ARAKANS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
CONSTRUCTION PLANS FOR STATE HIGHWAY

HWY. 18 IMPROVEMENTS
(MANILA) (S)
MISSISSIPPI COUNTY
ROUTE 18 SECTIONS 5 & 6
JOB 100654
FED. AID PROJ. STPR-0047(48)
NOT TO SCALE

STA. 1005+00.00
BEGIN JOB 100654
LOG MILE 5.40

STA. 1220+03.38
END JOB 100654

DEPUTY DIRECTOR
AND CHIEF ENGINEER

APPROVED

3-11-85

LATITUDE LONGITUDE
BEGIN JOB N 35° 51' 16" E 90° 00' 17"
MILE POINT N 35° 51' 16" E 90° 00' 16"
END JOB N 35° 51' 16" E 90° 00' 16"

GROSS LENGTH OF PROJECT 29503.38 FEET OR 4.077 MILES
NET + " ROADWAY 29503.38 - - 4.077 -
NET + " BRIDGES 0.000 - - 0.000 -
NET + " PROJECT 29503.38 - - 4.077 -
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NOTE: CROSS SECTIONS NOT NORMALLY INCLUDED IN PLANS SOLD TO PROSPECTIVE BIDDERS, BUT MAY BE HAD UPON REQUEST.
GOVERNING SPECIFICATIONS

ARKANSAS STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, EDITION OF 2003, AND THE FOLLOWING SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS:

NUMBER | TITLE
--- | ---
ERRATA | ERRATA FOR THE BOOK OF STANDARD SPECIFICATIONS
FHAW-1273 | REQUIRED CONTRACT PROVISIONS FOR FEDERAL-AID CONSTRUCTION CONTRACTS
FHAW-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - NOTICE TO CONTRACTORS
FHAW-1273 | SUPPLEMENT - SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES (33 U.S.C. 146)
FHAW-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - GOALS AND TIMETABLES
FHAW-1273 | SUPPLEMENT - EQUAL EMPLOYMENT OPPORTUNITY - FEDERAL STANDARDS
FHAW-1273 | SUPPLEMENT - TRAINING PROGRAM - JOB 100654
FHAW-1273 | SUPPLEMENT - POSTERS AND NOTICES REQUIRED FOR FEDERAL-AID PROJECTS
FHAW-1273 | SUPPLEMENT - WAGE RATE DETERMINATION
108-1 | LIQUIDATED DAMAGES
410-1 | CONSTRUCTION REQUIREMENTS AND ACCEPTANCE OF ASPHALT CONCRETE PLANT MIX COURSES
604-1 | RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES IN CONSTRUCTION ZONES
620-1 | PIPE CULVERTS FOR SIDE DRAINS
JOB 100654 | AIRPORT CLEARANCE REQUIREMENTS
JOB 100654 | BEDDING REQUIREMENTS AND CONDITIONS
JOB 100654 | BROADBAND INTERNET SERVICE FOR ASPHALT CONCRETE PLANT
JOB 100654 | BROADBAND INTERNET SERVICE FOR FIELD OFFICE
JOB 100654 | CONSTRUCTION IN SPECIAL FLOOD HAZARD AREAS
JOB 100654 | COORDINATION OF WORK
JOB 100654 | DISADVANTAGED BUSINESS ENTERPRISE BIDDERS RESPONSIBILITIES
JOB 100654 | GOALS FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
JOB 100654 | MANDATORY ELECTRONIC CONTRACT
JOB 100654 | PARTNERING REQUIREMENTS
JOB 100654 | PERCENT WITHIN LIMITS/PAVEMENT SMOOTHNESS
JOB 100654 | PLASTIC PIPE
JOB 100654 | SHOVELING FOR CULVERTS
JOB 100654 | SOIL STABILIZATION
JOB 100654 | STORM WATER POLLUTION PREVENTION PLAN
JOB 100654 | SUBMISSION OF ASPHALT CONCRETE HOT MIX ACCEPTANCE TEST RESULTS
JOB 100654 | UTILITY ADJUSTMENTS
JOB 100654 | VALUE ENGINEERING
JOB 100654 | WARM MIX ASPHALT
JOB 100654 | WELLHEAD PROTECTION

GENERAL NOTES

1. GRADE LINE DENOTES FINISHED GRADE WHERE SHOWN ON PLANS.
2. ALL PIPE LINES, 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. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING U.S. MAILBOXES WITHIN THE PROJECT LIMITS IN SUCH A MANNER THAT THE PUBLIC MAY RECEIVE CONTINUED MAIL SERVICE. PAYMENT WILL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS BID ITEMS.
5. ALL LAND MONUMENTS LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 107.12 OF THE STANDARD SPECIFICATIONS.
6. 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 INSURE THAT ALL TREES NOT TO BE REMOVED SHALL BE HARMED AS LITTLE AS POSSIBLE DURING THE CONSTRUCTION OPERATIONS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A FENCE TO CONTROL LIVESTOCK IN AREAS WHERE PASTURES ARE SEVERED. 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.
8. THIS PROJECT IS COVERED UNDER A SECTIONS 404 NATIONWIDE 14 PERMIT, REFER TO SECTION 110 OF THE STANDARD SPECIFICATIONS, EDITION OF 2014, FOR PERMIT REQUIREMENTS.
9. ALL FLEXIBLE BASE AND ASPHALTIC PAVEMENTS REMOVED SHALL BE PAID FOR UNDER THE ITEM NO. 210 - UNCLASSIFIED EXCAVATION.
10. THE EXISTING ASPHALT PAVEMENT TO BE REMOVED FROM THE REMAINING PAVEMENT SHALL BE SEPARATED BY SAWING ALONG A NEAT LINE. AFTER SAWING, 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 AND GENERAL NOTES
NOTES:
The final 2" of surface course is to be placed after all other courses have been laid. Longitudinal joints shall be at lane lines.

Refer to cross sections for deviation from the normal slopes; no changes shall be made from the planned slopes without the approval of the engineer.

The thickness of aggregate base course shall be within plus or minus one inch of the plan thickness shown. The contractor will correct any deficient thickness that does not meet tolerance indicated. Payment will not be made for material placed in excess of the tolerance indicated.

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 under roadway construction control. Before constructing notch and widening, calculations will not be paid for directly but payment will be considered to be included in the various pay items.

With the approval of the engineer, the contractor will be allowed to substitute, at no additional cost to the department, the first lift of acme surface course (1/2") in lieu of aggregate base course on the shoulders.

Prior to and during placement of pavement in front of the curb and gutter, the contractor shall provide positive drainage at all times. The methods used shall be approved by the engineer. Payment for this work shall be considered included in the price bid for the various contract items.
HWY, 1B NOTCH & WIDEN
W/2" SURFACING CURB AND GUTTER
SUPERELEVATION

STA, 1024+23.09  -  STA, 1039+97.66
STA, 1044+23.69  -  STA, 1061+57.27

NOTES:
- The final 2" of surface course is to be placed after all other courses have been laid. Longitudinal joints shall be at lane lines.
- Refer to cross sections for deviation from the normal slopes; no changes shall be made from the planned slopes without the approval of the engineer.
- The thickness of aggregate base course shall be within plus or minus one inch of the plan thickness shown. The contractor will correct any deficient thickness that does not meet tolerance noted. Payment will not be made for material placed in excess of the tolerance indicated.

HWY, 1B NOTCH & WIDEN
W/4" SURFACING CURB AND GUTTER

STA, 1081+00.00  -  STA, 1095+3.48

Prior to and during placement of pavement in front of the curb and gutter, the contractor shall provide positive drainage at all times. The method(s) used shall be approved by the engineer. Payment for this work shall be considered included in the price bid for the various contract items.
NOTES:
The final 2" of surface course is to be placed after all other courses have been laid. Longitudinal joints shall be at lane lines.

Refer to cross sections for deviation from the normal slopes; no changes shall be made from the planned slopes without the approval of the engineer.

The thickness of aggregate base course shall be within plus or minus one inch of the plan thickness shown. The contractor will correct any deficient thickness that does not meet tolerances indicated. Payment will not be made for material placed in excess of the tolerance indicated.

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 under roadway construction control. Before constructing notch and widening, calculations will not be paid for directly but payment will be considered to be included in the various pay items.

With the approval of the engineer, the contractor will be allowed to substitute, at no additional cost to the department, the first lift of ACM surface course (2") in lieu of aggregate base course on the shoulders.

Prior to and during placement of pavement in front of the curb and gutter, the contractor shall provide positive drainage at all times. The method(s) used shall be approved by the engineer. Payment for this work shall be considered included in the price bid for the various contract items.

TYPICAL SECTIONS OF IMPROVEMENT
NOTE: THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN Laid. LONGITUDINAL JOINTS SHALL BE AT THE EDGE LINES.

REFERR TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES, NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

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

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF AOM SURFACE COURSE (1/2") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

HWY. IB FULL DEPTH OPEN SHOULDER
SUPERELEVATION
STA. H32+00.00 - STA. H30+32.30
STA. H60+95.J4 - STA. H87+38.38

TYPICAL SECTIONS OF IMPROVEMENT
HWY. 1B NOTCH AND WIDEN
W/OUT 2" FINAL SURFACE OPEN SHOULDER

STA, 1219+03.38 - STA, 1220+03.38

NOTES:
1. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN Laid.
2. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
3. REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES, NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
4. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.
5. 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 UNDER ROADWAY CONSTRUCTION CONTROL BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS PAY ITEMS.
6. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF AGGREGATE SURFACE COURSE UP TO 1" IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.

NORTH CONNECTION NOTCH & WIDEN
OPEN SHOULDER
SUPERELEVATION

STA, H+30.00 - STA, H+75.77
TYPICAL SECTIONS OF IMPROVEMENT

NORTH CONNECTION FULL DEPTH
OPEN SHOULDER
STA. 10+28.00 - STA. 10+30.00
TRANSITIONS THRU TURNOUT WITH CURB AND GUTTER

WEST CONNECTION FULL DEPTH
OPEN SHOULDER
TRANSITION THRU TURNOUT
STA. 20+28.00 - STA. 20+73.85

EAST CONNECTION NOTCH & WIDEN
OPEN SHOULDER
SUPERELEVATION
STA. 31+69.26 - STA. 32+68.81

NOTES:
1. THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN Laid.
2. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.
3. REFER TO CROSS SECTIONS FOR DEVIATION FROM THE NORMAL SLOPES; NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.
4. THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF THE TOLERANCE INDICATED.
5. 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 UNDER ROADWAY CONSTRUCTION CONTROL BEFORE CONSTRUCTING NOTCH AND WIDENING. CALCULATIONS WILL NOT BE PAID FOR DIRECTLY BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS PAY ITEMS.
6. WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL COST TO THE DEPARTMENT, THE FIRST LIFT OF ACMA SURFACE COURSE (1/2"") IN LIEU OF AGGREGATE BASE COURSE ON THE SHOULDERS.
EAST CONNECTION FULL DEPTH
OPEN SHOULDER
SUPERELEVATION
STA. 32+68.81 - STA. 38+60.20
TRANSITIONS THRU TURNOUT
STA. 37+63.37 - STA. 38+60.20

WEST CONNECTION FULL DEPTH
OPEN SHOULDER
SUPERELEVATION
STA. 21+27.88 - STA. 25+48.00
TRANSITIONS THRU TURNOUT
STA. 20+73.85 - STA. 21+27.88

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

REFER TO CROSS SECTIONS FOR DEVIATION FROM
THE NORMAL SLOPES; NO CHANGES SHALL BE MADE
FROM THE PLANNED SLOPES WITHOUT THE APPROVAL
OF THE ENGINEER.

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

WITH THE APPROVAL OF THE ENGINEER, THE CONTRACTOR
WILL BE ALLOWED TO SUBSTITUTE, AT NO ADDITIONAL
COST TO THE DEPARTMENT, THE FIRST LIFT OF AGGREGATE
SURFACE COURSE 1/2" IN LIEU OF AGGREGATE BASE
 COURSE ON THE SHOULDER.

DETOUR
TO BE USED FOR STAGE 2 TRAFFIC
STA. 1056+60 - STA. 1063+80 TAPER
STA. 1063+80 - STA. 1064+30
STA. 1064+30 - STA. 1071+50 TAPER
DRIVEWAY TURNOUTS

DETAILED FOR TRANSITIONS

TRANSITION FROM OPEN SHOULDER TO CURB & GUTTER SECTION
DETAILS OF RUMBLE STRIPS

LOCATION PLAN OF RUMBLE STRIPS
LEFT OR RIGHT SHOULDER

DETAIL FOR RUMBLE STRIP GAP
AT DRIVEWAY TURNOUTS

GENERAL NOTES

1. RUMBLE STRIPS SHALL NOT BE INSTALLED ON CURVE SECTIONS, BRIDGE DECKS, APPROACH SLOPES, INTERSECTING STREETS OR ROADS, PEDESTRIAN OR CYCLIST LANES, OR AREAS SUBJECT TO FLOODING, EXCEPT AT EXPERIMENTAL JOINTS OF CONCRETE STRUCTURES.

2. RUMBLE STRIPS SHALL NOT BE INSTALLED ON A PAVED SHOULDER THAT IS USED AS A DESIGNATION LANE FOR A LENGTH DEEMED APPROPRIATE BY THE ENGINEER.

3. RUMBLE STRIPS INSTALLATION SHOULD BE INCREASED TO AVOID CONDITIONING JOINTS, IN ALL CASES, THE LATERAL Deviation FROM THE PLANNED PROFILE SHOULD BE KEEPT TO A MINIMUM.

4. RUMBLE STRIPS SHOULD BE ASSESSED BY THE ENGINEER TO DETERMINE THE LOCATION OF RUMBLE STRIPS OR DAISY PADS, OR OTHER PUBLIC USE INTERCTIONS WHERE RUMBLE STRIPS HAVE NOT BEEN CONSTRUCTED.

5. THE 2'-0" DEPTH SHALL GENERALLY APPLY FOR THE ENTIRE 2'-0" LENGHT. SOME VARIATION TO SUIT SHOULDER SLOPE BREAKS MAY BE NECESSARY.

DETAILED FOR GAP PATTERN RUMBLE STRIP
NOTE GAP PATTERN SHALL BE ADJUSTED BY THE ENGINEER TO THEN ALLOW FOR OPERATIONS TO SERVE AS THE GAP.

SPECIAL DETAILS
DETAIL OF TURNOUTS
ASPHALT STREETS, COUNTY ROADS & STATE HIGHWAYS

NOTE: PAVEMENT STRUCTURE FOR STATE HIGHWAYS TO BE SAME AS MAIN LINES.

NORMAL GUTTER LINE

VARIABLE RADIUS (SEE PLANS)

20'-0" MIN. (SEE PLANS)

1'-0" CONC. COMB. CURB & GUTTER (TYPE A)

VARIABLE RADIUS (SEE PLANS)

84'-0" MODIFIED CURB

8'-0"

3'-0" GRASS BERM

5'-0" CONCRETE WALK

5'-0" CONCRETE WALK

8'-0" P.C.C. DRIVE

PORTLAND CEMENT CONCRETE

14'-0"

8'-0"

24'-0" DRIVE

DRIVEWAY DETAIL
STA. 1093+29
STA. 1098+26

DETAILS OF SILT FENCE AT CROSSED DRAINAGE
Note: When top side of culvert serves as finished roadway surface, see General Notes on Sheet 1 of 4.

Typical Section M-M

Longitudinal Lap Detail at Change in Sections

Top Slab Shown, Bottom Slab Similar

Wingwall Attachment

See "Details of Wingwall" for additional information and wingwall details.

Typical Keyway Detail

All Construction Joints

Skewed End Section Details

Sheet 2 of 4

General Details of R.C. Box Culvert

Details of Single Barrel R.C. Box Culvert

Special Details
**INLET MINNOW TABLE**

<table>
<thead>
<tr>
<th>WALL HEIGHT</th>
<th>MINIMUM ANGLE (DEGREES)</th>
<th>FOOTING DIMENSION (PARALLEL WITH HOM)</th>
<th>LENGTH OF MINNOWS</th>
<th>REINFORCING STEEL</th>
<th>CONCRETE</th>
<th>INLET</th>
<th>LENS</th>
<th>CLIP</th>
<th>BARS</th>
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<tbody>
<tr>
<td>H1</td>
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<td>0.1</td>
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<td>L</td>
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<td>0.4</td>
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<td>L</td>
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**INLET SKEWED END SECTION**

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<tr>
<th>TOPOLOGICAL</th>
<th>REINFORCING STEEL</th>
<th>SIDE WALL</th>
<th>REINFORCING STEEL</th>
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<tr>
<td>Top Slab</td>
<td>L</td>
<td>Min</td>
<td>L</td>
<td>Min</td>
</tr>
<tr>
<td>Bottom Slab</td>
<td>Min</td>
<td>L</td>
<td>Min</td>
<td>Long</td>
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**INLET SLOPE SECTIONS**

<table>
<thead>
<tr>
<th>R/C BOX CULVERT</th>
<th>REINFORCING STEEL</th>
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<tbody>
<tr>
<td>Top Slab</td>
<td>L</td>
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<tr>
<td>Bottom Slab</td>
<td>Min</td>
</tr>
<tr>
<td>Side Wall</td>
<td>L</td>
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**BAR LAP TABLE**

<table>
<thead>
<tr>
<th>NO.</th>
<th>Long Lap Length (in)</th>
<th>Min Lap Length (in)</th>
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</tbody>
</table>

**MIC. LAW-MCR-9800-003**

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**SPECIAL DETAILS**

The data shown for Mid-Section and Slope Sections, and the data provided herein are based on the design of the Box Culvert D894-03, and the data provided herein are based on the design of the Box Culvert D894-03.

**MIC. LAW-MCR-9800-003**
## INLET SLOPE SECTIONS

### MID-SECTION

<table>
<thead>
<tr>
<th>Size</th>
<th>#</th>
<th>Name</th>
<th>Mid-Height</th>
<th>Reinforcing Steel</th>
<th>Side Reinforcing Steel</th>
<th>Top Slab Reinforcing Steel</th>
<th>Bottom Slab Reinforcing Steel</th>
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<td>Min</td>
<td>Min</td>
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<td>Min</td>
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<tr>
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<td>4x4</td>
<td>54</td>
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<tr>
<td>10&quot;</td>
<td>4</td>
<td>4x4</td>
<td>54</td>
<td>Max</td>
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### BAR LAP TABLE

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<tr>
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<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
<th>&quot;C&quot;</th>
<th>&quot;D&quot;</th>
<th>&quot;E&quot;</th>
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<td>1/2&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
<td>1&quot;</td>
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</table>

## BAR LAP END SECTION

### MID-SECTION

- **Bar Lap Required for the Skew End Section shall be considered subsidiary to the normal Reinforcing Steel - roadway G1, G2, G3.**
- **Bar Lap - Add one lap length for each Slope Section and one additional lap for Slope Sections greater than 45°-0" in length.**

### SHEET 1 OF 2

DETAILS OF R.C. BOX CULVERT

SINGLE BARREL BOX CULVERT

STA 120+600

SPECIAL DETAILS
* Maintain all erosion control devices until the end of the job, unless otherwise specified.
STAGE 2
TEMPORARY EROSION CONTROL DETAILS
REVISIONS

DATE

REVISION

LEGEND

1. Sandbag Ditch Checks
2. Rock Ditch Checks
3. Drop inlet silt fence
4. Silt fence

* Maintain all erosion control devices until the end of the job unless otherwise specified.
REVISED:

<table>
<thead>
<tr>
<th>DATE</th>
<th>REVISION</th>
</tr>
</thead>
</table>

LEGEND:

- Sand Bag Ditch Checks
- Rock Ditch Checks
- Drop Inlet Slit Fence
- Slit Fence

* Maintain all erosion control devices until the end of the job, unless otherwise specified.

STAGE 2
TEMPORARY EROSION CONTROL DETAILS
STA. 1220+03.38
END JOB 100654

REVISIONS

DATE    REVISION

LEGEND
- 1. SAND BAG DITCH CHECKS
- 2. ROCK DITCH CHECKS
- 3. ROCK DITCH CHECKS
- 4. Silt Fence

* Maintain all erosion control devices until the end of the job unless otherwise specified.

STAGE 2
TEMPORARY EROSION CONTROL DETAILS
REVISIONS

DATE

REVISION

**LEGEND**

- **1.** Sand Bag Ditch Checks
- **2.** Rock Ditch Checks
- **3.** Drop Inlet Salt Fence
- **4.** Salt Fence

*Maintain all erosion control devices until the end of the job unless otherwise specified.*
LEGEND

(2) Sand Bag Ditch Checks
(3) Rock Ditch Checks
(4) Drop Inlet Silt Fence
(5) Silt Fence

* Maintain all erosion control devices until the end of the job, unless otherwise specified.
STA. 1220+03.38
END JOB 100654

REVISIONS

DATE | REVISION
--- | ---

**LEGEND**
1. SAND BAG DITCH CHECKS
2. ROCK DITCH CHECKS
3. DROP METAL SILT FENCE
4. SILT FENCE

* MOUNT ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB UNLESS OTHERWISE SPECIFIED.

STAGE 3
TEMPORARY EROSION CONTROL DETAILS
REVISIONS

DATE

REVISION

LEGEND

1. SAND BAG DITCH CHECKS
2. ROOF DITCH CHECKS
3. DROP INLET SILT FENCE
4. SILT FENCE

* MAINTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB UNLESS OTHERWISE SPECIFIED.

STAGE 3
TEMPORARY EROSION CONTROL DETAILS
MOUNTAIN ALL EROSION CONTROL DEVICES UNTIL THE END OF THE JOB, UNLESS OTHERWISE SPECIFIED.

LEGEND:
- SAND BAG DITCH CHECKS
- ROCK DITCH CHECKS
- DROP INLET SLT FENCE
- SLT FENCE

STAGE 3
TEMPORARY EROSION CONTROL DETAILS

3/10/15
NOTE:
ADVANCE SIGNS AT ALL LOCATIONS
DO NOT PASS THROUGH ALL STAGES OF CONSTRUCTION.

STA. 1005+00.00
BEGIN JOB 100654
L.M. 5.40

DO NOT PASS
AT SAME LOCATIONS AS C2D-E
AND AT HALF-MILE INTERVALS
THROUGH LENGTH OF JOB.
RETAIN THROUGH ALL STAGES.

SHOULDER LOADING
DO NOT PASS
IF AND WHERE DIRECTED
BY THE ENGINEER.
RETAIN THROUGH ALL STAGES.

STA. 1220+03.38
END JOB 100654

MAINTENANCE OF TRAFFIC DETAILS
ADVANCE WARNING SIGNS
MAINTENANCE OF TRAFFIC DETAILS

SEQUENCING:

STAGE 1: Maintain traffic on existing roadway; construct temporary detour and right side of box culvert at STA. 68+40.

STAGE 2: Maintain traffic on existing roadway and utilize temporary detour to complete box culvert at STA. 68+40. Extend existing panels and construct new panels and boxes where applicable. Place construction pavement markings, notch and widen LT.

STAGE 3: Notch and widen RT. Utilize vertical panels/traffic drums at 60' O.C. spacing at existing lane edge on LT, shift traffic onto new location.

STAGE 4: Install final surface course and final striping.

NOTE: At clusters of turnouts, traffic drums may be omitted between turnouts.

200405-04

CITY STREET/COUNTY ROAD DETAIL

MAINTENANCE OF TRAFFIC DETAILS
SEQUENCING

STAGE 1: MOUNT TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND RIGHT SIDE OF BOX CULVERT AT STA. 064+00.

STAGE 2: MOUNT TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE SIDE DETOUR. RT. 58 LINES AT CENTERLINE AND CONSTRUCT/temporary detour, place concrete panels on side of detour, and construct

STAGE 3: MOUNT TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE SIDE DETOUR. RT. 58 LINES AT CENTERLINE AND CONSTRUCT.

STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.

MAINTENANCE OF TRAFFIC DETAILS

STAGE I

REMOVAL OF PAVEMENT MARKINGS
Hwy. 58
RT. & LT. EDGE LINES – OBS. CENTERLINE FROM STA. 056+40 – STA. 057+40 = 100 LF. RT.

CONSTRUCTION PAVEMENT MARKINGS DETOUR
Hwy. 58 STA. 056+40 – STA. 057+40
RT. & LT. EDGE LINES – 2600 LF. RT
OBS. CENTERLINE – 2500 LF. RT.

FURNISHING AND INSTALLING TEMPORARY PRECAST CONCRETE BARRIERS
 WITH TWO (2) SPECIAL END UNITS = OBS. LFT.
CM-2L = 3 EACH
CM-3L = 3 EACH

VERTICAL PANELS @ 40’ O.C. = 38 EACH TRAFFIC DRUMS @ 100 EACH
SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR ON RIGHT SIDE OF BOX CULVERT AT STA. 116+02.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE BOX CULVERT AT STA. 116+02, REPLACE EXISTING CULVERTS, AND COMPLETE GUIDANCE SYSTEMS. CONSTRUCT TEMPORARY MEDIAN隔离 ON LOCATION WHERE APPROPRIATE PLACE CONSTRUCTION MEDIAN隔离, INSTALL MEDIAN隔离 AND MEDIAN LINES.

STAGE 3: NOTCH AND BEND ST. UTILIZE VERTICAL PANELS, UTILIZE TRAFFIC DRUMS AT 12 FT. INTERVAL SPACING AT EXISTING LANE EDGE ON L.T. SWIFT TRAFFIC ONTO NEW LOCATION.

STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.

VERTICAL PANELS @ 60° O.C. @ 27 EACH
TRAFFIC DRUMS @ 96 EACH

RELOCATING TEMPORARY PRECAST CONCRETE BARRIER WITH TWO 30' SPECIAL END UNITS @ 25 UNITS.

GM-3R = 3 EACH
GM-3L = 3 EACH
VERTICAL PANELS @ 60 O.C. = 25 EACH
TRAFFIC DRUMS = 48 EACH

SEQUENCING
STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND RIGHT SIDE OF ROAD (L.H. LANE) AT 30' - 0" O.C.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO PERFORM ROAD WORK AT CENTRE LINE ON EXISTING ROADWAY AND CONSTRUCT NEW LANE. PERFORM LEVELING OPERATIONS.member APPLICABLE BUILD NEW LOCATION

STAGE 3: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.

STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.

VERTICAL PANELS @ 60 O.C. = 25 EACH
TRAFFIC DRUMS = 48 EACH
VERTICAL PANELS @ 60' O.C. @ 11 EACH
TRAFFIC DRUMS @ 15 EACH

SEQUENCING:
STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND RIGHT SIDE OF BOX CULVERT AT STA.1064+00.
STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE BOX CULVERT AT STA.064+00. EXTEND EXISTING CULVERTS AND CONSTRUCT NEW CULVERTS TO FORM LANE DIVIDERS. INSTALL VERTICAL PANELS, BASE AND LIDGET CONCRETE AND ADAPTION ROADWAY TO NEW ROADWAY. INSTALL STREET LIGHTS. UTILIZE VERTICAL PANELS AT THE NOTCH AT 60' O.C. SPACING.
STAGE 3: NOTCH AND MOW AT UTILIZE VERTICAL PANELS UTILIZE TRAFFIC DRUMS AT 15' O.C. SPACING AT EXISTING LANE EDGE, ON LT. SHIFT TRAFFIC UNTIL NEW CULVERTS ARE COMPLETE. INSTALL INFRASTRUCTURE. UTILIZE TRAFFIC DRUMS AT 15' O.C. SPACING ON NEW ROADWAY. INSTALL STOPLINE CONCRETE AND ADOPT NEW ROADWAY TO FULL ROADWAY.
STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.

MAINTENANCE OF TRAFFIC DETAILS
STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND RIGHT SIDE OF BOX COLLIERT AT STA. 064+03.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE BOX COLLIERT AT STA. 084+03, EXTEND EXISTING COLLIERTS, AND CONSTRUCT NEW COLLIERTS PERFORM LEVELING OPERATIONS WHERE APPLICABLE, BUILT NEW LOCATION WHERE APPLICABLE, PLACE CONSTRUCTION PAVING, MARKINGS, HOATS, AND WHEN LT. UTILIZE VERTICAL PANELS AT THE MINTER AT 60 O.C.C. SPACING.

STAGE 3: MOURT AND WHEN AT UTILIZE VERTICAL PANELS, UTILIZE TRAFFIC DRUMS AT 20 O.C.C. SPACING AT EXISTING LANE EDGE ON LT. SHIFT TRAFFIC ONTO NEW LOCATION.

STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.
SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND REMOVE BOX CULVERT AT STA. 064+02.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE BOX CULVERT AT STA. 064+02, EXTEND EXISTING CULVERTS AND CONSTRUCT NEW CULVERTS. PERFORM LEVELING OPERATIONS WHERE APPLICABLE, BUILD NEW LOCATION WHERE APPLICABLE, PLACE CONSTRUCTION PHYSICIAN WARNING, NO left, AND RADIO LT.

STAGE 3: NARROW AND REDUCE RT, UTILIZE VERTICAL PANELS, UTILIZE TRAFFIC DRUMS AT 200' O.C. SPACING AT EXISTING LANE EDGE ON LT, SHIFT TRAFFIC ONTO NEW LOCATION.

STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.
SEQUENCING
STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND RIGHT SIDE OF BOX CulVERT AT STA. 004+00.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE BOX CulVERT AT STA. 004+00, EXTEND EXISTING CulVERTS AND CONSTRUCT NEW ECONOMIC BOX CulVERT AT STA. 004+00, PLACE LOAD TESTED BOX CulVERTS IN THE OLD LOCATION WHERE APPLICABLE, PLACE CONSTRUCTION PAVEMENT MARKINGS, NOTCH AND MOVETT.

STAGE 3: NOTCH AND MOVETT. UTILIZE VERTICAL PANELS, UTILIZE TRAFFIC ORMS AT 100' O.C. SPACING AT EXISTING LANE EDGE ON TT, SHIFT TRAFFIC ONTO NEW LOCATION.

STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.

VERTICAL PANELS @ 60' O.C., 6 EACH
SEQUENCING
STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND RIGHT SIDE OF BOX CULVERT AT STA 1064+05.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE BOX CULVERT AT STA 1064+05 EXTEND EXISTING CULVERTS AND CONSTRUCT NEW CULVERTS, PERFORM LEVELING OPERATIONS WHERE APPLICABLE, BUILD NEW LOCATION WHERE APPLICABLE. PLACE CONSTRUCTION PAVEMENT MARKINGS. NOTCH AND WIDEN LT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 60 INSTALL SPACER.

STAGE 3: NOTCH AND WIDEN LT, UTILIZE VERTICAL PANELS, UTILIZE TRAFFIC DRUMS AT 10' SPACING AT EXISTING LANE EDGE ON LT, SHIFT TRAFFIC ONTO NEW LOCATION.

STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.

VERTICAL PANELS 60 EACH T EACH TRAFFIC DRUMS = 8 EACH
TRAFFIC DRUMS + 56 EACH
VERTICAL PANELS @ 60 O.C. + 25 EACH
TRAFFIC DRUMS @ 120 O.C. + 13 EACH

STA. 1005+00.00
BEGIN JOB 100654
LOG MILE = 5.40

SEQUENCING

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND RIGHT SIDE OF BOX CulVERT AT STA. 094+00
STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE DETOUR AT STA. 094+00. EXTEND EXISTING CULVERT AND CONSTRUCT NEW CULVERTS. PERFORM LEVELING OPERATIONS WHERE APPLICABLE. RELOCATE NEW LOCATION WHERE APPLICABLE. PLACE CONSTRUCTION PAYMENT MARKINGS. HEAL AND REOPEN L. UTILIZE VERTICAL PANELS AT THE NOTCH AT 60 O.C. SPACING.
STAGE 3: MATCH AND Widen RT. UTILIZE VERTICAL PANELS. UTILIZE TRAFFIC DRUMS AT 120 O.C. SPACING AT EXISTING LANE EDGE ON L. SHIFTS TRAFFIC ONTO NEW LOCATION
STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.
SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADSWAY, CONSTRUCT TEMPORARY DETOUR
AND RIGHT SIDE OF BOX CULVERT AT STA. 0+00.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADSWAY AND UTILIZE TEMPORARY DETOUR
TO COMPLETE BOX CULVERT AT STA. 0+300, ELIMINATE EXISTING CULVERTS, AND CONSTRUCT
NEW CULVERTS. PERFORM LEVELING OPERATIONS WHERE APPLICABLE.

STAGE 3: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.

STAGE 4: NOTCH AND Widen RT, UTILIZE VERTICAL PANELS, UTILIZE TRAFFIC DRUMS
AT 60' OCT. SPACING AT EXISTING LANE EDGE ON LT, SHIFT TRAFFIC INTO NEW
LOCATION.

TRAFFIC DRUMS = 225 EACH
VERTICAL PANELS = 60' OCT. = 25 EACH
TRAFFIC DRUMS = 20' OCT = 17 EACH
STAGE 3: MAINTENANCE OF TRAFFIC DETAILS

- Traffic Drum: 108 each
- Vertical Panels: 60' O.C. + 30 each
- Traffic Drum: 120 O.C. + 8 each

Staging:
1. Maintain traffic on existing roadway; construct temporary detour and right of way of box culvert, at STA. 25+50.
2. Stage 2: Maintain traffic on existing roadway and utilize temporary detours to complete box culvert at STA. 25+50. Extend existing culvert and construct new retaining/cap beam for future construction. Where applicable, build new location of box culvert and, where possible, utilize vertical panels at the end of the box culvert at 50' O.C. spacing.
3. Stage 3: Switch and widen box culvert, vertical panels, utility traffic drum, and utility traffic drum to new location.
4. Stage 4: Install final surface course and final striping.
SEQUENCING

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND REALIGN DRAIN OF BOX DRAIN AT STA. 004+00.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE BOX DRAIN AT STA. 034+50. EXTEND EXISTING DRAINS AND CONSTRUCT NEW DRAINS. PERFORM LEVELING OPERATIONS WHERE APPLICABLE, BUILD NEW LOCATION WHERE APPLICABLE. PLACE CONSTRUCTION DEVIATION MARKERS, NOTE AND INDEX LT.

STAGE 3: UTILIZE VERTICAL PANELS AT THE NOTCH AT 20" C.C. SPACING. UTILIZE TRAFFIC DRUMS AT 20" C.C. SPACING AT EXISTING LANE EDGE OR LT. SHIFT TRAFFIC ONTO NEW LOCATION.

STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.

MAINTENANCE OF TRAFFIC DETAILS
SEQUENCING

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND RIGHT SIDE OF BOX CULVERT AT STA. 106+03.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE BOX CULVERT AT STA. 106+03. EXTEND EXISTING CULVERTS AND CONSTRUCT NEW CULVERTS PENDING LEADING OPERATIONS WHERE APPLICABLE. BULK NEW LOCATION WITH DRAINAGE PANELS. INSTALL PANELS AT NOTCH AND WIDER LT. UTILIZE VERTICAL PANELS AT THE NOTCH AT 60" C.C. SPACING.

STAGE 3: NOTCH AND WIDE RT. UTILIZE VERTICAL PANELS. UTILIZE TRAFFIC DRUMS AT 40" C.C. SPACING AT EXISTING LANES EDGE ON LT. SHIFT TRAFFIC ONTO NEW LOCATION.

STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.
TRAFFIC DRUMS = 8 EACH
TRAFFIC DRUMS @ 10' O.C. = 26 EACH

SEQUENCING:
STAGE 1: MANTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND RIGHT SIDE OF BOX CULVERT AT STA. 664+00.

STAGE 2: MANTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE BOX CULVERT AT STA. 695+00, EXTEND EXISTING CULVERTS AND CONSTRUCT NEW CULVERTS, PERFORM LEVELING OPERATIONS WHERE APPLICABLE, BUILD NEW LOCATION WHERE APPLICABLE, PLACE CONSTRUCTION PAVEMENT MARKINGS, NOTCH AND WIDEN RT.

STAGE 3: NOTCH AND WIDEN RT, UTILIZE VERTICAL PANELS, INSTALL TRAFFIC DRUMS AT 10' O.C. SPACING AT EXISTING LANE EDGE ON RT, SHIFT TRAFFIC ONTO NEW LOCATION.

STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.
TRAFFIC DRUMS: 80' O.C. x 7 EACH
TRAFFIC DRUMS: 50' O.C. x 4 EACH

STA. 1220 + 03.38
END JOB 10654

SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND RIGHT SIDE OF BOX CULVERT AT STA. 1220 + 00.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE SITE CLEARING AT 50' O.C. EXTENDING FOR THE DISTANCE OF THE ROADWAY.

STAGE 2: REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS

RT. & LT. EDGE LINES & OBL. CENTERLINE FROM STAGE 1 TRAFFIC
STA. 1220 - STA. 1220 + 03 = 5572 LNL FT.
WEST CONNECTION
RT. & LT. EDGE LINES & OBL. CENTERLINE FROM STAGE 1 TRAFFIC
= 1300 LNL FT.
EAST CONNECTION
RT. & LT. EDGE LINES & OBL. CENTERLINE FROM STAGE 1 TRAFFIC
= 1400 LNL FT.

STAGE 2: REMOVAL OF CONSTRUCTION PAVEMENT MARKINGS

RT. & LT. EDGE LINES & OBL. CENTERLINE FROM STAGE 2 TRAFFIC
STA. 1237 + 38 = STA. 1237 + 03 = 15560 LNL FT.

STAGE 3: MAINTENANCE OF TRAFFIC DETAILS

RT. & LT. EDGE LINES & OBL. CENTERLINE FROM STAGE 2 TRAFFIC
STA. 1220 + 03 = STA. 1220 + 03 = 5572 LNL FT.

SEQUENCING

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY; CONSTRUCT TEMPORARY DETOUR AND RIGHT LANE OF BOX DISSER AT STA. 1804+03.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE BOX DISSER AT STA. 1804+03, EXTEND EXISTING DISSER, AND CONSTRUCT TEMPORARY LANE SHARING CROSSWALK AT INTERSECTION OF W. HARRISON AVE. AND HARTLEY. WHERE APPLICABLE, PLACE CONSTRUCTION PAVEMENT, MARKINGS, NOTCH AND WIDTH L.T. UTILIZE VERTICAL PANELS AT THE NOTCH AT 30 G.C. SPACING.

STAGE 3: NOTCH AND WIDTH RT. UTILIZE VERTICAL PANELS, UTILIZE TRAFFIC DRUMS AT 30 G.C. SPACING AT EXISTING LANE EDGE ON LT. SHIFT TRAFFIC ONTO NEW LOCATION.

STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.

TRAFFIC DRUMS x 25 EACH
VERTICAL PANELS 6 x 60 G.C. x 4 EACH
TRAFFIC DRUMS 6 x 60 G.C. x 15 EACH
STAGE 3: MAINTENANCE OF TRAFFIC DETAILS

SEQUENCING:

STAGE 1: MAINTAIN TRAFFIC ON EXISTING ROADWAY, CONSTRUCT TEMPORARY DETOUR AND RIGHT SIDE OF BOX CULVERT AT STA. 0+00.

STAGE 2: MAINTAIN TRAFFIC ON EXISTING ROADWAY AND UTILIZE TEMPORARY DETOUR TO COMPLETE BOX CULVERT AT STA. 0+00 - EXTEND EXISTING CURB AND CONSTRUCT TEMPORARY DETOUR WHERE APPLICABLE. PLACE CONSTRUCTION PAVEMENT MARKINGS, NOTCH AND REDUCE LT.

STAGE 3: NOTCH AND REDUCE RT. UTILIZE VERTICAL PANELS, UTILIZE TRAFFIC DRUMS AT 50' O.C. SPACING AT EXISTING LANE EDGE ON LT. SHIFT TRAFFIC ONTO NEW LOCATION.

STAGE 4: INSTALL FINAL SURFACE COURSE AND FINAL STRIPING.

TRAFFIC DRUMS: 26 EACH
VERTICAL PANELS @ 50' O.C.: 3 EACH
TRAFFIC DRUMS @ 50' O.C.: 6 EACH

3-30-05
TRAFFIC DRIVES 20' C.C. NORMAL LENGTH OF TAPER AND TRANSITION CLOSING OUTSIDE LANES = 20 EACH

RAISED PAVEMENT MARKERS:
HWY. 88 STA. 988+55 = STA. 989+63
TYPE WHITE/WHITE BO O.C. ON SKIP LANE DIVIDERS BOTH DIRECTIONS = 580 EACH
NORTH CONNECTION:
TYPE YELLOW/WHITE BO O.C. ON SKIP LANE DIVIDERS BOTH DIRECTIONS = 80 EACH
WEST CONNECTION:
TYPE YELLOW/WHITE BO O.C. ON SKIP LANE DIVIDERS BOTH DIRECTIONS = 3 EACH
TYPE WHITE/WHITE BO O.C. ON SKIP LANE DIVIDERS BOTH DIRECTIONS = 10 EACH
CONSTRUCTION PAVEMENT MARKINGS:
THROUGH & ENTRANCE:
TYPE WHITE/WHITE BO O.C. ON SKIP LANE DIVIDERS BOTH DIRECTIONS = 3 EACH
TYPE YELLOW/WHITE BO O.C. ON SKIP LANE DIVIDERS BOTH DIRECTIONS = 10 EACH
OVERLAY:
TYPE WHITE/WHITE BO O.C. ON SKIP LANE DIVIDERS BOTH DIRECTIONS = 20 EACH

THERMOPLASTIC PAVEMENT MARKINGS ON FINAL 2" ACVM SURFACE OVERLAY:

EXISTING 5-LANE

THERMOPLASTIC PAVEMENT MARKINGS

CONSTRUCTION PAVEMENT MARKINGS ON 2" ACVM SURFACE OVERLAY

1645'

8238.38'

FULL 4"

ACVM SURFACE

805'

2340'

100'

EXISTING 2-LANE

SCHEMATIC OF FINAL STRIPING

NOT TO SCALE

5 LANE STRIPING
OPEN SHOULDER
CONTINUOUS LT. TURN LANE
LINE WIDTH = 4"

PERMANENT STRIPING ON FINAL ACVM SURFACE

THERMOPLASTIC PAVEMENT MARKINGS

HWY. 88 STA. 988+55 = STA. 989+63
CONTINUOUS LT. TURN LANE = 9307 L/F FT. 4" YELLOW
NORTH CONNECTION OBL. CENTERLINE = 58 L/F FT. 4" YELLOW
NORTH CONNECTION OBL. CENTERLINE = 834 L/F FT. 4" YELLOW
EAST CONNECTION OBL. CENTERLINE = 1022 L/F FT. 4" YELLOW
OVERLAYS OBL. YELLOW CENTERLINE = 40558 L/F FT. 4" YELLOW

PERMANENT PAVEMENT MARKING DETAILS

020054 06 235

3-10-15

PERMANENT PAVEMENT MARKING DETAILS
10' WHITE REFLECTORIZED PAINT PAVEMENT MARKINGS TO BE PLACED ON ISLAND
8' WHITE OUTLINING ISLAND

TYPE II (YELLOW/YELLOW) 80' O.C.
ON DBL. YELLOW CENTERLINE = 3 EACH
4' WHITE DBL. 4' YELLOW

ISLAND THERMOPLASTIC PAVEMENT MARKINGS
8' WHITE = 221 L.IN. FT.
REFLECTORIZED PAINT PAVEMENT MARKINGS ON CURB
10' WHITE = 160 L.IN. FT.

CROSSWALK STRIPES
3 LOCATIONS
THERMOPLASTIC PAVEMENT MARKINGS
12' WHITE = 830 L.IN. FT.

STA. 1051+14 CONSTRUCT CONCRETE ISLAND W/TYPB CURB FACE = 136 SQ. YD.

HWY. 18/HWY. 77 LAYOUT AND STRIPING DETAILS

SCALE 1" = 30'
HWY 18/HWY 18 EAST LAYOUT AND STRIPING DETAIL

SCALE 1" = 30'

PERMANENT PAVEMENT MARKING DETAILS
HWY.18/HWY.77 WEST CONNECTION LAYOUT AND STRIPING DETAIL

PERMANENT PAVEMENT MARKING DETAILS

SCALE 1" = 30'

ISLAND THERMOPLASTIC PAVEMENT MARKINGS
8" WHITE = 361 LIN. FT.
TYPE II (YELLOW/YELLOW) 80' O.C.
ON DBL. YELLOW CENTERLINE

100' RADIUS

18'

8" WHITE OUTLINING ISLAND

4" WHITE
HWY.18/HWY.18 EAST CONNECTION LAYOUT AND STRIPING DETAIL

SCALE 1" = 30'

PERMANENT PAVEMENT MARKING DETAILS

ISLAND THERMOPLASTIC PAVEMENT MARKINGS
8" WHITE + 356 L/N. FT.
### ADVANCE WARNING SIGNS AND DEVICES

<table>
<thead>
<tr>
<th>SIGN NUMBER</th>
<th>DESCRIPTION</th>
<th>SIGN SIZE</th>
<th>STAGE 1</th>
<th>STAGE 2</th>
<th>STAGE 3</th>
<th>END OF JOB</th>
<th>MAXIMUM REQUIRED</th>
<th>TOTAL SIGNS REQUIRED</th>
<th>VERTICAL PANELS</th>
<th>TRAFFIC DRUMS</th>
<th>BARRIQUADES (TYPE 6)</th>
<th>FURNISHING &amp; INSTALLING PRECAST CONCRETE BARRIER</th>
<th>RELOCATING PRECAST CONCRETE BARRIER</th>
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<tbody>
<tr>
<td>1001</td>
<td>ROAD WORK, 1000 FT</td>
<td>40X40</td>
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<tr>
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<td>1007</td>
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<tr>
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<td>ROAD WORK, 100 FT</td>
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<td></td>
</tr>
<tr>
<td>1010</td>
<td>ROAD WORK, 50 FT</td>
<td>40X40</td>
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<td>2</td>
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</tbody>
</table>

### CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>STAGE 1</th>
<th>STAGE 2</th>
<th>STAGE 3</th>
<th>END OF JOB</th>
<th>CONSTRUCTION PAVEMENT MARKINGS</th>
<th>REMOVAL OF PERMANENT PAVEMENT MARKINGS</th>
<th>RAISED PAVEMENT MARKERS</th>
<th>THERMOPLASTIC PAVEMENT MARKING</th>
<th>REFLECTORIZED PAINT PAVEMENT MARKINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LNF FT</td>
<td>EACH</td>
<td>LNF FT</td>
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<td>LNF FT</td>
<td>EACH</td>
<td>LNF FT</td>
<td>EACH</td>
<td>LNF FT</td>
</tr>
</tbody>
</table>

### QUANTITIES

- **ADVANCE WARNING SIGNS AND DEVICES**
  - **TOTALS:**
    - **DESCRIPTION:**
    - **TOTAL VERTICAL PANELS:**
    - **TOTAL TRAFFIC DRUMS:**
    - **TOTAL BARRIQUADES (TYPE 6):**
    - **TOTAL FURNISHING & INSTALLING PRECAST CONCRETE BARRIER:**
    - **TOTAL RELOCATING PRECAST CONCRETE BARRIER:**

- **CONSTRUCTION PAVEMENT MARKINGS AND PERMANENT PAVEMENT MARKINGS**
  - **TOTALS:**
    - **DESCRIPTION:**
    - **TOTAL LNF:**
    - **TOTAL EACH:**

### NOTES
- The quantities provided are for one side of the roadway.
- The maximum quantity required is the maximum number of vertical panels that will be paid for.
- This is a high traffic volume road as defined in Section 6A-35, Standard Specifications for Highway Construction, 2014 Edition.
<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>DUMPED RIPRAP (GROUNDED)</th>
<th>FILTER BLANKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>28-05</td>
<td>1010 28</td>
<td>20 80</td>
<td>100 25</td>
</tr>
<tr>
<td>28-06</td>
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<td>28-07</td>
<td>1010 30</td>
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<td>1011 0</td>
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<td>100 25</td>
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<td>1011 3</td>
<td>20 80</td>
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<td>29-11</td>
<td>1011 4</td>
<td>20 80</td>
<td>100 25</td>
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<td>29-12</td>
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<td>29-15</td>
<td>1011 8</td>
<td>20 80</td>
<td>100 25</td>
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</table>

**TOTALS:** 117 203

*Quantities estimated. See Section 104.03 of the Standard Specifications.*

**DUMPED RIPRAP AND FILTER BLANKET**

**LOCATION**

**DUMPED RIPRAP (GROUNDED)**

**FILTER BLANKET**

**SOIL LOG**

**Station**

**Latitude**

**Longitude**

**Location**

**Depth**

**Liquid Limit**

**Plasticity Index**

**Ashaby Classification**

**Color**

**Note:** Filter blanket shall be geotextile fabric (Type 9).

**SOIL CHARACTERISTICS TABLED ABOVE ARE REPRESENTATIVE OF THE LOCATION OF THE SAMPLE AND FROM SURFACE Indicated are typical for the limits shown. These data are shown for information only. The state will help to determine variations in the soil characteristics and extend of same, refer to the above tabulation.**

**Erosion Control**

**Permanent Erosion Control**

**Temporary Erosion Control**

**Seedings**

**Mulch Cover**

**Water**

**Second Application**

**Temporary Protection**

**Mulch Cover**

**Water**

**Sand Bag Disposal Site**

**Rock Disposal Site**

**Drop Inlet Check**

**Hill Side**

**Sediment Basin**

**Obliteration Basin**

**Sediment Disposal Site**

**Yard Drains**

**Location**

**Yard Drains**

**"S"" SOPH Drain**

**Note:** Quantities estimated. See Section 104.03 of the Standard Specifications.
<table>
<thead>
<tr>
<th>STATION</th>
<th>SIDE</th>
<th>LOCATION</th>
<th>WIDTH</th>
<th>MODIFIED CURB</th>
<th>PORTLAND FILL</th>
<th>DRAINAGE</th>
<th>ACME SURFACE COURSE (5/16&quot;)</th>
<th>AGGREGATE</th>
<th>STANDARD DRAINS</th>
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<tbody>
<tr>
<td>100-00</td>
<td>D</td>
<td>100-00</td>
<td>15</td>
<td>100-00</td>
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<td>D</td>
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<td>15</td>
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<td>100-10</td>
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<td>100-30</td>
<td>100-30</td>
<td>100-30</td>
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</tr>
</tbody>
</table>

**NOTES:**
- For RC, PVE CULVERT INSTALLATIONS USE TYPE II RISING UNLESS OTHERWISE SPECIFIED.
- For CWS TYPE CULVERT INSTALLATIONS USE TYPE II RISING UNLESS OTHERWISE SPECIFIED.

**QUANTITIES:**

- See Section 10.48.1.1 of the Spec. Tech.
- Use ACME and陔HP Directly by the Engineer

**MINIMUM/maximum of ORDERED + 15% FOR PO 84-24**

**AHER PERFORMANCE GRADE ASPHALT SURFACE COURSE FOR DRIVING AND MAJOR SIDE STREET CONSTRUCTION AT NO ADDITIONAL COST TO THE DEPARTMENT.
# Clearing and Grubbing

## Cold Milling Asphalt Pavement

<table>
<thead>
<tr>
<th>Station</th>
<th>Station</th>
<th>Location</th>
<th>Clearing</th>
<th>Grubbing</th>
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</thead>
<tbody>
<tr>
<td>1390+00</td>
<td>1390+00</td>
<td>HWY 160 MILELINES</td>
<td>2</td>
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<tr>
<td>1391+30</td>
<td>1391+30</td>
<td>HWY 160 MILELINES</td>
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<td>2</td>
</tr>
<tr>
<td>1391+60</td>
<td>1391+60</td>
<td>HWY 160 MILELINES</td>
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<td>2</td>
</tr>
<tr>
<td>1391+90</td>
<td>1391+90</td>
<td>HWY 160 MILELINES</td>
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<td>2</td>
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<tr>
<td>1392+20</td>
<td>1392+20</td>
<td>HWY 160 MILELINES</td>
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</tr>
<tr>
<td>1392+50</td>
<td>1392+50</td>
<td>HWY 160 MILELINES</td>
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</tr>
<tr>
<td>1392+80</td>
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<tr>
<td>1393+10</td>
<td>1393+10</td>
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<tr>
<td>1394+00</td>
<td>1394+00</td>
<td>HWY 160 MILELINES</td>
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</table>

**Note:** Average milling depth is 1.00

## Asphalting

### Base and Surfacing

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<thead>
<tr>
<th>Station</th>
<th>Station</th>
<th>Location</th>
<th>Lenth</th>
<th>Basement Base</th>
<th>Aggregate Base</th>
<th>Admix Binder Course (Ft^3)</th>
<th>Admix Surface Course (Ft^3)</th>
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<tbody>
<tr>
<td>1000+00</td>
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<td>HWY 160 MILELINES</td>
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<td>200.00</td>
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### Tack Coat

<table>
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<th>Station</th>
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<tr>
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### Mastic

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<th>Mastic</th>
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<td>HWY 160 MILELINES</td>
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</tbody>
</table>

## Rumble Strips in Asphalt Shoulders

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<th>Location</th>
<th>Rumble Strips in Asphalt Shoulders</th>
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**Note:** See section 10.05 of the Std. Spec.

## Quantities

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<tr>
<td>TOTAL</td>
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**Note:** Quantity estimates are based on the estimated area of the shoulder.

### Asphalting for Maintenance of Traffic

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<th>Location</th>
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<tbody>
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<td>1000+00</td>
<td>1000+00</td>
<td>HWY 160 MILELINES</td>
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**Note:** Quantity estimates are based on the estimated area of the shoulder.

## Removal and Disposal of Fence

<table>
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<tr>
<th>Station</th>
<th>Station</th>
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<th>Fence</th>
<th>Gates</th>
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<td>1000+00</td>
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<td>0.00</td>
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**Note:** Estimated quantities are based on the estimated area of the shoulder.

## Mailboxes

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<tr>
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**Note:** Estimated quantities are based on the estimated area of the shoulder.

### Concrete Island

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**Note:** Estimated quantities are based on the estimated area of the shoulder.

### Concrete Combination Curb and Gutter

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**Note:** Estimated quantities are based on the estimated area of the shoulder.
### Survey Control Coordinates

**Project Name:** s100654  
**Date:** 3/12/2012  
**Coordinate System:** ARKANSAS STATE PLANE - NORTH ZONE BASED ON GPS CONTROL, PROJECTED TO GROUND.  
**Units:** U.S. SURVEY FOOT

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**Note:** Rebar and Cap - Standard **"** 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).

**USE CAM = 1.0 FOR STAKEOUT FOR THIS PROJECT**  
A PROJECT CAM OF 0.9999411667 HAS BEEN USED TO COMPUTE THE GROUND COORDINATES ABOVE. THIS CAM IS INTENDED FOR USE WITHIN THE PROJECT LIMITS.

**GRID DISTANCE = GROUND DISTANCE X CAM.**  
GRID COORDINATES ARE STORED UNDER FILE NAME: s100654gi.shc, 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 ENSURE CONTROL.**  
**IF THE PRIMARY CONTROL POINTS LISTED ABOVE HAVE BEEN DESTROYED, REFERENCE POINTS ARE NOT TO BE USED FOR VERTICAL CONTROL.**

**BASIS OF BEARING:**  
ARKANSAS STATE PLANE GRID BEARINGS - 0301-NORTH ZONE  
DETERMINED FROM GPS CONTROL POINTS  
CONVERGENCE ANGLE: 1-09-00.03 RIGHT AT LT: 35-51-51.9 LG: 090-01-25.3  
GRID AZIMUTH = ASTRONOMICAL AZIMUTH - CONVERGENCE ANGLE.
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**SURVEY CONTROL DETAILS**
STA. 1000+00 IN PLACE
24" x 24" C.M. PIPE CULVERT
RT. SIDE DRAIN
RETAIN

STA. 1003+79 IN PLACE
25" x 30" x 25" ARCH PIPE CULVERT
RT. SIDE DRAIN
RETAIN

STA. 1005+00,00
BEGIN JOB 100654
LOG MILE 5.40

STA. 1008+85 IN PLACE
18" x 24" C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL 30" x 24" PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APRPL ON RT. + 50 CU YDS.

STA. 1009+17 IN PLACE
18" x 24" R.D. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL 30" x 24" PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APRPL ON RT. + 50 CU YDS.

REVIEW CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
C.L. CONSTRUCT
P = 1116.27, 67
Ω = 69° 27', 14.0' LT.
T = 1627.49
L = 2550.83
R = 3000.00
PT = 1126.88, 80
E = 690'

STA 1126+52 INSTALL
24" X 54" FIRE CULVERT
LT SIDE DRAIN
CONSTRUCT APRIL ON LT. = 185 CU. YDS.

STA 1128+14 INSTALL
24" X 66" PIPE CULVERT
RT SIDE DRAIN
CONSTRUCT APRIL ON RT. = 325 CU. YDS.

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
PROPOSED R/W

CONSTR. LIMITS

REF. TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.

HWY. 18
Refer to survey control detail sheets for horizontal and vertical control data.
STA. 32+28 IN PLACE
18" x 24" C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL e = 48
24" x 42" PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPR. ON LT. = 130 CU. YDS.

STA. 31+66 IN PLACE
18" x 24" C.M. PIPE CULVERT
RT. SIDE DRAIN
REMOVE AND INSTALL e = 55
24" x 42" PIPE CULVERT
RT. SIDE DRAIN
CONSTRUCT APPR. ON LT. = 85 CU. YDS.

G.L. CONSTRUCT
Pf = 34.68, 87
D = 681.34, 50.6, RT.
0 = 131.00, 00
E = 259.60
L = 526.20
S = 51.77, 26
G = 31.65, 26
# = 0.100, 7
+$ = 0.000

EAST CONNECTION

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
TOE WALL DETAIL FOR CONCRETE DITCH PAVING

GENERAL NOTES:
THE FULL WIDTH OF EACH SECTION SHALL BE POURRED MONOLITHICALLY.
TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING AND POURRED MONOLITHICALLY.
SOLID SIDES 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 45' INTERVALS, THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH ANCHOR MDL.

ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN USES OF DITCH PAVING EXCEED "X", THE DISSIPATORS WILL NOT BE PAID FOR CORRECTLY, BUT SHALL BE CONTRIVED TO BE IMPOUNDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.

NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

ARKANSAS STATE HIGHWAY COMMISSION
CONCRETE DITCH PAVING
STANDARD DRAWING CDP-1
TABLE OF DIMENSIONS

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ARCH PIPE

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END VIEW

SECTION A-A

SECTION X-X
END SECTION FOR REINFORCED CONCRETE PIPE CULVERTS

SECTION Y-Y
END VIEW
CONCRETE ARCH PIPE

END SECTIONS FOR CORRUGATED METAL PIPE CULVERTS

NOTE: TONGUE END ON UPSTREAM SECTION, GROOVE END ON DOWNSTREAM SECTION

* THE MEASURED SPAN AND RISE SHALL NOT VARY MORE THAN ±2% FROM THE VALUES SPECIFIED BY ANSIO ST. D.01.
MINIMUM TRENCH WIDTH
BASED ON FILL HEIGHT "H"

TRENCH WIDTH

DIAMETER
4"
5"
6"
8"
10"
12"
14"
16"
18"
20"

H IN KA 0'-0" H IN K 0'-0"
4"
6"
8"
10"
12"
14"
16"
18"
20"

MINIMUM COVER FOR CONSTRUCTION LOADS

MINIMUM COVER

DIAMETER
4"
5"
6"
8"
10"
12"
14"
16"
18"
20"
24"

MINIMUM COVER VALUES

H IN KA 0'-0" H IN K 0'-0"
4"
6"
8"
10"
12"
14"
16"
18"
20"
24"

GENERAL NOTES

1. PIPE SHALL CONFORM TO ASHDO MFR. TYPE 5 INSTALLATION SHALL CONFORM TO JOR SPECIAL PROVISION "PLASTIC PIPE" AND SECTION 508 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.  
2. PLASTIC PIPE CULVERT DESIGN SHALL CONFORM TO ASHDO MFR. BRIDGE DESIGN SPECIFICATION.  
3. MATERIALS USED SHALL BE THE MINIMUM WITH PLUS A DIFFERENT BETWEEN THE TWO MATERIALS TO BE USED FOR THE PIPE.  
4. MATERIALS USED IN THE AREA DESIGNATED AS "STRUCTURAL BEARING" ARE TO BE SELECTED AND REINFORCED WITH THE SELECTED PIPE BEARING.  
5. PIPE INSTALLATION MAY REQUIRE THE USE OF RESTRAINTS TO ENSURE PROPER INSTALLATION.  
6. "LEGEND"  
   - = WALL  
   -- = OUTSIDE DIAMETER OF PIPE  
   + = MINIMUM  
   _____ = STRUCTURAL BACKFILL MATERIAL  
   = = UNSTABLE SOIL.
**MAXIMUM FILL HEIGHT BASED ON STRUCTURAL BACKFILL**

**TYPE 2 INSTALLATION**

**SELECTED MATERIALS**

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-8&quot;</td>
<td>Structural Backfill, used for embankments and embankment fill.</td>
</tr>
<tr>
<td>8-12&quot;</td>
<td>Structural Backfill, used for embankments and embankment fill.</td>
</tr>
<tr>
<td>12-16&quot;</td>
<td>Structural Backfill, used for embankments and embankment fill.</td>
</tr>
</tbody>
</table>

**NOTES:**

- Structural fill must be compacted to 95% of the maximum density according to the type of fill used.
- Embankment and trench installations may require use of restrictor mound or other approved methods in order to help maintain grade and alignment.

**MINIMUM TRENCH WIDTH BASED ON FILL HEIGHT "H"**

<table>
<thead>
<tr>
<th>TRENCH WIDTH BASED ON FILL HEIGHT &quot;H&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIA. (&quot;H&quot;)</td>
</tr>
<tr>
<td>0&quot;</td>
</tr>
<tr>
<td>4&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
</tr>
</tbody>
</table>

**MINIMUM COVER FOR PVC PIPE INSTALLATIONS**

<table>
<thead>
<tr>
<th>PVC PIPE DIA.</th>
<th>MINIMUM COVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;</td>
<td>0.5&quot;</td>
</tr>
<tr>
<td>4&quot;</td>
<td>1.0&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>1.5&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>2.0&quot;</td>
</tr>
</tbody>
</table>

**MULTIPLE INSTALLATION OF PVC PIPES**

<table>
<thead>
<tr>
<th>PVC PIPE DIA.</th>
<th>CLEAR DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;</td>
<td>0.5&quot;</td>
</tr>
<tr>
<td>4&quot;</td>
<td>1.0&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
<td>1.5&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
<td>2.0&quot;</td>
</tr>
</tbody>
</table>

**GENERAL NOTES**

1. PVC shall conform to ASTM F949. Class 4 or 6. Installation shall conform to job special provisions.
3. The maximum allowable trench shall be the minimum width plus a sufficient width to ensure working room to properly and safely place and install handrails and other backfill material.
4. Neporous material should be placed as directed by the engineer. At the ends of the culvert to prevent loss of structural backfill and end pipe. Clear distance required.
NOTE:
1. GRANULAR BACKFILL TO BE SUBSIDIARY TO PIPE UNDERDRAIN.
2. UNLESS OTHERWISE SPECIFIED ON THE PLAN, THE UNDERDRAIN COVER SHALL BE 3-1/2" MIN. THICKNESS AND SHALL BE SUBSIDIARY TO PIPE UNDERDRAIN.
3. GRANULAR MATERIAL SHALL BE BACKED WITH TEXTILES, FABRIC-LAP FABRIC 2" OR THE WIDTH OF THE TRENCH AT THE TOP.

PLAN VIEW

SIDE VIEW

FRONT VIEW

UNDERRRAIN OUTLET PROTECTORS

FERNCO 3656-44 14' CUPPLASTIC OR
FERNCO 3680-48 14' ALUMINUM COUPLING OR EQUAL, WITH 2 CLAMPS (TYPICAL)

UNDERDRAIN COVER WHERE REQUIRED

DRAIN PIPE ON GRADE

NOTE:
LATERALS SHALL BE INSTALLED AT ALL SAGS AND AT 250 INTERVALS OR GRADES.
THE FS DISTANCE MAY BE EXCEEDED ONLY WHERE NEEDED FOR AN ACCEPTABLE OUTLET.

DETAIL OF PIPE UNDERDRAIN WHEN PLACED ALONG PAVEMENT EDGE

NOTICE: PVC PIPE FOR LATERALS SHALL MEET THE REQUIREMENTS OF ASTM D2196 LATERAL RESISTIVITY SCHEDULE 40 PIPE.

ARKANSAS STATE HIGHWAY COMMISSION

DETAILS OF PIPE UNDERDRAIN

STANDARD DRAWING PU-1

4-85-05 REVISED NOTE 3
1-12-70 REVISED DETAIL OF UNDERDRAIN LATERALS
1-18-78 REVISED NOTE
10-9-76 REVISED WELD TYPHIE & TEXTILES CHECK
6-23-76 ADDED LATERAL NOTE 5/2" TO 5"
6-23-76 REVISED LATERALS
6-23-76 REVISED NOTE
1-18-78 REVISED LATERALS & REVISED NOTE
1-18-78 REVISED FOR EQUAL LATERALS
6-6-76 ADDED PVC TYPHIE PIPE
1-18-78 ADDED 4" SLIT ADAPTER
1-18-78 ADDED LATERAL ADAPT (WHERE REQUIRED)
6-6-76 REVISED PVC FABRIC
1-18-78 REVISED NOTE
6-6-76 DATE
1-18-78 REVISED NOTE
REINFORCED CONCRETE BOX CULVERT GENERAL NOTES

CONCRETE SHALL BE CLASS S WITH A MINIMUM 28 DAY COMpressive STRENGTH OF 3500 P.S.I.

REINFORCING STEEL SHALL BE ASHRO N 0.0 OR N 53, GRADE 60.

CONSTRUCTION AND MATERIALS FOR WingWALL & CULVERT DRAINAGE, INCLUDING WEEP HOLES AND GRANULAR MATERIAL, SHALL BE SUBSIDARY TO THE BD Item "CLASS S CONCRETE".

MEMBRANE WATERPROOFING SHALL CONFORM TO THE REQUIREMENTS OF SECTION 85 OF THE STANDARD SPECIFICATIONS.

MEMBRANE WATERPROOFING SHALL BE APPLIED TO ALL CONSTRUCTION JOINTS IN THE TOP SLAB AND THE GASKETS OF ALL R.C. BOX CULVERTS. IT IS DIRECTED BY THE ENGINEER, AND PAYMENT WILL BE MADE FOR THIS ITEM, BUT PAYMENT WILL BE CONSIDERED TO BE INCLUDED IN THE VARIOUS ITEMS BID FOR THE R.C. BOX CULVERT.

REINFORCING STEEL TOLERANCES: THE TOLERANCES FOR REINFORCING STEEL SHALL MEET THOSE LISTED IN "MANUAL OF STANDARD PRACTICE" PUBLISHED BY CONCRETE REINFORCING STEEL INSTITUTE, EXCEPT THAT THE TOLERANCE FOR TRUSS BARS SUCH AS FIGURE 3 OF THE TOLERANCE OF THE POSITIVE END SHALL BE MINUS 3/16 PLUS 1/8 INCH.

WEEP HOLES IN BOX CULVERT SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THE DRAIN OPENING SHALL BE 4" DIA. AND SHALL BE PLACED 1/8" ABOVE THE TOP OF THE BOTTOM SLAB.

WEEP HOLES IN WINGWALLS SHALL HAVE A MAXIMUM HORIZONTAL SPACING OF 10'-0" AND SHALL BE SPACED TO CLEAR ALL REINFORCING STEEL. THESE SHALL BE A MAXIMUM OF 4'-0" HORIZONTAL OPENING SHALL BE 4" DIA. AND SHALL BE PLACED 1/8" ABOVE THE TOP OF THE DRAINAGE.

THE REQUIREMENTS SHOWN ON THIS DRAWING SHALL SUPERCEDE THE CORRESPONDING REQUIREMENTS ON ALL REINFORCED CONCRETE BOX CULVERT STANDARD DRAWINGS.

ARKANSAS STATE HIGHWAY COMMISSION

REINFORCED CONCRETE BOX CULVERT DETAILS

STANDARD DRAWING RCB-1

RIK A. STEWART, PROJECT ENGINEER
SUPERELEVATION TABLE FOR TWO-WAY TRAFFIC

<table>
<thead>
<tr>
<th>DEGREE OF</th>
<th>30 MPH</th>
<th>45 MPH</th>
<th>60 MPH</th>
<th>75 MPH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LA (FT)</td>
<td>LA (FT)</td>
<td>LA (FT)</td>
<td>LA (FT)</td>
</tr>
<tr>
<td>0%</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>0%</td>
<td>215</td>
<td>215</td>
<td>215</td>
<td>215</td>
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<tr>
<td>0%</td>
<td>230</td>
<td>230</td>
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<td>230</td>
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<td>260</td>
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<td>0%</td>
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<tr>
<td>0%</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
</tbody>
</table>

**ABBREVIATIONS**

- CE - Normal Crown
- RC - Reduced Crown, Superelevation at Normal Crown Slope
- SE - Superelevation
- C - Normal Crown
- LA - Length of Superelevation Transition (ft)
- H - Height of Transition (in)
- W - Width of Subgrade (ft)
- L - Length of Transition (ft)
- T - Transition Width (ft)
- D - Diameter of Arc (ft)

**GENERAL NOTES**

1. On pavements with two-way traffic, the superelevation shall be revolved on the inside pavement edge unless otherwise noted in this plan.
2. Superelevation values shown on the cross sections are included or to be added to or deducted from the point of control.
3. Superelevation may be provided in multiples of 25 ft or 50 ft.
4. Transition widths shall have additional transition lengths as follows.
   - 1 Lane Undivided: — 400 ft
   - 2 Lane Undivided: — 800 ft
   - 3 Lane Undivided: — 1200 ft
   - 4 Lane Undivided: — 1600 ft

**NOTE:** Maintain normal crown on inside until superelevation exceeds 0.25% of tangent slope. Use superelevation shown on original plans as minimum.

**STANDARD METHOD WHEN SUPERELEVATION REVOLVES AROUND CENTER LINE**

**SUPERELEVATION FORMULA:**

\[ \text{Superelevation} = \frac{\text{H}}{\text{LA}} \]

**ARIZONA STATE HIGHWAY COMMISSION**

**TABLES AND METHOD OF**

**SUPERELEVATION FOR TWO-WAY TRAFFIC**

**STANDARD DRAWING SE-2**
Typical application - vehicle maintenance operations of short duration on a one lane divided roadway where half of the roadway is closed.

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

Typical application - crossing multiple lanes of a multi lane highway.

Channelizing devices

Traffic Control Devices

For Pavement Markings

Vertical Deflections

Location

Traffic Control

Vertical line

Edge of shoulder

Standard lane closure required

NOTE:

For road shoulders, the type of channelizing device shall be of sufficient length to extend across entire roadway.

Flag

Flag shall be of good size and material.

Vertical Panel Placement

Channelizing devices

Legend

Traffic drum

Channelizing device

Traffic drum

p

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

Typical application - crossing multiple lanes of a multi lane highway.

Channelizing devices

Legend

Traffic drum

Channelizing device

Traffic drum

p

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

Typical application - crossing multiple lanes of a multi lane highway.

Channelizing devices

Legend

Traffic drum

Channelizing device

Traffic drum

p

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Typical application - crossing multiple lanes of a multi lane highway.

Channelizing devices

Legend

Traffic drum

Channelizing device

Traffic drum

p

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Typical application - crossing multiple lanes of a multi lane highway.

Channelizing devices

Legend

Traffic drum

Channelizing device

Traffic drum

p

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Channelizing devices

Legend

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Channelizing devices

Legend

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Channelizing device

Traffic drum

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Channelizing devices

Legend

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Channelizing devices

Legend

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Legend

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Channelizing devices

Legend

Traffic drum

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Channelizing devices

Legend

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Channelizing devices

Legend

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Channelizing device

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Channelizing devices

Legend

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Channelizing devices

Legend

Traffic drum

Channelizing device

Traffic drum

p

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

Typical application - crossing multiple lanes of a multi lane highway.
REINFORCING BAR TABLE PER BARRIERS UNIT

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>BAR</th>
<th>BAR</th>
<th>BRANCH</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-1</td>
<td>5/8</td>
<td>16G</td>
<td></td>
</tr>
<tr>
<td>H-2</td>
<td>5/8</td>
<td>16G</td>
<td></td>
</tr>
<tr>
<td>H-3</td>
<td>5/8</td>
<td>16G</td>
<td></td>
</tr>
</tbody>
</table>

CONNECTING PIN

SECTION E-E

SECTION B-B

SECTION C-C

SECTION D-D

SECTION H-H

ELEVATION

BARRIER REMOVAL SLOT DETAILS

BARRIER STABILIZATION DETAIL

BRIDGE DECKS

1. The contractor shall furnish the Precast Concrete Barrier units and shall be responsible for the manufacture, delivery, storage, and handling of the Precast Concrete Barrier units.
4 feet or greater preferred. If less than 4 feet, Precast Units shall be connected to slab (See Barrier Stabilization Detail-Bridge Decks STD, DRMK, TC-4)

**Offset Distance for Two Way Traffic Only**

<table>
<thead>
<tr>
<th>Offset Distance (See Table)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4' 5&quot;</td>
</tr>
</tbody>
</table>

If offset distance is not obtainable, then use "Barrier Placement w/ O.D. 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 Attenuator Barrier."

SPECIAL END UNIT

**Offset Distance**

<table>
<thead>
<tr>
<th>Offset Distance (See Table)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10' 5&quot;</td>
</tr>
</tbody>
</table>

BARcER PLACEMENT WITH ATTEnuATOR

**Offset Distance**

<table>
<thead>
<tr>
<th>Offset Distance (See Table)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5' 6&quot;</td>
</tr>
</tbody>
</table>

Edge of Travel Lane

Temporary Impact Attenuation Barrier

Min. 5'-6" from Edge of Travel Lane to Nearest Edge of Attenuator

ARKANSAS STATE HIGHWAY COMMISSION

STANDARD TRAFFIC CONTROLS
FOR HIGHWAY CONSTRUCTION -
TEMPORARY PRECAST BARRIER

STANDARD DRAWING TC-5
CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE
1. PLACE PERMANENT CONTROLS (E.G. BILT FENCES, DIVERSION DITCHES, EROSION BARRIERS, ETC.)
2. PERFORM CLEARING AND GRUBBING OPERATION

EXCAVATION

EXISTING GROUND
INTERRUPTER OR DIVERSION DITCH
PHASE 1 EXCAVATION
PHASE 2 EXCAVATION
FINAL PHASE EXCAVATION

NOTE: NUMBERS OF PHASES WILL VARY, THREE PHASES SHOWN FOR ILLUSTRATION.

GENERAL NOTE
ALL CUT SLICES SHALL BE DRESSED, PREPARED, SEEDED, AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 10 FT. HANDED VERTICALLY.

CONSTRUCTION SEQUENCE
1. EXCAVATE AND STABILIZE INTERRUPTER 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. SECTIONS BETWEEN CONTROL DEVICES USING SECTIONS BETWEEN OTHER EROSION CONTROL DEVICES AS REQUIRED.

EMBANKMENT

CONSTRUCTION SEQUENCE
1. CONSTRUCT EMBANKMENT DITCHES DITCH CHECKS SEGMENT BARRIERS BILT 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 PHASE 3 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING.
5. PLACE PHASE 4 EMBANKMENT WITH PERMANENT OR TEMPORARY SEEDING.
6. PLACE PHASE 5 EMBANKMENT AND MAINTAIN DRAINAGE ENTIRE SLOPE IS STABILIZED.

NOTES:
- NUMBERS OF PHASES WILL VARY, THREE PHASES SHOWN FOR ILLUSTRATION.
- ALL EMBANKMENT SLOPES SHALL BE DRESSED, PREPARED, SEEDED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 20 FT. HANDED VERTICALLY.
STA. 1055+50 CONSTRUCT
DROP INLET ON RT, H = 3' 6"
WITH 4' EXTENSION AND
18" X 283" PIPE CYLVERT
TO DROP INLET ON RT.
TYPE B DROP INLET = 4' X 4'.
18" R.O. PIPE (CLASS IV) (TYPE 3 BEDDING) = 283 LIN. FT.
18" SLIPMACS PIPE (TYPE 2 BEDDING) = 283 LIN. FT.