"A FULLY CONTROLLED ACCESS FACILITY"
ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS

DE ROCHE CREEK STRS. & APPRS. (S)
CLARK AND HOT SPRING COUNTIES
ROUTE 30 SECTIONS 14 & 21
FED. AID PROJ. NHPP-1030(5)
JOB 012307

STA. 4388+00.00
BEGIN JOB 012307
LOG MILE 80.50

STA. 4397+50.00
END JOB 012307

NOT TO SCALE

DESIGN TRAFFIC DATA
DESIGN YEAR - 2039
2019 ADT - 24,000
2039 ADT - 35,000
2039 DTH - 3950
DIRECTONAL DISTRIBUTION - 0.60
TRUCKS - 13.5%
DESIGN SPEED - 70 MPH

LENGTH OF PROJECT CALCULATED ALONG C.L.
LENGTH OF PROJECT - 950.00 FEET 0.180 MILES
LENGTH OF ROA - 780.00 FEET 0.148 MILES
LENGTH OF PROJECT - 950.00 FEET 0.180 MILES
P.E. JOB 012307
GENERAL NOTES

1. GRADE LINE NOTES FINISHED GRADE WHERE SHOWN ON PLANS.

2. ALL PIPELINES, POWER, TELEPHONE, AND TELEGRAPH LINES TO BE MOVED OR LOWERED BY THE RESPECTIVE OWNERS AS PER AGREEMENT WITH SUCH OWNERS.

3. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY BE THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNERS UNLESS OTHERWISE PROVIDED.

4. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.

5. ALL TREES THAT DO NOT DIRECTLY INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE SPARED AS DIRECTED BY THE ENGINEER. CARE AND DISCRETION SHALL BE USED TO ENSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE BEVERED. WIRE FENCE MAY BE CONSTRUCTED INITIALLY, OR IN LIEU THEREOF, THE CONTRACTOR AT HIS OWN EXPENSE, MAY ELECT TO PROVIDE TEMPORARY FENCING SUITABLE TO CONTAIN LIVESTOCK.

7. 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.

8. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.

9. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAVING ALONG A NEAT LINE. AFTER SAVING, THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE THE PAVEMENT THAT IS TO REMAIN. ANY DAMAGE OF THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.


GOVERNING SPECIFICATIONS

NUMBER
ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHWA-1737 & 1738 REQUIRED CONTRACT PROVISIONS FEDERAL-AD CONSTRUCTION CONTRACTS
FHWA-1737 SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHWA-1737 SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY NOTICE TO CONTRACTORS (23 U.S.C. 140)
FHWA-1737 SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHWA-1737 SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHWA-1737 SUPPLEMENT - Training Program - JOB 012307
FHWA-1737 SUPPLEMENT - POSTERS AND NOICES REQUIRED FOR FEDERAL-AD PROJECTS
FHWA-1737 SUPPLEMENT - VAGE RATE DETERMINATION

101-3 Contractors License
101-4 DEPARTMENT NAME CHANGE
101-2 ISSUANCE OF PROPOSALS
101-1 QUALITY CONTROL AND ACCEPTANCE
101-10 TACK COATS
101-9 DESIGN AND QUALITY CONTROL OF ASPHALT MIXTURES
101-8 PERCENTAGE OF VAGUE FOR ACORDARI DESIGNS
101-7 LIQUID ASH INTERFACE
101-6 DEPARTMENT NAME CHANGE
101-5 CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
101-4 FEDERAL-AD POTENTIAL FOR ROLLING PATTERNING
101-3 INCIDENTAL CONSTRUCTION
101-2 RETAINING WALLS SHIELDING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
101-1 CONCRETE EITCH PAVING
101-0 GUARD RAIL TERMINAL (TYPE 2)
100-1 MULTIC COVER
100-0 FILTER SOCKS
100-3 STRUCTURES
100-2 CONCRETE FOR STRUCTURES
100-1 INSTALLATION OF ELASTOMERIC SEALS
100-2 ELASTOMERIC SEALS

JOB 123070 ASSESSMENT OF WORKING DAYS - MAINTENANCE OF TRAFFIC
JOB 123070 AUTOMATED WORK ZONE INFORMATION SYSTEM
JOB 123070 WORK ZONE REQUIREMENTS AND CONDITIONS
JOB 123070 BRIDGE DECK REPAIR
JOB 123070 CEMENT PAVEMENT CONSTRUCTION
JOB 123070 LIGHT STANDARD SPECIFICATIONS
JOB 123070 CONSTRUCTION OF SPREADING ZONES
JOB 123070 CONSTRUCTION PROJECT INFORMATION SHEET
JOB 123070 DESIGNATED PARKING AND VIEWING AREAS
JOB 123070 DIRECT TEHINON INDICATORS FOR HIGH STRENGTH BOLT ASSEMBLIES
JOB 123070 DRILL ADVANCED BUSINESS ENTERPRISE BIDDERS RESPONSIBILITIES
JOB 123070 DRILLED SHAFT FOUNDATIONS
JOB 123070 ENHANCED THERMOPLASTIC PAVEMENT MARKING
JOB 123070 EXTENSION FOR PIPE CULVERTS
JOB 123070 FLEXIBLE BEGINNING OF WORK - CALENDAR DAY CONTRACT
JOB 123070 GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 123070 LATERNARY BRIDGE SLIDE
JOB 123070 MAINTENANCE OF TRAFFIC
JOB 123070 MANDATORY ELECTRONIC CONTRACT
JOB 123070 MANDATORY ELECTRONIC DOCUMENT SUBMITTAL
JOB 123070 MOBILE SPEED LIMIT SYSTEM
JOB 123070 MODULAR FLARE SHIELD
JOB 123070 NEETING SITES OF MATERIALS (BIDS)
JOB 123070 NON-FRUCTIVE TESTING OF DRILLED SHAFTS
JOB 123070 OFF-SITE REFINISHING CONDITIONS FOR NORTHERN LONG EARED BATS
JOB 123070 PARTNERING REQUIREMENTS
JOB 123070 PERCENT WITH LIMITS
JOB 123070 PORTALS CONSTRUCTION LIGHTING
JOB 123070 PRICE ADJUSTMENT FOR ASPHALT TIMBER
JOB 123070 PRODUCTION AND PROCESS WITH HIC SCHEDULE
JOB 123070 ROLLING PATTERNING FOR RECYCLED ASPHALT PAVEMENT MATERIAL
JOB 123070 RUBBLE STRIP REMOVAL
JOB 123070 SAFETY DESCRIPTIONS OF PERMIT REQUIREMENTS
JOB 123070 SITE USE (A+B+C METHOD) CALENDAR DAY CONTRACT
JOB 123070 SKI STABILIZATION
JOB 123070 SPECIAL SAFETY REQUIREMENTS FOR BRIDGES
JOB 123070 STONE BACKFILL
JOB 123070 STORM WATER POLLUTION PREVENTION PLAN
JOB 123070 SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 123070 TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
JOB 123070 TRAFFIC CONTROL SUPERVISOR
JOB 123070 UTILITY REQUIREMENTS
JOB 123070 VALUE ENGINEERING
JOB 123070 VARIOUS MIX ASPHALT
JOB 123070 WIRE ROPE SAFETY FENCE (PORT REPAIR)
JOB 123070 WIRE ROPE SAFETY FENCE MAINTENANCE MATERIALS
JOB 123070 WIRE ROPE SAFETY FENCE (HARD) SPECIFICATIONS
EXISTING DIRECTED LEVELING
PAVEMENT
BY TO BE USED AND ENGINEER ELEVATION IF AND WHERE DIRECTED BY THE ENGINEER TO CORRECT SUPERELEVATION AND ELEVATION OF EXISTING PAVEMENT.

MAIN LANE SUPERELEVATED TYPICAL SECTION

RT. LANES STA. 4388+00.00 TO STA. 4391+53.62
LT. LANES STA. 4394+00.00 TO STA. 4397+50.00

NOTES:
1. REFER TO CROSS SECTIONS FOR DEVIATIONS FROM NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

2. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THEREFORE SHOWN. THE CONTRACTOR SHALL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET THE TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.

3. ASPHALT FOR LEVELING OF EXISTING PAVEMENT SHALL BE PLACED ONLY IF AND WHERE DIRECTED BY THE ENGINEER. CALCULATIONS FOR THE AMOUNT OF LEVELING AND/OR LEVELING OPERATIONS SHALL BE PERFORMED BEFORE CONSTRUCTING THE SURFACE COURSE. PAYMENT SHALL BE MADE ONLY FOR THE CALCULATED AMOUNT PLUS OR MINUS THE PRICE BB PER SQUARE YARD. PAYMENT SHALL BE CONSIDERED INCLUDED IN THE PRICE BB FOR THE VARIOUS PAY ITEMS.

4. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAYED. LONGITUDINAL JOINTS SHALL BE AT THE LANE LINES.

5. THE REMAINING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A HEAT LINE AFTER SAWING. THE PAVEMENT TO BE REMOVED SHALL BE CAREFULLY REMOVED IN A MANNER THAT WILL NOT DAMAGE ANY STRUCTURE OR THE ASPHALT PAVEMENT THAT IS TO REMAIN IN PLACE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER

NOTES:
1. ALIGNMENT OF RUMBLE STRIPS SHALL GENERALLY BE STRAIGHT AND
OFFSET ADJUSTED 4' FROM THE OUTER EDGE OF THE EDGE LINE.
THIS OFFSET MAY BE ADJUSTED TO ACCOMMODATE VARIATIONS IN THE
EDGE LINE.
2. THE 3/4" DEPTH SHALL APPLY TO THE ENTIRE 14' LENGTH.
SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.
3. RUMBLE STRIPS SHALL NOT BE INSTALLED ON BRIDGE DECKS, APPROACH
SLABS, OR ACROSS TRANSVERSE JOINTS OF CONCRETE SHOULDER.

DETAIL OF RUMBLE STRIP REMOVAL
IN INSIDE SHOULDERS
(ASPHALT)
SECTION DETAIL OF SHOULDER WIDENING FOR GUARDRAIL & OVERLAP ENDS OF WIRE ROPE SAFETY FENCE - INSIDE SHOULDER

REF: STANDARD DRAWINGS 04-8, 09-0, 09-0A, 09-10, 09-8, 09-8A FOR ADDITIONAL INFORMATION.

NOTE: REFER TO "WIRE ROPE SAFETY FENCE (WRSF) SPECIFICATIONS" SPECIAL PROVISION FOR ADDITIONAL REQUIREMENTS.

TYPICAL SECTION OF IMPROVEMENT FOR WIRE ROPE SAFETY FENCE LEFT OF CENTERLINE

DETAIL OF WIRE ROPE SAFETY FENCE AT BRIDGE END

REFER TO PLANS FOR RELATIVE PLACEMENT OF GUARDRAIL AND WIRE ROPE SAFETY FENCE AT EACH BRIDGE END

SPECIAL DETAILS
CONCRETE DITCH PAVING DETAILS FOR BRIDGE ENDS

SECTION A-A

WIDENING FOR GUARDRAIL

NOTE: REFER TO STANDARD DRAWINGS GR-8, GR-9, GR-9A, GR-10, GR-11, GR-12 FOR ADDITIONAL INFORMATION.

GUARDRAIL DETAIL FOR EB MAIN LANES

NOTE: REFER TO STANDARD DRAWINGS GR-8, GR-9, GR-9A, GR-10, GR-11, GR-12 FOR ADDITIONAL INFORMATION.

GUARDRAIL DETAIL FOR WB MAIN LANES

NOTE: REFER TO STANDARD DRAWINGS GR-8, GR-9, GR-9A, GR-10, GR-11, GR-12 FOR ADDITIONAL INFORMATION.

SECTION OF APPROACH SLAB

AGGREGATE BASE COURSE (CLASS 7)

VARIES + 6" MINIMUM COMPACTED DEPTH

* SEE APPROACH SLAB DETAILS IN BRIDGE DRAWINGS
TEMPORARY EROSION CONTROLDETAILS

APPROXIMATE 100 YEAR FLOODPLAIN LIMITS

EROSION CONTROL MEASURES TO BE PLACED DURING APPROPRIATE STAGES. THESE DEVICES SHALL BE LEFT IN PLACE AS LONG AS REQUIRED TO CONTROL EROSION.

EROSION CONTROL MEASURES PLACED IN STAGE 1 SHALL BE RETAINED UNTIL FINAL STABILIZATION.

---

LEGEND

- DROP INLET SILT FENCE
- SILT FENCE
- SAND BAG DITCH CHECKS
- ROCK DITCH CHECKS

---

DATE OF REVISION

REVISION

---

C.L. +30 C.L. MEDIAN
SILT FENCE
STA. 4386+00 TO 4387+00
LT., RT.

C.L. +30 C.L. MEDIAN
ROCK DITCH CHECKS
STA. 4386+00 TO 4387+00
LT., RT., MEDIAN

C.L. +30 C.L. MEDIAN
COMPRESS FILTER SOCK
DROP INLET PROTECTION
STA. 4379+00 TO 4384+28
MEDIAN

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APPROXIMATE 100 YEAR FLOODPLAIN LIMITS

---

REVISIONS

---

CONST. LIMITS

---

TOTAL TEMPORARY EROSION CONTROL DETAILS

ALL STAGES
DE ROCHE CREEK IS NEAR AN ECOLOGICALLY SENSITIVE WATERBODY. A 25' VEGETATED BUFFER ZONE IS REQUIRED.

**Temporarily Erosion Control Details**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
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<tr>
<td>02/07</td>
<td>TEMPORARY EROSION CONTROL DETAILS</td>
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**Revisions**

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<th>Date of Revision</th>
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**Approximate 100 Year Floodplain Limits**

**Legend**

- Compost filter sock
- Sand bag ditch checks
- Rock drop inlet protection
- Rock drop inlet
- Silt fence
- Sediment basin

**Erosion Control Measures**

- Measures to be placed during appropriate stages.
- These devices shall be left in place as long as required to control erosion.
- Erosion control measures placed in stage 1 shall be retained until final stabilization.

**Temporary Erosion Control Details**

- All Stages

**Dates of Revisions**

- 02/07

**Temporary Erosion Control Details**

- 02/07
- 02/07
LEGEND

- DROP INLET SILT FENCE
- ROCK DITCH CHECKS

EROSION CONTROL MEASURES TO BE PLACED DURING APPROPRIATE STAGES. THESE DEVICES SHALL BE LEFT IN PLACE AS LONG AS REQUIRED TO CONTROL EROSION. EROSION CONTROL MEASURES PLACED IN STAGE 1 SHALL BE RETAINED UNTIL FINAL STABILIZATION.

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TEMPORARY EROSION CONTROL DETAILS

ALL STAGES
SEQUENCE OF CONSTRUCTION:

STAGE OPERATIONS:
INSTALL ADVANCE WARNING SIGNS.
INSTALL TEMPORARY EROSION CONTROL DEVICES.
CONSTRUCT BRIDGE SUPERSTRUCTURE ON TEMPORARY SUPPORTS AND BRIDGE SUBSTRUCTURE UNDER EXISTING MAIN LANE.

STAGE 2 OPERATIONS:
INSTALL ADVANCE WARNING SIGNS.
CLOSE BOTH WEST LAKES ON MAIN LANE.
REMOVE WIRE ROPE SAFETY FENCE AND RUMBLE STRIPS IN CONSTRUCTION AREAS.
CONSTRUCT CROSSOVERS AND CONSTRUCTION PAVEMENT MARKINGS IN MEDIUM AREA.

STAGE 3 OPERATIONS:
SHIFT EB 1-30 MAIN LANE TRAFFIC TO OUTSIDE SHOULDER.
INSTALL PRIMARY EB MAIN LANE PRECAST CONCRETE BARRIER WITH MODULAR CLARE SHIELDS AND REMOVABLE CONSTRUCTION PAVEMENT MARKINGS.
PERFORM EXISTING BRIDGE DEMOLITION AND BRIDGE SLOPE.
RECONSTRUCT APPROACH SLABS AND ROADWAY APPROACH WORK AS SHOWN IN STAGE 3A MAINTENANCE OF TRAFFIC.

STAGE 3A OPERATIONS:
SHIFT EB 1-30 MAIN LANE TRAFFIC TO #8 OUTSIDE SHOULDER AND RETURN EB 1-30 MAIN LANE TRAFFIC TO NORMAL FLOW.
INSTALL PRIMARY EB MAIN LANE PRECAST CONCRETE BARRIER AND REMOVABLE CONSTRUCTION PAVEMENT MARKINGS.
RETURN EB 1-30 MAIN LANE TRAFFIC TO TWO TRAFFIC LANES.
REPLACE MEDIAN CONSTRUCTION PAVEMENT MARKINGS.
REPLACE CROSSOVER MARKINGS IN MEDIAN.
INSTAL RED AND INSTALL #8 MEDIUM GUARDRAIL.
INSTALL EDGE EB PERMANENT PAVEMENT MARKINGS AS DIRECTED.

STAGE 4 OPERATIONS:
SHIFT EB 1-30 MAIN LANE TRAFFIC TO OUTSIDE SHOULDER.
INSTALL PRIMARY EB MAIN LANE PRECAST CONCRETE BARRIER WITH MODULAR CLARE SHIELDS AND REMOVABLE CONSTRUCTION PAVEMENT MARKINGS.
ROUTE EB 1-30 MAIN LANE TRAFFIC THROUGH CROSSOVER INTO OUTSIDE LANE OF EB MAIN LANE.
PERFORM EXISTING BRIDGE DEMOLITION AND BRIDGE SLOPE.
RECONSTRUCT APPROACH SLABS AND ROADWAY APPROACH WORK AS SHOWN IN STAGE 4A MAINTENANCE OF TRAFFIC.

STAGE 4A OPERATIONS:
SHIFT EB 1-30 MAIN LANE TRAFFIC TO OUTSIDE SHOULDER.
INSTALL PRIMARY EB MAIN LANE PRECAST CONCRETE BARRIER WITH REMOVABLE CONSTRUCTION PAVEMENT MARKINGS.
RETURN EB 1-30 MAIN LANE TRAFFIC TO TWO TRAVEL LANES.
REPLACE MEDIAN CONSTRUCTION PAVEMENT MARKINGS.
REPLACE CROSSOVER MARKINGS.
REPLACE SHOULDER MARKINGS.
REPLACE MEDIAN CROSSOVERS AND INSTALL #8 PERMANENT PAVEMENT MARKINGS.

STAGE 5 OPERATIONS:
SHIFT EB TRAFFIC TO PERMANENT LOCATION AND INSTALL REMAINING PERMANENT PAVEMENT MARKINGS, GUARDRAIL, AND WIRE ROPE SAFETY FENCE.
**Advance Signs at Beginning and End of Job**

**Stage 1**

- Porta-Ble Changeable Message Sign to be used if and where directed by the Engineer.

**Precast Concrete Barrier Wall Placement Along Bridge Stage 1**

- Portable Changeable Message Sign to be used if and where directed by the Engineer.

**Legend**

- **Temporary Traffic Sign**
- **Traffic Flow Arrows**
- **Precast Concrete Barrier Wall**

**Maintenance of Traffic Details**

**Advance Warning Signs**
MAINTENANCE OF TRAFFIC DETAILS

LEGEND

- TRAFFIC DRUM

\[ \text{TRAFFIC FLOW ARROWS} \]

DIVERSION FOR LT. LANE WORK ZONE
STAGE 2 & 5"
SEQUENCE OF CONSTRUCTION

STAGE 3A OPERATIONS:

SHIFT EB I-30 MAIN LANE TRAFFIC TO OUTSIDE SHOULDER.

INSTALL PRIMARY EB MAIN LANE PRECAST CURB CURVITY BARRIER WITH MODULAR CLARE SHIELDS AND REMOVABLE CONSTRUCTION PAVEMENT MARKINGS.

ROUTE WB I-30 MAIN LANE TRAFFIC THROUGH CROSSOVER onto INSIDE LANE OF EB MAIN LANES.

PERFORM EXISTING NB SPEED DEMOLITION AND BRIDGE SLIDE.

RECONSTRUCT APPROACH SLABS AND ROADWAY APPROACH WORK AS SHOWN IN STAGE 3A MAINTENANCE OF TRAFFIC.

STAGE 3A CONSTRUCTION - I-30 WB
STA. 4376+00.00 TO 4399+50.00

STAGE 3A MAIN LANE HEAD-TO-HEAD FOR MAINTENANCE OF TRAFFIC
STA. 4375+00 TO 4402+50.00

MAINTENANCE OF TRAFFIC DETAILS
STAGE 3A - TYPICAL SECTION
LEGEND

- Traffic Drum
- Precast Concrete Barrier
- Temporary Traffic Sign
- Traffic Flow Arrows
- Type B Barricade
- Stage Construction Area

MAINTENANCE OF TRAFFIC DETAILS

STAGE 3A

JOB NO. 02307

LASON X. WILLOW

3-24-2019

LICENSED PROFESSIONAL ENGINEER

No. 18653

REMOVABLE CONSTRUCTION - PAVEMENT MARKINGS (WHITE)
REMOVABLE CONSTRUCTION - PAVEMENT MARKINGS (YELLOW)

REMOVABLE CONSTRUCTION - PAVEMENT MARKINGS (WHITE)
REMOVABLE CONSTRUCTION - PAVEMENT MARKINGS (YELLOW)

REMOVABLE CONSTRUCTION - PAVEMENT MARKINGS (WHITE)
REMOVABLE CONSTRUCTION - PAVEMENT MARKINGS (YELLOW)

REMOVABLE CONSTRUCTION - PAVEMENT MARKINGS (WHITE)
REMOVABLE CONSTRUCTION - PAVEMENT MARKINGS (YELLOW)

FURNISH AND INSTALL
PRECAST CONCRETE BARRIERS
STA. 438+00 TO STA. 438+100
400 LINE FT.

FURNISH AND INSTALL
PRECAST CONCRETE BARRIERS
STA. 438+00 TO STA. 438+100
400 LINE FT.

FURNISH AND INSTALL
PRECAST CONCRETE BARRIERS
STA. 438+00 TO STA. 438+100
400 LINE FT.

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PRECAST CONCRETE BARRIERS
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FURNISH AND INSTALL
PRECAST CONCRETE BARRIERS
STA. 438+00 TO STA. 438+100
400 LINE FT.

FURNISH AND INSTALL
PRECAST CONCRETE BARRIERS
STA. 438+00 TO STA. 438+100
400 LINE FT.
SEQUENCE OF CONSTRUCTION:

STAGE 3B OPERATIONS:

SHIFT WB 3-30 MAIN LANE TRAFFIC TO NB OUTSIDE SHOULDER AND RETURN EB 3-30 MAIN LANE TRAFFIC TO NORMAL FLOW. INSTALL PRIMARY WB MAIN LANE PRECAST CONCRETE BARRIER AND REMOVABLE CONSTRUCTION PAYMENT MARKINGS. RETURN WB 3-30 MAIN LANE TRAFFIC TO TWO TRAVEL LANE. RECONSTRUCT CENTER AND WB APPROACH LANES AND ROADWAY APPROACH WORK AS SHOWN IN STAGE 3B MAINTENANCE OF TRAFFIC. INSTALL INSIDE WB PERMANENT PAYMENT MARKINGS AS DIRECTED.

STAGE 3B CONSTRUCTION - I-30

STA. 4386+00.00 TO 4399+50.00

LEGEND

TRAFFIC DRUM

PRECAST CONCRETE BARRIER

TEMPORARY TRAFFIC SIGN

TRAFFIC FLOW ARROWS

TYPE I BARRICADE

STAGE CONSTRUCTION AREA

ROAD CLOSED

FURNISH AND INSTALL PRECAST CONCRETE BARRIER STA. 4373+00 TO 4393 LIN. FT.

FURNISH AND INSTALL PRECAST CONCRETE BARRIER STA. 4392+30 TO ST4. 4400+00 LIN. FT.

REMOVABLE CONSTRUCTION PAYMENT MARKINGS (WHITE)

REMOVABLE CONSTRUCTION PAYMENT MARKINGS (YELLOW)

TRAFFIC FLOW ARROWS

EXIST.

EXIST.

EXIST.

EXIST.
SEQUENCE OF CONSTRUCTION:

STAGE 4A OPERATIONS:
1. Shift NB I-30 main lane traffic to outside shoulder.
2. Route UB 1-30 main lane traffic through crossover onto inside lane of NB main lanes.
3. Reconstruct approach slabs and roadway approach work as shown in STAGE 4A Maintenance of Traffic.

INSTALL PRIMARY I-30 MAIN LANE PRECAST CONCRETE BARRIER WITH MODULAR GLARE SHIELDS AND REMOVABLE CONSTRUCTION PAVEMENT MARKINGS.

ROUTE EB I-30 MAIN LANE TRAFFIC THROUGH CROSSOVER ONTO INSIDE LANE OF IVB MAIN LANES.

EXISTING EB BRIDGE DEMOLITION AND BRIDGE SLIDE.

RECONSTRUCT APPROACH SLABS AND ROADWAY APPROACH WORK AS SHOWN IN STAGE 4A MAINTENANCE OF TRAFFIC.

TRAFFIC DRUM LOCATION AND SPACING AS SHOWN STAGE 4A MAINTENANCE OF TRAFFIC PLANS.

STAGE 4A MAIN LANE HEAD-TO-HEAD FOR MAINTENANCE OF TRAFFIC
STA. 4386+75.00 TO STA. 4406+75.00

STAGE 4A CONSTRUCTION - I-30 EB
STA. 4364+00.00 TO STA. 4399+50.00

MAINTENANCE OF TRAFFIC DETAILS
STAGE 4A - TYPICAL SECTION
STAGE CONSTRUCTION AREA

MAINTENANCE OF TRAFFIC DETAILS
STAGE 4A
SEQUENCE OF CONSTRUCTION:

STAGE 4B CONSTRUCTION:

SHIFT EB I-50 MAIN LANE TRAFFIC TO OUTSIDE SHOULDER AND RETURN WB I-50 MAIN LANE TRAFFIC TO NORMAL FLOW.
INSTALL PRIMARY EB MAIN LANE PRECAST CONCRETE BARRIER AND REMOVABLE CONSTRUCTION PAVEMENT MARKINGS.
RETURN EB I-50 MAIN LANE TRAFFIC TO TWO TRAVEL LANE.
RECONSTRUCT REMAINING EB APPROACH PLANS AND ROOSEVELT APPROACH WORK AS SHOWN IN STAGE 4B MAINTENANCE OF TRAFFIC.
REMOVE MEDIAN CROSSOVERS AND INSTALL WB PERMANENT PAVEMENT MARKINGS.

STAGE 4B CONSTRUCTION
STA. 4394+00.00 TO STA. 4399+50.00

MAINTENANCE OF TRAFFIC DETAILS
STAGE 48 - TYPICAL SECTION
MAINTENANCE OF TRAFFIC DETAILS
STAGE 4B
SEQUENCE OF CONSTRUCTION

STAGE 5 OPERATING:
SHIFT EB TRAFFIC TO PERMANENT LOCATION AND INSTALL REMAINING PERMANENT PAVEMENT MARKINGS, GUARDRAIL, AND WIRE ROPE SAFETY FENCE.

STAGE 5A MAINTENANCE OF TRAFFIC TYPICAL SECTION
STA. 4388+00.00 TO STA. 4397+50.00
PERMANENT PAVEMENT MARKINGS DETAILS

SEE STANDARD DRAWINGS PM-1 AND PM-2 FOR ADDITIONAL INFORMATION
### SUMMARY SOIL CLASSIFICATION TEST RESULTS - DE ROCHE CREEK CROSSING

<table>
<thead>
<tr>
<th>BORING NO.</th>
<th>APPROX. STATION</th>
<th>SAMPLE DEPTH (ft)</th>
<th>WATER CONTENT (%)</th>
<th>LIQUID LIMIT</th>
<th>PLASTIC LIMIT</th>
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SOIL CHARACTERISTICS TABULATED ABOVE ARE REPRESENTATIVE AT THE LOCATIONS OF THE SAMPLES AND FROM SURFACE INDICATIONS AND TYPICAL FOR THE LIMITS SHOWN. THESE DATA ARE SHOWN FOR INFORMATION ONLY. THE STATE WILL NOT BE RESPONSIBLE FOR VARIATIONS IN THE SOIL CHARACTERISTICS AND/OR EXTENT OF SAME OFFERING FROM THE ABOVE TABULATIONS.
### EROSION CONTROL

#### PERMANENT EROSION CONTROL

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Description</th>
<th>Water</th>
<th>SECOND SEEDING</th>
<th>MULCH COVER</th>
<th>Water</th>
<th>SAND BAGS &amp; CHECKS</th>
<th>ROCK CHECKS</th>
<th>FILTRE ROOF</th>
<th>TRENCH</th>
<th>SEDIMENT BASIN</th>
<th>OBSTRUCTION OF SEDIMENT BASE</th>
<th>TEMPORARY TRENCH &amp; DISPOSAL</th>
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#### EROSION CONTROL

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<th>Water</th>
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<th>Water</th>
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<th>ROCK CHECKS</th>
<th>FILTRE ROOF</th>
<th>TRENCH</th>
<th>SEDIMENT BASIN</th>
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<th>TEMPORARY TRENCH &amp; DISPOSAL</th>
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</thead>
<tbody>
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#### TEMPORARY EROSION CONTROL

- **Erosion Control**
- **Second Seeding**
- **Mulch Cover**
- **Sand Bags & Checkers**
- **Filtre Roof**
- **Trench**
- **Sediment Basin**
- **Obstruction of Sediment Basin**
- **Temporary Trench & Disposal**

### WIRE ROPE SAFETY FENCE

#### STATION LOCATION

<table>
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<th>Location</th>
<th>Wire Rope Safety Fence</th>
<th>Wire End Terminal</th>
<th>Concrete Guard Type B</th>
<th>Solid Sodding</th>
<th>Water</th>
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#### TOTAL

- **380**

### DITCH PAVING

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### FENCING

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#### TOTAL

- **40"**

### APPROACH GUTTERS AND SLABS

#### STATION LOCATION

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<th>Location</th>
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<th>Aggregate Base CBL. (Class 7)</th>
<th>Stone-backfill</th>
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#### TOTAL

- **583.44**

### GUARDRAILS

#### GUARDRAILS TYPE A

- **LBF. FT**

#### GUARDRAILS TYPE D

- **398**

### RUMBLE STRIPS IN ASPHALT SHOULDER

#### STATION LOCATION

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
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#### TOTAL

- **4038**

### STRUCTURES

#### STATION DESCRIPTION

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#### TOTAL

- **415**

### QUANTITIES

- **6 ARY.**

### STATION LOCATION

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<th>Location</th>
<th>DESCRIPTION</th>
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#### TOTAL

- **415**

### QUANTITIES

- **6 ARY.**

### NOTES:

- **Temporary Erosion Control**
- **Second Seeding**
- **Mulch Cover**
- **Sand Bags & Checkers**
- **Filtre Roof**
- **Trench**
- **Sediment Basin**
- **Obstruction of Sediment Basin**
- **Temporary Trench & Disposal**

### QUANTITIES

- **6 ARY.**
## Clearing and Grubbing

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<th>STATION</th>
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**TOTALS:** 39.00 2377.21

**Note:** Average clearing depth 9".

## Cold Milling Asphalt Paving

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<td>4379-00</td>
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## Asphalt Concrete Patching for Maintenance of Traffic

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<th>GAL.</th>
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**BASES OF ESTIMATE:**
- ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC = 35 TON/MILE
- TACK COAT FOR MAINTENANCE OF TRAFFIC = 50 GAL/MILE

## Base and Surfacing

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**TOTALS:** BASES OF ESTIMATE:
- ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC = 35 TON/MILE
- TACK COAT FOR MAINTENANCE OF TRAFFIC = 50 GAL/MILE

## Concrete Ditch Paving

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<th>STATION</th>
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<th>LOCATION</th>
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**TOTALS:** BASES OF ESTIMATE:
- ASPHALT CONCRETE PATCHING FOR MAINTENANCE OF TRAFFIC = 35 TON/MILE
- TACK COAT FOR MAINTENANCE OF TRAFFIC = 50 GAL/MILE
- ACME BINDER COURSE (1") |

**TACK COAT QUANTITIES WERE CALCULATED USING THE DILUTED ASPHALT RATES. REFER TO SS-400-1 FOR THE RESIDUAL ASPHALT APPLICATION RATES.**
### SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 02307

<table>
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<td>720</td>
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</table>

1. Steel piles are required to be Grade 50 and have approved driving points with which shall be paid for directly, but shall be considered subsidiary to them. "Steel Piling DP [QUANTITY]", supplied shall conform to M1A-2002.50 [QUANTITY].

2. The contractor and repair portions of the existing bridge deck for Bridge Numbers A & B 3853 in need of repair throughout construction as directed by the Engineer. The quantity shown is for estimating and bidding purposes only, actual quantity to be determined in the field.

---

### SCHEDULE OF BRIDGE QUANTITIES - JOB NO. 02307

<table>
<thead>
<tr>
<th>BRIDGE NAME</th>
<th>ITEM</th>
<th>DESCRIPTION</th>
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<tr>
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<td>SITE NO. 1 (BRIDGE SPANS)</td>
<td>SITE NO. 1 (BRIDGE SPANS)</td>
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<td>TOTAL</td>
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<td>720</td>
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</tbody>
</table>

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2. The contractor and repair portions of the existing bridge deck for Bridge Numbers A & B 3853 in need of repair throughout construction as directed by the Engineer. The quantity shown is for estimating and bidding purposes only, actual quantity to be determined in the field.
### SUMMARY OF QUANTITIES (BOX 1 OF 2)

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<td>BRUSHING</td>
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### SUMMARY OF QUANTITIES (BOX 2 OF 2)

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SURVEY CONTROL COORDINATES

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*Note - Rebar and Cap - Standard - 5/8" Rebar with 2" Aluminum Cap stamped
*standard markings common to all caps, or as indicated
(other markings indicated in the point description of the individual point).

ALL DISTANCES ARE GROUND.
USE CAP = 1,0 FOR STAKEOUT FOR THIS PROJECT.
A PROJECT CAP OF 0.999911221 HAS BEEN USED TO COMPUTE THE ABOVE GROUND COORDINATES.
THIS CAP IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.
GRID DISTANCE = GROUND DISTANCE X CAP.
GRID COORDINATES ARE STORED UNDER FILE NAME 8070460g1.ctl
HORIZONTAL DATUM: NAD 83 (1997)
VERTICAL DATUM: NAVD 88
POSITIONAL ACCURACY THIRD ORDER, UNLESS SPECIFIED OTHERWISE
AT A SPECIFIC POINT.

REFERENCE POINTS (1500 SERIES) ARE TO BE USED TO ESTABLISH CONTROL
IF THE PRIMARY CONTROL ABOVE POINTS LISTED ABOVE HAVE BEEN DESTROYED.
REFERENCE POINTS ARE NOT TO BE USED FOR VERTICAL CONTROL.

BASIS OF BEARING:
ARKANSAS STATE PLANE GRID BEARINGS - 0302-SOUTH ZONE
DETERMINED FROM GPS CONTROL POINTS 100029 - 100029A
CONVERGENCE ANGLE: 00-34-37 LEFT AT PN 4 LT 34-12-50N LG 093-01-50W
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.
ALIGNMENT NAME: C.L. I-30

ALIGNMENT NAME: CROSSOVER 1B

ALIGNMENT NAME: CROSSOVER 2A

ALIGNMENT NAME: CROSSOVER 2B
SURVEY BASELINE N 53°56'00" E 89.64

CL. CROSSOVER B

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SUPER

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CONTOUR REFERENCES

SURVEY CONTROL DETAILS

SURVEY BASELINE N 53°56'00" E 89.64

CL. CROSSOVER A

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CONTOUR REFERENCES

SURVEY BASELINE N 53°56'00" E 89.64

CL. CROSSOVER A

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<th>Stakes (ft)</th>
<th>Notes</th>
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<td>72&quot; # Drilled Shaft</td>
<td>Site 4392+00</td>
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STAKING DIAGRAM

Note: Staking is done C.L. Median. Stations shown on C.L. Bridge are performed by the construction from C.L. Bridge to C.L. Median.
STEP 1
Looking Forward
WST Stage 1 construct substructure under existing bridges.

STEP 2
Looking Forward
WST Stage 1 construct superstructure on temporary foundations.

STEP 3
Looking Forward
WST Stage 3a demolish existing Bridge A, build new Bridge B EBL complete approaches.

STEP 4
Looking Forward
WST Stage 4b demolish existing Bridge B, build new Bridge B EBL complete approaches.

COMPLETE
Looking Forward

PROPOSED CONSTRUCTION SEQUENCE
INTERSTATE 30 OVER DE ROCHE CREEK
DE ROCHE CREEK STS. & APPRS., (S)
CLARK AND HOT SPRING COUNTIES
ROUTE 30 SECTIONS H & I
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARKANSAS

3/29/19

ARRENS DEAN, P.E.
INTEGARCH INC.
123 MAIN STREET
LITTLE ROCK, ARKANSAS 72201

PROFESSIONAL
ENGINEER

DRAFTING NO. 000607
PRINT DATE 3/29/2019
BRIDGE NO. 088745
SCALE No Scale
Prior to setting the superstructure in its final location, the Contractor shall verify the orientation and position of the bearings.

ELASTOMERIC BEARING - PLAN VIEW

Top of Cope

ELASTOMERIC BEARING - FRONT VIEW

- Thickness of elastomer between steel laminae
- Thickness of elastomer cover on top and bottom of pad
- Number of elastomer layers of thickness t

ELASTOMERIC PAD

<table>
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<th>BRIDGE NO.</th>
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<th>NO. OF BEARINGS EACH BENT</th>
<th>MAXIMUM DESIGN LOAD (kip)</th>
<th>A</th>
<th>B</th>
<th>H</th>
<th>t</th>
<th>NO. &amp; THICKNESS OF STEEL LAMINA</th>
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<td>1 &amp; 2</td>
<td>ALL</td>
<td>296.0 22&quot;</td>
<td>6&quot;</td>
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<td>0.5&quot;</td>
<td>0.25&quot;</td>
<td>4 # 12 g.</td>
<td>25&quot;</td>
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(1) Minimum Load = Service Limit State

GENERAL NOTES

Elastomeric Bearings shall conform to Section 808 except that no external load is provided and shall be paid for at the unit price bid for “Elastomeric Bearings.”

Bearings shall be seated in accordance with Subsection 808.08.

This work and materials shall be considered subsidiary to the main “Elastomeric Bearings” and will not be paid for directly.
REINFORCING PLAN AND POURING SEQUENCE

1. Pour depth pour joint at this location (top 1'-6" above top of slab)

2. Poured as shown in "Poured Section", See Deg. No. 6032.

3. Pouring Sequence Construction Joint.

4. See Deg. No. 6035 for Pour No. 3 lower portion of end concrete diaphragms.
STA. 4392+12.73 BEGIN BRIDGE A
STA. 4392+13.27 BEGIN BRIDGE B
EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT VERTICAL WALL ABUTMENTS

EMBANKMENT CONSTRUCTION AT SPILL-THROUGH PILE END BENTS

EMBANKMENT CONSTRUCTION AND FOOTING BACKFILL AT SPILL-THROUGH END BENTS

EMBANKMENT CONSTRUCTION AT SPILL-THROUGH END BENTS WITH TURNBACK WING

EMBANKMENT CONSTRUCTION AT SPILL-THROUGH END BENTS WITH TRANSITION WING

GENERAL NOTES

The Bridge End Embankment shall be defined as a section of embankment, not less than 20 feet long adjacent to the bridge end, together with the side slopes and slopes under the bridge and inclining around the end of the embankment. The side slopes shall be protected by a plate of horizontal layers facing nose-end and connected to the use of mechanical equipment by the supervision of the Engineer. Refer to Subsections 20.08, 20.09 and 20.10 for construction requirements.

METHOD OF DETERMINING FILL SLOPE LOCATION AT BRIDGE ENDS

STANDARD DETAILS FOR EMBANKMENT CONSTRUCTION AND BACKFILL AT BRIDGE ENDS

ARKANSAS STATE HIGHWAY COMMISSION
Excavation for Structures - Abutment in New Embankment and Natural Ground

Excavation for Structures - Bridge Location with Designated Channel Change

Excavation for Structures - Abutment in New Embankment

Excavation for Structures - Abutment in Natural Ground

Excavation for Structures - Abutment in Natural Ground

Excavation for Structures - Bridge

Excavation for Structures - Abutment in New Embankment and Natural Ground

Open Abutment with Turnback Wings

Plan of Dumped Riprap

Elevation of Riprap Berme with Riprap

Elevation of Riprap Berme Without Riprap

Section A-A

Section B-B

Detail C

Standard Details for Dumped Riprap and Filter Blanket and Computing Excavation for Structures

Arkansas State Highway Commission

Little Rock, AR

Engineered by STO

Drawing NO. 5500

Scale: 1/8" = 1'-0"
CONCLUSION:
All concrete shall be Class S7 and with a minimum 28 day compressive strength of 4,000 psi. The concrete shall be placed in the dry and exposed areas shall be finished to meet any specified finishing requirements. The concrete shall be cured by methods specified in Section 801.2 for at least 21 days from time of placement.

The superstructure design shall be provided by the architect in accordance with Section 801.2. The reinforced concrete shall be designed to meet the requirements of the American Society of Civil Engineers. The reinforcement shall be placed in accordance with the specifications and the codes and standards of the jurisdiction in which the structure is located.

REFERENCES:
All references shall be to the current edition of the American Society of Civil Engineers. The references shall be identified in the drawings and specifications.

STANDARD STEEL BRIDGE SPECIFICATIONS:
All steel shall be of the grades and quality specified in the specifications. The steel shall be rolled and shall conform to the current edition of the American Society of Civil Engineers. The steel shall be furnished in accordance with the specifications and the codes and standards of the jurisdiction in which the structure is located.

SUBSTRUCTURE NOTES:

STANDARD GENERAL NOTES FOR STEEL BRIDGE STRUCTURES:
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

Designed by:

Drawn by: M-263

Ladd, J.C.

Work No. 50506

Drawing No. 55006
**ARKANSAS STATE HIGHWAY COMMISSION**

**CONCRETE DITCH PAVING**

**GENERAL NOTES:**

The full width of each section shall be poured monolithically.

Toewalls to be constructed full width at each end of ditch paving, and poured monolithically.

Solid sod along ditch paving to be placed within 14 days of ditch paving construction.

1" wide transverse expansion joints shall be placed in concrete ditch paving at 40 intervals. The space shall be filled with approved joint filler complying with AASHTO M213.

**ENERGY DISSIPATORS**

Energy dissipators to be used for the entire length of ditch when slope of ditch paving exceeds 7%. The dissipators will not be paid for separately, but shall be considered to be included in the price bid for concrete ditch paving.

**TOE WALL DETAIL FOR CONCRETE DITCH PAVING**

The steel and additional concrete for the back wall of the toe wall and the additional concrete for the toe wall detail shall be considered to be included in the price bid for concrete ditch paving.
NOTE: ADD'L. REINF. TO BE EMBEDDED IN ALL CIVIL TRENCHES OF BOX CULVERTS.

DROE INLET TYPE "TM" FOR REINFORCED CONC. BOX CULVERTS

TABLE OF "W" DIMENSIONS

NOTE: DIMENSIONS SHOWN ABOVE ARE FOR "W" DROE INLET ONLY. BOLT AND NUT DETAIL SHEET WILL SO BE SHOWN TO BE FULL DETAILED.

GENERAL NOTE:
1. STEEL PIPE FOR DROE AND REINF. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 401, BOLTS SHALL CONFORM TO ONE OF THE FOLLOWING: A307 OR A325 OR A325X OR A325X6.
2. STEEL PIPE FOR DROE SHALL BE "STANDARD WEIGHT" PIPE CONFORMING TO ASTM A53 NATIONAL STANDARD.
3. BOLTS/REINF. RODS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A523 OR A528, CLASS III.
4. ALL EXPOSED BOLTS TO HAVE SILICONE COATED TO PROTECT FROM CORROSION.
5. THE COMPLETE DROE SHALL BE PAINTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
METHODS OF INSTALLATION OF GUARD RAIL AT LESS THAN FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL TYPE 2 TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.

METHOD OF INSTALLATION OF GUARD RAIL AT FULL SHOULDER WIDTH BRIDGES USING GUARD RAIL TERMINAL (TYPE 2)

NOTE: GUARD RAIL WITH GUARD RAIL TERMINAL TYPE 2 TO BE INSTALLED ONLY AT LOCATIONS SHOWN ON PLANS.

LEGEND
- THREE BEAM GUARD RAIL TERMINAL
- GUARD RAIL TERMINAL (TYPE 2)

METHOD OF INSTALLATION OF GUARD RAIL USING GUARD RAIL TERMINAL (TYPE 1) (FULL SHOULDER WIDTH OR LESS BRIDGES)
TRAFFIC

EDGE OF TRAVELED WAY

EDGE OF SHOULDER

GETAPER

SLOPE AS SHOWN ON TYPICAL SECTION

VAR. 5'-6" NORMAL
ADD'L SURFACING

NORMAL
SHLDR, SURF., VAR.
2'-0"

GUARD RAIL (TYPE A)

0.04 FT/FT

0.02 FT/FT

SECTION A-A

DETAILS OF WIDENING FOR GUARD RAIL

SECTION B-B

DETAILS SHOWING POSITION OF GUARD RAIL ON HIGHWAY

SHOULDER PIER PROTECTION

MEDIAN PIER PROTECTION

METHOD OF INSTALLATION OF GUARD RAIL AT FIXED OBSTACLE

NOTE: NORMAL SECTION TO BE WIDENED APPROX. 3'-6"
EACH SIDE TO SUPPORT GUARD RAIL.

LIMITS OF WIDENING FOR GUARD RAIL (MATCH SHOULDER SLOPE)

NORMAL ROADWAY WIDTH

WIDTH OF SURFACING

WIDTH OF GUARD RAIL (TYPE A)

NORMAL ROADWAY WIDTH

SECTION ON TANGENT

SECTION ON CURVE

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-9A
**Structural Steel Tubing Blockout Detail**

- 1" x 4" x 0.062 Structural Tubing
- 0.375" x 0.375" Post Bolt Slot
- All holes punched or drilled 3/4" Dia.

**Blockout Detail**

- Attaching blockouts to post using 3/4" dia. red head bolts with 0.375" dia. cut steel washers and nut.

**General Notes**

- The three beam rail, special end shoe and the transition section shall be made of steel and shall be 8' long and coating shall be type C.
- Posts shall be perpendicular to the roadway profile grade and horizontal plane.
- All nuts shall be of sufficient length to extend through the full thickness of the posts and shall be larger than head being used.
- Holes in posts including special and shoe shall be made in the direction of traffic.
- Refer to standard drawing GR-44 for guard rail post clearance details.
- Use three beam guard rail components of same material for entire job.
- Three beam posts shall be made from 2" x 2" x 0.125" wood posts and wood blocks shall be either 2" x 4" (1.00) (structural) or better 0.75" over 0.1125" x 4" (structural).
THREE BEAM RAIL WITH STEEL TUBING BLOCKOUT AND STEEL POSTS 1-7

W-BEAM TO THREE BEAM TRANSITION RAIL WITH WOOD OR PLASTIC BLOCKOUT AND STEEL POST POST 8

THREE BEAM RAIL WITH WOOD OR PLASTIC BLOCKOUTS & WOOD POSTS POSTS 1-6

THREE BEAM RAIL WITH WOOD OR PLASTIC BLOCKOUT & WOOD POST POST 7

W-BEAM TO THREE BEAM TRANSITION RAIL WITH WOOD OR PLASTIC BLOCKOUT & WOOD POST POST 8

GENERAL NOTES:
RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.
WOOD POSTS & WOOD BLOCKS SHALL BE EITHER DENSE NO. 1 STRUCTURAL OR BETTER SLY 4400 P.I. OR NO. 1000 Y SOUTHERN PINE.

ARKANSAS STATE HIGHWAY COMMISSION

GUARD RAIL DETAILS

STANDARD DRAWING GR-II
THREE BEAM GUARD RAIL CONNECTION AT BRIDGE ENDS

GENERAL NOTES:
The three beam guard rail transition sections shall be made of steel and shall be framed and cornered shall be type L. The guardrail shall be perpendicular to the roadway profile and be uniformly spaced.

Rivets shall be of sufficient length to extend through the full thickness of the rail and no more than 3" beyond it. All lap joints, including special end shoes, shall be made in the direction shown on standard drawings. See "Details." Refer to standard drawing for post details.

Use three beam guard rail components of same sectional for entire job. Three beam posts shall be same material as W-beam posts for entire job. Posts shall be placed at the mid-span of the W-beam.

Wood posts & wood blockout of other design or material type of W-beam, U350. A centerline of W-beam shall be placed at the mid-span of the W-beam unless otherwise specified. See "Details."
**INSTALLATION**

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<tr>
<td>36-43</td>
<td>5, 5.5, 2.1</td>
</tr>
<tr>
<td>48</td>
<td>5.5, 2.2</td>
</tr>
<tr>
<td>54-60</td>
<td>5, 5.5, 2.2</td>
</tr>
<tr>
<td>66-78</td>
<td>6, 8, 2.2</td>
</tr>
<tr>
<td>84-108</td>
<td>7, 8.5, 2.3</td>
</tr>
</tbody>
</table>

**NOTE:** FOR MINIMUM COVER VALUES, H shall INCLUDE A MINIMUM OF 12" OF PAVER/MIXTURE BASE.

**MINIMUM HEIGHT OF FILL | OVER R.C. ARCH & HORIZONTAL ELLIPtical PIPE CULVERTS**

| **CLASS III** | **CLASS IV** |
| INSTALLATION TYPE | ALL | ALL |
| PIPE ID (IN) | FEET |
| TYPE 2 OR TYPE 3 | 2.5, 2.1 |

**NOTE:** FOR MINIMUM COVER VALUES, H shall INCLUDE A MINIMUM OF 2" OF PAVER/MIXTURE BASE.

---

**CONSTRUCTION SEQUENCE**

1. Place structural bedding material to grade; do not compact.
2. Install pipe with bedding in a manner that will not disturb the bedding./ 
3. Compact the structural bedding outside the middle third of the pipe. 
4. Complete backfill; material shall be compacted to 95% of the maximum density according to the type or class of materials used.

**LEGEND**

- **H** = NORMAL INSIDE DIAMETER OF PIPE
- **H** = OUTSIDE DIAMETER OF PIPE
- **H** = MINIMUM HEIGHT REQUIRED OVER STEEL PIPE
- **H** = MINIMUM INSULATED SOIL

**MAXIMUM HEIGHT OF FILL | OVER CIRCULAR R.C. PIPE CULVERTS**

<table>
<thead>
<tr>
<th>INSTALLATION TYPE</th>
<th>CLASS III</th>
<th>CLASS IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE 1</td>
<td>21</td>
<td>32</td>
</tr>
<tr>
<td>TYPE 2</td>
<td>16</td>
<td>25, 34</td>
</tr>
<tr>
<td>TYPE 3</td>
<td>12</td>
<td>20, 30</td>
</tr>
</tbody>
</table>

**NOTE:** IF FILL HEIGHT EXCEEDS FEET, A DESIGN CONCRETE PIPE WILL BE REQUIRED USING TYPE 1 INSTALLATION.

---

**EMBANKMENT AND TRENCH INSTALLATIONS**

1. Materials in the trench and outer structural bedding shall be compacted to 95% of the maximum density according to the type or class of materials used.
2. For trenches with walls of materials not compacted to 95%, the density of the fill in the lower side zone shall be as per the minimum required density for the classification of the backfill material. Uncompacted loose fill shall be corrected to bring it to the required density.
3. For embankments, the material in the lower side zone shall be compacted to 95% of the maximum density according to the type or class of materials used.

**GENERAL NOTES**

1. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO ARKANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (CURRENT EDITION WITH APPLICABLE REVISIONS). SPENDITIONS AND SPECIAL PROVISIONS, UNLESS OTHERWISE SPECIFIED IN THE PLANS, SPECIFICATIONS, AND SUBSEQUENT TO THE STANDARD CONSTRUCTION SPECIFICATIONS.
2. CONCRETE PIPE CULVERT DESIGN SHALL CONFORM TO AASHTO M220, CIRCULAR R.C.
3. ALL PIPE SHALL CONFORM TO SECTION 9.5. R.C. PIPE CULVERTS SHALL CONFORM TO SPECIFICATIONS (FIFTH EDITION) WITH 2010 INTERPAR.
4. ALL PIPE SHALL BE PROTECTED DURING CONSTRUCTION BY A COVER SUFFICIENT TO PREVENT DAMAGE FROM EQUIPMENT.
5. THE MINIMUM TRENCH WIDTH SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 24 INCHES.
6. THE MINIMUM ALLOWABLE DIAMETER SHALL BE 12" IN DIAMETER.
7. THE TYPE OR CLASS OF THE PIPE PLUS MATERIALS TO BE USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
8. THE MATERIALS TO BE USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
9. THE TYPE OR CLASS OF THE MATERIAL TO BE USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
10. THE MATERIALS TO BE USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
11. THE MATERIALS TO BE USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
12. THE MATERIALS TO BE USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
13. THE MATERIALS TO BE USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.
14. THE MATERIALS TO BE USED FOR STRUCTURAL BEDDING AND/OR BACKFILL.

---

**REINFORCED CONCRETE ARCH PIPE DIMENSIONS**

<table>
<thead>
<tr>
<th>MATERIAL REQUIREMENTS FOR HORIZONTAL ELLIPTICAL PIPE CULVERTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TYPE</strong></td>
</tr>
<tr>
<td>--------------</td>
</tr>
<tr>
<td><strong>A</strong></td>
</tr>
<tr>
<td><strong>B</strong></td>
</tr>
<tr>
<td><strong>C</strong></td>
</tr>
<tr>
<td><strong>D</strong></td>
</tr>
<tr>
<td><strong>E</strong></td>
</tr>
<tr>
<td><strong>F</strong></td>
</tr>
<tr>
<td><strong>G</strong></td>
</tr>
<tr>
<td><strong>H</strong></td>
</tr>
<tr>
<td><strong>I</strong></td>
</tr>
<tr>
<td><strong>J</strong></td>
</tr>
<tr>
<td><strong>K</strong></td>
</tr>
<tr>
<td><strong>L</strong></td>
</tr>
</tbody>
</table>

---

**EMBANKMENT SECTION**

<table>
<thead>
<tr>
<th>FILED PIPE REOUIRED</th>
<th>SELECTED PIPE DENSITIES</th>
<th>DESIGN OF EMERGEO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td><strong>SHALL</strong></td>
<td><strong>SPECIFICATIONS</strong></td>
</tr>
<tr>
<td><strong>B</strong></td>
<td><strong>SHALL</strong></td>
<td><strong>SPECIFICATIONS</strong></td>
</tr>
<tr>
<td><strong>C</strong></td>
<td><strong>SHALL</strong></td>
<td><strong>SPECIFICATIONS</strong></td>
</tr>
<tr>
<td><strong>D</strong></td>
<td><strong>SHALL</strong></td>
<td><strong>SPECIFICATIONS</strong></td>
</tr>
<tr>
<td><strong>E</strong></td>
<td><strong>SHALL</strong></td>
<td><strong>SPECIFICATIONS</strong></td>
</tr>
<tr>
<td><strong>F</strong></td>
<td><strong>SHALL</strong></td>
<td><strong>SPECIFICATIONS</strong></td>
</tr>
<tr>
<td><strong>G</strong></td>
<td><strong>SHALL</strong></td>
<td><strong>SPECIFICATIONS</strong></td>
</tr>
<tr>
<td><strong>H</strong></td>
<td><strong>SHALL</strong></td>
<td><strong>SPECIFICATIONS</strong></td>
</tr>
</tbody>
</table>

---

**CONCRETE PIPE CULVERT FILL HEIGHTS & BEDDING**

---

**STANDARD DRAWING PCC-1**
### Corrugated Steel Pipe (Round)

**Pipe Diameter (Inches)** | **Max. Fill Height (In.) Above Top of Pipe Feet** | **Metal Thickness (Gage)**
--- | --- | ---
5 | 25 | 0.064
8 | 30 | 0.079
10 | 36 | 0.079
12 | 40 | 0.095
14 | 43 | 0.109
16 | 48 | 0.119
18 | 53 | 0.129
20 | 58 | 0.139
24 | 63 | 0.159
28 | 70 | 0.179
30 | 73 | 0.189
36 | 85 | 0.209
42 | 98 | 0.239
48 | 110 | 0.279

**Pipe Diameter (Inches)** | **Min. Fill Height (In.) Above Top of Pipe Feet** | **Metal Thickness (Gage)**
--- | --- | ---
5 | 20 | 0.064
8 | 25 | 0.079
10 | 30 | 0.079
12 | 35 | 0.095
14 | 40 | 0.109
16 | 43 | 0.119
18 | 50 | 0.129
20 | 55 | 0.139
24 | 63 | 0.159
28 | 70 | 0.179
30 | 73 | 0.189
36 | 85 | 0.209
42 | 98 | 0.239
48 | 110 | 0.279

### Corrugated Aluminum Pipe (Round)

**Pipe Diameter (Inches)** | **Max. Fill Height (In.) Above Top of Pipe Feet** | **Metal Thickness (Gage)**
--- | --- | ---
5 | 25 | 0.060
8 | 30 | 0.075
10 | 35 | 0.075
12 | 40 | 0.095
14 | 43 | 0.095
16 | 48 | 0.109
18 | 53 | 0.129
20 | 58 | 0.129
24 | 63 | 0.159
28 | 70 | 0.179
30 | 73 | 0.189
32 | 85 | 0.209
42 | 98 | 0.239
48 | 110 | 0.279

### Corrugated Metal Pipe Arches

**Pipe Diameter (Inches)** | **Minimum Fill Height (In.) Above Top of Pipe Feet** | **Maximum Fill Height (In.) Above Top of Pipe Feet** | **Minimum Cover (In.) Above Top of Pipe Feet** | **Maximum Cover (In.) Above Top of Pipe Feet**
--- | --- | --- | --- | ---
5 | 25 | 0.064 | 0.079 | 0.060
8 | 30 | 0.079 | 0.095 | 0.075
10 | 36 | 0.079 | 0.095 | 0.075
12 | 40 | 0.095 | 0.109 | 0.095
14 | 43 | 0.095 | 0.109 | 0.095
16 | 48 | 0.109 | 0.119 | 0.095
18 | 53 | 0.109 | 0.119 | 0.095
20 | 58 | 0.109 | 0.129 | 0.095
24 | 63 | 0.109 | 0.139 | 0.095
28 | 70 | 0.109 | 0.179 | 0.095
30 | 73 | 0.109 | 0.189 | 0.095
36 | 85 | 0.109 | 0.209 | 0.095
42 | 98 | 0.109 | 0.239 | 0.095
48 | 110 | 0.109 | 0.279 | 0.095

### Construction Sequence

1. Place structural bedding material to grade, do not compact.
2. Compact structural bedding outside of the middle third of the pipe.
3. Compact structural bedding in the middle third of the pipe, beginning by working from inside-out, followed by working from outside-in.

**Notes:** Structural backfill and structural bedding material will not be placed separately, but compensation will be considered to be included in the price bid per linear foot of metal pipe.

### Installation

**Type 1:** Aggregate base course classified as SP-1, SP-2, SP-3 or Type II installation material.

**Type 2:** Selected materials classified as SP-1, SP-2, or Type II installation material.

### General Notes


2. All filling materials shall be compacted by the Engineer or his designee to the specified height and shall be selected to conform to the requirements of the Division of Construction and Subsection E-5, General Provisions, Fifth Edition, 1982.

3. All pipe culvert designs shall comply with the requirements of the Division of Construction and Subsection E-5, General Provisions, Fifth Edition, 1982.


5. The minimum trench width shall be the outside diameter of the pipe plus 24 inches.

### Equivalent Metal Thicknesses and Gauges

<table>
<thead>
<tr>
<th>Metal Thickness (Inches)</th>
<th>Gauge Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.064</td>
<td>16</td>
</tr>
<tr>
<td>0.075</td>
<td>16</td>
</tr>
<tr>
<td>0.079</td>
<td>16</td>
</tr>
<tr>
<td>0.085</td>
<td>16</td>
</tr>
<tr>
<td>0.095</td>
<td>16</td>
</tr>
<tr>
<td>0.109</td>
<td>16</td>
</tr>
<tr>
<td>0.119</td>
<td>16</td>
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<tr>
<td>0.129</td>
<td>16</td>
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<tr>
<td>0.139</td>
<td>16</td>
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<tr>
<td>0.159</td>
<td>16</td>
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<tr>
<td>0.179</td>
<td>16</td>
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<tr>
<td>0.189</td>
<td>16</td>
</tr>
<tr>
<td>0.209</td>
<td>16</td>
</tr>
<tr>
<td>0.239</td>
<td>16</td>
</tr>
<tr>
<td>0.279</td>
<td>16</td>
</tr>
</tbody>
</table>

**For minimum cover values, ‘W’ shall include a minimum 12" of pavement and/or base.**
NOTES:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE WIDTHS.
2. THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE LATEST REVISED ADDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
3. RAISED PAVEMENT MARKERS SHALL BE PLACED ON AN 80 FEET SPACING UNLESS OTHERWISE SHOWN IN THE PLANS.

2" FOR ASPHALT OR CONCRETE PAVEMENT
6" FOR BITUMINOUS SURFACE TREATMENT

PAVEMENT EDGE LINE MARKING

NOTE:
THE RED LENS OF THE TYPE II R.P.M. SHALL FACE THE INCORRECT TRAFFIC MOVEMENT.

TYPE II REO/CLEAR OR YELLOW/YELLOW

NOTE:
PRTSMATTC REFLECTOR DIMENSIONS SHOWN FOR RAISED PAVEMENT MARKERS ARE TYPICAL. THE CONTRACTOR MAY SUBSTITUTE SIMILAR MARKERS WITH THE APPROVAL OF THE ENGINEER. REQUESTING APPROVAL FOR SIMILAR MARKERS MAY BE MADE BY REFERING TO THE AHD QUALIFIED PRODUCTS LIST.
General Notes:
- The drawing should be considered as typical only. Additional details may be required by local traffic control officials.
- The dimensions shown for raised pavement markers are typical. The contractor may substitute equivalent markers with the approval of the engineer and in the absence of the approved work, in accordance with the policies outlined in the engineer's letter to the contractor.
- Notes for raised pavement markers are typical. The contractor may substitute equivalent markers with the approval of the engineer and in the absence of the approved work, in accordance with the policies outlined in the engineer's letter to the contractor.

Arkansas State Highway Commission
Permanent Pavement Marking
On Access Controlled Roadways

Standard Drawing PW-2
NOTE:
1. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE UNDERDRAIN COVER SHALL BE HANDED IN CONFORMITY TO SHAPED BAR "A" AS SHOWN.
2. GRANULAR MATERIAL SHALL BE WRAPPED WITH GEOFABRIC OR FABRIC "C" OR THE WIDTH OF THE TRENCH AT THE TOP.

PLAN VIEW

SIDE VIEW

DETAILS OF PIPE UNDERDRAIN

NOTES FOR PIPE UNDERDRAINS

1. GEOFABRIC SHALL MEET THE REQUIREMENTS OF SECTION 26.15 FOR TYPE I, PAYMENT FOR GEOFABRIC AND GRANULAR FILTER MATERIAL SHALL BE INCLUDED IN THE PRICE PER LIN. FT. FOR "4" PIPE UNDERDRAIN" IN ACCORDANCE WITH SECTION 26.16 STANDARD SPECIFICATIONS.
2. A NON-PERFORATED SCHEDULE 40 PVC PIPE LATERALS WITH OUTLET PROTECTORS SHALL BE INSTALLED AS SHOWN WHERE LATERALS WILL BE MEASURED AND PAID FOR AS "4" PIPE UNDERDRAINS." UNDERDRAIN OUTLET PROTECTORS WILL BE MEASURED AND PAID FOR BY THE UNIT IN ACCORDANCE WITH SECTION 64.12 OF THE STANDARD SPECIFICATIONS.
3. EXISTING "4" PIPE UNDERDRAINS MAY BE CONNECTED TO PROPOSED DROP PROTECTORS OR EXTENDED WHERE DIRECTED BY THE ENGINEER. PAYMENT FOR CONNECTING TO DROP PROTECTORS SHALL BE INCLUDED IN THE PRICE FOR "4" PIPE UNDERDRAINS.
4. THE LOCATION OF ALL LATERALS SHALL BE MARKED WITH "4" X 2" PERMANENT MARKING TAPE (TYPE B) AT THE OUTSIDE EDGE OF THE SHOULDER-PLACED TRANSVERSE TO TRAFFIC. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE PRICE PER THE VARIOUS CONTRAST ITEMS.
5. PAYMENT FOR THE RODENT SCREEN SHALL BE INCLUDED IN THE PRICE PER EACH FOR "UNDERDRAIN OUTLET PROTECTORS."
6. ANY EXISTING UNDERDRAINS THAT INTERFERE WITH INSTALLATION OF THE NEW UNDERDRAIN SYSTEM SHALL BE REMOVED AND DISPOSED OF AS DIRECTED BY THE ENGINEER. PAYMENT FOR THE REMOVAL OF UNDERDRAIN SYSTEMS AND DISPOSAL OF UNDERDRAIN OUTLET PROTECTORS
7. AT LOCATIONS WHERE A SINGLE LATERAL IS USED FOR DRAIN PIPE AND DAMAGE TO THE COVER OF THE UNDERSIDE OR INSTALL OUTLET PROTECTOR AS SHOWN ON STANDARD DRAWING PU-1 AND GRAY THE CAUSED HOLE WHERE INSTALL AN OUTLET PROTECTOR WITH A SINGLE HOLE.
TABLE FOR ONE-WAY TRAFFIC

GENERAL NOTES:
1. All dimensions are in feet and inches.
2. Super-elevation values shown on the drawing section are values for the inside lane.
3. Lengths for 10 may be increased in multiples of 25 ft.
4. Minimum and maximum values apply to the inside lane. Values shown for 2 lanes shall be an average of the values shown for 1 lane.
5. Lanes divided equal or more than 4 lanes shall have additional transition length as follows:
   - 2 lanes divided: 120 ft
   - 2 lanes divided: 180 ft

APPENDICES:
- Normal crowns
- Reverse crowns
- Super-elevation at normal crown slope
- Super-elevation at crown slope
- Distance from beginning of super-elevation transition to any point on the crown.
- Width of pavement.
- Minimum rate of super-elevation ft. per ft.
- Normal crown.

SUPER-ELEVATION FORMULA: S = \frac{L}{r}

ARKANSAS STATE HIGHWAY COMMISSION

TABLES AND METHOD OF SUPER-ELEVATION FOR ONE-WAY TRAFFIC

STANDARD DRAWING SE-1
Typical application - daily maintenance operations of short duration on a 4-lane divided roadway where half of the roadway is closed.

Typical application - 3-lane one-way roadway where center lane is closed.

Typical application - construction operations of intermediate to long term duration on a 4-lane divided roadway where half of the roadway is closed.

Channelizing devices

Traffic control devices

Vertical differential

Locations

Traffic control

Vertical, differential

Edge of shoulder

Standard lane closure required

Greater than 3' Edges of traveled lane

Note: When shown on the plan, the concrete barrier will be used.

When the shoulder area is used as part of the traveled lane and there is insufficient width to place drums on the existing shoulder width, then vertical panels shall be used.

Note for road closures, the type B barricades shall be of sufficient length to extend across the entire roadway.

Channelizing devices

Typlcol Channeling Device

Note: Channeling device shall be installed in accordance with the

Legend

4-lane divided roadway

See General Notes.

Typlcol Arrow Panel Required

Channeling Device

Traffic drum

Typical application - closing multiple lanes of a multilane highway.
**Offset Distance for Two Way Traffic Only**

<table>
<thead>
<tr>
<th>Speed Limit (MPH)</th>
<th>40' Distance (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 65</td>
<td>12</td>
</tr>
<tr>
<td>51-65</td>
<td>18</td>
</tr>
</tbody>
</table>

If offset distance is not attainable, then use "Barrier Placement with Attenuator" detail shown below.

**General Notes**

When shown on the Plans, the ends of the Temporary Precast Concrete Barrier shall be protected with an NCHRP-350 or Manual for Assessing Safety Hardware (MASH) approved Crash Cushion. Payment for Crash Cushions shall be made under the item of "Temporary Impact Attenuation Barrier."
CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE
1. Place perimeter controls (e.g., silt fences, diversion ditches, segment barriers),
2. Perform clearing and grubbing operation.

EXCAVATION

EXISTING GROUND
INTERCEPTOR OR DIVERSION DITCH
EXISTING GROUND

NOTE: NUMBER OF PHASES WILL VARY. THREE PHASES SHOWN FOR ILLUSTRATION.

GENERAL NOTE
ALL CUT SLOPES SHALL BE DRIED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED Vertically.

CONSTRUCTION SEQUENCE
1. Excavate and stabilize interceptor and/or diversion ditches,
2. Perform phase 1 excavation, place permanent or temporary seeding,
3. Perform phase 2 excavation, place permanent or temporary seeding,
4. Perform final phase of excavation, place permanent or temporary seeding, stabilize ditch, construct ditch check, diversion ditch, sediment basins, or other erosion control devices as required.

EMBANKMENT

NOTE: NUMBER OF PHASES WILL VARY. THREE PHASES SHOWN FOR ILLUSTRATION.

EXISTING GROUND

SIDE DITCH STABILIZE AS REQUIRED

GENERAL NOTE
ALL EMBANKMENT SLOPES SHALL BE DRIED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE
1. Construct diversion ditches, checkditch, sediment basins, silt fences, or other erosion control devices as specified.
2. Place phase 1 embankment with permanent or temporary seeding.
3. Place phase 2 embankment with permanent or temporary seeding.
4. Place final phase of embankment with permanent or temporary seeding.

GENERAL NOTE
EMBANKMENT TO BE IN PLACE UNTIL SLOPE IS COMPLETELY STABILIZED.

EMBANKMENT SLOPES SHALL BE DRIED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE
1. Construct diversion ditches, checkditch, sediment basins, silt fences, or other erosion control devices as specified.
2. Place phase 1 embankment with permanent or temporary seeding.
3. Place phase 2 embankment with permanent or temporary seeding.
4. Place final phase of embankment with permanent or temporary seeding.

GENERAL NOTE
EMBANKMENT TO BE IN PLACE UNTIL SLOPE IS COMPLETELY STABILIZED.

GENERAL NOTE
EMBANKMENT SLOPES SHALL BE DRIED, PREPARED, SEEDED, AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE CONSTRUCTED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 25 FEET, MEASURED VERTICALLY.

CONSTRUCTION SEQUENCE
1. Construct diversion ditches, checkditch, sediment basins, silt fences, or other erosion control devices as specified.
2. Place phase 1 embankment with permanent or temporary seeding.
3. Place phase 2 embankment with permanent or temporary seeding.
4. Place final phase of embankment with permanent or temporary seeding.

GENERAL NOTE
EMBANKMENT TO BE IN PLACE UNTIL SLOPE IS COMPLETELY STABILIZED.