ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS FOR STATE HIGHWAY

HWY. 7S - HWY. 5 (S)

GARLAND COUNTY
ROUTE 7 SECTION 9

JOB 061547

FED. AID PROJ. NHPP-9210(35)

STA. 140+40.65
END OVERLAY
BEGIN CONSTRUCTION
LOG MILE 14.04

STA. 334+00.00
END CONSTRUCTION
END JOB 061547

NOT TO SCALE

STRUCTURES OVER 20'-0" SPAN

1. STA. 146+56 CONSTRUCT
QUAD. 9' x 6' x 126' R.C. BOX
ON 45° LT. FWD. SKEW
WITH 3 FEET LT. AND RT.
0.50 = 1030 CFS; D.A. = 0.23 SQ. MI.
SPAN = 55'-1"

2. STA. 289+26 CONSTRUCT
DBL. 12' x 7' x 89' R.C. BOX
ON 15° RT. FWD. SKEW
WITH 3 FEET LT. AND RT.
0.50 = 1130 CFS; D.A. = 0.91 SQ. MI.
SPAN = 26'-9"

LOG MILE 13.42
BEGIN JOB 061547
BEGIN OVERLAY

DESIGN TRAFFIC DATA

DEPARTMENT OF TRANSPORTATION
COUNTY:

1940
2020 ADT
3000
4000
5000
6000
7000
8000
9000
10000
11000
12000
13000
14000
15000

DIRECTIONAL DISTRIBUTION
50:50
50:50
50:50
50:50
50:50
50:50
50:50

DESIGN SPEED
45 MPH

APPROVED

DEPUTY DIRECTOR
AND CHEF ENGINEER

H. H. SIMMONS

7/27/2016, 11:57 AM
Hwy. 7 - Three-Lane Full Depth Section
STA 647+00 to STA 647+22.00
STA 886+61.00 to STA 886+05.00

NOTES:

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 final 2" of surface course is to be placed after all other courses have been laid. Longitudinal joints shall be at lane lines.

Prior to and during placement of pavement in front of the curbs and gutter, the contractor shall provide

The final 2" of surface course shall be approved by the engineer. Payments for this work shall be considered included in the price bid for the various contract items.
ROUNDABOUT - NOTCH, MEDIAN, AND OVERLAY SECTION

STA, +00,000 TO STA, +07,73
STA, +07,73 TO STA, +83,52

NOTES

Refer to cross sections for deviations from the
normal slopes. No changes shall be made prior
the planned slopes without the approval of the Engineer.

Asphalt for leveling of existing pavement shall be
placed only if and when directed by the Engineer. Calculations
for the amount of asphalt and leveling operations
shall be performed by the Contractor. Calculations will not
be paid for directly but payment will
be considered included in the various pay items.

The final 2' of surface course is to be placed
after all other courses have been laid.

Should joints be left as 631 joint laps.

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 used shall
be approved by the Engineer. Payment for two rows shall
be considered included in the price for the various
contract items.

The existing asphalt pavement to be removed from
the remaining pavement shall be removed in sawing along
a neat line. After sawing, the pavement to be removed
shall be carefully removed in a manner that will not
cause the pavement that is to remain any damage of
the amount previously paid. Any removal in place shall
be removed by the Contractor's expense.

ROUNDABOUT - FULL DEPTH SECTION

STA, +07,73 TO STA, +83,52
DETOUR 1 - FULL DEPTH SECTION
STA 400+00.00 TO STA 400+48.46

DETOUR 2 - FULL DEPTH SECTION
STA 500+00.00 TO STA 505+86.78

DETOUR 3 - FULL DEPTH SECTION
STA 800+64.92 TO STA 808+83.8

NOTES:
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 final 3" of surface course is to be placed
after all other courses have been laid.
Longitudinal joints shall be at lane lines.
Detail of turnouts, asphalt streets, county roads & state highways
Curb & gutter section

Note: Pavement structure for state highways, city streets, & county roads to be same as main lanes.

Detail for solid sodding around drop inlets
NOTES:

1. THIS DETAIL TO BE USED ONLY WHERE DIRECTED BY THE ENGINEER.

2. QUANTITIES FOR METHOD OF GRADE RAISE USING ASPHALT WERE CALCULATED ON THIS PROJECT AT LOCATIONS WHERE THE DISTANCE BETWEEN THE EXISTING ASPHALT ROADWAY AND THE PROPOSED SUBGRADE WAS ONE FOOT OR LESS.


METHOD OF RAISING GRADE

STA. 314+00.00 TO STA. 325+00.00
STA. 324+00.00 TO STA. 327+00.00
STA. 331+00.00 TO STA. 334+00.00
STA. 337+00.00 TO STA. 338+65.00

METHOD OF RAISING GRADE

STA. 321+00.00 TO STA. 325+30.37
CONCRETE WALK THROUGH ISLAND DETAIL

NOTE: CONCRETE WALK THROUGH ISLAND SHALL BE PLACED IN ONE PLACEMENT. ALL MATERIAlS REQUIRED TO CONSTRUCT CONCRETE WALK THROUGH ISLAND SHALL BE INCLUDED IN THE PRICE OF 10 FOR CONCRETE ISLAND.
<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Varying Depth</th>
<th>Bar Size</th>
<th>Length</th>
<th>No. Req'd</th>
<th>Max. Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td>1'-10' to 12'</td>
<td>2'-8&quot;</td>
<td>12</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Subgrade</td>
<td>7'-10' to 9'</td>
<td>3'-4&quot;</td>
<td>12</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Bedrock</td>
<td>12'-14'</td>
<td>4'-6&quot;</td>
<td>12</td>
<td>4</td>
<td>12</td>
</tr>
</tbody>
</table>

**Concrete**

- **Top Slab Footings**
  - *Size L* = OH - 4" + BENDS
  - *Size F* = OH - 4"

- **Bottom Slab Footings**
  - *Size L* = OH - 4" + BENDS
  - *Size F* = OH - 4"

**Steel (Gr 60)**

- **Reinforcing**
  - "f0" (ONE SECTION)

**Design Fill Depth (FT.)**

- **Top Slab Footings**
  - *Top Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Top Slab Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Bottom Slab Footings**
  - *Bottom Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Bottom Slab Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Side Wall Footings**
  - *Side Wall Reinforcing Steel* = OH - 4"> 4" + BENDS
  - *Side Wall Distribution Reinforcing Steel* = OH - 4"> 4" + BENDS

- **Interior Wall Footings**
  - *Interior Wall Reinforcing Steel* = OH - 4"> 4" + BENDS
  - *Interior Wall Distribution Reinforcing Steel* = OH - 4"> 4" + BENDS

**Concrete Design**

- **Top Slab Distribution Reinforcing Steel**
  - "f0" = OH - 4" + BENDS

**Steel**

- **Reinforcing Steel**
  - "f0" (ONE SECTION, includes HDWL)

**Bar Lap Table**

- **Top Slab Footings**
  - *Top Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Top Slab Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Bottom Slab Footings**
  - *Bottom Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Bottom Slab Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Side Wall Footings**
  - *Side Wall Reinforcing Steel* = OH - 4" + BENDS
  - *Side Wall Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Interior Wall Footings**
  - *Interior Wall Reinforcing Steel* = OH - 4" + BENDS
  - *Interior Wall Distribution Reinforcing Steel* = OH - 4" + BENDS

**Inlet End Section**

- **Top Slab Footings**
  - *Top Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Top Slab Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Bottom Slab Footings**
  - *Bottom Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Bottom Slab Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Side Wall Footings**
  - *Side Wall Reinforcing Steel* = OH - 4" + BENDS
  - *Side Wall Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Interior Wall Footings**
  - *Interior Wall Reinforcing Steel* = OH - 4" + BENDS
  - *Interior Wall Distribution Reinforcing Steel* = OH - 4" + BENDS

**Inlet Slope Section**

- **Top Slab Footings**
  - *Top Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Top Slab Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Bottom Slab Footings**
  - *Bottom Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Bottom Slab Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Side Wall Footings**
  - *Side Wall Reinforcing Steel* = OH - 4" + BENDS
  - *Side Wall Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Interior Wall Footings**
  - *Interior Wall Reinforcing Steel* = OH - 4" + BENDS
  - *Interior Wall Distribution Reinforcing Steel* = OH - 4" + BENDS

**Inlet Section**

- **Top Slab Footings**
  - *Top Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Top Slab Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Bottom Slab Footings**
  - *Bottom Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Bottom Slab Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Side Wall Footings**
  - *Side Wall Reinforcing Steel* = OH - 4" + BENDS
  - *Side Wall Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Interior Wall Footings**
  - *Interior Wall Reinforcing Steel* = OH - 4" + BENDS
  - *Interior Wall Distribution Reinforcing Steel* = OH - 4" + BENDS

**Inlet Wink Wall**

- **Height**
  - 32316

- **Wing Wall**
  - 32316

**Footings at HDWL**

- **Top Slab Footings**
  - *Top Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Top Slab Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Bottom Slab Footings**
  - *Bottom Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Bottom Slab Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Side Wall Footings**
  - *Side Wall Reinforcing Steel* = OH - 4" + BENDS
  - *Side Wall Distribution Reinforcing Steel* = OH - 4" + BENDS

- **Interior Wall Footings**
  - *Interior Wall Reinforcing Steel* = OH - 4" + BENDS
  - *Interior Wall Distribution Reinforcing Steel* = OH - 4" + BENDS

**Inlet Side Wall**

- **Inlet Wall Footings**
  - *Top Slab Footings* = OH - 4" + BENDS
  - *Bottom Slab Footings* = OH - 4" + BENDS

- **Side Wall Footings**
  - *Top Slab Reinforcing Steel* = OH - 4" + BENDS
  - *Bottom Slab Reinforcing Steel* = OH - 4" + BENDS

- **Inlet Interior Wall**
  - *Top Slab Footings* = OH - 4" + BENDS
  - *Bottom Slab Footings* = OH - 4" + BENDS

**Inlet Wink Wall**

- **Height**
  - 32316

- **Wing Wall**
  - 32316
HDWL DEPTH

ADDITIONAL REINF. FOR HDWL

HD

LBS.

Y

LENGTH

(LBS)

REINF. STEEL

QTY. PER WING

SPACING

VARY

BAR SIZE

Min

57

HDWL)

BOTTOM SLAB REINFORCING STEEL

L

L

I
L

7'-6"

136

4

10

95

1'-10"

4

10

95

REINFORCING STEEL (GR 60)

73.04 CU. YDS.

12

10725 LBS.

(ONE SECTION - Includes HDWL)

INTERIOR WALL

TOP SLAB
DISTRIBUTION

BOTTOM SLAB
DISTRIBUTION

SIDE WALL
DISTRIBUTION

INTERIOR WALL
DISTRIBUTION

REINFORCING STEEL

REINFORCING STEEL

REINF. STEEL

REINF. STEEL

REINF. STEEL

REINF. STEEL

I

I

J

H

G

G

LENGTH = OH - 4"

LENGTH = OH - 4"

LENGTH = SL

LENGTH = SL

LENGTH = SL

LENGTH = SL

TOTAL

NO. REQ'D

6

SHORT
2'-2"

4

12

12

LENGTH

NO. REQ'D

SPACING

SIZE

LENGTH

NO. REQ'D

SPACING

4

1'-10"

12

40'-6"

12

SIDE WALL

LENGTH = OW - 4" + BENDS
%HQWE

12

(GR. 60)

(ONE SECTION - Includes

4

STEEL

0'-10"

NO. REQ'D

7'-6"

3

CLASS "S" CONCRETE

Y

G

38'-9"

75

LBS.

4

7

REINFORCING

38'-9"

5

2'-1"

CLASS "S"

6

8

CONCRETE

LENGTH

4

2'-1"

CU. YDS.

38'-9"

6

55

Min

NO. REQ'D

3

4

2'-1"

74

Min

SPACING

4

110

SIZE

4

Min

LONG

1 REINFORCING
STEEL (GR 60)
(Includes HDWL)

CLASS "S"
CONCRETE
(Includes HDWL)

LBS.

Min

49

6

CU. YDS.

Max

SIZE

LENGTHS
VARY

NO. REQ'D

SPACING

LENGTHS
VARY

SPACING

NO. REQ'D

SPACING

SIZE

NO. REQ'D

SIZE

G

NO. REQ'D

G

SIZE

LENGTHS

NO. REQ'D

BAR SIZE

SPACING

LENGTHS

BAR SIZE

LENGTHS

H

40'-11"

"h" HDWL BARS
SIZE

NO. REQ'D

LENGTHS
VARY

NO. REQ'D

BAR SIZE

SPACING

LENGTHS

SPACING

VARY

BAR SIZE
L

J

NO. REQ'D

L

I

SPACING

L

I

I

SIZE

SL

INTERIOR WALL
DISTRIBUTION
REINFORCING STEEL

NO. REQ'D

SECTION LENGTH (FT.)

OH

SIDE WALL DISTRIBUTION
REINFORCING STEEL

SPACING

OVER ALL HEIGHT

OW

BOTTOM SLAB DISTRIBUTION
REINFORCING STEEL

SIZE

OVER ALL WIDTH

W

TOP SLAB DISTRIBUTION
REINFORCING STEEL

NO. REQ'D

INTERIOR WALL THK.

C

INTERIOR WALL
REINFORCING STEEL

SPACING

SIDE WALL THK

B

SIDE WALL
REINFORCING STEEL

SIZE

BOTTOM SLAB THK

T

1'-8"

X

-

Max

NO. REQ'D

TOP SLAB THK.

H

757

40'-11"

1'-10"

F

3'-4"

Max

LENGTH = OW - 4" + BENDS
%HQWE

L

31'-9" 6 12 6

%DU3LQ'LD7DEOH











0LQ%DU/DS/HQJWK

 

 

 

 

 

38'-9"

TOP SLAB REINFORCING STEEL

D

1'-8"

Max

SPACING

CLEAR HEIGHT (FT.)

D S

4

2

X

38'-9"

2'-1"

SIZE

12

28'-7"

CLEAR SPAN (FT.)

5

NO. REQ'D

Max

2 28'-11" 4

4

LENGTH

LENGTH

SIZE

SIZE

12

28'-7"

DESIGN FILL DEPTH (FT.)

R.C. BOX SECTION

5

NO. REQ'D

-

70*

399

Max

"h" HDWL BARS

SIZE

LENGTH

-

3'-4"

15'-4" 6 12 6

38'-9"

"k2" HDWL BARS

SIZE

SIZE

2

L

4

Max

38'-9"
"k1" HDWL BARS

2 14'-10" 4

F12

-

Max

G

F11

38'-9"
Min

9

6

Min

NO. REQ'D

7'-10"

Max

Min

SIZE

39'-1"

8

F10

-

SPACING

6.5

-

3'-3"

F

SIZE

3:1

11

-

LENGTHS
VARY

OH

37'-8" 6 18 20

1156

2'-8"

LENGTH

OW

Max

SPACING

W

D

8

LBS.

15.32

-

2'-8"
4

CU.YD

17

Min

BOTTOM SLAB REINFORCING STEEL

LENGTHS
VARY

C

TOP SLAB REINFORCING STEEL

SPACING

B

3

Y

SIZE

HD

11

Max

NO. REQ'D

T

21'-6"

28'-8" 4 18 20 X

4 18 4

18'-10"

OVER ALL HEIGHT

-

OVER ALL WIDTH

Y

4 18 4

INTERIOR WALL THK.

-

SIDE WALL THK.

X

BOTTOM SLAB THK.

-

HDWL DEPTH

-

-

TOP SLAB THK.

Y

-

SECTION LENGTH

-

CLEAR HEIGHT (FT.)

- X

CLEAR SPAN (FT.)

-

DESIGN FILL DEPTH (FT.)

-

LL

SKEW (DEGREE)

L

9'-10"

17'-3" 6 18 10

SIZE

-

H

6

LENGTHS

Min

S

9

Y

9'-4"

8

NO. REQ'D

L

-

Max

4

SPACING

-

14'-2" 4 18 10 X

4 18 4

NO. REQ'D

Y

4 18 4

SIZE

-

LENGTHS
VARY

X

NO. REQ'D

L

-

Min

SPACING

-

-

W4

36'-10 1/4"

F9

2'-8"

SPACING

Y

-

4'-9"
9'-3"
2'-4"
2'-4"
2'-6"
7'-0"
4'-7"
9'-3"
2'-4"
2'-4"
2'-4"
7'-0"

SIZE

-

D

5

NO. REQ'D

BAR SIZE

SPACING

SPACING

NO. REQ'D

BAR SIZE

- X

NO. REQ'D

-

SIZE

-

F8

F7

Min
Max
Min
Max
Min
Max
Min
Max
Min
Max
Min
Max

L

4'-10"

SK SL

45

NO. REQ'D

HEEL

SLOPE
LENGTHS

BAR SIZE

SPACING

LENGTHS

Min

-

SLOPE

Y

L

-

SIZE

4 12 29 X

L

LENGTHS
VARY

WING B

L

3'-0"
7'-8"
0'-9"
0'-9"
2'-4"
7'-0"
3'-0"
8'-3"
0'-9"
1'-4"
2'-4"
7'-0"

F6

F5

SPACING

Y

Min
Max
Min
Max
Min
Max
Min
Max
Min
Max
Min
Max

F4

SIZE

4 12 15 X

VARY

LENGTHS

NO. REQ'D

MAX. SPACING

WING

BAR SIZE

WING A

L

F3

NO. REQ'D

CLEAR HEIGHT

FOOTING THK.

F2

F1

W3

16'-4 3/4"

W2

W1

14'-6" 29'-0"

NO. REQ'D

0'-5 1/8"

LENGTH

G2

0'-6"

BAR SIZE

G1

3'-9"

OUTLET

SPACING

WF2

3'-2"

OUTLET

WING A

NO. REQ'D

WF1

3'-2"

WING B

WING WING
B
A

LENGTHS

WE

60

WING B

SPACING

AF2

0

WING A

BAR SIZE

$)

2'-0"

WING B

NO. REQ'D

WH2

6'-10"

WING A

SIZE

WH1

2'-0"

WINGWALLS

LENGTHS

HL

53'-8 7/8"

PARALLEL WITH HDWL

REINFORCING STEEL
(Includes apron and laps if
required)

LENGTH

K

3:1

FOOTINGS AT HDWL

CLASS "S"
CONCRETE
(Includes apron)

LENGTH OF FOOTING HEEL

BAR SIZE

SL

45

LENGTH OF

NO. REQ'D

SK

FOOTING DIMENSION

LENGTHS

CW

0'-8"

WIDTH OF WING

NO. REQ'D

AT WING END

WB

0'-9"

WING WING
B
A

WALL END

AT HDWL

H

6'-0"

HDWL LENGTH

BOX SKEW (DEG.)

OW

39'-1"

OVER ALL WIDTH

WING WALL THK.

WINGWALL
ANGLE
(DEGREE)

FOOTING WIDTH AT

WALL HEIGHT

73.04

10725

LONG
31'-2"
MID
21'-5"
SHORT
11'-7"

323


### Mid-Section

#### Bar Lap Table

<table>
<thead>
<tr>
<th>Length</th>
<th>Top Slab</th>
<th>Bottom Slab</th>
<th>Side Wall</th>
<th>Interior Wall</th>
<th>Top Slab Distribution</th>
<th>Bottom Slab Distribution</th>
<th>Side Wall Distribution</th>
<th>Interior Wall Distribution</th>
<th>Concrete</th>
<th>Reinforcing Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>25'-10&quot;</td>
<td>8'-11&quot;</td>
<td>78</td>
<td>4</td>
<td>25'-10&quot;</td>
<td>8</td>
<td>25'-6&quot;</td>
<td>8 25'-10&quot;</td>
<td>7 25'-6&quot;</td>
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</tr>
<tr>
<td>25'-6&quot;</td>
<td>8</td>
<td>25'-10&quot;</td>
<td>8</td>
<td>25'-6&quot;</td>
<td>5</td>
<td>25'-10&quot;</td>
<td>5 25'-6&quot;</td>
<td>9 25'-10&quot;</td>
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<td>5 25'-6&quot;</td>
<td>9 25'-10&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Inlet Windwall Table

<table>
<thead>
<tr>
<th>Section Length</th>
<th>Top Slab Reinforcing Steel</th>
<th>Bottom Slab Reinforcing Steel</th>
<th>Side Wall Reinforcing Steel</th>
<th>Interior Wall Reinforcing Steel</th>
<th>Top Slab Distribution Reinforcing Steel</th>
<th>Bottom Slab Distribution Reinforcing Steel</th>
<th>Side Wall Distribution Reinforcing Steel</th>
<th>Interior Wall Distribution Reinforcing Steel</th>
<th>Concrete</th>
<th>Reinforcing Steel</th>
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</thead>
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**Note:** Data shown for Mid-Section, Splay Sections, and Swayed End Section is based on the design fill depth shown in the table. Use Step 1 SHEETS for actual fill depth.
<table>
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<th>Class of Concrete (includes HDWL)</th>
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<tr>
<td>Includes apron and laps if required</td>
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### Outlet: Wingwall

- **Height of Wing Wall from HDWL:** 1'-0" (Includes HDWL)
- **Length of Footing Heel:** 15'-0" (Includes apron and laps if required)
- **Footings at HDWL:** Parallel with HDWL
- **Wingwall Parallel with HDWL:** (Degree)

### Slope

- **Slope:** 3:1
- **Total Width of Structure:** 25'-10"
- **Bottom Width:** 23'-0"
- **Top Width:** 26'-5 3/8"

### Reinforcing Steel

#### No. 4 Requirements

- **Bar Size:** 18 SPACING
- **Lengths:**
  - Min 3'-6" Max 9'-2" (LBS)
  - Min 4'-11" Max 10'-3" (LBS)

#### No. 6 Requirements

- **Bar Size:** 11 SPACING
- **Lengths:**
  - Min 2'-9" Max 1'-3" (LBS)
  - Max 2'-4" Max 8'-0" (LBS)

#### No. 8 Requirements

- **Bar Size:** 7 SPACING
- **Lengths:**
  - Min 1'-8" Max 1'-2" (LBS)
  - Max 2'-6" Max 1'-3" (LBS)

### Special Details

- **Possible Notes:**
  - Additional notes for the special details section may be added as necessary.
GENERAL NOTES


LOADING:
- All concrete shall be Class C with a minimum 28-day compressive strength of 3,500 psi and shall be poured in the dry. All exposed corners to have 1/2" chambers.
- Reinforcing Steel shall be Grade 60 (yield strength = 60,000 psi) conforming to ASHHTO M311 or M322, Type A, with mill test reports.
- Reinforcing Steel Tolerance: The tolerances for reinforcing steel shall be those listed in ‘Manual of Standard Practice’ published by Concrete Reinforcing Steel Institute (CRSI) except that the tolerance for bars to be within minus 3/4 of the nominal size.
- Excavation and backfilling shall be in accordance with the requirements of Section 801.

Membrane Waterproofing shall conform to the requirements of Section 815. Membrane Waterproofing shall be Type C and as directed by the Engineer applied to all construction joints in the top slab and the sidewalks of R.C. Box culverts and to the construction joint between wingwalls and R.C. Box culvert walls.

Weep Holes in box culvert walls shall have a maximum horizontal spacing of 10'-0" and shall be spaced to allow all reinforcing steel. The drain opening shall be 4" diameter and shall be placed 12'-0" 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 allow all reinforcing steel. There shall be a minimum of two (2) weep holes in each wingwall. The drain opening shall be 4" diameter and shall be placed 12'-0" above the top of the wingwall footing.

The barrel components of the culvert may be constructed using continuous pourers. For larger culvert construction, the Contractor may use multiple pours with transverse construction joints spaced a minimum of 50 feet apart unless supervised by stage construction or site constraints as approved by the Engineer. Construction joints between footings and walls shall be made only where shown in the Plans. Joints shall be keyed and shall be normal to the centerline of barrel except as noted. Reinforcing shall be continuous through joints unless noted otherwise. Reinforcing through stage construction joints shall provide the minimum bar length shown on the Tabular Data Sheets. All longitudinal construction joints shall be submitted to the Engineer for approval.

Membrane Waterproofing, Weep Holes, Geonet Filter Fabric, and Drainage Fill Material will not be paid for directly but shall be considered submittals to Class C Concrete.

When the top slab of the box culvert serves as finished roadway surface, curbing and finishing shall be in accordance with subsections 802.37 and 802.39 for bridge roadway surface and a time finish shall be applied in accordance with subsection 802.10 for Class C Treated Bridge Roadway Surface Finish. Curbing and finishing shall not be paid for directly, but shall be considered incidental to the item "Class C Concrete Roadway" Class 1 Protective Surface Treatment shall be applied to the roadway surface and this work shall be paid for under the unit price bid for "Class 1 Protective Surface Treatment".

When precast reinforced concrete box culverts are substituted for cast in place box culverts, they shall be manufactured according to ASTM C 1577 and meet the requirements of Section 807. When the top slab of the box culvert serves as the finished roadway surface, a precast reinforced concrete box culvert substitution is not allowed.

GENERAL NOTES & LONGITUDINAL SECTION LENGTH SCHEDULE

SPECIAL DETAILS
Note: The top side of culvert serves as finished roadway surface. See General Notes on Sheet 3 of 4.

LONGITUDINAL LAP DETAIL AT CHANGE IN SECTIONS

LAP DETAIL AT CHANGE IN SECTIONS

MINERVA ATTACHMENT
(Cutoff of Minerva for additional information and expert details).

TYPICAL KEYWAY DETAIL
(Dot Construction Details)

SKEWED END SECTION DETAILS

GENERAL DETAILS OF R.C. BOX CULVERT

DETAILS OF SINGLE BARREL
R.C. BOX CULVERT

SPECIAL DETAILS
END ELEVATION
Flared Wingwall Slope

TYPICAL KEYWAY DETAIL
all Construction Joints

PART PLAN - FLARED WINGWALLS

PLAN - FLARED WINGWALLS
Showing footing reinforcement

PART PLAN - PARALLEL WINGWALLS

PLAN - PARALLEL WINGWALLS
Showing footing reinforcement

CONSTRUCTION JOINTS
Flared Wingwall Slope

GENERAL DETAILS OF R.C. BOX CULVERT
DETAILS OF WINGWALLS
SPECIAL DETAILS
STA. 140+40.65
END OVERLAY
BEGIN CONSTRUCTION
LOG MILE 14.04

LEGEND
- Silt Fence
- Sand Bag Ditch Checks

NOTE: PERIMETER CONTROLS SHALL BE PLACED AT CLEARING AND GRUBBING BOUNDARY. RE-MOVE ALL EROSION CONTROL DEVICES AT END OF CONSTRUCTION UNLESS OTHERWISE NOTED.

CLEARING AND GRUBBING
TEMPORARY EROSION CONTROL DETAILS
LEGEND

- Sand Bag Ditch Checks
- Silt Fence

NOTE: PERMITS Controls SHALL BE PLACED AS CLEARING AND GRUBBING

REVISIONS

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<th>DATE OF REVISION</th>
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CLEARING AND GRUBBING
Temporary Erosion Control Details
STA. 140+40.65
END OVERLAY
BEGIN CONSTRUCTION
LOG MILE 14.04
DETAIL FOR STAGE CONSTRUCTION (HWY. 7)
STA. 140+40.65 - STA. 278+00.00

24' EXIST, PVT.

DETAIL FOR STAGE CONSTRUCTION (HWY. 7)
STA. 276+00.00 - STA. 321+84

TURNBACK VAR, SPECIAL END UNIT

NOTE: OM-3L & OM-3R SIGNS SHALL BE EQUALLY SPACED ALONG PCCB TURNBACK.

DETAIL OF OBJECT MARKERS
AT PRECAST CONCRETE BARRIER TURNBACKS
STAGE 1: CONSTRUCTION SEQUENCE

INSTALL ADVANCE WARNING SIGN AND END WORK SIGN AT THE BEGINNING AND END OF JOB AS SHOWN ON THE ADVANCE WARNING DETAIL.

MAINTAIN TRAFFIC ON EXISTING LANES.

USE VERTICAL PANELS TO DELINITE THE WORK ZONE.

NOTE: ONE PANEL IS 1' X 6' AND OTHER IS 6' X 6', AS SHOWN ON THE DETAIL.  THE PANELS SHOULD BE SPACED 10' ON CENTER.

APPLY LEVELING COURSE TO EXISTING LANES IF AND WHERE DIRECTED BY THE ENGINEER.

STAGE 1: QUANTITIES

TRAFFIC CONES = 6 EACH
VERTICAL PANELS = 20 EACH
STAGE 2 CONSTRUCTION SEQUENCE
INSTALL CONSTRUCTION PAVEMENT MARKINGS AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.
USE VERTICAL PIPES AND TRAFFIC DRUMS SPACED 60 FT. TO DELIMIT THE WORK ZONE. USE TRAFFIC CONES TO DELIMIT WORK AREAS.
MOW AND RWI ARE 7 FT., HWY. 5 FT., AND TRAFFIC 8 FT.
AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS, VERIFY TRACKING AND HWY. 50 APPROACH AS SHOWN IN THE STAGE 2 MAINTENANCE OF TRAFFIC DETAILS.
APPLY LEVELING COURSE TO RETURN 3 FT. AND MORE LEVEL DIRECTED TO THE ENGINEER.
STAGE 2 QUANTITIES
TRAFFIC DRUMS - 4 EACH
VERTICAL PIPES - 16 EACH
CONSTRUCTION PAVEMENT MARKINGS - 4 - 324 - 324 FT.

STA. 334+00.00
END CONSTRUCTION
END JOB 061547
MAINTENANCE OF TRAFFIC DETAILS
STAGE 3 CONSTRUCTION SEQUENCES

INSTALL CONSTRUCTION PERFORMANCE MAINTENANCE AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

USE VERTICAL RAILS SPACED 20' O.C. TO DELINEATE THE WORK ZONE. USE TRAFFIC CONES TO DELINEATE DIVIDENDS.

MONITOR AND CONSISTENTLY MOW, 3 FT. AND 3 FT., NW-1, S.W., AND ROUNDABOUT LAKES AS SHOWN IN THE STAGE 3 MAINTENANCE OF TRAFFIC DETAILS.

STAGE 3 MAINTENANCE OF TRAFFIC DETAILS

TRAFFIC CONES - 12 EACH
VERTICAL RAILS - 36 EACH
CONSTRUCTION PERFORMANCE MAINTENANCE - 360 FT. WG. FT.

STA. 334+00.00
END CONSTRUCTION
END JOB 061547

STAGE 3
MAINTENANCE OF TRAFFIC DETAILS
PERMANENT PAVEMENT MARKINGS

RAISED PAVEMENT MARKERS TYPE II (YEL/YEL) (80’ O.C.) = 451 EACH
THERMOPLASTIC PAVEMENT MARKING WHITE (6’*) = 34379 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (8’*) = 235 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING WHITE (12’*) = 694 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (6’*) = 46058 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING YELLOW (8’*) = 556 LIN. FT
THERMOPLASTIC PAVEMENT MARKING (YIELD LINE) = 69 LIN. FT.
THERMOPLASTIC PAVEMENT MARKING (WORDS) = 2 EACH
THERMOPLASTIC PAVEMENT MARKING (ARROWS) = 3 EACH
THERMOPLASTIC PAVEMENT MARKING (BIKE EMBLEMS) = 121 EACH
REFLECTORIZED PAINT PAVEMENT MARKING WHITE (10’*) = 97 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (6’*) = 1785 LIN. FT.
REFLECTORIZED PAINT PAVEMENT MARKING YELLOW (10’*) = 663 LIN. FT.

Hwy. 7 OVERLAY STRIPING DETAIL

Hwy. 7 STRIPING DETAIL
STA. 140+40.65
END OVERLAY
BEGIN CONSTRUCTION
LOG MILE 14.04

PERMANENT PAVEMENT MARKING DETAILS
### Advance Warning Signs and Devices

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### Construction Pavement Markings and Permanent Pavement Markings

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**Note:** The data is presented as per the section 634.23, Standard Specifications for Highway Construction.
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*Quantity estimated. See Section 104.83 of the STD. SPECS.

**CONCRETE DITCH PAVING**

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**TOTALS:** 1468.15 987.34 12.87

**EROSION CONTROL**

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**BH BAGS / LOCATION**

**SAND BAG DITCH CHECKS**

**ROCK DITCH CHECKS**

**FILTER SOCK (13")**

**SEDIMENT REMOVAL & DISPOSAL**

**NOTE:** The temporary erosion control devices shown above and on the plans shall be installed in such a sequence as to deter erosion and sedimentation on U.S. waterways as explained by the national pollutant discharge elimination system permit.

*Quantities estimated. See Section 104.83 of the STD. SPECS.
### HY. 7

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### HY. 10

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<tr>
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<td>200983.8352</td>
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### ROUNDABOUT

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<tbody>
<tr>
<td>8635</td>
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**162+40 DRIVEWAY**

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**DETOUR 1**

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<tr>
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<tr>
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<td>PC</td>
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**DETOUR 2**

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<tr>
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<td>1997272.5110</td>
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<tr>
<td>8787</td>
<td>PC</td>
<td>407-11.22</td>
<td>1997272.5110</td>
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<tr>
<td>8797</td>
<td>PC</td>
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**DETOUR 3**

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<tr>
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---

**SURVEY CONTROL DETAILS**
STA. 140+40.65
END OVERLAY
BEGIN CONSTRUCTION
LOG MILE 14.04
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
LEFT SIDE OF HWY, 7

REFER TO SURVEY CONTROL DETAIL SHEETS FOR HORIZONTAL AND VERTICAL CONTROL DATA.
### TRAFFIC SIGNAL QUANTITIES

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
<th>UNIT</th>
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</thead>
<tbody>
<tr>
<td>SP &amp; 701</td>
<td>ACTUATED CONTROLLER (TB, TYPE 2) 2 PHASE</td>
<td>1</td>
<td>EACH</td>
</tr>
<tr>
<td>SP &amp; 706</td>
<td>TRAFFIC SIGNAL HEAD, LED (4 SECTION, 1 WAY)</td>
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<td>EACH</td>
</tr>
<tr>
<td>SP &amp; 707</td>
<td>ROUTE/CONDITION SIGNAL, LED</td>
<td>4</td>
<td>EACH</td>
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<tr>
<td>901</td>
<td>TRAFFIC SIGNAL CABLE (4/0.64 W.G.)</td>
<td>1036</td>
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<tr>
<td>700</td>
<td>TRAFFIC SIGNAL CABLE (2/0.64 W.G.)</td>
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<td>706</td>
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<td>LN FT</td>
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<tr>
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<td>TRAFFIC SIGNAL CABLE (4/0.64 W.G.)</td>
<td>222</td>
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<tr>
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<td>ELECTRICAL CONDUCTORS IN CONDUIT (12 GA, 6 W.G.)</td>
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<td>LN FT</td>
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<td>ELECTRICAL CONDUCTORS IN CONDUIT (4/0.64 W.G.)</td>
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<td>NON METALLIC CONDUIT (2&quot;)</td>
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<tr>
<td>711</td>
<td>CONCRETE FULL BOX (TYPE 1)</td>
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<td>711</td>
<td>CONCRETE FULL BOX (TYPE 2)</td>
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<td>90</td>
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<td>60</td>
<td>LED LUMINARE ASSEMBLY</td>
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<td>60S</td>
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<tr>
<td>90P</td>
<td>SIGNAL POINT ASSEMBLY (2 CIRCUIT)</td>
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<tr>
<td>60P</td>
<td>3&quot; STEEL PIPE, ERA</td>
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<td>SP &amp; 753</td>
<td>VIDEO DETECTION (2 UNIT)</td>
<td>8</td>
<td>EACH</td>
</tr>
<tr>
<td>753</td>
<td>VIDEO CABLE</td>
<td>753</td>
<td>LN FT</td>
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<tr>
<td>753</td>
<td>VIDEO MONITOR (2 UNIT)</td>
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<td>EACH</td>
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<tr>
<td>SP &amp; 753</td>
<td>VIDEO PROCESSOR, SIDE CARD (2 CAMERA)</td>
<td>4</td>
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<tr>
<td>SP &amp; 753</td>
<td>VEHICLE DETECTION IN-CAB (8 CHANNELS)</td>
<td>1</td>
<td>EACH</td>
</tr>
</tbody>
</table>

* ONE SPARE VIDEO DETECTOR AND ONE SPARE VIDEO PROCESSOR SHALL BE SUPPLIED (REFER TO PERMANENT TRAFFIC SIGNAL PLANS)

---

### OVERHEAD STREET NAME MARKER STANDARD

**MAST ARM MOUNTED**

- **VARIABLE**
  - 6" LOWERCASE
  - 4" UPPERCASE
  - 8" UPPERCASE
- **WHITE BORDER STRIP**
  - 1/2" WHITE BORDER STRIP
- **GREEN BACKGROUND**
  - WHITE TEXT ON GREEN BACKGROUND

**Fason DR.**

2 SIGNS REQUIRED

**NOTES:**

1. REFLECTIVE SHEETING SHALL COMPLY WITH ASTM E456, TYPE B OR C. REFLECTIVE SHEETING AND LEGEND SHALL BE APPLIED IN SUCH A MANNER TO PROVIDE WRINKLE AND BUBBLE FREE SURFACES. APPLICATION OF SHEETING IS CAUSE FOR REJECTION OF MATERIALS DUE TO WORKMANSHIP.
2. ALUMINUM SIGN BLANK SHALL BE ALLOY 6061-T6 OR 5052-H32. THE ALUMINUM SIGN BLANK SHALL BE ALSO ANODIZED. THE ALUMINUM SHEETING SHALL BE 0.120 INCH NOMINAL THICKNESS AND OF THE SIZE SHOWN WITH 1.5" CORNER RADIUS PRIOR TO FABRICATION OF THE SIGNS. THE LAYOUT SHALL BE APPROVED BY AN AGENT OF THE CITY COUNTY.
3. WHEN CROSSROAD HAS TWO NAMES, THE SIGN FOR THE CROSSROAD TO THE LEFT MAY BE INSTALLED ON THE BACKSIDE OF THE MAST ARM ON THE NEAR SIDE LEFT POLE. SEE STANDARD DRAWING SHEET FOR MORE INFORMATION ON MOUNTING ON MAST ARM ASSEMBLY.
4. THE SERIES C 2000 STANDARD ALPHABET SHALL BE USED FOR ALL LETTERS.
TRAFFIC SIGNAL NOTES:


2. Extend green equipment grounding conductor (G.E.C.) from ground bar at main breaker to control panel and to first pole. Solid/ Bond E.G.C. to ground lug of control cabinet and to pole ground. Ensure that only one neutral-to-ground bond exists in the system and that it is at the main breaker.

3. Electrical service shall be provided by the city/county to a service pole with external Raintight breaker (main breaker). Galvanized steel service riser, meter loop (if required), and weatherhead at a mutually acceptable point within 100 feet. If the service point is over 100 feet from the controller, the controller shall provide and install a separate two circuit external breaker (secondary breaker) on or near the traffic signal controller cabinet and shall install conduit, electrical service wire (200 A, G.U. rated, with ground). Perform wiring to tap into the city's county's main breaker as part of this contract. Conduit is paid for as a separate item of this contract. Two primary breakers considered subsidiary to the control equipment, are needed where street lighting is included. As part of the signal installation, street lighting circuit (200 A, G.U. rated, taped) shall be kept from the circuit serving the traffic signal control equipment from the point of tie-in at the secondary breaker provided by the contractor.

4. Contractor shall connect a separate neutral for each load switch represented on each signal pole.

5. Traffic controller cabinet and layout shall be such that it is not necessary to shut down power or remove load switches in order to easily test or modify detector inputs to the controller.

6. Controller cabinet shall be wired such that during flash operations power to the load switches cannot be fed to switch power buses.

7. All parts of this installation shall be in accordance with the standard specifications for highway construction, standard drawings and with the manual on uniform traffic control devices, current edition.

8. Conduit installed under roadway surfaces shall be installed by pushing or boring methods. If the engineer determines this is not feasible, then a trenching method as shown in the standard drawings may be used.

9. Traffic signal poles shall be galvanized. Backplates shall be supplied for all signal heads.

10. Pavement marking shown for reference only. See permanent pavement marking details.

11. Foundation for all poles shall be extended necessary to accommodate the requirements for signal head clearance above roadway only at locations where the ground elevation at the poles is below the elevation of the roadway (see notes on standard drawings). Payment will be included in section 714 Traffic Signal Mast Arm and Pole 4th Foundation of the standard specifications for highway construction, current edition.

12. All concrete pull boxes shall be (Type 2 HD) unless otherwise indicated. All conduit shall be three (3) inch diameter unless specified on plans.

13. Contractor shall notify all existing utility owners before beginning work on this project.

14. LED luminaires shall have a bug rating of 0.

15. Hardware inputs may be determined by supplier. Each detector output shall input the controller through a separate input unless otherwise noted and be programmed to activate the associated phase. Combination (Comb.) detectors shall also be programmed to provide vehicle occupancy data.

16. To determine utility clearances above the traffic signal pole, refer to the pole schedule for vertical shaft height. Where the pole schedule indicates that a luminaire arm will be used, thirty-eight (38) feet should be used to determine utility clearance above the luminaire arm. Where the pole schedule indicates a traffic signal pole without a luminaire arm, a height of twenty-one (21) feet should be used to determine utility clearance above the traffic signal mast arm. An additional six (6) feet should be used directly above "video detector" at locations shown on the signal plans.

17. The desirable minimum distance from the face of roadway curb or shoulder edge to the face of non-breakaway pole or obstruction is six (6) feet. Refer to traffic signal plans for specific location of poles, controller and any other non-breakaway obstructions. Refer to "Design Parameters" minimum clear zone distance 8. For minimum distance from the edge of traveled way to the face of a non-breakaway pole or obstruction, traffic signal pole or any other non-breakaway obstruction shall not be installed within the clear zone.

18. As determined by the engineer, foundation embedment may be decreased by a maximum of two feet if competent rock is encountered prior to achieving plan embedment and at least half of the remaining plan embedment is keyed into competent rock.

19. Connection of traffic signal display to field wiring shall utilize an approved terminal strip behind hand-hole cover at base of pole. Terminal strip shall provide protection to prevent exposure to the public. The event that the pole cover is missing. Payment for terminal strips shall be included in section 714 Traffic Signal Mast Arm and Pole with foundation of the standard specifications for highway construction, current edition.

20. Controller cabinet, joystick and orientation shall conform to base standards.

21. One video programming module shall be provided for aiming and setup of detectors if the video system cannot be adjusted through hardware and software provided by the system within the job.

22. Traffic signal controllers shall notify the engineer examined to another department project inspector each day prior to signal related work. No work on traffic signals will be allowed or approved without this prior notification.

23. All steel poles shall be designed to meet the AASHTO standard specifications for structural supports for highway signs, luminaries and traffic signals. 4th Edition (2003 and 2006 Interim).

24. Door panel test push buttons shall actuate indicated phases. Detector assignments and/or panel jumpers may require modification.

25. All system detector racks and associated equipment shall be protected by the main controller cabinet power surge protection.

26. In pull boxes, pole bases, junction boxes and controller cabinets, the direction of each cable run shall be indicated by attaching a tag of rigid plastic on non-ferrous metal to the conduit. Tags shall be embossed, stamped or engraved with letters 1/2" or greater in height and secured to the conduit with nylon or plastic ties. In instances where the conduit or conduit entrances are not visible or accessible, a direction tag shall be attached to each cable.

27. All non-metallic conduit runs shall have bell ring fittings installed on the terminating ends of the conduit. This includes pull boxes, pole bases and traffic signal cabinet.

28. All concrete pull boxes shall be set on a gravel or crushed stone bedding as specified in Section 711, concrete pull box, of the standard specifications for highway construction, edition of 2014.
NOTES:
1. All signal heads shall have backplates.
2. Refer to special provisions "retroreflective backplates" for details on requirements for backplates.
3. Refer to special provisions for details on requirements for pedestrian signal heads.
4. All pedestrian signal heads can be placed into operation if there are both wheelchair ramps and a crosswalk that meets AODA standards.

SIGNAL FACES
12" LENSES

ONE SECTION
8 & 10 & 11
6.7 & 12
2.3 & 13

PHASING DIAGRAM

FASION DR

40 Foot Right Offset

COLLAR GENERAL

RETENTION TYPICAL

VERTICAL & HORIZON DETECTION (TYPICAL)

NOTE: This document contains engineering and design details for a traffic signal system, including signal faces, phasing diagram, and pole dimensions. It also includes a detector spacing chart and hazard warning plans.
WIRING DIAGRAM

NOTES TO CONTRACTOR:
1. ONE SEPARATE 1-50 IS RUN TO EACH POLE FOR THE PEDESTRIAN PUSH BUTTONS.
2. ALL DETECTOR RACK CHANNELS, INCLUDING UNUSED, SHALL BE BROUGHT TO TERMINAL STRIP IN DETECTOR AREA OF CABINET.
3. THE LOCAL GOVERNMENT SHALL BE RESPONSIBLE FOR PROVIDING POWER TO THE SERVICE POINT.
### SIGNAL FACES

- 2, 3, 13
- 6, 7, 12
- 1
- 4

**NOTES**

1. All signal heads shall have backplates.
2. Refer to special provision "retroreflective backplates." For details on requirements for backplates.
3. Refer to special provision for details on requirements for pedestrian signal heads.
4. All pedestrian signal heads can be placed into operation if there are both wheelchair ramps and a crosswalk that meets A.D.A. standards.

### DETECTOR CHART

<table>
<thead>
<tr>
<th>HWY, 7/FASON OR DETECTOR ASSIGNMENTS</th>
<th>DETECTOR SYSTEM DESCRIPTION: JOB 051547</th>
<th>HARDWARE INPUTS</th>
<th>PROGRAM ASSIGNMENTS</th>
<th>COMMENTS</th>
<th>TUBE LENGTHS</th>
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</thead>
<tbody>
<tr>
<td>DET ID #</td>
<td>LOCATION DIRECTION</td>
<td>TYPE</td>
<td>DET #</td>
<td>CAB TRM CHN #</td>
<td>AMP CHN #</td>
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<td>V211</td>
<td>NB LEFT TURN (PAR)</td>
<td>GOODS</td>
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<td>V8</td>
<td>1</td>
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<tr>
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<td>NB LEFT TURN (LOCAL)</td>
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<td>3</td>
<td>V1</td>
<td>1</td>
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<td>V2</td>
<td>2</td>
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<td>V10</td>
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<td>P82 AAB</td>
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<td>P2</td>
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<td>HWY 7 S. LEG</td>
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<td>P3</td>
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</table>

**SPARE** 7,8,11,12,13,14,15 & 16

**CONTROLLER INPUT ABBREVIATIONS:**
- V = Vehicle input
- D = System or auxiliary input
- P = Pedestrian input

**NOTE:**
- "AMP CHN #" refers to the rack output position.
- This is wired to controller input detector number which is programmed to actuate the designated phase.
- Example: V9 = System detector 1, V10 = System detector 2

### INTERVAL CHART

<table>
<thead>
<tr>
<th>SIGNAL FACES</th>
<th>HWY, 7/FASON OR DETECTOR</th>
<th>PULSE POS</th>
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</thead>
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<tr>
<td>1DLN</td>
<td>2DLN</td>
<td>3DLN</td>
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<tr>
<td>1</td>
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<td>2</td>
</tr>
<tr>
<td>162</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

* Denotes green or yellow arrow depending on next phase
** Denotes green or yellow ball depending on next phase
*** Denotes flashing yellow arrow or yellow arrow depending on next phase
1. ANY EQUIPMENT OR APPURTENANCE THAT INTERFERES WITH THE PROPOSED CONSTRUCTION AND WHICH MAY TANGENT THE PROPERTY OF UTILITY SERVICE ORGANIZATIONS SHALL BE MOVED BY THE OWNER UNLESS OTHERWISE PROVIDED.

2. PERFORM ALL ELECTRICAL WORK IN ACCORDANCE WITH THE CURRENT EDITIONS OF NATIONAL ELECTRICAL CODE (NFPA 70), LIFE SAFETY CODE (NFPA 101), STATE AND LOCAL ELECTRICAL CODE. ALL PARTS OF THIS INSTALLATION SHALL BE IN ACCORDANCE WITH THE ARKANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION FOR HIGHWAY CONSTRUCTION, CURRENT EDITION.

3. CONDUIT INSTALLED UNDER ROADWAY SURFACES SHALL BE INSTALLED BY A PUSHER OR BORING METHOD OR AS DIRECTED BY ENGINEER. PVC OR HDPE CONDUIT SHALL BE USED. PVC CONDUIT SHALL BE MARKED "DIR. BORING" OR "DIRECTIONAL BORING" AS PER NEC.

4. NON-METALLIC HULL MAY BE REINFORCED AS NEEDED OR當地りくれたがる MAY BE PERFORMED ON NEW CONDUITS IN THE PRESENCE OF FIELD INSPECTOR. THE TEST VOLTAGE SHALL BE LIMITED TO 800 VOLTS. ANY CONDUCTOR NOT MEETING THE MINIMUM ACCEPTABLE VALE SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE USING NEW CONDUCTOR. THE RESULTS SHALL BE DOCUMENTED AND PROVIDED TO THE JOB ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES CAUSED BY MEG TEST WHILE DEVICES OR ACCESSORIES ARE STILL CONNECTED AND SHALL BE REPLACED AT CONTRACTOR'S EXPENSE BE special provision ELECTRICAL CONDUCTORS-IN-CONDUIT.

5. PULL BOX LOSS shall close flush without pinching any conductors. Conduit lengths in pull boxes shall be set accordingly. Any conductors that have been damaged by pinching shall be completely replaced at contractor's expense.

6. THE CONTRACTOR SHALL NOT ENGAGE IN EXCAVATION OR DEMOLITION ACTIVITIES WITHOUT HAVING FIRST NOTIFIED THE ARKANSAS ONE CALL CENTER IN ACCORDANCE WITH A.C.A. § 14-271. UNDERGROUND FACILITIES DAMAGE PREVENTION ACT. NOT ALL UTILITY COMPANIES ARE MEMBERS OF THE ARKANSAS ONE CALL SYSTEM. THE CONTRACTOR IS ADVISED TO CONTACT ALL NON-MEMBER UTILITIES AS WELL AS THE ONE CALL CENTER.

7. UNDERGROUND UTILITIES EXIST WITHIN ADEQUATE TO THE LIMITS OF CONSTRUCTION SOME UTILITIES MAY HAVE BEEN RELOCATED SINCE THE TIME OF DESIGN AND THE CONTRACTOR'S NOTICE TO PROCEED THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANIES INVOLVED AND VERIFY THE LOCATIONS OF UNDERGROUND UTILITIES. THE CONTRACTOR SHALL MAINTAIN THE UTILITY LOCATION MARKINGS UNTIL IT IS NO LONGER NECESSARY.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS OF REPAIR OR REPLACEMENT OF EXISTING UTILITIES DAMAGED DURING THE CONSTRUCTION.

9. EACH ROADWAY ILLUMINATION POLE SHALL BE BONDED TO EQUIPMENT GROUNDING CONDUCTOR PER NEC SEE ARTICLES 350 AND 410.

10. ALL ELECTRICAL COMPONENTS SHALL BE UL LISTED.

11. ALL LUMINAIRES ASSEMBLY SHALL HAVE DLC RATINGS OR UL.

12. BEFORE FINAL ACCEPTANCE, CONTRACTOR SHALL PROVIDE 2 SETS OF LEGEND SIZE (11" X 17") AS BUILT PLANS TO THE MAINTENANCE AUTHORITY AND ARNOT.

13. PULL CABLE SHALL BE MINIMUM 1/4" PULL NYLON OR POLYESTER ROPE, OR 1200 LBS PULL TAPE WHEN PULLING CONDUCTORS. STEEL CABLE OR FISH TAPE SHALL NOT BE USED. CONNECT PULLING DEVICES TO COPPER WIRE AND NOT TO JACKET USE PULLING COMPOUND PER MANUFACTURER'S REQUIREMENTS. ALL BENDS SHALL NOT BE LESS THAN RECOMMENDED BY NEC FOR CONDUCTORS USED.

14. ALL CONCRETE PULL BOXES SHALL BE TYPE 2 HD UNLESS OTHERWISE INDICATED ON THE PLANS.

15. BLACK CABLES IN PULL BOXES SHALL BE 3 FEET.

16. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE DOCUMENTATION TO PROJECT ENGINEER, TO ENSURE ARKANSAS STATE CODES (§17-28-101 ET SEQ. AND §20-31-01 ET SEQ) ARE MET. THE DOCUMENTATION SHALL INCLUDE:

   (1) ELECTRICIAN'S LICENTIS INFORMATION AND EXPIRATION DATE.
   (2) THE RATIO OF LICENSED-ELECTRICIAN-TO-APPRENTICE-ELECTRICIANS.
   (3) PRINTED SEARCH RESULT OF LICENSED ELECTRICIANS FROM ARKANSAS DEPARTMENT OF LABOR ELECTRICIAN LICENSE DIRECTORY (https://www.arl.org/labor/electrician/search.php) ALL LICENSES SHALL BE VALID AND CURRENT.
### LUMINAIRE SCHEDULE

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<tr>
<th>POLI NO.</th>
<th>EASTING</th>
<th>NORTHING</th>
<th>STA.</th>
<th>OFFSET (FT)</th>
<th>CENTER LINE</th>
<th>MOUNTING HEIGHT (FT)</th>
<th>VOLTAGE (V)</th>
<th>LUM ARM (FT)</th>
<th>DELIVERED LUMENS</th>
<th>ORIENTATION ANGLE (PLAN NORTH = 0°, CW ROTATION)</th>
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### ELECTRICAL SERVICE DATA

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<th>SERVICE VOLTAGE</th>
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<th>SERVICE CONDUCTORS</th>
<th>MAIN CIRCUIT BREAKER</th>
<th>BRANCH CIRCUIT BREAKER</th>
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### CIRCUIT A, Voltage Drop, 2C/8AWG, EGC

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### ILLUMINATION STATISTICS

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<th>MAX. (FC)</th>
<th>MIN. (FC)</th>
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### ILLUMINATION DESIGN CRITERIA

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NOTE: DESIGN BASIS ARE AASHTO ROADWAY LIGHTING DESIGN GUIDE, 7TH ED., FOR ROADWAY'S, AND IES NF-8-18 FOR ROUNDABOUT.
ILLUMINATION NOTES

1. FOR LUMINAIRE ORIENTATION AND PLACEMENT, SEE LUMINAIRE SCHEDULE.

2. INSTALL CONCRETE PULL BOX (TYPE 2 HD) WITHIN 5 FEET OF THE POLE FOUNDATION. FOR MORE INFORMATION, SEE STANDARD DRAWING SD-4 AND SPECIAL PROVISION CONCRETE PULL BOX.

3. INSTALL CONDUIT BELL END FITTINGS ON NON-METALLIC CONDUIT ENDS. THE COST OF FITTINGS SHALL BE CONSIDERED SUBSIDIARY TO THE PAY ITEM, "NON-METALLIC CONDUIT (2") ."

4. INSTALL 2\(\frac{1}{12}\) XHHW-2, 1\(\frac{1}{12}\) E.G.C. FROM PULL BOX TO LUMINAIRES.

5. THE DEGREE OF TILT ON LUMINAIRES SHALL BE ZERO.

6. USE MINIMUM 1\(\frac{1}{4}\)" PULL ROPE OR 1200 LBS PULL TAPE WHEN PULLING CONDUCTORS.

7. ALL SPLICES SHALL BE WATER-TIGHT, AND UL-LISTED FOR CONTINUOUS USE IN SUBMERSIBLE INSTALLATIONS.

8. CONDUCT A MINIMUM 14-DAY BURN TEST FOR THE COMPLETE LIGHTING SYSTEM. REPLACE BURNED OUT AND NOTICEABLY DIM LUMINAIRES; MALFUNCTIONING EQUIPMENT SHALL BE CORRECTED, AND RETEST THE SYSTEM. OTHERWISE REMOVE AND REPLACE WITH NEW EQUIPMENT.

9. UNDERGROUND CONDUIT SHALL HAVE MINIMUM 24" OF COVER.
NOTES:

1. LUMINAIRE POLES SHALL MEET THE REQUIREMENTS OF 90 MPH WIND ZONE WITH A L.GUST FACTOR ON THE ASHHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS, REVISIONS WITH 2003 AND 2006 INTERMVS.

2. STEEL LUMINAIRE POLES SHALL BE A MINIMUM OF #8 ROUND STEEL, LUMINAIRE POLES SHALL BE HIT-PROOF GALVANIZED, OTHER DIMENSIONS PER MANUFACTURER'S RECOMMENDATION AS NECESSARY TO MEET THE REQUIREMENTS OF THE 5P - LED ROADWAY ILLUMINATION POLE.

3. LUMINAIRE POLES SHALL BE FABRICATED FROM ASTM A572 GR. 50 OR 65 STEEL.

4. POLE CAP OR TENSION CAP SHALL BE PROVIDED.

5. ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF SECTION 7M OF THE STANDARD SPECIFICATIONS. THE TOP 8" OF ALL ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A325. ANCHOR BOLTS IN FOUNDATIONS SHALL BE 2.5" X 30º FOR MOUNTING WEIGHT OF 40" OR GREATER, 2.5" X 30º FOR MOUNTING WEIGHT LESS THAN 40". ANCHOR BOLTS SHALL HAVE TOP END THREADED NOT LESS THAN 5" AND FURNISHED WITH GALVANIZED HEX NUTS, LOCK WASHERS, AND TEMPLATE. THE LOWER END OF THE BOLT SHALL BE THREADED AND FURNISHED WITH HEX NUT AND TEMPLATE.
ENERGY DISSIPATORS TO BE USED FOR THE ENTIRE LENGTH OF DITCH WHEN SLOPE OF DITCH PAVING EXCEEDS 2%. THE DISSIPATORS WILL NOT BE PAID FOR IF SLOPE IS LESS THAN 2%. THE DISSIPATORS WILL BE INCLUDED IN THE PRICE BID FOR CONCRETE DITCH PAVING.

NUMBER OF ELEMENTS PER ROW VARIES WITH WIDTH OF PAVING SPECIFIED

TYPE A

TYPE B

THE STEEL AND ADDITIONAL CONCRETE FOR THE WALLS SHALL NOT BE PAID FOR EXCEPT AS DIRECTED BY THE ENGINEER IN ROCK EXCAVATION.

TOE WALL DETAIL FOR CONCRETE DITCH PAVING

GENERAL NOTES:

THE FULL WIDTH OF EACH SECTION SHALL BE Poured MONOLITHICALLY.

TOE WALLS TO BE CONSTRUCTED FULL WIDTH AT EACH END OF DITCH PAVING AND Poured MONOLITHICALLY.

SOLID SOIL 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 12' INTERVALS, THE SPACE SHALL BE FILLED WITH APPROVED JOINT FILLER COMPLYING WITH ARSHTO M213.
CONCRETE COMBINATION CURB AND GUTTER

DETAIL OF GUTTER SLOPE
GUTTER SHALL BE CONSTRUCTED ON 2% SLOPE AWAY FROM ROADWAY, REGARDLESS OF ROADWAY SLOPE.

ALTERNATE CONSTRUCTION METHOD FOR INTEGRAL CURB

CONCRETE CURB

DETAILS OF MODIFIED CURB
MINIMUM TRENCH WIDTH
BASED ON FILL HEIGHT "H"

<table>
<thead>
<tr>
<th>Trench Height</th>
<th>Minimum Width</th>
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<tbody>
<tr>
<td>0'6&quot; - 1'0&quot;</td>
<td>0'8&quot;</td>
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<tr>
<td>1'0&quot; - 1'5&quot;</td>
<td>0'9&quot;</td>
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<tr>
<td>1'5&quot; - 2'0&quot;</td>
<td>1'0&quot;</td>
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<tr>
<td>2'0&quot; - 2'5&quot;</td>
<td>1'1&quot;</td>
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<tr>
<td>2'5&quot; - 3'0&quot;</td>
<td>1'2&quot;</td>
</tr>
<tr>
<td>3'0&quot; - 3'5&quot;</td>
<td>1'3&quot;</td>
</tr>
<tr>
<td>3'5&quot; - 4'0&quot;</td>
<td>1'4&quot;</td>
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<td>1'5&quot;</td>
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<td>1'6&quot;</td>
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<tr>
<td>5'0&quot; - 5'5&quot;</td>
<td>1'7&quot;</td>
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<tr>
<td>6'5&quot; - 7'0&quot;</td>
<td>2'0&quot;</td>
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MINIMUM COVER FOR CONSTRUCTION LOADS

<table>
<thead>
<tr>
<th>Diameter (inches)</th>
<th>Minimum Cover (feet)</th>
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<tr>
<td>3</td>
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<tr>
<td>4</td>
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<tr>
<td>9</td>
<td>0'9&quot;</td>
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<tr>
<td>10</td>
<td>1'0&quot;</td>
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EMBANKMENT AND TRENCH INSTALLATIONS

1. Structural Members, Equipment, and Other Structural Spacing Material Shall Be Placed At Least 0'6" On Each Side Of The Trench Without Of Material Space.

CONSTRUCTION SEQUENCE

1. Place Structural Spacing Material To Grade, Do Not Compact.
2. Install Pipes To Grade.
3. Compact Structural Spacing Outside The Whole Width Of The Pipe.

GENERAL NOTES

1. Pipe Shall Comply With AASHTO Type IV, Integral Joint, And Be Used Only For Use In Natural Ground Conditions.
2. Pipe Joints Shall Comply With AASHTO Type IV, Integral Joint, And Be Used Only For Use In Natural Ground Conditions.
4. Materials Shall Be Placed As Specified In The Bid, At The End Of The Trench To Reduce Cost Of Structural Spacing When Spacing Material Is Used For Structural Spacing And For Materials.
5. Pipes Installed With The Deteriorated End Of The Structure Material Shall Be Installed On The Outside Of The Structural Spacing Material And Shall Be Placed Outside The Structural Spacing Material On Each Side Of The Trench Without Of Material Space.
NOTE:
1. REFER TO THE STRIPING DETAILS FOR PAVEMENT MARKING LINE PATTERN.
2. THE STRIPING SHALL BE USED IN CONJUNCTION WITH THE LATEST RECOMMENDATIONS OF THE "ROADWAY USER TRAFFIC CONTROL DEVICES."
3. RASTER PAVEMENT MARKERS SHALL BE PLACED ON 80 FEET SPACING UNLESS OTHERWISE SHOWN ON THE PLANS.
4. FOR ASPHALT OR CONCRETE PAVEMENT OR FOR SUSPENDED SURFACE TREATMENT

CONCRETE PAVEMENT

BROKEN LINE STRIPING

ASPHALT PAVEMENT

SOLID LINE STRIPING ON CONCRETE PAVEMENT

SOLID LINE STRIPING ON ASPHALT PAVEMENT

ASPHALT PAVEMENT

CONCRETE PAVEMENT

STRIPING AT ADJACENT NO PASSING Lanes

WHITE YIELD LINE TERMINATES TO ENTRY LANE

OFFSET OF TRAFFIC

YIELD LINE DETAIL

CROSSWALK AND STOP LINE DETAILS

ARKANSAS STATE HIGHWAY COMMISSION

PAVEMENT MARKING DETAILS

STANDARD DRAWING PM-1
NOTES

1. UNDERGRAND COVER SHALL MEET THE REQUIREMENTS OF SECTION 24.1 FOR TYPE I. PAYMENT FOR UNDERGROUND COVER MATERIAL SHALL BE INCLUDED IN THE PRICE DED PER LIN. FT. FOR "4" PIPE UNDERGROUND" IN ACCORDANCE WITH SECTION 24.6 OF THE NEGOTIATIONS SPECIFICATIONS.

2.aural material shall be installed as shown on the plans. The method of testing the material shall be accepted by the Engineer.

2.1 THE LOCATION OF ALL MATERIALS SHALL BE MARKED WITH "4" X "4" PERMANENT REMARKING BANDING OR "4" X "4" PERMANENT REMARKING BANDING AT THE OUTER EDGE OF THE PIPE. THE BANDING IS TO BE PLACED OUTSIDE OF TRAFFIC PATTERN FOR THE WORK TO BE INCLUDED IN THE PRICE DED FOR THE VARIOUS CONTRACTS.

5. PAYMENT FOR THE REMOVED COVER SHALL BE INCLUDED IN THE PRICE DED PER LIN. FT. FOR "UNDERGROUND OUTLET PROTECTORS".

6. PAYMENT FOR THE REMOVED COVER SHALL BE INCLUDED IN THE PRICE DED PER LIN. FT. FOR "UNDERGROUND OUTLET PROTECTORS".

7. ALL EXISTING UNDERGROUND SYSTEMS THAT INTERCEPT WITH INSTALLATION OF THE NEW UNDERGROUND SYSTEM SHALL BE REMOVED AND DISPOSAL AS DIRECTED BY THE ENGINEER. PAYMENT FOR THE REMOVED COVER SHALL BE INCLUDED IN THE PRICE DED FOR THE VARIOUS CONTRACTS. THE EXISTING UNDERGROUND OUTLET PROTECTORS SHALL BE REMOVED UNDER THE PERMITS, REMOVAL AND DISPOSAL OF UNDERGROUND OUTLET PROTECTORS.

8.4 THE LOCATION WHERE A SINGLE MATERIAL IS USED THE CONTRACTOR SHALL HAVE THE FOLLOWING OPTIONS: INSTALL ONE OUTLET PROTECTOR AS SHOWN ON THE DRAWING OR INSTALL ONE MATERIAL OF THE SUBMITTED RULE 2 INSTALL AN OUTLET PROTECTOR WITH A SINGLE RULE.
**Steel Fabrication**

Reinforcing steel fabrication shall conform to the dimensions listed in the table below.

<table>
<thead>
<tr>
<th>BAR SIZE</th>
<th>PIN DIAMETER</th>
<th>HOOK EXTENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2½&quot;</td>
<td>4&quot;</td>
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<td>8</td>
<td>6&quot;</td>
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*The overall height of the hook size diagram below for a "B", "C", and "D" bent bars is greater than the corresponding top or bottom slab thickness. Less than 1/8" does not affect the height of the bar. The bent bars shall be replaced with the hooked bars. The hook size dimensions as shown in the table below are the same as the "B", "C", "D", or "E" bent bars they replace.*

**Note:** Dimensions of bars are measured out to out of bars.

**Overall Height of Hooked Bar Diagram**

The hooked bars shall be placed in the bottom of the top slab and the top of the concrete column. The straight bars shall be placed in the top of the headwall. The hooked bars shall be placed in the top of the headwall. See table below for lengths of replacement hooked and straight bars.

For skewed culverts, the replacement straight bar may have to be cut in field to fit.

**Replacement Bar Lengths Table**

<table>
<thead>
<tr>
<th>BAR SIZE (B, C, D, or E)</th>
<th>LENGTH OF HOOKED BAR</th>
<th>LENGTH OF STRAIGHT BAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>#4</td>
<td>L + F + 0&quot;</td>
<td>See &quot;C&quot; bar length</td>
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<tr>
<td>#5</td>
<td>L + F + 2&quot;</td>
<td>See &quot;C&quot; bar length</td>
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<tr>
<td>#6</td>
<td>L + F + 4&quot;</td>
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<td>#7</td>
<td>L + F + 6&quot;</td>
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<td>#8</td>
<td>L + F + 9&quot;</td>
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<td>#10</td>
<td>L + F + 12&quot;</td>
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<td>#12</td>
<td>L + F + 18&quot;</td>
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<tr>
<td>#&quot;</td>
<td>L + F + 24&quot;</td>
<td>See &quot;C&quot; bar length</td>
</tr>
<tr>
<td>#3</td>
<td>L + F + 30&quot;</td>
<td>See &quot;C&quot; bar length</td>
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<tr>
<td>L + &quot;OW&quot; + 3 INCHES</td>
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**Reinforced Concrete Box Culvert General Notes**

Concrete shall be Class 5 with a minimum 30-Day Compressive Strength of 3500 psi. Reinforcing steel shall be ASTM size M-1300 M 55, grade 60.

Construction and materials for minnow culvert drainage, including minnow holes and granular material, shall be subsidiary to the box culvert and shall be in accordance with the Standard Specifications.

Membrane waterproofing shall conform to the requirements of Section 80 of the Standard Specifications.

Reinforcing steel tolerances: The tolerances for reinforcing steel shall meet those listed in the Manual of Standard Practice published by Concrete Reinforcing Steel Institute. Except that the tolerance for mesh bars such as Figure 3 on page 7-4 of the Manual shall be minus zero to plus 1/8".

The requirements shown on this drawing shall supersede the corresponding requirements on all reinforced concrete box culvert standard drawings.

**R.C. Box Culvert Headwall Modifications**

**Arkansas State Highway Commission**

**Reinforced Concrete Box Culvert Details**

**Standard Drawing RCB-1**
GENERAL NOTES:

1. FOR SECTION "PROTECTED/PRESERVE" LEFT TURN HEADS SHOULD BE PLACED A MINIMUM OF THE LEFT FEET TO THE RIGHT OF THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

2. THREE SECTION "PROTECTED" LEFT TURN HEADS SHOULD BE PLACED ON THE CENTERLINE OF THE APPROACHING LEFT TURN LANE.

3. WHEN IT IS NECESSARY TO PLACE TOLERANCES OTHER THAN 36 SHOWN ON PLANS, DEPARTURES FROM TOLERANCES SHOWN ON THE APPROACHING LEFT TURN LANE MUST NOT BE GREATER THAN 1/2 THE APPROACHING LEFT TURN LANE.

4. SIGNAL HEAD SPACING SHOWN IN NO CASE, BE LESS THAN 1/2 THE NEAR HEADS ON CENTER. HEADS ARE LIT PERPENDICULAR TO THE APPROACH.

5. ALL SIGNAL HEADS SHOWN ON THIS DETAIL SHEET SHALL BE LOCATED IN ACCORDANCE TO THE DIMENSIONS SHOWN IN RELATION TO THE APPROACH SIDE OF THE INTERSECTION.

6. MAXIMUM MOUNTING HEIGHT OF SIGNAL HEADS LOCATED BETWEEN 40 FEET AND 63 FEET FROM STOP AND SHALL BE IN ACCORDANCE WITH FIGURE 445 OR OTHER NOTES.
### Superelevation Table for Two-Way Traffic (4% Maximum)

<table>
<thead>
<tr>
<th>Degree</th>
<th>25 MPH</th>
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<th>35 MPH</th>
<th>Degree</th>
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### Notes:
- **NC** = Normal Crown
- **NC** = Reverse Crown

### General Notes:
1. On pavement with two-way traffic, the superelevation shall be resolved on the inside pavement edge unless otherwise noted in the plans.
2. Superelevation is computed using the formula:
   
   
   \[ \text{Superelevation} = \frac{1}{2} \times \text{Rate of Superelevation} \times \text{Length of Transition} \]

3. Lengths for I.L. may be rounded to the nearest 25 ft. or 50 ft.

4. Pavement widths shall be divided into two or more segments at points of intersection between various rates of superelevation.

### Diagram:
- **Outside Surcharge Edge**
- **Inside Surcharge Edge**
- **Centerline**
- **Control Point**

### Table and Method of Superelevation for Two-Way Traffic (4% Maximum)

<table>
<thead>
<tr>
<th>Degree</th>
<th>25 MPH</th>
<th>Degree</th>
<th>35 MPH</th>
<th>Degree</th>
<th>45 MPH</th>
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### ARKANSAS STATE HIGHWAY COMMISSION

**Standard Drawing SE-3**
(A) TYPICAL APPLICATION - Exterior Maintenance Operations of Traffic Control on a Marine Corps Facility: Remove an item of the equipment in control.

(B) TYPICAL APPLICATION - Traffic Control Removable Traffic Control Pole and Traffic Control Sign.

(C) TYPICAL APPLICATION - Construction Operations of Maintenance to Long Term Operation on a Marine Corps Facility: Remove an item of the equipment in control.

(D) TYPICAL APPLICATION - Closing Multiple Lines of a Walking Manhole.
CLEARING AND GRUBBING

CONSTRUCTION SEQUENCE
1. PLACE PERMANENT CONTROLS (IE. SILT FENCE, DIVERSION DITCHES, SEEDMEN AVAILABLE)
2. PERFORM CLEARING AND GRUBBING OPERATION

EXCAVATION

EXISTING GROUND

INTERSECTION OR DIVERSION DITCH

NOTES

ALL CUT SLOPES SHALL BE GRIDDED, PREPARED, SEEDED AND MAINTAINED AS THE WORK PROGRESSES TO ENSURE SEED GROWTH AND STABILIZATION IN EQUALLY-SPACED LAYERS TO BE ERECTED IN FEET, MEASURED HORIZONTALLY.

CONSTRUCTION SEQUENCE
1. EXCAVATE AND STABILIZE INTERSECTION OR DIVERSION DITCH
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

EMBANKMENT

NOTE

NUMBER OF PHASES WILL VARY, THREE PHASES SHOWN FOR ILLUSTRATION

GENERAL NOTE

ALL EMBANKMENT SLOPES SHALL BE GRIDDED, PREPARED, SEEDED AND MAINTAINED AS THE WORK PROGRESSES TO ENSURE SEED GROWTH AND STABILIZATION IN EQUALLY-SPACED LAYERS TO BE ERECTED IN FEET, MEASURED HORIZONTALLY.

CONSTRUCTION SEQUENCE
1. CONSTRUCT DIVERSION DITCHES, GRID INTERSECTION OR DIVERSION DITCHES, SEEDMEN AVAILABLE
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

ARIZONA STATE HIGHWAY COMMISSION

TEMPORARY EROSION CONTROL DEVICES

STANDARD DRAWING TEC-3
GENERAL NOTES:

THESE INSTALLATIONS TO BE USED WHERE NORMAL FENCING INSTALLATION WOULD CAUSE THE COLLECTION OR DRAIN IN THE CHANNEL OF THE DEPRESSION WILL NOT PERMIT NORMAL INSTALLATION INSTALLATIONS WILL BE MADE ONLY WHERE DIRECTED BY THE ENGINEER.

WHEN A FENCE LINE APPROACHES A CLEFT CULLEY OR DEPRESSION, THE LAST POST ON LEVEL GROUND SHALL BE PLACED CLOSE ENOUGH TO THE EDGE OF THE CLEFT OFF THAT THE FENCE MAY BE STRUNG TO THE POST IN THE DEPRESSION WITHOUT TOUCHING THE GROUND.

WHEN INSTALLATION IN TERRAIN OF SUCH EXTREME IRREGULARITY THAT FENCING WOULD NOT BE POSSIBLE THE NORMAL FENCE SHALL CONTINUE ON GRADE AND THE GULLIES OR DEPRESSIONS TREATED BY SUBSTITUTE FENCES AS SHOWN.

PAYMENT FOR THE TYPE INSTALLATION USED WILL NOT BE MADE DIRECTLY BUT WILL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR WIRE FENCE OR CORD LINE FENCE.

ARKANSAS STATE HIGHWAY COMMISSION

WIRE FENCE WATER GAPS

STANDARD DRAWING WF-2