

ARKANSAS STATE HIGHWAY COMMISSION

PROPOSAL DOCUMENTS

FOR THE CONSTRUCTION OF

STATE JOB NO. 040901

FEDERAL AID PROJECT NHPP-1765(9) & 9030

HWY. 22 – GUN CLUB RD. (F)

STATE HIGHWAY 549 SECTION 6

IN CRAWFORD & SEBASTIAN COUNTY

Bound herein are the Supplemental Specifications, Special Provisions, Proposal Documents and Schedule of Items applicable to this proposed construction contract.

Applicable to this proposed construction contract, but not bound herein, are the Arkansas State Highway Commission Standard Specifications for Highway Construction, Edition of 2014, and the Construction Plans.



CAUTION TO BIDDERS

Please review Section 102 of the Standard Specifications, 2014 Edition for Bidding Requirements and Conditions. Mistakes or omissions can be costly. Important items for you to check are included in, but not limited to, those listed below. This checklist is furnished only to assist you in submitting a proper bid. Check as you read.

- Have you contacted ARDOT (pmd@ardot.gov or 501-569-2261) to become an eligible bidder? This is required to submit a bid in the letting and must occur by 4:30pm the day prior to the letting.
- Have you acknowledged all Addenda by email or fax?
- Is the unit price entered appropriate for the item?
- Have you entered a unit price for each bid item except in the case of authorized alternate pay items? (A zero bid (\$0.00) is a valid price and will be considered.)
- Have you checked the Schedule of Items for various pay items that may have a minimum or maximum unit bid price? (Refer to the Standard Specifications for further information concerning these items)
 - ✓ Asphalt Binder
 - ✓ Relocating Precast Concrete Barrier
 - ✓ Water
 - ✓ Mobilization
- Have you limited your bid for Mobilization to five percent (5%) of the subtotal?
- For Federal-aid projects, did you complete the Certification for Federal aid Contracts?
- Prior to submitting your bid, did you check for error messages, and are all the folders "green"?
- If submitting a paper copy of the Proposal Guaranty (Bid Bond) is it signed by an officer of your company **AND** the Surety Agent?
- Did you ensure your Proposal Guaranty (if you are submitting a paper bond) will arrive prior to the time and date stated on Page 2 of the Proposal Documents?

1-17-08
Revised: 6-1-09
Revised: 2-15-12
Revised: 1-15-15
Revised: 5-26-16
Revised: 11-17-17
Revised: 7-5-23

ARKANSAS DEPARTMENT OF TRANSPORTATION

NOTICE OF NONDISCRIMINATION

The Arkansas Department of Transportation (ARDOT) complies with all civil rights provisions of federal statutes and related authorities that prohibit discrimination in programs and activities receiving federal financial assistance. Therefore, ARDOT does not discriminate on the basis of race, sex, color, age, national origin, religion (not applicable as a protected group under the Federal Motor Carrier Safety Administration Title VI Program), disability, Limited English Proficiency (LEP), or low-income status in the admission, access to and treatment in ARDOT's programs and activities, as well as ARDOT's hiring or employment practices. Complaints of alleged discrimination and inquiries regarding ARDOT's nondiscrimination policies may be directed to Civil Rights Officer Joanna P. McFadden (ADA/504/Title VI Coordinator), P. O. Box 2261, Little Rock, Arkansas 72203-2261, (501) 569-2298, (Voice/TTY 711), or the following email address: joanna.mcfadden@ardot.gov.

Free language assistance for Limited English Proficient individuals is available upon request.

This notice is available from the ADA/504/Title VI Coordinator in large print, on audiotape and in Braille.

TITLE VI CONTRACT PROVISIONS

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the “contractor”) agrees as follows:

(1) Compliance with Regulations: The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

(2) Nondiscrimination: The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

(3) Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Nondiscrimination on the grounds of race, color, or national origin.

(4) Information and Reports: The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the Federal Highway Administration, as appropriate, and will set forth what efforts it has made to obtain the information.

(5) Sanctions for Noncompliance: In the event of a contractor's noncompliance with the Nondiscrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

- (a) Withholding of payments to the contractor under the contract until the contractor complies, and/or
- (b) Cancelling, terminating or suspending a contract, in whole or in part.

(6) Incorporation of Provisions: The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

TITLE VI CONTRACT PROVISIONS

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC§ 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures Non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of Limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681et seq).

Arkansas Department of Transportation
Supplemental Specifications and Special Provisions Listing
State Job Number 040901

The following supplemental specifications and special provisions for this project supplement the standard specifications, edition of 2014. In case of conflict, the supplemental specifications and special provisions shall govern.

ERRATA	ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1273	REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1273	SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (23 U.S.C. 140)
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1273	SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1273	SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHWA-1273	SUPPLEMENT - WAGE RATE DETERMINATION
FHWA-1273	SUPPLEMENT - TRAINING PROGRAM - JOB 040901
JOB SP	CARGO PREFERENCE ACT REQUIREMENTS
JOB SP	GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB SP	DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES
JOB SP	PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT
JOB SP	BUY AMERICA - CONSTRUCTION MATERIALS
JOB SP	IMMEDIATE WORK ORDER
JOB SP	PRE-BID ON SITE INVESTIGATION OF SOIL CONDITIONS
JOB SP	BIDDING REQUIREMENTS AND CONDITIONS
JOB SP	MANDATORY ELECTRONIC CONTRACT
JOB SP	MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB SP	OFF-SITE RESTRAINING CONDITIONS FOR AMERICAN BURYING BEETLE
JOB SP	CONTRACTOR PROVIDED CULTURAL RESOURCES CLEARANCE FOR OFF-SITE LOCATIONS
JOB SP	OFF-SITE RESTRAINING CONDITIONS FOR INDIANA AND NORTHERN LONG-EARED BATS
JOB SP	ARMY CORPS – ARKANSAS RIVER, FLOODWAY AND LEVEE REQUIREMENTS
JOB SP	ARMY CORPS RESTRAINING CONDITIONS
JOB SP	ARMY CORPS – SPRINGHILL PARK REQUIREMENTS
JOB SP	ASSESSMENT OF WORKING DAYS - MAINTENANCE OF TRAFFIC
JOB SP	FLEXIBLE BEGINNING OF WORK - CALENDAR DAY CONTRACT
JOB SP	LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS
JOB SP	SPECIAL CLEARING REQUIREMENTS
JOB SP	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER FOR TREE CLEARING
JOB SP	NESTING SITES OF MIGRATORY BIRDS
JOB SP	SOIL STABILIZATION
JOB SP	ROCK FILL
JOB SP	TRENCHING AND SHOULDER PREPARATION FOR TEMPORARY WIDENING
JOB SP	RESTRICTIONS ON THE USE OF RECYCLED ASPHALT PAVEMENT MATERIAL

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JOB SP	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
JOB SP	PERCENT AIR VOIDS AND NDESIGN FOR ACHM SURFACE MIX DESIGNS
JOB SP	LONGITUDINAL JOINT DENSITIES FOR ACHM SURFACE COURSES
JOB SP	SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB SP	PRICE ADJUSTMENT FOR ASPHALT BINDER
JOB SP	PERCENT WITHIN LIMITS/PAVEMENT SMOOTHNESS (IRI)
JOB SP	DESIGN OF ASPHALT MIXTURES - AGGREGATES
JOB SP	PRICE ADJUSTMENT FOR FUEL
JOB SP	BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB SP	WARM MIX ASPHALT
JOB SP	LONGITUDINAL TINING
JOB SP	CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT AND CLASS S(AE) CONCRETE
JOB SP	REACTIVE AGGREGATE TESTING
JOB SP	PCC PAVEMENT SURFACE SMOOTHNESS (IRI)
JOB SP	BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB SP	MAINTENANCE OF TRAFFIC
JOB SP	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES LEFT IN PLACE
JOB SP	FURNISHING, INSTALLING AND LEAVING IN PLACE PRECAST CONCRETE BARRIER WALL
JOB SP	CONSTRUCTION PROJECT INFORMATION SIGN
JOB SP	CONCRETE DITCH PAVING
JOB SP	CULVERT CLEAN OUT
JOB SP	PLASTIC PIPE
JOB SP	SETTLEMENT MONITORING
JOB SP	ITS ELECTRICAL JUNCTION BOX, METALLIC
JOB SP	WIRE ROPE SAFETY FENCE (WRSF) SPECIFICATIONS
JOB SP	WIRE ROPE SAFETY FENCE MAINTENANCE MATERIALS
JOB SP	SPECIAL SEEDING REQUIREMENTS
JOB SP	GEOTEXTILE FABRIC
JOB SP	ACTUATED CONTROLLER
JOB SP	CABINET DRAWER ASSEMBLY
JOB SP	SYSTEM LOCAL CONTROLLER
JOB SP	LOUVERS FOR SIGNAL HEADS
JOB SP	RETROREFLECTIVE BACKPLATES
JOB SP	COMMUNICATION CABLE - FIBER
JOB SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (TRAFFIC SIGNAL)
JOB SP	ELECTRICAL CONDUCTORS-IN-CONDUIT (ROADWAY LIGHTING)
JOB SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES (TRAFFIC SIGNAL)

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JOB SP	ELECTRICAL CONDUCTORS FOR LUMINAIRES (ROADWAY LIGHTING)
JOB SP	BRIDGE MOUNTED GALVANIZED STEEL CONDUIT SYSTEM
JOB SP	ITS NON-METALLIC CONDUIT SYSTEM
JOB SP	CONCRETE PULL BOX
JOB SP	FIBER OPTIC CONCRETE PULL BOX
JOB SP	LED ROADWAY ILLUMINATION POLE
JOB SP	LED LUMINAIRE ASSEMBLY (BUG UO TYPE)
JOB SP	LED TRAFFIC SIGNAL HEAD
JOB SP	SERVICE POINT ASSEMBLY (TRAFFIC CONTROL DEVICES)
JOB SP	PEDESTAL TYPE SERVICE POINT ASSEMBLY
JOB SP	ENHANCED THERMOPLASTIC PAVEMENT MARKING
JOB SP	STREET NAME SIGN (MAST ARM MOUNTED)
JOB SP	OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORT
JOB SP	CONCRETE BRIDGE DECK CURING AND SURFACE TREATMENT RESTRICTIONS
JOB SP	ABUTMENT STONE - ARKANSAS RIVER
JOB SP	REVTMENT STONE (GRADATION A) - ARKANSAS RIVER
JOB SP	DRILLED SHAFT FOUNDATIONS
JOB SP	NONDESTRUCTIVE TESTING OF DRILLED SHAFTS
JOB SP	BRIDGE PILE CASING AND CORBEL COATING SYSTEM
JOB SP	UNPAINTED WEATHERING STRUCTURAL STEEL
JOB SP	GRADE HPS70W STRUCTURAL STEEL
JOB SP	DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB SP	INSPECTION ACCESS COMPONENTS
JOB SP	HLMR BEARING ASSEMBLY
JOB SP	PRESTRESSED CONCRETE BULB-TEE GIRDERS
JOB SP	BRIDGE WORK IN NAVIGABLE WATERS
JOB SP	CONCRETE FOR STRUCTURES
JOB SP	NAVIGATION LIGHTING SYSTEM
JOB SP	CLEARANCE GAUGES
JOB SP	MODULAR EXPANSION JOINT SYSTEM
JOB SP	SPECIAL SAFETY REQUIREMENTS FOR BRIDGES
JOB SP	SHORING FOR CULVERTS
JOB SP	SHORING
JOB SP	REQUIREMENTS OF U.S. COAST GUARD PERMIT
JOB SP	EXPLOSIVE HAZARDS
JOB SP	COORDINATION OF WORK
JOB SP	PROSECUTION AND PROGRESS WITH BID SCHEDULE

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JOB SP	STEEL WATER LINE
JOB SP	WATER LINE APPURTENANCES
JOB SP	ARCHEOLOGICAL MONITORING
JOB SP	DETAILS FOR RIVER TRAFFIC SAFETY
JOB SP	CATHODIC PROTECTION
JOB SP	HYBRID VIDEO/RADAR DETECTION SYSTEM
JOB SP	SPRINGHILL PARK TECHNICAL SPECIFICATIONS
JOB SP	SPRINGHILL PARK MEASUREMENT AND PAYMENT
JOB SP	WATER POLLUTION CONTROL
JOB SP	SPECIAL FACILITIES AT SITE
JOB SP	SITE USE (A+C METHOD) - CALENDAR DAY CONTRACT
JOB SP	SECTION 404 INDIVIDUAL PERMIT REQUIREMENTS
JOB SP	ZEBRA MUSSEL CONTAINMENT
JOB SP	PARTNERING REQUIREMENTS
JOB SP	CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB SP	STORM WATER POLLUTION PREVENTION PLAN
JOB SP	DELAY IN RIGHT OF WAY OCCUPANCY
JOB SP	SEQUENCE OF CONSTRUCTION
JOB SP	VALUE ENGINEERING
JOB SP	UTILITY ADJUSTMENTS
SP 108-1	LIQUIDATED DAMAGES
SS 100-3	CONTRACTOR'S LICENSE
SS 100-4	DEPARTMENT NAME CHANGE
SS 102-2	ISSUANCE OF PROPOSALS
SS 103-2	CONTACT INFORMATION FOR MOTORIST DAMAGE CLAIMS
SS 105-4	MAINTENANCE DURING CONSTRUCTION
SS 107-2	RESTRAINING CONDITIONS
SS 108-2	WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER
SS 110-1	PROTECTION OF WATER QUALITY AND WETLANDS
SS 210-1	UNCLASSIFIED EXCAVATION
SS 303-1	AGGREGATE BASE COURSE
SS 306-1	QUALITY CONTROL AND ACCEPTANCE
SS 307-1	CEMENT
SS 308-1	CEMENT
SS 400-1	TACK COATS
SS 400-4	DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
SS 400-5	PERCENT AIR VOIDS FOR ACHM MIX DESIGNS

Arkansas Department of Transportation
Supplemental Specifications and Special Provisions Listing
State Job Number 040901

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SS 400-6	LIQUID ANTI-STRIP ADDITIVE
SS 400-7	TRACKLESS TACK
SS 404-3	DESIGN OF ASPHALT MIXTURES
SS 409-2	ASPHALT LABORATORY FACILITY
SS 410-1	CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
SS 410-2	DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS
SS 410-4	EVALUATION OF ACHM SUBLOT REPLACEMENT MATERIAL
SS 416-1	RECYCLED ASPHALT PAVEMENT
SS 501-2	CEMENT
SS 600-2	INCIDENTAL CONSTRUCTION
SS 603-1	LANE CLOSURE NOTIFICATION
SS 604-1	RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
SS 604-3	TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)
SS 605-1	CONCRETE DITCH PAVING
SS 606-1	PIPE CULVERTS FOR SIDE DRAINS
SS 617-1	GUARDRAIL TERMINAL (TYPE 2)
SS 617-2	GUARDRAIL DELINEATORS
SS 620-1	MULCH COVER
SS 621-1	FILTER SOCKS
SS 632-1	CONCRETE ISLAND
SS 700-2	TRAFFIC CONTROL FACILITIES
SS 723-1	GENERAL REQUIREMENTS FOR SIGNS
SS 729-1	CHANNEL POST SIGN SUPPORT
SS 730-1	BREAKAWAY SIGN SUPPORT
SS 800-1	STRUCTURES
SS 802-3	CONCRETE FOR STRUCTURES
SS 802-4	CEMENT
SS 804-2	REINFORCING STEEL FOR STRUCTURES
SS 807-2	STEEL STRUCTURES
SS 808-1	INSTALLATION OF ELASTOMERIC BEARINGS
SS 808-2	ELASTOMERIC BEARINGS

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS

Errors noted in the printed book of Standard Specifications for Highway Construction, Edition of 2014, are listed below and this publication is hereby revised as follows:

- Page 124: The third sentence of the first paragraph of Subsection 110.03(c) should read: The Engineer will make a decision within 10 business days concerning the necessity or practicability of the request.
- Page 195: The sixth paragraph of subsection 303.02 should read: For Classes 1 through 8 materials, the fraction passing the #200 (0.075 mm) sieve shall not be greater than three-fourths of the fraction passing the #40 (0.0425 mm) sieve. For Classes 3 through 8, the fraction passing the #40 (0.425 mm) sieve shall have a liquid limit not greater than 25.
- Page 363: In the second paragraph of Subsection 502.02, the reference to ASTM 775 should be replaced by “ASTM A 775”.
- Page 636: In the second paragraph of Subsection 730.02, the references to AASHTO M 183 should be replaced with ASTM A36.
- Page 637: The last sentence of the second paragraph of Subsection 730.03 should read: All bolts, nuts, and washers shall be galvanized according to AASHTO M 232 or ASTM B 695, Class 40 or 50.
- Page 767: In the fourth paragraph of Subsection 807.06(a), the reference to ASTM B595 should be replaced by “ASTM B695”.
- Page 841: Subsection 817.04(a) should read: The treatment of lumber and timber shall meet the applicable requirements of the current edition of the AWWA, Standards U1, Commodity Specification E, Use Category UC4C.

**REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS**

- I. General
- II. Nondiscrimination
- III. Non-segregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- XI. Certification Regarding Use of Contract Funds for Lobbying
- XII. Use of United States-Flag Vessels:

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work

performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (see 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide

sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (1) Withholding monthly progress payments;
- (2) Assessing sanctions;
- (3) Liquidated damages; and/or
- (4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than \$10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway

Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act ([29 CFR part 3](#))), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act ([40 U.S.C. 3141\(2\)\(B\)](#)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH-1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in [29 CFR part 1](#), a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to DBAconformance@dol.gov. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to DBAconformance@dol.gov, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division

under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. *Fringe benefits not expressed as an hourly rate.* Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (2) A contracting agency for its procurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (4) A contractor's assignee(s);
- (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901–3907](#).

3. Records and certified payrolls (29 CFR 5.5)

a. *Basic record requirements (1) Length of record retention.* All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. *Certified payroll requirements (1) Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting

agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (e.g., the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH-347 or in any other format desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division website at <https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347.pdf> or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in [29 CFR part 3](#); and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH-347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature*. The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification*. The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under [18 U.S.C. 1001](#) and [31 U.S.C. 3729](#).

(7) *Length of certified payroll retention*. The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents*. The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers*. The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements*. If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under [29 CFR part 6](#) any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures*. Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address

of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29 CFR 5.5)

a. *Apprentices* (1) *Rate of pay*. Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits*. Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio*. The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates*. Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity*. The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and [29 CFR part 30](#).

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeyworkers shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility. a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, [18 U.S.C. 1001](#).

11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#); or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#).

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or

mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

* \$31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (2) A contracting agency for its procurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (4) A contractor's assignee(s);
- (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901](#)–3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the

event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or

d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;

- (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
- (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and

health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of \$150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1. Instructions for Certification – First Tier Participants:

- a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.
- d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

3. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which

this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

* * * * *

4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or

cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS

Elsewhere in this contract are three Supplemental Specifications on Equal Employment Opportunity designated as PR-1273 Supplements. They are (1) Specific Equal Employment Opportunity Responsibilities (23 U.S.C. 140), (2) Equal Employment Opportunity - Goals and Timetables, and (3) Equal Employment Opportunity - Federal Standards. This notice is to clarify the responsibilities for review of compliance and enforcement for these separate supplemental specification requirements.

The first of the Supplemental Specifications cited above covers the requirements for the equal employment opportunity program under Title 23 for which the Arkansas Department of Transportation (ARDOT) is responsible. The ARDOT performs the necessary compliance review and enforcement of this Supplemental Specification which is applicable to all contractors holding Federal-aid highway contracts.

The latter two Supplemental Specifications are for the specific equal opportunity requirements for Executive Order 11246 which is the sole responsibility of the Office of Federal Contract Compliance Programs (OFCCP), Department of Labor. Review and enforcement under these Supplemental Specifications is performed by OFCCP.

OFCCP has, under Paragraph 8 of the EEO Federal Standards Supplemental Specification, recognized the Arkansas AGC Heavy Highway Affirmative Action Plan as meeting the provisions of that Supplemental Specification and Supplemental Specification (2) cited above. With this recognition, those contractors signatory to the AGC Plan have been waived from individual review by OFCCP. However, OFCCP retains the right to review any such contractors whenever circumstances warrant. Also, contractors non-signatory to the AGC Plan are subject to OFCCP review under EO 11246.

ARDOT and OFCCP have agreed to work towards eliminating duplicative reviews on individual contractors; however, each agency may make reviews at any time notwithstanding the cited agreement.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES
(23 U.S.C. 140)**1. General.**

a. Equal employment opportunity requirements not to discriminate and to take affirmative action to assure equal employment opportunity as required by Executive Order 11246 and Executive Order 11375 are set forth in Required Contract Provisions (Form FHWA-1273 and Supplements) and these Special Provisions which are imposed pursuant to Section 140 of Title 23, U.S.C., as established by Section 22 of the Federal-Aid Highway Act of 1968. The requirements set forth in these Special Provisions shall constitute the specific affirmative action requirements for project activities under this contract and supplement the equal employment opportunity requirements set forth in the Required Contract Provisions. The initial measure of the contractor's good faith efforts to comply with these Special Provisions shall be its efforts to meet the goals set forth in the "Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)" for minority and female participation expressed in percentage terms for the contractor's work force in each trade on this project.

b. The contractor will work with the Department and the Federal Government in carrying out equal employment opportunity obligations and in their review of his/her activities under the contract.

c. The contractor and all his/her subcontractors holding subcontracts not including material suppliers, of \$10,000 or more, will comply with the following minimum specific requirement activities of equal employment opportunity: (The equal employment opportunity requirements of Executive Order 11246, as set forth in Volume 6, Chapter 4, Section 1, Subsection 1 of the Federal-Aid Highway Program Manual, are applicable to material suppliers as well as contractors and subcontractors.) The contractor will include these requirements in every subcontract of \$10,000 or more with such modification of language as is necessary to make them binding on the subcontractor.

2. Equal Employment Opportunity Policy.

The contractor will accept as his operating policy the following statement which is designed to further the provision of equal employment opportunity to all persons without regard to their race, color, religion, sex, age, disability, or national origin, and to promote the full realization of equal employment opportunity through a positive continuing program:

It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, age, disability, or national origin. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training.

3. Equal Employment Opportunity Officer.

The contractor will designate and make known to the Department contracting officers an equal employment opportunity officer (hereinafter referred to as the EEO Officer) who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of equal employment opportunity and who must be assigned adequate authority and responsibility to do so.

4. Dissemination of Policy.

a. All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's equal employment opportunity policy and contractual responsibilities to provide equal employment opportunity in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

(1) Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's equal employment opportunity policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

(2) All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer or other knowledgeable company official covering all major aspects of the contractor's equal employment opportunity obligations within thirty days following their reporting for duty with the contractor.

(3) All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer or appropriate company official in the contractor's procedures for locating and hiring minority and female employees.

b. In order to make the contractor's equal employment opportunity policy known to all employees, prospective employees and potential sources of employees, i.e., schools, employment agencies, labor unions (where appropriate), college placement officers, etc., the contractor will take the following actions:

(1) Notices and posters setting forth the contractor's equal employment opportunity policy will be placed in areas readily accessible to employees, applicants for employment, and potential employees.

(2) The contractor's equal employment opportunity policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

5. Recruitment.

a. When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be published in newspapers or other publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

b. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority and female applicants, including, but not limited to, State employment agencies, schools, colleges, and minority group organizations. To meet this requirement, the contractor will, through his EEO Officer, identify sources of potential minority and female employees, and establish with such identified sources procedures whereby minority and female applicants may be referred to the contractor for employment consideration.

In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with equal employment opportunity contract provisions. (The U.S. Department of Labor has held that where implementation of such agreements has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to refer minority and female applicants for employment by posting appropriate notices or bulletins in areas accessible to all such employees. In addition, information and procedures with regard to referring minority and female applicants will be discussed with employees.

6. Personnel Actions.

Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, age, disability, or national origin. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

7. Training and Promotion.

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event the Optional Training Special Provision is provided under this contract, this subparagraph will be superseded by that Special Provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

8. Unions.

If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an equal employment opportunity clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, age, disability, or national origin.

c. The contractor is to obtain information as to the referral practices and policies of the labor union, except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the State Highway Department and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, age, disability, or national origin, making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The U.S. Department of Labor has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the Department.

9. Subcontracting.

a. The contractor's attention is called to the Special Provision on Disadvantaged Business Enterprises in Federal-Aid Highway Construction.

b. The contractor will use his best efforts to ensure subcontractor compliance with their equal employment opportunity obligations.

10. Records and Reports.

a. The contractor will keep such records as are necessary to determine compliance with the contractor's equal employment opportunity obligations. The records kept by the contractor will be designed to indicate:

(1) the number of minority and non-minority group members and women employed in each work classification on the project,

(2) the progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and women (applicable only to contractors who rely in whole or in part on unions as a source of their work force),

(3) the progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees, and

(4) the progress and efforts being made in securing the services of Disadvantaged Business Enterprises or subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. All such records must be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the Department and the Federal Highway Administration.

c. The contractors will submit an annual report to the State Highway agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form PR 1391.

11. Corrective Action Plans.

The contractor understands that a designated representative of the Department will periodically review compliance by the contractor with all contractual provisions incorporated pursuant to Executive Order 11246, as amended, and Federal Highway Administration Equal Employment Opportunity Special Provisions implementing the Federal-Aid Highway Act of 1968, where applicable.

In the event that the designated representative of the Department finds that the contractor has failed to comply with any of the aforementioned contractual provisions, he will notify the contractor of this finding in writing. A declaration of default will result in the suspension of all future payments. No declaration of default will be made if the Department and the contractor formally agree to enter into a corrective action plan setting out the specified steps and timetables the contractor will be contractually obligated to perform in order to re-establish his compliance. This corrective action plan, in order to be accepted by the Department, shall include the following mandatory enforcement language:

"If, at any time in the future, the Office of Federal Contract Compliance Programs or the Federal Highway Administration or the Arkansas State Highway Commission or their successor(s) believe that (name of contractor) has violated any portion of this agreement, (name of contractor) shall be promptly notified of the fact in writing. This notification shall include a statement of the facts and circumstances relied upon in forming that belief. In addition, the notification shall provide (name of contractor) with 15 days to respond in writing to the notification except where the Office of Federal Contract Compliance Programs, the Federal Highway Administration or the Arkansas State Highway Commission alleges that such delay would result in irreparable injury. It is understood that enforcement proceedings for violation of this agreement may be initiated at any time after the 15-day period has elapsed (or sooner if irreparable injury is alleged) without issuance of a show cause notice."

"It is recognized that where the Office of Federal Contract Compliance Programs and/or the Federal Highway Administration and/or the Arkansas State Highway Commission believes that (name of contractor) has breached this agreement, evidence regarding the entire scope of (name of contractor) alleged noncompliance from which this agreement resulted, in addition to evidence regarding (name of contractor) alleged violation of this agreement, may be introduced at the enforcement proceeding."

"Violation of this agreement may subject (name of contractor) to sanctions pursuant to the Arkansas State Highway Commission contract administration procedures. It is further recognized that liability for violation of this agreement may also subject (name of contractor) to sanctions set forth in Section 209 of Executive Order 11246, as amended, and/or appropriate relief."

The contractor will submit quarterly reports to the Department as a result of any deficiencies cited during an equal employment opportunity compliance review. The reports will indicate the affirmative action steps taken to correct the deficiencies. Instructions for submission of the reports will be furnished by the Equal Employment Opportunity Section.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES

NOTICE OF REQUIREMENT FOR AFFIRMATIVE
ACTION TO ENSURE EQUAL EMPLOYMENT
OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

MINORITIESCOUNTY

Arkansas	16.4%	Lee	26.5%
Ashley	16.4%	Lincoln	16.4%
Baxter	3.3%	Little River	19.7%
Benton	3.3%	Logan	6.6%
Boone	3.3%	Lonoke	16.4%
Bradley	16.4%	Madison	3.3%
Calhoun	16.4%	Marion	3.3%
Carroll	3.3%	Miller	19.7%
Chicot	16.4%	Mississippi	26.5%
Clark	16.4%	Monroe	16.4%
Clay	26.5%	Montgomery	16.4%
Cleburne	16.4%	Nevada	20.2%
Cleveland	16.4%	Newton	3.3%
Columbia	20.2%	Ouachita	16.4%
Conway	16.4%	Perry	16.4%
Craighead	26.5%	Phillips	26.5%
Crawford	5.6%	Pike	20.2%
Crittenden	32.3%	Poinsett	26.5%
Cross	26.5%	Polk	6.6%
Dallas	16.4%	Pope	16.4%
Desha	16.4%	Prairie	16.4%
Drew	16.4%	Pulaski	15.7%
Faulkner	16.4%	Randolph	26.5%
Franklin	6.6%	Saline	15.7%
Fulton	16.4%	Scott	6.6%
Garland	16.4%	Searcy	3.3%
Grant	16.4%	Sebastian	5.6%
Greene	26.5%	Sevier	20.2%
Hempstead	20.2%	Sharp	16.4%
Hot Spring	16.4%	Stone	16.4%
Howard	20.2%	St. Francis	26.5%
Independence	16.4%	Union	16.4%
Izard	16.4%	Van Buren	16.4%
Jackson	16.4%	Washington	3.3%
Jefferson	31.2%	White	16.4%
Johnson	16.4%	Woodruff	16.4%
Lafayette	20.2%	Yell	16.4%
Lawrence	26.5%		

FEMALES

Statewide - 6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is as described in the Proposal Form for this report.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

EQUAL EMPLOYMENT OPPORTUNITY -FEDERAL STANDARDS

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS
(EXECUTIVE ORDER 11246)

1. As used in these specifications:

a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

d. "Minority" includes:

- i. Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
- ii. Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
- iii. Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
- iv. American Indian or Alaskan Native (all persons having origins in any of the original peoples of North American and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved

Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The

Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees before the start of work and then not less often than once every six months; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foreman, etc., prior to the initiation of construction work at any job site and then not less often than once every six months. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above describing the openings, screening procedures, and test to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between sexes.

o. Document and maintain a record of all solicitations of offers for subcontractors for disadvantaged business

enterprise construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's non-compliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, national origin, age or disability.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Employment Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of

these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41CFR60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

16. In addition to the reporting requirements set forth elsewhere in this contract, the contractor and the subcontractors holding subcontracts not including material suppliers, of \$10,000 or more, shall submit for every month of July during which work is performed employment data as contained under Form PR-1391 (Appendix C to 23 CFR, Part 230), and in accordance with the instructions included thereon.

7/26/96
Rev. 2/11/98
Rev. 2/20/03
Rev. 7/27/06
Rev. 10/24/06
Rev. 9/16/13
Rev. 8/22/17
Rev. 12/13/23

**FHWA-1273 SUPPLEMENTAL SPECIFICATION
POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS**

POSTER OR DOCUMENT REQUIRED	REQUIRED BY	WHERE TO OBTAIN
1. Equal Employment Opportunity – Know Your Rights	U.S. Department of Labor (OFCCP)	ARDOT Resident Engineer
2. Company EEO Policy (prepared by the Contractor on the Company's letterhead)	U. S. Department of Labor (OFCCP)	Contractor to Prepare: <ul style="list-style-type: none"> a. EEO policy statement. b. Notice encouraging employees to refer minority and female applicants for employment. c. Notice informing employees of an available training program and the entrance requirements. d. Complaint procedures. e. Notice identifying company EEO officer by name, including address and telephone number where EEO officer can be located. f. Work environment statement. g. Certification of nonsegregated facilities. *h. Notice to unions disseminating EEO commitments and responsibilities and requesting their cooperation.
3. Current Wage Rates (PR-1273 Supplement) or SS Revisions of PR-1273 for Off-System Projects	*Union Contractors Only U. S. Department of Labor	Contained in contract. Extra copies may be obtained from Program Management - ARDOT

7/26/96
Rev. 2/11/98
Rev. 2/20/03
Rev. 7/27/06
Rev. 10/24/06
Rev. 9/16/13
Rev. 8/22/17
Rev. 12/13/23

**FHWA-1273 SUPPLEMENTAL SPECIFICATION
POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS**

POSTER OR DOCUMENT REQUIRED	REQUIRED BY	WHERE TO OBTAIN
4. "Employee Rights Under the Davis-Bacon Act" (WH 1321)	U. S. Department of Labor	ARDOT Resident Engineer
5. "Employee Rights Under the Davis-Bacon Act" (WH 1321 SPA)	U. S. Department of Labor	ARDOT Resident Engineer
6. Minimum Wage Rate (WH 1088)	U. S. Department of Labor	ARDOT Resident Engineer
7. "NOTICE" Federal Aid Projects (PR-1022)	U. S. Department of Transportation (FHWA)	ARDOT Resident Engineer
8. Job Safety and Health Protection OSHA 3165	U. S. Department of Labor (OSHA)	ARDOT Resident Engineer
9. Job Safety and Health Protection OSHA 3167 SPA	U. S. Department of Labor (OSHA)	ARDOT Resident Engineer
10. Emergency Phone Numbers of Doctors, Hospital and Ambulance near Job Site for referring injured employees.	U. S. Department of Labor (OSHA)	ARDOT Resident Engineer
11. WCC Form AR-P Workers Compensation Notice and Instructions to Employers and Employees	State of Arkansas	Insurance Carrier
Self-Insurer	State of Arkansas	Administrator - Self-Insured Group

7/26/96
Rev. 2/11/98
Rev. 2/20/03
Rev. 7/27/06
Rev. 10/24/06
Rev. 9/16/13
Rev. 8/22/17
Rev. 12/13/23

**FHWA-1273 SUPPLEMENTAL SPECIFICATION
POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS**

POSTER OR DOCUMENT REQUIRED	REQUIRED BY	WHERE TO OBTAIN
12. Log and Summary of Occupational Injuries and Illnesses (OSHA Form 300) The Summary portion must be posted from February 1 to April 30, of the year following the year covered by the form.	U. S. Department of Labor (OSHA) Public Law 91-596	ARDOT Resident Engineer
13. Family and Medical Leave Act of 1993 (WH-1420) Employers who employ 50 or more employees for at least 20 workweeks in the current or preceding calendar year.	U. S. Department of Labor	ARDOT Resident Engineer
14. Employee Polygraph Protection Act (WH-1462)	U. S. Department of Labor	ARDOT Resident Engineer
15. Your Rights Under USERRA (The Uniformed Services Employment and Reemployment Rights Act)	U. S. Department of Labor	ARDOT Resident Engineer
16. Arkansas Department of Labor Notice to Employer & Employee	Arkansas Department of Labor	ARDOT Resident Engineer
17. Pay Transparency Nondiscrimination Provision	U. S. Department of Labor (OFCCP)	ARDOT Resident Engineer

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
WAGE RATE DETERMINATION

"General Decision Number: AR20240050 01/05/2024

Superseded General Decision Number: AR20230050

State: Arkansas

Construction Type: Heavy
HEAVY CONSTRUCTION PROJECTS (Including Water and Sewer Lines)

County: Crawford County in Arkansas.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

ARKANSAS DEPARTMENT OF TRANSPORTATION
 SUPPLEMENTAL SPECIFICATION
 WAGE RATE DETERMINATION

Modification Number Publication Date
 0 01/05/2024

SUAR2015-047 01/09/2017

	Rates	Fringes
CARPENTER, Includes Form Work....	\$ 16.47 **	1.93
CEMENT MASON/CONCRETE FINISHER...	\$ 15.23 **	0.00
ELECTRICIAN.....	\$ 22.88	7.19
LABORER: Common or General.....	\$ 12.11 **	0.00
LABORER: Pipelayer.....	\$ 14.17 **	0.00
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 16.36 **	0.00
OPERATOR: Bulldozer.....	\$ 17.00 **	1.92
OPERATOR: Crane.....	\$ 24.21	6.79
OPERATOR: Loader.....	\$ 15.45 **	0.00
PAINTER (Brush and Roller).....	\$ 18.00	0.00
TRUCK DRIVER: Dump Truck.....	\$ 14.08 **	0.00

 WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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 ** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.20) or 13658 (\$12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is

like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion

date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
WAGE RATE DETERMINATION

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
WAGE RATE DETERMINATION

"General Decision Number: AR20240057 01/05/2024

Superseded General Decision Number: AR20230057

State: Arkansas

Construction Type: Heavy
HEAVY CONSTRUCTION PROJECTS (Including Water and Sewer Lines)

County: Sebastian County in Arkansas.

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

ARKANSAS DEPARTMENT OF TRANSPORTATION
 SUPPLEMENTAL SPECIFICATION
 WAGE RATE DETERMINATION

Modification Number Publication Date
 0 01/05/2024

SUAR2015-054 01/09/2017

	Rates	Fringes
CARPENTER, Includes Form Work....	\$ 16.47 **	1.93
CEMENT MASON/CONCRETE FINISHER...	\$ 15.23 **	0.00
ELECTRICIAN.....	\$ 22.88	7.19
LABORER: Common or General.....	\$ 12.16 **	0.00
LABORER: Pipelayer.....	\$ 14.54 **	1.82
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 16.35 **	0.00
OPERATOR: Bulldozer.....	\$ 17.00 **	1.92
OPERATOR: Crane.....	\$ 24.21	6.79
OPERATOR: Loader.....	\$ 15.45 **	0.00
PAINTER (Brush and Roller).....	\$ 18.00	0.00
TRUCK DRIVER: Dump Truck.....	\$ 14.05 **	3.04

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.20) or 13658 (\$12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is

like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

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Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

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date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

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A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

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Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
WAGE RATE DETERMINATION

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

TRAINING PROGRAM

This Special Provision supersedes subparagraph 7b of the Special Provision entitled "Specific Equal Employment Opportunity Responsibilities" and implements 23 USC 140(a).

The contractors shall provide on-the-job training aimed at developing full journeymen in the type of trade or job classification involved.

The number of training slots to be trained under the special provision will be 8. A training slot will consist of 520 to 1040 hours.

As part of the contractor's equal employment opportunity/affirmative action program, training shall be provided as follows:

Training and upgrading of minorities, females and disadvantaged individuals toward journey level status is the primary objective of this Special Provision. A "disadvantaged individual" is an individual that meets the criteria established by the Department of Health and Human Services Poverty Guidelines. Training in classifications such as clerk-typist, secretary, bookkeeper, fire fighter, office engineer, estimator, timekeeper, laborer, or flag person **shall not** be approved for participation under this Special Provision.

The goals for minority and female participation established in accordance with 41 CFR 60-4 and listed elsewhere in this contract in the FHWA-1273 Supplement titled "Equal Employment Opportunity Goals and Timetables" subtitled "Notice of Requirement for Affirmative Action to Ensure Equal Opportunity (Executive Order 11246)" apply to all training performed by the contractor in the covered area.

In the event that the contractor subcontracts a portion of the contract work, the contractor may not further assign a portion of the training requirements established herein without the consent of the subcontractor(s). Any assignment of these training requirements by the contractor shall be submitted in writing to the Department and an appropriately amended commitment form shall be made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The contractor shall submit to the Department's Resident Engineer at the preconstruction conference a completed Training Commitment Form (TCF). Refer to Page four of four. The TCF should specify the training program, number of trainees, training classification, estimated starting date and training hours required per training classification to be used to fulfill the training requirement of this Special Provision. The Department must approve this form within 20 working days after the preconstruction conference. The contractor may enroll additional individuals in the training program based on approval of the Resident Engineer and there is sufficient time on the project or subsequent projects to complete the training.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

TRAINING PROGRAM

If the contractor fails to submit the TCF at the preconstruction conference, work will not be allowed to start on the project until the TCF is submitted to the Resident Engineer.

Only training programs approved by the Department with FHWA concurrence, the Department of Labor, its agencies, or by a State Apprenticeship Agency or Council recognized by the U.S. Department of Labor may be used to fulfill training requirements under this Special Provision.

The contractor, upon the start of training under the contract, shall provide the Resident Engineer the following information for each trainee:

- Name
- Address
- Telephone Number
- Social Security Number
- Race/Ethnic Origin
- Gender
- Training Classification
- Training Starting Date
- Classification(s) previously trained and date training was completed (if applicable)

The contractor shall furnish to the Resident Engineer the number of training hours the trainee has accumulated each month. A Trainee Termination Form shall be completed when a trainee terminates from the training program. The Resident Engineer shall receive a copy.

The contractor, prior to the start of training, shall provide written notice to each individual to be trained under this Special Provision of that individual's designation as a trainee, the training program and classification under which training will be provided, the length of the training program, and the hourly wage rate to be paid to the trainee. Each month, while enrolled in the training program, the contractor shall inform the trainee of the number of hours accumulated in the training program. Upon graduation, each trainee shall be issued a permanent certification designating the bearer as a graduate journey person of the appropriate training program.

No employee shall be employed as a trainee in any classification in which the employee has successfully completed a training course leading to journey level status or in which the employee has been employed at the journey level. Individuals may be trained a maximum of three times as long as the training is for the purpose of upgrading that individual. If the trainee is enrolled more than once on this project, the trainee will only count as one in satisfying the number that is required to be enrolled in this contract. The contractor shall satisfy this requirement by including appropriate questions in the employee application or by other suitable means. The contractor's findings in each case shall be documented.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

TRAINING PROGRAM

Except as otherwise noted below, the contractor will be paid \$2.00 per hour of training provided to minorities, women and disadvantaged individuals on this contract under an approved training program. As approved by the Department, payment will be made to the contractor for training persons in excess of the number of hours specified herein. This payment may be made even though the contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other payment. Payment for off-site training may be made only if the approved training program being used by the contractor includes provisions for off-site training, the trainees are concurrently employed on a Federal-aid project, and the contractor contributes to the cost of the training, provides the instruction to the trainee, or pays the trainee's wage during the off-site training.

No payment will be made due to failure to provide the training required as stated in the approved training program and a good faith effort has not been made to retain the trainee upon completion of the training program, if work continues to be available in that classification. It is normally expected that a trainee will begin training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in the work classification or until the trainee has completed the training program. It is desired that all trainees be on board for the entire length of the contract. Responsibilities will have been fulfilled under this Special Provision if acceptable training has been provided on the basis of the total number enrolled on the contract for a significant period or the contractor has made a good faith effort to fulfill its obligations.

Trainees will be paid at least 60 percent of the appropriate minimum journey level rate specified in the contract or no less than the common laborer rate for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees in an approved existing program are enrolled as trainees on this project. In that case, the appropriate rates approved by the Departments of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Special Provision.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

TRAINING PROGRAM

TRAINING COMMITMENT FORM

In accordance with this Training Special Provision, the undersigned bidder will provide training in the following crafts and in the amount of hours indicated below.

Training Program _____

<u>Number of Trainees</u>	<u>Training Classification</u>	<u>Estimated Starting Date</u>	<u>Minimum Number of Training Hours Required Per Trainee</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Company Representative

Title

Date

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

CARGO PREFERENCE ACT REQUIREMENTS

The requirements of the Cargo Preference Act (CPA) and implementing regulations (46 CFR 381.7(a)-(b)) are applicable to this contract. For additional information, see the FHWA's web page:

<https://www.fhwa.dot.gov/construction/cqit/cargo.cfm>

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901

GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION

A Disadvantaged Business Enterprise (DBE) goal of 4.0% has been established for this contract. Therefore, the provisions of subsection 103.08 of the Standard Specifications for Highway Construction, Edition of 2014, as revised, apply.

Requirements of Subsection 103.08 apply to successful bidders that are certified by the Department as a DBE. The Prime Contractor must meet the DBE goal. If the Prime Contractor is a Department certified DBE, then the work the Prime Contractor performs with its own forces, as well as work committed to be performed by DBE subcontractors and suppliers will count toward the goal. Therefore, DBE bidders should list work to be performed with its own forces on the DBE Participation form, along with DBE subcontractors to be utilized in achieving the goal.

All payments made to DBE Contractors, suppliers, manufacturers, and/or non-construction service firms must be reported by the Prime Contractor. This includes all payments made to DBE firms utilized in achieving the project goal and DBE firms that perform work that is not listed in the Disadvantaged Business Enterprise Participation form submitted with the executed Contract.

As required by Subsection 103.08(h), the Prime Contractor must use the appropriate DBE Payment Log form included in this Special Provision during the progress of the Contract. Listed below are the instructions on when each form is required to be submitted.

- The Prime DBE Payment Log (page 4) must be submitted by the Prime Contractor when he/she is a certified DBE Contractor and work was performed by their own forces or money was earned by the DBE Prime Contractor for work performed by a Subcontractor during the estimate period.
- The DBE Subcontractor Payment Log (page 3) must be submitted by the Prime Contractor when a Subcontractor is a certified DBE Contractor and work was performed by a Subcontractor or money was earned by a Subcontractor for work performed by a Second-tier Subcontractor during the estimate period.
- The 2nd Tier DBE Payment Log (page 5) must be submitted by the Prime Contractor when a 2nd Tier Subcontractor is a certified DBE Contractor and work was performed by a 2nd Tier Subcontractor during the estimate period.
- The 2nd Tier DBE Payment Log (page 5) must be submitted by the Prime Contractor when payments are made to a Department Certified DBE supplier, manufacturer, and/or non-construction service firm by the Prime Contractor or any Subcontractor or 2nd Tier Subcontractor during the estimate period.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901

GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION

A separate DBE Payment Log form is required for each DBE firm receiving payments for work completed or services provided during each estimate period. The DBE Payment Log forms, along with instructions for their use, are available on the Department's website at:

https://www.ardot.gov/wp-content/uploads/2021/01/DBE_Log.xlsx

All certifications of payments must be received by the Resident Engineer within thirty-five (35) calendar days following the end of each estimate period. Facsimile or scanned copies of the completed original payment log forms are acceptable to fulfill this requirement.

Upon completion of the contract, a final certificate of payments to all DBE firms -- page 6 of this Special Provision -- is required by Subsection 103.08 (h). The final amount paid to each DBE firm shall match the total to date reported on the last DBE payment log submitted for each firm. If necessary, an additional DBE payment log shall be submitted with the certificate of payment itemizing all payments made to DBE firms since the last estimate period. A signed, original of the Final Certificate of Payment must be furnished to the Resident Engineer.

**Arkansas Department of Transportation
DBE Subcontractor Payment Log**

Job Number _____ Prime Contractor _____
 Estimate No. _____ DBE Subcontractor _____
 Estimate Ending Date _____ Date Payment Made to DBE _____

Item Code*	Item Description	Subcontract Unit Price	2 nd Tier Unit Price	Quantity	Value Earned By Subcontractor

* Item Codes for pay items are shown on the estimate voucher	Total This Estimate _____ Retainage Withheld This Estimate _____ Net Total This Estimate _____ _____% Retainage Previous Total _____ Total To Date _____
DBE Payment Log must be received within 35 calendar days of the ending date of the estimate.	

The Prime Contractor certifies that the payment listed has been made to the DBE Subcontractor and that the documentation of this payment is available for inspection upon request.

Authorized Signature _____ Title _____
 Typed or Printed Name _____ Date _____

Department Use Only Received By _____ Date _____	Verified By _____ Date _____ RE Initials _____
--------------------------------------------------------	------------------------------------------------------

**Arkansas Department of Transportation
DBE 2nd Tier Payment Log**

Job Number _____ Prime Contractor _____
Estimate No. _____ Subcontractor _____
Estimate Ending Date _____ DBE 2nd Tier Subcontractor _____
Date Payment Made to DBE _____

Item Code*	Item Description	2nd Tier Unit Price	Quantity	Value Earned by 2nd Tier

* Item Codes for pay items are shown on the estimate voucher

Total This Estimate

Retainage Withheld This Estimate

Net Total This Estimate

____% Retainage Previous Total

Total To Date

DBE Payment Log must be received within 35 calendar days of the ending date of the estimate.

The Prime Contractor certifies that the payment listed has been made to the DBE 2nd Tier Subcontractor and that the documentation of this payment is available for inspection upon request.
Authorized Signature _____ Title _____
Typed or Printed Name _____ Date _____

Department Use Only
Received By _____ Date _____
Verified By _____ Date _____
RE Initials _____

**ARKANSAS DEPARTMENT OF TRANSPORTATION
CERTIFICATE OF PAYMENT**

JOB _____ F.A.P. _____

JOB NAME _____

ORIGINAL CONTRACT AMOUNT \$ _____ DBE GOAL \$ _____*

(Contract Commitment)

DBE CONTRACT GOAL ___%

FINAL PAYMENT TO DBEs

The undersigned Contractor on the above mentioned project hereby certifies that the following amount(s) were paid to:

<u>DBE Subcontractor(s)</u>	<u>Amount Paid</u>
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
Total Paid to DBEs	\$ _____

Only payments related to work, services, or material actually provided by DBE firms should be shown. Payments under second tier subcontracts from DBE firms to non-DBE firms should not be included. **DBE prime Contractors should include the value of work performed by its own forces.**

Contractor:			
Signature:			
Typed or Printed Name:			
Title:		Date:	

THIS "CERTIFICATE OF PAYMENT" IS TO BE SUBMITTED TO THE RESIDENT ENGINEER PRIOR TO PROJECT ACCEPTANCE.

* If goal not met, brief explanation: _____

Rev. 12-13-16
Rev. 11-07-19
Rev. 3-8-24

ARKANSAS DEPARTMENT OF TRANSPORTATION

CERTIFICATION TO SUBMIT DBE PARTICIPATION

JOB 040901

By submitting an internet proposal, the bidder irrevocably certifies that an amount equal to or greater than the Disadvantaged Business Enterprise (DBE) Goal established for this project will be performed by certified Disadvantaged Business Enterprise firms and the required DBE participation information will be submitted within 5 calendar days of the date of the bid opening.

Within five (5) calendar days of the date of the bid letting, all bidders shall furnish the required DBE Participation information to the Department on the forms provided to be considered a responsive bid. If a conditional award has been made and the successful bidder has not furnished the required information, the proposal will be rejected and their proposal guaranty forfeited. The proposal guaranty shall become property of the Commission, not as a penalty, but in liquidation of damages, sustained to the DBE Program. Award may then be made to the next lowest, responsive bidder or the work may be re-advertised as the Commission may decide.

Only work, materials, or services that will actually be provided by DBE firms will be credited toward the goal. The DBE firm's certification must be fully in effect at the letting date.

As an alternative, documentation of Good Faith Efforts to meet the DBE goal may be submitted to the Program Management Division prior to the deadline for proposals to be received.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

**DISADVANTAGED BUSINESS ENTERPRISE
BIDDER'S RESPONSIBILITIES**

Section 103 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 103.08(d)(2) is hereby deleted and the following substituted therefore:

(2) Within five (5) calendar days of the date of the bid letting, all bidders shall furnish the required DBE Participation information to the Department on the forms provided to be considered a responsive bid. If a conditional award has been made and the successful bidder has not furnished the required information, the proposal will be rejected and their proposal guaranty forfeited. The proposal guaranty shall become property of the Commission, not as a penalty, but in liquidation of damages, sustained to the DBE Program. Award may then be made to the next lowest, responsive bidder or the work may be re-advertised as the Commission may decide. Furthermore, any subsequent bidder's proposal will be considered non-responsive if their required DBE participation information was not submitted within the required five day period.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

**PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND
VIDEO SURVEILLANCE SERVICES OR EQUIPMENT**

In accordance with the requirements of 2 CFR 200.216, equipment utilized on this project for telecommunications and video surveillance services or equipment shall not be produced by:

- 1) Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
- 2) Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****BUY AMERICA - CONSTRUCTION MATERIALS**

Description: Section 106, Control of Material, of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added as **Subsection 106.01(c) Construction Materials**

Buy America – Construction Materials. (1) General. The Bipartisan Infrastructure Law (BIL) was enacted on November 15, 2021 (BIL Build America, Buy America Act Publication L. No. 117-58). This provision expands the Buy America requirements beyond what was only required for steel and iron products. The steel and iron provisions have not changed with the new law. Buy America requirements are in effect only on Federal-Aid contracts and all construction materials shall be produced/manufactured in the United States. Items specifically excluded from this requirement are cement and cementitious materials; aggregates such as stone, sand, or gravel; aggregate binding agents or additives (including asphalt binders). All other materials permanently incorporated into the project will be subject to Buy America requirements.

(2) Definitions. A construction material includes an article, material, or supply that is or consists primarily of:

- non-ferrous metals;
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cable);
- glass (including optic glass);
- lumber; or
- drywall.

Items manufactured through a combination of either two or more materials listed above, or at least one of the materials listed above and a material not listed shall be considered as a manufactured product, rather than as a construction material.

Build America, Buy America provisions specified for manufactured products in Section 70912(6)(B) of the Infrastructure Investment and Job Act (IIJA) do not apply to federal-aid construction projects per FHWA's existing statutory requirement applicable to manufactured products. A "manufactured product" is considered to be an item that undergoes one or more manufacturing processes before the item can be used on a construction project.

All construction materials shall be produced in the United States. This means all manufacturing processes to produce the construction materials shall occur in the United States. All manufacturing processes for construction materials shall mean the final manufacturing process and the immediately preceding manufacturing stage for the construction material.

(3) Compliance. The Contractor shall ensure that all manufacturing processes for each covered product comply with this Buy America Provision. Non-conforming products shall be replaced at no expense to the Department. It is the contractor's responsibility to assure all submittals required for Buy America are submitted to the Engineer prior to the products and or materials being incorporated into the project.

Buy America requirements do not apply to temporary elements not permanently incorporated into a project. This includes falsework, temporary sheet piling, detour bridges, temporary elements left in place at the contractor's convenience, unless the contract plans and specifications require steel or iron components or imply that the item be left in place, or items that are simply moved from one place to another within the same project. Buy America only applies to construction

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BUY AMERICA - CONSTRUCTION MATERIALS

materials that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, removed at or before completion of the project.

(4). Certification. The contractor shall provide a certification from the supplier for each construction material, stating that it meets the provisions of this specification or the Build America/Buy America act, prior to incorporating any construction material into the project. The supplier certifying may be the original manufacturer, fabricator, or vendor provided the supplier has sufficient control and knowledge of the manufacturing process to accept responsibility and certify full and complete conformance with the certification.

(5). Examples of Pay Items Affected. The following are items from the Standard Specifications that must meet the requirements of this specification. This list is provided for bidders' information and is not to be considered as all-inclusive as other items covered by the standard specifications, supplemental specifications, and special provisions may also fall under these requirements:

Non-Ferrous Metals	
Item	Specification Section
Aluminum Pipe Culverts	606
Aluminum Chain Link Fence	619
Aluminum Gates	619
Mailboxes	637
Electrical Conductors	700, 708
Ground Rods	701, 712, 714, 715
Loop Wiring	704
Feeder Wire	704
Traffic Signal Cable	708
Sign Supports	724, 730
Sign Panels	723, 725, 726, 727, 728
Video Cable	733
Metal Bridge Railing	806
Bridge Name Plates	812

Plastic/Polymer Based Products	
Item	Specification Section
Polyethylene Pipe Culverts	606
PVC Pipe Culverts	606
RC Pipe Culvert Gaskets	606
Drop Inlet Steps	609, 610, 640
ABS or Polyethylene Pipe for Underdrains	611
PVC Pipe for Underdrain Laterals	611
Filter Fabrics	611, 625, 629, 816
Geotextile Fabrics	625
Tactile Panels for Wheelchair Ramps	641
Non-Metallic Conduit (PE & PVC)	710
Sand Barrels/Lids for Impact Attenuation Barriers	731

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BUY AMERICA - CONSTRUCTION MATERIALS

Glass	
Item	Specification Section
Glass Beads (drop on application)	718, 719
Fiber Optic Cable	Job SP
Windows in Building Construction	Job SP

Lumber	
Item	Specification Section
Wood Guard Rail Posts	617, 639
Wood Block Outs for Guardrail	617,639
Wood Posts for Guard Cable	618
Fence Posts and Braces (Type A, B, C and D)	619
Mailbox Supports	637
Treated Wood Poles	716
Treated Lumber	817
Treated Bridge Timbers	817
Timber Piling	818
Framing Lumber, Plywood, Trim Lumber in Building Construction	Job SP

Drywall	
Item	Specification Section
Drywall in Building Construction	Job SP

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IMMEDIATE WORK ORDER

Bidders are advised that it is the intent of the Department to issue a work order to the successful bidder immediately after execution of the Contract by the Commission.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

PRE-BID ON SITE INVESTIGATION OF SOIL CONDITIONS

GENERAL: In consideration of these regulations, the prospective bidder (Contractor) and the Arkansas Department of Transportation (Department) subscribe to the following agreement.

AGREEMENT:

1. The Contractor is granted permission to investigate soil conditions on site pursuant to the regulations of the Arkansas Highway Commission. The Department waives none of its powers or rights to stop or control work within the right-of-way of a state highway.
2. The Contractor shall assume full responsibility for safeguarding all utilities in the work area during the time of the investigative work. The Contractor shall notify Arkansas One-Call at 1-800-482-8998 and have utility facilities located prior to beginning work.
3. The Contractor shall perform all work in a neat and workmanlike manner, using materials acceptable to the District Engineer of the Department.
4. The Contractor shall clean up the work area and leave it in a presentable condition upon completion of the described work.
5. The Contractor shall be responsible for locating and protecting all utilities in the work area and to hold harmless and indemnify the State Highway Commission, the Department and its duly appointed agents, officers, and employees, from all damages, expenses, claims, or liability arising out of any alleged damages of any nature to any utilities due to the construction, performance, or non-performance of work.
6. The Contractor shall fully protect the traffic on the highway during the investigative work. The Contractor shall utilize proper traffic control devices in accordance with the Manual on Uniform Traffic Control Devices, and to hold harmless the Department, its officers, and employees.
7. The Contractor shall undertake measures to avoid tracking of soil and mud from the work area onto the highway and shall revegetate, in accordance with the Standard Specifications for Highway Construction, most recent edition, all areas of disturbed soil, of any size, in the work area. All projects with disturbed soil shall, if required, have an appropriate NPDES Permit as required by the Arkansas Department of Environmental Quality (501-682-0616).
8. The Contractor is not required to provide a Surety Bond for pre-bid on site investigation of soil conditions.
9. The Contractor shall maintain all existing highway, street, and county road regulatory, warning, guide, and informational signs in effective location at all times for the duration of the work and shall install them at the correct location of the work. Any signs damaged by the Contractor shall be replaced at no cost to the State.

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PRE-BID ON SITE INVESTIGATION OF SOIL CONDITIONS

10. The Contractor shall provide at least three days notice to the District Engineer before beginning any work under this agreement.
11. The Contractor shall include Department inspection personnel in all negotiations with any entity for access to the area.
12. The Contractor shall notify the District Engineer, prior to completion, and provide access for inspection to ensure any disturbed areas have been restored to like original condition.
13. The Contractor agrees that any work performed under this agreement, including all investigative work, shall be at no cost to the Department.

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SPECIAL PROVISION

JOB NO. 040901

BIDDING REQUIREMENTS AND CONDITIONS

Section 102 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The fourth sentence of the second paragraph of **Subsection 102.01** is hereby deleted, and the following substituted therefore:

Prospective bidders may file a questionnaire at any time; however, prospective bidders will not be given authorization to submit a proposal unless a rating has been extended based on an acceptable questionnaire.

The following paragraph has been added to **Subsection 102.01**.

A contractor with common officers/owners/partners of any firm, partnerships, joint ventures, or corporations that is seeking prequalification, has been prequalified, or has entered into a previous or current contract with the Commission may have the prequalification denied, limited, or revoked for the reasons listed in Subsection 102.04(a)-(m).

The last paragraph of **Subsection 102.01** is hereby deleted.

The second sentence of **Subsection 102.02** is hereby deleted, and the following substituted therefore:

The Notice to Contractors will contain a description of the proposed work, and information regarding access to proposal documents, plans, specifications, and the amount and nature of the proposal guaranty.

Subsection 102.03 is hereby deleted, renamed **Contents of Proposal Documents**, and the following substituted therefore:

The proposal documents will state the location and description of the contemplated construction and will show the estimate of the various quantities and kinds of work to be performed or materials to be furnished, and will have a schedule of items. The proposal documents will state the time in which the work must be completed, the amount of the proposal guaranty, and the date and time of the letting of work. The documents will also include any special provisions or requirements that vary from or are not contained in the standard specifications.

All forms included in the proposal documents are considered a part thereof. The plans, specifications, and other documents designated in the proposal documents will be considered a part of the proposal whether included or not.

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BIDDING REQUIREMENTS AND CONDITIONS

The first through fourth paragraphs of **Subsection 102.04** are hereby deleted, and the following substituted therefore:

To become an eligible bidder, prospective bidders must be registered to bid in Arkansas with Bid Express. Prospective bidders must also contact the Program Management Division at (501) 569-2261 during regular business hours between the date the project is advertised and 4:30 p.m. on the day prior to the scheduled bid opening to request to become eligible to bid specific projects. Only prequalified contractors or their authorized representative may request to become an eligible bidder.

If the prospective bidder's prequalification rating is not "unlimited", the bidder shall file a certification with the Department citing all contracts in force and the unfinished value of such work. A prospective bidder will not be allowed to submit a proposal until a certification for the current bidding period is on file and the amount of work the contractor may be allowed to undertake is determined. The contractor's prequalification rating, less the unfinished value of all contracts in force, will determine the amount of additional work that the contractor may be allowed to undertake. A contractor will not be allowed to submit a proposal on an individual project for which the estimated cost is more than the amount that the contractor may be allowed to undertake, but the contractor will be allowed to submit a proposal on more than one project, providing that the estimated cost of each project is not more than the amount that the contractor may be allowed to undertake. In the event a contractor submits a low bid on more than one project and the aggregate amount is greater than the amount the contractor may be allowed to undertake, the Commission will exercise its discretion in the award of a particular project or projects.

A charge will be assessed for authorization to submit a proposal, paper copies of the proposal documents, and plans issued. These services are provided during regular business hours until 4:30 p.m. on the day prior to the scheduled bid opening at the Arkansas Department of Transportation, 10324 Interstate 30, Little Rock, Arkansas 72209, (501) 569-2261. Payment shall be made at the time services are provided or upon receipt of statement therefore. No refund will be allowed for bids not submitted or for plans or proposal documents returned.

The second sentence of the first paragraph of **Subsection 102.06** is hereby deleted, and the following substituted therefore:

The bidder is expected to examine carefully the site of the proposed work, the proposal documents, plans, specifications, supplemental specifications, and special provisions before submitting a proposal.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

BIDDING REQUIREMENTS AND CONDITIONS

The first paragraph of **Subsection 102.07** is hereby deleted, and the following substituted therefore:

The proposal shall only be submitted through the internet bidding service, Bid Express. The bidder shall specify a unit price in figures for each pay item for which a quantity is given. A unit price of "zero" (\$0.00) is a valid price and will be considered. A blank unit price is not considered valid. The unit bid price should not be carried beyond 1 cent (\$0.01). Any figures on the unit bid price beyond 1 cent will be dropped.

The second and third paragraphs of **Subsection 102.07** are hereby deleted.

The fifth paragraph of **Subsection 102.07** is hereby deleted, and the following substituted therefore:

The bidder's proposal must be submitted with a digital signature containing the name of the individual, one or more members of the partnership, one or more members or officers of each firm representing a joint venture, or one or more officers of a corporation, or by an agent of the Contractor legally qualified and acceptable to the Department.

The sixth paragraph of **Subsection 102.07** is hereby deleted, and the following substituted therefore:

If the proposal is submitted with a digital signature of any person who is not listed in the bidder's Prequalification Questionnaire (Questionnaire Form) as the individual, as a partner of a partnership, or as an officer of a corporation, authorization for such submittal should be on file with the Department prior to the download of bids. This authorization shall be made before the downloading of bids and be in the form of a Power of Attorney duly executed and signed by an official with power to constitute such authority.

The last sentence of the seventh paragraph of **Subsection 102.07** is hereby deleted, and the following substituted therefore:

Those items of Asphalt Binder that are subject to a minimum bid price will bear the note "(Minimum bid price is \$120.00 per ton)" within the Schedule of Items of the proposal documents.

The first sentence of the ninth paragraph of **Subsection 102.07** is hereby deleted, and the following substituted therefore:

The proposal documents for all federal aid projects will contain a bidders list.

The last sentence of the ninth paragraph of **Subsection 102.07** is hereby deleted, and the following substituted therefore:

The information provided will not be used for contract awarding purposes but must be provided before the Contractor will be given authorization to submit proposals for future lettings.

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BIDDING REQUIREMENTS AND CONDITIONS

Subsection 102.08 Irregular Proposals is hereby deleted, and the following substituted therefore:

- (a) Proposals will be considered irregular and will be rejected for the following reasons:
- (1) If the proposal does not contain a unit price for each pay item listed except in the case of authorized alternate pay items.
 - (2) If the proposal is not digitally signed by an authorized representative of the firm.
 - (3) If the proposal is not accompanied by the proper proposal guaranty.
 - (4) If a proposal is received from an individual, firm, partnership, or corporation with an interest, as principal, in another proposal for the same project.
 - (5) If the proposal is not accompanied by the Certification to Submit DBE Participation.
- (b) Proposals will be considered irregular and may be rejected for the following reasons:
- (1) If the proposal is not accompanied by a bid schedule and bid schedule narrative as required in the proposal documents.
 - (2) Unbalanced proposals in which the prices for some items are out of proportion to the reasonable costs representative of those items.
 - (3) If there are irregularities of any kind that may tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning.

The first sentence of **Subsection 102.09** is hereby deleted and the following substituted therefore:

No proposal will be considered by the Commission unless a guaranty in the form of a bank draft, certified check, or cashier's check drawn on a solvent bank or trust company, or a bidder's paper bond executed by an approved surety company has been received by the Program Management Division prior to the download of bids.

The following paragraph is hereby added after the first paragraph of **Subsection 102.09**:

Electronic bid bonds are allowed. The prospective bidder should verify their bid bond in their proposal prior to submission.

Subsection 102.10 is hereby deleted and the following substituted therefore:

The proposal shall only be submitted through the internet bidding service, Bid Express.

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SPECIAL PROVISION

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BIDDING REQUIREMENTS AND CONDITIONS

Subsection 102.11 is hereby deleted, and the following substituted therefore:

A bidder may withdraw or modify a proposal after it has been submitted to Bid Express, up to the time set for the deadline for proposals to be received. A proposal may also be withdrawn if the Commission fails to make an award within 40 calendar days after the date of downloading.

Subsection 102.12 is hereby deleted, renamed **Downloading of Proposals**, and the following substituted therefore:

Proposals will be downloaded and then posted on the Department's website at the time and place indicated in the Notice to Contractors.

The last sentence of **Subsection 102.15** is hereby deleted, and the following substituted therefore:

In any case, the prospective bidders will be contacted prior to the download of bids.

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JOB NO. 040901

MANDATORY ELECTRONIC CONTRACT

Paper Contract Documents and Forms will not be accepted.

The Department will only accept and execute an electronic contract for this project through Doc Express, a paperless contracting system. Prospective bidders will need to contact Doc Express to set up an account prior to the bid opening date. The toll-free phone number for Doc Express is 1-888-352-2439 and their website address is www.docexpress.com.

Section 103 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows.

The first sentence of **Subsection 103.06(a)** is hereby deleted, and the following substituted therefore:

The Contract shall be electronically signed by the successful bidder and electronically submitted to the Program Management Division, Construction Contract Procurement Section, together with the required bonds and proof of liability insurance, within 10 business days after the notice of award has been issued.

Subsection 103.08(d)(3)d. is hereby deleted, and the following substituted therefore:

Documentation of the bidder's commitment to use a DBE subcontractor whose participation it submits to meet a contract goal; and

Subsection 103.08(d)(3)e. is hereby deleted, and the following substituted therefore:

Document confirmation from the DBE that it is participating in the contract as provided in the Contractor's commitment.

Subsection 103.08(d)(5) is hereby deleted, and the following substituted therefore:

The preceding information shall be submitted directly to the Arkansas Department of Transportation, Program Management Division, via Doc Express.

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SPECIAL PROVISION

JOB NO. 040901

MANDATORY ELECTRONIC DOCUMENT SUBMITTAL

Paper Document Submittals will not be accepted.

The Department will only accept electronically-submitted documents for consideration on this project. All correspondence and submittals to the Department shall be submitted through Doc Express, a paperless contracting system. When signed originals are required, the original shall be the document uploaded to Doc Express and the signature shall be the electronic signature applied through Doc Express. The Contractor shall use the same organizational account for project documentation as used to fulfill the requirements of the Mandatory Electronic Contract Special Provision. The toll-free phone number for Doc Express is 1-888-352-2439 and their website address is www.docexpress.com.

Any reference in the Standard Specifications to document submittal in writing or by U.S. Mail, facsimile, or in person is hereby amended to require that such documents be submitted using Doc Express with the following exceptions:

- Material delivery tickets which are used for payment or for field verification shall be submitted on paper as required by the Standard Specifications for Highway Construction, Edition of 2014.
- Any document with specific submittal requirements in state and/or federal law or federal regulations that conflict with the requirements of this Special Provision shall be submitted in accordance with such state and/or federal law or federal regulations.

A user guide is available on the Department's web page to assist Contractors with the use of Doc Express. The "Contractor Guide to Using Doc Express" is available on the Department's web page at <https://ardot.gov/divisions/construction/doc-express/>.

The Contractor may provide access for subcontractors to view and submit items in Doc Express by following the instructions provided in the "Contractor Guide to Using Doc Express". Once an organizational account is activated and the Contractor provides access to the contract, a subcontractor may submit documents to the Contractor in Doc Express by uploading the electronic documents as directed in the User Guide. Any documents uploaded by the subcontractor must be then retrieved and published by the Contractor within Doc Express for further action by the Engineer. The Engineer will not review or take any actions on any documents submitted by the subcontractor until the document has been appropriately submitted by the Contractor.

Any submittals, documents, subcontracts, proposals, working drawings, or any other items submitted by the Contractor within Doc Express are not considered approved by the Engineer until written notification of the approval is published by the Engineer in the "CON-Correspondence-From Department to Contractor" drawer in Doc Express. Any action taken by the Contractor prior to this notification is taken at the Contractor's own risk.

The Department's System Administration team has no authority to take action on any documents submitted to the system. Access for this team is for management of the application only. Knowledge of any document submitted is not imputed to the Department by the knowledge of Systems Administration.

The requirements of this Special Provision shall supersede the requirements of all other Special Provisions unless such Special Provision includes a stated exception to this Special Provision.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901

OFF-SITE RESTRAINING CONDITIONS FOR AMERICAN BURYING BEETLE

Section 107.10 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added to **Section 107.10(c)(2) Non-commercially Operated Site**:

DESCRIPTION: *Nicrophorus americanus*, the American Burying Beetle (ABB), is protected under the Federal Endangered Species Act and may exist within certain areas of the following counties in Arkansas: Crawford, Franklin, Johnson, Logan, Scott, Sebastian, and Yell. The Contractor shall, in all operations, make provisions to minimize any impacts to the ABB resulting from work performed on off-site areas related to this project. Required actions of the Contractor shall include, but are not limited to, the following:

CONSTRUCTION METHODS: All off-site areas located in the aforementioned counties that result in land disturbance shall require an ABB clearance in the form of either: 1) a written concurrence from the Engineer that the Contractor's actions on the off-site area are "unlikely to affect an endangered species"; **OR** 2) that consultation with the U.S. Fish and Wildlife Service (FWS) was conducted under Section 7 of the Endangered Species Act which resulted in a written concurrence on a finding of "not likely to adversely affect an endangered species". Land disturbance includes, but is not limited to; borrow/waste areas, storage areas, field offices, and any areas requiring mechanized clearing or earthwork.

Off-site areas that will result in 2.0 acres or less of cumulative land disturbance are exempt from the ABB consultation process, subject to review and clearance from the Engineer. Once an area has been approved as exempt from the consultation process, there shall be no additional acreage or sites approved that cause the cumulative land disturbance total to equal or exceed 2.0 acres of disturbance. Should the Contractor require additional acreage that causes the cumulative land disturbance to exceed 2.0 acres, they will need to consult with the FWS Ecological Services Field Office in Conway, Arkansas. Consultation may result in ABB survey requirements, the need to trap and relocate ABB's prior to use of the area, or in other measures that may delay or preclude use of the area in question.

If the site is denied based upon its potential as ABB habitat, the Contractor may then, at no cost to the Department, acquire approval for use of the site through consultation with the FWS. All clearances or permits obtained by the Contractor regarding the dismissal of the restraining conditions shall be submitted to the Engineer for approval before site preparation begins.

CONTRACTOR NEGLIGENCE: The Contractor will be assessed the amount of any and all fines and penalties assessed against and costs incurred by the Department which are the result of the Contractor's failure to comply with this Special Provision. The Department will not be responsible for any delays or costs due to the Contractor's failure to comply with this Special Provision. The Contractor will not be granted additional compensation or contract time due to noncompliance.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT: All costs incurred in complying with this Special Provision will not be measured or paid for separately, but will be considered included in the contract unit prices bid for other items of the contract.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

**CONTRACTOR PROVIDED CULTURAL RESOURCES CLEARANCE
FOR OFF-SITE LOCATIONS**

DESCRIPTION. Off-site locations for the Contractor's use are necessary for highway construction activities. The area surrounding this project has a high probability for prehistoric and historic cultural resources. Therefore, the Engineer will not provide archeological and historical clearance for the off-site locations for this project. Instead, the Contractor shall utilize a professional archeologist to conduct investigations for all off-site use locations required for the project and provide clearance from the State Historic Preservation Officer (SHPO). For the purpose of this special provision, off-site locations also include any proposed haul or access roads from an off-site location to the project right of way, unless the access will be an existing public owned roadway.

Section 107.10 of the Standard Specifications for Highway Construction, Edition of 2014 is hereby amended as follows:

Subsection 107.10(a)(1) is deleted and the following is substituted therefore:

- (1) Archeologically or historically significant sites may contain artifacts or the remains of prehistoric/historic people's dwelling sites. The determination of archeological or historical significance for off-site locations will be made by the Contractor in coordination with the appropriate authorities and provided to the Engineer.

Subsection 107.10(c)(2) is hereby amended by the deletion of the first bullet addressing investigation for the presence of archeologically or historically significant sites by the Department, and the following is added:

The Contractor shall notify the Engineer of location of all proposed off-site locations and get pre-approval from the Environmental Division before the Contractor proceeds with hiring a qualified consultant. After this pre-approval of the proposed off-site locations, the Contractor is responsible for hiring a consultant to carefully investigate all areas intended for use off of the right-of-way for the presence of archeologically or historically significant sites. A global position system (GPS) shall be used to clearly delineate the areas submitted for approval using UTM NAD 83 eastings and northings in meters. All archeological work carried out under this Special Provision shall be conducted by or under the direct supervision of an individual or individuals who meet the Secretary of Interior's Professional Qualification Standards (36 CFR 61). All collections and documents will meet the Curation Standards set forth in 36 CFR Part 79 and in a *State Plan for the Conservation of Archeological Resources in the State of Arkansas* (Davis 1994). The SHPO shall review the cultural resources report for approval of use for all off-site locations. The Contractor is cautioned that the initial review of these areas by the SHPO may take 30 days. Any areas that require mitigation will be at the Contractor's expense.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

CONTRACTOR PROVIDED CULTURAL RESOURCES CLEARANCE

FOR OFF-SITE LOCATIONS

A copy of all SHPO correspondence shall be submitted to the Engineer prior to Department approval for use of the off-site locations. The submittal shall include a 7.5 minute topographic quadrangle map showing the location(s) that were subject to the cultural resources survey and the area approved by SHPO using UTM NAD 83 eastings and northings in meters. This information should be supplied by the professional archeologist that conducted the investigation.

CONTRACTOR NEGLIGENCE. The Contractor will be assessed the amount of any and all fines and penalties assessed against and costs incurred by the Department that are the result of the Contractor's failure to comply with the notification required by this Special Provision. The Department will not be responsible for any delays or costs due to the Contractor's failure to comply with this special provision. The Contractor will not be granted additional compensation or contract time due to noncompliance.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT. All costs incurred in complying with this Special Provision will not be measured or paid for separately but will be considered included in the contract unit prices bid for other items of the contract.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
OFF-SITE RESTRAINING CONDITIONS FOR INDIANA AND NORTHERN
LONG-EARED BATS

Section 107.10 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added to **Section 107.10(c)(2) Non-commercially Operated Site**:

DESCRIPTION: The Indiana Bat (IBAT), *Myotis sodalis*, and Northern Long-eared Bat (NLEB), *Myotis septentrionalis*, are protected under the Federal Endangered Species Act and may use forested areas near the project for roosting, feeding and pup rearing.

The current U.S. Fish and Wildlife Service (USFWS) guidance for the IBAT allows tree clearing activities as long as those activities do not occur during the summer active period, March 15 – November 15 or within 0.5 mile of any IBAT hibernaculum.

The current USFWS guidance for the NLEB allows tree clearing activities as long as those activities do not occur within 150 feet of any known occupied maternity roost tree during the pup rearing season (defined as May 1-July 31) or within 0.25 mile of any NLEB hibernaculum.

The Contractor shall, in all operations, make provisions to minimize any impacts to the bats resulting from work performed on off-site areas as described in the following information.

CONSTRUCTION METHODS: If an off-site area for this project will require tree cutting during the active summer season of March 15 through November 15, the Contractor shall submit a technical assistance request to the Arkansas Ecological Services Field Office of the USFWS. The recommended method for submittals is the online IPAC Information for Planning and Conservation system, which can be accessed at the following website <https://ecos.fws.gov/ipac/>. Alternatively, requests may be submitted by letter to the Arkansas Ecological Service Field Office), 110 South Amity Road Suite 300, Conway, AR 72032, phone (501) 513-4470.

The request shall include detailed project information including: (1) the off-site area location with boundaries marked and labeled in latitude and longitude points; (2) a detailed map with the limits of the off-site area clearly defined; (3) the acreage to be cleared; (4) the timing of clearing activities; and (5) a request to determine if NLEB maternity roosts or hibernacula occur in the proximity of the submitted area. Any detailed map is sufficient; however, the IPAC project design and map creator system is recommended to create the map and make requests.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

**OFF-SITE RESTRAINING CONDITIONS FOR INDIANA AND NORTHERN LONG-EARED
BATS**

The clearing of trees will be permitted unless the USFWS determines from their records that the submitted area and activity is likely to adversely affect either species.

The USFWS will submit a response within 30 days of receipt of the request. All clearances or responses obtained by the Contractor from USFWS shall be submitted to the Engineer for approval before site preparation begins.

The Contractor will be assessed the amount of any and all fines and penalties assessed against and costs incurred by the Department which are the result of the Contractor's failure to comply with this Special Provision. The Department will not be responsible for any delays or costs due to the Contractor's failure to comply with this Special Provision. The Contractor will not be granted additional compensation or contract time due to the procurement of an off-site location.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT: All costs incurred in complying with this Special Provision will not be measured or paid for separately, but will be considered included in the contract unit prices bid for other items of the contract.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB 040901****ARMY CORPS – ARKANSAS RIVER, FLOODWAY AND LEVEE REQUIREMENTS**

This Contractor shall conform to the requirements of this special provision during the construction of the project in the vicinity of the Arkansas River and Arkansas River Levee. The specific restraining locations are defined in the Army Corps Restraining Conditions Special Provision. Additionally, the Contractor shall be familiar with the analysis and design included in the approved Section 408 Package. Any deviations from that approved design shall be coordinated with the U.S. Army Corps of Engineers (USACE) and may require further Section 408 approvals.

Section 10 Permit: The project is permitted under a Section 10 of the Rivers and Harbors Act permit. Construction activities, including mooring, within the navigation channel require a Section 10 permit from the USACE. Section 10 of the Rivers and Harbors Act prohibits the unauthorized obstruction or alteration of any navigable water of the United States. All compliance measures required for the Section 10 permit are included within. In addition, reference is made to the Requirements of the U.S. Coast Guard permit, Details of River Traffic Safety and Bridge Work in Navigable Waters Special Provisions for specific information regarding construction activities within the Arkansas River Navigation Channel.

Access over the Levee: Any ramps crossing the existing levee shall be constructed in accordance with Section 8-10 of the USACE, Engineer Manual (EM) 1110-2-1913, "Design and Construction of Levees." The private ramp shall be surfaced with crushed stone or gravel to prevent erosion of the levee, i.e., the private ramp's surface is now the levee's surface. The ramp's side slopes shall not be steeper than 1V:3H for levee maintenance purposes, and under no circumstance shall the levee cross-section be reduced for the construction of the ramp, i.e., nonerodable material may be added to the levee but not removed. The surface of the private ramp shall be maintained to the satisfaction of the Crawford County Levee Board at all times. The side slopes, and any portion of the levee disturbed during the private ramp's construction shall be restored in accordance with EM 1110-2-18, "Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures." Any vegetation disturbed within 15 feet of the toe of the levee, along the access road or within the Contractor's limits of construction, shall be restored in accordance with EM 1110-2-18. This includes clearing and grubbing operations within 15 feet of the toe of the Arkansas River Levee. Any access road adjacent to the levee shall not encroach into the toe of the levee. Removal of any levee material is expressly prohibited.

Construction in the Floodplain: The Contractor shall be responsible for maintaining all access roads utilized by the Contractor from points of access to and from the floodplain. Rutting of access roads shall be preferably avoided or immediately repaired. At the completion of the project, the existing remaining access roads shall be in, at a minimum, the same condition as before the initiation of construction activities.

The Contractor shall adopt appropriate construction site management practices to prevent the discharge of oils, paints, gasoline, grease, and other pollutants from entering the storm water and Arkansas River.

The Contractor shall deploy appropriate measures to prevent debris or any other construction materials from falling into the Arkansas River channel.

Construction equipment, spoil materials, supplies, forms, trailers, etc. shall not be placed or stored in the floodplain during construction activities. Any item that may be transported by flood flows shall not be stored within the floodplain.

Stockpiling of Material: The Contractor shall stockpile onsite all excavated surface materials from around the drilled shafts and concrete riprap for backfill. The quantity of the stockpiled backfill material shall be sufficient to completely backfill the excavation around the drilled shaft casings and concrete riprap key to the elevation of original ground.

Emergency Action Plan

Monitoring River Stage: The Contractor shall coordinate with USACE and the National Weather Service to estimate the forecasted river stage. The project site is in the floodplain immediately downstream of the Trimble Lock and Dam and is susceptible to inundation. Initial inundation of low-lying areas of the floodplain can be expected for discharges approaching 100,000cfs. Because dam operations are based on numerous factors, discharges less than 150,000cfs are difficult to forecast using online sites (such as https://www.weather.gov/abr/c/lwrark_flow).

Construction Equipment in Floodplain: Construction equipment and materials actively utilized in the day-to-day construction work within the floodplain may be exempted from this requirement with written approval from the Engineer and USACE. Prior to initiating construction activities that require equipment and/or materials to remain in the floodplain during non-work hours, the Contractor will submit to the Engineer and USACE for review and approval an itemized list of equipment and materials requested for exemption. Items generally exempted include:

- Cranes, drilling rigs and lifts that must be demobilized to be moved from the floodplain and other track mounted equipment that cannot be readily moved
- Large generators and compressors
- Storage containers for water, drilling fluids, and miscellaneous construction tools utilized for day-to-day construction activities within the floodplain
- Portable latrines
- Drilled shaft casings and reusable concrete forms for on-going bridge foundation and substructure construction
- Bridge falsework, mats and erection towers for ongoing construction activities
- Reinforcing steel for pending incorporation into the project
- Bridge girders and deck panels for pending incorporation into the project
- Structure steel members that must be field spliced prior to pending erection into the work.

Non-exempted equipment and materials shall be moved out of the floodplain when not in use. The Contractor will move all items out of the floodplain that might be transported by flood flows and will strive to move all other equipment and materials out of the floodplain

for rain events that might result in an out-of-bank flood of the Arkansas River. Any equipment and materials left in the floodplain is at the Contractor's own risk.

Drilled Shaft Construction: A drilled shaft is considered complete only after it has been drilled to the required depth with reinforcing steel installed and concrete placed over the full depth of the excavation, temporary casing removed and void grouted, and surrounding ground restored to final grade. If an out-of-bank flood event of the Arkansas River is forecasted to an elevation within five (5) feet of the top of the drilled shaft plan elevation for any drilled shaft that is under construction and cannot be completed prior to the river reaching within 5 feet of the top of shaft, the Contractor shall immediately cease construction and implement the following guidelines.

Bridge 07685, Bents 12 and 13: Backfill the excavation around the drilled shaft to the elevation of original ground with stockpiled materials. Additionally, backfill voids around and the inside of temporary and permanent casings with flowable fill to the elevation of original ground. All backfilling shall be approved by the Engineer.

All other bent locations within the floodplain: If a drilled shaft is fully permanent cased, seated to rock and drilling below the bottom of the permanent casing has not started, fill the shaft with drilling fluid and adequately cover. Backfill the excavation around the drilled shaft to the elevation of original ground with stockpiled materials. If the shaft has been started but is not permanently cased to rock or the drilling below the bottom of the permanent casing has begun, then backfill the excavation around the drilled shaft to the elevation of original ground with stockpiled materials. Additionally, backfill voids around and the inside of temporary and permanent casing with flowable fill to the elevation of original ground.

Bridge 07685, Bents 13, 14 and 15: The Contractor shall monitor the shafts adjacent to the landside of the levee in the event the river rises for seepage and/or the formation of sand boils. If observed, additional flood fighting measures consisting of sandbags for constructing a ring levee around the shaft location will be required.

Once the river stage has fallen and the Contractor is reasonably assured that the river stage has stabilized to an elevation below 5 feet of the top of the drilled shaft plan elevation and bottom of concrete riprap key, the Contractor, with approval of the Engineer, shall be able to resume the construction activities.

South Bank River Revetment, Bridge 07684, Bent 13: Drilled shafts within the revetment should follow the same guidance outlined above for bent locations within the floodplain. Should the revetment sustain damage during a flood event, the Contractor should restore the affected revetment based on USACE guidance and remove deposition within the shored box.

Concrete Riprap at Levee: If an out-of-bank flood event of the Arkansas River is forecasted to an elevation within five (5) feet of the bottom of the concrete riprap key plan elevation while it is under construction and cannot be completed prior to the river reaching within 5 feet of the bottom of the concrete riprap key, the Contractor shall immediately cease construction and backfill the excavation to original ground with stockpiled materials.

Measurement and Payment: The costs of all requirements of this Special Provision will not be paid for separately but will be considered subsidiary to other items of work.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB 040901****ARMY CORPS RESTRAINING CONDITIONS**

Section 107.10 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added to **Section 107.10(b) and (c)**:

Four types of Restraining Conditions are present, and they are as follows:

Flowage Easements:

Restraining conditions are located along I-49 between Station Numbers 158+74 and 161+96 Right; Station Numbers 162+29 and 163+65 Left; Station Numbers 165+34 and 172+90 Right and Left; Station Numbers 192+69 and 200+75 Right and Left; Station Numbers 238+49 and 248+65 Right and Left.

Restraining Conditions are located along Gun Club Rd. between Station Numbers 20+00 and 21+25 Right and Left.

Restraining Conditions are located along Highway 59 between Station Numbers 41+50 and 57+50 Right.

Navigation System Marked Channel of Arkansas River:

A Restraining Condition is located along I-49 between Station Numbers 182+90 and 185+90 Right and Left.

South Bank Revetment of Arkansas River:

A Restraining Condition is located along I-49 between Station Numbers 181+30 and 182+30 Right and Left.

Arkansas River Levee (Crawford County Levee):

Restraining Conditions are located along Gun Club Rd. at Station Numbers 31+00 and 90+00 Right.

Restraining Conditions are located along I-49 at Station Numbers 254+20 and 255+50 Right and Left.

Restraining Conditions are located along Highway 59 between Station Numbers 36+75 and 79+00 Left.

Figures illustrating the location of the restraining conditions can be found on the subsequent pages.

The flowage easements, navigation channel, revetment, and levee are considered Restraining Conditions in accordance with Section 107.10(b) and (c) of the Standard Specifications for Highway Construction, 2014. Any construction activity not shown in the plans and approved in the Section 408 package within these specified locations, including the stockpiling and wasting of material, the staging of equipment, utility relocation, and any off-site activities must be avoided; furthermore, inside these designated areas, the Contractor shall not construct work roads or conduct other activities that would disturb or modify these areas without mitigation and written approval from the U.S. Army Corps of Engineers (USACE).

Additional requirements for these restraining conditions and Emergency Action Plan requirements are provided in the Army Corps – Arkansas River, Floodway and Levee Requirements Special Provision.

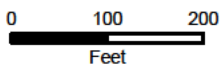
Any activities planned in or near these areas shall be coordinated through the Engineer, USACE and with the Environmental Division for acceptance. These requests may be denied or modified by the Engineer.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

ARMY CORPS RESTRAINING CONDITION



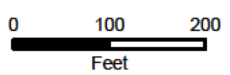
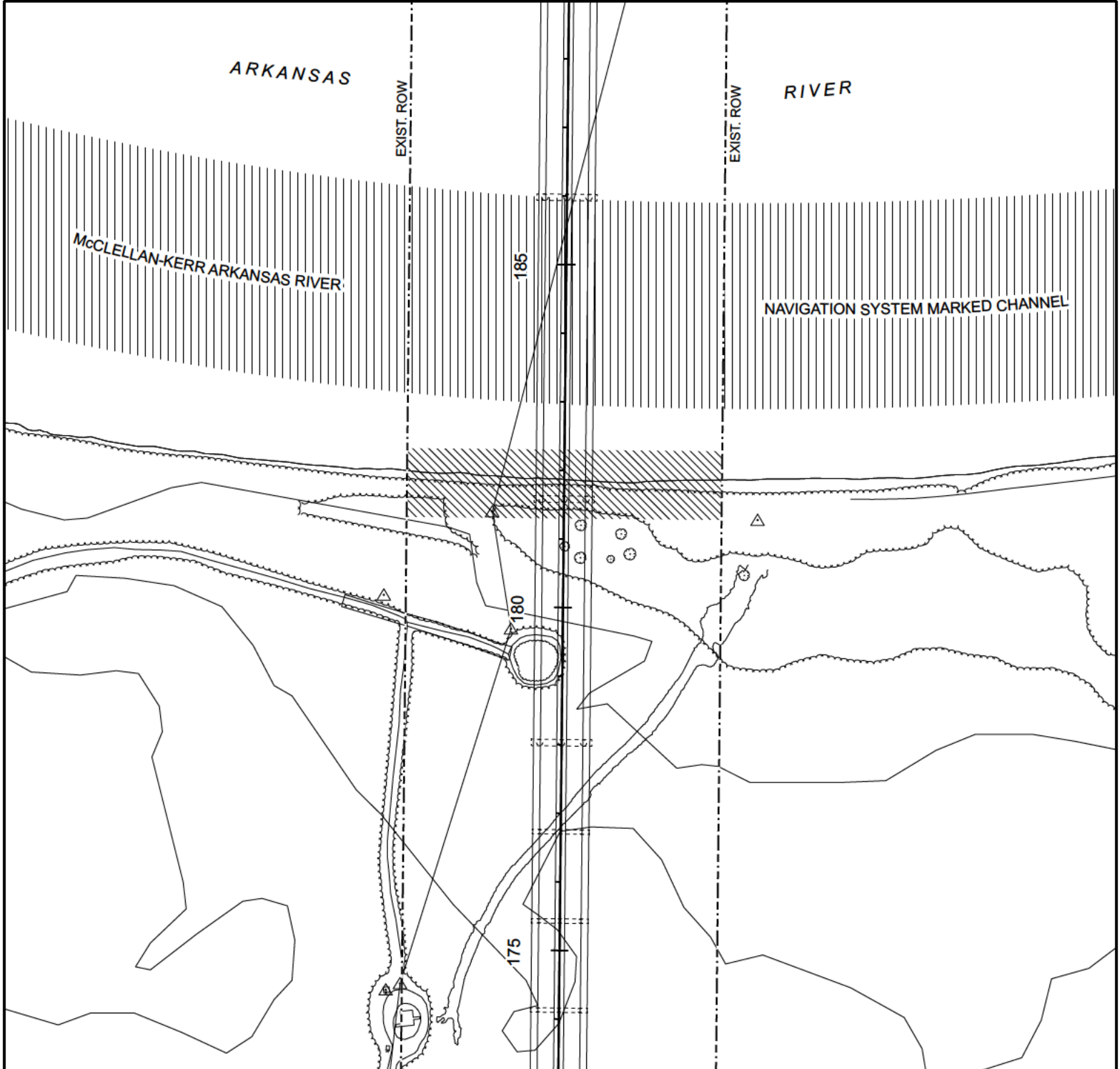
USACE Flowage Easement

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

ARMY CORPS RESTRAINING CONDITION



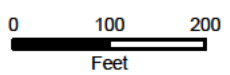
	USACE Navigation Channel
////	South Bank River Revetment

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

ARMY CORPS RESTRAINING CONDITION



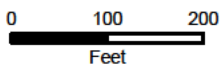
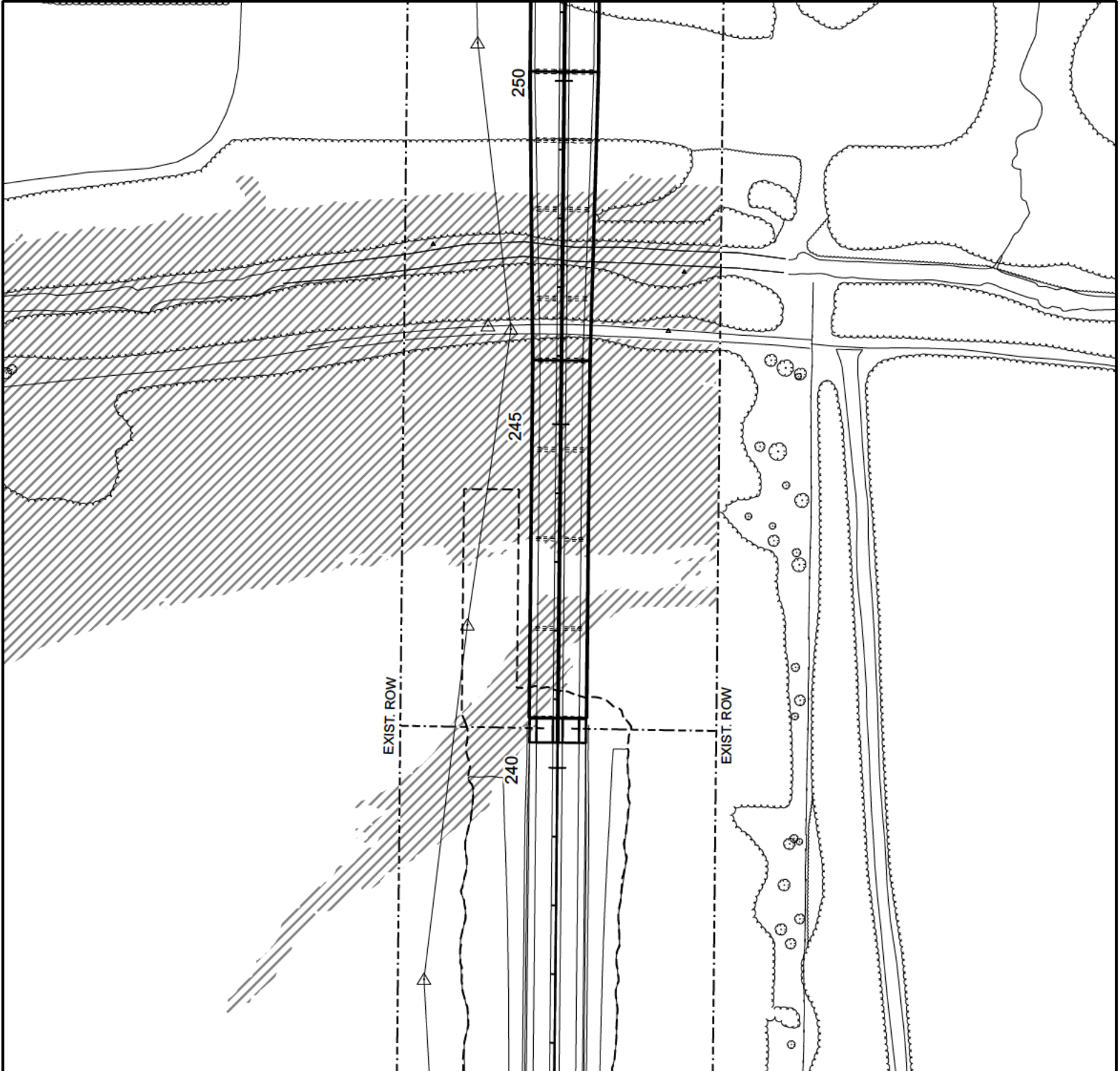
/// USACE Flowage Easement

ARKANSAS DEPARTMENT OF TRANSPORTATION


SPECIAL PROVISION

JOB 040901

ARMY CORPS RESTRAINING CONDITION



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February 6, 2024

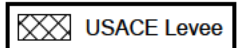
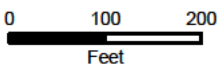
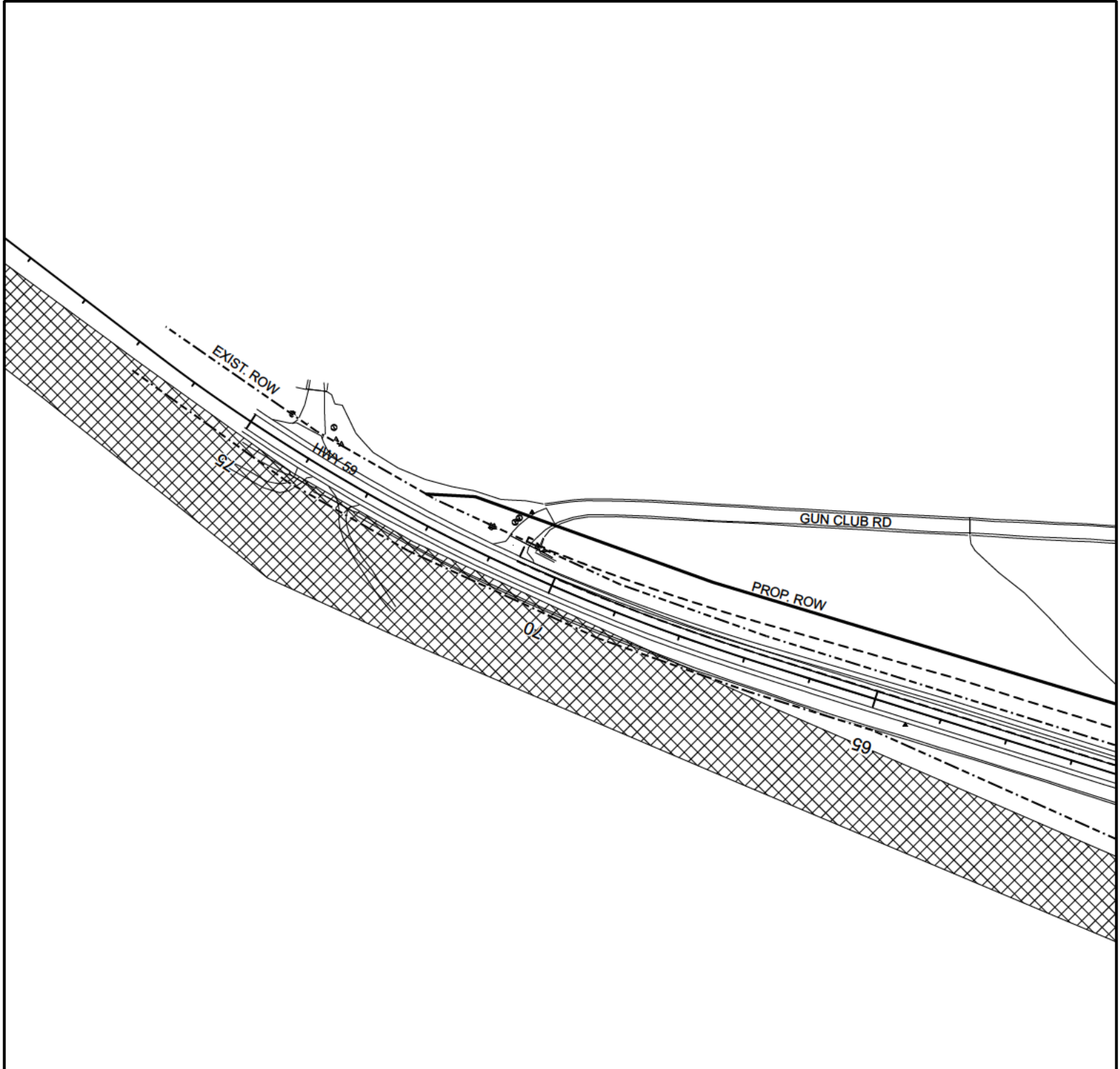
 USACE Flowage Easement

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

ARMY CORPS RESTRAINING CONDITION

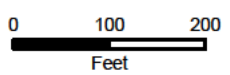
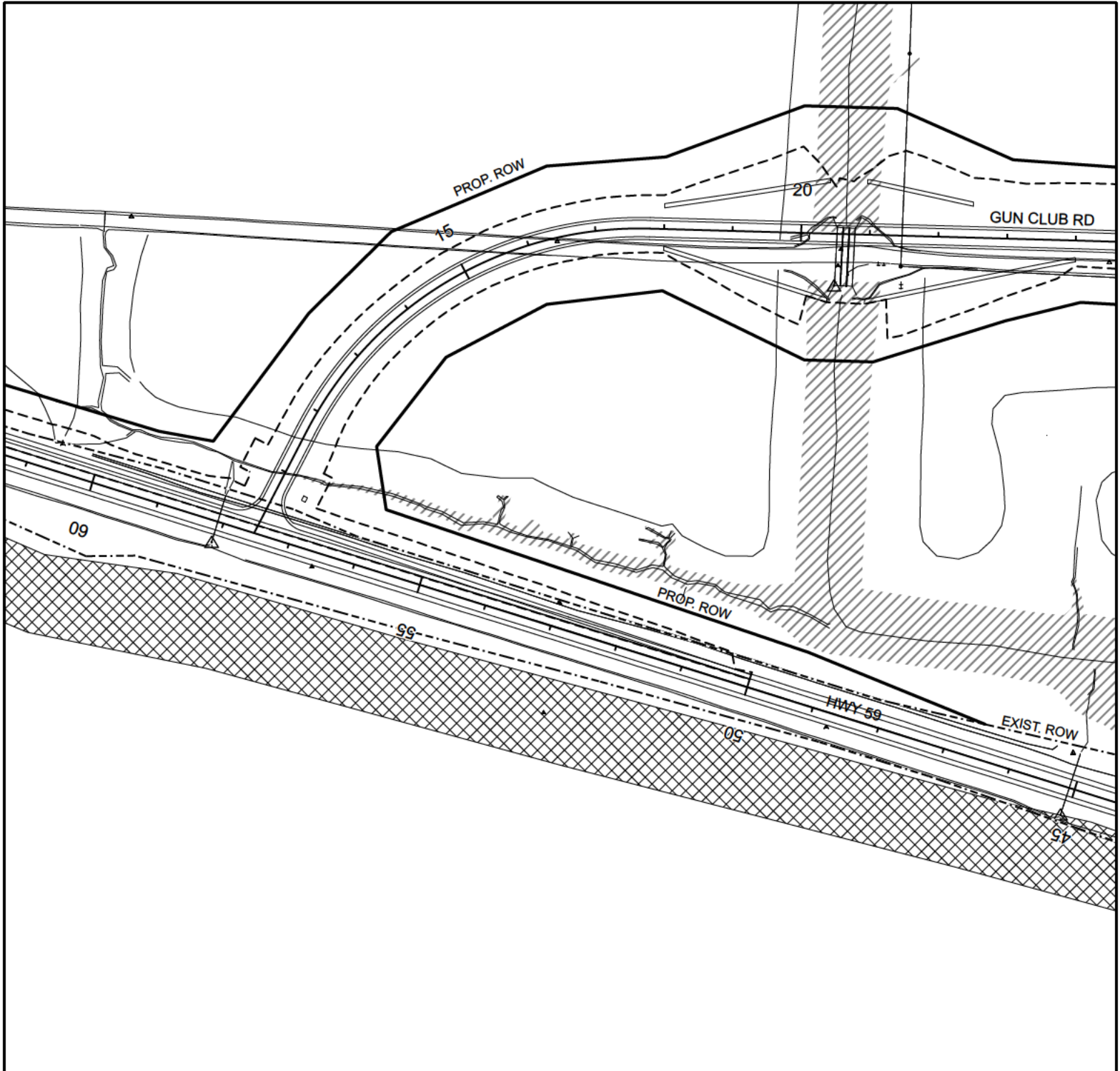


ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

ARMY CORPS RESTRAINING CONDITION



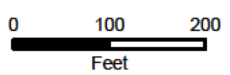
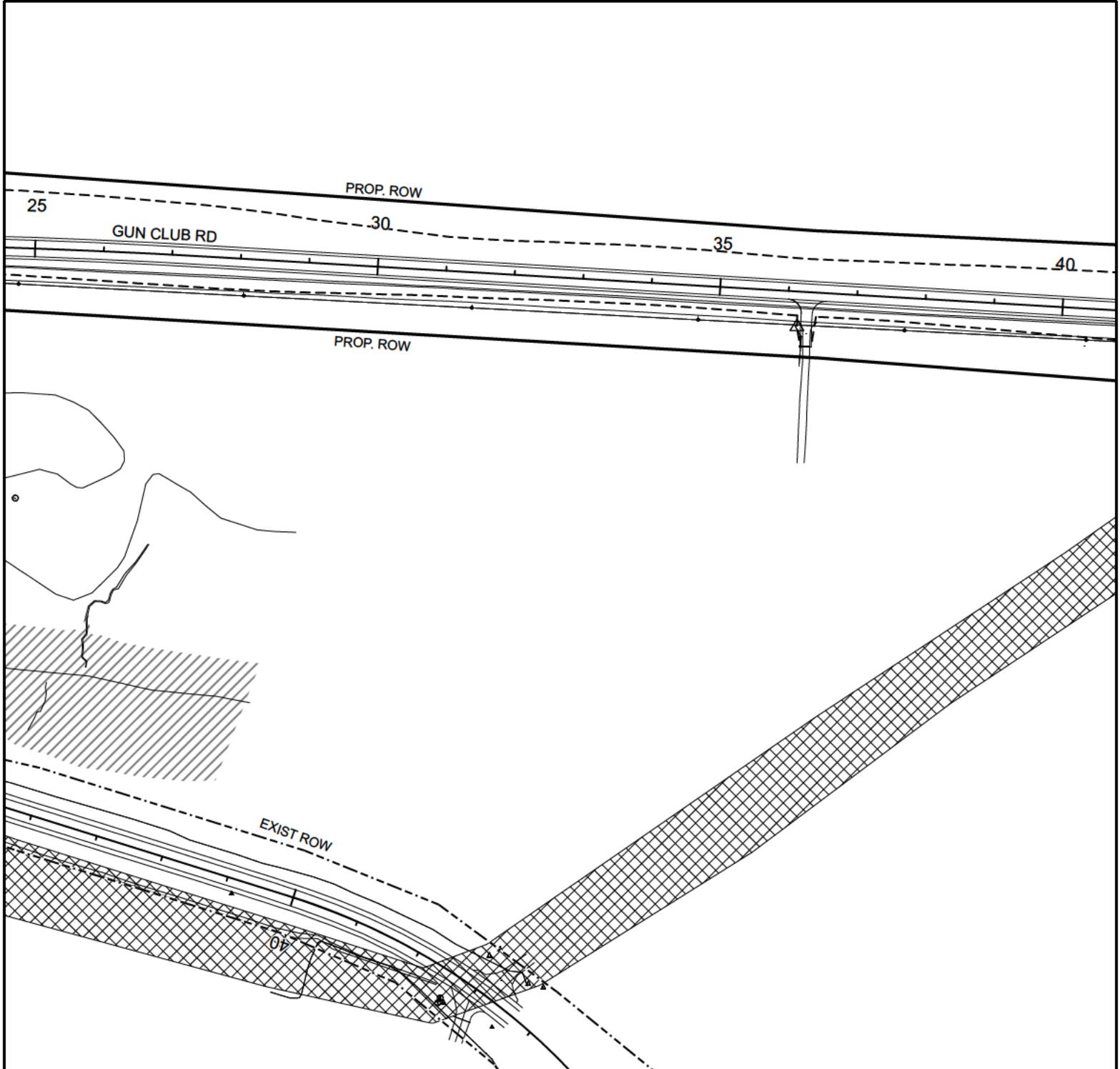
	USACE Flowage Easement
	USACE Levee

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

ARMY CORPS RESTRAINING CONDITION



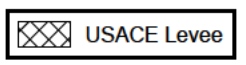
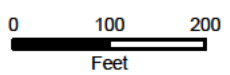
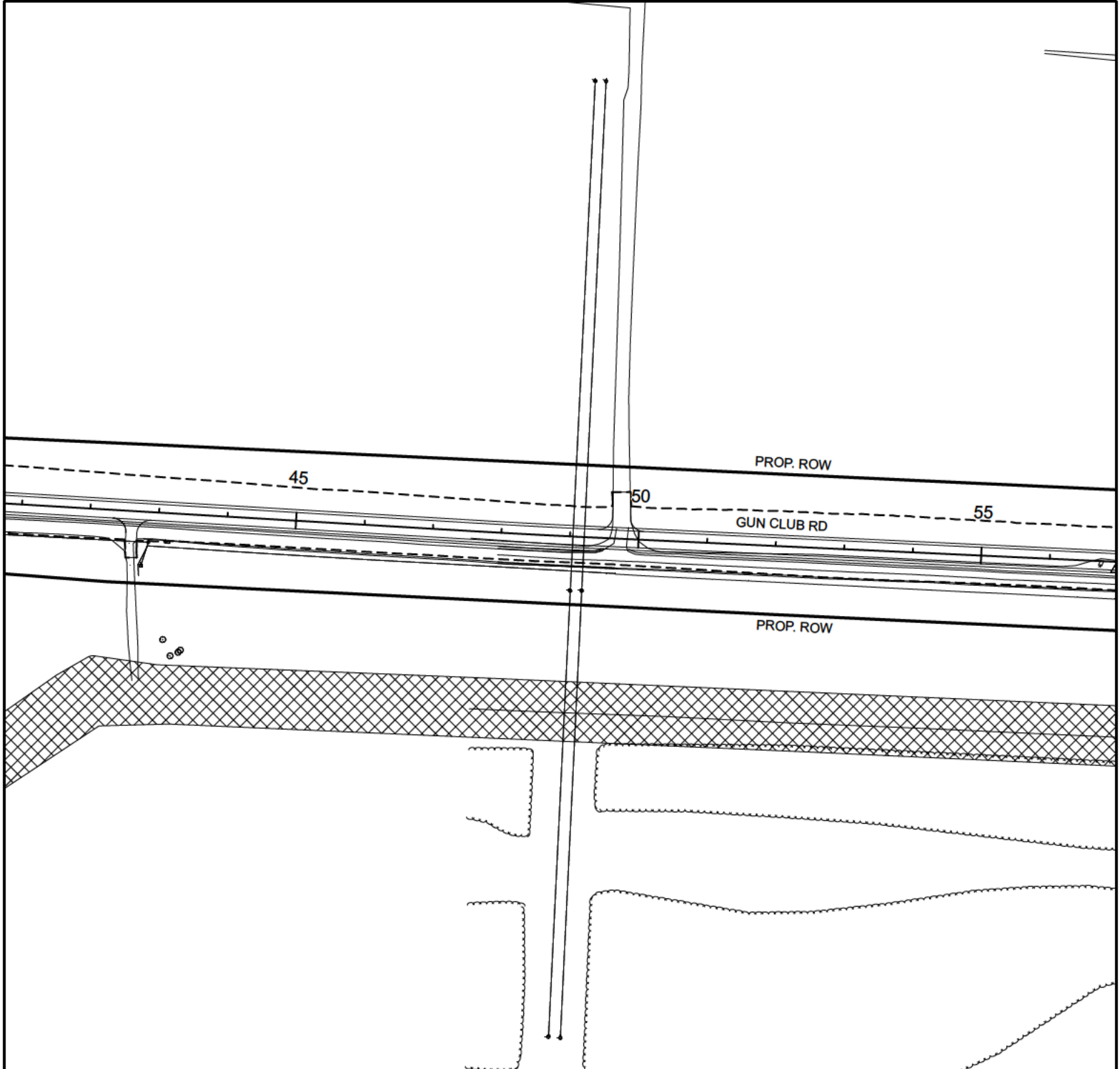
	USACE Flowage Easement
	USACE Levee

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

ARMY CORPS RESTRAINING CONDITION

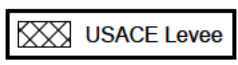
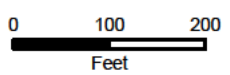
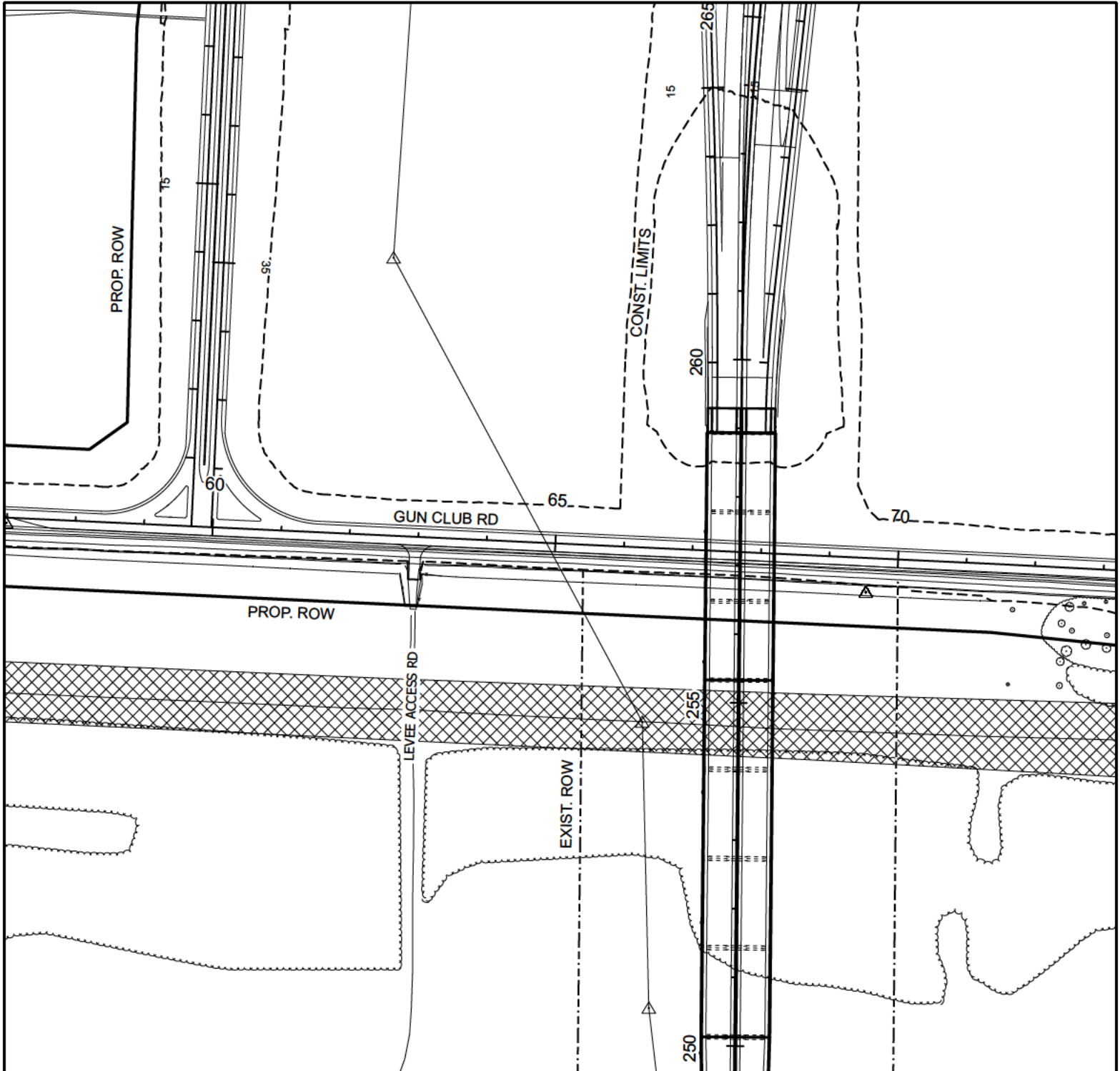


ARKANSAS DEPARTMENT OF TRANSPORTATION

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ARMY CORPS RESTRAINING CONDITION

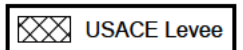
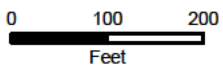
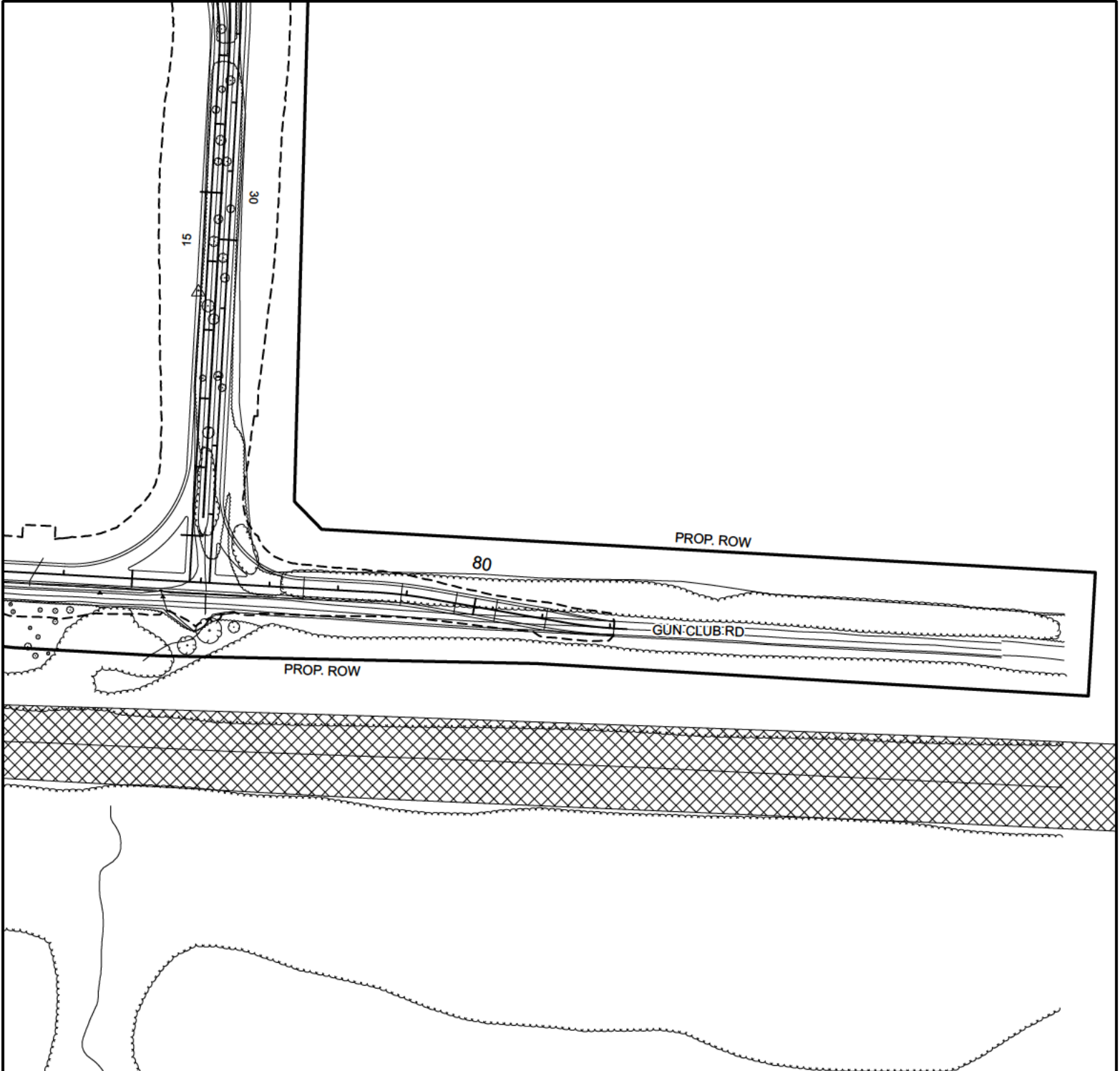


ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

ARMY CORPS RESTRAINING CONDITION



ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
ARMY CORPS – SPRINGHILL PARK REQUIREMENTS

DESCRIPTION: This item sets forth the following requirements relative to construction on lands of the United States administered by the U.S. Army Corps of Engineers (USACE) in the State of Arkansas. These requirements are herewith made part of the Contract Specifications and shall be applicable to the Contractor's operations on USACE lands. The primary USACE contact during construction of the proposed project shall be Robert Ahlert, Natural Resources Manager of the Russellville Site Office. They may be contacted by phone at (501) 349-1740 or (479) 970-0875, by email at robert.m.ahlert@usace.army.mil, or at the Russellville Site Office located at 1598 Lock & Dam Road, Russellville, Arkansas 72802.

FIRE PROTECTION: The following procedures shall be followed to provide for the protection of USACE resources as needed to compensate for the increased risk and hazard resulting from the Contractor's operations. The primary causes of forest fires in conjunction with construction projects are the burning of materials, equipment operations, and employee activities such as smoking, warming fires, etc.

Prior to commencing work on the project, the Contractor shall notify the USACE and the Engineer in writing of the name of their fire control representative. The Contractor shall be responsible for obtaining any required federal or state permits before burning material on USACE land.

The Contractor shall contact the USACE concerning the time, date, place, and duration of any proposed burning of brush, debris, or materials. The USACE can refuse permission for burning due to dangerous fire conditions. Such suspensions, if any, will be held to a minimum. All burning shall be kept within the cleared limit of the right of way and shall be accomplished in such a manner so as not to damage adjoining vegetation. The Contractor shall have an attendant on duty at the location of the fire during all times that material is being burned.

All Contractor equipment and manpower shall be immediately available for suppressing fires originating from the Contractor's operations. The Contractor shall take immediate steps to suppress all fires occurring from their operations and shall notify the USACE of such fire occurrence. Suppression operations shall be at the Contractor's expense. When the Contractor's resources prove unable to suppress the fire, and USACE land is involved or threatened, they shall request assistance from the USACE. If such a request is made, the USACE or their delegated fire officer will take charge of the fire on arrival. The Contractor shall be responsible for all fire suppression costs and damages attributed to such fires.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
ARMY CORPS – SPRINGHILL PARK REQUIREMENTS

CLEARING PLAN: Clearing and grubbing shall be accomplished in accordance with the appropriate specifications and the following requirements.

All construction equipment shall be operated only within the clearing limits of the right of way. All trees shall be felled within the clearing limits of the right of way. If a tree inadvertently falls beyond these limits, it shall be dragged back to lie completely within the clearing limits of the right of way.

EROSION CONTROL PLAN AND PERMANENT STABILIZATION: All exposed soil shall be revegetated in accordance with the appropriate specifications. During the course of the work, the Engineer will cooperate with the USACE to jointly review and make changes to the Stormwater Pollution Prevention Plan if the erosion and sediment control methods are inadequate. The necessary changes shall be implemented by the Contractor as soon as possible, but no later than three days after notification.

MATERIAL DISPOSAL SITES: Waste and surplus materials shall be disposed of in accordance with the Standard Specifications. Waste from the project shall be disposed of outside Springhill Park boundaries.

CONSTRUCTION RESTRICTIONS: Contractor access for highway work within Springhill Park shall be on P Street on the south side of the park and from the Arkansas River on the north side of the park.

Contractor vehicles shall only enter Springhill Park outside of the highway right of way or use park roads for non-highway construction within the park (i.e., paving park roads, campsite relocation and electrical upgrades, campground bathroom construction, etc.). Non-highway construction within Springhill Park shall be completed in a continuous manner to minimize the duration of the impacts to the park.

Any access other than what is outlined above is subject to USACE approval.

Any temporary structures or other items constructed within the Springhill Park boundaries shall be removed in their entirety before project completion.

PUBLIC ACCESS: Public access to Springhill Park shall be maintained at all times throughout construction, with the exception of the trail within the proposed highway corridor. The trail shall only be closed during construction of the Arkansas River bridge, for as short of a term as possible. The trail closure shall be coordinated with the USACE at least 30 days ahead of the proposed closure. Signage alerting trail users of the closure shall be posted at the direction of the USACE.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
ARMY CORPS – SPRINGHILL PARK REQUIREMENTS

LAND MONUMENTS: The protection of land monuments and the restoration of land monuments disturbed or destroyed by construction shall be in accordance with federal and state laws. Land monuments on USACE property disturbed by the Contractor's operations shall be restored in accordance with standards satisfactory to the USACE.

RESTRAINING CONDITIONS: The Engineer will notify the USACE upon the discovery of previously unknown restraining conditions and perform all required coordination. All other requirements of the Standard Specifications shall apply.

BASIS OF PAYMENT: All Contractor costs incurred in complying with this section will not be paid for directly, but shall be included in the unit prices bid for other items of work unless specifically included as a pay item in the Contract.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

ASSESSMENT OF WORKING DAYS – MAINTENANCE OF TRAFFIC

DESCRIPTION: To accommodate the off peak lane closure time limits shown in the contract “Maintenance of Traffic” Special Provision, the assessment of Calendar Days or Working Days will be based upon the same conditions as a normal Working Day.

For Calendar Day or Working Day projects, the Contractor shall be permitted to begin work on Sunday evening when the allowable lane closure period begins. Sunday evening shall be the allowable off peak lane closure time defined in the contract “Maintenance of Traffic” Special Provision but not prior to 6:00 p.m. On Working Day projects, time will not be assessed for Sunday. No other work will be allowed on Sunday unless an emergency is declared by the Department.

If the Contractor elects to work Friday and complete work on Saturday in accordance with the contract “Maintenance of Traffic” Special Provision, time will be assessed as appropriate for Saturday.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

FLEXIBLE BEGINNING OF WORK – CALENDAR DAY CONTRACT

DESCRIPTION: Section 108, Prosecution and Progress, of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 108.02(b)(4) b. Working Day Contract. is hereby deleted and the following is substituted therefor:

- b. Calendar Day Contract. Unless the Contractor is otherwise advised in writing, the Work Order for a calendar day contract shall become effective on the fifteenth calendar day following the execution of the Contract by the Department. Should the effective date fall on Sunday, a legal holiday designated in Subsection 101.01 (c), Monday following a holiday on Sunday, or Friday preceding a holiday on Saturday, the effective date shall be the next work day. The written Work Order from the Engineer will follow with the effective date being as specified.

The assessment of contract time will commence when the Contractor begins work or no later than 90 calendar days after the issuance of the work order if the contractor has not commenced work. The contractor will submit written notification to the Engineer five days prior to commencing work.

Subsection 108.02(c) is hereby deleted.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****LIQUIDATED DAMAGES PROCEDURE FOR BID LETTINGS**

Department Standard Specification **Section 102.04** and **Supplemental Specification 102-2** state that the Department reserves the right to refuse to issue, accept, or consider a proposal:

“If the prospective bidder is the Contractor on a current Contract with the Commission on which Liquidated Damages are being assessed, and there are no pending time extensions warranted to remove the project from Liquidated Damages.”

If the prospective bidder goes into liquidated damages on a current Contract with the Commission during the advertisement period for a letting, the Contractor will be notified seven business days prior to the letting that they will not be allowed to bid in the upcoming letting. This notification will be officially transmitted through Doc Express for the project in liquidated damages and via email.

Upon notification that they will not be allowed to bid in the upcoming letting, the Contractor will be provided an opportunity to request a reconsideration of this decision. This request must be transmitted in the form of a letter through Doc Express and via email to the Department for review within two (2) business days of receipt. The Department will review the reconsideration request and render a decision no later than the Friday prior to the letting.

Please note, a bid may be withdrawn at any time prior to the time specified for the bid letting. If a Contractor has been notified that they will not be allowed to bid, and they do not withdraw their bid, the bid will be considered invalid and rejected.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
SPECIAL CLEARING REQUIREMENTS

Section 201 Subsection 201.03 of the Standard Specifications for Highway Construction, 2014 Edition, is hereby amended by the addition of the following:

The Federally designated endangered Indiana Bat (*Myotis sodalis*) and endangered Northern Long-eared Bat (*Myotis septentrionalis*) have the potential to occur within the project area. When not in hibernation, Indiana and northern long-eared bats utilize hardwood forests for foraging, roosting and maternal activities. In an effort to avoid potential impacts to endangered species, the clearing of trees is prohibited from March 15 through November 15. However, grubbing activities will be allowed during the entire calendar year.

The Contractor will be restricted from working in areas that were not cleared during the time period described. Failure to clear work areas will not be considered a cause for extending contract time and working days will continue to be assessed.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER FOR TREE CLEARING**

Section 108 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 108.02(b)(2) is hereby deleted, and the following is substituted therefore:

(2) The delivery to the Department for execution of the Contract and bonds properly executed on behalf of the Contractor and surety and the minimum 72 hours advance notice as required above shall constitute the Contractor's authority to begin the following items of work:

- Tree clearing;

Such advance work shall be subject to the Contractor's assumption of the risk of cancellation of the award and the following:

- The Contractor shall, on commencing such operations, take all precautions required for public safety and shall observe all the provisions in the Contract;
- In the event of cancellation of the award, the Contractor shall at Contractor expense do such work as necessary to leave the site in a neat condition to the satisfaction of the Engineer;
- In the event of cancellation of the award, all work performed shall be deemed to be at the Contractor's expense; and
- All work done under this subsection in accordance with the Contract before its execution by the Commission will, when the Contract is executed, be considered authorized work and will be paid for as provided in the Contract.

Unless otherwise notified in writing, no time will be assessed for work performed prior to the effective date of a Work Order.

No payments will be made prior to the date established by the Engineer under Subsection 109.07, which date will be after the effective date of a Work Order.

The Contractor shall not be entitled to any additional compensation or an extension of time for any delay, hindrance, or interference caused by or attributable to commencement of work before the effective date of a Work Order.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
NESTING SITES OF MIGRATORY BIRDS

DESCRIPTION: All structures on this project, including new, temporary, and existing bridges and/or culverts, may be the nesting sites of migratory birds. These birds include, but are not limited to, swallows and phoebes. The birds and their habitat are protected under the Migratory Bird Treaty Act. Demolition of or construction activities on bridge and culvert structures that might disrupt egg incubation or feeding and sheltering of young migratory birds shall not occur without written permission from the Engineer.

If construction is planned on bridges or culverts when migratory birds are actively building nests, the Contractor shall utilize Option 1 and/or 2 below to deter birds from nesting to allow construction activities to proceed.

CONSTRUCTION METHODS: Restrictions to the Contractor's activities shall include, but are not limited to, the following:

- 1) Demolition of or construction activities on structures (i.e. sand blasting, painting, etc.) will not be permitted when migratory bird nests are considered active without written permission from the Engineer. This normally occurs in Arkansas from March 1 to August 31, but may occur outside of those dates during unusual weather events. The Contractor shall submit to the Engineer details for all work proposed to be performed on the structure from March 1 to August 31, or while nests are active with eggs or young. A determination will be made by the Engineer within 10 business days concerning the possible impacts of the work and will then accept or reject the Contractor's proposal.
- 2) **OPTION 1** - The Contractor shall prevent birds from nesting by erecting netting at any time outside of the active nesting season (generally after August 31 to March 1). The Contractor may be allowed to erect netting during the active nesting season if no active nest is present on the bridge or structure. Net openings shall be ½ inch or smaller after installation. Birds that nest despite prevention efforts shall not be removed or disturbed. Netting shall be installed securely and maintained in such a manner that it will not pose a safety hazard.
- 3) **OPTION 2** – The Contractor may remove inactive nests (those with no eggs or young) via hydro-cleaning or scraping at any time outside of the nesting season (generally after August 31 to March 1). The Contractor will be allowed to scrape or hydro-clean daily to remove any mud or debris placed on the structure by birds attempting to nest, as long as there are no eggs or young in the nests or partial nests. Adult birds cannot be harmed, injured, or harassed in any way except by removal of the unoccupied nests. Exclusionary netting does not have to be used if the Contractor agrees to be diligent and make sure no birds are allowed to nest on the structure.
- 4) No other methods of deterrence will be permitted without written approval of the Engineer.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
NESTING SITES OF MIGRATORY BIRDS

- 5) Migratory birds can build nests very quickly, specifically, in less than two days. If the Contractor allows even one nest on the structure to become active (containing eggs or young birds), they shall be required to stop construction/demolition until the young have voluntarily left the nest (up to six weeks), or get approval through the Engineer from the ARDOT Environmental Division to work around the birds in a manner that does not disrupt incubation, feeding, and/or sheltering of the birds.
- 6) If no birds are nesting on or in the bridge or culvert structures between March 1 and August 31, a request may be made to the Engineer to allow demolition or construction to proceed. The Engineer will make the final determination concerning the presence or absence of nesting migratory birds within ten business days and will accept or reject the Contractor's proposal concerning the demolition or construction.

CONTRACTOR NEGLIGENCE: The Contractor will be assessed the amount of any and all fines and penalties assessed against and costs incurred by the Department which are the result of the Contractor's failure to comply with this Special Provision. The Department will not be responsible for any delays or costs due to the Contractor's failure to comply with this special provision. The Contractor will not be granted additional compensation or contract time due to noncompliance.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT: All costs incurred in complying with this Special Provision will not be measured or paid for separately, but will be considered included in the contract unit prices bid for other items of the contract.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

SOIL STABILIZATION

Section 210 Excavation and Embankment of the Standard Specifications, Edition of 2014, is hereby amended as follows:

Subsection 210.07 Construction Requirements is expanded to include the following:

At locations that the Engineer designates the existing soils to be unstable and cannot be stabilized through normal drying and compactive efforts, the Contractor may, with the approval of the Engineer, utilize the following additives to expedite the drying process:

- Quicklime (dry) meeting the requirements of Subsection 301.03(b), or
- Portland cement and/or fly ash meeting the requirements of Subsection 307.03(b)

The Engineer shall determine which additive will be used. The rate of application shall be determined by trial mixing and shall be approved by the Engineer. The spreading and mixing procedure used shall thoroughly and uniformly disperse the material into the soil. Any procedure that results in excessive loss of material or that does not achieve the desired results shall be immediately discontinued.

Subsection 210.12 Method of Measurement is expanded to include the following:

- (g) Soil Stabilization will be measured by the ton of the additive used.

Subsection 210.13 Basis of Payment is expanded to include the following:

(d) Soil Stabilization completed and accepted and measured as provided above will be paid for at the contract unit price bid per ton for Soil Stabilization, which price shall be full compensation for furnishing, hauling and placing the material; for spreading and mixing; and for all labor, equipment, tools and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Soil Stabilization	Ton

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****ROCK FILL**

Description: This item shall consist of the construction of embankments at the locations shown on the plans as Rock Fill. Embankments designated as Rock Fill shall comply with Section 210, Excavation and Embankment, of the Arkansas Department of Transportation Standard Specifications, 2014 Edition. Where there is a conflict between these Special Provisions and Section 210, these Special Provisions shall govern.

Materials and Construction Requirements: Embankments requiring Rock Fill shall be constructed of materials meeting the following requirements:

- (1) Material for Rock Fill shall include stone obtained from an approved source and shall consist of hard and durable limestone, sandstone, or dolomite. The stone shall be greater than 1½” and less than 24”, reasonably well-graded and angular, with fractured faces on at least 75% of the surface and shall not contain more than 10% overburden or fines less than 1½” in maximum cross-section. The stone shall weigh not less than 140 pounds per solid cubic foot and shall have a percent of wear not greater than 45 by Los Angeles Test (AASHTO T 96). Acceptance of gradation shall be by visual inspection by the Engineer.
- 2) All sod and vegetable matter shall be removed from the ground surface limits upon which the Rock Fill is to be constructed. The limits shall be cleared and grubbed in accordance with Section 201.02 (a) and (b) and the ground surface leveled and smoothed.
- 3) Geotextile Fabric (Type 10) shall be placed on the prepared ground surface for the Rock Fill in accordance with Section 625 Geotextile Fabric.
- 4) The first 24” layer of Rock Fill over the Geotextile Fabric shall not be dumped directly on the Geotextile Fabric. The first layer shall be started by initially depositing Rock Fill adjacent to the Geotextile Fabric and pushing the Rock Fill out over the Geotextile Fabric. Rock Fill can then be deposited on top of the first layer and pushed progressively out over the Geotextile Fabric. No construction equipment shall be allowed directly on the Geotextile Fabric.
- (5) Subsequent layers of Rock Fill shall be placed and spread in lift thickness not to exceed the maximum particle size of 24”, shaped and consolidated with appropriate equipment to produce a well-graded mass with a minimum practicable number of voids, and provide a stable embankment and firm and unyielding foundation for the subgrade and pavement. Each lift of Rock Fill shall be visually inspected and approved by the Engineer prior to placing additional lifts.
- (6) The following shall be added to the third paragraph of Section 801.08 of the Standard Specifications. Rock Fill placed immediately adjacent to Pipe Culverts or Box Culverts including a minimum of 12 inches on top and sides of the culvert, and Rock Fill placed immediately adjacent to and surrounding settlement plates, drop inlets, outlet pipes, conduit vaults, and other

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

ROCK FILL

penetrations through the Rock Fill except piling and ITS camera pole foundations shall meet the requirements of Class 3 mineral aggregate as specified in Sections 403.01 and 403.02 of the Standard Specifications. Sufficient Class 3 Aggregate material shall be placed to protect and prevent movement of any penetrations through the Rock Fill.

(7) Rock Fill material placed in the vicinity of piling and ITS camera pole foundations shown on the plans as Aggregate Base Course (Class 7) Fill, shall meet the material requirements and be constructed in accordance with Sections 303.02, 303.03, and 303.04 of the Standard Specifications, 2014 Edition, and this special provision. It shall meet the material requirements of Aggregate Base Course (Class 7) specified in Table 303-1.

(8) The top layer of Rock Fill shall be in accordance with Section 303 of the Standard Specifications for Aggregate Base Course (Class 7). It shall be placed to provide a barrier for preventing the migration of fines from the overlaying embankment material into the Rock Fill embankment and provide a stable base beneath concrete riprap at end bents. The top layer shall be at least 10 inches in thickness. The top layer will not be required on the exterior side slopes (the exterior surface that daylights and is not covered with fill) and where covered by Abutment Stone on Filter Blanket at end bents. The completed surface of the Rock Fill embankment shall be approved by the Engineer prior to allowing placement of additional embankment material. Density testing will not be required for the Aggregate Base Course (Class 7) material used to cap Rock Fill.

Method of Measurement: Rock Fill consisting of the material gradations specified herein will be measured in place by the cubic yard and accepted by the Engineer. Geotextile Fabric (Type 10) will be measured according to Section 625 Geotextile Fabric.

Basis of Payment: Work completed and accepted by the Engineer and measured as described above shall be paid for at the contract unit price and shall include all labor, materials, and equipment for construction and for performing quality control and acceptance sampling and testing necessary to achieve the Rock Fill requirements as specified herein. Geotextile fabric (Type 10) will be paid for according to Section 625 Geotextile Fabric.

Payment will be made under:

Pay Item	Pay Unit
Rock Fill	Cubic Yard

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

TRENCHING AND SHOULDER PREPARATION FOR TEMPORARY WIDENING

Section 215 Trenching and Shoulder Preparation of the Standard Specifications, Edition of 2014, is hereby deleted and the following is substituted therefor:

215.01 DESCRIPTION. This item shall consist of trenching, scarifying, blading, compacting, and otherwise preparing the existing shoulder for asphalt pavement or portland cement concrete pavement widening within the limits shown on the plans and according to these specifications.

215.02 CONSTRUCTION REQUIREMENTS. The existing aggregate base course and bituminous surfacing shall be scarified and trenched to the width and depth shown on the plans or as directed by the Engineer. Any damage to the shoulder or pavement that is to remain shall be repaired as directed by the Engineer at no cost to the Department.

After the trench has been excavated to grade, the bottom of the trench shall be loosened to a minimum depth of 6" (150 mm) below the finished elevation, the entire area within the limits of the trench processed, the material brought within the range of optimum moisture content, compacted, and stabilized to meet the requirements of Subsection 210.10. The Contractor shall perform quality control and acceptance testing in accordance with Subsection 212.02, except that the minimum frequency of acceptance testing for density and moisture shall be one test per each ½ mile (0.8 km) of trench length, regardless of trench width. For trench sections less than ½ mile (0.8 km) in length, a minimum of one test will be taken per continuous trench unless waived by the Engineer after stability is achieved. The material will be considered stable when it will not rut and/or pump under construction operations.

Excavated or excess materials resulting from the operations of trenching and shoulder preparation shall be disposed of as approved by the Engineer. Suitable excess material from the trenching operation may be used as embankment material or placed on the slopes with the approval of the Engineer.

215.03 METHOD OF MEASUREMENT. Trenching and Shoulder Preparation will be measured by the 100-foot (100 m) survey station measured along the centerline of each set of lanes. This measurement will be made to the nearest foot (meter). Separate measurements will be made for the inside and outside shoulders if this work is required on both sides of the lane.

215.04 BASIS OF PAYMENT. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per station (metric station) for Trenching and Shoulder Preparation, which price shall be full compensation for trenching, scarifying, and spreading the material over the slopes; for disposing of the excess material; for recompacting; for performing quality control and acceptance sampling and testing; and for all labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Trenching and Shoulder Preparation	Station (Metric Station)

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****RESTRICTIONS ON THE USE OF RECYCLED ASPHALT PAVEMENT MATERIAL**

Division 400 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added as the last bullet following the first paragraph of **Subsection 404.01(b), Design Requirements**:

- Recycled asphalt pavement materials will not be permitted in any mixes using PG 76-22 asphalt binder.

The second paragraph of **Subsection 416.01, Description**, is hereby deleted, and the following is substituted therefor:

Unless otherwise provided, these provisions allow the Contractor to utilize recycling of reclaimed asphalt pavement material in any type mixture specified in Sections 405, 406, 407, and 417 except for those mixes using PG 76-22 asphalt binder. The recycled mixture shall meet all of the requirements of the mixture type specified on the plans.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES

Section 400 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The eighth (8th) and tenth (10th) bullet within the first paragraph of **Subsection 404.01, Design of Asphalt Mixtures. (a) General** is hereby deleted and the following added:

- A one-gallon sample of performance grade asphalt binder to be used in all Section 405 Asphalt Concrete Hot Mix Base Course and Section 406 Asphalt Concrete Hot Mix Binder Course mix designs.
- Nine (9) blended aggregate samples for all Section 405 Asphalt Concrete Hot Mix Base Course and Section 406 Asphalt Concrete Hot Mix Binder Course mix designs.
- A two-gallon sample of performance grade asphalt binder to be used in all Section 407 Asphalt Concrete Hot Mix Surface Course mix designs.
- Fourteen (14) blended aggregate samples for all Section 407 Asphalt Concrete Hot Mix Surface Course mix designs.

The last sentence of the last paragraph of **Subsection 404.01 Design of Asphalt Mixtures. (a) General** is hereby deleted and the following substituted therefor:

At least fifteen (15) business days shall be allowed for the review of the mix design.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****PERCENT AIR VOIDS AND NDESIGN FOR ACHM SURFACE MIX DESIGNS**

Supplemental Specification 400-5, Percent Air Voids for ACHM Mix Designs, is hereby amended as follows:

The fourth sentence of the first paragraph of **Subsection 404.01(b), Design Requirements**, is hereby deleted and the following substituted therefor:

The optimum asphalt content is the asphalt binder content at 4.0% air voids for ACHM Base and ACHM Binder Courses. The optimum asphalt content is the asphalt binder content at 3.5% air voids for ACHM Surface Courses.

The first bullet of the first paragraph of **Subsection 404.01(b), Design Requirements**, is hereby deleted and the following substituted therefor:

- All binder grades for ACHM Base and Binder Courses will be designed using 4.0% air voids and all binder grades for ACHM Surface Courses will be designed using 3.5% air voids.

The second paragraph of **Subsection 404.01(b), Design Requirements**, of the Standard Specifications, is hereby amended and the following added:

All ACHM Surface Courses will be designed at N_{des} of 60 gyrations.

The second sentence of the second paragraph of **Subsection 404.04, Quality Control of Asphalt Mixtures**, is hereby deleted and the following substituted therefor:

Adjustments to the accepted mix design to conform to actual production values without redesign of the mixture shall be based on production of the mixture at a target value of 4.0% air voids in ACHM Base and Binder Courses specimens and an asphalt binder content not less than that specified in the accepted mix design.

Adjustments to the accepted mix design to conform to actual production values without redesign of the mixture shall be based on production of the mixture at a target value of 3.5% air voids in ACHM Surface Course specimens and an asphalt binder content not less than that specified in the accepted mix design.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

PERCENT AIR VOIDS AND NDESIGN FOR ACHM SURFACE MIX DESIGNS

Table 407--1 and Table 407--2 of **Subsection 407.04, Construction Requirements and Acceptance**, are hereby deleted and the following substituted therefor:

Table 407-1

Design Requirements for Asphalt Concrete Hot/Warm Mix Surface Course
(1/2" [12.5 mm])

Control Points	
Sieve (mm)	Percent Passing (%)
3/4" (19.0)	100
1/2" (12.5)	90 - 100
3/8" (9.5)	90 max.
No. 8 (2.36)	28 - 58
No. 16 (1.18)	-
No. 30 (0.60)	-
No. 50 (0.30)	-
No. 200 (0.075)	3 - 7

Asphalt Binder Content	Design Value	
% Air Voids	3.5	
% VMA	14.5 – 16.0	
Minimum Water Sensitivity Ratio	80.0	
% Anti-strip	As Required	
Fines to Asphalt Ratio*	0.6 – 1.2	
Wheel Tracking Test	<u>Design PG Grade</u>	<u>Maximum Rut</u>
(8000 Cycles, 100 psi, 64° C)	64-22 or 67-22	0.315 in. (8.000 mm)
	70-22 or 76-22	0.197 in. (5.000 mm)

*Fines to asphalt ratio shall be defined as the percent materials passing the No. 200 (0.075 mm) sieve (expressed as a percent of total aggregate weight) divided by the effective asphalt binder content.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

PERCENT AIR VOIDS AND NDESIGN FOR ACHM SURFACE MIX DESIGNS

Table 407-2

Design Requirements for Asphalt Concrete Hot/Warm Mix Surface Course
(3/8" [9.5 mm])

	Control Points	
Sieve (mm)	Percent Passing (%)	
½" (12.5)	100	
3/8" (9.5)	90 - 100	
No. 4 (4.75)	90 max.	
No. 8 (2.36)	32 - 67	
No. 16 (1.18)	-	
No. 30 (0.60)	-	
No. 50 (0.30)	-	
No. 200 (0.075)	3 - 7	
Asphalt Binder Content	Design Value	
% Air Voids	3.5	
% VMA	15.5 – 17.0	
Minimum Water Sensitivity Ratio	80.0	
% Anti-strip	As Required	
Fines to Asphalt Ratio*	0.6 – 1.2	
Wheel Tracking Test	<u>Design PG Grade</u>	<u>Maximum Rut</u>
(8000 Cycles, 100 psi, 64° C)	64-22 or 67-22	0.315 in. (8.000 mm)
	70-22 or 76-22	0.197 in. (5.000 mm)

*Fines to asphalt ratio shall be defined as the percent materials passing the No. 200 (0.075 mm) sieve (expressed as a percent of total aggregate weight) divided by the effective asphalt binder content.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

PERCENT AIR VOIDS AND NDESIGN FOR ACHM SURFACE MIX DESIGNS

The Table 410-1 in **Subsection 410.09(b), Acceptance of the Pavement**, of the Standard Specifications, is hereby amended as follows for ACHM Surface Courses:

**TABLE 410-1
COMPLIANCE, PRICE REDUCTION AND REJECTION LIMITS FOR ACHM SURFACE COURSES**

Property	Compliance Limits	Price Reduction Limits	Lot Rejection Limits	Sublot Rejection Limits
Asphalt Binder Content	±0.3 from mix design value	more than ±0.3 from mix design value	more than ±0.6 from mix design value	±0.8 from mix design value
Air voids (AV)	2.5% to 4.5%	1.9% to 2.4% 4.6% to 5.0%	1.8% or less 5.1% or more	1.4% or less 5.6% or more
Voids in Mineral Aggregate (VMA)*				
ACHM Surface Course (1/2" [12.5 mm])	14.0% to 16.5%	13.5% to 13.9% 16.6% to 17.0%	13.4% or less 17.1% or more	12.9% or less 17.6% or more
ACHM Surface Course (3/8" [9.5 mm])	15.0% to 17.5%	14.5% to 14.9% 17.6% to 18.0%	14.4% or less 18.1% or more	13.9% or less 18.6% or more
Density (% of theoretical)	94.0% ± 2.0%	91.0% to 91.9% 96.1 to 97.0%	90.9% or less 97.1% or more	89.9% or less** 98.1% or more
Density (% of theoretical) where minimum specified is 90.0%	90.0% to 96.0%	89.0% to 89.9% 96.1% to 97.0%	88.9% or less 97.1% or more	87.9% or less** 98.1% or more

*The values for VMA_(actual) shall be determined by calculating the VMA_(effective) and reducing it by the correction factor shown on the mix design.

**Subject to further evaluation, see text.

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LONGITUDINAL JOINT DENSITIES FOR ACHM SURFACE COURSES

DIVISION 400 ASPHALT PAVEMENTS of the Standard Specifications, Edition of 2014, is hereby amended as follows:

The following is added after the first paragraph of **Subsection 407.04 Construction**:

Joint densities shall be measured directly on, and centered over, the visible joint for butt joints or centered over the wedge for joints constructed using a notched wedge paver attachment. The joint density core samples shall be 6" diameter and should be cut while the lane closure for the paving operation is still in place in order to provide proper traffic control for the coring operation. If the Contractor is unable to cut the cores while the lane closure is still in place, the coring operation must be performed using either a static or moving lane closure as detailed in the plans or MUTCD, and in accordance with any limitations contained in the Contract. The required joint density shall be 89% to 96% of the maximum theoretical density.

The third paragraph of **Subsection 410.07, Spreading and Finishing**, is hereby deleted and the following is substituted therefor:

The longitudinal joint in one layer shall offset that in the layer immediately below by approximately 6" (150 mm), if possible; however, in general, the joint in the top layer shall be at the centerline of the pavement if the roadway comprises two lanes in width, or at lane lines if the roadway is more than two lanes in width. On roadways with a center turn lane, the Contractor may, at his option, elect to place a joint at the crown (i.e., middle of the center turn lane) of the roadway and eliminate the joints on the lane lines of that lane. The slight excess of asphalt at a longitudinal joint, generated by overlapping during placement of an adjacent mat to a previous mat, shall not be scattered across the mat.

The following is added after the last paragraph of **Subsection 410.08 Rolling and Density Requirements and Joints**:

When the material forming the two sides of a longitudinal joint comes from two different sublots, the theoretical maximum density used as a basis for density calculations shall be the average of the theoretical maximum density for the two sublots.

The following is added after the second sentence of the second paragraph of **Subsection 410.09 Acceptance of the Pavement and Adjustments in Payment, (a) General** is expanded to include the following:

For longitudinal joint density testing, the standard lot size for acceptance and adjustment in payment will be 12,000 linear feet (3600 meters), with each standard lot divided into four sublots of 3,000 linear feet (900 meters) each. These lengths will apply only to ACHM Final Surface Course areas in which both sides of the longitudinal joint have been formed, including the joints between the travel lanes and acceleration or deceleration lanes, but excluding the longitudinal joint between a shoulder and travel lane which will not be subject to this testing. For longitudinal joint density tests, partial

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lots normally will be not less than 1,200 linear feet (360 meters) nor more than 13,200 linear feet (4000 meters). Cores for ACHM Intermediate Surface shall be cut and tested for density at locations where acceptance cores have been sampled. Results will not be used for Acceptance and Adjustments in Payment but shall be submitted to Department for informational purposes only.

The following is added after the last sentence of the second paragraph of **Subsection 410.09, Acceptance of the Pavement and Adjustments in Payment, (a) General**:

Field density tests on longitudinal joints shall be performed directly on the joint as soon as possible after placement of the hot lane. The core should be cut while the lane closure for the paving operation is still in place in order to provide proper traffic control for the coring operation. If the Contractor is unable to cut the cores while the lane closure is still in place, the coring operation must be performed using either a static or moving lane closure as detailed in the plans or MUTCD, and in accordance with any limitations contained in the Contract.

The first and second sentences of the third paragraph of **Subsection 410.09, Acceptance of the Pavement and Adjustments in Payment, (a) General** is hereby deleted and the following substituted therefor:

The Contractor shall obtain and test one sample taken at random from each subplot, including for longitudinal joint density testing. The Department will determine the location for each sample in the subplot by ARDOT Test Method 465.

Subsection 410.09 Acceptance of the Pavement and Adjustments in Payment, (b) Acceptance of the Pavement is hereby modified as follows:

The following is added as the second bullet following the first paragraph:

- The results of tests for the longitudinal joint density in Table 410-2

The following is added after the last paragraph of **Subsection 410.09(b)(1)**:

Acceptance for Longitudinal Joint Density as shown in Table 410-2 will be by lot. Acceptance of a standard longitudinal joint density lot will be based on the average of the five (5) tests performed on the lot. Acceptance of a partial lot will be based on the average of the actual number of tests made on that partial lot.

Incentives or disincentives will be added or deducted from the payment made for each acceptance lot for Longitudinal Joint Density according to Table 410-2.

In addition to the disincentives provided within the table, any lot with density results which average below 88% shall be sealed at no cost to the Department. The entire length of the longitudinal joint within the lot shall be sealed with PG 64-22 asphalt cement. The asphalt cement sealant shall be heated and maintained between 265°F and

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320°F. The sealant shall not be placed if the air temperature is below 40°F, unless otherwise permitted by the Engineer. The joint area of the pavement surface must be clean, dry, and free of any loose material and debris. Cleaning with a power broom may be required. Utilize a pressure applicator with a wand or nozzle capable of applying hot asphalt sealant in a straight and consistent width of 4 inches ±1 inch and thickness of 1/16 inch ± 1/32 inch at specified temperature range and at a minimum rate of 0.013 gallons/linear foot. The center of the sealant band should be placed within 1 inch of the joint. Immediately level high spots with a squeegee or wand. Remove and dispose of excess sealant at no cost to the Department. Re-seal areas of the joint that are inconsistently or not completely covered. Any pavement markings marred by the sealing operation will be replaced at no additional cost to the Department.

TABLE 410-2
LONGITUDINAL JOINT DENSITY DISINCENTIVE

% Gmm		
Min.	Max.	\$/L.F./Lot
98.0	100	-1.00
97.0	<98	-0.70
96.0	<97	-0.42
95.0	<96	+1.00
94.0	<95	+0.98
93.0	<94	+0.77
92.0	<93	+0.42
91.0	<92	0.00
90.0	<91	0.00
89.0	<90	0.00
88.0	<89	-0.42
87.0	<88	-0.77
86.0	<87	-0.98
	<86	-1.00

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SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS

Division 106 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is hereby added to **Subsection 106.04, Acceptance of Materials**:

All ACHM Contractor Acceptance Tests shall be submitted electronically by use of the ACHM Microsoft Excel Spreadsheet for Contractors/Suppliers and on paper.

The ACHM Microsoft Excel Spreadsheet for Contractors/Suppliers can be downloaded from the following website:

<https://www.ardot.gov/divisions/construction/construction-information/contractor-achm-workbook/>.

To download this file and the supporting documentation, follow the instructions on the page linked above.

Use of this file requires Microsoft Excel 2000, 2003, or 2007.

The preferred method of transmitting the file is to e-mail the completed ACHM Microsoft Excel Spreadsheet for Contractors/Suppliers to the Department's ACHM Plant Inspector assigned to the project. It is also acceptable to transmit the file by Compact Disk (CD) or other electronic device. Regardless of the method of transmission used, the signed paper acceptance tests must be provided to the Resident Engineer via the required Document Submission system required by the Contract (Doc Express or eBuilder).

Any questions or issues arising from the use of this file should be referred to the Resident Engineer.

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PRICE ADJUSTMENT FOR ASPHALT BINDER

A price adjustment clause is included in this Contract to provide additional compensation to the Contractor or a credit to the Department for fluctuations in asphalt binder prices. This price adjustment is dependent upon a change in the average price of asphalt binder which results in an increase or decrease in the price of products utilized on this project.

Payment. Payment will be made to the Contractor for monthly fluctuation in the price of asphalt binder used in performing the applicable items of Asphalt Concrete Hot Mix and Ultrathin Bonded Wearing Course work as listed in the table below when the asphalt binder price fluctuates from the base price defined below. Payment may be positive, negative, or nonexistent depending on the circumstances. Payments or deductions for the asphalt binder price adjustment will be included in the Contractors current estimates, and the payment or deduction authorized for each estimate will be based upon the quantities for applicable items of work.

The Asphalt Binder Price Adjustment will be a dollar amount paid as compensation to the Contractor, or as a credit to the Department as reflected on the Current (or Final) Estimate Summary Report as Payment Adjustments.

Asphalt Binder Price Adjustment (ABPA). The Asphalt Binder Price Adjustment (ABPA) for the current estimate will be computed according to the following formula:

$$ABPA = Q \times D \times (IQP / 100)$$

Where

- ABPA = Asphalt binder price adjustment, in dollars;
- Q = Quantities paid for the applicable items on the current estimate; tons of mix for ACHM items or square yards for Ultrathin Bonded Wearing Course
- D = Allowable price differential, in dollars;
- IQP = Item Quantity Percent, Quantity of Indexed Material per unit of the applicable item on the current estimate.

The above formula will be applied to each individual payment of the applicable item. When the Current (or Final) estimate is generated, the sum of these individual adjustments will be included as a Payment Adjustment.

Applicable Items of Work		
ITEM OF WORK	SPECIFICATION NUMBER	ITEM QUANTITY PERCENT
Asphalt Binder in ACHM Base Course	405	100
Asphalt Binder in ACHM Binder Course	406	100
Asphalt Binder in ACHM Surface Course	407	100
Ultrathin Bonded Wearing Course (Type B)	SP	5.5
Ultrathin Bonded Wearing Course (Type C)	SP	5.4

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The terms of this Special Provision will apply only to the items listed in this Special Provision table above. No other items on the contract will be subject to the terms of this Special Provision.

The allowable price differential, "D", for the current estimate will be computed according to the following formula, using the appropriate binder grades:

$$D = P - P(b)$$

P, the asphalt binder current price in dollars per ton, is the Monthly Asphalt Binder Price Index for the month in which the payment entry is entered.

P(b), the asphalt binder base price in dollars per ton, is the Monthly Asphalt Binder Price Index for the month in which the bids for the work were received.

Asphalt Binder Index Determination.

PG64-22 Binders. The Monthly Asphalt Binder Price Index for PG64-22 binders will be determined by calculating the average for performance-graded binder using the Selling Price of PG 64-22 paving grade. The monthly asphalt binder price will be an average of five asphalt binder prices. The prices will be furnished by the four largest asphalt binder suppliers in the State of Arkansas as determined by the previous calendar year. For an asphalt supplier to be included in the asphalt binder price index they must supply at least ten percent of the asphalt binder in Arkansas. The final component in the asphalt binder price index will be the Asphalt Weekly Monitor® furnished by Poten & Partners, Inc. The issue of the Asphalt Weekly Monitor® used will be for the last full week in the previous month received by the Department prior to the first day of the index month. The four largest suppliers included in the asphalt binder price index shall furnish the Department with their average price on the Thursday before the Friday of the last full week of the month. If any supplier fails to submit a price by this deadline, that supplier's price will not be included in the asphalt binder price index for that month.

PG70-22 and PG76-22 Binders (including Asphalt Binder in Ultrathin Bonded Wearing Course). The monthly Asphalt Binder Price Index for PG70-22 and PG76-22 binders (including asphalt binder in Ultrathin Bonded Wearing Course) will be determined by the same method above, except that the price from the Asphalt Weekly Monitor® will not be used in the calculation of the monthly average binder price. The monthly asphalt binder price for PG70-22 and PG76-22 binders will be calculated using the average of the prices supplied by the four largest binder suppliers in the State for those grades.

Supplemental Items Subject to Adjustment. Items included in the contract that are listed in the table above are subject to adjustment in accordance with this provision, regardless of any amount of overrun to the plan quantity. Any new items of work added to the Contract by supplemental agreement that are listed in the table above will be subject to the asphalt binder price adjustments in accordance with this provision. The base asphalt binder price, P(b), for any newly added eligible items will be the same P(b) as the eligible items in the Contract, and the new unit price established by supplemental agreement will be determined accordingly.

06-03-2015
10-02-2015 Rev.,11-16-2017 Rev.,
12-06-2018 Rev.,02-25-2021 Rev.,
04-13-2022 Rev.,01-12-2023 Rev.,
02-29-2024 Rev.

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Viewing Asphalt Binder Price Index. Historical asphalt binder price index values will be available in the "Asphalt Binder Index Report" document located on the ARDOT website at <https://ardot.gov/divisions/construction/construction-information/> under Asphalt Binder Information.

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PERCENT WITHIN LIMITS/PAVEMENT SMOOTHNESS (IRI)

Division 400 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 410.09(b)(1) is deleted and the following substituted therefor:

- (1) Properties in Table 410-1.** Acceptance with respect to the properties listed in Table 410-1 will be by lot. Acceptance of a standard lot will be based on the Percent Within Limits (PWL). Acceptance of a subplot will be based on the results of the test(s) performed on samples from that subplot.

In Table 410-1, the term “mix design value” refers to the value shown in the accepted mix design.

- (a) Percent Within Limits (PWL).** The PWL analysis will only be performed on lots when 3 or more tests are performed on the lot. Acceptance of a partial lot with 2 or less tests performed on the lot will be based on the lot average of the actual number of tests made on that partial lot.

ACHM base, binder, or surface course used in temporary work that will not be incorporated into the final roadway, such as temporary shoulder widening, crossovers, and temporary ramps, will be declared a partial lot and acceptance will be based on Section 410 of the Standard Specifications.

The Percent Within Limits (PWL) will be based on the mean, standard deviation and quality index of each lot's test results. The PWL and Pay Factors (PF) for the lot will be calculated as described below. The upper PWL (PWL_U) and lower PWL (PWL_L) are determined from the Table 410-2. Variables used in the calculations are as follows:

- x_i = individual test value (subplot)
- x_a = arithmetic mean of the individual test values
- n = number of tests (sublots)
- s = sample standard deviation
- Q_U = upper quality index
- USL = upper compliance limit (from Table 410-1)
- Q_L = lower quality index
- LSL = lower compliance limit (from Table 410-1)

- (1) Calculate the arithmetic mean (x_a) of the test values:

$$x_a = (\sum x_i)/n$$

- (2) Calculate the sample standard deviation(s):

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$$s = [\sum((x_i - x_a)^2/(n - 1))]^{1/2}$$

- (3) Calculate the upper quality index (Q_U):

$$Q_U = (USL - x_a)/s$$

- (4) Calculate the lower quality index (Q_L):

$$Q_L = (x_a - LSL)/s$$

- (5) From Table 410-2, use Q_U to determine the upper PWL (PWL_U).

- (6) From Table 410-2, use Q_L to determine the lower PWL (PWL_L).

- (7) If Q_U or Q_L is a negative number, then calculate the percent within limits for Q_U or Q_L as follows: enter Table 410-2 with the positive value of Q_U or Q_L and obtain the corresponding percent within limits for the proper sample size. Subtract this number from 100.00. The resulting number is the value to be used in the next step (Step 8) for the calculation of quality level.

- (8) Calculate the total percent within limits:

$$PWL = (PWL_U + PWL_L) - 100$$

- (9) Calculate the Pay Factor (PF) for each property. Pay Factors will be calculated by using the following equation:

$$PF = 55 + 0.5 \times PWL$$

- (10) Calculate the Total Pay Factor (PF_T) for the lot. The PF_T will be calculated based on the individual Pay Factors (PF) with the following weighting applied: 20 percent asphalt binder content (PAB), 35 percent air voids (PAV), 10 percent voids in mineral aggregate (VMA) and 35 percent density (PC). Calculate the PF_T by using the following formula, where the PF for each property is determined in Step (9):

$$PF_T = (0.20) PF_{PAB} + (0.35) PF_{PAV} + (0.10) PF_{VMA} + (0.35) PF_{PC}$$

All lots of material with a PF_T less than 80.00 shall be removed and replaced with acceptable material by the contractor at no cost to the Department. Payment for sections where removal and replacement is required will be withheld or recovered, and released after replacement has been acceptably completed. The quantity for payment will be the original quantity and measurement

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of the quantity used in replacement operations will not be considered. Sampling and testing of the replacement material will be according to Subsection 410.09(a). Acceptance of the replacement material will be determined using the acceptance criteria for Partial lots with two (2) or less tests as outlined below.

For any single property except density, if the result of the single test in a subplot falls outside the limits shown as "Sublot Rejection Limits", that subplot shall be removed and replaced at no cost to the Department. In the subplot containing the Department's lot test, if the result of either the Contractor's subplot test or the Department's lot test fall outside the subplot rejection limits, the two tests will be averaged and the average of the two test results used to determine acceptance or rejection of the subplot. Sampling and testing of the replacement material will be according to Subsection 410.09(a). Acceptance of the replacement material will be determined using the acceptance criteria for Partial lots with two (2) or less tests as outlined below.

For density, if a test for a subplot is more than 2.0 percentage points above or below the compliance limits for the type of mix, that subplot will be further evaluated as follows:

Two additional density tests will be performed by the Department on a statistically random basis within that subplot, except that only one additional test will be performed if the subplot contains both a Contractor subplot test and a Department lot test. If the average of the three tests is within 2.0 percentage points above or below the compliance limits, the subplot will be accepted. The average of the three test results will be used as a single value to compute the arithmetic mean of the test values for the lot for the PWL calculations.

If the average is outside the subplot rejection limits, the subplot shall be removed and replaced at no cost to the Department. Sampling and testing of the replacement material will be according to Subsection 410.09(a). Acceptance of the replacement material will be determined using the acceptance criteria for Partial lots with two (2) or less tests as outlined below.

(b) Partial lots with two (2) or less tests. Acceptance of a partial lot will be based on the average of the actual number of tests made on that partial lot.

When the average of the test results for a partial lot fall within the range shown in Table 410-1 as "Compliance Limits", the partial lot will be accepted with no price reduction for those properties. If the average of the test results for a partial lot for any single property listed in the table falls within the limits shown as "Price Reduction Limits", the material may be left in place at a reduced price as specified in Subsection 410.09(d). If the average of the test results for a partial lot for any single property listed in the table falls outside the limits shows as "Lot Rejection Limits", the entire partial lot shall be removed and replaced at no cost to the Department. Sampling and testing of the replacement material will be according to Subsection 410.09(a).

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For any single property except density, if the result of the single test in a subplot falls outside the limits shown as "Sublot Rejection Limits", that subplot shall be removed and replaced at no cost to the Department. In the subplot containing the Department's lot test, if the result of either the Contractor's subplot test or the Department's lot test fall outside the subplot rejection limits, the two tests will be averaged and the average of the two test results used to determine acceptance or rejection of the subplot. The average of the two test results will also be used as a single value to compute the average for the partial lot for acceptance and adjustment.

For density, if a test for a subplot is more than 2.0 percentage points above or below the specification limits for the type of mix, that subplot will be further evaluated as follows:

Two additional density tests will be performed by the Department on a statistically random basis within that subplot, except that only one additional test will be performed if the subplot contains both a Contractor subplot test and a Department lot test. If the average of the three tests is within 2.0 percentage points above or below the compliance limits, the subplot will be accepted. The average of the three test results will be used as a single value to compute the average for acceptance and adjustment of the partial lot.

If the average is outside the subplot rejection limits, the subplot shall be removed and replaced at no cost to the Department. In that case, the result of a density test performed on the replacement material will be used to calculate the average for acceptance and adjustment of the partial lot.

Subsection 410.09(b)(2), Pavement Smoothness, is hereby deleted and the following substituted therefor:

(2) Pavement Smoothness. (a) Binder and Intermediate Surface Courses. For full payment, the finished surface of binder and intermediate surface courses and any areas of final surface courses that have less than 4" (100 mm) of ACHM over the existing pavement (excluding leveling), when checked with a 10' (3 m) straight-edge parallel to the centerline, shall show no variation more than 3/16" (5 mm) for binder courses and not more than 1/8" (3 mm) for surface courses. When surface tests indicate surface tolerances do not meet these requirements, changes to the paving operations shall be made before beginning the next day's operations.

All transverse joints shall be straight-edged immediately following rolling of the joint. Paving will not continue until the transverse joint meets the applicable surface tolerances shown above.

Areas not meeting the above surface test requirements shall be corrected by skin patching, or other methods that would provide the required smoothness. All corrective work and material necessary to correct surface tolerance deficiencies shall be at no cost to the Department.

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(b) Final Surface Courses on Mainlanes and Ramps. The finished pavement surface, except as noted in paragraph (a) above and ramps, acceleration/deceleration lanes, shoulders, islands, tapers, or other incidentals, will be determined by the use of the Inertial Profiler (IP) and the International Roughness Index (IRI). Pavement smoothness will be determined for each lane by obtaining the IRI for the left and right wheel paths in an individual lane. After the final ACHM surface has been placed, the averaged IRI value will be used to determine areas requiring correction and applicable payment price adjustments.

(c) Equipment and Operator. The Contractor shall furnish a properly calibrated and documented Inertial Profiler (IP), capable of exporting raw profile data in an unfiltered ERD file format or an approved ADF file format. The IP shall also produce a profilogram (profile trace of the surface tested). The IP shall conform to the Class I requirements of the most recent revision of ASTM E950.

Profile analysis for determination of IRI and areas of localized roughness will be conducted using ProVAL version 3.6 or the most recent version of ProVAL Software. IRI values shall be reported in inches/mile (in/mi).

For all projects let to contract after October 1, 2025, both the technician performing pavement profiling operations for the Contractor and the profilometer used shall be certified in Inertial Profiling through the CTTTP program at the University of Arkansas.

(d) Pavement Surface Testing. In the presence of the Engineer, the Contractor shall setup a test section to calibrate the distance sensor and check the profile system calibration using the manufacturer's calibration procedures before each day's testing. Unless otherwise authorized by the Engineer, all smoothness testing shall be performed in the presence of the Engineer or his/her designated representative. For the duration of the work, every reasonable effort shall be made to test smoothness within 5 working days after each day's paving operation. Scheduling and testing shall be coordinated with the Engineer. The Engineer and the Contractor shall mutually agree upon scheduling of smoothness testing.

The Contractor shall remove all objects and foreign material on the pavement surface prior to surface evaluation. The Contractor will be responsible for all traffic control associated with testing and any corrective work (when applicable) that is required of the final pavement surface.

The IP shall be run in the final design direction of traffic. Profiles shall be measured in the left and right wheel paths of each lane. Each lane's wheel path shall be tested and evaluated separately. The Engineer shall determine the length in miles for each main lane of traffic. The IP shall be operated at the optimum speed as defined by the manufacturer.

The Contractor shall profile the final surface of the entire job length to determine if the pavement meets the smoothness values specified below and to determine total

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incentive/disincentive. Intermediate lifts will not be eligible for incentive, but may be profiled to isolate rough areas requiring proactive grinding. The Engineer will verify the profiles by testing approximately 10% of the pavement. This testing will be performed by the Engineer, using either the IP furnished by the Contractor or one provided by the Department, at the option of the Engineer. If the IP is furnished by the Contractor, the Contractor may elect to allow their employee to drive the IP but the sensors and data collection systems will be operated by the Engineer's representative during each of the verification runs.

The averaged IRI values for all segments will be used to determine payment incentive. The right and left wheel path readings will be averaged for every point read during the 528' lane segment. Areas less than 0.1 mile (200 m) shall be combined with a full 0.1-mile segment before profiling. The left and right averaged wheel path points will be averaged to obtain an IRI value for the lane segment.

Any longitudinal joints within the limits of a travel lane shall be uniform to a degree that no depressions or high spots greater than 1/8" (3 mm) in 10' (3 m) are present when tested with a straightedge placed perpendicular to the centerline of the lane.

Smoothness profiles of the first day's run will be analyzed before the second day's run commences. Should the first day's run exceed an IRI of 60 inch/mile the paving operations shall be discontinued until better methods and equipment are obtained or until the present equipment is properly adjusted. If adjustments are necessary from the first day's run, the second day's run will be profiled to determine the ability of the equipment to finish the pavement within the specified tolerance. If the second day's operation fails to produce a finished surface IRI of 60 inch/mile or less, the Contractor shall produce new methods and/or equipment that will obtain the specified results. The new methods and/or equipment will be given trial runs as indicated above for the original equipment. The finished pavement surface will be measured for roughness by the Contractor. Roughness will be measured using an IP. The profiler manufacturer's data collection setting specifications shall be furnished and approved by the Engineer. The IRI shall not exceed 70 inches per mile per 0.1-mile section. Bridges will not be included in the calculation of the IRI.

Areas of localized roughness will be identified using the ProVAL "Smoothness Assurance" analysis, calculating IRI with a short continuous segment length of 25 ft. (7.62 m), the 250 mm filter applied, and a threshold of 150 in/mi, for design speeds above 45 mph. For design speeds of 45 mph or below, a threshold of 170 in/mi shall be used. Design speeds are listed in Design Traffic Data on the title sheet of the plans. If areas of localized roughness are identified, corrective action shall be performed as specified below. The finished surface of 25' (7.5 m) sections adjacent to an existing structure or the end of pavement shall not show surface deviations in excess of 1/8" (3 mm) in 10' (3 m) with the approved inertial profiler.

For the duration of the work every reasonable effort shall be made to test smoothness within 5 working days after each day's run. All data obtained from the profiling operations will be

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furnished to the Engineer at the end of each day's profiling operations. Scheduling and testing shall be coordinated with the Engineer. The Contractor shall be responsible for traffic control associated with their own testing and the Department's verification testing.

Areas not meeting the above surface test requirements for the final surface course shall be corrected in such a manner as to maintain a quality pavement having the same uniform texture and appearance as the adjoining surface. Skin patching the final surface course will not be permitted.

When the corrective action involves removing and replacing a section of the final surface, the minimum area to be removed shall be 50 linear feet (15 m) of length for the full width of the course placed. Replacement of the final surface shall be accomplished using a paver.

Grinding will be allowed, if necessary, to reduce the IRI as determined by the profiling equipment, as appropriate, in any 0.1 mile (200 m) section on all profiles, including the trial run. The grinding equipment shall be power driven and specifically designed to smooth and uniformly texture the pavement by means of diamond blades.

After the areas of localized roughness have been identified and grinding has taken place, the smoothness of the pavement shall be measured again to determine if the pavement has met the smoothness requirements for 100% pay. If grinding of localized roughness is required as described previously, positive price adjustments will not be allowed on that section, but the Contractor can receive a maximum of 100% pay. Continual production of a final surface not qualifying for 100% payment will not be allowed.

The averaged IRI values will be used to determine price adjustments. The right and left wheel path readings will be averaged for every point read during the 528' lane segment. Areas less than 0.1 mile (200 m) shall be combined with a full 0.1-mile segment before profiling. Then the left and right averaged wheel path points will be averaged to obtain an IRI value for the lane segment.

All corrective work and material necessary to correct surface tolerance deficiencies for surface courses shall be at no cost to the Department.

Areas showing low spots of more than 1/4" (6 mm) in 10' (3 m) in the longitudinal direction shall be corrected by grinding or shall be removed and replaced to an elevation that will not show surface deviations in excess of 1/8" (3 mm) in 10' (3 m).

Furnishing the IP, taking all required profiles, and performing all necessary computations will not be measured and paid for separately, but will be considered as part of quality control and acceptance sampling and testing included in the bid items for the ACHM items.

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(e) Submittals. The Contractor shall submit the printed profile trace (graphical trace) signed by the operator, indicating each segment's averaged IRI value, at the end of each day's profiling operations.

The Contractor shall also submit electronic files, with the printed profile trace, in ERD and ADF format that represent the raw data from each pass. The electronic file names shall follow the standardized format shown in the following:

YYMMDD-J-T-N-D-L-W-S

Where:

YY=Two-digit year

MM=Month (including leading zeros)

DD=Day of Month (including leading zeros)

J=the Department Job Number

T=Route Type (I, AR, US, etc.)

N=Route Number (no leading zeros) and auxiliary ID (if applicable, i.e. E, W)

D=Primary route direction (I or D, indicating Increasing or Decreasing; Increasing = North or East, Decreasing = South or West)

L=Lane number (1 for driving lane, increasing by one for each lane to the left)

W=Wheel path (L (left), R (right), or B (both))

S=Beginning Station

Pavement smoothness within each wheel path will be measured in terms of IRI (in/mi) according to the Pavement Surface Testing section above. Price adjustments apply to the total area for the lane width represented by the profile index for a continuous main lane section at least 0.1 mile (200 m) long. Price adjustments for incentives are only based on the initial measured profile index of continuous sections of at least 0.1 mile (200 m) in length, excluding approach slabs and bridges, and before any corrective work; however, grinding will be allowed to achieve 100% full payment in lieu of accepting a disincentive for that section. Ramps, acceleration/deceleration lanes, shoulders, islands, tapers, or other incidentals shall not be considered for price adjustments. If grinding is required due to failure to meet the required profile index, the pavement will be ground to a level which qualifies for 100% payment. The IRI will be used to determine acceptance for Pavement Smoothness and Price Adjustments for each 0.1-mile segment.

Subsection 410.09(d) is hereby deleted and the following added therefor:

(d) Price Adjustments for Ride Smoothness. (1) Ride Smoothness Lot: Upon completion of the final surface of the main lanes of a project, the Contractor shall provide documentation of eligibility for price adjustments as defined in this subsection. The Department reserves the right

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to verify information provided by the Contractor. In the case of dispute regarding price adjustments, the Department decision shall govern.

Price adjustments on lots accepted based on Percent Within Limits (PWL) will be calculated as part of the Total Pay Factor (PFT).

The Project shall be divided into Ride Smoothness Lots consisting of 0.1 mile (200 meter) sections of each travel lane starting at the beginning of the ACHM noted on the plans or as constructed. Partial Ride Smoothness lots will not be considered for ride smoothness price adjustments. Travel lanes shall consist of traffic lanes, turning lanes, or painted paved medians. Ramps, acceleration/deceleration lanes, crossovers, turnouts, shoulders, driveways, islands, patching, tapers, or other incidentals shall not be considered as part of a Ride Smoothness lot for price adjustments. Exceptions, including bridges and approach slabs, shall not be considered a part of a Ride Smoothness Lot.

(2) Price Adjustments. The Contractor shall determine the smoothness of the finished surface for each Ride Smoothness Lot utilizing an IP conforming to the Class I requirements of the most recent revision of ASTM E950.

No incentive payment for smoothness will be considered for a Ride Smoothness Lot if any portion of that Ride Smoothness Lot contains patched areas less than 200' (60 m) in length or has been ground to obtain the required smoothness. If grinding of localized roughness is required as described previously, positive price adjustments will not be allowed on that section, but the Contractor can receive a maximum of 100% pay. If grinding is required due to failure to meet the required IRI, the pavement will be ground to a level which qualifies for 100% payment.

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Price adjustments shall be made as follows:

PRICE ADJUSTMENTS FOR RIDE SMOOTHNESS		
INTERNATIONAL ROUGHNESS INDEX In/Mi./0.1 Mi. section	INTERNATIONAL ROUGHNESS INDEX m per km/1.0 km section	PRICE ADJUSTMENT
45 or less	0.71 or less	+3.0%
Over 45 to 50	Over 0.71 to 0.79	+2.0%
Over 50 to 55	Over 0.79 to 0.87	+1.0%
Over 55 to 60	Over 0.87 to 0.95	0
Over 60 to 65	Over 0.95 to 1.03	-2.0%
Over 65 to 70	Over 1.03 to 1.10	-4.0%
Over 70	Over 1.10	CORRECTIVE WORK REQUIRED

Price adjustments for each ride smoothness lot will be calculated as follows:

$$\begin{array}{r}
 (\% \text{ Price} \\ \text{Adjustment})
 \end{array}
 \times
 \begin{array}{r}
 (\text{Composite Unit Price of} \\ \text{ACHM Surface Course} \\ \text{Per Ton [Metric Ton]})
 \end{array}
 \times
 \begin{array}{r}
 (\text{Tons [Metric Tons] of ACHM} \\ \text{in Ride Smoothness Lot})
 \end{array}$$

Where:

$$\text{Tons of ACHM in Ride Smoothness Lot} = \frac{(\text{Lane Width}) \times (528' \text{ Length}) \times (440 \text{ lbs/SY}^*)}{9 \text{ SF/SY} \times 2000 \text{ lbs/Ton}}$$

$$\text{Metric Tons of ACHM in Ride Smoothness Lot} = \frac{(\text{Lane Width}) \times (200 \text{ m Length}) \times (240 \text{ kg/sq m}^*)}{1000 \text{ kg/metric ton}}$$

*Note: This is a constant rate for calculating positive and negative price adjustments for all projects.

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PERCENT WITHIN LIMITS/PAVEMENT SMOOTHNESS (IRI)

**Table 410-2
 Percent Within Limits**

Quality Index	PWL for Selected Sample Size		
	n = 3	n = 4	n = 5
0.00	50.00	50.00	50.00
0.01	50.28	50.33	50.36
0.02	50.55	50.67	50.71
0.03	50.83	51.00	51.07
0.04	51.10	51.33	51.42
0.05	51.38	51.67	51.78
0.06	51.65	52.00	52.13
0.07	51.93	52.33	52.49
0.08	52.21	52.67	52.85
0.09	52.48	53.00	53.20
0.10	52.76	53.33	53.56
0.11	53.04	53.67	53.91
0.12	53.31	54.00	54.27
0.13	53.59	54.33	54.62
0.14	53.87	54.67	54.98
0.15	54.15	55.00	55.33
0.16	54.42	55.33	55.69
0.17	54.70	55.67	56.04
0.18	54.98	56.00	56.40
0.19	55.26	56.33	56.75
0.20	55.54	56.67	57.10
0.21	55.82	57.00	57.46
0.22	56.10	57.33	57.81
0.23	56.38	57.67	58.16
0.24	56.66	58.00	58.52
0.25	56.95	58.33	58.87
0.26	57.23	58.67	59.22
0.27	57.51	59.00	59.57
0.28	57.80	59.33	59.92
0.29	58.08	59.67	60.28
0.30	58.37	60.00	60.63
0.31	58.65	60.33	60.98
0.32	58.94	60.67	61.33
0.33	59.23	61.00	61.68
0.34	59.51	61.33	62.03
0.35	59.80	61.67	62.38
0.36	60.09	62.00	62.72
0.37	60.38	62.33	63.07

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PERCENT WITHIN LIMITS/PAVEMENT SMOOTHNESS (IRI)

**Table 410-2
 Percent Within Limits**

Quality Index	PWL for Selected Sample Size		
	n = 3	n = 4	n = 5
0.38	60.67	62.67	63.42
0.39	60.97	63.00	63.77
0.40	61.26	63.33	64.12
0.41	61.55	63.67	64.46
0.42	61.85	64.00	64.81
0.43	62.15	64.33	65.15
0.44	62.44	64.67	65.50
0.45	62.74	65.00	65.84
0.46	63.04	65.33	66.19
0.47	63.34	65.67	66.53
0.48	63.65	66.00	66.88
0.49	63.95	66.33	67.22
0.50	64.25	66.67	67.56
0.51	64.56	67.00	67.90
0.52	64.87	67.33	68.24
0.53	65.18	67.67	68.58
0.54	65.49	68.00	68.92
0.55	65.80	68.33	69.26
0.56	66.12	68.67	69.60
0.57	66.43	69.00	69.94
0.58	66.75	69.33	70.27
0.59	67.07	69.67	70.61
0.60	67.39	70.00	70.95
0.61	67.72	70.33	71.28
0.62	68.04	70.67	71.61
0.63	68.37	71.00	71.95
0.64	68.70	71.33	72.28
0.65	69.03	71.67	72.61
0.66	69.37	72.00	72.94
0.67	69.70	72.33	73.27
0.68	70.04	72.67	73.60
0.69	70.39	73.00	73.93
0.70	70.73	73.33	74.26
0.71	71.08	73.67	74.59
0.72	71.43	74.00	74.91
0.73	71.78	74.33	75.24
0.74	72.14	74.67	75.56
0.75	72.50	75.00	75.89
0.76	72.87	75.33	76.21

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PERCENT WITHIN LIMITS/PAVEMENT SMOOTHNESS (IRI)

**Table 410-2
 Percent Within Limits**

Quality Index	PWL for Selected Sample Size		
	n = 3	n = 4	n = 5
0.77	73.24	75.67	76.53
0.78	73.61	76.00	76.85
0.79	73.98	76.33	77.17
0.80	74.36	76.67	77.49
0.81	74.75	77.00	77.81
0.82	75.14	77.33	78.13
0.83	75.53	77.67	78.44
0.84	75.93	78.00	78.76
0.85	76.33	78.33	79.07
0.86	76.74	78.67	79.38
0.87	77.16	79.00	79.69
0.88	77.58	79.33	80.00
0.89	78.01	79.67	80.31
0.90	78.45	80.00	80.62
0.91	78.89	80.33	80.93
0.92	79.34	80.67	81.23
0.93	79.81	81.00	81.54
0.94	80.27	81.33	81.84
0.95	80.75	81.67	82.14
0.96	81.25	82.00	82.45
0.97	81.75	82.33	82.75
0.98	82.26	82.67	83.04
0.99	82.79	83.00	83.34
1.00	83.33	83.33	83.64
1.01	83.89	83.67	83.93
1.02	84.47	84.00	84.22
1.03	85.07	84.33	84.52
1.04	85.69	84.67	84.81
1.05	86.34	85.00	85.09
1.06	87.02	85.33	85.38
1.07	87.73	85.67	85.67
1.08	88.49	86.00	85.95
1.09	89.29	86.33	86.24
1.10	90.16	86.67	86.52
1.11	91.11	87.00	86.80
1.12	92.18	87.33	87.07
1.13	93.40	87.67	87.35
1.14	94.92	88.00	87.63
1.15	97.13	88.33	87.90

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PERCENT WITHIN LIMITS/PAVEMENT SMOOTHNESS (IRI)

**Table 410-2
 Percent Within Limits**

Quality Index	PWL for Selected Sample Size		
	n = 3	n = 4	n = 5
1.16	100.00	88.67	88.17
1.17	100.00	89.00	88.44
1.18	100.00	89.33	88.71
1.19	100.00	89.67	88.98
1.20	100.00	90.00	89.24
1.21	100.00	90.33	89.50
1.22	100.00	90.67	89.77
1.23	100.00	91.00	90.03
1.24	100.00	91.33	90.28
1.25	100.00	91.67	90.54
1.26	100.00	92.00	90.79
1.27	100.00	92.33	91.04
1.28	100.00	92.67	91.29
1.29	100.00	93.00	91.54
1.30	100.00	93.33	91.79
1.31	100.00	93.67	92.03
1.32	100.00	94.00	92.27
1.33	100.00	94.33	92.51
1.34	100.00	94.67	92.75
1.35	100.00	95.00	92.98
1.36	100.00	95.33	93.21
1.37	100.00	95.67	93.44
1.38	100.00	96.00	93.67
1.39	100.00	96.33	93.90
1.40	100.00	96.67	94.12
1.41	100.00	97.00	94.34
1.42	100.00	97.33	94.56
1.43	100.00	97.67	94.77
1.44	100.00	98.00	94.98
1.45	100.00	98.33	95.19
1.46	100.00	98.67	95.40
1.47	100.00	99.00	95.61
1.48	100.00	99.33	95.81
1.49	100.00	99.67	96.01
1.50	100.00	100.00	96.20
1.51	100.00	100.00	96.39
1.52	100.00	100.00	96.58
1.53	100.00	100.00	96.77
1.54	100.00	100.00	96.95

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PERCENT WITHIN LIMITS/PAVEMENT SMOOTHNESS (IRI)

**Table 410-2
 Percent Within Limits**

Quality Index	PWL for Selected Sample Size		
	n = 3	n = 4	n = 5
1.55	100.00	100.00	97.13
1.56	100.00	100.00	97.31
1.57	100.00	100.00	97.48
1.58	100.00	100.00	97.65
1.59	100.00	100.00	97.81
1.60	100.00	100.00	97.97
1.61	100.00	100.00	98.13
1.62	100.00	100.00	98.28
1.63	100.00	100.00	98.43
1.64	100.00	100.00	98.58
1.65	100.00	100.00	98.72
1.66	100.00	100.00	98.85
1.67	100.00	100.00	98.98
1.68	100.00	100.00	99.11
1.69	100.00	100.00	99.23
1.70	100.00	100.00	99.34
1.71	100.00	100.00	99.45
1.72	100.00	100.00	99.55
1.73	100.00	100.00	99.64
1.74	100.00	100.00	99.73
1.75	100.00	100.00	99.81
1.76	100.00	100.00	99.88
1.77	100.00	100.00	99.94
1.78	100.00	100.00	99.98
≥1.79 to 2.65	100.00	100.00	100.00

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

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DESIGN OF ASPHALT MIXTURES-AGGREGATES

Section 400 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added to the fifth sentence of the first paragraph in the bulleted section of **Subsection 404.01 Design of Asphalt Mixtures. (b) Design Requirements:**

- Limestone aggregate will be required as a part of the mix design for this project. The minimum requirement for limestone in the coarse aggregate shall be 20% by weight of the overall amount of the cold feed.

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SPECIAL PROVISION

JOB NO. 040901

PRICE ADJUSTMENT FOR FUEL

A price adjustment clause is included in this Contract to provide additional compensation to the Contractor or a credit to the Department for fluctuations in diesel fuel prices. This price adjustment is dependent upon a change in the average price of fuel which results in an increase or decrease in the price of products utilized on this project. For the purposes of this specification, it is assumed that all fuel used is diesel fuel and that the fuel use factors shown in the table below cover all fuel used in delivery to the plant, production, hauling to the job site, placement, and finishing of the items of work shown.

Payment. Payment will be made to the Contractor for monthly fluctuation in the price of diesel fuel used in performing the applicable items as listed in the table below when the diesel fuel price fluctuates from the base price defined below. Payments may be positive, negative, or nonexistent depending on the circumstances. Payments or deductions for the fuel price adjustment will be included in the Contractor's current estimates, and the payment or deduction authorized for each estimate will be based upon the quantities for applicable items of work. Subcontracts should include the payment or deduction of fuel price adjustments on pay items listed in the table below when those items are included in a subcontract.

The Fuel Price Adjustment will be a dollar amount paid as compensation to the Contractor, or as a credit to the Department as reflected on the Current (or Final) Estimate Summary Report as Payment Adjustments.

Fuel Price Adjustment (FPA). The Fuel Price Adjustment (FPA) for the current estimate will be computed according to the following formula:

$$FPA = Q \times F \times D$$

Where

- FPA = Fuel price adjustment, in dollars;
- Q = Quantities paid for the applicable items on the current estimate,
- F = The Fuel Use Factor for the applicable items of work subject to this price adjustment, as listed in the table below,
- D = Allowable price differential, in dollars.

The above formula will be applied to each individual payment of the applicable item. When the Current (or Final) estimate is generated, the sum of these individual adjustments will be included as a Payment Adjustment.

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PRICE ADJUSTMENT FOR FUEL

Fuel Use Factors		
Item of Work	Specification Numbers	Fuel Use Factor Per Unit
Earthwork: (Unclassified Excavation, Compacted Embankment, Selected Material)	210,302	0.34 gal./C.Y.
Soil Stabilization	Special Provision	2.28 gal./ton
Shaping: (Shaping Roadway Section, Subgrade Preparation, Trenching and Shoulder Preparation, Scarifying and Recompacting Shoulders)	213,214,215,216	2.52 gal./Station
Base Course and Stone: (Stone Backfill, Aggregate Base Course, Soil Aggregate in Cement Treated Base Course, Aggregate in Cement Stabilized Crushed Stone Base Course, Mineral Aggregate in Asphalt Surface Treatment)	207,303,307,308,309,310,402	0.54 gal./ton
ACHM Paving: (ACHM Base Course, ACHM Binder Course, ACHM Surface Course, Open Graded Asphalt Base Course)	405,406,407,417	2.36 gal./ton
Ultra Thin Bonded Wearing Course (All Types)	Special Provision	2.18 gal./ton
Milling: (Cold Milling Asphalt Pavement, Grinding Portland Cement Concrete Pavement)	412, 510	0.18 gal./S.Y.
PCC Paving: (Portland Cement Concrete Base, Open Graded Portland Cement Concrete Base, Portland Cement Concrete Pavement, High Early Strength Concrete Pavement, Continuously Reinforced Concrete Pavement, Portland Cement Concrete Driveway)	309, 310,501,503,505	0.44 gal./S.Y.
Structural Concrete (Approach Slabs, Approach Gutters, Class B Concrete-Bridge, Class S Concrete-Bridge, Class S(AE) Concrete-Bridge, Seal Concrete-Bridge, Class A Concrete-Roadway, Class S Concrete-Roadway)	504, 802	1.75 gal./C.Y.
Flatwork: (Concrete Ditch Paving, Concrete Islands, Concrete Walks, Wheelchair Ramps)	605,632,633,641	0.30 gal./S.Y.

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PRICE ADJUSTMENT FOR FUEL

When the units of measure in this contract for the items of work listed in the table do not correspond with the units shown in the table (i.e. Asphalt Concrete paid by the square yard, etc.), those items will not be subject to the terms of this special provision or any fuel price adjustment.

The allowable price differential, "D", for the current estimate will be computed according to the following formula:

$$D = P - P(b)$$

P, the current fuel price in dollars per gallon, is the Monthly Fuel Price Index for the month in which the payment entry is entered.

P(b), the fuel base price in dollars per gallon, is the Monthly Fuel Price Index for the month in which the bids for the work were received.

Fuel Price Index Determination. The Monthly Fuel Price Index will be determined by using the On-Highway retail price for No. 2 Diesel Fuel – ULS (Ultra Low Sulfur), as listed for the US Gulf Coast region on the U.S. Energy Information Administration's website. The value used will be that for either the closest Monday prior to the first calendar day of the index month or the first calendar day of the index month, if that is a Monday.

<https://www.eia.gov/opendata/qb.php?sdid=PET.EMD EPD2DXL0 PTE R30 DPG.W>

Supplemental Items Subject to Adjustment. Items included in the contract that are listed in the table above are subject to adjustment in accordance with this provision, regardless of any amount of overrun to the plan quantity. Any new items of work added to the Contract by supplemental agreement that are listed in the table above will be subject to the fuel price adjustments in accordance with this provision. The base fuel price, P(b), for any newly added eligible items will be the same P(b) as the eligible items in the Contract, and the new unit price established by supplemental agreement will be determined accordingly.

Viewing Fuel Price Index. Historical fuel price index values will be available in the "Asphalt Binder Index Report" document located on the ARDOT website under Fuel Price Information at <https://ardot.gov/divisions/construction/construction-information/>.

Opt Out Option. The Contractor, at its own discretion, can choose to opt out of the adjustments for fuel prices determined by this special provision. If the Contractor wishes to utilize this option, an authorized representative of the firm must sign the form on Page 4 of this special provision and submit it to the Department at PMD@ardot.gov prior to the time and date of the bid letting for this project. This representative must currently be listed with the Department as an officer approved to sign contracts in the firm's name.

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SPECIAL PROVISION

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PRICE ADJUSTMENT FOR FUEL

OPT OUT OF PRICE ADJUSTMENTS TO FUEL

As an authorized representative of this company, I hereby choose the option to opt out of the price adjustments for fuel for all pay items allowable by this special provision for this contract. By signature of this form, my firm waives all payment adjustments for fuel indexing for the duration of this project and waives any subsequent appeals for additional compensation for fuel price fluctuations.

This action only applies to the construction contract for the job number listed in the header of this document.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

Company Name: _____

NOTE: To opt out, this completed form must be submitted to the Department at PMD@ardot.gov prior to the time and date of the bid letting for this project.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT

Section 409.03(h) of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following bullet is added under detailed requirements:

- Broadband Internet Service shall be provided.

The Broadband Internet Service shall be provided with an Internet Protocol (IP) address which is reachable on the global Internet (public) and which is permanently assigned (static). The Contractor is not required to provide this service if an IP address which is both static and public is not available.

If this service is not available at the beginning of a project but becomes available during the life of the project, the Contractor shall provide the service immediately from the date of availability.

The data transfer rate shall be 3 megabits per second (Mbps) download and 500 kilobits per second (kbps) upload, or higher, with latency not to exceed 150 milliseconds. If the Broadband Internet Service meets all of the requirements of this specification except for the data transfer rate and/or latency, then the best performing available connection shall be provided.

Prior to the selection of the Broadband Internet Service provider, the Contractor shall submit to the Resident Engineer, in writing, the proposed method for providing Broadband Internet Service. The Resident Engineer shall review this submittal and respond in writing regarding the acceptability of the proposed method.

The Broadband Internet Service shall be provided with equipment providing one Ethernet port.

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JOB NO. 040901

WARM MIX ASPHALT

DESCRIPTION: The Department will allow the use of Warm Mix Asphalt (WMA). All provisions for the production and placement of conventional HMA mixtures as stipulated in Section 410 Construction Requirements and Acceptance of Asphalt Concrete Plant Mix Courses of the Standard Specifications for Highway Construction, Edition 2014, are applicable except as noted below.

Section 410 Construction Requirements and Acceptance of Asphalt Concrete Plant Mix Courses of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Section 410.03: Replace the third sentence with “WMA production temperatures at the plant shall be according to the Contractor’s approved mix design but may be adjusted based on recommendations of the WMA additive/process manufacturer.”

Add the following paragraph: “Implementation of best management practices in the control of aggregate moisture content prior to introduction to the drying or mixing drum is highly recommended in order to achieve the maximum benefit of WMA technology.”

Section 410.07: Replace the last sentence of the first paragraph with “Spreading and finishing temperatures shall be according to the Contractor’s approved mix design, but in no case shall the WMA be placed at a temperature less than 220° F.”

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

LONGITUDINAL TINING

Section 501, Portland Cement Concrete Pavement, of the Standard Specifications, Edition of 2014, is hereby expanded as follows:

Subsection 501.05(k)(5), Final Finish, is expanded to include the following:

The final finish shall be produced by using the drag finish as previously described with the further application of a metal tine finishing device. Tining shall produce grooves of $\frac{1}{8}$ " wide, by $\frac{1}{8}$ " deep, spaced $\frac{3}{4}$ " on center and parallel to the longitudinal joint. Longitudinal tining shall stop at the edge of the travel lanes. The metal tining device shall be operated by an approved mechanical means, and shall be maintained clean and free from encrusted mortar and debris to ensure uniform groove dimensions. The tining finish shall not be performed too early whereby the grooves may close up.

The tining grooves shall be neat in appearance, parallel with the longitudinal joint without noticeable wander, overlap, or wave pattern; uniform in depth and in accordance with these specifications. Grooves must exhibit no slumping of the groove edges or severe tearing of the concrete surface. Any time that the tining grooves do not meet these requirements, the concrete paving operation shall be immediately stopped and will not resume until the problem has been resolved.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

**CLASS C FLY ASH IN PORTLAND CEMENT CONCRETE PAVEMENT
AND CLASS S(AE) CONCRETE**

The following is added as the last paragraph of Subsections 501.04(a) and 802.06(a):

If the contractor elects to use Class C fly ash as a partial replacement for cement in Portland Cement Concrete Pavement or in Class S(AE) concrete and the plant producing the fly ash uses powdered activated carbon to meet EPA mercury emission requirements (as indicated in the Qualified Products List), an increased frequency for contractor quality control testing for air content will be required. As a minimum, an air content test must be taken at the beginning of placement and at intervals during placement not to exceed 20 cubic yards for Class S(AE) concrete and 100 cubic yards for Portland Cement Concrete Pavement. The Engineer may require more frequent testing if wide ranges occur in the air content test results. No additional payment will be made for additional air content testing, but full compensation will be considered included in the contract unit prices bid for Portland Cement Concrete Pavement or Class S(AE) Concrete.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****REACTIVE AGGREGATE TESTING**

Division 500 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 501.02(a) is hereby deleted and the following substituted therefor:

(a) Cement. Unless otherwise specified, Portland cement conforming to the requirements of AASHTO M 85, Type I shall be furnished. One of the following blended cements may be used in lieu of Type I:

- Portland-Pozzolan Cement, AASHTO M 240, Type IP (20% maximum)
- Slag-Modified Portland Cement, AAHTO M 240, Type IS (25% maximum)
- Portland - Limestone Cement, AASHTO M240, Type 1L. Type 1L shall have a limestone constituent greater than 5% and less than or equal to 15% by mass of blended cement.

Fly ash or slag cement shall not be substituted for blended cements. Cement, blended cement, fly ash, and slag cement shall be from sources that are listed on the Department's Qualified Products List and that have executed a certification agreement with the Department.

The total alkalis in the Portland cement ($\text{Na}_2\text{O} + 0.658 \text{K}_2\text{O}$) shall not exceed 0.60%. The total alkali content in the cementitious material (Portland cement, Portland – Limestone cement, fly ash or slag cement) shall not exceed 4 lb/cu yd (2.4 kg/cu m).

Fine and coarse aggregates to be used in the PCC on this project shall be tested and evaluated by the Contractor for alkali-aggregate reactivity in accordance with both ASTM C1260 and ASTM C1567. Tests must be representative of aggregate sources which will be providing material for production. ASTM C1260 and ASTM C1567 tests may be run concurrently. A minimum of 10 business days prior to the start of PCC pavement construction, the contractor shall submit certified test reports to the Engineer for approval. The certified test reports shall be from an independent testing laboratory and must have been completed within 6 months of the date of the concrete mix design submittal.

Coarse aggregates and fine aggregates shall be tested separately in accordance with ASTM C1260, however the length of the test shall be extended to 28 days (30 days from casting). The 28-day expansion of the individual aggregates shall each be $\leq 0.10\%$.

If the 28-day expansion is greater than 0.10% for any of the component aggregates, the Contractor shall find a new material source which meets the above requirement or, alternately, may test the combined coarse and fine aggregate in accordance with ASTM C1567, modified for

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****REACTIVE AGGREGATE TESTING**

combined aggregates, using the proposed mixture design proportions of aggregates, cementitious materials, and/or specific reactivity reducing chemicals. If the expansion does not exceed 0.10% at 28 days, the proposed combined materials will be accepted. If the expansion is greater than 0.10% at 28 days, the aggregates will not be accepted unless adjustments to the combined materials can reduce the expansion to less than 0.10% at 28 days, or new aggregates shall be evaluated and tested.

Cement shall be furnished in bulk. The mixing or alternate use of cement from different manufacturing plants will not be permitted. The source of cement shall not be changed without the written approval of the Engineer. The use of cement salvaged from spillage will not be allowed. Cement placed in storage shall be suitably protected. Loss in quality occurring during the storage period will be cause for rejection. If the cement furnished produces erratic results under the field conditions incident to the placing of the concrete, or in regard to the strength of the finished product, or in the time of the initial or final set, the contractor shall, without notice from the Engineer, cease the use of the source of cement.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB NO. 040901
PCC PAVEMENT SURFACE SMOOTHNESS (IRI)

This Special Provision supersedes Subsection 501.05(m) and 501.12 of the Standard Specifications.

Description. It is the intent of this specification to produce a pavement that is durable and consistently exceeds the minimum test values in these specifications. The pavement surface smoothness and associated payment adjustments will be determined by the use of the Inertial Profiler (IP) and the International Roughness Index (IRI). Pavement smoothness will be determined for each lane by obtaining the IRI for the left and right wheel paths in an individual lane. The averaged IRI values will be used to determine areas requiring correction and/or applicable payment price adjustments.

Equipment and Operator. The Contractor shall furnish a properly calibrated and documented Inertial Profiler (IP) capable of exporting raw profile data in an unfiltered ERD file format or an approved ADF file format. The IP shall also produce a profilogram (profile trace of the surface tested). The IP shall conform to the Class I requirements of the most recent revision of ASTM E950.

Profile analysis for determination of IRI and areas of localized roughness will be conducted using ProVAL version 3.6 or the most recent version of ProVAL Software. IRI values shall be reported in inches/mile (in/mi).

For all projects let to contract after October 1, 2025, both the technician performing pavement profiling operations for the Contractor and the profilometer used shall be certified in Inertial Profiling through the CTPP program at the University of Arkansas.

Pavement Surface Testing. In the presence of the Engineer, the Contractor shall setup a test section to calibrate the distance sensor and check the profile system calibration before each day's testing. Unless otherwise authorized by the Engineer, all smoothness testing shall be performed in the presence of the Engineer or his/her designated representative using the manufacturer's calibration procedures.

The Contractor shall remove all objects and foreign material on the pavement surface prior to surface evaluation. The Contractor will be responsible for all traffic control associated with testing and any corrective work (when applicable) that is required of the final pavement surface.

The IP shall be run in the final design direction of traffic. Profiles shall be measured in the left and right wheel paths of each lane. Each lane's wheel path shall be tested and evaluated separately. The Engineer shall determine the length in miles for each main lane of traffic. The IP shall be operated at the optimum speed as defined by the manufacturer.

The Engineer will verify the profiles by testing approximately 10% of the pavement. This testing will be performed by the Engineer, using either the IP furnished by the Contractor or one provided by the Department, at the option of the Engineer.

If the IP is furnished by the Contractor, the Contractor may elect to allow their employee to drive the IP, but the sensors and data collection systems will be operated by the Engineer's representative during each of the verification runs.

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For the first day's run, profiles will be taken utilizing the IP as soon as the hardness of the concrete is sufficient for proper testing. Smoothness profiles of the first day's run will be analyzed before the second day's run commences. Should the day's run exceed an IRI of 75 inch/mile the paving operations shall be discontinued until better methods and equipment are obtained or until the present equipment is properly adjusted. If adjustments are necessary from the first day's run, the second day's run will be profiled to determine the ability of the equipment to finish the pavement within specified tolerance. If the second day's operation fails to produce a finished surface IRI of 75 inch/mile or less, the contractor shall produce new methods and/or equipment that will obtain the specified results. The new methods and/or equipment will be given trial runs as indicated previously for original equipment. The finished pavement surface will be measured for roughness by the Contractor. Roughness will be measured using an IP. The profiler manufacturer's data collection setting specifications shall be furnished and approved by the Engineer. The IRI shall not exceed 85 inches per mile per 0.1-mile section (1.60m per km per 0.8 km section). Bridges will not be included in the calculation of the IRI.

Areas of localized roughness will be identified using the ProVAL "Smoothness Assurance" analysis, calculating IRI with a short continuous segment length of 25 ft. (7.62 m), the 250 mm filter applied, and a short continuous threshold of 150 in/mi, and for design speeds above 45 mph. For design speeds of 45 mph or below, a threshold of 170 in/mi shall be used. Design speeds are listed in Design Traffic Data on the title sheet of the plans. The longitudinal limits of corrective work shall be taken from the ProVAL "Grinding" section within the "Smoothness Assurance" analysis, using the "Default Grinding Strategy" option and corrective grinding shall be performed as specified below. The finished surface of 25' (7.5 m) sections adjacent to an existing structure or the end of pavement shall not show surface deviations in excess of 1/8" (3 mm) in 10' (3 m) with the approved inertial profiler.

For the duration of the work, every reasonable effort shall be made to test smoothness within 5 working days after each day's paving operation. Scheduling and testing shall be coordinated with the Engineer. The Engineer and the Contractor shall mutually agree upon scheduling of smoothness testing. All data obtained from the profiling operations will be furnished to the Engineer at the end of each day's profiling operations.

All corrective work and material necessary to correct surface tolerance deficiencies for surface courses shall be at no cost to the Department.

Furnishing the IP, taking all required profiles, and performing all necessary computations will not be measured and paid for separately but will be considered as part of quality control and acceptance sampling and testing included in the bid items for the PCCP items.

Areas showing low spots of more than 1/4" (6 mm) in 10' (3 m) in the longitudinal direction shall be corrected by grinding or shall be removed and replaced according to Section 507 to an elevation that will not show surface deviations in excess of 1/8" (3 mm) in 10' (3 m).

The cross slope of the pavement shall vary no more than 1/8" (3mm) in 10' (3 m) when tested with a straight edge.

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Any longitudinal joints within the limits of a travel lane shall be uniform to a degree that no depressions or high spots greater than 1/4" (6 mm) in 10' (3 m) are present when tested with a straightedge placed perpendicular to the centerline of the lane.

Grinding shall be performed, if necessary, to reduce the IRI as determined by the Smoothness Assurance analysis in ProVAL. The grinding equipment shall be power driven and specifically designed to smooth and texture PCC by means of diamond blades. Areas that have been ground shall be re-grooved by grooving according to Subsection 510.04, to provide a uniform texture equal in roughness to the surrounding unground pavement. The grinding process shall produce pavement surface that is true to grade and uniform in appearance with a longitudinal line type texture. The line type texture shall contain parallel longitudinal corrugations that present a narrow ridge corduroy type of appearance. The peaks of the rides shall be approximately 1/32" (0.8mm) higher than the bottoms of the grooves with approximately 53 to 57 evenly spaced grooves per foot (170 to 190 evenly spaced grooves per meter).

However, if the ground area is less than 50' (15 m) in length and full width of pavement lane, re-grooving will not be required.

After the areas of localized roughness have been identified and grinding has taken place, the smoothness of the pavement shall be measured again to determine if the pavement has met the smoothness requirements for 100% pay. If grinding of localized roughness is required as described previously, incentives will not be allowed on that section, but the Contractor can receive a maximum of 100% pay. Continual production of a final surface not qualifying for 100% payment will not be allowed.

The averaged IRI values will be used to determine payment adjustments. The right and left wheel path readings will be averaged for every point read during the 528' lane segment. Areas less than 0.1 mile (200 m) shall be combined with a full 0.1-mile segment before profiling. Then the left and right averaged wheel path points will be averaged to obtain an IRI value for the lane segment.

For isolated areas that are not connected to adjacent paved areas, a 10' rolling straightedge will be used to determine areas of localized roughness, following the method specified in Subsection 410.09(b)(2) of the Standard Specifications for Highway Construction, 2014 Edition. The 10' rolling straightedge will also be used to determine areas of localized roughness on transverse joints, construction joints, bridge ends, and any other area designated by the Engineer.

Submittals. The Contractor shall submit the printed profile trace (graphical trace) signed by the operator, indicating each segment's averaged IRI value at the end of each day's profiling operations.

The Contractor shall also submit electronic files, with the printed profile trace, in ERD and ADF format that represent the raw data from each pass. The electronic file names shall follow the standardized format shown in the following.

YYMMDD-J-T-N-D-L-W-S

Where:

YY=Two-digit year
MM=Month (including leading zeros)
DD=Day of Month (including leading zeros)

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J=the Department Job Number
 T=Route Type (I, AR, US, etc.)
 N=Route Number (no leading zeros) and auxiliary ID (if applicable, i.e. E, W)
 D=Primary route direction (I or D, indicating Increasing or Decreasing; Increasing = North or East, Decreasing = South or West)
 L=Lane number (1 for driving lane, increasing by one for each lane to the left)
 W=Wheel path (L (left), R (right), or B (both))
 S=Beginning Station

Pavement smoothness within each wheel path will be measured in terms of IRI (in/mi) according to the Pavement Surface Testing section above. Price adjustments apply to the total area for the lane width represented by the profile index for a continuous main lane section at least 0.1 mile (200 m) long. Price adjustments for incentives are only based on the initial measured profile index of continuous sections of at least 0.1 mile (200 m) in length, excluding bridges, and before any corrective work; however, grinding will be allowed to achieve 100% full payment in lieu of accepting a disincentive for that section. Ramps, acceleration/deceleration lanes, shoulders, islands, tapers, or other incidentals shall not be considered for price adjustments. If grinding is required due to failure to meet the required profile index, the pavement will be ground to a level which qualifies for 100% payment. The IRI will be used to determine acceptance for Pavement smoothness and price adjustments for each 0.1 mile segment.

Price Adjustments for Pavement Smoothness. Incentive payments will be shown on the final estimate as a separate item. Price adjustments apply to the total area of final surface for the standard lane width represented by the IRI for a continuous main lane section at least 0.1 mile (200 m) in length. Areas less than 0.1 mile (200 m) shall be combined with a full 0.1mile segment. Any area less than 0.1 mile (200 m) shall be authorized by the Engineer prior to the profiling activities. Incentives will be calculated based on the following guidelines.

No incentive payment for smoothness will be considered for a Ride Smoothness Lot if any portion of that Ride smoothness Lot has been ground to obtain the required smoothness. If grinding of localized roughness is required as described previously, incentives will not be allowed on that section, but the Contractor can receive a maximum of 100% pay. If grinding is required due to failure to meet the required IRI, the pavement will be ground to a level which qualifies for 100% payment.

INTERNATIONAL ROUGHNESS INDEX		PRICE ADJUSTMENT % of payment of Unit Bit Price
in/mi/0.1Mi	mm/km/200 m section	
60 or less	940 or less	+6.0%
Over 60 to 65	Over 940 to 1025	+4.0%
Over 65 to 70	Over 1025 to 1100	+2.0%
Over 70 to 75	Over 1100 to 1180	0
Over 75 to 80	Over 1180 to 1260	-2.0%
Over 80 to 85	Over 1260 to 1340	-4.0%
Over 85	Over 1340	CORRECTIVE WORK REQUIRED

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SPECIAL PROVISION

JOB NO. 040901

BROADBAND INTERNET SERVICE FOR FIELD OFFICE

Section 602 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added after the first paragraph of **Subsection 602.02(b)**:

Broadband Internet Service shall be provided to the field office where available.

The Broadband Internet Service shall be provided with an Internet Protocol (IP) address which is reachable on the global Internet (public) and which is permanently assigned (static). The Contractor is not required to provide this service if an IP address which is both static and public is not available.

If this service is not available at the beginning of a project but becomes available during the life of the project, the Contractor shall provide the service immediately from the date of availability.

The data transfer rate shall be 200 megabits per second (Mbps) download and 20Mbps upload, or higher, with latency not to exceed 150 milliseconds. If the broadband Internet service meets all of the requirements of this specification except for the data transfer rate and/or latency, then the best performing available connection shall be provided.

Prior to the selection of the broadband Internet service provider, the Contractor shall submit to the Resident Engineer, in writing, the proposed method for providing broadband Internet service. The Resident Engineer shall review this submittal and respond in writing regarding the acceptability of the proposed method.

The Broadband Internet Service shall be provided with equipment providing one Ethernet port.

Arkansas Department of Transportation

Special Provision

Maintenance of Traffic

This document will be provided once this project has been officially advertised.

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SPECIAL PROVISION

JOB NO. 040901

TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES LEFT IN PLACE

This Special Provision shall be supplementary to Section 604, Traffic Control Devices in Construction Zones, of the Standard Specifications, Edition of 2014.

MATERIALS. Signs, Barricades, and Traffic Drums Left in Place shall be classified as "acceptable" in accordance with Section 604.02, Materials, at the completion of the project. Signs, Barricades, and Traffic Drums shall meet the requirements of Section 604.

METHOD OF MEASUREMENT. Signs, Barricades, and Traffic Drums and shall be measured as provided in Section 604.

BASIS OF PAYMENT. Signs Left in Place, Barricades Left in Place, and Traffic Drums Left in Place completed and accepted and measured as provided above will be paid for at the contract unit price bid for these items and shall be full compensation for all materials, labor, tools, equipment, and incidentals necessary for installation, maintenance, repair, and leaving in place upon completion of work.

Payment will be made under:

Pay Item	Pay Unit
Signs Left in Place	Square Foot (Square Meter)
Barricades Left in Place	Linear Foot (Meter)
Traffic Drums Left in Place	Each

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SPECIAL PROVISION

JOB NO. 040901

FURNISHING, INSTALLING AND LEAVING IN PLACE PRECAST CONCRETE BARRIER WALL

DESCRIPTION: This item shall consist of furnishing, installing and leaving in place precast concrete barrier in accordance with these specifications and at the locations shown on the plans or directed by the Engineer.

MATERIALS: Materials for precast concrete barrier shall meet the requirements of Subsection 604.02(c) of the Standard Specifications, Edition of 2014.

CONSTRUCTION REQUIREMENTS: Precast concrete barrier shall be installed at the locations shown on the plans or as directed by the Engineer. Installation shall be in accordance with the details shown on Standard Drawing TC-4 and TC-5.

Used precast concrete barrier units may be utilized. Used units shall be inspected by the Engineer prior to installation and shall be cleaned and repaired as directed. Any damage to the units during installation shall be repaired as directed.

METHOD OF MEASUREMENT: Furnishing, Installing and Leaving in Place Precast Concrete Barrier will be measured by the Linear Foot.

BASIS OF PAYMENT: Work completed and accepted under this item and measured as provided above will be paid for at the contract unit price bid per linear foot for Furnishing, Installing and Leaving in Place Precast Concrete Barrier, which price shall be full compensation for furnishing all materials, labor, tools, equipment and incidentals necessary for furnishing, repairing, and installing the precast concrete barrier.

Payment will be made under:

Pay Item	Pay Unit
Furnishing, Installing and Leaving In Place Precast Concrete Barrier	Lin. Ft.

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JOB NO. 040901

CONSTRUCTION PROJECT INFORMATION SIGN

DESCRIPTION: This project includes Construction Project Information Signs to inform the public of pertinent job information. Included in this information is the job number, start date, and estimated completion date. Additional information to be included on this sign can be viewed on the special detail in the plans. Location and quantity of signs for this project is located in the Maintenance of Traffic Details.

MATERIALS: All materials incorporated into the project for this sign shall conform to the specifications pertaining to Signs in Section 604 in the Standard Specifications for Highway Construction and appropriate supplemental specifications. The numerals and letters for both date fields may be placed on separate sign blank material that can then be attached to the larger sign blank or be furnished as sections of reflective sheeting that can be used to overlay a revised date. The dimensions of the letters and numbers shall match the sizes shown in the project's special detail. The sign blank material and reflective sheeting used for the date fields shall be the same types used for the overall sign.

CONSTRUCTION REQUIREMENTS: The start date shown on the sign shall be either the date that work began on an active project or the month during which the Contractor plans to begin work on a new project. The initial estimated completion date to be placed on the sign will be either the completion date shown in the project's CPM schedule or a date based on information provided by the Contractor and agreed to by the Engineer. The Contractor will be required to update the sign's estimated completion date information, Month and/or Year, if and where directed by the Engineer throughout the duration of the project.

The Construction Project Information Sign shall be installed at the same time when all other advanced warning signs are installed on the project. The Contractor will have five (5) business days from the time the Engineer informs the Contractor to update the Estimated Completion Date on the Construction Project Information Sign. Failure to change the date on the sign after five (5) days may lead to the holding of pay estimates until the dates are updated.

METHOD OF MEASUREMENT: Construction Project Information Sign will be measured by the square foot of sign area and will be paid under the contract item "Signs". Construction Project Information Sign Update will be measured by the each, which shall consist of updating the Month and/or Year. Updates that require a change in both the month and year will not be treated separately and shall be paid as a quantity of one (1) each.

PAYMENT: Construction Project Information Sign. The contract unit price bid per square foot for Signs shall be full compensation for all materials, labor, equipment, tools, and incidentals necessary for installing, and for maintenance, repair, and removal of the Construction Project Information Signs.

CONSTRUCTION PROJECT INFORMATION SIGN UPDATE. The contract unit price bid for this item shall be full compensation for furnishing and installing the overlay or sign blank insert for updating the Estimated Completion Date, for all materials, labor, equipment, tools, and incidentals necessary for installing and maintaining the date field on the sign. This item will be

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CONSTRUCTION PROJECT INFORMATION SIGN

paid each time the Resident Engineer requests an updated date be installed on the Construction Project Information Sign.

Payment will be made under:

Pay Item	Pay Unit
Construction Project Information Sign Update	Each

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JOB NO. 040901

CONCRETE DITCH PAVING

Subsection 605.02: Delete the last sentence of the first paragraph and replace with the following:

The Department will perform all acceptance sampling and testing at the frequencies shown for Contractor acceptance testing in Subsection 802.06 except the standard lot size for acceptance of slump, air content, and compressive strength of concrete will be 2000 cubic yards (1500 cubic meters) of mix, with each standard lot divided into four sublots of 500 cubic yards (375 cubic meters).

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SPECIAL PROVISION

JOB NO. 040901

CULVERT CLEAN OUT

DESCRIPTION: This item shall consist of the removal and disposal of any obstructions impeding the natural flow of water through Pipe Culverts or Box Culverts at locations shown on the plans or as designated by the Engineer.

CONSTRUCTION METHODS: The Contractor shall remove and dispose of all obstructions to culverts shown on the plans or designated by the Engineer by any method approved by the Engineer. The Contractor shall remove the obstructions without damaging the existing culvert. Any damage to the existing culvert resulting from the Contractor's operation of clean-out will be repaired by the Contractor at no cost to the State. The material removed by the Contractor from the culverts shall be disposed of at a site approved by the Engineer.

METHOD OF MEASUREMENT: Culvert clean out will be measured by the each for each location of culvert shown on the plans or as designated by the Engineer to be cleaned out. Regardless of the number of pipes the existing pipe culvert has, the measurement shall be by the each for that particular location.

BASIS OF PAYMENT: Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per each for "Culvert Clean Out", which price shall be full compensation for the removal and disposal of any obstructions, and for all equipment, tools, labor, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Culvert Clean Out	Each

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

PLASTIC PIPE

Section 606 Pipe Culverts of the Standard Specifications for Highway Construction, Edition of 2014, is hereby expanded to include the following:

Subsection 606.02(d)(1) is hereby deleted and the following is substituted therefore:

(1) Polyethylene Pipe. The manufacture and furnishing of high density polyethylene pipe ranging in diameter from 18" (450mm) minimum to 48" (1200mm) maximum shall be according to AASHTO M 294, Type S. Polyethylene pipe shall have a corrugated outer shell with an essentially smooth wall waterway. Couplings and fittings supplied or recommended by the pipe manufacturer shall be used.

Subsection 606.02(d)(2) is hereby deleted and the following is substituted therefore:

(2) PVC Pipe. The manufacture and furnishing of PVC pipe ranging in diameter from 18" (450mm) minimum to 36" (900mm) maximum shall be according to ASTM F949, Cell Classification 12454. PVC pipe shall have annular or helical projections or ribs on the outer surface and an essentially smooth wall waterway. Couplings and fittings supplied or recommended by the pipe manufacturer shall be used.

The following is added as Subsection 606.02(d)(3):

(3) Polypropylene Pipe. The manufacture and furnishing of polypropylene pipe ranging in diameter from 18" (450mm) minimum to 60" (1500mm) maximum shall be according to AASHTO M330, Type S Polypropylene pipe shall have a corrugated outer shell with an essentially smooth wall waterway. Couplings and fittings supplied or recommended by the pipe manufacturer shall be used.

Subsection 606.02(k) is hereby deleted and the following is substituted therefore:

(k) Structural Bedding and Structural Backfill for Plastic Pipe Culverts shall meet the requirements for the material shown in the Plans and shall meet the requirements as shown in Subsection 302.02 of these Specifications except that the maximum particle size shall be 1" (25.4mm) for Structural Bedding and 1½" (37.5mm) for Structural Backfill.

Subsection 606.03.(a) second paragraph is hereby deleted and the following is substituted therefore:

Pipe culverts under the roadbed shall be so placed that the minimum depth of cover for pipe of any diameter or type shall be not less than the minimum cover as shown in the Plans, including a minimum of 12" (304.8mm) of pavement and/or base.

The following is added as Subsection 606.03(h):

(h) Acceptance Testing of Installed Polyethylene, PVC, and Polypropylene Pipe. All plastic pipes installed for storm drainage systems shall be tested for acceptance by the Contractor using a method consisting of, but not limited to, the following: electronic deflectometers, video cameras, or go/no-go mandrel. These tests shall be conducted not less than 30 days following installation of the pipe. The Engineer will witness all tests.

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PLASTIC PIPE

At least 10 percent of the total quantity of each size of plastic pipe installed for storm drainage on the project shall be inspected for deformations using one of the approved methods listed above. The Engineer may select the areas to be tested. If the test indicates excessive deflection in the selected length of pipe, the Engineer may require additional lengths of pipe be tested in increments of 10 percent of the total installed length. Any pipes with a reduced diameter of 5 percent of the actual inside pipe diameter shall be removed and re-laid, if undamaged, or replaced with a new pipe at no cost to the Department. Re-laid pipe and new pipe shall be retested at no cost to the Department.

If the mandrel test is selected, a nine-point mandrel with a diameter equal to 95 percent of the nominal diameter of the pipe shall be used. The mandrel shall be of a shape similar to that of a true circle enabling the gauge to pass through a satisfactory pipeline with little or no resistance and shall be designed to prevent tipping from side to side and to prevent debris build-up from occurring between channels of the adjacent fins or legs. Each end of the mandrel shall have fasteners for attaching pulling cables. The mandrel shall have nine various sized fins or legs of appropriate dimensions for various diameter pipes. Each fin or leg shall have a permanent marking that states its designated pipe size. For acceptance testing, the mandrel must pass through the entire section between manholes or other structures in one pass when pulled by hand without the use of excessive force.

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SPECIAL PROVISION

JOB NO. 040901

SETTLEMENT MONITORING

Description. This item shall consist of furnishing, installing, and monitoring of pipe riser settlement monitoring devices (settlement plates) at locations specified on the plans, to monitor magnitude and rate of settlement occurring at a point beneath Rock Fill and compacted embankment (embankment fill) during and subsequent to construction of the embankment fill. The data obtained from these devices are utilized to determine if piling construction can be commenced so that downdrag on piles is negligible. The data will also be used to determine when drainage structures and pavement construction can be commenced such that anticipated long term settlement is mitigated. All surveying and recording of settlement plate data shall be performed by an Arkansas licensed surveyor.

Materials. Components and assembly of settlement plates shall comply with the details illustrated in Attachment 1 of this Special Provision (SP). A settlement plate system shall include a nominal 1-inch-diameter Schedule 40 threaded steel riser pipe attached to a rigid wooden or metal base plate (nominal 24-inch-square) utilizing a threaded steel floor flange and protected with a nominal 3-inch-diameter Schedule 40 PVC sleeve (casing) that is placed over the base plate and centered around the steel riser pipe.

The steel riser pipes, and PVC protective sleeves shall be supplied in standard 5-foot sections, except that the first section of protective sleeve shall be slightly shorter to expose the steel riser pipe for facilitating survey measurement and joining additional pipe sections. The riser pipe sections shall be joined utilizing threaded pipe couplings. The PVC protective sleeve sections shall be joined with unthreaded PVC couplings and shall prevent embankment fill material from coming into contact with the steel riser pipe. A cover is required for the top PVC casing section.

Installation and Monitoring. Fixed benchmarks shall be established well outside the embankment fill area for elevation determination as accepted by the Engineer. Settlement plates shall be installed prior to any embankment fill placement at locations specified in the plans on a firm, level surface that is free of large rocks or clods, and base plate set on 3 inches granular leveling course. The base of settlement plates shall be placed approximately 12 inches below the prepared ground surface for seating purposes. Steel riser pipe shall be plumb. Settlement plates shall be located such that construction traffic in the vicinity is minimal. Adjustment of planned locations due to potential traffic influence or other reasons shall be approved by the Engineer.

Immediately after the first riser pipe section and its top coupling are installed and secured, initial elevation reading shall be established at the top of the first coupling. This is the initial reading on the reference point (defined as the top of the first coupling).

All the riser pipe joints shall be adequately tightened utilizing pipe wrenches. Relative rotation of existing joint components shall be prevented as new sections are added so that length of existing units will not change. Marks can be made on the components of a joint to verify relative rotation has not occurred. Embankment fill over the base plate and around the PVC protection sleeves should be hand compacted to avoid disturbing the settlement plates. Rock Fill (Class 3 Aggregate) should be placed adjacent to riser sections in Rock Fill embankment zones.

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SETTLEMENT MONITORING

Elevation of the settlement plates shall be surveyed at least once a day during construction of the embankment fill, or every other day when construction is not occurring on the embankment fill. More frequent readings may be required by the Engineer. After embankment fill construction is complete to the finished subgrade level, the elevation shall be determined frequently enough to indicate significant changes in the rate of settlement. Normally, the time between surveys shall be twice a week for the first eight (8) weeks immediately after completion of the embankment. The interval between surveys may be increased to one (1) time per week with approval of the Engineer until settlement readings are no longer required. The Contractor shall be responsible for securing settlement plate survey readings. Settlement plate survey readings shall be secured at the same time of day each day by the same surveyor using the same survey equipment. Readings must be secured to the nearest 0.01 foot.

All elevation measurements shall be performed on the top of secured couplings. The length of an added riser pipe unit (riser pipe and its top coupling) shall be determined as the difference in elevations between the tops of two (2) adjacent couplings that are surveyed essentially at the same time (within 30 minutes) without additional fill placement.

As a minimum, data collection for a settlement plate shall include project number, surveyor name, identification and location (Site No. / Bridge No., abutment, station and offset, etc.) of the settlement plate, survey date and time, fill height at the time of survey, and surveyed elevations. Any extreme or unusual events shall also be documented, such as rainstorms, flooding, local blasting, earthquake, etc. Any disturbance to the settlement plate, anomalies to the settlement data and corrective action shall be noted. Settlement plate graphs, expressed as recorded elevation at the reference point (top of the first coupler) versus days elapsed, shall be developed by the Contractor for monitoring settlement. The elevation at the reference point shall be determined by subtracting the accumulated length of added riser pipe units from the surveyed elevation on top of the current riser pipe unit.

Recommended procedures for installation and monitoring of settlement plates are provided in this SP as Attachment 2. A form for recording survey data is also included in this attachment.

Data Interpretation and Piling Commencement. Settlement plate survey readings shall be submitted to the Engineer the same day that readings are secured by the Contractor. The Engineer, or his representative, will be responsible for interpreting the data. Piling and drainage structures installation and pavement construction shall not be commenced until approved by the Engineer. Materials Division and Bridge Division can be consulted for review and interpretation of the data to determine whether consolidation settlement is essentially complete or reduced to a rate such that piling and drainage structures installation and pavement construction can be started. Estimated settlement wait times after completion of embankment construction are shown on the plans. Actual wait times will be determined by the Engineer. Estimated settlement wait periods should be reflected in the Contractor project's bid and baseline CPM schedules.

Disposal. After settlement monitoring is considered complete and further monitoring is not necessary, the riser pipe and protective sleeve shall be cut to a minimum 18 inches below final

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subgrade surface elevation and the area around the abandoned settlement device shall be properly backfilled and compacted with embankment material.

Basis of Payment. Furnishing of materials and components, installation, maintenance, and data collection and analysis for the settlement plates will not be paid for separately but shall be considered subsidiary to the item "Compacted Embankment". Any settlement plate damaged, improperly installed or maintained, or data determined unsuitable by the Engineer shall require the Contractor to replace the settlement plate and establish baseline reference survey readings prior to continuing with embankment fill construction. No separate payment will be made for replacing defective settlement plates or delays caused by unsuitable data.

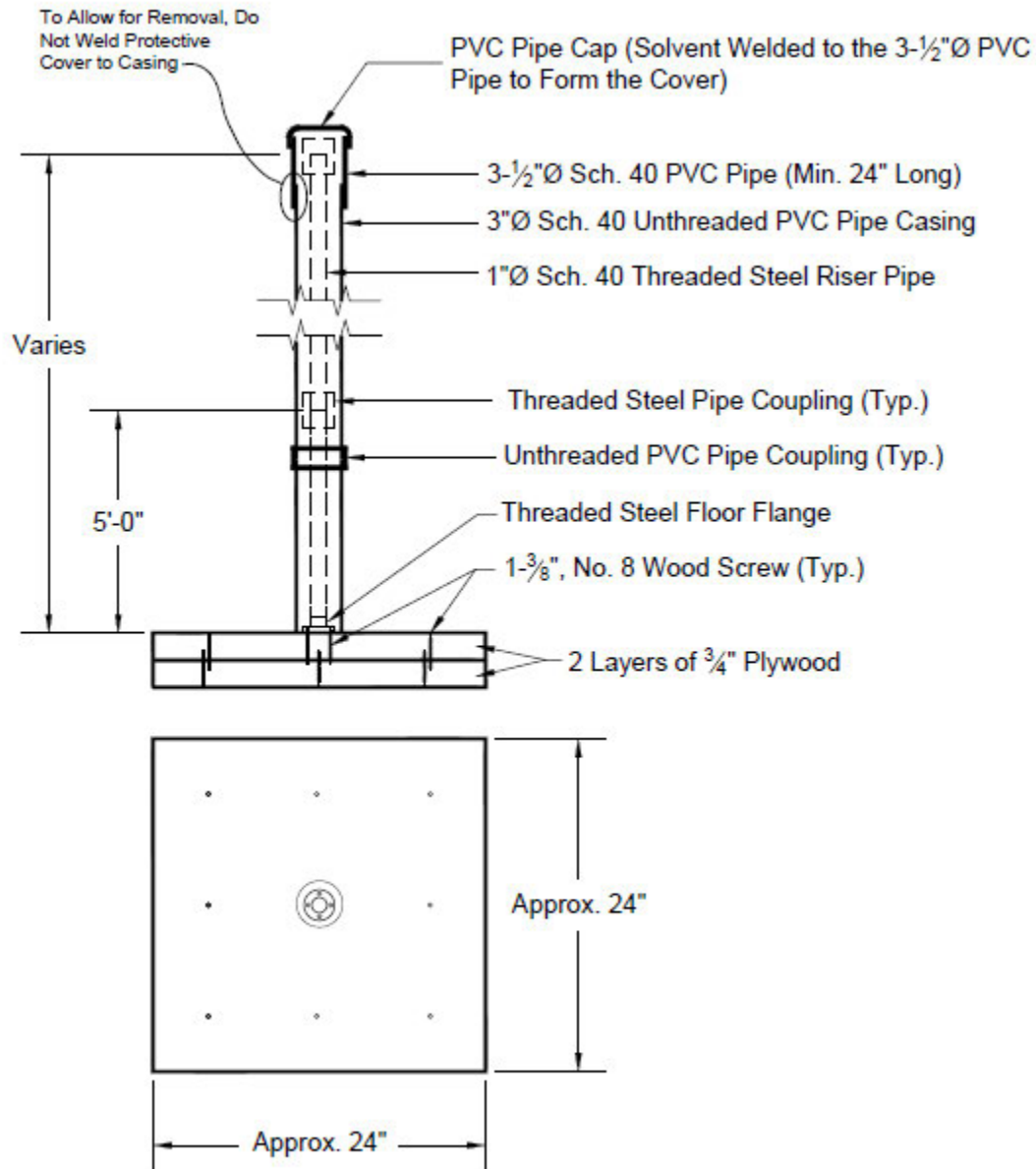
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SETTLEMENT MONITORING

Attachment 1 – Settlement Plate Detail



NOTES:

1. Place base plate on level surface, approximately 12 inches below prepared subgrade surface elevation and hand compact backfill adjacent to PVC.
2. Wooden base plate is shown in this detail due to inexpensive materials and easy installation. Metal base plate, if adequately rigid, is also acceptable.

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Attachment 2 – Recommended Procedures for Settlement Monitoring

Installation:

1. Determine the locations for installing a settlement device by survey. Locations of settlement plates are shown on the plans. If settlement readings are to be continued after completion of the fill, it is imperative that the unit be located outside of the travel way of vehicle or construction equipment. Adjustment of planned settlement plate locations shall be approved by the Engineer.
2. After preparation of the ground surface but prior to placement of any embankment fill material, excavate a pit to the depth of approximately 12 inches below the prepared ground surface elevation at the previously determined location. Prepare a firm, level area for the settlement device at the bottom of the pit and place approximately 3 inches of granular material leveling course.
3. Assemble the settlement device as shown in Attachment 1. Attach a pipe floor flange to the center of the wooden platform with bolts or lag screws. Then screw the first pipe section into the floor flange. Place a pipe coupling on the top of the pipe and tighten all joints in the assembly using pipe wrenches. After the joints are secured, make marks on the joint components to check relative rotation.
4. Slip the first protective sleeve over the riser pipe until it is approximately $2\pm$ inches above the floor flange. The first protective sleeve (approximately 4 feet long) shall be slightly shorter. Place a duct tape or other seal tape to hold the protective sleeve in place. Do not fix the protective sleeve to the base platform or the riser pipe. This protective sleeve is used to absorb the friction between the fill material and the settlement unit and, therefore, must be free to move independently from the wood platform and riser pipe.
5. Firmly seat the settlement device on the prepared area in the bottom of the pit. Then fill and compact by hand using fine embankment material free of large rocks and clods around the settlement device to a depth of approximately 6 inches.
6. Using a spirit level, check to make sure the riser pipe is plumb, then carefully fill the pit with fine embankment material and compact in place.
7. Immediately after the settlement device has been installed and backfilled to existing ground, survey the elevation of the top of the first pipe coupling.
8. Cap the PVC sleeve utilizing the protection cover.
9. Establish flagging / warning signs to alert construction equipment operators.

Settlement Monitoring:

1. Survey the elevation of the top of the riser pipe coupling in accordance with specified frequency and to the specified precision.

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2. During fill placement, sections of riser pipes and protective sleeves will be added. When extending the riser pipe, use the following procedure:
 - a. Remove the PVC cover, survey and record the elevation of the top of the existing coupling.
 - b. Attach a coupling to the new riser pipe section that will be added and tighten the joint with pipe wrenches.
 - c. Insert the added section (with secured top coupling) into the existing coupling and tighten the joint by using one pipe wrench on the existing coupling and one pipe wrench on the added riser pipe section. While tightening the joint, do not allow the existing coupling to turn. Turn only the added length of riser pipe.
 - d. Survey and record the elevation of the top of the new coupling.
 - e. Determine the length of added riser pipe section as the difference between the two elevation readings obtained in Step d and Step a (i.e., elevation on top of new coupling minus elevation on top of existing coupling).
 - f. Add and secure a standard (5 feet) protective sleeve to the existing sleeve. Place the protective cover over the sleeve and reestablish the flagging signs.

Data Collection and Reduction:

Column 1 - Record the reading date.

Column 2 – Survey and record the elevation of the top of the current riser pipe coupling.

Column 3 – Calculate and enter the cumulative length of all the other riser pipe sections in addition to the first pipe section.

Column 4 – Calculate and enter the elevation of the reference point, i.e., top of the first coupling (Column 2 minus Column 3).

Column 5 - Calculate and enter the total settlement to the nearest 0.1 inch. This value is obtained by subtracting the current value in Column 4 (current elevation at the reference point) from the value at the top of Column 4 (initial elevation at the time of installation). Convert from 0.00 feet to 0.0 inches

Column 6 – Record the surveyed elevation at the current surface of embankment fill next to the riser pipe / casing location.

Column 7 – Calculate and record the current height of the embankment fill above original ground to the nearest 0.1 foot.

Column 8 - Record the number of calendar days elapsed since the settlement device was installed. (Day of installation equals Day 1).

Column 9 - Record any information that would be helpful in the analysis of data. Be sure to indicate in this column the date and length added to the riser pipe.

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SETTLEMENT MONITORING

Project:	Plate ID:	Comments:
Location:	Station/Offset:	
	Design Fill Height:	
	Surcharge Height:	

Date	RISER PIPE		Elevation at Reference Point**	Settlement	FILL HEIGHT		Elapsed Time	Remarks
	Top of Riser Pipe Elevation (ft)	Length of Additional Riser Pipe Sections* (ft)			Ground/Fill Surface Elevation (ft)	Fill Above Original Ground (ft)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

*. Cumulative length of all the additional riser pipe sections excluding the first pipe section.

** Reference point is defined as the top of first coupling.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****ITS ELECTRICAL JUNCTION BOX, METALLIC**

DESCRIPTION. This item consists of installing and furnishing a NEMA 4X rated enclosure, of the type specified, for the general purpose of housing hardware, equipment, electronics, electrical conductors, splices, and other appurtenances for electrical power to a structure as shown in the plans or as directed by the Engineer. Each enclosure will include a removable top or removable lid (hinged or tethered) and a gasket material. Enclosure will be installed as per manufacturer's recommendations. Enclosure material and rating is as specified on this special provision and/or plans.

Provide brackets, supports, hangers, fittings, bonding jumpers, grounding systems, and other installation accessories as required.

Conduits entering junction boxes shall be provided with grounding bushings with green-colored machine screw terminal. All conduits shall be bonded together inside each junction box utilizing a minimum 6 AWG stranded copper bonding jumper. Junction boxes nearest each end of a bridge shall be grounded using no. 4/0-19 copper conductors, exothermically welded to the junction box with coal tar epoxy applied around the weld. Exposed ground conductors shall be protected inside a non-ferrous conduit. The ground end of the ground conductor shall be exothermically welded and epoxy tar coated at least two feet underground to a 5/8 inch diameter by 10 feet long copper clad steel ground rod. Per NEC Article 250, achieve a resistance to ground measurement of 25 ohms or less in dry conditions between the grounding electrode and the soil. Measure the ground resistance with an instrument designed specifically to measure and document earth/ground resistance, soil resistance, and current flow. Conduct the test by using the fall-of-potential method as described in the IEEE Standard 142-2007.

MATERIALS. Enclosure shall have the following requirements:

- NEMA 4X rating
- Constructed from stainless steel, or aluminum with minimum thickness of 1/8 inch
- Hinged or removable lid with gaskets, and latches
 - Non-hinged removable lids should be tethered in a manner that does not affect the NEMA rating.
- Lift tab on the lid
- Mounting tabs

METHOD OF MEASUREMENT. NEMA enclosure shall be measured by the unit.

BASIS OF PAYMENT. Work completed, accepted and measured as provided above will be paid for at the contract unit price bid for each enclosure installed; which price shall be full compensation for furnishing equipment, tools, labor and incidentals necessary to complete the work.

Payment will be made under:

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JOB NO. 040901

ITS ELECTRICAL JUNCTION BOX, METALLIC

Pay Item	Pay Unit
ITS ELECTRICAL JUNCTION BOX, METALLIC (___"x___"x___")	Each
ITS FIBER OPTIC JUNCTION BOX, METALLIC (___"x___"x___")	Each

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

WIRE ROPE SAFETY FENCE (WRSF) SPECIFICATIONS

DESCRIPTION: This item shall consist of the construction of a wire rope safety fence (WRSF) in accordance with these specifications and in conformity with the locations, dimensions, lines and grades shown on the plans and in accordance with the manufacturer's recommendation.

GENERAL: The Contractor shall have the option of constructing any of the WRSF systems listed below. The same type WRSF must be used for all safety fences.

Either of the WRSF systems will be acceptable provided that:

1. The basic WRSF geometry, including line and grade, length and limits of the WRSF shall be as shown on the plans.
2. The WRSF described by these specifications shall be a four (4) strand prestretched cable, capable of roadside or median installations as shown in the plans, and shall meet the requirements of the Manual for Assessing Safety Hardware (MASH) for test level 3 conditions on 6:1 or flatter slopes. If FHWA Letters of Eligibility have been obtained by the manufacturer for the WRSF, the manufacturer shall provide the FHWA Letters of Eligibility, with corresponding test results, prior to approval for use.
3. The WRSF End Terminals shall meet the requirements of Manual for Assessing Safety Hardware (MASH) for test level 3. If FHWA Letters of Eligibility have been obtained by the manufacturer for the WRSF, the manufacturer shall provide the FHWA Letters of Eligibility, with corresponding test results, prior to approval for use.

MATERIALS: All materials used in this construction shall comply with the following requirements:

(a) Wire Rope

- (1) The galvanized wire rope shall be ¾" 3 X 7 construction meeting AASHTO M30-92 (2000)/ASTM A741-98 Type 1 Class A coating except as modified below:
- (2) Table 1 Type 1 Breaking Strength Minimum = 39,000 pounds (17.7 tonnes)
- (3) In addition to this provision, the wire rope shall be prestretched during manufacture to exhibit a minimum modulus of elasticity of 11,805,090 pounds/in² after prestretching. Manufacturer shall provide certification that cable was prestretched.

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WIRE ROPE SAFETY FENCE (WRSF) SPECIFICATIONS

(b) Fittings

- (1) Threaded Terminals (**swaged type as shown in the plans**) shall be furnished and may be shop or field swaged (**Note: Other types of connection SHALL NOT be considered**). Threaded terminals shall be Right Hand (RH) or Left Hand (LH) threaded.

The body of the threaded terminal shall provide a minimum of 5.9 inches wire rope engagement depth. Fully fitted ropes shall develop a Minimum Breaking Load (MBL) of 36,800 pounds (16.7 tonnes). Threaded terminals shall be galvanized, after threading, to ASTM A153, or be constructed of stainless steel.

- (2) Turnbuckles shall be of the size and shape as recommended by the manufacturer. One end of the turnbuckle shall be threaded RH and the other end LH to accept threaded rope terminals. Turnbuckles shall be of the solid, closed, or open body type with two (2) inspection holes to determine threaded rope terminal penetration. They shall allow for a minimum of six (6) inches of penetration from each end. Turnbuckles shall develop minimum tensile load without yielding to 36,800 pounds (16.7 tonnes) and shall be galvanized to ASTM A153 after threading, or be constructed of stainless steel.
- (3) Anchor Fittings shall be provided at the anchor terminations of each wire rope. The type and design, into which the wire rope is inserted, shall be as recommended by the manufacturer. The fitting shall insure proper adjustment of the wire rope for proper length and shall develop minimum tensile load of the entire wire rope of 36,800 pounds (16.7 tonnes) without yielding. They shall be capable of release and reuse.

(c) Line Post

- (1) All posts shall be of the size and shape as recommended by the manufacturer and shall be uniformly spaced as to limit the deflection to a maximum 8'-0", but shall not exceed 15'-0" O.C. Posts shall have rounded edges, as a minimum, on the traffic approach side. The socketed version shall be used and shall include a metal sleeve, installed in a concrete foundation, for insertion of the post. All required welding shall be by Certified Welders to AWS D1.1. Posts shall be ASTM A-36, ASTM A-525 or ASTM A1011 SS Grade 36 Type 1 steel galvanized to ASTM A-123, after fabrication, and have a means of holding the wire ropes at design heights.
- (2) All posts shall be furnished with a post cap. The post cap shall be provided with retro-reflective sheeting properly sized to fit each side and meeting **ASTM D4956 Type IV adhesive sheeting**. Sheetting color shall be yellow and provide a **minimum of six (6) square inches of reflective surface per post facing**.

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WIRE ROPE SAFETY FENCE (WRSF) SPECIFICATIONS

- (3) Sockets shall be fabricated from a minimum eleven (11) gauge, hot rolled mild steel with bottom end closed as specified by the manufacturer and galvanized to ASTM A-123, after fabrication. An eight (8) inch diameter foundation reinforcing ring with four (4) inch overlap made from number three (3) deformed rebar shall be furnished for installation in line post concrete foundations as shown in the plans. Or, this reinforcement may be formed as a box shape approximately ten (10) inch diagonal dimension with four (4) inch overlap. Other reinforcement as recommended by the manufacturer shall be provided. Covers shall be installed around the base of each post to protect the socket from dirt and other debris.

(d) Wire Rope Safety Fence (WRSF) End Terminal

- (1) Fabricated anchor components shall be of the size and shape conforming to the manufacturer's recommendations. All posts shall be socket mounted, unless approved by the Engineer, with the sockets set in concrete foundations. The anchor shall be of the type and size specified by the manufacturer for the existing soil conditions encountered. All soils information deemed necessary by the manufacturer shall be provided by the contractor.

(e) Concrete

- (1) All concrete used in the installation of the WRSF shall meet the requirements for **Class S Concrete** in Section 802 of the Standard Specifications, Edition of 2014. If the soils are other than a strong cohesive classification, the manufacturer shall be contacted for recommended installation parameters. The Department will perform all acceptance sampling and testing at the frequencies shown for contractor acceptance testing in Subsection 802.06.

CONSTRUCTION REQUIREMENTS: The alignment and location of the WRSF shall be according to the plans or as directed by the Engineer. Line posts shall be spaced according to the manufacturer's recommendations to limit the deflection to a maximum 8'-0", but shall not exceed 15'-0" O.C., and shall be set plumb, in line (unless approved by the Engineer), to provide an aesthetically pleasing line of sight. Extreme care shall be taken to ensure proper wire rope height when installing line posts.

Concrete for line posts and end terminals shall be placed in excavations of natural, undisturbed ground. Excavation shall have vertical sides, to the size and shape per the manufacturer's recommendation. If over-excavation is unavoidable, additional concrete shall be used to completely fill the excavation.

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WIRE ROPE SAFETY FENCE (WRSF) SPECIFICATIONS

Wire rope shall be placed per the manufacturer's recommendation and be tensioned immediately after initial installation. The tension shall be rechecked and adjusted, if necessary, three (3) to five (5) weeks after initial tensioning on segment lengths over 2,500 feet (760 m). A tension log form shall be completed showing the time, date, location, wire rope temperature, and final tension reading, signed by the person performing the tension reading. This log shall be furnished to the Engineer upon completion of work. This form shall also include the WRSF manufacturer's recommended tension table.

BASIS OF ACCEPTANCE: Basis of acceptance of the WRSF furnished shall be based on the following:

- (a) Prequalification as set forth under this specification.
- (b) Visual inspection of all items furnished for condition and conformance with dimensional and other requirements.
- (c) Receipt of manufacturer's certification and material test reports for wire rope, posts, and anchor components.
- (d) Determination of the weight of galvanized coating by means of a magnetic gauge furnished and operated by the contractor and witnessed and approved by the Engineer, at the project site prior to installation.

METHOD OF MEASUREMENT: WRSF will be measured complete in place and the measurement will be to the nearest linear foot including end anchor terminals on each segment.

BASIS OF PAYMENT: Work completed, accepted, and measured as provided above will be paid for at the contract unit price bid per linear foot for Wire Rope Safety Fence, which price shall be full compensation for furnishing all materials, including concrete, reinforcing steel and WRSF End Terminals; for installing all posts with caps, socket covers, wire rope and reflectors; for excavation and backfill; and for all labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item

Pay Unit

Wire Rope Safety Fence

Linear Foot

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

WIRE ROPE SAFETY FENCE MAINTENANCE MATERIALS

DESCRIPTION: This item shall consist of furnishing, delivering and stacking Wire Rope Safety Fence maintenance materials in accordance with these specifications and to the location directed by the Engineer.

CONSTRUCTION METHODS: The following parts shall be furnished and delivered to the Sebastian County Area Headquarters, located at 808 Frontier Road in Barling, Arkansas and stacked where directed by the Engineer.

The maintenance materials to be delivered are as follows:

1. 200 LINE POSTS WITH ALL ABOVE GROUND PARTS FOR ATTACHING WIRE ROPE TO EACH POST.
2. ALL PARTS TO RECONSTRUCT 4 COMPLETE TERMINAL ENDS, NO REBAR, OR AT THE DEPARTMENT'S OPTION, 80 LINE POSTS WITH ALL ABOVE GROUND PARTS FOR ATTACHING THE WIRE ROPE TO EACH POST.

METHOD OF MEASUREMENT: "Wire Rope Safety Fence Maintenance Materials" will be measured by the Lump Sum.

BASIS OF PAYMENT: Payment for furnishing, delivering and stacking "Wire Rope Safety Fence Maintenance Materials" will be paid for by the Lump Sum.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
SPECIAL SEEDING REQUIREMENTS

Clean equipment. Prior to moving equipment used in **Section 620** Seeding, **Section 621** Temporary Erosion Control Items and Devices, and **Section 623** Second Seeding Application onto Federal Land the contractor shall clean equipment of seeds, soil, vegetative matter, and other debris that could contain or hold seeds, including thorough flushing of the hydroseeder if used

Germinated seed varieties not listed in this Special Provision and found to be within the limits of the seeded area will constitute the removal of the vegetation by methods approved by the Engineer. After removal of the vegetation, the area shall be reseeded according to the requirements of this Special Provision, and at no additional cost to the Department

Subsection 620.02(c) and (d) are hereby deleted and the following substituted therefore:

(c) Except as modified herein, the seed shall comply with the current rules and regulations of the Arkansas State Plant Board and the germination test shall be valid on the date the seed is used. A combined total of 50 noxious weed seeds shall be the maximum amount allowed per pound (110 per kg) of seed with the following exceptions: Johnson grass, mustard garlic, mimosa tree, Caucasian bluestem, musk thistle, tall fescue, sericea lespedeza, and kudzu seed will not be allowed in any amount. Seed shall be furnished in sealed, standard containers. Seed that has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable.

Seed must be from plants grown in Arkansas or adjacent states. Some of the specified varieties may be limited in availability.

Seed shall be composed of the varieties and amounts by Pure Live Seed (PLS) weight as shown below. Seed shall be tested and labeled with the % purity (pure seed) and % germination values. The seeding composition or origin may be altered by the Engineer with no adjustment in contract price. The alteration shall be on an equivalent cost basis.

If the seed is not purchased by PLS weight, the amount of seed required can be calculated from the % PLS.

A = % purity (pure seed)	$A \times B = C$
B = % germination	100
C = % PLS	

To determine the minimum weight of seed required per acre use the following equation:

D = seeding rate	$\frac{D \times 100}{C} = E$
E = actual weight of seed	C

Seeding rates may vary based on project location and area conditions. For example, if a slope is at 3:1 or steeper or if the area is located in a waterbody, it may be necessary to increase the amount of temporary cover crop (cereal rye).

**ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
SPECIAL SEEDING REQUIREMENTS**

Special Seeding Rates

Warm Season Grasses/Temporary Cover Crop:	lbs/acre	kg/ha
Big bluestem <i>Andropogon gerardii</i>	2	2
Little bluestem <i>Schizachyrium scoparium</i>	5	6
Indian grass <i>Sorghastrum nutans</i>	4	5
Cereal rye <i>Secale cereale</i>	25	28
Native Forbs:	lbs/acre	kg/ha
Lanceleaf coreopsis <i>Coreopsis lanceolata</i>	4	5
Black-eye Susan <i>Rudbeckia hirta</i>	0.5	0.5
Gay feather <i>Liatris pycnostachya</i>	3	3
Partridge pea <i>Cassia fasciculata</i>	3	3
Butterfly milkweed <i>Asclepias tuberosa</i>	2	2
Pale Purple coneflower <i>Echinacea pallida</i>	2	2
Wild bergamont <i>Monarda fistulosa</i>	1	1

The seed composition shall be verified by the Engineer prior to seed application. All seed labels shall be left in place until seed composition can be verified. Copies of original receipts may also be requested for both temporary and permanent seed purchases. These receipts should include the plant species, PLS weight, and origin.

(d) Mulch cover shall consist of straw from threshed rice, oats, wheat, barley, or rye.

Subsection 620.03(b) is hereby deleted and the following substituted therefore:

(b) Fertilization. Addition of lime and fertilizer to native grass and wildflower plantings is not necessary, provided the soil pH is above 5. If necessary, fertilizer shall be applied at the rate of 200 pounds per acre (220 kg/ha) of 5-10-10, or the equivalent amount of plant food. Fertilizer shall be uniformly incorporated into the soil alone or in conjunction with the required lime. It should be noted that if topsoil is reserved, most likely no fertilizer will be needed for establishment of native grasses and wildflowers. If the Contractor so elects, the fertilizer may be drilled into the soil or combined with the seed in the hydro-seeding operation.

Subsection 620.03(c) is hereby amended with the addition of the following:

This Special Seeding shall be performed between September 1 and April 30.

Subsection 620.03(c)(2) is hereby deleted.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
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SPECIAL SEEDING REQUIREMENTS

Subsection 620.03(c)(3) is hereby deleted and the following substituted therefore:

If a hydro-seeder is used for seeding, fertilizer, **if needed**, and seed may be incorporated into one operation but a maximum of 400 pounds of fertilizer shall be permitted for each 1500 gallons (maximum 181 kg for each 1500 L) of water. If the Contractor so elects, the fertilizer may be applied during preparation of the seedbed. The area shall be lightly firmed with a cultipacker immediately before hydro-seeding.

Subsection 620.03(e) shall be amended by the deletion of the second bullet, Asphalt Tackifier.

Subsection 620.05 is hereby amended by the addition of the following Pay Item:

Pay Items	Pay Unit
Special Seeding	Acre (Hectare)
Special Mulch Cover	Acre (Hectare)

Subsection 621.02 (a) and (b) is hereby deleted and the following substituted therefore:

- (a) Seed shall be of the fast germinating and growing variety but not including "common rye grass" is deleted from the list of seed that can be used for temporary seeding.
- (b) Mulch cover and tackifier, if applicable, shall comply with the amended Subsection 620.02 (d) and (e) above.

Subsection 621.03 (b) is hereby amended as follows:

Fertilizer shall be applied at the rate of 250 pounds per acre (kg/ha) of 5-10-10 or the equivalent amount of plant food. It is strongly encouraged that an application of water be applied, in accordance with Subsection 620.03(f)(1).

Section 623.01 is hereby deleted and the following substituted therefore:

This item shall consist of furnishing and applying seed on all seeded areas during the planting season following the original seeding, as directed. The Engineer will determine whether a second seeding application is required.

Section 623.02 is hereby deleted and the following substituted therefore:

The seed mixture specified above under 620.02(c) above shall be used or modified by the Engineer. No additional fertilizer will be applied.

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SPECIAL SEEDING REQUIREMENTS

Section 623.03 is hereby deleted and the following substituted therefore:

The seed and fertilizer may be placed with a hydro-seeder or broadcast with hand seeders or approved power equipment. Warm season grasses shall be planted between April 1 and May 30, and Native forbs shall be planted between June 1 and October 31.

Section 623.05 is hereby amended by the addition of the following Pay Item:

Pay Item	Pay Unit
Special Temporary Seeding	Acre (Hectare)
Special Second Seeding Application	Acre (Hectare)

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GEOTEXTILE FABRIC

Description: **Section 625 Geotextile Fabric** of the Standard Specifications for Highway Construction, Edition of 2014 is hereby expanded as follows to include a (Type Special) to be used beneath pavements where separation of two dissimilar materials is required:

Subsection 625.02 Materials is hereby expanded as follows:

Geotextile Fabric (Type Special) shall be a non-woven synthetic fabric that complies with the AASHTO M288 requirements for Separation, Class 1 and weighs at least 14.8 oz/yd².

Subsection 625.03 Construction Requirements is hereby expanded as follows:

(Type Special) geotextiles shall be installed in such a manner that all splice joints are provided with a 3' minimum lap.

Damages to (Type Special) geotextiles shall be repaired by placing a geotextile patch over the damaged area extending 3' beyond the perimeter of the damaged area.

Subsection 625.05 Basis of Payment is hereby expanded as follows:

Pay Item	Pay Unit
Geotextile Fabric (Type Special)	Square Yard

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ACTUATED CONTROLLER

Section 701 Actuated Controller of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The second paragraph of **Subsection 701.02 Materials (a) General** is hereby deleted and the following substituted therefore:

Prior to the ordering of all traffic signal equipment, the Contractor shall submit to the Engineer two (2) printed copies of the applicable brochures containing the design criteria for the equipment which the Contractor proposes to install for approval. The specific items that are proposed for use shall be clearly marked in the applicable brochures. A list shall be attached to identify the item and contain the manufacturer, quantity, model, and identifying descriptions of each item. Adequate engineering data, essential shop drawings, and schematic diagrams shall be provided for review. Partial submittals will not be accepted for consideration and shall be returned for correction without review.

- 1. Review.** For all traffic signal equipment submittals, the Engineer's review of the equipment submittals should be completed within thirty (30) days from the date of the submission unless otherwise specified. Once the Engineer has determined that the equipment submitted meets the design criteria, a written approval will be provided, in which no further action is required. If equipment submitted for use is rejected, the Contractor shall re-submit the equipment for review within fifteen (15) days of notification of equipment rejection. Resubmittal of rejected equipment for review will be considered the starting point of a new approval cycle as described.

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CABINET DRAWER ASSEMBLY

Section 701 Actuated Controller of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 701.02 (d) (10) Wiring Diagrams and Controller Manual is hereby deleted and the following substituted therefore:

Three copies of the Cabinet Wiring Diagram and one copy of the controller manual shall be supplied with each cabinet. One diagram and the manual shall be placed in the "Cabinet Drawer Assembly". The "Cabinet Drawer Assembly" shall be fabricated to the approximate dimensions shown on the plans. Included with the "Cabinet Drawer Assembly" will be all hardware necessary to fasten and install the Assembly to the underside of a cabinet shelf roughly at the midpoint of the Cabinet vertically. One diagram shall be delivered to the City or County before final inspection of the intersection. One diagram shall be given to the Engineer.

The "Cabinet Drawer Assembly" shop drawing shall be included in the traffic equipment submittal.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****SYSTEM LOCAL CONTROLLER**

1. **DESCRIPTION.** This item shall consist of furnishing and installing at locations shown on the plans or as directed, system local controller with ethernet switch and other associated equipment, to operate as part of and existing traffic-responsive, coordinated traffic control system master. All requirements of Standard Specifications for Highway Construction, Edition of 2014, **Division 700 Traffic Control Facilities**, and specifically **Section 701 Actuated Controller**, shall apply. Portions of the standard specifications may be superseded by these special provisions.
 - A. **General.** The existing system consists of an **Eagle Centralized TACTICS Server** traffic controls system with communication utilizing ethernet switches and **Multimode Fiber Optic Cable**. CAT-5E cable shall be used to connect the ethernet switch and controller. The traffic operations system software is currently licensed to the city and to the State. All equipment shall be completely compatible with the existing traffic control coordination system hardware and software.

1. **MATERIALS AND CONSTRUCTION.** (Other Special Provisions in this contract may also apply). The cabinet facilities and installation, in addition to standard requirements for **Section 701 Actuated Controller**, shall incorporate the provisions listed in this special provision to accomplish the following:
 - A. **System Local Controller and Conflict Monitor.** Where specified as "TS2-Type 2 E-Net" unit shall utilize SDLC Port and Malfunction Management Unit (MMU) in monitoring for conflict display at the intersection. Where specified as type "TS1" unit shall include SDLC port but be set up in the TS1 mode and utilize a NEMA Standard 12 Channel Monitor. Unit shall have the capability of monitoring intersections utilizing the latest's proposed operation of "Flashing Yellow Arrow" (FYA) display.
 - B. **Expandability.** All traffic controllers (timers) shall be not less than 8 Phases. This does not apply to cabinet facilities and conflict monitor which shall conform to the summary of quantities or other provisions in this contract. Detector wiring harnesses or rack mount detector channel slots shall, as a minimum, be wired for future connection for the number of phases as described in the Summary of Quantities or plan sheets (whichever is greater); for a minimum of 8 system detectors; or as governed by other provisions in this contract.
 - C. **Ethernet Cable.**
 1. The CAT-5E shall be industrial outdoor rated Ethernet cable. The cable shall be riser rated, 24 A.W.G. solid copper, have Polyolefin insulation, UV, and oil resistant PE jacket. Pair 1 shall be Blue, White/Blue, Pair 2 shall be Orange, White/Orange, Pair 3 shall be Green, White/Green and Pair 4 shall be Brown, White/Brown. The operating temperature shall be from -40° C to +70° C. The cable shall conform to the following standards: ISO/IEC 11801 Category 5e, NEMA WC 63, and ANSI/TIA/EIA 568-B.2 Category 5e. The cable shall be without splicing or joints for a single run. The

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contractor shall obtain instructions from the manufacturer about alternate architecture when length of a single run of CAT 5e cable exceeds 320 feet.

2. The supplier shall approve the Category 5e cable, RJ-45 connector and crimping tool and the manufacturer's instructions must be followed to insure proper connection.
3. Power cable shall be 14 A.W.G three conductor cable. This cable shall comply with the requirements of IMSA Specification 19-1.

D. Ethernet Switch, T100 Hardened (8 Port).

1. Equipment shall provide an interface between other Ethernet devices to master site.
2. Fully managed Layer 2 Ethernet Switch.
3. Minimum of 8-Ports.
 - a. RJ45 Ports – 10/100/1000BASE-T(X)
 - b. Fiber Ports – 100/1000 Mb/s SFP-modules
4. Industrial Hardened.
5. Environmental Conditions.
 - a. Storage Temperature: -40°C to 85°C
 - b. Operating Temperature: -40°C to 80°C
 - c. Operating Humidity: 5% to 95% Non-condensing
6. LED Indicators.
7. Minimum 5 Warranty.
8. Power Supply.

E. Installation. The unit including both radios and Antennas shall be mounted remote from control device with communications connection to the device utilizing an external grade Ethernet cable. Contractor shall perform any wiring, antenna, or cabinet modifications necessary. This shall include antenna adjustment necessary to achieve optimal performance of radio and control equipment.

F. Controller Manuals and Documentation. All documentation and software shall be provided a minimum of 14 calendar days before commencement of the 30-day trial

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period. The 30-day trial period will not start until this as well as other requirements for system operation have been met. Controller manuals (software and software manuals), must be provided 14 calendar days prior to placing intersection into operation.

Two sets (no photo-copies) of controller manuals shall be provided, one copy to the City or County and one copy to the Department's Maintenance Division.

- G. System Timing and Operation Test.** The 30-day performance test shall not commence on any portion of the system until all tests have been performed by the contractor to the satisfaction of the Engineer in the presence of the Department. Timing data will be provided by the Department's Maintenance Division. The contractor shall give the Engineer a minimum of 14 calendar days' notice to requiring timing data for testing and setup. Contractor shall be responsible for verification that data provided shall be functional and shall notify the Department's Maintenance Division of any changes necessary prior to installation.

In the event that the contractor is not qualified to perform these test and verification, he will be responsible for seeing that a manufacturer's representative is present on the day of testing.

2. **METHOD OF MEASUREMENT.** Completed and accepted items will be measured as follows:
- A. System Local Controller will be measured by the unit.
 - B. E-Net Cable of the type specified is included in other items of contract.
 - C. Ethernet Switch, T100 Hardened (8-Port) will be measured by the unit.
3. **BASIS OF PAYMENT.** Work completed and accepted and measured as provided above will be paid for at the contract unit price bid as follows:
- A. **System Local Controller.** Price bid for system local controller and associated equipment of the phases specified, shall be full compensation for furnishing all equipment for providing the foundation, and mounting the cabinet for installing, wiring, and testing the controller and communications unit for excavation and backfilling; and for all materials, equipment, tools, labor, and incidentals necessary to complete the work.
 - B. **E-Net Cable (Exterior Cat 5E).** Work completed and accepted for E-Net Cable of the type specified will not be paid separately furnishing, installing, and testing the cable; and for all equipment, tools, labor, and incidentals necessary to complete the work, but shall be included in the cost of other items of the contract.

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C. Ethernet Switch, T100 Hardened (8-Port) - Price bid for Ethernet Switch, T100 Hardened (8 Port) of the type specified shall be full compensation for furnishing, installing, and testing the switch; and for all equipment, tools, labor, and incidentals necessary to complete the work.

Payment shall be made under:

Pay Item	Pay Unit
System Local Controller TS 2-Type 2, E-Net (___ Phases)	Each
Ethernet Switch, T100 Hardened (8-Port)	Each

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LOUVERS FOR SIGNAL HEADS

DESCRIPTION. This item shall consist of furnishing and installing Pelco geometrically programmed louvers on signal heads designated by the Engineer or as shown on the plan sheets.

MATERIALS AND CONSTRUCTION REQUIREMENTS. Louvers shall be so designed to reduce visibility of the designated signal lenses to approaching motorists in lanes adjacent to the controlled movement. Louvers shall be firmly attached to the signal visor, but easily adjusted or removed by the technician. The contractor shall field adjust louvers to the satisfaction of the Engineer.

METHOD OF MEASUREMENT. Work completed and accepted under this item will be measured by the unit.

BASIS OF PAYMENT. Louvers installed, accepted, and measured as provided above shall be paid at the contract unit price bid each which price shall be full compensation for furnishing and installing the device.

Payment will be made under:

Pay Item	Pay Unit
Louvers	Each

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RETROREFLECTIVE BACKPLATES

Section 706 Traffic Signal Head of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The ninth paragraph of **Subsection 706.02 Materials (c) Housing** is hereby deleted and the following substituted therefore:

Visors and backplates for metal signal sections shall be made from 0.050" (1.25 mm) minimum thickness aluminum alloy sheet.

- The minimum thickness of 0.050" does not include the retroreflective border.
- Backplates shall not be flexible nor of the hinged design.
- The backplate shall be louvered.
- A louvered backplate shall include louvers with no louvers closer than 0.5" from the inner or 2.5" from the outer edge. Sides are defined on how the signal head is oriented in the plans.
- The backplate shall have a 2" wide yellow (non-fluorescent) retroreflective sheeting border, placed flush with the outer edge of the backplate and placed no closer than 0.5" from all louvers. No sheeting is allowed over any louvered area.
- Sheeting shall be applied in such a manner to provide wrinkle and bubble free surfaces. Application of sheeting shall be in accordance with this special provision otherwise will be cause for rejection of materials due to workmanship.
- The sheeting shall be Type VIII, Type IX, or Type XI in accordance with ASTM D4956 or ASTM D4956-05 and listed on ARDOT's qualified product list.
- All applicable brochures containing the design criteria for the retroreflective sheeting border shall be submitted by the Contractor for approval.
- The sheeting shall be applied in the orientation for the maximum angularity according to the manufacturer's recommendations to project rectangular appearance at night.
- All backplates types shall be securely attached to the signal-head as recommended by the manufacture's specifications and methods.

The tenth paragraph of **Subsection 706.02 Materials (c) Housing** is hereby deleted and the following substituted therefore:

Visors and backplates for plastic signal faces shall be either formed from sheet plastic or assembled from one or more injection, rotational, or blow molded plastic sections with a minimum thickness of 0.10" (2.5 mm).

- The minimum thickness of 0.10" does not include the retroreflective border.
- Backplates shall not be flexible nor of the hinged design.
- The backplate shall be non-louvered.

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- The backplate shall have a 2" wide yellow (non-fluorescent) retroreflective sheeting border, placed flush with the outer edge of the backplate.
- The sheeting shall be Type VIII, Type IX, or Type XI in accordance with ASTM D4956 or ASTM D4956-05 and listed on ARDOT's qualified product list.
- All applicable brochures containing the design criteria for the retroreflective sheeting border shall be submitted by the Contractor for approval.
- The sheeting shall be applied in the orientation for the maximum angularity according to the manufacturer's recommendations to project rectangular appearance at night.
- All backplate types shall be securely attached to the signal-head as recommended by the manufacture's specifications and methods.

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COMMUNICATION CABLE – FIBER

1. **DESCRIPTION.** This item shall consist of furnishing, installing, and testing traffic signal fiber optic communication cable in accordance with these specifications and at the locations shown on the plans or as directed.
2. **MATERIALS AND CONSTRUCTION.**

A. Properties, Optical. - A typical cable consists of a loose tube, 6 to 72 fiber strands (or as specified by the cable type) aerial/duct, graded index, multimode fiber-optic with the following properties:

The multimode fiber utilized in the cable specified herein shall meet EIA/TIA-492AAAA, Revision B, November 2009, "Detail Specification for 62.5 um core Diameter/125 um Cladding Diameter Class Ia Graded-Index Multimode Optical Fibers" as follows:

Fiber Type	Graded Index, Multimode
Core Diameter	62.5 microns \pm 3 microns
Cladding Diameter	125 microns \pm 2 microns
Attenuation	\pm 3.75 dB/km @ 850 nm \pm 1.50 dB/km @ 1300 nm
Bandwidth	\pm 160 MHz-km @ 850 nm \pm 500 MHz-km @ 1300 nm
Outer Jacket Thickness	250 microns
Connector/Coupling Loss	1 dB/pair maximum

All optical fibers shall be proof tested by the fiber manufacturer at a minimum load of 100 kpsi.

All optical fibers shall be 100% attenuation tested by the manufacturer. The attenuation of each fiber shall be provided with each cable reel. The measured attenuation shall be for both 1310 nm and 1550 nm frequency. This documentation shall be provided with each spool. The Contractor shall designate on the Plans and document the location where each spool has been installed and provide this data to the engineer.

B. Properties, Physical. - Physical properties of the cable shall be as follows:

- Cable shall consist of buffer tubes and filler tubes cabled around a central strength member with counter laid cabling with a dry wicking filler material.
- Each buffer tube may contain from six (6) to twelve (12) fibers and shall consist of polymeric insulation.
- Each filler tube shall be solid polyethylene.

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- The central strength member shall be a dielectric material such as epoxy/fiberglass.
- Water swellable yarn(s) shall be applied longitudinally along the central member during stranding.
- Two polyester yarn binders shall be applied contrahelicallly with sufficient tension to secure each buffer tube to the dielectric central member without crushing the tubes. The binders shall be non-hygroscopic, non-wicking, and dielectric with low shrinkage.
- Water swellable tape shall be applied longitudinally around the outside of the stranded tubes/fillers. It shall be non-nutritive to fungus, electrically non-conductive, and homogenous.
- The cable shall be approved by Underwriters Laboratory and shall have cable markings at two-foot intervals on the outer sheath indicating the type of cable, number of fibers, and distance from the end.
- The cable sheath shall be of high-density polyethylene.
- The cable shall be of such design that permits cable entry in mid span.
- Each fiber shall be distinguishable from others by means of color coding according to the following:

- | | |
|-----------|------------|
| 1. Blue | 7. Red |
| 2. Orange | 8. Black |
| 3. Green | 9. Yellow |
| 4. Brown | 10. Violet |
| 5. Slate | 11. Rose |
| 6. White | 12. Aqua |

- Buffer tubes containing fibers shall also be color coded with distinct and recognizable colors according to the following:

- | | |
|-----------|------------|
| 1. Blue | 7. Red |
| 2. Orange | 8. Black |
| 3. Green | 9. Yellow |
| 4. Brown | 10. Violet |
| 5. Slate | 11. Rose |
| 6. White | 12. Aqua |

C. Properties, Mechanical. - The cable shall have the following mechanical properties:

Maximum Installation Tension	2727 N (600 lbs)
Maximum Operating Tension	600 N (132 lbs)
Minimum Bend Radius Installation	16.5 cm (6.5")
Minimum Bend Radius Operating	8.2 cm (3.2")
Cable Weight kg/km (lbs/1000 ft)	48 (32), Nominal

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Crush Resistance (EIA RS-455-41 test)	262 N/cm
Impact Resistance (EIA RS-455-25 test)	500 impacts
Cyclic Flex (EIA-RS-455-104 test)	500 cycles
Twist Resistance (EIA RS-455-85 test)	150 cycles

- All fibers entering the traffic signal controller cabinet shall be terminated with multi-mode ceramic ST/UPC connectors to be compatible with the fiber optic termination unit in the controller cabinet. Sufficient cable shall be allowed in the controller cabinet to allow connection of the unit without violating the minimum operating bending radii of the fiber optic cable (additional cable included in the provided quantities).
- This item shall consist of furnishing and installing modifications to the controller cabinets to allow connection of the controller to the fiber optic cable interconnect in accordance with these specifications and at the locations shown on the plans or as directed.
- A Fiber Optic Termination Unit for ST/UPC connector compatible, 12 port, multimode couplings shall be provided in the traffic signal controller cabinet. This unit shall be mounted on the cabinet wall in a workmanlike manner so that the door and connector ports are easily accessible and shall have a minimum dimension of 10 inches H by 8" inches W by 3.75 inches D. The size of the unit shall be adequate for the number of fibers, proper winding area, and splices.
- Two (2) duplex multimode patch cords 5 feet in length shall be furnished with each controller cabinet to connect ethernet switch to the connector module. These patch cords shall have ceramic ST/UPC connectors on each end to be compatible with the connector module and the fiber optic modems internal to the traffic signal controllers. A sufficient number of patch cords shall be installed to provide a fully operational communications system. Each patch cord shall have a dielectric strength member and a durable outer jacket designed to withstand handling.
- ST/UPC connectors shall include BOOTS to protect the fiber connection to the ST/UPC connector.

D. Installation.

- A suitable cable feeder guide shall be used between the cable reel and the face of the duct and conduit to protect the cable and guide it into the duct/conduit off the reel. It shall be carefully inspected for jacket defects. If defects are noticed, the pulling operation shall be stopped immediately, and the Engineer notified.

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Precautions shall be taken during installation to prevent the cable from being “kinked” or “crushed”. A pulling eye shall be attached to the cable and used to pull the cable through the duct and conduit system. A pulling swivel shall be used to eliminate twisting of the cable. As the cable is played off the reel into the cable feeder guide, it shall be sufficiently lubricated with a type of lubricant recommended by the cable manufacturer. Dynamometers or breakaway pulling swings shall be used to ensure that the pulling line tension does not exceed the installation tension value specified by the cable manufacturer. The mechanical stress placed on the cable during installation shall not be such that the cable is twisted or stretched. The pulling of cable shall be had assisted at each controller cabinet. The cable shall not be crushed, kinked, or forced around a sharp corner. If lubricant is used it shall be of water-based type and approved by the cable manufacturer. Sufficient slack shall be left at each end of cable to allow for proper cable termination, minimum of 30 feet (additional cable included in the provided quantities). This slack shall be in addition to installation slack as specified. Additional slack cable shall be left in each traffic signal controller cabinet. Excess slack at the traffic signal controller cabinet shall be re-pulled into the nearest pull box to provide a neat and orderly installation.

- Storage of minimum slack cable in traffic signal controller cabinets and additional slack at pull boxes shall be coiled. The slack coils shall be bound at a minimum of three points around the coil perimeter and supported in their static storage positions. The binding material and installation shall not bind or kink the cable. Maximum length of cable pulling tensions shall not exceed the cable manufacturer’s recommendations. All fiber optic cables shall be marked with a metallic or preapproved identifier in the pull box adjacent to the traffic signal controller cabinet and on the cable in the cabinet at point of termination. The identifier, both in the cabinet and in the pull box, shall indicate the direction the cable is going, cable contents (SM), and the abbreviated location for the other end destination.
- A tracer wire shall be provided and installed in the conduit by the contractor to be used to locate the fiber conduit. The tracer wire shall meet or exceed the following specifications:
 1. No. 14 AWG, 600-volt single solid conductor cable.
 2. Insulated with high molecular weight polyethylene (HMWPE).
 3. Orange in color.
 4. ASTM specifications:
 - a. B 3: Soft or Annealed copper wire.
 - b. UL listed as tracer wire.

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E. Testing. - Perform tests in accordance with testing requirements in this Item, USDA RUS CFR 1755.900 and TIA/EIA-455-61 test specifications. For all tests, provide test forms to be used that compare measured results with threshold values.

1. **Test Procedures.** Submit test procedures and data forms for the pre-installation, post-installation, subsystem, final end to end test, and loss budget calculations for approval. Test procedures will require approval before performing tests. Submit 1 copy data forms containing data and quantitative results, as well as an authorized signature. Submit a copy of the OTDR results as a hard copy or electronic copy in PDF format including all OTDR traces and clearly identifying each event (fusion splice, jumper, connector, etc.) with the measured loss identified.
2. **Optical Time Domain Reflectometer (OTDR) Tests.** Use the OTDR to measure fiber optic cable for overall attenuation (signal loss dB/km), fiber cable length, and identify fiber optic cable anomalies such as breaks. Perform the following 4 OTDR tests:
 - pre-Installation test (Acceptance test),
 - post installation test,
 - post termination test, and
 - final end to end test.

OTDR Settings:

- generate a file name for each OTDR scan. The file name must indicate the location or direction the test was run from, as well as the fiber number being tested,
- set the “A” cursor at the beginning of the fiber trace and set the “B” cursor at the end of the fiber trace. The distance to cursor “B” indicates the length of the fiber cable segment being measured,
- match the index of refraction to the index of the factory report,
- set the loss indicator to dB/km for the acceptance test,
- the reflectance is automatically set internally by the OTDR,
- set the pulse width at a medium range. Change the pulse width to a slow pulse width when an anomaly occurs on the fiber trace so that it can be examined closely,

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- set the average at medium speed. Change the average to slow when an anomaly appears on the fiber trace to allow for closer examination of the anomaly, and
- set wavelength at 2 windows for multimode cable: 850 nm and 1300 nm.

Provide the current OTDR calibration certificate for the device used, showing the unit has been calibrated within the last year. Show all settings on test result fiber scans.

3. **Pre-installation Tests.** Test and record the fiber optic cable at the site storage area prior to installation.

Conduct bi-directional OTDR tests for each fiber strand. Test each optical fiber in the cable from one end with an OTDR compatible with wavelength and fiber type. Check testing for length, point discontinuity, and approximate attenuation. Record each measurement by color, location, and type of fiber measured. Perform a measurement from the opposite end of that fiber in case a measurement cannot be made from one end. Wait for notification if loss per kilometer exceeds manufacturer's test data by more than 0.5 dB/km or point discontinuity greater than 0.05 dB.

Perform this test within 5 days from receipt of the fiber optic cable. Test overall attenuation (dB/km), total cable length, anomalies, and cable problems. Test cable at both wavelengths (850 nm and 1300 nm for multimode cable). Verify that the cable markings on the outer jacket are within 1% of the total cable length.

Compare factory test results with test results and return to manufacturer if test results are not identical to factory test results. If identical, document the test results. Deliver documentation for future reference.

4. **Post-installation Tests.** Re-test and re-record each optical fiber in the cable after installation, before termination, for loss characteristics. Test both directions of operations of the fiber.

Immediately perform the post installation test after the fiber optic cable has been installed. Test cable for overall attenuation, cable segment length, and evidence of damage or microbend with the OTDR. Replace any cable segment that is damaged during the test and document test results. Submit test results for approval.

Use the same OTDR settings for Post-Installation Tests as the Pre-Installation Tests.

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5. **Post Termination Tests.** Perform the post termination test after the cable is terminated or spliced, including termination of fiber cable to fiber cable or fiber cable to fiber pigtail and fiber cable to patch panels. Check attenuation, fusion or termination point problems, and overall fiber cable segment. Determine if the attenuation and quality of the termination complies with these Specifications; if not, re-terminate the fiber and re-test until the Specification requirements are met. Test the fiber segment for attenuation and anomalies after termination acceptance. Document and submit test results after fiber segment acceptance.
6. **Subsystem Tests.** Perform network subsystem tests after integration to the fiber optic network. Test the capability of the fiber optic cable to transmit video and digital information from node to node. A node is defined as a traffic signal cabinet, communication cabinet, hub cabinet, surveillance cabinet, or hub building where network hub switches are located (at each fiber termination point). Complete and submit approved data forms for approval.

Correct and substitute components in the subsystem if the subsystem tests fail and repeat the tests. Components may include: cable, jumper, patch panel module, or connector.

Prepare and submit a report if a component was modified as result of the subsystem test failure. Describe in the report the failure and action taken to remedy the situation.

7. **Final End-to-End Test.** Perform final end to end Test after fiber cable segments of the system are terminated using the OTDR and an optical Power Meter and Light Source (PMLS).

Perform the Part 1 of the final end to end test using OTDR:

- measure the overall fiber cable system length,
- measure the overall system attenuation, and
- check for anomalies.

Perform the Part 2 of the final end to end test using a PMLS:

- measure the absolute power of the fiber optic signal across all links, and
- check for anomalies.

Document and submit results after test acceptance.

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8. **30-day Performance Test.** After all, testing procedures have been performed, submitted, and approved by the Engineer according to these specifications, the Contractor shall conduct a performance test, which shall consist of a continuous 30-day period of operation without a major malfunction. A major malfunction is considered to be any occurrence, other than a power failure beyond the Contractor's control, that renders the installation inoperative either momentarily or for a longer period.

The performance test cannot commence until Department's Maintenance Division, ITS Management Section, representative has inspected the system and all of its assemblies and has notified RE office that Performance Test can commence. The Contractor shall obtain and assign to the Department transferable manufacturers' warranties or guarantees on all parts of the system including electrical and mechanical equipment, consistent with those provided as customary practice. The manufacturer's warranty transferred to the Department shall be for a period of at least two (2) years. The Contractor shall guarantee satisfactory in-service operation of the mechanical and electrical equipment and related components for a period of 6 months following completion of the 30-day performance test, at no cost to the Department.

Defective equipment or accessories shall be repaired or replaced according to applicable specifications and to the satisfaction of the Engineer within 24 hours during the 30-day performance test and the 6-month guarantee period.

If the any equipment or components of the system including tools cannot be repaired such that the performance test can be resumed within 24 hours of notification of a failure of defect, then the 30-day performance test shall start over at Day 1 on successful repair of the system and failed equipment to the Engineer's satisfaction.

9. **Loss Budget Calculation and Documentation.** Calculate the total loss budget of the system according to the following calculations and compare the actual loss in each segment of the system to the calculated budget. Submit the results for each section of fiber optic cable in tabular format reporting if the total loss is within the limits of these Specifications by noting "pass" or "fail" for each segment of fiber. A segment of fiber is defined as one that terminates at each end. Use the following calculations to determine the loss budget for each segment:

- splice loss budget = number of splices x 0.1 dB/splice,
- connector loss budget = number of connectors x 0.75 dB/connector,

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- length loss budget = length of fiber optic cable (measured by OTDR) x 0.35 dB/km for 850 nm wavelength or 0.25 dB/km for 1300 nm wavelength, and
- total Loss Budget = splice loss budget + connector loss budget + length loss budget.

Provide loss budget calculation equations on test form to be submitted as part of the documentation requirements. Provide threshold calculations described above along with measured results.

- F. **Warranty.** Provide a warranty for all materials furnished in this Item. Ensure that the fiber optic cable, the termination enclosures, and cable markers have a minimum of a 2-year manufacturer's warranty and that 95% of that warranty remains at the date of final acceptance by the Engineer. If the manufacturer's warranties for the components are for a longer period, those longer period warranties will apply. Guarantee that the materials and equipment furnished and installed for this project performs according to the manufacturer's specifications.

Ensure that the manufacturer's warranties for off-the-shelf equipment consisting of termination enclosures, splice trays, connectors, fiber jumper cables, and fiber patch panels are fully transferable from the Contractor to the Department. Ensure that these warranties require the manufacturer to furnish replacements for any off-the-shelf part or equipment found to be defective during the warranty period at no cost to the Department within 10 calendar days of notification by the Department.

Ensure that the manufacturer's warranty for fiber optic cable is fully transferable from the Contractor to the Department. Ensure that the warranty requires the manufacturer to furnish replacement fiber optic cable found to be defective during the warranty period at no cost to the Department within 45 calendar days of notification by the Department.

3. **METHOD OF MEASUREMENT.** Completed and accepted items will be measured as follows:

- A. Communication Cable, Fiber (_ Channel) will be measured by the linear foot.
- B. WIC Fiber Enclosure will be measured by the unit.
- C. Trace Wire is included in other items of the contract.

4. **BASIS OF PAYMENT.** Work completed and accepted and measured as provided above will be paid for at the contract unit price bid as follows:

- A. **Communication Cable, Fiber (_ Channel)** - Price bid for "Communication Cable, Fiber (of the number of channels specified)"; which price shall be full compensation

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for furnishing the cable; tracer wire, installing and testing of all materials; and for equipment, tools, labor, and incidentals necessary to complete the work.

B. WIC Fiber Enclosure - Price bid for each WIC Fiber Enclosure, which price shall be full compensation for furnishing all materials, fittings, brackets, clamps, equipment, tools, labor, and incidentals necessary to complete the work.

C. Tracer Wire - Work completed and accepted under this item will not be paid separately, but shall be included in the cost of other items of the contract.

Payment will be made under:

Pay Item

Pay unit

Communication Cable, Fiber (_ Channel)

Linear Foot

WIC Fiber Enclosure

Each

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ELECTRICAL CONDUCTORS-IN-CONDUIT (TRAFFIC SIGNAL)

DESCRIPTION. This item consists of furnishing and installing electrical conductors from point to point as indicated on the plan sheets.

MATERIALS. The electrical conductors shall consist of cables of the gauge and number of conductors specified on the plan sheets and shall be USE rated (single conductor) or UF rated (two conductor) with cross-link polyethylene (XLP) insulation, 600-volt rating, and suitable for underground duct installation in wet or dry locations. Electrical conductors shall be UL Listed, and shall comply with ASTM B3, B8, B787, and UL Standard 854. Multiple single conductor cables shall not be twisted. Electrical conductors shall be solid or stranded copper unless otherwise approved by the Engineer.

Where specified "With Ground" (WG), included shall be a copper safety ground of either bare copper or green insulated; of not less than two sizes less than the load carrying conductors, whichever is greater.

Where specified "Equipment Ground Conductor" (E.G.C.), conductor shall be a copper safety ground of either bare copper or green insulated of the size and quantity shown.

CONSTRUCTION REQUIREMENTS. Splices are allowed at pole bases or as approved by the Engineer. Unless waterproof quick disconnects are used, splicing methods considered acceptable are: Soldered, compression connectors of proper size employing cyclic crimping devices, terminal strips, or other method approved by the Engineer. Splices on terminal strips shall utilize proper spade lugs. All splices shall be waterproof. When taping is required, the wire shall be covered with six (6) layers of plastic electrical tape and sealed with "Scotch-Coat" or other similar electrical sealing material. Where wire nuts are used, soldering, taping and sealing is still required. Electrical insulating putty may be used to round off sharp corners of wire or connectors before applying tape. Slack cable (3 ft. min.) shall remain at each splice location.

METHOD OF MEASUREMENT. Electrical Conductors-In-Conduit shall be measured by the linear foot. Multiple conductors shall be measured together, not measured singularly.

BASIS OF PAYMENT. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per linear foot for Electrical Conductors-In-Conduit of the type and size called for on the plans, which price shall be full compensation for furnishing materials, splicing, and connections and for all tools, equipment, labor, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item

Pay Unit

Electrical Conductors-In-Conduit (_c/_ A.W.G.,_)

Linear Foot

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JOB NO. 040901

ELECTRICAL CONDUCTORS-IN-CONDUIT (ROADWAY LIGHTING)

1. **DESCRIPTION.** This item consists of furnishing, installing, and testing copper electrical conductors from point to point as indicated on the plan sheets. The electrical conductors shall be suitable for installation in duct mounted on structures or buried in the ground.
2. **MATERIALS.** Electrical conductors shall consist of cables of the gauge and number of conductors specified on the plan sheets and shall be type USE-2 or UF with cross-linked polyethylene (XLP) insulation, and 600-volt rated. Electrical conductors shall be UL Listed, and shall comply with ASTM B3, B8, B787, and UL Standard 854. Multiple single conductor cables shall not be twisted. Electrical conductors shall be solid or stranded copper unless otherwise approved by the Engineer.

Where specified "With Ground" (WG), included shall be a copper safety ground of either bare copper or green insulated; of not less than two sizes less than the load carrying conductors, whichever is greater.

Where specified Electrical Conductor (E.G.C.), one additional EGC, bare or insulated, also be supplied of the size and quantity shown.

3. **CONSTRUCTION REQUIREMENTS.** The electrical conductors shall be continuously running directly from service points to electrical devices and/or junction boxes without splices being made in the conduits. In addition, the electrical conductors shall pass both MEG Test and Leakage Current Test after installation in the presence of the field inspector. The Contractor shall perform tests utilizing test equipment acceptable to the job Engineer, and submit reports to the job Engineer for validation. The Contractor shall be responsible for all damages caused by improper MEG Test and Leakage Current Test. Any conductor not meeting the minimum acceptable value shall be replaced at Contractor's expense using new conductor. Sample test pages are included in this item. The 30-day test on the system shall not commence until all conductors have been tested with specification and accepted by the job Engineer.

All conduit terminations shall be provided with UL Listed bushings or bell end fittings. All conduit installed in pull boxes shall be provided with 90-degree elbows with conduit opening facing skyward. All conduit butt splices shall be UL Listed couplings. All conduit used for directional boring shall be UL Listed for that purpose. Non-metallic conduit shall be stamped, "Dir. Bore" or "Directional Bore".

All conduit joints shall be connected by using UL approved methods only. No internal and external obstructions, such as rivets, screws, and/or any other puncturing method of connections are allowed. The Contractor shall not use a torch for bending or shaping non-metallic conduits.

Splices are allowed at pull boxes, pole bases, or as approved by the Engineer. All splices shall be waterproof, and UL Listed for continuous use in submersible installations. Splices in pull boxes shall be made with a Bus connector, such as "Homac RXL," "NSI Polaris Edge",

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ELECTRICAL CONDUCTORS-IN-CONDUIT (ROADWAY LIGHTING)

“Utilco Safetysub,” “Burndy Unitap,” or equivalent and approved by the job Engineer. Drip loops are required at pole base installations. No direct connection from copper to aluminum shall be allowed without a connector rated for the application. Slack cable (3 ft. min.) shall remain at each splice location to allow reconnection.

4. **METHOD OF MEASUREMENT.** Electrical Conductors-in-Conduit will be measured by the linear foot of circuit. Multiple conductors for a circuit shall not be measured singularly and added together.
5. **BASIS OF PAYMENT.** Work completed and accepted under this item, measured and tested as provided above will be paid for at the contract unit price bid per linear foot for Electrical Conductors-in-Conduit of the “number of conductors” and “size” called for on the plans, which price shall be full compensation for furnishing and installing the electrical conductors in all conduits, junction boxes and pole bases including making all necessary taps and connections to complete the circuits as shown on the plans and as directed by the Engineer, testing along with all equipment, tools, labor, and incidentals required to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Electrical Conductors-in-Conduit (Roadway Lighting) (___ C/ ___ A.W.G., ___)	Linear Foot

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SPECIAL PROVISION

JOB NO. 040901

ELECTRICAL CONDUCTORS-IN-CONDUIT (ROADWAY LIGHTING)

Insulation Resistance Test (MEG Test)

DESCRIPTION. This item describes a testing method for the Insulation Resistance Test ("Test"), also known as, MEG test as called for on the plans. All tests and data recordings must be done in the presence of, and signed by the field inspector. Any deviation from these procedures shall require approval by the Engineer.

MATERIALS. A digital insulation resistance tester ("Tester") is required to perform the test. The Tester shall be able to provide DC test voltage of 500 volts and perform short-time test.

Definitions

Circuit: A circuit is the entire run of conductors from the service point to the end, including splices.

Circuit No.: This is typically the number in a circle on the plans. If no circuit number is present, the Engineer will provide one.

Section: A section is a segment of conductors placed between two poles.

Section No.: This is typically the number in a rectangle on the plans. If no section number is present, the Engineer will provide one.

TESTING PROCEDURE.

Before starting the measurement:

- Do not connect the cable to service. Disconnect all other circuits or devices, as well as any cable accessories and protective end caps, and open the cable at both ends and ensure conductors are isolated from each other.
- Contractor shall be responsible for all damages caused by MEG testing while devices or accessories are still connected. Any conductor not meeting the minimum acceptable value shall be replaced at Contractor's expense using new conductor.
- Only test a cable if the temperature of the conductor is above the dew point. Otherwise, moisture will form on the surface of the insulation and could be absorbed by the cable causing the test to fail.
- Make sure that the conductor surface is free of any material that may be conductive.
- Do not exceed the recommended test voltage of the cable. Otherwise, the conductor insulation can be overstressed, or even damaged. The Contractor shall be responsible for damages caused by improper MEG Test.

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ELECTRICAL CONDUCTORS-IN-CONDUIT (ROADWAY LIGHTING)

Short-time Test. This test lasts 60 seconds.

For each conductor that is to be tested:

1. Record the following:
 - a. Conductor length
 - b. Ambient temperature
2. Strip back the conductor at each end, as if it were to be connected to the supply and load equipment (remove the jacket, separate the conductors, and strip the end of the conductors of any insulation). The cable must be disconnected from any equipment at both ends. This includes roadway lighting, disconnects, service point, and any other kind of device that may be connected to the conductors.
3. Separate the conductors from each other, and from any ground conductors.
4. Thoroughly clean the exposed conductor ends to remove any dirt or debris. They should also be completely dry at the time of measurement.
5. Apply 500 volts DC for 60 seconds per conductor. Each insulated conductor should be tested separately, and record the reading of resistance in megohms at 60 seconds.

Minimum acceptable insulation resistance for cables rated for 600 volts with respect to length is the following:

Length of Cable (ft)	Min. Acceptable Insulation Resistance (MΩ)
100	16
200	8
300	5.3
400	4
500	3.2
600	2.7
700	2.3
800	2
900	1.8
1000	1.6
1100	1.5
1200	1.3
1300	1.2
1400	1.14
1500	1.07
1600 or greater	1

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JOB NO. 040901

ELECTRICAL CONDUCTORS-IN-CONDUIT (ROADWAY LIGHTING)

Leakage Current Test

DESCRIPTION. This item describes a testing method for the Leakage Current Test as called for on the plans. All tests and data recordings must be done in the presence of, and signed by the field inspector. Any deviation from these procedures shall require approval by the Engineer. Contractor shall be responsible for all damages caused by improper Leakage Current Test. Any conductor not meeting zero leakage current shall be replaced at Contractor's expense using new conductor.

MATERIALS. A digital current clamp meter ("Meter") is required to perform the test.

TESTING PROCEDURE.

Before starting the measurement:

- Connect the conductors to service. Connect all circuits.
- If circuit includes High-Mast— place High-Mast disconnect in the "off" position.
- If circuit includes Roadway Poles— disconnect breakaway fusible links. Leave EGC grounded. Make safe any exposed ends. Do not allow ends to make contact with anything.
- Lastly, turn on service point.

At the service point—place the Meter, measure, and record whether the leakage current is detected on each conductor on the circuit. Make sure the mating faces of the jaws are protected from damage, kept clean, and closed completely together without an air gap when testing. Avoid twisting the jaws of the Meter.

Minimum acceptable leakage current shall be zero. There is no minimal acceptable leakage current. The presence of leakage current indicates a fault in the wiring. The Contractor shall be responsible for location and replacing damaged conductors. A circuit shall not be deemed acceptable until passing the leakage current test.

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JOB NO. 040901

ELECTRICAL CONDUCTORS FOR LUMINAIRES (TRAFFIC SIGNAL)

DESCRIPTION. This item consists of furnishing and installing electrical conductors as noted on the plans. This shall include conductors from the luminaire service point to the luminaire disconnect point and from the luminaire disconnect point to luminaires mounted on the traffic signal poles. Circuit breakers and weatherproof breaker boxes are considered subsidiary to "Electrical Conductors for Luminaires" and shall be provided and installed by the Contractor at the luminaire disconnect point.

MATERIALS. The electrical conductors shall consist of two conductor cables (#12 A.W.G.). Electrical conductors shall be stranded or solid copper UF rated 600-volt, suitable for underground duct installation in wet or dry locations. Electrical conductors shall comply to ASTM Specification B3, B-8 or B-787. The insulation shall be a color coded premium grade flame retardant PVC (polyvinyl chloride). The jacket shall be polyamide nylon. Circuit breakers shall be rated at 20 amps.

CONSTRUCTION REQUIREMENTS. The Contractor shall furnish and install a luminaire disconnect (20-amp circuit breaker assembly and weatherproof box) at the location designated on the plans that meets the requirements of the local utility company. The Contractor shall connect the circuit breaker assembly to the line side of the service point supplying the controller. Conductors for luminaires shall run directly from load side of luminaire disconnect to luminaires mounted on signal poles. Disconnect or trip of luminaire disconnect shall not effect power to controller. Luminaire disconnect shall be clearly labeled as "Street Light" circuit.

Splices are allowed at pole bases or as approved by the Engineer. Splicing methods considered acceptable are: Soldered, compression connectors of proper size employing cyclic crimping devices, terminal strips, or other method approved by the Engineer. Splices on terminal strips shall utilize proper spade lugs. All splices shall be waterproof. When taping is required, the wire shall be covered with six (6) layers of plastic electrical tape and sealed with "Scotch-Coat" or other similar electrical sealing material. Where wire nuts are used, soldering, taping and sealing is still required. Electrical insulating putty may be used to round off sharp corners of wire or connectors before applying tape. Slack cable (3 ft. min.) shall remain at each splice location or at end of luminaire arm when luminaire is not to be installed by contractor. Final connection of power from the local utility to the service point will be made by others.

METHOD OF MEASUREMENT. Electrical Conductors for Luminaires will be measured by the linear foot. Multiple conductors shall be measured together, not measured singularly.

10-18-2002
02-06-2003 Rev.
02-18-2003 Rev.
01-17-2008 Rev.
12-16-2016 Rev.
11-16-2017 Rev.
12-06-2018 Rev.

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ELECTRICAL CONDUCTORS FOR LUMINAIRES (TRAFFIC SIGNAL)

BASIS OF PAYMENT. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per linear foot for Electrical Conductors for Luminaires of the type and size called for on the plans, which price shall be full compensation for furnishing materials, splicing and connections and for all tools, equipment, labor, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item

Pay Unit

Electrical Conductors for Luminaires

Linear Foot

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SPECIAL PROVISION

JOB NO. 040901

ELECTRICAL CONDUCTORS FOR LUMINAIRES (ROADWAY LIGHTING)

DESCRIPTION. This item consists of furnishing and installing electrical conductors from the pillbox next to the illumination pole to the luminaire as noted on the lighting plans and indicated in the wiring details.

MATERIALS. The electrical conductors shall consist of two conductor cables and grounding, see the plan for wire size. Electrical conductors shall be stranded or solid copper, XHHW-2 or UF with rating of 600 volt, suitable for underground duct installation in THHN wires are suitable for applications up to 90°C (194°F) in dry or wet locations. Electrical conductors shall comply to ASTM Specification B3, B-8, and B-787.

CONSTRUCTION REQUIREMENTS. Splices are allowed at pull boxes, pole bases or as approved by the Engineer. All splices shall be waterproof, and UL Listed for continuous use in submersible installations.

Splices in pull boxes shall be made with a Bus connector, such as "Homac RXL," "NSI Polaris Edge," "Utica Safetysub," or equivalent and approved by the Engineer.

Splices in light poles shall be made with a fused breakaway disconnect.

Drip loops are required at pole base installations. No direct connection from copper to aluminum shall be allowed without a connector rated for the application. Slack cable (3 ft. min.) shall remain at each splice location to allow reconnection.

METHOD OF MEASUREMENT. Electrical Conductors for Luminaires will be measured by the linear foot. Multiple conductors shall be measured together, not measured singularly.

BASIS OF PAYMENT. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per linear foot for Electrical Conductors for Luminaires of the type and size called for on the plans, which price shall be full compensation for furnishing materials, splicing and connections and for all tools, equipment, labor, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item

Pay Unit

Electrical Conductors for Luminaires (Roadway Lighting)

Linear Foot

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****BRIDGE MOUNTED GALVANIZED STEEL CONDUIT SYSTEM****1. DESCRIPTION**

This item shall consist of furnishing and installing, at the locations shown on the plans or as directed, a bridge mounted galvanized steel conduit system of the type specified according to this special provision, Arkansas Department of Transportation's Standard Specifications Section 709, and in accordance with the plan sheets for the subject job. The purpose of the bridge mounted galvanized steel conduit system is to provide cable ways across bridges for future intelligent transportation system (ITS) and utility cables. The conduit system shall consist of two distinct banks of conduits. The conduit bank for future utility use shall consist of eight (8) 4-inch galvanized steel conduits and shall terminate in the final utility junction box beneath each bridge. The conduit bank for future ITS work shall consist of four (4) 4-inch galvanized steel conduits and shall extend from the ITS junction boxes on the bridge and transition to 4-inch nonmetallic conduit where the ITS conduit bank penetrates the bridge abutment at the end of each bridge. The ITS conduit bank shall terminate in a fiber optic concrete pull box as shown on the subject job plans and as described in the Fiber Optic Concrete Pull Box special provisions for this project. Provide brackets, support assemblies, hangers, fittings, bonding jumpers, grounding systems and other installation accessories as required.

2. MATERIALS AND CONSTRUCTION

All construction and materials shall be in accordance with the Subject Job Plan Sheets, this special provision, and ARDOT Standard Specifications Section 709. The bridge mounted galvanized steel conduit system shall consist of twelve (12) 4" diameter rigid galvanized steel conduits split into two distinct conduit banks. The proposed locations of the junction boxes for the eight-conduit future utility conduit bank can be found in the lighting plan sheets for this project. The proposed locations of the four-conduit ITS junction boxes can be found on the ITS plan sheets for this project and the ITS pull box schedule.

All components of the bridge mounted galvanized steel conduit system shall comply with ARDOT Standard Specification Section 709.02. Each conduit run shall be electrically bonded to each junction box in which it terminates, as specified in the ITS Electrical Junction Box, Metallic special provision for this project, to ensure that each conduit bank of the bridge mounted galvanized steel conduit system remains at the same electrical potential as ground. Additionally, install bonding jumpers across expansion fittings between conduit sections for ground path continuity. Utilize external bonding jumpers of length suitable for the full expansion. Utilize a minimum 6 AWG stranded copper bonding jumper or equivalent.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****BRIDGE MOUNTED GALVANIZED STEEL CONDUIT SYSTEM**

Submit product data and installation details for conduit or raceway installation on the following items:

- a. GRS conduit
- b. Fittings
- c. Bridge expansion joints - flexible metallic conduit with liquid-tight jacket
- d. Expansion fittings
- e. Metallic joint compounds and sealing compounds
- f. Grounding straps and grounding systems
- g. Pull cords or pull tapes
- h. Conduit mandrels
- i. Conduit numbering schedule/tabulation

3. CONSTRUCTION REQUIREMENTS

The bridge mounted galvanized steel conduit system shall be mounted to the bridge structure as shown on the bridge plans for this project, as required by ARDOT Standard Specifications Section 709.03, or as directed by the Project Engineer.

SPECIAL CONSIDERATIONS FOR ITS CONDUIT BANK:

- A. All conduits shall be labeled with an ID number matching the subject job plans. Provide metallic numbering tags indicating the conduit number on both ends of all conduit runs.
- B. After final assembly is in place, all 4" conduits shall be thoroughly cleaned and mandrelled prior to installing pull tape. Each conduit shall be mandrelled by pulling a flexible mandrel sized at least at 85% of the conduit inner diameter through the conduits. At the completion of mandrelling and before final acceptance, a nylon pull tape rated for 1800 lbs minimum shall be installed in each empty conduit. The pull tape shall remain accessible from each end at all times.
- C. Raceways that cannot meet the requirements for mandrelling, shall be deemed defective, and shall be replaced at the Contractor's expense.
- D. A conduit mandrel log shall be kept and submitted for review and approval for all conduits mandrelled. The mandrel log shall contain the following information in tabular format for each conduit mandrelled:
 - 1) Conduit description
 - 2) Conduit endpoints
 - 3) Conduit size
 - 4) Date mandrelled

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BRIDGE MOUNTED GALVANIZED STEEL CONDUIT SYSTEM

- 5) Pass/fail for specified mandrel
- 6) Install of pull cord

E. Where the ITS conduit bank penetrates the bridge abutment(s), each conduit run shall transition from 4” galvanized rigid steel conduit to 4” Schedule 40 rigid PVC conduit per ARDOT Standard Specification Section 710.

4. **METHOD OF MEASUREMENT**

The bridge mounted galvanized steel conduit system will be measured by the unit price bid per linear foot.

5. **BASIS OF PAYMENT**

Work completed, accepted, and measured as provided above will be paid for at the contract unit price bid per linear foot of the bridge mounted galvanized steel conduit system, which price shall be full compensation for furnishing and installing the conduit system. All mounting materials, support assemblies, fittings, expansion joints, bonding jumpers, grounding systems, and liquid-tight flexible conduit lengths shall be considered subsidiary to the bridge mounted galvanized steel conduit system.

Payment will be made under:

Pay Item	Pay Unit
Galvanized Steel Conduit (4”)	LF

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****ITS NON-METALLIC CONDUIT SYSTEM****1. DESCRIPTION**

This item shall consist of furnishing and installing PVC (polyvinyl chloride) or PE (polyethylene) conduit according to these specifications and at the locations shown on the plans or as directed according to this special provision, Arkansas Department of Transportation's Standard Specifications Section 710, for future intelligent transportation system (ITS) cables. The Contractor may elect to use either type of conduit where non-metallic conduit is shown on the plans; however, each run of conduit shall consist of conduit, fittings, and accessories of one type of material.

The conduit bank for future ITS work shall consist of four (4) 4-inch non-metallic conduits and shall extend from the ITS GRS conduit system at the bridge abutment at the end of each bridge to the Fiber Optic Concrete Pull Box adjacent to the at-grade roadway at each bridge end.

Non-metallic conduit installation trenched in soil, earth fill, or rock shall be installed at a minimum of 18" depth from the top of the conduits to the finished grade (36" to the top of pavement) and be encased in concrete. See detail in plans. The conduit trench shall have a subgrade foundation. The concrete encased conduit duct bank shall then be backfilled above the concrete encasement with Class 3 Bedding Course. See Arkansas Department of Transportation Special Provision Rock Fill, Job No. 040901.

All ITS conduits shall be installed with a detectable underground warning tape installed above the conduits. Each installed conduit shall be labeled, cleaned, mandrelled and provided with pull tapes installed.

All ITS conduits installation and construction activities shall comply with Arkansas Department of Transportation Special Provision Settlement Monitoring, Job No. 040901.

2. MATERIALS AND CONSTRUCTION

All construction and materials shall be in accordance with the Subject Job Plan Sheets, this special provision, and ARDOT Standard Specifications Section 710.

(a) PVC Conduit.

Conduit, fittings, and accessories shall be PVC suitable for underground, encased, and exposed applications as approved by Underwriters Laboratories according to the National Electric Code. The conduits shall be Schedule 40 rigid PVC.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****ITS NON-METALLIC CONDUIT SYSTEM**

- (b) PE Conduit.
Conduit, fittings, and accessories shall be polyethylene, suitable for underground, encased, and exposed applications as approved by Underwriters Laboratories according to the National Electric Code. Conduit shall be Schedule 40, meeting the requirements of ASTM D 2447-99, utilizing test procedure ASTM D 1248.
- (c) Duct spacing.
A minimum conduit separation of two inches both vertically and horizontally is required for all non-metallic underground conduit systems. Other spacing may be required for different applications in which case the additional spacers manufacturing data shall be submitted for approval. Conduit spacers shall be located every five (5) feet in the trench to support the conduits for concrete. The standard minimum conduit separation for concrete encased conduits shall be two (2) inches.
- (d) Warning tape.
Identification tape shall be a minimum of two inches wide with a minimum thickness of 5 mil, and be of a plastic-based non-deteriorating non-color-fading material. The tape shall contain a means of being located by a metallic cable detector. The tape shall be orange and imprinted with "CAUTION – BURIED COMMUNICATION LINE BELOW".
- (e) Conduit trench subgrade foundation for installation in rock/gravel.
See Arkansas Department of Transportation Special Provision Rock Fill, Job No. 040901.
- (f) Concrete encasement.
Concrete encasement for underground non-metallic conduits shall be Mix Class B, with 2,000 psi design strength, ASTM C33 Grade 7 maximum allowable aggregate, 0.60 water to cement ratio, and air entrainment at 4.5 %, -1.5%/+3%. Concrete shall be poured to backfill the conduits and cover them with a minimum of six (6) inches of concrete. Reference the plans for additional encasement details.
- (g) End bell fittings.
All conduits entering subgrade pull boxes, vaults, or manholes shall be terminated with end bell fittings inside the pull box. End bell fittings are required for both PVC and PE installations. Products provided shall be manufactured for use on the selected conduit type.
- (h) Conduit tags.
All conduits shall be labeled with an ID number matching the subject job plans. Provide metallic numbering tags indicating the conduit number on both ends of each conduit run. Interconnecting conduit runs on bridges shall utilize the same conduit numbering orientation across the bridges.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****ITS NON-METALLIC CONDUIT SYSTEM**

Submit product data and installation details for the following items:

- a. PVC conduit, couplers, elbows, and fittings
- b. PE conduit, couplers, fittings
- c. Pull tape
- d. Conduit mandrels and cleaning brushes
- e. Conduit numbering schedule/tabulation
- f. Warning tape
- g. End bell fittings
- h. Conduit tags
- i. Mandrel Logs

3. CONSTRUCTION REQUIREMENTS

The underground non-metallic conduit system shall be installed as required by ARDOT Standard Specifications Section 710, these requirements herein, or as directed by the Project Engineer.

SPECIAL CONSIDERATIONS FOR ITS CONDUIT UNDERGROUND INSTALLATIONS:

- A. Protective warning tape shall be installed directly above and parallel to the center line of the conduit bank and extend for the entire length of the subterranean conduit bank. After placing a minimum of 6 or a maximum of 12 inches of backfill over the conduits, place the appropriate warning tape above and parallel to the centerline of the duct for the entire length of the duct trench.
- B. All underground ITS conduits shall be thoroughly cleaned and mandrelled prior to installing pull tape. Mandrelling shall be performed in two stages. The first mandrelling shall be performed after the final assembly is in place but before the roadway pavement is laid. The second mandrelling shall be performed after the roadway pavement and all heavy construction is completed to ensure that all conduits are still in usable condition after all heavy construction activities. Each conduit shall be mandrelled by pulling a flexible mandrel sized at least 85% of the conduit inner diameter through the conduits. At the completion of mandrelling and before final acceptance, a nylon pull tape rated for 1800 lbs minimum shall be installed in each empty conduit, and remain accessible from each end at all times.
- C. Raceways that cannot meet the requirements for mandrelling, shall be deemed defective, and shall be repaired or replaced at the Contractor's expense.

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ITS NON-METALLIC CONDUIT SYSTEM

D. Conduit mandrel logs shall be kept and submitted for review and approval for all conduits mandrelled. The mandrel logs shall contain the following information in tabular format for each conduit mandrelled:

- 1) Installation Mandrel Log Submittal
 - a. Conduit description
 - b. Conduit endpoints
 - c. Conduit size
 - d. First mandrelling date
 - e. Pass/fail for specified mandrel
- 2) Road Surface Completion Mandrel Log Submittal
 - a. Second mandrelling date
 - b. Pass/fail for specified mandrel
 - c. Install of pull tape

4. **METHOD OF MEASUREMENT**

The non-metallic conduit underground system will be measured by the unit price bid per linear foot.

5. **BASIS OF PAYMENT**

Work completed, accepted, and measured as provided above will be paid for at the contract unit price bid per linear foot of the non-metallic conduit system, which price shall be full compensation for furnishing and installing the conduit system. All fill materials, concrete, spacers, fittings, couplers, elbows, reinforcement, warning tapes, pull tapes and submittals shall be considered subsidiary to the non-metallic conduit system.

Payment will be made under:

Pay Item	Pay Unit
Non-Metallic Conduit (4")	LF

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CONCRETE PULL BOX

Section 711 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 711.02 Materials is hereby deleted and the following substituted therefor:

The pull boxes shall be constructed with Portland Cement Concrete reinforced with welded wire or shall be polymer concrete reinforced with heavy weave fiberglass. No fiberglass shall be exposed. All exposed portions of the pull box shall be non-electrically conductive.

The minimum inside dimensions measured across the center of the box (horizontally) just below the lid support lip shall be as follows:

Concrete Pull Box – Type 1 and 1 HD:
 8 3/4" (220 mm) wide x 14 1/4" (360 mm) long

Concrete Pull Box – Type 2 and 2 HD:
 11" (280 mm) wide x 21" (530 mm) long

Concrete Pull Box – Type 3 and 3 HD:
 15 1/4" (385 mm) wide x 28" (710 mm) long

The depth measured from the top of the lid shall be a minimum of 11½" (290 mm).

A non-metal electrically insulated cover shall be provided for each pull box. The covers shall have a skid resistant surface on top and a lifting eye.

The pull box and cover shall be constructed in such a manner that the assembly will support light vehicular traffic. The cover with pull box shall meet or exceed the following test loading:

Type	Load		Load Area	
	pounds	kg	Sq. inch	sq mm
1	3800	1720	10 (3.16" x 3.16")	6400 (80 mm square)
1 HD	7500	3400	10	6400
2	3800	1720	20 (4" x 5")	13,000 (100 mm x 130 mm)
2 HD	7500	3400	20	13,000
3	3800	1720	20 (4" x 5")	13,000 (100 mm x 130 mm)
3HD	7500	3400	20	13,000

Pull box with cover in place shall comply with the National Electric Code for exposed boxes rated at voltages up to 480 VAC.

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CONCRETE PULL BOX

All heavy-duty concrete pull boxes are to be installed as shown on the plans with an apron of concrete 12" (305 mm) wide and 6" (152 mm) in depth. The concrete shall comply with Section 802 for Class S Concrete. The Department will perform all acceptance sampling and testing at the frequencies shown for the Contractor acceptance testing in Subsection 802.06. Reinforcement consisting of 6" x 6" W1.4 x W1.4 (150 mm x 150 mm MW10 x MW10) welded wire fabric complying with the requirements of Subsection 804.02(b) is required to be placed in the concrete as shown in the plans.

The pull box shall be permanently labeled with "ARDOT", "ELECTRIC" and "ALUMINUM", centered below, the manufacturer's name and model identifier.

Stainless steel vandal resistant Penta-head bolts shall be supplied for each pull box. Two Penta-head sockets shall be provided and turned over to Maintenance Authority.

Subsection 711.05 Basis of Payment is hereby deleted and the following substituted therefor:

Work completed and accepted and measured as provided above will be paid for at the contract unit price bid each for Concrete Pull Box of the type specified, which price shall be full compensation for furnishing and installing the pull box; for excavation, backfill, compaction, removal of surplus materials, and replacement of the existing surface; for furnishing and placing the bedding material; for furnishing and placing welded wire fabric and concrete; and for all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Concrete Pull Box (Type ___)	Each

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FIBER OPTIC CONCRETE PULL BOX

1. DESCRIPTION.

This item shall consist of furnishing and installing at the locations shown on the plans or as directed, a Concrete Pull Box of the type specified according to these specifications, and in accordance with the plan sheets for the subject job.

2. MATERIALS AND CONSTRUCTION:

All construction and materials shall be in accordance with the Subject Job Plan Sheets and this Special Provision. All pull boxes shall be grade-level enclosures, with open bottom design, placed in non-deliberate traffic environments.

The pull box cover, cover ring and body shall be constructed with:

1. Portland cement concrete reinforced with welded wire.
2. Or polymer concrete reinforced with heavy-weave fiberglass.
3. Or shall be manufactured using the compression molded process, utilizing high density polymer concrete reinforced with Sheet Molding Compound (SMC) to produce a one-piece monolithic structure.
4. Or other materials meeting the strength and durability requirements of this provision. The Contractor shall be responsible for providing manufacturer's certified analysis in lieu of sampling and testing of commercial or manufactured products. Refer to subsection 106.10 of *ARDOT Standard Specification, 2014 edition*.

No fiberglass shall be exposed. All exposed portions of the pull box shall be non-electrically conductive. Pull box with cover in place shall comply with the current National Electric Code for exposed boxes rated at voltages up to 480 VAC.

A non-metal electrically insulated cover shall be provided for each pull box. The cover shall have a skid resistant surface on top and shall be equipped with lifting slots/eyes. The cover shall seat flush when secured to the box body. The covers shall be secured to the body using corrosion resistant fasteners. A minimum of two (2) Stainless steel hex-head bolts or other approved anti-theft protection shall be used to secure the cover to the pull box. The securing threaded insert and/or nut assembly shall be field replaceable.

The pull boxes and cover shall meet the current version of the American National Standards Institute/Society of Cable Telecommunications Engineers (ANSI/SCTE) 77 Specification for Underground Enclosure Integrity and shall meet strength requirements of Tier 15 loading for non-Heavy Duty (HD) type enclosures, and Tier 22 loading for Heavy Duty (HD) enclosures. The Contractor and/or manufacturer shall provide certification with the submittals that the box meets the current ANSI/SCTE 77

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FIBER OPTIC CONCRETE PULL BOX

with the applicable rating (Tier 15 or 22). The pull box shall be UL listed and from a manufacturer that is listed on the Department's QPL.

The pull boxes shall be permanently labeled with "ARDOT FIBER OPTIC CABLE" along with the tier rating. The date of manufacture shall be permanently located on the top or bottom of the cover and on the inside of the box body. The manufacturer's part and/or model identification shall be permanently marked on the interior of the box body and shall be visible after installation. The permanent label "ARDOT FIBER OPTIC CABLE" shall be placed on the center of the outside of the pull box lid. A post-type fiber optic cable marker shall be placed adjacent to the pull box to identify buried conduits and cabling within the right-of-way.

The minimum inside dimensions (width and length) measured across the center of the box (horizontally) just below the lid support lip shall be as follows:

Fiber Optic Concrete Pull Box Type 4 and 4 HD

22" Wide X 33" Long

Fiber Optic Concrete Pull Box Type 5 and 5 HD

27" Wide X 45" Long

The depth shall be measured from the top of the lid and shall be a minimum of 36".

3. CONSTRUCTION REQUIREMENT:

Excavation for the pull box shall be to a depth that will result in the top of the cover being flush with the surrounding surface. The pull box shall be set on a gravel or crushed stone bedding that will serve as a sump. The bedding shall extend 18" to 24" (450 mm-600 mm) below the bottom of the box, and shall extend 8 inches beyond the length and width of the outside dimensions of the box.

All HD (heavy-duty) concrete pull boxes are to be installed as shown on the plans with a surrounding apron of concrete 12" (305 mm) wide and 7" (177.8 mm) in depth. The concrete shall comply with Section 802 for Class S Concrete. The Department will perform all acceptance sampling and testing at the frequencies shown for the Contractor acceptance testing in Subsection 802.06. Reinforcing steel shall meet the requirements of Subsection 804.02(a) for the size and grade shown in the plans and shall be placed as shown in the plans and in conformance with Subsections 804.06 and 804.07. Refer to Standard Drawing SD-6, Heavy Duty Pull Box.

Fiber cable markers shall be orange color and dome type with black lettering and a white UV resistant polyethylene 3.5" diameter post. The fiber cable marker post shall be installed plumb and embedded in an 18-inch-deep, 10-inch-diameter, concrete footing. The top of the footing shall be level with the finished

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FIBER OPTIC CONCRETE PULL BOX

ground surface. The notification information shall be clearly visible when viewed from up or down the roadway. Wherever practicable, fiber cable markers should be placed with their center line one foot further from the centerline of the highway than the outside edge of the duct bank. The top of marker shall be a minimum of 4 feet and a maximum of 5 feet above the finished grade. The marker lettering shall state "FIBER OPTIC CABLE BURIED BELOW, CAUTION, and CALL BEFORE DIGGING". The fiber cable markers and posts shall have a minimum service life of 10-years in an unprotected outdoor environment.

Concrete Pull Boxes shall be included in the Performance Test under Section 717 of the Standard Specification for Highway Construction, 2014 Edition, and any box or lid that fails for any reason (including heaving or settling) during the 6-month warranty period shall be replaced by the Contractor at no cost to the Department.

4. METHOD OF MEASUREMENT:

Concrete Pull Boxes, in place with lid will be measured by the unit price bid per each. One unit shall include all items that are listed in this Special Provision.

5. BASIS OF PAYMENT:

Work completed, accepted and measured as provided above will be paid for at the contract unit price bid for each Fiber Optic Cable Concrete Pull Box of the type specified, which price shall be full compensation for furnishing and installing the pull box; for excavation, backfill, compaction, removal of surplus materials and replacement of the existing surface; for furnishing and placing the bedding material; for furnishing and placing reinforcing steel and concrete for the HD pull box aprons; for furnishing and placing the fiber post-type markers; and for all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Fiber Optic Concrete Pull Box (Type)	Each

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LED ROADWAY ILLUMINATION POLE

DESCRIPTION. This work consists of constructing and furnishing all materials to ensure a properly operating roadway lighting system according to these specifications and the plans, or as directed by the Engineer.

LIGHTING SYSTEM DESIGN CRITERIA. Roadway/Rest Area lighting system shall meet the illuminance design values, Table 3-5a, in AASHTO *Roadway Lighting Design Guide*, current edition, and ANSI/IES RP-8-22 Recommended Practice: Lighting Roadway and Parking Facilities, current edition.

MATERIALS. (A) Luminaire. Luminaire assemblies with accessories shall be supplied in one style or model number from one manufacturer only. Luminaire’s driver shall be mounted inside the luminaire housing. The driver shall have voltage/current overload and short circuit protection.

In addition, luminaire(s) shall meet the following requirements:

- Light Source: Shall be LED. Refer to plan set for more information related to the number of lumens, mounted height, mast arm length, and orientation for each light source.
- Light Distribution: Type III
- Correlated Color Temperature: 4000K +/- 200K
- Color Rendering Index: No less than 70. Mesopic multipliers (i.e., effective luminance factors) shall not be used. All values shall assume photopic visual adaptation.
- Refractor or Lens: UV stabilized optical grade acrylic -or- high-translucent, high-strength heat/shock resistant glass, such as borosilicate.
- Operating Temperature Range: -40°C (-40°F) to +40°C (+104°F)
- BUG Rating: U0, in accordance with Arkansas Shielded Outdoor Lighting Act.
- RoHS: Compliant

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LED ROADWAY ILLUMINATION POLE

- IP Rating: IP66 or better
- Surge Protection: Minimum 10kV/5kA per ANSI C136.2
- Input Voltage: 120V-277V or 347V-480V
- Power Factor: 90% or higher
- Design Life: 100,000 hours to L90, tested in accordance with IES TM21-11
- Warranty: Minimum 5 years. LED driver and LED arrays shall be included in the warranty.
- Accessories: House-side shield shall be included for residential areas. See plans.
- Receptacle: ANSI C136.41 7-pin twist-lock photocell or shorting cap. See plans.
- Luminaire Housing: Die-cast aluminum with tool-less entry and fully gasketed. All internal components shall be assembled and pre-wired using quick disconnect or modular electrical connections. Internal components shall be replaceable without special tools.
- Paint: Luminaires shall be factory painted to match poles

(B) Conductors. Conductors for roadway luminaires shall be solid or stranded copper, UL Listed, XHHW-2, manufactured in accordance with ASTM B3, B-8, and B-787. Rated voltage for conductors shall be 600V. Temperature rating shall be 90°C/194°F for wet or dry locations.

(C) Luminaire Poles. Poles and mast arms, if used, shall be hot-dipped galvanized steel. All poles and arms within continuous systems shall be of similar shape, dimension, materials, and color. If top of the pole is exposed, a pole cap shall be provided.

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Luminaire poles and hardware, unless superseded by this special provision or the detail sheet(s), shall meet the minimum requirements under the current edition of *Standard Specifications for Highway Construction* (Standard Specifications), Arkansas Department of Transportation.

- Section 714. "Traffic Signal Mast Arm and Pole with Foundation" of the Standard Specifications shall apply to all units of steel design as well as hardware and foundation requirements for units of other material.
- Section 724. "Overhead, Bridge Mount, and Cantilever Sign Structure" of the Standard Specifications shall apply to poles and mast arms for units of aluminum design.

In addition, all luminaire poles shall meet the following minimum structural requirements:

- Design Specification: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, current edition and Interims Revisions.
- Minimum Structural Requirements: As a minimum, the diameter of the lower end of the shaft shall not be less than 8.0 inches with taper to a diameter of at least 3.4 inches at the top, or as shown on the plans. Pole shafts shall be a single-piece. Two-pieces, slip-fitted pole shafts will not be allowed.
- Nut Covers: Required for "shoe base" only.
- Hand Hole: Size (Inside Dimension) – 4 inches width x 6 inches height.
- Anchor Bolts: Anchor bolts shall be of sufficient size and strength and meet the requirements of Section 714 of the Standard Specifications.
- Construction Specifications: Standard Specifications for Highway Construction (current edition) with applicable Supplemental Specifications and Special Provisions.
- Base Wind Speed: 90 MPH

CONSTRUCTION. (A) General. Prior to construction, the Contractor shall provide documentation to the Project Engineer, to ensure Arkansas State Codes (§17-28-101 et seq. and §20-31-101 et seq.) are met. The documentation shall include:

- (1) Electricians' license information and expiration date.
- (2) The ratio of licensed-electrician-to-apprentice-electricians.

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(3) Printed search result of licensed electricians from Arkansas Department of Labor Electrician Licensee Directory (<https://www.ark.org/labor/electrician/search.php>).

All licenses shall be valid and current.

The Contractor shall contact the local utility companies and/or Arkansas One Call to determine the location of underground utilities in areas where new foundations are to be constructed. The Contractor shall maintain the utility location markings until they are no longer necessary.

The Contractor shall be responsible for all incidental damages during construction at no additional cost to the Department.

If existing underground conduit is to be incorporated into a new system, clean it with a mandrel or cylindrical wire brush and clean with compressed air.

Splices are allowed only at pull boxes and pole bases. All splices shall be made by using UL Listed or UL Certified products. All splices shall be watertight.

Degrees of tilt for luminaires shall be zero (0) to comply with BUG rating of U0 and Arkansas Shielded Outdoor Lighting Act.

(B) Luminaire Poles. All luminaire poles shall be placed according to pole orientations shown on the plans, or as directed by the Engineer.

Aluminum alloy surfaces contacting concrete foundations and steel surfaces shall be coated with or bedded in an aluminum caulking compound, such as alumilastic or other suitable material approved by the Engineer.

Hands holes shall be on the opposite side of the traveled lanes. Mast arms, if used, shall be included with the poles.

Cost of painting, powder coating, or anodization will not be paid for directly, and shall be considered subsidiary to the unit price bid for LED Roadway Illumination Pole. Subsequent to erection, any damaged galvanized coating or paint shall be repaired according to Standard Specification Section 807.88 or Section 638, as appropriate.

(C) Breakaway Transformer Base. Where designated in the Unit Item as a "T-Base", a breakaway transformer base shall be furnished and installed as per manufacturer's recommendation. Transformer base shall be permanent mold casting of Aluminum Alloy 359-T6 or equal as specified by the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. Bases shall be a minimum of 16-inches high and square in cross section. The dimensions shall be approximately those dimensions shown on the plans.

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Any change in dimension, approved by the Engineer, shall not lessen the design load strength of the base.

A detail sheet illustrating the proper installation of the T-Base shall be supplied to the Department.

A written certification shall be supplied to the Department that the T-Base meets the minimum requirements for AAHSTO breakaway specifications.

In lieu of T-Base, breakaway couplings are allowed with the Engineer's approval.

(D) Pole foundations. Pole foundations for luminaire poles shall be constructed in firm earth to the minimum size and depth shown on the plans. The location of foundations shall be as shown on the plans, or as directed by the Engineer. Foundations shall be placed monolithically and have 1" chamfer at the top. Concrete shall be constructed according to Standard Specifications, Section 802.

(E) Luminaire Wind Loading. Design shall support the maximum luminaire properties for the pole type specified for attachment of the following luminaire(s):

LED Cobra Head

- Effective Projected Area (EPA): less than or equal to 1.5 sq. ft.
- Weight: less than or equal to 35lbs.

Luminaire Arm (where required)

- All arms shall be single member (no truss)
- Length: variable, see plans

(F) Wiring. Two (2) 12 AWG copper with one (1) 12 AWG EGC conductors shall be used for luminaires. Conductors shall run through the shaft to the pole base. Approved watertight breakaway disconnect, dual rated for copper and aluminum connections, shall be used to terminate the wires in the pole base, and from the pole base to the splices in the pull box. The current carrying conductor shall be fused. The EGC shall be neutral/dummy fused. All in-line disconnects shall be located in the pole base.

Waterproof breakaways disconnect and URD multi-port connectors shall be a mechanical "Homac Flood-seal", "Eaton Bussmann," or approved equivalent.

All conductors for luminaire and wiring requirements for poles with luminaires shall be considered subsidiary to the special provision LED Roadway Illumination Pole.

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(G) Miscellaneous. A detail sheet illustrating the proper installation of the transformer base shall be supplied to the Department.

A written certification shall be supplied to the Department that the transformer base meets the minimum requirements for AASHTO breakaway specifications.

Poles not requiring T-Base, or non-breakaway base shall be designated in the Unit Item as "Shoe Base".

Barrier mounted poles shall be designated in the Unit Item as "Barrier Mounted".

(H) Test Requirements and Quality Assurance.**A. Meg and Leakage Test.**

Where specified in the contract, contractor shall perform the Meg Test and Leakage Test in accordance contract specifications. This will be paid for the Electrical Conductors in Conduit pay item.

B. 14-Day Burn-Out Test.

Contractor shall conduct minimum 14-day burn-out test for the complete lighting system. The Contractor shall be responsible to correct, and if needed, replace any malfunctioning equipment during the 14-day burn out test at no cost to the Department. The 14-day burn-out test shall be restarted in the event of any malfunctioning equipment.

C. 30-Day Performance Test.

Contractor shall perform 30-day performance test of the lighting system. The lighting system shall be functioning as the normal operations it intended for the system. The Contractor shall be responsible to correct, and if needed, replace any malfunctioning equipment during the 30-day performance test at no cost to the Department. The 30-day performance test shall be restarted in the event of any malfunctioning equipment. The 30-day performance test shall not start prior to the completion and approval of the 14-day burn-out test.

D. 6-Month Guarantee period.

Contractor shall guarantee satisfactory in-service operation of the mechanical and electrical equipment and related components for a period of 6 months following completion of the 30-day performance test. Contractor to maintain the lighting system for the 6-month guarantee period. The Contractor shall be responsible to correct, and if needed, replace any malfunctioning equipment during performing test at no cost to the Department. The 6-month guarantee period shall be restarted in the event of any malfunctioning equipment. The 6-month guarantee period shall not start prior to the completion and approval of the 30-day performance test.

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LED ROADWAY ILLUMINATION POLE

E. Warranty documents.

The contractor shall provide and transfer 5-year manufacturer’s warranty to the maintenance authority (e.g., County, or City) at the end of the 6-month guarantee period.

SUBMITTALS. The Contractor shall submit all manufacturers’ parts list, specification sheets, ordering information, shop drawings, IES file of luminaire, luminaire reports: LM-79, LM-80, and LM-21 (L70), released within the last five years, information on all manufacturers’ warranty and guarantee information, and certifications. All submittals shall be legible. The Contractor shall clearly state and highlight all requirements mentioned in this Special Provision.

METHOD OF MEASUREMENT. Work completed and accepted under this item shall be measured by the unit. One unit shall consist of luminaire; mast arm, where required; illumination pole; pole foundation; conductors; breakaway disconnect; fuses; and all other hardware required for installing the roadway illumination pole.

“Lumen” shall refer to the lumen output of luminaire, “Luminaire” shall refer to the shape of luminaire used (e.g., cobra head, shoebox, or acorn). “Base” refers to T-Base, or Shoe Base meeting the requirements of this Special Provision. Height shall refer to the mounting height of the luminaire including base.

BASIS OF PAYMENT. Work completed, accepted, and measured as provided above will be paid for at the contract unit price bid per each for LED Roadway Illumination Pole, which price shall be full compensation for erecting, furnishing, and installing the luminaire, mast arm (where required), pole, T-Base (where required), pole foundation and ground rod with grounding electrode; for connection of electrical components, including waterproof breakaway disconnect; for excavation, backfill, compaction, and removal of surplus material; and for all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
LED Roadway Illumination Pole (___ Lumens, ____, ____, ___ ‘)	Each

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LED LUMINAIRE ASSEMBLY (BUG U0 TYPE)

1. **DESCRIPTION.** This work shall consist of furnishing and installing LED luminaire assemblies on traffic signal poles, including the accessories, in accordance with these specifications and at the locations shown on the plans or as directed.
2. **MATERIALS AND CONSTRUCTION REQUIREMENTS.**

A. Luminaire. Each luminaire assembly shall consist of a "Cobra Head", power door style; Light Emitting Diode (LED) light source capable of outputting at least minimum of 12,000 lumens and a maximum of 14,000 lumens, and optics to produce an IESNA Type-III light distribution with a BUG rating of U0. The rated Correlated Color Temperature (CCT) shall be 4000° K +/- 200°K, and the Color Rendering Index (CRI) shall be no less than 60. As a minimum, 40% of Light Flux values shall be maintained on the downward street side; with greater than 0.002 foot-candles per 1000 lamp lumens at a point of "1 x 4" mounting heights on the downward street side. Mesopic multipliers (i.e., effective luminance factors) shall not be used. All values shall assume photopic visual adaptation. Luminaires with a Light Loss Factor using the L70 Method shall have a minimum rating of 50,000 hours, and a minimum 5-year warranty. The warranty shall provide for the repair or replacement of defective electrical parts (including light source and power supplies/drivers) for a minimum of five (5) years from the date of purchase. Luminaire shall be able to operate normally in temperatures from -40° C to +40° C. LED light source(s) and driver(s) shall be RoHS compliant.

The luminaires shall be all aluminum die cast hinged construction. Each luminaire assembly shall have a photocell and receptacle in the top of the luminaire housing and shall meet the requirements of the local utility company. The luminaires shall be rated IP-66 or better and shall employ the use of borosilicate glass lenses. All luminaire internal components shall be assembled and pre-wired using modular electrical connections and shall be designed for ease of component replacement and end-of-life disassembly.

All luminaires shall contain built-in drivers with power door assembly and be of an approved streamlined design. Drivers shall be wired for line voltage as indicated on the plan sheets (plus or minus 10%-line voltage, variation), 60-cycle, single phase, multiple circuit operation, with high power factor (90% or higher). The driver shall be suitable for the proper operation of the LED array inclusive to the luminaire assembly, with a minimum open circuit voltage as specified on the plan sheets and shall be an easily replaceable part of the luminaire assembly. The luminaire shall be listed for wet locations by a U.S. Occupational Safety Health Administration (OSHA) Nationally Recognized Testing Laboratory (NRTL). The luminaire shall have lightning suppression equipment

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LED LUMINAIRE ASSEMBLY (BUG U0 TYPE)

capable of meeting the performance requirements for electrical immunity as specified in ANSI C136.2, using a combination wave test level of at least 10kV/5kA.

Luminaire assemblies (with accessories) shall be supplied in one style or model number from one manufacturer only. The contractor shall submit manufacturer's brochures with illustrations and data in addition to LM-79, LM-80 and TM-21 reports to the Arkansas Department of Transportation for approval of luminaires, accessories and installation details. All submitted luminaires shall be listed on the Department of Energy's LED Lighting Facts website, and all supporting calculations and test data from the LM-79, LM-80 and TM-21 reports must be in accordance with LED Lighting Facts guidance.

B. Photocell. Each luminaire assembly shall have a solid-state photocell and receptacle in the top of the luminaire housing. Photocells shall have a locking-type photoelectric control with a rating of 5,000 operations minimum (13 years) on loads of 1800VA. The photocell shall operate at the same voltage rating as the luminaire driver.

3. **METHOD OF MEASUREMENT.** Completed and accepted LED Luminaire Assembly will be measured by the unit.
4. **BASIS OF PAYMENT.** Work completed and accepted under this item and measured as provided above shall be paid for at the contract unit price bid for each LED Luminaire Assembly, which price shall be full compensation for furnishing and installing the luminaires, lamps of the type described herein, driver, photocell, and all materials, equipment, tools, labor, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
LED Luminaire Assembly	Each

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LED TRAFFIC SIGNAL HEAD

1. **DESCRIPTION.** This item shall consist of furnishing and installing 300 mm (12") diameter Traffic Signal Heads and components based on Light Emitting Diode (LED) technology according to these specifications as well as **Section 706 Traffic Signal Head** of the Standard Specifications for Highway Construction, Edition of 2014, to approval of the engineer. Portions of the standard specifications will be superseded by these special provisions.
2. **MATERIALS.** The LED modules shall be suitable for span wire and mast arm mounted signals. Units must meet the following specifications to be accepted.
 - (A) **Physical and Mechanical.** LED traffic signal modules designed shall not require special tools for installation. Retrofit replacement LED signal modules shall fit into existing traffic signal housings built to the VTCSH Standard without modification to the housing. Installation of a retrofit replacement LED signal module into an existing signal housing shall only require the removal of the existing optical unit components, i.e., lens, lamp, and gaskets; shall be weather tight and fit securely in the housing; and shall connect directly to existing electrical wiring utilizing spade connectors. It shall not be necessary to remove reflector or lamp module. Reflector and lamp module is not required where new housings are provided.
 - (B) **Optical Requirements.** The RED and GREEN modules shall be measured per ITE specifications and are required to meet luminous values that are a minimum of 115 percent greater than the required minimum values in the specifications at the time of production. The YELLOW modules shall be tested for luminous output at 25°C, allowing the modules to achieve thermal equilibrium for 60 minutes, while the modules are energized at nominal operating voltage, at a 8.3% (or 1/12) duty cycle or 5 sec on/55 sec off). The yellow modules shall meet all other ITE specifications.
 - (C) **Optical Unit.** LED signal modules shall meet the following requirements:
 - Optical unit replacement** - The LED module shall be constructed to allow the replacement of the outer lens and/or the light engine when needed.
 - Lens Surface** - The external lens shall be smooth on the outside to prevent excessive dirt/dust buildup.
 - Tinting** - The RED, YELLOW and optionally on GREEN lens shall be tinted or shall use transparent film or materials with similar characteristics.
 - Chromaticity** - The measured coordinates of LED signal modules shall conform to the chromaticity requirements of Section 8.04 and Figure 1 of the VTCSH standard.
 - Environment** - The LED signal module shall be rated for use in the ambient operating temperature range, measured at the exposed rear of the module, of -40° C (-40° F) to +74°C (+165° F). The LED sign module shall be protected against dust and moisture intrusion per the requirements of NEMA Standard 250-1991, sections 4.7.2.1 and

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4.7.3.2, for Type 4 enclosures to protect all internal LED, electronic, and electrical components. The LED signal module lens shall be UV Stabilized.

Preassembly - The LED signal module shall be a single, self-contained device, not requiring on-site assembly for installation into an existing traffic signal housing. The power supply for the LED signal module may be either integral or packaged as a separate module. The power supply may be designed to fit and mount inside the traffic signal housing adjacent to the LED signal module. The assembly and manufacturing process for the LED signal assembly shall be designed to assure all internal LED and electronic components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.

LED Drive Circuitry (parallel) - The individual LED light sources shall be wired so that a catastrophic failure of one LED light source will result in the loss of only that one LED light source, and the loss of no more than 1% of the total LED'S within the LED signal module.

Material Composition - Materials used for the lens and signal module construction shall conform to ASTM specification for the materials where applicable. Enclosures containing either the power supply or electronic components of the signal modules shall be made of UL94VO flame retardant materials. The lens of the signal module is excluded from this requirement.

Identification Markings - Each individual LED signal module shall be identified for warranty purposes. Each LED signal module shall be identified on the backside with the manufacturer's name and serial number. The following operating characteristics shall be identified: nominal operating voltage, power consumption, and Volt-Ampere. Modules shall have a prominent and permanent vertical indexing indicator, i.e. UP ARROW or the word UP or TOP, for correct indexing and orientation inside a signal housing. Modules conforming to this specification may have the following statement: "Manufactured in Conformance with the Interim Purchase Specification of the ITE for LED vehicle Traffic Signal Modules" on an attached label.

The first sentence of Subsection 706.02, Materials. (d) is deleted and the following substituted therefore:

The Contractor shall furnish and install the proper signs adjacent to signal heads controlling an exclusive left turn lane:

- Traffic Signal Head (3 Sec., 1-Way) (Red Arrow, Yellow Arrow, and Green Arrow) for protect only shall include a MUTCD R10-10 sign (30" x 36") (LEFT TURN SIGNAL).
- Traffic Signal Head (3 Sec., 1-Way) (Red Arrow, Yellow Arrow, and Flashing Yellow Arrow) for permitted only shall include a MUTCD R10-12a sign (30" x 36") (LEFT TURN YIELD ON FLASHING YELLOW ARROW).

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- Traffic Signal Head (4 Sec., 1-Way) (Red Arrow, Yellow Arrow, Flashing Yellow Arrow, and Green Arrow) for protected-permitted shall include a MUTCD R10-12a sign (30" x 36") (LEFT TURN YIELD ON FLASHING YELLOW ARROW).
- Traffic Signal Head (5 Sec., 1-Way) (Red Ball, Yellow Ball, Green Ball, Yellow Arrow, and Green Arrow) for protected-permitted shall include a MUTCD R10-12 sign (30" x 36") (LEFT TURN YIELD ON GREEN (symbolic green ball)).

The sign type, size, and layout for any additional signs shall be furnished and installed as shown in the plans. All signs shall comply with Section 723. Unless otherwise specified, the sheeting shall be by Type III or IV.

(E) Manufacturer's Warranty. The standard contract warranty shall apply with time extensions applied to materials. The contractor shall provide a written manufacturer's guarantee to the Agency (City, County or etc.) who provides electrical service and maintenance of the intersection. Warranty shall provide the following stipulations:

- Isolated Failures Warranty Period not less than 7 Years
- Design Failure Warranty Period not less than 5 Years

Warranty for isolated lens failure shall include replacement LED module at no cost for materials and shipping for a period of 7 years from the date the intersection is considered substantially complete by the engineer. An LED module shall be considered failed when the luminosity drops below the ITE requirements listed above.

A product "Design Failure" is considered to have occurred if, within a period of 5 years or less, a total of ten percent (10%) of the LED modules supplied on a particular Job are considered failed as described above. The supplier shall then "recall" the entire shipment at no cost to the agency maintaining the equipment. This shall include labor and equipment necessary to replace the units.

3. CONSTRUCTION REQUIREMENTS. Construction shall be in accordance with the standard specifications. No distinction is made for span-wire installations, post mount, mast arm mount, or other mounting methods as described on the plan sheet(s).

Whether complete head assembly is replaced, or existing head is retrofitted with new lenses, contractor shall be responsible for aligning head properly with approach lanes. This does not include relocating head and bracket but adjusting the alignment of the head to achieve maximum visibility to motorists.

4. METHOD OF MEASUREMENT. Units are bid as "3 Section", "4 Section" or "5 Section". A 3 Section unit consists of one each: Red Ball, Yellow Ball, and Green Ball or Red Arrow, Yellow Arrow, and Green Arrow or Red Arrow, Yellow Arrow, and Flashing Yellow Arrow. A 4 Section unit consists of one each: Red Ball, Yellow Ball, Green Ball, and Green Arrow or

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Red Arrow, Yellow Ball, Flashing Yellow Arrow, and Green Arrow. A 5 Section unit consists of one each: Red Ball, Yellow Ball, Green Ball, Yellow Arrow, and Green Arrow. No distinction shall be made in the unit based on the orientation of the arrow indications.

- A. Traffic Signal Head, LED.** Work completed and accepted and measured as provided above will be measured by unit.
- B. Traffic Signal Head, LED Lens, Retrofit (Ret).** Work completed and accepted and measured as provided above will be measured by unit.

5. BASIS OF PAYMENT.

- A. LED Traffic Signal Head.** Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per each for Traffic Signal Head, LED of the type, display and size specified, which price shall be full compensation for furnishing and installing all materials and signs; and for all labor, equipment, tools, and incidentals necessary to complete the work.
- B. LED Traffic Signal Lens Ret.** Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per each for Traffic Signal Head, LED Lens, Retrofit of the type, number of sections, color and display specified, which price shall be full compensation for removing existing unnecessary hardware and modifying existing housing; and for furnishing and installing all materials; and for all labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Traffic Signal Head, LED, (___Section, 1 Way)	Each
Traffic Signal Head, LED Lens, Retrofit (___Section, 1 Way)	Each

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**SERVICE POINT ASSEMBLY
(TRAFFIC CONTROL DEVICES)**

DESCRIPTION. This item consists of furnishing and installing a distribution panel, circuit breaker, lightning arrestor, weatherhead, clamps, wiring, ground rod, and miscellaneous fittings at locations designated on the plans and in accordance with the latest version of the National Electrical Code.

Lightning arrestor shall be SPD Type 2 (load side) per NEC and UL Code 1449.

All construction and wiring shall be in compliance with local electrical codes. The Contractor shall perform all necessary liaisons with local power companies in order to ascertain such specific requirements as the power company may apply to each location.

MATERIALS AND CONSTRUCTION REQUIREMENTS. Height of the service riser weatherhead shall be 20 feet or greater depending on street crossings or other obstructions, unless otherwise approved by the Engineer.

The required weatherhead, conduit nipples, couplings, clamps and other fittings exposed to the weather shall be hot dipped galvanized steel and shall be attached to the pole in such a manner as to facilitate the final steel conduit connecting weatherhead. Service disconnect, distribution cabinet and tie to underground circuits is paid for by Service Point Assembly. Galvanized steel conduit for riser shall be paid as a separate item.

The Contractor shall furnish and install service feeder wire from the distribution cabinet to the main breaker and from the main breaker past the weatherhead. Tie-in and splicing of the service feeder wire to the secondaries supplied by the local utility will be performed by others and shall not be considered a part of this contract. Grounding shall be as shown on the Standard Drawing SD-9 (Service Point).

Mounted at the service location shall be NEMA 3R enclosure(s), circuit breaker, distribution panel and main breaker of a design and model number suitable to the local power company and as approved by the Engineer. The circuit breaker shall be magnetic trip only and sized in accordance with the plans. If required, a meter base provided by the utility company shall be installed above the distribution panel. All enclosures and circuit breakers shall be rated for 240 V.A.C. or greater, unless otherwise designated on the plan sheets. A 30 amp breaker shall be provided.

Where lighting is included in the signal installation for intersection lighting, a 20 amp breaker shall be provided.

The Contractor shall submit to the Engineer two (2) printed copies of the applicable brochures containing the design criteria for the equipment which the Contractor proposes to install for approval. The specific items that are proposed for use shall be clearly marked in the applicable

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brochures. A list shall be attached to identify the item and contain the manufacturer, quantity, model, and identifying descriptions of each item. The items to be submitted: load centers and enclosures, lightning arrestor, and all circuit breakers.

METHOD OF MEASUREMENT. Completed and accepted Service Point Assembly will be measured by the unit.

BASIS OF PAYMENT. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid each for Service Point Assembly for the number of circuits specified, which price shall be full compensation for furnishing and installing a treated wood pole, enclosure(s), circuit breaker(s), main breaker, distribution panel, steel conduit, conduit fittings, wiring and ground rod; for testing the service point assembly; and for all materials, equipment, tools, labor, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item

Pay Unit

Service Point Assembly (____ Circuit(s))

Each

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****PEDESTAL TYPE SERVICE POINT ASSEMBLY**

DESCRIPTION. This item consists of furnishing and installing a pedestal type service point assembly, pedestal concrete foundations, ground rods, breakers, photoelectric cell switch, wire, and miscellaneous fittings at locations designated on the plans and in accordance with the latest version of the National Electrical Code.

All construction and wiring shall be in compliance with local electrical codes per NEC current edition. The Contractor shall perform all necessary liaison with local power companies in order to ascertain such specific requirements as the power company may apply to each location.

MATERIAL and CONSTRUCTION REQUIREMENTS

The pedestal type service point shall be constructed as shown in the construction plans and details. The enclosure shall be NEMA 3R construction with expandable load centers to allow for future expansion. The pedestal type service point assembly shall be cold sequenced (have a disconnecting means on the utility side of the meter). If required by the local utility it is the Contractor's responsibility to install the conduit from the pedestal type service point to the location required by the utility to connect to the local utility secondary conductors. The pedestal type service point and secondary disconnect shall meet EUSERC 308 utility standards. All external hardware such as (screws, bolts, hinges, handles, hasps and sealing screws) shall be stainless steel. The unit shall be UL listed as a industrial control panel (UL 508).

Amperage - The service point assembly shall be rated for 100 Amps and be supplied with a 100 Amp 2-pole main breaker.

System Voltage - The system voltage shall be 120/240, single phase, three wire four jaw.

Distribution interior - The distribution interiors shall consist of a switched panel board with five (5) circuits. The circuit breaker shall be magnetic trip only and sized in accordance with the plans. All enclosures and circuit breakers shall be rated for 240 V.A.C. or greater, unless otherwise designated on the plans sheets. The contactor amperage shall be rated at a minimum of 100 amps. The service point shall have a photoelectric cell for controlled loads. The unit shall have 22K ampere interrupting capacity. The pedestal type service point assembly shall have a H. O. A. (Hand Off Auto) switch. The distribution interior shall include lighting arrestors of a type approved by the Engineer.

Finish - The pedestal type service point assembly cabinet finish shall be anodized aluminum.

Size 100 Amp Service Pedestal - The enclosure size shall be 16" x 17" x 48" with ringless meter socket or the meter socket required by the utility (Milbank SL series, Tesco Tescoflex series, Eaton CMP series, or approved equal).

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PEDESTAL TYPE SERVICE POINT ASSEMBLY

Base - The pedestal shall be installed on a concrete pad with anchor bolt kit installed as recommended by the manufacture with a minimum height of 18” above ground level at a location as shown in the plans. The pad shall be of the dimensions as shown in the detail sheet.

Contractor shall install a 5/8" x 10' copper ground rod in the first and last pull box and are subsidiary to pay item service point assembly.

METHOD OF MEASUREMENTS. Work completed and accepted items will be measured by the unit.

BASIS OF PAYMENT. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid each for Pedestal Type Service Point Assembly for the number of circuits, size and amperage specified which price shall be full compensation for furnishing and installing enclosures(s), circuit breakers(s), main breaker, distribution panel, conduit, concrete pad with anchor bolts, conduit fittings, wire and ground rod; for testing the service point assembly; and for all materials, equipment, tools labor and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Pedestal Type Service Point Assembly (___ Circuits, 100 AMP)	Each

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ENHANCED THERMOPLASTIC PAVEMENT MARKING

DESCRIPTION. This item shall consist of furnishing and placing enhanced thermoplastic pavement markings, of the color and type specified, all according to these specifications and in conformity with the dimensions and at the locations shown on the plans or as directed.

The markings are to be placed under existing traffic conditions. The work shall comply with the MUTCD except as modified by these specifications.

MATERIALS. The material used shall be a product especially compounded for traffic markings. Each container shall be clearly and adequately marked to indicate the color, weight, batch or lot number, and type of material.

The Contractor shall furnish a certification from the manufacturer showing that the material requirements of this specification have been met.

The material shall meet the requirements of AASHTO M 249 with the following additions:

Yellow materials color specifications shall be as follows:

Color Specifications							
Color Specification Limits - Daytime Initial							
Chromaticity Coordinates							
1		2		3		4	
x	y	x	y	x	y	x	y
0.499	0.466	0.545	0.455	0.518	0.432	0.485	0.454
Luminance Factor, Y (%)							
Minimum				Maximum			
40.0				60.0			

Initial daytime color determination will be made in accordance with AASHTO T 250. Values shall be evaluated on material without the drop-on beads.

Color Specifications Limits - Daytime Retained							
Chromaticity Coordinates							
1		2		3		4	
x	y	x	y	x	y	x	y
0.560	0.440	0.490	0.510	0.420	0.440	0.460	0.400

Retained daytime color limits shall conform to the specifications for a minimum of ninety days for construction pavement markings and one year for all other markings. Retained readings will be determined on a beaded surface in accordance with the requirements of ASTM E 2366.

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Color Specifications Limits - Nighttime Initial with drop-on beads							
Chromaticity Coordinates							
1		2		3		4	
x	y	x	y	x	y	x	y
0.575	0.425	.508	0.415	0.473	0.453	0.510	0.490

Initial nighttime color limits will be determined in accordance with the requirements of ASTM E 2367 on a beaded surface.

The pigments used for the pavement marking material compound shall not contain any compounds that will exceed the values listed in the Environmental Protection Agency Code of Federal Regulations (CFR) 40, Section 261.24, Table 1.

Heat-fused, pre-formed thermoplastic pavement marking material shall meet the requirements of AASHTO M249 with the exception of the relevant differences due to the material being pre-formed.

The material shall not break down or deteriorate if held at the plastic temperature for a period of 4 hours nor by reason of 4 re-heatings to the plastic temperature. The temperature-viscosity characteristics of the thermoplastic material shall remain consistent and there shall be no obvious change in the color of the material.

The material shall not deteriorate by contact with sodium chloride, calcium chloride, or other chemical formations on the roadway or streets, or because of the oil contact on pavement material, or from oil droppings from traffic.

After application and proper drying time, material shall show neither appreciable deformation nor discoloration under local traffic conditions and in air or road temperatures ranging from 0° F (-18° C) to 160° F (71° C). The material shall not smear or spread under normal traffic conditions at temperatures below 160° F (71° C).

Under this specification, the term "drying time" shall be defined as the minimum elapsed time after application when the pavement marking shall have and retain the characteristics required in the preceding paragraphs. In addition, the drying time shall be established by the minimum elapsed time after application when traffic will leave no impression or imprint on the applied marking. The drying time shall not exceed a characteristic straight-line curve, the limits of which are 2 minutes at 50° F (10° C) and 15 minutes at 90° F (32° C), measured at a maximum relative humidity of 70%.

The pavement markings shall maintain its original dimension and placement. The exposed surface shall be free of tack. Cold ductility of the material shall be such as to permit normal movement with the road surface without chipping or cracking. The material shall not be slippery when wet and it shall not lift from the pavement in freezing weather.

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The marking shall have a uniform cross section. The density and character of the material shall be uniform throughout its thickness and shall be completely reflectorized both internally and externally.

The glass beads used for the intermix and the drop-on application shall meet AASHTO M-247 for the gradation specified below, with the exception that the glass beads shall have a minimum 80% true spheres in all gradations.

Intermix Glass Beads. The required 30-40% glass bead intermix shall be comprised of 50% of AASHTO M 247 Type 1 and 50% of AASHTO M 247 Type 3 beads. The beads shall be uncoated.

Drop-On Beads. Drop-on beads shall be applied using a double drop system capable of applying the beads at the specified application rates. Drop-on beads shall consist of AASHTO M 247 60% Type 1 beads and 40% Type 4 beads. The beads shall be dual coated for moisture resistance and adhesion.

CONSTRUCTION REQUIREMENTS. The thermoplastic compound shall be screed or ribbon extruded to the pavement surface. Heat-fused, pre-formed pavement markings shall be fusible to asphalt or Portland cement concrete surfaces by means of the normal heat of a propane weed-burner type of torch or other heating device as recommended by the manufacturer.

The equipment used to apply the thermoplastic compound onto the pavement shall be suitably equipped for heating and controlling the flow of the material. The equipment shall be constructed to provide continuous mixing and agitation of the material. The conveying parts of the equipment, between the main material reservoir and applicator, shall be so constructed as to prevent accumulation and clogging. The equipment shall be constructed so that all mixing and conveying parts, up to and including the applicator, maintain the material at the plastic temperature. The thermoplastic material shall be dispensed at a temperature recommended by the manufacturer. The applicator shall include a cutoff device remotely controlled to provide clean, square stripe ends and to provide a method for applying skip lines.

The thermoplastic reservoir shall be insulated and equipped with an automatic thermostatic control to maintain the proper temperature of the material.

The thermoplastic machine shall comply with the requirements of the National Board of Fire Underwriters.

Beads applied to the surface of the completed stripe shall be applied by an automatic double drop bead dispenser attached to the pavement marking equipment in such a manner that the beads are immediately dispensed upon the completed line. The bead dispenser shall be equipped with an automatic cutoff control, synchronized with the cutoff of the pavement marking equipment. The Type 1 and Type 4 beads shall be automatically applied at a combined total minimum uniform rate of 8 to 10 pounds of glass beads to every 100 square feet. The Type 4

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beads shall be applied first, and shall be followed immediately by the Type 1 bead application. They shall be applied across the entire line width, ensuring uniform application and embedment of the beads to 50-60% of the bead diameter.

Thermoplastic markings shall not be applied to the pavement surface when the pavement surface temperature is less than 50° F or when the pavement surface shows evidence of moisture.

On new concrete pavements where no pavement markings exist or on existing concrete or asphalt pavements where the existing pavement markings are paint or thermoplastic and do not conflict with the proposed pavement markings, blasting with water or sand or a combination thereof will be required to remove any curing compound, oxidized paint or thermoplastic, or dirt to ensure a good bond. This blasting is considered surface preparation. On newly constructed asphalt pavements any sand, grit, or other surface contaminants must be removed using compressed air and/or sweeping. Water blasting may be necessary to remove surface contaminants which cannot be removed by the use of compressed air and/or sweeping. This work is considered surface preparation.

Conflicting pavement markings that exist shall be removed by blasting with water and/or sand or by grinding. This blasting or grinding is considered pavement marking removal.

The thickness of thermoplastic markings above the roadway surface shall be 90 mils. The thickness will be measured by a device supplied by the Contractor during the course of the project capable of measuring the thickness of the marking as installed on the pavement. The minimum thickness, as required above, will be measured in the center of the line when gauged by the equipment described above. The minimum thickness 1/2" from the edges shall not be less than 75% of the thickness required in the center. Maximum thickness of markings is 3/16".

On concrete pavements, paint pavement markings according to Section 718 shall be applied as a primer for the thermoplastic markings, except where thermoplastic markings are to be applied over existing thermoplastic markings. Paint applied to concrete pavement solely as a primer will not be measured or paid for separately, but full compensation therefor will be considered included in the contract unit prices bid for the various items of Enhanced Thermoplastic Pavement Markings. A primer other than paint may be used when recommended by the thermoplastic manufacturer.

A primer is not required for asphalt pavements, but paint pavement markings complying with Section 718 may be used by the Contractor as a primer at no cost to the Department.

When temperature limitations prohibit placement of thermoplastic markings within the 3 or 14 day limit specified in Section 604, the Contractor shall place painted markings according to Section 718. Painted markings required due to temperature limitations will be measured and paid for under Section 604. In this case, the Contractor shall maintain the painted markings at no additional cost to the Department until the thermoplastic markings, including primer if required, are installed.

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Spotting the pavement for centerline location on two-way roadways is required. It will be the responsibility of the Contractor to spot using a string line or chain so that spots are placed at intervals not exceeding 10'. The Department will establish the no passing zones if required. On one-way roadways spotting is required for the initial edge line or lane line placed. Edge lines and/or lane lines may be installed by referencing to center or lane lines. Edge lines shall not be broken for driveways. The trace of the thermoplastic line shall be uniform.

The finished lines shall have well defined edges, shall be uniform in thickness, and shall be straight and true. No stripe shall be less than the specified width. Any corrections of variations in width or alignment of the stripes shall not be made abruptly. Lines that cannot be corrected to meet these requirements shall be removed in accordance with Section 604 at the Contractor's expense.

Line removal as specified on the plans shall be performed in such a manner that no conflicting pavement marking will be left in place. Removal of the pavement marking by a means that will gouge the surface will not be permitted.

The Contractor shall use only workers experienced in installing thermoplastic markings.

METHOD OF MEASUREMENT.

(a) Enhanced Thermoplastic Pavement Markings will be measured by the linear foot (meter) of line of the width specified actually placed.

(b) Sand or water blasting in surface preparation will not be paid for separately, but full compensation therefor will be considered included in the contract unit price bid for Enhanced Thermoplastic Pavement Marking.

(c) Removal of pavement markings will be measured and paid for under Section 604.

BASIS OF PAYMENT. (a) Enhanced Thermoplastic Pavement Markings. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per linear foot for Enhanced Thermoplastic Pavement Markings of the width specified, which price shall be full compensation for furnishing and installing markings; for surface preparation; and for all labor, equipment, tools, furnishing thickness gauge, and incidentals necessary to complete the work.

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Payment will be made under:

Pay Item	Pay Unit
Enhanced Thermoplastic Pavement Marking White (")	Linear Foot
Enhanced Thermoplastic Pavement Marking Yellow (")	Linear Foot
Enhanced Thermoplastic Pavement Marking (Words)	Each
Enhanced Thermoplastic Pavement Marking (Arrows)	Each
Enhanced Thermoplastic Pavement Marking (Railroad Emblems)	Each
Enhanced Thermoplastic Pavement Marking (Bike Emblems)	Each

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**STREET NAME SIGN
(MAST ARM MOUNTED)**

DESCRIPTION. This item consists of furnishing and installing a Street Name Sign mounted on a traffic signal mast arm at locations designated on the plan sheets or as directed by the Engineer. All construction and materials shall be in accordance with the Standard Specifications for Highway Construction, Edition of 2014, with applicable supplemental specifications.

MATERIALS AND CONSTRUCTION REQUIREMENTS. Contractor shall provide all mounting hardware, sign blank, sheeting, tools, equipment and labor necessary to complete the installation. Sign design and construction shall be as shown on the plan sheets or as directed by the Engineer.

METHOD OF MEASUREMENT. Completed and accepted Street Name Sign shall be measured by the unit.

BASIS OF PAYMENT. Work completed, accepted and measured as provided above will be paid at the contract unit price bid for Street Name Sign which price shall be full compensation for furnishing the sign, mounting hardware, equipment, tools, labor, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item

Pay Unit

___" Street Name Sign

Each

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OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORT

Description. This item shall consist of furnishing and installing Omni-directional breakaway sign supports for roadside mounted signs according to these specifications and to the dimensions and details and at the locations shown on the plans or as directed.

Materials. The posts shall conform to the Standard Specification for Electric-Resistance-Welded Metallic-Coated Carbon Steel Mechanical Tubing, ASTM designation A787. The length of each post for each sign shall be verified by the Contractor before ordering to meet the existing field conditions and to conform to the specified sign mounting heights.

The Contractor shall submit to the Engineer certified mill test reports showing chemical analysis and physical tests. The square sign post tubing shall be hot-dipped galvanized conforming to ASTM specification A653 designation G90. The weld is zinc-coated after scarfing operation. The cross section of the post shall be square tubing formed of 10 gauge steel, carefully formed into size, and induction welded in such a manner that neither weld nor flash shall interfere with telescoping properties.

Holes shall be 3/ 8" in diameter on 1" centers for the entire length of the post. Holes shall be on the center line of each side in true alignment and opposite to each other. All holes and sheared ends shall be free from burrs.

All high strength bolts, nuts, and washers shall comply with AASHTO M 164M. Shims shall be fabricated from brass shim stock or strip complying with ASTM B 36.

Concrete for footings shall comply with Section 802 for Class S concrete. The Department will perform all acceptance sampling and testing at the frequencies shown for Contractor acceptance testing in Subsection 802.06. Reinforcing steel shall comply with Section 804 for Grade 40. Footings for standard sign supports shall not be reinforced.

Hardware required for attachment of the sign(s) to the support shall comply with Section 724.

Construction Requirements. Excavation, backfill, compaction, and disposal of surplus materials shall be performed according to Section 801. Compaction shall be accomplished to the extent necessary to prevent future settlement of the backfill. Disturbed surfaces shall be returned to the original condition.

The applicable provisions of Sections 802 and 804 shall govern the construction and installation of concrete and reinforcing steel.

Field welding will not be permitted except upon approval in writing by the Engineer. The Omni-directional breakaway sign support shall be constructed and installed at the locations shown on the plans or as directed. All sign supports shall provide a minimum vertical and horizontal clearance as shown on the plans. To ensure proper clearances, dimensions of the structure that affect clearances shall be verified by the Contractor by field measurements before fabrication begins. Sign supports shall be erected so that the sign face is plumb and at right angles

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JOB NO. 040901
OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORT

to the road unless otherwise directed by the Engineer. Subsequent to erection, any damaged galvanized coating shall be repaired according to Subsection 807.88.

The procedure for assembly of base connection, as shown on the plans, shall be followed explicitly.

Method of Measurement. Omni-directional breakaway sign supports will be measured by the unit. One unit consists of the post(s) and all bolts, nuts, washers, brackets, and other hardware necessary to complete the installation and mount the sign(s). The fabrication and installation of the sign will be paid for under Section 725 or 726.

Basis of Payment. Work completed and accepted and measured as provided above will be paid for at the contract unit price bid per each for Square Omni-directional breakaway sign supports of the type specified, which price shall be full compensation for furnishing, fabricating, and installing the support; and for all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Omni-directional breakaway sign supports (Type__)	Each

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB NO. 040901
CONCRETE BRIDGE DECK CURING AND SURFACE TREATMENT RESTRICTIONS

Sections 802 and 803 of the Standard Specifications for Highway Construction, Edition of 2014, are hereby amended as follows:

The following is added as the last sentence of the fourth paragraph of **Subsection 802.17(b)**:

The use of lithium curing compound as a replacement for the methods specified above will not be permitted.

The following is added as the second paragraph of **Subsection 803.02 (a)**:

Lithium curing compound will not be permitted as a substitute for Class 1 Protective Surface Treatment.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

ABUTMENT STONE - ARKANSAS RIVER

DESCRIPTION: This item shall consist of the placement of Arkansas River abutment stone at locations shown on the plans or as directed by the Engineer.

MATERIALS:

STONE: Abutment Stone shall be limestone reasonably free of fines and reasonably well graded between the maximum and minimum rock sizes so as to produce minimum voids.

GRADATION FOR ABUTMENT STONE: The lower and upper limits of the stone gradation, based on a specific gravity of 2.24 (minimum) is shown below:

<u>Diameter</u>	<u>Weight</u>
D100 = 18 in.	W100 = 310 lbs.
D85 = 15 to 16 in.	W85 = 190 to 230 lbs.
D50 = 12 to 13 in.	W50 = 85 to 110 lbs.
D15 = 6 to 7 in.	W15 = 12 to 20 lbs.

Gradation tests shall be performed by the Contractor at their expense. Any stone that does not meet the gradation requirements shall be removed from the work and not be paid for under this contract.

EXTENTS OF PLACEMENT: The stone shall be placed in the extents shown in the plans.

METHOD OF MEASUREMENT: Work completed under this item will be measured by the cubic yard in accordance with Section 109 of The Standard Specifications for Highway Construction for the quantity detailed in the plans.

BASIS OF PAYMENT: Work completed and accepted under this item and measured as provided above will be paid for at the unit price for the bid item, complete in place, which price shall be full compensation for furnishing materials, for placement; for preparation of slope; for excavation and backfill; and for all equipment, tools, labor, and incidentals necessary to complete the work.

Payment will be made under:

PAY ITEM	PAY UNIT
Abutment Stone	Cu. Yds.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

REVETMENT STONE (GRADATION A) - ARKANSAS RIVER

DESCRIPTION: This item shall consist of the replacement of affected Arkansas River revetment stone at locations shown on the plans or as directed by the Engineer.

MATERIALS:

STONE - material furnished shall be highly durable stone. Gypsum, anhydrite, chert, shale and soft or weathered rock shall not be used. Neither breadth nor thickness of any piece of stone shall be less than one-third its length. Rocks shall be of angular shape. The sources from which the Contractor proposes to obtain the material shall be selected well in advance of the time when the material is required in the work. If from a source listed below, the name and location of the quarry and face or ledge within the quarry will suffice for the Engineer to determine if it can produce stone that complies with the requirements of these specifications. In such cases, the source shall be submitted to the Contracting Officer at least 15 days prior to when placement is expected to begin. If from a source not listed below, suitable test samples shall be shipped to a commercial laboratory, approved by the Corps of Engineers, for testing. The Contractor is responsible for delivery of the samples to the laboratory and all costs associated with such delivery and testing. If a period greater than 60 days is required for testing any sample, the completion time for the contract will be increased to cover all time exceeding 60 days required for testing any sample. The total overall weight of the sample of material proposed for stone shall be approximately 300 pounds and representative pieces shall weigh not more than 100 pounds. If the protection stone is obtained from more than one source, samples meeting the above weight requirements shall be submitted from each source. Stone protection materials shall not be delivered to the site of the work prior to approval by the Engineer of either the test samples (in the case of new sources) or the quarry and face or ledge within the quarry (in the case of listed sources).

GRADATION FOR GRADED STONE A – The lower and upper limits of the stone gradation, based on a specific gravity of 2.62 (minimum) is shown below:

Diameter	Weight
D100 = 36 in.	W100 = 2,300 lbs.
D85 = 30 to 34 in.	W85 = 1,300 to 1,900 lbs.
D50 = 19 to 24 in.	W50 = 340 to 680 lbs.
D15 = 5 to 10 in.	W15 = 6 to 50 lbs.

Gradation tests shall be performed by the Contractor at their expense. Any stone that does not meet the gradation requirements shall be removed from the work and not be paid for under this contract.

TESTS - Suitable tests and service records will be used to determine the acceptability of the stone protection materials. If such tests and records are not available to the satisfaction of the Engineer, as in the case of a new source, the material shall be subjected to such tests as necessary to determine its acceptability for use in the work. Tests to which stone may be subjected include specific gravity and absorption, freezing-

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****REVETMENT STONE (GRADATION A) - ARKANSAS RIVER**

thaw resistance, magnesium sulfate soundness, petrographic examination and such other tests as may be considered necessary to demonstrate to the satisfaction of the Engineer that the materials are acceptable for use in the work. Tests and test values listed below are for job controls of all stone and will be used to determine the acceptability of the stone being produced.

Weight and Absorption - The minimum weight calculated from the bulk specific gravity (saturated surface-dry) of the sample, determined in accordance with ASTM C 127-88, shall be 150 pounds per cubic foot. Maximum absorption shall be 3 percent unless other tests and service records show that the stone is satisfactory. Tests shall be made on 1-1/2-inch to 2-1/2-inch aggregate.

Soundness (Freezing-Thaw Resistance) - The loss of weight of stone after 20 cycles of freezing and thawing with test specimen immersed in water shall be not more than 15 percent, as performed in accordance with CRD-C 144-92.

Resistance to Disintegration by Saturated Solutions of Sodium Sulfate or Magnesium Sulfate - Stone shall be subjected to the magnesium sulfate soundness test in accordance with ASTM C 88-90 and shall show a loss in weight of not more than 10%.

STONE PLACEMENT - Stone shall be placed in the stone-fill in such a manner as to produce a well-graded mass with a minimum practicable percentage of voids and shall be constructed to the lines and grades shown on the drawings. A tolerance of plus or minus 6 inches from the lines and grades shown on the drawings is acceptable, except that either extreme of such tolerance shall not be continuous over an area greater than 100 square feet. The desired distribution of the various sizes of stones throughout the mass shall be obtained by selective loading of the material at the quarry or other source and by controlled dumping during final placement.

SOURCES OF STONE – stone material shall be produced from the following USACE approved sources within the State of Arkansas, in accordance with the technical provisions provided herein. The following list may or may not be actively producing stone at the time of construction:

Black Rock Quarry
Vulcan Materials Company
Black Rock, Arkansas
870-878-6245

Duffield Quarry
Souter Construction Company
Oil Trough, Arkansas
501-354-0137

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REVETMENT STONE (GRADATION A) - ARKANSAS RIVER

Granite Mountain Quarries
Sweet Home, Arkansas
501-490-1535

Hatton Quarry
Meridian Aggregates Company
Hatton, Arkansas
501-385-2301

McClinton - Anchor Quarry
Avoca, Arkansas
501-636-1010

Meridian Quarry
Meridian Aggregates Company
Black Rock, Arkansas
800-999-6201

Morrilton Quarry
Souter Construction Co.
Conway County, Arkansas
501-354-0137

New Hope Quarry
Pope County, Arkansas
501-967-5565

Pryor Mountain Quarry
F&B Construction
Higden, Arkansas
501-825-7171

River Mountain Quarry
Arkansas River Mile 218.5
Logan County, Arkansas
501-938-7018

Rock Products Inc.
Heber Springs, Arkansas
501-362-8227

Rocky Point Quarry
Rocky Point Material
Independence Co.
Southside, Arkansas
501-251-3132

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REVETMENT STONE (GRADATION A) - ARKANSAS RIVER

Stoney Point Quarry
Souter Construction Company
Perry Co., Arkansas
501-354-0137

3M Quarry (Big Rock)
Little Rock, Arkansas
800-364-3577

Treece Quarry
Clinton Ready Mix
Van Buren County
Clinton, Arkansas
501-745-8373

Hollywood Quarry
Clark County, Arkansas
Carder/Souter Inc.
501-354-0137

Valley Springs Quarry
McClinton-Anchor
Hwy. 65 South
Harrison, Arkansas
870-443-1362

Toad Suck Quarry
Perry County, Arkansas
and
Greenbrier Quarry
Faulkner County, Arkansas
Mailing Address For Toad Suck & Greenbrier Quarries:
Rogers Group, Inc.
1223 Front Street
Conway, Arkansas 72032
501-329-8360

Preston Quarry
Arkola Sand & Gravel
Fort Smith, AR 72902
479-785-4271

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REVETMENT STONE (GRADATION A) - ARKANSAS RIVER

White River Materials, Inc.
Cord, Arkansas
Danny Mitchell
870.799.8086

Searcy Quarry (Vulcan Materials)
125 Rock Lane
Judsonia, Arkansas
501.729.3925

EXTENTS OF PLACEMENT: The stone shall be placed in the extents shown in the plans. The contactors means and methods shall avoid operating, storing or placing load on the existing revetment outside the plan dimension shown on the "Revetment of Bent No. 13" plan sheet. If construction activities occur on the existing revetment outside of the extents shown in the plans, the contractor shall remove and replace the top 5 feet of revetment with Gradation A in accordance with this Special Provision.

METHOD OF MEASUREMENT: Work completed under this item will be measured by the cubic yard in accordance with Section 109 of The Standard Specifications for Highway Construction for the quantity detailed in the plans. No additional measurement will be made for removal and replacement of the existing revetment outside of the extents shown in the plans.

BASIS OF PAYMENT: Work completed and accepted under this item and measured as provided above will be paid for at the unit price for the bid item, complete in place, which price shall be full compensation for furnishing materials, for placement; and for all equipment, tools, labor, and incidentals necessary to complete the work. No additional payment will be made for removal and replacement of the existing revetment outside of the extents shown in the plans.

Payment will be made under:

PAY ITEM	PAY UNIT
Revetment Stone (Gradation A) – Arkansas River	Cu. Yds.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

DRILLED SHAFT FOUNDATIONS

Description. This work includes the furnishing of all materials and the construction of foundations consisting of reinforced concrete shafts placed within drilled excavations. Such foundations shall be constructed in accordance with the details and governing dimensions shown on the plans, the Standard Specifications, this special provision, and as directed by the Engineer.

Construction Experience. The drilled shafts on this project shall be constructed by a contractor or specialty subcontractor experienced with drilled shaft construction. The Contractor shall submit a project reference list to the Engineer for approval verifying the successful completion by the Contractor or specialty subcontractor of at least three separate foundation projects with shafts of diameters and depths similar to or larger than those shown in the plans, and ground conditions similar to those identified in the Contract. A brief description of each listed project shall be provided along with the name and current phone number of the project owner or the owner's Contractor.

The Contractor shall submit a list identifying the on-site supervisors and drill rig operators potentially assigned to the project to the Engineer. The list shall contain a brief description of each individual's experience in shaft excavation operations and placement of assembled steel reinforcing bar cages and concrete in shafts. The individual experience lists shall be limited to a single page for each supervisor or operator.

1. On-site supervisors shall have a minimum of two (2) years experience in supervising construction of shaft foundations of similar size (diameter(s) and depth(s)) and scope to those shown in the plans, and similar geotechnical conditions to those described in the boring logs. Work experience shall be direct supervisory responsibility for the on-site shaft construction operations. Project management level positions indirectly supervising on-site shaft construction operations are not acceptable for this experience requirement.
2. Drill rig operator shall have a minimum of three (3) years experience in construction of shaft foundations.

The Engineer may suspend the shaft construction if the Contractor substitutes unapproved personnel. The Contractor shall be fully liable for the additional costs resulting from the suspension of work, and no adjustments in contract time resulting from the suspension of work will be allowed.

Pre-Construction Meeting. A pre-construction meeting shall be scheduled by the Engineer to be held after receipt and review of the complete work plan and construction experience submittals. The Engineer; the Contractor, including their Superintendent; the specialty subcontractor, including the listed onsite supervisor, shall attend. Attendance is mandatory. All other parties to be involved with the construction or testing of the drilled shaft foundations may be represented. The meeting will be conducted to clarify the requirements of the work, to coordinate

DRILLED SHAFT FOUNDATIONS

the construction schedule and activities, and to identify the contractual relationships and the delineation of responsibilities amongst the parties involved.

Materials. (a) Concrete. All concrete shall be Class S with a minimum 28-day compressive strength of 5,000 psi for Bents 12 through 16 for Bridge 07684 and 3,500 psi for all other bents and shall conform to Section 802 unless modified herein.

The slump of the drilled shaft concrete, at time of placement, shall be 9 inches \pm 1 inch for concrete placed underwater. The maximum water cement ratio specified in Subsection 802.05 shall not be increased. The aggregate used shall meet the sieve requirements set by AASHTO M 43, number 7. Approved admixtures may be used to obtain desired workability, flow, retard set, and anti-segregation properties.

Trial Batch: Each concrete mix design to be used in the drilled shafts shall be submitted to the Engineer a minimum of 10 business days prior to preparing a trial batch. A trial batch for each concrete mix design shall be prepared using the specific materials submitted in the mix design, including any admixtures, that are intended for use on the job. Each submitted mix design shall meet the slump requirements at the time of placement and shall maintain a slump of 6 inches or greater for the anticipated placement time stated in the Contractor's Drilled Shaft Work Plan plus two hours. The Contractor shall prepare a plant batch of at least 3 cubic yards or one-third the rated capacity of the mixer, whichever is greater. The trial batch, including all sampling and testing, shall be accomplished by the Contractor under the observation of the Engineer. The Contractor and Engineer shall sample and test the trial batch for compliance with the specifications for slump and compressive strength. Additional sampling and testing of the trial batch for slump loss shall be according to the following procedure:

1. The proposed mix shall be prepared for the slump loss test at a temperature consistent with ambient and concrete temperatures expected during actual concrete placement.
2. After initial mixing of 70 to 100 revolutions in accordance with Subsection 802.08, the slump, concrete temperature, and ambient temperature shall be determined. The slump shall be within the required specifications. The test start time is initiated when batch water is introduced to the cement of the mixture (the normal batch time that will be recorded on each concrete delivery ticket).
3. The mix shall remain in the mixer truck, which shall spin at minimum speed for the anticipated or actual time it will take for the mixer truck to travel to the job site. After this time period the mix will again be tested for slump, concrete temperature, and ambient temperature. If a higher slump is desired based on the results of this test, water may be added in accordance with Subsection 802.08, provided that the maximum water to cement ratio and/or the slump does not exceed the limits established by the specifications. The time and amount of water added shall be recorded on the batch ticket.
4. Once the desired slump is obtained, a one cubic yard sample of the mixture shall then be deposited into a plastic lined form measuring 3' x 3' x 3' in interior dimensions. A plastic-lined hole in the ground of approximately the same dimensions may be used. The surface of the concrete mixture shall be covered with plastic to prevent evaporation. The form shall not be exposed to direct sunlight for the entire duration of the slump loss test.

DRILLED SHAFT FOUNDATIONS

5. Using the concrete mixture in the form, tests shall be performed for slump, concrete temperature, and ambient temperature at intervals of 30 minutes until the slump is 6 inches or less, or for the anticipated placement time of the shaft plus two hours. In no case shall slump tests be performed for less than 4 hours. The top 6 inches of the concrete shall be thoroughly mixed using a scoop or shovel immediately prior to each set of tests. Plastic shall remain in place to cover the mixture between test intervals.

A record of the results of all tests performed, including the time of each test, along with a copy of the mix design and a copy of the batch ticket shall be submitted to the Engineer for review and approval.

(b) Reinforcing Steel. Reinforcing steel shall be Grade 60 conforming to the requirements of Section 804.

(c) Casing. Temporary casing shall conform to ASTM A252, Grade 2 or Grade 3. Permanent casing shall conform to ASTM A252, Grade 2 or Grade 3. The walls and interior surfaces of the casings shall be carefully washed and cleaned of all sand, gravel, bonded concrete or foreign materials before use.

All casing shall be smooth-walled steel, watertight and of ample strength to withstand handling and/or driving stresses and the pressure of both concrete and the surrounding earth materials. All casing shall be selected by the Contractor to control dimensions and alignment of excavations within tolerances and to execute all other construction operations.

Permanent casings for drilled shafts at Bridge 07684 Bents 12 and 16 shall have a minimum wall thickness of 3/4 inch and minimum 45 ksi yield strength.

(d) Slurry. Slurry shall consist of a stable colloidal suspension of various pulverized solids (mineral, commercial bentonite) or a drilling polymer thoroughly mixed with clean water, or water slurry with the properties given in Table 1. Slurry temperature shall be at least 40 degrees F when tested. Bentonite shall meet the requirements of API 13A.

Table 1

Item to be Measured	Acceptable Range of Results	Test Method
1. Density (lbs per cubic foot) a) mineral slurries b) polymer slurries c) water slurries	a) 64.3 to 72 b) 64 max. c) 64 max.	API 13B-1, 4 th Ed., Section 1 (Mud balance), ASTM D4280
2. Viscosity (seconds per quart) a) mineral slurries b) polymer slurries	a) 28 to 50 b) 40 to 90 or as recommended by manufacturer	API 13B-1, 4 th Ed., Section 2.2 (Marsh funnel & cup)

DRILLED SHAFT FOUNDATIONS

3. Sand Content (percent by volume immediately prior to performing final cleanout inspection) a) mineral slurries b) polymer slurries c) water slurries	a) not allowed in rock socket b) 1% max. c) 1% max.	API 13B-1, 4 th Ed., Section 5 (Sand screen)
4. pH of polymer and mineral slurries, during excavation	8 to 11.5	API 13B-1, 4 th Ed., (Paper test strips, glass-electrode, or pH meter)

Construction. (a) Work Plan. The Contractor shall submit to the Engineer, for information and record purposes, a Work Plan for each shaft of similar type and setting at least 30 days prior to beginning construction of the drilled shafts. Where drilled shafts are to be constructed at multiple sites, a separate Work Plan shall be submitted for each site. The Work Plan shall include at a minimum:

1. A thorough and complete description of the proposed drilling equipment including cranes, drills, augers, tremies, concrete pumps, casings, etc.
2. The method of drilling and achieving shaft alignment tolerances and removing obstructions.
3. Types of drilling fluid to be used to drill the shaft and rock socket and maintain shaft hole integrity as well as names of manufacturer's representative and field testers, fluid material properties, installation methods, mixing, sampling and testing, desanding method, and disposal procedures.
4. The method of installation for any permanent casings and the method of installation and removal for any temporary casings. Provisions shall be made for rigidly supporting the casings at locations where the soil that overlies rock is thin or absent or the casing extends above the ground line. The extension of permanent casing into competent rock beyond the depth required to maintain seal is not an acceptable method of rigid support.
5. Details of methods and equipment to clean and inspect the shaft excavation including the bottom of the shaft.
6. The method of supporting and centralizing the reinforcing steel.
7. Details of concrete placement for each shaft, including proposed operation procedures for pumping methods, the anticipated time required for concrete placement in each shaft, and a sample inspection form to be used for the concreting curve showing depth versus volume over the length of the shaft.
8. The sequence of drilling and time schedule for completion of each shaft including any non-destructive testing required by the plans or special provisions.
9. Preventative measures for working around any structures, railroad tracks, and utilities in the immediate vicinity.

DRILLED SHAFT FOUNDATIONS

10. The location of any work roads, detours, and traffic control devices.
11. A pollution prevention plan that shows the method of controlling the discharge of any pollutants including any water that may be used as a drilling fluid. The Contractor's pollution prevention plan will become part of the Department's Stormwater Pollution Prevention Plan. The Contractor shall ensure compliance with Section 110 of the Standard Specifications.
12. Casing details, including calculations showing the ability of the casing to withstand anticipated hydrostatic and earth pressures, and stresses due to installation without undue deformation. These shall include methods for casing handling, splicing, straightening, and out-of-round correction. Calculations shall be signed and sealed by an Arkansas Licensed Professional Engineer.

The drilled shafts shall be constructed in accordance with the Work Plan and no deviation shall be allowed without the written permission of the Engineer. Any change in the Work Plan shall be submitted to the Engineer at least three (3) business days before any work is begun. Acceptance of the Work Plan shall not relieve the Contractor of any other requirements in the plans and specifications.

(b) Protection of Existing Structures. The Contractor shall control his operations to prevent damage to any existing structures, utilities, and railroad tracks. Preventative measures shall include, but are not limited to, selecting construction methods and procedures that will prevent caving of the shaft excavation and monitoring and controlling the vibrations from construction activities such as the driving of casing or sheeting, or drilling of the shaft. Blasting will not be permitted.

(c) Construction Tolerances. The following construction tolerances apply to drilled shafts unless otherwise shown on the plans:

1. The center of the drilled shaft shall be within the integer value of $d/15$, where d is the shaft diameter in inches, of plan position in the horizontal plane at the plan elevation for the top of the shaft. In no instance shall the center tolerance be taken more than three (3) inches.
2. The vertical alignment of a vertical shaft excavation shall not vary from the plan alignment by more than 1/4 inch per foot of depth.
3. After all the concrete in a shaft is placed, the top of the reinforcing steel cage shall be no more than four (4) inches above and no more than two (2) inches below plan position.
4. The top elevation of the shaft shall have a tolerance of plus one (1) inch or minus three (3) inches from the plan top of shaft elevation.
5. Excavation equipment and methods shall be designed so that the completed shaft excavation will have a near planar bottom. The cutting edges of the excavation equipment shall be normal to the vertical axis of the equipment within a tolerance of $\pm 3/8$ inch per foot of diameter.

DRILLED SHAFT FOUNDATIONS

6. The finished diameter of the shaft shall be no less than the specified diameter along the entire length of the drilled shaft.

Drilled shaft excavations and completed shafts not constructed within the required tolerances are unacceptable. The Contractor shall be responsible for correcting all unacceptable shaft excavations and completed shafts to the satisfaction of the Engineer. Materials and work necessary, including engineering analysis and redesign by an Arkansas Licensed Professional Engineer, to complete corrections for out of tolerance drilled shaft excavations shall be furnished without either cost to the Department or an extension of the completion date of the project.

(d) Permanent Casing. Permanent casing will be required on all shafts as shown in the plans. The casing shall be continuous between top and bottom elevations as shown in the plans and as approved by the Engineer. The inside diameter of the permanent casing shall be as shown in the plans. The use of oversized permanent casing will not be permitted. Lengths of permanent casing shown on the plans are for estimating quantities only; actual lengths are to be determined in the field. All casings shall be watertight and of ample strength to withstand handling and/or driving stresses and the pressure of both concrete and the surrounding earth materials. All casings used shall be selected by the Contractor to control the dimensions and alignment of excavations within tolerances and to execute all other construction operations.

(e) Temporary Surface Casing. Temporary oversized surface casing will be required on all shafts to prevent sloughing of the top of the shaft excavation, and contain the drilling fluid for excavating the shaft, control caving of any substance into freshly placed concrete, and to facilitate construction. The void between the temporary surface casings and permanent casings shall be backfilled as the temporary casing is removed with grout or flowable fill injected from the bottom of void displacing any drilling fluid to top of shaft. Temporary surface casing removed after the shaft concrete is placed shall not be removed until after a minimum of 72 hours has elapsed since concrete placement and shall be done in a manner to not cause any damage to the finished drilled shaft. Concrete shall not be cast directly against temporary surface casing or used to fill the void between temporary and permanent casings.

(f) Slurry. The Contractor shall use slurry as drilling fluid, which conforms to the material property requirements specified herein, to maintain a stable excavation during excavation and concrete placement operations. Mineral or Polymer slurry shall be used to stabilize uncased excavations above top of rock. Once permanent casing is seated into rock, any mineral slurry shall be replaced with polymer slurry or clear water. During the replacement process, the sidewalls of the permanent casing shall be cleaned by an approved method to remove any slurry cake buildup. Only polymer slurry or water shall be used to excavate the rock socket.

For polymer and mineral slurry, the manufacturer's representative, as identified to the Engineer in the drilled shaft Work Plan, shall provide technical assistance for the use of the slurry, be at the site prior to introduction of the slurry into a drilled hole, and remain at the site during the construction and completion of a minimum of one shaft to adjust the slurry mix to the specific site conditions. After the manufacturer's representative is no longer present at the site, the Contractor's employee trained in the use of the slurry, as identified to the Engineer in the drilled shaft Work

DRILLED SHAFT FOUNDATIONS

Plan, shall be present at the site throughout the remainder of shaft slurry operations for this project to perform the duties specified above.

The Contractor shall clean, re-circulate, de-sand, or replace the slurry as needed in order to maintain the required slurry properties. Sand content shall be within limits specified herein, prior to final clean out inspection.

Mineral slurry and polymer slurry shall be mixed and thoroughly hydrated in slurry tanks. Direct mixing of slurry in the shaft is not permitted. The Contractor shall draw sample sets from the slurry tanks and test the samples for conformance with the appropriate specified material properties before beginning slurry placement in the drilled hole. Slurry shall conform to the quality control plan included in the drilled shaft Work Plan approved by the Engineer. A sample set shall be composed of samples taken at mid-height and within 2.0 ft. of the bottom of the storage area.

The Contractor shall sample and test all slurry in the presence of the Engineer, unless otherwise directed. The date, time, names of the persons sampling and testing the slurry, and the results of the tests shall be recorded. A copy of the recorded slurry test results shall be submitted to the Engineer at the completion of each shaft, and during construction of each shaft when requested by the Engineer.

Sample sets of all slurry, composed of samples taken at mid-height and within 2.0 ft. of the bottom of the shaft, shall be taken and tested during drilling as necessary to verify the control of the properties of the slurry. As a minimum, sample sets of polymer slurry shall be taken and tested at least once every 4.0 hours after beginning its use during each shift. Regardless of slurry type, at least one sample set per shaft shall be taken and tested every day that slurry is in use, or more often as required by the Engineer.

Sample sets of all slurry, as specified, shall be taken and tested immediately prior to final cleanout inspection and again immediately prior to placing concrete.

Contractor shall provide suitable means to recover slurries. Mineral and polymer slurries shall not be pumped or placed directly in the river or on the ground. Permission to pump or place a water slurry directly in the river or on the ground must be obtained by the Contractor from the appropriate agencies.

(g) Excavations. The Contractor shall perform the excavation required for the shafts through whatever materials encountered, to the dimensions and elevations shown on the plans or required by the site conditions. The Contractor's methods and equipment shall be suitable for the intended purpose and materials encountered. During excavation of the shafts, the Contractor shall make frequent checks on the plumbness, alignment, and dimensions of the shaft to maintain required tolerances.

Bottom of shafts shall not be founded at an elevation above that shown on the plans without the approval of the Engineer. The depth that is to be drilled shall be considered an approximation

DRILLED SHAFT FOUNDATIONS

and the Engineer may order, in writing, such changes in depth as may be necessary to secure a satisfactory foundation.

The Contractor shall drill one test boring at each drilled shaft location prior to the drilled shaft excavation, except Bridge 07684 Bents 12, 14, 15, and 16, for which test borings have already been drilled. The test boring shall be positioned as near as practical to the centerline of the shaft. If rock is encountered at an elevation at or above the required embedment above the planned tip elevation, core drilling shall start at the top of rock and advanced to a minimum depth of 2 times the shaft diameter below the planned tip elevation. If rock is encountered at an elevation lower than the required embedment above the planned tip elevation, core drilling shall start at the top of rock and advanced to a minimum depth of the required embedment plus 2 times the shaft diameter. If voids, coal, soil-filled cavities, or other discontinuities are encountered within the planned rock socket length or below the planned tip elevation, core drilling shall continue from the top of rock below the discontinuity and advanced to a minimum depth of 2 times the shaft diameter below the discontinuity or as directed by the Engineer.

Each test boring shall advance using rotary drilling techniques. Test borings shall use temporary casing extending through soil to the top of rock to facilitate diamond core drilling. Core drilling shall start at the top of rock. Hollow stem augers may be considered to meet the definition of temporary casing for drilling purposes provided they allow for satisfactory coring results. Diamond core drilling shall be done with a five-foot length NQ-size double-tube swivel-type wireline core barrel or a similar approved larger sized tube swivel-type core barrel. Test borings shall be backfilled with an approved bentonite-cement grout from the bottom up.

A completed test boring log for each respective test boring shall be provided to the Engineer. The test boring log shall include station, offset, surface elevation, complete visual description, drilling and sampling methods; and depth of the various soil or overburden layers encountered to top of rock. The test boring log shall also include visual descriptions and conditions of the rock cores, including any voids, soil-filled cavities or other anomalies encountered; Standard Core Recovery (SCR), and Rock Quality Designation (RQD) of each core run. The rock cores shall be removed, boxed, appropriately marked for elevation, SCR, and RQD, and photographed in the field.

The test boring logs, rock core photos, and rock core samples shall be provided to the Engineer within two business days after completion of the test boring for a determination of the drilled shaft tip elevation. If the bottom shaft elevation is lowered below planned tip elevation, additional core drilling may be required to sample rock below the new drilled shaft tip elevation.

The shaft excavation, including the rock socket, shall be made with the use of drilling fluid using the slurry displacement method. Mineral or Polymer slurry mixed in tanks and added to the shaft shall be used as a drilling fluid to stabilize the excavation and to prevent a hydrostatic head from occurring as the excavation advances below the temporary casing to rock. The drilling slurry level shall be maintained within the temporary casing at a minimum of at least 10 feet above the static groundwater level or river level, whichever is higher. Once the excavation advances to rock, the permanent casing shall be set in the excavated hole and seated into rock. Only water or polymer slurry shall be used as a drilling fluid during excavation and clean out of the shaft below the bottom

DRILLED SHAFT FOUNDATIONS

of permanent casing. The level of drilling fluid shall be maintained until concrete placement is completed. Mineral slurry will not be allowed in the rock socket. Excavation of the rock socket shall be made with suitable rock auger, digging bucket, and core barrel tooling.

As an alternate to the slurry displacement method of shaft excavation, temporary and permanent casings may be advanced through the ground by twisting, vibrating, driving, or oscillating before being cleaned out. Alternating advancement of temporary and permanent casing below the groundwater table elevation and excavation inside the casing will be permitted provided a 5-foot soil plug and a minimum fluid head 5 feet above the groundwater table elevation is maintained inside the casing to maintain stability of the hole. Removal of the soil plug to the final bottom of casing will only be permitted once casing is seated into rock. Advancement of excavation below top of rock shall be the same as for the slurry displacement method. The alternate method of shaft excavation, if proposed, shall be submitted with the Contractor's drilled shaft Work Plan.

Drilled shaft excavation shall begin only if the Contractor can complete the excavation, perform foundation inspection and testing, and place the reinforcement and concrete as a continuous operation. If the center-to-center spacing is less than 3 shaft diameters, no two adjacent shafts shall be excavated at the same time and shafts shall not be constructed within 24 hours of the completion of an adjacent shaft. If the excavation will be subjected to vibrations from nearby activities that may cause caving, casing shall be advanced as drilling proceeds to prevent caving.

No driving or vibrating of piling or casings shall be permitted within a radius of 75 feet of poured concrete that has not attained a compressive strength of 1500 psi.

Material excavated from shafts and not used in the backfill around the compacted pier or abutment shall be disposed of in a manner approved by the Engineer and shall not be placed in a waterway or otherwise impair the efficiency or appearance of the bridge or other parts of the work. Any excavation for the shaft beyond the lines required by the plans shall be filled with material approved by the Engineer and at the Contractor's expense. Excavation and backfill at Bridge 07684 Bent 13 and Revetment shall be in accordance with the plans and Shoring special provision.

When drilled shafts are to be installed in conjunction with embankment placement, the Contractor shall construct drilled shafts after the placement of fills unless otherwise approved by the Engineer.

When drilled shafts are to be installed in conjunction with a footing, excavation to the footing elevation shall be completed before shaft construction begins unless otherwise noted in the plans or approved by the Engineer. Prior to the footing pour, the Contractor shall repair any disturbance to the footing area caused by shaft installation.

No open excavation shall be left unattended. During non-working hours, excavations shall be protected by the use of solid, safe covers that are firmly fastened in place.

The Contractor shall provide suitable access, lighting, and equipment for checking the dimensions and alignment of each permanent shaft excavation and for inspecting the excavation.

DRILLED SHAFT FOUNDATIONS

Any mechanical equipment used within the excavation shall be operated by air or electricity. The use of gasoline driven engines or any device that produces toxic fumes or uses atmospheric oxygen, within the excavation for any purpose will not be permitted. All lighting shall be electric, and precautions shall be taken in regard to potential short circuits of electric current within ground water. The Contractor shall not allow workers to enter the shaft excavation for any reason.

The Contractor shall check the dimensions and alignment of the shaft excavation under the direction of the Engineer. Final shaft depths shall be measured with suitable weighted tape or other approved methods after final cleaning of the excavation.

Final cleaning of the bottom of all shafts shall be by cleanout bucket and airlift or hydraulic pump. Cleanout buckets for final cleaning of shafts shall have a diameter at least 75 percent of the shaft diameter.

No concrete shall be placed until the Engineer approves the condition of the excavation. Prior to placing concrete, the shaft excavation shall be cleaned so that a minimum of 50 percent of the base area will have less than ½ inch of sediment and at no place more than 1 ½ inch. The Contractor shall be responsible for showing that the excessive loose material has been removed from the excavation. Inspection of the bottom of the excavation shall be by camera, Shaft Inspection Device (SID), or other suitable means approved by the Engineer. When the shaft inspection is by a procedure other than SID, it shall be capable of viewing the bottom of excavation at a resolution for determining the bottom condition and directly measure sediment thickness. SID inspection shall be performed according to methods accepted by the Engineer. Weighted tape soundings will be used in combination with camera, SID, or other approved inspection method for final bottom inspection and approval. The use of weighted tape soundings as a single method of final bottom inspection and approval will only apply to shafts 6.0 feet and less cased diameter and only after the Contractor's final cleanout methods are proven to be consistently satisfactory by camera, SID, or other approved inspection results verified by weighted tape soundings. Each drilled shaft crew will be required to prove final bottom cleanout and acceptance by both bottom inspection methods. All expenses for inspection shall be included in the price bid for "Drilled Shaft (___" Dia.)".

(h) Reinforcing Steel. The reinforcing steel cage shall be completely assembled and shall be placed as a unit immediately after the shaft excavation is inspected and accepted, and prior to concrete placement. The cage will consist of the reinforcing shown in the plans, cage stiffener bars as required, spacing devices, and any other appurtenances required to maintain alignment, shape, and clearances. Any internal stiffeners shall be removed as the cage is lowered into the excavation.

The minimum clearance between the edge of the drilled shaft and the vertical reinforcing steel and the minimum length of steel required for lap with the column steel shall be as shown in the plans.

The Contractor shall be responsible for the proper bracing of the reinforcing cage. This bracing shall be sufficient to permit assembly above ground and placing in the shaft as a unit without inducing deforming, twisting, or bending stress. Welding of reinforcing bars will not be permitted.

DRILLED SHAFT FOUNDATIONS

Concrete or wood spacer blocks shall not be used on the reinforcing cages. Epoxy coated metal "chair" type spacers, epoxy coated bent pieces of steel bars, or high density plastic alignment systems shall be used to ensure concentric spacing of the cage inside the shaft. Non-metallic spacers shall be used on shafts for Bridge 07684, Bents 12 and 16 shafts. Spacers shall be placed at least at every 30 inches around the circumference of the cage, and at a longitudinal spacing not exceeding 10 feet along the shaft and 1.5 feet from the top and bottom of shaft. The spacer sizes shall be varied as necessary along the length of the shaft to maintain a concentric spacing within the cased and uncased portions of the shaft. Tie wires shall be tucked into rebar cage. Electronic isolation testing is required at Bridge 07684, Bents 12 & 16. See Waterline Plans and Specifications.

The cage shall be supported from the top by some positive method to minimize uplift or downward slump during concrete placement and/or extraction of the casing. A minimum of one-half of the vertical bars shall be supported from the top. The support shall be concentric with the cage to prevent racking and distortion of the steel. Setting the cage on the socket bottom or supported on the temporary casing will not be permitted.

The elevation of the top of the steel cage shall be carefully checked before and after the concrete is placed. Displacement of the steel beyond the specified tolerances will be cause for rejection.

(i) Concrete. The work shall be performed in accordance with the provisions of Section 802 and in conformance with the requirements herein.

The maximum subplot size for acceptance sampling and testing of drilled shaft concrete by the Contractor shall be 100 cubic yards or one drilled shaft.

Concrete shall be placed by underwater methods as soon as possible after completion of the excavation and the inspection and setting of the reinforcing cage. In addition, to limit the degradation of the exposed shale rock socket, the time from the start of excavation below the bottom of permanent casing into the rock socket to start of concreting the shaft shall not exceed 72 hours without refreshing the sidewalls and bottom of the rock socket with an approved back scratcher tool and cleanout bucket. Bottom inspection will be required after refreshing the socket. During concrete placement, the Contractor shall limit the difference in elevation of the concrete inside and outside the steel reinforcing cage to one (1) foot maximum. Concrete placement operations shall proceed in a continuous operation from the bottom of the shaft to the top of the shaft, unless a shaft construction joint below the top of the shaft is specified in the plans. After the concrete level has reached the top of the shaft, it will be forced to overflow until only fresh uncontaminated concrete is left in the shaft, unless a shaft construction joint below the top of the shaft is specified in the plans.

If a shaft construction joint below the top of the shaft is specified in the plans, concrete shall be placed in a continuous operation from the bottom of the shaft to 2'-6" above the shaft construction joint or as directed by the Engineer, but in no case less than 1'-0". Care shall be exercised to control and minimize the depth of scum, laitance, loose gravel, and sediment above the shaft construction joint prior to concrete set. After the shaft concrete has cured for a minimum

DRILLED SHAFT FOUNDATIONS

of 72 hours and after conducting nondestructive testing, the Contractor shall remove all remaining scum, laitance, loose gravel, and sediment down to sound concrete, or to the depth of the shaft construction joint, whichever is lower. After approval of the shaft, the column reinforcing shall be set and the remaining portion of the shaft concrete shall be poured in the dry.

Concrete waste shall not enter the waterway as required by any applicable Section 404 Permits. Exposed portions of each drilled shaft shall be cured and any construction joint area shall be treated as prescribed in Section 802 and roughened to an amplitude of ¼ inch.

Placement of drilled shaft concrete underwater shall be required for all shafts in strict conformance with the procedures outlined for an underwater pour. The drilling slurry level shall be maintained within the permanent casing at a minimum of at least 10 feet above the static groundwater level or river level, whichever is higher, until the concrete pour is completed.

All drilled shaft concrete shall be placed underwater through a tremie or by pumping to prevent segregation of materials. The tremie shall have sufficient length to discharge concrete at the shaft base and shall consist of a rigid tube with a diameter of no more than 14 inches nor less than 10 inches and be fitted with a hopper at the top. The tremie shall not contain aluminum parts that may come in contact with the concrete. The inside and outside surfaces of the tremie shall be clean and smooth to permit flow of concrete and unimpeded withdrawal. It shall be constructed and supported so that it can be moved horizontally to cover the work area and moved vertically to control the concrete flow as the level of the concrete in the shaft is raised.

The concrete pump line shall have a minimum diameter of 5 inches with the portion of the line inside the excavation meeting the requirements above, but only that portion of the pump line in contact with the concrete will be required to be rigid. All pump equipment shall be clean and in good operating condition.

The tremie and pump lines shall be watertight and constructed so that the discharge end can be sealed closed at the start of work to prevent water from entering the tremie or pump line before the tremie or pump line is filled with concrete. If a plug is used to separate the concrete from the fluid in the hole, the plug shall be removed from the excavation after placement has begun. Concrete placement shall be done in one continuous operation. The discharge orifice shall be at the bottom of the shaft at the beginning of the concrete placement and shall remain at least 10 feet below the top surface of the fluid concrete. The Contractor shall provide equipment and personnel to sound the top of the concrete in the presence of the Engineer in order to verify the location of the concrete surface and the discharge orifice at all times. After concrete placement has started the concrete level in the tremie shall be maintained above the water level in the shaft to prevent water intrusion into the shaft concrete. When lifting the pump line during concreting, the Contractor shall temporarily reduce line pressure until the orifice has been repositioned at a higher elevation in the excavation. If at any time during the concrete pour the orifice is removed from the fluid concrete and discharges concrete above the rising concrete surface, the entire drilled shaft will be considered defective. In such case, the Contractor shall remove the reinforcing cage and concrete, complete any necessary sidewall cleaning or overreaming as directed by the Engineer, and repour the shaft.

DRILLED SHAFT FOUNDATIONS

(j) Drilled Shaft Log. A record of each shaft construction shall be furnished by the Contractor to the Engineer prior to acceptance of the shaft. This Drilled Shaft Log shall include: information about the drilling procedures and equipment; a log of the excavated material; the as constructed elevations and lengths of all vertical elements of the shaft including reinforcing and casings; depth of final excavation, founding material and bottom condition; concrete volume and a concreting curve showing depth versus volume over the length of the shaft, volume used in overflow and purging; and the date and time of pertinent operations used in constructing the drilled shaft from beginning of excavation to completion of concrete placement. If a shaft construction joint below the top of the shaft is specified in the plans, the Drilled Shaft Log shall include the depth of concrete poured above the shaft construction joint, the depth of concrete removed prior to concrete set, and the method(s) used to control and minimize the depth of scum, laitance, loose gravel, and sediment above the shaft construction joint. During concrete operations, except for those above a shaft construction joint, the Contractor shall dedicate an inspector to the function of monitoring concreting operations and recording these portions of the Drilled Shaft Log. Failure to meet this requirement will be grounds for additional integrity investigation of the shaft at the Contractor's expense.

Method of Measurement. Acceptable drilled shafts, complete in place and of the specified diameter, will be measured by the linear foot as constructed to the dimensions shown on the plans or approved by the Engineer from bottom to top of shaft. No additional payment will be made for any excavation or concrete provided beyond the lines required by the plans.

Permanent casing for the specified diameter will be measured by the linear foot of the actual accepted length left in place. Measurement will be along the casing from top of casing or top of shaft, whichever is lower, to the bottom of the casing at each shaft location where permanent casing is authorized and used.

Temporary steel casing will not be measured for separate payment but shall be included in the unit price for "Drilled Shaft (___" Dia.)".

Basis of Payment. Drilled shafts, measured as provided above, will be paid for at the contract unit price bid per linear foot for "Drilled Shaft (___" Dia.)" which shall be full compensation for making and inspecting shaft excavations; for furnishing, use, and handling and disposing of all drilling fluids, for drilling test borings and furnishing logs; for furnishing, placing, and removing temporary casing; for furnishing and placing all concrete and reinforcing steel; for the removal of scum, laitance, loose gravel, and sediment down to sound concrete when preparing a shaft construction joint; for performing mix designs; for preparing trial batches; for keeping the Drilled Shaft Log; for providing and placing necessary materials for nondestructive testing as required by those special provisions; for quality control and acceptance sampling and testing; for all backfilling; and for furnishing all tools, labor, equipment and incidentals necessary to complete the work.

When drilled shafts are carried below elevations shown on the plans at the direction of the Engineer, the additional length of drilled shaft will be measured as provided above and will be paid for in accordance with the following price schedule:

DRILLED SHAFT FOUNDATIONS

Depth Below Planned Elevation

Not more than 5 feet
 Excess of 5 feet and not more than 15 feet
 More than 15 feet

Price

Contract Price
 Contract Price + 15%
 Contract Price + 25%

Permanent casing will be paid for at the contract unit price bid per linear foot for “Permanent Steel Casing (___" Dia.)” which shall be full compensation for furnishing and placing the casing above the costs attributed to the work paid for under associated pay items.

Payment will be made under:

Pay Item

Pay Unit

Drilled Shaft (___" Dia.)

Linear Foot

Permanent Steel Casing (___" Dia.)

Linear Foot

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

NONDESTRUCTIVE TESTING OF DRILLED SHAFTS

Description. This work shall consist of the Nondestructive Testing (NDT) of drilled shaft foundations, as described herein. All work shall be in accordance with this Special Provision, the details shown in the plans, Standard Specifications, and as directed by the Engineer.

Work to be Performed. (a) General Requirements. The NDT methods known as Crosshole Sonic Logging (CSL) and Thermal Integrity Profiling (TIP) shall be used on each drilled shaft where specified in the plans. The Contractor shall employ one experienced independent testing organization approved by the Engineer to perform all NDT. Information shall be supplied showing the independent testing organization has the experience in the kind of work described in this Special Provision and also showing they have the equipment capable of performing the work.

(b) CSL (1) Testing. Testing shall be in accordance with ASTM D6760 and this Special Provision, and shall not be conducted until at least 72 hours after placement of concrete is concluded in the shaft, unless a shaft construction joint below the top of the shaft is specified in the plans. If a shaft construction joint is specified, testing shall be conducted at least 72 hours after placement of the initial concrete is concluded in the shaft and prior to any subsequent concrete placement. Testing of drilled shaft concrete above a shaft construction joint specified in the plans will not be required. Testing of the first shaft placed in each bent shall be completed within 14 calendar days after placement of concrete in the first shaft in each bent.

The Engineer shall approve the scheduling of subsequent testing. Testing on the remaining shafts in each bent shall be completed within 14 calendar days of the last shaft placed, but no later than 30 calendar days after placement of concrete in a particular shaft.

(2) Preparation for Testing. To accommodate the CSL test requirements, the Contractor shall install a number of pipes in each shaft. The number of pipes installed will depend on the diameter of the shaft as specified below:

Shaft Diameter	Minimum Number of Pipes	Pipe Spacing
54"	5	72 Degrees
66"	6	60 Degrees
78"	7	51.4 Degrees
108"	9	40 Degrees

NONDESTRUCTIVE TESTING OF DRILLED SHAFTS

The pipes shall be ASTM A53 Standard Weight, or an approved equivalent, steel pipe with a minimum inside diameter (ID) of 1.5 or 2 inches, and shall be in compliance with “Buy America” requirements and Subsection 106.01. The pipes shall have a round, regular internal diameter free of defects or obstructions including defects at pipe joints; in order to permit the free, unobstructed passage of 1.375 inch diameter source and receiver probes. The pipes shall be watertight and free from corrosion with clean internal and external faces to ensure passage of the probes inside and a good bond with the concrete outside.

Each pipe shall be fitted with a watertight shoe on the bottom and a removable cap or plug on the top. The pipes shall be securely attached to the interior of the reinforcing steel cage. The pipes shall be installed in each shaft in a regular, symmetric pattern such that each pipe is equally spaced from the others around the perimeter of the cage. Prior to construction, the Contractor shall submit their selection of pipes and proposed method of pipe installation to the approved testing organization. The pipes shall be secured to the reinforcing cage at three foot vertical intervals, such that the pipes remain in position during placement of the cage and placement of the concrete.

The pipes shall be as near to parallel as possible. **They shall extend from within 0.25 feet above the shaft’s excavated bottom to at least 3 feet above the top of shaft. If the length of the excavated shaft varies from the plans, the pipes shall be adjusted to meet the above requirements.** No pipe may be allowed to rest on the bottom of a drilled excavation. Any joints required to achieve full length pipes shall be made watertight. Care shall be taken during placement of the reinforcing steel cage so as not to damage the pipes.

After placement of the cage, and before placement of concrete, the pipes shall be filled with potable water and the pipe tops shall be capped or sealed to keep debris or other foreign matter out of the pipes. In a case where conditions make rapid concrete placement imperative, the Engineer may permit the filling of the pipes to be delayed until immediately after the concrete is placed while exercising care to avoid spilling of water onto freshly cast concrete. Care shall be exercised in the removal of caps or plugs so as not to apply excess torque, hammering, or other stresses that could break the bond between the pipes and the concrete.

Upon completion of all CSL testing on a shaft, and after the acceptance of that shaft by the Engineer, the pipes shall be filled by the Contractor with a QPL approved grout such that no air pockets or impurities remain in the pipes. All water shall be removed from the access pipes. The portion of pipe extending above the top of the shaft shall be removed.

(3) CSL Test Equipment. The CSL testing equipment shall consist of all necessary supplies, support equipment, and power to perform the testing and to record, analyze, and report the results in accordance with this Special Provision.

(4) CSL Testing Procedures. Before placement of concrete, the Contractor shall investigate at least one pipe per shaft to ensure there are no bends, crimps, obstructions or other impediments to the free passage of the testing probes. A record of all pipe lengths, including a measurement of the projection of the pipes above the top of the shaft shall be made. Prior to the CSL tests, the Contractor shall provide this information, shaft bottom elevations, top elevations, and construction dates to the approved testing organization and Engineer.

NONDESTRUCTIVE TESTING OF DRILLED SHAFTS

The tests shall be conducted by the approved testing organization between all pairs of pipes. The CSL test shall be carried out with the source and receiver probes in the same horizontal plane. Any slack shall be removed from the cables prior to pulling to provide for accurate depth measurements in the CSL records. CSL measurements shall be made at increments of 3 inches or less from the bottom to the top of each shaft. The probes shall be pulled simultaneously over the depth measuring wheel, starting from the bottoms of the pipes.

Any anomalies/defects indicated by longer pulse arrival times and significantly lower amplitude/energy signals shall be reported to the Engineer. Further tests may be required to evaluate the extent of such anomalies/defects. Additional NDT methods which could be used to evaluate possible defects include: Angled Crosshole Sonic Logging, Crosshole Tomography, Single Hole Sonic Logging, Gamma-Gamma Nuclear Density Logging, and Sonic Echo and Impulse Response tests. Any additional nondestructive testing shall be provided at no cost to the Department and with no extension of the contract time.

(5) CSL Testing Results. The CSL test results shall be compiled into an overall shaft integrity testing report for each shaft. The report shall summarize and analyze (a) initial pulse arrival time versus depth and (b) pulse energy/amplitude versus depth. In addition, the report shall include a (c) plot of pulse velocity versus depth and a (d) waterfall diagram of nested arrival times for each pair of pipes that are tested. A CSL log will be presented for each pair of pipes tested, with any defect zones indicated on the logs and discussed in the report. All filtering or smoothing of the processed results shall be disclosed in the report. The logs shall cover the full length of shaft corresponding to the measurements provided by the Contractor for the constructed length minus 0.75 feet to allow for CSL tube to shaft bottom offset and CSL equipment limitations. More than 0.75 feet of missing data at any tube pair will be grounds for additional integrity investigation at the Contractor's expense.

(c) TIP (1) Testing. Testing, if specified in the plans, shall be in accordance with ASTM D7949 (Method B) and the provisions herein. Temperature measurements at each drilled shaft shall begin as soon as concrete placement has ceased, or sooner if directed so by the testing agency, and shall be recorded at 15 minute intervals for a minimum of 36 hours or until peak temperature is captured in the data, whichever is longer. Additional monitoring time may be required if the drilled shaft concrete contains admixtures such as set-retarders and water-reducing agents. Due to the limited time window for proper TIP testing, the Contractor shall coordinate with the testing agency all necessary project scheduling in an effort to minimize project delays and ensure proper monitoring of the concrete heat of hydration. Testing of drilled shaft concrete above a shaft construction joint will not be required.

(2) Preparation for Testing. The testing agency shall work closely with the Contractor to ensure all thermal wiring is properly installed and functional prior to cage installation and again prior to concreting. The Contractor responsible for installing the thermal wiring shall be required to obtain training from the Manufacturer on proper installation practices prior to actual installation. The number of thermal wires necessary for proper TIP testing shall be at the recommendation of the testing agency and meet or exceed standard industry practice based on the concrete volumes used, but in no case shall be less than one thermal wire per foot of shaft diameter, rounding to the next whole number as necessary (e.g., five wires are required for a 4'-6" diameter shaft). Thermal wiring shall be installed uniformly around the perimeter of the reinforcing cage and shall be adequately secured to the reinforcing steel cage. Securing thermal

NONDESTRUCTIVE TESTING OF DRILLED SHAFTS

wiring to CSL pipes will not be allowed. Thermal wiring shall extend to a depth capable of providing temperature measurements to within 0.5 feet of the shaft's excavated bottom. If the bottom of drilled shaft is excavated below plan elevation requiring the cage to be extended, proper measures shall be followed to adjust thermal wiring placement in a manner approved by the testing agency to ensure adequate TIP testing coverage. The Contractor shall provide an accurate record of thermal wiring serial numbers (or other identification codes) and their corresponding locations in each shaft for proper monitoring.

All thermal access ports (TAPs) shall be adequately protected from damage during rebar placement and concreting operations. Adequate thermal wiring shall be extended from the top of shaft to allow connecting of TAPs and all thermal monitoring equipment.

The Contractor shall work closely with the testing agency to provide all relevant information required for proper TIP testing, such as shaft drilling and inspection records, detailed concrete placement logs, and concrete mix design.

(3) TIP Test Equipment. The TIP testing equipment shall consist of all necessary supplies, support equipment, and power to perform the testing and to record, analyze, and report the results in accordance with this Special Provision.

(4) TIP Testing Results. The TIP test results shall be compiled into an overall shaft integrity testing report for each shaft. The report shall address, but not be limited to: overall shaft geometry, concrete cover, concrete quality, and location of the reinforcing cage. Any anomalies shall be addressed in the report along with the testing agency's expert opinion of what the likely cause of the anomaly is. The temperature data shall cover the full length of shaft corresponding to the measurements provided by the Contractor for the constructed length minus 0.5 feet to allow for thermal wire to shaft bottom offset. More than 0.5 feet of missing data will be grounds for additional integrity investigation at the Contractor's expense.

(d) Evaluation of NDT Results. The CSL and TIP test results shall be compiled into an overall integrity testing report for each shaft and approved/sealed by an Arkansas Licensed Professional Engineer. The approved testing organization shall supply one digital copy, in an approved format, of the NDT report to the Engineer and a copy of each report shall be provided to the Contractor. Raw data files for all NDT performed shall be kept available for review and provided at the Department's request.

The integrity report for the first shaft shall be provided to the Engineer within 72 hours of completion of all NDT on that shaft. The Contractor will not be allowed to begin any construction operations on the remaining shafts or make additional permanent construction on the first shaft until the Engineer has approved the first shaft. The Engineer will evaluate the NDT results and will determine whether or not the drilled shaft construction is acceptable. If the Engineer approves the first drilled shaft based upon the results of the NDT, then the shaft and the shaft site will be turned back to the Contractor and further construction may proceed.

The integrity reports of the subsequent shafts shall be provided to the Engineer within 72 hours of completion of all NDT on each shaft. The Contractor will not be allowed to make additional permanent construction on each shaft until the Engineer has approved that shaft.

NONDESTRUCTIVE TESTING OF DRILLED SHAFTS

Provided the reports received meet the requirements of this Specification, the Engineer will provide a response within 10 business days of each report received. Incomplete submission of required data necessary for review, including detailed drilled shaft logs, will delay this review and no contract time extensions will be allowed due to delays caused by incomplete submittals.

The acceptance of each drilled shaft shall be the decision of the Engineer, based on the results of the shaft integrity testing reports and other information of the shaft placement. If it is determined by the Engineer that any confirmed defect indicated by NDT may affect the structural integrity of the shaft, the Engineer may require the Contractor to verify shaft conditions by core drilling in accordance with Subsection (e), "Evaluation by Core Drilling."

(e) Evaluation by Core Drilling. A drilled shaft that is found to be unacceptable by the NDT may be cored by the Contractor using double tube core barrels. Core samples shall be obtained, handled, and tested in accordance with AASHTO T 24-15. At the Contractor's option a PQ size core barrel may be used. Core samples will be delivered to the Department's Materials Division where they will be visually inspected and selected samples will be evaluated for compressive strength. Selected samples with compressive strengths less than 0.85 f_c will be considered unacceptable. A core sample shall be taken from each defect location, at a length specified by the Engineer. The methods and equipment used to core the drilled shaft and grout the cored hole shall be approved by the Engineer prior to commencing coring operations. An accurate log of the core shall be kept and the core shall be crated/boxed and properly marked showing the shaft depth at each interval of core recovery. The crates/boxes which store the cores shall be properly labeled with the job number, bridge number, bent number, and the shaft number. The core, along with two copies of the coring log, shall be provided to the Engineer.

If the quality of the shaft, as represented by the core samples, is determined to be acceptable by the Engineer, then the shaft and the shaft site will be turned back to the Contractor and further construction may proceed. If the quality of the shaft is determined to be unacceptable by the Engineer, then the Contractor shall proceed in accordance with Subsection (f), "Defective Shaft," below. If a defect is confirmed, the Contractor shall pay for all coring and grouting in the shaft related to a suspected defect. If no defect is encountered, compensation for all coring and grouting in the shaft will be paid for at the contract unit price bid per linear foot for "Coring Drilled Shaft." Upon acceptance of the shaft, core holes shall be cleaned and filled with a QPL approved grout such that no impurities or air pockets remain.

(f) Defective Shaft. If the Engineer determines that a shaft is unacceptable, the Contractor shall submit a plan for remedial action to the Engineer for approval. Any modifications to the foundation shaft and load transfer mechanisms caused by the remedial action will require calculations and working drawings stamped and signed by an Arkansas Licensed Professional Engineer for all affected foundation elements. This data shall be submitted to the Engineer for information and record keeping purposes. All labor and materials required to perform remedial shaft action shall be provided at no cost to the Department and with no extension of the contract time.

Method of Measurement. (a) CSL Testing. Acceptable CSL tests shall be measured per each shaft tested of a specified diameter.

NONDESTRUCTIVE TESTING OF DRILLED SHAFTS

(b) TIP Testing. Acceptable TIP tests shall be measured per each shaft tested of a specified diameter. Non-functioning thermal sensors will be grounds for rejection at the discretion of the Engineer.

(c) Coring Drilled Shafts. If no defect is encountered, the coring of shafts shall be measured by the linear foot.

Basis of Payment. CSL and TIP testing shall be paid for at the contract unit price bid per each shaft tested of a specified diameter. The price bid for each shaft tested shall be full compensation for furnishing all equipment and incidentals necessary to perform the required test, performing the tests, analyzing the results, and furnishing the Engineer with the shaft integrity reports, as required.

Furnishing and installing all wiring, connectors, pipes, splices, maintaining water level in the pipes, dewatering the pipes, removing excess pipe above top of shaft, and filling the pipes with grout will be considered incidental to the unit price bid for “Drilled Shaft (" Dia.)”.

Coring for shafts where no defect is encountered will be paid for at the unit price bid per linear foot of “Coring Drilled Shaft” which price shall be compensation for furnishing all labor, materials, grout, tools, equipment, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Crosshole Sonic Logging (" Dia.)	Each
Thermal Integrity Profiling (" Dia.)	Each
Coring Drilled Shaft	Linear Foot

*ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION**JOB NO. 040901****BRIDGE PILE CASING AND CORBEL COATING SYSTEM*****PART 1: GENERAL**

1.1. INCLUSIVE CONDITIONS. All provisions of the “General Conditions” and “Supplemental General Conditions” apply to this category of work.

1.2. SUMMARY.

- A. Section Includes:
1. Work under this section consists of surface preparation, priming and painting necessary to complete work for the bridge pile casing, the pipe support corbel and any welded or cut sections.
 2. Coating shall be applied in the factory and under conditions that have environmental controls specifically for the application of coating systems. Field application of the coating shall be limited to welds, cuts, holidays, and locations where the coating has been damaged.
 2. Use coating systems specified in this section to finish all bridge pipe pile components and the pipe support corbel, unless otherwise indicated. Without restricting volume or generality, work to be performed under this section is limited to:

1.3. REFERENCES

- A. Publications listed herein are part of this specification to the extent referenced.
- B. American Society for Testing and Materials:
1. ASTM D16 Terminology Relating to Paint, Varnish, Lacquer, and Related Products
 2. ASTM D3359 Test Method for Measuring Adhesion by Tape Test
 3. ASTM D4541 Test Method for Pull Off Strength of Coatings Using Portable Adhesion-Testers
 4. ASTM D1005 Test for Determining Dry Film Thickness
 5. ASTM D4417 Test for Determining Surface Profile

BRIDGE PILE CASING AND CORBEL**COATING SYSTEM**

- C. The Society for Protective Coatings:
1. SSPC-SP1 Specification for Solvent Cleaning
 2. SSPC-SP2 Specification for Hand Tool Cleaning
 3. SSPC-SP3 Specification for Power Tool Cleaning
 4. SSPC-SP5 Specification for White Metal Blast Cleaning
 5. SSPC-SP6 Specification for Commercial Blast Cleaning
 6. SSPC-SP7 Specification for Brush-Off Blast Cleaning
 7. SSPC-SP10 Specification for Near White Metal Blast Cleaning
 8. SSPC-SP11 Specification for Power Tool Cleaning to Bare Metal
 9. SSPC-PA1 Painting Application Specification
 10. SSPC-PA2 Measurement of Dry Paint Thickness with Magnetic Gages
 11. SSPC-SP12 Water Jetting

1.4. DEFINITIONS.

- A. PAINT shall in a general sense have reference to epoxy type coatings and application of these materials.
- B. DRY FILM THICKNESS (DFT): Thickness, measured in mils (1/1000 inch), of a coat of paint in cured state.

1.5. SUBMITTALS.

- A. Product Data:
1. Submit manufacturer's literature describing products to be provided, giving manufacturer's name, product name, and product line number for each material.
 2. Submit technical data sheets for each coating, giving descriptive data, curing times, mixing, thinning, and application requirements.
- B. Quality Assurance Submittals:
1. Certificates:
 - a. Provide manufacturer's certification that products to be used comply with specified requirements and are suitable for intended application.
 - b. Submit listing of not less than five (5) of applicator's most recent applications representing similar scope and complexity to Project requirements. List shall include information as follows:
 - i) Project name and address
 - ii) Name of owner
 - iii) Name of contractor

BRIDGE PILE CASING AND CORBEL**COATING SYSTEM**

- iv) Name of engineer
 - v) Date of completion
2. Manufacturer's Instructions:
- a. Submit manufacturer's installation procedures, if not on product data sheets, which shall be the basis for accepting or rejecting actual installation procedures.

1.6. QUALITY ASSURANCE.

- A. Manufacturer:
- 1. Provide products from a company specializing in the manufacture of coatings with a minimum of ten (10) years of experience.
 - 2. Applicator shall be trained in application techniques and procedures of coating materials and shall demonstrate a minimum of two (2) years successful experience in such application. All work to be overseen by a fully qualified Coatings Expert. A qualified Coatings Expert shall be a person by reason of thorough knowledge of the physical sciences and the principals of engineering and mathematics acquired through professional education, who is qualified to engage in the practice of coating application and inspection and is accredited or certified as being a specialist in their field of practice, including the Coating Inspector Certification Program Level 3 (CIP 3) by the Association for Materials Performance and Protection (AMPP).
 - a. Maintain, throughout duration of application, a crew of painters who are fully qualified.
 - 3. Single Source Responsibility:
 - a. Materials shall be products of a single manufacturer.
 - b. If additional material is required, they shall be produced or shall be specifically recommended by the coating system manufacturer or the Coatings Expert to confirm compatibility of system.
 - 4. Unless specified by the Owner or Owner's Representative, Applicator shall have:
 - a. Materials shall be products of a single manufacturer.
 - b. Provide secondary materials, which are produced or are specifically recommended by coating system manufacturer to confirm compatibility of system.

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- B. Coatings Inspector
1. A coatings inspector shall be engaged to ensure the coating has been applied in accordance with industry standard and the requirements of this specification. A qualified Coatings Inspector shall be a person by reason of thorough knowledge of the physical sciences and the principals of engineering and mathematics acquired through professional education, who is qualified to engage in the practice of coating application and inspection and is accredited or certified as being a specialist in their field of practice, including the Coating Inspector Certification Program Level 3 (CIP 3) by the Association for Materials Performance and Protection (AMPP).
 2. Documents:
 - a. Review Contract Documents and applicable sections of referenced standards.
 3. Painting Inspection:
 - a. Verify cleaning operations to surfaces are to condition specified.
 - b. Verify conformance of paint to specification.
 - c. Test final dry film thickness and test for holidays.
 - d. Check touch-up for final finish.
 - e. Contractor will have both wet and dry film gauges onsite for inspector's use.
 4. Reports:
 - a. Submit written progress reports describing inspections made and showing action taken to correct non-conforming work. Report uncorrected deviations from Contract.
- C. Manufacturer's Service:
1. A representative of the paint manufacturer shall be available to provide on-site technical assistance, and guidance for application of the paint system as needed.
- D. Pre-Installation Meeting:
1. Schedule a meeting to be held at the facility prior to application of coating systems begin.
 2. Meeting shall be attended by Contractor, Owner's representative, Coating Applicators, and Manufacturer's representative.

BRIDGE PILE CASING AND CORBEL**COATING SYSTEM**

3. Topics to be discussed at meeting shall include:
 - a. A review of Contract Documents shall be made, and deviations or differences shall be resolved.
 - b. Review items such as environmental conditions, surface conditions, surface preparation, application procedures, and protection following application.
 - c. Establish which areas on-site will be available for use as storage areas and working area.

1.7. DELIVERY AND STORAGE.

- A. Packing and Shipping:
 1. Deliver products in manufacturer's original unopened containers. Each container shall have the manufacturer's label, intact and legible.
 2. Include on label for each container:
 - a. Manufacturer's name
 - b. Type of paint
 - c. Manufacturer's product number
 - d. Color name and number
 - e. Instructions for thinning, where applicable
 - f. Lot and Batch number
- B. Storage and Protection:
 1. Store materials in a designated protected area, per manufacturer's printed data sheet instructions.

1.8. PROJECT CONDITIONS.

- A. Environmental Requirements:
 1. Apply coating materials per manufacturer's printed data sheet:
 - a. Refer to specific product data sheets for minimum/maximum surface temperature, air temperature, and humidity requirements. Surface temperatures shall be at least 5 degrees F (15 degrees C) above dew point and in a rising mode.
 - b. Provide for proper ventilation.
 - c. Adequate illumination shall be provided.
 - d. Atmosphere shall be free of airborne dust.

BRIDGE PILE CASING AND CORBEL**COATING SYSTEM****PART 2: PRODUCTS****2.1. ACCEPTABLE MANUFACTURERS**

- A. This specification lists specific products manufactured by Tnemec Company, Inc. of Kansas City, Missouri. Materials specified herein are cited as the minimum standard of quality which will be acceptable.
- B. Materials specified herein shall not preclude consideration of equivalent materials meeting the performance standards listed below. Equivalent materials shall be submitted to Burns and McDonnell for consideration.

2.2. COATING MATERIALS AND PREPARATION REQUIREMENTS

Exterior - Coating System

In factory surface preparation: Surface must be clean, dry, and free of contaminants before coating, and in strict accordance with the manufacturer's instructions.

Coating: Tnemec Epoxoline Series 22 @ 30.0 – 40.0 mils DFT

2.3. ACCESSORIES.

- A. Coating Application Accessories:
 - 1. Provide application accessories as indicated in coating manufacturer's application instructions, including but not limited to cleaning agents, etching agents, cleaning cloths, sanding materials, and clean-up materials.
 - 2. Material not specifically identified, but needed for proper application shall be of a quality not less than specified products and approved by Burns and McDonnell and the Coatings Expert.

2.4. MIXING INSTRUCTIONS.

- A. Coating Specific product mixing and thinning instructions are to be found in the manufacturer's printed data sheets.

BRIDGE PILE CASING AND CORBEL
COATING SYSTEM

PART 3: EXECUTION

3.1. EXAMINATION.

- A. Site Verification of Conditions:
1. Examine areas and evaluate environmental considerations under which application of coating systems shall be performed for conditions that will adversely affect execution, permanence, or quality of coating system application.
 2. Correct conditions detrimental to timely and proper execution of Work.
 3. Do not proceed until unsatisfactory conditions have been corrected.
 4. Commencement of installation constitutes acceptance of conditions and responsibility for satisfactory performance.

3.2. PREPARATION.

- A. Housekeeping:
1. Take precautionary measures to prevent fire hazards and spontaneous combustion. Remove empty containers from site at completion of each day's work.
 2. Provide drop cloths, shields, and other protective equipment.
 3. Protect elements surrounding work from damage or disfiguration.
 4. As Work proceeds, promptly remove spilled, splashed, or splattered materials from surfaces. Leave storage area neat and clean at all times.
- B. Surface Preparation:
1. General Requirements:
 - a. Prior to application of primer, surfaces shall be prepared to receive specified coating system in compliance with manufacturer's recommendations and specifications of The Society of Protective Coatings as indicated below.
 - i. SSPC-SP10/NACE 2 Near-White Blast Cleaning with a minimum angular anchor profile of 3.0 mils.

BRIDGE PILE CASING AND CORBEL**COATING SYSTEM****3.3. APPLICATION.**

- A. General Requirements:
1. Apply coating systems in compliance with manufacturer's instructions and using application method best suited for obtaining full, uniform coverage of surfaces to be coated.
 2. Series 22 is self-priming therefore there is no need for intermediate or finish coats.
 3. Apply a single coat to achieve a final DFT of no less than 30 mils and no more than 40 mils. Apply additional coats as needed to provide a smooth, even application.
 - a. Closely adhere to re-coat times recommended by manufacturer. Allow each coat to dry thoroughly before applying next coat. Provide adequate ventilation to carry off solvents during drying phase.
 4. Employ only application equipment that is clean, properly adjusted, and in good working order, and of a type recommended by the coating manufacturer.
 5. After surface preparation, spot primer on weld seams shall be brush-applied.
- B. Thinning requirements for specified products are to be found in the paint manufacturer's printed data sheets and are to be strictly adhered to.
- C. Interface with Other Work:
1. Ensure all affected parties are aware of minimum curing times as stated in the product data sheet for a 30 – 40 mil DFT.
 2. Touch up may be necessary at the time of delivery and/or when the pile casing has been moved to the construction site or lay down yard.

3.4. REPAIR/RESTORATION.

- A. At completion of Work, touch-up and restore finishes where damaged. The coating shall be holiday tested to identify any deficiencies. All areas identified as deficient during the holiday testing shall be recoated as directed by the Qualified Coatings Inspector and as stated in the product data sheet.
- B. Holiday testing shall be completed at the factory, at delivery, and any time the pipe has been moved to a new location.
- C. Defects in Finished Surfaces:

BRIDGE PILE CASING AND CORBEL**COATING SYSTEM**

1. When stain, dirt, or undercoats show through final coat, correct defects until coating is of uniform finish, color, appearance, and coverage and meets the requirement of this specification.
- D. Touch-up of minor damage shall be acceptable where the result is not visibly different from surrounding surfaces. Where result is visibly different, either in color, sheen, or texture, recoat entire surface.

3.5. PROTECTION.

- A. Protect painted areas against damage until the coating system is fully cured, as confirmed by Inspector and Manufacturer's Representative.

3.6. WASTE MANAGEMENT.

- A. General Requirements:
1. Place materials defined as hazardous or toxic waste in designated containers.
 2. Return solvent and oil-soaked rags for contaminant recovery and laundering or for proper disposal.
 3. Do not dispose of paints or solvents by pouring them on the ground. Dispose of paints and solvents in designated containers for proper disposal.
- B. Containment/Disposal Requirements:
1. Surface Preparation Debris Containment:
 - a. When required by federal, state, or local regulation, entire structure shall be enclosed, and surface preparation debris contained.
 - b. Refer to SSPC 61 Guide for Containing Debris Generated during Paint Removal Operations.
 2. Disposal of Surface Preparation Debris:
 - a. Refer to SSPC 71 Guide for the Disposal of Lead-Contaminated Surface Preparation Debris.
 - b. Surface preparation debris shall be disposed of in compliance with applicable federal, state, and local regulations.
 3. Containment/Disposal Costs:
 - a. Painter shall be responsible for costs associated with containment and waste disposal that may result from execution of this Project.

BRIDGE PILE CASING AND CORBEL

COATING SYSTEM

PART 4: MEASUREMENT AND PAYMENT

4.1 Epoxy coating on the drilled shaft to include:

- Tnemec Series 22 Coating System
- Factory applied coating application
- Coating inspection
- Holiday testing
- Coating repair
- Disposal

4.2 Epoxy coating on the steel corbel to include:

- Tnemec Series 22 Coating System
- Factory applied coating application
- Coating inspection
- Holiday testing
- Coating repair
- Disposal

Pay Item	Unit
EPOXY COATING ON THE DRILLED SHAFT	INCLUDED WITH PERMANENT CASING
EPOXY COATING ON THE STEEL CORBEL	INCLUDED WITH STRUCTURAL STEEL GIRDER SPANS

END OF SECTION

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****UNPAINTED WEATHERING STRUCTURAL STEEL**

Subsection 807.84(e) Unpainted Weathering Structural Steel, of the 2014 Standard Specifications is hereby deleted and the following substituted therefor:

All structural steel on the outside surfaces and the bottom surface of the bottom flange plates of all exterior girders and beams shall be blast cleaned to remove mill scale or other substances. Blast cleaning shall conform to SSPC-SP6, Commercial Blast Cleaning. On blast cleaned steel and steel not required to be blast cleaned, care shall be taken that dents, scratches, gouges, or identification marks will not appear on exposed surfaces. All steel is to remain in the unpainted condition and shall be handled so that it is kept free of all grease, oil, concrete, chalk marks, dirt or any other foreign material that might affect the natural or uniform oxidation of the steel.

Any foreign material which adheres to the steel during the fabrication or construction process that will inhibit the formation of oxide film shall be removed as soon as practicable according to the SSPC Surface Preparation Specifications by one of the following four methods:

1. SSPC-SP 1, Solvent Cleaning
2. SSPC-SP 2, Hand Tool Cleaning
3. SSPC-SP 3, Power Tool Cleaning
4. SSPC-SP 7, Brush-off Blast Cleaning

Acids shall not be used in the field to remove stains or scales.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

GRADE HPS 70W STRUCTURAL STEEL

Section 807 of the Standard Specifications, Edition of 2014, is hereby amended to include ASTM A709, Grade HPS 70W structural steel as follows:

Subsection 807.05 is amended to include the following:

(e) High-Strength, Low-Alloy, Quenched, and Tempered Structural Steel Plate. High-strength, low-alloy, quenched, and tempered steel plate shall conform to ASTM A709, Grade HPS 70W.

Subsection 807.26(a) is modified as follows:

The first paragraph is deleted and the following substituted therefor:

(a) General. Welding of steel structures shall be accomplished by the electric arc process according to the ANSI/AASHTO/AWS D1.5 Bridge Welding Code, except as modified herein.

Welded girders utilizing ASTM A709, Grade HPS 70W steels shall be fabricated in accordance with the AASHTO Guide Specifications for Highway Bridge Fabrication with HPS 70W Steel and ANSI/AASHTO/AWS D1.5 Bridge Welding Code.

Subsection 807.68(a) is modified as follows:

The first paragraph is deleted and the following substituted therefor:

(a) Straightening Bent Members. Any member that is bent or distorted will be considered unacceptable until the member is either replaced or, if appropriate, repaired by a method proposed by the Contractor and approved by the Engineer. The straightening of plates, angles, other shapes, and built-up members, when permitted by the Engineer, shall be accomplished by methods that will not produce fracture or damage. Heat straightening of Grade HPS 70W or Grade 100 steel members shall be accomplished only under rigidly controlled procedures and each application shall be subject to the approval of the Engineer. In no case shall the maximum temperature of the Grade HPS 70W or Grade 100 steel exceed 1100° F nor shall the temperature exceed 950° F at or within 6" of weld metal. Heat shall not be applied directly to weld metal. In all other steels, the temperature of the heated area shall not exceed 1150° F as controlled by temperature-indicating crayons, liquids, or bi-metal thermometers.

Subsection 807.84(e) is modified as follows:

GRADE HPS 70W STRUCTURAL STEEL

The first sentence of the first paragraph is deleted and the following substituted therefor:

Unless otherwise specified, Grade 50W and Grade HPS 70W structural steel that is not to be painted shall be blast cleaned to remove mill scale or other substances.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES

Description. This item consists of the optional use of compressible-washer-type direct tension indicators to indicate bolt tension in high strength bolted assemblies in accordance with these specifications and in conformity with the plans. All references to Division, Section, and Subsection refer to the Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2014 Edition).

Subsection 807.06(a) is amended to include the following paragraph for Direct Tension Indicators (DTI):

Direct tension indicators shall be used in conjunction with bolts, nuts and washers as specified above. Direct tension indicators shall conform to the requirements of ASTM F959. Direct tension indicators for plain Type 1 high strength bolts shall be plain or galvanized. Galvanizing for direct tension indicators shall be by mechanical deposition in accordance with ASTM B695, Class 50. Direct tension indicators for Type 3 high strength bolts shall be Type 3.

Subsection 807.06(b) is modified as follows for Direct Tension Indicators (DTI): The first paragraph is deleted and the following substituted therefor:

(b) Required Tests. (1) Rotational Capacity. High strength fasteners, plain and galvanized, shall be subjected to a rotational capacity test according to ASTM F3125, Grade A325, Section 8.1, and shall meet the following requirements:

Subsection 807.06(b) is modified as follows for Direct Tension Indicators (DTI): The third paragraph is deleted and the following substituted therefor:

(2) Verification Testing for Direct Tension Indicators. Verification testing shall be performed in a calibration bolt tension device. A special flat insert shall be used in place of the normal bolt head holding insert. Three verification tests shall be required for each combination of fastener assembly rotational-capacity lot, direct tension indicator lot, and direct tension indicator position relative to the turned element to be used on the project. The fastener assembly shall be installed in the tension measuring device with the direct tension indicator located in the same position as in the work. The element intended to be stationary shall be restrained from rotation.

The verification test shall be conducted in two stages. The bolt, nut and direct tension indicator assembly shall be installed in a manner so that at least three and preferably not more than five threads are located between the bearing face of the nut and the bolt head. The bolt shall first be tensioned to the load equal to that listed in Table 807-3 under Verification Tension for the specified bolt. If an impact wrench is used, the tension developed using the impact wrench shall be no more than two-thirds of the required tension. Final tensioning shall be attained using

DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES

a manual wrench. The number of refusals of the 0.005" (0.125 mm) feeler gage in the spaces between the protrusions shall be recorded. The number of refusals for uncoated direct tension indicators under a stationary or turned element, or coated direct tension indicators under a stationary element, shall not exceed the number listed under Maximum Verification Refusals in Table 807-3 for the specified bolt. The maximum number of verification refusals for coated direct tension indicators, when used under a turned element, shall be no more than the number of spaces on the direct tension indicator less one. The direct tension indicator lot shall be rejected if the number of refusals exceeds the values in Table 807-3, or for coated if the gage is refused at all spaces.

After the number of refusals is recorded at Verification Tension, the bolt shall be further tensioned until the 0.005" (0.125 mm) feeler gage is refused at all the spaces and a visible gap exists in at least one space. The load at this condition shall be recorded and the bolt removed from the tension-measuring device. The nut shall be able to be run down freely by hand the complete thread length excluding thread run-out. If the nut cannot be run down for this thread length, the direct tension indicator lot shall be rejected unless the load recorded is less than 95 percent of the average load measured in the rotational capacity test of the fastener lot as specified in Subsection 807.06(b)(1) Rotational Capacity.

If the bolt is too short to be tested in the calibration device, the direct tension indicator lot shall be verified on a long bolt in a calibrator to determine the number of refusals at the Verification Tension listed in Table 807-3, the number of refusals shall not exceed the values listed under Maximum Verification Refusals in Table 807-3. Another direct tension indicator from the same lot shall then be verified with the short bolt in a convenient hole in the work. The bolt shall be tensioned until the 0.005" (0.125 mm) feeler gage is refused in all spaces and a visible gap exists in at least one space. The bolt shall be removed from the work and the nut shall be able to be run down freely by hand the complete thread length of the bolt excluding thread run-out. The direct tension indicator lot shall be rejected if the nut cannot be run down this thread length.

(3) Test Reports. The Engineer shall be furnished with a Manufacturer's certified test report for each production lot for all high strength bolts, nuts, washers, and direct tension indicators used on the project. This certification shall provide a lot number, shop order number, or other identification such that the heat number from which the items were made can be traced. This identifying number shall also appear on the sealed shipping containers. The certification shall indicate when and where all testing was done, including the rotational capacity tests, and include the zinc thickness when galvanized bolts, nuts, washers and direct tension indicators are used. The certification for direct tension indicators shall also include compression test loads, gap clearance, nominal size and type.

Subsection 807.71(b) is modified as follows for Direct Tension Indicators (DTI): The first paragraph is deleted and the following substituted therefor:

(b) Bolts, Nuts, Washers, and Direct Tension Indicators. Fastener components shall conform to the requirements of Subsection 807.06.

Subsection 807.71(d) is deleted and the following substituted therefor:

DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES

(d) Installation. (1) Bolt Tension. Compressible-washer-type direct tension indicators shall be used to indicate bolt tension. They shall be subject to the verification testing specified in Subsection 807.06 (b)(2) and installed in accordance with the method below. Bolt lengths shall be sufficient to accommodate direct tension indicators and any additional washers required. Direct tension indicators will be required at all high strength bolted connections. Direct tension indicator type and manufacturer shall not be mixed within a project.

Unless approved by the Engineer direct tension indicator shall be installed under the head of the bolt and the nut turned to tension the bolt. The Manufacturer's recommendations shall be followed for the proper orientation of the direct tension indicator and any additionally required washers. Installation of a direct tension indicator under the turned element may be permitted if a washer is used to separate the turned element from the direct tension indicator. The reuse of direct tension indicators will not be allowed. If it becomes necessary to loosen a previously tensioned bolt, the direct tension indicator shall be replaced.

Installation of fastener assemblies using direct tension indicators shall be in two stages. The stationary element shall be held against rotation during both stages. The connection shall first be brought to a snug tight condition with bolts installed in all holes. Snug tight, for bolt assemblies using direct tension indicators, exists when the plies of the joint are in firm contact and the number of spaces in which a 0.005" (0.125 mm) feeler gage is refused does not exceed that listed under Maximum Verification Refusals in Table 807-3. If the number of refusals exceeds the value listed under Maximum Verification Refusals in the Table 807-3 the direct tension indicator shall be replaced and the fastener assembly brought to a snug tight condition as specified above.

After all bolts in the connection have been properly brought to a snug tight condition, for uncoated direct tension indicators under a turned or stationary element and for coated direct tension indicators under a stationary element, the bolt assembly shall be further tensioned until the number of refusals of the 0.005" (0.125 mm) feeler gage is equal to or greater than the number listed under Minimum Installation Refusals in Table 807-3. If the bolt assembly is tensioned so that no visible gap remains in any space, the bolt assembly shall be removed and replaced by a new bolt and direct tension indicator that is properly tensioned. When coated direct tension indicators are used under a turned element, the 0.005" (0.125 mm) feeler gage shall be refused in all spaces, but a visible gap must remain in any space.

(2) Power Wrench Tightening. When power wrenches are used to provide the bolt tension specified Table 807-3, their setting shall be such that the requirements of Subsection 807.71(d)(1) are met. Wrenches shall be of adequate capacity to perform the required tightening of each bolt assembly in less than 10 seconds.

DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES

**TABLE 807-3
DIRECT TENSION INDICATOR REQUIREMENTS**

U.S. Standard		METRIC (SI)				
Bolt Size (Inches)	Verification Tension (kips)	Bolt Size	Verification Tension (kN)	Maximum Verification Refusals	DTI Spaces	Minimum Installation Refusals
1/2	13			1	4	2
5/8	20	M16	96	1	4	2
3/4	29	M20	149	2	5	3
7/8	41	M22	185	2	5	3
1	54	M24	215	2	6	3
1 1/8	59	M27	280	2	6	3
1 1/4	75	M30	342	3	7	4
1 3/8	89	M36	499	3	7	4
1 1/2	108			3	8	4

Subsection 807.71(e) is deleted and the following substituted therefor:

(e) Inspection. (1) The Engineer will observe the installation and tightening of bolts to determine that all bolts are tightened as specified. Where direct tension indicators are used the Engineer will examine at least 10 percent, but no less than 2 bolt assemblies in each connection for gap requirements and acceptability in accordance with the requirements of paragraph (d)(1). If any bolt assembly fails to meet these requirements all bolt assemblies in the connection shall be examined by the Engineer and the Fabricator or Erector shall retighten or replace bolt assemblies according to paragraph (d)(1).

(2) At the direction of the Engineer the Contractor may be required to inspect tightened bolt assemblies in a connection using an inspection wrench (only calibrated torque wrench will be acceptable). The inspection shall be conducted before loss of lubricant or corrosion influences the tightening torque.

The inspection wrench shall be calibrated by tightening three typical sample bolt assemblies of the same grade, size and condition as those under inspection in a calibration bolt tension device. A special flat insert shall be used in place of the normal bolt head holding insert. Each sample bolt assembly shall be individually placed in the calibration device and tightened to the verification tension specified in Table 807-3 for the grade and size being inspected. The fastener assembly shall be installed in the tension measuring device with the direct tension indicator located in the same position as in the work. The element intended to be stationary shall be restrained from rotation and here shall be a washer under the turned element of each sample bolt assembly. The inspecting wrench shall be applied to the tightened sample bolt assembly and the

DIRECT TENSION INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES

torque necessary to turn the nut or head 5° (approximately 1" [25 mm] at 12" [300 mm] radius) in the direction of tensioning shall be determined. The average of the torque measured in the testing of the three sample bolt assemblies shall be taken as the job inspection torque.

Where directed by the Engineer bolt assemblies represented by the sample bolt assembly and that have been tightened in the structure shall be inspected by applying the inspection wrench and its job inspection torque. If no nut or bolt head is turned by this application of the job inspecting torque, the connection will be accepted as properly tightened. If any nut or bolt head is turned by the application of the job inspecting torque, this torque shall be applied to all bolts in the connection, and all bolt assemblies whose nut or head is turned by the job inspecting torque shall be tightened and reinspected, or alternatively, the Fabricator or Erector, at his option, may retighten all of the bolt assemblies in the connection and resubmit the connection for the specified inspection.

Payment. All costs incurred in complying with this Special Provision including all costs for furnishing, installing, and testing of Direct Tension Indicators will not be measured or paid for separately, but shall be considered subsidiary to the items of "Structural Steel in Plate Girder Spans ()" and "Structural Steel in Beam Spans ()".

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****INSPECTION ACCESS COMPONENTS**

Description. Work under this item shall consist of the design, construction, and installation of inspection access components including the cable railing, ladder safety devices and safety closure gates in accordance with the plans on Bridge 07684.

Materials. The cable handrail materials are as follows.

a. Cable Railing.

Wire Rope. Wire rope shall be galvanized steel wire meeting the requirements of ASTM A1023, class 6x19, grade IPS with an IWRC steel core or approved equal. Diameter shall be as indicated on the plans. The wire rope shall have a total breaking load of no less than 10,000 lbs.

Steel Fittings. All steel fittings used in cable fencing system including all turnbuckles, swages, eye bolts, toggles, ferrules, wire rope grips and permanent tensioning devices shall be galvanized steel and meet the requirements of ASTM F1145.

Structural Steel and Handrail. Structural steel used in all inspection access components including posts, pull-posts, angle rails, walkway supports, braces, and connection plates and angles shall be ASTM A709 Grade 50 as indicated on the plans. Structural steel for pipe rails shall conform to the requirements of ASTM A53 Type E, Grade B.

Galvanizing Coating. The coating for inspection access components shall be hot-dip galvanized after fabrication in accordance with Subsection 807.19 of the Standard Specifications unless noted otherwise in the plans. Touch up galvanizing as required following installation of the waterline, supports, and inspection access components shall be performed as indicated in the standard specifications.

Accessories. Nylon bushes as recommended by the cable manufacturer shall be installed at each rail post hole to provide chafe protection of the wire rope. Provide grommets, bushings and washers as necessary for separation of dissimilar metals.

b. Ladder Safety Devices and Closure Gates. Ladder safety devices and self-closing gates shall be in accordance with OSHA requirements and installed at the locations shown in the plans. Where practicable ladder safety devices and self-closing gates and connection components shall be galvanized steel. Provide grommets, bushings and washers as necessary for separation of dissimilar metals.

Manufacturer's written documentation shall be submitted to the Engineer for approval.

INSPECTION ACCESS COMPONENTS

Work to be Performed.

a. Design Requirements. Wire rope system shall be dimensioned as indicated on the plans. Required pretensioning of the wire rope system shall be computed independently by the manufacturer. The system shall be capable of restraining the following design force:

- 1) A 200 lb. vertical force applied to one strand at the midpoint between posts shall not displace the rope more than 2 inches vertically.

Manufacturer's structural calculations shall be prepared by an Arkansas Licensed Professional Engineer. Provide verification that the tension force used in the wire rope system does not exceed capacity of the posts and pull posts and their connections in the plans. The calculations shall be in accordance with AASHTO LRFD Bridge Design Specifications, Ninth Edition, 2020.

Design pretension loads in each of the strands shall be submitted to the Engineer for review.

b. Shop Drawings. Submit shop drawings of the wire rope, posts, pull-posts and all hardware used in the installation and permanent configuration of the inspection walkway railing system to the Engineer for review. Layout of posts and pull-post locations shall be shown and approved by the Engineer.

Use approved type of identification marks on all strands and accessories in order to facilitate proper installation and erection.

Show the theoretical lengths of the ropes prior to installation and the final location of the turnbuckles. Final lengths shall be calculated to allow for tensioning with fittings 2/3 open (i.e. 1/3 thread length engaged). Tendon lengths shall be measured from center of pin to center of pin, or center of eye to center of eye.

Show all end anchorage systems and proposed connection to pull-posts.

Submit manufacturer's written certification that all materials comply with specified requirements and are suitable for intended application.

c. Quality Assurance. Components shall be free from defects impairing strength, durability and appearance. Exposed surfaces throughout project shall have same inherent texture and color for similar locations.

Exposed fasteners shall be of same materials, color and finish as material to which applied.

Field measurements shall be taken after permanent pull-post locations are in place and prior to fabrication, to ensure fitting of work.

Wire rope and components used in the fabrication of the assembly of the cable railing shall be products of a single manufacturer or be approved by primary manufacturer for use as part of the railing system.

INSPECTION ACCESS COMPONENTS

All components shall be transported, delivered and stored in a manner that will prevent damage.

Strength of all tensioned components including all turnbuckles, swages, eye bolts, toggles, ferrules, wire rope grips and permanent tensioning devices shall be able to achieve the breaking strength of the wire rope strands being tensioned.

d. Fabrication. Fabricate system in accordance with approved shop drawings.

Preassemble items in the shop to the greatest extent practicable to minimize assembly at project site. Disassemble units only to extent necessary for shipping and handling limitations. Mark units for reassembly.

e. Installation. Furnish end anchoring devices for attachment at pull-post locations.

Coordinate shop drawings, and directions for installation of end anchorages and wire rope tensioning procedures.

Provide end anchorage devices and fittings. Separate dissimilar materials with bushings, grommets or washers to prevent electrolytic corrosion.

Set work in location, alignment and elevation, plumb and level, true and free of rack, measured from established lines and levels.

Payment. Work completed, accepted, and measured as provided above will be paid for as "Structural Steel in Plate Girder Spans (A709, Grade 50W)."

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HLMR BEARING ASSEMBLY

DESCRIPTION: This item shall include designing, furnishing and installing complete in place factory-produced bearings in accordance with details shown on the bridge plans with the requirements of these special provisions. The term HLMR (High-Load, Multi-Rotational) Bearing shall be considered interchangeable with Pot Bearing or Disc Bearing.

The height of the various risers on the bridge caps shown in the plans were based on information from various bearing manufacturers. Any modifications to the height or reinforcing steel required due to the actual height of the bearings manufactured by the Contractor's selected supplier will be the responsibility of the Contractor. The cost of any additional concrete, reinforcing steel, labor, or equipment related to the height changes shall be considered included in the unit price bid for HLMR Bearing Assemblies.

The bearing manufacturer shall furnish the external load plate, HLMR bearing assembly and masonry plate.

MATERIALS:

All materials shall be new and unused, with no reclaimed material incorporated into the finished bearing. Material requirements, tolerances and finishes for these bearings shall be as prescribed in the AASHTO *LRFD Bridge Construction Specifications*, Section 18: Bearing Devices, on the Plans and in these Special Provisions.

Maximum-coefficient of friction (PTFE to stainless steel as furnished):

At 75% capacity	0.03
At 25% capacity	0.05

The PTFE sliding surface shall be bonded under factory-controlled conditions to a rigid back-up material capable of resisting any bending stresses to which the sliding surfaces may be subjected.

The mating stainless steel surface to the PTFE shall be an accurate flat surface as required by the design and shall have a minimum Brinell hardness of 125 and a surface finish of less than 20 micro-inches (0.50 μm) rms. The mating surfaces shall completely cover the PTFE surface in all operating positions of the bearing.

Stainless steel mating surfaces when used shall be a 16 gage minimum thickness and conform to ASTM A240, Type 304 with a surface finish of less than 0.5 microns rms. Stainless steel

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HLMR BEARING ASSEMBLY

mating surfaces shall be polished or rolled as necessary to meet the friction requirements of this specification.

Base plates, external load plates, guide bars, and other bridge bearing components shall be constructed of structural steel conforming to AASHTO M270 Grade 50 as noted on the plans. Steel surfaces shall be shop painted a prime coat of inorganic zinc as specified in accordance with applicable portions of Section 807 prior to field painting. Care shall be taken to avoid paint contact with bearing and sliding surfaces.

The masonry pad shall be in accordance with Section 808 for unreinforced pads.

Guiding arrangements shall have PTFE to stainless steel sliding surfaces.

The setting tolerance described in this specification shall be included in the design of the bearing.

MANUFACTURING DETAILS: Shop drawings shall be prepared in accordance with the general requirements of Subsection 807.04. Shop drawings shall be submitted with design calculations (sealed by a licensed Professional Engineer in the State of Arkansas) for review for conformance with loads in Contract Plans.

During the welding procedure of the stainless steel plates to the top plate and guide bars the surface of the stainless steel plates shall be protected from weld splatter.

The bonding of the PTFE sheets for expansion bearings shall be performed at the factory of the bearing manufacturer under controlled conditions and in accordance with the written instructions of the manufacturer of the approved adhesive system. After completion of the bonding operation, the PTFE surfaces shall then be polished.

Each manufactured lot of bearing assemblies shall be accompanied by a manufacturer's certificate stating that the materials meet the requirements of the specifications above, showing actual test results for the materials used in the manufacture of the bearings.

Acceptance of bearing assemblies will be based on satisfactory manufacturer's certification, acceptable test results, and inspection at the time of installation.

TESTING: The manufacturer shall furnish facilities for the test and inspection of the completed bearings or representative samples in his plant or at an independent test facility.

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A random sample from each production lot of bearings shall be tested after all bearings have been manufactured. Notification of the testing schedule and location shall be given to the Engineer not less than 30 days prior to beginning testing.

The test methods and equipment shall comply with AASHTO *LRFD Bridge Construction Specifications*, Table 18.3.4.2.2-1 and shall be approved by the Engineer.

Bearings represented by the test specimens passing the above requirements will be approved for use in the structure subject to on-site inspection for visible defects.

The bearings shall be packaged and crated in such a manner that they will be protected from dust and moisture, and not become damaged while being handled, transported or stored. Any bearing damaged during handling, transporting or storing shall be replaced by the Contractor at no expense to the Department.

The bridge bearings are not designed to accept bending stresses and must be fully supported over the entire area of the bottom and upper surfaces at all times when under load.

CONSTRUCTION DETAILS: The bearing base plate shall be set to line and grade. The Contractor shall locate the bearings at the proper elevation and orient them in the proper direction. The upper part of the bearing shall be located relative to the base of the bearing according to the Engineer's recommendation for the temperature at the time of erection. The Contractor shall set the bearing assembly within a tolerance of $\pm 1/2$ " of the plan values for centerline of the bearing adjusted based on the setting temperatures.

Bearings shall not be disassembled without written approval of the Engineer. If for any reason the bearings are disassembled, both disassembly and re-assembly shall be under the direction and observation of a representative of the bearing manufacturer.

It is necessary to exercise care in aligning both the base and upper part of the guided expansion bearing parallel to the axis of the structure, otherwise a wedging action will occur and unsought horizontal forces will result.

The Contractor shall align all bearings on any one pier exactly to the direction shown on the plans.

The Contractor shall avoid scratching, gouging or otherwise marking the PTFE or mating stainless steel surfaces of the bearings during handling or erection. The Contractor shall use

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whatever means are necessary to protect the bearings from dirt, grout or other foreign materials during the construction of other elements of the structure.

METHOD OF MEASUREMENT: HLMR bearing assembly will be measured by individual bearing assemblies as shown on the bridge plans.

BASIS OF PAYMENT: HLMR Bearing Assemblies will be paid for at the contract unit price per each. Price shall be full compensation for all materials, manufacturing, testing, shipping, storage, and all other incidentals necessary to complete the work, including anchor bolts, threaded couplers, sheet metal sleeves, welds, external masonry plate, masonry plate and masonry pad.

Payment will be made under:

Pay Item	Pay Unit
HLMR Bearing Assembly	Each

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PRESTRESSED CONCRETE BULB-TEE GIRDERS

Prestressed Concrete Bulb-Tee Girders shall be furnished and installed in conformance with Section 802 of the Standard Specifications and as amended by this special provision.

Subsection 802.22 of the Standard Specifications is hereby amended as follows:

The fifth sentence of Subsection 802.22(f)(2) d. Prestressing is deleted and the following substituted therefore: No bond stress shall be transferred to the concrete, nor end anchorages released, until the concrete has attained a compressive strength, as shown by cylinder tests, of at least 7000 psi for Bridge No. 07684 and 7000 psi for Bridge No. 07685.

The first sentence of the fourth paragraph of Subsection 802.22(f)(2) f. Steam Curing is deleted and the following substituted: Prestressed Concrete Bulb-Tee Girders shall remain on the bottom supporting forms until the concrete has reached a compressive strength of 7000 psi for Bridge No. 07684 and 7000 psi for Bridge No. 07685 as evidenced by test cylinders molded, cured, and tested as herein specified.

Add the following to the end of Subsection 802.22:

(5) Grading and Slab Forming. Prestressed Concrete Bulb-Tee Girders shall not be profiled for grade and no slab forming shall be erected until 90 days after release of the prestressing strands.

(6) Diaphragms. All end of unit and mid-span diaphragms shall be cast in place and poured a minimum of 48 hours before the slab is poured, unless otherwise noted. Intermediate bent diaphragms shall be cast monolithically with the slab.

(7) Temporary Bracing. Prestressed Concrete Bulb-Tee Girders shall be braced at both ends against overturning at all times prior and during the pouring of the deck slab. Bracing shall be installed as soon as possible after moving or erecting girders. Details for this bracing, complete with dimensions and kind of condition of materials, shall be submitted to the Engineer prior to casting of the girders for informational and record purposes. These details shall be approved by an Arkansas Licensed Professional Engineer, who shall certify that the adequacy of all components has been verified. The Contractor is responsible for the results obtained by their use.

(8) Prestressed Girder Substitution. The bridge has been designed for BT-72 girders as shown in the plans. At the Contractor's option, a different girder type may be proposed. Proposed girder type shall meet the requirements in this special provisions. NU70, Tx70, and Type J girder types, may be considered for substitution provided the Contractor provides adequate design, shop drawings and final plan modifications prepared and stamped by an Arkansas Licensed Professional Engineer. Girder design shall be in accordance with AASHTO LRFD Bridge Design Specifications, Ninth Edition, 2020.

This optional girder substitution shall be approved by the Engineer. Any additional expense as a result of the Contractor's substitution shall be at no cost to the Department.

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The profile grade, cross slope, girder spacing, girder length, slab overhang dimensions, bearing locations and maximum concrete strength shall match the information shown in the plans.

The slab design as shown in the plans is adequate for a prestressed girder top flange width of 3'-6" minimum. The slab longitudinal bars over the pier shall not be less in size, number and spacing of the plans. The longitudinal slab bars shall be designed and checked by the Contractor.

The girder cope details for the proposed girder shall be modified and designed by the Contractor and conform with the general plan details shown in the plans. Girder reinforcing steel shall be modified to conform to the new girder type and cope details for the expansion joints shown in the plans.

The girder design method shall be per ARDOT Bridge Design Guidelines, Section 4.4.4. The weight of the girders (without additional precast haunch) shall not be less than 0.826 kips/ft and no more than 1.040 kips/ft. The depths of the girders (without additional precast haunch) shall range between 70" minimum and 72" maximum from top of top flange to bottom of bottom flange.

The Contractor shall determine the adequate strand pattern for the proposed girder and conform to all the requirements of AASHTO LRFD Bridge Design Specifications, Ninth Edition, 2020 for all stages of construction, erection, final design and long-term serviceability requirements.

Camber diagrams shall be updated and used for the final plan geometry. Weight of haunches and girders shall not be greater than the values shown in the plans. The designed minimum haunch height at the centerline of the span shall not be less than 1/2".

Girder holes for girder ends, diaphragms, drain attachments and miscellaneous attachments shall be shown in the shop drawings and shall maintain 1.5" clear to the prestressing strands.

Diaphragm details shall be revised to accommodate the new girder shape and design loads. The overall out to out dimensions and thickness of diaphragms shall conform to plan dimensions. Diaphragm reinforcing bars shall be revised to accommodate the new girder shape. Reinforcing bars shall not be less in number, size or spacing as what is shown in the plans. Reinforcing clear distances, lap lengths and embedments shall match the minimum dimensions shown on the plans. No adjustment will be made for the change in concrete quantity for the diaphragms.

The bearings and anchor bolts for the proposed girder shall be designed by the Contractor.

The top of cap and pedestal elevations shall be revised for the proposed girder. The pedestal heights and top of cap adjustments shall not exceed the requirements shown in the general notes. Any changes to elevations of the top of capbeam elevation will require adjustment to the column reinforcing bars to achieve the minimum embedment of the column bars and pedestal bars.

Strands requiring debonding shall be blanketed over the required regions with sheathing. Sheathing shall be split plastic or solid plastic with a minimum wall thickness of 0.025 inch. To prevent concrete from contacting strands within the debonded length, sheathing shall be thoroughly taped at each end. Split sheathing shall be additionally sealed along its entire length by through taping.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****BRIDGE WORK IN NAVIGABLE WATERS**

DESCRIPTION: The Contractor shall acquaint himself with the right-of-way limits and available work and storage space at the site and with the conditions at the site. Any additional ground required by the Contractor for working and storage space or his overall operation shall be provided by the Contractor at his own expense.

The Contractor, Engineer and representatives of the city of Barling, and Crawford and Sebastian Counties, USACE, property owners and the Crawford County Levee District, if applicable, shall tour and document the Contractor's proposed haul routes to determine condition of such routes prior to beginning the work. Any damages attributable to the operations of the Contractor, whether due to hauling equipment or materials or other operations, shall be repaired to the satisfaction of the Engineer.

The Contractor shall comply with the requirements of federal, state and local agencies having jurisdiction and with all permit requirements, during the prosecution of the work. The Contractor shall coordinate the construction of temporary haul roads, access points, berms, boat docks, material storage areas and any other incidental or temporary construction with such agencies prior to beginning construction of temporary works.

Bridge Work in Navigable Waters: The construction of a bridge over the navigable waters of the Arkansas River has been authorized through a permit issued by the U.S. Coast Guard. This permit has been reproduced and attached to the Contract Documents. The Contractor shall assume all obligations and comply with all requirements and provisions of this permit as it applies to this contract.

The Contractor's particular attention is invited to the various requirements established by the Corps of Engineers, the U.S. Coast Guard, and others relative to construction work in and over a navigable stream which is applicable to this contract and which may not be covered by the above permit. Such matters of approval include, but are not necessarily limited to, dredging, construction schedules, plans for cofferdams, temporary causeways, work bridges, erection equipment, falsework bents, anchorage of barges and construction equipment, temporary restriction or closure of channel, lighting during construction, removal of temporary construction, or other temporary structures that will be placed in the water to facilitate the construction of the bridge. All construction operations in or over the river shall conform to the requirements or directions of the District Engineer, U.S. Army Corps of Engineers; U.S. Coast Guard; and/or other authority having jurisdiction. All work in navigable waters shall be so conducted that free navigation of the waterway will not be unreasonably interfered with and that the existing navigable depths will not be impaired. The Contractor shall refer to the temporary condition reflected in the Section 408 package and consider the potential hydraulic implications of a more intrusive layout. The Contractor shall communicate with the appropriate agency or agencies and procure, at its own expense, all required permits. Copies of all permits, authorizations, directions or orders issued to the Contractor by the Corps of Engineers, Coast Guard, or other constituted authority during the progress of the work shall be filed with the Engineer for information and record.

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The Contractor shall notify the U.S. Coast Guard not less than thirty days in advance of commencement of work in the river so that navigation interests may be notified of the presence of construction equipment and the Contractor also shall notify the same authority of any events that may affect navigation and when work in the river is complete. The Contractor shall keep the Engineer and the U.S. Coast Guard continually informed in writing of the progress of the work which affects navigation so that temporary navigation lights can be prescribed on remaining obstructions.

Should the Contractor, during the progress of work, lose, throw overboard, sink or misplace any material, machinery, plant, or appliance which in the opinion of the Engineer may be dangerous or obstructive to navigation, the Contractor shall immediately recover and remove the same with dispatch. The Contractor shall give immediate notice, with the description and location of such obstruction to the District Engineer, Corps of Engineers, and U.S. Coast Guard; and when required, the Contractor shall mark or buoy such obstructions until the same are removed.

Temporary navigation lights and other navigation signals or facilities that may be required by governmental authority on all temporary construction or vessels and on all partially or wholly finished permanent construction or demolition, shall be provided and maintained in accordance with the requirements of the U.S. Coast Guard District, 1222 Spruce Street, St. Louis, Missouri 63103. The Contractor shall submit to the Engineer and the U.S. Coast Guard for approval, prior to commencement of the work within the waterway, such information and documents as are customarily required by the said authority. Temporary lights, signals or facilities when so ordered, shall be provided and maintained throughout the life of the contract.

Section 404 Standard Individual Permit:

U.S. Coast Guard Approved Bridges: Discharges of dredged or fill material incidental to the demolition or construction of bridges across navigable waters of the United States, including cofferdams, abutments, foundation seals, drilled shafts, piers, and temporary construction and access fills are prohibited except as provided that such discharges have been authorized by the U.S. Coast Guard as part of the bridge permit. Contractor shall conform to the Standard Individual Permit.

This permit does not allow waste (disposal) of dredged or excavated material into the Arkansas River or wetlands nor does it authorize river or land dredging, except within cofferdams as previously approved by the Corps of Engineers.

Disposal of Structural Excavation: The Contractor shall comply with U.S. Army Corps of Engineers Regulations and U.S. Coast Guard Regulations respectively, stated in these Provisions.

The Contractor shall not dispose excavated material in the waters of the Arkansas River or within the regulatory floodway of the Arkansas River except as approved by the District Engineer, Corps of Engineers. Excavated materials not used for backfill or

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embankment construction shall be disposed of offsite at an approved upland, non-wetland site. Excess excavation material from drilled shafts and footings shall be hauled away to maintain the hydraulic characteristics of the ground as established by the grading plans.

Payment for the disposal of the structural excavation shall be incidental to all other items of the contract.

METHOD OF MEASUREMENT: No separate measurement will be made for compliance with this special provision.

BASIS OF PAYMENT: All costs incurred by the Contractor in complying with the above requirements shall be considered as included in and completely covered by the unit prices bid for the various items of work in the contract.

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CONCRETE FOR STRUCTURES

Section 802, Concrete for Structures, of the 2014 Edition of the Arkansas Highway and Transportation Department Standard Specifications for Highway Construction is hereby modified as follows:

802.16---Weather and Temperature Limitations and Protection of Concrete. After Subsection 802.16, add the following:

802.16.1---Mass Concrete. Mass concrete is defined as “Any large volume of cast-in-place concrete with dimensions large enough to require that measures be taken to cope with the generation of heat and attendant volume changes to minimize cracking”. When the minimum dimension of the concrete exceeds five (5) feet, the provisions for the placement of mass concrete shall be required.

Cement shall be Type I, 1L, II, IP or IS.

Use a combination of Ground Granulated Blast Furnace Slag or Class F fly ash in accordance with this specification. Class C fly ash may be used with a maximum substitution of 20%. The maximum total substitution of Portland cement shall not exceed 50%, including the amount of blended cement.

Cementitious material content shall be minimum of 560 pounds per cubic yard.

Maximum water to cementitious material ratio shall be 0.45.

Air entrainment shall be used with an air content of 6% (+/- 2%). To improve workability and aid in air entrainment, water reducing or retarding admixtures may be used in accordance with the contract documents.

The Contractor shall submit the mix design for the mass concrete in accordance with Subsection 802.05 (c).

When placing mass concrete, the maximum concrete temperature at time of placement shall not exceed 70°F and shall not be less than 40°F. The maximum concrete temperature at the time of placement may be modified by the detailed plan, when supported by thermal analysis. In no case shall the maximum concrete temperature at time of placement exceed 90°F. The maximum temperature within the mass concrete shall not exceed 160°F. The maximum temperature shall be evaluated at each temperature sensor location placed.

The Contractor shall assure that the maximum temperature differential between any point in the interior of the concrete element greater than 12 inches from the surface and the surface of the

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concrete element does not exceed 20°F immediately following placing of any lift during the heat dissipation period for 24 hours after placement, 30°F from 24-48 hours after placement, 40°F from 48-72 hours after placement, and 50°F after 72 hours or more after placement. The Contractor shall maintain records of the temperature differential and shall immediately apply corrective measures when the temperature differential nears 5°F below the limits stated above. This may be accomplished through a combination of the following:

- a. Use of Class S Concrete as modified to meet this specification.
- b. Selection of concrete ingredients to minimize the heat generated by hydration of the cement.
- c. Cooling component materials to reduce the temperature of the concrete while in its plastic state.
- d. Insulating the forms and the surface of the concrete to prevent heat loss.
- e. Controlling the rate of placing the concrete.
- f. Placement of concrete at times of day when the ambient temperature is lowest or highest.
- g. Providing supplemental heat at the surface of the concrete to prevent heat loss.
- h. Other acceptable methods which may be developed by the Contractor.

The duration of thermal control of each placement shall begin when concrete is first placed into the formwork. Thermal control shall be maintained until the temperature of the interior is within the maximum temperature differential limit (stated above) of the average ambient air temperature. The average ambient air temperature shall be determined by averaging the daily high and low temperatures over the preceding seven calendar days.

Prior to placing any concrete covered by the Special Provision, the Contractor shall submit to the Engineer a detailed thermal control plan, prepared by a licensed engineer specializing in thermal control of concrete members. The plan shall include calculations covering how these temperature differentials will be determined and how the restrictions are to be achieved. The plan shall be submitted at least 30 calendar days before the planned pour and updated for the actual temperatures on the day of the pour.

No concrete covered by this Special Provision shall be placed until the Contractor's temperature differential plan is reviewed and accepted by the Engineer. Approval of the detailed plan does not relieve the Contractor from meeting the requirements of this specification.

The Contractor shall install within the concrete placed in each mass concrete pour and in the surrounding environment of the concrete, temperature sensing devices of a type approved by and at locations as designated by the Engineer. These devices shall be accurate to within plus or minus 2°F within the temperature range of 32°F to 212°F. The temperature shall be recorded automatically by an approved strip-chart recorder furnished by the Contractor. The monitoring

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equipment shall be capable of continuously recording a minimum of one reading per hour for the entire duration of thermal control.

The sensing system shall contain as a minimum two independent sets of sensing devices in order to assure readings if one of the systems fail. The system will utilize 4 pairs of temperature sensors, one pair placed at the center of the mass, midpoint of the side or top surface, with 2” to 4” of concrete cover, which is the shortest distance from the center of mass, midpoint of the side or top surface, with 2” to 4” of concrete cover, with the second shortest distance from the center of the mass and the ambient air location. The ambient air temperature sensors shall be located at the project site, in a fully shaded location in the vicinity of the mass concrete being placed and away from artificial heat sources.

No direct payment will be made for compliance of this Subsection. All cost associated with this Special Provision shall be considered subsidiary to the Item “Class S Concrete – Bridge”.

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NAVIGATION LIGHTING SYSTEM

DESCRIPTION. This item shall consist of the furnishing of material, equipment and fixtures, and the installation of a navigation lighting system on bridges over the Arkansas River in accordance with the Contract Documents, this Special Provision, and the details in the Design Documents.. The navigation lighting system shall be in accordance with Title 33, Section 118, Code of Federal Regulations.

PLACEMENT. The center of the navigation channel span shall be marked by a range of two green lights. Each green light shall show through a horizontal arc of 360° and be mounted securely just below the outermost edge of the bridge span structure in line with the axis of the channel so as to be clearly visible to an approaching vessel.

The center of the navigation channel span shall be marked with green, high-intensity grade, retro-reflective square panels measuring two feet per side. The retro-reflective panels shall be placed near the top of the green navigation lights so as to effectively reflect the searchlight of any approaching vessel but not positioned so as to obscure the red navigation lights.

Each margin of the channel shall each be marked with two red lights, one on the upstream side and one on the downstream side of the bridge span structure. Each red light shall show through a horizontal arc of 180° and be securely mounted just below the outermost edge of the bridge to show 90° on either side of a line parallel to the axis of the channel, clearly visible to an approaching vessel.

Each margin of the channel, one on the upstream side and one on the downstream side, shall be marked with red, high-intensity grade, retro-reflective square panels measuring two feet per side. The retro-reflective panels shall be placed near the top of the red navigation lights so as to effectively reflect the searchlight of any approaching vessel but not positioned so as to obscure the red navigation lights.

MATERIALS Cable for the bridge navigation lighting system shall be copper, 600 volt with Type XHHW insulation, and sized as shown on the plans. Junction boxes shall be sized as shown on the plans, and shall have a NEMA 4X rating.

Furnish, install and connect to the service point assembly as shown on the Design Documents. Refer to the Service Point Assembly SP.

Furnish and install within the lighting pedestal shown on the Design Documents, one approved, 120/240 volt, lighting contactor with photoelectric control, with fail-safe and adjustable sensitivity features. Set the photoelectric control so the navigation lights are displayed from sunset to sunrise each night of the year and at other times when the visibility is less than one mile.

Furnish and install on the outside of the structure as shown on the Design Documents, six marine signal navigation light system – two for marking the center of the navigation span at the centerline of the navigation span and four for marking horizontal clearance lines for navigation. All lights must have sufficient candlepower as to be visible against the background lighting at a distance of at least 2,000 yards 90 percent of the nights of the year.

The navigation lighting system shall consist of the following components for each center channel

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NAVIGATION LIGHTING SYSTEM

and channel margin light fixture: marine lantern equipped with LED lamp, one lens, slide mechanism with trolley, hinged pad-lockable security cover, service wire rope, straps, mounting bracket, hanger housing and stem, signal housing and all other components necessary to provide a complete system of which the lantern can be slid for service.

The lantern housing shall be cast aluminum or molded acrylic, mounted on an adjustable bracket and designed for a LED lamp. Lantern shall provide space to allow the use of an AC/DC and/or 120/240 line converter if necessary. Lantern housing shall have an IEC classification IP-68. All cable entrances shall be water-tight.

The lens shall be permanent, rigid, glass or clear acrylic, standard marine fresnel-type, 180° or 360° section, measuring 150 mm diameter, approximately. The lens used in the system at the centerline of span shall be 360° clear acrylic with the LED producing the green light at a wavelength of approximately 510 nanometers. The lenses used in the two systems for marking horizontal clearance shall be 180° clear acrylic with the LED producing the red light at a wavelength of approximately 650 nanometers.

Provide 6 LED lamps and install in the six marine lantern fixtures. Provide 2 spare LED lamps and deliver to the Department.

All cable entrances shall be watertight. The entire assembly shall be constructed to prevent insect entry.

The mounting bracket, hanger housing and signal housing shall be heavy castings of silicon bronze. The bronze housing shall be unfinished.

The hanger stem shall be 1½" stainless steel pipe.

The 1/8" flat steel plate for the high intensity retroreflective material shall be cleaned by either the centrifugal wheel or the air blast method. Blast cleaning shall produce a surface preparation conforming to SSPC-SP10, Near-White Blast Cleaning, with a surface profile as recommended by the manufacturer of the retroreflective material. The retroreflective material shall be attached in the fabricator's shop after metallic shot and grit or sand is removed from the surface and before rust forms. The steel surface shall be thoroughly free of dirt, grease, oil, and other foreign substances.

The Contractor shall furnish and install all switch boxes, conduits, cable, junction boxes, splice fittings, fasteners, hardware grounds, mounting devices, fixtures, lamps and accessories necessary for the complete lighting system, tested and connected for operation.

The lighting installation, when completed, shall comply with the applicable provisions of the United States Coast Guard (USCG), National Fire Protection Association (NFPA) "National Electrical Code" (NFPA 70), Institute of Electrical and Electronics Engineers (IEEE) "National Electric Safety Code", American National Standards Institute (ANSI) standards, and the National Electric Manufacturers Association (NEMA) standards, and shall conform to all local and State laws or ordinances governing such installations and to the special requirements herein set forth. Should the Design Documents and detail specifications be in conflict with these requirements, through error or omission,

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the Contractor shall submit alternate products and materials to the Engineer of Record and the Department in accordance with the Construction Quality Management Plan (CQMP). Upon approval of the alternate products and materials, the Contractor shall make the necessary corrections in the installation.

All metal parts and fittings shall be hot-dipped galvanized or shall be of an approved corrosion resisting material such as copper, brass or bronze, stainless steel or of a material treated in an approved manner to render it adequately resistant to corrosion.

All material, equipment and fixtures shall be the best standard product of a manufacturer regularly engaged in the production of this type of equipment and shall be of the manufacturer's latest approved design.

The Contractor shall submit catalog numbers, certified shop drawings and descriptions of fixtures and equipment proposed and shall secure approval of all products prior to beginning the installation.

Suppliers of retroreflective materials as specified above and shown on the plans are as

follows:

3M Company
Traffic Control Products Div.
3M Center
St. Paul, MN 55101

American Decal and Mfg., Co.
4100 W. Fullerton Ave.
Chicago, IL 60639

Fasson. Div. of Avery Prod. Corp.
250 Chester St.
Painesville, OH 44077

Morgan Adhesives Co.
4560 Darrow Road
Stow, OH 44224

CONSTRUCTION METHODS. The installation, as a whole, shall be carried out in conformity with the requirements herein stated and implied, and upon completion of the work shall present a neat and workmanlike finished appearance. Safe construction and operating practices meeting the requirements of the NFPA 70 "National Electrical Code" and the IEEE "National Electric Safety Code" shall be maintained.

The Contractor shall provide for the installation of conduits, cables, and equipment in proper sequence with the construction of the bridge structure.

Cables, where practicable, shall be installed in continuous lengths without splices, from terminal to terminal. At the terminals, the cable shall be spliced to the equipment leads in strict conformity with the cable manufacturer's instructions. Care shall be taken to insure watertight joints and connections.

When necessary, splices of conductors shall be made with 600 volt insulated compression type

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fittings similar to those described by the highway illumination SP Electrical Conductors-in-Conduit. Splices shall be made in accessible junction boxes, not in conduit.

TESTS. The Contractor shall furnish all equipment and appliances necessary to test the completed system in accordance with ANSI/NETA ATS "Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems", current edition. All electric energy furnished by the power company shall be paid for by the Contractor. The Contractor shall test and demonstrate to the satisfaction of the Department that all lighting circuits are continuous and free from short circuits and unspecified grounds; that all circuits are properly connected in accordance with accepted practice; that the resistance to ground of non-grounded section of multiple circuits is not less than 100 megohms (run test for one minute); and that all circuits are operable, which demonstration shall include functioning not less than ten times and continuously operating circuit for not less than four hours.

All installations shall be fully tested in normal operation for not less than 14 days as completed systems prior to acceptance. Failure of system equipment or controls shall be cause to stop the test. Deficient equipment shall be replaced and new 14 day test started.

CONTRACTOR'S RESPONSIBILITY. The Contractor shall be responsible for the proper performance, in part and as a whole, of the structural, mechanical and electrical equipment provided for the lighting circuits and related parts for the period between the date of installation and the date of Final Acceptance; to the extent that the Contractor shall correct at his own expense any difficulties with the operation which may arise during this period as a result of defects in material, equipment, manufacture and installation. Responsibility for such correction shall include the repair, readjustment and replacement not only of the defective parts but of other parts which may be damaged thereby. The Department reserves the right to itself correct any such defects and the Contractor shall pay the cost thereof.

TEMPORARY NAVIGATION LIGHTING DURING CONSTRUCTION PERIOD. For the protection of navigation during construction of the bridge, the Contractor shall provide required lighting for falsework, and any other temporary obstructions which he may install for this construction operation. Temporary lights must be of the same color and characteristic and have a range of visibility equal to that prescribed for permanent lights. Four copies of the location of all construction facilities shall be furnished to the District Commander, Eighth Coast Guard District, 1222 Spruce Street, St. Louis, Missouri 63103, at least 60 days in advance of beginning of this work. One marked copy will be returned indicating required temporary lighting.

METHOD OF MEASUREMENT. Work completed and accepted under this item shall be measured as lump sum. The lump sum item shall consist of all cabinets, light fixtures, conduit, conductors, boxes, foundations, and all other hardware necessary for installing the navigation lighting system.

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BASIS OF PAYMENT. Work completed, accepted, and measured as provided above shall be inclusive of the entire work described in this SP, including but not limited to the furnishing and installing the navigation lighting fixtures; furnishing and installing conduit, pullboxes and junction boxes, and conductors, including splices and terminations; excavation, backfill, compaction, and removal of surplus material for underground conduit; and for all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Navigation Lighting System	Lump Sum

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SPECIAL PROVISION

JOB NO. 040901

CLEARANCE GAUGES

DESCRIPTION: The Contractor shall provide two (2) clearance gauges on the upstream and downstream face of Bent 14 of Bridge 07684 constructed over the Arkansas River in accordance with the requirements of the Contract Documents, the United States Coast Guard (USCG), the USCG Bridge Permit dated **XX X, 20XX**, and at the locations and conforming to the details shown in the Design Documents. The clearance gauges shall be installed before erection of the superstructure begins.

MATERIALS: The paint base type shall be compatible in all respects with the intended use at this project location. The paint shall be suitable for use on concrete masonry under severe exposure or submersion in water as recommended by the manufacturer. The paint shall be appropriate for use in exterior marine applications that is chemical, abrasion, chalking and bleeding resistant. Paint applications shall have a glossy finish and meet the maximum dry mill thickness as recommended by the manufacturer. The paint shall be Sherwin-Williams Macropoxy 646 Fast Cure Epoxy or equivalent.

CONSTRUCTION REQUIREMENTS: The paint system products shall be applied in accordance with the manufacturer's written recommendations. Manufacturer limitations may include but are not limited to concrete curing time, surface preparation, mixing, and number of coats.

The clearance gauges shall be painted on the structure with a white background with black numerals and foot marks to the elevations, details and dimensions shown on the plans. The paint shall be of good exterior quality, resistant to excessive chalking or bleeding. Manufactured numerals and background material may be used. Reflective paint shall not be used.

METHOD OF MEASUREMENT: Clearance gauges will be measured on the lump sum basis.

BASIS OF PAYMENT: Clearance gauges completed and accepted shall be paid for at the contract lump sum price bid for "CLEARANCE GAUGES" which price shall be full compensation for furnishing all materials, painting, and all labor, tools and equipment including incidentals necessary to complete the work.

Pay Item

Clearance Gauges

Pay Unit

Lump Sum

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SPECIAL PROVISION

JOB NO. 040901

MODULAR EXPANSION JOINT SYSTEM

1.0 Description. This work shall consist of furnishing materials, services, labor, tools, equipment, and incidentals necessary to design, fabricate, inspect, test and install the expansion joint system including the concrete and reinforcing steel in the blockouts as specified.

1.1 General. The modular expansion joint system shall consist of multiple strip seal joints that shall allow movements as shown on the plans. The configuration of the expansion joint system shall consist of neoprene strip seals mechanically held in place by steel edge and separation beams. Each separation beam shall be supported by independent multiple support bars welded to the separation beams, or by a single support bar system welded or bolted to the separation beams. The multiple support bars shall be suspended over the joint opening by sliding elastomeric bearings. Scissor type modular expansion joint systems will not be permitted. An equidistant control system shall be incorporated that develops its maximum compressive force when the joint is at its maximum opening. The final completed expansion joint system shall be continuous across the full width of the roadway and continue into the traffic barriers as shown on the plans.

1.2 Qualified Manufacturers. The qualified manufacturer shall have a minimum of 5 years' experience in designing and fabricating modular expansion joint systems and be certified under the AISC certification program for either "Simple Bridge" or "Bridge and Highway Metal Component Manufacturers". The following manufacturers are known suppliers of modular expansion joint systems:

D.S. Brown
300 East Cherry Street
North Baltimore, OH 45872
Telephone (419) 257-3561
www.dsbrown.com

Watson-Bowman & Acme Corp
95 Pineview Drive
Amherst, NY 14120
Phone (716) 691-7566
www.wbacorp.com

2.0 Design Requirements.

2.1 Truck and Impact Loading. The modular expansion joint system shall be designed in accordance with AASHTO LRFD Bridge Design Specifications, Ninth Edition (2020). The modular expansion joint system shall be designed for the maximum number of lanes between the barrier curbs, and the lane width shall be considered as 10 feet. The modular expansion joint system shall be designed such that the joint system is designed to support a wheel load being 12 inches from the roadway face of the curb. The modular expansion joint system shall be designed for the staged traffic loading as shown on the plans.

2.2 Field Splices. The design and fabrication of the modular expansion joint system shall be one continuous unit without field splices except as required by stage construction requirements as shown on the plans. If the site and/or stage construction requirements require the need for field splices, the splices shall be located in areas outside the main traffic lanes or as shown on the plans and consist of a welded separation beam splice in which the weld is a full

MODULAR EXPANSION JOINT SYSTEM

penetration weld, or another connection that is capable of developing the capacity of the spliced members. No fillet welds or partial-penetration splice joints shall be allowed. The Contractor shall complete the field splices in accordance with the details and procedures included in the shop drawings.

2.3 Movement. The modular expansion joint system shall be designed to provide the minimum total movement as noted on the plans and to accommodate all expected longitudinal movements (i.e. thermal, creep, shrinkage, elastic shortening, etc.) as well as vertical and horizontal rotations. This design shall incorporate strip seal glands with a maximum movement range of 3.15 inches per seal.

2.4 Fatigue. The modular expansion joint system shall be tested and designed following the guidelines provided in the National Cooperative Highway Research Program (NCHRP), Report 402 “Fatigue Design of Modular Bridge Expansion Joints” as well as the provisions included in Chapter 14, “Joints and Bearings”, of AASHTO LRFD Bridge Design Specifications, Ninth Edition (2020).

2.5 Water Tightness. After the modular expansion joint system has been completely installed, the joint shall be flooded for a minimum of one hour to a minimum depth of 3 inches. Testing shall be performed in stages with traffic flow maintained in accordance with the traffic control plans. If the Engineer observes leakage, the expansion joint system shall be repaired at the Contractor’s expense. The repair procedure shall be as recommended by the manufacturer and approved by the Engineer.

2.6 Corrosion Protection. All steel surfaces, except as noted, shall be hot dip galvanized in accordance with AASHTO M 111 (ASTM A123).

2.7 Anchorage of Expansion System. The modular expansion joint system anchorage shall be designed by the manufacturer and included in the design computations and shown in the shop drawings.

3.0 Material.

3.1 Structural Steel. Structural steel shall be in accordance with AASHTO M 270, Grade 50 (ASTM A709, Grade 50). All shop-welded connections that splice the horizontal separation beams and edge beams shall be full penetration welds. All separation beams to support bar connections shall be full penetration welds or bolted connections in accordance with NCHRP Report 402 requirements. No fillet welds or partial-penetration welds shall be allowed. Aluminum components will not be permitted. All fabrication of structural steel shall conform to Section 807.

3.2 Stainless Steel. The stainless steel sheet for the top and bottom elements of sliding bearings shall be Type 304 in accordance with ASTM A240. The finished stainless surface of the top element shall be a plane within a tolerance of 1/32 inch, polished sufficiently to meet the friction requirement in Section 3.3 of this job special provision, and shall be comparable to a No. 8 mirror finish as established by the American Iron and Steel Institute Committee of Stainless Steel Producers “Finishes for Stainless Steel” at the completion of fabrication.

MODULAR EXPANSION JOINT SYSTEM

3.3 Friction Requirement. The specimen shall be loaded to 800 psi compression at $68\text{ F} \pm 2\text{ F}$ and subjected to 100 cycles of one inch of horizontal movement each way from center at a rate of 2.5 inches per minute. The breakaway friction coefficient shall be computed for each direction of each cycle, and the breakaway friction coefficient mean and standard deviation shall be computed for the sixth through twelfth cycles. The initial static breakaway coefficient of friction for the first cycle shall not exceed twice the design coefficient of friction. The maximum coefficient of friction for all subsequent cycles shall not exceed the design coefficient of friction. Failure of a single sample shall result in rejection of the entire lot. Following the test, the breakaway coefficient of friction shall be determined again and shall not exceed the initial value. The bearing shall show no signs of bond failure or other defect.

3.4 Sliding Bearings. Slide bearings shall be fabricated as steel reinforced elastomeric pads with a polytetrafluorethylene (PTFE) sliding surface. Steel reinforced elastomeric pads shall conform to Section 808. The bearings shall be designed so that they are removable and replaceable. Components manufactured from polyurethane compounds will not be allowed.

3.5 Polytetrafluorethylene (PTFE). The PTFE material shall be 100 percent virgin PTFE fluorocarbon resin, unfilled or filled with fiberglass reinforcement to minimize the cold flow tendencies while maintaining the friction properties of the PTFE fluorocarbon resin. The amount of filler by weight of filled PTFE sheet shall be no more than 15 percent. The finished material shall exhibit the following physical properties:

Requirement	Test Method	Filled Value	Unfilled Value
Tensile Strength, psi	ASTM D638	2,000 min	-
	ASTM D2256	-	2,800 min
Elongation, Percent	ASTM D638	150 min	-
	ASTM D2256	-	200 min
Melting Point	ASTM D4895	$621 \pm 18\text{ F}$	$623 \pm 2\text{ F}$
Specific Gravity	ASTM D4895	2.20 ± 0.03	2.16 ± 0.03

The PTFE sheet shall be bonded to the stainless steel with epoxy bonding material designated by the manufacture as compatible with the PTFE sheet and stainless steel and be able to withstand the temperatures of vulcanization. The stainless steel shall then be bonded by vulcanization to the elastomer to provide a homogenous bond free of air and moisture pockets.

3.6 Strip Seals and Lubricant Adhesive. Strip seals and lubricant adhesive shall be in accordance with Section 809. The strip seals shall not protrude above the top of the joint. The maximum movement range of the expansion joint strip seals shall be 3.15 inches. “Box” seals or seals utilizing double webs will not be acceptable.

3.7 Bolts, Nuts, Washers. Bolts and other hardware shall conform to the requirements of AASHTO M 164 and shall be galvanized in accordance with AASHTO M 298.

4.0 Submittals.

MODULAR EXPANSION JOINT SYSTEM

4.1 Design Computations and Shop Drawings. The Contractor shall submit, for the Engineer's review, the design computations and shop drawings. All shall be signed, sealed and stamped by a licensed professional engineer in the State of Arkansas. The design computations shall include fatigue design and a strength design for all structural elements and connections. Shop drawings shall be prepared for the modular expansion joint system and approval secured before fabrication is begun. The shop drawings shall also include the following:

- a. Plans, elevation, and section of the joint system for each movement rating and roadway width showing dimensions and tolerances.
- b. All ASTM, AASHTO or other material designations.
- c. Method of installation, including but not limited to sequence, setting relative to temperature, anchorage during setting and installation at curbs.
- d. Corrosion protection system.
- e. Details of temporary support for shipping and handling.
- f. Details of blockout reinforcement and anchorage.
- g. Fatigue testing report.
- h. Details of adjustments to record drawings based on the selected modular joint system.

4.2 Maintenance Manual. The manufacturer shall submit to the Engineer a written maintenance manual and part replacement plan at the time of the shop drawing submission. Included in the submission shall be list of parts to be inspected, acceptable wear tolerances and the method of part replacement. The manufacturer shall conduct a pre-installation meeting to train ARDOT's construction inspectors and maintenance personnel on the installation and maintenance of the modular expansion joint system.

4.3 Certificates of Compliance. The manufacturer shall provide certification of the manufacturer's experience, including a list of projects, and certificate of compliance with the AISC certification program, in accordance with Section 1.2 of this job special provision, to be submitted to the Engineer.

5.0 Construction Requirements. The expansion joint system shall be stored at the job site in accordance with the manufacturer's written recommendations. Damage to the joint system during shipping or handling will be cause for rejection of the joint system. Any damage to the corrosion protection system shall be repaired to the satisfaction of the Engineer at the Contractor's expense. The support boxes shall rest on cast-in-place concrete or grout pads installed into a preformed blockout. The Contractor shall coordinate the size and reinforcing of the blockout with the selected modular joint manufacturer. This includes reinforcement in the blockout, the adjacent and supporting concrete slab and other concrete and structural steel supporting elements. Modifications to the record drawings to accommodate the selected modular system shall be the Contractor's responsibility. The Contractor shall provide details of any adjustments to the record drawings with the shop drawing submittal. Concrete shall be

MODULAR EXPANSION JOINT SYSTEM

forced under and around support boxes, anchorage systems and supporting hardware. Proper consolidation shall be achieved by localized internal vibration. Installation of the modular expansion joint system shall be as recommended by the manufacturer. The Contractor shall obtain the services of a qualified technical representative, approved by the manufacturer of the expansion joint system and acceptable to the Engineer, to assist during the installation. The installation shall not occur without the qualified technical representative from the joint manufacturer being present. The qualified technical representative shall have 3 years of experience working on installation of modular expansion joint systems on bridges.

6.0 Method of Measurement. The modular expansion joints will be measured from gutterline to gutterline. The portion of the joint that extends past the gutterline will be included in the cost of the joint but will not be measured. The barrier plates, blockout concrete and block out reinforcing are not included for measurement.

7.0 Payment. The payment for the joint will be linear feet. Cost shall include the shop drawings, design, materials, installation and testing in accordance with these special provisions. The barrier plates are not included in this bid item and will be paid for in pounds of steel in “STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR50W)” pay item. The blockout concrete and reinforcing steel are not included in this bid item and will be paid for in cubic yards in “CLASS S(AE) CONCRETE BRIDGE” and in pounds in “EPOXY COATED REINFORCING STEEL (GRADE 60)” items, respectively.

Pay Item	Pay Unit
Modular Joint	Linear Feet

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

SPECIAL SAFETY REQUIREMENTS FOR BRIDGES

Description. This specification covers special safety requirements during the construction of Bridge No. 07684 and 07685. These requirements are intended for the safety of both the traveling public and the workers. Any modifications must meet the approval of the Engineer.

Construction of New Bridge. (a) Short term road closures may be required during the erection of structural steel or prestressed concrete beams, placement and removal of safety platforms, painting and other activities deemed necessary by the Engineer on the spans over P Street, Springhill Park and Gun Club Road. During closure windows, all traffic may be stopped for short intervals of time, not to exceed 15 minutes, in order that the above activities can progress without endangering the traveling public. Between closure periods the roadway must be opened for a sufficient time to allow re-establishment of the normal flow of traffic. Time windows are subject to adjustment by the Engineer when necessary to accommodate special events or situations.

(b) The Contractor shall notify the Resident Engineer no less than five days before erection of structural steel or prestressed concrete beams or any other activities that will temporarily or permanently reduce the vertical clearance over the above listed roadway(s). Notification is required for each subsequent activity that will reduce the previous existing clearance. A minimum vertical clearance of 14'-0" must be maintained during all activities.

(c) The Contractor shall notify all local law enforcement and emergency agencies of closures or other activities that will affect normal flow of traffic on the above listed roadway(s) no less than three days before any such activities occur.

(d) Construction of bents and embankments shall be accomplished in such a manner that traffic is maintained on the highway as described above. Precast barriers shall be placed as shown on the roadway plans before work is performed. Sheet piling or other means shall be used to prevent embankment or excavated material from spilling onto the existing highway or to protect the shoulders from bent excavation. Excavation for footings and pouring of concrete shall be accomplished without construction equipment obstructing traffic.

Details of the shoring – complete with dimensions, design calculations, and kind and condition of materials – must be submitted to the Engineer for informational and record purposes prior to construction. These details must be prepared and/or approved by a Professional Engineer licensed in Arkansas.

The Contractor shall construct the shoring in accordance with the details submitted to the Engineer and the results obtained by the use of the shoring design are the Contractor's responsibility.

SPECIAL SAFETY REQUIREMENTS FOR BRIDGES

(e) During the erection of the structural steel or prestressed concrete beams, permanent bents or sufficient falsework shall be provided for support of the steel beams or prestressed concrete beams. Highway traffic shall not be allowed to travel under a span while a piece of structural steel or prestressed concrete beam on that span is being moved into position or before a steel beam or prestressed concrete beam is securely supported by falsework or by a permanent bent. Equipment or materials of any kind shall not be hoisted over highway traffic.

Any falsework or construction equipment required for the erection of the structural steel or prestressed concrete beams, or for other activities, shall be protected by precast barriers as shown on Standard Drawing TC-4. The precast barriers may be located to close a shoulder as approved by the Engineer. Appropriate signs must be in place when a shoulder is closed.

(f) Immediately after erection of structural steel or prestressed concrete beams, a safety platform shall be constructed directly under the steel beams or prestressed concrete beams on the spans over the highway for the entire area of construction to protect traffic from falling objects. The Contractor must devise a method of support for the safety platform used under the deck outside the exterior beams. The safety platform outside the exterior beams shall be below and independent of the overhang brackets. The safety platform between the exterior beams shall be plywood sheets adequately supported on top of the bottom beam flange, or other method as submitted by the Contractor.

Details for the platform construction - complete with dimensions, design calculations, and kind and condition of materials - must be submitted to the Engineer for informational and record purposes prior to construction. These details must be prepared and/or approved by a Professional Engineer. The Contractor shall construct the platform in accordance with the details submitted to the Engineer and the results obtained by the use of the platform design are the Contractor's responsibility. Traffic shall not be allowed to travel under a portion of platform being installed or removed.

(g) Permanent steel deck forms shall be used between beams in spans over the highway. Further requirements and details of permanent steel deck forms may be found on Standard Drawing No. 55005 and Subsection 802.14(b) of the Standard Specifications. Permanent steel deck forms will not be considered as part of the required safety platform.

(h) The epoxy tie coat may be applied before erection if the urethane coat can still be applied after erection but within the time interval recommended by the Manufacturer. The application of the urethane coat shall be deferred until adjoining concrete work has been placed and finished. If concreting operations damage the epoxy tie coat, the surface shall be recleaned and repainted. Spray painting will be permitted in applying the coat(s) of paint after erection to the spans over the highway during the work periods described above. The Contractor shall use tarps or similar curtains while spraying spans over the existing highway and when adjacent to traffic to prevent damage to highway traffic from drift. The Contractor shall assume all responsibility for any damage.

Payment. No direct payment will be made for this work. It shall be considered subsidiary to other items in the contract.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

SHORING FOR CULVERTS

DESCRIPTION: Work under this item shall consist of the design, construction, and removal of a shoring or bracing system that may be required to retain the existing, temporary, or new roadway embankment and to maintain traffic during construction of culverts. The shoring system shall provide sufficient clearance for excavation and construction work and shall ensure the safety of the traveling public and workmen at all times.

WORK TO BE PERFORMED: Prior to construction of the shoring system, the Contractor shall submit the design and details of the system to the Engineer for informational and record purposes. Such submission shall include the design calculations, the kind and condition of materials to be used, working drawings showing all dimensions, and the procedure for installation of the system. The design and details submitted shall be prepared and/or approved by a Professional Engineer registered in Arkansas.

The Contractor shall be responsible for the adequacy of the temporary shoring during the entire period of construction. The Contractor shall be responsible for any and all damages and/or claims, including injury or death, arising out of the construction and use of temporary shoring.

The Contractor shall construct the shoring in accordance with the details submitted to the Engineer for informational purposes. Unless otherwise permitted by the Engineer, all components of the shoring system shall be removed upon completion of their use and shall remain the property of the Contractor.

PAYMENT: No direct payment will be made for work described in this special provision (which includes preparation of necessary design details and drawings, construction and removal of shoring, and for all materials, labor, tools, equipment, and incidentals necessary to complete the work) but shall be considered subsidiary to other pay items in the contract.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

SHORING

Description. Work under this item shall consist of the design, construction, and removal of a shoring or bracing system to retain existing and new embankments and to maintain traffic during construction of new Bridge No. 07684, Bent 13 location. Shoring may consist of trench box sections, sheet piling, anchored walls, or other bracing systems. The shoring system shall provide sufficient clearance for excavation and construction work and shall ensure the safety of the traveling public and workers at all times.

The bridge layout shows the general intent and location of the required shoring. See “Revetment at Bent No. 13” plan sheet for additional information. Any other shoring used at the Contractor’s option will not be paid for directly, but will be considered subsidiary to the various pay items.

Work to be Performed. Prior to construction of the shoring system, the Contractor shall submit the design and details of the system to the Engineer for informational and record purposes. Such submission shall include the design calculations, the kind and condition of materials to be used, working drawings showing all dimensions, and the procedure for installation of the system. The design and details submitted shall be prepared and/or approved by an Arkansas Licensed Professional Engineer. The shoring system shall be submitted and approved by the USACE prior to beginning construction of the shoring system.

The Contractor shall construct the shoring in accordance with the details submitted to the Engineer for informational purposes. Unless otherwise permitted by the Engineer, all components of the shoring system shall be removed upon completion of their use and shall remain the property of the Contractor.

The Contractor shall be responsible for the adequacy of the shoring during the entire period of construction. The Contractor shall be responsible for any and all damages and/or claims, including injury or death, arising out of the construction and use of shoring.

Method of Measurement. The design, construction, and removal of the shoring system herein described shall be measured on a lump sum basis for each site.

Payment. Work completed, accepted, and measured as provided above will be paid for at the contract lump sum price bid for “Shoring (Site No. 1)”. Such price shall be full compensation for the preparation of necessary design details and drawings; for construction and subsequent removal of the shoring; and for all materials, labor, tools, equipment, and incidentals necessary to complete the work. The excavation and backfill of the revetment stone will be paid for under “Unclassified Excavation for Structures – Bridge” and “Revetment Stone (Gradation A) – Arkansas River”.

Payment will be made under:

SHORING

Pay Item

Pay Unit

Shoring (Site No. 1)

Lump Sum

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****REQUIREMENTS OF U.S. COAST GUARD PERMIT**

The bridge over the Arkansas River on this project is to be constructed according to the U.S. Coast Guard Permit issued for the construction, maintenance, and operation of this bridge. A copy of Permit No. **X-XX-X** dated **XXXXXXXX** is included and made a part of this Special Provision.

A copy of any correspondence, or other material submitted to the Coast Guard shall be sent to the Bridge Engineer, ARDOT, Little Rock, Arkansas.

The Coast Guard shall be extended an invitation to attend the Preconstruction Conference for this project.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
EXPLOSIVE HAZARDS

DESCRIPTION. The project area was previously owned by the U.S. Department of Defense, Fort Chaffee, and has the potential for unexploded ordnances or discarded military munitions to remain in the area. Although explosive hazards within the right of way are not anticipated, care should be taken while operating in this area to identify and avoid any such objects.

CONSTRUCTION METHODS. In the event the construction operations encounter any objects resembling an unexploded ordnance or munition, the Contractor shall immediately cease all operations, flag the location of the potential explosives, remove all personnel and equipment from the area, notify the Engineer of the finding and location, and secure the area to prevent unauthorized entry.

The Engineer shall contact Fort Chaffee for a determination of the proper procedures to be followed before work in the area can resume.

CPT Derek Abshier, Range Control Officer: (479) 484-2828

Alternate numbers for the fire desk:

(479) 484-2362

(479) 484-2272

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

COORDINATION OF WORK

DESCRIPTION: This item shall consist of specifications relative to the coordination of work during construction operations at the beginning, and/or intermediate points, and/or end of contracts or jobs and shall be supplementary to Section 105, Control of Work, of the Standard Specifications, Edition of 2014.

Coordination of work will be necessary with the Contractor for Job 040902 and with any other contractors that may have active jobs adjacent to this project during the construction period.

CONSTRUCTION: The Contractor shall schedule and perform the several operations of construction at the beginning and/or end, or any intermediate point of the project in such a sequence that work on the facility will progress in an expeditious manner.

The Contractor shall furnish the Engineer for approval a plan or schedule of his proposed work at the termini of the project as well as any intermediate points where coordination with another contractor will be necessary. He shall keep the Engineer informed or advised of any action or cause that might affect the successful coordination of work with other contractors.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB NO. 040901
PROSECUTION AND PROGRESS WITH BID SCHEDULE

Subsection 108.02(a) is hereby deleted and the following is substituted therefore:

108.02 Prosecution of Work.

- (a) Preconstruction Conference.** Before beginning the work specific to the project and unless waived by the Engineer, a preconstruction conference shall be held at a mutually agreed upon time and place. The Engineer will notify subcontractors, utility companies, and other interested parties of the time and place of the preconstruction conference. The Contractor shall submit the following to the Engineer before or at the preconstruction conference:
- A company safety plan and the name of the safety officer;
 - An EEO/affirmative action plan and the name of the EEO officer;
 - A list of key project personnel and their phone numbers;
 - A list of proposed subcontractors;
 - The names of Material Testers.

Subsection 108.02(b)(4) and the remainder of Subsection 108.02 is hereby deleted and the following is substituted therefore:

(c) Full Work Order.

- (1) Calendar Day Contract.** Unless the Contractor is otherwise advised in writing, the Work Order of a calendar day contract shall become effective on the fifteenth calendar day following the execution of the Contract. Should the effective date fall on a Saturday, Sunday, or legal holiday; Monday following a holiday on Sunday, or Friday preceding a holiday on Saturday, the effective date shall be the next work day. The assessment of contract time shall begin on the date the Contractor actually begins work or no later than as specified in the Special Provision "Flexible Beginning of Work - Calendar Day Contract".

Only work specified in SS 108-2 may begin before the assessment of contract time begins.

- (2) Allocation of Department Resources.** The Department allocates its resources to a contract based on the total time allowed in the Contract. However, should the Contractor propose an accelerated work schedule, the Department will provide the necessary resources to meet the demands of the accelerated work schedule. Utility and/or Right of Way (ROW) related delays are exempt from impact claims for the first ninety (90) days after the work order date.

(d) CPM Schedule.

- (1) General.** Prepare and submit to the Engineer a Critical Path Methodology (CPM) schedule in accordance with Section (j) "General Requirements of the Project Schedule" of this special provision utilizing scheduling best practices.

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The schedule shall be used to plan, coordinate, and manage the work, whether the Contractor's personnel are performing the work or not. Copies of the complete baseline schedule, update schedules, and revised schedules shall be shared with all subcontractors, suppliers, and utility companies affected by the work.

Float is a shared commodity and is not for the exclusive use or benefit of any party. It is available to all parties as needed until it is consumed.

The "Structure of the Project Schedule" document is located on the ARDOT website at <https://ardot.gov/divisions/construction/construction-information/> under CPM Schedule Information.

- (e) Project Scheduling.** Time is of the essence and the contract time requirement is a key factor for success to both the Department and the Contractor. All time limits stated in the Contract Documents are of essence to the Contract. The purpose of the Department requiring the project schedule shall be to:
- Ensure adequate planning during the prosecution and progress of the work in accordance with the allowable number of calendar days and all milestones identified by the Contract;
 - Assure coordination of the efforts of the Contractor, Department, Utilities, and others that may be involved in the project;
 - Assist the Contractor and Department in monitoring the progress of the work and evaluating proposed changes to the Contract;
 - Assist the Department in administering the contract time requirements;
 - Ensure that the project is planned for the entire project duration and completed within the contract time as bid.

The observance of the requirements herein is an essential part of the work to be performed under the Contract. No direct compensation will be allowed for fulfilling these requirements, as such work is considered subsidiary to the various bid items of the Contract.

- (f) Personnel.** The Contractor shall provide an individual, referred to hereafter as the Scheduler, to create and maintain the project schedule. The Scheduler shall be proficient in CPM development and analysis of resources, and shall be able to perform the required tasks using the specified software. The Scheduler shall be present, in person or via tele-conference at the discretion of the Engineer, at all CPM update meetings and made available for discussion or meetings when requested by the Engineer.

(g) Bid Schedule.

(1) General. The apparent low bidder shall provide an electronic ".xer" file, a PDF schedule report, and a bid schedule narrative to the Department's Program Management Division, via Doc Express, by 4:30 p.m. by the 5th calendar day following the opening of bids. Should the apparent low bidder fail to submit the bid schedule and the bid schedule narrative within the time allotted, the proposal will be rejected and the proposal guaranty

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will be returned to the bidder. Award may then be made to the next lowest responsible bidder, or the work may be re-advertised and constructed under contract or otherwise, as the Commission may decide. The low bidder who failed to produce an acceptable bid schedule, bid schedule narrative, or both will not be permitted to bid on any subsequent advertisement of the project.

(2) The Department shall review and verify the constructability of the bid schedule prior to contract award. At a minimum, the bid schedule shall contain the following:

- Include external constraints (outside Contractors work, utilities, permitting, Short Term Activity Authorizations (STAA), ROW clearance, etc.). Use the dates provided in the respective Special Provisions.
- High-level activities summarized by the Work Type Code as set forth in the “Activity Codes/Work Type” section of the “Structure of the Project Schedule” document located on the ARDOT website shall be represented in the schedule for each stage.
- Full scope of work for the entire project duration (bid contract time) clearly reflecting the MOT (Staging) plan as reflected in the bid documents in accordance with the MOT (Staging) plan described in the bid documents in accordance with the Work Breakdown Structure (WBS) sections of the “Structure of the Project Schedule” document located on the ARDOT website to level 3 detail of the WBS.
- The bid schedule shall be a CPM logic driven schedule.
- Appropriate work calendars shall be developed and applied for the various activities in accordance with all calendar references under Section (j) “General Requirements of the Project Schedule” of this special provision. Calendars shall include specified holidays, Sundays, and include anticipated adverse weather days.

(3) Bid Schedule Narrative. A schedule narrative shall be provided with the Bid Schedule proposal, and shall include the following information:

- General description of the workflow and plan for completing the project.
- A Time-Line illustrating the MOT (Staging) plan including key milestones such as utility turnover dates, migrating bird netting, ROW clearance date, etc.
- The working days per week, the number of shifts per day, the number of hours per shift, the holidays to be observed, and a description of how the schedule will account for adverse weather days.

(4) Criteria for Acceptance of the Bid Schedule.

- The bid schedule narrative shall meet all criteria as shown in the “Bid Schedule Narrative” subsection of this special provision.
- High level activities shall be included for all applicable Work Type codes for the full scope of work.
- The bid schedule shall be organized by the MOT (Staging) plan described in the bid documents in accordance with the “WBS Structure” sections of the “Structure of the Project Schedule” document located on the ARDOT website to level 3 detail of the WBS.
- The bid schedule shall be a CPM logic driven schedule.

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- The bid schedule shall contain appropriate work calendars reflecting holidays, Sundays, and a reasonable number of adverse weather days.
- The bid schedule shall indicate that the work can be reasonably assumed to be completed in the calendar days bid.

The bid schedule and bid schedule narrative submitted by the apparent low bidder will be reviewed by the Department to determine if the criteria noted in this Special Provision have been met. If it is determined by the Department that the submitted bid schedule, bid schedule narrative, or both do not meet the specified criteria, the bidder will be notified in writing, detailing the issues of concern and allowed the opportunity to submit a revised bid schedule, bid schedule narrative, or both. The revised bid schedule, bid schedule narrative, or both must be submitted within two business days of notification. If the revised bid schedule, bid schedule narrative, or both are deemed unacceptable or not submitted within two business days of notification, just grounds exist for rejection of the proposal. In this case, the bidder will be notified that an acceptable bid schedule, bid schedule narrative, or both have not been submitted and will be provided an opportunity for administrative reconsideration. A request for administrative reconsideration must be submitted to the Chief Engineer within two business days of the Department's notification. As part of the administrative reconsideration, the bidder may provide corrections or arguments concerning the issue of whether the bid schedule and bid schedule narrative meet the specified criteria. The Chief Engineer will render a written decision on the reconsideration explaining the basis for the finding. If the Chief Engineer determines that a bid schedule and a bid schedule narrative are not produced that meet the specified criteria, or no administrative reconsideration is requested, the proposal will be rejected and the proposal guaranty will be returned to the bidder. Award may then be made to the next lowest responsible bidder, or the work may be re-advertised and constructed under contract or otherwise, as the Commission may decide. The low bidder who failed to produce an acceptable bid schedule, bid schedule narrative, or both will not be permitted to bid on any subsequent advertisement of that project.

(h) Baseline Schedule.

(1) General. The Contractor shall provide the Baseline Schedule to the Engineer as soon as possible after notification of contract award. The Engineer will review the Baseline Schedule per Section (j) "General Requirements of the Project Schedule" of this special provision, and notify the Contractor of its acceptability. **The Contractor will not be allowed to start work until the Baseline Schedule has been approved by the Engineer. The contract time will start no later than that specified in the Special Provision "Flexible Beginning of Work - Calendar Day Contract" after the issuance of the work order. No time extension shall be considered for failure to submit an acceptable Baseline Schedule within the time period specified above.**

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(2) Baseline Schedule Narrative. The schedule narrative shall not be considered notification of delays, requests for change orders, or other issues. The Contractor shall provide a schedule narrative with the Baseline Schedule including the following information and topics as laid out:

- General description of the workflow and plan for completing the project.
- A timeline illustrating the MOT (Staging) plan according to bid documents; including key milestones such as utility turnover dates, migratory bird netting, ROW clearance date, etc.
- A description of the longest path.
- Subcontractors, equipment (full and part time noted), monthly crew staffing plan.
- List of completion dates for all major milestones.
- The work days per week, the number of shifts per day, the number of hours per shift, and the holidays to be observed, and a description of how the schedule accounts for adverse weather days.
- Activities requiring coordination with the Department, utilities, other parties, etc. (external constraints).
- Attachment defining each crew completely, describing the equipment, including number and type, required to carry out the work. The number of crews is to be defined by the Contractor. It is expected that a sufficient number of crews will be developed to correspond to the Contractor's plan to complete the project within the time specified. At a minimum, please include a list containing a legend for all abbreviations/acronyms.

Baseline Schedule Joint Review, Revision, and Acceptance. Within fifteen (15) calendar days of receipt of the Contractor's proposed Baseline Schedule, the Engineer shall evaluate the schedule for compliance with this specification and notify the Contractor of the findings. If the Engineer requests a revision or justification, the Contractor shall provide a satisfactory revision or adequate justification to the satisfaction of the Engineer within five (5) calendar days. The Contractor will not be allowed to start work until the Baseline Schedule has been approved by the Engineer.

The contract time will start no later than that specified in the Special Provision "Flexible Beginning of work – Calendar Day Contract" after the issuance of the work order. The Baseline Schedule submitted for acceptance must be sequenced according to the MOT plan provided in the contract documents. If the Contractor submits a Baseline Schedule for acceptance that is based on a sequence of work not in the plans, it will be rejected by the Engineer.

The Engineer's review and acceptance of the Contractor's Baseline Schedule is for conformance to the requirements of the Contract documents only. Review and acceptance by the Engineer of the Contractor's project schedule does not relieve the Contractor of any of its responsibility for the project schedule, or of the Contractor's ability to meet interim milestone dates (if specified) and the contract completion date, nor does such review and acceptance expressly or by implication warrant, acknowledge or admit the reasonableness

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of the logic, durations, manpower or equipment loading of the Contractor's Baseline Schedule. In the event the Contractor fails to define any element of work, activity or logic and the Engineer review does not detect this omission or error, such omission or error, when discovered by the Contractor or Engineer, shall be corrected by the Contractor at the next schedule submittal and shall not affect the project completion date.

At a time agreeable to the Engineer, the Contractor shall conduct a **Baseline Schedule Presentation Meeting** within seven (7) calendar days after submitting the proposed Baseline Schedule. The purpose of this meeting is for the Contractor to present the Contractor's schedule. The following is a minimum to be covered at the joint review of the schedule:

- Work Breakdown Structure (WBS)
- Sequence of work - step through the schedule activity by activity
- Resources - to include crews and production rates used
- Longest path Review

(3) Criteria for Acceptance of Baseline Schedule. The Engineer will accept a schedule based on the following:

- Baseline Schedule Presentation review meeting.
- Conformance with Section (j) "General Requirements of the Project Schedule" of this special provision and any other contract requirements.

The Engineer's acceptance of a schedule:

- Does not modify the Contract.
- Does not constitute endorsement or validation by the Engineer of the Contractor's activity logic, activity durations, or assumptions in creating the schedule.
- Does not guarantee that the project can be performed or completed as depicted in the schedule.
- Does not relieve the Contractor of its obligation or responsibility to submit complete and accurate information.

If the Contractor or Engineer discovers an error after the Engineer has accepted a schedule, the Contractor shall correct the error in the next schedule submission.

The Contractor will not be allowed to start work until the Baseline Schedule has been approved by the Engineer.

(i) Update Schedule.

(1) General. On a bi-weekly basis and in alignment with each pay estimate, the Contractor shall perform a complete update including the application of actual resource units. The bi-weekly schedule update shall be provided with each pay estimate. A .pdf schedule report shall be provided to the Engineer, showing each activity's original duration, remaining duration, percent complete, start date, finish date, material resource name, budgeted quantity, actual quantity, quantity to complete, and unit of measure as an

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attachment to the pay estimate. An electronic “.xer” backup file of the schedule shall be submitted to the Engineer. The Contractor’s scheduler must attend each bi-weekly schedule update; either in person, via computer, or tele-conference as determined by the Engineer. The following reports shall be provided as determined by the Engineer; three (3) week look-ahead, critical activities (longest path), productivity/quantities, actual/planned.

The project schedule and narrative shall be updated and submitted in accordance with Section (j) “General Requirements of the Project Schedule” of this special provision every twenty-eight (28) days (every other bi-weekly update) to align with pay estimates. The project schedule shall be updated during a joint project schedule update meeting that will be attended by the appropriate Engineers and Contractor representatives. The Contractor’s scheduler must attend the joint project update meeting; either in person, via computer, or tele-conference as determined by the Engineer. The joint project update meeting shall occur within no more than three (3) business days from the pay estimate date. All schedule submittals and time restrictions are required unless otherwise approved by the Engineer in writing. The schedule shall be submitted no later than close-of-business two (2) business days after the joint project schedule update meeting.

The Contractor shall meet with the Engineer to review and input into the project schedule the actual progress made until the data date of the schedule update. The review of progress will include dates for activities actually started and/or completed, and the duration percentage of work completed or remaining duration on each activity started and/or completed. The percentage of work completed shall be calculated by using the quantity and production rate information.

(2) Assignment of Baseline Schedules. The following Baseline Schedules shall be assigned prior to submission of schedule updates. The submitted schedule “.xer” backup file shall contain the following assigned Baseline Schedules:

- Project Baseline - assign the approved Baseline Schedule.
- Primary Baseline - assign the approved update from the prior month
- Secondary Baseline - assign the approved update from 2 months prior

(3) Store Period Performance. The “Store Period Performance” function shall be performed every twenty-eight (28) days (every other bi-weekly update) to align with pay estimates and the full schedule, reports, and narrative submittal to lock in actual-this-period units to coincide with the joint project update meeting prior to submission of the schedule update for review and disposition.

Failure to attend the scheduled update meeting or submit the schedule update within the specified period may result in the stoppage of work until the Department receives the schedule update and future withholding of estimate payments until the specified evaluation time has elapsed and the Contractor receives approval from the Engineer.

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(4) Update Schedule Narrative. The schedule narrative shall not be considered notification of delays, Requests for Changes Orders, or other issues. A schedule narrative shall be provided with each schedule update including the following information and topics as laid out:

- General description of status and what occurred during update period.
- Issues - known and potential
- Mitigation efforts associated with each issue
- General description of planned work during next update period
- Material quantities must align with estimate item codes and schedule resources.
- Schedule Related RFI's
- Schedule Related Change Orders and/or Proposals
- Attached default Claim Digger report
- Oracle Primavera schedule log report

(5) Update Schedule Joint Review, Revision and Acceptance. Within seven (7) calendar days of receipt of the Contractor's submitted Update Schedule, the Engineer shall evaluate the schedule for compliance with this specification, and notify the Contractor of the findings in writing. If the Engineer requests a revision or justification, the Contractor shall provide a satisfactory revision or adequate justification to the satisfaction of the Engineer within seven (7) calendar days. **Failure to provide revisions or justification within seven (7) calendar days may result in future withholding of estimate payments and/or the stoppage of work until a satisfactory response has been received, the specified evaluation time has elapsed, and the Contractor receives approval from Engineer.**

The update schedule submitted for acceptance must be sequenced according to the MOT plan provided in the contract documents. If the Contractor submits an update schedule for acceptance that is based on a sequence of work not previously approved by the Engineer, it will be rejected. Any MOT change of sequence must be submitted and approved through the change order process before inclusion in the Schedule.

The Engineer's review and acceptance of the Contractor's project schedule is for conformance to the requirements of the contract documents only. Review and acceptance by the Engineer of the Contractor's project schedule does not relieve the Contractor of any of its responsibility for the project schedule, or of the Contractor's ability to meet interim milestone dates (if specified) and the contract completion date, nor does such review and acceptance expressly or by implication warrant, acknowledge, or admit the reasonableness of the logic, durations, manpower, or equipment loading of the Contractor's project schedule. In the event the Contractor fails to define any element of work, activity, or logic and the Engineer review does not detect this omission or error, such omission or error, when discovered by the Contractor or Engineer, shall be corrected by the Contractor at the next schedule submittal and shall not affect the project completion date.

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(j) General Requirements of the Project Schedule.

(1) Scheduling Requirements. The following requirements are the minimum for the project schedules submitted by the Contractor to be in compliance with the Contract Documents. The project schedule shall employ computerized CPM for the planning, scheduling, and reporting of the work as described in this specification. The project schedule shall be prepared using the Precedence Diagram Method. The Contractor shall create and maintain the project schedule using scheduling software compatible with Engineer supported scheduling software. The Project will use Oracle Primavera P6 v8 or newer mutually agreed upon version of Oracle Primavera, which shall mean that the Contractor provided electronic file version of the project schedule may be loaded or imported by the Department with no modifications, preparation, or adjustments.

All scheduling software settings within the scheduling/leveling dialog box shall remain 'default' unless otherwise approved by the Department. The Contractor shall use retained logic for calculating all project schedules. Out-of-sequence Work shall be itemized and described in the monthly schedule narrative and discussed at monthly project schedule update meetings.

The Schedule will be prepared showing construction to the full contract time.

The Contractor shall create and maintain a CPM project schedule showing the manner of prosecution of work that he intends to follow in order to complete the contract within the allotted time.

- The project schedule shall show the sequence and interdependence of activities required for complete performance of the work. At a minimum all pay items shall be accounted for in the activities in the schedule including all If and Where Directed Items showing the plan quantity being utilized. The Contractor shall be responsible for assuring all work sequences are logical and show a true and coordinated plan of the work.

Each activity in the project schedule shall be described by:

- An activity ID (number) utilizing an alphanumeric designation system tied to the traffic control plans, as described in the "Activity ID Structure" section of the "Structure of the Project Schedule" document located on the ARDOT website and that is agreeable to the Engineer. At no time shall an activity ID be changed from one schedule version to another (i.e. from bid schedule to baseline schedule to update schedules and between monthly updates).
- Concise and unique description of the work represented by the activity name with no duplicate activity name within the project schedule as described in the "Activity Naming Convention" section of the "Structure of the Project Schedule" document located on the ARDOT website; and

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- Activity durations in whole days with a maximum of twenty (20) calendar days. Longer durations may be used for non-construction activities (mobilization, submittal preparation, curing, etc.), and other activities mutually agreeable between the Engineer and Contractor.
- An activity duration shall be based on the quantity for the individual work activity divided by a production rate. Activities that have varying production rates may be required to be separated into multiple activities by the Engineer.
- A User Defined Field shall be utilized to assign production rates to their associated activities and resources. The User Defined Fields shall be developed and structured in accordance with the "User Defined Field" section of the "Structure of the Project Schedule" document located on the ARDOT website.

The activities shall be coded so that organized plots/layouts of the project schedule may be produced as described in the "Activity Codes" subsection of this special provision.

The activities shall be assigned to a WBS as described in the "WBS Structure" sections of the "Structure of the Project Schedule" document located on the ARDOT website.

Administrative activities and milestones shall be incorporated into the schedule and assigned to the 'Admin/Milestones' WBS level as follows:

- All milestones identified by the Contract shall be reflected as start milestones with a 'start no earlier than' constraint or finish milestones with a 'finish no later than' constraint.
- Project Start-Start Milestone for work prior to work order.
- (NTP/Work Order Start)-Start Milestone for work after work order.
- Stage Complete-Finish Milestone for each stage of the project (shall not be constrained unless necessary to reflect MOT (Staging) plan)
- Substantial Completion-Finish Milestone to follow all contracted work scope and punch-list activities required for beneficial use. A Project Level "Must Finish By" date shall be applied on Calendar Day and Fixed Completion Date contracts. Note that the project level "Must Finish By" constraint is as-of 12:01 am.
- Project Complete-Finish Milestone to follow all close-out activities after substantial completion.
- Contract Days-No Level of Effort activities are to be used with the exception of a Level of Effort activity used for tracking the planned, actual, and remaining contract days. Relationships to be Start-to-Start (SS) with NTP/Work Order-Start milestone and Finish-to-Finish (FF) with Substantial Completion milestone. This activity will reflect total contract duration and track actual days charged against contract duration.
- Additional milestones used by the Contractor shall be approved by the Engineer.
- Constraints-only constraints associated with the WBS, phasing, staging, milestones, or project completion dates specified in the Contract are allowed. Any constraints to be utilized on the schedule other than the aforementioned dates must be authorized in advance by the Engineer.
- No lags shall be used on Finish-To-Start relationships and no negative lags shall be used at any time.

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- No Start-to-Finish relationships shall be used at any time.
- No activity shall have only Start-to-Start successor relationship(s) or only Finish-to-Finish predecessor relationship(s).
- Critical path shall be determined by the longest path.
- No activity shall contain scope that represents multiple Contractors, trades, or types of work.
- The Contractor shall resource-load the project schedule by assigning every construction activity the appropriate material and equipment resources which align with the Contractor's project plan and directly correlate to and support the Estimate Item Codes (Schedule of Values).
- Only project calendars shall be used. No global calendars may be used. Separate calendars shall be developed and assigned to activities for various Work Types, as appropriate.
- Seasonal weather conditions shall be considered and included in the project schedule for all work influenced by temperature and/or precipitation. Seasonal weather conditions shall be determined by an assessment of average historical climatic conditions. Average historical weather data is available through the National Oceanic and Atmospheric Administration (NOAA), company historical records, or any additional reference the Contractors deems necessary to prepare an accurate schedule. These effects will be simulated through the use of work calendars for each major work type (i.e., earthwork, concrete paving, structures, asphalt, drainage, etc.) for all activities.
- The work calendars shall be updated each month to reflect the actual days worked.
- Total Float is the amount of time that an activity can be delayed from its early start date without delaying the project finish date. Free Float is the amount of time that an activity can be delayed without delaying the early start date of any successor activity. Float time in the project schedule is a shared commodity between the Department and the Contractor. Suppression or consumption of float shall not be allowed, including by use of extended activity durations, dummy activities, unspecified or unnecessary milestones, unnecessary logic ties, or preferential sequencing.

At a minimum, include the following work activities, as applicable:

- Work to be performed by the Contractor, subcontractors, and suppliers.
- Work to be performed by the Department and third parties.
- The project start date, scheduled completion dates, and other milestones required by the Contract, start or finish dates for phases, or site access or availability dates.
- Submittal review and approval activities when applicable, including time for the Department's approval as specified in the Contract.
- Fabrication, delivery, installation, testing, and similar activities for materials, plants, and equipment.
- If and where directed items shall be included in the schedule as an activity showing the plan quantity being utilized.
- Sampling and testing periods.
- Settlement or surcharge periods.
- Cure periods.

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- Utility notification and relocation identified in the Contract.
- Installation, erection, and removal identified in contract documents and similar activities related to temporary systems or structures.
- Required acceptance testing, inspections, or similar activities.
- Activities representing acquisition of any necessary permits to be obtained by the Contractor or acquisition of right of way when a delay of occupancy is included in the contract documents.
- Activities shall not be deleted from the schedule. If scope or activity no longer applies, close the activity using the following process:
 - Apply actual start and finish date.
 - Remove activity from current sequence string.
 - Add predecessor of Project start and successor of project complete.
 - Add negative resource quantity(s) so as to have a quantity sum of zero (0).
 - Add note on activity explaining the reason for closing the activity and add the word “CLOSED” to the activity description.
 - Ensure explanation is included in the monthly narrative.

(2) Resource Loading

All construction activities shall be resource loaded as follows:

- Labor resources assigned with associated crews.
- Material resources assigned with associated quantities and appropriate units of measure such as to allow for earned value, production analysis, and s-curves. All material quantities shall be carried on material resources in alignment with and equal to the estimate item code “schedule of value line items” bid/contract quantities.
- Major equipment shall be assigned as resources with associated hours.

(3) Store Period Performance. At the end of each update cycle, “Store Period Performance” shall be performed to lock in actual-this-period units prior to submission of the schedule update for review and disposition. This should occur every twenty-eight (28) days in conjunction with a pay estimate and the full schedule, reports, and narrative submittal.

(4) Earned Value Rules (Performance Measurement). All scheduling software settings within the Earned Value, User Preference Calculations, and User Preference Resource Analysis dialog boxes shall remain ‘default’ unless otherwise approved by the Department.

(5) Level of Schedule Detail/Submission Requirements. Each project schedule submittal shall include a “.xer” electronic backup file and three (3) plots in .pdf or other format as determined by the Engineer with the activities logically grouped using the Project’s WBS and then by Work Type activity code as set forth in the “WBS” and “Activity Codes” sections of the “Structure of the Project Schedule” document located on the ARDOT website and sorted by start date and total float:

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- One bar chart plot showing the entire project schedule, with the longest path through the schedule readily discernible; and
- The second bar chart plot showing only the longest path;
- The third bar chart plot showing a 60-day Look-Ahead schedule, starting with the data date, containing no completed activities.

(6) Project Schedule Revisions. If the Contractor desires to make changes in the project schedule, the Contractor shall notify the Engineer in writing prior to making the revisions. The written notification shall include the reason for the proposed revision, what the revision is comprised of, and how the revision was incorporated into the schedule. In addition to the written notification of the revision, the Contractor shall include a “.xer” electronic backup file of the project schedule that includes the revision and one logically organized plot of the project schedule if requested by the Engineer.

The Department may request the submission of a revised schedule if any of the following circumstances occur:

- There is a delay (actual or projected) to the scheduled milestone or project completion dates.
- There is a difference between the actual sequence or durations of the work and the sequence or durations depicted in the last accepted schedule.
- The Department executes a contract revision that adds or deletes work, modifies the planned sequence of work, or modifies the means and methods of its performance.

The requirement to prepare a revised schedule is not a directive by the Department to accelerate the work.

Prepare and submit the revised schedule as soon as the need for a revised schedule is necessary, but no more than five (5) business days after the Department’s request.

Within five (5) business days of receipt of the revised schedule, the Department will respond in writing either accepting the revised schedule or rejecting the revised schedule and identifying the reasons for rejection, or requesting more information. Within five (5) business days after the date of the Department’s written response, address the reasons for rejection and resubmit the revised schedule or provide the information requested.

(7) Recovery Schedules. If the work is delayed such that the projected finish date of any completion deadline or contract milestone, in the current update schedule, is behind by twenty-eight (28) calendar days, then the Contractor shall provide a Recovery Schedule within seven (7) calendar days, including a recovery plan detailing how the delay will be recovered and the completion deadline(s) achieved, prior to submittal of its next monthly update schedule. The Recovery Schedule shall demonstrate the Contractor’s plan to regain lost progress and achieve all completion deadlines per the Contract Documents.

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(8) Change Orders. Any and all change orders affecting schedule durations, sequencing, and/or material, or equipment quantities shall be incorporated into the schedule, whether additive or deductive.

A fragnet shall be developed for all potential change orders. The fragnet and Time Impact Analysis (TIA) shall be submitted for inclusion with the change order. Failure to submit a fragnet with the change order forfeits any recovery for an associated recoverable project delay at any future date.

Approved Change Orders shall be incorporated into the current schedule with the activity(s) clearly identified and reflected as to the change order number the items are associated with. Potential time extensions based on change orders will be analyzed based on the most recent approved schedule, impact to the longest path, and subsequent movement of the current project completion date in accordance with the Evaluation of Delays and Calculation of Time Extensions section of this special provision.

For each added Change Order activity, the activity ID shall have CO plus the change order number added to the end of the standard activity ID structure. The activity description shall have CO plus the change order number added to the beginning of the standard activity description structure. Leading zeros should be included as part of the three (3) digit change order number.

For Change Orders only affecting resource quantities (not requiring new activities), the changer order resources may be added to existing activities, as appropriate, in accordance with the change order scope.

- a. Change Order Resources. Resources shall be created and assigned to activities for each approved change order, whether the resource resides on an existing or new change order activity. Change order resources shall include the entire scope of the change order. The resource code shall have CO plus the change order number added to the end of the standard resource ID structure. The resource description shall contain CO plus the change order number. Any leading zeros should be included as part of the change order number. All resource and cost loading rules apply to change orders.

Subsection 108.06 is hereby deleted and the following is substituted therefore:

108.06 Determination of Time of Completion and Extension of Contract Time.

- (a) General.** The time bid by the Contractor for the completion of the work included in the Contract will be stated in the proposal and Contract, and will be known as the "Contract Time". The contract time will be specified as calendar days.

The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project according to the plans and specifications within the contract time.

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The Contractor shall advance the work so that the available time is appropriately utilized in order to complete the work within the contract time.

Unless an emergency is declared, the Contractor shall not perform work that requires inspection on Sundays or legal holidays designated in Subsection 101.01(c) and the actual holiday if it falls on a Saturday or Sunday. If the Commission declares Friday following Thanksgiving Day as a Department recognized holiday, the Contractor shall not perform work that requires inspection. These days shall be charged in a Calendar Day contract.

No claim for an extension of time will be considered as a result of failure of the Engineer to furnish interpretations of the plans and specifications until 30 calendar days after receipt of such demand in writing as required by Subsection 105.01, and not then unless such request for an interpretation is clearly presented for understanding, reasonable and made in good faith.

The Engineer will determine the date upon which the Contract is substantially complete and time assessment will cease. In the event cleanup is necessary or items found at the final inspection are to be corrected, the Contractor shall complete this work in a timely manner or the Engineer will resume time charges.

(b) Calendar Days. When the contract time is specified in calendar days, time will be assessed for each calendar day in accordance with the Special Provision "Flexible Beginning of Work - Calendar Day Contract". A calendar day is defined under Subsection 101.01.

The Contractor shall take into consideration all normal conditions considered unfavorable to the progress of the work and place a sufficient work force and equipment on the project to ensure completion of the work with the contract time. Inaccessibility to a portion of the work due to utility conflict or utility work will be considered as an adverse condition for time exceeding that specified in the Contract for the utility adjustment.

Contract time will not be assessed during a full suspension of the work as ordered by the Engineer. Contract time will be assessed during a Partial Work Order period according to Subsection 108.02(b)(3). During a partial suspension of the work as ordered by the Engineer, the contract time will be assessed in direct proportion to the ratio of the money value of the items not suspended to the total contract amount.

(c) Extensions to the Contract Time. The Contractor shall immediately notify the Engineer of a delay once the Contractor becomes aware of the delay, not at the conclusion of the delay. The Contractor waives entitlement to a time extension or compensation for delay or costs incurred before the Contractor notified the Engineer of the delay.

Only Department responsible delays in activities that affect the milestone dates or the contract completion date, as determined by CPM analysis, will be considered for a time extension.

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The Contractor's plea that the contract time was insufficient is not a valid reason for an extension of time. When the time as extended by the Department falls on a date that is a Sunday or holiday, the Engineer will extend the contract time to the next business day.

The Department will evaluate the Contractor's documentation and analysis, and determine the time extension due, if any. The Department will not evaluate a request for an extension of the contract time or revise the contract time unless the Contractor notifies the Department in accordance with the contract documents and specifications.

The Engineer will evaluate delays and requests for extensions or revisions to phased or interim start or finish dates, or durations for portions of the project in the same manner as requests for an extension of the contract time for the project as a whole. Comply with the requirements of this subsection when seeking a time extension for phased or interim start or finish dates or durations.

In the event that the Department extends the contract time into a period of the year during which the working conditions are less favorable, the Department will consider a further extension of time based on the nature of the work the Contractor scheduled to perform during the less favorable period. Conversely, if the Department extends the contract time into a period of the year during which the working conditions are more favorable, the Department will consider reducing the contract time extension. If the Department reduces the work required to complete the project or relaxes phase or stage requirements, the Department may reduce the contract time.

(d) Evaluation of Delays and Calculation of Time Extensions. The Engineer will evaluate the Contractor's request for a time extension based on the Contractor's compliance with the following requirements:

- Base all evaluations of delay and all calculations of the appropriate time extensions due on the schedules submitted to and accepted by the Department and current at the time the delay occurred, not schedules created after the delay occurred.
- The delay is on the longest path when the delay occurred.
- The delay results in a scheduled milestone or project completion date that is later than the date required by the Contract.
- When using a CPM schedule, determine the duration of delays as follows:
 - Use time impact analysis (TIA) to identify and measure critical delays that have not yet occurred. Do not use this method to evaluate delays that have already occurred. In general terms, perform a TIA as follows:
 - Develop a "mini" schedule for the changed work. This schedule is known as a fragnet.
 - Identify the current accepted schedule and record the scheduled completion date on that schedule.
 - Insert the fragnet into the current schedule by properly linking the fragnet with the existing activities in the current accepted schedule.

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- Recalculate the current schedule with the fragnet inserted and record this scheduled completion date.
- The difference in the calculated scheduled completion dates between the current schedule and the schedule calculated with a properly inserted and properly composed fragnet is the delay attributable to the changed work. The time extension due, if any, will be based on this delay.
- Use a contemporaneous analysis when evaluating delays that have already occurred. In general terms, perform a contemporaneous analysis as follows:
 - Identify the most recent accepted schedule with a data date before the start of the delay being evaluated.
 - Identify each accepted schedule in effect during the delay and the schedule with a data date that immediately follows the conclusion of the delay.
 - Identify the longest path each day from immediately before the start of the delay to the schedule immediately following the delay.
 - Determine whether the delay falls on the longest path.
 - If the delay does not fall on the longest path, then no project delay occurred and no time extension is due.
 - If the delay falls on the longest path, then determine the number of days the longest path is delayed. The time extension due, if any, will be based on this delay.

(e) Administration of Time Extensions. For a Calendar Day project, the Department will provide a time extension by adding calendar days to the contract time.

(f) Excusable, Non-Compensable Delays. Excusable, non-compensable delays are unforeseeable and unavoidable delays that are not the Contractor's or the Department's fault or responsibility. The Contractor is entitled to a contract time extension but not entitled to compensation for delay costs associated with an excusable, non-compensable delay. The following are excusable, non-compensable delays:

- Delays due to floods, tornadoes, earthquakes, or other natural disasters that affect the project in regions which are declared as disaster areas by governing authorities.
- Delays due to utility or railroad work when the Contractor is required to alter operations due to conflicts with utility facilities not shown in the plans or railroads not shown in the plans.
- Utilities exceeding estimated completion dates noted in the contract that affect the longest path.
- The Contract requires the furnishing of critical materials and the Contractor experiences a delay in delivery because of Federal priorities for defense needs or because of nationwide shortages. Additional contract time may be allowed in an amount equal to the actual lost time resulting from such delay. To obtain additional contract time, the Contractor shall document and file with the Engineer all evidence pertaining to the original agreement with the material supplier or manufacturer. This evidence must indicate that delivery would be made at or before the time the materials would be needed in the normal sequence of construction operations for incorporation in the work.

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- In the event that no prior agreement has been made for furnishing a critical material, and the Contractor is unable to locate a supplier or manufacturer that can deliver the material when needed, the Engineer shall be advised of this situation in writing, indicating the date that delivery will be made and the date of the original request for such material. In either of these situations, when work has progressed to the point that critical materials not delivered are delaying progress of the project, the Contractor may make a written request to the Engineer for additional contract time.
 - Delays due to civil disturbances or acts of war or terror.
 - Delays due to epidemics or quarantines.
 - Delays due to labor strikes that are beyond the control of the Contractor, subcontractors, or suppliers and are not caused by the improper acts or failures of the Contractor, subcontractor, or supplier.

(g) Excusable, Compensable Delays. Excusable, compensable delays are delays that are not the Contractor's fault or responsibility but are the Department's fault or responsibility. The Contractor is entitled to a contract time extension and to compensation for delay costs associated with an excusable, compensable delay that affects the longest path. The Department will determine compensation for an excusable, compensable delay. The following are excusable, compensable delays:

- Delays due to an Engineer-ordered suspension.
- Delays due to the Department's neglect.
- Delays due to subsection 104.02(b) "Significant Changes in the Character of Work" that directly delay the longest path. Compensation will be as allowed under subsection 104.02(b).
- Delays due to subsection 104.02(c) "Differing Site Conditions" that directly delay the longest path. Compensation will be as allowed under subsection 104.02(c).

(h) Non-Excusable Delays. Non-excusable delays are delays that are the Contractor's fault or responsibility or delays that the Contractor could have foreseen or avoided, and weather delays not covered by the events listed in the "Excusable, Non-Compensable Delays" subsection of this special provision. Delays due to the Contractor's, subcontractors', or suppliers' insolvency or performance are neither excusable, nor compensable. The Contractor is not entitled to a time extension or compensation for a non-excusable delay.

(i) Concurrent Delays. Concurrent delays are separate delays to critical activities occurring at the same time. When a non-excusable delay is concurrent with an excusable delay, the Contractor is not entitled to a time extension for the period the non-excusable delay is concurrent with the excusable delay. When a non-compensable delay is concurrent with a compensable delay, the Contractor is entitled to a contract time extension but not entitled to compensation for the period the non-compensable delay is concurrent with the compensable delay.

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1.1 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. Unless otherwise stated, the latest edition for any commercial standards and all manufacturing tolerances referenced therein shall apply.
1. American Water Works Association (AWWA):
 - a. C200, Steel Water Pipe – 6” and Larger.
 - b. C205, Cement-Mortar Protective Lining and Coating for Steel Water Pipe-4” and Larger-Shop Applied.
 - c. C206, Field Welding of Steel Water Pipe
 - d. C207, Steel Pipe Flanges for Water Works Service, Sizes 4” through 144”.
 - e. C208, Dimensions for Fabricated Steel Water Pipe Fittings.
 - f. C210, Liquid-Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines
 - g. C218, Coating the Exterior of Aboveground Steel Water Pipelines and Fittings
 - h. C222, Polyurethane Coating and Lining for Steel Pipe
 - i. C602, Cement-Mortar Lining of Water Pipelines in Place – 4 in. and Larger
 - j. M11, Steel Pipe - A Guide for Design and Installation
 - k. American Welding Society (AWS):
 - l. A2.4, Standard Symbols for Welding, Brazing, and Nondestructive Examination.
 - m. A3.0M/A3.0, Standard Welding Terms and Definitions Including Terms for Adhesive Bonding, Brazing, Soldering, Thermal Cutting, and Thermal Spraying.
 - n. B2.1, Specification for Welding Procedure and Performance Qualification
 - o. D1.1/D1.1M, Structural Welding Code – Steel QC 1, Standard for AWS Certification of Welding Inspectors.
 2. ASME
 - a. B16.9, Factory-Made Wrought Buttwelding Fittings.
 - b. B36.10M, Welded and Seamless Wrought Steel Pipe.
 - c. Section VIII, Division 1, International Boiler & Pressure Vessel Code: Welding Design & Fabrication of Pressure Vessels
 - d. Section IX, International Boiler & Pressure Vessel Code: Welding and Brazing Qualifications
 - e. 31.3, Process Piping Guide
 3. ASTM

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- a. A20/A20M, Standard Specification for General Requirements for Steel Plates for Pressure Vessels.
 - b. A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - c. A106/A106M, Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service.
 - d. A234/A234M, Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
 - e. A370, Standard Test Methods and Definitions for Mechanical Testing of Steel Products.
 - f. A435/A435M, Standard Specification for Straight-Beam Ultrasonic Examination of Steel Plates.
 - g. A516/A516M, Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate- and Lower-Temperature Service.
 - h. A770/A770M, Standard Specification for Through-Thickness Tension Testing of Steel Plates for Special Applications.
 - i. F 402, Safe Handling of Solvent Cements, Primers, and Cleaners Used for Joining Thermoplastic Pipe and Fittings
4. International Organization for Standardization (ISO): 9001:2000, Quality Management Systems - Requirements.
 5. Lloyd's Registry.
 6. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
 - a. 704, Identification of the Hazards of Materials for Emergency Response
 7. NSF/ANSI
 - a. Standard 61, Drinking Water System Components
 8. Nation Association of Corrosion Engineers (NACE)
 - a. SP0188-2006 (Formerly RP0188) Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates
 9. Society for Protective Coatings, formerly Steel Structure Painting Council (SSPC)
 - a. PA2, Procedure for Determining Conformance to Dry Coating Thickness Requirements
 - b. SP3, Power Tool Cleaning
 - c. SP6, Commercial Blast Cleaning
 10. U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
 - a. 29 CFR 1910, Occupational Safety and Health Standards

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1.2 SUBMITTALS

A. Action Submittals:

1. The following shall be submitted in accordance with the project submittal procedures.
2. Shop Drawings:
 - a. Shop Fabricated Piping:
 - 1) Detailed pipe fabrication or spool drawings showing piping, special fittings, flanges, bends, dimensions, coatings, lining, and other pertinent information.
 - 2) Layout drawings showing location of each pipe section, fittings, and bends; number or otherwise designate laying sequence on each piece and each welded joint. Pipe laying schedule and marking diagrams shall be compatible with the requirements of AWWA Manual 11 (M11).
 - 3) Coating data: Manufacturer's descriptive data fully describing each product to include solids by volume. Include manufacturer's recommendations for mixing, thinning, and curing.
 - b. Material list and steel reinforcement schedules for materials specified.
 - c. Design calculations prepared by and sealed by a licensed professional engineering in the State of Arkansas for all fabricated steel pipe. Calculations shall show all loading conditions including internal loads, external loads, and handling.
 - d. Fabrication Information:
 - 1) Pipe and fitting details for temporary and permanent facilities indicating:
 - a) Design calculations for external and external loads.
 - b) Cylinder thickness.
 - c) Manufacturing tolerances.
 - d) Maximum angular deflection limitations of field joints.
 - e) Closure sections and cutoffs for field length adjustment.
 - f) Bulkheads, including details for removal of test bulkheads and repair of lining.
 - g) Weld lead outlets and plugs.
 - h) Stulling size, spacing, and layout.
 - e. Welded joint details including:
 - 1) Butt joints.
 - 2) Miter-cut ends for alignment conformance.
 - 3) Lap joints.
 - 4) Special thermal control joints required for control of temperature stresses.
 - 5) Butt strap joints.
 - f. Welding Data (Shop and Field Welding):
 - 1) Show on a weld map, complete information regarding base metal specification designation location, type, size, and extent of welds with reference called out for WPS and NDE numbers in tail of welding symbol.
 - 2) Distinguish between shop and field welds.

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- 3) Indicate, by welding symbols or sketches, details of welded joints and preparation of base metal. Provide complete joint welding details showing bevels, groove angles, and root openings for all welds.
 - 4) Welding and NDE symbols shall be in accordance with AWS A2.4.
 - 5) Welding terms and definitions shall be in accordance with AWS A3.0M/A3.0.
 - 6) Submit welding data together with Shop Drawings as a complete package.
- g. Product data for the following:
- 1) Welded Steel Pipe and Fittings:
 - a) Material data.
 - b) Chemical and physical test reports showing data consistent with specified requirements for each heat of steel proposed for use.

B. Informational Submittals:**1. Certificates:**

- a. Manufacturer's Certificate of Compliance.
- b. "Affidavit of Compliance" per AWWA-C206.
- c. Lining Materials: Certificate that lining system is currently approved for potable water contact in accordance with NSF 61 and satisfies current applicable governmental health and safety requirements for use in potable water. ASTM C150 or C595 Standard Specification for Blended Hydraulic Cements.
- d. Submit proof of certification for welders (Shop and Field Welding). Indicate certified procedures and position each welder is certified to perform. Include welder's certification of compliance with ANSI/ASME BPVC Section IX or ANSI/AWS D1.1 and provide documentation of the most recent weld qualification test date and continuity of use in each process for which the welder or welding operator is required.

2. Pipe Manufacturer's written Quality Assurance/Control Plan.**3. Statements of Qualification:**

- a. Pipe manufacturer.
- b. Fittings fabricator.
- c. Contractor's Shop Inspector.
- d. Contractor's Field Inspector.
- e. NDT Quality Control Personnel.

4. Procedures:

- a. Shop and field welding information; at a minimum include complete welding code paper trail with linkage to Shop Drawings.
- b. Welder Qualifications and Welding Procedure Specifications as specified below:
 - 1) Provide complete joint dimensions and details showing bevels, groove angles, root face, and root openings for all welds.

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- 2) Notch-tough welding procedures required. For shop welding, address supplementary essential variables in addition to essential variables as indicated in ASME Section IX, QW-251.2. For field welding, heat- input, control PQR essential variables as indicated in AWS D1.1/D1.1M, Table 4.6 shall be included. For shop and field welding, provide heat-input table on WPSs for welder guidance.
- 3) PQRs for notch-tough welding shall document heat- input control by monitoring volts, amps, and travel speed or time-rate of change of weld metal volume as calculated by measuring change in electrode length over a period of time. Charpy V-notch tests shall be conducted on weld metal and heat affected zone. Test coupons shall be oriented transverse to final direction of rolling. Full size Charpy specimen test acceptance shall be same as base metal specified herein.
- 4) Written NDT procedures.
- 5) Written description of proposed sequencing of events or special techniques such as:
 - a) Controlling pipe wall temperature stress during installation.
 - b) Minimizing distortion of steel.
 - c) Shop-Applied Cement-Mortar Lining: Include description of machine to be used and list of similar projects where machine was used. Identify pipe size and total footage.
 - d) Monitoring pipeline temperatures during installation.
- c. Written weld repair procedures for the Work.
- d. Field coating application and repair.
- e. Field lining application and repair.
5. Reports:
 - a. Source Quality Control Test Reports:
 - 1) Nondestructive weld testing.
 - 2) Steel impact testing using Charpy V-notch method.
 - b. Field Quality Control Test Reports:
 - 1) Weld tests, including re-examination of repaired welds, on each weld joint for the following tests, as applicable:
 - a) Radiographic (RT).
 - b) Ultrasonic (UT).
 - c. Cement-mortar lining compressive strength tests in accordance with AWWA C205.
6. Field Testing Plan: Submit at least 15 days prior to testing and include following information at a minimum:
 - a. Testing dates.
 - b. Piping system and sections to be tested.
 - c. Method of isolation.
 - d. Method of conveying water from source to system being tested.
 - e. Calculation of maximum allowable leakage for piping sections to be tested.

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7. Design calculations prepared by and stamped by a licensed professional engineer in the State of Arkansas for fittings, including opening reinforcement details of collars, wrappers, crotch plates; and harnessed joint assemblies.
 8. Temperature Stress Control Plan: Submit at least 45 days prior to installing pipe and include at least the following information:
 - a. Step by step installation procedures and sequencing to demonstrate compliance with temperature control requirements, including:
 - 1) Pipe installation.
 - 2) Joint welding of standard joints and temperature control joints.
 - 3) Pipe embedment and backfill.
 - b. Methods to ensure compliance with procedures by installation personnel.
 - c. Equipment to be used to monitor pipe wall temperature.
 - d. Time of day, climatic, or seasonal installation limits to be used to achieve compliance with temperature control requirements.
 9. Pipe manufacturer's certification of training of Contractor's pipe installation crews.
 10. Gasket material, temperature rating, and pressure rating.
 11. Flange assembly hardware.
- C. Quality Control Submittals:
1. Manufacturer's Certification of Compliance.
 - a. Pipe and fittings (AWWA C200, C207, C208)
 - b. Welding electrodes and filler materials (AWWA C206)
 - c. Factory applied linings and coatings (AWWA C210, C205; NSF 61)
 - d. Field applied linings and coatings
 2. Testing Equipment: Certified calibrations, Manufacturer's product data, and test procedures.
 3. Qualifications:
 - a. Weld Inspection and Testing Agency: Certification and qualifications.
 - b. Welding Inspector: Certification and qualifications.
 - c. Welders:
 - 1) List of qualified welders and welding operators.
 - 2) Current test records for qualified welder(s) and weld type(s) for factory and field welding.
 4. Non-destructive inspection and testing procedures.
 5. Nondestructive Testing reports.
 6. Certified weld inspection and test reports.
 7. DFT Test Reports: Coating Dry Film Thickness (DFT) measurements as required by Section 2.11.N herein.

1.3 QUALITY ASSURANCE

A. Pipe Manufacturer:

1. Pipe shall be manufactured, lined, and coated in the United States of America.

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2. Experienced in fabricating pipe of similar diameters, lengths, and wall thickness required for the Work.
 3. Steel Pipe Fabricators Association (SPFA), Lloyd's Registry Certification, or ISO 9001:2000 Certification.
 4. Demonstrate current production capability for volume of work required for Project.
 5. Experience shall include successful fabrication to AWWA C200 standards of at least 25,000 linear feet of 36-inch diameter or larger pipe, with wall thickness of 0.20 inches or greater, within past 5-year period.
 6. Experience shall be applicable to fabrication plant facilities and personnel, not company or corporation that currently owns fabrication facility or employs personnel.
- B. Fittings Fabricator:
1. Fittings shall be manufactured, lined, and coated in the United States of America.
 2. Experienced in fabricating fittings of similar diameters and wall thickness required for the Work.
 3. Steel Pipe Fabricators Association (SPFA), Lloyd's Registry Certification, or ISO 9001:2000 Certification.
 4. Demonstrate current production capability for volume of work required for this Project.
 5. Experience shall include successful fabrication to AWWA C200 and AWWA C208 standards of at least 25 fittings of 36-inch or larger pipe, with wall thickness 0.2 inch or greater, within past 5-year period.
 6. Experience shall include successful fabrication of at least five crotch plate fittings and/or five wrapper reinforced fittings within past 5-year period.
 7. Experience shall be applicable to fabrication shop facilities and personnel, not company or corporation that currently owns fabrication facility or employs personnel.
- C. Weld Inspection and Testing Laboratory Qualifications:
1. Contractor shall retain a third party, approved independent testing laboratory that will provide the services of an AWS certified Welding Inspector qualified in accordance with AWS QC1 with at least 5 years of prior inspection experience of type of welds specified herein. Inspector to be approved by Owner/Engineer.
 2. Perform weld examinations with qualified testing personnel who will carry out radiography, ultrasonic, magnetic particle, and other nondestructive testing methods as specified herein.
 3. Welding Inspector:
 - a. Be present when field welding is performed to certify that welding is in accordance with specified standards and requirements.
 - b. Duties include, but are not limited to, the following:
 - 1) Job material verification and storage.

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- 2) Verify qualification of welders.
 - 3) Certify conformance with approved welding procedure specifications.
 - 4) Maintain records and prepare reports in a timely manner.
 - 5) Notify Engineer within 1 hour of discovery of unsatisfactory weld performance and within 24 hours of weld test failure.
 - 6) Supervision of testing personnel.
- D. Welder and Welding Operator Performance:
1. Qualify welders and welding operators by approved testing laboratory before performing any welding under this section.
 2. Perform welder qualification tests in accordance with AWS D1.1.
 3. Qualification tests may be waived if evidence of prior qualification is deemed suitable by the Engineer.
 4. Qualify welders and operators in the performance of making groove welds on steel pipe, in Positions 2G and 5G for each welding process to be used.
- E. Certifications:
1. Weld Testing Agency: Certified in accordance with current American Society for Nondestructive Testing recommended practice SNT-TC-1A, NDT Level II.
- F. Welders and Welding Operators:
1. Shop Welders: In accordance with ASME BPVC SEC IX.
 2. Field Welders: In accordance with AWS D1.1/D1.1M.
- G. Contractor's Inspector for Shop and Field Welding:
1. In accordance with AWS QC 1, with knowledge of welding code for the Work.
 2. After receiving CWI qualification, at least one Shop CWI and one Field CWI shall have 5 years' minimum professional experience related to welding inspection similar to the Work. Other CWIs may work under the supervision of 5-year CWI, provided they have 1 year of related professional experience after receiving CWI qualification.
- H. NDT Quality Control Personnel:
1. In accordance with requirements of ASNT SNT-TC-1A, NDT Level II.
 2. After receiving NDT qualification, at least one NDT person shall have 5 years minimum professional experience related to NDT inspection similar to the Work. Other NDT personnel may work under the supervision of 5-year NDT, provided they have 1 year of related professional experience after receiving NDT qualification.
- I. Contractor's Shop Inspector:
1. In accordance with AWWA C200.
 2. Responsibilities:
 - a. Verify conformance to use of specified materials and their proper storage.

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- b. Monitor conformance to approved WPS.
 - c. Monitor conformance to approved NDT procedure specifications.
 - d. Monitor conformance of WPQ.
 - e. Provide 100 percent visual inspection before, during, and after shop welding.
 - f. Coordinate NDT work and review test results.
 - g. Maintain records and prepare report confirming results of inspection and testing.
- J. Contractor's Field Inspector:
- 1. In accordance with AWWA C206 and AWS D1.1/D1.1M.
 - 2. Responsibilities:
 - a. Verify conformance to use of specified materials and their proper storage.
 - b. Monitor conformance to approved WPS.
 - c. Monitor conformance to approved NDT procedure specifications.
 - d. Monitor conformance of WPQ.
 - e. Provide 100 percent VT before, during, and after field welding.
 - f. Coordinate NDT work and review test results.
 - g. Maintain records and prepare report confirming results of inspection and testing.
- K. Prefabrication Meeting:
- 1. Hold prior to fabrication of pipe and fittings between representatives of Owner, Contractor, Engineer, and pipe fabricator to review following:
 - a. Project scope.
 - b. Submittal requirements.
 - c. Testing.
 - d. Inspection responsibilities.
 - e. Shop welding requirements.
 - f. Field welding requirements.
 - g. Shop and field coating and lining requirements.
 - h. Production and delivery schedule.
 - i. Other issues pertinent to the Work.
- L. Inspection of Coating and Lining Application: Qualified manufacturer's technical representative shall visit pipe coating and lining shop and Site at beginning of application process to verify proper workmanship associated with coating and lining application and as may be required to resolve shop or field problems. Submit written report of visit to Engineer.
- 1.4 DELIVERY, STORAGE, AND HANDLING
- A. A material safety data sheet in conformance with 29 CFR 1910 Section 1200(g) shall accompany each chemical delivered for use in pipe installation, including field lining & coating materials. At a minimum, this includes all solvents, solvent cements, glues

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and other materials that may contain hazardous compounds. Handling shall be in accordance with ASTM F 402. Storage facilities shall be classified and marked in accordance with NFPA 704. Materials shall be stored with protection from puncture, dirt, grease, moisture, mechanical abrasions, excessive heat, ultraviolet (UV) radiation damage, or other damage.

- B. Materials delivered and placed in storage shall be stored with protection from the weather, excessive humidity variation, excessive temperature variation, dirt, dust and/or other contaminants. Proper protection and care of material before, during and after installation is the Contractor's responsibility. Any material found to be damaged shall be replaced at the Contractor's expense.
 - 1. Flanges: Securely attach metal, hardboard, or wood protectors over entire gasket surface.
 - 2. Pipe, fitting ends and lining: Fit with plugs or caps during storage and shipping. The Contractor shall provide a suitable bulkhead on the ends of the pipe and fittings and on all special openings to prevent drying out the lining. All bulkheads shall be substantial enough to remain intact during shipping and storage until the pipe is installed.
 - 3. Shop-applied coatings: Deliver and store piping in such a manner to prevent removal or damage.
 - 4. Field-applied coatings: Deliver materials in factory-sealed containers with manufacturer's labels intact and legible. Store materials in a protected area at a temperature between 50° F and 110° F.

- C. Steel Pipe
 - 1. Pipe Marking:
 - a. Legibly mark installation sequence number on pipe and fittings in accordance with piping layout. Standard pipe sections do not need sequence number labeled provided wall thickness is clearly marked.
 - b. Fittings shall be marked at each end with notation "TOP FIELD CENTERLINE".
 - c. The word "TOP" shall be painted or marked on outside top spigot of each fitting.
 - d. Mark "TOP MATCH POINT" for compound bends per AWWA C208 so end rotations can be easily oriented in field.
 - 2. Delivery:
 - a. Securely bulkhead or otherwise seal ends of pipe and fittings prior to loading at manufacturing site.
 - b. Pipe ends shall remain sealed until installation.
 - c. Damage to pipe and fittings, including linings and coatings, found upon delivery to Site shall be repaired to Resident Project Representative's satisfaction or removed from Site and replaced.
 - 3. Storage:

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- a. Support pipe securely to prevent accidental rolling and to avoid contact with mud, water, or other deleterious materials.
- b. Support on sand or earth berms free of rock exceeding 3 inches in diameter.
4. Acceptance at Site: Contractor shall inspect all deliveries for acceptance of material on site.

1.5 SEQUENCING AND SCHEDULING:

- A. Notify Engineer in writing of the following:
 1. Pipe Manufacturing and shop coating application: Not less than twenty-one (21) days prior to starting.
 2. Not less than seven (7) days prior to start of each of the following:
 - a. Welding.
 - b. Lining application.
 - c. Shop hydrostatic testing.
 - d. Field coating application.

1.6 PROJECT/SITE CONDITIONS

- A. The CONTRACTOR shall be responsible for verifying the final fitting of pipe and shall ensure no conflicts between bridge structure and the proposed water piping.
 - a. CONTRACTOR shall verify the fit, size, material, joint types, elevation, and horizontal location, before installing pipes. Notify ENGINEER if there are discrepancies 5 days prior to any related work.
- B. The Contractor shall notify the Engineer in writing of any concerns or issues prior to making structure penetrations or piping and equipment installations.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. General
 1. Provide piping materials and appurtenances as specified and as shown on the drawings, and suitable for the service intended. Piping materials, appurtenances, and equipment supplied as part of this contract shall be of equal material and ratings as the connecting pipe, new and unused except for testing equipment. Contractor supplied components that serve the same function and are the same size shall be identical products of the same manufacturer.
 2. All material must be of domestic manufacture and in accordance with the standards herein. **Foreign made materials (pipe, fittings, flanges, etc.) are strictly prohibited.**
 3. Pipe Manufacturer:
 - a. Pipe and fabricated fittings shall be responsibility of one main Supplier.
 - b. If pipe and fabricated fittings are manufactured by separate Suppliers, one main Supplier shall be responsible for formally managing the other Supplier.

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The one main Supplier is responsible for coordination and management of production of all pipe and fittings work of both Suppliers, including, but not limited to:

- 1) Qualifications.
- 2) Submittals.
- 3) Dimensional consistency between pipe and fittings.
- 4) Fabrication.
- 5) Quality assurance.
- 6) Quality control.
- 7) Reporting.
- 8) Shop lining.
- 9) Shop coating.
- 10) Shop testing.
- 11) Field services.
- 12) Delivery schedule.
- 13) Warranties or guarantees.

B. Identification and Tagging

1. Steel pipe and fittings shall be manufactured, tested, inspected, and marked to comply with AWWA C200 and additional requirements of these Contract Documents.
2. Each fitting and piece of pipe shall be shipped with a marking which reflects the laying sequence provided in the shop drawings and as required in other sections.

2.2 STEEL WATER PIPING SYSTEM

A. General:

1. The steel pipeline and fittings shall have a nominal inside diameter of 36 inches and an absolute minimum wall thickness of 3/8th (0.375) inch.
2. The total combined weight of the filled pipeline (coatings, steel pipe, lining, and water) shall not exceed 665 lbs per foot. CONTRACTOR may propose an alternate lining system with the sole purpose of decreasing the total combined weight below the maximum 665 lbs per foot. Any proposal must be approved by the ENGINEER and pipeline OWNER prior to pipeline order placement. No additional payment will be made for any changes to the lining system to reduce weight.
3. Steel for pipe and fittings shall be 42,000 psi minimum yield strength conforming to requirements of ASTM A139 Grade C or greater.
4. The entire water piping system (pipe lengths, joints, and fittings) shall be cement mortar-lined and polyurethane coated per C222 in the shop and the field according to the specifications herein with a minimum 30 mil DFT.

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B. Steel Water Pipe

1. Shop fabricated from carbon steel, sheet or coil, in accordance with AWWA C200, straight or spiral seam.
2. Design shall be in accordance with AWWA M11.
3. In lieu of collar reinforcement, pipe or fittings with outlets may be fabricated in their entirety of steel plate having thickness equal to sum of pipe wall plus required reinforcement.
4. Materials furnished shall be NSF 61 approved for use with potable water.

2.3 PIPE REQUIREMENTS AND DESIGN:

- A. Furnish pipe of materials, joint types, and sizes as indicated or specified.

- B. Pipe shall be designed to withstand all stresses resulting from external loads and internal pressures listed in the following table plus applicable allowance for surge unless otherwise specified:

Pipe Size	Design Cover Depth	Live Load	E'	Bedding (Embedment) Constant	Deflection Lag Factor	Soil Unit Weight (PCF)	Design Internal Working Pressure (PSI)	Design Maximum Test Pressure (PSI)
36"	N/A	N/A	N/A	N/A	N/A	N/A	240	300

- C. The pipe barrel thickness (steel shell) for all furnished pipe shall be 0.375-inch minimum, regardless of service conditions. Cement lining thickness shall be 0.375 inches.

- D. Design shall limit allowable deflection from external loads to 3% for flexible coating systems including epoxy systems, tape coating systems, and polyurethane systems (all with cement mortar lining) per the recommendation of M11.

- E. Maximum weight of pipe, coating, lining, and water shall not exceed 665 lbs/foot.

2.4 PIPE BARREL:

- A. Steel: Provide fully-killed, fine grained steel coils for spiral welded steel pipe or steel plate for straight seam welded steel pipe per AWWA C200 and as follows:
 1. Specified Minimum Yield Strength: 42,000 psi.
 2. Minimum Elongation in 2-inch Gauge Length: 21 percent.
 3. Steel Quality as follows:
 - a. Toughness:
 - 1) Charpy V-notch Acceptance Criteria: Transverse specimen orientation, full size specimens, 25 foot-pounds energy at test temperature of 30 degrees F.
 - 2) Frequency: See Paragraph Steel Toughness Testing for Thickness Equal to or Greater than 1/2 Inches

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4. Minimum wall thickness shall be 0.375.
 - a. Maximum allowable thickness variation for plate, sheet, or coil shall be 0.010 inch less than ordered thickness.
- 2.5 FITTINGS:
- A. Steel Water Pipe Fittings
1. Fittings shall meet the same requirements as the steel water pipe and shall conform to the dimensions within AWWA C208. If an elbow radius is less than 2.5 x pipe diameter, stress shall be checked per AWWA M11 and wall thickness or yield strength increased if necessary. Bends greater than or equal to 22.5 degrees shall be smooth, one-piece type. Bends less than 22.5 degrees shall be mitered or smooth type.
- B. Flanges & Flanged Water Pipe Fittings
1. Flanges shall be in accordance with AWWA C207:
 - 1) Provide Class E type flanges.
 - 2) Bolt hole drilling pattern shall match mating piping, valves or fittings.
 2. Shop coating and lining shall be per 2.10 and 2.11, respectively. Flange faces shall be shop coated with a soluble rust preventive compound.
 3. Gaskets shall be furnished in accordance with and meet the requirements of AWWA C207 and shall be compressed fiber or polytetrafluoroethylene and suitable for potable water service and rated for the hydrostatic test pressure.
 4. Required hardware for flanges is as follows:
 - a. For Class E:
 - 1) Bolts shall be ASTM A 193, Grade B7
 - 2) Nuts shall be ASTM A 194, Grade 2H heavy hex.
 5. Flange Insulating Kits:
 - a. Provide flange insulating kits at flanges between dissimilar pipe and install in accordance with the manufacturer's instructions.
 - b. Flange insulating kits shall be suitable for drinking water service and the hydrostatic test pressure.
- C. Fabrication:
1. Shop fabricate. No field fabrication will be allowed, unless approved by Engineer.
 2. Fabricate from materials or straight pipe in conformance with specified requirements and dimensions of AWWA C208, unless otherwise indicated.
- D. Crotch Plate: Fabricate from fully-killed, fine grain, pressure vessel steel conforming to ASTM A516/A516M, Grade 70, and as follows:
1. Plates shall be normalized.
 2. Perform through-thickness tension testing of plates in accordance with ASTM A770/A770M.

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3. Charpy v-notch tests in direction transverse to final rolling shall be performed per ASTM A370 on full size specimens of coupons taken from each plate.
Acceptance shall be 25 foot-pounds at 30 degrees F.

E. Wall Thickness

1. General:

- a. Refer to ASME B36.10M for definitions of wall thickness for standard weight pipe and nominal pipe size (NPS).
- b. Reinforce to withstand either internal pressures, both circumferential and longitudinal, or external loading conditions, whichever is greater.
- c. **Minimum Plate Thickness:** The greater of adjacent mainline pipe, thickness shown, thickness calculated as hereinafter specified, or as shown in Table 1.

Table 1		
Nominal Diameter (in.)	Pipe Manifolds Piping Above Ground Piping in Structures	Bend Reducers
24 and Under	Standard Weight	Standard Weight
Over 24	Adjacent Pipe Thickness	Adjacent Pipe Thickness

F. Bends, Unless Otherwise Indicated:

1. **Minimum Radius:** 2.5 times pipe diameter or as indicated on Drawings.
2. **Minimum Bend Wall Thickness:** Greater of Table 1 above or, if radius is less than 2.5 times pipe diameter, as calculated using equation in Chapter 7 of AWWA M11.
3. **Maximum Miter Angle:** 11-1/4 degrees on each section resulting in a maximum deflection angle of 22.5 degrees per miter weld as recommended in AWWA C208.
4. **Bevels:** Vary bevels on miters to provide a constant weld groove angle. For 11-1/4-degree miter, (22.5-degree miter weld) bevels must vary from 18.75 degrees on OD of bend to 41.25 degrees on ID of bend to provide a constant 60-degree groove angle for CJP welding.
5. Complete joint penetration (CJP) welds on miter welds.

G. Outlets:

1. 24 Inches and Smaller: Fabricate from ASTM A53/A53M, Type E or S, Grade B, standard weight steel pipe.
2. Larger than 24 Inches: Fabricate from ASTM A106/A106M, Grade B, standard weight pipe.
3. Fabricate collar or wrapper reinforcement using same steel as specified for main pipe barrel.

H. Steel Butt-Weld Fittings:

1. 24 Inches and Smaller: In accordance with ASME B16.9 conforming to ASTM A234/A234M.
2. Standard weight.

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3. Taper pipe wall at welds at 4:1 for connection to pipe of different wall thickness.
4. Coordinate difference in diameter convention between fittings and AWWA C200 and AWWA C208 pipe and fittings to provide complete piping system as shown.

2.6 JOINTS

A. Shop Welded:

1. Fabricate in accordance with AWWA C200 as modified herein.
2. Complete joint penetration (CJP) butt joints shall be used for longitudinal, girth, and spiral welds, unless otherwise indicated.
3. Lengths of pipe shall not be shop-joined using lap joints.

B. Preparation of Joints for Field Welding:

1. Unless specifically indicated otherwise on the drawings, all joints and fittings shall be single lap welded. Double lap welds and butt welds are required at special installations.
2. Butt Joint Welded:
 - a. Plain ends beveled as required by AWWA C200 and Contractor's field WPS.
 - b. Provide protection for factory beveled pipe ends so ends are not damaged during transport.
3. Lap Joint Welded:
 - a. Double fillet and Single fillet lap joints in preparation for field welding shall be in accordance with AWWA C200.
 - b. For pipe 30 inches in diameter and larger, provide one of the following:
 - 1) Tack weld four metal tabs at equal intervals around inside circumference of bell ends to indicate location at which spigot end has reached maximum penetration into bell. Remove stops after welding of joint.
 - 2) Train field crews and provide supplies to field paint (or draw) a 3/4-inch wide white stripe (or stripes) on outside circumference of spigot end of pipe. Side of stripe furthest from pipe end shall indicate location at which spigot end has reached maximum penetration into bell. Side of stripe closest to end of pipe will indicate limit of maximum joint pull.
 - c. Double welded lap joints and butt-strap joints shall be tapped and drilled for testing in accordance with AWWA C206.

C. Miter-End Cuts:

1. Lap Joints:
 - a. As shown on Drawings.
 - b. Moderate deflections and long radius curves may be made using miter-end cuts.

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- c. Use only with lap welded joints, unless specifically approved in writing by Engineer.
 - d. Maximum Total Allowable Angle: lesser of manufacturer’s actual limit or 5 degrees per pipe joint
 - e. Provide miter-cut that is cold expanded square with face of miter- cut on bell ends only.
 - f. Mitering of spigot ends will not be permitted.
2. Welded Butt Joints:
- a. Maximum Total Allowable Angle: 2.5 degrees per pipe joint.
 - b. Minimum Pipe Wall Thickness: 3/8 inch.
 - c. Welded Butt joints shall be CJP.

D. Special Temperature Control Joint:

- 1. Provide a special longer bell end (Special Temperature Control Joint) at a maximum spacing in accordance with AWWA C206 and M11 to account for movement on installed pipe as a result of temperature changes.
- 2. Pipe manufacturer shall determine length required for the longer bell, or may determine whether temperature control is required based on the method of installation (e.g. weld after backfill).
- 3. Minimum Special Temperature Control Joint length is as recommended by steel pipe manufacturer and indicated in the approved steel pipe laying schedule.

E. Acceptable joint types for each method of installation summarized below:

Steel Pipe Joint Requirements		
Joint Type	Minimum Requirement	Acceptable Alternative
Above Ground Installations	Butt Weld	None

2.7 FLANGES & FLANGED WATER PIPE FITTINGS

- A. Flanges shall be in accordance with AWWA C207:
- 1. Provide Class E type flanges.
 - 2. Bolt hole drilling pattern shall match mating piping, valves or fittings.
- B. Shop coating and lining shall be per 2.11 and 2.12, respectively. Flange faces shall be shop coated with a soluble rust preventive compound.
- C. Gaskets shall be furnished in accordance with and meet the requirements of AWWA C207 and shall be compressed fiber or polytetrafluoroethylene and suitable for potable water service and rated for the hydrostatic test pressure.

2.8 REQUIRED HARDWARE FOR FLANGES IS AS FOLLOWS:

- A. For Class E:
- 1. Bolts shall be ASTM A 193, Grade B7
 - 2. Nuts shall be ASTM A 194, Grade 2H heavy hex.

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B. Flange Insulating Kits:

1. Provide flange insulating kits at flanges between dissimilar pipe and install in accordance with the manufacturer's instructions.
2. Flange insulating kits shall be suitable for drinking water service and the hydrostatic test pressure.

2.9 PIPE TAP AND BRANCH CONNECTIONS

- A. Taps or branch piping to steel piping shall be made with a welded connection only; no threaded connections are allowed.
- B. Flanged branch outlet nozzles shall be rated for test pressure of 225 psi and flanges faced and drilled to match mating piping, valves or fittings.

2.10 STULLING (STRUTTING):

A. Materials:

1. Shop-Lined Pipe: Wood stulls and wedges.
2. Unlined Pipe: Steel or wood.

- B. Install stulling for pipe and fittings in accordance with approved submittal and as soon as practical after pipe is fabricated or, for shop-lined pipe, after lining has been applied.

- C. Install stulling in manner that will not harm lining.

2.11 STEEL PIPE & FITTINGS COATING

A. Quality Assurance

1. The applicator shall be trained in application techniques and procedures of coating materials and shall demonstrate a minimum of two (2) years successful experience in such application. All work to be overseen by a fully qualified Coatings Expert. A qualified Coatings Expert shall be a person by reason of thorough knowledge of the physical sciences and the principals of engineering and mathematics acquired through professional education, who is qualified to engage in the practice of coating application and inspection and is accredited or certified as being a specialist in their field of practice, including the Coating Inspector Certification Program Level 2 (CIP 2) by the Association for Materials Performance and Protection (AMPP).
 - a. Maintain, throughout duration of application, a crew of painters who are fully qualified.
2. Product Data:
 - a. Submit manufacturer's literature describing products to be provided, giving manufacturer's name, product name, and product line number for each material.

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- b. Submit technical data sheets for each coating, giving descriptive data, curing times, mixing, thinning, and application requirements.
 3. Quality Assurance Submittals:
 - a. Certificates:
 - b. Provide manufacturer's certification that products to be used comply with specified requirements and are suitable for intended application.
 - c. Submit listing of not less than five (5) of applicator's most recent applications representing similar scope and complexity to Project requirements. List shall include information as follows:
 - 1) Project name and address
 - 2) Name of owner
 - 3) Name of contractor
 - 4) Name of engineer
 - 5) Date of completion
 4. Manufacturer's Instructions:
 - a. Submit manufacturer's installation procedures, if not on product data sheets, which shall be basis for accepting or rejecting actual installation procedures.
- B. General
1. Steel water piping components and attachments shall be coated with blue polyurethane per AWWA C222 with a DFT of 30 mils or epoxy per AWWA C210 and in accordance with the coating manufacturer's writing instructions.
 2. Notify Engineer in writing prior to application of coating products.
 3. Holdback of any coating from field-welded shall be as recommended by the coating manufacturer for coating system selected.
 4. Unless otherwise indicated, coat exterior surfaces of pipe and fittings passing through structure walls from center of wall or from wall flange to end of underground portion.
 5. Packing and Shipping:
 - a. Deliver products in manufacturer's original unopened containers. Each container shall have manufacturer's label, intact and legible.
 - b. Include on label for each container:
 - 1) Manufacturer's name
 - 2) Type of paint
 - 3) Manufacturer's product number
 - 4) Color name and number
 - 5) Instructions for thinning, where applicable
 - 6) Lot and Batch number
- C. Storage and Protection:
1. Store materials in a designated protected area, per manufacturer's printed data sheet instructions.

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D. Acceptable Manufacturers:

1. Products specified are manufactured by Tnemec Company, Inc., North Kansas City, Missouri and are specified as a standard of quality.
2. Equivalent materials of other manufacturers may be substituted only by approval of the Engineer. Requests for substitution shall include manufacturer's literature for each product giving the name, generic type, descriptive information, solids by volume, recommended dry film thickness, manufacturer's five year warranty, and a list of five projects where each product has been used and rendered satisfactory service. No request for substitution shall be considered that would decrease film thickness or offer a change in the generic type of coating specified. Manufacturer's certified test reports showing that the substitute product(s) equal or exceed the performance of the specified products shall be submitted.
3. Products for each specified function and system shall be of a single manufacturer.

E. Materials:

1. Zinc-rich urethane primer: Tnemec Series 90-97 Tnemec-Zinc or equal.
2. High-build polyamidoamine epoxy: Tnemec Series N69 Epoxoline II or equal.
3. Topcoat: Series 1094 Endura-Shield topcoat
4. Durashield 210 (Blue)
5. Chemthane 2265 (Blue)

F. Environmental Requirements:

1. Apply coating materials per manufacturer's printed data sheet instructions:
2. Refer to specific product data sheets for minimum/maximum surface temperature, air temperature, and humidity requirements. Surface temperatures shall be at least 5 degrees F above dew point and in a rising mode.
3. Provide proper ventilation using explosion-proof equipment.
4. Adequate illumination shall be provided using explosion proof lights and equipment.
5. Atmosphere shall be free of airborne dust.

G. Surface preparation:

1. Prior to application of primer, surfaces shall be prepared to receive the specified coating system in compliance with manufacturer's recommendations and specifications of The Society of Protective Coatings (SSPC)
2. Perform SSPC-SP6 Commercial Blast Clean
3. Existing steel damaged during construction: Perform SSPC-SP3 Power Tool Cleaning
4. SSPC-SP10 per C222 for polyurethane

H. Coating Preparation:

1. Mix and thin materials according to manufacturer's latest printed instructions.
2. Do not use materials beyond manufacturer's recommended shelf life.

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3. Do not use mixed materials beyond manufacturer's recommended pot life.
- I. Site Verification of Conditions:
1. Examine areas and conditions under which application of coating systems shall be performed. Examine for conditions that will adversely affect execution, permanence, or quality of coating system application.
 2. Correct conditions detrimental to timely and proper execution of Work.
 3. Do not proceed until unsatisfactory conditions have been corrected.
 4. Commencement of installation constitutes acceptance of conditions and responsibility for satisfactory performance.
- J. Application:
1. Apply coating system in compliance with manufacturer's instructions and using application method best suited for obtaining full, uniform coverage of surfaces to be coated.
 2. Employ only application equipment that is clean, properly adjusted, and in good working order, and of type recommended by coating manufacturer.
 3. After surface preparation, spot primer on interior weld seams shall be brush-applied.
 4. Apply materials at specified film thickness by method recommended by manufacturer.
 5. Allow each coat to dry thoroughly before recoating. Follow manufacturer's recommended recoat time.
 6. Cut edges clean and sharp where work joins other materials or colors.
 7. Make finish coats smooth, uniform in color and free of brush marks, laps, runs, dry spray, overspray, and skipped or missed areas.
 8. Thinning: Thinning requirements for specified products are to be found in the paint manufacturer's printed data sheets and are to be strictly adhered to.
 9. At completion of Work, touch-up and restore finishes where damaged. The coating shall be holiday tested to identify any deficiencies in the coating. All areas identified in the holiday testing shall be recoated as directed by the Qualified Coatings Expert and as stated in the product data sheet.
 10. Defects in Finished Surfaces:
 - a. When stain, dirt, or undercoats show through final coat, correct defects and cover with additional coats until coating is of uniform finish, color, appearance and coverage.
 - b. Touch-up of minor damage shall be acceptable where result is not visibly different from surrounding surfaces. Where result is visibly different, either in color, sheen, or texture, recoat entire surface.
- K. Inspection of Field Coatings:
1. Inspector's Services: A qualified Coatings Inspector shall be a person by reason of thorough knowledge of the physical sciences and the principals of engineering

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and mathematics acquired through professional education, who is qualified to engage in the practice of coating application and inspection and is accredited or certified as being a specialist in their field of practice, including the Coating Inspector Certification Program Level 3 (CIP 3) by the Association for Materials Performance and Protection (AMPP).

- a. Documents:
 - 1) Review Contract Documents and applicable sections of referenced standards.
- b. Field Painting Inspection:
 - 1) Verify cleaning operations to surfaces are to condition specified.
 - 2) Verify conformance of paint to specification.
 - 3) Check for final dry film thickness and holidays.
 - 4) Check touch-up for final finish.
 - 5) Contractor will have both wet and dry film gauges onsite for inspector's use.
- c. Reports:
 - 1) Submit written progress reports describing inspections made and showing action taken to correct non-conforming work. Report uncorrected deviations from Contract.
- d. Manufacturer's Service:
 - 1) A representative of the paint manufacturer shall be available to provide on-site technical assistance, and guidance for application of the paint system as needed.

L. Cleaning

1. Remove paint spatters from adjoining surfaces.
2. Repair damage to coatings or surfaces caused by cleaning operations.
3. Remove debris from job site and leave storage areas clean.
4. General Requirements:
 - a. Place materials defined as hazardous or toxic waste in designated containers.
 - b. Return solvent and oil-soaked rags for contaminant recovery and laundering or for proper disposal.
 - c. Do not dispose of paints or solvents by pouring on ground. Place in designated containers for proper disposal.
5. Containment/Disposal Requirements:
 - a. Surface Preparation Debris Containment:
 - 1) When required by federal, state or local regulation, entire structure shall be enclosed and surface preparation debris contained.
 - 2) Refer to SSPC 61 Guide for Containing Debris Generated during Paint Removal Operations.
6. Disposal of Surface Preparation Debris:
 - a. Refer to SSPC 71 Guide for the Disposal of Lead-Contaminated Surface Preparation Debris.

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- b. Surface preparation debris shall be disposed of in compliance with applicable federal, state and local regulations.
7. Containment/Disposal Costs:
 - a. Painter shall be responsible for costs associated with containment and waste disposal that may result from execution of this Project.

M. Coating Schedule

Coat	Tnemec Product	Dry Film Thickness (mils)	Color	*Holdback (inches)
Prime	Series 90-97 Tneme-Zinc	2.5 to 3.5	Reddish-Gray	6
Base	Series N69 or L69 Epoxoline II	4.0 to 6.0	Slate Gray	8
Finish	Series 1094 Endura-Shield II	3.0 to 5.0	**Selected by Engineer	10

*At welded pipe joints, hold back shop applied coating from end of piping or fitting.

**Provide color samples with piping submittal for topcoat color selection.

N. Dry Film Thickness (DFT) Measurement

1. Provide DFT measurement in accordance with the instructions described in SSPC-PA2.
2. Contractor shall follow special instructions for pipe exteriors as shown in SSPC-PA 2, Appendix 7.
3. Coating thickness tolerances shall meet the requirements of Restriction Level 3 (SSPC-PA 2, Section 9.3)
4. Shop Coated Piping: Submit DFT measurement test reports for review and approval prior to pipe shipment.
5. Field Coated Piping: Submit DFT measurement test reports for review and approval.

O. Warranty

1. Submitted products shall qualify for manufacturer's five-year warranty not to peel, check, crack, or delaminate from ductile iron piping or new steel piping, and meet or exceed performance criteria listed below.
2. Contractor to provide coating warranty certificate upon completion of pipeline installation.

2.12 STEEL PIPE & FITTINGS LINING

A. General

1. Interior surface of all steel pipe, fittings and specials shall be lined in the shop with cement-mortar lining applied centrifugally in conformity with AWWA C205.
2. Cement mortar materials provided, including curing compounds and bonding agents, shall be NSF-61 approved for both shop and field applications.
3. Notify Engineer at least seven (7) days prior to application of lining products.

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4. Holdback of lining from field-welded joints shall be as follows:
 - a. For butt-welded joints, holdback lining from field weld 3 inches (per side) or as recommended by the pipe manufacturer, whichever is greater.
 5. Defective linings as identified in AWWA C205 shall be removed from the pipe wall and shall be replaced to the full thickness required. Defective linings shall be cut back to a square shoulder in order to avoid feather edged joints.
 6. Cement-mortar linings shall be kept moist during storage.
 7. ASTM C150 or ASTM C595
- B. Shop-Applied:
1. Applied centrifugally in conformance with AWWA C205. Thickness shall be in accordance with AWWA C205.
 2. Lining machine type that has been used successfully for similar work and approved by Engineer.
 3. Maintain pipe in round condition during lining operation and thereafter by suitable bracing or strutting.
 4. Provide polyethylene or other suitable bulkhead on ends of pipe and on special openings to prevent drying out of lining. Bulkheads shall be substantial enough to remain intact during shipping and storage until pipe is installed.
 5. Pipe shall be left bare where field joints occur.
 6. Ends of lining shall be left square and uniform. Feathered or uneven edges will not be permitted.
- C. Field-Applied:
1. Materials conforming to AWWA C602.
 2. Do not use pozzolanic material in mortar mix.
 3. Admixtures shall contain no calcium chloride.
 4. Water shall be of potable quality.
 5. Wire mesh conforming to AWWA C205.
- D. Liquid Epoxy Lining (outlets and connections smaller than 6"):
1. The interior of all outlets and connections smaller than 6" shall be painted with liquid epoxy in accordance with AWWA C210, Liquid Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipes.
- 2.13 SOURCE QUALITY CONTROL:
- A. Steel Toughness Testing for Thickness Equal to or Greater than 7/16 Inches:
1. Include three impact specimens; conduct test in direction transverse to final direction of the coil rolling.
 2. Coils:
 - a. Conduct Charpy Testing per ASTM A370 on an initial coil of each heat to establish uniformity of steel.

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- b. Take test coupons from an initial coil of each heat at locations of outer and inner wrap of coil.
 - c. For each coil that fails to meet acceptance criteria, conduct Charpy Testing on next two coils in that heat.
 - d. Do not use coils that do not qualify in production of pipe.
3. Plate:
- a. Conduct Charpy Tests on each plate in accordance with ASTM A20/A20M.
 - b. Conduct on full-size (10 mm by 10 mm) specimens from each plate in accordance with ASTM A20/A20M.
 - c. Do not use plates that do not qualify in production of pipe.
- B. Crotch Plate:
1. Perform through-thickness tension testing with acceptance criteria per Article 5 of ASTM A770/A770M on each plate.
 2. Conduct straight-beam ultrasonic examination with acceptance criteria per Article 6 of ASTM A435/A435M on each plate.
 3. Plates that do not qualify shall not be used.
- C. Shop Hydrostatic Pressure Test: In accordance with AWWA C200 Section 5.2, except as follows:
1. General: Unless specified otherwise, testing of pipe and fittings shall be performed before lining and coating is applied.
 2. Pipe: Maintain test pressure for minimum of 2 minutes and conduct thorough inspection of entire weld length of pipe. Repair or reject pipe revealing leaks or cracks.
 3. Fittings:
 - a. Except as otherwise specified herein, no additional shop hydrostatic test will be required on fittings fabricated from successfully hydrostatically tested straight pipe.
 - b. Test Pressure: Design Pressure of fitting.
 - c. Maintain test pressure for a length of time as required to perform a visual inspection of welds.
 - d. No leakage is allowed.
- D. Shop Nondestructive Testing:
1. Welds: 100 percent visually examined by Contractor's Shop Inspector to criteria in ASME BPVC SEC VIII, Division 1.
 2. CJP Welds: Spot radiographically or radioscopically examine pipe in accordance with ASME BPVC SEC VIII, Div. 1, Paragraph UW-52 or 100 percent ultrasonically examine in accordance with API 5L, Annex. E. or ASME BPVC SEC VIII, Div. 1 paragraph UW-53.

STEEL WATER LINE

- a. Except as otherwise specified herein, no shop CJP weld nondestructive testing will be required on straight pipe which has successfully been hydrostatically tested in accordance with this Section.
3. Fillet Welds: 100 percent examine using magnetic particle inspection method in accordance with ASME BPVC SEC VIII, Division 1, Appendix 6.
4. Air test collars and wrappers in accordance with AWWA C206.

PART 3 - PART 3 - EXECUTION

3.1 EXAMINATION

- A. After becoming familiar with all details of the work, verify all dimensions in the field, and advise the Engineer of any discrepancy before performing the work.
- B. Verify size, material, joint types, elevation, horizontal location, and pipe service of existing pipelines to be connected to new pipelines or new equipment.
- C. Welding Electrodes: Verify proper grade and type, free of moisture and dampness, and coating is undamaged.

3.2 PREPARATION

- A. System Preparation
 1. Pipe and fittings shall be inspected before exposed piping is installed. Clean the ends of pipes thoroughly, remove foreign matter and dirt from inside of pipes, and keep piping clean during and after installation.
- B. Shop and Field Coating
 1. All pipe coating shall be completed in shop and touched up in field as needed using approved materials.
- C. Pre-Coating Inspections
 1. Examine surface to be coated and report conditions that would adversely affect appearance or performance of coating systems and which cannot be put into an acceptable condition by preparatory work specified. Do not proceed with surface preparation and application until surface is acceptable or authorization to proceed is given by Engineer.
 2. Apply coating only under the following prevailing conditions:
 - a. The air and surface temperatures are not below 50° F or above 120° F.
 - b. Relative humidity is not above 85% and the surface temperature is at least 5° F above the dew point.
 3. Protect all surfaces not to be coated.

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D. Field Assembly

1. Notify the Engineer at least 2 weeks prior to field assembly of pipe or fittings and at least 3 days prior to the start of any surface preparation or coating application work. Field welding of steel water piping shall be performed in accordance with AWWA C206 and AWS D1.1. Welding electrodes shall be provided in accordance with Table 3.1 of AWS D1.1/D1.1M as required for the applicable base metals and welding process.

3.3 PIPING INSTALLATION

A. General

1. Piping shall be run as straight as practical along the alignment following the curvature of the bridge as shown on the contract drawings and with a minimum of joints. Piping and appurtenances shall be installed in conformance with reviewed shop drawings, manufacturer's instructions, ASME B31.3, and AWWA M11. Piping shall be installed without springing or forcing the pipe.
2. Joints and related work for field assembly of fittings shall conform to requirements for straight pipe, unless otherwise shown.
3. Inspect pipe and fittings before installation. Reject defective, damaged, or unsound pipe and fittings and remove them from the site. Clean ends thoroughly, remove foreign matter and dirt from inside.
4. Make minor field adjustments by pulling standard joints.
 - a. Maximum Allowable Angle: Manufacturer's recommendation.
 - b. Maximum Allowable Gap: 1/8 inch between bell and spigot at weld location.
5. Horizontal deflections or fabricated angles shall fall on alignment, as shown within tolerances below.
6. Vertical deflections shall fall on alignment, and pipe angle point locations shall match those indicated on Drawings within tolerances below.
7. For field-welded joints, pipe 30 Inches in Diameter and Larger:
 - a. Ensure maximum penetration of spigot end into bell end is achieved through use of shop-welded tabs on inside circumference of bell end or by use of a paint stripe.
 - b. If welded metal tabs are used, remove tabs prior to welding inside of joint.
8. Stulling:
 - a. Maintain stulling in place until pipe is completely installed.
 - b. Reinstall stulls that were temporarily removed to facilitate interior welding prior to backfilling.
9. Do not lay on blocks unless pipe is to receive total concrete encasement.
10. Clean interior of all pipe, fittings, and joints prior to installation. Exclude entrance of foreign matter during installation and at discontinuance of installation.
 - a. At all times when pipe laying is not in progress, close open ends of pipe with snug-fitting closures to prevent the entrance of foreign matter into the pipe. These provisions shall apply during the noon hour as well as overnight.

STEEL WATER LINE

- b. Do not let water fill trench. Include provisions to prevent flotation should water control measures prove inadequate.
 - c. Remove water, sand, mud, and other undesirable materials from trench before removal of end cap.
11. Brace or anchor as required to prevent displacement after establishing final position.
 12. Perform only when weather and trench conditions are suitable. Do not lay in water.
- B. Control of Temperature Stresses:
1. In accordance with AWWA M11, AWWA C206, approved Temperature Stress Control Plan submittal, and this specification.
 2. To control temperature stresses, shade un-backfilled special temperature control joint area of pipe from direct rays of sun by use of properly supported awnings, umbrellas, tarpaulins or other suitable materials until pipe is backfilled at least 1 foot over top of pipe. The special temperature control joint area is defined as the entire length of pipe left exposed. Shading materials shall not rest directly on pipe, but shall be supported to allow air circulation around pipe. Shading of special temperature control joints is not required when ambient air temperature is below 50 degrees F.
 3. Locate special temperature control (thermal expansion) joints at maximum intervals recommended by the steel pipe manufacturer and not exceeding recommendations in AWWA M11 (latest edition) and AWWA C206 (latest edition) considering type of installation (for instance weld after backfill vs. open trench welding).
 4. Install special temperature control joints as indicated on Shop Drawings.
 5. Design, furnish and install a pipeline temperature monitoring system consisting of thermocouple temperature gauges to monitor temperature of steel pipe wall in trench. Gauges shall be located at top inside surface of pipe at intervals not exceeding 50 feet. Hand held portable temperature sensor devices may be used, provided temperature readings are taken at top of pipe at a frequency and spacing that demonstrates compliance with temperature control requirements.
 6. Temperature Control Requirements:
 - a. Prior to and during placement of pipe backfill, pipeline steel temperature shall be at or below 90 degrees F. Monitor specified temperature and control for at least 3 hours after placement of pipe backfill. Provide supplemental cooling as required.
 - b. Place pipe backfill from a single heading starting at one special temperature control joint and proceed toward next special temperature control joint.
 - c. During period of pipe backfill placement, pipeline section that is partially backfilled shall be shaded as indicated in above. Temperature of partially backfilled pipe shall not be allowed to exceed 110 degrees F. Provide supplemental cooling as required.

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- d. Prior to welding special temperature control joints, pipeline extending 300 feet (or as recommended by steel manufacturer) each direction from joint shall be maintained at or below 85 degrees F. Additionally, pipeline extending 300 feet (or as recommended by steel manufacturer) each direction from joint shall be backfilled to at least 1 foot over top of pipe. Weld special temperature control joint at specified temperature of 90 degrees or below. Begin and complete weld during coolest time interval of the 24-hour day. Use pipeline temperature monitoring system data to demonstrate to Engineer coolest interval of the day. After field welding of special temperature control joint, pipe temperature for 150 feet in each direction shall be maintained below 110 degrees F for a minimum of 24 hours after special temperature control joint area has been backfilled to at least 1 foot over top of pipe.

C. Cleaning

1. Prevent the accumulation of weld rod, weld spatter, pipe cuttings and filings, gravel, cleaning rags, and other foreign material within piping sections during fabrication. The piping shall be examined to assure removal of these and other foreign objects prior to assembly and installation. Installed pipe shall be temporarily plugged at the end of each work day.
2. All installed pipe ends shall be sealed and made watertight at the end of each work day.

3.4 FIELD WELDED JOINTS

A. Sample joints for approval and standard of quality:

1. Before the onset of pipeline construction, the Contractor shall weld together 3 pieces of steel pipe, each of two foot length. The Contractor shall complete two welded joints of the sample steel pipeline and suspend further joint welding in order for the Welding Inspector and Engineer to perform a complete weld examination.
2. When the Welding Inspector is satisfied with the two sample joints, he/she shall notify the Engineer with written approval.
3. Only after the Welding Inspector and Engineer have approved the first two sample joints in writing, the Contractor shall be permitted to begin welding joints for pipeline installation.
 - a. The sample pipe and sample joints and will not be part of the permanent pipeline installation.
 - b. Disapproved sample joints shall be replaced or repaired at the Contractors expense until deemed satisfactory to the Welding Inspector.
 - c. The approved sample joints shall be used as standard of quality for all welded joints. Any pipeline joints that do not meet this standard as determined by the Welding Inspector shall be replaced or repaired at the Contractor's expense.
- d. Perform welding only in presence of Contractor's Field Inspector.

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- e. Conform to AWS D1.1/D1.1M, AWWA C206, approved welding procedures, and referenced welding codes. In case of conflict AWS D1.1/D1.1M shall govern.
- f. Preheat and Interpass temperature requirements for unlisted base metals shall be determined according to AWS D1.1/D1.1M, Annex XI Guideline on Alternative Methods for Determining Preheat.
- g. Rejectable weld defects shall be repaired or redone and retested until sound weld metal has been deposited in accordance with appropriate welding codes.
- h. Remove surface rust prior to performing the weld.

3.5 REPAIR OF SHOP-APPLIED COATINGS:

- A. Exterior surfaces of steel pipe and fittings shall be inspected upon delivery to Site and just prior to backfilling trench.
- B. Repair of Coating: Field repairs shall be made in accordance with requirements of coating system specified.
- C. All damaged linings and coatings shall be repaired prior to backfill.

3.6 COATING OF FIELD-WELDED JOINTS:

- A. Provide coating repair as required for coating system specified and selected.
- B. Coat as recommended by the steel pipe manufacturer with the selected coating system provided.
- C. Weld After Backfill (WAB) using heat shrink sleeves:
 - 1. Welding from the inside of the pipe after backfilling shall only be used on single-lap welded joints.
 - 2. Apply heat shrink sleeves prior to internal welding of pipe using approved procedure compatible with coating system.
 - 3. Install heat shrink joint system in accordance with manufacturer's recommendation
 - a. Install heat resistant underlay, if required by manufacturer, as shown in Drawings
 - 4. Provide services of technical representative or manufacturer available on site at beginning of pipe laying operations.
 - a. Representative to advise contractor regarding installation, repairs, and general construction methods.
 - b. Installations using this method shall be quality controlled by verification.
 - 1) At least three (3) randomly selected joints within the first twenty (20) joints shall be buried, welded, and then subsequently excavated/exposed to

STEEL WATER LINE

verify that the pipe coating system has performed as specified. This process shall be repeated should the field welding procedure change.

- 2) The heat shrink sleeve representative and Resident Project Representative shall witness excavation to verify that the coating system is performing appropriately. The heat shrink representative shall be coordinated and paid for by the Contractor at no additional cost to the Owner.

3.7 FIELD-APPLIED CEMENT-MORTAR LINING:

A. General:

1. Except for requirements specified in this section, lining of steel pipe shall be in accordance with AWWA C602.
2. After joints are welded, tested, and coated, begin cleaning and lining operation.
 - a. Access for cleaning and lining operations shall be at pipe access manways or pipe ends. No cutting of openings in pipe will be allowed, unless approved in writing by Engineer.
 - b. Upon approval by Engineer, openings may be cut into pipe in order to gain entry for placing lining. Repair of openings, welding, repair of coatings, and backfilling shall conform to other portions of these Specifications.
3. Internal Cleaning:
 - a. Prior to placing lining, pipe shall be thoroughly cleaned of foreign matter, including water.
 - b. Cleaning may be by hand or mechanical method that is approved by Engineer.
 - c. Waste materials and water from cleaning operations shall not be passed through sections of existing pipe or pipe that has already been lined.
4. Protection of Appurtenances:
 - a. Prevent mortar from being thrown into pipe openings in accordance with AWWA C602.
 - b. Outlet openings shall be trimmed, smoothed, and beveled.
 - c. Damaged or defective areas shall be repaired to satisfaction of Engineer.

3.8 CEMENT-MORTAR LINING APPLICATION AT JOINTS:

- A. Cement-Mortar Lining: For pipe with shop-applied cement-mortar lining, place lining at joints in accordance with AWWA C205, latest edition.

3.9 PIPING EXPANSION AND CONTRACTION PROVISIONS

- A. The piping shall be installed to allow for thermal expansion and contraction resulting from the difference between installation and operating temperatures. Anchors shall be installed as shown in the contract drawings to withstand expansion thrust loads and to direct and control thermal expansion.

STEEL WATER LINE

3.10 PIPE FLANGES

- A. Pipe flanges shall be set level, plumb, and aligned. Flanges shall be installed true and perpendicular to the axis of the pipe. The bolt holes shall be concentric to the centerline of the pipe and shall straddle the vertical centerline of the pipe.
1. Clean flanges by wire brushing before installing flanged fittings. Clean flange bolts and nuts by wire brushing; lubricate bolts with graphite.
 2. Insert the nuts and bolts (or studs), finger tighten, and progressively tighten diametrically opposite bolts uniformly around the flange to the proper tension.
 3. Execute care when tightening joints to prevent undue strain upon valves, pumps and other equipment.
 4. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reset or replace the gasket, reinstall or re-tighten the bolts and nuts, and retest the joints.

3.11 FIELD QUALITY CONTROL

- A. Field weld quality control:
1. All welds, 100 percent inspection, shall be VT inspected by Contractor's Field Inspector and marked to indicate acceptance or rejection.
 2. Test butt-strap or double-welded lap joint welds by pressurizing connection between the two fillet welds in accordance with AWWA C206.
 - a. Apply air or other Engineer-approved gas into connection between the two fillet welds.
 - b. Paint welds with soap solution.
 - c. Mark leaks indicated by escaping gas bubbles.
 - d. Close threaded openings with flush pipe plugs or by welding them.
 3. CJP Welds:
 - a. Inspect 10 percent of butt joint welds with full circumference RT.
 - b. Inspect 10 percent of other groove welds with UT.
 4. Inspect 10 percent of lap joint welds with PT or MT.
 5. Weld Acceptance:
 - a. If, in the opinion of Engineer, inspections indicate inadequate quality of welds, percentage of welds inspected shall be increased.
 - b. Welds to be inspected, if less than 100 percent rate, shall be selected at random by Resident Project Representative.
 - c. VT: Perform VT per AWS D1.1/D1.1M Paragraph 6.9, Visual Inspection, Statically Loaded Nontubular Connections.
 - d. UT: Perform UT of CJP groove welds in accordance with AWS D1.1/D1.1M, Paragraph 6.13.1.
 - e. RT: Perform RT of CJP butt joint welds in accordance with AWS D1.1/D1.1M, Paragraph 6.12.1.
 - f. PT or MT:
 - a) Perform on fillet and PJP groove welds in accordance with AWS D1.1/D1.1M, Paragraph 6.10.
 - b) Acceptance shall be in accordance with VT standards specified above.

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- g. Remove in manner that permits proper and complete repair by welding.
 - h. Caulking or peening of defective welds is not permitted.
 - i. Retest unsatisfactory welds.
6. Verification Acceptance: Engineer may conduct random nondestructive inspections of field-welded joints. Inspections will be of an appropriate type for weld being evaluated. Possible types of inspection include, but are not limited to, RT, UT, PT, and VT. Testing will be performed and evaluated per AWS D1.1/D1.1M.

B. Nondestructive Testing (NDT)

- 1. At the direction of the Engineer, the contractor shall perform a non-destructive test on field welded connections of the pipe. This testing includes testing by 100 percent magnetic particle testing using acceptance criteria as stated in AWS D1.1 or 100 percent ultrasonic testing using methods and acceptance criteria in ASME Sec. VIII, Division 1. The method used shall be at the discretion/direction of the Engineer.
- 2. If the NDT determines that a weld is unacceptable or “defective”, the Contractor shall submit a plan for remedial action to the Engineer for approval. All labor and materials required to perform remedial actions shall be provided at no cost to the Owner and with no extension of the contract time.
 - a. Remediated field connections shall have a NDT performed to verify integrity.
- 3. Submit all NDT reports to Engineer for review.

3.12 ACCEPTANCE TESTING AND INSPECTION

A. Closed Circuit Television (CCTV) Inspection:

- 1. The Contractor shall televise and digitally record the installed pipeline as follows:
 - a. The Contractor shall clean all lines thoroughly prior to the start of televising.
 - b. The Contractor shall televise and digitally record each segment of pipe and each joint.
 - c. The camera shall be moved through the line at a uniform slow rate not to exceed 30 feet per minute, by means of cable winches, or similar mechanisms. While moving, the location of the camera along the pipeline shall be documented continuously. Under no circumstances shall the camera be tethered to a hydraulically propelled or high-velocity jet cleaning device or any device that will harm the interior coating while the cleaning device is on.
 - d. The Contractor shall review the video for possible defects in material or workmanship.
 - e. The Contractor shall correct any defects discovered during the television inspection at the Contractor’s expense.
 - f. The Contractor shall deliver to the Engineer a final video of the inspection of all CCTV inspections prior to and after all defects have been repaired.
 - g. All equipment shall be clean and disinfected before insertion into the pipeline.

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- B. Hydrostatic & Leakage Testing
1. Hydrostatic Pressure and Leakage Testing shall be performed after CCTV inspection has been completed.
 2. 100% of the newly installed and existing water lines shall be hydrostatically tested in accordance with the recommendation of AWWA M11, Chapter 12.
 - a. As modified herein and detailed in Section 2.3.
 - b. At no additional cost to Owner.
 3. General:
 - a. Notify Engineer in writing seven (7) days prior to testing. Perform testing in presence of Owner's Representative.
 - b. Test 100% of newly installed pipelines.
 - c. Contractor shall provide all test water at no additional cost.
 - d. Using clear, clean, oil free, and alkali free water as test medium, pipes shall successfully pass a leakage test prior to acceptance.
 - a) Pressure testing with air as a medium is not acceptable.
 - e. Contractor shall furnish all testing equipment and perform tests in manner satisfactory to Engineer. Testing equipment shall provide observable and accurate measurements of make-up water under specified conditions.
 - f. Isolate new pipelines that are connected to existing pipelines.
 - g. Isolate separate water line test segments from other test segments per the test pressure requirements detailed in this specification section.
 - h. Contractor is responsible for providing valving, bulkheads, and/or plugs as required to separate test segments.
 - i. Contractor shall provide an over-pressurization valve (pressure safety valve) near the test pump correctly calibrated to open and expel water in the event of over pressurization.
 - j. Conduct field hydrostatic test on all completed piping segments. Testing may, as approved by Engineer, be done prior to placement of asphaltic concrete or roadway structural section.
 - k. Contractor may, if field conditions permit and as determined by Engineer, partially backfill trench and leave joints open for inspection and conduct an initial service leak test. Final field hydrostatic test shall not, however, be conducted until backfilling has been completed as specified above.
 - l. Dispose of water used in testing in accordance with federal, state, and local requirements at no additional cost.
 4. Procedure:
 - a. Maximum filling velocity shall not exceed 0.25 foot per second, calculated based on the full area of pipe.
 - b. Expel air from pipe system during filling. Expel air through air release valves or through corporation stop installed at high points and other strategic points.
 - c. Test Pressure:
 - 1) Hydrostatic test pressures shall be per the table herein.

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- 2) Do not deviate more than 10 feet in either direction from the indicated locations/stations.
- 3) Test “pressure” is represented as a test hydraulic grade line. The indicated hydraulic gradient may be applied at any point within the tested segment.
- 4) Gage pressure (psi) at point of application must be calculated based upon the vertical elevation of the test equipment.
- 5) Over pressurization device (pressure safety valve) must be included in the test section and calibrated to release water safely to the atmosphere at pressures greater than 15 psi over the calculated test pressure at the pressure safety valve location.
- 6) It is NOT acceptable to test the pipeline in alternative segments or at pressures greater than or less than those indicated. This may result in internal pressures above those used for the pipeline design.
- 7) Maintain hydrostatic test pressure continuously for 2 hours minimum. Maintain pressure throughout test +/- 1 psi of required test pressure.
- 8) Allowable Make-up Water:
 - a) Leakage test shall be conducted concurrently with the pressure test on push-on gasketed water lines. Acceptable when leakage does not exceed that determined by the following formula:

$$L = \frac{S \cdot D \cdot \sqrt{P}}{148,000}$$

L = Allowable Leakage in gallons per hour
 S = Length of pipe tested, in feet
 D = Nominal diameter of pipe, in inches
 P = Average test pressure during the hydrostatic test, in PSI

When testing against existing closed valves, an additional leakage per closed valve of 0.0078 gal/hr/in of nominal valve size shall be allowed.
 - b) For pipe with fully welded joints, no make-up water is allowed.
- 9) Potable water shall be used for disinfection, hydrostatic pressure testing, and any flushing operation. Drainage shall take place away from the construction or work area. Adequate drainage must be provided during flushing and must prevent erosion or scouring in a manner that is acceptable to the ENGINEER.
- 10) Chlorinated water shall be thoroughly neutralized in accordance to methods outlined in AWWA C655, latest revision.

C. Disinfection and Bacteriological Testing

1. Disinfection

- a. All materials, work, workmanship and methods shall be in accordance with AWWA C651, latest revision, for Disinfecting Water Mains.

STEEL WATER LINE

- b. The form of chlorine used for the disinfection may be either a liquid chlorine gas-water mixture applied by means of a solution-feed chlorinating device, or a mixture of water and a chlorine-bearing compound of known chlorine content. The chlorine-bearing compounds that may be used can be found in AWWA C651, latest revision. The preparation of these compounds shall be in accordance with AWWA C651, latest revision.
 - c. Potable water shall be used for disinfection, hydrostatic pressure testing, and any flushing operation. Drainage shall take place away from the construction or work area. Adequate drainage must be provided during flushing and must prevent erosion or scouring in a manner that is acceptable to the ENGINEER.
 - d. Chlorinated water shall be thoroughly neutralized in accordance to methods outlined in AWWA C655, latest revision.
2. Bacteriological Testing
- a. Samples of water collected by the Contractor in accordance with AWWA C651, latest revision. The samples shall be submitted for analysis to the Arkansas Department of Health (ADH). A copy of the test results from ADH shall be furnished to the Engineer. The Engineer must provide the City of Fort Smith Utility Department a copy for review.
 - b. The disinfection procedures outlined in this section shall be repeated as necessary until two consecutive samples indicate that the water is safe as determined by the ADH. Two copies of the test results from ADH shall be provided to the Engineer. The Engineer shall provide one copy to the City of Fort Smith Utility Department.

3.13 MANUFACTURER'S SERVICES AND CERTIFICATION REQUIREMENTS

A. Manufacturer's Services:

- 1. Manufacturer's representative available at Site for installation assistance and training of pipe installation crews.
 - a. Coordinate pipe manufacturer's representative services.
 - b. Pipe manufacturer's representative shall visit Site and instruct, guide, and provide procedures for pipe handling, laying, and jointing at start of pipe installation by each crew.

B. Pipe Manufacturer's Pipe School And Certification:

- 1. Prior to, and at the start of construction, Contractor shall require that the pipe manufacturer provide an experienced field representative to instruct and train CONTRACTOR's crews regarding pipe and fitting installation requirements. Pipe manufacturer's representative shall be available during construction start-up in order to assure Engineer that Contractor's crews understand and can properly install pipe in accordance with these Specifications and manufacturer's installation procedures. Contractor shall require that the manufacturer's representative shall not leave the project until Engineer and CONTRACTOR

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agree CONTRACTOR's crews are adequately trained and have successfully installed adequate footage to verify the quality of the installation. All new pipe crews shall be required to receive the same training by pipe manufacturer. Pipe manufacturer's representative shall complete and provide Engineer with a certification within 30 days after the completion of training.

2. Contractor shall provide a minimum of two weeks (14 days) written notice to Pipe Manufacturer and Fitting Technical Representatives and Engineer prior to actual start date of initial pipe installation field training. Contractor shall schedule start of work so that field training class can be conducted early in the week on Tuesday or Wednesday with full operations scheduled for the rest of the working week to allow technical representatives' specified observations to be completed during that same trip.
3. All equipment, materials, labor, and test instruments shall be on-site and available to allow full production to start immediately following the start-up training during the same field trip. This will allow the required observation of actual production procedures including quality control testing and record keeping by the Engineer and manufacturer technical representatives. If full production does not start during that field trip, and a second trip is required, then the Contractor is responsible for the additional costs of Engineer and Coating Manufacturer's technical representatives to return to site to observe Contractor's full production procedures, quality control testing, and record keeping.
4. After the initial training, the Contractor shall require that the pipe manufacturer's technical representative shall visit the job site on a regular basis (while pipe installation is occurring) in order to observe that the Contractor is adhering to the pipe manufacturer's recommendations (including handling, installation, jointing, etc.).
 - a. The Contractor shall require that the pipe manufacturer's field representative prepare a report of each site visit. The Contractor shall submit this report to the Engineer. The report shall be signed by the representative and should include, but not be limited, to action items and corrective actions to be made by the Contractor to correct and install the pipeline per the manufacturer's recommendations.

3.14 FINAL COMPLETION

- A. At final completion, Contractor shall seal all openings and completely fill the pipeline.

STEEL WATER LINE

3.15 MEASUREMENT AND PAYMENT

A. Steel Water Line

1. Pipeline shall be paid based on the linear foot of the various sizes and types of water lines and will be measured along the centerline of the pipe from center of fitting to center of fitting or to the end of the pipeline. No deduction will be made for fittings.
2. The price bid shall include, but not be limited to, the pipe material indicated, all fittings, gaskets, bolts, manways, dished heads, all labor, training and certifications, equipment, appurtenances not specifically paid for in other sections, construction and installation of pipeline fixed support at center of bridge, welding, lining, coating, all testing, evaluations, inspections, cleanup after testing, and all other work and material incidental to install the water line as shown or indicated in the CONTRACT DOCUMENTS.

Payment will be made under:

Pay Item	Pay Unit
STEEL WATER LINE (36-INCH)	LINEAR FOOT

END OF SECTION

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

WATER LINE APPURTENANCES

PART 1 - GENERAL

1.1 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. Unless otherwise stated, the latest edition for any commercial standards and all manufacturing tolerances referenced therein shall apply.
1. American Water Works Association (AWWA)
 - a. C105 – Polyethylene Encasement for Ductile-Iron Pipe Systems
 - b. C116 – Protective Fusion-Bonded Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray Iron Fittings
 - c. C153 – Ductile-Iron Compact Fittings
 - d. C207 – Steel Pipe Flanges for Waterworks Service, Sizes 4 In. Through 144 In. (100 mm Through 3,600 mm)
 - e. C213 - Fusion-Bonded Epoxy Coatings and Linings for Steel Water Pipe and Fittings
 2. American Society of Testing and Materials (ASTM)
 - a. A536 – Standard Specification for Ductile Iron Castings
 3. NSF Standard 61, Drinking Water System Components
 4. Society for Protective Coatings, formerly Steel Structure Painting Council (SSPC)
 - a. SP5, White Metal Blast Cleaning

1.2 SUBMITTALS

1. The following shall be submitted in accordance with the project submittal procedures.
2. Shop Drawings
 - a. Flexible Expansion Joints
 - b. Blind Flanges
 - c. Ball Valves
 - d. Adjustable Pipe Roller Supports

1.3 PROJECT/SITE CONDITIONS

1. The Contractor shall notify the Engineer in writing of any concerns or issues prior to equipment installations.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. General

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

WATER LINE APPURTENANCES

1. All material must be of domestic manufacture and in accordance with the standards herein. **Foreign made materials (pipe, fittings, flanges, etc.) are strictly prohibited.**
2. Materials shall comply with the requirements of the Safe Drinking Water Act and other applicable federal and state regulations.

B. Identification and Tagging

1. Each piece of pipe, valve, fitting, or appurtenance shall bear the ASTM and/or AWWA designation and all other markings required for that designation.

2.2 FLEXIBLE EXPANSION JOINTS

1. EBAA Iron – 36-Inch Force Balanced Flex-Tend
 - a. Flexible expansion joints shall be installed in the locations indicated on the drawings and shall be manufactured of ductile iron conforming to the material requirements of ASTM A536 and ANSI/AWWA C153/A21.53. Foundry certification of material shall be readily available upon request.
 - b. Each flexible expansion joint shall be pressure tested prior to shipment against its own restraint to a minimum of 250 PSI. A minimum 2:1 safety factor, determined from the published pressure rating, shall apply.
 - c. Each flexible expansion joint shall consist of an expansion joint designed and cast as an integral part of a ball and socket type flexible joint, having a minimum per ball deflection of 15° for 36-inch. The flexible expansion fitting shall not expand or exert an axial imparting thrust under internal water pressure. The flexible expansion fitting shall not increase or decrease the internal water volume as the unit expands or contracts. The minimum total linear travel shall be 16-inches.
 - d. All internal surfaces (wetted parts) shall be lined with a minimum of 15 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C213. Sealing gaskets shall be constructed of EPDM. The coating shall meet ANSI/NSF-61.
 - e. Exterior surfaces shall be coated with a minimum of 6 mils of fusion bonded epoxy conforming to the applicable requirements of ANSI/AWWA C116/A21.16. 6. Polyethylene sleeves, meeting ANSI/AWWA C105/A21.5, shall be included for all applications.

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- f. Manufacturer's certification of compliance to the above standards and requirements shall be readily available upon request. The purchaser, engineer, or owner shall reserve the right to inspect the manufacturer's facility for compliance. All flexible expansion joints shall be the FORCE BALANCED FLEX-TEND as manufactured by EBAA Iron, Inc. Eastland, TX., U.S.A.

2.3 BLIND FLANGES**A. 24-Inch Blind Flange(24-Inch)**

1. 24-inch blind flanges shall be provided and installed at each manway in locations shown on the plans.
2. Blind flanges shall be of Type E as detailed in the latest revision of AWWA C207.
3. Blind flange drilling and machine facing shall match the mating flange.
4. Shall include a 2-inch sample tap with a 2-inch ball valve and a plug to be attached to the valve at the completion of water line testing.
5. Contractor shall ensure that bolt hole drilling pattern shall match mating piping, valves, fittings, or other appurtenances.

2.4 BALL VALVES**A. Ball Valve (2-Inch)**

1. Ball valves shall be attached on two-inch NTP threaded port openings.
2. Valves and valve ports shall be located at the following location:
 - a. Two valves and valve ports shall be located at the pipeline high point near Bent 14. Location to be detailed on shop plans.
 - b. One valve and valve port located at the center of pipe of each dished end cap. (Two total)
 - c. One valve and valve port located at the center of each 24-inch manway blind flange. (Two total)
3. Ball valves shall have a working pressure rating not less than 300 psi and be lead free and NSF 61 compliant.
4. Ball valve external opening shall have an NTP threaded capped installed after final testing and filling is complete to prevent debris from coming in contact with the internal portion of the ball valve.
5. Valve shall be a two-inch NIBCO Two-Piece Bronze Ball Valve, Lead Free, Threaded, Full Port, or ENGINEER approved equal.

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2.5 PIPE ROLLER SUPPORTS

A. Adjustable pipe roller support

1. Adjustable pipe roller supports will support the pipeline and allow for longitudinal movement due to expansion and contraction that may occur due to thermal expansion and where vertical and lateral adjustments during installation may be required.
2. Adjustable pipe roller supports shall be installed at each pipe support, as indicated on the plans, on the top and the bottom of the pipe.
3. Contractor to ensure proper fit of each roller in the adjustable pipe roller assembly in order to properly support the water line.
4. Contractor is required to ensure that each pipe roller support is able to be properly raised or lowered in order to provide the correct amount of support.
5. Pipe rollers must include a protective resilient coating or be non-conductive in order to prevent the passing of current between the water line and the structure.
6. Roller support and associated appurtenances must be able to support the max weight of a water filled pipeline. Pipeline weight and volume of water per foot will be determined by the pipe manufacturer but shall not exceed 665 pounds per foot.
7. Any required base plate or other support structure that may needed will be considered incidental to the adjustable pipe roller support.

PART 3 - EXECUTION

3.1 EXAMINATION

1. After becoming familiar with all details of the work, verify all dimensions in the field, and advise the Engineer of any discrepancy before performing the work.
2. Verify size, material, joint types, elevation, horizontal location, and pipe service of existing pipelines to be connected to new pipelines or new equipment.

3.2 PREPARATION

1. System Preparation
Pipe and fittings shall be inspected before exposed piping is installed. Clean the ends of pipes thoroughly, remove foreign matter and dirt from inside of pipes, and keep piping clean during and after installation.
2. Field Assembly
Notify the Engineer at least 2 weeks prior to field assembly of pipe, fittings, and appurtenances and at least 3 days prior to the start of any surface preparation or coating application work.

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3.3 INSTALLATION

A. EBAA Iron – 36-Inch Force Balanced Flex-Tend

1. EBAA Iron – 36-inch Force Balanced Flex-Tend devices shall be installed per the manufacturer’s recommendations; including, but not limited to, inspection, assembly flanged connections, proper installation of the O-ring and bolts in the manner required.
2. Polyethylene sleeve shall be installed with the unit.
3. Estimated weight is 11,158 lbs based on manufacturer’s documentation.

B. Air Release, Drains, and Sample, and Valve Ports

1. Valve ports shall be provided where indicated on the contract drawings or as detailed in the specifications.
2. Valve ports shall be NPT threaded to allow for the attachment of a 2-inch ball valve.
3. The specified valve ports located at piping high points will be located for future air valve installation to allow for release of entrapped air.
4. One valve port shall be installed at the center of pipe on each of the dished ends.
5. One valve port located at the center of each 24-inch manway blind flange.
6. ENGINEER may approve larger ports and valves to be located on the piping if requested by the Contractor, for their convenience, in support of filling operations. No additional payment will be made for larger ports or valves.

3.4 MEASUREMENT AND PAYMENT

A. Flexible Expansion Joint

1. Quantities of the 36-Inch EBAA Iron Force Balanced Flex-Tend will be the actual number installed by the CONTRACTOR and approved by the ENGINEER. The price bid shall include, but not be limited to: the 36-Inch EBAA Iron Force Balanced Flex-Tend, all labor, necessary equipment, welding, coating work, lining work, supports, and all other work incidental to place the flexible expansion joint as shown or indicated in the Contract Documents.

B. Blind Flange

1. Quantities of the blind flange will be the actual number and size installed by the CONTRACTOR and approved by the ENGINEER. The price bid shall include, but not be limited to: the blind flange, all labor, necessary equipment, welding, coating work, lining work, gaskets, nuts, bolts and all other work incidental to install the blind flange and the associated port connection as shown or indicated in the Contract Documents. Valves and valve

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ports that are located on the blind flanges shall be paid for under the Ball Valve pay item.

C. Ball Valve

1. Quantities of the ball valves will be the actual number and size installed by the CONTRACTOR and approved by the ENGINEER.
The price bid shall include, but not be limited to: the valve, valve port (pipe opening and boss), valve plug, all labor, necessary equipment, welding, coating work, lining work, supports, and all other work incidental to place the ball valve, valve port, valve cap, and the associated port connection as shown or indicated in the Contract Documents. Valves and valve ports that are located on the blind flanges will be paid under this pay item.

D. Adjustable Pipe Roller Support

1. Quantities of the adjustable pipe roller supports will be the actual number installed by the CONTRACTOR and approved by the ENGINEER.
The price bid shall include, but not be limited to: the pipe roller, stand, base plate, threaded rods, WT-member, angle, all other hardware, labor, welding, equipment, and all other work incidental to correctly install the adjustable pipe roll as detailed by the manufacturer or as indicated in the Contract Documents.

Payment will be made under:

Pay Item	Pay Unit
FLEXIBLE EXPANSION JOINT – 36-INCH EBAA IRON – FORCE BALANCE FLEX-TEND	EACH
BLIND FLANGE (24-INCH)	EACH
BALL VALVE (2-INCH)	EACH
ADJUSTABLE PIPE ROLLER SUPPORT	EACH

END OF SECTION

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ARCHEOLOGICAL MONITORING

Description. Archeological monitoring of a segment of this project is required by the State Historic Preservation Officer; therefore, the Contractor must hire a Secretary of Interior (SOI) qualified archeologist to monitor construction activity between Stations 58+44 and 67+15 Right of Gun Club Road (offset 53 feet) and document the findings in that area. Notification of these planned activities within the noted area must be sent two weeks prior to any construction activities through the Engineer to the email address EnvironmentalClearance@arkansashighways.com. A copy of the final monitoring report shall be submitted to the Engineer and the Environmental Division for review.

Construction Methods. The SOI archeologist should be present for any ground-disturbing activities, such as clearing and grubbing, stripping of topsoil, and excavating below the existing grade. If burials or evidence of burials is encountered, the project will be halted, the county sheriff, coroner, and the Arkansas Historic Preservation Program will be notified, and the procedures outlined in the Arkansas Burial Laws (Act 753 and Act 1533 [1991/1999]) and the Department's Section 106 Programmatic Agreement will be followed.

Contractor Compliance. Potential discoveries on the Right-of-Way will be addressed by Section 107.10(b) & (d)(1) of the Standard Specifications for Highway Construction, Edition of 2014. Refer to Section 104.02 (c) Differing Site Conditions for information related to potential changes in site conditions.

Contractor Negligence. The Contractor will be assessed the amount of any and all fines and penalties assessed against, and costs incurred by the Department which are the results of the Contractor's failure to comply with the notification required by this Special Provision. The Department will not be responsible for any delays or costs due to the Contractor's failure with this Special Provision. The Contractor will not be granted additional compensation or contract time due to noncompliance.

Method of Measurement and Basis of Payment. All costs incurred in complying with this Special Provision will not be measured or paid for separately but will be considered included in the contract unit prices bid for other items of the contract.

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DESCRIPTION: This special provision shall establish the contract item, River Traffic Safety, to cover the protection of boating and other vessel traffic from any dangers which might result from the construction of the Arkansas River Bridge. This item shall also consist of furnishing, installing, maintaining and removing temporary signs, warning lights and all other safety features.

All Contractor barges, boats, work platforms, or equipment being used in the Arkansas River shall be lighted in accordance with U.S. Coast Guard Navigation Rules International-Inland waterways and Arkansas Game and Fish regulations. All construction operations in or over the river shall conform to the permit requirements and conditions or directions of the District Engineer, U.S. Army Corps of Engineers, U.S. Coast Guard, and/or any authority having jurisdiction.

This special provision requires the use of a "safety platform(s)" to protect river traffic during construction of the Arkansas River Bridge, which shall be paid for at the contract unit price bid for River Traffic Safety.

CONSTRUCTION REQUIREMENTS: The Contractor shall submit a plan to the Engineer for approval from the Little Rock District Corps of Engineers and U.S. Coast Guard that detail the Contractor's plans for protection of river traffic 30 days prior to any work commencing above the Arkansas River. The Engineer will provide the contact name and information for the Little Rock District Corps of Engineers Navigation Branch and the local U.S. Coast Guard office.

The Contractor shall be responsible to take all necessary steps to warn and protect river traffic from any dangers that might be encountered as a result of the construction of this project.

The Contractor shall install a sign or signs, as shown in Details A and B of this special provision, in a clearly visible position on either side of the construction zone in the Arkansas River and at all public boat ramps between Lock & Dam (L&D) Number 12 (Ozark Jetta-Taylor), Lock & Dam (L&D) Number 13 (James W. Trimble) and L&D No.14 (W.D. Mayo). As you travel downstream from L&D No. 14 the boat ramps are as follows: Below Lock No. 14 Boat Ramp (right bank of river), Lee Creek Park boat ramp (left bank of river at mouth of Lee Creek), Fort Smith Park boat ramp (right bank of river), Massard Creek boat ramps (right bank at mouth of Massard Creek), Springhill Park boat ramp (right bank), Clear Creek Park (left bank of river at mouth of Frog Bayou), River Ridge Park boat ramp (right bank), Vine Prairie Public Use Area (left bank of river at mouth of Mulberry River), and Aux Arc Park (South Park) (right bank of river). The Contractor shall coordinate the location, number of signs and method of installation of the signs through the Engineer, with the Engineer having final approval.

Safe Navigation Passage Channel: During construction of Arkansas River Bridge, a channel for safe passage shall be maintained through the Arkansas River Bridge construction area for river traffic, boats and other vessels. The remaining channel should be closed during this work. Buoys, floats, and lights shall be used to direct river traffic to use the safe navigation passage channel. **The safe navigation passage channel shall be maintained by the Contractor during working**

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and non-work hours.

Should the Contractor, during the progress of work, lose, throw overboard, sink or misplace any material, machinery, plant, or appliance which in the opinion of the Engineer may be dangerous or obstructive to navigation, the Contractor shall immediately recover and remove the same with dispatch. The Contractor shall give immediate notice, with the description and location of such obstruction to the District Engineer, Corps of Engineers, and U.S. Coast Guard; and when required, the Contractor shall mark or buoy such obstructions until the same are removed.

During erection of structural steel for the Arkansas River Bridge, boats shall not be allowed under a span while a piece of structural steel on that is being moved into position or before a steel girder is securely supported by falsework or by a permanent bent. River traffic in the navigation channel may be temporarily halted for short intervals of time, not to exceed 30 minutes or as directed by the Engineer, in order that potentially dangerous construction activities can be conducted without endangering the public. Flaggers in boats may be required, by the Contractor or as directed by the Engineer, to halt river traffic or to ensure boats and other vessels do not enter dangerous construction areas. Prior to "temporary closure" of the navigation channel, the Little Rock District Corps of Engineers Navigation Branch (501-324-5739), local U.S. Coast Guard office (501-227-6832), and St. Louis Coast Guard office (314-269-2378), Arkansas Game and Fish Commission (479-439-1705), City of Little Rock (501-371-4510), and the City of North Little Rock (501-975-8888) shall be notified by the Contractor, so they can respond to public inquiries.

Buoys, floats, signs and warning lights shall be installed and maintained in good condition. The Contractor shall certify weekly to the Engineer that the devices in use have been inspected on at least a daily basis and the any devices failing to comply with the requirements set out herein were corrected. The certification shall contain, at a minimum, the following information:

- Date and time of inspection
- Name of person performing the inspection
- Any deficiencies found and measures taken to correct the deficiencies.

Safety Platform(s): Before any span(s) is buoyed and marked for a safe passage and immediately after the erection of structural steel for any span(s) of the new bridge, a "safety platform" shall be constructed directly under the spans over the navigation channel span. The safety platform shall be constructed to the extent necessary, as directed by the Engineer, to protect boats and other vessels from falling objects. The Contractor must devise a method of support for the safety platform used. The safety platforms shall consist of timbers, heavier than plywood, capable of supporting any fallen material from the bridge construction. Safety platforms must maintain the vertical clearance required for the Arkansas River Navigation Channel, which is 52 ft from normal pool elevation or as approved by the United States Coast Guard in a temporary condition.

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Details for safety platform construction, complete with dimensions, design calculation, and kind and condition of materials, must be submitted to the Engineer for informational and record purposes prior to construction. These details must be prepared and/or approved by a Professional Engineer licensed in Arkansas and submitted to the U.S. Coast Guard and the Little Rock District Corps of Engineers 30 days prior to any activities occurring above the Arkansas River. The Contractor shall construct the platform in accordance with the details submitted to the Engineer and the results obtained by the use of the platform design are the Contractor's responsibility. Boat and other vessel traffic shall not be allowed under a portion of the safety platform being installed or removed.

MATERIALS: The materials, construction, and maintenance of the signs shall conform to the requirements of Section 604 of the Standard Specifications and the General Notes on Standard Drawing TC-1. A black, direct applied, non-reflective border and legend shall be used on the background of the signs. This background shall consist of AASHTO M 268 Type V retro-reflective sheeting. Legends shall utilize six-inch series "D" letters as shown in Standard Alphabets for Highway Signs' published by the Federal Highway Administration, U.S. Department of Transportation (Refer to Sign Detail A and B.).

All buoys shall have a 3-inch minimum width reflective band around the top. A line of individual buoys with white light heads shall be used to mark the Danger Area where the construction is actively occurring, and shall show a Danger Area symbol with a reflective message at least 3 inches tall saying, "DANGER", as shown in Detail C of this special provision. Green can buoys shall be used to mark the left side of the passage channel proceeding upstream. Red can buoys shall be used to mark the right side of the passage channel proceeding upstream. Green and Red can buoys will also have color coded reflective tape so they may be seen at night, or painted with reflective paint. Additionally, NO WAKE buoys shall be placed around the construction area to alert boaters of the "No-Wake" zones (in accordance with AGFC rules and regulations).

The anchoring device for buoys shall be in accordance with the manufacturer's recommendation and shall be sufficient to retain the buoys and barrier floats system in a relatively stable position at all water depths and velocities. Any anchor cables above the water surface, if approved, will have flagging and reflective tape placed no more than 3 feet apart to alert vessels of the cables.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT: The safety platform required during construction of the new bridge shall be paid for at the contract unit price bid for "River Traffic Safety", which price shall be full compensation for furnishing and placing materials and for all labor, equipment, tools, and incidental necessary to complete the work.

All other Contractor costs incurred in complying with the requirements of this special provision including placement of buoys and temporary warning lights to mark the passage channel and temporary warning lights on work platforms, boats and barges and other equipment in the

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Arkansas River, and placement of signs, will be paid for at the price bid for the contract item "River Traffic Safety", which price shall be full compensation for furnishing and placing materials and for all labor, equipment, tools, and incidental necessary to compete the work.

Payment will be made under:

Pay Item:	Pay Unit
River Traffic Safety	Lump Sum

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SIGN DETAIL

Detail A
60" X 36"

WARNING!
BRIDGE CONSTRUCTION
FOLLOW MARKED NAVIGATION
CHANNEL SLOW NO WAKE
ZONE

NOTE: ORANGE WITH BLACK LEGEND *NOT TO SCALE*

SIGN DETAIL

Detail B
60" X 36"

WARNING!
BRIDGE CONSTRUCTION
BRIDGE NO. 07684
FOLLOW MARKED
NAVIGATION CHANNEL

NOTE: ORANGE WITH BLACK LEGEND *NOT TO SCALE*

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**DANGER BUOY
DETAIL**

Detail C



NOT TO SCALE

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CATHODIC PROTECTION

PART 1 - GENERAL

1.0 DESCRIPTION

- A. Installation of cathodic protection components shall be in accordance with the following specifications and specific design elements contained in the Project Drawings.
- B. The cathodic protection components for the Fort Smith 9ft diameter pile casing will include prepackaged anodes, cathodic protection test stations, wiring, permanent reference electrodes and testing coupons.
- C. Upon completion of the work, a qualified Corrosion Engineer shall test, operate, inspect, and survey the installed work. Repair or replacement of defective or improperly installed cathodic protection/cathodic protection monitoring systems shall be corrected by the Contractor at no additional cost to the Owner.

1.01 PERFORMANCE REQUIREMENTS

- A. Engage a qualified Corrosion Engineer to oversee the installation and testing of the cathodic protection system. A qualified Corrosion Engineer is a person by reason of thorough knowledge of the physical sciences and the principals of engineering and mathematics acquired through professional education, who is qualified to engage in the practice of corrosion control engineering and is accredited or certified as being a specialist in their field of practice (Corrosion Specialist or Cathodic Protection Specialist) by the National Association of Corrosion Engineers (NACE).

1.1 REFERENCES

- A. The following is a list of the Standards referenced in this Section.
 - 1. American Society for Testing and Materials (ASTM)
 - a. ASTM A48: Specification for Gray Iron Castings
 - b. ASTM C31: Test Methods for Making and Curing Concrete Test Specimens in the Field

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- c. ASTM C39: Test Method for Compressive Strength of Cylindrical Concrete Specimens
 - d. ASTM C94 Specification for Ready-Mixed Concrete
 - e. ASTM B843: Standard Specification for Magnesium Alloy
 - f. ASTM B3: Standard Specification for Soft or Annealed Copper Wire
 - g. ASTM B8: Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
 - h. ASTM D1248 Standard Specification for Polyethylene Plastics
2. Society for Protective Coatings (SSPC)
- a. SSPC SP3: Surface Preparation Specification No. 3, Power Tool Cleaning
3. National Association of Corrosion Engineers (NACE)
- a. Standard Practice SP0169-2013 – Control of External Corrosion on Underground or Submerged Metallic Piping Systems
 - b. Standard Practice SP0200-2023 – Steel Cased Pipeline Practices–
 - c. Standard Practice SP0286-2007 – Electrical Isolation of Cathodically Protected Pipelines
 - d. Standard Practice SP0775-2023 – Preparation, Installation, Analysis, and Interpretation of Corrosion Coupons in Hydrocarbon Operations
4. Society for Protective Coatings (SSPC)
- a. SSPC SP3: Surface Preparation Specification No. 3, Power Tool Cleaning
5. NSF International
- a. NSF 61 Drinking Water System Components - Health Effects

CATHODIC PROTECTION

6. US Department of Transportation
 - a. US DOT H-20: Roadway Delineation Practices Handbook

1.2 SUBMITTALS

- A. Qualifications of the qualified corrosion engineer shall be submitted for approval by the Burns & McDonnell project Corrosion Engineer.
- B. Product Data for each of the following items:
 1. Anodes
 2. Wire and Cable
 3. Test Stations
 4. Exothermic weld materials
 5. Coupons
 6. Gasket Isolation Kits
 7. Shunts
 8. Splicing Material
- C. Field quality control test report.

1.3 PROJECT/SITE CONDITIONS

- A. All materials shall be delivered and stored in packaging as provided by the manufacturer. Delivery shall be to the project site or to the installing contractor. Upon delivery, all materials shall be inspected to ensure all the count is as ordered, items are as undamaged, as identified in this specification or are an approved equal. All damaged materials shall be replaced at the contractor's expense. Anodes exhibiting cured backfill, those that have a punctured cloth sack, or any anode that is broken shall be rejected and replaced at the contractor's expense. Wire or cable that is kinked or shows damage to the shielding shall be rejected.
- B. Materials shall be handled such that wiring, anodes and coupons are given the highest possible care. Anodes shall be protected from exposure to rain and direct sunlight. All materials shall be kept off the ground and covered or contained in their original packaging until installation.

PART 2 – PRODUCTS

2.1 PREPACKAGED MAGNESIUM ANODES

CATHODIC PROTECTION

- A. Each anode shall have a nominal weight of 20 pounds, excluding backfill. The anode ingot shall be 56.75 inches long, 3 inches tall and 2.75 inches wide.
- B. Composition of the anode shall be as follows:
- | | |
|-----------|----------------|
| Aluminum | 0.01% Maximum |
| Manganese | 0.5 to 1.3% |
| Copper | 0.02% Maximum |
| Nickel | 0.001% Maximum |
| Iron | 0.03% Maximum |
| Silicon | 0.05% Maximum |
| Other | 0.05% Each |
| Magnesium | Remainder |
- C. The 20-pound anodes shall be packaged in permeable cloth sack, with packaged dimensions of 66 inches long with a 5.5-inch diameter.
- D. The packaged anode weight shall be 70 pounds. Backfill materials shall be prepackaged in a water permeable sack or cloth bag. Anodes shall be factory assembled and centered in the packaged backfill using a method that results in dense packing. The backfill material shall have the following composition:
- | | |
|-----------------|-----|
| Hydrated Gypsum | 75% |
| Bentonite | 20% |
| Sodium Sulfate | 5% |
- E. The anode core shall be 0.25-inch diameter steel rod with the connection covered in heat-shrinkable tubing extending over the connection.
- F. Wiring shall be #10 AWG HMWPE, red in color, attached to the anode by the manufacturer. Wiring shall be long enough to extend to the anode header cable without splicing.

2.2 IDENTIFICATION MATERIALS

CATHODIC PROTECTION

- A. Each wire termination point on the terminal board shall be identified using laminated plastic material with white letters on a blue background. Include identifier legend on Shop Drawings.
- B. Each wire entering a test station shall be identified with yellow heat shrinkable tubing with black lettering, or approved equal. Each wire or cable shall be marked individually.
 - 1. Assets shall be identified by the size, material, and product, ie: PILE CASING
 - 2. Coupons shall be marked as COUPON
 - 3. Pile Casing structure lead wires shall be marked as PILE CASING
 - 4. Anode header shall be marked as ANODE HEADER #1 and ANODE HEADER #2
- C. Cable Warning Tape shall be detectable 4-ply laminate composed of a solid core aluminum foil, and clear polyethylene film. The tape shall be 6-inches wide and yellow in color with black lettering and shall be marked as "Buried Cathodic Protection Cable Below."

2.3 TEST STATIONS

- A. Flush Mounted Test Stations shall be a traffic box with cast-iron covers, capable of withstanding AASHTO's "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," H 20 traffic loads, with welded bead including a legend "CP TEST." Terminal boards shall be plastic or micarta with stainless steel hardware and configured to accommodate one terminal for each structure lead wire, anode header lead wire(s), and corrosion coupons. A shunt shall be installed between the anode header, or group of anodes, and the structure drain. Magnetic switches shall be installed between the new pile casing and the corrosion coupon. Each test station shall be outfitted with a magnet attached to a lanyard for operating the magnetic switch.

2.4 TEST STATION CONCRETE

- A. Poured concrete for the flush-mounted test station slabs shall be ready-mix conforming to ASTM C94. Minimum allowable 28-day compressive field strength shall be 3,000 psi when cured and tested in conformance with ASTM C31 and ASTM C39. Portland cement shall be Type 1.

2.5 TEST STATION TERMINAL LUGS

CATHODIC PROTECTION

- A. Test station terminal lugs shall be one-hole, compression terminal lugs for 0.25 inch bolt size.

2.6 CURRENT MEASURING SHUNT

- A. Test station shunts shall be constructed to fit the terminal posts for the specified test station. The shunt shall be red, 0.1 ohm with a current capacity of 2 amperes. Shunts shall have a polycarbonate circuit board, nickel plated brass post and strips, with Manganin resistance wire

2.7 IR FREE CORROSION COUPONS AND MAGNETIC SWITCHES

- A. The corrosion coupon shall have an exposed steel surface area of 10 square centimeters (1.55 square inches).
- B. The corrosion coupon shall be provided with two lead wires of sufficient length to reach the test station terminal board. The lead wires shall be AWG No. 14 stranded copper wire with green THHN insulation. The lead wire shall be attached to the steel coupon with the manufacturer's factory connection. Splicing of the corrosion coupon lead wires shall not be permitted under any circumstances.
- C. Each coupon shall be provided with a magnetic switch to be connected between the pile casing and the corrosion coupon. The magnetic switch shall be terminal board mounted EDI model UI-MSx-BRD, the EDI adjustable mounting switch EDI model UI-MSx-ADJ or approved equal.
- D. All corrosion coupon magnetic switches shall be afforded an activating magnet, EDI model UI-MS-MAG or approved equal. This magnet shall be attached to the test station wiring and shall remain in the test station.

2.8 WIRE AND CABLE

- A. Unless otherwise stated in this specification, all wiring shall be suitable for direct burial, shall be stranded copper wire of American Wire Gauge. The wiring shall be single conductor, insulation type HWMPE, manufactured specifically for service in a cathodic protection system.
- B. Connection types shall be copper compression or exothermic welds and as detailed in this specification.

CATHODIC PROTECTION

- C. Wire shall be colored as indicated below: Any deviation from the below color scheme shall be approved by Burns and McDonnell.
 - 1. Anode and anode header cable: Red
 - 2. Pile Casing: Black
 - 3. Corrosion Coupon: Green
- D. Structure lead wires shall be #8 AWG HMWPE and colored as shown in Section 2.8. WIRE AND CABLE Subsection C. Structure lead wiring shall be long enough to extend from the asset to the cathodic protection test station without splicing.
- E. Anode lead wire shall be #10 AWG HMWPE stranded, red in color and connected to the anode by the manufacturer. Anode wires shall be long enough to extend from the anode to the anode header cable without splicing.
- F. Anode header cable shall be #8 AWG HMWPE, red in color. The wiring shall be long enough to extend from the cathodic protection test station to the last anode in the groundbed and loop back to the test station without splicing.
- G. Wiring for corrosion coupons shall be #14 AWG THHN, green in color and long enough to reach the test station without splicing.
- H. Splicing is prohibited other than connections to the anode header cable.

2.9 THERMITE WELD EQUIPMENT

- A. Thermite weld molds and charges shall be suitable for the sizes and types of materials and shapes encountered. Adapter sleeves shall be utilized for all thermite welds. Pin brazing shall not be used to attach bond wires and/or test wires to the piping.

2.10 COATING FOR THERMITE WELDS

- A. Thermite welds to pile casings, steel pipe, and steel fittings are to be coated with a prefabricated assembly specially designed for covering cathodic protection wire connections to piping and fittings. The prefabricated assembly shall consist of the following components:
 - 1. Top plastic sheet formed with an igloo shaped dome and entry tunnel for the lead wire;

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2. A special elastomeric compound in the plastic dome firm enough to resist flow at normally encountered application and operating temperatures, but soft enough to mold itself around and completely cover the irregular welded profile;
3. A double row of parallel, flexible serrations on either side of the dome to assist with conforming around small diameter pipe;
4. A base of black unbacked elastomeric tape with exceptional adhesive properties for bonding firmly to a surface when used with the appropriate primer.
5. Caps shall be as manufactured by Royston Laboratories Division, Model Handy-Cap XL IP or approved equal.
6. Upon installation the dome shall be compressed to ensure elastomeric molds itself around the weld.

2.11 COMPRESSION CONNECTORS

- A. Compression connectors for splices shall be specifically manufactured for splicing copper cables together. All connectors shall be copper and shall be Type YC-C as manufactured by Burndy Corporation or approved equal.
- B. Compression connectors used for terminal connections shall be copper with electro-tin plating manufactured by Burndy as YA8CL or approved equal.

2.12 ELECTRICAL TAPE

- C. Formable water tight sealant having a dielectric strength not less than 15kV for a 1/8 inch thick layer. Tape shall be Scotch 88 Vinyl Tape and Scotch C130 Rubber Tape or approved equals.

2.16 RESIN SPLICE KIT

- A. Anode to anode header cable shall use an epoxy splice kit at each connection point. The splice kit shall be manufactured to accommodate three (3) wires, will include a formable mold, and will come with a two part epoxy. Epoxy resin splice kit shall be 3M Scotchcast 90-B1 or approved equal.

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PART 3 – EXECUTION

3.1 EXOTHERMIC WELDING

- A. All exothermic welds shall be made as shown on the Project Drawings and in accordance with the manufacturer's recommendations using the proper combination of equipment for the pipe and wire size being welded. All welding materials and equipment shall be the product of a single manufacturer.
- B. Remove the coating from a 2-inch square area on the pipe or fitting surface at the weld location. Ensure that the area where the attachment is to be made is clean and dry. Remove mill coating, dirt, grime and grease from the pipe or fitting surface at the weld location by grinder, wire brushing or by the use of suitable safety solvents. The bare metal shall be prepared to a bright shiny surface, free of all pits and flaws by use of a mechanical grinder.
- C. Prepare the wire for welding by assuring that the cable is dry. The cable shall be free of dirt, grease and other foreign products. Cut the cable in such a way as to avoid flattening or forcing out of round. To prevent deformation of the cable, cut the cable with cable cutters. Remove the insulation in a manner that will avoid damage to strands. Where required, utilize adapter sleeves prior to welding. Hold the cable at an approximate 30 degree angle to the pipe surface when welding.
- D. When the weld has cooled, remove the weld slag and test the weldment for strength by striking it with a sharp blow by a two-pound hammer while pulling firmly on the wire. Reweld unsound welds and retest weldments. Thoroughly clean mold and mold covers after completion of each weld to assure that no slag will penetrate into the next weld.

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- E. After soundness of the weld has been verified, thoroughly clean with a stiff wire brush and coat. Thermite welds to pile casing shall be coated with a plastic cap filled with elastomeric material. The elastomeric cap shall extend on all four sides beyond the cleaned area. Apply primer over the entire weld area and over the entire area where the elastomeric cap will be placed. Push the dome of the prefabricated cap containing elastomeric material firmly into weld area. Lift the wire away from the pipe and apply the elastomeric material completely around and underneath the wire. Push the wire back down on the pipe. Follow all manufacturer's instructions for installing prefabricated caps. Repair pipe coating as recommended by the pipe coating manufacturer.
- F. Pin brazing is not an acceptable alternative to thermite welding.

3.2 PREPACKAGED MAGNESIUM ANODES AND ANODE HEADER SPLICING

- A. Prepackaged magnesium anodes shall be installed where indicated. Prior to installation, remove all shipping covers, plastic or paper covering from the anode. Anodes shall be laid horizontally in the pipe trench no closer than 36-inches from the casing. Install the anodes in the vertical column free from rocks, roots, organic material, trash or other debris. Do not install the anode in sand, rock or gravel backfill. Upon installation, after they have been covered by at least 6 inches of soil, and prior to connecting to the anode header cable, each anode shall be soaked with no less than 10 gallons of water.
- B. Splice the #10 AWG HMWPE copper wire supplied with the anode to the #8 AWG HMWPE stranded copper anode header cable by use of a compression connector and epoxy splice kit as shown. After the anode header cable and the anode lead wire have been connected using the compression fitting, tape the connection using Scotch 23 Electrical Tape and, encapsulate by use of the epoxy splice kit. Hold mold halves in place, centered over the splice. Snap mold halves together firmly. Check to see that both seams are carefully snapped together. Tape the end of the mold body around the cable to seal the mold. Use Scotch Electrical Tape 23 for taping around ends by stretching the tape to approximately $\frac{3}{4}$ its original width. Position the mold body with the fill hole facing upward. Insert the pouring spout into the hole on the top of the mold. Mix the resin thoroughly in accordance with the package instructions. Pour the resin into the pouring spout until the mold and the spout are completely filled. Refill the spout after air escapes. When the resin has solidified and cooled, clip off the spout. Terminate the ends of the anode header cable in the test station as indicated.

CATHODIC PROTECTION

3.3 TEST STATIONS

- A. Install test stations at the locations indicated. Test boxes are to be placed between the central and outer piles and shall not be closer than three feet apart to accommodate the soil access ports, and routing of wires.
- B. Excavate to expose the pile casing and prepare a location for welding as stated in 3.1 Exothermic Welding. Attach test wires to the pile casing as indicated using the proper thermite welding equipment and charges specified for the wire size and respective material and orientation. Follow all procedures as outlined in Section 3.1 – Exothermic Welding above.
- C. Cathodic protection test station wiring, including anode header cables, shall be ran in a trench no less than 36 inches deep, and then into the accompanying test station. Anode header cable, anode wiring and splices shall be buried in the trench.
- D. All other cathodic protection test station wires, unless stated otherwise, shall be routed a minimum of 36 inches below finished grade. Maintain sufficient slack in the test wires so that the wires can extend a minimum of 18 inches from the test box after they've been connected. Connect the test wires to the test station terminal board with one-hole, compression terminal lugs for 0.25 inch bolt size.
- E. Anode test stations shall include one (1) 0.1 ohm shunt for measuring the current output of the anode string. Shunts shall be connected between both Anode header #1 and #2 and one (1) pile casing test lead wire at all test stations.
- F. All test stations shall include a magnetic switch to be connected between the corrosion coupon and the new casing pipe test lead wire. The magnetic switch shall include a magnet and lanyard for operating the magnetic switch. The magnet and lanyard shall be tied to the pile casing test lead wire and shall remain in each test box for future use.
- G. Test boxes shall be set in poured concrete, two feet on each side and six inches thick reinforced with 4 inch by 4 inch - W2.1 by W2.1 welded wire and fabric and as shown in the project drawings. The flush mounted test box lids shall be free of concrete and not cemented over.

3.4 CORROSION COUPONS AND SOIL ACCESS PORT

- A. Install corrosion coupons at the test stations indicated. The corrosion coupons shall be installed to a depth of 10 feet. Native soil shall be used to backfill the corrosion

CATHODIC PROTECTION

coupon for a minimum of twelve (12) inches, within the soil access port. Prior to installation of the soil access port, ensure the corrosion coupon PVC coupling has been firmly attached to the end of the soil access port with PVC glue. Ensure the corrosion coupon is free from glue, and is not in contact with rocks, trash, concrete, or other debris.

- B. Route corrosion coupon wiring to ensure minimal pull on the wiring during backfill. It is suggested that the wiring be wrapped around the soil access port tube to prevent pulling or damage to the corrosion coupon wiring and connections. Once wiring is in place, route it through the test station stuffing tube and into the test station.
- C. Backfill the soil access port with twelve (12) inches of native soil, ensuring no rocks, trash concrete, or other debris is in the port tube, and provide minor compaction of the soil in the tube by pouring one (1) quart of water down the tube. Remeasure the depth of the soil after water has been used and continue to fill with native soil until reaching the desired depth.

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PART 4 - POST INSTALLATION TESTING

4.1 TESTING

- A. Perform the following field tests and inspections and prepare test reports under the supervision of a qualified Corrosion Engineer as specified in Section 1.1 Performance Requirements.
1. Isolation Testing: Before the anode system is connected to the pipe and fittings, test for electrical isolation between the pile casing and the rebar cage, bridge, and any other local structures. Demonstrate that no metallic contact, or short circuit, exists between the pile casing and the pile rebar cage, the bridge or other structures.
 - i. Testing in this manner is to be completed after the rebar cage has been built or lowered into the casing and after the casing has been filled with concrete
If electrical isolation is inadequate, identify locations where metallic contact is being made and schedule the site for repair or replacement. Testing will be accomplished by use of a Gas Electronics Model 601, Tinker and Rasor RF-IT Above Ground Insulator Tester or a calibrated digital multimeter. Confirmation of the adequacy of electrical isolation between the pile casing the rebar cage and the bridge shall be recorded and included in the final field report.
 2. After backfilling of the new pile casing and anodes is complete, but before anodes and coupon are connected, measure the static potential of the pile casing to soil and the coupon to soil. Record initial measurements.
 3. Prior to the connection of the anode header to the structure test lead, measure and record the open circuit anode header-to-soil potential of each anode header cable.
 4. Upon connection of the anodes, measure electrical current as groups of anodes are connected to the casing. Use the installed shunt or a low-resistance ammeter. Record current magnitude, date, time, and location of each measurement.
- B. Upon completion of installation of the entire cathodic protection system and after no less than 24 hours of operation, take pipe-to-soil potential measurements according to NACE SP0169-2013, using a calibrated copper/copper-sulfate reference electrode and a calibrated digital multimeter with an internal resistance (sensitivity) of not less

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than 100,000 ohms per volt and a full scale of 1 or 2 V. Record voltage, date, time, and location of each measurement, and evaluate the structures for adequate levels of cathodic protection using one of the following criteria at a minimum.

1. 0.850 V Polarized Potential: With cathodic system in operation, measure the pile casing to soil potential including both an on and a polarized, or instant off potential for the pile casing. The instant off measurement should be at least negative 0.850 V between structure and a saturated copper/copper-sulfate reference electrode contacting the earth near the pile casing.
2. 100 mV Polarization: Determine polarization by disconnecting the protective current (the anodes) and measuring polarization decay. An immediate voltage shift will occur in the pile casing to soil potential if protective current is interrupted, also called the instant off potential. Use the instant off potential, as a base reading from which to measure polarization decay. After the instant off measurement is recorded, disconnect the protective current for a minimum of 24 hours and remeasure the pile casing-to-soil potential. The difference between the instant off and the measurement made after the current has been disconnected for 24 is the polarization decay. This measurement shall be at least a minimum polarization voltage shift of 100 mV between the structure and a saturated copper/copper-sulfate reference electrode contacting the earth directly over the structure.
3. Location of Measurements for piping, take measurements using a calibrated reference electrode in contact with the earth within 5ft of the casing. Measurements should be taken at the cardinal points around the pile casing.
4. Measurements are to be taken on the corrosion coupon using a calibrated copper sulfate reference electrode inserted in the soil access port. Measurements are to be taken as on and instant off by use of the magnetic switch.
5. Upon completion of the field testing, develop a field quality control test report discussing the operability of the cathodic protection system, including all pile casing-to-soil measurements, anode header-to-soil measurements, anode current outputs, corrosion coupon potentials, and the status of electrical isolation and findings. Contractor shall correct and retest, at his expense, deficiencies in the materials and installation observed by these tests and inspections.

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6. Test electrical isolation between pile casing and the bridge. Identify and correct short circuits.
7. Test the potential for interference with cathodic protection from any foreign asset in cooperation with the Owner of the foreign asset. Report results and recommendations.

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PART 5 – MEASUREMENT AND PAYMENT

5.1 Cathodic protection system and testing to include:

- Anodes
- Wiring
- Test stations and all elements of the test station
- Exothermic welding, including exposure of the pile casing
- Testing for electrical isolation
- Commissioning testing
- Final report
- Epoxy

Pay Item	Unit
CATHODIC PROTECTION	LUMP SUM

END OF SECTION

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****HYBRID VIDEO/RADAR DETECTION SYSTEM**

Section 733 Video Detector with Radio Interface of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 733.01, Description. is deleted and the following substituted therefore:

This item consists of furnishing and installing a Multi-Sensor Detection System (MSDS), Central Control Unit (CCU), Video Cable, Video Monitor, Communication Interface, 8 Port SDLC Hub, harness, any hardware or accessories required, and software in accordance with these specifications, and modification or remote video monitoring site(s), at the locations shown on the plans or as directed by the Engineer, for the purpose of providing actuation to a traffic signal controller and for live video monitoring of traffic conditions at the site.

The Hybrid Video/Radar Detectors (MSDS) shall utilize two different sensors of different technologies, video imaging and radar, to detect and track vehicles on a lane-by-lane basis at a distance up to 600 feet from the sensor, CCU, Video Cable, and other associated equipment and shall detect vehicle information from the two sensors to provide highly accurate and precise detection for simultaneous stop line presence, advanced, and special detection by the means described, process the information and provide vehicle actuation to an actuated controller, system local controller, or other device as outlined in the plans or Contract. In addition, where communications are specified, live video shall be transmitted back to a central site by means of that communication. MSDS equipment and its associated components shall also meet the environmental and electrical requirements in Section 701.

Subsection 733.02, Materials is hereby amended by **adding** the following:

(h) Hybrid Video/Radar Detector – The Hybrid Video/Radar Detector shall meet the following:

- Both camera and radar sensors shall be housed in a single enclosure assembly of size not exceeding 14 inches x 15 inches x 17 inches.
- The unit shall not exceed an overall weight of 11 pounds.
- The sensors shall be housed in a weather-tight sealed enclosures conforming to IP-67 specifications. The housing shall allow the camera and radar to be adjusted for proper alignment between the camera and the traveled road surface.
- The sensor shall utilize a single shielded CAT 5E cable for power, communications, and video.

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- The unit shall operate satisfactorily in a temperature range of from -30° F to +165° F (-34° C to +74° C) and a humidity range of from 0% to 95%, non-condensing as set forth in NEMA specifications.
- The sensor shall support a minimum of 32 detection zones per camera and 16 detection zones per radar.
- The camera shall produce a useable video image of the bodies of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 0.003 lux to 10,000 lux.
- The camera enclosure shall be equipped with a sunshield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view.
- The camera sensor shall allow the user to set the focus and field of view and provide an auto-focus feature.
- System cameras shall have Tin Oxide lens heaters, with output power varying with temperature to assure proper operation of the lens functions at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure.
- The radar sensor shall detect objects by utilization of four dimensions. Those dimensions shall be: Speed (Velocity), Distance (Range), Angle (Azimuth), Height (Elevation).
- The radar sensor shall detect object speed within a range of 0 to 150 miles per hour +/- 1.0 miles per hour.
- The radar sensor shall be able to detect vehicles in 1 to 6 traffic lanes.
- The radar detection range shall be a minimum of 600 feet from the sensor placement.
- The radar sensor shall be able to track up to 64 independent objects simultaneously.
- The sensors shall detect vehicles in real time as they travel across each detection zone.

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(i) Video Detector (IP) – The Video Detector (IP) shall meet the following:

- The camera imager shall employ wide dynamic range (WDR) technology to compensate for wide dynamic outdoor lighting conditions. The dynamic range shall be greater than 100 dB.
- The camera shall be digital signal processor (DSP) based and shall use a CCD sensing element and shall output color video with resolution of not less than 540 TV lines. The color CCD imager shall have a minimum effective area of 811(h) x 508(v) pixels.
- The camera sensor shall allow the user to set the focus and field of view via the software. Camera sensor control from the controller cabinet shall communicate over a single Cat-5e or CAT6 cable. No additional wires shall be required.
- The camera shall produce a useable video image of the features of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 0.003 lux to 10,000 lux
- The camera electronics shall include automatic gain control (AGC) to produce a satisfactory image at night for the VDS algorithms
- The camera shall include an electronic shutter control based upon average scene luminance and shall be equipped with an auto-iris lens that operates in tandem with the electronic shutter. The electronic shutter shall operate between the range of 1/60th to 1/90,000th second
- The camera shall include a variable focal length lens with variable focus that can be adjusted, without opening up the camera housing, to suit the site geometry by means of a portable interface device designed for that purpose and manufactured by the detection system supplier
- The camera enclosure shall include a proportionally controlled Indium Tin Oxide (ITO) lens coating for the heating element of the front glass that maximizes heat transfer to the lens. The output power of the heater shall vary with temperature, to assure proper operation of the lens functions at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure. The transparent coating shall not impact the visual acuity and shall be optically clear.

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(j) Central Control Unit – The CCU shall be supplied in a Standard One 19” Rack Unit or a Shelf-Mount Unit. The CCU shall utilize non-volatile memory technology to store on board firmware and operational data and shall meet the following:

- **Standard One 19” Rack Unit:**
 - There shall be brackets to allow the CCU to be mounted under the shelves where a 19” frame is not available.
 - The CCU shall be powered from an 110V or 230V, 50Hz or 60Hz supply.
 - The CCU power consumption shall not exceed 20 Watts.
- **Shelf-Mount Unit:**
 - The CCU shall be in compliance with NEMA TS-2 specifications.
 - The CCU shall be powered from 48V DC power supply.
 - The CCU power consumption shall not exceed 150 Watts.
- **Surge Suppression:**
 - The CCU shall incorporate surge suppression for each sensor input.
 - The CCU shall incorporate power surge suppression on both the input power and on the power supplied to the sensors.
 - The CCU shall be appropriately grounded to the cabinet ground rod using 14 A.W.G. minimum.
- **Interface:**
 - The CCU shall support up to four camera sensors.
 - The CCU shall communicate through an SDLC connection to the traffic signal controller. The connector shall be a ‘D-15’ type, in compliance with NEMA TS-2 specifications.
 - The CCU shall provide an indicator when the SDLC port is active.
 - An Ethernet communications port shall be provided on the front panel. The Ethernet port shall be compliant with IEEE 802.3 and shall use a RJ-45 type connector mounted on the front panel of the CCU. The Ethernet communications interface shall allow the user to remotely configure the system and/or to extract calculated vehicle/roadway information. The interface protocol shall be documented, or interface software shall be provided.
 - The CCU shall be IP addressable.
 - The CCU shall provide output to a monitor. The native resolution of the monitor port shall be 1024 x 768.
 - The CCU shall provide 2 USB ports to be utilized for various functions including keyboard and mouse as well as USB storage devices.
 - The CCU shall provide an indicator when the unit has power.
 - The CCU shall provide an indicator when the unit is online.

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- The CCU shall provide a Wi-Fi connection. The connection shall be over a standard 2.4GHz connection. The Wi-Fi connection shall be enabled and disabled by a switch on the CCU. The CCU shall provide an indicator when the Wi-Fi connection is active.
- The CCU shall provide system status via an on-board Organic Light Emitting Diode display. The display shall indicate various system parameters, such as camera health and VDP health, firmware version and camera air temperature. The display will be enabled and disabled with a switch on the CCU.

(k) Video Cable (Exterior Cat 5E) - The Ethernet Cable shall meet the following:

- The Ethernet cable shall be environmentally hardened, outdoor rated 350 MHz Category 5e cable. The cable shall be riser rated, 24 AWG solid copper, have Polyolefin insulation, UV and oil resistant PVC jacket. Pair 1 shall be Blue, White/Blue, Pair 2 shall be Orange, White/Orange, Pair 3 shall be Green, White/Green and Pair 4 shall be Brown, White/Brown. The operating temperature shall be from -40° C to +70° C. The cable shall conform to the following standards: ISO/IEC 11801 Category 5e, NEMA WC 63, and ANSI/TIA/EIA 568-B.2 Category 5e. The cable shall be without splicing or joints for a single run. The contractor shall obtain instructions from the manufacturer about alternate architecture when length of a single run of CAT 5e cable exceeds 1000 feet.
- The RJ-45 plug connectors shall be used at both the camera and cabinet ends. The supplier of the video detection systems shall approve the Category 5e cable, RJ-45 connectors and crimping tool and the manufacturer's instructions must be followed to insure proper connection.

(l) Video Monitor (CLR) – Where called or in the plans, a video monitor meeting the following shall be provided:

- Display –Color (CLR)
- Light Source - LED
- Size – 10" Diagonal
- HDMI – 2 Inputs
- VGA Input
- USB Input
- Video Input/Output

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- Input Power – 12V DC

(m) 8 Port SDLC Hub – An 8 port SDLC hub shall be provided to support all needs of the system. The 8 port SDLC hub as be compatible with TS-2 NEMA cabinets. The 8 port SDLC hub shall be supplied from the same manufacturer as the detectors.

(n) Harness – This shall be any harness or wiring for the system to work properly. Any harness used shall be supplied from the same manufacturer as the detectors.

(o) Manufacturer's Warranty – The following shall be provided:

- The supplier shall provide a limited three-year warranty and shall apply with time extensions applied to materials. The contractor shall provide a written manufacturer's guarantee to the Agency (City, County or etc.) who provides electrical service and maintenance of the intersection.
- During the warranty period, technical support shall be available from the supplier via telephone with 4 business hours of the time a call is made by the user, and this support shall be available from factory-certified personnel or factory-certified installers.
- The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the detection system.
- During the warranty period, updates to the system software shall be available from the supplier without charge.

Subsection 733.03 Construction Requirements (C) Software is hereby **deleted** and the following substituted therefore: Subsection 733.03 Construction Requirements (C) Software is hereby deleted and the following substituted:

(C) Software – Software required for monitoring, setup, and programming of the system shall be supplied as subsidiary to this special provision for the item "Central Control Unit", of the number of channels specified. Two licensed copies shall be required for the job. Software shall be Windows based and operate from and IBM compatible, laptop with Windows XP or later operating system. If other programming devices are required, one unit shall be supplied and shall be considered subsidiary to this special provision.

Subsection 733.04 Method of Measurement is hereby amended by **adding** the following:

- (i)** Hybrid Video/Radar Detector shall be measured by the unit.

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- (j) Video Detector (IP) shall be measured by the unit
- (k) Central Control Unit of the number of channels specified shall be measured by the unit.
- (l) Video Cable (Exterior Cat 5E) of the type specified shall be measured by the linear foot.
- (m) Video Monitor (CLR) shall be measured by the unit.
- (n) 8 Port SDLC Hub is included in other items of the contract.
- (o) Harness is included in other items of the contract.

Subsection 733.05 Basis of Payment. is hereby amended by **adding** the following:

- (i) **Hybrid Video/Radar Detector** – Work completed and accepted under this item and measured as provided above, shall be paid for at the contract unit price Hybrid Video/Radar Detector; which price shall be full compensation for providing and installing the device, wiring, configuring, and testing the device; and shall also be for all labor, equipment, tools, and incidentals necessary to complete the work.
- (j) **Video Detector (IP)** - Work completed and accepted under this item and measured as provided above, shall be paid for at the contract unit price for Video Detector (IP); which price shall be full compensation for providing and installing the device, wiring, configuring, and testing the device; and shall also be for all labor, equipment, tools and incidentals necessary to complete the work.
- (k) **Central Control Unit** – Work completed and accepted under this item and measured as provided above, shall be paid for at the contract unit price Central Control Unit of the number of channels specified; which price shall be full compensation for providing and installing the device, wiring, configuring, and testing the device; and shall also be for all labor, equipment, tools, and incidentals necessary to complete the work.
- (l) **Video Cable (Exterior Cat 5E)** – Price bid for Video Cable (Exterior Cat 5E) of the type specified shall be full compensation for furnishing, installing, and testing the cable; and shall also be for all labor, equipment, tools, and incidentals necessary to complete the work.
- (m) **Video Monitor (CLR)** – Work completed and accepted under this item and measured as provided above, shall be paid for at the contract unit price Video Monitor (CLR); which price shall be full compensation for providing and installing the device, wiring,

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configuring, and testing the device; and shall also be for all labor, equipment, tools, and incidentals necessary to complete the work.

(n) 8 Port SDLC Hub - Work completed and accepted under this item will not be paid separately but shall be included in the cost of other items in the contract.

(o) Harness - Work completed and accepted under this item will not be paid separately but shall be included in the cost of other items in the contract.

Payment will be made under:

Pay Item	Pay Unit
Hybrid Video/Radar Detector	Each
Video Detector (IP)	Each
Central Control Unit (___ Channel)	Each
Video Cable (Exterior Cat 5E)	Linear Foot
Video Monitor (CLR)	Each

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

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SPRINGHILL PARK TECHNICAL SPECIFICATIONS

Springhill Park will be paid for according to the Springhill Park Measurement and Payment Special Provision. The technical specifications contained herein are to apply to the various construction items used for the Springhill Park proposed improvements shown in the Springhill Park Details.

Construction element	Governing technical specifications
<i>ACHM Asphalt Overlay</i> (standard ARDOT pay methods for Pay Items: - Asphalt Binder (PG64-22) ACHM Surface (1/2") - Mineral Aggregate in Asphalt Binder (1/2") (see plans for application rates))	ARDOT's Standard Specifications for Highway Construction (2014 edition) with associated supplemental specifications and standard provisions
<i>Cold Milling</i> (standard ARDOT pay methods)	ARDOT's Standard Specifications for Highway Construction (2014 edition) with associated supplemental specifications and standard provisions
<i>Crushed Stone Aggregate Base Course</i> (paid for as part of lump sum items – see "Springhill Park Measurement and Payment Special Provision")	ARDOT's Standard Specifications for Highway Construction (2014 edition) with associated supplemental specifications and standard provisions
<i>Compacted Embankment and Unclassified Excavation</i> (paid for as part of lump sum items – see "Springhill Park Measurement and Payment Special Provision")	ARDOT's Standard Specifications for Highway Construction (2014 edition) with associated supplemental specifications and standard provisions
Sites 1-4 lump sum pay items elements: - Site utilities - Landscaping - Exterior Electrical Distribution - Restroom Building (paid for as lump sum items – see "Springhill Park Measurement and Payment Special Provision")	Technical specifications contained herein

Index of technical specifications

- 01 6410 – Enclosed Switches and Breakers
- 01 6461 – Dry-type Transformers (600V and Less)
- 13 3429 – Fabricated Restrooms
- 26 0519 – Low-Voltage Electrical Power Conductors and Cables
- 26 0526 – Grounding and Bonding for Electrical Systems
- 26 0529 – Hangers and Supports for Electrical Systems
- 26 0533.13 – Conduits for Electrical Systems
- 26 0553 – Identification for Electrical Systems
- 26 2416 – Panelboards

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT**SPECIAL PROVISION****JOB 040901****SPRINGHILL PARK TECHNICAL SPECIFICATIONS****SECTION 01 6410 – ENCLOSED SWITCHES AND CIRCUIT BREAKERS**

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following individually mounted, enclosed switches and circuit breakers:
1. Fusible switches.
 2. Nonfusible switches.
 3. Enclosures.

1.2 DEFINITIONS

- A. HD: Heavy duty.

1.3 SUBMITTALS

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
1. Enclosure types and details.
 2. Current and voltage ratings.
 3. Short-circuit current rating.
 4. Features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

- B. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

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1.5 COORDINATION

- A. Coordinate layout and installation of switches, circuit breakers, and components with other construction, including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

1.6 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Spares: For the following:
 - a. Fuses for Fusible Switches: Three of each type installed

PART 2 - PRODUCTS

2.1 FUSIBLE AND NONFUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
 - 1. Eaton Corporation; Cutler-Hammer Products.
 - 2. General Electric Co.; Electrical Distribution & Control Division.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D/Group Schneider.
- B. Fusible Switch, 600 A and Smaller: NEMA KS 1, Type HD, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.
- C. Accessories:
 - 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
 - 2. Neutral Kit: Internally mounted; insulated, capable of being grounded, and bonded; and labeled for copper and aluminum neutral conductors.

2.2 ENCLOSURES

- A. NEMA AB 1 and NEMA KS 1 to meet environmental conditions of installed location.
 - 1. Outdoor Locations: NEMA 250, Type 3R, unless noted otherwise

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- A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 CONCRETE BASES

- A. Coordinate size and location of concrete bases.

3.3 INSTALLATION

- A. Comply with applicable portions of NECA 1, NEMA PB 1.1, and NEMA PB 2.1 for installation of enclosed switches and circuit breakers.
- B. Mount individual wall-mounting switches and circuit breakers with tops at uniform height, unless otherwise indicated.
- C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

3.4 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - 1. Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.5 for switches. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

3.5 ADJUSTING

- A. Set field-adjustable switches.

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3.6 CLEANING

- A. On completion of installation, vacuum dirt and debris from interiors; do not use compressed air to assist in cleaning.
- B. Inspect exposed surfaces and repair damaged finishes.

END OF SECTION 01 6410

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PART 4 - GENERAL

4.1 SUMMARY

- A. This Section includes the following types of dry-type transformers rated 600 V and less, with capacities up to 1000 kVA:
 - 1. Distribution transformers.

4.2 SUBMITTALS

- A. Product Data Include rated nameplate data, capacities, weights, dimensions, minimum clearances, installed devices and features, and performance for each type and size of transformer indicated.
- B. Shop Drawings: Wiring and connection diagrams.

4.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with IEEE C 57.12.91.

4.4 DELIVERY, STORAGE, AND HANDLING

- A. Temporary Heating: Apply temporary heat according to manufacturer's written instructions within the enclosure of each ventilated-type unit, throughout periods during which equipment is not energized and when transformer is not in a space that is continuously under normal control of temperature and humidity.

4.5 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.

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- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Eaton Corporation; Cutler-Hammer Products
 2. General Electric Co.; Electrical Distribution & Control Division.
 3. Siemens Energy & Automation, Inc.
 4. Square D/Groupe Schneider NA.

5.2 MATERIALS

- A. Description: Factory-assembled and -tested, air-cooled units for 60-Hz service.
- B. Cores: Grain-oriented, non-aging silicon steel.
- C. Coils: Continuous windings without splices, except for taps.
1. Internal Coil Connections: Brazed or pressure type.
 2. Coil Material: Copper.

5.3 DISTRIBUTION TRANSFORMERS

- A. Transformers shall be energy-efficient, as defined by the current Code of Federal Regulations Energy Conservation requirements, namely 10 CFR Part 431 Subpart K Distribution Transformers. Transformers shall be tested and certified in accordance with the requirements described above.
- B. Comply with NEMA ST 20, and list and label as complying with UL 1561.
- C. Cores: One leg per phase.
- D. Enclosure: Ventilated, raintight, NEMA 250, Type 3R.
- E. Outdoor Transformer Enclosure Finish: Comply with NEMA 250 for "Outdoor Corrosion Protection."
1. Finish Color: Gray.
- F. Insulation Class: 220 deg C, UL-component-recognized insulation system with a maximum of 150 deg C rise above 40 deg C ambient temperature.

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- G. Taps for Transformers 25 kVA and Larger: Two 2.5 percent taps above and four 2.5 percent taps below normal full capacity.
- H. Fungus Proofing: Permanent fungicidal treatment for coil and core.

5.4 SOURCE QUALITY CONTROL

- A. Test and inspect transformers according to IEEE C57.12.91.

PART 6 - EXECUTION**6.1 EXAMINATION**

- A. Examine conditions for compliance with enclosure- and ambient-temperature requirements for each transformer.
- B. Verify that field measurements are as needed to maintain working clearances required by NFPA 70 and manufacturer's written instructions.
- C. Examine walls and floors for suitable mounting conditions where transformers will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

6.2 INSTALLATION

- A. Install floor-mounting transformers level on concrete bases.
 - 1. Anchor transformers to concrete bases according to manufacturer's written instructions.

6.3 CONNECTIONS

- A. Ground equipment according to Section "Grounding and Bonding for Electrical Systems."
- B. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

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6.4 ADJUSTING

- A. Record transformer secondary voltage at each unit for at least 48 hours of typical occupancy period. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 10 percent and not being lower than nameplate voltage minus 5 percent. Submit recording and tap settings as test results.
- B. Output Settings Report: Prepare a written report recording output voltages and tap settings.

END OF SECTION 01 6461

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT**SPECIAL PROVISION****JOB 040901****SPRINGHILL PARK TECHNICAL SPECIFICATIONS****SECTION 13 3429 - FABRICATED RESTROOM FACILITIES**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Fabricated precast concrete restroom facilities.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for restroom facilities.
 - 2. Include rated capacities, operating characteristics, and electrical characteristics, for included systems.
- B. Shop Drawings: For restroom facilities. Include plans, elevations, sections, details, accessories, and fastening and anchorage details, including mechanical fasteners.
- C. Samples: For each exposed product and for each color and texture specified, Approximately 8-1/2 by 11 inches in size.
- D. Delegated-Design Submittal: For fabricated restroom facilities, including analysis data signed and sealed by the qualified Licensed Professional Engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For special warranty.
- B. Certificates: Product certificates signed by the manufacturer certifying material compliance with specified performance characteristics and criteria, and physical requirements.

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1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For restroom facilities to include in maintenance manuals.

1.6 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair finish or replace restroom facilities that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: For the building system for a period of one (1) year from the date of shipment. This includes all materials and freight to rectify any product defects.

1.7 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified Licensed Professional Engineer, as defined in Section 01 4000 "Quality Requirements," to design fabricated restroom facilities.
- B. Structural Performance: Fabricated restroom facilities shall withstand the following loads and stresses within limits and under conditions indicated in accordance with ACI 318:
 - 1. Loads:
 - a. Roof Snow Load: Minimum 250 PSF.
 - b. Floor Load: Minimum 400 PSF.
 - c. Wind Load: Minimum 150 miles per hour (3-second gust) wind exposure C.
 - d. Earthquake: Minimum Seismic Group 1 Design Category E.
- C. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70 and marked for intended location and application.
- D. Regulatory Requirements: Comply with applicable provisions in The U.S. Department of Justice 2010 ADA Standards for Accessible Design and ICC A117.1.

PART 2 - PRODUCTS

2.1 FABRICATED PRECAST CONCRETE RESTROOM FACILITIES

- A. Basis-of-Design: Subject to compliance with requirements, provide products by the following, or comparable by pre-approved manufacturer:
 - 1. [CXT Incorporated; 6701 E. Flamingo Ave. Building 300, Nampa, ID 83687, Phone: 800-696-5766.](#)
- B. Building Style: As indicated on Drawings.

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- C. Size: 20'-0" by 26'-0" by 12'-0" overall height.
- D. Concrete – General:
1. The concrete mix design is designed to ACI 211.1 to produce concrete of good workability.
 2. Concrete will contain a minimum of 675 pounds of cementitious material per yard. Cement is a low alkali type I/II or III conforming to ASTM C-150.
 3. Coarse aggregates used in the concrete mix design will conform to ASTM C33 with the designated size of coarse aggregate #67.
 4. Maximum water/cement ratio will not exceed .45.
 5. Air-entraining admixtures will conform to ASTM C260. Water reducing admixtures will conform to ASTM C494, Type A.
 6. If Self Compacting Concrete (SCC) is used, it must conform to ASTM C1611.
 7. Grout is a non-shrink type and are painted to match the color of surrounding concrete as nearly as possible.
- E. Concrete Reinforcement:
1. All reinforcing steel will conform to ASTM A615. All welded wire fabric will conform to ASTM A185.
 2. All reinforcement is new, free of dirt, oil, paint, grease, loose mill scale and loose or thick rust when placed.
 3. Details not shown on drawings or specified are to ACI318.
 4. Steel reinforcement is centered in the cross-sectional area of the walls and will have at least 1¼" of cover on the under surface of the floor.
 5. The maximum allowable variation for center-center spacing of reinforcing steel is ½".
 6. Full lengths of reinforcing steel are used when possible. When splices are necessary on long runs, splices are alternated from opposite sides of the components for adjacent steel bars.
 - a. Lap bars under #4 a minimum of 12" bar diameters.
 - b. Lap bars larger than #4 a minimum of 24" bar diameters.
 7. Reinforcing bars are bent cold. No bars partially embedded in concrete are field bent unless approved by the Architect.
- F. Sealants:
1. Interior and exterior joints are caulked with a paintable polyurethane sealant.
 2. Caulking service temperatures from -40°F to +194°F.
- G. Swinging Doors: 1-3/4 inches thick; tubular-frame design fabricated from 16-gauge galvanized steel; Equip door with deadlock, three butt hinges, closer, and full weather stripping.
1. Commercial Grade Steel Frame: knockdown or welded type, single rabbet, minimum 16-gauge prime coated steel top painted with DTM ALKYD, width to suit wall thickness. Three (3) rubber door silencers will be provided on latch side of frame.
 2. Door Hinges: Provide three (3) per door, 4½" x 4½", with dull chrome plating, adjustable tension, and automatic closing for each door.
 3. Latchset: Meet ANSI A156.2 Series 4000, Grade 1 cylindrical lockset for exterior door.

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- a. Lever handle both inside and out.
 - b. Either handle operates latch unless outside handle is locked by inside push-button.
 - c. Push-button will automatically release when inside lever handle is turned or door is closed.
 - d. Emergency slot on exterior so door can be unlocked from the outside with a coin, screwdriver etc.
 - e. Inside lever always active.
 - f. U.S. 26D finish.
4. Dead Bolt: Certified ANSI/BHMA A156.5-2001 Grade 1.
 - a. Heavy duty tamper resistant.
 - b. 2 $\frac{3}{4}$ " backset.
 - c. U.S. 26D finish
 5. Doorstop: Doorstop will be a dome style stop meeting ANSI 156.16.
 6. Door Sweep: Door sweep will be provided at the bottom of door and will be an adjustable brush type.
 7. Accessories:
 - a. Double Coat Hook: Coat hook will be 304 stainless steel 16-gauge (1.5mm), formed construction with a satin finish and have $\frac{3}{16}$ " x $\frac{7}{8}$ " nail in anchor. Upper hook will extend at least 2 $\frac{1}{2}$ " from the wall. Lower hook will extend at least 1 $\frac{1}{4}$ " from the wall.
- H. Windows: Hollow metal sash frames glazed with $\frac{3}{16}$ " thick translucent pebble finished mar-resistant Lexan.
1. Frame Finish: Painted
 2. Vandal resistant fasteners.
 3. $\frac{3}{4}$ " recess with 45-degree bevel.
- I. Wall Vent:
1. Wall vent will be crank operated allowing the unit to be opened or closed. Crank will be removable. Vent cover will be 14-gauge 304 stainless steel and anchored into the concrete wall with high strength anti-rust tap con fasteners. Vent to come with insect screen. Cover to be recessed a minimum $\frac{3}{4}$ " on exterior walls with a 45-degree bevel. Interior to be flush mounted. Wall vent will not protrude from the wall.
- J. Paints and Coatings:
1. Interior concrete surfaces.
 - a. Interior floors will be a chemical resistant urethane.
 - b. Color: gray.
 2. Interior walls and ceilings will be a modified acrylic, water repellent penetrating stain.
 - a. Color: white followed by a clear acrylic anti-graffiti sealer.
 3. Metal surfaces both inside and out.
 - a. DTM ALKYD.
 4. Exterior concrete surfaces.
 - a. Exterior slab will be clear sealer.

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- b. Exterior walls and roof will be a water repellent penetrating stain in the same color as the walls or roof followed by a clear acrylic anti-graffiti sealer.
- K. Toilet Accessories:
- 1. Grab Bars: Grab bars will be 18-gauge, type 304 stainless steel with 1½" clearance. Grab bars will each be able to withstand 300-pound top loading.
 - 2. Toilet Paper Dispenser: Dispenser will be constructed of ¼" thick, type 304 stainless steel. Dispenser will be capable of holding three (3) standard rolls of toilet paper. Toilet paper holder fastening system will be able to withstand 300-pound top loading.
 - 3. Mirrors: Mirror to be 18" x 36" frameless 430 18-gauge stainless steel with #8 bright polish.
 - 4. Shower Benches: Shower benches to be heavy duty, type 304 satin finish stainless steel with phenolic slats.
 - 5. Hand Dryers: Saniflow hand dryers.
- L. Signage:
- 1. Signs to have raised pictograms, letters, and braille to meet ADA.
- M. Electrical: All electrical power supply panels, disconnects, power outlet receptacles, lighting fixtures and system wiring components to be installed at job site in accordance with NEC standards. Design and scheduled as indicated on drawings.
- 1. All components to be UL listed.
 - 2. Breaker panel – Sized to meet load requirements and mounted to meet electrical code.
 - 3. Interior lighting – Vandal resistant fixtures with built-in occupancy sensor, energy efficient LED lights, and lifetime warranty.
 - 4. Exterior lighting – Vandal resistant fixtures with built-in photoelectric switch, energy efficient LED lights.
 - 5. Exhaust fans – All wet location motion activated with speed control in chase area to control CFM.
 - 6. Wiring – Conduit, surface mounted in the service area and concealed in the user compartments. All wire will be copper.
 - 7. GFI outlets provided per code requirements.
 - 8. Warm air, ADA compliant, vandal resistant hand dryers.
- N. Plumbing: All plumbing equipment, fixtures and piping drainage and supply components to be installed at job site in accordance with adopted code standards. Design and scheduled as indicated on drawings.
- 1. All fixtures to meet ANSI A112.19.2.
 - 2. All fixtures to be stainless steel.
 - 3. Plumbing will be concealed in the service area.
 - 4. Flush valve – Concealed closet flush-o-meter constructed of rough brass. Furnish valve with integral vacuum breaker and wall mounted push button. Valve will be of a water saver type with a flow of 1.6 gallons per flush.
 - 5. Hammer arrester – Installed on water line.
 - 6. Hose bib – Available in the chase area.

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7. Lavatory – Stainless steel with back splashguard, front overflow opening, equipped with brass trap and drainpipe without stopper. Sink will be 20" wide x 18" front to back x 5³/₄" deep with ADA trap cover.
 8. Main Shut-off valve and drain.
 9. Toilet – Constructed of stainless steel, wall hung, with siphon jet action. Toilet will have a back spud for a concealed flush valve connection and will be mounted with the top of the seat 18" above the finished floor. Seat will be heavy duty solid plastic with an open front.
 10. Trap primer distribution unit.
 11. Waste and vent material – ABS or PVC plastic and will be plumbed to meet International Building Plumbing Codes.
 12. Water material – Copper tubing Type L, hard drawn. A gate valve will be provided at the inlet end of the water line. All water lines will be of a size to provide proper flushing action based on a nominal water pressure of 40 psi.
 13. Water valve – Self-closing water set with indexed push button.
 14. Water heater – High efficiency commercial grade water heater(s) provided per code.
- O. Plumbing - Shower:
1. Shower control unit – 14-gauge, type 304 stainless steel recessed shower panel with 2.5 gpm flow rate, pressure balancing valve, recessed soap dish and integral stainless steel shower head.
 2. ADA shower control unit – 14-gauge, type 304 stainless steel recessed shower panel with 2.5 gpm flow rate, pressure balancing valve, recessed soap dish, high low diverter valve, and high low integral stainless steel shower heads.
 3. Water heater – High efficiency commercial grade water heater(s) provided per code.

2.2 FABRICATION

- A. Factory fabricate complete restroom facilities, with accessories and options installed at factory.
- B. Factory preglaze windows and doors.
- C. Factory prewire and pre-plumb restroom facilities, ready for connection to service at Project site.
- D. Accessible Restroom facilities: Fabricate restroom facilities as follows:
 1. Provide door opening with minimum 32-inch clear width.
 2. Locate controls and operable parts no lower than 15 inches and no higher than 48 inches above the floor where reach is unobstructed. Where side reach is obstructed, locate controls and operable parts no lower than 15 inches and no higher than 46 inches above the floor.
- E. Finishing Concrete
 1. All exterior building walls and exterior screen walls will be any one of the available textures as indicated on Drawings.

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2. All exterior surfaces of the roof panels will be cast to simulate any one of the available textures as indicated on Drawings. The underside of the overhang will have a smooth finish.
- F. Structural Joints
1. Wall components will be joined together with two (2) welded plate pairs at each joint. Each weld plate will be 6" long and located one (1) pair in the top quarter and one (1) pair in the bottom quarter of the seam. Weld plates will be anchored into the concrete panel and welded together with a continuous weld.
 2. The inside seams will be a paintable caulk. The outside seams will use a caulk in a coordinating building color or clear.
 3. Walls and roof will be joined with weld plates, 3" x 6" at each building corner.
 4. The joint between the floor slab and walls will be joined with a grout mixture on the inside, matching colored caulk on the outside and two (2) weld plates 6" long per wall.
- G. Painting/Staining
1. An appropriate curing time will be allowed before paint or stain is applied to concrete.
 2. Schedule of finishes.
 - a. Inside concrete surfaces.
 - 1) Inside floors will be one (1) coat of 1-part water based chemical resistant urethane.
 - 2) Interior walls and ceilings will be two (2) coats of a modified acrylic, water repellent penetrating stain, followed by one (1) coat of clear sealer.
 - b. Metal surfaces both inside and out.
 - 1) Two (2) coats of DTM ALKYD.
 - c. Exterior concrete surfaces.
 - 1) Exterior walls will be two (2) coats of water repellent penetrating stain in the same color as the walls or roof followed by 1 coat of clear acrylic anti-graffiti sealer.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, including concrete bases; accurate placement, pattern, and orientation of anchor bolts; critical dimensions; and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical and communication systems to verify actual locations of connections before control booth installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

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- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install restroom facilities in accordance with manufacturer's written instructions. Building foundations and subbase by others.
- B. Accessible Restroom facilities: Install with interior floor surface at same elevation as adjacent paved surfaces.
- C. Set restroom facilities plumb and aligned. Level true to plane, with full bearing on concrete bases.
- D. Fasten restroom facilities securely to concrete base with anchorage indicated.
- E. Connect to electrical power service, plumbing service, and communication systems.
- F. Perform startup checks of heating units in accordance with manufacturer's written instructions.

3.3 TESTING

- A. The following tests will be performed on concrete used in the manufacture of toilets. All testing will be performed in the CXT (PCI certified) laboratories. Testing will only be performed by qualified individuals who have been certified ACI Technician Grade 1. Sampling will be in accordance with ASTM C172.
 - 1. The air content of the concrete will be checked per ASTM C231 on the first batch of concrete. The air content will be in the range of 5.0% +/- 2.0%.
 - 2. The compressive strength of the cylinders will be tested to ASTM C39. We will make one (1) cylinder for release, one (1) for seven (7) days and one (1) for 28 days. The release must be a minimum strength of 2500 psi, the 7-day must be a minimum of 4500 psi and the 28-day must be a minimum of 5000 psi.
 - 3. A copy of all test reports will be available to the customer as soon as 28-day test results are available.

3.4 CRACKS AND PATCHING

- A. Cracks in concrete components which are judged to affect the structural integrity of the building will be rejected.
- B. Small holes, depressions, and air voids will be patched with a suitable material. The patch will match the finish and texture of the surrounding surface.
- C. Patching will not be allowed on defective areas if the structural integrity of the building is affected.

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3.5 ADJUSTING

- A. Adjust doors, operable windows, and hardware to operate smoothly, easily, properly, and without binding. Confirm that locks engage accurately and securely without forcing or binding.
- B. Adjust interior and exterior lighting controls.
- C. Lubricate hardware and other moving parts.
- D. After completing installation, inspect exposed finishes and repair damaged finishes.

END OF SECTION 13 3429

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT**SPECIAL PROVISION****JOB 040901****SPRINGHILL PARK TECHNICAL SPECIFICATIONS****SECTION 26 0519 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES****PART 1 - GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Copper building wire.
2. Nonmetallic underground conduit with conductors, Type NUCC.
3. Connectors and splices.

1.2 ACTION SUBMITTALS**A. Product Data:**

1. Copper building wire.
2. Nonmetallic underground conduit with conductors, Type NUCC.
3. Connectors and splices.

PART 2 - PRODUCTS**2.1 COPPER BUILDING WIRE****A. Description:** Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.**B. Standards:**

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

C. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.**D. Conductor Insulation:**

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1. Type USE-2. Comply with UL 854.
2. Type XHHW-2. Comply with UL 44.

2.2 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.
- C. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.
 1. Material: Copper.
 2. Type: Two hole with standard barrels.
 3. Termination: Compression.

PART 3 - EXECUTION**3.1 CONDUCTOR MATERIAL APPLICATIONS**

- A. Feeders:
 1. Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits:
 1. Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Type XHHW-2, single conductors in raceway.
- D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type USE-2.
- E. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type USE-2.

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- A. Complete raceway installation between conductor and cable termination points in accordance with Section 260533.13 "Conduits for Electrical Systems" prior to pulling conductors and cables.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
 - 1. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.

3.5 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.6 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors for compliance with

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requirements.

2. Perform each of the following visual and electrical tests:
 - a. Inspect exposed sections of conductor and cable for physical damage and correct connection according to the single-line diagram.
 - b. Test bolted connections for high resistance using one of the following:
 - 1) A low-resistance ohmmeter.
 - 2) Calibrated torque wrench.
 - 3) Thermographic survey.
 - c. Inspect compression-applied connectors for correct cable match and indentation.
 - d. Inspect for correct identification.
 - e. Inspect cable jacket and condition.
 - f. Insulation-resistance test on each conductor for ground and adjacent conductors. Apply a potential of 500 V(dc) for 300 V rated cable and 1000 V(dc) for 600 V rated cable for a one-minute duration.
 - g. Continuity test on each conductor and cable.
- B. Cables will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports to record the following:
 1. Procedures used.
 2. Results that comply with requirements.
 3. Results that do not comply with requirements, and corrective action taken to achieve compliance with requirements.

END OF SECTION 260519

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GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Grounding and bonding conductors.
2. Grounding and bonding clamps.
3. Grounding and bonding bushings.
4. Grounding and bonding hubs.
5. Grounding and bonding connectors.
6. Grounding (earthing) electrodes.

1.2 ACTION SUBMITTALS

A. Product Data:

1. For each type of product indicated.

PART 2 - PRODUCTS

2.1 GROUNDING AND BONDING CONDUCTORS

A. Equipment Grounding Conductor:

1. General Characteristics: 600 V, , copper wire or cable, green color, in accordance with Section 260519 "Low- Voltage Electrical Power Conductors and Cables."

2.2 GROUNDING AND BONDING CLAMPS

- A. Description: Clamps suitable for attachment of grounding and bonding conductors to grounding electrodes, pipes, tubing, and rebar.
- B. Source Limitations: Obtain products from single manufacturer.
- C. Performance Criteria:

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1. Regulatory Requirements:
 - a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 2. Listing Criteria:
 - a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
- D. UL KDER - Exothermically Welded Connection
1. General Characteristics: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- 2.3 GROUNDING AND BONDING BUSHINGS
- A. Description: Bonding bushings connect conduit fittings, tubing fittings, threaded metal conduit, and unthreaded metal conduit to metal boxes and equipment enclosures, and have one or more bonding screws intended to provide electrical continuity between bushing and enclosure. Grounding bushings have provision for connection of bonding or grounding conductor and may or may not also have bonding screws.
 - B. Source Limitations: Obtain products from single manufacturer.
 - C. Performance Criteria:
 1. Regulatory Requirements:
 - a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 2. Listing Criteria:
 - a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
 - D. UL KDER - Bonding Bushing:
 1. General Characteristics: Threaded bushing with insulated throat.
 - E. UL KDER - Grounding Bushing:
 1. General Characteristics: Threaded bushing with insulated throat and mechanical-type wire terminal.

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- A. Description: Hubs with certified grounding or bonding locknut.
- B. Source Limitations: Obtain products from single manufacturer.
- C. Performance Criteria:
 - 1. Regulatory Requirements:
 - a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 - 2. Listing Criteria:
 - a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
- D. UL KDER - Grounding and Bonding Hub :
 - 1. General Characteristics: Insulated, gasketed, watertight hub with mechanical-type wire terminal.

2.5 GROUNDING AND BONDING CONNECTORS

- A. Source Limitations: Obtain products from single manufacturer.
- B. Performance Criteria:
 - 1. Regulatory Requirements:
 - a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 - 2. Listing Criteria:
 - a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.

2.6 GROUNDING (EARTHING) ELECTRODES

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- A. Description: Grounding electrodes include rod electrodes, ring electrodes, metal underground water pipes, metal building frames, concrete-encased electrodes, and pipe and plate electrodes.
- B. Source Limitations: Obtain products from single manufacturer.
- C. Performance Criteria:
 - 1. Regulatory Requirements:
 - a. Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 - 2. Listing Criteria:
 - a. Grounding and Bonding Equipment: UL CCN KDER; including UL 467.
- D. UL KDER - Rod Electrode:
 - 1. General Characteristics: Copper-cladsteel; 3/4 inch by 10 ft .

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine facility's grounding electrode system and equipment grounding for compliance with requirements for maximum ground-resistance level and other conditions affecting performance of grounding and bonding of electrical system.
- B. Inspect test results of grounding system measured at point of electrical service equipment connection.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with connection of electrical service equipment only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's published instructions.

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1. Connections: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact are galvanically compatible.
2. Electrodes:
 - a. Ground Rods: Drive rods until tops are 2 inch below finished floor or final grade unless otherwise indicated.
 - 1) Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
 - 2) Use exothermic welds for below-grade connections.
 - b. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least same distance from other grounding electrodes, and connect to service grounding electrode conductor.
3. Grounding at Service:
 - a. Equipment grounding conductors and grounding electrode conductors must be connected to ground bus. Install main bonding jumper between neutral and ground buses.
4. Grounding Separately Derived Systems:
 - a. Transformer: Install grounding electrode(s) at transformer location. Electrode must be connected to equipment grounding conductor and to frame of transformer.
5. Equipment Grounding:
 - a. Install insulated equipment grounding conductors with feeders and branch circuits.

3.3 FIELD QUALITY CONTROL**A. Tests and Inspections:**

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.

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2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with calibrated torque wrench in accordance with manufacturer's published instructions.
 3. Test completed grounding system at each location where maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal. Make tests at ground rods before conductors are connected.
 - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method in accordance with IEEE Std 81.
 - c. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.
- B. Nonconforming Work:
1. Grounding system will be considered defective if it does not pass tests and inspections.
 2. Remove and replace defective components and retest.
- C. Collect, assemble, and submit test and inspection reports.
- 3.4 PROTECTION
- A. After installation, protect grounding and bonding cables and equipment from construction activities. Remove and replace items that are contaminated, defaced, damaged, or otherwise caused to be unfit for use prior to acceptance by Owner.

END OF SECTION 260526

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Support, anchorage, and attachment components.
2. Fabricated metal equipment support assemblies.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
 - a. Slotted support systems, hardware, and accessories.
 - b. Clamps.
 - c. Hangers.
 - d. Sockets.
 - e. Eye nuts.
 - f. Fasteners.
 - g. Anchors.
 - h. Saddles.
 - i. Brackets.

2. Include rated capacities and furnished specialties and accessories.

B. Shop Drawings: For fabrication and installation details for electrical hangers and support systems.

1. Slotted support systems.
2. Equipment supports.

C. Delegated Design Submittals: For hangers and supports for electrical systems.

1. Include design calculations and details of hangers.

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PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified structural Licensed Professional Engineer to design hanger and support system.

2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32 inch diameter holes at a maximum of 8 inch on center in at least one surface.
1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
 2. Material for Channel, Fittings, and Accessories: Galvanized steel or Stainless steel, Type 304.
 3. Channel Width: Selected for applicable load criteria
 4. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA- 4.
 5. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Conduit and Cable Support Devices: hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

PART 3 - EXECUTION

3.1 SELECTION

- A. Comply with the following standards for selection and installation of hangers and supports, except where requirements on Drawings or in this Section are stricter:
1. NECA NEIS 101
 2. NECA NEIS 102.
 3. NECA NEIS 105.
 4. NECA NEIS 111.
- B. Comply with requirements for raceways specified in Section 260533.13 "Conduits for Electrical Systems."
- C. Comply with requirements for boxes specified in Section 260533.16 "Boxes and Covers for Electrical Systems."

3.2 INSTALLATION OF SUPPORTS

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- A. Comply with NECA NEIS 101 for installation requirements except as specified in this article.
- B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination must be weight of supported components plus 200 lb (90 kg).

3.4 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated, but not less than 4 inch (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000 psi, 28-day compressive-strength concrete.
- C. Anchor equipment to concrete base as follows:
 - 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

- A. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A780.

END OF SECTION 260529

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Type ERMC-S duct raceways, elbows, couplings, and nipples.
2. Type LFMC duct raceways.
3. Type PVC duct raceways and fittings.
4. Electrically conductive corrosion-resistant compounds for threaded conduit.
5. Solvent cements.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Type ERMC-S duct raceways, elbows, couplings, and nipples.
2. Type PVC duct raceways and fittings.
3. Electrically conductive corrosion-resistant compounds for threaded conduit.
4. Solvent cements.

B. Sustainable design submittals.

1. Solvent cements.

1.3 INFORMATIONAL SUBMITTALS

A. Manufacturers' Published Instructions:

1. .
2. Type ERMC-S duct raceways, elbows, couplings, and nipples.
3. Type PVC duct raceways and fittings.

PART 2 - PRODUCTS

2.1 TYPE ERMC-S DUCT RACEWAYS, ELBOWS, COUPLINGS, AND NIPPLES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DYIX; including UL 6.

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1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DYIX - Galvanized-Steel Electrical Rigid Metal Conduit (ERMC-S-G), Elbows, Couplings, and Nipples:

1. Type ERMC-S-G is referred to on the Drawings as 'RMC.'
2. Exterior Coating: Zinc.
3. Options:
 - a. Interior Coating: Zinc.
 - b. Minimum Trade Size: Metric designator 21 (trade size 3/4).
 - c. Colors: As indicated on Drawings.

2.2 TYPE LFMC DUCT RACEWAYS**A. Performance Criteria:**

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DXHR; including UL 360.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DXHR - Steel Liquidtight Flexible Metal Conduit (LFMC-S):

1. Material: Steel.
2. Options:
 - a. Minimum Trade Size: Metric designator 21 (trade size 3/4).

2.3 TYPE PVC DUCT RACEWAYS AND FITTINGS**A. Performance Criteria:**

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1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 2. Listing Criteria: UL CCN DZYR; including UL 651.
- B. Source Quality Control:
1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
 2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.
- C. UL DZYR - Schedule 40 Rigid PVC Conduit (PVC-40) and Fittings:
1. Dimensional Specifications: Schedule 40.
 2. Options:
 - a. Minimum Trade Size: Metric designator 21 (trade size 3/4).
- 2.4 ELECTRICALLY CONDUCTIVE CORROSION-RESISTANT COMPOUNDS FOR THREADED CONDUIT
- A. Performance Criteria:
1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 2. Listing Criteria: UL CCN FOIZ; including UL Subject 2419.
- B. Source Quality Control:
1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
 2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.
- C. UL FOIZ - Electrically Conductive Corrosion-Resistant Compound for Threaded Conduit:
- 2.5 SOLVENT CEMENTS
- A. Performance Criteria:
1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
 2. Listing Criteria: UL CCN DWTT; including UL 514B.

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- B. Source Quality Control:
 - 1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
 - 2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.
- C. UL DWTT - Solvent Cements for Type PVC Duct Raceways and Fittings:

PART 3 - EXECUTION**3.1 SELECTION OF CONDUITS FOR ELECTRICAL SYSTEMS**

- A. Outdoors:
 - 1. Exposed and Subject to Physical Damage: ERMCM.
 - 2. Exposed and Not Subject to Physical Damage: ERMCM.
 - 3. Direct Buried: PVC-40.
 - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMCM.
- B. Duct Fittings: Select fittings in accordance with NEMA FB 2.10 guidelines.
 - 1. ERMCM and IMCM: Provide threaded-type fittings unless otherwise indicated.

3.2 INSTALLATION OF CONDUITS FOR ELECTRICAL SYSTEMS

- A. Comply with manufacturer's published instructions.
- B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:
 - 1. Type ERMCM-S: Article 344 of NFPA 70 and NECA NEIS 101.
 - 2. Type LFMCM: Article 350 of NFPA 70 and NECA NEIS 101.
 - 3. Type PVC: Article 356 of NFPA 70 and NECA NEIS 111.
 - 4. Consult Architect for resolution of conflicting requirements.
- C. Special Installation Techniques:
 - 1. General Requirements for Installation of Duct Raceways:

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- a. Complete duct raceway installation before starting conductor installation.
- b. Provide stub-ups through floors with coupling threaded inside for plugs, set flush with finished floor. Plug coupling until conduit is extended above floor to final destination or a minimum of 2 ft above finished floor.
- c. Install no more than equivalent of three 90-degree bends in conduit run.
- d. Make bends in duct raceway using large-radius preformed ells except for parallel bends. Field bending must be in accordance with NFPA 70 minimum radii requirements. Provide only equipment specifically designed for material and size involved.
- e. Support conduit within 12 inch of enclosures to which attached.
- f. Install duct sealing fittings at accessible locations in accordance with NFPA 70 and fill them with listed sealing compound. For concealed duct raceways, install fitting in flush steel box with blank cover plate having finish similar to that of adjacent plates or surfaces. Install duct sealing fittings in accordance with NFPA 70.
- g. Install devices to seal duct raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal interior of duct raceways at the following points:
 - 1) Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 - 2) Where an underground service duct raceway enters a building or structure.
 - 3) Conduit extending from interior to exterior of building.
 - 4) Where otherwise required by NFPA 70.
- h. Keep duct raceways at least 6 inch away from parallel runs of flues and steam or hot-water pipes. Install horizontal duct raceway runs above water and steam piping.
- i. Cut conduit perpendicular to the length. For conduits metric designator 53 (trade size 2) and larger, use roll cutter or a guide to make cut straight and perpendicular to the length. Ream inside of conduit to remove burrs.
- j. Install pull wires in empty duct raceways. Provide polypropylene or monofilament plastic line with not less than 200 lb tensile strength. Leave at least 12 inches of slack at both ends of pull wire. Cap underground duct raceways designated as spare above grade alongside duct raceways in use.
- k. Install duct raceways square to the enclosure and terminate at enclosures without hubs with locknuts on both sides of enclosure wall. Install locknuts hand tight, plus one-quarter turn more.
 - 1) Termination fittings with shoulders do not require two locknuts.
- l. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to metric designator 35 (trade size 1-1/4) and insulated throat metal bushings on metric

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designator 41 (trade size 1-1/2) and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

2. Types ERMC and IMC:
 - a. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound that maintains electrical conductivity to threads of duct raceway and fittings before making up joints. Follow compound manufacturer's published instructions.
 3. Types FMC, LFMC, and LFNC:
 - a. Provide a maximum of 36 inch of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
 4. Types PVC, HDPE, and EPEC:
 - a. Do not install Type PVC, Type HDPE, or Type EPEC conduit where ambient temperature exceeds 122 deg F . Conductor ratings must be limited to 75 deg C except where installed in a trench outside buildings with concrete encasement, where 90 deg C conductors are permitted.
 - b. Comply with manufacturer's published instructions for solvent welding and fittings.
 5. Duct Fittings: Install fittings in accordance with NEMA FB 2.10 guidelines.
 - a. Flexible Conduit: Provide only fittings listed for use with flexible conduit type. Comply with NEMA FB 2.20.
- 3.3 PROTECTION
- A. Protect coatings, finishes, and cabinets from damage and deterioration.
 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 26 0533.13

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Labels.
2. Signs.
3. Miscellaneous identification products.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Labels.
2. Signs.
3. Miscellaneous identification products.

- B. Identification Schedule: For each piece of electrical equipment and electrical system components to be index of nomenclature for electrical equipment and system components used in identification signs and labels. Use same designations indicated on Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Signs, labels, and tags required for personnel safety must comply with the following standards:

1. Safety Colors: NEMA Z535.1.
2. Safety Symbols: NEMA Z535.3.
3. Product Safety Signs and Labels: NEMA Z535.4.

- B. Comply with NFPA 70E requirements for arc-flash warning labels.

- C. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, must comply with UL 969.

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- A. Color-Coding for Phase- and Voltage-Level Identification, 1000 V or Less: Use colors listed below for ungrounded service, feeder, and branch-circuit conductors.
1. Color must be factory applied or field applied for sizes larger than 8 AWG if authorities having jurisdiction permit.
 2. Colors for 240 V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 3. Colors for 480 V Circuits:
 - a. Phase A: Brown.
 - b. Phase B: Orange.
 4. Color for Neutral: White.
 5. Color for Equipment Grounds: Green.

2.3 LABELS

- A. Self-Adhesive Wraparound Labels: Preprinted, 3 mil thick, polyester flexible label with acrylic pressure-sensitive adhesive.
1. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over legend. Labels sized such that clear shield overlaps entire printed legend.
 2. Marker for Labels:
 - a. Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.
- B. Self-Adhesive Labels: Polyester, thermal, transfer-printed, 3 mil thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.
1. Minimum Nominal Size:
 - a. 3-1/2 by 5 inch for equipment.
 - b. As required by authorities having jurisdiction.

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2.4 TAPES AND STENCILS

A. Underground-Line Warning Tape:

1. Tape:

- a. Recommended by manufacturer for method of installation and suitable to identify and locate underground electrical utility lines.
- b. Printing on tape must be permanent and may not be damaged by burial operations.
- c. Tape material and ink must be chemically inert and not be subject to degradation when exposed to acids, alkalis, and other destructive substances commonly found in soils.

2. Color and Printing:

- a. Comply with APWA Uniform Color Code using NEMA Z535.1 safety colors.
- b. Inscriptions for Red Tapes: "CAUTION BURIED ELECTRIC LINE BELOW".

2.5 SIGNS

A. Laminated Acrylic or Melamine Plastic Signs:

1. Engraved legend.
2. Thickness:

- a. For signs up to 20 sq. inch, minimum 1/16 inch thick.
- b. For signs larger than 20 sq. inch, 1/8 inch thick.
- c. Engraved legend with black letters on white face.
- d. Self-adhesive.
- e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.6 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless steel screws or stainless steel machine screws with nuts and flat and lock washers.

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT**SPECIAL PROVISION****JOB 040901****SPRINGHILL PARK TECHNICAL SPECIFICATIONS****PART 3 - EXECUTION****3.1 PREPARATION**

- A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

3.2 INSTALLATION**A. Self-Adhesive Labels:**

1. Install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on 1-1/2 inch high label; where two lines of text are required, use labels 2 inch high.

B. Underground Line Warning Tape:

1. During backfilling of trenches, install continuous underground-line warning tape directly above cable or raceway at 6 to 8 inch below finished grade. Use multiple tapes where width of multiple lines installed in common trench exceeds 16 inch overall.
2. Install underground-line warning tape for direct-buried cables and cables in raceways.

CC. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to location and substrate.
2. Unless otherwise indicated, provide single line of text with 1/2 inch high letters on 1-1/2 inch high sign; where two lines of text are required, use labels 2 inch high.

3.3 IDENTIFICATION SCHEDULE

- A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.
- B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.
- C. Locations of Underground Lines: Underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.
- D. Arc Flash Warning Labeling: Self-adhesive labels.
- E. Equipment Identification Labels:

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

JOB 040901

SPRINGHILL PARK TECHNICAL SPECIFICATIONS

1. Outdoor Equipment: Laminated acrylic or melamine sign.
2. Equipment to Be Labeled:
 - a. Panelboards: Typewritten directory of circuits in location provided by panelboard manufacturer. Panelboard identification must be in form of self-adhesive, engraved, laminated acrylic or melamine label.
 - b. Enclosures and electrical cabinets.
 - c. Transformers: Label that includes tag designation indicated on Drawings for transformer, feeder, and panelboards or equipment supplied by secondary.
 - d. Enclosed switches.

END OF SECTION 26 0553

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT**SPECIAL PROVISION****JOB 040901****SPRINGHILL PARK TECHNICAL SPECIFICATIONS****SECTION 26 2416 - PANELBOARDS****PART 1 - GENERAL****1.1 SUMMARY****A. Section Includes:**

1. Lighting and appliance branch-circuit panelboards.
2. Disconnecting and overcurrent protective devices.

1.2 DEFINITIONS**A. MCCB: Molded-case circuit breaker.****1.3 ACTION SUBMITTALS****A. Product Data:**

1. Lighting and appliance branch-circuit panelboards.
2. Disconnecting and overcurrent protective devices.
3. Include materials, switching and overcurrent protective devices, SPDs, accessories, and components indicated.
4. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details.
2. Show tabulations of installed devices with nameplates, conductor termination sizes, equipment features, and ratings.
3. Detail enclosure types including mounting and anchorage, environmental protection, knockouts, corner treatments, covers and doors, gaskets, hinges, and locks.
4. Detail bus configuration, current, and voltage ratings.
5. Short-circuit current rating of panelboards and overcurrent protective devices.
6. Include evidence of listing, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for series rating of installed devices.
7. Include evidence of listing, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for SPD as installed in panelboard.
8. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
9. Include wiring diagrams for power, signal, and control wiring.

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT**SPECIAL PROVISION****JOB 040901****SPRINGHILL PARK TECHNICAL SPECIFICATIONS**

1.4 CLOSEOUT SUBMITTALS

- A. Warranty documentation.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Spare Parts: Furnish to Owner spare parts, for repairing panelboards, that are packaged with protective covering for storage on-site and identified with labels describing contents. Include the following:

- 1. Keys: Two spares for each type of panelboard cabinet lock.
- 2. Circuit Breakers Including GFCI and GFEP Types: Two spares for each panelboard.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.
- B. Handle and prepare panelboards for installation in accordance with NECA 407.

1.7 WARRANTY

- A. Special Installer Extended Warranty: Installer warrants that fabricated and installed panelboards perform in accordance with specified requirements and agrees to repair or replace components or products that fail to perform as specified within extended-warranty period.
 - 1. Extended-Warranty Period: Two years from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 – PRODUCTS

2.1 PANELBOARDS AND LOAD CENTERS COMMON REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70, by qualified electrical testing agency recognized by authorities having jurisdiction, and marked for intended location and application.
- B. Comply with NEMA PB 1.
- C. Comply with NFPA 70.
- D. Enclosures: Surface-mounted, dead-front cabinets.
 - 1. Rated for environmental conditions at installed location.
 - a. Outdoor Locations: UL 50E, Type 3R.

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT**SPECIAL PROVISION****JOB 040901****SPRINGHILL PARK TECHNICAL SPECIFICATIONS**

2. Height: 7 ft maximum.
 3. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions. Trims must cover live parts and may have no exposed hardware.
 4. Finishes:
 - a. Fungus Proofing: Permanent fungicidal treatment for overcurrent protective devices and other components.
- E. Incoming Mains:
1. Location: Bottom.
- F. Phase, Neutral, and Ground Buses:
1. Material: Hard-drawn copper, 98 percent conductivity.
 2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
 3. Full-Sized Neutral: Equipped with full-capacity bonding strap for service entrance applications. Mount electrically isolated from enclosure.
- G. Conductor Connectors: Suitable for use with conductor material and sizes.
1. Material: Hard-drawn copper, 98 percent conductivity.
 2. Terminations must allow use of 75 deg C rated conductors without derating.
 3. Main and Neutral Lugs: Mechanical type, with lug on neutral bar for each pole in panelboard.
 4. Ground Lugs and Bus-Configured Terminators: Mechanical type, with lug on bar for each pole in panelboard.
- H. Panelboard Short-Circuit Current Rating:
1. Fully rated to interrupt symmetrical short-circuit current available at terminals. Assembly listed, by qualified electrical testing laboratory recognized by authorities having jurisdiction, for 100 percent interrupting capacity.
 - a. Panelboards and overcurrent protective devices rated 240 V or less must have short-circuit ratings as shown on Drawings, but not less than 10 000 A(rms) symmetrical.
 - b. Panelboards and overcurrent protective devices rated above 240 V and less than 600 V must have short-circuit ratings as shown on Drawings, but not less than 14 000 A(rms) symmetrical.
- I. Surge Suppression: Factory installed as integral part of indicated panelboards, complying with UL 1449 SPD Type 2.
- 2.2 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS
- A. Listing Criteria: NEMA PB 1, lighting and appliance branch-circuit type.

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT**SPECIAL PROVISION****JOB 040901****SPRINGHILL PARK TECHNICAL SPECIFICATIONS**

- B. Mains: Circuit breaker.
- C. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

2.3 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. MCCB: Comply with UL 489, with interrupting capacity to meet available fault currents.
 - 1. Thermal-Magnetic Circuit Breakers:
 - a. Inverse time-current element for low-level overloads.
 - b. Instantaneous magnetic trip element for short circuits.
 - c. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
 - 2. MCCB Features and Accessories:
 - a. Standard frame sizes, trip ratings, and number of poles.
 - b. Breaker handle indicates tripped status.
 - c. UL listed for reverse connection without restrictive line or load ratings.
 - d. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Receive, inspect, handle, and store panelboards in accordance with NECA 407.
- B. Examine panelboards before installation. Reject panelboards that are damaged, rusted, or have been subjected to water saturation.

3.2 INSTALLATION

- A. Comply with manufacturer's published instructions.
- B. Reference Standards:
 - 1. Panelboards: Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NECA 407.
- C. Special Techniques:
 - 1. Equipment Mounting:
 - a. Mount surface-mounted panelboards to steel slotted supports. Size supports adequately to support equipment as described in 'Hangers and Supports for Electrical Systems.' Orient steel slotted supports vertically.
 - 2. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from panelboards.

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT**SPECIAL PROVISION****JOB 040901****SPRINGHILL PARK TECHNICAL SPECIFICATIONS**

3. Mount panelboard cabinet plumb and rigid without distortion of box.
4. Install overcurrent protective devices and controllers not already factory installed.
 - a. Set field-adjustable, circuit-breaker trip ranges.
 - b. Tighten bolted connections and circuit breaker connections using calibrated torque wrench or torque screwdriver in accordance with manufacturer's published instructions.
5. Make grounding connections and bond neutral for services and separately derived systems to ground. Make connections to grounding electrodes, separate grounds for isolated ground bars, and connections to separate ground bars.
6. Install filler plates in unused spaces.
7. Stub four 1 inch empty conduits 36 inches below grade, extending 5 feet from the edge of the equipment support pad.

3.3 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; install warning signs complying with requirements in Section 260553 "Identification for Electrical Systems."
- B. Panelboard Nameplates: Label each panelboard with nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- C. Device Nameplates: Label each branch circuit device in power panelboards with nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- D. Install warning signs complying with requirements in Section 260553 "Identification for Electrical Systems" identifying source of remote circuit.
- E. Panelboard Label: Manufacturer's name and trademark, voltage, amperage, number of phases, and number of poles must be located on interior of panelboard door.
- F. Breaker Labels: Faceplate must list current rating, UL and IEC certification standards, and AIC rating.
- G. Circuit Directory:
 1. Provide computer-generated circuit directory mounted inside panelboard door with transparent plastic protective cover.
 - a. Circuit directory must identify specific purpose with detail sufficient to distinguish it from other circuits.

3.4 FIELD QUALITY CONTROL

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

JOB 040901

SPRINGHILL PARK TECHNICAL SPECIFICATIONS

- A. Acceptance Testing Preparation:
 - 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.

- B. Nonconforming Work:
 - 1. Panelboards will be considered defective if they do not pass tests and inspections.
 - 2. Remove and replace defective units and retest.

3.5 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

3.6 PROTECTION

- A. Temporary Heating: Prior to energizing panelboards, apply temporary heat to maintain temperature in accordance with manufacturer's published instructions.

END OF SECTION 26 2416

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

SPRINGHILL PARK MEASUREMENT AND PAYMENT

1. GENERAL

A. DESCRIPTION

1. This special provision provides method of Measurement and Payment applicable to work performed for improvements within the Springhill Park area of this contract, whether the pay items are provided or implied as part of the contract Plan documents.
2. Select items within the Springhill Park area are to be paid for and specified as standard ARDOT pay items. No changes are implied or intended to these items with this special provision.
3. For Lump Sum Pay items described in this special provision, site specific elements of the lump sum items are listed on the plans for information only and do not relieve the Contractor of the requirement to account for all items necessary to complete the work shown in the plans. Some plan elements are not counted in the provided quantity information and are subject to the Contractor installing replacement items to match existing conditions.

B. SPRINGHILL PARK SITE BREAKOUT

Springhill Park will be broken up into multiple sites. Each site within Springhill Park will have one or more pay items to be counted within the site breakout.

1. The following is a list of the sites with their associated areas of Springhill Park.

Site name	List of areas included	Description of work included
Site 1	Loop A, Lock and Dam road from bridge underpass to Loop A	- ACHM overlay - Cold Milling
Site 2	Loop B, Loop B Restroom facility, Boat ramp and access road	- ACHM overlay - RESTROOM BUILDING - SITE UTILITIES - LANDSCAPING - EXTERIOR ELECTRICAL DISTRIBUTION
Site 3	Loop E	- ACHM overlay - Cold Milling - EXTERIOR ELECTRICAL DISTRIBUTION - LANDSCAPING - SITE UTILITIES
Site 4	Lock and dam road from park entrance to bridge underpass, parking lot	- ACHM overlay - Cold Milling

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB 040901****SPRINGHILL PARK MEASUREMENT AND PAYMENT****2. PAY ITEMS**

A. SITE UTILITIES will be measured on the lump sum basis and shall consist of the following:

1. water meters,
2. water piping, gate valves and fittings,
3. sanitary sewer cleanouts, manholes, piping, fittings
4. pipe encasements,
5. road bores,
6. road trench crossing repair,
7. utility connections,
8. trenching,
9. trench safety,
10. excavation and backfill.

The Contractor shall provide a schedule of values which will be considered when measuring the completed work for this pay item. Work completed and accepted and measured as provided above will be paid for at the contract lump sum price bid for *Site Utilities*, which price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

B. LANDSCAPING will be measured on the lump sum basis per site and shall consist of the following:

1. the removal and disposal of existing plant material and hardscape,
2. removal and storage of designated existing plant and tree material,
3. all new plant material including topsoil, fertilizer, seeding, solid sodding, mulch,
4. parking wheel stops,
5. landscape timbers and hardware,
6. site signing (including handicap accessible signs),
7. replacement pavement markings, including initial site conditions documentation for item replacement (for signing, striping and parking wheel stops),
8. campsite and restroom facility earthwork,
9. Crushed stone aggregate base course (class 7) for walkways and building foundations.
10. Maintenance of plant material and warranty shall be included.
11. Metal chain link fence panels and gates, 6'-0" high, for temporary use in limiting access to roadway and bridge construction areas annotated in plans.

The Contractor shall provide a schedule of values which will be considered when measuring the completed work for this pay item. Work completed and accepted as provided above will be paid for at the contract lump sum price bid for *Landscaping*, which price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB 040901****SPRINGHILL PARK MEASUREMENT AND PAYMENT**

C. EXTERIOR ELECTRICAL DISTRIBUTION will be measured on the lump sum basis per site and shall consist of the following:

1. the installation of new electrical service,
2. transformer,
3. distribution panelboards,
4. handholes,
5. underground feeder and branch circuits
6. including all trenching and excavation as shown on the plans.

The Contractor shall provide a schedule of values which will be considered when measuring the completed work for this pay item. Work completed and accepted and measured as provided above will be paid for at the contract lump sum price bid for *Exterior Electrical Distribution*, which price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

D. RESTROOM BUILDING will be measured on the lump sum basis and shall consist of the construction and installation of the new Facilities as follows:

1. Loop B Restroom Facility

The Work shall include all building systems and interior furnishings, allowance items, and conduit and wiring for communications and security systems.

Also included are:

1. retaining/foundation walls,
2. safety rails, and associated items;
3. utility services connecting to distribution lines including but not limited to
 - a. electrical services,
 - b. water service lines,
 - c. sewer service lines,
 - d. ½", ¾" & 1" copper service lines
4. building exterior lighting,
5. concrete walks, and
6. All other work required by the Springhill Park Details plan sheets and Springhill Park Technical Specifications special provision not defined under other pay items on this project.

The Contractor shall provide a schedule of values which will be considered when measuring the completed work for this pay item. Work completed and accepted and measured as provided above will be paid for at the contract lump sum price bid for the *Restroom Building*, which price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
WATER POLLUTION CONTROL

Section 110 of the Standard Specifications for Highway Construction, Edition of 2014 is hereby amended as follows:

The following is added to **Section 110**:

Sedimentation, turbidity, and other water pollution shall be carefully controlled and minimized on this project. The Contractor shall, in all operations, make provisions to prevent as much material or debris, resulting from work performed on this project, as practical from entering the waterway. Required actions of the Contractor shall include, but are not limited to, the following:

- **Demolition of the existing bridge shall be accomplished in such a manner that turbidity and sedimentation are minimized. The method of demolition and removal shall be approved by the Engineer.**
- **No material shall be wasted or temporarily stockpiled in wetlands or where it can be eroded or washed into waters of the United States.**
- **Riprap as specified in Subsection 816.02 (a)(2), or larger, shall be used to construct all approved temporary fills.**
- **All temporary fill must be removed prior to completion of the project. After removal, salvaged material that meets the requirements of Subsection 816.02 (a)(2) may be reused in other areas that require the utilization of riprap.**
- **Storage areas of petroleum and other chemical products shall be located away from the stream channel and floodplain to prevent all possibility of spillage into the water. The Engineer reserves the right to limit the amount of these products in areas where spillage into the waterway is possible.**
- **If material or debris resulting from Contractor operations enters the waterway, the Engineer shall determine whether it shall remain. If it is determined that the material is to be removed from the waterway, the Engineer must preapprove the Contractor's method of removal. Methods of removal that would contribute to increased turbidity, such as dredging, shall be avoided.**
- **Fording of streams shall not be allowed.**

METHOD OF MEASUREMENT AND BASIS OF PAYMENT: The work involved in complying with this Special Provision will not be measured or paid for separately, but will be considered included in the contract unit prices bid for other items of the contract.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SPECIAL PROVISION****JOB NO. 040901****SPECIAL FACILITIES AT SITE**

Description. This Special Provision covers the water transportation for use of the Engineer.

Transportation. For transportation to and from river banks, floating equipment and temporary or permanent construction in the river, the Contractor shall provide a six (6) passenger power boat, equipped to meet U.S. Coast Guard regulations, with operator or operators, for the exclusive use of the Engineer. Such use shall take precedence over any that the Contractor may have and the boat shall be available at all times that work is underway.

The Contractor shall also provide and maintain suitable landing docks on each side of the river, constructed so as to permit safe and easy access to the boat during all stages of the river.

The Contractor shall secure from the District Engineer all necessary permits for the construction of any temporary landing docks. Upon completion of this contract, the landing docks shall be removed if so directed by the Engineer.

Payment. Payment for the furnishing, construction, maintaining and removing these special facilities will not be made directly but will be included as a part of the unit prices bid for the various items of work.

Arkansas Department of Transportation

Special Provision

Site Use (A+C Method) – Calendar Day Contract

This document will be provided once this project has been officially advertised.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

SECTION 404 STANDARD INDIVIDUAL PERMIT REQUIREMENTS

Specification 110 of the Standard Specifications, 2014 Edition, is hereby amended as follows:

DESCRIPTION: The following is added to **Specification 110:**

This project is permitted under a Section 404 Standard Individual Permit issued by the Army Corps of Engineers.

The Environmental Division has determined that this project will not adversely affect public water supply intakes, shellfish production areas, or endangered species. Any excavation, temporary fill, permanent fill, or clearing and grubbing which deviates from the original plans and contract or any construction or construction related activity not specified on the plans (including, but not limited to, borrow areas, haul roads, access roads, waste areas, etc.) shall be coordinated with the Environmental Division through the Construction Division to assure that the Section 404 Standard Individual Permit remains valid.

The following items and quantities have been permitted for this project.

Type of Activity	Location	Amount
Temporary Fill (Work Road below Bridge 07684)	Arkansas River Stations 181+66 – 193+05	15,284.5 yd ³ (below OHW elevation 384 ft msl)
Temporary Fill (Work Road below Bridge 07685)	Flat Rock Creek Stations 247+33 – 247+68	6,300.9 yd ³ (below OHW elevation 384 ft msl)

Refer to Section 110.05 (c) for the requirements of temporary work ramps and haul roads.

The Contractor should be aware that Corps of Engineers review of proposed modifications to a Section 404 Standard Individual Permit may require 60 to 120 calendar days. A determination will be made by the Engineer within ten (10) business days concerning the necessity or practicability of the request. The Department will then apply for permit modifications, which it determines to be necessary or practicable.

These requested changes may be denied or modified by the Department or Corps of Engineers. Requested modifications, which require mitigation, will be denied by the Department. The Contractor will not be granted additional compensation or contract time due to requested modifications of the Section 404 Standard Individual Permit that are considered by the Engineer to be for the convenience of the Contractor.

Other details concerning those activities listed above shall be as shown on the plans.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT: Riprap, if reused, will be measured and paid for in accordance with the applicable specification for its final use. All

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

SECTION 404 STANDARD INDIVIDUAL PERMIT REQUIREMENTS

Contractor costs incurred in complying with this section will not be paid for directly, but shall be included in the unit prices bid for other items of work unless specifically included as a pay item in the Contract.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
ZEBRA MUSSEL CONTAINMENT

This Special Provision shall be supplemental to **Section 107.01** of the Standard Specifications, Edition of 2014.

DESCRIPTION: The Contractor shall comply with Arkansas Game and Fish Commission Regulation 26.14. Pursuant to this regulation, the Arkansas Game and Fish Commission has established procedures to slow the spread of zebra mussels within Arkansas. The zebra mussel is an exotic species that is threatening native aquatic life.

CONSTRUCTION METHODS: The Contractor's Equipment (boats, barges, and any other equipment) which will enter the White River must be inspected for zebra mussel contamination.

The Contractor, at his option, may arrange for inspection of the Equipment. The final inspection shall be performed by a recognized expert in zebra mussel identification. The Contractor shall provide the Engineer with a certification from the expert attesting to the inspection/and or cleaning of the Equipment before the Equipment enters the Arkansas River. Zebra mussel inspection arranged by the Contractor will be at the cost of the Contractor.

The Engineer can arrange inspection of the Contractor's Equipment before it enters Arkansas River. The inspection shall take place at a location approved by the Engineer. All Equipment to be inspected shall be out of the water and assembled in a single location by the Contractor. The inspection location shall be within a fifty-mile radius of the project area. In order to expedite the inspection process, the Engineer shall be notified as soon as the Contractor selects where and when the Equipment will be ready for inspection. A minimum of three days prior notice shall be required. At this time, the Contractor shall submit a list of the type and size of the Equipment to be inspected. The inspection will take place within three calendar working days of the arrival of the Equipment at the inspection location. Zebra mussel inspection performed by the Department will be at the cost of the Department.

In the event zebra mussels are discovered, the Contractor shall decontaminate his Equipment as instructed by the Engineer before it enters the Arkansas River. One option of removing adult zebra mussels is scraping. The Department will inspect the Equipment if it is dry docked after decontamination. If not, the Contractor shall provide the Department a certification from an expert as described above attesting that no zebra mussels remain attached to the Equipment.

The use of a chlorine based bleach to pretreat bilges and other water containing areas will be required. Bilges shall be drained before entering the Arkansas River watershed, and bilges shall not be allowed to drain into natural waters.

Subsequent trips of previously cleaned barges, boats, and other equipment to the Arkansas or Mississippi rivers during mid-March through October expose the Equipment to reinfestation by zebra mussels. Additional inspections and cleaning may be required to prevent secondary zebra mussel infestations from reaching sexual maturity (sexual maturity is reached in about four months) and reproducing in the Arkansas River.

The Contractor will not be granted any additional compensation or contract time due to compliance with this Special Provision.

CONTRACTOR NEGLIGENCE: The Contractor will be assessed the amounts of any and all fines and penalties assessed against and costs incurred by the Department which are the result of the Contractor's failure to comply with this Special Provision.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB 040901
ZEBRA MUSSEL CONTAINMENT

METHOD OF MEASUREMENT AND BASIS OF PAYMENT: All other work involved in complying with this Special Provision will not be measured or paid for separately, but will be considered included in the contract unit prices bid for other items of the contract.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

PARTNERING REQUIREMENTS

Section 104 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added to **subsection 104.01**:

The Department encourages on this project the establishment and use of a voluntary cohesive partnership agreement between the Department and its Prime Contractor and subcontractors. Toward this end, a partnership may be structured between these parties to draw on the strengths of each to identify and achieve their mutual goals. The objectives of this are:

- Effective contract performance,
- Efficient contract performance,
- Completion of the project within budget,
- Completion of the project on schedule, and
- Construction of the project in accordance with the contract.

This partnership will be shared equally between the Department and the Prime contractor and subcontractors. Participation in this "partnering" concept is voluntary on this project. The Prime Contractor and approved subcontractors shall bear the costs associated with their personnel's time while participating in seminars, workshops, and meetings for successful "partnering" on this project.

In order to obtain a successful partnering relationship and agreement, the Department shall arrange for a partnership development/team building workshop prior to the preconstruction conference. Persons required to attend this workshop are:

- Contractor and approved Subcontractor President, Vice President, or General Superintendent,
- Contractor and approved Subcontractor project Superintendent,
- Department District Engineer,
- Department Resident Engineer,
- Appropriate Department Design personnel,
- Department Staff Construction Engineer, and
- Department Area Materials Engineer.

The Federal Highway Administration and other interested parties shall be invited to attend and participate, but their attendance will not be required.

The Department and/or the Contractor may bring other personnel at their option.

Follow-up meetings shall be held periodically throughout the duration of the contract. The establishment of a partnership charter on this project will not change the legal relationship of the Department and the other participating parties to the contract nor relieve either party from any of the terms of the contract.

The partnership agreement shall NOT constitute authority to change the contract, plans, or Specifications.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB NO. 040901
CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS

GENERAL: This special provision limits the temporary construction operations in Special Flood Hazard Areas (SFHA) as required by the National Flood Insurance Program (NFIP).

Temporary construction operations include all work and material necessary to access and construct the permanent bridge(s) and roadway embankment within the SFHA. These operations may include work ramps, haul roads, temporary crossings, detour roads, levees, diversion channels, retaining walls, cofferdams, forms, storage of materials, storage of large equipment, and other related work.

This project crosses a regulatory floodway, regulatory floodplain, or SFHA as shown on the Community's Flood Insurance Rate Map published by FEMA. The regulatory floodway, regulatory floodplain, or SFHA limits are shown on the project plan and profile drawings.

The project is designed to comply with the NFIP's regulations set forth in Title 44, Chapter 1, Parts 59-77, of the U.S. Code of Federal Regulations (CFR).

The following special conditions must be complied with:

- Temporary operations are to be used during the low flow season when possible.
- The conceptual work plan (CWP), included in this Special Provision, for temporary operations in a regulatory floodway provide for no increase in the NFIP's published flood levels within the community during the occurrence of the 100-year flood discharge.
- The conceptual work plan (CWP) for temporary operations in a regulatory floodplain provide for up to a one foot increase in the NFIP's published flood levels within the community during the occurrence of the 100-year flood discharge.
- The conceptual work plan (CWP) for temporary operations in a SFHA provide for up to a one foot increase in the designed flood levels within the community during the occurrence of the 100-year flood discharge.
- Temporary operations shall not obstruct an existing or proposed bridge(s) waterway opening more than what is shown on the CWP.
- Any changes in the CWP that will increase flood levels shall be approved in accordance with the "Modifications to Conceptual Plan" section of this Special Provision.
- All temporary operations shall meet the requirements of the Corps of Engineers' Section 404 Permit issued for this project.
- All temporary fills and temporary obstructions to the existing or proposed bridge(s) or culvert(s) must be removed in their entirety and the affected areas returned to their pre-construction or designed elevation and condition.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB NO. 040901
CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS

- The contractor is responsible for preventing equipment and materials within the floodplain from becoming buoyant and floating downstream during a significant flood event. In the event this flood starts to occur, the contractor shall remove and/or anchor materials and equipment by means approved by the Engineer at the Preconstruction Conference.

MODIFICATIONS TO CONCEPTUAL WORK PLAN: If the Contractor prefers another conceptual work plan, a request shall be submitted to the Engineer outlining the specifics of the proposed modifications. The modifications should consider the minimization of reduction of waterway opening in the floodplain as a primary objective.

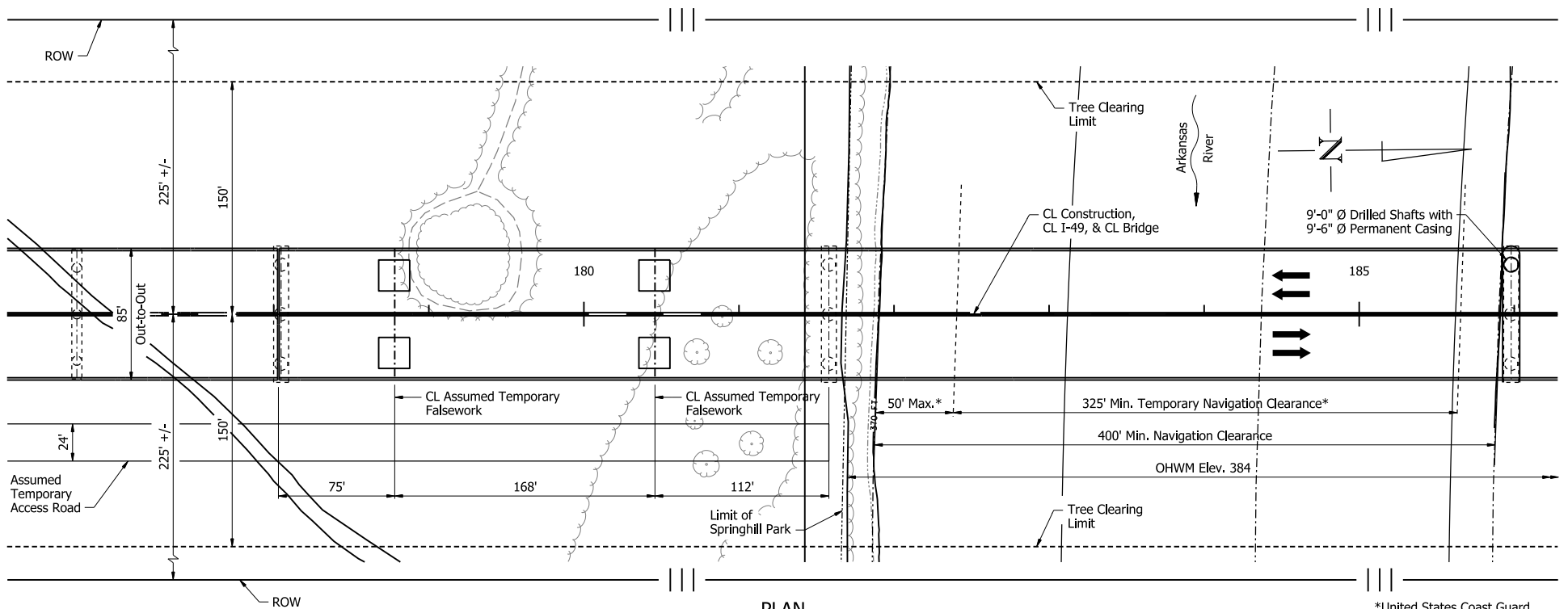
A determination will be made by the Engineer within ten (10) business days concerning the necessity or practicability of the request. If approved, the modifications will be reviewed by the Department's Hydraulics Section. The Hydraulics Section will approve or deny the request within ten (10) business days after receiving the request.

Modifications to the Plan that also change the volume of temporary fill in place at any one time may require a modification of the Section 404 Permit which will require additional time for review by the Corps of Engineers. Refer to the 404 Permit for these requirements.

The contract time will not be extended for the time required to consider or approve any modifications. Any additional work or expenses incurred preparing, submitting, or completing an alternate conceptual work plan shall be at no additional cost to the Department.

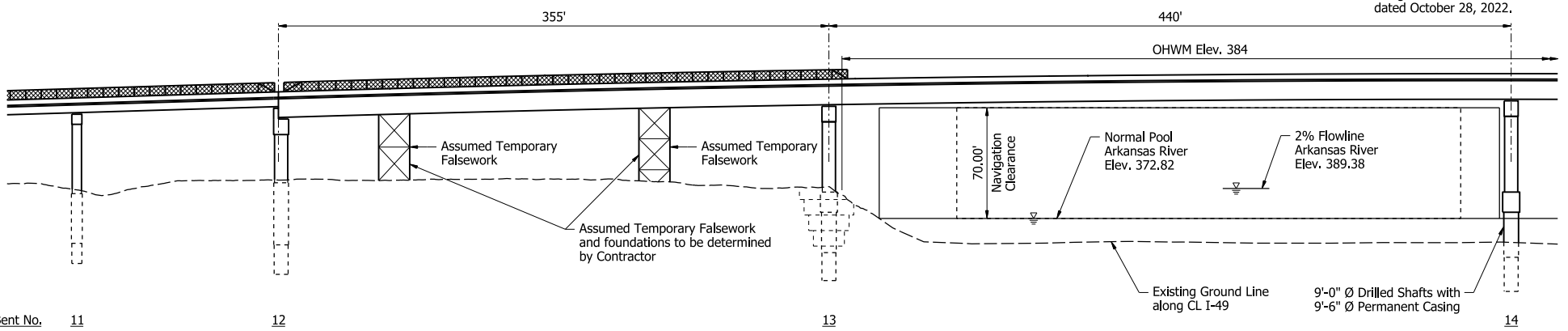
METHOD OF MEASUREMENT AND BASIS OF PAYMENT: All work, including labor, materials, tools, and equipment necessary to complete the requirements of this special provision shall not be paid for directly, but will be considered subsidiary to other items in the contract.

Conceptual Work Plan



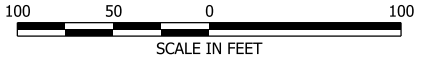
PLAN

*United States Coast Guard has provided reduced temporary navigation clearances. See letter dated October 28, 2022.



ELEVATION

Bent No. 11 12 13 14



PRELIMINARY
NOT FOR CONSTRUCTION

BRIDGE ENGINEER

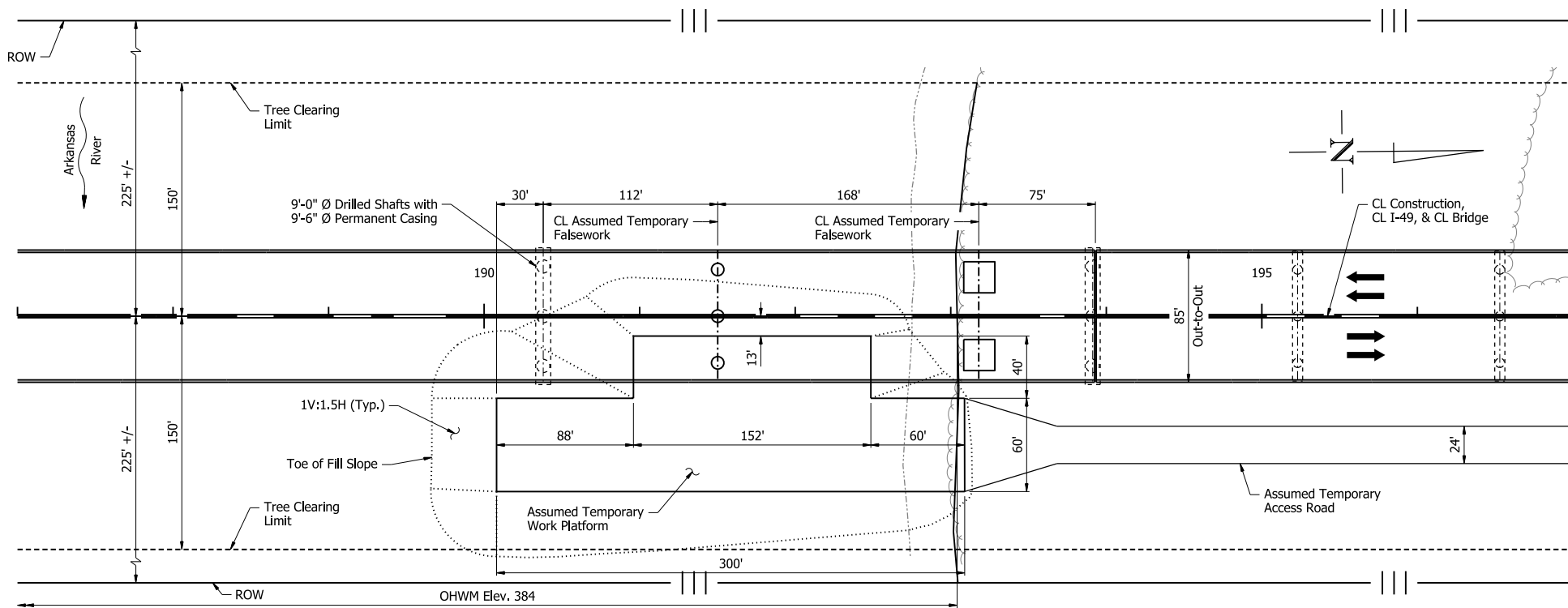
CONSULTANT:



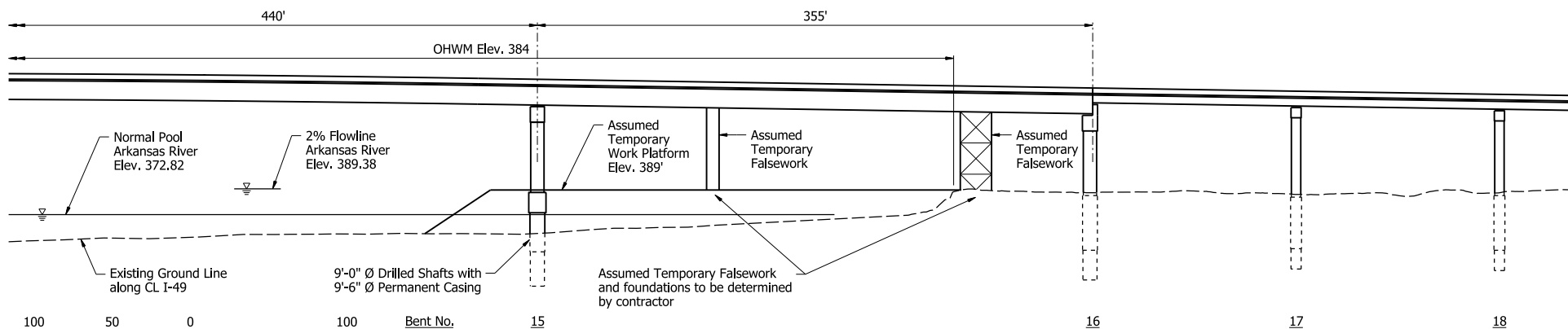
PROPOSED BRIDGE NO. 07684
INTERSTATE 49 OVER ARKANSAS RIVER,
NEAR BARLING, ARKANSAS (CRAWFORD &
SEBASTIAN COUNTIES)
ARKANSAS DEPARTMENT OF TRANSPORTATION

PRINT DATE: 5/13/2024

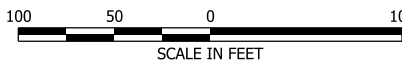
Conceptual Work Plan



PLAN



ELEVATION



Type of Activity	Location	Amount
Temporary Fill (Work Platform)	Arkansas River Stations 181+66 - 193+05	15,284.5 yd ³ (below OHW elevation 384 ft msl)

PRELIMINARY
NOT FOR CONSTRUCTION

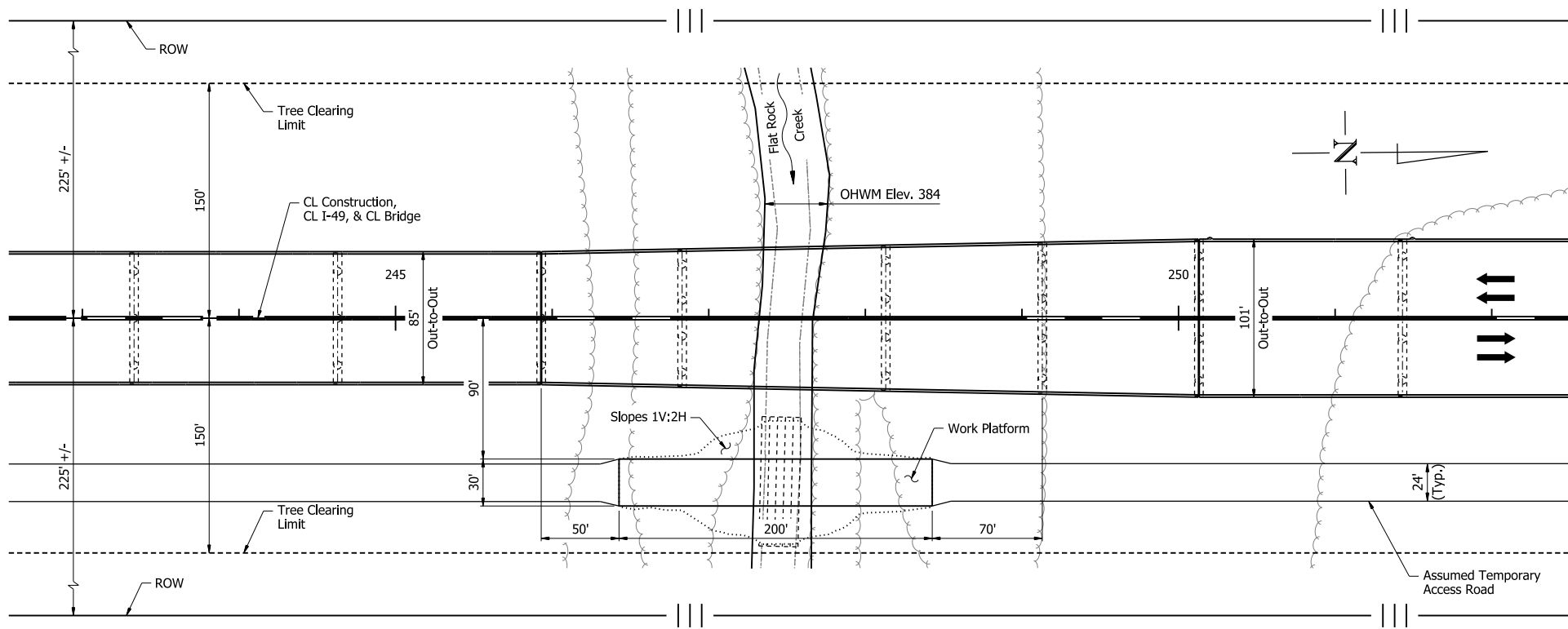
BRIDGE ENGINEER

CONSULTANT:

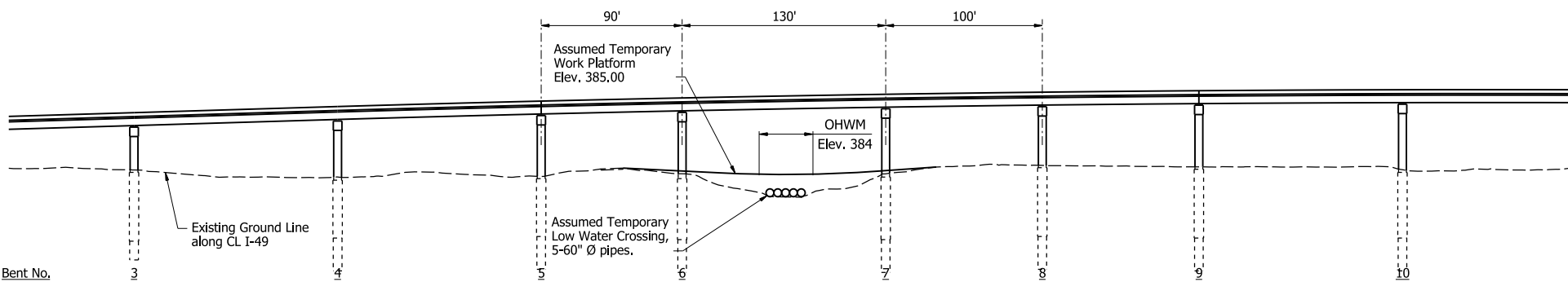


PROPOSED BRIDGE NO. 07684
INTERSTATE 49 OVER ARKANSAS RIVER,
NEAR BARLING, ARKANSAS (CRAWFORD &
SEBASTIAN COUNTIES)
ARKANSAS DEPARTMENT OF TRANSPORTATION

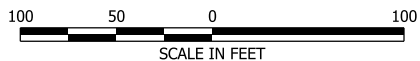
Conceptual Work Plan



PLAN



ELEVATION



Bent No.

Type of Activity	Location	Amount
Temporary Fill (Work Platform)	Flat Rock Creek Stations 247+33 – 247+68	6,300.9 yd ³ (below OHW elevation 384 ft msl)

PRELIMINARY
NOT FOR CONSTRUCTION

BRIDGE ENGINEER

CONSULTANT:

HNTB

PROPOSED BRIDGE NO. 07685
INTERSTATE 49 OVER ARKANSAS RIVER
NEAR BARLING, ARKANSAS (CRAWFORD COUNTY)

ARKANSAS DEPARTMENT OF TRANSPORTATION

SHEET 1 OF 1

JUNE 2023

PRINT DATE: 5/13/2024

Arkansas Department of Transportation

Special Provision

Stormwater Pollution Prevention Plan

This document will be provided once this project has been officially advertised.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 040901

DELAY IN RIGHT OF WAY OCCUPANCY

Right of occupancy and use of the right of way for the following areas will be delayed until August 31, 2024, to allow for the completion of acquisition activities.

<u>Tract</u>	<u>Approximate Station Locations</u>
1	100+00.00 RT to 148+00.00 RT
2	95+00.00 LT to 130+50.00 LT
3	255+50.00 LT to 258+20.00 LT
3	36+00.00 RT to 66+00.00 RT
4	254+40.00RT to 256+80.00 RT
4	71+00.00 RT to 90+00.00 RT
5	257+06.00 LT to 284+45.00 LT
5	49+62.00 LT to 63+00.00 LT
6	256+50.00 LT & RT to 284+45.00 LT & RT
6	62+00.00 LT to 76+50.00 LT
103	46+50.00 RT to 72+50.00 RT
103	10+00.00 LT & RT to 23+50.00 LT & RT
104	23+50.00 LT & RT to 50+00.00 LT & RT
105	23+50.00 RT to 47+00.00 RT
106	36+00.00 RT to 37+00.00 RT
109	256+00.00 RT to 271+00.00 RT
109	76+00.00 LT & RT to 90+00.00 LT & RT
119	46+00.00 RT to 73+00.00 RT
119	10+00.00 LT to 23+50.00 LT & RT
120E	200+00.00 RT to 216+00.00 RT
121E	200+00.00 RT to 216+00.00 RT

The Contractor is forewarned that they will in no event be allowed to perform work in the area(s) mentioned above until the right of occupancy and use has, in fact, been extended to them.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB 100657

DELAY IN RIGHT OF WAY OCCUPANCY

In case there is a delay in extending the Contractor the right of occupancy and use beyond the anticipated dates as set forth above, and should such delay necessarily cause a delay in the Contractor's prosecution of the work, an equitable extension of contract time will be granted to the Contractor. No claim for extra compensation will be allowed, however, because of such delay.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

SEQUENCE OF CONSTRUCTION

DESCRIPTION: This item shall consist of scheduling of the various construction items to maintain traffic and provide an orderly progression of work.

The general sequence of construction for the various stages of work on this project are shown on the maintenance of traffic plans.

The sequence as shown on the maintenance of traffic plans is a general outline for the construction of this project, and in no way is it intended to cover every item in the project. Items not critical to the construction sequence may be constructed in any stage as approved by the Resident Engineer.

The Contractor may submit for consideration an alternate proposal for sequence of construction. If an alternate sequence of construction is proposed, the Contractor will be required to submit for review and approval a traffic control plan of comparable detail to the traffic control plans included in the job, showing all traffic control items necessary to accomplish the work. If the Contractor's sequence of construction is approved, it shall become the accepted sequence for this project. Any alteration or deviation from the accepted sequence for this project shall have the **written** approval of the Engineer. If the Contractor's sequence of construction necessitates additional traffic control devices or other materials beyond the contract amount, such devices and materials shall be provided, maintained and replaced, if necessary, at no cost to the Department.

There will be no direct payment for fulfilling the requirements of this Special Provision, but compensation will be considered to be included in the price bid for the various contract items.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB NO. 040901
VALUE ENGINEERING

Section 104 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added as a new subsection:

104.08 Value Engineering Change Proposals (VECP).

(a) General. The Contractor may submit a Value Engineering Change Proposal at any time after execution of the Contract by the Department. Any VECP submitted before this date shall be deemed to have been submitted on the date the Contract was executed by the Department and the time allowed for consideration of the VECP shall begin on that date. Any cost savings generated to the Contract as a result of a VECP submitted by the Contractor and approved by the Department shall be shared equally between the Contractor and the Department.

The Contractor may submit a VECP for an approved subcontractor. Subcontractors may not submit a VECP except through the Contractor.

Bid prices shall not be based on the anticipated approval of a VECP. If a VECP is rejected, the Contract shall be completed at the Contract bid prices.

If the Department determines that the time for response indicated in the submittal is insufficient for review, the Contractor will be promptly notified. Based on the additional time needed by the Department for review and the effect on the Contractor's schedule occasioned by the added time, the Department will evaluate the need for a time extension.

The Contractor shall have no claim against the Department for any delay to the Contract based on the failure to respond within the time indicated in the submittal if additional information is needed to complete the review.

VECPs contemplated are those that could produce a savings to the Department without impairing essential functions and characteristics of the facility; including but not limited to, service life, economy of operation, ease of maintenance, desired appearance, and safety.

The Contractor may submit for review a "VECP Concept" provided that it contains enough information to clearly define the work involved and the benefits to be realized. Written notification by the Department that the review has been completed and that the "VECP Concept" appears to be favorable merely indicates that the engineering and plan development may continue for submittal of the VE Change Proposal and is not authorization for any construction work to begin. Should the final design not reflect the expected benefits, the Department may reject the "VECP Concept" and the VE Change Proposal without recourse by the Contractor.

(b) Submittal of Proposal. The following materials and information shall be submitted with each proposal:

1. A statement that the proposal is submitted as a VECP.
2. A description of the difference between the existing Contract and the proposed change, and the cooperative advantages and disadvantages of each, including effects on service life, economy of operations, ease of maintenance, desired appearance, and safety.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB NO. 040901
VALUE ENGINEERING

3. A complete set of plans and specifications showing the proposed revisions relative to the original Contract features and requirements.
4. A complete analysis indicating the final estimate costs and quantities to be replaced by the Proposal compared to the new costs and quantities generated by the Proposal.
5. A statement specifying the date by which a Change Order adopting the Proposal must be executed to obtain the maximum cost reduction during the remainder of the Contract. This is the review time.
6. A statement detailing the effect the Proposal will have on the Contract time for completing the Contract.
7. A description of any previous use or testing of the Proposal and the conditions and results. If the Proposal was previously submitted on another Department project, indicate the date, Contract number, and the action taken by the Department.

(c) Conditions. VECPs will be considered only when all the following conditions are met:

1. VECPs, approved or not approved by the Department, apply only to the ongoing Contract(s) referenced in the Proposal and become the property of the Department. The Proposal(s) shall contain no restrictions imposed by the Contractor on their use or disclosure. The Department has the right to use, duplicate, and disclose in whole or in part any data necessary for the utilization of the Proposal. The Department retains the right to utilize any accepted Proposal or part thereof on other projects without obligation to the Contractor. This provision is not intended to deny rights provided by law with respect to patented materials or processes.
2. If the Department is already considering certain revisions to the Contract or has approved certain changes in the Contract for general use that are subsequently incorporated in a VECP, the Department will reject the Proposal and may proceed without obligation to the Contractor.
3. The Contractor shall have no claim against the Department for additional costs or delays resulting from the rejection of a VECP, including but not limited to, "VECP Concept" acceptance, engineering and development costs, loss of anticipated profits, increased material or labor costs.
4. The Department will determine if a Proposal qualifies for consideration and evaluation. It may reject any Proposal that requires excessive time or costs for review, evaluation, and/or investigations, or that is not consistent with the Department's design policies and criteria for the project.
5. The Engineer will reject all or any portion of work performed under an approved VECP if unsatisfactory results are obtained. The Engineer will direct the removal of such rejected work and require construction to proceed under the original Contract requirements without reimbursement for work performed under the proposal, or for its removal. Where modifications to the VECP, other than changes to the estimated quantities, are approved to adjust to field or other conditions, reimbursement will be limited to the total amount payable for the work at the Contract bid prices as if it were

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
JOB NO. 040901
VALUE ENGINEERING

constructed under the original contract requirements. The rejection or limitation of reimbursement shall not constitute the basis of any claim against the Department for delay or for other costs.

6. The proposed work shall not contain experimental features but shall be proven features that have been used under similar or acceptable conditions on other projects or locations acceptable to the Department.

7. Proposals will not be considered if equivalent options are already provided in the Contract.

8. The savings generated by the Proposal must be sufficient to warrant a review and processing.

9. A Proposal changing the type and/or thickness of the pavement structure or revising quantities simply by adjusting grades will not be considered.

10. Additional information needed to evaluate Proposals, shall be provided in a timely manner. Untimely submittals of additional information will result in rejection of the Proposal. Where design changes are proposed, the additional information could include results of field investigations and surveys, design computations, and field change sheets. The review time shall be extended by the number of days between the request by the Department for additional information and the delivery of such additional information.

(d) Payment. If the VECP is accepted, the changes and payment will be authorized by Change Order.

Reimbursement will be made as follows:

1. The changes will be incorporated into the Contract by changes in quantities or unit prices of existing pay items, by the addition of new pay items, or any combination of these methods, as appropriate. Existing pay items are the original Contract pay items and any pay items that have been added to the Contract by Supplemental Agreement on or before the date the VECP is submitted.

2. The cost of the revised work as determined from the changes will be paid as specified in the Change Order. In addition, the Department will pay the Contractor 50 percent of the actual savings to the Department as reflected by the difference between the cost of the revised work and the cost of the related construction required by the original Contract computed at Contract bid prices. This payment will be made upon satisfactory completion of all work under the VECP.

3. Costs for "VECP Concept" acceptance, engineering and development, design, and implementation associated with the VECP are not eligible for reimbursement.

4. Payments as designated above will be made to the Contractor. If the VECP was originated by a subcontractor, the Contractor shall be responsible for any and all payments to the subcontractor arising from the approval of the VECP.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 040901

UTILITY ADJUSTMENTS

Utility facilities at the approximate locations noted in Appendix A will be removed, relocated and/or adjusted in accordance with separate agreements between the Department and the respective utility owners.

In accordance with Subsection 105.07, Cooperation with Utilities, of the Standard Specifications, Edition of 2014, the Contractor is forewarned that such work may be underway concurrently with the work under this contract.

1. Owner – Arkansas Oklahoma Gas

Contact Rebecca Sewell, 479-783-3181, 5030 South S. St., Fort Smith, AR 72902.

It is anticipated that Arkansas Oklahoma Gas will be issued a work order by August 31, 2024 with an estimated completion date of December 31, 2024.

2. Owner – Arkansas Valley Electric

Contact Kenneth Wilbanks, 479-667-2176, 208 S. 17th St., Ozark, AR 72949.

It is anticipated that Arkansas Valley Electric will be issued a work order by August 31, 2024 with an estimated completion date of February 28, 2025.

3. Owner – AT&T Arkansas

Contact Bryan Williams, 479-249-5194, 1133 E. Harold St., Fayetteville, AR 72703.

It is anticipated that AT&T Arkansas will be issued a work order by August 31, 2024 with an estimated completion date of December 31, 2024.

4. Owner – City of Barling

Contact Steve Core, 479-452-1550, PO Box 23039, Barling, AR 72923.

The City of Barling has advised that no adjustments are necessary.

5. Owner – City of Fort Smith

Contact Jimmie Johnson, 479-784-2274, 801 Carnall, Suite 500, Fort Smith, AR 72901.

The City of Fort Smith has been issued a work order with an estimated completion date of August 31, 2024.

6. Owner – Cox Communications

Contact Rick Sweeten, 479-831-8925, 4900 S. Zero St., Ft. Smith, AR 72903.

It is anticipated that Cox Communications will be issued a work order by August 31, 2024 with an estimated completion date of February 28, 2025.

7. Owner – Energy Transfer

Contact Erik Van Aller, 281-226-2594, 1300 Main St., Houston, TX 77002.

It is anticipated that Energy Transfer will be issued a work order by June 30, 2024, with an estimated completion date of December 31, 2024.

8. Owner – Oklahoma Gas & Electric

Contact Rae Anne Lawrence, 405-553-5785, P.O. Box 321, M/C M109, Oklahoma City, OK 73101-0321.

It is anticipated that Oklahoma Gas & Electric will be issued a work order by August 31, 2024 with an estimated completion date of December 31, 2024.

9. Owner – Merit Energy

Contact John Newman, 479-651-0478, 1541 Airport Rd., Ozark, AR 72949.

Merit Energy has advised that no adjustments are necessary.

10. Owner – Sprint Communications

Contact Jimmy Looper, 501-204-1208, 900 West Broadway, Little Rock, AR 72114.

Sprint Communications has advised that no adjustments are necessary.

These utility statuses were based on information received from the utility companies and ARDOT right of way being acquired by August 31, 2024; therefore, the dates are subject to change.

In case there is a delay beyond the information as set forth above, and should such delay necessarily cause a delay in the Contractor's prosecution of the work, an equitable extension

of contract time will be granted to the Contractor. No claim for extra compensation will be allowed, however, because of such delay.

An approved Highway-Utility Agreement, a letter of commitment, or other appropriate document evidencing satisfactory arrangements for the orderly removal, relocation, and/or adjustment of separately owned utility facilities located within the limits and interfering, with the construction under this contract is on file with the Arkansas Department of Transportation.

The Contractor is required to make every effort to locate buried utilities including, but not limited to, calling Arkansas One Call Center (800) 482-8998.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION
LIQUIDATED DAMAGES

As specified in the Contract, liquidated damages for this project will be as shown in the following table:

WORKING DAY PROJECTS

ORIGINAL CONTRACT AMOUNT		
FROM MORE THAN	TO AND INCLUDING	RATE
\$ 0	\$ 100,000	\$ 140
100,000	500,000	400
500,000	1,000,000	660
1,000,000	2,000,000	800
2,000,000	5,000,000	1,380
5,000,000	10,000,000	1,800
10,000,000	15,000,000	2,620
15,000,000	20,000,000	2,720
20,000,000	30,000,000	2,940
30,000,000	-----	3,500

FIXED DATE PROJECTS

ORIGINAL CONTRACT AMOUNT		
FROM MORE THAN	TO AND INCLUDING	RATE
\$ 0	\$ 100,000	\$ 60
100,000	500,000	80
500,000	1,000,000	220
1,000,000	2,000,000	300
2,000,000	5,000,000	420
5,000,000	10,000,000	1,000
10,000,000	15,000,000	1,200
15,000,000	20,000,000	1,300
20,000,000	30,000,000	1,400
30,000,000	-----	1,520

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

CONTRACTOR'S LICENSE

Section 102 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The third paragraph of **Subsection 102.01, Prequalification of Bidders**, is hereby deleted and the following substituted thereof:

The attention of prospective bidders is directed to Ark. Code Ann. §17-25-101 et seq., Act 150 of the 1965 Acts of Arkansas, being an "Act Regulating the Practice of Contracting in the State of Arkansas", and any subsequent amendments made thereto. When the work offered is financed in whole with State funds and is estimated to cost \$50,000 or more, the prospective bidder must show evidence of its license and evidence of registration or license of its subcontractors with the Contractors Licensing Board for the State of Arkansas before being furnished with a proposal form.

The third paragraph of **Subsection 108.01, Subletting of Contract**, is hereby deleted and the following substituted thereof:

It shall be the responsibility of the Contractor to determine that all parties performing work amounting to \$50,000 or more are currently licensed or registered by the Contractors Licensing Board for the State of Arkansas.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
DEPARTMENT NAME CHANGE

All references to the Arkansas State Highway and Transportation Department contained within the Standard Specifications for Highway Construction (Edition of 2014), the Qualified Products List, the Manual of Field Sampling and Testing Procedures, plan sheets, Supplemental Specifications, and all Special Provisions contained in this proposal are hereby deleted and replaced with the title of Arkansas Department of Transportation.

All references to AHTD contained within the Standard Specifications for Highway Construction (Edition of 2014), the Qualified Products List, the Manual of Field Sampling and Testing Procedures, plan sheets, Supplemental Specifications, and all Special Provisions contained in this proposal are hereby deleted and replaced with the abbreviation ARDOT.

All references to the Arkansas State Highway Commission contained within the Standard Specifications for Highway Construction (Edition of 2014), the Qualified Products List, the Manual of Field Sampling and Testing Procedures, the Standard Drawings, plan sheets, Supplemental Specifications, and all Special Provisions contained in this proposal remain in effect.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
ISSUANCE OF PROPOSALS

Section 102 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 102.04(j) is hereby deleted and the following is substituted therefor:

(j) If the prospective bidder is the Contractor on a current Contract with the Commission on which Liquidated Damages are being assessed, and there are no pending time extensions warranted to remove the project from Liquidated Damages.

Subsection 102.04(k) is hereby deleted and the following is substituted therefor:

(k) If the prospective bidder has a current Contract in default.

Subsection 102.04(n) is hereby added:

(n) If the prospective bidder has an individual, as an officer/owner/partner of any firm, partnerships or corporation, that has entered into a previous or current contract with the Commission that in the Department's sole discretion, is subject to any of the reasons listed in Subsection 102.04(a)-(m).

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

CONTACT INFORMATION FOR MOTORIST DAMAGE CLAIMS

Section 103, AWARD AND EXECUTION OF CONTRACT, of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added as the fourth paragraph of **Subsection 103.05(b), Liability Insurance**:

Prior to beginning construction, the Contractor shall provide the Engineer with the name, phone number and e-mail address for the individual within their organization responsible for submission of claims for damages to motorists' vehicles inside the work zones. This information shall be updated annually or whenever this responsibility changes within the Contractor's organization. The information will be made available to the public on the Department's webpage.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
MAINTENANCE DURING CONSTRUCTION

Division 100 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 105.15 is hereby modified as follows:

The first paragraph of **Subsection 105.15** is hereby deleted and the following substituted therefor:

105.15 Maintenance During Construction. The Contractor shall maintain the work during construction and until the project is accepted. For contracts containing a Flexible Beginning of Work special provision, the responsibility for maintenance by the Contractor will begin at the earlier date of the following:

- when the Contractor begins work, or
- on the date of the beginning of time charges in accordance with the Work Order if the Contractor has not commenced work.

This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces, to the end that the roadway or structures are kept in satisfactory condition at all times.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
RESTRAINING CONDITIONS

Section 107 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is hereby added after the first bullet of the first paragraph of **Subsection 107.10 Restraining Conditions (a), General**:

- Human remains, burials, and/or associated burial artifacts

The following is hereby added after the second paragraph of **Subsection 107.10 (b), Restraining Conditions Within the Right-of-Way**:

When restraining conditions under (1) and (2) below are encountered, the following provisions should be executed.

(1) If archeological sites and/or historically significant cultural resources are unexpectedly impacted or subsequently discovered during construction, the Contractor shall stop work with no ground-disturbing activities occurring within a two hundred (200)-foot radius of the location of the discovery. The Engineer shall be notified immediately, who will then notify the Environmental Division. A Department staff archeologist will inspect the discovery and determine if the established buffer radius is appropriate. The radius may be decreased or increased based on the nature of the discovery at the discretion of the archeologist. Work in the buffer radius shall not resume until the Environmental Division has provided written notification to the Engineer that construction activities can proceed.

(2) If human remains, burials, and/or associated burial artifacts are encountered during construction, the Contractor shall stop work with no ground-disturbing activities occurring within a two hundred (200)-foot radius of the location of the discovery and the location secured and protected by flagging or fencing. The human remains shall be covered with a canvas tarp and shall not be removed or collected. The Engineer shall be notified immediately, who then will notify the Environmental Division. A Department staff archeologist will inspect the remains and determine if the established buffer is appropriate. The radius may be decreased or increased based on the nature of the discovery at the discretion of the archeologist. The local law enforcement and Chief Medical Examiner will be notified by the Environmental Division. Work in the buffer radius shall not resume until the Environmental Division has provided written notification to the Engineer that construction activities can proceed.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

RESTRAINING CONDITIONS

The following is hereby added after the third sentence of the first paragraph of **Subsection 107.10 (c), Restraining Conditions Outside the Right-of-Way, (2) Non-commercially Operated Site:**

The Contractor shall limit the amount of acres submitted for an off-site location to no more than 10 acres, except for commercial areas, previously approved locations, or where previous ground disturbance exists. If a Contractor requires more than 10 acres for a proposed off-site location, the Contractor may, at no cost to the Department, acquire approval for use of the site from the State Historic Preservation Officer and a qualified archeological consultant.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
WORK ALLOWED PRIOR TO ISSUANCE OF WORK ORDER

Section 108 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 108.02(b)(2) is hereby deleted and the following is substituted therefore:

(2) The delivery to the Department for execution of the Contract and bonds properly executed on behalf of the Contractor and surety and the minimum 72 hours advance notice as required above shall constitute the Contractor's authority to begin the following items of work:

- Mobilization;
- Preparation of shop drawings and other required submissions;
- Ordering, fabrication, assembly, and/or stockpiling of materials;
- Driving Test Piling; and
- Contract surveying, when Roadway and/or Bridge Construction Control is included in the Contract.
- Erection of advance warning signs.
- Installation of netting on structures to prevent nesting of migratory birds in accordance with applicable Special Provisions (if included in the Contract).
- Set up, installation, and testing of Automated Work Zone Information Systems (if included in the Contract).
- Off-site area approval process per Section 107.10(c).

Such advance work shall be subject to the Contractor's assumption of the risk of cancellation of the award and the following:

- The Contractor shall, on commencing such operations, take all precautions required for public safety and shall observe all the provisions in the Contract;
- In the event of cancellation of the award, the Contractor shall at Contractor expense do such work as necessary to leave the site in a neat condition to the satisfaction of the Engineer;
- In the event of cancellation of the award, all work performed shall be deemed to be at the Contractor's expense; and
- All work done under this subsection in accordance with the Contract before its execution by the Commission will, when the Contract is executed, be considered authorized work and will be paid for as provided in the Contract.

Unless otherwise notified in writing, no time will be assessed for work performed prior to the effective date of a Work Order.

No payments will be made prior to the date established by the Engineer under Subsection 109.07, which date will be after the effective date of a Work Order.

The Contractor shall not be entitled to any additional compensation or an extension of time for any delay, hindrance, or interference caused by or attributable to commencement of work before the effective date of a Work Order.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

PROTECTION OF WATER QUALITY AND WETLANDS

Section 110 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is hereby added as the last paragraph of **Subsection 110.04(b)**:

On all projects let to contract after October 1, 2018, the project superintendent or supervisor (as defined in Subsection 105.06) must be certified in National Pollutant Discharge Elimination System (NPDES) through the University of Arkansas' Center for Training Transportation Professionals (CTTP). The project superintendent or supervisor must provide proof of NPDES certification before any earth disturbing activities, including clearing and grubbing, or any installation of erosion control activities are allowed to begin.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

UNCLASSIFIED EXCAVATION

Section 200 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is hereby added after the first paragraph of **Subsection 210.08, Excavation Operations**:

When performing excavation to construct cut slopes, the Contractor shall not excavate material below the finished slope grade. If excavation is performed more than 8 inches below the finished cut slope grade, overcut material shall be removed at no cost to the Department and replaced with clean durable stone. The stone source and gradation shall be approved by the engineer before placement. There shall be no payment for this work.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
AGGREGATE BASE COURSE

Section 303 of the Standard Specifications for Highway Construction, Edition 2014, is hereby amended as follows:

The second paragraph of **Subsection 303.02, Materials** is hereby deleted and the following substituted therefor:

The Contractor shall have the option of using any higher numbered class Aggregate Base Course than that specified, provided that payment will be for the class specified. Acceptance criteria shall be for the class specified. Different classes of Aggregate Base Course shall not be mixed in the same location.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
QUALITY CONTROL AND ACCEPTANCE

Division 300 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The first sentence of the third paragraph **Subsection 306.03 Acceptance Testing** is hereby deleted and the following substituted therefor:

If the material being furnished is crushed stone the Department will furnish the PL, LL, and PI for the material, further tests for PL, LL, and PI are waived.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
CEMENT

Section 307 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added as the last bullet of the first paragraph of **Subsection 307.03, Materials. (b) Cement.**

- Portland-Limestone Cement, AASHTO M240, Type 1L. Type 1L shall have a limestone constituent greater than 5 percent and less than or equal to 15 percent by mass of blended cement.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
CEMENT

Section 308 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added as the last bullet of the first paragraph of **Subsection 308.03, Materials. (b) Cement.**

- Portland-Limestone Cement, AASHTO M240, Type 1L. Type 1L shall have a limestone constituent greater than 5 percent and less than or equal to 15 percent by mass of blended cement.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
TACK COATS

Division 400 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Section 401, Prime and Tack Coats and Emulsified Asphalt in Base Course, is hereby modified as follows:

The first sentence of **Subsection 401.03(a)** is hereby deleted and the following substituted therefore:

The surface to be treated with prime or tack coat shall be cleaned of dust, dirt, and loose or foreign material by sweeping with mechanical brooms immediately preceding the application of the prime or tack coat.

Third sentence of **Subsection 401.03(c)** is hereby deleted and the following is substituted therefore:

No dilution beyond that which is part of the emulsification process is permitted. The tack coat shall not be diluted, cut, or otherwise thinned after receipt from the manufacturer's facility.

The fifth sentence of **Subsection 401.03(c)** is hereby deleted and the following substituted therefore:

The rate of application shall be from 0.03 gallon to 0.10 gallon per square yard (0.1 L/sq m to 0.5 L/sq m) of residual asphalt as designated by the Engineer.

Section 410, Construction Requirements and Acceptance of Asphalt Concrete Plant Mix Courses, is hereby modified as follows:

The sixth paragraph of **Subsection 410.05** is hereby deleted and the following substituted therefore:

For foreign material, or when the time lapse between courses is more than 8 hours, the earlier course shall be cleaned and given a tack coat before placing the succeeding course. When directed, the tack coat shall be applied and paid for under Section 401. If directed by the Engineer, a tack coat shall be used even though the elapsed time has been less than 8 hours.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES

Division 400 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Section 404, QUALITY CONTROL OF ASPHALT MIXTURES, is hereby modified as follows:

The fifth sentence of the second paragraph of **Subsection 404.01, Design of Asphalt Mixtures, (a) General**, is hereby deleted and the following substituted therefor:

A mix design that has not been produced on an ARDOT project in the last two years is inactive. The Contractor may submit a passing field verification test for the inactive asphalt mix design to the Materials Division to be reactivated. Asphalt mix designs with an expiration date may remain in production if they are not inactive.

The third through fifth paragraphs of **Subsection 404.04, Quality Control of Asphalt Mixtures**, are hereby deleted and the following substituted therefor:

The accepted mix design shall be field verified by the Contractor at the start of mix production or after an interruption of more than 120 calendar days. Production of Department approved mix designs for placement on non-ARDOT projects may be used for mix verification. The Contractor shall be allowed two attempts to verify the mix design if being placed on an ARDOT project and three attempts to verify the mix design if being placed on a non-ARDOT project. The Contractor shall notify the Engineer sufficiently in advance for Department personnel to witness all testing of this production and shall provide copies of all test results to the Department.

Verification will begin with testing the plant produced mix using the aggregate proportions and asphalt binder content shown on the accepted mix design. After the first attempt of verification of the initial design, the Contractor may elect to adjust aggregate proportions to vary the accepted mix design gradations and bring the mix properties near the center of the compliance limits. If the mix is in subplot rejection, all future attempts will only be allowed on non-ARDOT projects.

The mix will be verified if the test values for air voids, asphalt binder content, and VMA are within the compliance limits shown in Table 410-1, and when the accepted mix design has been produced within the gradation tolerances according to Subsection 404.04.

The Contractor may request a one-time field mix design be accepted by the Engineer of Materials. The Contractor will be notified in writing if the field mix design is accepted. A field mix design allows the Contractor to use the adjusted aggregate proportions for future verification of the mix design. Cold feed adjustments will be allowed to both the initial mix design and field mix design if they do not exceed more than 10% for any single cold feed or 20% overall from the initial mix design. No individual cold feed will be allowed to be eliminated by such changes. Gradation tolerances will be based off the initial job mix formula. All cold feed adjustments exceeding the limits outlined above will require a new mix design.

Once verified, the asphalt binder content shall be adjusted at the plant to obtain the optimum asphalt binder content shown on the mix design during production based on the lot average. At no time shall the asphalt binder content be adjusted in a manner to produce an asphalt binder content lower

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES

than the design value. Adjustments to the asphalt binder content are not allowed for control of any volumetric property. All changes to be made to the asphalt binder content must first be reported to the Engineer. If adjustments do not give the intended result, production shall be stopped, and the asphalt plant and equipment shall be recalibrated and adjusted so the asphalt binder content can be successfully obtained.

The test method ARDOT 461, (NOTE 3), and (NOTE 4) in the table of the tenth paragraph of **Subsection 404.04, Quality Control of Asphalt Mixtures**, are hereby deleted.

The thirteenth and fourteenth paragraphs of **Subsection 404.04, Quality Control of Asphalt Mixtures, NOTE 3 and NOTE 4** are hereby deleted.

The eighteenth paragraph of **Subsection 404.04, Quality Control of Asphalt Mixtures**, is hereby deleted.

The fourth and fifth sentences in the nineteenth paragraph of **Subsection 404.04, Quality Control of Asphalt Mixtures**, are hereby deleted and the following substituted therefor:

Individual aggregate cold feeds should be adjusted to bring the mix design properties near the center of compliance limits. If excessive changes are required, production will be suspended, and a new mix design shall be developed according to the applicable specifications. Excessive changes are cold feed adjustments that exceed more than 10% for any single cold feed change or 20% overall from the initial mix design. No individual cold feed will be allowed to be eliminated by such changes. All cold feed adjustments exceeding the limits outlined above will require a new mix design.

Section 410, CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES, is hereby modified as follows:

The first through third sentences in the first paragraph of **Subsection 410.09(a), General**, are hereby deleted and the following is substituted therefor:

The accepted mix design shall be verified by the Contractor at the start of mix production for that design or after an interruption of more than 120 calendar days. A maximum of 200 tons (200 metric tons) of materials may be placed on the roadway during the verification process. If the mix produced does not verify the mix design, the material placed on the roadway shall be declared a partial lot. If all verification attempts have been exhausted, a new mix design shall be required.

Section 411, ASPHALT CONCRETE COLD PLANT MIX, is hereby modified as follows:

The third sentence of **Subsection 411.05 (b), Acceptance**, is hereby amended and the following is substituted therefor:

The accepted mix design shall be field verified by the Contractor at the start of mix production or after an interruption of more than 120 calendar days.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
PERCENT AIR VOIDS FOR ACHM MIX DESIGNS

Division 400 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The fourth sentence of Paragraph 1 of **Subsection 404.01(b), Design Requirements**, is hereby deleted and the following substituted therefor:

The optimum asphalt content is the asphalt binder content at 4% Air Voids (AV).

The first bullet of Paragraph 1 is hereby deleted and the following substituted therefor:

- PG 64-22 and PG 70-22 mixes will be designed using 4% air voids;

The second sentence of Paragraph 2 of **Subsection 404.04, Quality Control of Asphalt Mixtures**, is hereby deleted and the following substituted therefor:

Adjustments to the accepted mix design to conform to actual production values without re-design of the mixture shall be based on production of the mixture at a target value of 4.0% Air Voids (AV) in specimens and an asphalt binder content not less than that specified in the accepted mix design.

Table 405-1 of **Subsection 405.03 Materials** is hereby deleted and the following substituted therefor:

Table 405-1		
Design Requirements for Asphalt Concrete Hot Mix Base Course		
(1-1/2" [37.5 mm])		
Control Points		
Sieve (mm)	Percent Passing (%)	
2" (50.0)	100	
1½" (37.5)	90 - 100	
1" (25.0)	90 max.	
No. 4 (4.75)	-	
No. 8 (2.36)	15 - 41	
No. 16 (1.18)	-	
No. 30 (0.60)	-	
No. 50 (0.30)	-	
No. 200 (0.075)	0 - 6	
Asphalt Binder Content	Design Value	
% Air Voids	4.0	
% VMA	11.5 – 13.0	
Minimum Water Sensitivity Ratio	80.0	
% Anti-strip	As Required	
Fines to Asphalt Ratio*	0.6 – 1.6	
Wheel Tracking Test	<u>Design Gyration</u>	<u>Maximum Rut</u>
(8000 cycles, 100 psi, 64°C)	75 & 115	0.315 in. (8.000 mm)
	160	0.197 in. (5.000 mm)
	205	0.197 in. (5.000 mm)

*Fines to asphalt ratio shall be defined as the percent materials passing the No. 200 (0.075 mm) sieve (expressed as a percent of total aggregate weight) divided by the effective asphalt binder content.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
PERCENT AIR VOIDS FOR ACHM MIX DESIGNS

Table 406-1 of **Subsection 406.04, Construction Requirements and Acceptance**, is hereby deleted and the following substituted therefor:

Table 406-1		
Design Requirements for Asphalt Concrete Hot Mix Binder Course (1" [25 mm])		
Control Points		
Sieve (mm)	Percent Passing (%)	
1½" (37.5)	100	
1" (25.0)	90 - 100	
¾" (19.0)	90 max.	
No. 4 (4.75)	-	
No. 8 (2.36)	19 - 45	
No. 16 (1.18)	-	
No. 30 (0.60)	-	
No. 50 (0.30)	-	
No. 200 (0.075)	1 - 7	
Asphalt Binder Content	Design Value	
% Air Voids	4.0	
% VMA	12.5 – 14.0	
Minimum Water Sensitivity Ratio	80	
% Anti-strip	As Required	
Fines to Asphalt Ratio*	0.6 – 1.6	
Wheel Tracking Test (8000 cycles, 100 psi, 64°C)	<u>Design Gyration</u>	<u>Maximum Rut</u>
	75 & 115	0.315 in. (8.000 mm)
	160	0.197 in. (5.000 mm)
	205	0.197 in. (5.000 mm)

*Fines to asphalt ratio shall be defined as the percent materials passing the No. 200 (0.075 mm) sieve (expressed as a percent of total aggregate weight) divided by the effective asphalt binder content.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
PERCENT AIR VOIDS FOR ACHM MIX DESIGNS

Table 407-1 and Table 407-2 of **Subsection 407.04, Construction Requirements and Acceptance**, are hereby deleted and the following substituted therefor:

Table 407-1		
Design Requirements for Asphalt Concrete Hot Mix Surface Course (1/2" [12.5 mm])		
Control Points		
Sieve (mm)	Percent Passing (%)	
3/4" (19.0)	100	
1/2" (12.5)	90 - 100	
3/8" (9.5)	90 max.	
No. 8 (2.36)	28 - 58	
No. 16 (1.18)	-	
No. 30 (0.60)	-	
No. 50 (0.30)	-	
No. 200 (0.075)	2 - 10	
Asphalt Binder Content	Design Value	
% Air Voids	4.0	
% VMA	14.0 – 16.0	
Minimum Water Sensitivity Ratio	80.0	
% Anti-strip	As Required	
Fines to Asphalt Ratio*	0.6 – 1.6	
Wheel Tracking Test (8000 cycles, 100 psi, 64°C)	<u>Design Gyration</u>	<u>Maximum Rut</u>
	75 & 115	0.315 in. (8.000 mm)
	160	0.197 in. (5.000 mm)
	205	0.197 in. (5.000 mm)

*Fines to asphalt ratio shall be defined as the percent materials passing the No. 200 (0.075 mm) sieve (expressed as a percent of total aggregate weight) divided by the effective asphalt binder content.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
PERCENT AIR VOIDS FOR ACHM MIX DESIGNS

Table 407-2

Design Requirements for Asphalt Concrete Hot Mix Surface Course (3/8" [9.5 mm])

	Control Points	
Sieve (mm)	Percent Passing (%)	
½" (12.5)	100	
3/8" (9.5)	90 - 100	
No. 4 (4.75)	90 max.	
No. 8 (2.36)	32 - 67	
No. 16 (1.18)	-	
No. 30 (0.60)	-	
No. 50 (0.30)	-	
No. 200 (0.075)	2 - 10	
Asphalt Binder Content	Design Value	
% Air Voids	4.0	
% VMA	15.0 – 17.0	
Minimum Water Sensitivity Ratio	80.0	
% Anti-strip	As Required	
Fines to Asphalt Ratio*	0.6 – 1.6	
Wheel Tracking Test	<u>Design Gyration</u>	<u>Maximum Rut</u>
(8000 cycles, 100 psi, 64°C)	75 & 115	0.315 in. (8.000 mm.)
	160	0.197 in. (5.000 mm)
	205	0.197 in. (5.000 mm)

*Fines to asphalt ratio shall be defined as the percent materials passing the No. 200 (0.075 mm) sieve (expressed as a percent of total aggregate weight) divided by the effective asphalt binder content.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

LIQUID ANTI-STRIP ADDITIVE

Division 400 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Section 404, DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES, is hereby modified as follows:

The following is added as the last bullet following the first paragraph of **Subsection 404.01(b), Design Requirements**:

- All ACHM mixes must contain a liquid, anti-strip additive.

Section 409, MATERIALS AND EQUIPMENT FOR ASPHALT CONCRETE PLANT MIX COURSES, is hereby modified as follows:

The second paragraph of **Subsection 409.02 Asphalt Binder** is hereby deleted and the following substituted therefor:

The asphalt binder for all Asphalt Concrete Hot Mixes shall contain a heat-stable, liquid anti-strip additive. The additive shall be furnished from the Qualified Products List. The additive shall not harm the completed bituminous concrete mixture and must be compatible with the aggregate and asphalt binder supplied for the project. The anti-strip additive shall be added either by an in-line blending process just before introduction of the asphalt binder to the mixer or by blending with the asphalt binder at the asphalt binder terminal. If blended at the terminal, the bill of lading accompanying the load being delivered to the hot mix asphalt plant shall include the anti-strip manufacturer's name, product name, and quantity of all anti-strip additive included in the load.

The liquid anti-strip additive shall be added at rates as indicated below:

- For ACHM mixes where the use of an anti-strip additive is required as determined by the laboratory analysis and mix design procedures, the anti-strip additive shall be added at the rate of 0.5% to 0.75% (0.05% to 0.10% for organosilane based materials) by weight of asphalt binder as determined by the laboratory analysis and laboratory mix design procedures.
- For all other mixes, the manufacturer's recommended dosage of the additive shall be used, but the rate of liquid anti-strip additive shall not be less than 0.25% (0.05% for organosilane based materials) by weight of the asphalt binder.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

TRACKLESS TACK

Sections 401 and 403 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is hereby added after the second sentence of **Subsection 401.02 Materials:**

Trackless Tack meeting the requirements of this supplemental specification may be used as Tack Coat at no additional cost to the Department.

The following is hereby added after the fifth sentence of **Subsection 401.03(c), Application of Tack Coat:**

When Trackless Tack is used, the Contractor shall follow the manufacturer's recommendations for storage, application temperature, and application rate.

The following is hereby added as the second paragraph of **Subsection 401.06, Basis of Payment:**

If the Contractor elects to use Trackless Tack in lieu of Tack Coat, the application and payment for the material used will be measured and paid for at the contract unit price bid for Tack Coat per gallon (liter).

The following is hereby added after the second sentence of the first paragraph **Subsection 403.03, Asphalt Materials:**

The manufacturer shall submit certified test results for Trackless Tack to the Engineer.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

TRACKLESS TACK

The following is hereby added as **Subsection 403.03 (g), Trackless Tack:**

Trackless tack shall be an anionic or cationic asphalt emulsion conforming to the requirements below:

	Test Method	Min	Max
Viscosity, Saybolt Furol at 25°C SFS	AASHTO T59	20	150
Storage stability test, 24-h, %	AASHTO T59		1
Sieve test, %	AASHTO T59		0.3
Residue by distillation, %	AASHTO T59	50	
Tests on residue from distillation:			
Penetration, 25°C, 100 g, 5 s	AASHTO T59		20
*Solubility %	AASHTO T44	97.5	
*Ash Content	AASHTO T111		1
Softening Point °C	AASHTO T53	65	

*Ash Content or Solubility may be used for testing purposes of the residue from distillation.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****DESIGN OF ASPHALT MIXTURES**

Section 400 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added after the first sentence of paragraph 3 **Subsection 404.01 Design of Asphalt Mixtures. (b) Design Requirements:**

Any use of recycled engine oil bottoms (REOB) or other engine oil derivatives in the manufacture or modification of a binder are strictly prohibited. Ground Tire Rubber (GTR) may be added to asphalt binder with blending of GTR into asphalt occurring only at the asphalt terminal. GTR shall be Class 80-1 ground tire rubber as defined by ASTM D5603.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
ASPHALT LABORATORY FACILITY

Division 400 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 409.03(h), Plant Inspection, is hereby deleted and the following substituted therefor:

(h) Plant Inspection. The Engineer shall have access to all parts of the plant.

The Contractor shall provide and maintain a laboratory facility for the exclusive use of the Engineer. This facility shall be located at the plant site. The dimensions and other requirements specified herein are minimums. The facility may be built by the Contractor for the specific purposes stated. Portable structures used as lab facilities must be anchored to the ground and have adequate reinforcement to the floor to provide stability for lab equipment. It is not intended, however, to preclude the use of commercially built trailers or prefabricated buildings that may deviate in minor dimension or detail from the requirements listed but may in some features exceed these requirements and in all major respects be entirely suitable for the purpose intended. The Contractor may furnish, in lieu of a separate building, a facility having sufficient space in a building, parts of which are used for other purposes, provided that the facility furnished meets all other requirements of this subsection; is physically separated from the remainder of the building; and has an outside entrance with unrestricted access allowed and reserved for the exclusive use of the Engineer. Adequate space shall be provided for parking of at least three Department vehicles in the vicinity of the facility. The Engineer will determine the suitability of any facility furnished.

General requirements for the laboratory facility are:

- Minimum working laboratory space of 380 square feet (35.3 sq m) for building widths between 8' to 12' (2.4 to 3.7 m) or 208 square feet (19.3 sq m) with a width of 12' (3.7 m) or greater.
- Minimum designated office space of 30 square feet (2.8 sq m) shall be included in addition to the laboratory square footage.
- A ceiling height of 8' (2.4 m) or greater.
- A desk or table approximately 24" x 36" (600 mm x 900 mm), with at least two drawers, each approximately 13" x 13" x 18" (330 mm x 330 mm x 450 mm) for storing records and at least three office style rolling chairs.
- At least one door with a substantial lock and all keys placed in the possession of the Engineer. The door must be a minimum of 36" (900 mm) wide. A second entry door at the end of trailers that are greater than 30' (9.1 m) in length will be required for safety reasons.
- Access to a well-maintained restroom, with a functioning sink, within reasonable proximity to the Department laboratory facility. Portable restrooms are not acceptable.
- Floored, weatherproof, and reasonably dustproof.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
ASPHALT LABORATORY FACILITY

- Level and stable with substantial/durable structure capable of supporting required laboratory equipment. Movement in the lab shall not affect testing operations such as scale readings, etc.
- At least two glazed screened windows capable of being opened and locked only from the inside.
- Basic utility services shall be provided year-round as long as the plant is listed on the QPL. If utility services to the Department lab are voluntarily suspended at any time, the plant may be removed from the QPL.
- Equip the lab with heating and air conditioning units that maintain the ambient air temperature between 65 °F and 80 °F (18 °C and 27°C). The lab must be climate-controlled year-round.
- A work counter approximately 30" to 36" (760 to 900 mm) high with a minimum depth of 30" (760 mm). The countertop shall be metal capped with a rolled back edge of 2" (50 mm) if adjacent to the wall or other comparable durable surface. Total length of the work counter shall be approximately 35' (10.7 m) with a minimum of 12' (3.7 m) of counter length 36" (900 mm) deep.
- A minimum of 54" (1370 mm) width between parallel work counters.
- Adequate electric lights suitable for the purposes intended. At least one power outlet per every four feet of counter. At least two power outlets shall provide 220 VAC.
- An exhaust outlet with at least 3" (76 mm) inside diameter no farther than 8' (2.4 m) from the ignition oven shall be included near one of the 220 VAC outlets. Provide a surface for the ignition oven that is level, sturdy, and fireproof with at least 6" (152 mm) of clearance between the furnace and other vertical surfaces. The exhaust fumes exiting the furnace exhaust port may reach 270 °C (518 °F).
- An exhaust fan shall be installed over the equipment clean up area. The exhaust fan shall be equipped with a rheostat control and capable of exhausting in one minute a volume of air equal to the volume of the entire laboratory. The exhaust fan shall be maintained operational.
- A sink, approximately 25" (635 mm) square with a minimum depth of 9" (230 mm) with an outside drain.
- A clean water supply providing a minimum of 50 gallons (200 liters) storage capacity (or connected to a public or private water system), discharging through a faucet above the sink. A thermostat controlled hot water supply shall be provided to the laboratory sink.
- Adequate shelves and/or cabinets for storage of testing equipment that do not impede the operation of testing equipment.
- A storage area for storing nuclear equipment, complete with a substantial lock and all keys to this area placed in the possession of the Engineer.
- At least one Type ABC fire extinguisher (10-pound size minimum) with up-to-date inspection tag per 300 square feet of building.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
ASPHALT LABORATORY FACILITY

- A local access touchtone telephone line (with access to toll free telephone numbers but otherwise blocked for outgoing long-distance calls), with a landline modular jack and touchtone telephone, shall be provided in the laboratory facility for use by Department personnel.
- Reliable Broadband Internet Service shall be provided.
The Broadband Internet Service shall be provided with an Internet Protocol (IP) address which is reachable on the global Internet (public) and which is permanently assigned (static). The Contractor is not required to provide this service if an IP address which is both static and public is not available.

If this service is not available at the beginning of a project but becomes available during the life of the project, the Contractor shall provide the service immediately from the date of availability.

The data transfer rate shall be 3 megabits per second (Mbps) download and 500 kilobits per second (kbps) upload, or higher, with latency not to exceed 150 milliseconds. If the Broadband Internet Service meets all of the requirements of this specification except for the data transfer rate and/or latency, then the best performing available connection shall be provided. The Broadband Internet Service shall be provided with equipment providing a minimum of one Ethernet port.

Prior to the selection of the Broadband Internet Service provider, the Contractor shall submit to the Resident Engineer, in writing, the proposed method for providing Broadband Internet Service. The Resident Engineer shall review this submittal and respond in writing regarding the acceptability of the proposed method.

Adequate maintenance of the laboratory facility shall be required for plant inclusion on the QPL and will be included as part of the annual ACHM plant inspection. Maintenance shall include, but is not limited to, HVAC and electrical systems, and plumbing. The Resident Engineer may determine a lab is in reasonable compliance with this specification if all required testing can be accomplished with reasonable ease by the Construction Materials Inspector.

The requirements of this Supplemental Specification shall be implemented in order to receive the next scheduled ACHM Plant Certification. If the requirements are not met and the Resident Engineer determines the laboratory is not within reasonable compliance an ACHM Plant Certification will not be provided until all requirements are fulfilled and/or the Resident Engineer is satisfied with the conditions of the facilities.

The field laboratory for asphalt mixing plants and the utility services provided will not be paid for directly but will be considered a part of the asphalt mixing plant.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

**CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF
ASPHALT CONCRETE PLANT MIX COURSES**

Section 410, Construction Requirements and Acceptance of Asphalt Concrete Plant Mix Courses, of the Standard Specifications for Highway Construction, Edition of 2014, is hereby modified as follows:

Subsection 410.10 Incentives is hereby deleted.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

DEVICES FOR MEASURING DENSITY FOR ROLLING PATTERNS

Section 410 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The fourth sentence of the first paragraph of **Subsection 410.08, Rolling and Density Requirements and Joints**, is hereby deleted and the following substituted therefor:

The Engineer will observe the Contractor's use of an electromagnetic surface contact device that meets ASTM D7113/D7113M or the use of a nuclear density gauge to verify that the maximum densities possible are obtained.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

EVALUATION OF ACHM SUBLLOT REPLACEMENT MATERIAL

Section 410 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following shall be added to the second to the last paragraph of **Subsection 410.09 (a)**

General:

If the material used to replace unacceptable material is a different mix design from what was originally placed, the remaining material in the lot and the replacement material shall both be evaluated as separate partial lots.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
RECYCLED ASPHALT PAVEMENT

Division 400 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The fourth paragraph of **Subsection 416.03, Materials and Composition**, is hereby deleted and the following substituted therefor:

To ensure the “production” stockpile is distinguishable to anyone involved in the production of asphalt at the plant and no “unprocessed” materials are introduced into the process of ACHM mix manufacturing, the following shall be required for the use of Recycled Asphalt Pavement (RAP):

- RAP stockpiles should have only binder covered aggregates and therefore, there shall be no virgin aggregate or deleterious materials present in any RAP stockpile. Uncoated aggregate from asphalt plant produced material shall not be considered virgin aggregate as it applies to RAP. Plant startup and shut down materials will be considered binder covered and are allowed.
- Unprocessed RAP and processed RAP stockpiles shall be separated by distance and each stockpile signed accordingly.
- Only processed RAP shall be introduced into asphalt mixes. Processed is defined as efforts to create a uniform stockpile of material and may include, but is not limited to, crushing and/or fractionating. Use of the scalper screen on the plant does not define processed RAP.
- Processed RAP stockpiles shall be of adequate size for multiple operational days of asphalt mix production at the plant’s maximum production rate. Processed RAP must be stockpiled before use in plant production. Processed RAP may not be taken from underneath the crusher and placed directly into the cold feed bins. If the crusher is feeding the processed stockpile, the loader must load the cold feed bins from the opposite end of the processed stockpile.

Quality control testing for asphalt binder content and gradation of RAP shall be the contractor’s responsibility and conducted as follows:

- Tested as part of the field verification process. Field verification test results may be transferred from another ARDOT job given they are from the same mix design and were completed within 120 days of the current job’s field verification process.
- Minimum of one set of tests per job for jobs that contain at least 1,000 tons of ACHM.
- One set of tests for every 10,000 tons of ACHM produced.
- The first tests on the job must be performed within the first 3 days of production on the job.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
RECYCLED ASPHALT PAVEMENT

The Contractor has the option of quality control testing while the processed stockpile is being built in lieu of testing during production. Quality control testing for asphalt binder content and gradation of RAP shall be the Contractor's responsibility and conducted as follows:

- Tested as part of the field verification process. Field verification test results may be transferred from another ARDOT job given they are from the same mix design and were completed within 120 days of the current job's field verification process.
- One set of tests for every 1,500 tons of RAP produced for each stockpile.
- The quantity of RAP being placed in the processed stockpile must be tracked.

The Contractor shall pick only one option of quality control method per processed RAP stockpile. The Engineer shall be given the opportunity to witness all testing. Test results shall be submitted to the Engineer by the next business day. The Contractor shall keep a logbook to track the consistency of the asphalt binder content and gradation.

If testing determines the properties of the RAP have deviated significantly from the mix design, as determined by the Engineer, changes to virgin binder content and/or aggregate proportions will be required before production of the ACHM continues. Once adjustments are made and the plant produced mix has the desired properties, the Contractor may request that a field mix design be accepted by the Engineer.

To create uniform, repeatable testing for RAP binder content, asphalt binder content of the RAP shall be determined using AASHTO T 308 with the specific requirements as follows:

- Sample shall be dried to a constant mass as per AASHTO T 329 using a drying temperature of $230\text{ }^{\circ}\text{F} \pm 9\text{ }^{\circ}\text{F}$.
- The ignition oven burn temperature used during the mix design process must be used for quality control. The burn temperature shall be reported on the mix design submittal.
- Asphalt Binder Content = % loss – Aggregate Correction Factor (ACF)
- An ACF for each processed RAP stockpile shall be submitted with the mix design if used. An ACF for the job mix formula shall be submitted on the mix design if used. If multiple ignition ovens are used, an ACF for each oven shall be submitted.
- Determination of the ACF may be based on regional historical data at the time of the change. This will ensure all parties involved are aware of the correction factor and therefore avoiding disagreements pertaining to manipulation/fluctuation in aggregate correction factors that could be used to adjust binder content data.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
CEMENT

Section 501 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added as the last bullet of the first paragraph of **Subsection 501.02, Materials. (a) Cement.**

- Portland-Limestone Cement, AASHTO M240, Type 1L. Type 1L shall have a limestone constituent greater than 5 percent and less than or equal to 15 percent by mass of blended cement.

The second sentence of the third paragraph of **Subsection 501.02, Materials. (a) Cement.** is revised as follows:

The total alkalis in the cementitious material (Portland cement, Portland – Limestone cement, fly ash or slag cement) shall not exceed 5 lb/cu yd (3 kg/cu m).

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

INCIDENTAL CONSTRUCTION

Sections 609, 611, 617, and 618 of the Standard Specifications for Highway Construction, Edition of 2014, are hereby amended as follows:

Subsection 609.02(c), Materials for Drop Inlets and Junction Boxes, is hereby deleted and the following is substituted therefor:

- (c) Steel for welded steel grates and frames shall comply with ASTM A709, Grade 36 (250).

Subsection 611.02(a)(2), Materials for Pipe Underdrains, Outlet Protectors, and Covers, is hereby deleted and the following is substituted therefor:

- (2) **Corrugated Polyethylene Tubing.** The tubing shall be the heavy duty type and shall comply with AASHTO M 252. The tubing shall have a minimum pipe stiffness of 46 psi (3.23 kg/cm²) at 5% deflection and shall be capable of 60 percent vertical deflection in parallel plate loading without splitting or cracking when tested in accordance with ASTM D 2412.

The second sentence of **Subsection 617.02(a)(2), Materials for Steel Posts**, is hereby deleted and the following is substituted therefor:

- (2) **Steel Posts.** The steel shall comply with ASTM A709, Grade 36 (250).

Subsection 617.02(b)(3), Materials for Terminal Anchor Posts, is hereby deleted and the following is substituted therefor:

- (3) The steel anchor posts shall consist of structural shapes of the section shown on the plans, or as otherwise specified, and shall comply with ASTM A709, Grade 36 (250). The upper 15" (380 mm) of the anchor assembly shall be galvanized according to AASHTO M 111.

The third sentence of the third paragraph **Subsection 618.02(a), Posts for Guard Cable**, is hereby deleted and the following is substituted therefor:

- The steel shall comply with ASTM A709, Grade 36 (250).

Subsection 618.02(d), Materials for Bolts, Nuts, and Washers, is hereby deleted and the following is substituted therefor:

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****INCIDENTAL CONSTRUCTION**

(d) Bolts, Nuts, and Washers. Bolts, nuts, and washers shall conform to the plans and shall be steel complying with ASTM A 307, ASTM F3125, Grade A325, Heavy Hex, Type 1, or ASTM A449 (Heavy Hex), galvanized according to AASHTO M 232. Threads on bolts and nuts shall conform to Unified Coarse Thread Series Class 2A, ANSI B 1.1 (Metric Coarse Thread Series, ANSI B 1.13M, 6g tolerance).

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****LANE CLOSURE NOTIFICATION**

Division 600 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Section 603, Maintenance of Traffic and Temporary Structures, is hereby modified as follows:

The first sentence of the third paragraph **Subsection 603.02 (d)** is hereby deleted and the following substituted therefor:

The Contractor shall provide the Engineer with a minimum of five full business days advance, written notification of any nonemergency lane closure or lane width restriction. The first full business day shall commence at midnight on the first business day following written notification to the Engineer. This advanced notification is required to allow adequate notice for the issuance of over width load permits by the Department.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
RETROREFLECTIVE SHEETING FOR
TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES

Section 604 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is inserted after the first paragraph of Subsection 604.02(b):

Retroreflective sheeting used on traffic drums shall meet the requirements of ASTM D4956 for Type III or IV with the additional requirements for Reboundable Sheeting. Retroreflective sheeting for delineators shall comply with section 728.

Retroreflective sheeting shall be applied to a properly treated substrate with mechanical equipment and in a manner specified by the sheeting manufacturer. Sign material (substrate) shall be of sufficient thickness and stability to maintain a substantial, effective sign for the duration of the project. One splice will be allowed in retroreflective sheeting on sign blanks. "Left", "Right", "Distances", and "Ahead" will be allowed on signs as inserts. All letters and numerals on inserts shall be of the same size and series as those on the sign face.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES (MASH)**

Section 604 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The first paragraph of **Subsection 604.02 Materials (a) General** is hereby deleted and the following substituted therefor:

All work zone traffic control devices used on the project, including sign supports, barricades, traffic drums equipped with flashing lights, crash cushions, and impact attenuators, manufactured after December 31, 2019, shall comply with the requirements of the Manual for Assessing Safety Hardware (MASH). Such devices manufactured on or before December 31, 2019, and successfully tested to the requirements of National Cooperative Highway Research Program (NCHRP) Report 350 or the 2009 edition of MASH, may continue to be used throughout their normal service lives. The Contractor shall furnish a certification of such compliance from the manufacturer or supplier of all work zone traffic control devices prior to using the devices on the project. The certification shall state the device meets the requirements of MASH, or in the case that the device was manufactured on or before December 31, 2019, the certification shall state the device meets the requirements of NCHRP 350 or MASH. The certification shall include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments for each device. Devices shall be fabricated and installed in accordance with the plans and with the crash testing documentation provided in the FHWA approval letter which is available at:

http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

CONCRETE DITCH PAVING

Division 600, INCIDENTAL CONSTRUCTION, of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Section 605, CONCRETE DITCH PAVING, is hereby modified as follows:

The last sentence of **Subsection 605.03(e) Expansion Joints** is hereby deleted and the following substituted therefor:

The space shall be filled with approved joint filler complying with AASHTO M 213 or a Semi-Rigid Closed-Cell Polypropylene Foam, Prefomed Expansion joint filler that meets ASTM D8139. Materials meeting ASTM D8139 shall be accepted on the basis of the manufacturer's certification in accordance with these specifications and acceptable performance on the project.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
PIPE CULVERTS FOR SIDE DRAINS

Section 606 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The second paragraph of **Subsection 606.01** is hereby deleted and the following substituted therefore:

For side drains, when the type is not specified on the plans, the Contractor may furnish any of the types listed in Subsection 606.02 provided that only one type and material shall be used for all side drains of like cross-sectional shape on the project. In addition, when circular pipe is specified for a side drain the Contractor may, at no additional cost to the Department, substitute an arch pipe providing the equivalent waterway.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
GUARDRAIL TERMINAL (TYPE 2)

Section 617 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The third paragraph of subsection **617.01 Description** is hereby deleted and the following substituted therefor:

The item “Guardrail Terminal (Type 2)” shall consist of furnishing and installing an acceptable crashworthy end terminal for W-beam guardrail at the locations shown in the plans or as directed by the Engineer. The guardrail terminal shall be specifically designed as a W-beam guardrail terminal, and shall provide an anchor against which the full tensile strength of the rail can be developed for downstream hits while remaining crashworthy for end-on impacts. The guardrail terminal shall satisfy the Manual for Assessing Safety Hardware (MASH) Test Level 3 (TL-3). The guardrail terminal shall be of a configuration that will be compatible with the site geometry shown on the plans. Guardrail terminals that require additional grading or require anchoring outside the limits of the site shown on the plans will be acceptable; however, the cost of any additional site work shall be included in the price bid for the particular type of guardrail terminal used. Guardrail terminals shown on the plans shall be 50 feet (15 meters) in length. Any additional length of guardrail needed to fulfill the 50 feet (15 meters) requirement shall be included in the price bid for the particular type of guardrail terminal used.

The first paragraph of subsection **617.02(f), Guardrail Terminal (Type 2)**, is hereby deleted and the following substituted therefor:

The Contractor shall furnish a certification from the manufacturer or supplier that the guardrail terminal meets the requirements of MASH Test Level 3 (TL-3). All materials shall be new. Rail elements and posts shall meet the requirements above. All steel components shall be galvanized. All parts shall be clearly identified for proper assembly and replacement.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
GUARDRAIL DELINEATORS

Division 600 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Section 617, GUARDRAIL is hereby modified as follows:

The following is hereby added as **Subsection 617.02(g) Delineators**.

Guardrail delineators shall be included on the Department's Qualified Product List (QPL).

The following is hereby added as **Subsection 617.03 (g) Delineators**.

Guardrail delineators shall be installed at 37.5' spacing maximum in tangent sections except that any individual run of guardrail shall have no less than three delineators installed. Spacing may be reduced in curves as directed by the Engineer.

Guardrail delineators shall have a minimum reflective area of 8.0 sq. in. per side, be made of galvanized metal with a 12-gauge minimum thickness, and be capable of being bolted to the guardrail web. The delineator shall have two (2) reflective surfaces and shall use reflective sheeting conforming to ASTM D4956 Types VIII or IX. Reflective sheeting used shall be listed on the Department's Qualified Products List (QPL) 723 Reflective Sheeting.

The following is hereby added as the last sentence of **Subsection 617.05 Basis of Payment. (a)**

Payment for the Guardrail Delineators will not be paid for separately, but full compensation therefor will be considered included in the contract unit price for Guardrail (Type ____).

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
Mulch Cover

Section 620 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection **620.02 Materials (d)** is hereby deleted and the following substituted therefore:

(d) Mulch cover. Shall be a mulch cover system as listed on the Department's Qualified Products List (QPL) or shall consist of straw from threshed rice, oats, wheat, barley, or rye; of wood excelsior; or of hay obtained from various legumes or grasses, such as lespedeza, clover, vetch, soybeans, bermuda, carpet sedge, bahia, fescue, or other legumes or grasses; or a combination thereof. Mulch shall be dry and reasonably free from Johnson grass or other noxious weeds, and shall not be excessively brittle or in an advanced state of decomposition. All material will be inspected and approved prior to use.

The following is inserted after Subsection **620.03 Construction Requirements (c) Seeding (3) Hydro-seeding:**

(4) Mulch Cover. If a mulch cover system listed on the Department's Qualified Products List (QPL) is used then the mulch cover and the seed may be incorporated into one operation.

Subsection **620.03 Construction Requirements (d)** is hereby deleted and the following substituted therefore:

(d) Mulch Cover. If a Mulch Cover system listed on the Department's Qualified Products List (QPL) is used then refer to the application rate listed in the QPL otherwise the mulch cover shall be applied at the rate of 4000 pounds per acre (4500 kg/ha). If the mulch cover and seed are not incorporated into one operation then apply the mulch cover immediately after seeding and spread the mulch cover uniformly over the entire area by approved power mulching equipment. When approved by the Engineer, the Contractor may use hand methods to apply mulch cover to small or inaccessible areas. If the Contractor so elects, an approved mulching machine may be used, whereby the application of mulch cover and tackifier may be combined into one operation. If this method is used, no change in application rates will be allowed. In its final position, the anchored mulch shall be loose enough to allow air to circulate, but compact enough to partially shade the ground and reduce the impact of rainfall on the surface of the soil. Care shall be taken to prevent tackifier materials from discoloring or marking structures, pavements, utilities, or other plant growth. Removal of any objectionable discoloration shall be at no cost to the Department.

**ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION**

Mulch Cover

The first paragraph of subsection **620.03 Construction Requirements (e)** is hereby deleted and the following substituted therefore:

(e) Mulch Anchoring. If a mulch cover system is selected from the Department's Qualified Products List (QPL) then no additional anchoring is needed. If a mulch cover system is not used then immediately following or during the application of mulch cover on seeded areas, the mulch shall be anchored by one of the following methods.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
FILTER SOCKS

Section 621 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added to **Subsection 621.01**:

(p) Filter Socks. This item shall consist of furnishing, installing, maintaining, and removing filter socks at locations indicated on the plans or as otherwise directed by the Engineer. Filter socks consist of filter media (compost or non-treated wood) encased in a three-dimensional fabric tube for the purposes of filtering silt, sediment, and other pollutants out of stormwater.

The following is added to **Subsection 621.02**:

(o) Compost or non-treated wood used for filter sock filter media shall be weed, disease, and pathogen free and derived from a clean source of woody organic matter. The media shall be free of any refuse, contaminants, or other materials toxic to plant growth. Test methods for the parameters shown in Table 621-2 should follow the recommendations provided in the AASHTO Standard Practice for Compost for Erosion and Sediment Control (R 51). Compost products must be supplied with a Seal of Testing Assurance (STA) by the U.S. Composting Council from the manufacturer. The Engineer may request a sample for approval prior to being used and materials must comply with all local, state, and federal regulations.

Table 621-2
Filter Sock Media Parameters

Parameters	Reported as (units of measure)	Test Method	Required Value
pH	pH Units	AASHTO R 51	5.0-8.5
Moisture Content	%, wet weight basis	AASHTO R 51	<60%
Organic Matter Content	%, dry weight basis	AASHTO R 51	>30%
Particle Size	% passing a selected mesh size, dry weight basis	AASHTO R 51	99% passing a 2" sieve <40% passing a 3/8" sieve
Physical Contaminates (man-made inert material)	%, dry weight basis	N/A	<1%

Filter sock containment shall be produced from 5-mil-thick continuous high density polyethylene (HDPE) filament or multi-filament polypropylene (MFPP), woven or knitted into a tubular mesh netting. Openings in the mesh shall range from 1/8th to 3/8th inch. This tube shall then be filled to the specified diameter of the sock with filter media which meets the specifications outlined in Table 621-2. Filter sock fabric shall have a minimum functional longevity of 9 months.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
FILTER SOCKS

Furnish filter socks with a diameter of 8-9, 12, 18, or 24 inches in diameter in variable lengths as directed by the Engineer.

Use 2" by 2" hardwood stakes of a length which will allow them to be driven at least one foot into the soil while leaving at least 3" projecting above the sock after installation. In rocky or other difficult locations steel stakes may be used if directed by the Engineer. Sandbags may be used as necessary to anchor the filter sock for installation on paved surfaces. Placement shall be as directed by the Engineer.

The following is added to **Subsection 621.03**:

(q) Trenching of filter socks is not required but woody vegetation shall be cut at ground level or otherwise removed, and uneven or rocky surfaces shall be graded or raked to ensure the socks uniformly contact the ground. The socks shall be secured with stakes driven through the center of the devices or installed as recommended by the manufacturer. For perimeter control or on slopes, stakes shall be installed on a maximum of 10 foot centers and the ends of the socks shall be directed upslope to prevent storm water from running around the end of the sock. For ditch checks and drop inlets, stakes shall be installed on a maximum of 4 foot centers. Additional stakes may be necessary as directed by the Engineer. Filter socks may be laid end to end or overlapped according to the manufacturer's directions.

Routinely maintain the socks in good condition (including staking, anchoring, etc.) Accumulated sediment shall be removed when the sediment reaches one-half the height of the sock or as directed by the Engineer. Sediment removed shall be deposited and stabilized as described in Section 110 of the Standard Specifications for Highway Construction, Edition of 2014. Repair of or complete replacement of torn or damaged socks shall be performed as required or as directed by the Engineer. Filter socks shall be carefully removed and replaced as required to facilitate construction operations.

When the required work has been completed, the area has been stabilized, and the filter socks are no longer required as approved by the Engineer, the containment material shall be cut and the core material shall be evenly distributed on the surrounding ground area. Containment shall be removed and disposed of.

The following is added to **Subsection 621.04**:

(q) Filter Socks will be measured by the linear foot (meter) complete in place; measurement will be made along the centerline of the top of the filter sock. No payment will be made for overlap. No payment will be made for additional length beyond that approved by the Engineer.

**ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
FILTER SOCKS**

The following is added to **Subsection 621.05**:

(q) Filter Socks completed and accepted and measured as provided above will be paid for at the contract unit price bid per linear foot (meter) for Filter Socks, which price shall be full compensation for furnishing all materials; for installation and maintenance of filter socks; for temporarily removing and replacing filter socks as required to facilitate construction operation; for removal and disposal of the filter socks as directed; and for all labor, equipment, tools, and incidentals necessary to complete the work.

The following is added as the last Pay Item in **Subsection 621.05**:

Pay Item	Pay Unit
Filter Sock (____")	Linear Foot (Meter)

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

CONCRETE ISLAND

Division 600, INCIDENTAL CONSTRUCTION, of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Section 632, CONCRETE ISLAND, is hereby modified as follows:

The last sentence of the fifth paragraph of **Subsection 632.03 Construction Requirements** is hereby deleted and the following substituted therefor:

The space shall be filled with approved joint filler complying with AASHTO M 213 or a Semi-Rigid Closed-Cell Polypropylene Foam, Prefomed Expansion joint filler that meets ASTM D8139. Materials meeting ASTM D8139 shall be accepted on the basis of the manufacturer's certification in accordance with these specifications and acceptable performance on the project.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****TRAFFIC CONTROL FACILITIES**

Sections 712, 713, 714, 715, 728 and 730 of the Standard Specifications for Highway Construction, Edition of 2014, are hereby amended as follows:

Subsection 712.02(a) Materials for Span Wire Support Pole With Foundation is hereby deleted and the following is substituted therefor:

(a) Pole shafts shall comply with ASTM A 1011, SS, Grade 50 (345), ASTM A709, Grade 50 (345), ASTM A 595 Grade A, or ASTM A 572, Grade 50 or Grade 65. Galvanizing shall comply with AASHTO M 111, Thickness Grade 100.

Subsection 712.02(c) Materials for Span Wire Support Pole With Foundation is hereby deleted and the following is substituted therefor:

(c) Anchor base plates shall comply with ASTM A709, Grade 36 (250). Galvanizing shall comply with AASHTO M 111, Thickness Grade 100.

Subsection 712.02(e) Materials for Span Wire Support Pole With Foundation is hereby deleted and the following is substituted therefor:

(e) Hex nuts shall comply with AASHTO M 292 Grade 2H or ASTM A653 Grade 2H or ASTM A653 Grade DH or DH3 (Grade 10S or 10S3). The thread series shall correspond with that of the bolt furnished. Washers shall comply with ASTM F436. Galvanizing shall comply with AASHTO M 232 or ASTM B 695 Class 40 or 50. Nuts shall be galvanized by the same process as that of the bolts.

Subsection 712.02(f) Materials for Span Wire Support Pole With Foundation is hereby deleted and the following is substituted therefor:

(f) Concrete shall comply with Section 802 for Class S concrete. The Department will perform all acceptance sampling and testing at the frequencies shown for Contractor acceptance in Subsection 802.06. Reinforcing steel shall comply with Section 804 for Grade 60 steel.

The third paragraph of **Subsection 713.02 Materials for Span Wire Assembly** is hereby deleted and the following is substituted therefor:

Suitable cable ties shall be provided to suspend the traffic control cable at intervals not to exceed 18" (450 mm). Necessary eyebolts, washers, nuts, and fittings shall be galvanized steel complying with AASHTO M 232 or ASTM B695, Class 40 or 50.

Subsection 714.02(a) Materials for Traffic Signal Mast Arm and Pole with Foundation is hereby deleted and the following is substituted therefor:

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****TRAFFIC CONTROL FACILITIES**

(a) Poles and mast arms shall be ASTM A 1011, SS, Grade 50 (345), ASTM A709, Grade 50 (345), ASTM A 595 Grade A or ASTM A 572, Grade 50 or Grade 65. Galvanizing shall comply with AASHTO M 111, Thickness Grade 100.

Subsection 714.02(c) Materials for Traffic Signal Mast Arm and Pole With Foundation is hereby deleted and the following is substituted therefor:

(c) Anchor Base Plates shall be ASTM A709, Grade 36 (250). Galvanizing shall comply with AASHTO M 111, Thickness Grade 100.

Subsection 714.02(e) Materials for Traffic Signal Mast Arm and Pole With Foundation is hereby deleted and the following is substituted therefor:

(e) Hex nuts shall comply with AASHTO M 292 Grade 2H or ASTM A563 Grade DH or DH3 (Grade 10S or 10S3). The thread series shall correspond with that of the bolt furnished. Washers shall comply with ASTM F436. Galvanizing shall comply with AASHTO M 232 or ASTM B695, Class 40 or 50. Nuts shall be galvanized by the same process as that of the bolts.

Subsection 714.02(f) Materials for Traffic Signal Mast Arm and Pole With Foundation is hereby deleted and the following is substituted therefor:

(f) Clamp Plates shall be ASTM A709, Grade 36 (250). Galvanizing shall comply with AASHTO M 111, Thickness Grade 100.

Subsection 714.02(g) Materials for Traffic Signal Mast Arm and Pole With Foundation is hereby deleted and the following is substituted therefor:

(g) Flange and Gusset Plates shall be ASTM A709, Grade 36 (250). Galvanizing shall comply with AASHTO M 111, Thickness Grade 100.

Subsection 714.02(h) Materials for Traffic Signal Mast Arm and Pole With Foundation is hereby deleted and the following is substituted therefor:

(h) Clamp and Flange Bolts shall be ASTM F3125, Grade A325, Type 1, Heavy Hex with the requirements of Annex A2. Galvanizing shall comply with AASHTO M 232 or ASTM B695, Class 40 or 50.

Subsection 714.02(i) Materials for Traffic Signal Mast Arm and Pole With Foundation is hereby deleted and the following is substituted therefor:

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****TRAFFIC CONTROL FACILITIES**

(i) Concrete shall comply with Section 802 for Class S concrete. The Department will perform all acceptance sampling and testing at the frequencies shown for Contractor acceptance testing in Subsection 802.06. Reinforcing steel shall comply with Section 804 for Grade 60 steel.

Subsection 715.02(c) Materials for Traffic Signal Pedestal Pole With Foundation is hereby deleted and the following is substituted therefor:

(c) Anchor Base Plates shall be ASTM A709, Grade 36 (250). Galvanizing shall comply with AASHTO M 111, Thickness Grade 100.

Subsection 715.02(e) Materials for Traffic Signal Pedestal Pole With Foundation is hereby deleted and the following is substituted therefor:

(e) Hex nuts shall comply with AASHTO M 292 Grade 2H or ASTM F436 Grade DH or DH3 (Grade 10S or 10S3). The thread series shall correspond with that of the bolt furnished. Washers shall comply with ASTM F436. Galvanizing shall comply with AASHTO M 232 or ASTM B695, Class 40 or 50. Nuts shall be galvanized by the same process as that of the bolts.

The fifth and sixth paragraphs of **Subsection 728.02 Materials for Delineators** are hereby deleted and the following are substituted therefor:

Steel posts for bridge rail installation shall be a 1" x 1" x 3/16" (25 mm x 25 mm x 4.76 mm) angle weighing 1.61 pounds per foot (2.4 kg/m), and manufactured from ASTM A709, Grade 36. Length of post and spacing of holes shall be as shown on the plans.

All delineators posts shall be hot dip galvanized in accordance with ASTM A123 and all fabrication, including punching or drilling holes, shall be completed before the posts are galvanized.

The second and third paragraphs of **Subsection 730.02 Materials for Breakaway Sign Support** are hereby deleted and the following are substituted therefor:

All structural steel, except pipe posts but including base plates on pipe posts, and steel fuse plates, shall comply with AASHTO M 270 Grade 50. Pipe posts shall be structural steel complying with ASTM A 53 Grade B pipe. Steel bolted or welded to the primary support posts and not affecting the breakaway function, may be AASHTO M 270 Grade 36.

All high strength bolts, nuts, and washers shall comply with ASTM F3125, Grade A325, Type 1, Heavy Hex with the requirements of Annex A2.

ARKANSAS DEPARTMENT OF TRANSPORTATION

SUPPLEMENTAL SPECIFICATION

TRAFFIC CONTROL FACILITIES

The third paragraph of **Subsection 730.03 Fabrication for Breakaway Sign Support** is hereby deleted and the following is substituted therefor:

All structural steel shall be galvanized after fabricating according to AASHTO M 111. All bolts, nuts, and washers shall be galvanized according to AASHTO M 232 or ASTM B695, Class 40 or 50.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****GENERAL REQUIREMENTS FOR SIGNS**

Section 723 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 723.02(b) is hereby deleted and the following is substituted therefor:

(b) Sign Panels. Standard signs shall consist of a single sheet of aluminum alloy (ASTM B 209, Alloy 5052 H38) without stiffeners on the back. Minimum sign blank thickness shall be 0.080" (2.0 mm) for a sign size of 9 square feet (0.84 sq m) or less or 0.100" (2.5 mm) for a sign size greater than 9 square feet (0.84 sq m). Sign blanks shall be flat and straight and within commercial tolerances established by the aluminum industry.

Guide signs shall be fabricated using one piece extruded panels fabricated of aluminum alloy (ASTM B221, Alloy 6063 T6).

Extruded panel signs shall consist of sign panels; stringers or horizontal supporting members; necessary fasteners for assembling the units; reflective materials; letters; numerals; symbols; and border. All extrusions and fasteners shall be applied without causing objectionable projections on the sign face.

The one piece extruded aluminum panels shall be a minimum of 12" (300 mm) in width except one 6" (150 mm) panel may be used per sign face when necessary to construct the sign as shown on the plans.

All extruded panels shall be bolted together at every other hole (every 24" [610 mm]) with the faces and ends in alignment.

Single sheet and extruded panels to which reflective sheeting is to be applied shall be conversion coated as specified in ASTM B449 or ASTM B921 per the sheeting manufacturer's recommendations.

All fabrication, including cutting and punching of holes, excluding holes for demountable letters, numerals, symbols, and borders, shall be completed before conversion coating.

Sign panels shall be free of buckles, warp, dents, cockles, burrs, and defects resulting from fabrication. The surface of all sign panels shall be flat.

The Contractor shall submit a Certified Test Report to the Engineer covering the sign panels.

The first paragraph of **Subsection 723.02(c)** is hereby deleted and the following is substituted therefor:

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****GENERAL REQUIREMENTS FOR SIGNS**

(c) Retroreflective Sheeting. The retroreflective sheeting for signs shall comply with ASTM D4956 for Type III, IV, VIII, or IX retroreflective sheeting, except that Type IX retroreflective sheeting shall be used on all W1-6, W1-8, and OM-3 signs. ASTM D4956 Type XI sheeting shall be used on all R5-1 and R5-1a signs. All retroreflective sheeting shall have either Class 1 or Class 2 backing.

Subsection 723.02(d) is hereby deleted and the following is substituted therefor:

(d) Legend. All legend, which includes letters, numerals, symbols, arrows, and border, shall have a regular outline, be clean cut and sharp, and shall have a continuous stroke and border without ragged or torn edges.

All legend on guide signs shall be of the size shown on the plans. Legend on standard signs shall comply with the latest revision of FHWA Standard Highway Signs.

The legend on freeway main lane guide signs shall be demountable. Unless otherwise specified, the legend on all other guide signs shall be manufactured using either direct application or acrylic overlay film. All other signs shall be manufactured using standard industry processes, including silk screening, acrylic overlay film, and digital printing. Digitally printed signs shall be overlaid with a clear UV film per the sheeting manufacturer's recommendation.

All demountable legend shall be of the same manufacturer. The sign area outside the corner radius shall not be trimmed to match the border radius.

Frames for border strips, corners, shields, and legend shall be fabricated from 0.063" (1.6 mm) sheet aluminum complying with the requirements of ASTM B209, Alloy 5052-H38. Mounting holes shall be provided with the frames to permit the use of screws, bolts, rivets, or other fasteners of stainless steel, galvanized steel, or aluminum to fasten the frames to the sign face, subject to the condition that dissimilar metals shall be insulated to prevent corrosion.

The aluminum frames shall comply with Subsection 723.02(b).

All border material shall be secured from the same company that furnishes the cutout letters, numerals, etc. and shall be mounted in the same manner as the cutout letters.

Transparent colors, inks, paints, and films used in the sign manufacturing process shall be of the type and quality recommended by the manufacturer of the reflective sheeting and shall conform to red, blue, yellow, and green colors approved by the FHWA and shown in the MUTCD and FHWA Standard Highway Signs. The Contractor shall provide a sheeting manufacturer's full component system warranty, and shall provide certification that the materials used shall meet all MUTCD minimum requirements for retroreflectivity and contrast for the warranty period of the sheeting.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****CHANNEL POST SIGN SUPPORT**

Section 729 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following paragraph is added after the last paragraph of **Subsection 729.02 Materials**:

All posts used on the project, manufactured after December 31, 2019, shall comply with the requirements of the Manual for Assessing Safety Hardware (MASH). Such devices manufactured on or before December 31, 2019, and successfully tested to the requirements of National Cooperative Highway Research Program (NCHRP) Report 350 or the 2009 edition of MASH, may continue to be used throughout their normal service lives. The Contractor shall furnish a certification of such compliance from the manufacturer or supplier of all posts prior to using the devices on the project. The certification shall state the post meets the requirements of MASH, or in the case that the post was manufactured on or before December 31, 2019, the certification shall state the post meets the requirements of NCHRP 350 or MASH. The certification shall include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments for each device. Devices shall be fabricated and installed in accordance with the plans and with the crash testing documentation provided in the FHWA approval letter, which is available at:

http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****BREAKAWAY SIGN SUPPORT**

Section 730 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following paragraph is added after the last paragraph of **Subsection 730.02 Materials**:

All breakaway sign supports used on the project, manufactured after December 31, 2019, shall comply with the requirements of the Manual for Assessing Safety Hardware (MASH). Such devices manufactured on or before December 31, 2019, and successfully tested to the requirements of National Cooperative Highway Research Program (NCHRP) Report 350 or the 2009 edition of MASH, may continue to be used throughout their normal service lives. The Contractor shall furnish a certification of such compliance from the manufacturer or supplier of all devices prior to using the devices on the project. The certification shall state the device meets the requirements of MASH, or in the case that the post was manufactured on or before December 31, 2019, the certification shall state the device meets the requirements of NCHRP 350 or MASH. The certification shall include a copy of the Federal Highway Administration's (FHWA) approval letter with all attachments for each device. Devices shall be fabricated and installed in accordance with the plans and with the crash testing documentation provided in the FHWA approval letter, which is available at:

http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
STRUCTURES

Sections 802, 805, 807, 809 and 817 of the Standard Specifications for Highway Construction, Edition of 2014, are hereby amended as follows:

The fifth sentence of the ninth paragraph **802.14(b), Permanent Steel Deck Forms**, is hereby deleted and the following is substituted therefor:

- (b) However, welding of form supports to flanges of steels other than ASTM A709, Grade 36 (250), 50 (345), or 50W (345W) of a weldable grade, and to those portions of a flange subject to tensile stresses will not be permitted except as provided for in the plans. Welding shall be accomplished by certified welders and according to Subsection 807.26 except that 1/8" (3mm) fillet welds will be permitted.

Subsection 805.03(c) is hereby deleted and the following is substituted therefor:

- (c) Unless otherwise specified, steel piles shall consist of structural shapes of the section shown on the plans and shall comply with ASTM A709, Grade 36 (250).

Subsection 807.05, Structural Steel, is hereby deleted and the following substituted therefor:

Unless otherwise specified, structural steel shall conform to the requirements of Structural Steel for Bridges, ASTM A709, except that the Charpy V-Notch Impact test requirements shall apply only to materials designated on the contract drawings as main load carrying member components. When Charpy V-Notch tests are required, the test results shall conform to the requirements specified for Zone 1 minimum service temperature.

Grade 36 (250) shall be furnished unless otherwise specified.

Steel shall be furnished according to the following specifications:

- (a) **Carbon Steel.** Unless otherwise specified, structural carbon steel for bolted or welded construction shall conform to ASTM A709, Grade 36 (250). Fill or shim plates 1/4" (6mm) or less in thickness used in high strength bolted connections may be ASTM A1011, SS, Grade 36 (250), Type 2, Grade 40 (275), Grade 50 (340), or Grade 55 (380) or ASTM A 1011 HSLAS, Grade 50 (340), Class 1 or Grade 55 (380), Class 1.
- (b) **High Strength Low-Alloy Structural Steel.** High strength low alloy structural steel shall conform to ASTM A709, Grades 50 (345) or 50W (345W). Fill or shim plates 1/4" (6mm) or less in thickness used in high strength bolted connections of painted bridges may be ASTM A 1011, SS, Grade 50 (340), or Grade 55 (380) or ASTM A 1011 HSLAS, Grade 50 (340), Class 1 or Grade 55 (380), Class 1.

Fill or shim plates 1/4" (6mm) or less in thickness used in high strength bolted connections of unpainted weathering steel may be ASTM A 606, Type 4.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
STRUCTURES

- (c) **High-Yield-Strength, Quenched and Tempered Alloy Steel Plate.** High yield strength, quenched and tempered alloy steel plate shall conform to ASTM A514, Grade 100 (690).

Quenched and tempered alloy steel structural shapes and seamless mechanical tubing shall meet all of the mechanical and chemical requirements of ASTM A514, Grade 100 (690), except that the specified maximum tensile strength may be 145,000 psi (1000 MPa) for seamless mechanical tubing.

- (d) **Structural Steel for Eyebars.** Steel for eyebars shall be of a weldable quality conforming to ASTM A709, Grade 36 (250), Grade 50 (345), or Grade 50W (345W).

Subsection 807.06, High Strength Bolts, Nuts, and Washers for Structural Steel Connections, is hereby deleted and the following is substituted therefor:

- (a) **Specifications.** High strength bolts shall be heavy hex and shall conform to the requirements of ASTM F3125, Grade A325, Heavy Hex, except as modified herein. Type 1 bolts shall be provided when used with painted structural steel or when galvanized bolts are specified. Type 3 bolts shall be provided when used with unpainted weathering structural steel. The maximum hardness of high strength bolts shall be 33 Hardness Rockwell C.

Nuts shall be heavy hex and shall conform to the requirements of ASTM A563 or AASHTO M 292. Nuts for plain, uncoated Type 1 bolts shall be Grade 2H, Grade DH or DH3. Nuts for Type 3 bolts shall be Grade DH3. Nuts for galvanized bolts shall be Grade 2H or Grade DH. When galvanized nuts are furnished, the zinc coating, overtapping, lubrication, and proof loading shall be in accordance with ASTM A563.

Washers shall conform to the requirements of ASTM F436. Where necessary, washers may be clipped on one side to a point not closer than 7/8 of the bolt diameter from the center of the washer. Beveled washers shall be used in the flanges of American Standard beams and channels. Weathering steel washers shall be used with Type 3 bolts.

When galvanized bolt assemblies are specified, the bolts, nuts, and washers shall be galvanized according to AASHTO M 232, Class C, or ASTM B695, Class 50. All components in a fastener assembly shall be galvanized by the same process.

Galvanized nuts shall be provided with a lubricant that is clean and dry to the touch. The lubricant shall contain a visible dye so that a visual check can be made for the lubricant at the time of field installation. Plain, uncoated bolts, nuts, and washers must be "oily" to the touch when installed.

- (b) **Required Tests.** High strength fasteners, plain and galvanized, shall be subjected to a rotational capacity test according to ASTM F3125 Annex A2, and shall meet the following requirements:

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
STRUCTURES

1. Go through two times the required number of turns (from snug tight conditions) indicated in Table 807-1, in a Skidmore-Wilhelm Calibrator or equivalent tension measuring device, without stripping or failure.
2. During this test, the maximum recorded tension shall be equal to or greater than 1.15 times the Minimum Bolt Tension as shown in Table 807-3.
3. The measured torque needed to produce the Minimum Bolt Tension shall not exceed the value obtained by the following equation:

$$\text{Torque} = 0.25 * P * D$$

where:

Torque = Maximum Measured Torque
(Foot-pounds [newton meter])

P = Measured Bolt Tension (pounds [kilonewtons])

D = Nominal Diameter (Feet [mm])

Proof load tests according to ASTM F606M (F606) Method 1 are required for the bolts. Wedge tests of full size bolts are required according to Section 10 of ASTM F3125. Galvanized bolts shall be wedge tested after galvanizing. Proof load tests according to ASTM A563 are required for the nuts. The proof load tests for nuts to be used with galvanized bolts shall be performed after galvanizing, overtapping, and lubricating.

The Engineer shall be furnished with a manufacturer's certification for all high strength bolts, nuts, and washers used on the project. This certification shall provide a lot number, shop order number, or other identification such that the heat number from which the items were made can be traced. This identifying number shall also appear on the sealed shipping containers. The certification shall indicate when and where all testing was done, including the rotational capacity tests, and shall include the zinc thickness when galvanized bolts, nuts, and washers are used.

Item (1) of **Subsection 807.26(b), Modification of Structural Welding Code**, is hereby deleted and the following is substituted therefor:

- (1) Subparagraph 1.3.4 is modified to include:

Electroslag welding shall not be used as a welding process on bridge structures.

The first paragraph of **Subsection 807.71, High Strength Bolt Connections**, is hereby deleted and the following is substituted therefor:

- (a) **General.** High strength bolts meeting the requirements of ASTM F3125, Grade A325, Heavy Hex, including Annex A2, shall be furnished unless otherwise specified.

Subsection 807.77, Materials (a) Inorganic Zinc-Rich Primer, is hereby deleted and the following is substituted therefor:

ARKANSAS DEPARTMENT OF TRANSPORTATION
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STRUCTURES

(a) Inorganic Zinc-Rich Primer. The prime coat shall be an inorganic zinc-rich paint complying with the requirements of AASHTO M 300 for Type 1 or Type II.

The paint shall qualify for a Class A classification (slip coefficient of 0.33 or greater) when tested according to "Testing Methods to Determine the Slip Coefficient for Coatings used in Bolted Joints", in Appendix A of *Specification for Structural Joints Using High-Strength Bolts* as published by the Research Council on Structural Connections.

The first paragraph of **Subsection 809.02(b), Armored Joint with Neoprene Strip Seal**, is hereby deleted and the following is substituted therefor:

(b) Armored Joint with Neoprene Strip Seal. The armored joint shall consist of steel extrusions with neoprene strip seal. Steel extrusions shall conform to the requirements of ASTM A709, Grade 50W, or as specified.

Subsection 817.02(b), Steel Items, is hereby deleted and the following is substituted therefor:

(b) Steel Items. Bars, plates, and structural shapes shall be of steel conforming to the requirements of ASTM A709, Grade 36 (250), except that Charpy V-Notch Impact tests are not required.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
CONCRETE FOR STRUCTURES

Section 802 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The fourth paragraph of **Subsection 802.19(b)(1), Class 1, Ordinary Surface Finish**, is hereby deleted and the following is substituted therefor:

The tops of caps shall be properly finished with a steel trowel to a smooth finish at the plan elevation and shall not be deformed, recessed, or irregular. Any misalignment in the area of the bridge seat shall be corrected to form a level surface. All corrective action (including changes to the finished elevation of the concrete surface) greater than 1/8" (3 mm) must be submitted to the Engineer for review and approval.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
CEMENT

Section 802 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The following is added as the last bullet of the second paragraph of **Subsection 802.02, Materials. (a) Cement.**

- Portland-Limestone Cement, AASHTO M240, Type 1L. Type 1L shall have a limestone constituent greater than 5 percent and less than or equal to 15 percent by mass of blended cement.

The second sentence of the fourth paragraph of **Subsection 802.02, Materials. (a) Cement** is revised as follows:

The total alkalis in the cementitious material (Portland cement, Portland – Limestone cement, fly ash or slag cement) shall not exceed 5 lb/cu yd (3 kg/cu m).

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****REINFORCING STEEL FOR STRUCTURES**

Section 804 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Subsection 804.02 Materials (b) Wire and Wire Fabric is hereby deleted and the following is substituted therefor:

(b) Wire and Welded Wire Reinforcement. Wire, when used as reinforcement in concrete, shall conform to the requirements of AASHTO M 336. For plain wire, Grade 70 shall be furnished unless otherwise specified.

Welded wire reinforcement, when used as reinforcement in concrete, shall conform to the requirements of AASHTO M 336. For welded wire reinforcement, Grade 65 shall be furnished unless otherwise specified. The type of welded wire reinforcement shall be approved by the Engineer.

ARKANSAS DEPARTMENT OF TRANSPORTATION**SUPPLEMENTAL SPECIFICATION****STEEL STRUCTURES**

Division 800 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

Section 807, Steel Structures, is hereby modified as follows:

The first paragraph **Subsection 807.02** is hereby deleted and the following substituted therefor:

All structural steel fabricators shall be certified for AISC Category SBR (Simple Steel Bridge Structures), IBR (Intermediate Steel Bridge Structures - Major), ABR (Advanced Steel Bridge Structures - Major), or CPT (Bridge Component Standard), as appropriate, except as provided herein. In addition, the fabricator shall have the appropriate Complex Coatings Endorsement (P1, P2, or P3) which qualifies them to apply complex coating systems.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
INSTALLATION OF ELASTOMERIC BEARINGS

Section 808 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The first paragraph of **Subsection 808.08** is hereby deleted and the following is substituted therefor:

808.08 Installation. Reinforced bearings shall be placed on level, uniform surfaces that are properly finished to the plan elevation and shall not be deformed, recessed, or irregular. Any misalignment in the support area of the bridge seat shall be corrected to form a level surface. All corrective action (including changes to the finished elevation of the concrete surface) greater than 1/8" (3 mm) must be submitted to the Engineer for review and approval. Reinforced bearings shall be set level in their specified position and shall have uniform bearing upon the support area. Bottom external load plates (masonry plates), when used, shall be set on unreinforced pads. Preformed fabric pads meeting the requirements of Subsection 807.15(a) may be used in lieu of unreinforced pads.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENTAL SPECIFICATION
ELASTOMERIC BEARINGS

Section 808 of the Standard Specifications for Highway Construction, Edition of 2014, is hereby amended as follows:

The third and fourth paragraph of **Subsection 808.02 Materials** is hereby deleted and the following is substituted therefor:

Steel lamina shall be rolled mild steel conforming to ASTM A709, Grade 36 [250] (except that Charpy V-Notch Impact tests are not required), ASTM A 1011, SS, or HSLAS, or equivalent, shall have a minimum yield strength of 30,000 psi (205 MPa), and shall be ordered to the nominal thickness specified on the plans.

External load plates shall conform to the requirements of ASTM A709, Grade 36 (250), 50 (345), or 50W (345W) as noted on the plans, except that Charpy V-Notch Impact tests are not required.

The following is added to **Subsection 808.04 Tolerances**

(b) External load plates:

5) Relation to centerline of bearing..... $\pm 1/8"$ (± 3 mm)

**ARKANSAS
STATE HIGHWAY COMMISSION**



**STANDARD SPECIFICATIONS
FOR
HIGHWAY CONSTRUCTION**

EDITION OF 2014

***PROPOSAL DOCUMENTS
AND
SCHEDULE OF ITEMS***

**ARKANSAS STATE HIGHWAY COMMISSION
PROPOSAL DOCUMENTS**

PROPOSAL FOR CONSTRUCTING:

THE PURPOSE OF THIS PROJECT IS TO CONSTRUCT A FOUR-LANE INTERSTATE FACILITY, INCLUDING A NEW FOUR LANE BRIDGE OVER THE ARKANSAS RIVER IN CRAWFORD AND SEBASTIAN COUNTIES. THIS PROJECT CONSISTS OF CLEARING AND GRUBBING, REMOVAL AND DISPOSAL ITEMS, EARTHWORK, AGGREGATE BASE COURSE, CEMENT IN CEMENT STABILIZED CRUSHED STONE BASE COURSE, PROCESSING CEMENT STABILIZED CRUSHED STONE BASE COURSE, ACHM BASE, BINDER, AND SURFACE COURSES, COLD MILLING ASPHALT PAVEMENT, APPROACH SLABS AND GUTTERS, MAINTENANCE OF TRAFFIC, CONCRETE DITCH PAVING, MINOR DRAINAGE, GUARDRAIL, EROSION CONTROL, RUMBLE STRIPS, TRAFFIC SIGNAL ITEMS, ILLUMINATION ITEMS, CONSTRUCT ONE TRIPLE RC BOX CULVERT (TOTAL LENGTH 28.00'), CONSTRUCT TWO CONTINUOUS PRESTRESSED CONCRETE GIRDER UNITS (TOTAL LENGTH 7054.34'), PAVEMENT MARKING, AND MISC. ITEMS.

State Highway 549, Section 6, in **CRAWFORD & SEBASTIAN** County, Arkansas, in accordance with Standard Specifications for Highway Construction, Edition of 2014; the Supplemental Specifications and Special Provisions attached hereto; and the Construction Plans on file in the Office of the State Highway Commission, designated as

Job **040901** **FEDERAL AID PROJECT NHPP-1765(9) & 9030**

Job Name: **HWY. 22 – GUN CLUB RD. (F)**

said project being approximately **3.201 miles in length.**

Proposal received until 10:00 a.m. on September 18, 2024

TO THE ARKANSAS STATE HIGHWAY COMMISSION:

Gentlemen: By submission of your bid, you agree to the following:

It is hereby certified that a careful examination has been made of the Plans, Specifications, Supplemental Specifications, Special Provisions, and Form of Contract and the site of the work throughout its whole extent. On the basis of the Plans, Specifications, Supplemental Specifications, Special Provisions, and Form of Contract, the bidder proposes to furnish all necessary machinery, equipment, tools, labor and other means of construction, and to furnish all materials as specified, in the manner and at the time prescribed, and to finish the entire project within the time hereinafter proposed. The bidder understands that the quantities of work mentioned herein are approximate only, and are subject to increase or decrease, and hereby proposes to perform all quantities of work, whether increased or decreased, in accordance with the provisions of the Specifications, and at the unit prices bid in the attached Schedule of Items.

Receipt is hereby specifically acknowledged, and complete examination expressly guaranteed of the following:

1. Standard Specifications for Highway Construction, Edition of 2014.
2. Supplemental Specifications.
3. Special Provisions.
4. Proposal Documents.
5. Schedule of Items.
6. Construction Plans.

The bidder further proposes to perform all Extra Work that may be required, on the basis provided in the Specifications, and to give such work personal attention, and to secure economical performance.

The bidder further proposes to execute the contract agreement, and to furnish satisfactory bonds within ten days after he has received notice that he has been awarded the contract. The bidder further agrees to begin work when ordered by the Engineer, or within ten days thereafter, and to complete the work [REDACTED]

PROPOSAL DOCUMENTS

(Continued)

The bidder also proposes to furnish a surety Performance bond or bonds in a sum equal to the full amount of the contract and a surety Payment bond or bonds in a sum equal to 80% of the full amount of the contract. These bonds shall not only serve to guarantee the completion of the work and payment of all bills and claims by the bidder, but also to guarantee the excellence of both workmanship and material until the work is finally accepted and the provisions of the Plans, Specifications and Special Provisions fulfilled.

The bidder shall furnish a Proposal Guaranty in the form specified in Subsection 102.09 of the Specifications, in the amount of five percent (5%) of the total amount bid, which is submitted as a guarantee of the good faith of the proposal, and that the Bidder will enter into written contract, as provided, to do the work should the award be made to him; and it is hereby agreed that if, at any time other than as provided in Subsection 102.11 of the Standard Specifications, Withdrawal/Modification of Proposals, the bidder should withdraw his proposal, or should fail to execute the contract and furnish satisfactory bonds as herein provided, if his proposal is accepted, the Arkansas State Highway Commission, in either of such events, shall be entitled and is hereby given the right to retain the Proposal Guaranty, not as a penalty, but as liquidated damages, it being understood and agreed by the bidder that the amount of the Proposal Guaranty is a reasonable sum to be fixed as liquidated damages considering the damages the Arkansas State Highway Commission will sustain in the event of the bidder's withdrawal of his proposal, or failure to execute the contract and furnish satisfactory bonds if his proposal is accepted, and said amount is herein agreed upon and fixed as liquidated damages because of the difficulty of ascertaining the exact amount of damage that may be sustained by reason of the above set out circumstances.

Arkansas Department of Transportation
Schedule of Items

State Job No.: 040901
 Job Name: HWY. 22 – GUN CLUB RD. (F)
 Federal Aid Project: NHPP-1765(9) & 9030

Date Estimated: 5/1/2024
 Date Revised:

Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
Section 01 - PROPOSAL ITEMS - COMMON TO EITHER PAVING ALTERNATE				
0001	SP&201 - CLEARING	67.600	ACRE	
0002	SP&201 - CLEARING	114.000	STA	
0003	SP&201 - GRUBBING	67.600	ACRE	
0004	SP&201 - GRUBBING	160.000	STA	
0005	202 - REMOVAL AND DISPOSAL OF FENCE	2,856.000	LF	
0006	202 - REMOVAL AND DISPOSAL OF CONCRETE PAVEMENT	69.000	SQYD	
0007	202 - REMOVAL AND DISPOSAL OF CONCRETE ISLANDS	957.000	SQYD	
0008	202 - REMOVAL AND DISPOSAL OF PIPE CULVERTS	4.000	EACH	
0009	202 - REMOVAL AND DISPOSAL OF BOX CULVERTS	1.000	EACH	
0010	202 - REMOVAL AND DISPOSAL OF HEADWALLS	1.000	EACH	
0011	202 - REMOVAL AND DISPOSAL OF GUARDRAIL	50.000	LF	
0012	202 - REMOVAL AND DISPOSAL OF SIGNS	22.000	EACH	
0013	202 - REMOVAL AND RELOCATION OF SIGN	21.000	EACH	
0014	207 - STONE BACKFILL	2,275.000	TON	
0015	SPSS210 - UNCLASSIFIED EXCAVATION	129,898.000	CUYD	
0016	SP&210 - COMPACTED EMBANKMENT	497,682.000	CUYD	
0017	SP&210 - ROCK FILL	198,833.000	CUYD	
0018	SP&210 - SOIL STABILIZATION	500.000	TON	
0019	SP&215 - TRENCHING AND SHOULDER PREPARATION	23.000	STA	
0020	SPSS303 - AGGREGATE BASE COURSE (CLASS 7)	19,962.000	TON	
0021	SS&401 - TACK COAT	12,981.000	GAL	
0022	SPSS406 - MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	3,778.000	TON	
0023	SPSS406 - ASPHALT BINDER (PG 70-22) IN ACHM BINDER COURSE (1") (MINIMUM BID \$120.00)	166.000	TON	
0024	SPSS407 - MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	11,471.000	TON	

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Schedule of Items

State Job No.: 040901

Date Estimated: 5/1/2024

Job Name: HWY. 22 – GUN CLUB RD. (F)

Date Revised:

Federal Aid Project: NHPP-1765(9) & 9030

Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
0025	SPSS407 - ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2") (MINIMUM BID \$120.00)	324.000 TON		
0026	SPSS407 - ASPHALT BINDER (PG 70-22) IN ACHM SURFACE COURSE (1/2") (MINIMUM BID \$120.00)	312.000 TON		
0027	SP&412 - COLD MILLING ASPHALT PAVEMENT	661.000 SQYD		
0028	SPSS504 - APPROACH SLABS	666.200 CUYD		
0029	SPSS504 - APPROACH GUTTERS	31.200 CUYD		
0030	SP&602 - FURNISHING FIELD OFFICE	1.000 EACH		
0031	SPSS603 - MAINTENANCE OF TRAFFIC	1.000 L.S.		
0032	603 - 24" TEMPORARY CULVERT	196.000 LF		
0033	SS&604 - SIGNS	733.000 SQFT		
0034	SPSS604 - SIGNS LEFT IN PLACE	60.000 SQFT		
0035	SPSS604 - CONSTRUCTION PROJECT INFORMATION SIGN UPDATE	1.000 EACH		
0036	SS&604 - BARRICADES	192.000 LF		
0037	SPSS604 - BARRICADES LEFT IN PLACE	64.000 LF		
0038	SS&604 - TRAFFIC DRUMS	372.000 EACH		
0039	SS&604 - FURNISHING AND INSTALLING PRECAST CONCRETE BARRIER	433.000 LF		
0040	SPSS604 - FURNISHING, INSTALLING AND LEAVING IN PLACE PRECAST CONCRETE BARRIER	1,633.000 LF		
0041	604 - CONSTRUCTION PAVEMENT MARKINGS	28,613.000 LF		
0042	604 - REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	12,973.000 LF		
0043	604 - REMOVAL OF PERMANENT PAVEMENT MARKINGS	1,028.000 LF		
0044	604 - REMOVAL OF PERMANENT PAVEMENT MARKINGS (WORDS)	1.000 EACH		
0045	604 - REMOVAL OF PERMANENT PAVEMENT MARKINGS (ARROWS)	1.000 EACH		
0046	SPSS605 - CONCRETE DITCH PAVING (TYPE B)	7,827.000 SQYD		
0047	SS&606 - 18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	550.000 LF		

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Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
0048	SS&606 - 24" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	2,482.000 LF		
0049	SS&606 - 30" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	64.000 LF		
0050	SS&606 - 36" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	266.000 LF		
0051	SS&606 - 18" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	8.000 EACH		
0052	SS&606 - 24" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	24.000 EACH		
0053	SS&606 - 30" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	4.000 EACH		
0054	SS&606 - 36" FLARED END SECTIONS FOR REINFORCED CONCRETE PIPE CULVERTS	2.000 EACH		
0055	SP - CULVERT CLEAN OUT	4.000 EACH		
0056	SPSS606 - 18" SIDE DRAIN	276.000 LF		
0057	SS&606 - SELECTED PIPE BEDDING	1,780.000 CUYD		
0058	SS&609 - DROP INLETS (TYPE C)	8.000 EACH		
0059	SS&609 - DROP INLETS (TYPE RM)	5.000 EACH		
0060	SS&609 - JUNCTION BOXES (TYPE E)	13.000 EACH		
0061	SS&609 - JUNCTION BOXES (TYPE ST)	3.000 EACH		
0062	SS&611 - 4" PIPE UNDERDRAINS	31,515.000 LF		
0063	SS&611 - UNDERDRAIN OUTLET PROTECTORS	149.000 EACH		
0064	SS&617 - GUARDRAIL (TYPE A)	5,575.000 LF		
0065	SS&617 - GUARDRAIL (TYPE C)	25.000 LF		
0066	SS&617 - TERMINAL ANCHOR POSTS (TYPE 1)	2.000 EACH		
0067	SS&617 - GUARDRAIL TERMINAL (TYPE 2)	6.000 EACH		
0068	SS&617 - THRIE BEAM GUARDRAIL TERMINAL	8.000 EACH		
0069	SP - WIRE ROPE SAFETY FENCE	5,534.000 LF		
0070	SP - WIRE ROPE SAFETY FENCE MAINTENANCE MATERIALS	1.000 L.S.		
0071	SS&619 - WIRE FENCE (TYPE A)	27,733.000 LF		
0072	620 - LIME	1,059.000 TON		
0073	620 - SEEDING	596.890 ACRE		
0074	SP&620 - SPECIAL SEEDING	172.170 ACRE		

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Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
0075	SS&620 - MULCH COVER	1,587.870 ACRE		
0076	SPSS620 - SPECIAL MULCH COVER	516.510 ACRE		
0077	620 - WATER	84,981.800 MGAL		
0078	621 - TEMPORARY SEEDING	1,193.780 ACRE		
0079	621 - SILT FENCE	41,113.000 LF		
0080	621 - SAND BAG DITCH CHECKS	3,168.000 BAG		
0081	621 - DIVERSION DITCH	6,808.000 LF		
0082	621 - SEDIMENT BASIN	4,278.000 CUYD		
0083	621 - OBLITERATION OF SEDIMENT BASIN	4,278.000 CUYD		
0084	621 - SEDIMENT REMOVAL AND DISPOSAL	6,079.000 CUYD		
0085	621 - PIPE FOR SLOPE DRAINS	1,150.000 LF		
0086	621 - ROCK DITCH CHECKS	402.000 CUYD		
0087	SS&621 - FILTER SOCK (12")	4,486.000 LF		
0088	621 - WATTLE (20")	22,084.000 LF		
0089	621 - TRIANGULAR SILT DIKE	2,300.000 LF		
0090	SP&621 - SPECIAL TEMPORARY SEEDING	344.340 ACRE		
0091	623 - SECOND SEEDING APPLICATION	529.290 ACRE		
0092	SP&623 - SPECIAL SECOND SEEDING APPLICATION	172.170 ACRE		
0093	624 - SOLID SODDING	4,470.000 SQYD		
0094	SP&625 - GEOTEXTILE FABRIC (TYPE 10)	14,108.000 SQYD		
0095	SS&631 - CONCRETE BARRIER WALL (MEDIAN TYPE A)	5,772.000 LF		
0096	SS&631 - CONCRETE BARRIER WALL (MEDIAN TYPE B)	723.000 LF		
0097	SPSS632 - CONCRETE ISLAND	3,201.000 SQYD		
0098	635 - ROADWAY CONSTRUCTION CONTROL	1.000 L.S.		
0099	642 - RUMBLE STRIPS IN ASPHALT SHOULDERS	38,824.000 LF		
0100	SP&701 - SYSTEM LOCAL CONTROLLER TS2-TYPE 2, E-NET (8 PHASES)	2.000 EACH		
0101	SP - ETHERNET SWITCH, T100 HARDENED (8-PORT)	2.000 EACH		
0102	SP - WIC FIBER ENCLOSURE	2.000 EACH		
0103	SP&706 - TRAFFIC SIGNAL HEAD, LED, (3 SECTION, 1 WAY)	16.000 EACH		

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Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
0104	SP&706 - TRAFFIC SIGNAL HEAD, LED, (4 SECTION, 1 WAY)	2.000 EACH		
0105	SP - LOUVERS	4.000 EACH		
0106	708 - TRAFFIC SIGNAL CABLE (5C/14 A.W.G.)	910.000 LF		
0107	708 - TRAFFIC SIGNAL CABLE (7C/14 A.W.G.)	150.000 LF		
0108	708 - TRAFFIC SIGNAL CABLE (12C/14 A.W.G.)	220.000 LF		
0109	708 - TRAFFIC SIGNAL CABLE (20C/14 A.W.G.)	760.000 LF		
0110	SP - ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/8 A.W.G., E.G.C.)	1,920.000 LF		
0111	SP - ELECTRICAL CONDUCTORS-IN-CONDUIT (1C/12 A.W.G., E.G.C.)	740.000 LF		
0112	SP - ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/8 A.W.G., E.G.C.)	7,196.000 LF		
0113	SP - ELECTRICAL CONDUCTORS-IN-CONDUIT (2C/6 A.W.G.)	80.000 LF		
0114	SP - ELECTRICAL CONDUCTORS FOR LUMINAIRES	5,175.000 LF		
0115	SP - COMMUNICATION CABLE, FIBER (6 CHANNEL)	380.000 LF		
0116	709 - GALVANIZED STEEL CONDUIT (2")	40.000 LF		
0117	SP&709 - GALVANIZED STEEL CONDUIT (4")	83,641.000 LF		
0118	710 - NON-METALLIC CONDUIT (1.5")	2,644.000 LF		
0119	710 - NON-METALLIC CONDUIT (2")	6,597.000 LF		
0120	710 - NON-METALLIC CONDUIT (3")	830.000 LF		
0121	SP&710 - NON-METALLIC CONDUIT (4")	11,425.000 LF		
0122	SS&711 - CONCRETE PULL BOX (TYPE 1)	2.000 EACH		
0123	SS&711 - CONCRETE PULL BOX (TYPE 2)	6.000 EACH		
0124	SS&711 - CONCRETE PULL BOX (TYPE 3)	2.000 EACH		
0125	SS&711 - CONCRETE PULL BOX (TYPE 2 HD)	11.000 EACH		
0126	SPSS711 - CONCRETE PULL BOX (TYPE 2 HD)	53.000 EACH		
0127	SPSS711 - FIBER OPTIC CONCRETE PULL BOX (TYPE 5 HD)	8.000 EACH		
0128	SS&714 - TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (0')	8.000 EACH		

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Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
0129	SS&714 - TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (36')	3.000 EACH		
0130	SS&714 - TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (40')	2.000 EACH		
0131	SS&714 - TRAFFIC SIGNAL MAST ARM AND POLE WITH FOUNDATION (48')	1.000 EACH		
0132	SP - LED LUMINAIRE ASSEMBLY	14.000 EACH		
0133	SP - LED ROADWAY ILLUMINATION POLE (12,750 LUMENS, COBRA HEAD, BARRIER MOUNTED, 26.5')	7.000 EACH		
0134	SP - LED ROADWAY ILLUMINATION POLE (12,750 LUMENS, COBRA HEAD, BREAKAWAY BASE, 30')	34.000 EACH		
0135	SP - SERVICE POINT ASSEMBLY (2 CIRCUITS)	2.000 EACH		
0136	SP - PEDESTAL TYPE SERVICE POINT ASSEMBLY (2 CIRCUITS, 100 AMP)	7.000 EACH		
0137	718 - REFLECTORIZED PAINT PAVEMENT MARKING WHITE (6")	17,961.000 LF		
0138	718 - REFLECTORIZED PAINT PAVEMENT MARKING WHITE (12")	423.000 LF		
0139	718 - REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6")	25,351.000 LF		
0140	718 - REFLECTORIZED PAINT PAVEMENT MARKING (YIELD LINE)	117.000 LF		
0141	719 - THERMOPLASTIC PAVEMENT MARKING (WORDS)	8.000 EACH		
0142	719 - THERMOPLASTIC PAVEMENT MARKING (ARROWS)	23.000 EACH		
0143	SP - ENHANCED THERMOPLASTIC PAVEMENT MARKING WHITE (6")	56,154.000 LF		
0144	SP - ENHANCED THERMOPLASTIC PAVEMENT MARKING WHITE (12")	2,694.000 LF		
0145	SP - ENHANCED THERMOPLASTIC PAVEMENT MARKING YELLOW (6")	46,184.000 LF		
0146	721 - RAISED PAVEMENT MARKERS (TYPE II)	882.000 EACH		
0147	SS&725 - GUIDE SIGN-ROADSIDE MOUNTED (DEMOUNTABLE LEGEND)	919.000 SQFT		
0148	SS&726 - STANDARD SIGN	1,561.000 SQFT		
0149	SP - 18" STREET NAME SIGN	2.000 EACH		

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Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
0150	SS&727 - EXIT NUMBER PANEL (TYPE A)	143.000 SQFT		
0151	SS&728 - DELINEATOR (TYPE 2)	37.000 EACH		
0152	SS&729 - CHANNEL POST SIGN SUPPORT (TYPE U-1)	5.000 EACH		
0153	SS&730 - BREAKAWAY SIGN SUPPORT (TYPE G-2)	9,329.000 LB		
0154	SP - OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORTS (TYPE G-1)	68.000 EACH		
0155	SP - OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORTS (TYPE G-2)	35.000 EACH		
0156	SP - OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORTS (TYPE G2-1)	16.000 EACH		
0157	SP - OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORTS (TYPE G2-3)	3.000 EACH		
0158	SP - OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORTS (TYPE G2-4)	1.000 EACH		
0159	SP - OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORTS (TYPE G2-5)	7.000 EACH		
0160	SS&731 - TEMPORARY IMPACT ATTENUATION BARRIER	3.000 EACH		
0161	SS&731 - TEMPORARY IMPACT ATTENUATION BARRIER (REPAIR)	3.000 EACH		
0162	SP&733 - VIDEO DETECTOR (IP)	2.000 EACH		
0163	SP&733 - HYBRID VIDEO/RADAR DETECTOR	4.000 EACH		
0164	SP&733 - VIDEO CABLE (EXTERIOR CAT 5E)	1,350.000 LF		
0165	SP&733 - VIDEO MONITOR (CLR)	2.000 EACH		
0166	SP&733 - CENTRAL CONTROL UNIT (8 CHANNEL)	2.000 EACH		
0167	801 - UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	450.000 CUYD		
0168	801 - UNCLASSIFIED EXCAVATION FOR STRUCTURES-ROADWAY	438.000 CUYD		
0169	SPSS802 - CLASS S CONCRETE-ROADWAY	826.550 CUYD		
0170	SPSS802 - CLASS S CONCRETE-BRIDGE	7.000 CUYD		
0171	SS&804 - REINFORCING STEEL-ROADWAY (GRADE 60)	178,638.000 LB		
0172	SS&804 - REINFORCING STEEL-BRIDGE (GRADE 60)	1,711.000 LB		

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Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
0173	SPSS807 - STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR50W)	426,054.000 LB		
0174	SP - FLEXIBLE EXPANSION JOINT - 36-INCH EBAA IRON - FORCE BALANCED FLEX-TEND	2.000 EACH		
0175	SS&816 - FILTER BLANKET	2,735.000 SQYD		
0176	SS&816 - DUMPED RIPRAP	1,407.000 CUYD		
0177	SP - BLIND FLANGES (24-INCH)	2.000 EACH		
0178	SP - BALL VALVE (2-INCH)	6.000 EACH		
0179	SP - ADJUSTABLE PIPE ROLLER SUPPORT	180.000 EACH		
0180	SP - NAVIGATION LIGHTING SYSTEM	1.000 L.S.		
0181	SP - RIVER TRAFFIC SAFETY	1.000 L.S.		
0182	SP - STEEL WATER LINE (36-INCH)	1,558.000 LF		
0183	SP - SITE UTILITIES	1.000 L.S.		
0184	SP - ITS ELECTRICAL JUNCTION BOX, METALLIC (32"X30"X18")	17.000 EACH		
0185	SP - ITS FIBER OPTIC JUNCTION BOX, METALLIC (32"X16"X18")	17.000 EACH		
0186	SP - RESTROOM BUILDING	1.000 L.S.		
0187	SP - CATHODIC PROTECTION	1.000 L.S.		
0188	SP - EXTERIOR ELECTRICAL DISTRIBUTION	1.000 L.S.		
0189	SP - LANDSCAPING	1.000 L.S.		
Section 01 Total:				

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Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
Section 02 - PROPOSAL ITEMS - BID ITEMS IF CONCRETE PAVING ALTERNATE CHOSEN				
0190	SP&210 - COMPACTED EMBANKMENT	2,416.000	CUYD	
0191	SPSS303 - AGGREGATE BASE COURSE (CLASS 7)	47,528.000	TON	
0192	SPSS308 - AGGREGATE IN CEMENT STABILIZED CRUSHED STONE BASE COURSE	34,572.000	TON	
0193	SPSS308 - CEMENT IN CEMENT STABILIZED CRUSHED STONE BASE COURSE	2,207.000	TON	
0194	SPSS308 - PROCESSING CEMENT STABILIZED CRUSHED STONE BASE COURSE	105,081.000	SQYD	
0195	SPSS407 - MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	4,100.000	TON	
0196	SPSS407 - ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2") (MINIMUM BID \$120.00)	229.000	TON	
0197	SPSS501 - PORTLAND CEMENT CONCRETE PAVEMENT (9" UNIFORM THICKNESS)	92,597.000	SQYD	
0198	506 - PORTLAND CEMENT CONCRETE CORRUGATIONS	163.000	SQYD	
0199	SP&625 - GEOTEXTILE FABRIC (TYPE SPECIAL)	106,392.000	SQYD	
Section 02 Total:				

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Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
Section 03 - PROPOSAL ITEMS - BID ITEMS IF ASPHALT PAVING ALTERNATE CHOSEN				
0200	SPSS303 - AGGREGATE BASE COURSE (CLASS 7)	115,665.000 TON		
0201	SS&401 - TACK COAT	13,673.000 GAL		
0202	SPSS405 - MINERAL AGGREGATE IN ACHM BASE COURSE (1 1/2")	21,944.000 TON		
0203	SPSS405 - ASPHALT BINDER (PG 76-22) IN ACHM BASE COURSE (1 1/2") (MINIMUM BID \$120.00)	891.000 TON		
0204	SPSS406 - MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	19,187.000 TON		
0205	SPSS406 - ASPHALT BINDER (PG 76-22) IN ACHM BINDER COURSE (1") (MINIMUM BID \$120.00)	841.000 TON		
0206	SPSS407 - MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	22,821.000 TON		
0207	SPSS407 - ASPHALT BINDER (PG 76-22) IN ACHM SURFACE COURSE (1/2") (MINIMUM BID \$120.00)	1,277.000 TON		
			Section 03 Total:	

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Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
Section 04 - BRIDGE NOS. 07684 & 07685 - BID ALL ITEMS IF BRIDGE ALTERNATE NO. 1 CHOSEN				
0208	SS&619 - 6' STEEL CHAIN LINK FENCE	2,040.000	LF	
0209	636 - BRIDGE CONSTRUCTION CONTROL	1.000	L.S.	
0210	801 - UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	3,615.000	CUYD	
0211	SPSS802 - CLASS S CONCRETE-BRIDGE	12,091.400	CUYD	
0212	SPSS802 - CLASS S(AE) CONCRETE-BRIDGE	23,944.200	CUYD	
0213	SP - ABUTMENT STONE	6,459.000	CUYD	
0214	SP - REVETMENT STONE (GRADATION A) - ARKANSAS RIVER	3,615.000	CUYD	
0215	SPSS802 - PRESTRESSED CONCRETE GIRDERS (TYPE BT-72)	56,280.300	LF	
0216	SP&803 - CLASS 2 PROTECTIVE SURFACE TREATMENT	77,508.400	SQYD	
0217	SS&804 - REINFORCING STEEL-BRIDGE (GRADE 60)	2,466,439.000	LB	
0218	SS&804 - EPOXY COATED REINFORCING STEEL (GRADE 60)	5,968,030.000	LB	
0219	SS&805 - STEEL PILING (HP 14X89)	5,664.000	LF	
0220	SP - CORING DRILLED SHAFT	2,035.000	LF	
0221	SP - DRILLED SHAFT (54" DIAMETER)	2,195.000	LF	
0222	SP - DRILLED SHAFT (66" DIAMETER)	4,351.000	LF	
0223	SP - DRILLED SHAFT (108" DIAMETER)	852.000	LF	
0224	SP - DRILLED SHAFT (78" DIAMETER)	729.000	LF	
0225	SP - PERMANENT STEEL CASING (60" DIAMETER)	1,724.000	LF	
0226	SP - PERMANENT STEEL CASING (72" DIAMETER)	3,206.000	LF	
0227	SP - PERMANENT STEEL CASING (84" DIAMETER)	504.000	LF	
0228	SP - PERMANENT STEEL CASING (114" DIAMETER)	471.000	LF	
0229	SP - CROSSHOLE SONIC LOGGING (54" DIAMETER)	39.000	EACH	
0230	SP - CROSSHOLE SONIC LOGGING (66" DIAMETER)	76.000	EACH	

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0231	SP - CROSSHOLE SONIC LOGGING (78" DIAMETER)	15.000 EACH		
0232	SP - CROSSHOLE SONIC LOGGING (108" DIAMETER)	15.000 EACH		
0233	SP - THERMAL INTEGRITY PROFILING (108" DIA.)	15.000 EACH		
0234	SPSS807 - STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR50W)	10,900,546.000 LB		
0235	SPSS807 - STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GRHPS70W)	2,364,540.000 LB		
0236	SS&807 - PAINTING STRUCTURAL STEEL	770.500 TON		
0237	SS&808 - ELASTOMERIC BEARINGS	659,119.000 CUIN		
0238	SP - HLMR BEARING ASSEMBLY	40.000 EACH		
0239	SS&809 - ARMORED JOINT WITH NEOPRENE STRIP SEAL	352.000 LF		
0240	SP - MODULAR JOINT	164.000 LF		
0241	812 - BRIDGE NAME PLATE (TYPE D)	2.000 EACH		
0242	815 - MEMBRANE WATERPROOFING (TYPE C)	80.000 SQFT		
0243	SS&816 - FILTER BLANKET	9,688.000 SQYD		
0244	SS&816 - CONCRETE RIPRAP	527.000 CUYD		
0245	SP - SHORING (SITE NO. 1)	1.000 L.S.		
0246	SP - CLEARANCE GAUGES	1.000 L.S.		

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Federal Aid Project: NHPP-1765(9) & 9030

Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
Section 05 - BRIDGE NOS. 07684 & 07685 - BID ALL ITEMS IF BRIDGE ALTERNATE NO. 2 CHOSEN				
0247	SS&619 - 6' STEEL CHAIN LINK FENCE	2,040.000	LF	
0248	636 - BRIDGE CONSTRUCTION CONTROL	1.000	L.S.	
0249	801 - UNCLASSIFIED EXCAVATION FOR STRUCTURES-BRIDGE	3,615.000	CUYD	
0250	SPSS802 - CLASS S CONCRETE-BRIDGE	11,950.400	CUYD	
0251	SPSS802 - CLASS S(AE) CONCRETE-BRIDGE	20,123.400	CUYD	
0252	SP - ABUTMENT STONE	6,459.000	CUYD	
0253	SP - REVETMENT STONE (GRADATION A) - ARKANSAS RIVER	3,615.000	CUYD	
0254	SP&803 - CLASS 2 PROTECTIVE SURFACE TREATMENT	77,508.400	SQYD	
0255	SS&804 - REINFORCING STEEL-BRIDGE (GRADE 60)	2,242,459.000	LB	
0256	SS&804 - EPOXY COATED REINFORCING STEEL (GRADE 60)	4,709,620.000	LB	
0257	SS&805 - STEEL PILING (HP 14X89)	5,763.000	LF	
0258	SP - CORING DRILLED SHAFT	2,035.000	LF	
0259	SP - DRILLED SHAFT (54" DIAMETER)	2,195.000	LF	
0260	SP - DRILLED SHAFT (66" DIAMETER)	4,351.000	LF	
0261	SP - DRILLED SHAFT (108" DIAMETER)	852.000	LF	
0262	SP - DRILLED SHAFT (78" DIAMETER)	729.000	LF	
0263	SP - PERMANENT STEEL CASING (60" DIAMETER)	1,724.000	LF	
0264	SP - PERMANENT STEEL CASING (72" DIAMETER)	3,206.000	LF	
0265	SP - PERMANENT STEEL CASING (84" DIAMETER)	504.000	LF	
0266	SP - PERMANENT STEEL CASING (114" DIAMETER)	471.000	LF	
0267	SP - CROSSHOLE SONIC LOGGING (54" DIAMETER)	39.000	EACH	
0268	SP - CROSSHOLE SONIC LOGGING (66" DIAMETER)	76.000	EACH	
0269	SP - CROSSHOLE SONIC LOGGING (78" DIAMETER)	15.000	EACH	

Arkansas Department of Transportation
Schedule of Items

State Job No.: 040901
 Job Name: HWY. 22 – GUN CLUB RD. (F)
 Federal Aid Project: NHPP-1765(9) & 9030

Date Estimated: 5/1/2024
 Date Revised:

Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
0270	SP - CROSSHOLE SONIC LOGGING (108" DIAMETER)	15.000 EACH		
0271	SP - THERMAL INTEGRITY PROFILING (108" DIA.)	15.000 EACH		
0272	SPSS807 - STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GR50W)	26,863,366.000 LB		
0273	SPSS807 - STRUCTURAL STEEL IN PLATE GIRDER SPANS (M270-GRHPS70W)	2,364,540.000 LB		
0274	SS&807 - PAINTING STRUCTURAL STEEL	1,816.000 TON		
0275	SS&808 - ELASTOMERIC BEARINGS	476,298.000 CUIN		
0276	SP - HLMR BEARING ASSEMBLY	40.000 EACH		
0277	SS&809 - ARMORED JOINT WITH NEOPRENE STRIP SEAL	352.000 LF		
0278	SP - MODULAR JOINT	164.000 LF		
0279	812 - BRIDGE NAME PLATE (TYPE D)	2.000 EACH		
0280	815 - MEMBRANE WATERPROOFING (TYPE C)	60.000 SQFT		
0281	SS&816 - FILTER BLANKET	9,688.000 SQYD		
0282	SS&816 - CONCRETE RIPRAP	527.000 CUYD		
0283	SP - SHORING (SITE NO. 1)	1.000 L.S.		
0284	SP - CLEARANCE GAUGES	1.000 L.S.		
Section 05 Total: _____				
Section 06 - 6' CHAIN LINK FENCE ALTERNATE - BID ONE ITEM ONLY				
0285	SS&619 - 6' STEEL CHAIN LINK FENCE A0 - 1	2,406.000 LF		
0286	SS&619 - 6' ALUMINUM CHAIN LINK FENCE A0 - 2	2,406.000 LF		
Section 06 Total: _____				
Section 07 - 8' GATES ALTERNATE - BID ONE ITEM ONLY				
0287	SS&619 - 8' STEEL GATES B0 - 1	2.000 EACH		
0288	SS&619 - 8' ALUMINUM GATES B0 - 2	2.000 EACH		
Section 07 Total: _____				

Arkansas Department of Transportation
Schedule of Items

State Job No.: 040901
 Job Name: HWY. 22 – GUN CLUB RD. (F)
 Federal Aid Project: NHPP-1765(9) & 9030

Date Estimated: 5/1/2024
 Date Revised:

Line Number	Item Code and Description	Estimated Quantity	Unit Bid Price	Price Extension
Section 08 - 16' GATES ALTERNATE - BID ONE ITEM ONLY				
0289 CO - 1	SS&619 - 16' STEEL GATES	1.000 EACH	_____	_____
0290 CO - 2	SS&619 - 16' ALUMINUM GATES	1.000 EACH	_____	_____
Section 08 Total:				_____
Subtotal:				_____
0291	601 - MOBILIZATION (UNIT BID AMOUNT MAY NOT EXCEED 5% OF SUBTOTAL)	1.000 L.S.	_____	_____
Bid Total:				_____

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENT TO PROPOSAL
ANTI-COLLUSION AND DEBARMENT CERTIFICATION

**FAILURE TO EXECUTE AND SUBMIT THIS CERTIFICATION SHALL RENDER THIS
BID NONRESPONSIVE AND NOT ELIGIBLE FOR AWARD CONSIDERATION.**

As a condition precedent to the acceptance of the bidding document for this project, the bidder shall file this Affidavit executed by, or on behalf of the person, firm, association, or corporation submitting the bid. The original of this Affidavit shall be filed with the Arkansas Department of Transportation **at the time proposals are submitted.**

A F F I D A V I T

I hereby certify, under penalty of perjury under the laws of the United States and/or the State of Arkansas, that the bidder listed below has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the submitted bid for this project, is not presently barred from bidding in any other jurisdiction as a result of any collusion or any other action in restraint of free competition, and that the foregoing is true and correct.

Further, that except as noted below, the bidder, or any person associated therewith in the capacity of owner, partner, director, officer, principal investigator, project director, manager, auditor, or any position involving the administration of Federal funds:

- a. is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal, State, or Local agency;
- b. has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal, State, or Local agency within the past 3 years;
- c. does not have a proposed debarment pending; and
- d. has not been indicted, convicted, or had an adverse civil judgment rendered by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

**ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENT TO PROPOSAL
ANTI-COLLUSION AND DEBARMENT CERTIFICATION**

**FAILURE TO EXECUTE AND SUBMIT THIS CERTIFICATION SHALL RENDER THIS
BID NONRESPONSIVE AND NOT ELIGIBLE FOR AWARD CONSIDERATION.**

EXCEPTIONS:

APPLIED TO	INITIATING AGENCY	DATES OF ACTION
_____	_____	_____
_____	_____	_____
_____	_____	_____

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. Providing false information may result in criminal prosecution or administrative sanctions.

Job No. _____	_____
	(Name of Bidder)
F.A.P. No. _____	_____
	(Signature)
_____	_____
(Date Executed)	(Title of Person Signing)

The following Notary Public certification is **OPTIONAL** and may or may not be completed at the contractor's discretion.

State of _____)
County of _____)ss.

_____, being duly sworn, deposes and says that he is

_____ of _____
(Title) (Name of Bidder)

and that the above statements are true and correct.

Subscribed and Sworn to before me this _____ day of _____, 20____.
My commission expires: _____.

(Notary Public)

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENT TO PROPOSAL
RESTRICTION OF BOYCOTT OF ISRAEL CERTIFICATION

Pursuant to Arkansas Code Annotated § 25-1-503, a public entity **shall not** enter into a contract valued at \$1,000 or greater with a company unless the contract includes a written certification that the person or company is not currently engaged in, and agrees for the duration of the contract not to engage in, a boycott of Israel.

By signing below, the Contractor agrees and certifies that they do not boycott Israel and will not boycott Israel during the remaining aggregate term of the contract.

If a company does boycott Israel, see Arkansas Code Annotated § 25-1-503.

Bid Number/Contract Number	
Description of product or service	
Contractor name	

Contractor Signature: _____

Date: _____

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENT TO PROPOSAL
CERTIFICATION FOR FEDERAL-AID CONTRACTS

The prospective contractor certifies, by signing and submitting this proposal, to the best of his or her knowledge and belief that:

1. No Federal appropriated funds have been paid or will be paid, by or on his or her behalf, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a member of Congress, an officer or employee of Congress, or any employee of a member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal-Aid contract, the prospective contractor shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities", in accordance with its instructions. (Available from Arkansas Department of Transportation, Program Management Division.)

This Certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. This Certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 3 1, U.S. Code.

During the period of performance of the contract, the contractor and all lower tier subcontractors must file a Form-LLL at the end of each calendar year quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any previously filed disclosure form. Any person who fails to file the required Certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each failure.

The prospective contractor also agrees by submitting his or her proposal that he or she shall require that the language of this Certification be included in all lower tier subcontracts which exceed \$100,000 and that all such subcontractors shall certify and disclose accordingly.

ARKANSAS DEPARTMENT OF TRANSPORTATION
SUPPLEMENT TO PROPOSAL
C E R T I F I C A T I O N

THIS CERTIFICATION SHALL BE COMPLETED BY THE BIDDER
AS PART OF THIS PROPOSAL

The bidder _____, proposed subcontractor _____, hereby certifies that he has _____, has not _____, participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114, or 11246, and that he has _____, has not _____, filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

(Currently, Standard Form 100 [EEO-1] is the only report required by the Executive Orders or their implementing regulations)

Job No. _____ (Company)
F.A.P. No. _____ By: _____
Date _____ (Title)

NOTE: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b)(1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of \$10,000 or under are exempt.)

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b)(1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

**ARKANSAS DEPARTMENT OF TRANSPORTATION
 BIDDERS LIST**

JOB NUMBER 040901 LETTING DATE September 18, 2024
 JOB NAME HWY. 22 – GUN CLUB RD. (F)
 CONTRACTOR _____

➔ ENTER THE WORK CODES TO BE PERFORMED BY THE PRIME CONTRACTOR

The Department is required by 49 CFR 26.11, to create and maintain a master bidder's list of all firms attempting to participate on federally assisted projects. The Contractor shall provide the names and addresses of all subcontractors, truckers or material suppliers that bid or provided quotes on any item on the project, regardless of whether the quotes were used in preparing the proposal or not. Place an X in the box following the firm's name if DBE Contractor. Additionally, the Race and Gender of the majority owner of the firm should be indicated. Denote the firm's and annual gross receipts by checking the appropriate box. The general type of work to be performed should be indicated using the following codes; (01) removal and disposal items (including clearing and grubbing), (02) earthwork (including drainage items), (03) hauling, (04) paving (PCCP or ACHM), (05) miscellaneous concrete, (06) traffic control, (07) erosion control, (08) signals/electrical, (09) structures (includes steel suppliers), (10) material (aggregate) supplier (11) miscellaneous *items should be shown*. See <https://www.census.gov/naics/> for the NAICS codes to enter in the last column. Please contact the Department's Civil Rights Division at (501) 569-2297 with any questions.

Firm Name Address/Phone	DBE	Race (majority Owner)	Gender (M/F) (majority owner)	Age of Firm	Annual Gross Receipts	Type of Work (Enter Code)	NAICS code (Enter Code)
				<input type="checkbox"/> Less than 1 year <input type="checkbox"/> 1- 3 years <input type="checkbox"/> 4-7 years <input type="checkbox"/> 8-10 years <input type="checkbox"/> More than 10 years	<input type="checkbox"/> Less than \$1 million <input type="checkbox"/> \$1-3 million <input type="checkbox"/> \$3-6 million <input type="checkbox"/> \$6-10 million <input type="checkbox"/> Greater than \$10 million		
				<input type="checkbox"/> Less than 1 year <input type="checkbox"/> 1- 3 years <input type="checkbox"/> 4-7 years <input type="checkbox"/> 8-10 years <input type="checkbox"/> More than 10 years	<input type="checkbox"/> Less than \$1 million <input type="checkbox"/> \$1-3 million <input type="checkbox"/> \$3-6 million <input type="checkbox"/> \$6-10 million <input type="checkbox"/> Greater than \$10 million		
				<input type="checkbox"/> Less than 1 year <input type="checkbox"/> 1- 3 years <input type="checkbox"/> 4-7 years <input type="checkbox"/> 8-10 years <input type="checkbox"/> More than 10 years	<input type="checkbox"/> Less than \$1 million <input type="checkbox"/> \$1-3 million <input type="checkbox"/> \$3-6 million <input type="checkbox"/> \$6-10 million <input type="checkbox"/> Greater than \$10 million		
				<input type="checkbox"/> Less than 1 year <input type="checkbox"/> 1- 3 years <input type="checkbox"/> 4-7 years <input type="checkbox"/> 8-10 years <input type="checkbox"/> More than 10 years	<input type="checkbox"/> Less than \$1 million <input type="checkbox"/> \$1-3 million <input type="checkbox"/> \$3-6 million <input type="checkbox"/> \$6-10 million <input type="checkbox"/> Greater than \$10 million		
				<input type="checkbox"/> Less than 1 year <input type="checkbox"/> 1- 3 years <input type="checkbox"/> 4-7 years <input type="checkbox"/> 8-10 years <input type="checkbox"/> More than 10 years	<input type="checkbox"/> Less than \$1 million <input type="checkbox"/> \$1-3 million <input type="checkbox"/> \$3-6 million <input type="checkbox"/> \$6-10 million <input type="checkbox"/> Greater than \$10 million		

ARKANSAS DEPARTMENT OF TRANSPORTATION

CERTIFICATION TO SUBMIT DBE PARTICIPATION

JOB 040901

**FAILURE TO COMPLY WITH ONE OF THE FOLLOWING SHALL RENDER THIS BID
NONRESPONSIVE AND NOT ELIGIBLE FOR AWARD CONSIDERATION**

- (1) SUBMITTAL OF REQUIRED DBE PARTICIPATION INFORMATION,**
- (2) SUBMITTAL OF DOCUMENTATION OF GOOD FAITH EFFORTS, OR**
- (3) SUBMITTAL OF THE CERTIFICATION TO SUBMIT DBE PARTICIPATION**

By submitting an internet proposal, the bidder irrevocably certifies that an amount equal to or greater than the Disadvantaged Business Enterprise (DBE) Goal established for this project will be performed by certified Disadvantaged Business Enterprise firms and the required DBE participation information will be submitted within 5 calendar days of the date of the bid opening.

Within five (5) calendar days of the date of the bid letting, all bidders shall furnish the required DBE Participation information to the Department on the forms provided to be considered a responsive bid. If a conditional award has been made and the successful bidder has not furnished the required information, the proposal will be rejected and their proposal guaranty forfeited. The proposal guaranty shall become property of the Commission, not as a penalty, but in liquidation of damages, sustained to the DBE Program. Award may then be made to the next lowest, responsive bidder or the work may be re-advertised as the Commission may decide.

Only work, materials, or services that will actually be provided by DBE firms will be credited toward the goal. The DBE firm's certification must be fully in effect at the letting date.

As an alternative, documentation of Good Faith Efforts to meet the DBE goal may be submitted to the Program Management Division prior to the deadline for proposals to be received.

ARKANSAS DEPARTMENT OF TRANSPORTATION

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION

JOB 040901

NOTE: PROPOSED PARTICIPATION BY DBEs MAY BE SHOWN BELOW AND SUBMITTED WITH BIDDER'S PROPOSAL, OR THE REQUIRED INFORMATION MAY BE SUBMITTED IN KEEPING WITH THE STANDARD SPECIFICATIONS AND THE SPECIAL PROVISIONS "GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION" AND "DISADVANTAGED BUSINESS ENTERPRISE BIDDER'S RESPONSIBILITIES".

As provided in the Special Provision "Goals for Disadvantaged Business Enterprise Participation", the undersigned bidder proposes to use the certified DISADVANTAGED BUSINESS ENTERPRISE (DBE) subcontractors listed below to meet the goal of **4.0%** of the total contract by DBEs. Only work or services that will actually be provided by the DBE firm(s) should be shown.

NAME & ADDRESS	LINE #	ITEM DESCRIPTION	AMOUNT
			\$

If any firm listed above is a regular dealer, but not a manufacturer, the total amount of the agreement and the amount to be credited (60%) should be recorded on this form.

Total for DBEs - \$ _____ or _____ % of bid.

(Contractor)

By: _____

Title: _____

The named DBE subcontractors confirm their participation in the contract as provided in the commitment.

DBE Firm:

DBE Owner or Authorized Representative's Signature:

- | | |
|----------|-------|
| 1. _____ | _____ |
| 2. _____ | _____ |
| 3. _____ | _____ |
| 4. _____ | _____ |

ARKANSAS DEPARTMENT OF TRANSPORTATION

CERTIFICATION STATEMENT

JOB 040901

Contractor's Certification Statement for National Pollutant Discharge Elimination System (NPDES) Construction Storm Water Permit Number ARR150000.

All Contractors operating on the site shall have the responsibility for compliance with Section 110 of the Standard Specifications for their operations, including, but not limited to: Good housekeeping practices, spill prevention, spill reporting and clean-up, and product specific practices such as limiting the discharge of concrete waste water to areas specified in the SWPPP.

Contractor Printed Name: _____

Signature: _____ **Title:** _____

Company Name: _____ **Date:** _____

Company Address: _____

Telephone No.: _____ **ARDOT Job Number:** _____