

INTEROFFICE MEMORANDUM

DATE: December 20, 1995

TO: Bridge Design Personnel

FROM: Dale F. Loe, Bridge Engineer

SUBJECT: Construction in Special Flood Hazard Areas (SFHA)

Special Flood Hazard Areas (SFHA) as required by the National Flood Insurance Program (NFIP) limits temporary construction operations. Permits are required for crossings in a SFHA. The Hydraulic Section has classified these permits into six types (Type 1 through VI).

An example of a Job Special Provision (SP) to be used with Type I, III, & V permits is attached for your information. This SP is an example and includes a Conceptual Work Plan (CWP) that only applied to the bridge site in the example. The CWP shall be tailored for each crossing and it is recommended that it be coordinated with the Construction Division.

An example of a (SP) to be used with Type II, IV, & VI permits is also attached for your information.

The Hydraulic Report will identify the Type of permit required. The Bridge Division will be responsible for including the proper SP for all bridge sites. Roadway Design or the State Aid Division will be responsible for including the proper SP for all other stream crossings including bridge length culverts.

The limits of the floodway and/or floodplain shall be shown on the roadway plan and profile sheet(s).

The SP(s) shall be included for all Jobs beginning with the March 1996 letting.

JAS:js

Encl.

cc & encl.: Assistant Chief Engineer for Design
Roadway Design
State Aid
Hydraulics

12-18-95

EXAMPLE FOR TYPE I, III, OR V PERMIT
ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

JOB NO.

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 SFHA with a regulatory floodway, regulatory floodplain, or SFHA published by the NFIP. The regulatory floodway, regulatory floodplain, or SFHA limits are shown on the plan and profile sheet(s).

The project is permitted under a "Floodplain Development Permit" issued by the local community. The requirements of the "Floodplain Development Permit" and related regulations for construction within SFHA's are in the local community's "Flood Damage Prevention Ordinance." The NFIP's regulations are set forth at Title 44, Chapter 1, Parts 59-77, Code of Federal Regulations (CFR).

The following special conditions must be complied with for the "Floodplain Development Permit" to be valid:

- Temporary operations are to be performed 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 CWP for temporary operations in a regulatory floodplain provide for a one-foot increase in the NFIP's published flood levels within the community during the occurrence of the 100-year flood discharge.

- The CWP for temporary operations in a SFHA provide for 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 of 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 existing or proposed bridge(s) must be removed in their entirety and the affected areas returned to their preconstruction or designed elevation and condition.
- The contractor is responsible for preventing equipment and materials within the floodplain from becoming buoyant and floating downstream during a 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.

Bridges in this project are to be rehabilitated and widened using stage construction to maintain traffic. It is anticipated that temporary work roads will be required to construct the bridges. The following CWP is approved and permitted. It shall not be modified, unless modifications are approved as required by this Special Provision. All temporary work roads shall be constructed no higher than the elevation shown on the conceptual plan and shall not reduce the waterway opening more than 120 square feet at any time. The type of material used for temporary fill to construct the work roads is specified in the Job Special Provision for the Nationwide Section 404 Permit. Construction will be allowed under terms of the Permit as defined by 33 CFR, Appendix A to Part B (26) for headwater discharges.

STAGE ONE: Work road A (median) shall be placed between the bridges and used to construct part of Stage I construction on the first bridge to be widened. After work road A is removed, work road B may be placed to complete Stage I construction for the first bridge. Stage I construction for the opposite bridge may be built using the completed Stage I of the first bridge as a work bridge.

The contractor's plan for placing construction equipment on the completed structures shall be submitted and approved by the Engineer before any construction equipment is allowed on the deck. Any plan that could cause damage to the bridges structurally or superficially will not be approved. Timbers with a minimum total thickness of eight inches will be required to be placed on the deck to distribute the loads and protect the deck.

STAGE TWO: Work roads A (left and right) for Stage II shall be constructed, used and removed similar to the procedure required in Stage I except they shall be located to the outside of the bridges. Roads A (left and right) or roads B (left and right) may be in place at the same time. However, roads A and B shall not be in place at the same time.

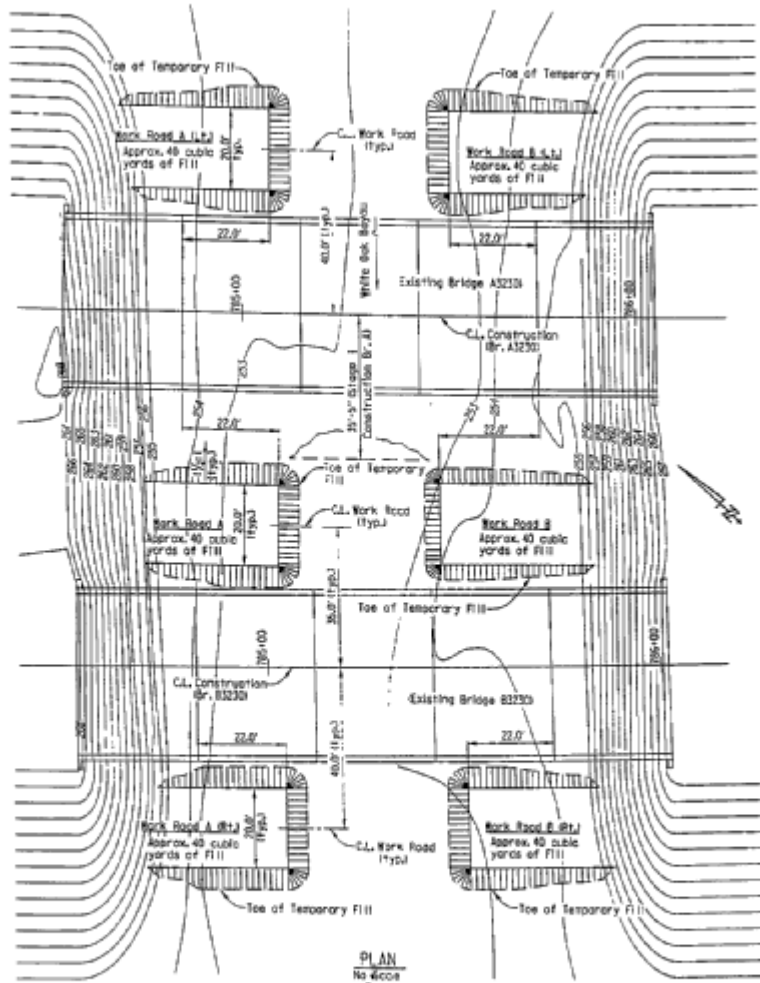
MODIFICATIONS OF CONCEPTUAL WORK PLAN: If the Contractor prefers another work plan, a request shall be submitted to the Engineer outlining the specifics of the proposed modifications to the plan. Proposed modifications should consider the minimization of reduction of waterway opening in the floodway 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 Department will then apply for permit modifications that it determines to be necessary or practical. These permit modifications will be reviewed by the Department's Hydraulics Section. The Hydraulics Section will approve or deny the request within (10) business days after receiving the request. Any modification that requires a revision to the "Floodplain Development Permit" will require additional time for the local community to review and approve.

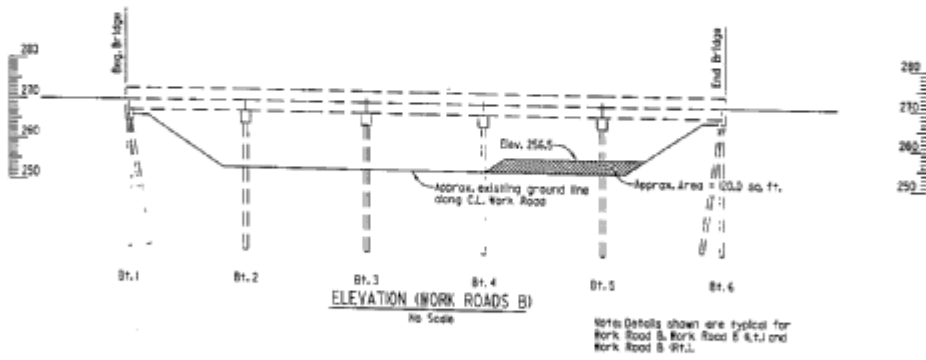
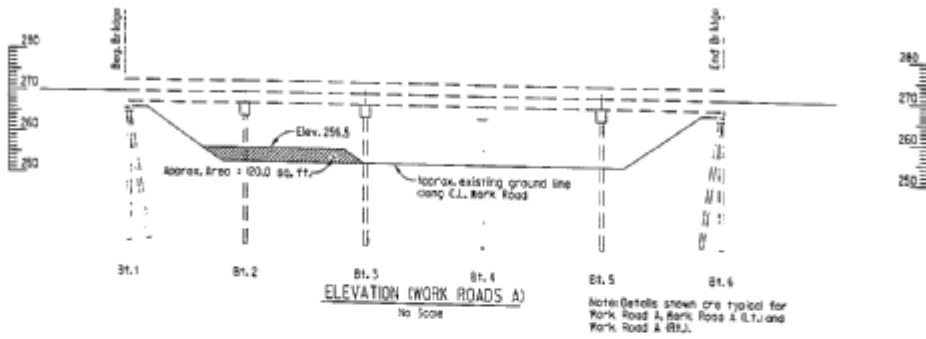
Modifications in the plan that also change the volume of temporary fill in place at any one time may require a modification in the Section 404 Permit which will require additional time for review by the Corps of Engineers. Refer to the 404 permit for these requirements.

The contract time will not be extended for the time required to consider or approve any modifications. Any additional work or expenses incurred in preparing, submitting, or completing an alternate work plan shall be at no additional cost 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.



WORK
 SHEET 1 OF 2
 CONCEPTUAL PLAN
 FOR TEMPORARY FILL



YORK
SHEET 2 OF 2
CONCEPTUAL PLAN
FOR TEMPORARY FILL

12-18-95

EXAMPLE FOR TYPE II, IV, OR VI PERMIT

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SPECIAL PROVISION

JOB NO.

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 SFHA with a regulatory floodway, regulatory floodplain, or SFHA published by the NFIP. The regulatory floodway, regulatory floodplain, or SFHA limits are shown on the plan and profile sheets.

The project is permitted under a "Floodplain Development Permit" issued by the local community. The requirements of the "Floodplain Development Permit" and related regulations for construction within SFHA's are in the local community's "Flood Damage Prevention Ordinance." The NFIP's regulations are set forth at Title 44, Chapter 1, Parts 59-77, Code of Federal Regulations (CFR).

The following special conditions must be complied with for the "Floodplain Development Permit" to be valid:

- Temporary operations are to be performed during the low flow season when possible.
- Temporary operations shall not result in a significant increase in flood levels within the community during the occurrence of a major flood.
- Temporary operations shall not obstruct a significant portion of an existing or proposed bridge(s) waterway opening.

- 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 existing or proposed bridge(s) must be removed in their entirety and the affected areas returned to their preconstruction or designed elevation and condition.
- 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.

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.

Sfha2.sp

INTER OFFICE MEMORANDUM

DATE: December 18, 1995

TO: Mr. Jacob Weston, State Aid Engineer

FROM: Don L. Potter, Engineer of Hydraulics

SUBJECT: Job IAR215
Hwy. 425 - East (Star City - IAR)(S)
Cane Creek Tributary
Lincoln County

The Hydraulics Section has completed the analysis of the above referenced Job. Listed below are the pertinent data and results.

PERTINENT DATA

Stream Name	Cane Creek Tributary
Survey Station	56 ± 50
1) Drainage area (mi. ²)	0.4
2) Main channel length (mi.)	1.5
3) Main channel slope (ft./mi.)	52.4
4) Local slope (ft./ft.)	.006
5) Q ₂ (cfs)	90
stage (ft.)	229.9
Q ₂₅ (cfs)	350
stage (ft.)	231.2
Q ₅₀ (cfs)	450
stage (ft.)	231.4
Q ₁₀₀ (cfs)	550
stage (ft.)	231.6
Q ₅₀₀ (cfs)	800
stage (ft.)	232.1

Discharges were determined using the U.S.G.S. regression equations. The WSPRO computer program was used to determine normal depth stage elevations at the "FULV" section reflecting "normal" unconfined flow.

December 18, 1995
Job IAR215
Page -2-

This site is located in a special flood hazard area, as identified on the "City of Star City" FIRM map. It has been classified as Type VI, so we are required to comply with the requirements as listed on the attached sheet. Also attached is a partial copy of the FIRM map for State Aid's use in showing on the plan and profile sheets. The approximate stations of the floodplain boundaries are shown.

We recommend a 9' x 5' RCB culvert with an inlet flowing elevation of 227.4 ft. and outlet flow line elevation of 227.0 ft. This culvert will convey the Q25 of 350 cfs without overtopping at an overtopping elevation of 234.5 ft. The HY8 computer program was used to size the culvert.

There are no significant flood control structures located upstream of this site and available information indicates that it is not located within the boundaries of a drainage district.

Attached is a location map.

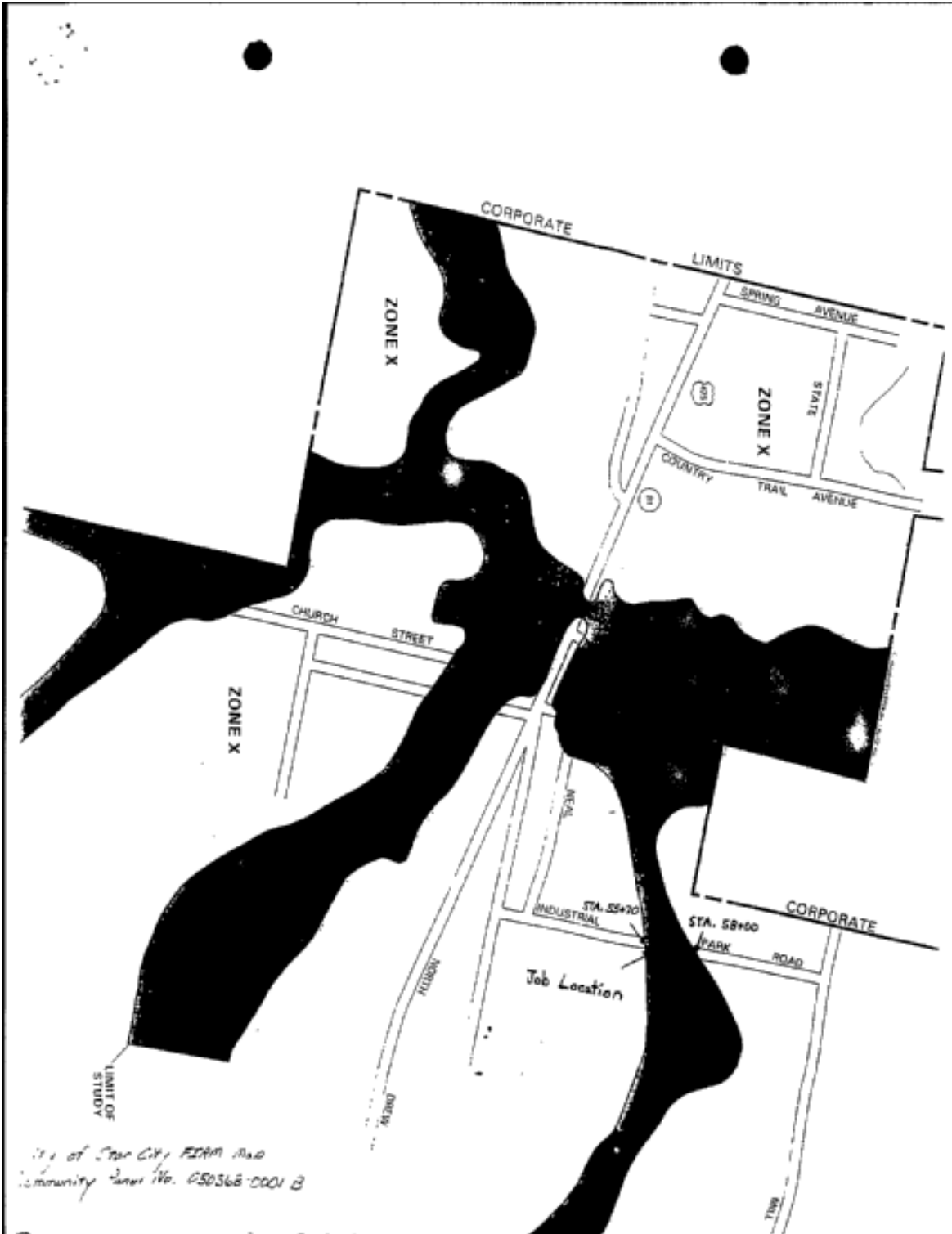
If there are any questions concerning this analysis, please contact David Sullivan in the Hydraulics Section.

DLP/DS:cr

cc: Mr. Paul DeBusk
file: Job IAR215

TYPE VI PERMIT - NATIONAL FLOOD INSURANCE PROGRAM
(SPECIAL FLOOD HAZARD AREA, NO DETAILED STUDY, WITHOUT
INSURABLE BUILDING)

- A maximum of one-foot increase in the existing pre-construction 100-year WSE is desirable but not required. Standard Department backwater criteria may be used in lieu of the NFIP limits where associated risks permit a less-conservative design.
- No detailed analysis is required for temporary fill and temporary drainage structures within the floodplain.
- The post-construction 100-year floodplain limits should be shown on the plan and profile sheet(s).
- The floodplain permit application should include the permanent construction items and discuss the temporary construction items.
- A Special Provision (SP), " Construction in Special Flood Hazard Areas" should be included in the job specifications.
- Storage of the contractor's equipment and material within the floodplain should be discussed in the SP and floodplain permits application.
- If the projects design exceeds the one foot increase in the existing preconstruction 100-year WSE, then within six months after the bridge(s) is constructed, "as built plans" and technical data should be submitted to FEMA, via the local community, for mapping the post-construction 100-year floodplain.



Map of Star City, AR, showing
Community Zone No. 050366-0001 B

