



# THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY

## CONTRACT I-16-4274 REAGAN MEMORIAL TOLLWAY (I-88) ILLINOIS ROUTE 47 INTERCHANGE

MILE POST 108.8 TO MILE POST 109.9  
STATION 5760+30 TO STA. 5822+20

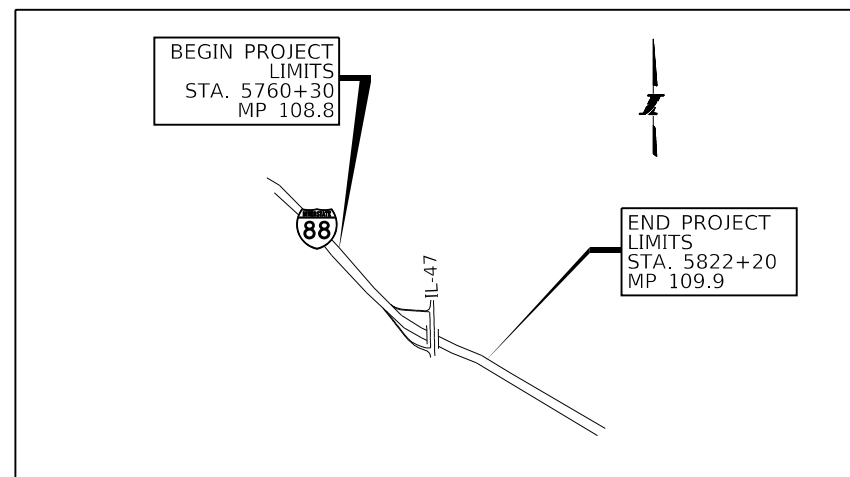
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#### VOLUME 1

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SUMMARY OF QUANTITIES,  
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REMOVAL PLANS,  
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PAVEMENT ELEVATION AND JOINTING PLAN,  
GRADING PLANS,  
LANDSCAPE PLANS,  
EROSION CONTROL PLANS,  
PAVEMENT MARKING AND SIGNING PLANS,

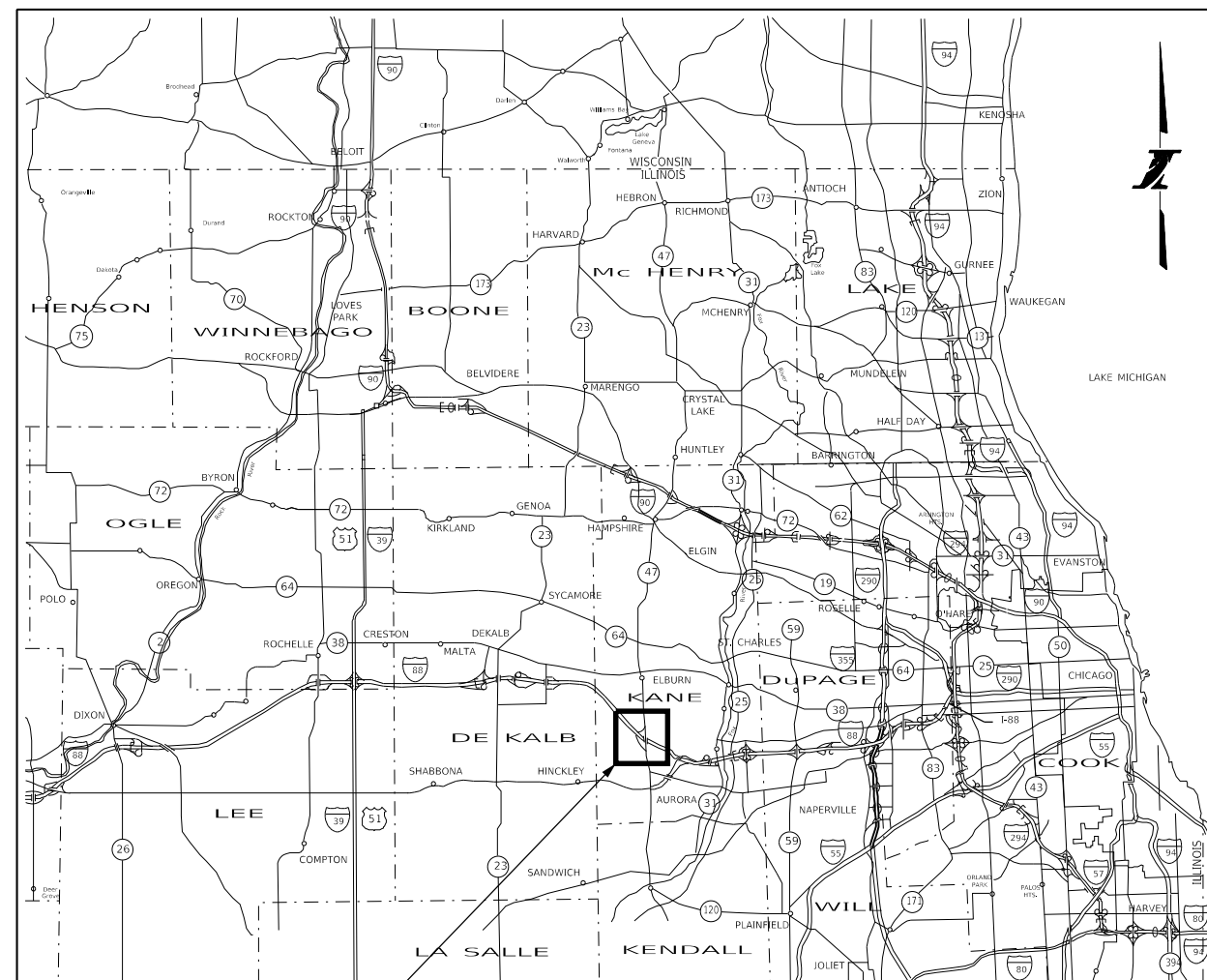
#### VOLUME 2

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PLAZA MECHANICAL PLANS  
PLAZA CIVIL SITE PLANS  
TOLL PLAZA STRUCTURAL PLANS  
AND DETAILS,  
STRUCTURAL PLANS,  
CROSS SECTIONS



CONSTRUCTION AREA MAP

DESIGN SPEED  
IL ROUTE 47 - 60 MPH  
  
POSTED SPEED  
IL ROUTE 47 - 55 MPH  
  
DESIGN CONSIDERATIONS  
IL ROUTE 47 - 24500 (2030)



CONTRACT I-16-4274  
SEE CONSTRUCTION AREA MAP

LOCATION MAP  
NTS

PROJ DATE = 10/17/2018 FILE NAME = ...102\_SHTV274-3R-cover-02.dwg



VOLUME 1

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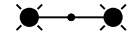




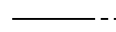
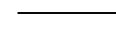
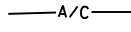


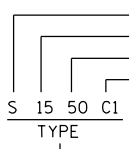


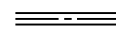

THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY  
 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
 INDEX OF DRAWINGS  
 VOLUME 2

SHEET NO.  
 IND-02  
 DRAWING NO.  
 268 OF 397

**LEGEND**

-  PROPOSED GROUND MOUNTED LIGHT POLE, ALUMINUM, AND LUMINAIRE, LED, HORIZONTAL MOUNT
-  PROPOSED DOUBLE ARM, GROUND MOUNTED LIGHT POLE, ALUMINUM, AND LUMINAIRE, LED, HORIZONTAL MOUNT
-  TEMPORARY LIGHTING UNIT, 400W HPS LUMINAIRE TYPE S-C-II, 15 FT. MAST ARM, WOOD POLE TO FURNISH 50 FT. MOUNTING HEIGHT
-  TEMPORARY WOOD POLE, 60 FT., CLASS 4
-  EXISTING LIGHTING UNIT TO BE REMOVED
-  INTERIOR CONTROL CONSOLE, 240/480V SINGLE PHASE, 3 WIRE, 200 AMP
-  UNIT DUCT UNDERGROUND, NO. AND SIZE OF WIRE AS NOTED ON PLANS BY WIRING/CONDUIT TAG
-  WIRING IN CONDUIT UNDERGROUND
-  A/C AERIAL CABLE WITH MESSENGER WIRE
-  HEAVY DUTY HANDHOLE TOLLWAY
-  WIRING/CONDUIT TAG
-  S- FOR SINGLE, D-FOR DOUBLE, Q-FOR QUAD MAST ARM, 15 FT. LONG MOUNTING HEIGHT, 50 FT. CIRCUIT NUMBER  
CIRCUIT DISTRIBUTION SCHEME
-  LED PHOTOMETRIC DISTRIBUTION TYPE (SEE TABLE BELOW ON THIS SHEET)
-  ComEd PAD MOUNTED SERVICE TRANSFORMER
-  UNDERGROUND CONDUIT
-  EXISTING CONTROL CONSOLE

**PHOTOMETRIC DISTRIBUTION TABLE**

MANUFACTURER	PHOTOMETRIC DISTRIBUTION	
	A	B
AMERICAN ELECTRIC	TYPE II	TYPE II
PHILIPS	TYPE R2M	-
GENERAL ELECTRIC	TYPE 23E1	TYPE II

**GENERAL NOTES:**

1. PRIOR TO INSTALLATION OF THE NEW UNIT DUCTS, CONDUITS, JUNCTION BOXES, HANDHOLES, LIGHT STANDARD FOUNDATIONS AND APPURTENANCES, THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION OF EXISTING CONDUITS, CABLE AND UNDERGROUND UTILITIES. THE CONTRACTOR SHALL CALL J.U.L.I.E. (800-893-0123) TO LOCATE AND MARK/STAKE ALL APPLICABLE UNDERGROUND UTILITIES.
2. THE CONTRACTOR MUST VERIFY ALL INFORMATION SHOWN ON THE CONTRACT PLANS AND REFERENCE DRAWINGS WHICH WOULD EFFECT HIS/HER WORK UNDER THIS CONTRACT FOR THE OPERATION OF THE EXISTING ROADWAY LIGHTING IF ANY.
3. ALL NEW UNIT DUCTS, CONDUITS, JUNCTION BOXES AND APPURTENANCES ARE DIAGRAMMATICALLY SHOWN THEREFORE THE ACTUAL LOCATION IN THE FIELD MUST MEET THE APPROVAL OF THE ENGINEER.
4. CONDUIT AND UNIT DUCT MUST BE POSITIONED IN THE FIELD TO AVOID CONFLICT WITH ALL UNDERGROUND UTILITIES IN ELEVATION BY MAINTAINING A MINIMUM SEPARATION OF 12".
5. NO MATERIAL OR EQUIPMENT SHALL BE DELIVERED TO THE JOB SITE WITHOUT PRIOR INSPECTION AND APPROVAL OF THE ENGINEER. ANY MATERIAL AND EQUIPMENT NOT APPROVED BY THE ENGINEER MUST BE REMOVED FROM JOB SITE AT THE CONTRACTOR'S EXPENSE.
6. THE ELECTRICAL MATERIAL MUST BE NEW AND OF THE TYPES AND KINDS APPROVED BY THE FOLLOWING ORGANIZATIONS.  
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)  
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)  
ILLUMINATING ENGINEERS SOCIETY OF NORTH AMERICA (IES)  
AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)  
U.S. DEPARTMENT OF TRANSPORTATION (USDOT)  
UNDERWRITERS LABORATORIES (UL)  
AMERICAN NATIONAL STANDARD INSTITUTE (ANSI)  
INSULATED POWER AND CABLE ENGINEERS ASSOCIATION (IPCEA)  
ILLINOIS STATE TOLL HIGHWAY AUTHORITY
7. ALL ABOVE GROUND CONDUITS SHALL BE PVC COATED RGS UNLESS NOTED OTHERWISE.
8. ALL CONCRETE ENCASED CONDUIT AND CONDUIT IN SINGLE FACE PROPOSED CONCRETE BARRIER SHALL BE SCHEDULE 40 PVC OR CNC UNLESS NOTED OTHERWISE.
9. ALL ELECTRICAL SYSTEMS, EQUIPMENT AND APPURTENANCES SHALL BE PROPERLY GROUNDED IN STRICT CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE, EVEN THOUGH EVERY DETAIL OF REQUIREMENTS IS NOT SPECIFIED OR SHOWN.
10. ALL CONDUIT ENTRANCES INTO THE INTERIOR CONSOLE FILED DRILLED AND ATTACHED WITH WATERPROOF HUBS.
11. IT SHALL BE THE CONTRACTOR RESPONSIBILITY TO MARK THE PROPOSED LOCATION OF ALL LIGHT POLES FOR EXAMINATION AND CONFIRMATION BY THE ENGINEER.
12. UNLESS OTHERWISE NOTED, ALL LIGHT POLES SHALL HAVE A SETBACK OF 7 FEET FROM EDGE OF PAVED SHOULDER, PER STANDARD H1-07.
13. REFER TO TOLLWAY STANDARD H2-06 FOR LIGHT STANDARD WIRING DETAILS.
14. NO POLES SHALL BE ERECTED UNTIL THE RESPECTIVE FOUNDATIONS HAVE CURED, AS APPROVED BY THE ENGINEER.
15. TO MAINTAIN STRUCTURAL INTEGRITY OF ALUMINUM POLES WITH MAST ARMS, THEY SHALL NOT BE ERECTED AND LEFT TO STAND WITHOUT LUMINAIRES.
16. UNLESS OTHERWISE NOTED ALL GROUND MOUNTED ALUMINUM POLES SHALL BE PROVIDED WITH BREAKAWAY DEVICES AS SPECIFIED. ALL BREAKAWAY DEVICES MUST BE CLASSIFIED BY AASHTO AND FHWA.
17. ALL UNDERGROUND CONDUIT AND DUCT SHALL BE INSTALLED NOT LESS THAN 2'-9" BELOW FINISHED GRADE OR 45" BELOW THE TOP OF PAVEMENT UNLESS INDICATED OTHERWISE.
18. ALL ROADWAY LIGHTING FIXTURES SHALL BE LED AS APPROVED BY THE TOLLWAY.
19. FOR REFERENCE DRAWINGS AND SPECIFICATIONS, REFER TO THE ILLINIOS STATE TOLLWAY HIGHWAY AUTHORITY STANDARD DRAWINGS FOR THE LIGHTING CONTRACT.
20. ALL LED LUMINAIRES SHALL BE PROVIDED WITH A DECAL FOR DISTRIBUTION TYPE PER TOLLWAY SUPPLEMENTAL PROVISION FOR SECTION 1067 AND INCLUDE TILT ANGLE TO FACILITATE MAINTENANCE.
21. ALL EMPTY CONDUITS UNDERGROUND OR ABOVE GRADE SHALL HAVE A 3/8" DIA. NYLON ROPE INSTALLED PER SECTION 801.19. EACH END OF SUCH CONDUITS SHALL BE CAPPED ALSO.
22. ALL POWER HANDHOLES SHALL BE HEAVY DUTY, REFER TO TOLLWAY STANDARD DETAIL H4-04.
23. ALL PROPOSED LIGHT POLES MAST ARMS SHALL BE PROVIDED WITH MAST ARM CABLE ASSEMBLY AS PER STANDARD DRAWINGS H16 AND H17.

**LIST OF STANDARD DRAWINGS**

- H1-07 LIGHT STANDARD FOUNDATION
- H2-06 LIGHT STANDARD DETAILS
- H4-04 HEAVY DUTY HANDHOLE AND BURIED WIRING DETAILS
- H8-03 INTERIOR CONTROL CONSOLE DETAILS
- H16 MAST ARM CABLE ASSEMBLY (TWIN MAST ARM)
- H17 MAST ARM CABLE ASSEMBLY (SINGLE MAST ARM)

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**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

<b>CONTRACT NO.</b> I-16-4274
GENERAL NOTES AND LEGEND

<b>SHEET NO.</b> EL-01
<b>DRAWING NO.</b> 269 OF 397

**BILL OF MATERIALS**

PAY ITEM NUMBER	DESCRIPTION	UNIT OF MEASURE	QUANTITY
JS804100	ELECTRIC SERVICE INSTALLATION	EACH	1
JS810822	UNDERGROUND CONDUIT, GALVANIZED STEEL, 3" DIA.	FOOT	50
JS810879	UNDERGROUND CONDUIT, COILABLE NONMETALLIC CONDUIT, 4" DIA.	FOOT	1225
JS814002	HEAVY-DUTY HANDHOLE, TOLLWAY	EACH	7
JS816074	UNIT DUCT, WITH 2-1/C NO. 4 AND 1/C NO. 6 GROUND, 600V (XLP-TYPE USE), 2" DIA. CNC	FOOT	1804
JS816078	UNIT DUCT, WITH 4-1/C NO. 4 AND 1/C NO. 6 GROUND, 600V (XLP-TYPE USE), 2" DIA. CNC	FOOT	15,592
JS817218	ELECTRIC CABLE IN CONDUIT, 600V (XLP-TYPE USE) 1/C NO. 3/0	FOOT	150
JS821003	TEMPORARY LUMINAIRE, SODIUM VAPOR, HORIZONTAL MOUNT, 400 WATT	EACH	19
JS821100	LUMINAIRE, LED, HORIZONTAL MOUNT	EACH	84
JS825004	LIGHTING CONTROLLER, 200 AMPERE	EACH	1
JS830003	GROUND MOUNTED LIGHT POLE, ALUMINUM, 50 FT., 15 FT. MAST ARM	EACH	72
JS830030	TEMPORARY WOOD POLE, 60 FT. CLASS 4	EACH	5
JS830031	TEMPORARY WOOD POLE, 60 FT. CLASS 4, 15 FT. MAST ARM	EACH	19
JS830055	GROUND MOUNTED LIGHT POLE, ALUMINUM, 50 FT., TWO 15 FT. MAST ARMS	EACH	6
JS836001	LIGHT POLE FOUNDATION (RDWAY) STEEL HELIX (7 FT) OR CONCRETE	EACH	72
JS836004	LIGHT POLE FOUNDATION (PARKING LOT) CONCRETE	EACH	6
JS842085	REMOVAL OF EXISTING LIGHTING UNIT, NO SALVAGE	EACH	27
JS845011	REMOVAL OF LIGHTING CONTROLLER	EACH	1
JS845013	REMOVAL OF LIGHTING CONTROLLER FOUNDATION	EACH	1
JS846001	MAINTAIN LIGHTING SYSTEM	L SUM	1
81800190	AERIAL CABLE, 2-1/C NO. 2 WITH MESSENGER WIRE	FOOT	540
81800400	AERIAL CABLE, 4-1/C NO. 2 WITH MESSENGER WIRE	FOOT	5055

**CABLE AND CONDUIT DESCRIPTION**

- A** UNIT DUCT, WITH 2-1/C NO. 4 AND 1/C NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
  - B** UNIT DUCT, WITH 4-1/C NO. 4 AND 1/C NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
  - C** AERIAL CABLE, 4-1/C NO. 2 WITH MESSENGER WIRE
  - D** AERIAL CABLE, 2-1/C NO. 2 WITH MESSENGER WIRE
  - E** UNDERGROUND CONDUIT, GALVANIZED STEEL, 3" DIA.
  - F** UNDERGROUND CONDUIT, CNC, 4" DIA.
  - G** ELECTRIC CABLE IN CONDUIT, 600V (XLP-TYPE USE), 1/C NO. 3/0.
- ( )** SUPERSCRIPIT DESIGNATES THE NUMBER OF CONDUITS IN THE CONDUIT RUN. SINGLE CONDUIT WHEN NO SUPERSCRIPIT IS PROVIDED

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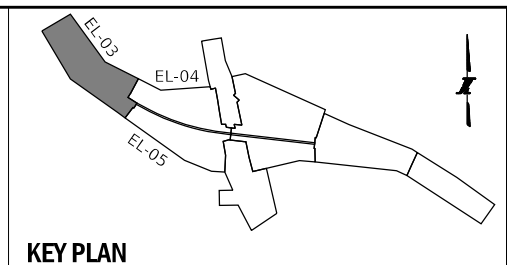


THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY  
 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

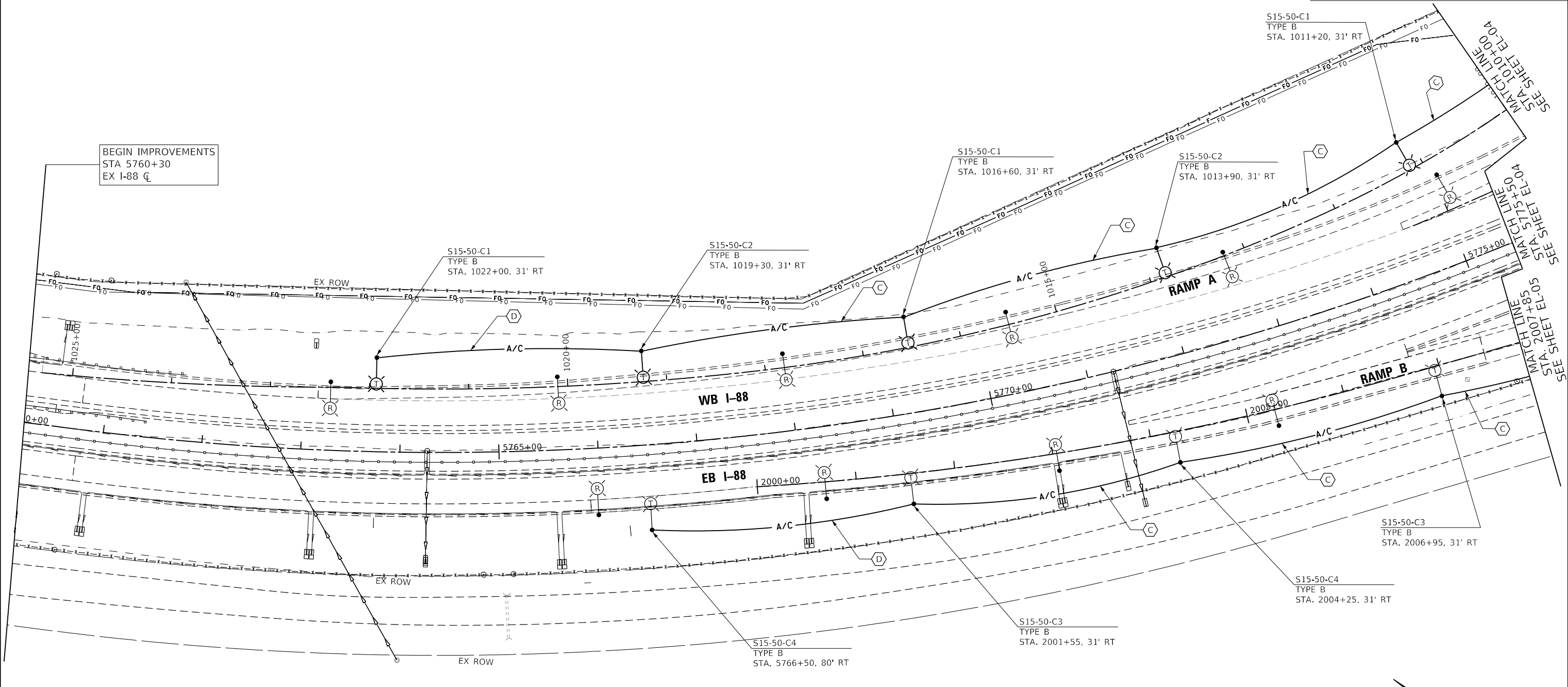
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO.** I-16-4274  
**BILL OF MATERIALS,**  
**CABLE AND CONDUIT DESCRIPTION**

**SHEET NO.** EL-02  
**DRAWING NO.** 270 OF 397

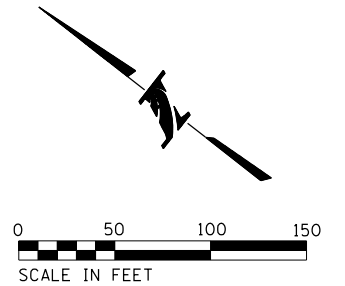


BEGIN IMPROVEMENTS  
STA 5760+30  
EX I-88 CL



- CABLE AND CONDUIT DESCRIPTION**
- (C) AERIAL CABLE, 4-1/C NO. 2 WITH MESSENGER WIRE
  - (D) AERIAL CABLE, 2-1/C NO. 2 WITH MESSENGER WIRE

- NOTES:**
1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEETS EL-01 AND EL-02.
  2. TEMPORARY LIGHTING SHALL BE INSTALLED AND MADE OPERATIONAL PRIOR TO REMOVAL OF EXISTING LIGHTING.
  3. ELECTRIC FEED TO TEMPORARY LIGHTING SHALL BE FROM EXISTING LIGHTING CONTROLLER.



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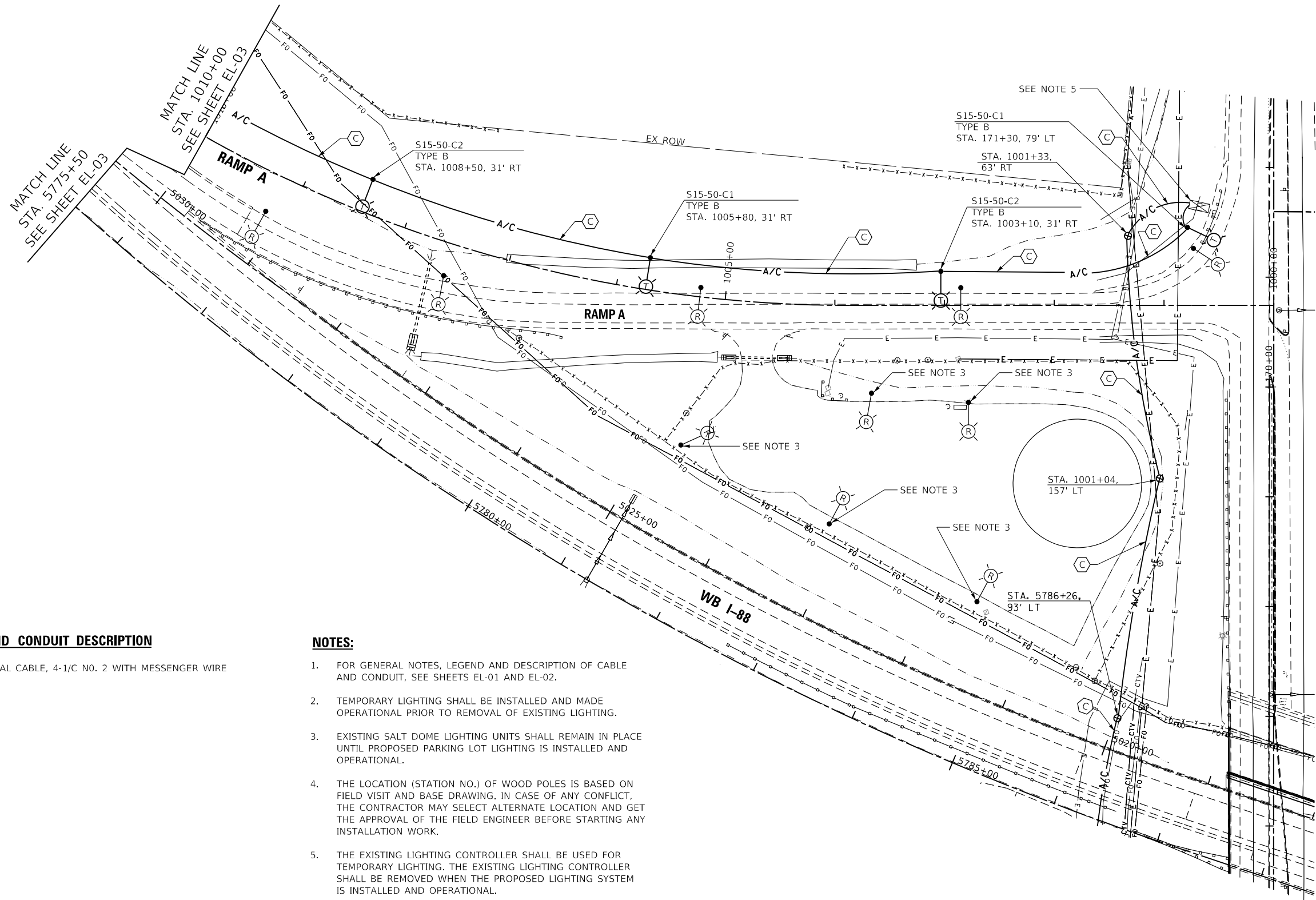
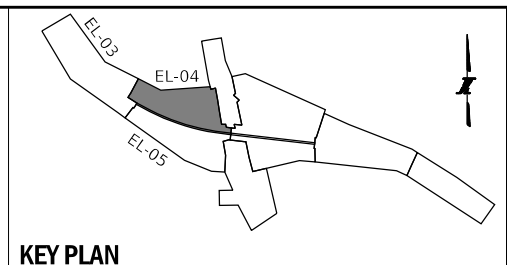
**AMES Engineering, Inc.**  
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**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
2700 OGDEN AVENUE  
DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
REMOVAL AND TEMPORARY  
LIGHTING PLAN

**SHEET NO.**  
EL-03  
**DRAWING NO.**  
271 OF 397

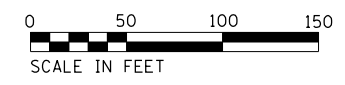


**CABLE AND CONDUIT DESCRIPTION**

AERIAL CABLE, 4-1/C NO. 2 WITH MESSENGER WIRE

**NOTES:**

1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEETS EL-01 AND EL-02.
2. TEMPORARY LIGHTING SHALL BE INSTALLED AND MADE OPERATIONAL PRIOR TO REMOVAL OF EXISTING LIGHTING.
3. EXISTING SALT DOME LIGHTING UNITS SHALL REMAIN IN PLACE UNTIL PROPOSED PARKING LOT LIGHTING IS INSTALLED AND OPERATIONAL.
4. THE LOCATION (STATION NO.) OF WOOD POLES IS BASED ON FIELD VISIT AND BASE DRAWING. IN CASE OF ANY CONFLICT, THE CONTRACTOR MAY SELECT ALTERNATE LOCATION AND GET THE APPROVAL OF THE FIELD ENGINEER BEFORE STARTING ANY INSTALLATION WORK.
5. THE EXISTING LIGHTING CONTROLLER SHALL BE USED FOR TEMPORARY LIGHTING. THE EXISTING LIGHTING CONTROLLER SHALL BE REMOVED WHEN THE PROPOSED LIGHTING SYSTEM IS INSTALLED AND OPERATIONAL.
6. THE EXISTING PARKING LOT LIGHTING FOUNDATIONS SHALL BE REMOVED. EXISTING WIRING SHALL BE DISCONNECTED FROM THE EXISTING PANEL AND REMOVED FROM THE EXISTING DUCT BETWEEN THE PANEL AND THE LIGHTING UNITS. THE DUCT BENEATH THE PARKING LOT SHALL BE ABANDONED IN PLACE.



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<b>CHECKED BY</b>	BL	<b>SCALE</b>	1"=50'

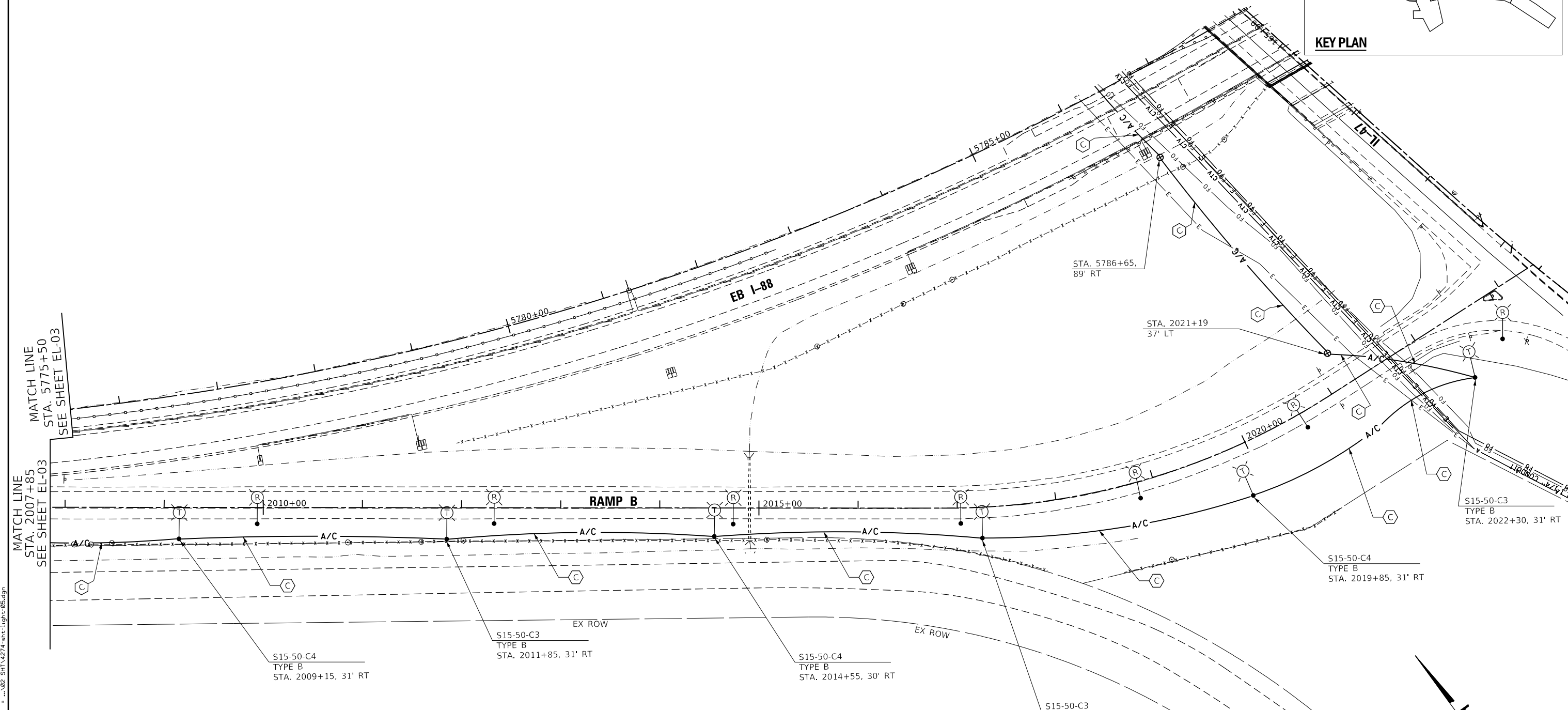
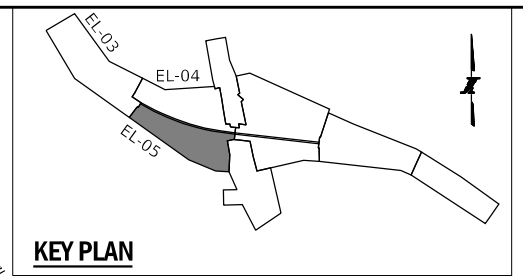
**AMES Engineering, Inc.**  
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 Downers Grove, IL 60516

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 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 REMOVAL AND TEMPORARY  
 RAMP A LIGHTING PLAN

**SHEET NO.**  
 EL-04  
**DRAWING NO.**  
 272 OF 397

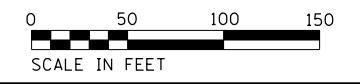


**CABLE AND CONDUIT DESCRIPTION**

AERIAL CABLE, 4-1/2 NO. 2 WITH MESSENGER WIRE

**NOTES:**

1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEETS EL-01 AND EL-02.
2. TEMPORARY LIGHTING SHALL BE INSTALLED AND MADE OPERATIONAL PRIOR TO REMOVAL OF EXISTING LIGHTING.
4. THE LOCATION (STATION NO.) OF WOOD POLES IS BASED ON FIELD VISIT AND BASE DRAWING. IN CASE OF ANY CONFLICT, THE CONTRACTOR MAY SELECT ALTERNATE LOCATION AND GET THE APPROVAL OF THE FIELD ENGINEER BEFORE STARTING ANY INSTALLATION WORK.



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<b>CHECKED BY</b>	BL	<b>SCALE</b>	1"=50'

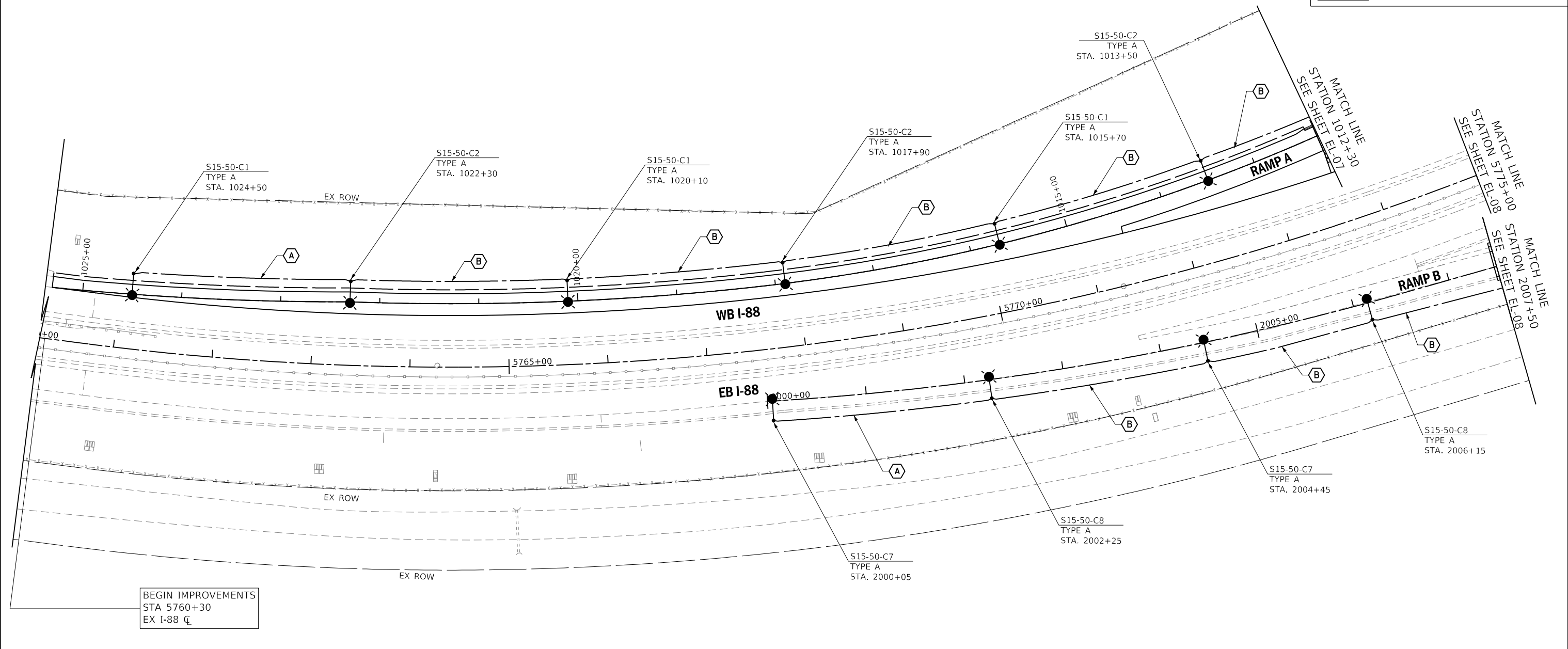
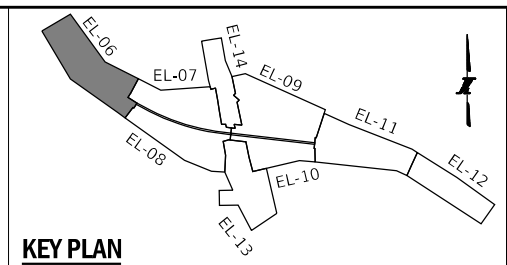
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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 REMOVAL AND TEMPORARY  
 RAMP B LIGHTING PLAN

**SHEET NO.**  
 EL-05  
**DRAWING NO.**  
 273 OF 397



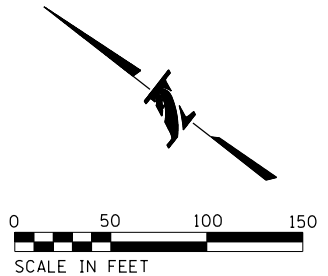
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 STA 5760+30  
 EX I-88 CL

**CABLE AND CONDUIT DESCRIPTION**

- (A) UNIT DUCT, WITH 2-1/2" NO. 4 AND 1/2" NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- (B) UNIT DUCT, WITH 4-1/2" NO. 4 AND 1/2" NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC

**NOTES:**

1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEETS EL-01 AND EL-02.



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**DRAWN BY** SR      **DATE** 10/18/2018  
**CHECKED BY** BL      **SCALE** 1"=50'

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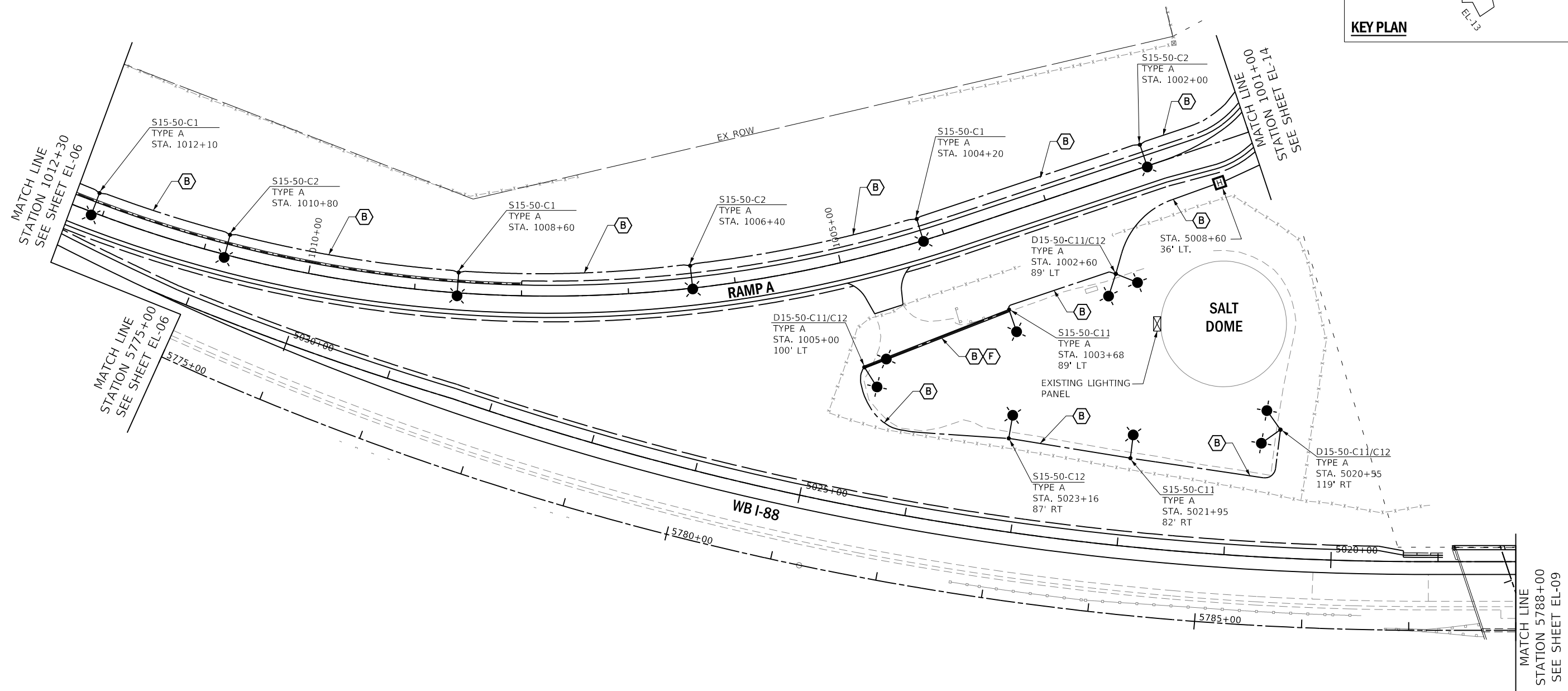
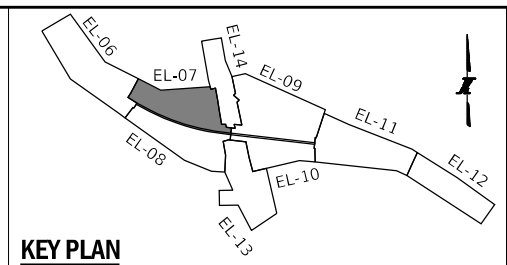
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 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
**PROPOSED LIGHTING PLAN**  
**RAMP A & RAMP B**

**SHEET NO.**  
 EL-06  
**DRAWING NO.**  
 274 OF 397



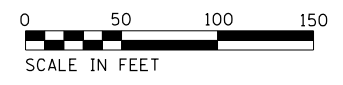


**CABLE AND CONDUIT DESCRIPTION**

- (B)** UNIT DUCT, WITH 4-1/C NO. 4 AND 1/C NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- (F)** UNDERGROUND CONDUIT, CNC, 4" DIA.

**NOTES:**

1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEETS EL-01 AND EL-02.
2. PROPOSED LIGHTING UNITS FOR SALT DOME PARKING LOT SHALL BE INSTALLED ON LIGHT POLE FOUNDATION (PARKING LOT) CONCRETE BUILT PER SHEET EL-18.
3. THE CONCRETE PARKING LOT FOUNDATIONS SHALL HAVE 36" ELEVATION ABOVE GROUND.
4. THE EDGE OF THE FOUNDATION SHALL BE 3/4" X 45° CHAMFER OR 1" RADIUS.



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**CHECKED BY** BL      **SCALE** 1"=50'

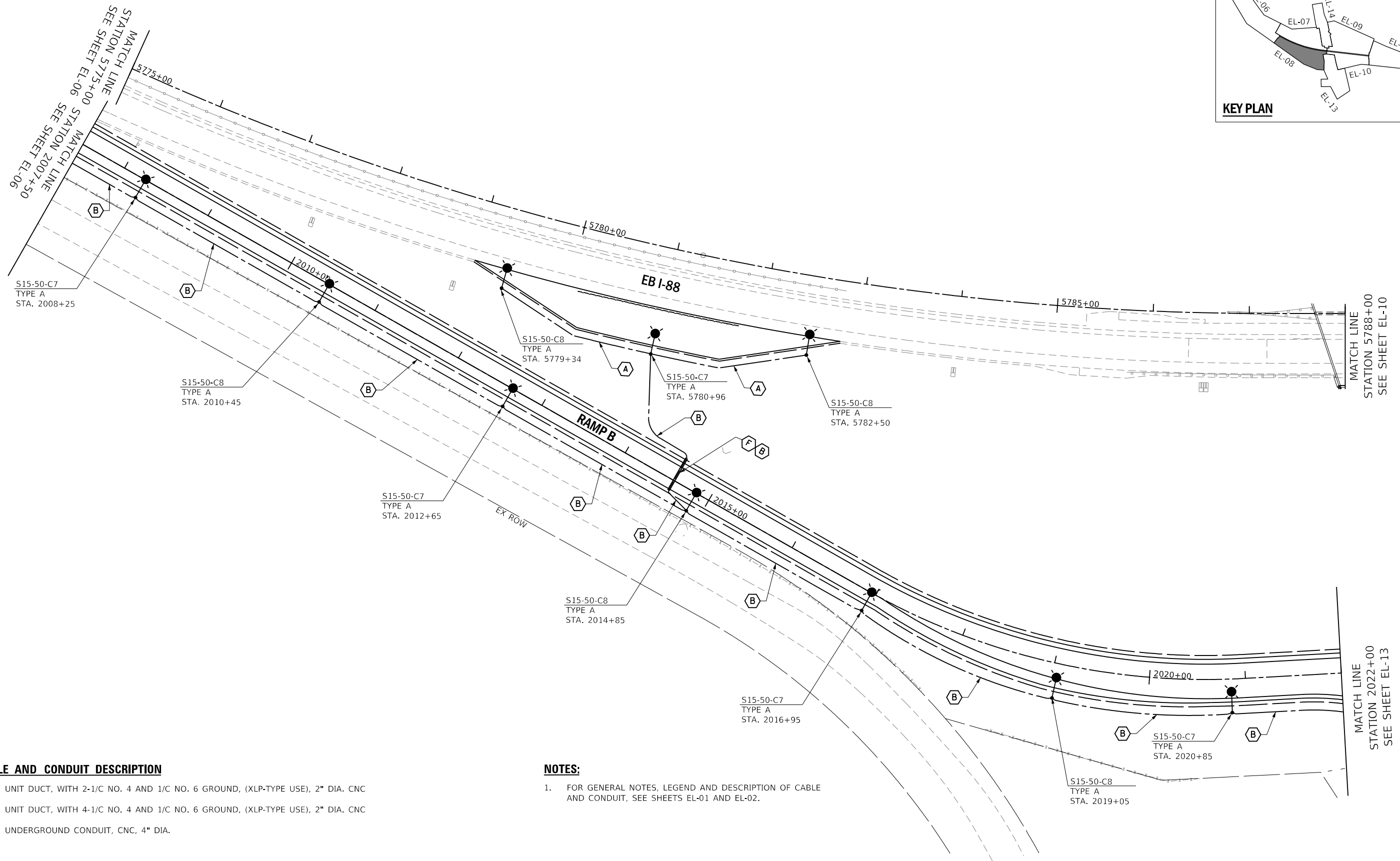
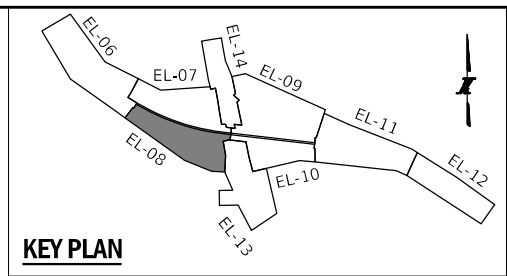

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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO.** I-16-4274  
**PROPOSED LIGHTING PLAN**  
**RAMP A**

**SHEET NO.** EL-07  
**DRAWING NO.** 275 OF 397

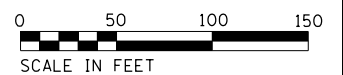


**CABLE AND CONDUIT DESCRIPTION**

- (A) UNIT DUCT, WITH 2-1/8 NO. 4 AND 1/8 NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- (B) UNIT DUCT, WITH 4-1/8 NO. 4 AND 1/8 NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- (F) UNDERGROUND CONDUIT, CNC, 4" DIA.

**NOTES:**

1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEETS EL-01 AND EL-02.



PEN TABLE: ILLTOLLWAY-TABLES-PL01.TBL  
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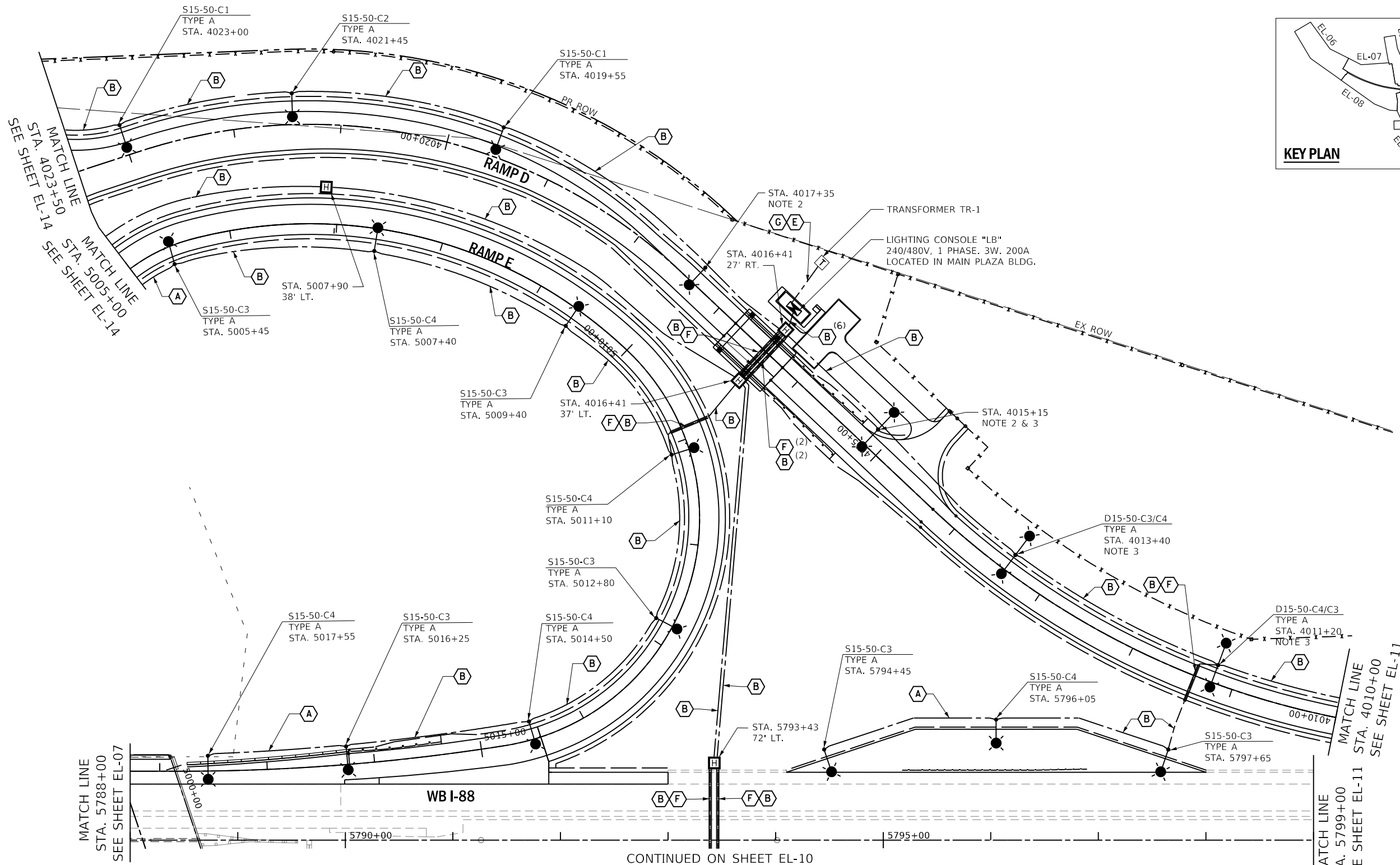
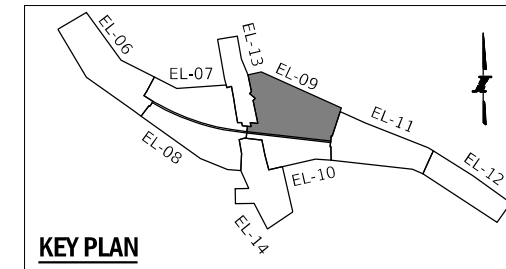

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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO.** I-16-4274  
 PROPOSED LIGHTING PLAN  
 RAMP B

**SHEET NO.** EL-08  
**DRAWING NO.** 276  
**OF** 397

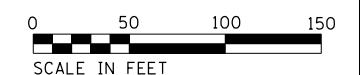


**CABLE AND CONDUIT DESCRIPTION**

- (A) UNIT DUCT, WITH 2-1/2 NO. 4 AND 1/2 NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- (B) UNIT DUCT, WITH 4-1/2 NO. 4 AND 1/2 NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- (E) UNDERGROUND CONDUIT, GALVANIZED STEEL, 3" DIA.
- (F) UNDERGROUND CONDUIT, CNC, 4" DIA.
- (G) ELECTRIC CABLE IN CONDUIT, 600V (XLP-TYPE USE), 1/2 NO. 3/0.
- ( ) SUPERSCRIPIT DESIGNATES THE NUMBER OF CONDUITS IN THE CONDUIT RUN. SINGLE CONDUIT WHEN NO SUPERSCRIPIT IS PROVIDED.

**NOTES:**

1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEETS EL-01 AND EL-02.
2. LIGHTING UNITS SHALL BE FED FROM PLAZA. FOR DETAILS, SEE UNDERGROUND ELECTRICAL PLAN RAMP D WITH CONTROL BUILDING, ON SHEET TPE-04.
3. TWIN MAST ARM LIGHTING UNITS TO PROVIDE LIGHTING FOR SALVAGE YARD.
4. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING BURIED FOC FACILITIES, PROTECT AND EXERCISE EXTREME CAUTION TO LAY PROPOSED UNDERGROUND LIGHTING CONDUIT AND CABLE.



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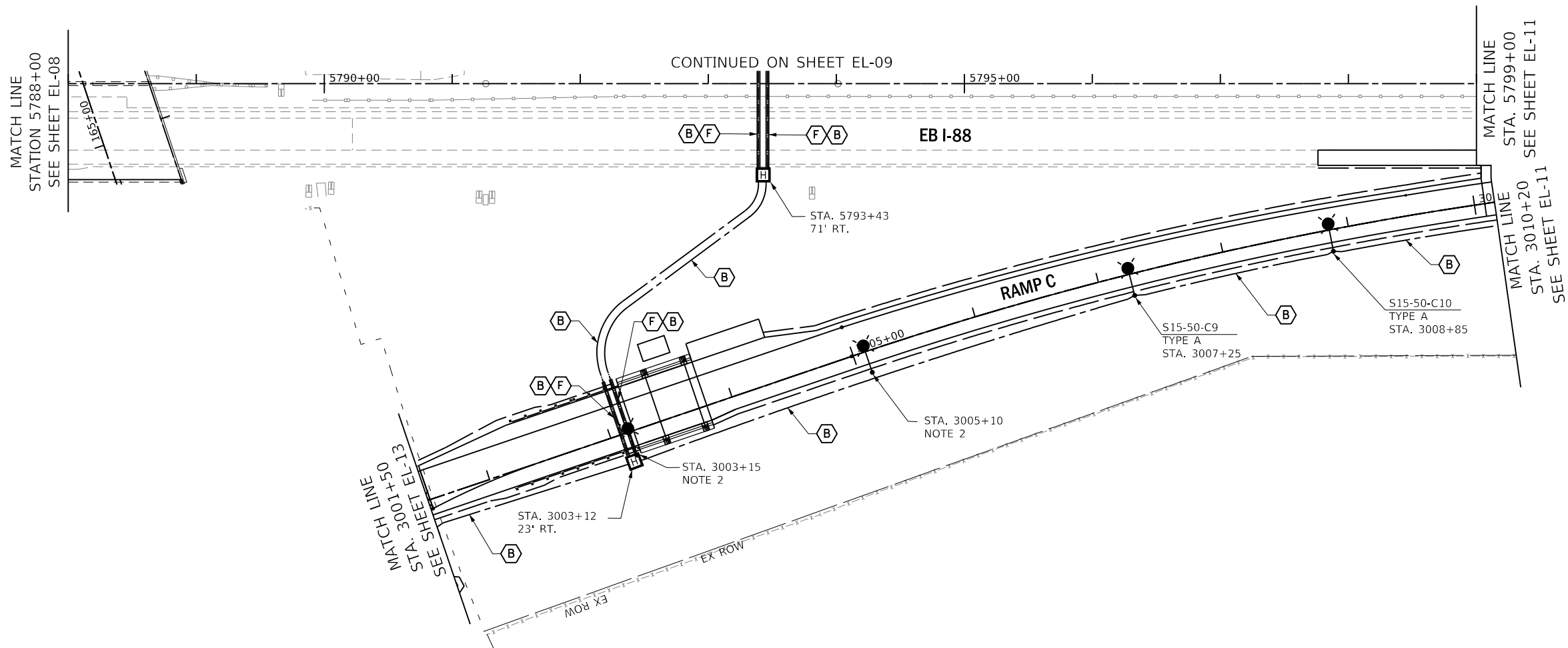
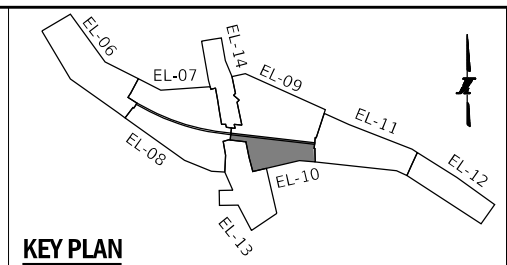
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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 PROPOSED LIGHTING PLAN  
 RAMP D AND E

**SHEET NO.**  
 EL-09  
**DRAWING NO.**  
 277 OF 397

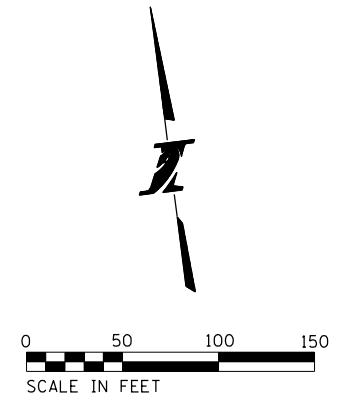


**CABLE AND CONDUIT DESCRIPTION**

- (B) UNIT DUCT, WITH 4-1/C NO. 4 AND 1/C NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- (F) UNDERGROUND CONDUIT, CNC, 4" DIA.

**NOTES:**

1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEETS EL-01 AND EL-02.
2. LIGHTING UNITS SHALL BE FED FROM PLAZA. FOR DETAILS, SEE UNDERGROUND ELECTRICAL PLAN RAMP D WITH CONTROL BUILDING, ON SHEET TPE-05.



PEN TABLE: ILLTOLLWAY-TABLES-PLT.TBL  
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<b>CHECKED BY</b>	BL	<b>SCALE</b>	1"=50'

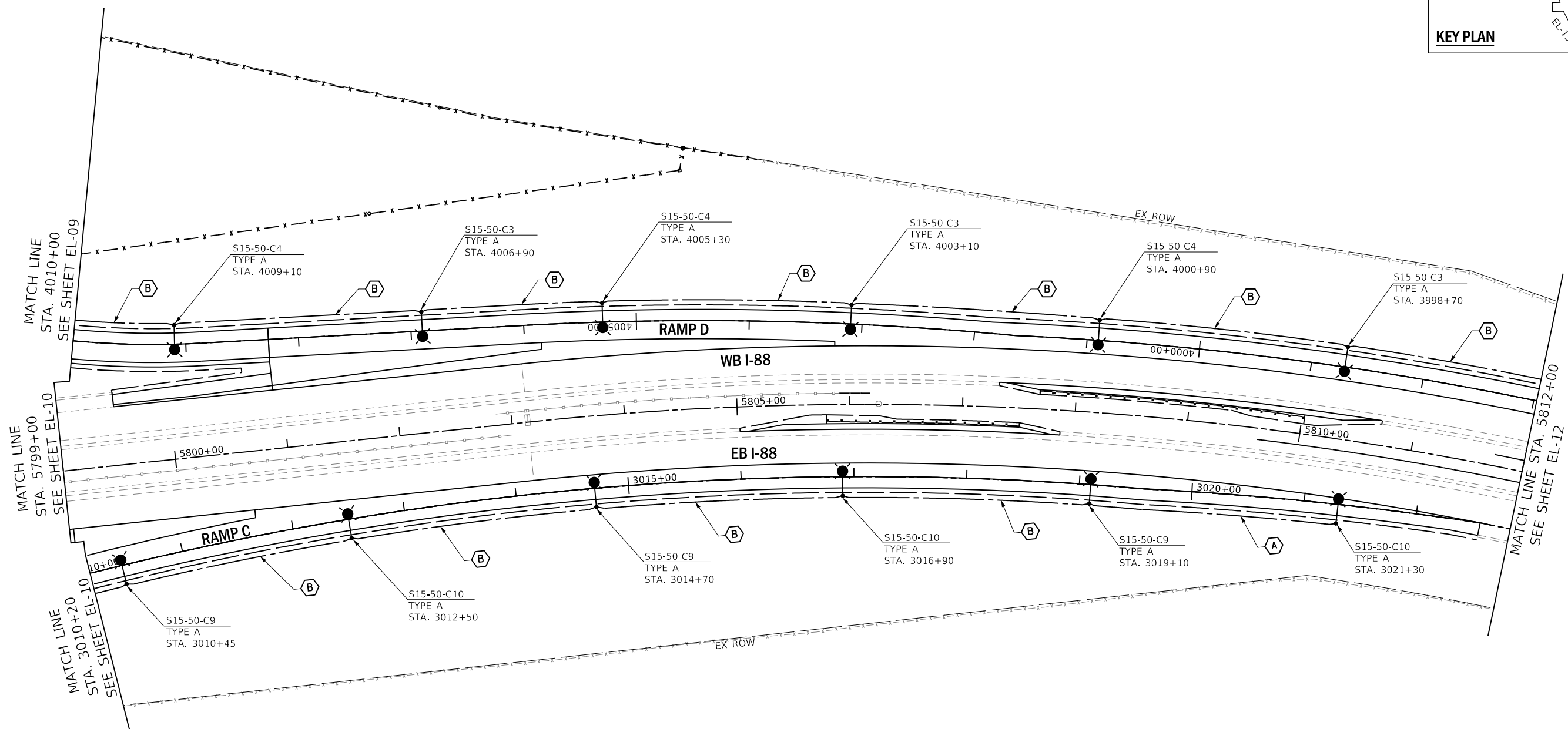
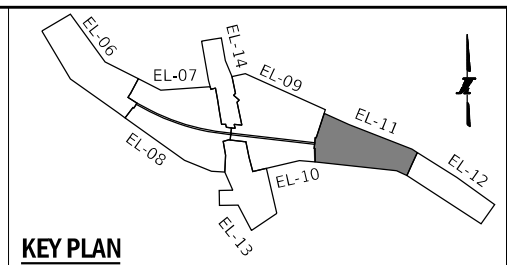

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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 PROPOSED LIGHTING PLAN  
 RAMP C

**SHEET NO.**  
 EL-10  
**DRAWING NO.**  
 278 OF 397

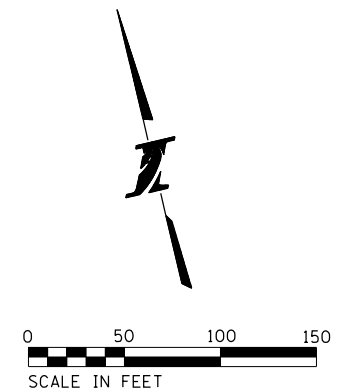


**CABLE AND CONDUIT DESCRIPTION**

- (A) UNIT DUCT, WITH 2-1/C NO. 4 AND 1/C NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- (B) UNIT DUCT, WITH 4-1/C NO. 4 AND 1/C NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC

**NOTES:**

1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEETS EL-01 AND EL-02.



PEN TABLE: ILLTOLLWAY-TABLES-PL01.TBL  
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**DRAWN BY** SR      **DATE** 10/18/2018  
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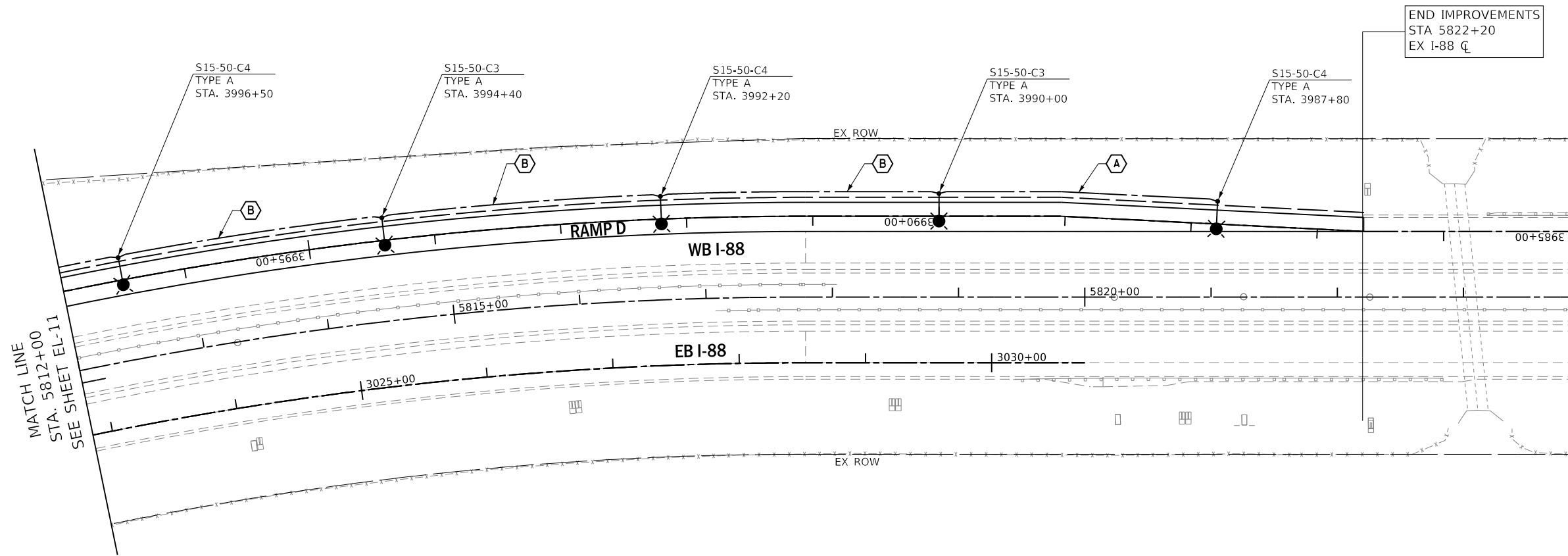
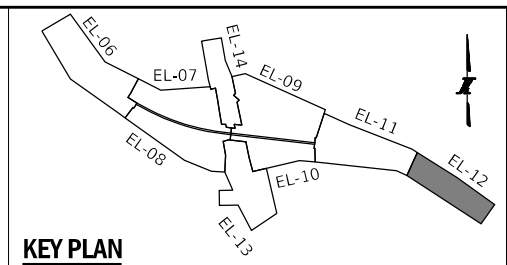
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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO.** I-16-4274  
**PROPOSED LIGHTING PLAN**  
**RAMP D & RAMP C**

**SHEET NO.** EL-11  
**DRAWING NO.** 279 OF 397

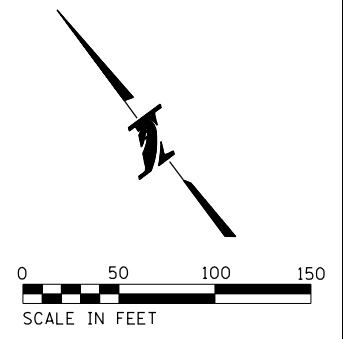


**CABLE AND CONDUIT DESCRIPTION**

- A** UNIT DUCT, WITH 2-1/C NO. 4 AND 1/C NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- B** UNIT DUCT, WITH 4-1/C NO. 4 AND 1/C NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC

**NOTES:**


1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEETS EL-01 AND EL-02.



PEN TABLE: ILLTOLLWAY-TABLES-PL01.TBL  
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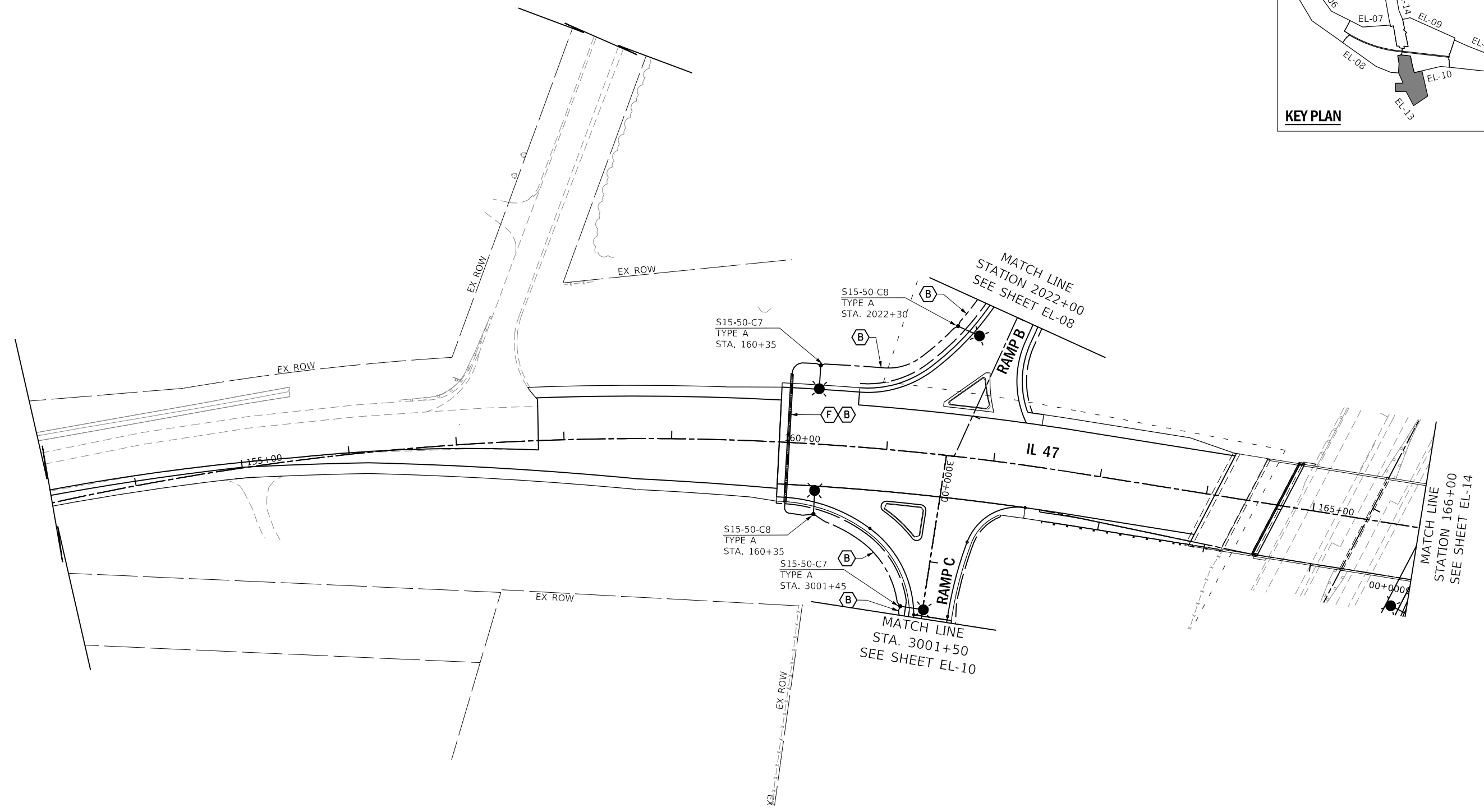
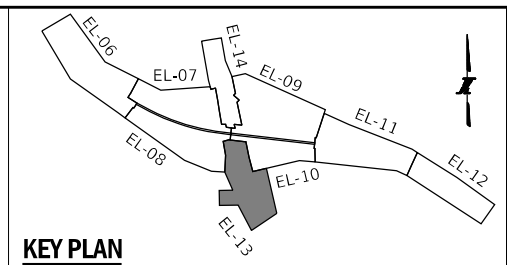

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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO.** I-16-4274  
**PROPOSED LIGHTING PLAN**  
**RAMP D**

**SHEET NO.**  
 EL-12  
**DRAWING NO.**  
 280 OF 397

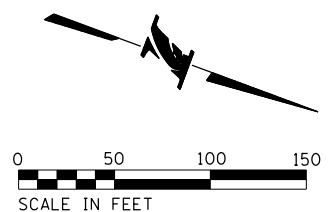


**CABLE AND CONDUIT DESCRIPTION**

- B UNIT DUCT, WITH 4-1/C NO. 4 AND 1/C NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- F UNDERGROUND CONDUIT, CNC, 4" DIA.

**NOTES:**

1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEETS EL-01 AND EL-02.



PEN TABLE: ILTOLLWAY-TABLES-PLOT.TBL  
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**CHECKED BY** BL      **SCALE** 1"=50'

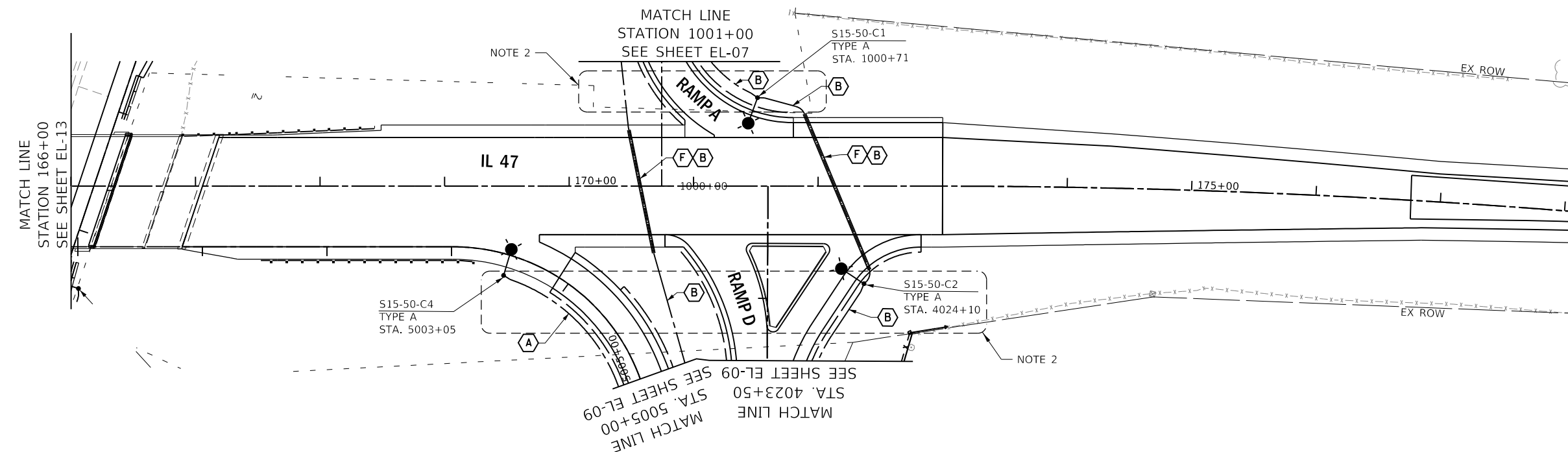
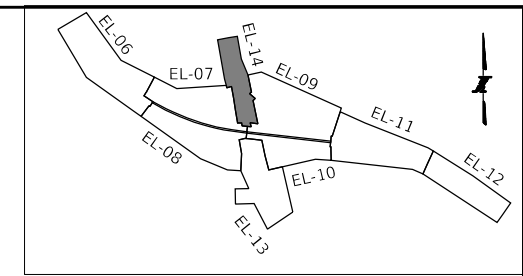
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 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO.** I-16-4274  
**PROPOSED LIGHTING PLAN**  
**RAMP B AND RAMP C**

**SHEET NO.** EL-13  
**DRAWING NO.** 281 OF 397

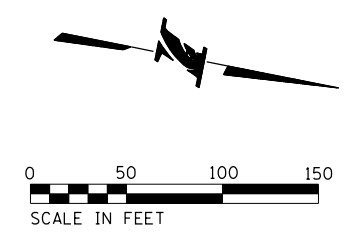


**CABLE AND CONDUIT DESCRIPTION**

- A** UNIT DUCT, WITH 2-1/2 NO. 4 AND 1/2 NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- B** UNIT DUCT, WITH 4-1/2 NO. 4 AND 1/2 NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- F** UNDERGROUND CONDUIT, CNC, 4" DIA.

**NOTES:**


1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEETS EL-01 AND EL-02.
2. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING BURIED FOC FACILITIES TO PROTECT THEM AND EXERCISE EXTREME CAUTION TO LAY PROPOSED UNDERGROUND LIGHTING CONDUITS AND CABLES.



PEN TABLE: ILTOLLWAY-TABLES-PLT.TBL  
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<b>DRAWN BY</b>	SR	<b>DATE</b>	10/18/2018
<b>CHECKED BY</b>	BL	<b>SCALE</b>	1"=50'


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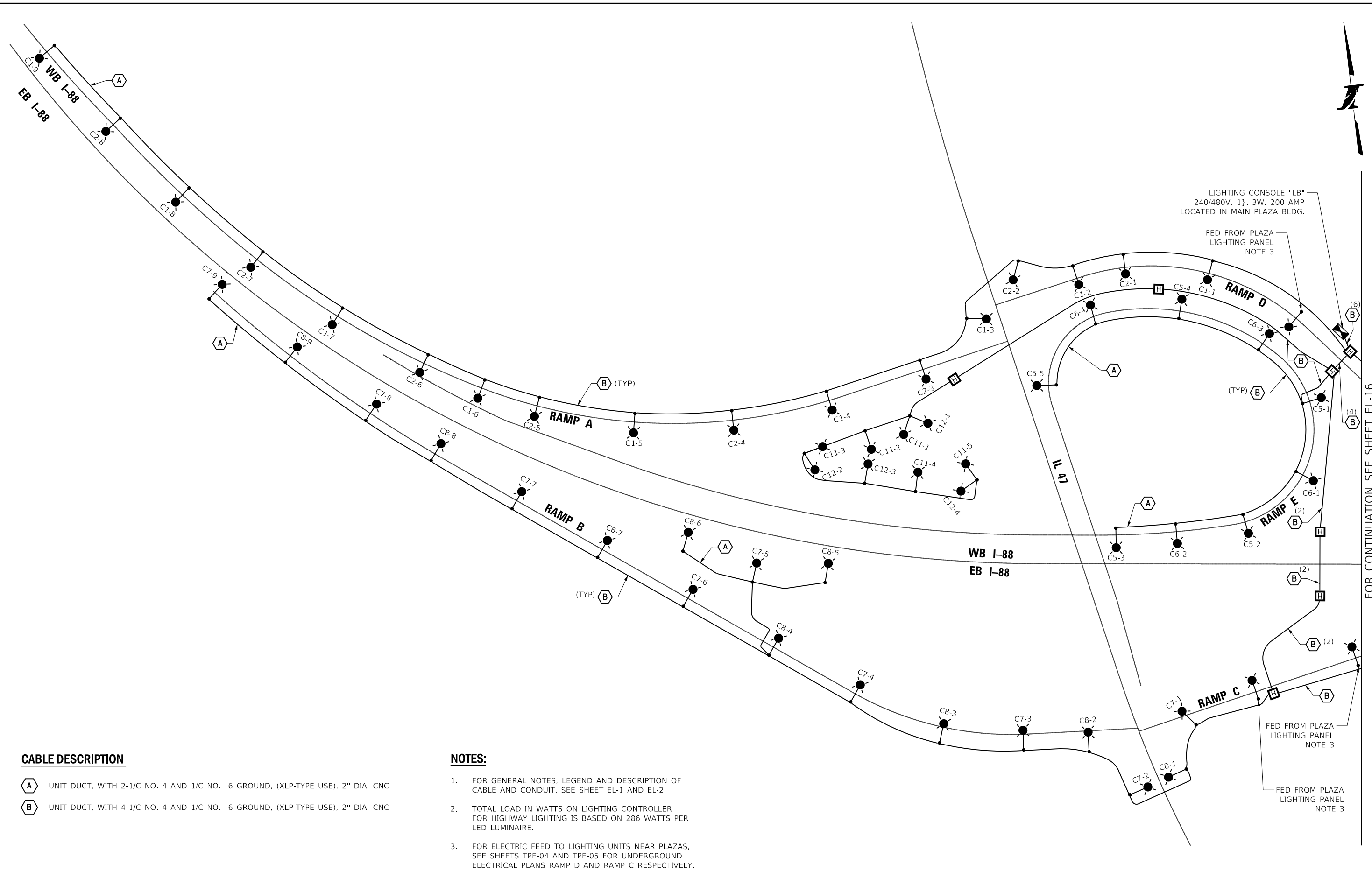
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 PROPOSED LIGHTING PLAN

**SHEET NO.**  
 EL-14  
**DRAWING NO.**  
 282 OF 397



PEN TABLE: ILTOLLWAY-TABLES-PL01.TBL  
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 PLOT DATE: 10/17/2018  
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 FILE NAME: ...N82\_SHT\4274-shwt-light-15.dgn



**CABLE DESCRIPTION**

- (A)** UNIT DUCT, WITH 2-1/C NO. 4 AND 1/C NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- (B)** UNIT DUCT, WITH 4-1/C NO. 4 AND 1/C NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC

**NOTES:**

1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEET EL-1 AND EL-2.
2. TOTAL LOAD IN WATTS ON LIGHTING CONTROLLER FOR HIGHWAY LIGHTING IS BASED ON 286 WATTS PER LED LUMINAIRE.
3. FOR ELECTRIC FEED TO LIGHTING UNITS NEAR PLAZAS, SEE SHEETS TPE-04 AND TPE-05 FOR UNDERGROUND ELECTRICAL PLANS RAMP D AND RAMP C RESPECTIVELY.

**DRAWN BY** SR      **DATE** 10/18/2018  
**CHECKED BY** BL      **SCALE** NONE

**AMES Engineering, Inc.**  
 CONSULTING ENGINEERS  
 6330 Belmont Road, Unit 4B  
 Downers Grove, IL 60516

**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

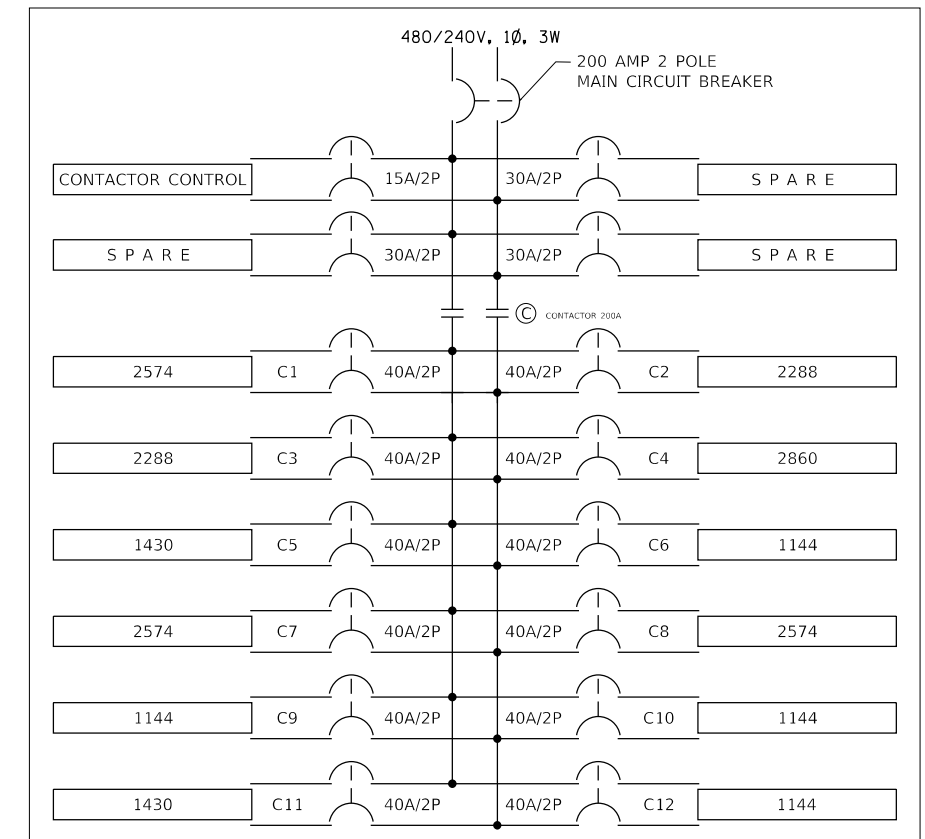
**CONTRACT NO. I-16-4274**  
 SINGLE LINE WIRING DIAGRAM  
 SHEET 1 TO 2

**SHEET NO.** EL-15  
**DRAWING NO.** 283 OF 397

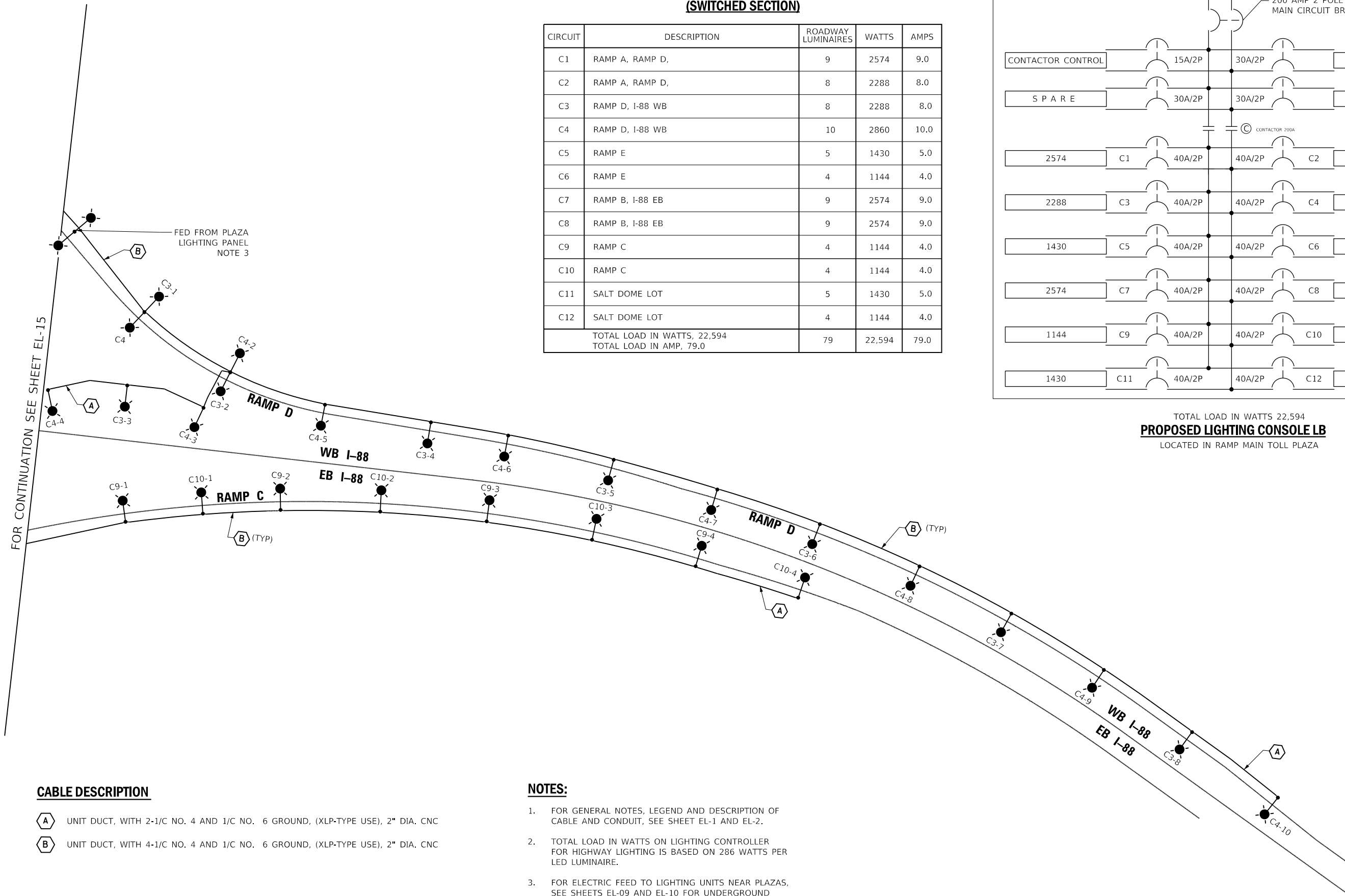
FOR CONTINUATION SEE SHEET EL-16

**LIGHTING CONSOLE "LB" LOAD TABLE  
(SWITCHED SECTION)**

CIRCUIT	DESCRIPTION	ROADWAY LUMINAIRES	WATTS	AMPS
C1	RAMP A, RAMP D,	9	2574	9.0
C2	RAMP A, RAMP D,	8	2288	8.0
C3	RAMP D, I-88 WB	8	2288	8.0
C4	RAMP D, I-88 WB	10	2860	10.0
C5	RAMP E	5	1430	5.0
C6	RAMP E	4	1144	4.0
C7	RAMP B, I-88 EB	9	2574	9.0
C8	RAMP B, I-88 EB	9	2574	9.0
C9	RAMP C	4	1144	4.0
C10	RAMP C	4	1144	4.0
C11	SALT DOME LOT	5	1430	5.0
C12	SALT DOME LOT	4	1144	4.0
TOTAL LOAD IN WATTS, 22,594		79	22,594	79.0
TOTAL LOAD IN AMP, 79.0				



TOTAL LOAD IN WATTS 22,594  
**PROPOSED LIGHTING CONSOLE LB**  
LOCATED IN RAMP MAIN TOLL PLAZA



**CABLE DESCRIPTION**

- A** UNIT DUCT, WITH 2-1/2 NO. 4 AND 1/2 NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC
- B** UNIT DUCT, WITH 4-1/2 NO. 4 AND 1/2 NO. 6 GROUND, (XLP-TYPE USE), 2" DIA. CNC

**NOTES:**

1. FOR GENERAL NOTES, LEGEND AND DESCRIPTION OF CABLE AND CONDUIT, SEE SHEET EL-1 AND EL-2.
2. TOTAL LOAD IN WATTS ON LIGHTING CONTROLLER FOR HIGHWAY LIGHTING IS BASED ON 286 WATTS PER LED LUMINAIRE.
3. FOR ELECTRIC FEED TO LIGHTING UNITS NEAR PLAZAS, SEE SHEETS EL-09 AND EL-10 FOR UNDERGROUND ELECTRICAL PLANS RAMP D AND RAMP C RESPECTIVELY.

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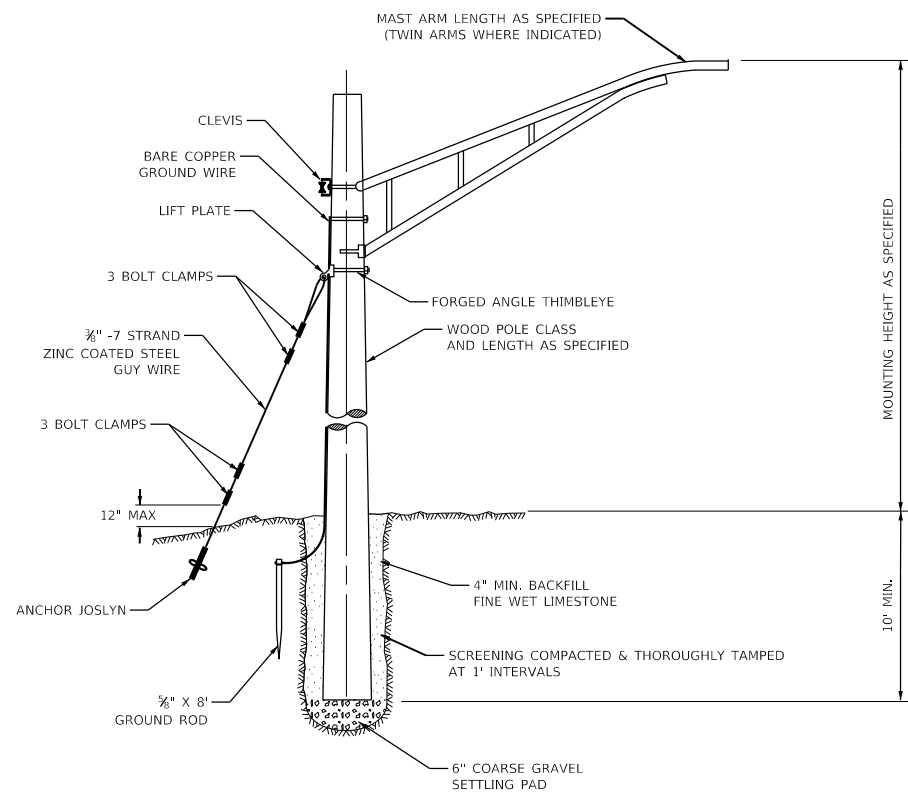

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NO.	DATE	DESCRIPTION

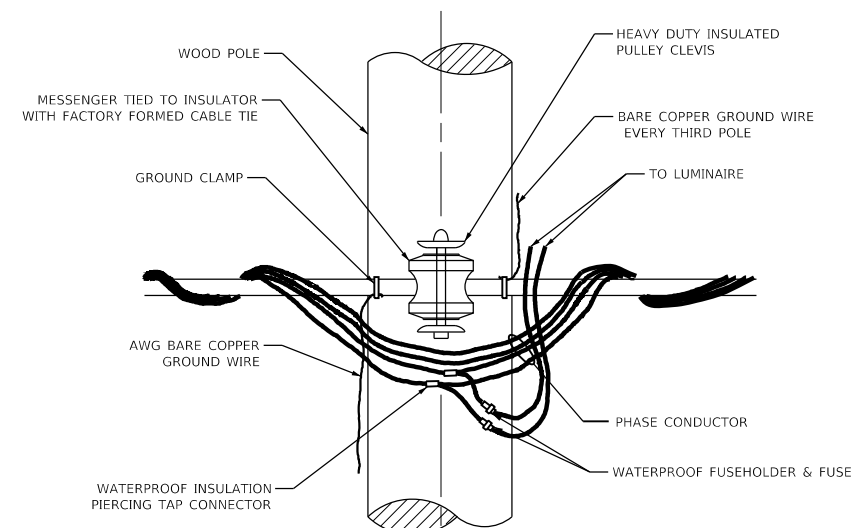
**CONTRACT NO. I-16-4274**  
 SINGLE LINE WIRING DIAGRAM  
 SHEET 2 TO 2

**SHEET NO.**  
 EL-16  
**DRAWING NO.**  
 284 OF 397



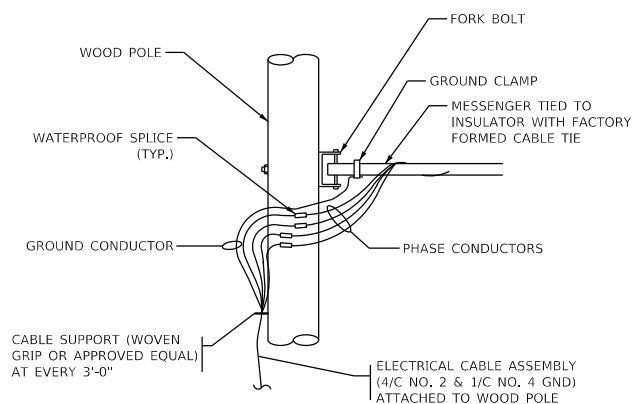
**TEMPORARY LIGHT POLE DETAIL**

N.T.S.



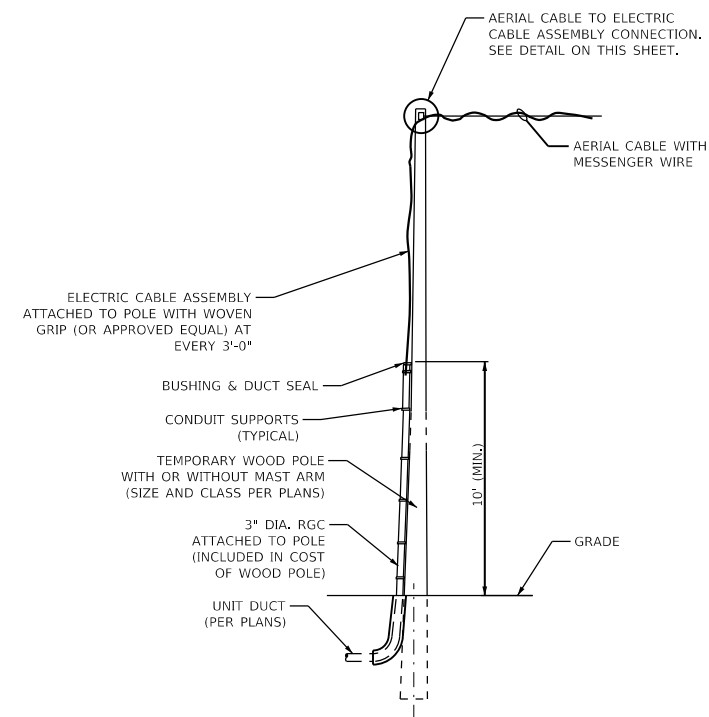
**TEMPORARY LIGHT POLE ATTACHMENT DETAIL**

N.T.S.



**AERIAL CABLE CONNECTION DETAIL**

N.T.S.



**AERIAL CABLE TO UNDERGROUND DUCT TRANSITION DETAIL**

N.T.S.

**NOTE:**

- COST OF SPLICES AND MOUNTING HARDWARE SHALL BE INCLUDED IN THE UNIT PRICE FOR AERIAL CABLE.

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**CHECKED BY** BL      **SCALE** NTS

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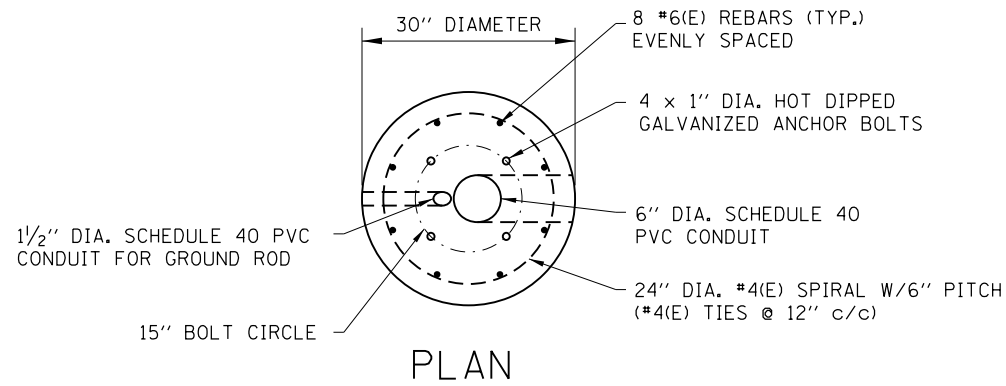
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REVISIONS		
NO.	DATE	DESCRIPTION

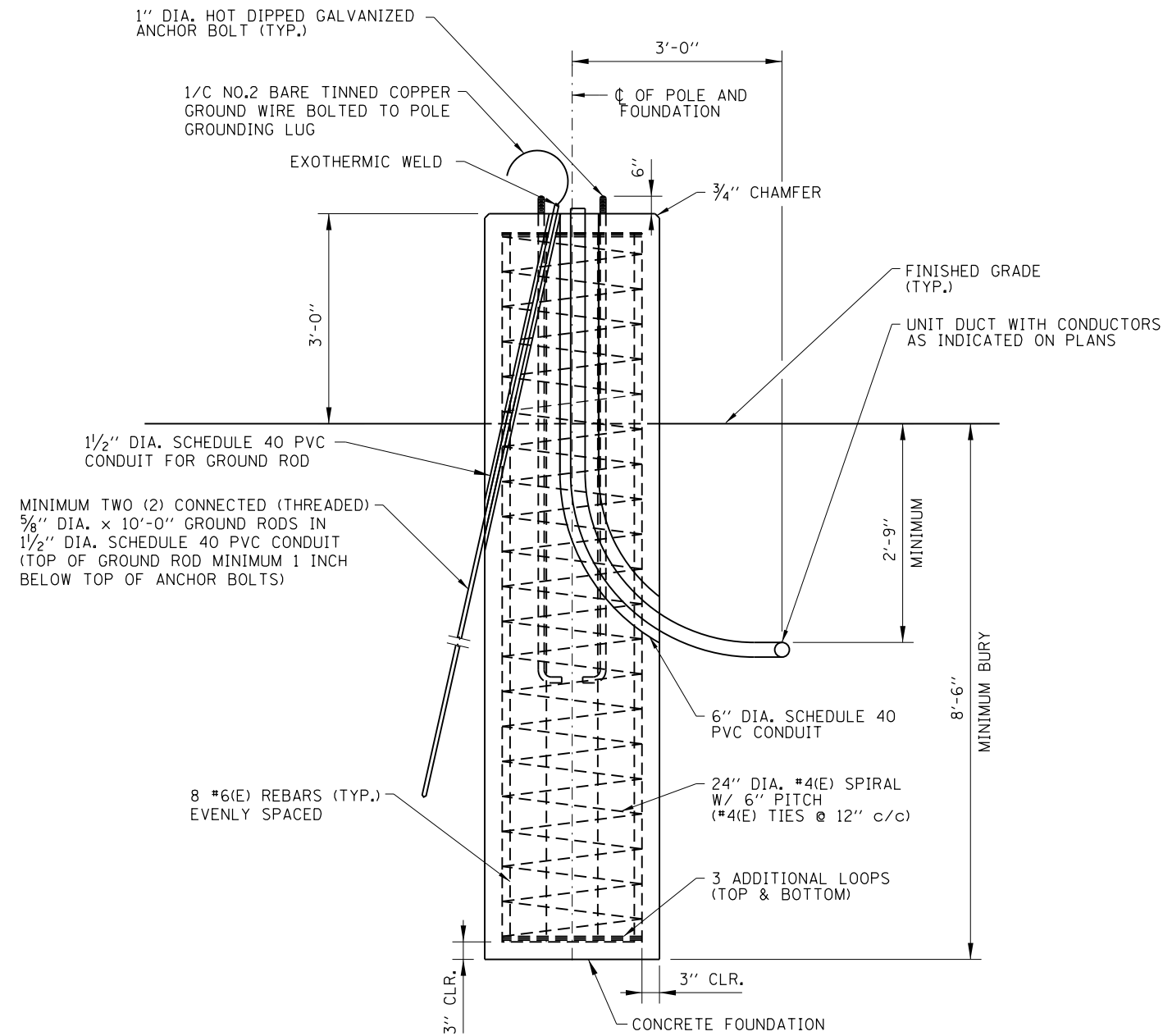
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**LIGHTING DETAILS**

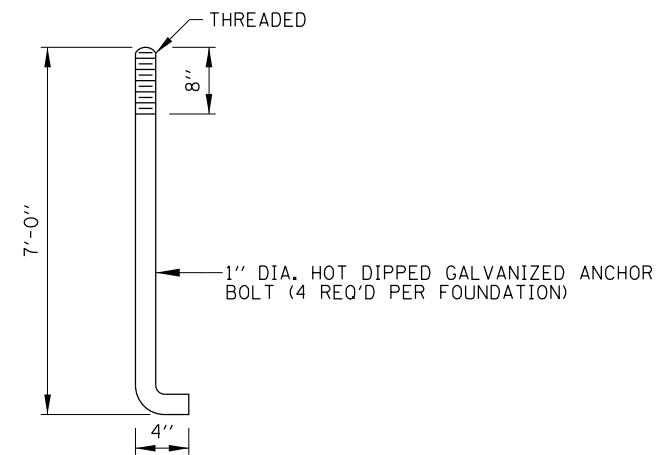
**SHEET NO.**  
 EL-17  
**DRAWING NO.**  
 285 OF 397



PLAN



ELEVATION



ANCHOR BOLT DETAIL

NOTES:

1. FOR DETAILS OF FUSE HOLDER, POLE BASE WIRING AND CONDUCTOR SPLICE SEE STANDARD H2.
2. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED.
3. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
4. POLE SHALL BE MOUNTED AND WIRED PER DETAIL FOR "BARRIER WALL MOUNTED UNITS" ON LIGHT STANDARD DETAILS (STANDARD H2)

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 PLOT SCALE: 10.00000 / 1"

DRAWN BY MC DATE 10/18/2018  
 CHECKED BY GJH SCALE 1"=10'



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 www.civiltechinc.com



THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY  
 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
 PARKING LOT  
 LIGHT POLE FOUNDATION  
 DETAILS

SHEET NO. EL-18  
 DRAWING NO. 286 OF 397

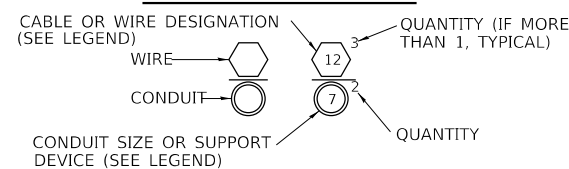
### TOLL EQUIPMENT WIRING CABLE/CONDUIT SCHEDULE

SYMBOL	CABLE DESCRIPTION	REMARKS
1	1-6PR #22 SHLD	NOTE 8
2	1-3/C #12 SHLD	NOTE 4
3	1-3PR #22 SHLD	NOTE 8
4	1-4/C #12 SHLD	NOTES 1 & 4
5	2-1/C #12, 1-1/C #12(GRD)	NOTE 1
6	1-1PR #14 SHLD (LOOP LEAD IN)	
7	1-1/C #14 (LOOP WIRE)	NOTE 3
8	1-1/C #6 BARE TINNED (GRD)	NOTE 7
9	1-7/C #12 SHLD	NOTE 4
10	1-3/C #12 SHLD	NOTE 5
11	2-1PR #22 SHLD	NOTE 1
12	1-3/C #16 SHLD (24 VAC) 1-3/C #12 SHLD 1-COAXIAL VIDEO CABLE	NOTES 4, 5 & 10
13	1-2 PR #24 (RS 422)	
14	1-COAXIAL VIDEO CABLE	NOTES 10
15	1-COAXIAL ANTENNA CABLE	
16	1- 9/C #22 IND SHLD	
17	1-1/C #4/0 (GRD BUS)	
18	1-1/C #8 (GRD)	
19	1-1/C #2 (GRD)	
20	1-4PR #24 (CATEGORY 6)	
21	1-12 STRAND, SINGLE MODE FIBER OPTIC CABLE	ARMORED CABLE
22	1-24 STRAND, SINGLE MODE FIBER OPTIC CABLE	ARMORED CABLE
23	1-36 STRAND, SINGLE MODE FIBER OPTIC CABLE	ARMORED CABLE
24	1-48 STRAND, SINGLE MODE FIBER OPTIC CABLE	ARMORED CABLE
25	1-12PR #22 SHLD	
26	1-9/C #18 SHLD	NOTE 4
27	2-2/C #18 SHLD	NOTE 4
28	1-6PR #22 SHLD	
29	1-3PR #24 SHLD	NOTE 6
30	1-3/C #10 SHLD	
31	1-2PR #22 SHLD	
32	OEM CABLE (POWER AND VIDEO)	NOTE 7
33	1 - 1PR #22 SHLD (SENSE WIRE VES CAM)	
34 THRU 49	RESERVED FOR STANDARD DRAWINGS	
50	CAT6 CABLE	OUTDOOR RATED
51	SYNC CABLE, TWISTED PAIR # 24. BELDEN 89730	BARE, TINNED COPPER

### TOLL EQUIPMENT WIRING CABLE/CONDUIT SCHEDULE

SYMBOL	CABLE DESCRIPTION	CONDUIT DIA. SIZE		REMARKS
		EXPOSED	EMBEDDED OR UNDER-GROUND	
101	(4) 1/C #1/0 (1) 1/C #1/0 (GRD)		3"	
102	(4) 1/C #4/0 (1) 1/C #2 (GRD)	3"	3"	
103	(4) 1/C #2 (1) 1/C #8 (GRD)	2"	2"	
104	(3) 1/C #10 (1) 1/C #10 (GRD)	1"	1"	
105	(4) 1/C #10 (1) 1/C #10 (GRD)	1"	1"	
106	(2) 1/C #12 (1) 1/C #12 (GRD)	¾"	1"	
107	(3) 1/C #12 (1) 1/C #12 (GRD)	¾"	1"	
108	(4) 1/C #12 (1) 1/C #12 (GRD)	¾"	1"	
109	(5) 1/C #12 (1) 1/C #12 (GRD)	1"	1"	
110	(5) 1/C #12 (1) 1/C #12 (GRD)	1"	2"	
111	(6) 1/C #12 (1) 1/C #12 (GRD)	1"	1"	
112	(7) 1/C #12 (1) 1/C #12 (GRD)		1"	
113	1" CABLE DUCT WITH (2) 1/C #12 (1) 1/C #12 (GRD)			
114	1" CABLE DUCT WITH (3) 4/C #12 (SHLD)			
115	(3) 1/C #2/0 & 1 #8 (GND)		4"	
116	(2) 1/C #8 (1) 1/C #8 (GRD) 600V	1"		
117	(3) 1/C #250MCM 600V (1) 1/C #1/0 (GRD) 600V		3"	
118	(2) 1/C #8 (1) 1/C #8 (GRD) 600V	1"	2"	
119	(1) 16 AWG 6C FPLR (6) 1PR #22 SHLD	¾"		
120	(2) 1/C #16 SHIELDED PAIR	¾"	1"	SECURITY-CARD ACCESS
121	(2) 1/C #10 (1) 1/C #10 (GRD)	¾"	2"	FIRE ALARM
122	(3) 1/C #3/0 (1) 1/C #1/0 (GRD)		3"	
123	(3) 1/C #1/0 (1) 1/C #4 (GRD)		3"	
124	(1) 1/C #6 SHLD			NOTE 11
125	36/36 HYBRID (36 STRANDS SMF/36 STRANDS MMF)		2"	ARMORED CABLE
126	6/6 HYBRID (6 STRANDS SMF/6 STRANDS MMF)			ARMORED CABLE

#### DESIGNATION KEY



52	1-1/C #3/0 (GRD)	BARE, TINNED COPPER
----	------------------	---------------------

### CONDUIT DIA. SIZES

1	RIGID METALLIC CONDUIT ¾"
2	RIGID METALLIC CONDUIT 1"
3	RIGID METALLIC CONDUIT 1½"
4	RIGID METALLIC CONDUIT 1¾"
5	RIGID METALLIC CONDUIT 2"
6	RIGID METALLIC CONDUIT 2½"
7	RIGID METALLIC CONDUIT 3"
9	RIGID METALLIC CONDUIT 4"
12	RIGID NON-METALLIC CONDUIT 1" SCHEDULE 40
15	RIGID NON-METALLIC CONDUIT 2" SCHEDULE 40
17	RIGID NON-METALLIC CONDUIT 3" SCHEDULE 40
19	RIGID NON-METALLIC CONDUIT 4" SCHEDULE 40
22	RIGID NON-METALLIC CONDUIT 1" SCHEDULE 80
24	RIGID NON-METALLIC CONDUIT 1½" SCHEDULE 80
25	RIGID NON-METALLIC CONDUIT 2" SCHEDULE 80
27	RIGID NON-METALLIC CONDUIT 3" SCHEDULE 80
29	RIGID NON-METALLIC CONDUIT 4" SCHEDULE 80
32	RIGID METALLIC CONDUIT PVC COATED 1"
33	RIGID METALLIC CONDUIT PVC COATED 1½"
34	RIGID METALLIC CONDUIT PVC COATED 1¾"
35	RIGID METALLIC CONDUIT PVC COATED 2"
37	RIGID METALLIC CONDUIT PVC COATED 3"
39	RIGID METALLIC CONDUIT PVC COATED 4"
40	1½" COILABLE PVC CABLE DUCT
41	RIGID NON-METALLIC CONDUIT 4" SCHEDULE 80 WITH 1" INNER DUCTS
42	1" COILABLE PVC CABLE DUCT
43	2" COILABLE PVC CABLE DUCT
44	4" COILABLE PVC CABLE DUCT
45	3" COILABLE PVC CABLE DUCT
46	4" COILABLE PVC CABLE DUCT

#### GENERAL NOTES:

- MINIMUM SIZE OF EXPOSED CONDUIT DIA. IS ¾" DIA. MINIMUM SIZE OF EMBEDDED CONDUIT DIA. IS 1" DIA. EMBEDDED CONDUIT SHALL BE PVC COATED RIGID STEEL.
- ALL EMPTY CONDUITS SHALL BE PROVIDED WITH A PULL NYLON ROPE.
- SINGLE CONDUCTOR #14 AWG THHN/THWN CABLE ENCASING IN POLYETHYLENE SHEAT (TUBE) FOR LOOP DETECTOR.
- MULTI -CONDUCTOR SHIELDED CABLE #12 AWG FOR NORMAL POWER AND UPS POWER. SHALL BE COLOR CODED AS SPECIFIED IN THE SPECIAL PROVISIONS OF THE CONTRACT.
- MULTI -CONDUCTOR SHIELDED CABLE #14 AWG THROUGH #18 AWG FOR CONTROL USE SHALL BE COLOR CODED PER ICEA-NEC (K-2) STANDARD.
- I-PASS READER SYNC CABLE.
- OEM CABLE CONTAINS POWER AND VIDEO FOR VES CAMERAS RESIDING IN AET ZONES. SEE SPECIAL PROVISIONS FOR DETAILS.
- PLENUM RATED CABLE INSTALLED IN EMBEDDED CONDUIT.
- LANE VIOLATION CAMERA IS MOUNTED ON MONOTUBE. SEE SHEET TPE-20 AND TPE-21.
- PROVIDE SURGE PROTECTION DEVICE FOR ALL COAXIAL VIDEO CABLE. AN IN-LINE ADAPTER MUST BE INSTALLED AT THE CONNECTION TO THE FIBER OPTIC DEVICE. THE SURGE PROTECTION DEVICE MUST BE AS MANUFACTURED BY PHOENIX CONTACT "COAXTRAX SERIES" CATALOG NUMBER C-UFB-5DC/E.
- ORANGE TRACE WIRE FOR FIBER OPTIC CABLE.

#### INDEX OF SHEETS:

- |        |  |
|--------|--|
| TPE-01 | CABLE CONDUIT SCHEDULE AND GENERAL NOTES.                    |
| TPE-02 | LEGEND SYMBOL, LIST, ABBREVIATIONS.                          |
| TPE-03 | RAMPS C AND D, ELECTRICAL SITE PLAN,                         |
| TPE-04 | UNDERGROUND ELECTRICAL PLAN RAMP D WITH CONTROL BUILDING.    |
| TPE-05 | UNDERGROUND ELECTRICAL PLAN RAMP C WITH CONTROL BUILDING.    |
| TPE-06 | RAMP C CONTROL BUILDING EQUIPMENT LAYOUT.                    |
| TPE-07 | RAMP D CONTROL BUILDING EQUIPMENT LAYOUT.                    |
| TPE-08 | RAMP C CONTROL BUILDING LIGHTING PLAN.                       |
| TPE-09 | RAMP D CONTROL BUILDING LIGHTING PLAN.                       |
| TPE-10 | RAMP C CONTROL BUILDING GROUNDING DETAILS.                   |
| TPE-11 | RAMP D CONTROL BUILDING GROUNDING DETAILS.                   |
| TPE-12 | RAMP D AET LANE LOOP.  |
| TPE-13 | RAMP C AET LANE LOOP.  |
| TPE-14 | RAMP D OVERHEAD EQUIPMENT WIRING DETAILS.                    |
| TPE-15 | RAMP C OVERHEAD EQUIPMENT WIRING DETAILS.                    |
| TPE-16 | SINGLE LINE DIAGRAM AND UTILITY POWER CABLE.                 |
| TPE-17 | MISCELLANEOUS DETAILS.                                       |
| TPE-18 | VIDEO POWER JUNCTION BOX.                                    |
| TPE-19 | UPS SINGLE LINE AND WIRING DIAGRAM DOOR ALARM DETAILS.       |
| TPE-20 | PANEL BOARD SCHEDULES FOR MDP-1, TP-1 TP-2, UPS-1 AND UPS-2. |
| TPE-21 | MISCELLANEOUS SCHEMATIC DIAGRAMS.                            |
| TPE-22 | LOOP JUNCTION BOX DETAILS.                                   |
| TPE-23 | TSIC TERMINAL BLOCK LAYOUT.                                  |
| TPE-24 | TSIC IN CONTROL BUILDING.                                    |
| TPE-25 | POLE MOUNTED CCTV CABINET HD WIRING DIAGRAM.                 |
| TPE-26 | VIDEO DATA LOGGER CAMERA DETAIL.                             |
| TPE-27 | VES WASH SYSTEM ENCLOSURE DETAILS.                           |
| TPE-28 | VES WASH SYSTEM PANEL DETAILS AND HMI.                       |
| TPE-29 | VES WASH SYSTEM MECHANICAL DETAILS AND FLOW DIAGRAM.         |
| TPE-30 | VES WASH SYSTEM SUGGESTED CONDUIT ROUTING                    |
| TPE-31 | VES WASH SYSTEM MISC POWER WIRING.                           |
| TPE-32 | VES WASH SYSTEM CONTROL AND SWITCH SCHEMATIC.                |

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**CHECKED BY** BL    **SCALE** XXX

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 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**

CABLE CONDUIT SCHEDULE  
 AND GENERAL NOTES

**SHEET NO.**  
 TPE-01  
**DRAWING NO.**  
 287 OF 397

**LEGEND**

**GENERAL**

	EXPOSED CONDUIT
	CONDUIT IN SLAB
	UNDERGROUND CONDUIT OR CABLE DUCT
	CONDUIT OR CABLE DUCT IN CASING
	HOME RUN TO PANEL AS NOTED
	INDICATES CIRCUIT TURNING DOWN
	INDICATES CIRCUIT TURNING UP
	GROUND ROD
	GROUNDING ELECTRODE SYSTEM
	GROUNDING TRIAD
	EXPOSED GROUND CONDUCTOR
	UNDERGROUND GROUND CONDUCTOR
	SLASHES INDICATE NUMBER OF #12 CONDUCTORS IN 3/4" CONDUIT (U.ON.)
	PHASE CONDUCTOR NEUTRAL
	CONDUCTOR TELEPHONE SYSTEM
	FLEXIBLE CONNECTION TO EQUIPMENT
	HEAVY DUTY HANDHOLE TOLLWAY
	ITS HANDHOLE TOLLWAY

**GENERAL**

	WALL TYPE 2'-0" AFF (U.N.O.) RECESSED TELEPHONE OUTLET
	DATA OUTLET RECESSED MOUNTED 2'-0" AFF (U.N.O.)

**FIRE ALARM**

	MANUAL PULL STATION
	SMOKE DETECTION
	FIRE ALARM CONTROL PANEL

**KEY CARD ACCESS**

	DOOR - CARD READER
	DOOR RELEASE

**KEY CARD ACCESS**

	"S" SINGLE
	LENGTH OF MAST ARM, 15 FT.
	NOMINAL MOUNTING HEIGHT 50 FT.
	CIRCUIT NUMBER
	A15-50-C1
	TYPE P3B1
	LED LIGHT DISTRIBUTION TYPE
	STREET LIGHT POLE FOUNDATION

**SYMBOL LIST**

SYMBOL	DESCRIPTION
	30 KVA 480-208Y/120V 3), 4W TRANSFORMER. 30 KVA DENOTES TRANSFORMER RATING. 480-208Y/120V DENOTES VOLTAGE. 3) DENOTES 3 PHASE. 4W DENOTES 4 WIRE.
	LEGEND NUMBER FOR CABLE & CONDUIT. (SEE CABLE AND CONDUIT SCHEDULES).
	MECHANICAL REFERENCE TAG EF - DENOTES EXHAUST FAN
	MOTOR WITH FLEXIBLE CONNECTION HP - DENOTES HORSEPOWER
	AUTOMATIC TRANSFER SWITCH (ATS). N DENOTES NORMAL SOURCE. E DENOTES EMERGENCY SOURCE. L DENOTES LOAD. 260A DENOTES 260 AMPERE ATS RATING. 3P DENOTES 3 POLE. 4W DENOTES 4 WIRE.
	JUNCTION BOX.
	EXISTING CONCRETE HANDHOLE, CONCRETE HANDHOLE AND DOUBLE CONCRETE HANDHOLE.
	DISCONNECT SWITCH. 60A DENOTES 60 AMPERES.
	CIRCUIT BREAKER. 50A DENOTES 50 AMPERES.
	MANUAL TRANSFER SWITCH. 200A DENOTES 200 AMPERES. 3PDT DENOTES 3 POLE DOUBLE-THROW.
	SELF CONTAINED UTILITY METERING.
	STANDBY GENERATOR.
	PANEL CIRCUIT BREAKER. 30A DENOTES 30 AMPERES. 2P DENOTES 2 POLES.
	MECHANICALLY HELD LIGHTING COIL.
	CONTROL RELAY COIL.
	THERMOSTAT
	LIGHTING ARRESTER
	IDENTIFIES GROUNDING
	MAGNETIC CONTACTS. X - AMPERE RATING
	ELECTRICAL PANEL, 120/208V, 30 4W AS INDICATED ON PANEL SCHEDULE.
	WATCHDOG VIDEO CAMERA
	TRANSFORMER

**ABBREVIATIONS**

AFF	ABOVE FINISH FLOOR
ATS	AUTOMATIC TRANSFER SWITCH
BF	BARRIER WARNING LIGHT
DHH	DOUBLE HANDHOLE
GCS	GENERATOR CONTROL SWITCH
GFI	GROUND FAULT INTERRUPTER
HH	HANDHOLE
JB	JUNCTION BOX
LA	LIGHTNING ARRESTER
LC	LINE CONDITIONER
LCC	LANE CONTROLLER CABINET
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MMF	MULTI-MODE FIBER
MSD	MAIN SERVICE DISCONNECT
MTS	MANUAL TRANSFER SWITCH
OCR	OPTICAL CHARACTER RECOGNITION
SMF	SINGLE MODE FIBER
TSIC	TERMINAL STRIP INTERCONNECT CENTER
SPD	SURGE PROTECTION DEVICE
UPS	UNINTERRUPTIBLE POWER SUPPLY
VES	VIOLATION ENFORCEMENT SYSTEM
WP	WEATHERPROOF
FLPC	FRONT LICENSE PLATE CAMERA
RLPC	REAR LICENSE PLATE CAMERA

**NOTE:**

1. ALL TYPE 'B' FIXTURES SHALL BE MOUNTED AT THE SAME ELEVATION WITH A MINIMUM MOUNTING HEIGHT AS INDICATED.

**WIRING DEVICE SCHEDULE**

SYMBOL	DESCRIPTION	RATING	MFR. AND CAT. NO.	MOUNTING HEIGHT
	SINGLE-POLE SWITCH a-SWITCH LEG (LOWER CASE LETTER)	20A, 120V	HUBBELL #LHIR	4'-0"
	DUPLEX RECEPTACLE X - CIRCUIT NUMBER	20A, 120V	HUBBELL #HBL5362	18" AS NOTED
	QUAD RECEPTACLE X - CIRCUIT NUMBER	20A, 120V	-	18" AS NOTED
	4P, 4W, WEATHERPROOF RECEPTACLE WITH SPRING DOOR, BACK BOX, & ANGLE ADAPTER	200A, 600V	CROUSE-HINDS "ARKTITE" SERIES #AREA20417	3'-0" ABOVE GRADE
	4P, 4W, WEATHERPROOF RECEPTACLE WITH SPRING DOOR & BACK BOX	30A, 600V	CROUSE-HINDS "ARKTITE" SERIES #ARE3413	3'-0" ABOVE GRADE
	DUPLEX RECEPTACLE WITH GROUND FAULT PROTECTION WP - IDENTIFIES WEATHERPROOF	20A, 120V	HUBBELL #GF5362	3'-0" ABOVE GRADE

**LIGHTING FIXTURE SCHEDULE**

SYMBOL	DESCRIPTION	VOLTAGE	LAMPS	MFR. AND CAT. NO.	REMARKS
	4' LED LOW PROFILE SUSPENDED DIRECT LUMINAIRE	120 V	LED	PHILIPS / LIGHTOLIER ST-74-W-A-35A-40-U-35A ATLAS ILW4 & LED 4D	MOUNT 8' ABOVE FINISHED FLOOR
	LED LARGE GLASS LOW PROFILE WALL PACK	120 V	LED	PHILIPS / DAYBRITE WTN-24WLU-FWT	MOUNT 10'-0" ABOVE FINISHED GRADE NOTE 1
	EMERGENCY LED LIGHT WITH NICKEL METAL HYBRIDE BATTERY	120 V	LED	DUAL LITE EV LED LITE GEAR	MOUNT 8' ABOVE FINISHED FLOOR
	PLAZA ROADWAY LUMINAIRE	480 V	LED		POLE MOUNTED

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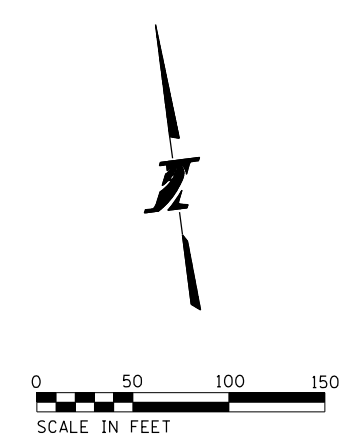
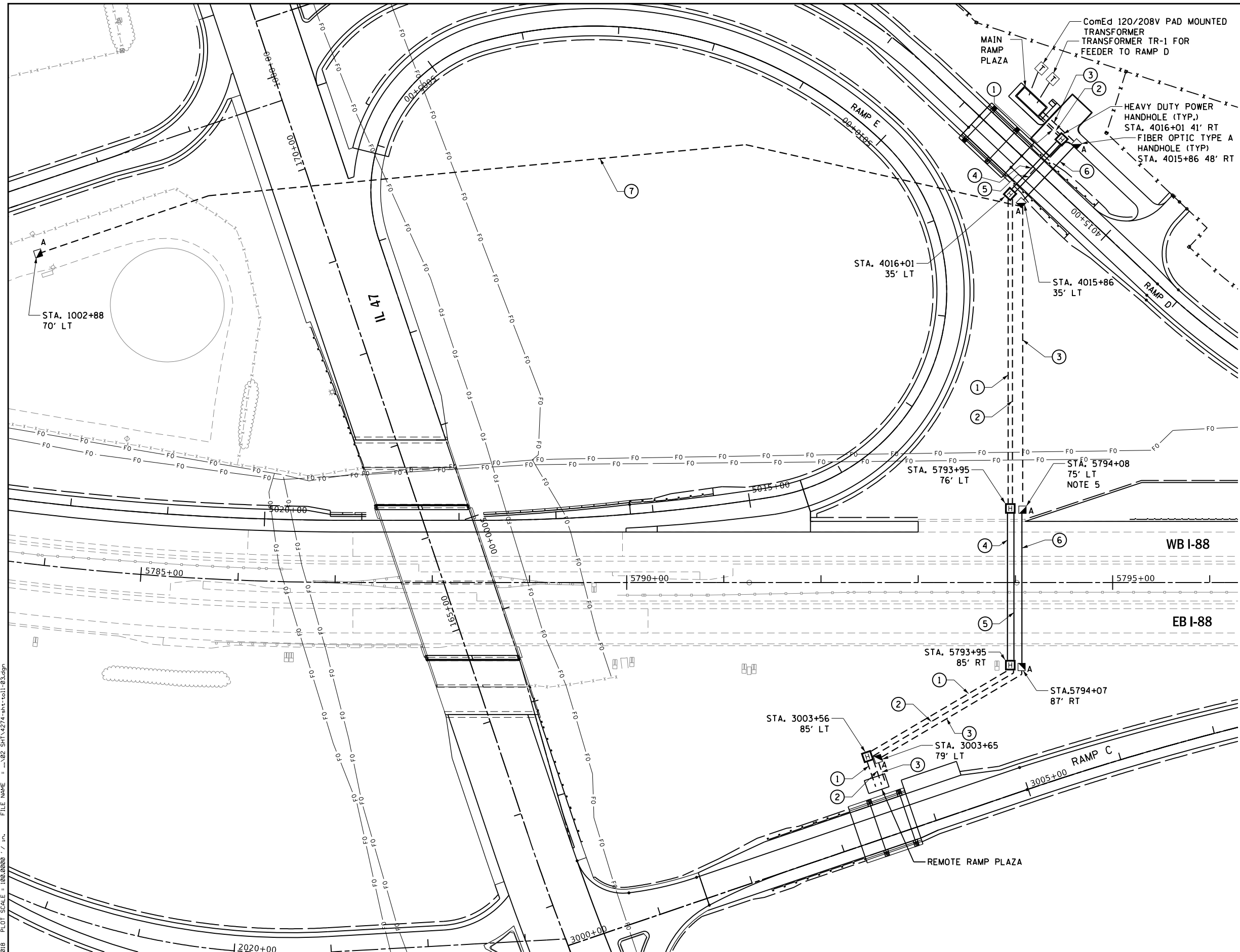
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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
LEGEND, SYMBOL  
LIST, ABBREVIATIONS AND  
EQUIPMENT SCHEDULE

**SHEET NO.**  
TPE-02  
**DRAWING NO.**  
288 OF 397



**EQUIPMENT LEGEND**

- ① 3" DIA. COILABLE NONMETALLIC CONDUIT.  
3-NO. 3/0, 600V TYPE XLP, AND  
1-NO. 1/0, 600V TYPE XLP CONDUCTORS.
- ② EMPTY 3" DIA COILABLE NONMETALLIC CONDUIT.
- ③ 4" DIA. COILABLE NONMETALLIC CONDUIT WITH (2)-48  
STRAND SM ARMORED FIBER OPTIC CABLES AND (2)  
INNERDUCT FOR SINGLE MODE FO CABLE, 1 1/4" DIA.,  
COILABLE NONMETALLIC RIBBED.
- ④ 3" DIA. COILABLE NONMETALLIC CONDUIT.  
3-NO. 3/0 600V TYPE XLP AND 1-NO. 1/0,  
600V TYPE XLP CONDUCTORS IN 5" DIA. UNDERGROUND  
CNC CASING.
- ⑤ EMPTY 3" DIA. COILABLE NONMETALLIC CONDUIT.  
IN 5" DIA. UNDERGROUND CNC CASING.
- ⑥ (3) INNERDUCT FOR SINGLE MODE FO CABLE 1 1/4" DIA.,  
COILABLE NONMETALLIC RIBBED, WITH (3) 48 STRAND  
SM ARMORED FIBER OPTIC CABLE.  
IN 5" DIA. UNDER GROUND CNC CASING.
- ⑦ 3" DIA. COILABLE NONMETALLIC CONDUIT WITH AT  
LEAST 4 STRANDS OF MULTIMODE OM3 OR OM4  
FIBER OPTIC CABLE.

**NOTES:**

1. PROVIDE 3'-0" MINIMUM SEPARATION BETWEEN POWER AND DATA CABLES IN SEPARATE TRENCHES.
2. ALL ITEMS ON THIS SHEET SHALL BE INCLUDED IN THE COST OF PLAZA ELECTRICAL WORK.
3. FINAL LOCATION OF ALL HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR. COORDINATE LOCATION WITH ALL NEW AND EXISTING UTILITIES.
4. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING BURIED FOC FACILITIES, PROTECT AND EXERCISE EXTREME CAUTION TO LAY PROPOSED UNDERGROUND CONDUIT DUCTS.
5. THE FIBER SHALL BE CONNECTED TO THE FIBER BACKBONE AT THIS LOCATION.

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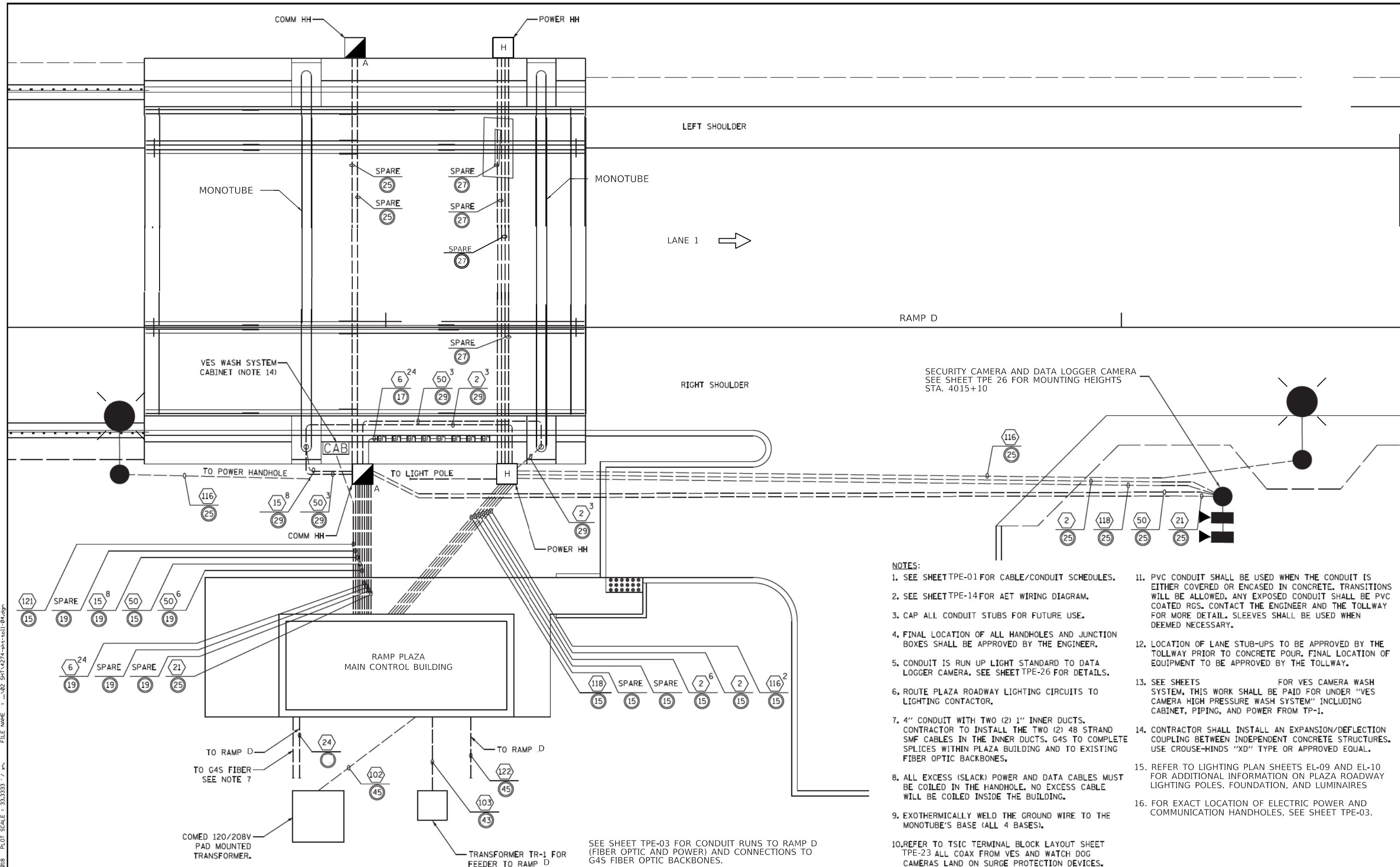

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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO.** I-16-4274  
 RAMP C AND D  
 ELECTRICAL SITE PLAN

**SHEET NO.** TPE-03  
**DRAWING NO.** 289  
**OF** 397




- NOTES:**
- SEE SHEET TPE-01 FOR CABLE/CONDUIT SCHEDULES.
  - SEE SHEET TPE-14 FOR AET WIRING DIAGRAM.
  - CAP ALL CONDUIT STUBS FOR FUTURE USE.
  - FINAL LOCATION OF ALL HANDHOLES AND JUNCTION BOXES SHALL BE APPROVED BY THE ENGINEER.
  - CONDUIT IS RUN UP LIGHT STANDARD TO DATA LOGGER CAMERA. SEE SHEET TPE-26 FOR DETAILS.
  - ROUTE PLAZA ROADWAY LIGHTING CIRCUITS TO LIGHTING CONTRACTOR.
  - 4" CONDUIT WITH TWO (2) 1" INNER DUCTS. CONTRACTOR TO INSTALL THE TWO (2) 48 STRAND SMF CABLES IN THE INNER DUCTS. G4S TO COMPLETE SPLICES WITHIN PLAZA BUILDING AND TO EXISTING FIBER OPTIC BACKBONES.
  - ALL EXCESS (SLACK) POWER AND DATA CABLES MUST BE COILED IN THE HANDHOLE. NO EXCESS CABLE WILL BE COILED INSIDE THE BUILDING.
  - EXOTHERMICALLY WELD THE GROUND WIRE TO THE MONOTUBE'S BASE (ALL 4 BASES).
  - REFER TO TSIC TERMINAL BLOCK LAYOUT SHEET TPE-23 ALL COAX FROM VES AND WATCH DOG CAMERAS LAND ON SURGE PROTECTION DEVICES.
  - PVC CONDUIT SHALL BE USED WHEN THE CONDUIT IS EITHER COVERED OR ENCASED IN CONCRETE. TRANSITIONS WILL BE ALLOWED. ANY EXPOSED CONDUIT SHALL BE PVC COATED RGS. CONTACT THE ENGINEER AND THE TOLLWAY FOR MORE DETAIL. SLEEVES SHALL BE USED WHEN DEEMED NECESSARY.
  - LOCATION OF LANE STUB-UPS TO BE APPROVED BY THE TOLLWAY PRIOR TO CONCRETE POUR. FINAL LOCATION OF EQUIPMENT TO BE APPROVED BY THE TOLLWAY.
  - SEE SHEETS \_\_\_\_\_ FOR VES CAMERA WASH SYSTEM, THIS WORK SHALL BE PAID FOR UNDER "VES CAMERA HIGH PRESSURE WASH SYSTEM" INCLUDING CABINET, PIPING, AND POWER FROM TP-1.
  - CONTRACTOR SHALL INSTALL AN EXPANSION/DEFLECTION COUPLING BETWEEN INDEPENDENT CONCRETE STRUCTURES. USE CROUSE-HINDS "XD" TYPE OR APPROVED EQUAL.
  - REFER TO LIGHTING PLAN SHEETS EL-09 AND EL-10 FOR ADDITIONAL INFORMATION ON PLAZA ROADWAY LIGHTING POLES. FOUNDATION, AND LUMINAIRES
  - FOR EXACT LOCATION OF ELECTRIC POWER AND COMMUNICATION HANDHOLES, SEE SHEET TPE-03.

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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO.** I-16-4274  
 UNDERGROUND ELECTRICAL PLAN  
 RAMP D WITH CONTROL BUILDING

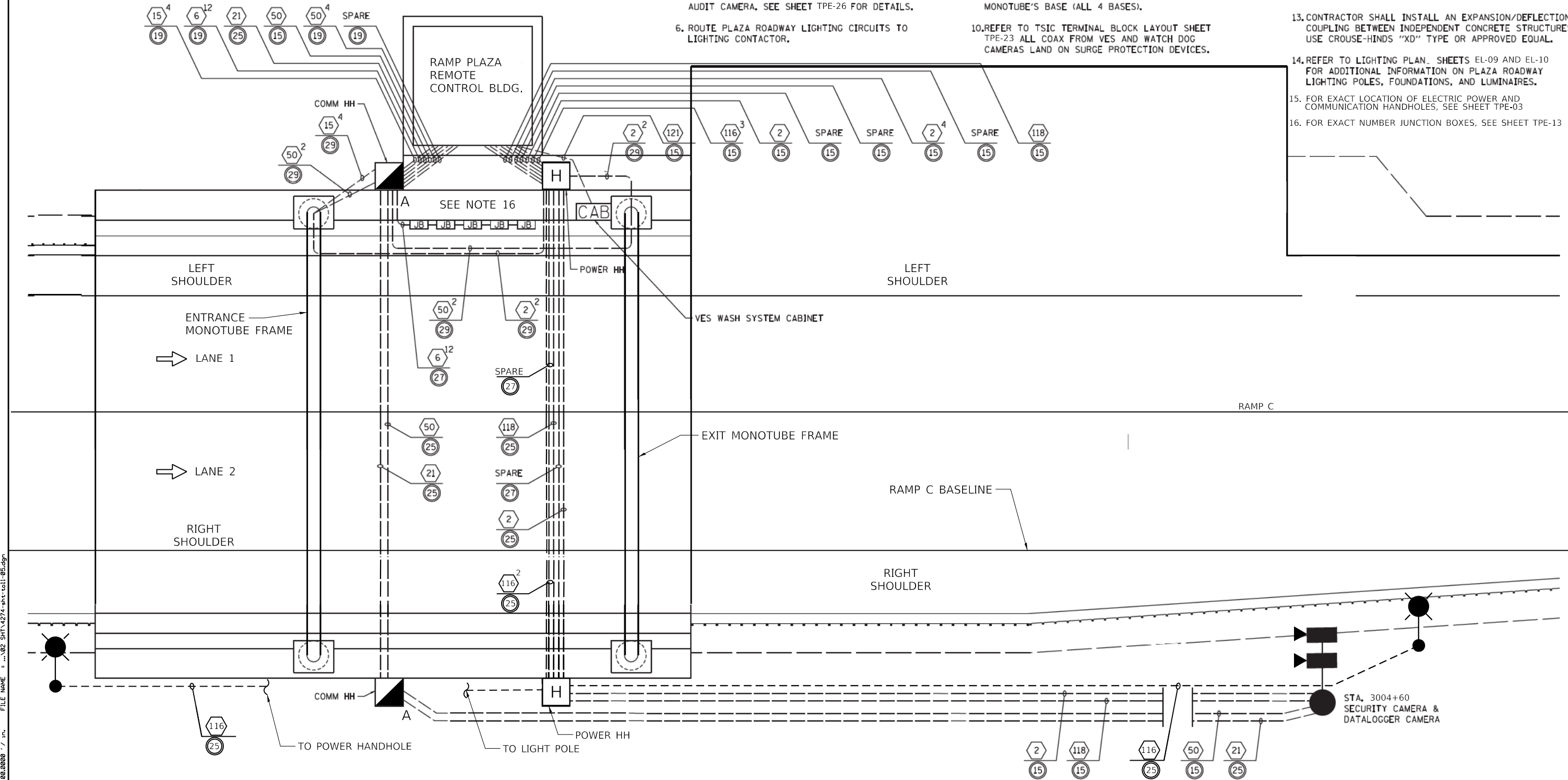
**SHEET NO.** TPE-04  
**DRAWING NO.** 290 OF 397



**NOTES**

1. SEE SHEET TPE-01 FOR CABLE/CONDUIT SCHEDULES.
2. SEE SHEET TPE-15 FOR AET WIRING DIAGRAM.
3. CAP ALL CONDUIT STUBS FOR FUTURE USE.
4. FINAL LOCATION OF ALL HANDHOLES AND JUNCTION BOXES SHALL BE APPROVED BY THE ENGINEER.
5. CONDUIT IS RUN UP LIGHT STANDARD TO VIDEO AUDIT CAMERA. SEE SHEET TPE-26 FOR DETAILS.
6. ROUTE PLAZA ROADWAY LIGHTING CIRCUITS TO LIGHTING CONTACTOR.
7. REFER TO SHEETS TPE-27 THROUGH TPE-32 FOR DETAILS OF THE VES CAMERA WASH SYSTEM. THIS WORK SHALL BE PAID FOR UNDER "VES CAMERA HIGH PRESSURE WASH SYSTEM" INCLUDING CABINET, PIPING, AND POWER FROM TP-2.
8. ALL EXCESS (SLACK) POWER AND DATA CABLES MUST BE COILED IN THE HANDHOLE. NO EXCESS CABLE WILL BE COILED INSIDE THE BUILDING.
9. EXOTHERMICALLY WELD THE GROUND WIRE TO THE MONOTUBE'S BASE (ALL 4 BASES).
10. REFER TO TSIC TERMINAL BLOCK LAYOUT SHEET TPE-23 ALL COAX FROM VES AND WATCH DOG CAMERAS LAND ON SURGE PROTECTION DEVICES.
11. PVC CONDUIT SHALL BE USED WHEN THE CONDUIT IS EITHER COVERED OR ENCASED IN CONCRETE. TRANSITIONS WILL BE ALLOWED. ANY EXPOSED CONDUIT SHALL BE PVC COATED RGS. CONTACT THE ENGINEER AND THE TOLLWAY FOR MORE DETAIL. SLEEVES SHALL BE USED WHEN DEEMED NECESSARY.
12. LOCATION OF LANE STUB-UPS TO BE APPROVED BY THE TOLLWAY PRIOR TO CONCRETE POUR. FINAL LOCATION OF EQUIPMENT TO BE APPROVED BY THE TOLLWAY.
13. CONTRACTOR SHALL INSTALL AN EXPANSION/DEFLECTION COUPLING BETWEEN INDEPENDENT CONCRETE STRUCTURES. USE CROUSE-HINDS "XD" TYPE OR APPROVED EQUAL.
14. REFER TO LIGHTING PLAN SHEETS EL-09 AND EL-10 FOR ADDITIONAL INFORMATION ON PLAZA ROADWAY LIGHTING POLES, FOUNDATIONS, AND LUMINAIRES.
15. FOR EXACT LOCATION OF ELECTRIC POWER AND COMMUNICATION HANDHOLES, SEE SHEET TPE-03
16. FOR EXACT NUMBER JUNCTION BOXES, SEE SHEET TPE-13


SEE SHEET TPE-03 FOR CONDUIT RUNS TO RAMP C (FIBER OPTIC AND POWER)



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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 UNDERGROUND ELECTRICAL PLAN  
 RAMP C WITH CONTROL BUILDING

**SHEET NO.**  
 TPE-05  
**DRAWING NO.**  
 291 OF 397

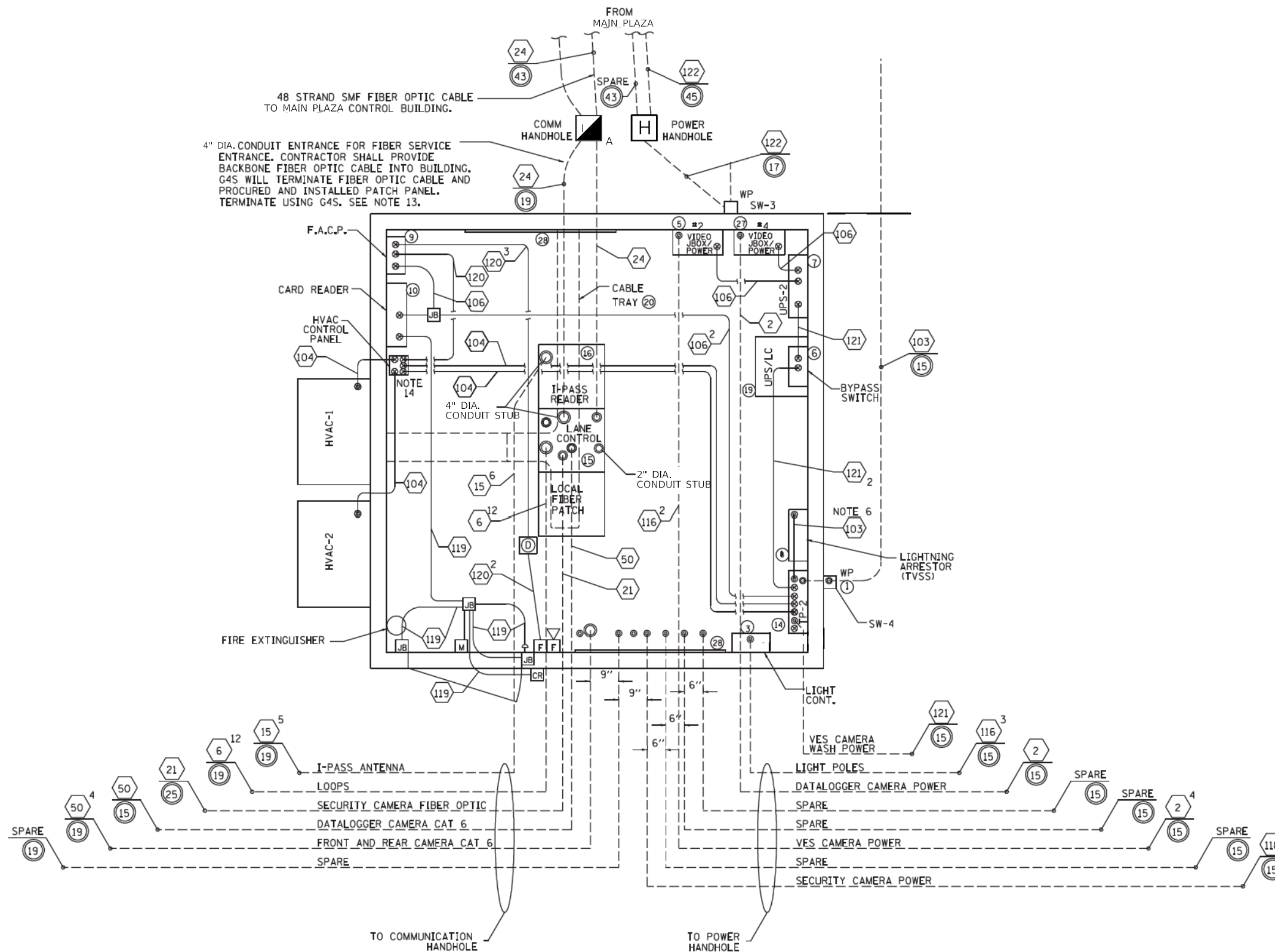
**NOTES:**

1. SEE SHEET TPE-01 FOR CABLE/CONDUIT SCHEDULES.
2. SEE SHEET TPE-16 FOR SYSTEM POWER SINGLE LINE DIAGRAM.
3. SEE SHEET TPE-17 FOR WALL ELEVATION.
4. DOOR ALARM SWITCH, SEE DETAIL ON SHEET TPE-19
5. PROVIDE A 3 PAIR #22 SHIELDED CABLE FOR ATS ALARMS AND ROUTE TO WALLBOARD (TSIC).
6. THE LIGHTNING PROTECTION SYSTEM DEVICE SHALL BE CONNECTED TO THE LOAD SIDE OF THE UTILITY METER.
7. THE CONDUIT SHALL BE STUBBED OUT 5 FEET SOUTH OF RETAINING WALL.
8. FOR ROADWAY LIGHTING. ROUTE TO 20A. CIRCUIT BREAKER
9. NOT USED.
10. REFER TO TSIC TERMINAL BLOCK LAYOUT SHEET TPE-23 ALL COAX WATCHDOG CAMERAS LAND ON SURGE PROTECTION DEVICES. SEE SHEET TPE-01 NOTE 10. VES CAT 6 CABLES SHALL BE SURGE PROTECTED.
11. NOT USED.
12. THE CABLE LENGTH FROM THE ANTENNA TO THE I-PASS READER SHALL NOT EXCEED 150 FEET.
13. 48 SMF CABLE BY CONTRACTOR, TERMINATED BY G4S.
14. PROVIDE A 3 PAIR #22 SHIELDED CABLE FOR SMOKE DETECTOR ALARM CONTACT AND ROUTE TO FIRE ALARM CONTROL PANEL.
15. PROVIDE AN ETHERNET CONNECTION FROM UPS TO CISCO SWITCH.
16. TERMINATE ALARM CABLES ON TERMINAL BLOCK ON TSIC BOARD.
17. CONTRACTOR SHALL COORDINATE ALL WORK FOR UTILITY SERVICES WITH COMED AND NICOR.
18. POWER FRONT AND REAR VES CAMERAS FROM 24V DC VIDEO JUNCTION BOX #3 AND AUDIT CAMERAS FROM 24V AC VIDEO JUNCTION BOX #4 (SEE SHEET TPE-20) ALL POWER SHALL BE SURGE PROTECTED.
19. ALL ALARM OUTDOOR CABLE SHALL TERMINATE ON SIC (INCLUDING DOOR ACCESS).

**EQUIPMENTS**

**LEGEND**

- |  |  |
|--|--|
| ① BUILDING DISCONNECT  | ⑮ 19" RACK LOCAL BACKBONE FIBER  |
| ② NOT USED   | ⑯ 19" RACK I-PASS READER   |
| ③ LIGHTING CONTACTOR, TRANSFORMER, AND CIRCUIT BREAKER   | ⑰ NOT USED   |
| ④ NOT USED   | ⑱ CARD READER  |
| ⑤ VIDEO JBOX/POWER #2  | ⑲ UPS / LINE CONDITIONER   |
| ⑥ BYPASS SWITCH  | ⑳ CABLE TRAY-12" WIDE WITH 9" RUNG SPACING ZINC CHROMATE FINISH & HARDWARE, CSF #10012 |
| ⑦ UPS-2  | ㉑ NOT USED   |
| ⑧ LIGHTNING PROTECTION SYSTEM PHOENIX CONTACT "FLASHTRAB + CNTL SERIES" CATALOG NUMBER 5603414 | ㉒ NOT USED   |
| ⑨ FIRE ALARM CONTROL PANEL   | ㉓ NOT USED   |
| ⑩ CARD READER PANEL  | ㉔ NOT USED   |
| ⑪ HVAC CONTROL PANEL   | ㉕ SMF DISTRIBUTION PANEL   |
| ⑫ NOT USED   | ㉖ GAS METER  |
| ⑬ NOT USED   | ㉗ VIDEO JBOX/POWER #4  |
| ⑭ ELECTRICAL PANEL TP-2  | ㉘ TSIC   |



**CONTROL BUILDING EQUIPMENT LAYOUT**  
NOT TO SCALE

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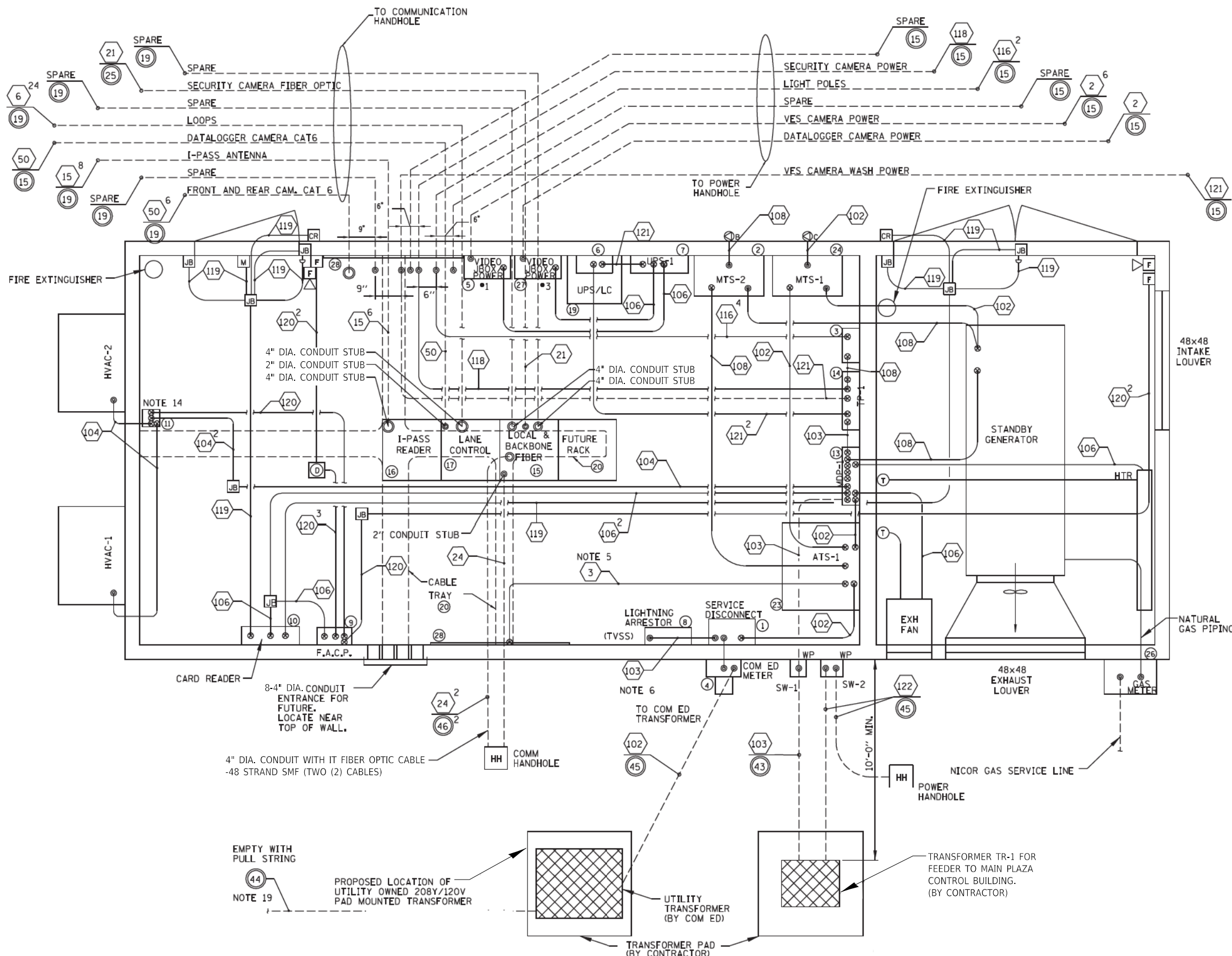


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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
RAMP C  
CONTROL BUILDING  
EQUIPMENT LAYOUT

**SHEET NO.** TPE-06  
**DRAWING NO.** 292 OF 397



**CONTROL BUILDING POWER PLAN (30'x12')**  
NOT TO SCALE

- NOTES:**
- SEE SHEET TPE-01 FOR CABLE/CONDUIT SCHEDULES.
  - SEE SHEET TPE-16 FOR SYSTEM POWER SINGLE LINE DIAGRAM.
  - SEE SHEET TPE-17 FOR WALL ELEVATION.
  - DOOR ALARM SWITCH, SEE DETAIL ON SHEET TPE-19.
  - PROVIDE A 3 PAIR #22 SHIELDED CABLE FOR ATS ALARMS AND ROUTE TO WALLBOARD (TSIC).
  - THE LIGHTNING PROTECTION SYSTEM DEVICE SHALL BE CONNECTED TO THE LOAD SIDE OF THE UTILITY METER.
  - THE CONDUIT SHALL BE STUBBED OUT 5 FEET SOUTH OF RETAINING WALL.
  - FOR ROADWAY LIGHTING, ROUTE TO 20A. CIRCUIT BREAKER
  - NOT USED.
  - REFER TO TSIC TERMINAL BLOCK LAYOUT SHEET TPE-23. ALL COAX WATCHDOG CAMERAS LAND ON SURGE PROTECTION DEVICES. SEE SHEET TPE-01 NOTE 10. VES CAT 6 CABLES SHALL BE SURGE PROTECTED.
  - NOT USED.
  - THE CABLE LENGTH FROM THE ANTENNA TO THE I-PASS READER SHALL NOT EXCEED 100 FEET.
  - NOT USED.
  - PROVIDE A 3 PAIR #22 SHIELDED CABLE FOR SMOKE DETECTOR ALARM CONTACT AND ROUTE TO FIRE ALARM CONTROL PANEL.
  - PROVIDE AN ETHERNET CONNECTION FROM UPS TO CISCO SWITCH.
  - TERMINATE ALARM CABLES ON TERMINAL BLOCK ON TSIC BOARD.
  - CONTRACTOR SHALL COORDINATE ALL WORK FOR UTILITY SERVICES WITH COMED AND NICOR.
  - POWER FRONT AND REAR VES CAMERAS FROM 24V DC VIDEO JUNCTION BOX #1 AND AUDIT CAMERA FROM 24V AC VIDEO JUNCTION BOX #2 (SEE SHEET TPE-18) ALL POWER TO BE SURGE PROTECTED.
  - PROVIDE 4" DIA. SDR 13.5 HDPE CONDUIT 3'-0" BELOW GRADE FOR ComEd INCOME PRIMARY CABLES.

- EQUIPMENTS**      **LEGEND**
- |  |   |
|--|---|
| ① MAIN SERVICE DISCONNECT  | ⑭ ELECTRICAL PANEL TP-1   |
| ② MTS-2 FOR GENERATOR CONTROL  | ⑮ 19" RACK LOCAL BACKBONE FIBER   |
| ③ LIGHTING CONTACTOR, TRANSFORMER, AND CIRCUIT BREAKER   | ⑯ 19" RACK I-PASS READER  |
| ④ ELECTRIC UTILITY METER   | ⑰ 19" RACK LANE CONTROL RACK  |
| ⑤ VIDEO JBOX/POWER #1  | ⑱ CARD READER   |
| ⑥ BYPASS SWITCH  | ⑲ UPS / LINE CONDITIONER  |
| ⑦ UPS-1  | ⑳ CABLE TRAY-12" WIDE WITH 9" RUNG SPACING, ZINC CHROMATE FINISH AND HARDWARE, CSF #10012 |
| ⑧ LIGHTNING PROTECTION SYSTEM PHOENIX CONTACT "FLASHTRAB + CNTL SERIES" CATALOG NUMBER 5603414 | ㉑ JACKET WATER HEATER   |
| ⑨ FIRE ALARM CONTROL PANEL   | ㉒ BATTERY CHARGER   |
| ⑩ CARD READER PANEL  | ㉓ ATS-1   |
| ⑪ HVAC CONTROL PANEL   | ㉔ MTS-1 FOR GENERATOR POWER   |
| ⑫ GENERATOR CONTROL PANEL  | ㉕ SMF DISTRIBUTION PANEL  |
| ⑬ MAIN DISTRIBUTION PANEL MDP-1  | ㉖ GAS METER   |
|  | ㉗ VIDEO JBOX/POWER #3   |
|  | ㉘ TSIC  |

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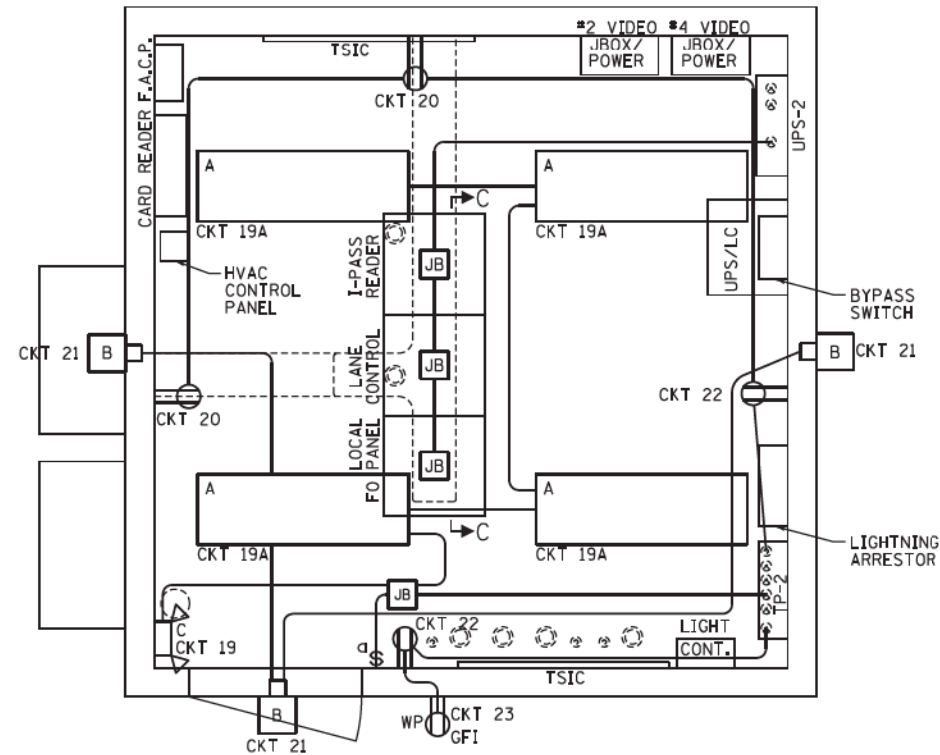
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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 RAMP D  
 CONTROL BUILDING  
 EQUIPMENT LAYOUT

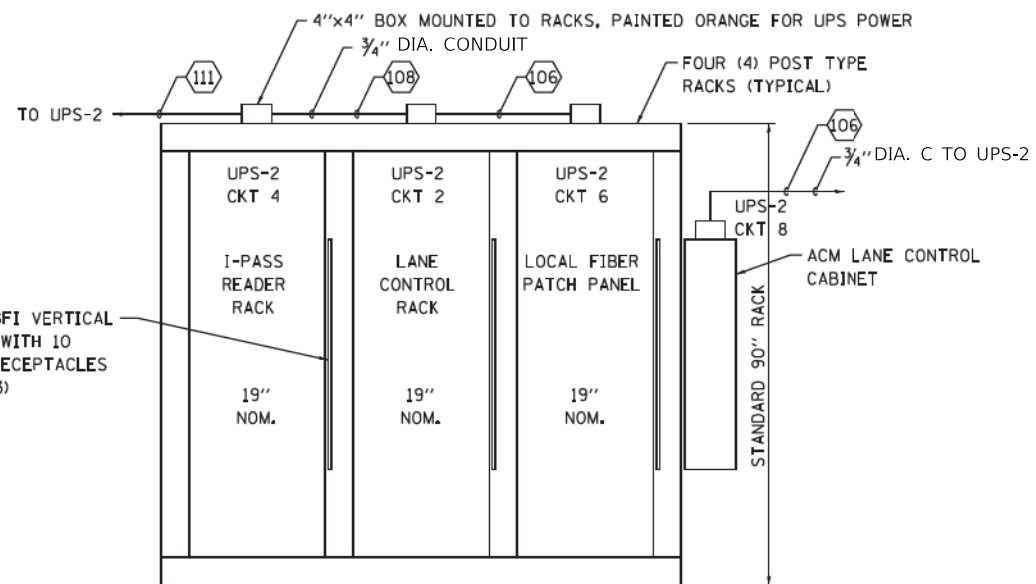
**SHEET NO.** TPE-07  
**DRAWING NO.** 293 OF 397



BUILDING LIGHTING AND RECEPTACLE PLAN 12'x20'  
NOT TO SCALE

**NOTES**

1. SEE SHEET TPE-01 FOR CABLE/CONDUIT SCHEDULES.
2. RECEPTACLE AND LIGHTING CONDUIT SHALL BE 3/4" WITH 2-1/C #12 AND 1/C #12 GROUND UNLESS OTHERWISE NOTED.
3. SEE SHEET TPE-22 FOR PANEL SCHEDULES.
4. PROVIDE CONNECTION TO RECEPTACLES FOR THE EQUIPMENT RACKS AS SPECIFIED, THE PLUG STRIP SHALL BE MOUNTED TO THE SIDE OF THE CABINET AS DIRECTED BY THE TOLLWAY.
5. SEE SHEET TPE-02 FOR LIGHTING FIXTURE SCHEDULE, ELECTRICAL SYMBOLS, LEGEND, AND ABBREVIATIONS.
6. LIGHTING AND RECEPTACLES SHALL BE FED FROM PANEL TP-2.



COMMUNICATIONS AND EQUIPMENT RACK ELEVATION C-C  
NOT TO SCALE

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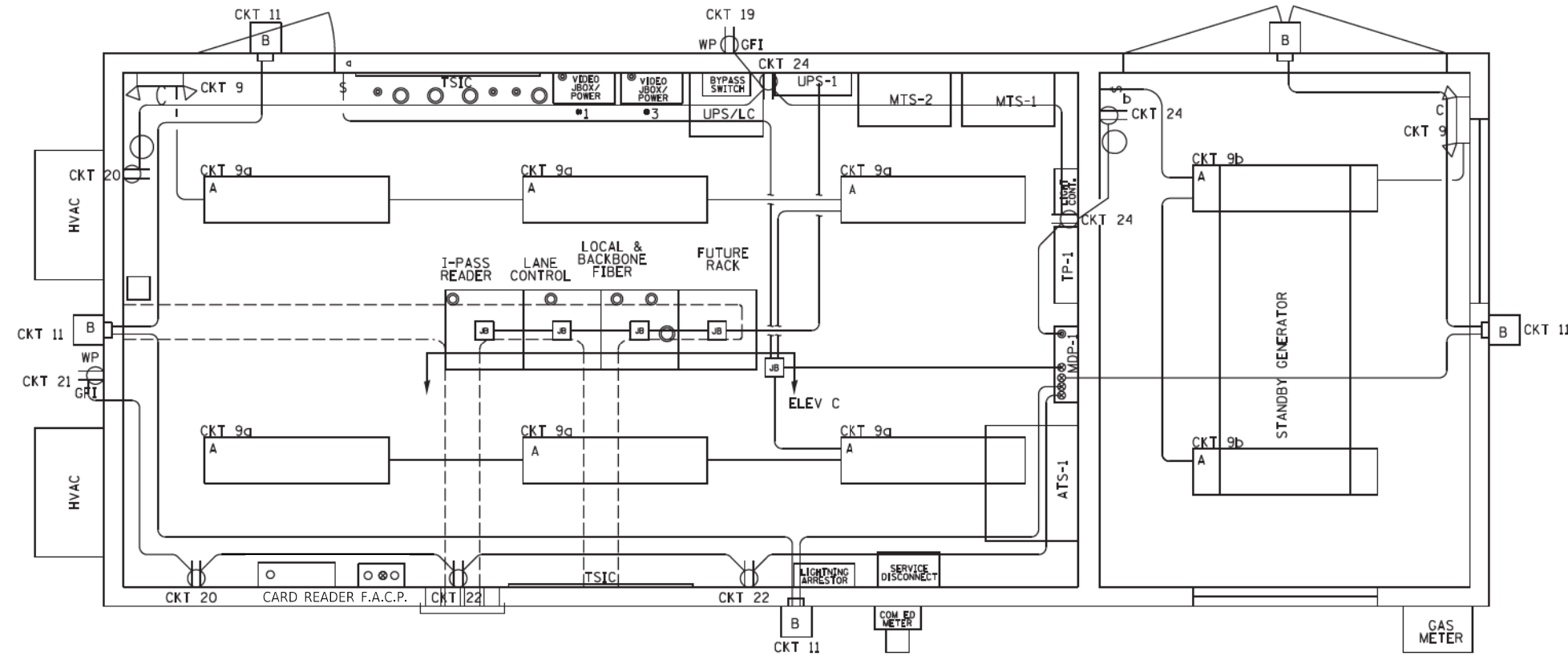


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REVISIONS		
NO.	DATE	DESCRIPTION

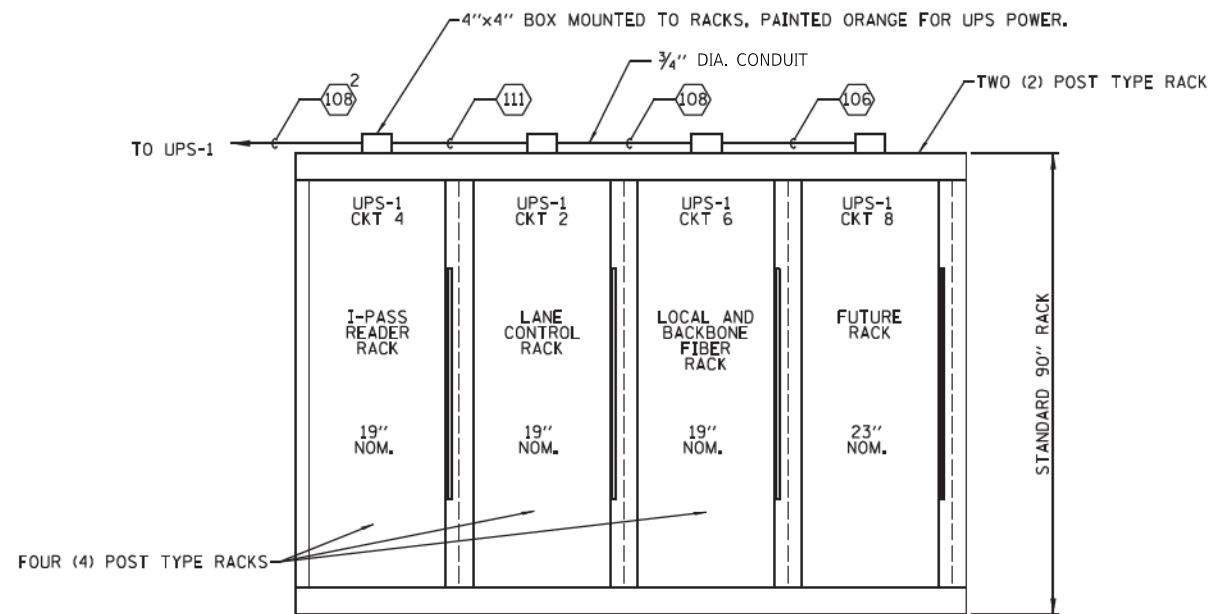
**CONTRACT NO.** I-16-4274  
 RAMP C CONTROL  
 BUILDING LIGHTING PLAN

**SHEET NO.**  
 TPE-08  
**DRAWING NO.**  
 294 OF 397



**BUILDING LIGHTING AND RECEPTACLE PLAN**  
NOT TO SCALE

- NOTES**
1. SEE SHEET TPE-01 FOR CABLE/CONDUIT SCHEDULES.
  2. RECEPTACLE AND LIGHTING CONDUIT SHALL BE 3/4" DIA. WITH 2-1/2 #12 AND 1/2 #12 GROUND UNLESS OTHERWISE NOTED.
  3. SEE SHEET TPE-20 FOR PANEL BOARD SCHEDULES.
  4. PROVIDE CONNECTION TO RECEPTACLES FOR THE EQUIPMENT RACKS AS SPECIFIED. THE PLUG STRIP SHALL BE MOUNTED TO THE SIDE OF THE CABINET AS DIRECTED BY THE TOLLWAY.
  5. SEE SHEET TPE-02 FOR LIGHTING FIXTURE SCHEDULE, ELECTRICAL SYMBOLS, LEGEND, AND ABBREVIATIONS.
  6. LIGHTING AND RECEPTACLES SHALL BE FED FROM PANEL MDP-2.



**COMMUNICATIONS AND EQUIPMENT RACK ELEVATION C**  
NOT TO SCALE

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**DRAWN BY** MB/SR    **DATE** 10/18/2018  
**CHECKED BY** BL    **SCALE** NTS

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 Downers Grove, IL 60516

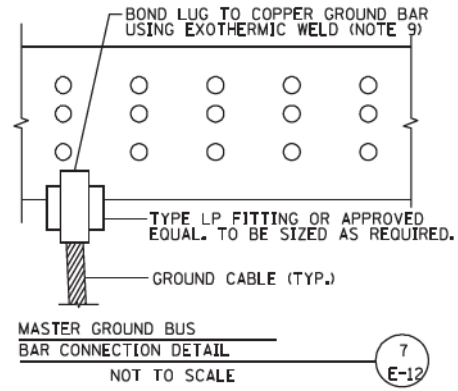
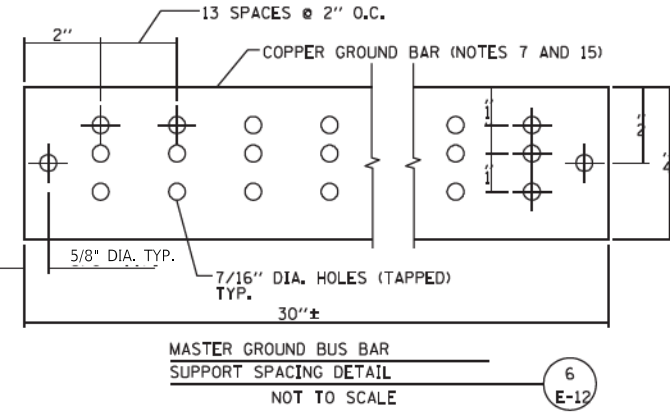
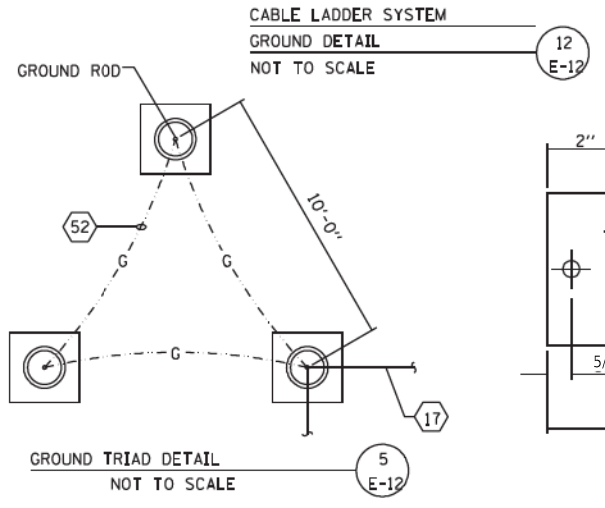
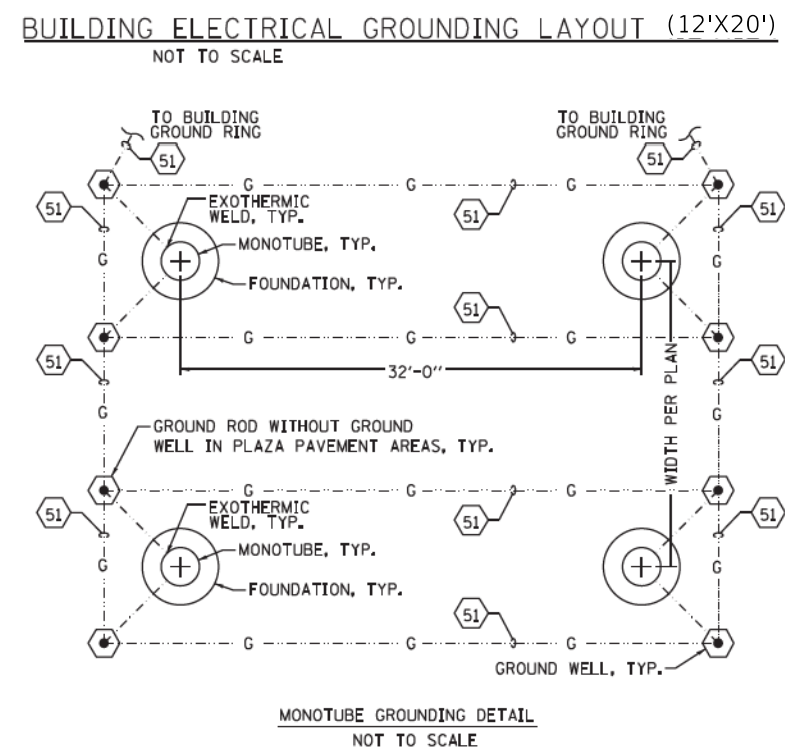
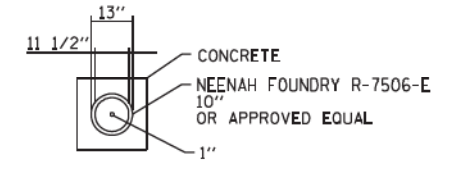
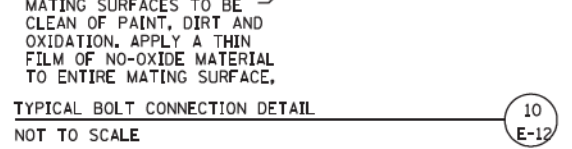
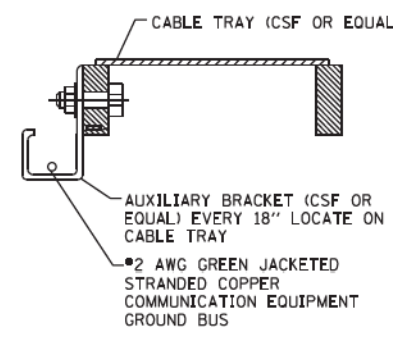
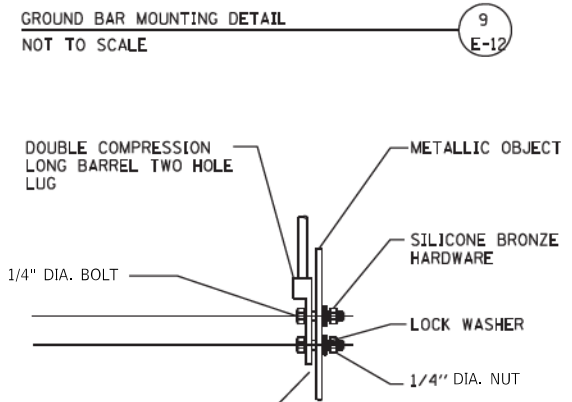
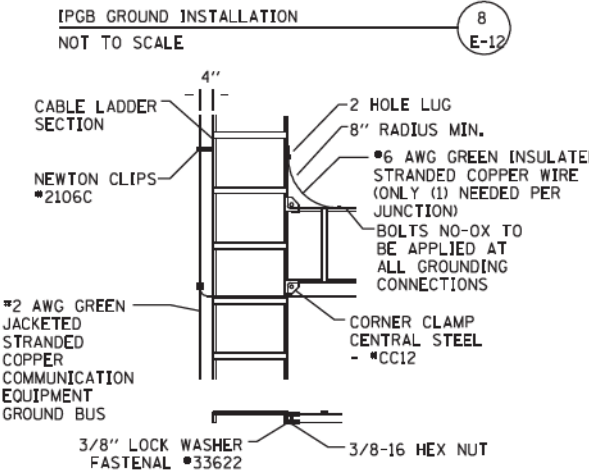
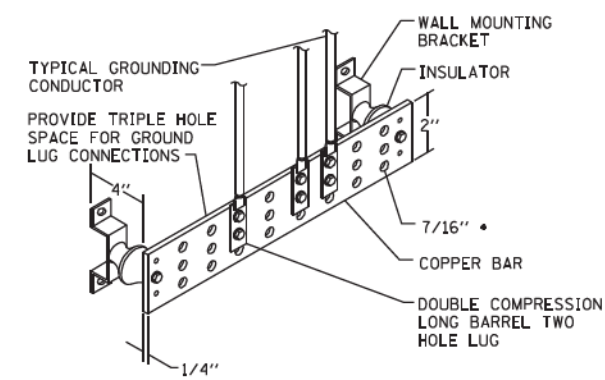
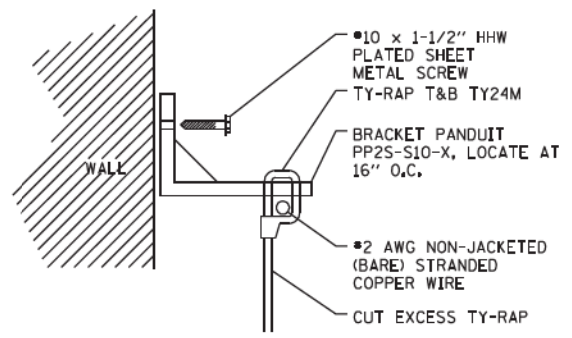
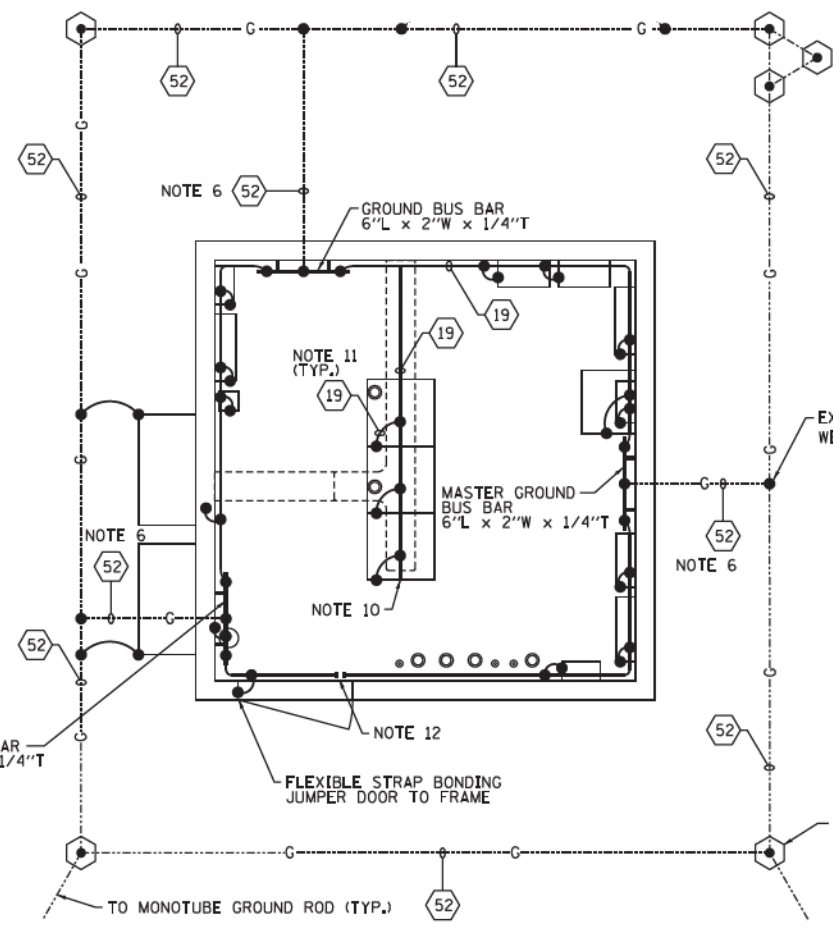

**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 RAMP D CONTROL  
 BUILDING LIGHTING PLAN

**SHEET NO.**  
 TPE-09  
**DRAWING NO.**  
 295 OF 397

- NOTES:
- SEE SHEET TPE-01 FOR CABLE/CONDUIT SCHEDULE.
  - SEE SHEET TPE-01 FOR POWER CABLE INFORMATION.
  - DETAIL SHOWS INSTALLATION IN UNPAVED AREA. WHEN INSTALLING IN A PAVED AREA, INCORPORATE GROUND WELL IN THE POUR.
  - GROUND WELLS ARE REQUIRED AT EVERY GROUND ROD.
  - SEE SHEET TPE-17 FOR GROUNDING SCHEMATIC.
  - PROVIDE 1" SCHEDULE 40 PVC CONDUIT FOR GROUND CABLES UNDER BUILDING.
  - ALL COPPER GROUND BARS SHALL BE OF HARD DRAWN, COMMERCIAL PURE, ELECTROLYTIC COPPER, FOR USE AS AN ELECTRICAL CONDUCTOR AND SHALL COMPLY WITH ASTM SPEC. B-187 OF LATEST DATE.
  - BOLTS, NUTS, & WASHERS USED FOR CONNECTION TO GROUND BUS BARS SHALL BE SOLID COPPER.
  - WELD PER MANUFACTURER SPECIFICATION (ERICO PRODUCTS OR BURNDY CORP.).
  - THE COPPER GROUND BUS BAR SHALL BE MOUNTED TO THE CABLE TRAY ABOVE EQUIPMENT RACKS.
  - PROVIDE A #2 AWG GROUND GREEN INSULATED CABLE FROM THE FRAME OF EACH EQUIPMENT RACK TO THE GROUND BUS AS SHOWN. THE CABLE SHALL BE BOLTED TO THE RACK USING A SEAMLESS HEAVY DUTY COMPRESSION TERMINAL.
  - A SIX INCH GAP SHALL BE PROVIDED BETWEEN THE ENDS OF THE TWO CONDUCTORS THAT MAKE UP THE INTERNAL PERIMETER GROUND BUS CONDUCTOR.
  - ALL EQUIPMENT LOCATED INSIDE THE BUILDING SHALL BE BONDED TO THE MAIN GROUND BUS OR THE INTERNAL PERIMETER GROUND CONDUCTOR WITH A #6 AWG GREEN INSULATED GROUND CABLE. ALL CONNECTIONS SHALL BE BOLTED WITH A DOUBLE COMPRESSION LONG BARREL TWO HOLE LUG.
  - THE INTERNAL PERIMETER GROUND BUS CONDUCTOR (#2 AWG BARE STRANDED COPPER) SHALL BE INSTALLED HORIZONTALLY ALONG THE WALL APPROXIMATELY 8 FEET ABOVE FINISHED FLOOR. THE CONDUCTOR SHALL BE SUPPORTED 2 INCHES FROM THE WALL SURFACE ON INSULATED STANDOFFS. THE STANDOFFS SHALL BE INSTALLED AT INTERVALS AS NECESSARY TO KEEP THE CONDUCTOR SECURELY IN PLACE WITHOUT NOTICEABLE SAGS AND BENDS.
  - THE GROUND BUS BARS SHALL BE MOUNTED APPROXIMATELY 8 FEET ABOVE FINISHED FLOOR AND MOUNTED TO WALL USING A MOUNTING BRACKET WITH INSULATOR.
  - USE NO-OXIDE-A CORROSION PREVENTATIVE COMPOUND AT ALL BOLTED GROUND TERMINATIONS.
  - FOR MONOTUBE FOUNDATIONS, INSTALL 1-1/2" #4/0 GND TO BUILDING GROUNDING SYSTEM.
  - GROUNDING SYSTEM FOR MONOTUBES SHALL NOT BE PAID FOR SEPARATELY. IT SHALL BE INCLUDED IN THE FOUNDATION PAY ITEM.



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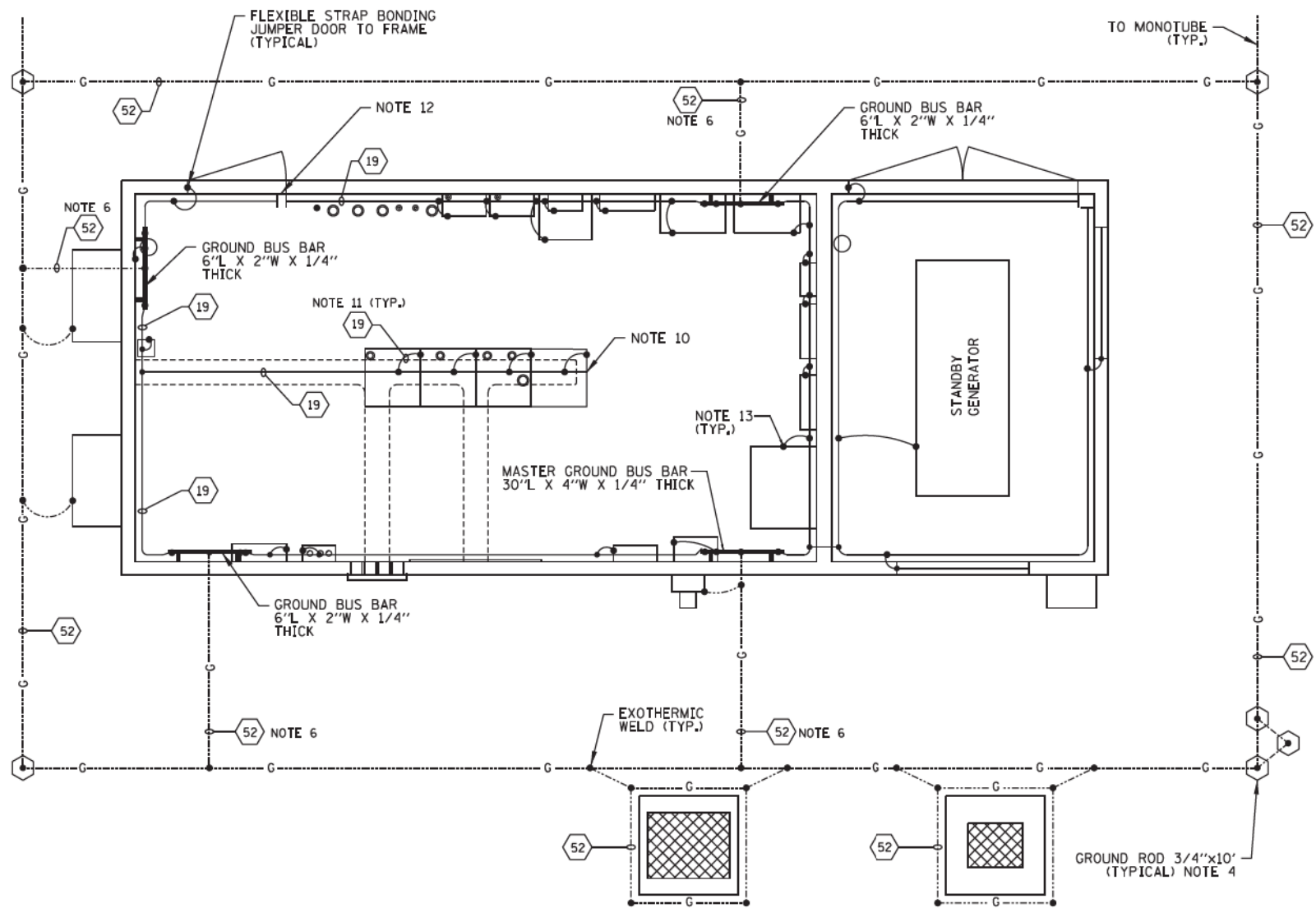
**AMES Engineering, Inc.**  
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 6330 Belmont Road, Unit 4B  
 Downers Grove, IL 60516

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 DOWNERS GROVE, ILLINOIS 60515

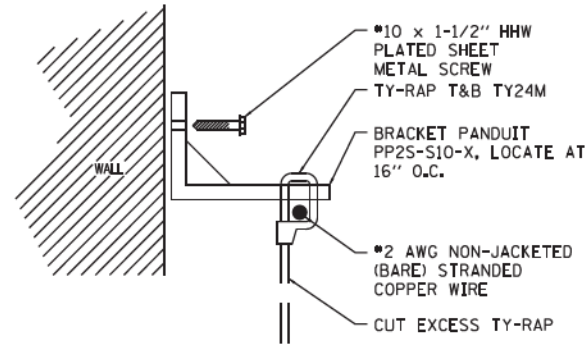
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 RAMP C CONTROL  
 BUILDING GROUNDING DETAILS

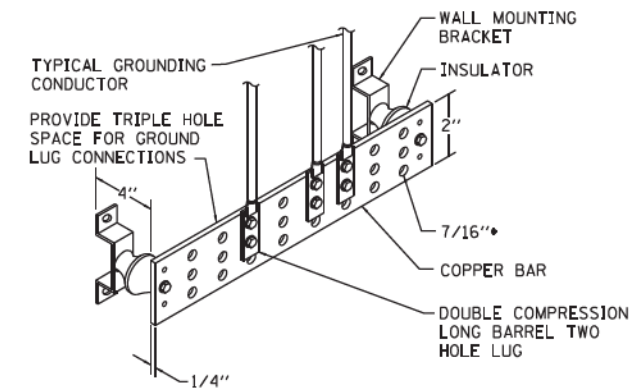
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**DRAWING NO.** 296 OF 397



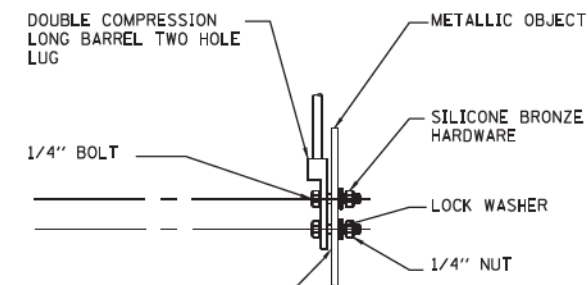
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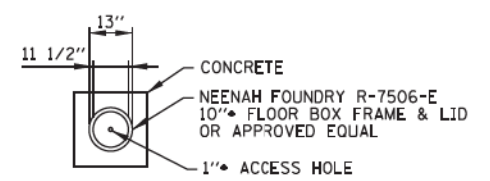
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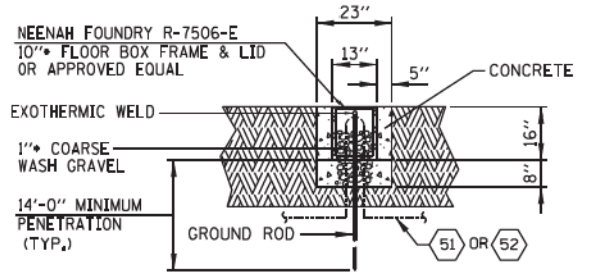
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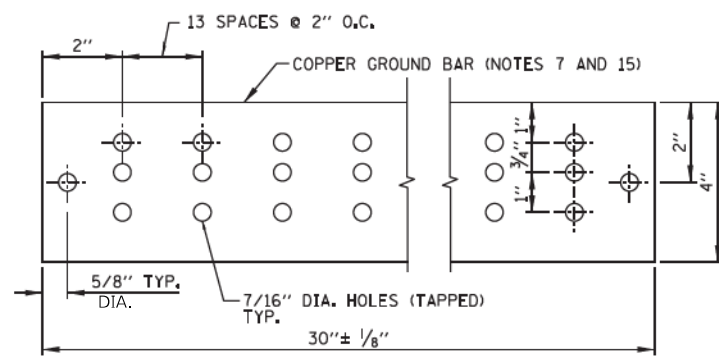
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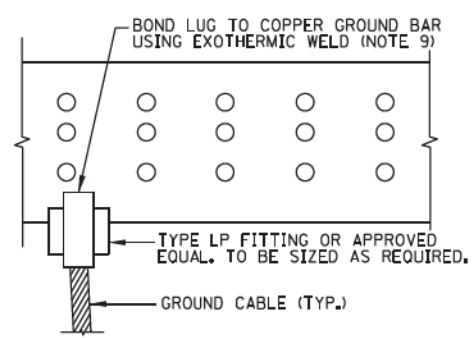
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NOT TO SCALE (NOTE 3)



**GROUND WELL ELEVATION DETAIL** (2)  
NOT TO SCALE (NOTE 3)



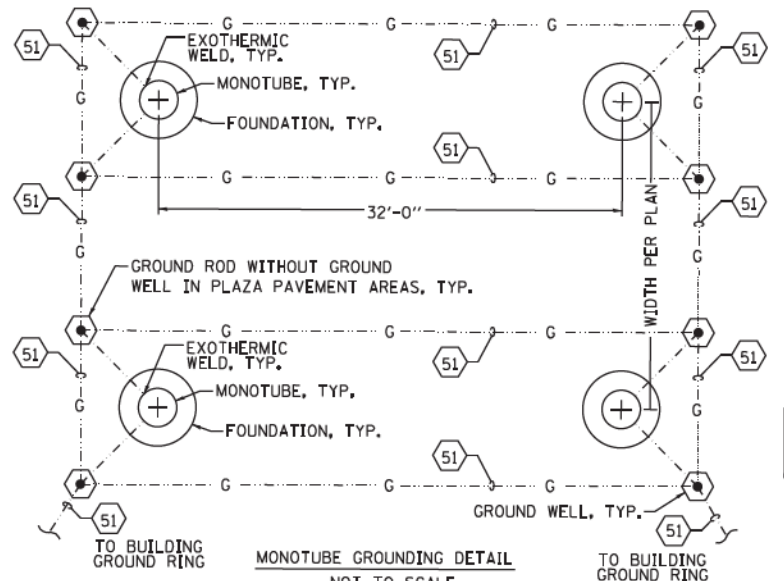
**MASTER GROUND BUS BAR SUPPORT SPACING DETAIL** (6)  
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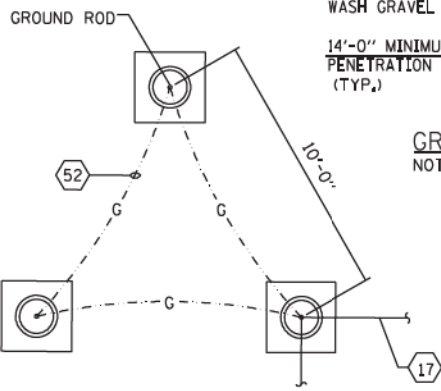
**MASTER GROUND BUS BAR CONNECTION DETAIL** (7)  
NOT TO SCALE

**NOTES:**

- SEE SHEET TPE-01 FOR CABLE/CONDUIT SCHEDULE.
- SEE SHEET TPE-01 FOR POWER CABLE INFORMATION.
- DETAIL SHOWS INSTALLATION IN UNPAVED AREA. WHEN INSTALLING IN A PAVED AREA, INCORPORATE GROUND WELL IN THE POUR.
- GROUND WELLS ARE REQUIRED AT EVERY GROUND ROD.
- SEE SHEET TPE-17 FOR GROUNDING SCHEMATIC.
- PROVIDE 1" DIA. SCHEDULE 40 PVC CONDUIT FOR GROUND CABLES UNDER BUILDING.
- ALL COPPER GROUND BARS SHALL BE OF HARD DRAWN, COMMERCIAL PURE, ELECTROLYTIC COPPER, FOR USE AS AN ELECTRICAL CONDUCTOR AND SHALL COMPLY WITH ASTM SPEC. B-187 OF LATEST DATE.
- BOLTS, NUTS, & WASHERS USED FOR CONNECTION TO GROUND BUS BARS SHALL BE SOLID COPPER.
- WELD PER MANUFACTURER SPECIFICATION (ERICO PRODUCTS OR BURNDY CORP.).
- THE COPPER GROUND BUS BAR SHALL BE MOUNTED TO THE CABLE TRAY ABOVE EQUIPMENT RACKS.
- PROVIDE A #2 AWG GREEN INSULATED GROUND CABLE FROM THE FRAME OF EACH EQUIPMENT RACK TO THE GROUND BUS AS SHOWN. THE CABLE SHALL BE BOLTED TO THE RACK USING A SEAMLESS HEAVY DUTY COMPRESSION TERMINAL.
- A SIX INCH GAP SHALL BE PROVIDED BETWEEN THE ENDS OF THE TWO CONDUCTORS THAT MAKE UP THE INTERNAL PERIMETER GROUND BUS CONDUCTOR.
- ALL EQUIPMENT LOCATED INSIDE THE BUILDING SHALL BE BONDED TO THE MAIN GROUND BUS OR THE INTERNAL PERIMETER GROUND CONDUCTOR WITH A #6 AWG GREEN INSULATED GROUND CABLE. ALL CONNECTIONS SHALL BE BOLTED WITH A DOUBLE COMPRESSION LONG BARREL TWO HOLE LUG.
- THE INTERNAL PERIMETER GROUND BUS CONDUCTOR (#2 AWG BARE STRANDED COPPER) SHALL BE INSTALLED HORIZONTALLY ALONG THE WALL APPROXIMATELY 8 FEET ABOVE FINISHED FLOOR. THE CONDUCTOR SHALL BE SUPPORTED 2 INCHES FROM THE WALL SURFACE ON INSULATED STANDOFFS. THE STANDOFFS SHALL BE INSTALLED AT INTERVALS AS NECESSARY TO KEEP THE CONDUCTOR SECURELY IN PLACE WITHOUT NOTICEABLE SAGS AND BENDS.
- THE GROUND BUS BARS SHALL BE MOUNTED APPROXIMATELY 8 FEET ABOVE FINISHED FLOOR AND MOUNTED TO WALL USING A MOUNTING BRACKET WITH INSULATOR.
- USE NO-OXIDE-A CORROSION PREVENTATIVE COMPOUND AT ALL BOLTED GROUND TERMINATIONS.



**MONOTUBE GROUNDING DETAIL** (5)  
NOT TO SCALE



**GROUND TRIAD DETAIL** (5)  
NOT TO SCALE

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**DRAWN BY** MB/SR    **DATE** 10/18/2018  
**CHECKED BY** BL    **SCALE** NONE

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 DOWNERS GROVE, ILLINOIS 60515

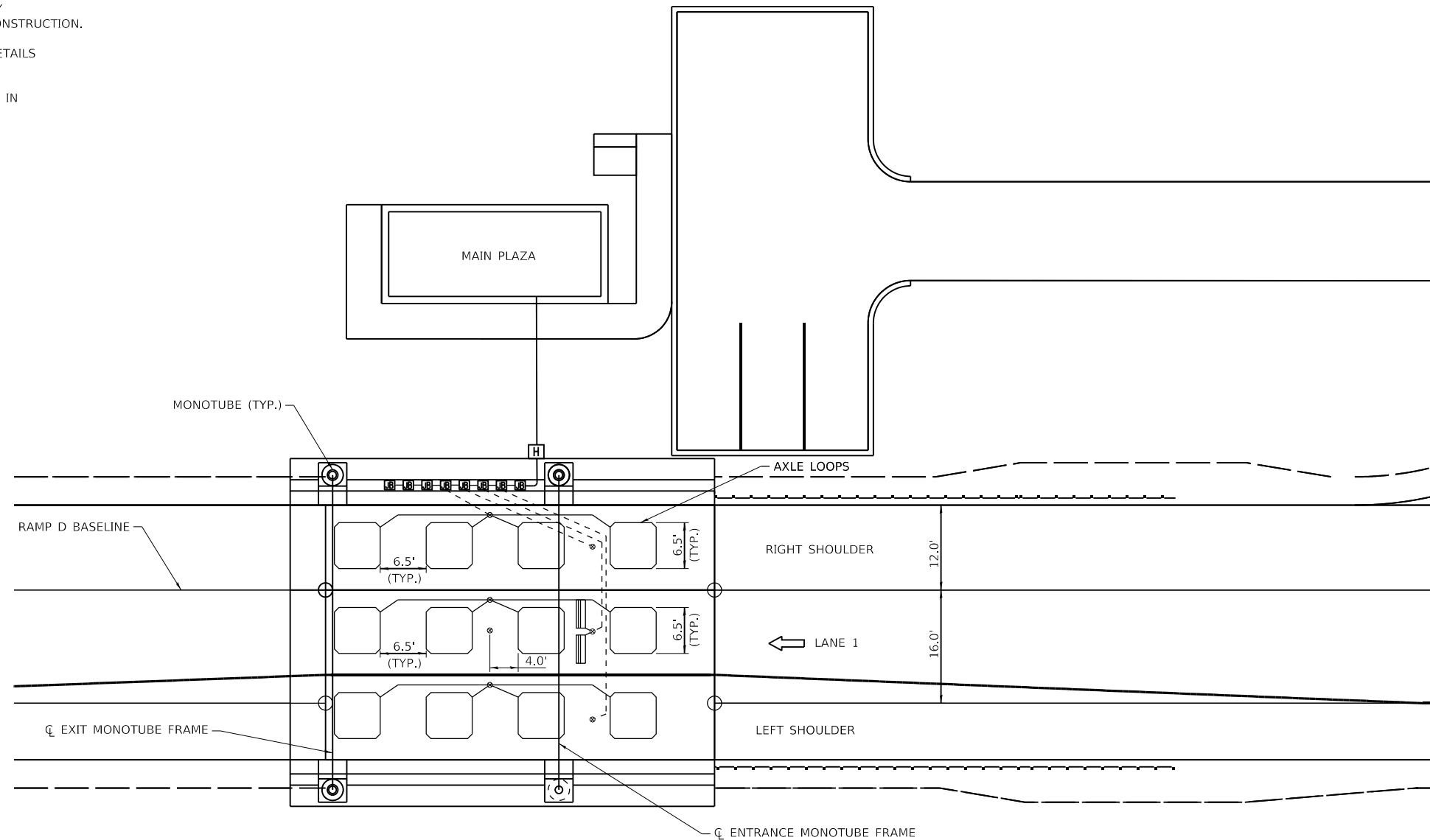
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO.** I-16-4274  
 RAMP D CONTROL  
 BUILDING GROUNDING DETAILS

**SHEET NO.** TPE-11  
**DRAWING NO.** 297 OF 397

**NOTES:**

1. MINIMUM CONDUIT DIA. SIZE SHALL BE 29#32.
2. LOOP WIRE SPLICES SHALL BE MADE IN JUNCTION BOXES.
3. LOOPS ARE PROVIDED AND INSTALLED BY THE TOLLWAY.
4. VERIFY THE CONDUIT AND MONOTUBE FRAME COLUMN LOCATIONS WITH THE TOLLWAY PRIOR TO BARRIER CONSTRUCTION.
5. EQUIPMENT LOCATIONS MUST BE VERIFIED BY THE TOLLWAY AUTHORITY PRIOR TO THE START TO THE START OF ANY CONSTRUCTION.
6. SEE SHEET TPE-22 FOR CONDUIT ROUTING AND STUB UP DETAILS FOR LOOPS.
7. CONTRACTOR IS TO PROVIDE ALL CONDUIT AND LOOP LEAD IN CABLE COILED IN JUNCTION BOXES.



**AET EQUIPMENT AND LOOP LAYOUT PLAN- RAMP D**

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**CHECKED BY** BL    **SCALE** NONE


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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**

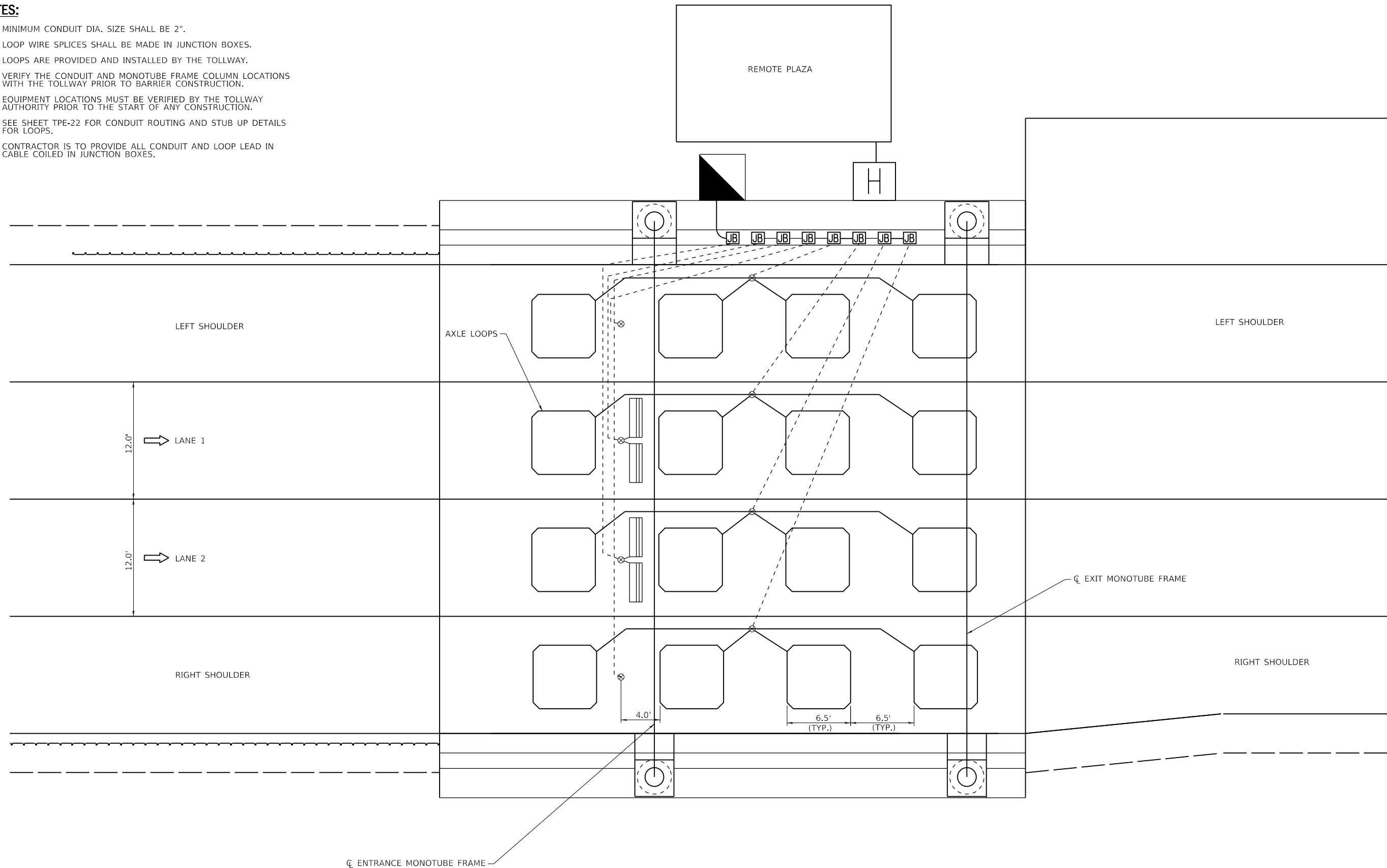
RAMP D  
AET LANE LOOP

**SHEET NO.**  
 TPE-12  
**DRAWING NO.**  
 298 OF 397



**NOTES:**

1. MINIMUM CONDUIT DIA. SIZE SHALL BE 2".
2. LOOP WIRE SPLICES SHALL BE MADE IN JUNCTION BOXES.
3. LOOPS ARE PROVIDED AND INSTALLED BY THE TOLLWAY.
4. VERIFY THE CONDUIT AND MONOTUBE FRAME COLUMN LOCATIONS WITH THE TOLLWAY PRIOR TO BARRIER CONSTRUCTION.
5. EQUIPMENT LOCATIONS MUST BE VERIFIED BY THE TOLLWAY AUTHORITY PRIOR TO THE START OF ANY CONSTRUCTION.
6. SEE SHEET TPE-22 FOR CONDUIT ROUTING AND STUB UP DETAILS FOR LOOPS.
7. CONTRACTOR IS TO PROVIDE ALL CONDUIT AND LOOP LEAD IN CABLE COILED IN JUNCTION BOXES.



**AET EQUIPMENT AND LOOP LAYOUT PLAN - RAMP C**

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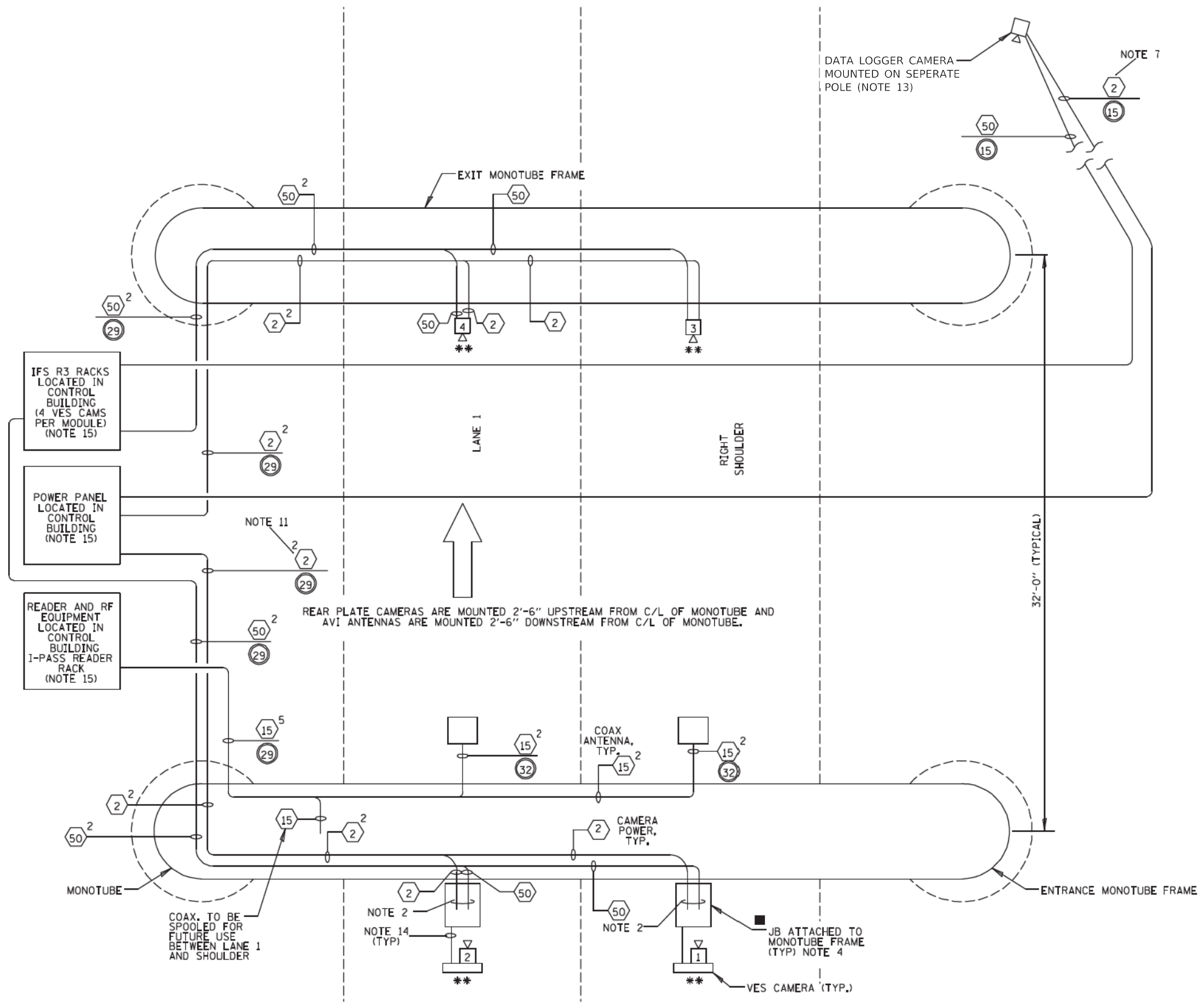

**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**

RAMP C  
 AET LANE LOOP

**SHEET NO.**  
 TPE-13  
**DRAWING NO.**  
 299 OF 397



- NOTES:
- SEE SHEET TPE-01 FOR CABLE/CONDUIT SCHEDULE AND NOTES.
  - FRONT AND REAR VES CABLES ARE PULLED BY THE CONTRACTOR INTO MONOTUBE JUNCTION BOX AND POLE ARM. THE CONTRACTOR WHIPS UP ABOUT 10 FEET OF CABLE, LEAVING THE MAJORITY INSIDE THE MONOTUBE/POLE ARM. THE TOLLWAY WILL PULL FROM THE JB/POLE ARM TO THE CAMERAS AND THEN TERMINATE.
  - VES CAMERA NUMBERING SCHEME BEGIN AT RIGHT SHOULDER AND ARE ORDERED SEQUENTIALLY (1, 2, 3, ... ETC) TO LEFT SHOULDER.
  - J-BOX IS MOUNTED ON ONE SIDE OF HANDHOLE. J-BOX MOUNTED OVER 2" COUPLER WITH CLOSE NIPPLE SEALING NUTS AND BUSHING. J-BOX IS CENTERED OVER TRAVEL OR SHOULDER LANE.
  - NOT USED.
  - COAX FOR AVI ANTENNAS ROUTE THROUGH 2" TO 1" COUPLER, THEN RUN IN 1" CONDUIT TO ANTENNA.
  - 3-C WIRE USED TO POWER AET DATALOGGER CAMERA. CONTRACTOR FURNISHED AND INSTALLED 24 VAC TRANSFORMER LOCATED IN CONTROL BUILDING.
  - NOT USED.
  - EQUIPMENT LOCATIONS MUST BE VERIFIED BY THE TOLLWAY PRIOR TO CONSTRUCTION STARTING.
  - SEE SHEET TPE-01 FOR DETAILS OF FRONT AND REAR VES CAMERA TRIGGER POINT LOCATIONS. IF VES CAMERAS ARE MOUNTED 18' ABOVE THE ROADWAY, THEN THE CAMERAS SHALL BE PLACED 33' HORIZONTAL FROM THE TRIGGER.
  - THIS CABLING IS USED TO POWER THE VES CAMERAS. THESE CABLES WILL RUN FROM A 24V DC POWER SUPPLY LOCATED IN THE POWER ENCLOSURE. THE CONTRACTOR SHALL USE A SIMILAR WIRING METHOD AS WHAT IS USED FOR WIRING DC POWERED CAMERAS.
  - NOT USED.
  - DATA LOGGER CAMERA SHALL BE PLACED UPSTREAM OF THE MONOTUBE ON A SEPARATE POLE TO COVER THE YARD ALSO, SEE SHEET TPE-26.
  - 1.5" SEALTITE AND FITTINGS ARE FURNISHED BY THE CONTRACTOR AND INSTALLED BY THE TOLLWAY.
  - ALL WIRING FROM CAMERAS/I-PASS ANTENNAS SHALL BE SURGE PROTECTED AS IT ENTERS PLAZA BUILDING.

- LEGEND
- \* INDICATES EQUIPMENT FURNISHED BY THE TOLLWAY AND INSTALLED BY THE CONTRACTOR.
  - \*\* INDICATES EQUIPMENT FURNISHED AND INSTALLED BY THE TOLLWAY.
  - INDICATES EQUIPMENT FURNISHED AND INSTALLED BY THE CONTRACTOR.

FRONT / REAR PLATE VES BLOCK WIRING DIAGRAM  
(AET LANES - ONE LANE CONFIGURATION)

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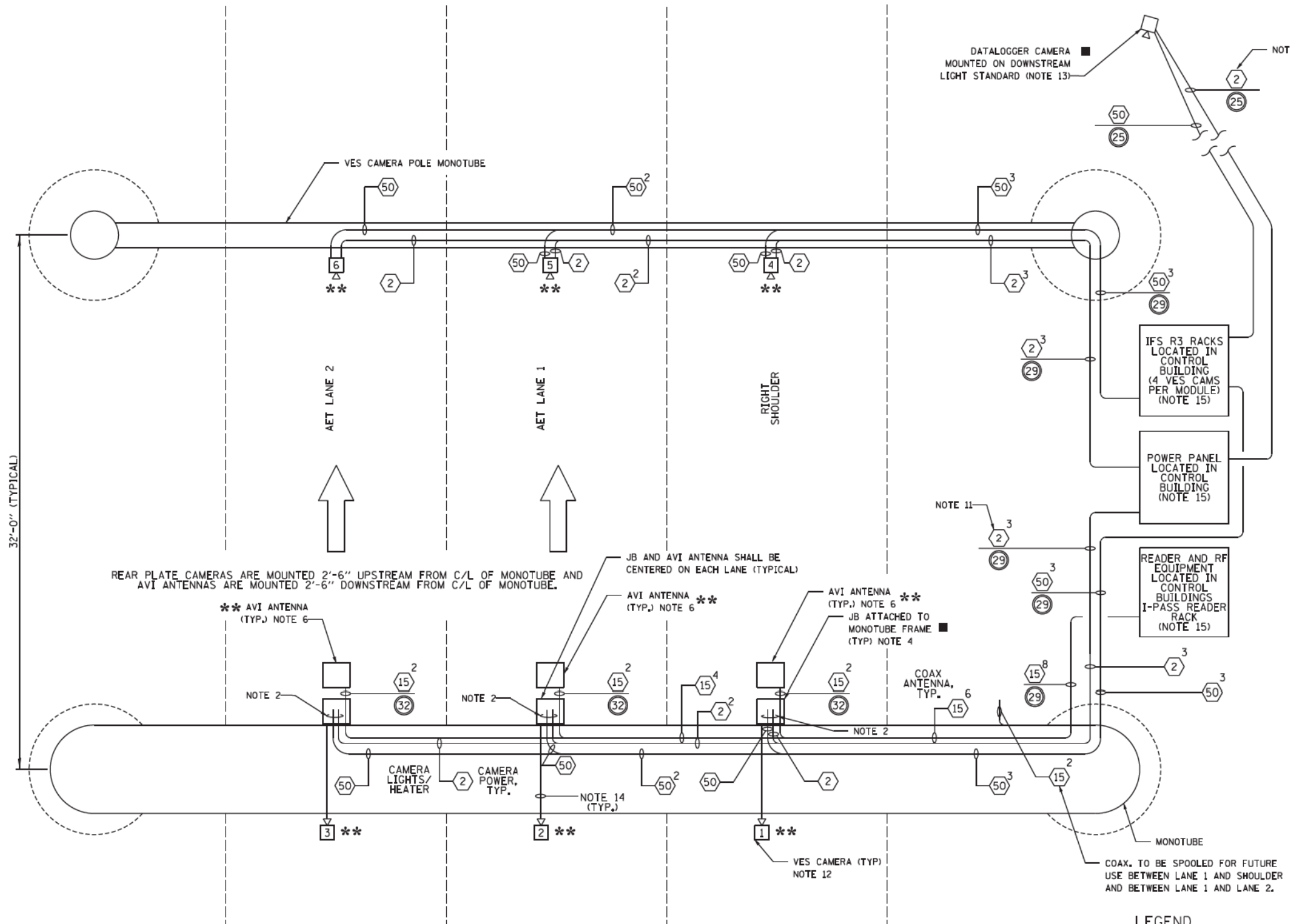
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 Downers Grove, IL 60516

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 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
 RAMP D OVERHEAD  
 EQUIPMENT WIRING DETAILS

SHEET NO. TPE-14  
 DRAWING NO. 300 OF 397



- NOTES:**
- SEE SHEET TPE-01 FOR CABLE/CONDUIT SCHEDULE AND NOTES.
  - FRONT AND REAR VES CABLES ARE PULLED BY THE CONTRACTOR INTO MONOTUBE JUNCTION BOX AND POLE ARM. THE CONTRACTOR WHIPS UP ABOUT 10 FEET OF CABLE, LEAVING THE MAJORITY INSIDE THE MONOTUBE/POLE ARM. THE TOLLWAY WILL PULL FROM THE JB/POLE ARM TO THE CAMERAS AND THEN TERMINATE.
  - VES CAMERA NUMBERING SCHEME BEGIN AT RIGHT SHOULDER LANE AND ARE ORDERED SEQUENTIALLY (1, 2, 3, ... ETC) TO LEFT SHOULDER.
  - J-BOX IS MOUNTED ON ONE SIDE OF HANDHOLE. J-BOX MOUNTED OVER 2" COUPLER WITH CLOSE NIPPLE SEALING NUTS AND BUSHING. J-BOX IS CENTERED OVER TRAVEL OR SHOULDER LANE.
  - NOT USED.
  - COAX FOR AVI ANTENNAS ROUTE THROUGH 2" TO 1" COUPLER, THEN RUN IN 1" CONDUIT TO ANTENNA.
  - 3-C WIRE USED TO POWER AET DATA LOGGER CAMERA. CONTRACTOR FURNISHED AND INSTALLED 24 VAC TRANSFORMER LOCATED IN CONTROL BUILDING.
  - NOT USED.
  - EQUIPMENT LOCATIONS MUST BE VERIFIED BY THE TOLLWAY PRIOR TO CONSTRUCTION STARTING.
  - SEE SHEET TPE-12 TO TPE-13 FOR DETAILS OF FRONT AND REAR VES CAMERA TRIGGER POINT LOCATIONS. IF VES CAMERAS ARE MOUNTED 18' ABOVE THE ROADWAY, THEN THE CAMERAS SHALL BE PLACED 33' HORIZONTAL FROM THE TRIGGER.
  - THIS CABLING IS USED TO POWER THE VES CAMERAS. THESE CABLES WILL RUN FROM A 24V DC POWER SUPPLY LOCATED IN THE POWER ENCLOSURE. THE CONTRACTOR SHALL USE A SIMILAR WIRING METHOD AS WHAT IS USED FOR WIRING DC POWERED CAMERAS.
  - NOTE USED.
  - DATA LOGGER CAMERA SHALL BE PLACED DOWNSTREAM PLACED OF THE EXITING MONOTUBE ON A SEPARATE POLE SEE SHEET TPE-26.
  - 1.5" SEALTITE AND FITTINGS ARE FURNISHED BY THE CONTRACTOR AND INSTALLED BY THE TOLLWAY.
  - ALL WIRING FROM CAMERA/I-PASS ANTENNAS SHALL BE SURGE PROTECTED AS IT ENTERS PLAZA BUILDING.

- LEGEND**
- \* INDICATES EQUIPMENT FURNISHED BY THE TOLLWAY AND INSTALLED BY THE CONTRACTOR.
  - \*\* INDICATES EQUIPMENT FURNISHED AND INSTALLED BY THE TOLLWAY.
  - INDICATES EQUIPMENT FURNISHED AND INSTALLED BY THE CONTRACTOR.

**FRONT / REAR PLAN VES BLOCK WIRING DIAGRAM**  
 NOT TO SCALE (RAMP C SHOWN; RAMP D IS SIMILAR)

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 PLOT DATE: 10/17/2018  
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**CHECKED BY** BL    **SCALE** NONE

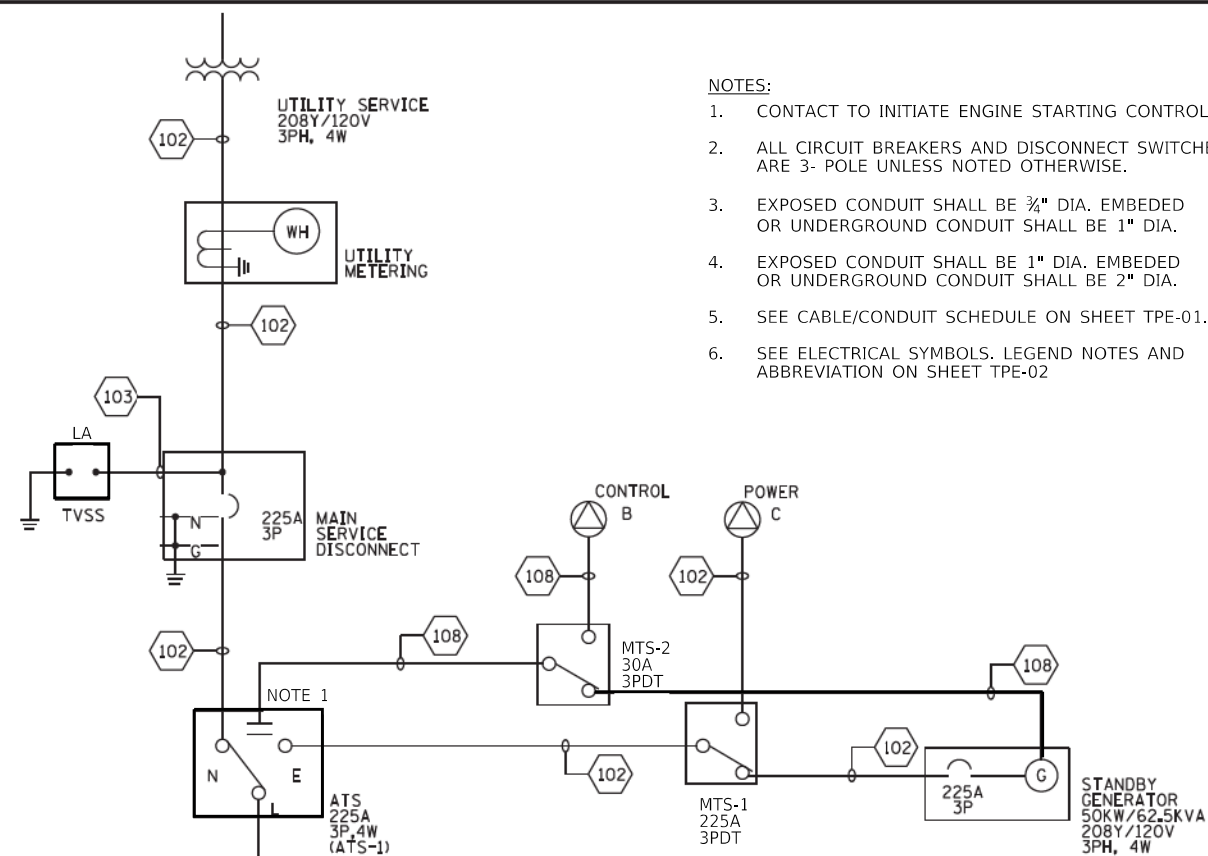
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 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 RAMP C OVERHEAD  
 EQUIPMENT WIRING  
 DETAILS

**SHEET NO.**  
 TPE-15  
**DRAWING NO.**  
 301 OF 397



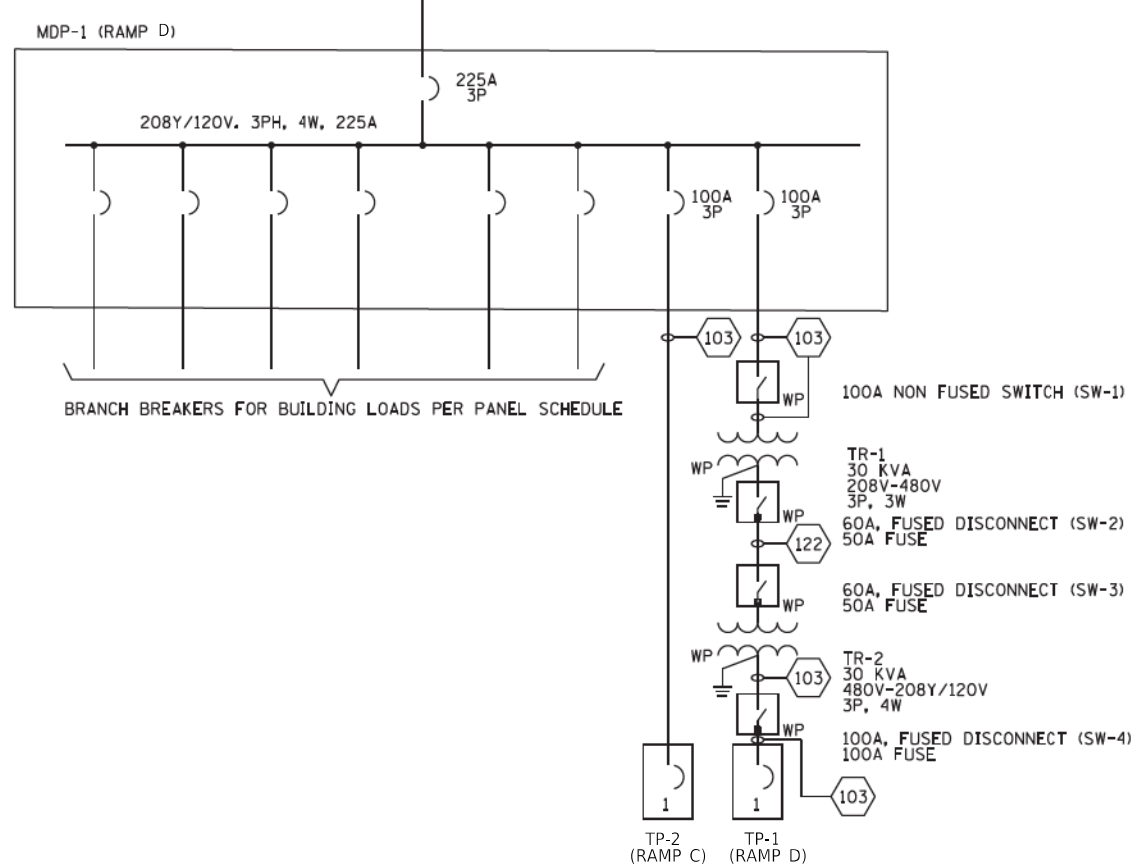
- NOTES:
- CONTACT TO INITIATE ENGINE STARTING CONTROLS.
  - ALL CIRCUIT BREAKERS AND DISCONNECT SWITCHES ARE 3- POLE UNLESS NOTED OTHERWISE.
  - EXPOSED CONDUIT SHALL BE 3/4" DIA. EMBEDDED OR UNDERGROUND CONDUIT SHALL BE 1" DIA.
  - EXPOSED CONDUIT SHALL BE 1" DIA. EMBEDDED OR UNDERGROUND CONDUIT SHALL BE 2" DIA.
  - SEE CABLE/CONDUIT SCHEDULE ON SHEET TPE-01.
  - SEE ELECTRICAL SYMBOLS, LEGEND NOTES AND ABBREVIATION ON SHEET TPE-02

ATS PARAMETER NOTES:

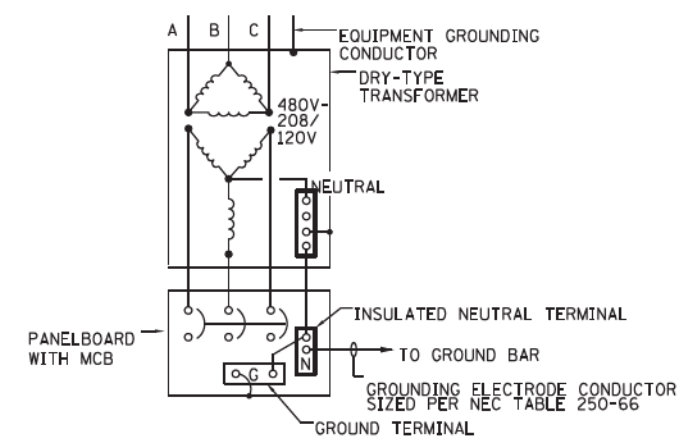
- GENERATOR STARTS WITHIN 3 SECONDS OF LOSS OF COMMERCIAL POWER OR START OF TEST.
- ATS TRANSFERS LOAD TO GENERATOR WITHIN 5 SECONDS OF GENERATOR START.
- GENERATOR WILL RUN 15 MINUTES (MINIMUM) BEFORE ATS RE-TRANSFERS LOAD TO COMMERCIAL POWER.
- GENERATOR WILL CONTINUE TO RUN FOR 15 MINUTES AFTER RE-TRANSFER FOR COOL DOWN.
- THE GENERATOR IS TESTED/EXERCISED UNDER LOAD EVERY TUESDAY AT 8AM.
- THE GENERATOR WILL EXERCISE FOR 30 MIN UNDER LOAD.

ELECTRIC SERVICE NOTES:

- ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH NFPA 70NEC MOST CURRENT ISSUE IN FORCE, THE RESPECTIVE EQUIPMENT MANUFACTURER'S DIRECTIONS AND ALL OTHER APPLICABLE LOCAL CODES, LAWS, ORDINANCES AND REQUIREMENTS IN FORCE. ANY INSTALLATION WHICH VOID THE U.L. LISTING (OR OTHER THIRD PARTY LISTING) AND/OR THE MANUFACTURER'S WARRANTY OF A DEVICE SHALL NOT BE PERMITTED.
- PROVIDE PHENOLIC ENGRAVED NAMEPLATES AT THE SERVICE DISCONNECT LABELED: "SERVICE DISCONNECT" (PER NEC 230-70), & "NOTE ENGINE GENERATOR NEUTRAL IS ALSO BONDED TO GROUND AT THE SERVICE DISCONNECT" (PER NEC 701-9 OR 702-8). PROVIDE ADDITIONAL NAMEPLATES NOTING TYPE AND LOCATION OF STANDBY POWER SOURCE.
- PROVIDE 18 INCH (MIN.) RADIUS ELBOW FOR ALL BENDS.
- CONTRACTOR SHALL CONFIRM INPUT POWER REQUIREMENTS WITH THE ACTUAL NAMEPLATE ON THE RESPECTIVE HVAC EQUIPMENT AND ADJUST CIRCUIT BREAKER, WIRE SIZES AND CONDUIT SIZES TO CONFORM WITH NEC AND MANUFACTURER'S RECOMMENDATIONS WHERE APPLICABLE. WIRE SIZES SHOWN ON THE PLANS ARE MINIMUM.



SINGLE LINE DIAGRAM RAMP C AND D



TYPICAL DRY TYPE TRANSFORMER GROUNDING DETAIL  
NO SCALE

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PLOT FILE ILTOLLWAY-PDF-COMPLOT.ctb  
USER NAME ILTOLLWAY-PDF-COMPLOT.ctb  
PLOT DATE 10/17/2018 PLOT SCALE 1:100.00000 / in. FILE NAME ...N4274-eh-tollway-eh-16.dgn

DRAWN BY MB/SR DATE 10/18/2018  
CHECKED BY BL SCALE NONE

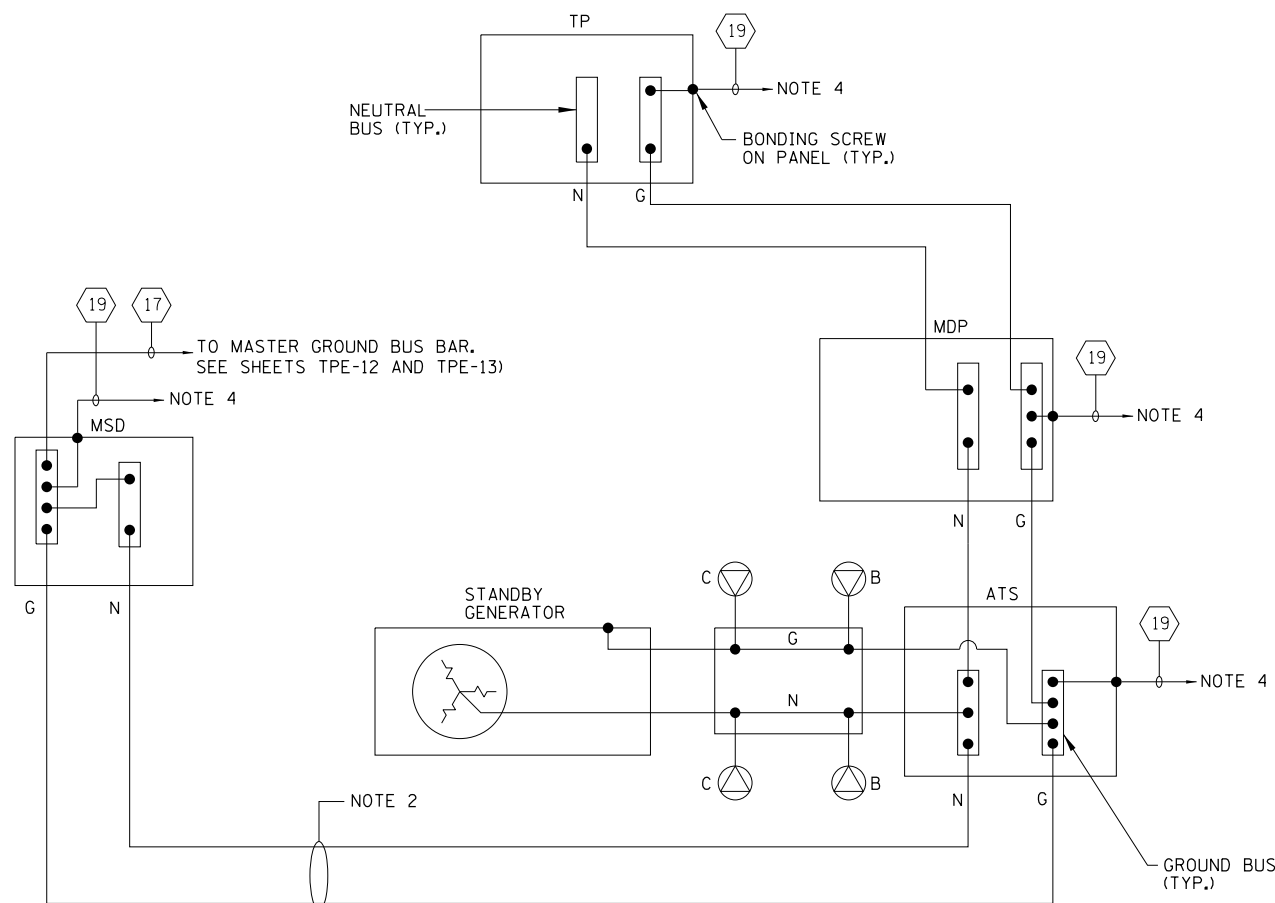
**AMES Engineering, Inc.**  
CONSULTING ENGINEERS  
6330 Belmont Road, Unit 4B  
Downers Grove, IL 60516

**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
2700 OGDEN AVENUE  
DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
SINGLE LINE DIAGRAM AND  
UTILITY POWER CABLE

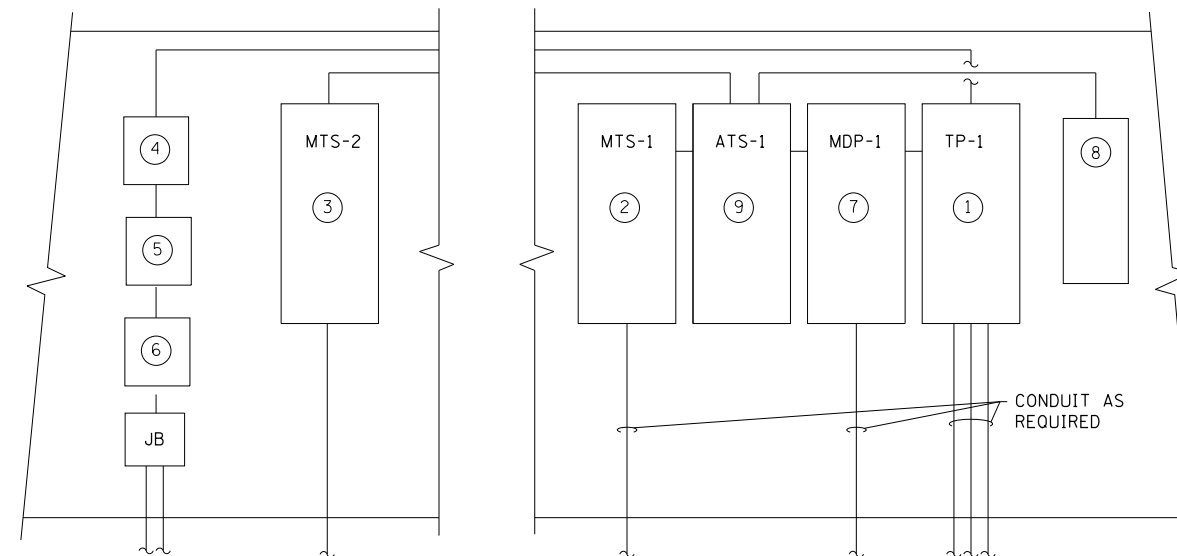
SHEET NO. TPE-16  
DRAWING NO. 302 OF 397



**CONTROL BUILDING EQUIPMENT**

**NOTES:**

1. SEE SHEET TPE-01 FOR CABLE/CONDUIT SCHEDULE.
2. SEE SHEET TPE-01 FOR POWER CABLE INFORMATION.
3. PROVIDE 3/4" DIA. SCHEDULE 40 PVC CONDUITS FOR GROUND CABLES CONNECTION UPS-1 (2) AND LC-1 (2) TO MASTER GROUND BUS BAR.
4. PROVIDE DOUBLE COMPRESSION CONNECTION TO INTERNAL PERIMETER BUS CONDUCTOR. SEE SHEET TPE-10 AND TPE-11.
5. GROUND SHALL BE PER MOTOROLA R56 STANDARD.



**WALL ELEVATIONS**

NOT TO SCALE

**EQUIPMENT LEGEND**

ITEM	DESCRIPTION
①	PANELBOARD NEMA 1 ENCLOSURE, PANEL TP-1 100A. MAIN CIRCUIT BREAKER, 208/120 VOLT, 3-PHASE, 4W, 30 CIRCUITS.
②	MANUAL TRANSFER SWITCH (MTS-1) FOR POWER, 225A, 3 POLE, 208V.
③	MANUAL TRANSFER SWITCH (MTS-2) FOR CONTROL, 30A, 3 POLE, 208V.
④	LIGHTING CONTACTOR 120V, 30A, 1 PHASE, 4-POLE IN A NEMA 1 ENCLOSURE WITH A THREE POSITION SELECTOR SWITCH HAND-OFF-AUTO MOUNTED ON THE COVER.
⑤	TRANSFORMER DRY TYPE, 2KVA, 120V PRIMARYx480V SECONDRY FOR PLAZA ROADWAY LIGHTING.
⑥	CIRCUIT BREAKER, 30A, 2-POLE, 480 VOLT IN A NEMA 1 ENCLOSURE.
⑦	MAIN DISTRIBUTION PANEL (MDP), 208Y/120V, 3 PHASE, 4W 225A AMP, MAIN CIRCUIT BREAKER.
⑧	SERVICE DISCONNECT, 225A 3 POLE CIRCUIT BREAKER 208V.
⑨	AUTOMATIC TRANSFER SWITCH (ATS-1) 225A, 3 POLE 208V.

**NOTES:**

1. CONTRACTOR SHALL ROUTE ALL CONDUIT AS REQUIRED TO ALL PANELS, EQUIPMENT AND CONTROL DEVICES.
2. THE WALL ELEVATIONS FOR THE MAIN RAMP CONTROL BUILDING ARE SHOWN ON THIS DRAWING. THE WALL ELEVATIONS (NOT SHOWN) FOR THE REMOTE RAMP CONTROL BUILDING ARE SIMILAR.

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**DRAWN BY** MB/SR    **DATE** 10/18/2018  
**CHECKED BY** BL    **SCALE** NONE

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 Downers Grove, IL 60516



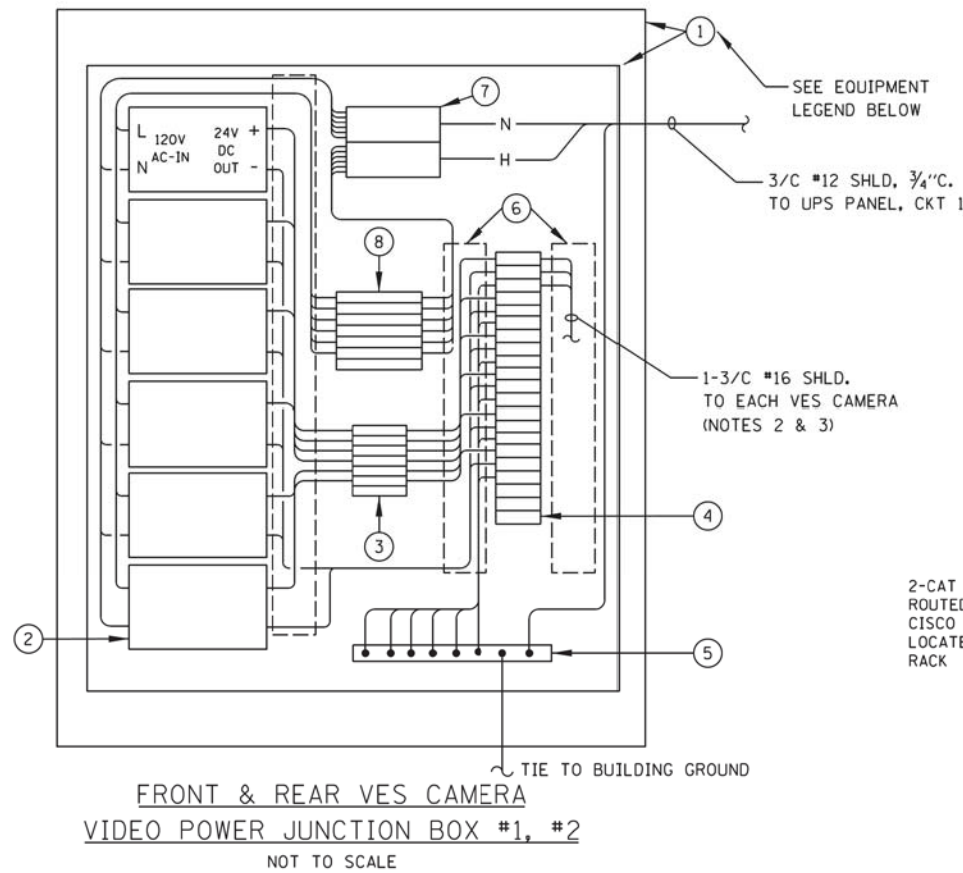
THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY  
 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**

MISCELLANEOUS DETAILS

**SHEET NO.**  
 TPE-17  
**DRAWING NO.**  
 303 OF 397



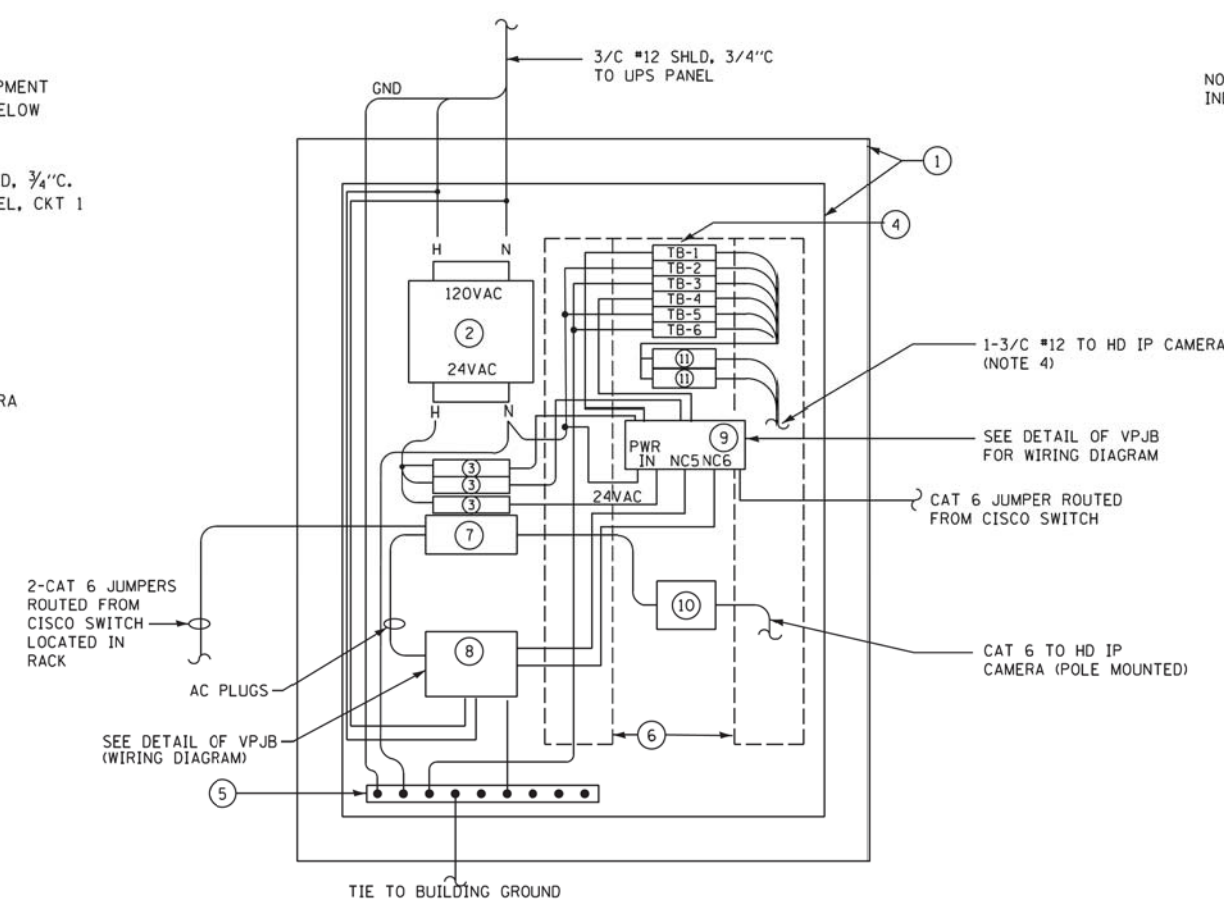
FRONT & REAR VES CAMERA  
VIDEO POWER JUNCTION BOX #1, #2  
NOT TO SCALE

EQUIPMENT LEGEND - VIDEO POWER JUNCTION BOX #1, #2

ITEM	QUANTITY	DESCRIPTION
①	1	30"H X 24"W X 8"D NEMA 1 ENCLOSURE WITH 26"H X 22.5"W BACK PANEL. HOFFMAN CATALOG NO. A-30N24BLP. WITH A-30N24MP PANEL.
②	6	CONTROL POWER SUPPLY 120VAC-24VAC 108W LAMBDA NO. HWS100-24/A.
③	7	TERMINAL BLOCKS, FUSE SWITCH TYPE WITH BLOWN FUSE INDICATOR COMPLETE WITH 5 AMP FUSE. MOUNTING RAIL, ANCHORS, BARRIERS, MARKING STRIPS AND JUMPERS. ALLEN BRADLEY CATALOG NO. 1492-FB1M30-DI.
④	21	TERMINAL BLOCKS, 1 POLE, PANEL MOUNT BLOCK, SCREW TERMINAL WITH WIRE CLAMP. ALLEN BRADLEY CATALOG NO. 1492-C08.
⑤	1	GROUND BAR SYSTEM WITH INSULATED MOUNTING BRACKET. HOFFMAN CATALOG NO. PGS2K.
⑥	LOT	PANDUIT PLASTIC WIRING DUCT SNAP-IN SLOT DESIGN AND NON-SLIP COVER, 1"W X 1"H. CATALOG NO. FLX1LG6 WITH COVER C1LG6.
⑦	1	POWER DISTRIBUTION BLOCK, MARATHON NO. 1322580.
⑧	7	SQUARE D. OOU 115 1P/15A BREAKER.

NOTES:

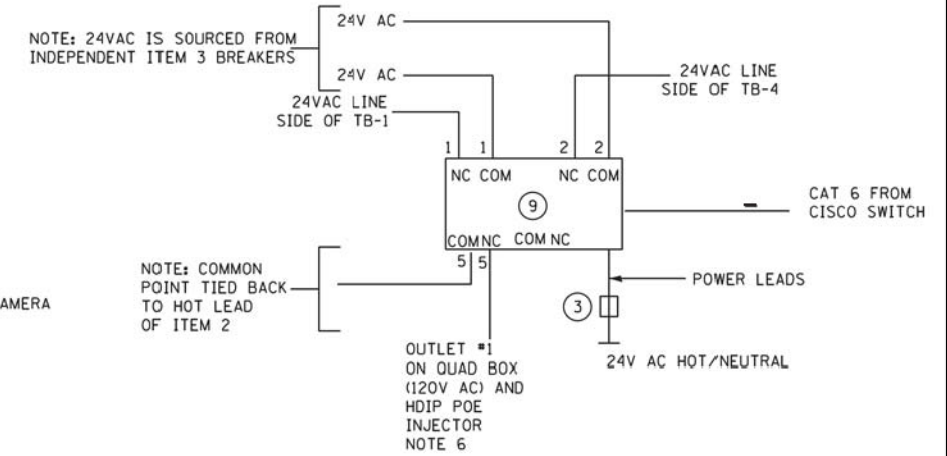
- LABEL JUNCTION BOX, TERMINAL STRIPS AND ALL WIRE AND CABLES.
- ROUTE 1-3/C #12 #16 POWER CABLE FOR EACH VES VIDEO CAMERA TO POWER CABINET OR HANDHOLE AS SHOWN ON SHEET TPE-04 AND TPE-05.
- ALL ELECTRICAL CABLES TO CAMERA SHALL HAVE SURGE PROTECTION.



DATALOGGER CAMERA  
VIDEO POWER JUNCTION BOX #2, #4  
NOT TO SCALE

NOTES:

- VIDEO JUNCTION BOX SHALL BE WIRED TO ACCOMMODATE POWER TO POLE MOUNTED CAMERA.
- LABEL JUNCTION BOX, TERMINAL STRIPS AND ALL WIRE AND CABLES.
- ALL ELECTRICAL CABLES TO CAMERAS SHALL HAVE SURGE PROTECTION (INCLUDES POWER AND CAT6)
- ITEM 7 WILL PLUG INTO QUAD OUTLET.
- ITEM 9 CABLE DIAGRAM WILL INCLUDE POE CONNECTIONS (ITEM 7). DETAILS OF VIDEO POWER JUNCTION BOX ILLUSTRATES ITEM 9 WIRED IN QUAD BOX (120V AC) CIRCUITS TO CONTROL POWER TO THE POE INJECTORS.
- MOUNT POE INJECTORS (ITEM 7) TO BACKBOARD.
- IF DISTANCE FROM VPJB TO THE HDIP CAMERA ON POLE IS GREATER THAN 330 FEET, THEN ITEM 7 IS REQUIRED TO POWER AN ETHERNET EXTENDER DEVICE. IF DISTANCE IS LESS THAN 328 FEET, THEN CAT6 JUMPERS FROM CISCO SWITCH PLUG DIRECTLY INTO ITEM 7.
- PLACE A #12AWG WIRE FROM THE HOT OF UPS CIRCUIT TO PORT 5 & 6 COM PORTS ON THE IP RELAY. ALSO PLACE A #12AWG FROM THE NC PORTS 5 & 6 TO THE QUAD BOX. PLACE A WIRE NUT ON BOTH #12AWG ENDS AS THIS CONNECTION IS ONLY MADE WHEN THE POE+ INJECTORS ARE UTILIZED TO POWER THE BUILDING MOUNTED CAMERAS. HOT AND NEUTRAL LEADS SHALL BE CONNECTED TO EACH OUTLET UNTIL A FUTURE REQUIREMENT PLACES THE NEED TO REWIRE THE OUTLETS ALLOWING THE IP RELAY TO CONTROL TWO OF THESE OUTLETS.
- ITEM 8 WILL SHALL BE BUILT WITH 4 OUTLETS. TWO OUTLETS WILL BE INDEPENDENTLY SWITCHED IN VIA THE THE IP RELAY SO THESE OUTLETS CAN CONTROL THE POE INJECTORS. THE OTHER TWO OUTLETS SHALL BE WIRED DIRECTLY INTO UPS POWER.



DETAIL OF VIDEO POWER JUNCTION BOX (VPJB)  
NOT TO SCALE (WIRING DIAGRAM)

EQUIPMENT LEGEND - VIDEO POWER JUNCTION BOX #2, #4

ITEM	QUANTITY	DESCRIPTION
①	1	30"Hx24"Wx8"D NEMA 1 ENCLOSURE WITH 26"Hx22.5"W BACK PANEL HOFFMAN CATALOG NO. A-20N16BLP, WITH 20N16MP PANEL
②	1	CONTROL POWER TRANSFORMER 120V AC-24V AC 500VA SQUARE D, CLASS 9070, PART SQ 9070T5S0D13
③	3	TERMINAL BLOCKS, FUSE SWITCH TYPE WITH BLOWN FUSE INDICATOR COMPLETE WITH 10AMP FUSE, MOUNTIN RAIL, ANCHORS, BARRIERS, MARKING STRIPS AND JUMPERS ALLEN BRADLEY CATALOG NO. 1492-WFB1024
④	1	TERMINAL BLOCKS, 6 POLE PANEL MOUNT BLOCK SCREW TERMINAL WITH WIRE CLAMPS, ALLEN BRADLEY CATALOG NO. 1492-HJ86
⑤	1	GROUND BAR SYSTEM WITH INSULATED MOUNTING BRACKET, HOFFMAN CATALOG NO. X-G52K
⑥	LOT	PANDUIT PLASTIC WIRING DUCT SNAP-IN SLOT COVER 1"Wx1"H, CATALOG NO. FIX1LG6 WITH COVER C1LG6
⑦	1	POE INJECTOR
⑧	1	QUAD BOX WITH 2-DUAL AC OUTLETS, POWER SOURCE UPS PANEL (120VAC)
⑨	1	DIGILOGGER DIN RELAY
⑩	1	CAT 6 HIGH POE SURGE PROTECTOR, ATLANTIC SCIENTIFIC 24590
⑪	1	24VAC SURGE PROTECTORS, COOPER CROUSE-HINDS ZONE BARRIER ZB24580

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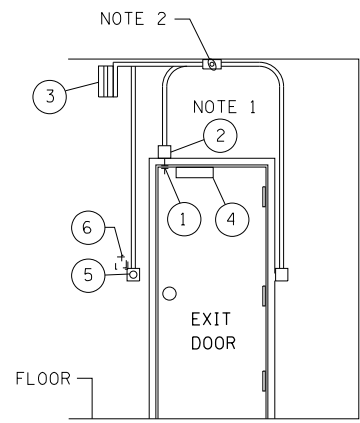
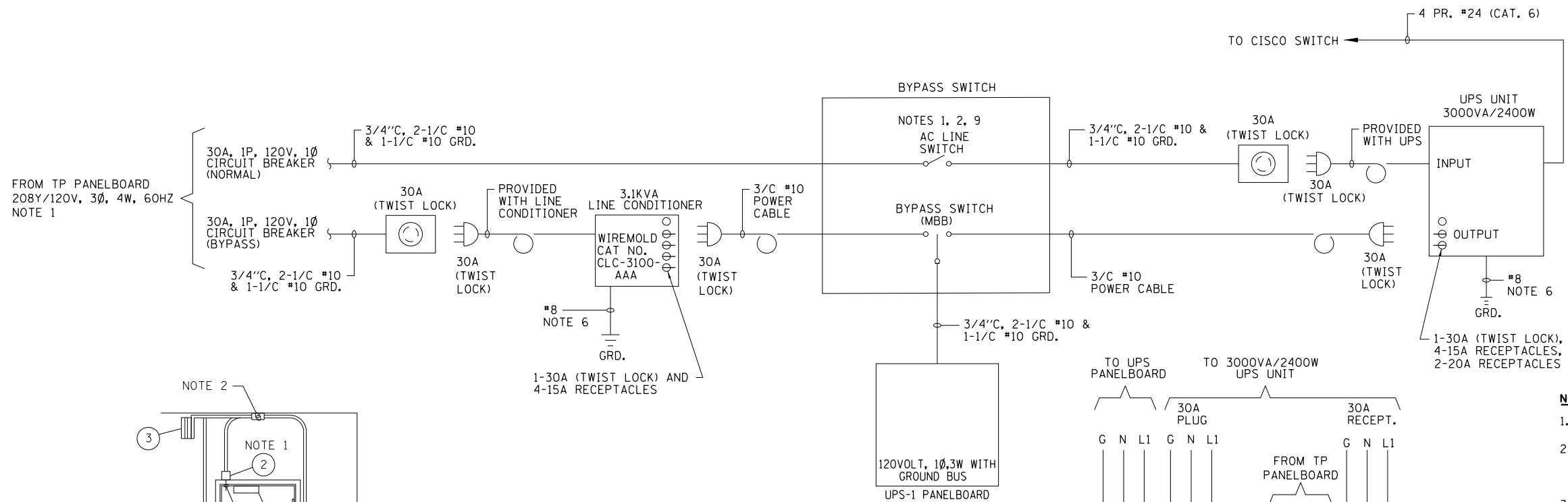
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REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
VIDEO POWER JUNCTION BOX

SHEET NO. TPE-18  
DRAWING NO. 304 OF 397



DOOR ALARM JUNCTION BOX DETAIL - SINGLE DOOR  
NOT TO SCALE

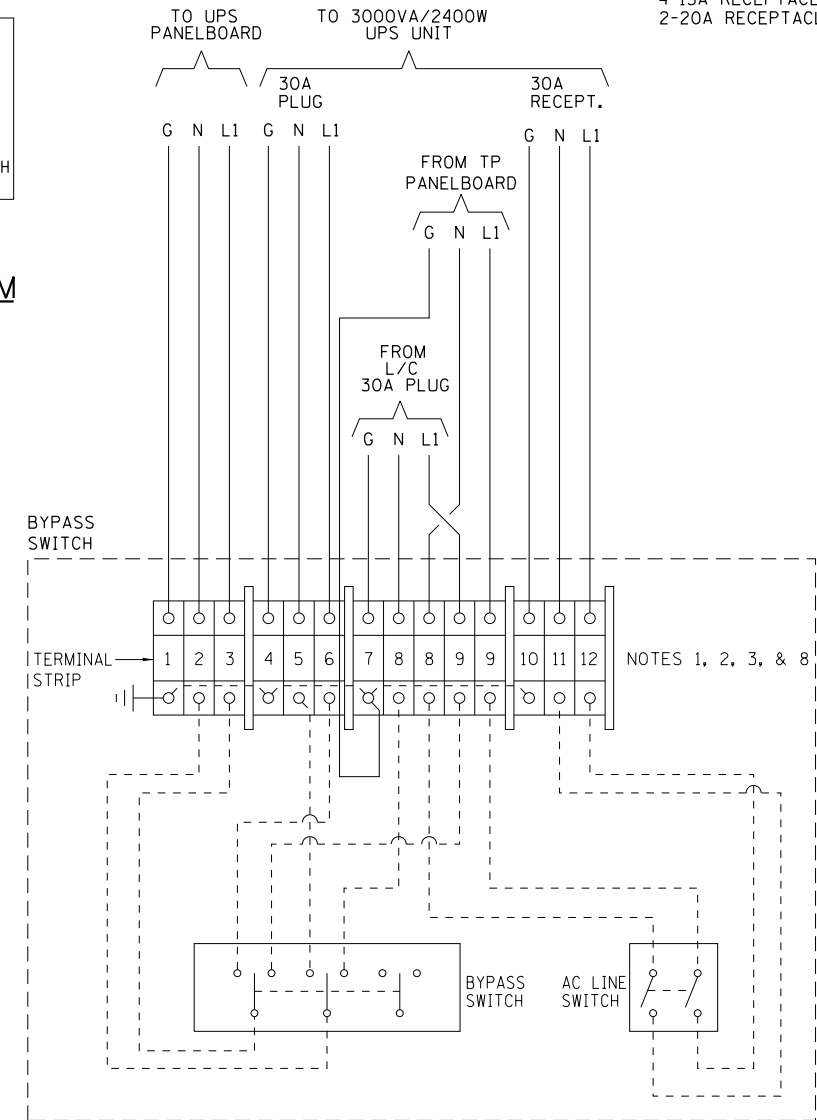
SAMPLE UPS SINGLE LINE DIAGRAM  
3000VA SHOWN

- NOTES:**
- PHASING MUST BE THE SAME ALL THROUGH SYSTEM.
  - REMOVE FLAT PLATE JUMPER BETWEEN DUAL PINS 8 - 8 AND 9 - 9 AS DIRECTED BY THE MANUFACTURER TO PROVIDE FOR TWO POWER SOURCES.
  - BOTH SWITCHES SHOWN IN "OFF" POSITION.
  - INPUT AND OUTPUT VOLTAGE IS 120 VOLT, 1 PHASE, 60 HERTZ, 3 WIRE.
  - CONDUIT SIZE SHOWN IS BASED ON TYPE THHN/THWN WIRE.
  - CONNECT GROUND ELECTRODE CONDUCTOR TO EQUIPMENT ENCLOSURE.
  - THE BYPASS SWITCH AND UPS UNIT SHALL BE AS MANUFACTURED BY POWER WARE, INC. THE LINE CONDITIONER SHALL BE AS MANUFACTURED BY WI REMOLD ELECTRONICS. THE UPS SYSTEM IS AVAILABLE FROM SEPS, INC. AT 1-800-369-7377.
  - DASHED LINES INDICATE INTERNAL WIRING. SOLID LINES INDICATE EXTERNAL WIRING.
  - PROVIDE AN ETHER NET CONNECTION FROM UPS TO CISCO SWITCH.

**EQUIPMENT LEGEND - DOOR ALARM**

ITEM	DESCRIPTION
1	NORMALLY CLOSED (N.C. WHEN THE DOOR IS CLOSED) MAG REED CONTACT BUILT INTO DOOR FRAME. SENTROL 1078C OR 1078 SERIES. COIL CONTACT LEADS AND COMMUNICATION CABLE IN JUNCTION BOX.
2	JUNCTION BOX, 4" X 4" WITH BLANK COVER PLATE, AND 3/4" CONDUIT TO CABLE TRAY.
3	MOTION DETECTOR
4	MAGNETIC DOOR LOCK
5	DOOR RELEASE BUTTON
6	CARD READER (EXTERIOR)

- NOTES:**
- COIL 2 FEET CABLE IN BOX FOR TERMINATION BY THE ILLINOIS TOLLWAY UNLESS OTHERWISE NOTED.
  - ROUTE TO CARD READER PANEL, TERMINATION BY THE ILLINOIS TOLLWAY. 4-1PR #22 SHLD. CABLE IN 3/4" CONDUIT.



BYPASS SWITCH WIRING DIAGRAM

PEN TABLE ILL TOLLWAY TABLES PLOT.TBL  
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<b>DRAWN BY</b>	MB/SR	<b>DATE</b>	10/18/2018
<b>CHECKED BY</b>	BL	<b>SCALE</b>	NONE

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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 UPS SINGLE LINE AND WIRING  
 DIAGRAM DOOR ALARM DETAILS

**SHEET NO.**  
 TPE-19  
**DRAWING NO.**  
 305 OF 397

PANELBOARD MDP-1 RAMP D  
 VOLTAGE 120/208V  
 PHASE/WIRE 3/4

MAINS 250A. MCB  
 BUS RATING 300A.  
 MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS)			AMPS/POLES	CKT BKR	CKT BKR	AMPS/POLES	LOAD (WATTS)			CKT NO.	DESCRIPTION		
		A	B	C					A	B	C				
PANEL TPE-1	1	4040			100/3			20/1	200			2	CARD READER PANEL		
	3		3220							20/1		200		4	FIRE ALARM CONTROL PANEL
	5			2990									2690		6
VES WASH CABINET	7	--			20/1		45/3	2690			8	HVAC UNITS			
INTERIOR LIGHTS	9		560		20/1					2690		10			
EXTERIOR BUILDING LIGHTS	11			425	20/1		20/2			---	12	SPARE			
EXHAUST FAN	13	345			20/1							14			
GEN. BATTERY CHARGER	15		160		20/1		20/1	750			16	BASEBOARD HEATER			
GEN. JACKET WATER HTR.	17			1500	20/1						200		18	SPARE	
EXTERIOR RECEPTACLE	19	200			20/1		20/1	400			20	INTERIOR RECEPTACLES			
EXTERIOR RECEPTACLE	21		200		20/1						400		22	INTERIOR RECEPTACLES	
SPARE	23			2100	30/1		20/1				24	INTERIOR RECEPTACLES			
SPARE	25	--			15/3				45/3	1920				26	HVAC UNIT HP-02
SPARE	27		--								375		28		
SPARE	29			--								1920	30		
SPARE	31	--			30/3		100/3	10000			32				
SPARE	33		--											34	PANEL TP-2 (XFMR)
SPARE	35			--									10000	36	
SUBTOTAL "A"			4585						15010						
SUBTOTAL "B"				4140						15960					
SUBTOTAL "C"											15010				
TOTAL WATTS "A,B,C"			= 61.720 KW = 61.720 KW = 72.6KVA												

PANELBOARD UPS-1  
 VOLTAGE 120V.  
 PHASE/WIRE 1/2

MAINS 30A. 1P. MCB  
 BUS RATING 60A.  
 MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS)	AMPS/POLES	CKT BKR	CKT BKR	AMPS/POLES	LOAD (WATTS)	CKT NO.	DESCRIPTION	
VES FRONT EQUIPMENT	1	200	20/1			20/1	300	2	RACK RECEPTACLE (LCC)	
SPARE	3	---	20/1					20/1	300	4
SPARE	5	---	20/1			20/1	300	6	RACK RECEPTACLE (FIBER)	
SPARE	7	---	20/1					20/1	300	8
VIDEO POWER JUNCTION BOX 1	9	500	20/1			20/1	--	10	SPARE	
SPARE	11	---	20/1					20/1	--	12
SUBTOTAL "A"							700			
TOTAL WATTS "A"			= 1.900W = 1.9 KW = 2.0KVA							

PANELBOARD UPS-2  
 VOLTAGE 120V  
 PHASE/WIRE 1/2

MAINS 30A. 2P. MCB  
 BUS RATING 60A.  
 MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS)	AMPS/POLES	CKT BKR	CKT BKR	AMPS/POLES	LOAD (WATTS)	CKT NO.	DESCRIPTION	
VES FRONT EQUIPMENT	1	200	20/1			20/1	300	2	RACK RECEPTACLE (LCC)	
SPARE	3	--	20/1					20/1	300	4
SPARE	5	--	20/1			20/1	300	6	RACK RECEPTACLE (FIBER)	
SPARE	7	--	20/1					20/1	300	8
VIDEO POWER JUNCTION BOX 1	9	500	20/1			20/1	--	10	SPARE	
SPARE	11	--	20/1					20/1	--	12
SUBTOTAL "A"							700			
TOTAL WATTS "A"			= 1.900W = 1.9 KW = 2.0KVA							

PANELBOARD TP-1  
 VOLTAGE 208Y/120V  
 PHASE/WIRE 3/4

RAMP D  
 MAINS 100A. MCB  
 BUS RATING 100A.  
 MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS)	AMPS/POLES	CKT BKR	CKT BKR	AMPS/POLES	LOAD (WATTS)	CKT NO.	DESCRIPTION	
SPARE	1	--				30/1	1140	2	SPARE	
SPARE	3	--				30/1		4	SPARE	
SPARE	5		--			30/1		6	SPARE	
SPARE	7	--				30/3	2400	8	UPS-1 (3000VA) (BYPASS)	
SPARE	9		--			30/1		10	SPARE	
WATCH DOG CAMERA	11			500		30/1		12	SPARE	
	13	500				20/1		14	LINE CONDITIONER (LC-1)	
ROADWAY LIGHTING TRANSFORMER	15		2000			30/1		16	BARRIER WARNING LIGHT	
LIGHTING CONTACTOR (CONTROL)	17			200		20/1		18	LANE CONTROL SIGNAL	
SPARE	19	--				20/1	--	20	SPARE	
SPARE	21		--			20/1	--	22	SPARE	
SPARE	23			--		20/1	--	24	SPARE	
SPARE	25	--				30/2	--	26	SPARE	
SPACE	27					20/1		28	SPACE	
SPACE	29							1250	30	SPACE
SUBTOTAL "A"			500				3540			
SUBTOTAL "B"				2000				1220		
SUBTOTAL "C"					700				2290	
TOTAL WATTS "A,B,C"			= 10.250W = 10.2 KW = 12.0KVA							

PANELBOARD TP-2  
 VOLTAGE 208Y/120V  
 PHASE/WIRE 3/4

RAMP C  
 MAINS 100A. MCB  
 BUS RATING 100A.  
 MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS)	AMPS/POLES	CKT BKR	CKT BKR	AMPS/POLES	LOAD (WATTS)	CKT NO.	DESCRIPTION	
VES CAMERA WASH CABINET	1	2100				30/1	1140	2	SPARE	
SPARE	3		--			30/1		4	SPARE	
SPARE	5		--			30/1		6	UPS-2 (3000VA) (BYPASS)	
SPARE	7	--				30/1	2400	8	SPARE	
SPARE	9		--			30/1		10	SPARE	
WATCH DOG CAMERA	11			500		30/1		12	LINE CONDITIONER (LC-2)	
	13	500				20/1	--	14	SPARE	
ROADWAY LIGHTING TRANSFORMER	15		2000			30/1		16	FIRE ALARM CONTROL PANEL	
LIGHTING CONTACTOR (CONTROL)	17			200		20/1		18	CARD READER	
INTERIOR LIGHTS	19	300				20/1	400	20	INTERIOR RECEPTACLES	
EXTERIOR BUILDING LIGHTS	21		300			20/1		22	INTERIOR RECEPTACLES	
EXTERIOR RECEPTACLES	23			200		20/1		24	SPARE	
HVAC	25	2525				35/3	1080	26	HVAC-2	
	27		2525					1080		28
	29			2525						1080
SUBTOTAL "A"			5425				5020			
SUBTOTAL "B"				4825				2820		
SUBTOTAL "C"					3425				3280	
TOTAL WATTS "A,B,C"			= 10.250W = 10.2 KW = 12.0KVA							

PEN TABLE ILLTOLLWAY-TABLES-PL01.TBL  
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**DRAWN BY** MB/SR **DATE** 10/18/2018  
**CHECKED BY** BL **SCALE** NONE

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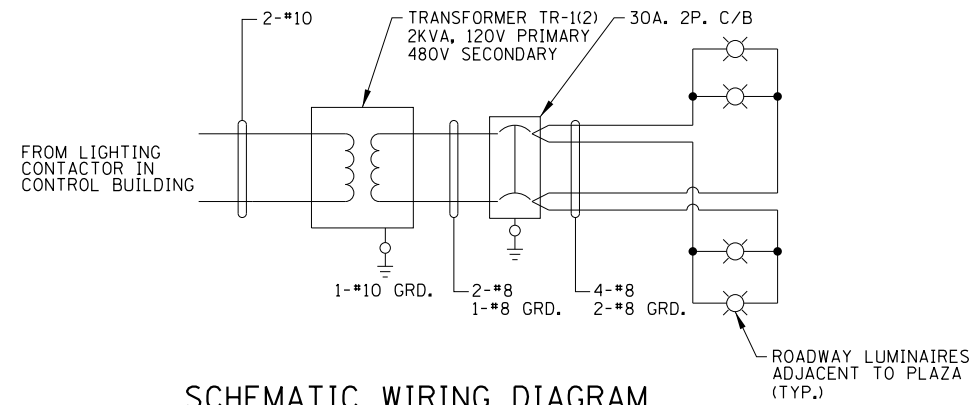
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NO.	DATE	DESCRIPTION

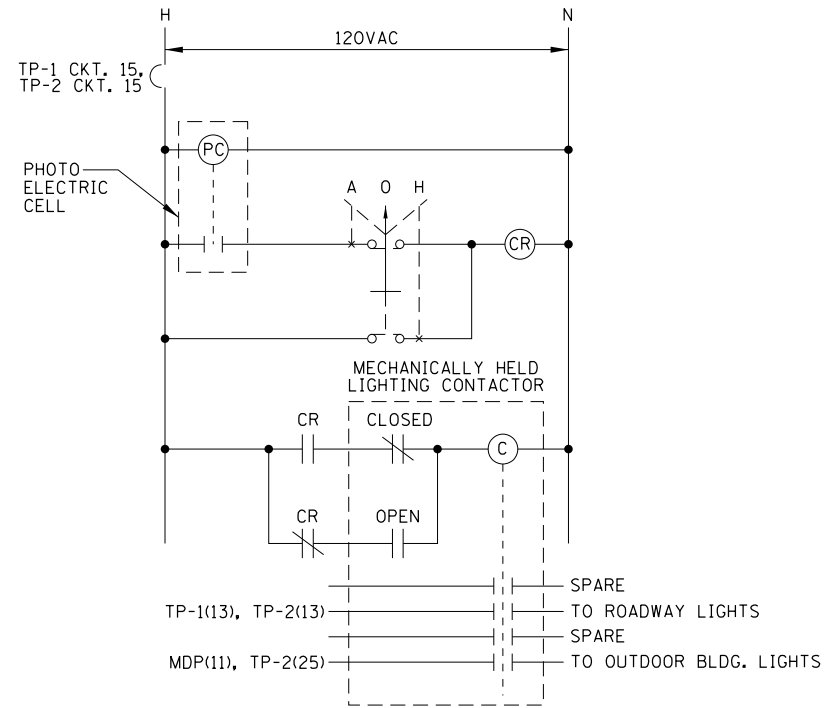
**CONTRACT NO. I-16-4274**  
 PANELBOARD SCHEDULES  
 FOR MDP-1, TP-1, TP-2,  
 UPS-1 AND UPS-2

**SHEET NO.** TPE-20  
**DRAWING NO.** 306 OF 397





**SCHEMATIC WIRING DIAGRAM  
EMERGENCY ROADWAY PLAZA LIGHTING**



**LIGHTING CONTACTOR WIRING DIAGRAM**

**NOTES:**

1. SEE BASE SHEETS TPE-02 FOR SYMBOLS AND ABBREVIATIONS.
2. SEE SHEET TPE-04 TO TPE-05 FOR CABLE AND CONDUIT ROUTING.
3. LIGHTING CONTACTOR: 120VAC, 30A I-PHASE, 4-POLE MECHANICALLY HELD, IN A NEMA 1 ENCLOSURE WITH A 3-POSITION SELECTOR SWITCH HAND-OFF-AUTO; MOUNTED IN THE COVER WITH A LEGEND PLATE. CONTROL RELAY (1-NO & 1-NC AUXILIARY CONTACTS).
4. PHOTO ELECTRIC CONTROL SWITCH: 120VAC, 2000W, INTEGRAL SURGE ARRESTER, WITH MOUNTING RECEPTACLE.

PEN TABLE: ILTOLLWAY-TABLES-PL01.TBL  
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 PLOT DATE: 10/17/2018  
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**DRAWN BY** MB/SR    **DATE** 10/18/2018  
**CHECKED BY** BL    **SCALE** NONE


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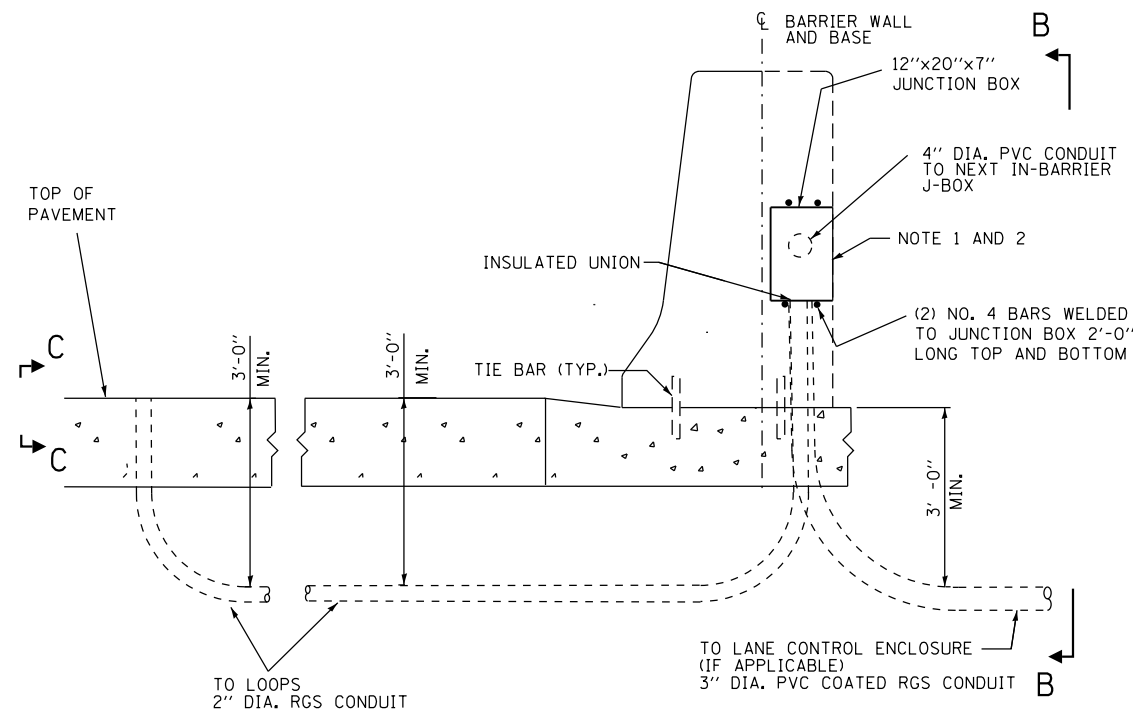

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NO.	DATE	DESCRIPTION

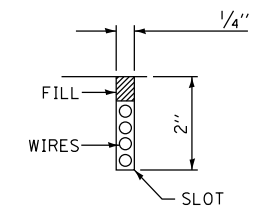
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MISCELLANEOUS  
SCHEMATIC DIAGRAMS

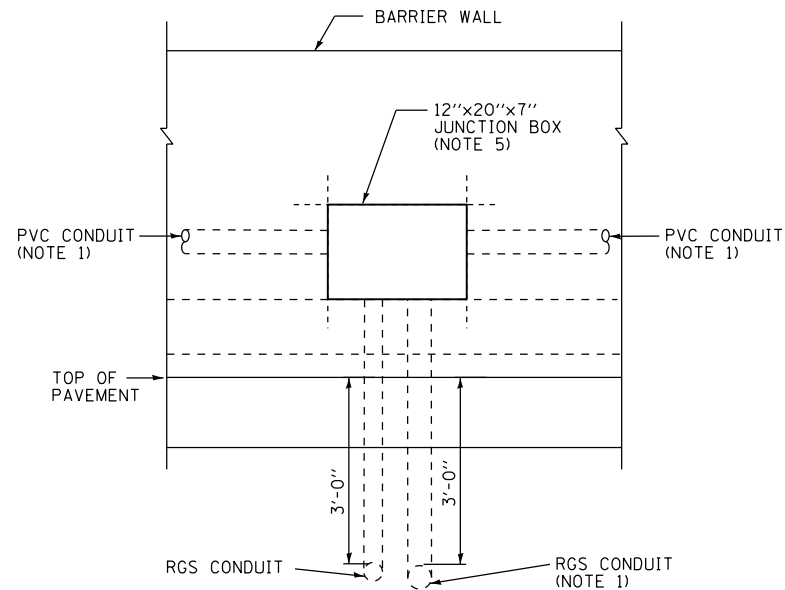
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 TPE-21  
**DRAWING NO.**  
 307 OF 397



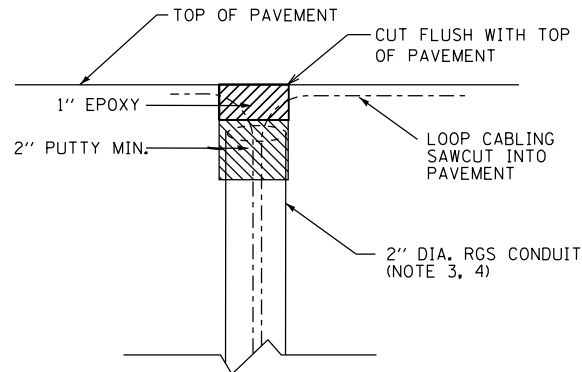
SECTION A-A  
(AET LANE LOOP LAYOUT SHEETS TPE-12 TO TPE-13)  
N.T.S.



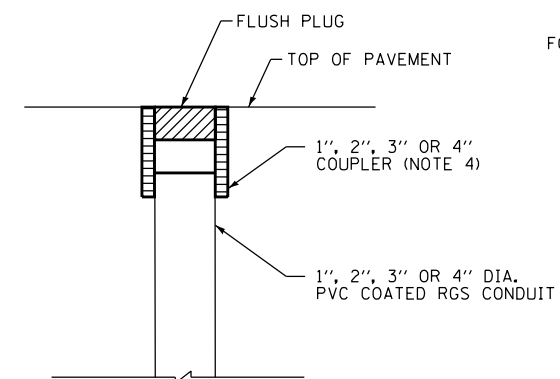
DETAIL OF  
DETECTOR LOOP SLOT  
N.T.S.



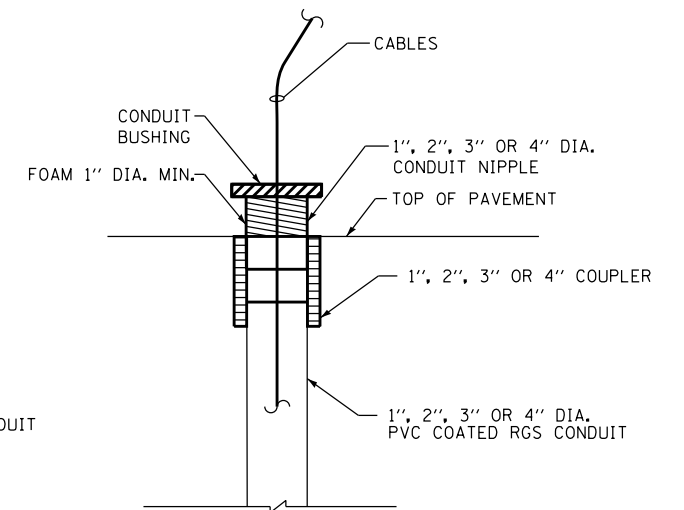
ELEVATION B-B  
EMBEDDED JUNCTION BOX IN  
BARRIER WALL-ELEVATION  
N.T.S.



SECTION C-C  
LOOP INSTALLATION DETAILS  
N.T.S.



SECTION C-C  
PRIOR TO ROAD OR  
ISLAND CONSTRUCTION  
N.T.S.



SECTION C-C  
EQUIPMENT ENDS AFTER  
CABLE INSTALLATION  
N.T.S.

NOTES:

1. SEE SHEETS TPE-12, TO TPE-13, FOR AET LOOP LAYOUT.
2. A MINIMUM OF 18" OF SEPARATION MUST BE PROVIDED BETWEEN THE IN BARRIER JUNCTION BOXES.
3. NOT USED.
4. CONDUITS THAT STUB UP IN THE ISLAND CAN BE 1" , 2" , 3" OR 4" DIA., CONDUITS THAT STUB UP IN THE PAVEMENT ARE 2" DIA., UNLESS NOTED OTHERWISE.

PEN TABLE: ILLTOLLWAY-TABLES-PLT01.TBL  
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DRAWN BY MB/SR DATE 10/18/2018  
CHECKED BY BL SCALE NTS

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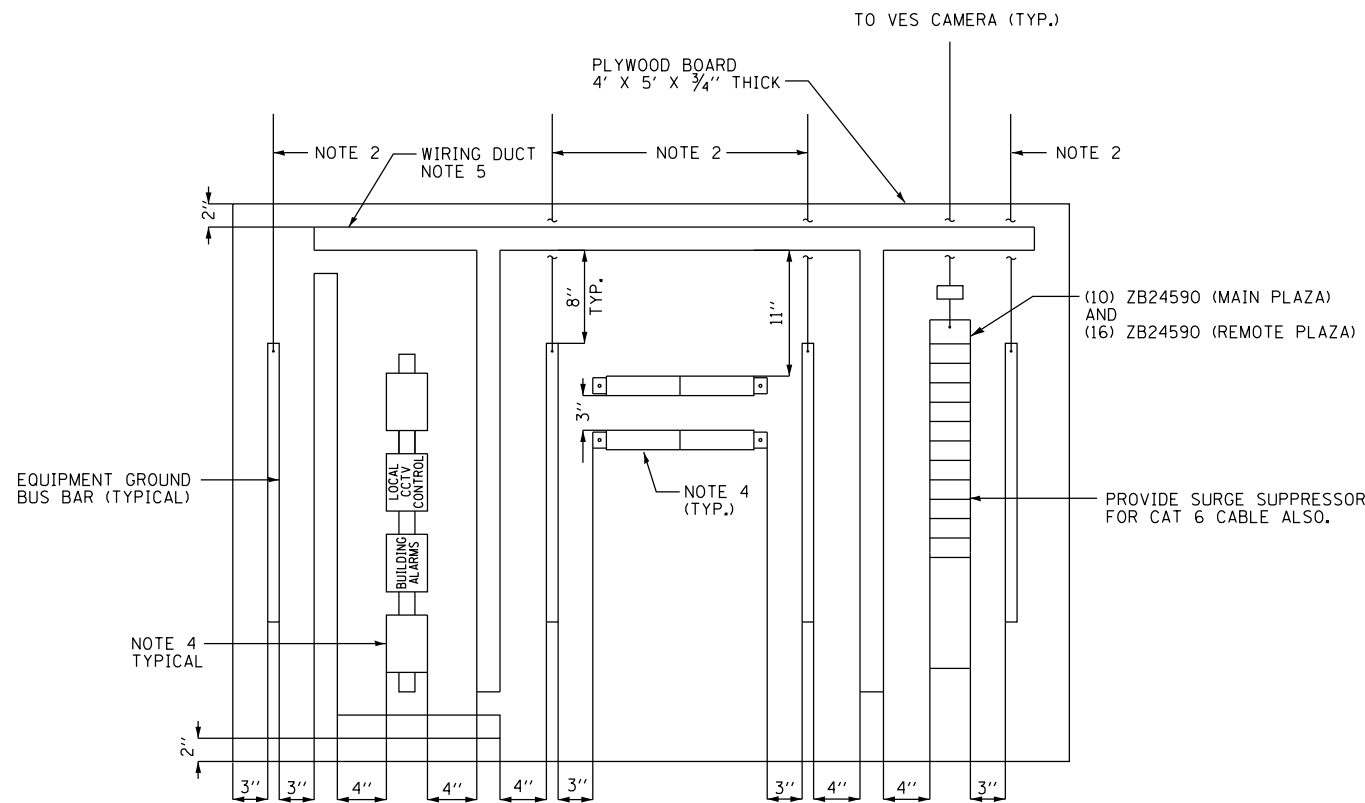
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NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274

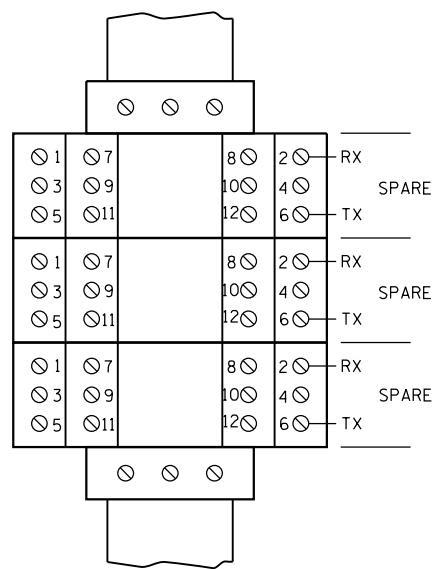
LOOP JUNCTION  
BOX DETAILS

SHEET NO.  
TPE-22  
DRAWING NO.  
308 OF 397



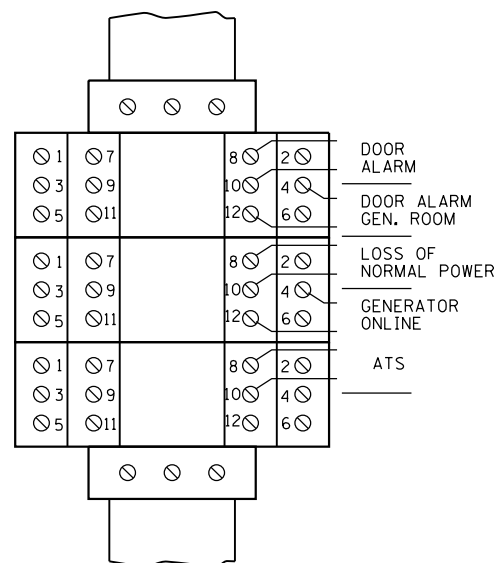
**TERMINAL STRIP INTERCONNECT CENTER (TSIC)**

N.T.S. (SEE NOTE 1)



**LOCAL CCTV CONTROL  
TERMINAL STRIP**

N.T.S.



**BUILDING ALARMS TERMINAL  
STRIP**

N.T.S.

**NOTES:**

1. TERMINAL STRIP INTERCONNECT CENTER (TSIC) IS LOCATED IN THE CONTROL BUILDING. SEE BUILDING EQUIPMENT LAYOUT DRAWINGS, BASE SHEETS TPE-05 AND TPE-06 FOR LOCATION.
2. ROUTE #6 COPPER GROUND CABLE FROM GROUND BUS BAR TO INTERNAL PERIMETER GROUND BUS CONDUCTOR.
3. ALL EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
4. DIN RAIL MOUNTED TERMINAL BLOCKS. SEE BASE SHEET TPE-25 FOR TERMINAL BLOCK DETAILS.
5. PROVIDE WIRE DUCT AS SHOWN ON THE DRAWING. WIRE DUCT SHALL BE PANDUIT PART NUMBER E2X3LG6 WITH COVER PART NUMBER C2LG6 AND CORNER STRIP PART NUMBER CSP3LG-0.
6. LOCAL VES CAMERAS LIGHTNING PROTECTION, DITEX CORP. CATALOG NUMBERDTX-DP4P.
7. TERMINAL BLOCKS MOUNTED ON DIN RAIL. SEE SHEET TPE-25 FOR DETAILS.
8. WATCHDOG CAMERA LIGHTING PROTECTION.

3 PAIR DATA/COMMUNICATIONS CABLE COLOR CODE CHART	
PAIR NO.	MFGR'S COLOR CODE CHART COLOR COMBINATION
CABLE-1	
1	BLACK PAIRED WITH RED
2	BLACK PAIRED WITH WHITE
3	BLACK PAIRED WITH GREEN
3 PR. #22 CABLE WITH INDIVIDUALLY SHIELDED PAIRS SHALL BE BELDEN #88777 OR MANHATTAN #M43103.	

6 PAIR DATA/COMMUNICATIONS CABLE COLOR CODE CHART	
PAIR NO.	MFGR'S COLOR CODE CHART COLOR COMBINATION
CABLE-2	
1	BLACK PAIRED WITH RED
2	BLACK PAIRED WITH WHITE
3	BLACK PAIRED WITH GREEN
4	BLACK PAIRED WITH BLUE
5	BLACK PAIRED WITH YELLOW
6	BLACK PAIRED WITH BROWN
6 PR. #22 CABLE WITH INDIVIDUALLY SHIELDED PAIRS SHALL BE BELDEN #88778 OR MANHATTAN #M43106	

9 CONDUCTOR ALARM CABLE COLOR CODE CHART	
CONDUCTOR NO.	MFGR'S COLOR CODE CHART COLOR COMBINATION
CABLE-3	
1	BLACK
2	WHITE
3	RED
4	GREEN
5	ORANGE
6	BLUE
7	WHITE/BLACK
8	RED/BLACK
9	GREEN/BLACK
9 CONDUCTOR #22 SHIELDED CABLE SHALL BE BELDEN #83559.	

PEN TABLE ILLTOLLWAY-TABLES-PL01.TBL  
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<b>CHECKED BY</b>	BL	<b>SCALE</b>	NONE

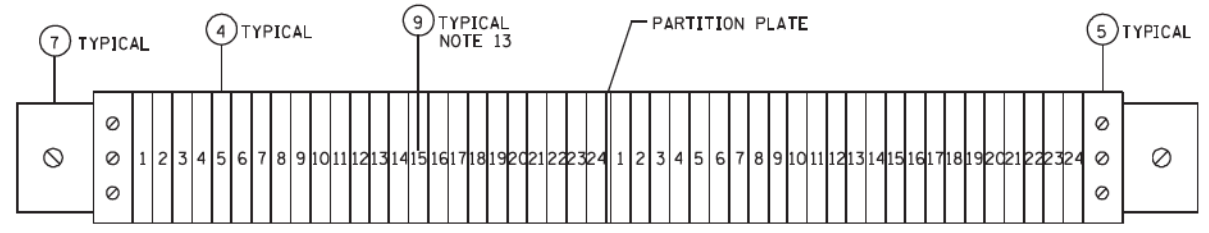
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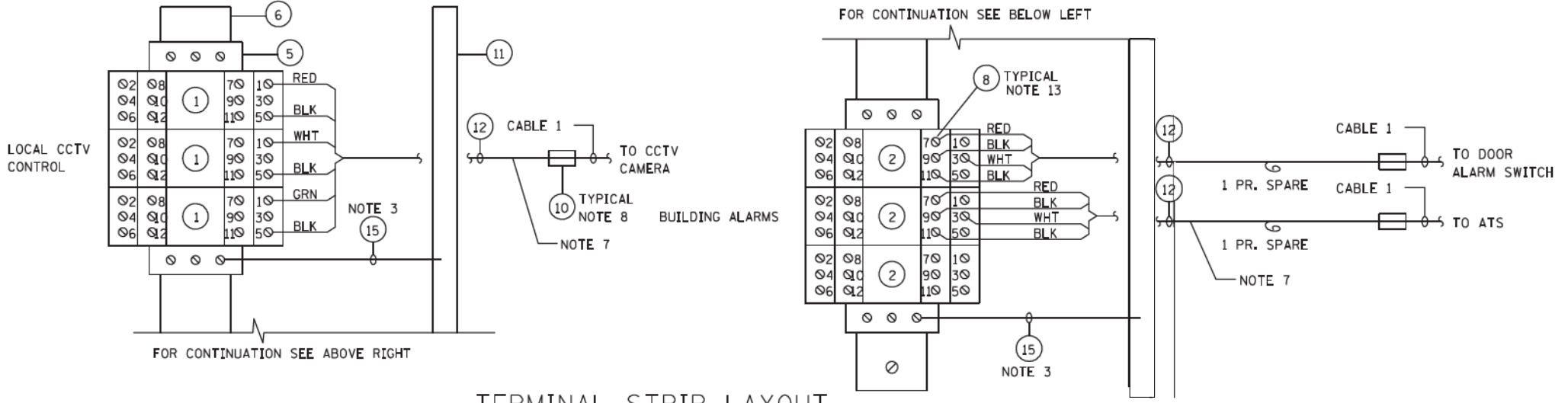
**CONTRACT NO. I-16-4274**  
 TSIC TERMINAL  
 BLOCK LAYOUT

**SHEET NO.**  
 TPE-23  
**DRAWING NO.**  
 309 OF 397



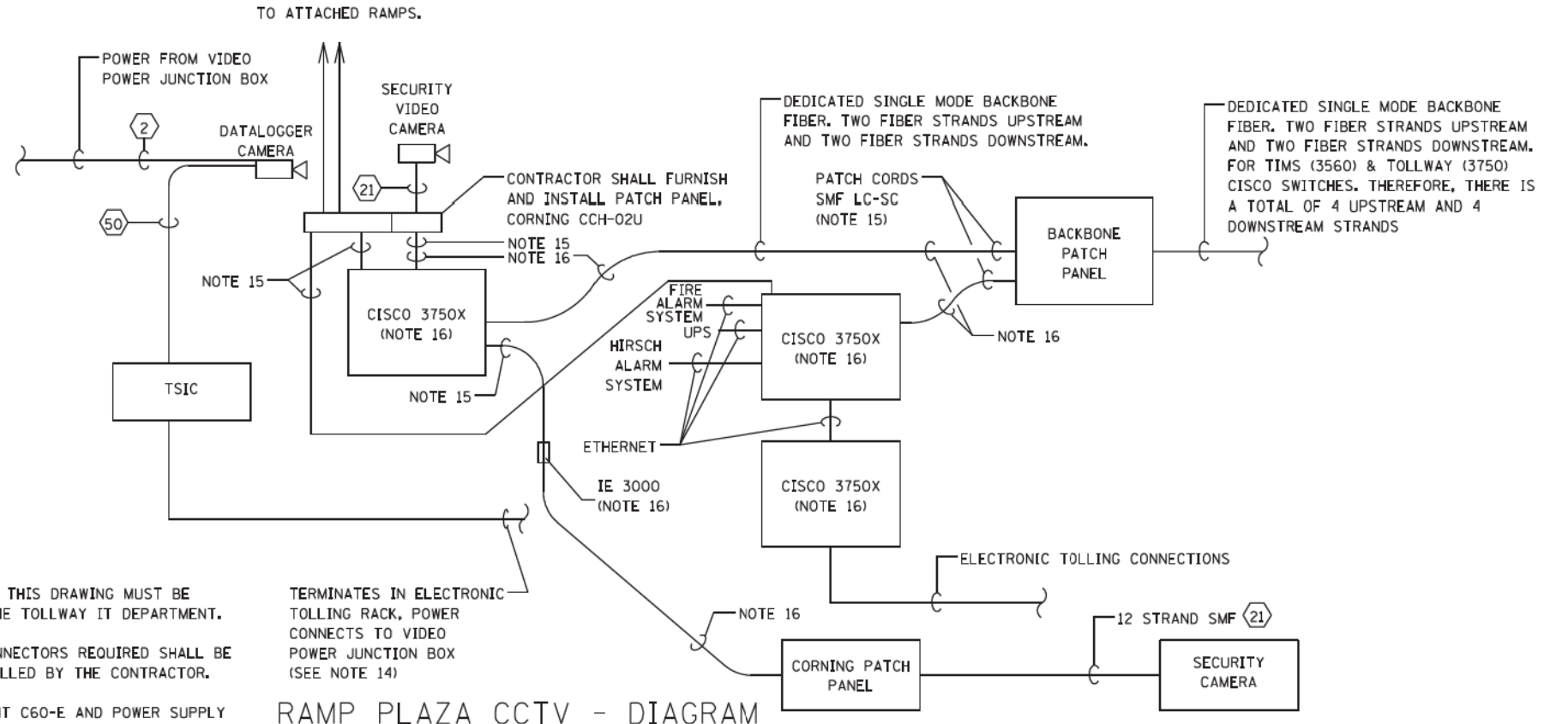
TERMINAL STRIP LAYOUT

SEE NOTE 1



TERMINAL STRIP LAYOUT

SEE NOTE 1



RAMP PLAZA CCTV - DIAGRAM

- NOTES:**
- EQUIPMENT SHOWN ON THIS DRAWING MUST BE COORDINATED WITH THE TOLLWAY IT DEPARTMENT.
  - ALL CABLING AND CONNECTORS REQUIRED SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
  - CONTRACTOR TO MOUNT C60-E AND POWER SUPPLY IN RACK.

TERMINATES IN ELECTRONIC TOLLING RACK, POWER CONNECTS TO VIDEO POWER JUNCTION BOX (SEE NOTE 14)

- TERMINAL BLOCKS ARE LOCATED ON THE TERMINAL STRIP INTERCONNECT CENTER (TSIC) LOCATED IN PLAZA BUILDING. FOR A COMPLETE LAYOUT OF THE TERMINAL BLOCKS MOUNTED ON THE TSIC, SEE SHEET TPE-23
- TERMINAL BLOCKS, TERMINAL BLOCK MARKER STRIPS, AND GROUND BUS BARS ARE SHOWN DIAGRAMMATICALLY. WIRING DUCT IS NOT SHOWN ON THIS DRAWING.
- ROUTE #6 AWG COPPER GROUND CABLE FROM GROUND TERMINAL BLOCK TO GROUND BUS BAR.
- DETAILED LANE CABLE WIRING DIAGRAM WILL BE PROVIDED BY THE TOLLWAY.
- THE CONTRACTOR SHALL IDENTIFY EACH LANE CABLE ON AS-BUILT DRAWINGS.
- ROUTE #6 AWG COPPER GROUND CABLE FROM GROUND BUS BAR TO THE BUILDING'S MASTER GROUND BAR. SEE SHEET TPE-09 FOR LOCATION OF MASTER GROUND BAR.
- SHIELD GROUND WIRE TIED BACK IN 3" PIGTAIL AND TERMINATED TO TSIC GROUND BUS BAR WITH A BURNDY TYPE YAEV LUG. THE COMPONENT END OF THE SHIELD GROUND WIRE IS NOT TO BE TERMINATED.
- EACH CABLE SHALL BE IDENTIFIED WITH A CABLE MARKER.
- ROUTE #6 AWG COPPER GROUND CABLE FROM GROUND BUS BAR TO ADJACENT GROUND BAR ON BOARD AS SHOWN.
- FOR DATA/COMMUNICATIONS CABLE COLOR CODE CHART, SEE SHEET PE-27.
- SEE SHEET TPE-23, FOR THE LOCAL RAMP CONTROL TERMINAL STRIP CONNECTION DESIGNATIONS.
- EACH TERMINAL BLOCK WIRING TERMINAL SHALL BE IDENTIFIED WITH A TERMINAL MARKER. THE MARKERS SHALL BE NUMBERED AS DIRECTED BY THE TOLLWAY.
- SEE SHEET TPE-23, FOR THE BUILDING ALARMS TERMINAL STRIP CONNECTION DESIGNATIONS.
- ALL ELECTRICAL CABLES FROM CAMERAS (POWER WIRING, CONTROL WIRING, COAX, CAT6, ETC.) SHALL BE SURGE PROTECTED AS THEY ENTER BUILDING. EACH WILL BE OUTDOOR TEMPERATURE RATED CABLE.
- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL F.O. PATCH CORDS.
- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CISCO IE 3000 AND 3750 SWITCHES, INCLUDING MULTIMODE FIBER SFP'S SINGLE MODE FIBER SFP'S & ATTENUATOR PADS. EACH 3750 REQUIRES 3-SMF SFP'S PART # GLC-LH-SM, EACH IE 3000 REQUIRES (1) GLC-LX-SM-RGD AND (1) GLC-SX-MM-RGD SFP

**EQUIPMENT LEGEND**

ITEM	DESCRIPTION
①	TERMINAL BLOCK WITH DATA SIGNAL PROTECTION. PHOENIX CONTACT "PLUGTRAB PT" SERIES CATALOG NUMBER FOR PLUG PT5-HF-12DC-ST WITH BASE ELEMENT PT2x2-BE.
②	TERMINAL BLOCK WITH DISCRETE SIGNAL PROTECTION. PHOENIX CONTACT "PLUGTRAB PT" SERIES CATALOG NUMBER FOR PLUG PT2x1-5DC-ST WITH BASE ELEMENT PT2x1-BE.
③	NOT USED.
④	UNIVERSAL TERMINAL BLOCK. PHOENIX CONTACT CATALOG NUMBER UK5N.
⑤	GROUND TERMINAL BLOCK, PHOENIX CONTACT CATALOG NUMBER USLK10N.
⑥	MOUNTING RAIL; COPPER UNPERFORATED, 35mm X 7.5m X 900mm, PHOENIX CONTACT CATALOG NUMBER 0801762.
⑦	MOUNTING RAIL; COPPER UNPERFORATED, 35mm X 7.5m X 375mm, PHOENIX CONTACT CATALOG NUMBER 0801762.
⑧	TERMINAL BLOCK MARKERS, PHOENIX CONTACT CATALOG NUMBER ZB 5.
⑨	TERMINAL BLOCK MARKERS, PHOENIX CONTACT CATALOG NUMBER ZB 6.
⑩	CABLE MARKERS. BRADY TYPE PWC-PK-3.
⑪	EQUIPMENT GROUND BUS BAR. HOFFMAN CATALOG NUMBER X-GS6K.
⑫	3 PAIR #22 CABLE WITH INDIVIDUALLY SHIELDED PAIRS.
⑬	NOT USED.
⑭	NOT USED.
⑮	1-1/2" #6 AWG GROUND CABLE. (NOTES 3, 6, AND 9)

PEN TABLE: ILTOLLWAY-TABLES-PLCOT.TBL  
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 USER NAME: 10/17/2018  
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**DRAWN BY** MB/SR    **DATE** 10/18/2018  
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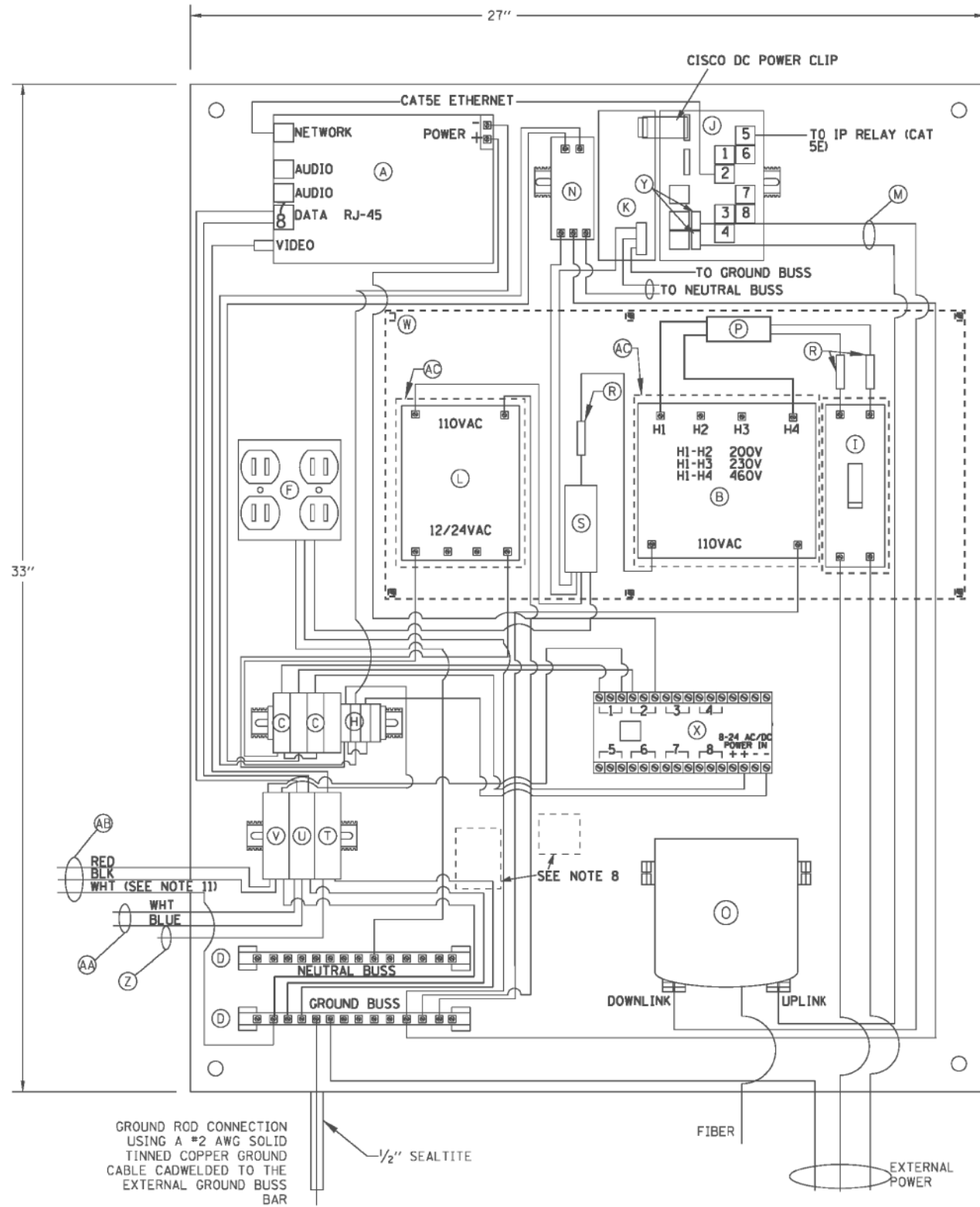
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**CONTRACT NO.** I-16-4274  
 TSIC IN CONTROL  
 BUILDING

**SHEET NO.** TPE-24  
**DRAWING NO.** 310 OF 397

POLE MOUNTED CCTV CABINET - IP RELAY WIRING TABLE						
FROM CONNECTION			DESCRIPTION	WIRE OR CABLE	TO CONNECTION	
DEVICE	TB	CONNECTION			DEVICE	TB
C	TB1	+ 24 VAC	CIRCUIT BREAKER FOR CCTV		IP_RELAY	TB1 1 NC
					IP_RELAY	TB1 1 NO
V	TB 1	POWER +	24VAC SURGE PROTECTOR FOR CCTV	16 AWG	IP_RELAY	TB1 1 COM
C	TB 1	+ 12VAC	CIRCUIT BREAKER FOR ENCODER		IP_RELAY	TB1 2 NC
					IP_RELAY	TB1 2 NO
A	TB 1	POWER +	OPTELECOM ENCODER C-60-E-MC/SA		IP_RELAY	TB1 2 COM
			RESERVED FOR WIRELESS RADIO/SENSYS AP		IP_RELAY	TB1 3 NC
					IP_RELAY	TB1 3 NO
			RESERVED FOR DMS OR WIM		IP_RELAY	TB1 3 COM
					IP_RELAY	TB1 4 NC
					IP_RELAY	TB1 4 NO
			RESERVED FOR FLASHING BEACONS		IP_RELAY	TB1 4 COM
					IP_RELAY	TB1 5 NC
					IP_RELAY	TB1 5 NO
					IP_RELAY	TB1 5 COM
			UNUSED		IP_RELAY	TB1 (6 / 7 / 8) NC
					IP_RELAY	TB1 (6 / 7 / 8) NO
					IP_RELAY	TB1 (6 / 7 / 8) COM



**EQUIPMENT LEGEND:**

- (A) VIDEO ENCODER, SIQURA MODEL C-60-E-MC/SA WITH PSR-12DC/US POWER ADAPTER
- (B) CONTROL POWER TRANSFORMER, 1000VA, 208/240/480-120VAC, 1PH, SQUARE D CLASS 9070, TYPE T1000D95 (OR EQUIVALENT)
- (C) FOUR (4) SINGLE CIRCUIT FUSIBLE TERMINAL BLOCKS, WITH LED BLOWN FUSE INDICATOR, COMPLETE WITH 5 AMP FUSE, MOUNTING RAIL, ANCHORS, BARRIERS, MARKING STRIPS AND JUMPERS. ALLEN BRADLEY CAT NO. 1492-FB1M30-D1. FOUR TERMINAL BLOCKS ALLEN BRADLEY CAT NO. 1492-CD8. (OR EQUIVALENT)
- (D) TWO (2) GROUNDING BAR SYSTEM, HOFFMAN CAT NO, PGS2K (OR EQUIVALENT)
- (E) NEMA 4X STAINLESS STEEL, 36" H X 30" W X 12" D ENCLOSURE HOFFMAN CAT No. CA36H3012SS6LP WITH 33" X 27" PANEL (A36P30) (OR EQUIVALENT)
- (F) TWO DUPLEX 120V RECEPTACLES, ONE GFCI (HUBBELL GFR5362TR) AND ONE STANDARD (HUBBELL BR20WR), SEE NOTE 9
- (G) NOT USED
- (H) FIVE (5) MERSEN ATM5, 5 AMP FUSE (OR EQUIVALENT)
- (I) 240V, 2P, 30A CKT BRKR, CUTLER HAMMER TYPE HFD2030L (OR EQUIVALENT)
- (J) CISCO MODEL IE-3000-BTC-E SWITCH
- (K) CISCO MODEL PWR-IE3000-AC= POWER SUPPLY
- (L) CONTROL POWER TRANSFORMER, 250VA, 120-24VAC, 1PH SQUARE D CLASS 9070, TYPE T250D13 (OR EQUIVALENT)
- (M) 9' 6-SMF0 LC-SC JUMPERS, CORNING CATALOG No. 047206RW425009F OR 6' 6-MMF0 LC-SC JUMPERS, CORNING CATALOG No. 055702K5116002M
- (N) SIQURA C-60-E-MC/SA POWER SUPPLY (PSR 12-DC/US)
- (O) CORNING WMO-85 WITH (6) WMO-CP02-59-85 (FOR SMF0) OR CORNING WMO-85 WITH (6) WMO-CP02-91-85 (FOR MMF0)
- (P) COOPER CROUSE HINDS 240VAC SURGE SUPPRESSOR, PIN MA15/D/2/5I, MOUNTED ON DIN RAIL
- (Q) PANDUIT WIRING DUCT (OR EQUIVALENT) CATALOG No. FIX1LG6 WITH COVER C1LG6
- (R) THREE (3) MERSEN 10 AMP FUSE (ATM10) (OR EQUIVALENT)
- (S) ALTECH 38041 SPLICE BLOCK (OR EQUIVALENT)
- (T) ATLANTIC SCIENTIFIC COAX SURGE SUPPRESSOR, P/N 24584, MOUNTED ON COMMON DIN RAIL
- (U) ATLANTIC SCIENTIFIC RS-422 SURGE SUPPRESSOR, P/N 24528, MOUNTED ON COMMON DIN RAIL
- (V) ATLANTIC SCIENTIFIC 24VAC SURGE SUPPRESSOR, P/N 24580, MOUNTED ON COMMON DIN RAIL
- (W) CLEAR PLEXIGLASS SAFETY COVER ENCOMPASSING ITEMS L, R, S, B, P & I, WITH OPENING FOR OPERABLE SWITCH I. (THE INSTALLER SHALL PERMANENTLY AFFIX A LABEL STATING "DANGER 480 VAC" OR "DANGER 240 VAC" OR NO LABEL FOR 120 VAC AS FIELD CONDITIONS WARRANT.)
- (X) POWER CONTROLLER, DATA LOGGERS, INC 8-CHANNEL DIN ETHERNET RELAY
- (Y) (2) GLC-LX-SM-RGD = 1 GBPS SM SFP MODULES OR (2) GLC-FE-100FX-RGD = 100 MBPS MM SFP MODULES
- (Z) RG-6/U COAX CABLE, BELDEN CATALOG No. 5339X5
- (AA) RS-422 CONTROL CABLE, BELDEN CATALOG No. 9829
- (AB) #14 3/C CCTV POWER CABLE, BELDEN CATALOG No. 9367
- (AC) TRANSFORMER COVERS, SQUARE D CATALOG No. 9070FSC2

**NOTES:**

1. ALL POWER WIRING SHALL BE RHH/RHW CONTRACTOR TO VERIFY CORRECT TRANSFORMER TAPS ARE USED BASED ON INCOMING POWER SOURCE.
2. ALL CABLES AND EQUIPMENT SHALL BE PROPERLY DRESSED AND LABELED. ALL CONDUITS SHALL BE PROPERLY PLUGGED WITH DUCT SEAL PUTTY (RAINBOW TECHNOLOGIES OR EQUIVALENT).
3. NOT USED.
4. EACH 120VAC OUTLET, PS OR TRANSFORMER (ITEM F, K, L & N) SHALL BE FED FROM A SEPARATE FUSED INPUT LINE.
5. MOUNT ITEMS J, K & N ON A 15 INCH CONTINUOUS SECTION OF DIN RAIL. THE DIN RAIL SHALL BE INSTALLED WITH THE CENTER LINE NO LESS THAN 5 INCHES FROM ANY OBSTACLE ABOVE AND NO LESS THAN 4 INCHES FROM ANY OBSTACLE BELOW.
6. ALL CABLES INSTALLED WITHIN THE CCTV CABINET AND POLE SHALL BE OUTDOOR RATED.
7. THESE ELEMENTS ARE ILLUSTRATED FOR FUTURE USAGE. THEY ARE THE SURGE SUPPRESSOR AND POWER OVER ETHERNET DEVICES FOR AN ACCESS POINT ELEMENT UTILIZED FOR RAMP QUEUE DETECTION.
8. THE GFI OUTLETS LOAD SHALL NOT BE CONNECTED TO ANY OTHER LOAD IN THE ENCLOSURE. THE GFI IS INTENDED TO BE UTILIZED FOR EXTERNAL EQUIPMENT ONLY.
9. ALL BREAKERS SHALL BE LABELED (e.g. CAMERA, ENCODER, IP RELAY).
10. THE GROUND WIRE IN THE 3/C #14 CCTV POWER CABLE SHALL BE TAPED GREEN.
11. USE THE MOUNTING TABS ON THE IP RELAY UNIT TO MOUNT THE UNIT DIRECTLY TO THE BACK PLATE. REFER TO THE IP RELAY WIRING TABLE FOR WIRING DETAILS.

PEN TABLE: ILLTOLLWAY-TABLES-PLC1781  
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 PLOT SCALE: 1.00

**DRAWN BY** MB/SR    **DATE** 10/18/2018  
**CHECKED BY** BL     **SCALE** NONE

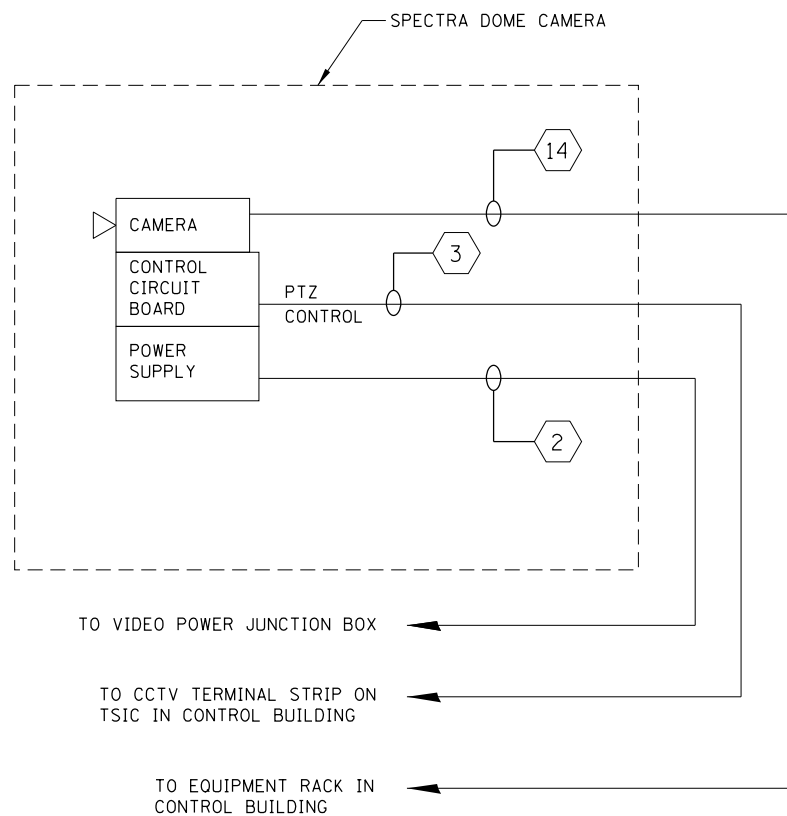
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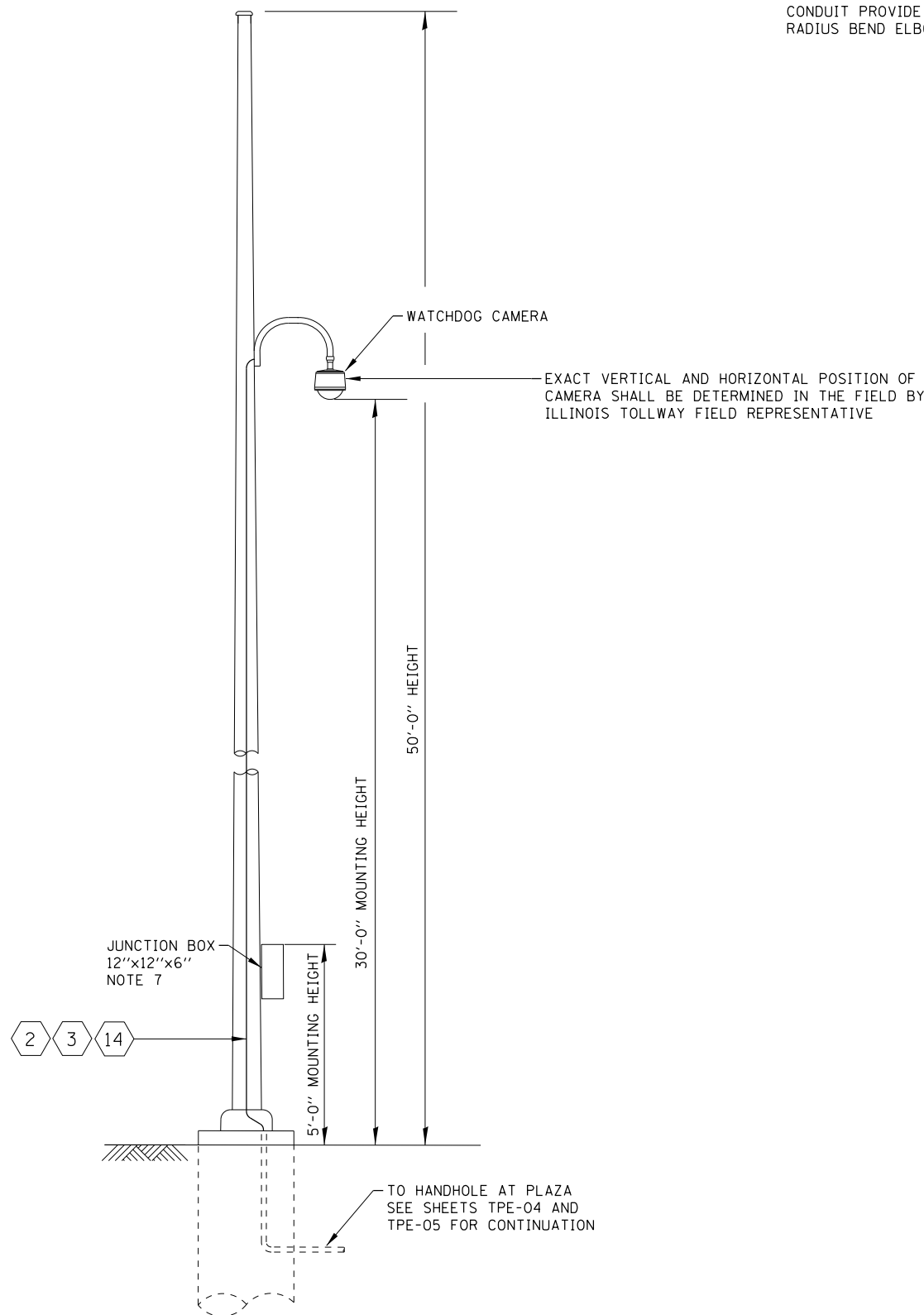
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 POLE MOUNTED CCTV CABINET  
 HD WIRING DIAGRAM

**SHEET NO.**  
 TPE-25  
**DRAWING NO.**  
 311 OF 397

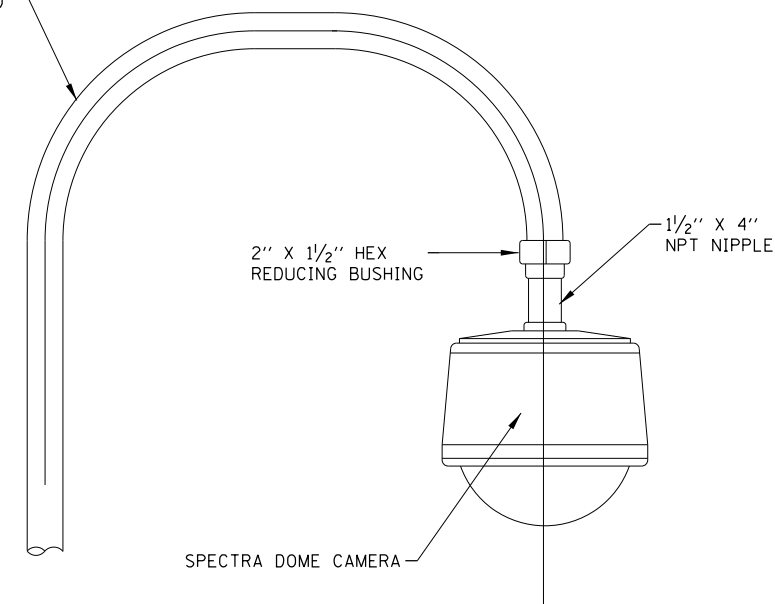


**WIRING DIAGRAM**  
N.T.S.



**EQUIPMENT MOUNTED TO POLE DETAIL**  
N.T.S.

2" DIA. PVC COATED RIGID STEEL CONDUIT PROVIDE LARGE (2 FOOT) RADIUS BEND ELBOW



**VIDEO WATCHDOG CAMERA**  
N.T.S.

**NOTES:**

1. SEE BASE SHEET TPE-01 FOR CABLE/CONDUIT SCHEDULES.
2. INSTALL CABLES BETWEEN THE JUNCTION BOX AND CAMERA PER MANUFACTURER'S RECOMMENDATIONS.
3. THE CAMERA'S FINAL MOUNTING LOCATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
4. CAMERA CONDUIT INSTALLATION SHALL BE COORDINATED WITH THE ROADWAY LIGHTING WORK.
5. THE PVC COATED CONDUIT AND CAMERA SHALL BE ATTACHED TO POLE WITH AS APPROVED BY THE ENGINEER WITH AN APPROVED OPENING FOR THE CABLE TO BE INSTALLED FROM THE POLE TO THE CAMERA.
6. THE COST FOR THE WORK TO FURNISH AND INSTALL THE CAMERA, CABLES, CONDUIT, AND ASSOCIATED MOUNTING HARDWARE ON THE LIGHT POLE SHALL BE INCLUDED IN THE LUMP SUM PAY ITEM FOR ELECTRICAL WORK FOR THE PLAZA.
7. PROVIDE STRAIN RELIEF FOR VERTICAL CABLES IN JUNCTION BOX TRANSITION POWER CABLE FROM 3\*12 TO 3\*18. LOOP 12" OF 3\*18 WIRE FOR CABLE IN JUNCTION BOX TO FACILITATE CAMERA MAINTENANCE.
8. CAMERA POLE HOLDING DATA LOGGER CAMERA SHALL BE IN A PROTECTED AREA.
9. SEE SHEETS TPE-04 AND TPE-05 FOR CAMERA LOCATIONS.

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 FILE NAME ...N4274-sh-tollway-sh-t-26.dgn

**DRAWN BY** MB/SR **DATE** 10/18/2018  
**CHECKED BY** BL **SCALE** NONE

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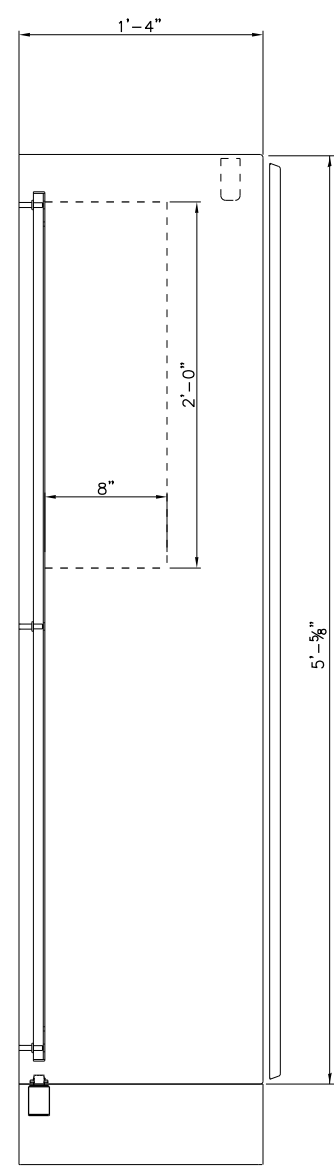
**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
2700 OGDEN AVENUE  
DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

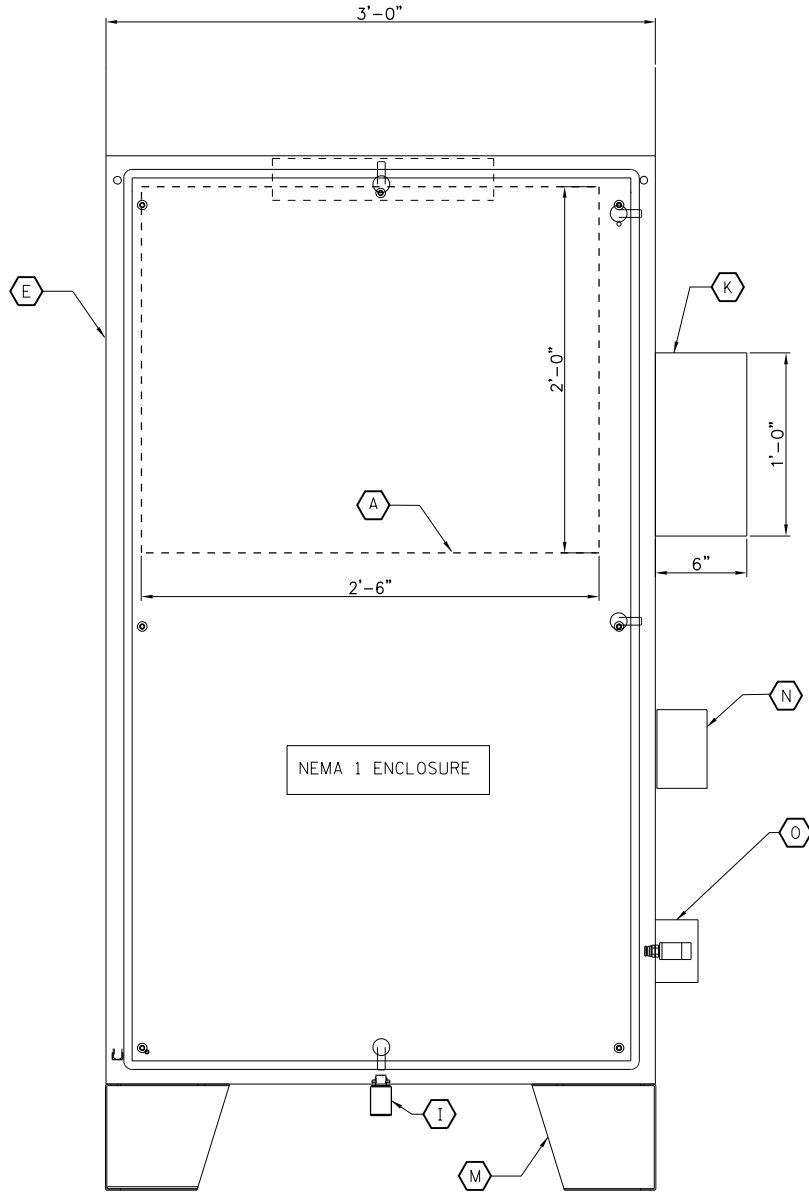
**CONTRACT NO. I-16-4274**

VIDEO WATCHDOG  
CAMERA DETAILS

**SHEET NO.**  
TPE-26  
**DRAWING NO.**  
312 OF 397

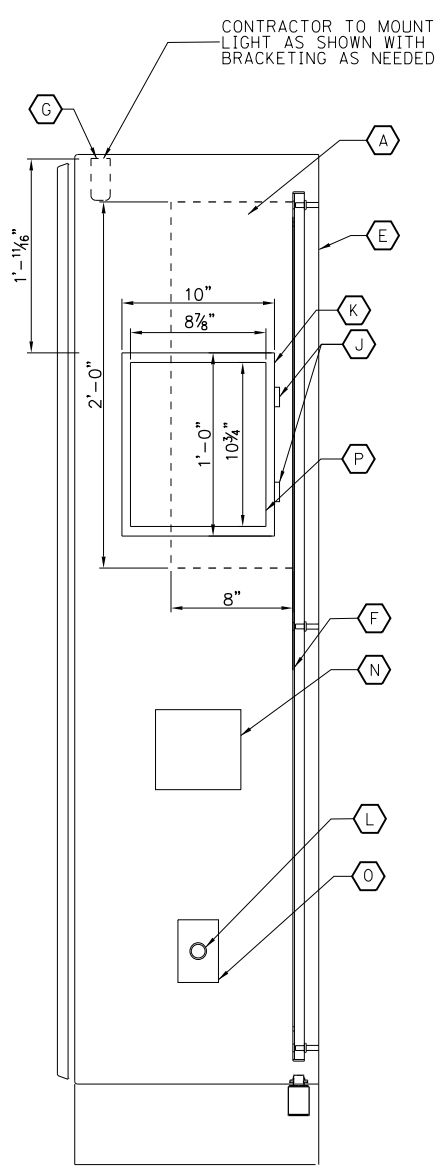


**MAIN ENCLOSURE  
LEFT SIDE VIEW**

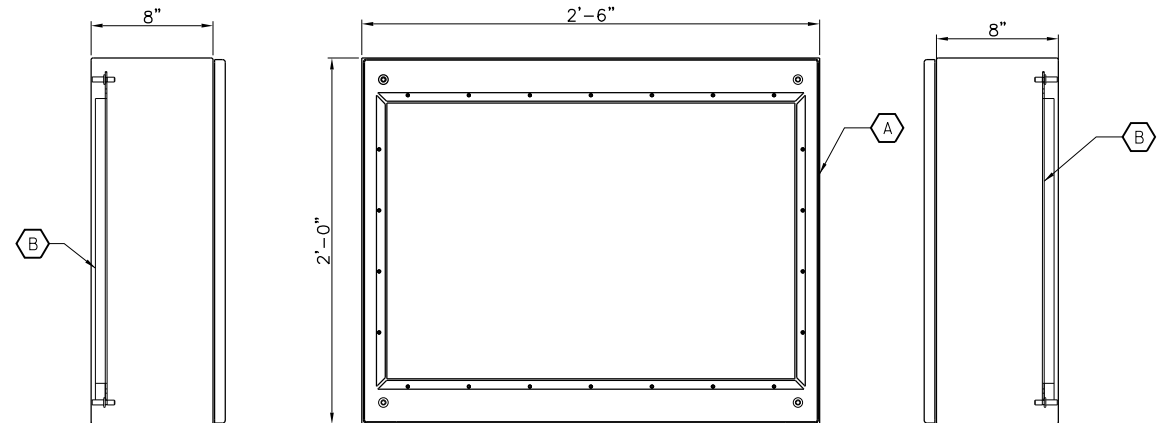


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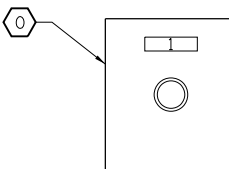
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**MAIN ENCLOSURE  
RIGHT SIDE VIEW**



**ELECTRICAL ENCLOSURE  
NOT TO SCALE**



NAMEPLATE LEGEND			
NUMBER	QTY.	TEXT HEIGHT	INSCRIPTION
3	1	1/8"	AIR CONNECTION

**CONNECTION DETAIL  
NOT TO SCALE**

BILL OF MATERIALS COMPONENTS (OR APPROVED EQUAL)			
MARK NO.	QTY.	SPARE	DESCRIPTION
A	1		NEMA 4X S.S. ENCLOSURE - 30"H X 24"W X 8"D HOFFMAN CATALOG No. CSD3024WSS
B	1		SUBPANEL FOR ENCLOSURE HOFFMAN CATALOG No. CP3024
D	1		GROUNDING BAR HOFFMAN CATALOG No. PGS2K (NOT ILLUSTRATED ON DRAWING)
E	1		NEMA 1 ENCLOSURE - 60"H X 36"W X 18"D HOFFMAN CATALOG No. A60N3618FSLP WITH MOUNTING BRACKETS (HOFFMAN CAT. No. CMFKSS) & PAD LOCKING HANDLE KIT (HOFFMAN CAT. No. WSHPL)
F	1		SUBPANEL FOR NEMA 1 ENCLOSURE HOFFMAN CATALOG No. A49P32N
G	1		FLUORESCENT LIGHT FIXTURE FOR ENCLOSURE WITH 120VAC OUTLET HOFFMAN CATALOG No. LF120V15 WITH DOOR SWITCH HOFFMAN CATALOG No. ALFSWD
H			NOT USED
I	1		SS VENT DRAIN HOFFMAN CATALOG No. AVDR4SS4
J	2		FAST OPERATING STAINLESS STEEL CLAMP HOFFMAN CATALOG No. AL23SS
K	1		NEMA 4X S.S. ENCLOSURE - 12"H X 10"W X 6"D HOFFMAN CATALOG No. A12106CHNFSS
L	1	2	3/8" S.S. QUICK DISCONNECT ALPHA FITTINGS CATALOG No. 8013106
M			NOT USED
N	1		ELECTRICAL DUAL OUTLET GFCI 20A WITH COVER THOMAS & BETTS CATALOG No. CKMUV
O	1		IN DOOR COVER
P	1		SUBPANEL FOR NEMA 4X SS JUNCTION BOX A12106CHNFSS HOFFMAN CATALOG No. A12P10
Q	1		JUNCTION BOX SWING OUT PANEL KIT HOFFMAN CATALOG No. AJCDFK

(1) SEE NOTE 5.

- NOTES:**
1. MAXIMUM SYSTEM PRESSURE IS 80 PSI.
  2. EXACT OPERATING PRESSURE TO BE DETERMINED.
  3. FOR PRODUCT SUBSTITUTIONS SEE THE SPECIFICATIONS.
  4. ALL CONDUITS, FITTINGS AND ENTRY POINTS INTO EACH OF THE ENCLOSURES SHALL BE PROPERLY SEALED WITH DUCT SEAL TO PREVENT MOISTURE ENTRY.
  5. THE CONTRACTOR SHALL DETERMINE A SUITABLE ELECTRICAL HEATER WITH THERMOSTAT FOR THE APPLICATION. THE HEATER SHALL HAVE SUFFICIENT POWER RATING TO PREVENT FREEZING OF THE FIELD LINES INSIDE THE MAIN VES CABINET. THE CONTRACTOR SHALL SUBMIT PRODUCT DATA SHEETS FOR APPROVAL BY THE TOLLWAY BEFORE INSTALLING THE HEATER. ALL MOUNTING HARDWARE (BRACKETS, SHELVES ETC.) SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE TOLLWAY.

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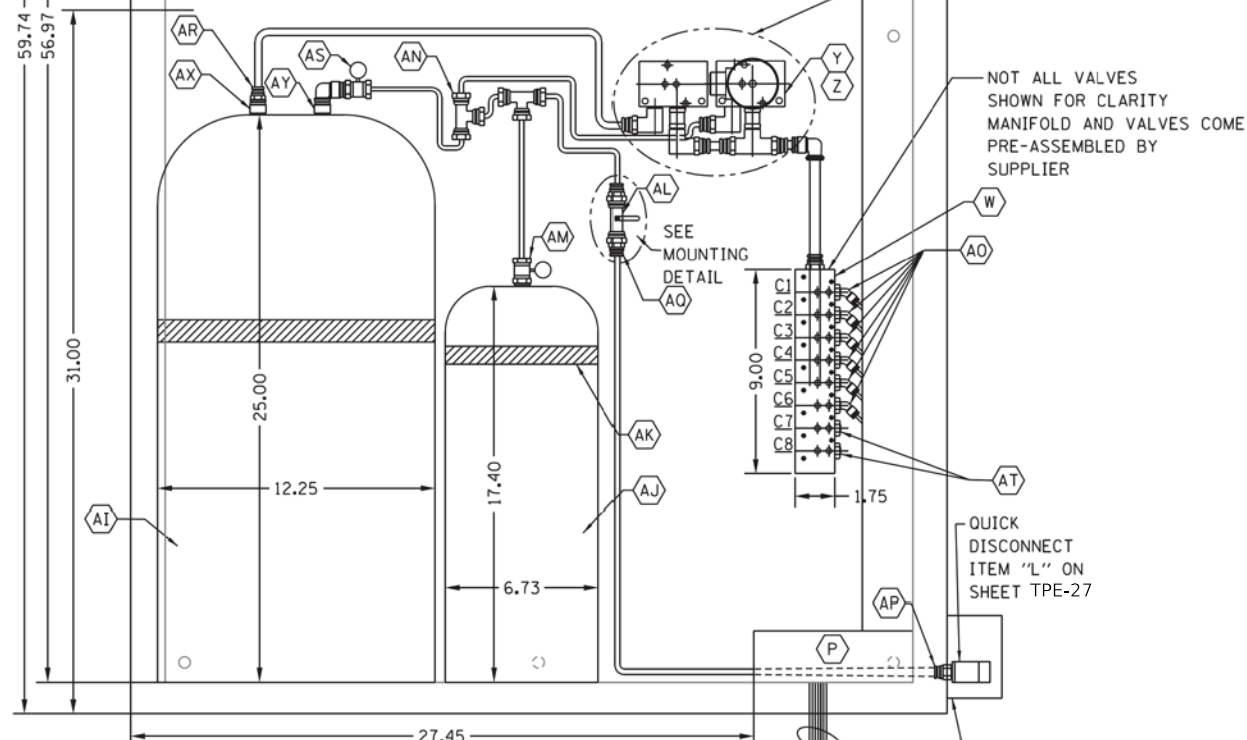
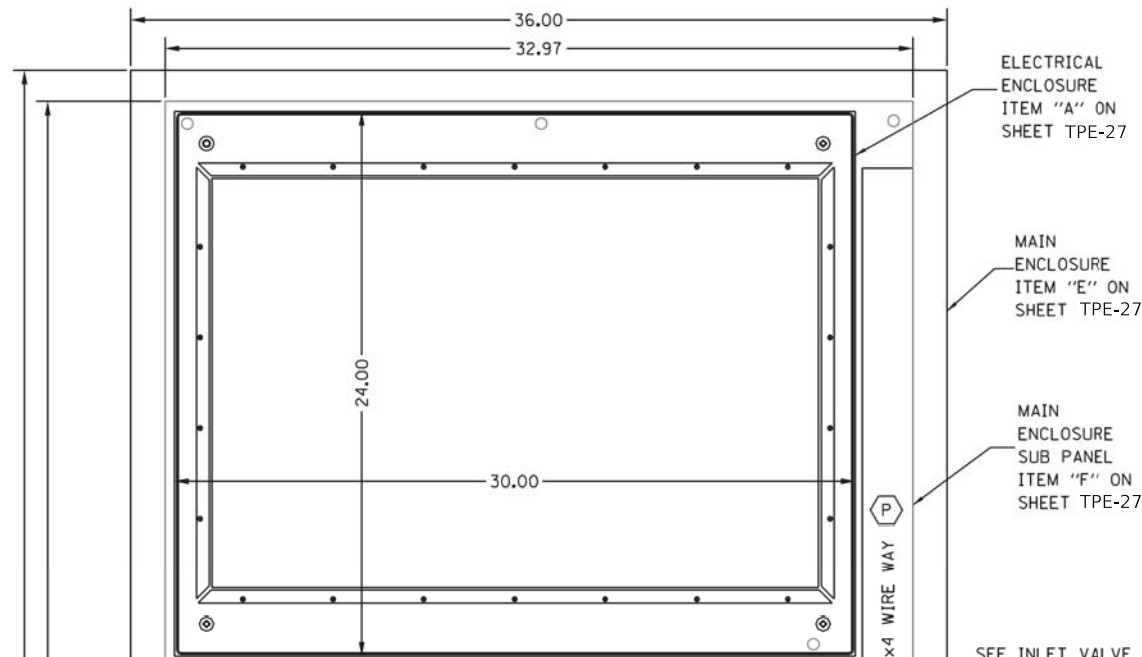
**AMES Engineering, Inc.**  
 CONSULTING ENGINEERS  
 6330 Belmont Road, Unit 4B  
 Downers Grove, IL 60516

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 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

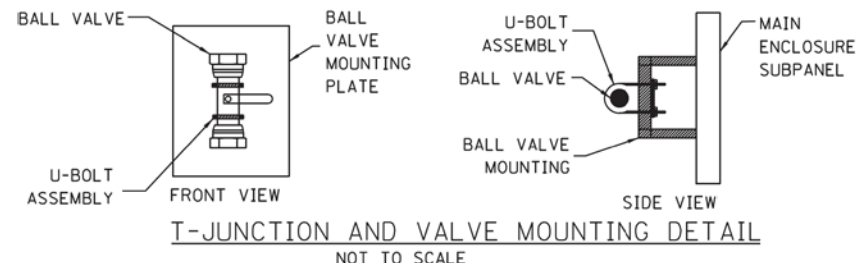
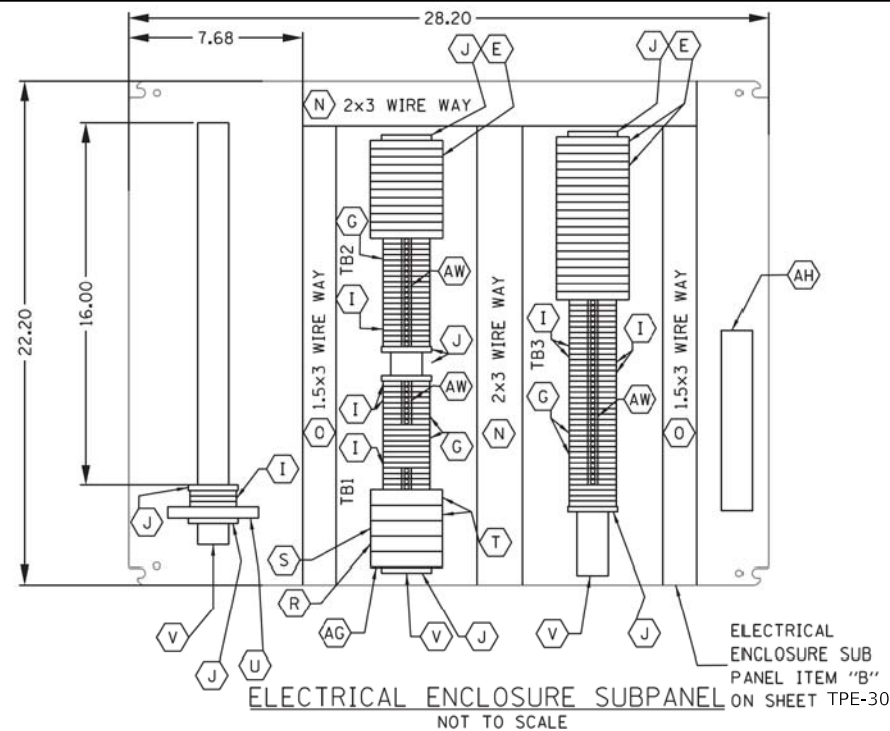
**CONTRACT NO. I-16-4274**  
 VES WASH SYSTEM  
 ENCLOSURE DETAILS

**SHEET NO.**  
 TPE-27  
**DRAWING NO.**  
 313 OF 397



NOTES:

- MAIN ENCLOSURE AND SUBPANEL LAYOUT**  
NOT TO SCALE
1. PNEUMATIC FITTINGS TO BE BRASS IN CONSTRUCTION AND MEET SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) SPECIFICATIONS.
  2. QUANTITIES ILLUSTRATED ARE FOR A 2-LANE RAMP PLAZA THAT HAS SIX (6) VES CAMERAS INSTALLED (3 REAR AND 3 FRONT VES).
  3. A ONE (1) ONE RAMP PLAZA HAS FOUR (4) VES CAMERAS INSTALLED (2 REAR AND 2 FRONT VES). THE VES WASH SYSTEM FOR A 1-RAMP PLAZA WILL USE A SINGLE MANIFOLD PART NUMBER EZM-2140-6-0-HC-A120 WHICH HAS SIX (6) PORTS (ONE EACH FOR THE 4 VES CAMERAS INSTALLED AND TWO (2) SPARE PORTS FOR FUTURE USE. THE SPARE PORTS WILL BE PLUGGED USING VERSA PNEUMATIC PIPE PLUGS (CATALOG No. P-1022-02A)



4. DEPENDING ON ENCLOSURE LOCATION, THE NYLON TUBING MAY HAVE TO BE LONGER THAN 100FT. ALPHA TECHNOLOGIES HAS THESE TUBES IN 100/250/500/1000FT ROLLS. THE PART NUMBER ILLUSTRATED IS FOR 100FT ROLLS. TUBING MUST RUN CONTINUOUS FROM THE MANIFOLD VALVES IN THE VES CABINET TO THE CAMERA NOZZLE, WITHOUT ANY INTERMEDIATE SPLICES. CONTRACTOR TO DETERMINE THE ACTUAL LENGTH OF TUBING REQUIRED FOR EACH OF THE VES CAMERAS AT SITE.
5. VINYL TUBES RUN TO VES CAMERAS AND EXIT THE BOTTOM OF THE ENCLOSURE.
6. MAIN BREAKER IS 25A
7. 30 A BREAKER TO BE SUPPLIED BY CONTRACTOR IN THE ORT POWER ENCLOSURE CONNECTED TO NORMAL POWER BREAKER PANEL.
8. ALL VALVES TO BE SECURELY MOUNTED TO THE BACKPLATE AS SHOWN USING U-BOLT ASSEMBLY, GRAINGER (CATALOG No. 5YY10).
9. ALL TUBING AND HOSES TO BE SECURED TO THE BACKPLATE USING T-CLIP FASTENER, GRAINGER CATALOG No. 6ZF06) AT SUITABLE SPACING.
10. ALL HOSES AND TUBING SHOULD BE FREE FROM KINKS OR SHARP BENDS.
11. ALL CONDUITS, FITTINGS AND ENTRY POINTS INTO EACH OF THE ENCLOSURES SHALL BE PROPERLY SEALED WITH DUCT SEAL TO PREVENT MOISTURE ENTRY.

AT	8	PNEUMATIC PIPE PLUGS VERSA CATALOG No. P-1022-02A
AU	AS REQ'D	U-BOLT ASSEMBLY GRAINGER CATALOG No. 5YY10
AV	AS REQ'D	T-CLIP CONNECTORS (NOT SHOWN) GRAINGER CATALOG No. 6ZF06
AW	10	CENTER JUMPERS ALLEN BRADLEY CATALOG No. 1492-CJJ6-10 & 1492-CJJ6-4
AX	1	1/4" FNPT SS LIQUID CONNECTOR FITTING HANSEN BEVERAGE CATALOG No. 2-HL16
AY	1	1/4" MNPT SS AIR CONNECTOR FITTING HANSEN BEVERAGE CATALOG No. 2-HL15

BOM (ALL COMPONENTS "OR APPROVED EQUAL")

MARK NO.	QTY.	DESCRIPTION
E	25	FUSED TERMINAL BLOCK (USES COOPER BUSSMAN AGC-2 2A FUSES) ALLEN BRADLEY CATALOG No. 1492-H4
F	25	FUSED TERMINAL BLOCK END BARRIER ALLEN BRADLEY CATALOG No. 1492-N37
G	35	STANDARD FEED-THRU TERMINAL BLOCK ALLEN BRADLEY CATALOG No. 1492-J4
H	35	STANDARD FEED-THRU TERMINAL BLOCK END BARRIER ALLEN BRADLEY CATALOG No. 1492-EBJ3
I	35	STANDARD FEED-THRU TERMINAL BLOCK - GREEN (GND) ALLEN BRADLEY CATALOG No. 1492-J4-G
J	12	DIN RAIL END ANCHORS ALLEN BRADLEY CATALOG No. 1492-EAJ35
N	AS REQ'D	2" X 3" WIREWAY WITH COVER PANDUIT CATALOG No. F2X3LG6 & C2LG6
O	AS REQ'D	1.5" X 3" WIREWAY WITH COVER PANDUIT CATALOG No. F1.5X3LG6 & C1.5LG6
P	AS REQ'D	2" X 4" WIREWAY WITH COVER PANDUIT CATALOG No. F2X4LG6 & C2LG6
R	1	3 AMP CIRCUIT BREAKER ALLEN BRADLEY CATALOG No. 1492-SP1B030
S	1	5 AMP CIRCUIT BREAKER ALLEN BRADLEY CATALOG No. 1492-SP1B050
T	2	10 AMP CIRCUIT BREAKER ALLEN BRADLEY CATALOG No. 1492-SP1B100
U	1	25 AMP CIRCUIT BREAKER ALLEN BRADLEY CATALOG No. 1492-MCAA125
V	AS REQ'D	AB DIN RAIL CATALOG No. 199-DR1 OR APPROVED EQUAL
W	1	8 STATION MANIFOLD INCLUDING VALVES VERSA CATALOG No. EZM-2140-8-0-HC-A120
Y	2	SUBPLATE - SINGLE STATION VERSA CATALOG No. EM-21-120-1
Z	2	2-WAY N.C. VALVE ASSEMBLY VERSA CATALOG No. E7SM-2011-140-A120
AA	1	1/4" BLACK NYLON TUBING (NOTE 4) ALPHA N11-041-100
AB	1	100ft 3/8" NATURAL NYLON TUBING ALPHA N11-062-100
AG	2	20 AMP CIRCUIT BREAKER ALLEN BRADLEY CATALOG No. 1492-SP1B200
AH	1	GROUNDING BAR HOFFMAN CATALOG No. PGS2K
AI	1	10 GAL WASHER FLUID CANISTER SIMGO CATALOG No. 22-29764
AJ	2	NITROGEN TANK AIRCAS CATALOG No. NI-40 (FILLED WITH NITROGEN)
AK	2	WALL MOUNT CYLINDER BRACKET GLOBAL INDUSTRIAL CATALOG No. G100
AL	2	1/4" BALL VALVE WESTERN ENTERPRISES CATALOG No. WMV-5-11
AM	2	NITROGEN TANK REGULATOR WESTERN ENTERPRISES CATALOG No. REB-7-5AC
AN	1	T-JUNCTION FITTING (10 PACK) SMC FITTINGS CATALOG No. K02T11-00
AO	3	45 DEG MALE ELBOW FITTING (10 PACK) SMC FITTINGS CATALOG No. K02K07-34S
AP	1	EXTERNAL QUICK DISCONNECT BULKHEAD FITTING (10 PACK) SMC FITTINGS CATALOG No. K02E11-36
AO	3	MALE CONNECTOR FITTING (10 PACK) SMC FITTINGS CATALOG No. K02H11-35S
AR	2	FEMALE CONNECTOR FITTING (10 PACK) SMC FITTINGS CATALOG No. K02F11-35
AS	1	REGULATOR FOR FLUID CANISTER INLET CA TECHNOLOGIES CATALOG No. 52-7

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**CHECKED BY** BL **SCALE** NONE

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Downers Grove, IL 60516

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DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
VES WASH SYSTEM  
PANEL DETAILS AND HMI

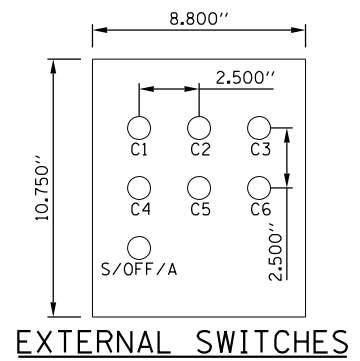
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TPE-28  
**DRAWING NO.**  
314 OF 397



**BILL OF MATERIAL COMPONENTS (OR APPROVED EQUAL)**

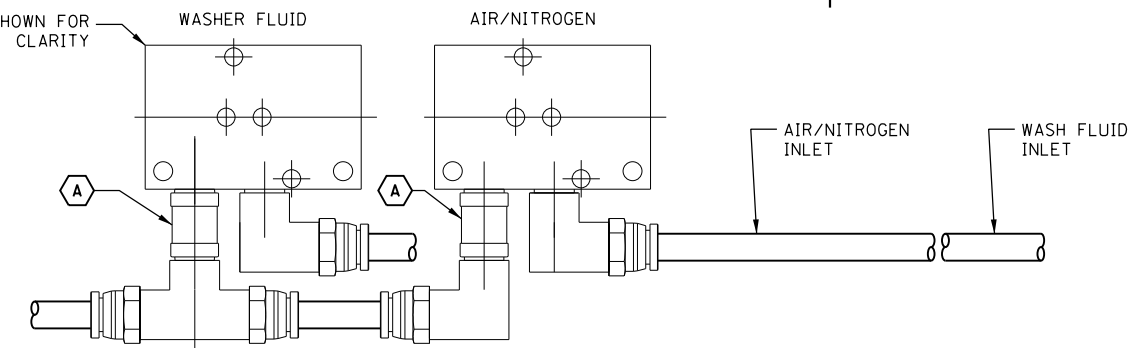
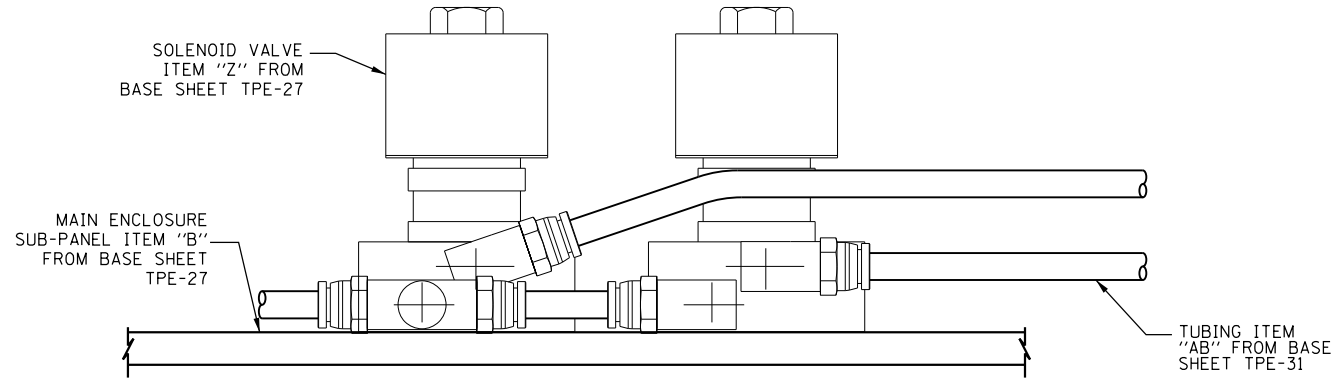
MARK NO.	QTY.	SPARE	DESCRIPTION
A	2	1	1/4" NPT CHECK VALVE McMASTER-CARR CATALOG No. 7775K62
B	AS REQ'D		SILICONE HOSE SLEEVE (50' SPOOL) McMASTER-CARR CATALOG No. 7453K49
C	6	*	SPRAY NOZZLE GRAINGER CATALOG No. IMDH2
E	6		MINIATURE CORROSION RESISTANT STRAIN RELIEF HUBBELL CATALOG No. SHC1021CR
F	2		ADJUSTABLE MOUNTING STRAP McMASTER-CARR CATALOG No. 7572K12 (50 PER PACK)
G	5	2	30.5 MM, ON / OFF SWITCH (NOTE 4) SQUARE D PART NUMBER SKS11BH13
H	1	1	30.5 MM, ON / OFF / ON SWITCH (NOTE 5) SQUARE D PART NUMBER SKS43BH13
I	1	*	NOZZLE BULKHEAD FITTING (10 PACK) SMC FITTING CATALOG No. K02E07-35

\* MATCH CONTRACT QUANTITY

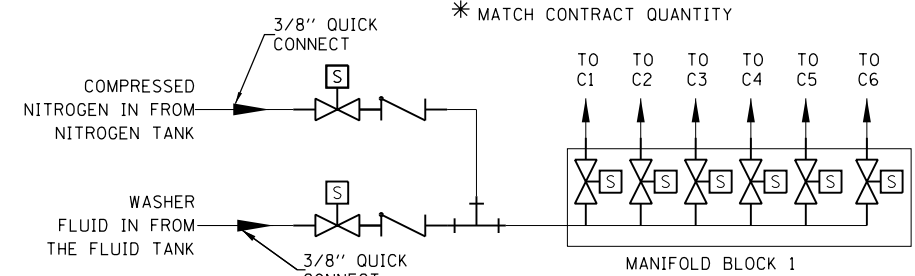


**SWITCH NAMEPLATE LEGEND**

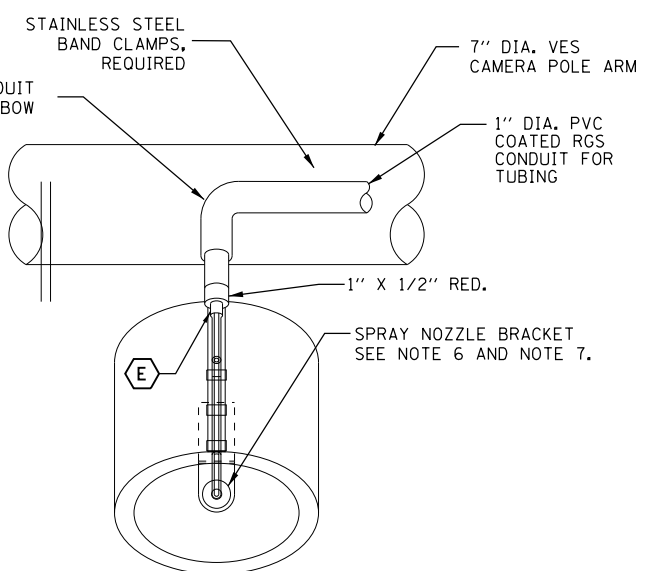
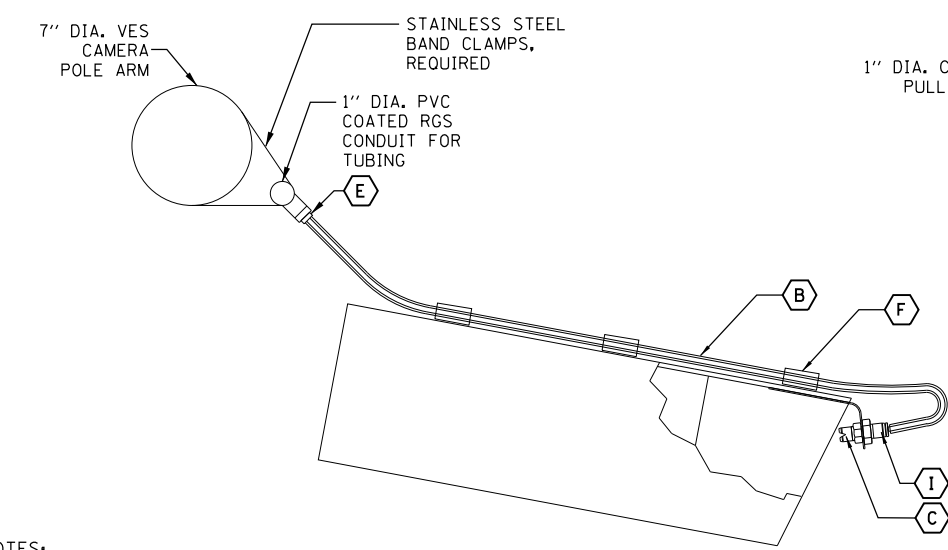
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**INLET VALVE DETAIL**  
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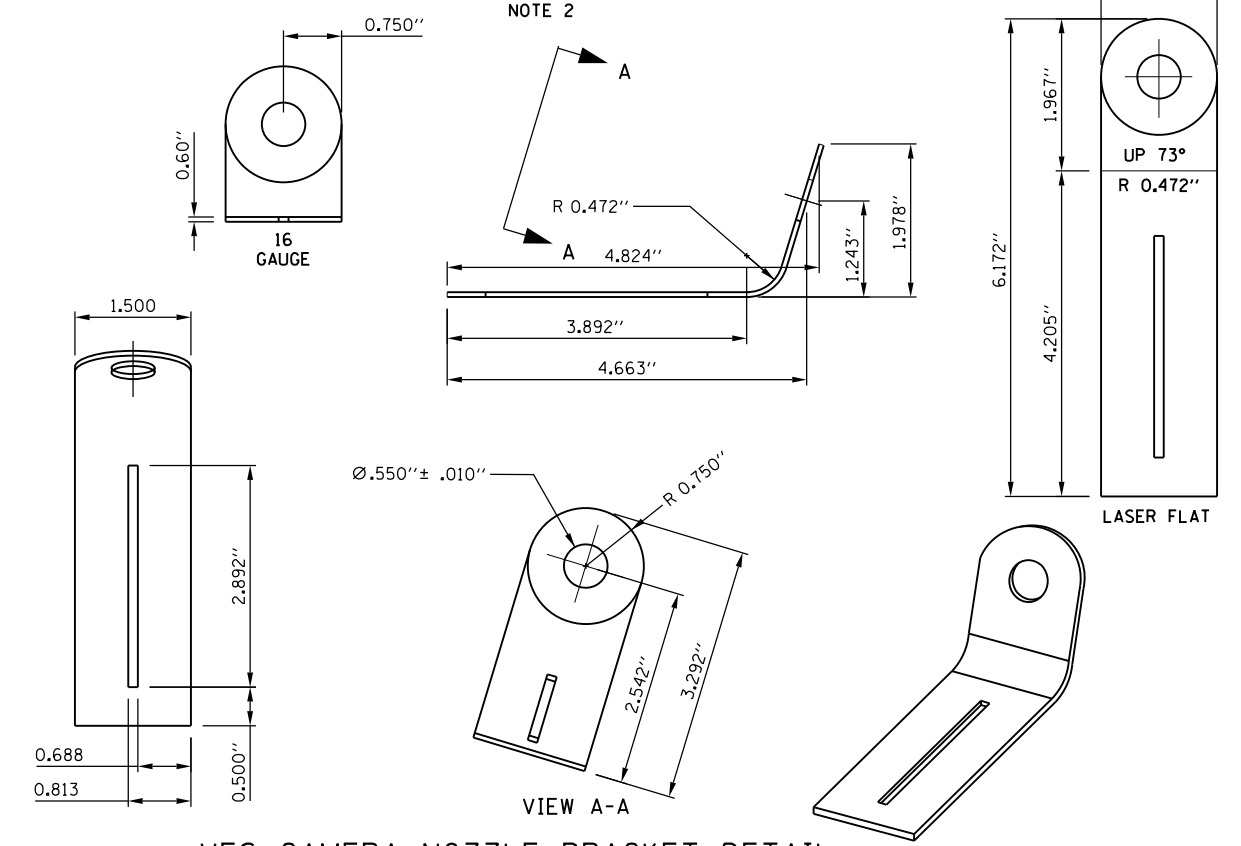
**WASH SYSTEM FLOW DIAGRAM**



**NOZZLE DETAIL - VES CAMERA MONOTUBE**  
NOT TO SCALE

**NOTES:**

- QUANTITIES ILLUSTRATED ARE FOR A 2-LANE RAMP PLAZA THAT HAS SIX (6) VES CAMERAS (3 REAR AND 3 FRONT VES).
- A 2-LANE RAMP PLAZA CONFIGURATION IS ILLUSTRATED. THE MANIFOLD-VALVE SYSTEM SHOWN ILLUSTRATES EIGHT (8) PORTS, ONE EACH FOR THE SIX (6) VES CAMERAS INSTALLED (3 REAR VES AND 3 FRONT VES) AND TWO (2) SPARE PORTS PLUGGED FOR FUTURE USE.
- A 1-LANE RAMP PLAZA WILL HAVE FOUR (4) CAMERAS (2 REAR AND 2 FRONT VES). THE MANIFOLD-VALVE SYSTEM FOR A 1-LANE RAMP PLAZA WILL HAVE SIX (6) PORTS, ONE EACH FOR THE THREE (3) VES CAMERAS INSTALLED AND TWO (2) SPARE PORTS PLUGGED FOR FUTURE USE.
- THE SWITCHES ARE NOT SHOWN ON THIS DRAWING. THE QUANTITY ILLUSTRATED ARE FOR A 2-LANE RAMP PLAZA. THESE SWITCHES ARE MOUNTED ON THE BACKPLATE OF THE HOFFMAN SWITCH ENCLOSURE ILLUSTRATED ON TPE-27.
- THIS SWITCH IS NOT SHOWN ON THIS DRAWING. THIS SINGLE SWITCH WILL CONTROL THE LIQUID AND AIR INLET VALVES. THIS SWITCH IS MOUNTED ON THE BACKPLATE OF THE HOFFMAN SWITCH ENCLOSURE ILLUSTRATED ON TPE-27.
- CAMERA NOZZLE BRACKET SHALL BE FABRICATED USING 12 GA. STAINLESS STEEL. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL.
- CAMERA NOZZLE BRACKET SHALL BE ADJUSTABLE. STAINLESS STEEL NUT-BOLT COMBINATION SHALL BE USED FOR MOUNTING THE CAMERA NOZZLE BRACKET TO THE CAMERA LENS HOUSING. CONTRACTOR TO VERIFY THAT THE MOUNTING HARDWARE SECURELY HOLDS THE BRACKET BUT ALSO ALLOWS EASY ADJUSTMENT. CONTRACTOR SHALL SUBMIT INSTALLATION DRAWINGS CLEARLY IDENTIFYING PART NUMBERS USED FOR MOUNTING HARDWARE. INSTALLATION DRAWINGS SHALL ALSO INDICATE THE POSITON OF THE MOUNTING HARDWARE ON THE CAMERA NOZZLE BRACKET. THE INSTALLATION DRAWINGS SHALL BE APPROVED BY THE ILLINOIS TOLLWAY BEFORE INSTALLATION IN THE FIELD.



**VES CAMERA NOZZLE BRACKET DETAIL**  
NOT TO SCALE

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 PLOT SIZE: 10.00000 / 1.00

**DRAWN BY** MB/SR    **DATE** 10/18/2018  
**CHECKED BY** BL    **SCALE** NONE

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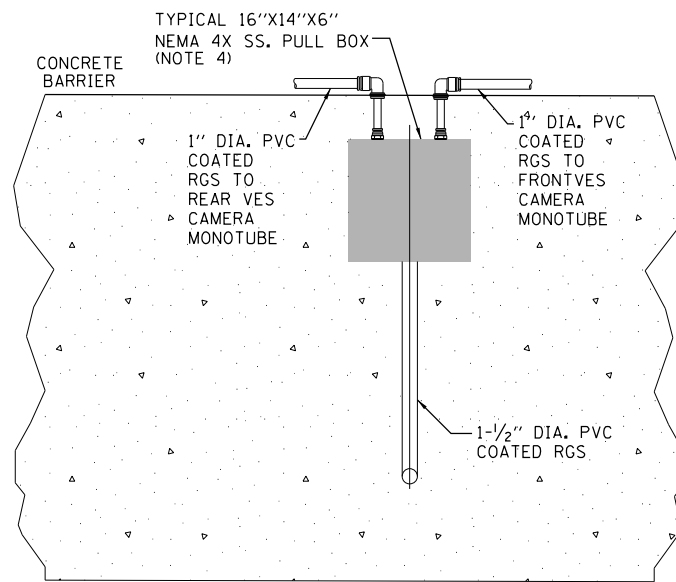
**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
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 DOWNERS GROVE, ILLINOIS 60515

**REVISIONS**

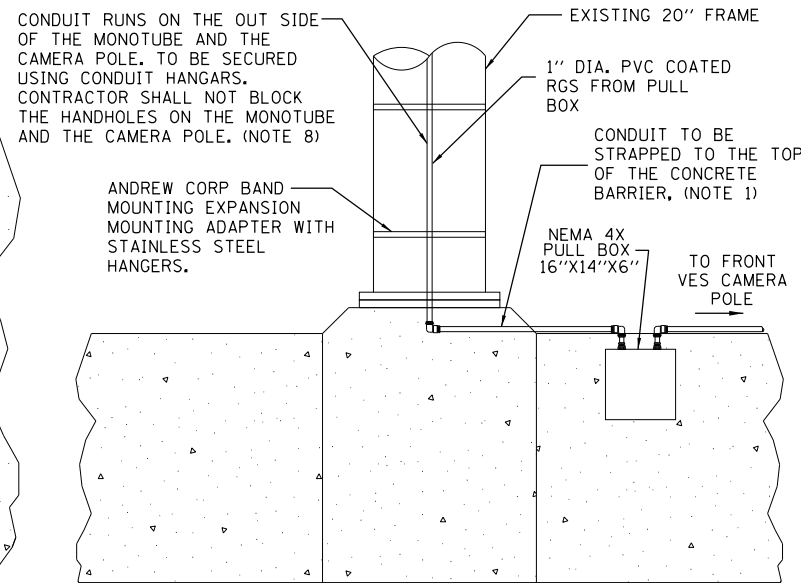
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**CONTRACT NO.** I-16-4274  
 VES WASH SYSTEM MECHANICAL  
 DETAILS AND FLOW DIAGRAM

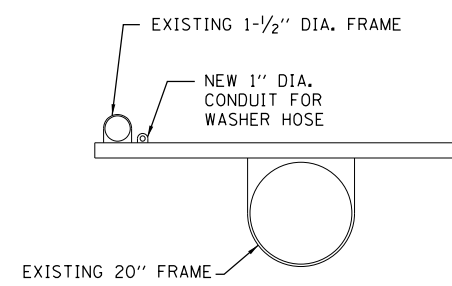
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**DRAWING NO.** 315 OF 397



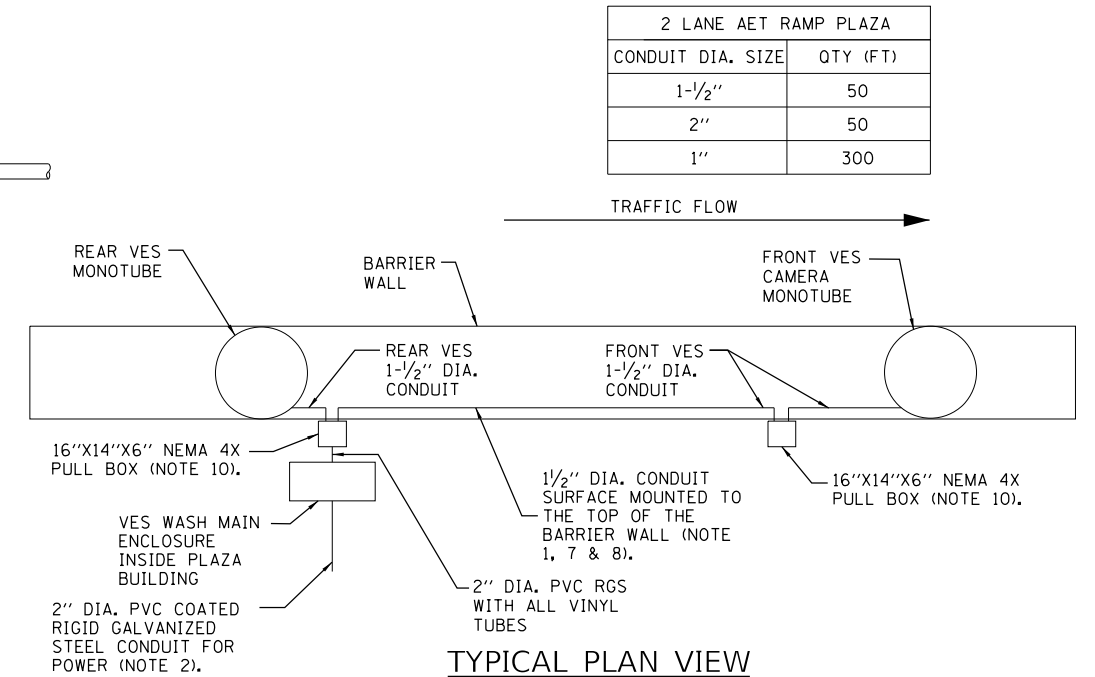
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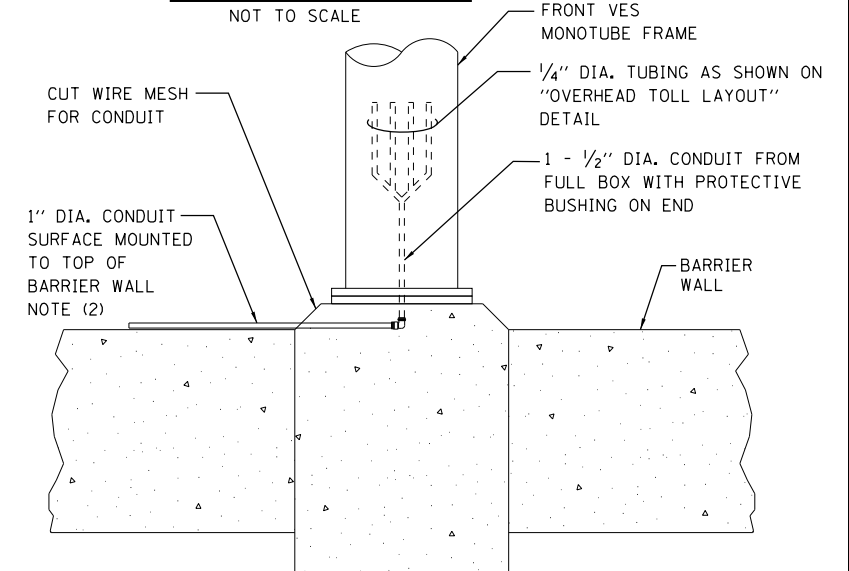
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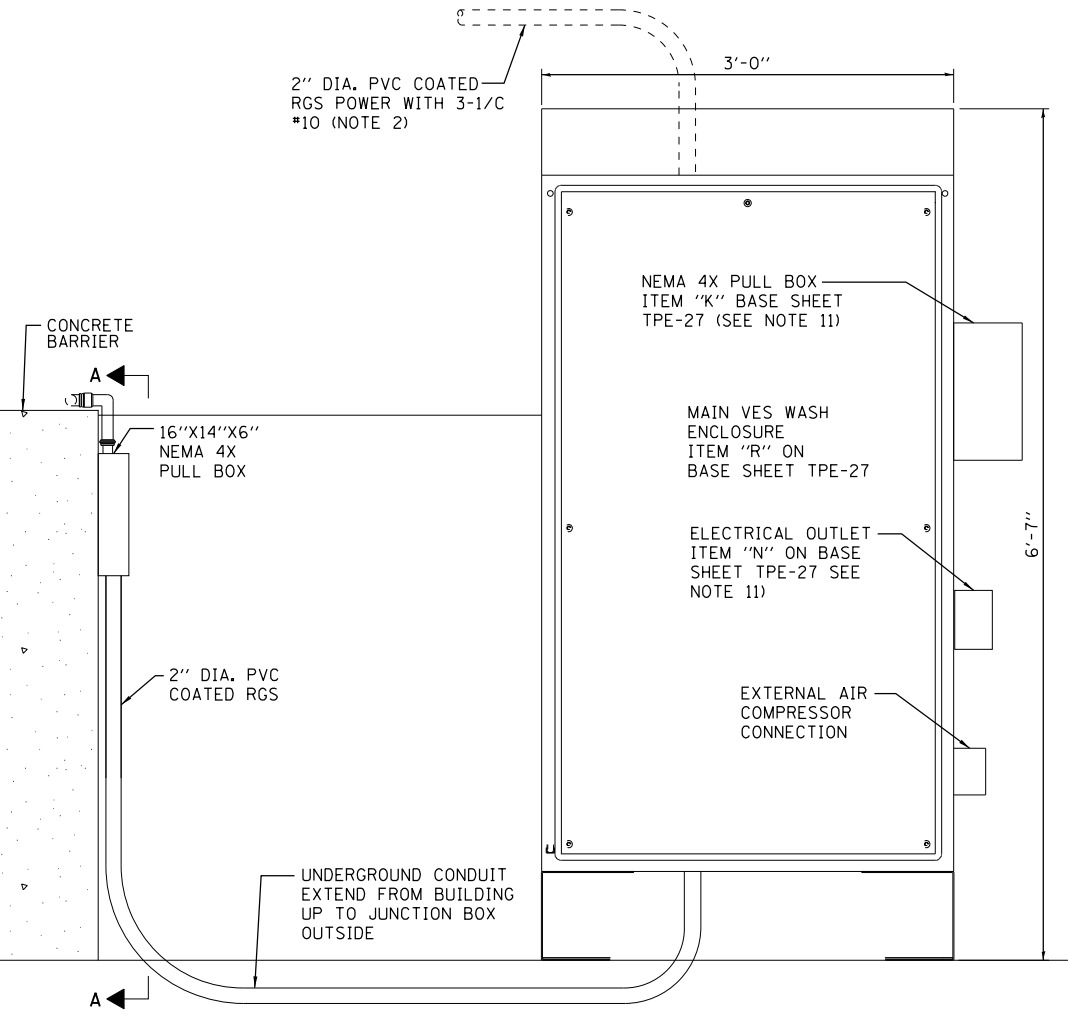
**SECTION B-B**  
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**TYPICAL PLAN VIEW**  
NOT TO SCALE



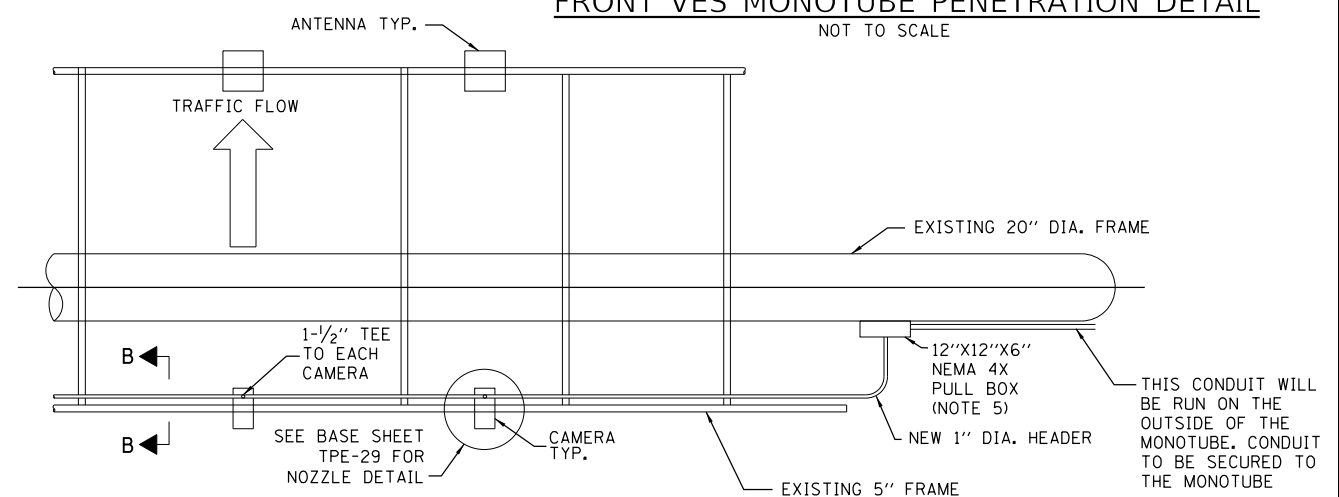
**FRONT VES MONOTUBE PENETRATION DETAIL**  
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**MAIN ENCLOSURE MOUNTING DETAIL TRAFFIC LIGHT**  
NOT TO SCALE

**NOTES:**

- ALL CONDUIT ROUTING AND EQUIPMENT PLACEMENT IS THE RESPONSIBILITY OF THE CONTRACTOR. THE ROUTING AND PLACEMENT DEPICTED IS SUGGESTED ONLY. ACTUAL ENCLOSURE LOCATION WILL VARY BASED ON SITE CONDITIONS. THE CONTRACTOR SHALL COORDINATE EQUIPMENT LOCATION AND CONDUIT ROUTING WITH CONSTRUCTION ENGINEER AND ILLINOIS TOLLWAY ENGINEER.
- THE POWER CONDUIT WILL RUN TO THE POWER PANEL INSIDE THE MAIN LINE PLAZA BUILDING. THE NORMAL BREAKER PANEL WILL BE UTILIZED FOR THE VES WASH POWER SOURCE.
- UNLESS OTHERWISE NOTED ALL CONDUIT IS PVC COATED RGS.
- ONE (1) NEMA 4X 12"x12"x6" ENCLOSURE WILL BE PLACED ON THE REAR AND FRONT VES CAMERA MONOTUBE AND ONE (1) NEMA 4X 16"x14"x8" WILL BE PLACED ON THE BARRIER WALL AT EACH AET ZONE.
- MONOTUBE MOUNTED NEMA 4X PULL BOXES LOCATION TO BE DETERMINED IN FIELD. PULL BOX TO BE SECURELY FASTENED TO THE CONCRETE BARRIER. AT LEAST 1' OF SPOOLED UP VINYL TUBING FOR EACH CAMERA WILL BE PLACED IN THE MONOTUBE PULL BOXES.
- NOT USED.
- CONDUITS FOR SPRAY TUBING SHALL BE SEALED ON BOTH ENDS TO PREVENT WATER FROM PENETRATING.
- CONTRACTOR SHALL PROVIDE STRAIN RELIEF FOR WASHER TUBING IN POLES/MONOTUBES.
- FINAL POSITION AND NUMBER OF VES CAMERAS INSTALLED TO BE DETERMINED IN THE FIELD. NUMBER OF REAR VES CAMERAS SHOWN IS FOR ILLUSTRATION PURPOSES ONLY.
- 16"x14"x6" NEMA 4X PULL BOXES FOR THE REAR AND FRONT VES CAMERA MONOTUBE SHALL BE SURFACE MOUNTED ON THE RIGHT SHOULDER BARRIER WALL, AWAY FROM TRAFFIC.
- NEMA 4X ENCLOSURE (ITEM "K" ON BASE SHEET TPE-30, EXTERNAL AIR COMPRESSOR CONNECTION AND ELECTRICAL DUAL OUTLET (ITEM "N" ON BASE SHEET TPE-30) SHALL BE MOUNTED ON THE SIDE OF THE MAIN ENCLOSURE, AWAY FROM ANY OBSTRUCTION.
- ALL CONDUITS, FITTINGS AND PENETRATIONS INTO EACH OF THE ENCLOSURES IN THE SYSTEM SHALL BE PROPERLY SEALED WITH DUCT SEAL OR OTHER APPROVED SEALING METHODS TO PREVENT MOISTURE AND RODENT ENTRY.
- CONTRACTOR MUST VERIFY THAT THERE SHALL BE SUFFICIENT ROOM FOR CABINET DOOR TO OPEN.



**OVERHEAD TOLL LAYOUT**  
NOT TO SCALE  
TYP REAR VES ILLUSTRATED

2 LANE AET RAMP PLAZA	
CONDUIT DIA. SIZE	QTY (FT)
1-1/2"	50
2"	50
1"	300

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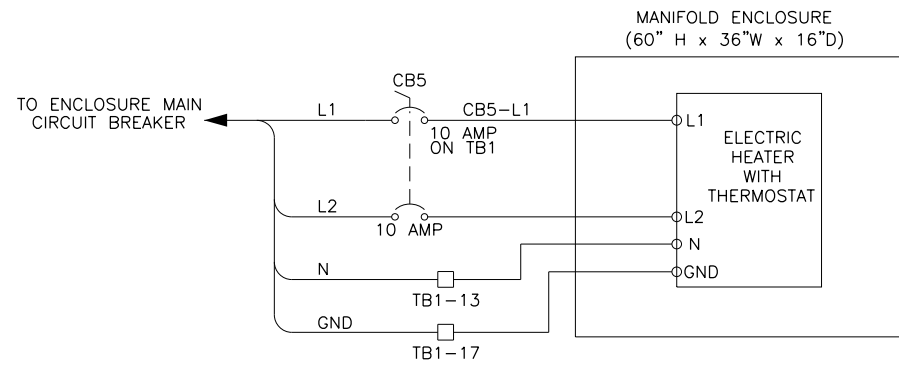
**AMES Engineering, Inc.**  
 CONSULTING ENGINEERS  
 6330 Belmont Road, Unit 4B  
 Downers Grove, IL 60516

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 DOWNERS GROVE, ILLINOIS 60515

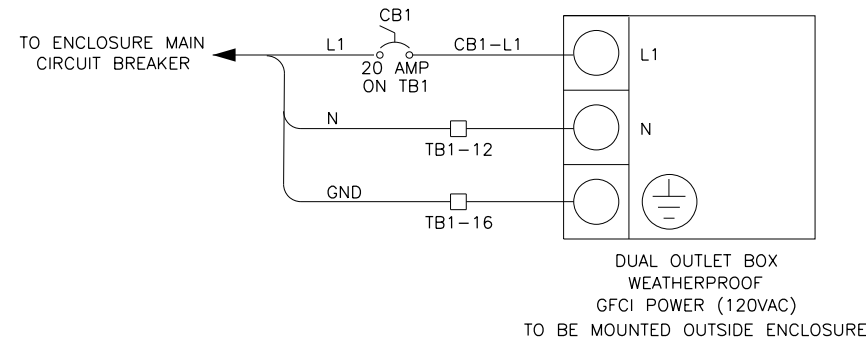
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 VES WASH SYSTEM SUGGESTED  
 CONDUIT ROUTING

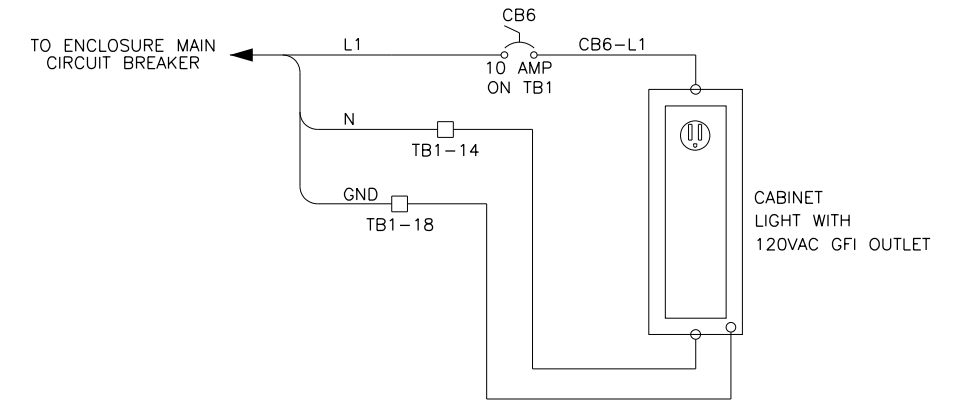
**SHEET NO.** TPE-30  
**DRAWING NO.** 316 OF 397



**ELECTRIC HEATER WITH THERMOSTAT (IF REQUIRED)**  
NOTE 4



**OUT DOOR ELECTRICAL DUAL OUTLET GFCI 20A**



**CABINET LIGHTING AND GFI OUTLET**


**NOTES:**

1. ALL CABLING ON THIS DRAWING IS #12 AWG
2. MAIN BREAKER IS 25A, ILLUSTRATED ON SHEET TPE-28 ITEM U, LOCATED ON TOP DIN RAIL.
3. THREE 1-C #10 CABLES WILL BE ROUTED FROM THE AET POWER ENCLOSURE TO THE VES POWER WASH ENCLOSURE. THE POWER FEED WILL BE INITIATED FROM THE NORMAL BREAKER PANEL. THE CONTRACTOR TO SUPPLY AND INSTALL A 30A BREAKER IN THE AET BREAKER PANEL. POWER IS 120VAC WITH A HOT, NEUTRAL AND GROUND. THIS POWER FEED WILL THEN TERMINATE ON THE MAIN 25A BREAKER IN THE VES POWER WASH ENCLOSURE.
4. ELECTRIC HEATER IS INSTALLED IN OUTSIDE CABINETS ONLY.

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 USER NAME ILTOLLWAY-PDF-CONF.plt  
 PLOT DATE 10/17/2018 PLOT SCALE 100.0000 / in.  
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**CHECKED BY** BL    **SCALE** NONE

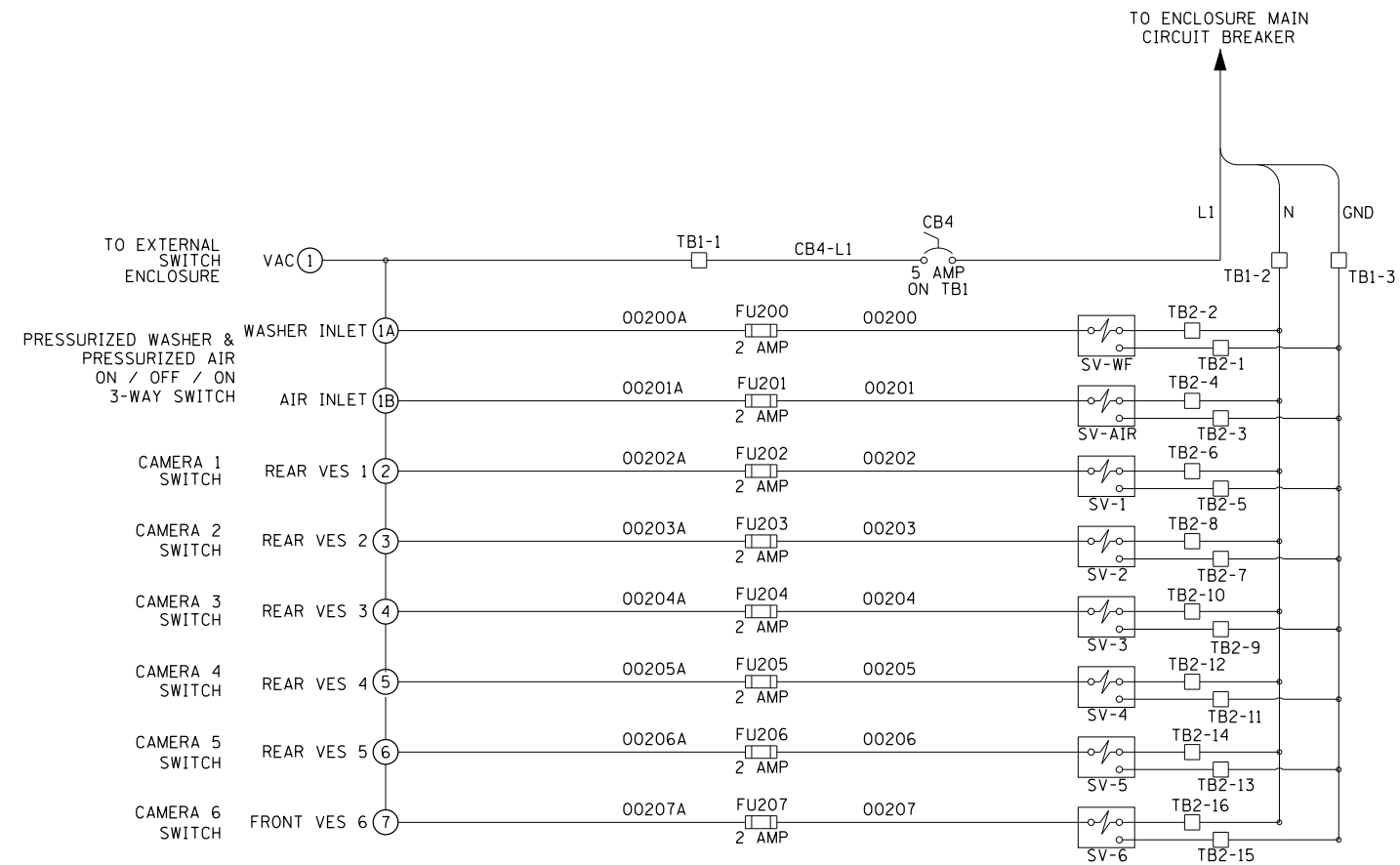

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**CONTRACT NO.** I-16-4274  
 VES WASH SYSTEM  
 MISC POWER WIRING

**SHEET NO.**  
 TPE-31  
**DRAWING NO.**  
 317 OF 397



### SWITCH CONFIGURATION

#### NOTES:

1. SCHEMATIC ILLUSTRATES TWO (2) LANE PLAZA WITH SIX (6) VES CAMERAS INSTALLED (3 REAR AND 3 FRONT VES).
2. WIDE ANGLE VES CAMERAS ARE INSTALLED.
3. FOR RAMP L1 VES CAMERAS SHALL BE FOUR (4) 2 REAR, AND 2 FRONT VES.

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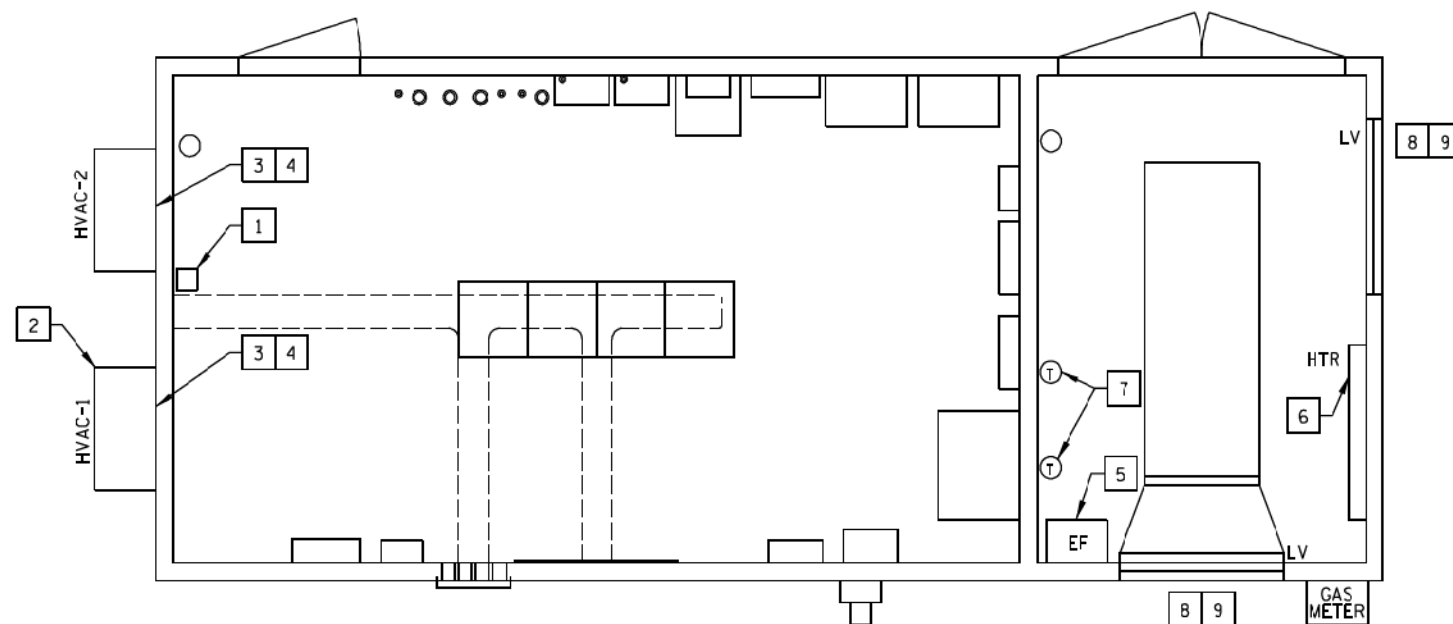


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NO.	DATE	DESCRIPTION

**CONTRACT NO.** I-16-4274  
 VES WASH SYSTEM CONTROL  
 AND SWITCH SCHEMATIC

**SHEET NO.**  
 TPE-32  
**DRAWING NO.**  
 318 OF 397



**BUILDING MECHANICAL PLAN (12'x30')**

NOT TO SCALE

**MECHANICAL UNITS NOTES:**

- 1** PROVIDE BARD'S "MC-4000-A" CONTROLLER FOR PERFORMING LEAD/LAG AND ROTATION BETWEEN UNITS TO ENSURE EQUAL WEAR ON THE TWO UNITS. CONTROLLER SHALL PROVIDE FOR STAGING COOLING (OR HEATING) FOR BOTH UNITS. WHEN ONE UNIT CANNOT SATISFY BUILDING LOAD, SECOND UNIT SHALL BE ENERGIZED TO SUPPLEMENT EFFORTS OF THE FIRST UNIT. WHEN ACTUAL SPACE TEMP SATISFIES SETPOINT, CONTROLLER SHALL DISABLE HEAT/COOL FUNCTION AND "CYCLE-OFF" THE BLOWER AS WELL. IF BOTH UNITS ARE OPERATING, CONTROLLER SHALL FIRST DISABLE LAG UNIT WHEN SPACE TEMP CONTINUES TO REMAIN SATISFIED. NOTE THAT AIR BLOWER IS NOT REQUIRED TO RUN WHEN SPACE TEMP IS SATISFIED. PROVIDE AUTO/MANUAL SWITCH TO RUN UNIT #1 (OR UNIT #2) IN MANUAL MODE. SPACE TEMP SETPOINTS SHALL BE:  
 SUMMER = 74  
 WINTER = 68
- 2** PROVIDE TWO NEW "BARD" WALL MOUNTED AC HEAT PUMP UNITS, MODEL "T36H1", COORDINATE RIGHT SIDE/LEFT SIDE CONTROL PANELS.  
  
 CAPACITY:  
 3.0 TR COOLING CAP WITH 6 KW ELECTRIC HEAT.  
  
 ELECTRICAL:  
 208V/3 PH/60 HZ  
  
 FEATURES:  
 •NO OUTSIDE AIR (BLANK OFF OUTDOOR AIR OPENING)  
 •R-410A REFRIGERANT  
 •LOW AMBIENT KIT TO ALLOW COMPRESSOR OPERATION DOWN TO -20  
 •CONDENSER FAN OPERATION/CONTROL TO MAINTAIN PROPER REFRIGERANT PRESSURES  
 •HP SWITCH WITH LOCKOUT RELAY (MANUAL RESET)  
 •LP SWITCH WITH AUTO RESET  
 •ADJUSTABLE COMPRESSOR TIME DELAY  
 •DRY CONTACTS FOR REMOTE ALARM UPON UNIT LOCKOUT  
 •2", 35% EFFICIENT, DISPOSABLE FILTERS  
 •PREWIRED ELECTRICAL DISCONNECT  
 •ONE EXTRA SET OF FILTERS (TO BE TURNED OVER TO OWNER)  
 •RETURN GRILLE  
 •SUPPLY GRILLE
- 3** HVAC WALL SLEEVE 16"x30"x8" AND RETURN GRILLE 16"x30".
- 4** HVAC WALL SLEEVE 10"x30"x8" AND SUPPLY GRILLE 10"x30".
- 5** SIDEWALL PROPELLER EXHAUST FAN, 750 CFM, 0.25" SP, 1/8HP, 120V, 1PH.
- 6** BASEBOARD HEATER, 750W, 120V, 1PH, INTEGRAL DISCONNECT SWITCH.
- 7** THERMOSTAT, REVERSE ACTING, 120V, 1PH.
- 8** 48"x48" OPPOSED BLADE, 2-POSITION, INSULATED, MOTORIZED DAMPER (120V, 1PH). INTERLOCK WITH GENERATOR OPERATION.
- 9** 48"x48" DRAINABLE BLADE INTAKE/EXHAUST LOUVER, FLANGED FRAME, KYNAR FINISH, S.S. BIRD SCREEN, COLOR TO MATCH BUILDING.
- 10** REFER TO SPECIAL PROVISION PREFABRICATED CONTROL BUILDING (12'-0"x30'-0") FOR WORK REQUIREMENTS.

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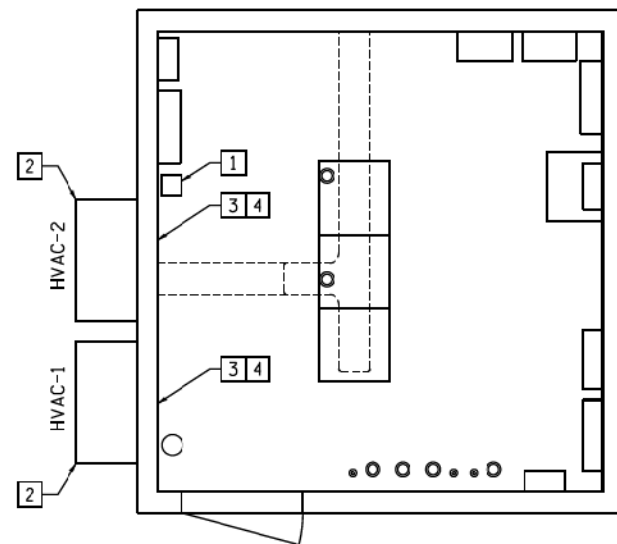
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 DOWNERS GROVE, ILLINOIS 60515

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NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 CONTROL BUILDING  
 MECHANICAL PLAN

**SHEET NO.**  
 PM-01  
**DRAWING NO.**  
 319 OF 397



**BUILDING MECHANICAL PLAN (12'x20')**  
NOT TO SCALE

**MECHANICAL UNITS NOTES:**

- 1 PROVIDE BARD'S "MC-4000-A" CONTROLLER FOR PERFORMING LEAD/LAG AND ROTATION BETWEEN UNITS TO ENSURE EQUAL WEAR ON THE TWO UNITS. CONTROLLER SHALL PROVIDE FOR STAGING COOLING (OR HEATING) FOR BOTH UNITS. WHEN ONE UNIT CANNOT SATISFY BUILDING LOAD, SECOND UNIT SHALL BE ENERGIZED TO SUPPLEMENT EFFORTS OF THE FIRST UNIT. WHEN ACTUAL SPACE TEMP SATISFIES SETPOINT, CONTROLLER SHALL DISABLE HEAT/COOL FUNCTION AND "CYCLE -OFF" THE BLOWER AS WELL. IF BOTH UNITS ARE OPERATING, CONTROLLER SHALL FIRST DISABLE LAG UNIT WHEN SPACE TEMP CONTINUES TO REMAIN SATISFIED. NOTE THAT AIR BLOWER IS NOT REQUIRED TO RUN WHEN SPACE TEMP IS SATISFIED. PROVIDE AUTO/MANUAL SWITCH TO RUN UNIT #1 (OR UNIT "2") IN MANUAL MODE. SPACE TEMP SETPOINTS SHALL BE:  
SUMMER = 74°F (±2°F)  
WINTER = 68°F (±3°F)
- 2 PROVIDE TWO NEW "BARD" WALL MOUNTED AC HEAT PUMP UNITS, MODEL "T24H1". COORDINATE RIGHT SIDE/LEFT SIDE CONTROL PANELS.  
  
CAPACITY:  
2.0 TR COOLING CAP WITH 6 KW ELECTRIC HEAT.  
  
ELECTRICAL:  
208V/3 PH/60 HZ  
  
FEATURES:  
•NO OUTSIDE AIR (BLANK OFF OUTDOOR AIR OPENING) •R-410A REFRIGERANT  
•LOW AMBIENT KIT TO ALLOW COMPRESSOR OPERATION DOWN TO -20°F  
•CONDENSER FAN OPERATION/CONTROL TO MAINTAIN PROPER REFRIGERANT PRESSURES  
•HP SWITCH WITH LOCKOUT RELAY (MANUAL RESET)  
•LP SWITCH WITH AUTO RESET  
•ADJUSTABLE COMPRESSOR TIME DELAY  
•DRY CONTACTS FOR REMOTE ALARM UPON UNIT LOCKOUT  
•2", 35% EFFICIENT, DISPOSABLE FILTERS PREWIRED ELECTRICAL DISCONNECT  
•ONE EXTRA SET OF FILTERS (TO BE TURNED OVER TO OWNER)  
•RETURN GRILLE  
•SUPPLY GRILLE
- 3 HVAC WALL SLEEVE 14"x28"x8" AND RETURN GRILL 14"x28".
- 4 HVAC WALL SLEEVE 8"x28"x8" AND SUPPLY GRILL 8"x28".
- 5 REFER TO SPECIAL PROVISION PREFABRICATED CONTROL BUILDING (12'-0"x20'-0") FOR WORK REQUIREMENTS.

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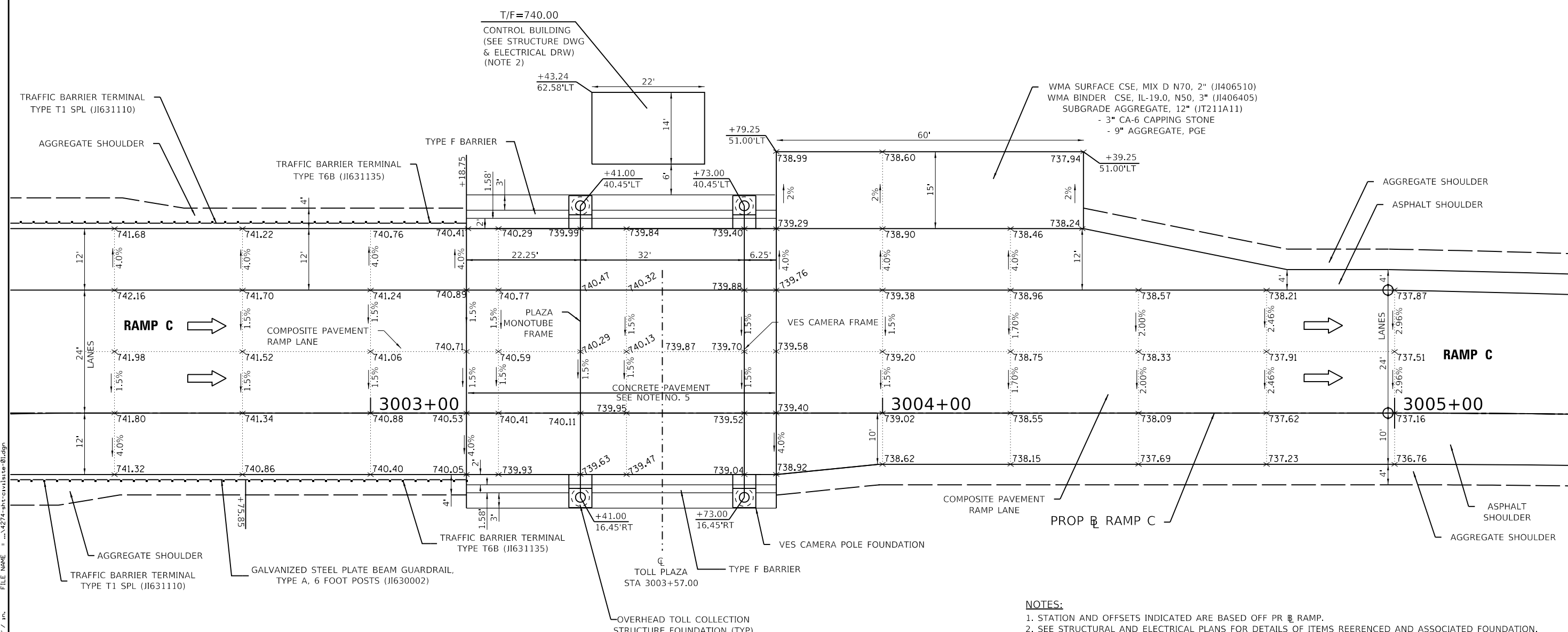
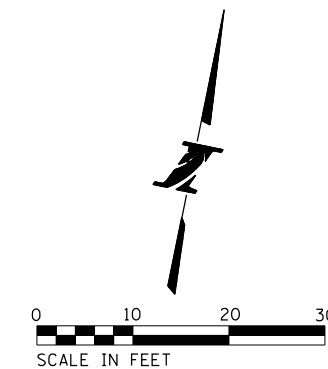
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**CONTRACT NO. I-16-4274**  
CONTROL BUILDING  
MECHANICAL PLAN

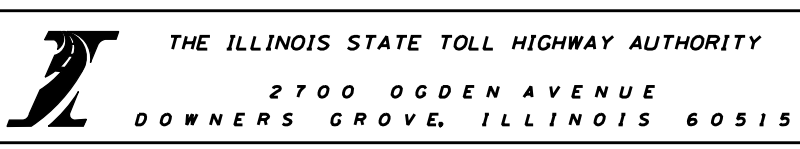
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PM-02  
**DRAWING NO.**  
320 OF 397



- NOTES:**
1. STATION AND OFFSETS INDICATED ARE BASED OFF PR RAMP.
  2. SEE STRUCTURAL AND ELECTRICAL PLANS FOR DETAILS OF ITEMS REFERENCED AND ASSOCIATED FOUNDATION.
  3. SEE ROADWAY PLANS SHEETS FOR ROADWAY CALL OFFS.
  4. SEE DRAINAGE AND SUB-SURFACE DRAINAGE PLAN SHEETS FOR DRAINAGE INFORMATION.
  5. FOR PLAZA CONCRETE PAVEMENT DETAILS SEE SHEET NO. PS-14

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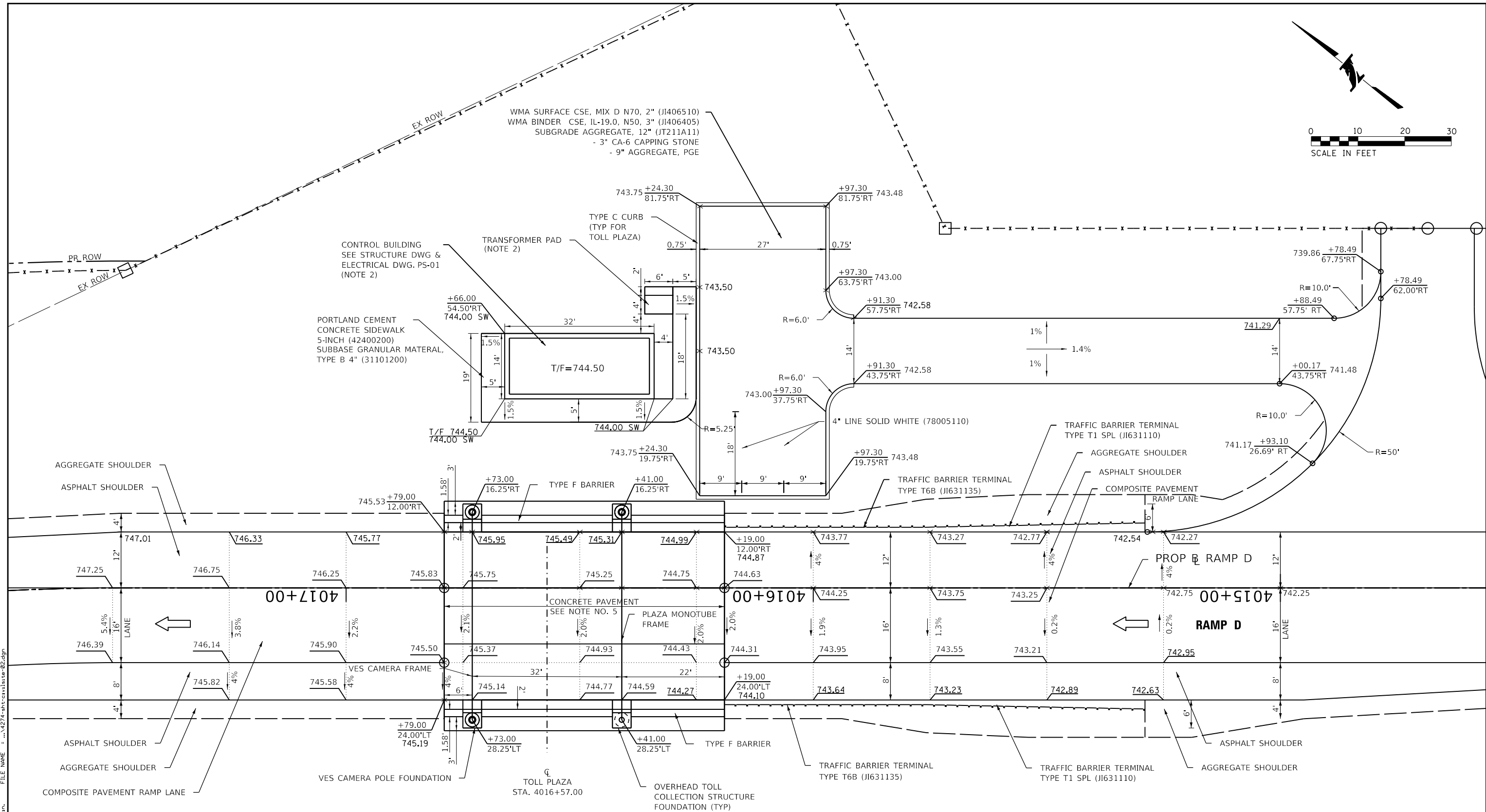
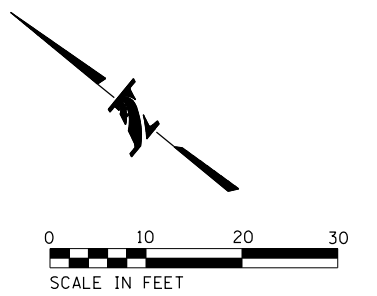
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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO.** I-16-4274  
 PLAZA CIVIL SITE PLAN  
 RAMP C TOLL PLAZA  
 STATION 3003+59

**SHEET NO.** CS-01  
**DRAWING NO.** 321 OF 397



- NOTES:**
1. STATION AND OFFSETS INDICATED ARE BASED OFF PR & RAMP.
  2. SEE STRUCTURAL AND ELECTRICAL PLANS FOR DETAILS OF ITEMS REERENCED AND ASSOCIATED FOUNDATION.
  3. SEE ROADWAY PLANS SHEETS FOR ROADWAY CALL OFFS.
  4. SEE DRAINAGE AND SUB-SURFACE DRAINAGE PLAN SHEETS FOR DRAINAGE INFORMATION.
  5. FOR PLAZA CONCRETE PAVEMENT DETAILS SEE SHEET NO. PS-15

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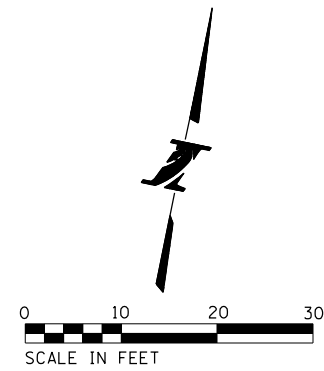


REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO.** I-16-4274  
 PLAZA CIVIL SITE PLAN  
 RAMP D TOLL PLAZA  
 STATION 4016+57

**SHEET NO.** CS-02  
**DRAWING NO.** 322 OF 397





**DESIGN LOADING:**

WIND LOAD CRITERIA  
SIGN PANEL 35 P.S.F.  
COLUMN/BEAM 35 P.S.F.

**EQUIPMENT LOADS:**

CAMERA ASSEMBLY 8 L.B.  
ANTENNAE 20 L.B.

**DESIGN STRESSES REINFORCED CONCRETE**

$f_c$  = COMPRESSIVE STRENGTH OF CONCRETE AT 14 DAYS (CLASS S1) = 3,500 P.S.I.  
 $f_c$  = COMPRESSIVE STRENGTH OF CONCRETE AT 14 DAYS (CLASS D5) = 4,000 P.S.I.  
 $f_y$  = YIELD STRENGTH OF REINFORCEMENT BARS (GRADE 60) = 60,000 P.S.I.  
 MATERIAL USED FOR THIS PROJECT SHALL CONFORM TO IDOT MATERIAL SPECIFICATIONS AS DIRECTED ON THE PLANS AND/OR SPECIAL PROVISIONS. SEE SPECIAL PROVISIONS FOR MORE DETAILS.

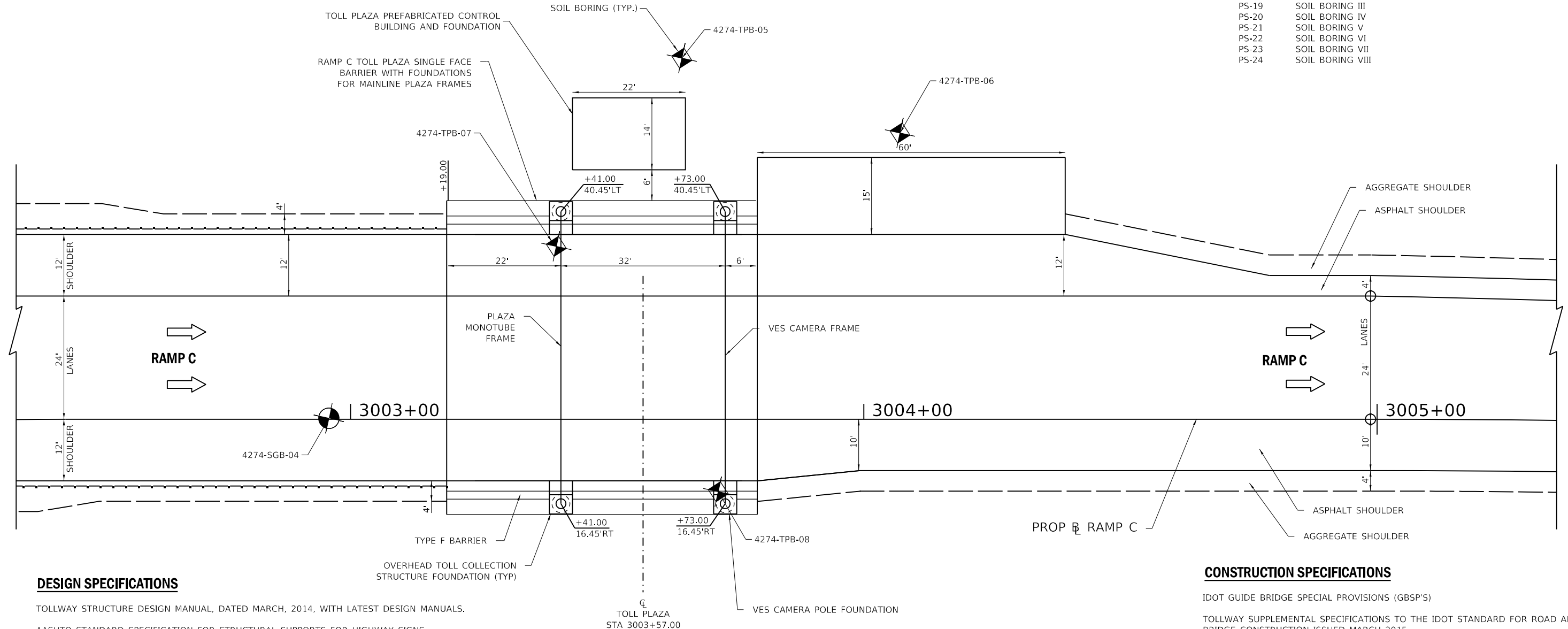
**FOUNDATION**

MINIMUM UNCONFINED COMPRESSIVE STRENGTH,  $Q_u$  FOR ALL LAYERS OF COHESIVE SOILS (CLAYS) SHALL BE 1.25 T.S.F. AT PLAZA FRAMES.

MINIMUM STANDARD PENETRATION TEST VALUE, N, FOR GRANULAR SOILS (SANDS) SHALL BE 10 BLOWS PER FOOT.

**INDEX OF DRAWINGS**

PS-01	RAMP C STRUCTURAL SITE PLAN
PS-02	RAMP D STRUCTURAL SITE PLAN
PS-03	RAMP C PLAZA PAVEMENT
PS-04	RAMP D PLAZA PAVEMENT
PS-05	TOLL PLAZA STRUCTURAL GENERAL NOTES
PS-06	TOLL PLAZA CONTROL BUILDING FOUNDATION DETAILS
PS-07	RAMP C OVERHEAD SIGN STRUCTURE ENTRANCE MONOTUBE AET
PS-08	RAMP C OVERHEAD SIGN STRUCTURE EXIT MONOTUBE AET
PS-09	RAMP C MONOTUBE FRAMING PLAN AND DETAILS
PS-10	TOLL PLAZA C ENTRANCE MONOTUBE FRAMING PLAN AND DETAILS
PS-11	TOLL PLAZA C EXIT MONOTUBE FRAMING PLAN AND DETAILS
PS-12	TOLL PLAZA FOUNDATION FOR TOLL PLAZA RAMP C
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PS-16	TOLL PLAZA MONOTUBE FRAMING DETAILS
PS-17	SOIL BORING I
PS-18	SOIL BORING II
PS-19	SOIL BORING III
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PS-23	SOIL BORING VII
PS-24	SOIL BORING VIII



**DESIGN SPECIFICATIONS**

TOLLWAY STRUCTURE DESIGN MANUAL, DATED MARCH, 2014, WITH LATEST DESIGN MANUALS.  
 AASHTO STANDARD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS, 6TH EDITION WITH 2015 INTERIM REVISIONS.  
 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION DATED FEBRUARY 2014.  
 IDOT BRIDGE MANUAL, JANUARY 2012  
 IDOT SIGN STRUCTURES MANUAL, JUNE 2012.

**CONSTRUCTION SPECIFICATIONS**

IDOT GUIDE BRIDGE SPECIAL PROVISIONS (GBSP'S)  
 TOLLWAY SUPPLEMENTAL SPECIFICATIONS TO THE IDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION ISSUED MARCH 2015.  
 IDOT SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS ADOPTED JANUARY 1, 2015.  
 IDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION ADOPTED JANUARY 1, 2012.  
 SPECIAL PROVISIONS

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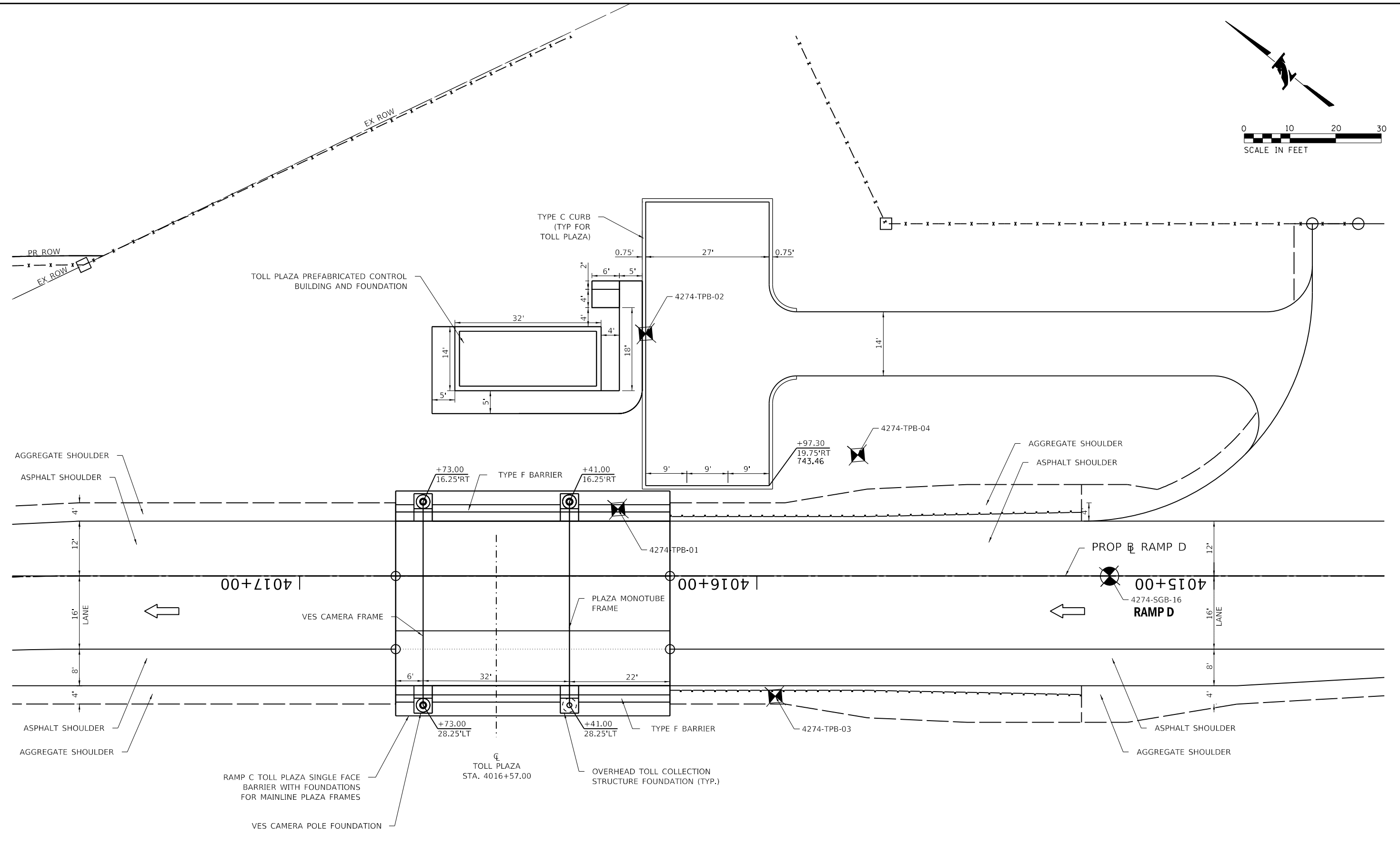
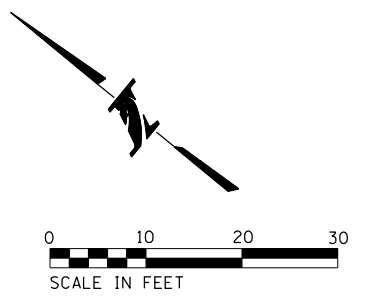
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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 RAMP C TOLL PLAZA  
 STRUCTURAL SITE PLAN

**SHEET NO.**  
 PS-01  
**DRAWING NO.**  
 323 OF 397



PEN TABLE: ILTOLLWAY-TABLES-PLT1.TBL  
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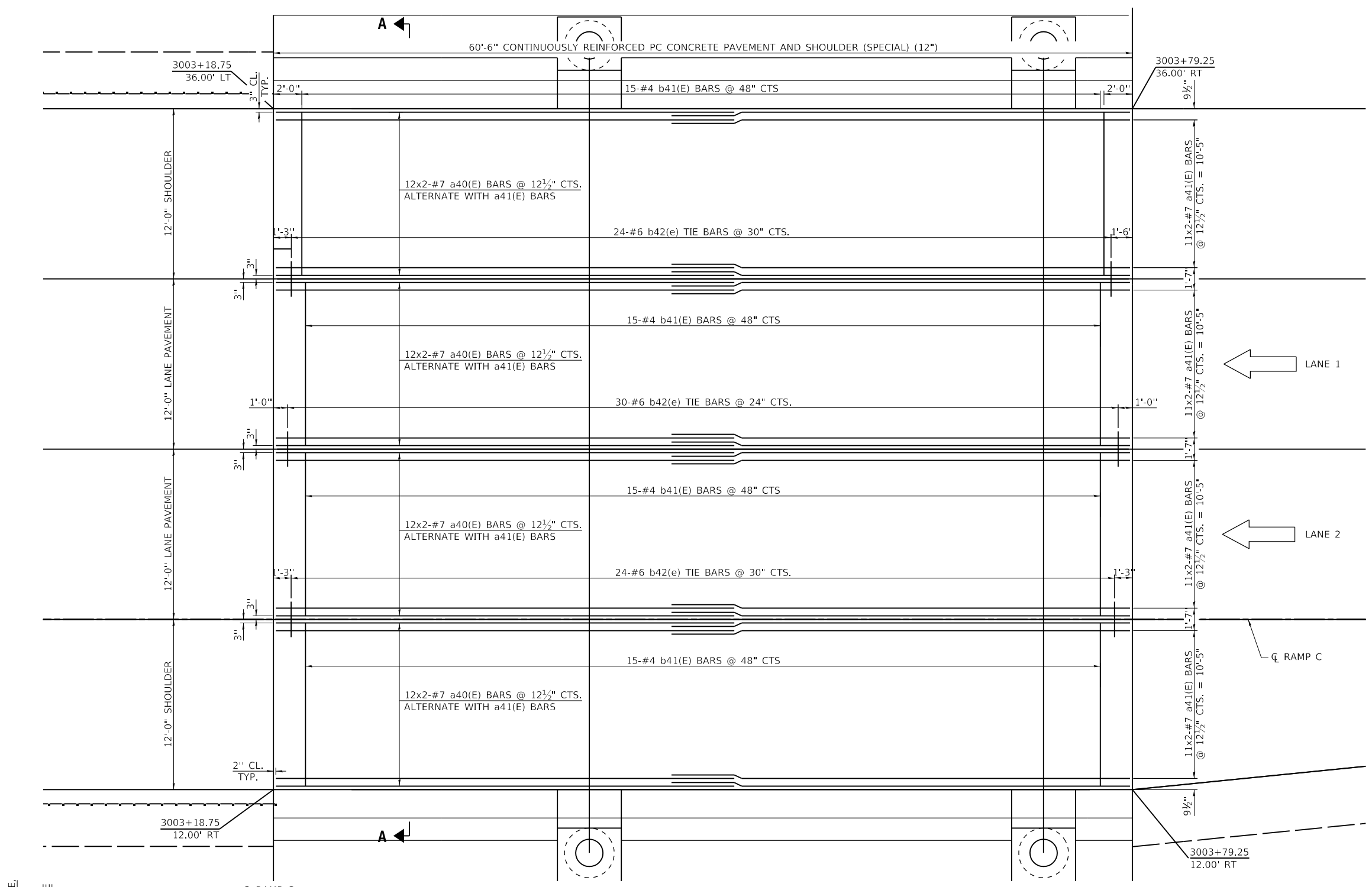

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NO.	DATE	DESCRIPTION

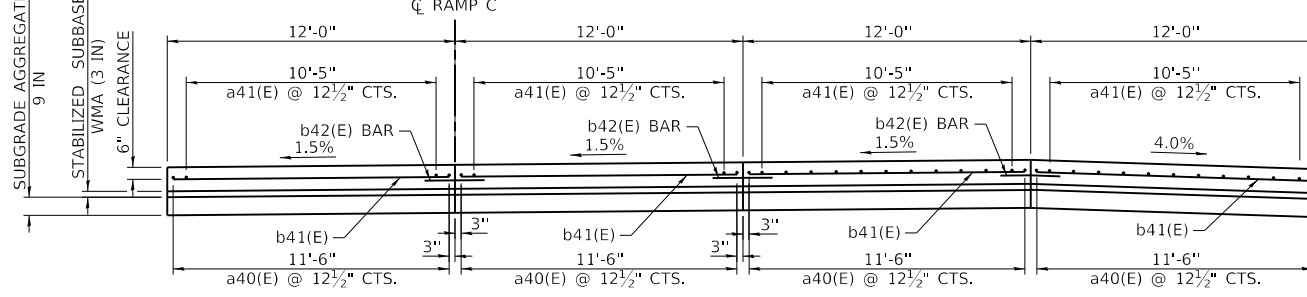
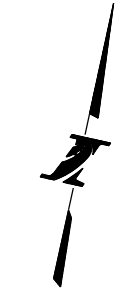
**CONTRACT NO.** I-16-4274  
 RAMP D TOLL PLAZA  
 STRUCTURAL SITE PLAN

**SHEET NO.** PS-02  
**DRAWING NO.** 324 OF 397

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 PLOT DATE: 10/17/2018  
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**MIN. LAP LENGTH**  
 #7 BAR = 4'-5"



**NOTES**

1. BARS NOTED THUS, 3x2 #5 INDICATES 3 LINES OF BARS WITH 2 LENGTHS OF BARS PER LANE.
2. COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BARS SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACE UNLESS OTHERWISE SHOWN.
3. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
4. REINFORCEING STEEL SHALL BE 6" BELOW THE TOP OF PAVEMENT GRADE.
5. SEE SHEET PS-01 FOR PAVEMENT LOCATION.

**BILL OF MATERIAL**

BAR	NO.	SIZE	LENGTH	SHAPE
a40(E)	96	#7	32'-4"	—
a41(E)	88	#7	32'-4"	—
b41(E)	60	#4	11'-6"	—
b42(E)	78	#6	2'-6"	—
ITEM		UNIT	TOTAL	
CONTINUOUSLY REINFORCED PC CONCRETE PAVEMENT AND SHOULDER (SPECIAL) (12") (JT421380)		SQ YD.	107	
PAVEMENT REINFORCEMENT (12") (JT421960)		SQ YD.	107	
PROTECTIVE COAT (50300300)		SQ YD.	107	
* REINFORCEMENT BARS, EPOXY COATED		LBS	12,630	

\* THE QUANTITY FOR REINFORCEMENT BARS, EPOXY COATED IS INCLUDED IN THE PAY ITEM "PAVEMENT REINFORCEMENT" OF THE DEPTH SPECIFIED.

**DRAWN BY** EV **DATE** 10/18/2018  
**CHECKED BY** GJH **DATE** 10/18/2018

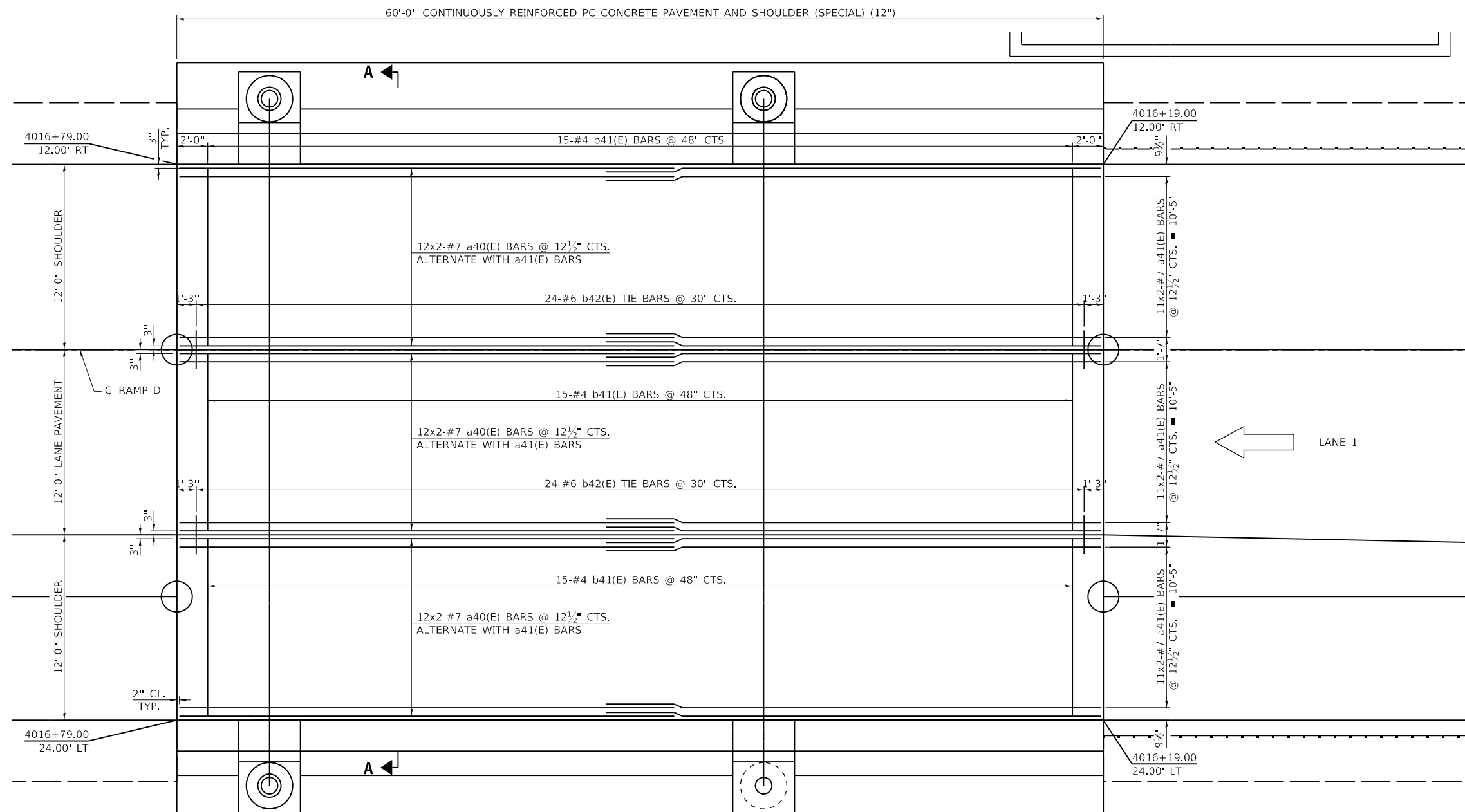
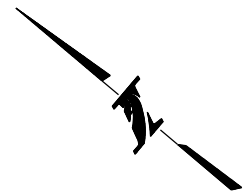
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 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 IL ROUTE 47 AT RAMP C  
 TOLL COLLECTION STRUCTURES  
 PLAZA PAVEMENT

**SHEET NO.** PS-03  
**DRAWING NO.** 325 OF 397



**PLAN**

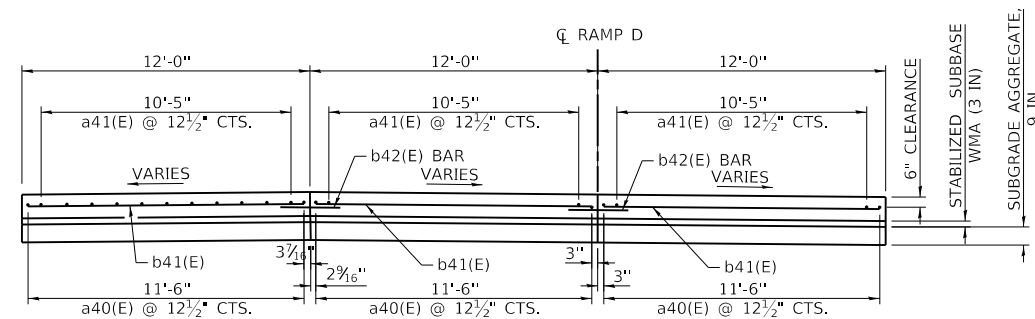
**MIN. LAP LENGTH**

#7 BAR = 4'-5"

**BILL OF MATERIAL**

BAR	NO.	SIZE	LENGTH	SHAPE	
a40(E)	72	#7	32'-1"	—	
a41(E)	66	#7	32'-1"	—	
b41(E)	45	#4	11'-6"	—	
b42(E)	48	#6	2'-6"	—	
ITEM				UNIT	TOTAL
CONTINUOUSLY REINFORCED PC CONCRETE PAVEMENT AND SHOULDER (SPECIAL) (12") (JT421380)			SQ YD.	80	
PAVEMENT REINFORCEMENT (12") (JT421960)			SQ YD.	80	
PROTECTIVE COAT (50300300)			SQ YD.	80	
* REINFORCEMENT BARS, EPOXY COATED			LBS	9,400	

\* THE QUANTITY FOR REINFORCEMENT BARS, EPOXY COATED IS INCLUDED IN THE PAY ITEM "PAVEMENT REINFORCEMENT" OF THE DEPTH SPECIFIED.



**SECTION A-A (RAMP D TYPICAL SECTION)**

**NOTES**

- BARS NOTED THUS, 3x2 #5 INDICATES 3 LINES OF BARS WITH 2 LENGTHS OF BARS PER LANE.
- COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BARS SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACE UNLESS OTHERWISE SHOWN.
- REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
- REINFORCING STEEL SHALL BE 6" BELOW THE TOP OF PAVEMENT GRADE.
- SEE SHEET PS-02 FOR PAVEMENT LOCATION.

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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 IL ROUTE 47 AT RAMP D  
 TOLL COLLECTION STRUCTURES  
 PLAZA PAVEMENT

**SHEET NO.** PS-04  
**DRAWING NO.** 326 OF 397

**GENERAL NOTES**

- SEE THE TOLLWAY STRUCTURE DESIGN MANUAL FOR MINIMUM VERTICAL CLEARANCE.
- AFTER ADJUSTMENTS TO LEVEL FRAME BEAM AND ENSURE ADEQUATE VERTICAL CLEARANCE, TIGHTEN ALL TOP AND LEVELING NUTS AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. THEN PLACE STAINLESS STEEL MESH AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.

**CAST-IN-PLACE CONCRETE**

- ALL CAST-IN-PLACE CONCRETE SUPERSTRUCTURE SHALL BE CLASS SI (f'c = 3,500 PSI AT 14 DAYS) IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
- ALL CAST-IN-PLACE CONCRETE STRUCTURE SHALL BE CLASS DS (f'c = 4,000 PSI AT 14 DAYS) IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
- ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" x 45° CHAMFER, EXCEPT WHERE SHOWN OTHERWISE. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL.

**REINFORCEMENT BARS**

- REINFORCEMENT BARS, INCLUDING EPOXY-COATED REINFORCEMENT BARS, SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 (ASTM A615), GRADE 60, DEFORMED BARS. EPOXY-COATED REINFORCING STEEL SHALL COMPLY WITH ASTM A775.
- REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
- REINFORCEMENT BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION.
- REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.
- COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BARS SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN.

**STRUCTURAL STEEL**

- MATERIAL FOR THE MONOTUBE FRAME SHALL CONFORM TO THE REQUIREMENT OF ASTM A500 GRADE B. OTHER STRUCTURAL STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, UNLESS NOTED OTHERWISE.
- PIPES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A53 GRADE B.
- ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1554 GRADE 55, WITH A MINIMUM TENSILE STRENGTH OF 75,000 PSI. THEY SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 (AASHTO M232). SEE SHEET PS-07 FOR GALVANIZED LENGTH.
- U-BOLTS SHALL BE STAINLESS STEEL AND SHALL CONFORM TO ASTM 193, CLASS 1, GRADE B8 (AISI TYPE 304). WASHERS FOR U-BOLTS SHALL CONFORM TO ASTM A240, TYPE 302. NUTS FOR U-BOLTS SHALL CONFORM TO ASTM A194 (AASHTO M292), GRADE 8F (AISI TYPE 303).
- BOLTS (EXCLUDING ANCHOR BOLTS AND U-BOLTS) SHALL BE HIGH STRENGTH AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325 (AASHTO M164). THEY SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 (AASHTO M232).
- NUTS SHALL CONFORM TO ASTM A563 GRADE DH AND GALVANIZED ACCORDING TO ASTM A153 (AASHTO M232).
- HARDENED STEEL WASHERS SHALL CONFORM TO ASTM F436 AND GALVANIZED ACCORDING TO ASTM A153 (AASHTO M232).
- TUBES FOR MONOTUBE FRAME, PIPES, STRUCTURAL STEEL SHAPES AND PLATES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION.
- THE MONOTUBE FRAME BEAM, COLUMNS, BASE PLATE MATERIAL, AND SPLICES ARE CONSIDERED TENSION MEMBERS AND SHALL CONFORM TO THE IMPACT TESTING REQUIREMENT, ZONE 2.
- WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS USING E70-XX ELECTRODES, AND SHALL CONFORM TO AWS D1.1-08 "STRUCTURAL WELDING CODE - STEEL". ALL WELDS ON ARCHITECTURAL EXPOSED STEEL (AES) MEMBERS ARE TO BE GROUND SMOOTH AND FILLED.

**CONSTRUCTION**

CONTRACTOR SHALL COORDINATE WORK WITH THE CIVIL AND ELECTRICAL DRAWINGS AND VERIFY THE LOCATION OF ANCHOR BOLTS, PLATES, CAST-IN-PLACE ANGLES, SIZE AND LOCATION OF OPENINGS, EMBEDMENTS AND OTHER MISCELLANEOUS ITEMS BEFORE PLACEMENT OF CONCRETE. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING AND PROPOSED UTILITIES AND ELECTRICAL CONDUIT AND CABLE PRIOR TO DRILLING FOUNDATION.

CONTRACTOR SHALL NOT SCALE DIMENSIONS FROM THE CONTRACT PLANS FOR CONSTRUCTION PURPOSES. SCALES SHOWN ARE FOR INFORMATION ONLY.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO STARTING CONSTRUCTION, CONTACT J.U.L.I.E., 800-892-0123.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL FIBER OPTIC UTILITIES PRIOR TO STARTING CONSTRUCTION. THE CONTRACTOR SHALL INITIATE THE LOCATION PROCESS FOR THE FIBER OPTIC CABLE BY COMPLETING A "REQUEST TOLLWAY UTILITIES LOCATE" FORM FILLED IN ONLINE AT THE TOLLWAY WEBSITE UNDER "DOING BUSINESS" AT LEAST FIVE (5) BUSINESS DAYS PRIOR TO STARTING ANY UNDERGROUND OPERATIONS, EXCAVATIONS OR DIGGING OF ANY TYPE IN THE GENERAL AREA OF THE FIBER OPTIC CABLE.

THE CONTRACTOR SHALL USE CARE WHEN EXCAVATING AROUND EXISTING FOUNDATIONS. ANY DAMAGE TO THE EXISTING STRUCTURE AND/OR SUPPORTING FOUNDATION SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

UPON COMPLETION OF EACH STRUCTURE, THE CONTRACTOR SHALL MEASURE THE RESULTING HORIZONTAL AND VERTICAL CLEARANCES AND SUBMIT THEM TO THE CM FOR REVIEW AND INCLUSION IN THE AS BUILT PLANS (RECORD DRAWINGS).

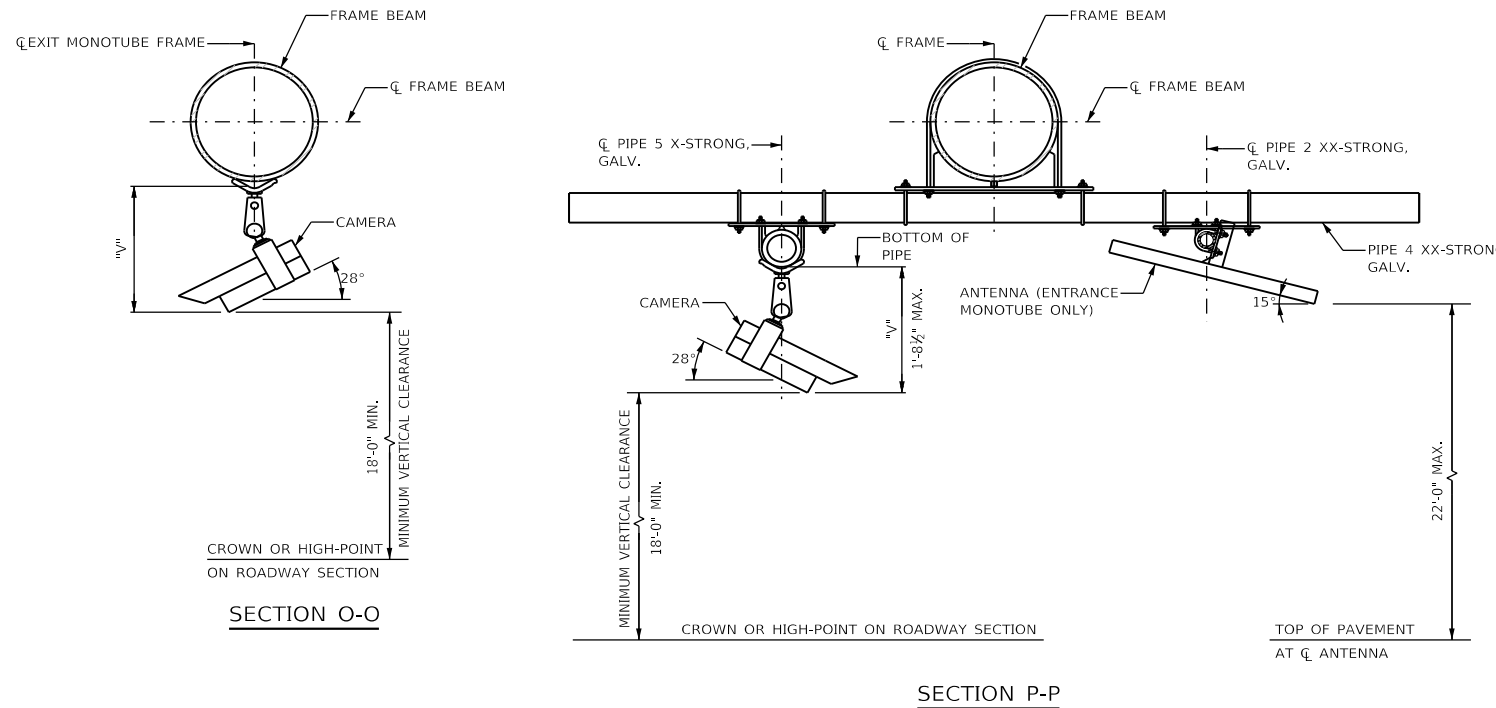
**TOTAL BILL OF MATERIAL**

PAY ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	RECORD QUANTITY
50300225	CONCRETE STRUCTURES	CU YD	124.8	
50300300	PROTECTIVE COAT	SQ YD	403	
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	38,516	
J5733710	OVERHEAD SIGN STRUCTURE, MAINLINE ENTRANCE MONOTUBE TYPE (STEEL)	FOOT	57	
J5733750	OVERHEAD SIGN STRUCTURE, MAINLINE EXIT MONOTUBE TYPE (STEEL)	FOOT	57	
J5733610	OVERHEAD SIGN STRUCTURE, AET RAMP ENTRANCE MONOTUBE TYPE (STEEL)	FOOT	45	
J5733630	OVERHEAD SIGN STRUCTURE, AET RAMP EXIT MONOTUBE TYPE (STEEL)	FOOT	45	
J5734E10	FOUNDATION FOR OVERHEAD SIGN STRUCTURE, MAINLINE MONOTUBE TYPE	CU YD	61	
J5734F10	FOUNDATION FOR OVERHEAD SIGN STRUCTURE, RAMP MONOTUBE TYPE	CU YD	41	
* JT131651	CONTROL BUILDING FOUNDATION, LOCATION 1	L SUM	1	
* JT131652	CONTROL BUILDING FOUNDATION, LOCATION 2	L SUM	1	
* JT421380	CONTINUOUSLY REINFORCED P.C. CONCRETE PAVEMENT AND SHOULDER (SPECIAL)(12 IN)	SQ YD	187	
* JT421960	PAVEMENT REINFORCEMENT (12 IN.)	SQ YD	187	

\* INDICATES PAY ITEM GOVERNED BY A SPECIAL PROVISION

**ABBREVIATIONS**

B.F.	BACK FACE	N.S.	NEAR SIDE
BK/	BACK OF	N.	NORTH
BOT.	BOTTOM	NO.	NUMBER
B/	BOTTOM OF	O.C.	ON CENTER
		O.D.	OUTSIDE DIAMETER
		O.F.	OUTSIDE FACE
CTR.	CENTER	R OR PL.	PLATE
CTS.	CENTERS	PT.	POINT
CL.	CENTERLINE	LB.	POUND
COL.	COLUMN	PSF	POUNDS PER SQUARE FOOT
CONST.	CONSTRUCTION	PSI	POUNDS PER SQUARE INCH
C.J.	CONSTRUCTION JOINT	PCI	POUNDS PER CUBIC INCH
CU FT	CUBIC FEET	PLF	POUNDS PER LINEAR FOOT
CU YD	CUBIC YARD	P.J.F.	PREFORMED JOINT FILLER
		P.G.L.	PROFILE GRADE LINE
		PROP.	PROPOSED
DIA. OR Ø	DIAMETER	R	RADIUS
DIM.	DIMENSION	REV.	REVISION
DWL.	DOWEL	SEC.	SECTION
DWG.	DRAWING	SHT.	SHEET
EA.	EACH	SHLDR.	SHOULDER
E.F.	EACH FACE	SIM.	SIMILAR
E.	EAST	S.	SOUTH
ELEV. OR EL.	ELEVATION	SPA.	SPACES, SPACING
EQ.	EQUAL	SQ.	SQUARE
EX	EXISTING	STD.	STANDARD
		STA.	STATION
F.S.	FAR SIDE	SQ FT	SQUARE FEET
FT.	FEET, FOOT	SQ IN	SQUARE INCH
F.F.	FRONT FACE	SQ YD	SQUARE YARD
		SYM.	SYMMETRICAL
H.P.	HIGH POINT	TEMP.	TEMPORARY
		THK.	THICK, THICKNESS
IN.	INCH	T&B	TOP AND BOTTOM
I.D.	INSIDE DIAMETER	T/	TOP OF
I.F.	INSIDE FACE	T/CONC.	TOP OF CONCRETE
		T/FDN.	TOP OF FOUNDATION
JT.	JOINT	T/FTG.	TOP OF FOOTING
		TYP.	TYPICAL
K	KIP	U.N.O.	UNLESS NOTED OTHERWISE
KSF	KIPS PER SQUARE FOOT	W.	WEST
KSI	KIPS PER SQUARE INCH	W/	WITH
L.F.	LINEAR FOOT		
L.L.	LIVE LOAD		
L.P.	LOW POINT		
L.S.	LUMP SUM		
MAX.	MAXIMUM		
MIN.	MINIMUM		



**NOTES:**

- VERIFY DIMENSION "V" WITH CAMERA MANUFACTURER.
- FOR LOCATION OF SECTION P-P SEE SHEETS PS-09.

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<b>CHECKED BY</b>	GJH	<b>DATE</b>	10/18/2018

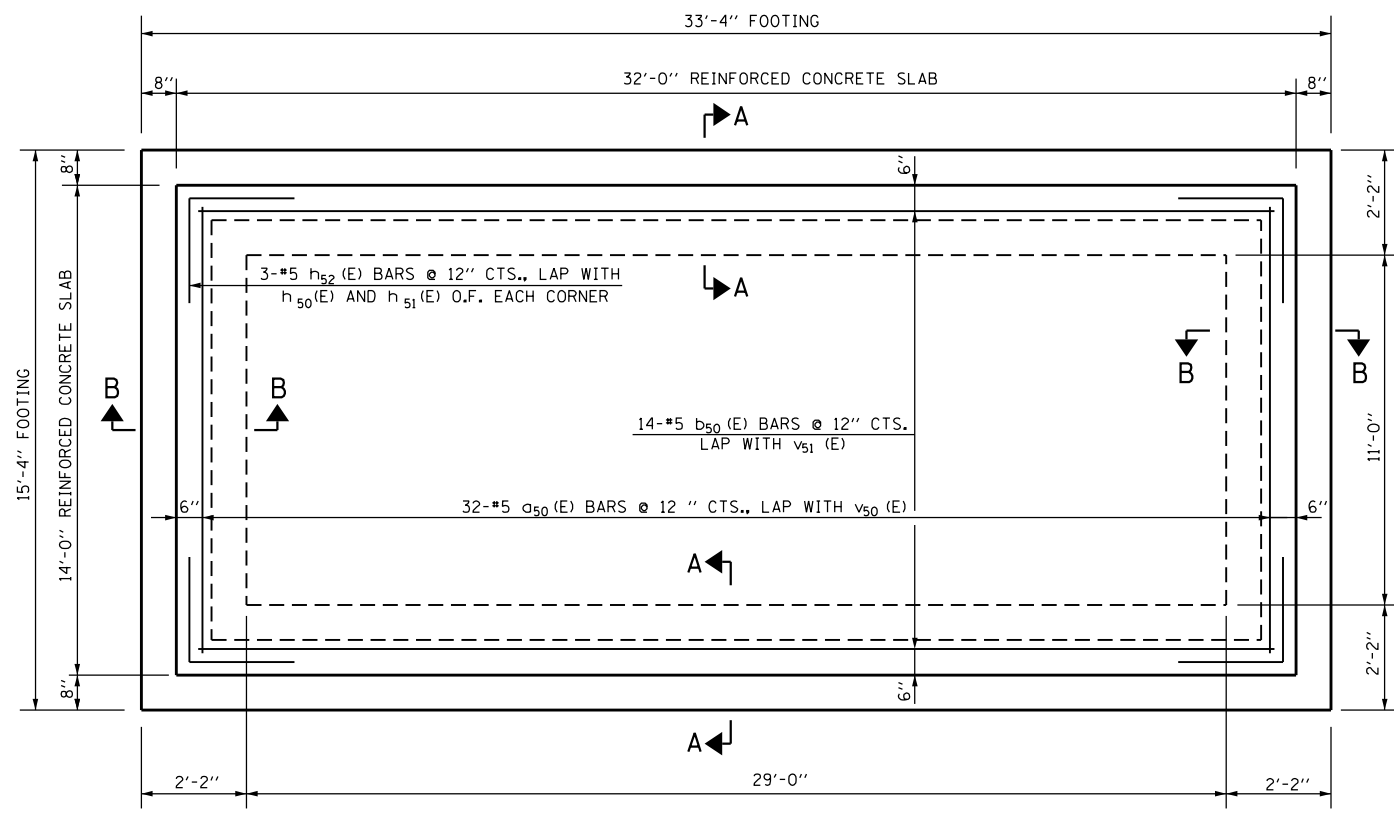

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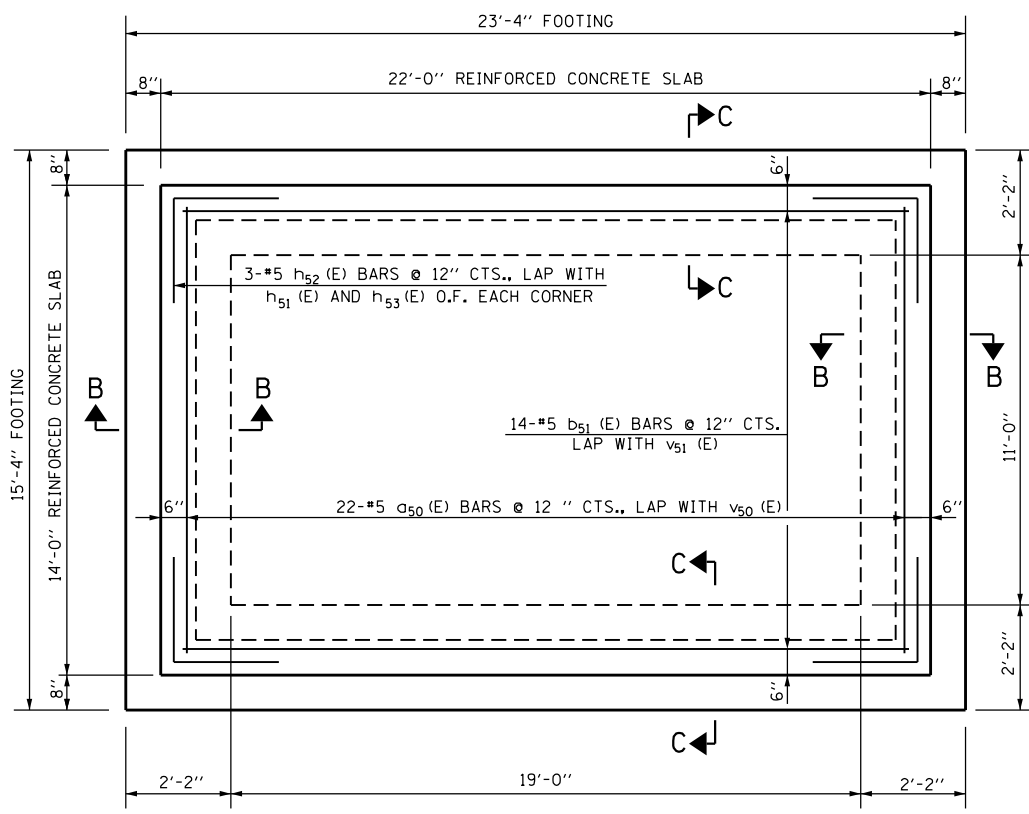
**CONTRACT NO. I-16-4274**  
 TOLL PLAZA  
 STRUCTURAL GENERAL NOTES  
 RAMP C & RAMP D

**SHEET NO.**  
 PS-05  
**DRAWING NO.**  
 327 OF 397



CONTROL BUILDING FOUNDATION PLAN, 14' x 32'

(LOCATION 1)



CONTROL BUILDING FOUNDATION PLAN, 14' x 22'

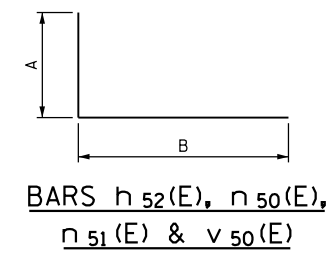
(LOCATION 2)

NOTES:

1. PREFABRICATED BUILDING TO BE SUPPORTED ON SPREAD FOOTINGS. ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.
2. ALL FOOTING EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY THE ENGINEER PRIOR TO PLACING CONCRETE. EXCAVATIONS SHALL BE FREE OF WATER AT ALL TIMES. REPLACE SOFT OR WEAKENED SOIL WITH COMPACTED CA-6.
3. NO ENGINEERED FILL SHALL BE PLACED UNTIL EXCAVATION BOTTOMS HAVE BEEN INSPECTED AND APPROVED BY THE ENGINEER.
4. BACKFILLING:
  - A. NO FILL OR BACKFILL SHALL BE SETTLED BY THE USE OF WATER.
  - B. BOTH SIDES OF THE FOUNDATION WALL SHALL BE BACKFILLED SIMULTANEOUSLY SO AS TO PREVENT OVERTURNING OR LATERAL MOVEMENT OF THE WALLS.
5. FOR ELECTRICAL CONDUIT STUB UPS AND OTHER REQUIREMENTS FOR THESE STRUCTURES, SEE PLAZA ELECTRICAL DRAWINGS.
6. PROTECTIVE COAT SHALL BE APPLIED TO THE TOP OF THE CONCRETE SLABS AND ON THE SIDE FACES FOR A DEPTH OF 9" FROM THE TOP OF SLAB.

BILL OF MATERIAL

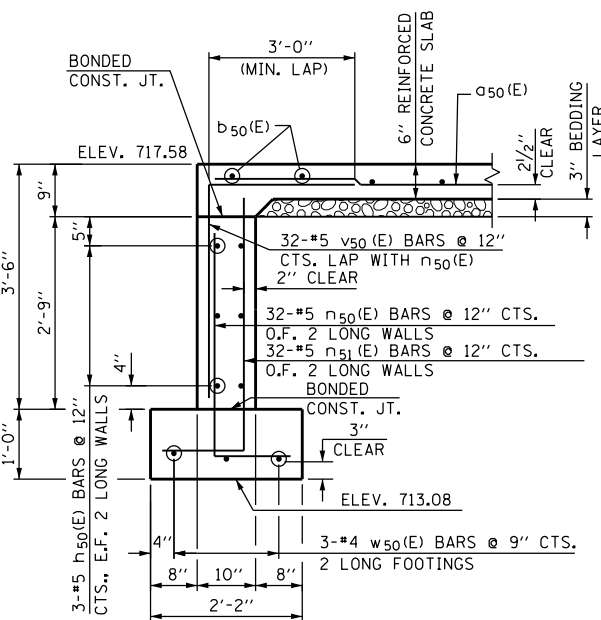
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a <sub>50</sub> (E)	54	#5	13'-7"	—
b <sub>50</sub> (E)	14	#5	31'-7"	—
b <sub>51</sub> (E)	14	#5	21'-7"	—
h <sub>50</sub> (E)	12	#5	31'-7"	—
h <sub>51</sub> (E)	24	#5	13'-7"	—
h <sub>52</sub> (E)	24	#5	6'-0"	└
h <sub>53</sub> (E)	12	#5	21'-7"	—
n <sub>50</sub> (E)	164	#5	4'-5"	└
n <sub>51</sub> (E)	164	#4	5'-0"	└
v <sub>50</sub> (E)	164	#5	5'-9"	└
w <sub>50</sub> (E)	6	#4	33'-0"	—
w <sub>51</sub> (E)	12	#4	15'-0"	—
w <sub>52</sub> (E)	6	#4	23'-0"	—



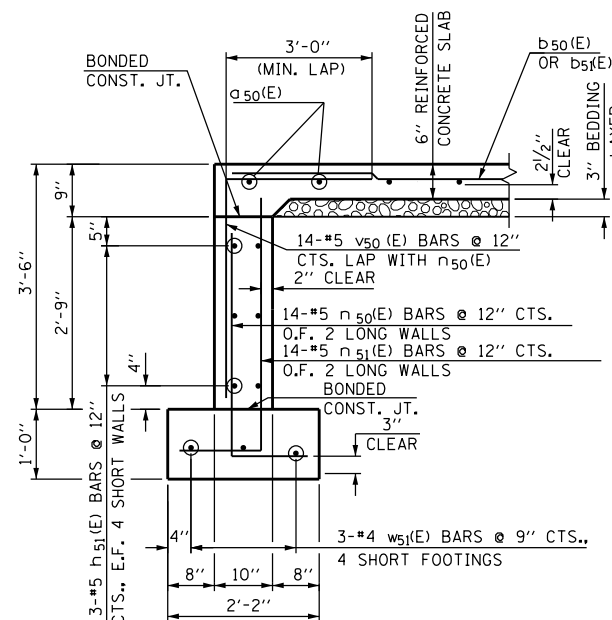
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VARIABLE DIMENSIONS

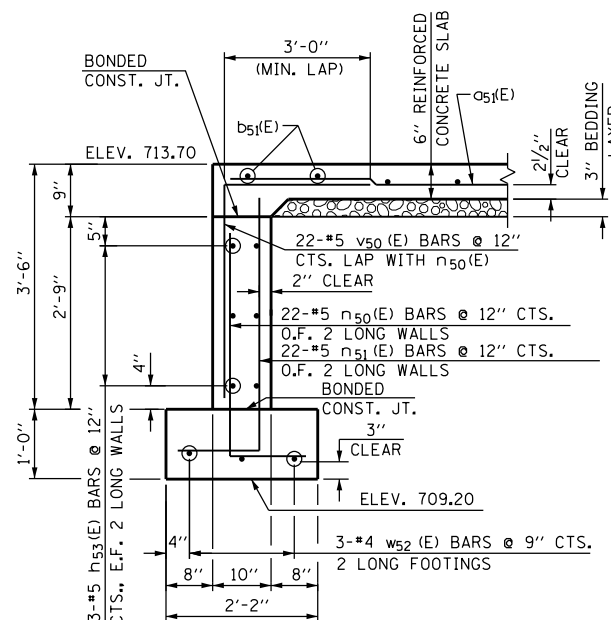
BAR	A	B
h <sub>52</sub> (E)	3'-0"	3'-0"
n <sub>50</sub> (E)	1'-2"	3'-3"
n <sub>51</sub> (E)	1'-2"	3'-10"
v <sub>50</sub> (E)	3'-0"	3'-2"



SECTION A-A



SECTION B-B



SECTION C-C

PAY ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
* JT131651	CONTROL BUILDING FOUNDATION, LOCATION 1	L SUM	1
* JT131652	CONTROL BUILDING FOUNDATION, LOCATION 2	L SUM	1
** ---	CONCRETE STRUCTURES	CU YD	41.4
** ---	PROTECTIVE COAT	SQ YD	98
** ---	REINFORCEMENT BARS, EPOXY COATED	POUND	5,710
** ---	BEDDING LAYER	CU YD	12
** ---	STRUCTURE EXCAVATION	CU YD	162

\* INDICATES PAY ITEM GOVERNED BY A SPECIAL PROVISION.  
 \*\* QUANTITIES SHOWN FOR INFORMATION ONLY. PAYMENT FOR CONCRETE STRUCTURES, REINFORCEMENT BARS EPOXY COATED, PROTECTIVE COAT AND BEDDING LAYER IS INCLUDED WITH PAYMENT FOR CONTROL BUILDING FOUNDATION LOCATION 1 AND 2.

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DRAWN BY EV DATE 10/18/2018  
 CHECKED BY GJH DATE 10/18/2018

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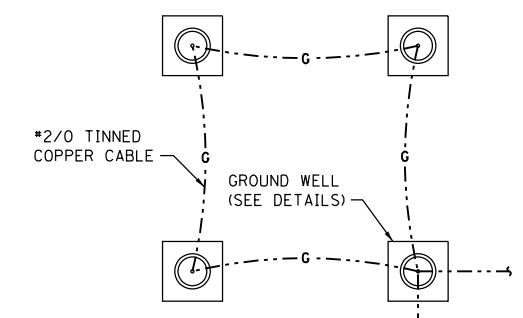
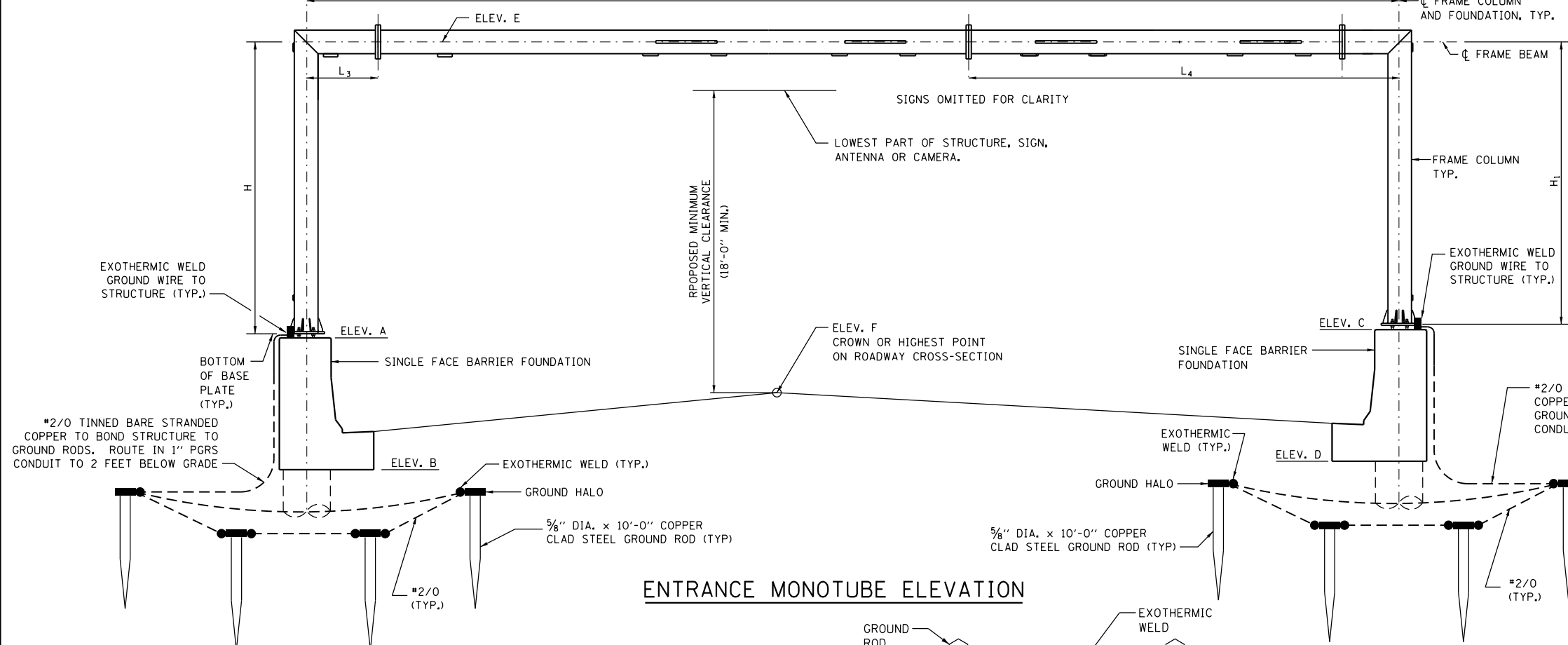
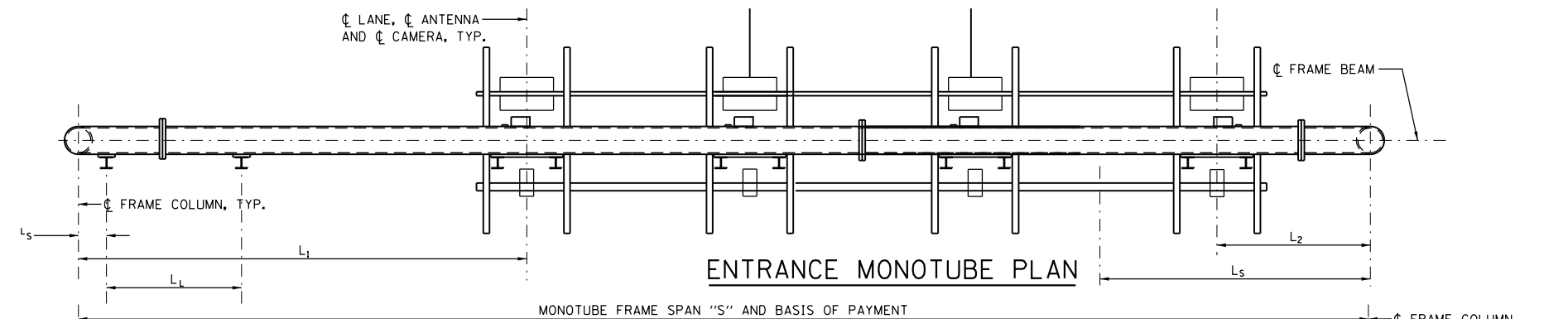
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NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
 TOLL PLAZA  
 CONTROL BUILDING  
 FOUNDATION DETAILS

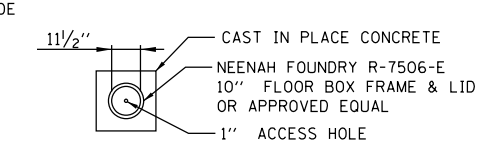
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 DRAWING NO. 328 OF 397

**GENERAL NOTES:**

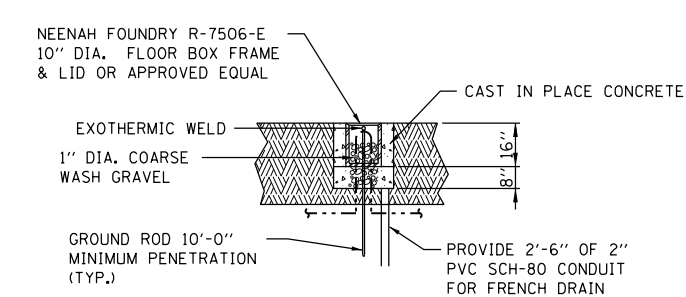
1. INSTALL MARKER TAPE DIRECTLY ABOVE GROUNDING ELECTRODE CONDUCTORS.
2. GROUND RODS SHALL NOT BE ROUTED THROUGH FOUNDATIONS.
3. GROUND RODS SHALL BE INSTALLED IN GROUND WELLS IN FINISHED GRADE UNLESS INSTALLED UNDER SHOULDERS OR PAVEMENT.
4. ALL GROUNDING DIAGRAMS ARE SCHEMATIC ONLY.
5. AT LEAST AN 8 INCH MINIMUM BENDING RADIUS SHALL BE MAINTAINED ON ALL GROUNDING ELECTRODE CONDUCTORS. THE ANGLE OF ANY BENDING SHALL NOT BE LESS THAN 90 DEGREE.
6. THE QUANTITY OF GROUNDING ELECTRODE CONDUCTORS CONNECTED TO A GROUND ROD ELECTRODE SHALL BE LIMITED TO THREE.
7. WHENEVER POSSIBLE, GROUND ROD ELECTRODES SHALL BE INSTALLED NO CLOSER THAN 11' FROM A FOUNDATION
8. THE COST OF ALL MATERIALS, EXOTHERMIC WELDING, GROUND WELL, GROUND RODS AND ALL OTHER ITEMS TO COMPLETE THE GROUNDING ELECTRODE SYSTEM SHALL BE INCLUDED IN THE PAY ITEMS FOR EACH FOUNDATION TYPE.



**GROUND HALO DETAIL**  
(NOT TO SCALE)

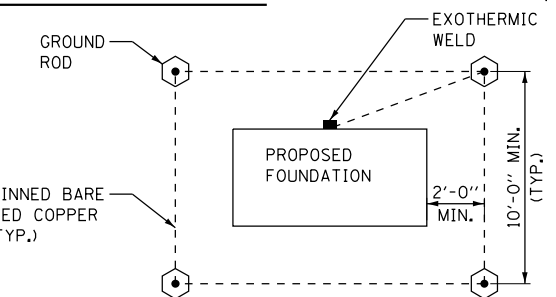


**GROUND WELL PLAN DETAIL**  
(NOT TO SCALE, NOTE 1)



**GROUND WELL ELEVATION DETAIL**  
(NOT TO SCALE, NOTE 1)

**ENTRANCE MONOTUBE ELEVATION**



**GROUNDING SCHEMATIC**  
(NOT TO SCALE)

TOTAL BILL OF MATERIAL			
PAY ITEM	DESCRIPTION	UNIT	TOTAL
50300225	CONCRETE STRUCTURES	CU YD	68.4
50300300	PROTECTIVE COAT	SO YD	98
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	14,636
J5733710	OVERHEAD SIGN STRUCTURE, MAINLINE ENTRANCE MONOTUBE TYPE (STEEL)	FOOT	57
J5734E10	FOUNDATION FOR OVERHEAD SIGN STRUCTURE, MAINLINE MONOTUBE TYPE	CU YD	30.6

**SUMMARY**

STRUCTURE NUMBER	STATION	MONOTUBE FRAME TYPE	SPAN "S"	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E	ELEV. F	PROPOSED MINIMUM VERTICAL CLEARANCE	SHEET 2 OF STANDARD F13							SHEETS 6 AND 7 OF STANDARD F13		SIGN AREA (SQ FT)	FOUNDATION FOR OVERHEAD SIGN STRUCTURE		SINGLE FACE BARRIER CONCRETE STRUCTURE (CU YD)	REINFORCEMENT BARS, EPOXY COATED (POUND)	PROTECTIVE COAT (SQ YD)
											Ls	Ll	L1	L2	L3	L4	H	H1	"C"		CLASS SI CONCRETE (CU YD)	CLASS DS CONCRETE (CU YD)			
EW109.40M,EB(R)	3003+41	I	56'-11"	743.31	736.48	742.94	736.11	763.00	740.47	18'-00"	2'-4"	4'-2"	10'-3"	4'-0"	25'-9"	28'-5 1/2"	19'-5 1/2"	19'-10"	1	9.2	21.4	68.4	14636	98	
<b>TOTAL</b>																					9.2	21.4	68.4	14636	98

PEN TABLE: ILLTOLLWAY-TABLES-PL01.TBL  
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**DRAWN BY** EV      **DATE** 10/18/2018  
**CHECKED BY** GJH      **DATE** 10/18/2018

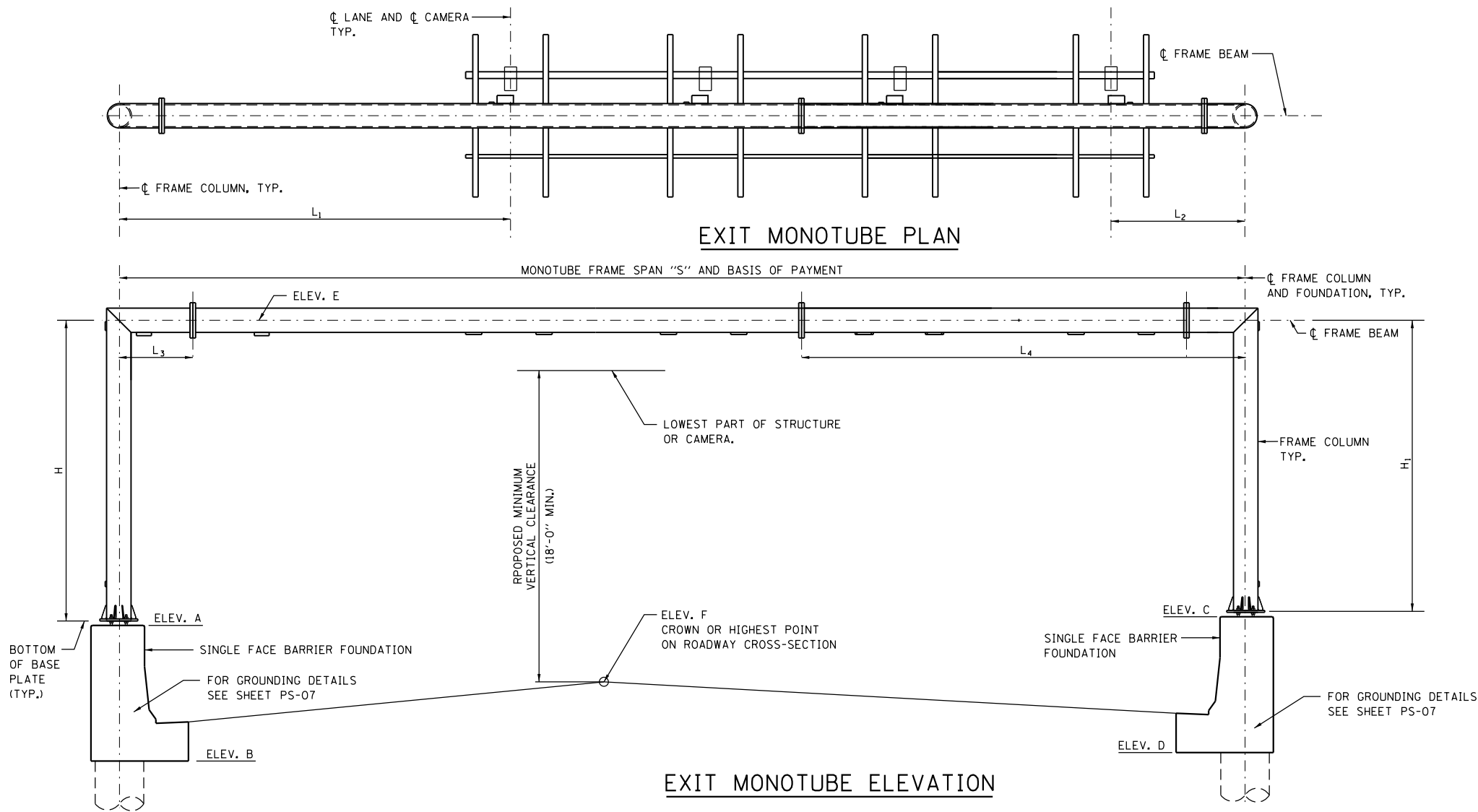
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 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 OVERHEAD SIGN STRUCTURE  
 ENTRANCE MONOTUBE  
 SUMMARY RAMP C

**SHEET NO.** PS-07  
**DRAWING NO.** 329 OF 397



**SUMMARY**

STRUCTURE NUMBER	STATION	MONOTUBE FRAME TYPE	SPAN "S"	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E	ELEV. F	PROPOSED MINIMUM VERTICAL CLEARANCE	SHEET 2 OF STANDARD F13						SHEETS 6 AND 7 OF STANDARD F13	SIGN AREA (SQ FT)	SIGN LENGTH	FOUNDATION FOR OVERHEAD SIGN STRUCTURE		SINGLE FACE BARRIER CONCRETE STRUCTURES (CU YD)	REINFORCEMENT BARS, EPOXY COATED (POUND)	PROTECTIVE COAT (SQ YD)	
											L5	L1	L2	L3	L4	H				H1	"C"				CLASS S1 CONCRETE (CU YD)
EW109.40M,EB(R)	3003+73	I	56'-11"	742.72	735.89	742.35	735.52	761.20	739.88	18'-0"		10'-5 1/2"	10'-5 1/2"	4'-0"	28'-5 1/2"	18'-3"	18'-7 1/2"	1	0	0	9.2	21.4	-	6620	12
<b>TOTAL</b>																			9.2	21.4	-	6620	12		

**TOTAL BILL OF MATERIAL**

PAY ITEM	DESCRIPTION	UNIT	TOTAL
50300225	CONCRETE STRUCTURES	CU YD	-
50300300	PROTECTIVE COAT	SO YD	12
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	6,620
J5733750	OVERHEAD SIGN STRUCTURE, MAINLINE EXIT MONOTUBE TYPE (STEEL)	FOOT	57
J5734E10	FOUNDATION FOR OVERHEAD SIGN STRUCTURE, MAINLINE MONOTUBE TYPE	CU YD	30.6

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 FILE NAME: ...N4274-shht-plans-08.dgn

**DRAWN BY** EV      **DATE** 10/18/2018  
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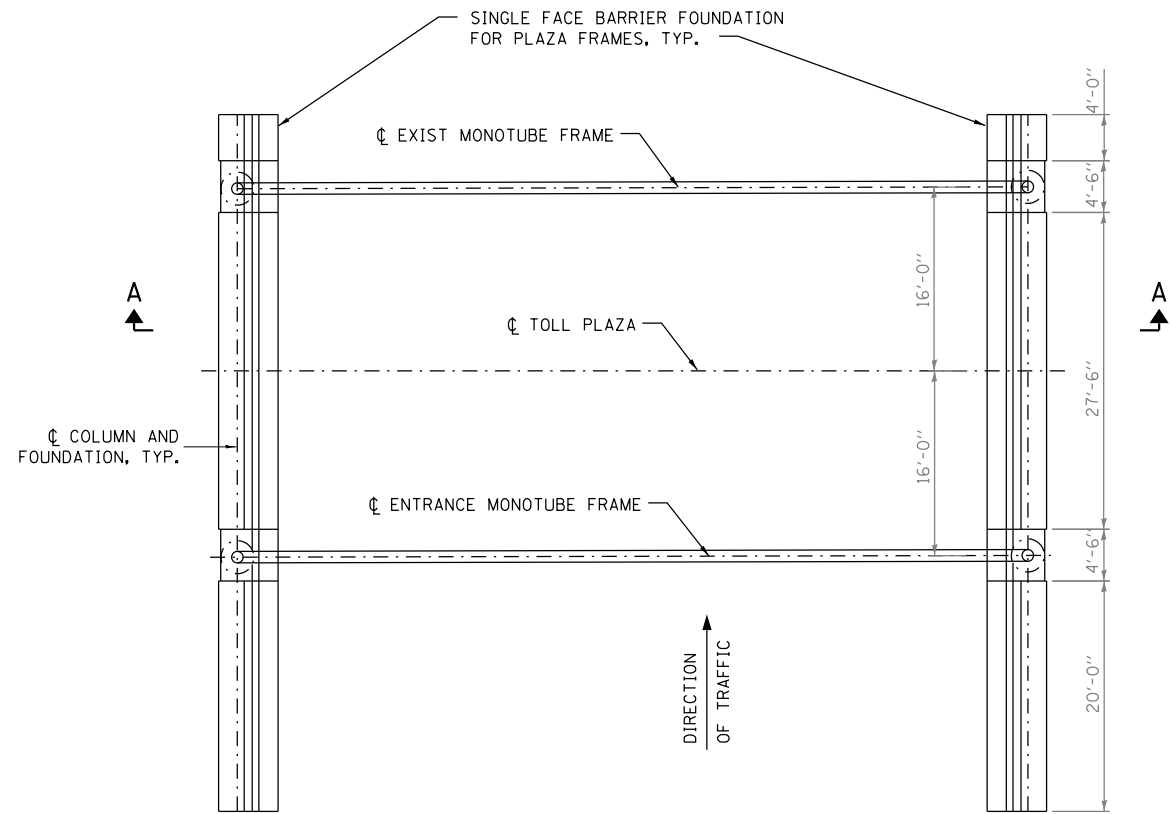

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REVISIONS		
NO.	DATE	DESCRIPTION

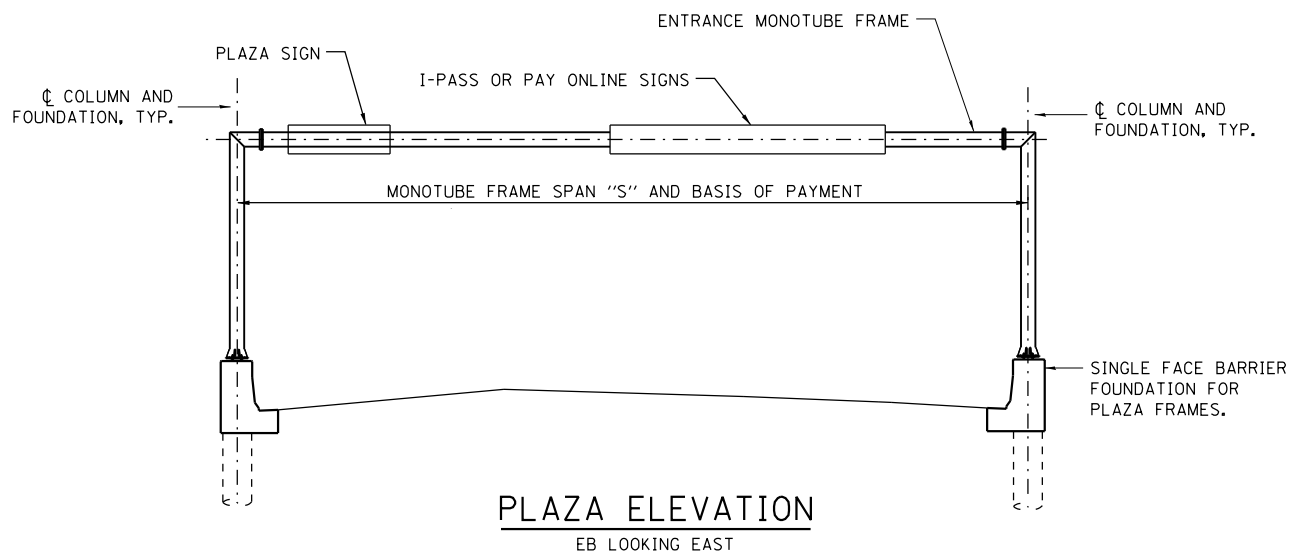
**CONTRACT NO. I-16-4274**  
 OVERHEAD SIGN STRUCTURE  
 EXIT MONOTUBE  
 SUMMARY RAMP C

**SHEET NO.**  
 PS-08  
**DRAWING NO.**  
 330 OF 397

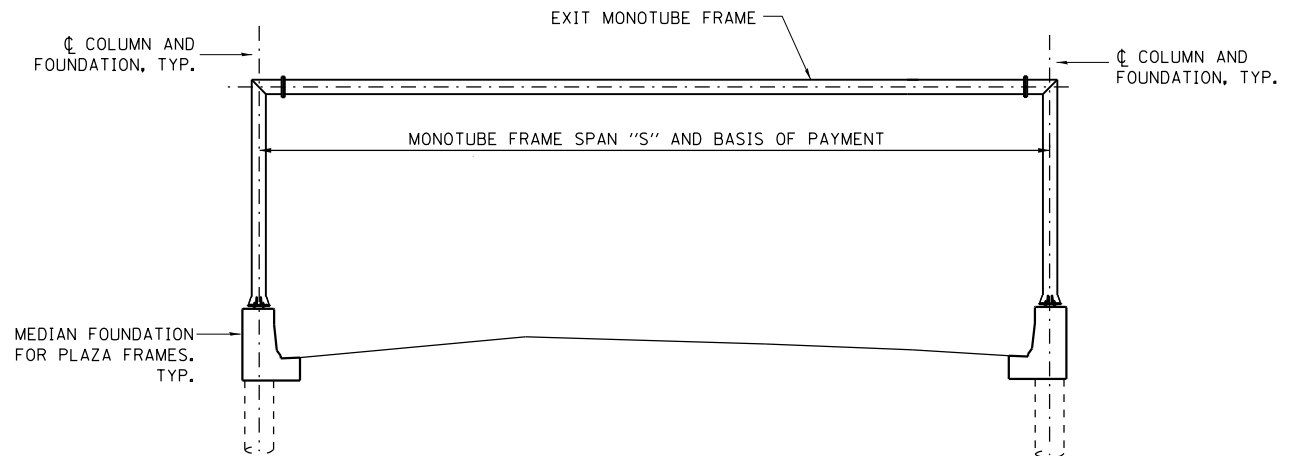




**TOLL PLAZA PLAN**



**PLAZA ELEVATION**  
EB LOOKING EAST



**SECTION A-A**

**NOTES**

1. SEE PLANS FOR SIGN SIZE AND LOCATION.
2. MAXIMUM PLAZA SIGN AREA IS 108 SQ. FT.  
MAXIMUM PLAZA SIGN LENGTH IS 36 FT.

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 USER NAME: jg  
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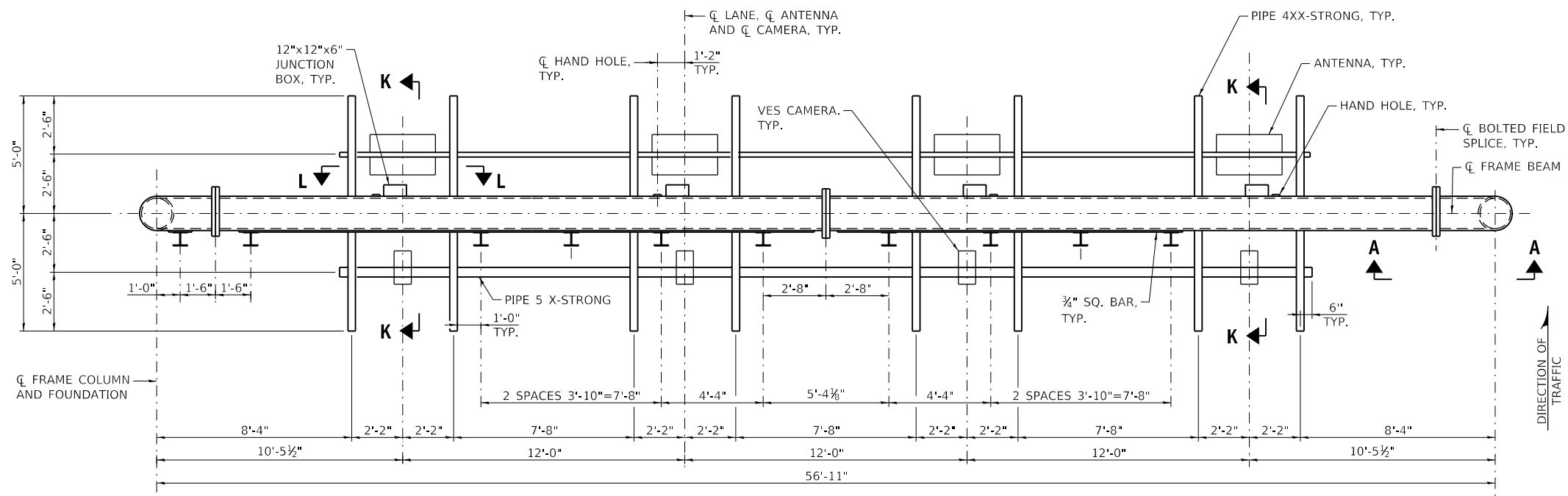


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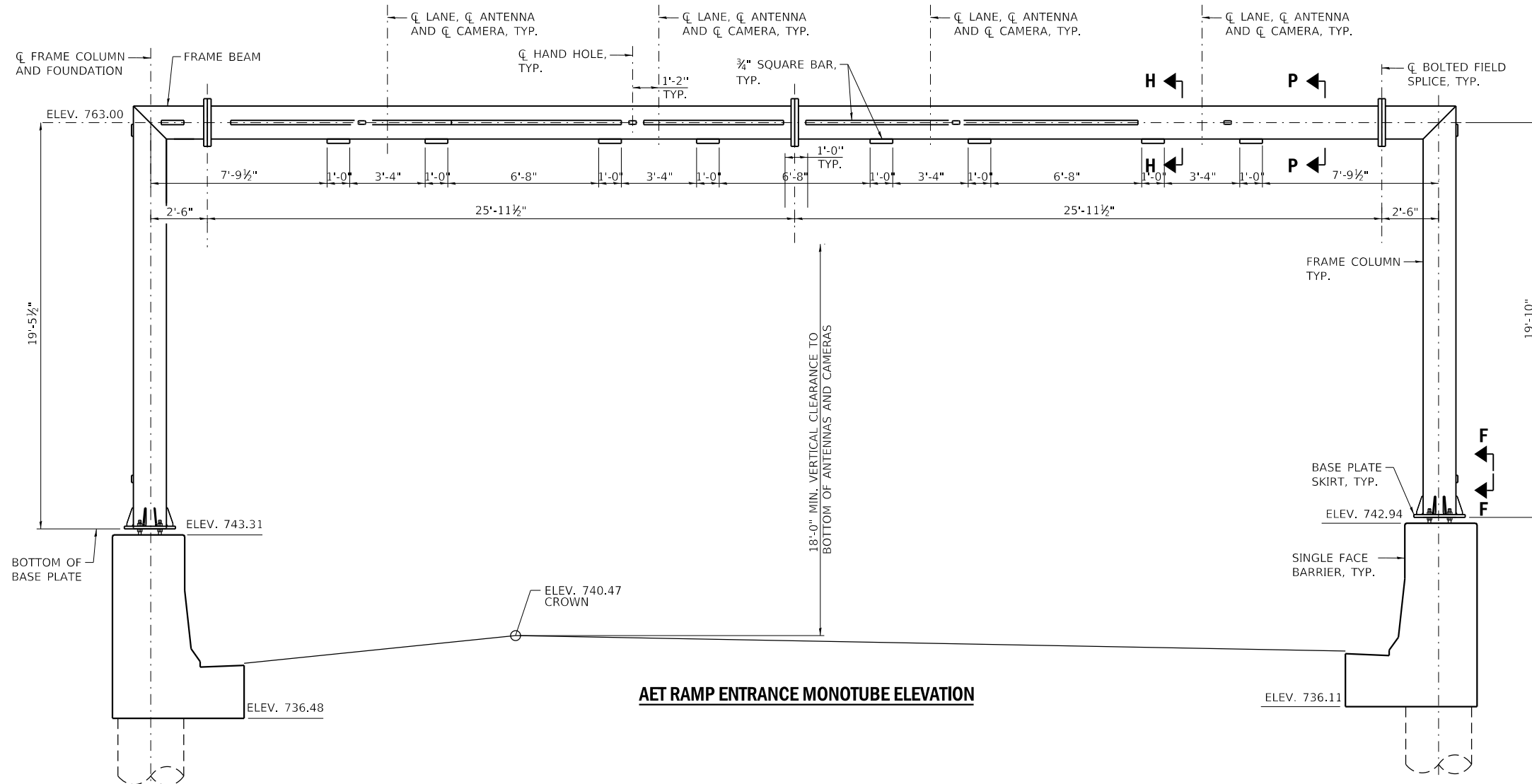
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 RAMP C TOLL PLAZA  
 MONOTUBE  
 FRAMING PLAN AND DETAILS

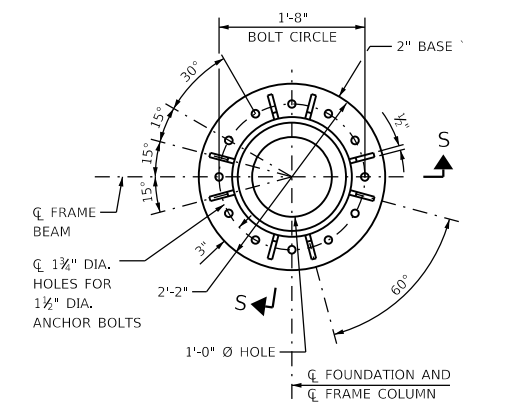
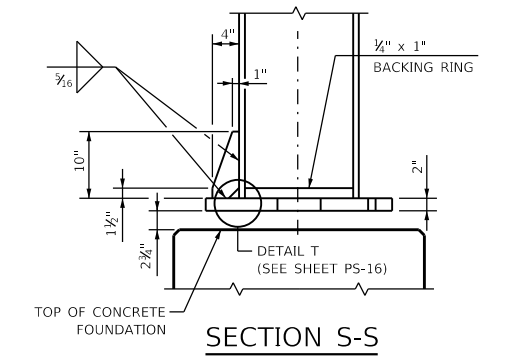
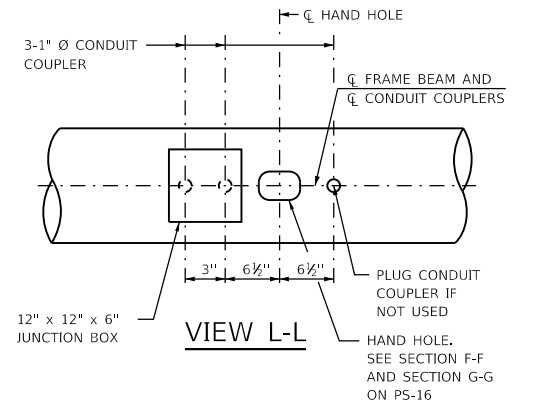
**SHEET NO.**  
 PS-09  
**DRAWING NO.**  
 331 OF 397



**AET RAMP ENTRANCE MONOTUBE PLAN**



**AET RAMP ENTRANCE MONOTUBE ELEVATION**



**ENTRANCE MONOTUBE FRAME TABLE**


SPAN	FRAME COLUMN	FRAME BEAM	CAMBER
56'-11"	HSS 16x0.500	HSS 16x0.500	2 3/4"

- NOTES:**
1. FOR FOUNDATIONS FOR MONOTUBE SEE SHEET PS-12.
  2. FOR SECTION P-P SEE SHEET PS-05.
  3. FOR SECTIONS A-A, H-H, K-K, HAND HOLE AND BASE PLATE SKIRT DETAILS SEE SHEET PS-16.
  4. PROVIDE CAMBER AT MIDSPAN OF STRUCTURE.

PEN TABLE: ILLTOLLWAY-TABLES-PL01.TBL  
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 USER NAME: ILLTOLLWAY-PDF-CONF01.ctb  
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**DRAWN BY** EV      **DATE** 10/18/2018  
**CHECKED BY** GJH      **DATE** 10/18/2018

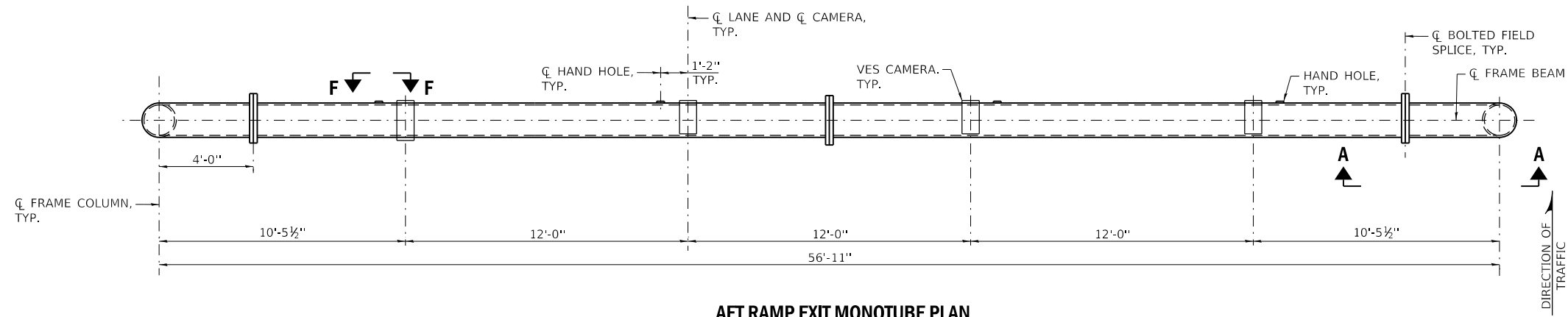

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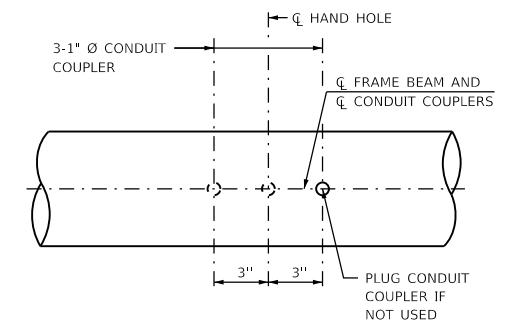
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 TOLL PLAZA RAMP C  
 ENTRANCE MONOTUBE  
 FRAMING PLAN AND DETAILS

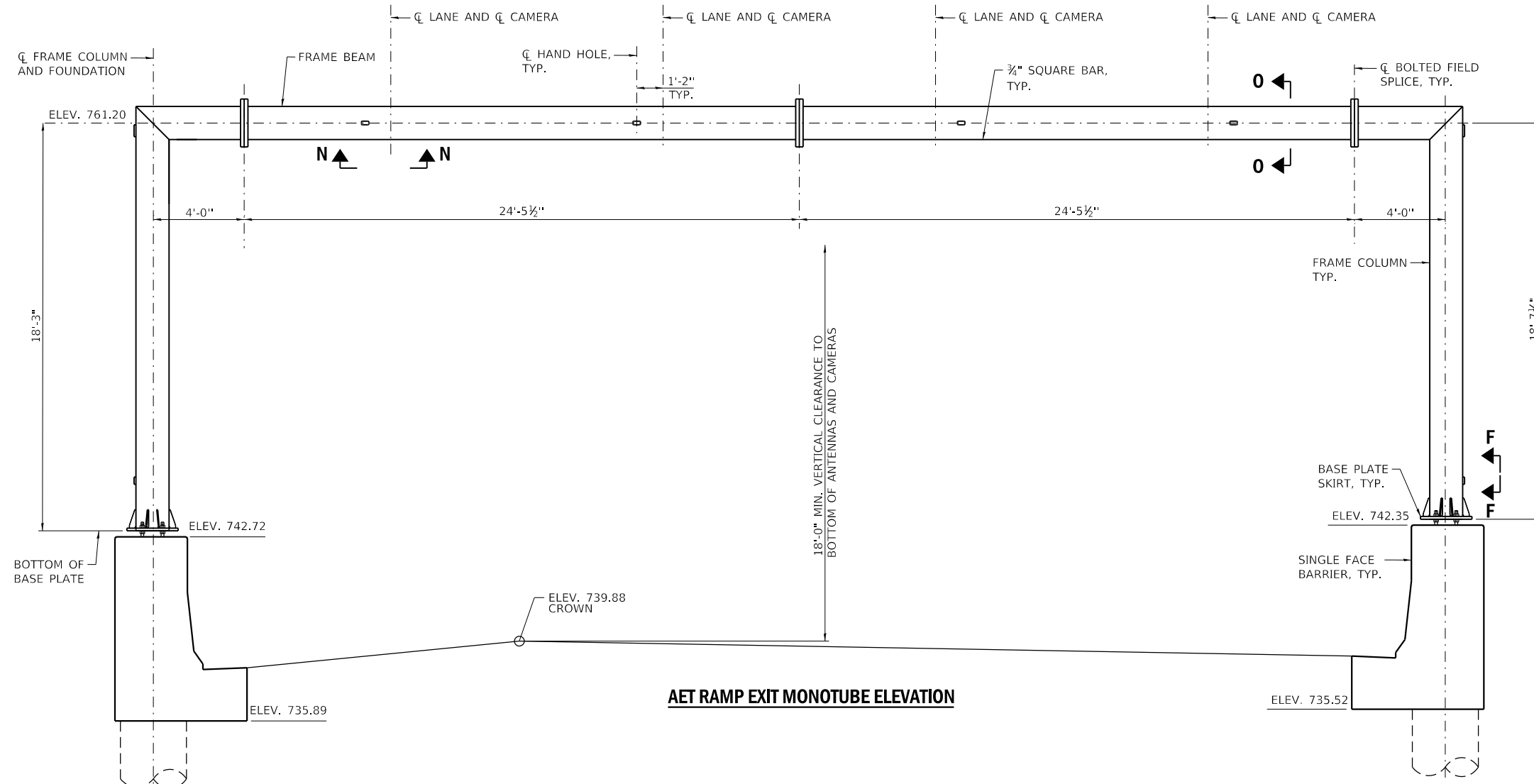
**SHEET NO.**  
 PS-10  
**DRAWING NO.**  
 332 OF 397



**AET RAMP EXIT MONOTUBE PLAN**



**VIEW N-N (CONDUIT COUPLER DETAIL)**



**AET RAMP EXIT MONOTUBE ELEVATION**

**EXIT MONOTUBE FRAME TABLE**

SPAN	FRAME COLUMN	FRAME BEAM	CAMBER
56'-11"	HSS 16x0.500	HSS 16x0.500	2 3/4"

**NOTES:**

1. FOR BASE PLAN AND DETAILS AND ADDITIONAL NOTES SEE SHEET PS-12.
2. FOR SECTION O-O SEE SHEET PS-05.
3. FOR SECTION A-A, VIEW F-F AND BASE PLATE SKIRT SEE SHEET PS-16.

PEN TABLE: ILTOLLWAY-TABLES-PLT.TBL  
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**DRAWN BY** EV      **DATE** 10/18/2018  
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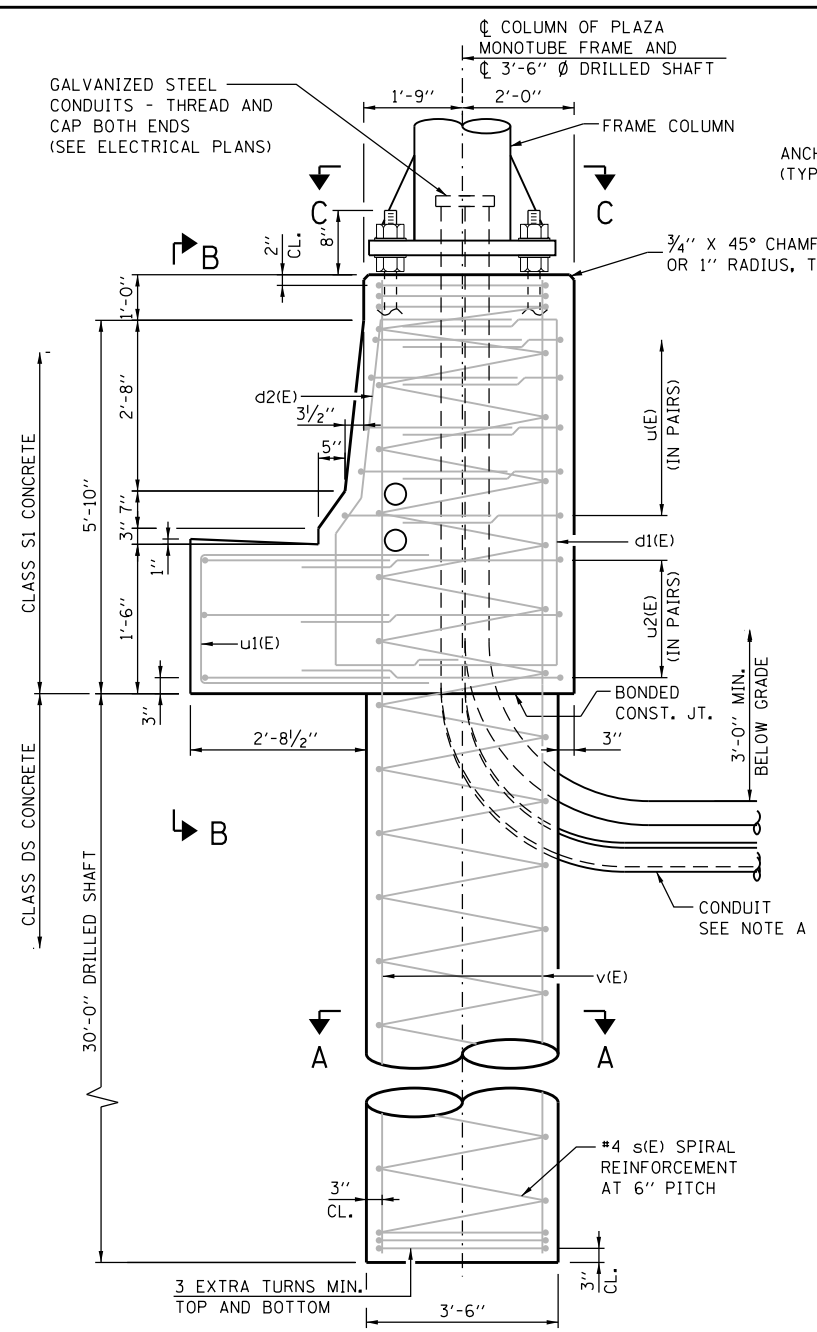


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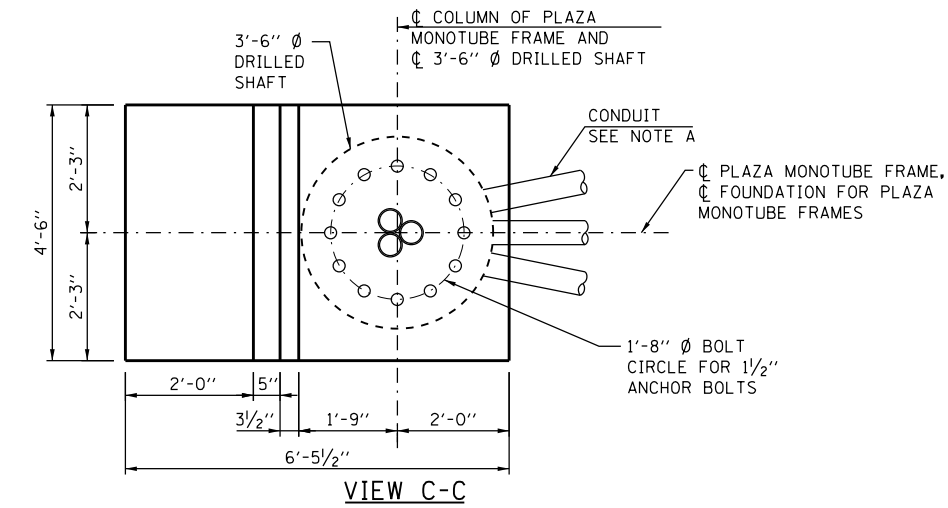
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NO.	DATE	DESCRIPTION

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 TOLL PLAZA RAMP C  
 EXIT MONOTUBE  
 FRAMING PLAN AND DETAILS

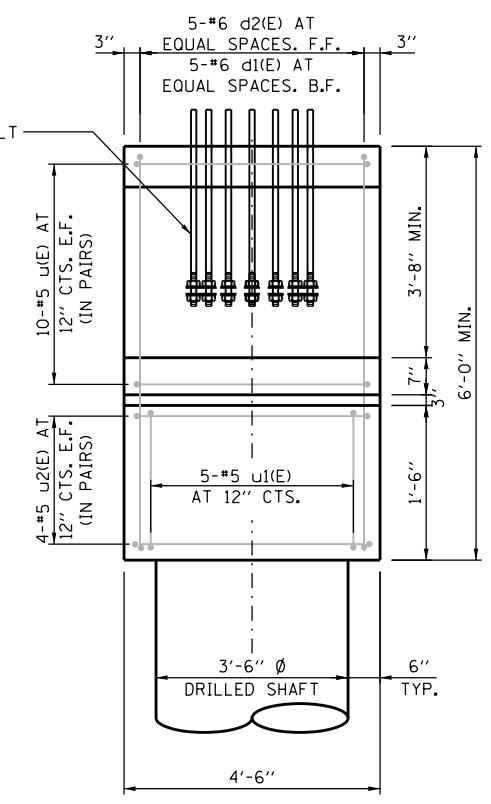
**SHEET NO.** PS-11  
**DRAWING NO.** 333 OF 397



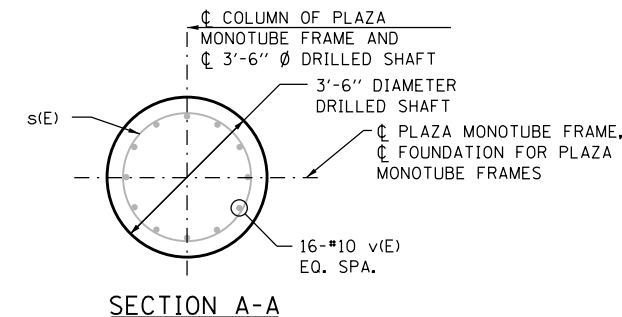
**SIDE ELEVATION**



**VIEW C-C**



**VIEW B-B**



**SECTION A-A**

**NOTE A:**

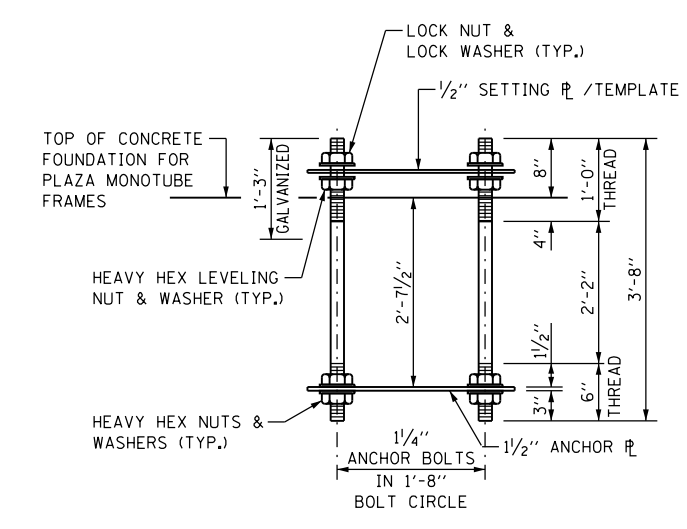
- COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. PROVIDE CONDUIT COUPLERS AS REQUIRED.
- CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT. CUTTING OF REINFORCEMENT SHALL NOT BE ALLOWED.

**NOTE B:**

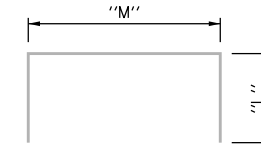
PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER AND TOP OF GUTTER.

**FOUNDATION NOTE:**

THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TONS/SQ. FT. WHICH MUST BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.

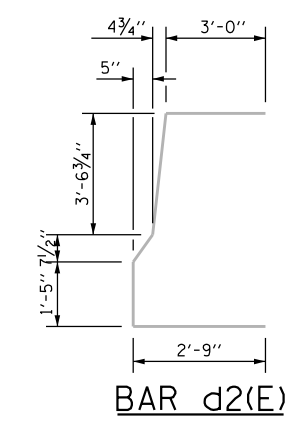


**ANCHOR BOLT ASSEMBLY**

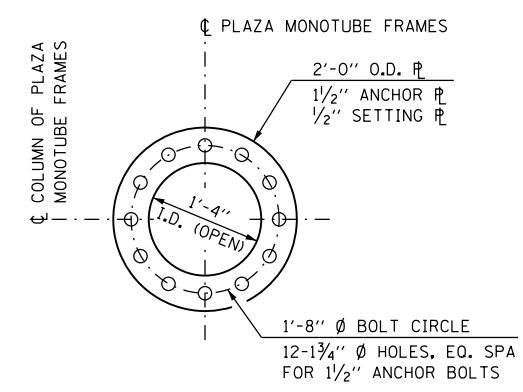


BAR	"L"	"M"
d1(E)	3'-0"	5'-6"
u1(E)	3'-0"	4'-2"
u2(E)	4'-1"	4'-2"

**BARS d1(E), u1(E), u2(E)**



**BAR d2(E)**



**ANCHOR BOLT / SETTING BOLT**

**BAR LIST-ONE FOUNDATION**

BAR	NO.	SIZE	LENGTH	SHAPE
d1(E)	5	#6	11'-7"	
d2(E)	5	#6	11'-9"	
s(E)	1	#4	35'-7"	<b>WWW</b>
v(E)	16	#10	35'-7"	
u1(E)	10	#5	10'-2"	
u1(E)	5	#5	8'-1"	
u2(E)	4	#5	12'-4"	

\* THE LENGTH OF SPIRAL SHOWN IS HEIGHT THE SPIRAL

**ESTIMATED QUANTITY**

ITEM	UNIT	ESTIMATED QUANTITY
CLASS S1 CONCRETE	CU. YD.	4.6
CASS DS CONCRETE	CU. YD.	10.7
REINFORCEMENT BARS, EPOXY COAT	POUND	3,310
PROTECTIVE COAT	SQ. YD.	6.0

**LEGEND:**

F.F. - FRONT FACE  
B.F. - BACK FACE  
CTS. - CENTERS

PEN TABLE: ILLTOLLWAY-TABLES-PL01.TBL  
PLOT CFE: ILLTOLLWAY-PDF-COMFIGplot.ctb  
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**DRAWN BY** EV **DATE** 10/18/2018  
**CHECKED BY** GJH **DATE** 10/18/2018

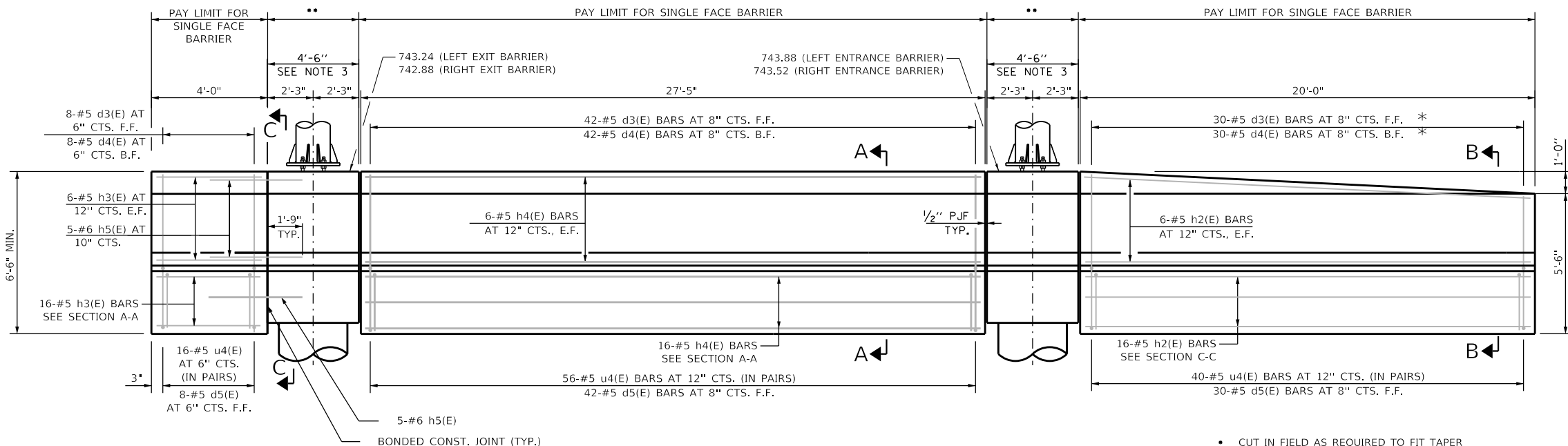
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NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
TOLL PLAZA  
FOUNDATIONS FOR PLAZA  
RAMP C

**SHEET NO.** PS-12  
**DRAWING NO.** 334 OF 397

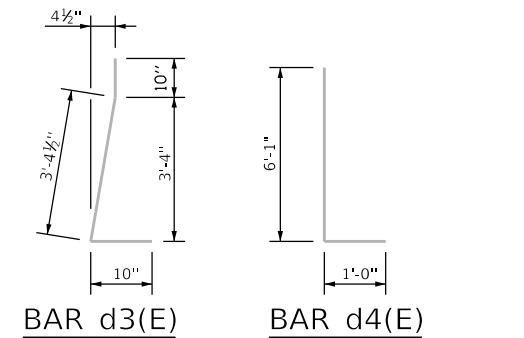


**SINGLE FACE BARRIER AND BARRIER BASE ELEVATION**  
INSIDE FACE OF BARRIER IS SHOWN

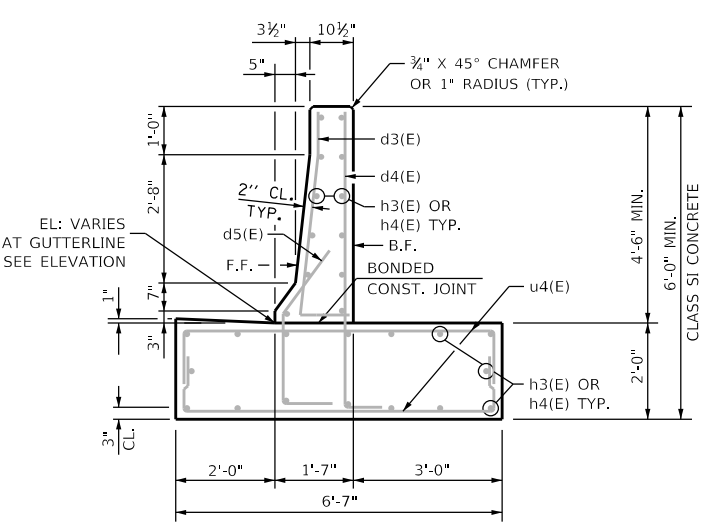
- CUT IN FIELD AS REQUIRED TO FIT TAPER
- PAY LIMIT FOR FOUNDATION FOR OVERHEAD SIGN STRUCTURE

**BAR LIST - ONE BARRIER**

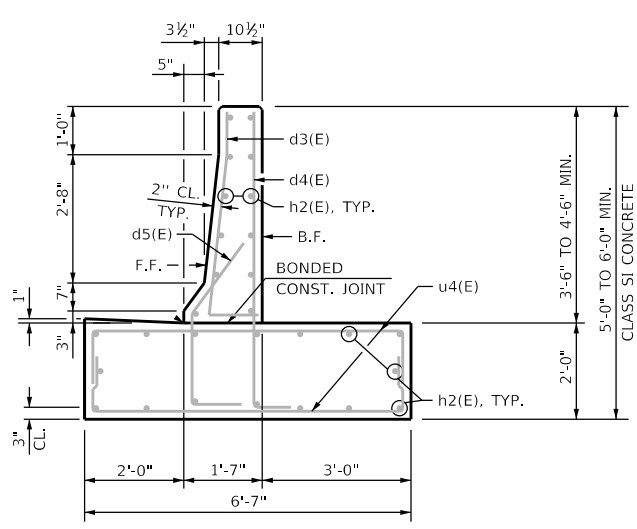
BAR	NO.	SIZE	LENGTH	SHAPE
d3(E)	80	#5	5'-1"	
d4(E)	80	#5	7'-1"	
d5(E)	80	#5	5'-1"	
h2(E)	28	#5	19'-7"	
h3(E)	28	#5	2'-8"	
h4(E)	28	#5	27'-1"	
h5(E)	10	#6	3'-9"	
u4(E)	112	#5	9'-3"	



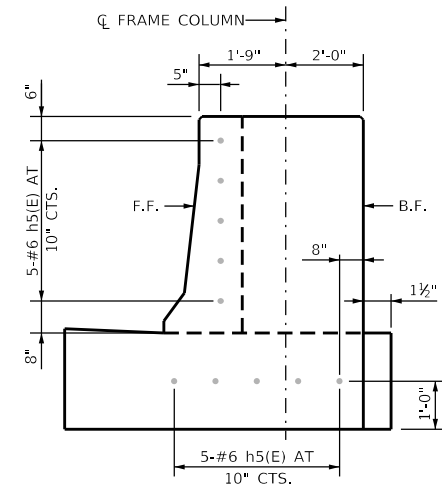
BAR d3(E)      BAR d4(E)



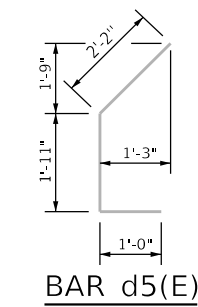
SECTION A-A



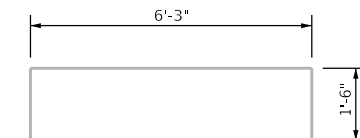
SECTION B-B



SECTION C-C



BAR d5(E)



BAR u4(E)

**ESTIMATED QUANTITY**  
(FOR ONE SINGLE FACE BARRIER)

ITEM	UNIT	QUANTITY
CONCRETE STRUCTURES	CU. YD.	34.2
REINFORCEMENT BARS, EPOXY COATED	POUND	4,008
PROTECTIVE COAT	SQ. YD.	43.0

**NOTES:**

1. PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER, TOP FACE OF THE GUTTER AND TO THE ENTRANCE SIDE FACE (AT THE BEGINNING OF THE PLAZA PAVEMENT) FOR THE FULL HEIGHT OF THE BARRIER.
2. FOR LOCATION OF ELECTRICAL JUNCTION BOXES ON THE WALL, SEE ELECTRICAL DETAIL SHEETS.
3. ELECTRICAL JUNCTION BOXES SHALL BE EXTERIOR MOUNTED ON THE BACK FACE OF BARRIER.
4. FOR SINGLE FACE BARRIER FOUNDATION DETAILS FOR MONOTUBE FRAMES, SEE SHEET PS-12.

PEN TABLE: ILLTOLLWAY-TABLES-PL01.TBL  
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 USER NAME: ILLTOLLWAY-PDF-COMFIGplotcf9  
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**DRAWN BY** EV      **DATE** 10/18/2018  
**CHECKED BY** GJH      **DATE** 10/18/2018

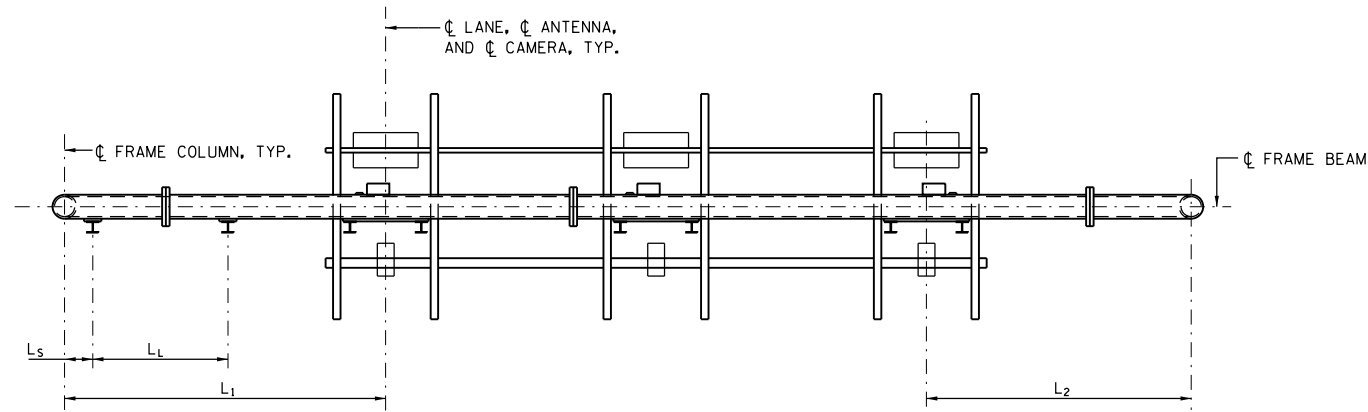
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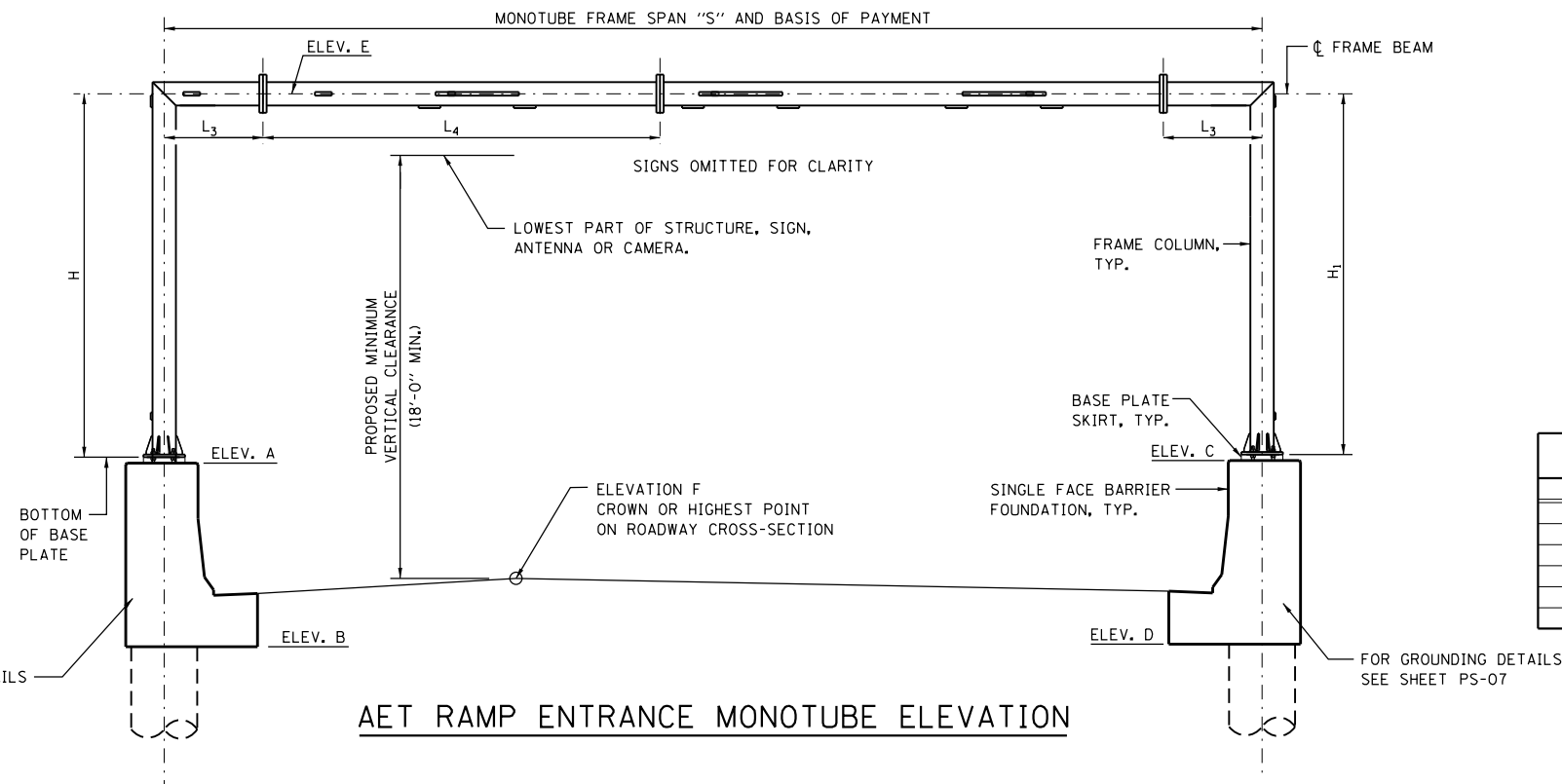
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 TOLL PLAZA RAMP C  
 MONOTUBE TYPE (STEEL)  
 ELEVATION AND DETAILS

**SHEET NO.** PS-13  
**DRAWING NO.** 335 OF 397



AET RAMP ENTRANCE MONOTUBE PLAN



AET RAMP ENTRANCE MONOTUBE ELEVATION

TOTAL BILL OF MATERIAL			
PAY ITEM	DESCRIPTION	UNIT	TOTAL
50300225	CONCRETE STRUCTURES	CU. YD.	56.4
50300300	PROTECTIVE COAT	SQ. YD.	96
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	12,540
JS733610	OVERHEAD SIGN STRUCTURE, AET RAMP ENTRANCE MONOTUBE TYPE (STEEL)	FOOT	45
JS734F10	FOUNDATION FOR OVERHEAD SIGN STRUCTURE, RAMP MONOTUBE TYPE	CU. YD.	20.6

SUMMARY

STRUCTURE NUMBER	STATION	SPAN "S" (FT.)	ELEV. A	ELEV. B	ELEV. C	ELEV. D	ELEV. E	ELEV. F	PROPOSED MINIMUM VERTICAL CLEARANCE	SHEET 2 OF STANDARD F15								SHEET 6 OF STANDARD F15	FOUNDATION FOR OVERHEAD SIGN STRUCTURE		SINGLE FACE BARRIER CONCRETE STRUCTURES (CU. YD.)	REINFORCEMENT BARS, EPOXY COATED (POUNDS)	PROTECTIVE COAT (SQ. YD.)
										Ls	Ll	L1	L2	L3	L4	H	H1	"C"	CLASS S1 CONCRETE (CU. YD.)	CLASS D5 CONCRETE (CU. YD.)			
EW109.40M.WB(R)	4016+41	44.5	748.01	741.18	747.83	741.00	767.57	745.07	18'-0"	2'-4"	4'-2"	10'-3"	10'-3"	4'-0"	14'-3"	19'-4"	19'-7"	1	7.4	13.2	56.4	12540	96
											TOTAL								7.4	13.2	56.4	12540	96

PEN TABLE: ILLTOLLWAY-TABLES-PLT.TBL  
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 PLOT SCALE: 2.00000 / 1 in.  
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**DRAWN BY** EV      **DATE** 10/18/2018  
**CHECKED BY** GJH      **DATE** 10/18/2018

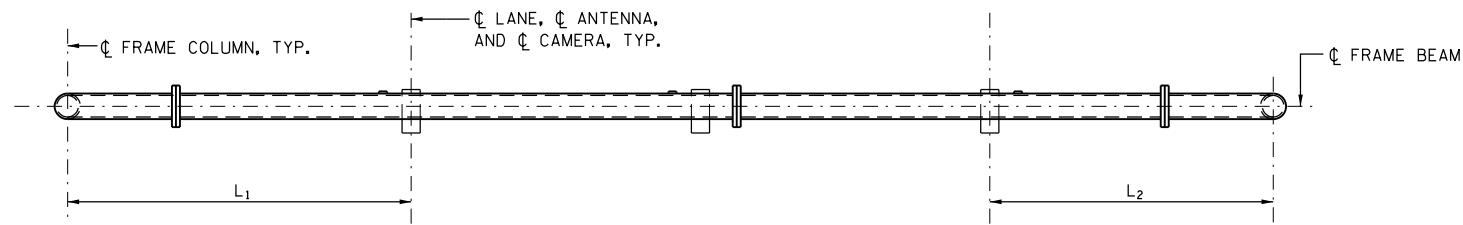

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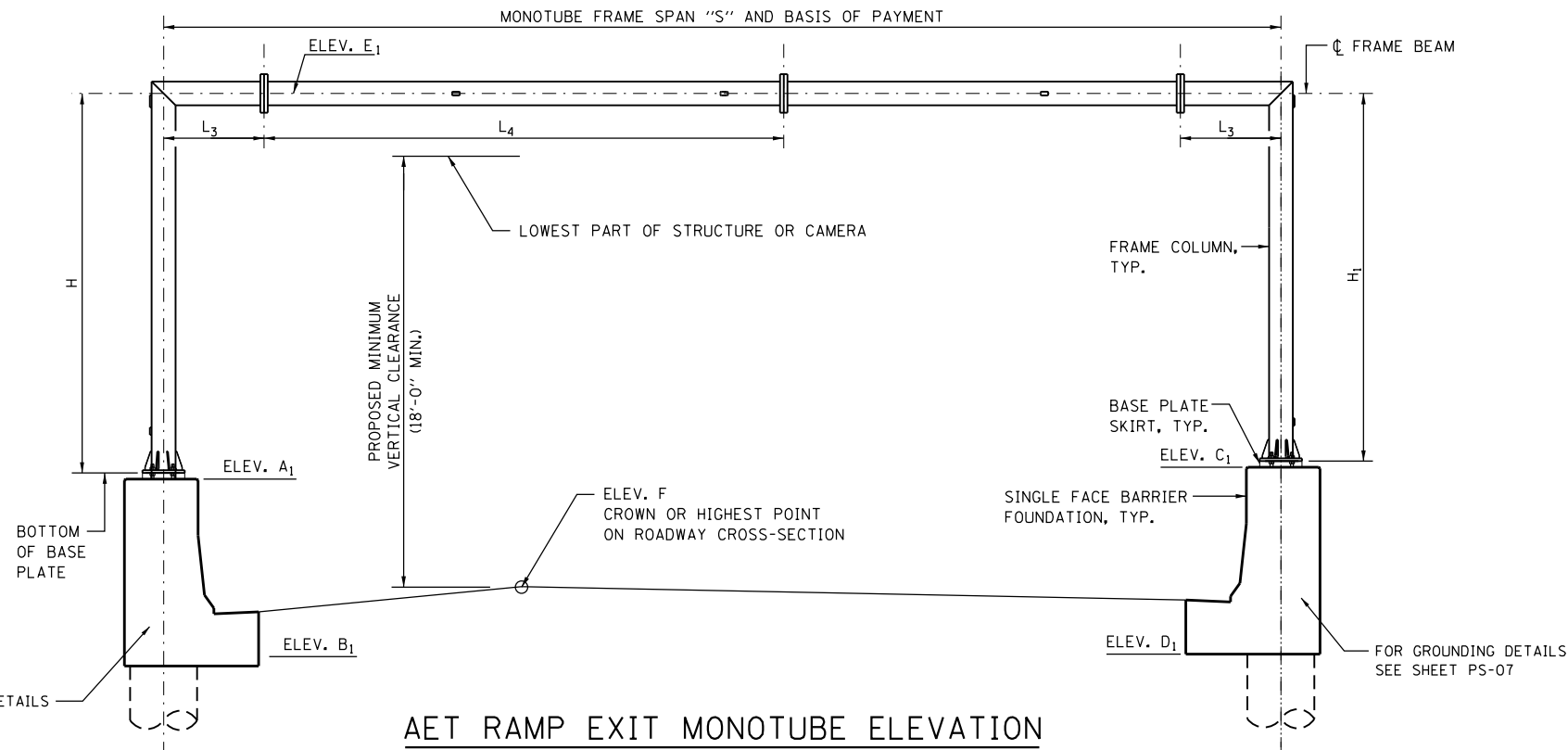
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 OVERHEAD SIGN STRUCTURE  
 ENTRANCE MONOTUBE  
 RAMP D SUMMARY

**SHEET NO.**  
 PS-14  
**DRAWING NO.**  
 336 OF 397



**AET RAMP EXIT MONOTUBE PLAN**



**AET RAMP EXIT MONOTUBE ELEVATION**

TOTAL BILL OF MATERIAL			
PAY ITEM	DESCRIPTION	UNIT	TOTAL
50300225	CONCRETE STRUCTURES	CU. YD.	0
50300300	PROTECTIVE COAT	SQ. YD.	10
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	4,720
J5733630	OVERHEAD SIGN STRUCTURE, AET RAMP EXIT MONOTUBE TYPE (STEEL)	FOOT	45
J5734F10	FOUNDATION FOR OVERHEAD SIGN STRUCTURE, RAMP MONOTUBE TYPE	CU. YD.	20.6

FOR GROUNDING DETAILS SEE SHEET PS-07

FOR GROUNDING DETAILS SEE SHEET PS-07

**SUMMARY**

STRUCTURE NUMBER	STATION	SPAN "S" (FT.)	ELEV. A <sub>1</sub>	ELEV. B <sub>1</sub>	ELEV. C <sub>1</sub>	ELEV. D <sub>1</sub>	ELEV. E <sub>1</sub>	ELEV. F	PROPOSED MINIMUM VERTICAL CLEARANCE	SHEET 3 OF STANDARD F15				SHEET 6 OF STANDARD F15		FOUNDATION FOR OVERHEAD SIGN STRUCTURE		SINGLE FACE BARRIER CONCRETE STRUCTURES (CU. YD.)	REINFORCEMENT BARS, EPOXY COATED (POUNDS)	PROTECTIVE COAT (SQ. YD.)	
										L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	H	H <sub>1</sub>	"C"	CLASS SI CONCRETE (CU. YD.)				CLASS DS CONCRETE (CU. YD.)
EW109.40M.WB(R)	4016+73	44.5	748.83	742.00	748.13	741.30	766.57	745.71	18'-0"	10'-3"	10'-3"	4'-0"	24'-0"	17.74	17.02	1'-0"	7.4	13.2	-	4720	10
										<b>TOTAL</b>											

PEN TABLE: ILTOLLWAY-TABLES-PLT01.TBL  
 PLOT FILE: ILTOLLWAY-PDF-COMPLOT.ctb  
 USER NAME: J9/17/2018  
 PLOT DATE: 10/17/2018  
 PLOT SCALE: 2.00000 / 1 in.  
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**DRAWN BY** EV      **DATE** 10/18/2018  
**CHECKED BY** GJH      **DATE** 10/18/2018

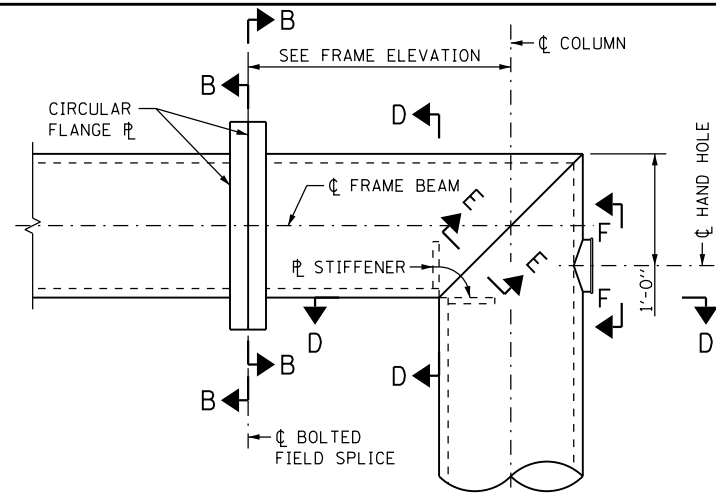

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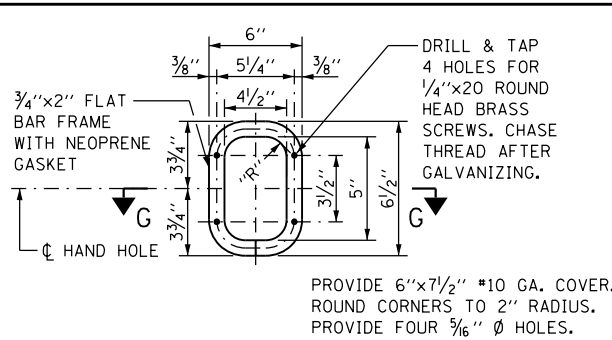
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 OVERHEAD SIGN STRUCTURE  
 EXIT MONOTUBE  
 RAMP D SUMMARY

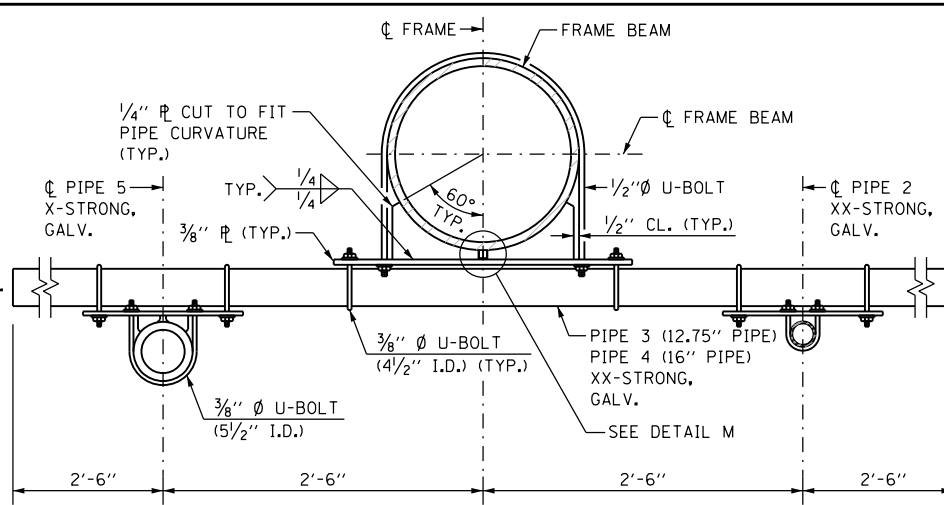
**SHEET NO.** PS-15  
**DRAWING NO.** 337 OF 397



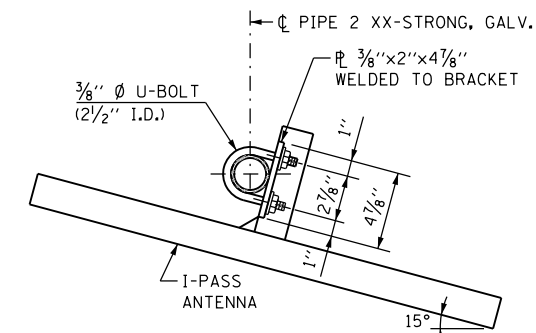
**SECTION A-A**  
SEE SHEETS PS-10, PS-11



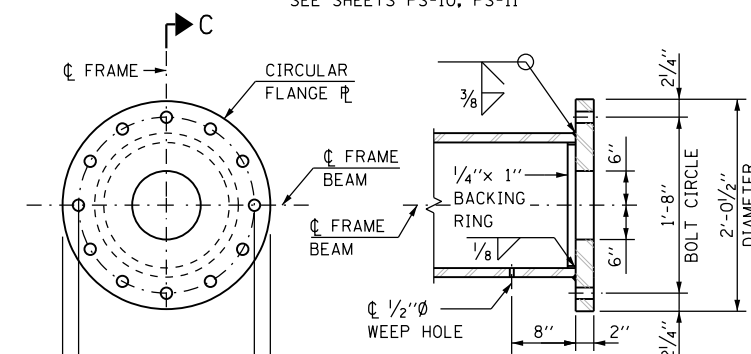
**SECTION F-F**



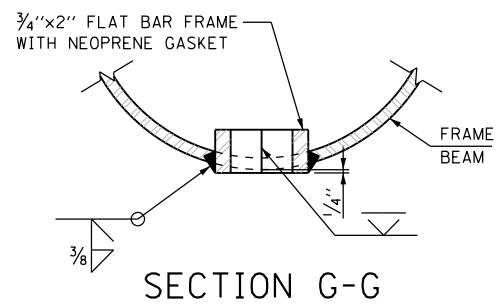
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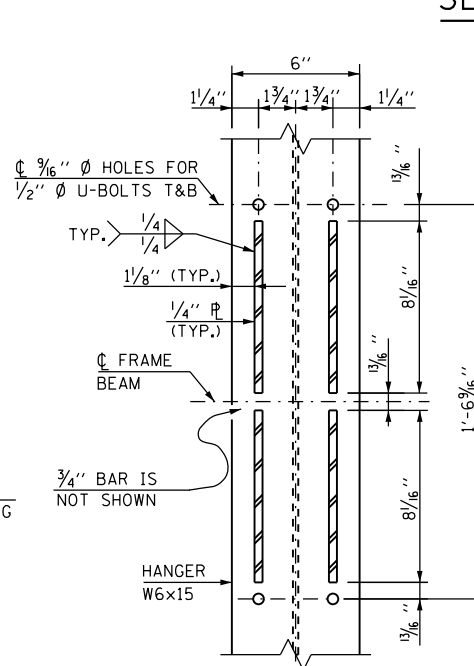
**ANTENNA HANGER**



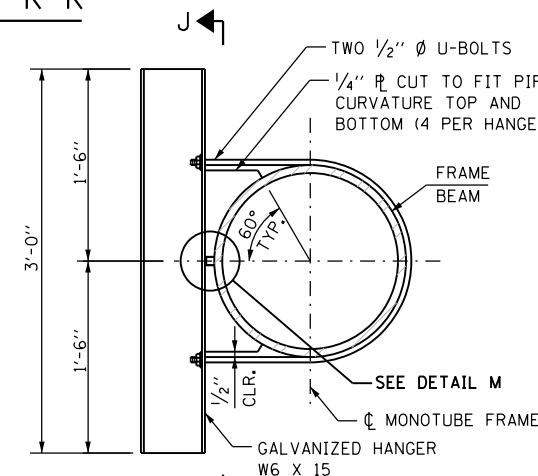
**SECTION C-C**



**SECTION G-G**

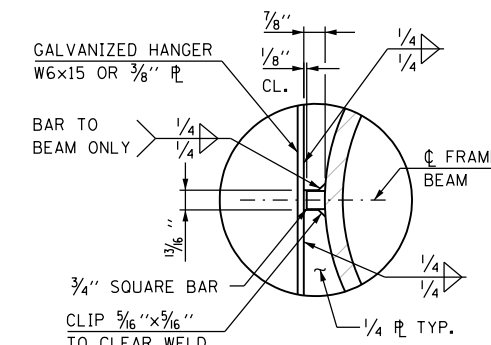


**SECTION J-J**

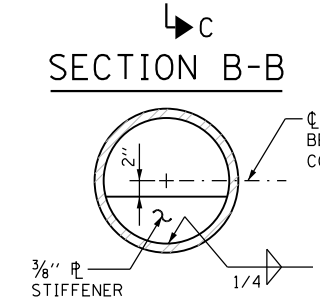


**SECTION H-H (SIGN HANGER)**

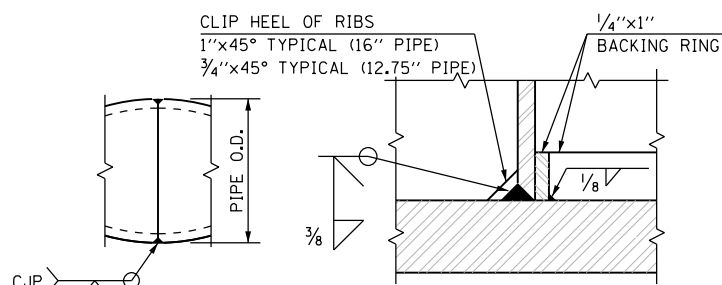
SEE SHEETS PS-14 & PS-15



**DETAIL M**



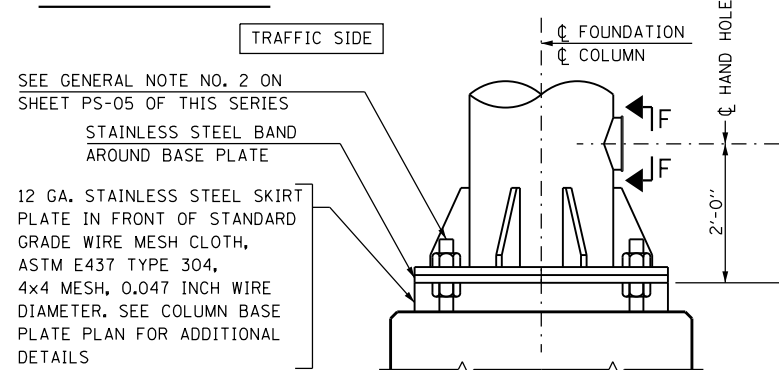
**SECTION B-B**



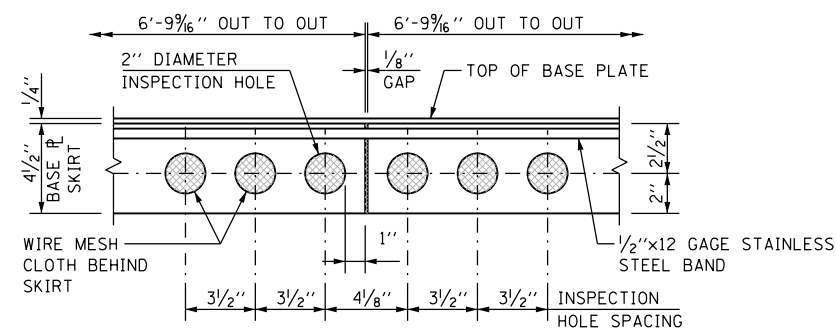
**SECTION E-E**

**DETAIL T**

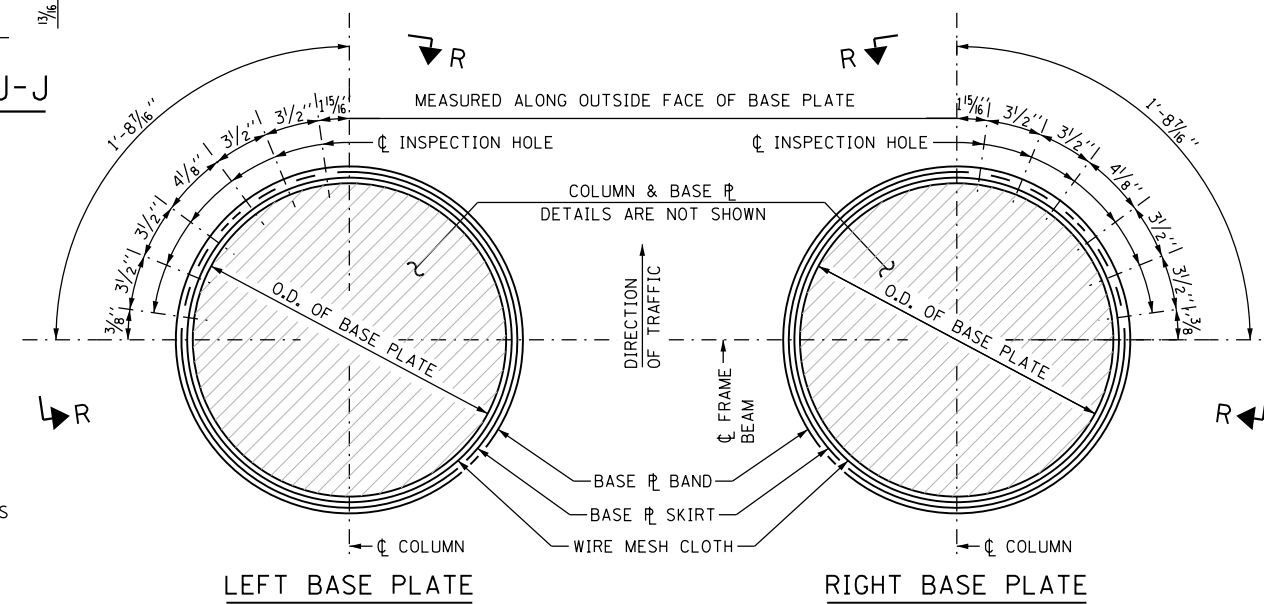
**SECTION D-D**



**COLUMN BASE**



**VIEW R-R (BASE PLATE SKIRT)**



**COLUMN BASE PLATE PLAN**

ALL DIMENSIONS MEASURED ALONG  
OUTSIDE FACE OF BASE PLATE

PEN TABLE: ILLTOLLWAY-TABLES-PLOT.TBL  
PLOT CFE: ILLTOLLWAY-PDF-CONF10plot.ctb  
USER NAME: J10/17/2018  
PLOT DATE: 10/17/2018  
PLOT SCALE: 2.00000 / 1 in.  
FILE NAME: ...N4274-shrt-plazastruc1.dwg

**DRAWN BY** EV      **DATE** 10/18/2018  
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**CONTRACT NO. I-16-4274**  
TOLL PLAZA  
MONOTUBE FRAMING DETAILS  
RAMP C

**SHEET NO.** PS-16  
**DRAWING NO.** 338 OF 397





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### SOIL BORING LOG

Page 1 of 2  
Date 2/28/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY JJR  
SECTION I-88 and Route 47 LOCATION Northeast Quadrant Northing 1876812.484 Easting 948595.4818  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. Toll Plaza 1  
Station 4016+30.36  
BORING NO. 4274-TPB-01  
Station 4016+30.36  
Offset 14.60ft R  
Ground Surface Elev. 741.40 ft

DEPTH (ft)  
GRAPHIC LOG (/6") (tsf) (%) (pcf) (%)  
ORGANIC (%)

Surface Water Elev. n/a ft  
Stream Bed Elev. n/a ft  
Groundwater Elev.:  
First Encounter 734.4 ft  
Upon Completion n/a ft  
After Hrs. n/a ft

DEPTH (ft)	GRAPHIC LOG (/6")	UCS (tsf)	MOIST (%)	ORGANIC (%)	NOTES
740.90	6 inches Topsoil				
737.40	Very Stiff Black and Gray, Moist CLAY, trace organics (CL)	2.0	22		
735.40	Stiff Brown, Very Moist SANDY CLAY, trace gravel (SC)	1.5	27		
730.40	Very Loose to Loose Brown and Gray, Wet SANDY LOAM (SM)		19		
730.40	Stiff to Very Stiff Brown, Moist SANDY CLAY, trace gravel (SC)	3.1	12		
-15	Cobbles at 14 ft	1.8	13		
-20		1.7	12		
-20		2.1	11		

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



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### SOIL BORING LOG

Page 2 of 2  
Date 2/28/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY JJR  
SECTION I-88 and Route 47 LOCATION Northeast Quadrant Northing 1876812.484 Easting 948595.4818  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. Toll Plaza 1  
Station 4016+30.36  
BORING NO. 4274-TPB-01  
Station 4016+30.36  
Offset 14.60ft R  
Ground Surface Elev. 741.40 ft

DEPTH (ft)  
GRAPHIC LOG (/6") (tsf) (%) (pcf) (%)  
ORGANIC (%)

Surface Water Elev. n/a ft  
Stream Bed Elev. n/a ft  
Groundwater Elev.:  
First Encounter 734.4 ft  
Upon Completion n/a ft  
After Hrs. n/a ft

DEPTH (ft)	GRAPHIC LOG (/6")	UCS (tsf)	MOIST (%)	ORGANIC (%)	NOTES
720.40	Stiff Gray, Moist SANDY CLAY, trace gravel (SC)	1.5	11		
715.40	Stiff to Hard Gray, Moist SILTY CLAY, trace sand and gravel (CL/ML)	1.3	14		
702.90	Medium Dense Gray, Moist SAND, with gravel (SPG)	5.0	12		
701.40					

End of Boring  
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

PEN TABLE ILTOLLWAY-TABLES-PL01.TBL  
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 USER NAME = J9/17/2018 PLOT SCALE = 2.00000 / in.  
 FILE NAME = ...N4274-shr-plazastruc-17.dgn

DRAWN BY EV DATE 10/18/2018  
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REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
TOLL PLAZA  
SOIL BORINGS I  
RAMP C & RAMP D

SHEET NO. PS-17  
DRAWING NO. 339 OF 397



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### SOIL BORING LOG

Page 1 of 1  
Date 2/27/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY KMM/SM

SECTION I-88 and Route 47 LOCATION Northeast Quadrant Northing 1876832.746 Easting 948628.6987

COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. Toll Plaza 1  
Station 4016+24.32

BORING NO. 4274-TPB-02  
Station 4016+24.32  
Offset 52.97ft R  
Ground Surface Elev. 741.50 ft

DEPTH (ft)	BLOWS (/6")	UCS (tsf)	MOIST (%)	ORGANIC (%)
3				
4	2.3	26		
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Surface Water Elev. n/a ft  
Stream Bed Elev. n/a ft  
Groundwater Elev.:  
First Encounter 728.0 ft  
Upon Completion n/a ft  
After Hrs. n/a ft

DEPTH (ft)	DESCRIPTION	BLOWS (/6")	UCS (tsf)	MOIST (%)	ORGANIC (%)
0-18	18 inches Topsoil				
3-4	Medium Stiff to Very Stiff Brown, Very Moist SILTY CLAY (CL/ML)	3	2.3	26	
5-7	Loose Brown, Moist SANDY LOAM, trace gravel (SM)	2	0.8	26	
8-12	Stiff Brown, Moist SILTY CLAY, trace gravel (CL/ML)	3	1.5	13	
13-15	Very Soft to Medium Stiff Brown, Moist SANDY CLAY, trace gravel (SC)	2	0.2	11	
16-19.5	Sandy Seam at 19.5 ft	1	0.6	11	

End of Boring  
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



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### SOIL BORING LOG

Page 1 of 2  
Date 2/28/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY JJR

SECTION I-88 and Route 47 LOCATION Northeast Quadrant Northing 1876759.836 Easting 948586.2695

COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. Toll Plaza 1  
Station 4015+95.96

BORING NO. 4274-TPB-03  
Station 4015+95.96  
Offset 26.27ft L  
Ground Surface Elev. 740.50 ft

DEPTH (ft)	BLOWS (/6")	UCS (tsf)	MOIST (%)	ORGANIC (%)
3				
4	2.5	18		
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Surface Water Elev. n/a ft  
Stream Bed Elev. n/a ft  
Groundwater Elev.:  
First Encounter 734.0 ft  
Upon Completion n/a ft  
After Hrs. n/a ft

DEPTH (ft)	DESCRIPTION	BLOWS (/6")	UCS (tsf)	MOIST (%)	ORGANIC (%)
0-6	6 inches Topsoil				
3-5	Stiff to Very Stiff Black, Moist to Very Moist CLAY, trace organics (CL)	3	2.5	18	
6-8	Medium Stiff Brown and Gray, Moist SANDY CLAY (SC)	2	1.0	28	
9-11	Very Loose to Loose Brown and Gray, Moist SANDY LOAM, trace gravel (SM) Cobbles at 6.5 ft	1		6	
12-14	Stiff to Very Stiff Brown, Moist SANDY CLAY, trace gravel (SC)	2	2.5	13	
15-17	Cobbles at 14 ft	8	3.5	11	
18-20	Very Soft to Medium Stiff Brown, Moist SANDY CLAY, trace gravel (SC)	3	2.0	13	
19-20	Sandy Seam at 19.5 ft	1	0.6	11	

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

PEN TABLE ILTOLLWAY-TABLES-PL01.TBL  
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 FILE NAME = ...N4274-shr-plazastruc18.dgn

DRAWN BY EV DATE 10/18/2018  
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REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
TOLL PLAZA  
SOIL BORINGS II  
RAMP C & RAMP D

SHEET NO. PS-18  
DRAWING NO. 340 OF 397



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### SOIL BORING LOG

Page 2 of 2  
Date 2/28/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY JJR  
SECTION I-88 and Route 47 LOCATION Northeast Quadrant Northing 1876759.836 Easting 948586.2695  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO  
STRUCT. NO. Toll Plaza 1  
Station 4015+95.96  
BORING NO. 4274-TPB-03  
Station 4015+95.96  
Offset 26.27ft L  
Ground Surface Elev. 740.50 ft

DEPTH (ft)	SOIL DESCRIPTION	BLOW COUNT (Blows/6")	UCS (tsf)	MOISTURE (%)	ORGANIC (%)	NOTES
0-3	Stiff Gray, Moist SANDY CLAY, trace gravel (SC)	3				
3-3		3	1.0	12		
3-4		3	P			
4-4	Sand seam at 24 ft	4				
4-3		3	1.3	10		
3-2		3				
3-3		3	1.5	11		
4-2		4	P			
711.50-2		2				
711.50-3	Stiff to Hard Gray, Moist SILTY CLAY, trace gravel (CL/ML)	3	1.3	11		
3-3		3	P			
3-3		3				
3-5		5	1.3	13		
8-9		8				
9-10		9	5.0	9		
10-5		10	B			
703.00-7		7				
703.00-16	Medium Dense Gray, Moist SAND, trace gravel (SP)	16	5.0	9		
6-8		6				
8-8		8		15		
14-700.50		14				

End of Boring  
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



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### SOIL BORING LOG

Page 1 of 1  
Date 2/27/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY KMM/SM  
SECTION I-88 and Route 47 LOCATION Northeast Quadrant Northing 1876779.604 Easting 948638.235  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO  
STRUCT. NO. Toll Plaza 1  
Station 4015+77.93  
BORING NO. 4274-TPB-04  
Station 4015+77.93  
Offset 26.44ft R  
Ground Surface Elev. 739.50 ft

DEPTH (ft)	SOIL DESCRIPTION	BLOW COUNT (Blows/6")	UCS (tsf)	MOISTURE (%)	ORGANIC (%)	NOTES
0-2	18 inches Topsoil	2				
2-3		2	1.0	27		
3-3	Soft to Stiff Brown and Gray, Moist to Very Moist SILTY CLAY, trace organics (CL/ML)	3	B			
2-2		2				
2-5		5	0.4	14		
3-6		3				
6-4		6	0.4	13		
732.50-4	Loose Brown, Moist SAND, trace gravel (SP)	4	B			
3-3		3				
6-6		6	0.8	11		
730.00-4	Very Soft to Medium Stiff Brown, Moist SANDY CLAY, trace gravel (SC)	4	B			
3-3		3				
3-3		3	0.6	12		
3-3	Organic seam at 12 ft	3	B			
1-2		1				
2-4		2	0.2	12		
4-3		4	B			
723.00-3		3				
3-5	Very Soft Gray, Moist SILTY CLAY, trace gravel (CL/ML)	3	0.2	11		
5-3		5	B			
3-3		3				
2-2		2	0.2	10		
4-719.50		4	B			

End of Boring  
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

PEN TABLE ILTOLLWAY-TABLES-PL01.TBL  
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 FILE NAME = ...N4274-shr-plazastruc19.dgn

DRAWN BY EV DATE 10/18/2018  
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REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
TOLL PLAZA  
SOIL BORINGS III  
RAMP C & RAMP D

SHEET NO. PS-19  
DRAWING NO. 341 OF 397



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### SOIL BORING LOG

Page 1 of 1  
Date 3/2/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY KMM  
SECTION I-88 and Route 47 LOCATION Southeast Quadrant Northing 1876185.635 Easting 948377.2398  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. Toll Plaza 2  
Station 3003+64.54  
BORING NO. 4274-TPB-05  
Station 3003+64.54  
Offset 70.33ft L  
Ground Surface Elev. 724.90 ft

DEPTH (ft)  
BLOW S (/6")  
UCS (tsf)  
MOIST (%)  
DENSITY (pcf)  
ORGANIC (%)

Surface Water Elev. n/a ft  
Stream Bed Elev. n/a ft  
Groundwater Elev.:  
First Encounter 718.9 ft  
Upon Completion n/a ft  
After Hrs. n/a ft

DEPTH (ft)	BLOW S (/6")	UCS (tsf)	MOIST (%)	DENSITY (pcf)	ORGANIC (%)	DESCRIPTION
0						18 inches Topsoil
723.40	3					
	2	0.8	28			Soft to Medium Stiff Brown and Gray, Very Moist SILTY CLAY, trace organics (CL/ML)
	2	B				
	1					
	1	0.4	31		1.5	
	1	B				
718.90						Medium Dense Brown, Moist SAND, with gravel (SPG)
	5		15			
	6					
	9					
	9					
	10		10			
	9					
713.40						Medium Dense Gray, Moist SILT (ML)
	4		13			
	10					
	10					
	7					
	9		19			
	8					
	7					
	13		16			
	14					Gray sand seam at 17 ft
	14					
	12					
	14		7			Gray sand seam at 18.5 ft
	14					
704.90						End of Boring

End of Boring  
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



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### SOIL BORING LOG

Page 1 of 1  
Date 2/28/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY KMM/SM  
SECTION I-88 and Route 47 LOCATION Southeast Quadrant Northing 1876180.652 Easting 948421.3159  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. Toll Plaza 2  
Station 3004+07.05  
BORING NO. 4274-TPB-06  
Station 3004+07.05  
Offset 55.76ft L  
Ground Surface Elev. 725.20 ft

DEPTH (ft)  
BLOW S (/6")  
UCS (tsf)  
MOIST (%)  
DENSITY (pcf)  
ORGANIC (%)

Surface Water Elev. n/a ft  
Stream Bed Elev. n/a ft  
Groundwater Elev.:  
First Encounter 714.2 ft  
Upon Completion n/a ft  
After Hrs. n/a ft

DEPTH (ft)	BLOW S (/6")	UCS (tsf)	MOIST (%)	DENSITY (pcf)	ORGANIC (%)	DESCRIPTION
0						18 inches Topsoil
723.70	1					
	2	0.4	26			Soft to Medium Stiff Brown and Gray, Very Moist SILTY CLAY, trace organics (CL/ML)
	2	B				
	1					
	2	0.8	26			
	1	P				
	2					
718.20						Loose Brown, Moist SANDY LOAM, trace gravel (SM)
	3	0.8	30			
	5	P				
	3					
716.20						Medium Dense Brown, Wet SAND (SP)
	9		17			
	10					
715.20						Medium Dense Gray, Moist SAND, with gravel (SPG)
	4					
	7		11			
	7					
711.70						Loose to Medium Dense Gray, Moist SILT, trace sand & gravel (ML)
	4					
	4		11			
	5					
	5					
	11		17			
	12					
707.70						End of Boring

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

PEN TABLE ILTOLLWAY-TABLES-PL01.TBL  
PLOT CFE- ILTOLLWAY-PDF-COMFIGplotcf9  
USER NAME = 10/17/2018 PLOT SCALE = 2.0000 / in.  
FILE NAME = ...N4274-shr-plazastruc-20.dgn

DRAWN BY EV DATE 10/18/2018  
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CONTRACT NO. I-16-4274  
TOLL PLAZA  
SOIL BORINGS IV  
RAMP C & RAMP D

SHEET NO. PS-20  
DRAWING NO. 342 OF 397



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### SOIL BORING LOG

Page 1 of 3  
Date 3/2/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY KMM  
SECTION I-88 and Route 47 LOCATION Southeast Quadrant Northing 1876144.455 Easting 948361.484  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. Toll Plaza 2  
Station 3003+40.09  
BORING NO. 4274-TPB-07  
Station 3003+40.09  
Offset 33.68ft L  
Ground Surface Elev. 725.30 ft

DEPTH (ft)  
BLOW COUNT (blows/6")  
UCS (tsf)  
MOISTURE (%)  
ORGANIC (%)

Surface Water Elev. n/a ft  
Stream Bed Elev. n/a ft  
Groundwater Elev.:  
First Encounter 714.3 ft  
Upon Completion n/a ft  
After Hrs. n/a ft

DEPTH (ft)	BLOW COUNT (blows/6")	UCS (tsf)	MOISTURE (%)	ORGANIC (%)	DESCRIPTION
0					18 inches Topsoil
2					
3	0.8	29			Very Soft to Medium Stiff Brown and Gray, Moist to Very Moist SILTY CLAY, trace organics (CL/ML)
4	B				
1					
1	0.2	24			
2	B				
3					
3	0.4	12			Soft Brown, Moist SANDY CLAY (SC)
10	B				Medium Dense Brown, Moist SANDY LOAM, with gravel (SM)
11					
9		11			
9					
7		26			Medium Dense Gray, Very Moist SILT (ML)
9					
5					
11		22			
10					
3					
3		17			Loose to Medium Dense Gray, Moist SAND, trace gravel (SP)
2					
6					
10		14			
12					

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



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### SOIL BORING LOG

Page 2 of 3  
Date 3/2/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY KMM  
SECTION I-88 and Route 47 LOCATION Southeast Quadrant Northing 1876144.455 Easting 948361.484  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. Toll Plaza 2  
Station 3003+40.09  
BORING NO. 4274-TPB-07  
Station 3003+40.09  
Offset 33.68ft L  
Ground Surface Elev. 725.30 ft

DEPTH (ft)  
BLOW COUNT (blows/6")  
UCS (tsf)  
MOISTURE (%)  
ORGANIC (%)

Surface Water Elev. n/a ft  
Stream Bed Elev. n/a ft  
Groundwater Elev.:  
First Encounter 714.3 ft  
Upon Completion n/a ft  
After Hrs. n/a ft

DEPTH (ft)	BLOW COUNT (blows/6")	UCS (tsf)	MOISTURE (%)	ORGANIC (%)	DESCRIPTION
17					Medium Dense to Dense Gray, Moist SILT (ML) (continued)
29		9			Medium Dense to Very Dense Gray, Moist SAND, trace gravel (SP)
20/2					
9					
14		12			
15					
7					
13	4.8	14			Very Stiff to Hard Gray, Moist SILTY CLAY, trace gravel (CL/ML)
14	P				
7					
6	2.3	13			
15	P				
7					
14	5.0	10			Gray sand seam at 33.5 ft
12	P				
5					
8	3.3	12			Dense Gray, Moist SILT (ML)
2/2	P				
7					
8	4.0	11			Medium Dense Gray, Moist SAND, trace gravel (SP)
12	P				
7					Very Stiff Dark Gray, Moist SANDY CLAY, trace gravel (SC)
11	5.6	11			Hard Dark Gray, Moist
12	B				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

PEN TABLE: ILLTOLLWAY-TABLES-PL01.TBL  
 PLOT CFE: ILLTOLLWAY-PDF-COMPLOTcf5  
 USER NAME: J9/17/2018  
 PLOT DATE: J9/17/2018  
 PLOT SCALE: 2.0000 / 1 in.  
 FILE NAME: ...N4274-shr-plazastruc-21.dgn

DRAWN BY EV DATE 10/18/2018  
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NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
TOLL PLAZA  
SOIL BORINGS V  
RAMP C & RAMP D

SHEET NO. PS-21  
DRAWING NO. 343 OF 397



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### SOIL BORING LOG

Page 3 of 3  
Date 3/2/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY KMM  
SECTION I-88 and Route 47 LOCATION Southeast Quadrant Northing 1876144.455 Easting 948361.484  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO  
STRUCT. NO. Toll Plaza 2  
Station 3003+40.09  
BORING NO. 4274-TPB-07  
Station 3003+40.09  
Offset 33.68ft L  
Ground Surface Elev. 725.30 ft

DEPTH (ft)	BLOW COUNT (/6")	UCS (tsf)	MOISTURE (%)	ORGANIC (%)	NOTES
0					Surface Water Elev. n/a ft Stream Bed Elev. n/a ft Groundwater Elev.: First Encounter 714.3 ft ▼ Upon Completion n/a ft After Hrs. n/a ft
0					SILTY CLAY, trace sand and gravel (CL/ML) End of Boring

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



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### SOIL BORING LOG

Page 1 of 2  
Date 3/2/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY KMM  
SECTION I-88 and Route 47 LOCATION Southeast Quadrant Northing 1876104.701 Easting 948402.2929  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO  
STRUCT. NO. Toll Plaza 2  
Station 3003+71.64  
BORING NO. 4274-TPB-08  
Station 3003+71.64  
Offset 14.12ft R  
Ground Surface Elev. 724.10 ft

DEPTH (ft)	BLOW COUNT (/6")	UCS (tsf)	MOISTURE (%)	ORGANIC (%)	NOTES
0					Surface Water Elev. n/a ft Stream Bed Elev. n/a ft Groundwater Elev.: First Encounter 715.6 ft ▼ Upon Completion n/a ft After Hrs. n/a ft
0					18 inches Topsoil
2	22				Soft Brown and Gray, Moist SILTY CLAY, trace organics (CL/ML)
2	23	0.4 B			
6	16	2.0 P			Medium Dense Brown, Moist SAND, trace gravel (SP)
5	12				Very Stiff Brown, Moist SANDY CLAY (SC)
5	12				Medium Dense Brown, Moist SAND, trace gravel (SP)
7	12				Medium Dense Gray, Moist SAND, with gravel (SPG)
7	16				Medium Dense Gray, Moist SILT (ML)
2	10				Loose to Medium Dense Gray, Moist SAND, trace gravel (SP)
7	14				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

PEN TABLE ILTOLLWAY-TABLES-PL01.TBL  
PLOT CFE- ILTOLLWAY-PDF-COMFIGplotcf9  
USER NAME = J9/17/2018 PLOT SCALE = 2.00000 / in.  
FILE NAME = ...N4274-shr-plazastruc-22.dgn

DRAWN BY EV DATE 10/18/2018  
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NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
TOLL PLAZA  
SOIL BORINGS VI  
RAMP C & RAMP D

SHEET NO. PS-22  
DRAWING NO. 344 OF 397



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### SOIL BORING LOG

Page 2 of 2  
Date 3/2/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY KMM  
SECTION I-88 and Route 47 LOCATION Southeast Quadrant Northing 1876104.701 Easting 948402.2929  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. Toll Plaza 2  
Station 3003+71.64  
BORING NO. 4274-TPB-08  
Station 3003+71.64  
Offset 14.12ft R  
Ground Surface Elev. 724.10 ft

DEPTH (ft)  
GRAPHIC LOG  
BLOWS (6") (tsf) (pcf) (%)  
UCS Qu  
MOIST (%)  
ORGANIC (%)

Surface Water Elev. n/a ft  
Stream Bed Elev. n/a ft  
Groundwater Elev.:  
First Encounter 715.6 ft  
Upon Completion n/a ft  
After Hrs. n/a ft

DEPTH (ft)	GRAPHIC LOG	BLOWS (6") (tsf)	UCS Qu	MOIST (%)	ORGANIC (%)
702.60		13			
10		10	2.5	10	
12		12	B		
7		7	7.5	11	
15		15	B		
6		14	8.8	9	
13		13	B		
6		14	5.8	11	
10/1		10/1	P		
16		20	7.5	10	
0/1		0/1	B		
10		14	4.6	16	
11/1		11/1	B		
9		13	3.8	17	
18		18	B		
9		9	3.3	17	
5		5	B		

End of Boring  
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



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### SOIL BORING LOG

Page 1 of 1  
Date 3/2/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY KMM  
SECTION I-88 and Route 47 LOCATION Southeast Quadrant Northing 1876102.614 Easting 948325.224  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. n/a  
Station n/a  
BORING NO. 4274-SGB-04  
Station 3002+95.78  
Offset 0.18ft L  
Ground Surface Elev. 724.30 ft

DEPTH (ft)  
GRAPHIC LOG  
BLOWS (6") (tsf) (pcf) (%)  
UCS Qu  
MOIST (%)  
ORGANIC (%)

Surface Water Elev. n/a ft  
Stream Bed Elev. n/a ft  
Groundwater Elev.:  
First Encounter 713.3 ft  
Upon Completion n/a ft  
After Hrs. n/a ft

DEPTH (ft)	GRAPHIC LOG	BLOWS (6") (tsf)	UCS Qu	MOIST (%)	ORGANIC (%)
18 inches Topsoil		2			
722.80		2	0.8	27	
2		2	B		
719.80		3	1.0	15	
5		5	P		
717.30		4	1.5	9	
2		4	B		
3		3	0.8	15	
3		3	B		
712.80		3			
6		6		19	
9		9			
4		6		15	
6		6			
15		9			
14		14		17	
12		12			
705.80		1			
2		2		16	
9		9			

End of Boring  
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

PEN TABLE ILTOLLWAY-TABLES-PLC1.TBL  
PLOT CFE- ILTOLLWAY-PDF-COMFIG.ctb  
USER NAME = J9/17/2018  
PLOT DATE = 10/17/2018  
PLOT SCALE = 2.0000 / 1 in.  
FILE NAME = ...N4274-shr-plazastruc-23.dgn

DRAWN BY EV DATE 10/18/2018  
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REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
TOLL PLAZA  
SOIL BORINGS VII  
RAMP C & RAMP D

SHEET NO. PS-23  
DRAWING NO. 345 OF 397



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# SOIL BORING LOG

Page 1 of 1  
Date 2/27/18

ROUTE I-88 DESCRIPTION Ramps and Toll Plazas LOGGED BY KMM/SM  
SECTION I-88 and Route 47 LOCATION Northeast Quadrant Northing 1876720.879 Easting 948653.8754  
COUNTY Kane DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. n/a  
Station n/a  
BORING NO. 4274-SGB-16  
Station 4015+22.84  
Offset 0.04ft L  
Ground Surface Elev. 738.40 ft

DEPTH (ft)  
G R A V E L (%)  
B L O W S (/6") (tsf)  
U C S Qu  
M O I S T (%)  
D I L L I N G (pcf)  
O R G A N I C (%)

Surface Water Elev. n/a ft  
Stream Bed Elev. n/a ft  
Groundwater Elev.:  
First Encounter None ft  
Upon Completion n/a ft  
After Hrs. n/a ft

DEPTH (ft)	G R A V E L (%)	B L O W S (/6") (tsf)	U C S Qu	M O I S T (%)	D I L L I N G (pcf)	O R G A N I C (%)
18 inches Topsoil						
736.90	2					
Soft to Stiff Brown and Gray, Moist SILTY CLAY, trace gravel (CL/ML)	3	1.0	24			
	3	B				
	2					
	1	0.4	22			
	2	B				
Organic seam at 6 feet	2					
731.40	2	0.8	25			
Medium Stiff Brown, Moist SANDY CLAY, with gravel (SC)	3	P				
	2					
	3	0.8	12			
	6	B				
728.40						
End of Boring						

NOTES:  
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

PEN TABLE: ILTOLLWAY-TABLES-PLLOT.TBL  
PLOT CFG: ILTOLLWAY-PDF-CNF10p1ctf9  
USER NAME: 10/17/2018 PLOT SCALE = 2.0000 / in.  
FILE NAME: ...N4274-shr-plazastruc24.dgn

DRAWN BY EV DATE 10/18/2018  
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REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
TOLL PLAZA  
SOIL BORINGS VIII  
RAMP C & RAMP D

SHEET NO. PS-24  
DRAWING NO. 346 OF 397



BENCHMARK: SQUARE CUT IN EASTERN CORNER OF METAL BASE OF LIGHT POLE AT SOUTHWEST CORNER OF ROUTE 47 & I-88 EB OFF RAMP. EL = 747.79.

EXISTING STRUCTURE: THE EXISTING STRUCTURE 045-0082 WAS ORIGINALLY CONSTRUCTED IN 1972 AND REHABILITATED IN 1997 AND 2006. THE EXISTING STRUCTURE CONSISTS OF TWO VAULTED APPROACH SPANS AND TWO MAIN SPANS. THE VAULTED SPANS CONSIST OF A 7 1/2" THICK REINFORCED CONCRETE SLAB SUPPORTED ON 36" DEEP PPC I-BEAMS. THE MAIN SPANS CONSIST OF A 7 1/2" THICK REINFORCED CONCRETE SLAB SUPPORTED ON 48" DEEP CONTINUOUS FOR LIVE LOAD PPC I-BEAMS. THE OUT TO OUT DECK WIDTH IS 91'-8". THE SUBSTRUCTURE CONSISTS OF REINFORCED CONCRETE VAULTED ABUTMENTS, PILE BENTS, AND TWO THREE-COLUMN PIERS AT C OF I-88 (E-W TOLLWAY). THE ABUTMENTS, PIERS, AND PILE BENTS ARE REINFORCED CONCRETE ELEMENTS SUPPORTED ON CAST-IN-PLACE CONCRETE PILE. THE OVERALL STRUCTURE LENGTH IS 239'-0" BACK TO BACK OF PILE BENTS.

MAINTENANCE OF TRAFFIC: TRAFFIC WILL BE MAINTAINED BY UTILIZING STAGED CONSTRUCTION.

SALVAGE: NONE.

**BRIDGE RATING (HS20)**

LOAD CASE	INVENTORY RATING	OPERATING RATING
MOMENT (STRENGTH)	1.00	1.61
SHEAR (STRENGTH)	1.07	1.79

**DESIGN SPECIFICATIONS**

AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGE, 17TH EDITION

STRUCTURE DESIGN MANUAL, ILLINOIS TOLLWAY, MARCH 2018

ILLINOIS DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL DATED JANUARY 2012

ILLINOIS DEPARTMENT OF TRANSPORTATION STRUCTURAL SERVICE MANUAL DATED JUNE 2017

ILLINOIS DEPARTMENT OF TRANSPORTATION ALL BRIDGE DESIGNERS MEMORANDUMS

**HIGHWAY CLASSIFICATION**

IL RTE 47 (F.A.P. ROUTE 326)

FUNCTIONAL CLASS: OTHER PRINCIPAL ARTERIAL

ADT: 14,900 (2016) 15,160 (2040)

ADTT: 1,490 (2016) 1,520 (2040)

DHV = 1490 (2016) 1,520 (2040)

DESIGN SPEED: 60 M.P.H.

POSTED SPEED: 55 M.P.H.

TWO-WAY TRAFFIC DIRECTIONAL DIST. 50:50

I-88

E.B. I-88

FUNCTIONAL CLASS: INTERSTATE (URBAN)

ADT: 58,920 (2013) 62,930 (2040)

ADTT: 3,830 (2013) 4,090 (2040)

DHV = 5,395

DESIGN SPEED: 70 M.P.H.

POSTED SPEED: 60 M.P.H.

W.B. I-88

FUNCTIONAL CLASS: INTERSTATE (URBAN)

ADT: 62,710 (2013) 66,980 (2040)

ADTT: 4,076 (2013) 4,360 (2040)

DHV = 5,760

DESIGN SPEED: 70 M.P.H.

POSTED SPEED: 60 M.P.H.

**DESIGN STRESSES**

**FIELD UNITS (NEW CONSTRUCTION)**

f'c = 4,000 psi CLASS BS (DECK, APPR. SLAB, PARAPETS & BARRIERS)

f'c = 4,000 psi HIGH PERFORMANCE CONC. (MOMENT SLAB)

f'c = 3,500 psi CLASS SI (APPR. SLAB FTNG.)

fy = 60,000 psi (REINFORCEMENT)

**FIELD UNITS (EXISTING CONSTRUCTION)**

CAST IN PLACE CONCRETE

f'c = 3,500 psi (SUBSTRUCTURE & SUPERSTRUCTURE)

fy = 60,000 psi (REINFORCEMENT SUPERSTRUCTURE)

fy = 40,000 psi (REINFORCEMENT SUBSTRUCTURE)

PRECAST PRESTRESSED CONCRETE

f'c = 7,000 psi (48" PPC I-BEAMS)

f'c = 5,000 psi (36" PPC I-BEAMS)

f's = 270,000 psi (1/2" Ø LOW RELAX. STRANDS)

**SEISMIC DATA**

SEISMIC PERFORMANCE CATEGORY (SPC) = A  
BEDROCK ACCELERATION COEFFICIENT (A) = 0.4g  
SITE COEFFICIENT (S) = 1.0

**LOADING HS20-44**

**CONSTRUCTION SPECIFICATIONS**

ILLINOIS DEPARTMENT OF TRANSPORTATION GUIDE BRIDGE SPECIAL PROVISIONS (GBSP'S).

ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS TO THE ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION ISSUED MAY, 2017.

ILLINOIS DEPARTMENT OF TRANSPORTATION SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS ADOPTED JANUARY 1, 2018.

ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION ADOPTED APRIL 1, 2016.

**SCOPE OF WORK**

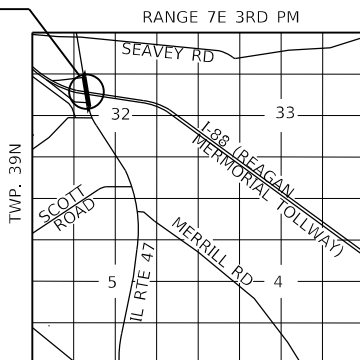
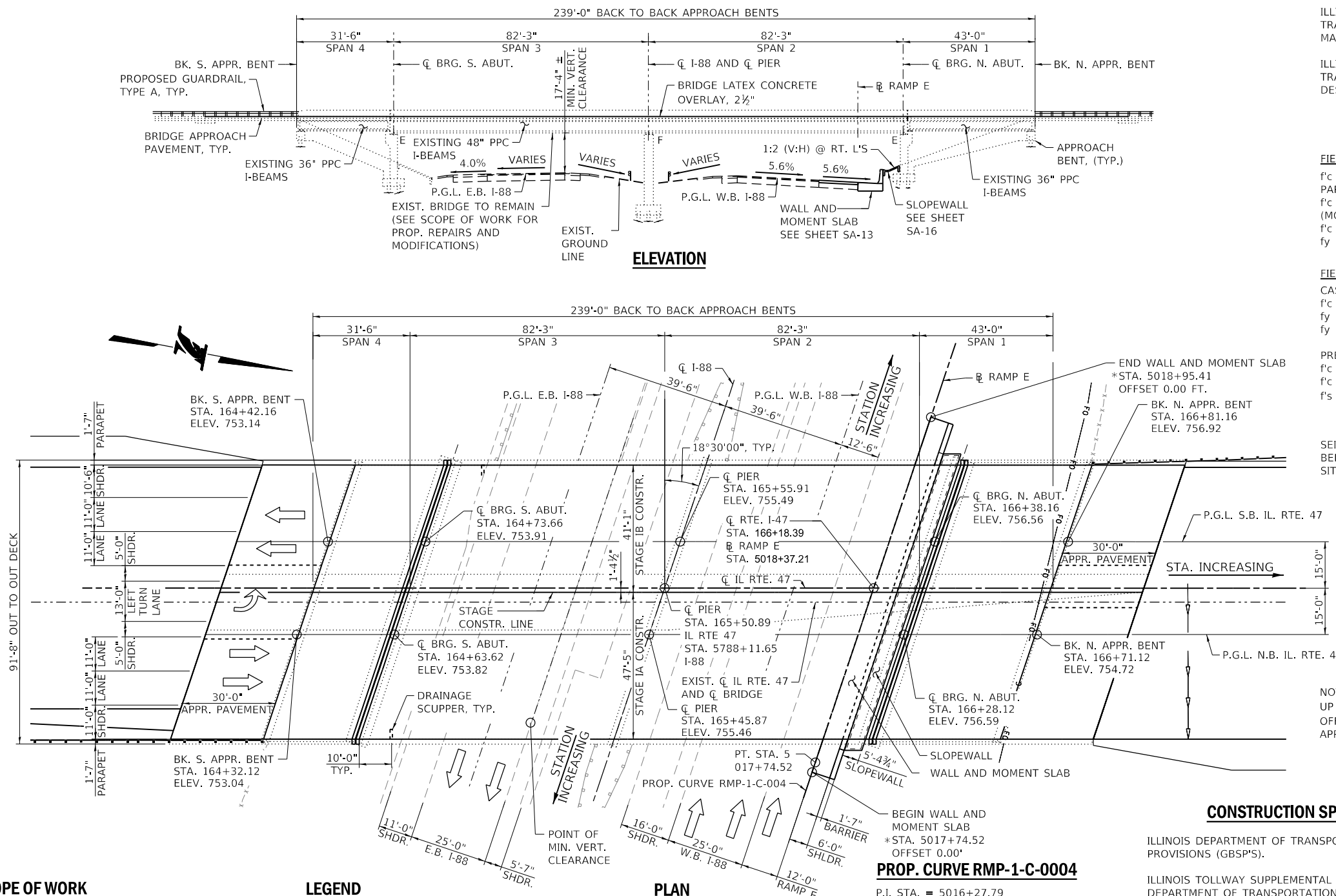
- REPAIR DELAMINATED CONCRETE IN BRIDGE DECK AND CRACKS IN APPR. PAVEMENTS.
- REMOVE THE EXISTING RAISED CONCRETE MEDIAN.
- SCARIFY THE ENTIRE WIDTH OF THE BRIDGE DECK AND APPR. PAVEMENTS AND PLACE A LATEX CONCRETE OVERLAY.
- REPLACE THE BRIDGE DECK EXPANSION JOINT AT EACH ABUTMENT
- CONSTRUCT THE RETAINING WALL AND SLOPEWALL AT THE NORTH ABUTMENT TO ACCOMMODATE RAMP E

**LEGEND**

- - - - - EXISTING STORM SEWER
- - - - - EXISTING FIBER OPTIC
- x - x - x - x - x - x - EXISTING FENCE
- - - - - EXISTING GUARDRAIL

**PLAN**

\* STATION AND OFFSET SHOWN ALONG RAMP E



**GENERAL PLAN & ELEVATION**

**IL RTE 47 OVER I-88**

**F.A.P. ROUTE 326**

**KANE COUNTY**

**STA. 165+50.89**

**STRUCTURE NO. 045-0082**

FILE NAME = ...N4274-sh-t-BN101-01\_gens.dgn

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PLOT SCALE: = 48.00000 / 1"

DRAWN BY EV DATE 10/18/2018

CHECKED BY GJH DATE 10/18/2018



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2700 OGDEN AVENUE  
DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
BRIDGE NO. 1101  
GENERAL PLAN AND ELEVATION  
IL RTE 47 OVER I-88

SHEET NO. SA-01  
DRAWING NO. 347 OF 397

**GENERAL NOTES**

**CAST-IN-PLACE CONCRETE**

ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" X 45° CHAMFER, EXCEPT WHERE SHOWN OTHERWISE. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL.

**REINFORCEMENT BARS**

REINFORCEMENT BARS, INCLUDING EPOXY-COATED REINFORCEMENT BARS, SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A706), GRADE 60, DEFORMED BARS.

REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.

REINFORCEMENT BAR BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315.

REINFORCEMENT BAR BENDING DIMENSIONS ARE OUT TO OUT.

BAR NOTED THUS, 3X2-#5 INDICATES 3 LINES OF BARS WITH 2 LENGTHS OF BARS PER LINE.

COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BARS SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN.

SLOPEWALLS SHALL BE REINFORCED WITH WELDED WIRE REINFORCEMENT, 6" X 6" - W4.0 X 4.0, WEIGHING 58 POUNDS PER 100 SQUARE FEET.

**CONSTRUCTION**

PLAN DIMENSIONS AND DETAILS RELATIVE TO EXISTING STRUCTURE HAVE BEEN TAKEN FROM EXISTING PLANS AND ARE SUBJECT TO NOMINAL CONSTRUCTION VARIATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY SUCH DIMENSIONS AND DETAILS IN THE FIELD AND MAKE NECESSARY APPROVED ADJUSTMENTS PRIOR TO CONSTRUCTION OR ORDERING OF MATERIALS. SUCH VARIATIONS SHALL NOT BE CAUSE FOR ADDITIONAL COMPENSATION FOR A CHANGE IN THE SCOPE OF WORK; HOWEVER, THE CONTRACTOR SHALL BE PAID FOR THE QUANTITY ACTUALLY FURNISHED AT THE UNIT PRICE FOR THE WORK.

CONTRACTOR SHALL NOT SCALE DIMENSIONS FROM THE CONTRACT PLANS FOR CONSTRUCTION PURPOSES. SCALES SHOWN ARE FOR INFORMATION ONLY.

NO CONSTRUCTION JOINTS EXCEPT THOSE SHOWN ON THE PLANS SHALL BE ALLOWED UNLESS APPROVED BY THE ENGINEER.

THE CONTRACTOR MAY REQUEST COPIES OF EXISTING CONSTRUCTION PLANS THAT ARE CURRENTLY ON FILE WITH THE ILLINOIS TOLLWAY. THE REQUEST SHALL BE IN WRITING WITH THE UNDERSTANDING THAT ANY REPRODUCTION COST WILL BE AT THE CONTRACTOR'S EXPENSE AT NO ADDITIONAL COST TO THE ILLINOIS TOLLWAY.

NO CONCRETE CUTTING SHALL BE PERMITTED UNTIL THE CUTTING LIMITS HAVE BEEN OUTLINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO STARTING CONSTRUCTION. CONTACT J.U.I.E., 800-892-0123.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL FIBER OPTIC UTILITIES PRIOR TO STARTING CONSTRUCTION. THE CONTRACTOR SHALL INITIATE THE LOCATION PROCESS FOR THE FIBER OPTIC CABLE BY COMPLETING A "REQUEST ILLINOIS TOLLWAY UTILITIES LOCATE" FORM FILLED IN ONLINE AT THE ILLINOIS TOLLWAY WEBSITE UNDER "DOING BUSINESS" AT LEAST FOUR (4) BUSINESS DAYS PRIOR TO STARTING ANY UNDERGROUND OPERATIONS, EXCAVATIONS OR DIGGING OF ANY TYPE IN THE GENERAL AREA OF THE FIBER OPTIC CABLE."

THE CONTRACTOR SHALL USE CARE WHEN EXCAVATING AROUND EXISTING FOUNDATIONS. ANY DAMAGE TO THE EXISTING STRUCTURE AND/OR SUPPORTING FOUNDATION SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE AT NO ADDITIONAL COST TO THE ILLINOIS TOLLWAY.

EXISTING REINFORCEMENT WHICH IS TO BE INCORPORATED INTO THE NEW CONSTRUCTION SHALL BE BLAST CLEANED TO GRAY METAL, STRAIGHTENED (WITHOUT HEATING), AND CUT TO FIT. COST OF WHICH SHALL BE INCLUDED WITH "CONCRETE REMOVAL."

THE PROTECTIVE SHIELD SYSTEM SHALL EXTEND A MINIMUM OF 10' BEYOND THE INDICATED LIMITS OF REPAIR SHOWN IN THE PLANS OR 5' BEYOND THE ACTUAL LIMITS OF PARTIAL OR FULL DEPTH REPAIR AS IDENTIFIED IN THE FIELD, WHICHEVER IS GREATER.

WHENEVER ANY MATERIAL IS DEPOSITED INTO A DRAINAGE SYSTEM OR DRAINAGE STRUCTURES, THE DEPOSITED MATERIAL SHALL BE REMOVED AT THE CLOSE OF EACH WORKING DAY. AT THE CONCLUSION OF CONSTRUCTION OPERATIONS, ALL DRAINAGE SYSTEMS AND STRUCTURES SHALL BE FREE FROM DIRT AND DEBRIS DEPOSITED DURING THE VARIOUS CONSTRUCTION OPERATIONS.

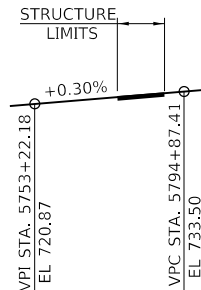
**STRUCTURAL ASSESSMENT REPORTS FOR CONTRACTOR'S MEANS AND METHODS**

A STRUCTURAL ENGINEER, LICENSED IN THE STATE OF ILLINOIS, SHALL PREPARE AND SUBMIT STRUCTURE ASSESSMENT REPORTS (SARS) FOR THE PROPOSED WORK ASSOCIATED WITH REMOVING, MODIFYING OR RECONSTRUCTING EXISTING STRUCTURES OR PORTIONS THEREOF. UNLESS NOTED OTHERWISE, A SAR SHALL BE REQUIRED WHEN THE CONTRACTOR'S MEANS AND METHODS APPLY LOADS TO THE STRUCTURE OR CHANGE ITS STRUCTURAL BEHAVIOR. A SAR SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO STARTING THE WORK, IN ACCORDANCE WITH THE LATEST IDOT GUIDE BRIDGE SPECIAL PROVISION, "STRUCTURAL ASSESSMENT REPORTS FOR CONTRACTOR'S MEANS AND METHODS" PRIOR TO BEGINNING THE WORK COVERED BY THAT SAR. SEPARATE PORTIONS OF THE WORK MAY BE COVERED BY SEPARATE SARS WHICH MAY BE SUBMITTED AT DIFFERENT TIMES OR AS DICTATED BY THE CONTRACTOR'S SCHEDULE.

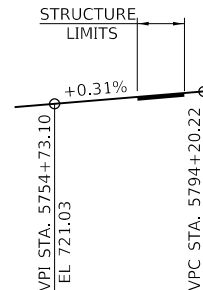
AN EXISTING STRUCTURE INFORMATION PACKAGE (ESIP) WILL BE PROVIDED BY THE ILLINOIS TOLLWAY TO THE CONTRACTOR UPON REQUEST. THIS PACKAGE WILL TYPICALLY INCLUDE EXISTING OR "AS BUILT" PLANS, AND THE LATEST NATIONAL BRIDGE INSPECTION STANDARDS (NBIS) INSPECTION REPORT. THE AVAILABILITY OF STRUCTURAL INFORMATION FROM THE ILLINOIS TOLLWAY IS SOLELY FOR THE CONVENIENCE AND INFORMATION OF THE CONTRACTOR AND SHALL NOT RELIEVE THE CONTRACTOR OF THE DUTY TO MAKE, AND THE RISK OF MAKING, EXAMINATIONS AND INVESTIGATIONS AS REQUIRED TO ASSESS CONDITIONS AFFECTING THE WORK. ANY DATA FURNISHED IN THE ESIP IS FOR INFORMATION ONLY AND DOES NOT CONSTITUTE A PART OF THE CONTRACT. THE ILLINOIS TOLLWAY MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, AS TO THE INFORMATION CONVEYED OR AS TO ANY INTERPRETATIONS MADE FROM THE DATA.

**TOTAL BILL OF MATERIAL**

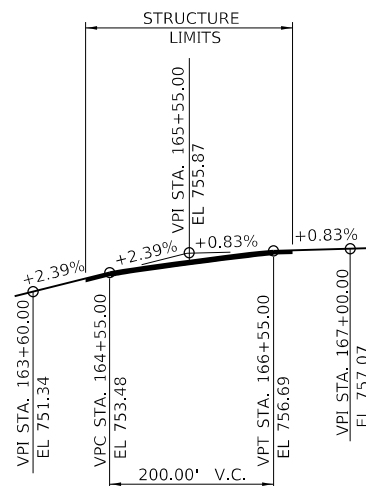
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20900110	POROUS GRANULAR BACKFILL	CU YD	97	
31101200	SUBBASE GRANULAR MATERIAL, TYPE B 4"	SQ YD	125	
50102400	CONCRETE REMOVAL	CU YD	148.9	
50104650	SLOPE WALL REMOVAL	SQ YD	155	
50157300	PROTECTIVE SHIELD	SQ YD	311	
50200100	STRUCTURE EXCAVATION	CU YD	230	
50300225	CONCRETE STRUCTURES	CU YD	7.3	
50300255	CONCRETE SUPERSTRUCTURE	CU YD	31.7	
50300300	PROTECTIVE COAT	SQ YD	157	
50301350	CONCRETE SUPERSTRUCTURE (APPROACH SLAB)	CU YD	49.5	
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	30,820	
50800515	BAR SPLICERS	EACH	144	
51100100	SLOPE WALL 4 INCH	SQ YD	70	
52000110	PREFORMED JOINT STRIP SEAL	FOOT	191	
59000200	EPOXY CRACK INJECTION	FOOT	171	
59100100	GEOCOMPOSITE WALL DRAIN	SQ YD	51	
J1503020	HIGH PERFORMANCE CONCRETE MOMENT SLAB STRUCTURES	CU YD	86.5	
X5030250	BRIDGE DECK GROOVING (LONGITUDINAL)	SQ YD	1,894	
Z0006014	BRIDGE DECK LATEX CONCRETE OVERLAY, 2 1/2 INCHES	SQ YD	2,923	
Z0012130	BRIDGE DECK SCARIFICATION 3/4"	SQ YD	2,963	
Z0016200	DECK SLAB REPAIR (PARTIAL)	SQ YD	5	
Z0018051	DRAINAGE SCUPPERS TO BE ADJUSTED	EACH	2	
Z0029090	DIAMOND GRINDING (BRIDGE SECTION)	SQ YD	2,809	
Z0046304	PIPE UNDERDRAINS FOR STRUCTURES 4"	FOOT	121	



**PROFILE GRADE**  
ALONG E.B. I-88

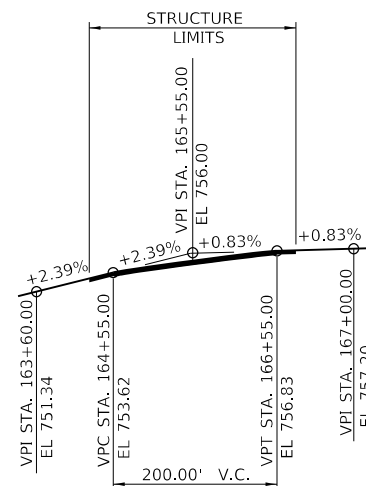


**PROFILE GRADE**  
ALONG W.B. I-88



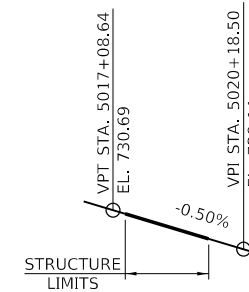
**PROFILE GRADE**  
ALONG S.B. IL RTE. 47

THE PROFILE GRADE SHOWS THE FINAL ELEVATIONS AFTER GRINDING



**PROFILE GRADE**  
ALONG N.B. IL RTE. 47

THE PROFILE GRADE SHOWS THE FINAL ELEVATIONS AFTER GRINDING



**PROFILE GRADE**  
ALONG RAMP E

**INDEX OF SHEETS**

- SA-01 GENERAL PLAN AND ELEVATION
- SA-02 GENERAL NOTES AND BILL OF MATERIAL
- SA-03 CONSTRUCTION STAGING
- SA-04 APPROACH SLAB STAGING
- SA-05 FINAL CROSS SECTION AND DETAILS
- SA-06 DECK REMOVAL AND REPAIR PLAN
- SA-07 APPR. REMOVAL AND REPAIR PLAN
- SA-08 EXP. JOINT RECONSTRUCTION
- SA-09 MODIFIED PREFORMED JOINT STRIP SEAL
- SA-10 DRAINAGE SCUPPER ADJ. DETAILS
- SA-11 APPR. PVTM RECONSTRUCTION 1
- SA-12 APPR. PVTM RECONSTRUCTION 2
- SA-13 CONC. WALL AND MOMENT SLAB 1
- SA-14 CONC. WALL AND MOMENT SLAB 2
- SA-15 CONC. WALL AND MOMENT SLAB 3
- SA-16 SLOPEWALL DETAILS
- SA-17 BAR SPLICER DETAILS

**ABBREVIATIONS**

- |          |                              |
|----------|------------------------------|
| ABUT.    | ABUTMENT                     |
| APPR.    | APPROACH                     |
| B/       | BOTTOM OF                    |
| B.F.     | BACK FACE                    |
| BK.      | BACK FACE                    |
| BRG.     | BEARING                      |
| CL.      | CLEARANCE                    |
| CONC.    | CONCRETE                     |
| CONSTR.  | CONSTRUCTION                 |
| DIA.     | DIAMETER                     |
| E.F.     | EACH FACE                    |
| E.       | EAST                         |
| E.B.     | EAST BOUND                   |
| ELEV.    | ELEVATION                    |
| EXIST.   | EXISTING                     |
| EXP.     | EXPANSION                    |
| F.F.     | FRONT FACE                   |
| HORIZ.   | HORIZONTAL                   |
| I.F.     | INSIDE FACE                  |
| JT.      | JOINT                        |
| LT.      | LEFT                         |
| MIN.     | MINIMUM                      |
| N.       | NORTH                        |
| N.B.     | NORTH BOUND                  |
| O.F.     | OUTSIDE FACE                 |
| PVMT.    | PAVEMENT                     |
| P.G.L.   | PROFILE GRADE LINE           |
| P.J.F.   | PREFORMED JOINT FILLER       |
| P.J.S.   | PREFORMED JOINT SEALER       |
| PPC      | PRECAST PRESTRESSED CONCRETE |
| PROP.    | PROPOSED                     |
| REINFOR. | REINFORCEMENT                |
| RT.      | RIGHT                        |
| S.       | SOUTH                        |
| S.B.     | SOUTH BOUND                  |
| SHLDR.   | SHOULDER                     |
| STA.     | STATION                      |
| T/       | TOP OF                       |
| TYP.     | TYPICAL                      |
| V.I.F.   | VERIFY IN FIELD              |
| VERT.    | VERTICAL                     |
| W.       | WEST                         |

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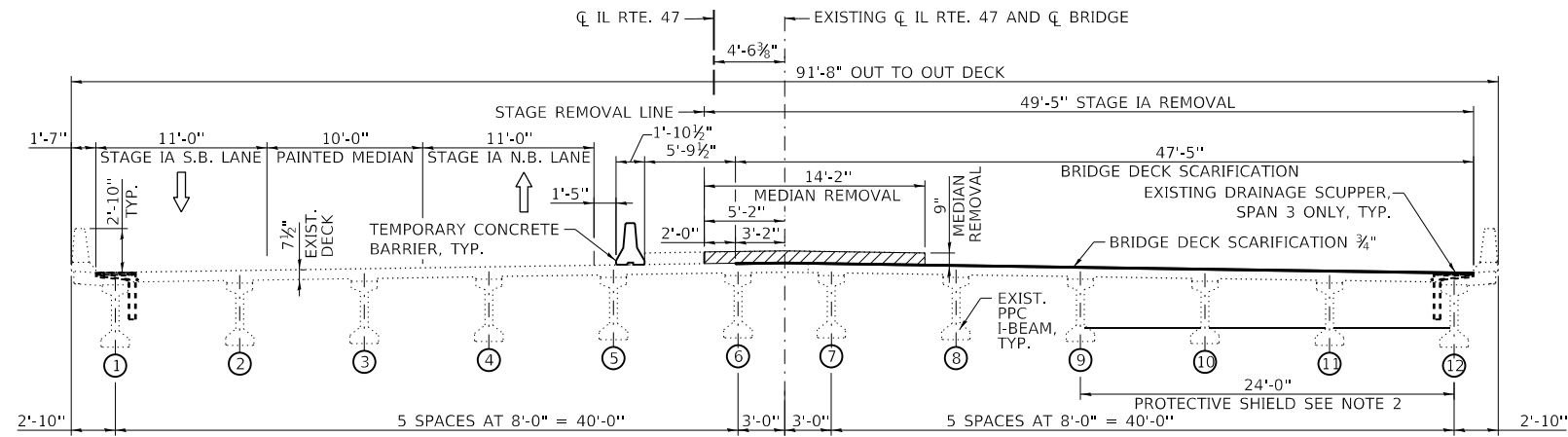


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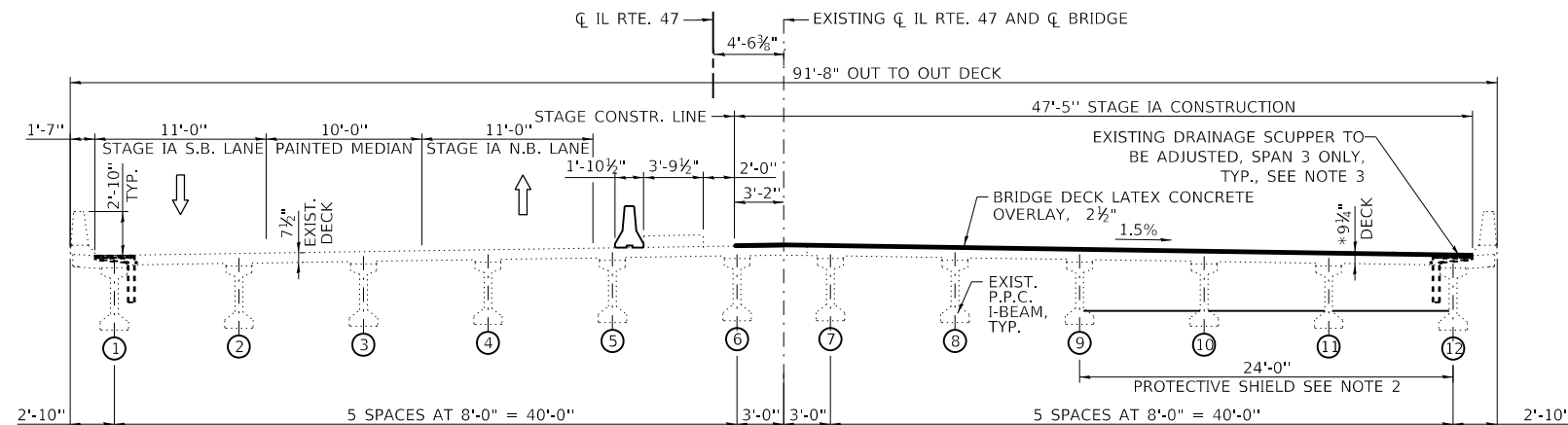
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 BRIDGE NO. 1101  
 GENERAL NOTES AND BILL OF MATERIAL  
 IL RTE 47 OVER I-88

**SHEET NO.** SA-02  
**DRAWING NO.** 348 OF 397



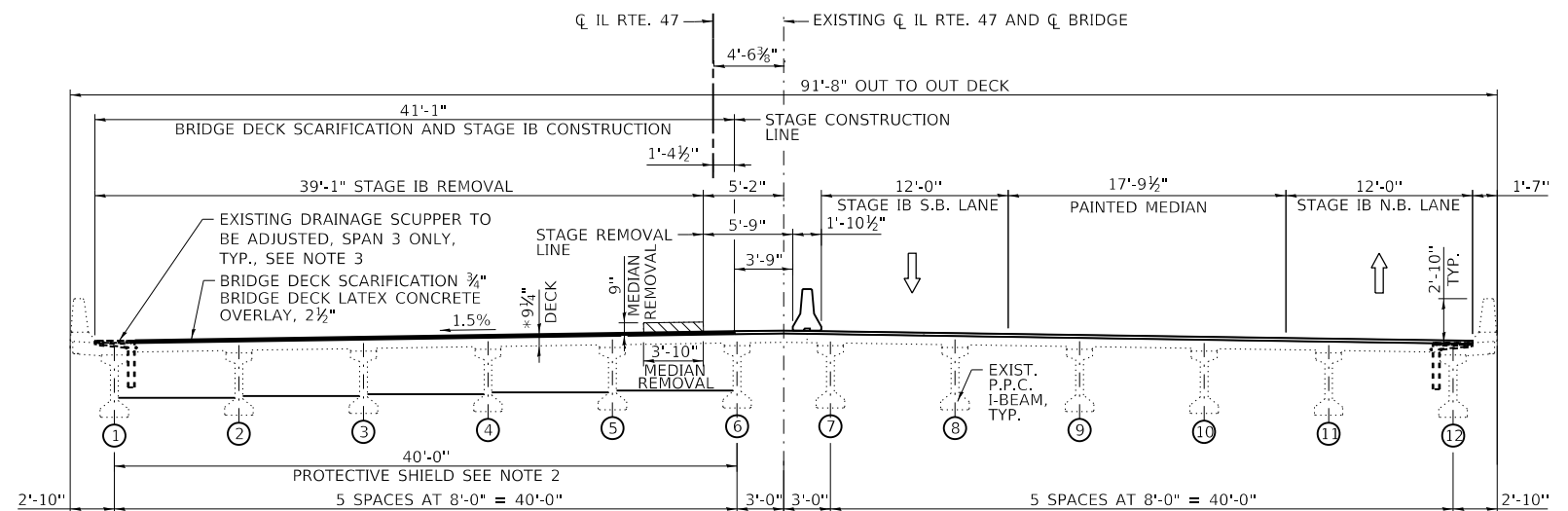
**STAGE IA REMOVAL**

(LOOKING NORTH, SPANS 2 & 3 SHOWN, SPANS 1 & 4 SIMILAR)  
ALL DIMENSIONS AT RIGHT L'S TO CL IL RTE. 47



**STAGE IA CONSTRUCTION**

(LOOKING NORTH, SPANS 2 & 3 SHOWN, SPANS 1 & 4 SIMILAR)  
ALL DIMENSIONS AT RIGHT L'S TO CL IL RTE. 47



**STAGE IB REMOVAL AND CONSTRUCTION**

(LOOKING NORTH, SPANS 2 & 3 SHOWN, SPANS 1 & 4 SIMILAR)  
ALL DIMENSIONS AT RIGHT L'S TO CL IL RTE. 47

\* 3/4" CONCRETE DECK, 2 1/2"  
LATEX CONCRETE OVERLAY  
(PRIOR GRINDING)

**LEGEND**

- RAISED MEDIAN REMOVAL STAGE IA
- RAISED MEDIAN REMOVAL STAGE IB
- CONCRETE BRIDGE DECK SCARIFICATION 3/4" / BRIDGE DECK LATEX CONCRETE OVERLAY, 2 1/2"

**NOTES:**

1. FOR TEMPORARY CONCRETE BARRIER QUANTITY SEE ROADWAY SHEETS
2. FOR PROTECTIVE SHIELD LIMITS SEE SHEET SA-06
3. FOR DRAINAGE SCUPPER ADJUSTMENT DETAILS, SEE SHEET SA-10

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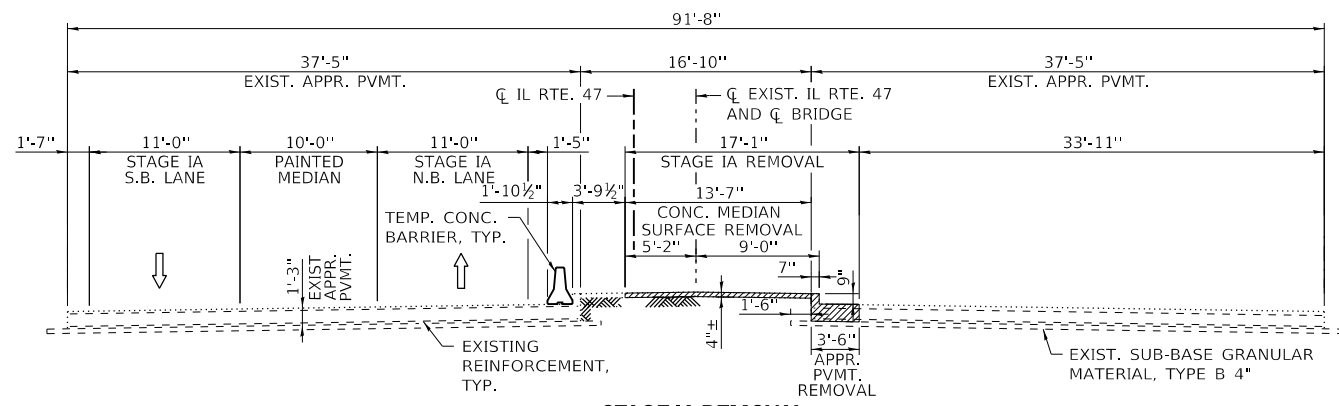


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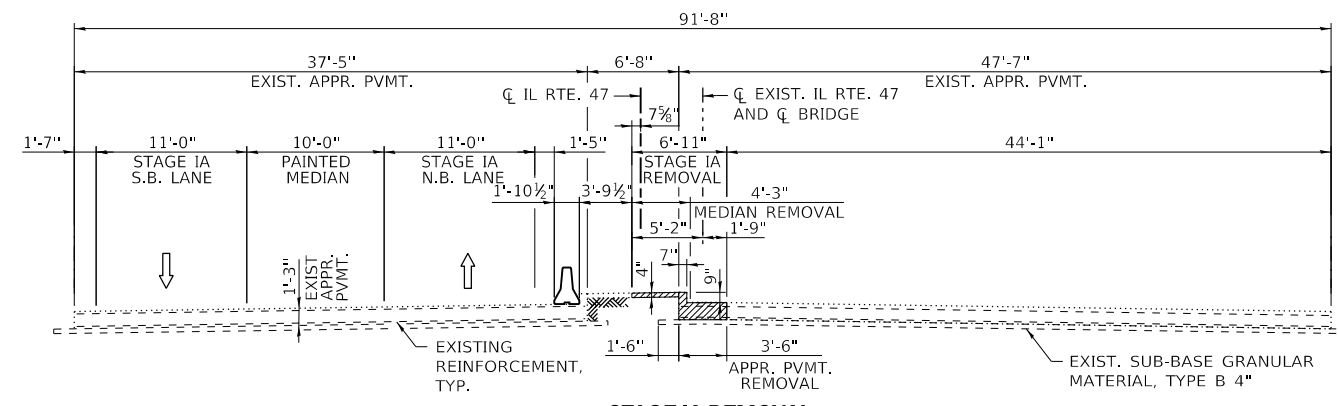
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 BRIDGE NO. 1101  
 CONSTRUCTION STAGING  
 IL RTE 47 OVER I-88

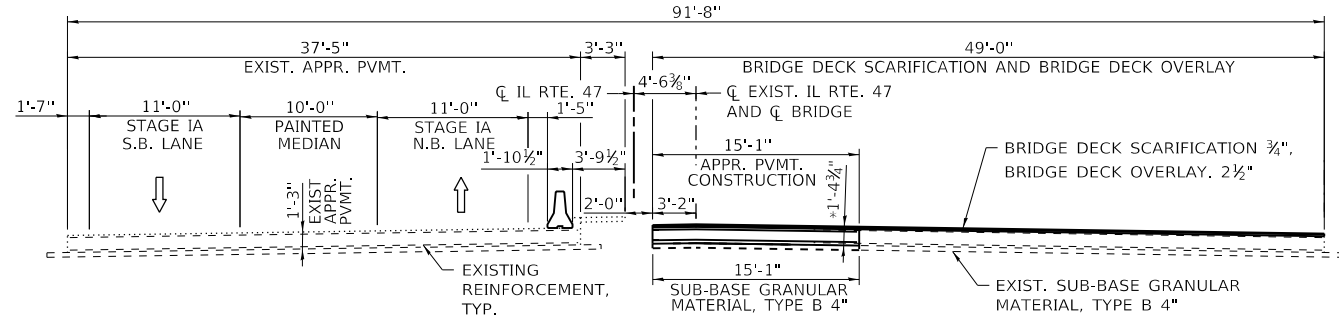
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**DRAWING NO.**  
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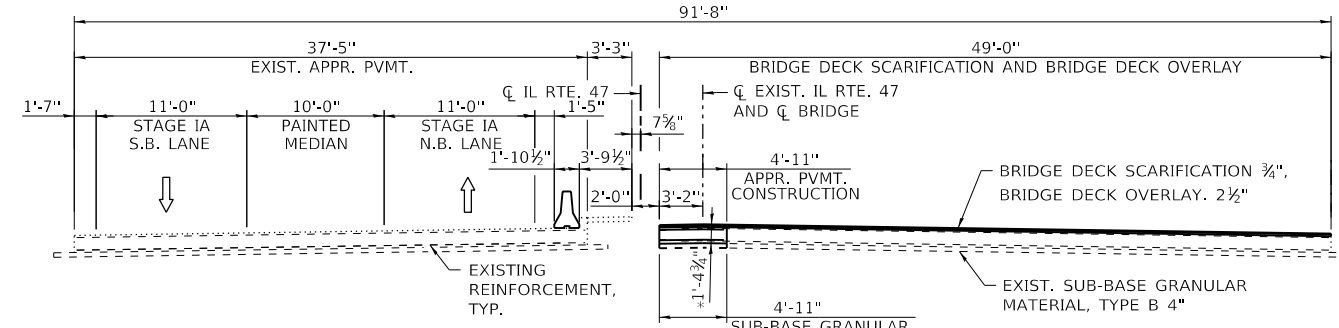
**STAGE IA REMOVAL**  
SOUTH APPROACH SLAB  
LOOKING NORTH



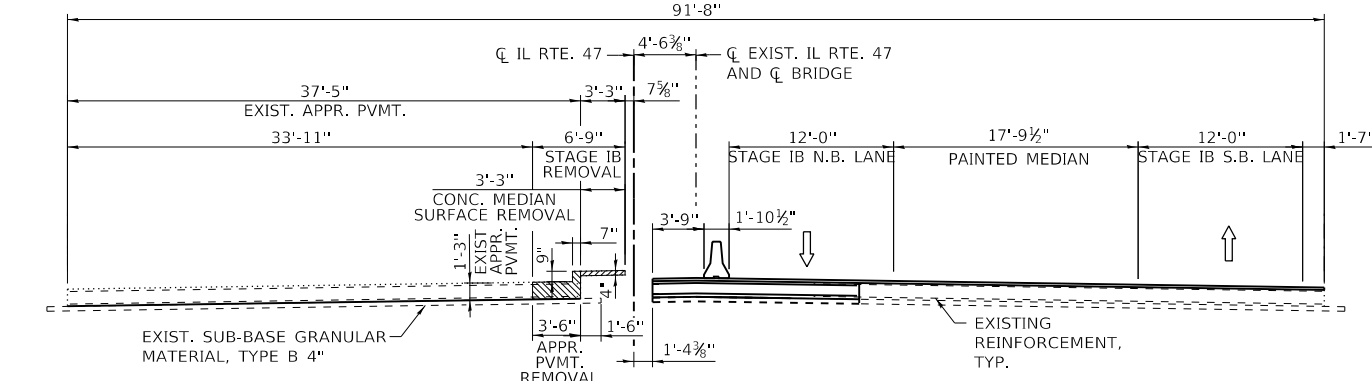
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NORTH APPROACH SLAB  
LOOKING NORTH



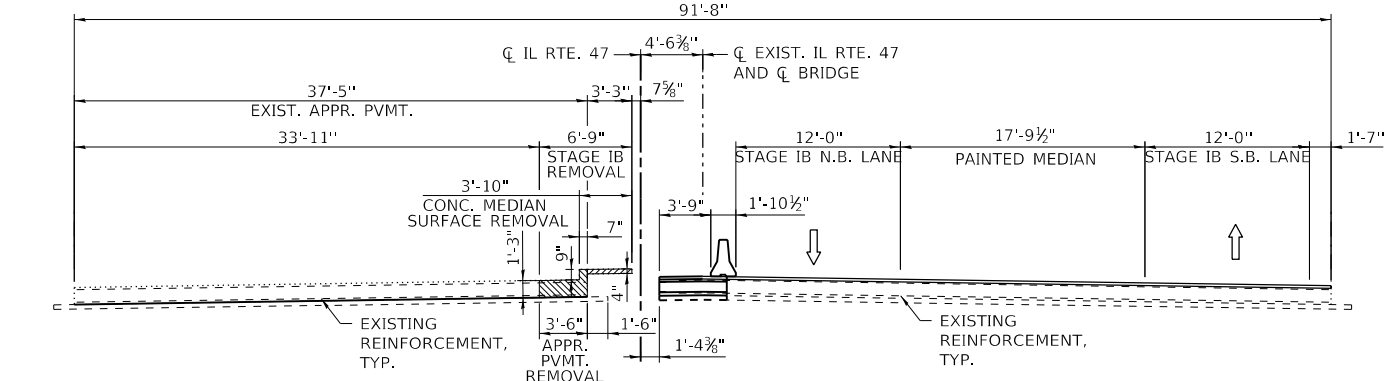
**STAGE IA CONSTRUCTION**  
SOUTH APPROACH SLAB  
LOOKING NORTH



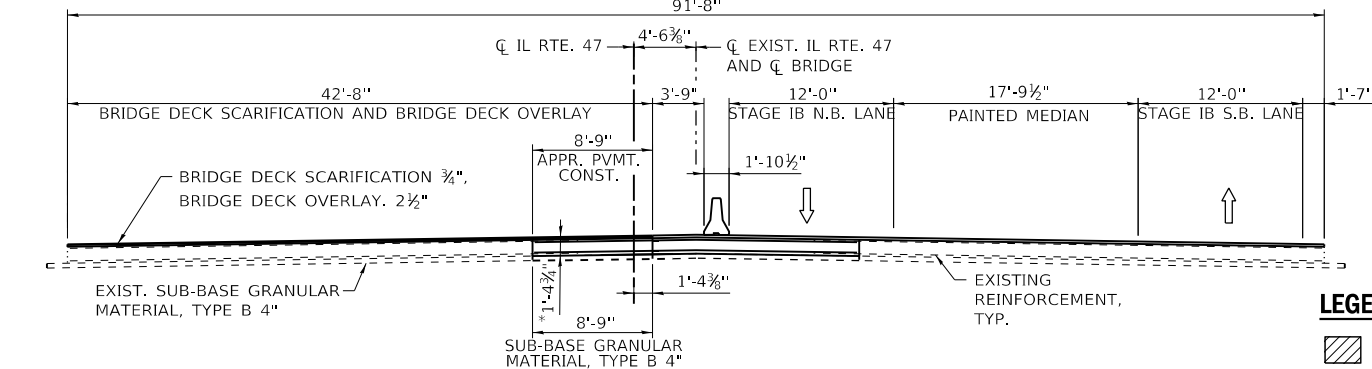
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NORTH APPROACH SLAB  
LOOKING NORTH



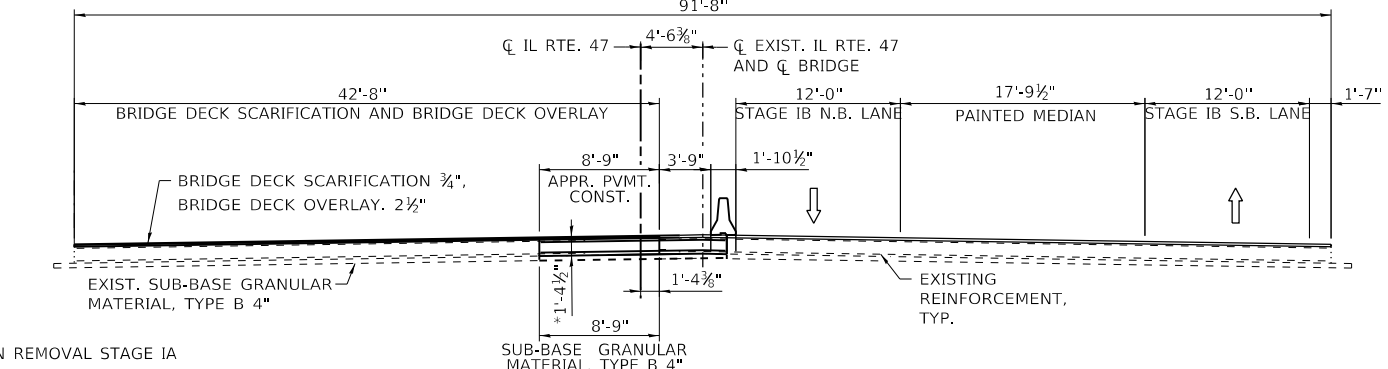
**STAGE IB REMOVAL**  
SOUTH APPROACH SLAB  
LOOKING NORTH



**STAGE IB REMOVAL**  
NORTH APPROACH SLAB  
LOOKING NORTH



**STAGE IB CONSTRUCTION**  
SOUTH APPROACH SLAB  
LOOKING NORTH



**STAGE IB CONSTRUCTION**  
NORTH APPROACH SLAB  
LOOKING NORTH

\* 1'-2 1/4" CONCRETE DECK, 2 1/2" LATEX CONCRETE OVERLAY (PRIOR GRINDING)

**LEGEND**

- RAISED MEDIAN REMOVAL STAGE IA
- RAISED MEDIAN REMOVAL STAGE IB
- CONCRETE BRIDGE DECK SCARIFICATION 3/4", BRIDGE DECK LATEX CONCRETE OVERLAY, 2 1/2"

NOTES:  
1. FOR TEMPORARY CONCRETE BARRIER QUANTITY SEE ROADWAY SHEETS.

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<b>CHECKED BY</b>	GJH	<b>DATE</b>	10/18/2018

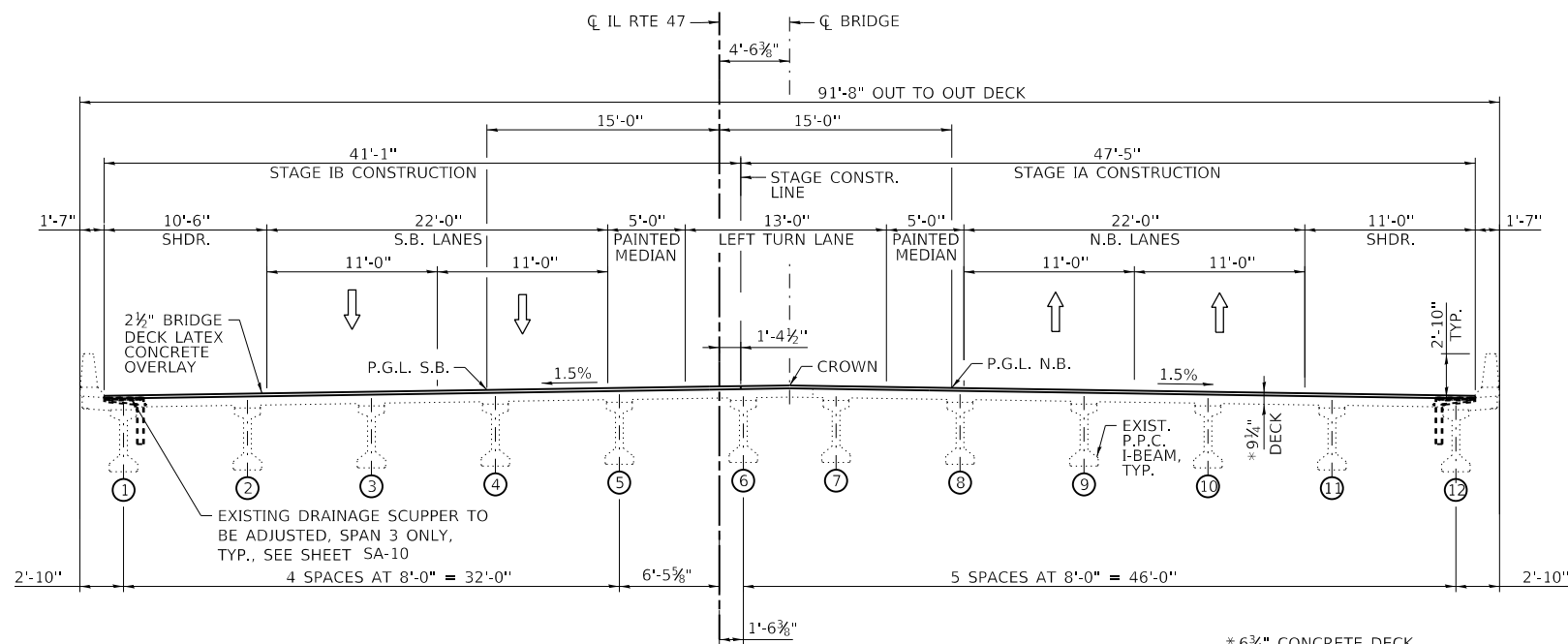
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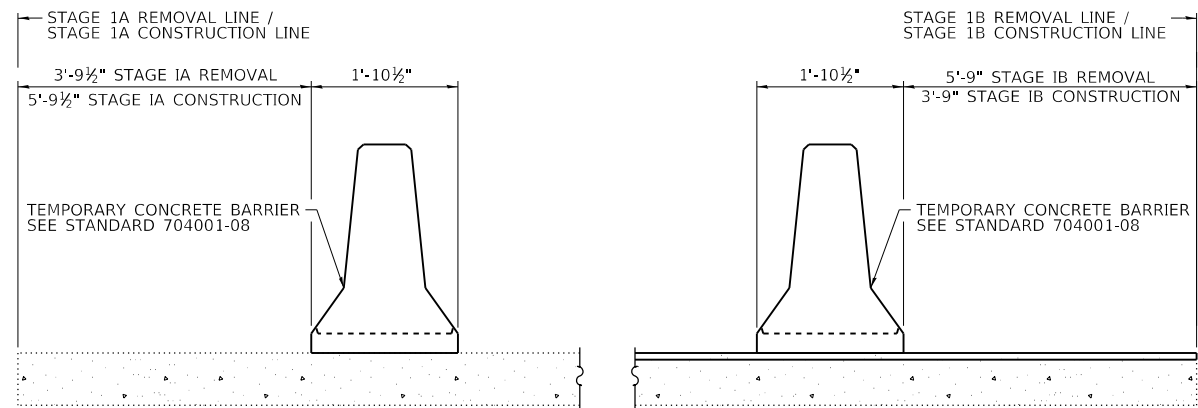
**CONTRACT NO. I-16-4274**  
 BRIDGE NO. 1101  
 APPROACH SLAB STAGING  
 IL RTE 47 OVER I-88

**SHEET NO.**  
 SA-04  
**DRAWING NO.**  
 350 OF 397



**FINAL CROSS SECTION**  
 (LOOKING NORTH, SPANS 2 & 3 SHOWN, SPANS 1 & 4 SIMILAR)  
 ALL DIMENSIONS AT RIGHT L'S TO CL IL RTE. 47

\* 6 3/8" CONCRETE DECK,  
 2 1/2" LATEX CONCRETE OVERLAY  
 (PRIOR GRINDING)



**SECTION THRU EXISTING SLAB**      **SECTION THRU RECONSTRUCTED SLAB**

**TEMPORARY CONCRETE BARRIER DETAILS**

- NOTES:  
 1. FOR TEMPORARY CONCRETE BARRIER DETAILS SEE ROADWAY SHEETS

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**DRAWN BY** EV      **DATE** 10/18/2018  
**CHECKED BY** GJH      **DATE** 10/18/2018

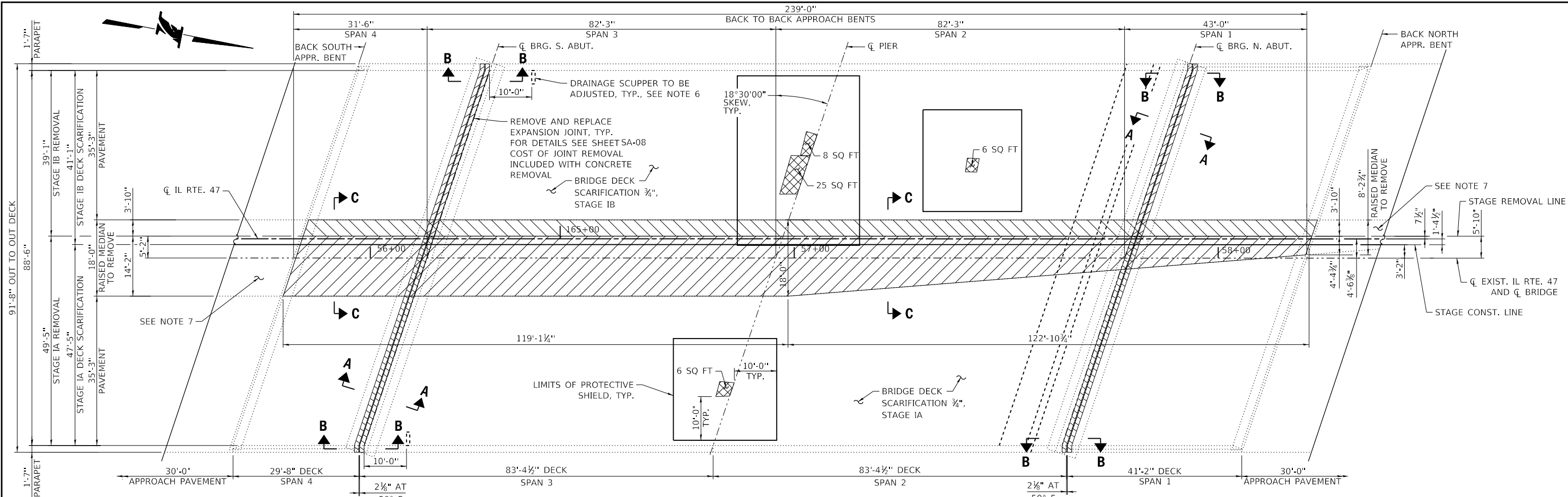
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**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 BRIDGE NO. 1101  
 FINAL CROSS SECTION AND DETAILS  
 IL RTE 47 OVER I-88

**SHEET NO.** SA-05  
**DRAWING NO.** 351 OF 397



**REMOVAL AND REPAIRS PLAN**

**LEGEND**

- RAISED MEDIAN REMOVAL STAGE IA
- RAISED MEDIAN REMOVAL STAGE IB
- EXPANSION JOINT REMOVAL STAGE IA
- EXPANSION JOINT REMOVAL STAGE IB
- DECK SLAB REPAIR (PARTIAL)
- BRIDGE DECK SCARIFICATION 3/4"
- 3/4" SAWCUT

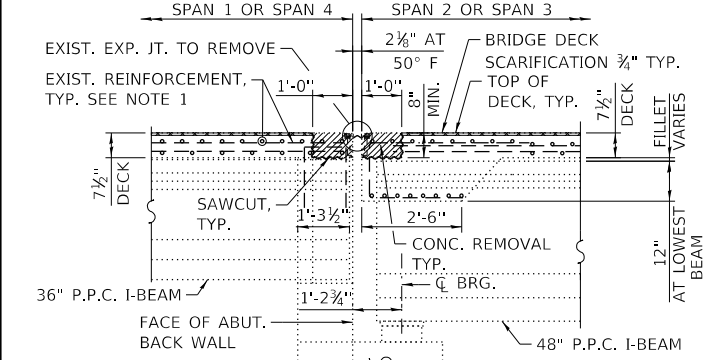
**BILL OF MATERIAL**

ITEM	UNIT	TOTAL
CONCRETE REMOVAL	CU YD	113.4
PROTECTIVE SHIELD	SQ YD	311
BRIDGE DECK SCARIFICATION 3/4"	SQ YD	2,351
DECK SLAB REPAIR (PARTIAL)	SQ YD	5

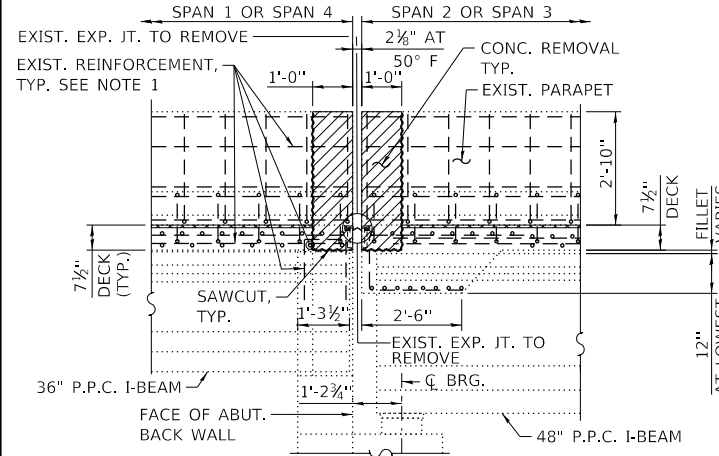
**NOTES:**

1. EXISTING TRANSVERSE AND LONGITUDINAL REINFORCEMENT BARS CROSSING THE REMOVAL LINE AND EXTENDING INTO THE CONCRETE REMOVAL AREA SHALL REMAIN AND BE INCORPORATED INTO THE NEW CONSTRUCTION.
2. CONTRACTOR MUST EXERCISE EXTREME CAUTION WHILE REMOVING CONCRETE OVER PPC I-BEAMS. ANY DAMAGE DONE TO THE PPC I-BEAM FLANGE DURING CONCRETE REMOVAL OPERATIONS MUST BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
3. PERIMETERS OF CONCRETE REMOVAL AREA SHALL BE SAW CUT 3/4" PRIOR TO THE REMOVAL OF THE CONCRETE. CARE SHALL BE EXERCISED BY THE CONTRACTOR DURING AND FOLLOWING CONCRETE REMOVAL TO ENSURE THE EXISTING REINFORCEMENT REMAINING IN PLACE IS NOT DAMAGED. IF BOTTOM OF TOP REINFORCEMENT LAYER IS EXPOSED REMOVE CONCRETE 1" BELOW THE REINFORCING. IF BOTTOM OF BOTTOM LAYER OF REINFORCEMENT IS EXPOSED USE FULL DEPTH REPAIR.
4. DECK REPAIR QUANTITY IS ESTIMATED, ACTUAL REPAIR AREAS AND LOCATIONS SHALL BE DETERMINED BY THE ENGINEER AND SHOWN ON "AS-BUILT" PLANS
5. EXISTING DECK INSPECTED IN APRIL 2016. SEE REMOVAL AND REPAIRS PLAN ON THIS SHEET FOR LOCATIONS
6. FOR DRAINAGE SCUPPER ADJUSTMENT DETAILS, SEE SHEET SA-10
7. FOR APPROACH PAVEMENT REMOVAL AND RECONSTRUCTION, SEE SHEET SA-07

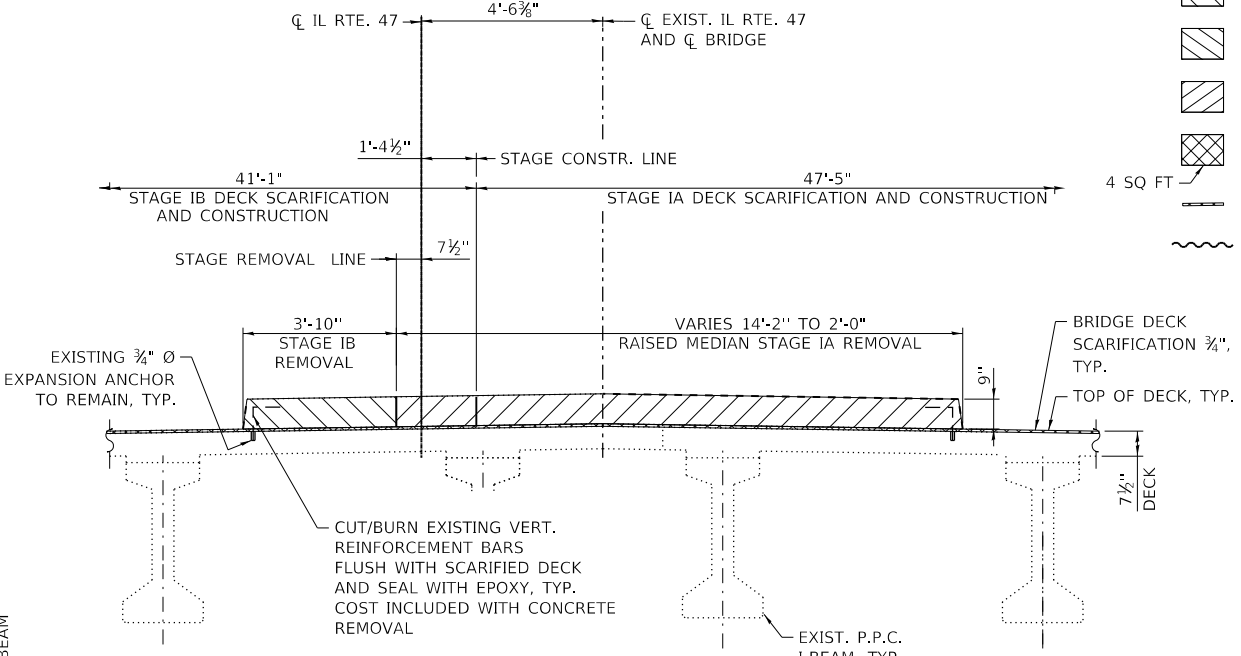
**SECTION A-A**



**SECTION B-B**  
(@ RT. L'S)



**SECTION C-C**



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**DRAWN BY** EV      **DATE** 10/18/2018  
**CHECKED BY** GJH      **DATE** 10/18/2018

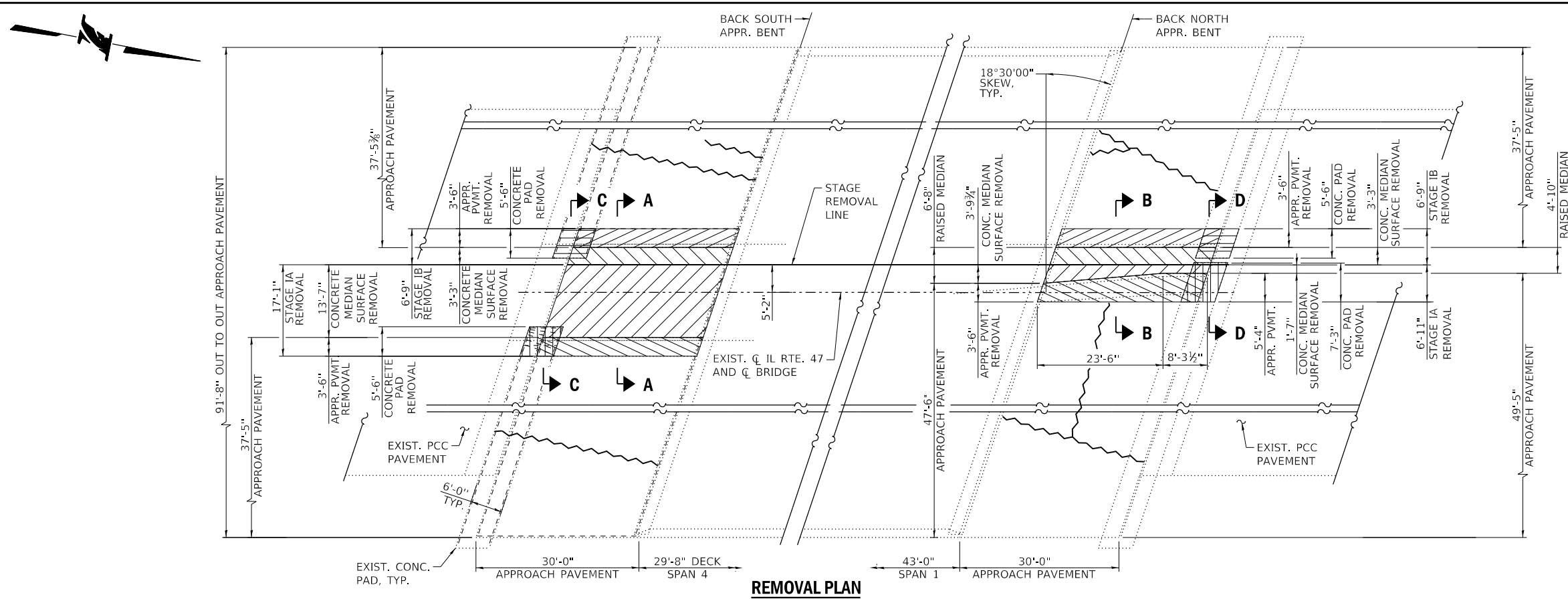
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 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 BRIDGE NO. 1101  
 DECK REMOVAL AND REPAIR PLAN  
 IL RTE 47 OVER I-88

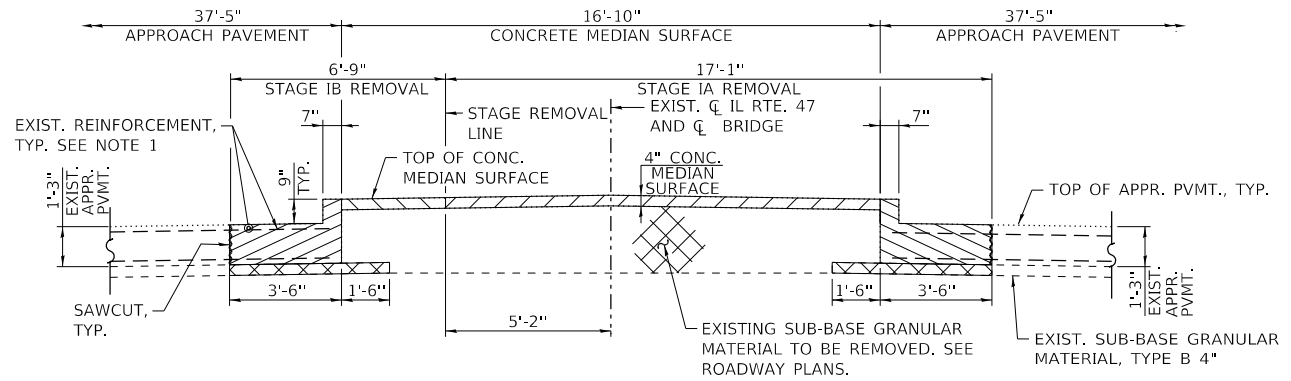
**SHEET NO. SA-06**  
**DRAWING NO. 352 OF 397**



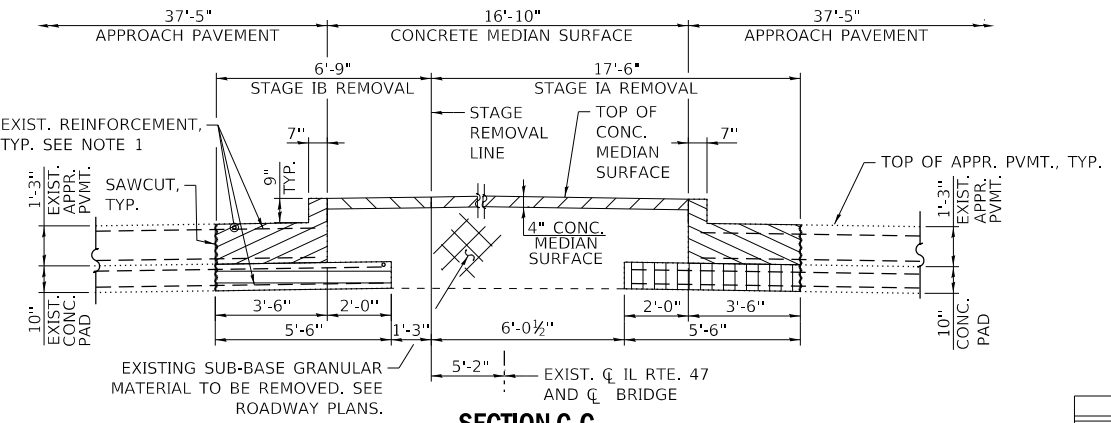
**REMOVAL PLAN**

**LEGEND**

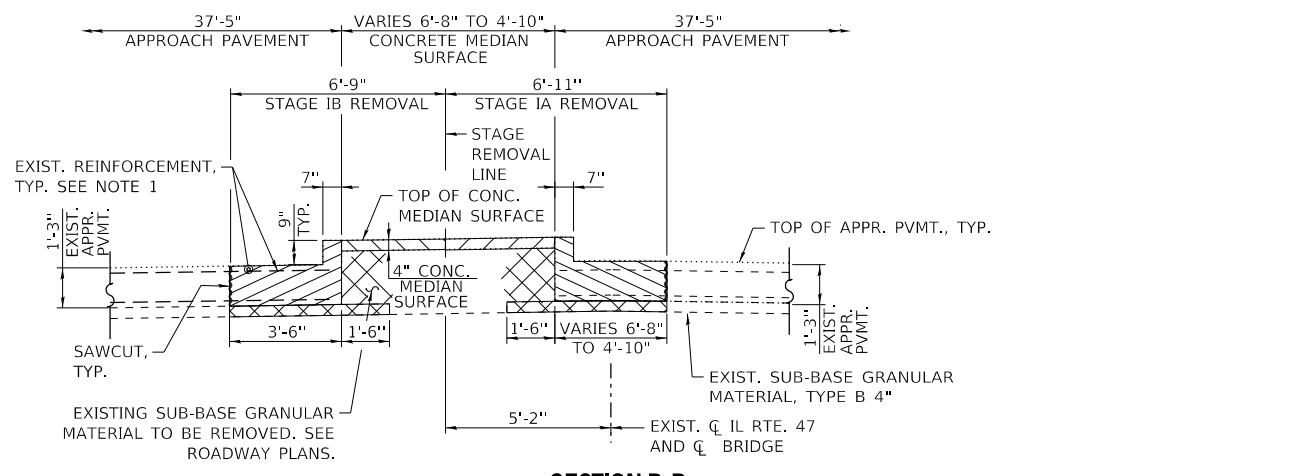
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- RAISED CONCRETE MEDIAN SURFACE REMOVAL STAGE IB
- APPROACH PAVEMENT REMOVAL STAGE IA
- APPROACH PAVEMENT REMOVAL STAGE IB
- CONCRETE PAD REMOVAL STAGE IA
- CONCRETE PAD REMOVAL STAGE IB
- SUB-BASE GRANULAR MATERIAL REMOVAL, SEE ROADWAY PLANS.
- 3/4" SAWCUT
- EPOXY CRACK INJECTION



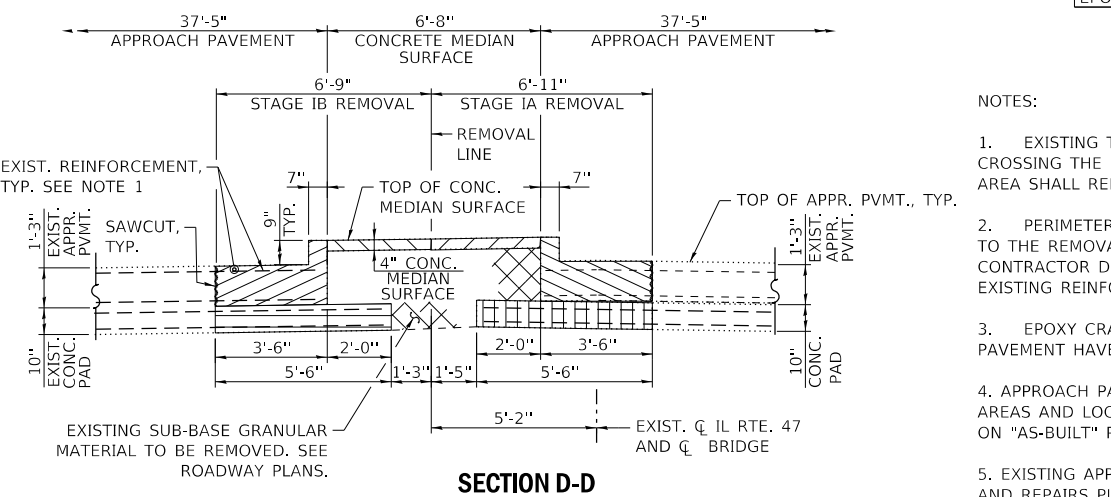
**SECTION A-A**



**SECTION C-C**



**SECTION B-B**



**SECTION D-D**

**BILL OF MATERIAL**

ITEM	UNIT	TOTAL
CONCRETE REMOVAL	CU YD	35.5
EPOXY CRACK INJECTION	FOOT	171

**NOTES:**

1. EXISTING TRANSVERSE AND LONGITUDINAL REINFORCEMENT BARS CROSSING THE REMOVAL LINE AND EXTENDING INTO THE CONCRETE REMOVAL AREA SHALL REMAIN AND BE INCORPORATED INTO THE NEW CONSTRUCTION.
2. PERIMETERS OF CONCRETE REMOVAL AREA SHALL BE SAW CUT 3/4" PRIOR TO THE REMOVAL OF THE CONCRETE. CARE SHALL BE EXERCISED BY THE CONTRACTOR DURING AND FOLLOWING CONCRETE REMOVAL TO ENSURE THE EXISTING REINFORCEMENT REMAINING IN PLACE IS NOT DAMAGED.
3. EPOXY CRACK INJECTION SHALL BE PERFORMED AFTER THE APPROACH PAVEMENT HAVE BEEN SCARIFIED.
4. APPROACH PAVEMENT REPAIR QUANTITY IS ESTIMATED, ACTUAL REPAIR AREAS AND LOCATIONS SHALL BE DETERMINED BY THE ENGINEER AND SHOWN ON "AS-BUILT" PLANS.
5. EXISTING APPROACH PAVEMENT INSPECTED IN APRIL 2016. SEE REMOVAL AND REPAIRS PLAN ON THIS SHEET FOR LOCATIONS.

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**DRAWN BY** EV      **DATE** 10/18/2018  
**CHECKED BY** GJH      **DATE** 10/18/2018

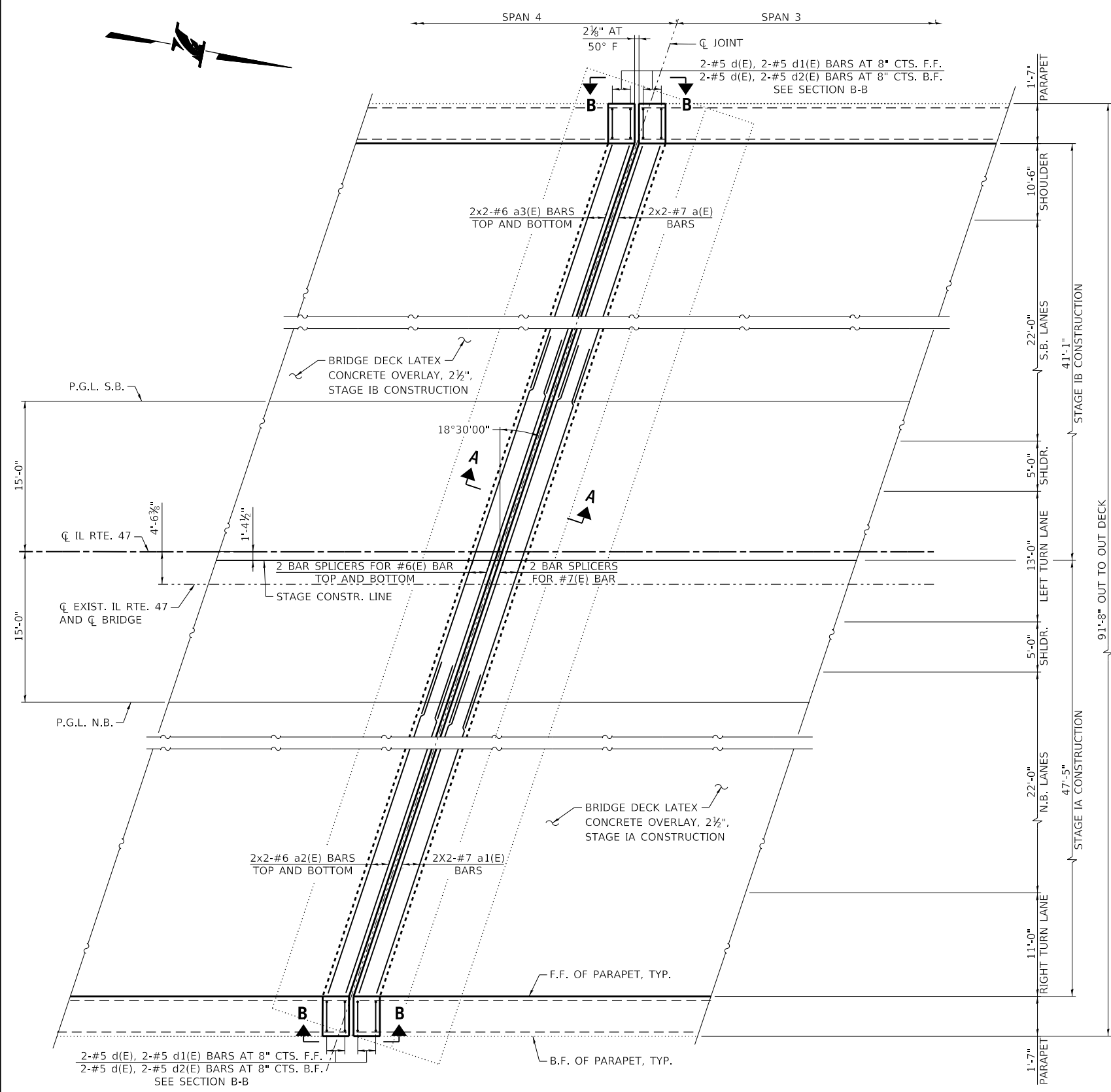
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 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

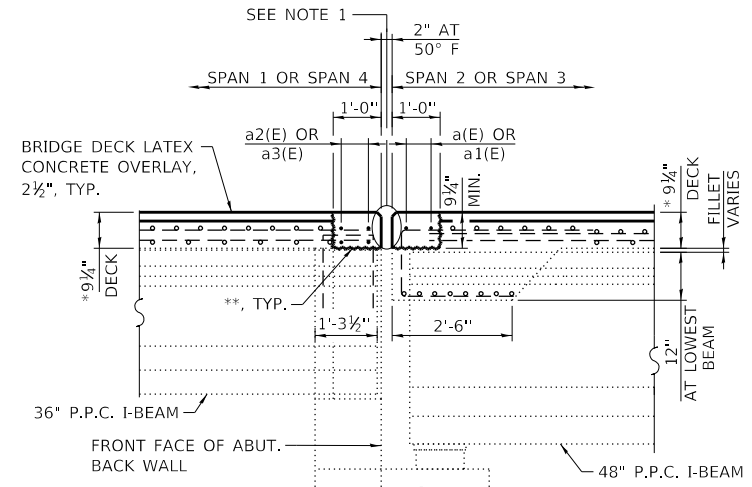
**CONTRACT NO. I-16-4274**  
 BRIDGE NO. 1101  
 APPR. REMOVAL AND REPAIR PLAN  
 IL RTE 47 OVER I-88

**SHEET NO.** SA-07  
**DRAWING NO.** 353 OF 397



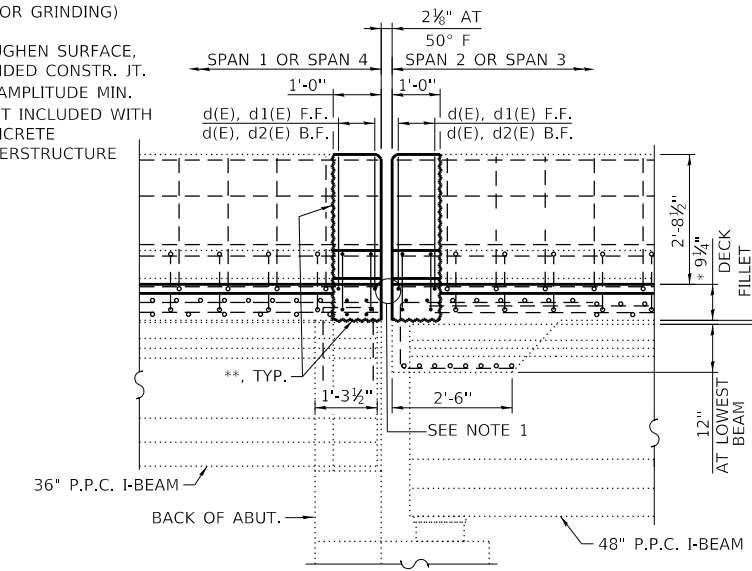
**RECONSTRUCTION PLAN - EXPANSION JOINT AT SOUTH ABUTMENT**  
(EXPANSION JOINT AT NORTH ABUTMENT - OPPOSITE HAND)

**MIN. LAP LENGTH**  
#6 BAR - 3'-7"  
#7 BAR - 4'-2"

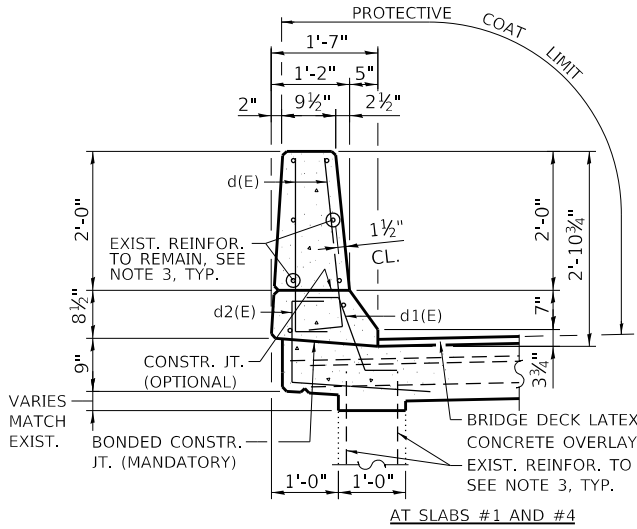


\* 6 3/4" CONCRETE DECK,  
2 1/2" BRIDGE DECK LATEX  
CONCRETE OVERLAY  
(PRIOR GRINDING)

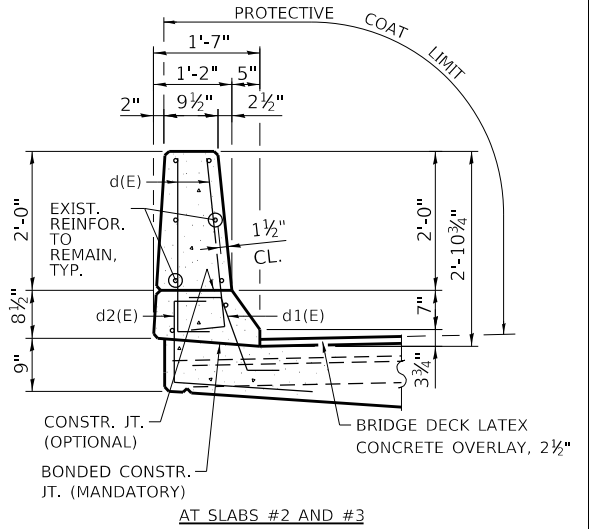
\*\* ROUGHEN SURFACE,  
BONDED CONSTR. JT.  
1/4" AMPLITUDE MIN.  
COST INCLUDED WITH  
CONCRETE  
SUPERSTRUCTURE



**SECTION B-B**



**PARAPET RECONSTRUCTION**



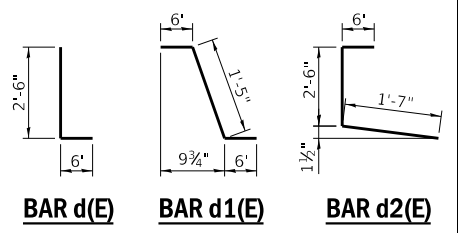
**PARAPET RECONSTRUCTION**

NOTES:

- FOR EXPANSION JOINT DETAILS SEE SHEET SA-09
- FOR SPLICER DETAILS SEE SHEET SA-17
- EXISTING REINFORCEMENT BARS CROSSING THE REMOVAL LINE AND EXTENDING INTO THE CONCRETE REMOVAL AREA SHALL REMAIN AND BE INCORPORATED INTO THE NEW CONSTRUCTION.

**BILL OF MATERIAL**

BAR	NO.	SIZE	LENGTH	SHAPE
a(E)	4	#7	28'-0"	—
a1(E)	4	#7	24'-8"	—
a2(E)	8	#6	27'-9"	—
a3(E)	8	#6	24'-5"	—
d(E)	8	#5	3'-0"	—
d1(E)	4	#5	2'-5"	—
d2(E)	4	#5	3'-3"	—
ITEM	UNIT	TOTAL		
CONCRETE SUPERSTRUCTURE	CU YD	10.6		
PROTECTIVE COAT	SQ YD	4		
REINFORCEMENT BARS, EPOXY COATED	POUND	2,220		
BAR SPLICERS	EACH	12		
BRIDGE DECK GROOVING (LONGITUDINAL)	SQ YD	1,514		
BRIDGE DECK LATEX CONCRETE OVERLAY, 2 1/2 INCHES	SQ YD	2,311		
DIAMOND GRINDING (BRIDGE SECTION)	SQ YD	2,245		



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PLOT DATE: 10/17/2018  
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**DRAWN BY** EV      **DATE** 10/18/2018  
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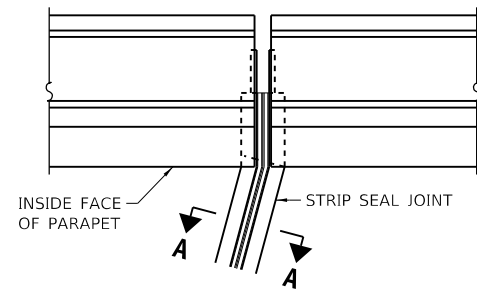
**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
2700 OGDEN AVENUE  
DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

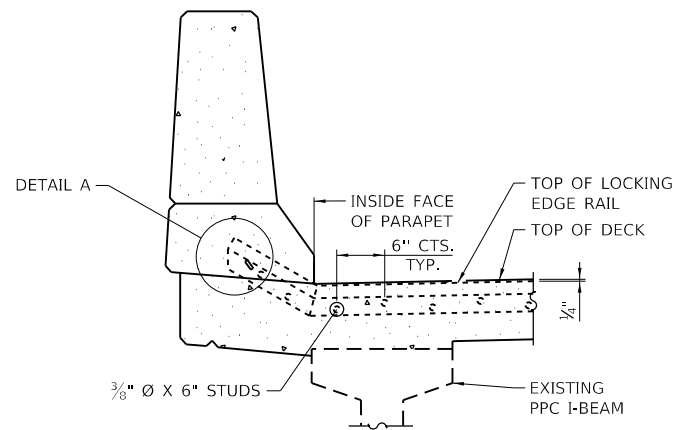
**CONTRACT NO. I-16-4274**  
BRIDGE NO. 1101  
EXP. JOINT RECONSTRUCTION  
IL RTE 47 OVER I-88

**SHEET NO. SA-08**  
**DRAWING NO. 354 OF 397**

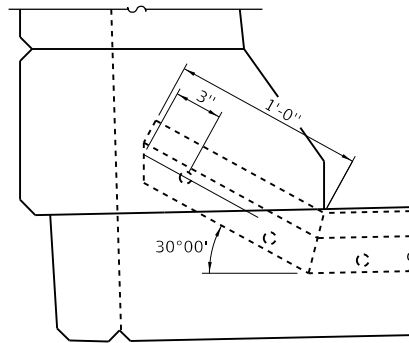




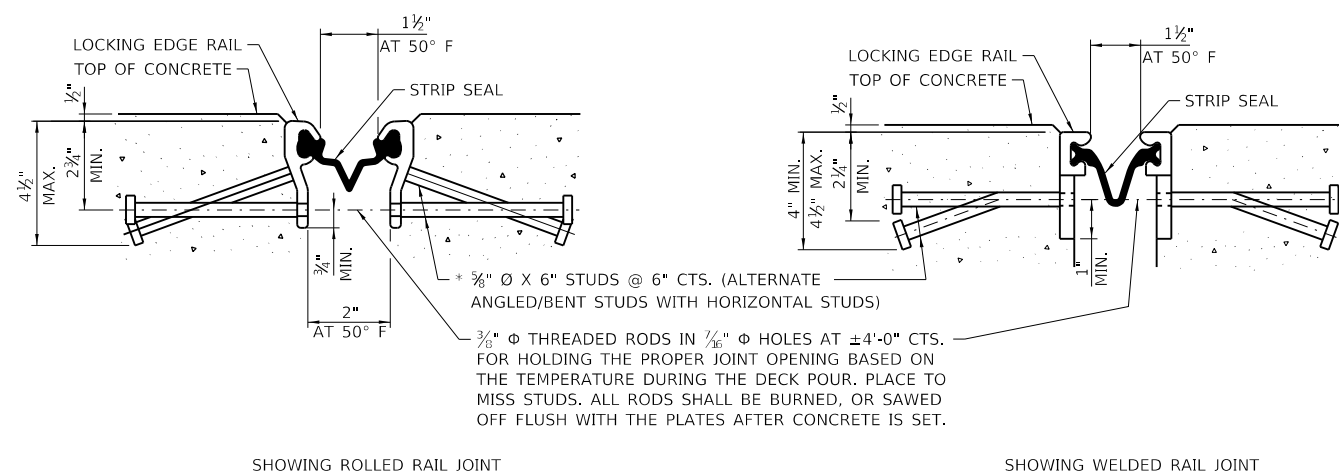
**PLAN AT PARAPET**



**ELEVATION AT PARAPET**

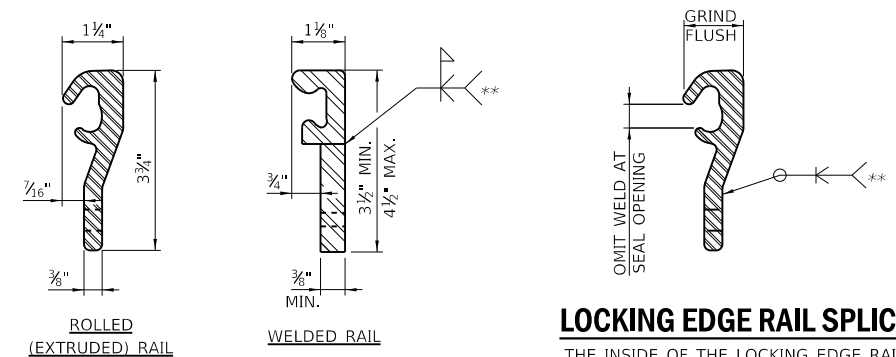


**DETAIL A**



**SECTION A-A**

\* GRANULAR OR SOLID FLUX FILLED HEADED STUDS CONFORMING TO ARTICLE 1006.32 OF THE STD. SPECS., AUTOMATICALLY END WELDED.



**LOCKING EDGE RAIL**

\*\* BACK GOUGE NOT REQUIRED IF COMPLETE JOINT PENETRATION IS VERIFIED BY MOCK-UP.

**LOCKING EDGE RAIL SPLICE**

THE INSIDE OF THE LOCKING EDGE RAIL GROOVE SHALL BE FREE OF WELD RESIDUE. ROLLED RAIL SHOWN, WELDED RAIL SIMILAR.

**BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
PERFORMED JOINT STRIP SEAL	FOOT	191

**NOTES:**

1. THE STRIP SEAL SHALL BE MADE CONTINUOUS AND SHALL HAVE A MINIMUM THICKNESS OF 1/4". THE CONFIGURATION OF THE STRIP SEAL SHALL MATCH THE CONFIGURATION OF THE LOCKING EDGE RAILS. OPEN OR "WEBBED" STRIP SEAL GLAND CONFIGURATIONS ARE NOT PERMITTED. THE GLAND SHALL BE SIZED FOR A MAXIMUM RATED MOVEMENT OF 4 INCHES.
2. THE LOCKING EDGE RAILS DEPICTED ARE CONFIGURED FOR TYPICAL APPLICATIONS AND ARE CONCEPTUAL ONLY. THE ACTUAL CONFIGURATION OF THE LOCKING EDGE RAILS AND MATCHING STRIP SEAL MAY VARY FROM MANUFACTURER TO MANUFACTURER PROVIDED THEY FIT THE APPLICATION AND MEET THE MINIMUM ANCHORAGE SHOWN. FLANGED EDGE RAILS, HOWEVER, WILL NOT BE ALLOWED. LOCKING EDGE RAILS MAY EXCEED THE 4 1/2" MAXIMUM DEPTH PROVIDED THE ANCHORAGE SYSTEM IS REVISED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.
3. THE MANUFACTURER'S RECOMMENDED INSTALLATION METHODS SHALL BE FOLLOWED.
4. ALL STEEL COMPONENTS SHALL BE GALVANIZED AFTER FABRICATION ACCORDING TO ARTICLE 520.03 OF THE STANDARD SPECIFICATIONS.
5. THE MAXIMUM SPACE BETWEEN LOCKING EDGE RAIL SEGMENTS SHALL BE 1/16" AND SEALED WITH A SUITABLE SEALANT; HOWEVER, ANY RAIL JOINT WITHIN 10' MEASURED PERPENDICULAR TO THE FACE OF THE CURB OR PARAPET SHALL BE WELDED AS SHOWN IN THE LOCKING EDGE RAIL SPLICE DETAIL.
6. COST OF EMBEDDED PLATES, ANCHORAGE STUDS, AND EXPANSION ANCHORS INCLUDED WITH PREFORMED JOINT STRIP SEAL.
7. THE CONCRETE OPENING BELOW THE STRIP SEAL WILL VARY BASED ON THE LOCKING EDGE RAIL CHOSEN BY THE CONTRACTOR. DECK AND PARAPET LENGTHS SHOWN ELSEWHERE IN THE PLANS ARE DIMENSIONED TO THE CONCRETE OPENING, NOT THE JOINT OPENING, AND ARE BASED ON THE ROLLED LOCKING EDGE RAIL. IF THE CONTRACTOR ELECTS TO USE A DIFFERENT LOCKING EDGE RAIL, DIMENSIONAL ADJUSTMENTS MAY BE REQUIRED. ONE EXCEPTION TO THIS WOULD BE THE STRIP SEAL JOINT AT THE END OF THE PRECAST BRIDGE APPROACH SLAB. FOR THESE CASES THE PAVEMENT CONNECTOR LENGTH SHALL BE ADJUSTED, NOT THE LENGTH OF THE BRIDGE APPROACH SLAB.

PEN TABLE ILTOLLWAY-TABLES-PLT.DWG  
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**DRAWN BY** EV      **DATE** 10/18/2018  
**CHECKED BY** GJH      **DATE** 10/18/2018

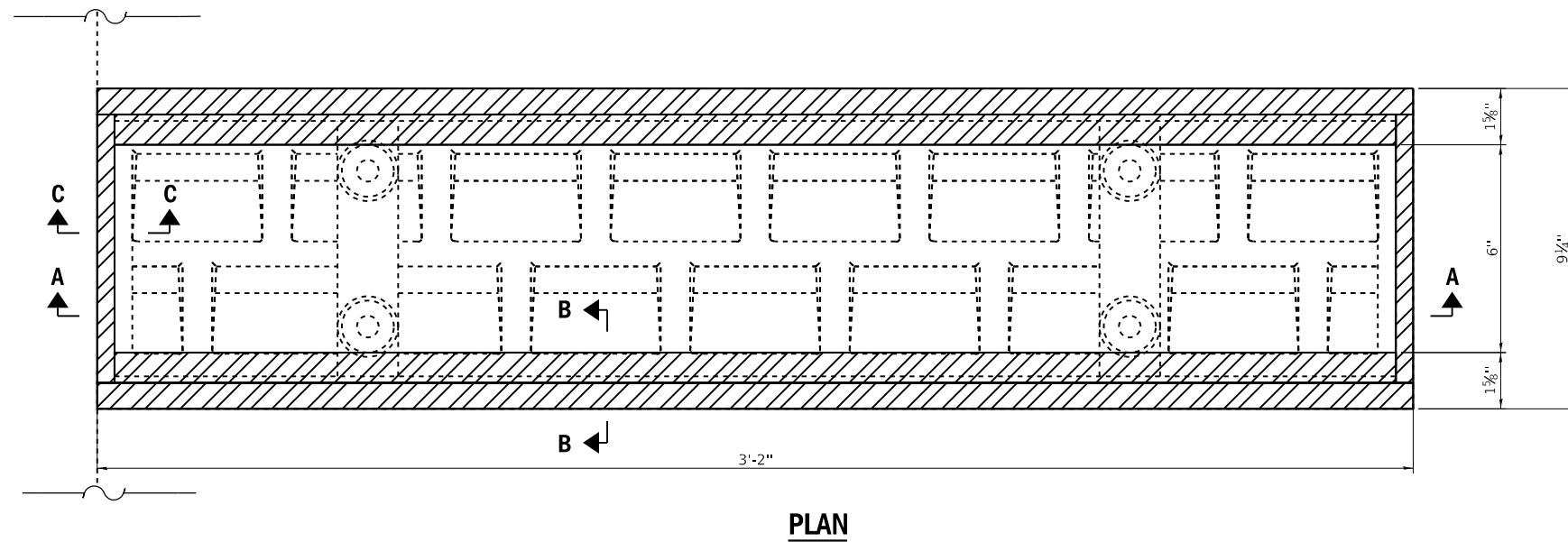
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REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 BRIDGE NO. 1101  
 MODIFIED PREFORMED JOINT STRIP SEAL  
 IL RTE 47 OVER I-88

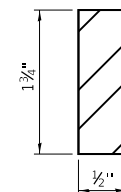
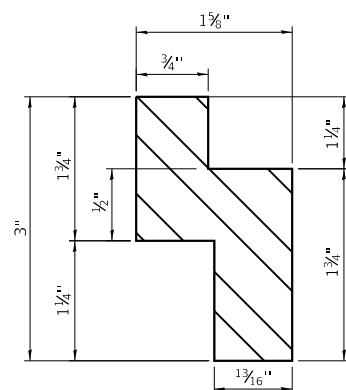
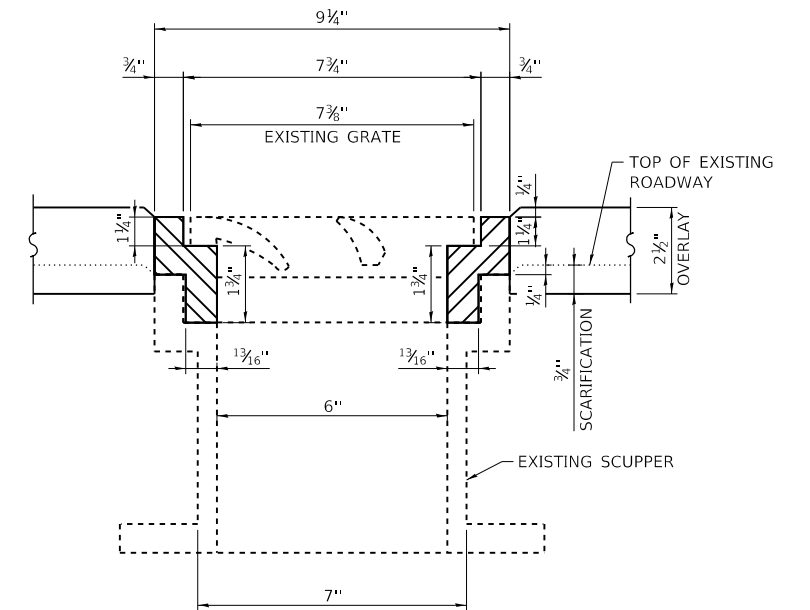
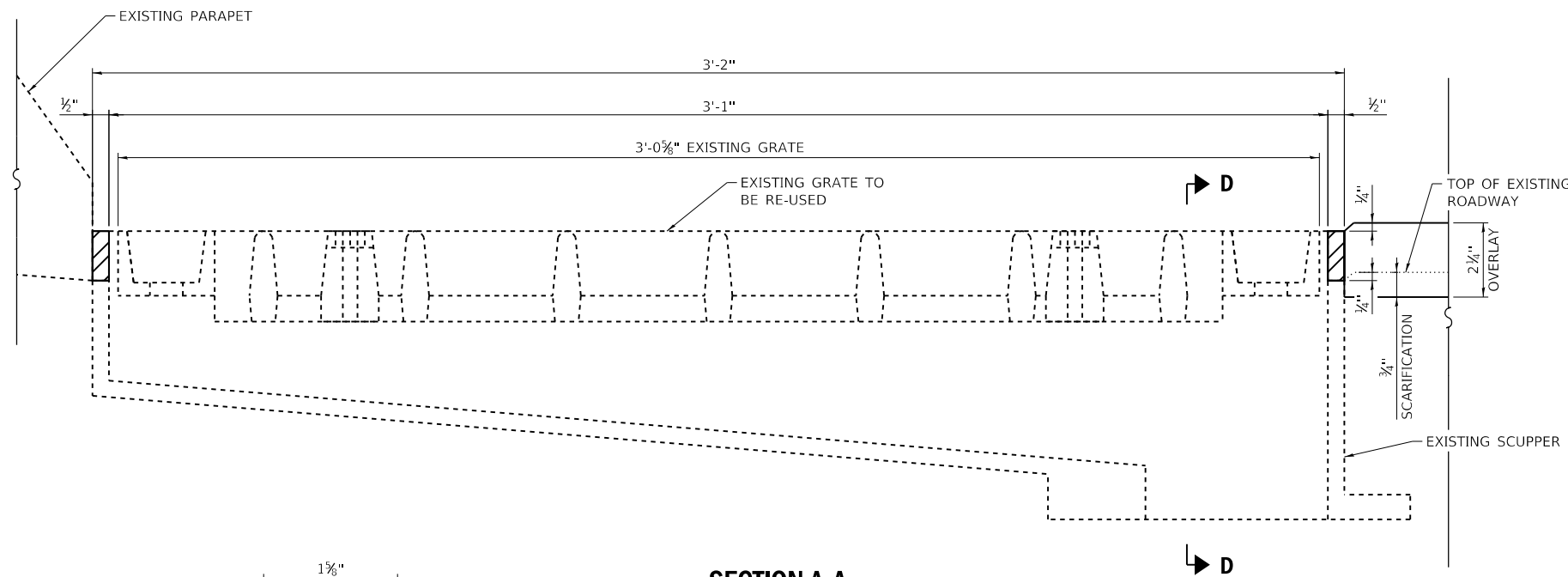
**SHEET NO.** SA-09  
**DRAWING NO.** 355 OF 397



NOTES:

1. SEE SHEET SA-01 FOR SCUPPER LOCATIONS.
2. ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 36. THE ADJUSTING SCUPPER RING SHALL BE GALVANIZED.
3. BOLTS SHALL BE 1/2" Ø ASTM A307 GALVANISED ACCORDING TO AASHTO M232.
4. PLAN DIMENSIONS AND DETAILS RELATIVE TO EXISTING PLANS ARE SUBJECT TO NOMINAL CONSTRUCTION VARIATIONS. THE CONTRACTOR SHALL MAKE NECESSARY APPROVED ADJUSTMENTS PRIOR TO CONSTRUCTION OR ORDERING OF MATERIALS. SUCH VARIATIONS SHALL NOT BE CAUSE FOR ADDITIONAL COMPENSATION FOR A CHANGE IN SCOPE OF THE WORK. HOWEVER, THE CONTRACTOR WILL BE PAID FOR THE QUANTITY ACTUALLY FURNISHED BASED AT THE UNIT PRICE BID FOR THE WORK.
5. SHOP PLANS FOR PROPOSED ADJUSTING SCUPPER RING SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION.
6. CONTRACTOR SHALL ENSURE THAT NO DAMAGE IS DONE TO EXISTING GRATES TO BE REUSED. COST OF ALL LABOR AND MATERIALS NECESSARY TO REMOVE EXISTING GRATES, CLEAN EXISTING SCUPPERS, INSTALL ADJUSTING SCUPPER RINGS AND REINSTALLING GRATES IS INCLUDED IN THE COST PER UNIT EACH FOR DRAINAGE SCUPPERS TO BE ADJUSTED.

LEGEND



BILL OF MATERIAL

ITEM	UNIT	TOTAL
DRAINAGE SCUPPERS TO BE ADJUSTED	EACH	2

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**DRAWN BY** EV      **DATE** 10/18/2018  
**CHECKED BY** GJH      **DATE** 10/18/2018



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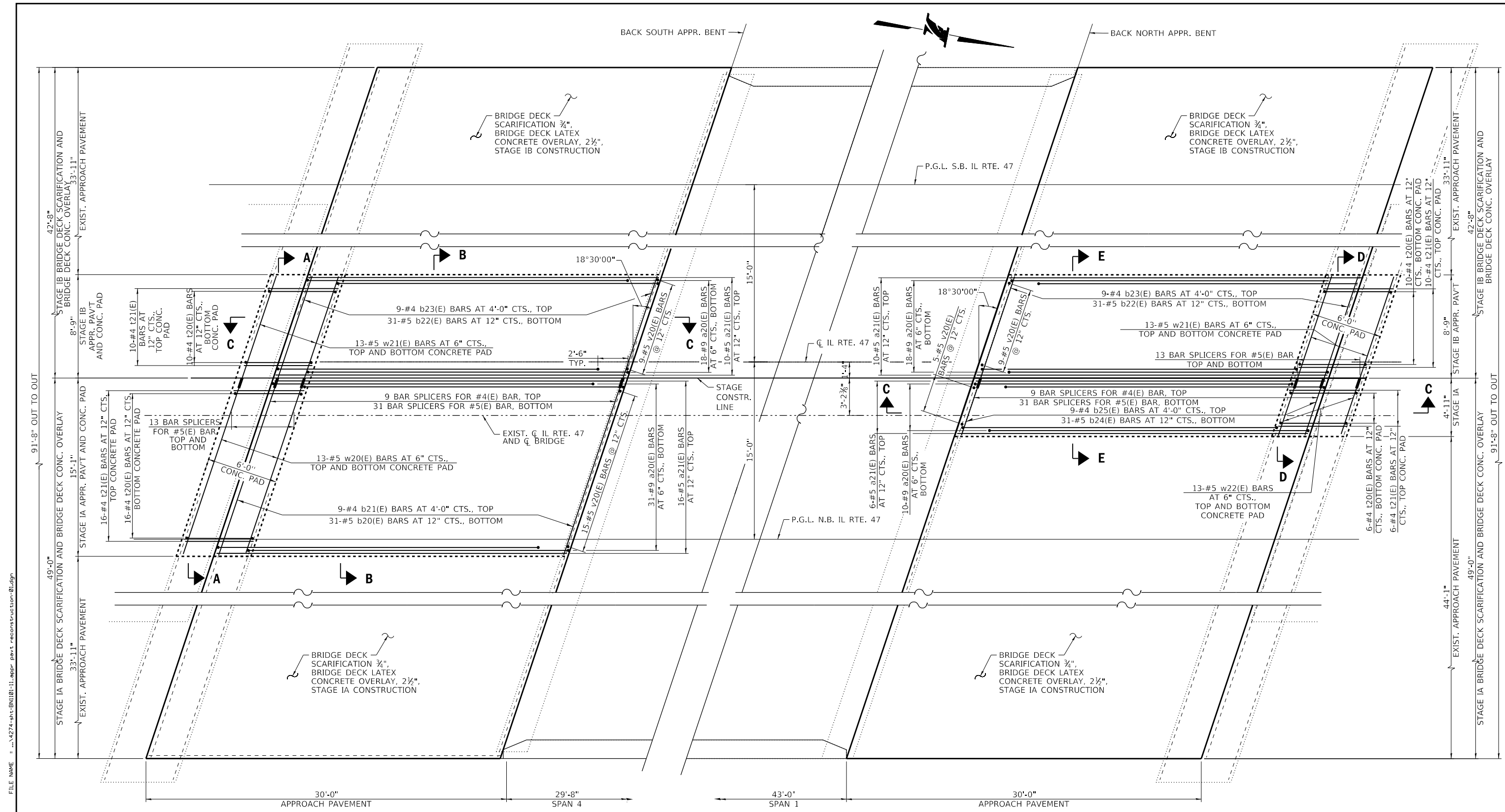
THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY  
 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 BRIDGE NO. 1101  
 DRAINAGE SCUPPER ADJ. DETAIL  
 IL RTE 47 OVER I-88

**SHEET NO.**  
 SA-10  
**DRAWING NO.**  
 356 OF 397

PEN TABLE: ILTOLLWAY-TABLES-PLT.tbl  
 PLOT FILE: ILTOLLWAY-PDF-COMFIG.plt  
 USER NAME: JG/17/2018  
 PLOT DATE: 10/17/2018  
 PLOT SCALE: 8.0000 / 1" = 30'-0"



**APPROACH PAVEMENT RECONSTRUCTION PLAN**

- NOTES:
- FOR SECTIONS A-A THRU E-E SEE SHEET SA-12
  - FOR SPLICER DETAILS SEE SHEET SA-17
  - EXISTING REINFORCEMENT BARS CROSSING THE REMOVAL LINE AND EXTENDING INTO THE CONCRETE REMOVAL AREA SHALL REMAIN AND BE INCORPORATED INTO THE NEW CONSTRUCTION.

**DRAWN BY** EV      **DATE** 10/18/2018  
**CHECKED BY** GJH      **DATE** 10/18/2018

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 DOWNERS GROVE, ILLINOIS 60515

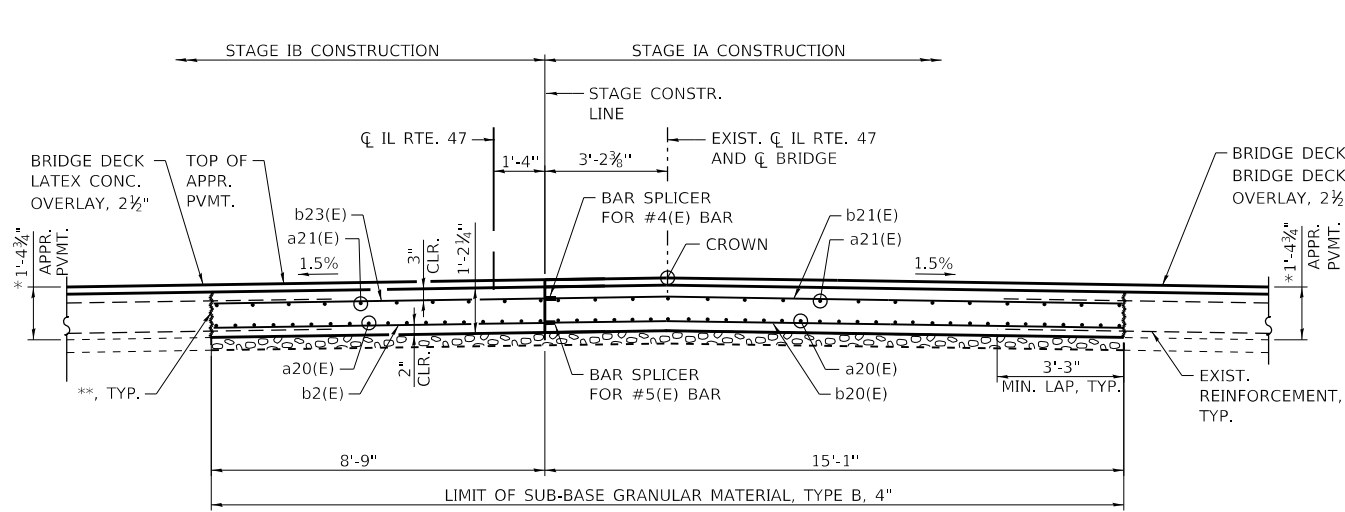
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 BRIDGE NO. 1101  
 APPR. PVMT. RECONSTRUCTION 1  
 IL RTE 47 OVER I-88

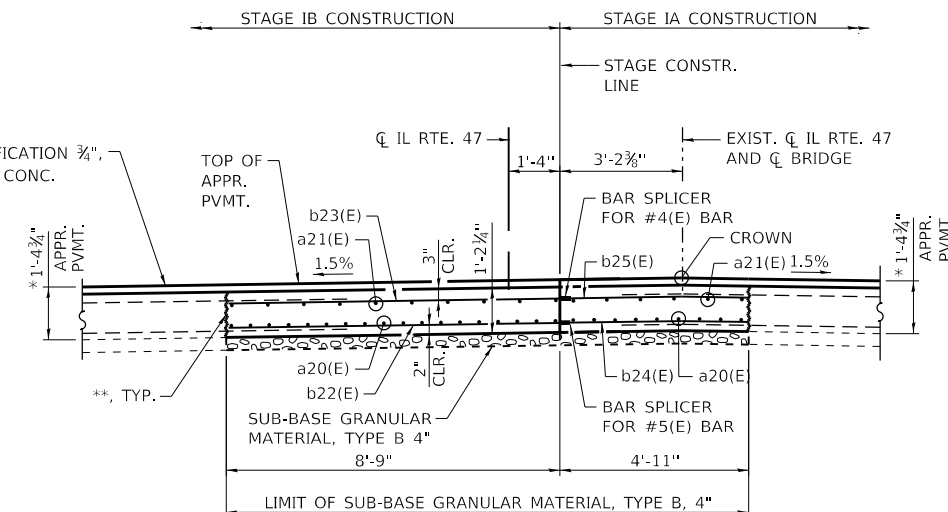
**SHEET NO.**  
 SA-11  
**DRAWING NO.**  
 357 OF 397

**BILL OF MATERIAL**  
(FOR 2 APPROACHES)

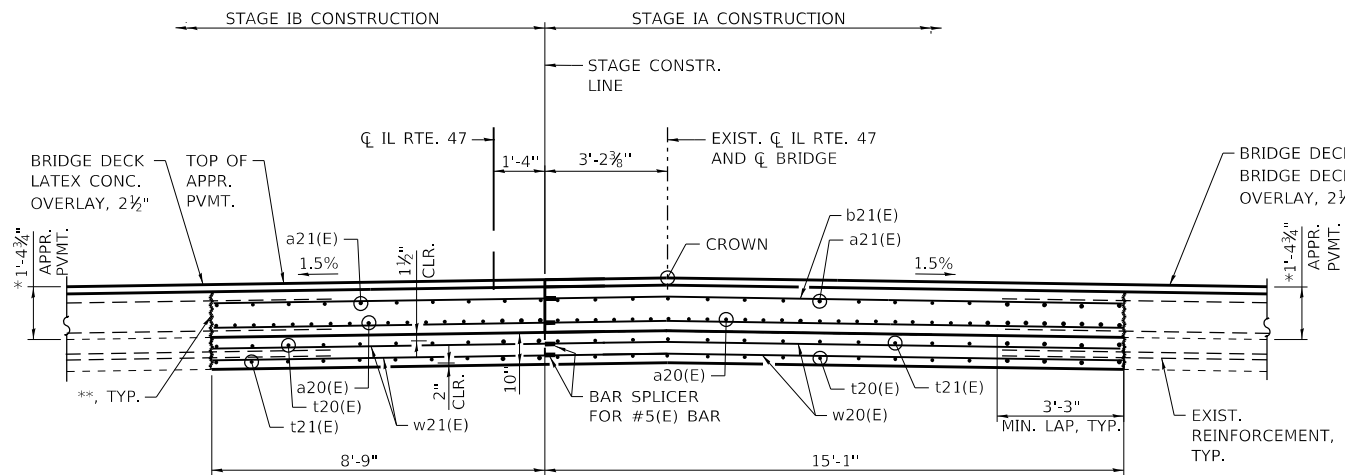
BAR NO.	NO.	SIZE	LENGTH	SHAPE
a20(E)	77	#9	29'-6"	
a21(E)	42	#5	29'-6"	
b20(E)	31	#5	15'-5"	
b21(E)	9	#4	15'-5"	
b22(E)	62	#5	8'-10"	
b23(E)	18	#4	8'-10"	
b24(E)	31	#5	4'-10"	
b25(E)	9	#4	4'-10"	
t20(E)	42	#4	6'-8"	
t21(E)	42	#4	5'-8"	
v20(E)	38	#5	2'-6"	
w20(E)	26	#5	15'-5"	
w21(E)	52	#5	8'-10"	
w22(E)	26	#5	4'-10"	
ITEM	UNIT	TOTAL		
SUBBASE GRANULAR MATERIAL, TYPE B 4"	SQ YD	125		
CONCRETE STRUCTURES	CU YD	7.3		
CONCRETE SUPERSTRUCTURE (APPROACH SLAB)	CU YD	49.5		
REINFORCEMENT BARS, EPOXY COATED	POUND	12,470		
BAR SPLICERS	EACH	132		
BRIDGE DECK GROOVING (LONGITUDINAL)	SQ YD	380		
BRIDGE DECK LATEX CONCRETE OVERLAY, 2 1/2 INCH	SQ YD	612		
BRIDGE DECK SCARIFICATION 3/4"	SQ YD	612		
DIAMOND GRINDING (BRIDGE SECTION)	SQ YD	564		



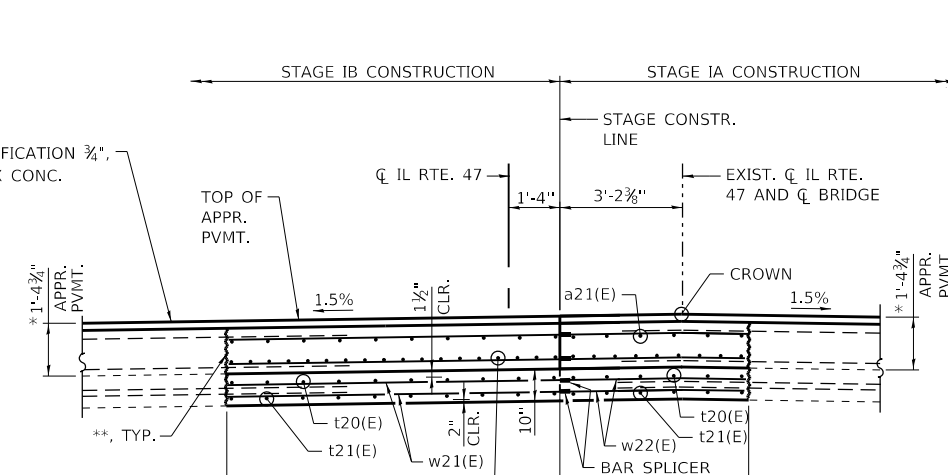
**SECTION B-B**



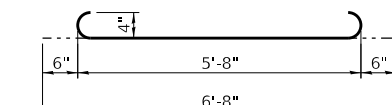
**SECTION E-E**



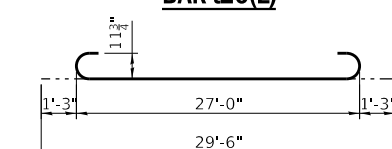
**SECTION A-A**



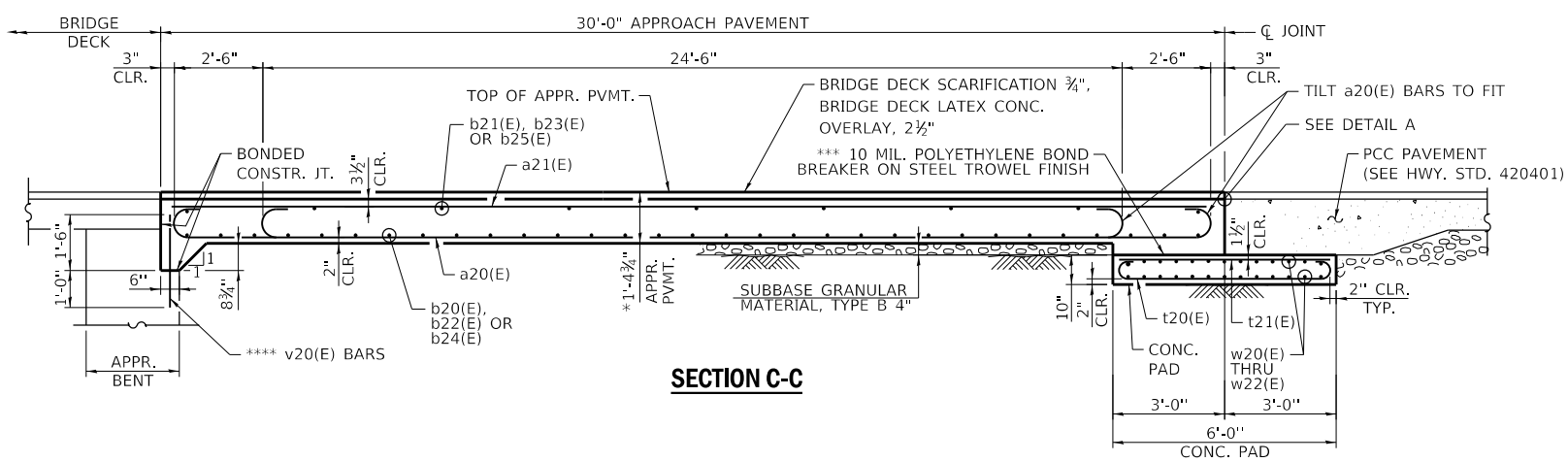
**SECTION D-D**



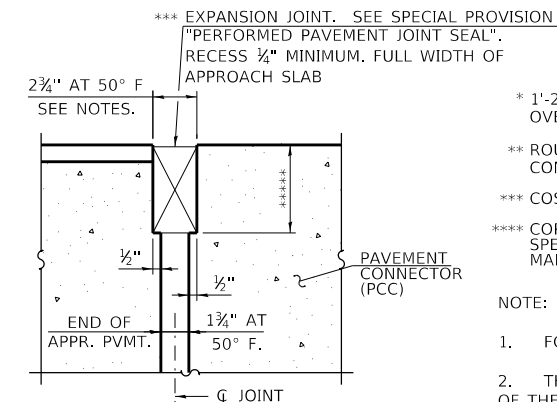
**BAR t20(E)**



**BAR a20(E)**



**SECTION C-C**



**DETAIL A**

- \*\*\* EXPANSION JOINT. SEE SPECIAL PROVISION "PERFORMED PAVEMENT JOINT SEAL". RECESS 1/4" MINIMUM. FULL WIDTH OF APPROACH SLAB
- 2 1/2" AT 50° F SEE NOTES.
- 1 1/2" AT 50° F.
- \*\*\*\*\* PER MANUFACTURER RECOMMENDATION
- \* 1'-2 1/2" CONCRETE APPROACH PAVEMENT, 2 1/2" BRIDGE DECK LATEX CONCRETE OVERLAY (PRIOR GRINDING)
- \*\* ROUGHEN SURFACE, BONDED CONSTR. JT. 1/4" AMPLITUDE MIN. COST INCLUDED WITH CONCRETE SUPERSTRUCTURE (APPROACH SLAB).
- \*\*\* COST INCLUDED WITH CONCRETE SUPERSTRUCTURE (APPROACH SLAB).
- \*\*\*\* CORE AND SET v20(E) BARS ACCORDING TO ARTICLE 509.06 OF THE STANDARD SPECIFICATIONS. CORED HOLES SHALL BE ROUGHENED OR SCORED PER MANUFACTURER'S RECOMMENDATIONS.
- NOTE:
- 1. FOR LOCATION OF SECTIONS A-A THRU E-E SEE SHEET SA-11
- 2. THE JOINT OPENING SHALL BE ADJUSTED FOR TEMPERATURE PER ARTICLE 520.04 OF THE STANDARD SPECIFICATIONS. THE LENGTH OF BRIDGE USED TO CALCULATE THE ADJUSTMENT SHALL BE EQUAL TO HALF THE TOTAL LENGTH PLUS LENGTH OF THE BRIDGE APPROACH PAVEMENT.
- 3. APPROACH SLAB SHALL BE PAID FOR AS CONCRETE SUPERSTRUCTURE (APPROACH SLAB).
- 4. APPROACH FOOTING CONCRETE SHALL BE PAID FOR AS CONCRETE STRUCTURES.
- 5. FOR SUB-BASE GRANULAR MATERIAL, TYPE B, 4" QUANTITY SEE ROADWAY PLANS.

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 PLOT CFE: ILTOLLWAY-PDF-COMFplotcf5  
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 PLOT DATE: 10/17/2018  
 FILE NAME: ...N4274-shr-SN101-12.appr.pvmt.reconstruction-02.dgn  
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**DRAWN BY** EV      **DATE** 10/18/2018  
**CHECKED BY** GJH      **DATE** 10/18/2018

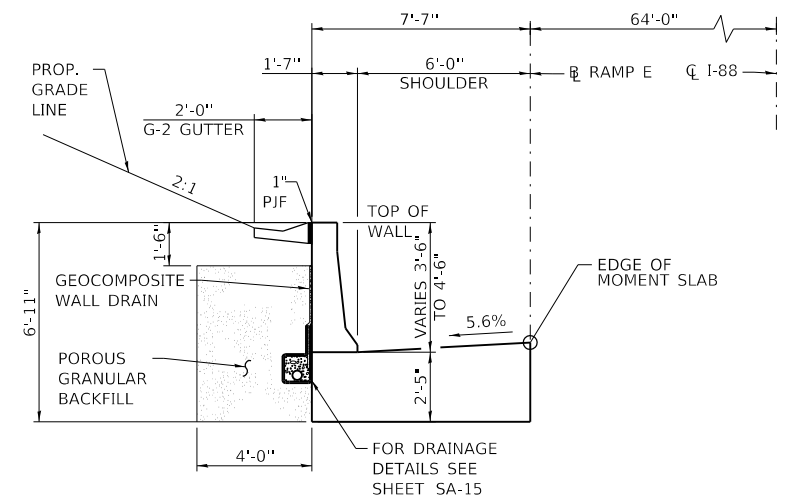
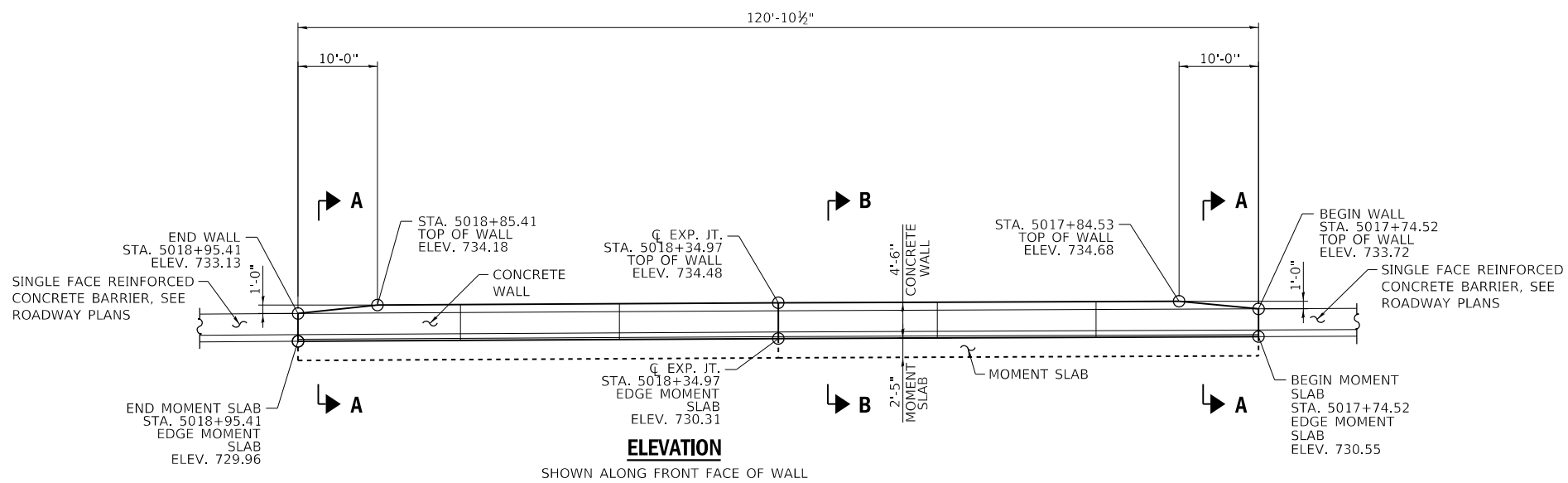
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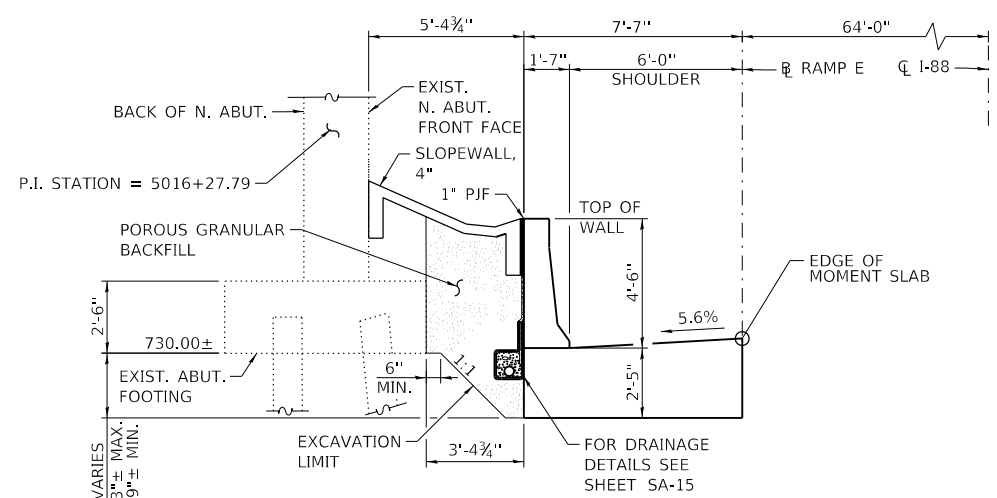
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
 BRIDGE NO. 1101  
 APPR. PVMT. RECONSTRUCTION 2  
 IL RTE 47 OVER I-88

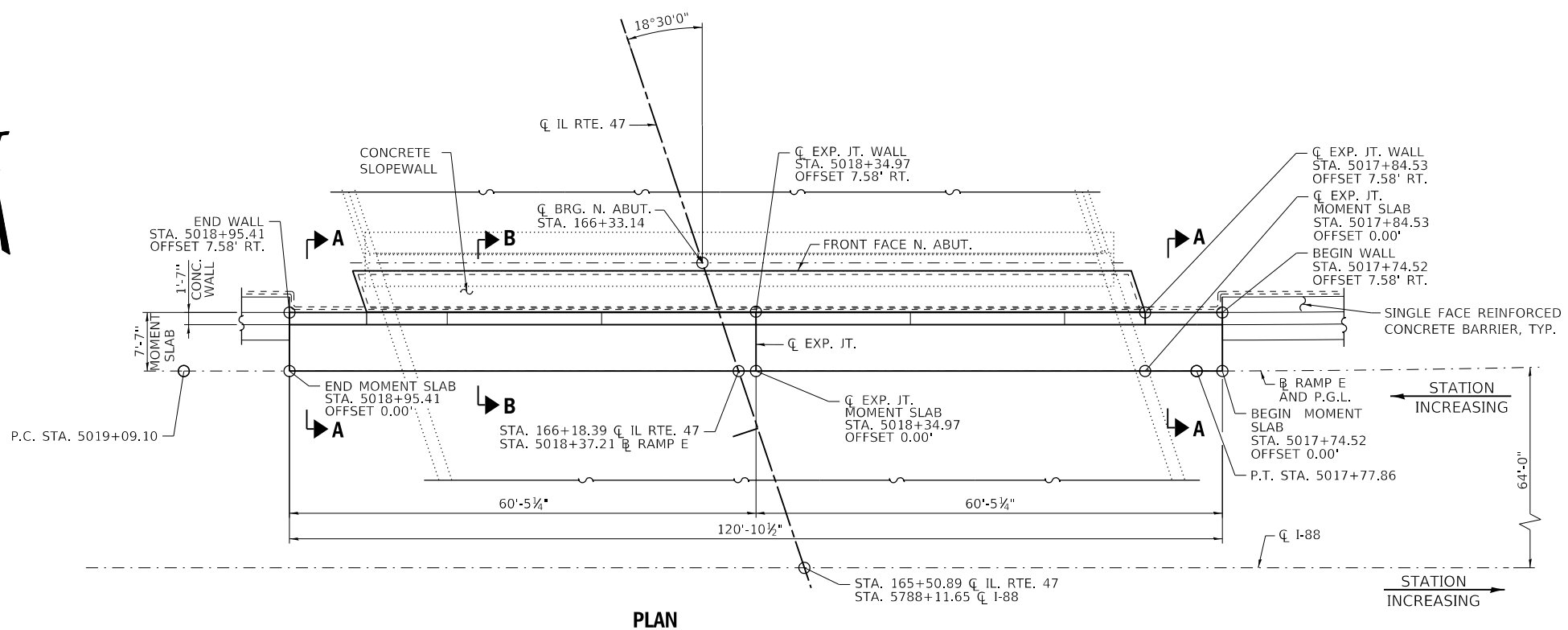
**SHEET NO. SA-12**  
**DRAWING NO. 358 OF 397**



**SECTION A-A**



**SECTION B-B**




**PLAN**

- NOTES:
- STATIONS AND OFFSETS SHOWN IN RELATION TO RAMP E.
  - FOR MOMENT SLAB AND WALL REINFORCEMENT DETAILS SEE SHEET SA-14

PEN TABLE: ILTOLLWAY-TABLES-PLT.tbl  
 PLOT CFG: ILTOLLWAY-PDF-COMPLOT.cfg  
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 PLOT DATE: 10/17/2018  
 PLOT SCALE: 20.00000 / 1.00  
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<b>CHECKED BY</b>	GJH	<b>DATE</b>	10/18/2018

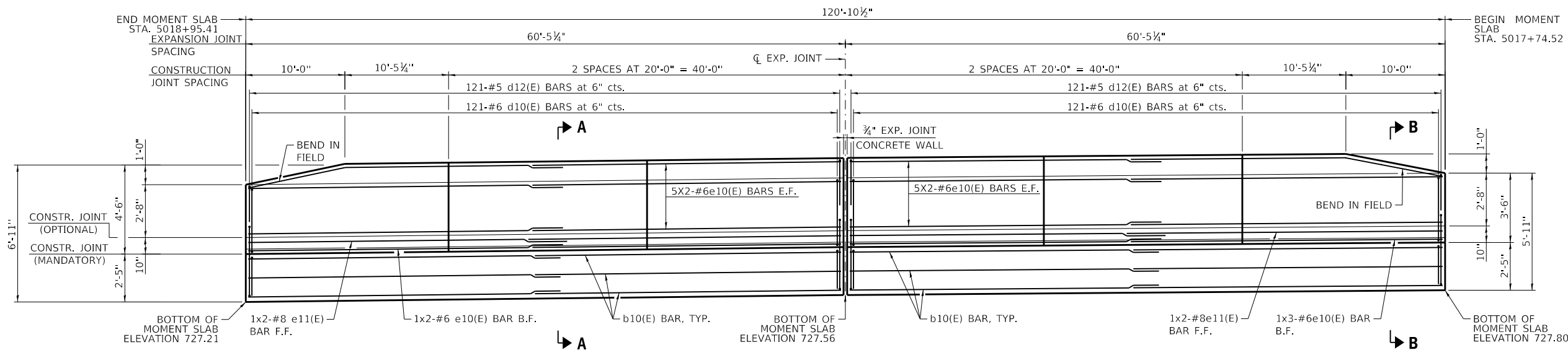

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**CONTRACT NO. I-16-4274**  
 BRIDGE NO. 1101  
 CONC. WALL AND MOMENT SLAB 1  
 IL RTE 47 OVER I-88

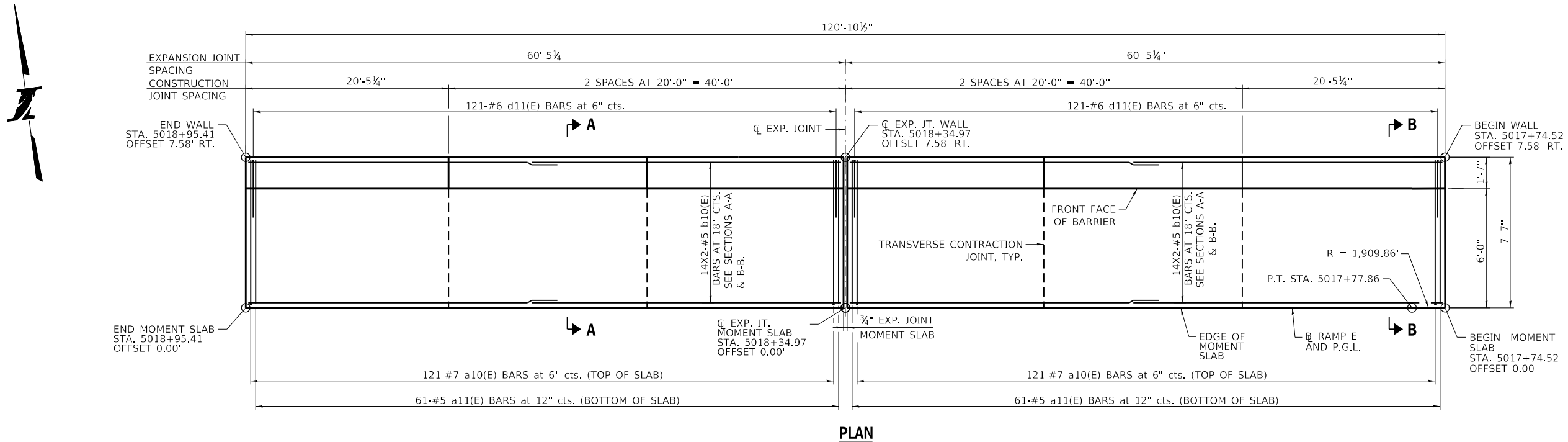
**SHEET NO. SA-13**  
**359 OF 397**



**INSIDE ELEVATION OF CONCRETE WALL**  
(LOOKING NORTH)

**MIN. BAR LAP LENGTH**

- #5 BAR - 3'-4"
- #6 BAR - 3'-6"
- #8 BAR - 5'-11"



**PLAN**

- NOTES:
- FOR SECTIONS A-A AND B-B, WALL AND MOMENT SLAB DETAILS, BAR BENDING DIAGRAMS AND BILL OF MATERIAL, SEE SHEET SA-15
  - FOR WALL AND MOMENT SLAB LAYOUT SEE SHEET SA-13

PEN TABLE: ILLTOLLWAY-TABLES-PLT.TBL  
 PLOT CFE: ILLTOLLWAY-PDF-CONF/plotcfes  
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**DRAWN BY** EV      **DATE** 10/18/2018  
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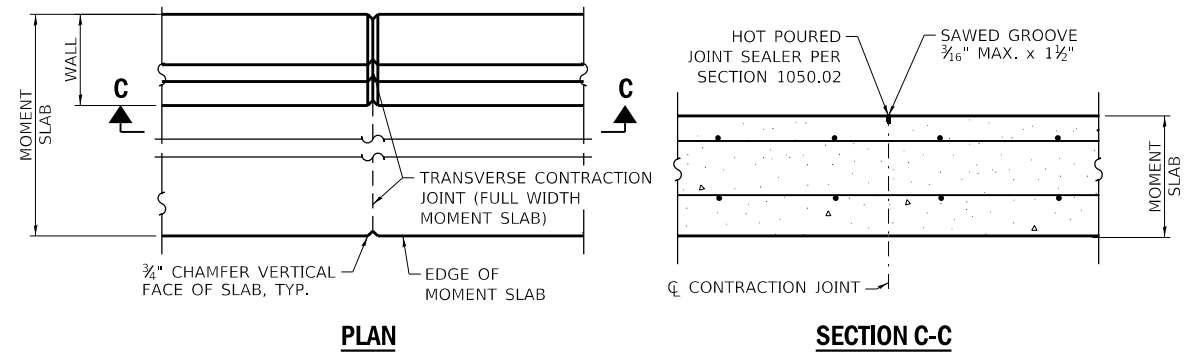
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NO.	DATE	DESCRIPTION

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 BRIDGE NO. 1101  
 CONC. WALL AND MOMENT SLAB 2  
 IL RTE 47 OVER I-88

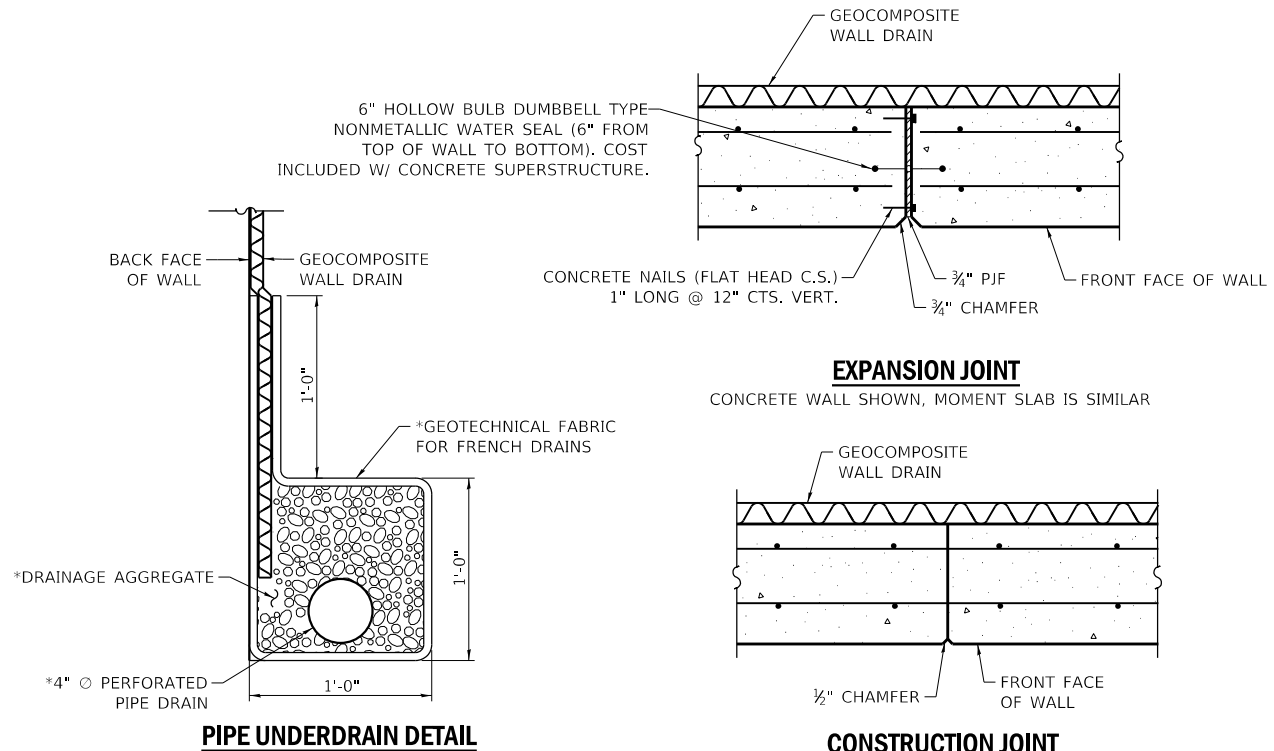
**SHEET NO.**  
 SA-14  
**DRAWING NO.**  
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**BILL OF MATERIAL**

BAR	NO.	SIZE	LENGTH	SHAPE
a10(E)	242	#7	9'-8"	
a11(E)	122	#5	7'-4"	
b10(E)	56	#5	31'-4"	
d10(E)	242	#6	6'-10"	
d11(E)	242	#6	6'-10"	
d12(E)	242	#5	4'-8"	
e10(E)	44	#6	31'-8"	
e11(E)	4	#8	32'-0"	
ITEM			UNIT	TOTAL
POROUS GRANULAR BACKFILL			CU YD	97
STRUCTURE EXCAVATION			CU YD	230
CONCRETE SUPERSTRUCTURE			CU YD	21.1
PROTECTIVE COAT			SQ YD	153
REINFORCEMENT BARS, EPOXY COATED			POUND	16,130
GEOCOMPOSITE WALL DRAIN			SQ YD	51
HIGH PERFORMANCE CONCRETE MOMENT SLAB STRUCTURES			CU YD	86.5
PIPE UNDERDRAINS FOR STRUCTURES 4"			FOOT	121

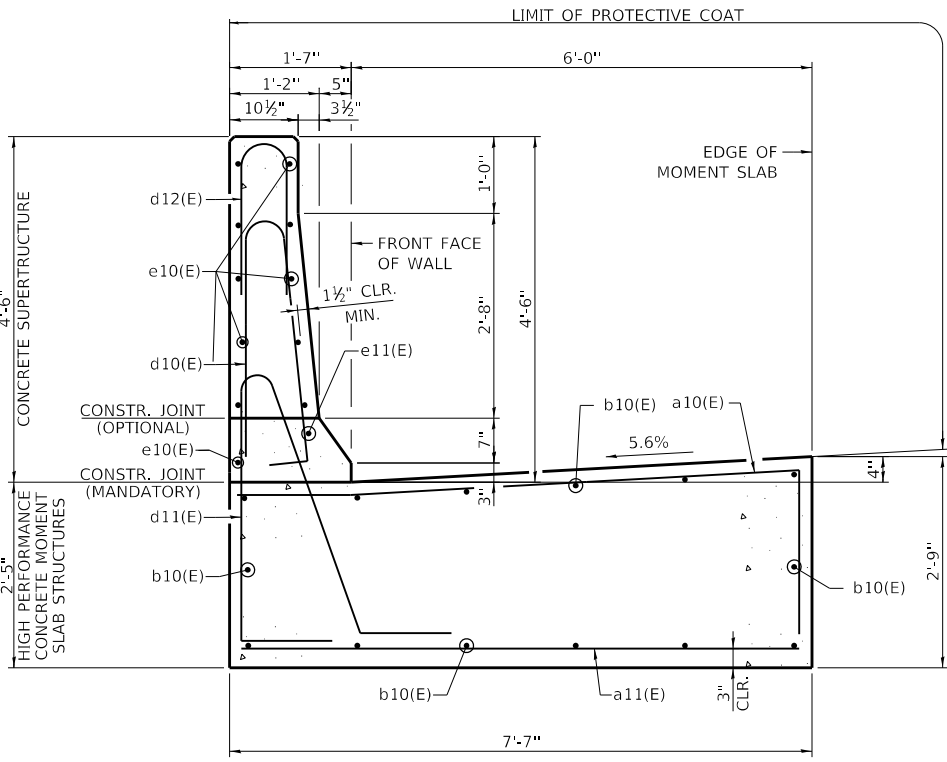


**TRANSVERSE CONTRACTION JOINT**

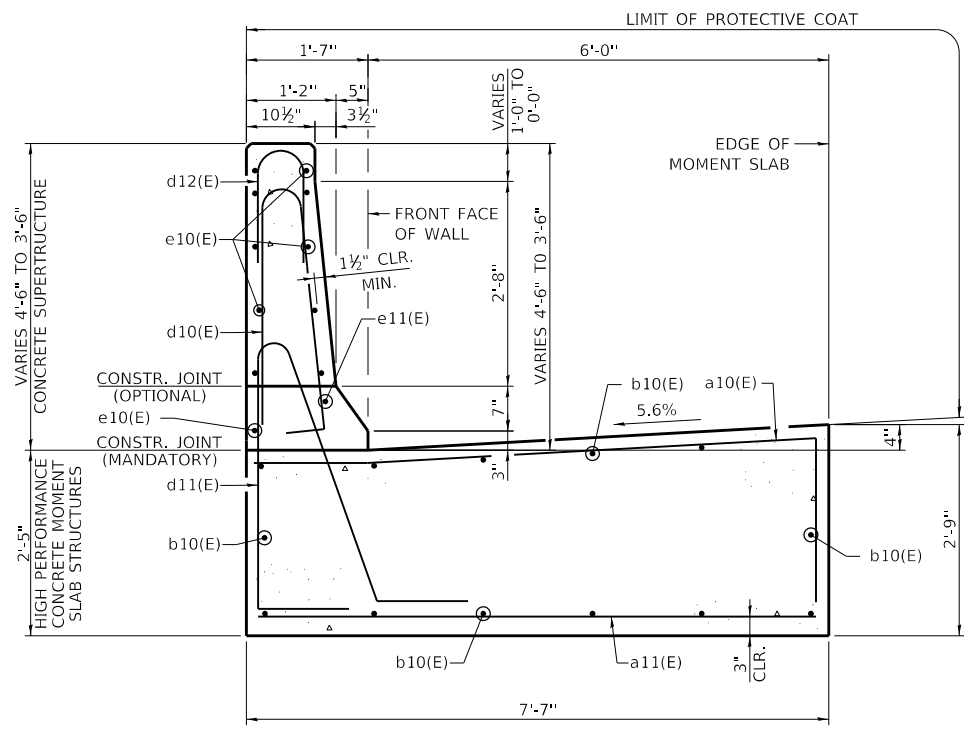


**PIPE UNDERDRAIN DETAIL**  
\*INCLUDED IN THE COST OF PIPE UNDERDRAINS FOR STRUCTURES 4"

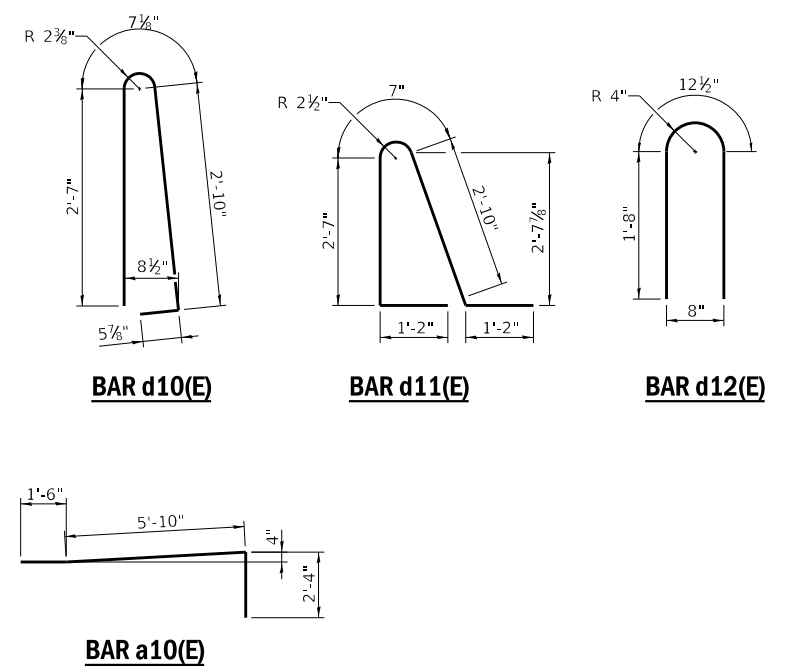
**CONSTRUCTION JOINT**  
CONCRETE WALL SHOWN, MOMENT SLAB IS SIMILAR



**SECTION A-A**



**SECTION B-B**



NOTES:  
1. FOR LOCATION OF SECTIONS A-A AND B-B SEE SHEET SA-14

PEN TABLE: ILTOLLWAY-TABLES-PL01.TBL  
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 PLOT DATE: 10/17/2018  
 PLOT SCALE: 10.00000 / 1"  
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**CHECKED BY** GJH      **DATE** 10/18/2018

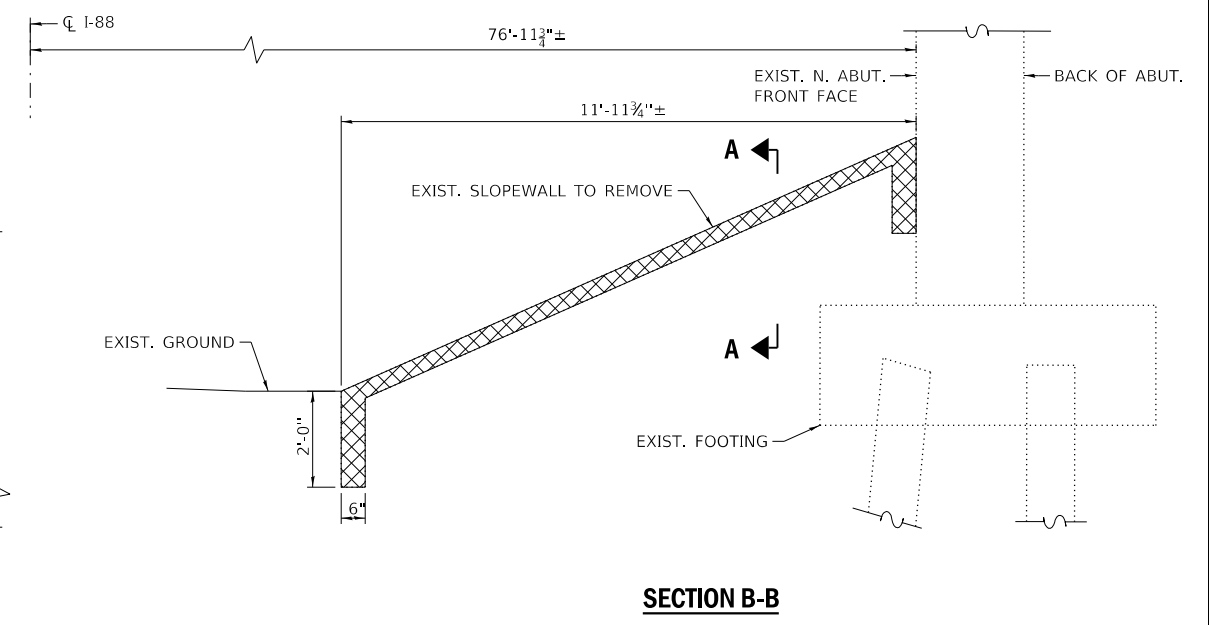
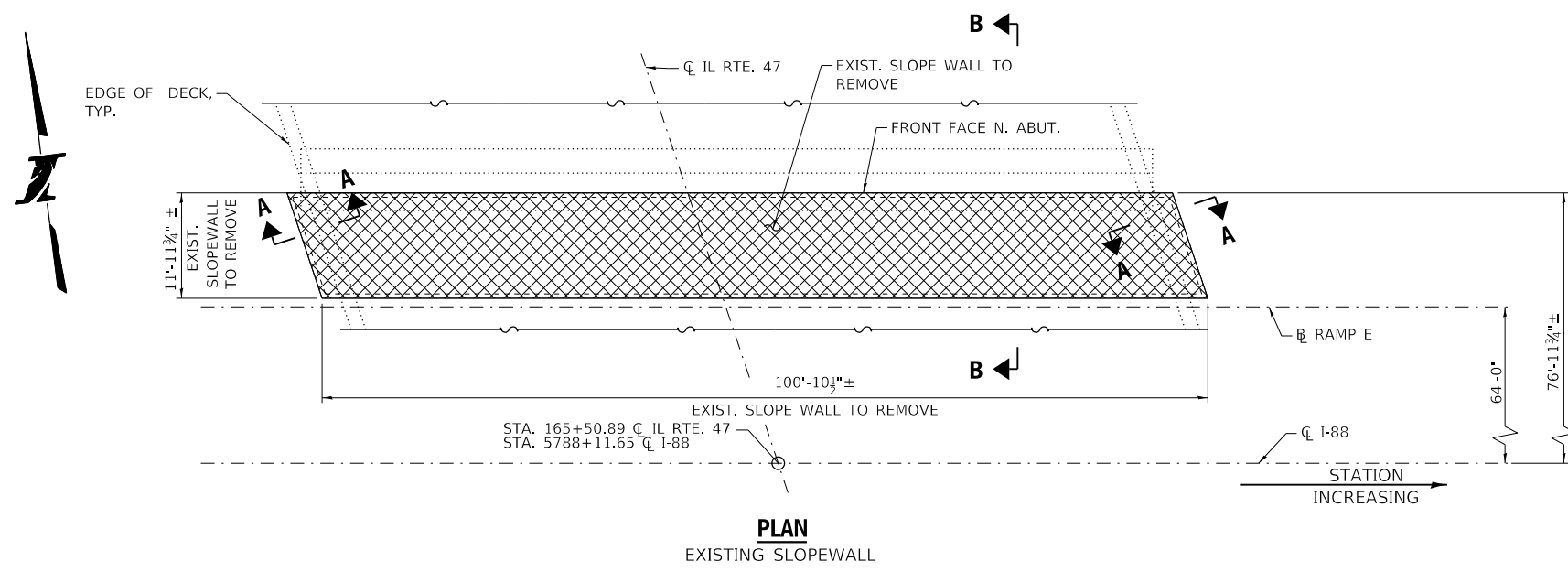
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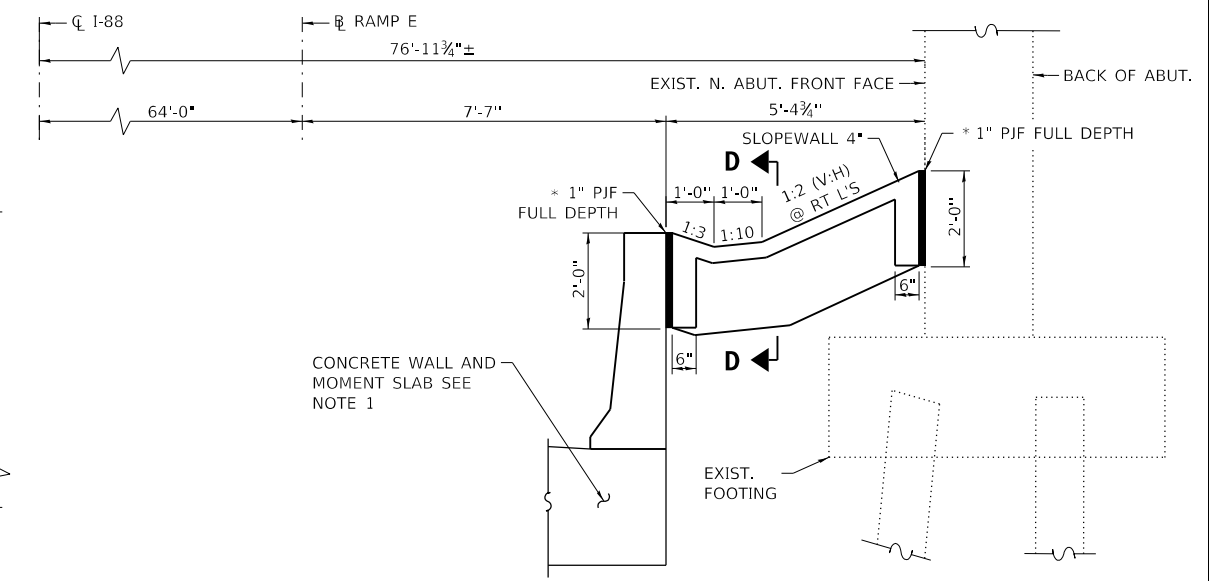
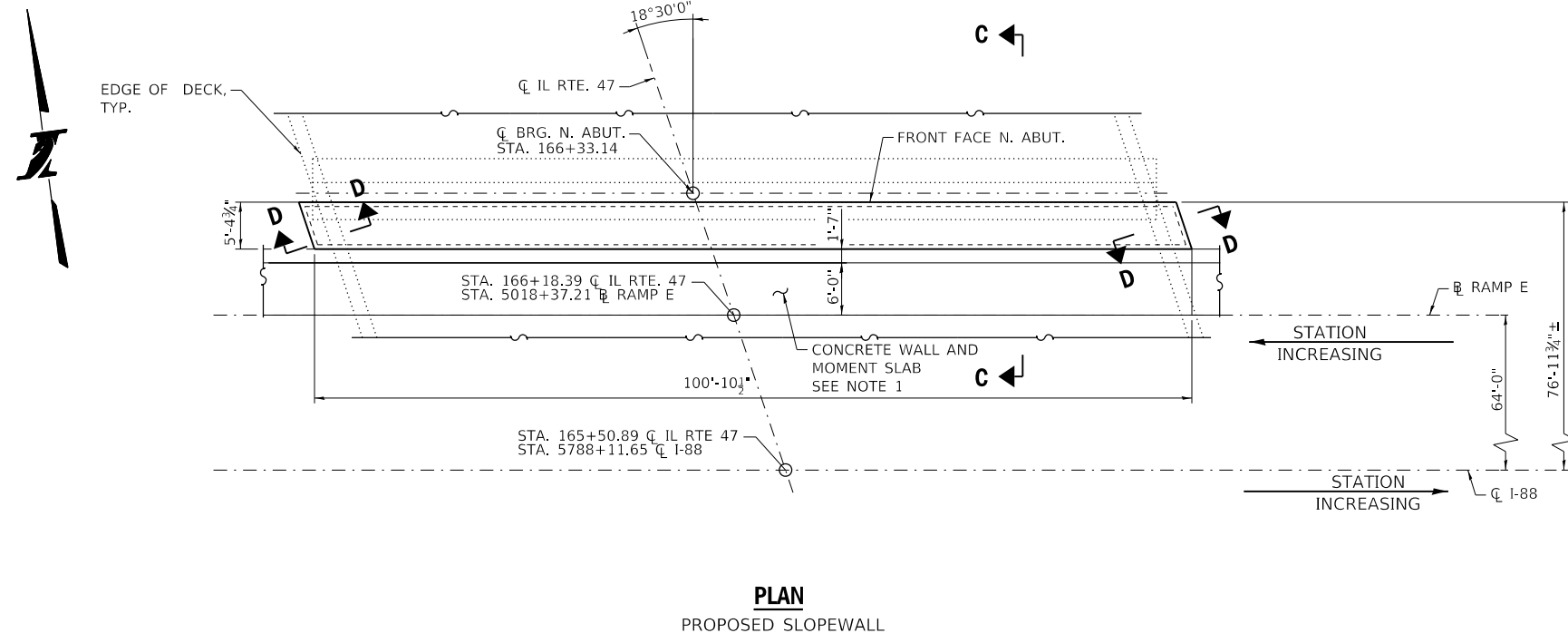
REVISIONS		
NO.	DATE	DESCRIPTION

**CONTRACT NO. I-16-4274**  
BRIDGE NO. 1101  
CONC. WALL AND MOMENT SLAB 3  
IL RTE 47 OVER I-88

**SHEET NO.** SA-15  
**DRAWING NO.** 361 OF 397



**SECTION B-B**



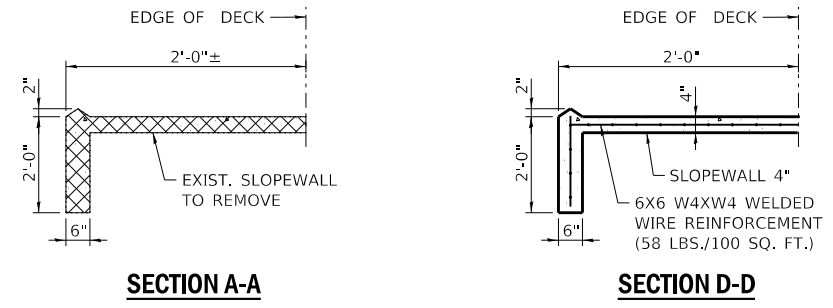
**SECTION C-C**

\* COST INCLUDED WITH SLOPE WALL 4 INCH

**BILL OF MATERIAL**

ITEM	UNIT	TOTAL
SLOPE WALL REMOVAL	SQ YD	155
SLOPE WALL 4 INCH	SQ YD	70

NOTES:  
1. FOR MOMENT SLAB AND WALL DETAILS SEE SHEET SA-13.




**SECTION A-A**

**SECTION D-D**

PEN TABLE: ILTOLLWAY-TABLES-PL01.TBL  
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 PLOT DATE: 10/17/2018  
 PLOT SCALE: 20.00000  
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**DRAWN BY** EV      **DATE** 10/18/2018  
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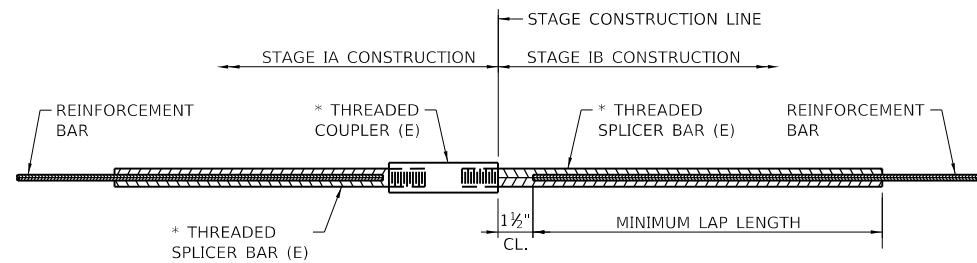

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**CONTRACT NO. I-16-4274**  
 BRIDGE NO. 1101  
 SLOPEWALL DETAILS  
 IL RTE 47 OVER I-88

**SHEET NO.**  
 SA-16  
**DRAWING NO.**  
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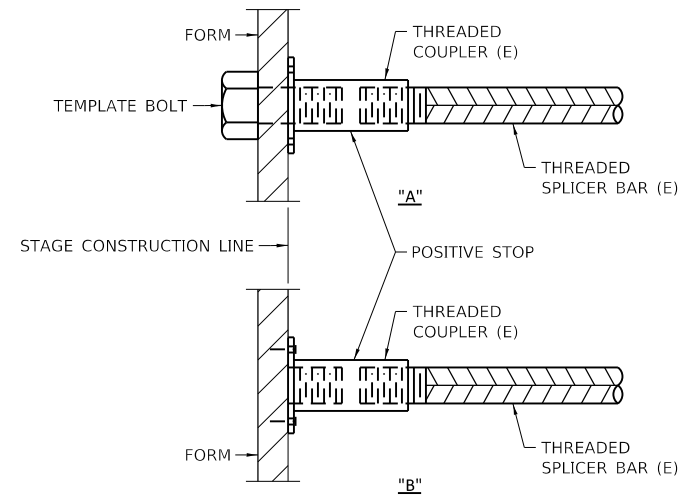


**STANDARD BAR SPLICER ASSEMBLY**

THREADED SPLICER BAR LENGTH = MIN. LAP LENGTH + 1 1/2" + THREAD LENGTH

\* EPOXY NOT REQUIRED ON BAR SPLICER ASSEMBLY COMPONENTS USED IN CONJUNCTION WITH BLACK BARS.

LOCATION	BAR SIZE	NO. ASSEMBLIES REQUIRED	MINIMUM LAP LENGTH
S. ABUT. EXP. JT. (SPAN 4)	#6	4	3'-7"
S. ABUT. EXP. JT. (SPAN 3)	#7	2	4'-2"
S. ABUT. EXP. JT. (SPAN 2)	#7	2	4'-2"
S. ABUT. EXP. JT. (SPAN 1)	#6	4	3'-7"
S. APPR. PAVEMENT (TOP)	#4	9	2'-5"
S. APPR. PAVEMENT (BOTTOM)	#5	31	3'-3"
S. APPR. CONCRETE PAD (TOP)	#5	13	3'-3"
S. APPR. CONCRETE PAD (BOTTOM)	#5	13	3'-3"
N. APPR. PAVEMENT (TOP)	#4	9	2'-5"
N. APPR. PAVEMENT (BOTTOM)	#5	31	3'-3"
N. APPR. CONCRETE PAD (TOP)	#5	13	3'-3"
N. APPR. CONCRETE PAD (BOTTOM)	#5	13	3'-3"



**INSTALLATION AND SETTING METHODS**

"A": SET BAR SPLICER ASSEMBLY BY MEANS OF A TEMPLATE BOLT.  
 "B": SET BAR SPLICER ASSEMBLY BY NAILING TO WOOD FORMS OR CEMENTING TO STEEL FORMS.  
 (E) : INDICATES EPOXY COATING.

NOTES:

- SPLICER BARS SHALL BE DEFORMED WITH THREADED ENDS AND HAVE A MINIMUM 60 KSI YIELD STRENGTH.
- ALL REINFORCEMENT SHALL BE LAPPED AND TIED TO THE SPLICER BARS.
- BAR SPLICER ASSEMBLIES SHALL BE EPOXY COATED ACCORDING TO THE REQUIREMENTS FOR REINFORCEMENT BARS. SEE SECTION 508 OF THE STANDARD SPECIFICATIONS.
- SEE APPROVED LIST OF BAR SPLICER ASSEMBLIES.

PEN TABLE ILTOLLWAY-TABLES-PL01.TBL  
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 PLOT DATE 10/17/2018 PLOT SCALE = 2.0000 / 1" FILE NAME = ...N4274-sh-t-BN101-17\_bar\_splicer-01.dgn

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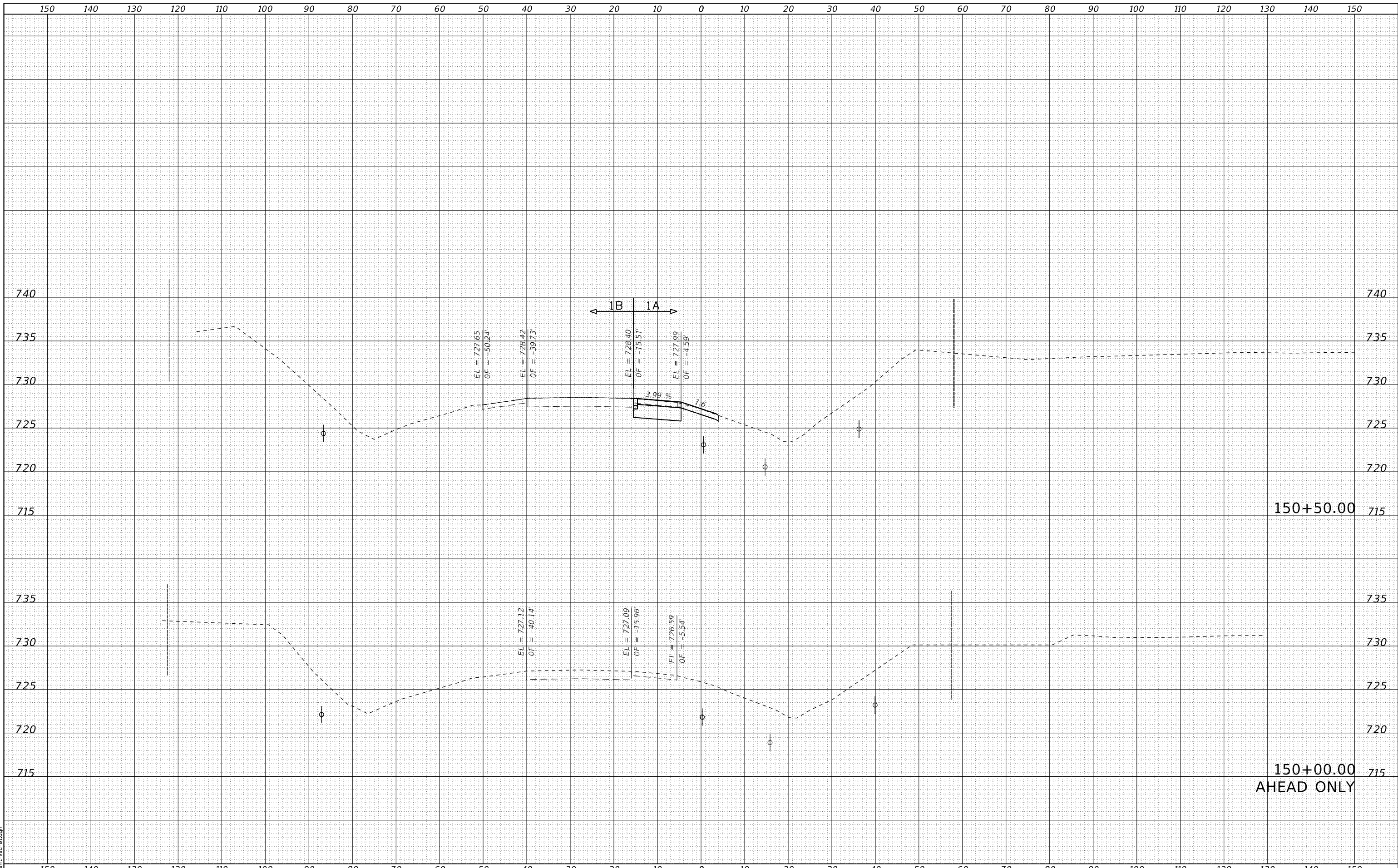


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**CONTRACT NO. I-16-4274**  
 BRIDGE NO. 1101  
 BAR SPLICER DETAILS  
 IL RTE 47 OVER I-88

**SHEET NO.**  
 SA-17  
**DRAWING NO.**  
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150+50.00

150+00.00  
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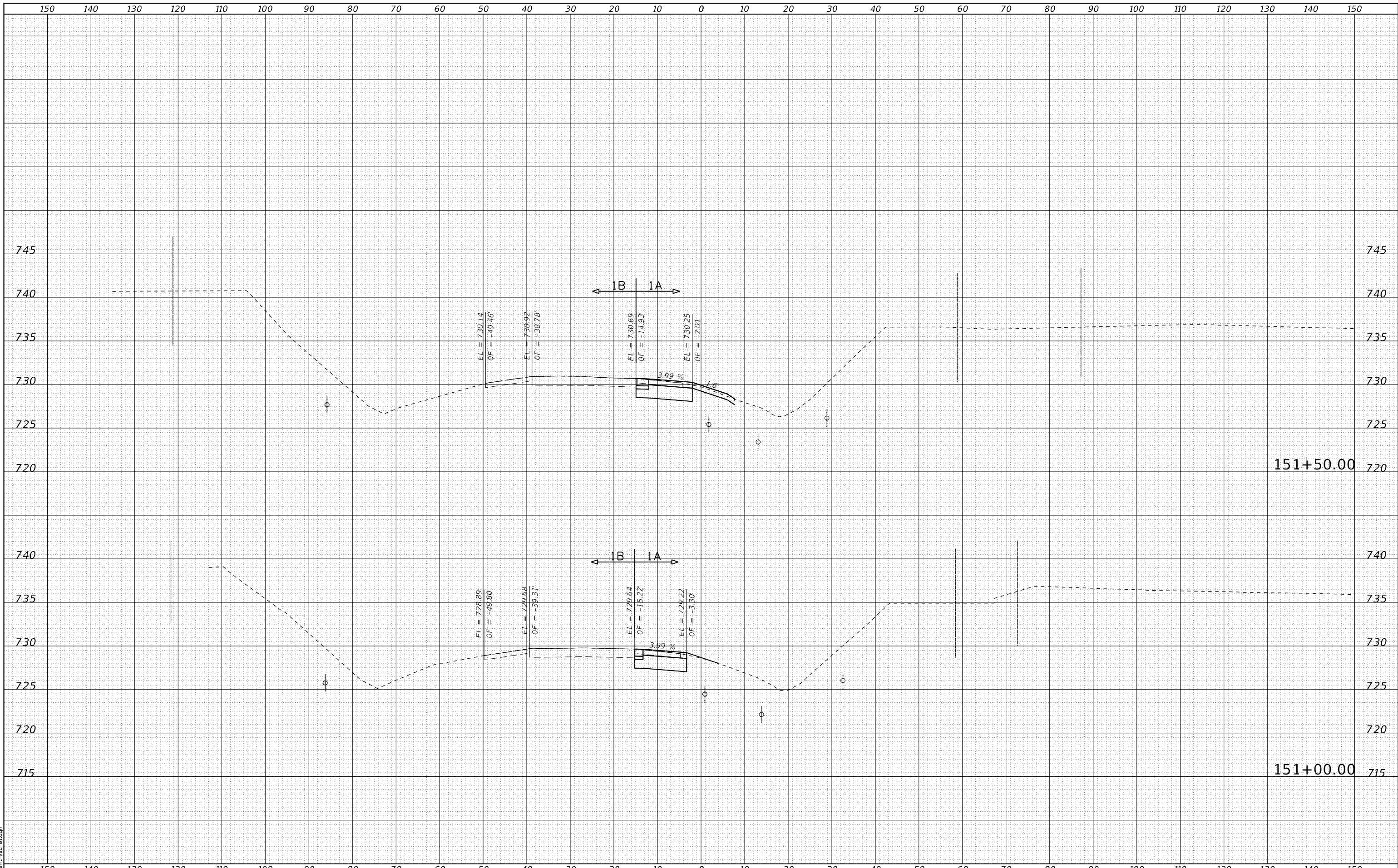


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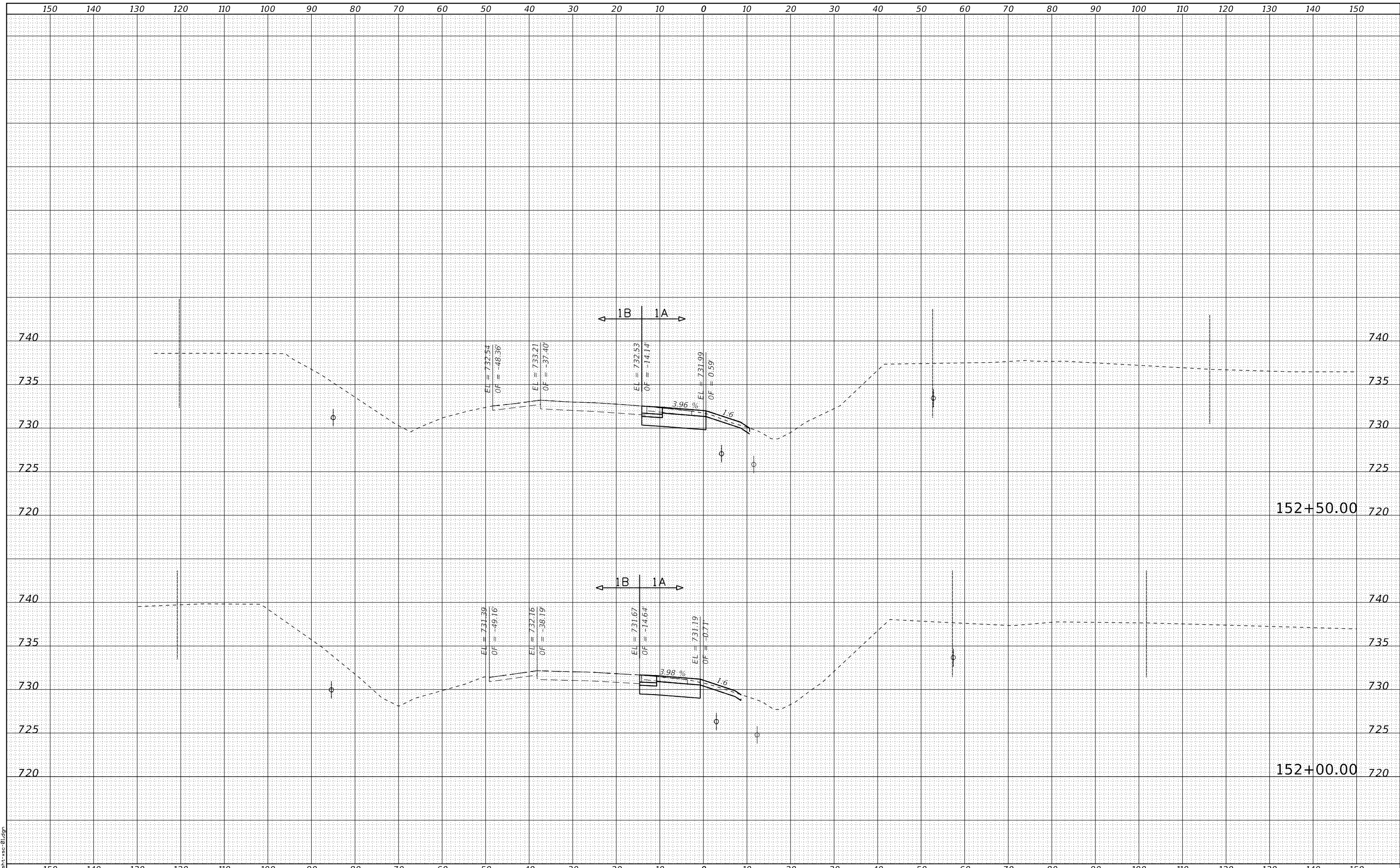


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CONTRACT NO. I-16-4274  
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 365 OF 397



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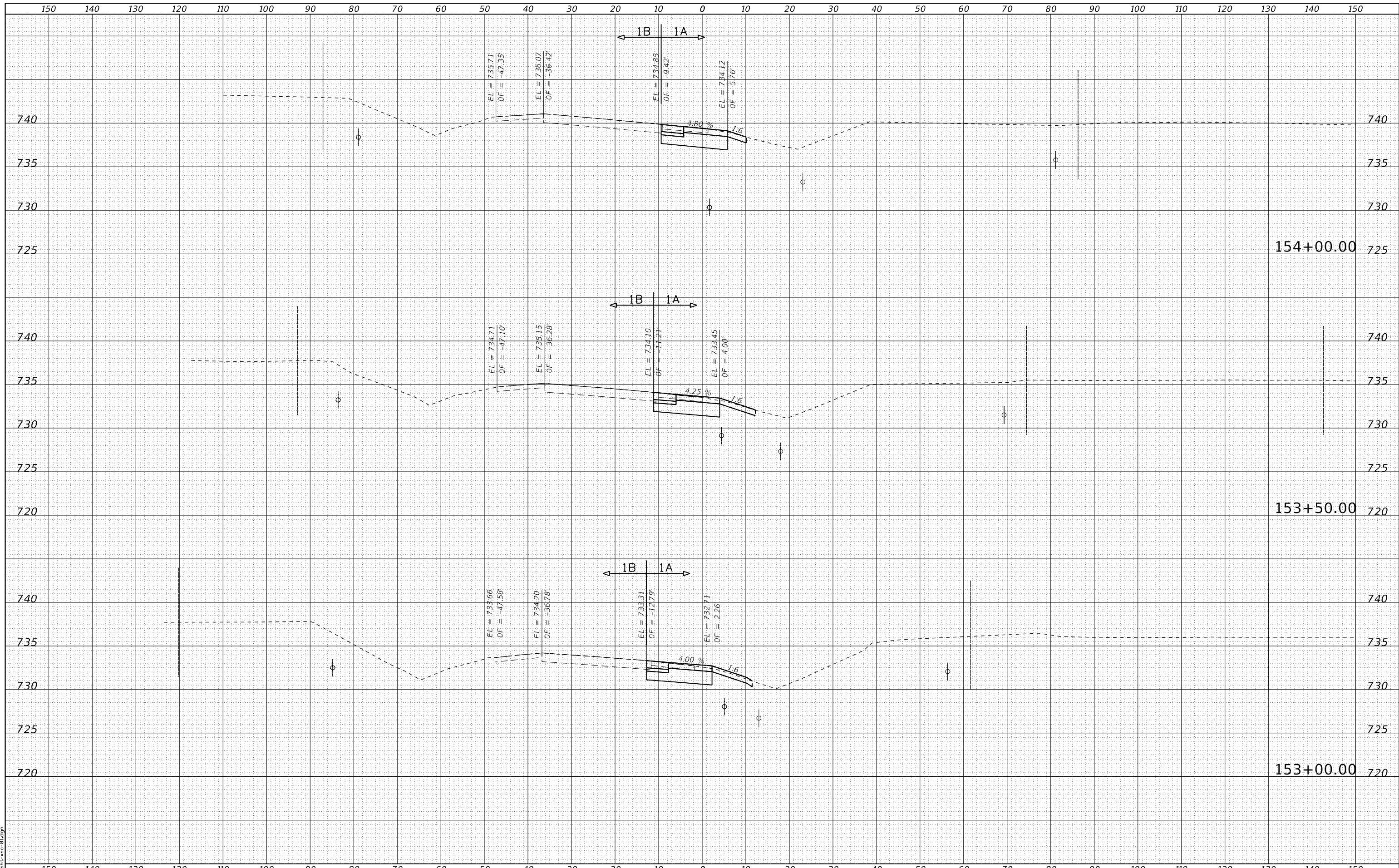


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NO.	DESCRIPTION

CONTRACT NO. I-16-4274  
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SHT NO. XSC-03  
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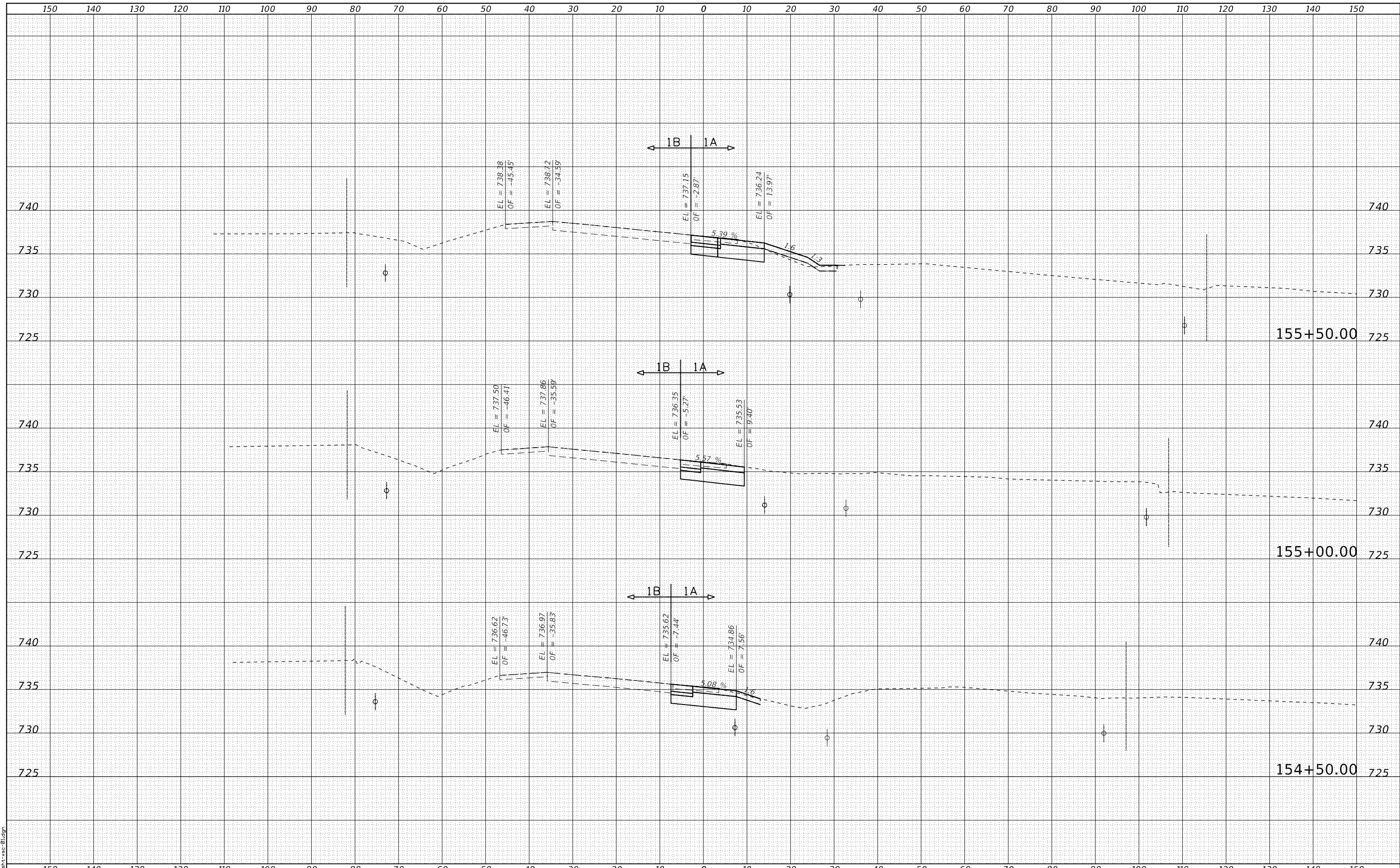


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SHT NO. XSC-04  
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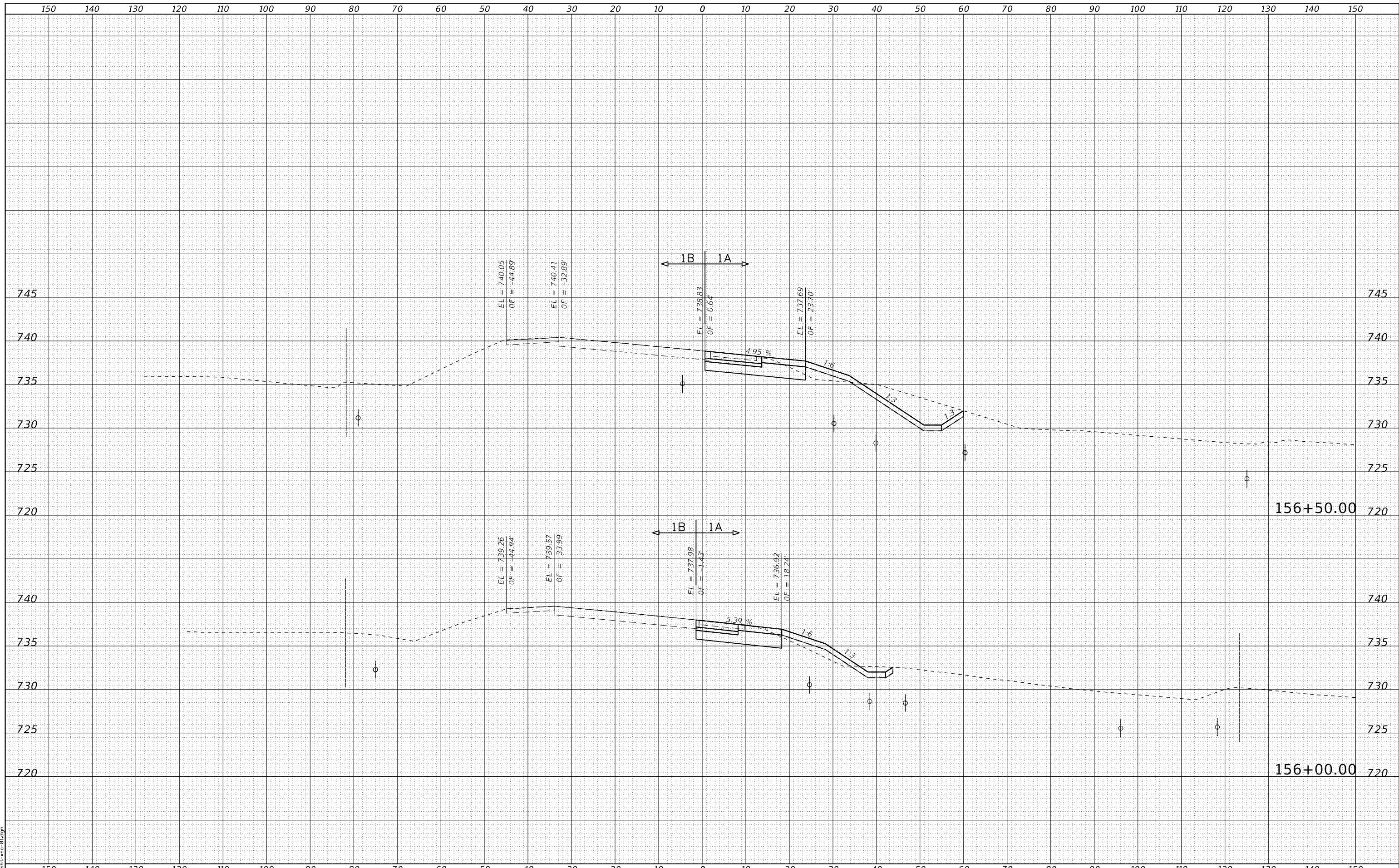
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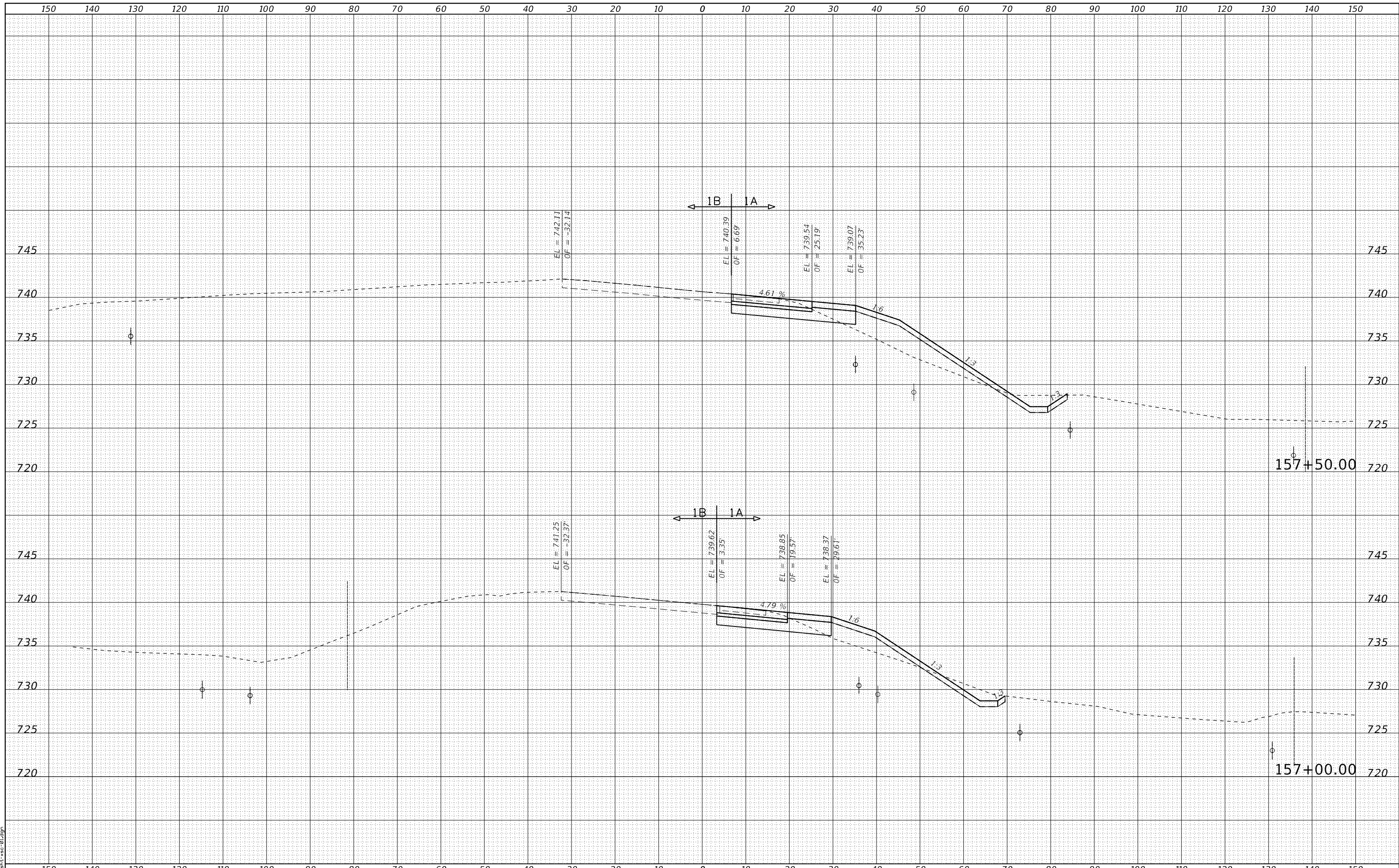


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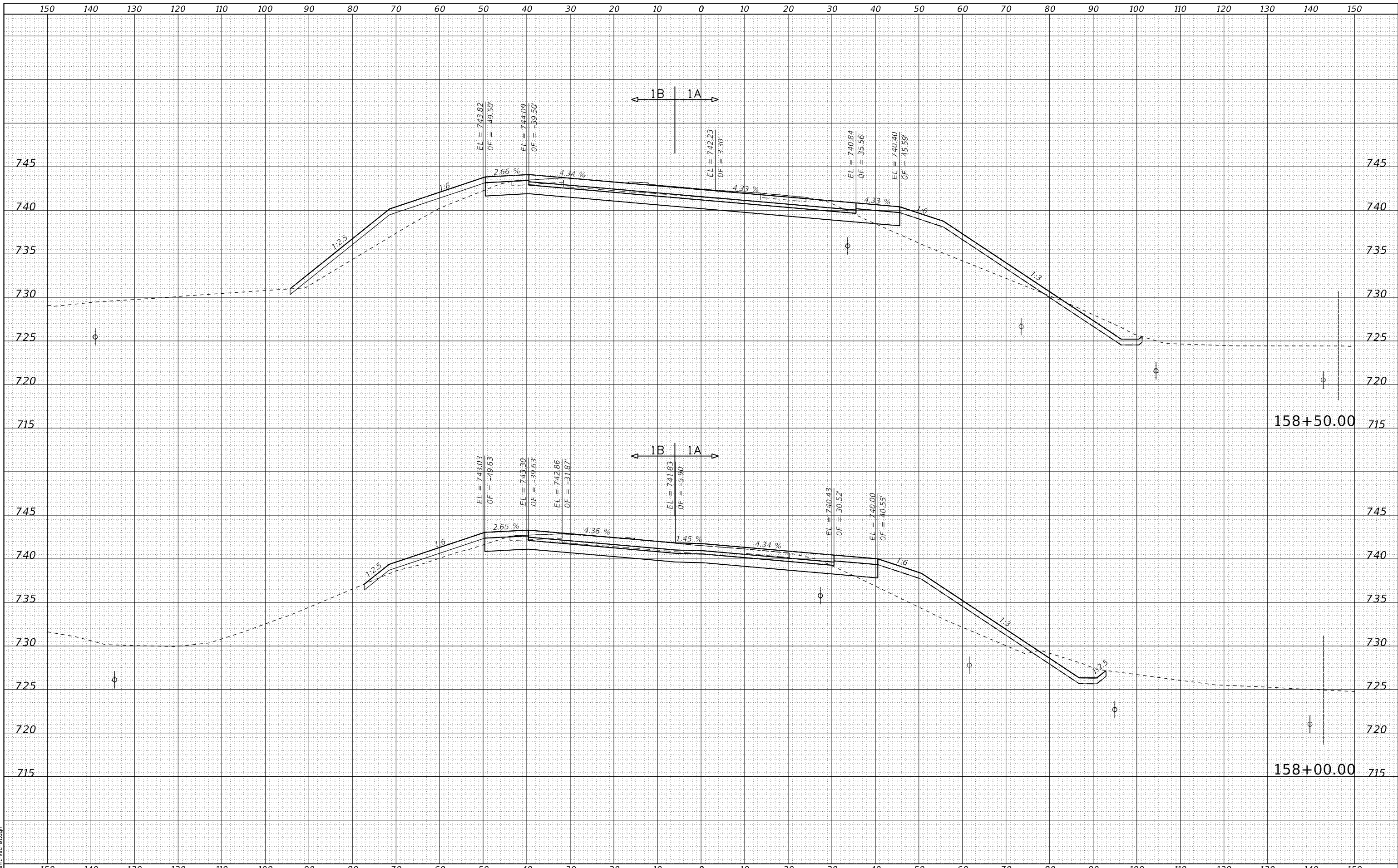
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 DRAWING NO.  
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158+00.00

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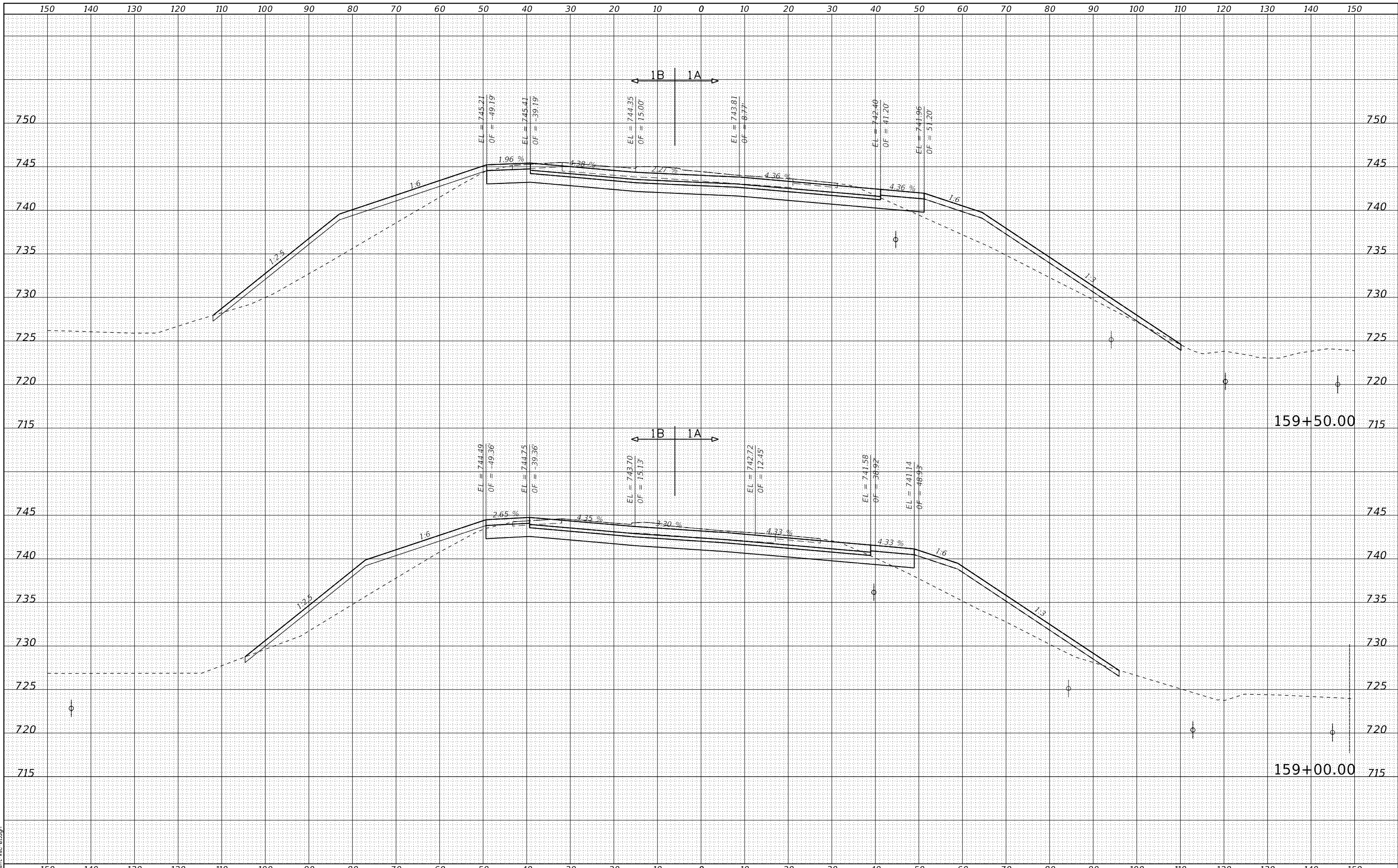
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CONTRACT NO. I-16-4274  
 ILLINOIS ROUTE 47

SHT NO. XSC-08  
 DRAWING NO. 371 OF 397



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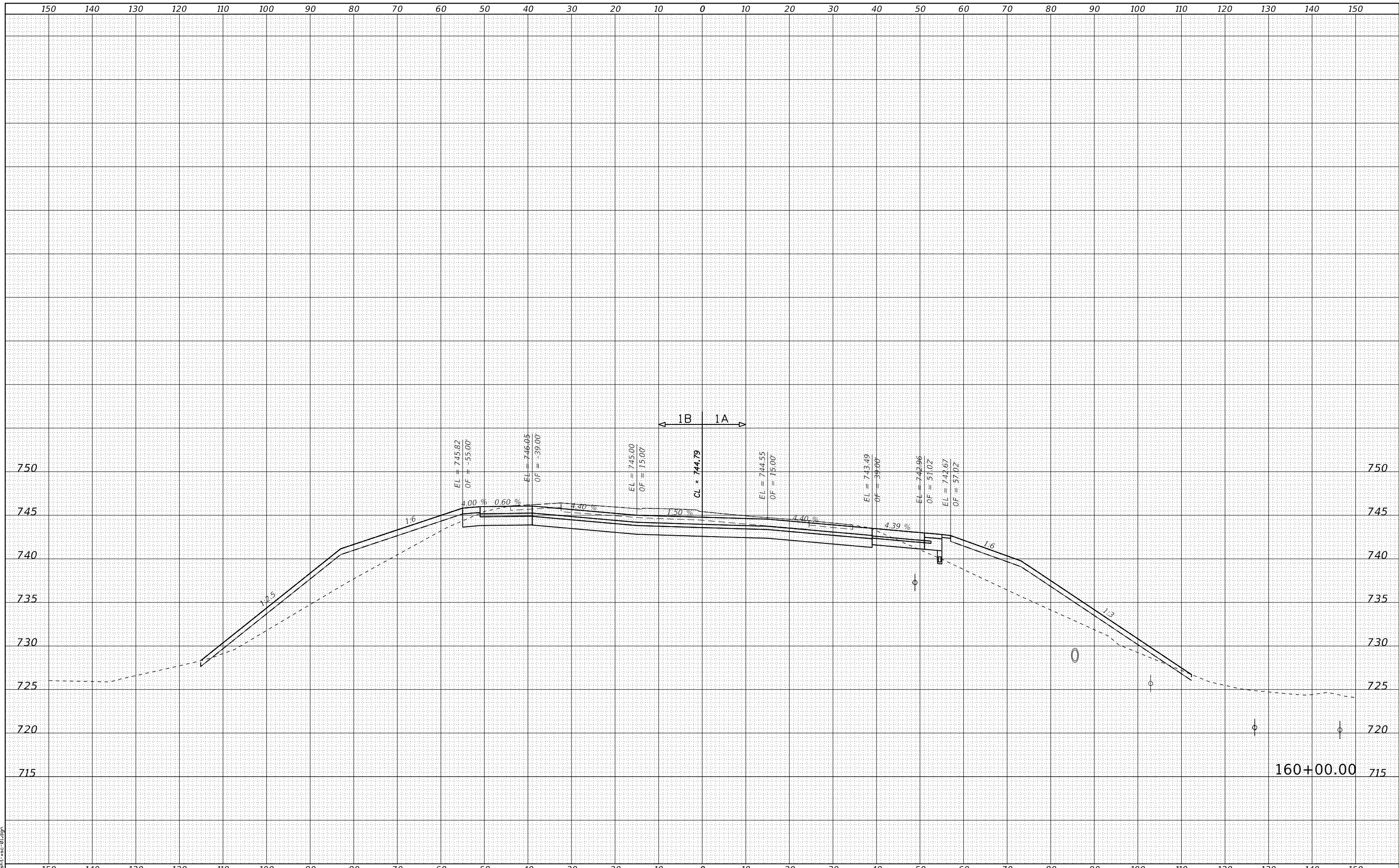
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 DOWNERS GROVE,  
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NO.	DATE	DESCRIPTION

CONTRACT NO. 1-16-4274  
 ILLINOIS ROUTE 47

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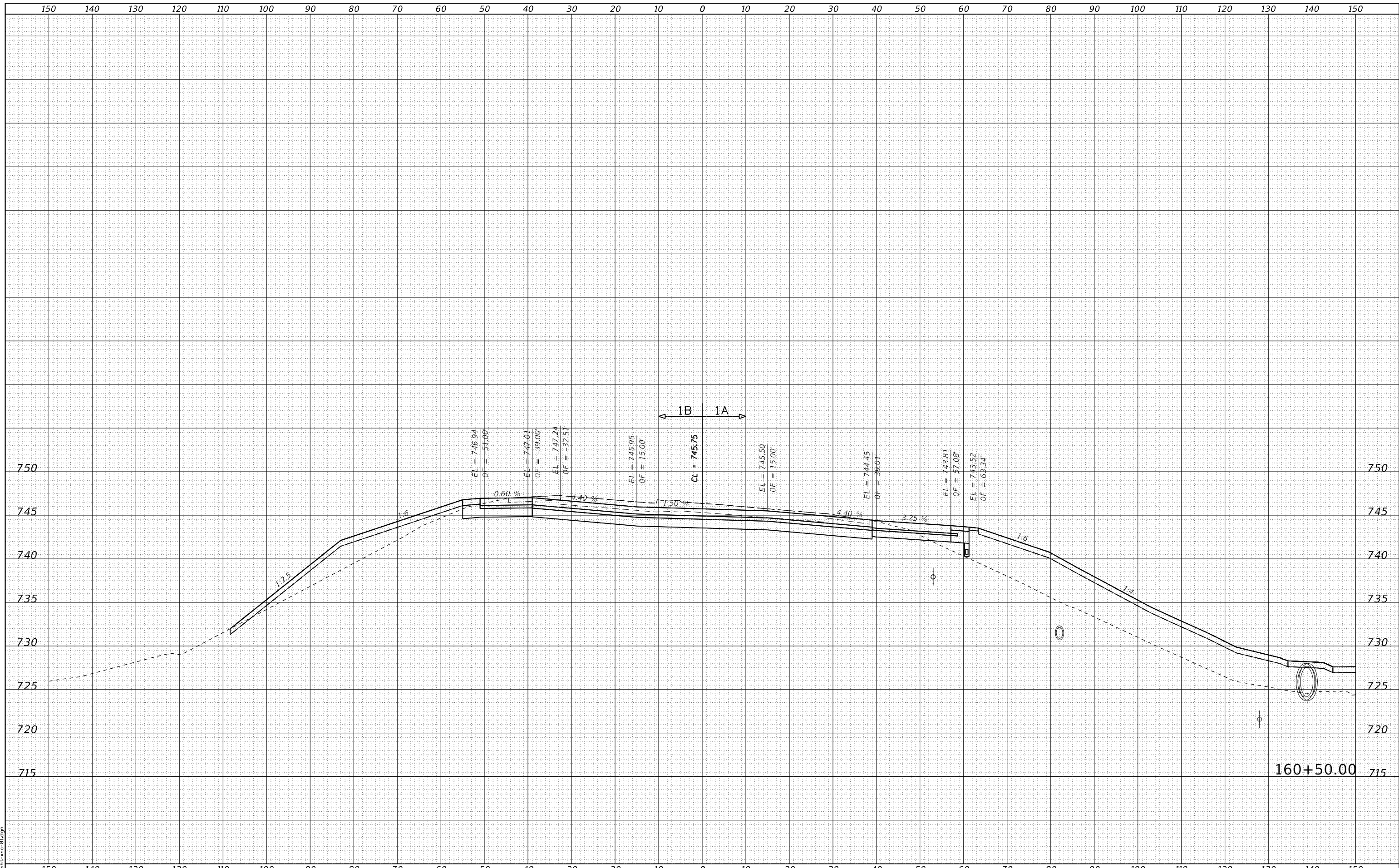
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 ILLINOIS 60515

REVISIONS	
NO.	DESCRIPTION

CONTRACT NO. I-16-4274  
 ILLINOIS ROUTE 47

SHT NO. XSC-10  
 DRAWING NO.  
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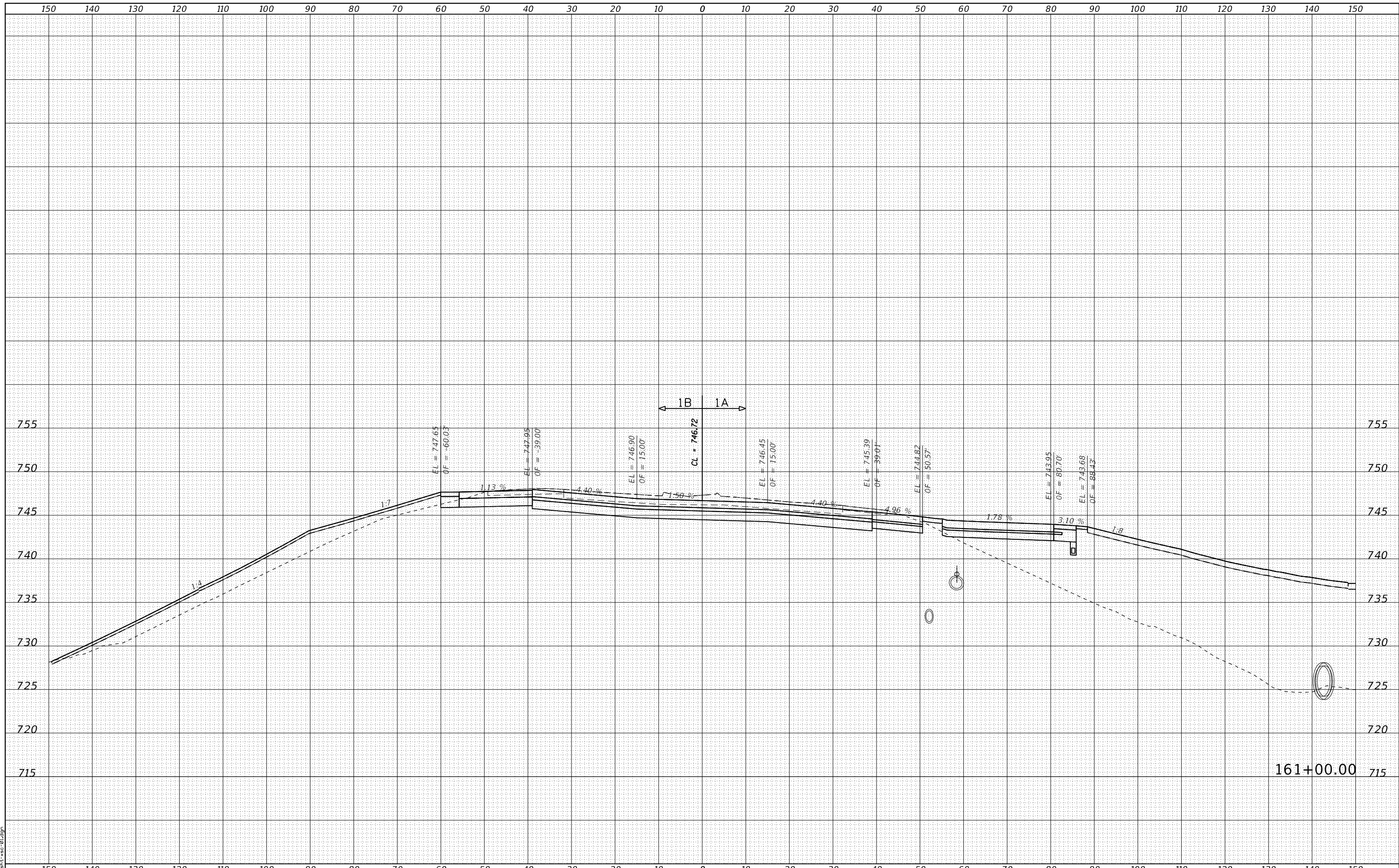
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REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. I-16-4274  
 ILLINOIS ROUTE 47

SHT NO. XSC-11  
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CONTRACT NO. I-16-4274  
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SHT NO. XSC-12  
 DRAWING NO.  
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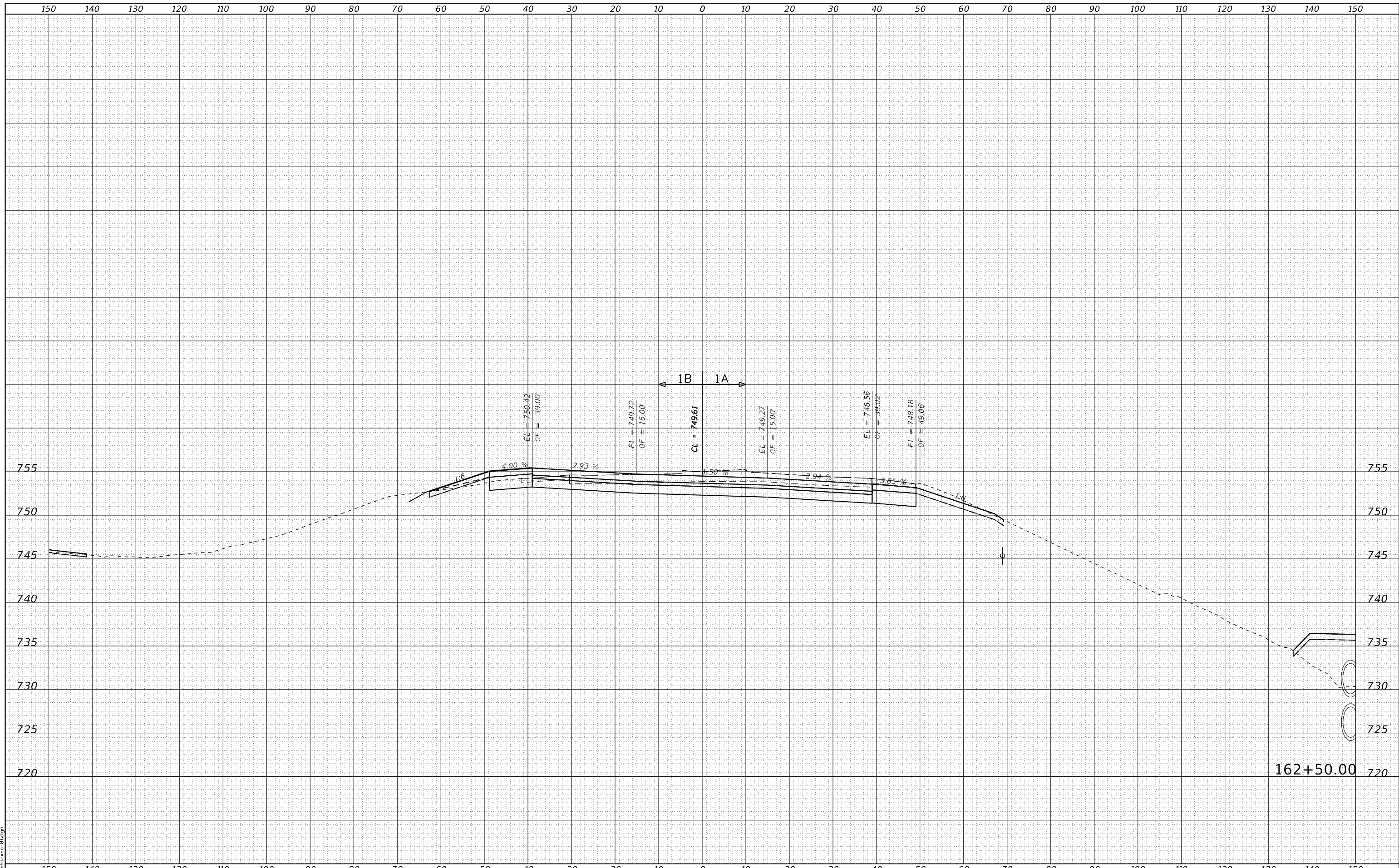
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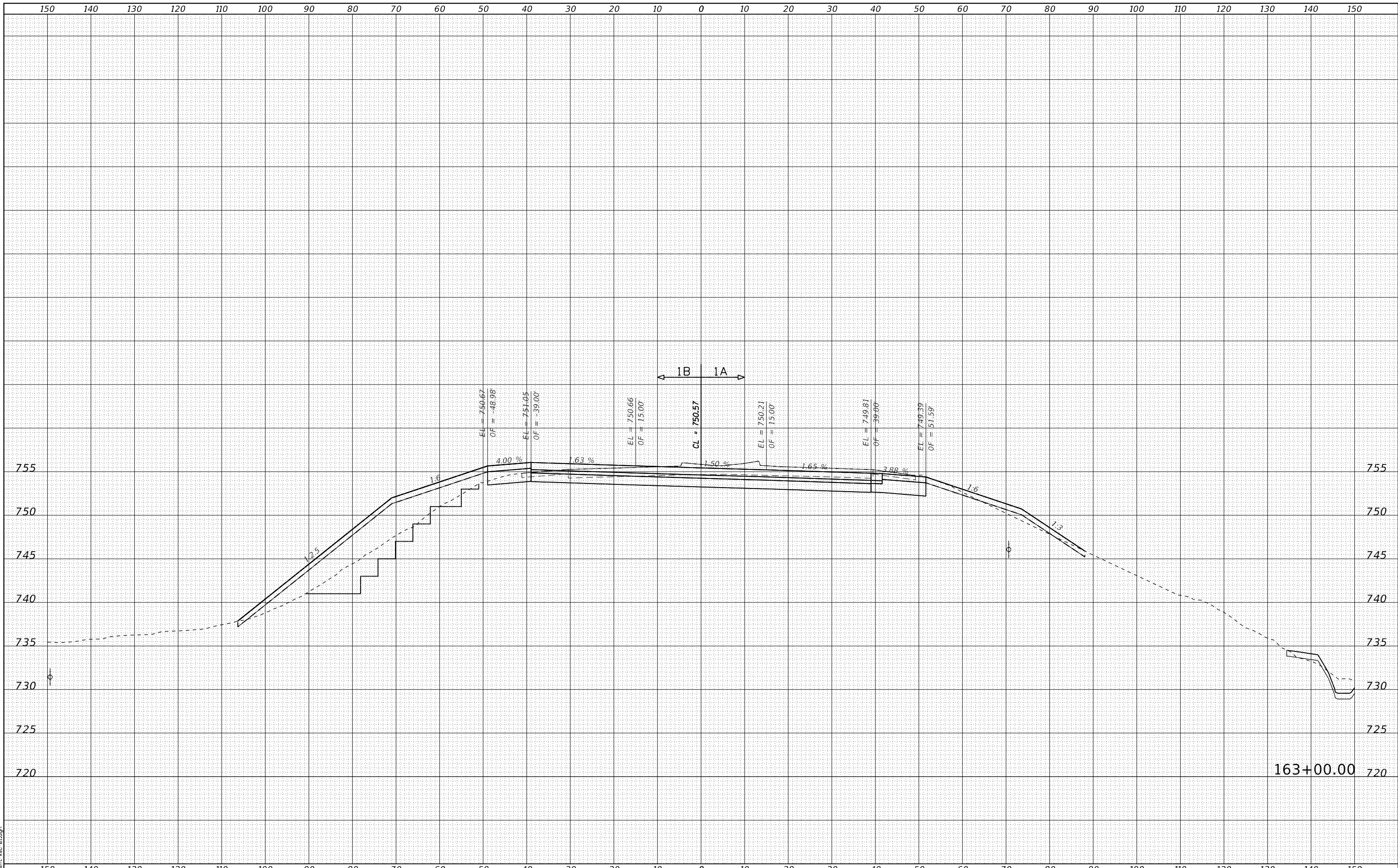


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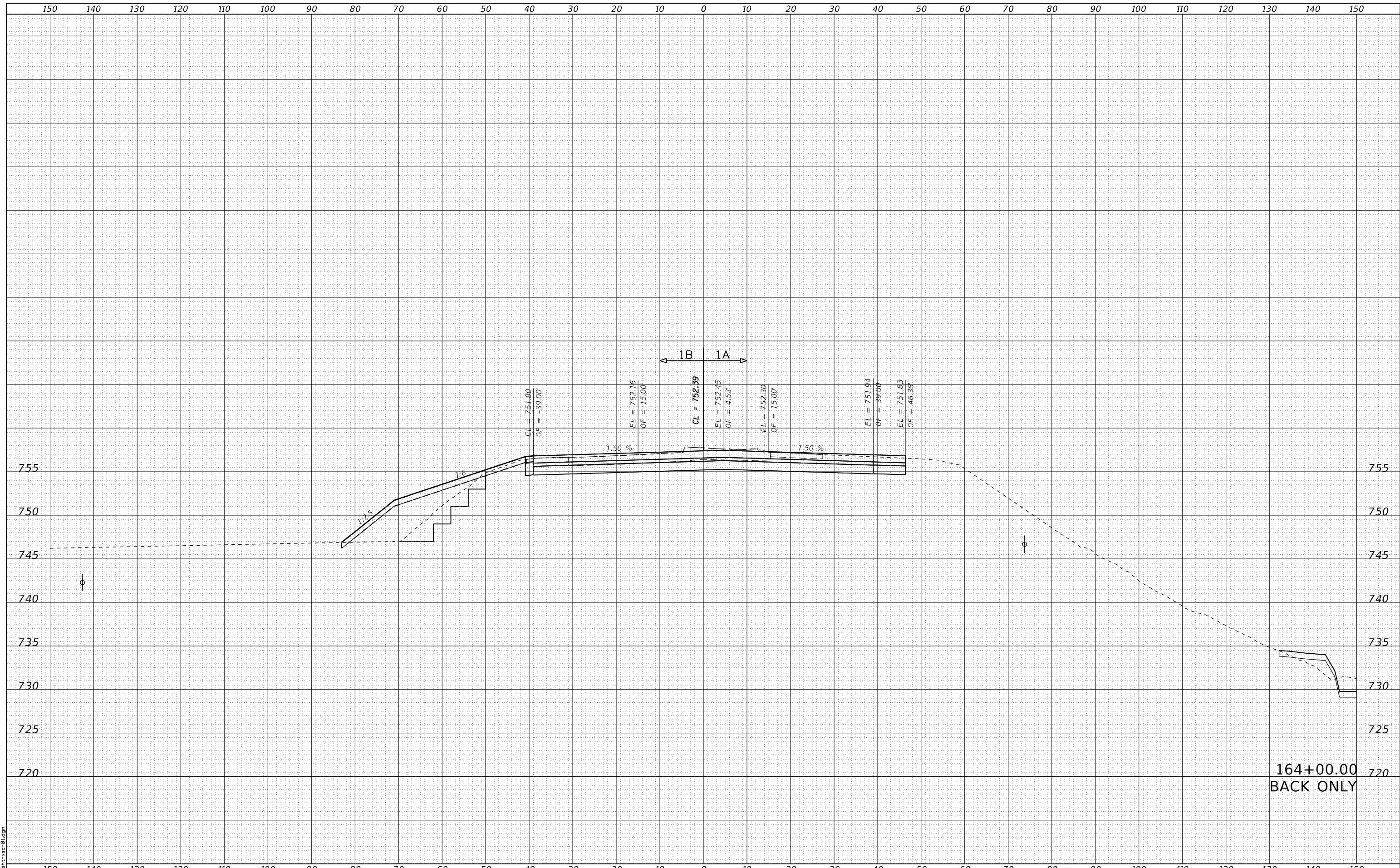
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 ILLINOIS ROUTE 47

SHT NO. XSC-15  
 DRAWING NO.  
 378 OF 397

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164+00.00  
BACK ONLY

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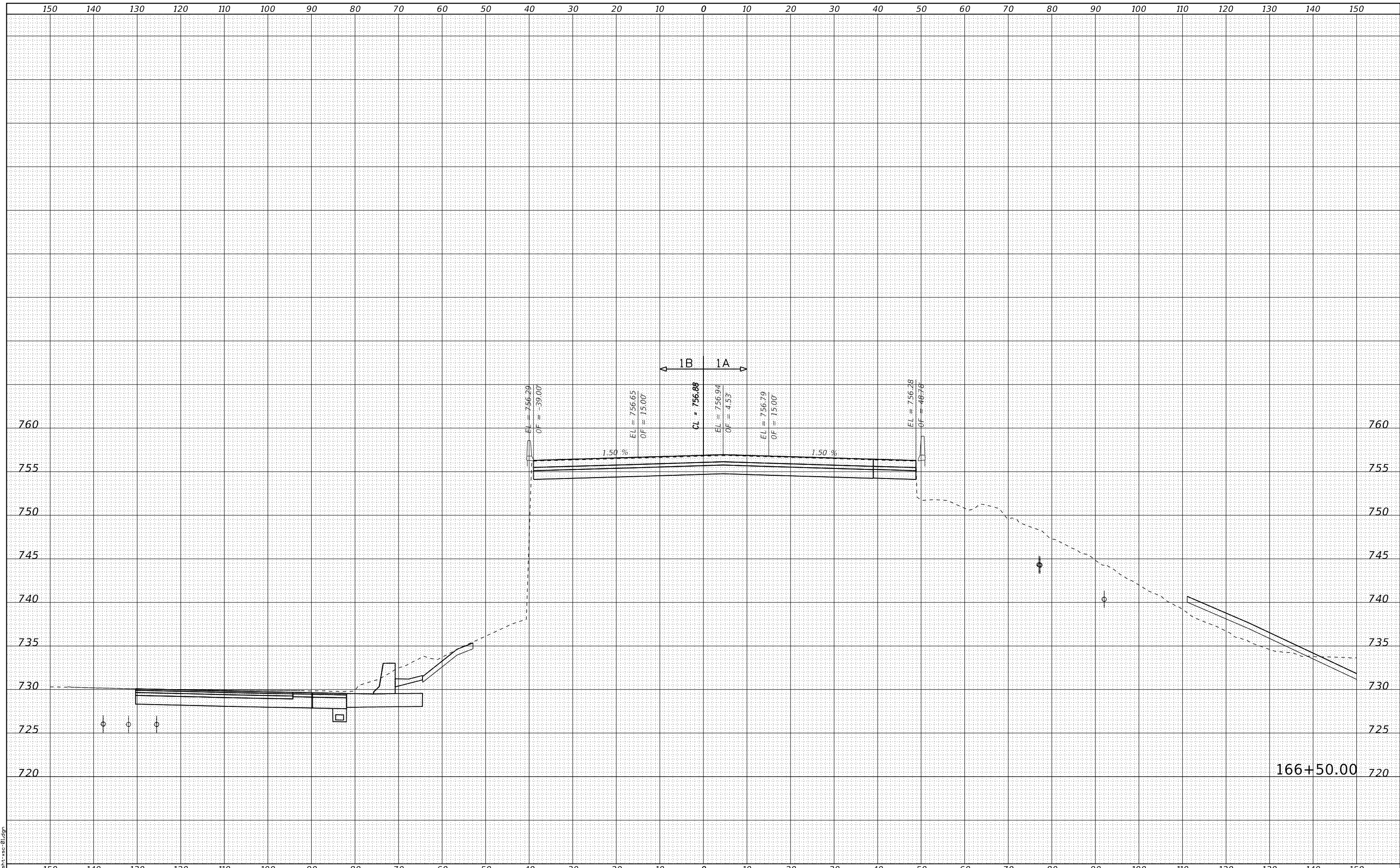
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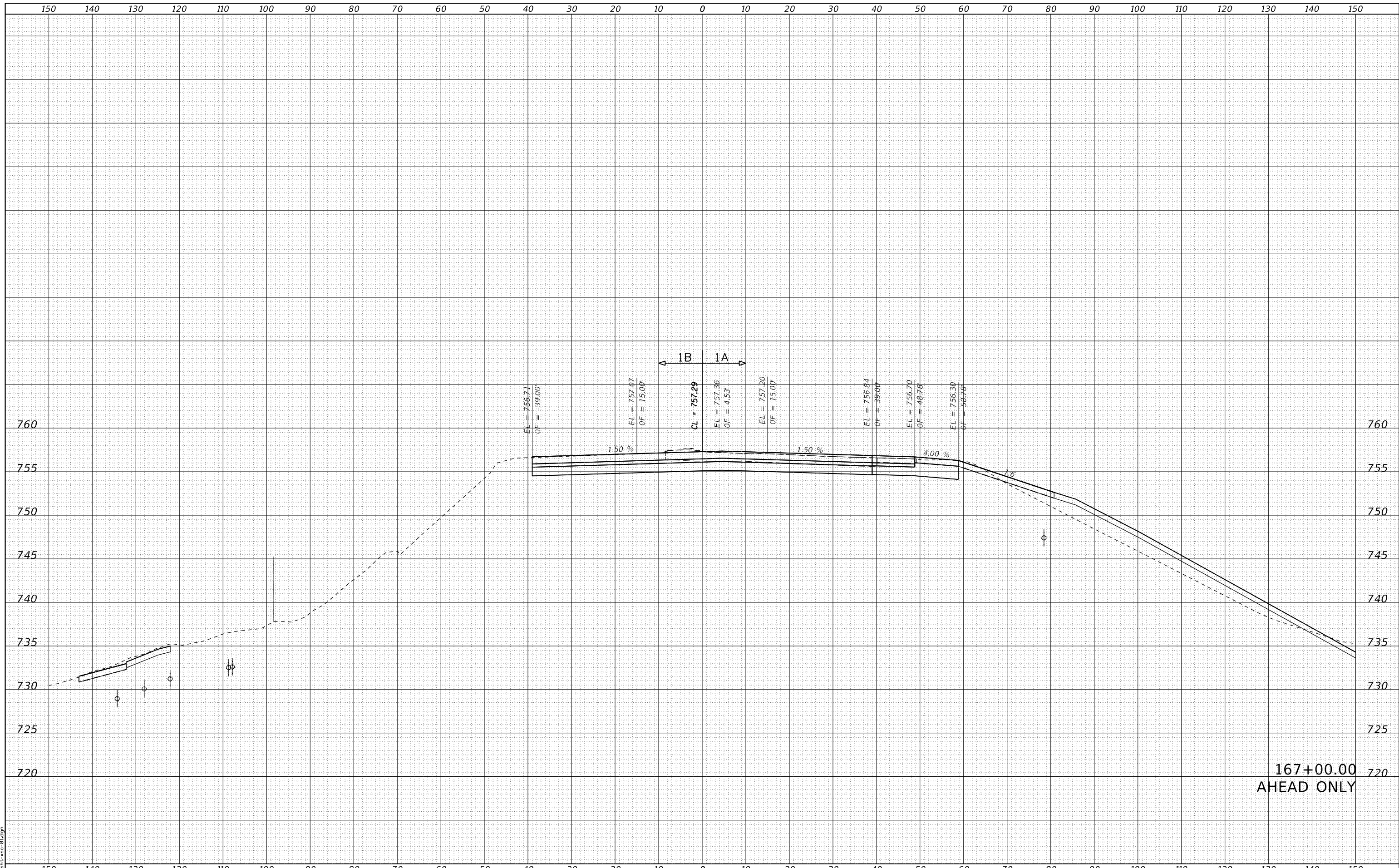
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CONTRACT NO. I-16-4274  
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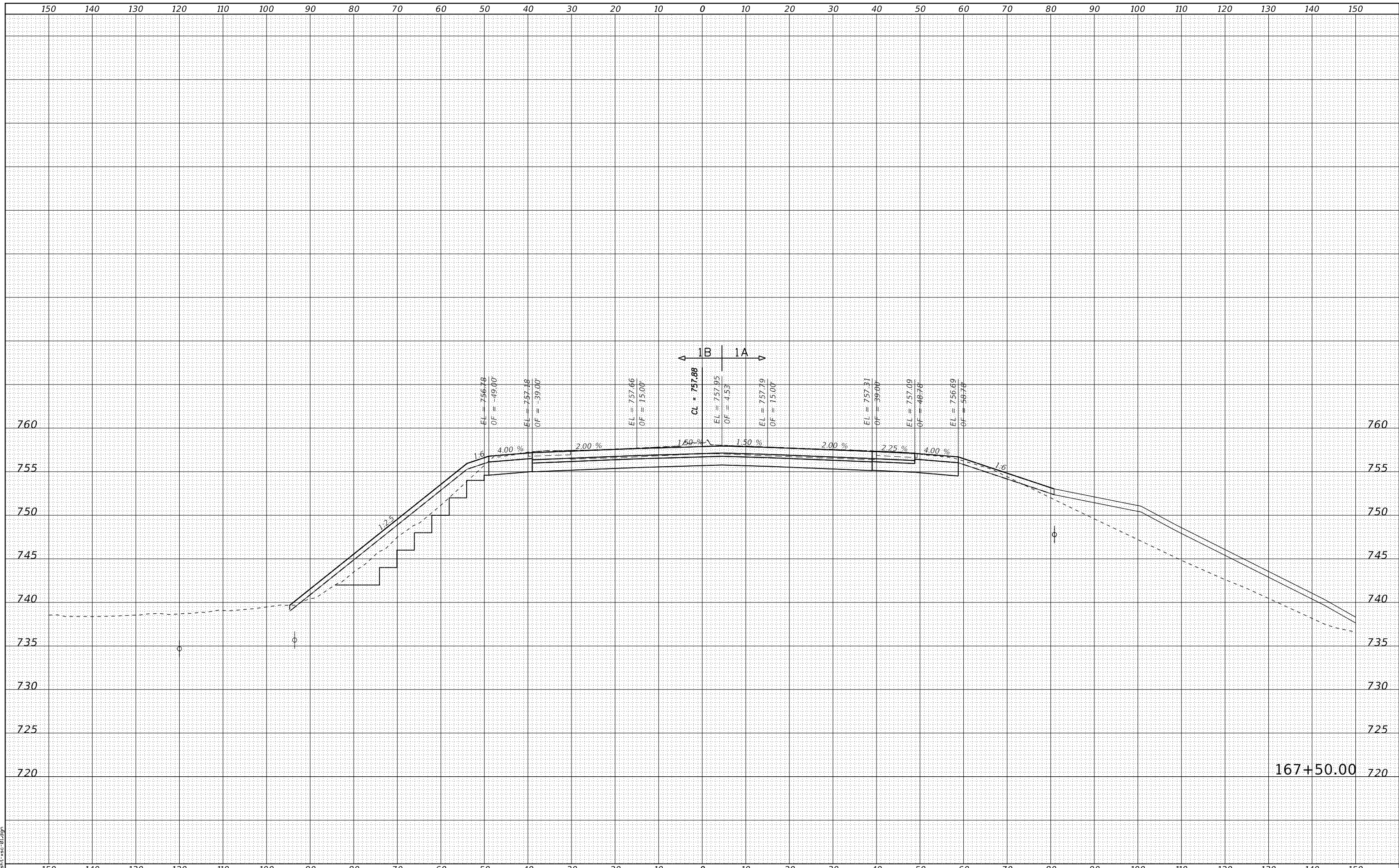


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NO.	DESCRIPTION

CONTRACT NO. I-16-4274  
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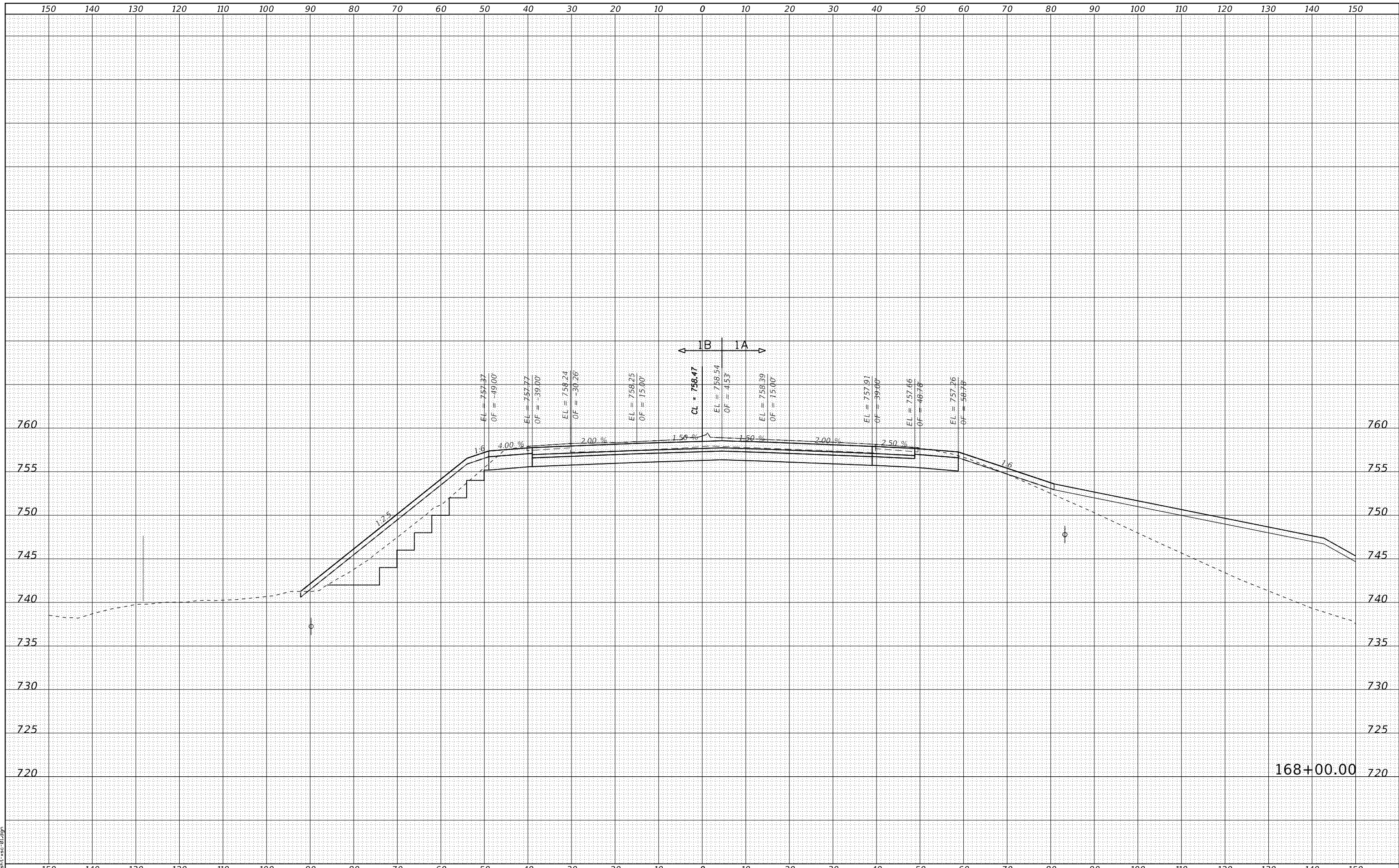


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 ILLINOIS ROUTE 47

SHT NO. XSC-20  
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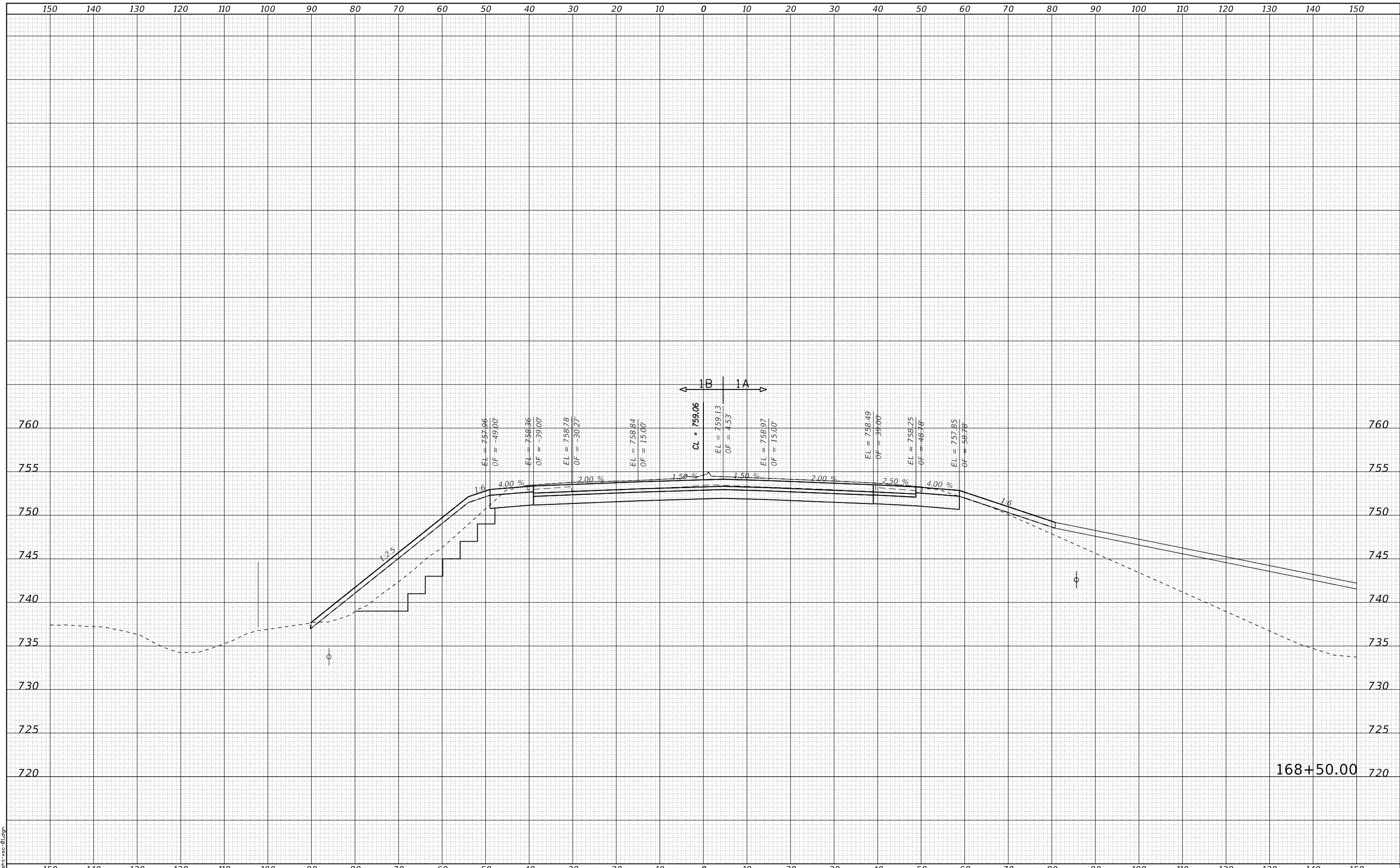
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REVISIONS	
NO.	DESCRIPTION

CONTRACT NO. I-16-4274  
 ILLINOIS ROUTE 47

SHT NO. XSC-21  
 DRAWING NO.  
 384 OF 397

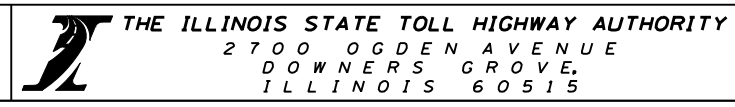


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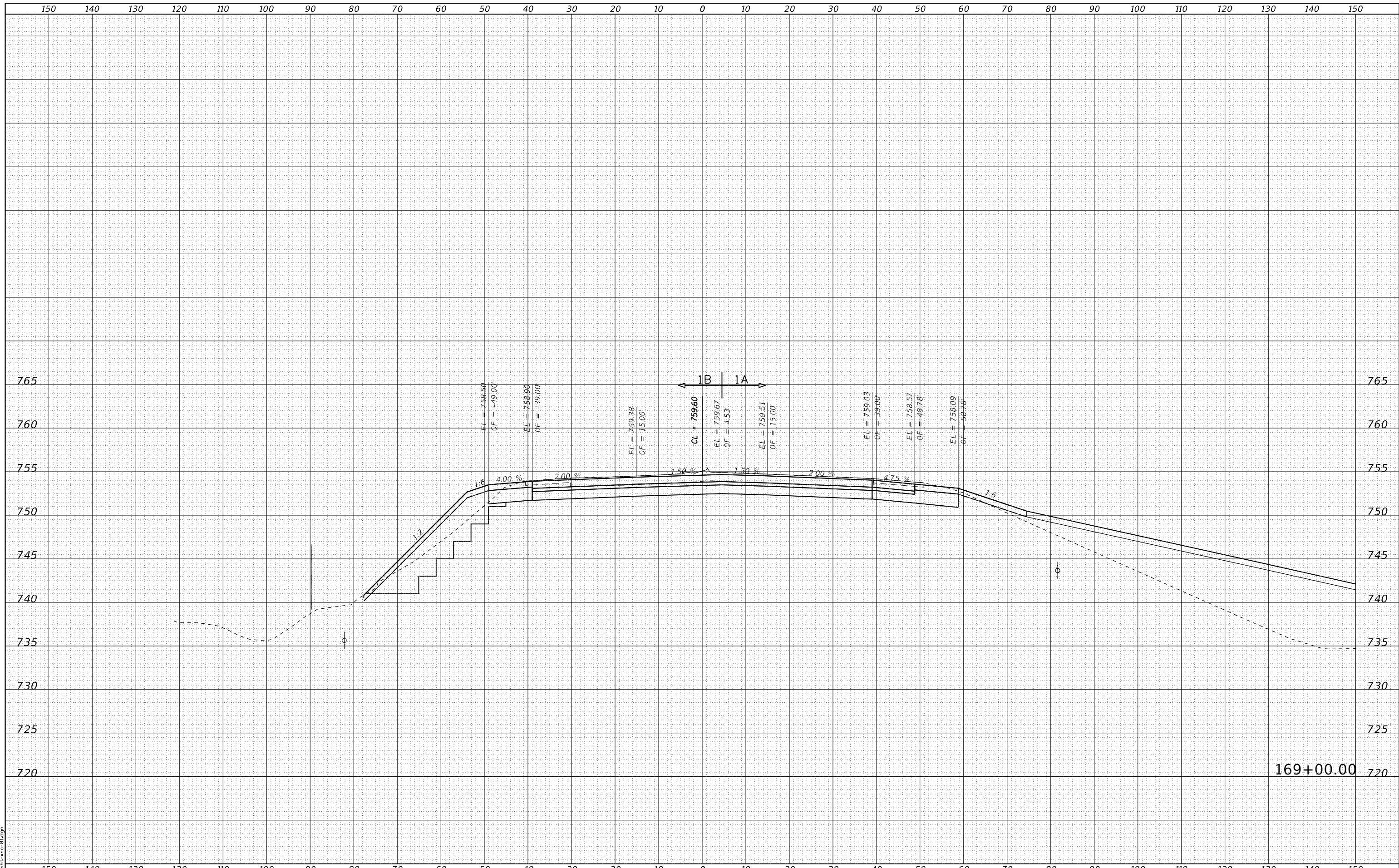


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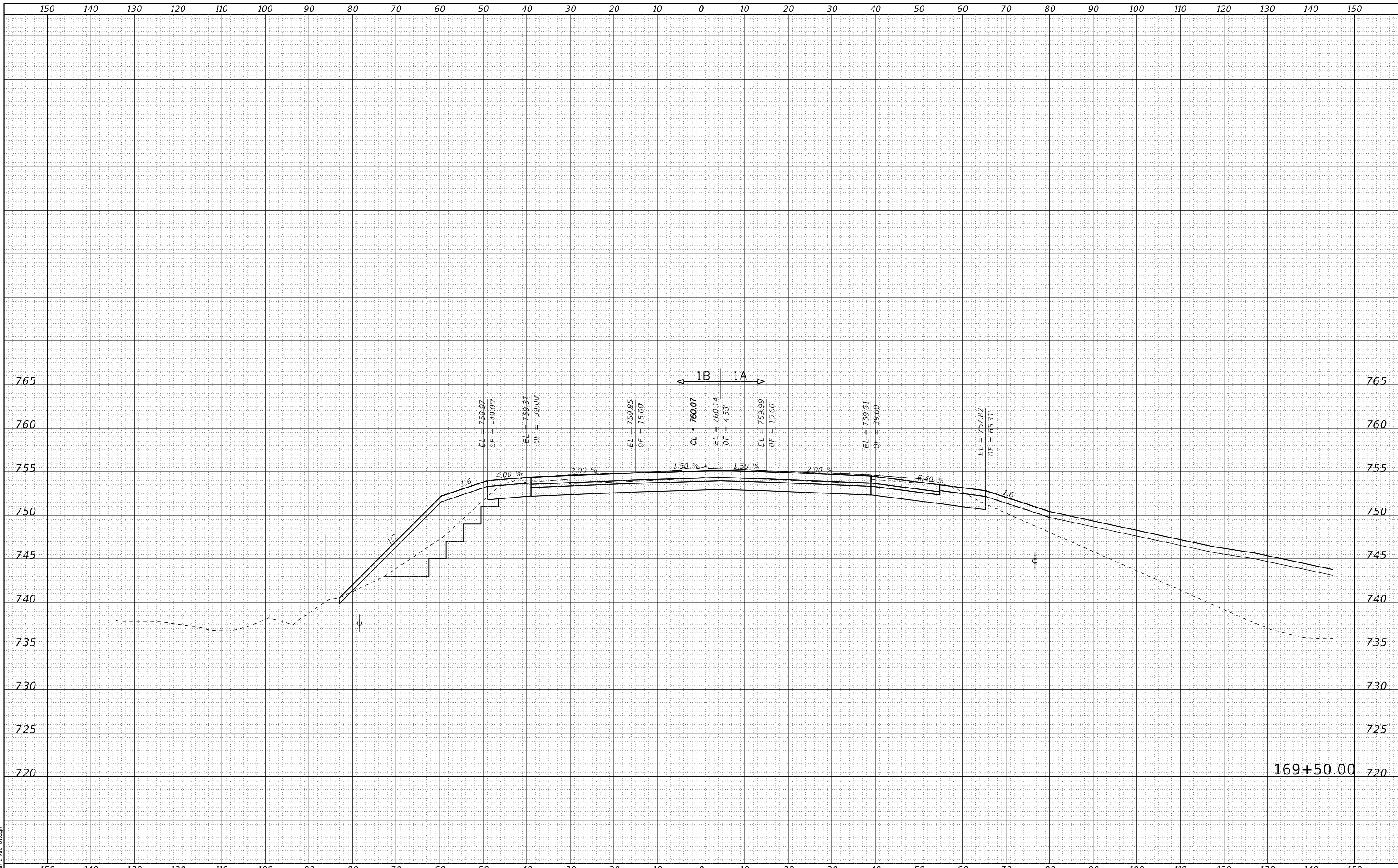


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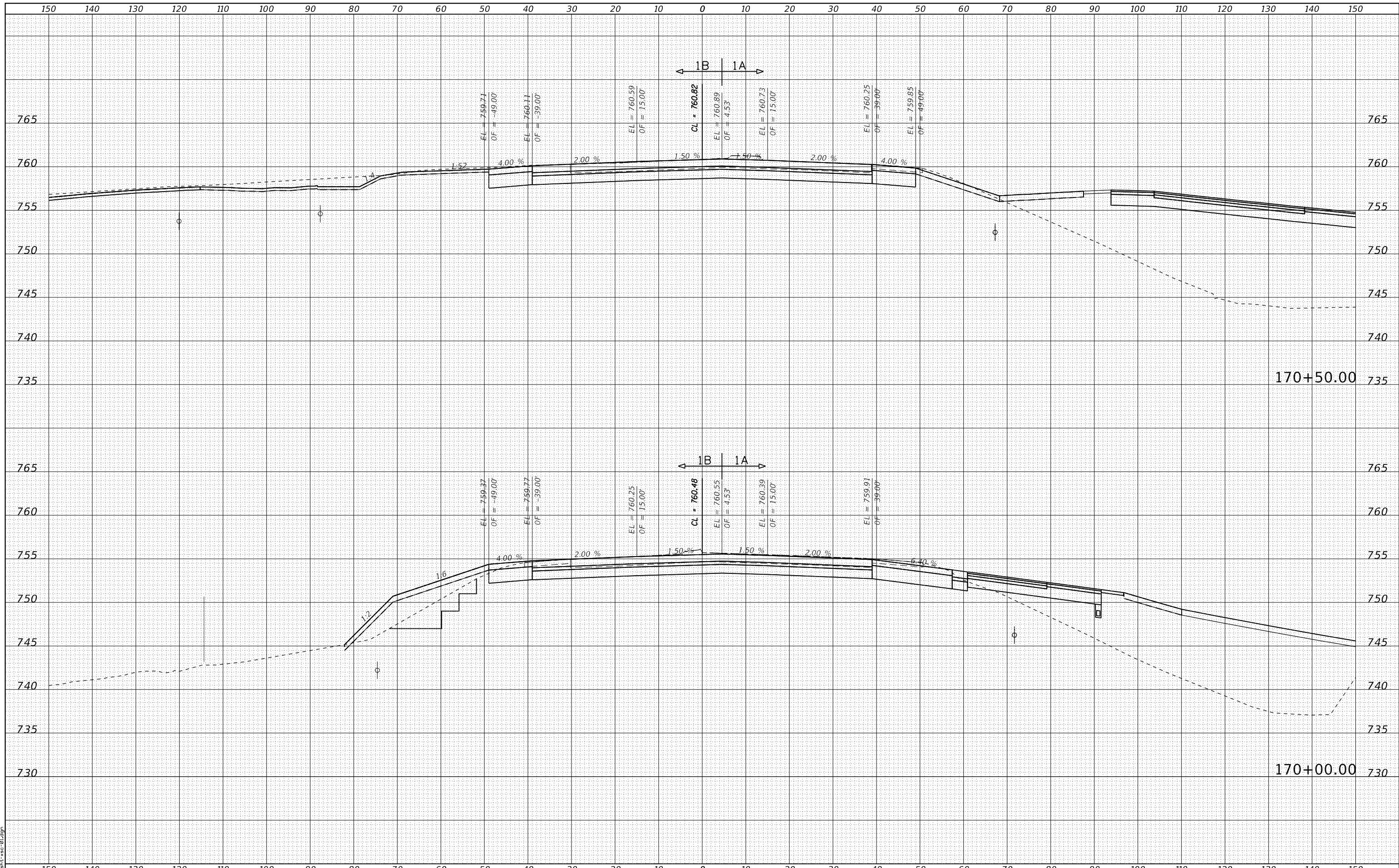
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NO.	DESCRIPTION

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 ILLINOIS ROUTE 47

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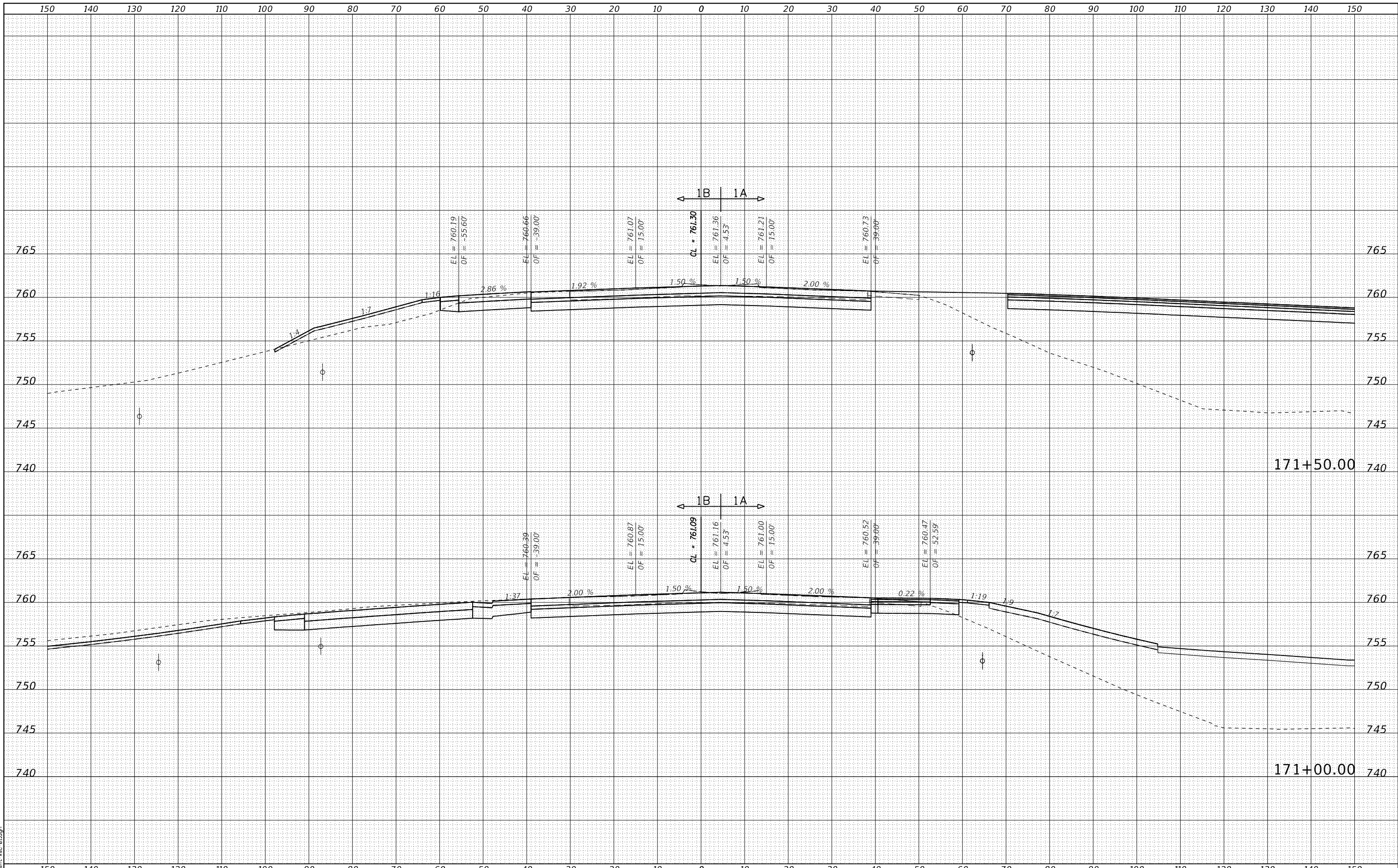
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 388 OF 397

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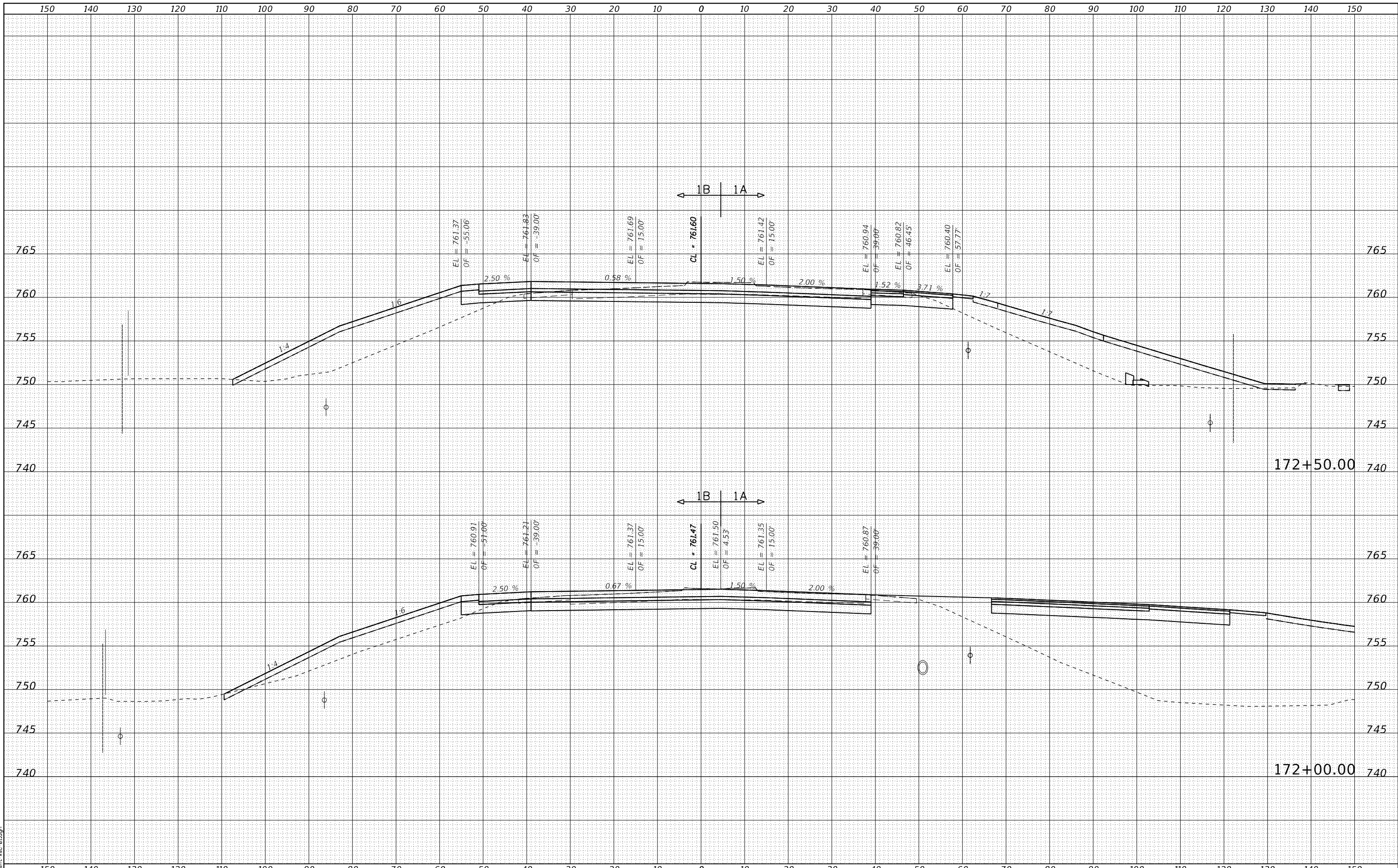
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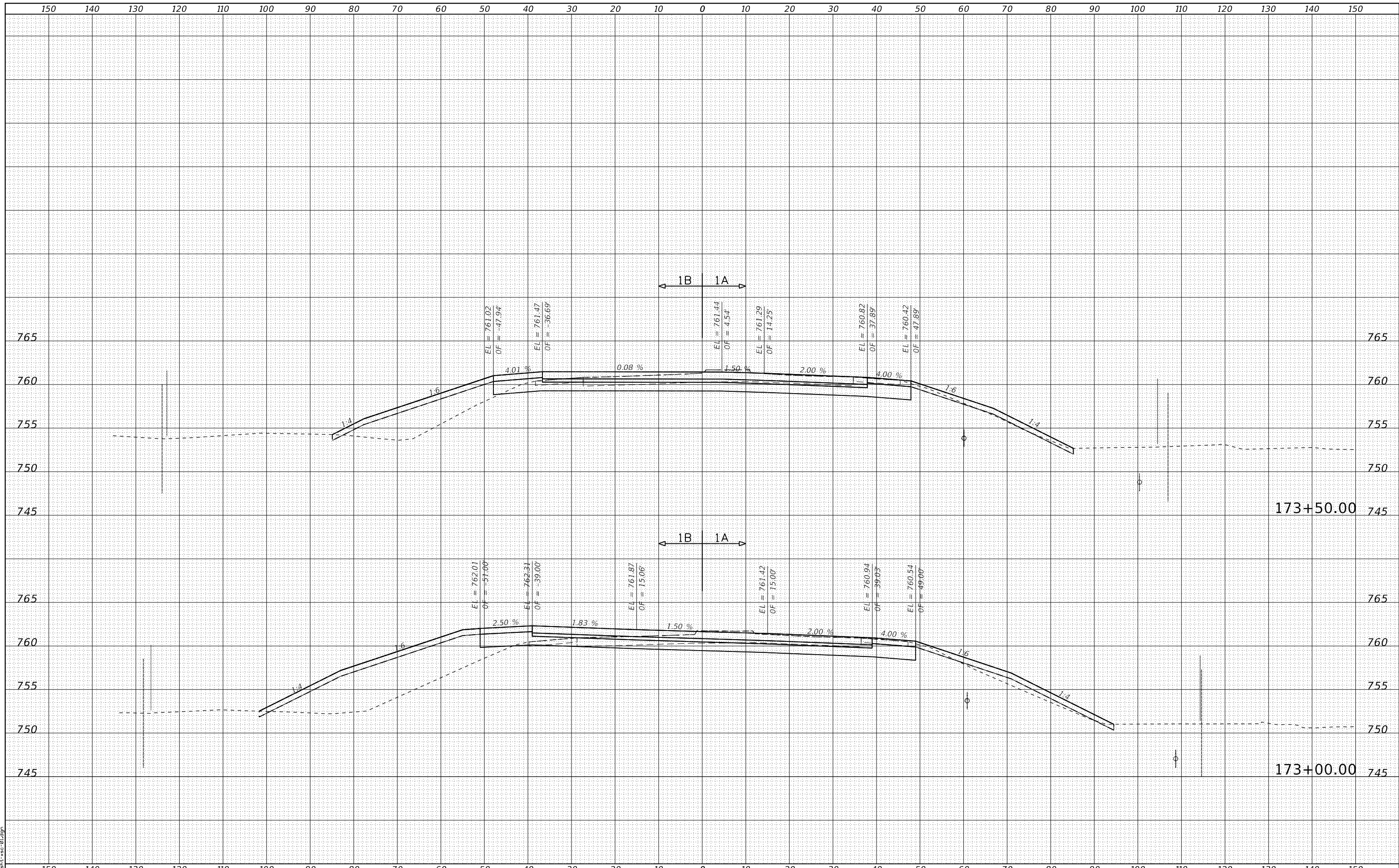


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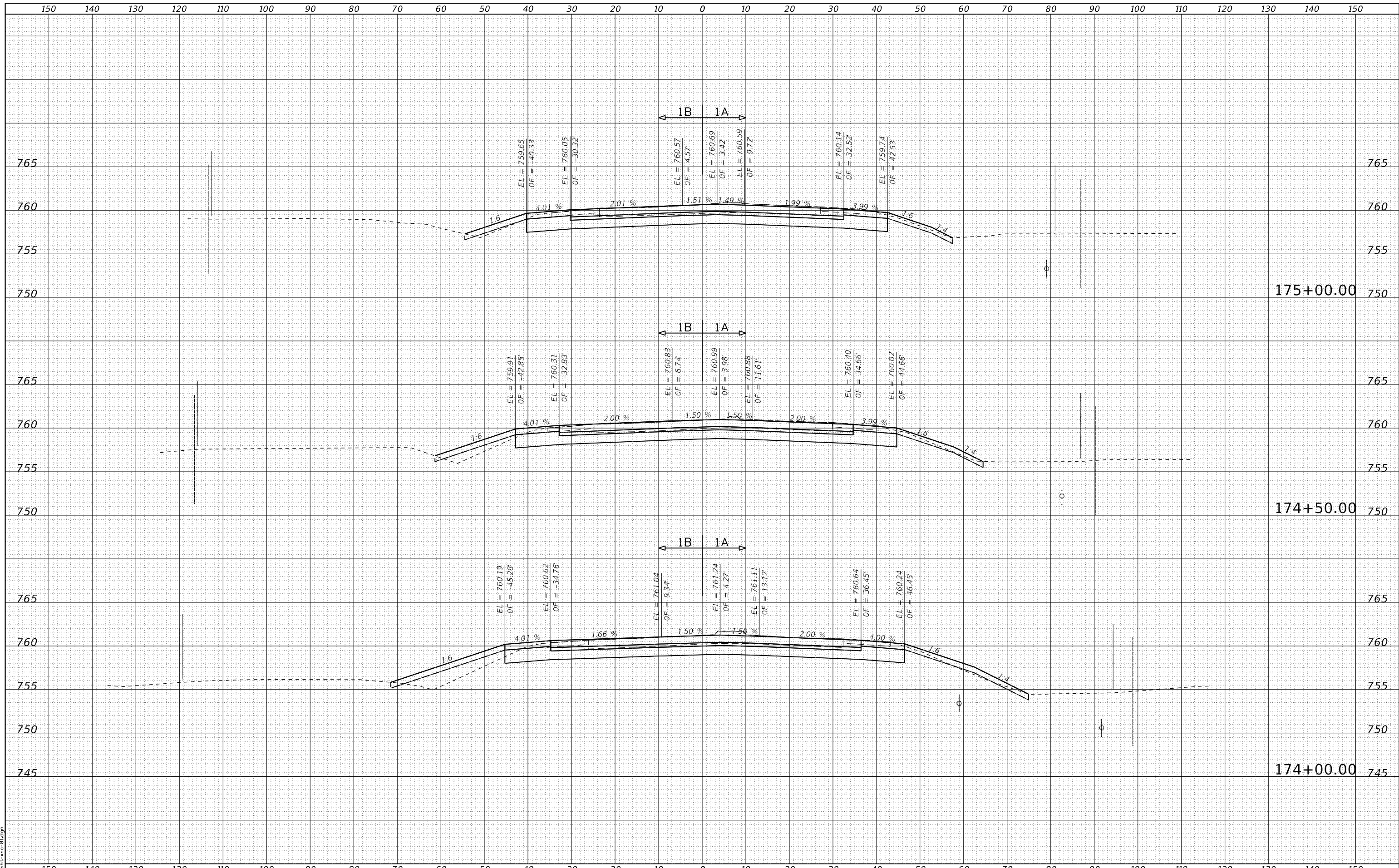


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 ILLINOIS ROUTE 47

SHT NO. XSC-28  
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 391 OF 397



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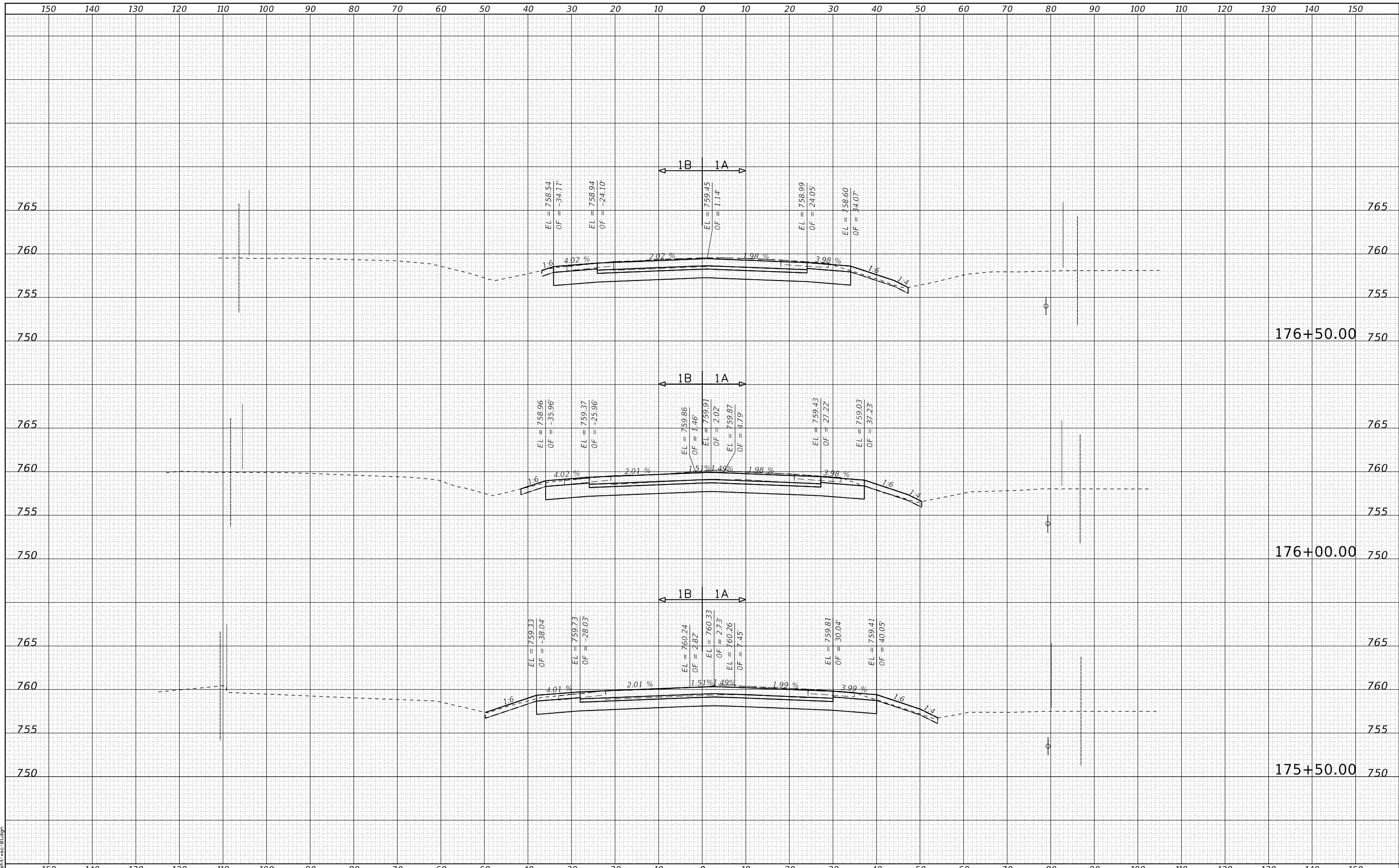
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 SHT NO. XSC-29  
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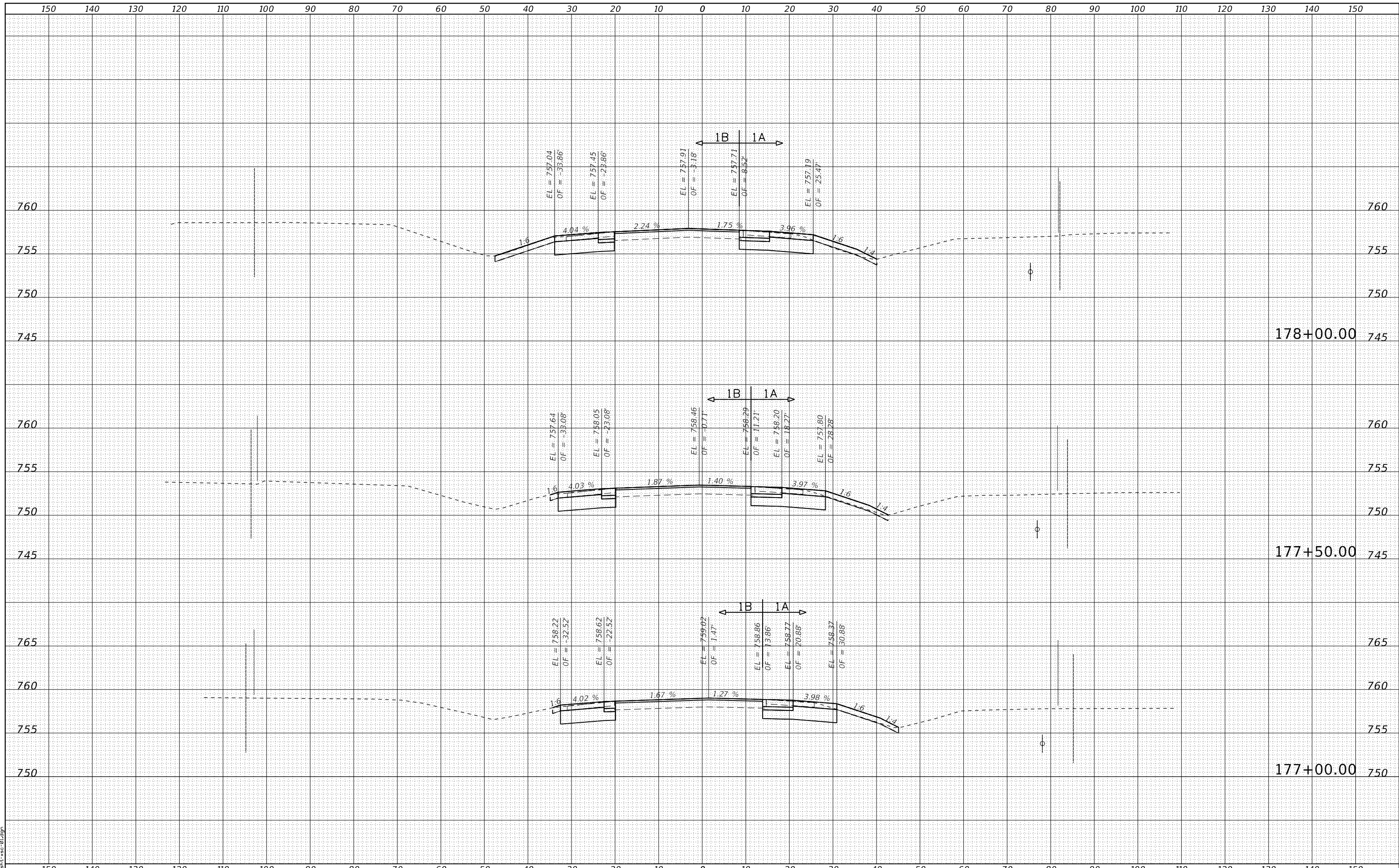
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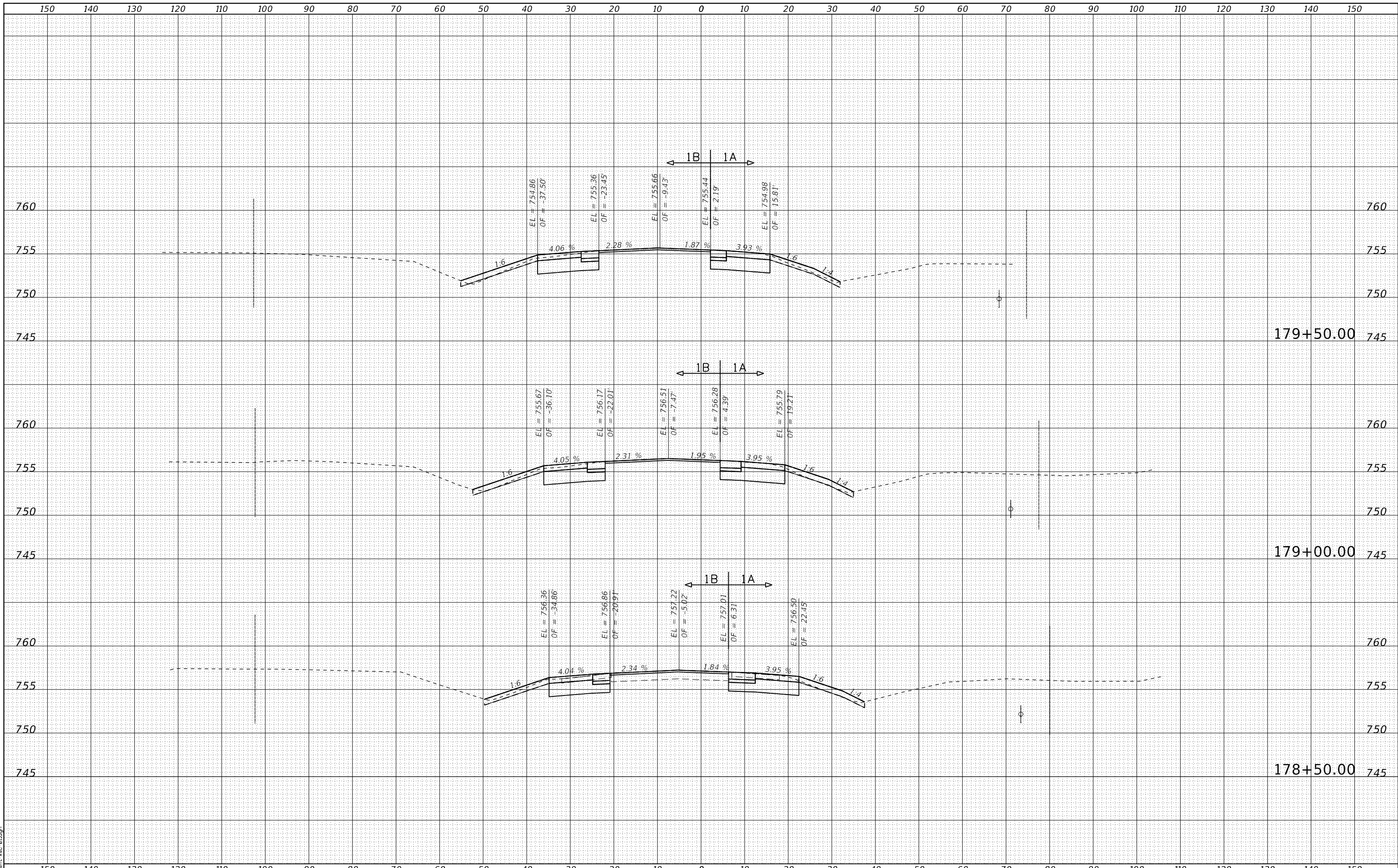
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 ILLINOIS ROUTE 47

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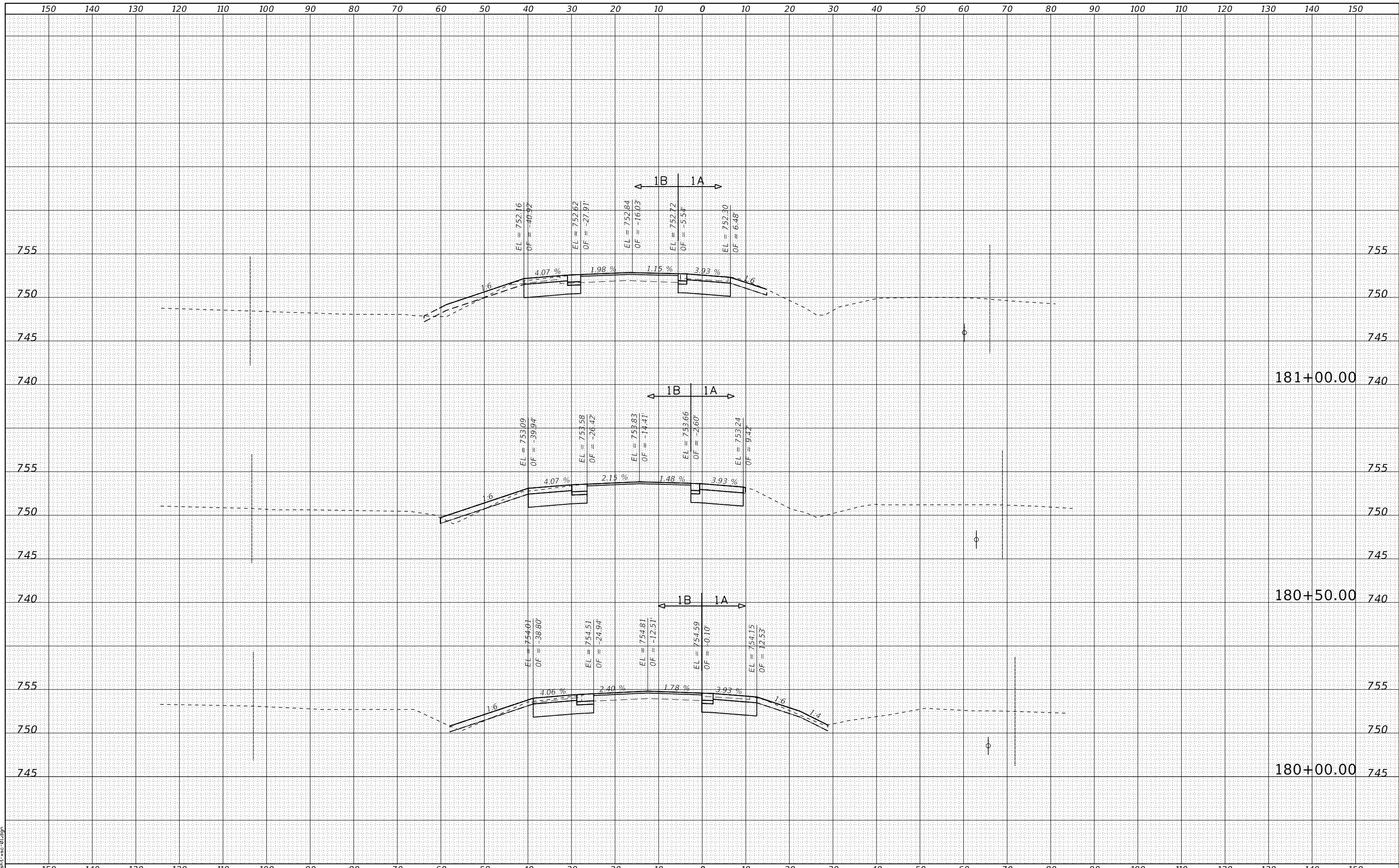
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 ILLINOIS ROUTE 47  
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 DRAWING NO. 395 OF 397



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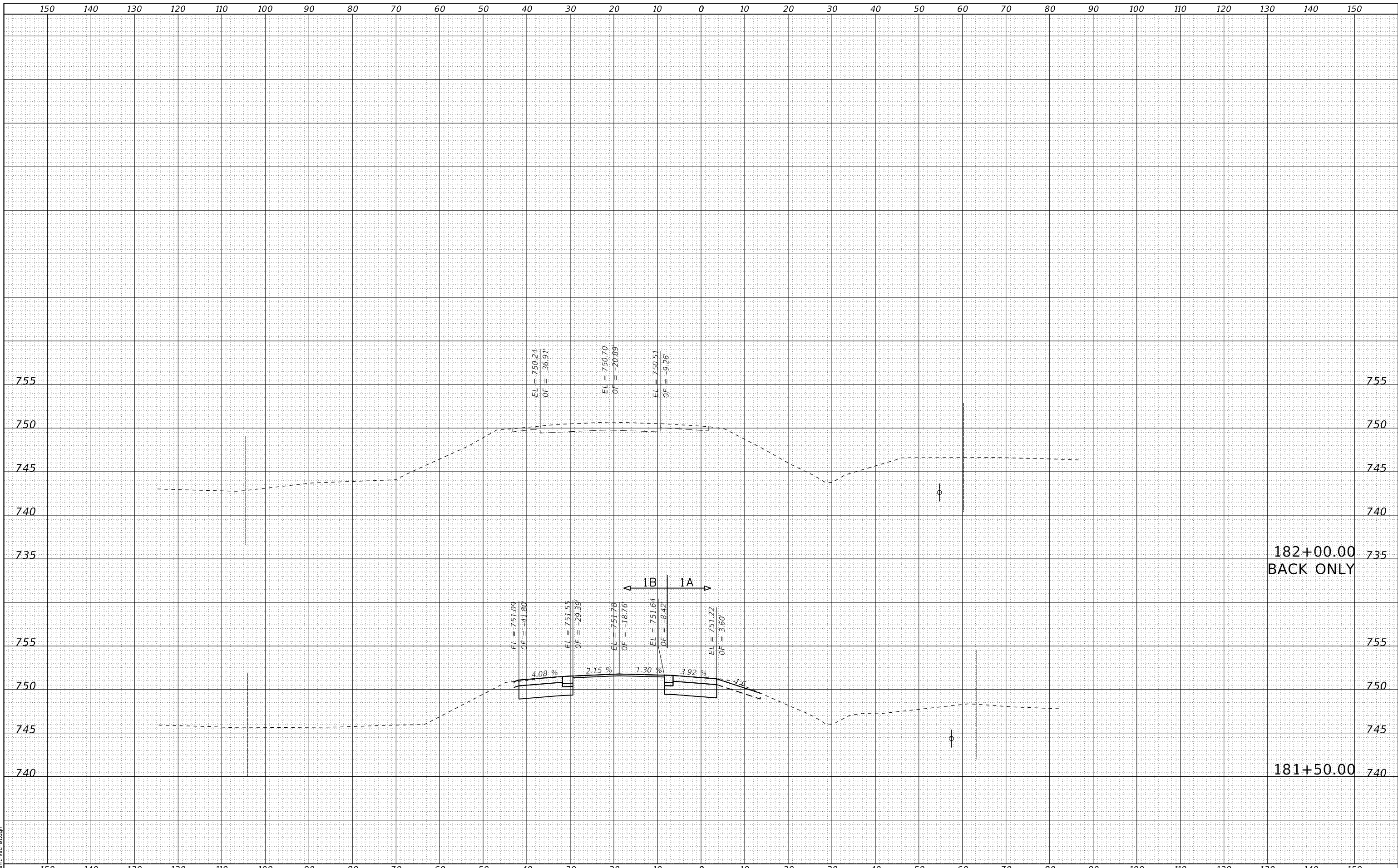
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 ILLINOIS ROUTE 47

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 DRAWING NO.  
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ABV	ABOVE	CU YD	CUBIC YARD	HD	HEAD	PED	PEDESTAL	STD	STANDARD
A/C	ACCESS CONTROL	CULV	CULVERT	HDW	HEADWALL	PNT	POINT	SBI	STATE BOND ISSUE
AC	ACRE	C&G	CURB & GUTTER	HDUTY	HEAVY DUTY	PC	POINT OF CURVATURE	SR	STATE ROUTE
ADJ	ADJUST	D	DEGREE OF CURVE	ha	HECTARE	PI	POINT OF INTERSECTION OF HORIZONTAL CURVE	STA	STATION
AS	AERIAL SURVEYS	DC	DEPRESSED CURVE	HMA	HOT MIX ASPHALT			SPBGR	STEEL PLATE BEAM GUARDRAIL
AGG	AGGREGATE	DET	DETECTOR	HWY	HIGHWAY	PRC	POINT OF REVERSE CURVE	SS	STORM SEWER
AH	AHEAD	DIA	DIAMETER	HORIZ	HORIZONTAL	PT	POINT OF TANGENCY	STY	STORY
APT	APARTMENT	DIST	DISTRICT	HSE	HOUSE	POT	POINT ON TANGENT	ST	STREET
ASPH	ASPHALT	DOM	DOMESTIC	IL	ILLINOIS	POLYETH	POLYETHYLENE	STR	STRUCTURE
AUX	AUXILIARY	DBL	DOUBLE	IMP	IMPROVEMENT	PCC	PORTLAND CEMENT CONCRETE	e	SUPERELEVATION RATE
AGS	AUXILIARY GAS VALVE (SERVICE)	DSEL	DOWNSTREAM ELEVATION	IN DIA	INCH DIAMETER	PP	POWER POLE OR PRINCIPAL POINT	S.E. RUN.	SUPERELEVATION RUNOFF LENGTH
AVE	AVENUE	DSFL	DOWNSTREAM FLOWLINE	INL	INLET	PRM	PRIME	SURF	SURFACE
AX	AXIS OF ROTATION	DR	DRAINAGE OR DRIVE	INST	INSTALLATION	PE	PRIVATE ENTRANCE	SMK	SURVEY MARKER
BK	BACK	DI	DRAINAGE INLET OR DROP INLET	IDS	INTERSECTION DESIGN STUDY	PROF	PROFILE	T	TANGENT DISTANCE
B-B	BACK TO BACK	DRV	DRIVEWAY	INV	INVERT	PGL	PROFILE GRADELINE	T.R.	TANGENT RUNOUT DISTANCE
BKPL	BACKPLATE	DCT	DUCT	IP	IRON PIPE	PROJ	PROJECT	TEL	TELEPHONE
B	BARN	EA	EACH	IR	IRON ROD	P.C.	PROPERTY CORNER	TB	TELEPHONE BOX
BARR	BARRICADE	EB	EASTBOUND	JT	JOINT	PL	PROPERTY LINE	TP	TELEPHONE POLE
BGN	BEGIN	EOP	EDGE OF PAVEMENT	kg	KILOGRAM	PR	PROPOSED	TEMP	TEMPORARY
BM	BENCHMARK	E-CL	EDGE TO CENTERLINE	km	KILOMETER	R	RADIUS	TBM	TEMPORARY BENCH MARK
BIND	BINDER	E-E	EDGE TO EDGE	LS	LANDSCAPING	RR	RAILROAD	TD	TILE DRAIN
BIT	BITUMINOUS	EL	ELEVATION	LN	LANE	RRS	RAILROAD SPIKE	TBE	TO BE EXTENDED
BTM	BOTTOM	ENTR	ENTRANCE	LT	LEFT	RPS	REFERENCE POINT STAKE	TBR	TO BE REMOVED
BLVD	BOULEVARD	EXC	EXCAVATION	LP	LIGHT POLE	REF	REFLECTIVE	TBS	TO BE SAVED
BRK	BRICK	EX	EXISTING	LGT	LIGHTING	RCCP	REINFORCED CONCRETE CULVERT PIPE	TWP	TOWNSHIP
BBOX	BUFFALO BOX	EXPWAY	EXPRESSWAY	LF	LINEAL FEET OR LINEAR FEET	REINF	REINFORCEMENT	TR	TOWNSHIP ROAD
BLDG	BUILDING	E	EXTERNAL DISTANCE OF HORIZONTAL CURVE	L	LITER OR CURVE LENGTH	REM	REMOVAL	TS	TRAFFIC SIGNAL
CIP	CAST IRON PIPE	E	OFFSET DISTANCE TO VERTICAL CURVE	LC	LONG CHORD	RC	REMOVE CROWN	TSCB	TRAFFIC SIGNAL CONTROL BOX
CB	CATCH BASIN	F-F	FACE TO FACE	LNG	LONGITUDINAL	REP	REPLACEMENT	TSC	TRAFFIC SYSTEMS CENTER
C-C	CENTER TO CENTER	FA	FEDERAL AID	L SUM	LUMP SUM	REST	RESTAURANT	TRVS	TRANSVERSE
CL	CENTERLINE OR CLEARANCE	FAI	FEDERAL AID INTERSTATE	MACH	MACHINE	RESURF	RESURFACING	TRVL	TRAVEL
CL-E	CENTERLINE TO EDGE	FAP	FEDERAL AID PRIMARY	MB	MAIL BOX	RET	RETAINING	TRN	TURN
CL-F	CENTERLINE TO FACE	FAS	FEDERAL AID SECONDARY	MH	MANHOLE	RT	RIGHT	TY	TYPE
CTS	CENTERS	FAUS	FEDERAL AID URBAN SECONDARY	MATL	MATERIAL	ROW	RIGHT-OF-WAY	T-A	TYPE A
CERT	CERTIFIED	FP	FENCE POST	MED	MEDIAN	RD	ROAD	TYP	TYPICAL
CHSLD	CHISELED	FE	FIELD ENTRANCE	m	METER	RDWY	ROADWAY	UNDGND	UNDERGROUND
CS	CITY STREET	FH	FIRE HYDRANT	METH	METHOD	RTE	ROUTE	USGS	U.S. GEOLOGICAL SURVEY
CP	CLAY PIPE	FL	FLOW LINE	M	MID-ORDINATE	SAN	SANITARY	USEL	UPSTREAM ELEVATION
CLSD	CLOSED	FB	FOOT BRIDGE	mm	MILLIMETER	SANS	SANITARY SEWER	USFL	UPSTREAM FLOWLINE
CLID	CLOSED LID	FDN	FOUNDATION	mm DIA	MILLIMETER DIAMETER	SEC	SECTION	UTIL	UTILITY
CT	COAT OR COURT	FR	FRAME	MIX	MIXTURE	SEED	SEEDING	VBOX	VALVE BOX
COMB	COMBINATION	F&G	FRAME & GRATE	MBH	MOBILE HOME	SHAP	SHAPING	VV	VALVE VAULT
C	COMMERCIAL BUILDING	FRWAY	FREEWAY	MOD	MODIFIED	S	SHED	VLT	VAULT
CE	COMMERCIAL ENTRANCE	GAL	GALLON	MFT	MOTOR FUEL TAX	SH	SHEET	VEH	VEHICLE
CONC	CONCRETE	GALV	GALVANIZED	N & BC	NAIL & BOTTLE CAP	SHLD	SHOULDER	VP	VENT PIPE
CONST	CONSTRUCT	G	GARAGE	N & C	NAIL & CAP	SW	SIDEWALK OR SOUTHWEST	VERT	VERTICAL
CONTD	CONTINUED	GM	GAS METER	N & W	NAIL & WASHER	SIG	SIGNAL	VC	VERTICAL CURVE
CONT	CONTINUOUS	GV	GAS VALVE	NOAA	NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION	SOD	SODDING	VPC	VERTICAL POINT OF CURVATURE
COR	CORNER	GRAN	GRANULAR			SM	SOLID MEDIAN	VPI	VERTICAL POINT OF INTERSECTION
CORR	CORRUGATED	GR	GRATE	NC	NORMAL CROWN	SB	SOUTHBOUND	VPT	VERTICAL POINT OF TANGENCY
CMP	CORRUGATED METAL PIPE	GRVL	GRAVEL	NB	NORTHBOUND	SE	SOUTHEAST	WM	WATER METER
CNTY	COUNTY	GND	GROUND	NE	NORTHEAST	SPL	SPECIAL	VV	WATER VALVE
CH	COUNTY HIGHWAY	GUT	GUTTER	NW	NORTHWEST	SD	SPECIAL DITCH	WMAIN	WATER MAIN
CSE	COURSE	GP	GUY POLE	OLID	OPEN LID	SQ FT	SQUARE FEET	WB	WESTBOUND
XSECT	CROSS SECTION	GW	GUY WIRE	PAT	PATTERN	m <sup>2</sup>	SQUARE METER	WILDFL	WILDFLOWERS
m <sup>3</sup>	CUBIC METER	HH	HANDHOLE	PVD	PAVED	mm <sup>2</sup>	SQUARE MILLIMETER	W	WITH
mm <sup>3</sup>	CUBIC MILLIMETER	HATCH	HATCHING	PVMT	PAVEMENT	SQ YD	SQUARE YARD	WO	WITHOUT
				PM	PAVEMENT MARKING	STB	STABILIZED		

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APPROVED <u>Joe E. Ellis</u> January 1, 2019	
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DATE	REVISIONS
1-1-19	Added new symbols.
1-1-11	Updated abbreviations and symbols.

## STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS

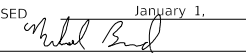
(Sheet 1 of 9)

**STANDARD 000001-07**

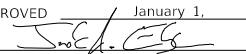
<u>ADJUSTMENT ITEMS</u>		<u>EX</u>	<u>PR</u>	<u>ALIGNMENT ITEMS</u>		<u>EX</u>	<u>PR</u>	<u>DRAINAGE ITEMS</u>		<u>EX</u>	<u>PR</u>
Structure To Be Adjusted			ADJ	Baseline	_____	_____		Channel or Stream Line	-----	-----	
Structure To Be Cleaned			C	Centerline	-----	-----		Culvert Line	-----	-----	
Main Structure To Be Filled			FM	Centerline Break Circle	o	o		Grading & Shaping Ditches	-----	-----	
Structure To Be Filled			F	Baseline Symbol	\	\		Drainage Boundary Line	////	////	
Structure To Be Filled Special			FSP	Centerline Symbol	CL	CL		Paved Ditch	-----	-----	
Structure To Be Removed			R	PI Indicator	Δ	Δ		Aggregate Ditch	-----	-----	
Structure To Be Reconstructed			REC	Point Indicator	o	o		Pipe Underdrain	-----	-----	
Structure To Be Reconstructed Special			RSP	Horizontal Curve Data (Half Size)	CURVE P.I. STA= Δ= D= R= T= L= E= e= T.R.= S.E. RUN= P.C. STA= P.T. STA=	CURVE P.I. STA= Δ= D= R= T= L= E= e= T.R.= S.E. RUN= P.C. STA= P.T. STA=		Storm Sewer	-----	-----	
Frame and Grate To Be Adjusted			A	<u>BOUNDARIES ITEMS</u>		<u>EX</u>	<u>PR</u>	Flowline	FL	FL	
Frame and Lid To Be Adjusted			A	Dashed Property Line	-----	-----		Ditch Check	◆	◆	
Domestic Service Box To Be Adjusted			A	Solid Property/Lot Line	_____	_____		Headwall	-	∩	
Valve Vault To Be Adjusted			A	Section/Grant Line	-----	-----		Inlet	□	■	
Special Adjustment			SP	Quarter Section Line	-----	-----		Manhole	⊙	⊙	
Item To Be Abandoned			AB	Quarter/Quarter Section Line	-----	-----		Summit	↔	↔	
Item To Be Moved			M	County/Township Line	-----	-----		Roadway Ditch Flow	~→	~→	
Item To Be Relocated			REL	State Line	-----	-----		Swale	→	→	
Pavement Removal and Replacement				Iron Pipe Found	o	o		Catch Basin	○	●	
				Iron Pipe Set	●	●		Culvert End Section	◁	◁	
				Survey Marker	◐	◐		Water Surface Indicator	▽	▽	
				Property Line Symbol	P	P		Riprap	▨	▨	
				Same Ownership Symbol (Half Size)	↗	↗		<u>HYDRAULICS ITEMS</u>		<u>EX</u>	<u>PR</u>
				Northwest Quarter Corner (Half Size)	◐	◐		Overflow	↪	↪	
				Section Corner (Half Size)	◐	◐		Sheet Flow	→	→	
				Southeast Quarter Corner (Half Size)	◐	◐		Hydrant Outlet	→	→	

**STANDARD SYMBOLS,  
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**STANDARD 000001-07**

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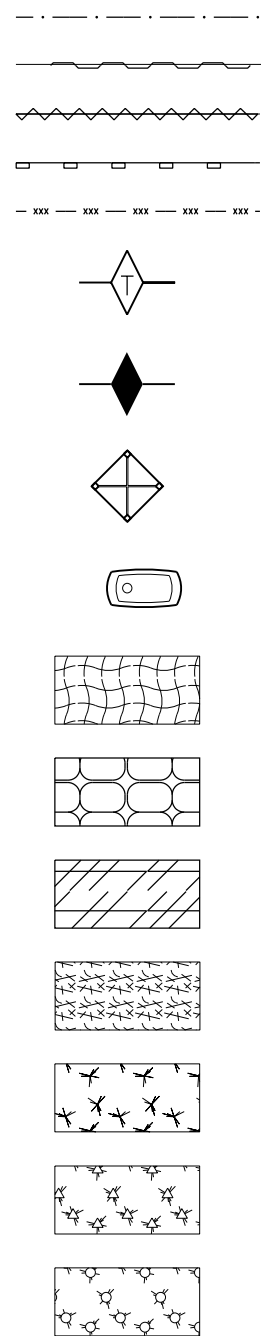
APPROVED January 1, 2019  
  
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**EROSION & SEDIMENT CONTROL ITEMS**

**EX**

**PR**

- Cleaning & Grading Limits
- Dike
- Erosion Control Fence
- Perimeter Erosion Barrier
- Temporary Fence
- Ditch Check Temporary
- Ditch Check Permanent
- Inlet & Pipe Protection
- Sediment Basin
- Erosion Control Blanket
- Fabric Formed Concrete Revetment Mat
- Turf Reinforcement Mat
- Mulch Temporary
- Mulch Method 1
- Mulch Method 2 Stabilized
- Mulch Method 3 Hydraulic

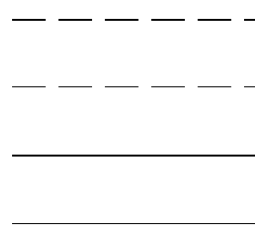


**CONTOUR ITEMS**

**EX**

**PR**

- Approx. Index Line
- Approx. Intermediate Line
- Index Contour
- Intermediate Contour

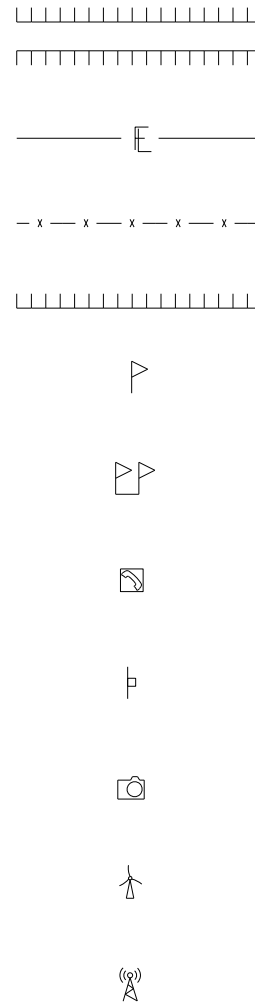


**NON-HIGHWAY IMPROVEMENT ITEMS**

**EX**

**PR**

- Noise Attn./Levee
- Field Line
- Fence
- Base of Levee
- Mailbox
- Multiple Mailboxes
- Pay Telephone
- Advertising Sign
- ITS\* Camera
- Wind Turbine
- Cellular Tower



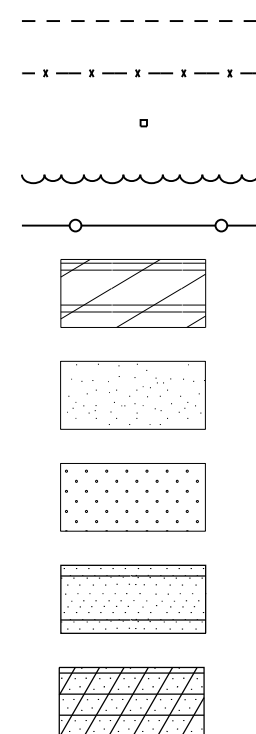
\*Intelligent Transportation Systems

**LANDSCAPING ITEMS**

**EX**

**PR**

- Contour Mounding Line
- Fence
- Fence Post
- Shrubs
- Mowline
- Perennial Plants
- Seeding Class 2
- Seeding Class 2A
- Seeding Class 4
- Seeding Class 4 & 5 Combined

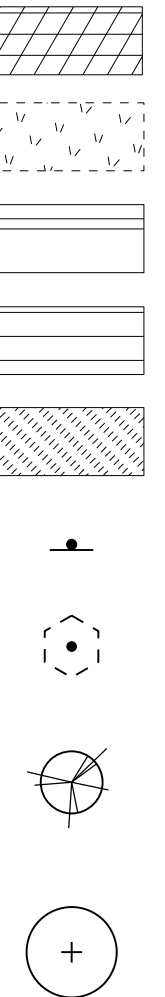


**EXISTING LANDSCAPING ITEMS (contd.)**

**EX**

**PR**

- Seeding Class 5
- Seeding Class 7
- Seedlings Type 1
- Seedlings Type 2
- Sodding
- Mowstake w/Sign
- Tree Trunk Protection
- Evergreen Tree
- Shade Tree

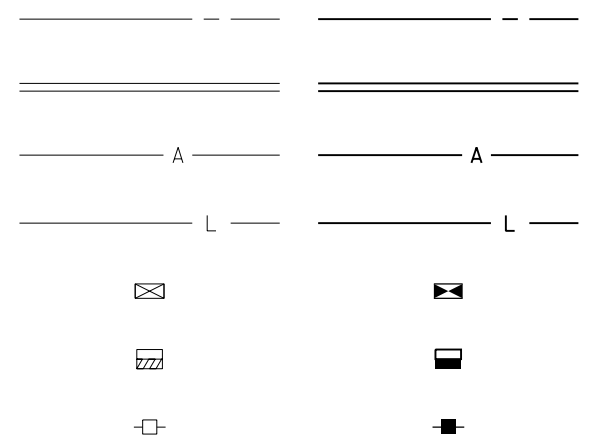


**LIGHTING**

**EX**

**PR**

- Duct
- Conduit
- Electrical Aerial Cable
- Electrical Buried Cable
- Controller
- Underpass Luminaire
- Power Pole



**STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS**

(Sheet 3 of 9)

**STANDARD 000001-07**

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**LIGHTING  
(contd.)**

**EX**

**PR**

Pull Point



Handhole



Heavy Duty Handhole



Junction Box



Light Unit Comb.



Electrical Ground



Traffic Flow Arrow



High Mast Pole  
(Half Size)



Light Unit-1

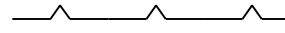


**PAVEMENT (MISC.)**

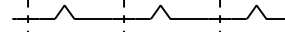
**EX**

**PR**

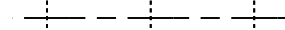
Keyed Long. Joint



Keyed Long. Joint w/Tie Bars



Sawed Long. Joint w/Tie Bars



Bituminous Shoulder



Bituminous Taper



Stabilized Driveway



Widening



**PAVEMENT MARKINGS**

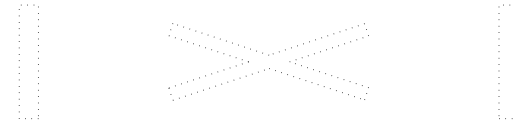
**EX**

**PR**

Handicap Symbol



RR Crossing



Raised Marker Amber 1 Way



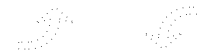
Raised Marker Amber 2 Way



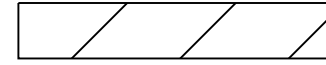
Raised Marker Crystal 1 Way



Two Way Turn Left



Shoulder Diag. Pattern



Skip-Dash White



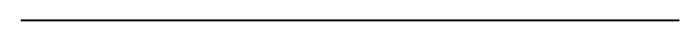
Skip-Dash Yellow



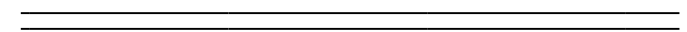
Stop Line



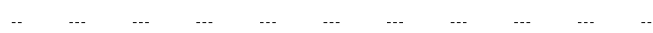
Solid Line



Double Centerline



Dotted Lines



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**STANDARD SYMBOLS,  
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AND PATTERNS**

(Sheet 4 of 9)

**STANDARD 000001-07**

**PAVEMENT MARKINGS**  
**(contd.)**

CL 2Ln 2Way  
RRPM 12.2 m (40') o.c.

CL 2Ln 2Way  
RRPM 80' (24.4 m) o.c.

CL Multilane Div.  
RRPM 40' (12.2 m) o.c.

CL Multilane Div.  
RRPM 80' (24.4 m) o.c.

CL Multilane Div. Dbl.  
RRPM 80' (24.4 m) o.c.

CL Multilane Undiv.

Two Way Turn Left Line

Urban Combination Left

Urban Combination Right

Urban Left Turn Arrow

Urban Right Turn Arrow

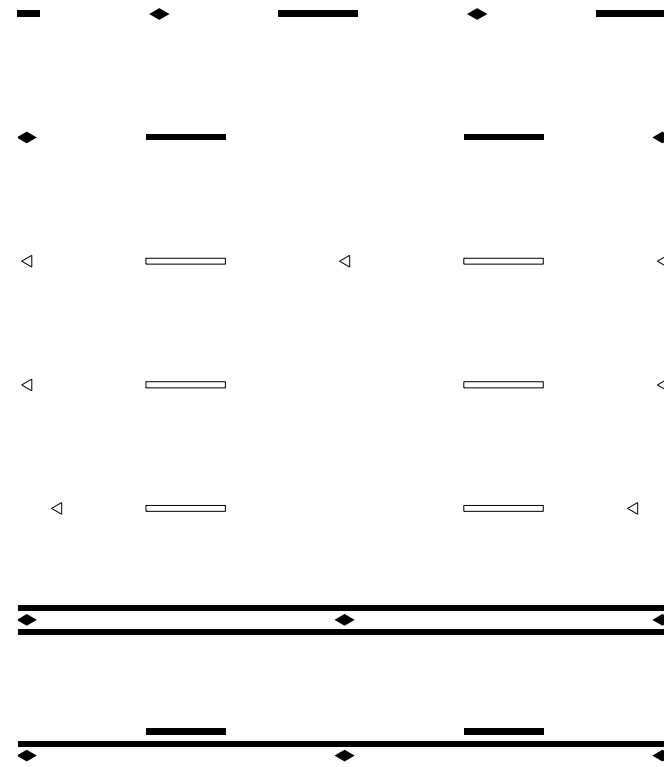
Urban Left Turn Only

Urban Right Turn Only

Urban Thru Only

**EX**

**PR**



ONLY ONLY ONLY



ONLY ONLY ONLY

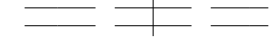


**RAILROAD ITEMS**

**EX**

**PR**

Abandoned Railroad



Railroad



Railroad Point



Control Box



Crossing Gate



Flashing Signal



Railroad Cant. Mast Arm



Crossbuck

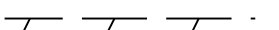


**REMOVAL ITEMS**

**EX**

**PR**

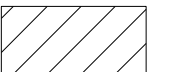
Removal Tic



Bituminous Removal



Hatch Pattern



Tree Removal Single



**RIGHT OF WAY ITEMS**

**EX**

**PR**

Future ROW Corner Monument



ROW Marker



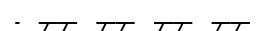
ROW Line



Easement



Temporary Easement



**STANDARD SYMBOLS,  
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**PAVEMENT MARKINGS**  
**(contd.)**

**EX**

**PR**

Urban U-Turn



Urban Combined U-Turn



Rural Combination Left



Rural Combination Right



Rural Left Turn Arrow



Rural Right Turn Arrow



Rural Left Turn Only



ONLY



Rural Right Turn Only



ONLY



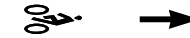
Rural Thru Only



ONLY



Bike Lane Symbol



Bike Lane Text

BIKE LANE

Bike Path Shared



Bike Shared Roadway



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**STANDARD SYMBOLS,  
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**RIGHT OF WAY ITEMS  
(contd.)**

	<u>EX</u>	<u>PR</u>
Access Control Line	—	— AC —
Access Control Line & ROW	— AC —	— AC —
Access Control Line & ROW with Fence	— x — AC —	— x — AC — x —
Excess ROW Line		— XS —

**ROADWAY PLAN  
ITEMS**

	<u>EX</u>	<u>PR</u>
Cable Barrier		
Concrete Barrier		
Edge of Pavement	---	---
Bit Shoulders, Medians and C&G Line	---	---
Aggregate Shoulder	---	---
Sidewalks, Driveways	---	---
Guardrail		
Guardrail Post	□	
Traffic Sign		
Corrugated Median		
Impact Attenuator		
North Arrow with District Office (Half Size)		
Match Line		STA. 45+00
Slope Limit Line	---	
Typical Cross-Section Line	---	---

**ROADWAY PROFILES**

	<u>EX</u>	<u>PR</u>
P.I. Indicator	△	△
Point Indicator	○	○
Earthworks Balance Point		
Begin Point		
Vert. Curve Data	VPI = ELEV = L = E =	VPI = ELEV = L = E =
Ditch Profile Left Side	----	----
Ditch Profile Right Side	----	----
Roadway Profile Line	----	----
Storm Sewer Profile Left Side	----	----
Storm Sewer Profile Right Side	----	----

**SIGNING ITEMS**

	<u>EX</u>	<u>PR</u>
Cone, Drum or Barricade		○
Barricade Type II		
Barricade Type III		TT
Barricade With Edge Line		
Flashing Light Sign		○
Panels I		
Panels II		
Direction of Traffic		
Sign Flag (Half Size)		

**SIGNING ITEMS  
(contd.)**

	<u>EX</u>	<u>PR</u>
Reverse Left W1-4L (Half Size)		
Reverse Right W1-4R (Half Size)		
Two Way Traffic Sign W6-3 (Half Size)		
Detour Ahead W20-2(O) (Half Size)		
Left Lane Closed Ahead W20-5L(O) (Half Size)		
Right Lane Closed Ahead W20-5R(O) (Half Size)		
Road Closed Ahead W20-3(O) (Half Size)		
Road Construction Ahead W20-1(O) (Half Size)		
Single Lane Ahead (Half Size)		
Transition Left W4-2L (Half Size)		
Transition Right W4-2R (Half Size)		

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**STANDARD SYMBOLS,  
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**SIGNING ITEMS**  
**(contd.)**

**EX**

**PR**

One Way Arrow Lrg. W1-6-(O)  
(Half Size)



Two Way Arrow Large W1-7-(O)  
(Half Size)



Detour M4-10L-(O)  
(Half Size)



Detour M4-10R-(O)  
(Half Size)



One Way Left R6-1L  
(Half Size)



One Way Right R6-1R  
(Half Size)



Left Turn Lane R3-I100L  
(Half Size)



Keep Left R4-7AL  
(Half Size)



Keep Left R4-7BL  
(Half Size)



Keep Right R4-7AR  
(Half Size)



Keep Right R4-7BR  
(Half Size)



Stop Here On Red R10-6-AL  
(Half Size)



Stop Here On Red R10-6-AR  
(Half Size)



No Left Turn R3-2  
(Half Size)



No Right Turn R3-1  
(Half Size)



Road Closed R11-2  
(Half Size)



Road Closed Thru Traffic R11-2  
(Half Size)

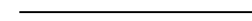


**STRUCTURES ITEMS**

**EX**

**PR**

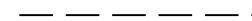
Box Culvert Barrel



Box Culvert Headwall



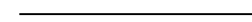
Bridge Pier



Bridge



Retaining Wall



Temporary Sheet Piling



**TRAFFIC SHEET**  
**ITEMS**

**EX**

**PR**

Cable Number



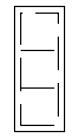
Left Turn Green



Left Turn Yellow



Signal Backplate



Signal Section 8" (200 mm)



Signal Section 12" (300 mm)



Walk/Don't Walk Letters



Walk/Don't Walk Symbols



**TRAFFIC SIGNAL**  
**ITEMS**

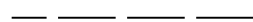
**EX**

**PR**

Galv. Steel Conduit



Underground Cable



Detector Loop Line



Detector Loop Large



Detector Loop Small



Detector Loop Quadrapole



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**STANDARD SYMBOLS,  
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**TRAFFIC SIGNAL ITEMS (contd.)**

	<b><u>EX</u></b>	<b><u>PR</u></b>
Detector Raceway		
Aluminum Mast Arm		
Steel Mast Arm		
Veh. Detector Magnetic		
Conduit Splice		
Controller		
Gulfbox Junction		
Wood Pole		
Temp. Signal Head		
Handhole		
Double Handhole		
Heavy Duty Handhole		
Junction Box		
Ped. Pushbutton Detector		
Ped. Signal Head		
Power Pole Service		
Priority Veh. Detector		
Signal Head		
Signal Head w/Backplate		
Signal Post		
Closed Circuit TV		
Video Detector System		

**UNDERGROUND UTILITY ITEMS**      **EX**      **PR**      **ABANDONED**

Cable TV			
Electric Cable			
Fiber Optic			
Gas Pipe			
Oil Pipe			
Sanitary Sewer			
Telephone Cable			
Water Pipe			

**UTILITIES ITEMS**      **EX**      **PR**

Controller		
Double Handhole		
Fire Hydrant		
GuyWire or Deadman Anchor		
Handhole		
Heavy Duty Handhole		
Junction Box		
Light Pole		
Manhole		
Monitoring Well (Gasoline)		
Pipeline Warning Sign		
Power Pole		
Power Pole with Light		
Sanitary Sewer Cleanout		
Splice Box Above Ground		
Telephone Splice Box Above Ground		
Telephone Pole		

**UTILITY ITEMS (contd.)**      **EX**      **PR**

Traffic Signal		
Traffic Signal Control Box		
Water Meter		
Water Meter Valve Box		
Profile Line		
Aerial Power Line		

**VEGETATION ITEMS**      **EX**      **PR**

Deciduous Tree		
Bush or Shrub		
Evergreen Tree		
Stump		
Orchard/Nursery Line		
Vegetation Line		
Woods & Bush Line		

**WATER FEATURE ITEMS**      **EX**      **PR**

Stream or Drainage Ditch		
Waters Edge		
Water Surface Indicator		
Water Point		
Disappearing Ditch		
Marsh		
Marsh/Swamp Boundary		

Illinois Department of Transportation

PASSED January 1, 2019  
  
 ENGINEER OF POLICY AND PROCEDURES

ISSUED 1-1-97

APPROVED January 1, 2019  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

**STANDARD SYMBOLS,  
 ABBREVIATIONS  
 AND PATTERNS**  
 (Sheet 9 of 9)

**STANDARD 000001-07**

REINFORCEMENT BARS - ENGLISH (METRIC)

Bar Size English (metric)	Dia. in. mm	Cross- Sectional Area sq. in. (sq. mm)	Weight lbs./ft. kg/m	SPACING, in. (mm)													
				4 (100)	4½ (115)	5 (125)	5½ (140)	6 (150)	6½ (165)	7 (175)	7½ (190)	8 (200)	8½ (215)	9 (225)	10 (250)	11 (275)	12 (300)
				AREA OF STEEL PER FOOT (METER), sq. in. (sq. mm)													
3 (10)	0.375 (9.5)	0.110 (71)	0.376 (0.560)	0.330 (710)	0.293 (617)	0.264 (568)	0.240 (507)	0.220 (473)	0.203 (430)	0.189 (406)	0.176 (374)	0.165 (355)	0.155 (330)	0.147 (316)	0.132 (284)	0.120 (258)	0.110 (237)
4 (13)	0.500 (12.7)	0.196 (129)	0.668 (0.944)	0.588 (1290)	0.523 (1122)	0.470 (1032)	0.428 (921)	0.392 (860)	0.362 (782)	0.336 (737)	0.314 (679)	0.294 (645)	0.277 (600)	0.261 (573)	0.235 (516)	0.214 (469)	0.196 (430)
5 (16)	0.625 (15.9)	0.307 (199)	1.043 (1.552)	0.921 (1990)	0.819 (1730)	0.737 (1592)	0.670 (1421)	0.614 (1327)	0.567 (1206)	0.526 (1137)	0.491 (1047)	0.461 (995)	0.433 (926)	0.409 (884)	0.368 (796)	0.335 (724)	0.307 (663)
6 (19)	0.750 (19.1)	0.442 (284)	1.502 (2.235)	1.326 (2840)	1.179 (2470)	1.061 (2272)	0.964 (2029)	0.884 (1893)	0.816 (1721)	0.758 (1623)	0.707 (1495)	0.663 (1420)	0.624 (1321)	0.589 (1262)	0.530 (1136)	0.482 (1033)	0.442 (947)
7 (22)	0.875 (22.2)	0.601 (387)	2.044 (3.042)	1.803 (3870)	1.603 (3365)	1.442 (3096)	1.311 (2764)	1.202 (2580)	1.110 (2345)	1.030 (2211)	0.962 (2037)	0.902 (1935)	0.848 (1800)	0.801 (1720)	0.721 (1548)	0.656 (1407)	0.601 (1290)
8 (25)	1.000 (25.4)	0.785 (510)	2.670 (3.973)	2.355 (5100)	2.093 (4435)	1.884 (4080)	1.713 (3543)	1.570 (3400)	1.449 (3091)	1.346 (2914)	1.256 (2684)	1.178 (2550)	1.108 (2372)	1.047 (2267)	0.942 (2040)	0.856 (1855)	0.785 (1700)
9 (29)	1.128 (28.7)	1.000 (645)	3.400 (5.060)	3.000 (6450)	2.667 (5609)	2.400 (5160)	2.182 (4607)	2.000 (4300)	1.846 (3909)	1.714 (3686)	1.600 (3395)	1.500 (3225)	1.412 (3000)	1.333 (2867)	1.200 (2580)	1.091 (2345)	1.000 (2150)
10 (32)	1.270 (32.3)	1.267 (819)	4.303 (6.404)	3.801 (8190)	3.379 (7122)	3.041 (6552)	2.764 (5850)	2.534 (5460)	2.339 (4964)	2.172 (4680)	2.027 (4311)	1.901 (4095)	1.789 (3809)	1.689 (3640)	1.520 (3276)	1.382 (2978)	1.267 (2730)
11 (36)	1.410 (35.8)	1.561 (1006)	5.313 (7.907)	4.683 (10060)	4.163 (8748)	3.746 (8048)	3.406 (7186)	3.122 (6707)	2.882 (6097)	2.676 (5749)	2.498 (5295)	2.342 (5030)	2.204 (4679)	2.081 (4471)	1.873 (4024)	1.703 (3658)	1.561 (3353)

Illinois Department of Transportation  
 PASSED January 1, 2009  
 ENGINEER OF POLICY AND PROCEDURES  
 APPROVED January 1, 2009  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

DATE	REVISIONS
1-1-09	Switched units to English (metric).
1-1-07	Deleted metric table. Soft converted English table.

**AREAS OF REINFORCEMENT BARS**  
**STANDARD 001001-02**

DECIMAL OF AN INCH AND OF A FOOT

A		B	A		B	A		B	A		B	A		B	A		B
1/64	0.0052	1/16	11/64	0.171875	2 1/16	11/32	0.3385	4 1/16	33/64	0.5052	6 1/16	43/64	0.671875	8 1/16	27/32	0.8385	10 1/16
	0.0104	1/8		0.1771	2 1/8		0.34375	4 1/8		0.5104	6 1/8		0.6771	8 1/8		0.84375	10 1/8
	0.015625	3/16		0.1823	2 3/16		0.3490	4 3/16		0.515625	6 3/16		0.6823	8 3/16		0.8490	10 3/16
	0.0208	1/4		0.1875	2 1/4		0.3542	4 1/4		0.5208	6 1/4		0.6875	8 1/4		0.8542	10 1/4
1/32	0.0260	5/16	13/64	0.1927	2 5/16	23/64	0.359375	4 5/16	17/32	0.5260	6 5/16	45/64	0.6927	8 5/16	55/64	0.859375	10 5/16
	0.03125	3/8		0.1979	2 3/8		0.3646	4 3/8		0.53125	6 3/8		0.6979	8 3/8		0.8646	10 3/8
	0.0365	7/16		0.203125	2 7/16		0.3698	4 7/16		0.5365	6 7/16		0.703125	8 7/16		0.8698	10 7/16
	0.0417	1/2		0.2083	2 1/2		0.3750	4 1/2		0.5417	6 1/2		0.7083	8 1/2		0.8750	10 1/2
3/64	0.046875	9/16	7/32	0.2135	2 9/16	25/64	0.3802	4 9/16	35/64	0.546875	6 9/16	23/32	0.7135	8 9/16	57/64	0.8802	10 9/16
	0.0521	5/8		0.21875	2 5/8		0.3854	4 5/8		0.5521	6 5/8		0.71875	8 5/8		0.8854	10 5/8
	0.0573	11/16		0.2240	2 11/16		0.390625	4 11/16		0.5573	6 11/16		0.7240	8 11/16		0.890625	10 11/16
	0.0625	3/4		0.2292	2 3/4		0.3958	4 3/4		0.5625	6 3/4		0.7292	8 3/4		0.8958	10 3/4
5/64	0.0677	13/16	5/64	0.234375	2 13/16	13/32	0.4010	4 13/16	37/64	0.5677	6 13/16	47/64	0.734375	8 13/16	29/32	0.9010	10 13/16
	0.0729	7/8		0.2396	2 7/8		0.40625	4 7/8		0.5729	6 7/8		0.7396	8 7/8		0.90625	10 7/8
	0.078125	15/16		0.2448	2 15/16		0.4115	4 15/16		0.578125	6 15/16		0.7448	8 15/16		0.9115	10 15/16
	0.0833	1		0.2500	3		0.4167	5		0.5833	7		0.7500	9		0.9167	11
3/32	0.0885	1 1/16	11/64	0.2552	3 1/16	27/64	0.421875	5 1/16	19/32	0.5885	7 1/16	49/64	0.7552	9 1/16	59/64	0.921875	11 1/16
	0.09375	1 1/8		0.2604	3 1/8		0.4271	5 1/8		0.59375	7 1/8		0.7604	9 1/8		0.9271	11 1/8
	0.0990	1 3/16		0.265625	3 3/16		0.4323	5 3/16		0.5990	7 3/16		0.765625	9 3/16		0.9323	11 3/16
	0.1042	1 1/4		0.2708	3 1/4		0.4375	5 1/4		0.6042	7 1/4		0.7708	9 1/4		0.9375	11 1/4
7/64	0.109375	1 5/16	9/32	0.2760	3 5/16	29/64	0.4427	5 5/16	39/64	0.609375	7 5/16	25/32	0.7760	9 5/16	61/64	0.9427	11 5/16
	0.1146	1 3/8		0.28125	3 3/8		0.4479	5 3/8		0.6146	7 3/8		0.78125	9 3/8		0.9479	11 3/8
	0.1198	1 7/16		0.2865	3 7/16		0.453125	5 7/16		0.6198	7 7/16		0.7865	9 7/16		0.953125	11 7/16
	0.1250	1 1/2		0.2917	3 1/2		0.4583	5 1/2		0.6250	7 1/2		0.7917	9 1/2		0.9583	11 1/2
9/64	0.1302	1 9/16	5/16	0.296875	3 9/16	15/32	0.4635	5 9/16	41/64	0.6302	7 9/16	13/16	0.796875	9 9/16	31/32	0.9635	11 9/16
	0.1354	1 5/8		0.3021	3 5/8		0.46875	5 5/8		0.6354	7 5/8		0.8021	9 5/8		0.96875	11 5/8
	0.140625	1 11/16		0.3073	3 11/16		0.4740	5 11/16		0.640625	7 11/16		0.8073	9 11/16		0.9740	11 11/16
	0.1458	1 3/4		0.3125	3 3/4		0.4792	5 3/4		0.6458	7 3/4		0.8125	9 3/4		0.9792	11 3/4
5/32	0.1510	1 13/16	21/64	0.3177	3 13/16	31/64	0.484375	5 13/16	23/32	0.6510	7 13/16	53/64	0.8177	9 13/16	63/64	0.984375	11 13/16
	0.15625	1 7/8		0.3229	3 7/8		0.4896	5 7/8		0.65625	7 7/8		0.8229	9 7/8		0.9896	11 7/8
	0.1615	1 15/16		0.328125	3 15/16		0.4948	5 15/16		0.6615	7 15/16		0.828125	9 15/16		0.9948	11 15/16
	0.1667	2		0.3333	4		0.5000	6		0.6667	8		0.8333	10		1.0000	12

A = Fractions of Inch or Foot  
 B = Inch Equivalents to Foot Fractions

DATE	REVISIONS
1-1-97	New Standard.

**DECIMAL OF AN INCH  
AND OF A FOOT**

**STANDARD 001006**

Illinois Department of Transportation

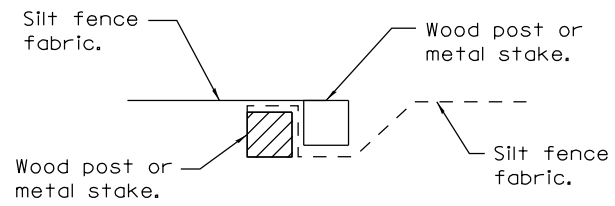
PASSED January 1, 1997

ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 1997

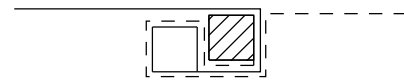
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97



Place end-post (stake) of first silt fence adjacent to end-post (stake) of second silt fence with fabric positioned as shown.

**STEP 1**

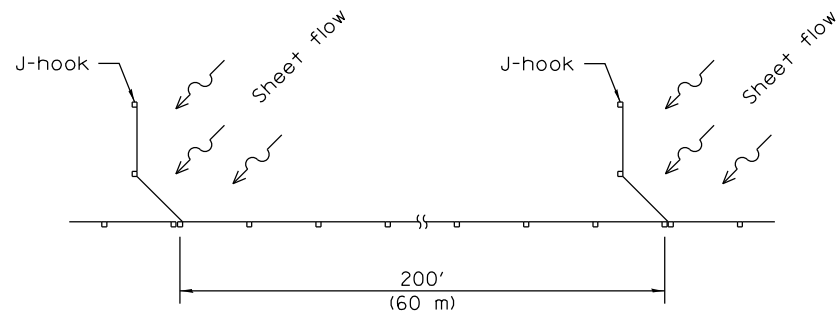


Rotate posts (stakes) together 180° clockwise and drive both posts (stakes) 18 (450) into ground.

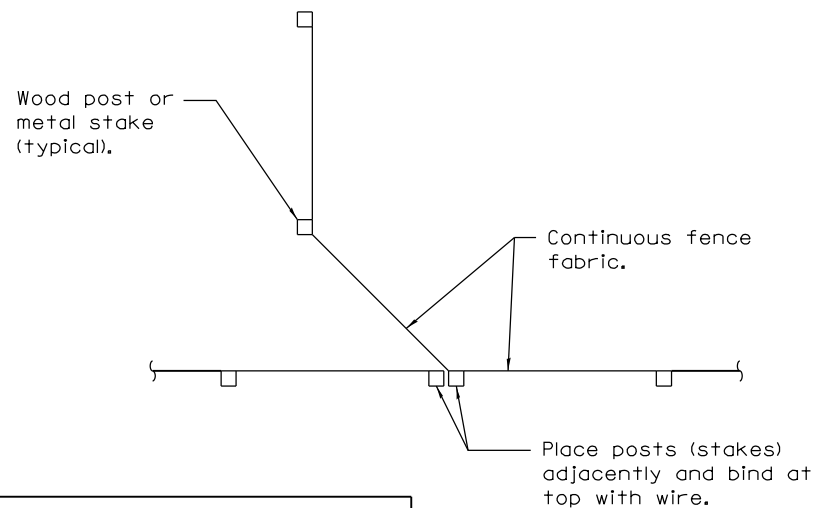
**STEP 2**

**ATTACHING TWO SILT FILTER FENCES**

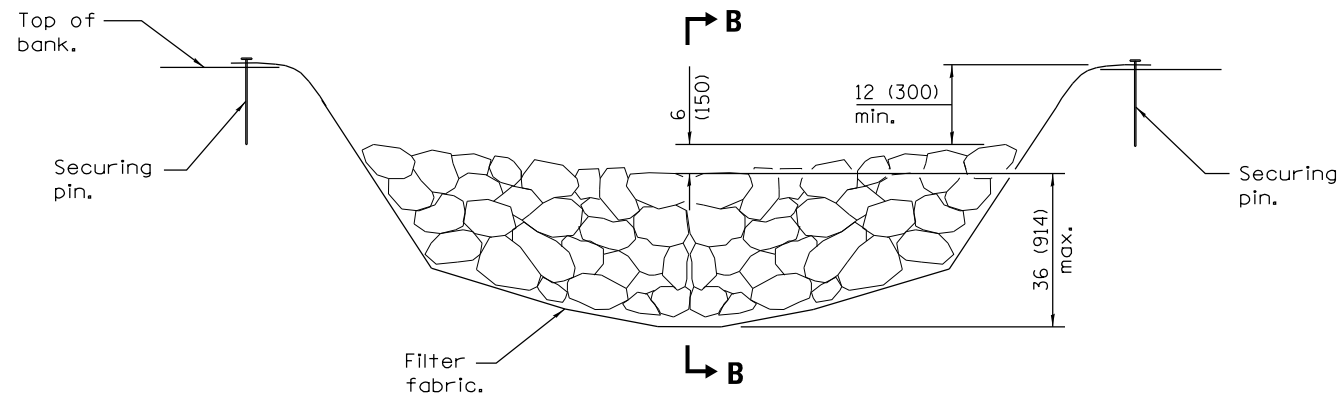
(Not applicable for J-hooks)



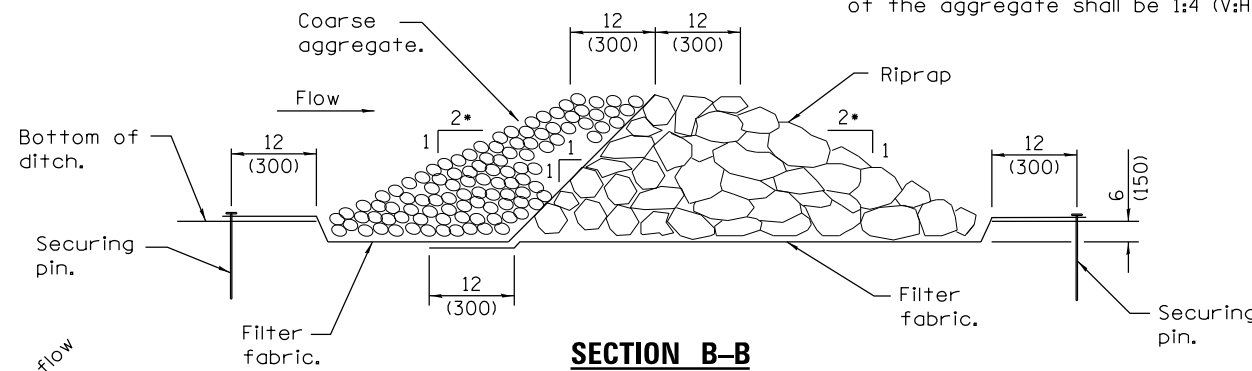
**SILT FILTER J-HOOK PLACEMENT**



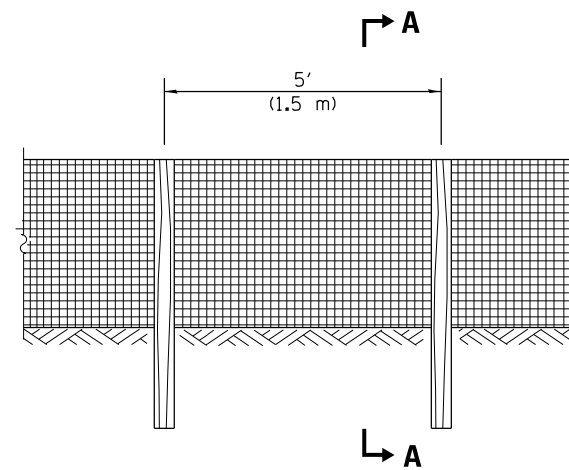
**J-HOOK**



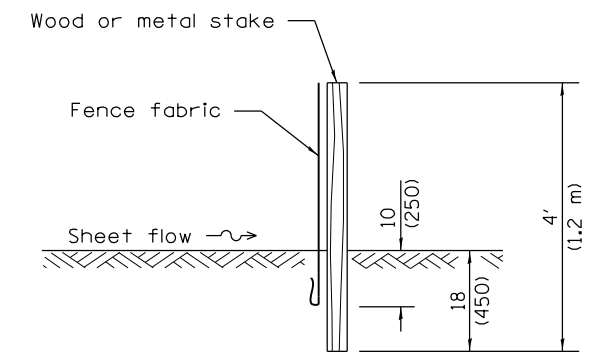
• When the ditch check is within the clear zone and the road is open to traffic, the traffic approach slope of the aggregate shall be 1:4 (V:H).



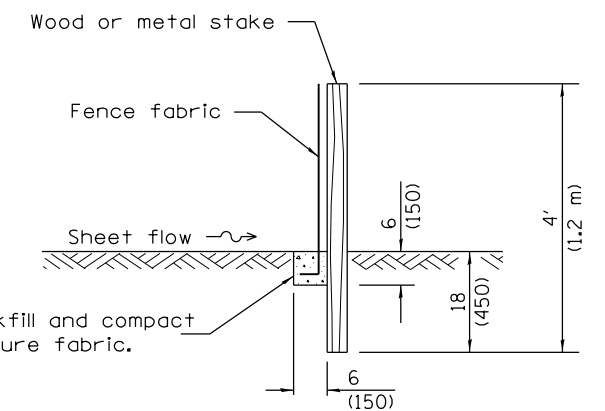
**AGGREGATE DITCH CHECK**



**SILT FILTER FENCE AS A PERIMETER EROSION BARRIER**



**SLICE METHOD**



**TRENCH METHOD**

**SECTION A-A**

Excavate, backfill and compact trench to secure fabric.

**GENERAL NOTES**

The installation details and dimensions shown for perimeter erosion barriers shall also apply for inlet and pipe protection.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-13	Corrected notation for flowline (E) on SEDIMENT BASIN ELEVATION.
1-1-12	Omitted hay/straw perimeter barrier. Added SLICE METHOD to SECTION A-A.

**TEMPORARY EROSION CONTROL SYSTEMS**

(Sheet 1 of 2)

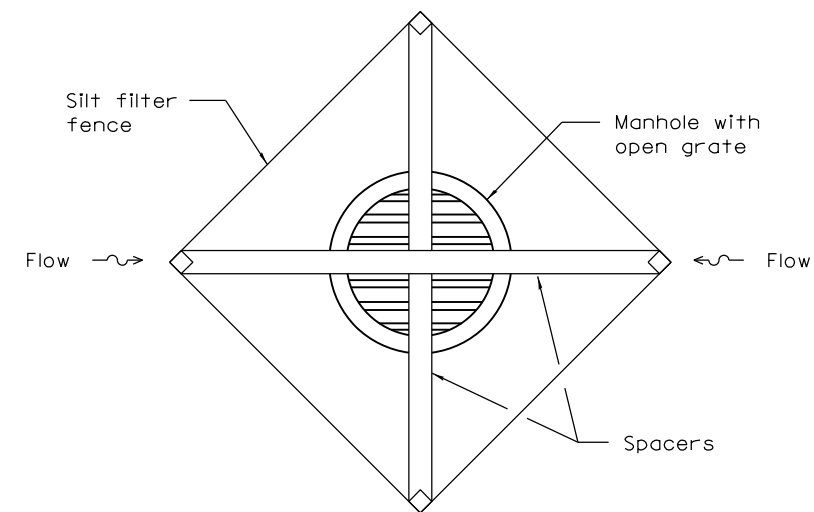
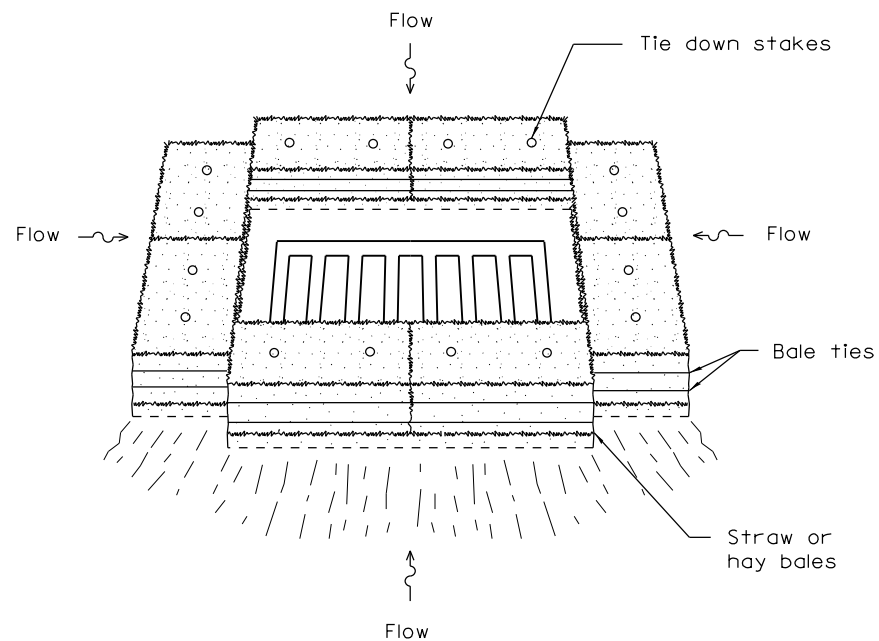
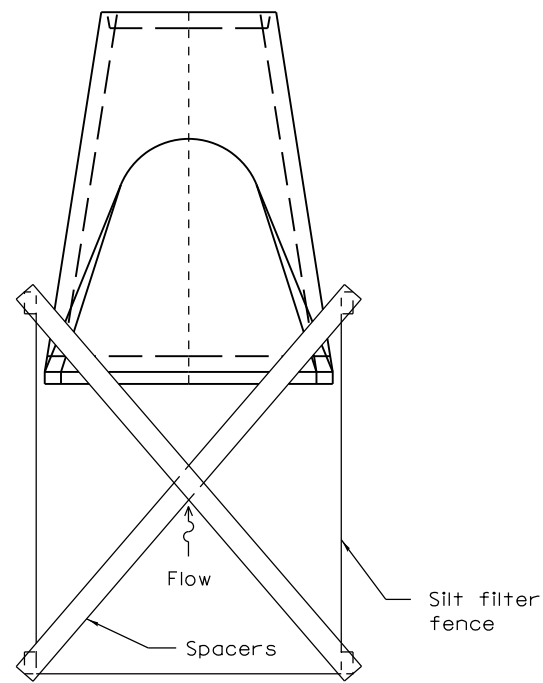
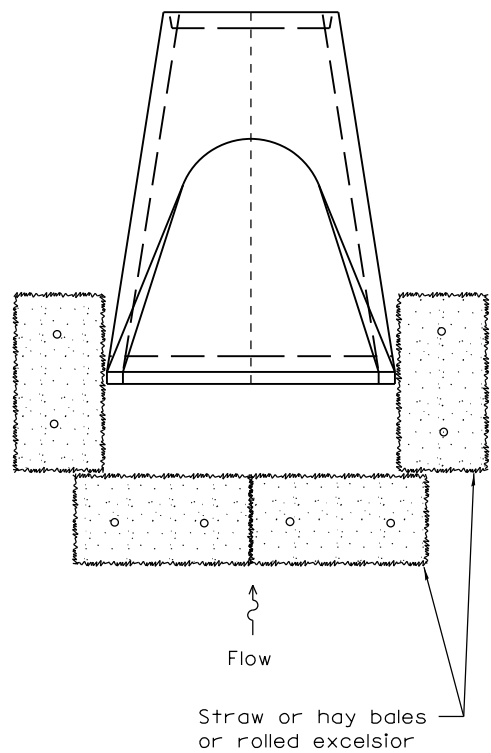
**STANDARD 280001-07**

Illinois Department of Transportation

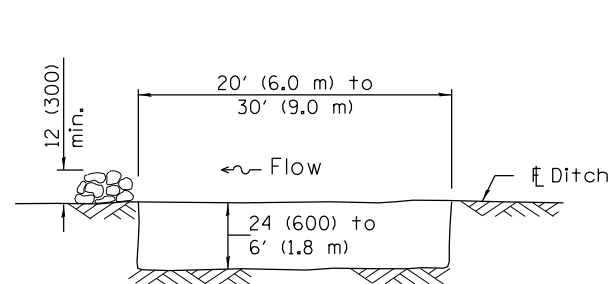
PASSED January 1, 2013  
*Michael Brand*  
 ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2013  
*[Signature]*  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

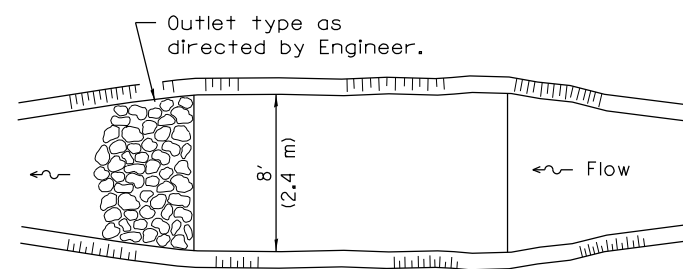


**INLET AND PIPE PROTECTION**



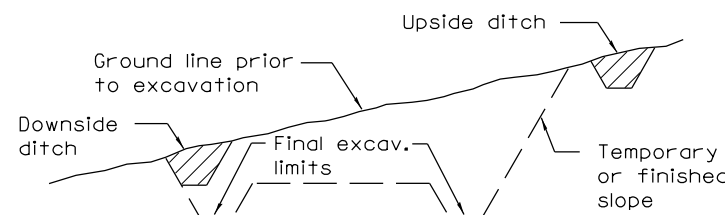
The performance of the basin will improve if put into a series.

**ELEVATION**

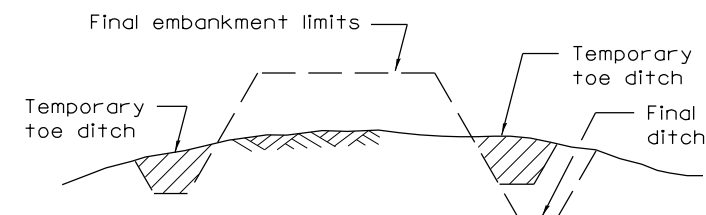


The long dimension should be parallel with the direction of the flow. Accumulated silt shall be removed anytime the basins become 75% filled.

**PLAN**



**TYPICAL CUT CROSS-SECTION**



**TYPICAL FILL CROSS-SECTION**

**TEMPORARY DITCHES FOR CUT & FILL SECTIONS**

**SEDIMENT BASIN**

Illinois Department of Transportation

PASSED January 1, 2013  
*Michael Brand*  
 ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2013  
*[Signature]*  
 ENGINEER OF DESIGN AND ENVIRONMENT

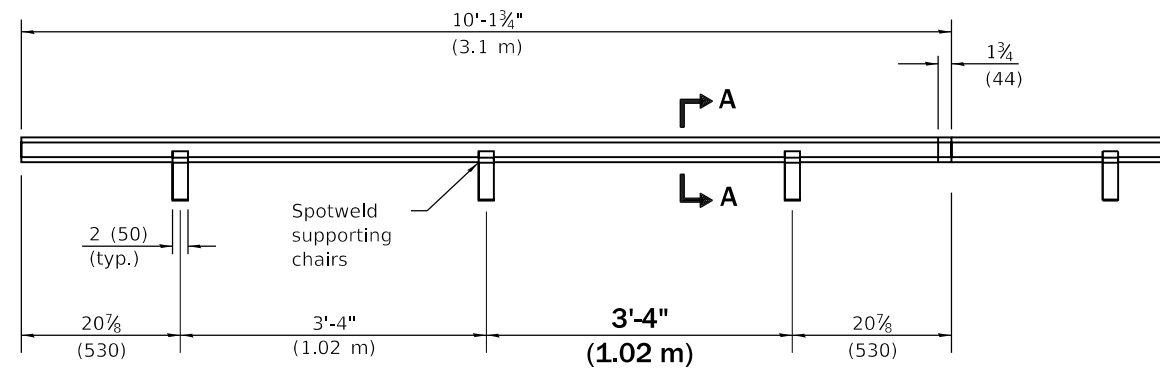
ISSUED 1-1-97

**TEMPORARY EROSION CONTROL SYSTEMS**

(Sheet 2 of 2)

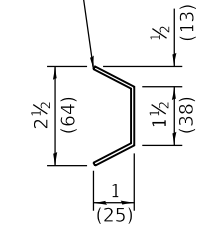
**STANDARD 280001-07**



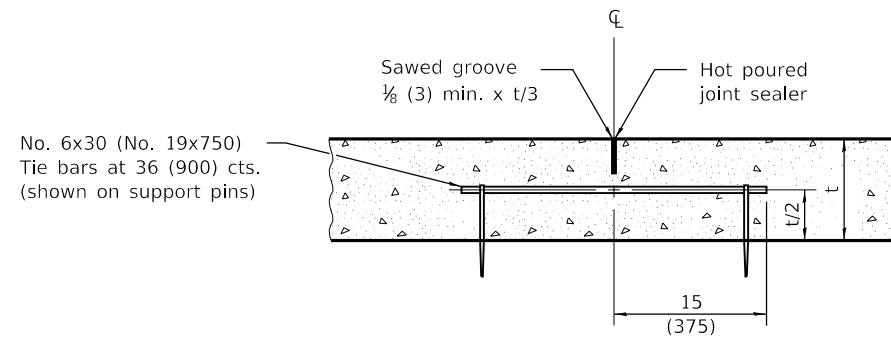


**TYPE C METAL JOINT**

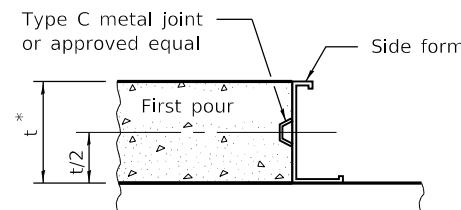
Sheet steel of suitable thickness to form keyway as detailed or approved equal.



**SECTION A-A**

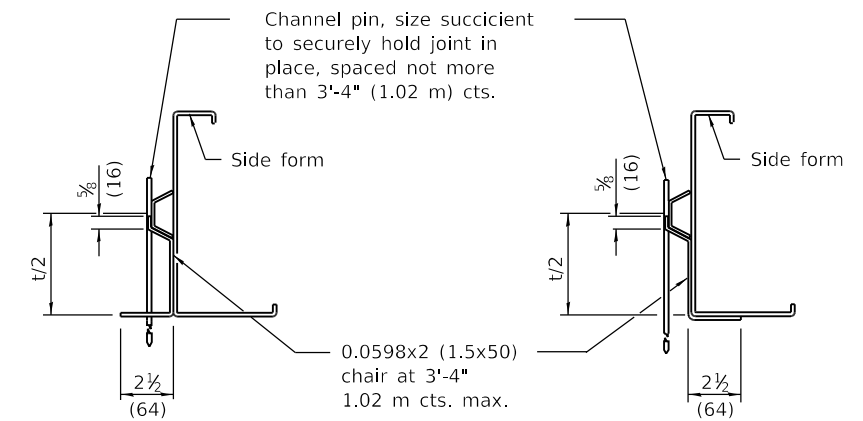


**LONGITUDINAL SAWED JOINT**



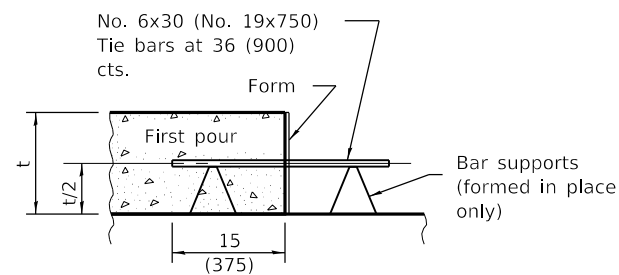
**LONGITUDINAL KEYED JOINT**

\* 8 (203) min. pavement thickness for keyed joints.

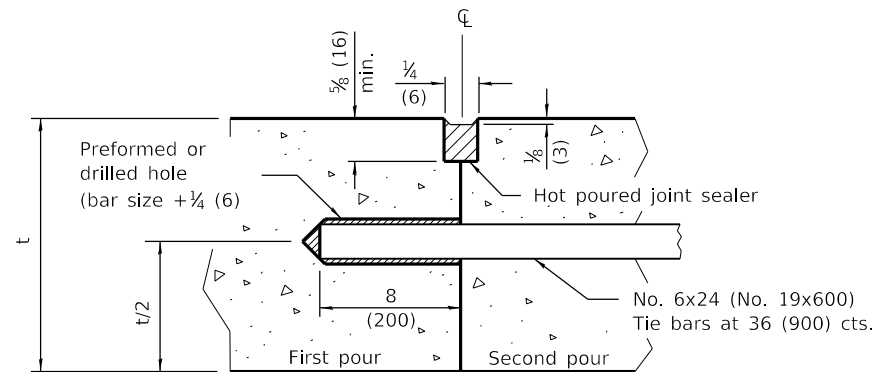


**SUPPORTING CHAIR ALTERNATE**

**SUPPORTING CHAIR ALTERNATE**



**LONGITUDINAL CONSTRUCTION JOINT**  
(TIE BAR FORMED IN PLACE OR MECHANICALLY INSERTED)



**LONGITUDINAL CONSTRUCTION JOINT**  
(TIE BAR GROUTED IN PLACE)

**GENERAL NOTES**

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED January 1, 2018  
*Michael Beard*  
 ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2018  
*Marcus M. Beck*  
 ENGINEER OF DESIGN AND ENVIRONMENT

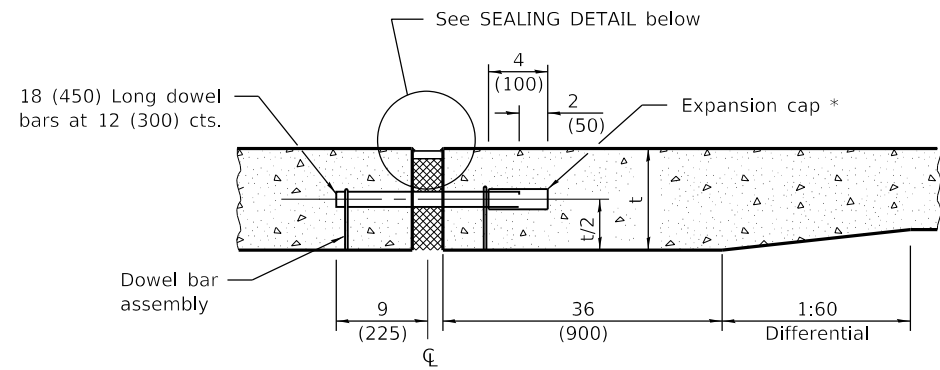
ISSUED 1-1-97

DATE	REVISIONS
1-1-18	Changed tie bar spacing to 36 (900) cts. Revised DOWEL BAR TABEL.
1-1-08	Switched units to English (metric).

**PAVEMENT JOINTS**

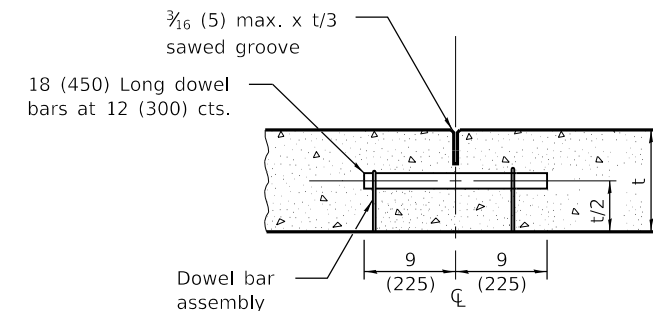
(Sheet 1 of 2)

**STANDARD 420001-09**

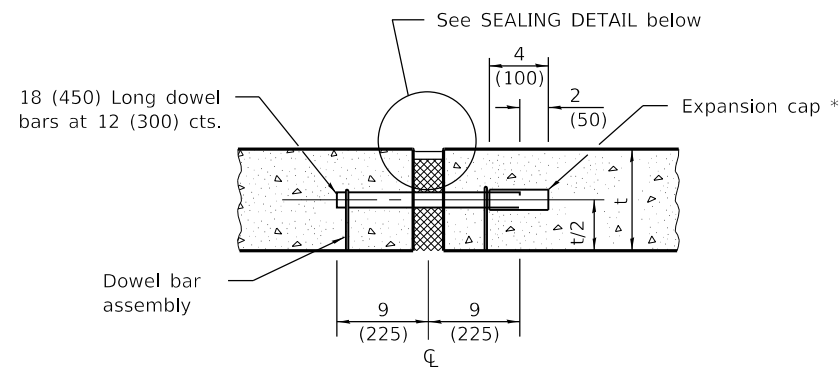


**TRANSVERSE EXPANSION JOINT**  
(FOR PAVEMENTS WITH UNEQUAL THICKNESS)

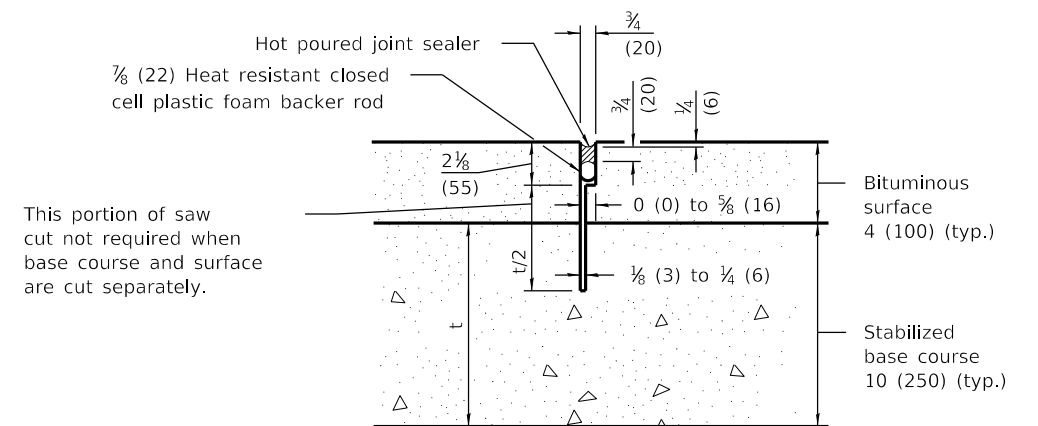
\* Expansion caps shall be installed on the exposed end of each dowel bar once the header has been removed and the joint filler material has been installed.



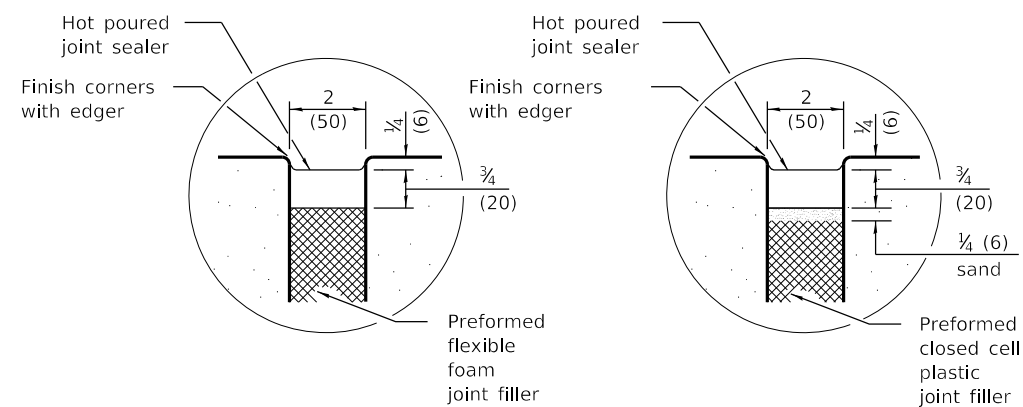
**TRANSVERSE CONTRACTION JOINT**



**TRANSVERSE EXPANSION JOINT**  
(FOR PAVEMENTS WITH EQUAL THICKNESS)

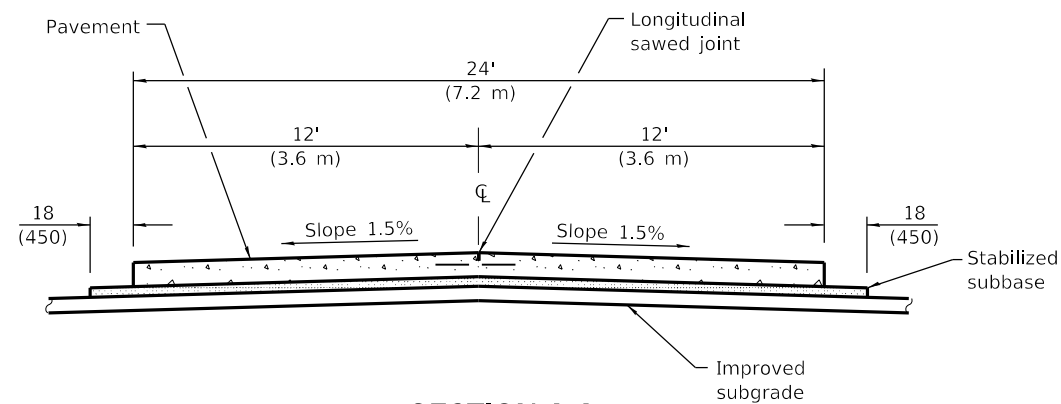


**TRANSVERSE CONTRACTION JOINT**  
(FOR CAM, CFA AND LFA BASE COURSE MIXTURES)

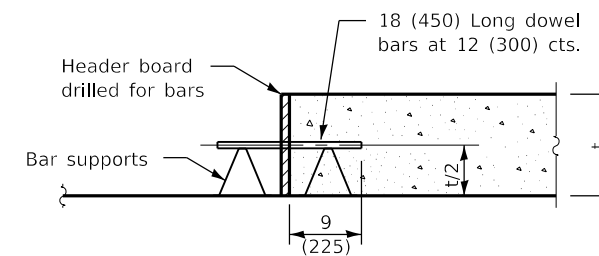


**SEALING DETAIL**

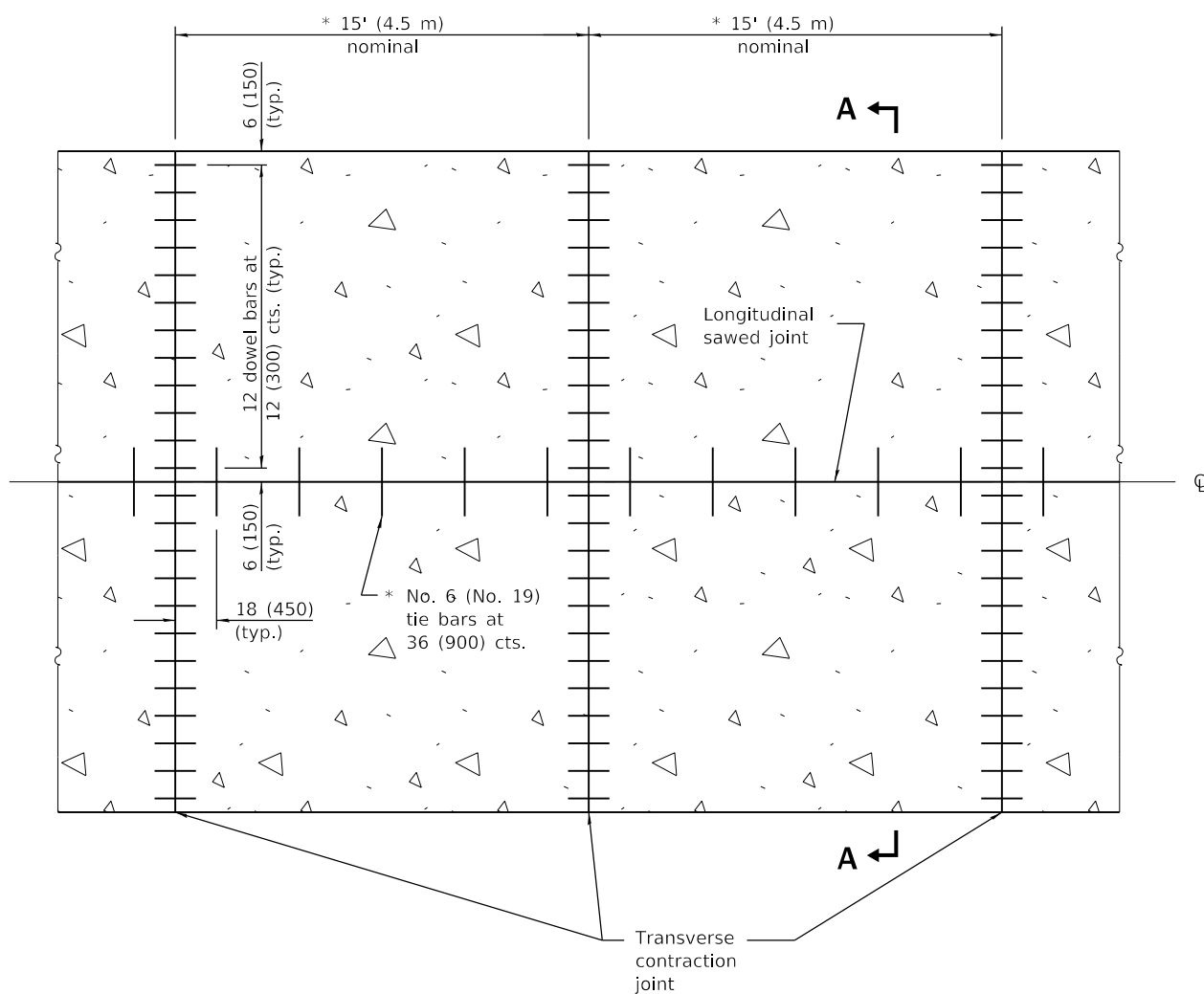
DOWEL BAR TABLE	
PAVEMENT THICKNESS	DOWEL BAR DIAMETER
10 (250) or greater	1 1/2 (38)
8 (200) thru 9.99 (249)	1 1/4 (32)
Less than 8 (200)	1 (25)



**SECTION A-A**  
(TYPICAL 2-LANE WITH SHOULDERS)

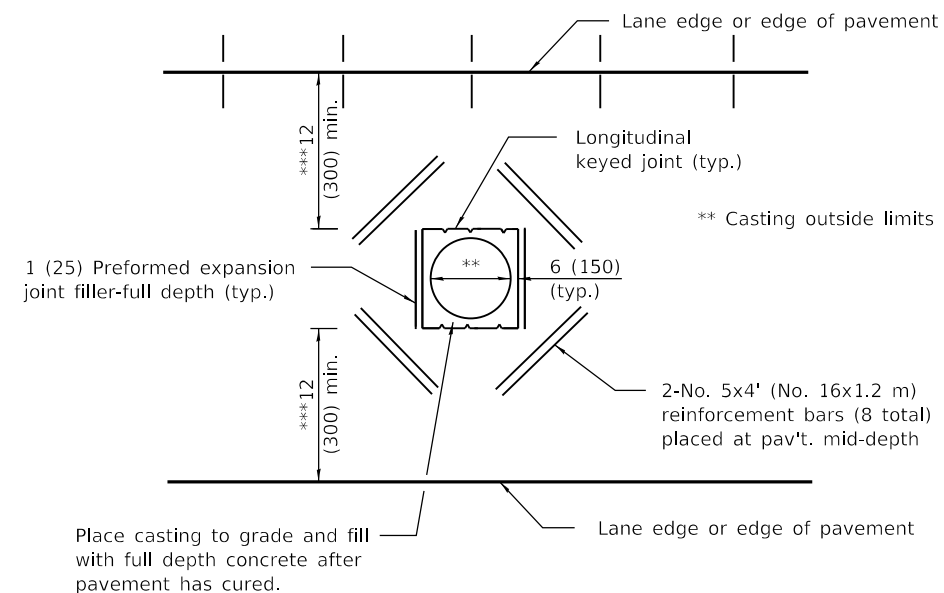


**TRANSVERSE CONSTRUCTION JOINT**



**PAVEMENT PLAN**

\* The 15' (4.5 m) dimension shall be adjusted to 12' (3.6 m) min. to 18' (5.5 m) max. when placed adjacent to existing pcc pavement structure so that the joints are in prolongation. Adjust the tie bar spacing to maintain a clearance of 6 (150) from dowel bars.



**DETAIL OF ADDED REINFORCEMENT FOR PAVEMENT BLOCKS-OUTS**

\*\*\* When the 12 (300) minimum cannot be achieved, the transverse joints shall be extended to either the longitudinal joint or edge of pavement.

**GENERAL NOTES**

See Standard 420001 for details of joints not shown.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED January 1, 2018  
*Michael Beard*  
ENGINEER OF POLICY AND PROCEDURES

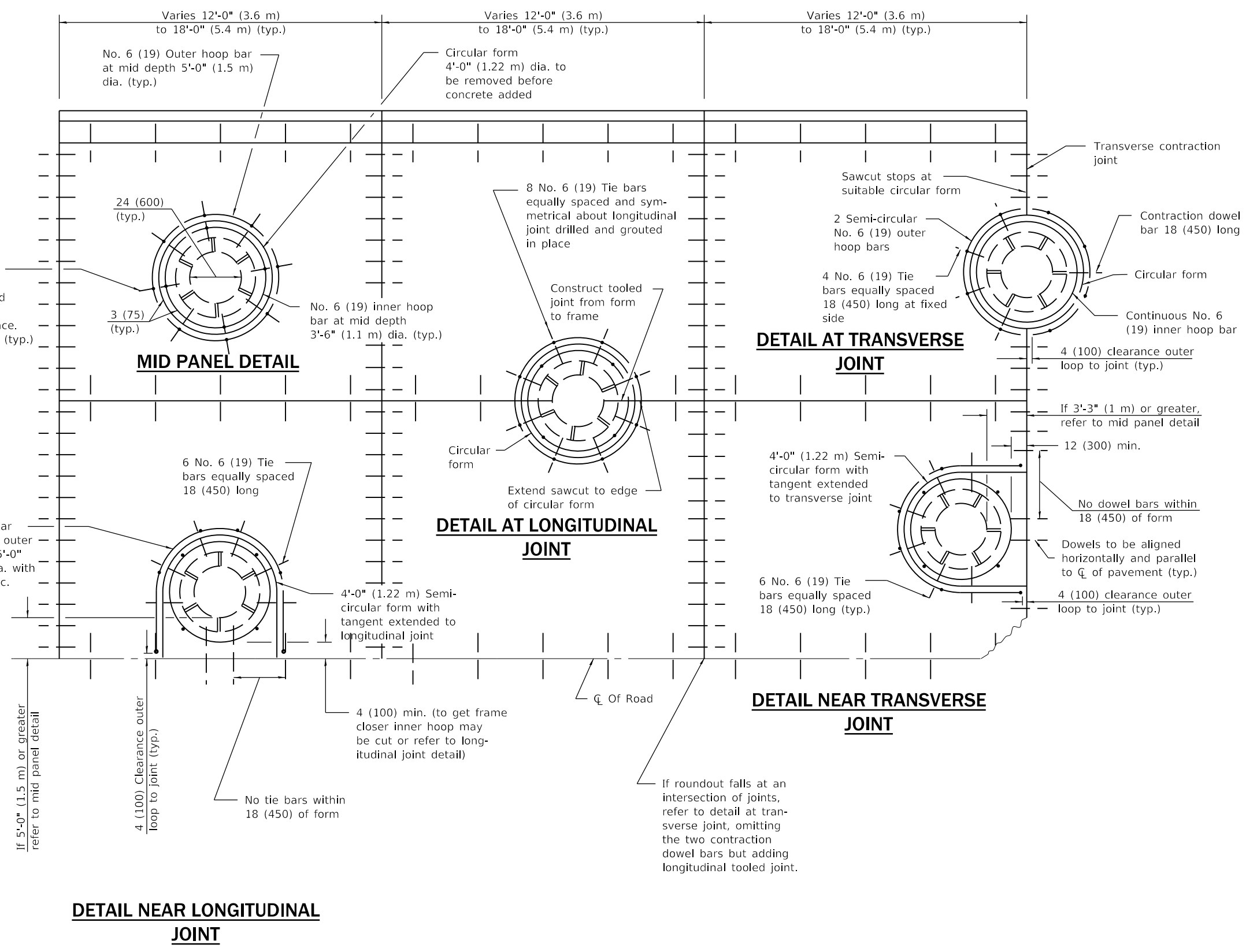
APPROVED January 1, 2018  
*Maureen M. Adams*  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

DATE	REVISIONS
1-1-18	Changed spacing of tie bars to 36 (900).
1-1-15	Added dimension of tie bars from transverse contraction joints

**24' (7.2 m) JOINTED PCC PAVEMENT**

**STANDARD 420101-06**



**GENERAL NOTES**

Transverse joints may be moved to accommodate roundout. Edge of circular joint shall be minimum 24 (600) from transverse joint. Relocated transverse joint shall be continuous from edge of pavement to edge of pavement.

The transverse joint spacing should be adjusted to use the DETAIL NEAR TRANSVERSE JOINT. If the joint cannot be adjusted to give the 12 (300) min. offset, use the DETAIL AT TRANSVERSE JOINT and ensure the joint is centered in the structure as shown.

Circular form shall be removed prior to drill and grout of tie bars.

Drill and grout is preferred, however tie bars can be poured in place if clearance is provided to outer edge of frame. Maximum 2 (50) clearance.

Shims shall be used to adjust all frames. After adjusting mortar has cured, the shims shall be removed and the voids under the frames filled with nonshrink grout.

Hoop reinforcement shall be one piece construction having a minimum lap length of 24 (600).

All situations not shown and may require combination of details.

WHEN USING CAST IN PLACE:  
Frame shall be anchored to the structure to prevent movement during the paving operation.

All dimensions are in inches (millimeters) unless otherwise shown.

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PASSED January 1, 2018  
*Michael Beard*  
ENGINEER OF POLICY AND PROCEDURES

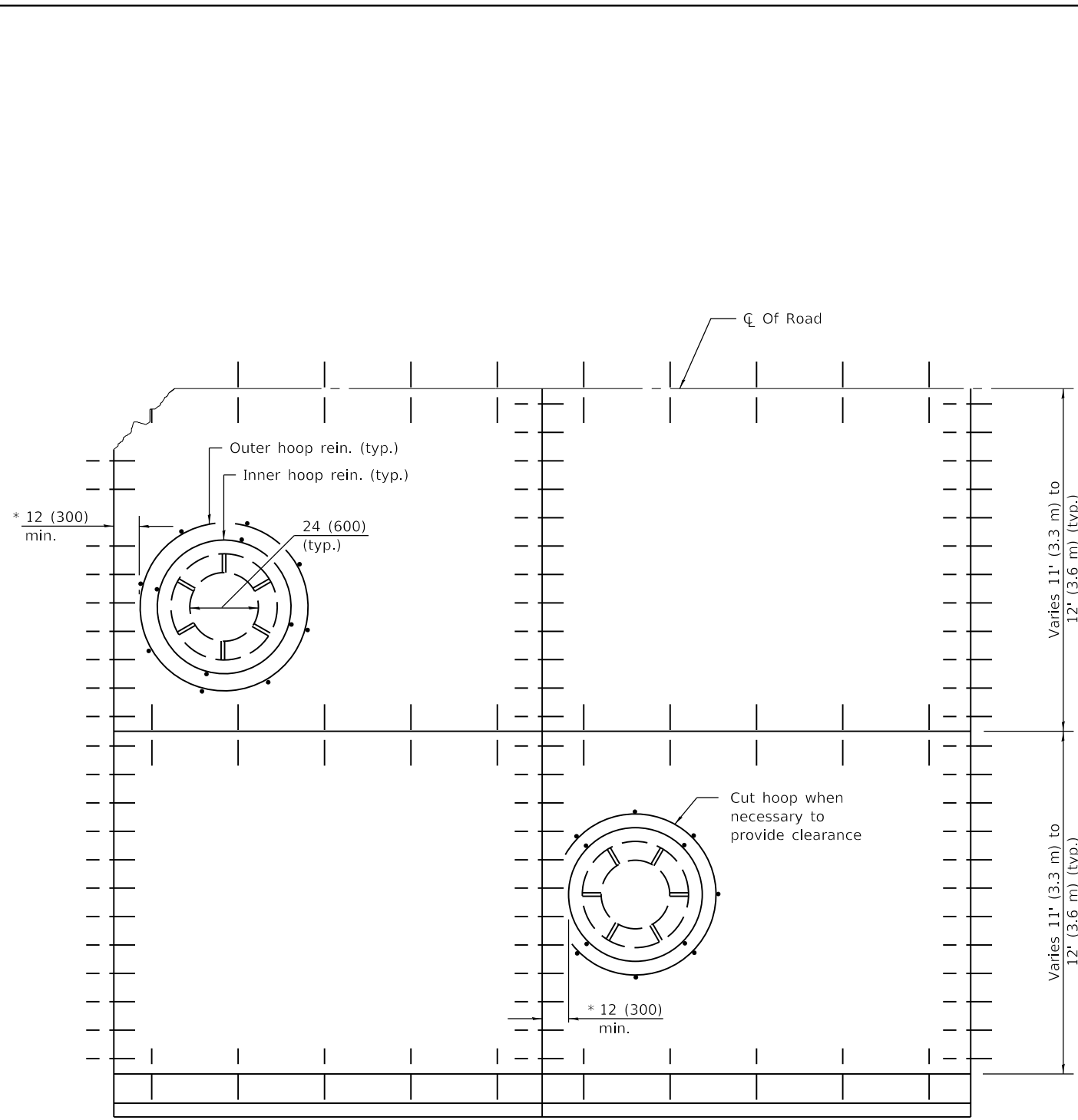
APPROVED January 1, 2018  
*Marcus M. Beck*  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

DATE	REVISIONS
1-1-18	Revised standard for 36 (900) tie bar spacing. Revised General Notes.
1-1-11	Corrected 'T/2' dim. on DETAIL OF REINFORCEMENT FOR PAVEMENT ROUNDOUT.

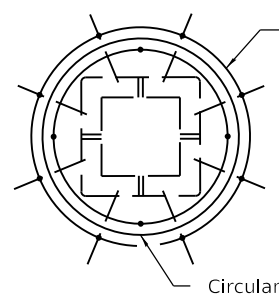
**PCC PAVEMENT ROUNDOUTS**  
(Sheet 1 of 2)

**STANDARD 420111-04**



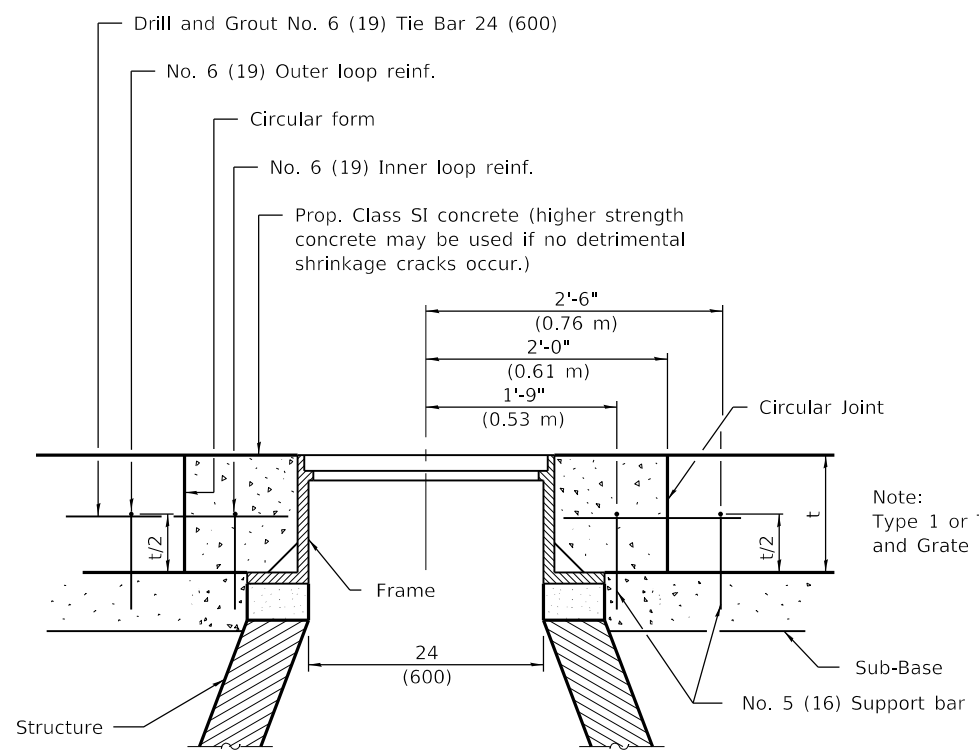
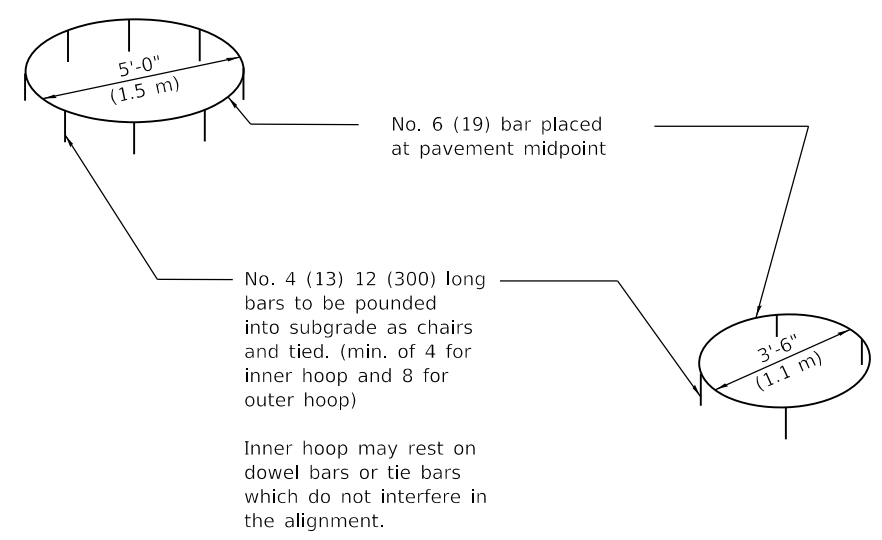
**CAST IN PLACE DETAIL**

\* Less than 12 (300) formed roundout to be used.



**ROUNDOUT FOR SQUARE FRAME & GRATE AND MANHOLES**

All dimensions same for the majority of circular frame & grates. For larger structures increase hoop bar and circular form diameter by 12 (300) each and add two additional equally spaced tie bars.



**DETAIL OF REINFORCEMENT FOR PAVEMENT ROUNDOUT**

Note: Type 1 or Type 5 Frame and Grate may be used

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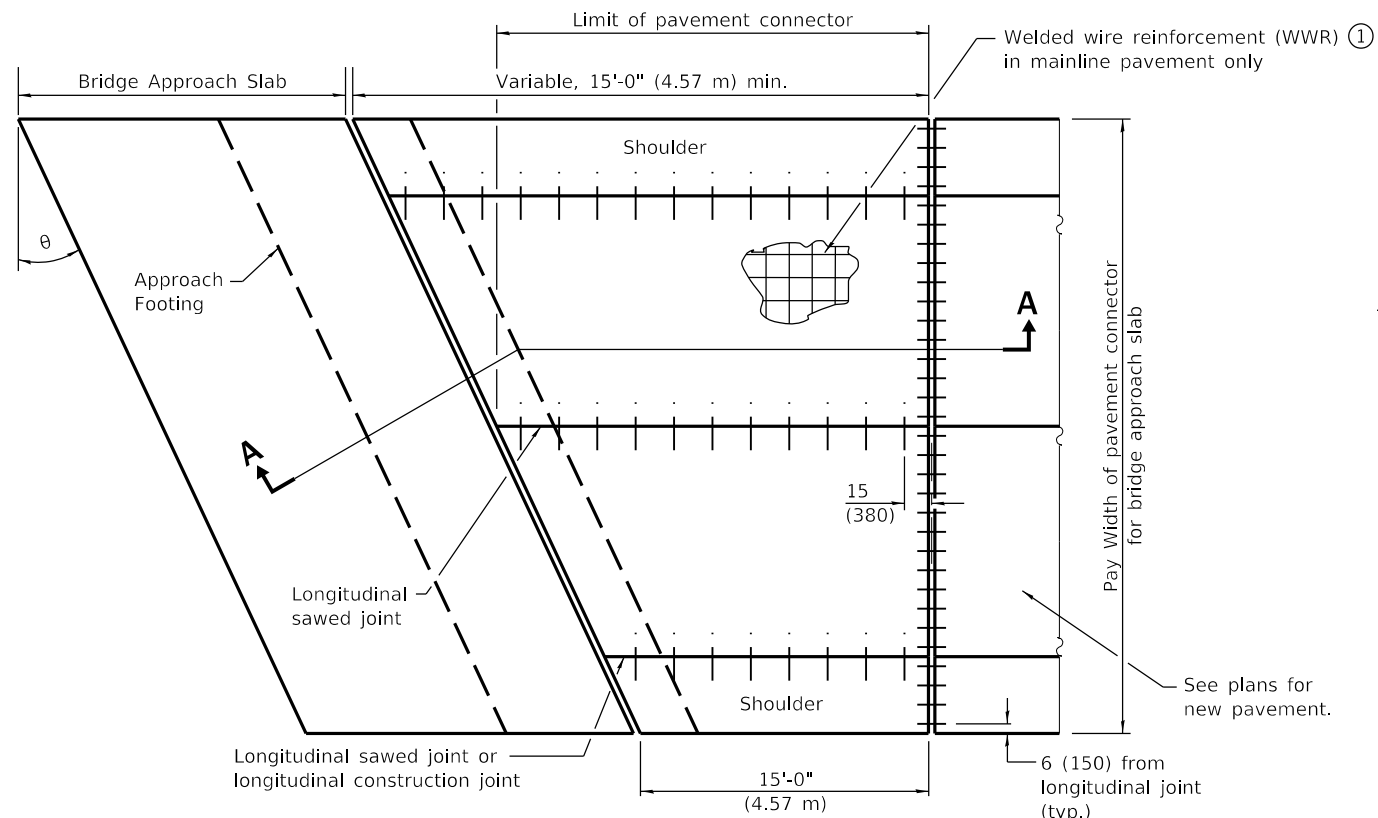
PASSED January 1, 2018  
*Michael Beard*  
 ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2018  
*Maureen M. Beck*  
 ENGINEER OF DESIGN AND ENVIRONMENT

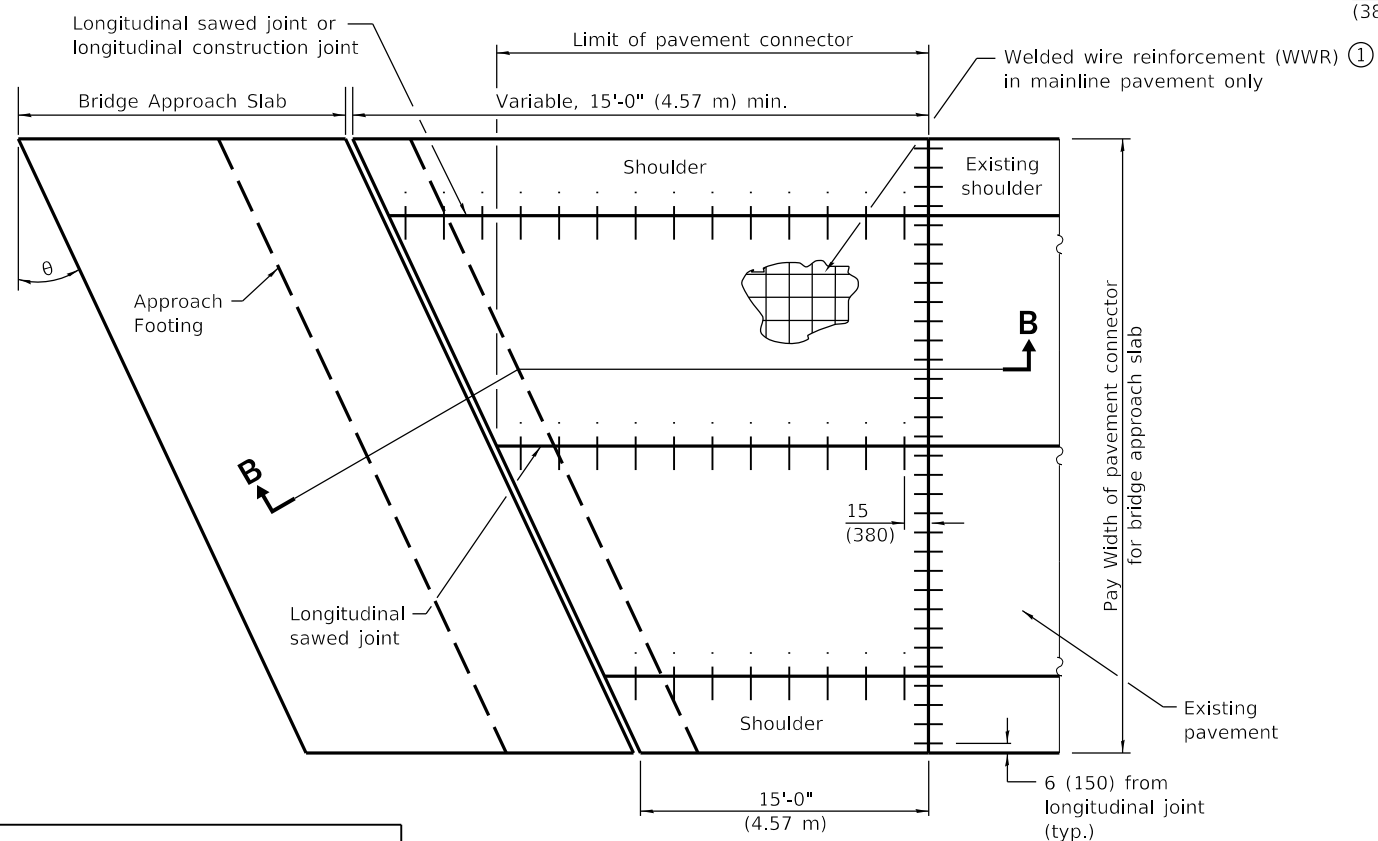
ISSUED 1-1-97

**PCC PAVEMENT ROUNDOUTS**  
 (Sheet 2 of 2)

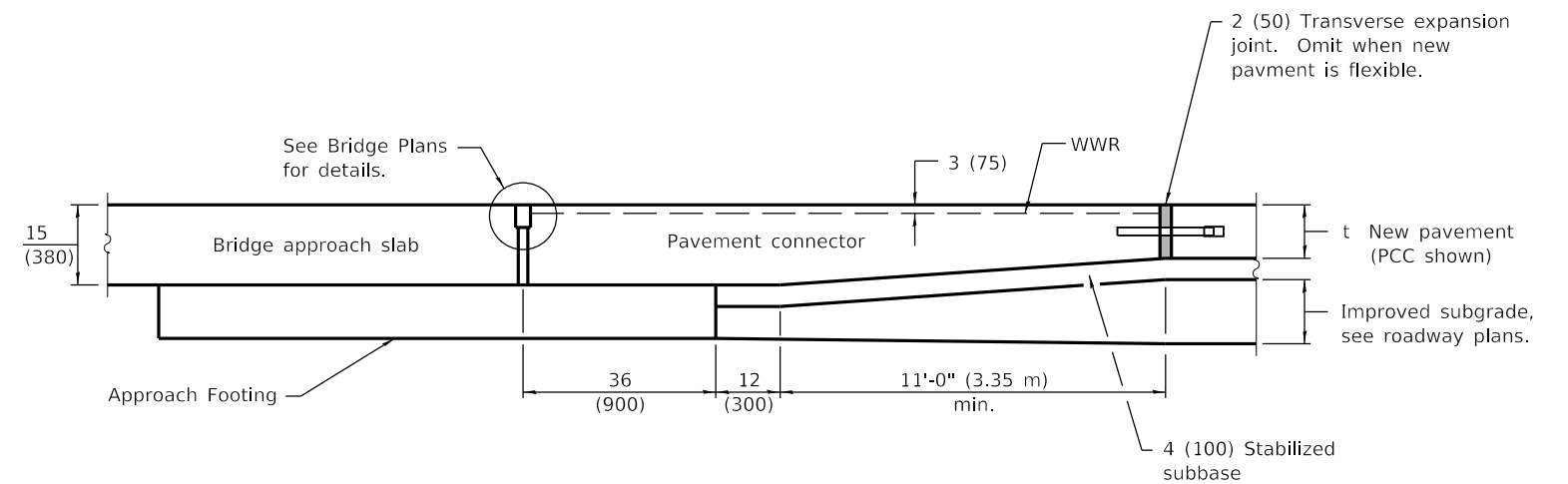
**STANDARD 420111-04**



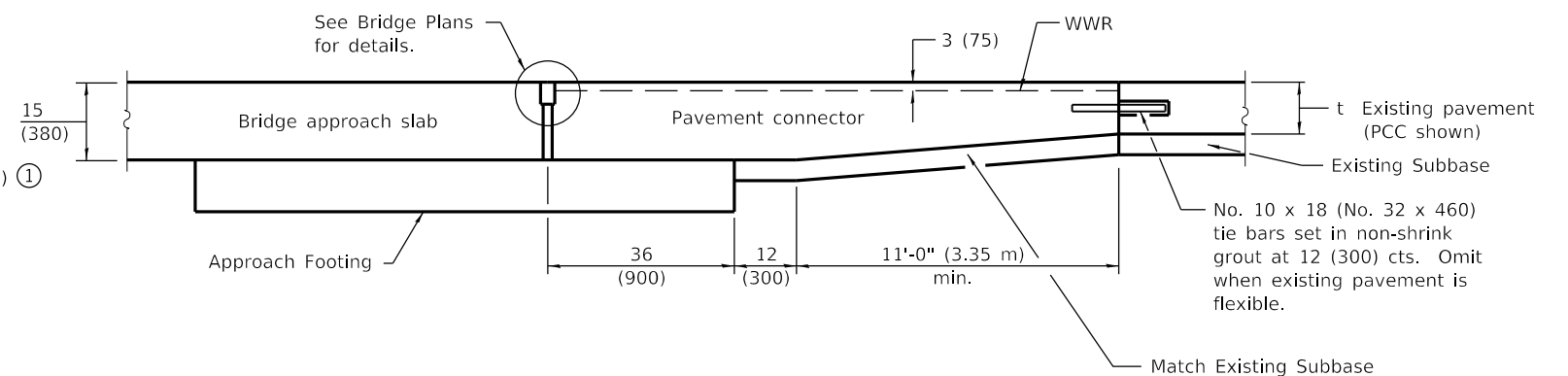
**PLAN  
NEW CONSTRUCTION**



**PLAN  
EXISTING CONSTRUCTION**



**SECTION A-A**



**SECTION B-B**

① WWR shall be 0.11 sq. in./ft. (230 sq. mm/m) in both directions. Maximum wire spacing shall be 6 (150). Minimum lap distance shall be two cross wires.

**GENERAL NOTES**

- THICKNESS-*t*=Thickness of Pavement.
- See Standard 420001 for pavement joint details not shown.
- See Standard 610001 for shoulder inlet with curb when required.
- See plans for details of bridge approach slab, approach footing and joint treatment.
- All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-19	Changed rebar in pavement connector to welded wire reinforcement.
4-1-16	Revised pavement connector to be rigid only. Omitted WFB term. joint. Renamed std.

**PAVEMENT CONNECTOR (PCC)  
FOR BRIDGE APPROACH SLAB**

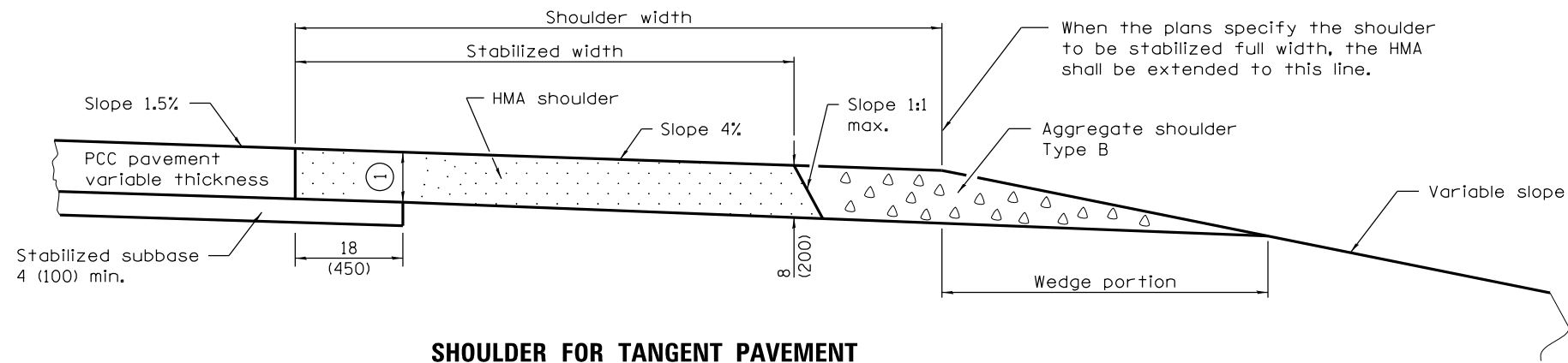
**STANDARD 420401-13**

Illinois Department of Transportation

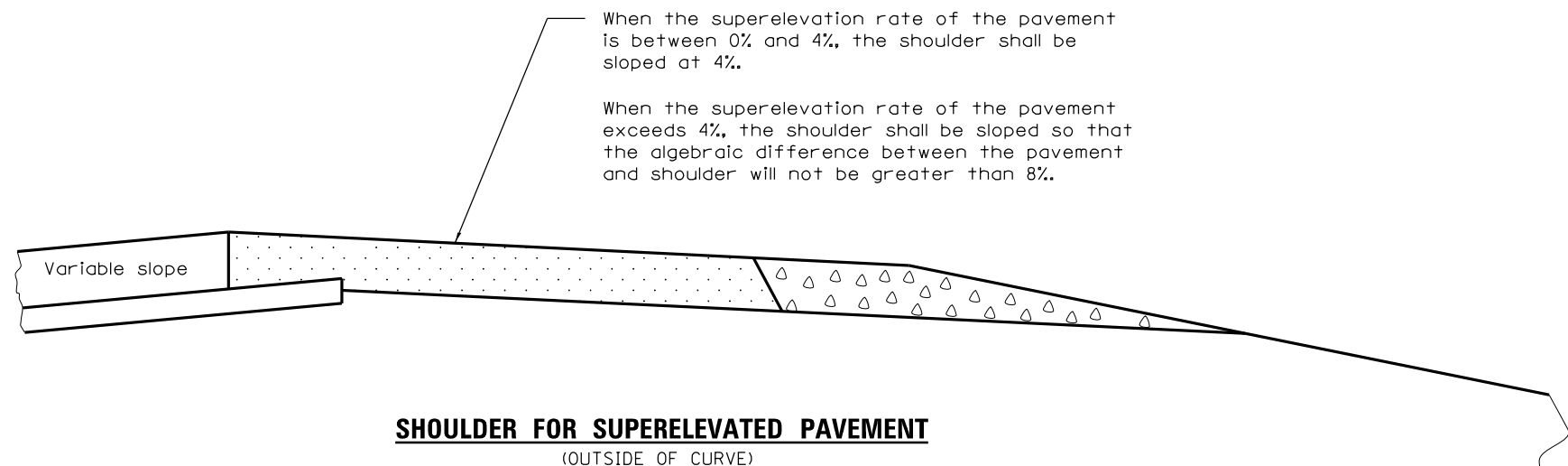
PASSED January 1 2019  
*Michael Bond*  
ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1 2019  
*John E. ...*  
ENGINEER OF DESIGN AND ENVIRONMENT

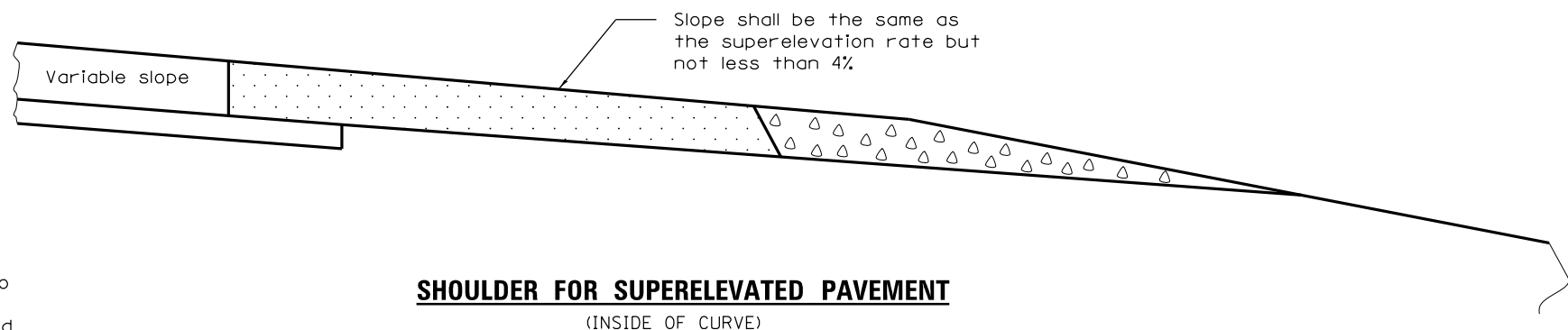
ISSUED 1-1-97



**SHOULDER FOR TANGENT PAVEMENT**



**SHOULDER FOR SUPERELEVATED PAVEMENT  
(OUTSIDE OF CURVE)**



**SHOULDER FOR SUPERELEVATED PAVEMENT  
(INSIDE OF CURVE)**

① (Applies only when subbase extension is to remain in place.) This thickness will vary with the thickness of pavement, extended length of subbase, and the slope of pavement. When this thickness is less than 8 (200), the stabilized shoulder shall be stepped down at this line to provide a 8 (200) minimum thickness.

**GENERAL NOTES**

Except as noted or shown the dimensions and notes specified for the shoulder of tangent pavement are typical for the shoulders of superelevated pavement.

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

All dimensions are in inches (millimeters) unless otherwise shown.

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PASSED January 1, 2008  
*Scott Smith*  
 ENGINEER OF POLICY AND PROCEDURES

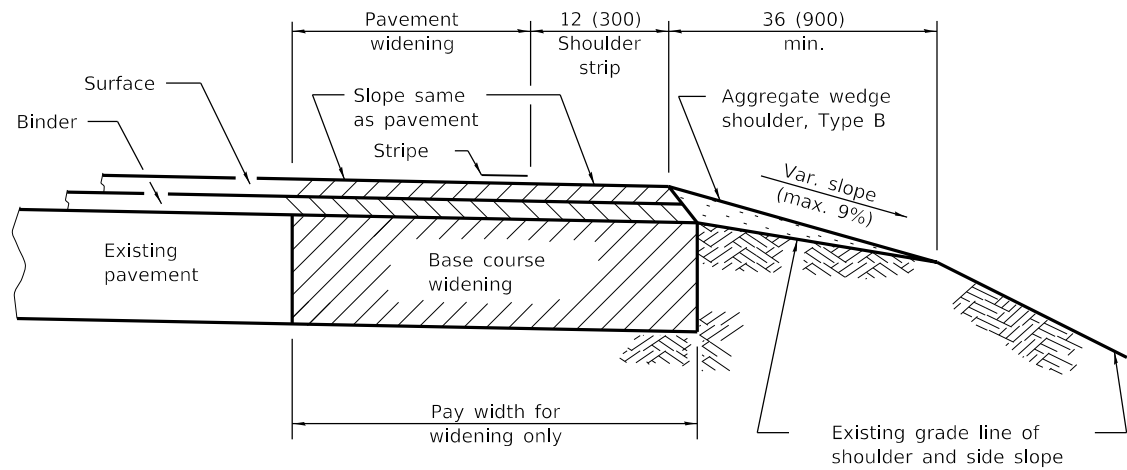
APPROVED January 1, 2008  
*Lee E. Han*  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

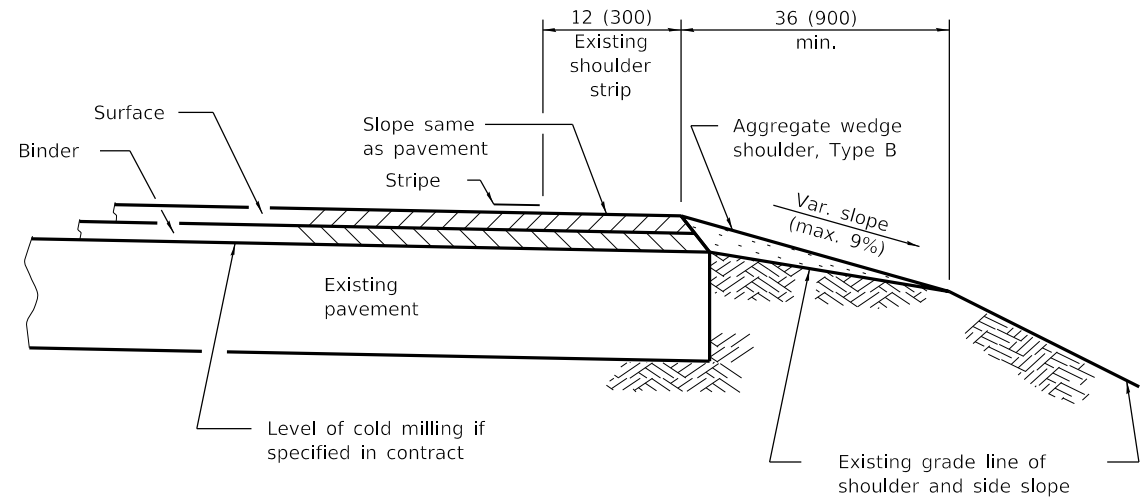
DATE	REVISIONS
1-1-08	Switched units to English (metric).
1-1-07	Switched to Hot-Mix Asphalt (HMA) terminology.

**HMA SHOULDER ADJACENT TO RIGID PAVEMENT**

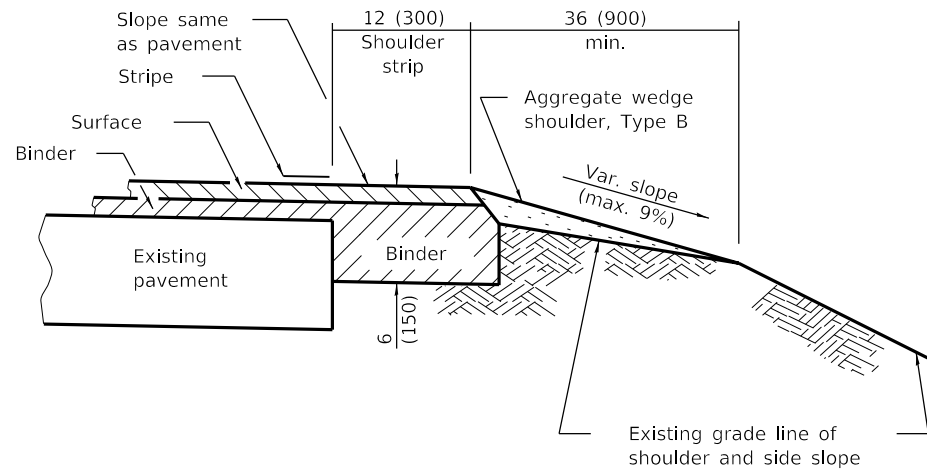
**STANDARD 482006-03**



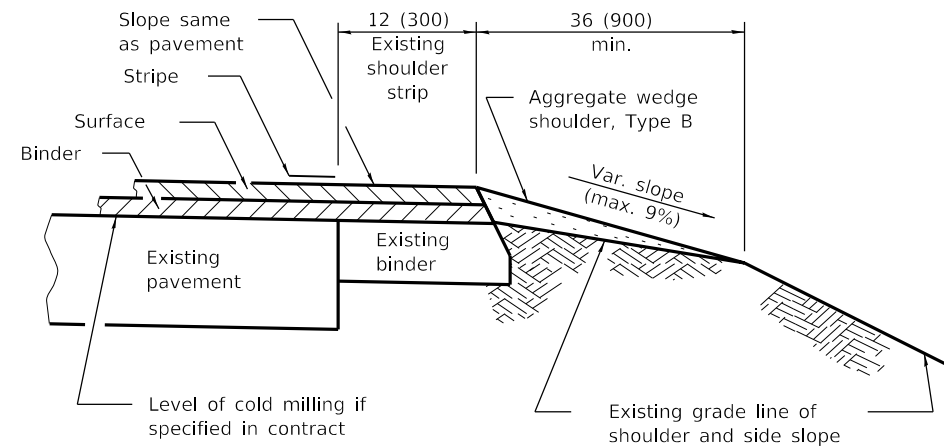
**HMA SHOULDER STRIP AND  
AGGREGATE WEDGE WITH WIDENING**  
(Cross-section A)



**COLD MILLING AND/OR RESURFACING OF  
EXISTING PAVEMENT WITH SHOULDER STRIPS**  
(Cross-section C)



**HMA SHOULDER STRIP AND  
AGGREGATE WEDGE WITH RESURFACING**  
(Cross-section B)



**COLD MILLING AND/OR RESURFACING OF  
EXISTING PAVEMENT WITH SHOULDER STRIPS**  
(Cross-section D)

All dimensions are in inches (millimeters)  
unless otherwise shown.

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PASSED January 1, 2008  
*[Signature]*  
ENGINEER OF POLICY AND PROCEDURES

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ENGINEER OF DESIGN AND ENVIRONMENT

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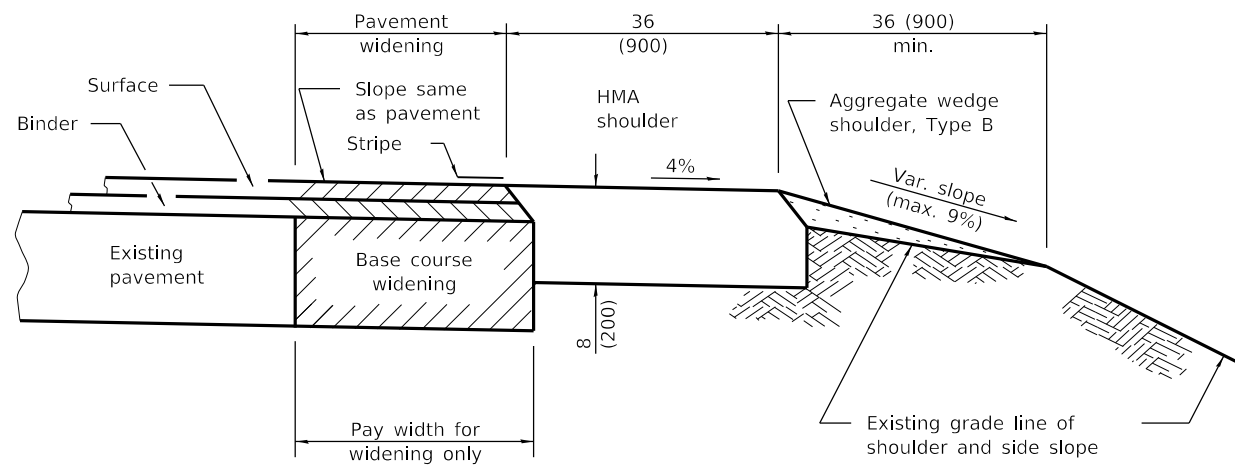
DATE	REVISIONS
1-1-08	Switched units to English (metric).
1-1-07	Switched to Hot-Mix Asphalt (HMA) terminology.

**HMA SHLD. STRIPS/SHLDS. WITH  
RESURFACING OR WIDENING  
AND RESURFACING PROJECTS**

(Sheet 1 of 2)

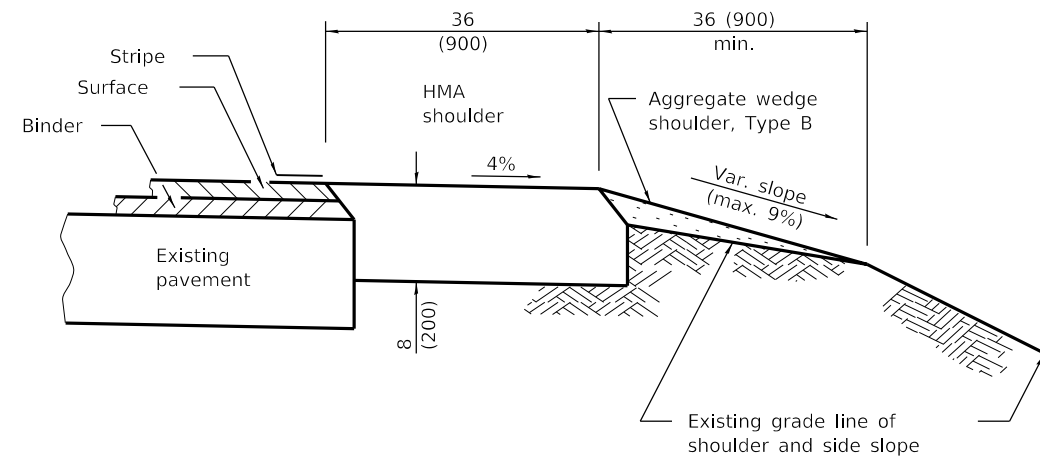
**STANDARD 482011-03**





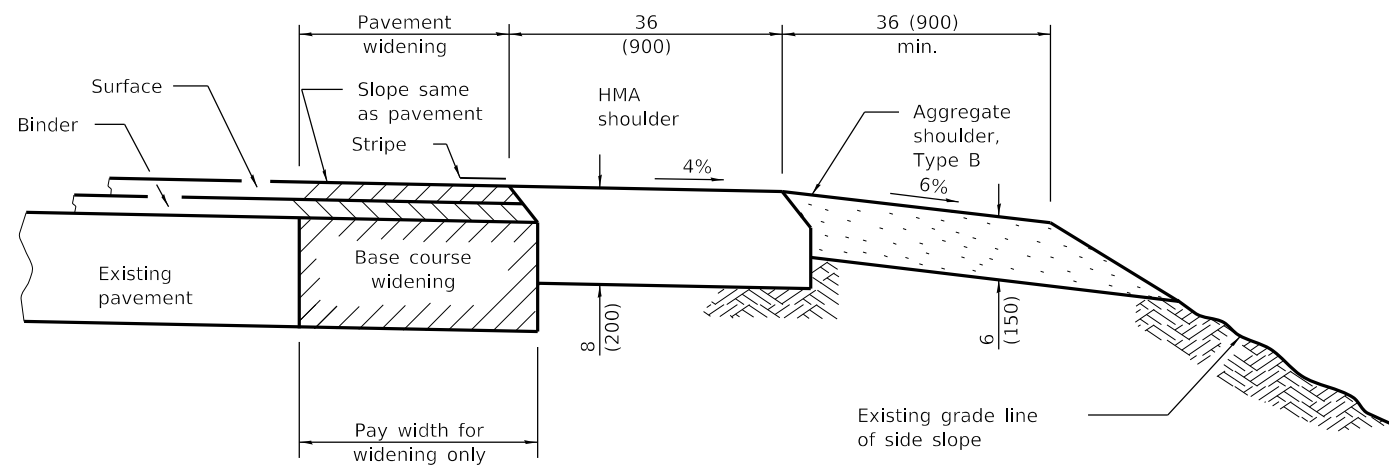
**HMA SHOULDER AND AGGREGATE WEDGE WITH WIDENING**

(Cross-section E)



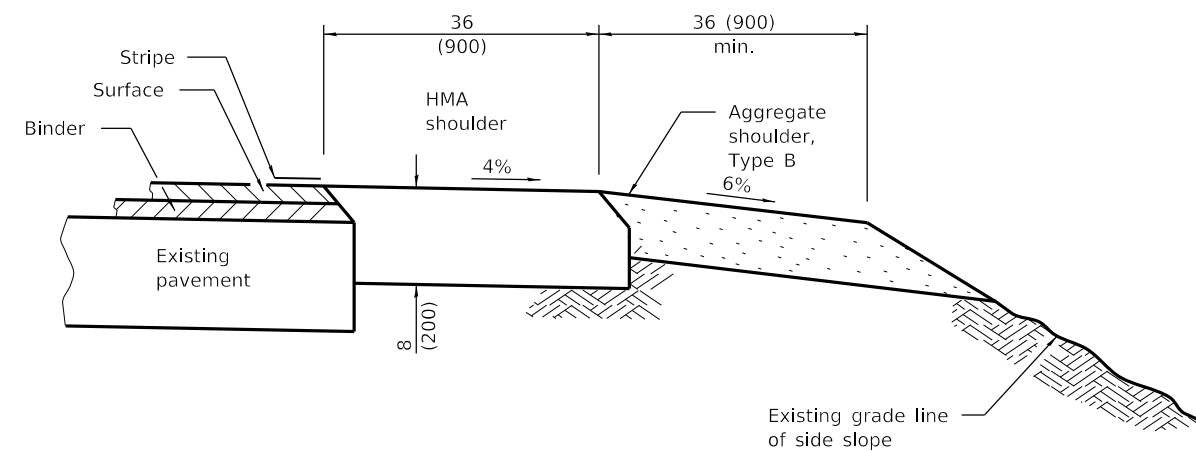
**HMA SHOULDER AND AGGREGATE WEDGE WITH RESURFACING**

(Cross-section G)



**HMA AND AGGREGATE SHOULDERS WITH WIDENING**

(Cross-section F)



**HMA AND AGGREGATE SHOULDERS WITH RESURFACING**

(Cross-section H)

Illinois Department of Transportation

PASSED January 1, 2008  
*[Signature]*  
 ENGINEER OF POLICY AND PROCEDURES

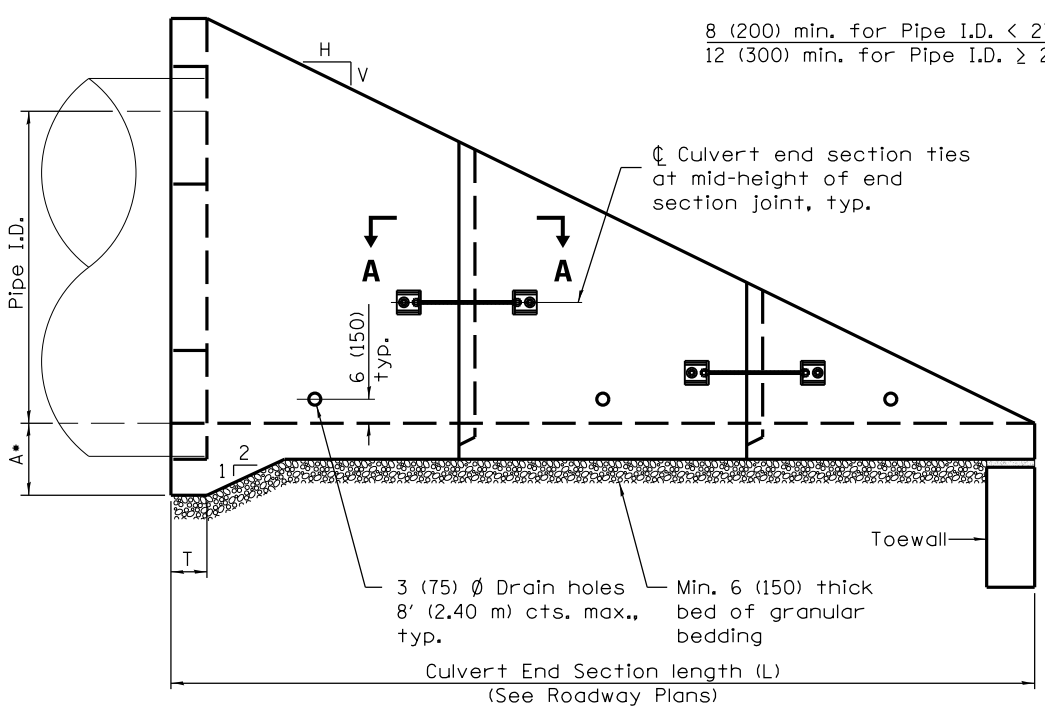
APPROVED January 1, 2008  
*[Signature]*  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

**HMA SHLD. STRIPS/SHLDS. WITH RESURFACING OR WIDENING AND RESURFACING PROJECTS**

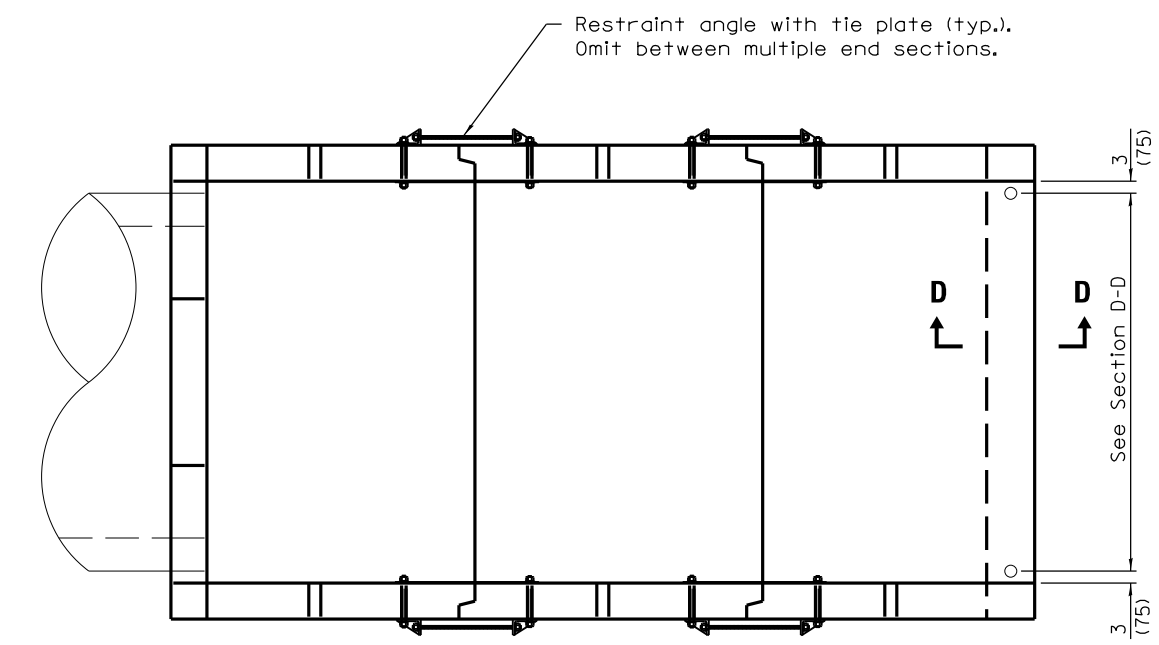
(Sheet 2 of 2)

**STANDARD 482011-03**

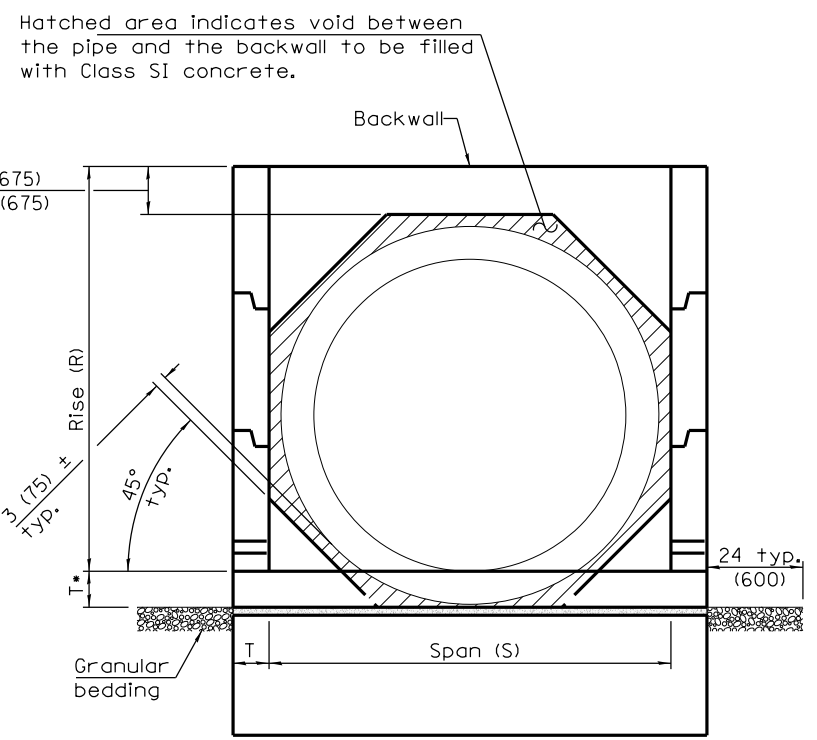


**ELEVATION**

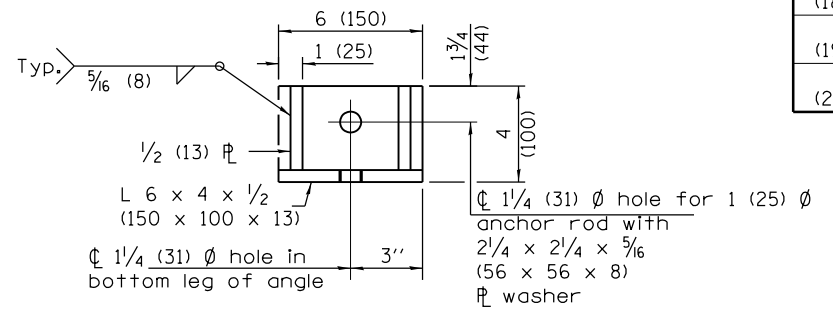
• This dimension shall be increased by 1/2 (38) for CIP field construction. See General Notes.



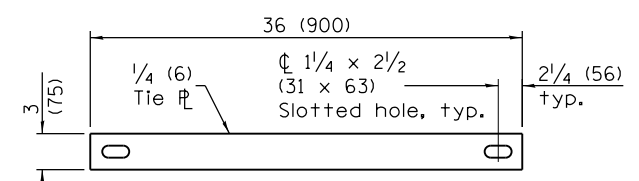
**PLAN**



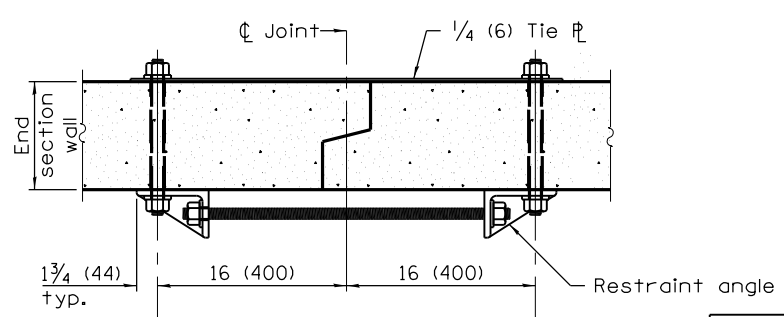
**END VIEW**



**RESTRAINT ANGLE DETAIL**



**TIE PLATE DETAIL**



$\phi$  1 (25)  $\phi$  Anchor rods with 2 1/4 x 2 1/4 x 5/16 (56 x 56 x 8)  $\phi$  washers installed in 1/8 (28)  $\phi$  formed holes in end section walls

**SECTION A-A**  
(Showing end section tie details)

**PIPE CULVERT END SECTION DIMENSIONS**

Pipe I.D.	A	R	S	T	L			
					Slope of End Section			
					1:2	1:3	1:4	1:6
15 (375)	14 (350)	29 (737)	28 (711)	8 (200)	5'-6" (1.68 m)	7'-11" (2.42 m)	10'-4" (3.16 m)	15'-2" (4.63 m)
18 (450)	15 (375)	33 (838)	32 (813)	8 (200)	6'-2" (1.88 m)	8'-11" (2.72 m)	11'-8" (3.56 m)	17'-2" (5.24 m)
21 (525)	15 (375)	36 (914)	34 (864)	8 (200)	6'-8" (2.03 m)	9'-8" (2.95 m)	12'-8" (3.86 m)	18'-8" (5.69 m)
24 (600)	15 (375)	39 (990)	38 (970)	8 (200)	7'-2" (2.19 m)	10'-5" (3.18 m)	13'-8" (4.17 m)	20'-2" (6.15 m)
27 (675)	15 (375)	3'-10" (1.17 m)	3'-6" (1.07 m)	8 (200)	8'-4" (2.54 m)	12'-2" (3.71 m)	16'-0" (4.88 m)	23'-8" (7.21 m)
30 (750)	16 (400)	4'-2" (1.27 m)	3'-10" (1.17 m)	8 (200)	9'-0" (2.75 m)	13'-2" (4.02 m)	17'-4" (5.29 m)	25'-8" (7.83 m)
33 (825)	16 (400)	4'-5" (1.35 m)	4'-0" (1.22 m)	8 (200)	9'-6" (2.90 m)	13'-11" (4.25 m)	18'-4" (5.60 m)	27'-2" (8.29 m)
36 (900)	16 (400)	4'-8" (1.42 m)	4'-4" (1.32 m)	8 (200)	10'-0" (3.05 m)	14'-8" (4.47 m)	19'-4" (5.90 m)	28'-8" (8.74 m)
42 (1050)	17 (425)	5'-3" (1.60 m)	5'-0" (1.52 m)	8 (200)	11'-2" (3.41 m)	16'-5" (5.01 m)	21'-8" (6.61 m)	32'-2" (9.81 m)
48 (1200)	17 (425)	5'-9" (1.75 m)	5'-6" (1.68 m)	8 (200)	12'-2" (3.71 m)	17'-11" (5.46 m)	23'-8" (7.22 m)	35'-2" (10.73 m)
54 (1350)	18 (450)	6'-4" (1.93 m)	6'-2" (1.88 m)	8 (200)	13'-4" (4.07 m)	19'-8" (6.00 m)	26'-0" (7.93 m)	38'-8" (11.79 m)
60 (1500)	18 (450)	6'-10" (2.08 m)	6'-8" (2.03 m)	8 (200)	14'-4" (4.37 m)	21'-2" (6.46 m)	28'-0" (8.54 m)	41'-8" (12.71 m)
66 (1650)	19 (475)	7'-5" (2.26 m)	7'-4" (2.24 m)	8 (200)	15'-6" (4.73 m)	22'-11" (6.99 m)	30'-4" (9.26 m)	45'-2" (13.78 m)
72 (1800)	19 (475)	7'-11" (2.41 m)	7'-10" (2.39 m)	8 (200)	16'-6" (5.03 m)	24'-5" (7.45 m)	32'-4" (9.87 m)	48'-2" (14.70 m)
78 (1950)	21 (525)	8'-6" (2.59 m)	8'-6" (2.59 m)	9 (230)	17'-9" (5.41 m)	26'-3" (8.01 m)	34'-9" (10.60 m)	51'-9" (15.78 m)
84 (2100)	21 (525)	9'-0" (2.74 m)	9'-0" (2.74 m)	9 (230)	18'-9" (5.72 m)	27'-9" (8.46 m)	36'-9" (11.21 m)	54'-9" (16.70 m)

**GENERAL NOTES**

This Standard is for use with single pipe culverts and multi-pipe culvert installations. For multi-pipe culvert installations, place the end sections side-by-side leaving a 3 (75) space between adjacent end section walls and fill the space(s) with Class SI concrete.

The number of segments shown in elevation is for example only. The length and number of precast sections required to construct the end section shall be determined by the Contractor.

See roadway plans for slope (V:H) and pipe inside diameter.

End section may be installed up to ± 15 degrees skewed with roadway.

2 1/4 x 2 1/4 x 5/16 (56 x 56 x 8) plate washers shall be provided under each nut required for the anchor rods. Holes in the walls for the culvert tie assembly may be drilled using core bits in lieu of formed holes.

See Standard 542311 for end sections having traversable pipe grate.

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
4-15-16	Added general note for multiple end sections.
4-1-16	Added note to omit restraint angle and tie plate for mult. end sections.

**CONCRETE END SECTIONS FOR PIPE CULVERTS  
15" (375 mm) THRU 84" (2100 mm) DIA.**

(Sheet 1 of 3)

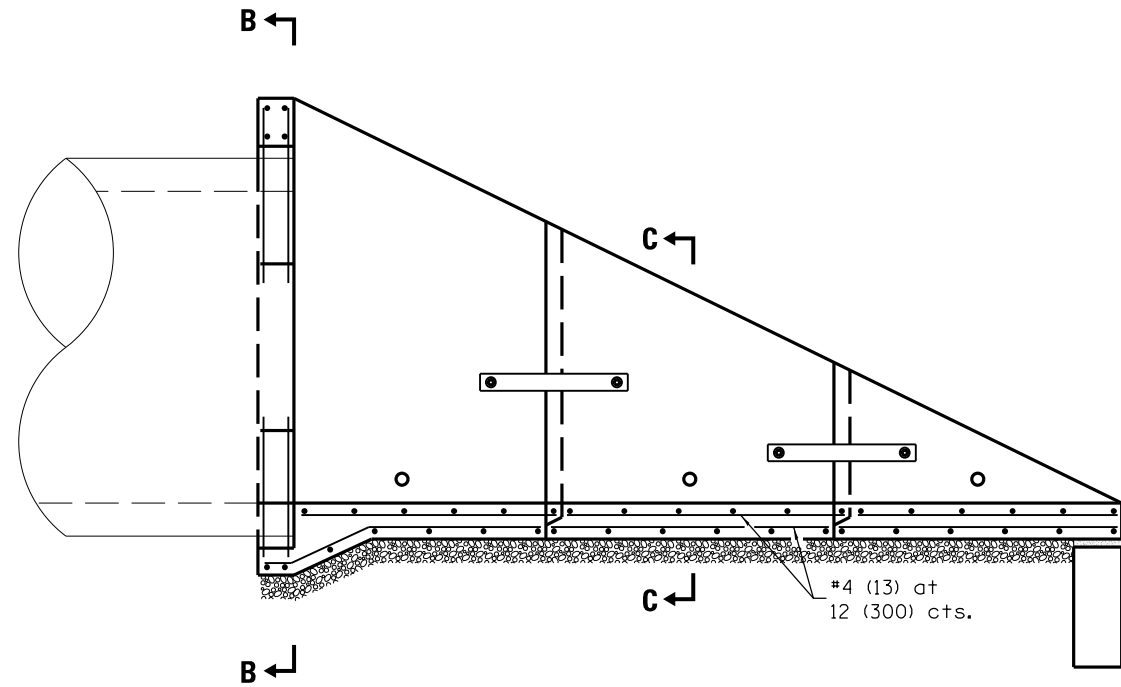
**STANDARD 542001-06**

Illinois Department of Transportation

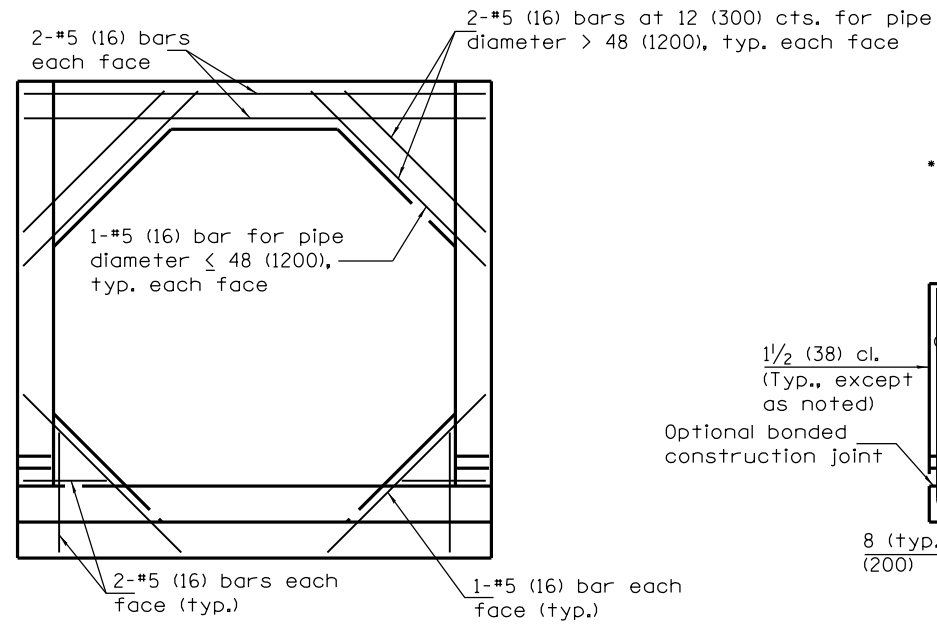
APPROVED April 15, 2016  
ENGINEER OF BRIDGES AND STRUCTURES

APPROVED April 15, 2016  
ENGINEER OF DESIGN AND ENVIRONMENT

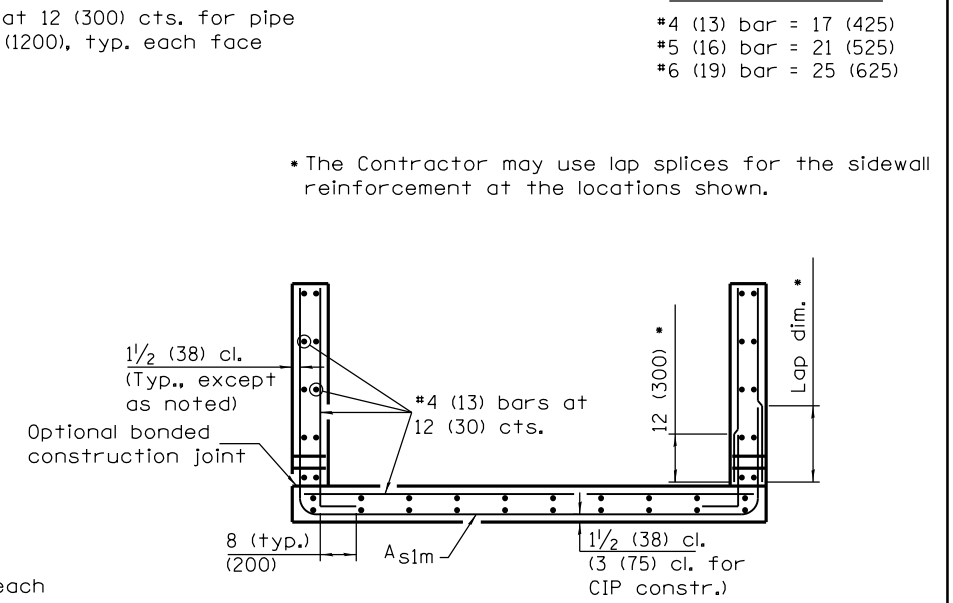
ISSUED 1-1-97



**LONGITUDINAL SECTION**  
(Showing bottom slab and backwall reinforcement.)



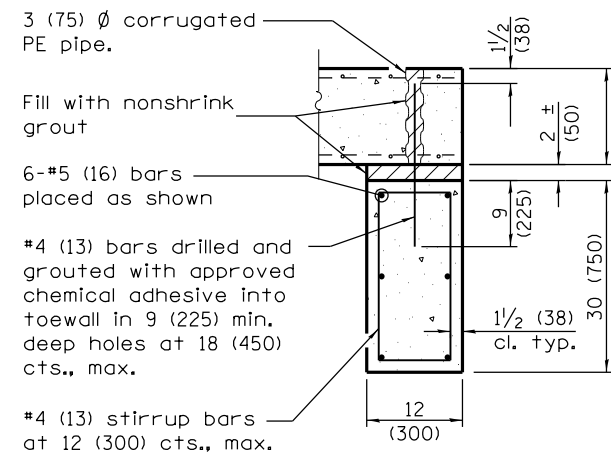
**SECTION B-B**  
(Showing backwall reinforcement only.)  
(Pipe omitted for clarity.)



**SECTION C-C**

**REINFORCEMENT SCHEDULE**

Pipe I.D.	A <sub>slm</sub>	
	Bar Size	Bar Spacing
15 (375)	4 (13)	12 (300)
18 (450)	4 (13)	12 (300)
21 (525)	4 (13)	12 (300)
24 (600)	4 (13)	12 (300)
27 (675)	4 (13)	12 (300)
30 (750)	4 (13)	12 (300)
33 (825)	4 (13)	12 (300)
36 (900)	4 (13)	12 (300)
42 (1050)	4 (13)	8 (200)
48 (1200)	4 (13)	8 (200)
54 (1350)	5 (16)	8 (200)
60 (1500)	5 (16)	8 (200)
66 (1650)	5 (16)	8 (200)
72 (1800)	6 (19)	8 (200)
78 (1950)	6 (19)	8 (200)
84 (2100)	6 (19)	8 (200)



**SECTION D-D**

**LAP DIMENSION**

- #4 (13) bar = 17 (425)
- #5 (16) bar = 21 (525)
- #6 (19) bar = 25 (625)

\*The Contractor may use lap splices for the sidewall reinforcement at the locations shown.

Illinois Department of Transportation

APPROVED April 15, 2016  
*[Signature]*  
 ENGINEER OF BRIDGES AND STRUCTURES

APPROVED April 15, 2016  
*[Signature]*  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

**CONCRETE END SECTIONS FOR PIPE CULVERTS  
15" (375 mm) THRU 84" (2100 mm) DIA.**

(Sheet 2 of 3)

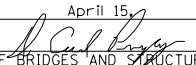
**STANDARD 542001-06**

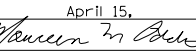
**QUANTITIES**

Pipe I.D.	Concrete yd <sup>3</sup> (m <sup>3</sup> ) ①				Reinforcement Without Lap lbs. (kg)				Reinforcement With Lap lbs (kg)			
	Slope of End Section				Slope of End Section				Slope of End Section			
	1:2	1:3	1:4	1:6	1:2	1:3	1:4	1:6	1:2	1:3	1:4	1:6
15 (375)	1.3 (1.0)	1.7 (1.3)	2.1 (1.6)	2.8 (2.1)	190 (85.2)	230 (104.1)	280 (123.3)	360 (159.2)	210 (94.9)	260 (117.6)	310 (140.3)	410 (182.9)
18 (450)	1.6 (1.2)	2.1 (1.6)	2.6 (2.0)	3.5 (2.7)	230 (104.3)	290 (131.1)	350 (158.0)	460 (207.3)	260 (114.8)	330 (146.0)	400 (177.3)	520 (234.0)
21 (525)	1.8 (1.4)	2.3 (1.8)	2.9 (2.2)	3.9 (3.0)	260 (114.5)	320 (143.3)	380 (172.2)	510 (229.9)	280 (126.5)	360 (159.7)	430 (193.0)	580 (259.5)
24 (600)	2.1 (1.6)	2.7 (2.1)	3.3 (2.5)	4.5 (3.4)	270 (121.9)	350 (155.8)	420 (189.3)	560 (251.5)	300 (133.9)	390 (172.8)	470 (211.6)	630 (282.6)
27 (675)	2.6 (2.0)	3.4 (2.6)	4.2 (3.2)	5.8 (4.4)	350 (155.5)	440 (198.5)	540 (244.4)	740 (336.3)	380 (169.6)	480 (217.8)	600 (269.6)	830 (373.2)
30 (750)	2.9 (2.2)	3.9 (3.0)	4.9 (3.7)	6.8 (5.2)	380 (169.6)	490 (219.2)	600 (271.9)	830 (374.0)	410 (184.5)	530 (240.0)	660 (299.2)	920 (413.9)
33 (825)	3.2 (2.4)	4.3 (3.3)	5.3 (4.1)	7.4 (5.7)	400 (179.7)	520 (234.9)	640 (290.3)	880 (397.6)	430 (195.2)	570 (257.2)	710 (319.0)	970 (438.9)
36 (900)	3.5 (2.7)	4.7 (3.6)	5.9 (4.5)	8.3 (6.3)	440 (197.8)	580 (262.4)	720 (323.8)	990 (449.4)	480 (214.2)	630 (286.1)	780 (354.0)	1090 (493.7)
42 (1050)	4.3 (3.3)	5.8 (4.4)	7.3 (5.6)	10.3 (7.9)	570 (256.4)	770 (346.4)	950 (429.0)	1330 (601.3)	620 (279.4)	840 (380.0)	1040 (471.6)	1470 (663.7)
48 (1200)	5.0 (3.8)	6.8 (5.2)	8.6 (6.6)	12.2 (9.3)	670 (301.1)	910 (409.9)	1140 (514.8)	1610 (728.2)	720 (325.6)	990 (445.8)	1240 (561.2)	1760 (796.8)
54 (1350)	6.0 (4.6)	8.2 (6.3)	10.3 (7.9)	14.7 (11.2)	890 (403.6)	1200 (544.5)	1530 (692.0)	2170 (985.0)	990 (448.6)	1340 (608.1)	1710 (775.8)	2440 (1108.2)
60 (1500)	6.8 (5.2)	9.3 (7.1)	11.8 (9.0)	16.8 (12.8)	1020 (461.5)	1400 (635.3)	1780 (806.8)	2530 (1149.8)	1120 (508.8)	1550 (704.5)	1980 (896.8)	2820 (1281.5)
66 (1650)	7.9 (6.0)	10.9 (8.3)	13.8 (10.6)	19.7 (15.1)	1150 (519.0)	1570 (712.4)	2010 (911.1)	2880 (1305.8)	1260 (570.2)	1730 (786.1)	2220 (1007.9)	3190 (1449.3)
72 (1800)	8.8 (6.7)	12.2 (9.3)	15.5 (11.9)	22.2 (17.0)	1520 (689.9)	2120 (962.1)	2690 (1222.5)	3880 (1761.3)	1710 (777.0)	2400 (1088.2)	3050 (1384.8)	4410 (2001.0)
78 (1950)	11.4 (8.7)	15.8 (12.1)	20.1 (15.4)	28.9 (22.1)	1750 (791.1)	2400 (1090.7)	3100 (1409.0)	4490 (2039.7)	1950 (885.5)	2700 (1223.1)	3490 (1583.9)	5060 (2298.9)
84 (2100)	12.6 (9.6)	17.4 (13.3)	22.3 (17.0)	32.1 (24.5)	1900 (862.7)	2680 (1217.4)	3430 (1558.6)	4960 (2254.4)	2120 (959.6)	3000 (1359.6)	3840 (1743.2)	5560 (2526.8)

① For cast-in-place construction, increase concrete volumes by approximately 12%.

Illinois Department of Transportation

APPROVED April 15, 2016  
  
 ENGINEER OF BRIDGES AND STRUCTURES

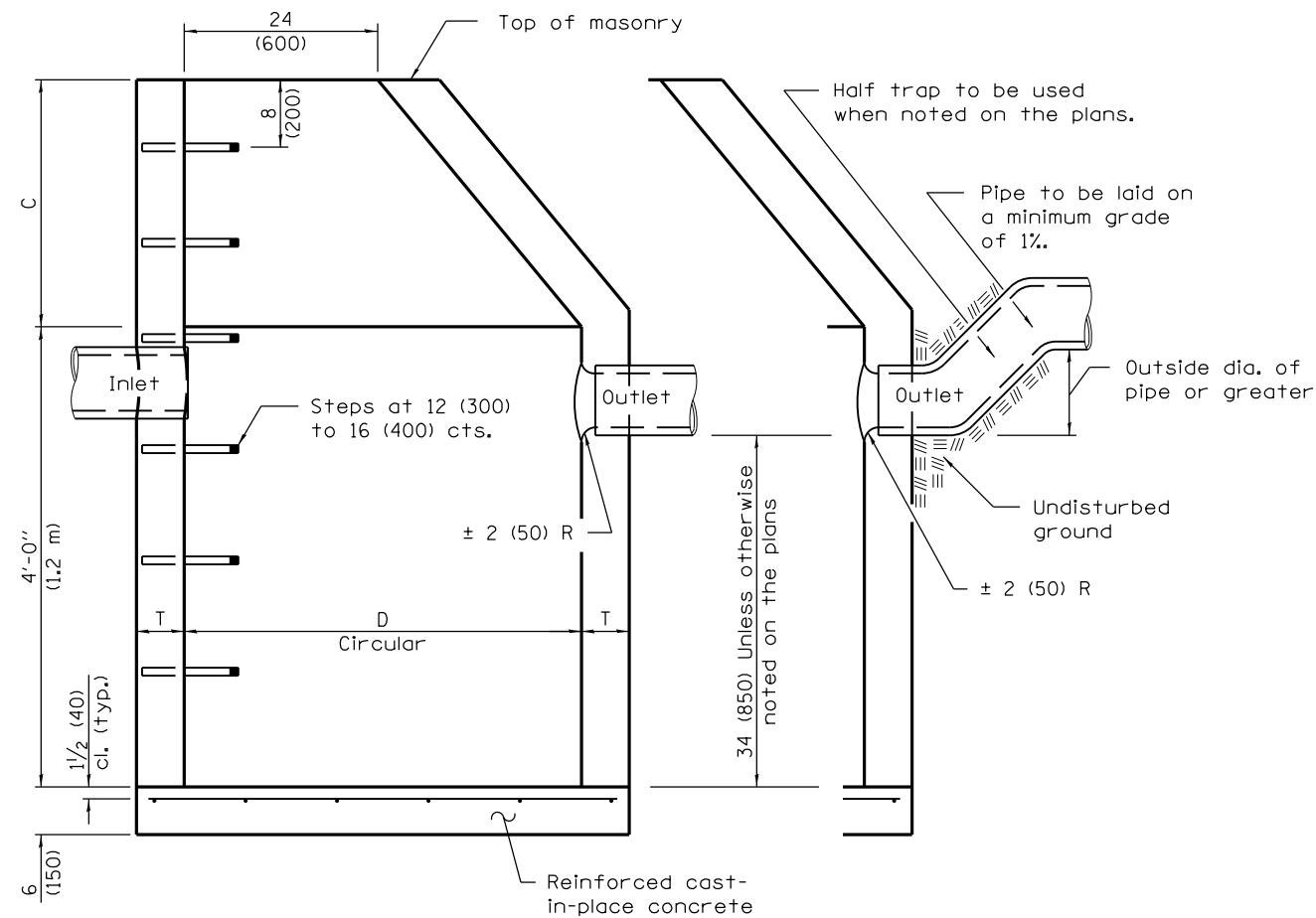
APPROVED April 15, 2016  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

**CONCRETE END SECTIONS FOR PIPE CULVERTS  
 15" (375 mm) THRU 84" (2100 mm) DIA.**

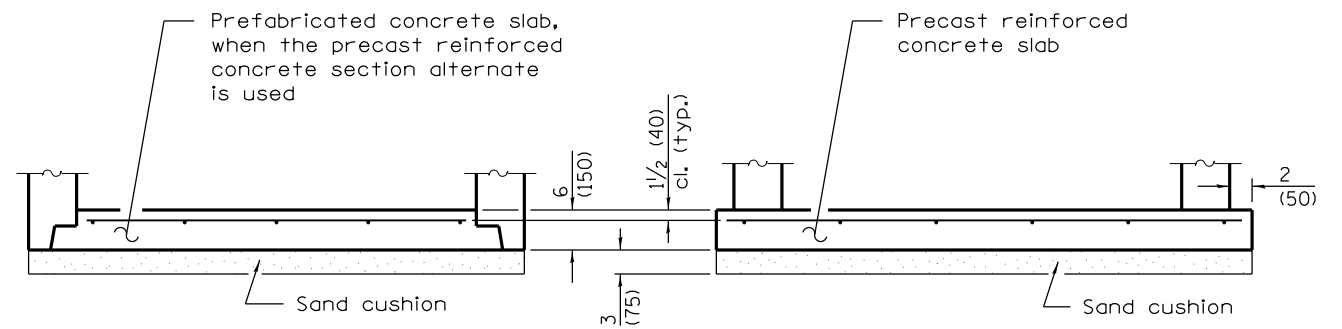
(Sheet 3 of 3)

**STANDARD 542001-06**



**ELEVATION**  
(Standard Outlet)

**ELEVATION**  
(Half Trap)



**ALTERNATE BOTTOM SLAB**

ALTERNATE MATERIALS FOR WALLS	D	C*	T (min.)
Concrete Masonry Unit	4'-0" (1.2 m)	30 (750)	5 (125)
	5'-0" (1.5 m)	3'-9" (1.15 m)	5 (125)
Brick Masonry	4'-0" (1.2 m)	30 (750)	8 (200)
	5'-0" (1.5 m)	3'-9" (1.15 m)	8 (200)
Precast Reinforced Concrete Section	4'-0" (1.2 m)	30 (750)	4 (100)
	5'-0" (1.5 m)	3'-9" (1.15 m)	5 (125)
Cast-in-place Concrete	4'-0" (1.2 m)	30 (750)	6 (150)
	5'-0" (1.5 m)	3'-9" (1.15 m)	6 (150)

- For precast reinforced concrete sections, dimension "C" may vary from the dimension given to plus 6 (150).

**GENERAL NOTES**

Bottom slabs shall be reinforced with a minimum of 0.20 sq. in./ft (420 sq. mm/m) in both directions with a maximum spacing of 12 (300).

Bottom slabs may be connected to the riser as determined by the fabricator; however, only a single row of reinforcement around the perimeter may be utilized.

See Standard 602601 for optional precast reinforced concrete flat slab top.

See Standard 602701 for details of steps.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED January 1, 2011  
*Michael Beard*  
 ENGINEER OF POLICY AND PROCEDURES

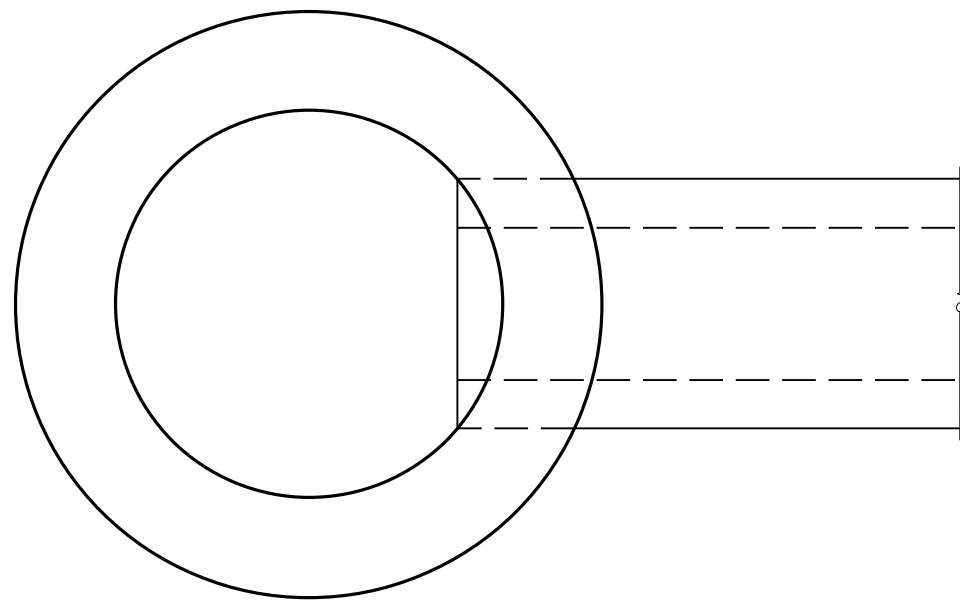
APPROVED January 1, 2011  
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 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

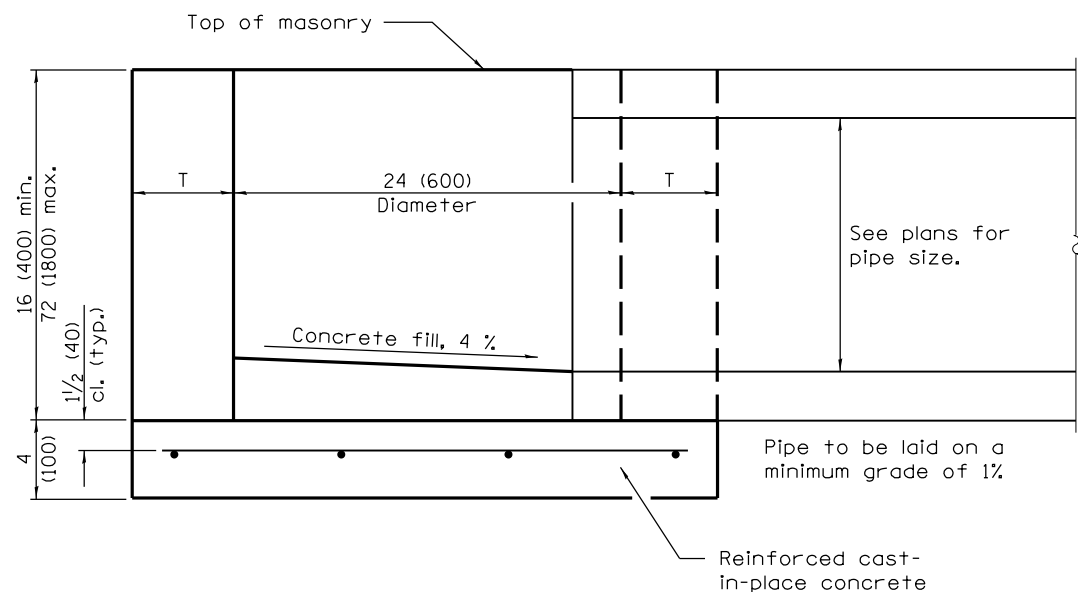
DATE	REVISIONS
1-1-11	Added 'Outside' to half trap note. Detail rein. in slabs.
	Revised general notes.
1-1-09	Switched units to English (metric).

**CATCH BASIN  
TYPE A**

**STANDARD 602001-02**

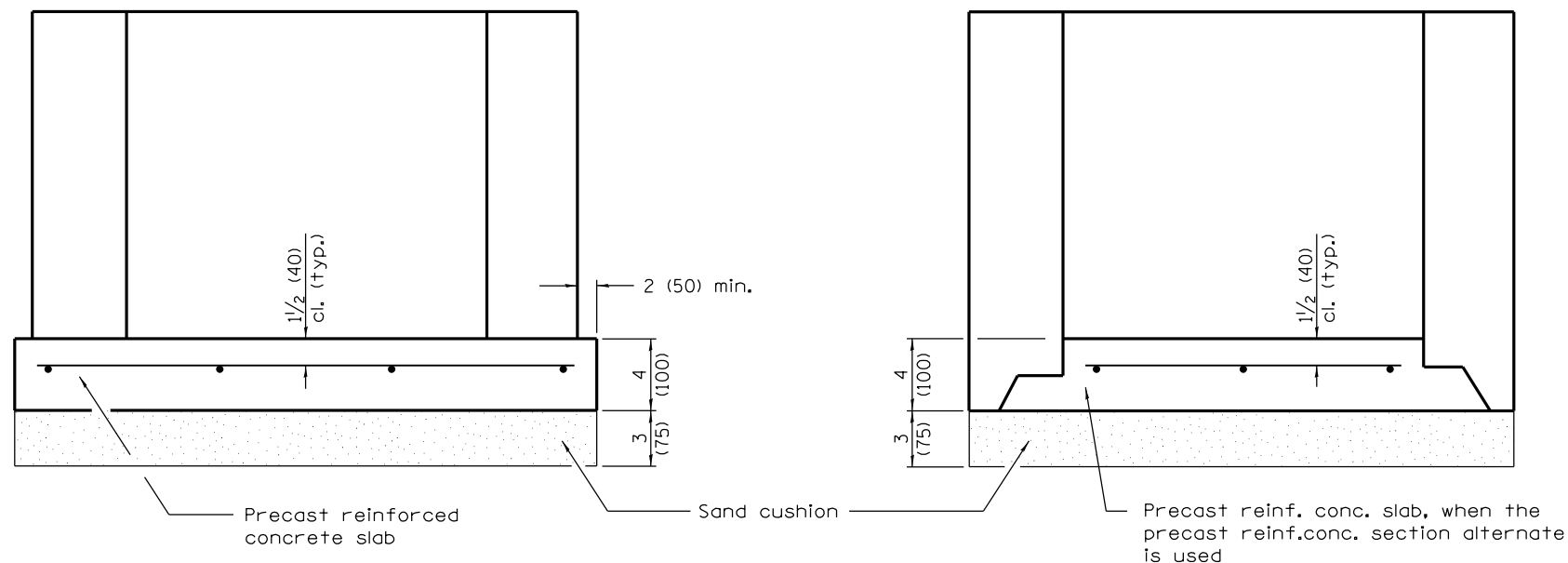


**PLAN**



**ELEVATION**

ALTERNATE MATERIALS FOR WALLS	T
BRICK MASONRY	8 (200)
CAST-IN-PLACE CONCRETE	6 (150)
CONCRETE MASONRY UNIT	5 (125)
PRECAST REINFORCED CONCRETE SECTION	3 (75)



**ALTERNATE METHODS**

**GENERAL NOTES**

Bottom slabs shall be reinforced with a minimum of 0.24 sq. in./ft. (510 sq. mm/m) in both directions with a maximum spacing of 10 (250).

Bottom slabs may be connected to the riser as determined by the fabricator; however, only a single row of reinforcement around the perimeter may be utilized.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-14	Increased height to 72 (1800) maximum.
1-1-11	Detailed rein. in slabs.
	Added max. limit to height.
	Added general notes.

**INLET – TYPE A**

**STANDARD 602301-04**

Illinois Department of Transportation

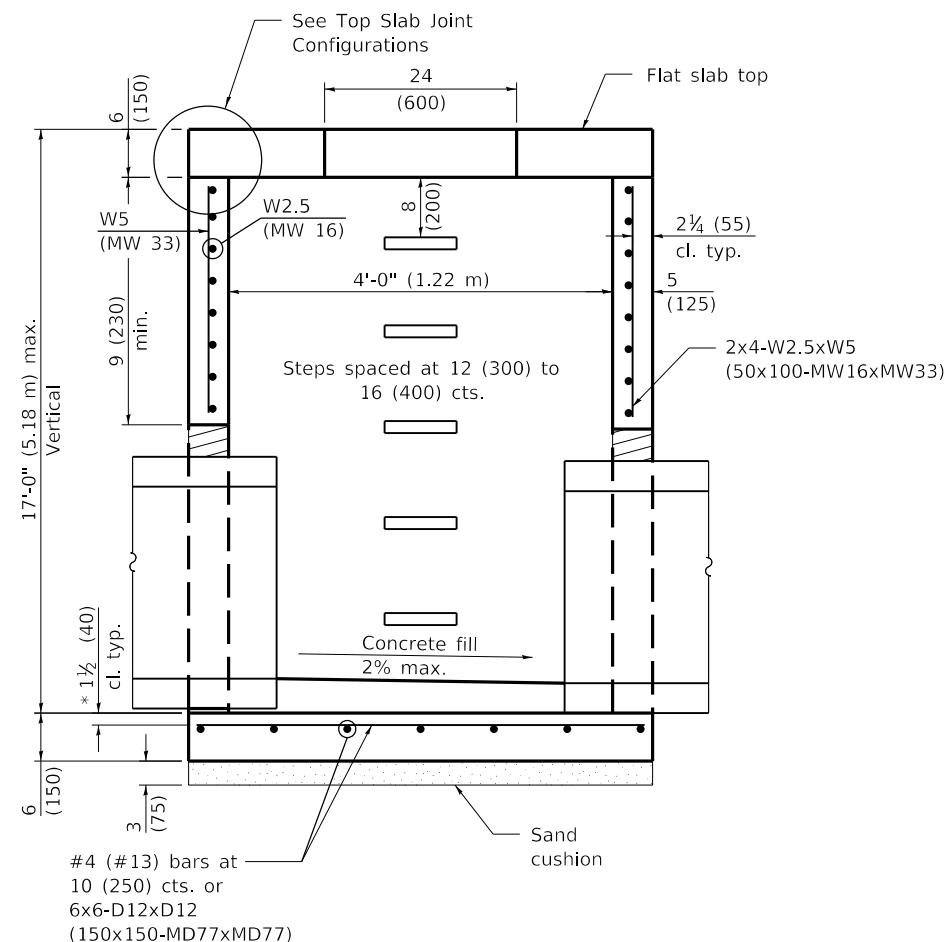
PASSED January 1, 2014

Michael Beard  
ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2014

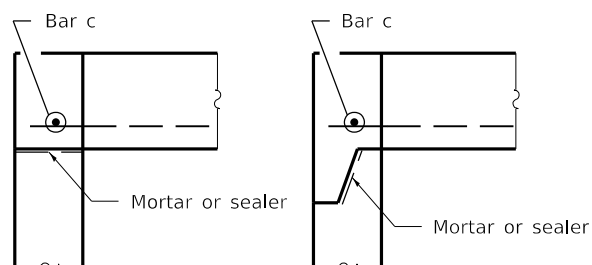
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

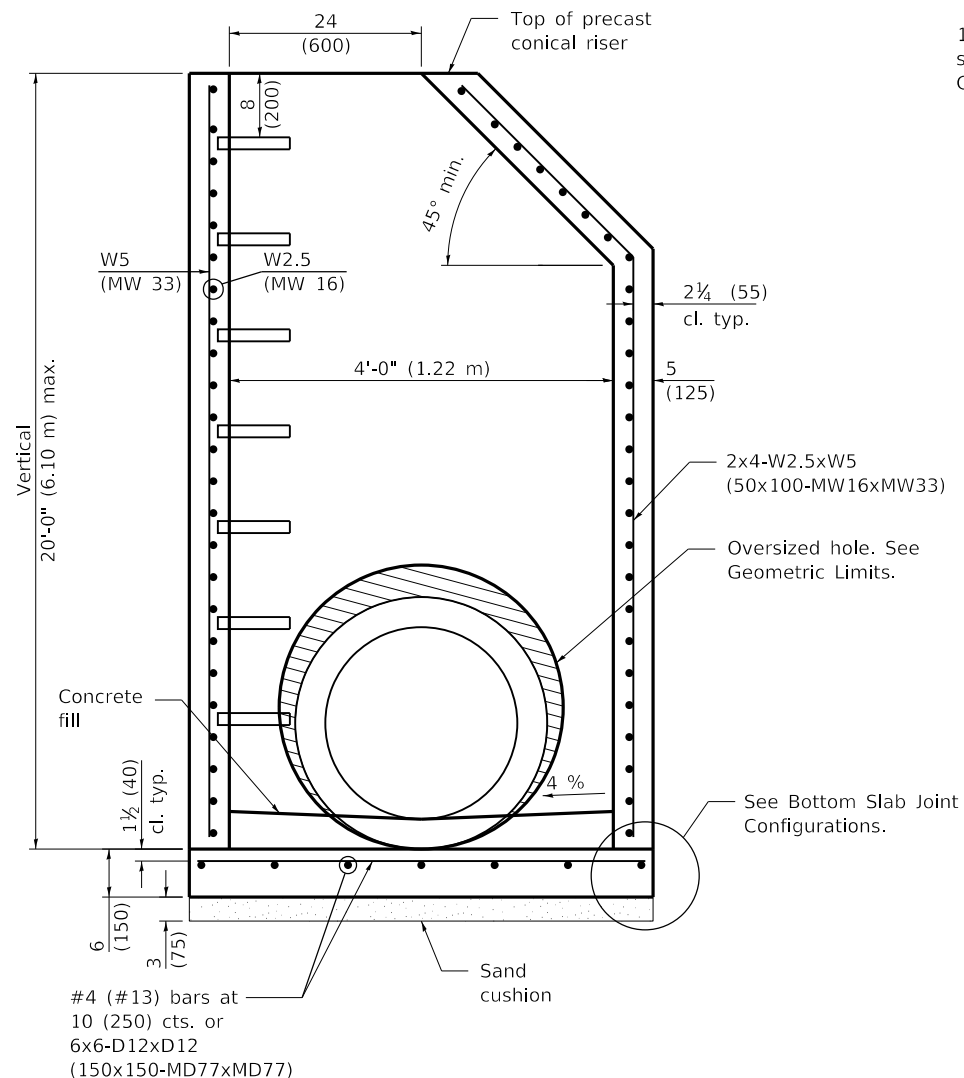


**SECTION THRU MANHOLE**  
(With flat slab top only)

\* Typical for top and bottom slabs.



**TOP SLAB JOINT CONFIGURATIONS**  
(Shown at access hole)

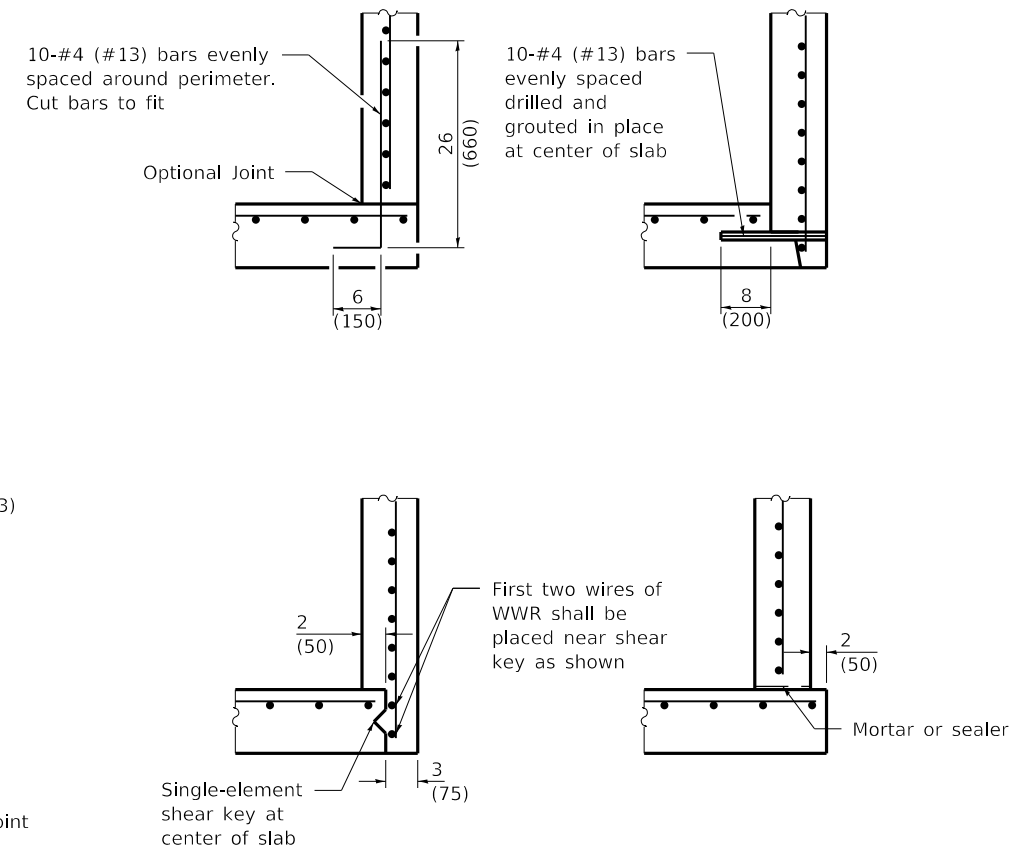


**SECTION THRU MANHOLE**  
(With riser)

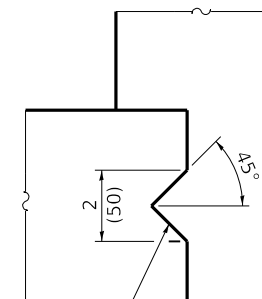
**GEOMETRIC LIMITS**

Oversized holes, as necessary for constructability, shall satisfy the following requirements:

1. A minimum of 9 (230) of monolithic reinforced concrete shall be maintained above the fabricated pipe hole.
2. A minimum 9 (230) inside arc length of reinforced concrete, extending vertically from bottom slab to top slab, shall be maintained between the fabricated pipe holes.
3. A maximum of 60 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.
4. Horizontal joints through pipe holes shall be spliced when the remaining column between holes, measured along inside arc length, is less than 24 (600). See detail.
5. The recommended oversized hole is equal to the O.D. of the pipe plus 4 (100).



**BOTTOM SLAB JOINT CONFIGURATIONS**



Single-element shear key at center of slab

**SHEAR KEY GEOMETRY**  
(Reinforcement not Shown for Clarity)

See Sheet 2 for General Notes.

DATE	REVISIONS
1-1-18	Completely revised std. for LRFD. Renamed std. Moved 5' (1.5 m) manhole to new std.
1-1-11	Detailed rein. in slabs.
	Added max. limit to height.
	Revised general notes.

**PRECAST MANHOLE TYPE A**  
**4' (1.22 m) DIAMETER**

(Sheet 1 of 2)

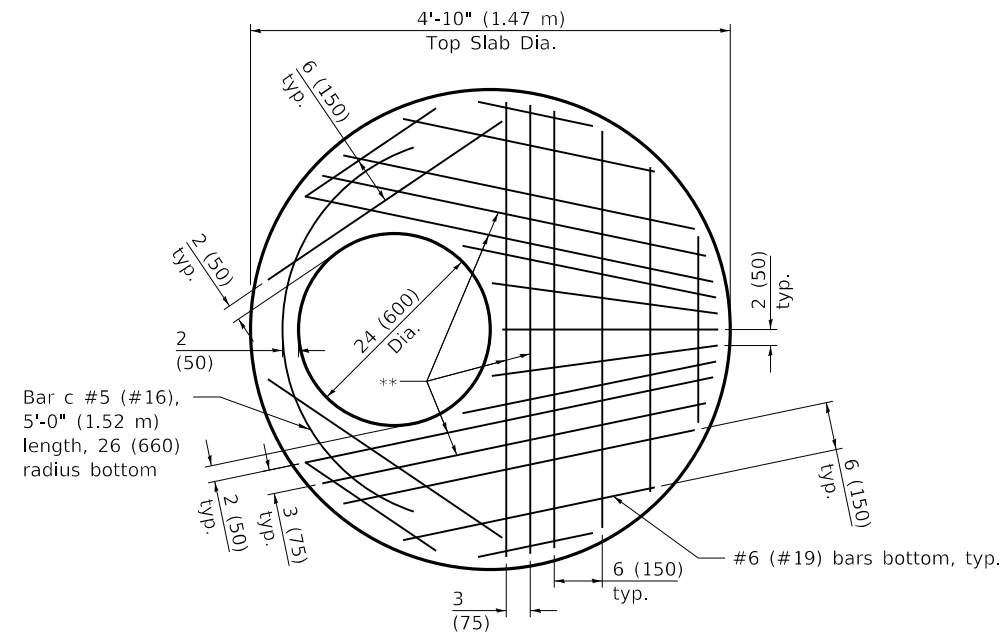
**STANDARD 602401-04**

Illinois Department of Transportation

PASSED January 1, 2018  
Michael Brand  
ENGINEER OF POLICY AND PROCEDURES

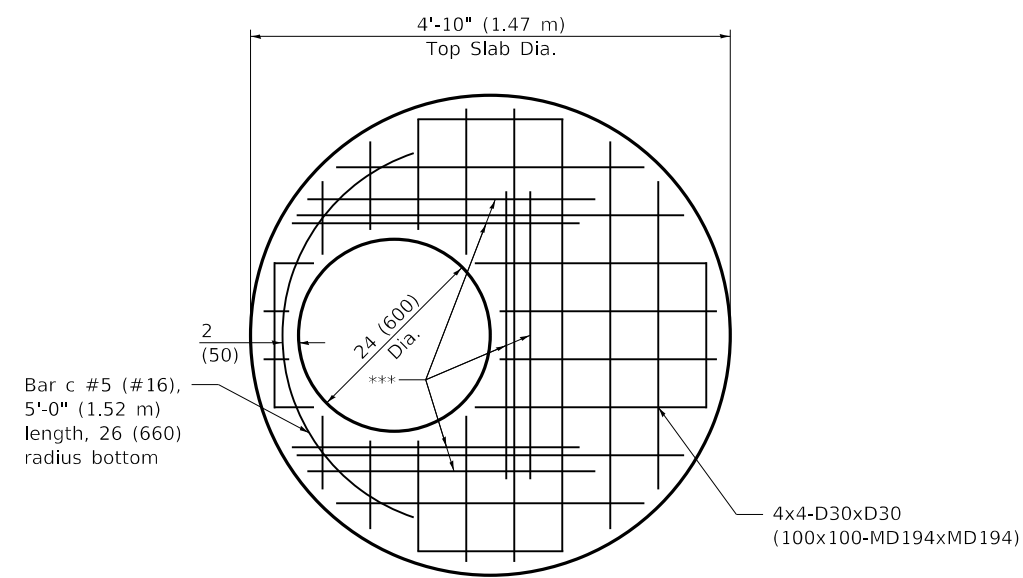
APPROVED January 1, 2018  
Maurice M. Adams  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97



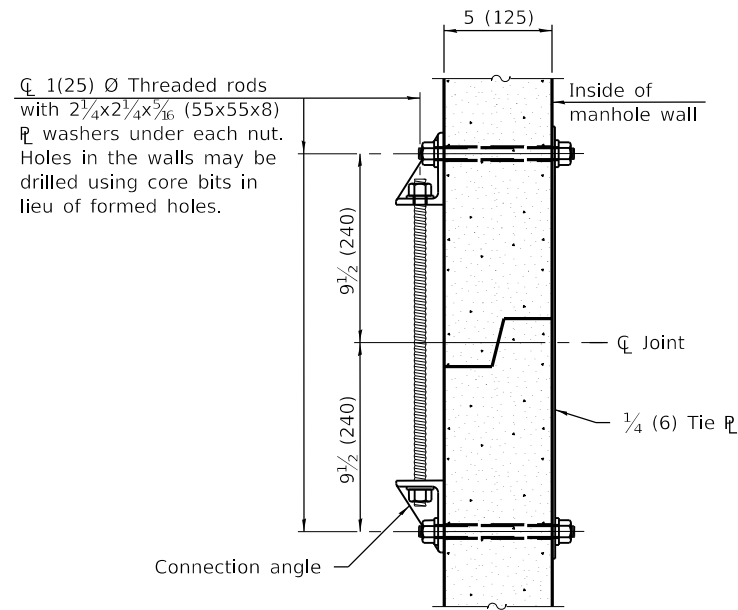
**PLAN**

(Showing Layout of Reinforcement Bars)



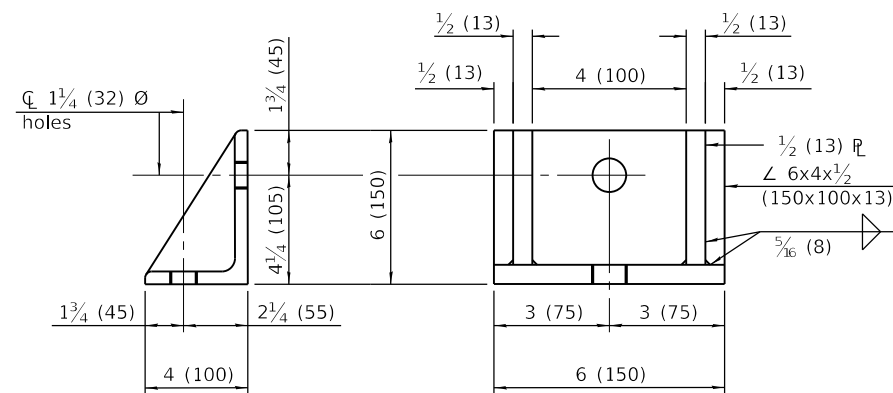
**PLAN**

(Showing Layout of Welded Wire Reinforcement)

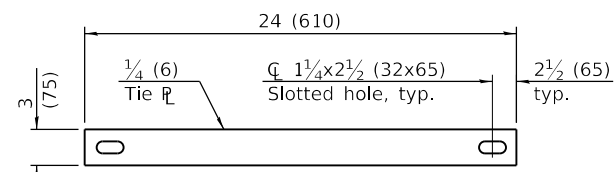


ϕ 1(25) Ø Threaded rods with 2 1/4 x 2 1/4 x 3/16 (55x55x8) ϕ washers under each nut. Holes in the walls may be drilled using core bits in lieu of formed holes.

**JOINT SPLICE**



**CONNECTION ANGLE**



**TIE PLATE**

**GENERAL NOTES**

Joint configuration and dimensions of flat slab shall match and fit the riser joint detail.

The manufacturer shall ensure that all precast manhole sections are additionally reinforced where required to resist damage from handling, shipping and installation stresses.

Lifting holes shall be located in the sections as per the manufacturer's recommendations and grouted prior to backfilling.

See Standard 602701 for details of manhole steps.

All dimensions are in inches (millimeters) unless otherwise noted.

**PRECAST MANHOLE TYPE A  
4' (1.22 m) DIAMETER**

(Sheet 2 of 2)

**STANDARD 602401-04**

Illinois Department of Transportation

PASSED January 1, 2018

Michael Beard  
ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2018

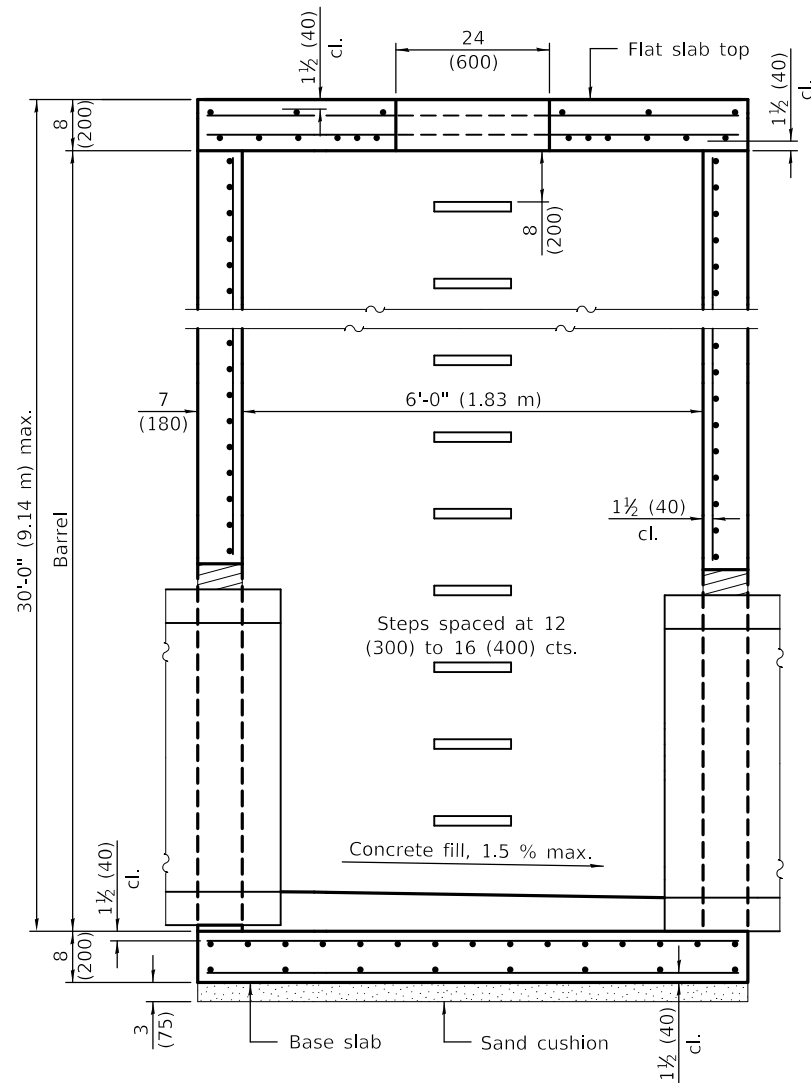
Matthew M. Adams  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

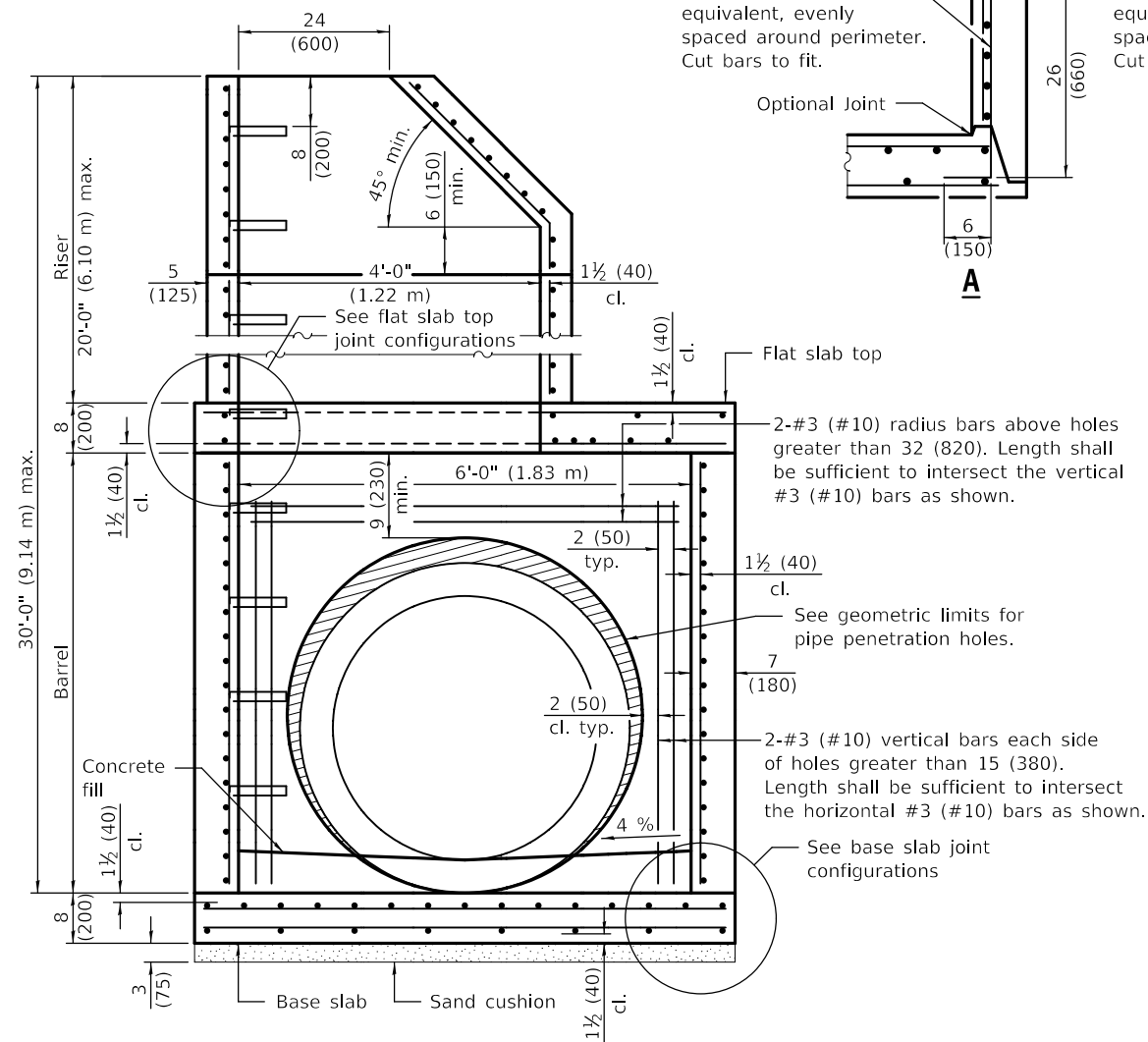
\*\* #5 (#16) bars at 3 (75) cts. bottom.

\*\*\* #5 (#16) bars at 3 (75) cts. 36 (910) long bottom. Bundle first bar with closest WWR bar to the opening.

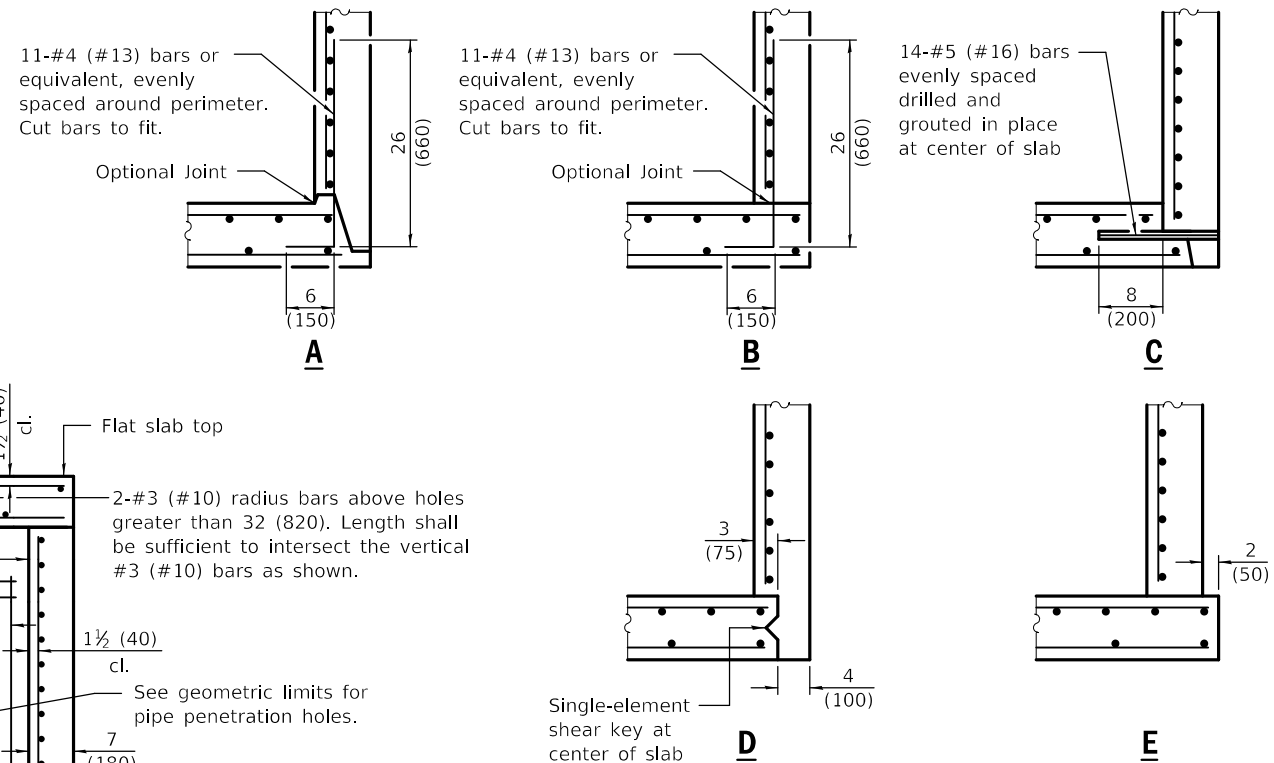




**SECTION PARALLEL TO PIPE**  
(Without conical top riser)

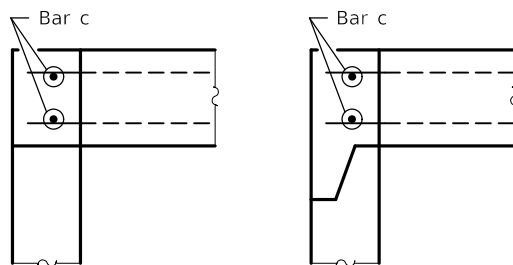


**SECTION PERPENDICULAR TO PIPE**  
(With conical top riser)



**BASE SLAB JOINT CONFIGURATIONS**

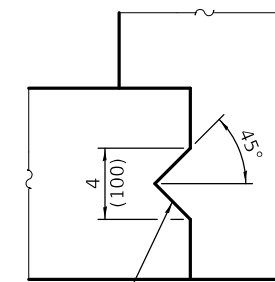
Joint configurations C and D require the unit to be lifted from the top of the base slab. Lifting from the walls shall not be permitted without providing additional wall reinforcement extending to the bottom of the wall.



**FLAT SLAB TOP JOINT CONFIGURATIONS**  
(Shown at access hole)

**GEOMETRIC LIMITS FOR PIPE PENETRATION HOLES**

1. A minimum of 9 (230) of monolithic reinforced concrete shall be maintained above pipe penetration holes > 32 (810).
2. A minimum 9 (230) inside arc length of reinforced concrete shall be maintained between pipe penetration holes > 15 (380).
3. A maximum of 60 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.
4. Horizontal joints that intersect pipe penetration holes > 15 (380) shall have one joint splice for every location around the perimeter of the joint where the inside arc length between pipe penetration holes is < 24 (600). See joint splice detail.
5. The recommended pipe penetration hole is equal to the O.D. of the pipe plus 4 (100).
6. Only pipe penetration holes ≤ 15 (380) are allowed in riser sections.



Single-element shear key at center of slab

**SHEAR KEY GEOMETRY**  
(Reinforcement not shown for clarity)

**GENERAL NOTES**

Pipe holes shall be formed to facilitate proper placement of hole reinforcement.

The manufacturer shall ensure that all precast manhole sections are additionally reinforced where required to resist damage from handling, shipping and installation stresses.

Lifting holes shall be located in the sections as per the manufacturer's recommendations, except as noted.

See Standard 602701 for details of manhole steps.

All dimensions are in inches (millimeters) unless otherwise noted.

DATE	REVISIONS
1-1-19	Expanded / refined reinforcement options. Increased manhole depths.
1-1-18	Completely revised standard for RLFD. Renamed standard.

**PRECAST MANHOLE TYPE A**  
**6' (1.83 m) DIAMETER**

(Sheet 1 of 3)

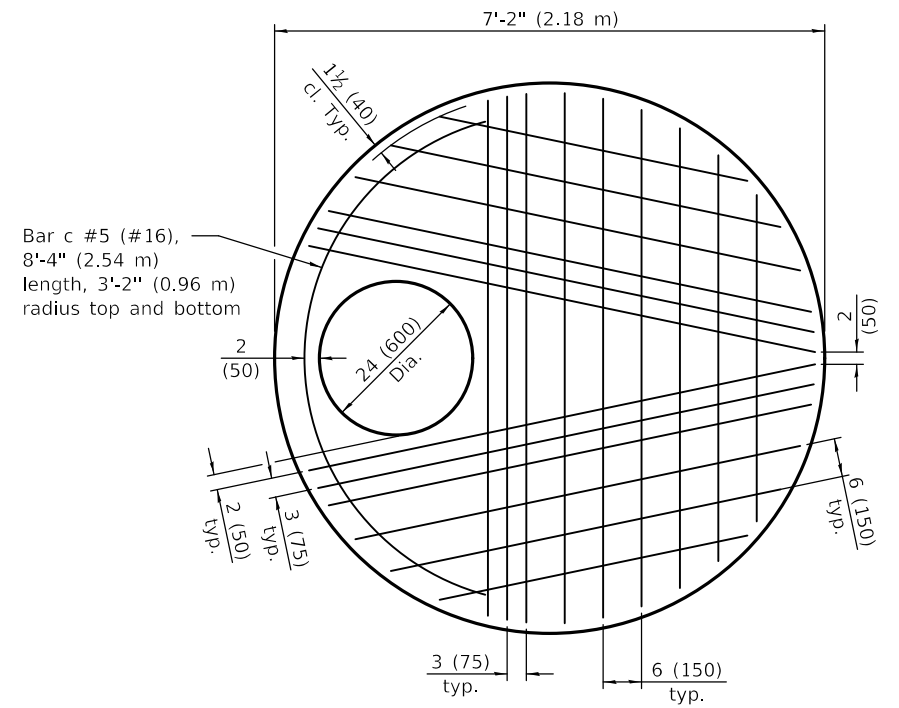
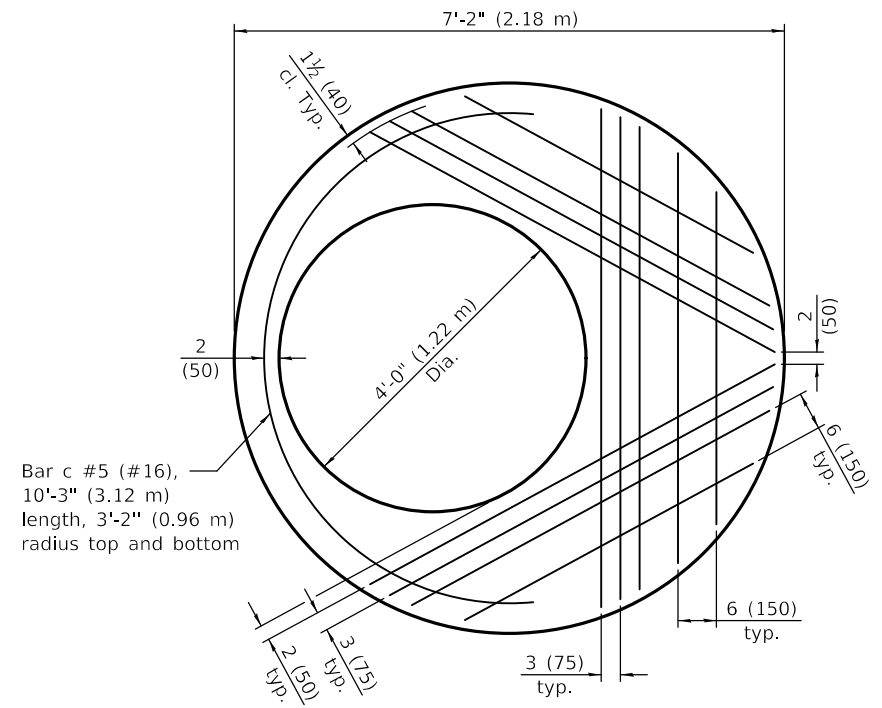
**STANDARD 602406-09**

Illinois Department of Transportation

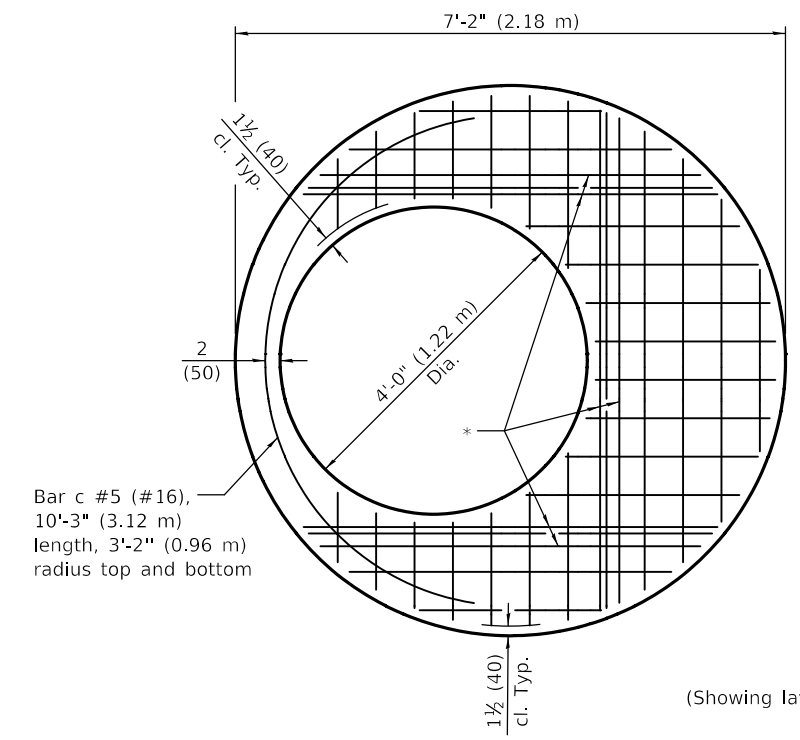
PASSED January 1, 2019  
*Michael Bond*  
ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2019  
*Joe E. ...*  
ENGINEER OF DESIGN AND ENVIRONMENT

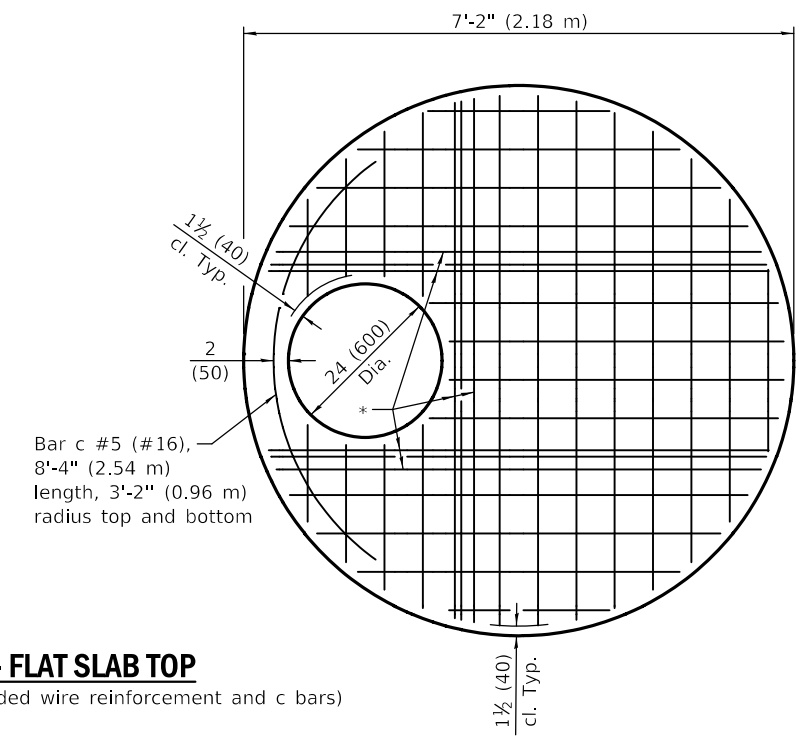
ISSUED 1-1-19



**PLAN - FLAT SLAB TOP**  
(Showing layout of bottom reinforcement bars and c bars)



**PLAN - FLAT SLAB TOP**  
(Showing layout of welded wire reinforcement and c bars)



\* #5 (#16) bars for risers ≤ 10 ft. (3.05 m) tall or #6 (#19) bars for risers > 10 ft. (3.05 m) tall bottom. Bundle first bar with closest WWR bar to the opening and place second bar ±3 (75) away.

Illinois Department of Transportation

PASSED January 1, 2019

ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2019

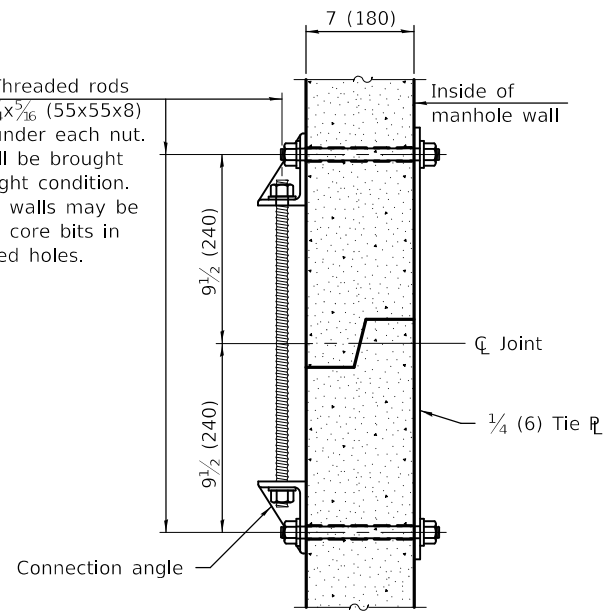
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

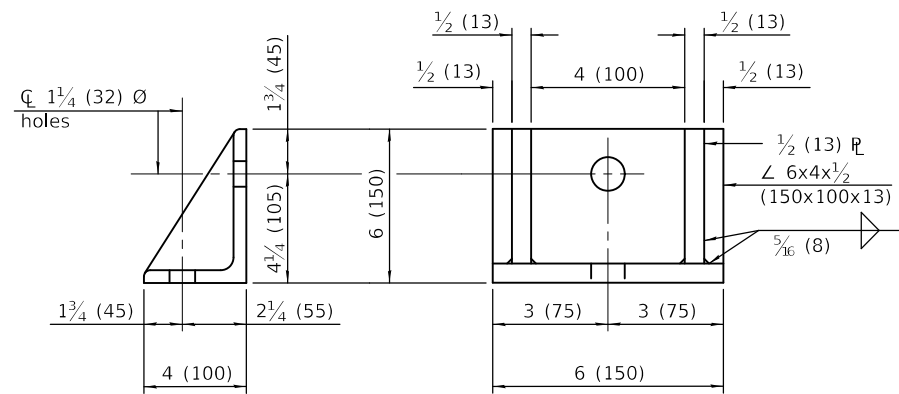
**PRECAST MANHOLE TYPE A**  
**6' (1.83 m) DIAMETER**  
(Sheet 2 of 3)

**STANDARD 602406-09**

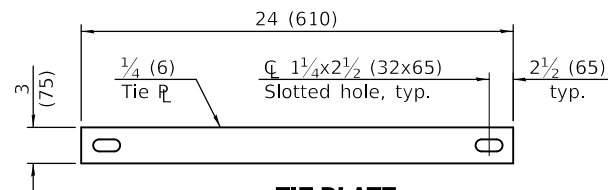
$\varnothing$  1(25)  $\varnothing$  Threaded rods with  $2\frac{1}{4} \times 2\frac{1}{4} \times \frac{3}{16}$  (55x55x8)  $\varnothing$  washers under each nut. All nuts shall be brought to a snug tight condition. Holes in the walls may be drilled using core bits in lieu of formed holes.



**JOINT SPLICE**



**CONNECTION ANGLE**



**TIE PLATE**

**FLAT SLAB TOP REINFORCEMENT**

Location	Riser Height (RH)	WWR (each direction)		Rebar (each direction except as noted)		
		$A_s$ (min.)	Spacing (max.)	$A_s$ (min.)	Spacing (max.)	Bar Size
Top Mat	All	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)	#3 or #4 (#10) (#13)
Bottom Mat	RH $\leq$ 10 ft. (3.05 m)	** 0.62 sq. in./ft. (1312 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#5 (#16)
	RH > 10 ft. (3.05 m)	** 0.88 sq. in./ft. (1863 sq. mm/m)	6 (150)			#6 (#19)

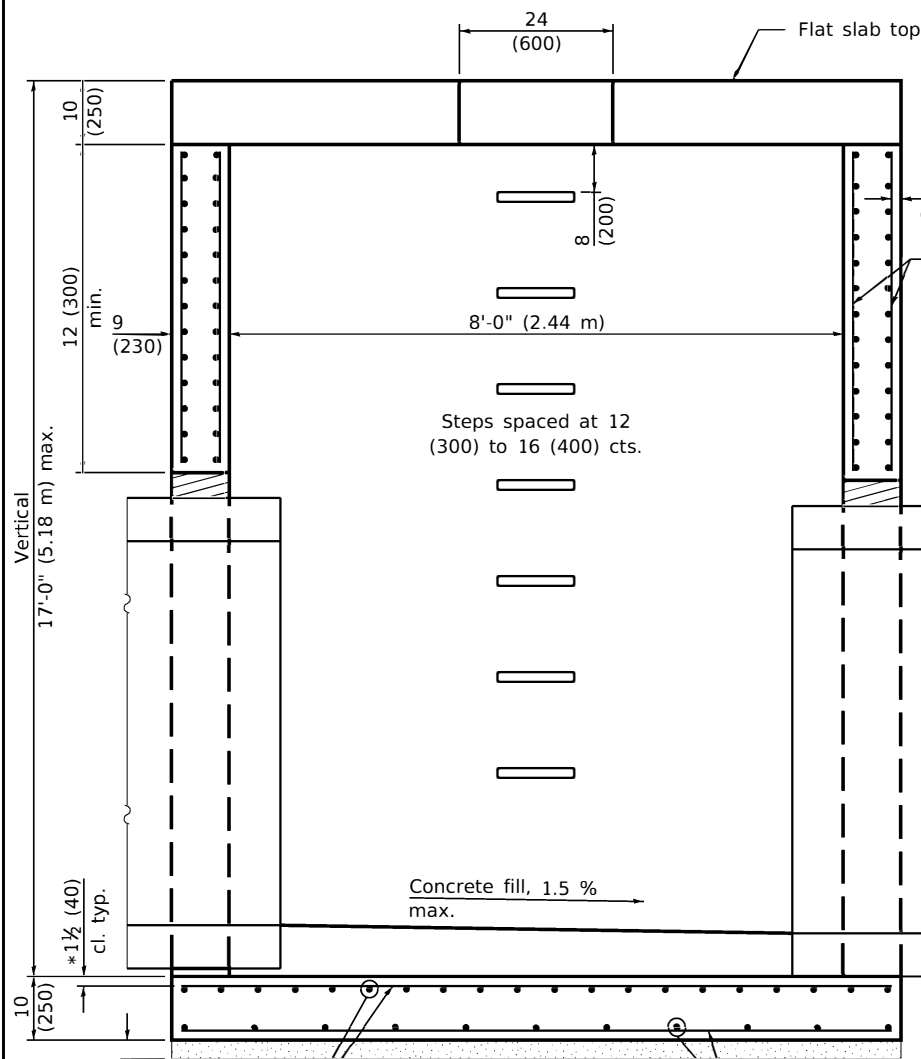
\*\* Only one layer of WWR permitted to avoid congestion.

**WALL REINFORCEMENT**

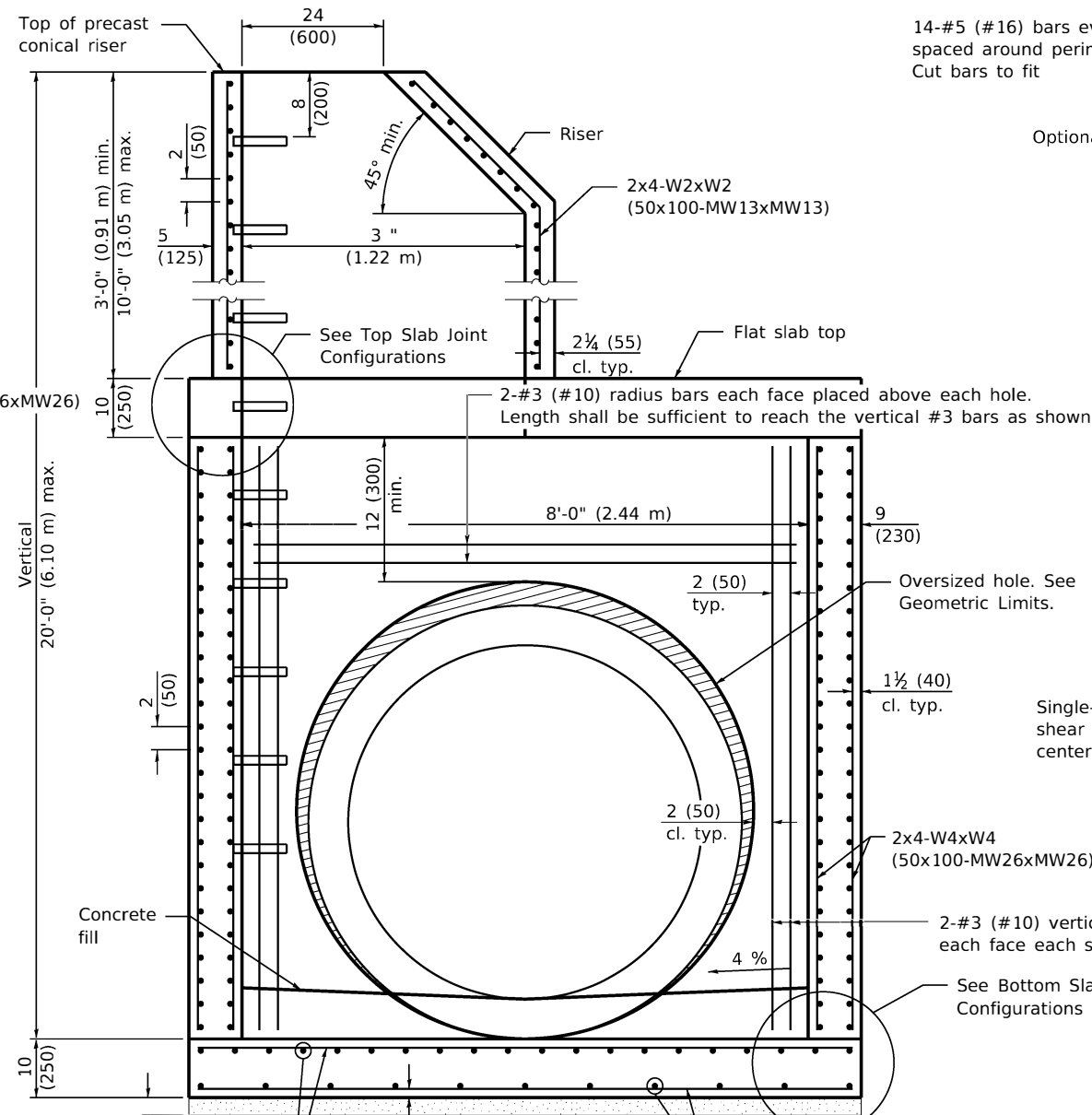
Location	Orientation	WWR or Rebar	
		$A_s$ (min.)	Spacing (max.)
4 ft. (1.22 m) $\varnothing$ Riser Inside Mat	Circumferential	0.12 sq. in./ft. (254 sq. mm/m)	6 (150)
	Vertical	0.045 sq. in./ft. (95 sq. mm/m)	8 (200)
6 ft. (1.83 m) $\varnothing$ Barrel Inside Mat	Circumferential	0.18 sq. in./ft. (381 sq. mm/m)	6 (150)
	Vertical	0.045 sq. in./ft. (95 sq. mm/m)	8 (200)

**BASE SLAB REINFORCEMENT**

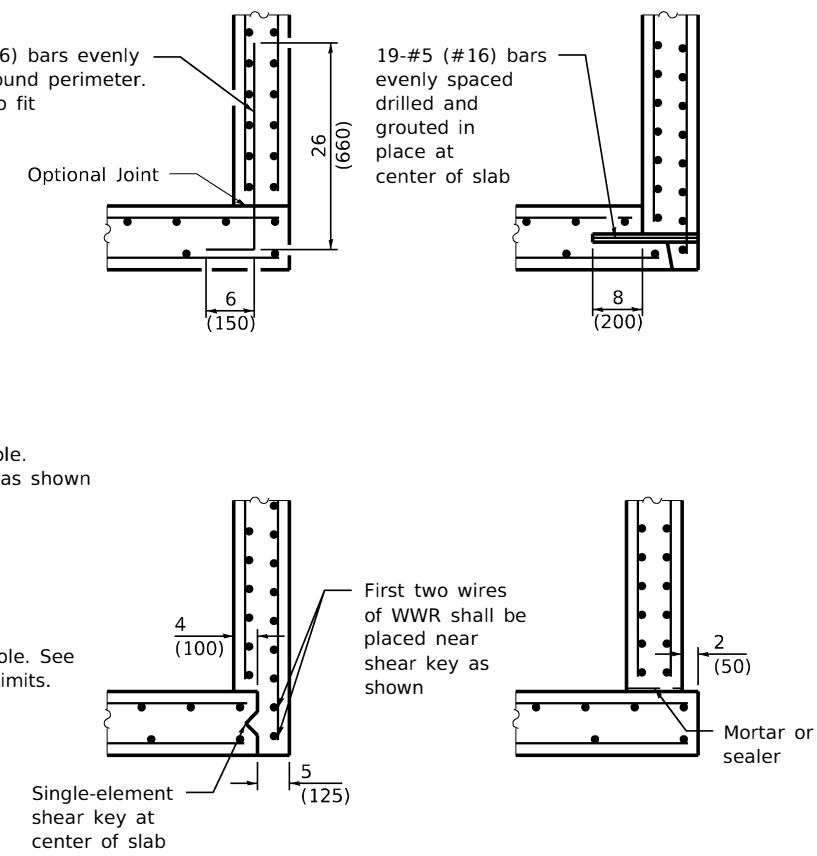
Location	Riser Height (RH)/ Total Height (TH)	WWR or Rebar (each direction)	
		$A_s$ (min.)	Spacing (max.)
Top Mat	RH $\leq$ 10 ft. (3.05 m) & TH $\leq$ 20 ft. (6.10 m)	0.28 sq. in./ft. (593 sq. mm/m)	6 (150)
	RH > 10 ft. (3.05 m) or TH > 20 ft. (6.10 m)	0.40 sq. in./ft. (847 sq. mm/m)	6 (150)
Bottom Mat	All	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)



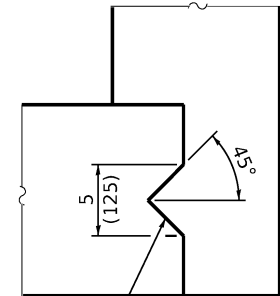
**SECTION THRU MANHOLE**  
(With flat slab top only)



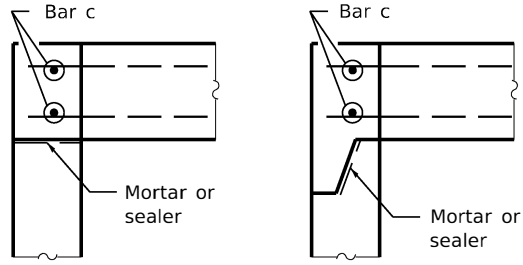
**SECTION THRU MANHOLE**  
(With flat slab top and riser)



**BOTTOM SLAB JOINT CONFIGURATIONS**



**SHEAR KEY GEOMETRY**  
(Reinforcement not Shown for Clarity)



**TOP SLAB JOINT CONFIGURATIONS**  
(Shown at access hole)

**GEOMETRIC LIMITS**

Oversized holes, as necessary for constructability, shall satisfy the following requirements:

1. A minimum of 12 (300) of monolithic reinforced concrete shall be maintained above the fabricated pipe hole.
2. A minimum 12 (300) inside arc length of reinforced concrete, extending vertically from bottom slab to top slab, shall be maintained between the fabricated pipe holes.
3. A maximum of 60 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.
4. Horizontal joints through pipe holes shall be spliced when the remaining column between holes, measured along inside arc length, is less than 24 (600). See detail.
5. The recommended oversized hole is equal to the O.D. of the pipe plus 4 inches.

See Sheet 3 for General Notes.

DATE	REVISIONS
1-1-18	Completely revised standard for LRFD. Renamed standard.
4-1-16	Changed terminology to 'welded wire reinforcement'.

**PRECAST MANHOLE TYPE A**  
**8' (2.44 m) DIAMETER**

(Sheet 1 of 3)

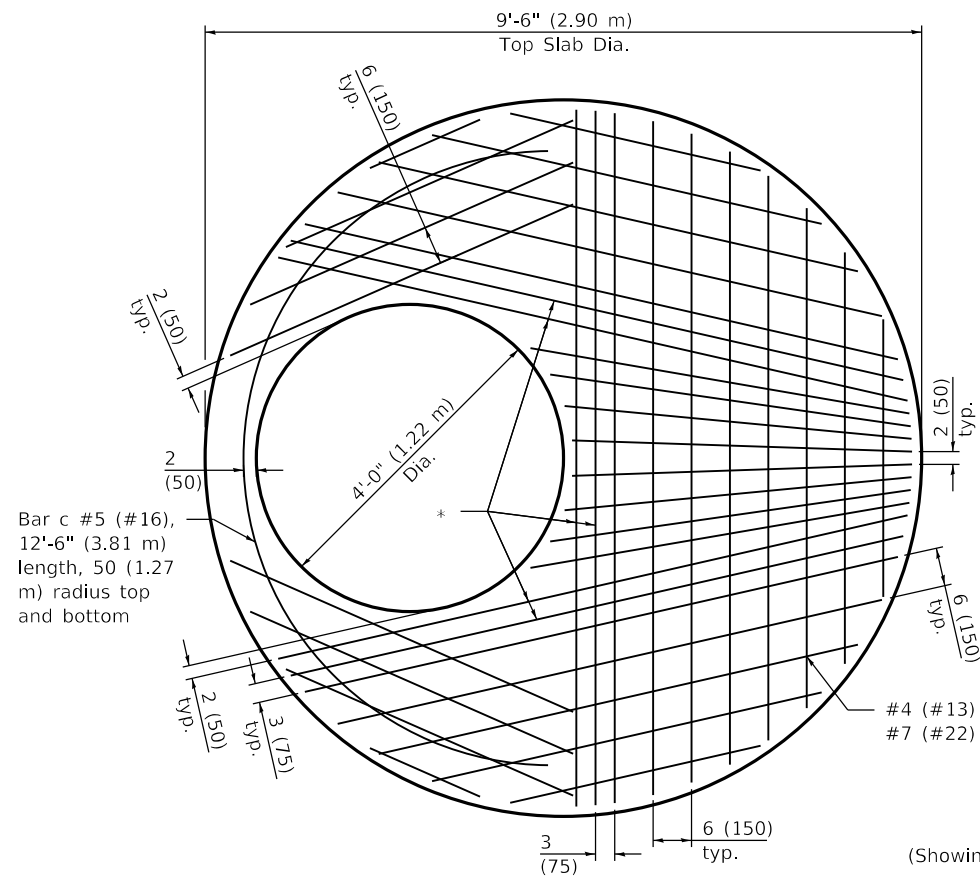
**STANDARD 602416-06**

Illinois Department of Transportation

PASSED January 1, 2018  
Michael Brand  
ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2018  
Maurice M. Adams  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 4-1-06



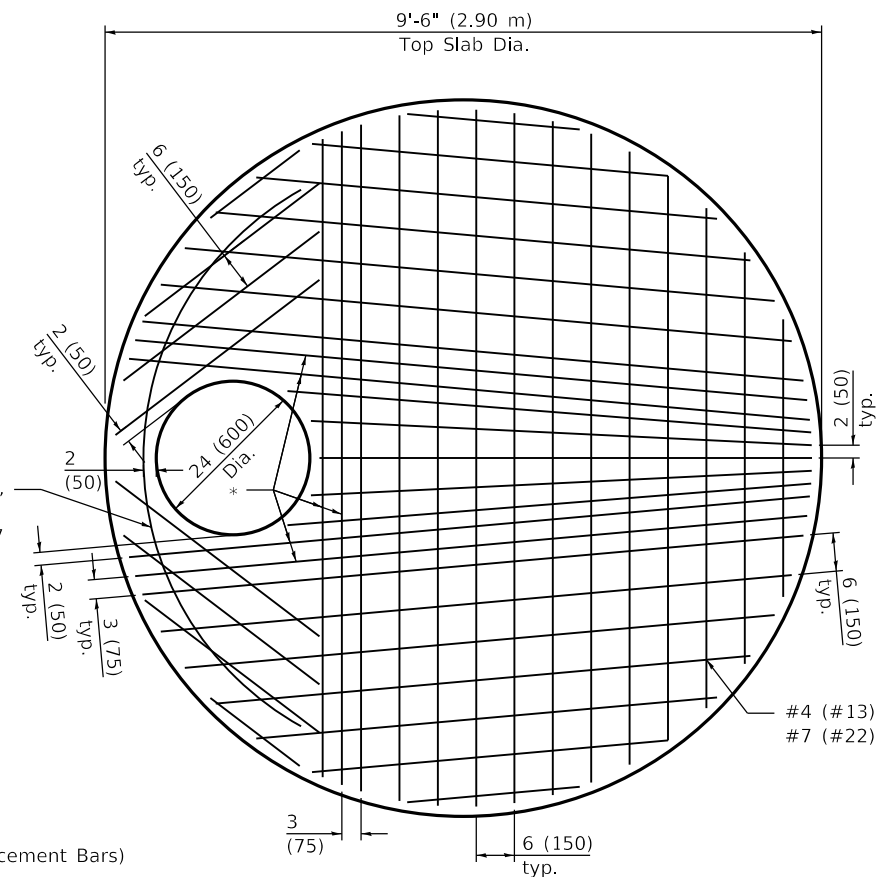
Bar c #5 (#16),  
12'-6" (3.81 m)  
length, 50 (1.27  
m) radius top  
and bottom

Bar c #5 (#16),  
8'-6" (2.60 m)  
length, 50 (1.27  
m) radius top  
and bottom

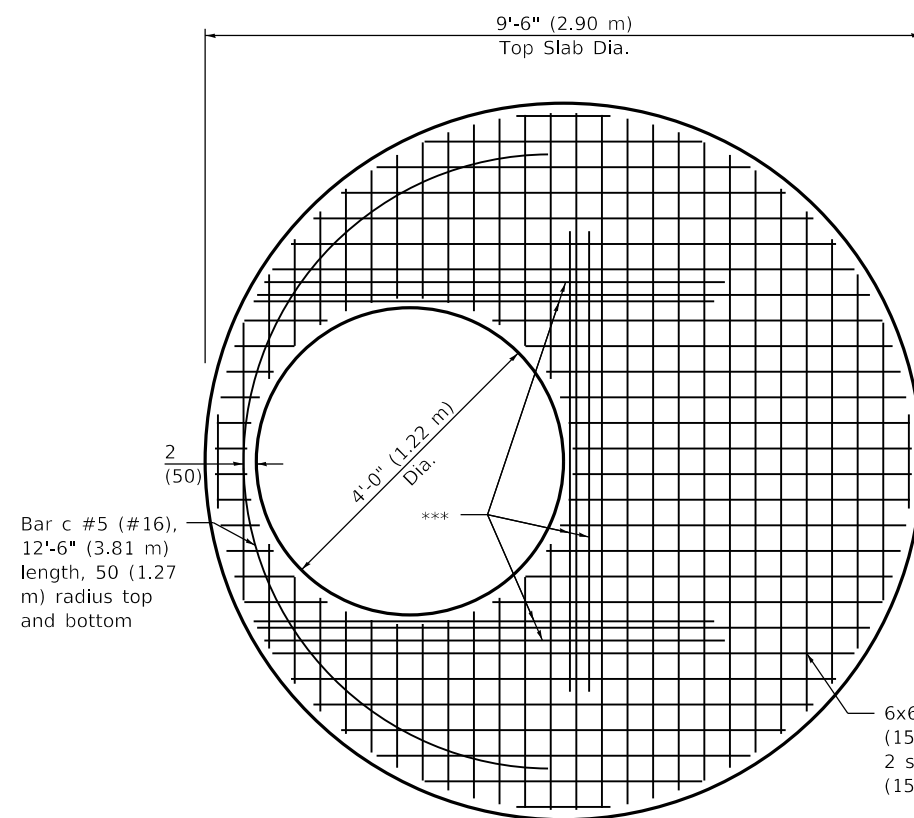
#4 (#13) bars top, typ.  
#7 (#22) bars bottom, typ.

**PLAN**

(Showing Layout of Reinforcement Bars)



#4 (#13) bars top, typ.  
#7 (#22) bars bottom, typ.

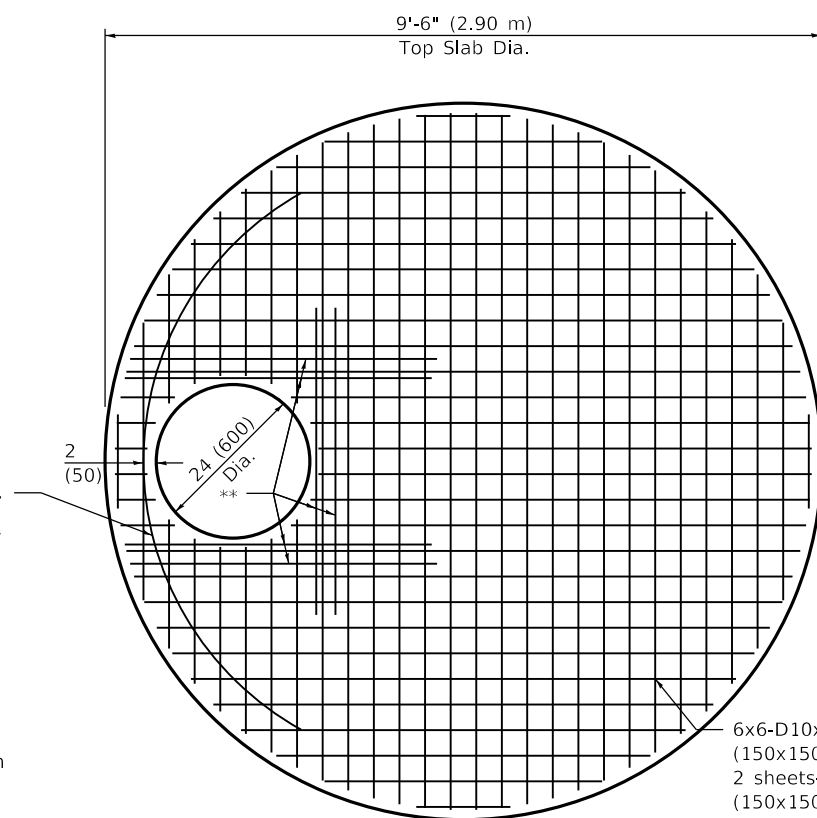


Bar c #5 (#16),  
12'-6" (3.81 m)  
length, 50 (1.27  
m) radius top  
and bottom

6x6-D10xD10 top  
(150x150-MD65xMD65)  
2 sheets-6x6-D30xD30 bottom  
(150x150-MD194xMD194)

**PLAN**

(Showing Layout of Welded Wire Reinforcement)



6x6-D10xD10 top  
(150x150-MD65xMD65)  
2 sheets-6x6-D30xD30 bottom  
(150x150-MD194xMD194)

- \* #7 (#22) bars at 3 (75) cts. top and bottom.
- \*\* #7 (#22) bars at 3 (75) cts. 4'-0" (1.22 m) long top and bottom. Bundle first bar with closest WWR bar to the opening.
- \*\*\* #7 (#22) bars at 3 (75) cts. 6'-0" (1.83 m) long top and bottom. Bundle first bar with closest WWR bar to the opening.

Illinois Department of Transportation

PASSED January 1, 2018  
*Michael Beard*  
ENGINEER OF POLICY AND PROCEDURES

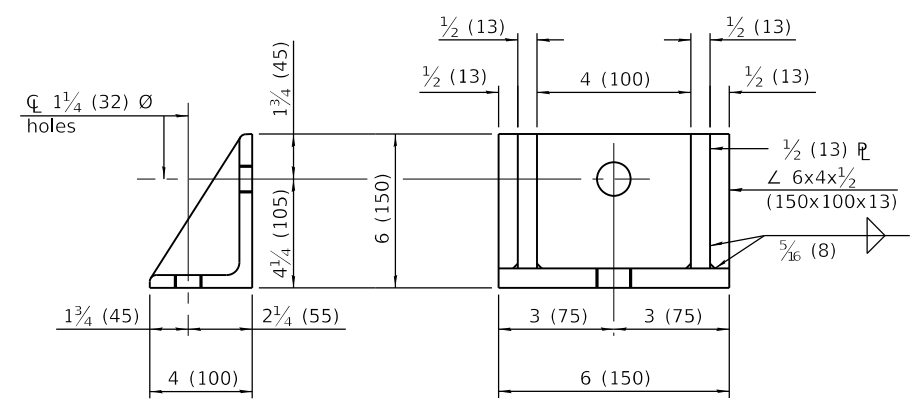
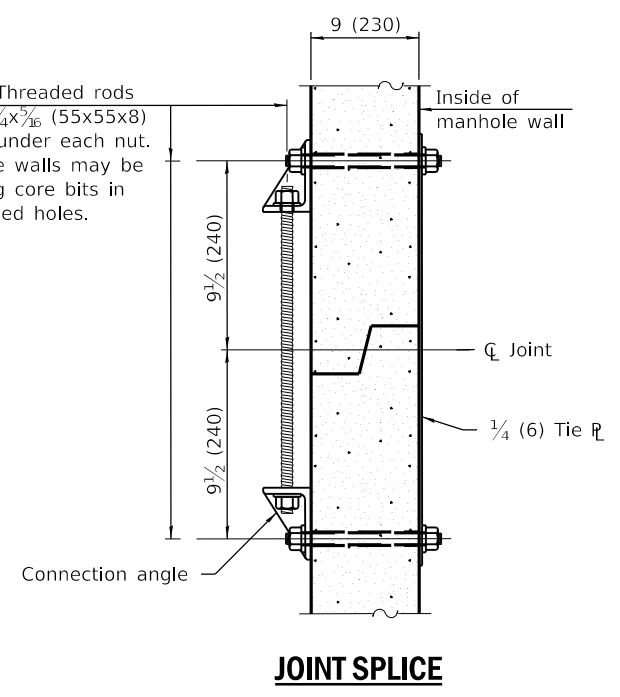
APPROVED January 1, 2018  
*Maureen M. Beck*  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 4-1-06

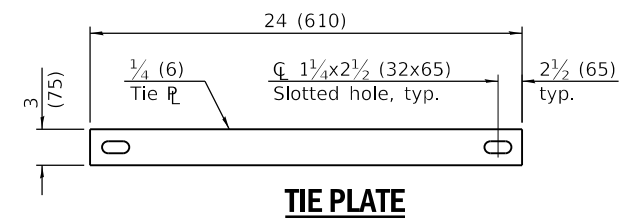
**PRECAST MANHOLE TYPE A**  
**8' (2.44 m) DIAMETER**  
(Sheet 2 of 3)

**STANDARD 602416-06**

$\varnothing$  1(25)  $\varnothing$  Threaded rods  
 with  $2\frac{1}{4} \times 2\frac{1}{4} \times \frac{7}{16}$  (55x55x8)  
 $\varnothing$  washers under each nut.  
 Holes in the walls may be  
 drilled using core bits in  
 lieu of formed holes.



**CONNECTION ANGLE**



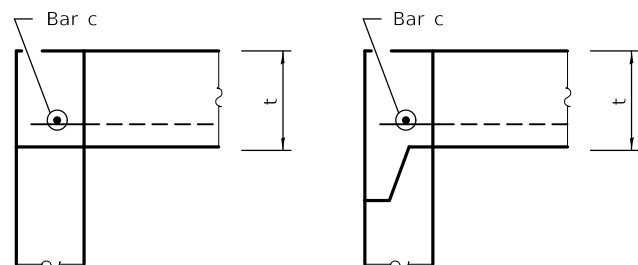
**TIE PLATE**

**GENERAL NOTES**

- Joint configuration and dimensions of flat slab shall match and fit the riser joint detail.
- Pipe holes shall be formed to facilitate proper placement of hole reinforcement.
- The manufacturer shall ensure that all precast manhole sections are additionally reinforced where required to resist damage from handling, shipping and installation stresses.
- Lifting holes shall be located in the sections as per the manufacturer's recommendations and grouted prior to backfilling.
- See Standard 602701 for details of manhole steps.
- All dimensions are in inches (millimeters) unless otherwise noted.

Illinois Department of Transportation  
 PASSED January 1, 2018  
 Michael Beard  
 ENGINEER OF POLICY AND PROCEDURES  
 APPROVED January 1, 2018  
 Matthew M. Beck  
 ENGINEER OF DESIGN AND ENVIRONMENT  
 ISSUED 4-1-06

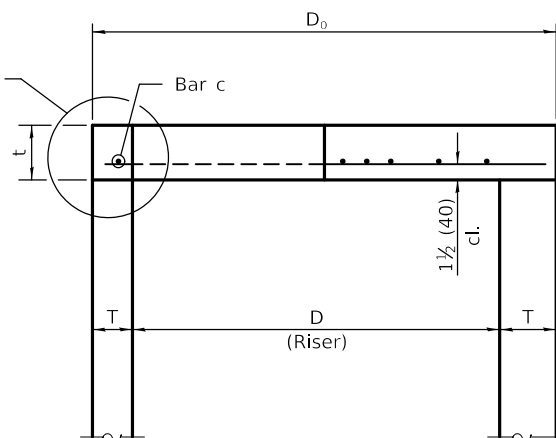
**PRECAST MANHOLE TYPE A**  
**8' (2.44 m) DIAMETER**  
 (Sheet 3 of 3)  
**STANDARD 602416-06**



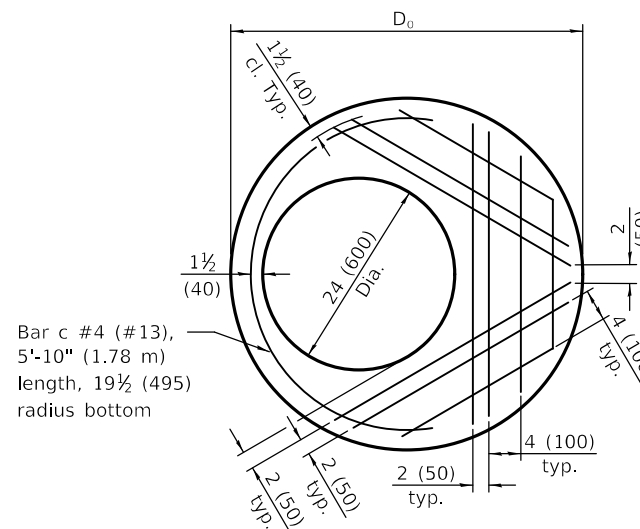
**FLAT SLAB TOP JOINT CONFIGURATIONS  
FOR D = 36 (900) AND D = 4'-0" (1.22 m)**

(Shown at access hole)

See Top Slab Joint Configurations for D=36 (900) and D=4'-0" (1.22 m)

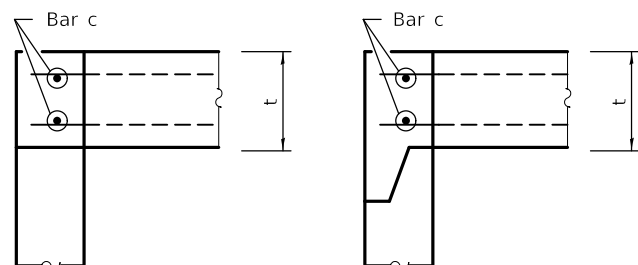


**SECTION THRU FLAT SLAB TOP  
FOR D = 36 (900) AND D = 4'-0" (1.22 m)**



**PLAN - FLAT SLAB TOP FOR D = 36 (900)**

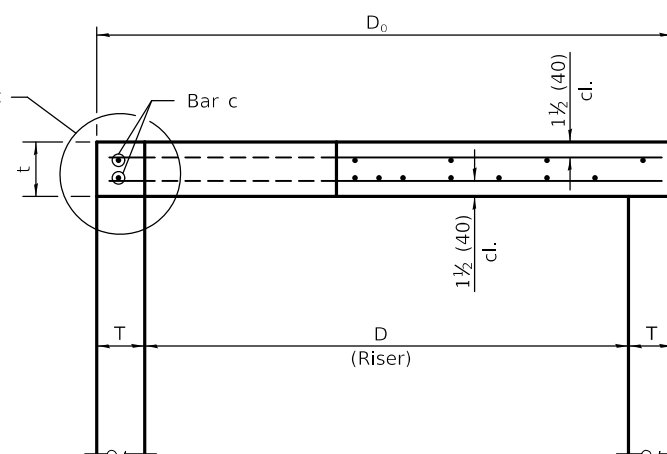
(Showing layout of reinforcement bars and c bars)



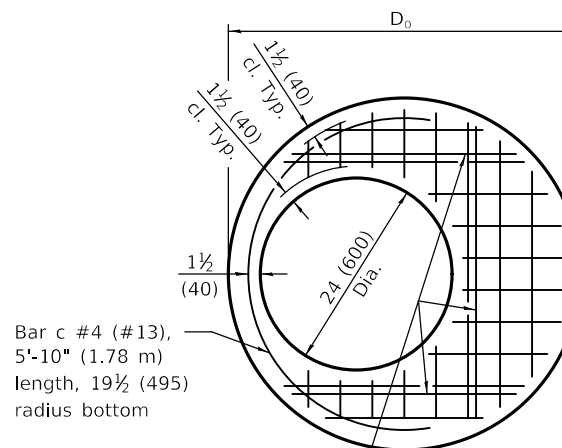
**FLAT SLAB TOP JOINT CONFIGURATIONS  
D = 5'-0" (1.52 m)**

(Shown at access hole)

See Top Slab Joint Configurations for D=5'-0" (1.52 m)



**SECTION THRU FLAT SLAB TOP  
FOR D = 5'-0" (1.52 m)**



**PLAN - FLAT SLAB TOP FOR D = 36 (900)**

(Showing layout of welded wire reinforcement and c bars)

**TABLE**

D	T	D <sub>o</sub> (min.)	t
36 (900)	See applicable Standards	D + 2T	6 (150)
4'-0" (1.2 m)			6 (150)
5'-0" (1.5 m)			8 (200)

**GENERAL NOTES**

The flat slab top may be used in lieu of the tapered tops shown on Standards 602001, 602016, or 602306 at the option of the Contractor or when field conditions prohibit the use of tapered tops.

Lifting holes shall be located in the sections as per the manufacturer's recommendations.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-19	Expanded / refined reinforcement options.
1-1-18	Revised for compliance with LRFD.

**PRECAST REINFORCED  
CONCRETE FLAT SLAB TOP**

(Sheet 1 of 2)

**STANDARD 602601-06**

Illinois Department of Transportation

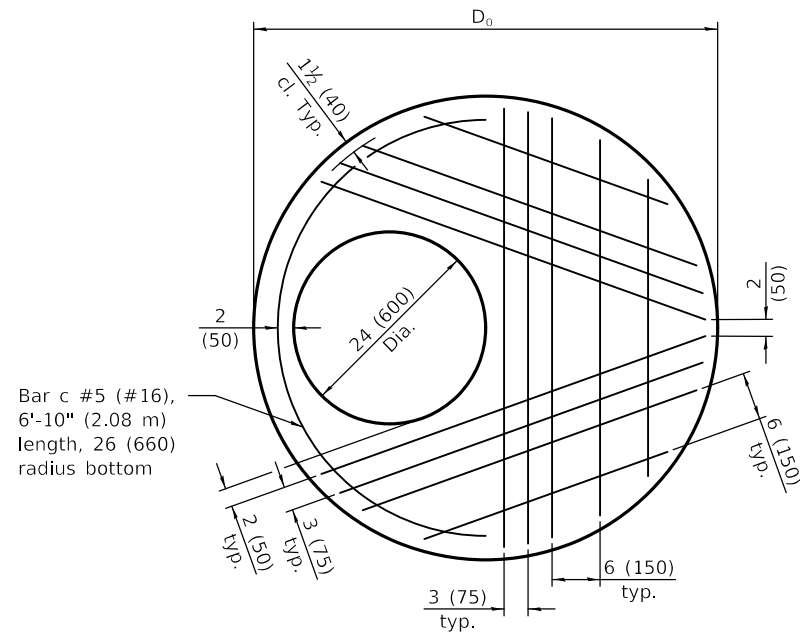
PASSED January 1, 2019

ENGINEER OF POLICY AND PROCEDURES

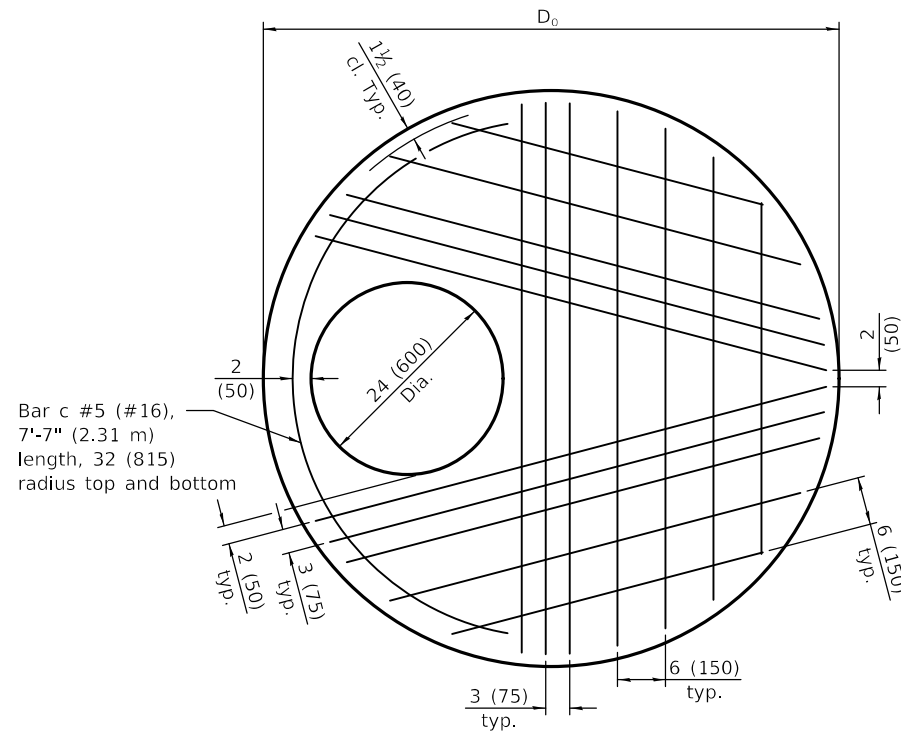
APPROVED January 1, 2019

ENGINEER OF DESIGN AND ENVIRONMENT

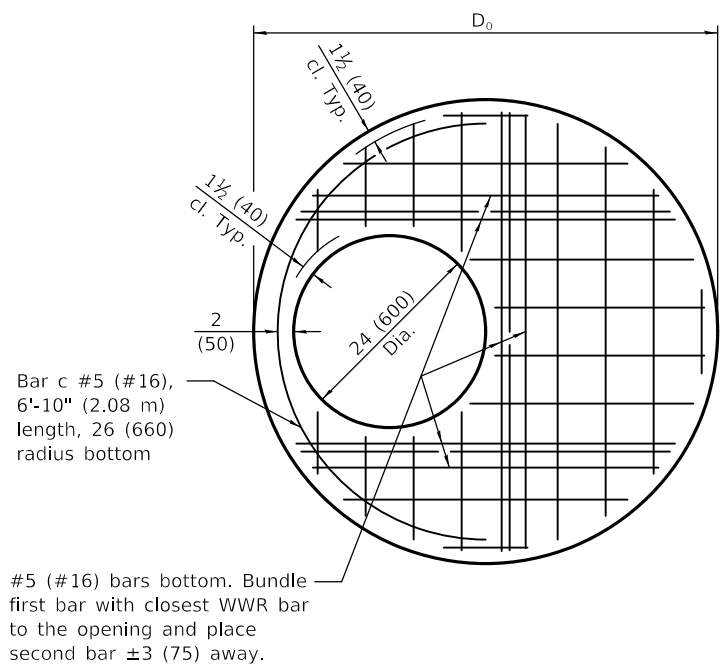
ISSUED 1-1-97



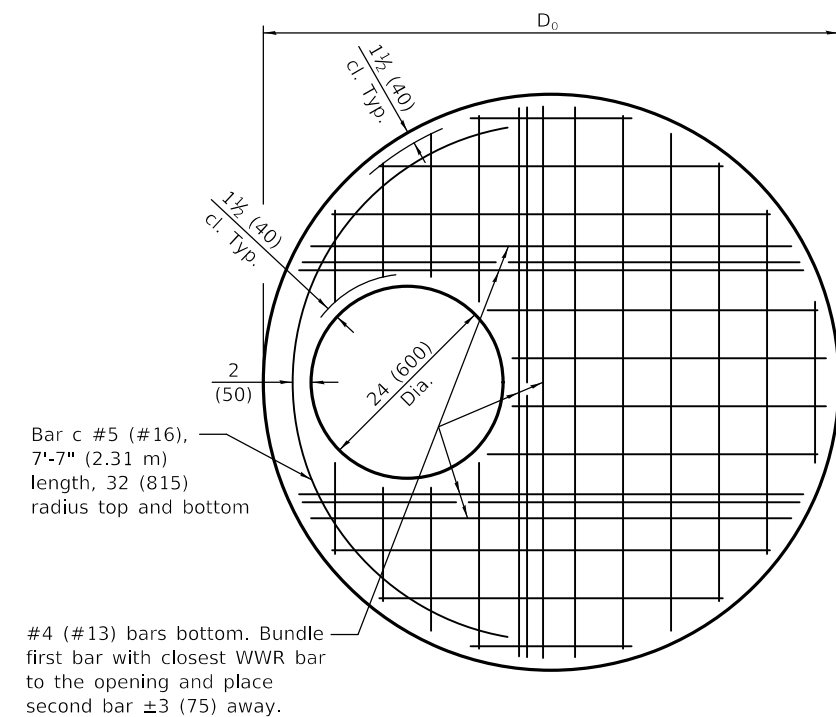
**PLAN - FLAT SLAB TOP FOR D = 4'-0" (1.22 m)**  
(Showing layout of reinforcement bars and c bars)



**PLAN - FLAT SLAB TOP FOR D = 5'-0" (1.52 m)**  
(Showing layout of bottom reinforcement bars and c bars)



**PLAN - FLAT SLAB TOP FOR D = 4'-0" (1.22 m)**  
(Showing layout of welded wire reinforcement and c bars)



**PLAN - FLAT SLAB TOP FOR D = 5'-0" (1.52 m)**  
(Showing layout of welded wire reinforcement and c bars)

**FLAT SLAB TOP REINFORCEMENT FOR D = 36 (900)**

Location	WWR (each direction)		Rebar		
	A <sub>s</sub> (min.)	Spacing (max.)	A <sub>s</sub> (min.)	Spacing (max.)	Bar Size
Bottom Mat	* 0.60 sq. in./ft. (1270 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#4 (#13)

**FLAT SLAB TOP REINFORCEMENT FOR D = 4'-0" (1.22 m)**

Location	WWR (each direction)		Rebar		
	A <sub>s</sub> (min.)	Spacing (max.)	A <sub>s</sub> (min.)	Spacing (max.)	Bar Size
Bottom Mat	* 0.62 sq. in./ft. (1312 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#5 (#16)

**FLAT SLAB TOP REINFORCEMENT FOR D = 5'-0" (1.52 m)**

Location	WWR (each direction)		Rebar (each direction except as noted)		
	A <sub>s</sub> (min.)	Spacing (max.)	A <sub>s</sub> (min.)	Spacing (max.)	Bar Size
Top Mat	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)	0.11 sq. in./ft. (233 sq. mm/m)	18 (450)	#3 or #4 (#10) (#13)
Bottom Mat	* 0.40 sq. in./ft. (847 sq. mm/m)	6 (150)	See plan view for rebar orientation and spacing and this table for bar size		#4 (#13)

\* Only one layer of WWR permitted to avoid congestion.

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PASSED January 1, 2019  
  
 ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2019  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

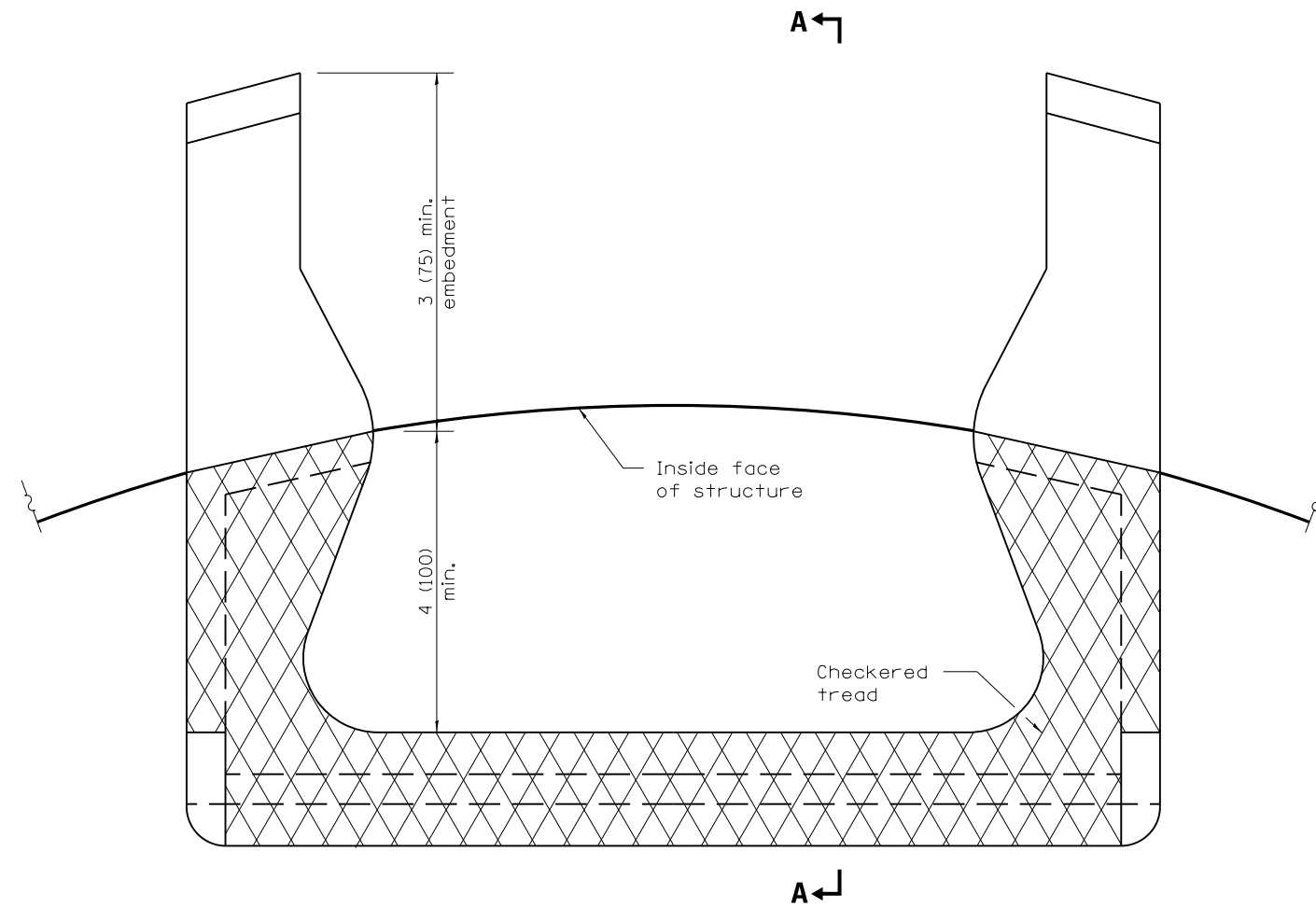
ISSUED 1-1-97

**PRECAST REINFORCED CONCRETE FLAT SLAB TOP**

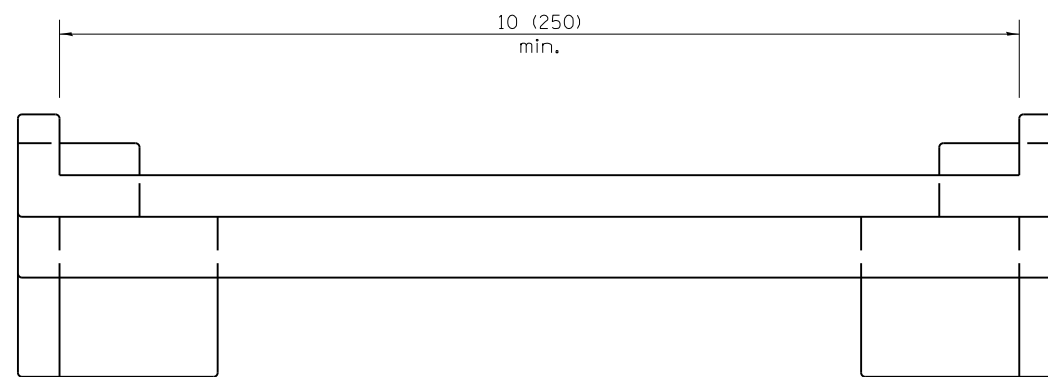
(Sheet 2 of 2)

**STANDARD 602601-06**

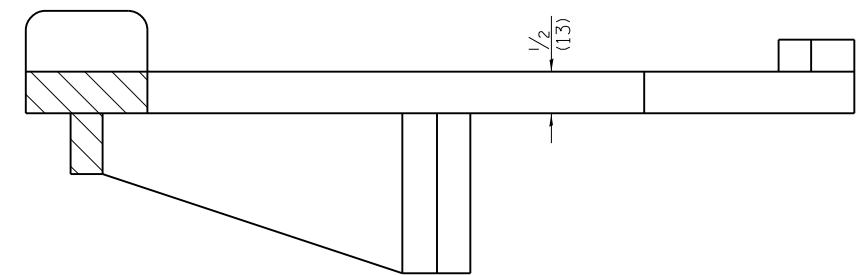




**PLAN VIEW**



**ELEVATION VIEW**



**SECTION A-A**

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED January 1, 2009

ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2009

ENGINEER OF DESIGN AND ENVIRONMENT

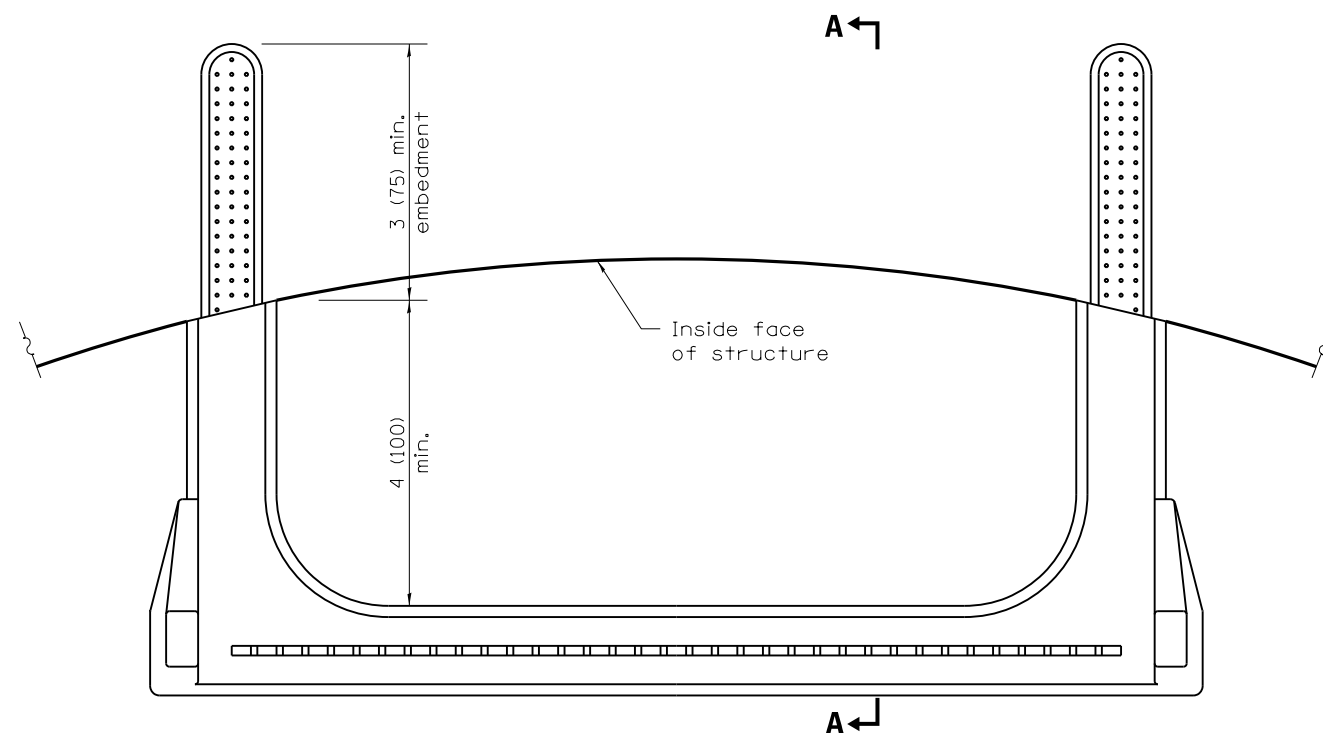
ISSUED 1-1-97

DATE	REVISIONS
1-1-09	Switched units to English (metric).
4-1-06	Revised title, drawings, and added plastic steps on sheet 2.

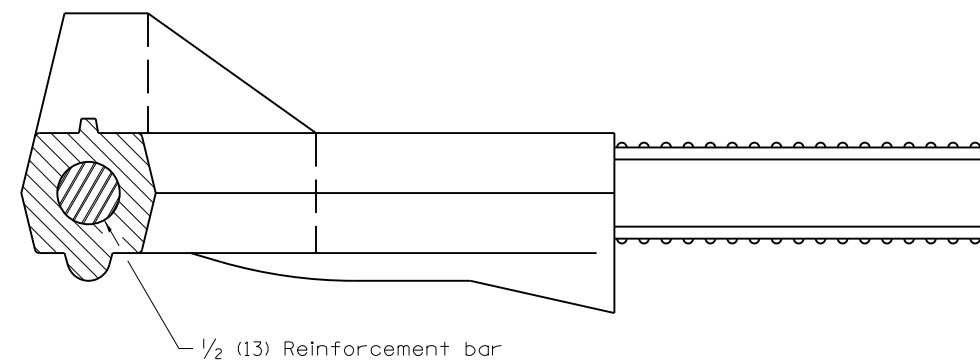
**MANHOLE STEPS**

(Sheet 1 of 2)

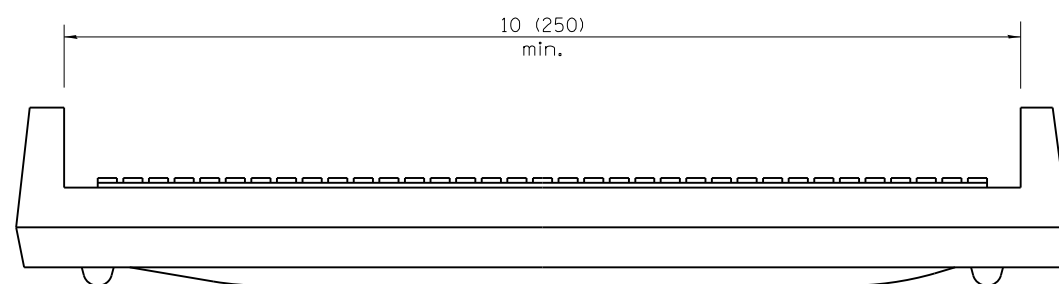
**STANDARD 602701-02**



**PLAN VIEW**



**SECTION A-A**



**ELEVATION VIEW**

Illinois Department of Transportation

PASSED January 1, 2009

*[Signature]*  
ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2009

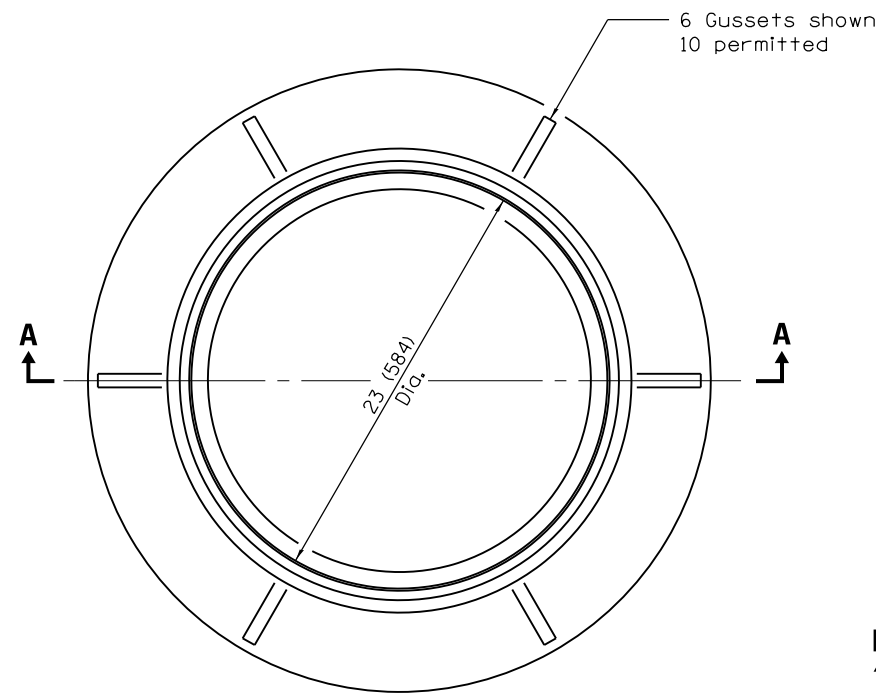
*[Signature]*  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

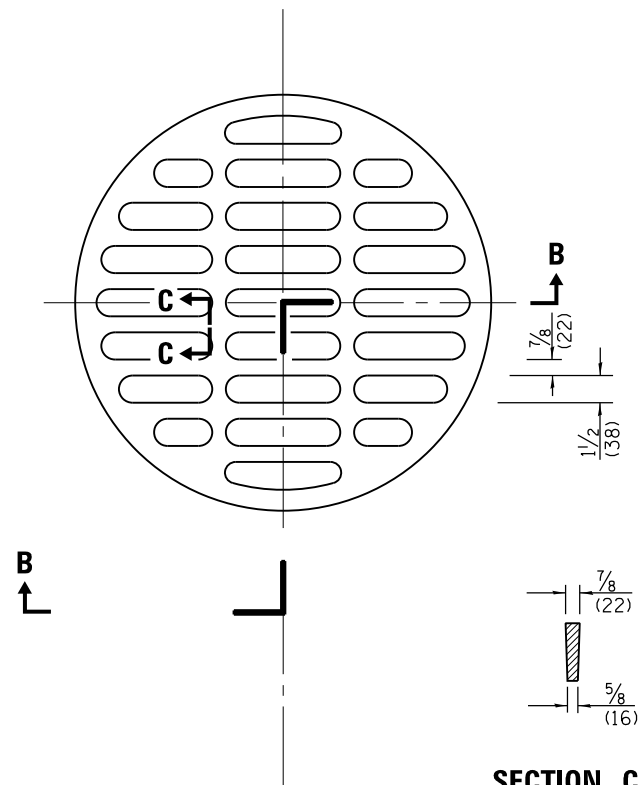
**MANHOLE STEPS**

(Sheet 2 of 2)

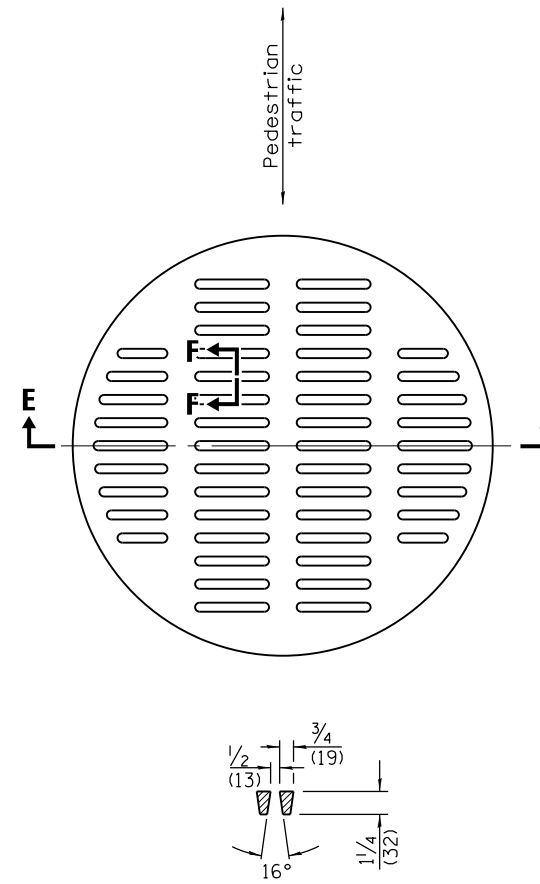
**STANDARD 602701-02**



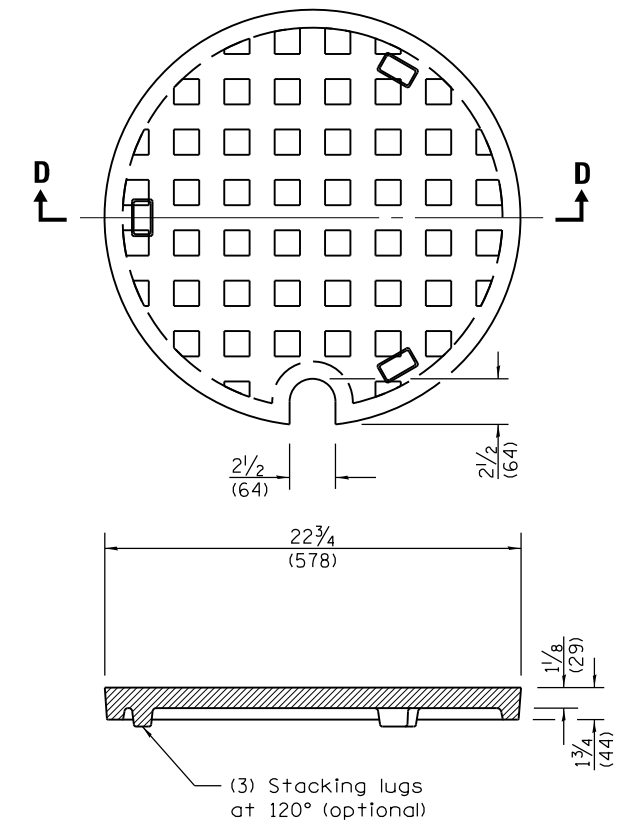
**CAST FRAME**



**SECTION C-C**

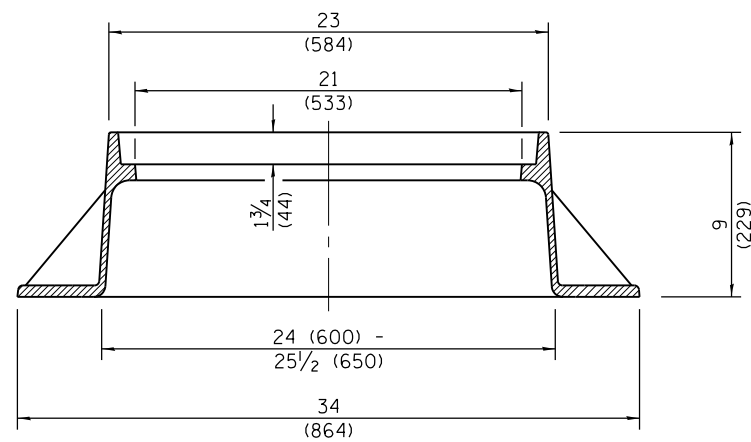


**SECTION F-F**

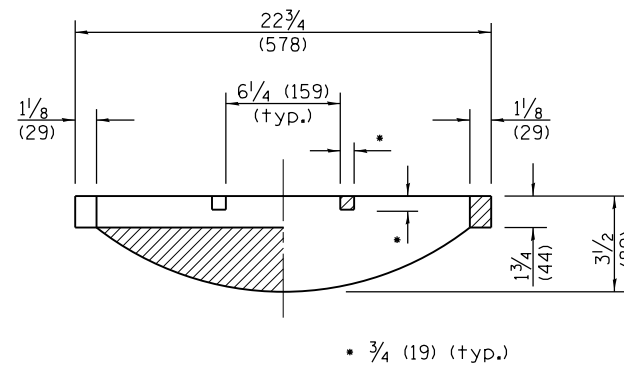


**SECTION D-D**

**CAST CLOSED LID**  
Gray Iron Lid

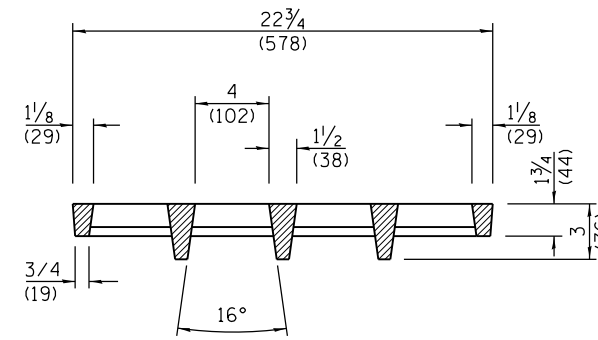


**SECTION A-A**  
Gray Iron



**SECTION B-B**

**CAST OPEN LID**



**SECTION E-E**

**ADA COMPLIANT  
CAST OPEN LID**

All dimensions are in inches (millimeters)  
unless otherwise shown.

Illinois Department of Transportation

PASSED January 1, 2015

Michael Beard  
ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2015

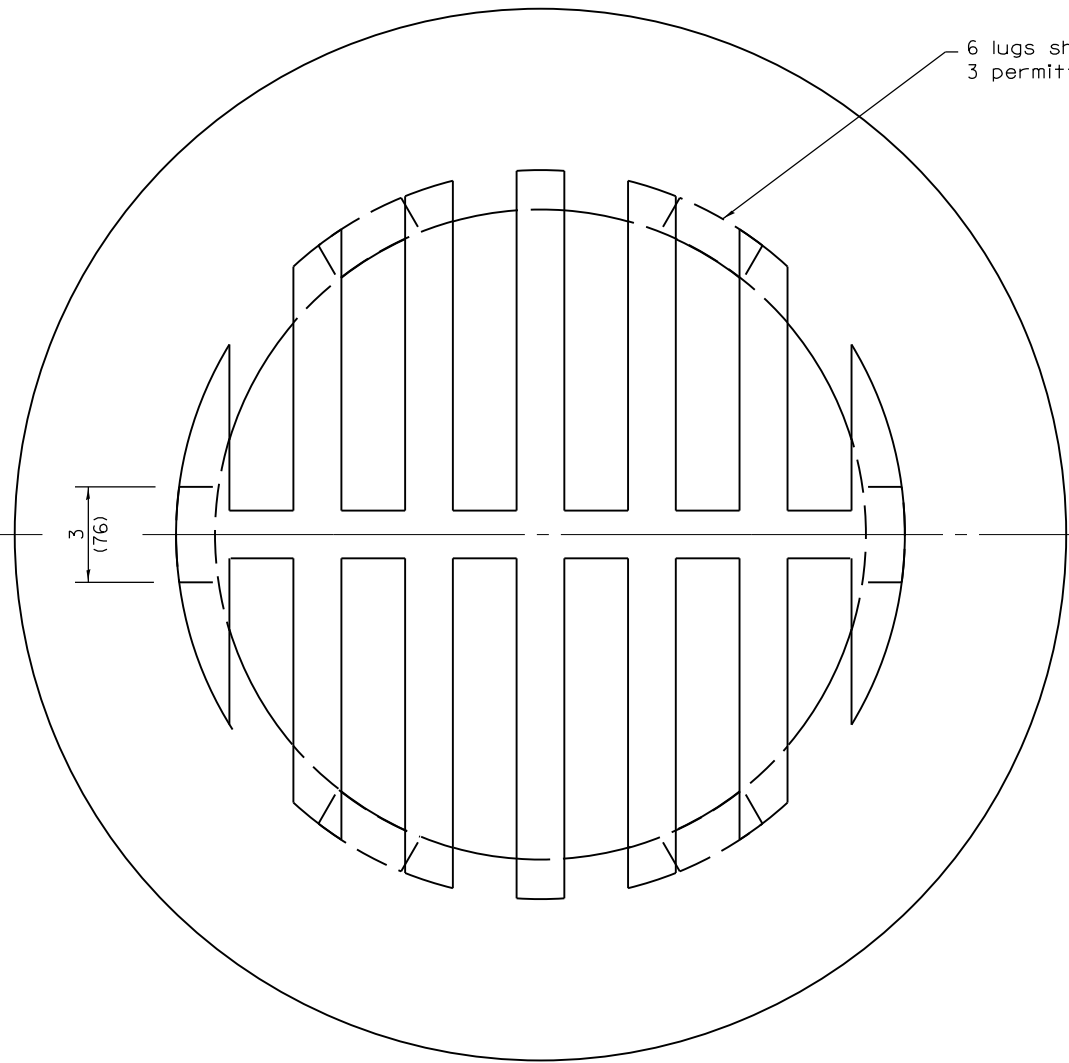
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-15  
46-1-19

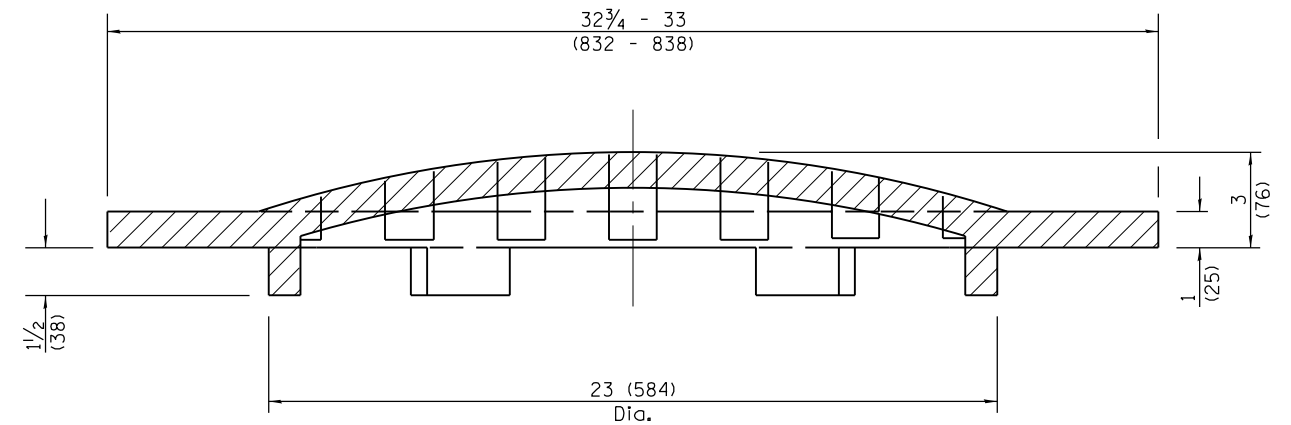
DATE	REVISIONS
1-1-15	Revised dimensioning of frame. Added ADA compliant open lid.
1-1-09	Switched units to English (metric).

**FRAME AND LIDS  
TYPE 1**

**STANDARD 604001-04**




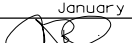
6 lugs shown,  
3 permitted.



**SECTION A-A**

**CAST GRATE**

All dimensions are in inches (millimeters)  
unless otherwise shown.

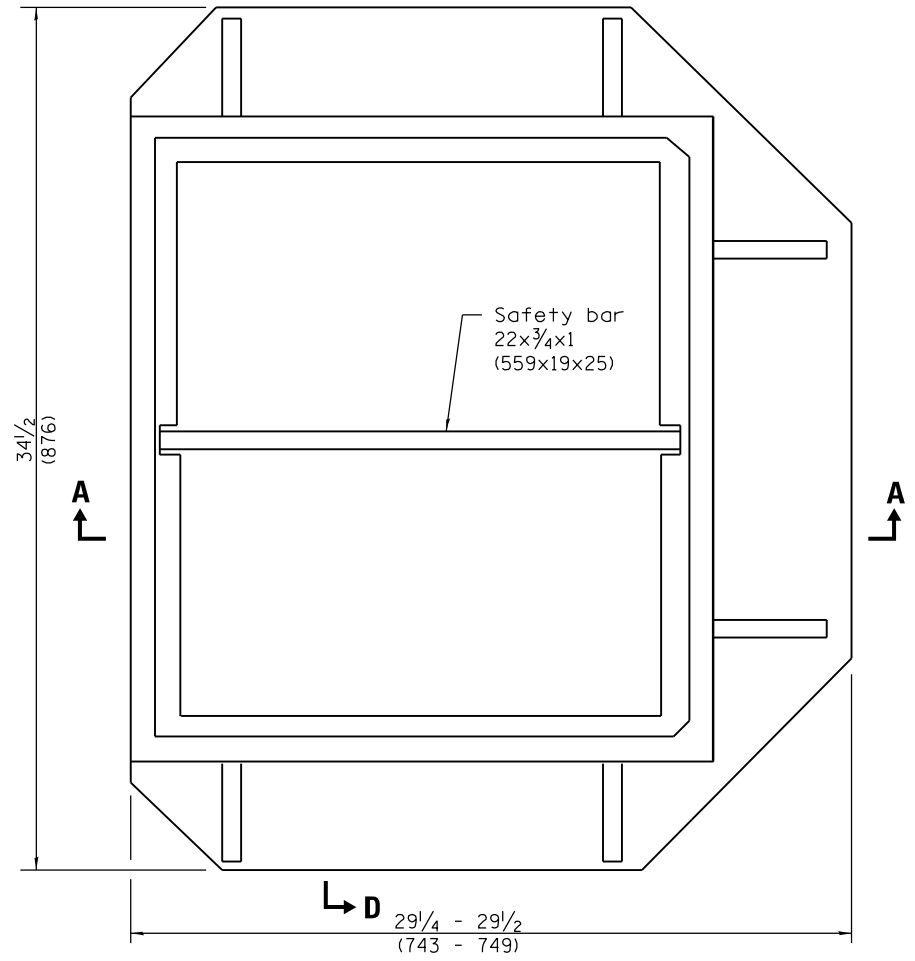
 Illinois Department of Transportation  
 PASSED January 1, 2015  
*Michael Beard*  
 ENGINEER OF POLICY AND PROCEDURES  
 APPROVED January 1, 2015  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

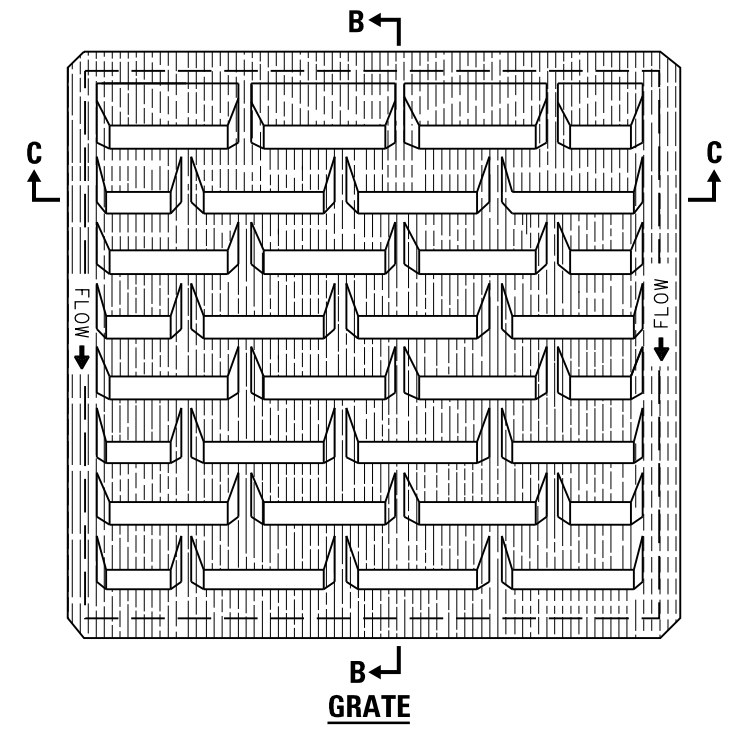
DATE	REVISIONS
1-1-15	Revised dimensions.
1-1-09	Switched units to English (metric).

**GRATE TYPE 8**

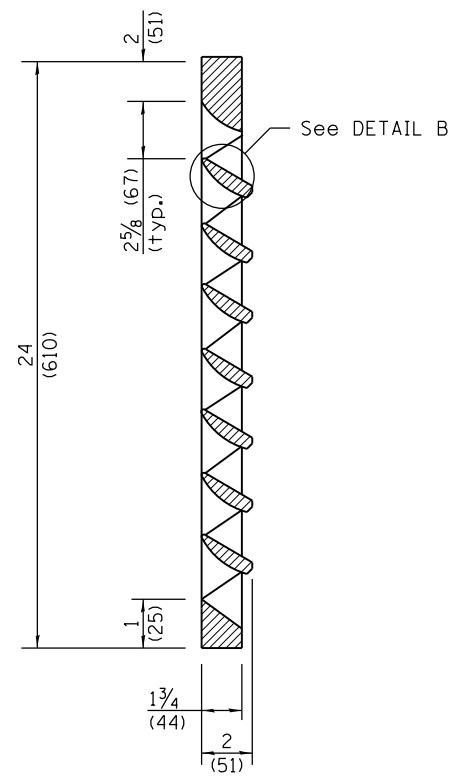
**STANDARD 604036-03**



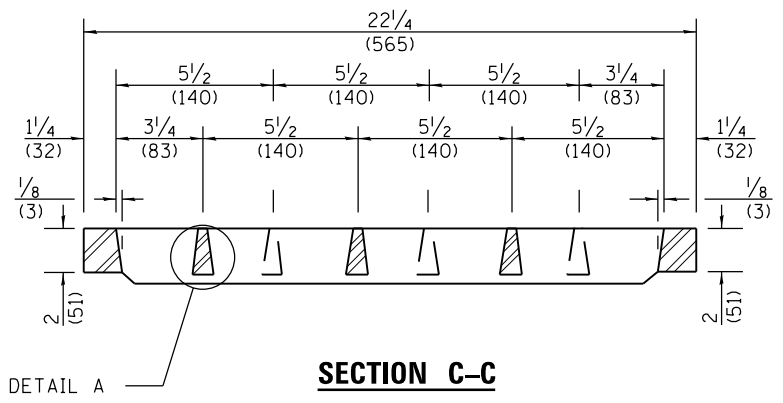
**PLAN - FRAME**



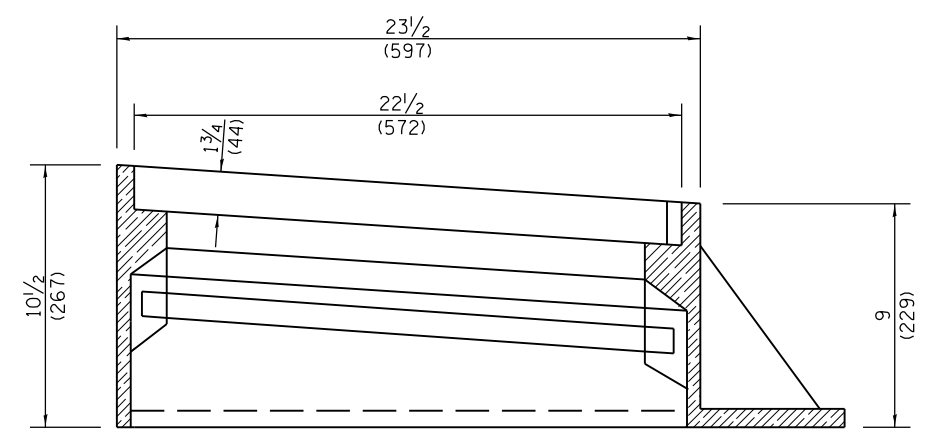
**GRATE**



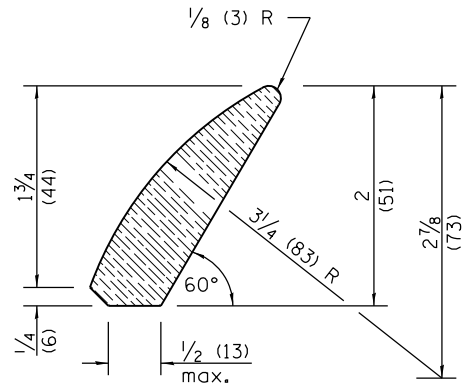
**SECTION B-B**



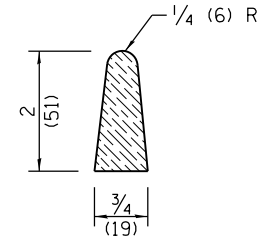
**SECTION C-C**



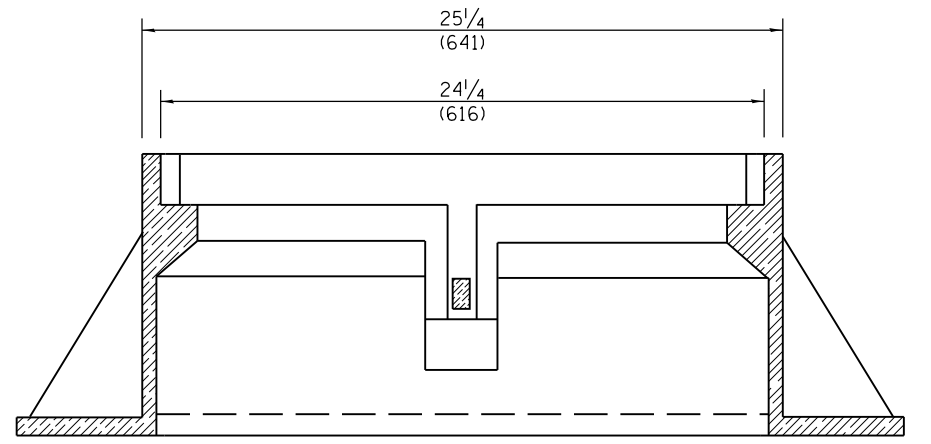
**SECTION A-A**



**DETAIL A**



**DETAIL B**



**SECTION D-D**

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED January 1, 2015

*Michael Beard*  
ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2015

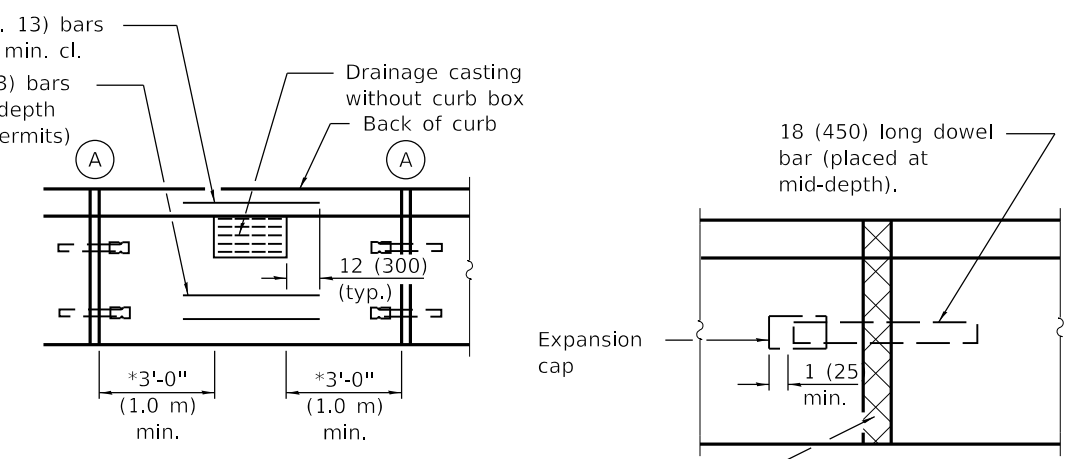
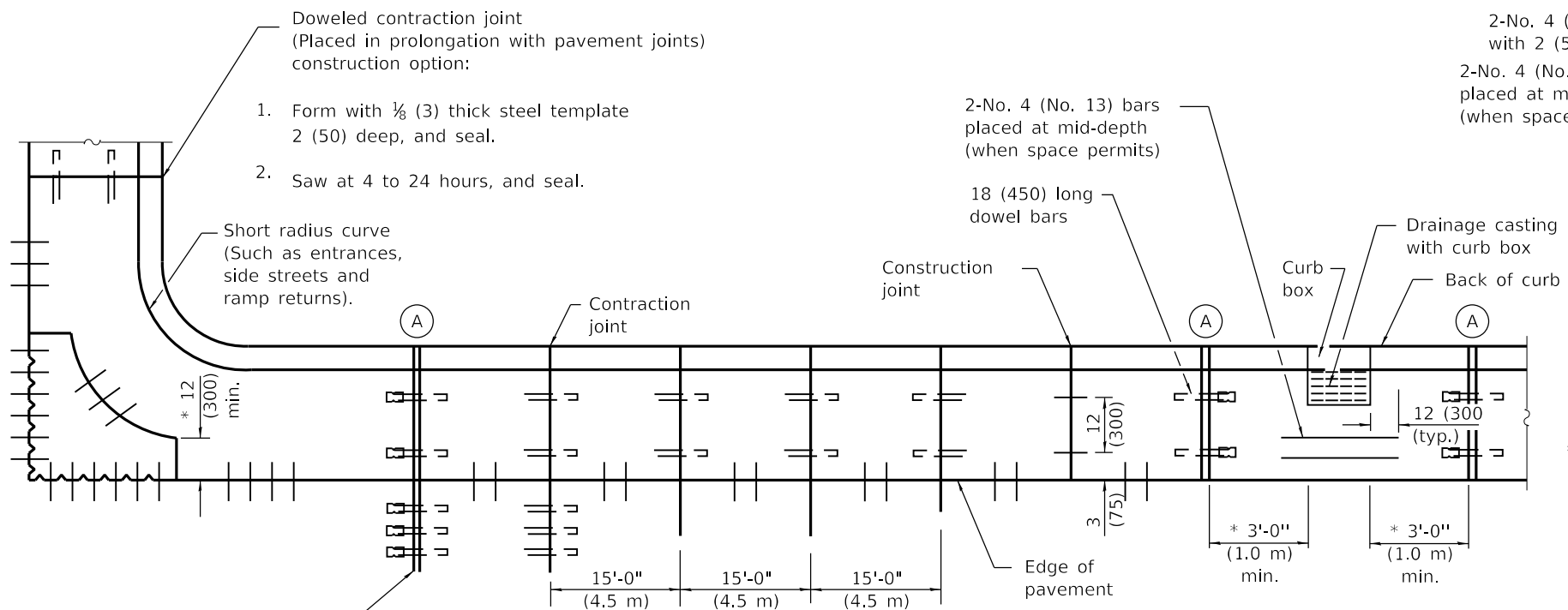
*[Signature]*  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

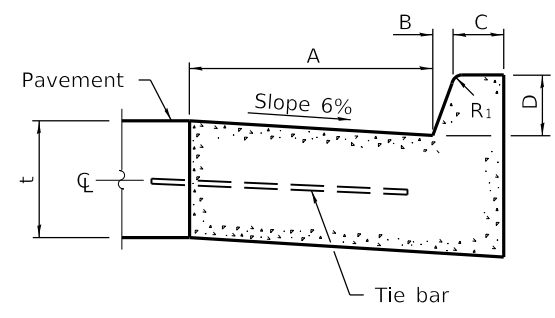
DATE	REVISIONS
1-1-15	Revised dimensions of frame.
1-1-09	Switched units to English (metric).

**FRAME AND GRATE  
TYPE 24**

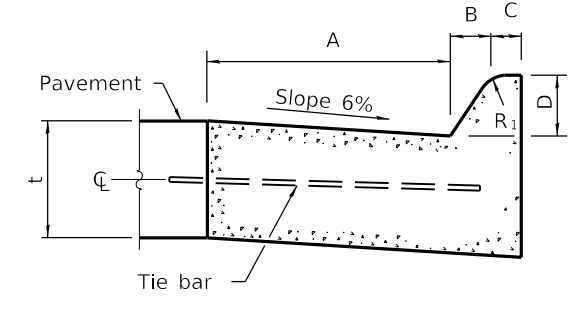
**STANDARD 604091-03**



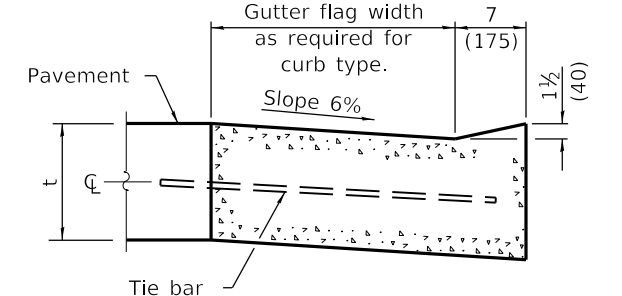
**PLAN**  
**ADJACENT TO PCC PAVEMENT OR PCC BASE COURSE**



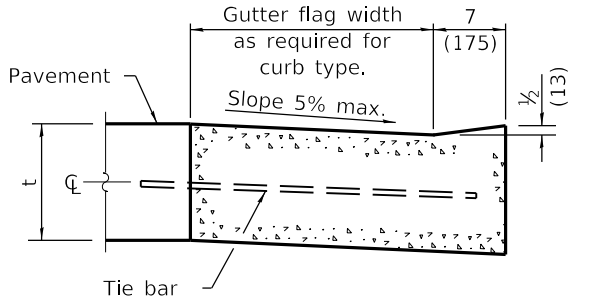
**BARRIER CURB**



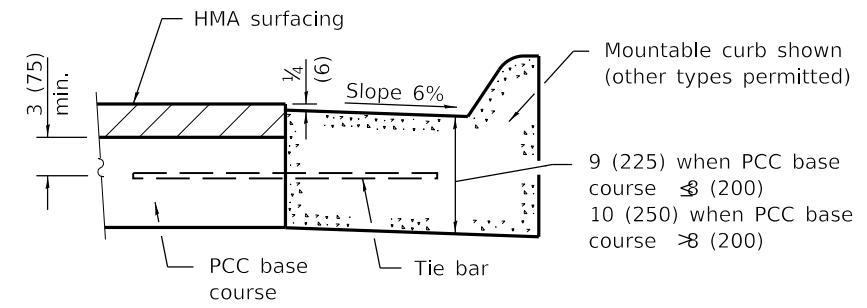
**MOUNTABLE CURB**



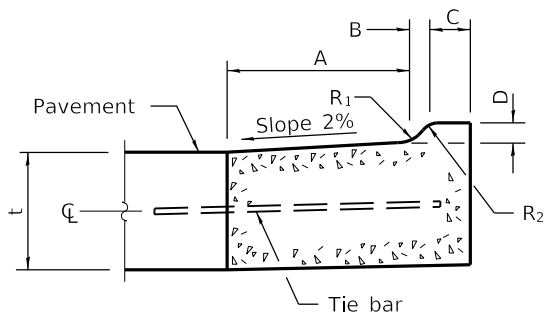
**DEPRESSED CURB (TYPICAL)**



**DEPRESSED CURB ADJACENT TO CURB RAMP ACCESSIBLE TO THE DISABLED**



**ADJACENT TO PCC BASE COURSE WITH HMA SURFACING**



**M-2.06 (M-5.15) and M-2.12 (M-5.30)**

TYPE	A	B	C	D	R <sub>1</sub>
B-6.06 *	6	1	6	6	1
(B-15.15)	(150)	(25)	(150)	(150)	(25)
B-6.12	12	1	6	6	1
(B-15.3)	(300)	(25)	(150)	(150)	(25)
B-6.18	18	1	6	6	1
(B-15.45)	(450)	(25)	(150)	(150)	(25)
B-6.24	24	1	6	6	1
(B-15.60)	(600)	(25)	(150)	(150)	(25)
B-9.12	12	2	5	9	1
(B-22.30)	(300)	(50)	(125)	(225)	(25)
B-9.18	18	2	5	9	1
(B-22.45)	(450)	(50)	(125)	(225)	(25)
B-9.24	24	2	5	9	1
(B-22.60)	(600)	(50)	(125)	(225)	(25)

\* For corner islands only.

TYPE	A	B	C	D	R <sub>1</sub>	R <sub>2</sub>
M-2.06	6	2	4	2	3	2
(M-5.15)	(150)	(50)	(100)	(50)	(75)	(50)
M-2.12	12	2	4	2	3	2
(M-5.30)	(300)	(50)	(100)	(50)	(75)	(50)
M-4.06	6	4	3	4	3	NA
(M-10.15)	(150)	(100)	(75)	(100)	(75)	NA
M-4.12	12	4	3	4	3	NA
(M-10.30)	(300)	(100)	(75)	(100)	(75)	NA
M-4.18	18	4	3	4	3	NA
(M-10.45)	(450)	(100)	(75)	(100)	(75)	NA
M-4.24	24	4	3	4	3	NA
(M-10.60)	(600)	(100)	(75)	(100)	(75)	NA
M-6.06	6	6	2	6	2	NA
(M-15.15)	(150)	(150)	(50)	(150)	(50)	NA
M-6.12	12	6	2	6	2	NA
(M-15.30)	(300)	(150)	(50)	(150)	(50)	NA
M-6.18	18	6	2	6	2	NA
(M-15.45)	(450)	(150)	(50)	(150)	(50)	NA
M-6.24	24	6	2	6	2	NA
(M-15.60)	(600)	(150)	(50)	(150)	(50)	NA

**GENERAL NOTES**

The bottom slope of combination curb and gutter constructed adjacent to pcc pavement shall be the same slope as the subbase or 6% when subbase is omitted.

t = Thickness of pavement.

Longitudinal joint tie bars shall be No. 6 (No. 19) at 36 (900) centers in accordance with details for longitudinal construction joint shown on Standard 420001.

A minimum clearance of 2 (50) between the end of the tie bar and the back of the curb shall be maintained.

The dowel bars shown in contraction joints will only be required for monolithic construction.

See Standard 606301 for details of corner islands.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-18	Revised General Note for tie bar spacing to 36 (900) cts.
1-1-15	Added B-6.06 (B-15.15) barrier curb and gutter to table (corner islands only).

**CONCRETE CURB TYPE B AND COMBINATION CONCRETE CURB AND GUTTER**  
(Sheet 1 of 2)

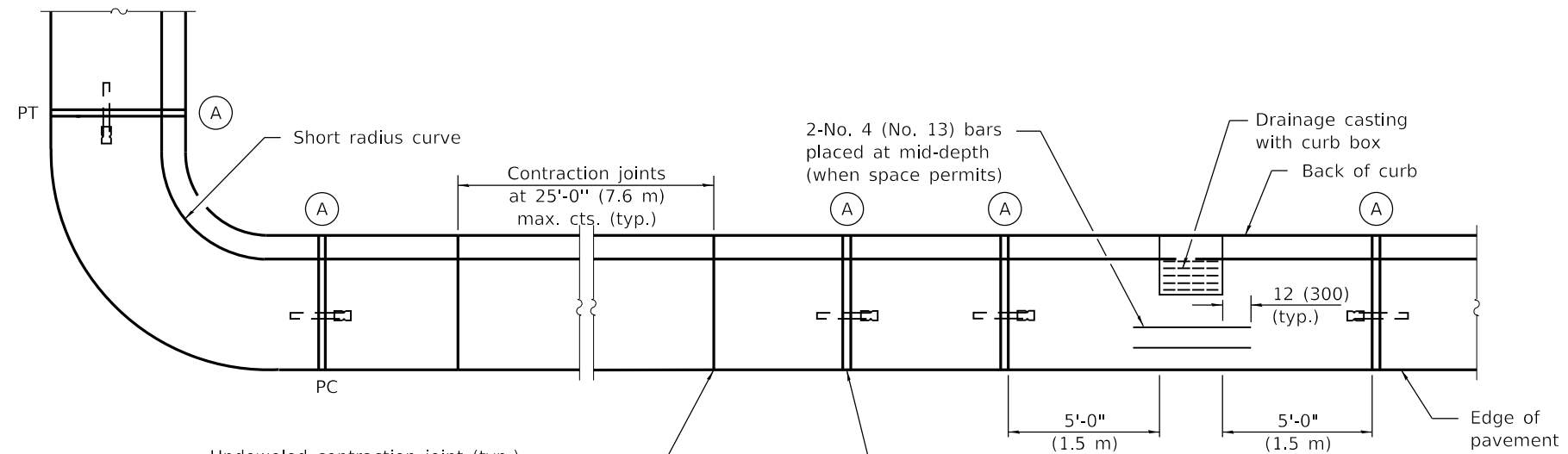
**STANDARD 606001-07**

Illinois Department of Transportation

PASSED January 1, 2018  
Michael Brand  
ENGINEER OF POLICY AND PROCEDURES

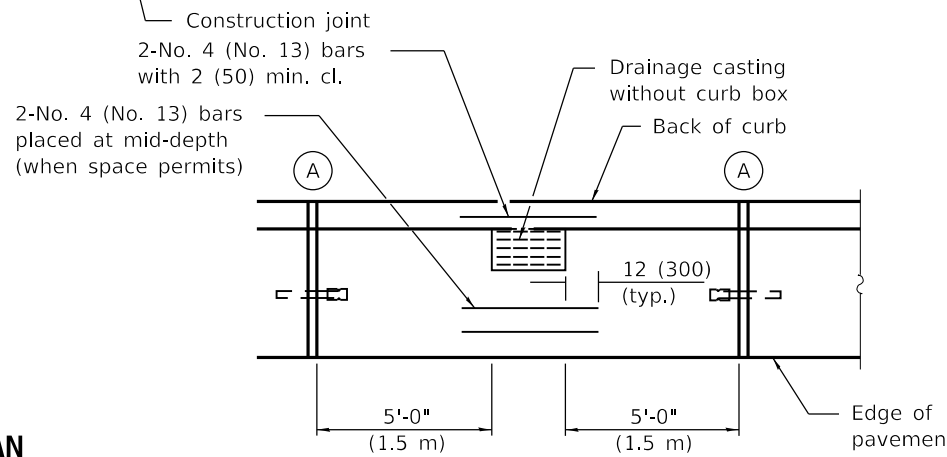
APPROVED January 1, 2018  
Maureen M. Beck  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

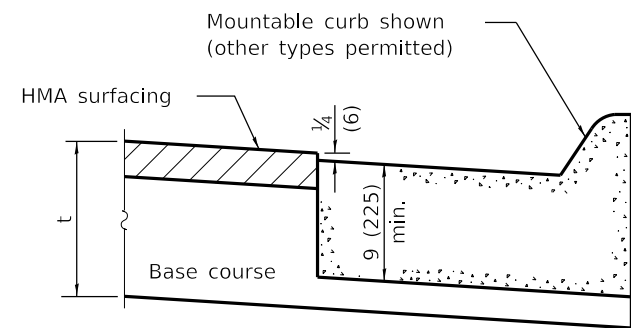


Undoweled contraction joint (typ.) construction options:

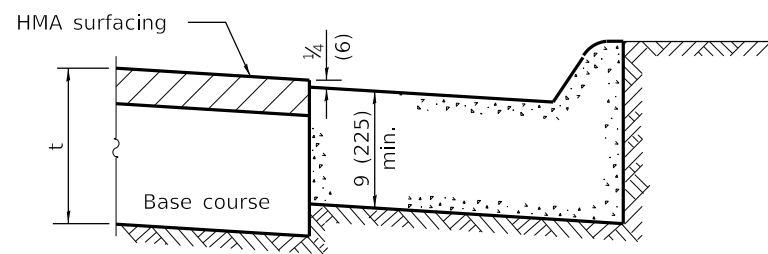
1. Form with 1/8 (3) thick steel template 2 (50) deep, and seal.
2. Saw 2 (50) deep at 4 to 24 hours, and seal.
3. Insert 3/4 (20) thick preformed joint filler full depth and width.



**PLAN**

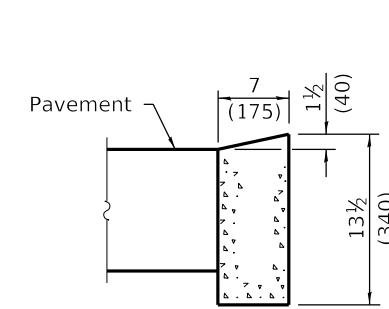


**ON DISTURBED SUBGRADE**

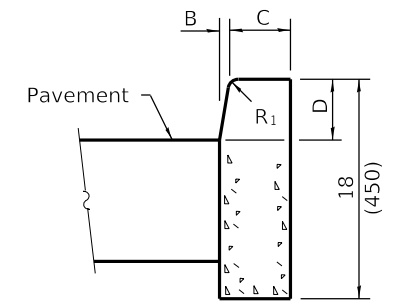


**ON UNDISTURBED SUBGRADE**

**ADJACENT TO FLEXIBLE PAVEMENT**

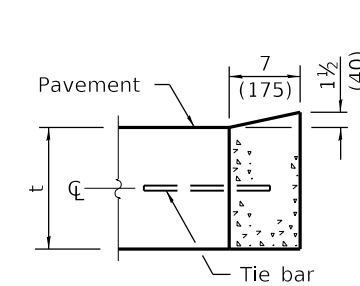


**DEPRESSED CURB**

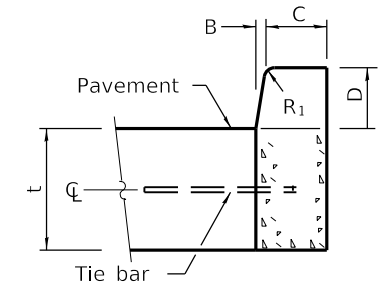


**BARRIER CURB**

**ADJACENT TO FLEXIBLE PAVEMENT**



**DEPRESSED CURB**



**BARRIER CURB**

**ADJACENT TO PCC PAVEMENT OR PCC BASE COURSE**

**CONCRETE CURB TYPE B**

**CONCRETE CURB TYPE B AND COMBINATION CONCRETE CURB AND GUTTER**

(Sheet 2 of 2)

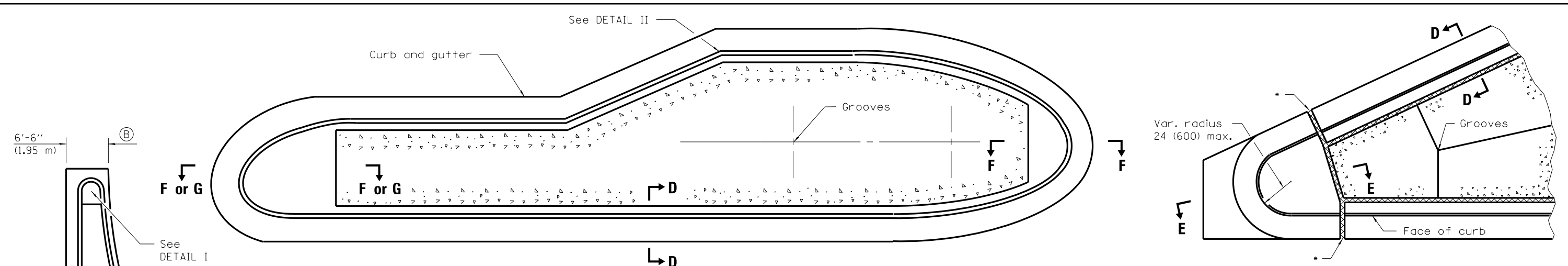
**STANDARD 606001-07**

Illinois Department of Transportation

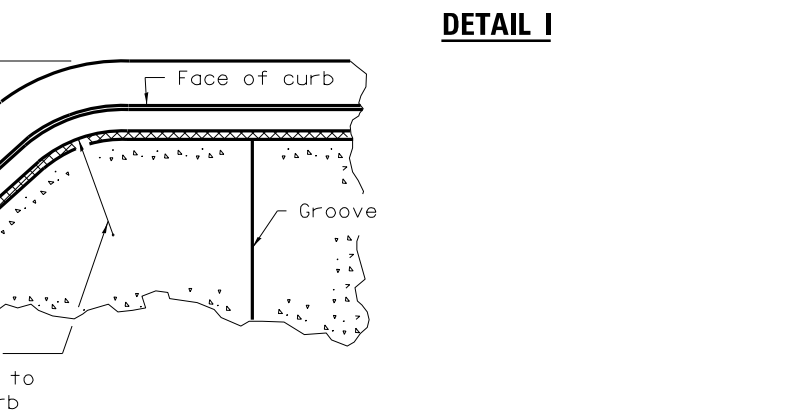
PASSED January 1, 2018  
*Michael Beard*  
 ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2018  
*Marcus M. Beck*  
 ENGINEER OF DESIGN AND ENVIRONMENT

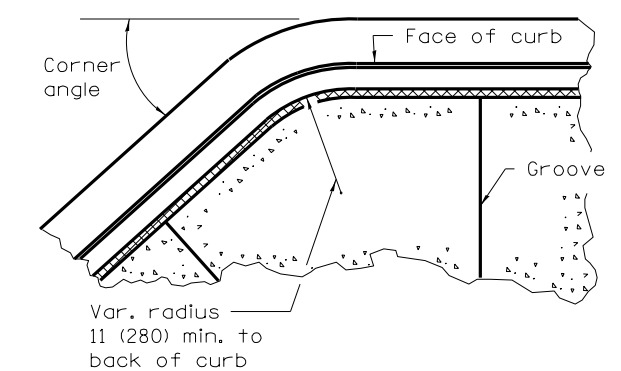
ISSUED 1-1-97



**TYPICAL PLAN OF MEDIAN ISLAND**  
(SEE SHEET 2 FOR DETAILS OF RAMPED NOSES)

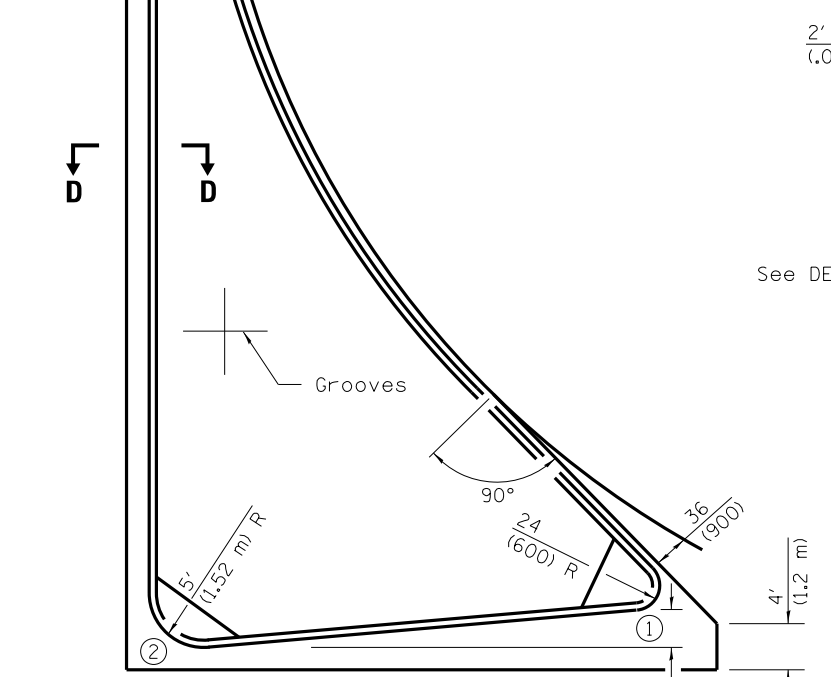


**DETAIL I**

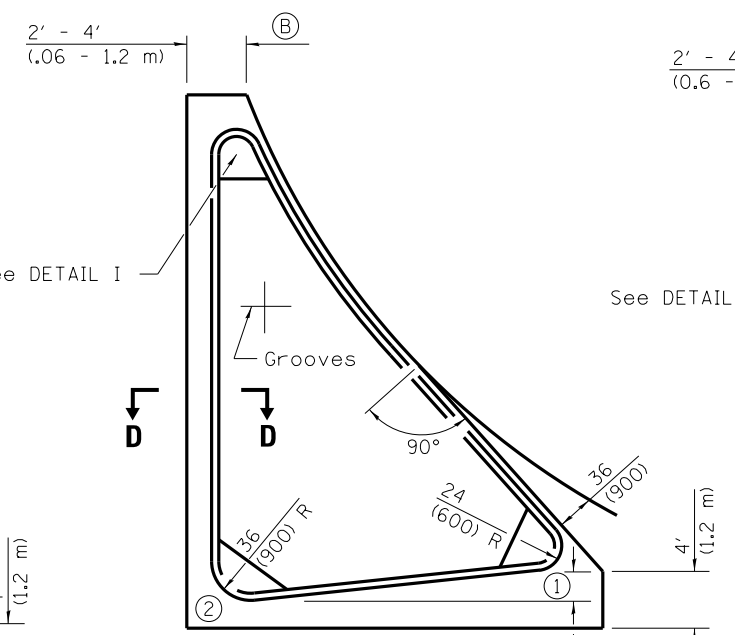


**DETAIL II**

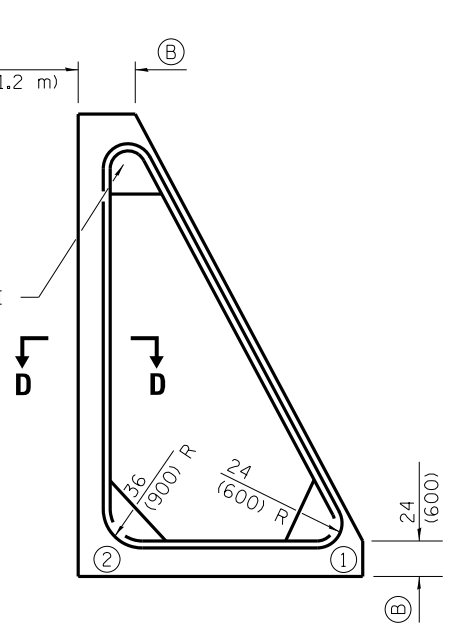
Typical detail when corner angle is less than 90° and for other corners with radius greater than 24 (600).



**LARGE ISLAND**  
(FREE FLOW DESIGN)



**INTERMEDIATE ISLAND**  
(FOR RIGHT TURN LANE DESIGN)



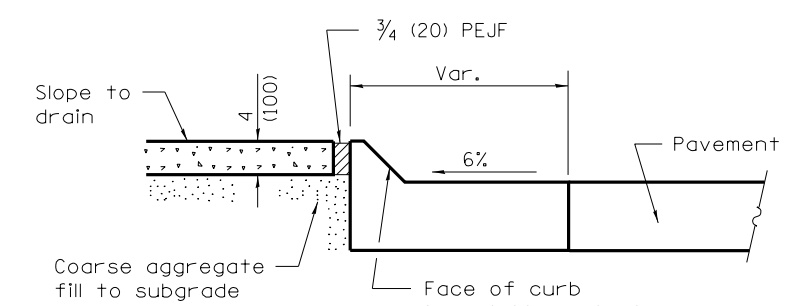
**SMALL ISLAND**

NOTE:  
The blockouts (B) for the islands shall be extended so that the termination will line up with proposed or existing pavement joint.

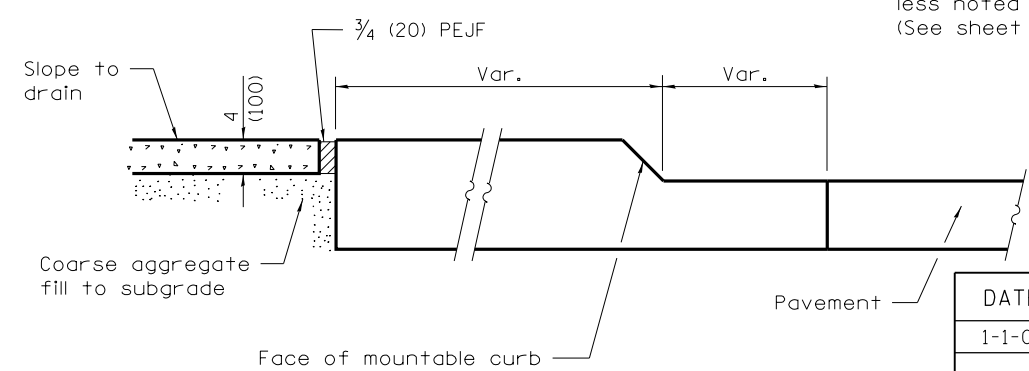
Noses (1) and (2) shall be ramped unless noted otherwise on the plans. (See sheet 2 for length)

**GENERAL NOTES**

- PEJF = Preformed expansion joint filler.
- Median layout and radii shall be as shown on the plans.
- Keyed longitudinal construction joints shall be constructed without tie bars.
- See Standard 420001 and 606001 for details not shown.
- ¾ (20) PEJF conforming to the full cross section of the curb, gutter and median surface.
- X = PCC base course plus HMA thickness.
- + = Pavement or pcc base course thickness.
- All dimensions are in inches (millimeters) unless otherwise shown.



**SECTION D-D**



**SECTION E-E**

DATE	REVISIONS
1-1-09	Switched units to English (metric).
1-1-07	Switched to Hot-Mix Asphalt (HMA) terminology.

**PC CONCRETE ISLANDS AND MEDIANS**

(Sheet 1 of 2)

**STANDARD 606301-04**

Illinois Department of Transportation

PASSED January 1, 2009

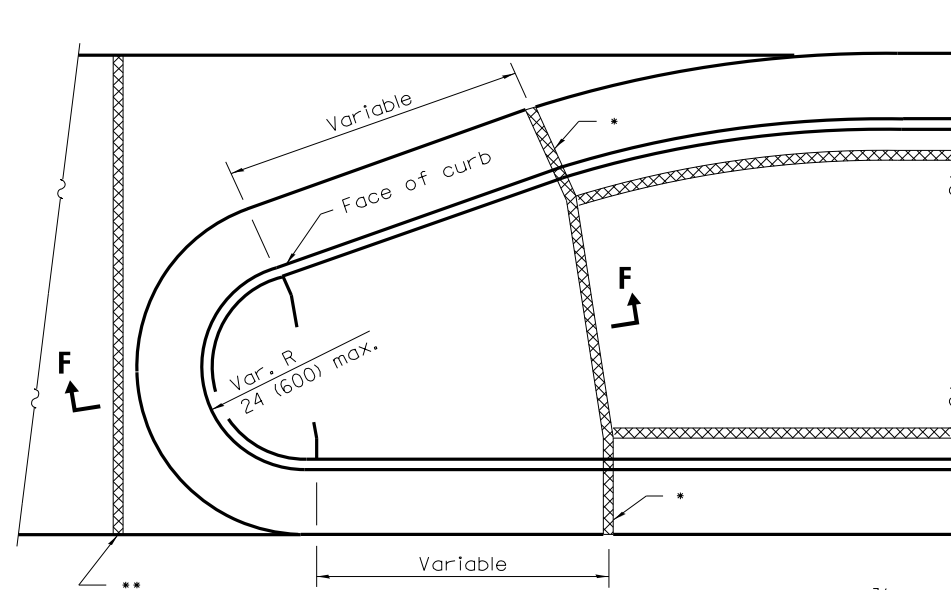
ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2009

ENGINEER OF DESIGN AND ENVIRONMENT

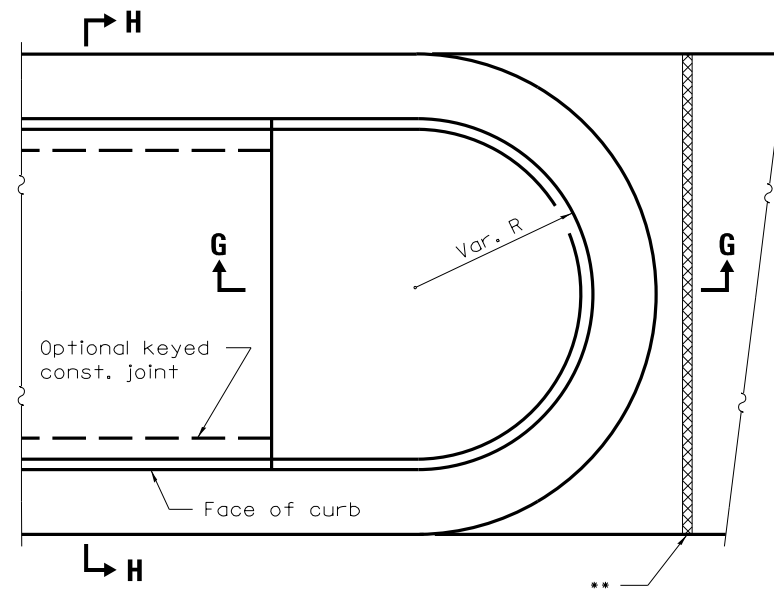
ISSUED 1-1-09





**TYPE P MEDIAN SURFACE**

\*\* 3/4 (20) PEJF between rigid pavement and median end. Align with joint in adjacent pavement.



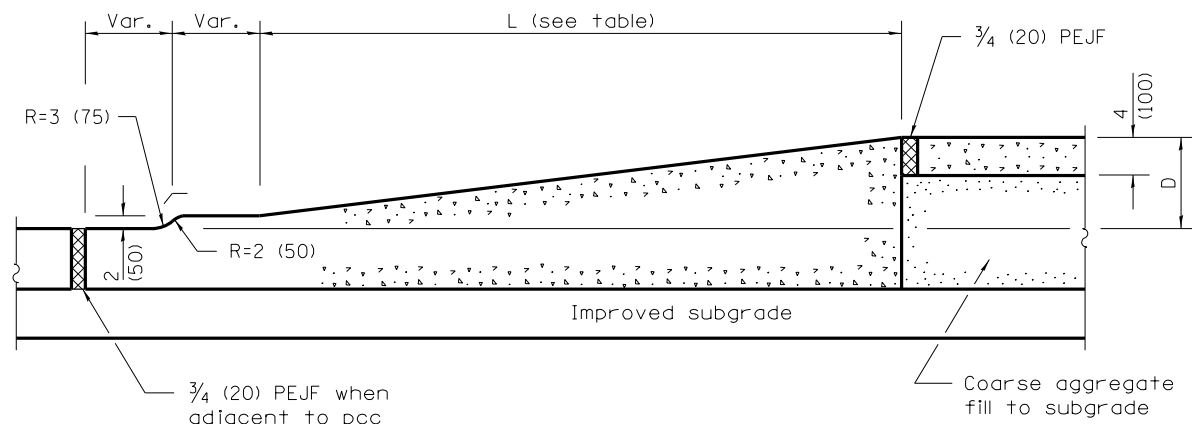
**SOLID MEDIAN**

TABLE OF DIMENSIONS					
TYPE SB MEDIANS					
TYPE	A	B	C	D	R <sub>1</sub>
SB-6.06 (SB-15.15)	6 (150)	1 (25)	6 (150)	6 (150)	1 (25)
SB-6.12 (SB-15.30)	12 (300)	1 (25)	6 (150)	6 (150)	1 (25)
SB-6.18 (SB-15.45)	18 (450)	1 (25)	6 (150)	6 (150)	1 (25)
SB-6.24 (SB-15.60)	24 (600)	1 (25)	6 (150)	6 (150)	1 (25)
SB-9.06 (SB-22.15)	6 (150)	2 (50)	5 (125)	9 (225)	1 (25)
SB-9.12 (SB-22.30)	12 (300)	2 (50)	5 (125)	9 (225)	1 (25)
SB-9.18 (SB-22.45)	18 (450)	2 (50)	5 (125)	9 (225)	1 (25)
SB-9.24 (SB-22.60)	24 (600)	2 (50)	5 (125)	9 (225)	1 (25)

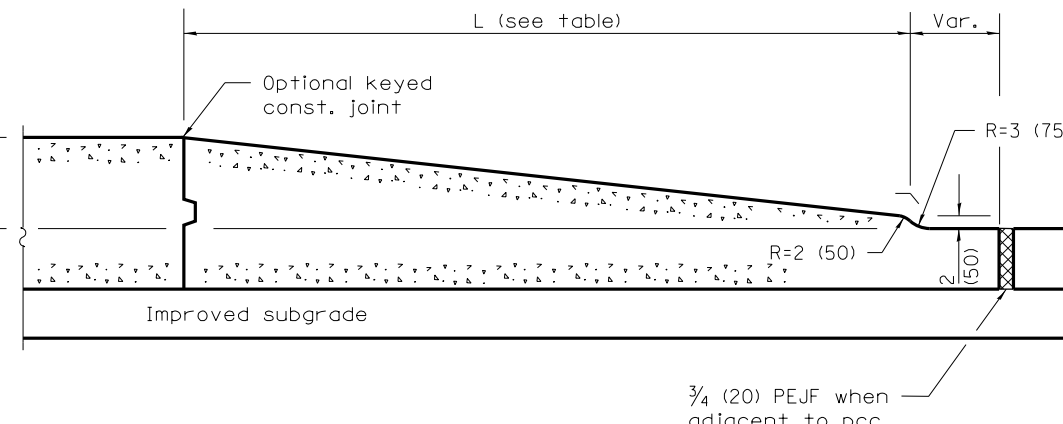
TABLE OF DIMENSIONS					
TYPE M AND SM MEDIANS					
TYPE	A	B	C	D	R <sub>1</sub>
M-2.06 (M-5.15)	6 (150)	2 (50)	4 (100)	2 (50)	2 (50)
M-2.12 (M-5.30)	12 (300)	2 (50)	4 (100)	2 (50)	2 (50)
SM-4.06 (SM-10.15)	6 (150)	4 (100)	3 (75)	4 (100)	3 (75)
SM-4.12 (SM-10.30)	12 (300)	4 (100)	3 (75)	4 (100)	3 (75)
SM-4.18 (SM-10.45)	18 (450)	4 (100)	3 (75)	4 (100)	3 (75)
SM-4.24 (SM-10.60)	24 (600)	4 (100)	3 (75)	4 (100)	3 (75)
SM-6.06 (SM-15.15)	6 (150)	6 (150)	2 (50)	6 (150)	2 (50)
SM-6.12 (SM-15.30)	12 (300)	6 (150)	2 (50)	6 (150)	2 (50)
SM-6.18 (SM-15.45)	18 (450)	6 (150)	2 (50)	6 (150)	2 (50)
SM-6.24 (SM-15.60)	24 (600)	6 (150)	2 (50)	6 (150)	2 (50)

**PLAN**

(RAMPED NOSES)

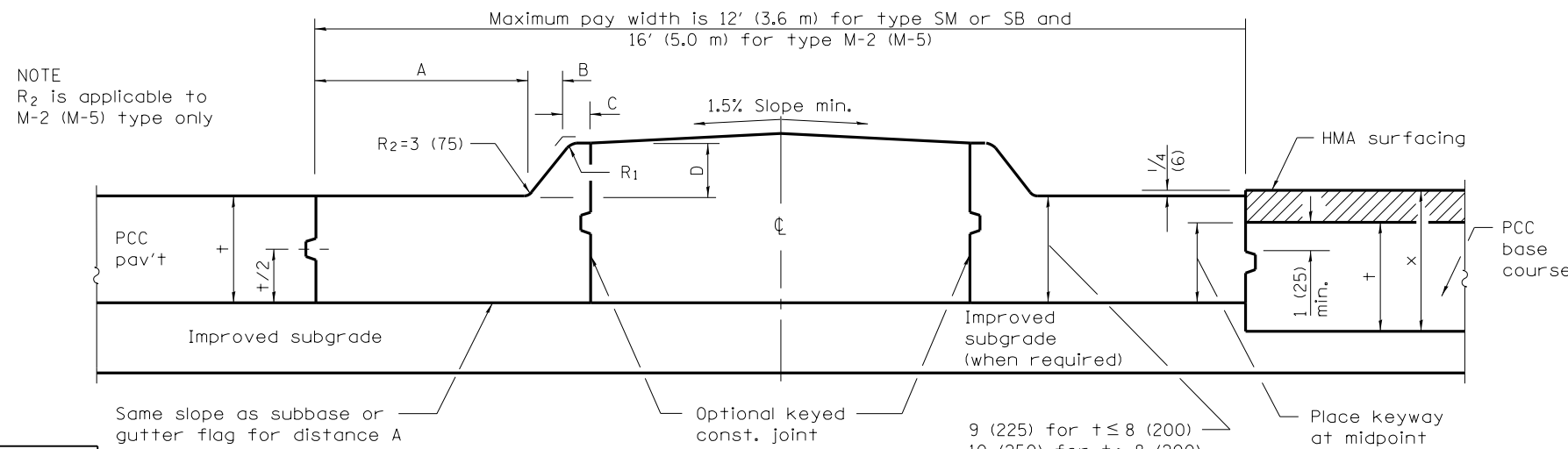


**SECTION F-F**



**SECTION G-G**

TABLE OF RAMPED NOSE LENGTHS	
TYPE OF NOSE	L
Median	6' (1.8 m)
Small Island	24 (600)
Intermediate Island	4' (1.2 m)
Large Island	6' (1.8 m)

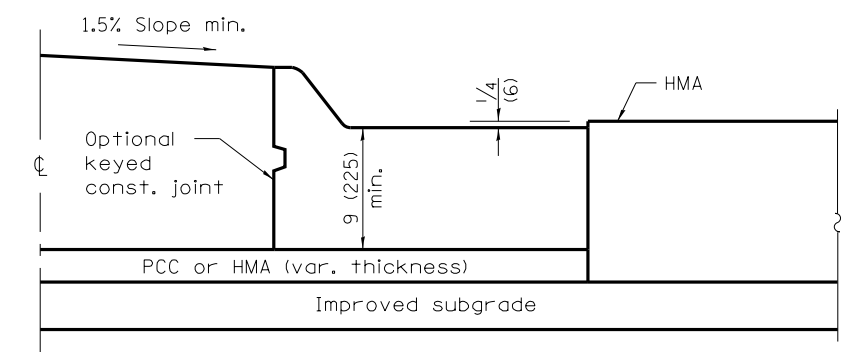


**HALF SECTION FOR PCC PAVEMENT**

**HALF SECTION FOR PCC BASE COURSE**

**SECTION H-H**

(TYPE SM, SB & M-5 (M-2) MEDIANS)



**HALF SECTION FOR FLEXIBLE PAVEMENT**

NOTE  
R<sub>2</sub> is applicable to M-2 (M-5) type only

Same slope as subbase or gutter flag for distance A

9 (225) for t ≤ 8 (200)  
10 (250) for t > 8 (200)

Place keyway at midpoint

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APPROVED January 1, 2009

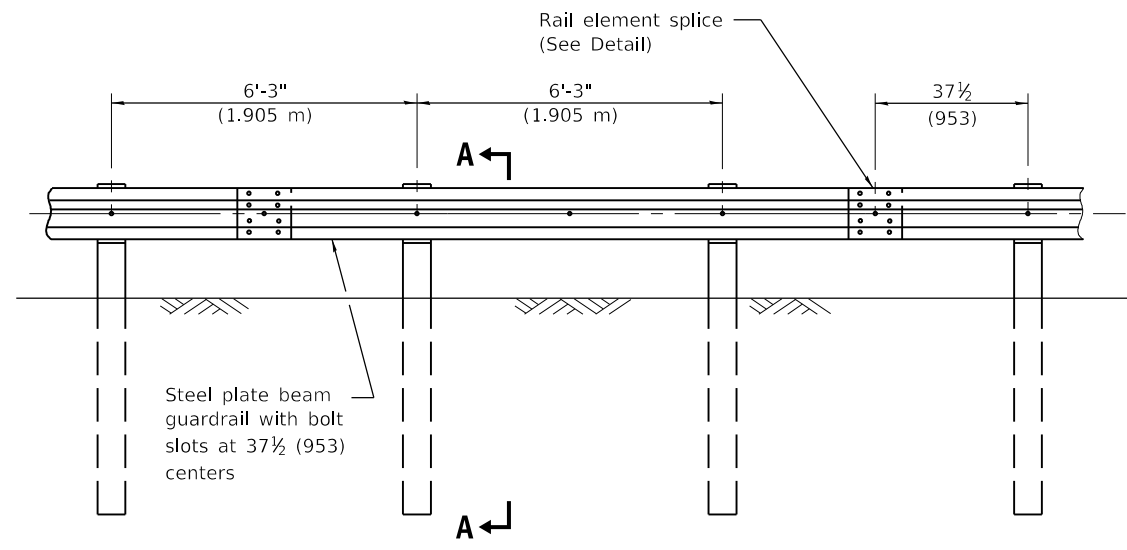
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

**PC CONCRETE ISLANDS AND MEDIANS**

(Sheet 2 of 2)

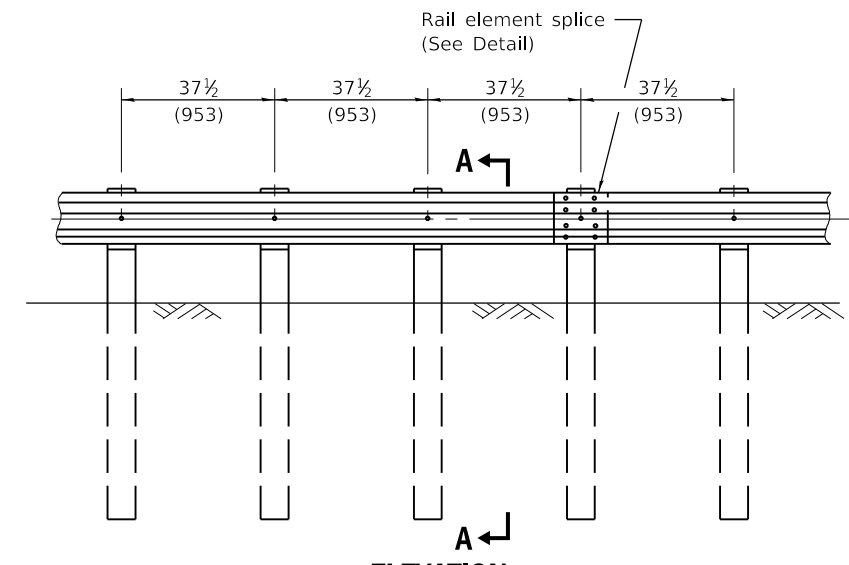
**STANDARD 606301-04**



**ELEVATION**

**TYPE A**

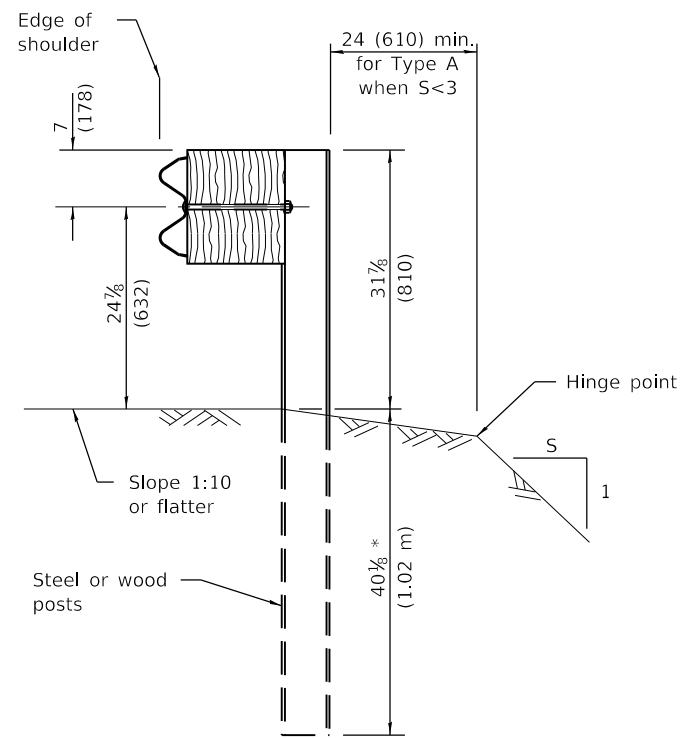
6'-3" (1.905 m) Typical post spacing



**ELEVATION**

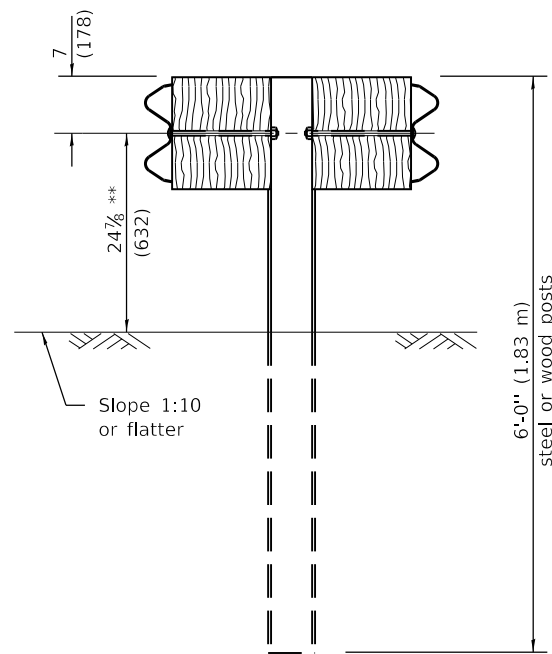
**TYPE B**

37 1/2 (953) Closed post spacing



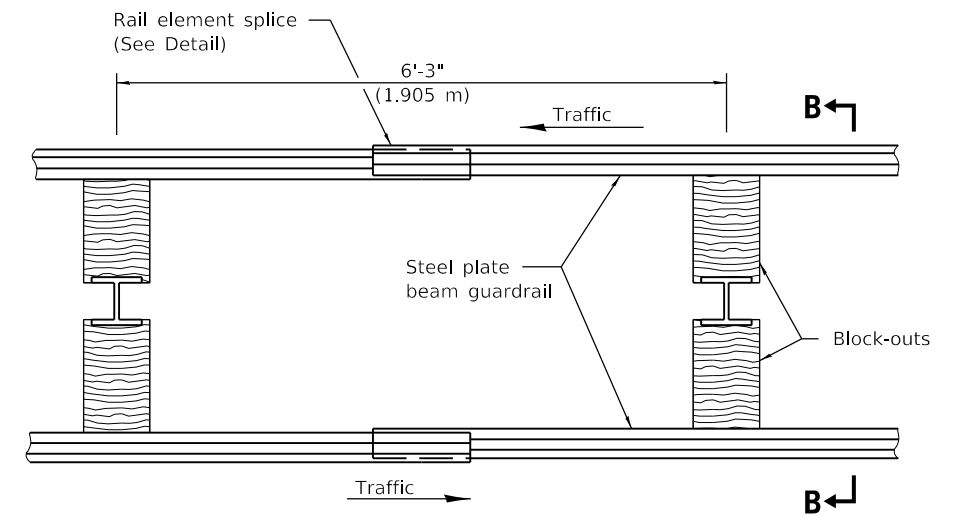
**SECTION A-A**

\* When "S" is less than 3 and the distance from the back of post is less than 24 (610), the post shall be steel and the embedment shall be 76 1/8 (1.93 m) and the minimum top of rail height shall be 31 (787).



**SECTION B-B**

\*\* When connecting Type D guardrail to an impact attenuator, adjust this dimension to match over a distance of 25'-0" (7.62 m) from point of connection if necessary.



**PLAN**

**TYPE D**

Double steel plate beam guardrail  
6'-3" (1.905 m) typical post spacing

**GENERAL NOTES**

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

All dimensions are in inches (millimeters) unless otherwise shown.

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ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2018  
*Maureen M. Beck*  
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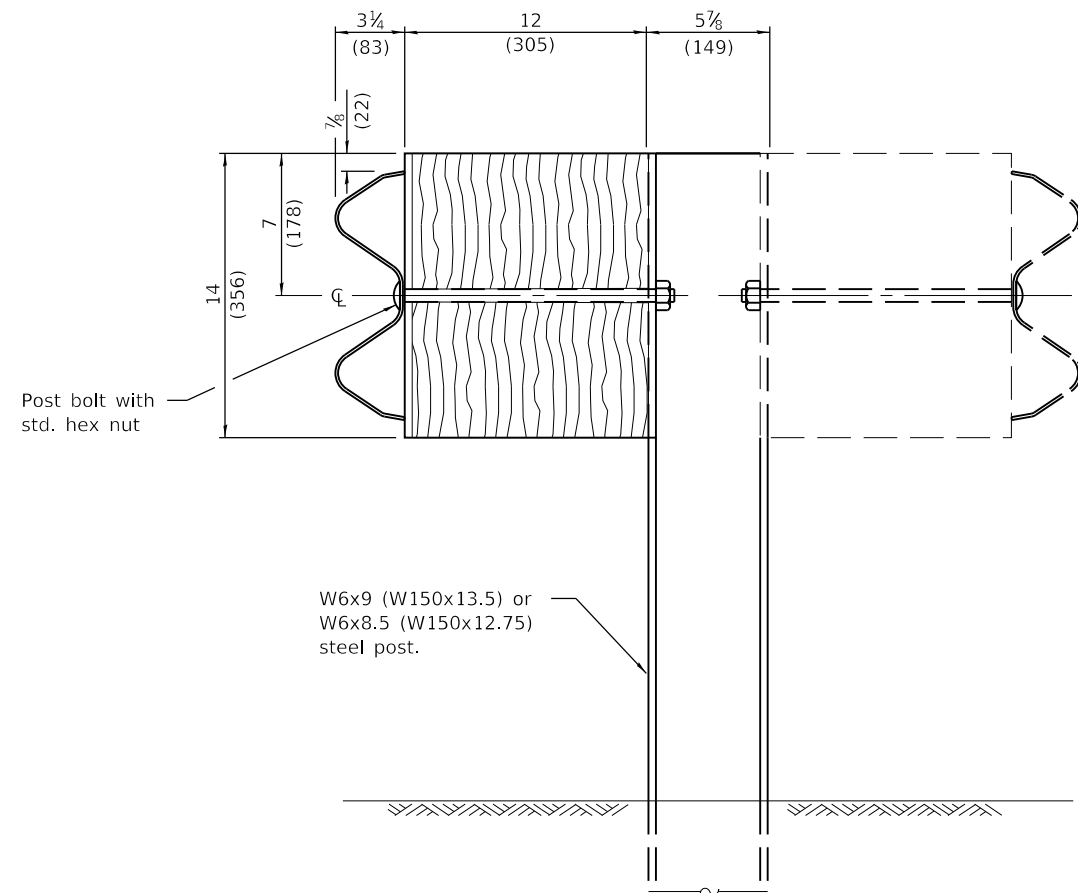
ISSUED 1-1-97

DATE	REVISIONS
1-1-18	Revised steel post to have four holes in each flange.
1-1-17	Added detail for leave-out.
	Rev. 'D' to less than 6 (150) for guardrail behind curb.

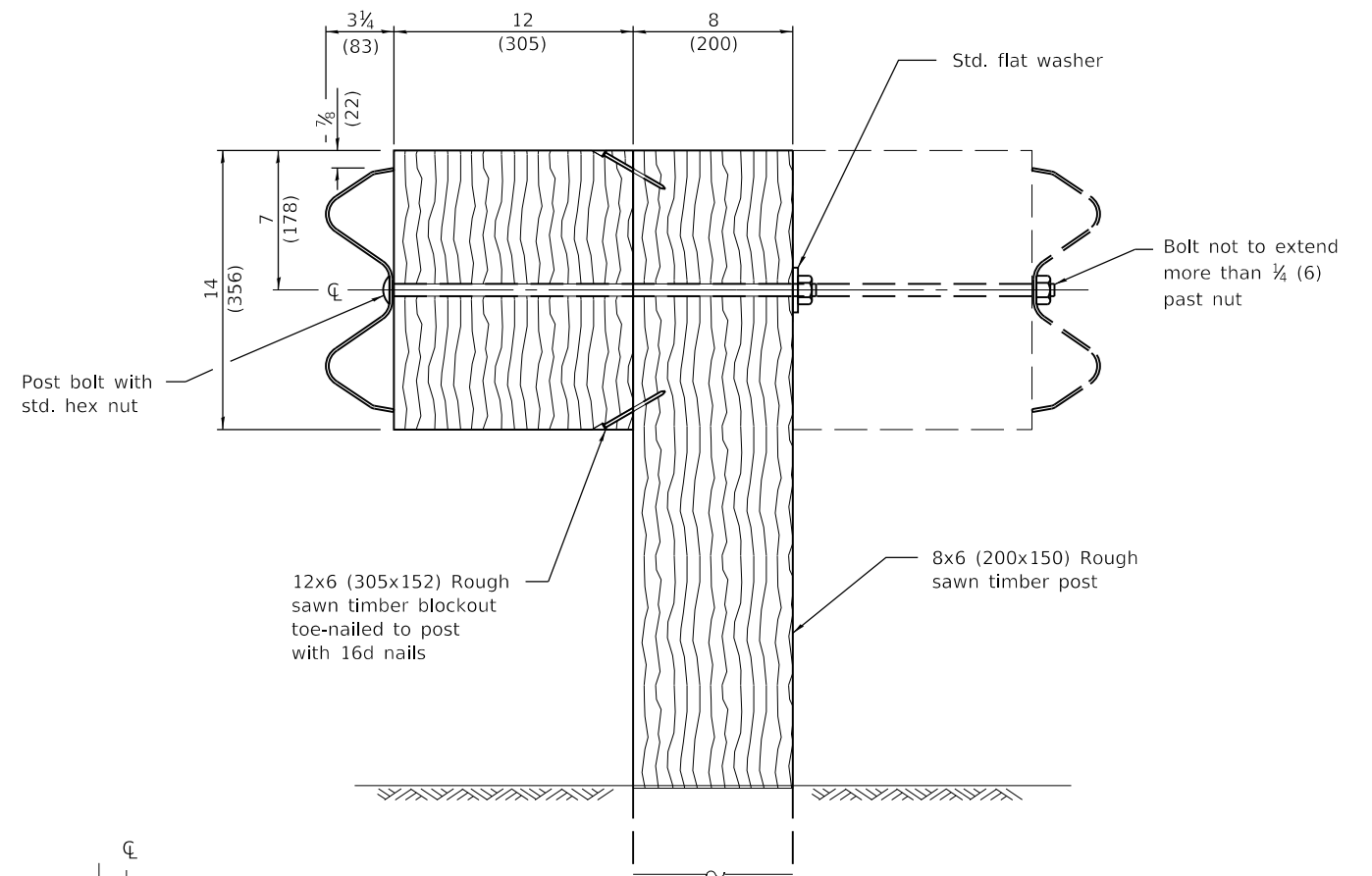
**STEEL PLATE BEAM GUARDRAIL**

(Sheet 1 of 4)

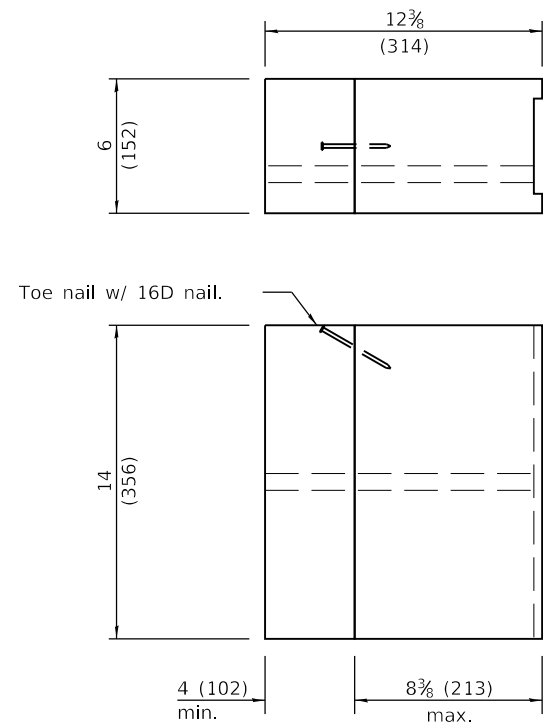
**STANDARD 630001-12**



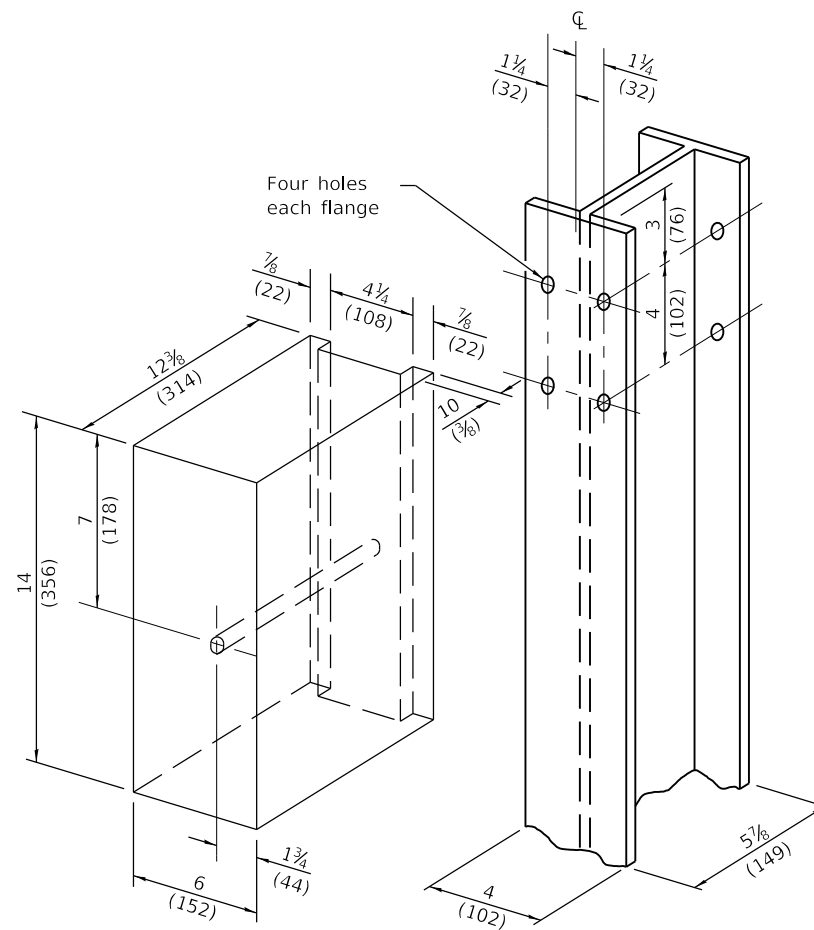
**STEEL POST CONSTRUCTION**



**WOOD POST CONSTRUCTION**

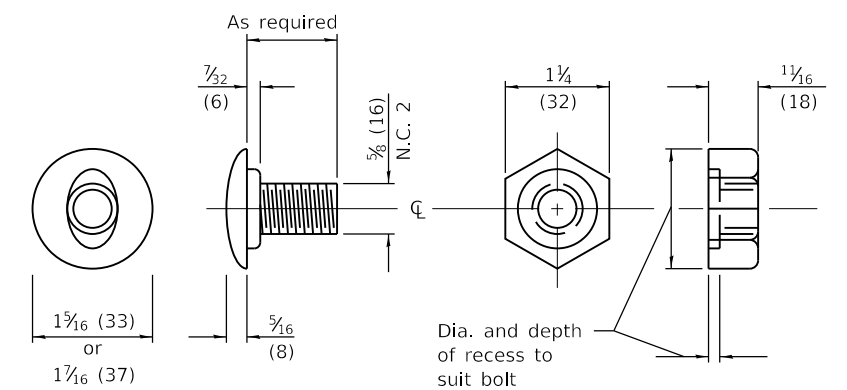


**TWO-PIECE WOOD BLOCKOUT OPTION**



Note:  
All holes 3/4 (20) dia.

**WOOD BLOCK-OUT AND STEEL POST DETAILS**



**POST OR SPLICE BOLT & NUT**

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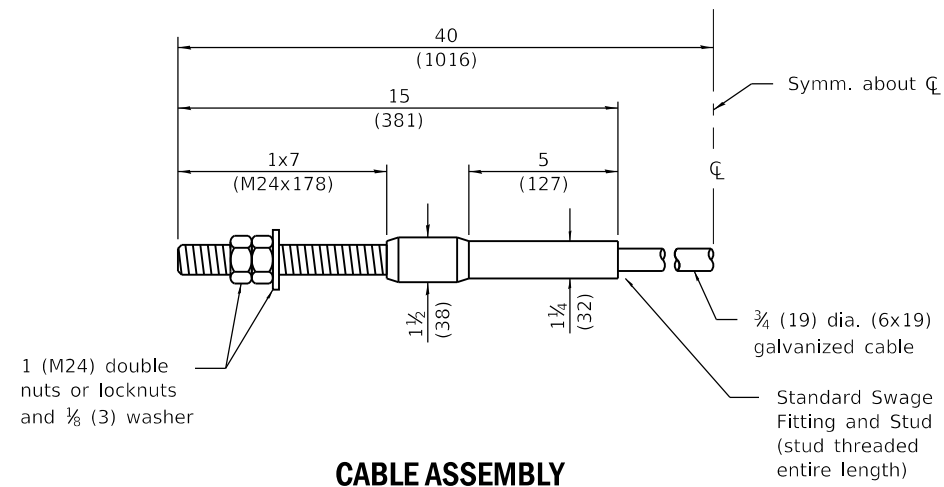
Marcus M. Beck  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-18

**STEEL PLATE BEAM GUARDRAIL**

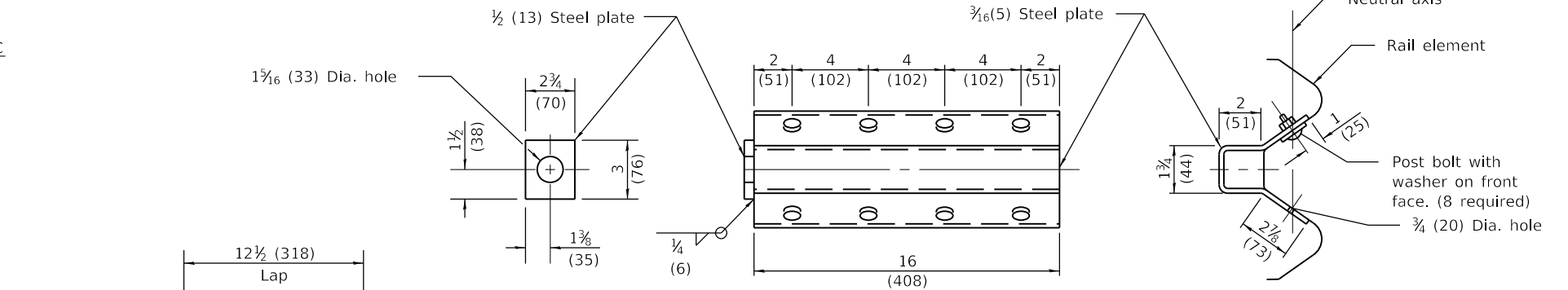
(Sheet 2 of 4)

**STANDARD 630001-12**



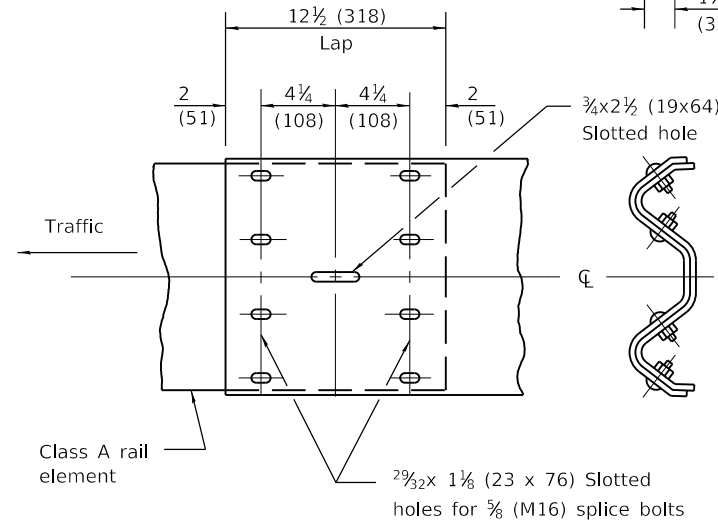
**CABLE ASSEMBLY**

(42,800 lbs. (190 kN) min. breaking strength)  
Tighten to taut tension.

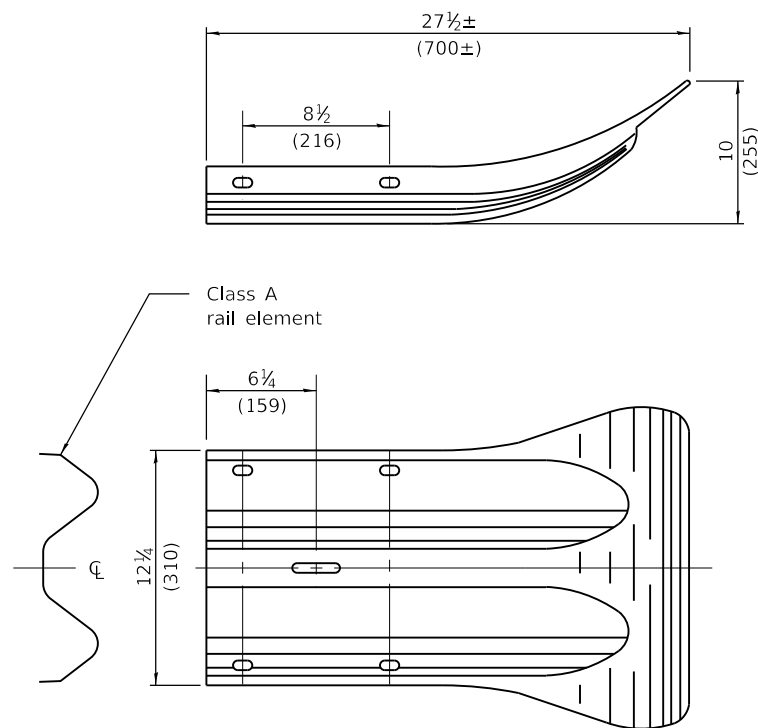


NOTE  
Anchor plate T shall be used to attach cable assembly to guardrail when required on traffic barrier terminals.

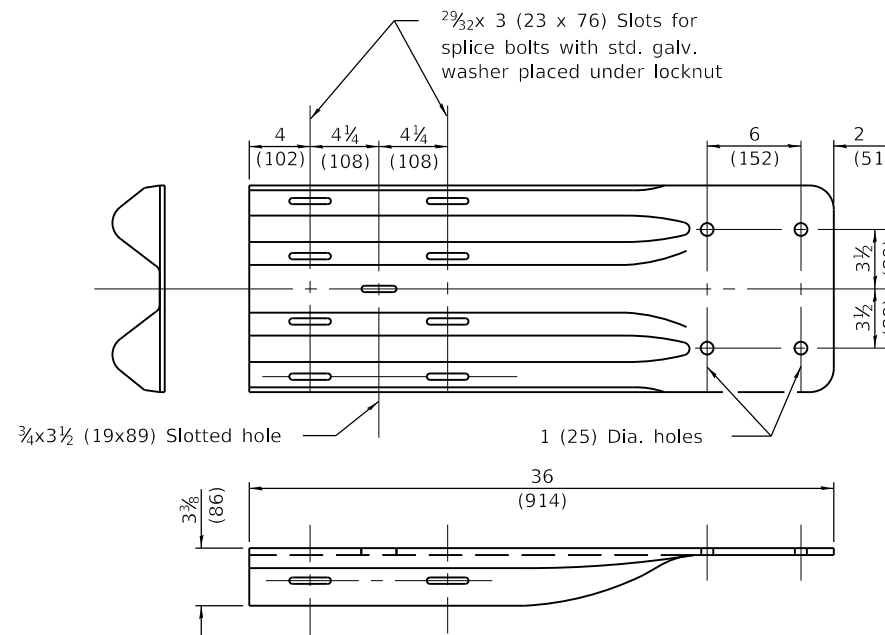
**ANCHOR PLATE T DETAILS**



**RAIL ELEMENT SPLICE**



**END SECTION**

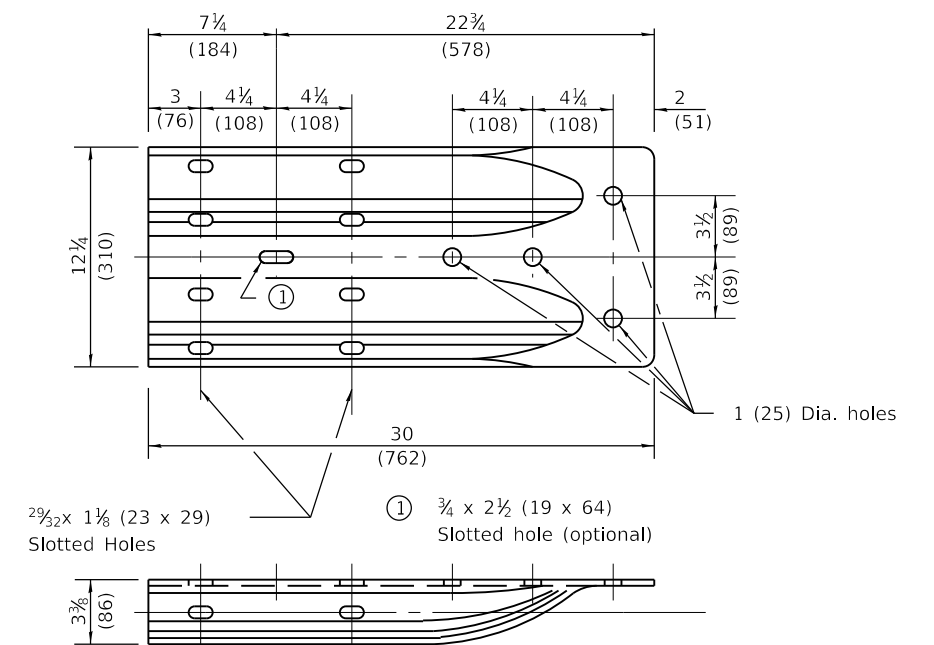


NOTE  
When end shoe is attached to a bridge parapet which has an expansion joint, the bolts shall be provided with a locknut or double nut and shall be tightened only to a point that will allow guardrail movement.

The standard end shoe shall be attached to the concrete with pre-drilled or self-drilling anchor bolts. The anchor cone shall be set flush with the surface of the concrete.

Externally threaded studs protruding from the surface of the concrete will not be permitted.

**END SHOE**



**ALTERNATE END SHOE**

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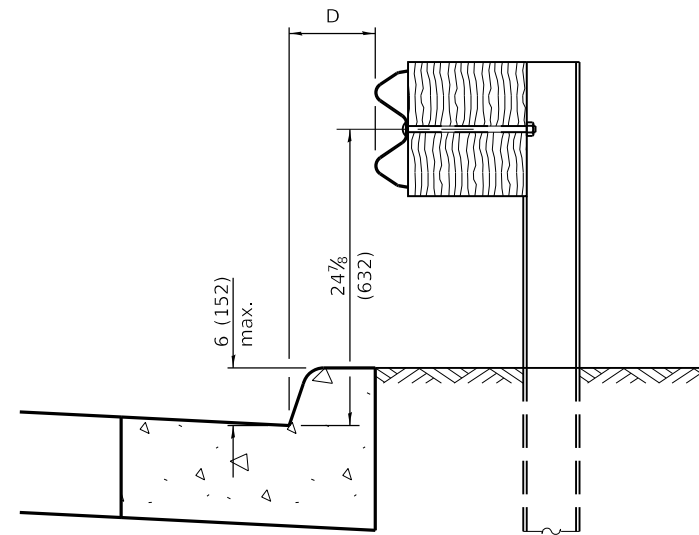
APPROVED January 1, 2018  
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ISSUED 1-1-97

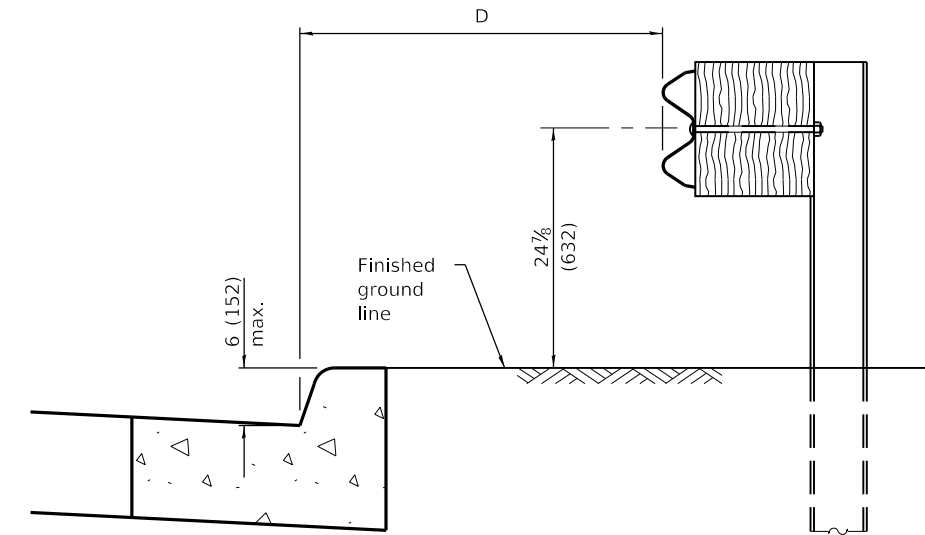
**STEEL PLATE BEAM  
GUARDRAIL**

(Sheet 3 of 4)

**STANDARD 630001-12**



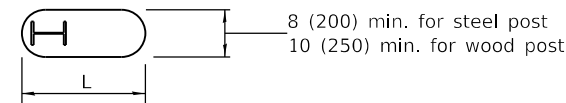
**$0 \leq D < 6 (150 \text{ m})$**



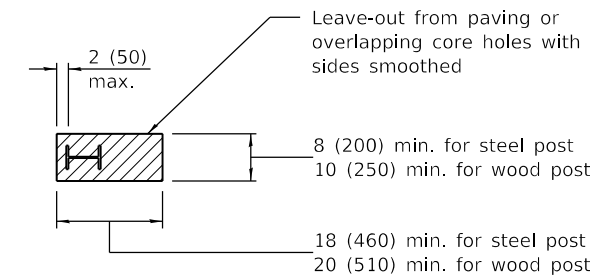
**$4'-0'' (1.2 \text{ m}) \leq D \leq 12'-0'' (3.7 \text{ m})$**

**GUARDRAIL PLACED BEHIND CURB**

Note: 'D' shall not exceed 6 (152) for design speeds greater than 45 mph.

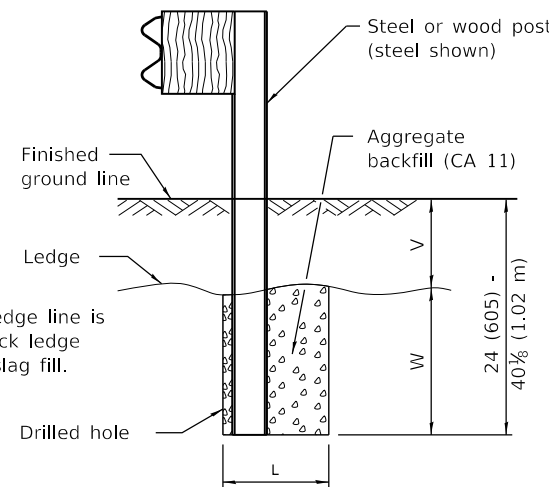


**PLAN**



**PLAN**

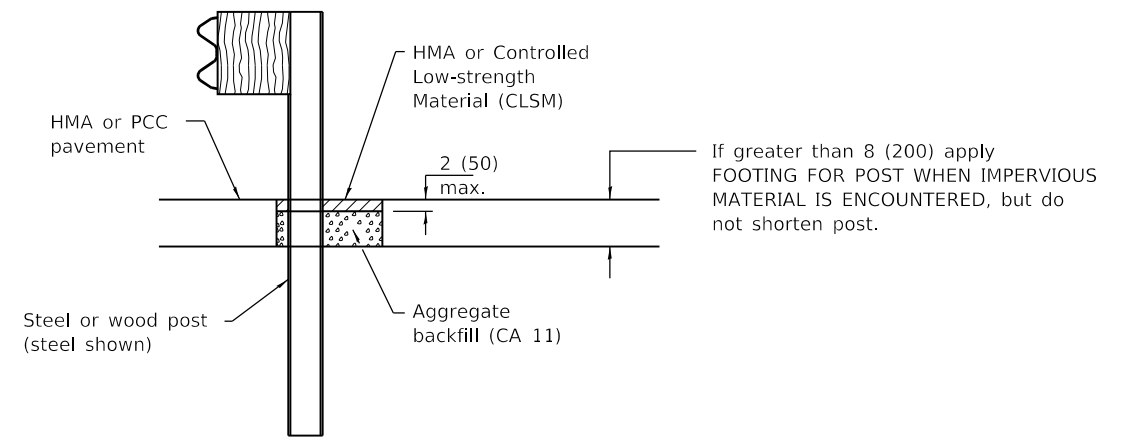
V	W	L	
		Steel Post	Wood Post
0 - 6 (0 - 152)	24 (610)	21 (530)	23 (580)
> 6 - 18 (> 152 - 458)	18 (458)	14½ (368)	16½ (419)
> 18 - 31 (> 458 - 787)	12 (305)	8 (203)	10 (250)
> 31 - 40½ (> 787 - 1.02 m)	12 - 0 (305 - 0)	8 (203)	10 (250)



Note: Ledge line is top of rock ledge or hard slag fill.

**ELEVATION**

**FOOTING FOR POST WHEN IMPERVIOUS MATERIAL IS ENCOUNTERED**



If greater than 8 (200) apply FOOTING FOR POST WHEN IMPERVIOUS MATERIAL IS ENCOUNTERED, but do not shorten post.

**ELEVATION**

**LEAVE-OUT FOR POST WHEN PAVED MATERIAL IS ENCOUNTERED**

Illinois Department of Transportation

APPROVED January 1, 2018  
*Michael Beard*  
 ENGINEER OF POLICY AND PROCEDURES

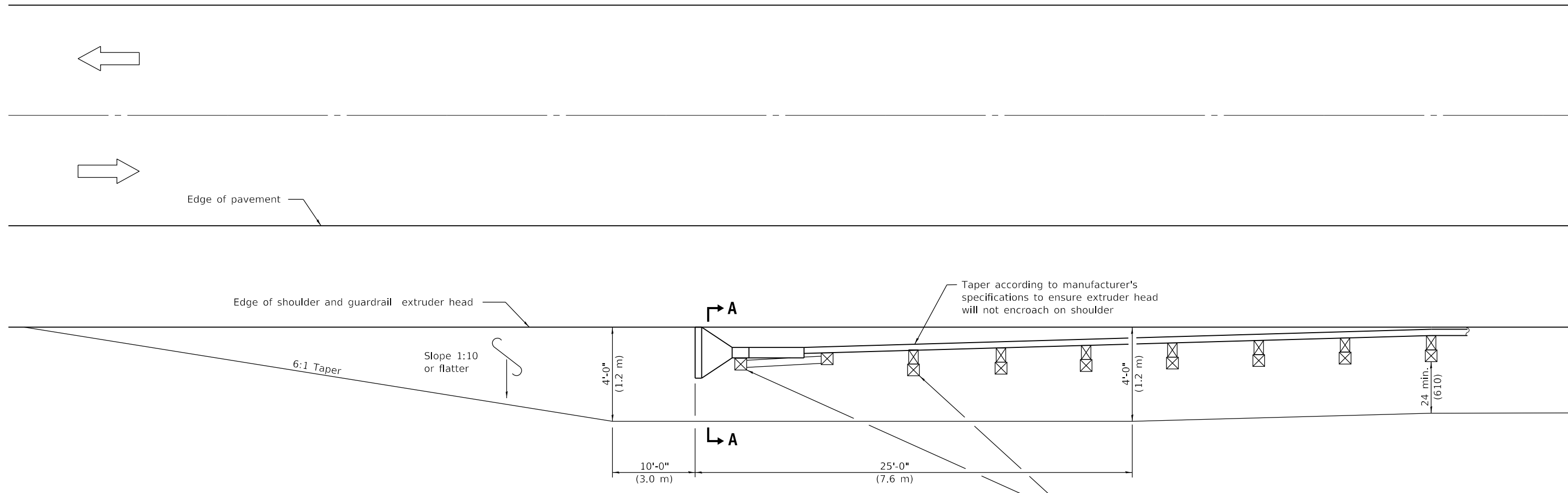
APPROVED January 1, 2018  
*Marcus M. Beck*  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

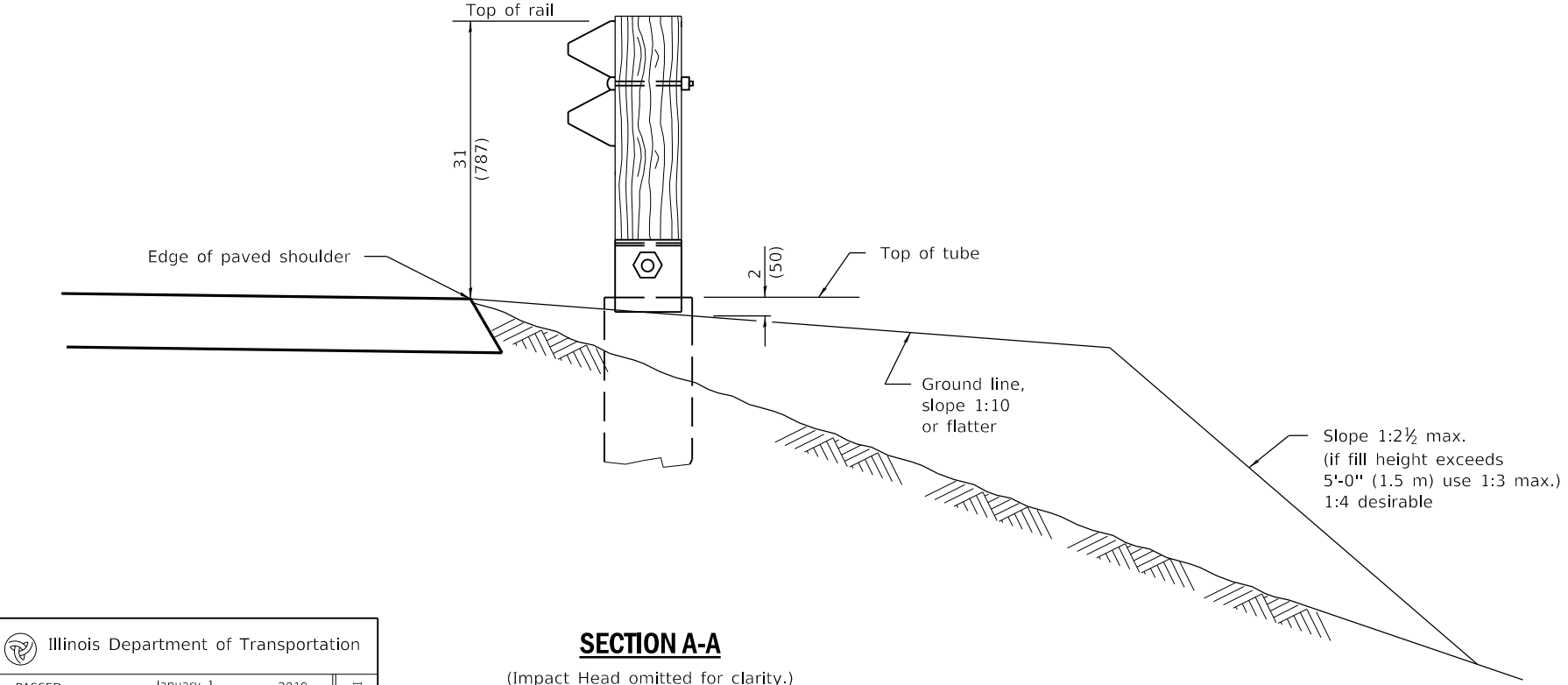
**STEEL PLATE BEAM GUARDRAIL**

(Sheet 4 of 4)

**STANDARD 630001-12**



**SHOULDER WIDENING TRANSITION  
FOR TANGENT TERMINAL**



**SECTION A-A**  
(Impact Head omitted for clarity.)

Beginning length of need point varies by manufacturer. Typically occurs between posts 1 and 3.

**GENERAL NOTES**

All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-19	Removed pay limits. Revised notes regarding the taper/flare and length of need point.
1-1-18	Omitted posts from 'Pay limits of other type'.

**SHOULDER WIDENING FOR  
TYPE 1 (SPECIAL)  
GUARDRAIL TERMINALS**  
(Sheet 1 of 2)

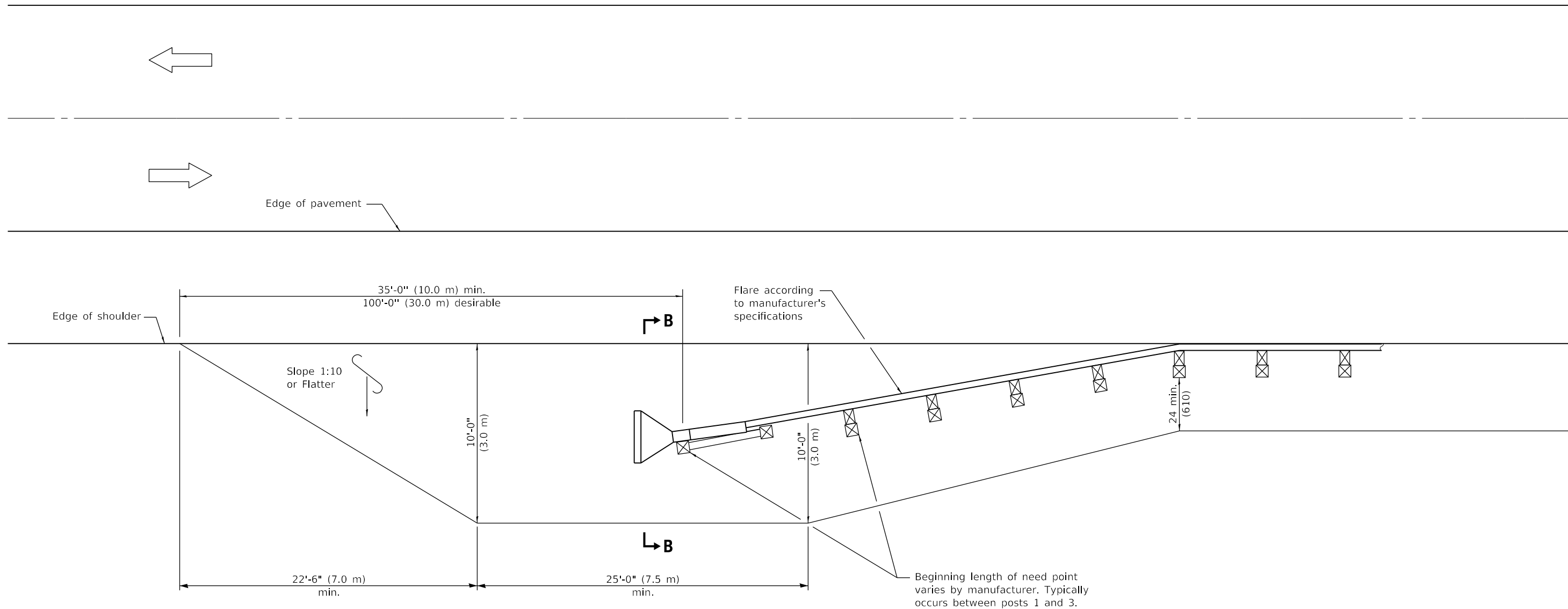
**STANDARD 630301-09**

Illinois Department of Transportation

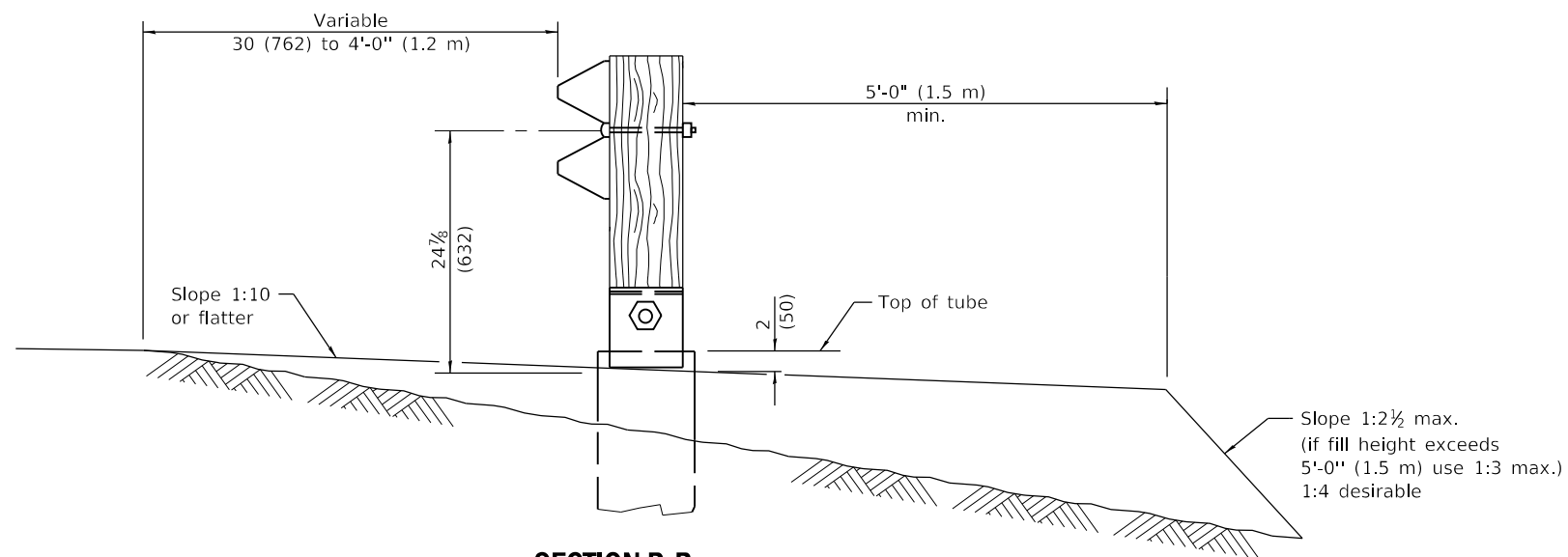
PASSED January 1, 2019  
*Michael Bond*  
ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2019  
*John E. Edwards*  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-00



**SHOULDER WIDENING TRANSITION  
FOR FLARED TERMINAL**



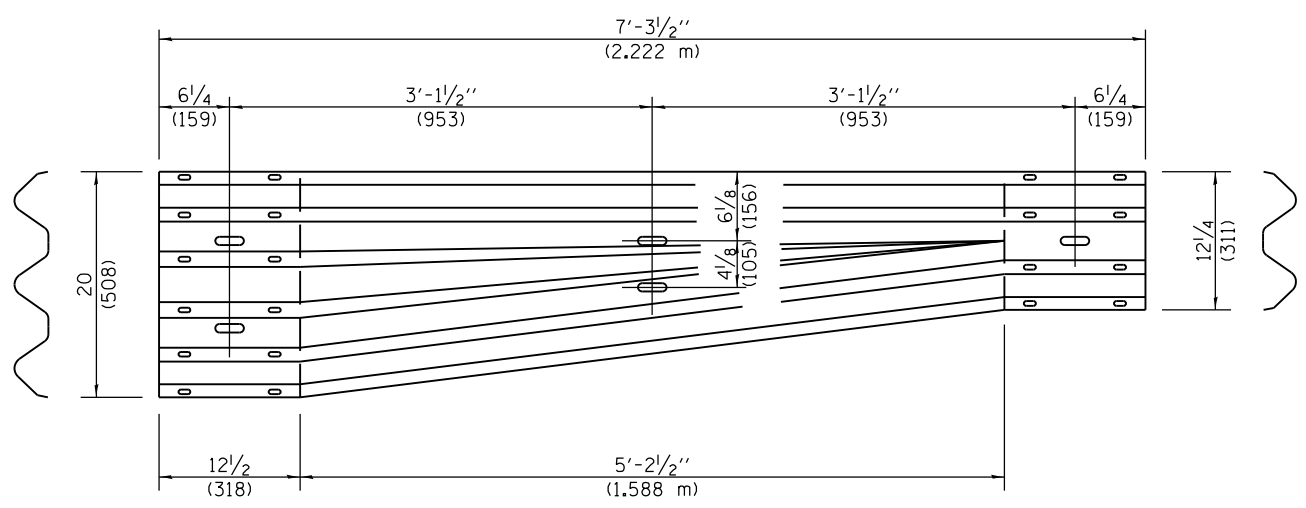
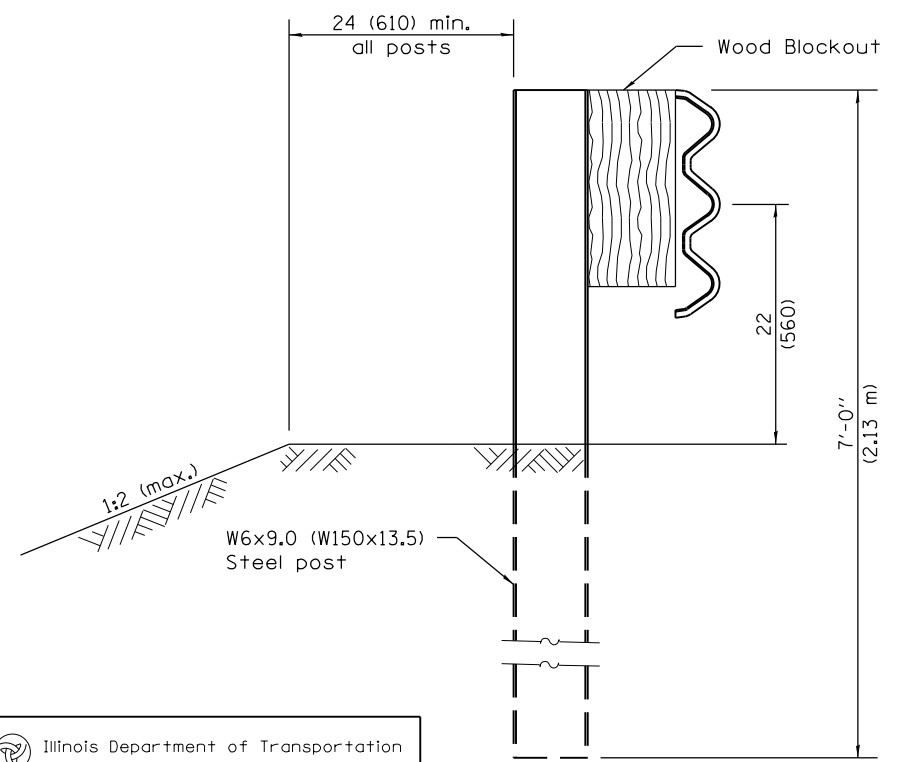
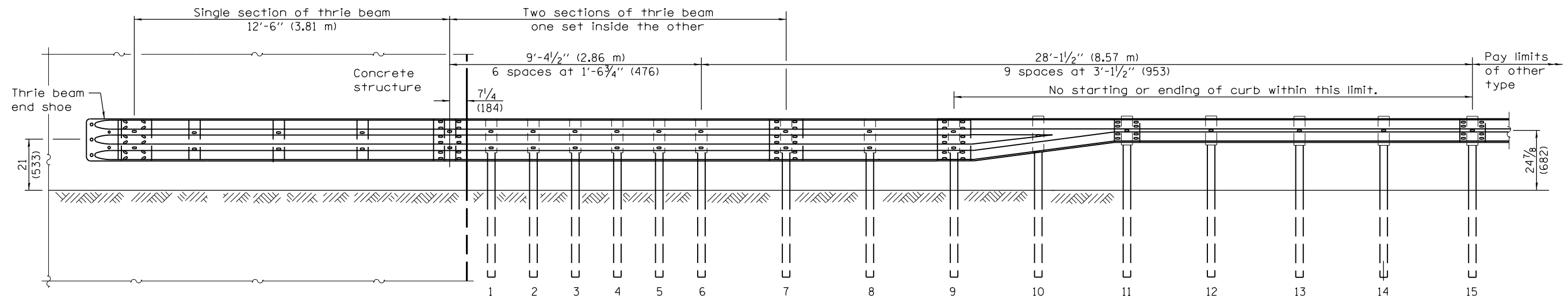
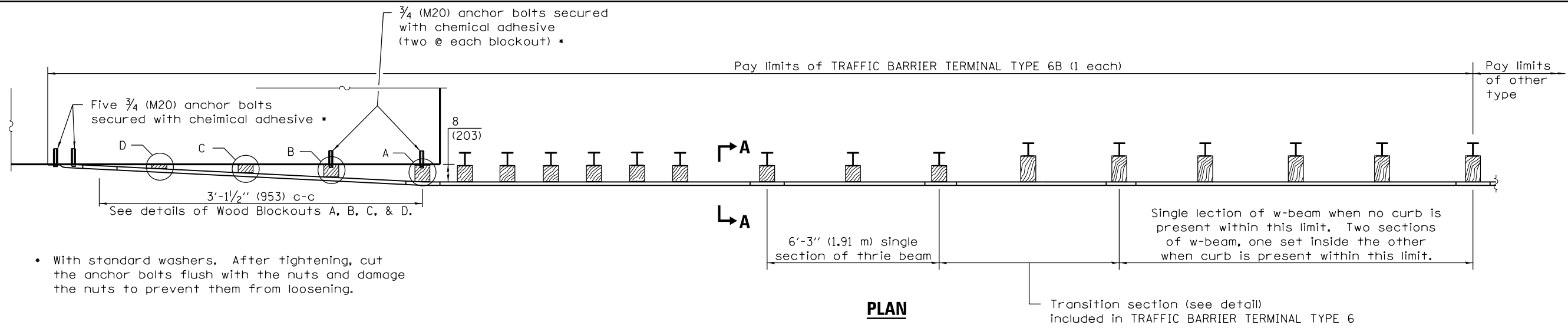
**SECTION B-B**  
(Impact Head omitted for clarity.)

**SHOULDER WIDENING FOR  
TYPE 1 (SPECIAL)  
GUARDRAIL TERMINALS**

(Sheet 2 of 2)

**STANDARD 630301-09**

	Illinois Department of Transportation	
	PASSED	January 1, 2019
	ENGINEER OF POLICY AND PROCEDURES	
APPROVED	January 1, 2019	ISSUED 1-1-00
ENGINEER OF DESIGN AND ENVIRONMENT		



**GENERAL NOTES**

- See Standard 630001 for details of guardrail not shown.
- Thrie beam rail shall be bolted to block-out at all posts.
- All slope ratios are expressed as units of vertical displacement to units of horizontal displacement (V:H).
- All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

PASSED January 1, 2017

Michael Beard  
ENGINEER OF POLICY AND PROCEDURES

APPROVED January 1, 2017

Maureen M. Adams  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-2003

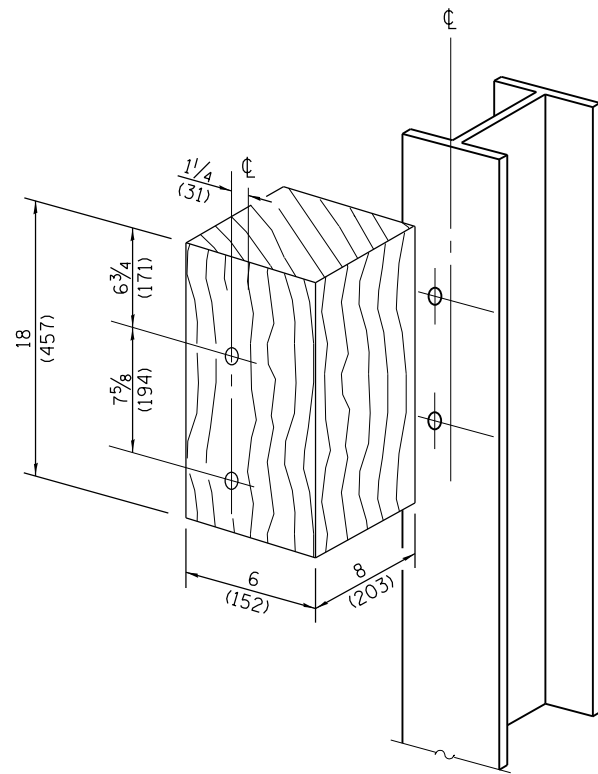
DATE	REVISIONS
1-1-17	Revised length of thrie beam. Revised length of posts.
1-1-15	Revised notes for attachment to concrete structure.

**TRAFFIC BARRIER TERMINAL, TYPE 6B**

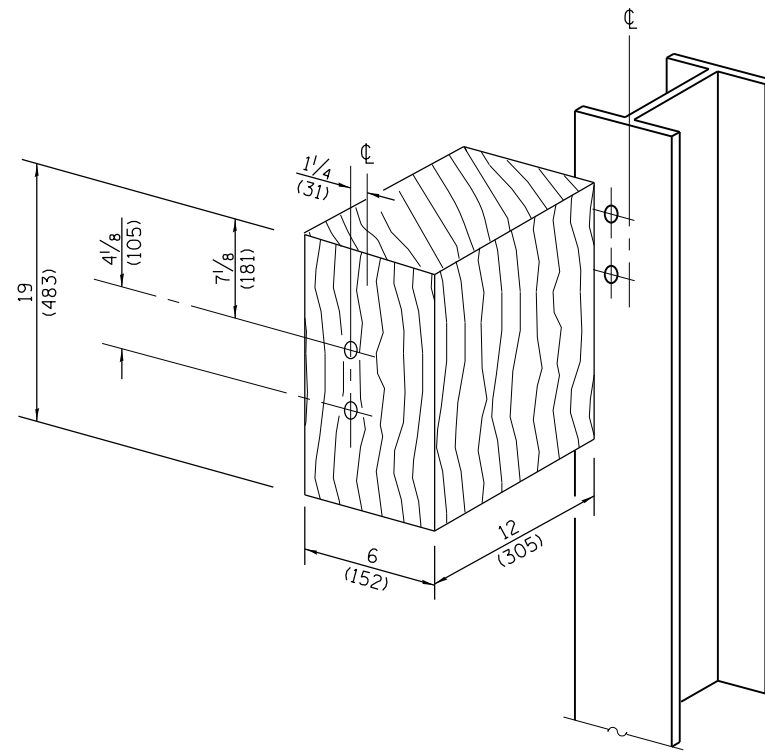
(Sheet 1 of 2)

**STANDARD 631033-07**

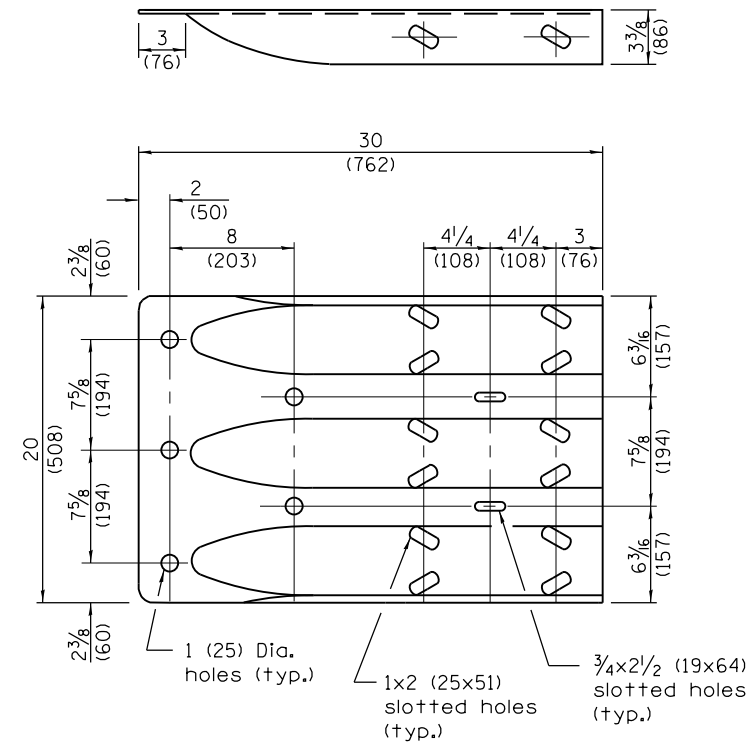




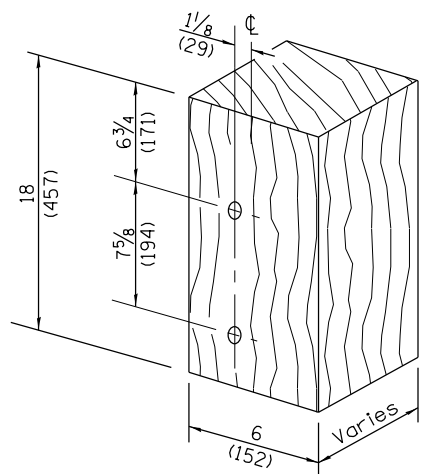
**POSTS 1-9 WOOD BLOCKOUT DETAIL**



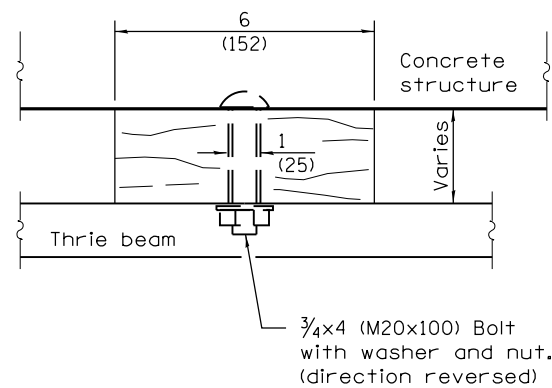
**POST 10 WOOD BLOCKOUT DETAIL**  
(See Standard 630001 for post 11-15 blockouts.)



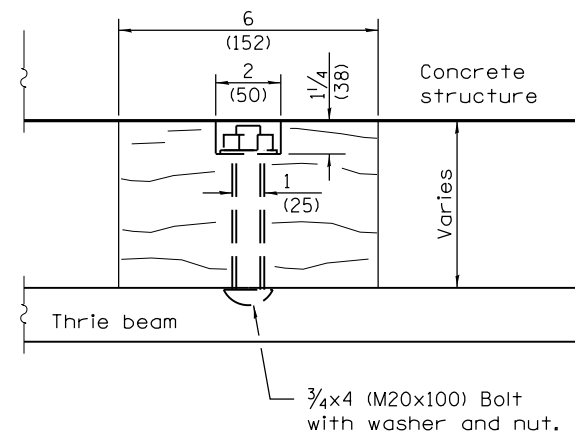
**THRIE BEAM END SHOE DETAIL**



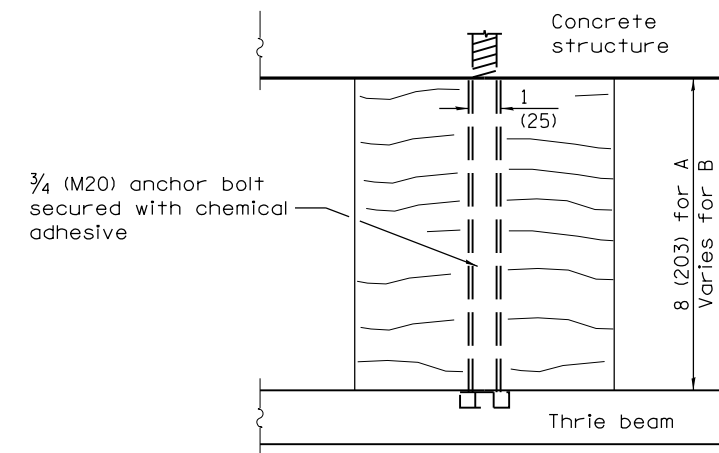
**MODIFIED THICKNESS DETAIL  
WOOD BLOCKOUTS A, B, C, & D**



**WOOD BLOCKOUT D**



**WOOD BLOCKOUT C**



**WOOD BLOCKOUT A & B**

Illinois Department of Transportation  
 PASSED January 1, 2017  
 Michael Beard  
 ENGINEER OF POLICY AND PROCEDURES  
 APPROVED January 1, 2017  
 Matthew M. Adams  
 ENGINEER OF DESIGN AND ENVIRONMENT  
 ISSUED 1-1-2003

**TRAFFIC BARRIER  
 TERMINAL, TYPE 6B**

(Sheet 2 of 2)

**STANDARD 631033-07**



**TYPICAL APPLICATIONS**

- Landscaping work
- Utility work
- Fencing contracts and maintenance
- Cleaning culverts

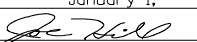
**GENERAL NOTES**

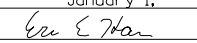
This Standard is used where at all times all vehicles, equipment, workers or their activities are more than 15' (4.5 m) from the edge of pavement.

When the work operation requires that two or more work vehicles cross the 15' (4.5 m) clear zone in any one hour, traffic control shall be according to Standard 701006.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

APPROVED January 1, 2009  
  
 ENGINEER OF OPERATIONS

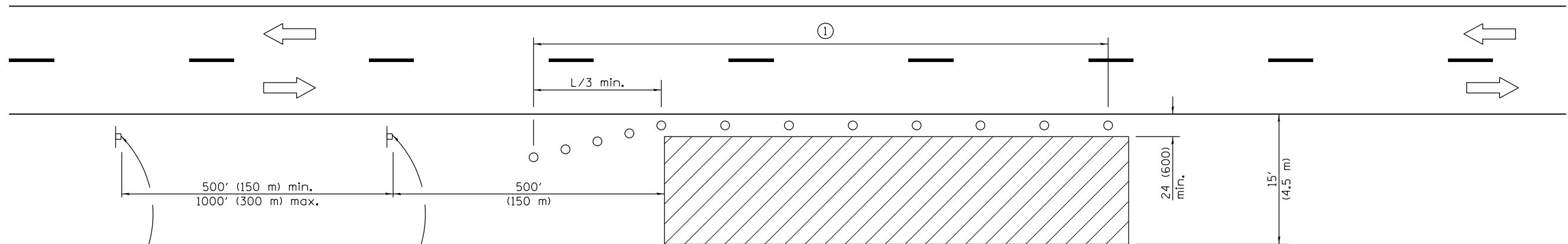
APPROVED January 1, 2009  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

DATE	REVISIONS
1-1-09	Switched units to English (metric).
1-1-05	Revised title and notes.

**OFF-RD OPERATIONS,  
 2L, 2W, MORE THAN  
 15' (4.5 m) AWAY**

**STANDARD 701001-02**



For contract construction projects



W20-I103(O)-48



W21-1(O)-48

For maintenance and utility projects

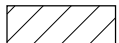




W20-1(O)-48

### TYPICAL APPLICATIONS

- Utility operations
- Culvert extensions
- Side slope changes
- Guardrail installation and maintenance
- Delineator installation
- Landscaping operations
- Shoulder repair
- Sign installation and maintenance

### SYMBOLS

-  Work area
-  Sign
-  Cone, drum or barricade

① When the work operation exceeds one hour, cones, drums or barricades shall be placed at 25' (8 m) centers for L/3 distance, and at 50' (15 m) centers through the remainder of the work area.

### GENERAL NOTES

This Standard is used where any vehicles, equipment, workers or their activities will encroach in the area 15' (4.5 m) to 24' (600) from the edge of pavement.

Calculate L as follows:

SPEED LIMIT	FORMULAS	
	English	(Metric)
40 mph (70 km/h) or less:	$L = \frac{WS^2}{60}$	$L = \frac{WS^2}{150}$
45 mph (80 km/h) or greater:	$L = (W)(S)$	$L = 0.65(W)(S)$

W = Width of offset in feet (meters).

S = Normal posted speed mph (km/h).

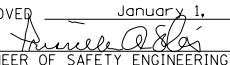
All dimensions are in inches (millimeters) unless otherwise shown.

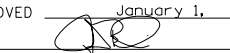
DATE	REVISIONS
1-1-14	Revised workers sign number to agree with current MUTCD.
1-1-13	Omitted text 'WORKERS' sign.

**OFF-RD OPERATIONS, 2L, 2W,  
15' (4.5 m) TO 24" (600 mm)  
FROM PAVEMENT EDGE**

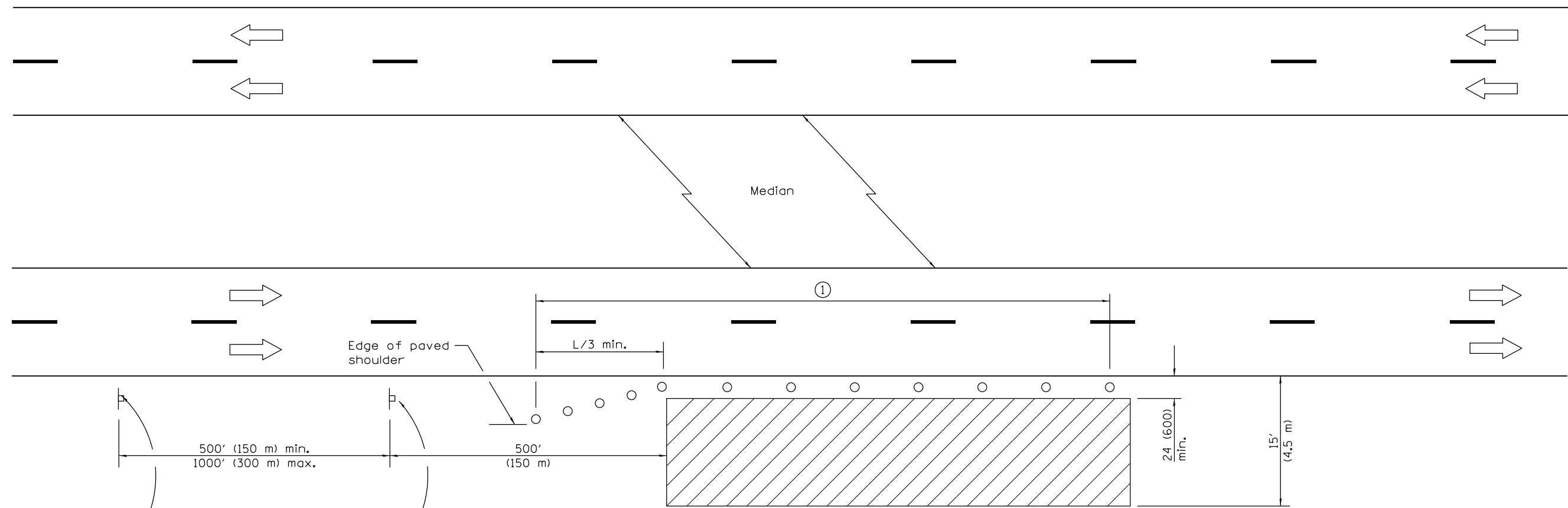
**STANDARD 701006-05**

Illinois Department of Transportation

APPROVED January 1, 2014  
  
 ENGINEER OF SAFETY ENGINEERING

APPROVED January 1, 2014  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97



For contract construction projects



W20-1103(O)-48



W21-1(O)-48

For maintenance and utility projects



W20-1(O)-48

**TYPICAL APPLICATIONS**

- Utility operations
- Culvert extensions
- Side slope changes
- Guardrail installation and maintenance
- Delineator installation
- Landscaping operations
- Shoulder repair
- Sign installation and maintenance

① When the work operation exceeds one hour, cones, drums or barricades shall be placed at 25' (8 m) centers for L/3 distance, and at 50' (15 m) centers through the remainder of the work area.

**SYMBOLS**

- Work area
- Sign
- Cone, drum or barricade

**GENERAL NOTES**

This Standard is used where any vehicles, equipment, workers or their activities will encroach in the area 15' (4.5 m) to 24' (600) from the edge of pavement.

Calculate L as follows:

SPEED LIMIT	FORMULAS	
	English	(Metric)
40 mph (70 km/h) or less:	$L = \frac{WS^2}{60}$	$L = \frac{WS^2}{150}$
45 mph (80 km/h) or greater:	$L = (W)(S)$	$L = 0.65(W)(S)$

W = Width of offset in feet (meters).

S = Normal posted speed mph (km/h).

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
4-1-16	Corrected typo in title.
1-1-14	Revised workers sign number to agree with current MUTCD.

**OFF-RD OPERATIONS, MULTILANE,  
15' (4.5 m) TO 24" (600 mm)  
FROM PAVEMENT EDGE**

**STANDARD 701101-05**

Illinois Department of Transportation

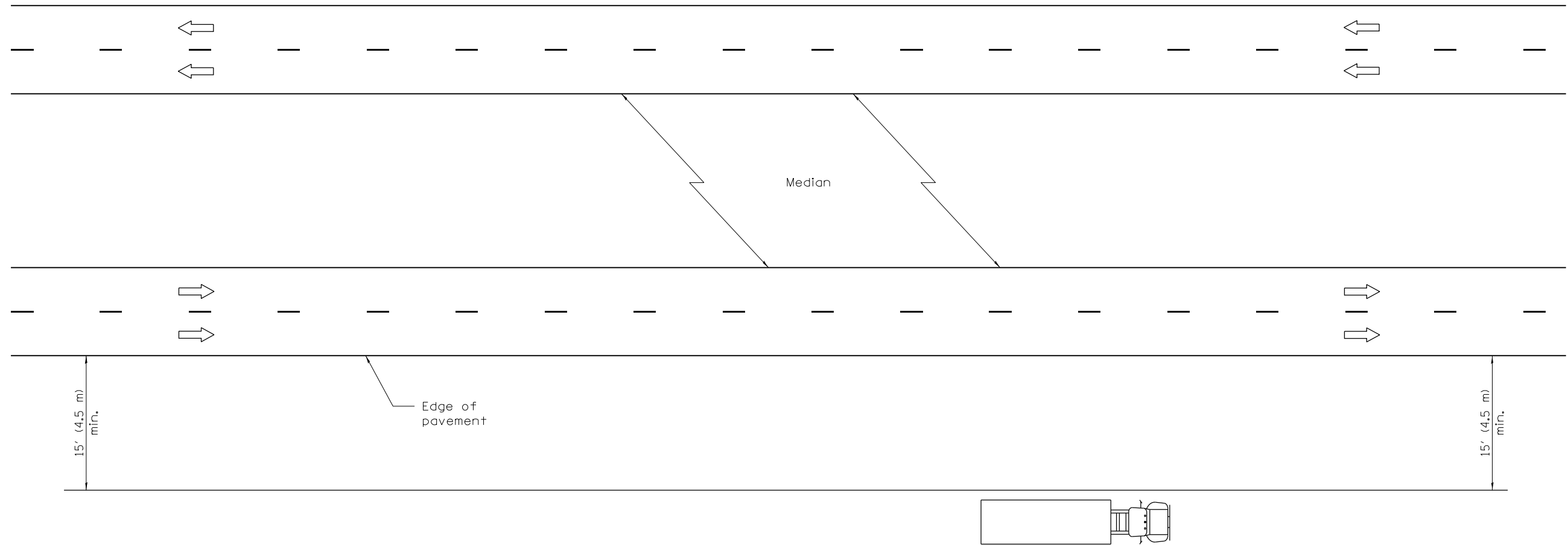
APPROVED April 1, 2016

*[Signature]*  
ENGINEER OF SAFETY ENGINEERING

APPROVED April 1, 2016

*[Signature]*  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97



**TYPICAL APPLICATIONS**

- Landscaping work
- Utility work
- Fencing contracts

**GENERAL NOTES**

This Standard is used where at all times all vehicles, equipment, workers or their activities are more than 15' (4.5 m) from the edge of pavement.

When the work operation requires that two or more work vehicles cross the 15' (4.5 m) clear zone in any one hour, traffic control shall be according to Standard 701101.

This Standard also applies to work performed in the median more than 15' (4.5 m) from either pavement.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-05	Switched units to English (metric).
1-1-05	Revised title.

**OFF-RD OPERATIONS, MULTILANE,  
MORE THAN 15' (4.5 m) AWAY**

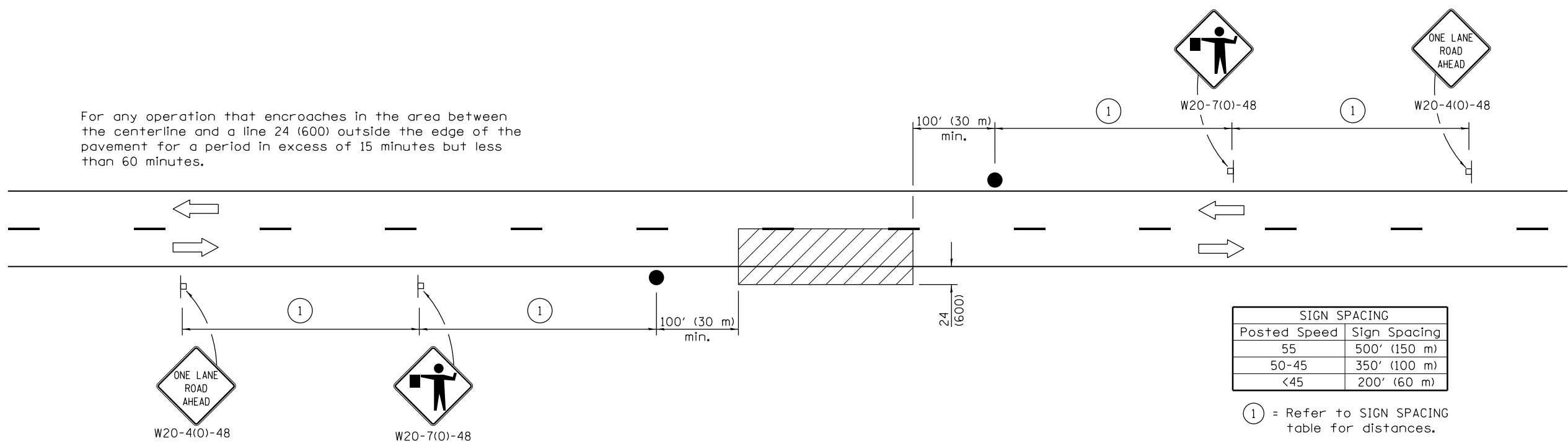
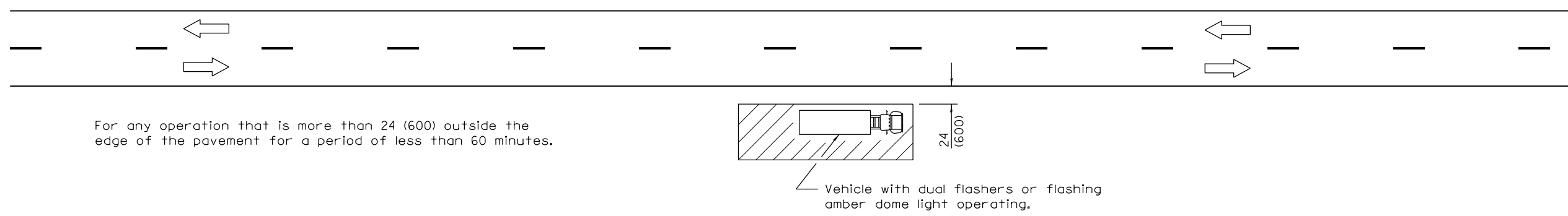
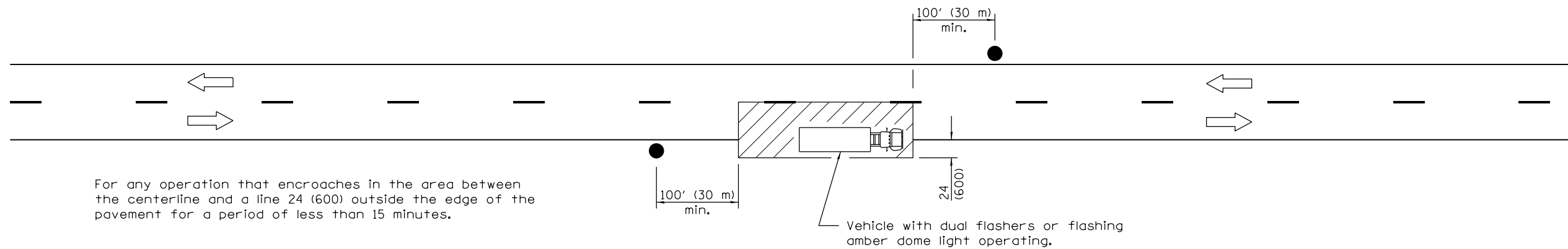
**STANDARD 701106-02**

Illinois Department of Transportation

APPROVED January 1, 2009  
  
 ENGINEER OF OPERATIONS

APPROVED January 1, 2009  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97



SIGN SPACING	
Posted Speed	Sign Spacing
55	500' (150 m)
50-45	350' (100 m)
<45	200' (60 m)

① = Refer to SIGN SPACING table for distances.

All dimensions are in inches (millimeters) unless otherwise shown.

**TYPICAL APPLICATIONS**

- Marking patches
- Field survey
- String line
- Utility operations
- Cleaning up debris on pavement

**SYMBOLS**

- Work area
- Sign on portable or permanent support
- Flagger with traffic control sign

DATE	REVISIONS
1-1-11	Revised flagger sign.
1-1-09	Switched units to English (metric).

**LANE CLOSURE, 2L, 2W,  
SHORT TIME OPERATIONS**

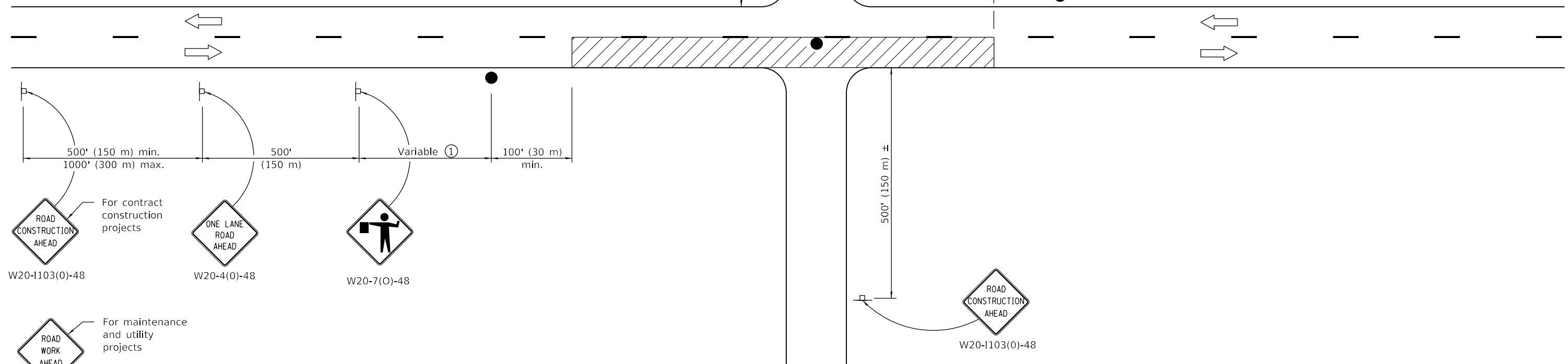
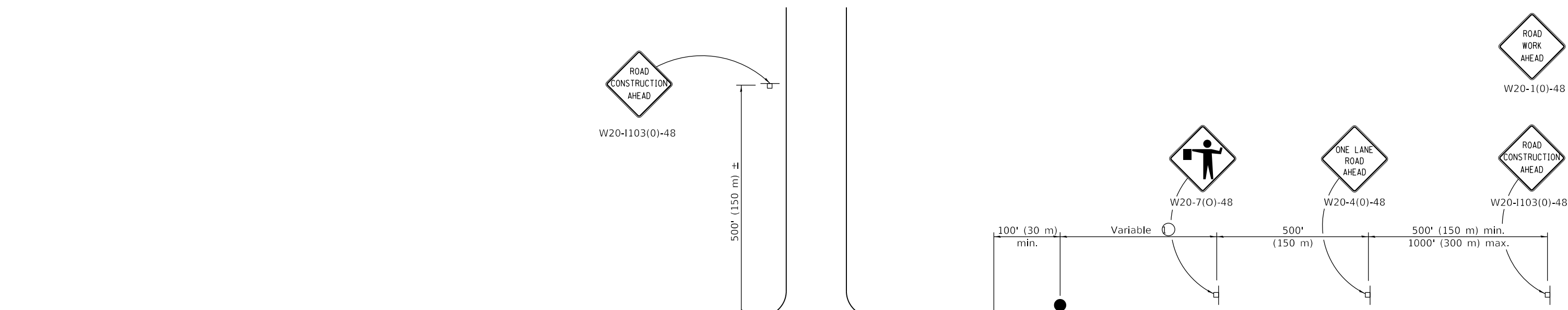
**STANDARD 701301-04**

Illinois Department of Transportation

APPROVED January 1, 2011  
  
 ENGINEER OF SAFETY ENGINEERING

ISSUED 1-1-97

APPROVED January 1, 2011  
  
 ENGINEER OF DESIGN AND ENVIRONMENT



For contract construction projects:  
 W20-1103(0)-48 (Road Construction Ahead)  
 W20-4(0)-48 (One Lane Road Ahead)  
 W20-7(0)-48 (Flagger Ahead)

For maintenance and utility projects:  
 W20-1(0)-48 (Road Work Ahead)

**TYPICAL APPLICATIONS**

- Bituminous resurfacing
- Milling operations
- Utility operations
- Shoulder operations

**SYMBOLS**

- Work area
- Sign on portable or permanent support
- Flagger with traffic control sign

① Minimum distance is 200' (60 m). Maximum distance to be determined by the Engineer but should not exceed ½ the length required for one normal working day's operation or 2 miles (3200 m), whichever is less.

**GENERAL NOTES**

This Standard is used where at any time, any vehicle, equipment, workers or their activities require an intermittent or continuous moving operation on the pavement where the average speed of movement is greater than ½ mph (1 km/h) and less than 4 mph (6 km/h).

When the operation does not exceed 60 minutes, traffic control may be according to Standard 701301.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-18	Revised lower speed limit for operation to ½ mph.
1-1-11	Revised flagger sign.

**LANE CLOSURE, 2L, 2W, SLOW MOVING OPERATIONS DAY ONLY, FOR SPEEDS ≥ 45 MPH**

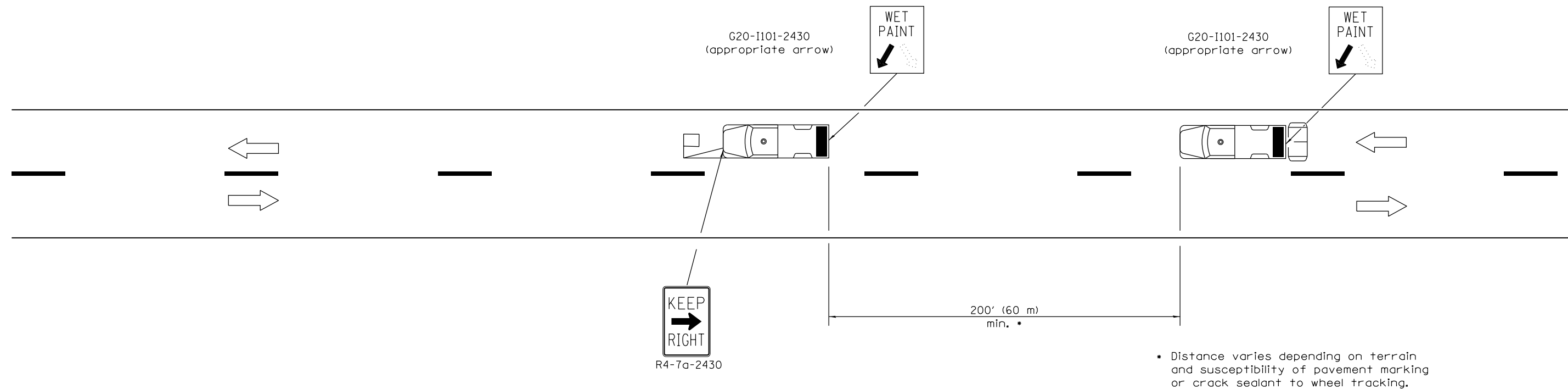
**STANDARD 701306-04**

Illinois Department of Transportation

PASSED January 1, 2018  
*Paul L. ...*  
 ENGINEER OF SAFETY PROG. AND ENGINEERING

APPROVED January 1, 2018  
*Walter M. ...*  
 ENGINEER OF DESIGN AND ENVIRONMENT


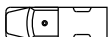


ISSUED 1-1-97



**TYPICAL APPLICATIONS**

- Landscaping work
- Utility work
- Pavement marking
- Weed spraying
- Roadometer measurements
- Debris cleanup
- Crack pouring

**SYMBOLS**

-  Arrow board (Hazard Mode only)
-  Truck with headlights, emergency flashers and flashing amber light. (visible from all directions)
-  18x18 (450x450) min. orange flag (use when guide wheel is used)
-  Truck mounted attenuator

**GENERAL NOTES**

This Standard is used where any vehicle, equipment, workers or their activities will require a continuous moving operation where the average speed is greater than 3 mph (5 km/h).

For shoulder operations not encroaching on the pavement, use DETAIL A, Standard 701426.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-09	Switched units to English (metric). Omitted Pass With Care sign.
1-1-00	Elim. speed restrictions in Standard title.

**LANE CLOSURE 2L, 2W  
MOVING OPERATIONS—  
DAY ONLY**

**STANDARD 701311-03**

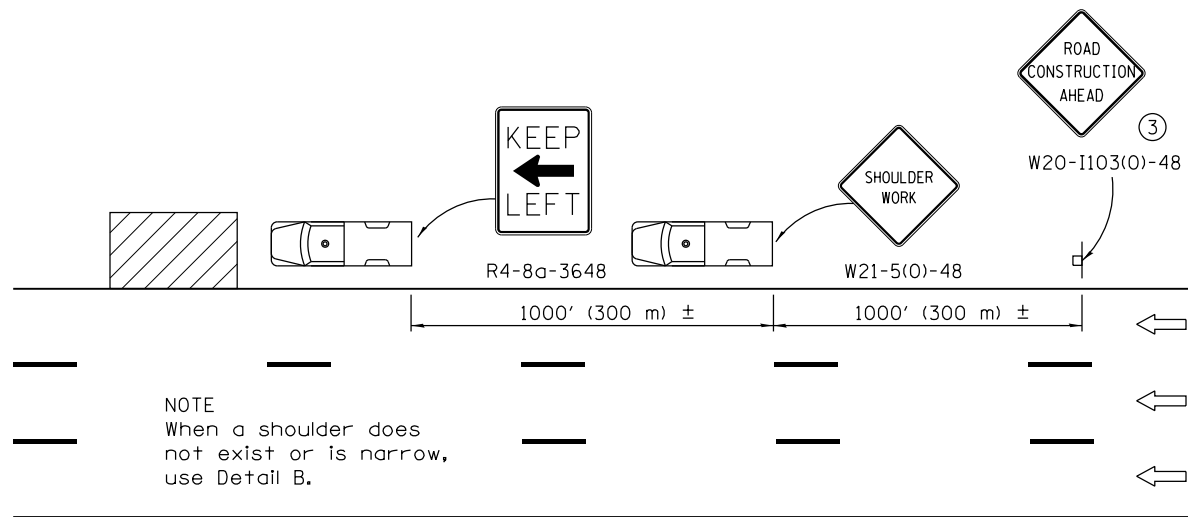
Illinois Department of Transportation

APPROVED January 1, 2009  
ENGINEER OF OPERATIONS

APPROVED January 1, 2009  
ENGINEER OF DESIGN AND ENVIRONMENT

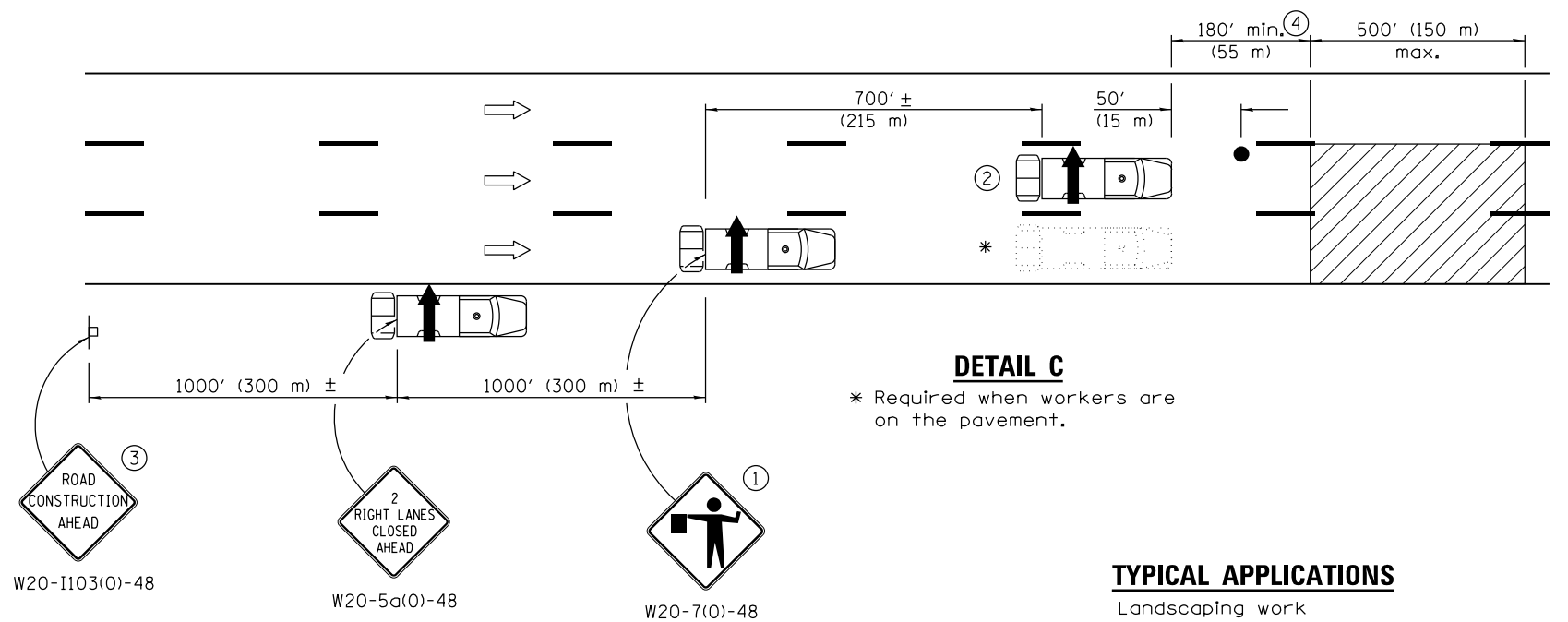
ISSUED 1-1-97





**DETAIL A**

NOTE  
When a shoulder does not exist or is narrow, use Detail B.

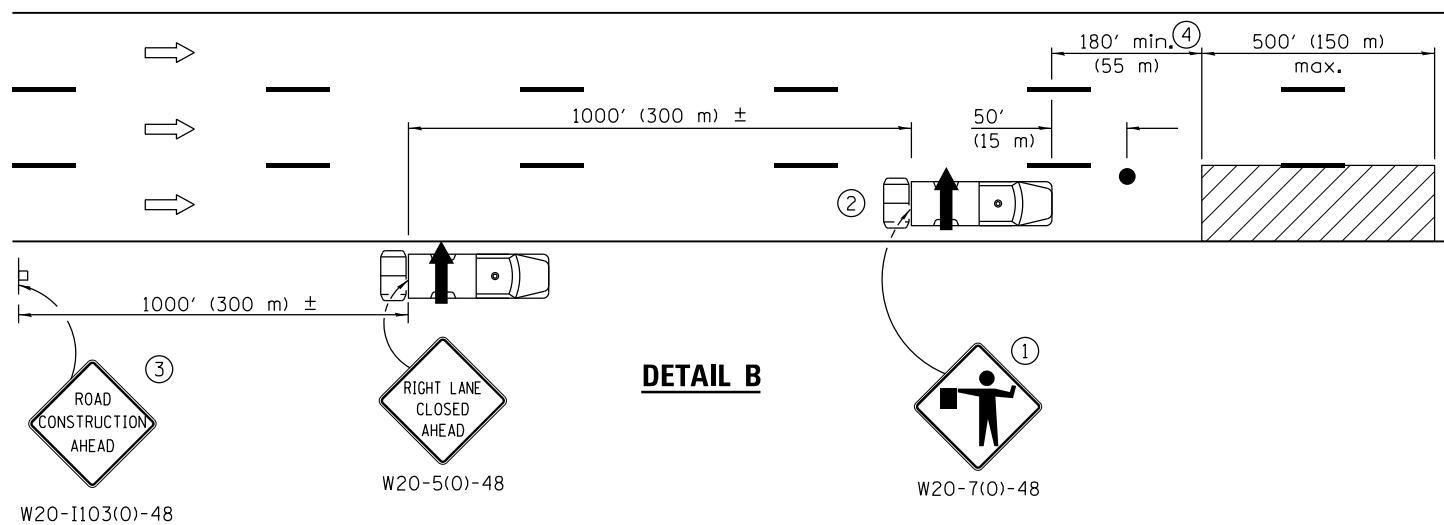


**DETAIL C**

\* Required when workers are on the pavement.

**TYPICAL APPLICATIONS**

- Landscaping work
- Utility work
- Pavement marking
- Weed spraying
- Roadometer measurements
- Debris cleanup
- Crack pouring



**DETAIL B**

- ① Flaggers are required when workers are on the pavement.
- ② For striping operations only. See sign arrow detail on this standard.
- ③ For stationary operations which are on the roadway or shoulder, greater than 15 minutes and up to 1 hour.
- ④ The distance between the work and the lead truck may vary according to terrain or paint/crack sealing drying time.



G20-I101-2430  
(appropriate arrow)  
② (when striping only)

**GENERAL NOTES**

This Standard is used where any vehicle, equipment, workers or their activities will require: 1) stationary operations up to 1 hour, or 2) a continuous or intermittent moving operation where the average speed of movement is greater than 1 mph (2 km/h).

This Standard is also applicable when work is being performed in the left lane(s) or on the median shoulder. Under these conditions, KEEP RIGHT signs shall be substituted for KEEP LEFT signs and arrow board indications shall be directed to the right.

All dimensions are in inches (millimeter) unless otherwise shown.

**SYMBOLS**

- ↑ Arrow board
- ▨ Work area
- 🚚 Truck with flashing amber light
- 🚛 Truck/Trailer mounted attenuator
- 👤 Flagger with traffic control sign
- 🚧 Sign

DATE	REVISIONS
1-1-17	Revised 'NOTE' on DETAIL A to use DETAIL B in lieu of DETAIL C.
4-1-16	Added trailer option for attenuator symbol. Added note ④. Revised gen. notes.

**LANE CLOSURE, MULTILANE, INTERMITTENT OR MOVING OPER., FOR SPEEDS ≥ 45 MPH**

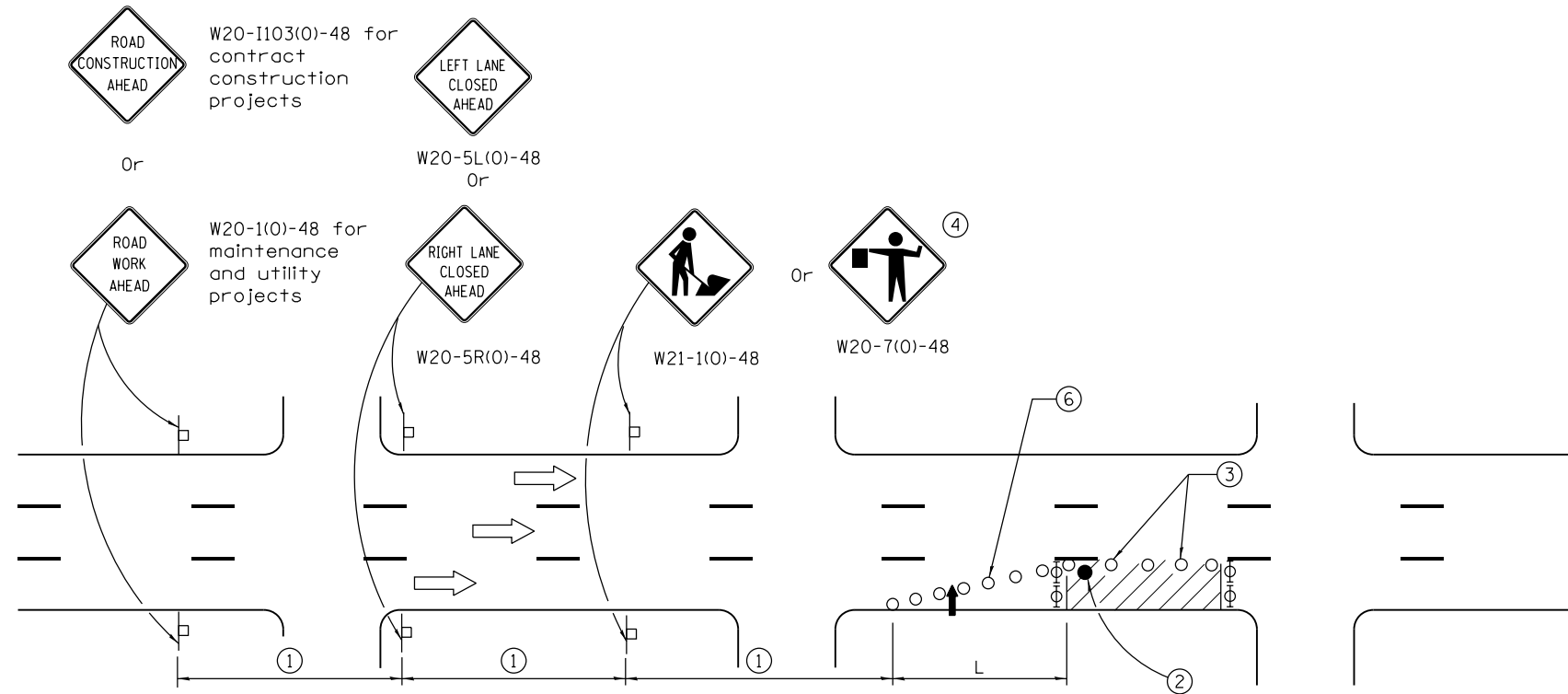
**STANDARD 701426-09**

Illinois Department of Transportation

APPROVED January 1, 2017  
*Bruce L. ...*  
ENGINEER OF SAFETY, PROG. AND ENGINEERING

APPROVED January 1, 2017  
*Maureen M. ...*  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97



SIGN SPACING	
Posted Speed	Sign Spacing
55	500' (150 m)
50-45	350' (100 m)
<45	200' (60 m)

**SYMBOLS**

- Arrow board
- Cone, drum or barricade
- Sign on portable or permanent support
- Work area
- Barricade or drum with flashing light
- Type III barricade with flashing lights
- Flagger with traffic control sign.

- ① Refer to SIGN SPACING TABLE for distances.
- ② Required for speeds > 40 MPH
- ③ Cones at 25' (8 m) centers for 250' (75 m). Additional cones may be placed at 50' (15 m) centers. When drums or Type I or Type II barricades are used, the interval between devices may be doubled.
- ④ Use flagger sign only when flagger is present.
- ⑤ For approved sidersoad closures.
- ⑥ Cones, drums or barricades at 20' (6 m) in taper.

**GENERAL NOTES**

This Standard is used where at any time, day or night, any vehicle, equipment, workers or their activities encroach on the pavement during shoulder operations or where construction requires lane closures in urban areas.

Calculate L as follows:

SPEED LIMIT	FORMULAS	
	English	(Metric)
40 mph (70 km/h) or less:	$L = \frac{WS^2}{60}$	$L = \frac{WS^2}{150}$
45 mph (80 km/h) or greater:	$L = (W)(S)$	$L = 0.65(W)(S)$

W = Width of offset in feet (meters).  
S = Normal posted speed mph (km/h).

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

APPROVED January 1, 2014  
  
 ENGINEER OF SAFETY ENGINEERING

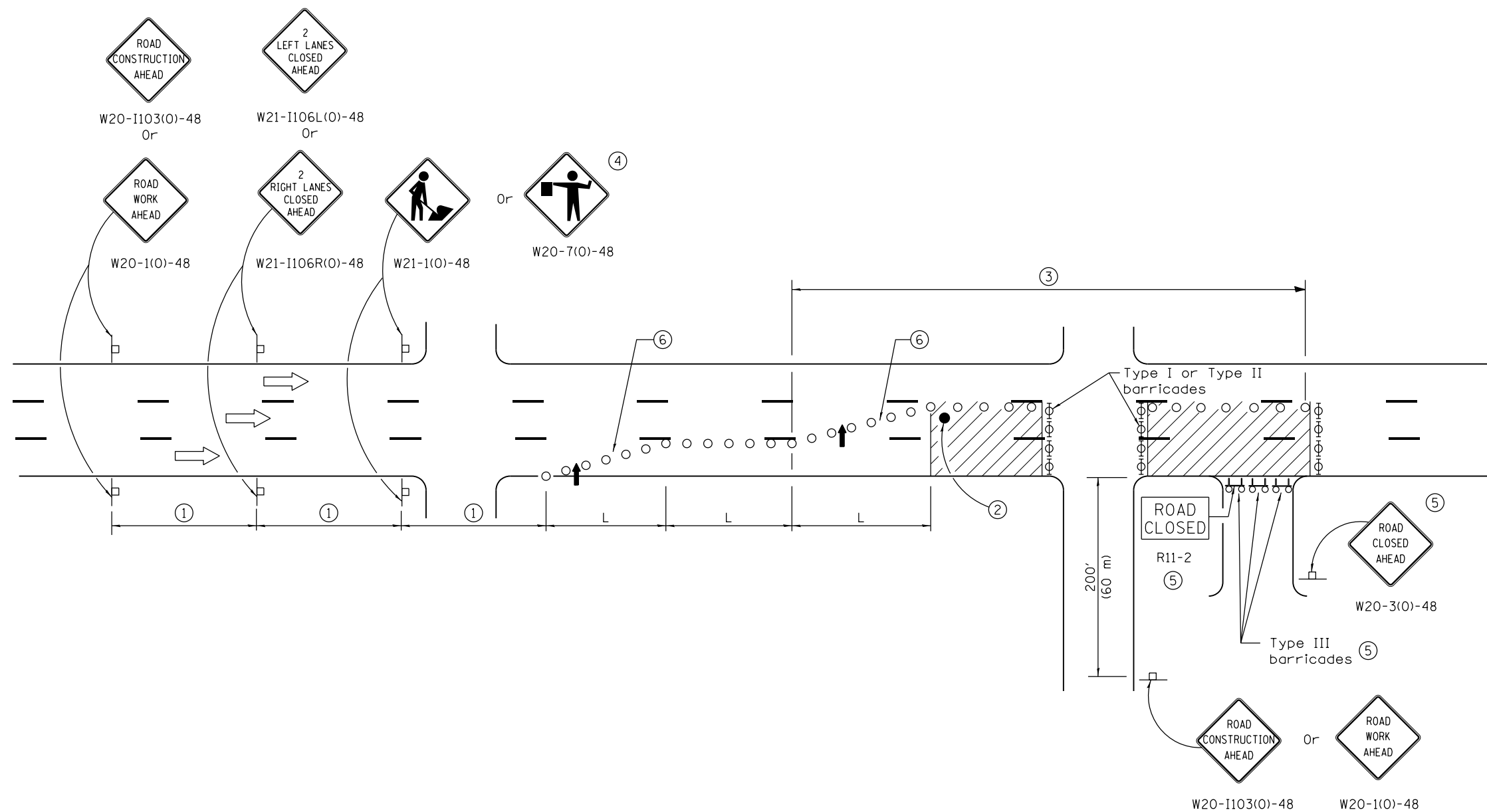
APPROVED January 1, 2014  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

DATE	REVISIONS
1-1-14	Revised workers sign number to agree with current MUTCD.
1-1-13	Omitted text 'WORKERS' sign.

**URBAN LANE CLOSURE,  
MULTILANE, 1W OR 2W WITH  
NONTRAVERSABLE MEDIAN**  
 (Sheet 1 of 2)

**STANDARD 701601-09**



Illinois Department of Transportation

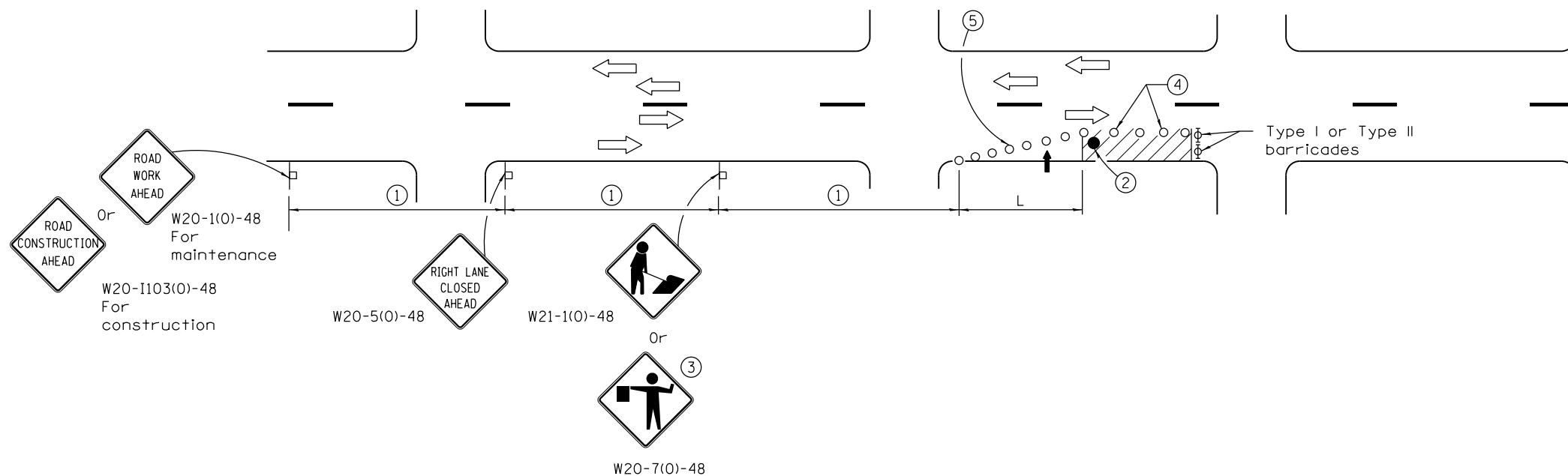
APPROVED January 1, 2014  
*[Signature]*  
 ENGINEER OF SAFETY ENGINEERING

APPROVED January 1, 2014  
*[Signature]*  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97







**URBAN LANE CLOSURE,  
 MULTILANE, 1W OR 2W WITH  
 NONTRAVERSABLE MEDIAN**  
 (Sheet 2 of 2)

**STANDARD 701601-09**



SIGN SPACING	
Posted Speed	Sign Spacing
55	500' (150 m)
50-45	350' (100 m)
<45	200' (60 m)

**SYMBOLS**

-  Arrow board
-  Cone, drum or barricade
-  Sign on portable or permanent support
-  Work area
-  Barricade or drum with flashing light
-  Flagger with traffic control sign.

- ① Refer to SIGN SPACING TABLE for distances.
- ② Required for speeds > 40 mph.
- ③ Use flagger sign only when flagger is present.
- ④ Cones at 25' (8 m) centers for 250' (75 m). Additional cones may be placed at 50' (15 m) centers. When drums or Type I or Type II barricades are used, the interval between devices may be doubled.
- ⑤ Cones, drums or barricades at 20' (6 m) centers in taper.

**GENERAL NOTES**

This Standard is used where at any time, day or night, any vehicle, equipment, workers or their activities encroach on the pavement requiring the closure of one traffic lane in an Urban area.

Calculate L as follows:

SPEED LIMIT	FORMULAS	
	English	(Metric)
40 mph (70 km/h) or less:	$L = \frac{WS^2}{60}$	$L = \frac{WS^2}{150}$
45 mph (80 km/h) or greater:	$L=(W)(S)$	$L=0.65(W)(S)$

W = Width of offset in feet (meters).

S = Normal posted speed mph (km/h).

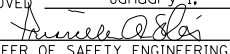
All dimensions are in inches (millimeters) unless otherwise shown.

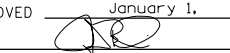
DATE	REVISIONS
1-1-15	Renamed standard. Moved case on Sheet 2 to new Highway Standard.
1-1-14	Revised workers sign number to agree with current MUTCD.

**URBAN SINGLE LANE CLOSURE, MULTILANE, 2W WITH MOUNTABLE MEDIAN**

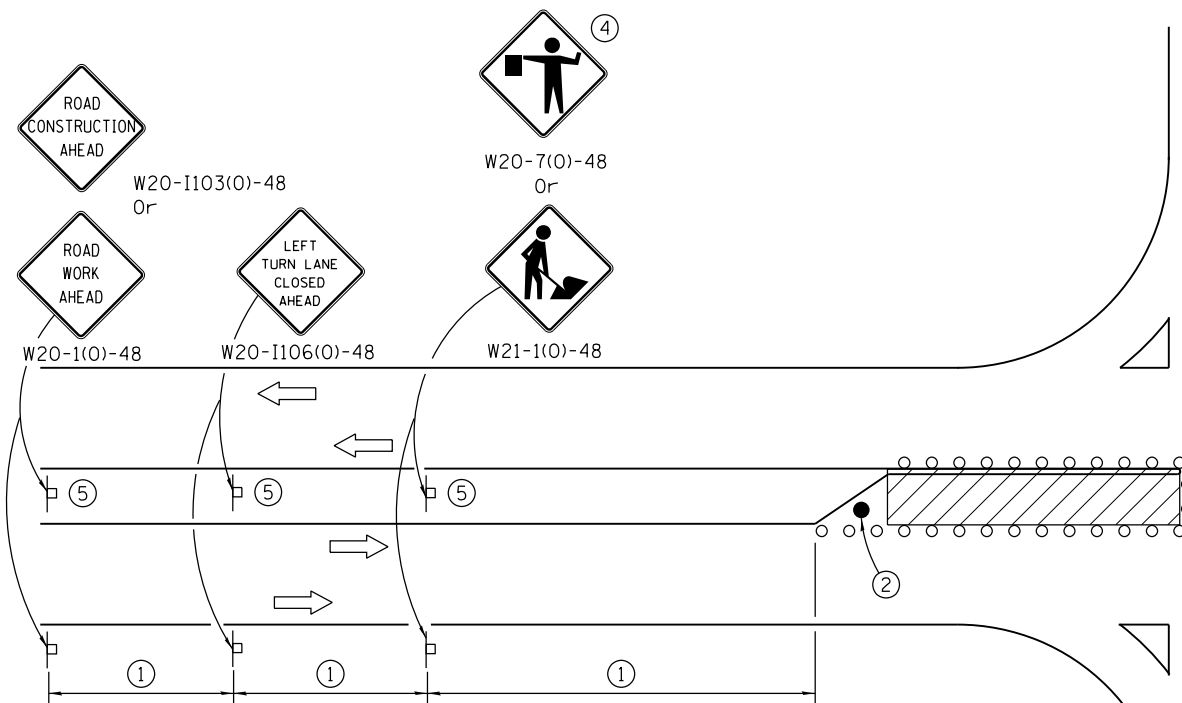
**STANDARD 701606-10**

Illinois Department of Transportation

APPROVED January 1, 2015  
  
 ENGINEER OF SAFETY ENGINEERING

APPROVED January 1, 2015  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97



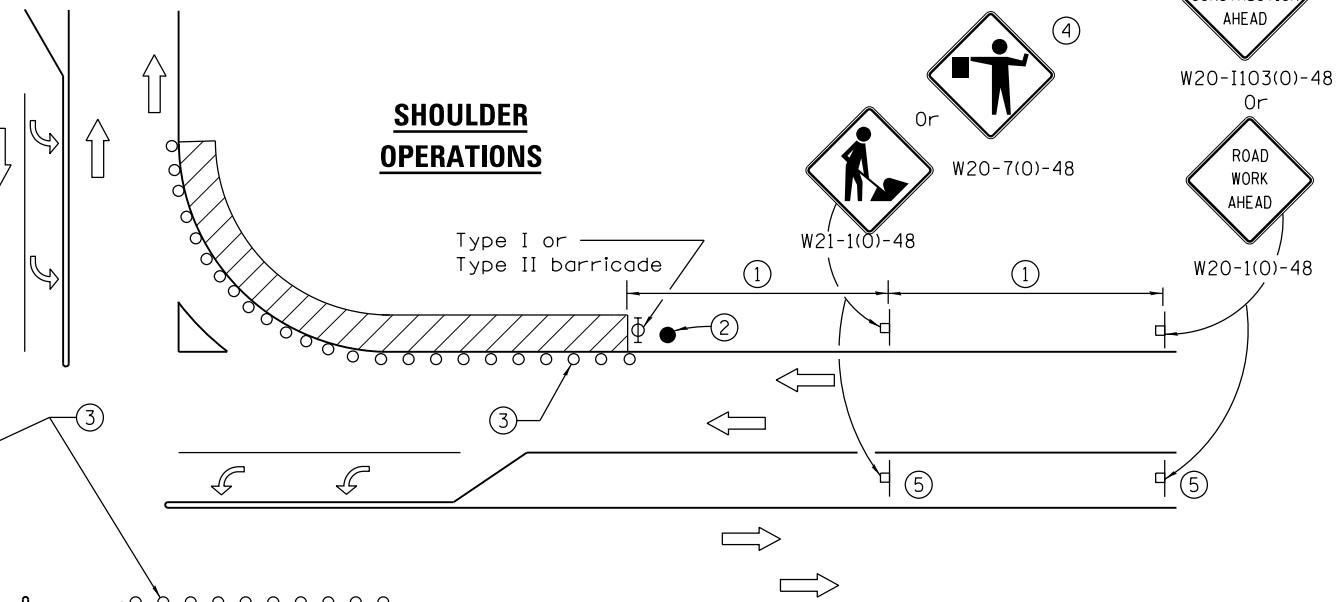
**LEFT TURN LANE OR CENTER  
MEDIAN OPERATIONS**

- ① Refer to SIGN SPACING TABLE for distance.
- ② Required for speed > 40 mph.
- ③ Cones at 25' (8 m) centers for 250' (75 m). Additional cones may be placed at 50' (15 m) centers. When drums or Type I or Type II barricades are used, the interval between devices may be doubled.
- ④ Use flagger sign only when flagger is present.
- ⑤ Omit this sign when median is less than 10' (3 m) or for bi-directional turn lanes.
- ⑥ Cones, drums or barricades at 20' (6 m) centers in taper.
- ⑦ Advanced arrow board required for speeds > 45 mph.
- ⑧ Three Type II barricades, drums or vertical barricades at 50' (15 m) centers.

**SYMBOLS**

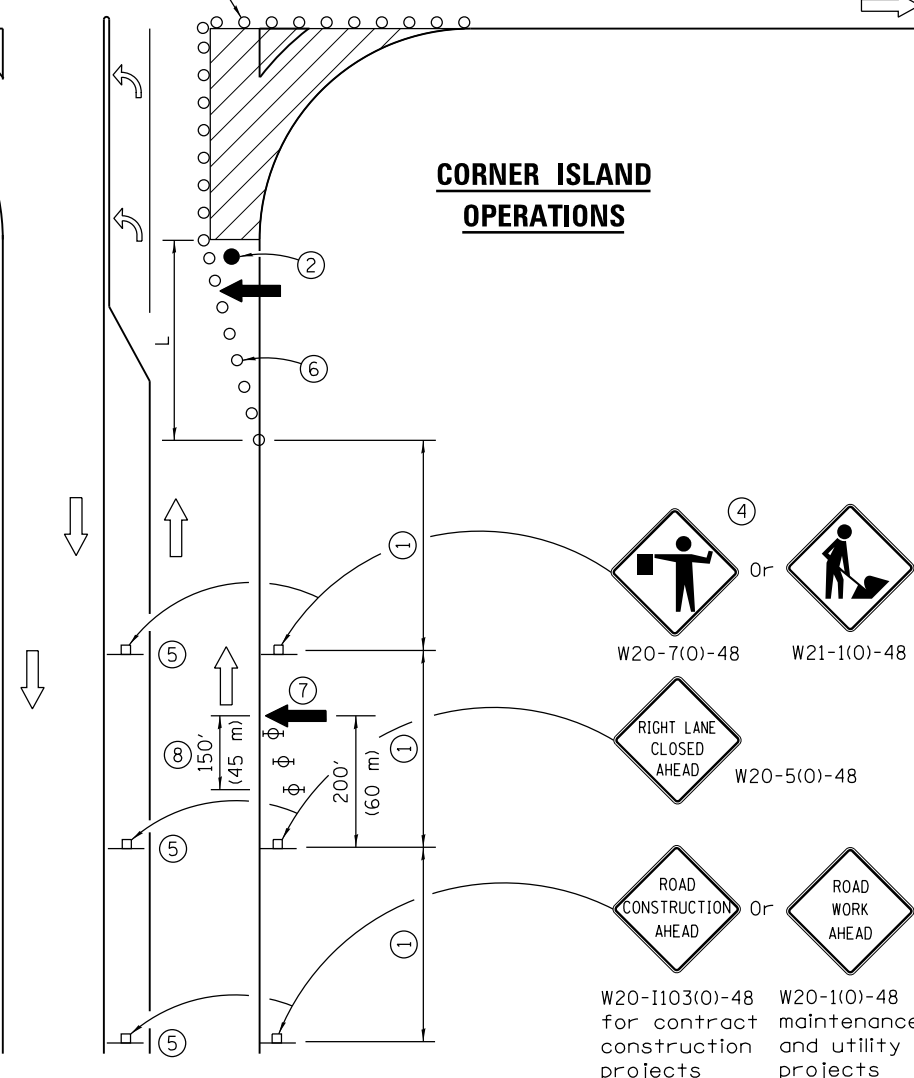
- Work area
- Cone, drum or barricade
- Sign on portable or permanent support
- Arrow board
- Barricade or drum with flashing light
- Flagger with traffic control sign

SIGN SPACING	
Posted Speed	Sign Spacing
55	500' (150 m)
50-45	350' (100 m)
<45	200' (60 m)



**SHOULDER  
OPERATIONS**

**CORNER ISLAND  
OPERATIONS**



**GENERAL NOTES**

This Standard is used where at any time, day or night, any vehicle, equipment, workers or their activities encroach on the pavement during shoulder operations or where construction requires lane closures in an urban area.

Calculate L as follows:

SPEED LIMIT	FORMULAS	
	English	(Metric)
40 mph (70 km/h) or less:	$L = \frac{WS^2}{60}$	$L = \frac{WS^2}{150}$
45 mph (80 km/h) or greater:	$L = (W)(S)$	$L = 0.65(W)(S)$

W = Width of offset in feet (meters).

S = Normal posted speed mph (km/h).

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
4-1-16	Corrected sign number for LEFT TURN LANE CLOSED AHEAD.
1-1-14	Added devices at arrow board upstream from taper.
	Rev. workers sign number.

**URBAN LANE CLOSURE,  
MULTILANE INTERSECTION**

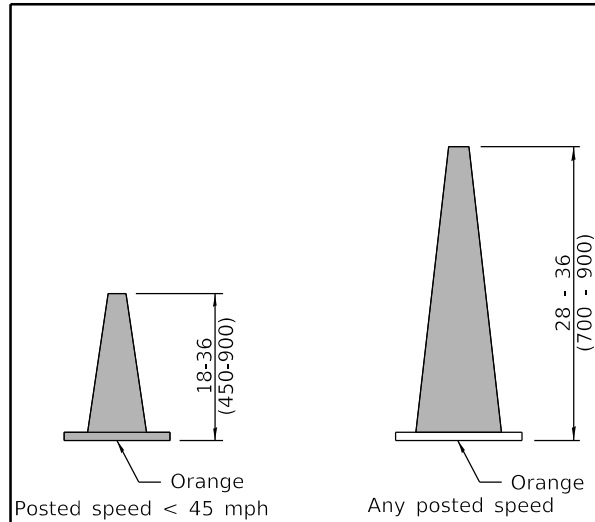
**STANDARD 701701-10**

Illinois Department of Transportation

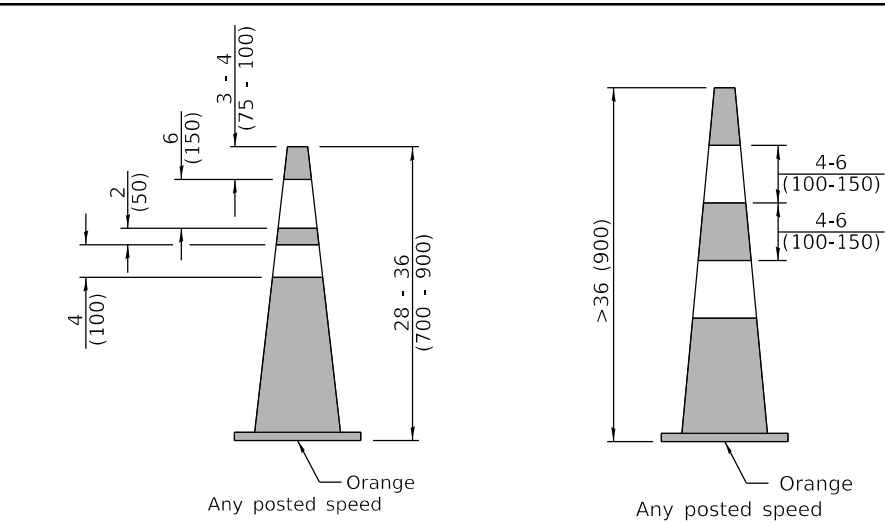
APPROVED April 1, 2016  
  
 ENGINEER OF SAFETY ENGINEERING

APPROVED April 1, 2016  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

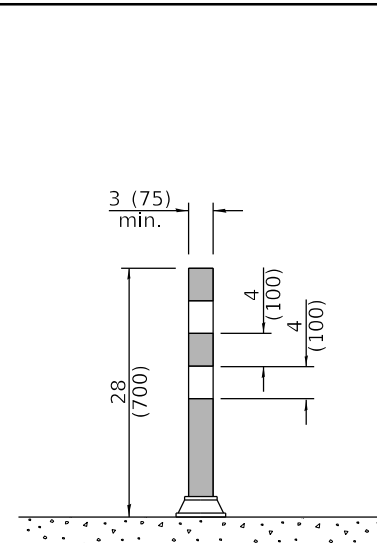
ISSUED 1-1-97



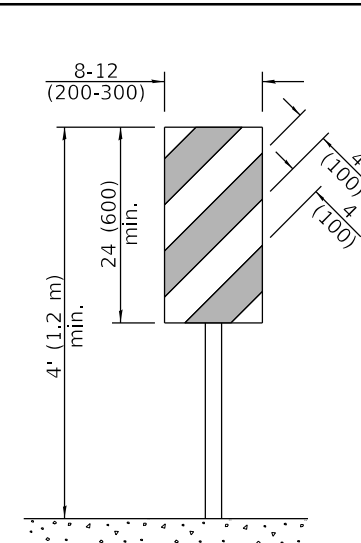
**DAYTIME USE**



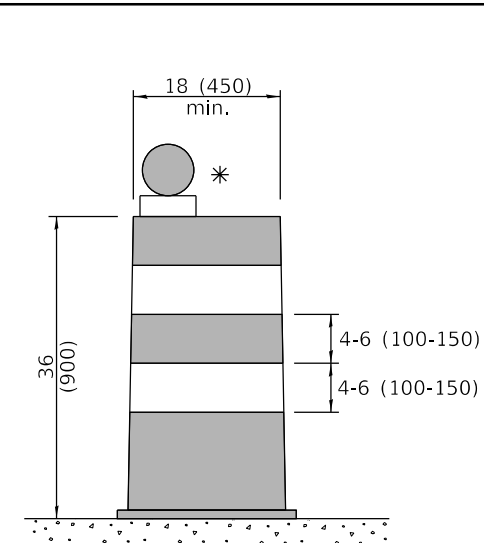
**DAY OR NIGHTTIME USE**



**TUBULAR MARKER**

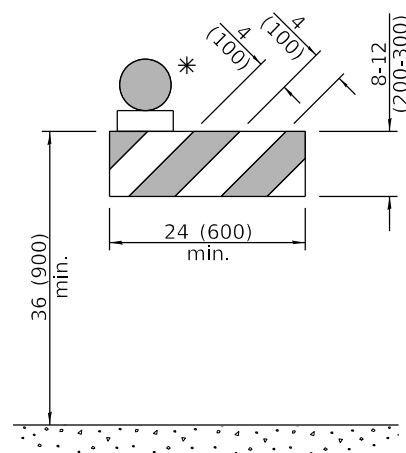


**VERTICAL PANEL  
POST MOUNTED**

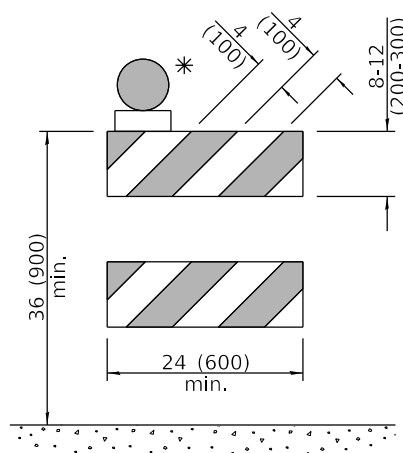


**DRUM**

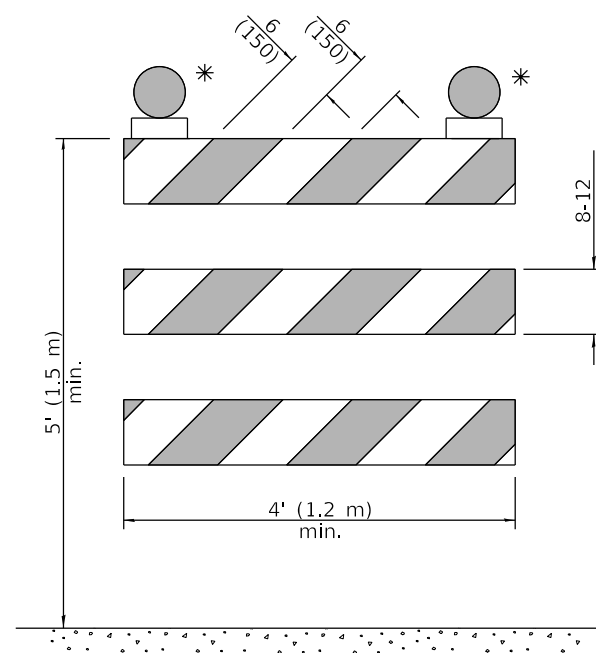
**CONES**



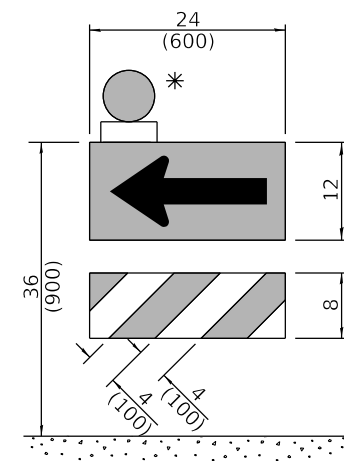
**TYPE I BARRICADE**



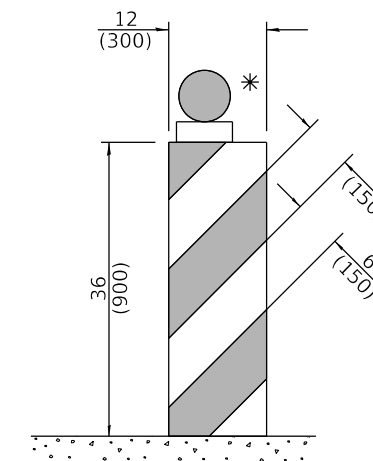
**TYPE II BARRICADE**



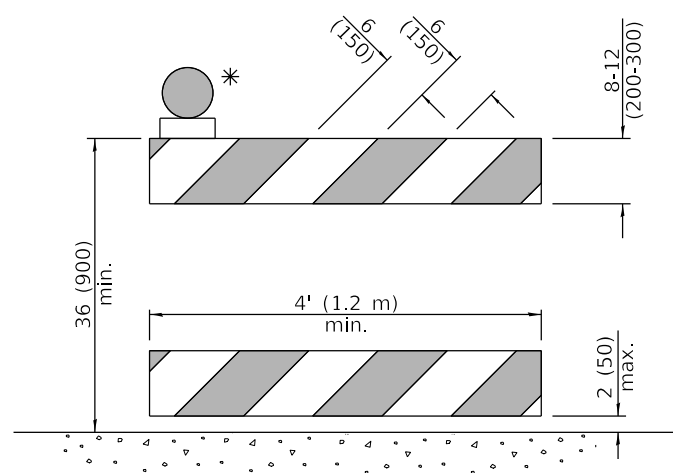
**TYPE III BARRICADE**



**DIRECTION INDICATOR  
BARRICADE**



**VERTICAL BARRICADE**



**DETECTABLE PEDESTRIAN  
CHANNELIZING BARRICADE**

\* Warning lights (if required)

**GENERAL NOTES**

All heights shown shall be measured above the pavement surface.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-19	Revised cone usage and added cones >36" (900 mm) height.
1-1-18	Revised END WORK ZONE SPEED LIMIT sign from orange to white background.

**TRAFFIC CONTROL DEVICES**

(Sheet 1 of 3)

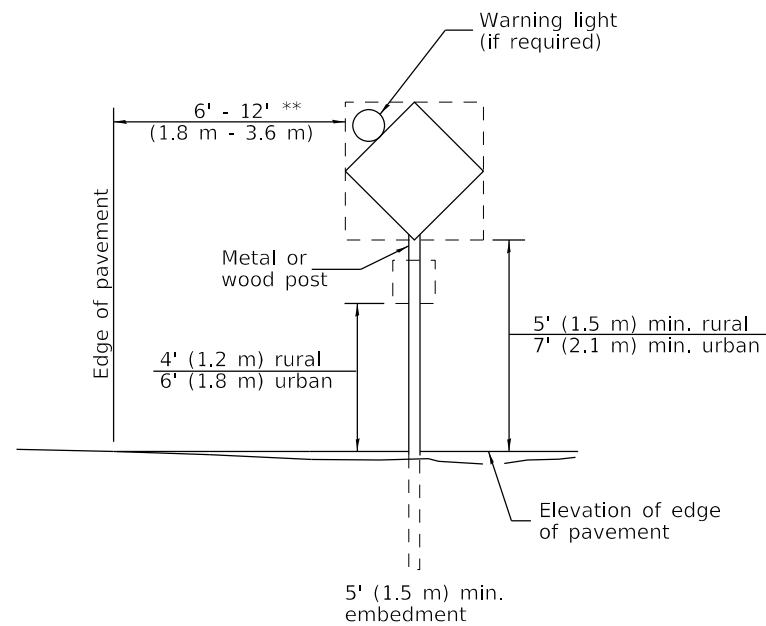
**STANDARD 701901-08**

Illinois Department of Transportation

APPROVED January 1, 2019  
  
 ENGINEER OF SAFETY PROG. AND ENGINEERING

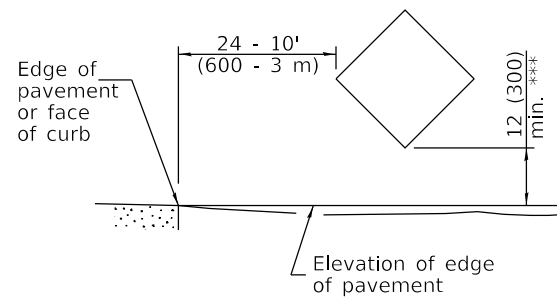
APPROVED January 1, 2019  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED  
 ET-1-1



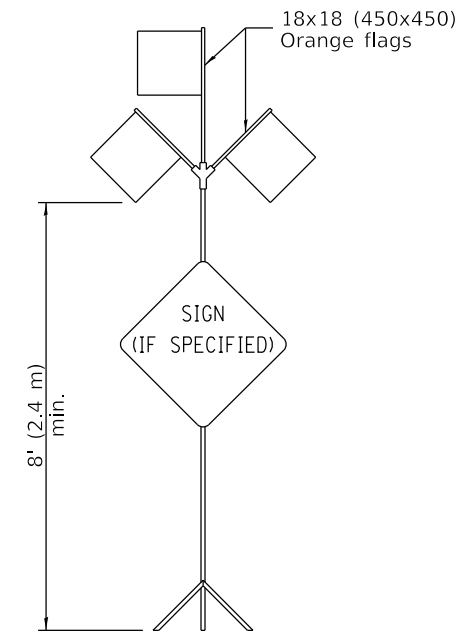
**POST MOUNTED SIGNS**

\*\* When curb or paved shoulder are present this dimension shall be 24 (600) to the face of curb or 6' (1.8 m) to the outside edge of the paved shoulder.



**SIGNS ON TEMPORARY SUPPORTS**

\*\*\* When work operations exceed four days, this dimension shall be 5' (1.5 m) min. If located behind other devices, the height shall be sufficient to be seen completely above the devices.

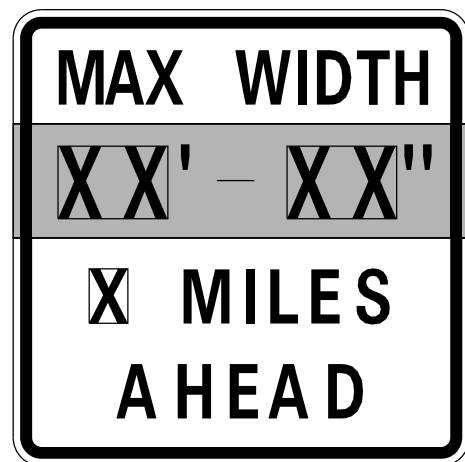


**HIGH LEVEL WARNING DEVICE**

ROAD CONSTRUCTION NEXT X MILES	END CONSTRUCTION
G20-I104(0)-6036	G20-I105(0)-6024

This signing is required for all projects 2 miles (3200 m) or more in length.  
 ROAD CONSTRUCTION NEXT X MILES sign shall be placed 500' (150 m) in advance of project limits.  
 END CONSTRUCTION sign shall be erected at the end of the job unless another job is within 2 miles (3200 m).  
 Dual sign displays shall be utilized on multi-lane highways.

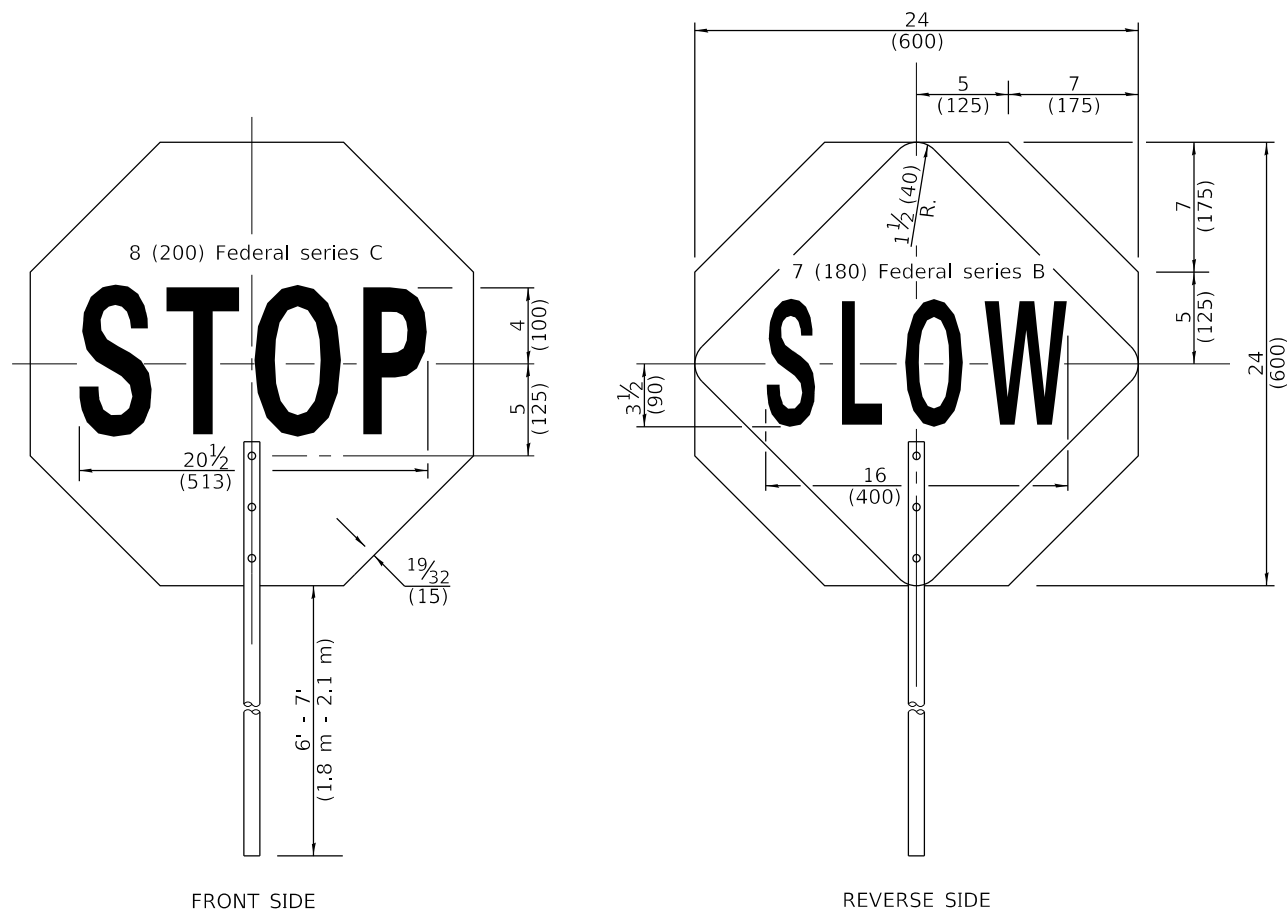
**WORK LIMIT SIGNING**



W12-I103-4848

**WIDTH RESTRICTION SIGN**

XX'-XX" width and X miles are variable.



**FLAGGER TRAFFIC CONTROL SIGN**

WORK ZONE	W21-III5(0)-3618
SPEED LIMIT XX	R2-1-3648
PHOTO ENFORCED	R10-I108p-3618 ****
\$XXX FINE MINIMUM	R2-I106p-3618

Sign assembly as shown on Standards or as allowed by District Operations.

END WORK ZONE SPEED LIMIT	G20-I103-6036
---------------------------	---------------

This sign shall be used when the above sign assembly is used.

**HIGHWAY CONSTRUCTION SPEED ZONE SIGNS**

\*\*\*\* R10-I108p shall only be used along roadways under the jurisdiction of the State.

Illinois Department of Transportation

APPROVED January 1, 2019  
*[Signature]*  
 ENGINEER OF SAFETY PROG. AND ENGINEERING

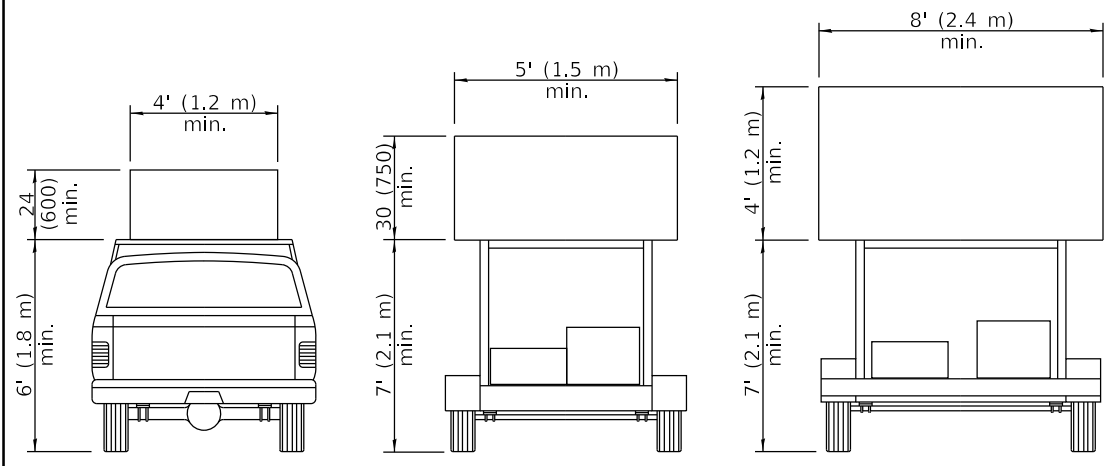
APPROVED January 1, 2019  
*[Signature]*  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-13

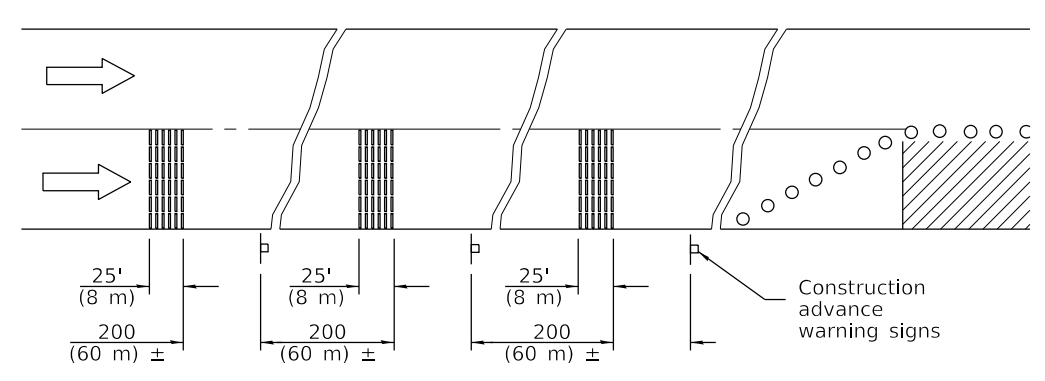
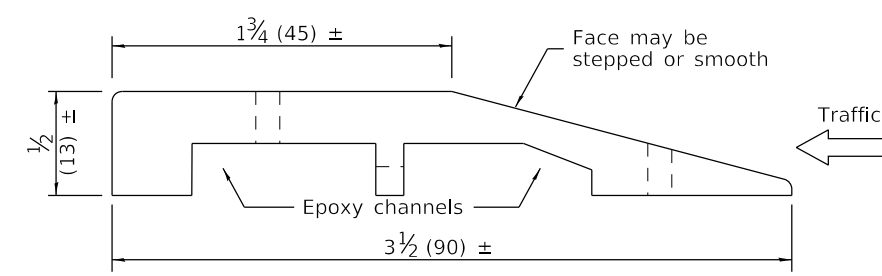
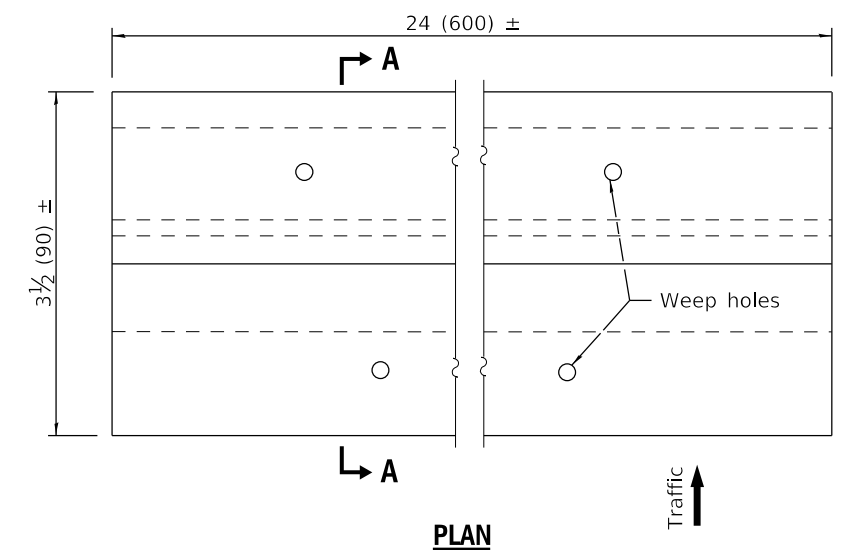
**TRAFFIC CONTROL DEVICES**

(Sheet 2 of 3)

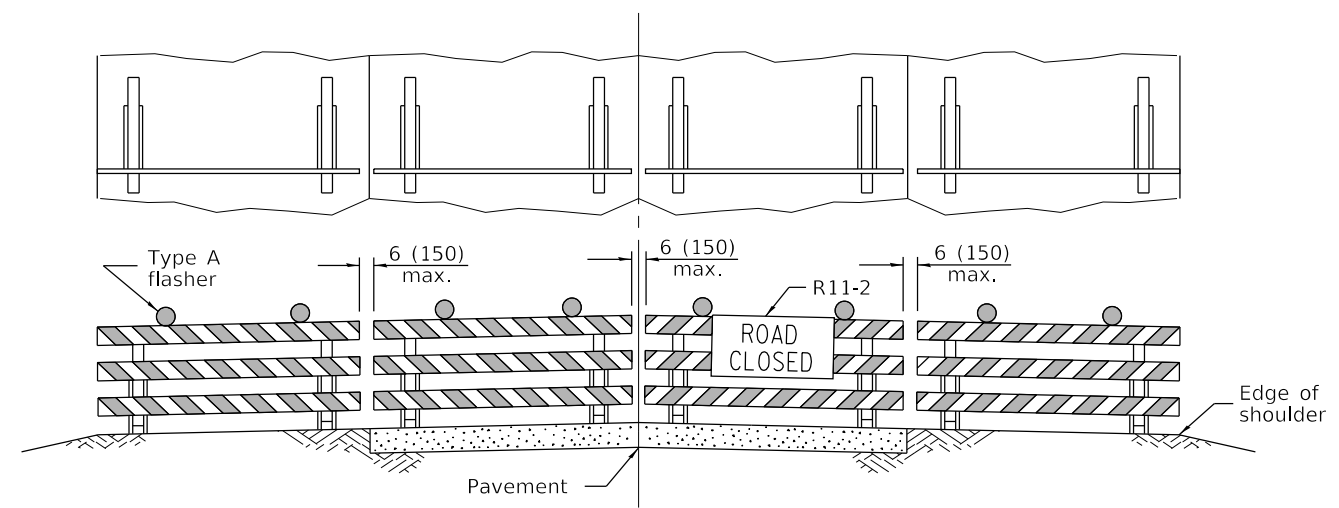
**STANDARD 701901-08**



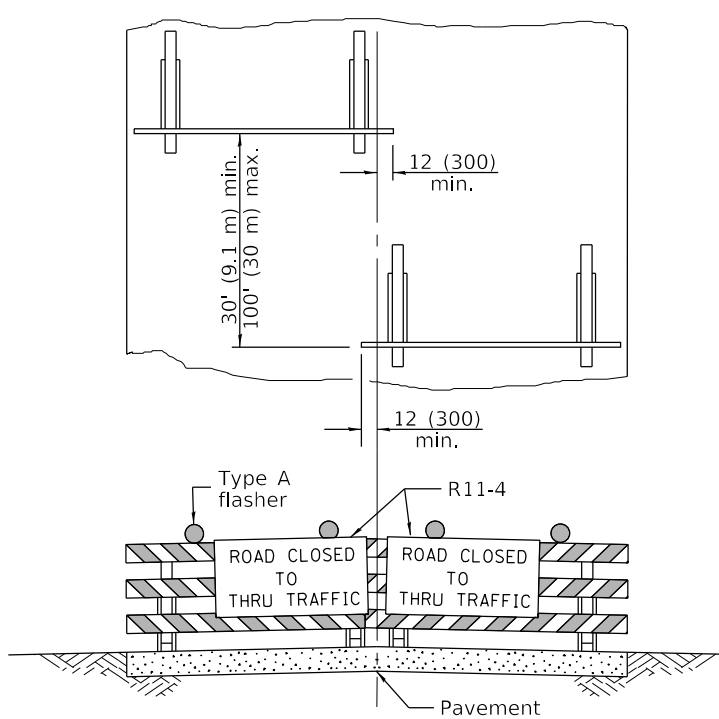
**ARROW BOARDS**



**TEMPORARY RUMBLE STRIPS**



Reflectorized striping may be omitted on the back side of the barricades. If a Type III barricade with an attached sign panel which meets NCHRP 350 is not available, the sign may be mounted on an NCHRP 350 temporary sign support directly in front of the barricade.



Reflectorized striping shall appear on both sides of the barricades. If a Type III barricade with an attached sign panel which meets NCHRP 350 is not available, the signs may be mounted on NCHRP 350 temporary sign supports directly in front of the barricade.

**TYPICAL APPLICATIONS OF  
TYPE III BARRICADES CLOSING A ROAD**

Illinois Department of Transportation

APPROVED January 1, 2019  
*Cynthia Watt*  
ENGINEER OF SAFETY PROG. AND ENGINEERING

APPROVED January 1, 2019  
*Joe E. ...*  
ENGINEER OF DESIGN AND ENVIRONMENT

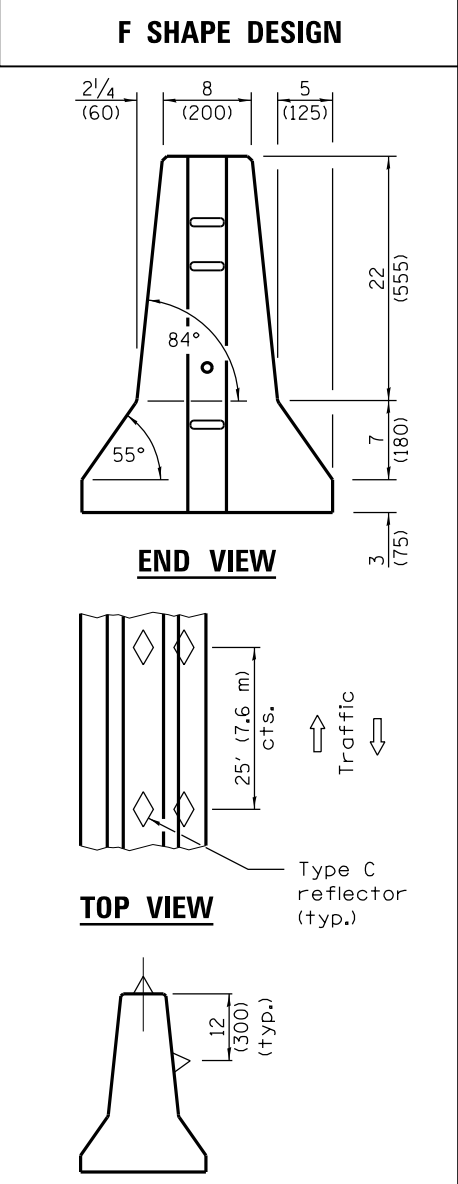
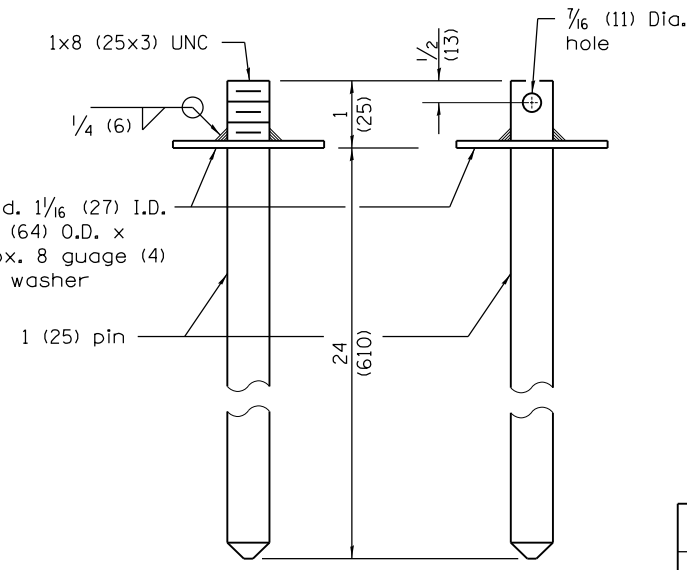
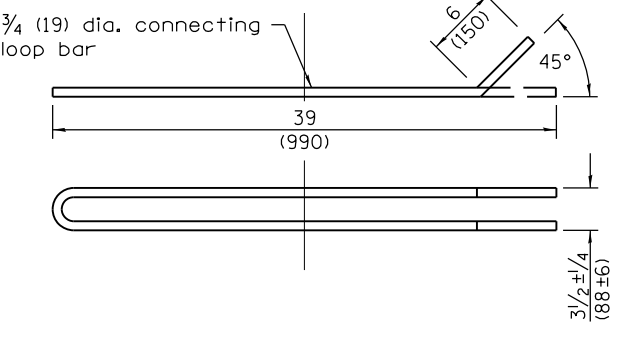
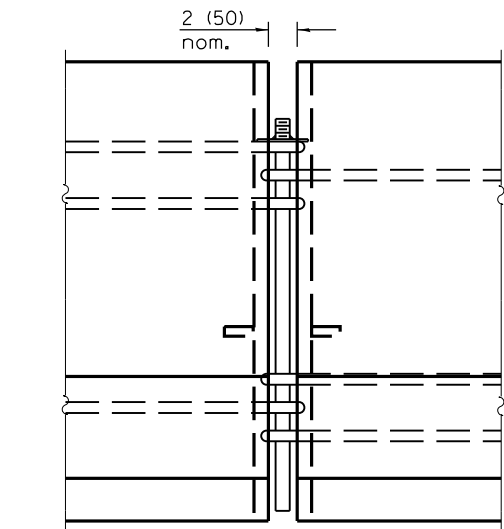
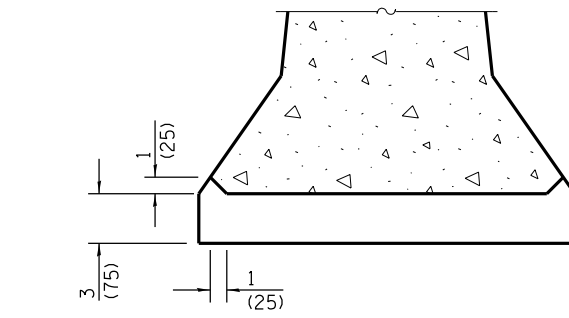
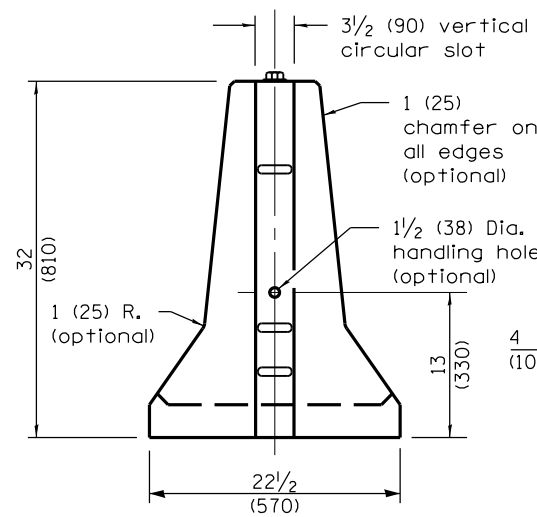
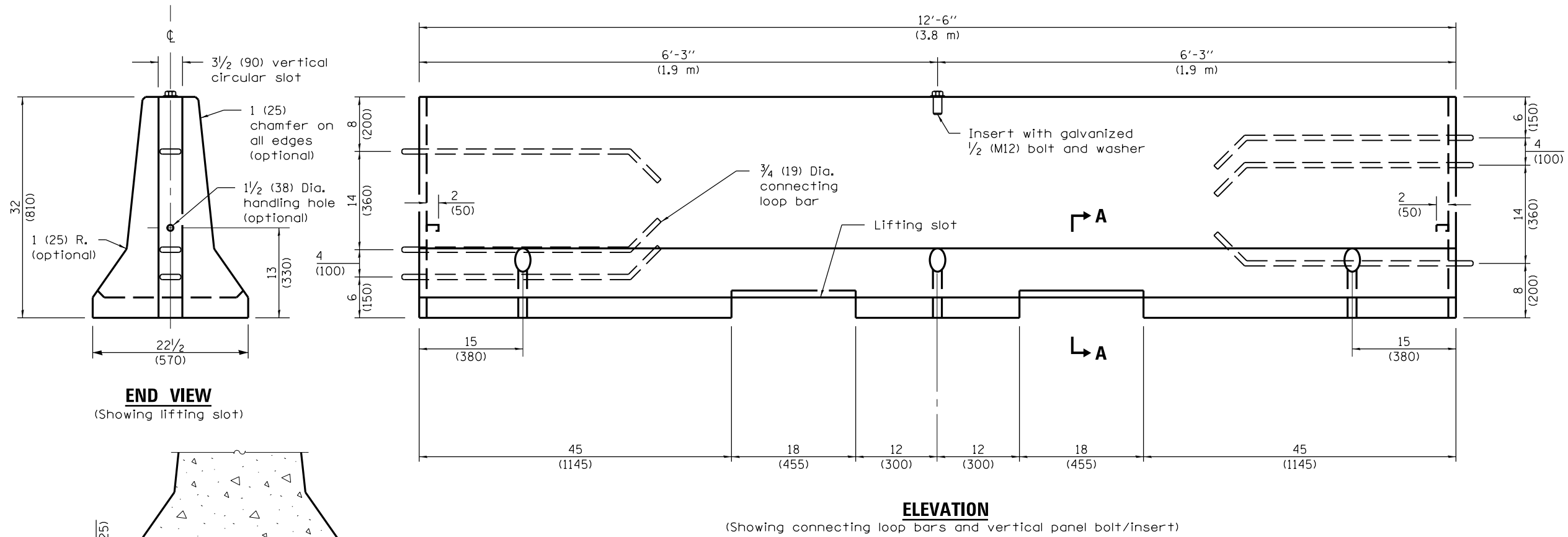
ISSUES  
E1-1-1 Q3551

**TRAFFIC CONTROL  
DEVICES**

(Sheet 3 of 3)

**STANDARD 701901-08**





**GENERAL NOTES**

Each F shape barrier shall be clearly marked with "ILLINOIS F SHAPE", the Producer's mark and the date of manufacture. The markings shall be indented on the barrier or painted thereon with waterproof paint/ink.

The insert for the 1/2 (M12) bolt shall be capable of 3,000 lb (13 kN) pull-out strength.

When barrier separates opposing flows of traffic markers shall be on both sides of barrier.

See Standard 782006 for dimensions of Type C reflector.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
4-1-16	Rev. opt. chamfer on all edges to 1 (25). Reference to Std. 635011 now 782006.
1-1-12	Omitted 'ALTERNATE' from connecting and anchoring pins detail.

**TEMPORARY CONCRETE BARRIER**

(Sheet 1 of 2)

**STANDARD 704001-08**

Illinois Department of Transportation

PASSED April 1, 2016

Michael Beard  
ENGINEER OF POLICY AND PROCEDURES

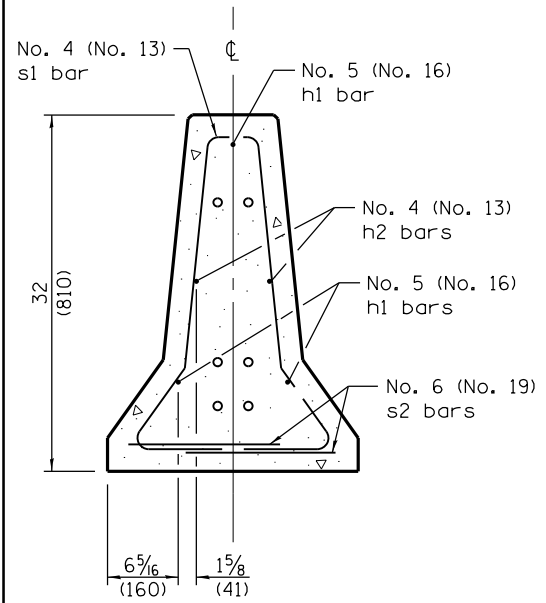
APPROVED April 1, 2016

ENGINEER OF DESIGN AND ENVIRONMENT

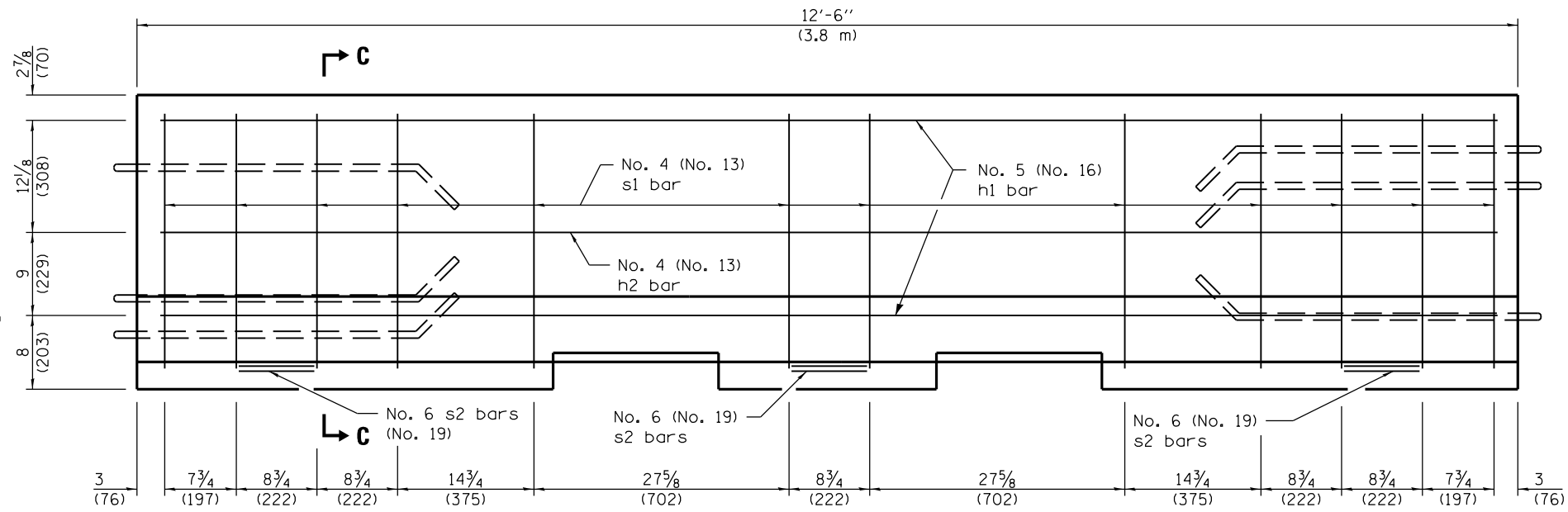
ISSUED 10-1-03

20-1-01

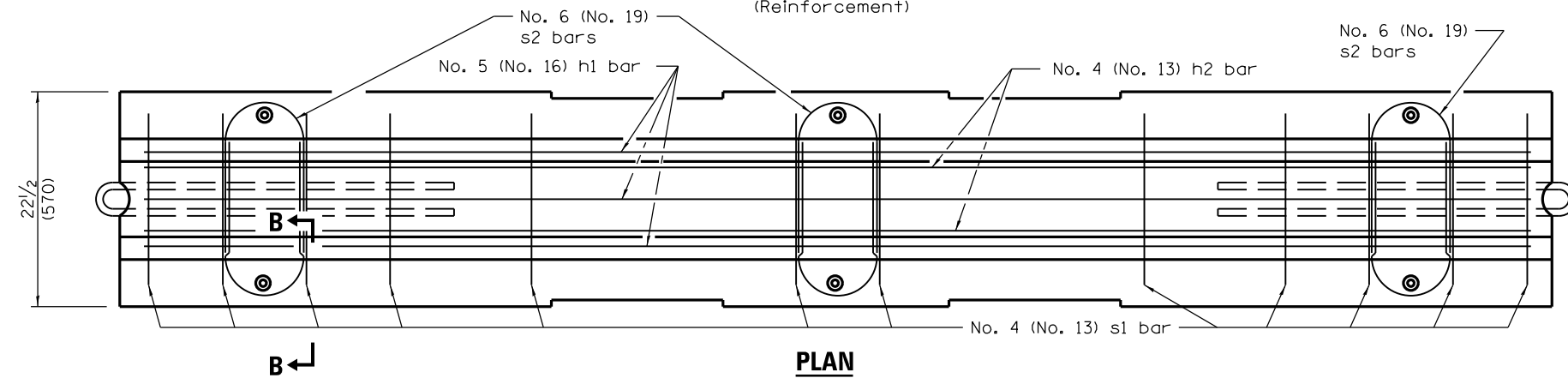
**F SHAPE DESIGN**



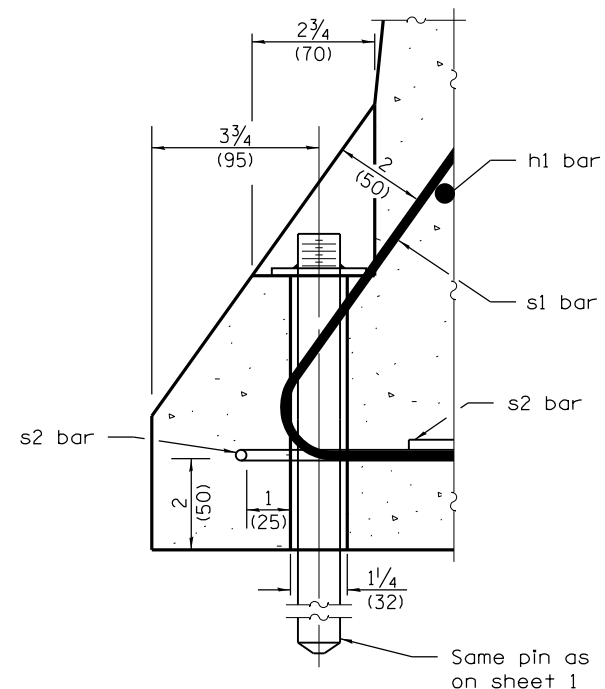
**SECTION C-C**



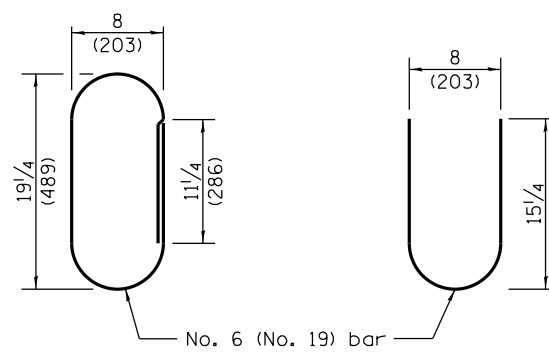
**ELEVATION**  
(Reinforcement)



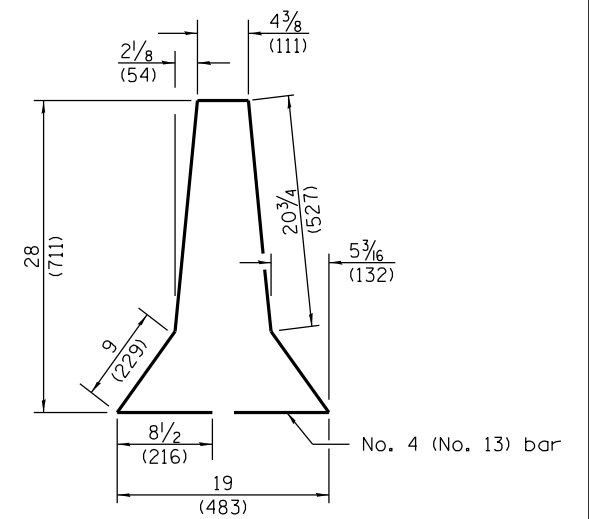
**PLAN**



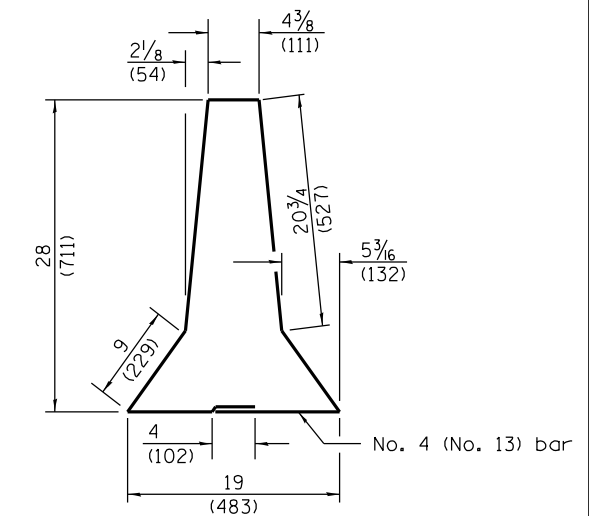
**SECTION B-B**  
**ANCHORING DETAIL**



**ALTERNATE s2 BARS**



**s1 BAR**



**ALTERNATE s1 BAR**

Illinois Department of Transportation

PASSED April 1, 2016  
*Michael Beard*  
 ENGINEER OF POLICY AND PROCEDURES

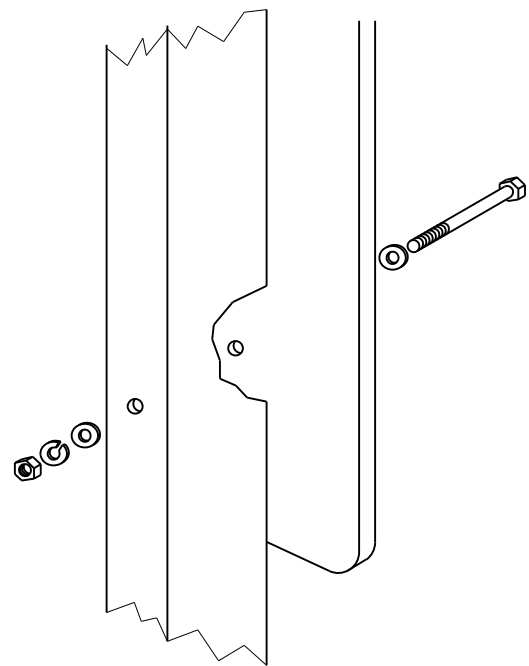
APPROVED April 1, 2016  
*[Signature]*  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 10-1-20  
 20-1-01

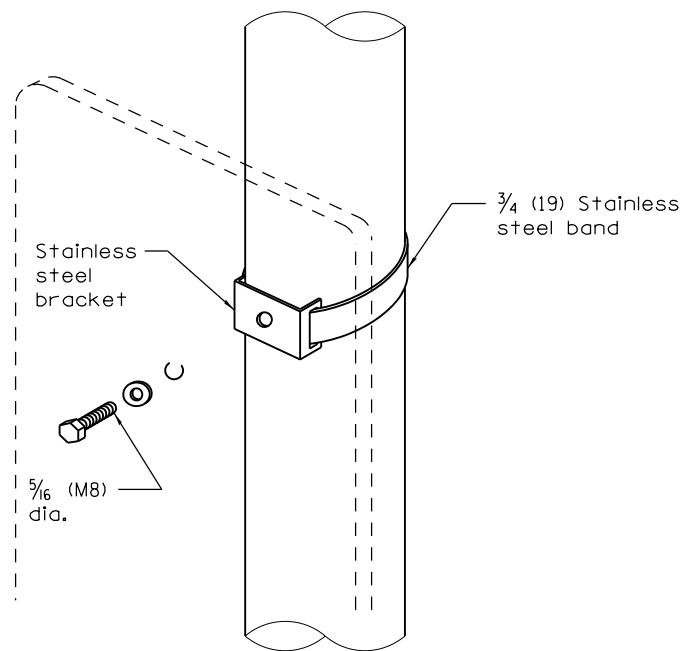
**TEMPORARY CONCRETE BARRIER**

(Sheet 2 of 2)

**STANDARD 704001-08**

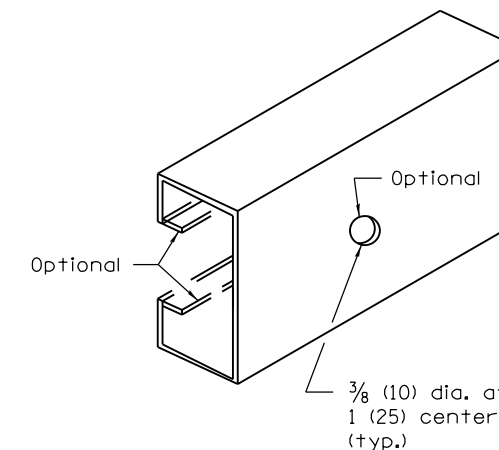
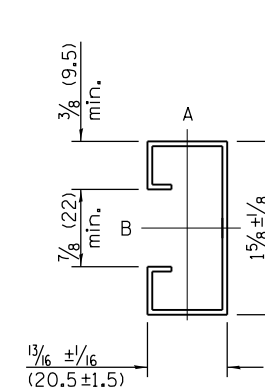


Sign panel 36 (900) wide or less

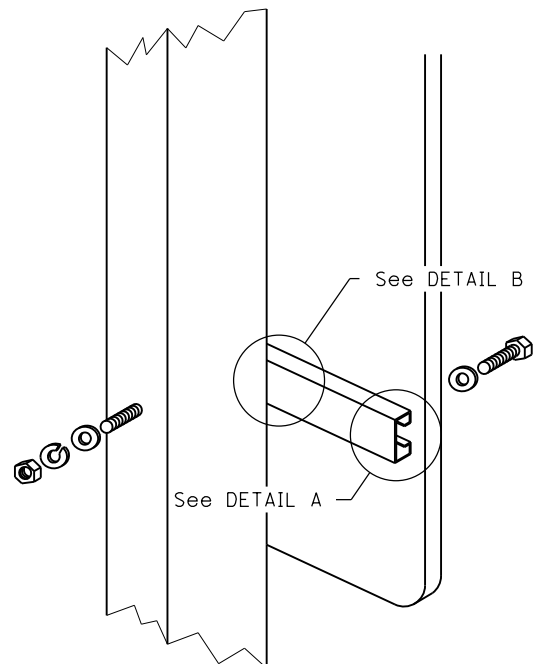


Sign panel 36 (900) wide or less

Section modulus (minimum)	Axis A	Axis B
Steel	0.050 in. <sup>3</sup> (819 mm <sup>3</sup> )	0.105 in. <sup>3</sup> (1720 mm <sup>3</sup> )
Aluminum	0.150 in. <sup>3</sup> (2458 mm <sup>3</sup> )	0.315 in. <sup>3</sup> (5162 mm <sup>3</sup> )

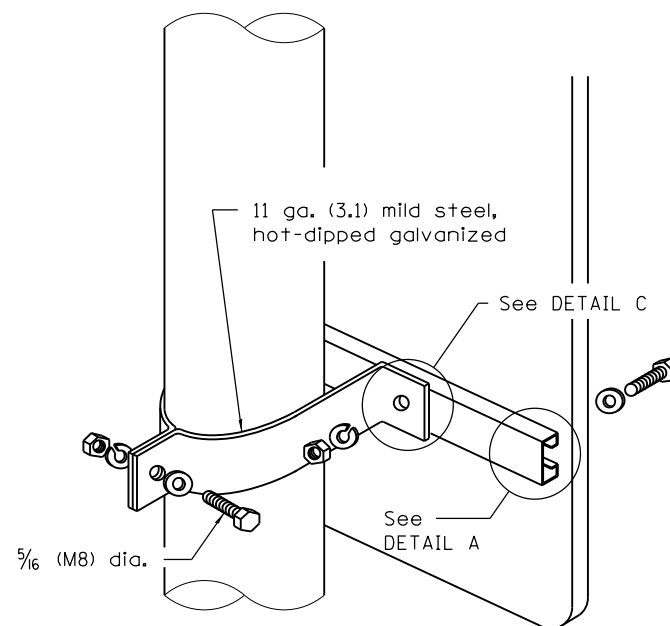


**SUPPORTING CHANNEL DETAILS**



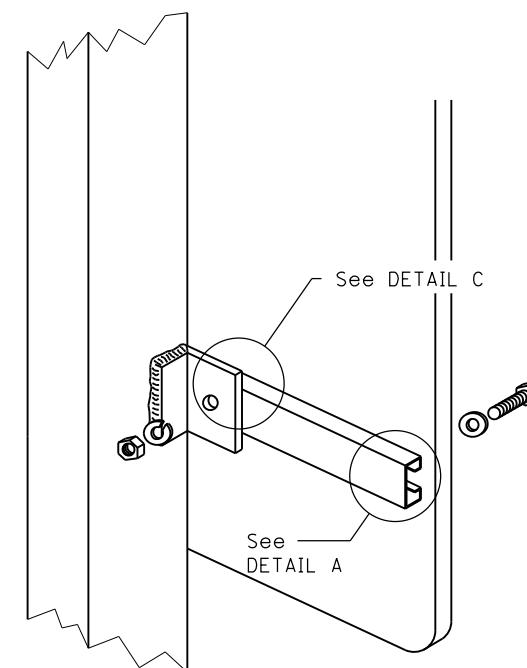
Sign panel over 36 (900) wide

**WOOD OR TELESCOPING STEEL POSTS**



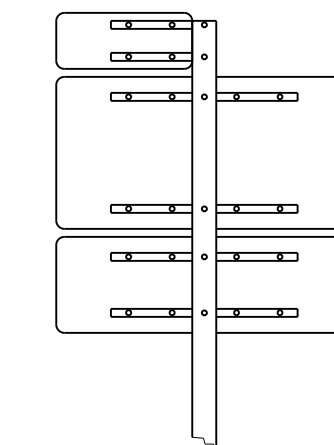
Sign panel over 36 (900) wide

**LIGHT OR SIGNAL STANDARDS**

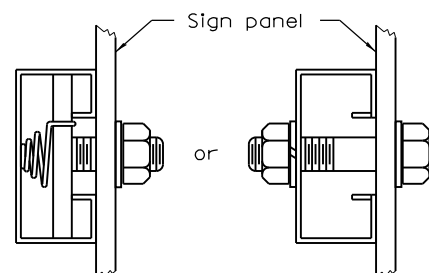


**BREAKAWAY STEEL TUBING POSTS**

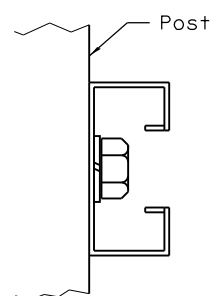
(All sign panel sizes)



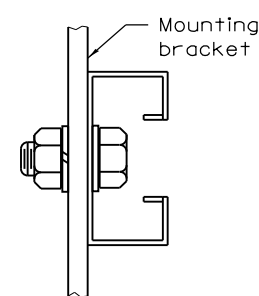
**ROUTE MARKER ASSEMBLY**



**DETAIL A**



**DETAIL B**



**DETAIL C**

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-09	Switched units to English (metric).
1-1-97	Renum. Standard 2319-6.

**SIGN PANEL MOUNTING DETAILS**

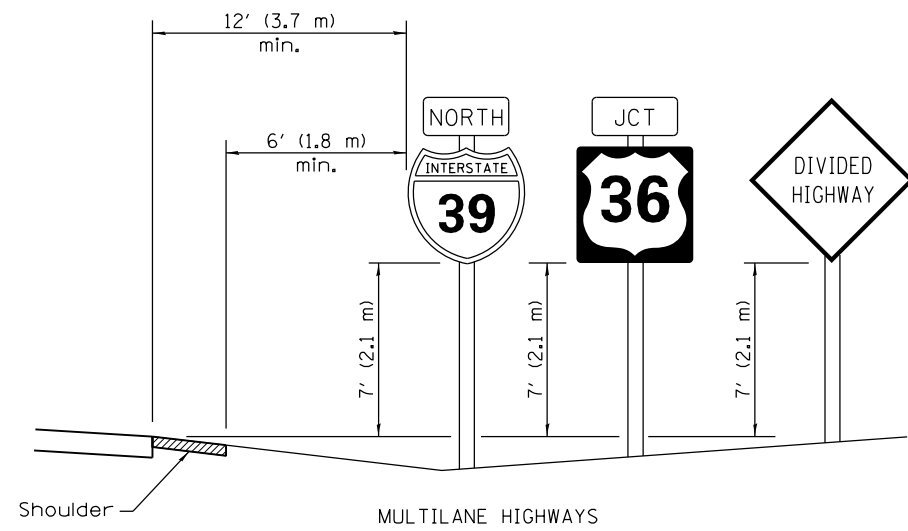
**STANDARD 720001-01**

Illinois Department of Transportation

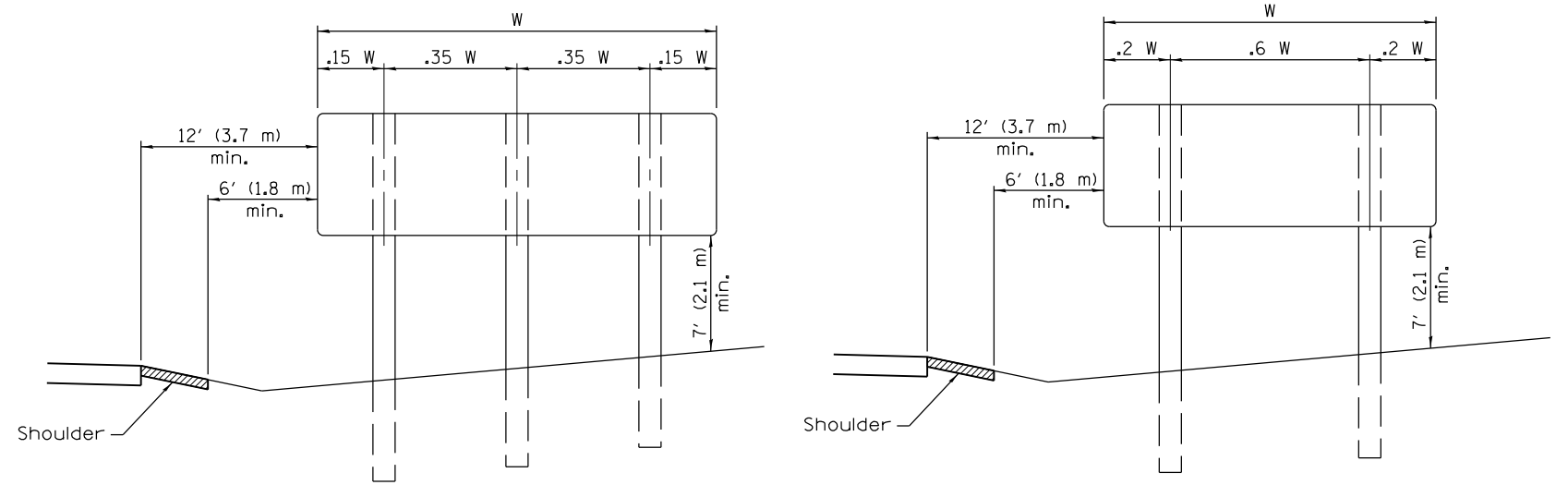
APPROVED January 1, 2009  
*Joe Hill*  
 ENGINEER OF OPERATIONS

APPROVED January 1, 2009  
*Ken E. Han*  
 ENGINEER OF DESIGN AND ENVIRONMENT

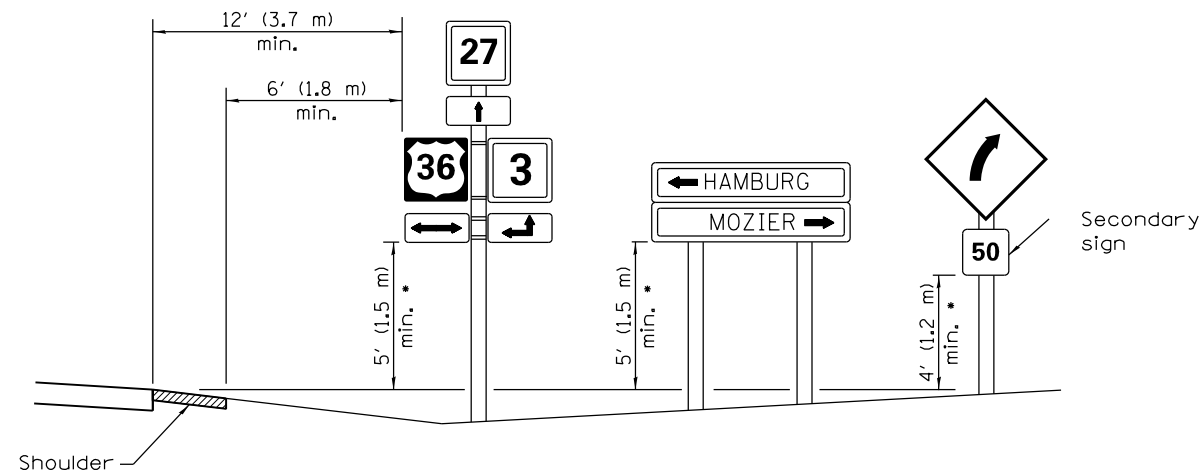
ISSUED 1-1-97



MULTILANE HIGHWAYS

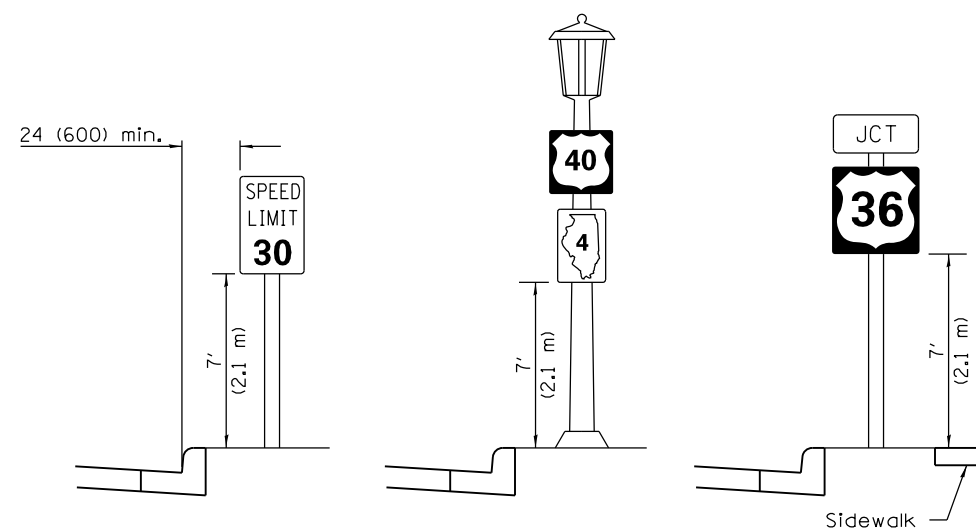


**POST SPACING FOR NON-FREWAY SIGN PANELS**



- In any area where parking is likely to occur or where there are obstructions to view or where signs are located over sidewalks, the height shall be at least 7' (2.1 m).

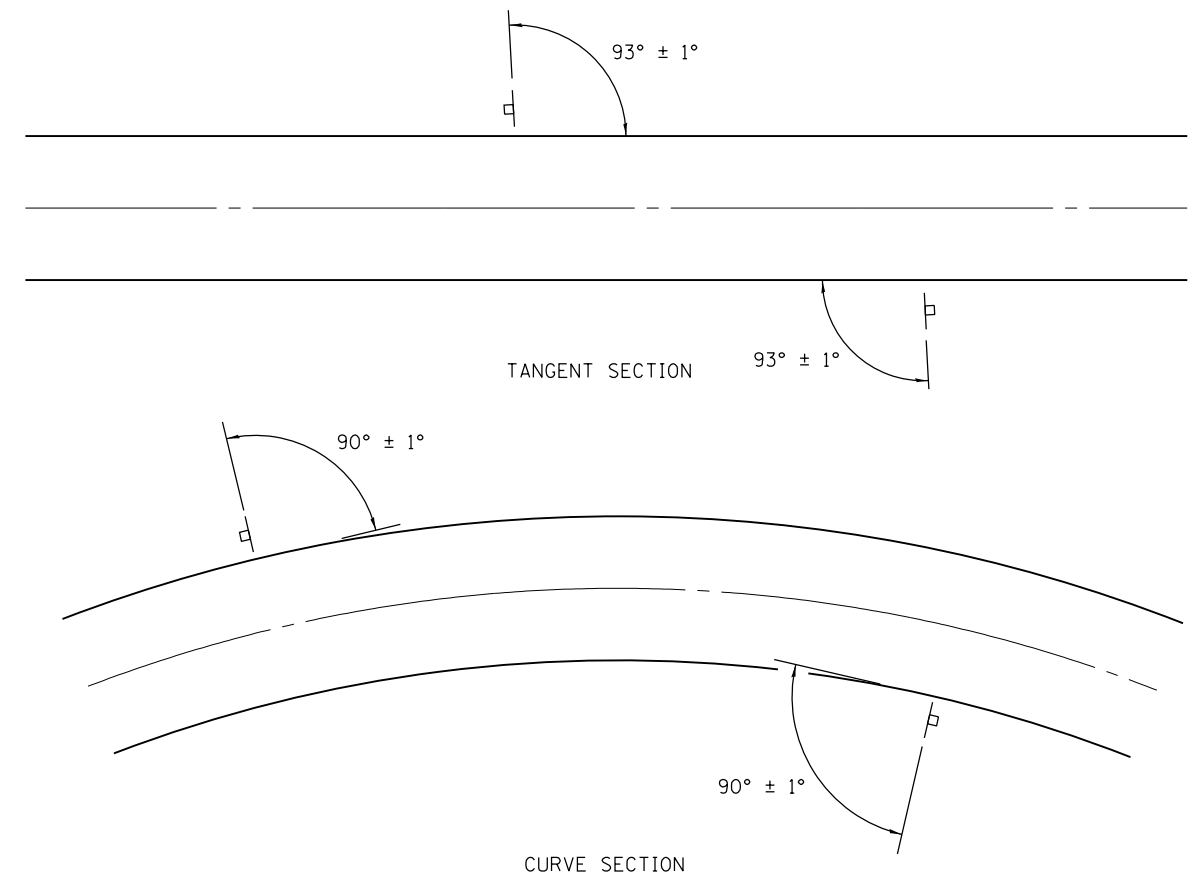
TWO LANE RURAL HIGHWAYS



URBAN LOCATIONS

**TYPICAL INSTALLATIONS**

Signs in any area shall be erected to a uniform height above the edge of the pavement.



**GROUND MOUNT SIGN POSITIONING**

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

APPROVED Justin Mann January 1, 2014  
ENGINEER/OF OPERATIONS

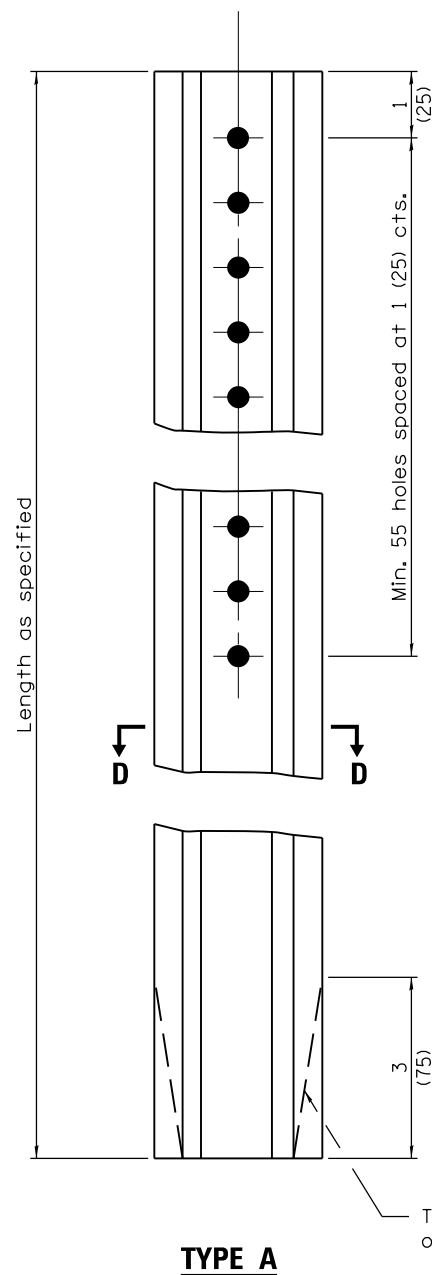
APPROVED [Signature] January 1, 2014  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

DATE	REVISIONS
1-1-14	Added shoulders and slopes. Changed sign distances from roadway and shoulder.
1-1-12	Rev. sign elev. for multilane hwy's. Revised sign elev. and dist. to curb for rural loc.

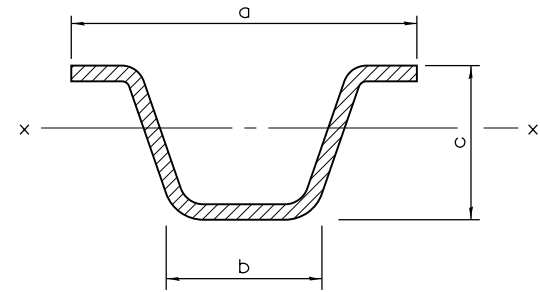
**SIGN PANEL  
ERECTION DETAILS**

**STANDARD 720006-04**

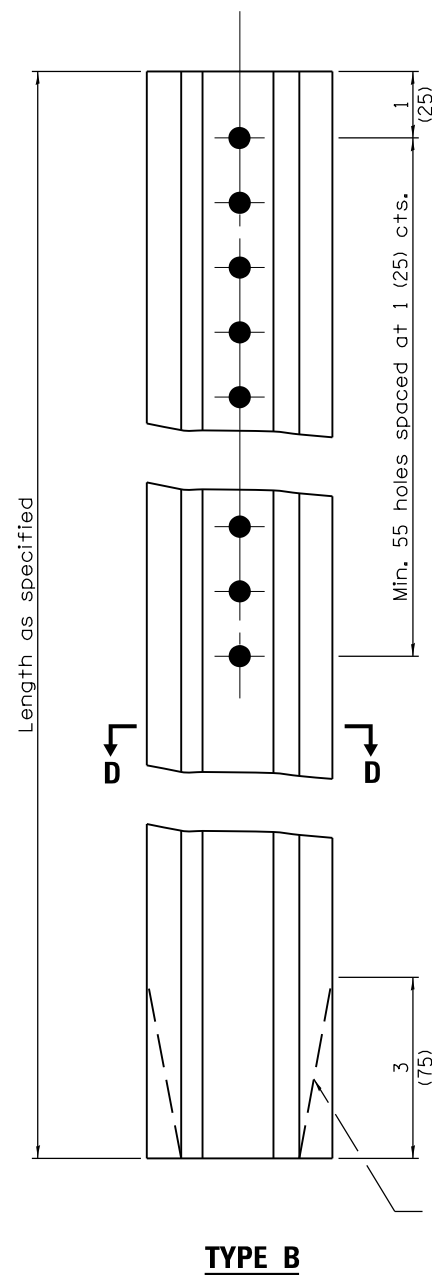


**TYPE A**

Taper optional

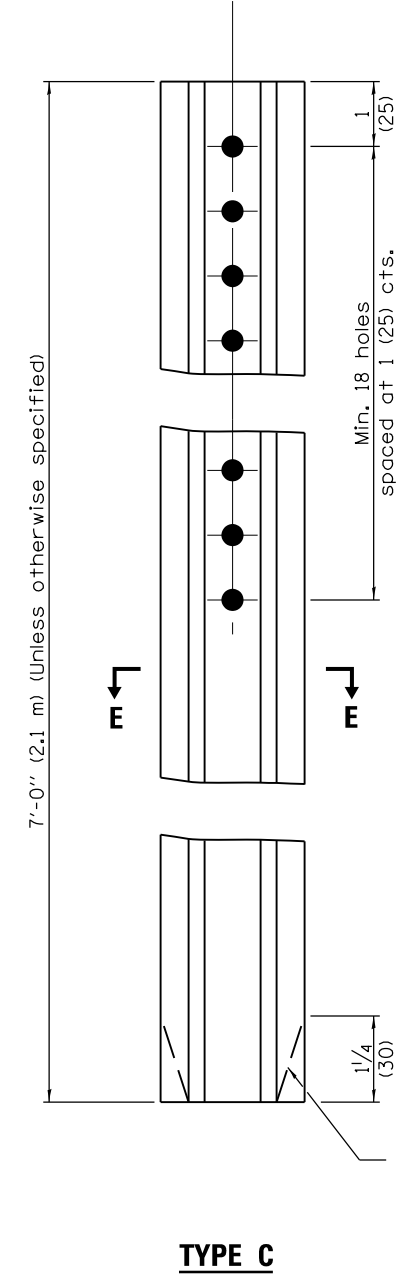


**SECTION D-D**



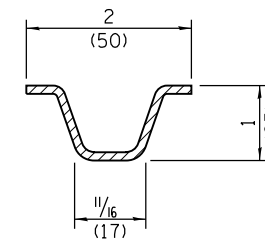
**TYPE B**

Taper optional



**TYPE C**

Taper optional



**SECTION E-E**

Steel - 1.12 lbs./ft. (1.67 kg/m)

		a	b	c	Sx-x in. <sup>3</sup> (mm <sup>3</sup> )	lbs./ft. (kg/m)
TYPE A	Steel	3/16 (78)	1/4 (32)	1/16 (37)	0.223 (3,654)	2.00 (2.98)
	Aluminum	3/2 (89)	1 5/8 (41)	1 7/8 (48)	0.435 (7,128)	0.90 (1.34)
TYPE B	Steel	3 3/8 (81)	1/4 (32)	1/2 (38)	0.341 (5,588)	3.00 (4.46)
	Aluminum	4 5/8 (118)	2/4 (57)	2 3/8 (60)	0.888 (14,552)	1.30 (1.93)

**GENERAL NOTES**

Dimensions shown for cross sections are minimum.

All holes are 3/8 (10).

Sx-x is the minimum section modulus about the x-x axis of the post as shown. For posts in which holes are punched or drilled for more than half their length, Sx-x shall be computed for the net section.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-09	Switched units to English (metric).
1-1-97	Renum. Standard 2350-4.

**METAL POSTS FOR SIGNS, MARKERS & DELINEATORS**

**STANDARD 720011-01**

Illinois Department of Transportation

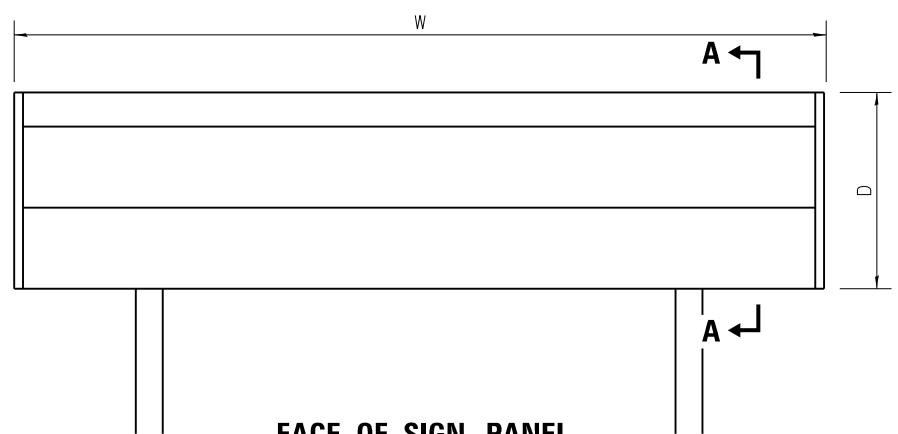
PASSED January 1, 2009

ENGINEER OF POLICY AND PROCEDURES

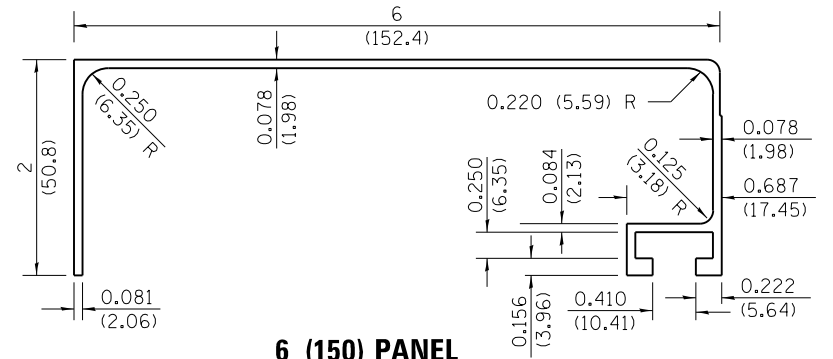
APPROVED January 1, 2009

ENGINEER OF DESIGN AND ENVIRONMENT

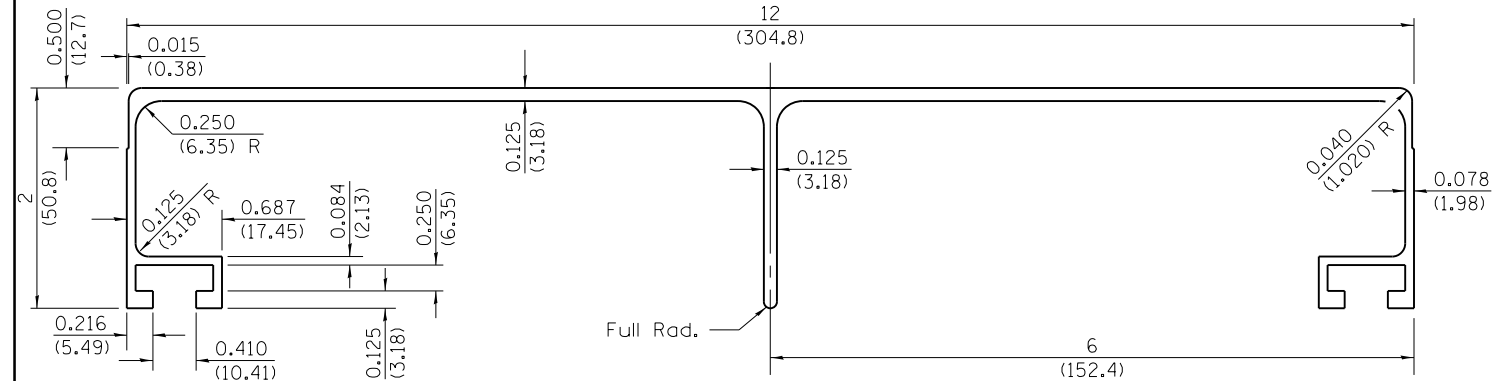
ISSUED 1-1-97



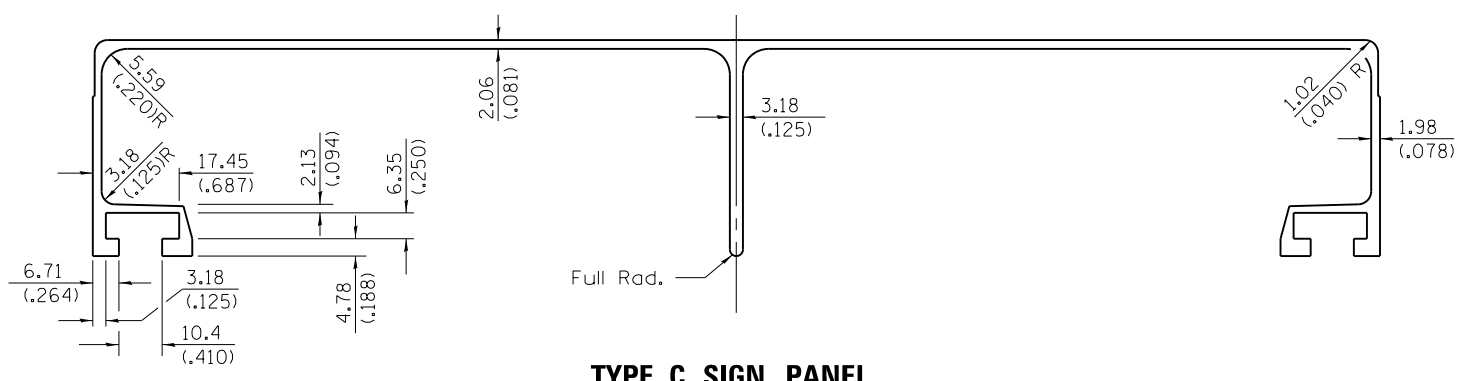
**FACE OF SIGN PANEL**



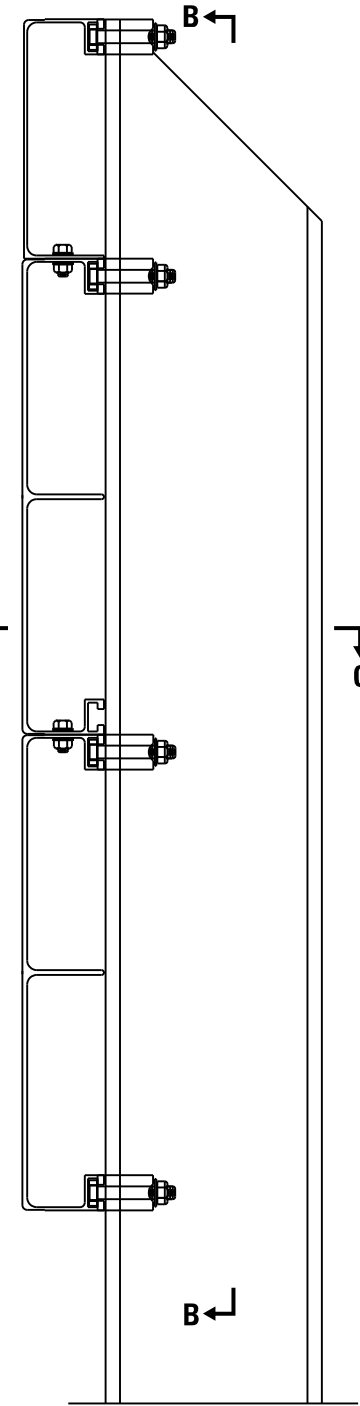
**6 (150) PANEL**



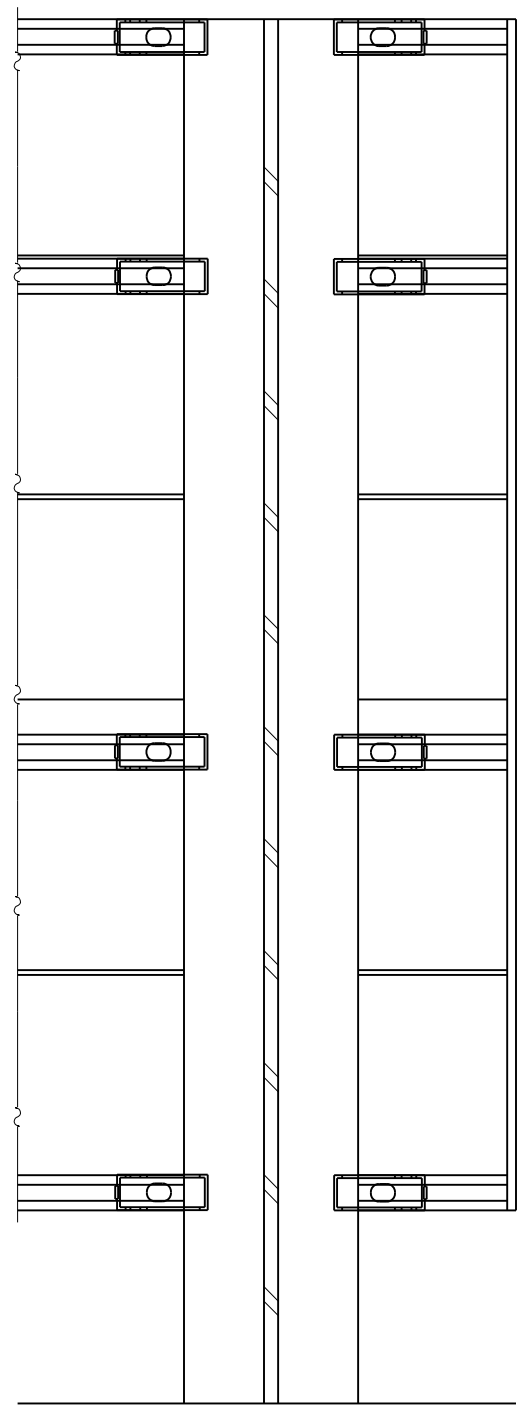
**TYPE B SIGN PANEL**



**TYPE C SIGN PANEL**

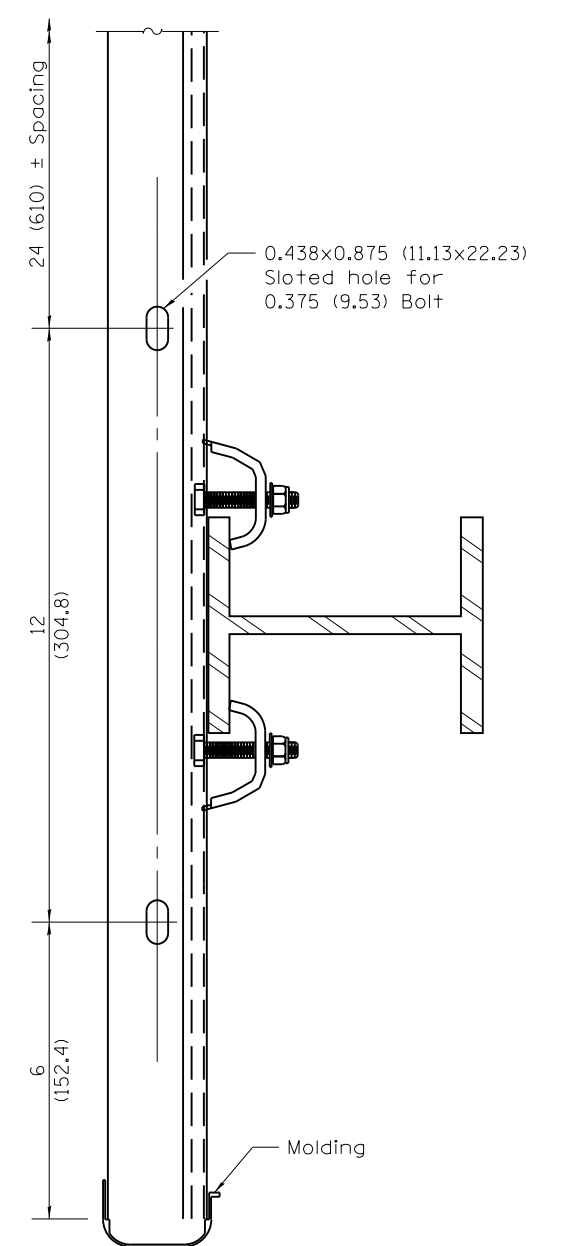


**SECTION A-A**

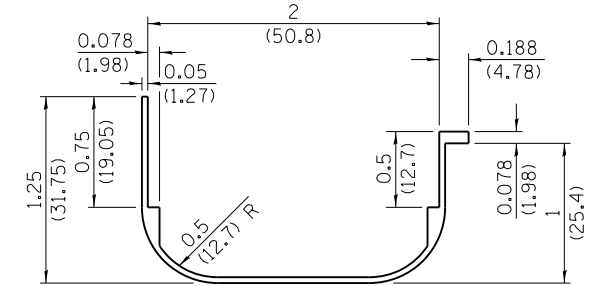


**SECTION B-B**

(Provide two post clips top and bottom. Alternate at interior panel joints on ground-mounted signs, and provide two clips at all panel joints on over-head mounted signs.)



**SECTION C-C**  
(w/o panel bolts)



**SIGN MOLDING**

(Color shall match sign facematerial. To be riveted to sign panel at 24 (600) O.C.)

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

APPROVED January 1, 2009

ENGINEER OF OPERATIONS

APPROVED January 1, 2009

ENGINEER OF DESIGN AND ENVIRONMENT

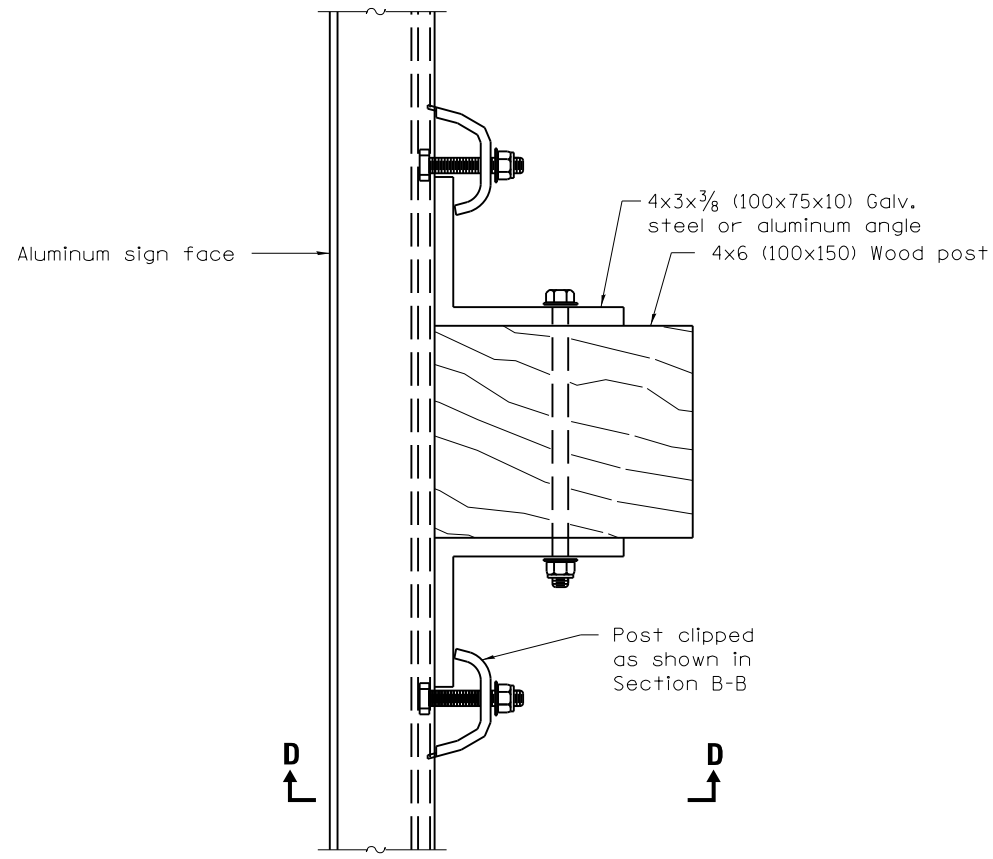
ISSUED 1-1-00

DATE	REVISIONS
1-1-09	Added aluminum clip.
	Switched units to English (metric).
1-1-03	Revised stainless steel clip design, and minor changes.

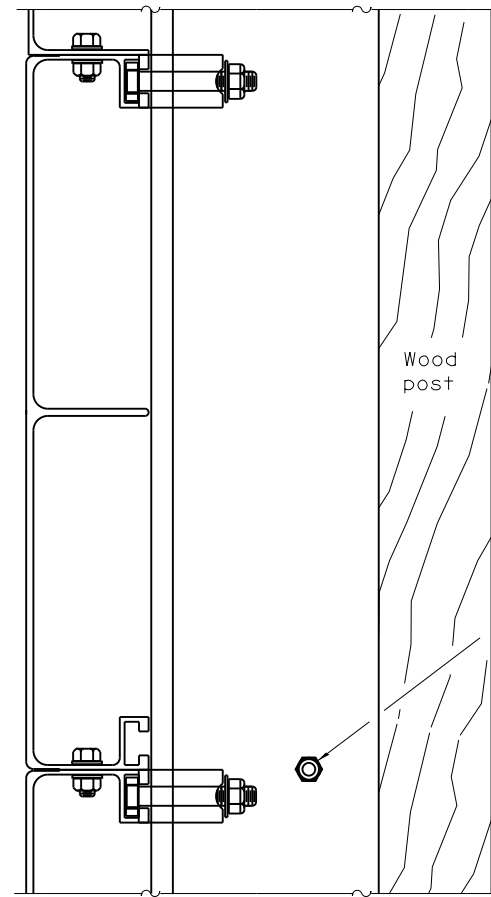
**SIGN PANELS**  
**EXTRUDED ALUMINUM TYPE**

(Sheet 1 of 2)

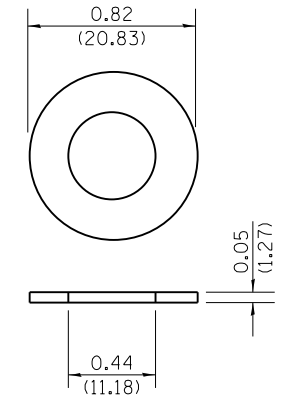
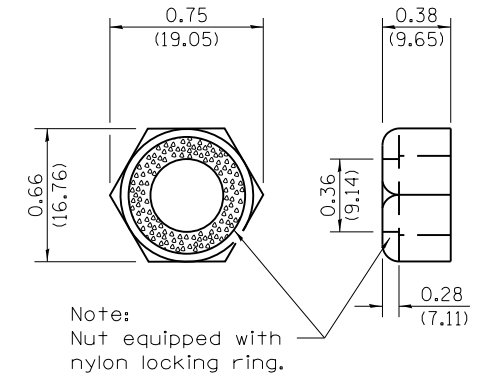
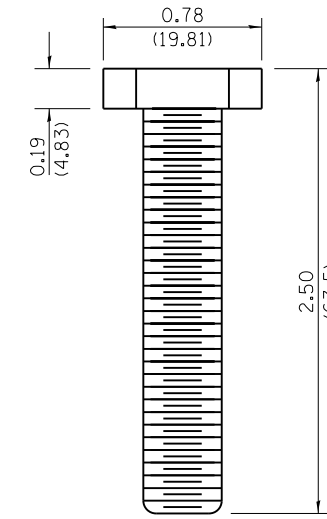
**STANDARD 720021-02**



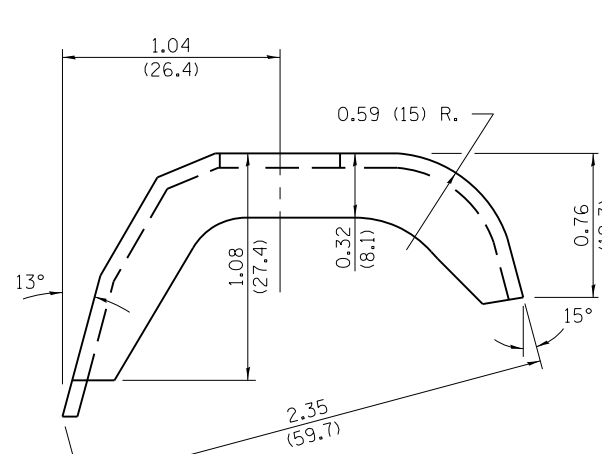
**SIGN PANEL ATTACHMENT TO WOOD POST**



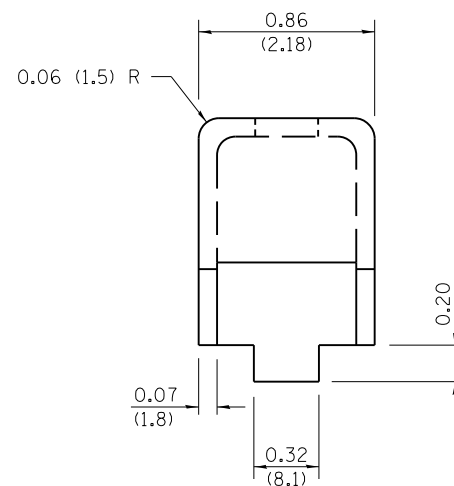
**SECTION D-D**



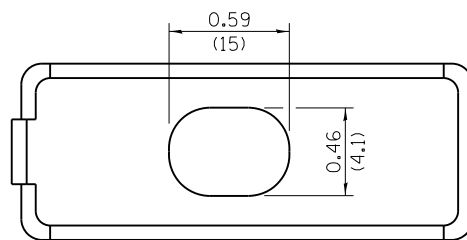
**STAINLESS STEEL CLIP NUT, BOLT AND WASHER ASSEMBLY**



**ELEVATION VIEW**

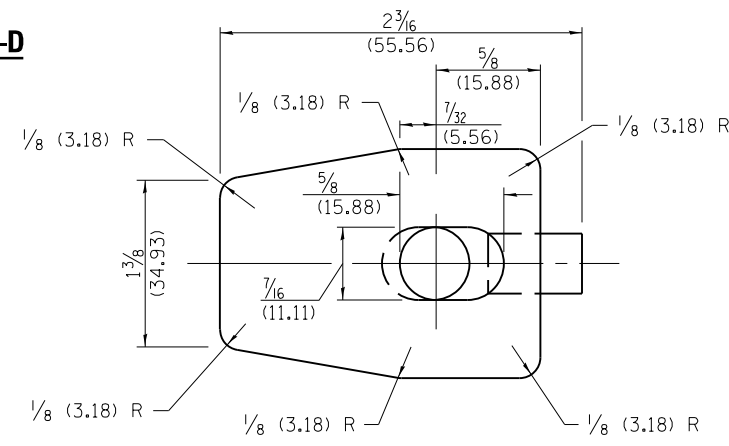


**END VIEW**

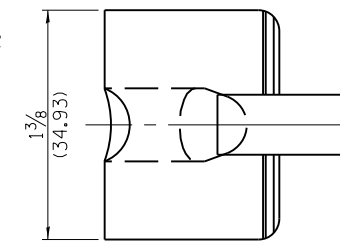


**PLAN VIEW**

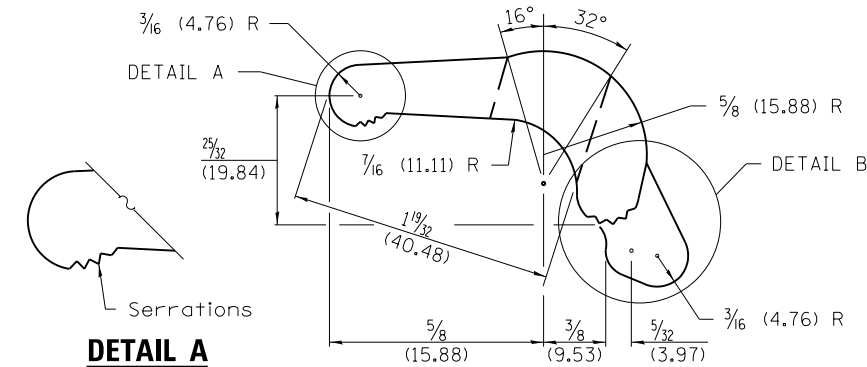
**STAINLESS STEEL CLIP**



**PLAN VIEW**



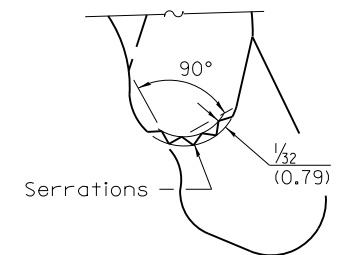
**END VIEW**



**ELEVATION VIEW**



**DETAIL A**  
(Enlarged view of serrations)



**DETAIL B**  
(Enlarged detail of serrations)

**ALUMINUM CLIP**

**SIGN PANELS EXTRUDED ALUMINUM TYPE**

(Sheet 2 of 2)

**STANDARD 720021-02**

Illinois Department of Transportation

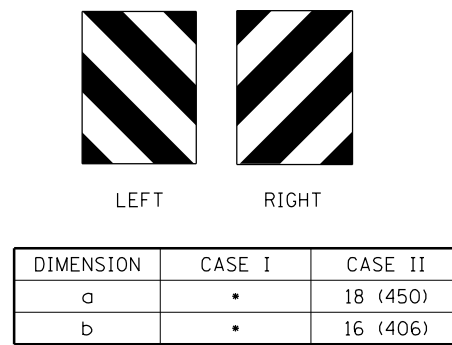
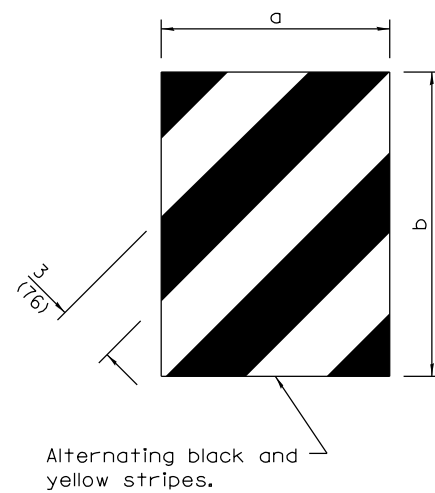
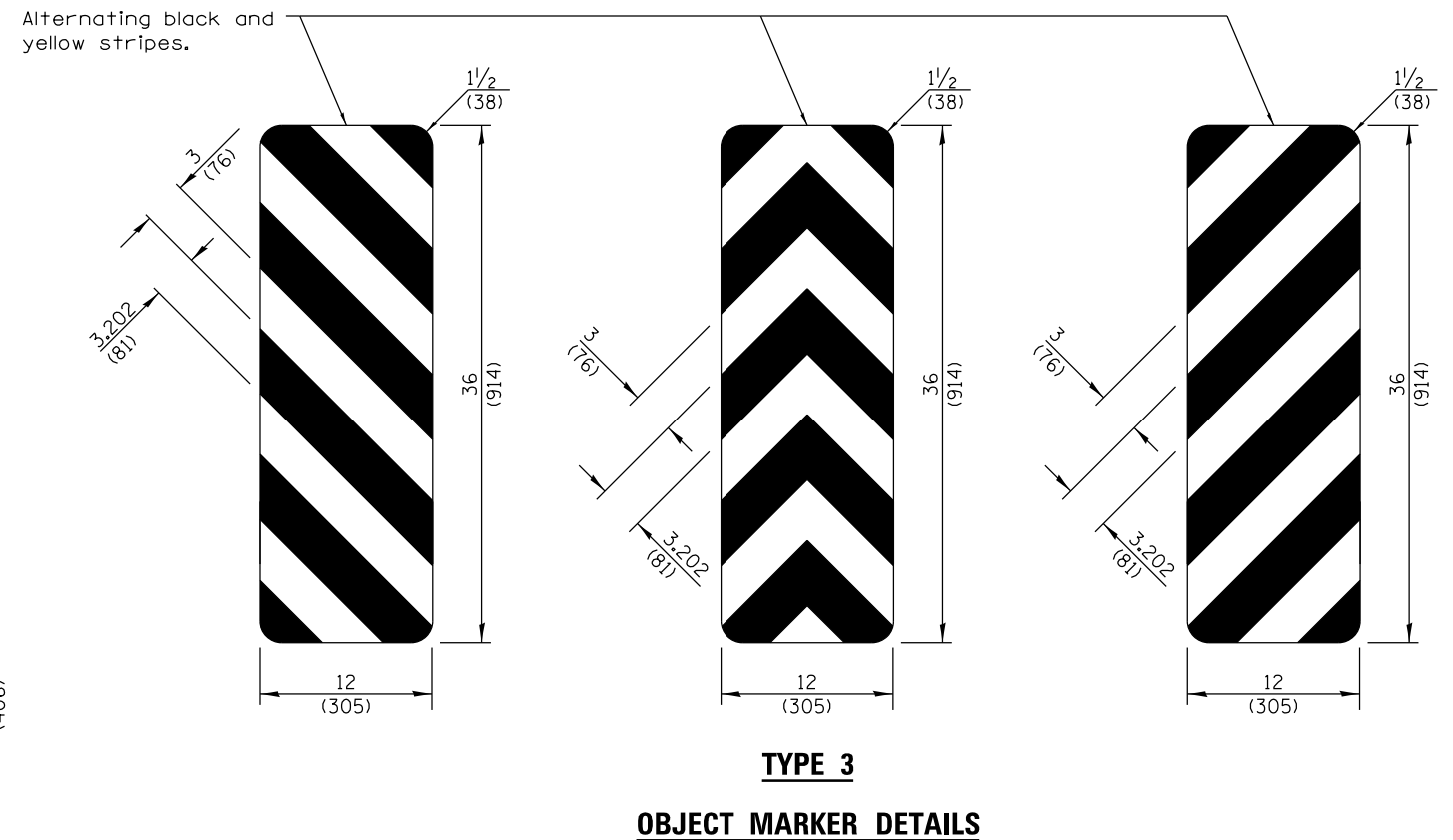
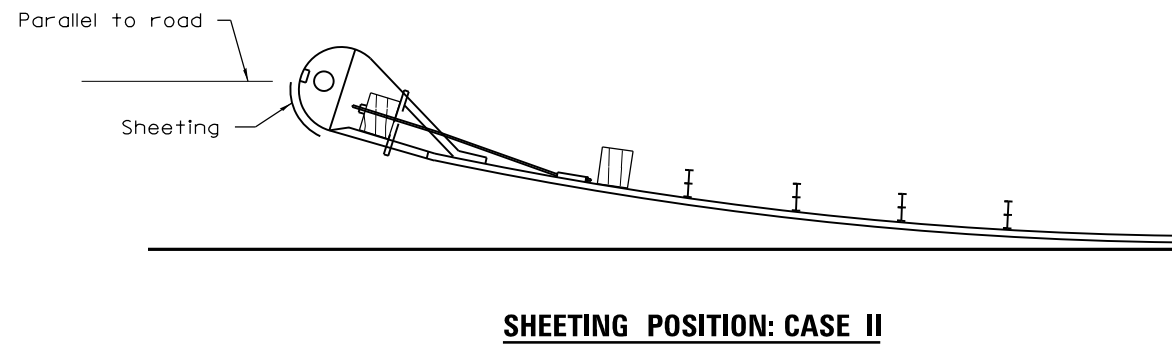
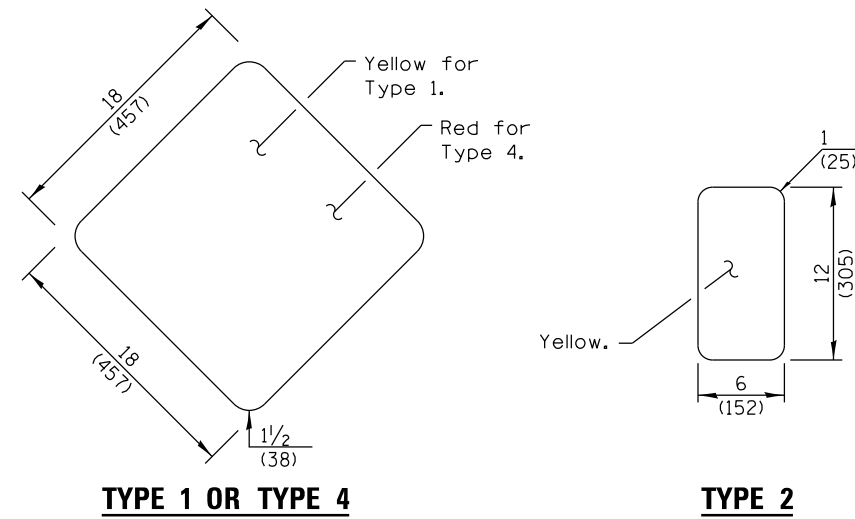
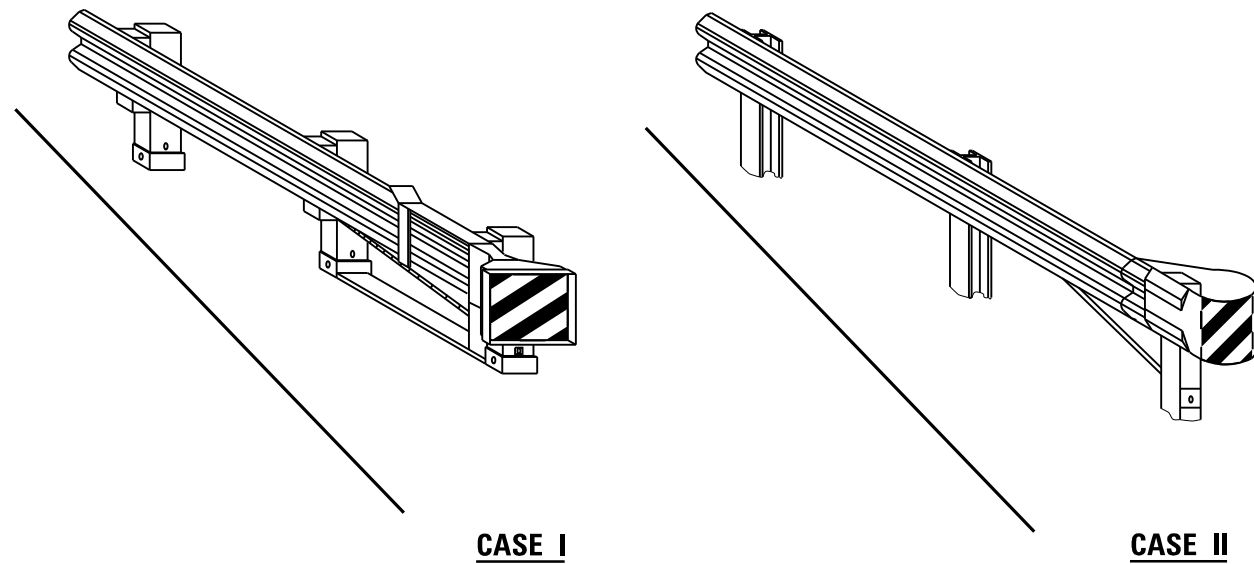
APPROVED January 1, 2009

ENGINEER OF OPERATIONS

APPROVED January 1, 2009

ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-00

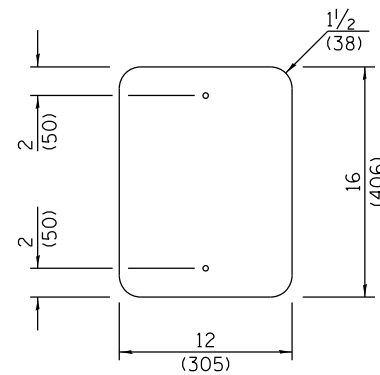


**DIRECT APPLIED**

**TERMINAL MARKER DETAILS**

Color: Black / Yellow reflectorized

- The width and height (a, b) of the terminal marker shall be within approximately 1 (25) of the outer edge of the terminal end.



**GENERAL NOTES**

See detail on Standard 729001 for mounting markers to posts.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-17	Omitted minimum reflective area requirement for terminal marker.
4-1-16	Renumbered standard from 635006.

**OBJECT AND TERMINAL MARKERS**

**STANDARD 725001-01**

Illinois Department of Transportation

APPROVED January 1, 2017

ENGINEER OF OPERATIONS

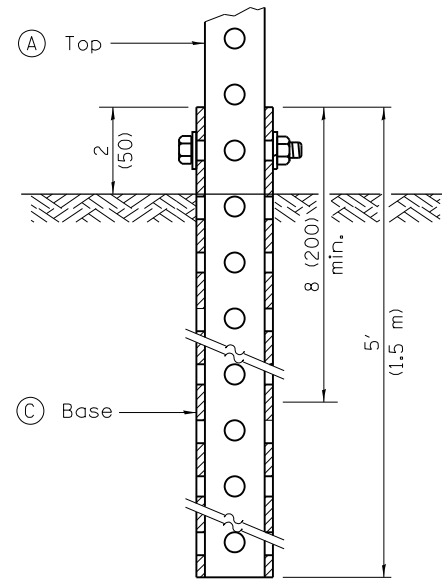
APPROVED January 1, 2017

ENGINEER OF DESIGN AND ENVIRONMENT

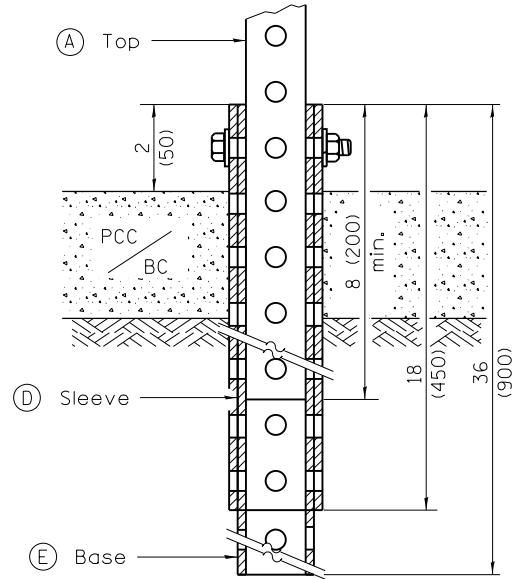
ISSUED 1-1-2016

9102-1-1

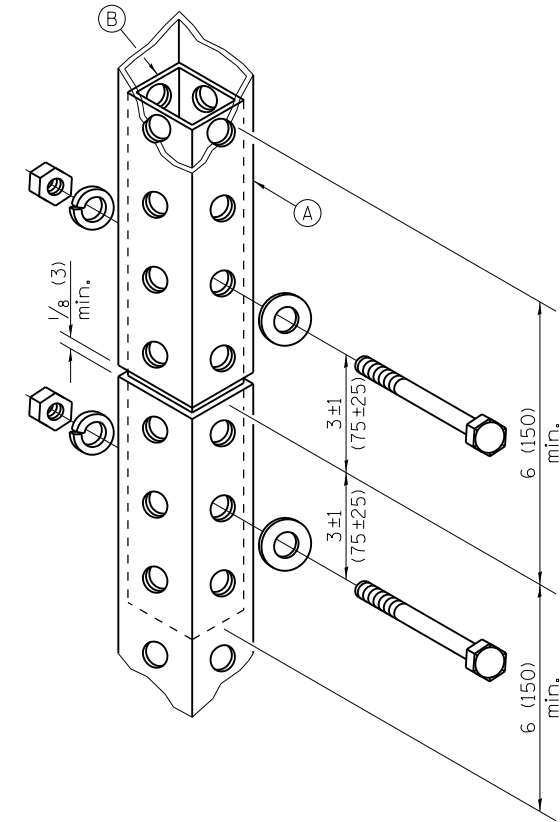




**GROUND MOUNT DETAIL**



**PAVEMENT MOUNT DETAIL**



**SPLICE DETAIL**

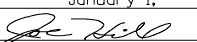
(A)	2 x 2 x var. (51 x 51 var.)
(B)	1 3/4 x 1 3/4 x 12 (44 x 44 x 300)
(C)	2 1/4 x 2 1/4 x 60 (57 x 57 x 1500)
(D)	2 1/2 x 2 1/2 x 18 (64 x 64 x 450)
(E)	2 1/4 x 2 1/4 x 36 (57 x 57 x 900)

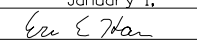
**GENERAL NOTES**

All bolts 3/8 (M10) hex head zinc or cadmium plated.

All dimensions are in inches (millimeters) unless otherwise shown.

Illinois Department of Transportation

APPROVED January 1, 2009  
  
 ENGINEER OF OPERATIONS

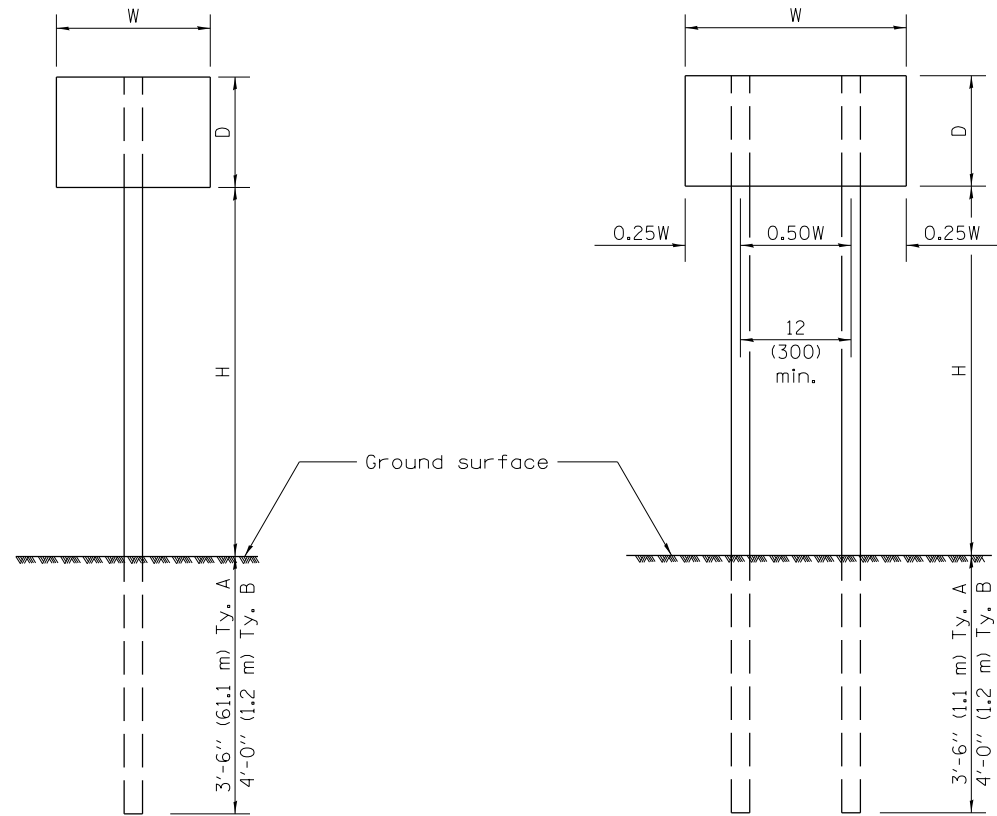
APPROVED January 1, 2009  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-07

DATE	REVISIONS
1-1-09	Switched units to English (metric).
1-1-07	New Standard. Used to be part of Standard 720006.

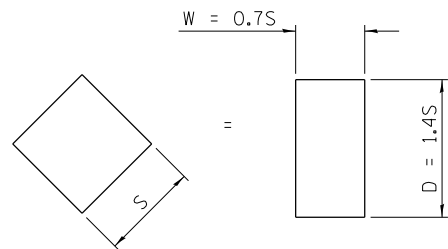
**TELESCOPING STEEL SIGN SUPPORT**

**STANDARD 728001-01**



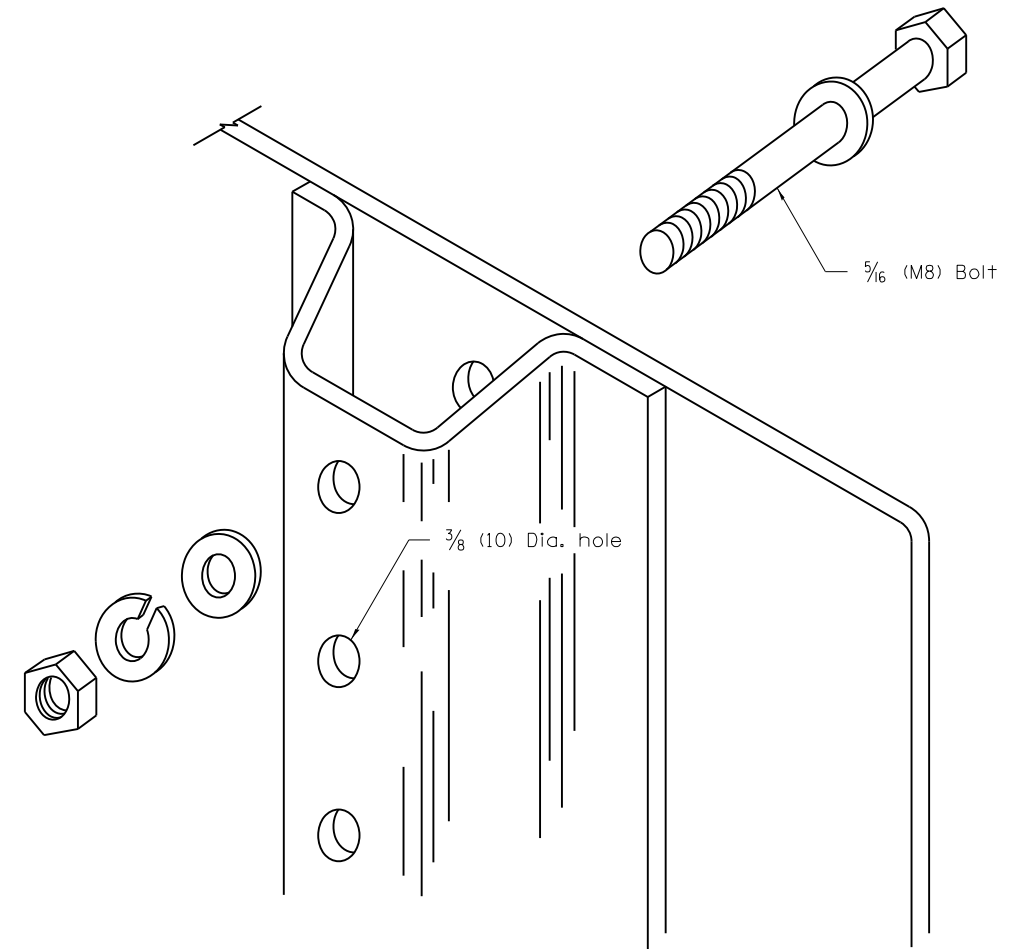
**ONE POST INSTALLATION**

**TWO POST INSTALLATION**



For diamond shaped sign with side S as shown, use required post size for a sign with  $W = 0.7S$  and  $D = 1.4S$ .

SIGN DEPTH (D)	H	NO. AND TYPE OF POST FOR SIGN WIDTH (W)				
		12 (300)	18 (450)	24 (600)	30 (750)	36 (900)
18 (450)	5'-0" (1.5 m)	A	A	A	A	A
	5'-6" (1.7 m)	A	A	A	A	A
	6'-0" (1.8 m)	A	A	A	A	B
	6'-6" (2.0 m)	A	A	A	A	B
	7'-0" (2.1 m)	A	A	A	A	B
	7'-6" (2.3 m)	A	A	A	A	B
	8'-0" (2.4 m)	A	A	A	A	B
	8'-6" (2.6 m)	A	A	A	B	B
	9'-0" (2.7 m)	A	A	A	B	B
24 (600)	5'-0" (1.5 m)	A	A	A	A	B
	5'-6" (1.7 m)	A	A	A	A	B
	6'-0" (1.8 m)	A	A	A	B	B
	6'-6" (2.0 m)	A	A	A	B	B
	7'-0" (2.1 m)	A	A	A	B	B
	7'-6" (2.3 m)	A	A	A	B	B
	8'-0" (2.4 m)	A	A	A	B	2A
	8'-6" (2.6 m)	A	A	B	B	2A
	9'-0" (2.7 m)	A	A	B	B	2A
30 (750)	5'-0" (1.5 m)	A	A	A	B	B
	5'-6" (1.7 m)	A	A	A	B	2A
	6'-0" (1.8 m)	A	A	A	B	2A
	6'-6" (2.0 m)	A	A	A	B	2A
	7'-0" (2.1 m)	A	A	B	B	2A
	7'-6" (2.3 m)	A	A	B	B	2A
	8'-0" (2.4 m)	A	A	B	B	2A
	8'-6" (2.6 m)	A	A	B	2A	2A
	9'-0" (2.7 m)	A	A	B	2A	2A
36 (900)	5'-0" (1.5 m)	A	A	B	B	2A
	5'-6" (1.7 m)	A	A	B	B	2A
	6'-0" (1.8 m)	A	A	B	B	2A
	6'-6" (2.0 m)	A	A	B	2A	2A
	7'-0" (2.1 m)	A	A	B	2A	2A
	7'-6" (2.3 m)	A	A	B	2A	2A
	8'-0" (2.4 m)	A	B	B	2A	2A
	8'-6" (2.6 m)	A	B	B	2A	2B
	9'-0" (2.7 m)	A	B	2A	2A	2B
4'-0" (1.2 m)	5'-0" (1.5 m)	A	A	B	2A	2A
	5'-6" (1.7 m)	A	B	B	2A	2A
	6'-0" (1.8 m)	A	B	B	2A	2A
	6'-6" (2.0 m)	A	B	2A	2A	2B
	7'-0" (2.1 m)	A	B	2A	2A	2B
	7'-6" (2.3 m)	A	B	2A	2B	2B
	8'-0" (2.4 m)	A	B	2A	2B	2B
	8'-6" (2.6 m)	B	B	2B	2B	2B
	9'-0" (2.7 m)	B	2A	2B	2B	2B



**DETAIL OF MOUNTING SIGN TO POST**

NOTE: Minimum of 2 bolts per post required.

**GENERAL NOTES**

DESIGN: Current AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

LOADING: for 60 mph (95 km/h) wind velocity with 30% gust factor, normal to sign.

SOIL PRESSURE: Minimum allowable soil pressure 1.25 tsf (120 kPa).

See Standard 720011 for details of Types A and B posts.

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-09	Switched units to English (metric).
1-1-97	Renum. Standard 2363-2.

**APPLICATIONS OF TYPES A & B METAL POSTS (FOR SIGNS & MARKERS)**

**STANDARD 729001-01**

Illinois Department of Transportation

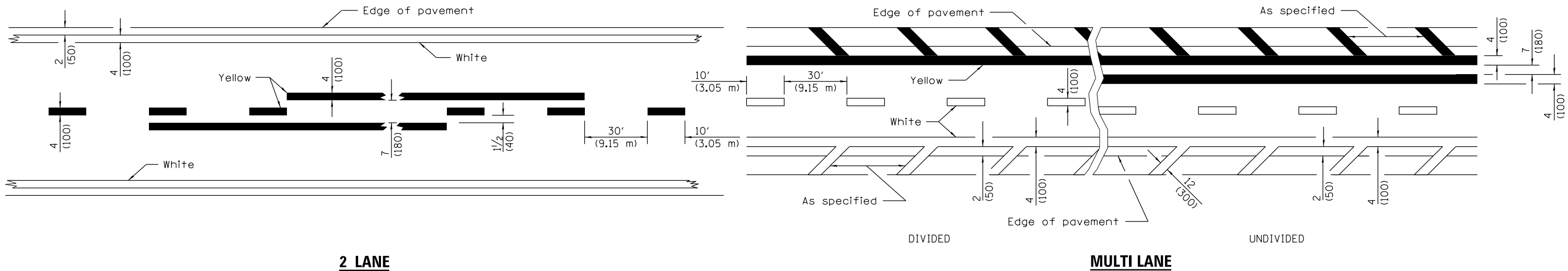
PASSED January 1, 2009

ENGINEER OF POLICY AND PROCEDURES

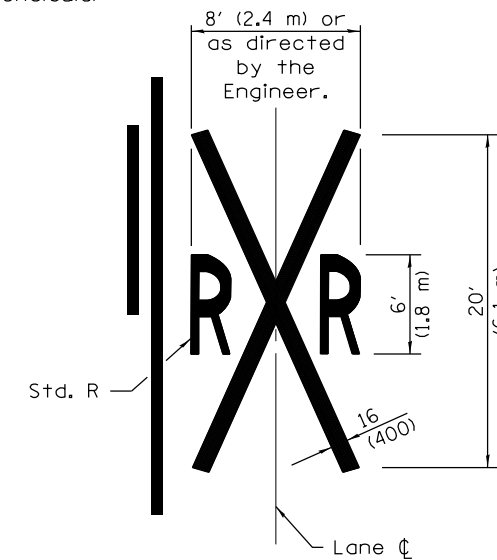
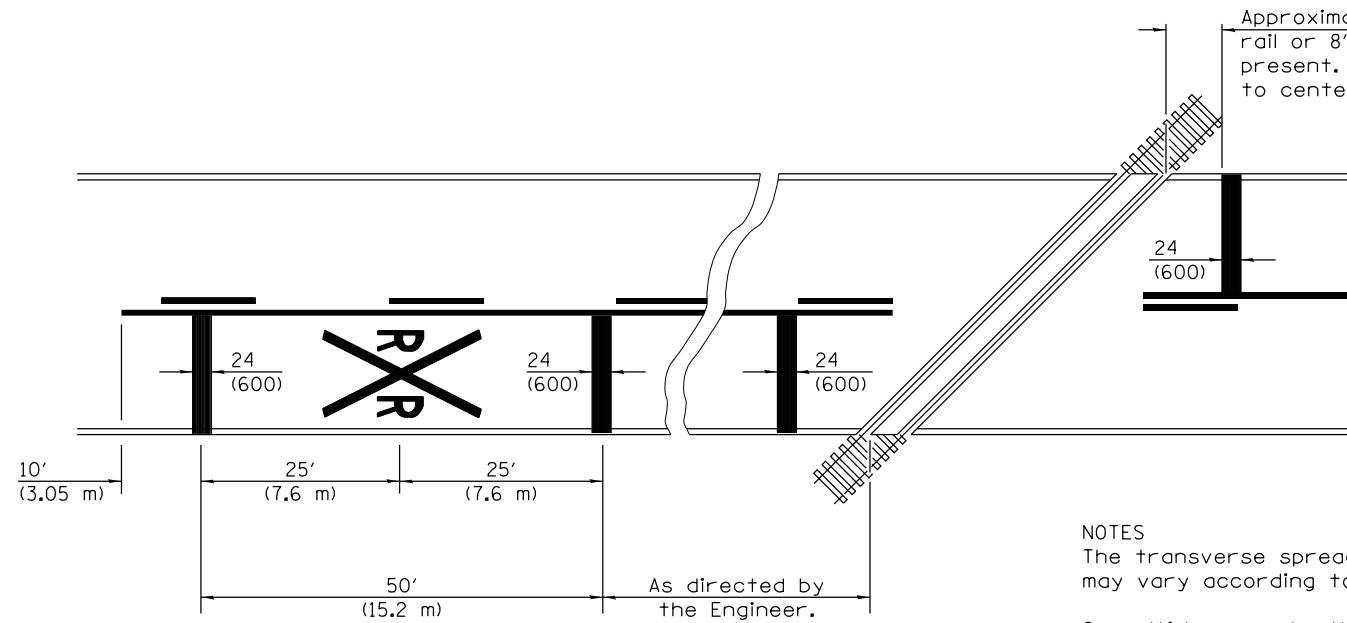
APPROVED January 1, 2009

ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97



**LANE AND EDGE LINES**



**NOTES**

The transverse spread of the "X" may vary according to lane width.

On multi-lane roads, the stop lines shall extend across all approach lanes and separate RXR symbols shall be placed adjacent to each other in each lane.

When the pavement marking symbol is used, a portion of the symbol should be located directly adjacent to the Advance Warning Sign (W10-1) as placed by Table 2C-4, Condition B of the MUTCD.

**PAVEMENT MARKINGS AT RAILROAD-HIGHWAY GRADE CROSSING**

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
1-1-15	Added symbols. Revised bike symbol. Revised note for stop line at RR crossing.
1-1-14	Added bike symbol. Renamed 'LANE DROP ARROW' detail to 'LANE-REDUCTION ARROW'.

**TYPICAL PAVEMENT MARKINGS**

(Sheet 1 of 3)

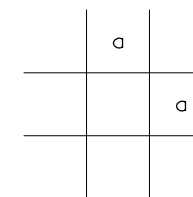
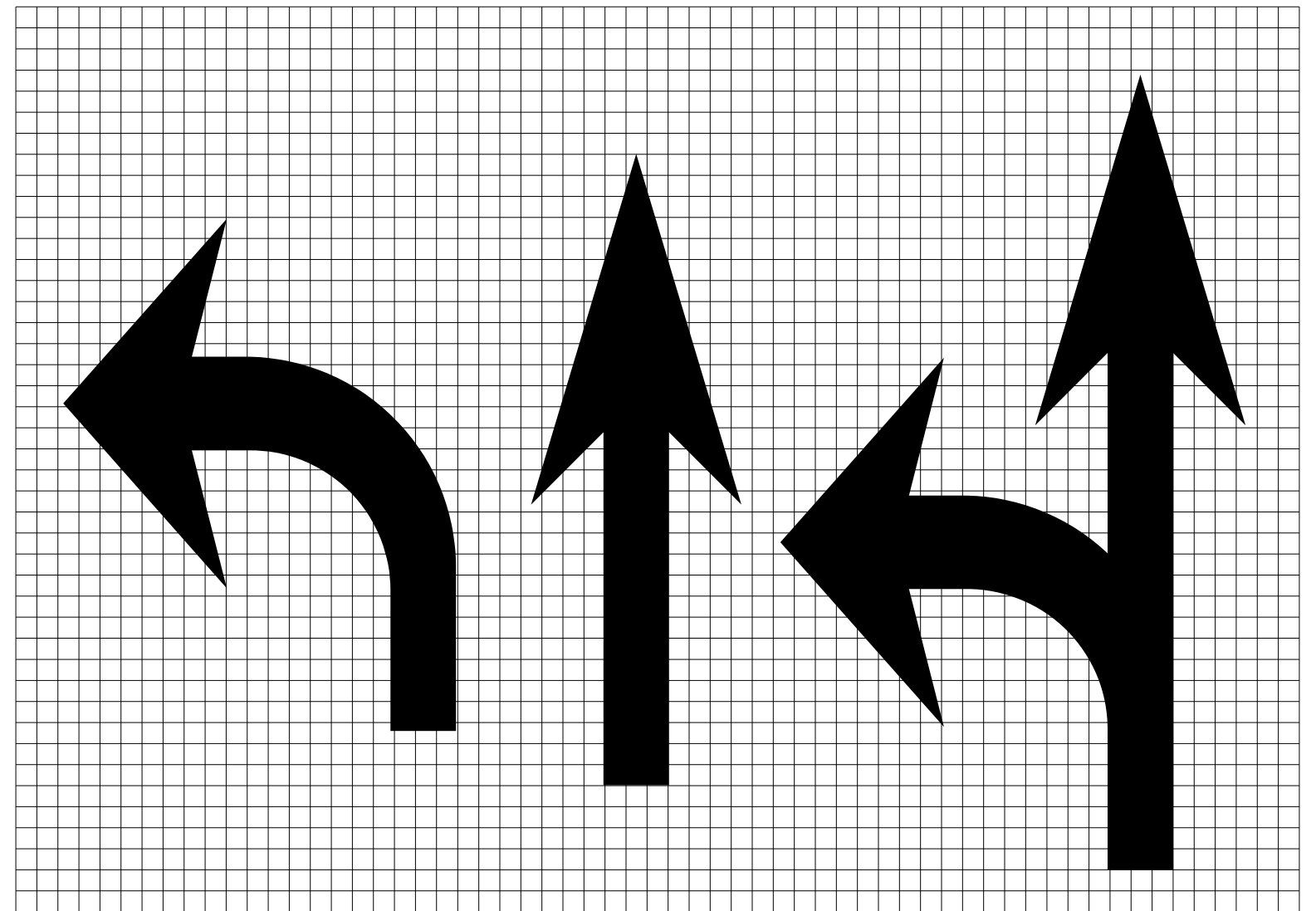
**STANDARD 780001-05**

Illinois Department of Transportation

APPROVED January 1, 2015  
*Amy Allen*  
 ENGINEER OF OPERATIONS

APPROVED January 1, 2015  
*[Signature]*  
 ENGINEER OF DESIGN AND ENVIRONMENT


ISSUED 1-1-97



Legend Height	Arrow Size	a
6' (1.8 m)	Small	2.9 (74)
8' (2.4 m)	Large	3.8 (96)

The space between adjacent letters or numerals should be approximately 3 (75) for 6' (1.8 m) legend and 4 (100) for 8' (2.4 m) legend.

**LETTER AND ARROW GRID SCALE**

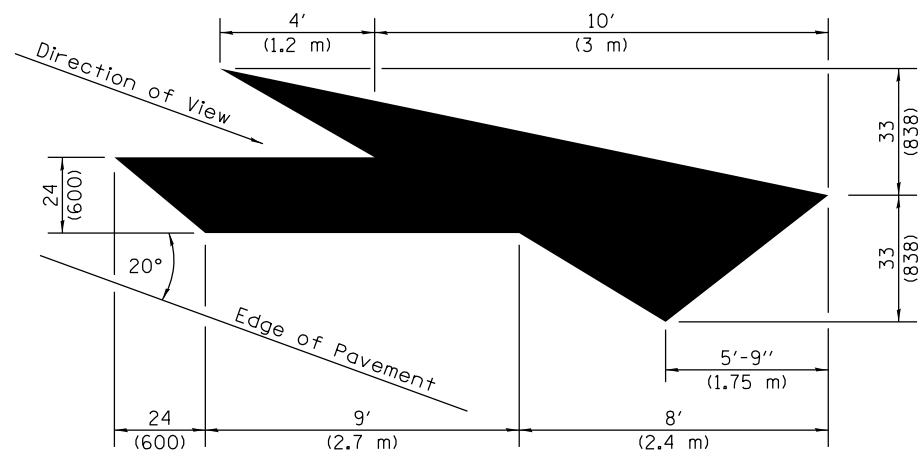
 Illinois Department of Transportation  
 APPROVED January 1, 2015  
*Amy Allen*  
 ENGINEER OF OPERATIONS  
 APPROVED January 1, 2015  
*DR*  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

**TYPICAL PAVEMENT MARKINGS**

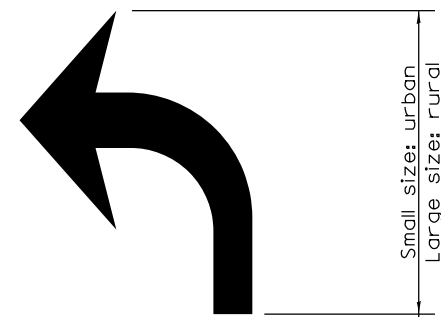
(Sheet 2 of 3)

**STANDARD 780001-05**



**LANE-REDUCTION ARROW**

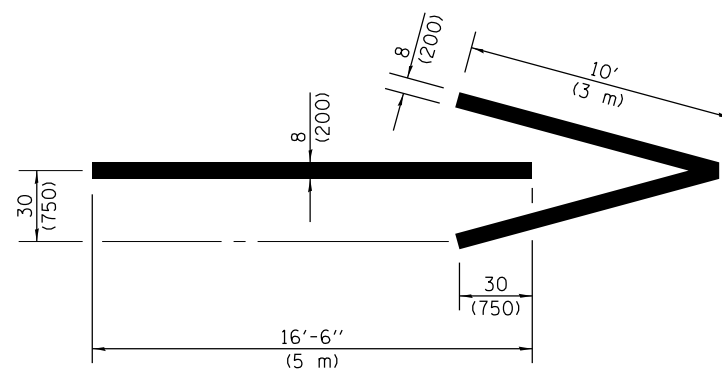
Right lane-reduction arrow shown.  
Use mirror image for left lane.



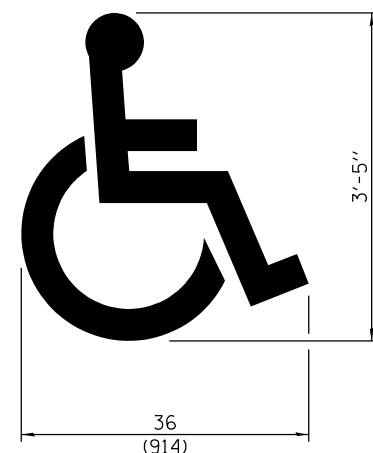
20' (6 m): urban  
50' (15 m): rural  
(Between arrow  
and word or  
between words)

**ONLY**

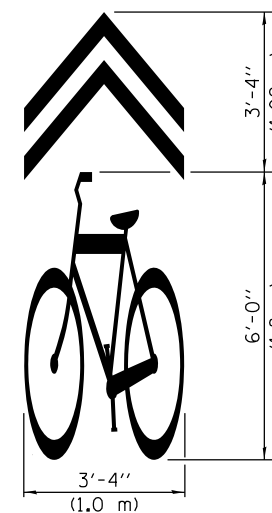
**WORD AND ARROW LAYOUT**



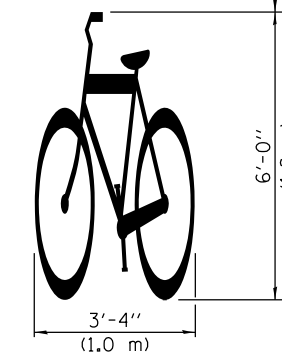
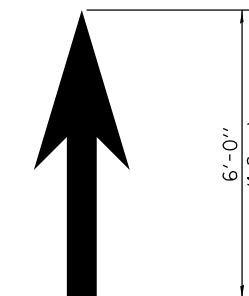
**WRONG WAY ARROW**



**INTERNATIONAL  
SYMBOL OF  
ACCESSIBILITY**



**SHARED LANE  
SYMBOL**



**BIKE SYMBOL**  
(Arrow is optional.)

Illinois Department of Transportation

APPROVED January 1, 2015  
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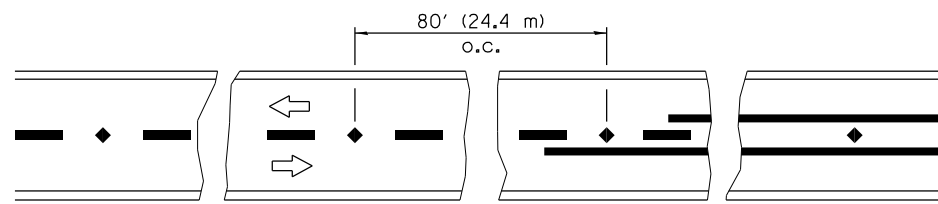
APPROVED January 1, 2015  
*[Signature]*  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-97

**TYPICAL PAVEMENT  
MARKINGS**

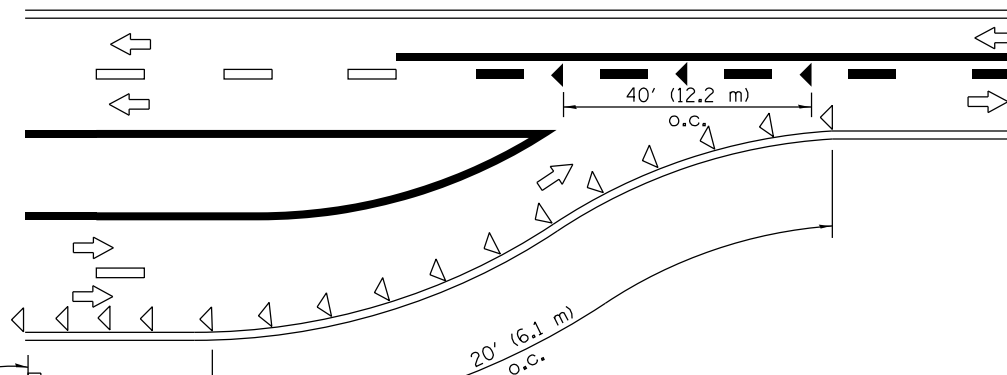
(Sheet 3 of 3)

**STANDARD 780001-05**

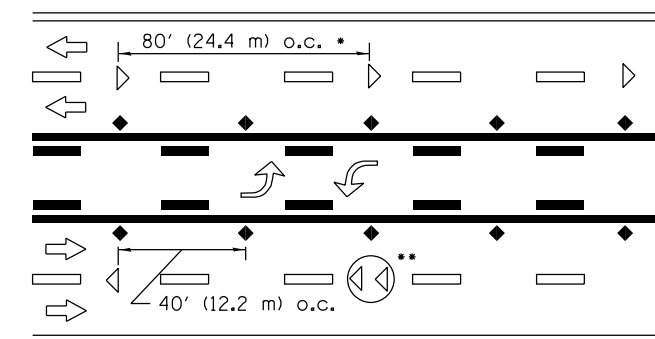


Reduce to 40' (12.2 m) o.c. on curves with posted or advisory speeds of 45 mph (70 km/h) or less.

**TWO-LANE /TWO-WAY**



**LANE REDUCTION TRANSITION**

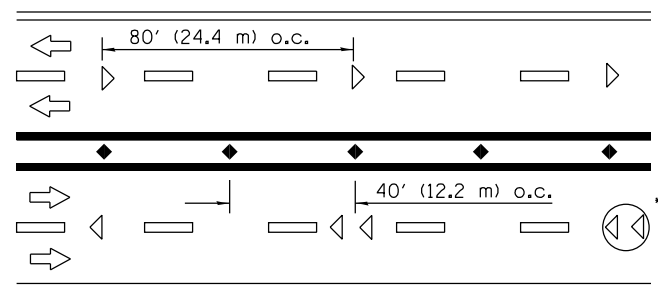


\*\*\* See MULTI LANE DIVIDED detail for lane marker notes.

**TWO-WAY LEFT TURN**

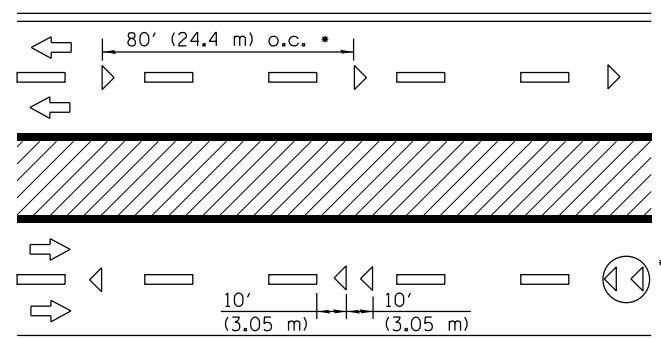


W4-2



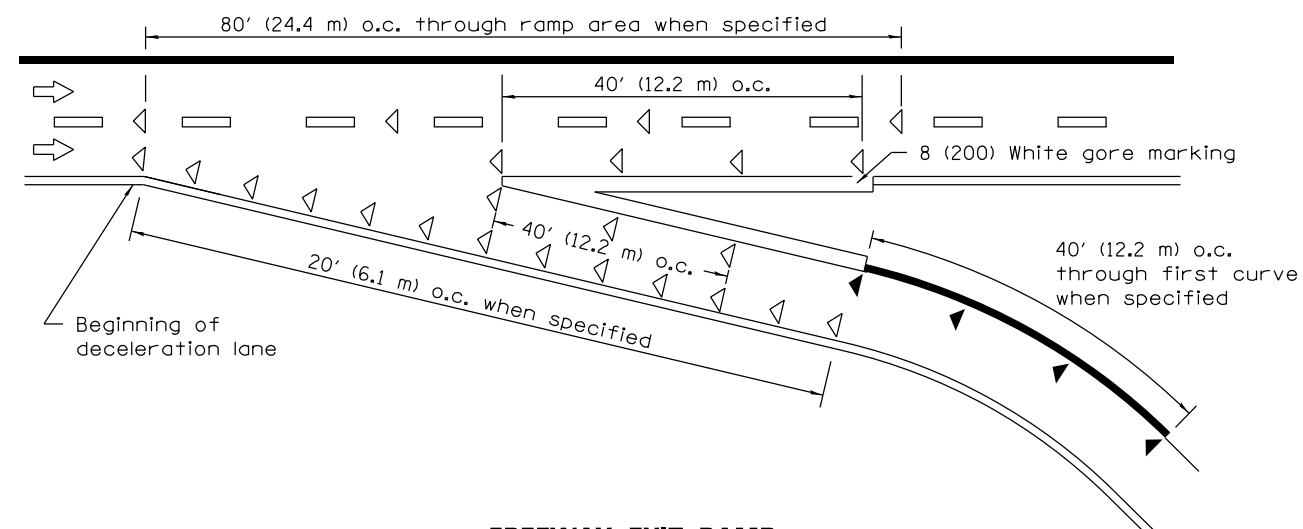
\*\*\* See MULTI LANE DIVIDED detail for lane marker notes.

**MULTI-LANE UNDIVIDED**

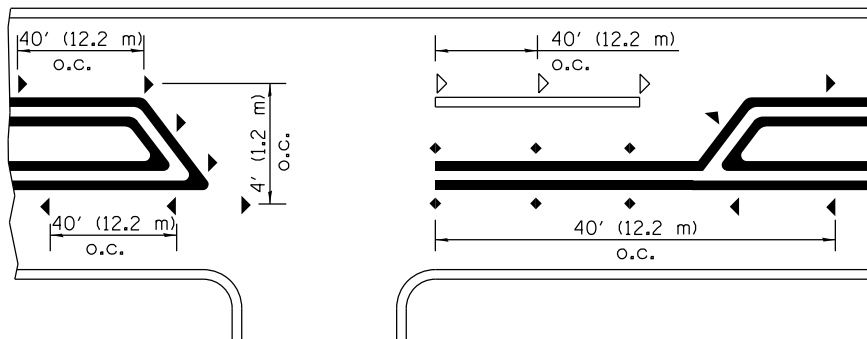
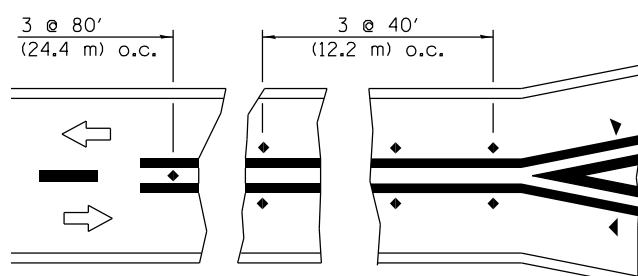


- Reduce to 40' (12.2 m) o.c. on curves where advisory speeds are 10 mph (15 km/h) lower than posted speeds.
- \*\* Where double lane line markers are specified, they shall be spaced as shown.

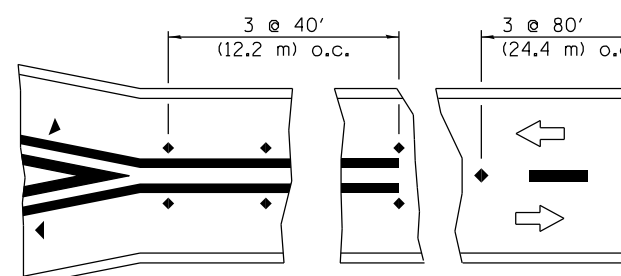
**MULTI-LANE DIVIDED**



**FREEWAY EXIT RAMP**



**RURAL LEFT TURN**



**SYMBOLS**

- Yellow stripe
- White stripe
- One-way amber marker
- One-way crystal marker
- Two-way amber marker

All dimensions are in inches (millimeters) unless otherwise shown.

DATE	REVISIONS
4-1-16	Revised LANE ENDS sign
	W4-2 to agree with current MUTCD.
1-1-09	Switched units to English (metric).

**TYPICAL APPLICATIONS  
RAISED REFLECTIVE  
PAVEMENT MARKERS**

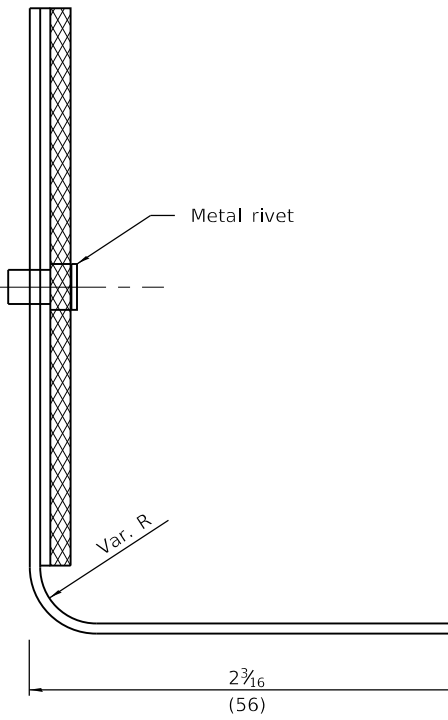
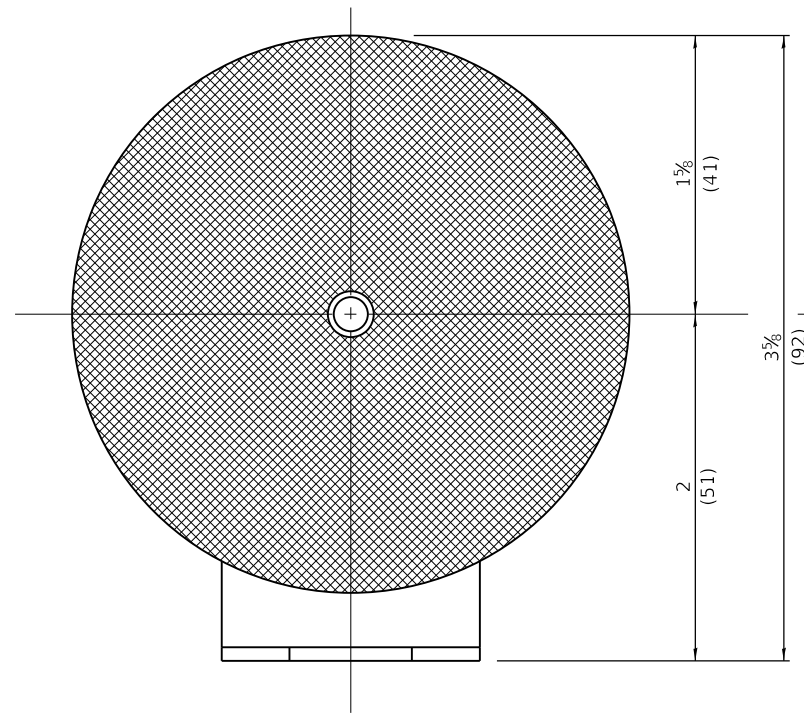
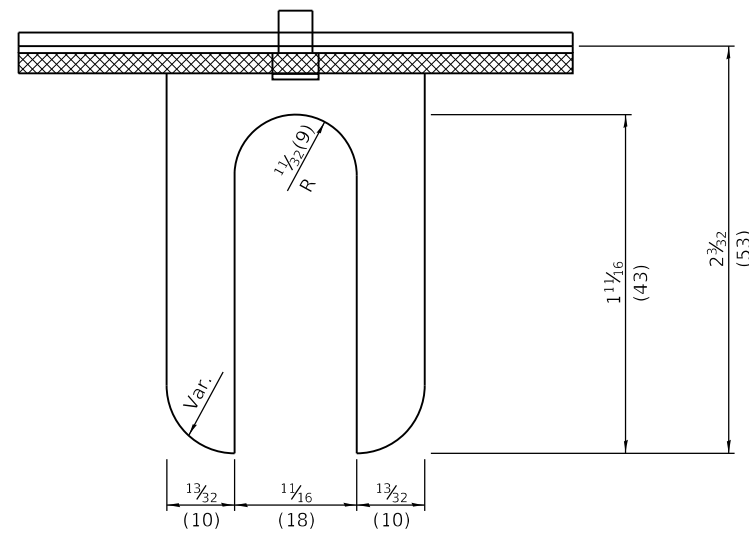
**STANDARD 781001-04**

Illinois Department of Transportation

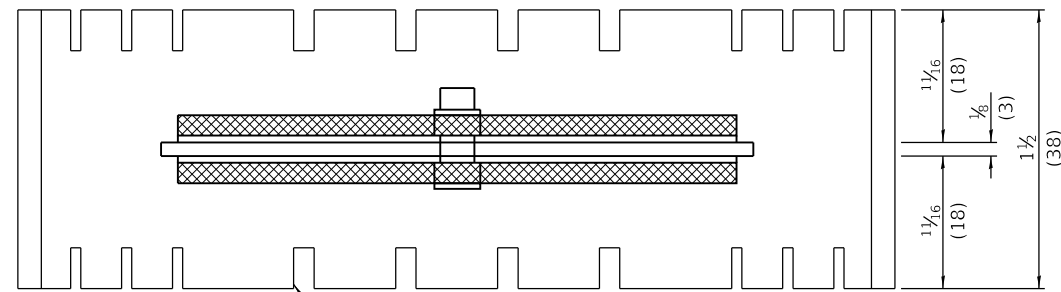
APPROVED April 1, 2016  
*Amy Ellis*  
 ENGINEER OF OPERATIONS

APPROVED April 1, 2016  
*[Signature]*  
 ENGINEER OF DESIGN AND ENVIRONMENT

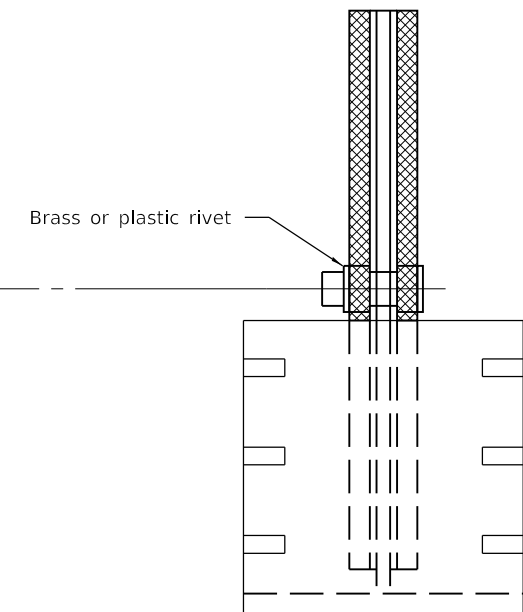
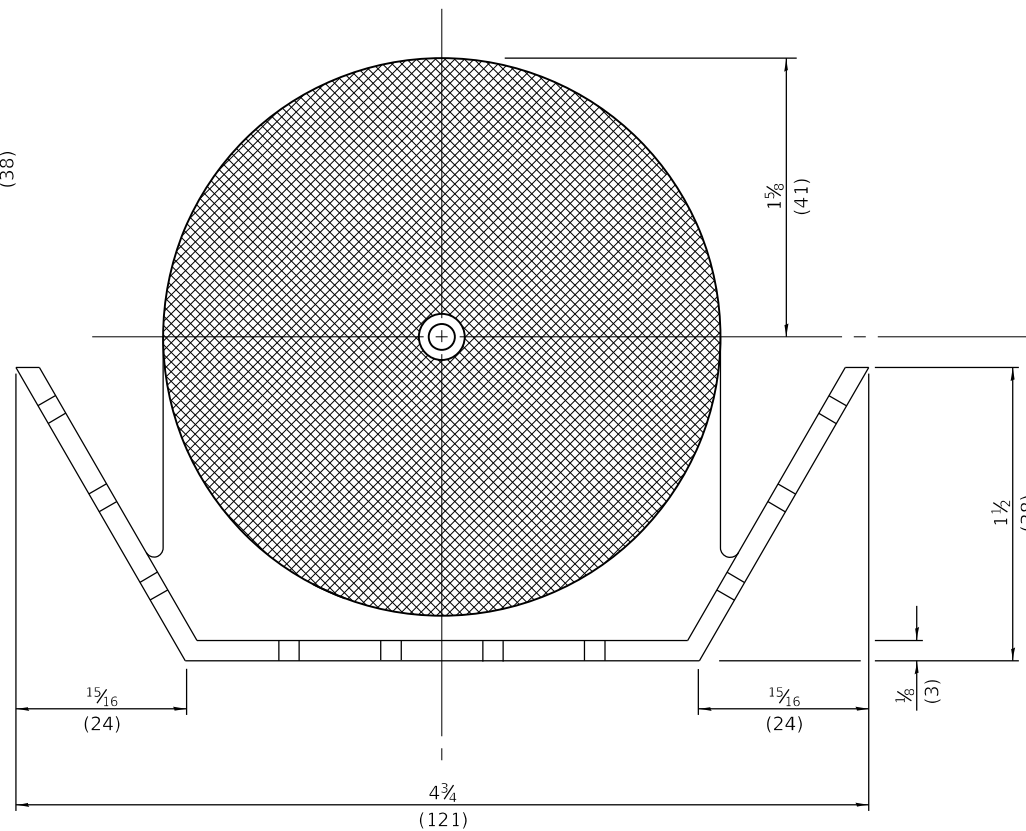
ISSUED 1-1-97



**REFLECTOR TYPE A**  
(monodirectional shown)



Adhesive weep slots or holes  
equally spaced on both sides



All dimensions are in inches (millimeters)  
unless otherwise shown.

**REFLECTOR TYPE B**  
(bidirectional shown)

DATE	REVISIONS
4-1-16	Added reflector spacing detail. Moved TERMINAL MARKER to std. 725001.
1-1-09	Switched units to English (metric).

**GUARDRAIL AND  
BARRIER WALL REFLECTOR  
MOUNTING DETAILS**  
(Sheet 1 of 3)

**STANDARD 782006**

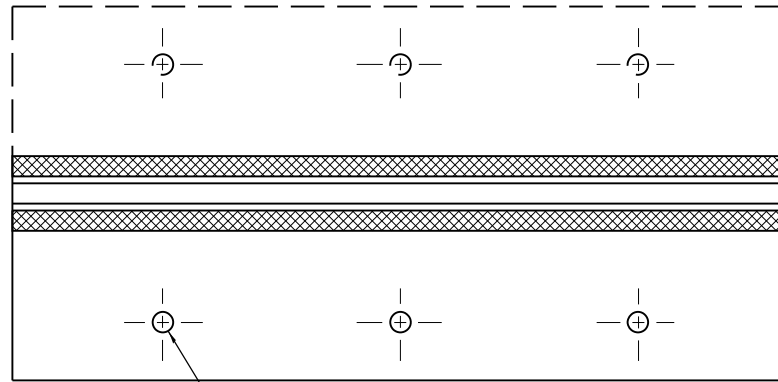
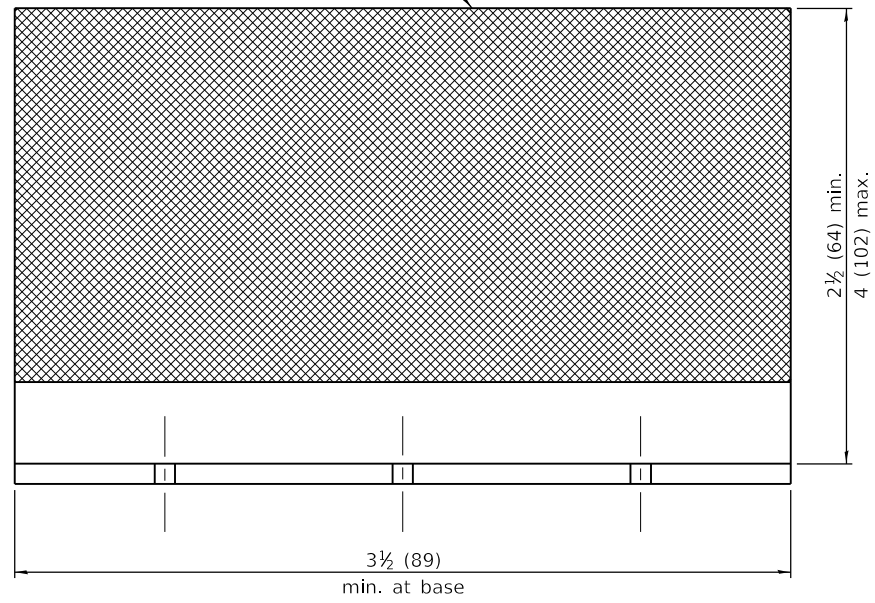
Illinois Department of Transportation

PASSED April 1, 2016  
  
 ENGINEER OF OPERATIONS

APPROVED April 1, 2016  
  
 ENGINEER OF DESIGN AND ENVIRONMENT

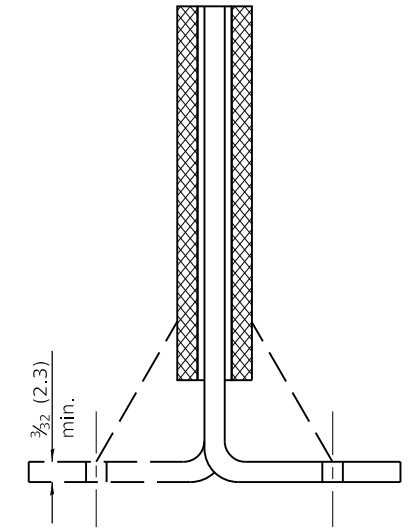
ISSUED 1-1-2000

Reflective area. May be rectangular or slight trapezoid.



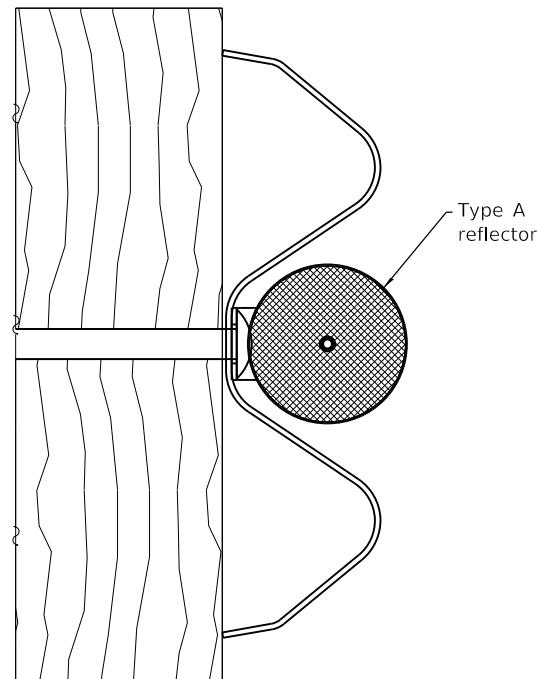
3 min. adhesive weep holes or slots each side, variable spacing.

Minimum total area of base 7.0 sq. in. (4,516 mm<sup>2</sup>)

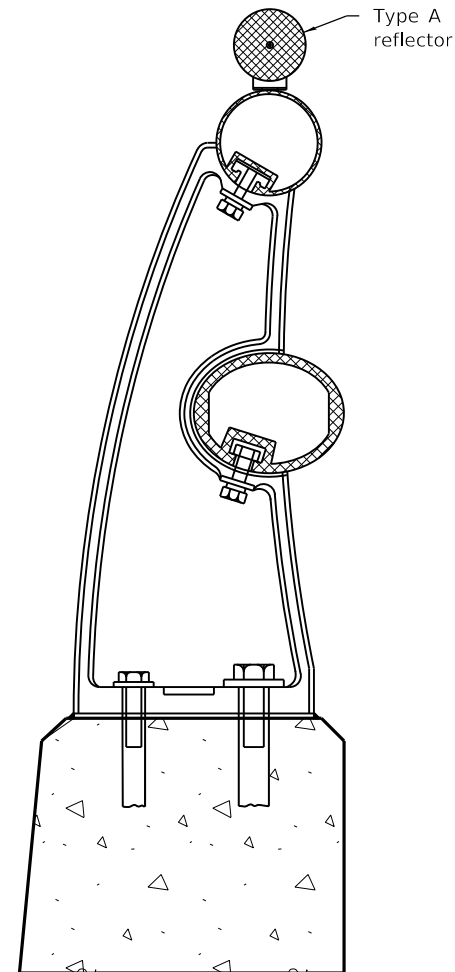
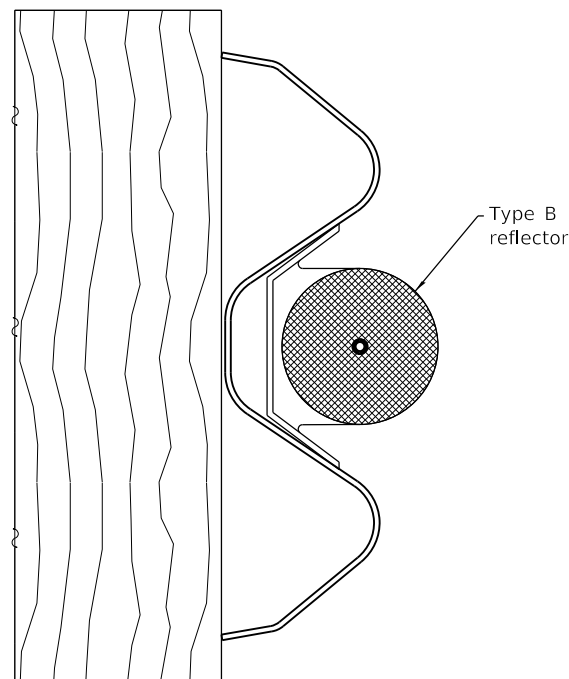


Cross section may be "T" or "L" shaped and may have side supports at ends.

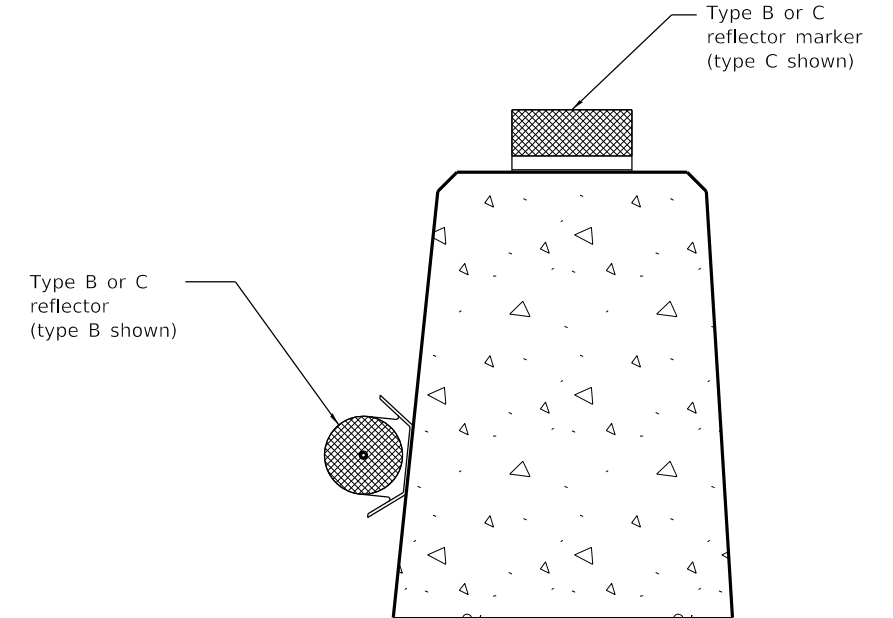
**REFLECTOR TYPE C**



**TYPICAL MOUNTING DETAIL FOR GUARDRAIL REFLECTOR**



**TYPICAL MOUNTING DETAIL FOR BRIDGE RAIL REFLECTOR**



**TYPICAL MOUNTING DETAIL FOR BARRIER WALL REFLECTOR**

Illinois Department of Transportation

PASSED April 1, 2016  
*Amy Allen*  
 ENGINEER OF OPERATIONS

APPROVED April 1, 2016  
*[Signature]*  
 ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-2000

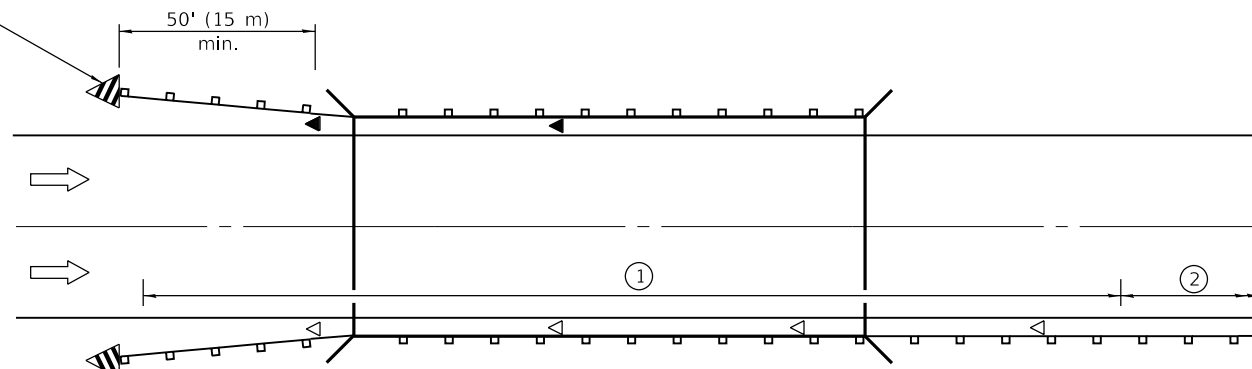
**GUARDRAIL AND BARRIER WALL REFLECTOR MOUNTING DETAILS**

(Sheet 2 of 3)

**STANDARD 782006**



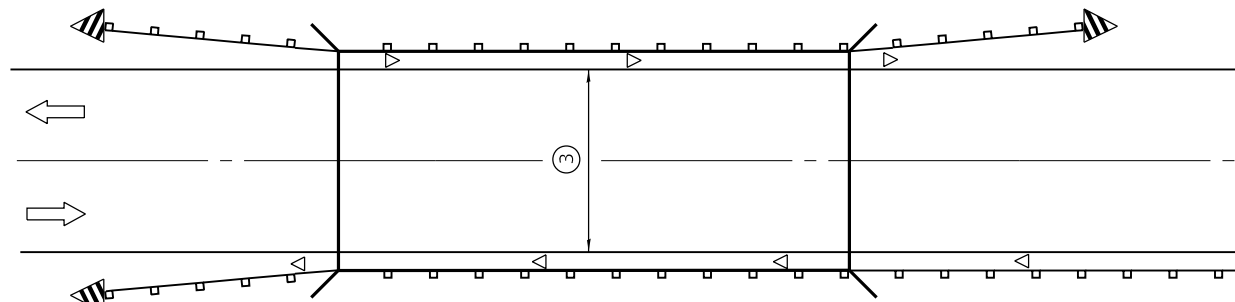
Terminal marker.  
See standard  
725001.



① Spacing 80 ft. (24 m) max. for first 400 ft. (122 m) or curve spacing shown in Standard 635001, whichever is less (min. 4 reflectors regardless of length).

② After 400 ft. (122 m), transition to normal delineator spacing shown in Standard 635001, and continue as required.

ONE-WAY TRAFFIC



③ Bidirectional silver/silver should be used in lieu of monodirectional silver on both sides of two-lane bridges where the pavement is less than 24 (610) wider than the pavement approaching the bridge.

◁ Monodirectional crystal

◀ Monodirectional amber

TWO-WAY TRAFFIC

**GUARDRAIL / BARRIER WALL  
REFLECTOR PLACEMENT DETAIL**

Illinois Department of Transportation

PASSED April 1, 2016

*Amy Eller*  
ENGINEER OF OPERATIONS

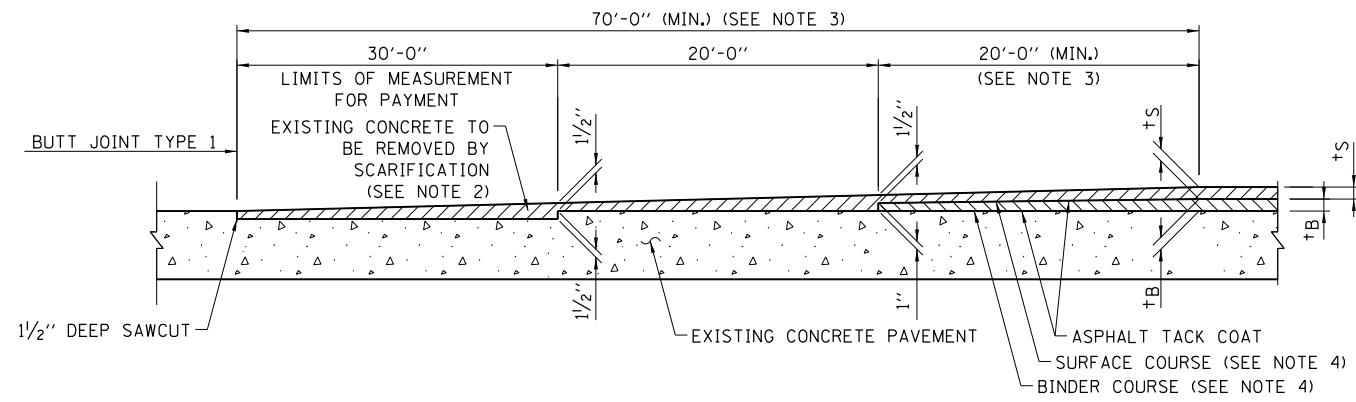
APPROVED April 1, 2016

*[Signature]*  
ENGINEER OF DESIGN AND ENVIRONMENT

ISSUED 1-1-2000

**GUARDRAIL AND  
BARRIER WALL REFLECTOR  
MOUNTING DETAILS**  
(Sheet 3 of 3)

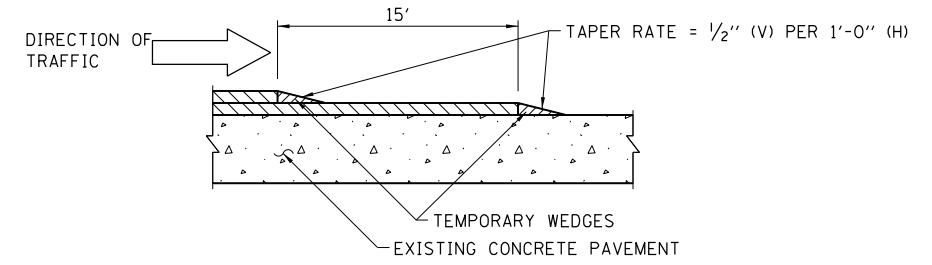
**STANDARD 782006**



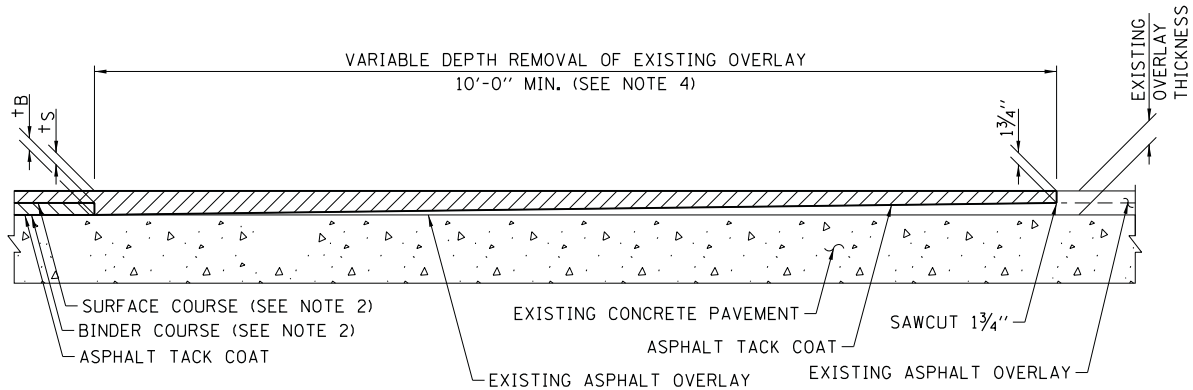
**DETAIL OF BUTT JOINT, TYPE 1**

**NOTES FOR BUTT JOINT, TYPE 1**

1. THE ABOVE WORK WILL BE PERFORMED AT THE ENDS OF ALL ASPHALT RESURFACING.
2. ONLY APPROVED SCARIFYING OR MILLING EQUIPMENT SHALL BE USED TO SCARIFY THE CONCRETE PAVEMENT.
3. REGARDLESS OF TYPE OF SURFACE MIX USED, NUMBER OR THICKNESS OF COURSES OR LAYERS, THE OVERLAY THICKNESS TRANSITION LENGTH SHALL BE BASED ON 1" IN 20' AND THE MINIMUM SURFACE LAYER THICKNESS SHALL BE 1/2".
4. REFER TO THE CONTRACT DOCUMENTS FOR THE REQUIRED BINDER AND SURFACE COURSE MATERIALS. "tS" IS THE THICKNESS OF THE SURFACE COURSE SPECIFIED IN THE CONTRACT. "tB" IS THE THICKNESS OF THE BINDER COURSE SPECIFIED IN THE CONTACT.



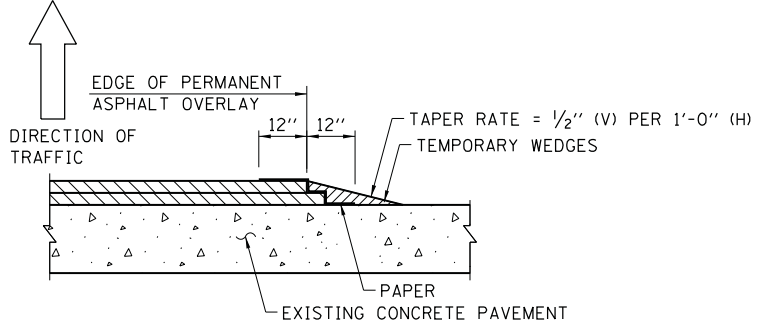
**TEMPORARY ASPHALT WEDGE - TRANSVERSE**



**DETAIL OF BUTT JOINT, TYPE 2 AT EXISTING OVERLAY AREAS**

**NOTES FOR BUTT JOINT, TYPE 2**

1. THE ABOVE WORK WILL BE PERFORMED AT THE ENDS OF ALL ASPHALT RESURFACING WHERE BUTT JOINTS EXIST.
2. REFER TO THE CONTRACT DOCUMENTS FOR THE REQUIRED BINDER AND SURFACE COURSE MATERIALS. "tS" IS THE THICKNESS OF THE SURFACE COURSE SPECIFIED IN THE CONTRACT. "tB" IS THE THICKNESS OF THE BINDER COURSE SPECIFIED IN THE CONTACT.
3. SAWCUT MAY BE ELIMINATED IF MILLING EQUIPMENT IS USED AND VERTICAL AND STRAIGHT SIDES ARE OBTAINED.
4. REGARDLESS OF TYPE OF SURFACE MIX USED, NUMBER OR THICKNESS OF COURSES OR LAYERS, THE OVERLAY THICKNESS TRANSITION LENGTH SHALL BE BASED ON 1" IN 20' AND THE MINIMUM SURFACE LAYER THICKNESS SHALL BE 1 3/4".



**TEMPORARY ASPHALT WEDGE - LONGITUDINAL**

**NOTES FOR TEMPORARY ASPHALT WEDGE - LONGITUDINAL**

1. UPON REMOVAL OF THE WEDGES, THE SURFACE COURSE SHALL BE SAWCUT PARALLEL TO THE JOINT TO PROVIDE A TRUE VERTICAL SURFACE.
2. REFER TO THE CONTRACT DOCUMENTS FOR THE REQUIRED BINDER AND SURFACE COURSE MATERIALS.

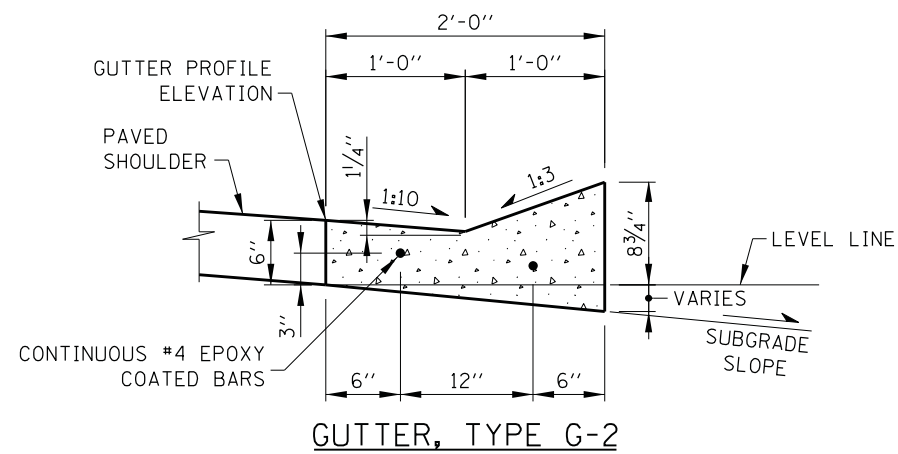
APPROVED: *Paul Kovacs* CHIEF ENGINEERING OFFICER DATE 5-1-2009

DATE	REVISIONS
3-31-2016	REVISED PRIME COAT TO TACK COAT AND REVISED NOTES.
3-31-2017	REMOVED PAY ITEM DESIGNATION FROM NOTES REVISED MIN + THICKNESS
	UPDATED BUTT JOINT TYPE 2
	ADDED TRAFFIC ARROWS
3-01-2018	ADDED DIRECTION ARROWS

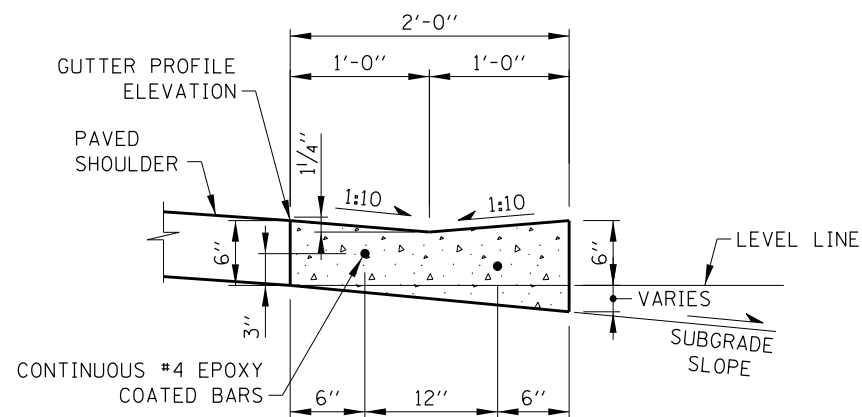


**BUTT JOINTS AND TEMPORARY ASPHALT WEDGE**

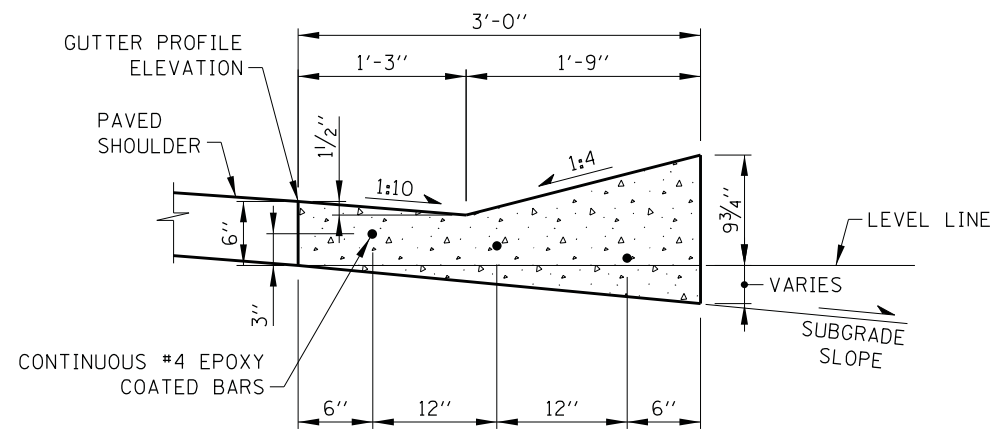
STANDARD A4-05



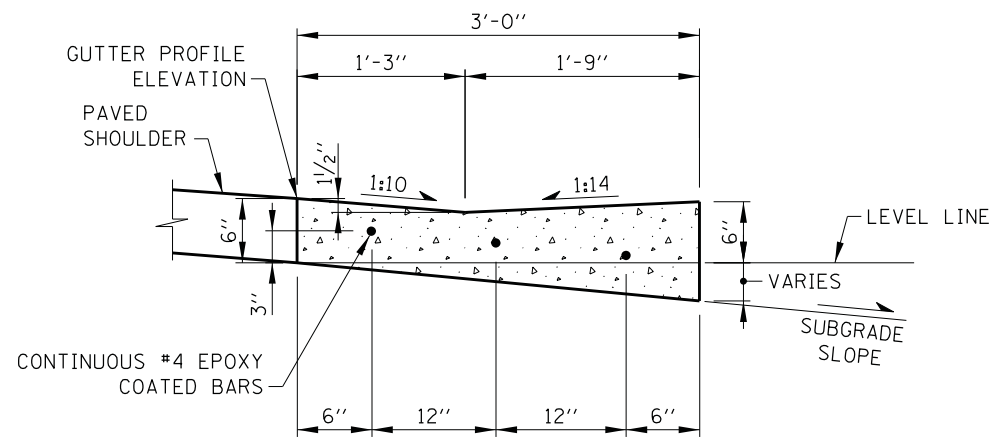
GUTTER, TYPE G-2



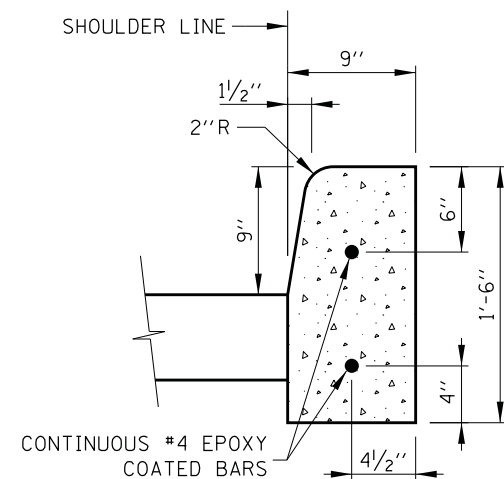
GUTTER, TYPE G-2, MODIFIED



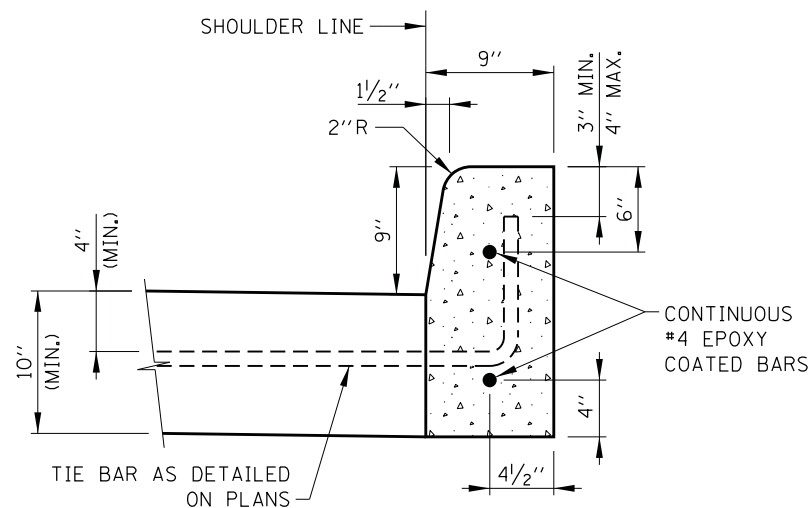
GUTTER, TYPE G-3



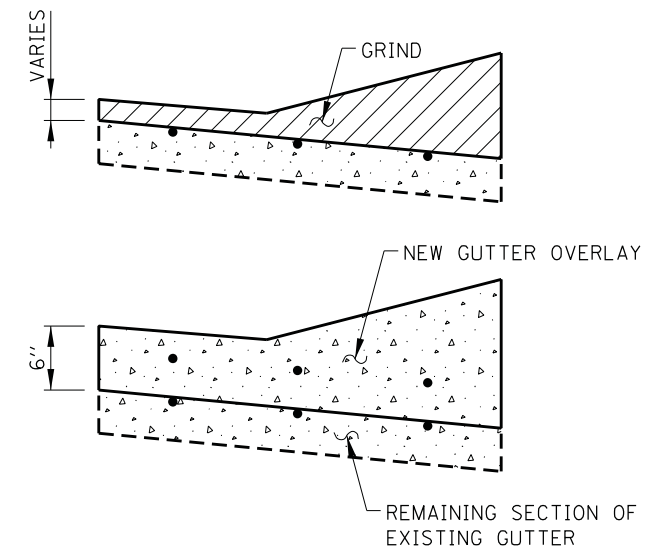
GUTTER, TYPE G-3, MODIFIED



ADJACENT TO FLEXIBLE PAVEMENT



ADJACENT TO PCC PAVEMENT



CONCRETE GUTTER OVERLAY

CONCRETE CURB, TYPE C  
(RAMP TOLL PLAZAS ONLY)

NOTES:

- FOR CONCRETE CURB, TYPE C TRANSITIONS, THE LEADING ENDS OF CURB IN THE DIRECTION OF TRAFFIC SHALL BEGIN FLUSH WITH ADJACENT PAVEMENT OR SHOULDER SURFACE AND TRANSITION TO FULL HEIGHT AT THE RATE OF ONE INCH VERTICAL TO ONE FOOT HORIZONTAL.
- | GUTTER TRANSITION DETAILS                    | STANDARD DRAWING |
|--|------------------|
| TRAFFIC BARRIER TERMINAL TYPE T1 (SPECIAL)   | B-28             |
| TRAFFIC BARRIER TERMINAL TYPE T1-A (SPECIAL) | B-29             |
| TRAFFIC BARRIER TERMINAL TYPE T10            | B-2              |
| TRAFFIC BARRIER TERMINAL TYPE T6             | B-3              |
- ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
- REINFORCEMENT STEEL SHALL BE ACCURATELY PLACED AND FIRMLY HELD IN THE POSITION SPECIFIED USING EPOXY COATED STEEL CHAIRS. CHAIR SPACING SHALL NOT EXCEED 4'-0".
- GUTTER REINFORCEMENT SHALL BE PLACED 3" ABOVE BOTTOM OF GUTTER FOLLOWING THE SUBGRADE SLOPE.
- OTHER GUTTER AND CURB TRANSITION DETAILS WILL BE SHOWN ON THE PLANS.
- CONTINUOUS #4 BARS SHALL BE LAPPED A MINIMUM OF 1'-1".
- FOR CONCRETE GUTTER OVERLAYS, CRACK CONTROL JOINTS SHALL BE PLACED AT LOCATIONS OF UNDERLYING JOINTS AND WORKING CRACKS.
- GUTTER CRACK CONTROL JOINTS TO ALIGN IN PROLONGATION WITH PCC SHOULDER JOINTS WHERE EXISTING. CRACK CONTROL JOINTS SHALL BE SEALED FULL DEPTH AND WIDTH IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- EXPANSION JOINTS SHALL BE CONSTRUCTED IN GUTTER AT MAXIMUM JOINT SPACING OF 60'-0", SEE EXPANSION JOINT DETAIL ON SHEET 2 OF THIS STANDARD.

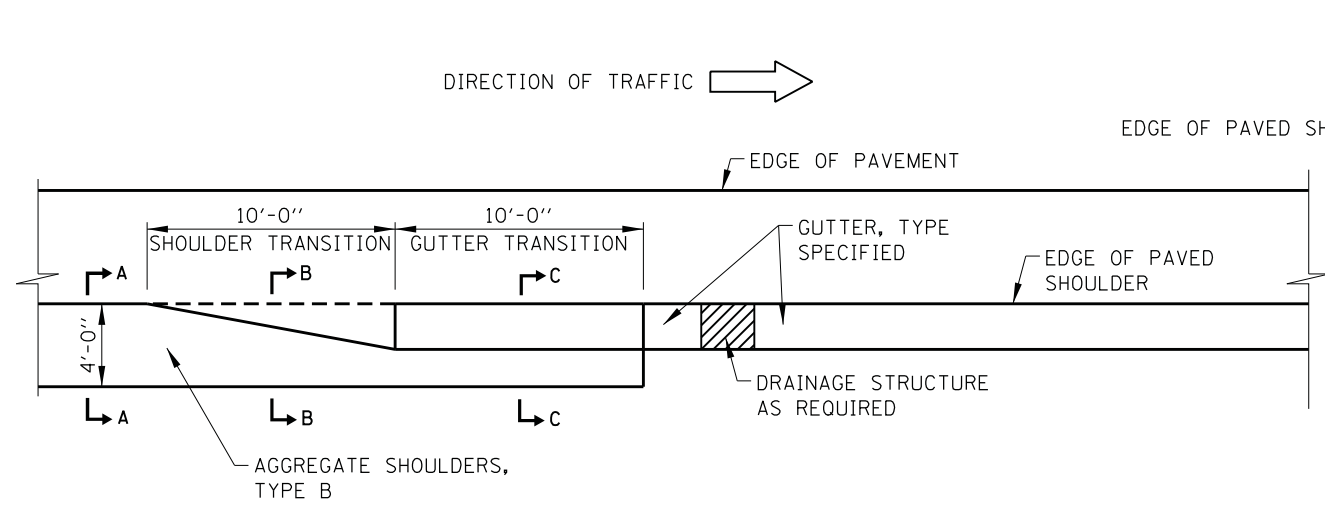
APPROVED: *Paul Kovacs*  
CHIEF ENGINEERING OFFICER DATE: 2-7-2012

DATE	REVISIONS
2-07-12	REVISED NOTES
11-01-12	ADDED CONCRETE GUTTER OVERLAY, MODIFIED GUTTER CONTROL JOINT SPACING
3-11-2015	REVISED DETAIL DESCRIPTIONS
3-31-2016	REVISED NOTE
3-01-2018	REVISED NOTE

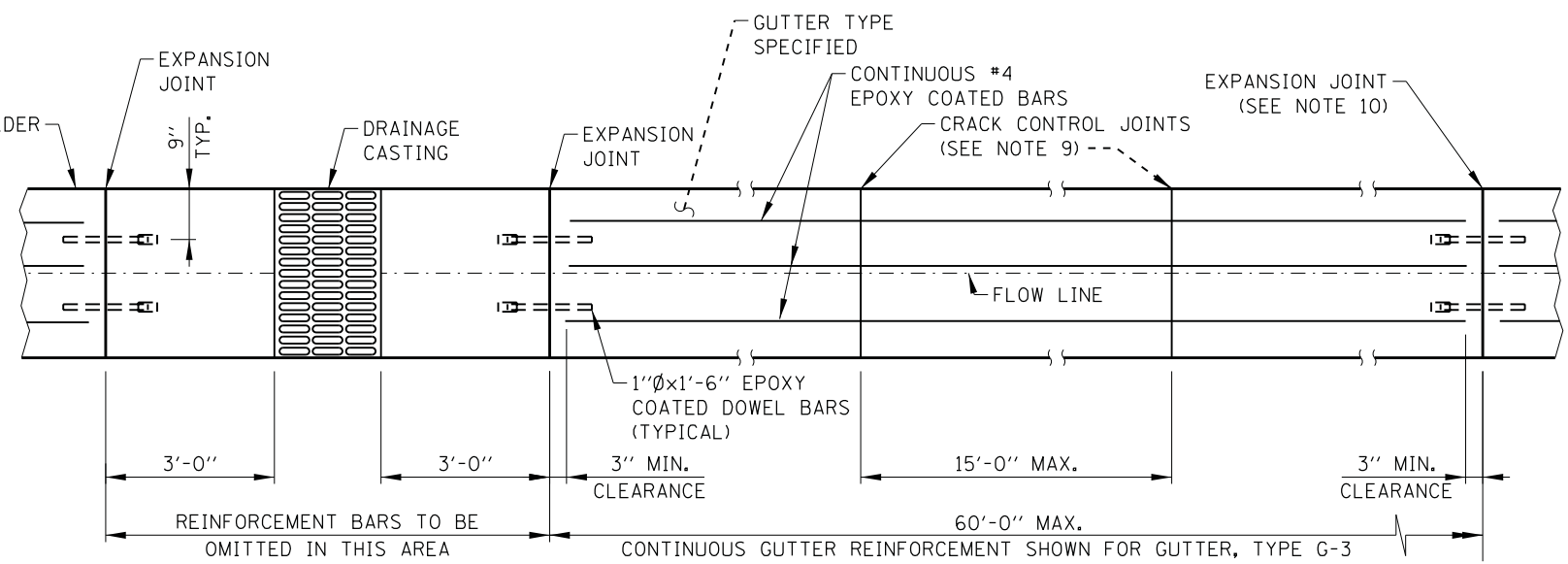


GUTTER AND CURB  
DETAILS

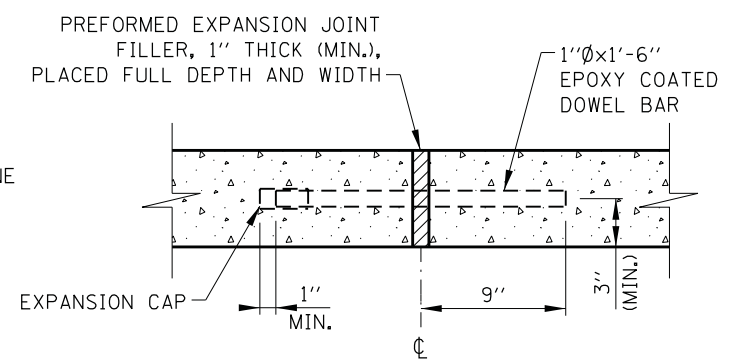
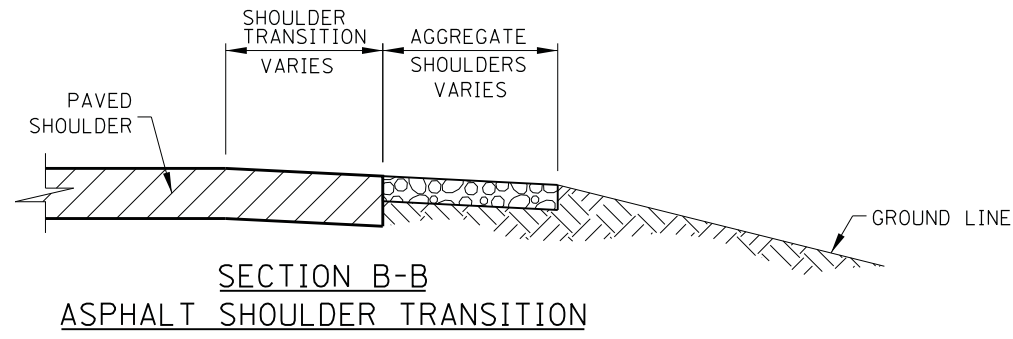
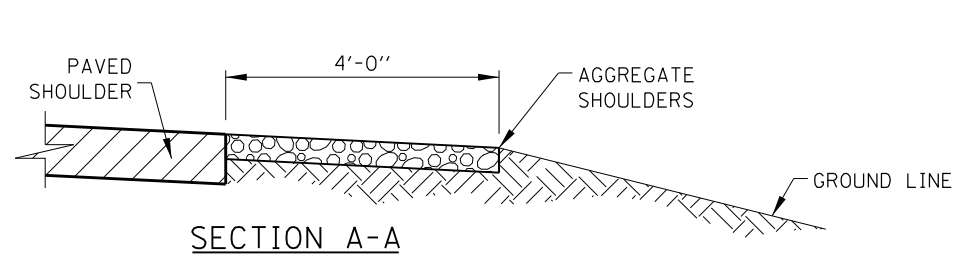
STANDARD B1-08



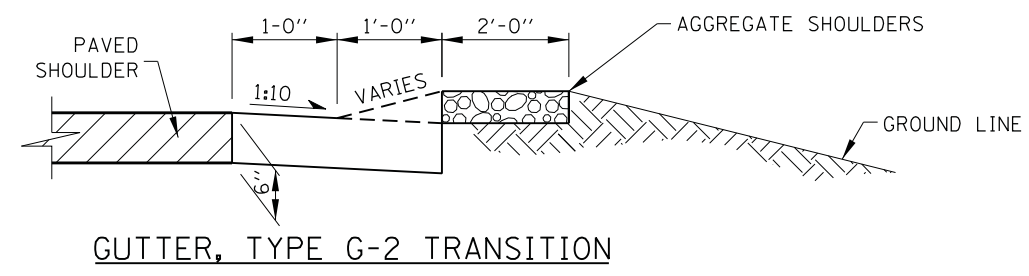
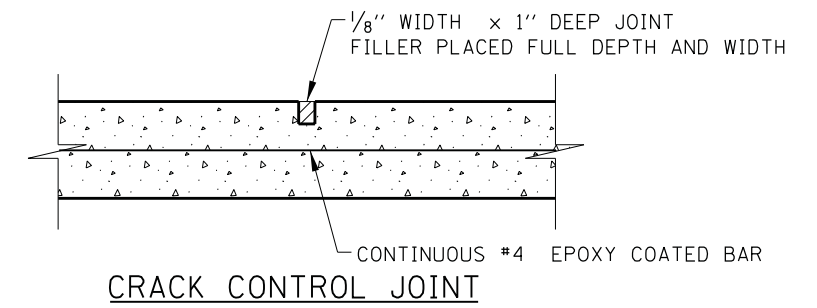
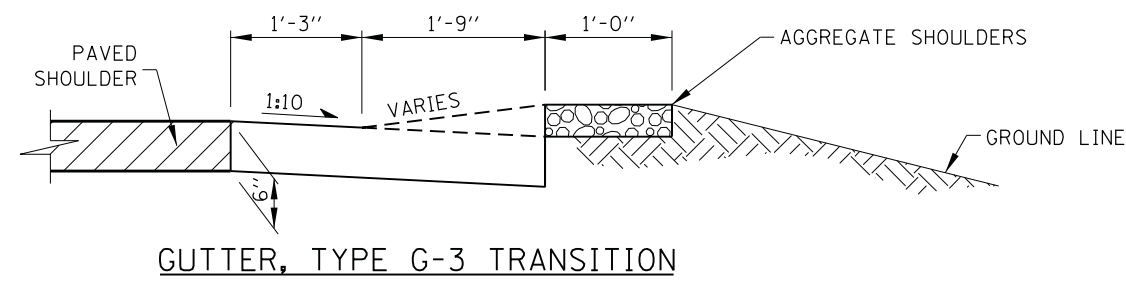
**GUTTER TRANSITION TERMINATION**



**GUTTER PLAN**



**EXPANSION JOINT**



**EXPANSION-CRACK CONTROL JOINTS**  
**GUTTER, TYPE SPECIFIED**

**SECTION C-C**

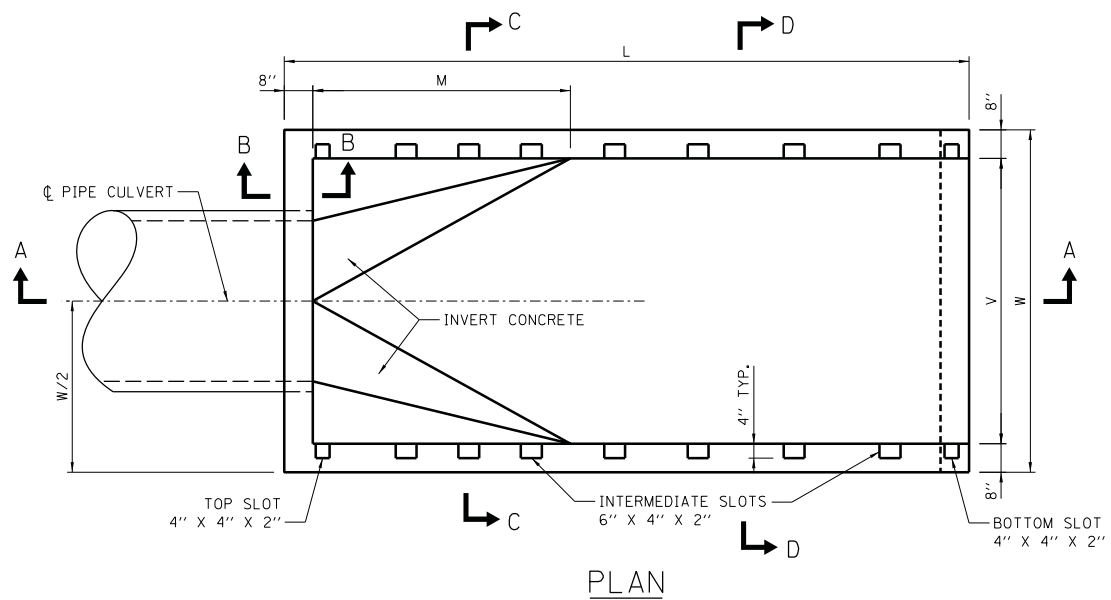
APPROVED *Paul Kovacs* CHIEF ENGINEERING OFFICER DATE 2-7-2012

NOTE:  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

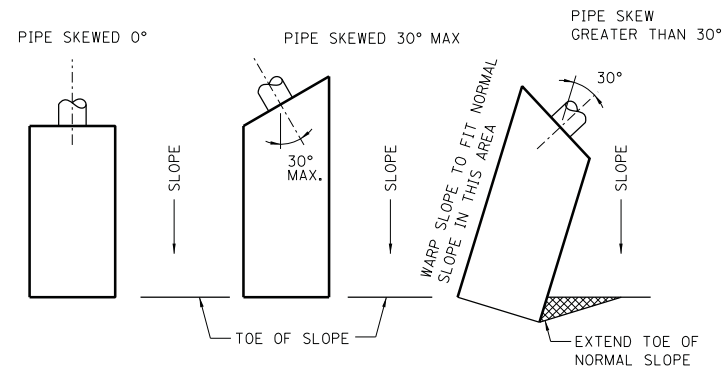
**Illinois Tollway**

GUTTER AND CURB DETAILS

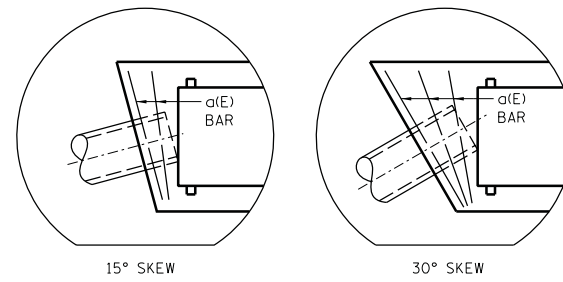
STANDARD B1-08



PLAN



PLAN VIEW OF STRUCTURE LOCATIONS

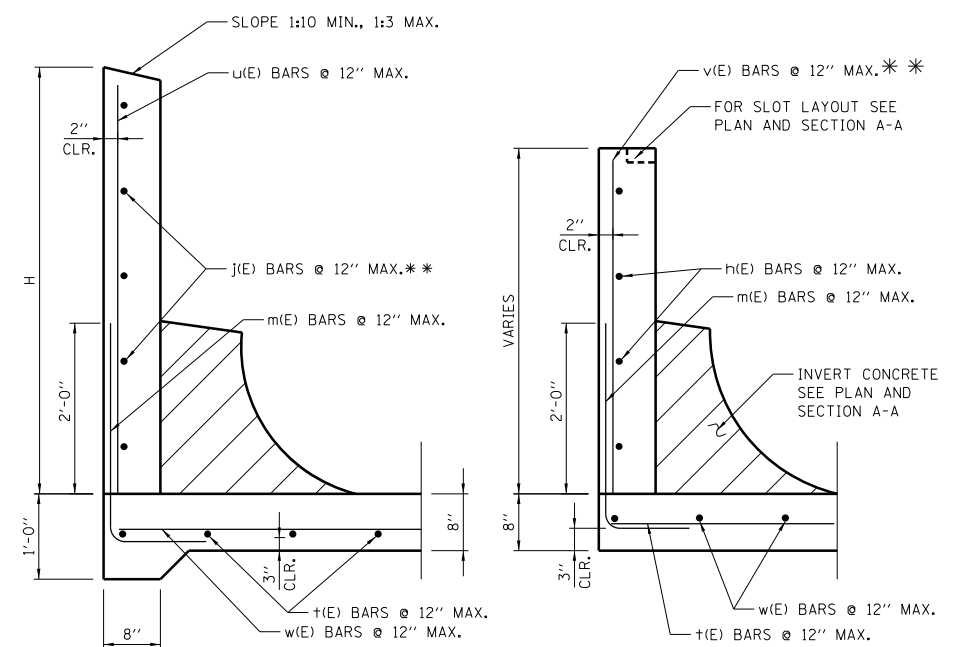


FLARED BAR DETAILS

NOTES:

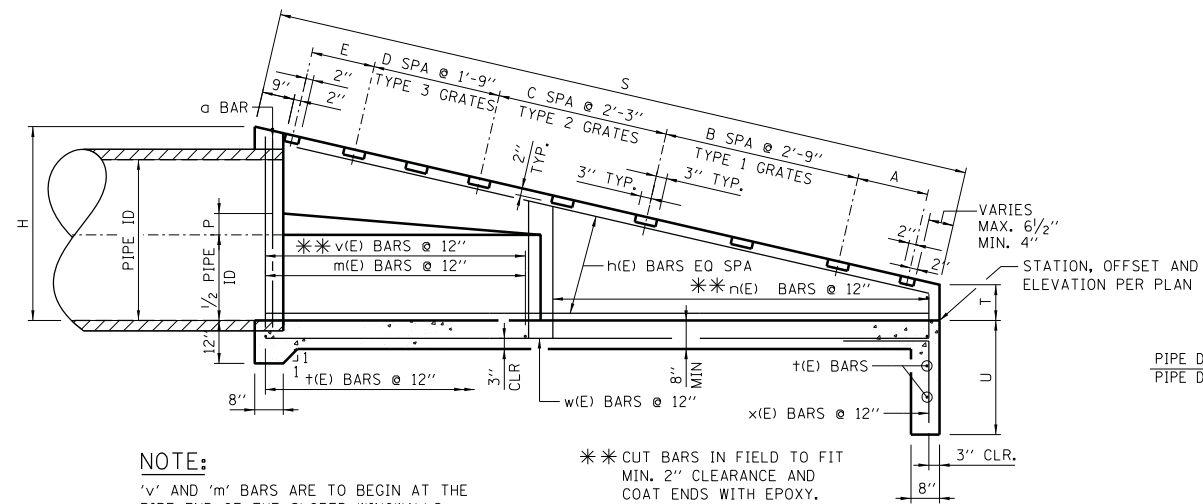
ADDITIONAL "a" BARS SHALL BE FURNISHED AND PLACED BY THE CONTRACTOR. THE ADDITIONAL BARS ARE NOT INCLUDED IN THE LISTED QUANTITIES, BUT WILL BE PAID FOR AS REINFORCEMENT BARS (EPOXY COATED).

1 ADDITIONAL BAR REQUIRED FOR EACH 15° SKEW OR FRACTION THEREOF.



SECTION B-B

SECTION C-C



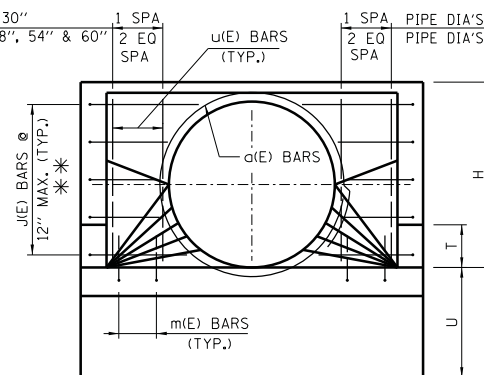
SECTION A-A

NOTE:

"v" AND "m" BARS ARE TO BEGIN AT THE PIPE END OF THE SLOPED WINGWALLS.

\*\* CUT BARS IN FIELD TO FIT MIN. 2" CLEARANCE AND COAT ENDS WITH EPOXY.

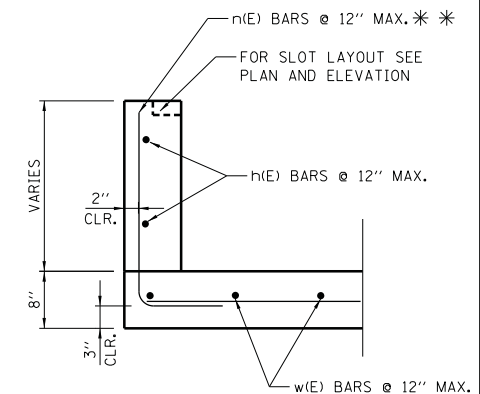
PIPE DIA'S 18", 24" & 30"  
PIPE DIA'S 36", 42", 48", 54" & 60"



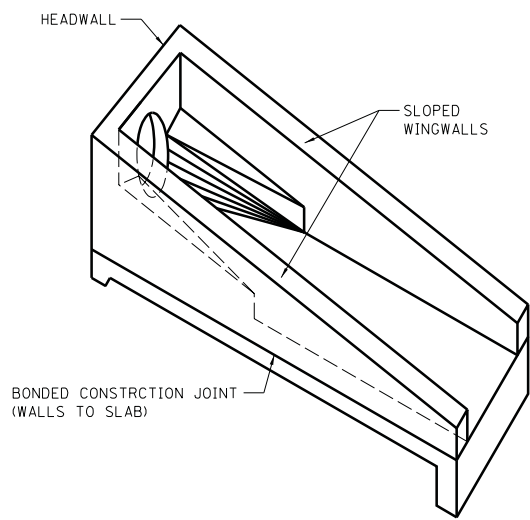
FRONT ELEVATION

NOTES:

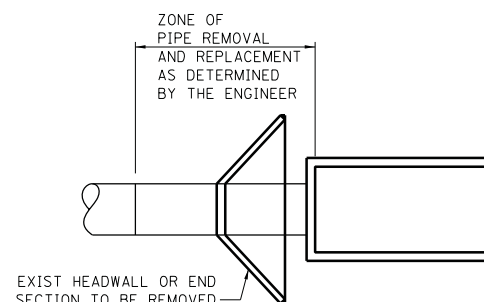
1. HEADWALL TYPE III SHALL BE CONSTRUCTED FLUSH WITH EXISTING OR PROPOSED SLOPE.
2. CLASS SI CONCRETE SHALL BE USED THROUGHOUT.
3. ALL REINFORCEMENT BARS SHOWN SHALL BE EPOXY COATED (E).
4. BAR BENDING DETAILS ARE DIMENSIONED OUT TO OUT OF BARS.
5. ALL EXPOSED EDGES SHALL HAVE A 3/4" - 45° CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW THE FINISHED GROUND LINE.
6. COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BAR SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN.
7. CARE SHALL BE EXERCISED IN REMOVING ANY LENGTH OF EXISTING PIPE SO THE REMAINING PIPE IS UNDAMAGED AND FULLY FUNCTIONING.
8. FOR DIMENSIONS AND QUANTITIES FOR ONE HEADWALL, SEE SHEET 2 IN THIS SERIES.
9. FOR STEEL GRATING DETAILS, SEE SHEET 3 IN THIS SERIES.
10. FOR ALTERNATE PRECAST CONCRETE DETAILS AND NOTES, SEE SHEET 4 IN THIS SERIES.
11. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).



SECTION D-D



ISOMETRIC VIEW



INSTALLATION DETAIL



HEADWALL TYPE III  
18"-24"-30"-36"-42"-48"-54"-60"  
FOR 1:3, 1:4, 1:6, AND  
1:10 SLOPES  
STANDARD B6-06

DATE	REVISIONS
3-31-2014	REVISED QUANTITIES-CONC REINF STEEL
3-11-2015	REVISED QUANTITIES, CONCRETE REINFORCEMENT STEEL AND PRECAST CONCRETE DETAILS
3-31-2016	ADDED NOTE TO OMIT RESTRAINT ANGLE AND THE PLATE FOR MULTI-END SECTIONS
	REVISED GRATE LAYOUT

APPROVED: *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III 1:3 SLOPE

PIPE DIA	DIMENSIONS											NO. OF SPACES			CONCRETE CLASS SI CU. YD.	REINF. BARS LB.
	H	L	M	P	S	T	U	V	W	A	E	B	C	D		
36"	3'-10"	11'-0"	3'-3"	4"	11'-7"	2"	2'-8"	6'-0"	7'-4"	2'-2"	1'-8"	0	2	1	3.8	347
42"	4'-5"	12'-9"	3'-10"	6"	13'-5"	2"	3'-2"	6'-6"	7'-10"	2'-2"	1'-8"	0	2	2	4.6	444
48"	5'-0"	14'-6"	4'-4"	6"	15'-3"	2"	3'-2"	7'-0"	8'-4"	1'-8"	1'-8"	0	0	6	5.5	502
54"	5'-6"	16'-0"	4'-10"	8"	16'-10"	2"	3'-6"	7'-6"	8'-10"	2'-2"	1'-8"	0	2	4	6.4	613
60"	6'-0"	17'-6"	5'-3"	8"	18'-5"	2"	3'-6"	8'-0"	9'-4"	2'-8"	1'-8"	2	0	4	7.3	668

DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III 1:4 SLOPE

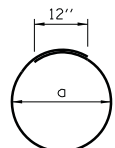
PIPE DIA	DIMENSIONS											NO. OF SPACES			CONCRETE CLASS SI CU. YD.	REINF. BARS LB.
	H	L	M	P	S	T	U	V	W	A	E	B	C	D		
36"	3'-10"	14'-8"	4'-5"	4"	15'-2"	2"	2'-8"	6'-0"	7'-4"	2'-8"	2'-8"	3	0	0	4.7	415
42"	4'-5"	17'-0"	5'-1"	6"	17'-6"	2"	3'-2"	6'-6"	7'-10"	2'-8"	2'-2"	0	5	0	5.8	546
48"	5'-0"	19'-4"	5'-10"	6"	19'-11"	2"	3'-2"	7'-0"	8'-4"	2'-8"	2'-2"	0	6	0	6.9	625
54"	5'-6"	21'-4"	6'-5"	8"	22'-0"	2"	3'-6"	7'-6"	8'-10"	2'-8"	2'-2"	0	7	0	8.0	788
60"	6'-0"	23'-4"	7'-0"	8"	24'-1"	2"	3'-6"	8'-0"	9'-4"	1'-8"	1'-8"	0	0	11	9.1	837

DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III 1:6 SLOPE

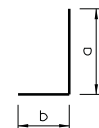
PIPE DIA	DIMENSIONS											NO. OF SPACES			CONCRETE CLASS SI CU. YD.	REINF. BARS LB.
	H	L	M	P	S	T	U	V	W	A	E	B	C	D		
36"	3'-10"	22'-0"	6'-8"	4"	22'-4"	2"	2'-8"	6'-0"	7'-4"	1'-8"	1'-8"	0	0	10	7.5	573
42"	4'-5"	25'-6"	7'-8"	6"	25'-10"	2"	3'-2"	6'-6"	7'-10"	1'-8"	1'-8"	0	0	12	9.5	746
48"	5'-0"	29'-0"	8'-9"	6"	29'-5"	2"	3'-2"	7'-0"	8'-4"	1'-8"	1'-8"	0	0	14	11.7	863
54"	5'-6"	32'-0"	9'-8"	8"	32'-5"	2"	3'-6"	7'-6"	8'-10"	2'-2"	1'-8"	0	5	9	13.9	1047
60"	6'-0"	35'-0"	10'-6"	8"	35'-6"	2"	3'-6"	8'-0"	9'-4"	2'-2"	1'-8"	0	1	16	16.3	1177

DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III 1:10 SLOPE

PIPE DIA	DIMENSIONS											NO. OF SPACES			CONCRETE CLASS SI CU. YD.	REINF. BARS LB.
	H	L	M	P	S	T	U	V	W	A	E	B	C	D		
18"	2'-3"	20'-10"	6'-3"	2"	20'-11 1/2"	2"	2'-8"	3'-0"	4'-4"	2'-8"	2'-2"	2	4	0	4.1	368
24"	2'-9"	25'-10"	7'-9"	3"	25'-11 1/2"	2"	2'-8"	4'-0"	5'-4"	1'-8"	1'-8"	0	0	12	6.1	490
30"	3'-4"	31'-8"	9'-6"	4"	31'-10"	2"	2'-8"	5'-0"	6'-4"	2'-8"	2'-2"	6	4	0	8.8	705
36"	3'-10"	36'-8"	11'-0"	4"	36'-10 1/2"	2"	2'-8"	6'-0"	7'-4"	2'-8"	2'-2"	7	5	0	11.9	944
42"	4'-5"	42'-6"	12'-9"	6"	42'-8 1/2"	2"	3'-2"	6'-6"	7'-10"	2'-8"	2'-8"	13	0	0	15.2	1178
48"	5'-0"	48'-4"	14'-6"	6"	48'-7"	2"	3'-2"	7'-0"	8'-4"	2'-2"	2'-2"	0	19	0	18.8	1457
54"	5'-6"	53'-4"	16'-0"	8"	53'-7 1/2"	2"	3'-6"	7'-6"	8'-10"	2'-8"	2'-8"	17	0	0	22.4	1687
60"	6'-0"	58'-4"	17'-6"	8"	58'-7 1/2"	2"	3'-6"	8'-0"	9'-4"	2'-8"	2'-2"	19	0	0	26.2	1964



TYPE 1



TYPE 2

REINFORCEMENT BARS SCHEDULE FOR ONE HEADWALL TYPE III 1:10 SLOPE

PIPE DIA	NO 4 REINFORCEMENT BARS					
	MARK(E)	TYPE	NO REQ'D	LENGTH	a	b
18"	a18	1	1	8'-7"	2'-5"	-
	n18	2	32	2'-7"	1'-10"	9"
	m18	2	18	3'-2"	2'-5"	9"
	j18	2	6	4'-0"	2'-0"	2'-0"
	h18	STR.	6	20'-8"	-	-
	x18	2	5	4'-3"	2'-3"	2'-0"
	t18	STR.	23	4'-0"	-	-
	u18	STR.	4	2'-1"	-	-
	v18	STR.	14	2'-1"	-	-
	w18	STR.	5	20'-6"	-	-
24"	a24	1	1	10'-5"	3'-0"	-
	n24	2	38	2'-11"	2'-2"	9"
	m24	2	20	3'-2"	2'-5"	9"
	j24	2	6	4'-0"	2'-0"	2'-0"
	h24	STR.	6	25'-8"	-	-
	x24	2	6	4'-3"	2'-3"	2'-0"
	t24	STR.	28	5'-0"	-	-
	u24	STR.	4	2'-7"	-	-
	v24	STR.	16	2'-7"	-	-
	w24	STR.	6	25'-6"	-	-
30"	a30	1	1	12'-3"	3'-7"	-
	n30	2	46	3'-4"	2'-7"	9"
	m30	2	24	3'-2"	2'-5"	9"
	j30	2	8	4'-0"	2'-0"	2'-0"
	h30	STR.	8	31'-6"	-	-
	x30	2	7	4'-3"	2'-3"	2'-0"
	t30	STR.	34	6'-0"	-	-
	u30	STR.	4	3'-2"	-	-
	v30	STR.	20	3'-2"	-	-
	w30	STR.	7	31'-4"	-	-
36"	a36	1	1	13'-10"	4'-1"	-
	n36	2	52	3'-8"	2'-11"	9"
	m36	2	30	3'-2"	2'-5"	9"
	j36	2	10	4'-0"	2'-0"	2'-0"
	h36	STR.	10	36'-6"	-	-
	x36	2	8	4'-3"	2'-3"	2'-0"
	t36	STR.	39	7'-0"	-	-
	u36	STR.	6	3'-8"	-	-
	v36	STR.	24	3'-8"	-	-
	w36	STR.	8	36'-4"	-	-
42"	a42	1	1	15'-11"	4'-9"	-
	n42	2	62	3'-8"	2'-11"	9"
	m42	2	34	3'-2"	2'-5"	9"
	j42	2	10	4'-0"	2'-0"	2'-0"
	h42	STR.	20	22'-2"	-	-
	x42	2	9	4'-7"	2'-7"	2'-0"
	t42	STR.	46	7'-6"	-	-
	u42	STR.	6	4'-3"	-	-
	v42	STR.	28	4'-3"	-	-
	w42	STR.	18	22'-1"	-	-
48"	a48	1	1	17'-9"	5'-4"	-
	n48	2	70	4'-6"	3'-9"	9"
	m48	2	36	3'-2"	2'-5"	9"
	j48	2	12	4'-0"	2'-0"	2'-0"
	h48	STR.	24	25'-2"	-	-
	x48	2	9	4'-7"	2'-7"	2'-0"
	t48	STR.	52	8'-0"	-	-
	u48	STR.	6	4'-10"	-	-
	v48	STR.	30	4'-10"	-	-
	w48	STR.	18	25'-0"	-	-
54"	a54	1	1	19'-7"	5'-11"	-
	n54	2	76	4'-10"	4'-1"	9"
	m54	2	40	3'-2"	2'-5"	9"
	j54	2	12	4'-0"	2'-0"	2'-0"
	h54	STR.	24	27'-8"	-	-
	x54	2	10	5'-1"	3'-1"	2'-0"
	t54	STR.	57	8'-6"	-	-
	u54	STR.	6	5'-4"	-	-
	v54	STR.	34	5'-4"	-	-
	w54	STR.	20	27'-6"	-	-
60"	a60	1	1	21'-2"	6'-5"	-
	n60	2	82	5'-3"	4'-6"	9"
	m60	2	42	3'-2"	2'-5"	9"
	j60	2	14	4'-0"	2'-0"	2'-0"
	h60	STR.	28	30'-2"	-	-
	x60	2	10	5'-1"	3'-1"	2'-0"
	t60	STR.	62	9'-0"	-	-
	u60	STR.	6	5'-10"	-	-
	v60	STR.	36	5'-10"	-	-
	w60	STR.	20	30'-0"	-	-

REINFORCEMENT BARS SCHEDULE FOR ONE HEADWALL TYPE III 1:6 SLOPE

PIPE DIA	NO 4 REINFORCEMENT BARS					
	MARK(E)	TYPE	NO REQ'D	LENGTH	a	b
36"	a36	1	1	13'-10"	4'-1"	-
	n36	2	22	3'-8"	2'-11"	9"
	m36	2	20	3'-2"	2'-5"	9"
	j36	2	8	4'-0"	2'-0"	2'-0"
	h36	STR.	8	22'-0"	-	-
	x36	2	8	4'-3"	2'-0"	2'-0"
	t36	STR.	25	7'-0"	-	-
	u36	STR.	6	3'-7"	-	-
	v36	STR.	14	3'-7"	-	-
	w36	STR.	8	21'-8"	-	-
42"	a42	1	1	15'-11"	4'-9"	-
	n42	2	38	4'-2"	3'-5"	9"
	m42	2	22	3'-2"	2'-5"	9"
	j42	2	10	4'-0"	2'-0"	2'-0"
	h42	STR.	10	25'-6"	-	-
	x42	2	9	4'-7"	2'-7"	2'-0"
	t42	STR.	29	7'-6"	-	-
	u42	STR.	6	4'-2"	-	-
	v42	STR.	16	4'-2"	-	-
	w42	STR.	9	25'-6"	-	-
48"	a48	1	1	17'-9"	5'-4"	-
	n48	2	42	4'-6"	3'-9"	9"
	m48	2	24	3'-2"	2'-5"	9"
	j48	2	10	4'-0"	2'-0"	2'-0"
	h48	STR.	10	29'-1"	-	-
	x48	2	9	4'-7"	2'-7"	2'-0"
	t48	STR.	33	8'-0"	-	-
	u48	STR.	6	4'-9"	-	-
	v48	STR.	18	4'-9"	-	-
	w48	STR.	9	28'-8"	-	-
54"	a54	1	1	19'-7"	5'-11"	-
	n54	2	46	4'-10"	4'-1"	9"
	m54	2	26	3'-2"	2'-5"	9"
	j54	2	12	4'-0"	2'-0"	2'-0"
	h54	STR.	12	32'-1"	-	-
	x54	2	10	5'-1"	3'-1"	2'-0"
	t54	STR.	36	8'-6"	-	-
	u54	STR.	6	5'-3"	-	-
	v54	STR.	20	5'-3"	-	-
	w54	STR.	10	31'-8"	-	-
60"	a60	1	1	21'-2"	6'-5"	-
	n60	2	50	5'-3"	4'-6"	9"
	m60	2	28	3'-2"	2'-5"	9"
	j60	2	12	4'-0"	2'-0"	2'-0"
	h60	STR.	12	35'-2"	-	-
	x60	2	10	5'-1"	3'-1"	2'-0"
	t60	STR.	40	9'-0"	-	-
	u60	STR.	6	5'-9"	-	-
	v60	STR.	22	5'-9"	-	-
	w60	STR.	10	34'-8"	-	-

**GRATE DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III END ENTRANCE 1:3 SLOPE**

INSIDE PIPE DIAMETER	GRATES		BARS FOR ONE GRATE				HEADWALL GRATES (POUND)	
	NUMBER REQUIRED	TYPE REQ'D	BAR NO 1		BAR NO 2		EACH GRATE	TOTAL
			BARS REQ'D	LENGTH	BARS REQ'D	LENGTH		
36"	0	1	2	6'-7"	11	2'-4 1/2"	112	493
	3	2	2	6'-7"	11	1'-10 1/2"	102	
	2	3	2	6'-7"	11	1'-4 1/2"	93	
42"	0	1	2	7'-1"	12	2'-4 1/2"	121	633
	3	2	2	7'-1"	12	1'-10 1/2"	110	
	3	3	2	7'-1"	12	1'-4 1/2"	100	
48"	0	1	2	7'-7"	13	2'-4 1/2"	130	863
	0	2	2	7'-7"	13	1'-10 1/2"	119	
	8	3	2	7'-7"	13	1'-4 1/2"	108	
54"	0	1	2	8'-1"	14	2'-4 1/2"	139	958
	3	2	2	8'-1"	14	1'-10 1/2"	127	
	5	3	2	8'-1"	14	1'-4 1/2"	115	
60"	3	1	2	8'-7"	15	2'-4 1/2"	148	1058
	0	2	2	8'-7"	15	1'-10 1/2"	135	
	5	3	2	8'-7"	15	1'-4 1/2"	123	

**GRATE DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III END ENTRANCE 1:4 SLOPE**

INSIDE PIPE DIAMETER	GRATES		BARS FOR ONE GRATE				HEADWALL GRATES (POUND)	
	NUMBER REQUIRED	TYPE REQ'D	BAR NO 1		BAR NO 2		EACH GRATE	TOTAL
			BARS REQ'D	LENGTH	BARS REQ'D	LENGTH		
36"	5	1	2	6'-7"	11	2'-4 1/2"	112	558
	0	2	2	6'-7"	11	1'-10 1/2"	102	
	0	3	2	6'-7"	11	1'-4 1/2"	93	
42"	1	1	2	7'-1"	12	2'-4 1/2"	121	784
	6	2	2	7'-1"	12	1'-10 1/2"	110	
	0	3	2	7'-1"	12	1'-4 1/2"	100	
48"	1	1	2	7'-7"	13	2'-4 1/2"	130	962
	7	2	2	7'-7"	13	1'-10 1/2"	119	
	0	3	2	7'-7"	13	1'-4 1/2"	108	
54"	1	1	2	8'-1"	14	2'-4 1/2"	139	1157
	8	2	2	8'-1"	14	1'-10 1/2"	127	
	0	3	2	8'-1"	14	1'-4 1/2"	115	
60"	0	1	2	8'-7"	15	2'-4 1/2"	148	1595
	0	2	2	8'-7"	15	1'-10 1/2"	135	
	13	3	2	8'-7"	15	1'-4 1/2"	123	

**GRATE DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III END ENTRANCE 1:10 SLOPE**

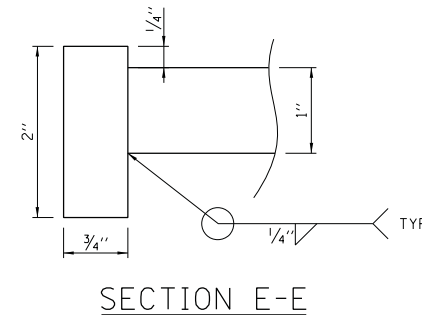
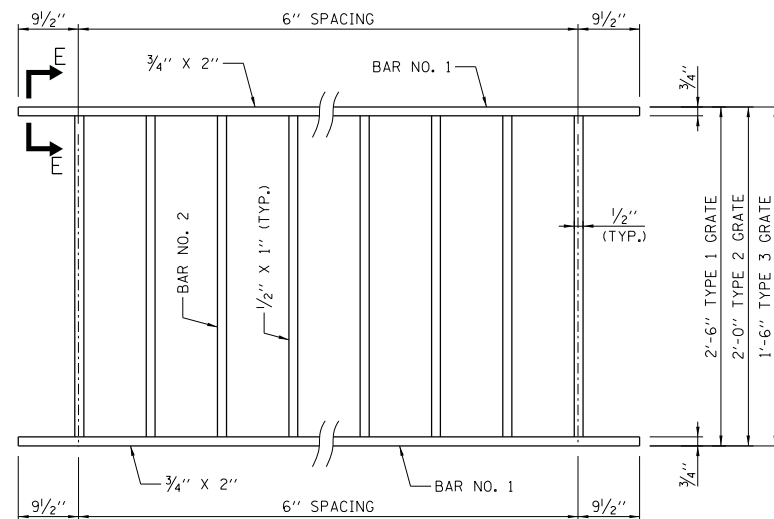
INSIDE PIPE DIAMETER	GRATES		BARS FOR ONE GRATE				HEADWALL GRATES (POUND)	
	NUMBER REQUIRED	TYPE REQ'D	BAR NO 1		BAR NO 2		EACH GRATE	TOTAL
			BARS REQ'D	LENGTH	BARS REQ'D	LENGTH		
18"	3	1	2	3'-7"	5	2'-4 1/2"	57	433
	5	2	2	3'-7"	5	1'-10 1/2"	52	
	0	3	2	3'-7"	5	1'-4 1/2"	48	
24"	0	1	2	4'-7"	7	2'-4 1/2"	75	884
	0	2	2	4'-7"	7	1'-10 1/2"	69	
	14	3	2	4'-7"	7	1'-4 1/2"	63	
30"	7	1	2	5'-7"	9	2'-4 1/2"	93	1082
	5	2	2	5'-7"	9	1'-10 1/2"	86	
	0	3	2	5'-7"	9	1'-4 1/2"	78	
36"	8	1	2	6'-7"	11	2'-4 1/2"	112	1507
	6	2	2	6'-7"	11	1'-10 1/2"	102	
	0	3	2	6'-7"	11	1'-4 1/2"	93	
42"	15	1	2	7'-1"	12	2'-4 1/2"	121	1812
	0	2	2	7'-1"	12	1'-10 1/2"	110	
	0	3	2	7'-1"	12	1'-4 1/2"	100	
48"	0	1	2	7'-7"	13	2'-4 1/2"	130	2497
	21	2	2	7'-7"	13	1'-10 1/2"	119	
	0	3	2	7'-7"	13	1'-10 1/2"	108	
54"	19	1	2	8'-1"	14	2'-4 1/2"	139	2643
	0	2	2	8'-1"	14	1'-10 1/2"	127	
	0	3	2	8'-1"	14	1'-4 1/2"	115	
60"	20	1	2	8'-7"	15	2'-4 1/2"	148	3100
	1	2	2	8'-7"	15	1'-10 1/2"	135	
	0	3	2	8'-7"	15	1'-4 1/2"	123	

**GRATE DIMENSIONS AND QUANTITIES IN ONE HEADWALL TYPE III END ENTRANCE 1:6 SLOPE**

INSIDE PIPE DIAMETER	GRATES		BARS FOR ONE GRATE				HEADWALL GRATES (POUND)	
	NUMBER REQUIRED	TYPE REQ'D	BAR NO 1		BAR NO 2		EACH GRATE	TOTAL
			BARS REQ'D	LENGTH	BARS REQ'D	LENGTH		
36"	0	1	2	6'-7"	11	2'-4 1/2"	112	1115
	0	2	2	6'-7"	11	1'-10 1/2"	102	
	12	3	2	6'-7"	11	1'-4 1/2"	93	
42"	0	1	2	7'-1"	12	2'-4 1/2"	121	1405
	0	2	2	7'-1"	12	1'-10 1/2"	110	
	14	3	2	7'-1"	12	1'-4 1/2"	100	
48"	0	1	2	7'-7"	13	2'-4 1/2"	130	1725
	0	2	2	7'-7"	13	1'-10 1/2"	119	
	16	3	2	7'-7"	13	1'-4 1/2"	108	
54"	0	1	2	8'-1"	14	2'-4 1/2"	139	1916
	6	2	2	8'-1"	14	1'-10 1/2"	127	
	10	3	2	8'-1"	14	1'-4 1/2"	115	
60"	0	1	2	8'-7"	15	2'-4 1/2"	148	2357
	2	2	2	8'-7"	15	1'-10 1/2"	135	
	17	3	2	8'-7"	15	1'-4 1/2"	123	

**NOTES:**

1. ALL STRUCTURAL STEEL SHALL BE AASHTO M270, GRADE 36 OR 50.
2. GALVANIZING SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
3. FOR PLACEMENT OF GRATES, SEE SHEET 1 IN THIS SERIES.
4. ALL TABLE DIMENSIONS AND QUANTITIES ARE FOR SINGLE HEADWALL, TYPE III.
5. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).



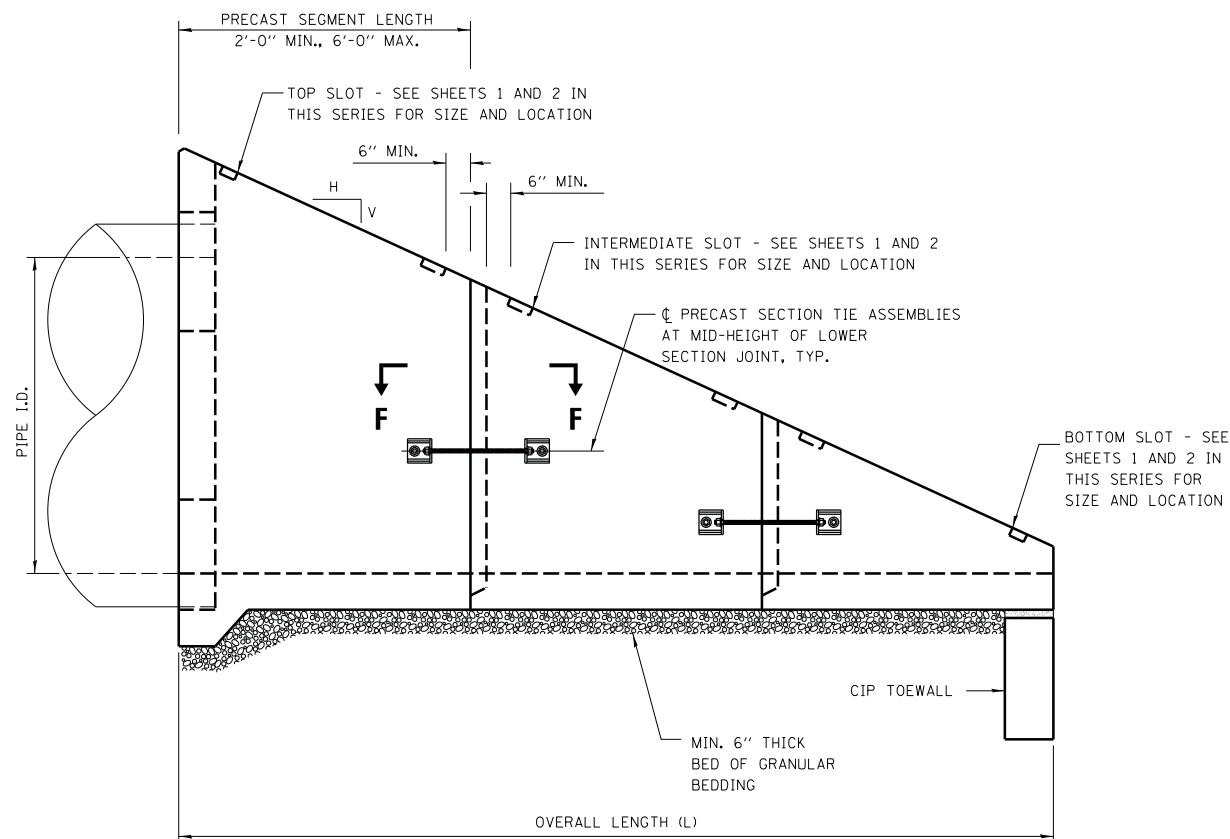
**TYPICAL GRATE**

*Paul Kovacs*  
APPROVED..... CHIEF ENGINEER..... DATE 5-1-2009.....

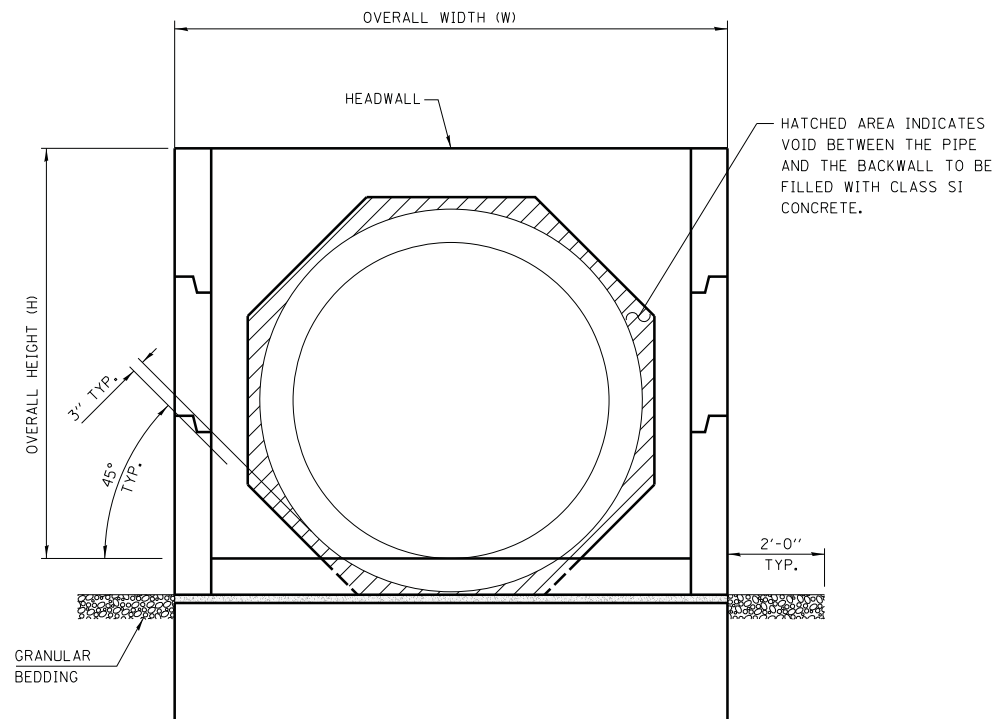
**Illinois Tollway**

HEADWALL TYPE III  
18"-24"-30"-36"-42"-48"-54"-60"  
FOR 1:3, 1:4, 1:6, AND  
1:10 SLOPES

STANDARD B6-06



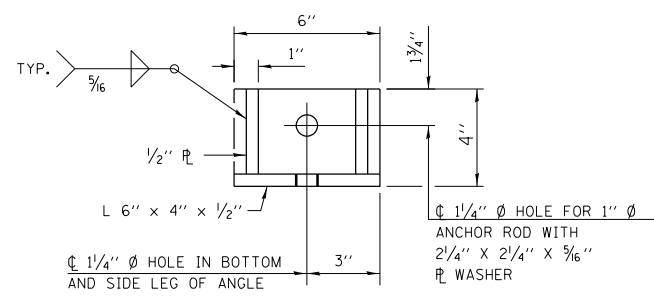
**ELEVATION**



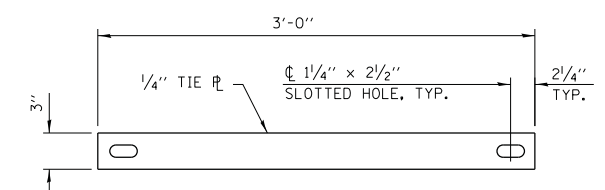
**END VIEW**

**GENERAL NOTES:**

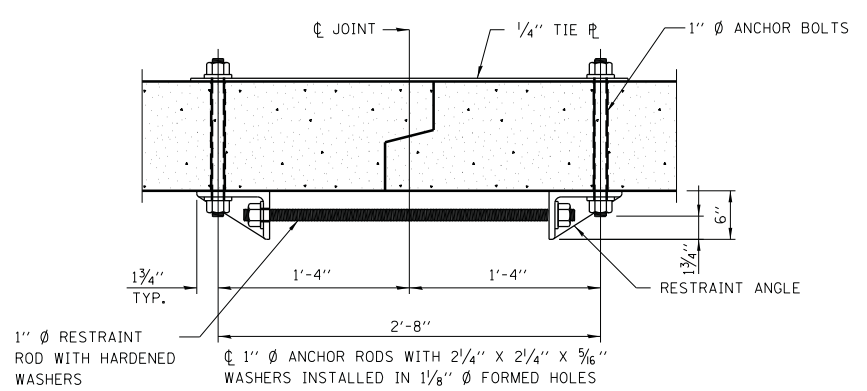
1. THE NUMBER OF SEGMENTS SHOWN IN ELEVATION IS FOR EXAMPLE ONLY. THE LENGTH AND NUMBER OF PRECAST SECTIONS REQUIRED TO CONSTRUCT THE END SECTION SHALL BE DETERMINED BY THE CONTRACTOR.
2. CONTRACTOR SHALL RETAIN THE SERVICES OF AN ILLINOIS LICENSED STRUCTURAL ENGINEER TO PROPORTION, DESIGN AND DETAIL PRECAST SECTIONS FOR INSTALLATION AND FOR SERVICE. SEE CAST-IN-PLACE DIMENSIONS AND REINFORCING DETAILS FOR MINIMUM REQUIREMENTS. INCREASE MEMBER SIZES AND REINFORCING AS NECESSARY TO SATISFY HANDLING AND INSTALLATION STRESSES IN PRECAST SECTIONS.
3. CLASS "SI" CONCRETE SHALL BE USED THROUGHOUT.
4. REINFORCEMENT BARS (GRADE 60) SHALL BE EPOXY COATED. SEE CAST-IN-PLACE DETAILS FOR BENDING DIAGRAMS. SEE NOTES ON SHEET 1 IN THIS SERIES FOR REINFORCING COVER REQUIREMENTS.
5. ALL EXPOSED EDGES SHALL BE CHAMFERED. SEE NOTES ON SHEET 1 IN THIS SERIES.
6. SEE ROADWAY PLANS FOR SLOPE (V:H) AND PIPE INSIDE DIAMETER.
7. HOLES IN THE WALLS FOR THE PRECAST TIE ASSEMBLY MAY BE DRILLED USING CORE BITS IN LIEU OF FORMED HOLES. AVOID DAMAGE TO REINFORCING FROM DRILLING HOLES.
8. FOR STEEL GRATING DETAILS, SEE SHEET 3 IN THIS SERIES.
9. ALL SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
10. TIE ASSEMBLIES, CONSISTING OF ANCHOR RODS, TIE PLATES, RESTRAINT ANGLES, RESTRAINT RODS AND ALL NUTS AND WASHERS SHALL CONFORM WITH AASHTO M270 GR36, OR GR50 AND SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M 111 AFTER FABRICATION.



**RESTRAINT ANGLE DETAIL**

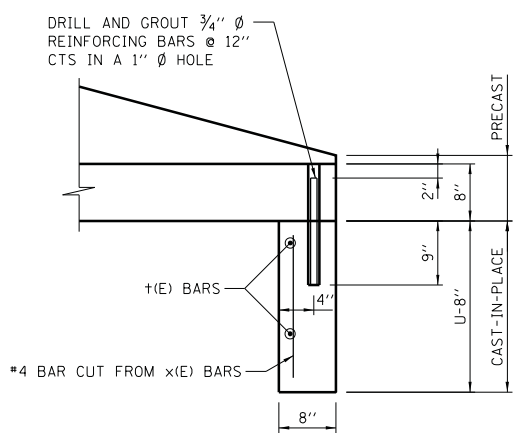


**TIE PLATE DETAIL**

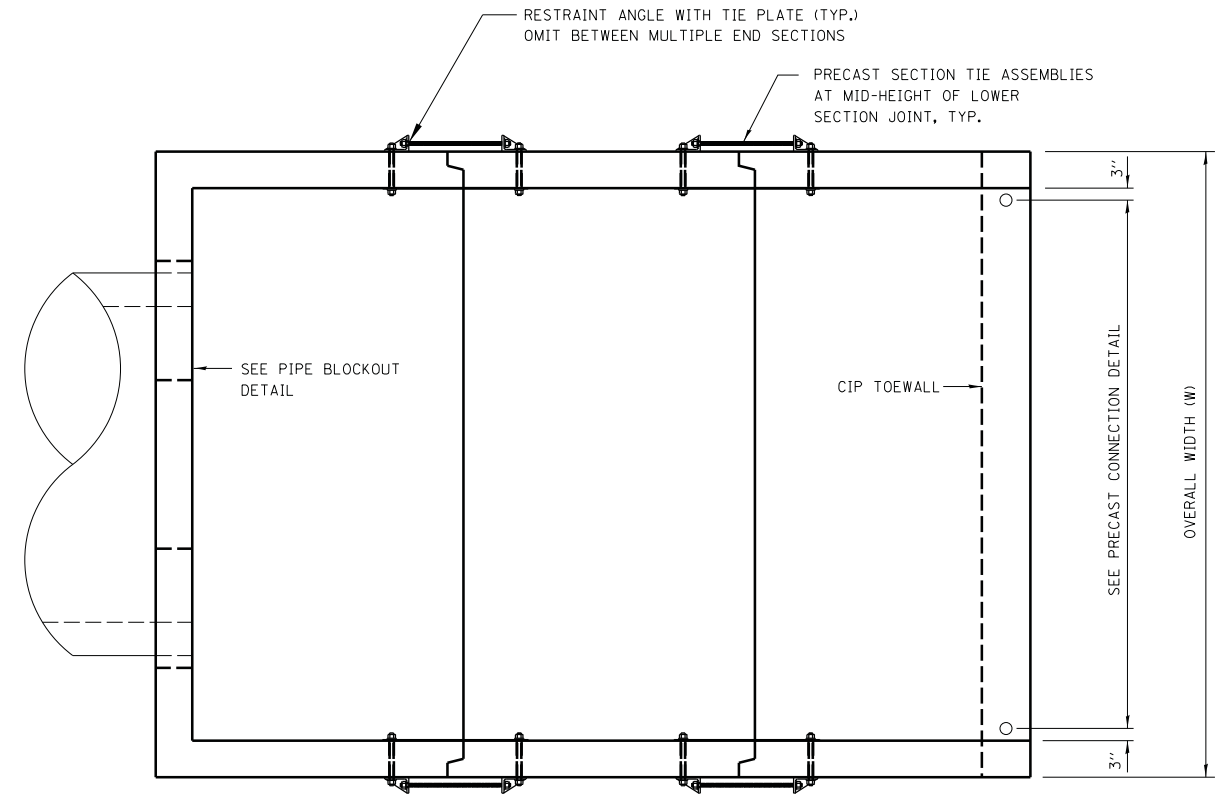


**SECTION F-F**

(SHOWING PRECAST SECTION TIE DETAILS)



**PRECAST CONNECTION DETAIL**



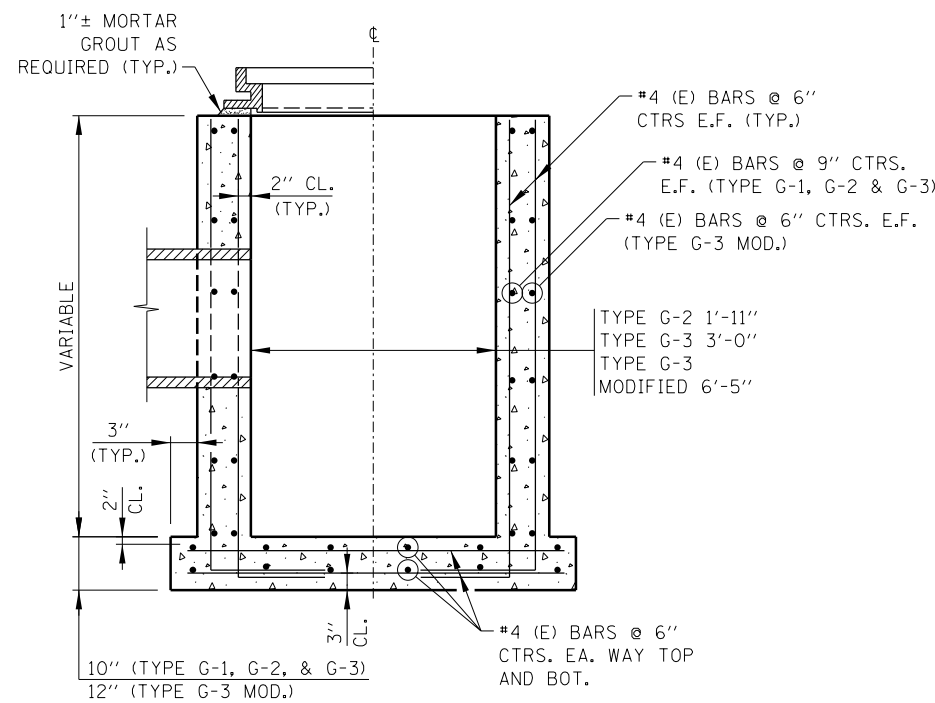
**PLAN**

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

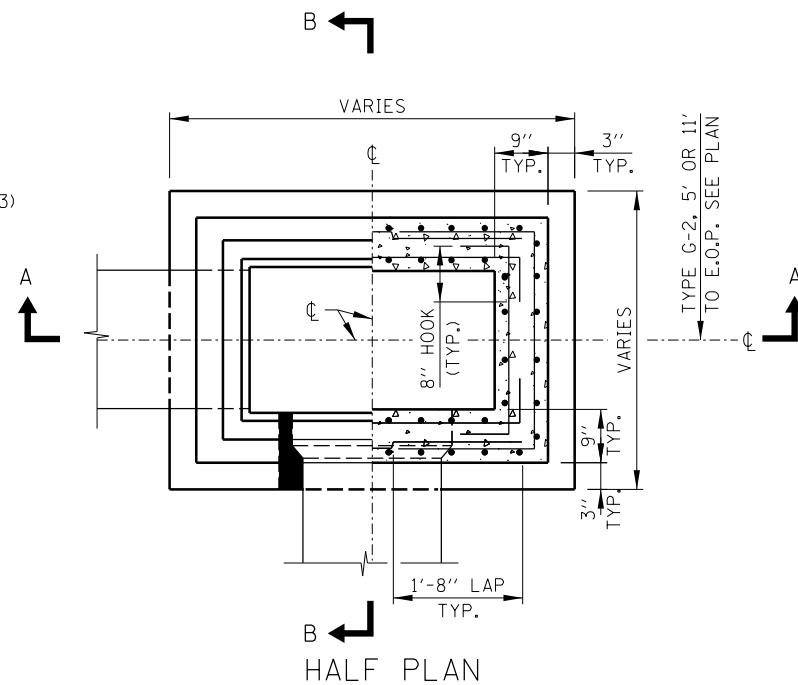
**HEADWALL TYPE III ALTERNATE PRECAST CONCRETE DETAILS**

HEADWALL TYPE III  
18"-24"-30"-36"-42"-48"-54"-60"  
FOR 1:3, 1:4, 1:6, AND  
1:10 SLOPES  
STANDARD B6-06

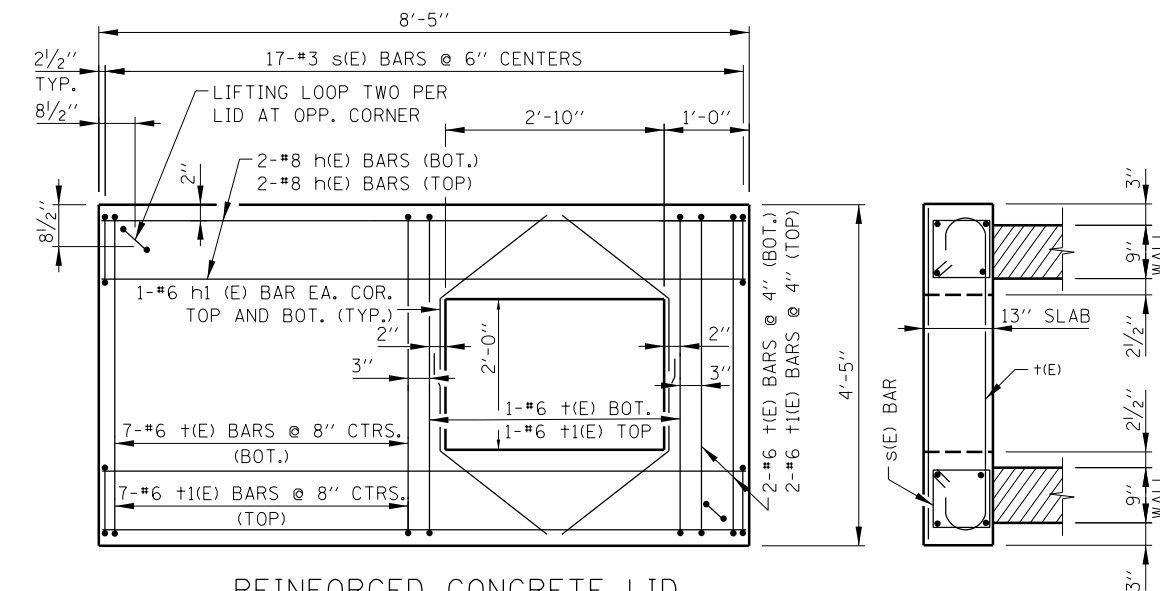




SECTION A-A



HALF PLAN

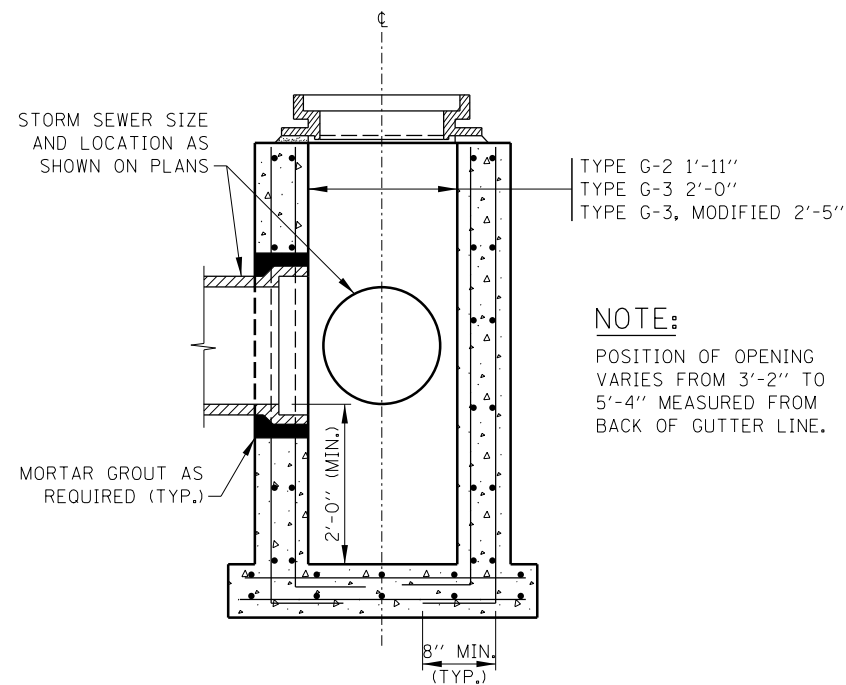


REINFORCED CONCRETE LID

CATCH BASIN, TYPE G-3, MODIFIED

NOTES:

1. PRECAST CONCRETE UNITS WILL BE ACCEPTABLE PROVIDED THEY MEET ALL THE REQUIREMENTS AS SHOWN ON THIS DRAWING. BASE EXTENSION OF 3" NOT REQUIRED FOR PRECAST UNITS. FABRICATION DRAWINGS SHOWING PIPE OPENINGS, REINFORCEMENT AND OTHER PERTINENT DIMENSIONS WILL BE REQUIRED FOR EACH UNIT, FOR APPROVAL BY THE ENGINEER PRIOR TO FABRICATION.
2. CATCH BASIN, TYPE G-2 SHALL BE USED ALONG RAMPS WHERE GUTTER TYPE G-2 IS PROVIDED.
3. CATCH BASIN, TYPE G-3 SHALL BE USED WHERE GUTTER TYPE G-3 IS PROVIDED.
4. CATCH BASIN, TYPE G-3 MODIFIED SHALL BE USED IN PAVEMENT SECTIONS AND ON THE LOW SIDE OF SUPERELEVATED PAVEMENT.
5. CATCH BASIN, TYPE G-3 MODIFIED SHALL BE PROVIDED WITH A REINFORCED CONCRETE SLAB TOP AS DETAILED ON THIS DRAWING.
6. TYPE G-2 FRAME AND GRATE SHALL BE NEENAH R-3508-A2, EAST JORDAN IRON WORKS 7300 OR APPROVED EQUAL.
7. TYPE G-3 FRAME AND GRATE SHALL BE NEENAH INLET FOR ROLL TYPE CURB R-3501-U OR EAST JORDAN IRON WORKS 7545 OR APPROVED EQUAL.
8. TYPE G-3, MODIFIED FRAME AND GRATE SHALL BE NEENAH INLET FOR ROLL TYPE CURB SPECIAL R-3501-U1, EAST JORDAN IRON WORKS 7546 OR APPROVED EQUAL.
9. TYPE G-2, MODIFIED FRAME AND GRATE FOR ROLL TYPE CURB R-3508-B2 OR APPROVED EQUAL.
10. MORTAR OR SEALER SHALL BE USED WHEN A PRECAST REINFORCED CONCRETE LID IS USED.
11. REINFORCEMENT BARS DESIGNATED (E) SHALL BE EPOXY COATED.
12. E.O.P. = EDGE OF PAVEMENT.
13. ALL CONCRETE SHALL BE CLASS SI CONCRETE.

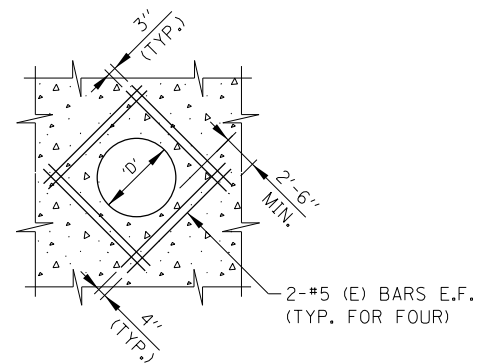


SECTION B-B

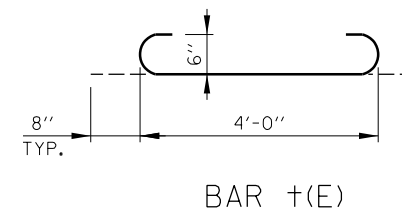
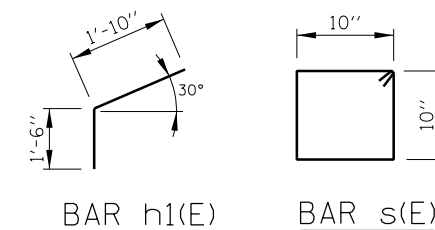
CATCH BASIN TYPE "G" SERIES

NOTE:

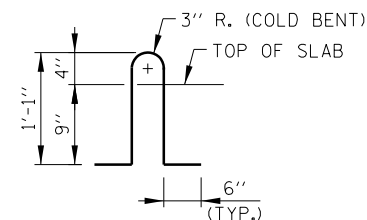
POSITION OF OPENING VARIES FROM 3'-2" TO 5'-4" MEASURED FROM BACK OF GUTTER LINE.



TYPICAL REINFORCEMENT AROUND STORM SEWER PIPE



LIFTING LOOP TO BE 1/2" Ø x 270 KSI STRANDS TO BE BURNED AFTER PRECAST CONCRETE LID IS SET IN PLACE.



LIFTING LOOP DETAIL

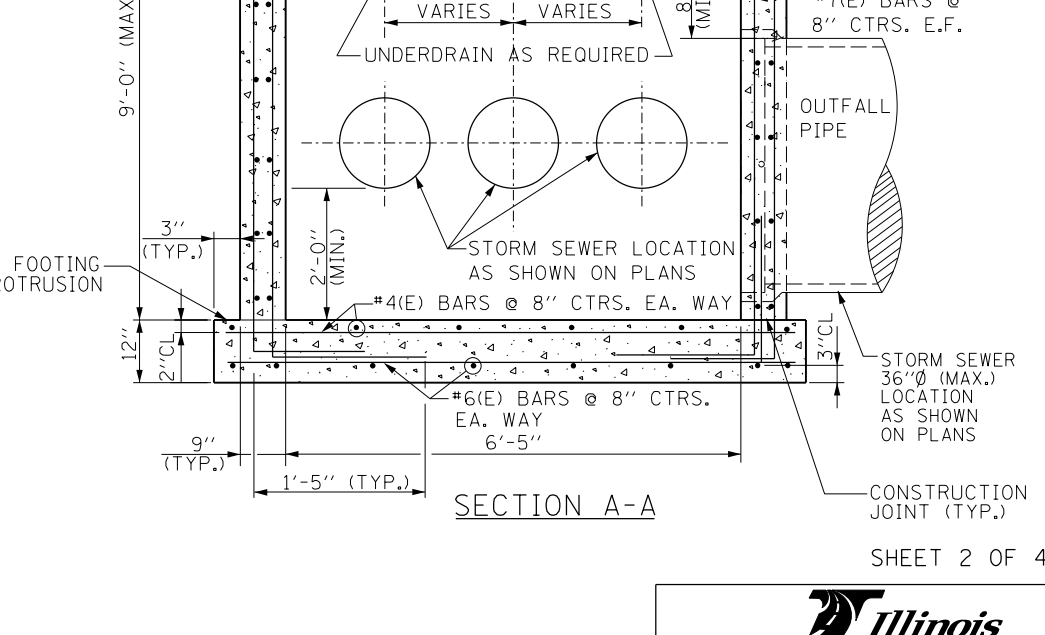
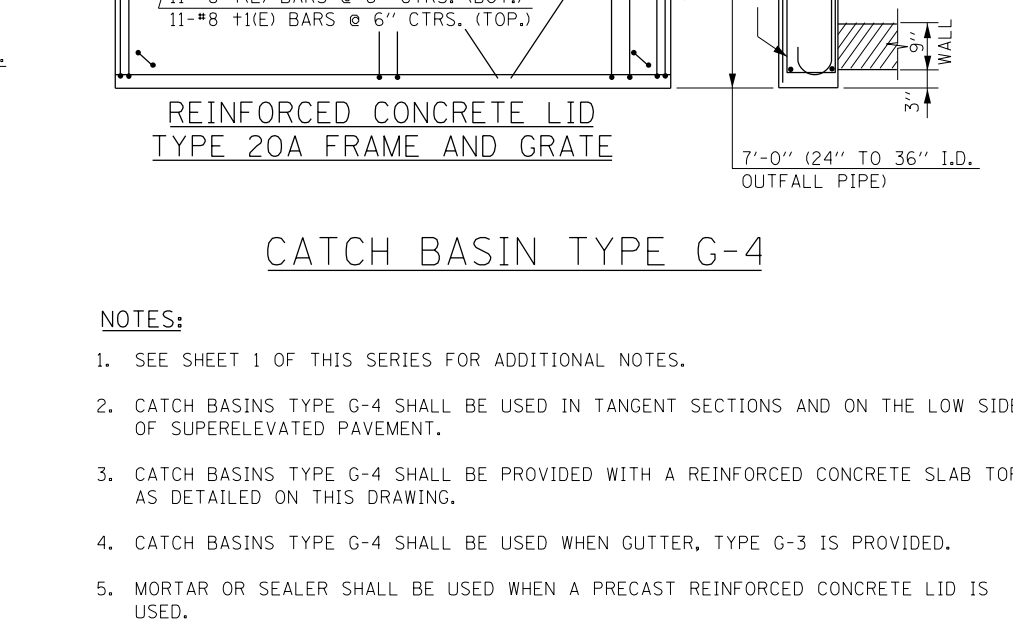
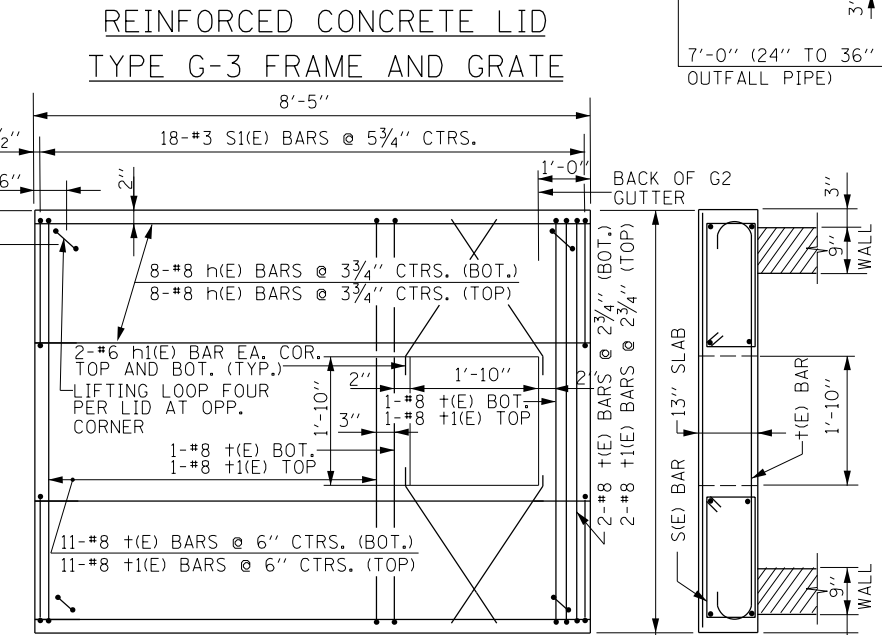
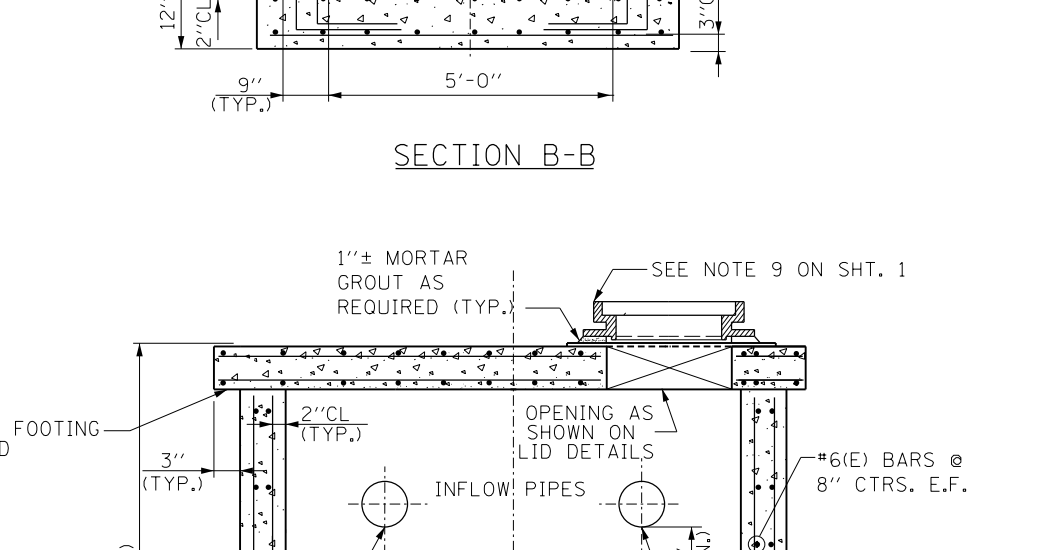
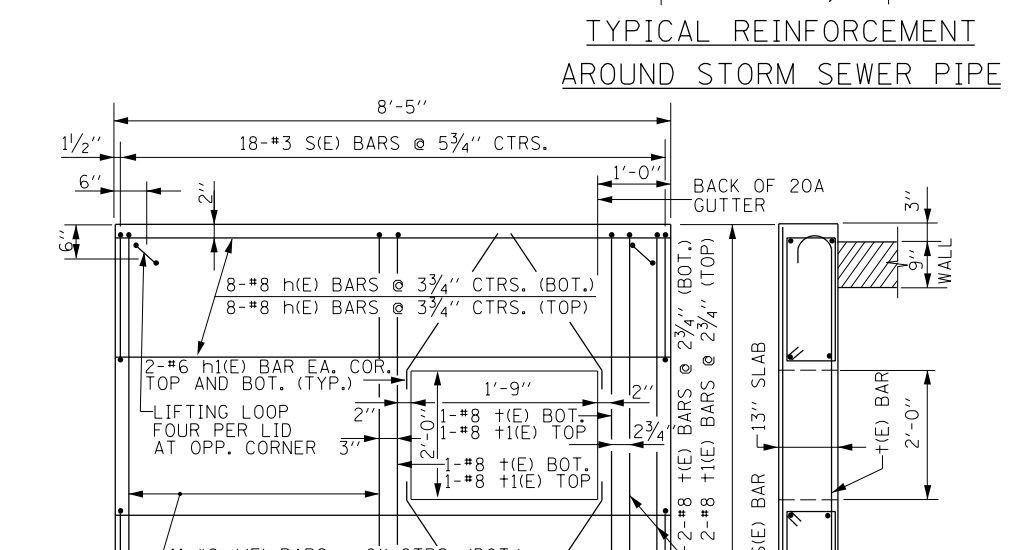
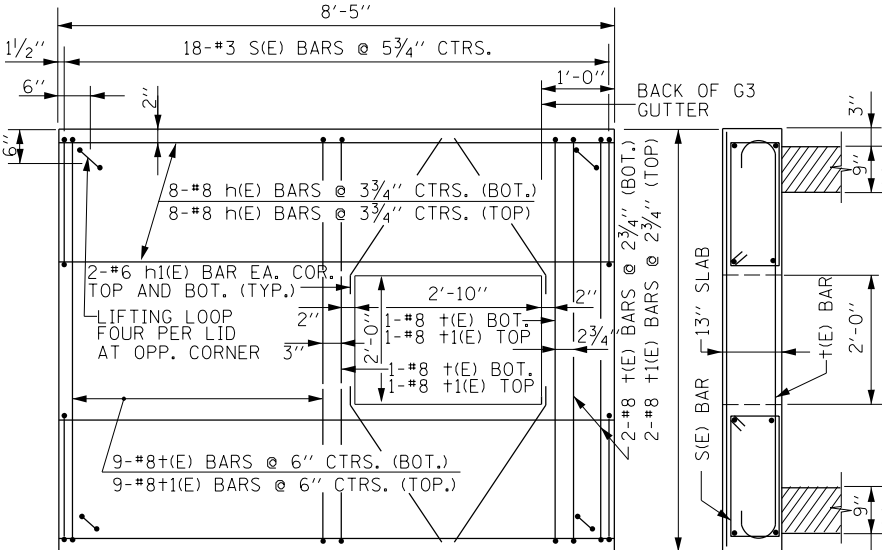
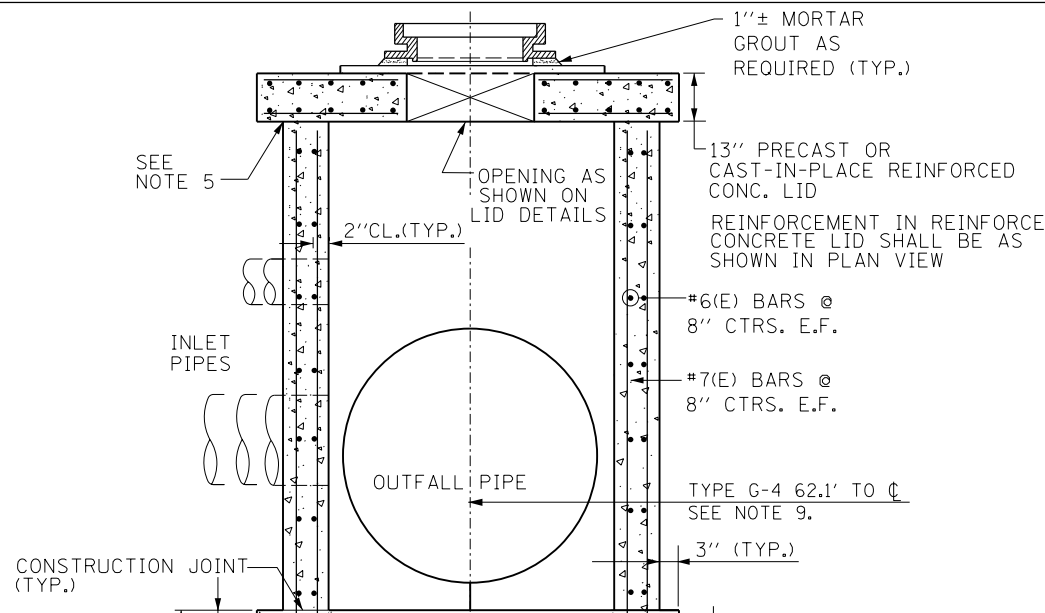
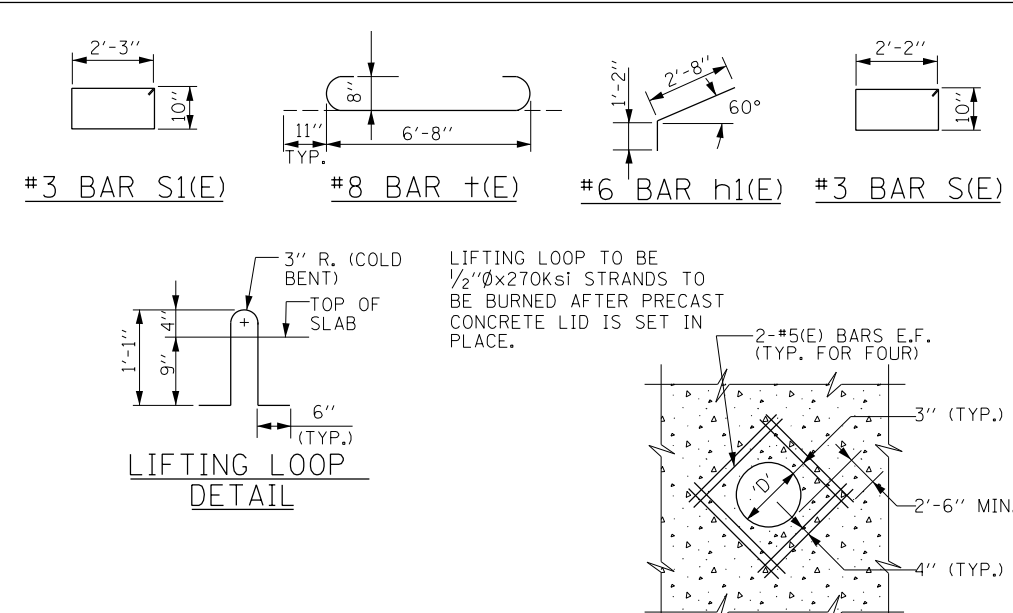
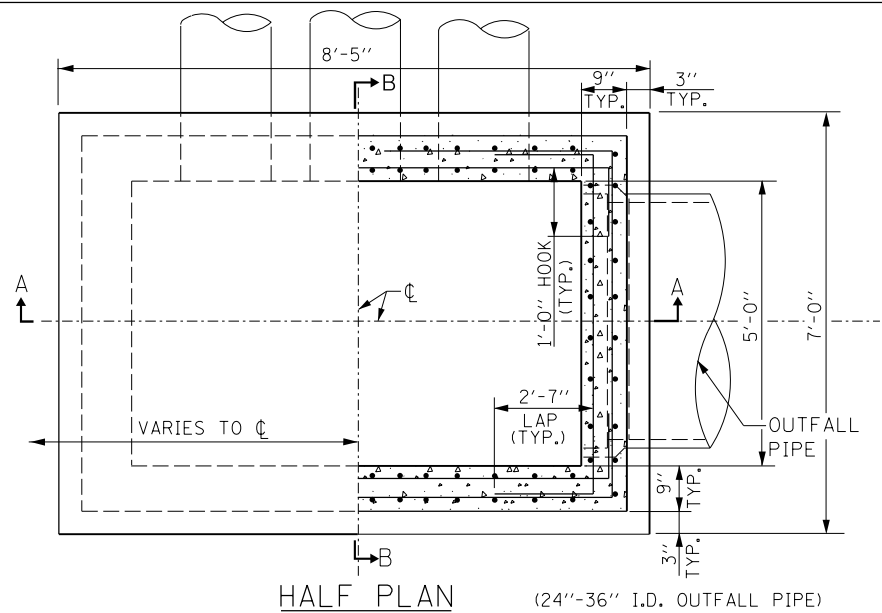
DATE	REVISIONS
6-01-2009	DELETE REINF. CONC. LID TYPE S FRAME & GRATE
2-07-2012	REVISED REINFORCEMENT BARS
11-01-2012	ADDED TYPE G-2, MODIFIED FRAME AND GRATE
	MODIFIED PIPE BELL DETAIL
3-31-2014	ADDED FRAME AND GRATE CASTINGS
3-11-2015	REVISED NOTES AND ADDED CATCH BASIN TYPE G-4 AND TYPE G-5

SHEET 1 OF 4

CATCH BASINS TYPE G AND TYPE G MODIFIED, FRAMES AND GRATES

STANDARD B8-05

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 6-1-2009




**CATCH BASIN TYPE G-4**

- NOTES:**
- SEE SHEET 1 OF THIS SERIES FOR ADDITIONAL NOTES.
  - CATCH BASINS TYPE G-4 SHALL BE USED IN TANGENT SECTIONS AND ON THE LOW SIDE OF SUPERELEVATED PAVEMENT.
  - CATCH BASINS TYPE G-4 SHALL BE PROVIDED WITH A REINFORCED CONCRETE SLAB TOP AS DETAILED ON THIS DRAWING.
  - CATCH BASINS TYPE G-4 SHALL BE USED WHEN GUTTER, TYPE G-3 IS PROVIDED.
  - MORTAR OR SEALER SHALL BE USED WHEN A PRECAST REINFORCED CONCRETE LID IS USED.
  - EDGE OF SHOULDER, FRAME AND GRATE RIM ELEVATION AND OFFSET MEASURED AT THIS POINT.
  - 36"Ø MAX. OUTFALL PIPE FOR TYPE G-4 CATCH BASIN.
  - ALL CONCRETE SHALL BE CLASS SI CONCRETE.
  - DISTANCE FROM CL OUTFALL PIPE TO CL ROADWAY TO BE VERIFIED BY ENGINEER.

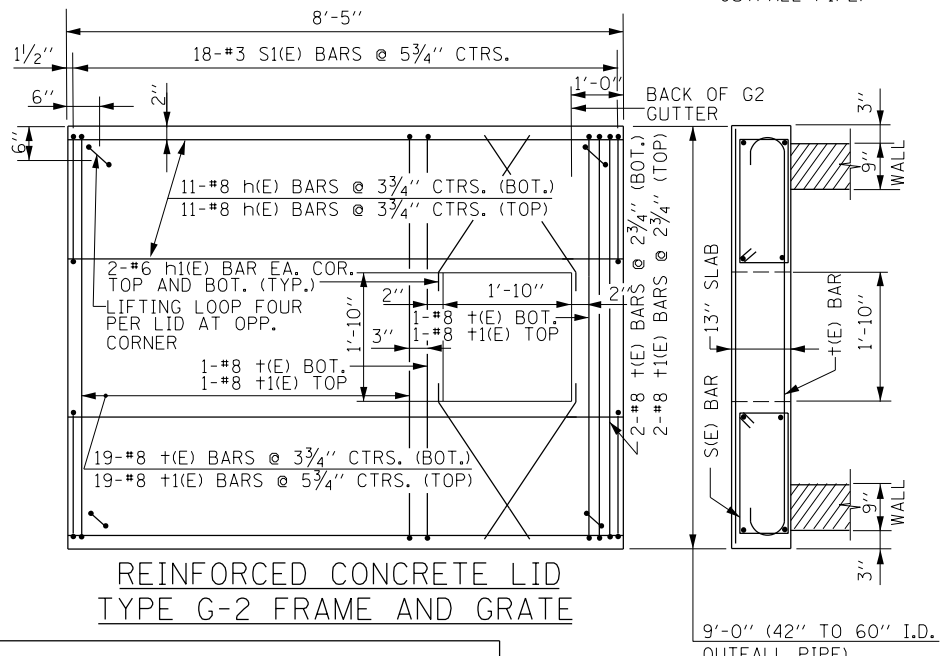
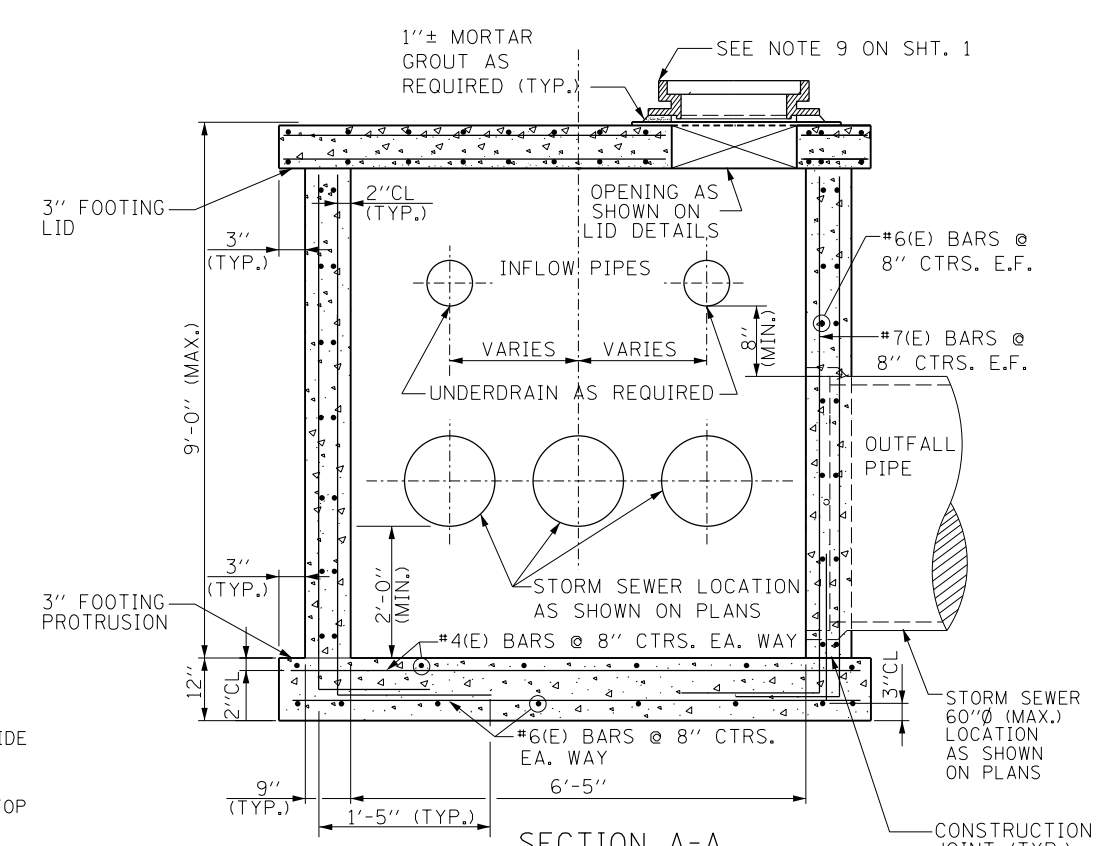
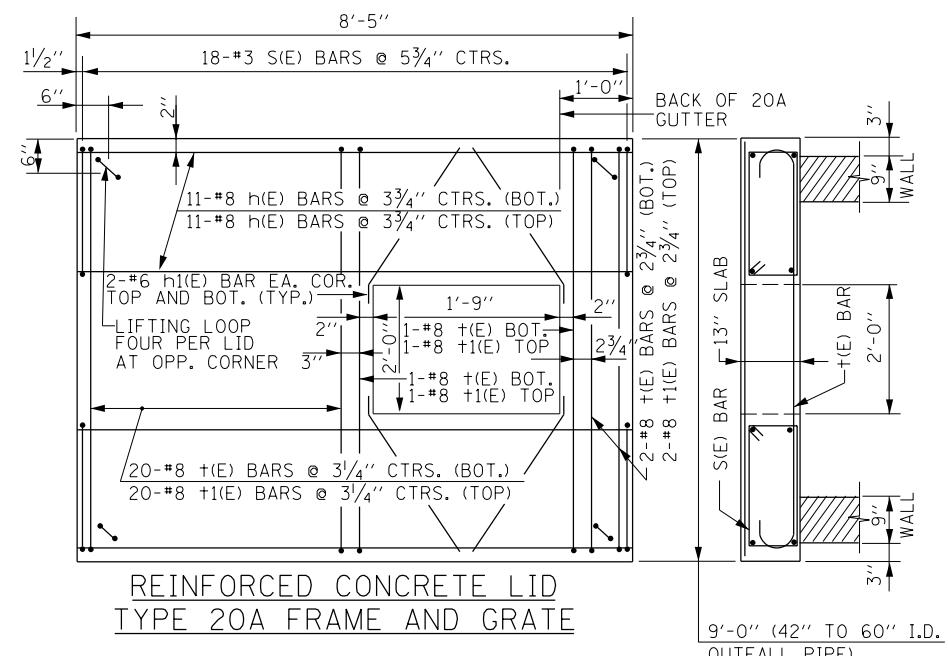
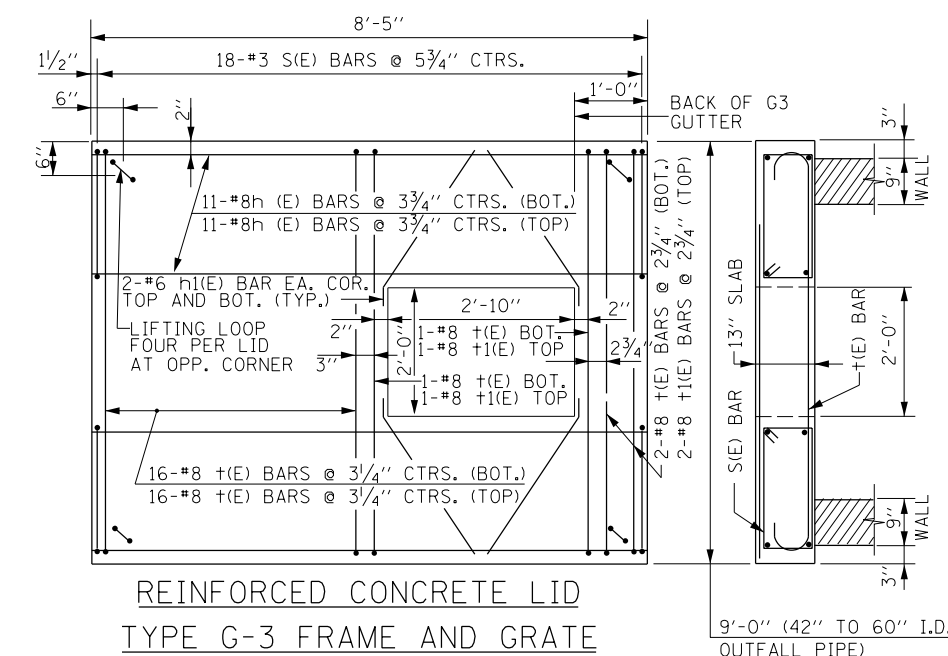
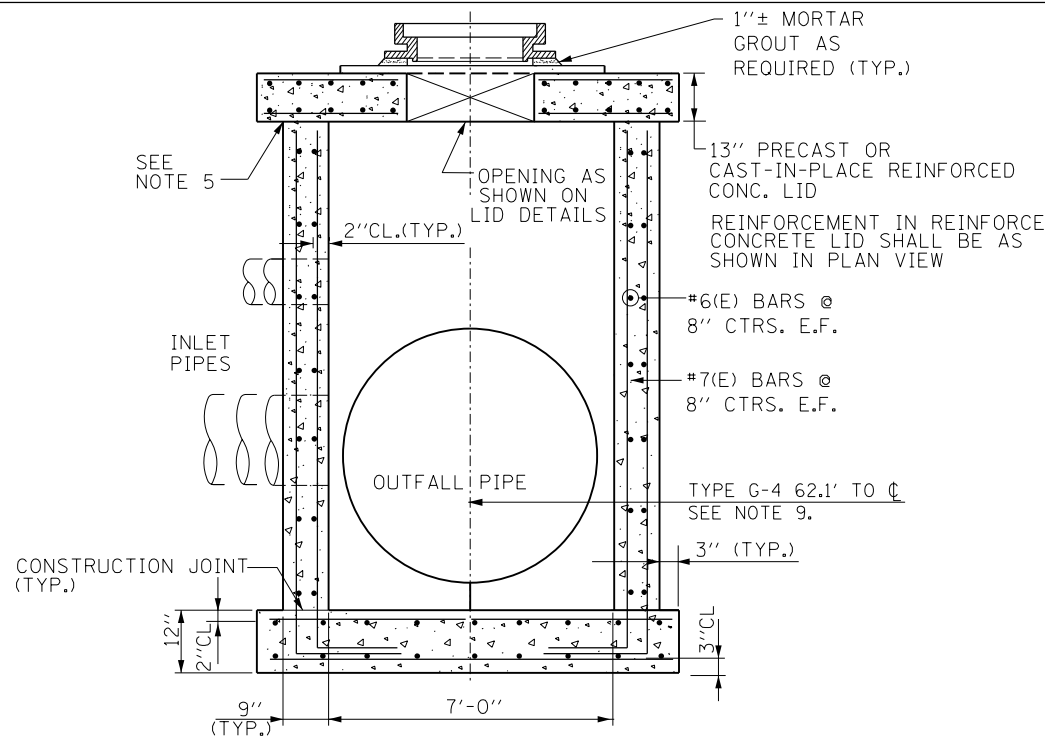
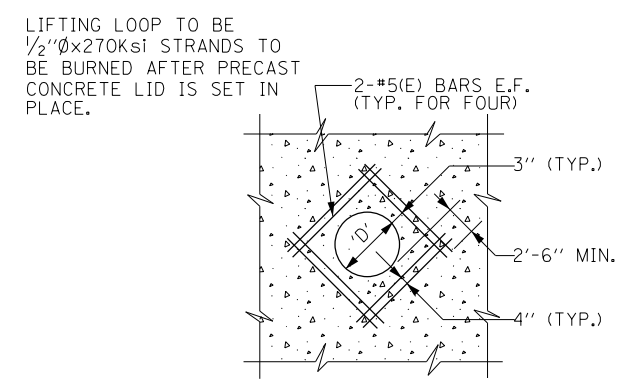
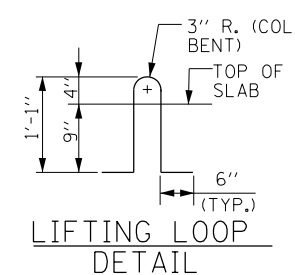
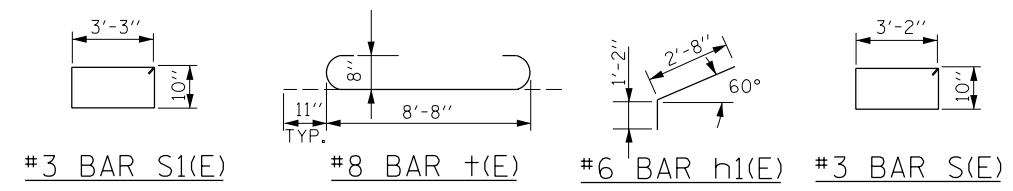
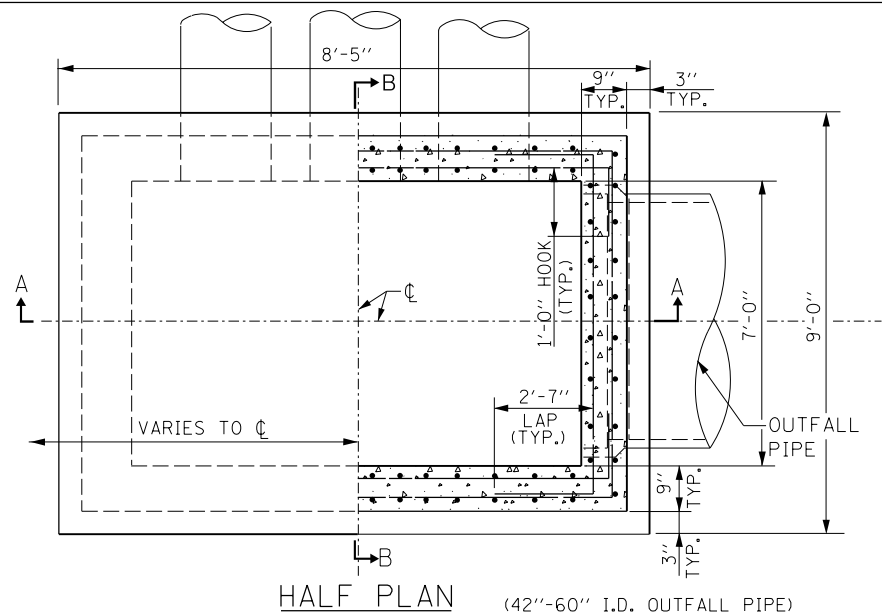
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 6-1-2009

SHEET 2 OF 4



CATCH BASINS TYPE G AND  
TYPE G MODIFIED, FRAMES  
AND GRATES

STANDARD B8-05



CATCH BASIN TYPE G-5

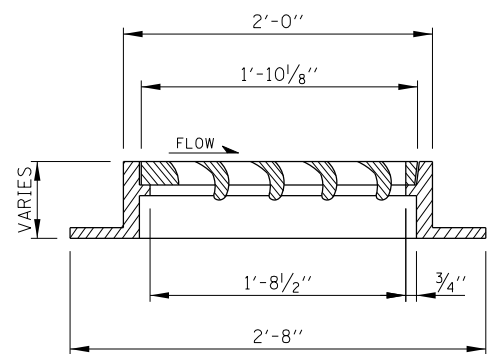
- NOTES:
- SEE SHEET 1 OF THIS SERIES FOR ADDITIONAL NOTES.
  - CATCH BASINS TYPE G-5 SHALL BE USED IN TANGENT SECTIONS AND ON THE LOW SIDE OF SUPERELEVATED PAVEMENT.
  - CATCH BASINS TYPE G-5 SHALL BE PROVIDED WITH A REINFORCED CONCRETE SLAB TOP AS DETAILED ON THIS DRAWING.
  - CATCH BASINS TYPE G-5 SHALL BE USED WHEN GUTTER, TYPE G-3 IS PROVIDED.
  - MORTAR OR SEALER SHALL BE USED WHEN A PRECAST REINFORCED CONCRETE LID IS USED.
  - EDGE OF SHOULDER, FRAME AND GRATE RIM ELEVATION AND OFFSET MEASURED AT THIS POINT.
  - 60"Ø MAX. OUTFALL PIPE FOR TYPE G-5 CATCH BASIN.
  - ALL CONCRETE SHALL BE CLASS SI CONCRETE.
  - DISTANCE FROM CL OUTFALL PIPE TO CL ROADWAY TO BE VERIFIED BY ENGINEER.



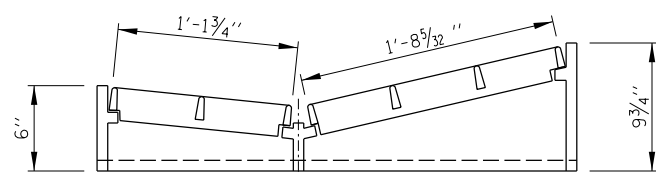
CATCH BASINS TYPE G AND TYPE G MODIFIED, FRAMES AND GRATES

STANDARD B8-05

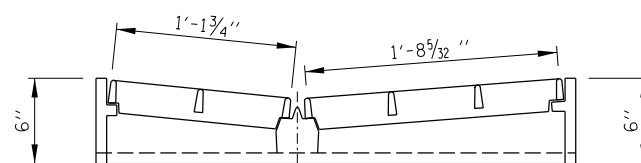
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 6-1-2009



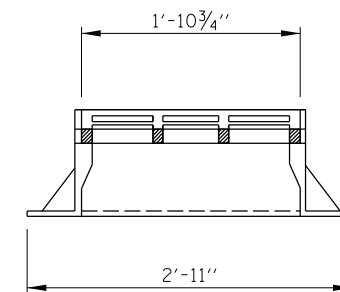
SECTION T-T



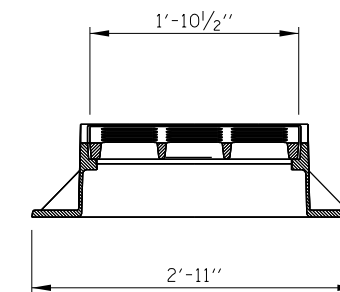
SECTION U-U



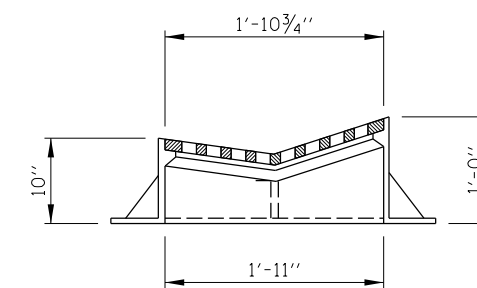
SECTION W-W



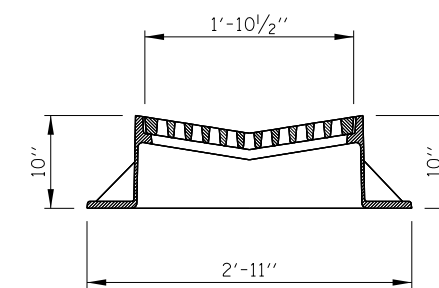
SECTION Y-Y



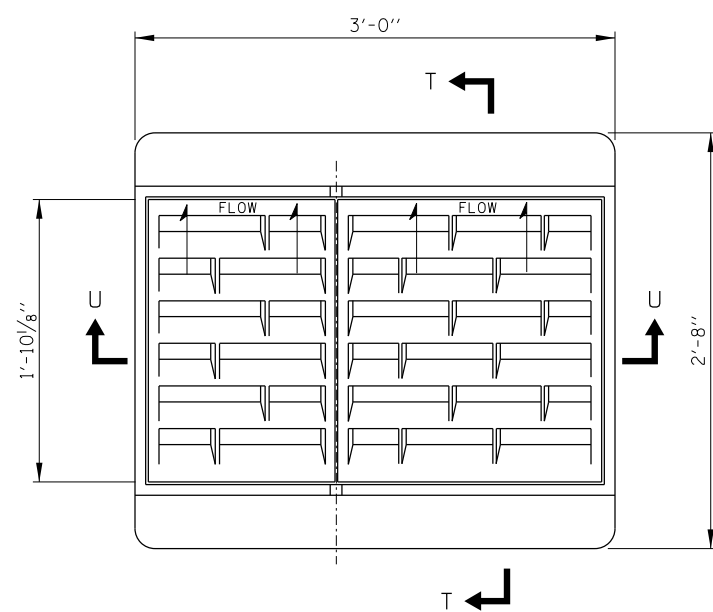
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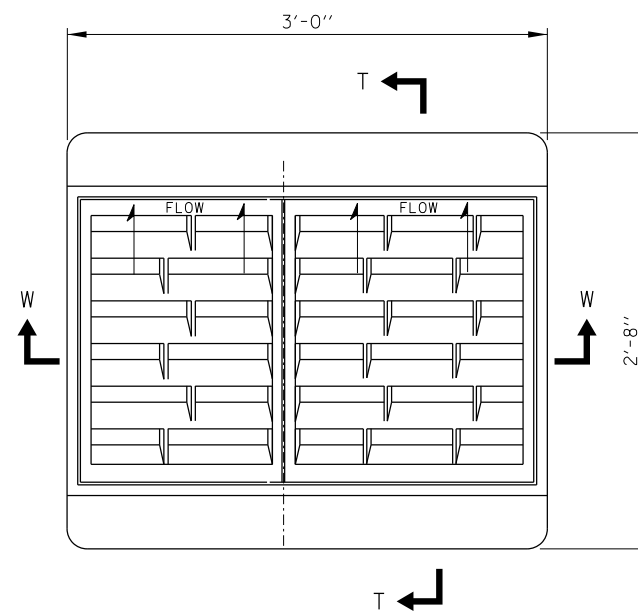
SECTION Z-Z



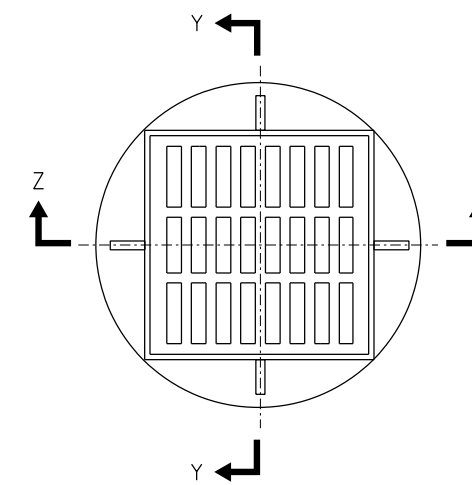
SECTION V-V



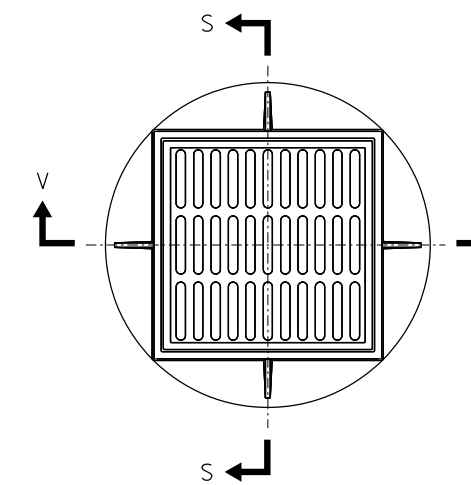
TYPE G-3 FRAME & GRATE



TYPE G-3, MODIFIED  
FRAME & GRATE



TYPE G-2 FRAME & GRATE



TYPE G-2 MODIFIED  
FRAME & GRATE

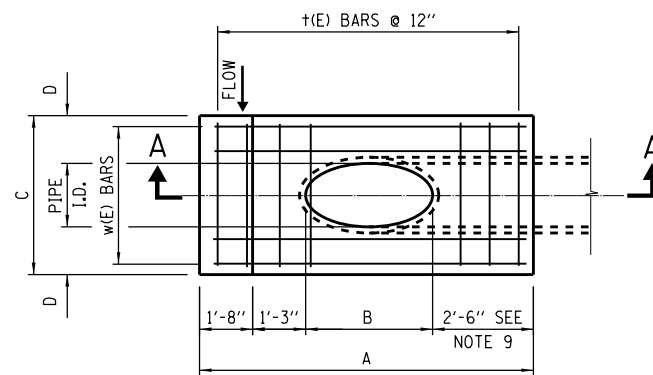
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 6-1-2009

NOTE:  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

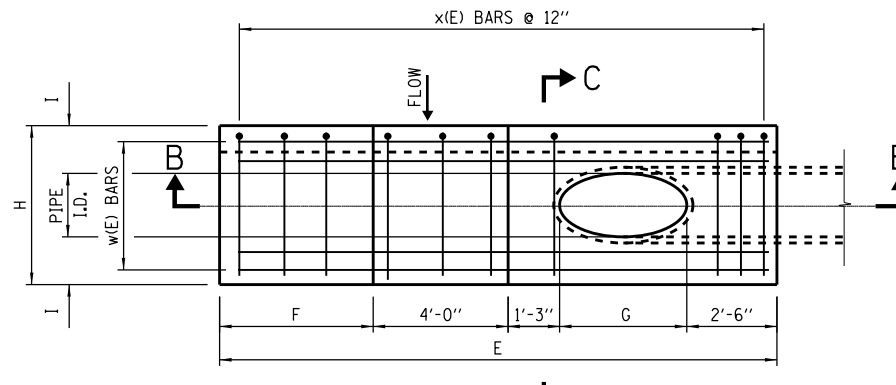


CATCH BASINS TYPE G AND  
TYPE G MODIFIED, FRAMES  
AND GRATES

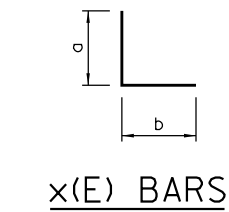
STANDARD B8-05



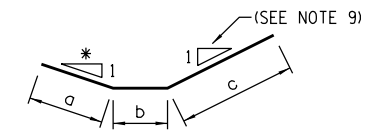
PLAN I



PLAN II

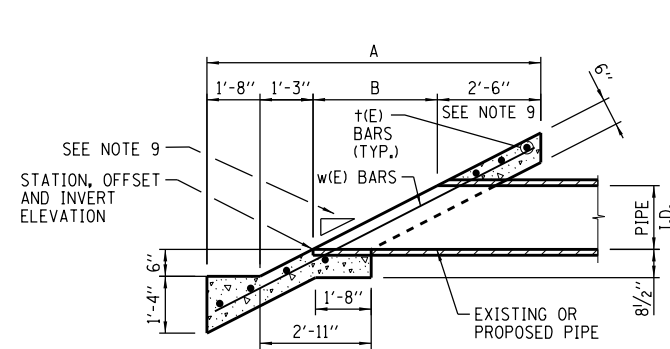


x(E) BARS

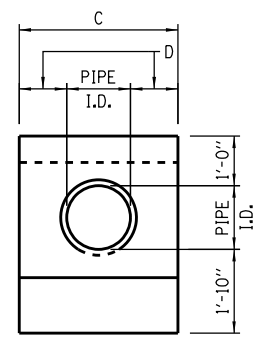


w(E) BARS

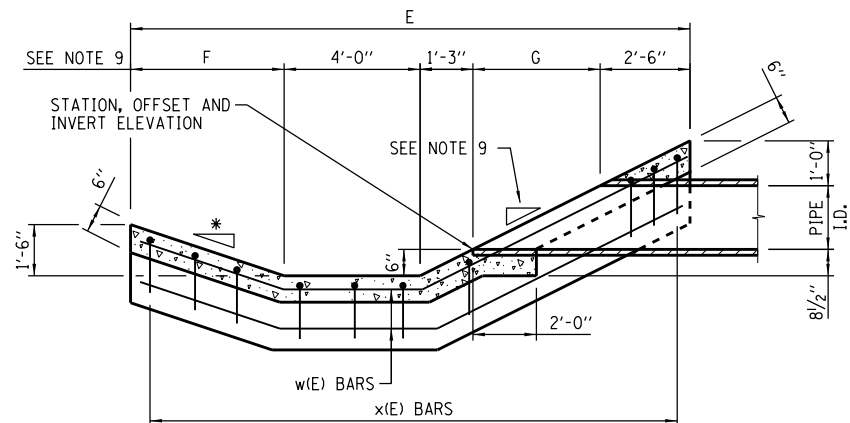
- NOTES:
1. SLOPED HEADWALL TYPES I AND II SHALL BE CONSTRUCTED FLUSH WITH EXISTING OR PROPOSED SLOPE.
  2. CLASS SI CONCRETE SHALL BE USED THROUGHOUT.
  3. ALL REINFORCEMENT BARS SHOWN SHALL BE EPOXY COATED (E).
  4. BAR BENDING DETAILS ARE DIMENSIONED OUT TO OUT OF BARS.
  5. ALL EXPOSED EDGES SHALL HAVE A 3/4" CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW THE FINISHED GROUND LINE.
  6. COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BARS SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN.
  7. CARE SHALL BE EXERCISED IN REMOVING ANY LENGTH OF EXISTING PIPE SO THE REMAINING PIPE IS UNDAMAGED AND FULLY FUNCTIONING.
  8. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
  9. SLOPED HEADWALLS, TYPES I AND II TO BE USED ONLY FOR SLOPES STEEPER THAN 1:3. DIMENSIONS AND QUANTITIES SHOWN ARE BASED ON A 1:2.5 SLOPE (EXISTING AND PROPOSED).
  10. I.D. DENOTES INSIDE DIAMETER OF PIPE. O.D. DENOTES OUTSIDE DIAMETER OF PIPE.



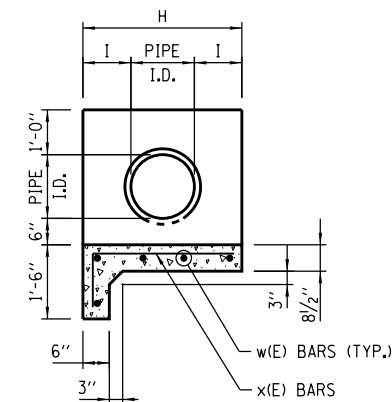
SECTION A-A



ELEVATION



SECTION B-B



SECTION C-C

\* MATCH EXISTING OR PROPOSED SLOPE, SEE NOTE 9

TABLES FOR DIMENSIONS, REINFORCEMENT AND QUANTITIES FOR ONE SLOPED HEADWALL TYPE I

PIPE I.D.	A	B	C	D
6"	6'-8"	1'-3"	2'-6"	1'-0"
12"	7'-11"	2'-6"	3'-0"	1'-0"
15"	8'-7"	3'-2"	3'-9"	1'-3"
18"	9'-2"	3'-9"	4'-6"	1'-6"

PIPE I.D.	REINFORCEMENT BARS		
	MARK(E)	NO. & SIZE	LENGTH
6"	+6	7-#4	2'-2"
	w6	4-#4	6'-8"
12"	+12	7-#4	2'-8"
	w12	4-#4	8'-2"
15"	+15	7-#4	3'-5"
	w15	4-#4	8'-11"
18"	+18	7-#4	4'-2"
	w18	4-#4	9'-6"

DESIGN NO.	INSIDE DIA. OF PIPE	CONC. 1 HDWL. (CU. YD.)	REINF. BARS. 1 HDWL. (POUND)
F-6-2	6"	0.5	29
F-12-2	12"	0.6	35
F-15-2	15"	0.8	40
F-18-2	18"	1.0	45

SLOPED HEADWALL TYPE I

TABLES FOR DIMENSIONS, REINFORCEMENT AND QUANTITIES FOR ONE SLOPED HEADWALL TYPE II

PIPE I.D.	E	F	G	H	I
12"	14'-0"	3'-9"	2'-6"	3'-0"	1'-0"
15"	14'-8"	3'-9"	3'-2"	3'-9"	1'-3"
18"	15'-3"	3'-9"	3'-9"	4'-6"	1'-6"

PIPE I.D.	REINFORCEMENT BARS					
	MARK(E)	NO. & SIZE	LENGTH	a	b	c
12"	x12	10-#4	3'-6"	2'-6"	1'-0"	---
	w12	5-#4	14'-4"	3'-10"	4'-0"	6'-6"
15"	x15	10-#4	4'-3"	3'-3"	1'-0"	---
	w15	5-#4	15'-1"	3'-10"	4'-0"	7'-3"
18"	x18	10-#4	5'-0"	4'-0"	1'-0"	---
	w18	5-#4	15'-8"	3'-10"	4'-0"	7'-10"

DESIGN NO.	INSIDE DIA. OF PIPE	CONC. 1 HDWL. (CU. YD.)	REINF. BARS. 1 HDWL. (POUND)
E-12-2	12"	1.2	75
E-15-2	15"	1.6	82
E-18-2	18"	1.7	89

SLOPED HEADWALL TYPE II

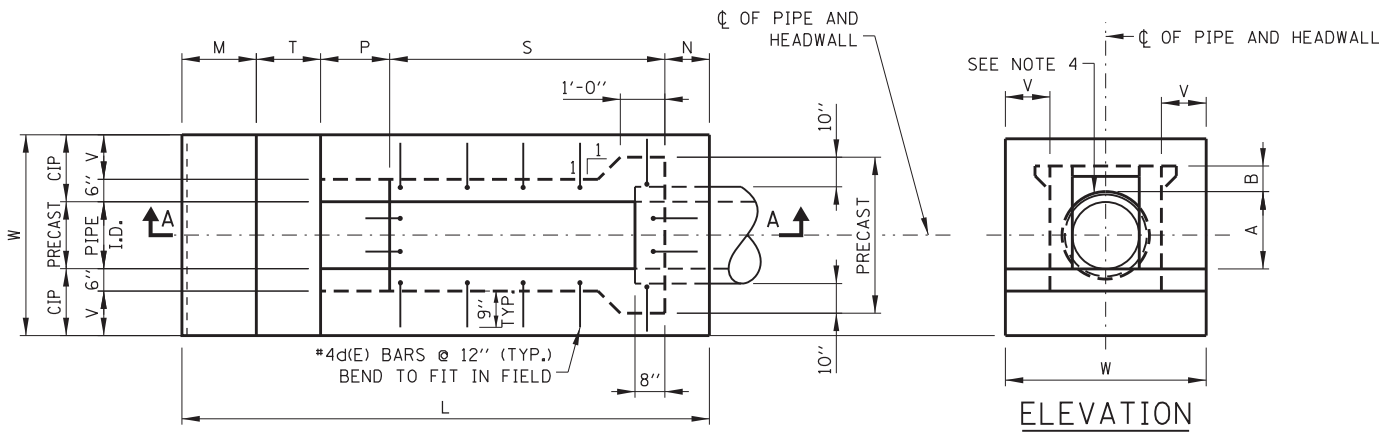
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 2-7-2012

DATE	REVISIONS
2-7-2012	REVISED REINFORCEMENT BARS, TABLES
3-31-2014	REVISED CONCRETE QUANTITIES- REINFORCEMENT STEEL
3-11-2015	REVISED REINFORCEMENT BARS, TABLES
3-31-2017	REVISED REINFORCEMENT BARS, TABLES

SLOPED HEADWALLS TYPE I AND TYPE II

STANDARD B9-04

**DIMENSIONS AND QUANTITIES  
FOR ONE SLOPED HEADWALL TYPE III**

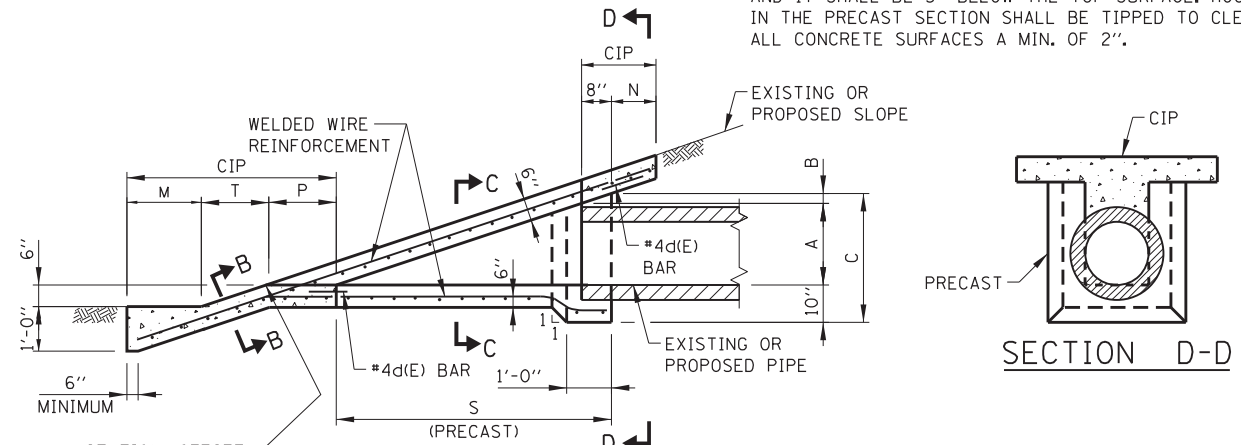


**PLAN - SLOPED HEADWALL**

**ELEVATION**

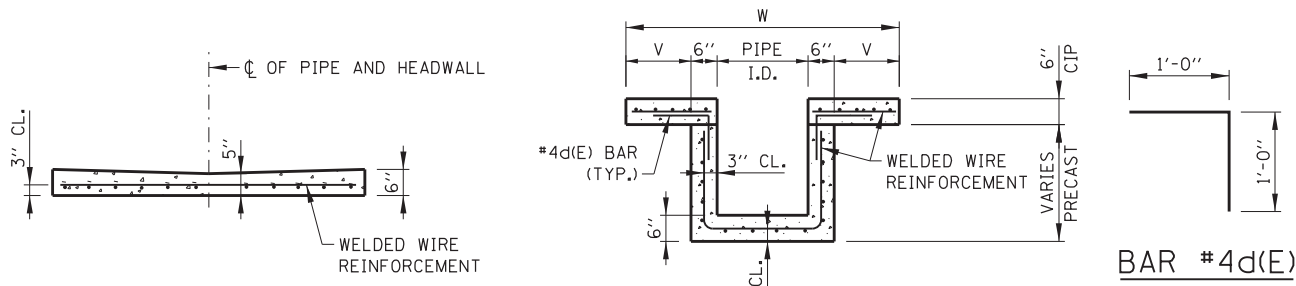
**NOTES:**

EACH #4d(E) BAR SHALL BE PLACED SUCH THAT IT WILL PROJECT 9" INTO THE CAST IN PLACE (CIP) CONCRETE AND IT SHALL BE 3" BELOW THE TOP SURFACE. HOOKS IN THE PRECAST SECTION SHALL BE TIPPED TO CLEAR ALL CONCRETE SURFACES A MIN. OF 2".



**SECTION A-A**

**SECTION D-D**



**SECTION B-B**

**SECTION C-C**

PIPE I.D.	DIMENSIONS											PRE CAST CONC. CU. YD.	CAST-IN-PLACE CU. YD.	WELDED WIRE REINFORCEMENT SQ. YD.	REINFORCEMENT BARS				
	A	B	C	N	M	T	P	S	L	V	W				MARK(E)	SIZE	NO.	LENGTH	LB.
6"	9"	2 3/4"	1'-9 3/4"	1'-0"	1'-8"	1'-6"	1'-6 3/4"	2'-11 1/4"	8'-8"	1'-0"	3'-6"	0.15	0.72	3.28	d6	#4	12	2'-0"	16
12"	1'-3 1/2"	2 3/4"	2'-4 1/4"	1'-0"	1'-8"	1'-6"	1'-6 3/4"	4'-6 3/4"	10'-3 1/2"	1'-0"	4'-0"	0.34	0.92	4.50	d12	#4	14	2'-0"	19
15"	1'-6 1/2"	2 3/4"	2'-7 1/4"	1'-0"	1'-8"	1'-6"	1'-6 3/4"	5'-3 3/4"	11'-1 1/2"	1'-0"	4'-3"	0.45	1.01	5.88	d15	#4	16	2'-0"	21
18"	1'-10"	2 3/4"	2'-10 3/4"	1'-0"	1'-8"	1'-6"	1'-6 3/4"	6'-2 1/4"	11'-11"	1'-0"	4'-6"	0.61	1.13	6.44	d18	#4	18	2'-0"	24
21"	2'-1"	2 3/4"	3'-1 3/4"	1'-0"	1'-9"	1'-6"	1'-6 3/4"	6'-11 1/4"	12'-9"	1'-3"	5'-3"	0.76	1.39	8.34	d21	#4	22	2'-0"	29
24"	2'-4 1/2"	2 3/4"	3'-5 1/4"	1'-0"	2'-0"	1'-6"	1'-6 3/4"	7'-9 3/4"	13'-10 1/2"	1'-6"	6'-0"	0.95	1.72	9.85	d24	#4	24	2'-0"	32
27"	2'-7 1/2"	2 3/4"	3'-8 1/4"	1'-1 1/2"	2'-3"	1'-6"	1'-6 3/4"	8'-6 3/4"	15'-0"	1'-9"	6'-9"	1.14	2.07	13.54	d27	#4	24	2'-0"	32
30"	2'-11"	2 3/4"	3'-11 3/4"	1'-3"	2'-6"	1'-6"	1'-6 3/4"	9'-5 1/4"	16'-3"	2'-0"	7'-6"	1.38	2.46	16.40	d30	#4	26	2'-0"	35

PIPE I.D.	DIMENSIONS											PRE CAST CONC. CU. YD.	CAST-IN-PLACE CU. YD.	WELDED WIRE REINFORCEMENT SQ. YD.	REINFORCEMENT BARS				
	A	B	C	N	M	T	P	S	L	V	W				MARK(E)	SIZE	NO.	LENGTH	LB.
6"	9"	2"	1'-9"	1'-0"	1'-8"	2'-0"	2'-1"	3'-8"	10'-5"	1'-0"	3'-6"	0.17	0.83	4.07	d6	#4	12	2'-0"	16
12"	1'-3 1/2"	2"	2'-3 1/2"	1'-0"	1'-8"	2'-0"	2'-1"	5'-10"	12'-7"	1'-0"	4'-0"	0.41	1.07	5.50	d12	#4	16	2'-0"	21
15"	1'-6 1/2"	2"	2'-6 1/2"	1'-0"	1'-8"	2'-0"	2'-1"	6'-10"	13'-7"	1'-0"	4'-3"	0.55	1.18	6.63	d15	#4	18	2'-0"	24
18"	1'-10"	2"	2'-10"	1'-0"	1'-8"	2'-0"	2'-1"	8'-0"	14'-9"	1'-0"	4'-6"	0.74	1.32	8.60	d18	#4	22	2'-0"	29
21"	2'-1"	2"	3'-1"	1'-0"	1'-9"	2'-0"	2'-1"	9'-0"	15'-10"	1'-3"	5'-3"	0.93	1.63	11.03	d21	#4	24	2'-0"	32
24"	2'-4 1/2"	2"	3'-4 1/2"	1'-0"	2'-0"	2'-0"	2'-1"	10'-2"	17'-3"	1'-6"	6'-0"	1.18	2.00	13.88	d24	#4	28	2'-0"	37
27"	2'-7 1/2"	2"	3'-7 1/2"	1'-1 1/2"	2'-3"	2'-0"	2'-1"	11'-2"	18'-7 1/2"	1'-9"	6'-9"	1.42	2.41	14.83	d27	#4	30	2'-0"	40
30"	2'-11"	2"	3'-11"	1'-3"	2'-6"	2'-0"	2'-1"	12'-4"	20'-2"	2'-0"	7'-6"	1.71	2.87	20.49	d30	#4	32	2'-0"	43

PIPE I.D.	DIMENSIONS											PRE CAST CONC. CU. YD.	CAST-IN-PLACE CU. YD.	WELDED WIRE REINFORCEMENT SQ. YD.	REINFORCEMENT BARS				
	A	B	C	N	M	T	P	S	L	V	W				MARK(E)	SIZE	NO.	LENGTH	LB.
6"	9"	1 1/2"	1'-8 1/2"	1'-0"	1'-8"	3'-0"	3'-0"	5'-3"	13'-11"	1'-0"	3'-6"	0.23	1.07	5.29	d6	#4	16	2'-0"	21
12"	1'-3 1/2"	1 1/2"	2'-3"	1'-0"	1'-8"	3'-0"	3'-0"	8'-6"	17'-2"	1'-0"	4'-0"	0.57	1.38	8.62	d12	#4	22	2'-0"	29
15"	1'-6 1/2"	1 1/2"	2'-6"	1'-0"	1'-8"	3'-0"	3'-0"	10'-0"	18'-8"	1'-0"	4'-3"	0.77	1.53	10.35	d15	#4	26	2'-0"	35
18"	1'-10"	1 1/2"	2'-9 1/2"	1'-0"	1'-8"	3'-0"	3'-0"	11'-9"	20'-5"	1'-0"	4'-6"	1.04	1.70	12.47	d18	#4	28	2'-0"	37
21"	2'-1"	1 1/2"	3'-0 1/2"	1'-0"	1'-9"	3'-0"	3'-0"	13'-3"	22'-0"	1'-3"	5'-3"	1.31	2.11	15.77	d21	#4	34	2'-0"	45
24"	2'-4 1/2"	1 1/2"	3'-4"	1'-0"	2'-0"	3'-0"	3'-0"	15'-0"	24'-0"	1'-6"	6'-0"	1.66	2.59	17.62	d24	#4	38	2'-0"	51
27"	2'-7 1/2"	1 1/2"	3'-7"	1'-1 1/2"	2'-3"	3'-0"	3'-0"	16'-6"	25'-10 1/2"	1'-9"	6'-9"	1.99	3.11	24.10	d27	#4	40	2'-0"	53
30"	2'-11"	1 1/2"	3'-10 1/2"	1'-3"	2'-6"	3'-0"	3'-0"	18'-3"	28'-0"	2'-0"	7'-6"	2.41	3.70	29.13	d30	#4	44	2'-0"	59

**NOTES:**

- THE CAST IN PLACE (CIP) SLOPED HEADWALL SHALL BE CONSTRUCTED FLUSH WITH EXISTING OR PROPOSED SLOPE.
- CLASS SI CONCRETE SHALL BE USED THROUGHOUT.
- WELDED WIRE REINFORCEMENT SHALL BE EPOXY COATED 6x6-W4xW4, 58 LBS. PER 100 SQ.FT.
- ALL REINFORCEMENT BARS SHOWN SHALL BE EPOXY COATED (E).
- BAR BENDING DETAILS ARE DIMENSIONED OUT TO OUT OF BARS.
- COVER FROM FACE OF CONCRETE TO FACE OF REINFORCEMENT BAR SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN.
- PRECAST UNIT USE IS OPTIONAL. THE ENTIRE STRUCTURE MAY BE CAST IN PLACE.
- AFTER THE PRECAST SLOPED HEADWALL HAS BEEN PLACED, THE SPACE BETWEEN THE HEADWALL AND PIPE SHALL BE COMPLETELY FILLED WITH AN APPROVED NON-SHRINK GROUT WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5000 PSI.
- THE SLOPED HEADWALL DETAILS SHOWN ON THIS DRAWING ARE FOR USE ONLY WITH PIPES HAVING DIAMETER OR SPAN OF 30" OR LESS.
- ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
- I.D. DENOTES INSIDE DIAMETER OF PIPE. O.D. DENOTES OUTSIDE DIAMETER OF PIPE.

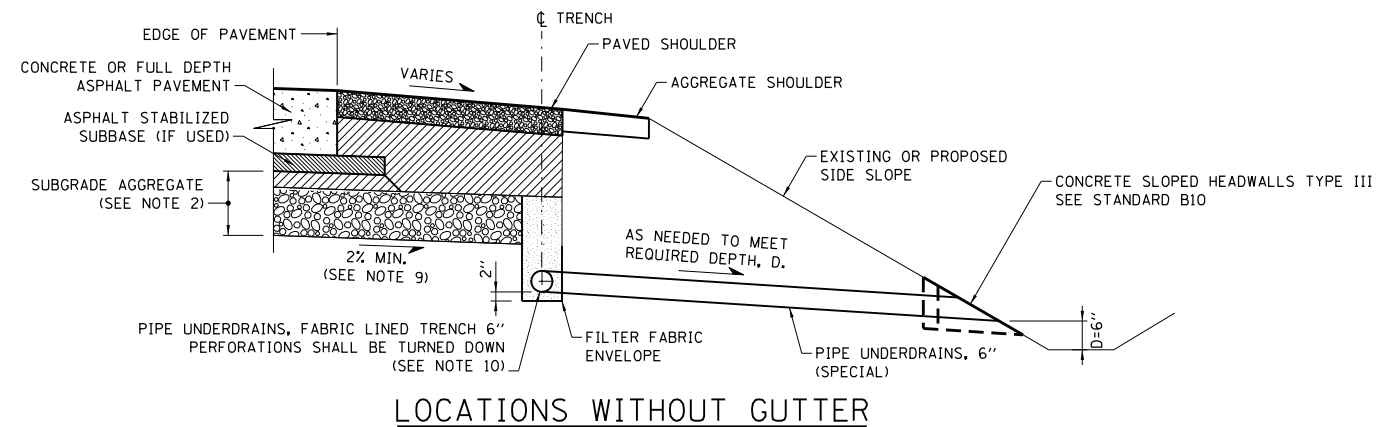
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 2-7-2012

DATE	REVISIONS
3-31-2014	REVISED QUANTITIES
3-11-2015	REVISED TABLES AND SECTIONS
3-31-2016	CHANGED TERMINOLOGY TO WELDED WIRE REINFORCEMENT
3-31-2017	REVISED TABLE (L)

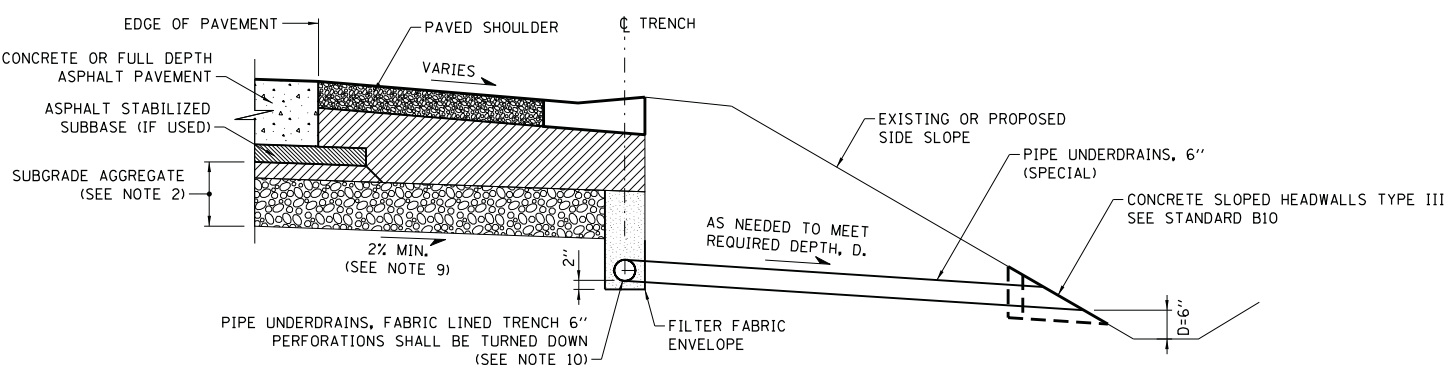
**Illinois Tollway**

**SLOPED HEADWALLS  
TYPE III DETAILS**

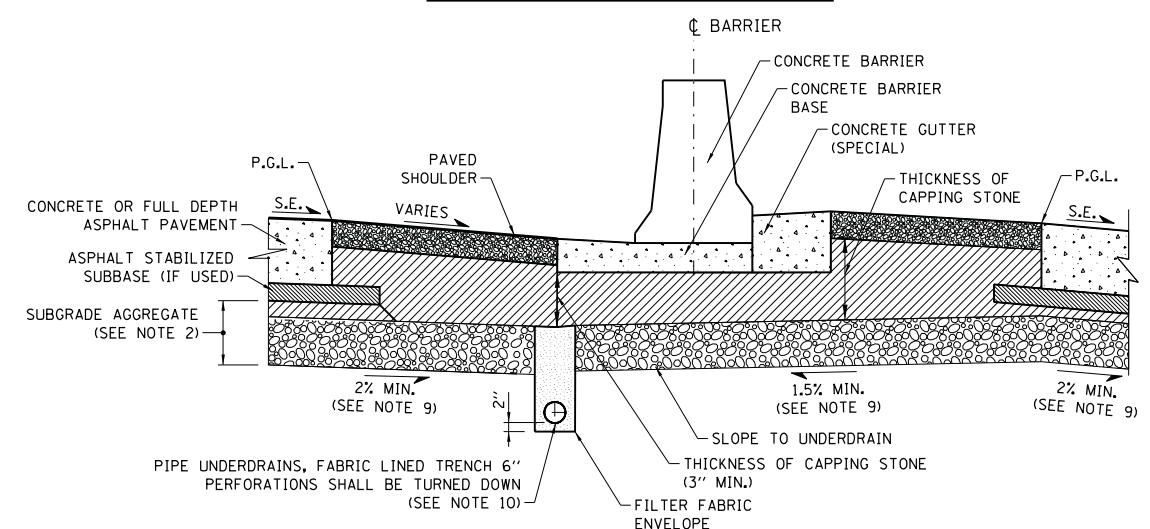
**STANDARD B10-09**



LOCATIONS WITHOUT GUTTER

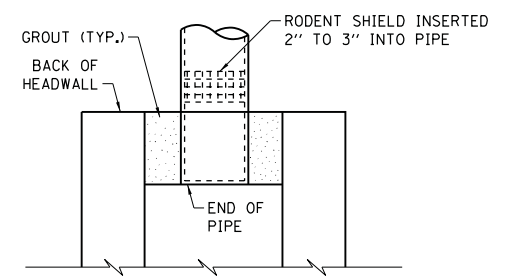


LOCATIONS WITH GUTTER

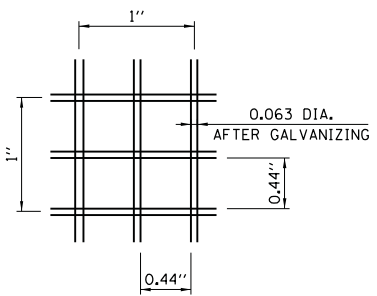


LOCATIONS WITH VARIABLE HEIGHT DOUBLE FACE BARRIER

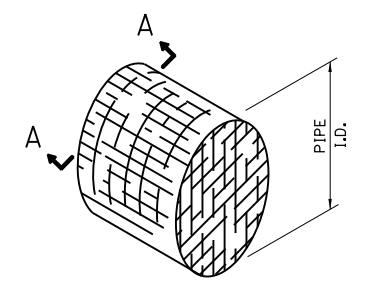
MAXIMUM ALLOWABLE DRAINAGE DISTANCE TO OUTLET OR SEPARATION DISTANCE BETWEEN OUTLETS	
ROADWAY PROFILE GRADE (%)	DISTANCE
≤ 1	250 FT.
BETWEEN 1 AND 2	375 FT.
≥ 2	500 FT. (NOTE 5)



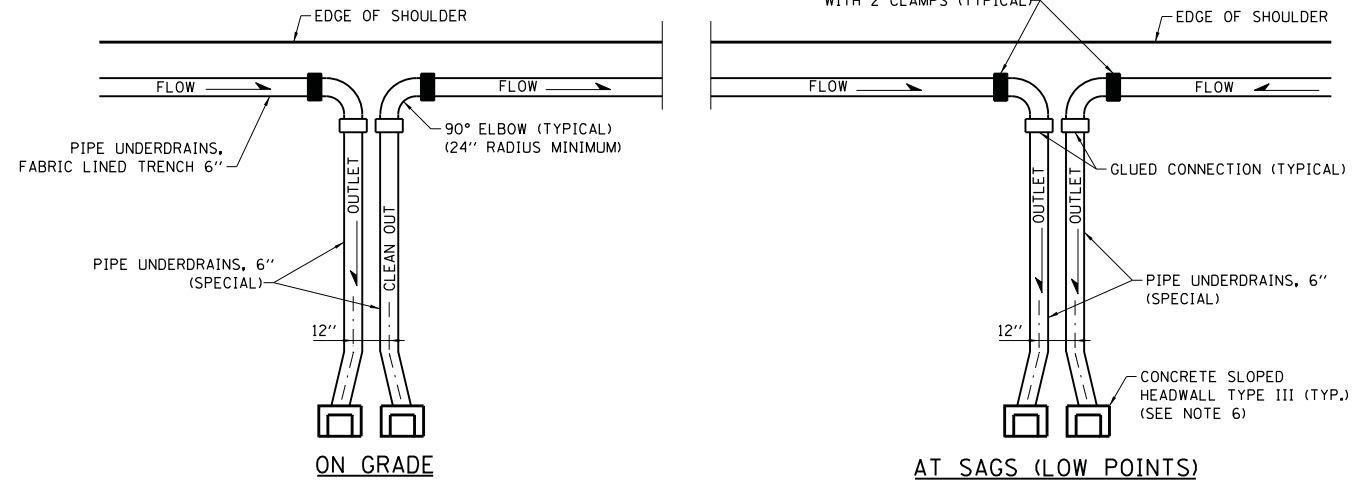
RODENT SHIELD PLACEMENT



SECTION A-A

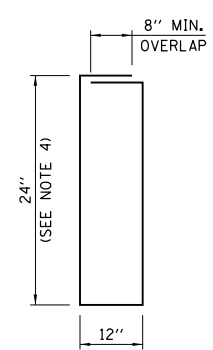


DETAIL OF RODENT SHIELD



DETAIL OF PIPE UNDERDRAIN OUTLETS

(SEE NOTE 7)



FILTER FABRIC ENVELOPE

NOTES FOR PIPE UNDERDRAIN

- FOR NEW CONSTRUCTION OR WIDENING PROJECTS, THE PIPE UNDERDRAIN INSTALLATION SHALL OCCUR AFTER SUBGRADE HAS BEEN PREPARED AND AFTER LIFT OF PGE BASE IS PLACED AND BEFORE 3" AND VARIES CA-6 CAPPING STONE IS PLACED. FOR PAVEMENT RUBBLIZATION PROJECTS, THE PIPE UNDERDRAIN SHALL BE INSTALLED PRIOR TO RUBBLIZATION.
- SUBGRADE AGGREGATE SHALL CONSIST OF A 3" AND VARIES CA-6 CAP ABOVE A PGE BASE, THICKNESS AS NOTED IN THE PLANS.
- ON SUPERELEVATED CURVES PLACE LONGITUDINAL UNDERDRAIN ON LOW SIDE ONLY.
- IN AREAS WHERE ROADWAY LONGITUDINAL GRADE IS LESS THAN 0.5%, DIMENSION WILL INCREASE AS NECESSARY TO MAINTAIN MINIMUM 0.5% SLOPE IN PIPE UNDERDRAIN.
- IF 500' MAXIMUM DISTANCE IS EXCEEDED, PIPE UNDERDRAIN SHALL BE INCREASED TO 8" DIAMETER AND TRENCH WIDTH INCREASED TO 16".
- AT OUTLET LOCATIONS, PIPE UNDERDRAINS SHALL SEPARATE SUFFICIENTLY TO PROVIDE SPACE FOR TWO CONCRETE SLOPED HEADWALLS, OR TWO PIPES CAN RUN PARALLEL INTO A LARGER HEADWALL.
- IN AREAS WHERE A CLOSED DRAINAGE SYSTEM EXISTS, THE PIPE UNDERDRAIN, 6" (SPECIAL) SHALL DRAIN TO THE NEAREST CATCH BASIN. THE UPPER END OF A RUN ON GRADE SHALL ALSO BE CONNECTED TO A CATCH BASIN TO BE USED AS A CLEANOUT.
- THE OUTLET END OF THE SUBDRAIN SHALL BE PROTECTED BY A PERMANENT RODENT SHIELD. THE RODENT SHIELD SHALL HAVE THE CONFIGURATION SHOWN AND BE CONSTRUCTED FROM HOT DIP GALVANIZED STEEL INDUSTRIAL WIRE CLOTH 3x3 MESH, 0.063"x0.063" WIRE SIZE IN ACCORDANCE WITH AASHTO M232 (ASTM A153).
- BOTTOM OF SUBGRADE AGGREGATE SLOPE FROM ROADWAY PROFILE GRADE SHALL NOT BE LESS THAN 1.5% TOWARD THE PIPE UNDERDRAIN IN SUPERELEVATED SECTIONS.
- A CA 16 BACKFILLED TRENCH SHALL BE USED WITH THE INSTALLATION OF A PIPE UNDERDRAIN SYSTEM, EXCEPT THE PERCENT PASSING THE NO. 16 (1.18 mm) SIEVE SHALL BE 4 ± 4 PERCENT.

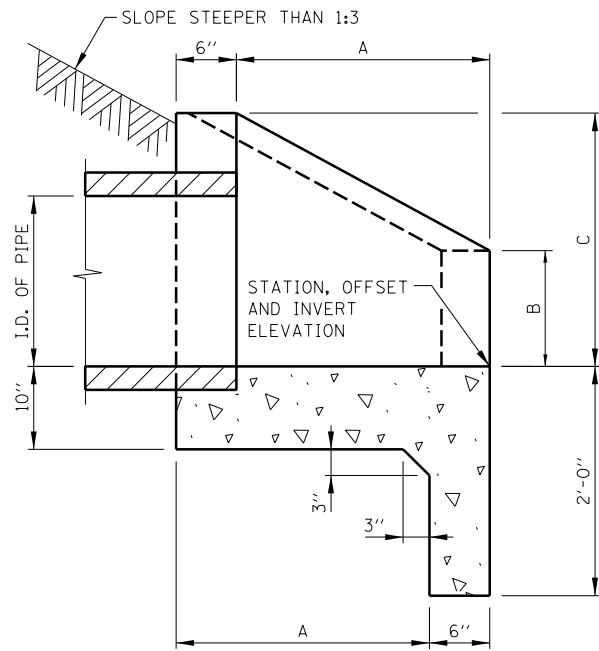
DATE	REVISIONS
11-01-12	REVISED NOTES, MODIFIED PIPE
11-01-12	UNDERDRAIN WITHOUT GUTTER.
3-11-2015	REVISED PIPE UNDERDRAIN DIMENSIONS.
3-31-2016	REMOVE RUBBLIZED DETAIL, ADD VAR. HEIGHT BARRIER DETAIL.
3-31-2017	REVISED SUBGRADE SCOPE IN LOCATIONS WITH VARIABLE HEIGHT DOUBLE FACE BARRIER
3-01-2018	ADDED MINIMUM THICKNESS OF CAPPING STONE



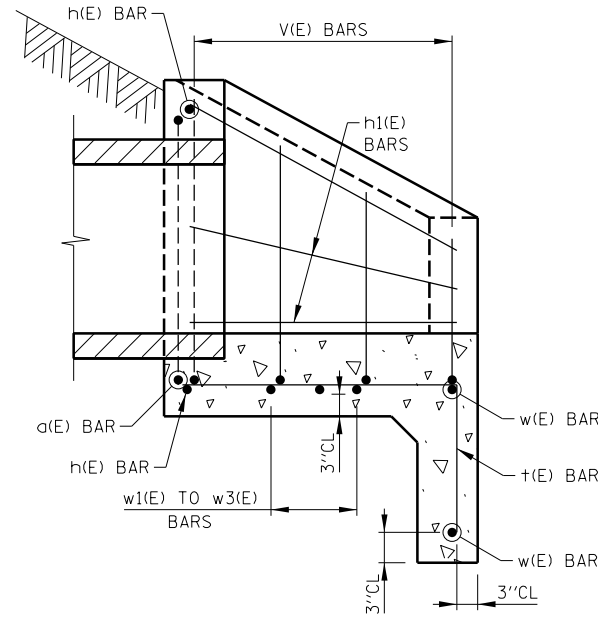
PIPE UNDERDRAINS

STANDARD B24-06

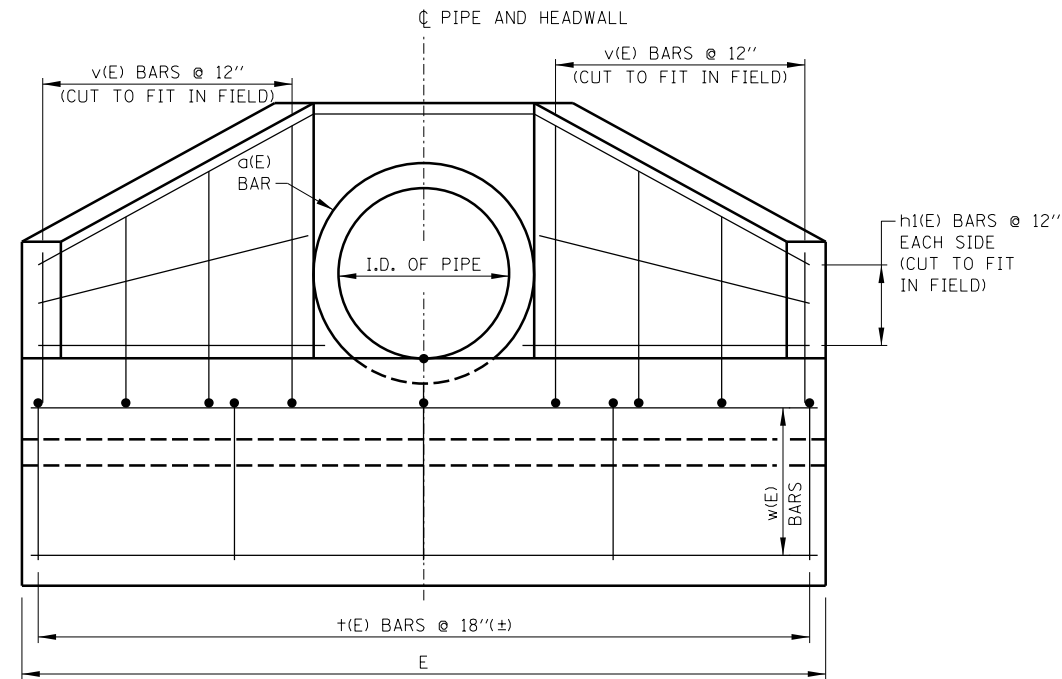
APPROVED *Paul Kovacs* CHIEF ENGINEERING OFFICER DATE 6-1-2009



SECTION A-A  
(DIMENSIONS)



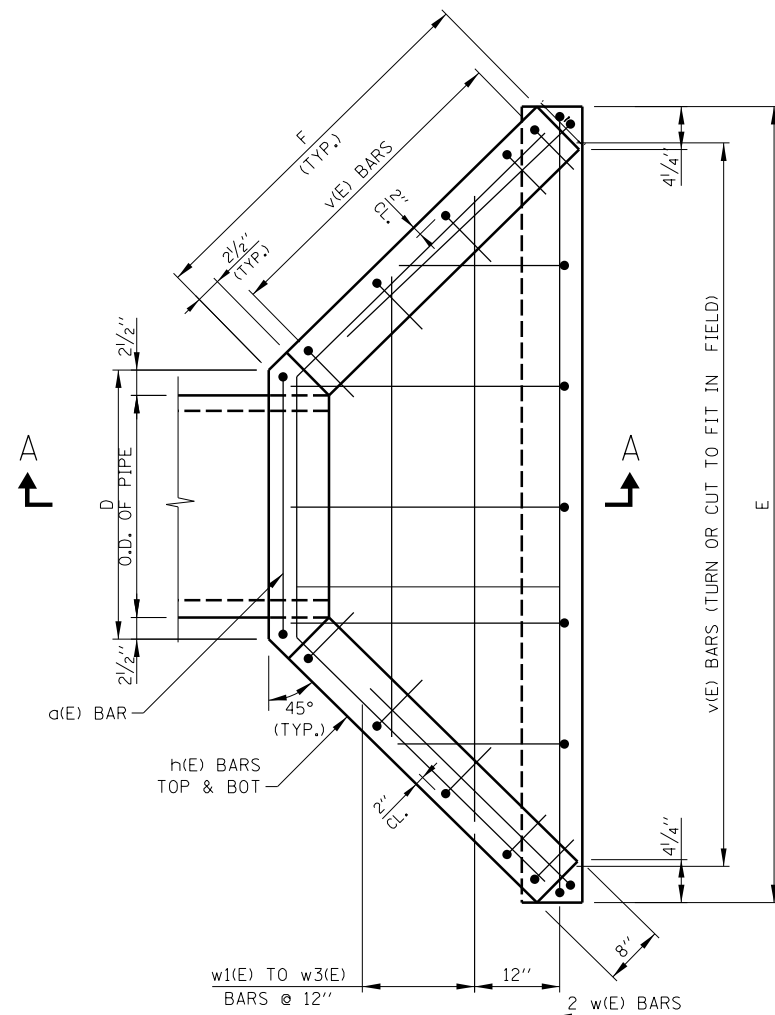
SECTION A-A  
(REINFORCEMENT)



FRONT ELEVATION

NOTES:

1. SLOPED HEADWALL TYPES I AND II SHALL BE CONSTRUCTED FLUSH WITH EXISTING OR PROPOSED SLOPE.
2. CLASS SI CONCRETE SHALL BE USED THROUGHOUT.
3. ALL REINFORCEMENT BARS SHOWN SHALL BE EPOXY COATED (E).
4. BAR BENDING DETAILS ARE DIMENSIONED OUT TO OUT OF BARS.
5. ALL EXPOSED EDGES SHALL HAVE A 3/4"-45° CHAMFER. CHAMFER ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW THE FINISHED GROUND LINE.
6. COVER FROM THE FACE OF CONCRETE TO FACE OF REINFORCEMENT BAR SHALL BE 3" FOR SURFACES FORMED AGAINST EARTH AND 2" FOR ALL OTHER SURFACES UNLESS OTHERWISE SHOWN.
7. CARE SHALL BE EXERCISED IN REMOVING ANY LENGTH OF EXISTING PIPE SO THE REMAINING PIPE IS UNDAMAGED AND FULLY FUNCTIONING.
8. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT.
9. TYPES I AND II HEADWALLS TO BE USED ONLY FOR SLOPES STEEPER THAN 1:3. DIMENSIONS AND QUANTITIES ARE BASES ON A SLOPE 1:2.
10. I.D. DENOTES INSIDE DIAMETER OF PIPE. O.D. DENOTES OUTSIDE DIAMETER OF PIPE.
11. FOR EROSION PROTECTION SEE STANDARD B19.



PLAN

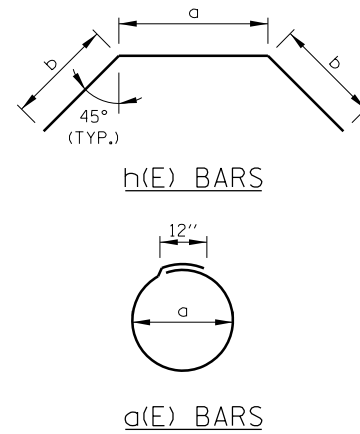


TABLE OF DIMENSIONS AND QUANTITIES FOR ONE HEADWALL

INSIDE DIA. OF PIPE	SLOPE OF FILL	DIMENSIONS						CONCRETE CLASS SI	REINF. BARS (POUND)
		A	B	C	D	E	F		
21"	1:3	2'-6"	1'-2"	2'-6"	2'-8"	7'-11 1/2"	3'-6 1/2"	1.6 C.Y.	75
24"	1:3	2'-10"	1'-4"	2'-9"	2'-11"	8'-10 1/2"	4'-2 1/2"	2.1 C.Y.	80
27"	1:3	3'-2"	1'-8"	3'-0"	3'-3"	9'-7"	4'-5 3/4"	2.0 C.Y.	100
30"	1:3	3'-4"	1'-7"	3'-3"	3'-6"	10'-5 1/2"	4'-11"	2.7 C.Y.	120
36"	1:3	4'-0"	1'-10"	3'-10"	4'-1"	12'-4 1/2"	5'-10 1/2"	3.6 C.Y.	145

TABLE OF REINFORCING STEEL FOR ONE HEADWALL

BAR MARK (E)	SIZE	21" I.D. PIPE				24" I.D. PIPE				27" I.D. PIPE				30" I.D. PIPE				36" I.D. PIPE			
		NO.	LENGTH	a	b	NO.	LENGTH	a	b	NO.	LENGTH	a	b	NO.	LENGTH	a	b	NO.	LENGTH	a	b
a	#4	1	9'-3"	31 1/2"	-	1	10'-2"	35"	-	1	11'-1"	38 1/2"	-	1	12'-0"	42"	-	1	13'-10"	49"	-
h	#4	2	8'-7"	2'-3"	3'-2"	2	10'-2"	2'-6"	3'-10"	2	11'-0"	2'-10"	4'-1"	2	9'-5"	3'-1"	3'-2"	2	11'-0"	3'-8"	4'-1"
h1	#4	4	3'-2"	-	-	4	3'-10"	-	-	4	4'-2"	-	-	5	4'-7"	-	-	6	5'-6"	-	-
v	#4	8	4'-0"	1'-0"	3'-0"	8	4'-3"	1'-0"	3'-3"	8	4'-6"	1'-0"	3'-6"	10	4'-9"	1'-0"	3'-9"	10	5'-4"	1'-0"	4'-4"
t	#4	6	4'-0"	1'-6"	2'-6"	6	4'-3"	1'-6"	2'-9"	6	4'-8"	1'-6"	3'-1"	7	4'-10"	1'-6"	3'-4"	8	5'-4"	1'-6"	3'-10"
w	#4	2	7'-7"	-	-	2	8'-6"	-	-	2	10'-1"	-	-	2	10'-0"	-	-	2	12'-0"	-	-
w1	#4	1	6'-0"	-	-	1	6'-11"	-	-	1	7'-11"	-	-	1	8'-7"	-	-	1	10'-6"	-	-
w2	#4	1	4'-0"	-	-	1	4'-11"	-	-	1	5'-11"	-	-	1	6'-7"	-	-	1	8'-6"	-	-
w3	#4	-	-	-	-	-	-	-	-	-	-	-	-	1	4'-7"	-	-	1	7'-6"	-	-

HEADWALL - TYPE I  
(PIPE DIAMETER ≤ 36")



DATE	REVISIONS
2-07-2012	ADDED 21" AND 27" DIA PIPE AND REVISED TABLE QUANTITIES
3-11-2015	REVISED NOTES

HEADWALLS  
TYPE I AND II

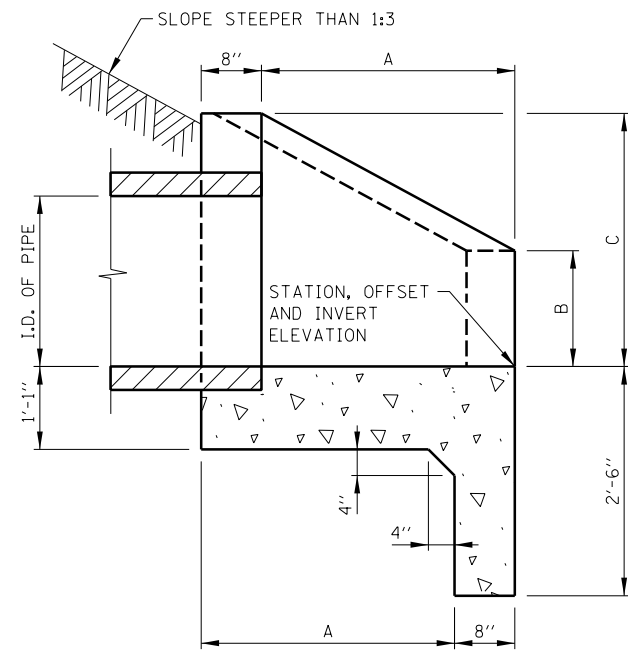
STANDARD B30-02

APPROVED: *Paul Kovacs*  
CHIEF ENGINEER DATE 2-7-2012

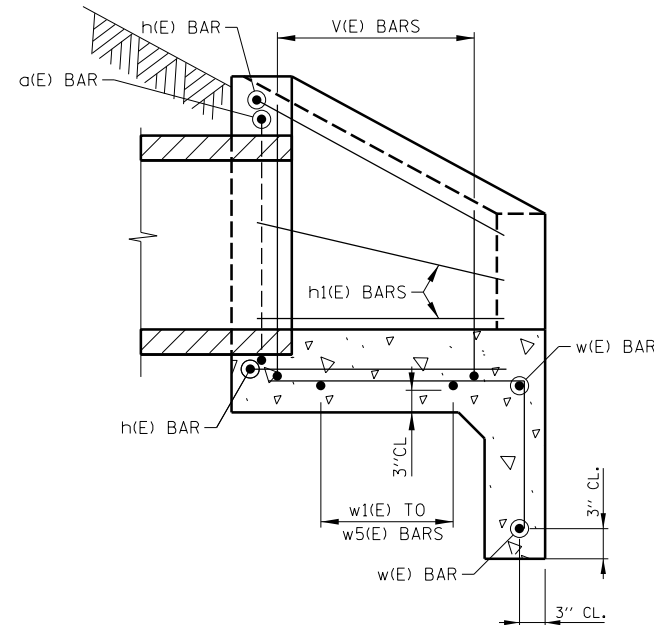


**NOTE:**

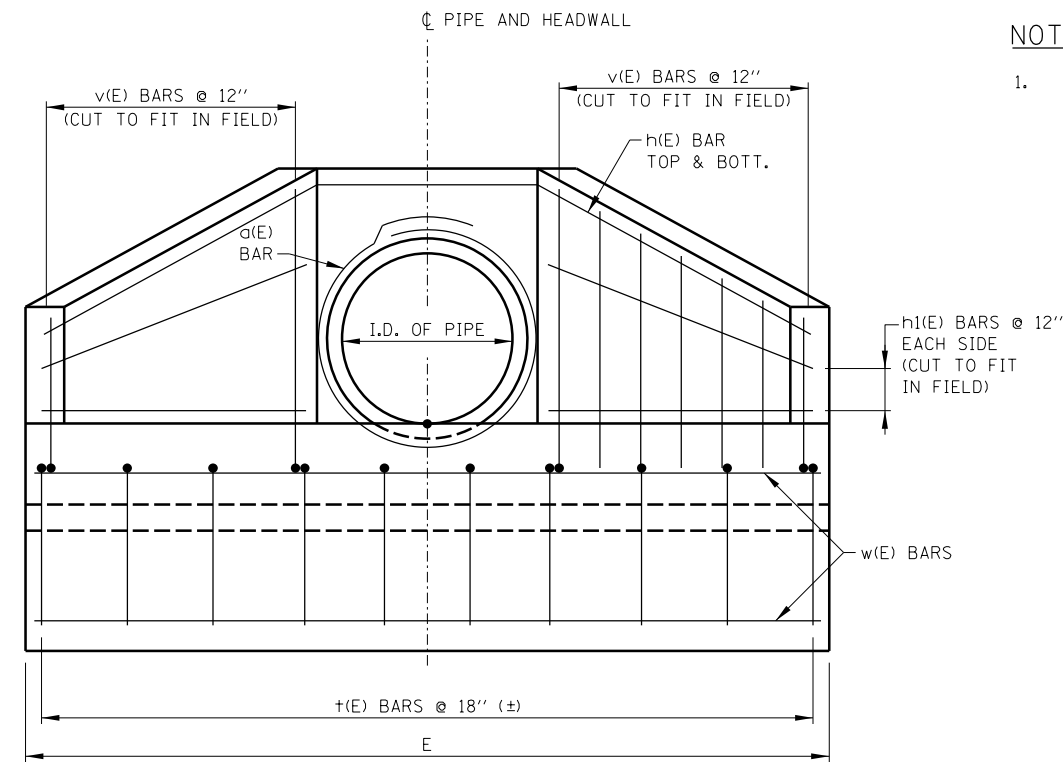
1. FOR ADDITIONAL NOTES SEE SHEET 1 IN THIS SERIES.



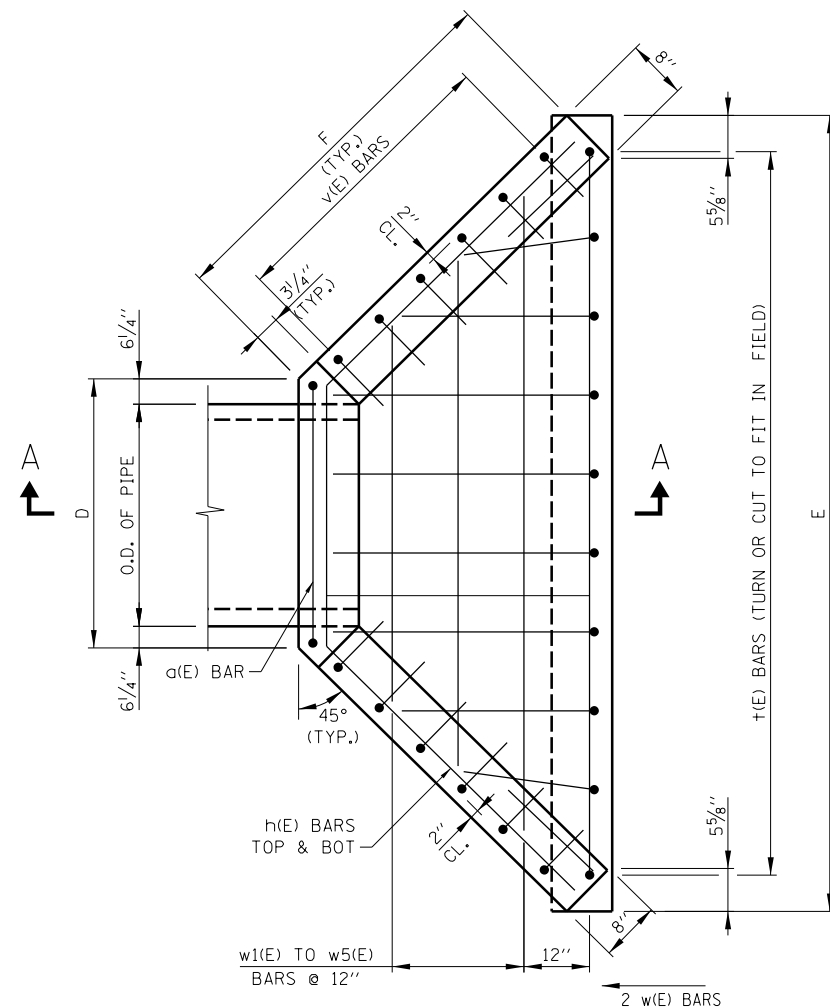
**SECTION A-A**  
(DIMENSIONS)



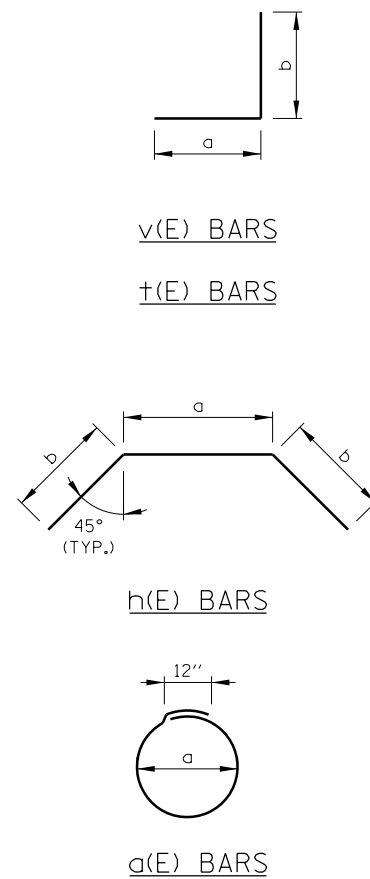
**SECTION A-A**  
(REINFORCEMENT)



**FRONT ELEVATION**



**PLAN**



**HEADWALL - TYPE II**  
(PIPE DIAMETER ≥ 36")

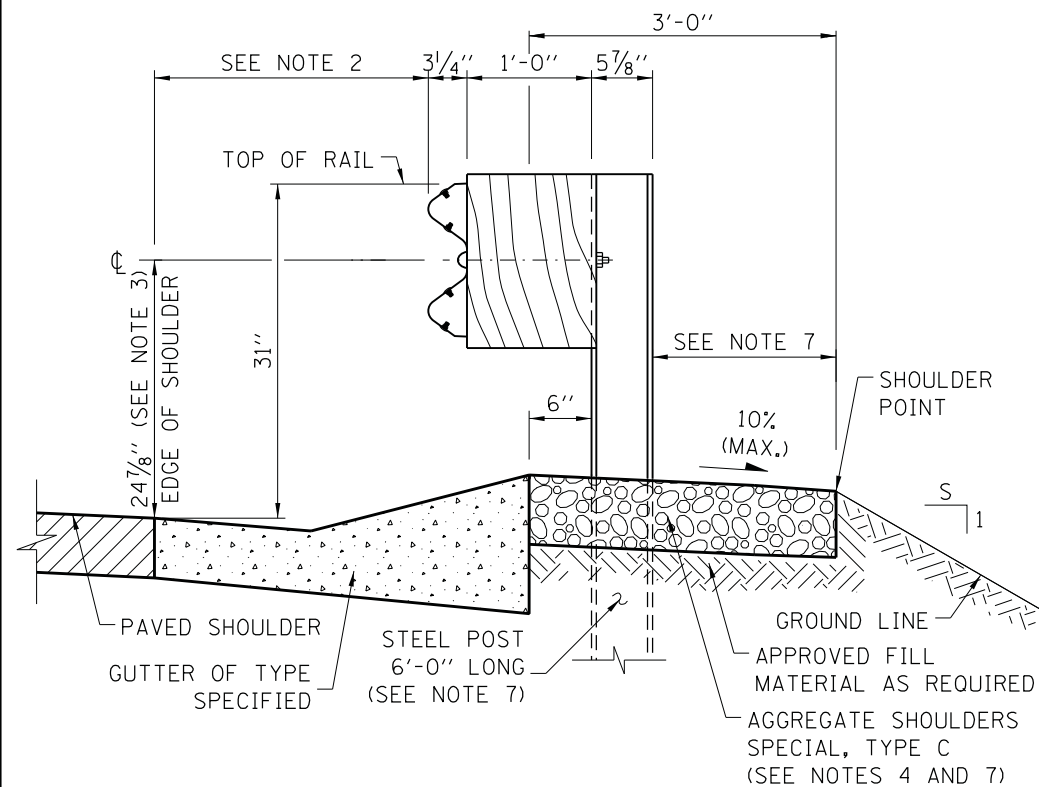
**TABLE OF BARS FOR ONE HEADWALL**

BAR MARK (E)	SIZE	NO.	42" PIPE			48" PIPE			54" I.D. PIPE			60" I.D. PIPE					
			LENGTH	a	b	NO.	LENGTH	a	b	NO.	LENGTH	a	b	NO.	LENGTH	a	b
a	#5	2	15'-11"	4'-9"	-	2	17'-9"	5'-4"	-	2	19'-7"	5'-11"	-	2	21'-5"	6'-6"	-
h	#5	2	17'-7"	5'-3"	6'-2"	2	19'-9"	5'-9"	7'-0"	2	22'-0"	6'-4"	7'-10"	2	24'-1"	6'-9"	8'-8"
h1	#5	8	6'-6"	-	-	10	7'-4"	-	-	10	8'-2"	-	-	12	9'-0"	-	-
†	#5	10	6'-1"	1'-6"	4'-7"	11	6'-8"	1'-6"	5'-2"	13	7'-3"	1'-6"	5'-9"	15	7'-10"	1'-6"	6'-4"
v	#5	14	5'-10"	1'-0"	4'-10"	16	6'-6"	1'-0"	5'-6"	16	7'-1"	1'-0"	6'-1"	18	7'-8"	1'-0"	6'-8"
w	#5	2	14'-3"	-	-	2	15'-10"	-	-	2	17'-8"	-	-	2	18'-10"	-	-
w1	#5	1	12'-0"	-	-	1	13'-8"	-	-	1	15'-2"	-	-	1	16'-10"	-	-
w2	#5	1	10'-0"	-	-	1	11'-8"	-	-	1	13'-4"	-	-	1	15'-0"	-	-
w3	#5	1	8'-0"	-	-	1	9'-8"	-	-	1	11'-6"	-	-	1	13'-2"	-	-
w4	#5	-	-	-	-	1	8'-0"	-	-	1	9'-8"	-	-	1	11'-4"	-	-
w5	#5	-	-	-	-	-	-	-	-	-	7'-8"	-	-	1	9'-6"	-	-

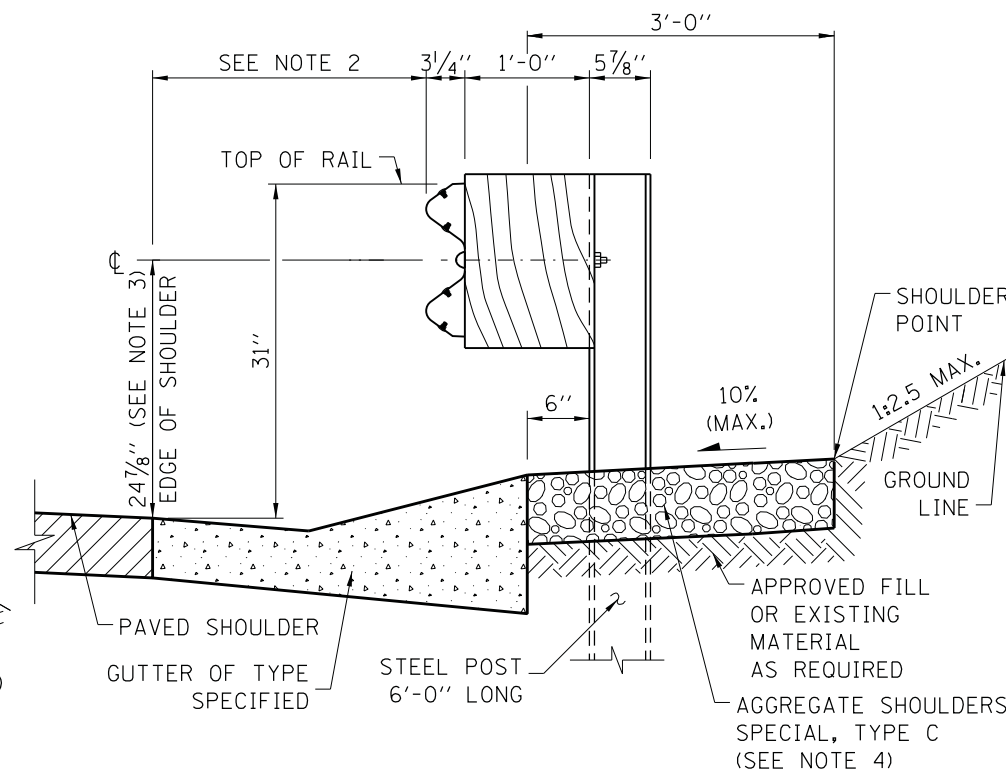
**TABLE OF DIMENSIONS AND QUANTITIES FOR ONE HEADWALL**

INSIDE DIA. OF PIPE	SLOPE OF FILL	DIMENSIONS						CONCRETE CLASS SI	REINF. BARS (POUND)
		A	B	C	D	E	F		
42"	1:3	4'-5"	2'-2"	4'-4 1/2"	5'-6"	14'-9"	6'-6 1/4"	3.8 C.Y.	400
48"	1:3	5'-0"	2'-5"	4'-11"	6'-0"	16'-4 3/4"	7'-4 1/4"	4.1 C.Y.	450
54"	1:3	5'-7"	2'-8"	5'-5 1/2"	6'-7"	18'-1 3/4"	8'-2"	5.6 C.Y.	500
60"	1:3	6'-2"	2'-11"	6'-0"	7'-0"	19'-2 3/4"	9'-0"	6.5 C.Y.	600

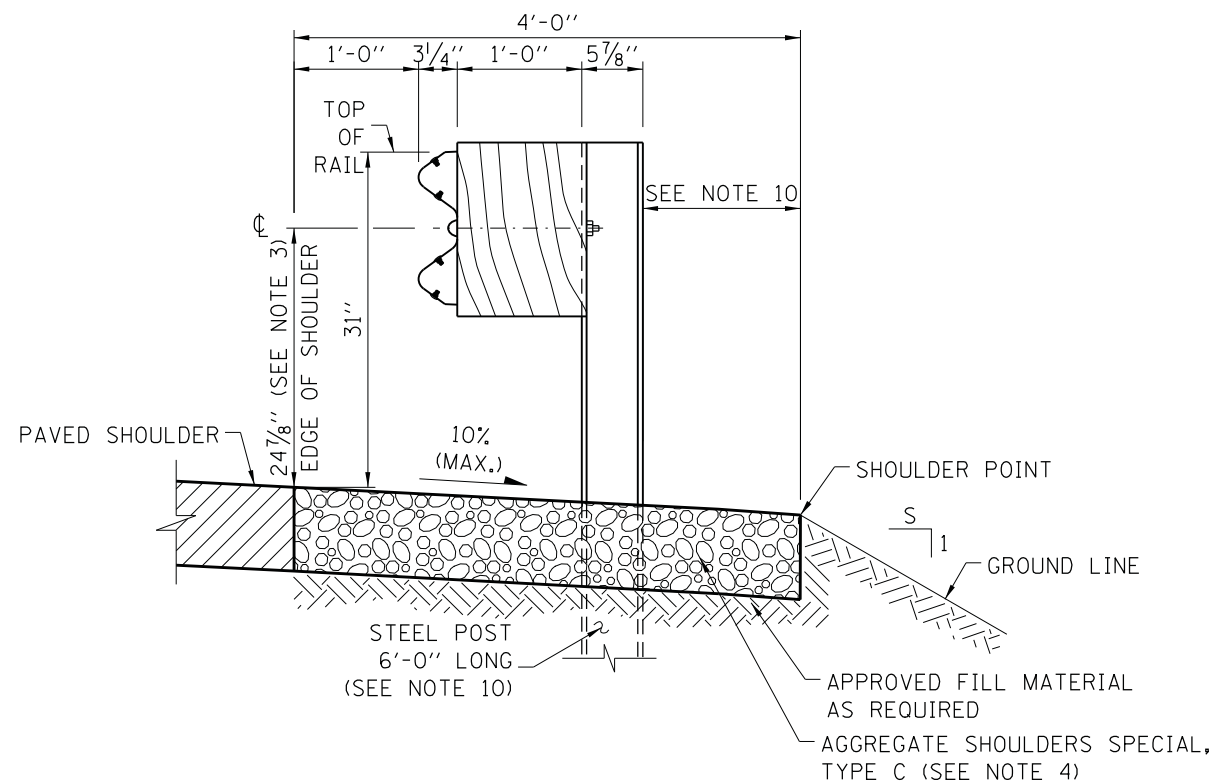




FILL SECTION WITH GUTTER



CUT SECTION WITH GUTTER



SECTION WITHOUT GUTTER

GUARDRAIL INSTALLATION DETAILS

NOTES:

- 1'-0" OFFSET FROM EDGE OF PAVED SHOULDER TO FACE OF RAIL IS TYPICAL FOR ALL INSTALLATIONS WITHOUT GUTTER EXCEPT AS OTHERWISE DETAILED IN THE PLAN DRAWINGS.
- WHERE GUTTERS SUCH AS TYPE G-2, G-3 ARE REQUIRED IN FRONT OF THE GUARDRAIL, THE POSTS SHALL BE LOCATED 6" BEHIND THE GUTTER, OR AS OTHERWISE DETAILED IN THE PLANS. THE OFFSET FROM THE EDGE OF SHOULDER TO THE FACE OF THE GUARDRAIL SHALL BE AS SHOWN ON STANDARD B28.
- THE 24 7/8" TYPICAL RAIL HEIGHT IS MEASURED FROM EXISTING SURFACE 1'-0" IN FRONT OF RAIL, OR FROM EDGE OF SHOULDER/EDGE OF GUTTER WHEN EDGE IS MORE THAN 1'-0" IN FRONT OF RAIL TO CENTER OF RAIL.
- WHERE GUTTER IS PROPOSED WITH GUARDRAIL, A 6" MINIMUM THICKNESS OF AGGREGATE SHOULDERS SPECIAL, TYPE C SHALL BE PLACED BEHIND GUTTER. FOR GUARDRAIL WITHOUT GUTTER, AGGREGATE SHOULDER, TYPE C, OF THE SAME THICKNESS AS PAVED SHOULDER SLOPING AWAY TO A 6" MIN. THICKNESS.
- GUARDRAIL POSTS SHALL NOT BE ATTACHED TO ANY STRUCTURE.
- PLASTIC BLOCK-OUTS SHALL NOT BE ALLOWED AS A SUBSTITUTE FOR WOOD BLOCK-OUTS ON NEW INSTALLATIONS.
- WHEN S IS LESS THAN OR EQUAL TO 3 AND 3'-0" AGGREGATE SHOULDER WIDTH CANNOT BE MET, THE POST LENGTH SHALL BE 9'-0" AND THE AGGREGATE SHOULDER WIDTH SHALL BE 1'-0" MIN. BEHIND THE POST TO THE SHOULDER POINT.
- ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENTS (V:H).
- UNDER NO CIRCUMSTANCES SHALL AN EXISTING GUARDRAIL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE EXTENDED, ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
- WHEN S IS LESS THAN OR EQUAL TO 3, THE POST LENGTH SHALL BE 9'-0" AND 4'-0" AGGREGATE SHOULDER WIDTH MAINTAINED.
- THE GUARDRAIL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURES DEFINED IN THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.
- GUARDRAIL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENT. WHEN NECESSARY USE LEAVE-OUT DETAIL ON SHEET 3 OF 4 OF THIS SERIES.

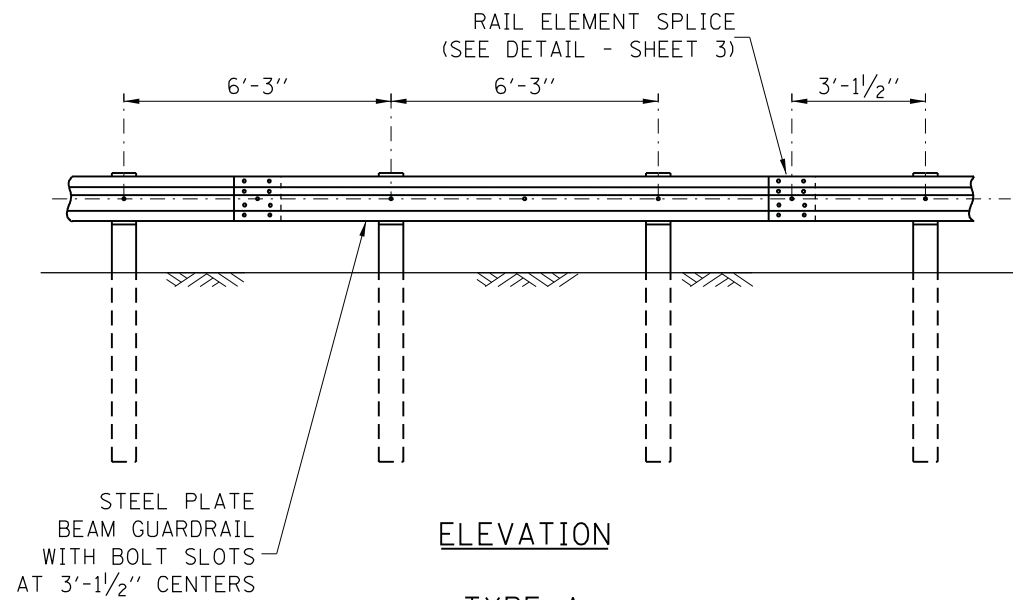


GALVANIZED STEEL PLATE BEAM GUARDRAIL

STANDARD C1-10

DATE	REVISIONS
11-01-12	MODIFIED AGGREGATE SHOULDERS
03-31-14	REMOVED SECONDARY HOLE FROM POST AND UPDATED NOTES.
03-31-16	ADDED SECTION, REV'D SHLDR
03-31-17	REVISED NOTES
03-01-18	CORRECTED NOTES, ADDED TABLES 2A AND 2B.

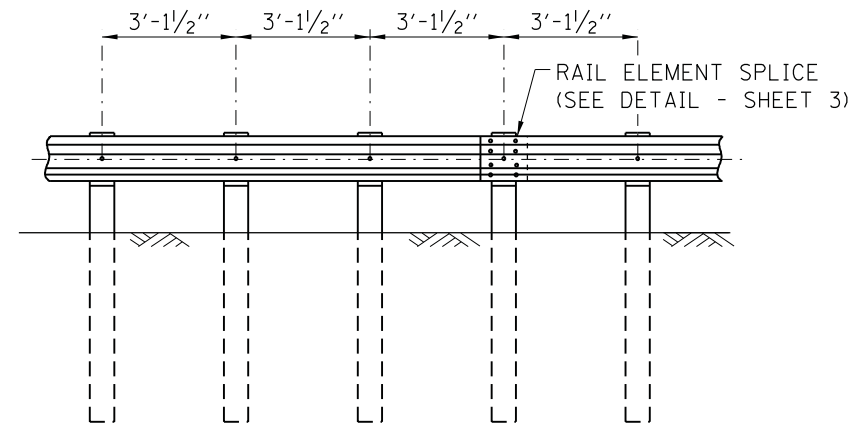
APPROVED: *Paul Kovacs* DATE 5-1-2009  
CHIEF ENGINEERING OFFICER



ELEVATION

**TYPE A**

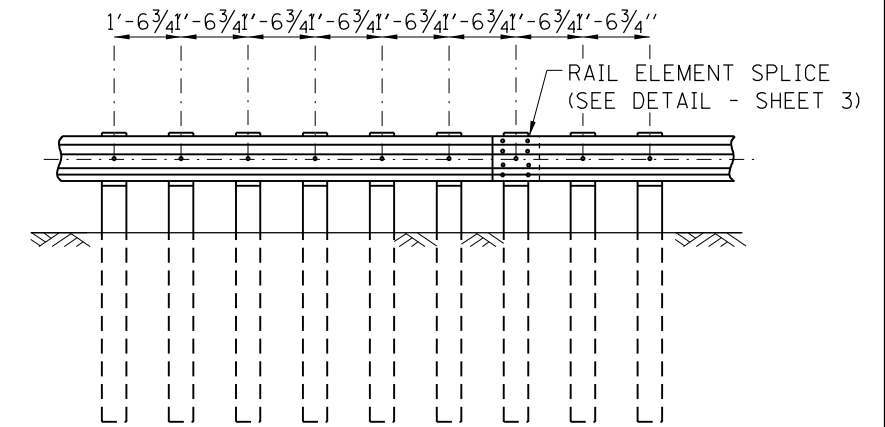
6'-3" TYPICAL POST SPACING



ELEVATION

**TYPE B**

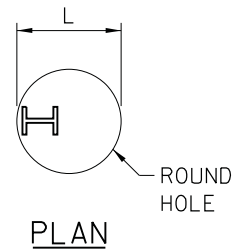
3'-1/2" 1/2 POST SPACING



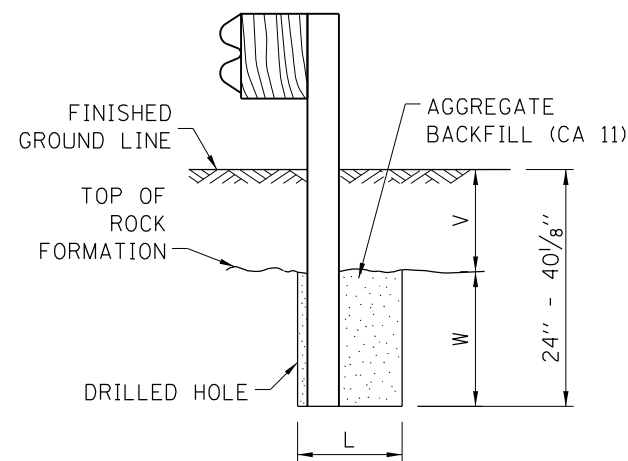
ELEVATION

**TYPE C**

1'-6 3/4" 1/4 POST SPACING



PLAN

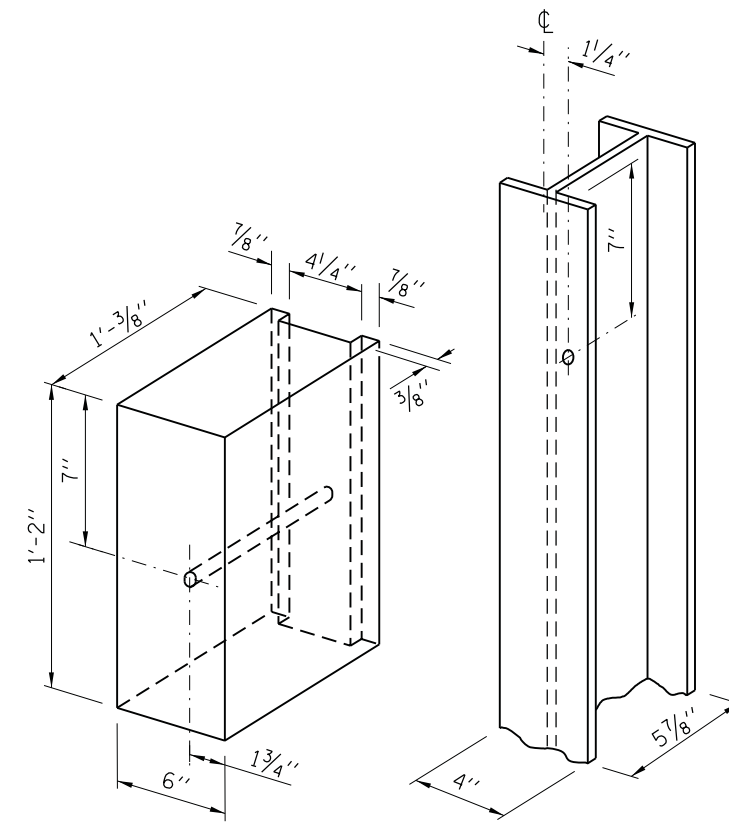


ELEVATION

FOOTING FOR POST WHEN ROCK FORMATION IS ENCOUNTERED

TABLE 1		
V	W	L
0 - 16 1/8"	24"	21"
> 16 1/8" - 28 1/8"	12"	8"
> 28 1/8" - 40 1/8"	12" - 0 (*)	8"

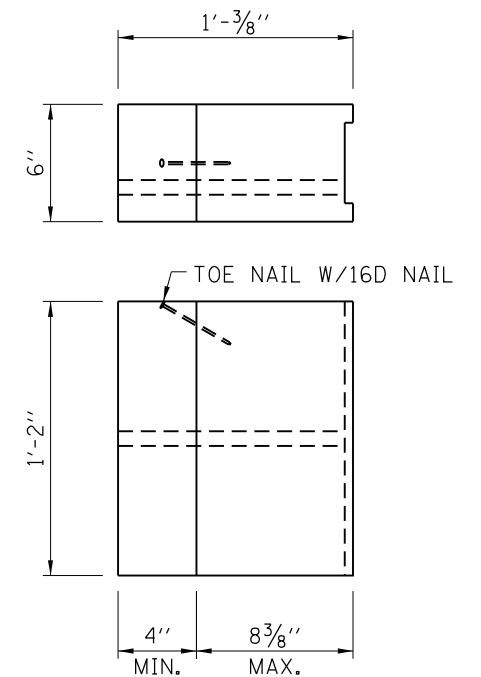
\* V + W = 40 1/8"



**NOTES:**

ALL HOLES 3/4" DIA.

WOOD BLOCK-OUT AND STEEL POST DETAILS



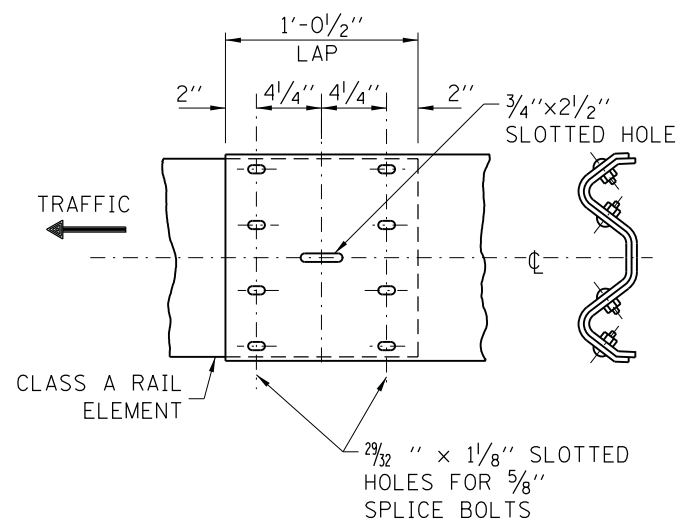
TWO-PIECE WOOD BLOCK-OUT OPTION



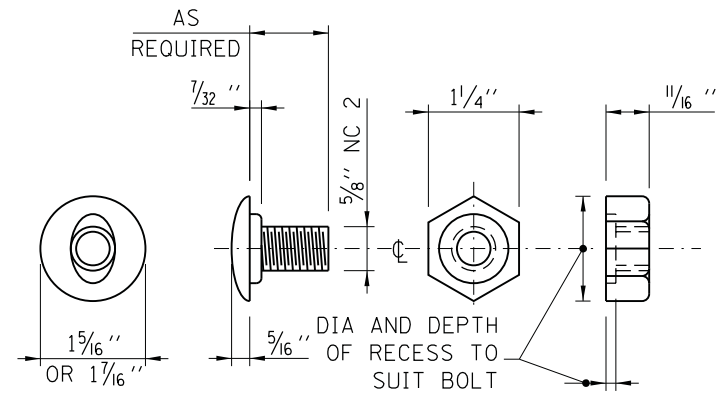
GALVANIZED STEEL PLATE BEAM GUARDRAIL

STANDARD C1-10

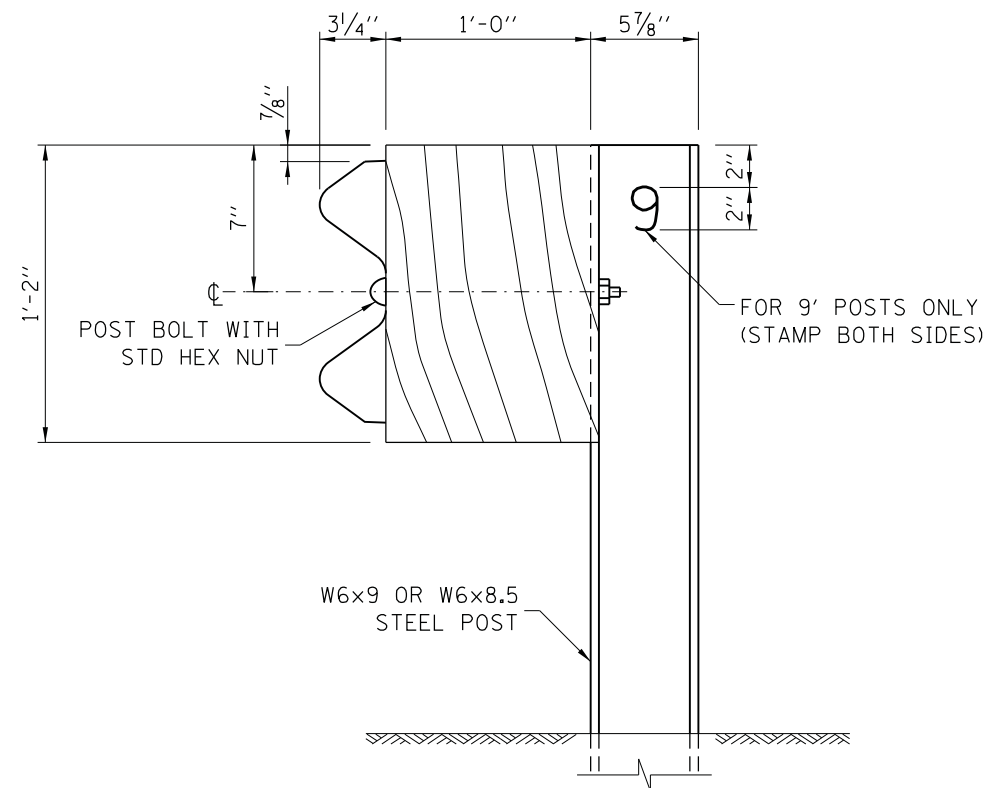
APPROVED: *Paul Kovacs* DATE 5-1-2009  
CHIEF ENGINEERING OFFICER



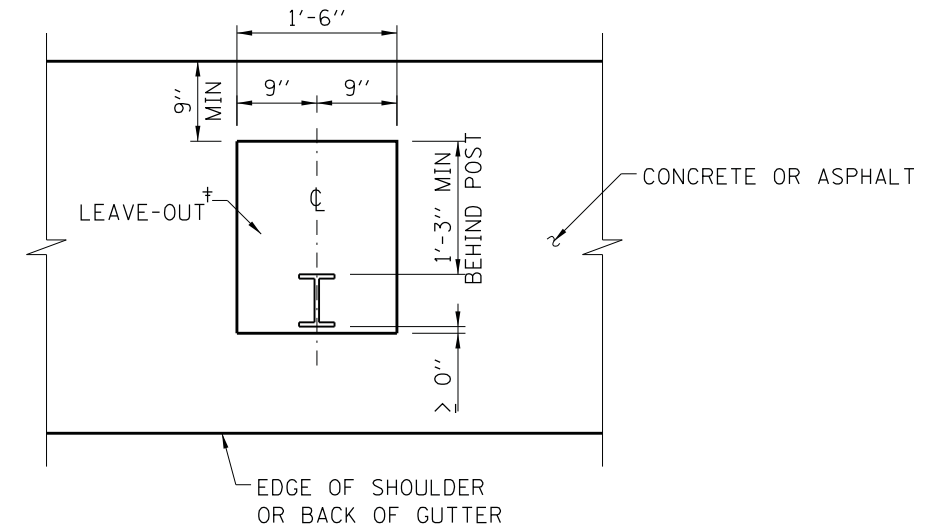
RAIL ELEMENT SPLICE



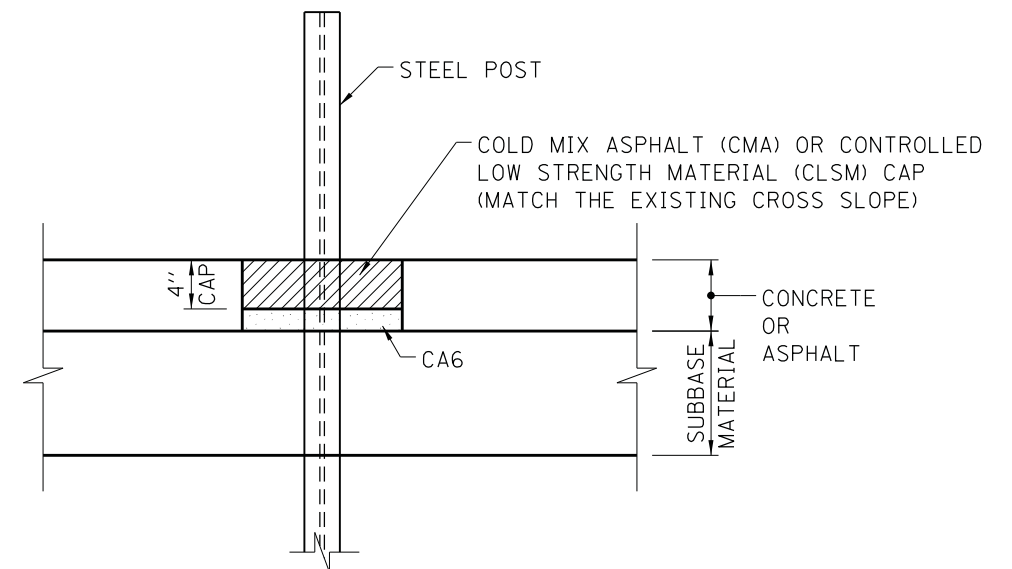
POST OR SPLICE BOLT & NUT



STEEL POST CONSTRUCTION



PLAN



ELEVATION

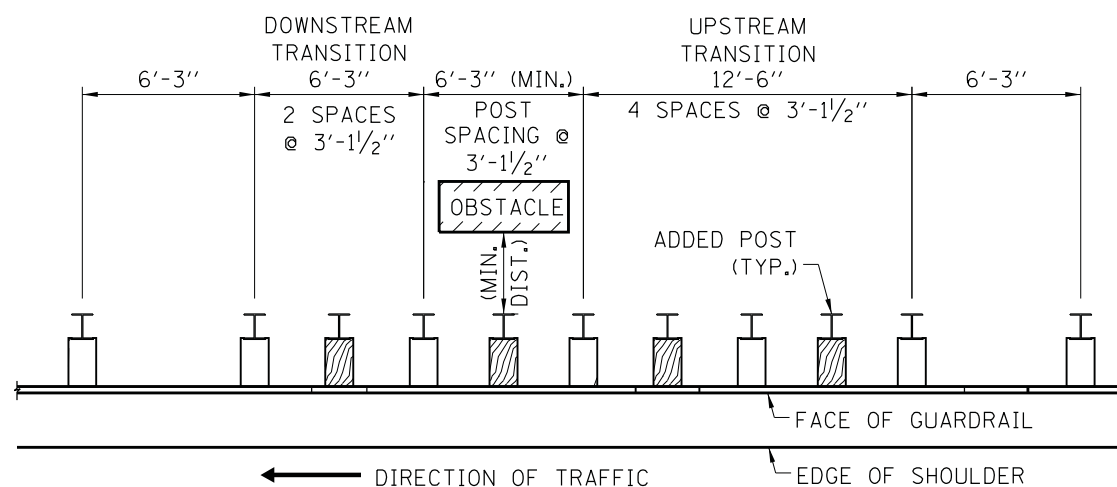
LEAVE-OUTS

† THE AREA AROUND THE POST THAT IS EITHER OMITTED FROM THE NEW CONSTRUCTION OR REMOVED FROM THE EXISTING CONCRETE OR ASPHALT.

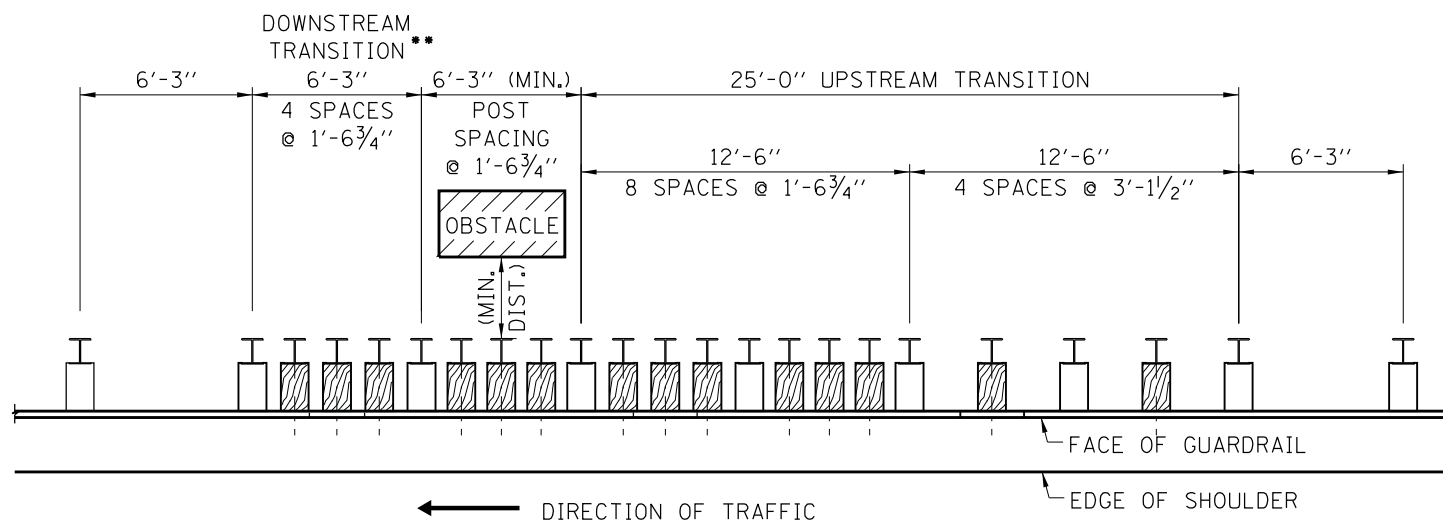


TABLE 2A BARRIER CLEARANCE DISTANCE (MGS) NEW CONSTRUCTION/RECONSTRUCTION		
GUARDRAIL SYSTEM	POST SPACING	MINIMUM DISTANCE
TYPE A	6'-3"	39"
TYPE B 1/2 POST SPACING	3'-1 1/2"	34"
TYPE C 1/4 POST SPACING	1'-6 3/4"	26"

TABLE 2B BARRIER CLEARANCE DISTANCE (MGS) REHABILITATION				
GUARDRAIL SYSTEM	POST SPACING	MINIMUM DISTANCE		
		EXISTING BREAKAWAY LIGHT POLES	ALL OTHER OBSTACLES	
			NCHRP 350	MASH
TYPE A	6'-3"	20"	28"	39"
TYPE B 1/2 POST SPACING	3'-1 1/2"	N/A	23"	34"
TYPE C 1/4 POST SPACING	1'-6 3/4"	N/A	14"	26"



TRANSITION TO 1/2-POST SPACING



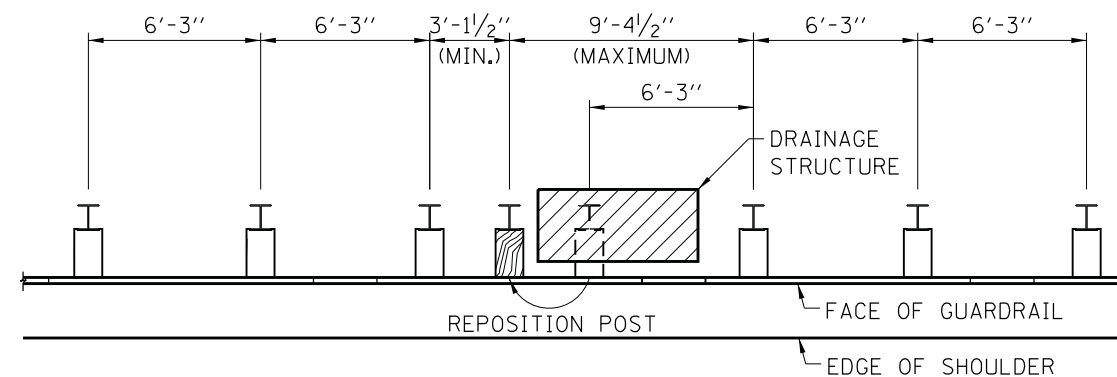
TRANSITION TO 1/4-POST SPACING

\*\* WHEN LENGTH OF OBSTACLES IS 1'-3" OR LESS, THE DOWNSTREAM TRANSITION SHALL BE OMITTED.

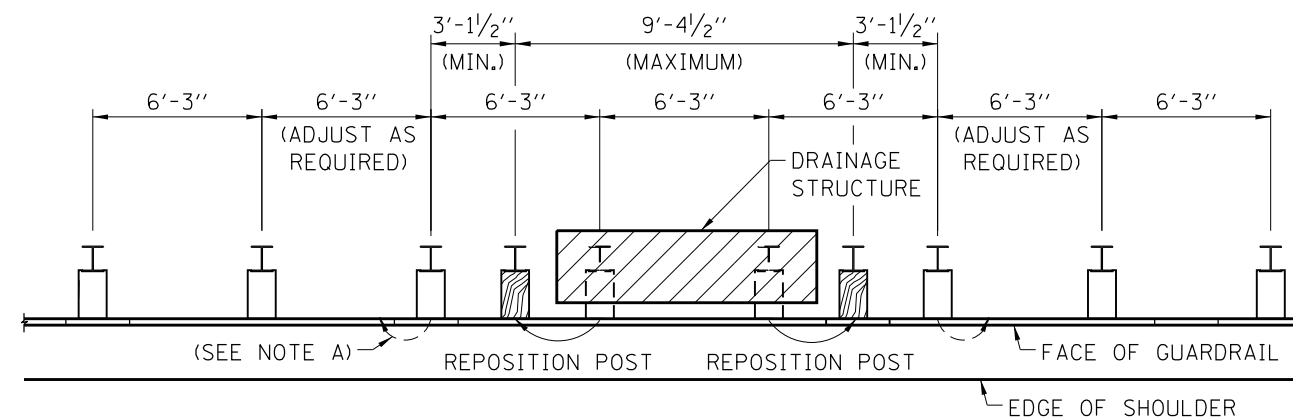
POST SPACING TRANSITIONS

NOTE: NO MODIFICATIONS OF ANY KIND TO THE TRANSITION POST SPACING ARE ALLOWED.

APPROVED: *Paul Kovacs* DATE 5-1-2009  
CHIEF ENGINEERING OFFICER



TYPE A GUARDRAIL- DRAINAGE STRUCTURE CONFLICT  
ONE POST



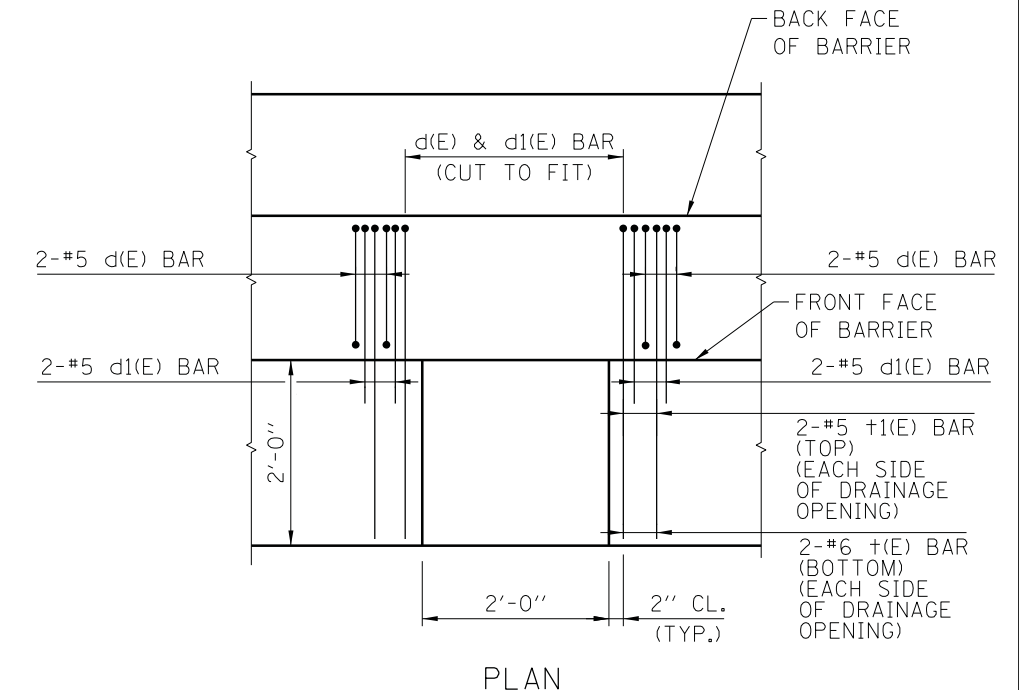
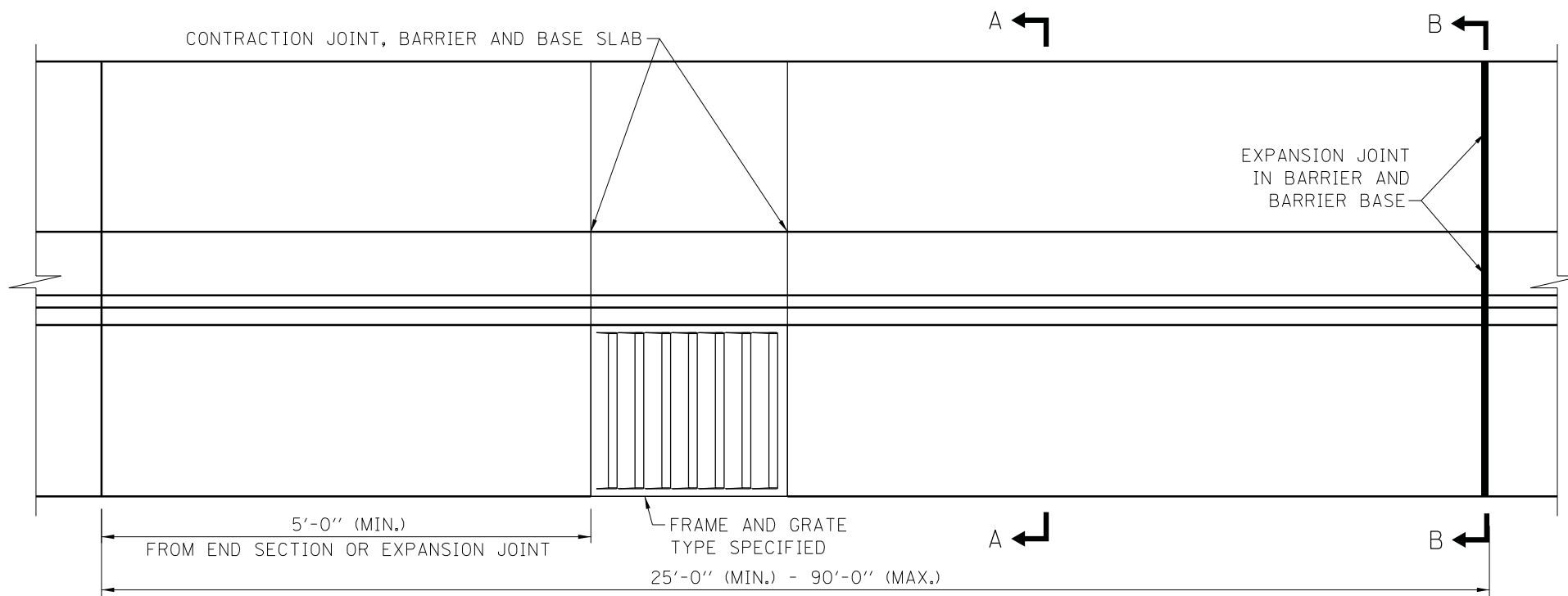
TYPE A GUARDRAIL - DRAINAGE STRUCTURE CONFLICT  
TWO POSTS

DRAINAGE STRUCTURE CONFLICTS

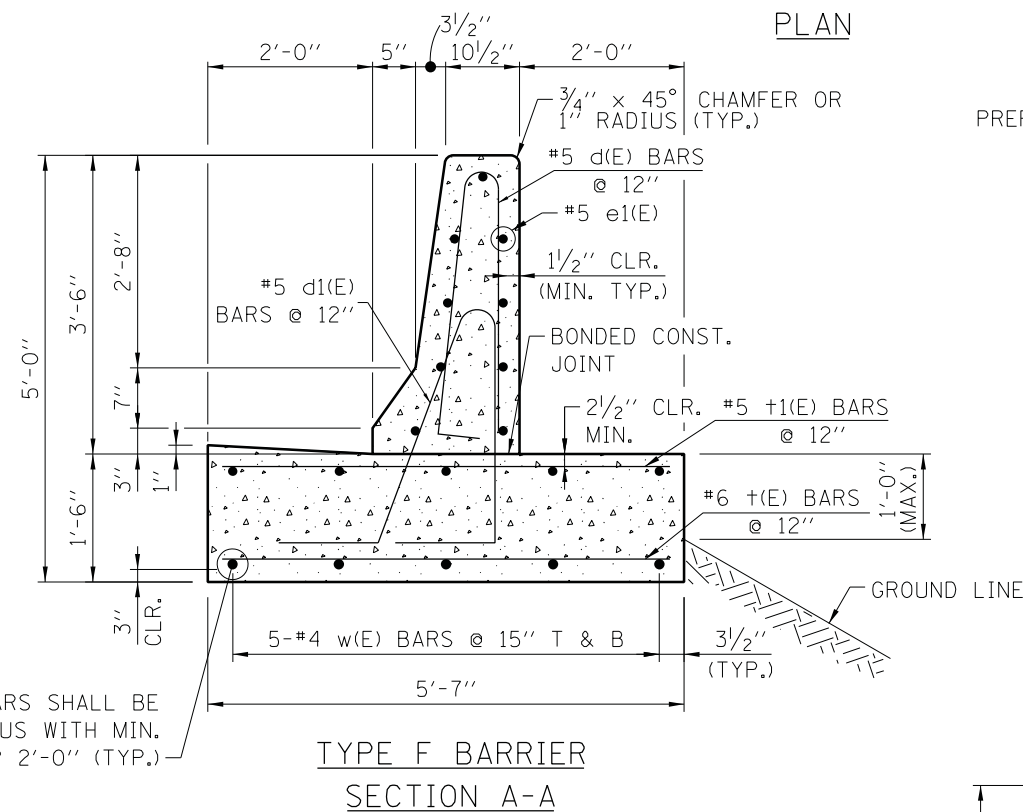
NOTES:

- A. GUARDRAIL POSTS SHALL NOT BE ELIMINATED; ALL POSTS MUST BE USED. POSTS ADJACENT TO REPOSITIONED POSTS MAY NEED TO BE MOVED TO KEEP 3'-1 1/2" MINIMUM SPACING.
- B. GUARDRAIL POSTS SHALL NOT BE SET BACK TO AVOID CONFLICTS WITH A DRAINAGE STRUCTURE.
- C. THIS DETAIL ALSO APPLIES TO OTHER UNDERGROUND CONFLICTS.



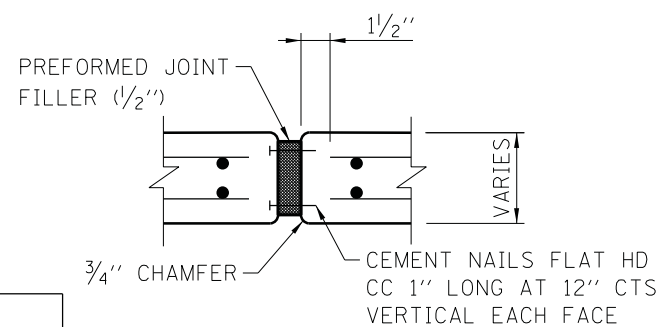


PLAN  
REINFORCEMENT AROUND  
DRAINAGE STRUCTURE

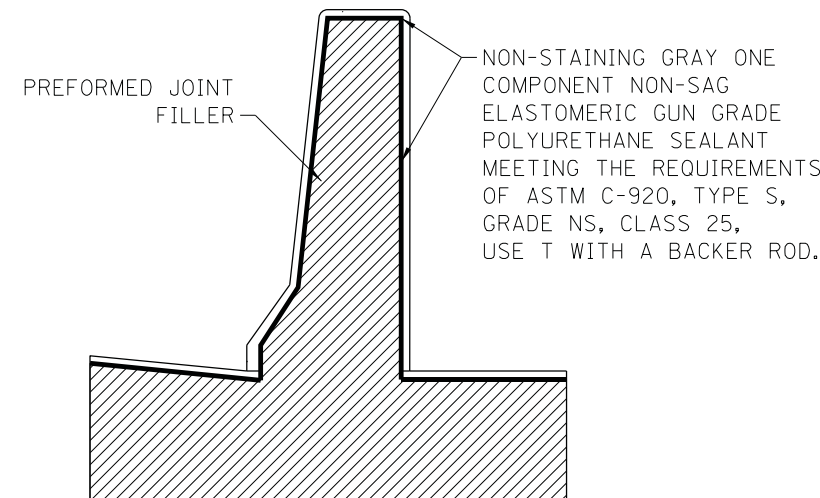


TYPE F BARRIER  
SECTION A-A

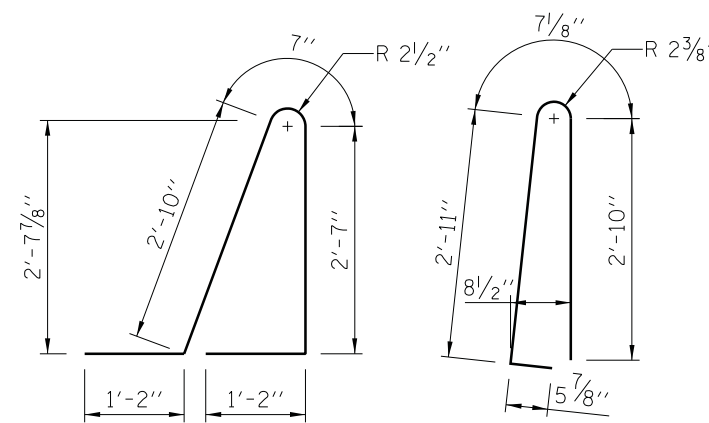
#4 w(E) BARS SHALL BE CONTINUOUS WITH MIN. LAP 2'-0" (TYP.)



EXPANSION JOINT



TYPE F BARRIER  
EXPANSION JOINT  
SECTION B-B



BAR d1(E)

BAR d(E)

BENDING DIAGRAMS

NOTES:

- TOP SHOULDER EDGE OF BARRIER BASE GUTTER SHALL MATCH THE TOP OF SHOULDER ELEVATION.
- 1" DEEP CONTRACTION JOINTS SHALL BE CONSTRUCTED IN BOTH THE REINFORCED CONCRETE BARRIER WALL AND BASE. CONTRACTION JOINTS SHALL ALSO BE CONSTRUCTED AT BOTH SIDES OF ALL DRAINAGE STRUCTURES. MAXIMUM CONTRACTION JOINT SPACING SHALL BE 30'-0".
- THE FORMING OF CONTRACTION JOINTS SHALL BE DONE WITH AN APPROVED FINISHING TOOL OR BY SAWING SUBJECT TO THE SATISFACTORY CONTROL OF CRACKING.
- REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
- REINFORCEMENT BARS BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION.
- REINFORCEMENT BARS BENDING DIMENSIONS ARE OUT TO OUT.
- AT DRAINAGE STRUCTURES, CUT FOOTING BARS TO FIT. ADD AN ADDITIONAL SET OF d, d1, t, AND +1 BARS ON EACH SIDE OF THE DRAINAGE STRUCTURE.
- EXPANSION JOINTS SHALL BE CONSTRUCTED IN BARRIER WALL AT MAXIMUM JOINT SPACING OF 90'-0". SEE SECTION B-B FOR DETAILS.
- MINIMUM LENGTH OF INSTALLATION SHALL BE 25'-0".
- MINIMUM EXPANSION JOINT SPACING SHALL BE 25'-0".

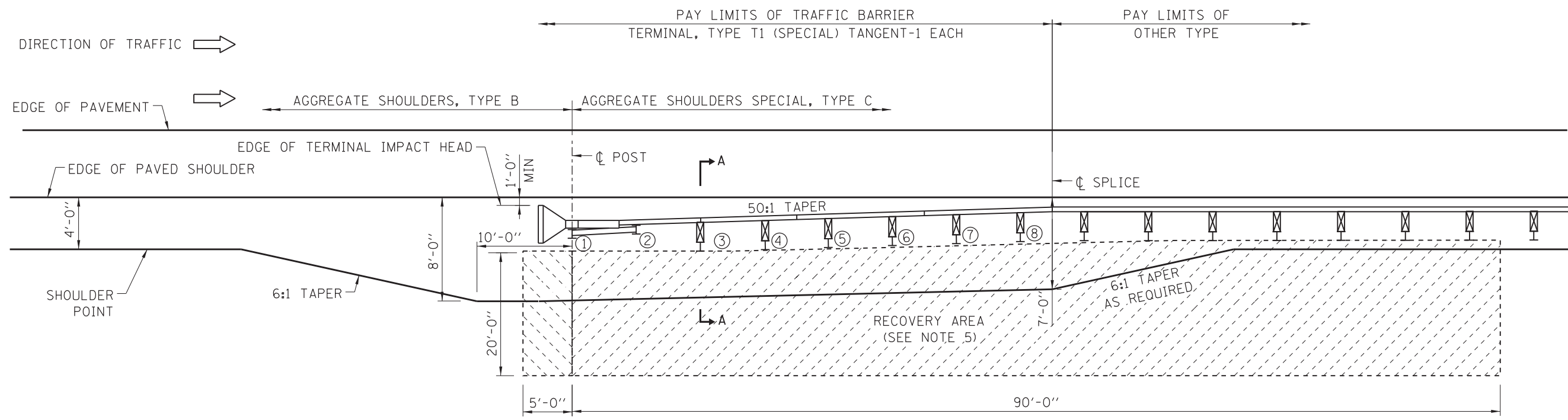
DATE	REVISIONS
11-01-12	GUTTER TRANS. TAPER DET. NEW JOINT DET., REV. NOTES
10-01-13	REVISED REINFORCEMENT BARS AND GUTTER WIDTH
03-31-14	REDESIGNED FOR TL-4 LOADING
3-11-2015	REVISED BENDING DIAGRAM
3-31-2016	ADDED MAX. EXPOSED BASE, REVISED EXP. JT. NOTE



SINGLE FACE REINFORCED CONCRETE BARRIER

STANDARD C3-06

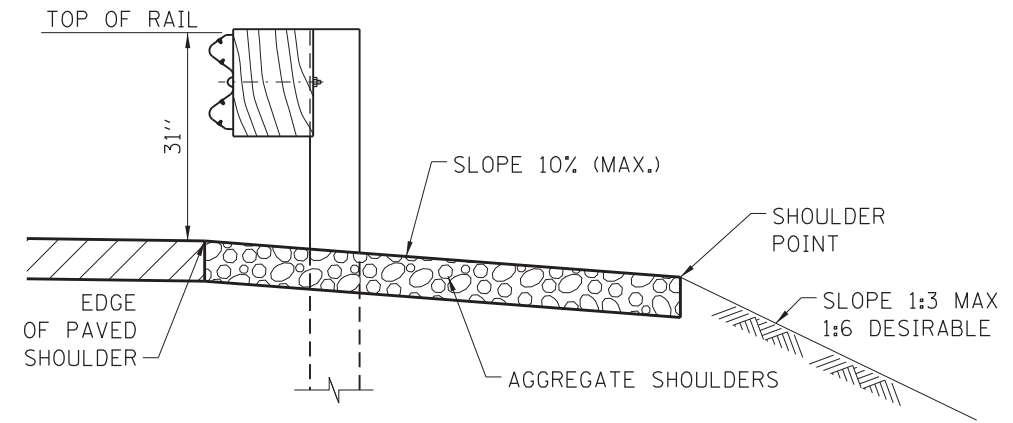
Paul Kovacs  
APPROVED... CHIEF ENGINEER... DATE 2-7-2012



**SHOULDER WIDENING TRANSITION-WITHOUT GUTTER FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT**

**GENERAL NOTES:**

1. ALL SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
2. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING B28 FOR GUTTER TRANSITION, AND MINIMUM DISTANCE FROM EDGE OF PAVED SHOULDER TO FACE OF RAIL.
3. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANY WAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
4. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS AND SPECIFICATIONS.
5. NO ABOVE-GROUND ROADSIDE OBSTACLE OF ANY TYPE-FIXED OR BREAKAWAY, EITHER TEMPORARY OR PERMANENT SHALL BE ALLOWED WITHIN THIS RECOVERY AREA.
6. ON TANGENT ROADWAY: TRAFFIC BARRIER TERMINAL SHALL BE INSTALLED AT A 50:1 TAPER MEASURED FROM EDGE OF TRAVELED WAY. ON CURVED ROADWAY: THE EDGE OF THE TERMINAL IMPACT HEAD SHALL BE OFFSET A DISTANCE FROM A POINT ON THE BACK OF THE CURVED EDGE OF PAVED SHOULDER AS SHOWN IN TABLE 1. NO CURVED W-BEAM SECTIONS ARE PERMITTED WITHIN THE TERMINAL PAY LIMITS. THE TERMINAL SHALL BE LAID OUT IN A STRAIGHT LINE.
7. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR HMA. WHEN NECESSARY USE LEAVE-OUT DETAIL SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING C1.
8. THE TERMINAL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURES DEFINED IN THE NATIONAL COOPERATIVE HIGHWAY RESEARCH REPORT (NCHRP) REPORT 350. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.
9. WHEN GUTTER IS PRESENT, DRAINAGE STRUCTURES SHALL NOT BE INSTALLED WITHIN THE TERMINAL LIMITS, BUT SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE TERMINAL AS REQUIRED.



**SECTION A-A**

*Paul Kovacs*  
 APPROVED ..... CHIEF ENGINEER ..... DATE 7-1-2009

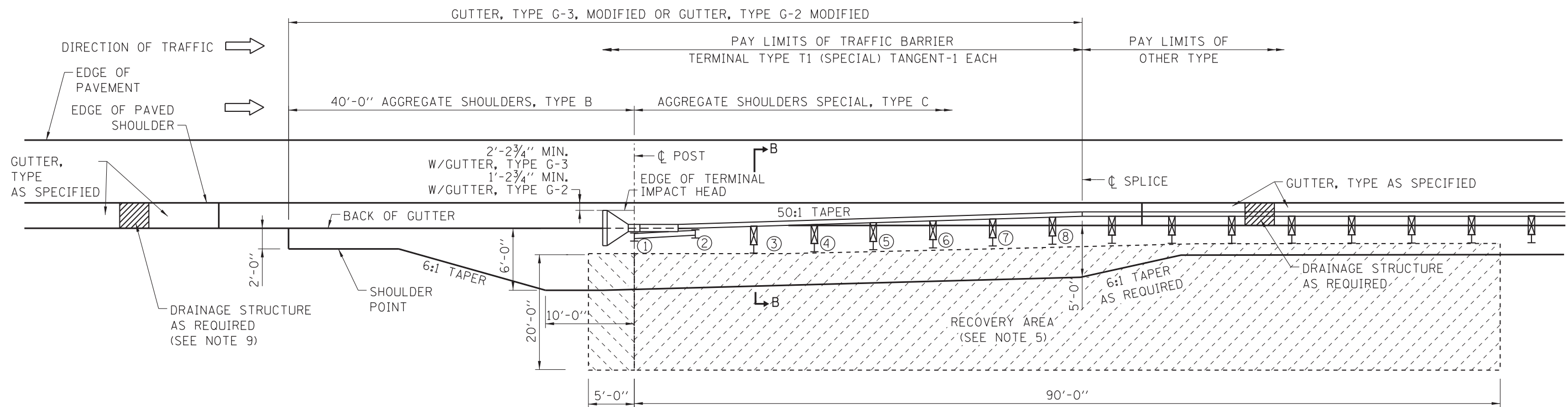
DATE	REVISIONS
03-01-13	TERMINAL CHANGED TO ALL STEEL POST SYSTEM, REVISED TERMINAL PAY LIMITS
03-31-14	REVISED RECOVERY AREA DIMENSION
3-11-2015	REVISED NOTES
3-31-2016	COMBINED G-3 & G-2
3-31-2017	REVISED NOTES

SHEET 1 OF 2

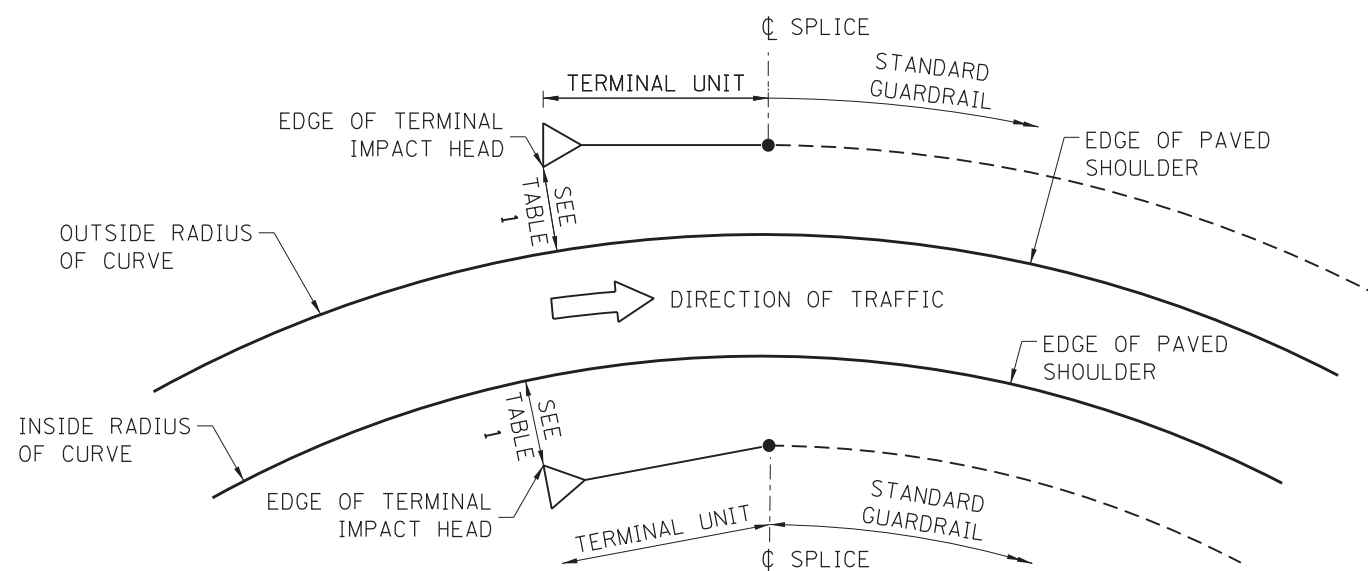


**SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT**

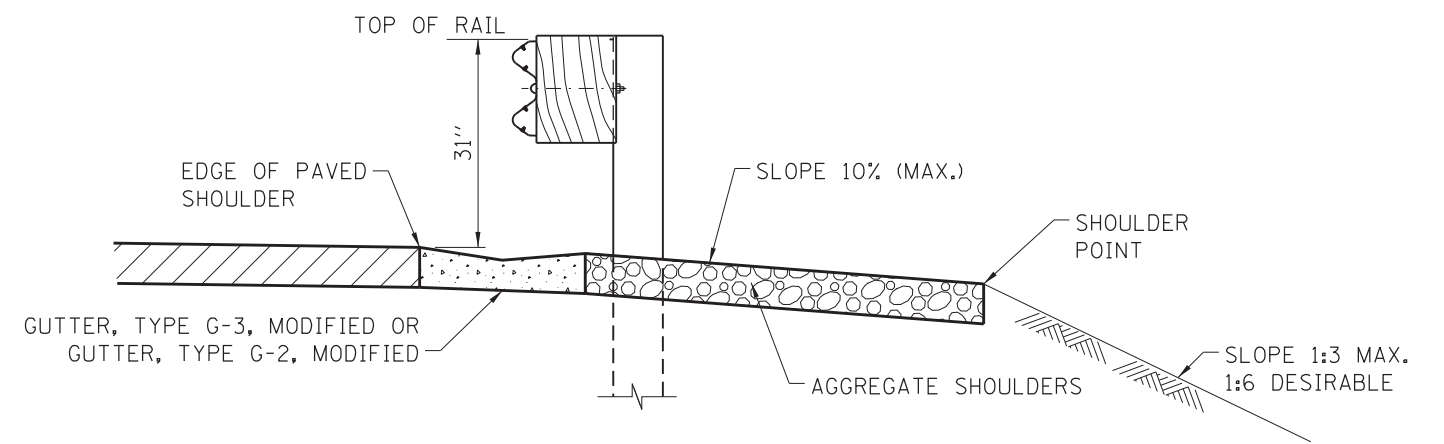
STANDARD C6-09



SHOULDER WIDENING TRANSITION-WITH GUTTER, TYPE G-3 OR TYPE G-2 FOR TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT



CURVED ROADWAY TRAFFIC BARRIER TERMINAL PLACEMENT



SECTION B-B

TABLE 1		
LATERAL OFFSET DIMENSION TO EDGE OF TERMINAL IMPACT HEAD		
	INSIDE RADIUS OF CURVE	OUTSIDE RADIUS OF CURVE
NO GUTTER	1'-0"	1'-0" MIN. *
GUTTER, TYPE G-2	1'-2 3/4"	1'-2 3/4" MIN. *
GUTTER, TYPE G-3	2'-2 3/4"	2'-2 3/4" MIN. *

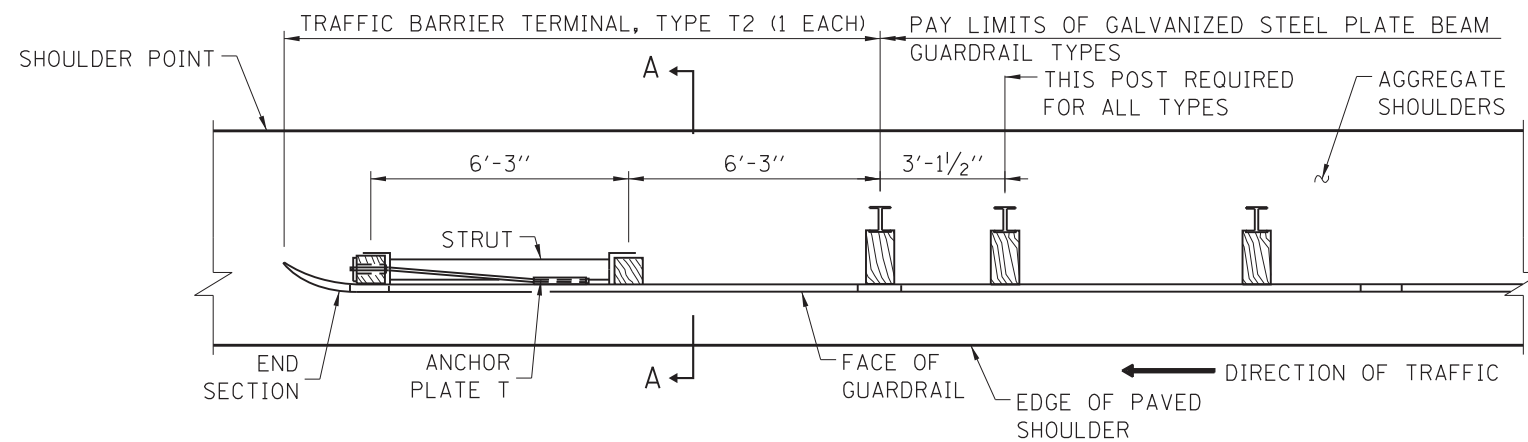
(\* ) OFFSET DISTANCE WILL VARY BASED ON RADIUS OF HORIZONTAL CURVE AND THE TERMINAL BEING INSTALLED IN A STRAIGHT LINE.

NOTES:  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

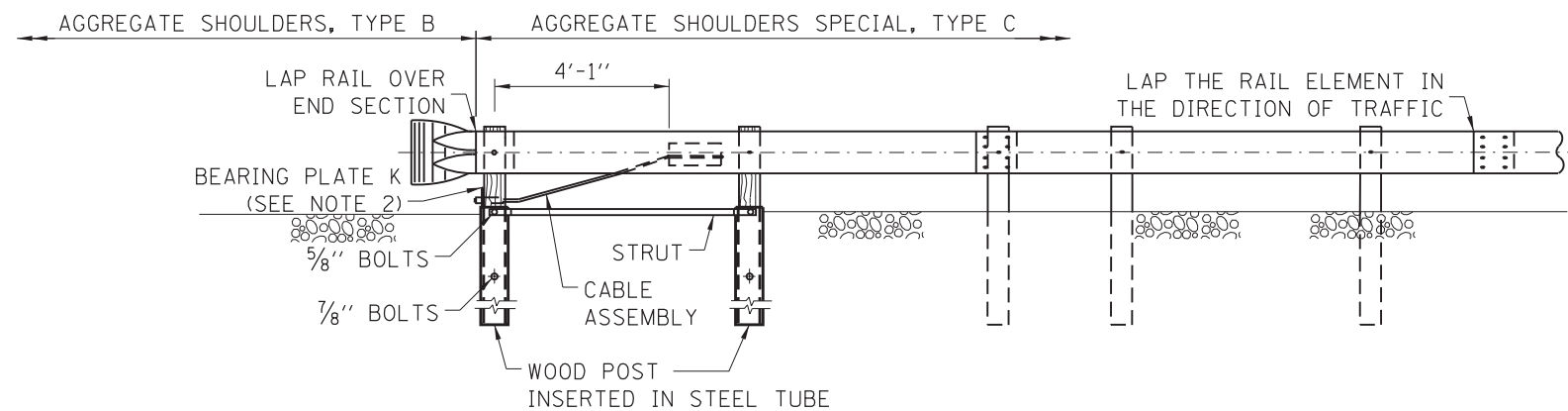
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009





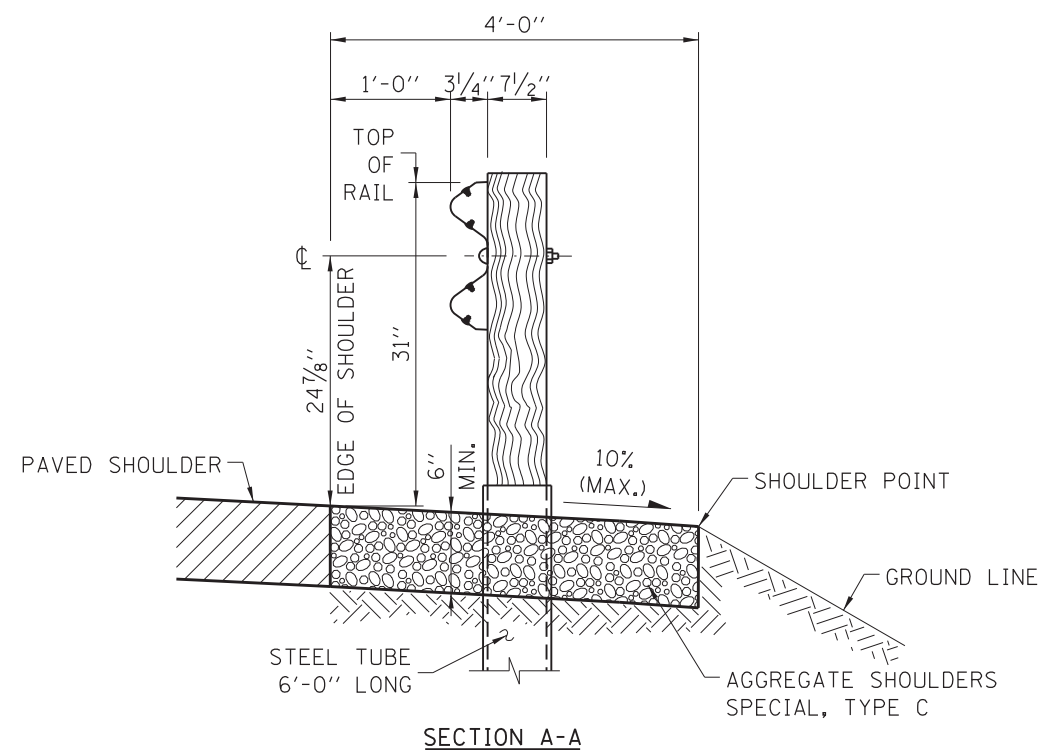


PLAN



ELEVATION

TRAFFIC BARRIER TERMINAL, TYPE T2-WITHOUT GUTTER



SECTION A-A

NOTES:

1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THE BEARING PLATE K SHALL BE HELD IN POSITION BY TWO 8D NAILS DRIVEN INTO THE POST AND BENT OVER THE TOP OF THE PLATE.
3. THE TRAFFIC BARRIER TERMINAL, TYPE T2 IS TYPICALLY UTILIZED FOR THE DEPARTING END SECTION OF A GALVANIZED STEEL PLATE BEAM GUARDRAIL BARRIER SYSTEM.
4. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS. NO MODIFICATIONS SHALL BE PERMITTED.
6. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENT. WHEN NECESSARY USE LEAVE-OUT DETAIL PER ILLINOIS TOLLWAY STANDARD DRAWING C1.
7. WHERE GUTTER, TYPE G-2 OR GUTTER, TYPE G-3 ARE REQUIRED IN FRONT OF THE GUARDRAIL, THE POSTS SHALL BE LOCATED 6" BEHIND THE GUTTER, OR AS OTHERWISE DETAILED IN THE PLANS. THE OFFSET FROM THE EDGE OF SHOULDER TO THE FACE OF THE GUARDRAIL SHALL BE AS SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING B28.

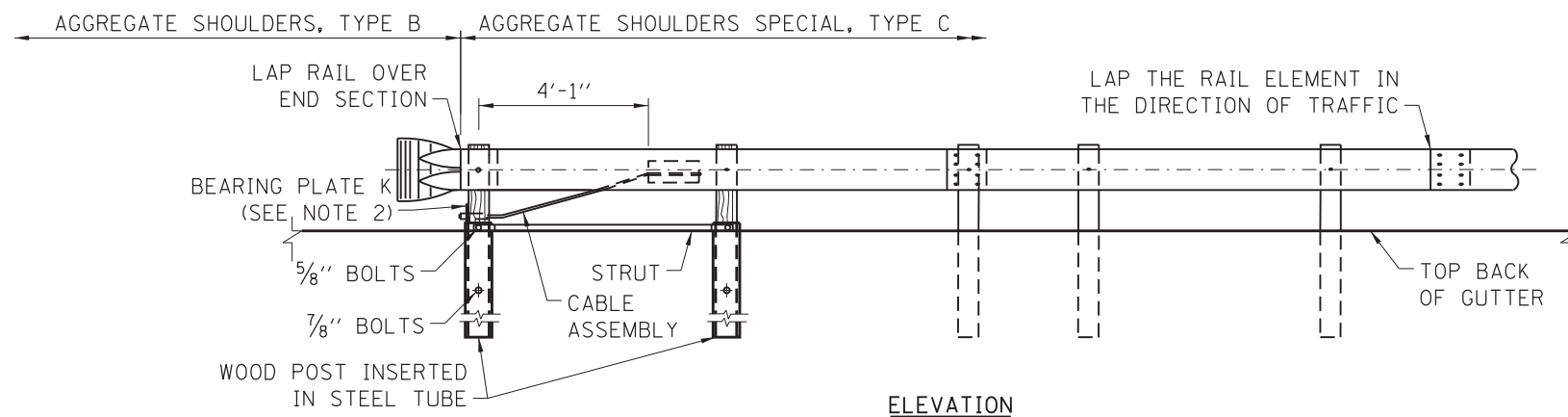
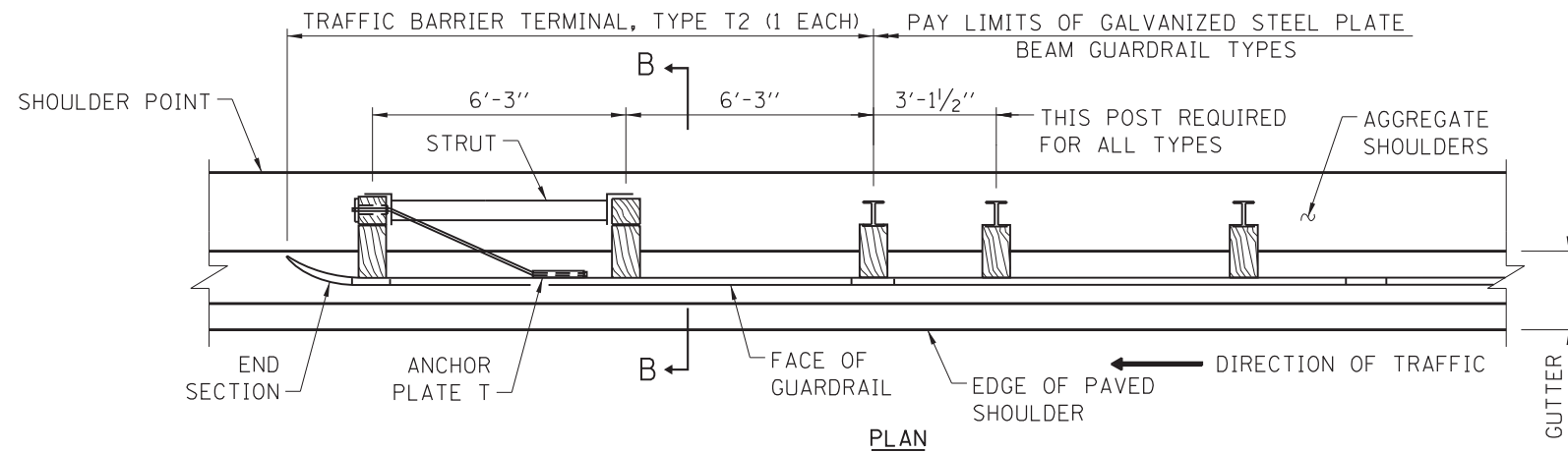


TRAFFIC BARRIER TERMINAL, TYPE T2

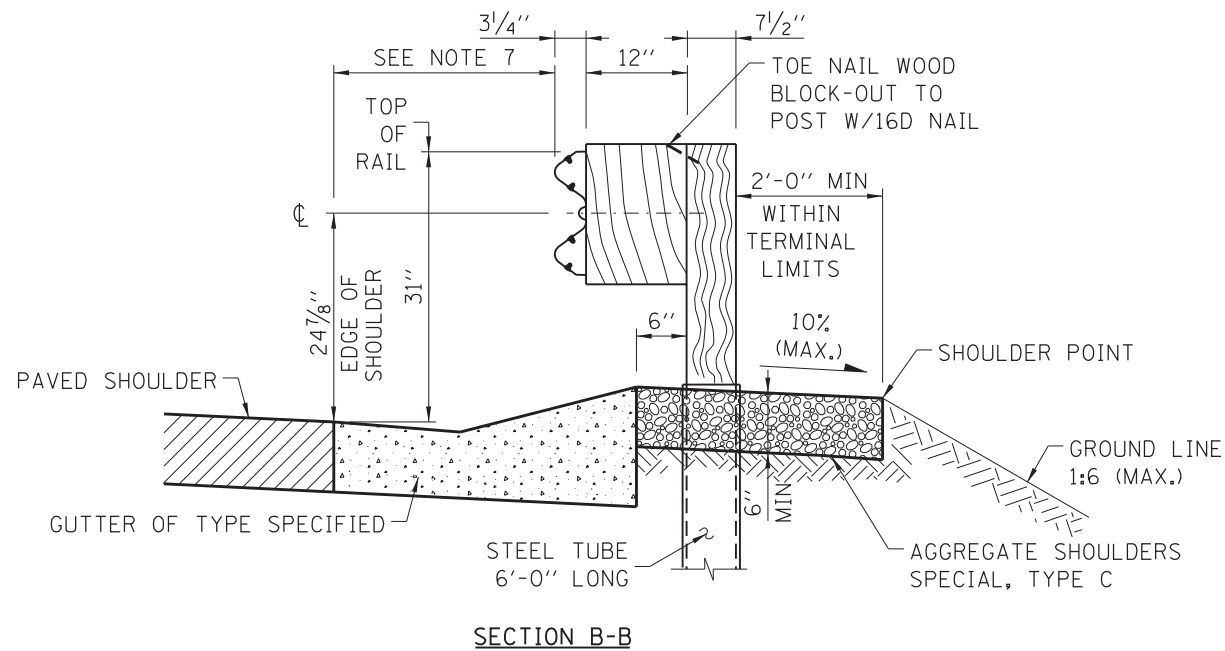
STANDARD C7-08

DATE	REVISIONS
2-07-2012	REVISED DIMENSIONS OF BEARING PLATE, POST, CABLE STRUT AND TUBE AND NOTES
11-01-2012	MODIFIED AGGREGATE SHOULDERS, REVISED WOOD POST DIMENSION
3-31-2014	REVISED NOTES
3-11-2015	REVISED NOTES
3-31-2016	REVISED SECTION A-A SHOULDER
3-31-2017	REVISED SECT A-A SHOULDER SLOPE TO 2%

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009



TRAFFIC BARRIER TERMINAL, TYPE T2-WITH GUTTER



SECTION B-B

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009

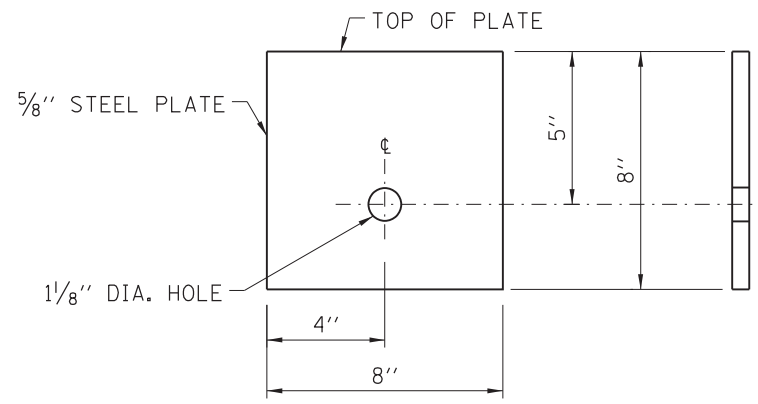
NOTE:  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

SHEET 2 OF 3

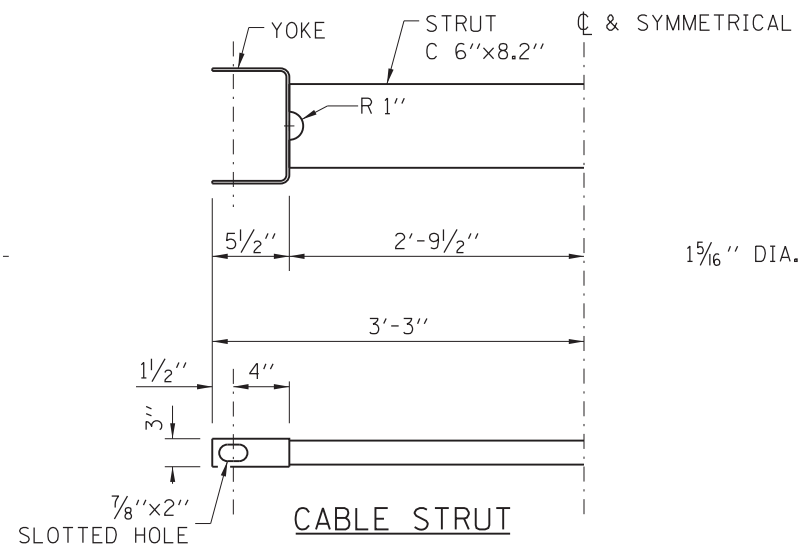


TRAFFIC BARRIER TERMINAL, TYPE T2

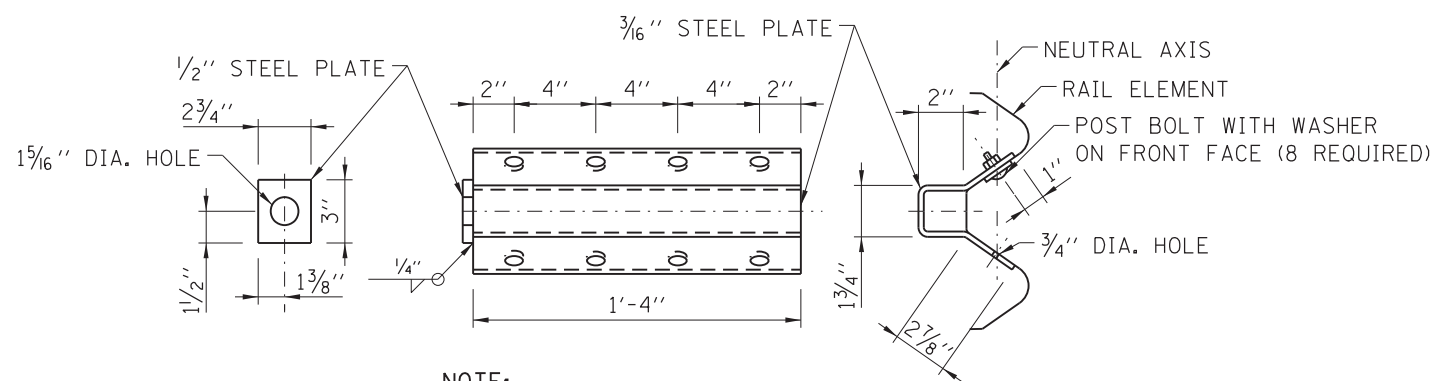
STANDARD C7-08



**BEARING PLATE K**

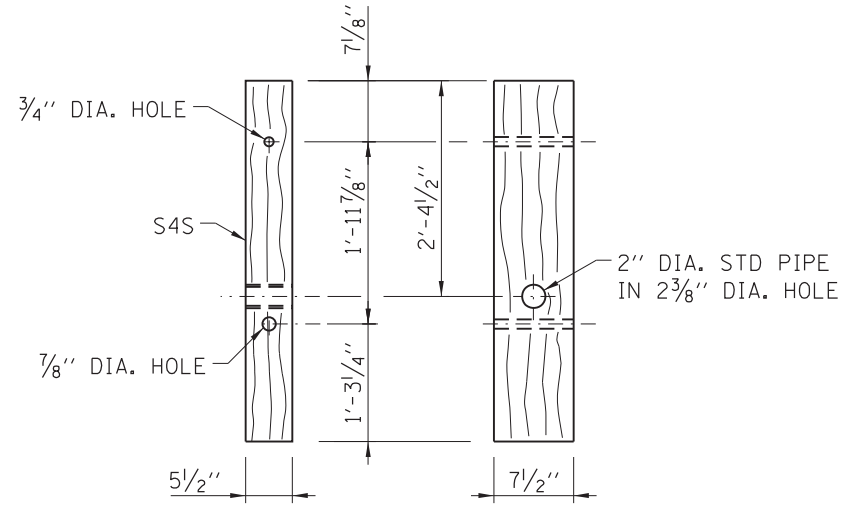


**CABLE STRUT**

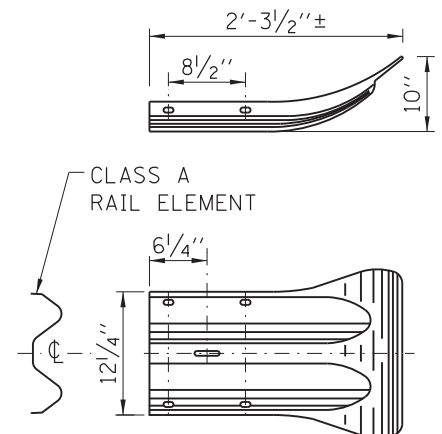


**NOTE:**  
ANCHOR PLATE T SHALL BE USED TO ATTACH CABLE ASSEMBLY TO GUARDRAIL WHEN REQUIRED ON TRAFFIC BARRIER TERMINALS.

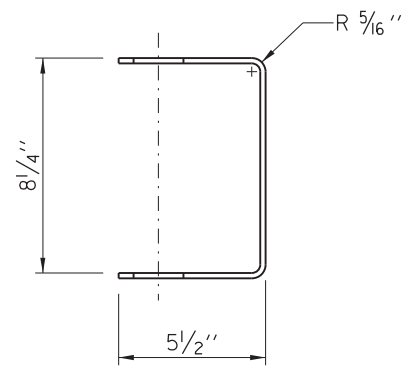
**ANCHOR PLATE T DETAILS**



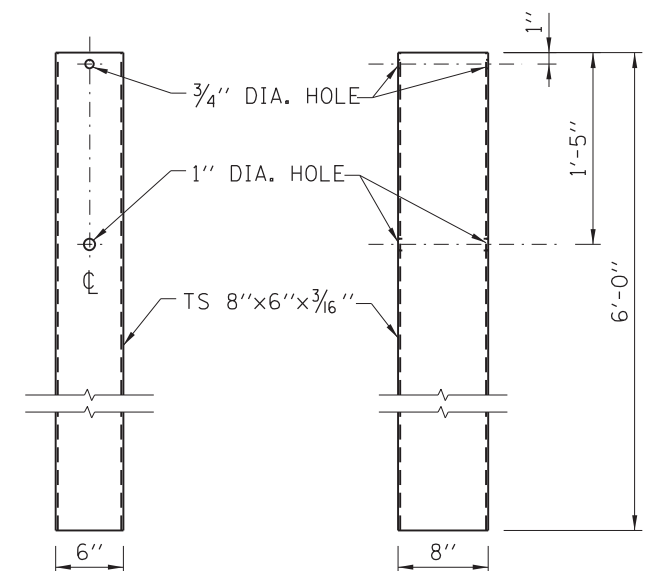
**WOOD POST**



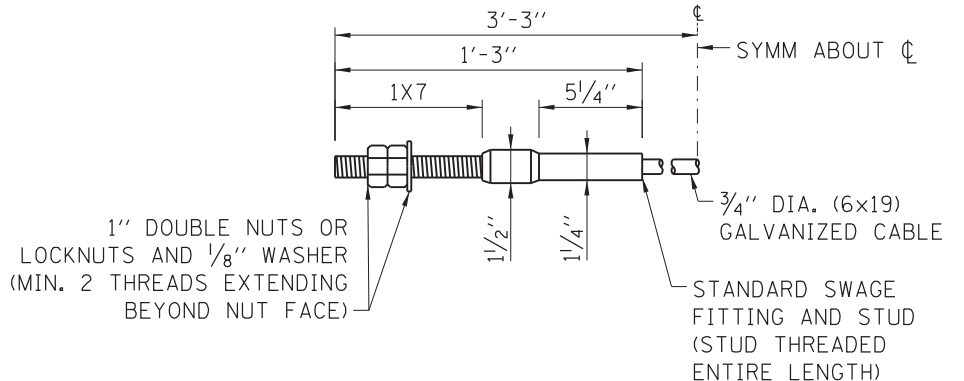
**END SECTION**



**YOKE**  
3/16 inch THICK STEEL



**STEEL TUBE**

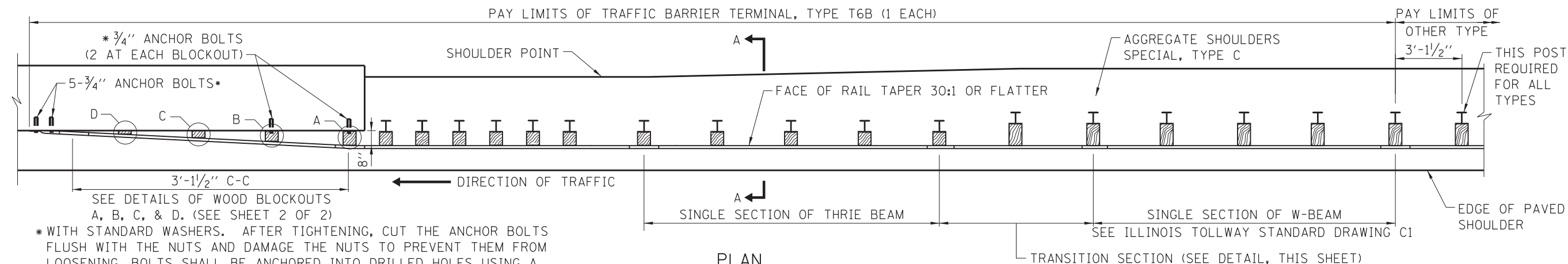


**CABLE ASSEMBLY**  
(40,000 LBS.) MIN. BREAKING STRENGTH)  
TIGHTEN TO TAUT TENSION

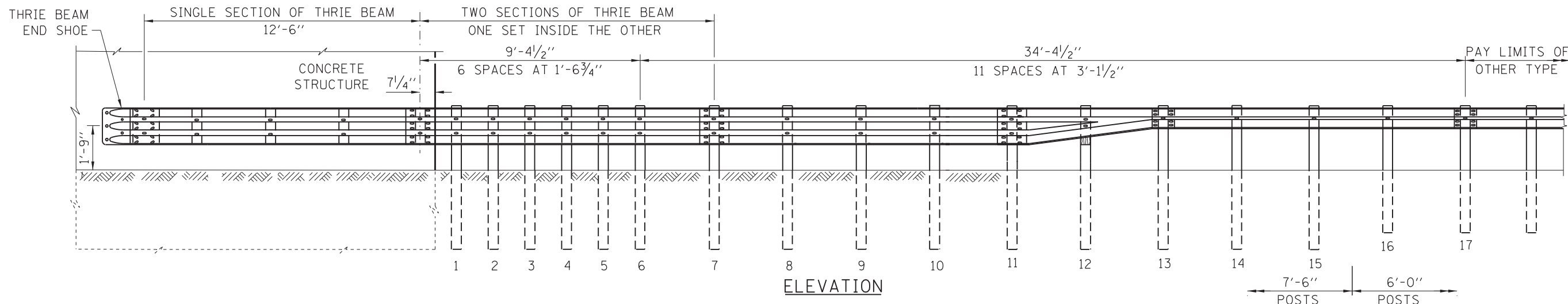
**NOTE:**  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009



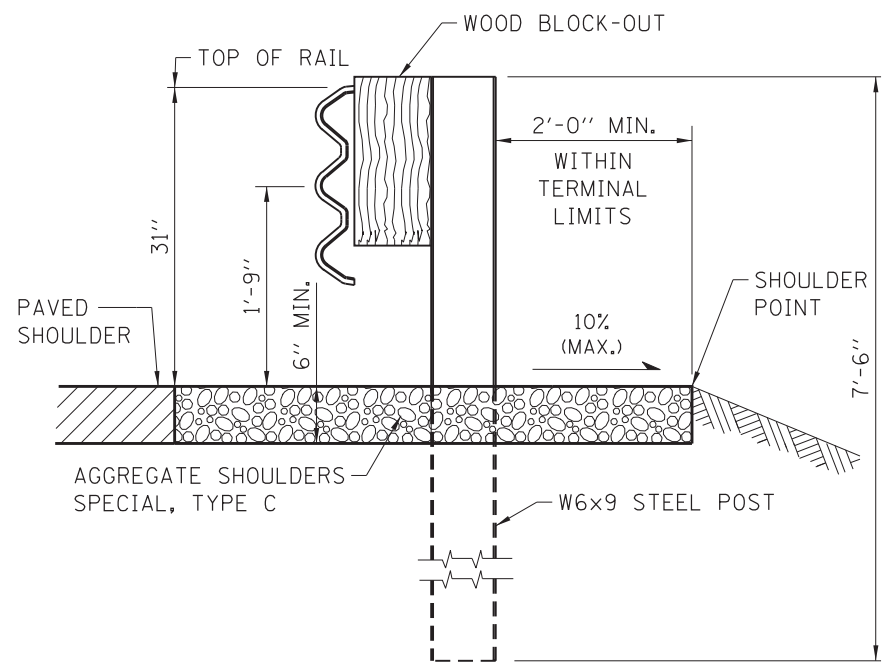


\* WITH STANDARD WASHERS. AFTER TIGHTENING, CUT THE ANCHOR BOLTS FLUSH WITH THE NUTS AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING. BOLTS SHALL BE ANCHORED INTO DRILLED HOLES USING A CHEMICAL ADHESIVE RESIN SYSTEM. MINIMUM EMBEDMENT 10\".

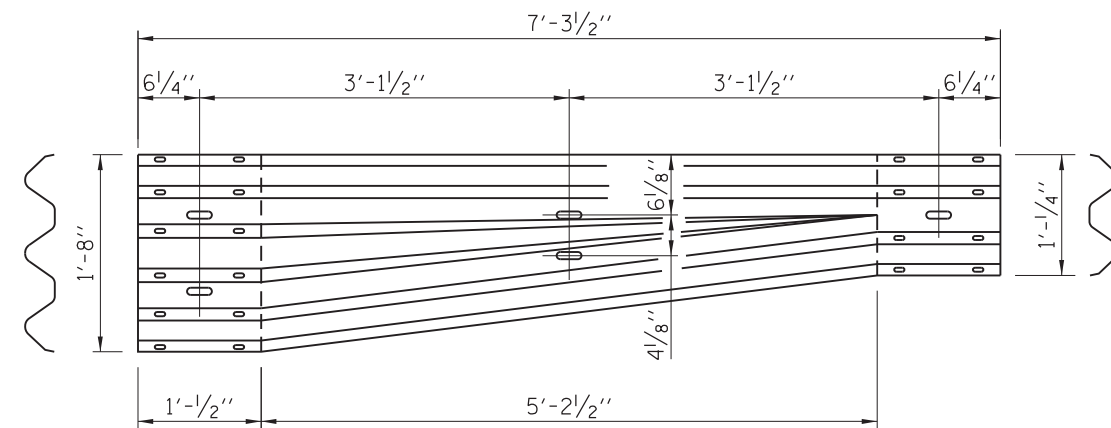


**NOTES:**

1. SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR DETAILS OF GUARDRAIL NOT SHOWN.
2. THRIE BEAM RAIL SHALL BE BOLTED TO BLOCK-OUT AT ALL POSTS.
3. THE TRAFFIC BARRIER TERMINAL, TYPE T6B IS TYPICALLY UTILIZED TO ATTACH GALVANIZED STEEL PLATE BEAM GUARDRAIL AT THE UPSTREAM END OF THE BRIDGE CONCRETE PARAPET, WHERE A ROADSIDE GUTTER IS NOT TO BE INSTALLED.
4. UNDER NO CIRCUMSTANCES SHALL EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY'S DETAILS AND SPECIFICATIONS. NO MODIFICATIONS SHALL BE PERMITTED.
6. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVEMENTS. WHEN NECESSARY USE LEAVE-OUT DETAIL PER ILLINOIS TOLLWAY STANDARD DRAWING C1, SHEET 3 OF 4.
7. TERMINAL BARRIER CLEARANCE DISTANCE SHALL CONFORM WITH TABLE 2 ON ILLINOIS TOLLWAY STANDARD DRAWING C1.
8. LEAVE-OUT DIMENSION BEHIND POSTS 1-6, SHALL BE A MINIMUM OF 4\".



SECTION A-A



TRANSITION SECTION  
(10 GAUGE RAIL ELEMENT)

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009

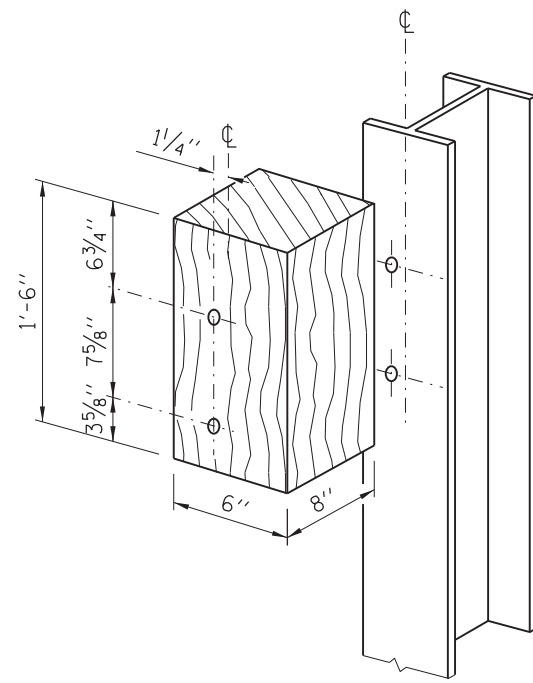
DATE	REVISIONS
2-07-2012	REVISED WOOD BLOCK-OUT DIMENSION ADHESIVE AND REVISED NOTES
11-01-2012	MODIFIED AGGREGATE SHOULDERS, REVISED NOTES
3-31-2014	REVISED WOOD BLOCKS AND NOTES
3-11-2015	REVISED NOTES
3-31-2016	REVISED SECTION A-A SHOULDER
3-31-2017	REVISED SHOULDER SLOPE LABEL

SHEET 1 OF 2

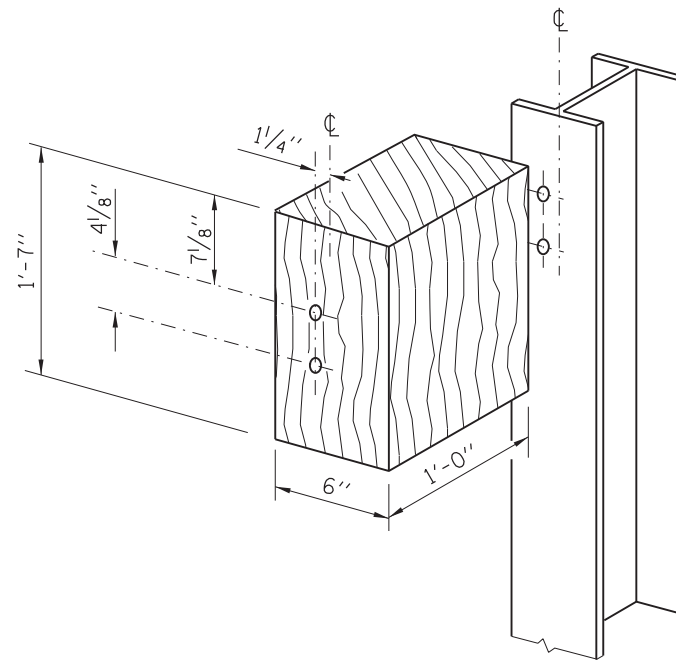


**TRAFFIC BARRIER TERMINAL, TYPE T6B**

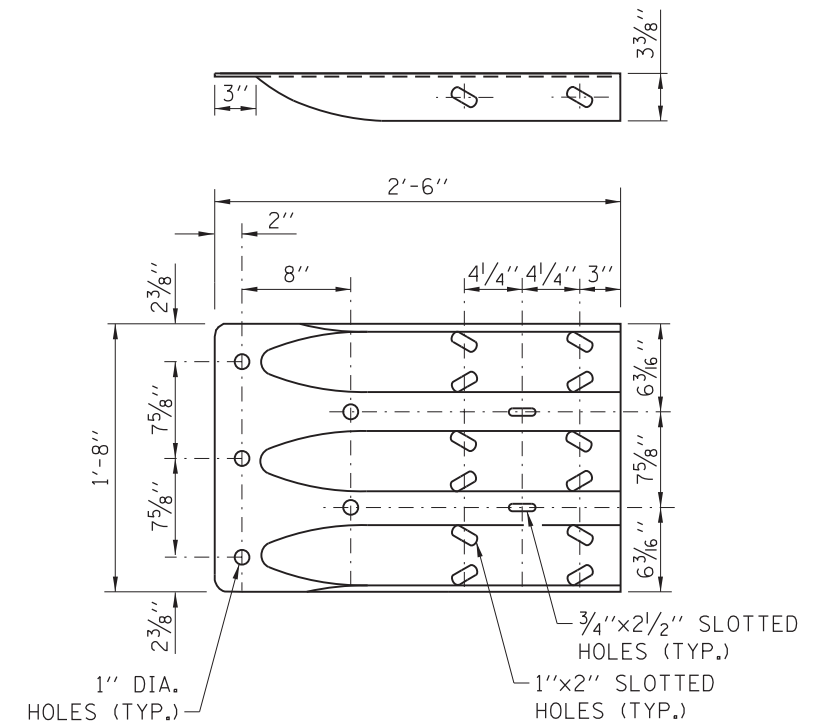
STANDARD C10-08



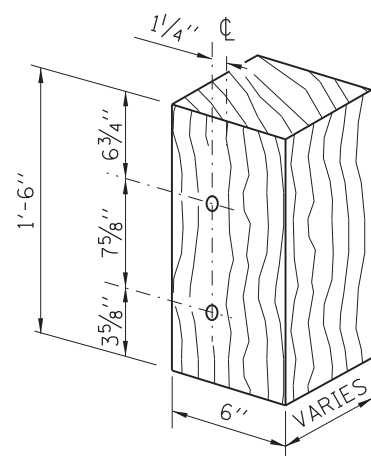
POSTS 1-11 WOOD BLOCK-OUT DETAIL



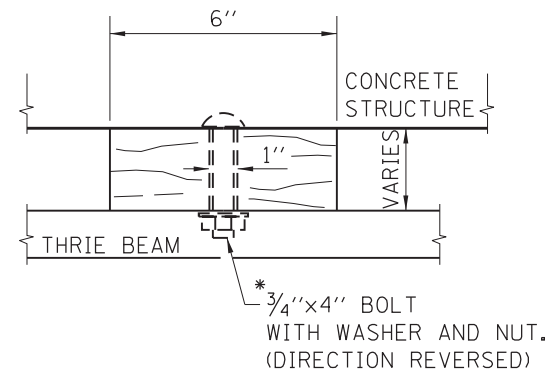
POST 12 WOOD BLOCK-OUT DETAIL  
(SEE ILLINOIS TOLLWAY STANDARD DRAWING C1 FOR POST 13-17 BLOCKOUTS)



THRIE BEAM END SHOE DETAIL

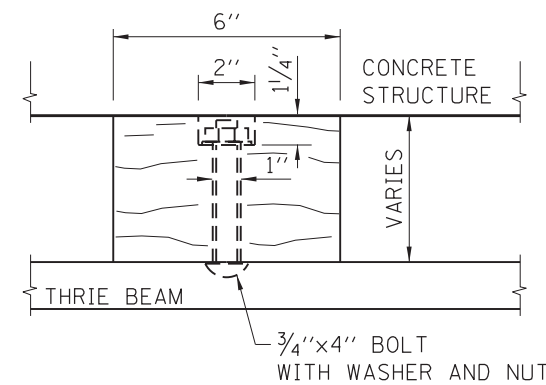


MODIFIED THICKNESS DETAIL  
WOOD BLOCK-OUTS A, B, C, & D

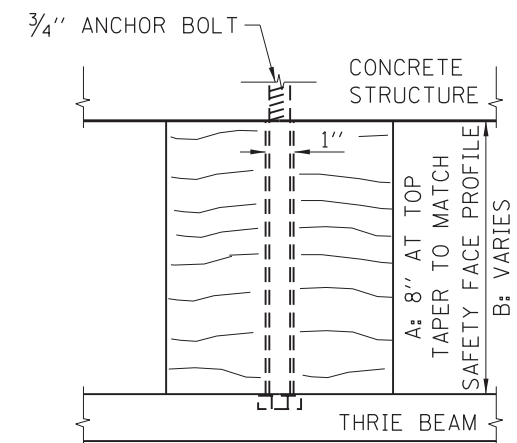


WOOD BLOCK-OUT D

\* AFTER TIGHTENING, CUT THE BOLTS FLUSH WITH THE NUTS AND DAMAGE THE NUTS TO PREVENT THEM FROM LOOSENING.



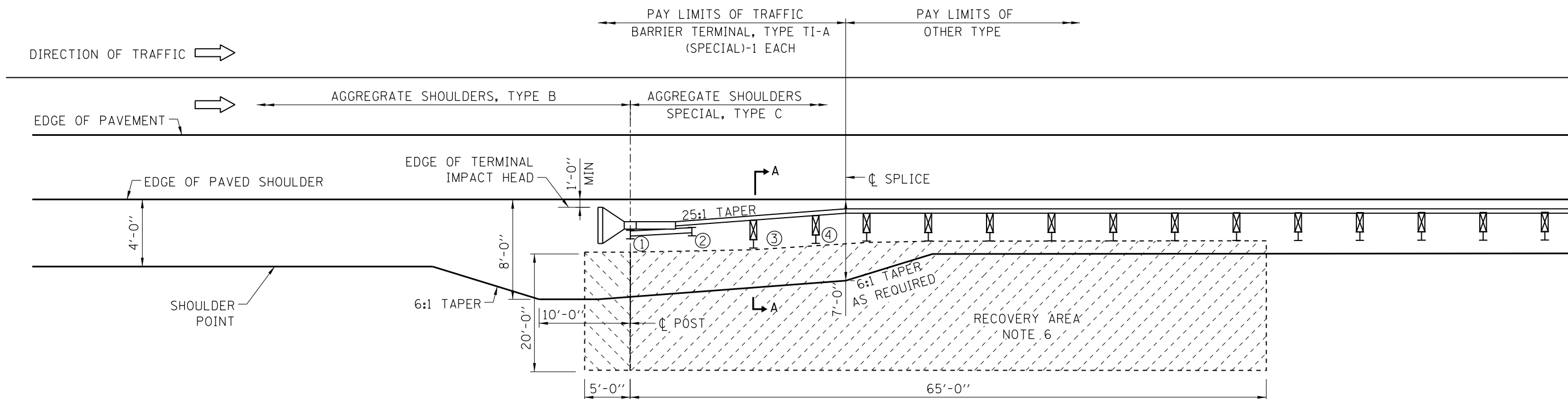
WOOD BLOCK-OUT C



WOOD BLOCK-OUT A & B

NOTE:  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

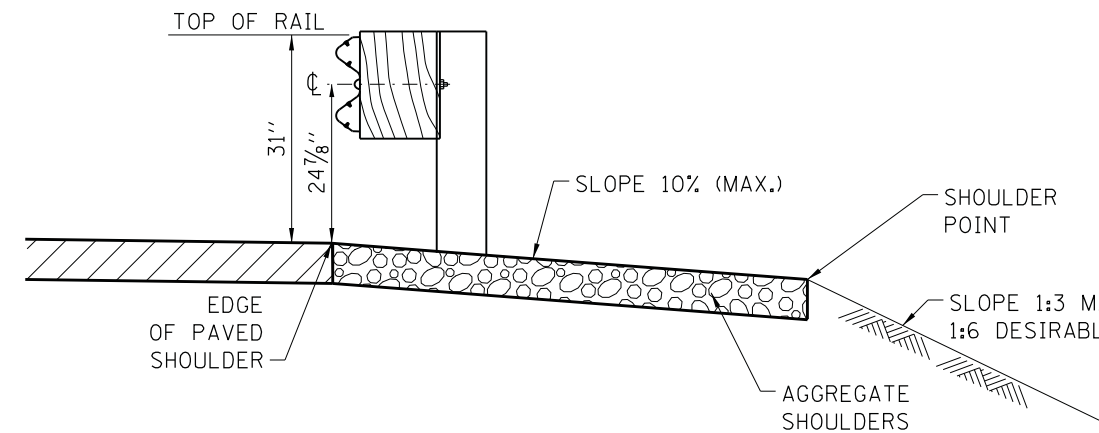
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009



**SHOULDER WIDENING TRANSITION-WITHOUT GUTTER  
FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)**

**GENERAL NOTES:**

1. ALL SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
2. THE TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL) IS THE UPSTREAM END SECTION OF A GALVANIZED STEEL PLATE BEAM GUARDRAIL BARRIER SYSTEM, FOR RAMP INSTALLATION WITH DESIGN SPEED LIMIT OF 40 MPH OR LESS, NCHRP 350, TEST LEVEL (TL-2).
3. REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING B29 FOR GUTTER TRANSITION AT TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL), AND MINIMUM DISTANCE FROM EDGE OF PAVED SHOULDER TO FACE OF RAIL.
4. UNDER NO CIRCUMSTANCES SHALL AN EXISTING TERMINAL, THAT WAS DESIGNED USING A PREVIOUS STANDARD, BE ATTACHED TO OR MODIFIED IN ANYWAY FROM ITS ORIGINAL DESIGN. IF ANY MODIFICATION IS REQUIRED AND A PROPER BARRIER WARRANT HAS BEEN COMPLETED, THE ENTIRE BARRIER INSTALLATION SHALL BE COMPLETELY REMOVED AND REPLACED WITH A NEW SYSTEM THAT CONFORMS TO THE CURRENT STANDARD.
5. TRAFFIC BARRIER TERMINAL SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS AND SPECIFICATIONS.
6. NO ABOVE-GROUND ROADSIDE OBSTACLE OF ANY TYPE-FIXED OR BREAKAWAY, EITHER TEMPORARY OR PERMANENT SHALL BE ALLOWED WITHIN THIS RECOVERY AREA.
7. ON TANGENT ROADWAY: TRAFFIC BARRIER TERMINAL SHALL BE INSTALLED AT A 25:1 TAPER MEASURED FROM EDGE OF TRAVELED WAY.  
ON CURVED ROADWAY: THE EDGE OF THE TERMINAL IMPACT HEAD SHALL BE OFFSET A DISTANCE FROM A POINT ON THE BACK OF THE CURVED EDGE OF PAVED SHOULDER AS SHOWN IN TABLE 1. NO CURVED W-BEAM SECTIONS ARE PERMITTED WITHIN THE TERMINAL PAY LIMITS. THE TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL) SHALL BE LAID OUT IN A STRAIGHT LINE.
8. TERMINAL POSTS SHALL NOT BE INSTALLED IN CONCRETE OR HMA. WHEN NECESSARY USE LEAVE-OUT DETAIL SHOWN ON ILLINOIS TOLLWAY STANDARD DRAWING C1.
9. THE TERMINAL SYSTEM HAS BEEN PERFORMANCE-TESTED FOR CRASHWORTHINESS UNDER PROCEDURES DEFINED IN THE NATIONAL COOPERATIVE HIGHWAY RESEARCH REPORT (NCHRP) REPORT 350. NO MODIFICATION TO THIS STANDARD DRAWING SHALL BE PERMITTED.
10. WHEN GUTTER IS PRESENT, DRAINAGE STRUCTURES SHALL NOT BE INSTALLED WITHIN THE TERMINAL LIMITS, BUT SHALL BE INSTALLED UPSTREAM AND DOWNSTREAM OF THE TERMINAL AS REQUIRED.

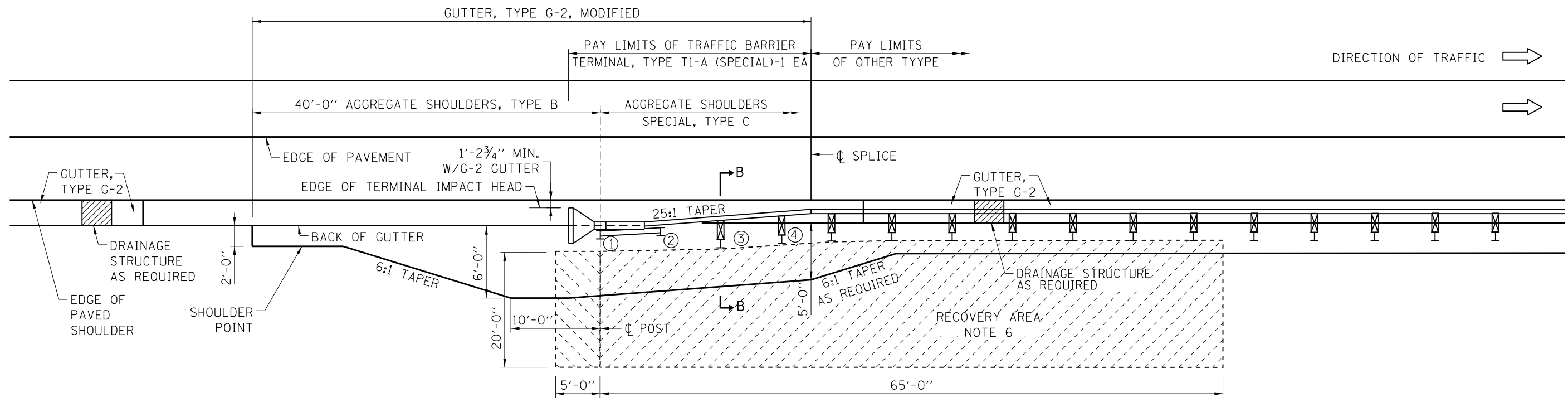


**SECTION A-A**

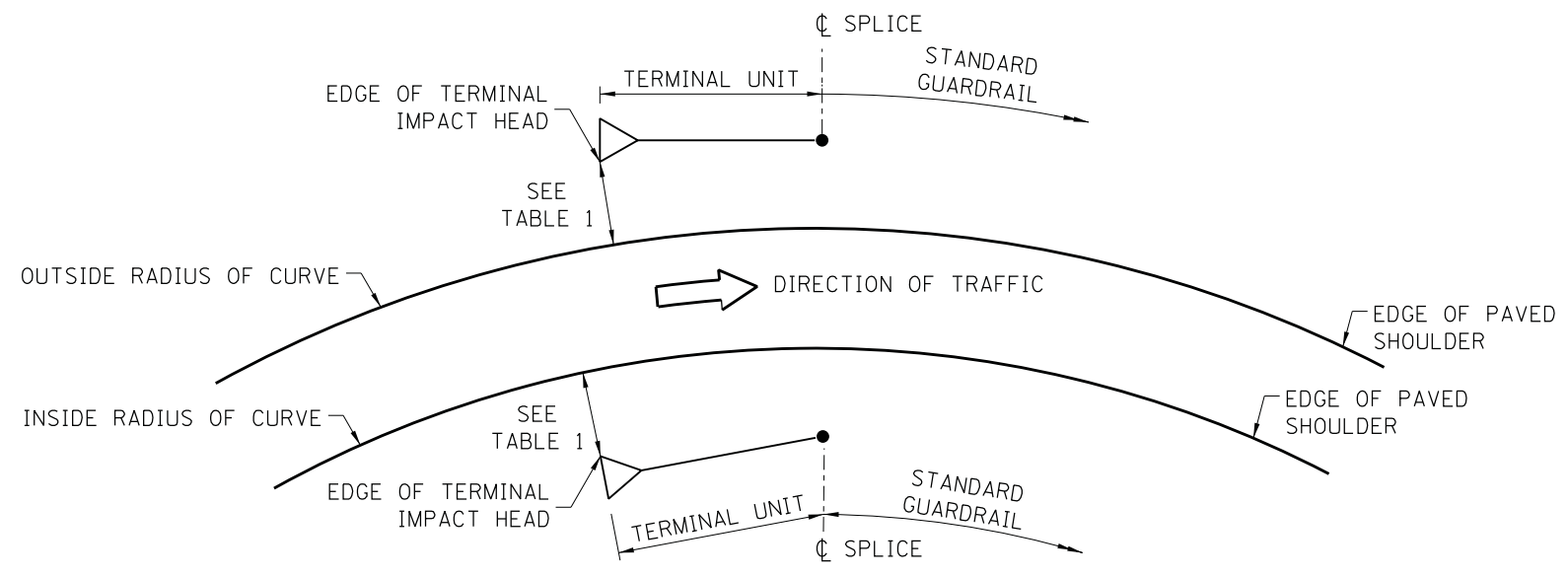
APPROVED: *Paul Kovacs* DATE: 1-1-2011  
CHIEF ENGINEERING OFFICER

DATE	REVISIONS
2-07-2012	REVISED SLOPE NOTE.
11-01-2012	MODIFIED AGGREGATE SHOULDER
3-01-2013	TERMINAL CHANGED TO ALL STEEL POST, REVISED TERMINAL PAY LIMITS
3-31-2014	REVISED RECOVERY AREA DIMENSION.
3-11-2015	REVISED NOTES
3-31-2016	ADDED INSTALLATION NOTES IN NOTE 7 AND REVISED SECTION A-A SHOULDER
3-31-2017	REVISED SHOULDER WIDTH AT TERMINAL
3-01-2018	CORRECTED G-2 GUTTER REFERENCE

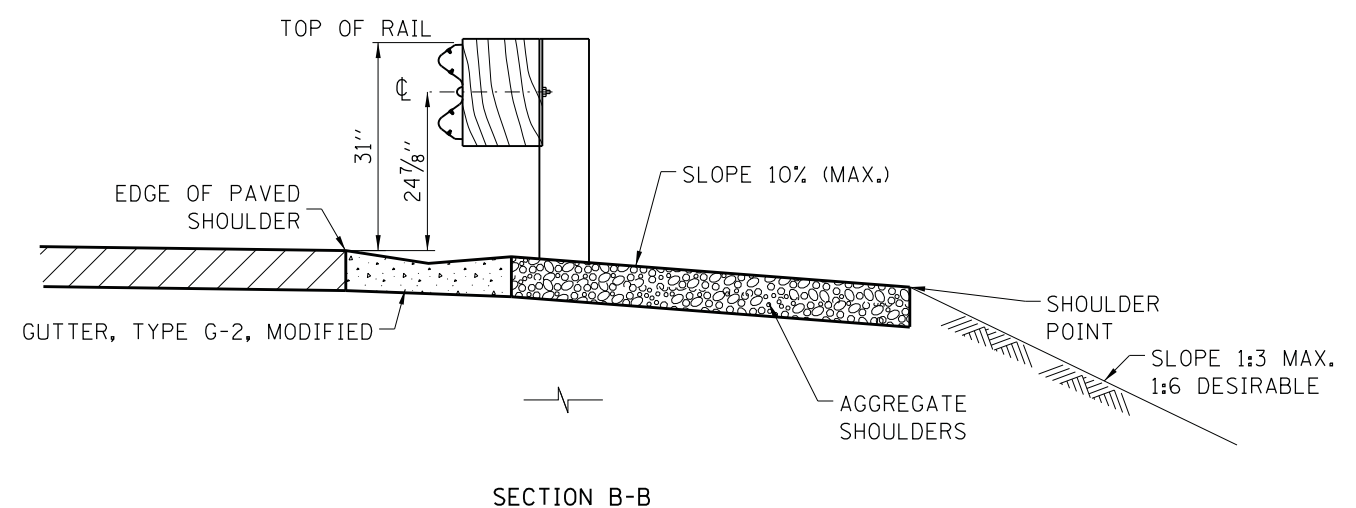
  
**SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)**  
 STANDARD C12-08



SHOULDER WIDENING TRANSITION-WITH GUTTER, TYPE G-2 FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)



CURVED ROADWAY TRAFFIC BARRIER TERMINAL PLACEMENT (SEE NOTE 7)



NOTES:  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

TABLE 1		
LATERAL OFFSET DIMENSION TO EDGE OF TERMINAL IMPACT HEAD		
	INSIDE RADIUS OF CURVE	OUTSIDE RADIUS OF CURVE
NO GUTTER	1'-0"	1'-0" MIN. *
GUTTER, TYPE G-2	1'-2 3/4"	1'-2 3/4" MIN. *

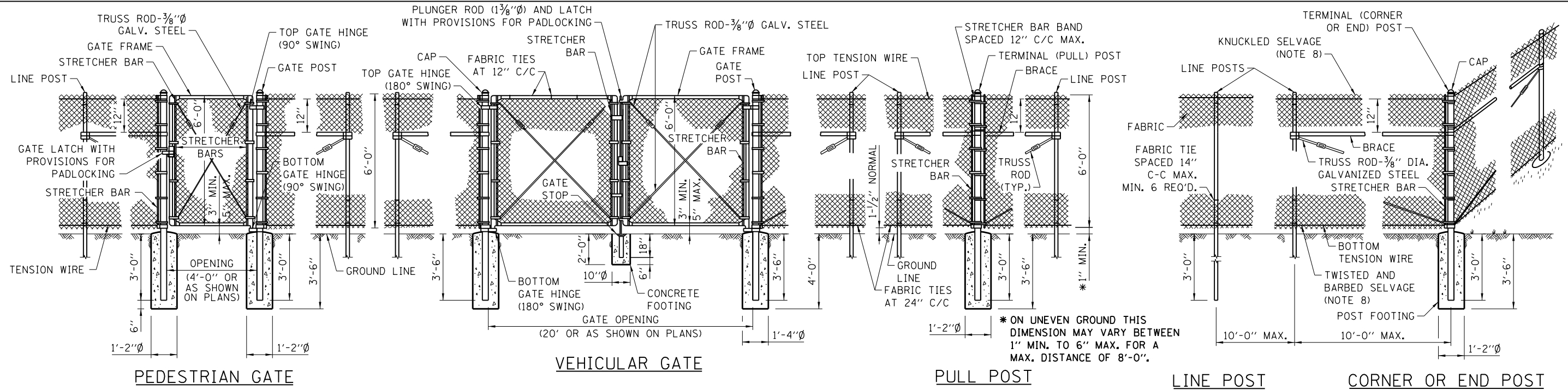
(\* ) OFFSET DISTANCE WILL VARY BASED ON RADIUS OF HORIZONTAL CURVE AND THE TERMINAL BEING INSTALLED IN A STRAIGHT LINE.

APPROVED: *Paul Kovacs* CHIEF ENGINEERING OFFICER DATE: 1-1-2011

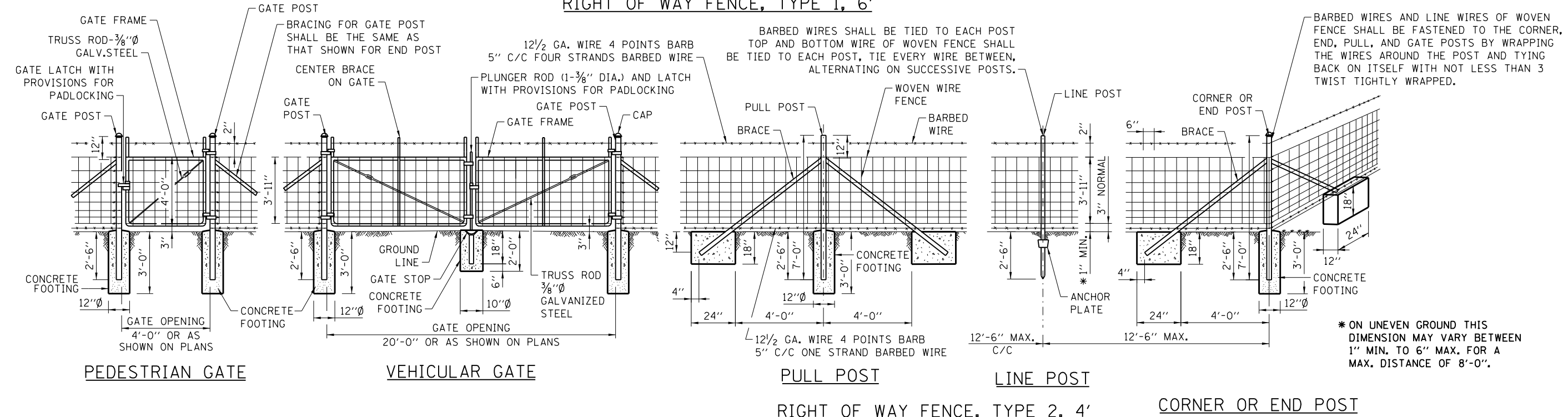
SHEET 2 OF 2

SHOULDER WIDENING FOR TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL)

STANDARD C12-08



**RIGHT OF WAY FENCE, TYPE 1, 6'**



**GENERAL NOTES**

- ON STRAIGHT RUNS OF FENCE, PULL POSTS SHALL BE USED AT 500' CENTERS FOR TYPE 1 AND 330' CENTERS FOR TYPE 2.
- WHERE R.O.W. FENCE FOLLOWS R.O.W. LINE IT SHALL BE INSTALLED PARALLEL TO AND 6" INSIDE THE R.O.W. LINE ON ILLINOIS TOLLWAY PROPERTY.
- LINE POSTS AND BRACES SHALL BE ON ILLINOIS TOLLWAY SIDE OF FENCE FABRIC.
- WHEN THE TENSION OF THE FENCE TENDS TO PULL THE POSTS FROM THE GROUND, THE LINE POSTS SHALL BE ANCHORED WITH ANCHORAGE SPECIFIED FOR CORNER POSTS.
- WHEN THE FENCE LINE HAS A CHANGE IN DIRECTION OF 10° OR MORE, A CORNER POST SHALL BE PLACED AT THE POINT OF CHANGE. WHERE THE ANGLE OF CHANGE IS LESS THAN 10° A PULL POST SHALL BE USED.
- WHERE GRADE LINE HAS A CHANGE IN SLOPE OF 10° OR MORE, A CORNER POST WITH BRACING AS REQUIRED SHALL BE PLACED. WHERE ANGLE IS LESS THAN 10° LINE POST MAY BE USED.
- WHERE RIGHT-OF-WAY FENCE, TYPE 1 IS USED, THE FABRIC SHALL BE KNUCKLED SELVAGE ON TOP AND TWISTED AND BARBED SELVAGE ON BOTTOM.
- PLACEMENT OF BRACED END POSTS OR CORNER POSTS WITHIN THE CLEAR ZONE SHALL BE AVOIDED.

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009

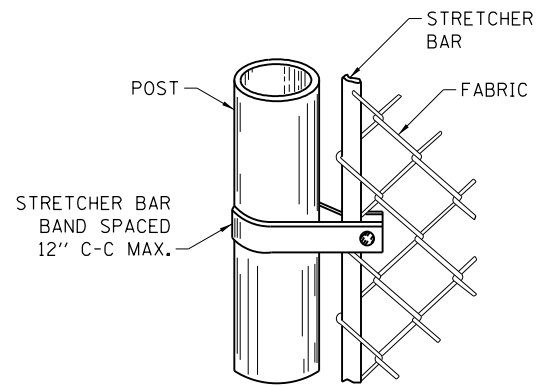
DATE	REVISIONS
7-01-2009	R.O.W. FENCE TYPES 1 AND 2 FENCE DETAILS
11-01-2012	REVISED NOTES
3-31-2014	REVISED ROLLED FORM SECTIONS
3-11-2015	REVISED NOTES
3-31-2017	REVISED NOTES

SHEET 1 OF 3

**RIGHT OF WAY FENCE**

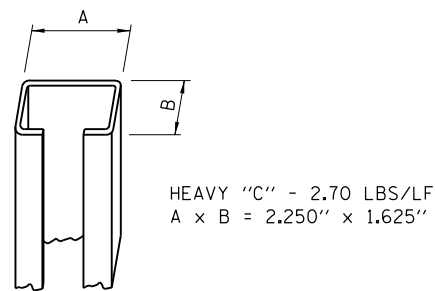
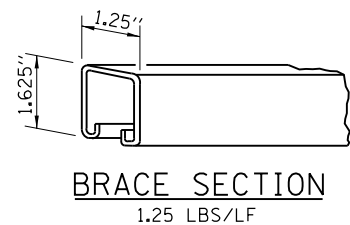
STANDARD D1-05



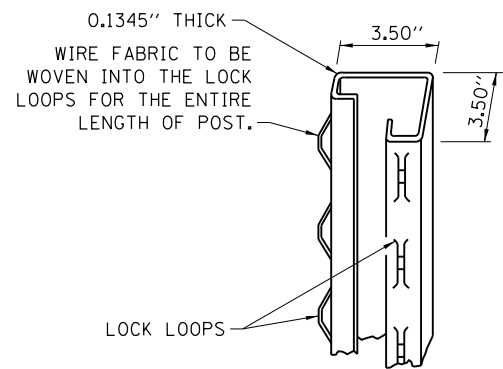


STRETCHER BARS SHALL BE GALVANIZED FLAT STEEL BAR NOT LESS THAN  $\frac{1}{4}$ " x  $\frac{3}{4}$ " AND THE STRETCHER BAR BANDS SHALL BE GALVANIZED FLAT STEEL BAR NOT LESS THAN  $\frac{1}{8}$ " x 1" WITH A  $\frac{3}{8}$ " GALVANIZED CARRIAGE BOLT.

**METHOD OF FASTENING STRETCHER BAR TO POST**

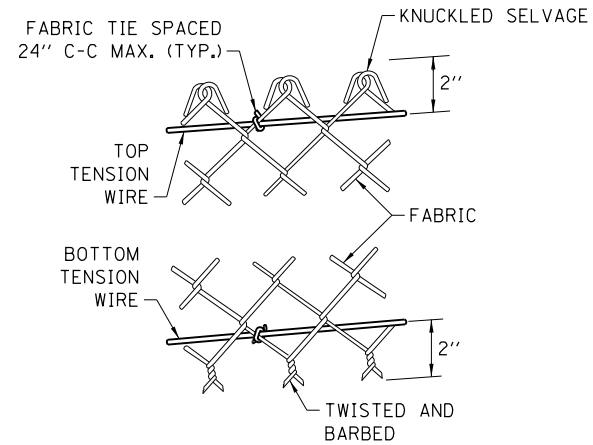


**LINE POST 'C' SECTION**

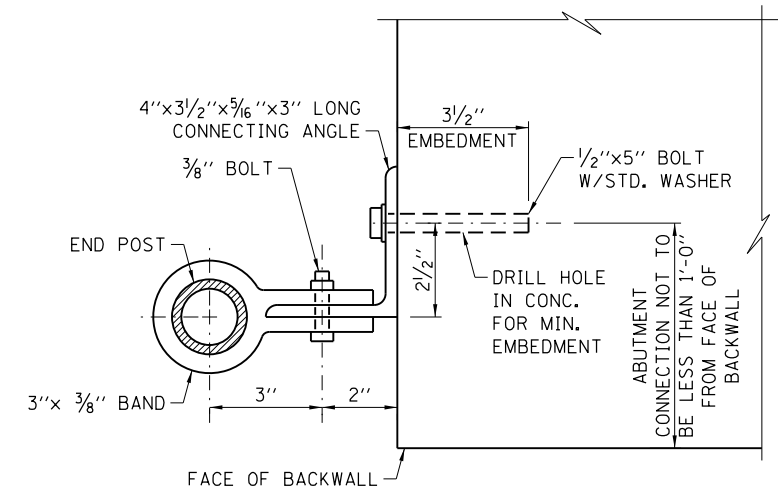


**TERMINAL POST SECTION**  
5.10 LBS/LF

**DETAILS OF ROLL FORMED SECTIONS**



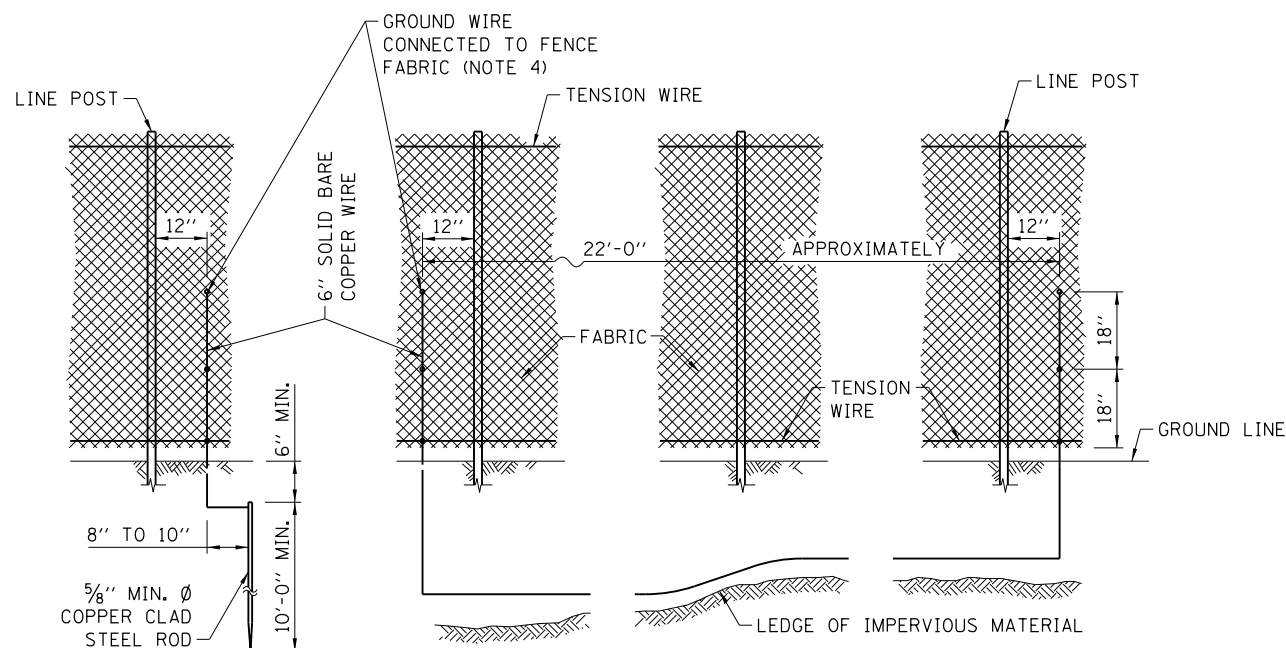
**METHOD OF TYING FABRIC TO TENSION WIRES**



**ABUTMENT CONNECTION DETAIL**

**NOTES FOR ABUTMENT CONNECTION:**

1. WHEN ROLL FORMED SECTION IS USED IN LIEU OF PIPE AS END POST, THE POST SHALL BE BOLTED DIRECTLY TO THE ABUTMENT WALL WITH  $2\frac{1}{2}$ " x 5" BOLTS WITH STANDARD WASHERS MEETING THE APPROVAL OF THE ENGINEER.

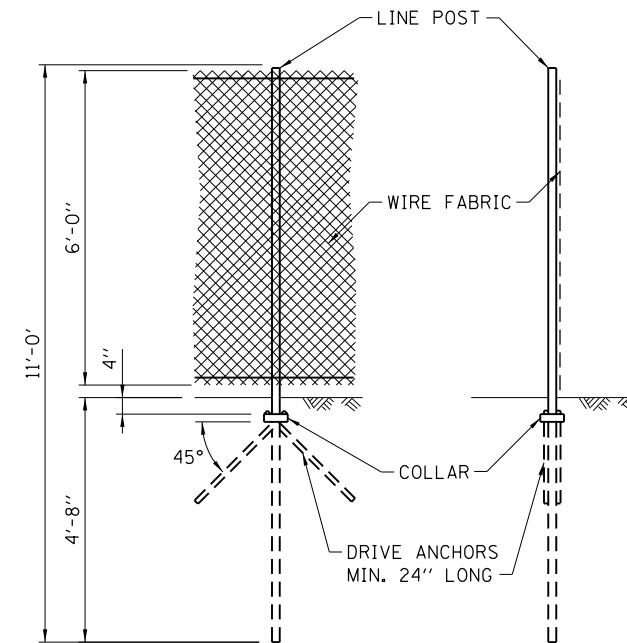


**STANDARD GROUND**

**COUNTERPOISE GROUND (ALTERNATE)**

**NOTES FOR STANDARD AND COUNTERPOISE GROUND:**

1. THE INTERVALS FOR GROUNDING CONTINUOUS FENCING SHALL NOT EXCEED 500 FEET IN URBAN AREAS AND 1000 FEET IN RURAL AREAS. FENCE ADJACENT TO A GATE SHALL BE GROUNDED A MAXIMUM DISTANCE 100 FEET EACH SIDE OF THE GATE.
2. FENCE CROSSING UNDER A POWER LINE SHALL BE GROUNDED, ONCE DIRECTLY UNDER THE CROSSING AND ONE ON EACH SIDE AT 25 TO 50 FEET AWAY. FENCE LOCATED DIRECTLY UNDER A TELEPHONE WIRE OR CABLE CROSSING SHALL HAVE A SINGLE GROUND.
3. COUNTERPOISE GROUNDS SHALL BE USED AT LOCATIONS WHERE GROUND RODS CAN NOT BE DRIVEN DUE TO IMPERVIOUS EARTH MATERIALS.
4. THE GROUND WIRES SHALL BE CONNECTED TO FENCE FABRIC AND GROUND ROD BY STAINLESS STEEL BOLTS AND WASHERS. THE LOWER CONNECTION OF THE GROUND WIRE SHALL BE MADE TO THE BOTTOM TENSION WIRE.



**ALTERNATE DRIVEN LINE POST ANCHORAGE WITH OR WITHOUT DRIVE ANCHORS**

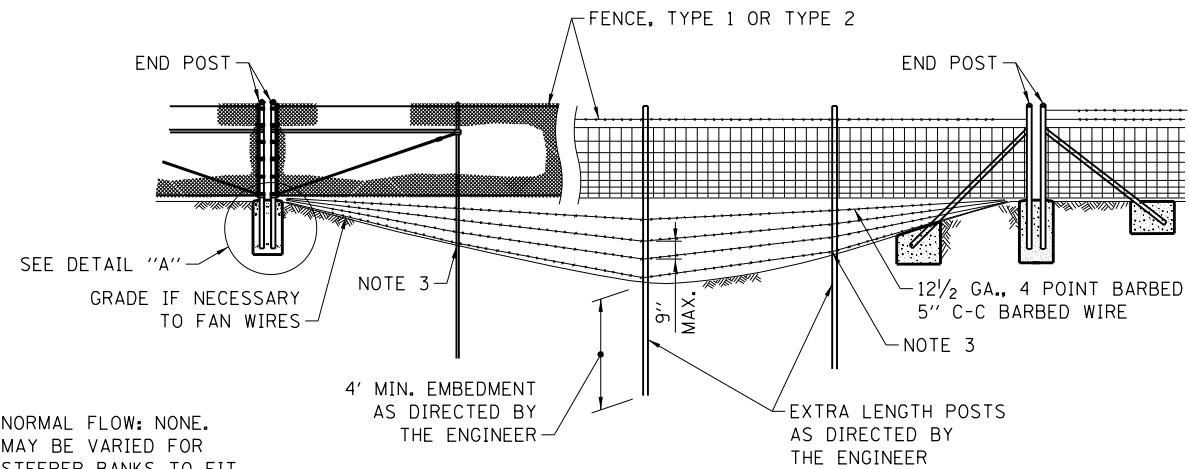
**NOTE FOR FENCE POST:**

ALTERNATE DRIVEN LINE POST ANCHORAGE IS OPTIONAL. DRIVEN LINE POST ANCHORAGE WITHOUT DRIVE ANCHORS MAY BE USED IN AVERAGE TO GOOD SOIL CONDITIONS. WHEN SOIL IS WEAKER ( $Q_u < 1.25$  TONS/ SQ. FT.) AND STABILITY OF THE POST IS QUESTIONABLE, DRIVE ANCHORS SHALL BE USED. TYPES, SHAPES, DIMENSIONS AND COATING REQUIREMENTS OF DRIVE ANCHORS (ANCHOR BLADES AND COLLARS) FOR DIFFERENT TYPE OF POSTS SHALL BE AS RECOMMENDED BY THE MANUFACTURER.

**ELECTRICAL GROUNDING DETAILS**

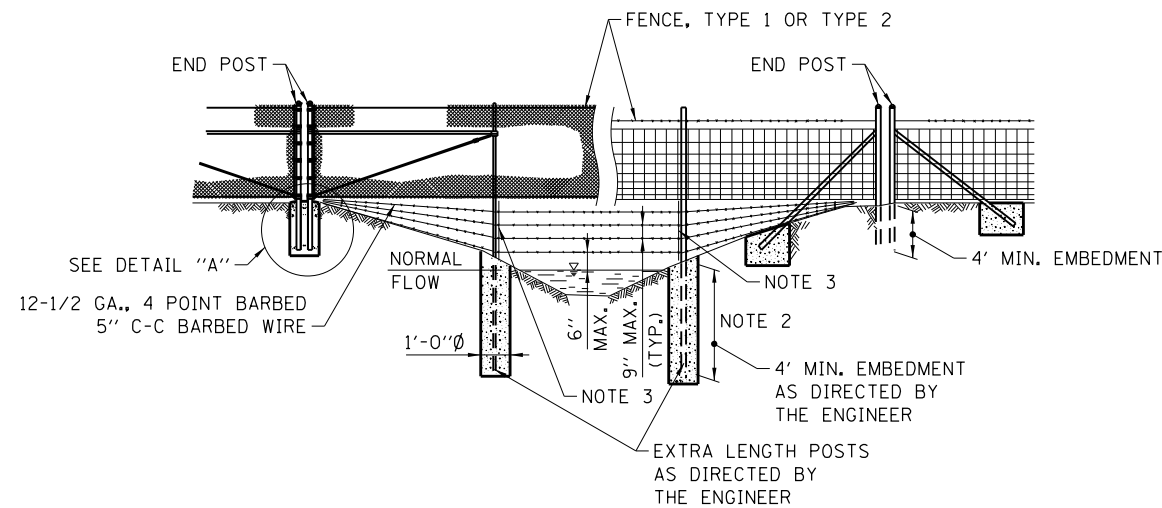
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009





NORMAL FLOW: NONE.  
MAY BE VARIED FOR  
STEEPER BANKS TO FIT  
VARIOUS CHANNEL SECTIONS.

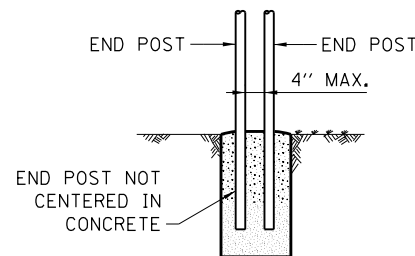
**STREAM CROSSING, TYPE 1**



**STREAM CROSSING, TYPE 2**

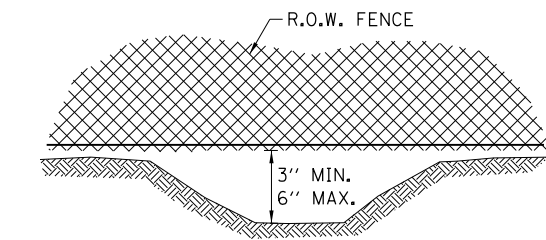
**NOTES FOR STREAM CROSSING TYPE 1 AND TYPE 2:**

1. THESE INSTALLATION CONDITIONS ARE TYPICAL AND ARE NOT TO BE CONSTRUED AS REPRESENTATIVE OF ALL CONDITIONS WHICH WILL BE ENCOUNTERED. CONSTRUCTION WILL BE VARIED AS REQUIRED OR DIRECTED TO MEET FIELD CONDITIONS.
2. FOR STREAM CROSSING OF THE TYPE REQUIRED THE BOTTOM BARBED WIRE SHALL BE ANCHORED TO CONCRETE FOOTING OR TO HOLES DRILLED IN POSTS, AND INTERMEDIATE WIRES SHALL BE TIED TO THE BOTTOM WIRE AND TO POSTS IN AN EVENLY SPACED FASHION TO PREVENT SLIPPAGE.
3. CONCRETE AND FITTINGS FOR ALL TYPES OF FENCE SHALL BE AS DETAILED FOR SIMILAR CONDITIONS PER STANDARD DRAWING.

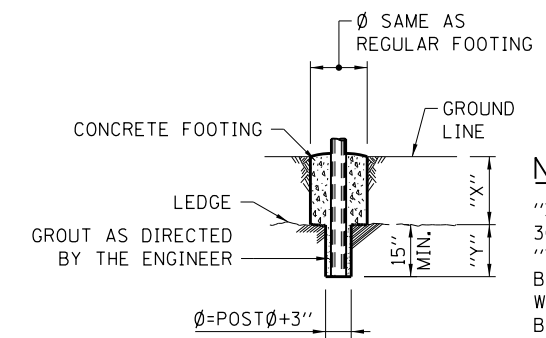


THE FENCE FABRIC SHALL BE REPLACED BY BARBED WIRE STRANDS AT 12\"/>

**DETAIL A**

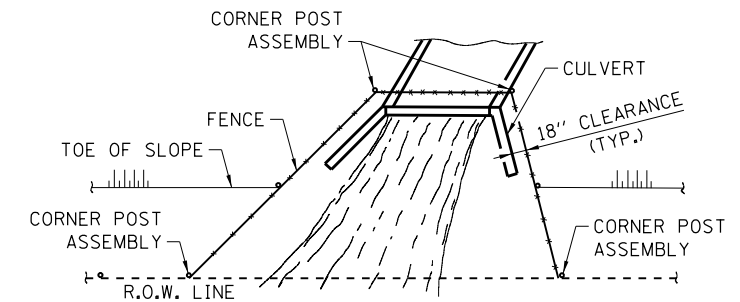


**FENCE INSTALLATION OVER DITCH**

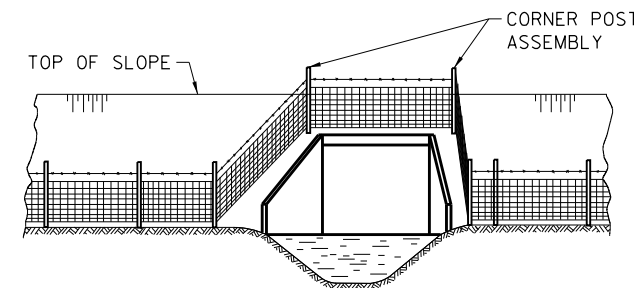


**NOTE:**  
"X" + "Y" SHALL NOT EXCEED 30" WHEN "X" IS 0" TO 15" "Y" =15", AND THE POST SHALL BE SHORTENED AS REQUIRED. WHEN "X" EXCEEDS 15" "Y" SHALL BE DECREASED ACCORDINGLY.

**FOOTING FOR POST WHEN ROCK LEDGE IS ENCOUNTERED**



**PLAN AT HEADWALL**



**ELEVATION**

**NOTES FOR INSTALLATION AROUND HEADWALL:**

1. THIS TYPE OF INSTALLATION IS TO BE USED ONLY WHEN SPECIFICALLY CALLED FOR IN THE CONTRACT PLANS.
2. WHEN THE WIDTH OF THE CULVERT MAKES NECESSARY TO ANCHOR A POST TO THE TOP OF THE CULVERT, A CAST IRON SHOE OR OTHER DEVICE APPROVED BY THE ENGINEER SHALL BE USED.

**INSTALLATION AROUND HEADWALL**



**SURVEY AND ROADWAY ITEMS**

EXISTING	PROPOSED	
		CONSTRUCTION JOINT W/DOWEL BARS
		BENCHMARK
		CANTILEVER SIGN STRUCTURE
		BUTTERFLY SIGN STRUCTURE
		DOUBLE COLUMN GROUND MOUNTED SIGN
		SINGLE COLUMN GROUND MOUNTED SIGN
		SPAN TYPE SIGN STRUCTURE
		TRIPLE COLUMN GROUND MOUNTED SIGN
		RUMBLE STRIP

**EROSION & SEDIMENT CONTROL, LANDSCAPING ITEMS**

EXISTING	PROPOSED		EXISTING	PROPOSED	
		CLEARING & GRADING LIMITS (LIMITS OF CONSTRUCTION)			EROSION CONTROL BLANKET
		DIVERSION DIKE			OVER SEEDING CLASS B1
		DRAINAGE DIVIDE			OVER SEEDING CLASS B2
		DRAINAGE PATH			SEEDING CLASS A1
		SEDIMENT BASIN AGGREGATE BERM			SEEDING CLASS A2
		CULVERT INLET PROTECTION-STONE			SEEDING CLASS A3
		CULVERT INLET PROTECTION-FENCE			SEEDING CLASS A4
		DEWATERING BASIN			SEEDING CLASS A5
		FILTER FABRIC INLET PROTECTION, BASKET TYPE			SEEDING CLASS A6
		FILTER FABRIC INLET PROTECTION, COVER TYPE			SEEDING CLASS D1
		FLOTATION BOOM			SODDING (SALT TOLERANT)
		INITIAL CONSTRUCTION ITEM			TEMPORARY GROUND COVER
		RECTANGULAR INLET PROTECTION			TURF REINFORCEMENT MAT
		TEMPORARY ROCK CHECK DAM			
		TEMPORARY DITCH CHECK			
		SEDIMENT BASIN			
		SILT FENCE			
		SUPER SILT FENCE			
		STABILIZED CONSTRUCTION ENTRANCE			
		STONE OUTLET STRUCTURE			
		SEDIMENT TRAP			
		STREAM DIVERSION			
		TEMPORARY PIPE SLOPE DRAIN			
		TEMPORARY RIPRAP			
		TEMPORARY SWALE			
		TREES AND STUMP			
		TREE PROTECTION			
		TEMPORARY STREAM CROSSING			

**DRAINAGE AND UTILITY ITEMS; ROADWAY LIGHTING AND SIGNS**

EXISTING	PROPOSED	
		BOX CULVERT WITH HEADWALL
		CABLE IN DUCT W/O GROUND
		LOW POINT
		OVERHEAD ELECTRICAL
		OVERHEAD TELEPHONE
		PIPE CULVERT
		LAKE OR POND
		QUARRY
		STREAM
		SWAMP
		CABLE OR CONDUIT TAG
		ELECTRICAL MANHOLE
		LIGHT-DUTY BOX
		ROADWAY LUMINAIRE
		STEEL TOWER
		TELEPHONE MANHOLE
		UNDERPASS LUMINAIRE
		WATER POINT
		WATERMAIN VALVE VAULT
		WATER WELL
		WOOD POLE

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009

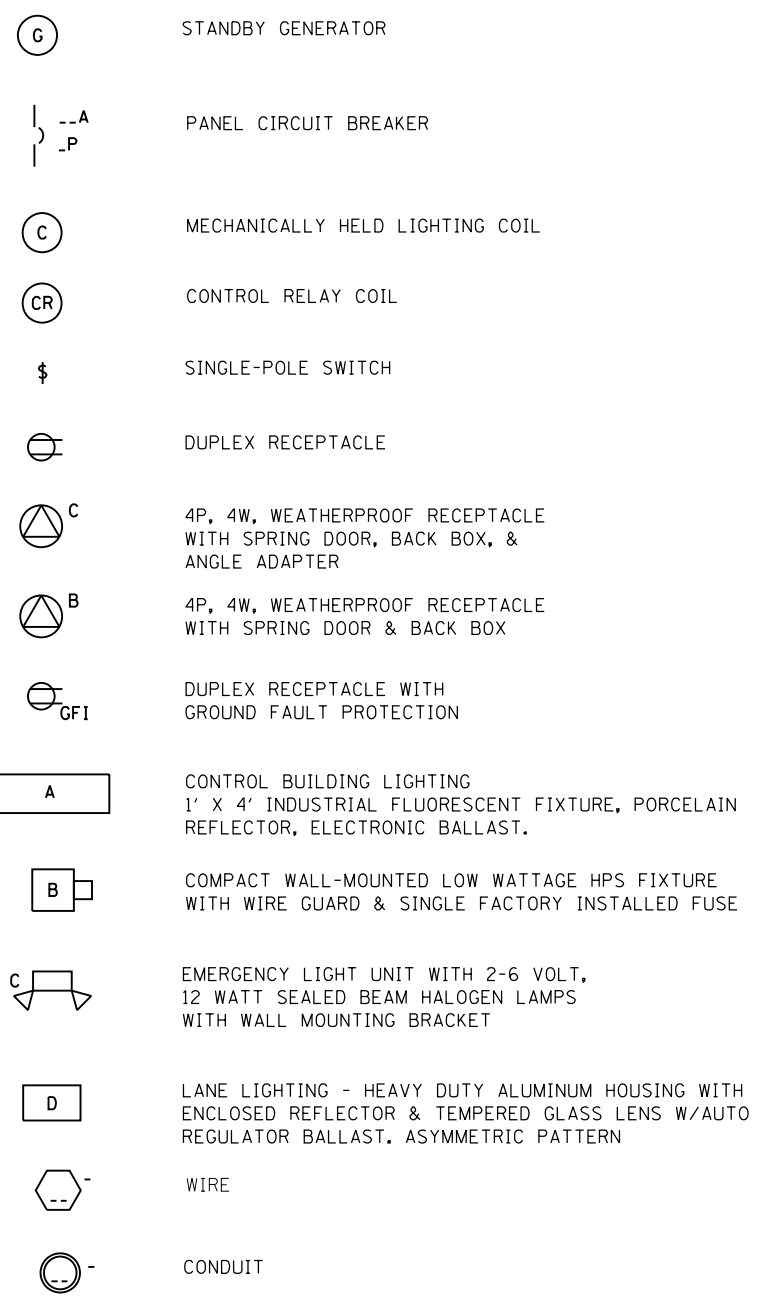
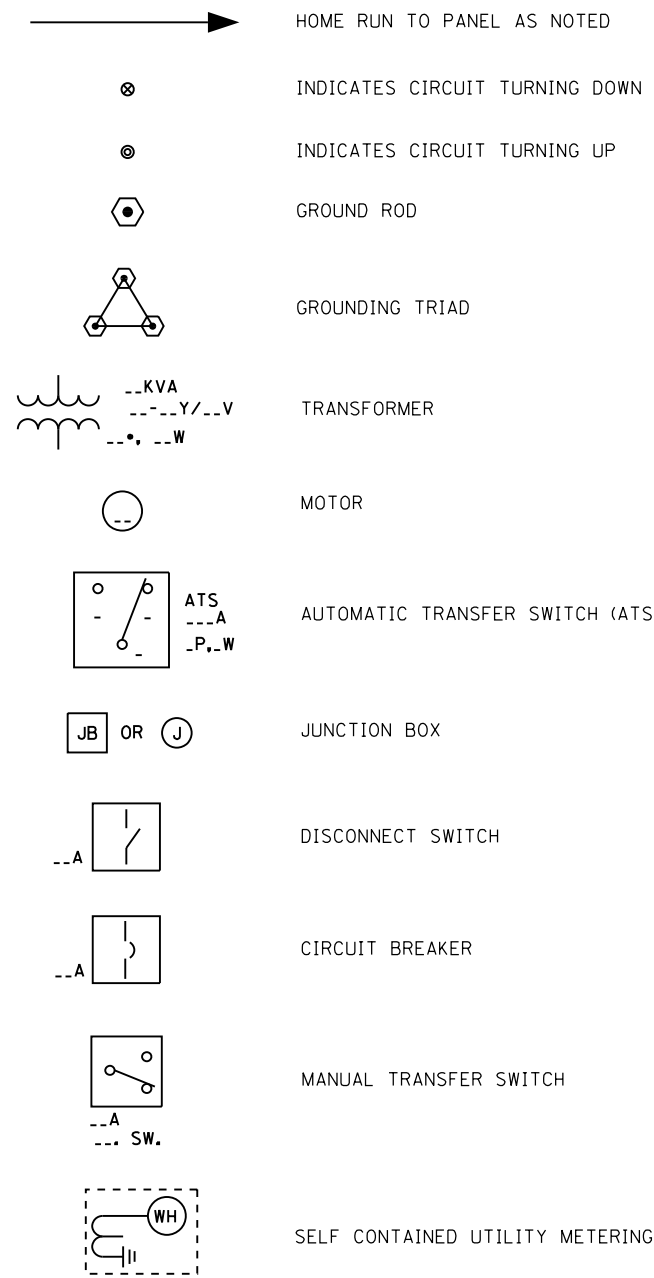


DATE	REVISIONS
7-01-2009	REVISED SYMBOL & PATTERNS
11-01-2012	ADDED NEW SYMBOLS
3-11-2015	ADDED NEW SYMBOL
3-31-2016	UPDATED DITCH CHECK SYMBOL

SYMBOLS AND PATTERNS

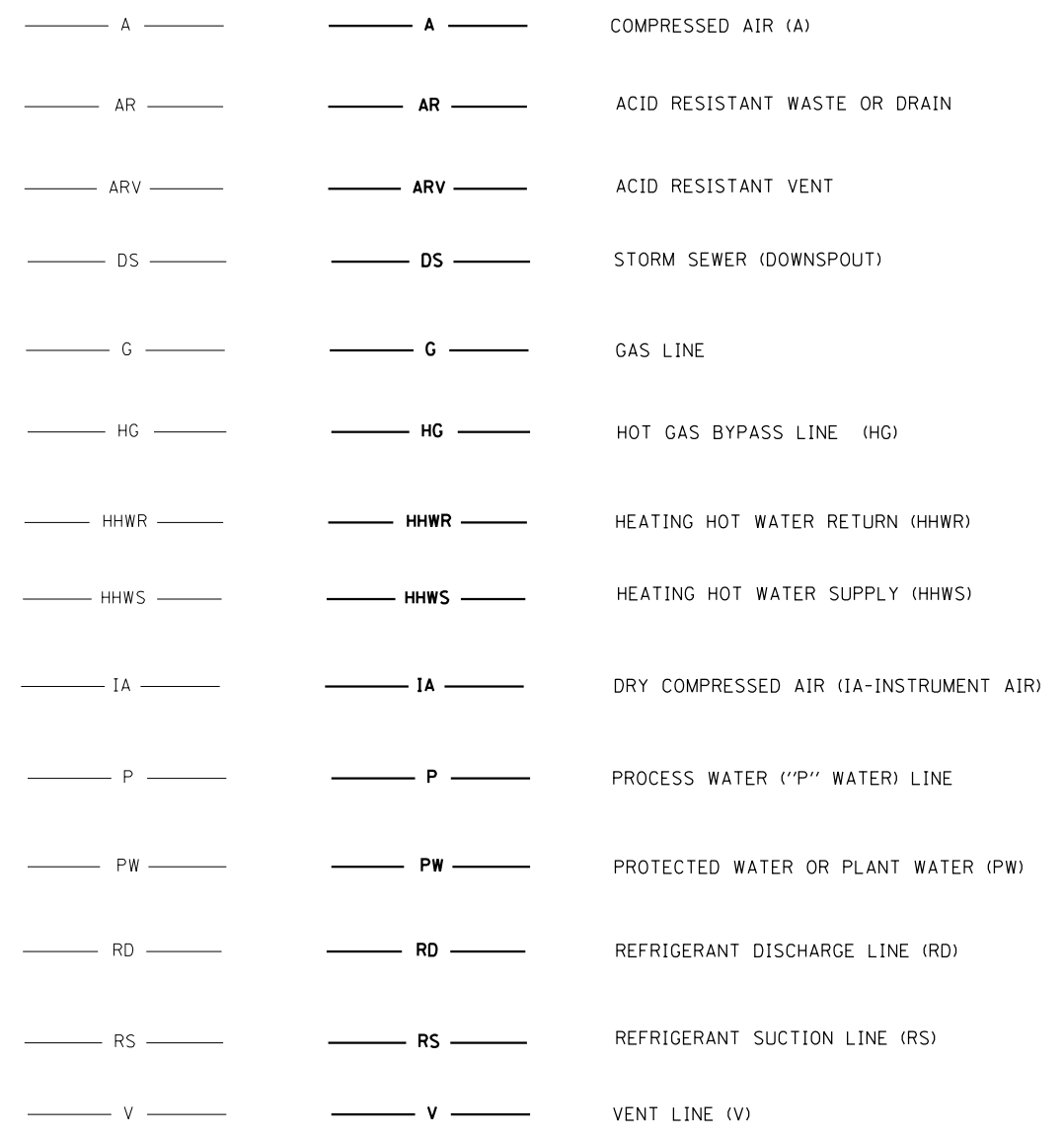
STANDARD D2-04

ELECTRICAL AND MECHANICAL ITEMS



EXISTING

PROPOSED



SYMBOLS AND PATTERNS

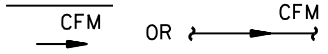
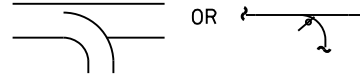

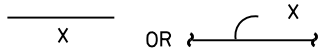


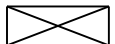


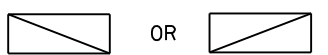


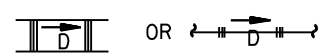


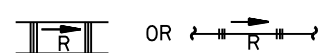


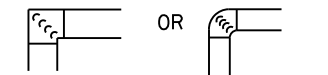


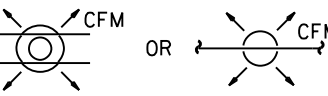


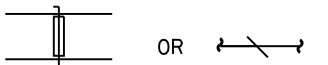


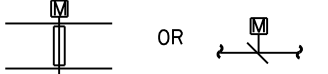
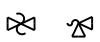




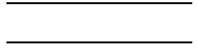
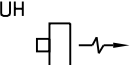

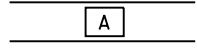


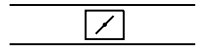
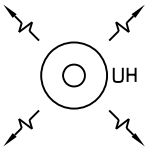

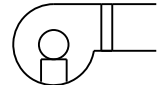



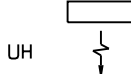

STANDARD D2-04

NOTE:

ALL SYMBOLS AND PATTERNS ON THIS DRAWING ARE PROPOSED UNLESS OTHERWISE NOTED.


*Paul Kovacs*  
 APPROVED ..... CHIEF ENGINEER ..... DATE 7-1-2009

## ELECTRICAL AND MECHANICAL ITEMS


	<p>QUANTITY AND DIRECTION OF THE AIR FLOW</p>		<p>SPLITTER DAMPER</p>		<p>GLOBE VALVE</p>
	<p>DUCT SIZE (FIRST FIGURE SIZE OF SHOWN, SECOND FIGURE SIZE OF SIDE NOT SHOWN.)</p>		<p>PLUG VALVE WITH MEMORY STOP (BALANCING)</p>		<p>BUTTERFLY VALVE</p>
	<p>SUPPLY DUCT SECTION</p>		<p>PLUG VALVE</p>		<p>CHECK VALVE</p>
	<p>RETURN OR EXHAUST DUCT SECTION</p>		<p>SOLENOID VALVE</p>		<p>ANGLE GATE VALVE</p>
	<p>DUCT DROPS IN THE DIRECTION OF FLOW</p>		<p>TEMPERATURE CONTROL VALVE</p>		<p>CONCENTRIC REDUCER</p>
	<p>DUCT RISES IN THE DIRECTION OF FLOW</p>		<p>THREE-WAY TEMPERATURE CONTROL VALVE DIAPHRAGM</p>		<p>ECCENTRIC REDUCER</p>
	<p>TURNING VANES</p>		<p>THREE-WAY TEMPERATURE CONTROL VALVE TOP VIEW</p>		<p>ORIFICE FLANGE</p>
	<p>8" THROAT DIAMETER CEILING DIFFUSER; AIR FLOW -- 100 CFM</p>		<p>PRESSURE REDUCING VALVE (NOS. = INITIAL AND FINAL PRESSURE - PSIG)</p>		<p>CROSSOVER</p>
	<p>BALANCING OR VOLUME DAMPER</p>		<p>AIR PRESSURE REDUCING STATION (NO. CORRESPONDS WITH AIR PRESSURE REDUCER SCHEDULE)</p>		<p>PIPE GUIDE</p>
	<p>MOTOR OPERATED DAMPER</p>		<p>SAFETY VALVE (NOS. = PRESSURE SETTING - PSIG)</p>		<p>EXPANSION JOINT (SLIP TYPE)</p>
	<p>FLEXIBLE DUCT</p>		<p>FLOAT OPERATED VALVE</p>		<p>EXPANSION JOINT (BELLOWS TYPE)</p>
	<p>FIRE DAMPER</p>		<p>HORIZONTAL UNIT HEATER (NO. CORRESPONDS WITH UNIT HEATER SCHEDULE)</p>		<p>AIR ELIMINATOR (AIR VENT)</p>
	<p>SOUND ATTENUATOR</p>		<p>QUICK COUPLING (QC)</p>		<p>PIPE CAP</p>
	<p>ZONE DAMPER</p>		<p>VERTICAL UNIT HEATER (NO. CORRESPONDS WITH UNIT HEATER SCHEDULE)</p>		<p>STRAIGHT CROSS</p>
	<p>FLEXIBLE CONNECTION AT FAN OR EQUIPMENT</p>		<p>THERMOSTAT OR ROOM TEMPERATURE SENSOR</p>		<p>90° ELBOW</p>
	<p>EXTRACTOR</p>		<p>CABINET TYPE UNIT HEATER (NO. CORRESPONDS WITH UNIT HEATER SCHEDULE)</p>		<p>90° ELBOW TURNED DOWN</p>

**NOTE:**

ALL SYMBOLS AND PATTERNS ON THIS DRAWING ARE PROPOSED UNLESS OTHERWISE NOTED.

  
 APPROVED ..... CHIEF ENGINEER ..... DATE 7-1-2009

SHEET 3 OF 3

  
**Illinois Tollway**

SYMBOLS AND PATTERNS

STANDARD D2-04

PERMANENT DELINEATION SPACING				
REFLECTORS	MAINLINE		RAMP	
	TANGENT	CURVE	TANGENT	CURVE
* GUARDRAIL	100'	100'	100'	100' (R >= 1,050') 50' (R < 1,050')
* BARRIER WALL (DOUBLE FACE)	100'	100'	100'	100' (R >= 1,050') 50' (R < 1,050')
* BARRIER WALL (SINGLE FACE)	100'	100'	100'	100' (R >= 1,050') 50' (R < 1,050')
SHOULDER NARROWING	3 @ 15'	3 @ 15'	3 @ 15'	3 @ 15'
BRIDGE APPROACHES	3 @ 15'	3 @ 15'	3 @ 15'	3 @ 15'
* BRIDGE PARAPET	50'	50'	50'	50'
* NOISE ABATEMENT WALL (CRASH WORTHY)	100'	100'	100'	100' (R >= 1,050') 50' (R < 1,050')
ROADWAY DELINEATORS	MAINLINE		RAMP	
	TANGENT	CURVE	TANGENT	CURVE
POST MOUNTED DELINEATOR	200'	200'	200'	TABLE A
POST MOUNTED DELINEATOR (RAMP TAPERS AND TANGENTS)	100'	100'	NA	NA
TEMPORARY DELINEATION SPACING				
	TANGENT	REVERSE CURVE	SHIFT	TAPER
TEMPORARY CONCRETE BARRIER	50'	25'	25'	25'
* WHEN ADJACENT SHOULDER IS USED AS A TRAVELED LANE, USE SPACING REQUIREMENTS AS SHOWN FOR TEMPORARY DELINEATION.				

TABLE A	
REFLECTOR SPACING ON RAMP-CURVES	
RADIUS OF CURVE (FT.)	SPACING ALONG CURVE (FT.)
LESS THAN 1050	50
1050-1299	100
1300-1999	125
2000-2999	150
3000-3999	175
MORE THAN 3999	200

**GENERAL NOTES:**

EMERGENCY TURNAROUNDS DELINEATION-THE FOLLOWING DELINEATION SHOULD BE INSTALLED ON THE LEFT SIDE OF THE PAVEMENT APPROACHING EMERGENCY TURNAROUNDS.

- A. ONE-HALF OF A MILE IN ADVANCE OF THE EMERGENCY TURNAROUNDS ONE WHITE REFECTOR UNIT OVER THREE AMBER REFLECTOR UNITS.
- B. ONE-FOURTH OF A MILE IN ADVANCE OF THE EMERGENCY TURNAROUNDS ONE WHITE REFLECTOR UNIT OVER TWO AMBER REFLECTOR UNITS.
- C. AT A POINT NEAR THE INTERSECTION OF THE EDGE OF THE LEFT SHOULDER AND NEAR EDGE OF THE EMERGENCY TURNAROUNDS ONE WHITE REFLECTOR UNIT OVER ONE AMBER REFLECTOR UNIT.

**NOTES FOR ROADWAY DELINEATORS, POST MOUNTED INSTALLATION:**

1. A. MAINLINE-SINGLE WHITE REFECTOR UNITS SHALL BE PLACED CONTINUOUSLY ON THE RIGHT AND SINGLE AMBER REFLECTOR UNITS SHALL BE PLACED ON THE LEFT ON MAIN LINE SECTIONS WITHOUT BARRIER WALL.
- B. RAMPS-SINGLE REFLECTOR UNITS SHALL BE PLACED ON THE OUTSIDE OF ALL CURVED SECTIONS OF RAMPS, SINGLE WHITE SHALL BE PLACED ON THE RIGHT SIDE AND AMBER ON THE LEFT SIDE. THE DELINEATORS SHALL BE OVERLAPPED FOR A SHORT DISTANCE TO CLEARLY INDICATE WHERE DELINEATION ON ONE SIDE OF THE RAMP ENDS AND DELINEATION ON THE OTHER SIDE APPEARS.
- C. DOUBLE WHITE REFLECTOR UNITS SHALL BE PLACED ON THE RIGHT AT ALL ACCELERATION AND DECELERATION LANES.
2. REFLECTORS SHALL BE MOUNTED ON SUPPORTS SUCH THAT THE TOP OF REFLECTORS IS FOUR FEET ABOVE THE ROADWAY EDGE AND TWO FEET OUTSIDE THE OUTER EDGE OF THE PAVED SHOULDER OR TWO FEET MINIMUM AND SIX FEET MAXIMUM OUTSIDE THE BACKS OF CURBS OR GUTTERS.
3. IN ALL CASES, THE COLOR OF THE REFLECTORS SHALL BE THE SAME AS THE ADJACENT EDGE LINE EXCEPT AS SPECIFIED IN GENERAL NOTES.
4. POST MOUNTED REFLECTORS SHALL BE PLACED CONTINUOUSLY AS NOTED ABOVE IN CONJUNCTION WITH GUARDRAIL INSTALLED.
5. THE PLACEMENT OF ROADWAY DELINEATOR "CIRCULAR REFLECTORS" SHALL BE USED FOR ALL MINOR PROJECTS WHICH HAVE A LENGTH OF LESS THAN 5 MILES. THE PLACEMENT OF ROADWAY DELINEATOR "RECTANGULAR REFLECTORS" SHALL BE USED FOR ALL MAJOR PROJECTS WHICH HAVE A LENGTH GREATER THAN 5 MILES. ALL ROADWAY DELINEATORS WITHIN A ROADWAY SEGMENT SHALL BE OF THE SAME TYPE.

**NOTES FOR GUARDRAIL AND BARRIER WALL REFLECTOR:**

1. REFLECTORS TYPE B AND TYPE C SHALL HAVE REFLECTIVE SURFACE ON ONE SIDE ONLY.

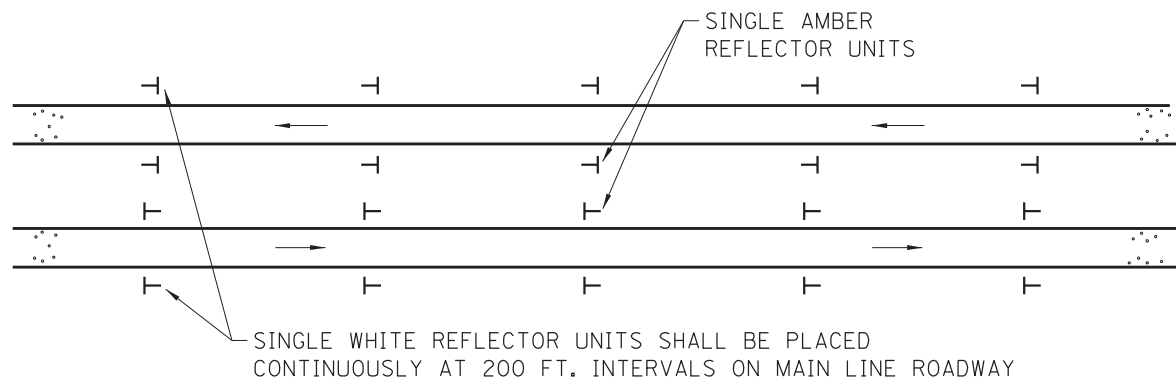


ROADWAY DELINEATORS AND REFLECTORS

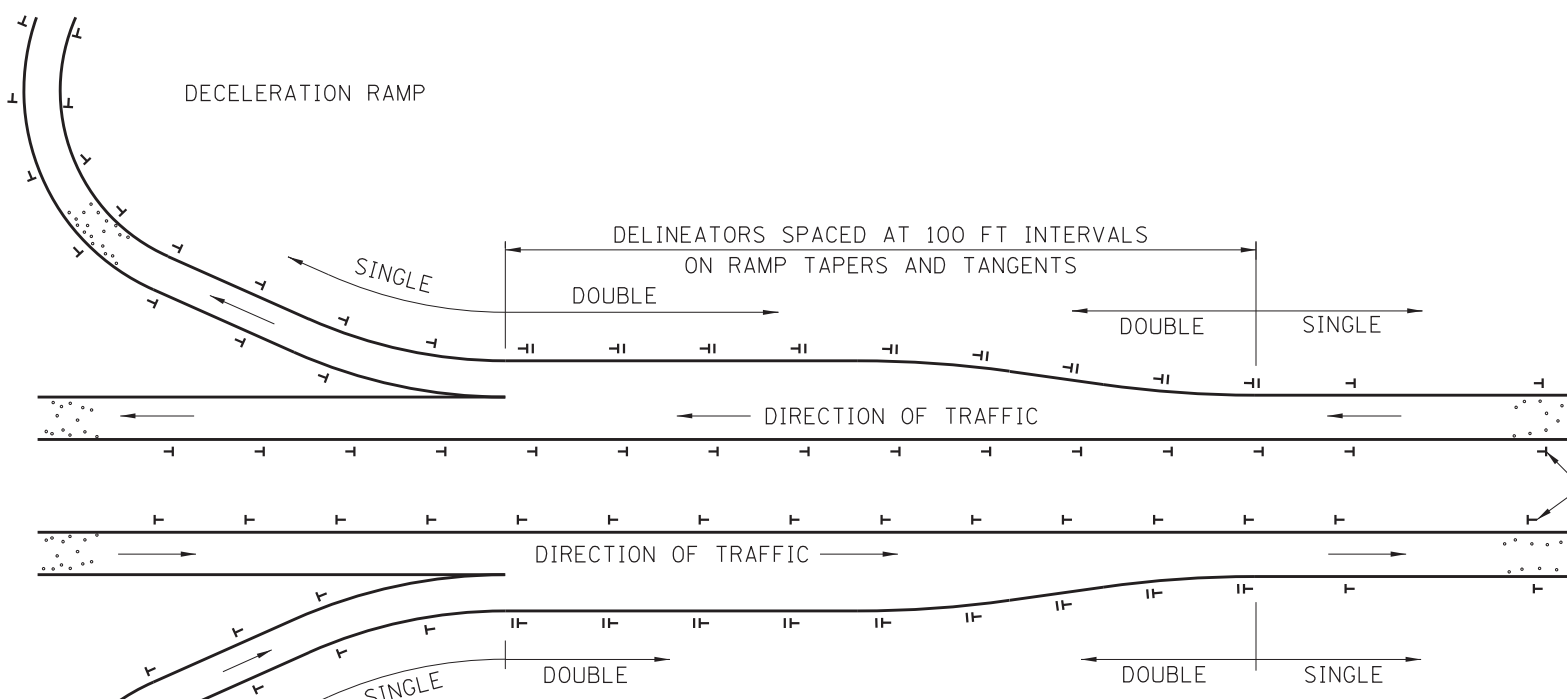
STANDARD D4-06

DATE	REVISIONS
07-01-09	CHANGED BARRIER TO F-SHAPE CONFIG. ADDED SECTION C-C NEW BARRIER DELINEATORS
02-07-12	REVISED REFLECTOR MARKER TYPE C DIMENSION
11-01-12	REVISED NOTES, TABLE AND DELINEATION SPACING
3-11-2015	REVISED NOTES
3-31-2016	REVISED DELINEATOR ATTACHMENT TO POST
3-31-2017	REVISED PERM. DELINEATION SPACING TABLE

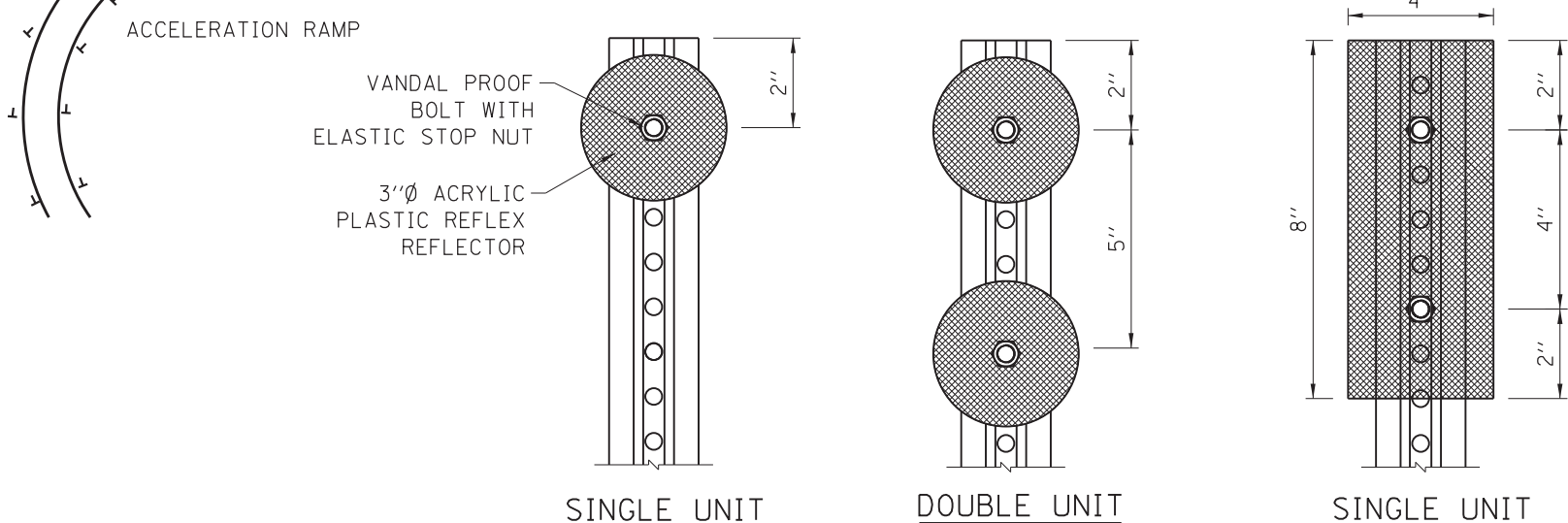
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009



**TANGENT PLACEMENT**

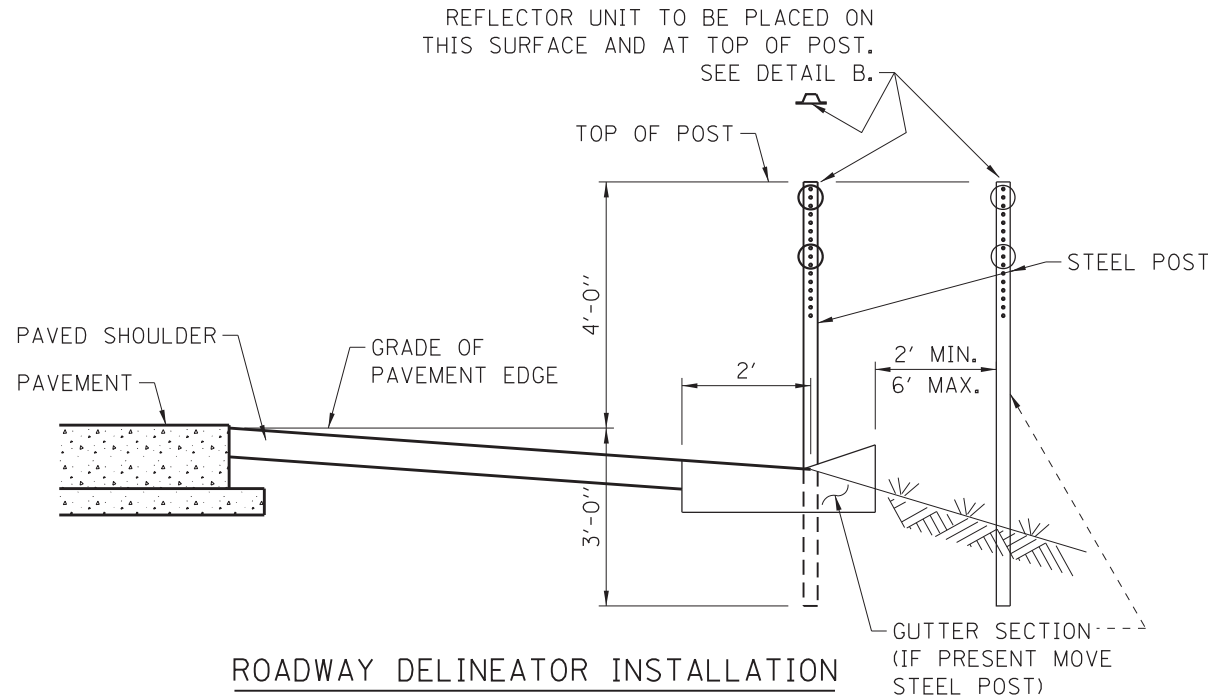


**INTERCHANGE RAMP PLACEMENT**

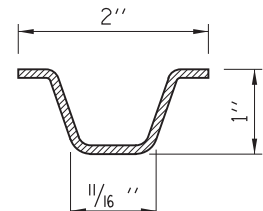


**CIRCULAR REFLECTORS**

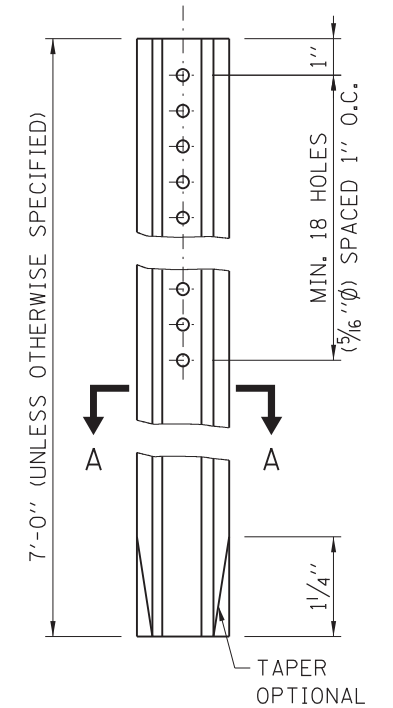
**RECTANGULAR REFLECTORS**



**ROADWAY DELINEATOR INSTALLATION**



**SECTION A-A**  
STEEL- 1.12 LBS/FT.

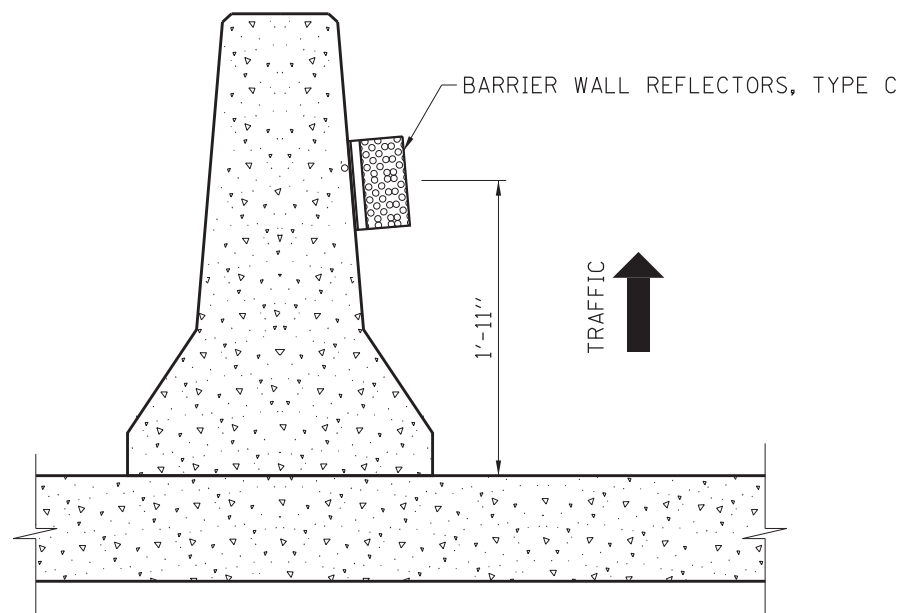


**STEEL POST**



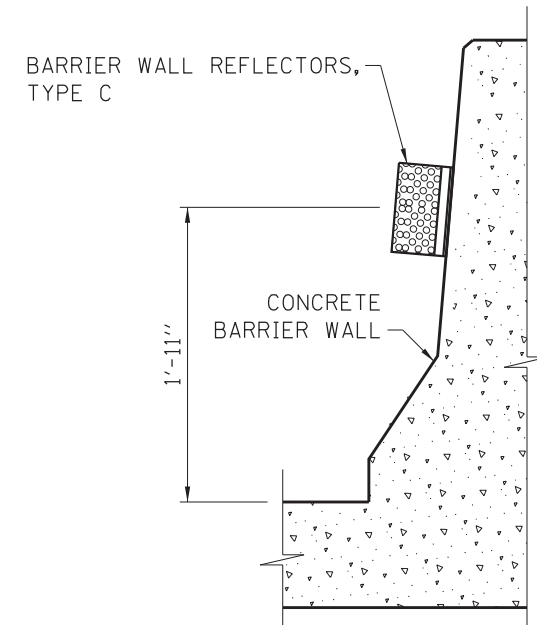
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009

**NOTE:**  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

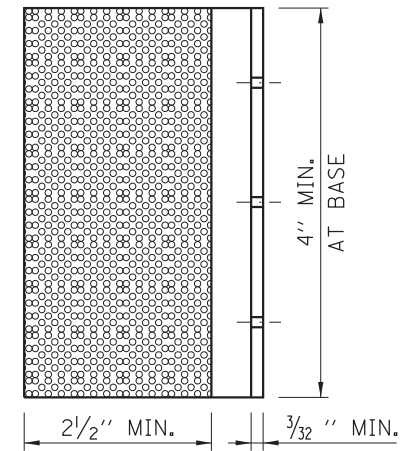


CROSS-SECTION

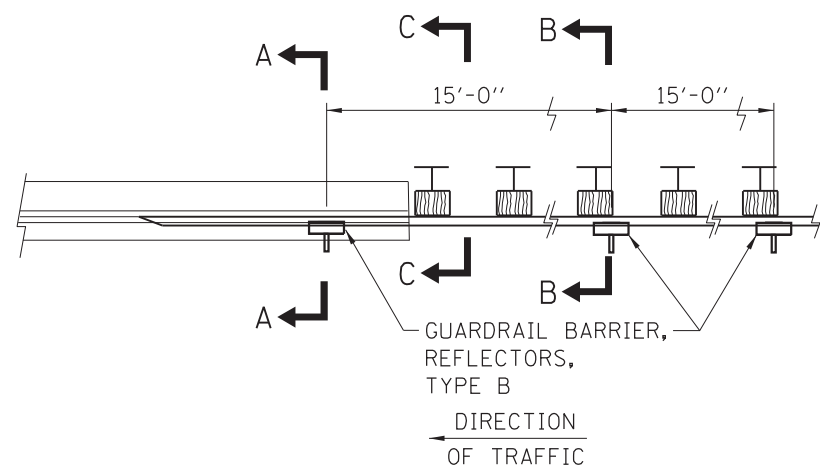
TEMPORARY CONCRETE BARRIER



BARRIER OR PARAPET REFLECTOR INSTALLATION



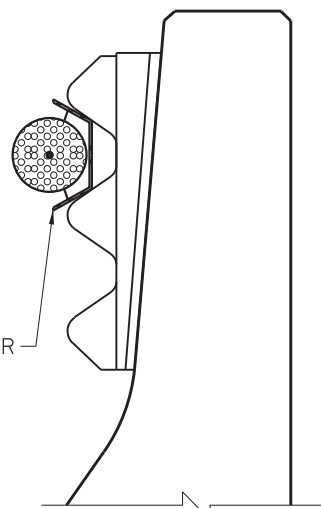
REFLECTOR, TYPE C



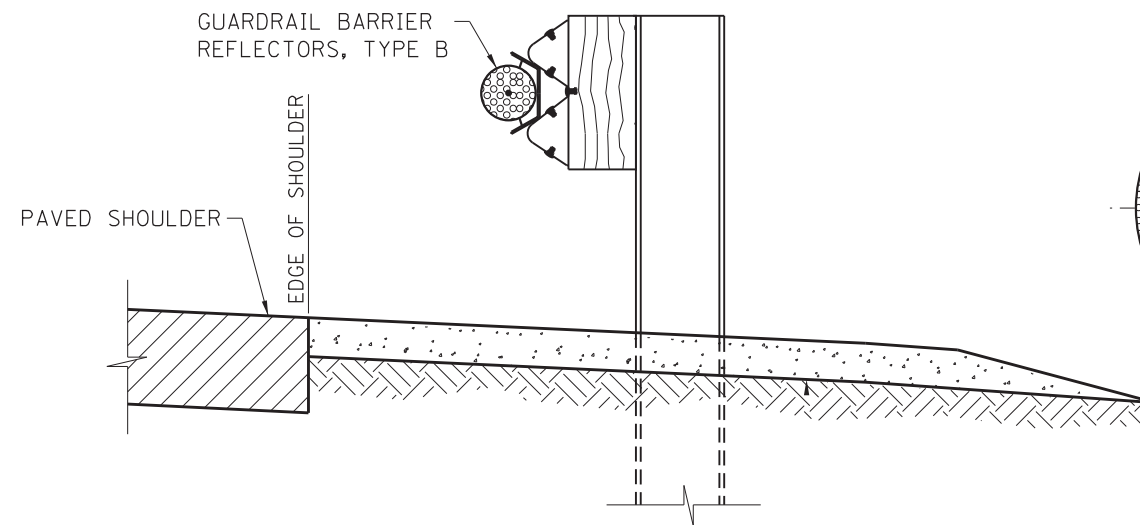
PLAN

REFLECTOR INSTALLATION ON GUARDRAIL AT BRIDGE APPROACHES

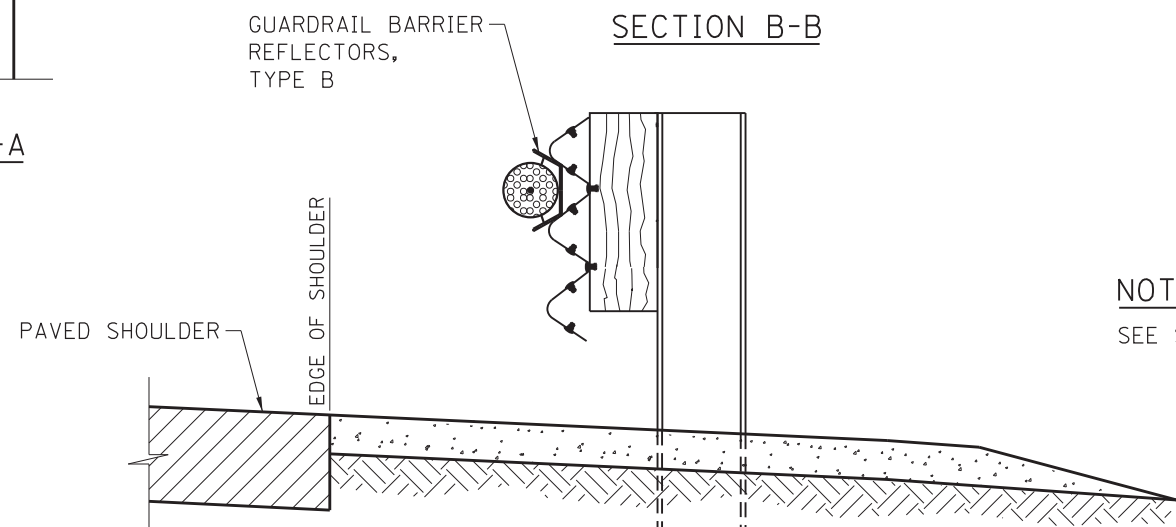
ALSO SEE SHEET 1 IN THIS SERIES FOR ADDITIONAL INFORMATION



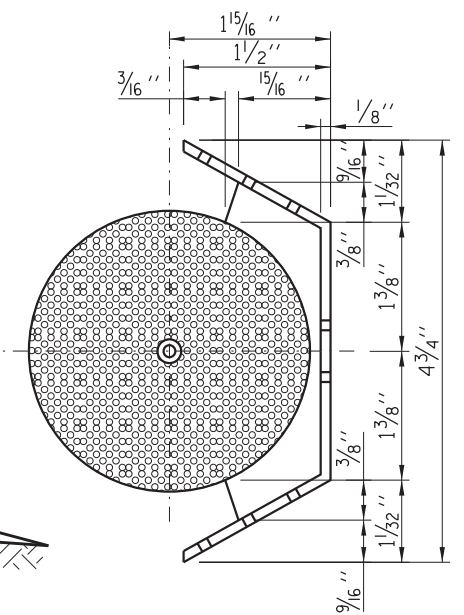
SECTION A-A



SECTION B-B



SECTION C-C



REFLECTOR, TYPE B

NOTE:  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

SHEET 3 OF 3

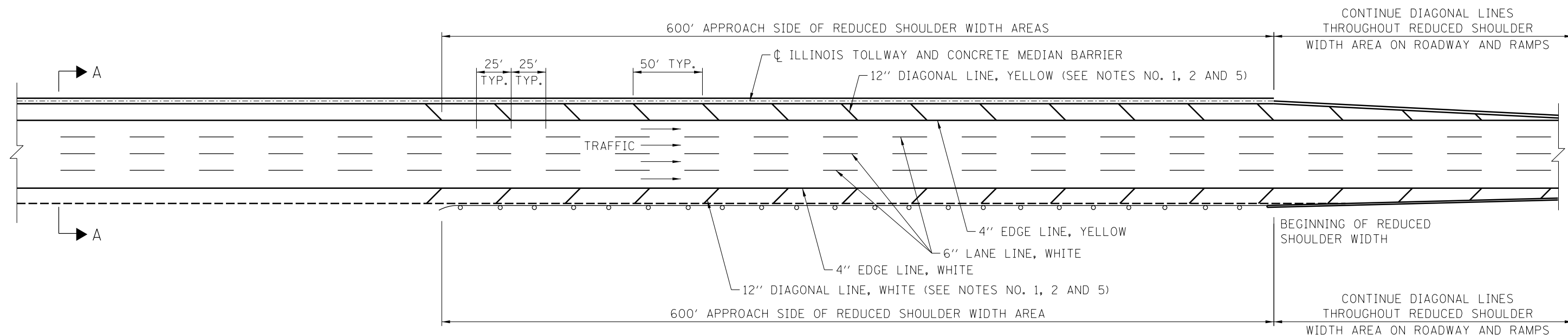


ROADWAY DELINEATORS AND REFLECTORS

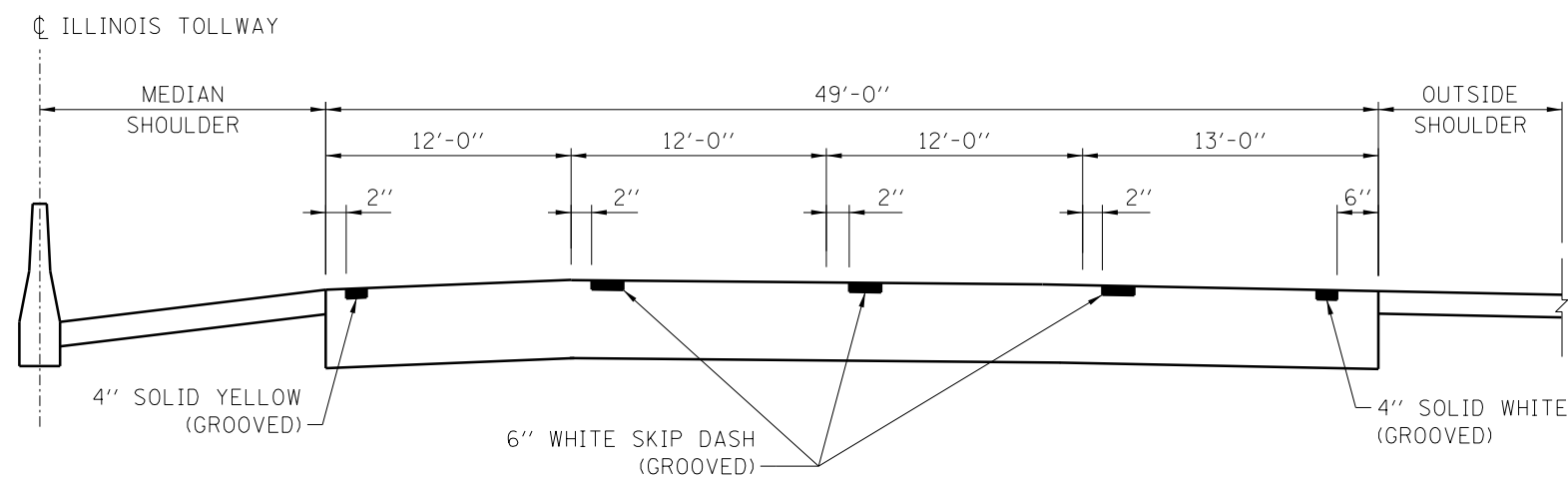
STANDARD D4-06

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009





PLAN



SECTION A-A

ROADWAY AND SHOULDER STRIPING - NEW CONSTRUCTION

GENERAL NOTES:

1. DIAGONAL SHOULDER STRIPING REQUIRED WHERE THE SHOULDER WIDTH IS LESS THAN STANDARD.
2. ROADWAY MARKING MATERIALS TO BE USED ON FINISHED CONCRETE SURFACE AND ASPHALT SURFACE SHALL BE AS SHOWN ON THE PLANS.
3. WHERE THE GUARDRAIL ENCROACHES ON THE SHOULDER THE DIAGONAL MARKINGS SHALL EXTEND AS CLOSE TO THE FACE OF THE RAIL AS POSSIBLE.
4. ALL PERMANENT LANE LINES AND EDGE LINES SHALL BE GROOVED, ON ROADWAY SURFACES, UNLESS OTHERWISE NOTED.
5. DIAGONAL STRIPING SHALL BE SURFACE APPLIED.
6. GORE STRIPING (CHEVRON) SHALL BE SURFACE APPLIED.
7. ALL LANE LINES AND EDGE LINES SHALL BE SURFACE APPLIED ON BRIDGES.
8. PAVEMENT MARKINGS SHALL NOT BE GROOVED AT THE CASH SIDE OF MAINLINE TOLL PLAZAS OR THE OPEN ROAD TOLLING (ORT), 100' CONTINUOUSLY REINFORCED CONCRETE (CRC) PAVEMENT SECTION OF MAINLINE UNDER MONOTUBES.

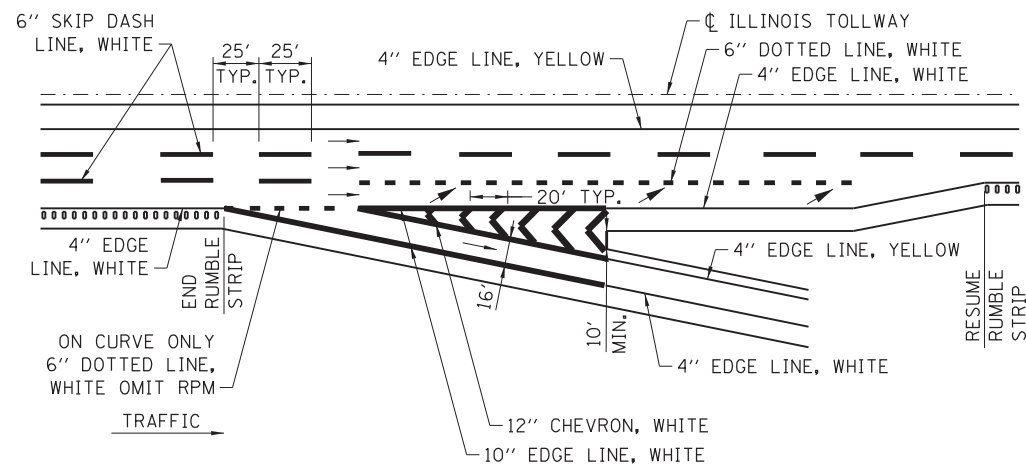
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009

DATE	REVISIONS
7-01-09	ADDED LINE GROOVING NOTES
2-07-12	REVISED NOTES
11-01-12	REVISED EDGELINE OFFSET, REVISED NOTES
3-31-14	REVISED NOTES
3-31-16	REVISED NOTES

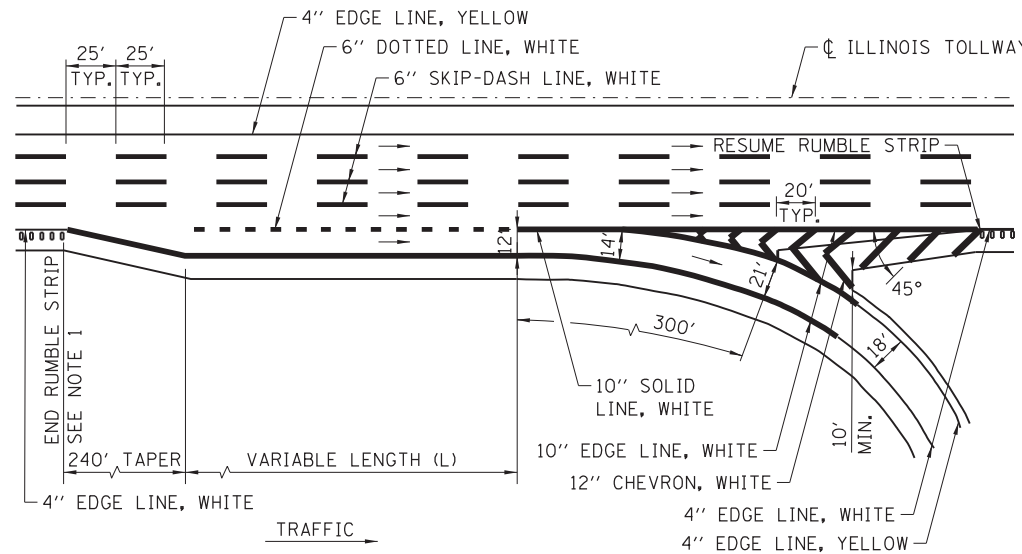


PERMANENT PAVEMENT MARKINGS

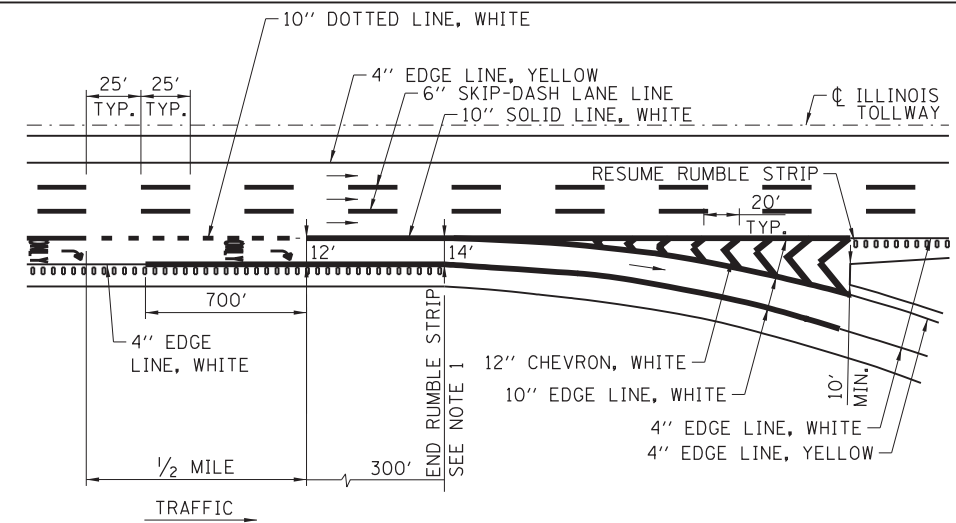
STANDARD D5-06



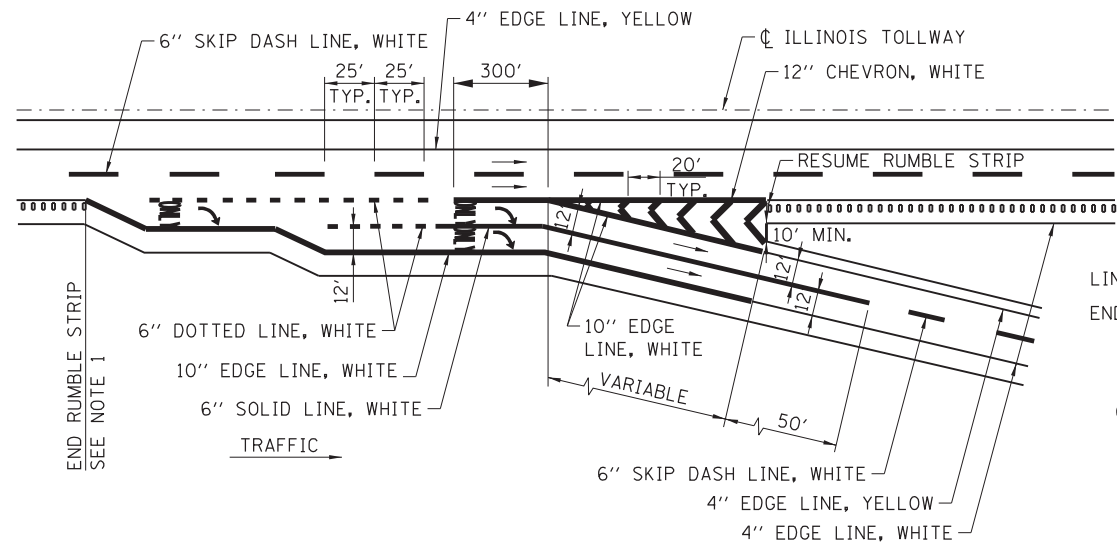
EXIT - SINGLE LANE RAMP  
LANE THREE TERMINATION



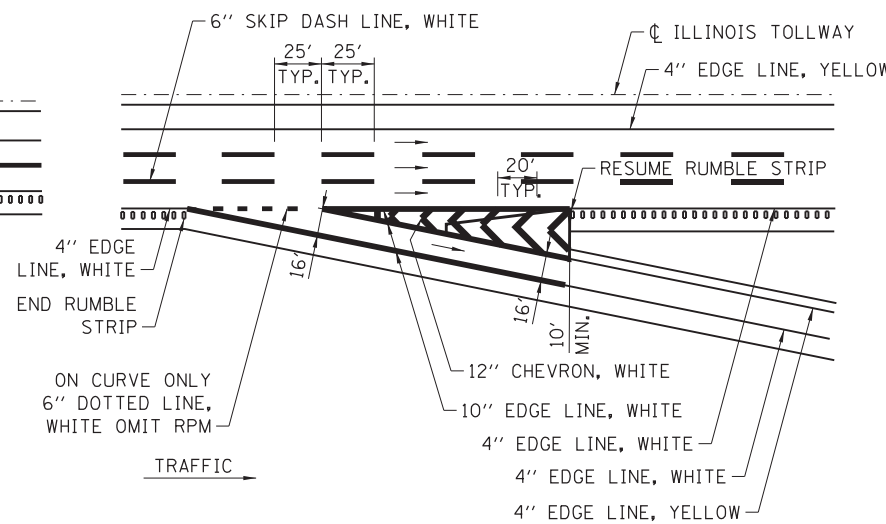
EXIT - SINGLE LANE LOOP RAMP - PARALLEL TYPE



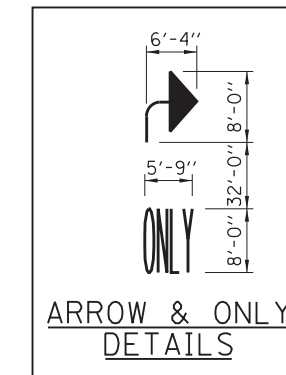
EXIT - SINGLE LANE RAMP - LANE DROP



EXIT - TWO LANE PARALLEL RAMP



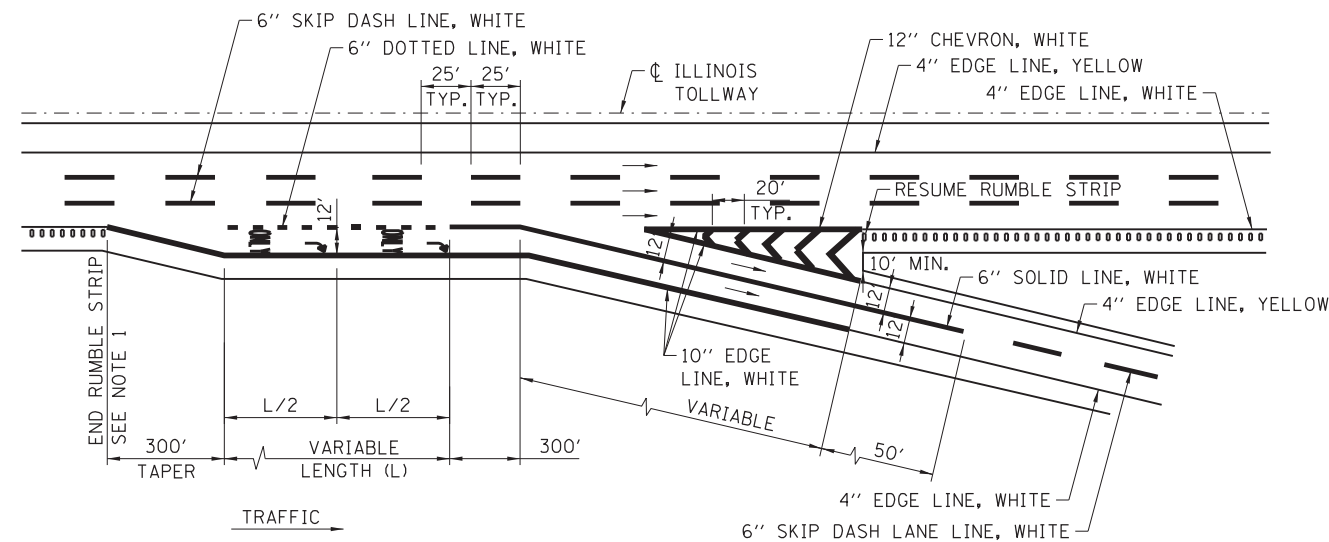
EXIT - SINGLE LANE RAMP - TAPER TYPE



NOTE:  
PAVEMENT MARKING LETTERS AND SYMBOLS-ONLY AND ARROW ARE TO BE TYPICALLY PLACED AT 1/2 MILE EXIT ONLY GUIDE SIGN, AT GORE EXIT GUIDE SIGN AND APPROXIMATELY HALFWAY BETWEEN THE TWO.

GENERAL NOTES:

1. RUMBLE STRIPS SHALL BE INSTALLED BETWEEN THE THEORETICAL GORE AND TAPER WHEN LENGTHS (L) OF AUXILIARY LANES, ACCELERATION LANES OR DECELERATION LANES, ARE GREATER THAN 1000'.
2. ROADWAY MARKING MATERIALS TO BE USED ON FINISHED CONCRETE SURFACE AND ASPHALT SURFACE SHALL BE AS SHOWN ON THE PLANS.
3. ALL LANE LINES AND EDGE LINES SHALL BE GROOVED.
4. GORE STRIPING (CHEVRON) SHALL BE SURFACE APPLIED.
5. LETTERS AND SYMBOL MARKING SHALL BE SURFACE APPLIED.
6. DOTTED LINES SHALL CONSIST OF 3' LINE AND 9' GAPS.



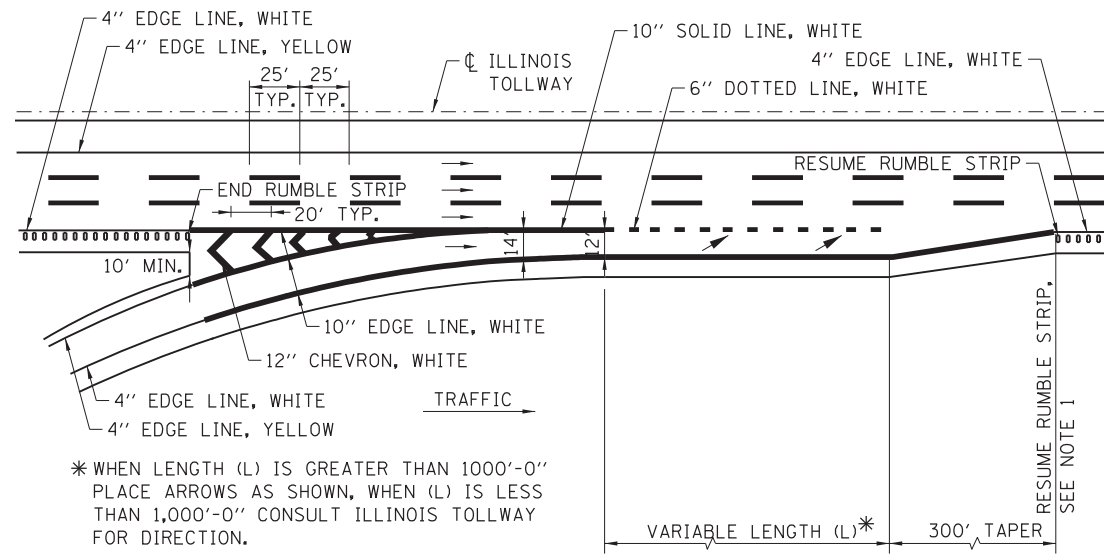
EXIT - TWO LANE RAMP

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009

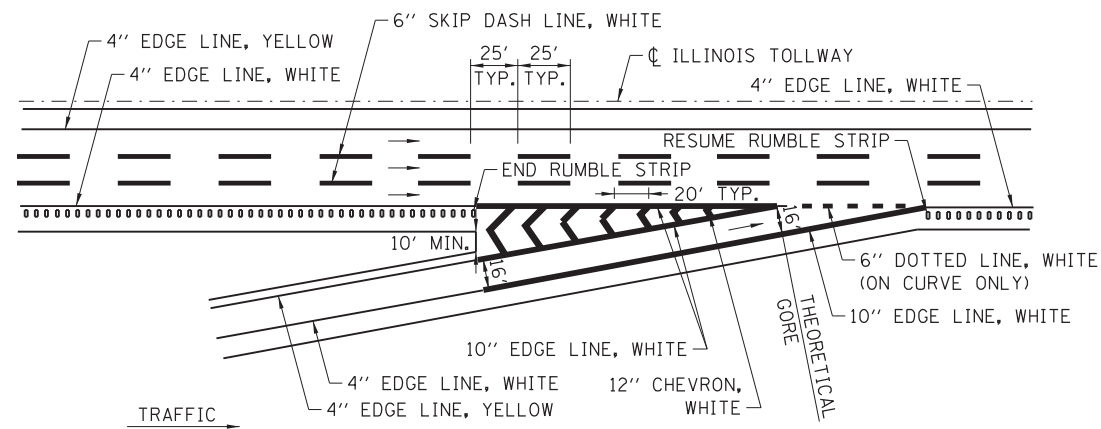


DATE	REVISIONS
11-01-12	REVISED NOTES AND ADDED DOTTED LINE
03-01-13	REVISED SINGLE LANE LOOP RAMP DETAILS
03-31-14	ADDED LANE REDUCTION MARKINGS
3-11-2015	REVISED DETAILS, ADDED LANE-REDUCTION ARROWS AND SHEET 3
3-31-2016	REVISED NOTES, ADDED IPO PAVEMENT MARKING DETAIL.
3-31-2017	REVISED NOTES

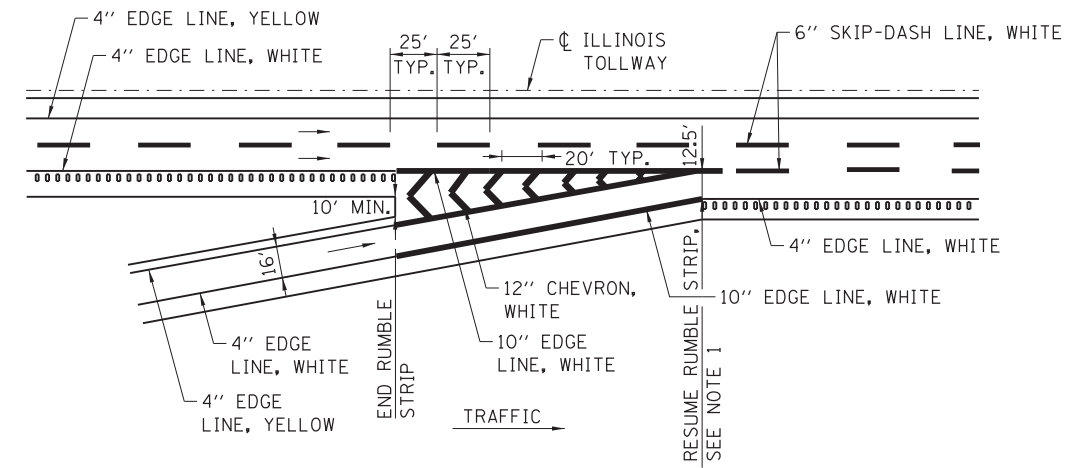
PAVEMENT MARKING AND SHOULDER RUMBLE STRIP DETAILS  
STANDARD D6-07



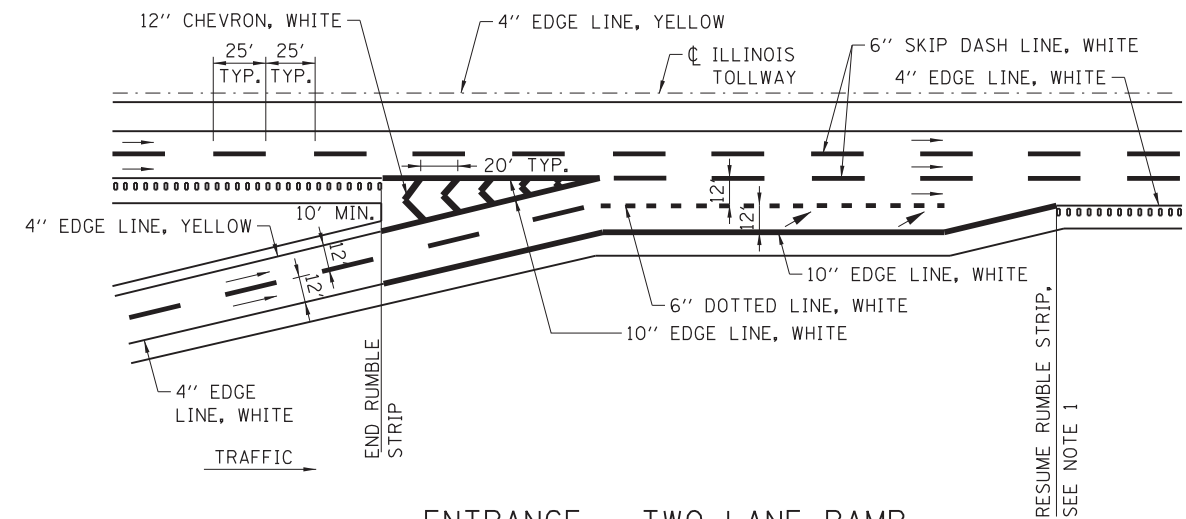
ENTRANCE - SINGLE LANE RAMP - PARALLEL TYPE



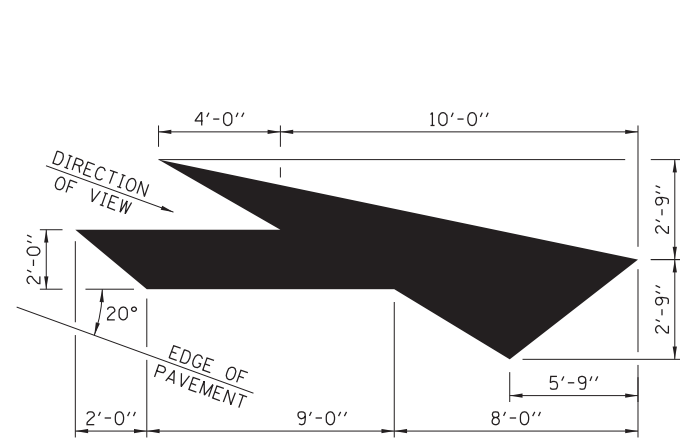
ENTRANCE - SINGLE LANE RAMP - TAPER TYPE



ENTRANCE - SINGLE LANE RAMP WITH ADDED MAINLINE LANE

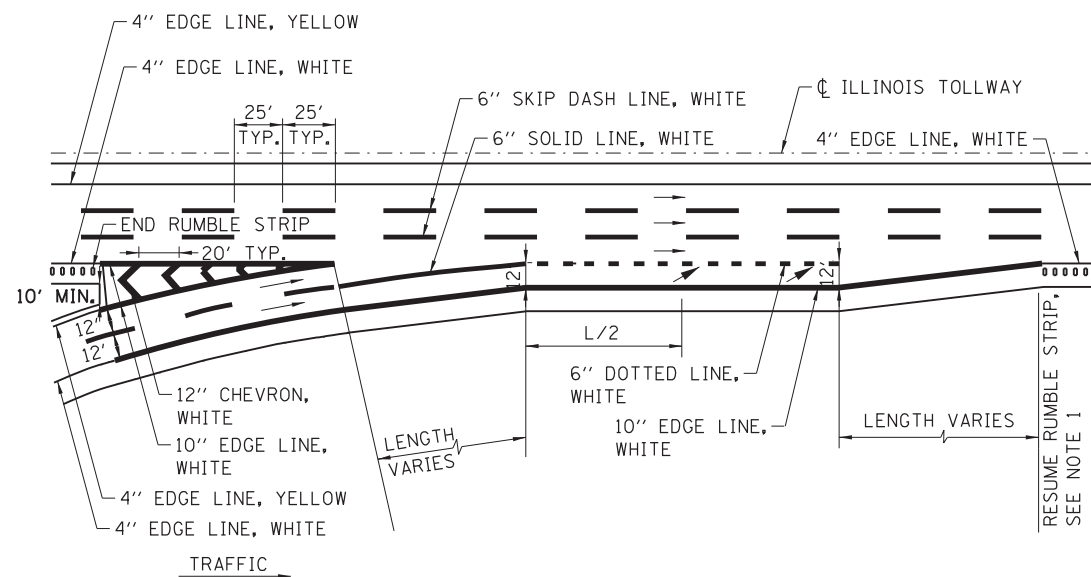


ENTRANCE - TWO LANE RAMP WITH ADDED MAINLINE LANE

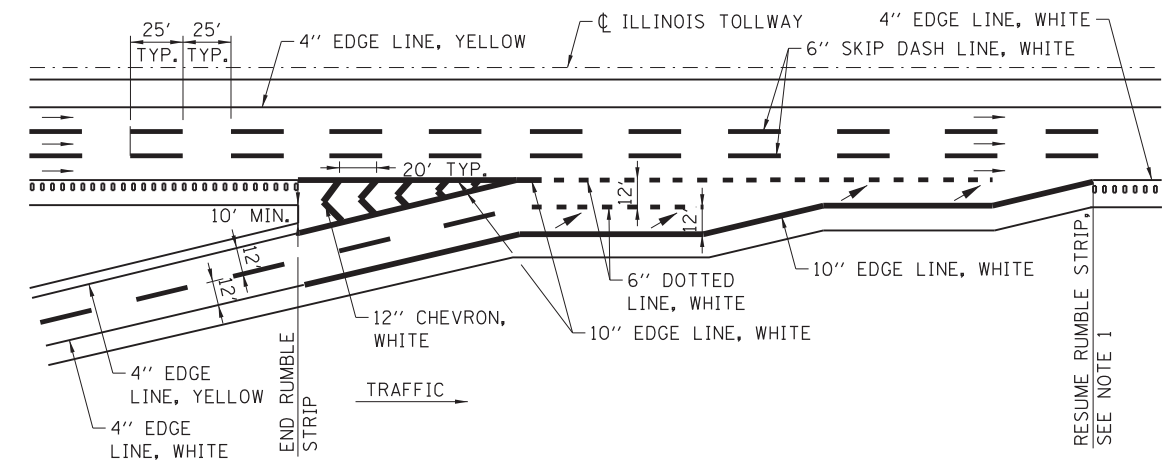


LANE-REDUCTION ARROW

RIGHT LANE-REDUCTION ARROW SHOWN.  
USE MIRROR IMAGE FOR LEFT LANE.

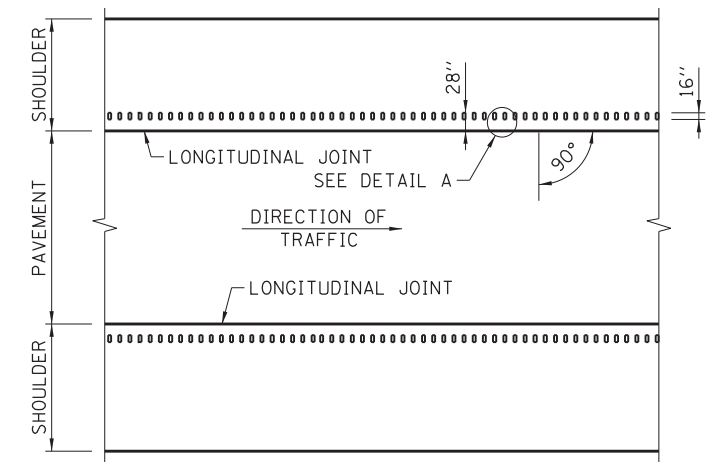
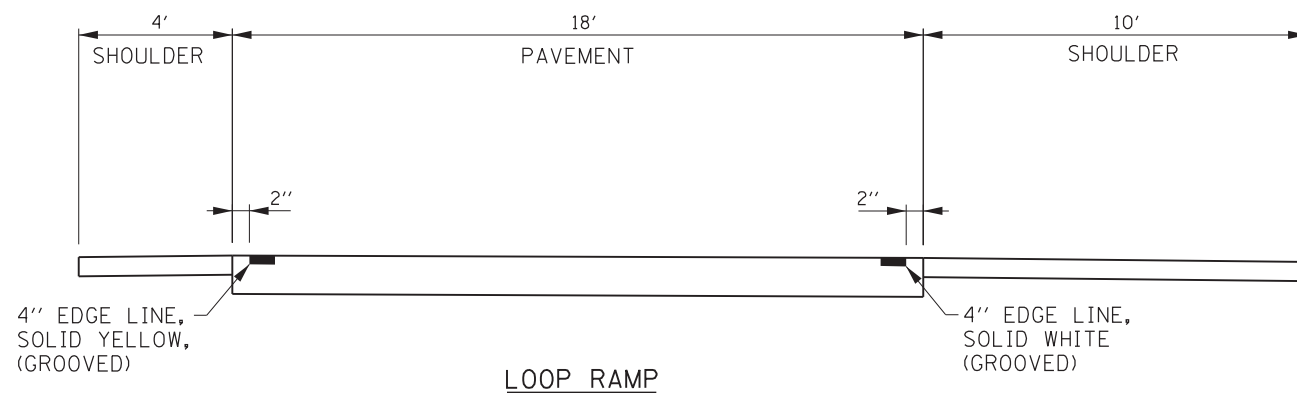
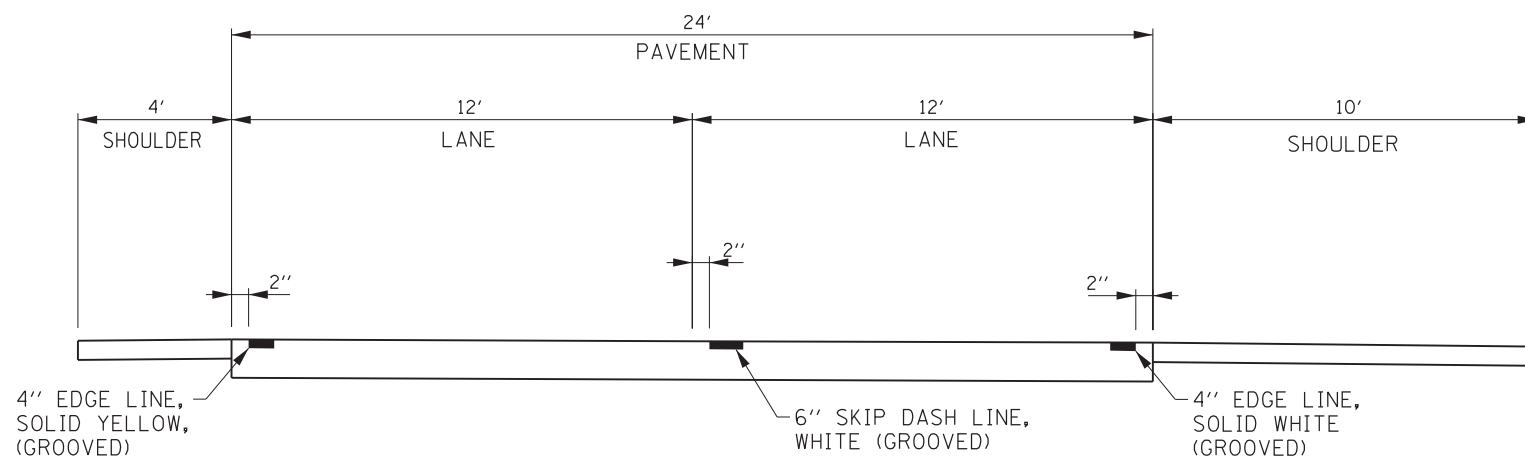
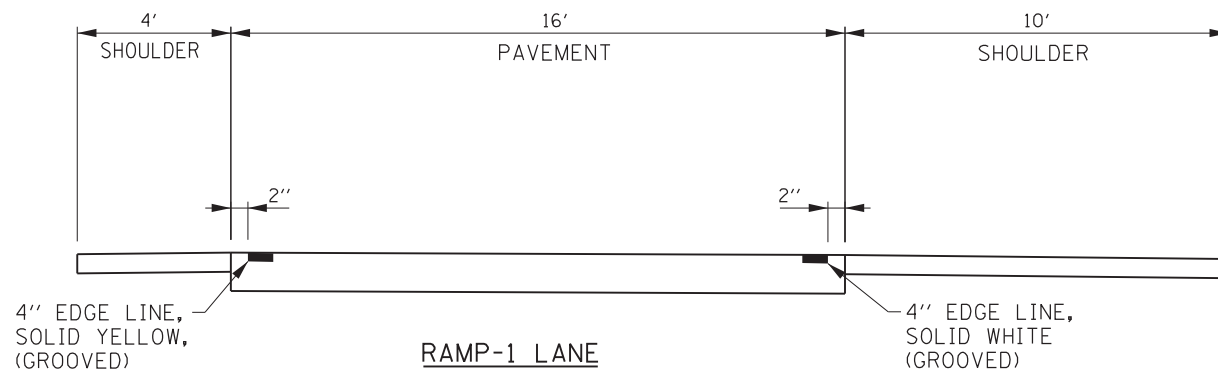


ENTRANCE - TWO LANE RAMP

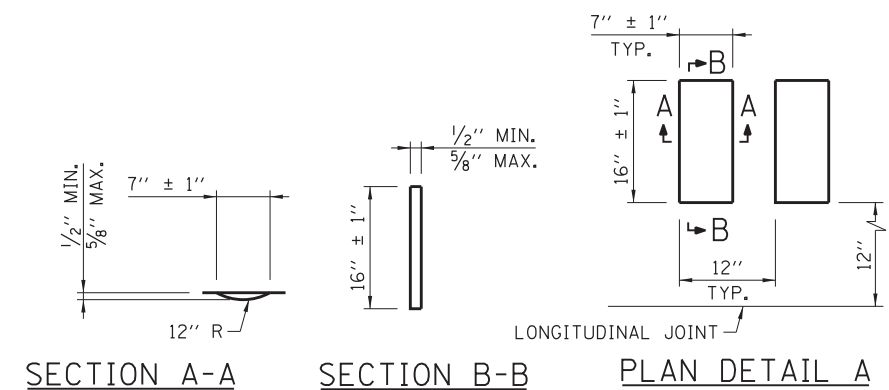


ENTRANCE - TWO LANE PARALLEL RAMP

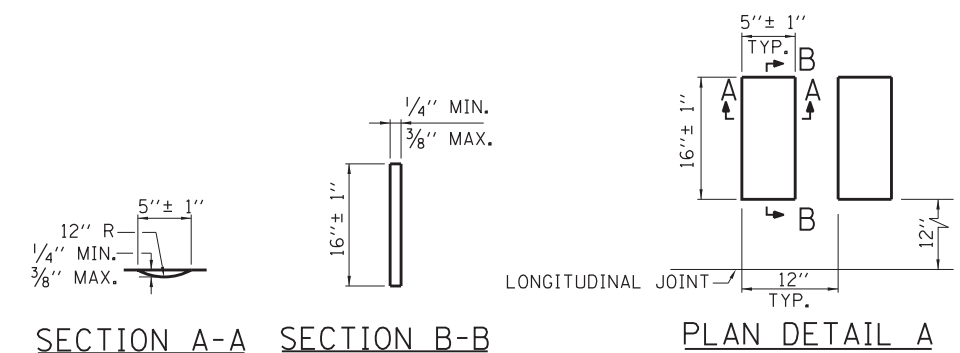




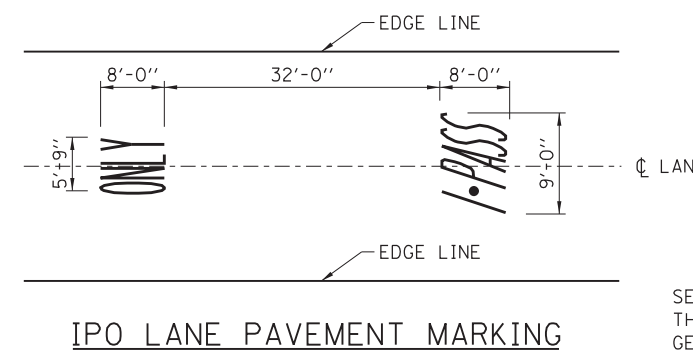
TYPICAL PLAN VIEW  
MAINLINE



ASPHALT SHOULDER  
RUMBLE STRIP DETAILS

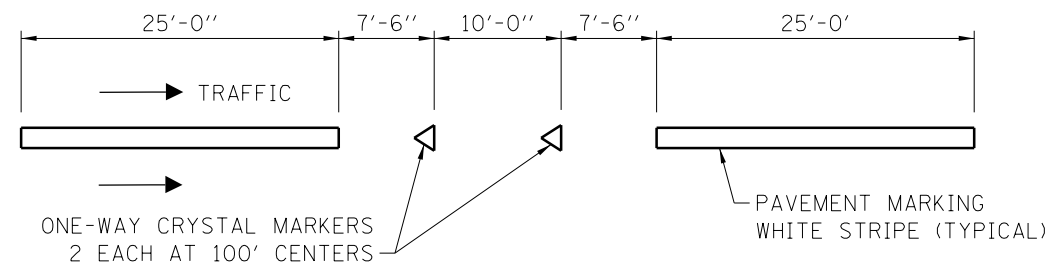


CONCRETE SHOULDER  
RUMBLE STRIP DETAILS

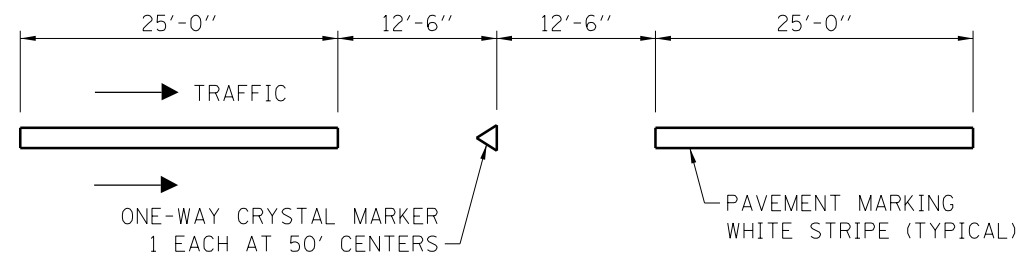


SEE SHEET 1 IN  
THIS SERIES FOR  
GENERAL NOTES.

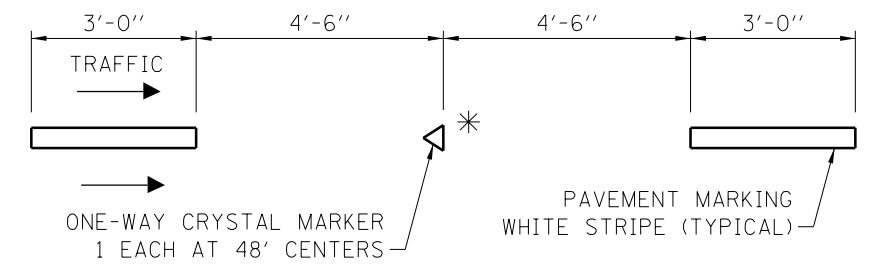




DETAIL A

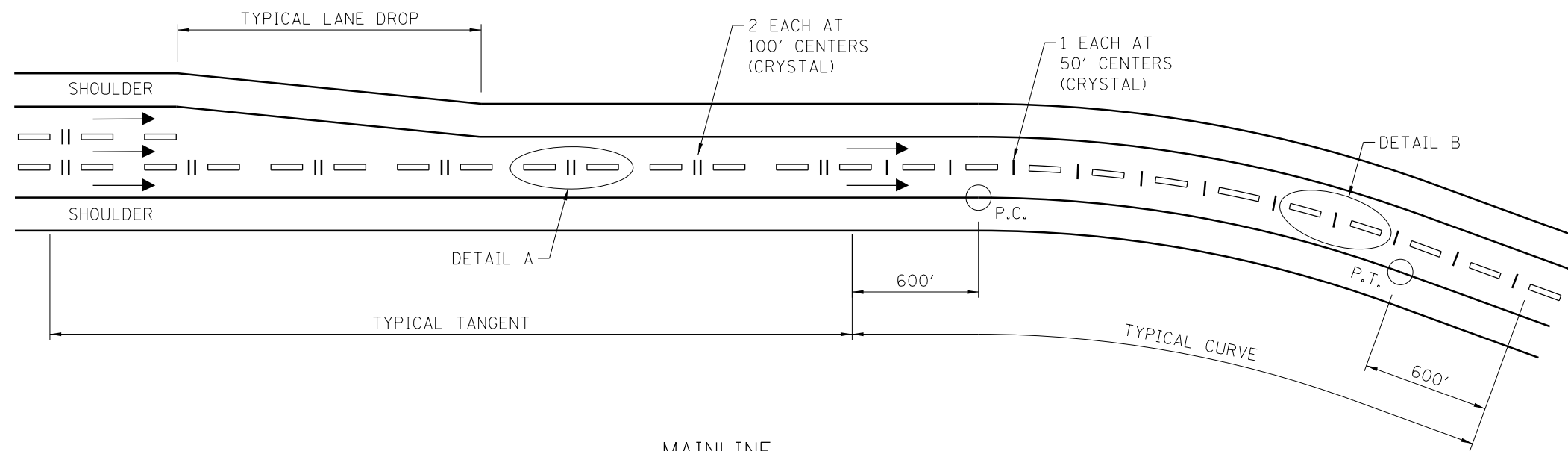


DETAIL B



\* MARKER TO BE INSTALLED WHEN LENGTHS OF AUXILIARY LANES ARE GREATER THAN 1000'.

DETAIL C



MAINLINE

RAISED PAVEMENT LANE MARKER DETAILS

NOTES:

1. FOR COLLECTOR-DISTRIBUTOR (C-D) ROADWAYS, PLACE ONE-WAY CRYSTAL MARKER, 2 EACH AT 100' CENTERS. USE DETAIL A.
2. FOR MULTI LANE DIRECTIONAL RAMPS, PLACE ONE-WAY CRYSTAL MARKER, 1 EACH AT 50' CENTERS. USE DETAIL B.
3. FOR AUXILIARY LANES, PLACE ONE-WAY CRYSTAL MARKER, 1 EACH AT 48' CENTERS. USE DETAIL C.

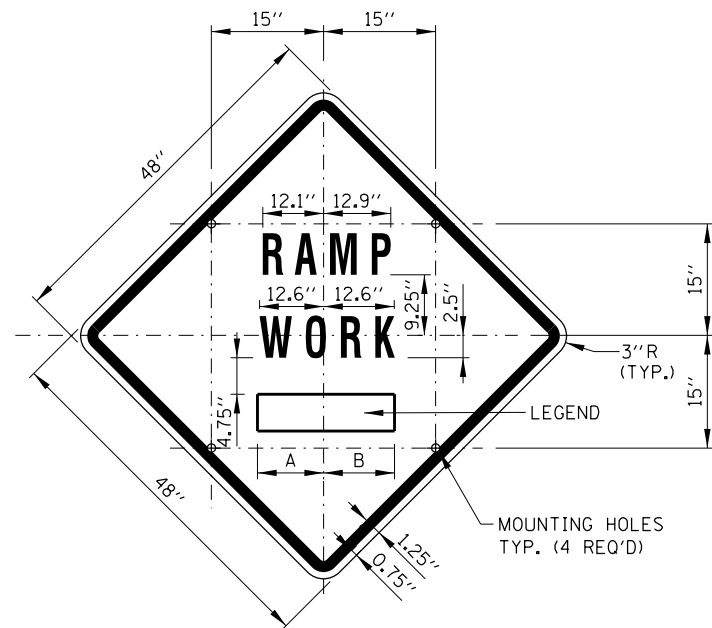
APPROVED: *Paul Kovacs* CHIEF ENGINEER DATE 7-1-2009

DATE	REVISIONS
11-01-2012	REVISED DETAIL C.
3-31-2016	REVISED NOTES 1.



RAISED PAVEMENT LANE MARKER

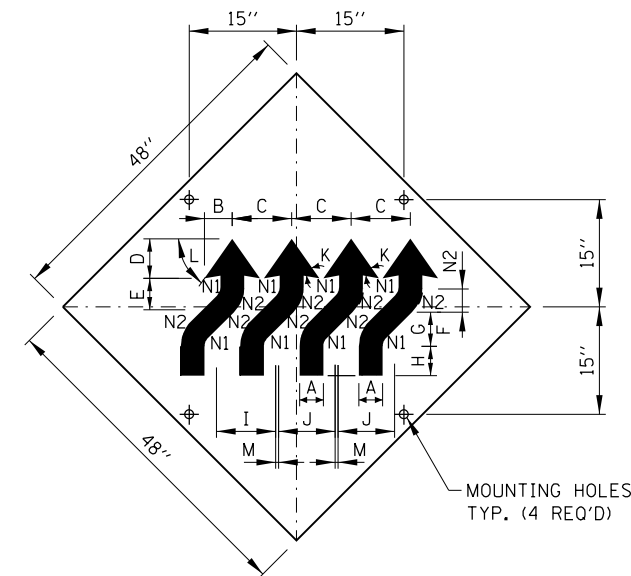
STANDARD D8-02



**SIGN TS-2 (O)**

COLOR: BACKGROUND - FLUORESCENT ORANGE (O)  
 BORDER AND SYMBOL - BLACK  
 SIZE: 48"x48"  
 LETTERING: 7" FEDERAL SERIES D  
 MOUNTING HOLES: 1/16" DIA., 4 HOLES SPACED AS SHOWN

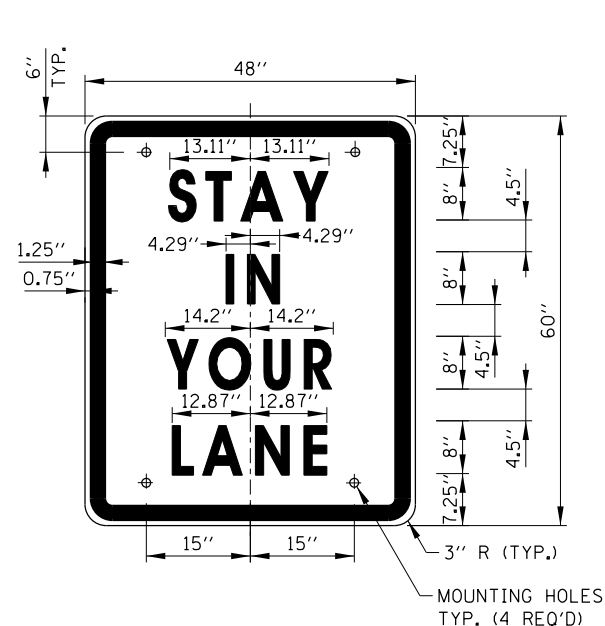
SIGN NO.	LEGEND	A	B
TS-2A	AHEAD	15.50"	15.50"
TS-2B	500 FT	14.25"	15.13"
TS-2C	1000 FT	14.88" L2	15.75" L2
TS-2D	1500 FT	14.88" L2	15.75" L2
TS-2E	1/2 MILE	15.75" L3	15.75" L3
TS-2F	1 MILE	13.06"	13.06"



**SIGN W1-4dR (O)**

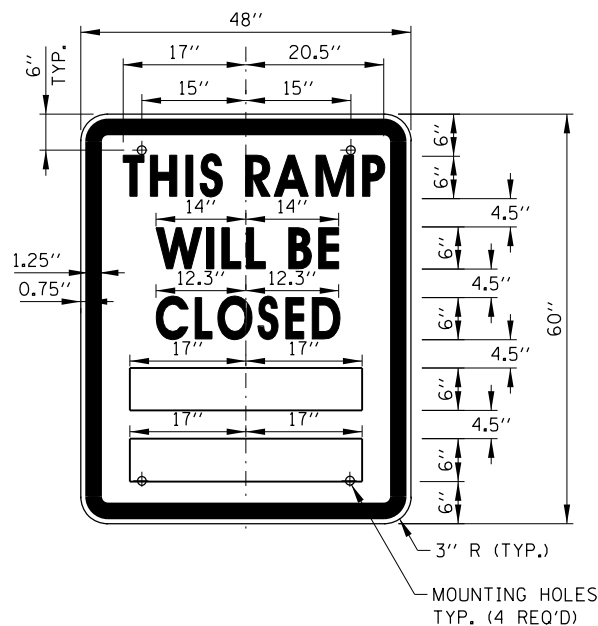
COLOR: BACKGROUND-FLUORESCENT ORANGE (O)  
 TYPE A REFLECTIVE SHEETING PER STANDARD SPECIFICATIONS (\*A)  
 BORDER AND LETTERS-BLACK  
 SIZE: 48"x48"  
 MOUNTING HOLES: 1/16" DIA., 4 HOLES SPACED AS SHOWN.

A	4 1/2"
B	5 3/4"
C	12 1/2"
D	7 3/4"
E	6 1/2"
F	4 1/2"
G	6 1/2"
H	6"
I	12 3/4"
J	12"
K	45°
L	55°
M	3/4"
N1	2"
N2	6 1/2"



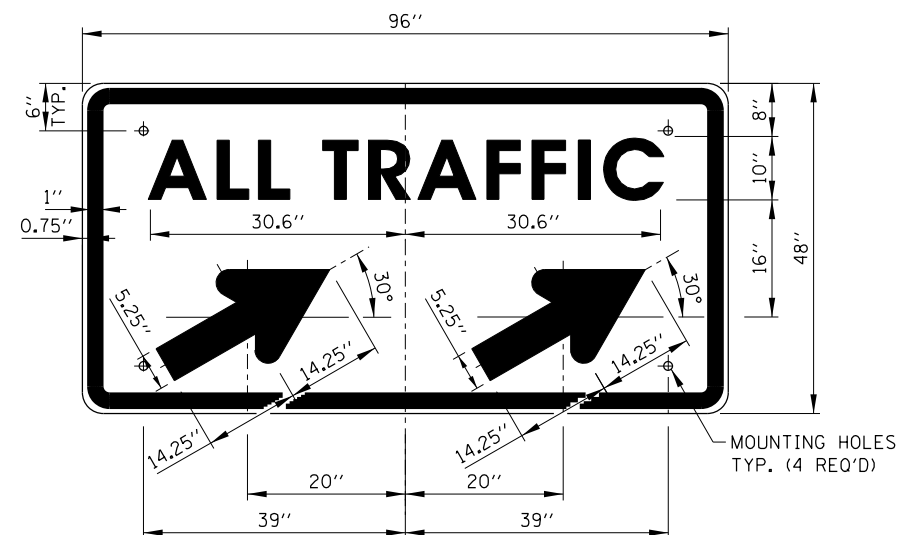
**SIGN TS-3**

COLOR: BACKGROUND - WHITE (REFLECTORIZED) (\*A)  
 BORDER AND LETTERS - BLACK  
 SIZE: 48"x60"  
 LETTERING: LEGEND - 8" FEDERAL SERIES D  
 MOUNTING HOLES: 1/16" DIA., 4 HOLES, SPACED AS SHOWN



**SIGN TS-4**

COLOR: BACKGROUND - WHITE (REFLECTORIZED) (\*A)  
 BORDER AND LETTERS - BLACK  
 SIZE: 48"x60"  
 LETTERING: LEGEND - 6" FEDERAL SERIES C  
 MOUNTING HOLES: 1/16" DIA., 4 HOLES, SPACED AS SHOWN



**SIGN TS-5a & TS-5b**

COLOR: BACKGROUND - WHITE (REFLECTORIZED) (\*A)  
 BORDER AND LETTERS - BLACK  
 ARROW - BLACK  
 SIZE: 96"x48"  
 LETTERING: 10" FEDERAL SERIES D  
 MOUNTING HOLES: 1/16" DIA., 4 HOLES, SPACED AS SHOWN  
 NOTE: SIGN TS-5a IS SHOWN, SUBSTITUTE LEGEND "↗" FOR "↘" FOR SIGN TS-5b

**NOTES:**

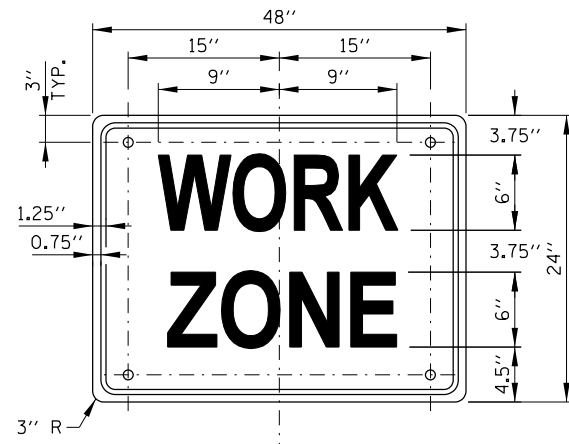
- ALL LETTERING IS DESIGNATED BY SIZE AND SERIES IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" AS PUBLISHED BY THE U.S. DEPARTMENT OF TRANSPORTATION. LETTERING SPACING SHALL BE IN ACCORDANCE WITH THIS GUIDE EXCEPT WHERE NOTED.
- SYMBOLS AND ARROWS SHALL CONFORM TO THE DETAILS SHOWN IN THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" AS PUBLISHED BY THE U.S. DEPARTMENT OF TRANSPORTATION.
- SEE THE CONTRACT REQUIREMENTS FOR ADDITIONAL NOTES AND SPECIFICATIONS.  
 (O) FLUORESCENT ORANGE REFLECTIVE SHEETING PER THE STANDARD SPECIFICATIONS.  
 (\*A) - REFLECTIVE SHEETING PER THE STANDARD SPECIFICATIONS.
- DIMENSIONS INDICATED THUS L ARE BASED ON A REDUCTION IN STANDARD LETTERING SPACING AS SHOWN BELOW:  
 L1 SPACING REDUCED BY 25%  
 L2 SPACING REDUCED BY 40%  
 L3 SPACING REDUCED BY 50%

**RAMP CLOSURE ADVANCE INFORMATION SIGN**

THE VARIABLE MESSAGE WITH DATES FOR THE BOTTOM TWO LINES SHALL BE DETERMINED BY THE ENGINEER AND GIVEN TO THE CONTRACTOR BEFORE THE REQUIRED FIELD ERECTION DATE.

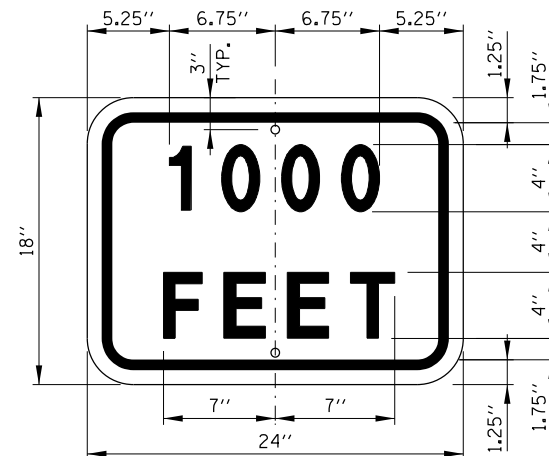


DATE	REVISIONS
05-01-09	DELETED FLASHING ARROW BOARDS
01-01-11	ADDED SIGN COLOR DESIGNATION
11-01-12	DELETED SIGN TS-1
03-31-14	REVISED FINE SIGN NUMBER AND ADDED LED SPEED LIMIT DISPLAY
3-11-2015	REVISED NOTES
3-31-2017	REVISED END WZSL SIGN COLOR



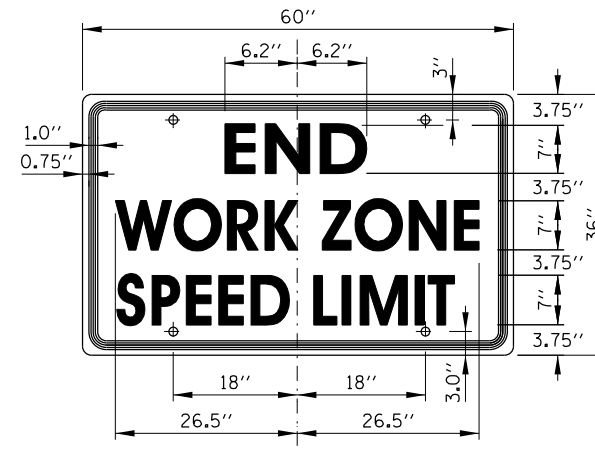
SIGN G20-I102 (O)

COLOR: BACKGROUND - FLUORESCENT ORANGE (O)  
 BORDER AND LETTERS - BLACK  
 SIZE: 48"x24"  
 LETTERING: 6" FEDERAL SERIES C  
 MOUNTING HOLES: 7/16" DIA., 4 HOLES SPACED AS SHOWN



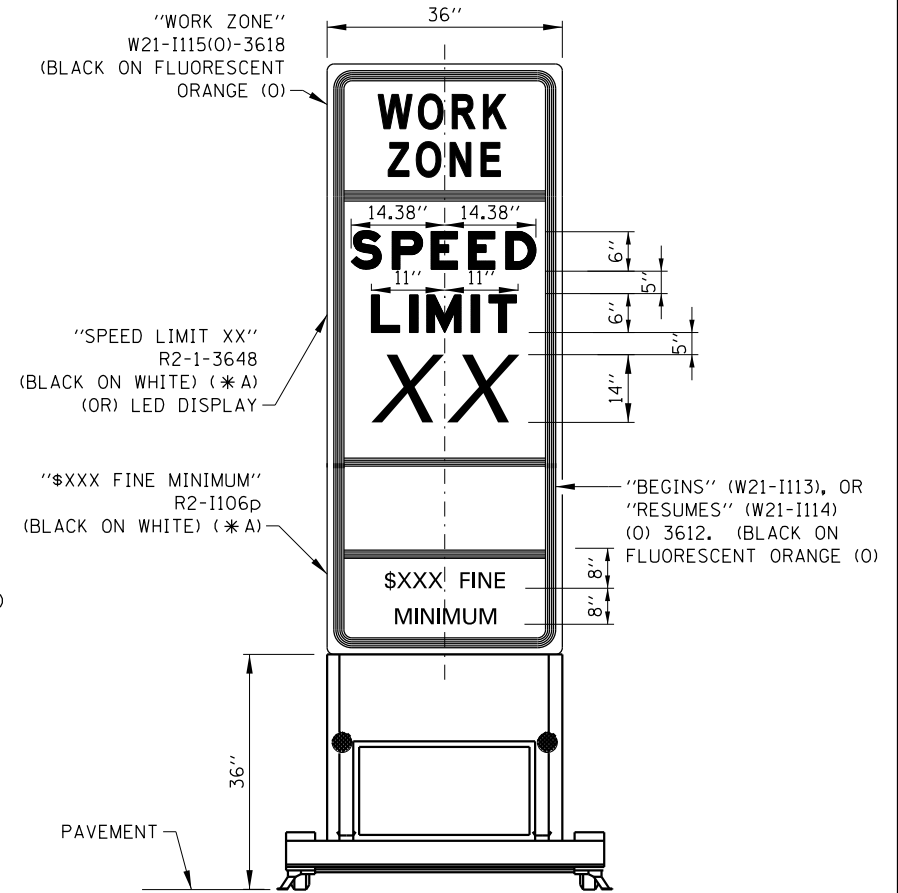
SUPPLEMENTAL PLATE (O)

COLOR: BACKGROUND - FLUORESCENT ORANGE (O)  
 BORDER AND LETTERS - BLACK  
 SIZE: 24"x18"  
 LETTERING: 4" FEDERAL SERIES D  
 MOUNTING HOLES: 7/16" DIA., 2 HOLES SPACED AS SHOWN

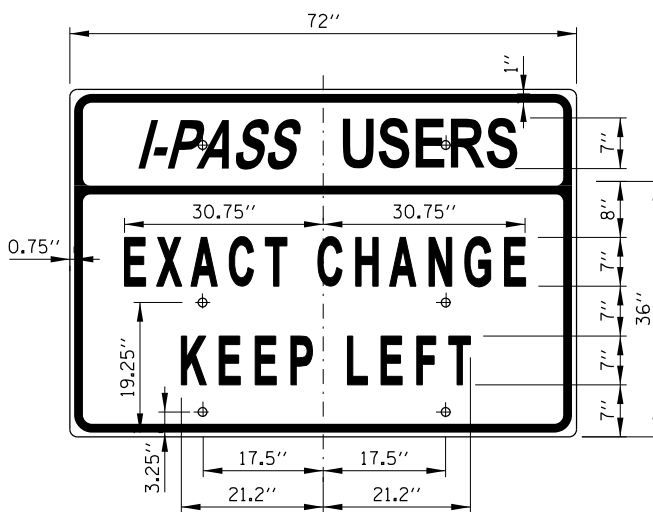


SIGN G20-I103

COLOR: BACKGROUND - WHITE (REFLECTORIZED) (\*A)  
 BORDER AND LETTERS - BLACK  
 SIZE: 60"x36"  
 LETTERING: 6" FEDERAL SERIES C  
 MOUNTING HOLES: 7/16" DIA., 4 HOLES SPACED AS SHOWN

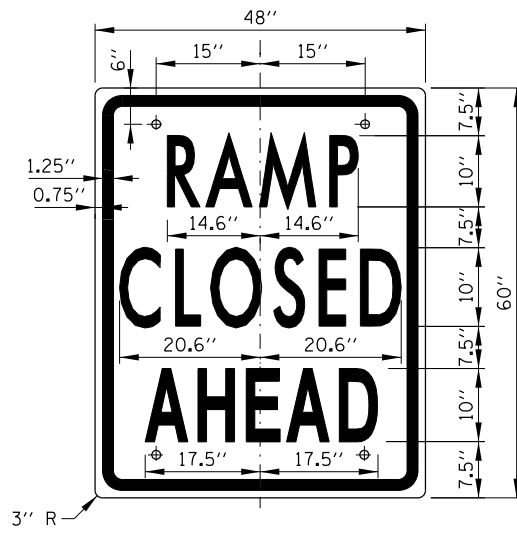


WORK ZONE SPEED LIMIT SIGN ASSEMBLY



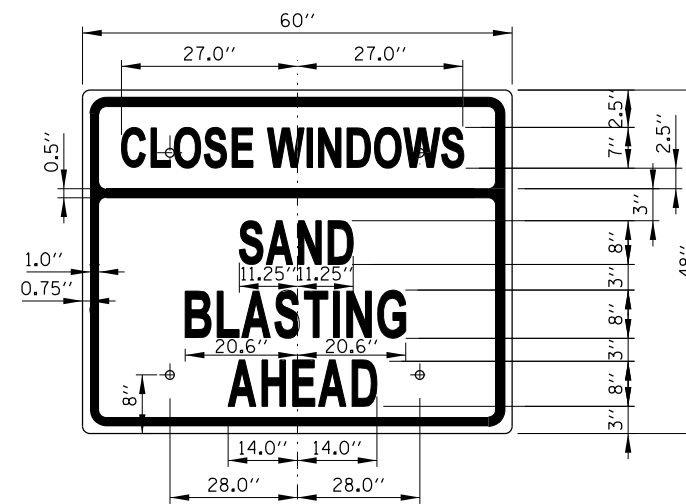
SIGN TS-7

COLOR: BACKGROUND - WHITE (REFLECTORIZED) (\*A)  
 BORDER AND LETTERS - BLACK  
 SIZE: 72"x36"  
 LETTERING: 7" FEDERAL SERIES C  
 MOUNTING HOLES: 7/16" DIA., 4 HOLES SPACED AS SHOWN



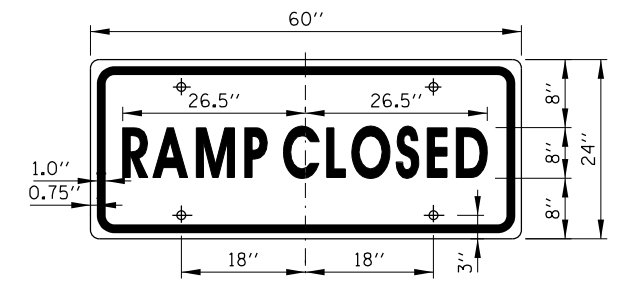
SIGN TS-9

COLOR: BACKGROUND - WHITE (REFLECTORIZED) (\*A)  
 BORDER AND LETTERS - BLACK  
 SIZE: 48"x60"  
 LETTERING: 10" FEDERAL SERIES C  
 MOUNTING HOLES: 7/16" DIA., 4 HOLES SPACED AS SHOWN



SIGN TS-10 (O)

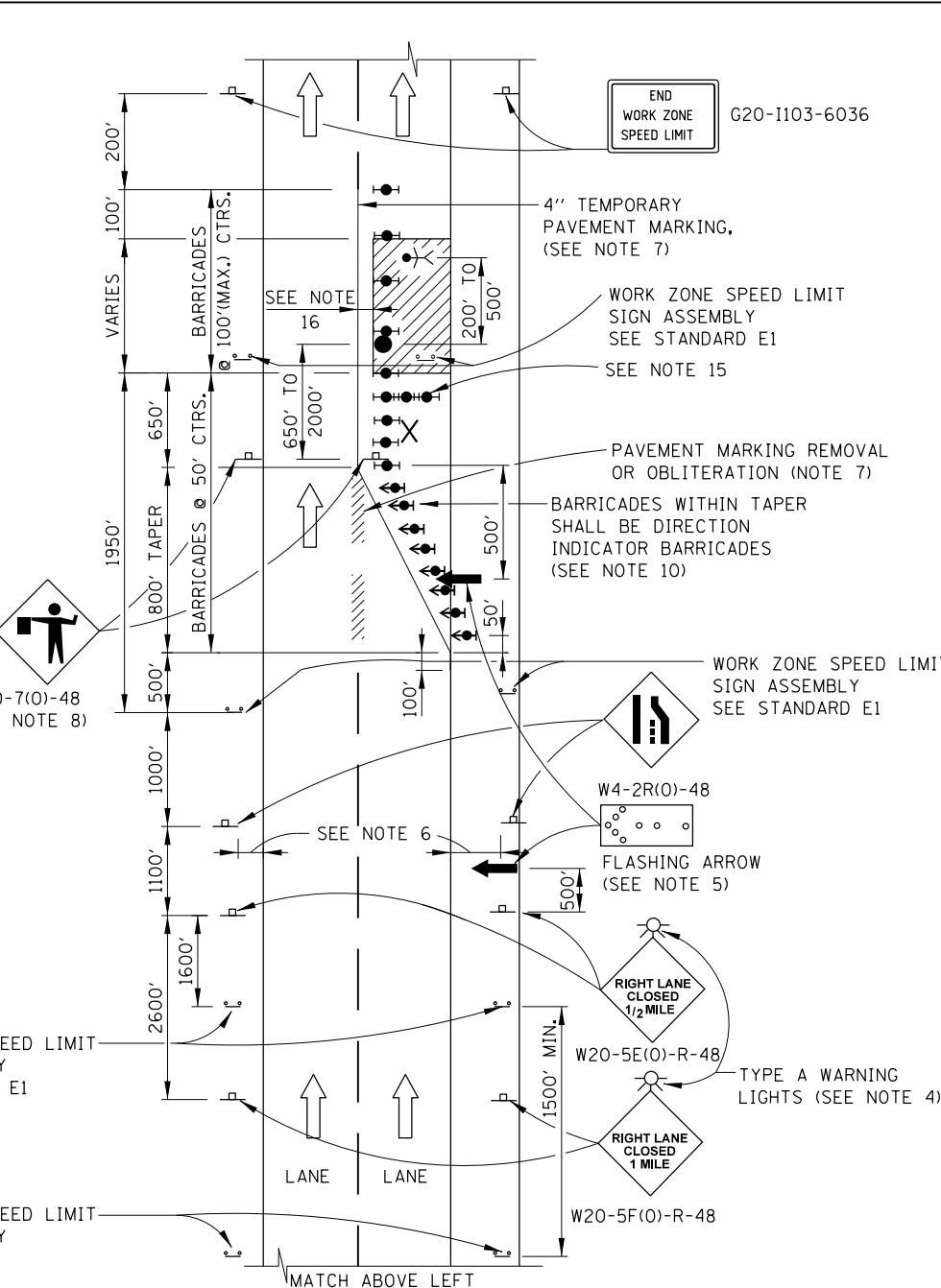
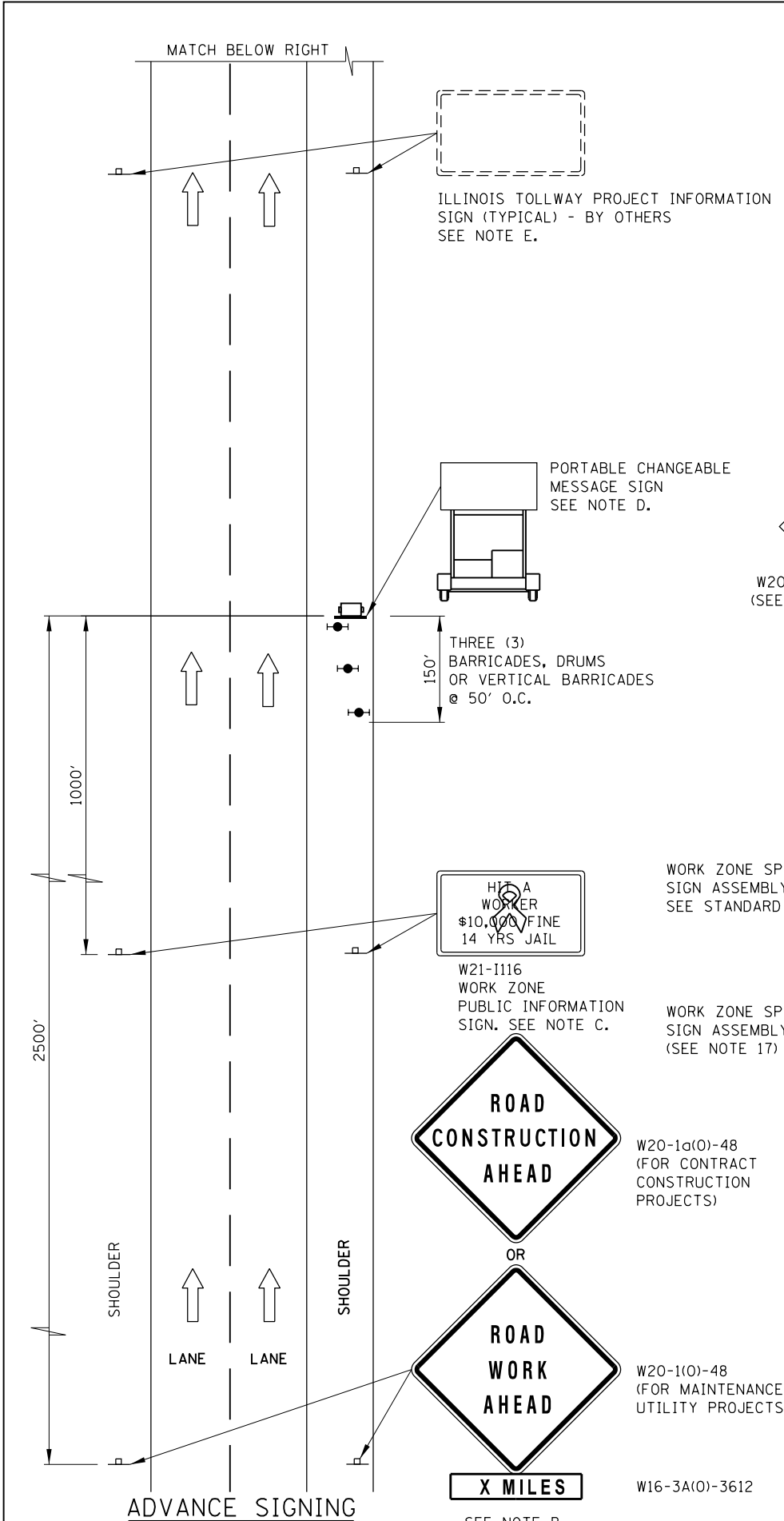
COLOR: BACKGROUND - FLUORESCENT ORANGE (O)  
 BORDER AND LETTERS - BLACK  
 SIZE: 60"x48"  
 LETTERING: 8" FEDERAL SERIES C, 7" FEDERAL SERIES B  
 MOUNTING HOLES: 7/16" DIA., 4 HOLES SPACED AS SHOWN



SIGN TS-6

COLOR: BACKGROUND - WHITE (REFLECTORIZED) (\*A)  
 BORDER AND LETTERS - BLACK  
 SIZE: 60"x24"  
 LETTERING: 8" FEDERAL SERIES C  
 MOUNTING HOLES: 7/16" DIA., 4 HOLES SPACED AS SHOWN





**ONE-LANE CLOSURE WITH BARRICADE**

**ADVANCE SIGNING NOTES:**

- A. THE ADVANCE SIGNING SHOWN ON THIS STANDARD SHALL APPLY ANY TIME THE CONTRACTOR CLOSES ONE OR MORE LANES, OR IS REQUIRED TO SHIFT THE LANE ALIGNMENT. THE "ROAD WORK AHEAD" OR "ROAD CONSTRUCTION AHEAD" SIGNS, WORK ZONE PUBLIC INFORMATION SIGNS AND PORTABLE CHANGEABLE MESSAGE ARE STATIONARY.
- B. THE ROAD CONSTRUCTION AHEAD SIGN (W20-1A, WITH W16-3a SUPPLEMENTAL PLATE) OR ROAD WORK AHEAD SIGN (W20-1, WITH W16-3A SUPPLEMENTAL PLATE) SHALL BE LOCATED UP TO 5 MILES IN ADVANCE OF THE PROJECT LIMITS, WITH THE LOCATION BEING DETERMINED BY THE ENGINEER.
- C. THE WORK ZONE PUBLIC INFORMATION SIGN IS 60" WIDE BY 48" HIGH. THE CONTRACTOR SHALL OBTAIN THE CAMERA-READY ARTWORK REQUIRED FOR THE SIGN MESSAGE BY CONTACTING IDOT'S CENTRAL BUREAU OF OPERATIONS.
- D. THE PORTABLE CHANGEABLE MESSAGE SIGN SHALL BE USED TO DISPLAY THE STATUS OF LANE WITHIN THE CONTRACT LIMITS. THE PRIMARY MESSAGES SHALL BE: "RIGHT LANE(S) CLOSED" / "X MILES AHEAD", "LEFT LANE(S) CLOSED" / "X MILES AHEAD", "LANE(S) SHIFT" / "X MILES AHEAD", "ALL LANES OPEN". THE PORTABLE CHANGEABLE MESSAGE SIGN MAY BE MOVED TO THE MEDIAN SHOULDER WHEN THE LANE CLOSURES ARE ON THE LEFT, PROVIDED THE EXISTING SHOULDER WIDTH IS ADEQUATE.
- E. THE ILLINOIS TOLLWAY WILL FURNISH AND INSTALL STATIC PROJECT INFORMATION SIGNS IN ADVANCE, THROUGH AND AT THE END OF THE WORK ZONE. THESE SIGNS WILL BE INSTALLED ALONG THE OUTSIDE SHOULDER WITH THE ADVANCE SIGNS LOCATED BEYOND THE PORTABLE CHANGEABLE MESSAGE SIGN. THE ENGINEER AND CONTRACTOR SHALL COORDINATE WITH THE ILLINOIS TOLLWAY REGARDING THE LOCATION OF THESE SIGNS AND NOTIFY THE ILLINOIS TOLLWAY OF ANY DAMAGE TO THE SIGNS OR SUPPORTS.

**LANE CLOSURE NOTES:**

1. IF CLOSURES ARE EXPECTED TO PRODUCE TRAFFIC BACKUPS EXTENDING BEYOND THE FIRST WARNING SIGN SHOWN ON THE DETAILS, ADDITIONAL UPSTREAM SIGNS SHALL BE PLACED SO THAT THE TRAFFIC CONTROL ZONE ENCOMPASSES THE ANTICIPATED BACKUP ZONE.
2. LONGITUDINAL DIMENSIONS MAY BE ADJUSTED SLIGHTLY TO FIT FIELD CONDITIONS.
3. THESE DETAILS ALSO APPLY TO OPPOSITE HAND LANE CLOSURES BY CHANGING SIGN LEGENDS AND ARROW DIRECTIONS TO INDICATE THE APPROPRIATE CLOSURE.
4. FOR NIGHT TIME CLOSURES, ONE TYPE A WARNING LIGHT SHALL BE INSTALLED ABOVE EACH OF THE 1 MILE AND 1/2 MILE ADVANCE WARNING SIGNS. FOR DAYLIGHT-ONLY CLOSURES, THE LIGHTS MAY BE OMITTED.
5. FOR ANY LANE CLOSURE, FLASHING ARROW BOARDS SHALL BE REQUIRED AND IN OPERATION AT ALL TIMES. THE FLASHING ARROW BOARD IN ADVANCE OF THE TAPER SHALL BE PROTECTED WITH THREE TYPE II BARRICADES AT 50' O.C.
6. CONSTRUCTION SIGNS SHALL GENERALLY BE POST-MOUNTED OR ATTACHED TO PORTABLE SUPPORTS AND SHALL BE INSTALLED 8' TO 12' FROM ADJACENT TRAVEL LANE WHEREVER POSSIBLE. IN NO CASE SHALL SIGNS BE LOCATED TO PROVIDE LESS THAN 2' CLEARANCE BETWEEN EDGE OF SIGN AND ADJACENT TRAVEL LANE.
7. PAVEMENT MARKING TAPE AND REMOVAL OR OBLITERATION OF EXISTING MARKINGS SHALL BE REQUIRED WHEN THE CLOSURE TIME EXCEEDS FOUR DAYS. THIS WORK SHALL BE MEASURED AND PAID FOR SEPARATELY.
8. WHEN A FLAGGER IS NOT ON STATION, THE FLAGGER SIGN SHALL BE PROMPTLY REMOVED, COVERED OR TURNED TO FACE AWAY FROM TRAFFIC. FLAGGER SIGNS SHALL BE MOVED AS NECESSARY TO MAINTAIN THE REQUIRED SPACING BETWEEN THE SIGNS AND THE WORKERS IN EACH SEPARATE WORK ACTIVITY, PER THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
9. WORK ZONE SPEED LIMIT SIGN ASSEMBLIES, SHALL BE PLACED ADJACENT TO THE OPEN TRAFFIC LANE(S). WORK ZONE SPEED SIGNS SHALL BE MOVED AS NECESSARY TO MAINTAIN THE REQUIRED SPACING BETWEEN SIGNS AND THE WORKERS IN EACH SEPARATE WORK ACTIVITY PER THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
10. DIRECTION INDICATOR BARRICADES SHALL BE USED IN LANE TAPERS.
11. FOR CLOSURES OTHER THAN SHORT TERM (SUNRISE TO ONE HOUR BEFORE SUNSET), THE MINIMUM HEIGHT OF THE SIGN FROM SHOULDER ELEVATION SHALL BE 7'-0".
12. CONES MAY BE USED IN LIEU OF BARRICADES IN THE BUFFER AND WORK AREAS, WHEN THE CLOSURE IS FOR MAINTENANCE OPERATIONS.
13. BARRICADES ARE TO BE LOCATED AT JOINT LINE WHEN WORK AREA EXTENDS UP TO JOINT UNLESS OTHERWISE SHOWN ON THE PLANS.
14. SEE MAINTENANCE OF TRAFFIC DRAWINGS FOR ADDITIONAL SIGNING IN THIS AREA.
15. CHECK BARRICADES SHALL BE PLACED IN THE MIDDLE OF THE CLOSED LANE AND AT THE SHOULDER AT 1000 FOOT CENTERS.
16. A 1'-0" MINIMUM/2'-0" DESIRABLE SHY DISTANCE SHALL BE PROVIDED, MEASURED BETWEEN EDGE OF PAVEMENT LANE MARKING TO THE EDGE OF THE TRAFFIC CONTROL DEVICE.
17. ADDITIONAL WORK ZONE SPEED LIMIT SIGNS SHALL BE PLACED WHEN DIFFERENCE BETWEEN POSTED TO WORK ZONE SPEED LIMIT IS > 20 M.P.H.

**LEGEND**

- ↑ ARROW BOARD
- ▨ WORK AREA
- | SIGN
- ⚡ DIRECTION INDICATOR BARRICADE WITH SEQUENTIAL FLASHING WARNING LIGHT
- ⦿ TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE WITH STEADY BURN MONODIRECTIONAL LIGHT
- FLAGGER WITH TRAFFIC CONTROL SIGN
- ⚧ WORKER
- ✕ LANE CLOSED



DATE	REVISIONS
11-01-12	ADDED THREE LANE CLOSURE
03-31-14	REVISED BUFFER SPACE, TAPER DIMENSIONS AND REVISED NOTES.
3-11-2015	REVISED NOTES.
3-31-2016	ADDED LANE CLOSURE WITH BARRIER AND ADDED SEQUENTIAL FLASHING WARNING LIGHT.
3-31-2017	ADDED TAPER RATE TABLE

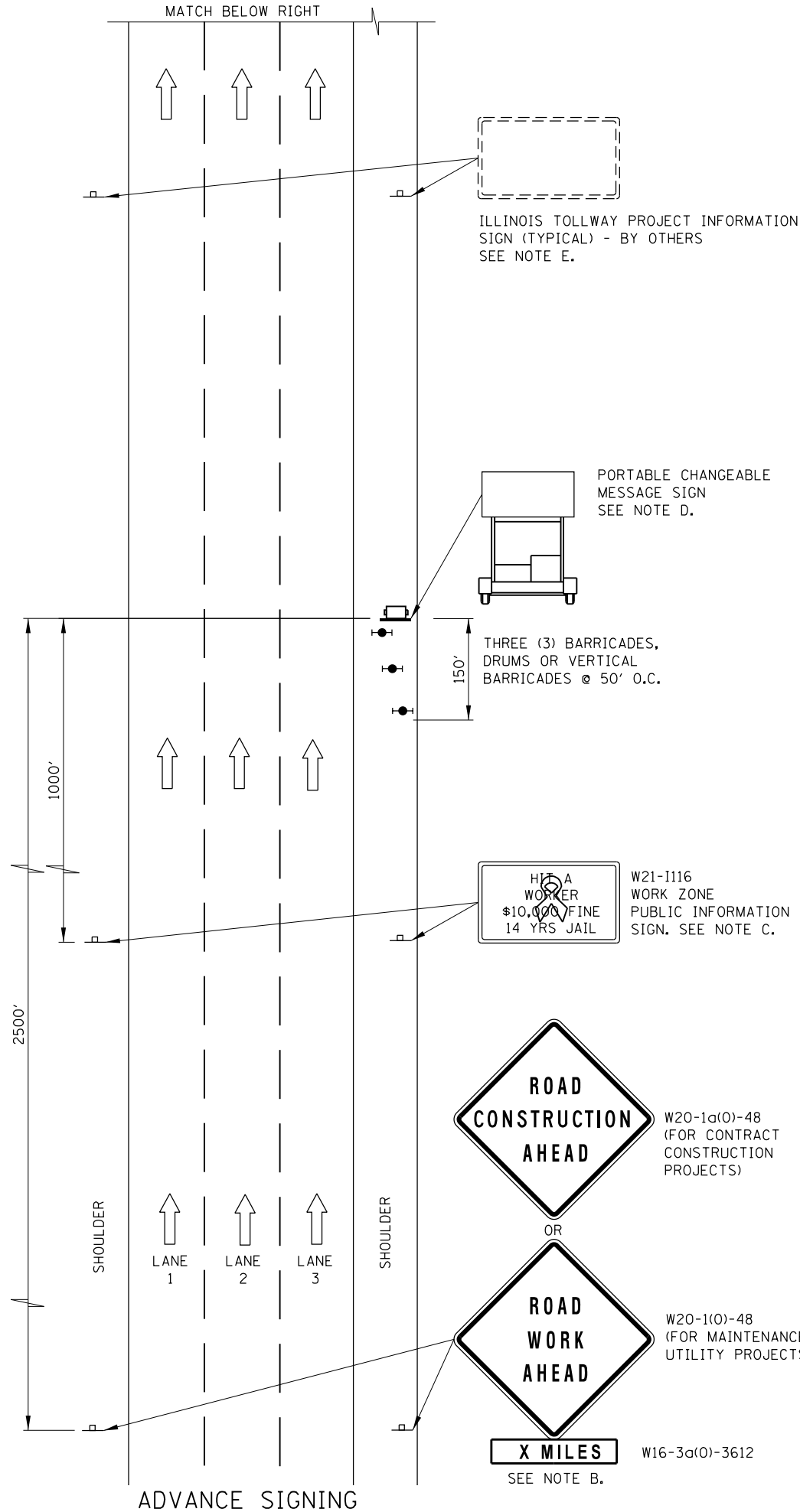
**LANE CLOSURE DETAILS**

STANDARD E2-07

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009



MATCH BELOW RIGHT

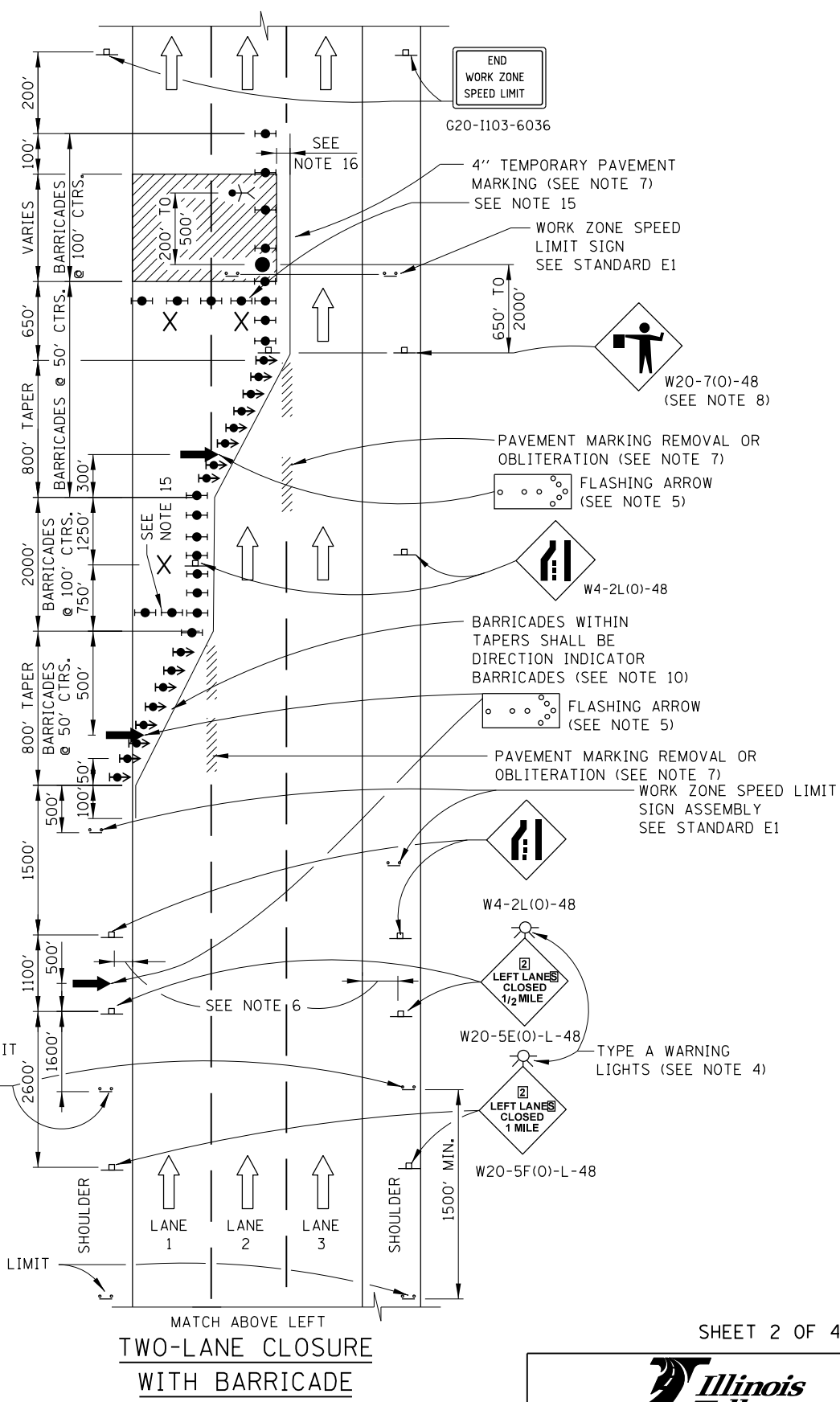


**LEGEND**

- ARROW BOARD
- WORK AREA
- SIGN
- DIRECTION INDICATOR BARRICADE WITH SEQUENTIAL FLASHING WARNING LIGHT
- TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE WITH STEADY BURN MONODIRECTIONAL LIGHT
- FLAGGER WITH TRAFFIC CONTROL SIGN
- WORKER
- LANE CLOSED

*Paul Kovacs*  
 APPROVED CHIEF ENGINEER DATE 5-1-2009

ADVANCE SIGNING



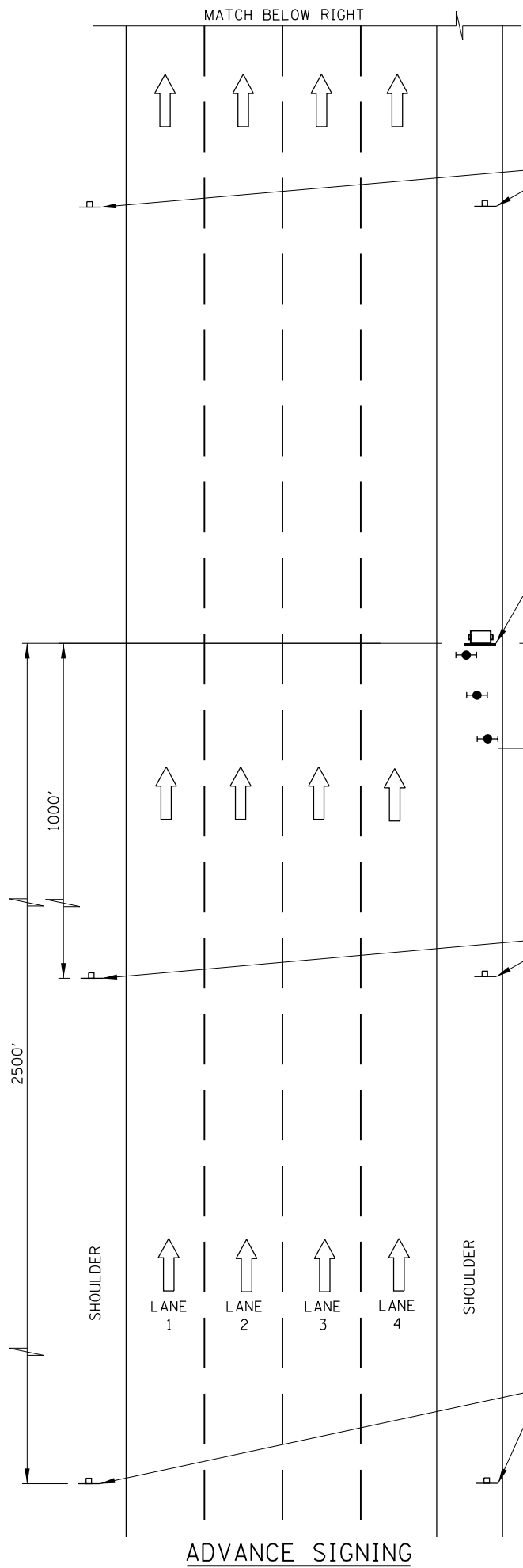
MATCH ABOVE LEFT  
TWO-LANE CLOSURE  
WITH BARRICADE

SEE SHEET 1 IN THIS SERIES FOR NOTES

**Illinois Tollway**

LANE CLOSURE DETAILS

STANDARD E2-07



ILLINOIS TOLLWAY PROJECT INFORMATION SIGN (TYPICAL) - BY OTHERS SEE NOTE E.

PORTABLE CHANGEABLE MESSAGE SIGN SEE NOTE D.

THREE (3) BARRICADES, DRUMS OR VERTICAL BARRICADES @ 50' O.C.

W21-1116 WORK ZONE PUBLIC INFORMATION SIGN, SEE NOTE C.

ROAD CONSTRUCTION AHEAD

W20-1a(0)-48 (FOR CONTRACT CONSTRUCTION PROJECTS)

ROAD WORK AHEAD

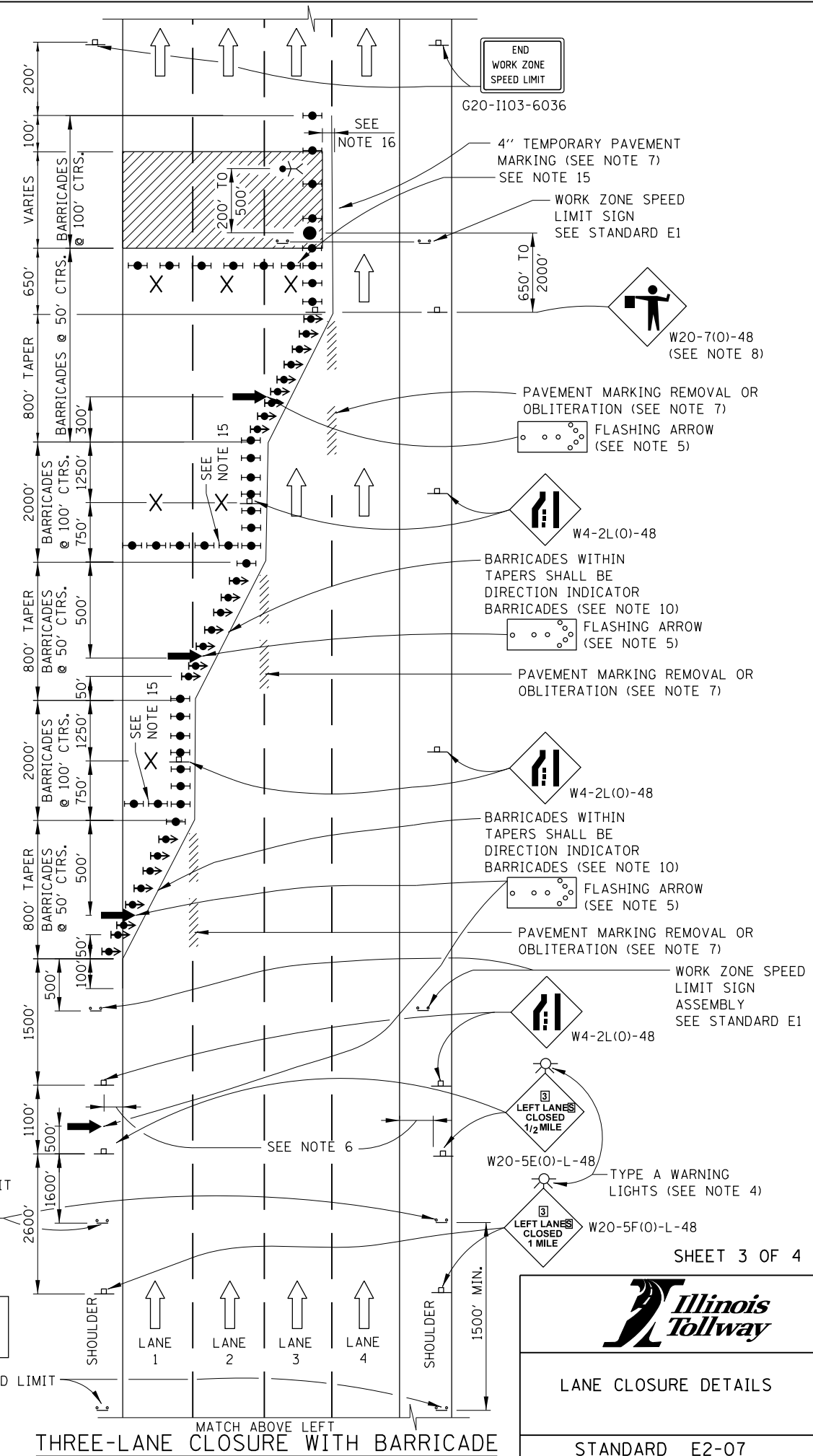
W20-1(0)-48 (FOR MAINTENANCE AND UTILITY PROJECTS)

X MILES SEE NOTE B.

W16-3a(0)-3612

**LEGEND**

- ARROW BOARD
- WORK AREA
- SIGN
- DIRECTION INDICATOR BARRICADE WITH SEQUENTIAL FLASHING WARNING LIGHT
- TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE WITH STEADY BURN MONODIRECTIONAL LIGHT
- FLAGGER WITH TRAFFIC CONTROL SIGN
- WORKER
- LANE CLOSED



END WORK ZONE SPEED LIMIT G20-1103-6036

4" TEMPORARY PAVEMENT MARKING (SEE NOTE 7) SEE NOTE 15

WORK ZONE SPEED LIMIT SIGN SEE STANDARD E1

W20-7(0)-48 (SEE NOTE 8)

PAVEMENT MARKING REMOVAL OR OBLITERATION (SEE NOTE 7) FLASHING ARROW (SEE NOTE 5)

W4-2L(0)-48

BARRICADES WITHIN TAPERS SHALL BE DIRECTION INDICATOR BARRICADES (SEE NOTE 10)

FLASHING ARROW (SEE NOTE 5)

PAVEMENT MARKING REMOVAL OR OBLITERATION (SEE NOTE 7)

W4-2L(0)-48

BARRICADES WITHIN TAPERS SHALL BE DIRECTION INDICATOR BARRICADES (SEE NOTE 10)

FLASHING ARROW (SEE NOTE 5)

PAVEMENT MARKING REMOVAL OR OBLITERATION (SEE NOTE 7)

WORK ZONE SPEED LIMIT SIGN ASSEMBLY SEE STANDARD E1

W4-2L(0)-48

LEFT LANES CLOSED 1/2 MILE W20-5E(0)-L-48

TYPE A WARNING LIGHTS (SEE NOTE 4)

LEFT LANES CLOSED 1 MILE W20-5F(0)-L-48

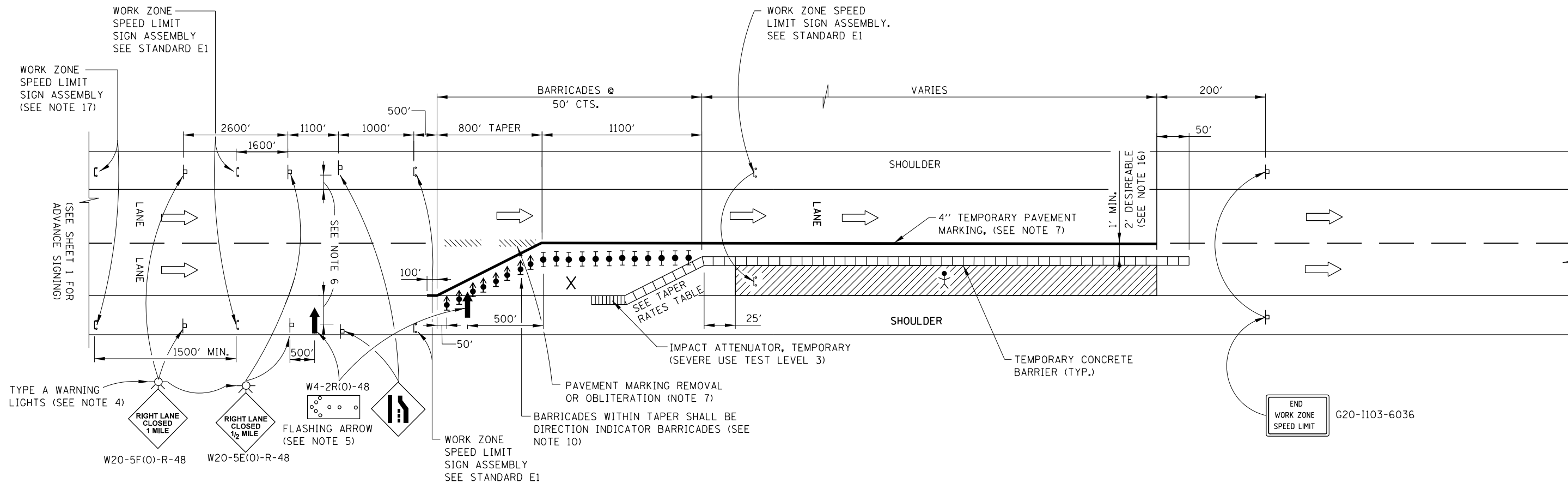
SHEET 3 OF 4



LANE CLOSURE DETAILS

STANDARD E2-07

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009



**ONE-LANE CLOSURE WITH BARRIER**

**TAPER RATES**

WORK ZONE SPEED (mph)	SHY LINE (ft.)	BARRIER INSIDE SHY LINE	BARRIER AT OR BEYOND SHY LINE
65	8.5	28:1	19:1
60	8	26:1	18:1
55	7	24:1	16:1
50	6.5	21:1	14:1
45	6	18:1	12:1
40	5	16:1	10:1
35	4.5	15:1	9:1
30	4	13:1	8:1

- LEGEND**
- ARROW BOARD
  - WORK AREA
  - SIGN
  - PORTABLE CHANGEABLE MESSAGE SIGN
  - DIRECTION INDICATOR BARRICADE WITH SEQUENTIAL FLASHING WARNING LIGHT
  - TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE WITH STEADY BURN MONODIRECTIONAL LIGHT
  - WORKER
  - LANE CLOSED

**NOTE:**  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

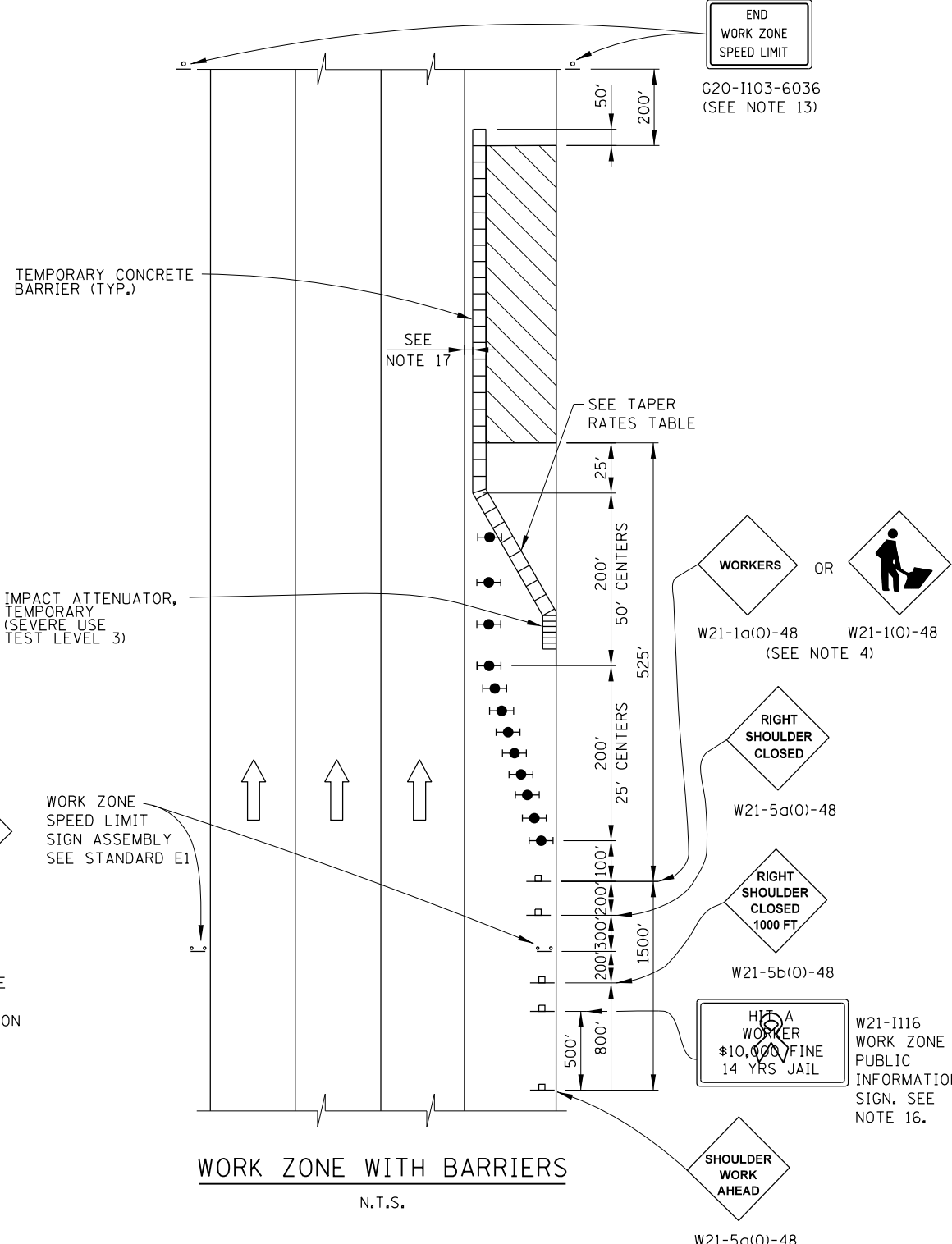
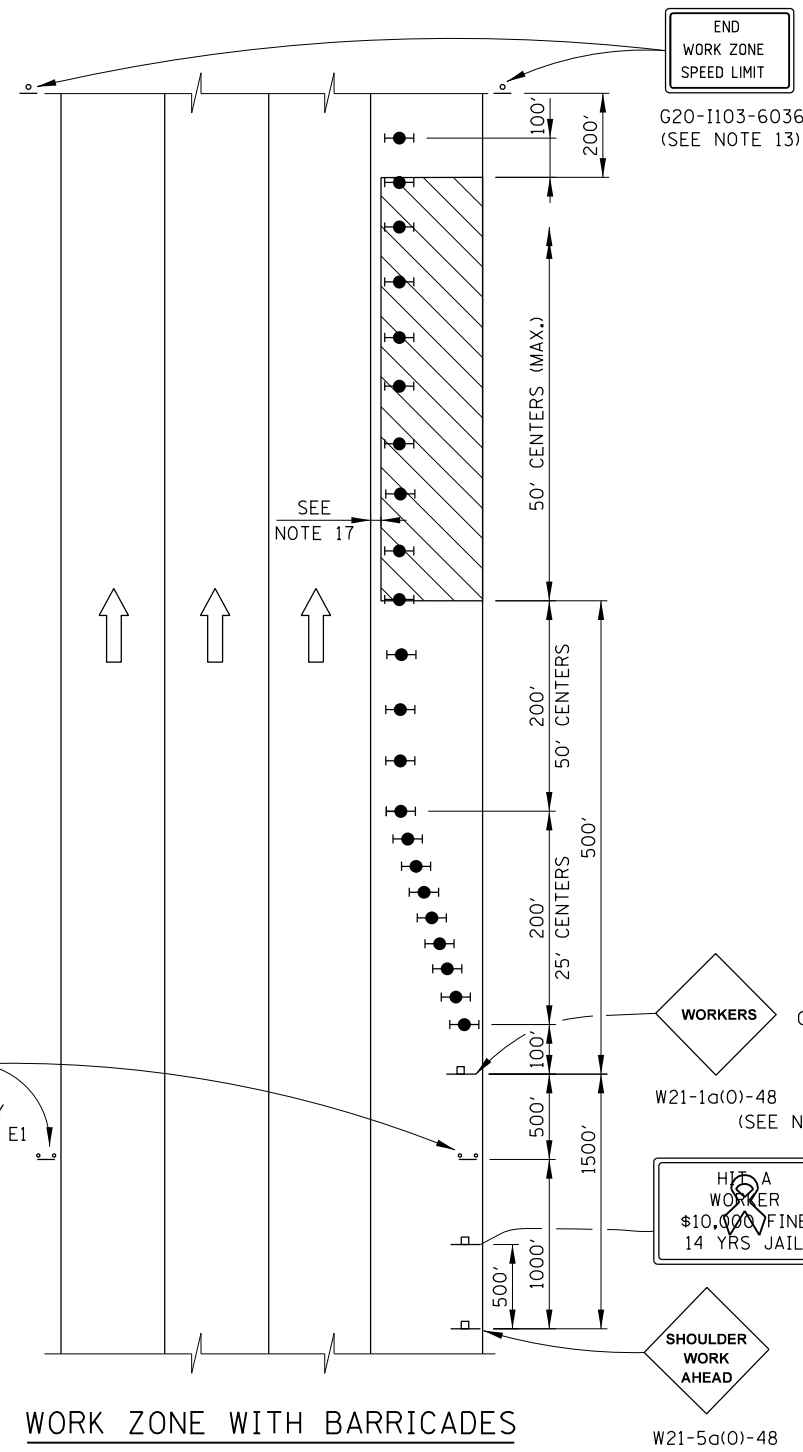


APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 3-31-2016

END WORK ZONE SPEED LIMIT G20-I103-6036

**GENERAL NOTES:**

1. THE SHOULDER SHALL BE CLOSED WHEN A WORK ACTIVITY REQUIRING 15 OR MORE MINUTES IS PERFORMED AT A DISTANCE WHICH IS LESS THAN 15 FEET BUT NO CLOSER THAN 2 FEET FROM THE EDGE OF PAVEMENT.
2. THE ADJACENT EXTERIOR LANE SHALL BE CLOSED WHEN WORK IS PERFORMED WITHIN 2 FEET FROM THE EDGE OF PAVEMENT.
3. THE CHANNELIZING DEVICES WHICH SEPARATE THE WORK SPACE FROM THE ADJACENT TRAVEL LANE SHALL BE SPACED AT 25' FOR (200 FEET) AND AT A MAXIMUM OF 50' FOR ALL ADDITIONAL DEVICES.
4. WHEN THE WORKSITE IS UNATTENDED, SUBSTITUTE - "SHOULDER WORK AHEAD" SIGN.
5. WORKER SIGNS OR SHOULDER WORK SIGNS AND CHANNELIZATION DEVICES ARE PLACED ONLY ON THE SIDE OF THE ROADWAY ON WHICH THE ACTIVITY IS PERFORMED.
6. FOR SHOULDER CLOSURE EXTENDING OVERNIGHT, BARRICADE TYPE II WITH STEADY BURNING LIGHT, TYPE C SHALL BE USED.
7. FOR SHORT TERM CLOSURE (SUNRISE TO ONE HOUR BEFORE SUNSET) NOT EXTENDING INTO DARKNESS, CONES MAY BE USED.
8. ONE WORK ZONE SPEED LIMIT SIGN ASSEMBLY SHALL BE PLACED AT A DISTANCE OF 500' TO 2,500' MAXIMUM IN ADVANCE OF WORKERS THROUGHOUT THE SHOULDER CLOSURE. MOVING OPERATIONS MAY REQUIRE CONTINUOUS ADJUSTMENT OF THE SIGN ASSEMBLY LOCATION TO MAINTAIN THE ABOVE INTERVAL.
9. AN ADDITIONAL SIGN ASSEMBLY SHALL BE PLACED 500' BEYOND THE LAST ENTRANCE RAMP FOR EACH INTERCHANGE THAT FALLS WITHIN THE 2,500'.
10. THE SIGN ASSEMBLY SHALL BE PLACED NO CLOSER THAN 500' TO ANY OTHER SIGN.
11. THE WORK ZONE SPEED LIMIT SIGNS AND SIGN ASSEMBLY SHALL BE PROMPTLY REMOVED OR COVERED WHEN SHOULDER CLOSURE IS NOT IN USE.
12. ALL CONFLICTING SPEED LIMIT SIGNS SHALL BE COVERED OR REMOVED.
13. "END WORK ZONE SPEED LIMIT" SIGNS SHALL BE IN PLACE ONLY WHEN THE EXISTING POSTED SPEED > 55MPH.
14. FOR SHOULDER REPAIRS OR REPLACEMENT THE CHANNELIZING DEVICES SHALL BE PLACED AT THE EDGE OF PAVEMENT WHENEVER THE WORK ACTIVITIES RESULT IN A DROPOFF AT THE EDGE OF PAVEMENT.
15. ANY UNATTENDED OBSTACLE OR EXCAVATION LEFT ON THE SHOULDER OVERNIGHT SHALL BE IN COMPLIANCE WITH THE ROADWAY TRAFFIC CONTROL AND COMMUNICATIONS MANUAL.
16. THE WORK ZONE PUBLIC INFORMATION SIGN IS 60" WIDE BY 48" HIGH. THE CONTRACTOR SHALL OBTAIN THE CAMERA-READY ARTWORK REQUIRED FOR THE SIGN MESSAGE BY CONTACTING IDOT'S CENTRAL BUREAU OF OPERATIONS.
17. A 1'-0" MINIMUM/2'-0" DESIRABLE SHY DISTANCE SHALL BE PROVIDED, MEASURED BETWEEN EDGE OF PAVEMENT LANE MARKING TO THE EDGE OF THE TRAFFIC CONTROL DEVICE.



**TAPER RATES**

WORK ZONE SPEED (mph)	SHY LINE (ft.)	BARRIER INSIDE SHY LINE	BARRIER AT OR BEYOND SHY LINE
65	8.5	28:1	19:1
60	8	26:1	18:1
55	7	24:1	16:1
50	6.5	21:1	14:1
45	6	18:1	12:1
40	5	16:1	10:1
35	4.5	15:1	9:1
30	4	13:1	8:1

**LEGEND**

- WORK AREA
- SIGN
- TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE WITH STEADY BURN MONODIRECTIONAL LIGHT

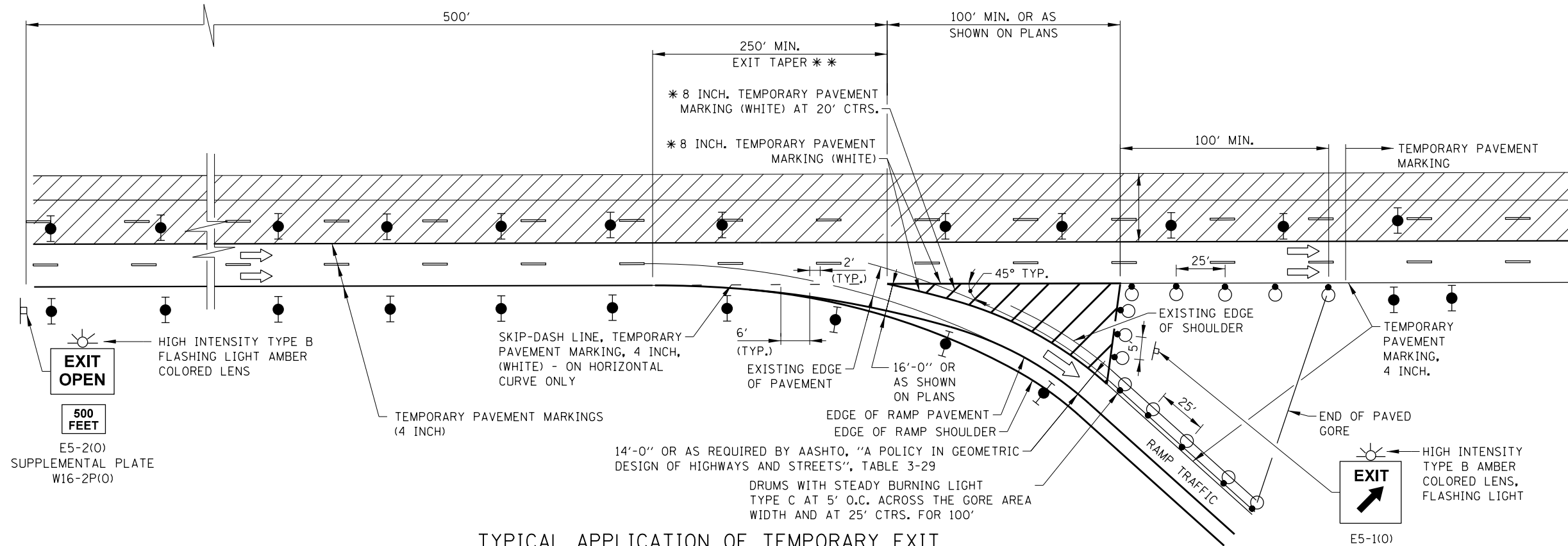
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 5-1-2009

DATE	REVISIONS
1-01-11	CHANGED SYMBOL DESIGNATION
	REVISED NOTES
3-31-14	REVISED WORKER SIGN NUMBERS PER "MUTCD" AND REVISED NOTES.
3-11-2015	REVISED NOTES
3-31-2016	ADD WORK ZONE WITH BARRIERS.
3-31-2017	ADDED TAPER RATE TABLE.

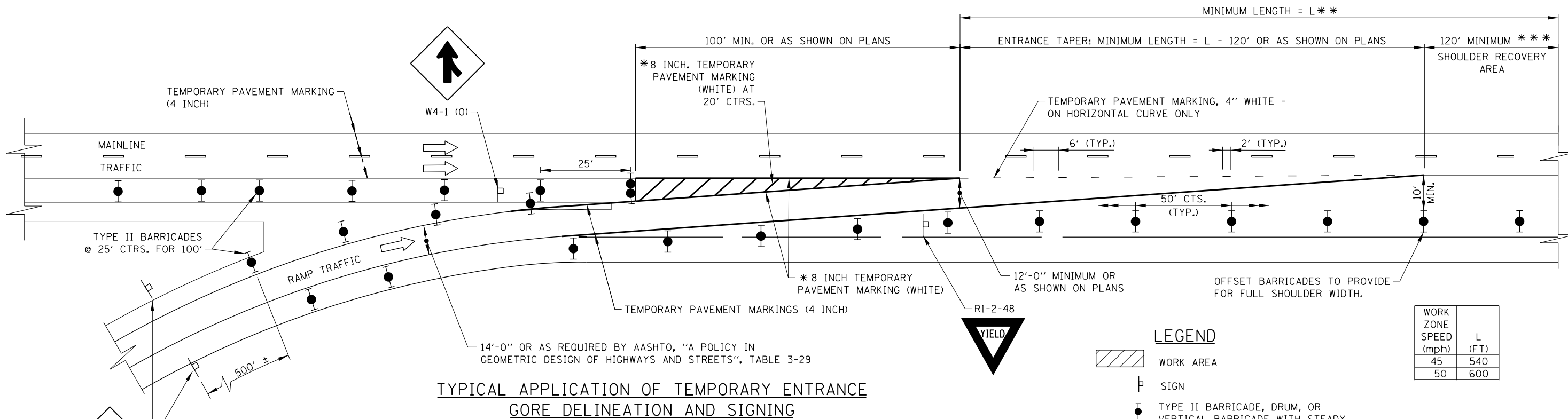
**Illinois Tollway**

**SHOULDER CLOSURE DETAILS**

**STANDARD E3-06**



TYPICAL APPLICATION OF TEMPORARY EXIT GORE DELINEATION AND SIGNING



TYPICAL APPLICATION OF TEMPORARY ENTRANCE GORE DELINEATION AND SIGNING

- \* 8 INCH TEMPORARY PAVEMENT MARKING IS TO BE MADE OF 2-TEMPORARY PAVEMENT MARKING 4 INCH, WHITE OF THE TYPE SPECIFIED.
- \*\* REFER TO TABLE - TAPER LENGTHS ARE BASED ON 12'-0" RAMP WIDTH AT START OF ENTRANCE TAPER
- \*\*\* WHERE VIABLE WITH STAGED CONSTRUCTION

**NOTE:**

WHEN TEMPORARY PAVEMENT MARKING IS NOT REQUIRED, TEMPORARY GORES MAY BE DELINEATED BY DRUMS WITH STEADY BURN LIGHTS AT 25' C-C ACCORDING TO THE CONFIGURATIONS SHOWN.

**LEGEND**

- WORK AREA
- SIGN
- TYPE II BARRICADE, DRUM, OR VERTICAL BARRICADE WITH STEADY BURN MONODIRECTIONAL LIGHT
- DRUM WITH STEADY BURNING LIGHT

WORK ZONE SPEED (mph)	L (FT)
45	540
50	600

DATE	REVISIONS
2-07-2012	REVISED MERGE SIGN.
3-31-2014	ADDED 45 MPH SPEED TO ENTRANCE TAPER.
3-11-2015	REVISED EXIT/ENTRANCE DETAIL LAYOUTS REMOVED DETAILS NOT NEEDED.
3-31-2016	REVISED ENTRANCE GORE DETAIL.
3-31-2017	REVISED EXIT GORE DRUM LAYOUT
3-1-2018	REVISED DIMENSIONS FOR ENTRANCE TAPER.



TEMPORARY GORE DETAILS

STANDARD E5-07

APPROVED: *Paul Kovacs* DATE 5-1-2009  
CHIEF ENGINEERING OFFICER

**GENERAL NOTES:**

1. WORK THIS SHEET WITH OVERHEAD SIGN STRUCTURES SPAN TYPE SUMMARY AND TOTAL BILL OF MATERIAL.
2. AFTER ADJUSTMENTS TO LEVEL TRUSS AND ENSURE ADEQUATE VERTICAL CLEARANCE, ALL TOP AND LEVELING NUTS SHALL BE TIGHTENED AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. STAINLESS STEEL MESH SHALL THEN BE PLACED AROUND THE PERIMETER OF THE BASE PLATE, SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.
3. SIGN SUPPORT STRUCTURES MAY BE SUBJECT TO DAMAGING VIBRATIONS AND OSCILLATIONS WHEN SIGN PANELS ARE NOT IN PLACE DURING ERECTION OR MAINTENANCE OF THE STRUCTURE. TO AVOID THESE, ATTACH TEMPORARY BLANK SIGN PANELS OR OTHER BRACING TO THE STRUCTURE UNTIL PERMANENT SIGNS ARE INSTALLED.
4. TRUSS SEGMENTS SHALL BE SHIPPED INDIVIDUALLY WITH ADEQUATE PROVISION TO PREVENT DETRIMENTAL MOTION DURING TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CONFIGURATION AND PROTECTION OF THE TRUSSES.
5. ONLY SIGN PANELS ARE PERMITTED TO BE MOUNTED ON THIS TRUSS.

**DESIGN SPECIFICATIONS:**

1. 2013 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 6TH EDITION.

**CONSTRUCTION SPECIFICATIONS:**

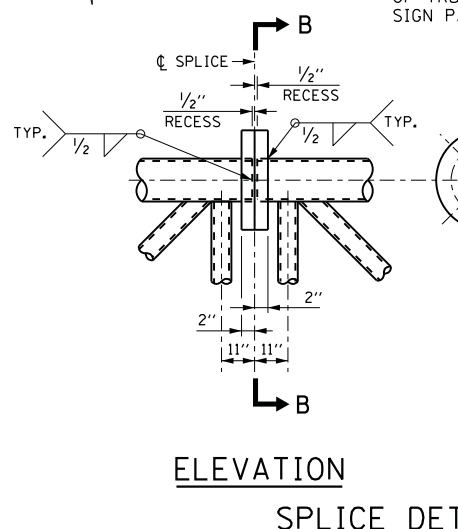
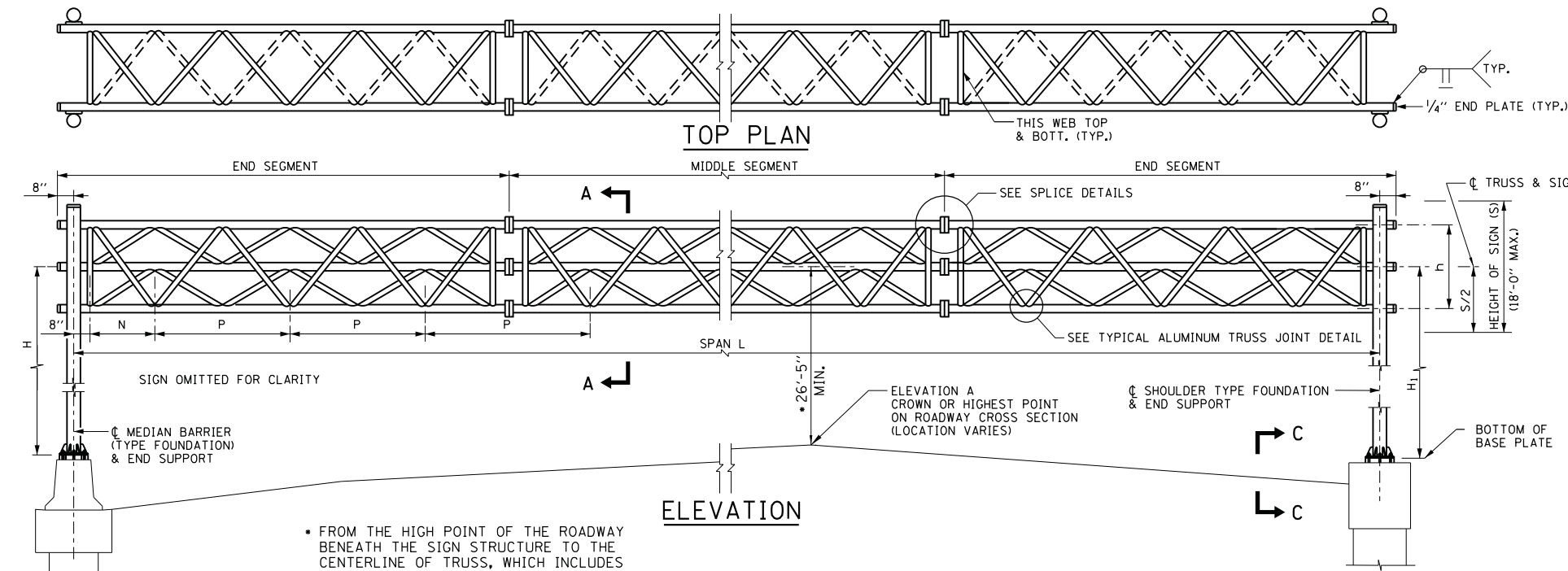
1. ALL MATERIALS, EXCEPT AS SHOWN, FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 733 OF THE LATEST ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.

**LOADING:**

1. BOTH END SUPPORTS ARE DESIGNED FOR 60% OF THE TOTAL LOAD.
2. WIND LOADING SHALL BE A MINIMUM OF 35 PSF ON SIGN PANELS AND 10 PSF ON GROSS AREAS DEFINED BY THE PERIMETER OF TRUSS MEMBERS NOT COVERED BY SIGN PANEL AREAS.
3. THE AASHTO GROUP II AND III ALLOWABLE STRESS SHALL BE 133% (ALLOWABLE STRESS DESIGN).

**FABRICATION NOTES:**

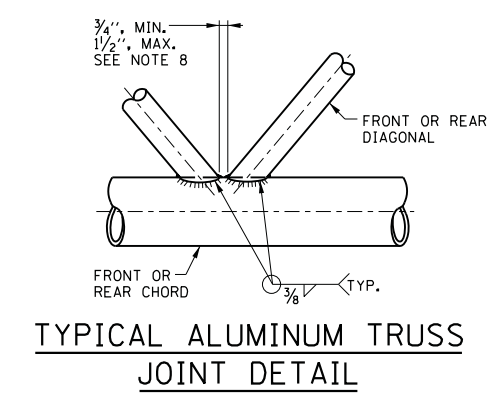
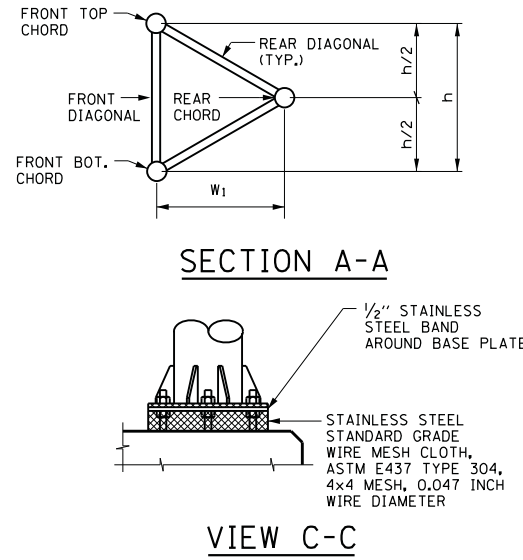
1. NO SPLICES SHALL BE LOCATED WITHIN 0.1xL OF THE CENTERLINE OF THE SPAN.
2. MATERIALS: ALUMINUM SHALL CONFORM TO ASTM B221, ALLOY 6061 TEMPER T6. ALL STRUCTURAL STEEL PIPE SHALL BE ASTM A53 GRADE B OR A106 GRADE B. ALL STRUCTURAL STEEL PLATES AND SHAPES SHALL CONFORM TO AASHTO M270 GR. 36 OR GR. 50. STAINLESS STEEL FOR SHIMS, SLEEVES AND HANDHOLE COVERS SHALL BE ASTM A240, TYPE 302 OR 304, OR ANOTHER ALLOY SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER. THE STEEL PIPE AND STIFFENING RIBS AT THE BASE PLATE FOR THE COLUMN SHALL HAVE A MINIMUM LONGITUDINAL CHARTY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 40° F. (ZONE 2) BEFORE GALVANIZING.
3. WELDING: ALL WELDS TO BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING TO BE DONE IN ACCORDANCE WITH CURRENT AWS D1.1 AND D1.2 STRUCTURAL WELDING CODES (STEEL AND ALUMINUM) AND THE STANDARD SPECIFICATIONS. ALUMINUM WELD FILLER SHALL BE ALLOY 5556.
4. FASTENERS FOR ALUMINUM TRUSSES: HIGH STRENGTH BOLTS MUST SATISFY THE REQUIREMENTS OF AASHTO M164 (ASTM A325), OR APPROVED ALTERNATE, AND MUST HAVE MATCHING LOCK NUTS. THREADED STUDS FOR SPLICES (IF MEMBERS INTERFERE) MUST SATISFY THE REQUIREMENTS OF ASTM A449, ASTM A193, GRADE B7, OR APPROVED ALTERNATE, AND MUST HAVE MATCHING LOCK NUTS. BOLTS AND LOCK NUTS NOT REQUIRED TO BE HIGH STRENGTH MUST SATISFY THE REQUIREMENTS OF ASTM A307. ALL BOLTS AND LOCK NUTS MUST BE HOT DIP GALVANIZED PER AASHTO M232, EXCEPT STAINLESS STEEL FASTENERS, NUTS AND WASHERS. THE LOCK NUTS MUST HAVE NYLON OR STEEL INSERTS. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240 TYPE 302 OR 304, IS REQUIRED UNDER BOTH HEAD AND NUT OR UNDER BOTH NUTS WHERE THREADED STUDS ARE USED. HIGH STRENGTH BOLT INSTALLATION SHALL CONFORM TO ARTICLE 505.04 (F) (2) OF THE IDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ROTATIONAL CAPACITY ("ROCAP") TESTING OF BOLTS WILL NOT BE REQUIRED.
5. U-BOLTS: U-BOLTS MUST BE PRODUCED FROM ASTM A276 TYPE 304, 304L, 316 OR 316L, CONDITION A, COLD FINISHED STAINLESS STEEL, OR AN EQUIVALENT MATERIAL ACCEPTABLE TO THE ENGINEER. ALL NUTS FOR U-BOLTS MUST BE LOCK NUTS EQUIVALENT TO ASTM A307 WITH NYLON OR STEEL INSERTS AND HOT DIP GALVANIZED PER AASHTO M232. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240, TYPE 302 OR 304, IS REQUIRED UNDER EACH U-BOLT LOCK NUT.
6. GALVANIZING: ALL STEEL GRATING, PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111. PAINTING IS NOT PERMITTED.
7. SEE TABLE "SIGN STRUCTURE MEMBER SCHEDULE" FOR "W" AND "W<sub>1</sub>".
8. DIAGONALS SHALL BE DETAILED TO MINIMIZE OFFSET FOR THEORETICAL PANEL POINT AND PROVIDE 3/4 TO 1 1/2 INCH CLEARANCE BETWEEN DIAGONALS AND PROVIDE CLEARANCE FOR U-BOLT CONNECTIONS OF SIGNS OR WALKWAY BRACKETS.



FROM THE HIGH POINT OF THE ROADWAY BENEATH THE SIGN STRUCTURE TO THE CENTERLINE OF TRUSS, WHICH INCLUDES AN ALLOWANCE FOR 9' FROM CENTERLINE OF TRUSS TO BOTTOM OF AN 18' TALL SIGN PANEL.

N=MINIMUM NUMBER OF BOLTS

BOLT CIRCLE FOR 1 5/8" Ø HOLES AND 7/8" Ø STAINLESS STEEL (S.S.) BOLTS WITH HEX LOCKNUTS & S.S. WASHERS UNDER HEAD & NUT. FOR E, F, G & N. SEE TABLE A. REQUIRED MIN. BOLT TENSION IS 12,500\*. 7/8" Ø STUDS SHALL BE SUBSTITUTED WHEN DIAGONALS INTERFERE WITH BOLT LOCATION.



SIGN STRUCTURE MEMBER SCHEDULE														
TRUSS NO.	DIMENSIONS					ALUMINUM TRUSS*				STEEL END SUPPORT				
	TRUSS SPAN L	P	N	h	W <sub>1</sub>	MAXIMUM ALLOWABLE SIGN PANEL AREA	DL (TRUSS) DEFLECTION	MIDDLE SEGMENT OR END SEGMENT				W	PIPE COLUMN (NOMINAL DIAMETER)	
								CHORD (O.D.)		DIAGONAL (O.D.)			10" X.X.S. (104.13#/FT.)	12" X.X.S. (125.49#/FT.)
								FRONT	REAR	FRONT	REAR			
T-80	80'-0"	9'-0"	3'-4"	4'-6"	3'-10 3/4"	900 S.F.	1"	5 1/2" φ x 1/2"	5 1/2" φ x 1/2"	2 1/2" φ x 1/4"	2 1/2" φ x 1/4"	5'-9"	32'-0" (MAX)	38'-0" (MAX)
T-85	85'-0"	9'-6"	3'-10"	4'-9"	4'-1 3/8"	955 S.F.	1 1/16"	6 7/8" φ x 1/2"	6 7/8" φ x 1/2"	3" φ x 1/4"	3" φ x 1/4"	6'-7"	31'-0" (MAX)	38'-0" (MAX)
T-90	90'-0"	10'-0"	4'-4"	5'-0"	4'-4"	1010 S.F.	1 1/8"	6 7/8" φ x 1/2"	6 7/8" φ x 1/2"	3" φ x 1/4"	3" φ x 1/4"	6'-7"	31'-0" (MAX)	38'-0" (MAX)
T-95	95'-0"	10'-6"	4'-10"	5'-3"	4'-6 5/8"	1065 S.F.	1 3/16"	6 7/8" φ x 1/2"	6 7/8" φ x 1/2"	3" φ x 1/4"	3" φ x 1/4"	6'-7"	31'-0" (MAX)	38'-0" (MAX)
T-100	100'-0"	11'-4"	4'-0"	5'-8"	4'-10 7/8"	1125 S.F.	1 1/4"	7" φ x 1/2"	7" φ x 1/2"	3 1/2" φ x 1/4"	3 1/2" φ x 1/4"	7'-5"	31'-0" (MAX)	38'-0" (MAX)
T-105	105'-0"	12'-0"	3'-10"	6'-0"	5'-2 3/8"	1180 S.F.	1 5/16"	7" φ x 1/2"	7" φ x 1/2"	3 1/2" φ x 1/4"	3 1/2" φ x 1/4"	7'-5"	31'-0" (MAX)	38'-0" (MAX)
T-110	110'-0"	12'-6"	4'-4"	6'-3"	5'-5"	1200 S.F.	1 3/8"	7" φ x 1/2"	7" φ x 1/2"	3 1/2" φ x 1/4"	3 1/2" φ x 1/4"	7'-5"	31'-0" (MAX)	38'-0" (MAX)
T-115	115'-0"	13'-0"	4'-10"	6'-6"	5'-7 5/8"	1200 S.F.	1 1/2"	7 1/2" φ x 1/2"	7 1/2" φ x 1/2"	3 1/2" φ x 1/4"	3 1/2" φ x 1/4"	10'-2"	34'-0" (MAX)	40'-0" (MAX)
T-120	120'-0"	13'-8"	4'-8"	6'-10"	5'-11"	1200 S.F.	1 5/8"	7 1/2" φ x 1/2"	7 1/2" φ x 1/2"	3 1/2" φ x 1/4"	3 1/2" φ x 1/4"	10'-2"	34'-0" (MAX)	40'-0" (MAX)
T-130	130'-0"	15'-0"	4'-4"	7'-6"	6'-5 3/8"	1200 S.F.	1 5/8"	9" φ x 1/2"	9" φ x 1/2"	4" φ x 1/4"	4" φ x 1/4"	10'-2"	NOT APPLICABLE	40'-0" (MAX)
T-140	140'-0"	16'-3"	4'-4"	8'-2"	7'-0 7/8"	1200 S.F.	1 11/16"	10" φ x 1/2"	10" φ x 1/2"	4" φ x 1/4"	4" φ x 1/4"	10'-2"	NOT APPLICABLE	40'-0" (MAX)
T-150	150'-0"	17'-6"	4'-4"	8'-10"	7'-7 3/4"	1200 S.F.	1 3/4"	11" φ x 1/2"	11" φ x 1/2"	4 1/2" φ x 1/4"	4 1/2" φ x 1/4"	10'-2"	NOT APPLICABLE	40'-0" (MAX)

CAMBER	
SPAN IN FEET	CAMBER IN INCHES
80 THRU 95	1 1/2"
96 THRU 110	1 5/8"
111 THRU 120	1 7/8"
121 THRU 130	1 7/8"
131 THRU 140	2"
141 THRU 150	2 1/8"

PROVIDE THE ABOVE CAMBER AT MIDDLE OF SPAN OF STRUCTURES

TABLE A			
CHORD O.D.	E	F	N
5 1/2" φ		10"	13"
6 7/8" φ & 7" φ	11 1/2"	14 1/2"	10
7 1/2" φ	12 1/2"	15 1/2"	12
9" φ	13 1/2"	16 1/2"	14
10" φ	15 1/2"	18 1/2"	16
11" φ	17 1/2"	20 1/2"	18

\* SUBSTITUTION OF LARGER TRUSS SIZE IS ACCEPTABLE.

**NOTES:**

1. XXS DENOTES DOUBLE EXTRA STRONG PIPE.
2. A PAIR OF MAIN PIPE COLUMN SIZES FOR EACH SUPPORT SHALL BE SELECTED INDEPENDENTLY BASED ON SPECIFIC NEEDS.

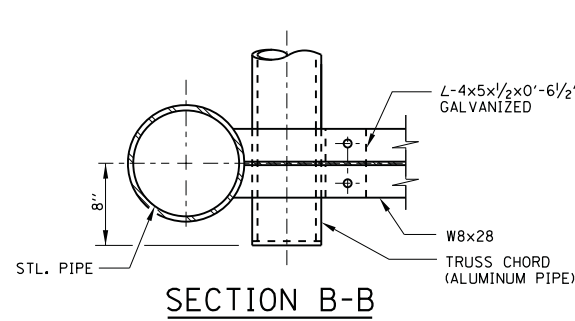
APPROVED: *Paul Kovacs* DATE 2-7-2012  
CHIEF ENGINEERING OFFICER

DATE	REVISIONS
2-07-2012	REVISED FOUNDATIONS AND REVISED NOTES.
2-01-2013	REVISED TABLES, ELEVATION, AND NOTES.
12-12-2013	REVISED TABLES AND NOTES.
3-31-2014	REVISED SIGN STRUCTURE DETAILS.
7-01-2014	REVISED FOUNDATION CONCRETE.
3-11-2015	REVISED NOTES.
3-31-2016	REVISED FOUNDATION NOTE AND REVISED BASE PLATE DIMENSIONS.
3-31-2017	COLUMN MEMBER ADJUSTMENTS AND FOUNDATION REINFORCEMENT.
3-01-2018	REVISED VER. CLEARANCE, AND ADDED NOTE

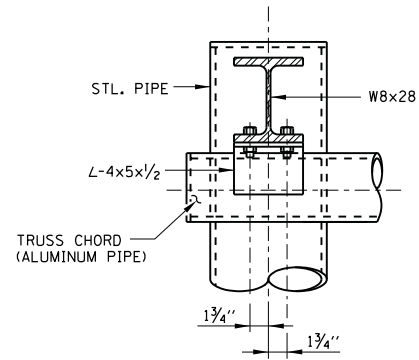
SHEET 1 OF 5

**OVERHEAD SIGN STRUCTURE  
SPAN TYPE  
STRUCTURE DETAILS**

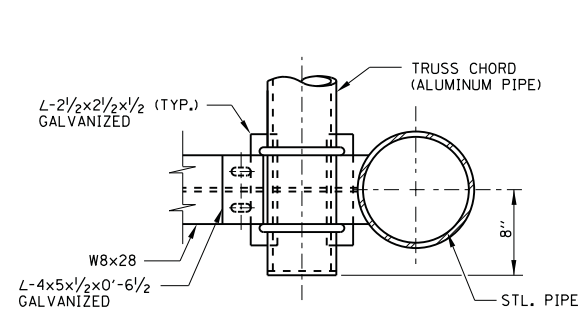
**STANDARD F1-08**



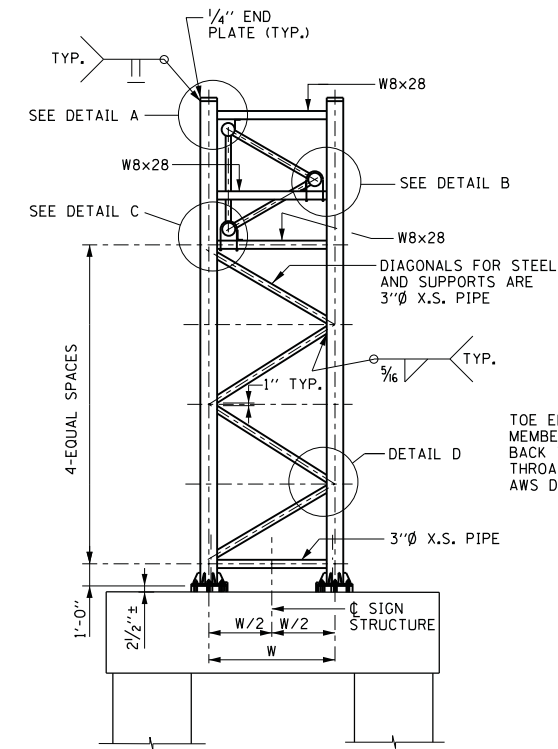
SECTION B-B



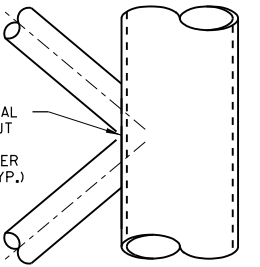
SECTION A-A



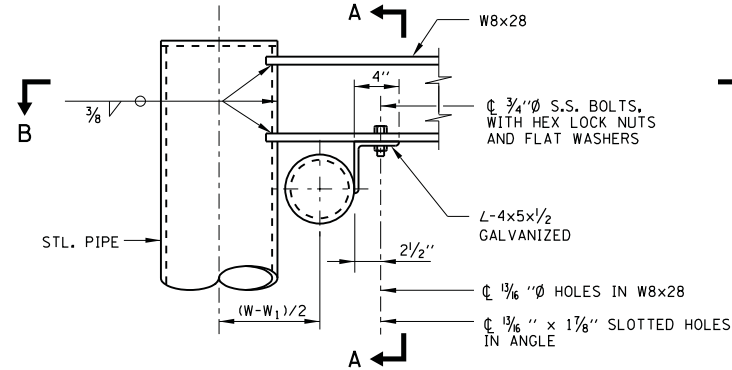
SECTION D-D



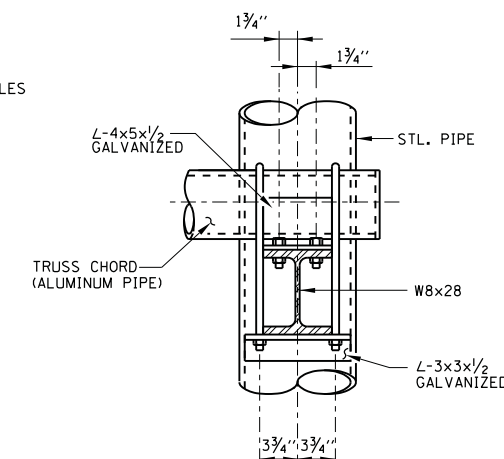
TYPICAL END SUPPORT ELEVATION



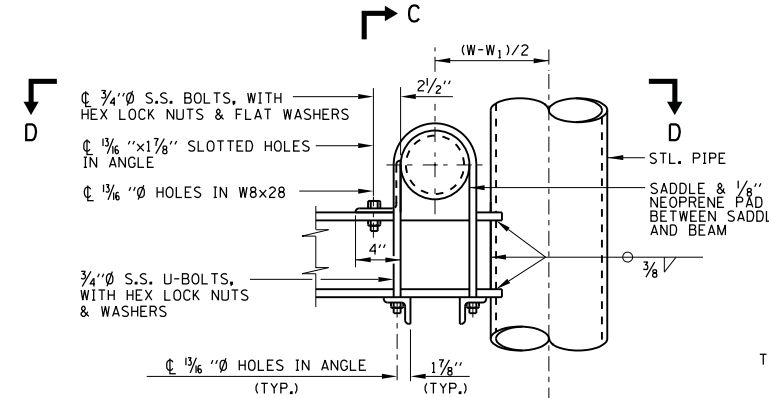
DETAIL D



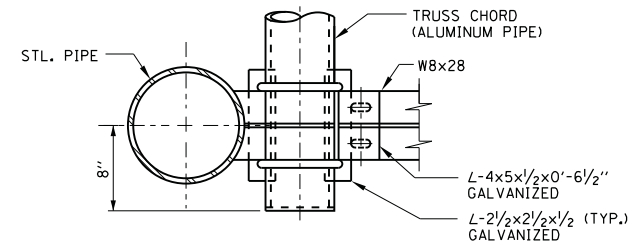
DETAIL A



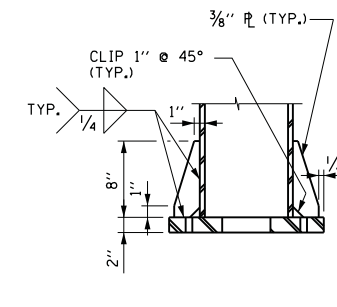
SECTION C-C



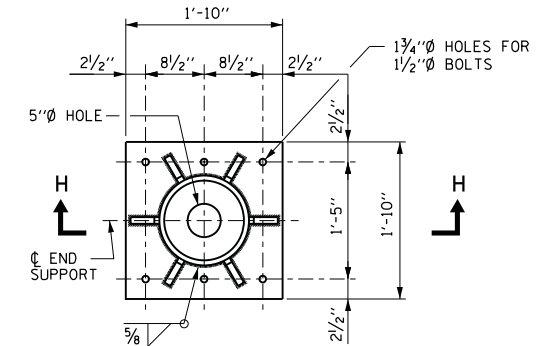
DETAIL B



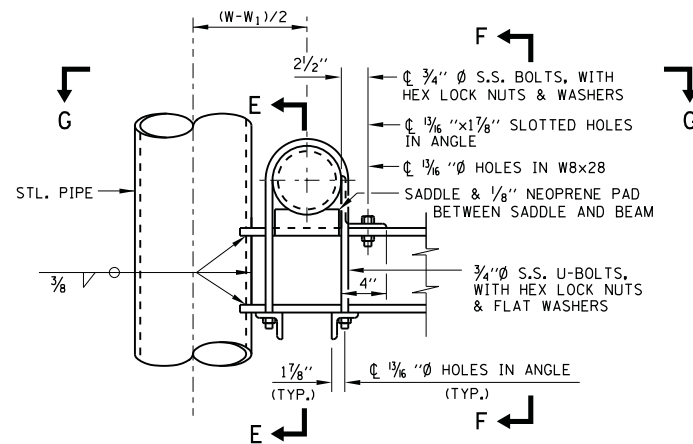
SECTION G-G



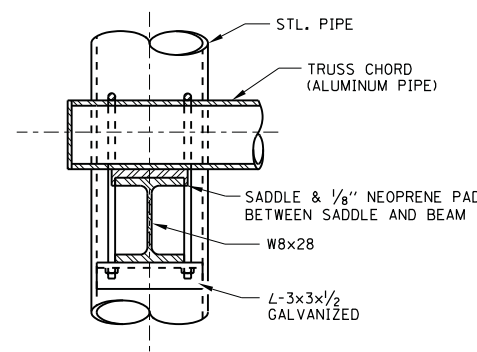
SECTION H-H



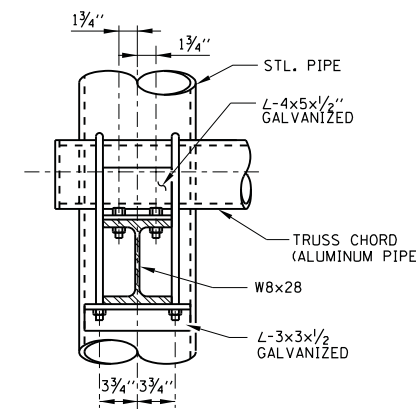
BASE PLATE PLAN



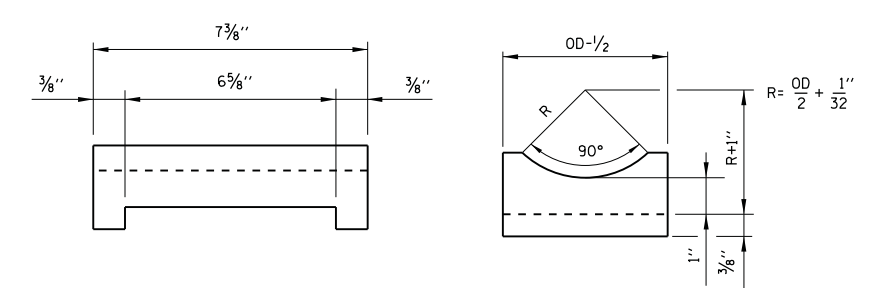
DETAIL C



SECTION E-E

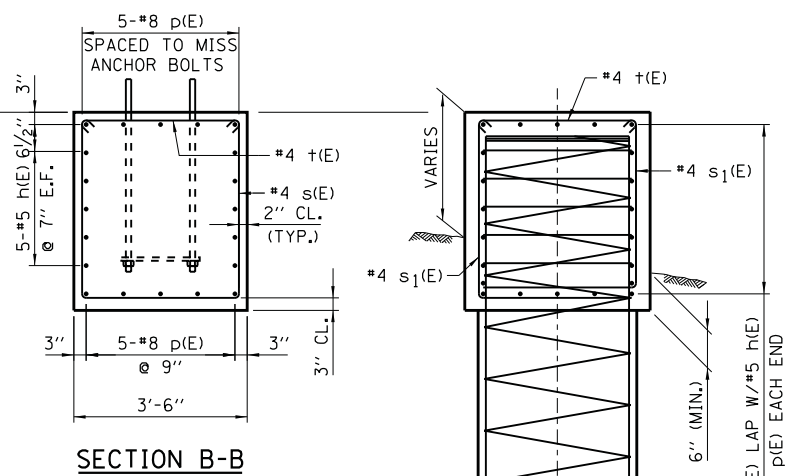
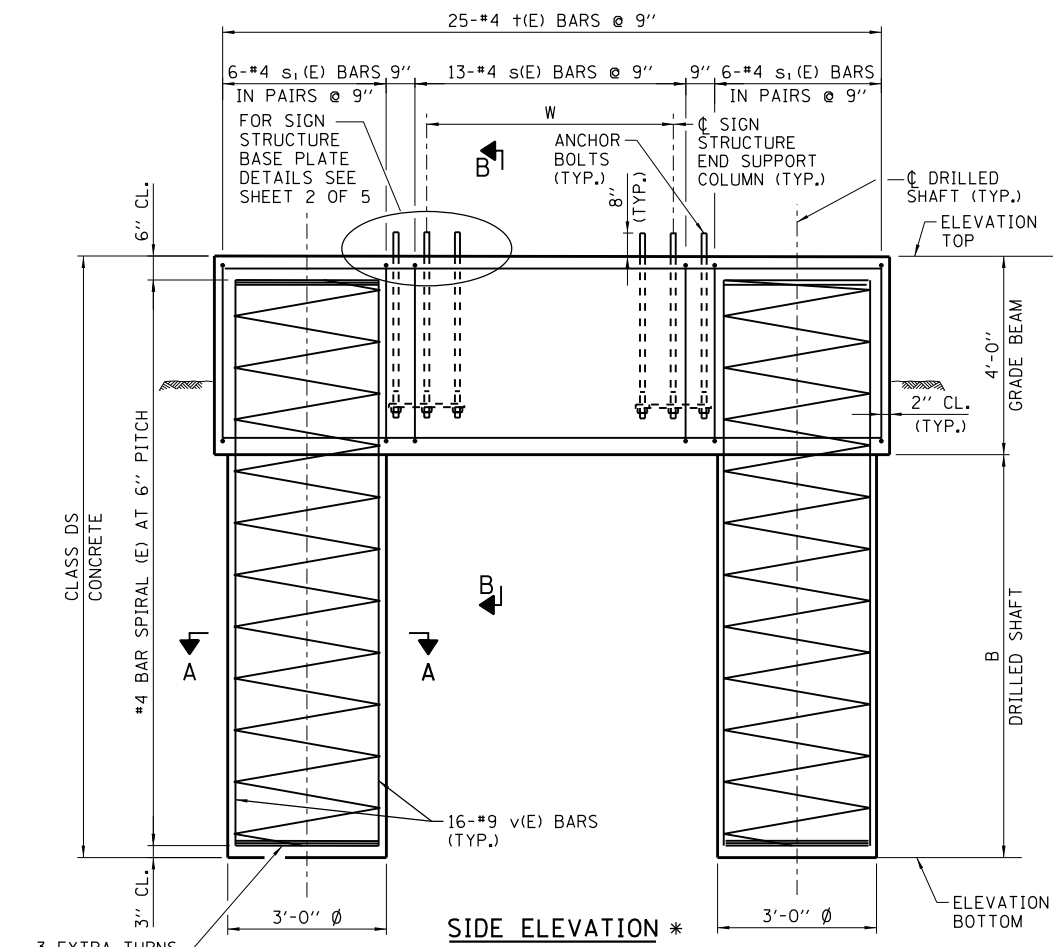


SECTION F-F

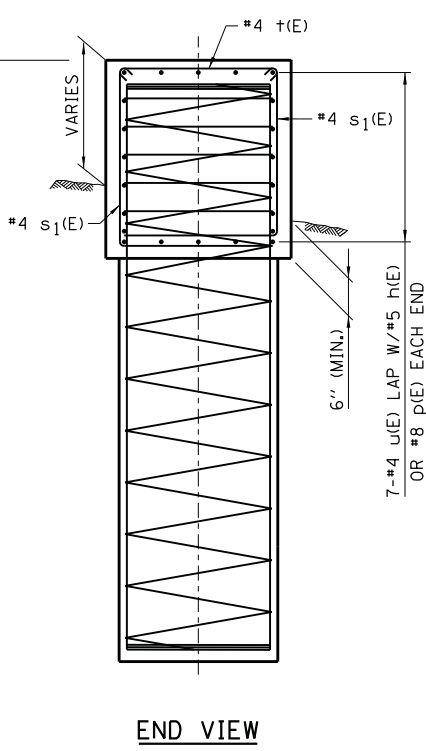
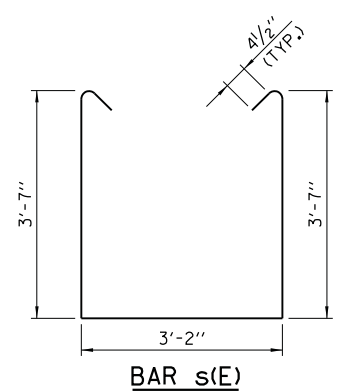


SADDLE (SHIM) DETAIL (ALUMINUM)

Paul Kovacs  
APPROVED... DATE 2-7-2012...  
CHIEF ENGINEERING OFFICER



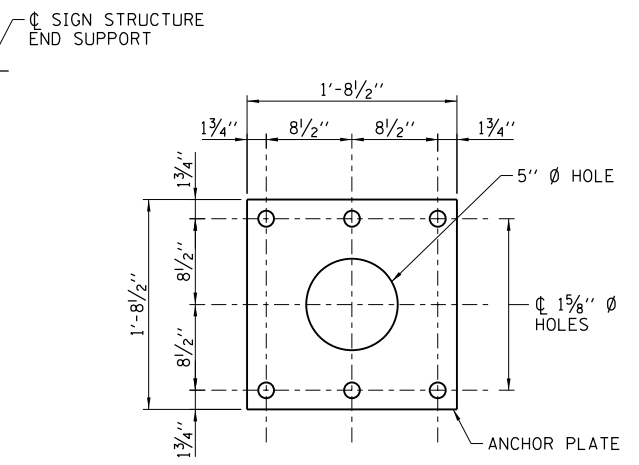
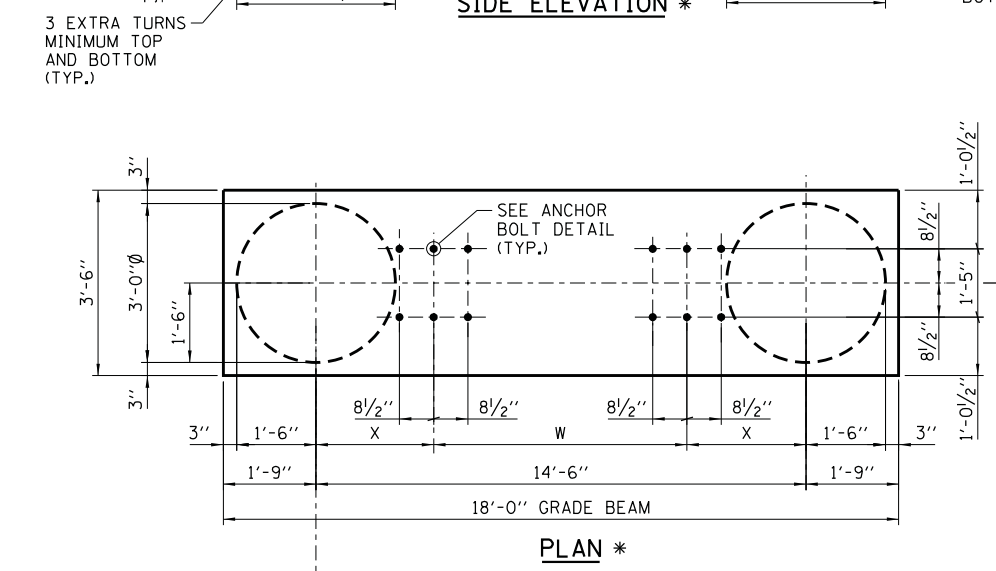
SECTION B-B  
\* REINFORCEMENT IN GRADE BEAM NOT SHOWN FOR CLARITY



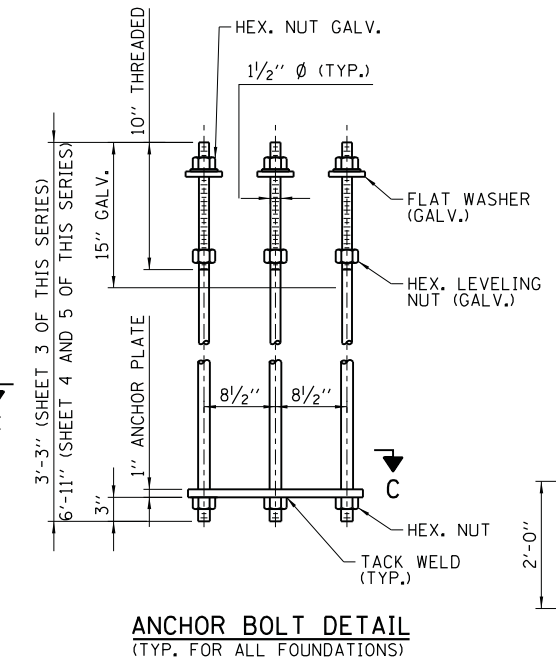
**NOTES:**

1. THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH MUST BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE FOUNDATION DIMENSIONS SHOWN SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.
2. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M314 OR ASTM F1554 GRADE 55, WITH A MINIMUM TENSILE STRENGTH OF 75,000 PSI. ALL OTHER MATERIAL, FABRICATION, AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 734 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
3. CONCRETE SHALL BE PLACED MONOLITHICALLY, WITHOUT CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.
4. BACKFILL SHALL BE PLACED PER SECTION 502 OF THE IDOT STANDARD SPECIFICATION AND PRIOR TO ERECTION OF SUPPORT COLUMN.
5. A NORMAL SURFACE FINISH FOLLOWED BY A CONCRETE SEALER APPLICATION WILL BE REQUIRED ON CONCRETE SURFACES ABOVE THE LOWEST ELEVATION 6" BELOW FINISHED GROUND LINE.
6. ALL REBAR DESIGNATED (E) SHALL BE EPOXY COATED. REBAR SHALL BE POSITIONED SO THAT THERE WILL BE NO INTERFERENCE BETWEEN VERTICAL REINFORCEMENT AND ANCHOR BOLTS.
7. SITE GROUNDING ELECTRODE SYSTEM TO BE PROVIDED AS INDICATED ON THE PLANS.
8. NO SONOTUBES OR DECOMPOSABLE FORMS SHALL BE USED 6" BELOW THE FINISHED GROUND LINE. PERMANENT METAL FORMS OR OTHER SHIELDING SHALL NOT BE LEFT IN PLACE BELOW THE ELEVATION WITHOUT THE ENGINEER'S WRITTEN PERMISSION. EXCAVATIONS SHALL BE DEWATERED BEFORE CONCRETE PLACEMENT IF DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.
9. IF NECESSARY TO INCREASE STEEL END SUPPORT HEIGHT ABOVE THE LIMITATIONS SHOWN IN SIGN STRUCTURE MEMBER SCHEDULE ON SHEET 1 OF THIS SERIES, GRADE BEAM DEPTH SHALL BE INCREASED UP TO 6'-0" WITHOUT CHANGES TO THE DRILLED SHAFT DESIGN. GRADE BEAM REINFORCEMENT, CONCRETE VOLUME AND LENGTH OF ANCHOR BOLTS SHALL BE REVISED ACCORDINGLY.

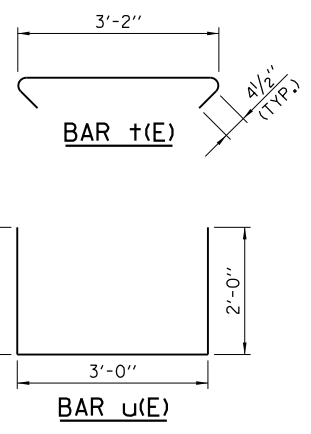
DESIGN TABLE FOR DRILLED SHAFTS IN COHESIVE SOILS					
TRUSS No.	W	X	B	CLASS DS CONC. CY	REINF. BARS POUND
T-80	5'-9"	4'-5"	40'-0"	30.3	6650
T-85	6'-7"	4'-1"	50'-0"	35.5	7940
T-90	6'-7"	4'-1"	50'-0"	35.5	7940
T-95	6'-7"	4'-1"	50'-0"	35.5	7940
T-100	7'-5"	3'-7"	50'-0"	35.5	7940
T-105	7'-5"	3'-7"	50'-0"	35.5	7940
T-110	7'-5"	3'-7"	50'-0"	35.5	7940
T-115	10'-2"	2'-2"	50'-0"	35.5	7940
T-120	10'-2"	2'-2"	50'-0"	35.5	7940
T-130	10'-2"	2'-2"	55'-0"	38.1	8590
T-140	10'-2"	2'-2"	55'-0"	38.1	8590
T-150	10'-2"	2'-2"	55'-0"	38.1	8590



SECTION C-C



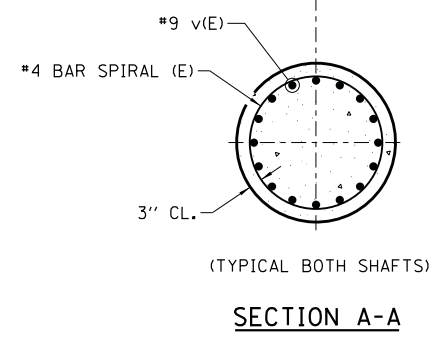
ANCHOR BOLT DETAIL  
(TYP. FOR ALL FOUNDATIONS)



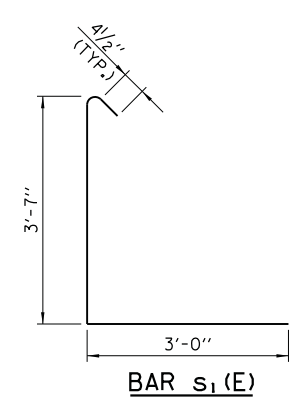
**BAR LIST - EACH FOUNDATION**  
(2 SHAFT AND 1 GRADE BEAM)

BAR	NUMBER	SIZE	LENGTH	SHAPE
h(E)	10	#5	17'-8"	—
p(E)	10	#8	17'-8"	—
s(E)	13	#4	11'-1"	U
s1(E)	24	#4	6'-11 1/2"	U
t(E)	25	#4	3'-11"	—
u(E)	14	#4	7'-0"	U
v(E)	32	#9	B ADD 3'-3"	—

\*4 BAR SPIRAL (E) - SEE SIDE ELEVATION



SECTION A-A



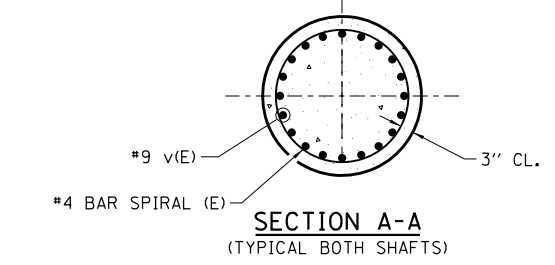
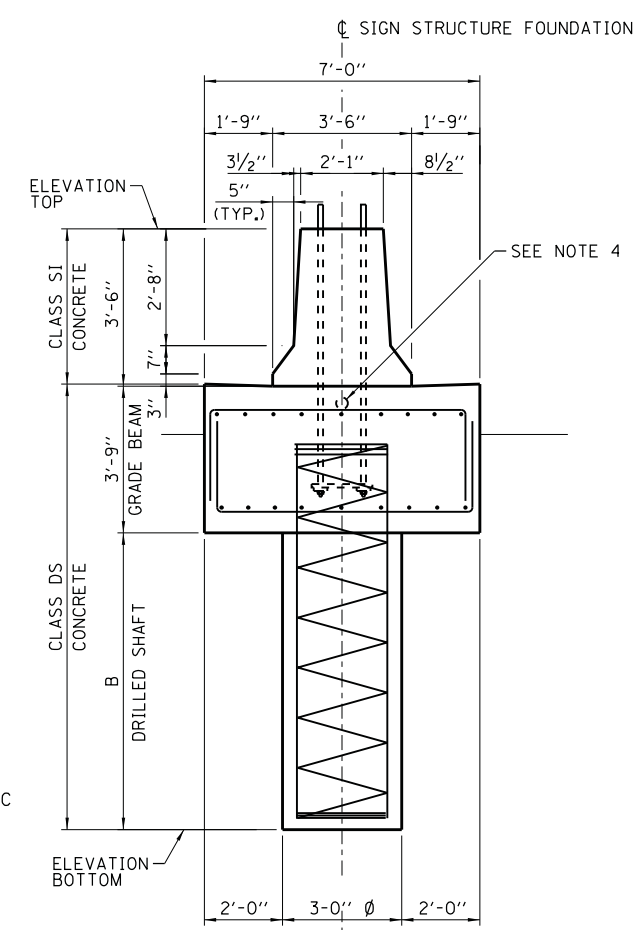
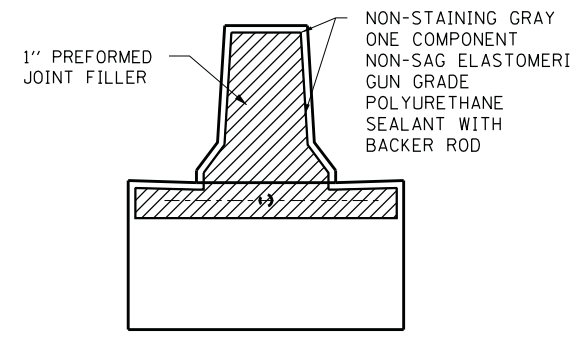
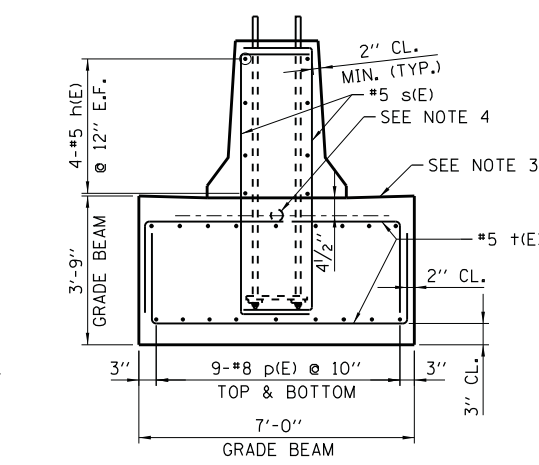
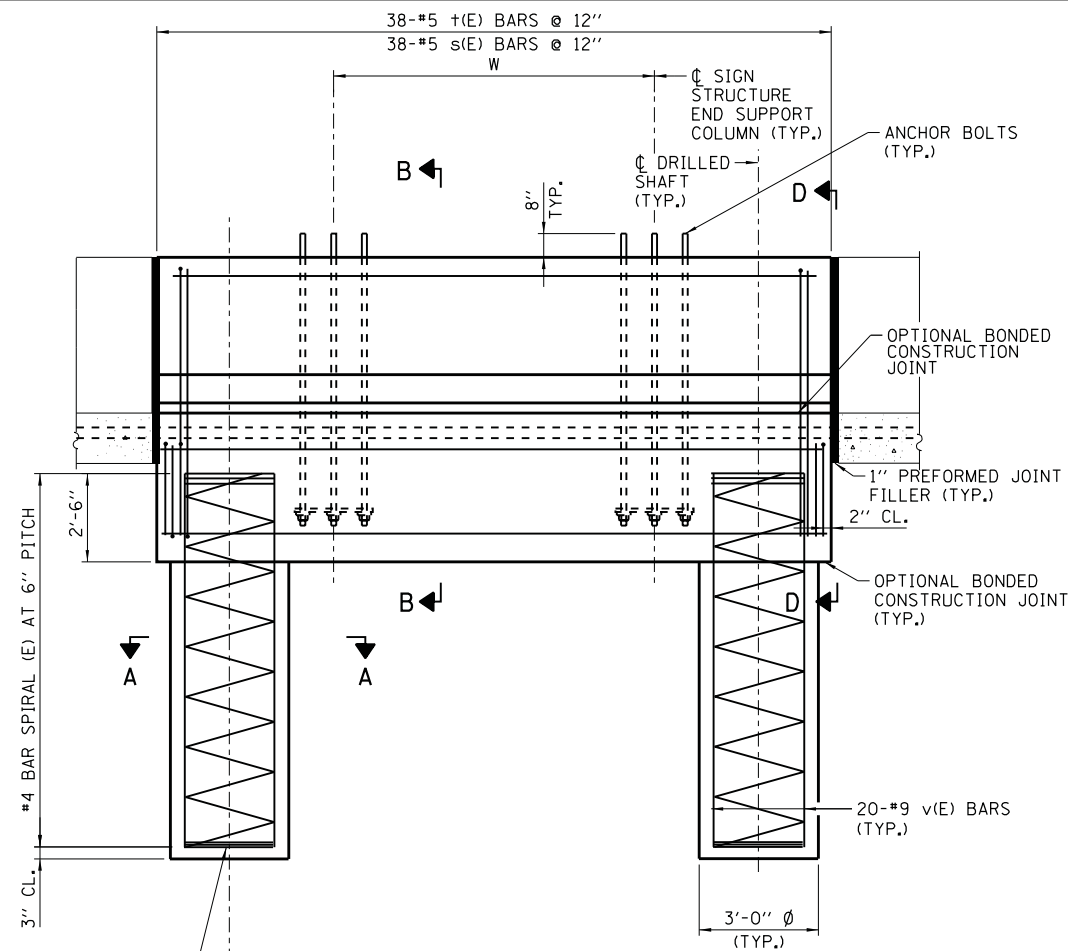
BAR s1(E)

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APPROVED... DATE 2-7-2012...  
CHIEF ENGINEERING OFFICER

SHEET 3 OF 5

OVERHEAD SIGN STRUCTURE  
SPAN TYPE  
STRUCTURE DETAILS  
STANDARD F1-08

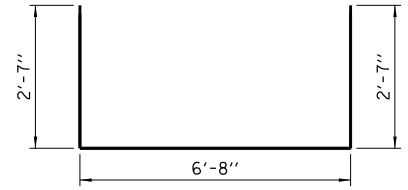




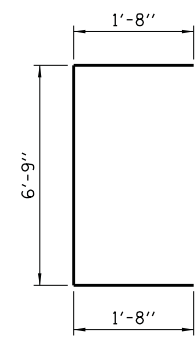
**BAR LIST - EACH FOUNDATION**

BAR	NUMBER	SIZE	LENGTH	SHAPE
h(E)	8	#5	17'-8"	—
p(E)	18	#8	17'-8"	—
s(E)	38	#5	10'-1"	C
t(E)	38	#5	11'-10"	—
v(E)	40	#9	B ADD 2'-3"	—

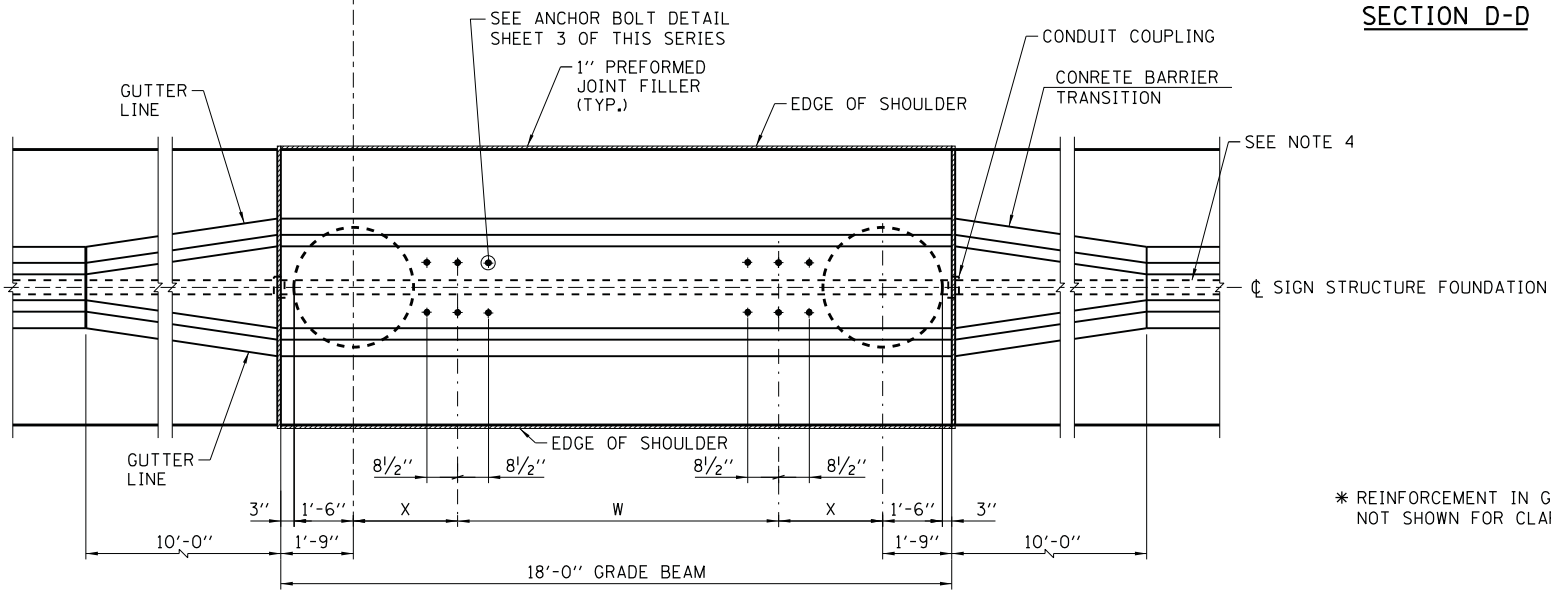
#4 BAR SPIRAL (E) - SEE SIDE ELEVATION



**BAR t(E)**



**BAR s(E)**



**PLAN \***  
(REINFORCEMENT NOT SHOWN FOR CLARITY)

\* REINFORCEMENT IN GRADE BEAM NOT SHOWN FOR CLARITY

**DESIGN TABLE FOR DRILLED SHAFTS IN COHESIVE SOILS**

TRUSS No.	W	X	B	CLASS DS CONC. CU. YD.	CLASS S1 CONC. CU. YD.	REINF. BARS POUND	PROTECTIVE COAT SQ. YD.
T-80	5'-9"	4'-5"	50'-0"	43.7	6.0	10100	26.0
T-85	6'-7"	4'-1"	55'-0"	46.3	6.0	10880	26.0
T-90	6'-7"	4'-1"	55'-0"	46.3	6.0	10880	26.0
T-95	6'-7"	4'-1"	55'-0"	46.3	6.0	10880	26.0
T-100	7'-5"	3'-7"	55'-0"	46.3	6.0	10880	26.0
T-105	7'-5"	3'-7"	55'-0"	46.3	6.0	10880	26.0
T-110	7'-5"	3'-7"	55'-0"	46.3	6.0	10880	26.0
T-115	10'-2"	2'-2"	55'-0"	46.3	6.0	10880	26.0
T-120	10'-2"	2'-2"	55'-0"	46.3	6.0	10880	26.0
T-130	10'-2"	2'-2"	55'-0"	46.3	6.0	10880	26.0
T-140	10'-2"	2'-2"	55'-0"	46.3	6.0	10880	26.0
T-150	10'-2"	2'-2"	55'-0"	46.3	6.0	10880	26.0

**NOTES:**

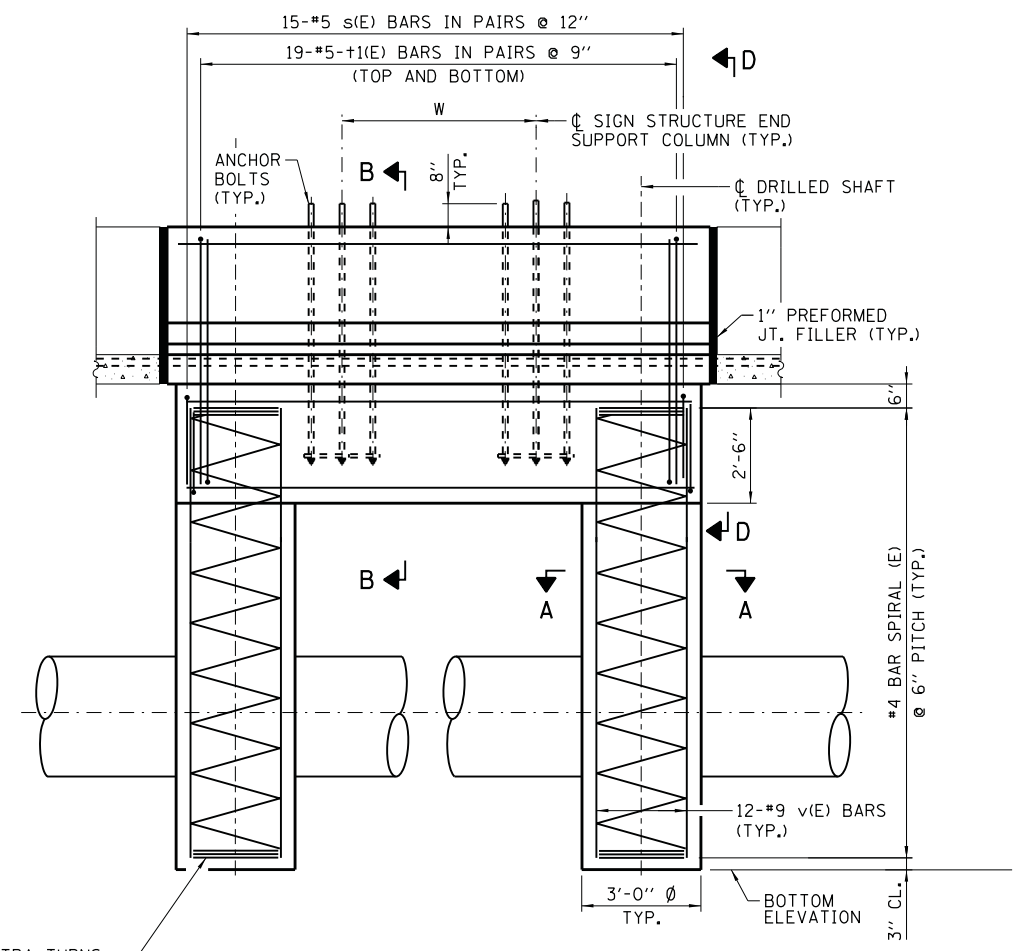
- SEE SHEET 3 OF THIS SERIES FOR GENERAL NOTES AND DESIGN CRITERIA.
- FOR SIGN STRUCTURE BASE PLATE DETAIL, SEE SHEET 2 OF THIS SERIES.
- REFERENCE ILLINOIS TOLLWAY STANDARD DRAWING C5 FOR GUTTER SLOPE.
- COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS, CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS, DO NOT CUT REINFORCEMENT BARS.
- PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER AND TOP FACE OF GUTTER.



OVERHEAD SIGN STRUCTURE  
SPAN TYPE  
STRUCTURE DETAILS

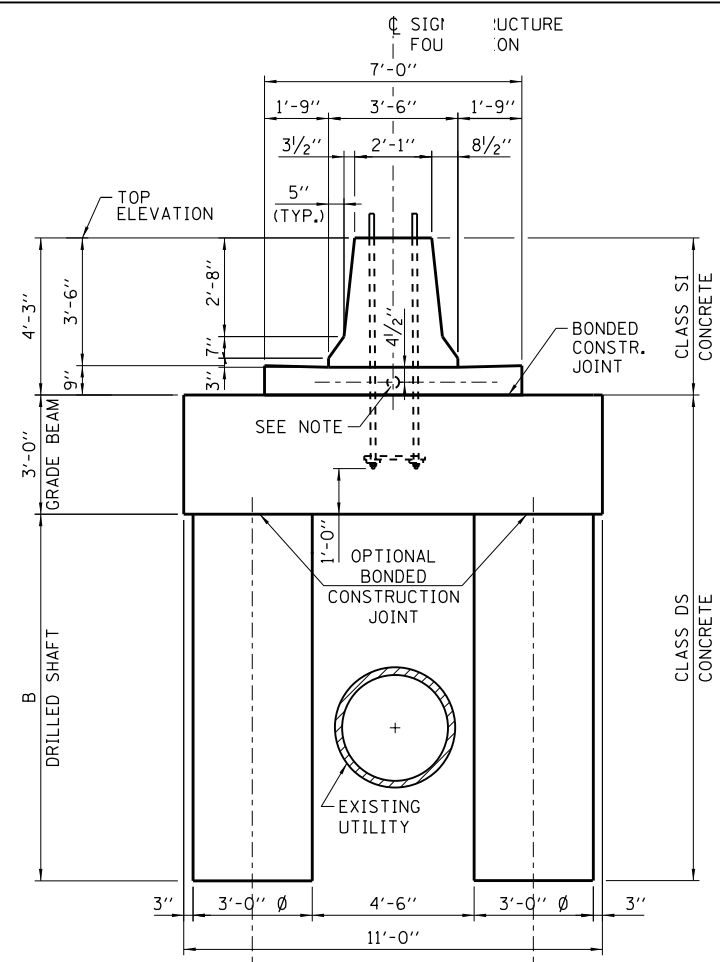
STANDARD F1-08

APPROVED: *Paul Kovacs* DATE: 2-7-2012  
CHIEF ENGINEERING OFFICER



**SIDE ELEVATION \***

\* REINFORCEMENT IN GRADE BEAM NOT SHOWN FOR CLARITY



**END VIEW**

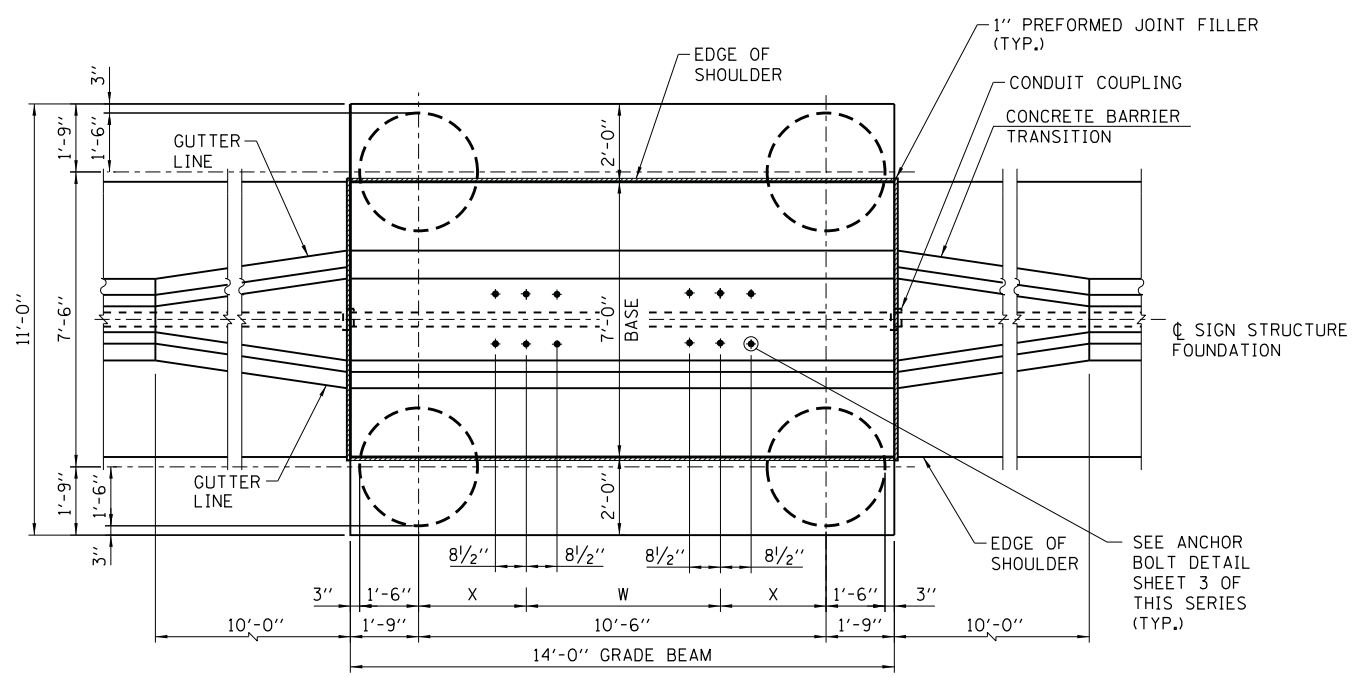
DESIGN TABLE FOR DRILLED SHAFTS IN COHESIVE SOILS

TRUSS No.	W	X	B	CLASS DS CONC. CU. YD.	CLASS SI CONC. CU. YD.	REINF. BARS POUND	PROTECTIVE COAT SQ. YD.
T-80	5'-9"	2'-5"	25'-0"	43.3	7.4	9980	21.0
T-85	6'-7"	2'-1"	25'-0"	43.3	7.4	9980	21.0
T-90	6'-7"	2'-1"	25'-0"	43.3	7.4	9980	21.0
T-95	6'-7"	2'-1"	25'-0"	43.3	7.4	9980	21.0
T-100	7'-5"	1'-7"	25'-0"	43.3	7.4	9980	21.0
T-105	7'-5"	1'-7"	30'-0"	48.5	7.4	11000	21.0
T-110	7'-5"	1'-7"	30'-0"	48.5	7.4	11000	21.0
T-115	10'-2"	0'-2"	30'-0"	48.5	7.4	11000	21.0
T-120	10'-2"	0'-2"	30'-0"	48.5	7.4	11000	21.0
T-130	10'-2"	0'-2"	30'-0"	48.5	7.4	11000	21.0
T-140	10'-2"	0'-2"	30'-0"	48.5	7.4	11000	21.0
T-150	10'-2"	0'-2"	30'-0"	48.5	7.4	11000	21.0

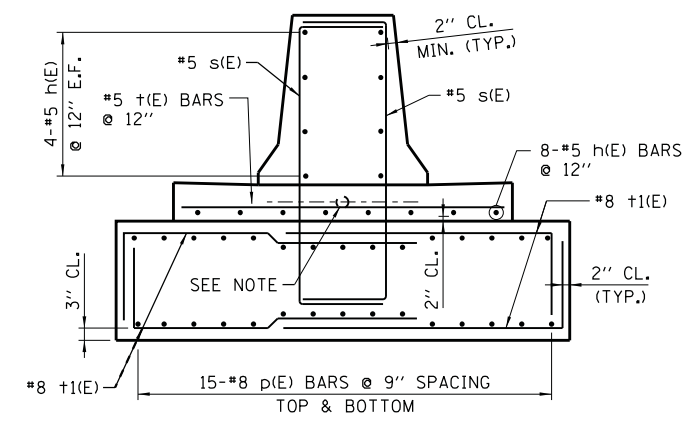
**BAR LIST - EACH FOUNDATION**

BAR	NUMBER	SIZE	LENGTH	SHAPE
h(E)	16	#5	13'-8"	—
p(E)	30	#8	13'-8"	—
s(E)	30	#5	10'-1"	C
+1(E)	15	#5	6'-8"	—
+1(E)	76	#8	12'-7"	—
v(E)	48	#9	B ADD 2'-3"	—

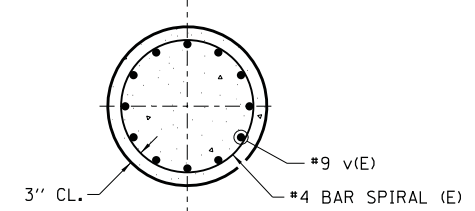
#4 BAR SPIRAL (E) - SEE SIDE ELEVATION



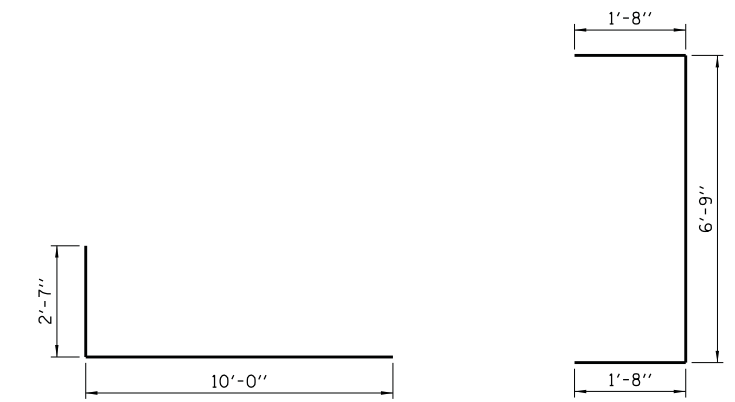
**PLAN \***



**SECTION B-B**

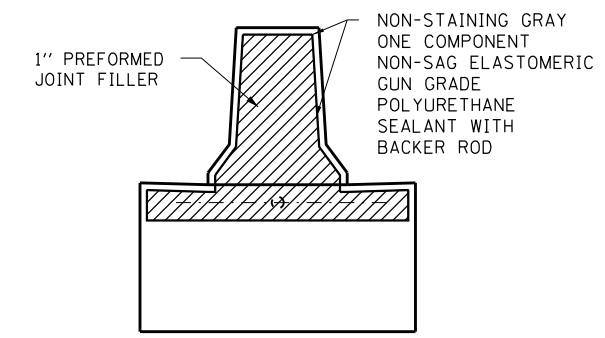


**SECTION A-A**  
(TYPICAL FOR 4 SHAFTS)



**BAR +1(E)**

**BAR s(E)**



**SECTION D-D**

APPROVED: *Paul Kovacs* DATE 2-7-2012  
CHIEF ENGINEERING OFFICER

**NOTE:**  
1. SEE NOTES ON SHEET 4 OF THIS SERIES.

SHEET 5 OF 5

OVERHEAD SIGN STRUCTURE  
SPAN TYPE  
STRUCTURE DETAILS  
STANDARD F1-08

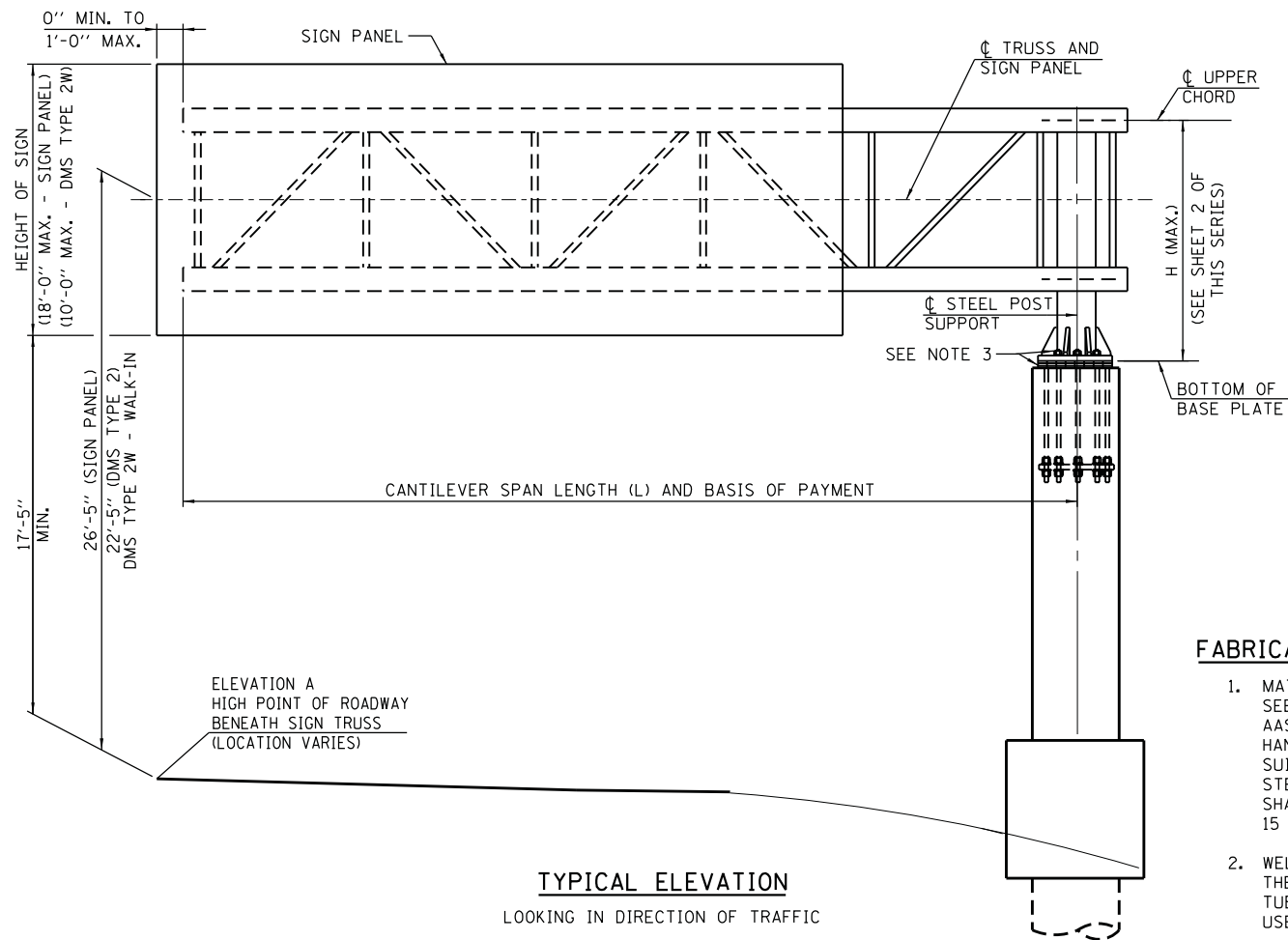
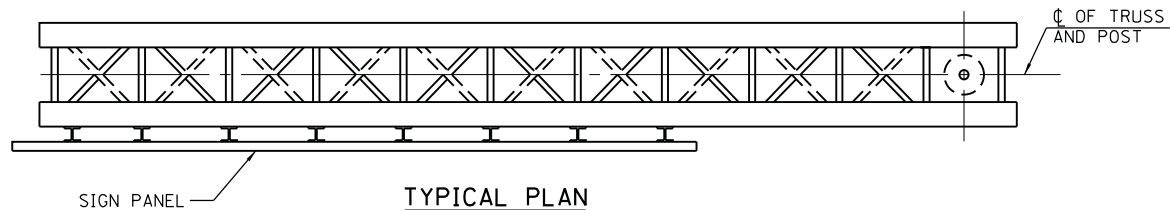
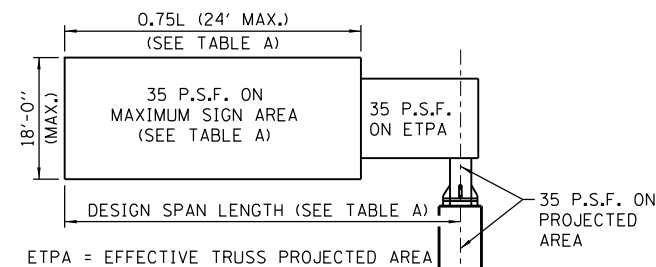


TABLE A: MAXIMUM LIMITS FOR SIGNS

TRUSS TYPE	DESIGN SPAN LENGTH (FT.)	MAXIMUM SIGN AREA (SQ. FT.)	MAXIMUM SIGN LENGTH (FT.)
20-D	20	270	15
25-D	25	338	18.75
30-D	30	405	22.5
35-D	35	432	24
40-D	40	432	24
45-D	45	432	24
50-D	50	432	24



DESIGN WIND LOADING DIAGRAM

FABRICATION NOTES:

- MATERIALS: FOR MATERIAL SPECIFICATIONS FOR CANTILEVER SIGN STRUCTURES, SEE TABLE B. ALL STRUCTURAL STEEL PLATES AND SHAPES SHALL CONFORM TO AASHTO M270 GR. 50, STAINLESS STEEL FOR SHIMS, SLEEVES AND HANDHOLE COVERS SHALL BE ASTM A240, TYPE 302 OR 304 OR ANOTHER ALLOY SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER. THE STEEL PIPE AND STIFFENING RIBS AT THE BASE PLATE FOR THE STEEL POST SHALL HAVE A MINIMUM LONGITUDINAL CHARPY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 40° F (ZONE 2) BEFORE GALVANIZING.
- WELDING: ALL MATERIALS, WELDING PROCEDURES AND INSPECTION USED FOR THE CANTILEVER OVERHEAD SIGN STRUCTURE SHALL CONFORM TO AWS D1.1-10 FOR TUBULAR, CYCLICALLY LOADED STRUCTURES. ADDITIONALLY, ALL WELDED MATERIALS USED SHALL BE PREQUALIFIED FOR USE WITH WPS AS PER AWS D1.1-10, TABLE 3.1.
- FASTENERS FOR STEEL TRUSSES: HIGH STRENGTH BOLTS MUST SATISFY THE REQUIREMENTS OF AASHTO M164 (ASTM A325), OR APPROVED ALTERNATE, AND MUST HAVE MATCHING LOCKNUTS. THREADED STUDS FOR SPLICES (IF MEMBERS INTERFERE) MUST SATISFY THE REQUIREMENTS OF ASTM A449, ASTM A193 GRADE B7, OR APPROVED ALTERNATE, AND MUST HAVE MATCHING LOCKNUTS. BOLTS AND LOCKNUTS NOT REQUIRED TO BE HIGH STRENGTH MUST SATISFY THE REQUIREMENTS OF ASTM A307. ALL BOLTS AND LOCKNUTS MUST BE HOT DIP GALVANIZED PER AASHTO M232, EXCEPT STAINLESS STEEL FASTENERS, NUTS AND WASHERS. THE LOCKNUTS MUST HAVE NYLON OR STEEL INSERTS. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240 TYPE 302 OR 304, IS REQUIRED UNDER BOTH HEAD AND NUT OR UNDER BOTH NUTS WHERE THREADED STUDS ARE USED. HIGH STRENGTH BOLT INSTALLATION SHALL CONFORM TO ARTICLE 505.04(F)(2)d OF THE IDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ROTATIONAL CAPACITY ("ROCAP") TESTING OF BOLTS WILL NOT BE REQUIRED.
- U-BOLTS: U-BOLTS MUST BE PRODUCED FROM ASTM A276 TYPE 304, 304L, 316 OR 316L, CONDITION A, COLD FINISHED STAINLESS STEEL, OR AN EQUIVALENT MATERIAL ACCEPTABLE TO THE ENGINEER. ALL NUTS FOR U-BOLTS MUST BE LOCKNUTS EQUIVALENT TO ASTM A307 WITH NYLON OR STEEL INSERTS AND HOT DIP GALVANIZED PER AASHTO M232. A STAINLESS STEEL FLAT WASHER CONFORMING TO ASTM A240, TYPE 302 OR 304, IS REQUIRED UNDER EACH U-BOLT LOCKNUT.
- GALVANIZING: ALL PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111. PAINTING IS NOT PERMITTED. ALL FASTENERS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111 OR M232 AS APPROPRIATE FOR THE PRODUCT (EXCEPT STAINLESS STEEL FASTENERS).

GENERAL NOTES:

- WORK THIS SHEET WITH OVERHEAD SIGN STRUCTURE CANTILEVER TYPE SUMMARY AND TOTAL BILL OF MATERIAL SHEET.
- AFTER ADJUSTMENTS TO LEVEL TRUSS AND ENSURE ADEQUATE VERTICAL CLEARANCE, ALL TOP AND LEVELING NUTS SHALL BE TIGHTENED AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. STAINLESS STEEL MESH SHALL THEN BE PLACED AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.
- SIGN SUPPORT STRUCTURES MAY BE SUBJECT TO DAMAGING VIBRATIONS AND OSCILLATIONS WHEN SIGN PANELS ARE NOT IN PLACE DURING ERECTION OR MAINTENANCE OF THE STRUCTURE. TO AVOID THESE, ATTACH TEMPORARY BLANK SIGN PANELS OR OTHER BRACING TO THE STRUCTURE UNTIL PERMANENT SIGNS ARE INSTALLED.
- TRUSSES SHALL BE SHIPPED INDIVIDUALLY WITH ADEQUATE PROVISION TO PREVENT DETRIMENTAL MOTION DURING TRANSPORT. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CONFIGURATION AND PROTECTION OF THE TRUSSES.
- ALL WELDS SHALL BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH CURRENT AWS D1.1 STRUCTURE WELDING CODE AND THE STANDARD SPECIFICATIONS.
- ALL STEEL PLATES, SHAPES AND PIPE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111.
- PROVIDE RUBBED SURFACE FINISH FOLLOWED BY CONCRETE SEALER APPLICATION ON ENTIRE SURFACE OF CONCRETE COLUMN AND NORMAL SURFACE FINISH ON GRADE BEAM, EXCEPT BOTTOM SURFACE.
- REINFORCEMENT BARS DESIGNATED (E) SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- DMS TYPE 2W - WALK-IN IS PERMITTED TO BE INSTALLED ON CANTILEVER TRUSS. DO NOT INSTALL SIGN PANEL IN CONJUNCTION WITH DMS TYPE 2W - WALK-IN. SEE SHEET 9 OF THIS SERIES FOR PERMISSIBLE SIGN SIZE AND WEIGHT.

CONSTRUCTION SPECIFICATIONS:

- ALL MATERIALS, EXCEPT AS SHOWN, FABRICATION, ERECTION AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 733 OF THE LATEST ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.

LOADING:

- ALL CANTILEVER TRUSSES ARE DESIGNED FOR AN 18'-0" DEEP SIGN PANEL OVER 75% OF THE ARM LENGTH, WITH A MAXIMUM PANEL WIDTH OF 24'-0".
- ALL CANTILEVER TRUSSES ARE DESIGNED FOR 35 PSF WIND PRESSURE ON TRUSS MEMBERS AND SIGN PANEL.
- THE AASHTO GROUP II AND III ALLOWABLE STRESS SHALL BE 133% (ALLOWABLE STRESS DESIGN).

DESIGN SPECIFICATIONS:

THESE STRUCTURES ARE DESIGNED TO SATISFY THE 2013 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SIXTH EDITION.

CONCRETE COLUMN, GRADE BEAM AND DRILLED SHAFT ARE DESIGNED IN ACCORDANCE WITH THE 2012 EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (INCLUDING THE 2013 INTERIM REVISIONS).

DESIGN UNIT STRESSES FOR REINFORCED CONCRETE:

CLASS SI CONCRETE .....  $f'_c = 3,500$  P.S.I.  
 CLASS DS CONCRETE .....  $f'_c = 4,000$  P.S.I.  
 REINFORCING STEEL .....  $f_y = 60,000$  P.S.I.

SHOP CAMBER TABLE

CANTILEVER LENGTH (L)	SHOP CAMBER AT END
20'	1 1/2"
25'	1 1/2"
30'	2"
35'	2 1/2"
40'	2 1/2"
45'	3"
50'	3 1/2"

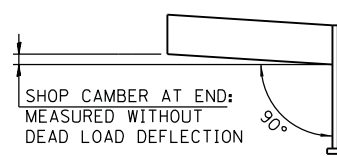


TABLE B: MATERIAL SPECIFICATIONS FOR STRUCTURAL STEEL AND FASTENERS

ELEMENT OF STRUCTURE	SPECIFICATION	MINIMUM YIELD STRENGTH (K.S.I.)	MINIMUM ULTIMATE STRENGTH (K.S.I.)
STRUCTURAL STEEL TUBE	ASTM A500 GRADE B	46	58
STRUCTURAL STEEL POST AND PIPE	API 5L GRADE B OR X42 OR X52	35	52
	ASTM A106 GRADE B	35	60
	ASTM A53, TYPE E OR S, GRADE B	35	60
STEEL BAR AND STEEL PLATES	ASTM A572 GRADE 50	50	65
STAINLESS STEEL BOLTS	ASTM A193, CLASS 1, GRADE B8	30	75
STRUCTURAL STEEL BOLTS	ASTM 325 TYPE 1	--	105
STAINLESS STEEL LOCKNUTS	ASTM A194 GRADE 8F ASTM A194 GRADE 2H	--	--
NUTS	ASTM A563 GRADE DH	--	--
STEEL WASHERS	ASTM F436	--	--
STAINLESS STEEL WASHERS	ASTM A240, TYPE 302	--	--
STEEL ANCHOR BOLTS	AASHTO M314 OR ASTM F1554	55	75



DATE	REVISIONS
12-12-2013	REVISED TABLES AND NOTES
2-07-2014	REVISED STEEL POST TO CONCRETE
3-31-2014	ADDED DMS TYPE II
7-01-2014	ADDED DIMENSIONS AND REVISED NOTES
3-11-2015	ADDED DIMENSIONS AND REVISED NOTES
3-31-2016	REVISED FOUNDATION NOTE
3-31-2017	ADDED WALKWAY GRATING DETAILS
3-01-2018	ADDED VERTICAL CLEARANCE

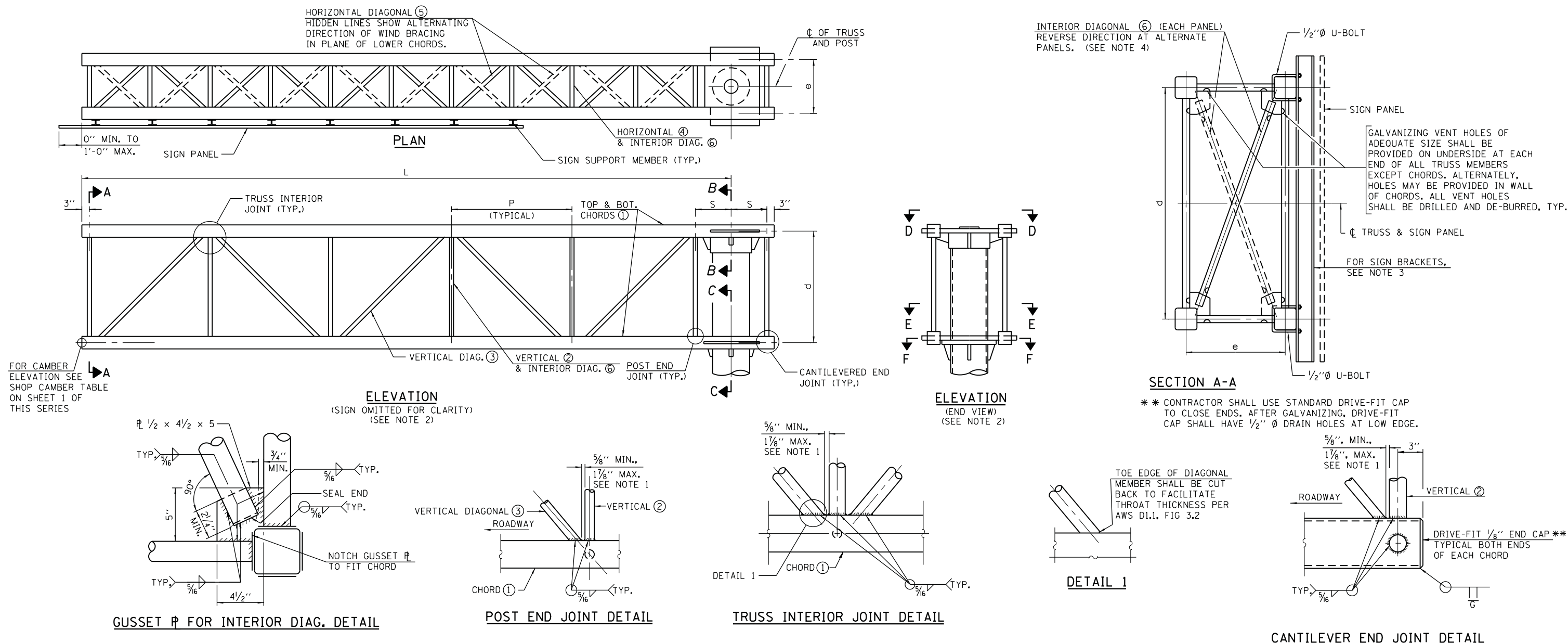


TABLE C: TRUSS AND POST DETAILS FOR 18'-0" (MAX.) SIGN HEIGHT

DESIGN SPAN LENGTH (L)	TRUSS TYPE	TRUSS SIZE		ACTUAL SPAN LENGTH	MAXIMUM SIGN LENGTH	STEEL SUPPORT POST (COLUMN)				TRUSS MEMBERS AND DETAILS													
		e	d			DIAMETER	WEIGHT	* WALL THICKNESS	H (MAX.)	TOP & BOTTOM CHORD (1)	VERTICAL (2)		VERTICAL DIAG. (3)		HORIZONTAL (4)		HORIZONTAL DIAG. (5)		INTERIOR DIAG. (6)		PANELS		
											PIPE	WALL	PIPE	WALL	PIPE	WALL	PIPE	WALL	PIPE	WALL	NO.	P	S
20'	20-D	2'-6"	5'-6"	20'-1"	15'-0"	18"	138.30 (#/FT)	1"	12'-0"	HSS 5x5x1/4	2 1/2" Ø X.S	0.276"	3" Ø X.X.S	0.600"	1 1/2" Ø X.S	0.200"	2 1/2" Ø X.S	0.276"	1 1/2" Ø X.S	0.200"	4	4'-7"	1'-6"
25'	25-D	3'-6"	5'-6"	24'-11"	18'-9"	18"	181.73 (#/FT)	1"	12'-0"	HSS 5x5x1/4	2 1/2" Ø X.S	0.276"	3" Ø X.X.S	0.600"	2" Ø X.S	0.218"	2 1/2" Ø X.S	0.276"	2" Ø X.S	0.218"	5	4'-7"	1'-9"
30'	30-D	3'-6"	7'-0"	30'-2"	22'-6"	18"	181.73 (#/FT)	1"	12'-0"	HSS 6x6x1/4	3" Ø X.S	0.300"	4" Ø X.X.S	0.674"	2" Ø X.S	0.218"	2 1/2" Ø X.S	0.276"	2" Ø X.S	0.218"	5	5'-7"	2'-0"
35'	35-D	4'-0"	7'-0"	35'-0"	24'-0"	24"	186.41 (#/FT)	1"	12'-0"	HSS 6x6x1/4	3" Ø X.S	0.300"	4" Ø X.X.S	0.674"	2" Ø X.S	0.218"	2 1/2" Ø X.S	0.276"	2" Ø X.S	0.218"	5	6'-6"	2'-3"
40'	40-D	4'-0"	7'-0"	40'-0"	24'-0"	24"	186.41 (#/FT)	1"	12'-0"	HSS 6x6x1/4	3" Ø X.S	0.300"	4" Ø X.X.S	0.674"	2" Ø X.S	0.218"	2 1/2" Ø X.S	0.276"	2" Ø X.S	0.218"	6	6'-3"	2'-3"
45'	45-D	4'-6"	7'-0"	45'-0 1/2"	24'-0"	24"	245.87 (#/FT)	1"	12'-0"	HSS 6x6x1/4	3" Ø X.S	0.300"	4" Ø X.X.S	0.674"	2" Ø X.S	0.218"	2 1/2" Ø X.S	0.276"	2" Ø X.S	0.218"	7	6'-0 1/2"	2'-6"
50'	50-D	4'-6"	7'-0"	50'-1"	24'-0"	24"	245.87 (#/FT)	1"	12'-0"	HSS 6x6x1/4	3" Ø X.S	0.300"	4" Ø X.X.S	0.674"	2" Ø X.S	0.218"	2 1/2" Ø X.S	0.276"	2" Ø X.S	0.218"	8	5'-11"	2'-6"

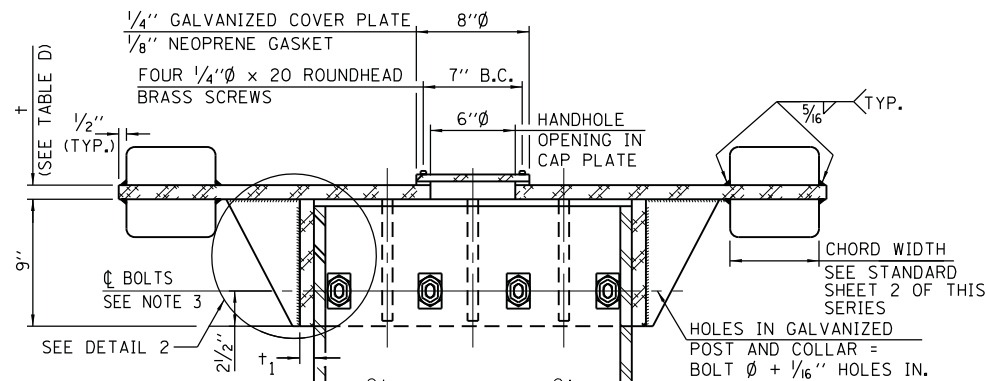
\* NOMINAL WALL THICKNESS SHOWN. THICKER WALL IS PERMITTED UPON ENGINEER'S APPROVAL.

NOTES:

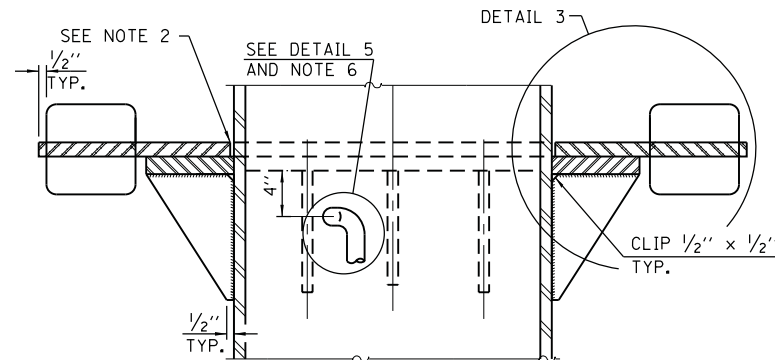
- TRUSS MEMBERS SHALL BE SPACED A MINIMUM OF 3 TIMES THE WALL THICKNESS OF THE LARGEST CONNECTING MEMBERS TO ENSURE PROPER WELD SPACING.
- FOR SECTIONS B-B, C-C, D-D, E-E AND F-F SEE SHEET 3 OF THIS SERIES.
- FOR SIGN SUPPORT DETAILS, SEE ILLINOIS TOLLWAY STANDARD DRAWING F8, FOR DMS TYPE 2W - WALK-IN SIGN SUPPORT DETAILS, SEE SHEET 9 OF THIS SERIES.
- DIRECTION OF INTERIOR DIAGONALS SHOWN IN SECTION A-A CORRECTLY DEPICTS TRUSSES HAVING AN ODD NUMBER OF PANELS. TRUSSES WITH AN EVEN NUMBER OF PANELS WILL HAVE DIAGONALS IN A REVERSED DIRECTION THAN AS SHOWN.
- FOR ANY DESIGN SPAN LENGTH THAT FALLS BETWEEN TWO CONSECUTIVE SPANS, PROVIDED IN COLUMN 1 OF TABLE C, THE LARGER DESIGN SPAN LENGTH SHALL BE USED (I.E. FOR A 32' SPAN LENGTH FALLING BETWEEN 30' AND 35' DESIGN SPAN LENGTHS IN TABLE C, THE 35' DESIGN SPAN LENGTH TRUSS AND POST DETAILS SHALL BE USED).

Paul Kovacs  
 APPROVED... DATE 3-31-2014  
 CHIEF ENGINEERING OFFICER

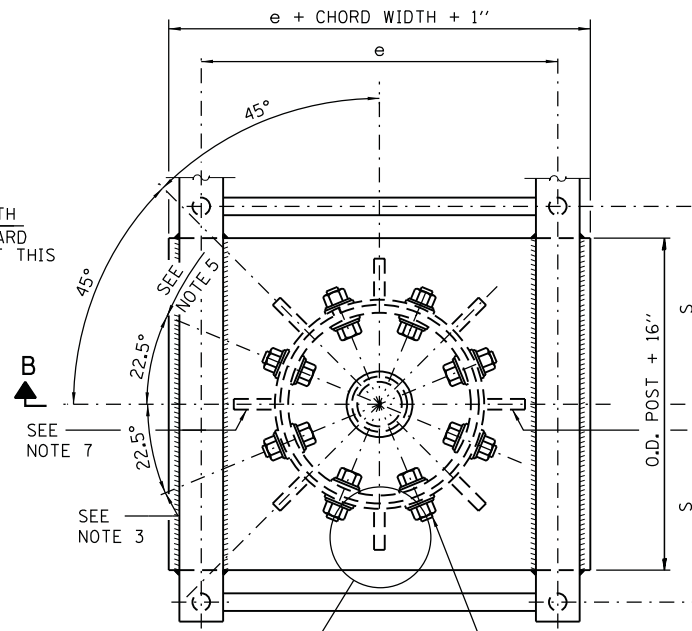




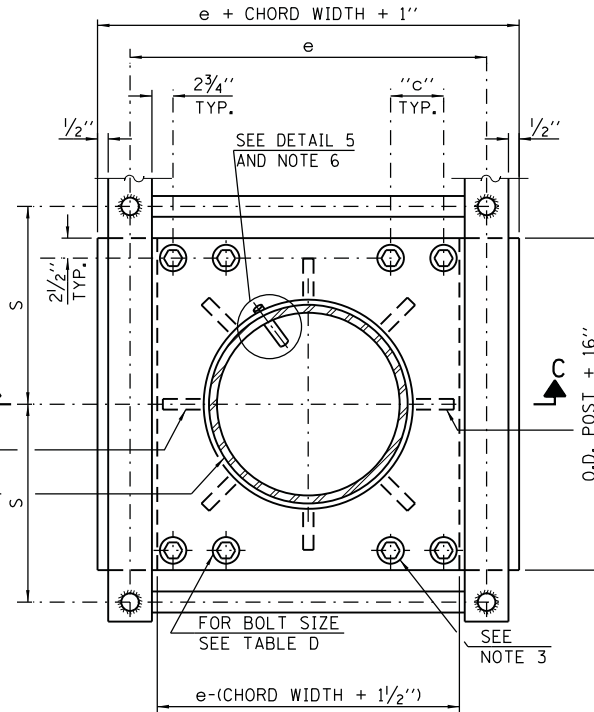
SECTION B-B



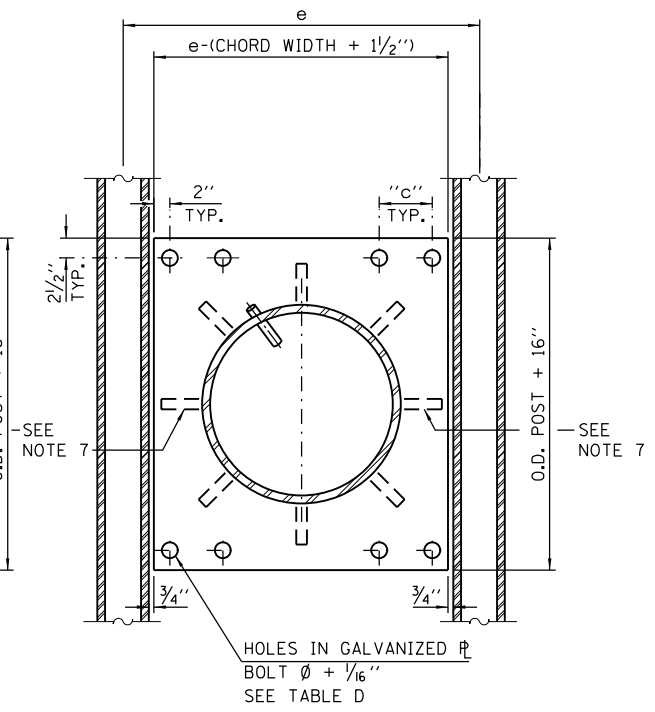
SECTION C-C



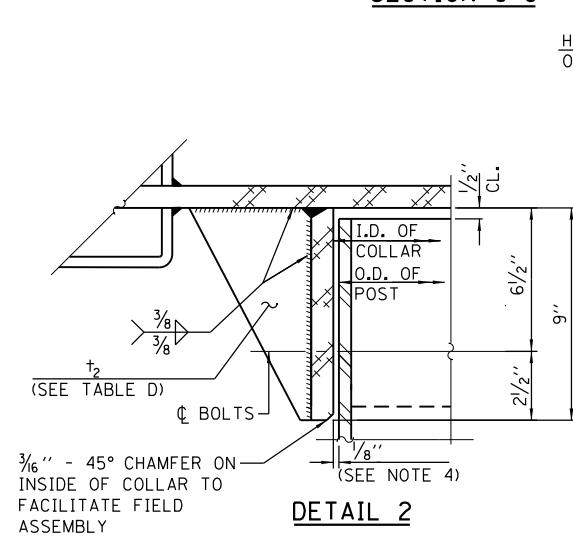
VIEW D-D  
(CAP PLATE)



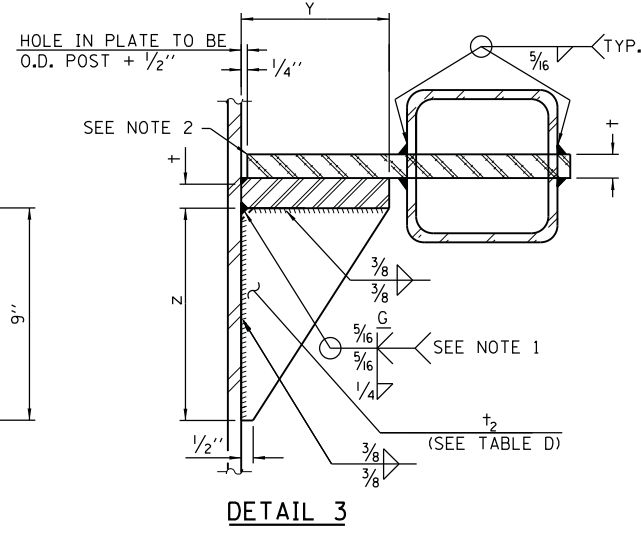
SECTION E-E  
(JUNCTURE PLATE)



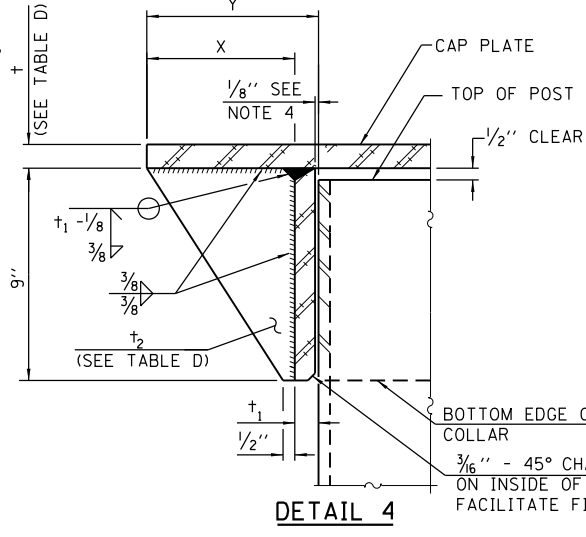
SECTION F-F  
(SETTING PLATE)



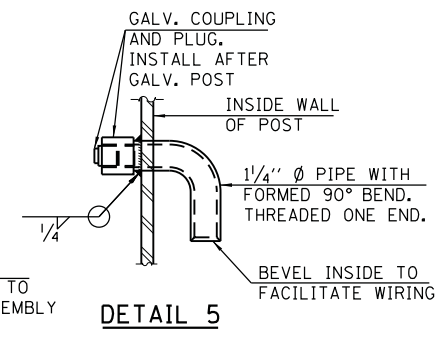
DETAIL 2



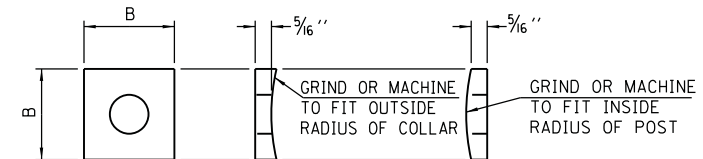
DETAIL 3



DETAIL 4



DETAIL 5



BOLT SIZE	CONTOURED WASHERS	
	HOLE DIA.	B
1 1/8" Ø	1 1/4" Ø	2 1/4"
1 1/4" Ø	1 3/8" Ø	2 1/4"
1 1/2" Ø	1 5/8" Ø	2 1/4"

CONTOURED WASHERS  
(ASTM A240, TYPE 304)

**NOTES:**

- GRIND TOP IF REQUIRED TO FULLY SEAT PLATE. REPAIR DAMAGED GALVANIZING BEFORE ASSEMBLY.
- AFTER TIGHTENING LOWER CONNECTION BOLTS, FILL GAP WITH NON-HARDENING SILICONE CAULK SUITABLE FOR EXTERIOR EXPOSURE AND ACCEPTABLE TO THE ENGINEER.
- CONNECTION BOLTS IN COLLAR AND BOLTS AT LOWER CHORD CONNECTION MUST BE HIGH STRENGTH WITH MATCHING LOCKNUTS. LOWER CONNECTION BOLTS MUST HAVE 2 FLAT WASHERS EACH.
- AFTER GALVANIZING, COLLAR I.D. SHALL EQUAL O.D. OF GALVANIZED POST PLUS 1/8" (±1/16") MAXIMUM GAP BETWEEN POST AND COLLAR AT ANY LOCATION SHALL BE 1/8" BEFORE TIGHTENING BOLTS.
- OPTIONAL FULL PENETRATION WELD IN COLLAR. (TWO LOCATIONS MAXIMUM (180° APART) X-RAY OR UT 100%) ALL BOLTS SHOWN ARE HIGH STRENGTH.
- ORIENT PIPE TOWARD SIGN PANEL SIDE. HOLE IN POST = O.D. PIPE + 1/8".
- OMIT INDICATED STIFFENER IN TRUSS TYPE 20-D.

TABLE D: BOLT SCHEDULE

SPAN LENGTH	POST OUTSIDE DIAMETER	JUNCTURE & COLLAR CONNECTION BOLT DIAMETER	LOWER JUNCTURE BOLT SPACING DIMENSION "c"	PLATE THICKNESS		STIFFENER THICKNESS (t <sub>2</sub> )	NO. OF STIFFENERS	STIFFENERS		
				(t)	(t <sub>1</sub> )			x	y	z
< = 20'	18"	1 1/8"	3 1/8"	1"	3/4"	1/2"	6	5"	6"	8"
21'-30'	18"	1 1/2"	3 3/4"	1 1/8"	7/8"	3/4"	8	5"	6"	8"
31'-40'	24"	1 1/2"	4 1/2"	1 1/4"	1"	3/4"	8	7"	8"	10 1/2"
41'-50'	24"	1 1/2"	4 1/2"	1 1/4"	1"	3/4"	8	7"	8"	10 1/2"

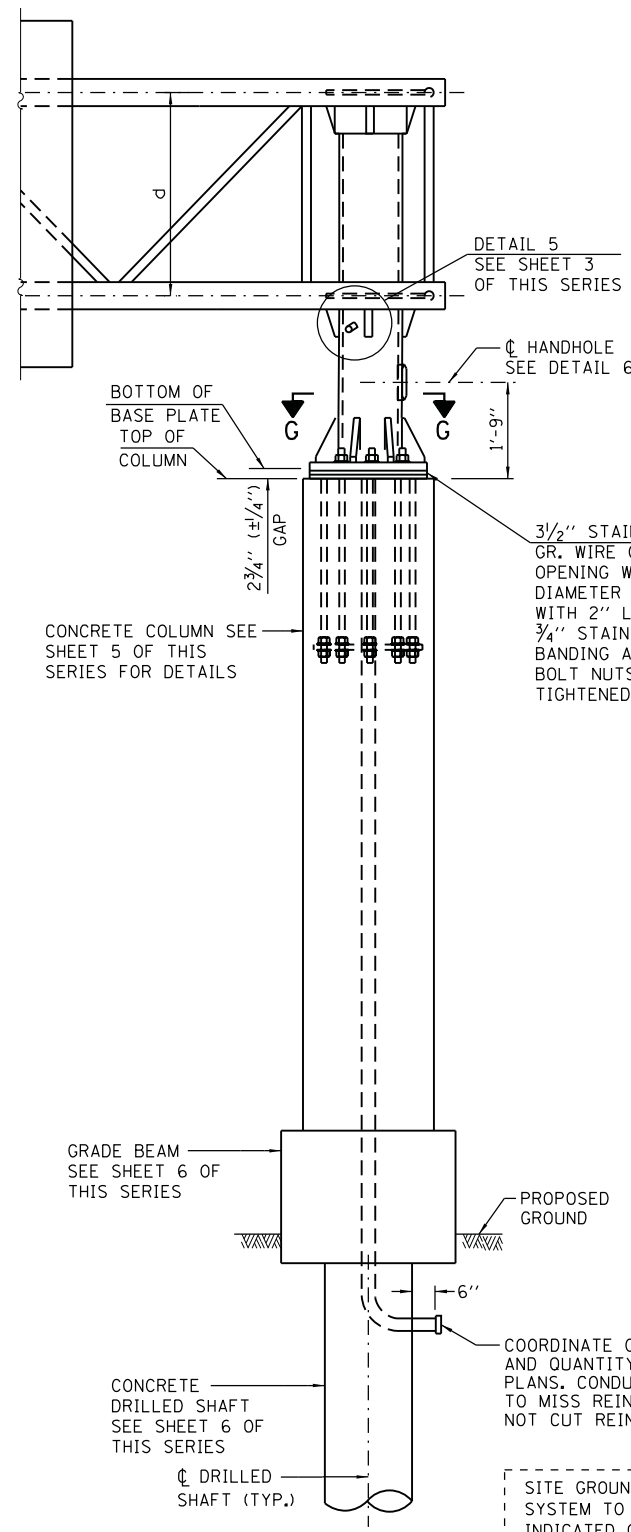
Paul Kovacs  
APPROVED... DATE 3-31-2014  
CHIEF ENGINEERING OFFICER

B.C. = BOLT CIRCLE



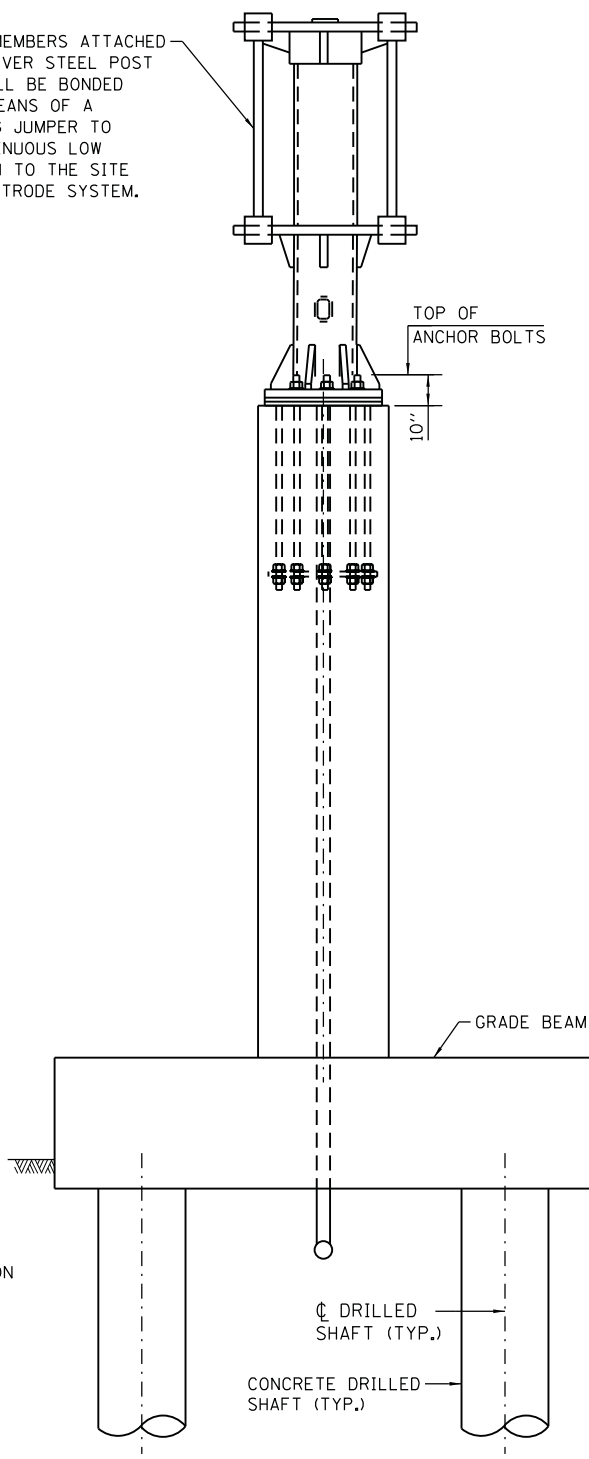
OVERHEAD SIGN STRUCTURE  
CANTILEVER TYPE  
STRUCTURE DETAILS

STANDARD F4-09

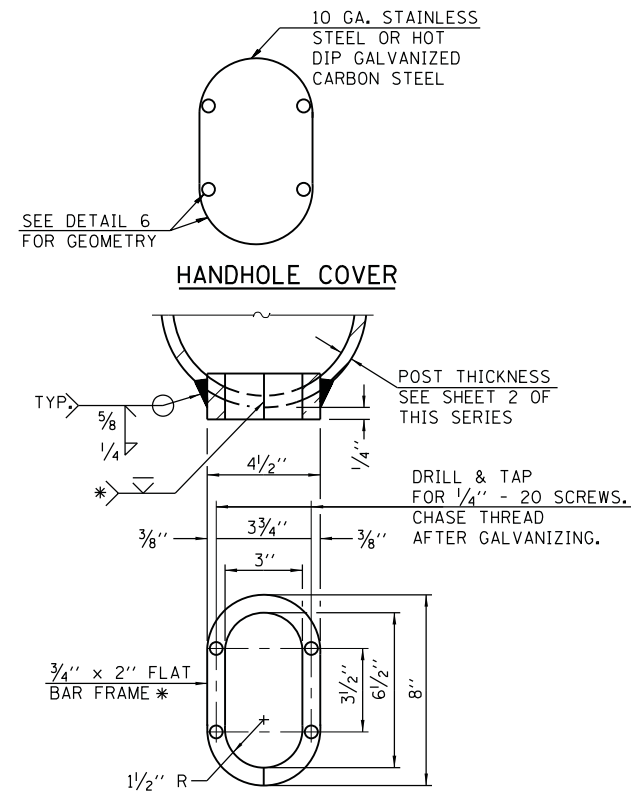


FRONT ELEVATION

ALL METALLIC MEMBERS ATTACHED TO THE CANTILEVER STEEL POST STRUCTURE SHALL BE BONDED TOGETHER BY MEANS OF A COPPER BONDING JUMPER TO CREATE A CONTINUOUS LOW IMPEDANCE PATH TO THE SITE GROUNDING ELECTRODE SYSTEM.



SIDE ELEVATION



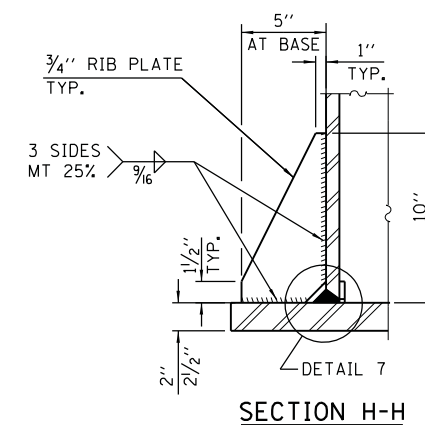
DETAIL 6

\* BENT BARS MAY BE BUTT WELDED TOP AND BOTTOM OR BOTTOM ONLY. IN LIEU OF FABRICATED HANDHOLE FRAME AS SHOWN, MAY CUT FROM 2" PLATE (ROLLING DIRECTION VERTICAL). ALL CUT FACES TO BE GROUND TO ANSI ROUGHNESS OF 500 μIN OR LESS.

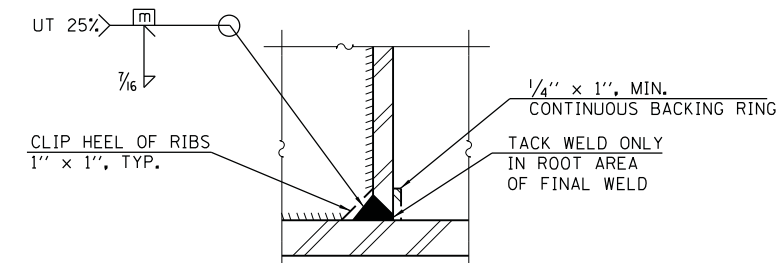
\* \* 18" IS MINIMUM TO BE GALVANIZED. ENTIRE BOLT MAY BE GALVANIZED AT CONTRACTOR'S OPTION.

TABLE E: BASE PLATE DETAIL

SPAN LENGTH (L)	POST OUTSIDE DIAMETER	BASE PLATE		BOLT CIRCLE	BOLT DIA.
		DIAMETER	THICKNESS		
< = 20'	18"	30"	2"	24"	1 3/4"
21'-30'	18"	30"	2"	24"	1 3/4"
31'-40'	24"	36"	2 1/2"	30"	2"
41'-50'	24"	36"	2 1/2"	30"	2 1/4"



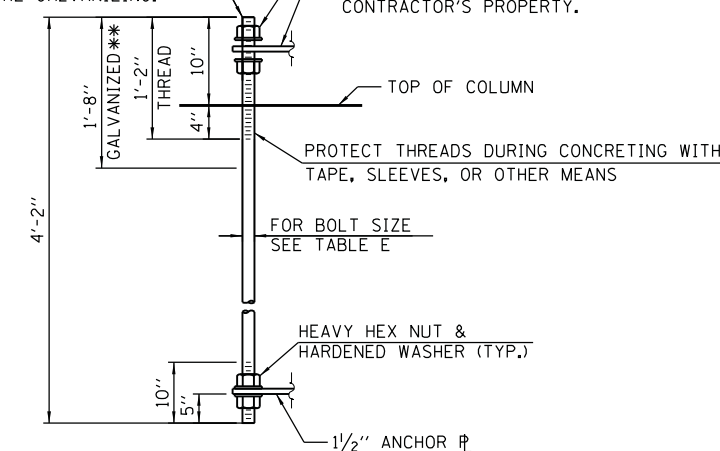
SECTION H-H



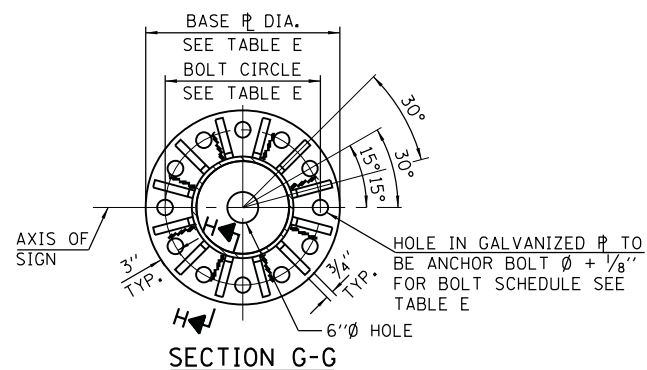
DETAIL 7 (TYPICAL RIB)

UTILIZE 1/2" POSITIONING PLATE AND TEMPORARY NUTS WITH LEVELING NUTS OR OTHER ENGINEER APPROVED METHODS TO MAINTAIN ANCHOR BOLTS' ALIGNMENT DURING CONCRETE PLACEMENT. PLATE, EXTRA NUTS AND OTHER POSITIONING AIDS BECOME CONTRACTOR'S PROPERTY.

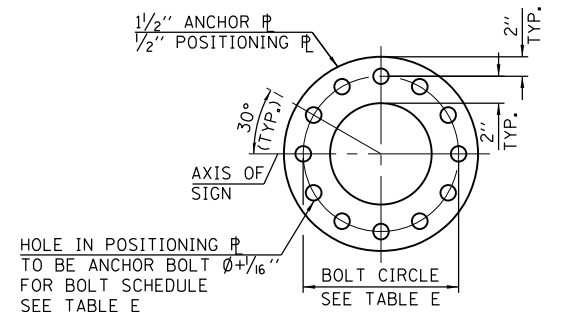
FOR UT, GRIND TOP OF BOLT SQUARE AND SMOOTH BEFORE GALVANIZING.



ANCHOR BOLT DETAIL



SECTION G-G



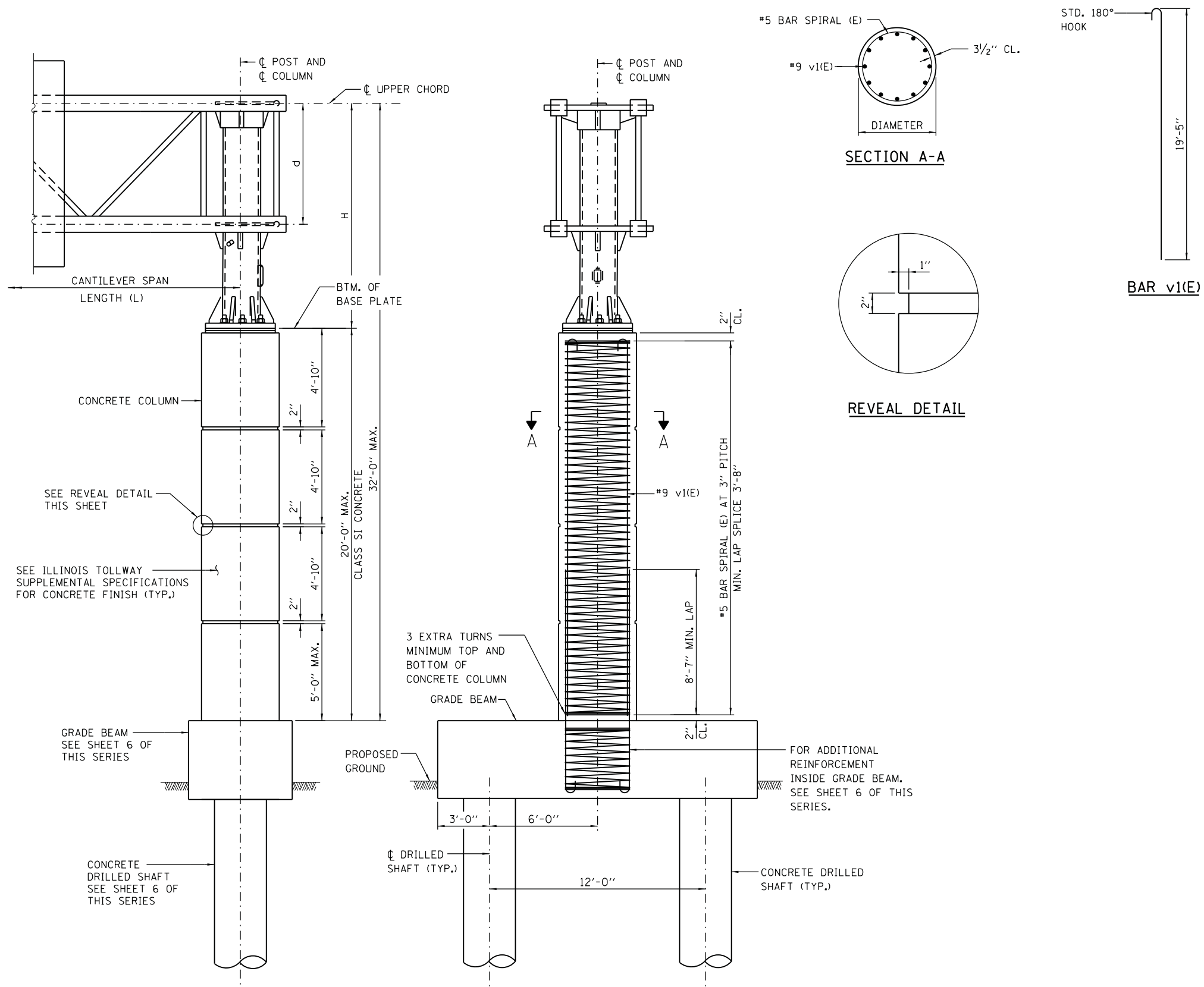
POSITIONING PLATE / ANCHOR PLATE

NOTE:

ANCHOR BOLTS SHALL CONFORM TO AASHTO M314 OR ASTM F1554 AND MEET CHARPY V-NOTCH (CVN) ENERGY OF 15 LB.-FT. AT 10° F. BEFORE GALVANIZING. GALVANIZE THE UPPER 18" (MINIMUM \*\*\*) AND ASSOCIATED M291, GRADE A, C OR DH HEAVY HEX NUTS AND HARDENED WASHERS PER AASHTO M293. NO WELDING SHALL BE PERMITTED ON BOLTS. PROVIDE AN UNFINISHED NUT AT BOTTOM, A HEXAGON LOCKNUT AND WASHER ABOVE BASE PLATE AND A LEVELING NUT AND WASHER BELOW BASE PLATE. NUTS SHALL EACH BE TIGHTENED WITH 200 LB.-FT. MINIMUM TORQUE AGAINST BASE PLATE. BEFORE OR AFTER THREADING, BUT BEFORE GALVANIZING, EACH ANCHOR BOLT SHALL BE ULTRASONICALLY TESTED (UT) BY A LEVEL II OR III INSPECTOR, QUALIFIED IN ACCORDANCE WITH ANSI GUIDELINES, USING A STRAIGHT BEAM, 1/2" Ø 3.5 MHZ. TRANSDUCER, TO ENSURE NO REJECTABLE FLAWS EXIST IN THE UPPER 18" (TENSION CRITERIA).

Paul Kovacs  
APPROVED... DATE 3-31-2014  
CHIEF ENGINEERING OFFICER





**TABLE F: CONCRETE COLUMN DESIGN TABLE**

SPAN LENGTH (L)	STEEL POST DIAMETER	CONCRETE COLUMN			
		DIAMETER	VERTICAL BAR v1(E)	CLASS SI CONC. CU. YD.*	REINF. BARS POUND *
< = 20'	18"	3'-6"	16-#9	7.1	1,910
21'-30'	18"	3'-6"	16-#9	7.1	1,910
31'-40'	24"	4'-0"	20-#9	9.2	2,330
41'-50'	24"	4'-0"	20-#9	9.2	2,330

\* CONCRETE VOLUME AND REBAR WEIGHT ARE DETERMINED FOR 20'-0" CONCRETE COLUMN HEIGHT. ADJUST CONCRETE VOLUME AND REBAR WEIGHT ACCORDINGLY IF CONCRETE COLUMN HEIGHT IS LESS THAN 20'-0".

**FRONT ELEVATION**

**SIDE ELEVATION**

**SECTION A-A**

**REVEAL DETAIL**

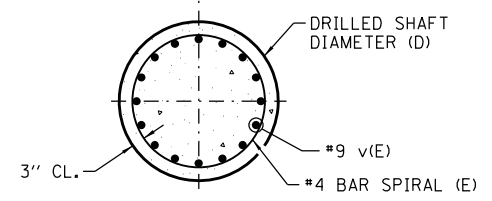
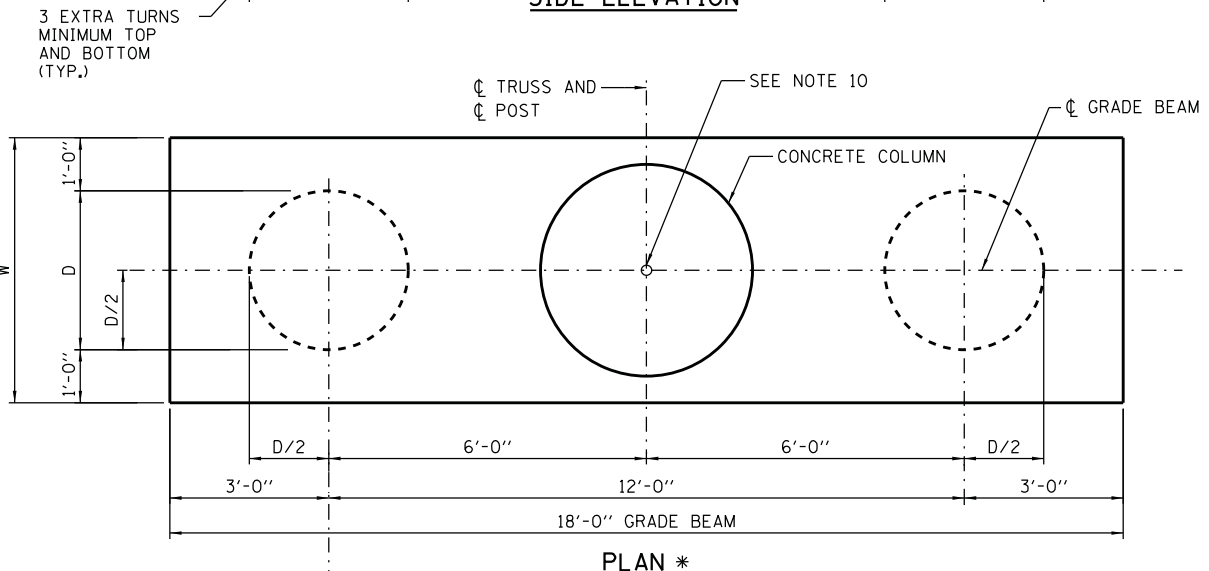
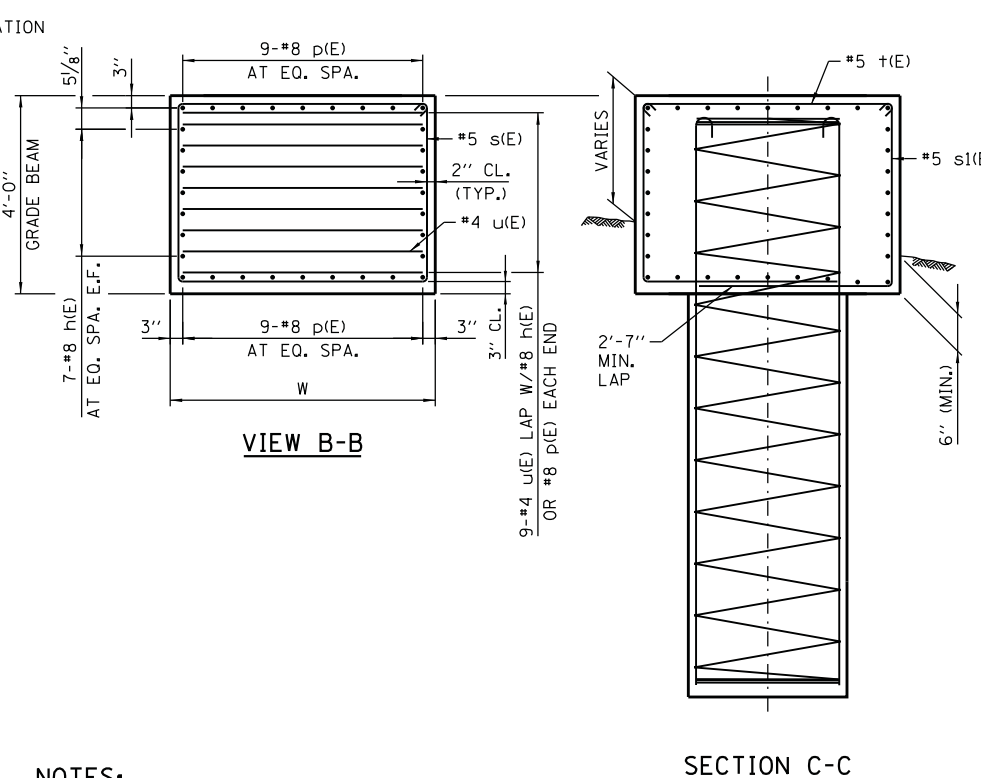
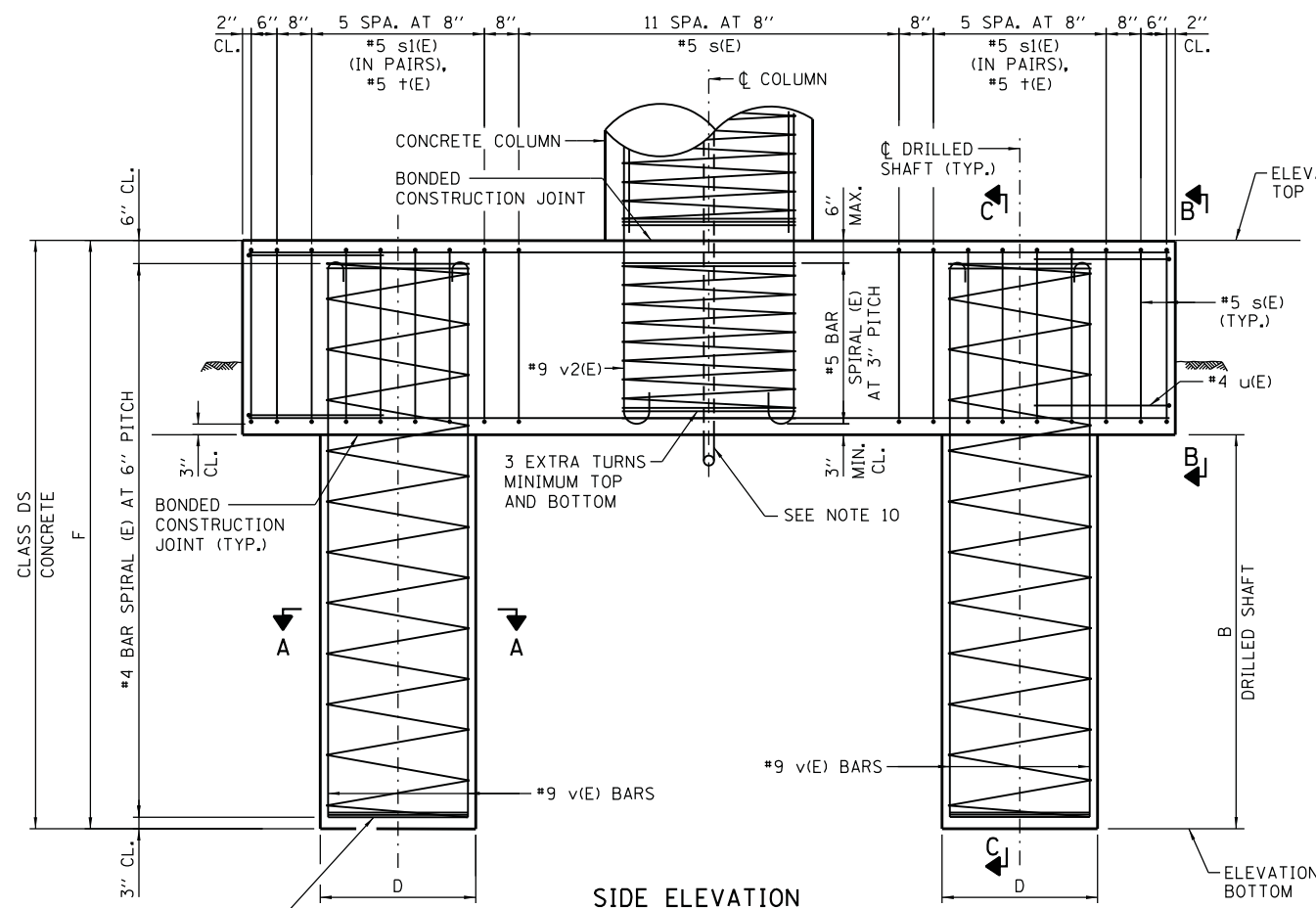


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**BAR LIST - EACH FOUNDATION**

(2 SHAFT AND 1 GRADE BEAM)

BAR	NUMBER	SIZE	LENGTH		SHAPE
			D = 3'-0"	D = 4'-0"	
h(E)	14	#8	17'-8"	17'-8"	—
p(E)	18	#8	17'-8"	17'-8"	—
s(E)	16	#5	17'-5"	19'-5"	□
s1(E)	24	#5	7'-8 1/2"	8'-2 1/2"	└
t(E)	12	#5	5'-7"	6'-7"	└
u(E)	18	#4	8'-7"	9'-7"	└
v(E)	SEE TABLE G	#9	44'-6"	44'-6"	└
v2(E)	SEE TABLE G	#9	13'-9"	13'-9"	└
*4 BAR SPIRAL (E) - SEE SIDE ELEVATION					
*5 BAR SPIRAL (E) - SEE SIDE ELEVATION					



**NOTE:**  
 \* REINFORCEMENT IN GRADE BEAM NOT SHOWN FOR CLARITY.  
 \*\* FOR GRADE BEAM ONLY.

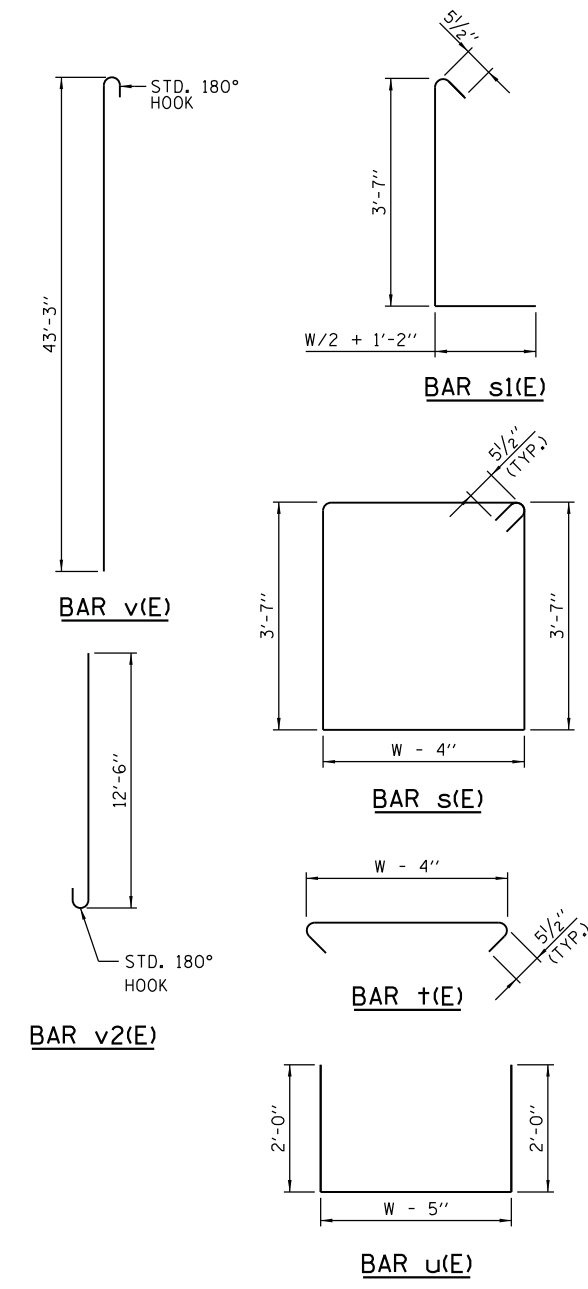
BAR SPIRAL LAP SPLICE	
BAR	MIN. LAP
#4	2'-11"
#5	3'-8"

**NOTES:**

- THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH MUST BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.
- ALL MATERIAL, FABRICATION, AND CONSTRUCTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH SECTION 734 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
- CONCRETE SHALL BE PLACED MONOLITHICALLY, WITHOUT CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.
- BACKFILL SHALL BE PLACED PER SECTION 502 OF THE STANDARD SPECIFICATION AND PRIOR TO ERECTION OF CONCRETE COLUMN.
- PROVIDE RUBBED SURFACE FINISH FOLLOWED BY CONCRETE SEALER APPLICATION ON ENTIRE SURFACE OF CONCRETE COLUMN AND NORMAL SURFACE FINISH ON GRADE BEAM, EXCEPT BOTTOM SURFACE. COST IS INCLUDED IN THE COST OF "FOUNDATION FOR OVERHEAD SIGN STRUCTURE, CANTILEVER TYPE".
- ALL REBAR DESIGNATED (E) SHALL BE EPOXY COATED. REBAR SHALL BE POSITIONED SO THAT THERE WILL BE NO INTERFERENCE BETWEEN VERTICAL REINFORCEMENT AND STIRRUPS.
- NO SONOTUBES OR DECOMPOSABLE FORMS SHALL BE USED 6" BELOW THE FINISHED GROUND LINE. PERMANENT METAL FORMS OR OTHER SHIELDING SHALL NOT BE LEFT IN PLACE BELOW THE ELEVATION WITHOUT THE ENGINEER'S WRITTEN PERMISSION. EXCAVATIONS SHALL BE DEWATERED BEFORE CONCRETE PLACEMENT IF DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.
- FOR SIZE AND NUMBER OF PVC COATED STEEL CONDUITS, SEE ELECTRICAL CONSTRUCTION DRAWINGS.
- TYPICAL SIGN STRUCTURE FOUNDATION IS SHOWN ON THIS SHEET. SEE SHEET 7 OF THIS SERIES FOR FOUNDATION LOCATED IN ROADWAY MEDIAN.
- COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS. DO NOT CUT REINFORCEMENT BARS.

**TABLE G: DESIGN TABLE FOR DRILLED SHAFTS IN COHESIVE SOILS**

SPAN LENGTH (L)	W	D	B	F	VERTICAL BAR			CLASS DS CONC. CU. YD.**	CLASS DS CONC. CU. YD.	REINF. BARS POUND
					v(E) SHAFT 1	v(E) SHAFT 2	v2(E)			
< = 20'	5'-0"	3'-0"	40'	44'	12-#9	12-#9	16-#9	13.4	21	7,700
21'-30'	5'-0"	3'-0"	40'	44'	12-#9	12-#9	16-#9	13.4	21	7,700
31'-40'	6'-0"	4'-0"	40'	44'	20-#9	20-#9	20-#9	16	37.3	10,800
41'-50'	6'-0"	4'-0"	40'	44'	20-#9	20-#9	20-#9	16	37.3	10,800



OVERHEAD SIGN STRUCTURE  
 CANTILEVER TYPE  
 STRUCTURE DETAILS

STANDARD F4-09

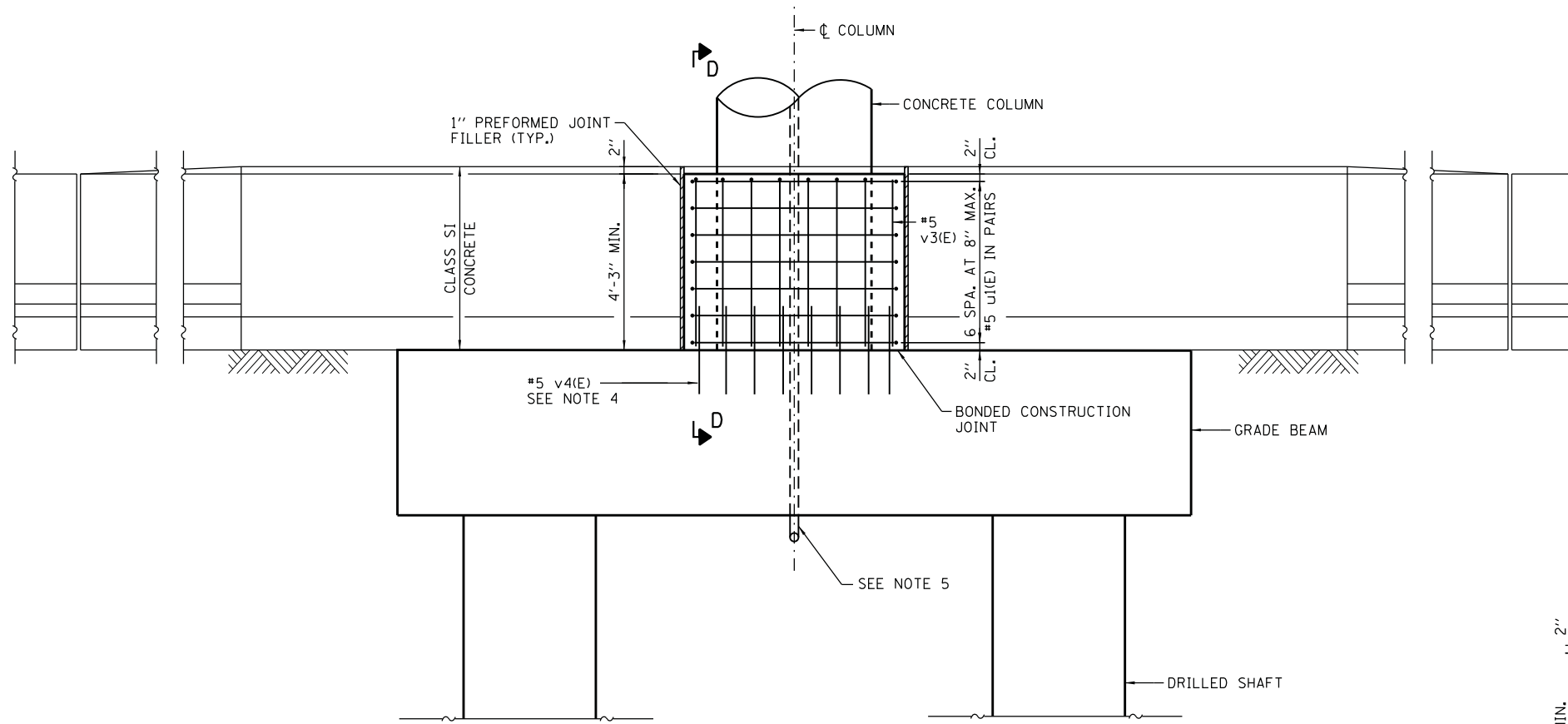
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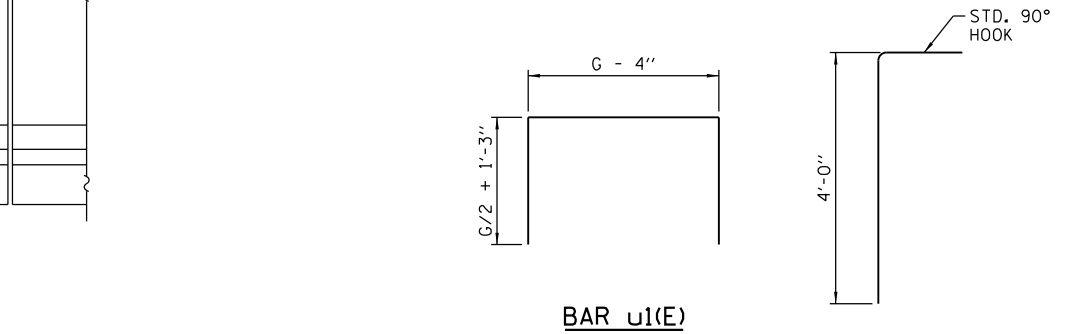


**BAR LIST - CRASHWALL**

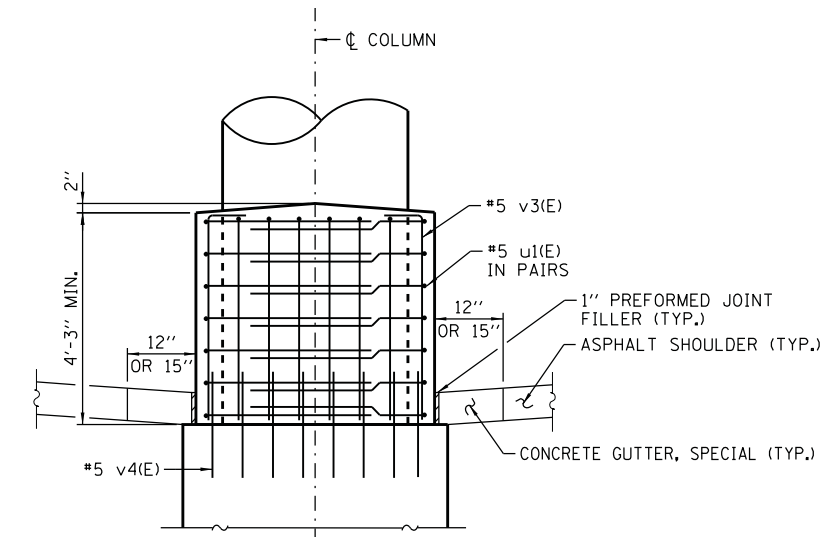
BAR	SIZE	G = 4'-6"		G = 5'-0"		SHAPE
		NUMBER	LENGTH	NUMBER	LENGTH	
u1(E)	#5	14	11'-2"	14	12'-2"	
v3(E)	#5	24	4'-10"	28	4'-10"	
v4(E)	#5	24	2'-0"	28	2'-0"	



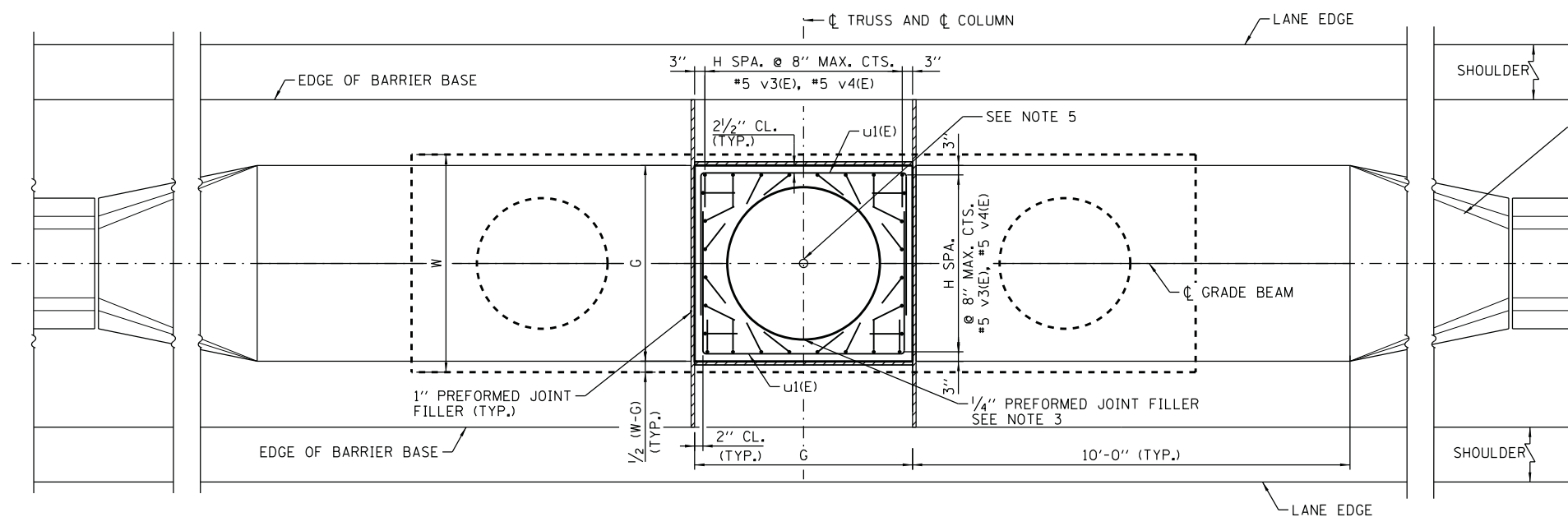
**SIDE ELEVATION**



**BAR v3(E)**



**SECTION D-D**



**PLAN**

**NOTES:**

- SEE SHEET 6 OF THIS SERIES FOR ADDITIONAL NOTES.
- GRADE BEAM AND DRILLED SHAFT DIMENSIONS, DETAILS, QUANTITIES AND BAR LIST ARE SHOWN ON SHEET 6 OF THIS SERIES.
- SEAL EXPOSED SURFACE OF 1/4" PREFORMED JOINT FILLER WITH BACKER ROD AND SILICONE SEALER (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE).
- #5 DRILLED ANCHOR BARS WILL BE EPOXY GROUTED AASHTO M31, GRADE 60 REBAR. PROVIDE 12" MINIMUM EMBEDMENT. INSTALL ANCHORS ACCORDING TO STANDARD SPECIFICATIONS SECTION 584. LOCATE GRADE BEAM REBAR PRIOR TO DRILLING. DO NOT DAMAGE GRADE BEAM REBAR DURING INSTALLATION.
- COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT BARS. DO NOT CUT REINFORCEMENT BARS.
- PROTECTIVE COAT SHALL BE APPLIED TO TRAFFIC AND TOP FACES OF CRASHWALL.

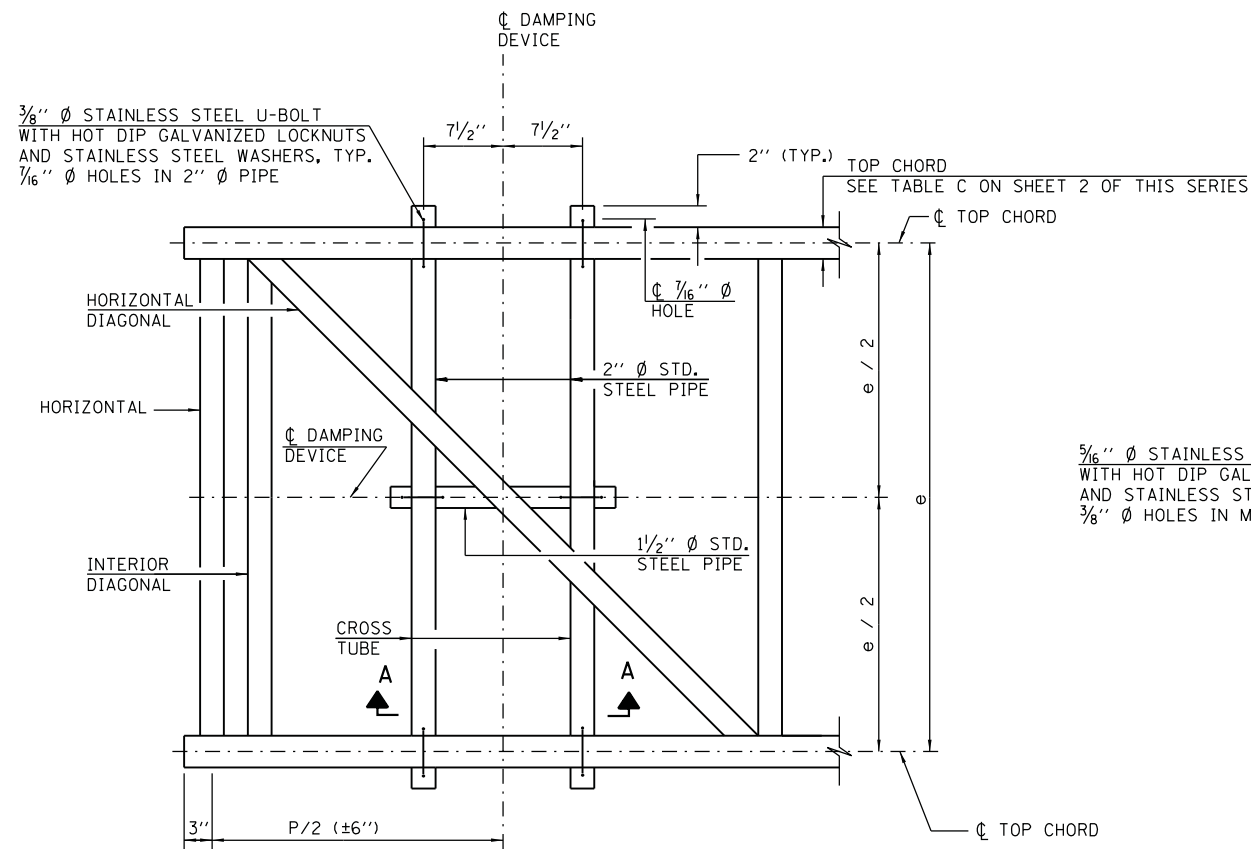
**TABLE H: DESIGN TABLE FOR CRASHWALL**

SPAN LENGTH (L)	W	G	H	CLASS SI CONCRETE CU. YD.	REINF. BARS POUND	PROTECTIVE COAT SQ. YD.
< = 20'	5'-0"	4'-6"	6	1.7	340	6.0
21'-30'	5'-0"	4'-6"	6	1.7	340	6.0
31'-40'	6'-0"	5'-0"	7	2.0	380	7.0
41'-50'	6'-0"	5'-0"	7	2.0	380	7.0

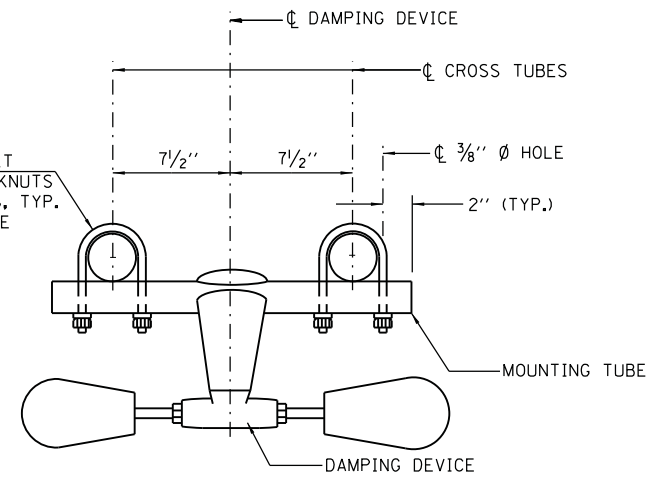


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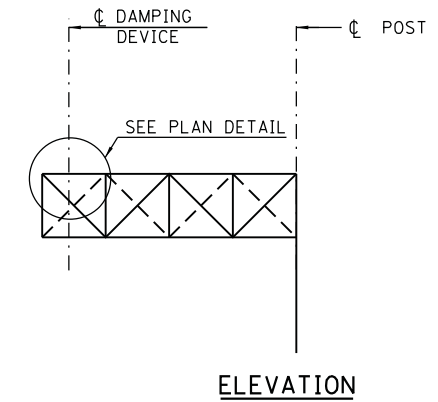
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PLAN DETAIL

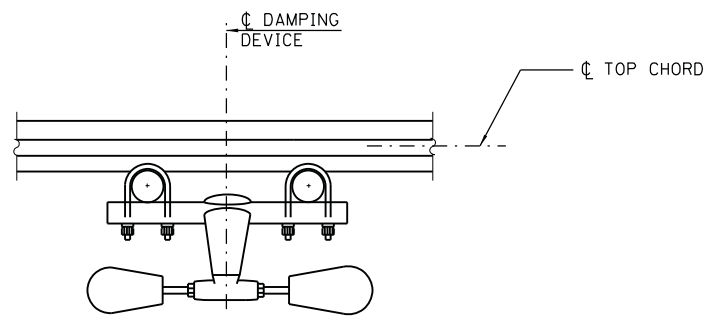


TRUSS DAMPING DEVICE CONNECTION DETAIL

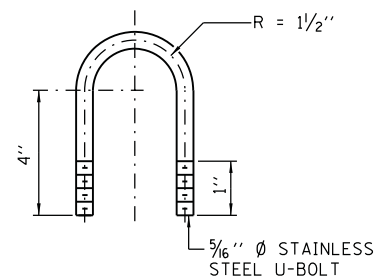


ELEVATION

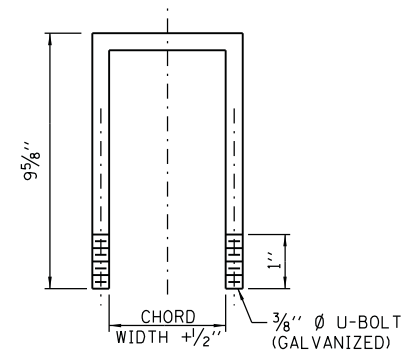
**NOTE:**  
 DAMPER: ONE DAMPER PER TRUSS. (31 LBS. STOCKBRIDGE-TYPE 29" MINIMUM BETWEEN ENDS OF WEIGHTS.)



SECTION A-A



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL (TYPICAL)



TOP CHORD TO CROSS TUBE U-BOLT DETAIL (TYPICAL)

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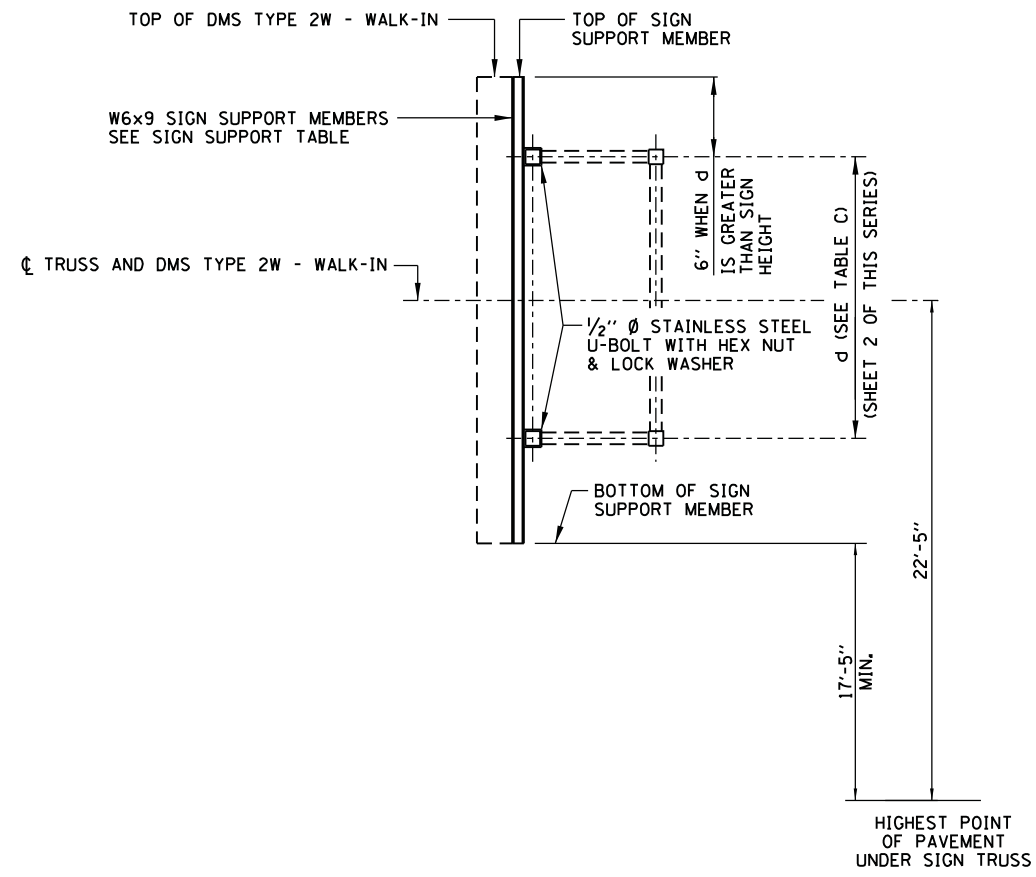
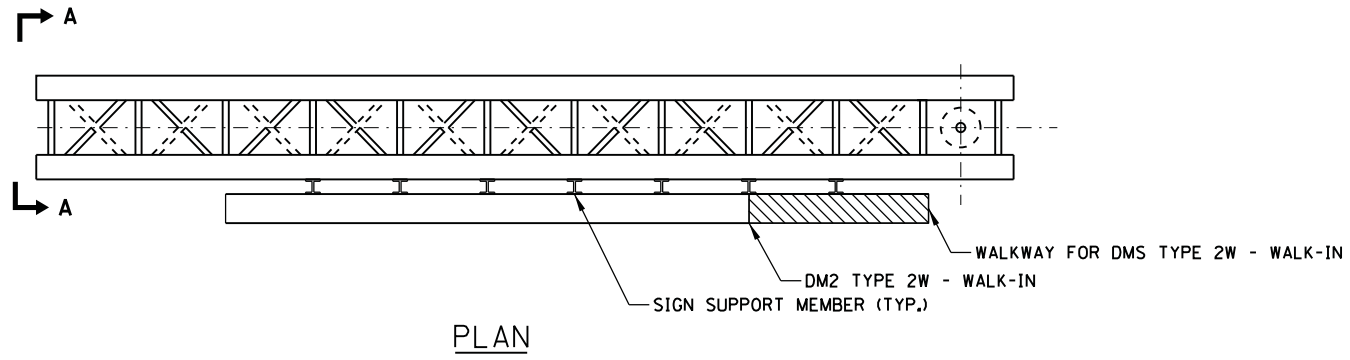
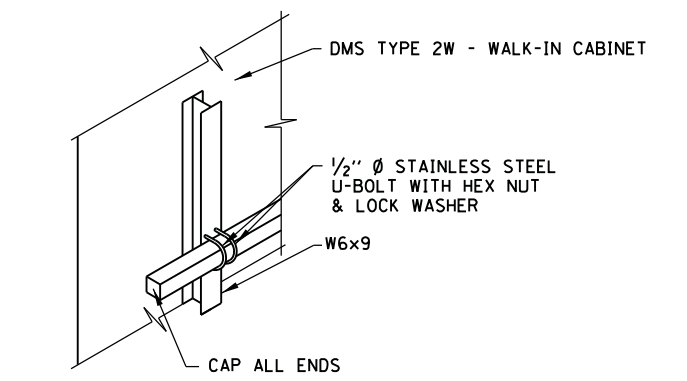


TABLE I: SIGN SUPPORT TABLE

SIGN WIDTH		NUMBER OF SIGN SUPPORTS REQUIRED
GREATER THAN	LESS THAN OR EQUAL TO	
8'-0"	8'-0"	2
14'-0"	14'-0"	3
20'-0"	20'-0"	4
26'-0"	26'-0"	5
32'-0"	32'-0"	6

TABLE J: DMS TYPE 2W - WALK-IN TABLE

MAXIMUM TRUSS LENGTH	SIGN WIDTH			MAXIMUM WEIGHT
	HEIGHT	WIDTH	DEPTH	
40 FEET	8'-0"	26'-6"	3'-4 1/2"	4200 LBS.



STAINLESS STEEL U-BOLT DETAIL

NOTES:

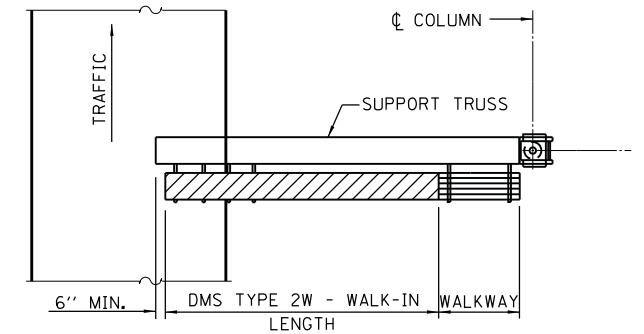
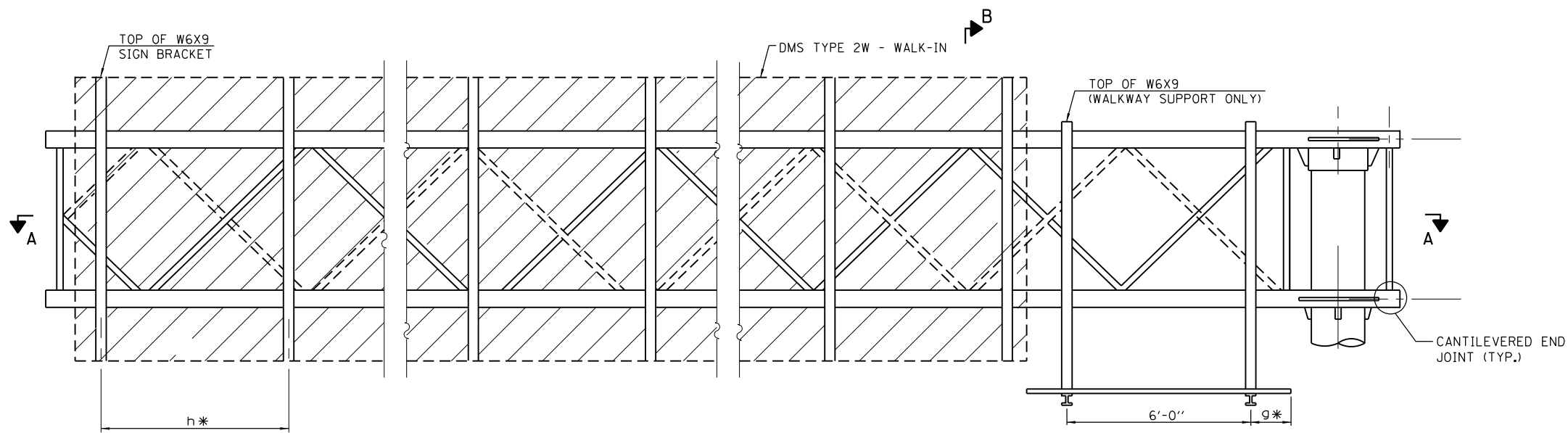
1. DMS TYPE 2W - WALK-IN SHALL BE ATTACHED TO TRUSS AS CLOSE TO PANEL JOINTS AS POSSIBLE.
2. VERIFY SIGN SUPPORT MEMBER LENGTH PRIOR TO FABRICATION.
3. DMS TYPE 2W - WALK-IN MANUFACTURER SHALL DESIGN, PROVIDE AND INSTALL HORIZONTAL MOUNTING MEMBERS. VERTICAL SPACING OF HORIZONTAL MEMBERS SHALL BE DESIGNED BY DMS TYPE 2W - WALK-IN MANUFACTURER. VERIFY VERTICAL SPACING WITH HOLES FOR STAINLESS STEEL U-BOLT.

APPROVED.....  
*Paul Kovacs*  
 CHIEF ENGINEERING OFFICER  
 DATE 3-31-2014

SHEET 9 OF 12

OVERHEAD SIGN STRUCTURE  
 CANTILEVER TYPE  
 STRUCTURE DETAILS

STANDARD F4-09



**PLAN**  
**WALKWAY AND HANDRAIL SKETCH**  
 (ROAD PLAN BENEATH TRUSS VARIES)  
 WALKWAY MAY BE LOCATED AT RIGHT OR LEFT END OF TRUSS.

\* BRACKET AND GRATING DIMENSIONS ARE NOMINAL AND WILL VARY BASED ON ACTUAL DMS TYPE 2W - WALK-IN DIMENSIONS PLUS MANUFACTURER'S MOUNTING DEVICES.

**TYPICAL FRONT ELEVATION**  
 WITH HANDRAIL OMITTED FOR CLARITY.  
 FOR SECTION B-B, SEE SHEET 11 OF THIS SERIES.

**NOTES:**

SPACE WALKWAY BRACKETS AND SIGN BRACKETS W6X9 FOR EFFICIENCY AND WITHIN LIMITS SHOWN:

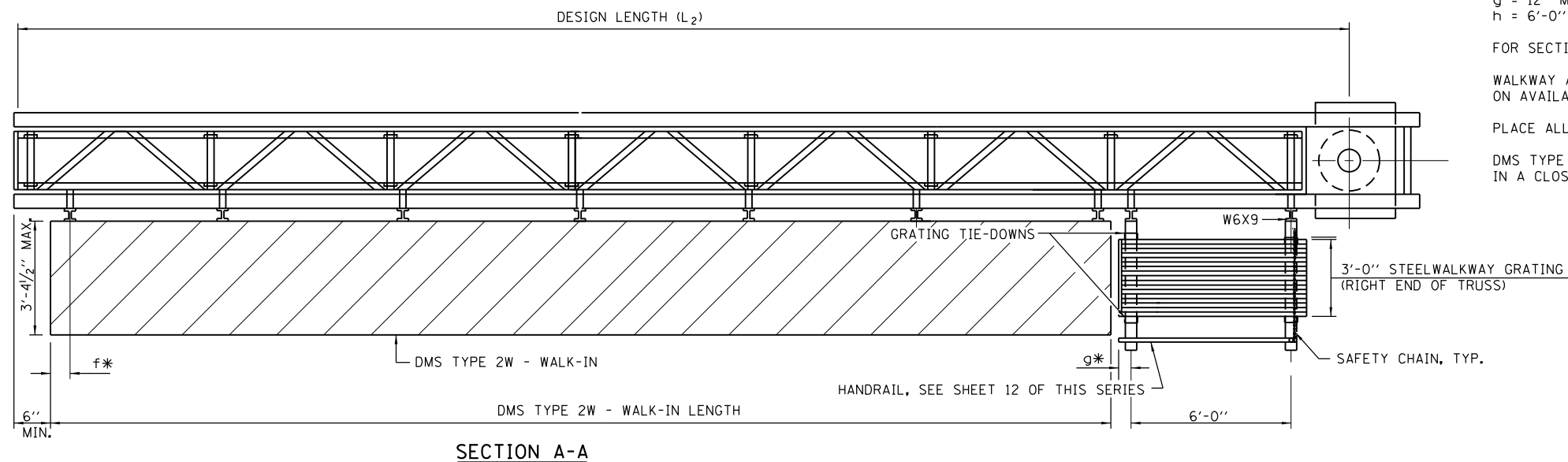
- f = 12" MAXIMUM, 4" MINIMUM (END OF SIGN TO  $\phi$  OF NEAREST BRACKET)
- g = 12" MAXIMUM, 4" MINIMUM (END OF WALKWAY GRATING TO  $\phi$  OF NEAREST SUPPORT BRACKET)
- h = 6'-0" MAXIMUM ( $\phi$  TO  $\phi$  SIGN AND/OR WALKWAY SUPPORT BRACKETS, W6X9)

FOR SECTION B-B, SEE SHEET 11 OF THIS SERIES.

WALKWAY AND TRUSS GRATING WIDTH DIMENSIONS ARE NOMINAL AND MAY VARY  $\pm 1/2$ " BASED ON AVAILABLE STANDARD WIDTH.

PLACE ALL SIGN AND WALKWAY BRACKETS AS CLOSE TO PANEL POINTS AS PRACTICAL.

DMS TYPE 2W - WALK-IN SHALL HAVE THE DOOR AT THE END, OPPOSITE THE WALKWAY SECURED IN A CLOSED POSITION.

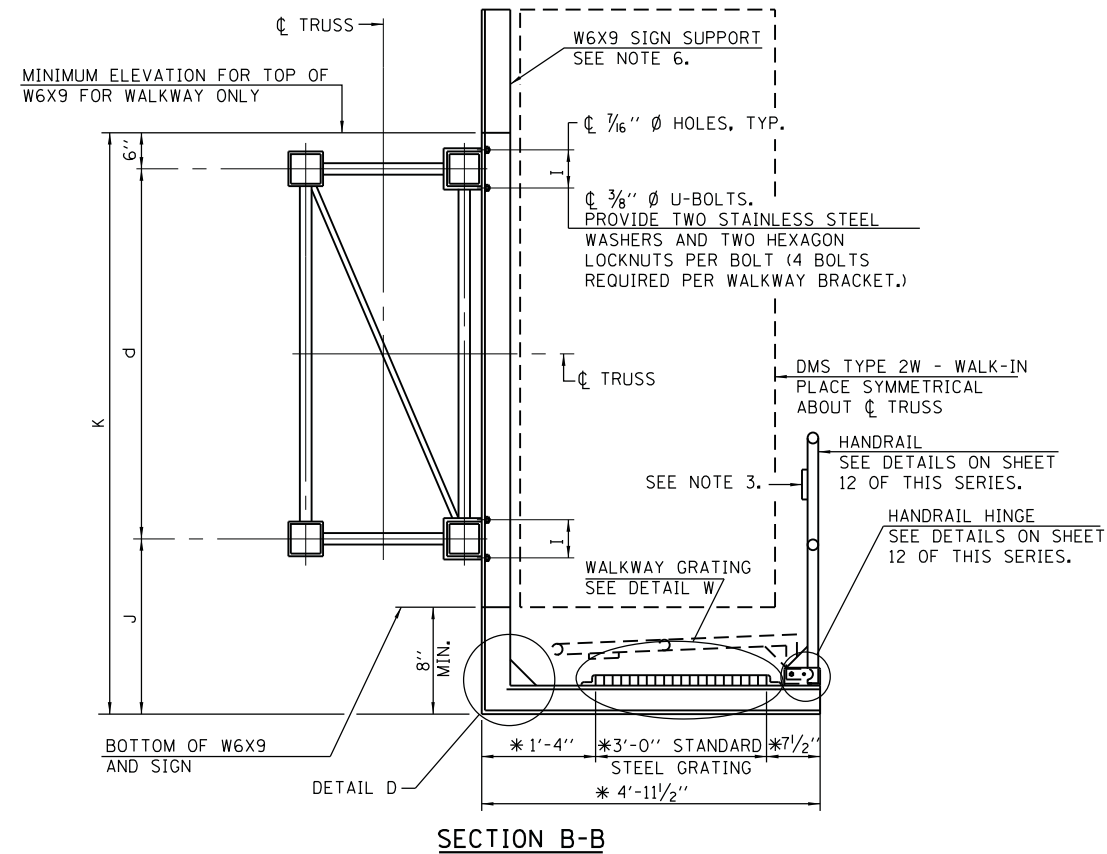


PLACE ALL SIGN AND WALKWAY BRACKETS AS CLOSE TO PANEL POINTS AS PRACTICAL.

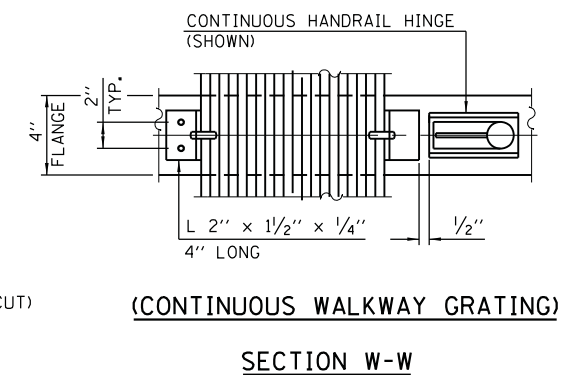
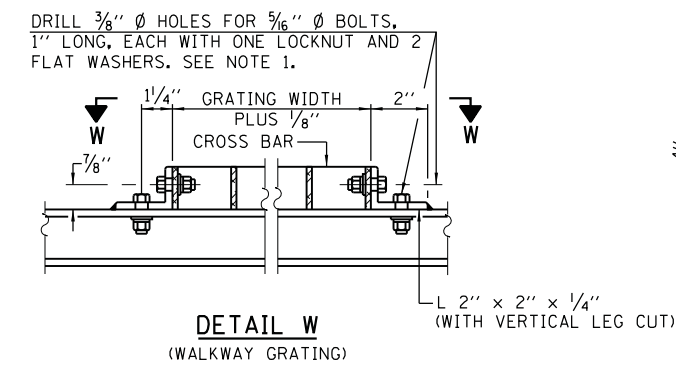
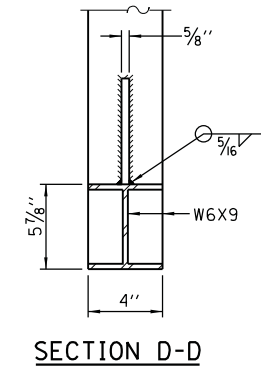
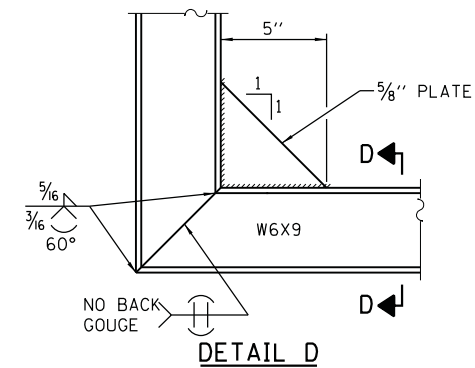
**BRACKET TABLE**

W6X9		
SIGN WIDTH		NUMBER OF BRACKETS REQUIRED
GREATER THAN	LESS THAN OR EQUAL TO	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6





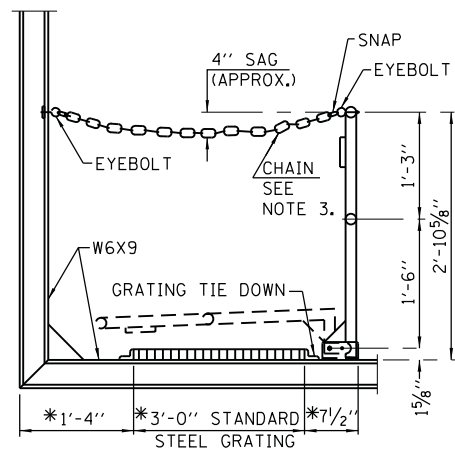
\*BRACKET AND GRATING DIMENSIONS ARE NOMINAL AND WILL VARY BASED ON ACTUAL DMS TYPE 2W - WALK-IN DIMENSIONS PLUS MANUFACTURERS MOUNTING DEVICE.



**NOTES:**

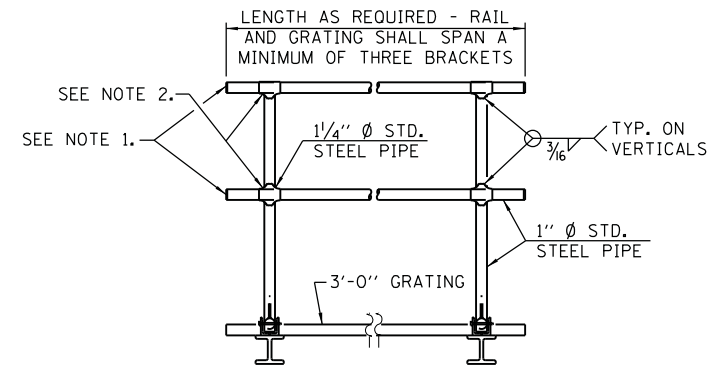
1. DRILLING HOLES IN GRATING MAY BE DONE IN SHOP OR FIELD, BASED ON CONTRACTOR'S PREFERENCE AND SUBJECT TO ACCURATE ALIGNMENT.
2. IF HANDRAIL JOINT PRESENT, WELD ANGLE TO W6X9 AND 1/4" EXTENSION BARS. SEE SHEET 12 OF THIS SERIES.
3. # 1\*8" x 1\*2" x 2" WELDED TO HANDRAIL POSTS TO PROTECT LOCATIONS THAT CONTACT GRATING.
4. DMS TYPE 2W - WALK-IN MANUFACTURER MUST DESIGN AND SUPPLY HARDWARE FOR CONNECTION TO W6X9. BOLTS MUST BE STAINLESS STEEL OR HOT DIP GALVANIZED HIGH STRENGTH PER IDOT SPECIFICATIONS.





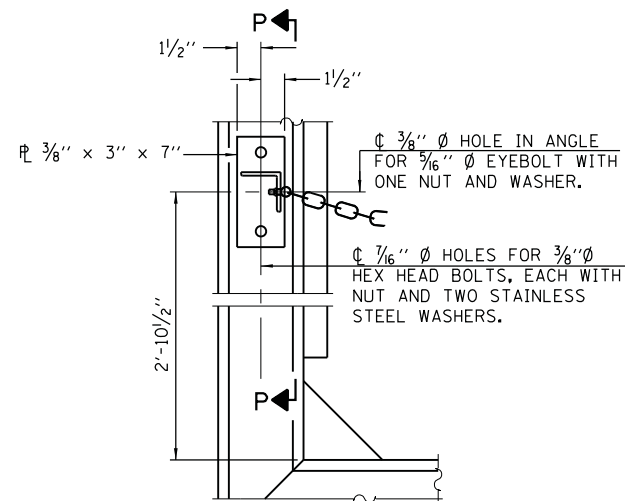
**SIDE ELEVATION**  
(SHOWING SAFETY CHAIN W/O SIGN)

\* BRACKET AND GRATING DIMENSIONS ARE NOMINAL AND WILL VARY BASED ON ACTUAL DMS TYPE 2W - WALK-IN DIMENSIONS PLUS MANUFACTURERS MOUNTING DEVICE.



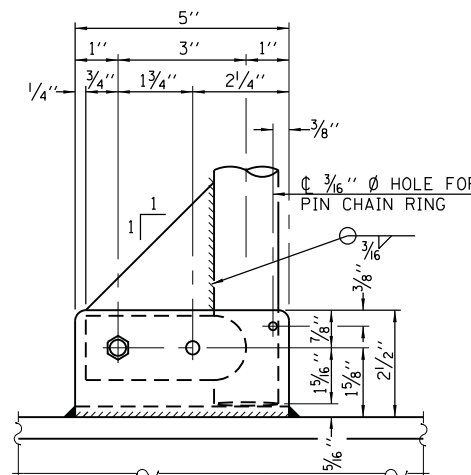
**FRONT ELEVATION**

**HANDRAIL DETAILS**

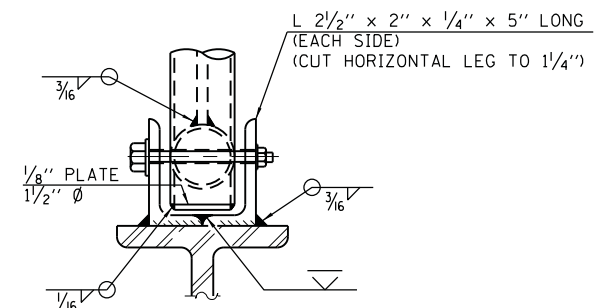


**ALTERNATE SAFETY CHAIN ATTACHMENT**

ITEMS NOT SHOWN SAME AS "SIDE ELEVATION" OF "HANDRAIL DETAILS"

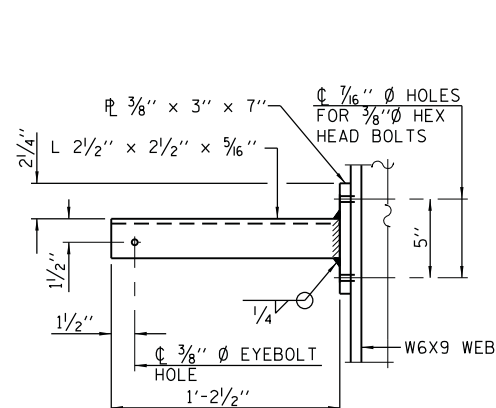


**SIDE ELEVATION**

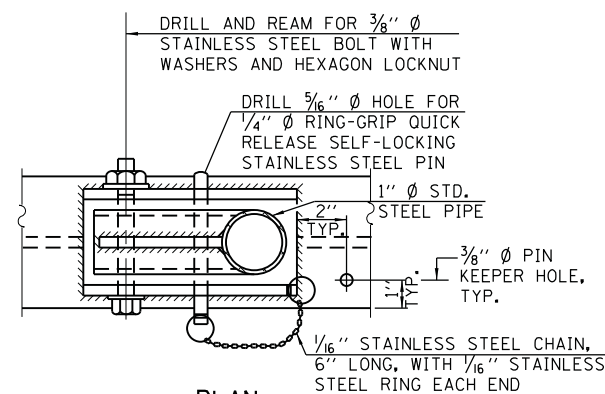


**FRONT ELEVATION**

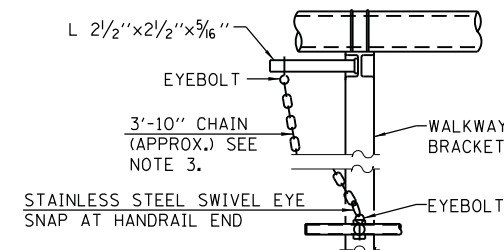
DETAILS NOT SHOWN SAME AS "ELEVATION" AT RIGHT.



**SECTION P-P**

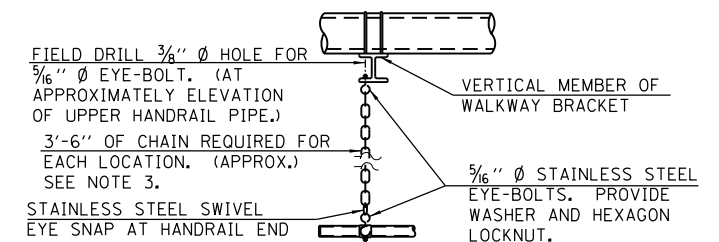


**PLAN  
DETAIL E HANDRAIL HINGE**



**ALTERNATE SAFETY CHAIN ATTACHMENT**

DETAILS NOT SHOWN SIMILAR TO "SAFETY CHAIN" DETAILS (WALKWAY OMITTED FOR CLARITY)



**SAFETY CHAIN**

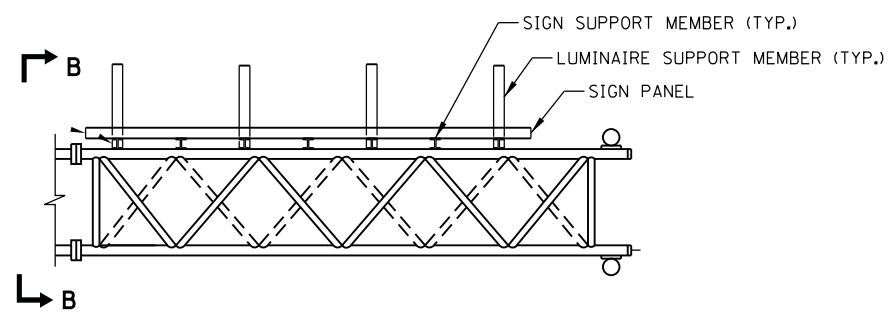
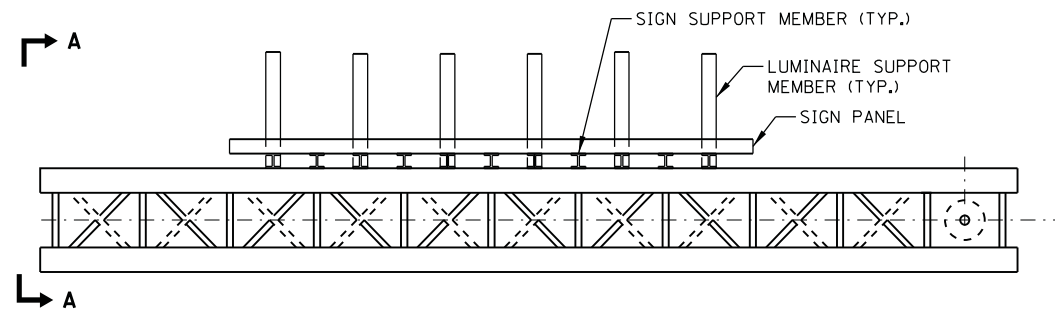
ONE REQUIRED FOR EACH END OF WALKWAY.

**NOTES:**

1. INSTALL STANDARD FORCE-FIT END CAPS OR WELD 1/8" END PLATES WITH 1/8" C.F.W. AND GRIND SMOOTH. (ALL RAIL ENDS)
2. HORIZONTAL HANDRAIL MEMBER SHALL BE CONTINUOUS THRU 1 1/4" Ø PIPE. PROVIDE 3/16" Ø HOLE IN 1 1/4" Ø PIPE FOR 3/8" Ø BOLT. FIELD DRILL 3/16" Ø HOLE IN HORIZONTAL RAIL MEMBER. PROVIDE LOCKNUT AND TWO STAINLESS STEEL WASHERS FOR BOLT. (USE 3/16" EYEBOLTS IN 3/16" Ø HOLES ON TOP RAIL AT ENDS ONLY.)
3. 3/16" TYPE 304L STAINLESS STEEL CHAIN, APPROXIMATELY 12 LINKS PER FOOT.



Paul Kovacs



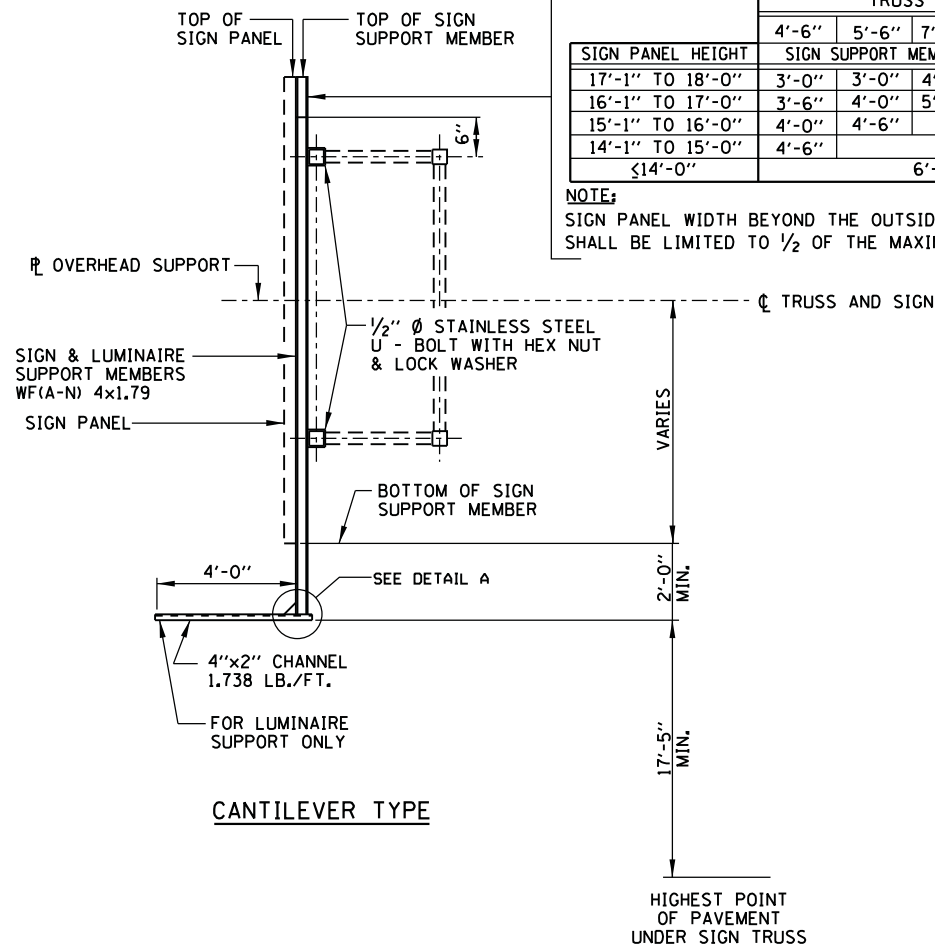
PLAN

PLAN

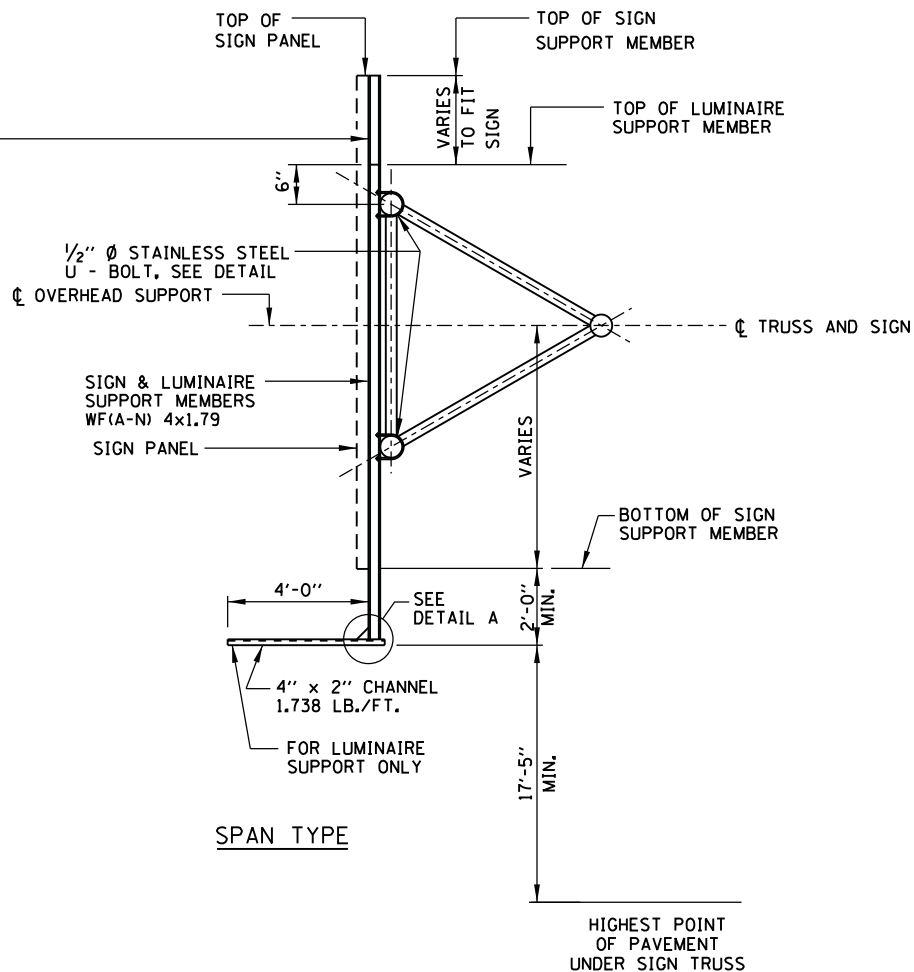
SIGN SUPPORT MEMBERS-WF(A-N) 4x1.79

SIGN PANEL HEIGHT	TRUSS DEPTH				
	4'-6"	5'-6"	7'-0"	8'-2"	8'-10"
17'-1" TO 18'-0"	3'-0"	3'-0"	4'-6"	5'-6"	6'-0"
16'-1" TO 17'-0"	3'-6"	4'-0"	5'-0"	6'-0"	
15'-1" TO 16'-0"	4'-0"	4'-6"		6'-0"	
14'-1" TO 15'-0"	4'-6"		6'-0"		
≤14'-0"			6'-0"		

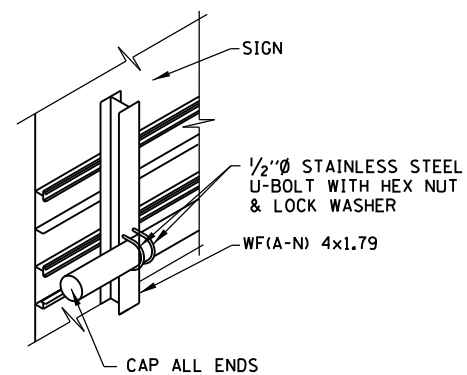
NOTE:  
SIGN PANEL WIDTH BEYOND THE OUTSIDE VERTICAL MEMBER SHALL BE LIMITED TO 1/2 OF THE MAXIMUM SPACING



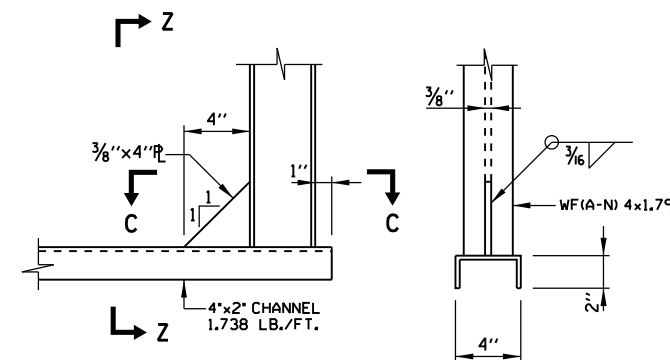
SECTION A-A



SECTION B-B

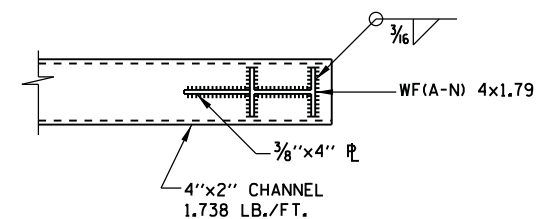


STAINLESS STEEL U-BOLT DETAIL



DETAIL A

SECTION Z-Z



SECTION C-C

NOTES:  
ALL MATERIAL IS ALUMINUM (UNLESS OTHERWISE NOTED).

NOTES:

- SIGN PANEL SHALL BE ATTACHED TO TRUSS AS CLOSE TO PANEL JOINTS AS POSSIBLE.
- LUMINAIRE SUPPORT MEMBERS TO BE INSTALLED ONLY WHEN SIGN STRUCTURE IS TO BE ILLUMINATED. DESIGNER TO DETERMINE REQUIREMENTS BASED ON ROADWAY GEOMETRY.

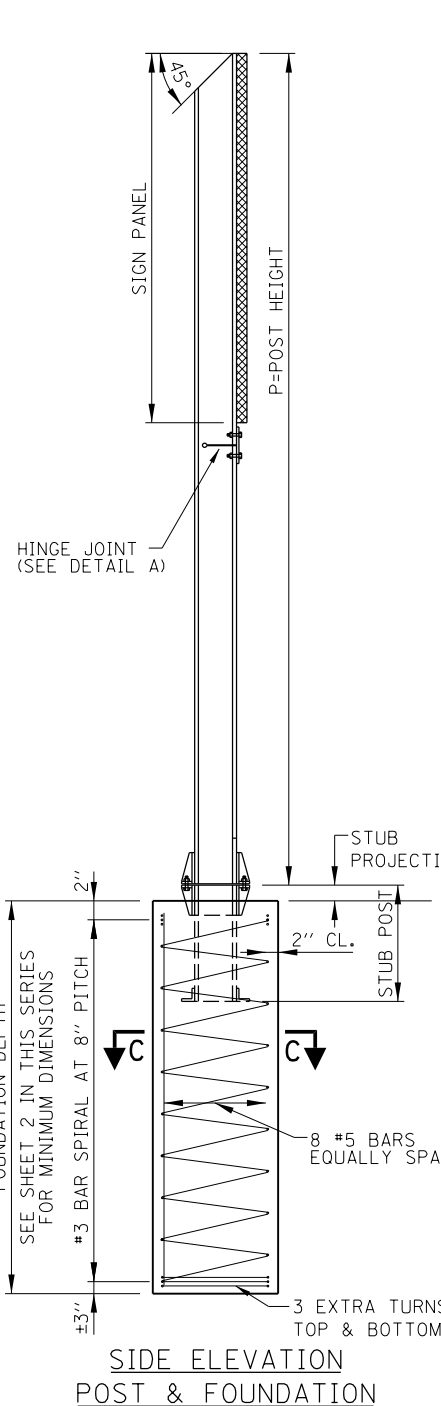
APPROVED... *Paul Kovacs* DATE 2-7-2012...  
CHIEF ENGINEERING OFFICER

DATE	REVISIONS
1-1-2009	ADDED PLAN VIEWS FOR SIGN STRUCTURES
2-7-2012	REVISED OVERHEAD SIGN STRUCTURE CANTILEVER DIAGONALS
2-1-2013	REMOVED VERTICAL CLEARANCE.
3-31-2014	REVISED SIGN SUPPORT MEMBERS
3-11-2015	REVISED VERTICAL CL. AND SIGN SUPPORT
3-01-2018	ADDED VERTICAL CLEARANCE

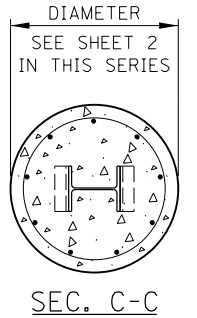


OVERHEAD SIGN STRUCTURE  
SIGN AND LUMINAIRE  
SUPPORTS

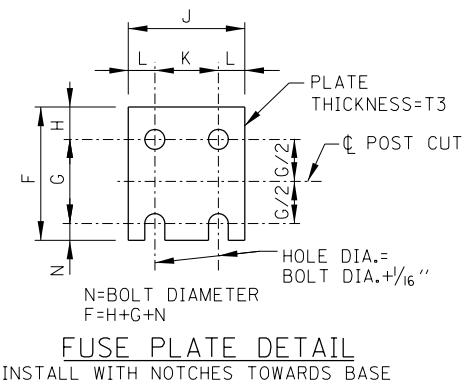
STANDARD F8-06



**SIDE ELEVATION  
POST & FOUNDATION**



**SEC. C-C**



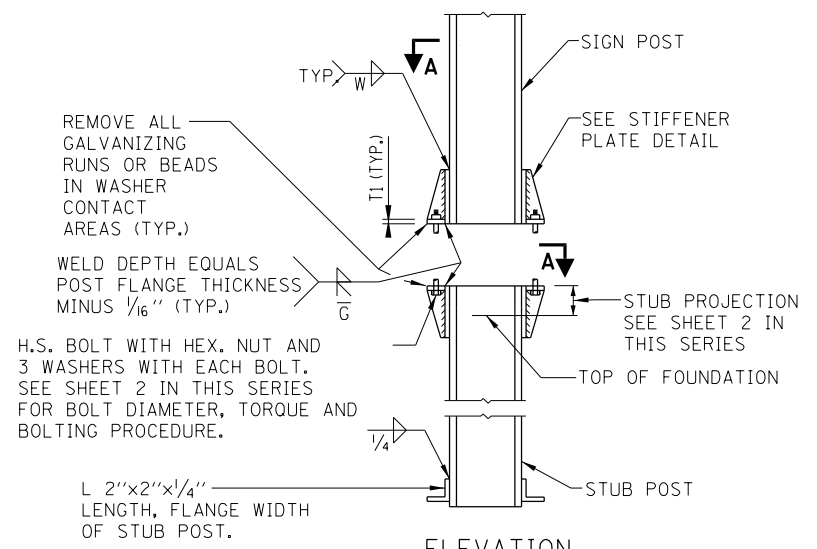
**FUSE PLATE DETAIL**  
INSTALL WITH NOTCHES TOWARDS BASE

**G & H DIM. TABLE**

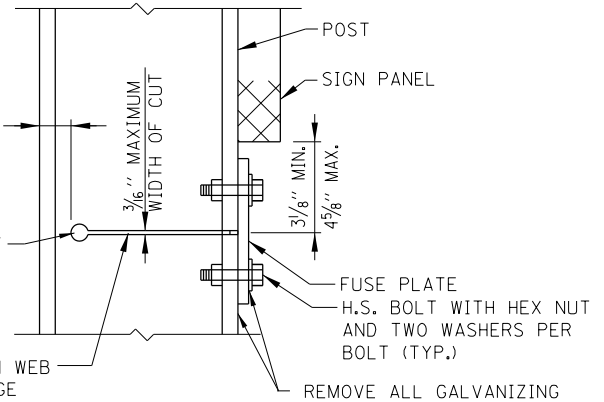
BOLT DIA.	G	H
1/2"	2"	1 1/8"
5/8"	2 1/4"	1 1/4"
3/4"	2 1/2"	1 3/8"
7/8"	2 3/4"	1 1/2"
1"	3"	1 5/8"
1 1/8"	3 1/4"	1 3/4"
1 1/4"	3 1/2"	1 7/8"

**FABRICATORS NOTES**

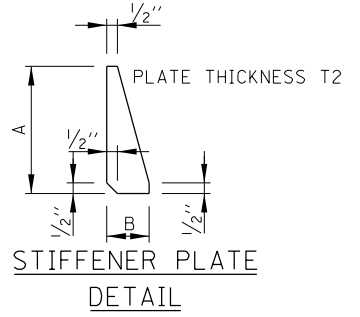
THE SLOT AND THE 5/8" DIA. HOLE IN THE WEB AND THE FUSE PLATE BOLT HOLES IN THE FLANGE SHALL BE MADE BEFORE GALVANIZING. POST FLANGE SHALL BE SAW CUT AFTER GALVANIZING AND BARE METAL SURFACES SHALL BE COATED WITH AN APPROVED ZINC SOLDER OR ZINC-RICH PAINT. THESE SURFACES SHALL NOT BE COATED UNTIL THE FUSE PLATE IS INSTALLED AND BOLTS FULLY TIGHTENED.



**ELEVATION  
SIGN POST & STUB POST**

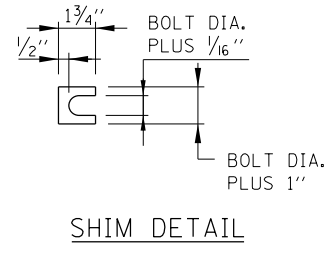


**HINGE JOINT  
DETAIL A**



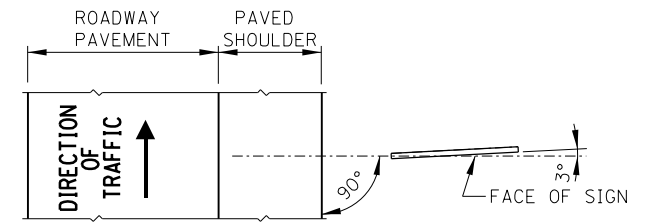
**STIFFENER PLATE  
DETAIL**

SEE SHEET 2 IN THIS SERIES FOR DIMENSIONS

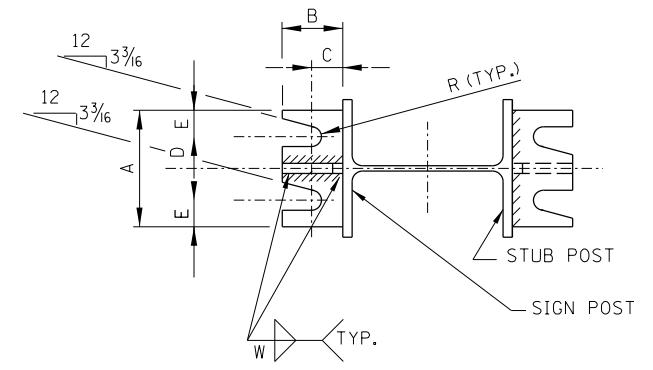


**SHIM DETAIL**

FURNISH 2-.012" THICK AND 2-.032" THICK SHIMS PER POST. SHIMS SHALL BE FABRICATED FROM BRASS SHIM STOCK CONFORMING TO ASTM B36.



**LOCATION SKETCH**



**SEC. A-A**

**GENERAL NOTES**

**DESIGN:** THE LATEST EDITION OF THE "AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRE AND TRAFFIC SIGNALS".

**CONSTRUCTION:** IDOT STANDARD SPECIFICATIONS AND THE SPECIAL PROVISIONS.

**LOADING:** FOR 80 MPH WIND VELOCITY PLUS 30% GUST FACTOR NORMAL TO SIGN.

**DESIGN STRESSES:**  
STRUCTURAL STEEL - PER AASHTO 20,000 P.S.I.  
REINFORCING STEEL - 24,000 P.S.I.  
CLASS SI CONCRETE - 1,400 P.S.I.  
MINIMUM SOIL PRESSURE - 1.25 TONS/SQ. FT.

**WELDING:** ALL WELDING TO BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING TO BE DONE IN ACCORDANCE WITH CURRENT AWS SPECIFICATIONS, AND IDOT STANDARD SPECIFICATIONS.

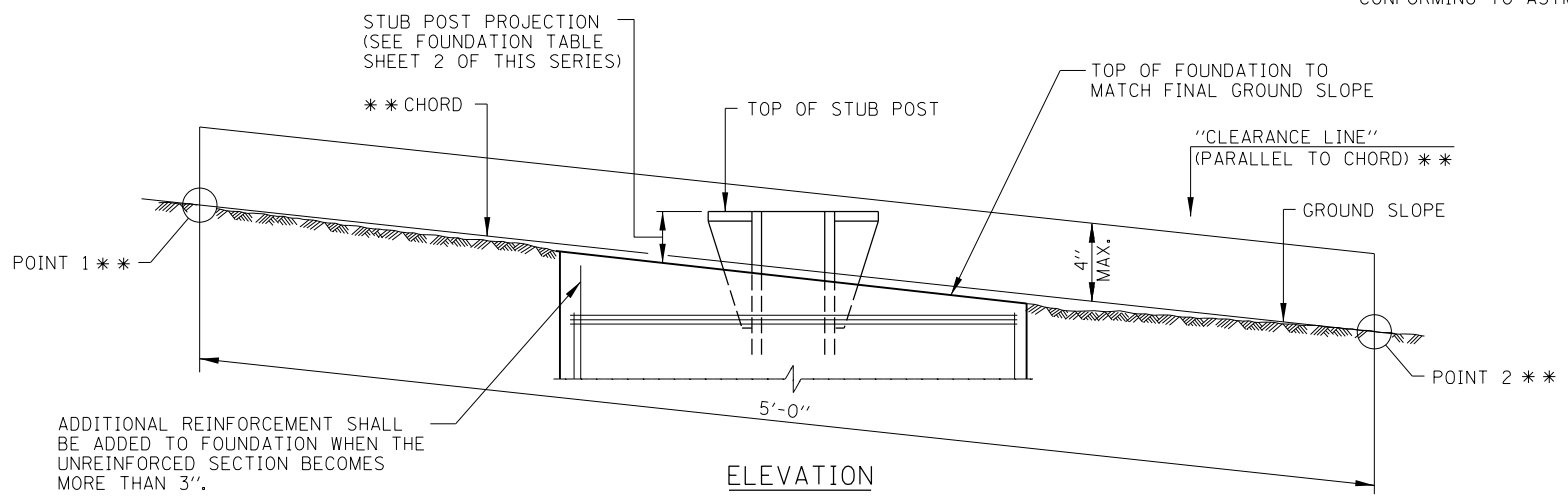
**MATERIALS:** ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A36 AND IDOT STANDARD SPECIFICATIONS.

ALL HIGH STRENGTH STEEL BOLTS, NUTS AND WASHERS SHALL CONFORM TO IDOT STANDARD SPECIFICATIONS.

HIGH STRENGTH STEEL BOLTS, NUTS AND HARDENED WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M232.

HIGH STRENGTH BOLTS IN BASE PLATES SHALL BE TIGHTENED TO THE TORQUE SHOWN ON SHEET 2 IN THIS SERIES.

AFTER FABRICATION, THE POST, FUSE PLATE, BASE PLATE AND UPPER 6" OF STUB POST SHALL BE HOT-DIP GALVANIZED ACCORDING TO ASTM M111, EXCEPT AS NOTED UNDER FABRICATOR NOTES.



**ELEVATION  
GROUND LINE & STUB POST**

\*\* FOR ALL "POINT 1" AND "POINT 2" LOCATIONS, "CLEARANCE LINE" MUST BE AT OR ABOVE TOP OF STUB POST.

ADDITIONAL REINFORCEMENT SHALL BE ADDED TO FOUNDATION WHEN THE UNREINFORCED SECTION BECOMES MORE THAN 3'.



DATE	REVISIONS
2-7-2012	ADDED STUB POST CLEARANCE DIMENSIONS, REVISED SIGN INSTALLATION CLEARANCE DIMENSIONS
11-1-2012	REVISED NOTES, MODIFIED SLOPE REQUIREMENTS FOR BREAKAWAY SUPPORTS



POST	FOUNDATION TABLE											BASE CONNECTION DATA TABLE												
	FOUNDATION			REINFORCEMENT					STUB POST			BOLT SIZE AND TORQUE	A	B	C	D	E	T1	T2	W	R			
	DIA.	MIN. DEPTH	CY.* CONC.	VERTICAL NO.	BARS SIZE	LGTH.	BAR SPIRALS SIZE	O.D.	LGTH.	LBS.**	STUB LGTH.											STUB PROJECTION	LBS.***	
W6x9	2'-0"	6'-0"	.70	8	#5	5'-9"	#3	20 1/2"	79'	78	2'-3"	3"	44	5/8" Ø x 3 1/4" LG. TORQUE = 450" #	6"	2 1/4"	1 1/4"	3 1/2"	1 1/4"	3/4"	1/2"	1/4"	11/32"	
W6x15	2'-0"	6'-0"	.70	8	#5	5'-9"	#3	20 1/2"	79'	78	2'-6"	3"	71											
W8x18	2'-0"	6'-0"	.70	8	#5	5'-9"	#3	20 1/2"	79'	78	2'-6"	3"	85	3/4" Ø x 3 3/4" LG. TORQUE = 750" #	6"	2 1/2"	1 3/8"	3 1/4"	1 3/8"	1"	1/2"	5/16"	13/32"	
W10x22	2'-6"	6'-6"	1.18	8	#5	6'-3"	#3	26 1/2"	105'	92	3'-0"	2 1/2"	110											
W10x26	2'-6"	7'-0"	1.27	8	#5	6'-9"	#3	26 1/2"	112'	98	3'-0"	2 1/2"	137											
W12x26	2'-6"	7'-9"	1.41	8	#5	7'-6"	#3	26 1/2"	119'	107	3'-0"	2 1/2"	140	7/8" Ø x 4" LG. TORQUE = 950" #	7"	2 3/4"	1 1/2"	4"	1 1/2"	1"	3/4"	3/8"	15/32"	
W14x30	3'-0"	7'-3"	1.90	8	#5	7'-0"	#3	32 1/2"	145'	113	3'-0"	2 1/2"	150											
W14x38	3'-0"	8'-0"	2.09	8	#5	7'-9"	#3	32 1/2"	153'	122	3'-6"	2 1/2"	208	1" Ø x 4 1/2" LG. TORQUE = 1100" #	7 1/2"	3"	1 3/4"	4"	1 3/4"	1 1/4"	3/4"	3/8"	11/32"	
W16x45	3'-0"	8'-6"	2.23	8	#5	8'-3"	#3	32 1/2"	162'	130	3'-6"	2 1/2"	233											

**PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:**

- ASSEMBLE POST TO STUB WITH H.S. BOLTS AND ONE OF THE THREE FLAT WASHERS ON EACH BOLT BETWEEN PLATES AS SHOWN.
- SHIMS MAY BE USED BETWEEN PLATES TO LEVEL POST.
- TIGHTEN BOLTS IN BASE PLATE IN A SYSTEMATIC ORDER TO THE REQUIRED TORQUE.
- LOOSEN EACH BOLT AND RETIGHTEN TO THE REQUIRED TORQUE IN SAME ORDER AS INITIAL TIGHTENING.
- BURR OR CENTER PUNCH THREADS AT JUNCTURE OF BOLT AND NUT TO PREVENT NUT FROM LOOSENING.

- QUANTITY OF IDOT CLASS DS CONCRETE CONSISTS OF ALL CONCRETE NECESSARY FOR ONE FOUNDATION. (CUBIC YARDS)
- THIS INCLUDES REINFORCEMENT BARS AND SPIRAL HOOPING REQUIRED FOR ONE FOUNDATION.
- INCLUDES WEIGHT OF STUB POST WITH ANGLES, GUSSETS, BASE PLATES, BOLTS, NUTS, WASHERS, PLUS BASE PLATES AND GUSSETS ON MAIN POST, PLUS FUSE PLATE (IF ANY) WITH BOLTS, NUTS AND WASHERS. (ONE POST)

**EQUIVALENT TORQUE VALUES**

- 450" # = 37.5' #
- 750" # = 62.5' #
- 950" # = 79.2' #
- 1100" # = 91.7' #

POST	FUSE PLATE DATA TABLE				FUSE PLATE BOLT SIZE TABLE											
					SIGN DEPTH											
	J	K	L	T3	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	
W6x9	4"	2 1/4"	7/8"	1/4"	1/2"Øx1 1/2"	1/2"Øx1 1/2"	1/2"Øx1 1/2"	5/8"Øx1 3/4"	5/8"Øx1 3/4"	5/8"Øx1 3/4"	---	---	---	---	---	
W6x15	6"	3 1/2"	1 1/4"	3/8"	1/2"Øx1 3/4"	1/2"Øx1 3/4"	5/8"Øx2"	5/8"Øx2"	3/4"Øx2"	3/4"Øx2"	3/4"Øx2"	3/4"Øx2"	7/8"Øx2"	7/8"Øx2"	---	
W8x18	5 1/4"	2 3/4"	1 1/4"	3/8"	1/2"Øx1 3/4"	1/2"Øx1 3/4"	1/2"Øx1 3/4"	5/8"Øx2"	5/8"Øx2"	3/4"Øx2"	3/4"Øx2"	3/4"Øx2"	7/8"Øx2 1/4"	7/8"Øx2 1/4"	7/8"Øx2 1/4"	7/8"Øx2 1/4"
W10x22	5 3/4"	2 3/4"	1 1/2"	1/2"	1/2"Øx2"	1/2"Øx2"	1/2"Øx2"	5/8"Øx2"	5/8"Øx2"	3/4"Øx2 1/4"	3/4"Øx2 1/4"	3/4"Øx2 1/4"	7/8"Øx2 1/4"	7/8"Øx2 1/4"	7/8"Øx2 1/2"	1"Øx2 1/2"
W10x26	5 3/4"	2 3/4"	1 1/2"	5/8"	1/2"Øx2"	1/2"Øx2"	1/2"Øx2"	5/8"Øx2 1/4"	5/8"Øx2 1/4"	3/4"Øx2 1/2"	3/4"Øx2 1/2"	3/4"Øx2 1/2"	7/8"Øx2 1/2"	7/8"Øx2 1/2"	1"Øx2 3/4"	1"Øx2 3/4"
W12x26	6 1/2"	3 1/2"	1 1/2"	5/8"	---	---	---	---	---	5/8"Øx2 1/4"	---	---	7/8"Øx2 1/2"	7/8"Øx2 1/2"	1"Øx2 1/2"	1"Øx2 1/2"
W14x30	6 3/4"	3 1/2"	1 5/8"	1/2"	1/2"Øx2"	1/2"Øx2"	1/2"Øx2"	1/2"Øx2"	1/2"Øx2"	5/8"Øx2 1/4"	5/8"Øx2 1/4"	3/4"Øx2 1/4"	3/4"Øx2 1/4"	7/8"Øx2 1/2"	7/8"Øx2 1/2"	1"Øx2 1/2"
W14x38	6 3/4"	3 1/2"	1 5/8"	1/2"	---	1/2"Øx2"	1/2"Øx2"	1/2"Øx2"	1/2"Øx2"	5/8"Øx2 1/4"	5/8"Øx2 1/4"	3/4"Øx2 1/2"	3/4"Øx2 1/2"	7/8"Øx2 1/2"	7/8"Øx2 1/2"	1"Øx2 1/2"
W16x45	7"	3 1/2"	1 3/4"	1/2"	---	---	---	1/2"Øx2"	1/2"Øx2"	5/8"Øx2 1/4"	5/8"Øx2 1/4"	5/8"Øx2 1/4"	3/4"Øx2 1/2"	3/4"Øx2 1/2"	7/8"Øx2 1/2"	7/8"Øx2 1/2"

POST	FUSE PLATE DATA TABLE				FUSE PLATE BOLT SIZE TABLE										
					SIGN DEPTH										
	J	K	L	T3	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	---
W6x9	4"	2 1/4"	7/8"	1/4"	---	---	---	---	---	---	---	---	---	---	---
W6x15	6"	3 1/2"	1 1/4"	3/8"	---	---	---	---	---	---	---	---	---	---	---
W8x18	5 1/4"	2 3/4"	1 1/4"	3/8"	7/8"Øx2 1/4"	7/8"Øx2 1/4"	---	---	---	---	---	---	---	---	---
W10x22	5 3/4"	2 3/4"	1 1/2"	1/2"	1"Øx2 3/4"	1"Øx2 3/4"	1"Øx2 3/4"	1"Øx2 3/4"	1"Øx2 3/4"	1"Øx2 3/4"	---	---	---	---	---
W10x26	5 3/4"	2 3/4"	1 1/2"	5/8"	1"Øx2 3/4"	1 1/8"Øx3"	1 1/8"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	---
W12x26	6 1/2"	3 1/2"	1 1/2"	5/8"	1"Øx2 3/4"	1"Øx2 3/4"	1 1/8"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	---
W14x30	6 3/4"	3 1/2"	1 5/8"	1/2"	1"Øx2 3/4"	1"Øx2 3/4"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	---
W14x38	6 3/4"	3 1/2"	1 5/8"	1/2"	1"Øx2 1/2"	1"Øx2 3/4"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	---
W16x45	7"	3 1/2"	1 3/4"	1/2"	7/8"Øx2 1/2"	1"Øx2 3/4"	1"Øx2 3/4"	1 1/8"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	1 1/4"Øx3"	---

**PROCEDURE FOR FUSE PLATE BOLT TIGHTENING:**

ALL FRICTION FUSE BOLTS SHALL BE TIGHTENED IN THE SHOP AS APPROVED BY THE ENGINEER ACCORDING TO ONE OF THE FOLLOWING METHODS:

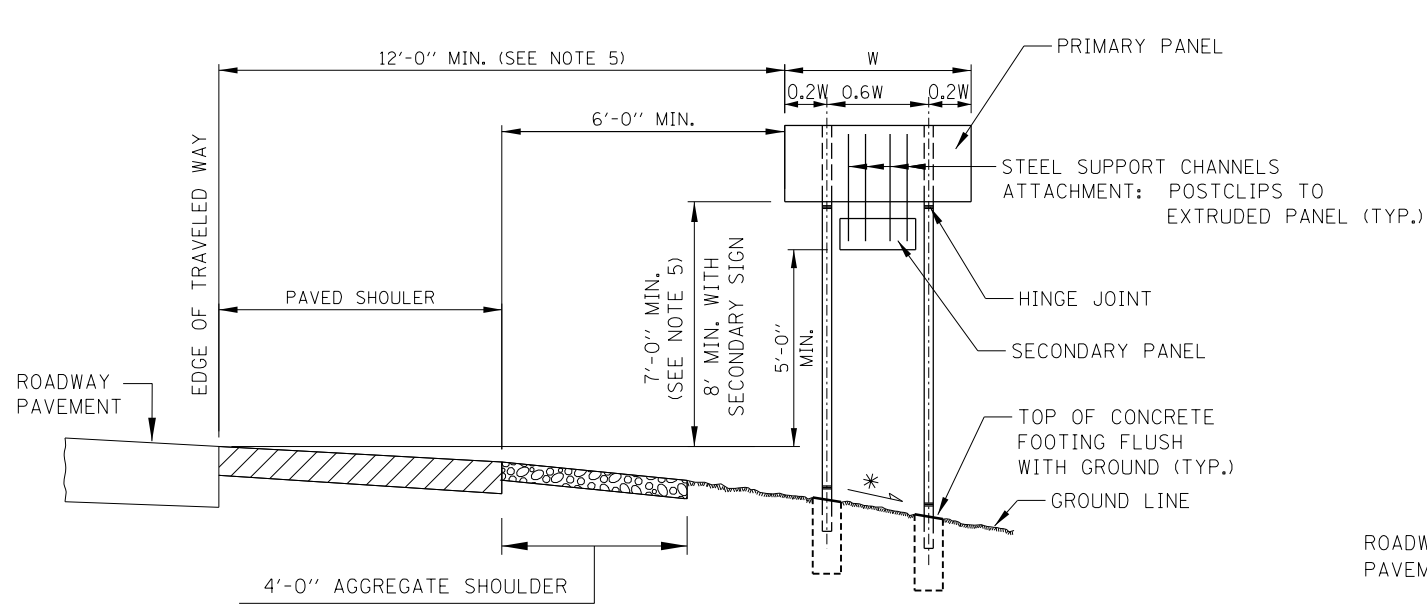
- TURN-OF-NUT TIGHTENING,
- TIGHTENING BY USE OF A DIRECT TENSION INDICATOR.

THE ABOVE METHODS OF INSTALLATION AND TIGHTENING SHALL CONFORM TO THE LATEST ISSUE OF THE SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A-325 OR A-490 BOLTS, FOR SLIP-CRITICAL CONNECTIONS AS ISSUED BY THE RESEARCH COUNCIL ON RIVETED AND BOLTED STRUCTURAL JOINTS OF THE ENGINEERING FOUNDATION.

TIGHTENING SHALL BE TO SUCH A DEGREE AS TO OBTAIN THE FOLLOWING MINIMUM RESIDUAL TENSION IN EACH BOLT.

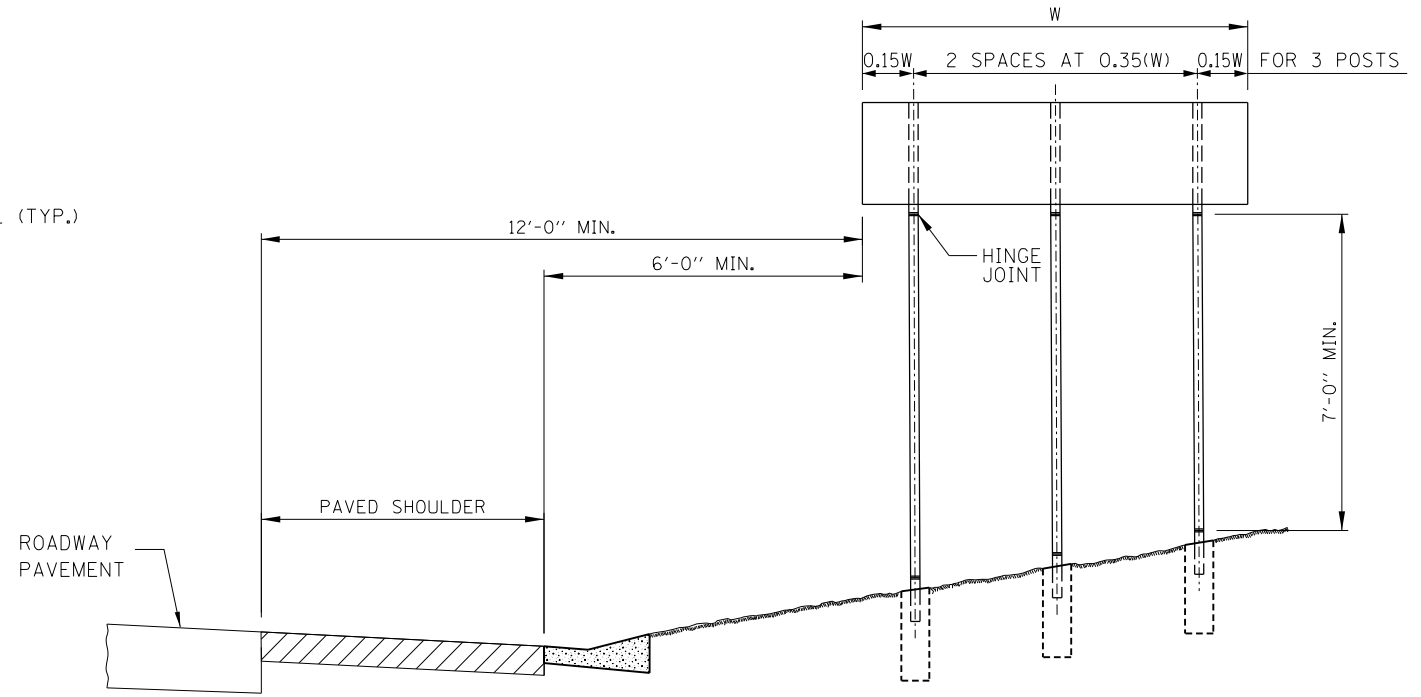
BOLT DIA.	MIN. RESIDUAL BOLT TENSION	BOLT DIA.	MIN. RESIDUAL BOLT TENSION	BOLT DIA.	MIN. RESIDUAL BOLT TENSION
1/2"	12,050	7/8"	39,250	1 1/4"	71,700
5/8"	19,200	1"	51,500		
3/4"	28,400	1 1/8"	56,450		



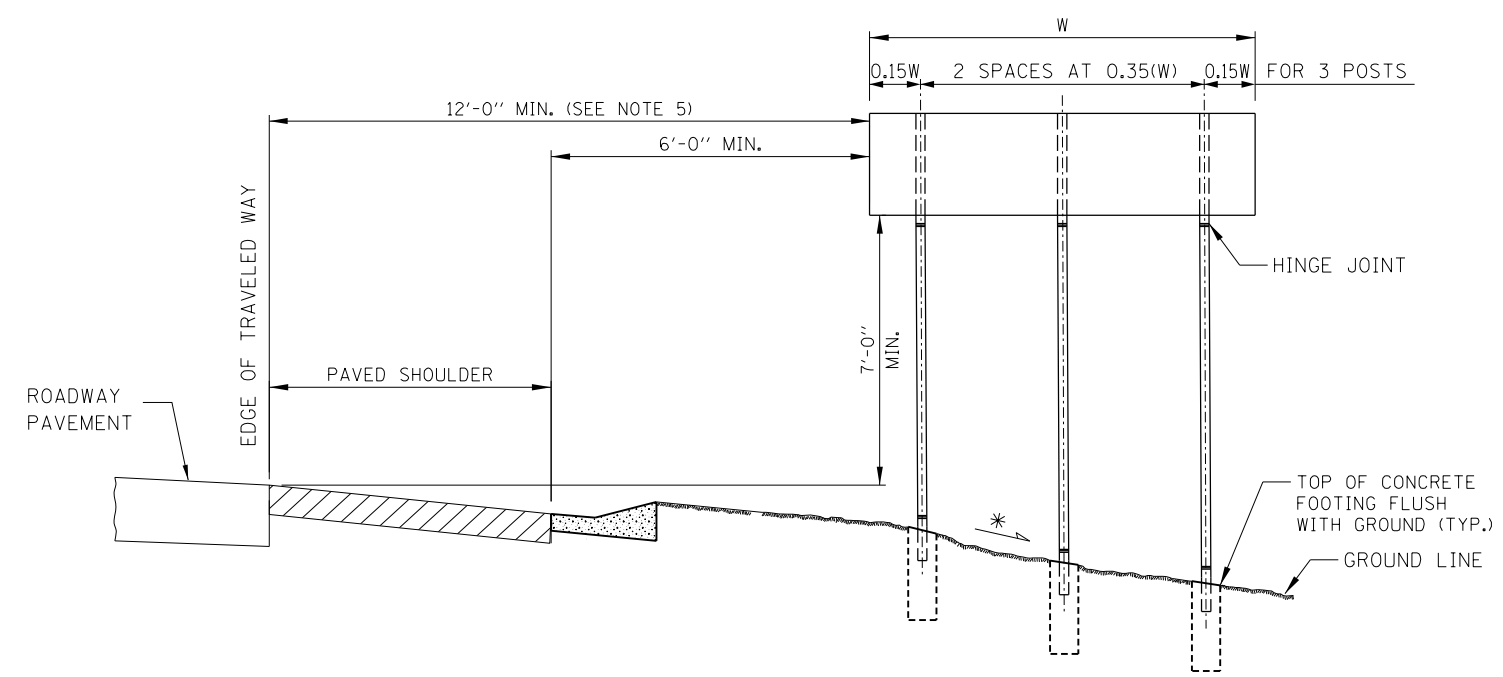


CONDITION 1 - SIGN INSTALLATION

(\*) FORESLOPE 1:6 (V:H) OR FLATTER



CONDITION 3 - SIGN INSTALLATION



CONDITION 2 - SIGN INSTALLATION

(\*) FORESLOPE 1:6 (V:H) OR FLATTER

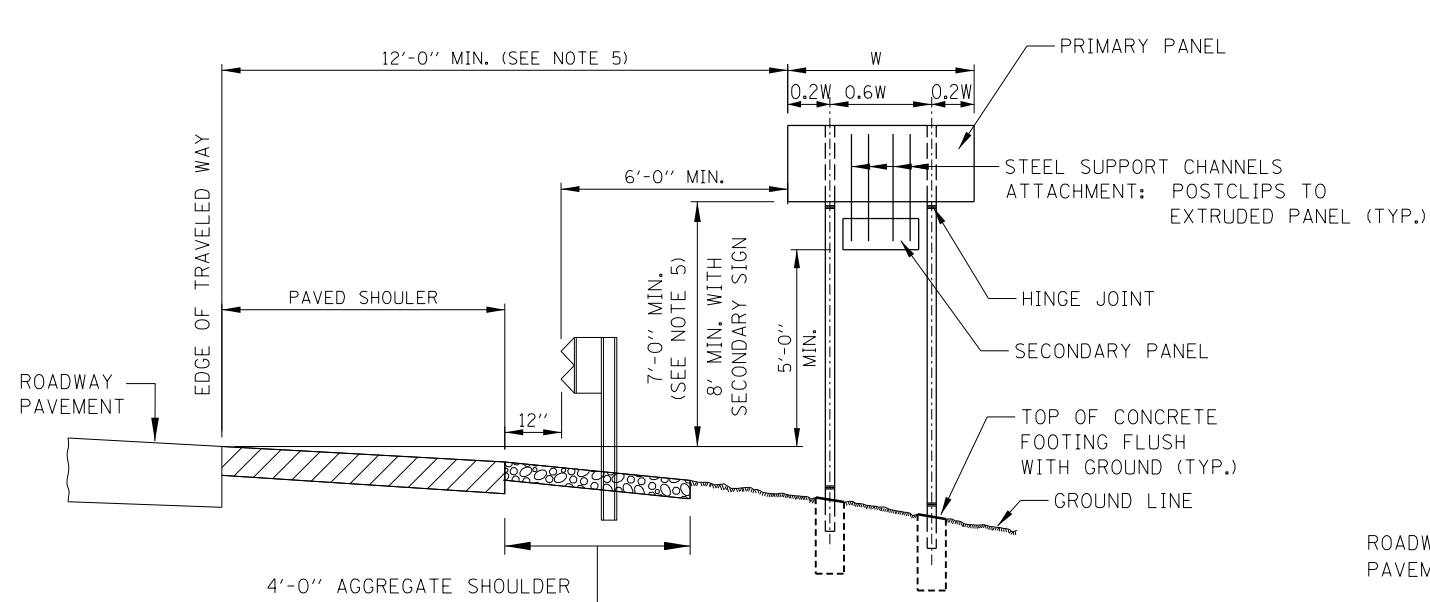
NOTES:

1. SEE SIGN INSTALLATION SCHEDULE IN CONTRACT PLANS FOR DIMENSIONS.
2. THE DIMENSIONS OF ALL POSTS FOR GROUND MOUNTED SIGNS ARE BASED ON DESIGN CROSS SECTIONS. THE CONTRACTOR SHALL VERIFY REQUIRED POST LENGTHS IN THE FIELD, PRIOR TO SUBMITTING SHOP DRAWINGS AND POST FABRICATION TO MAINTAIN THE CLEARANCES SHOWN.
3. SIGN FOUNDATION ELEVATIONS TO BE BASED ON FINISHED SLOPES.
4. ANY ADDITIONAL SIGN TO BE ADDED LATER MUST BE SUPPORTED BY THE EXISTING SIGN PANEL AND NOT THE SIGN POST. MINIMUM CLEARANCES SHALL BE MAINTAINED.
5. SIGNS THAT ARE PLACED WELL OUTSIDE THE CLEAR ZONE MAY BE INSTALLED WITH A MINIMUM HEIGHT OF 5 FEET, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE HORIZONTAL ELEVATION OF THE NEAR EDGE OF TRAVELED ROADWAY.
6. MINIMUM HEIGHT OF LOWEST POST SHALL BE 7'-0" MEASURED BETWEEN STUB PROJECTION AND HINGE JOINT.
7. FOR TWO POSTS SPACED LESS THAN 7 FEET APART, EACH POST SHALL HAVE A MASS LESS THAN 18 lb/ft.
8. WHEN THE TOTAL COMBINED WEIGHT OF THE TWO POSTS LOCATED WITHIN 7 FEET OF EACH OTHER EXCEEDS 600 lbs., THE SIGN SHALL BE PLACED WELL OUTSIDE THE CLEAR ZONE OR BE SHIELDED FROM VEHICULAR IMPACT.

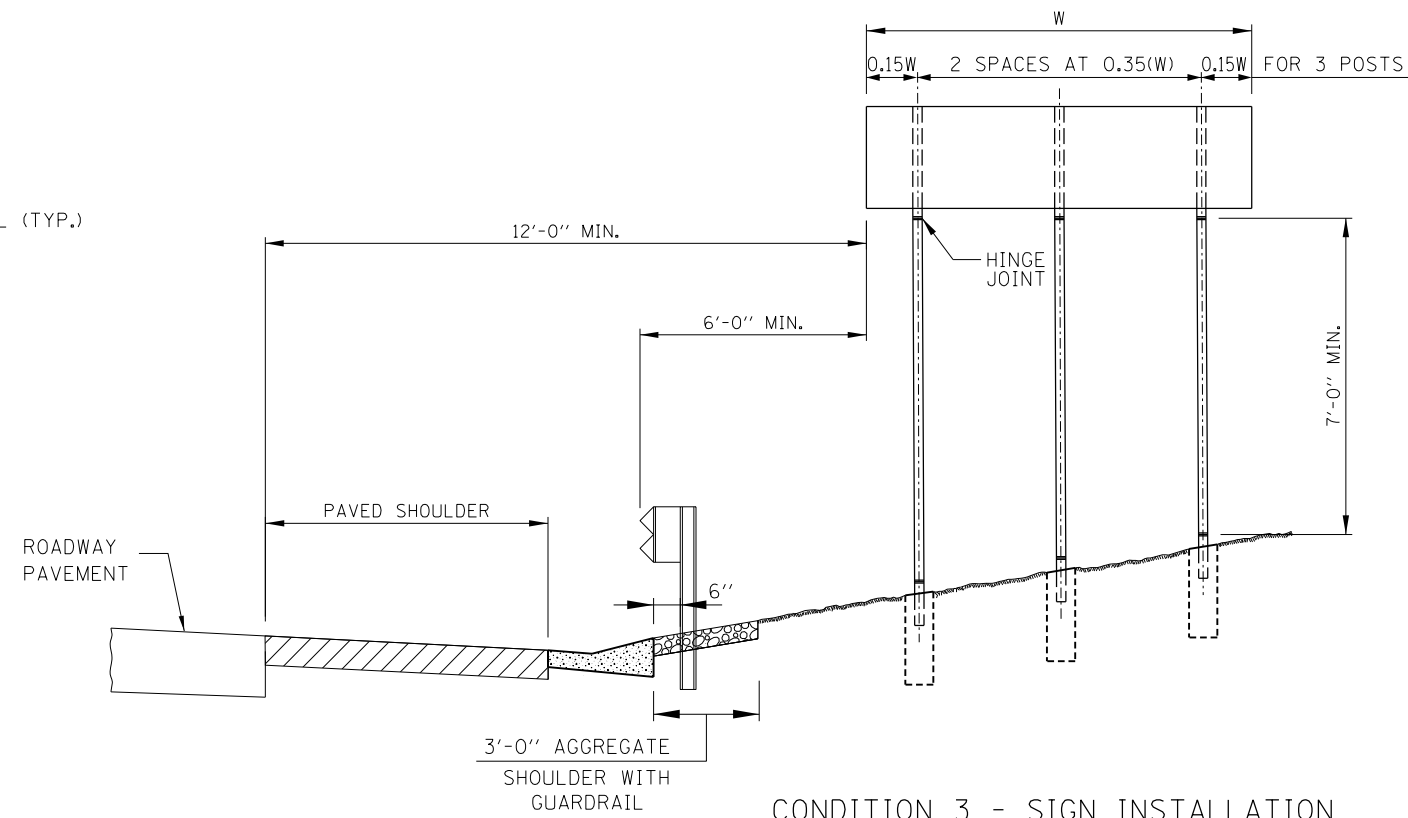
UNSHIELDED SLOPE



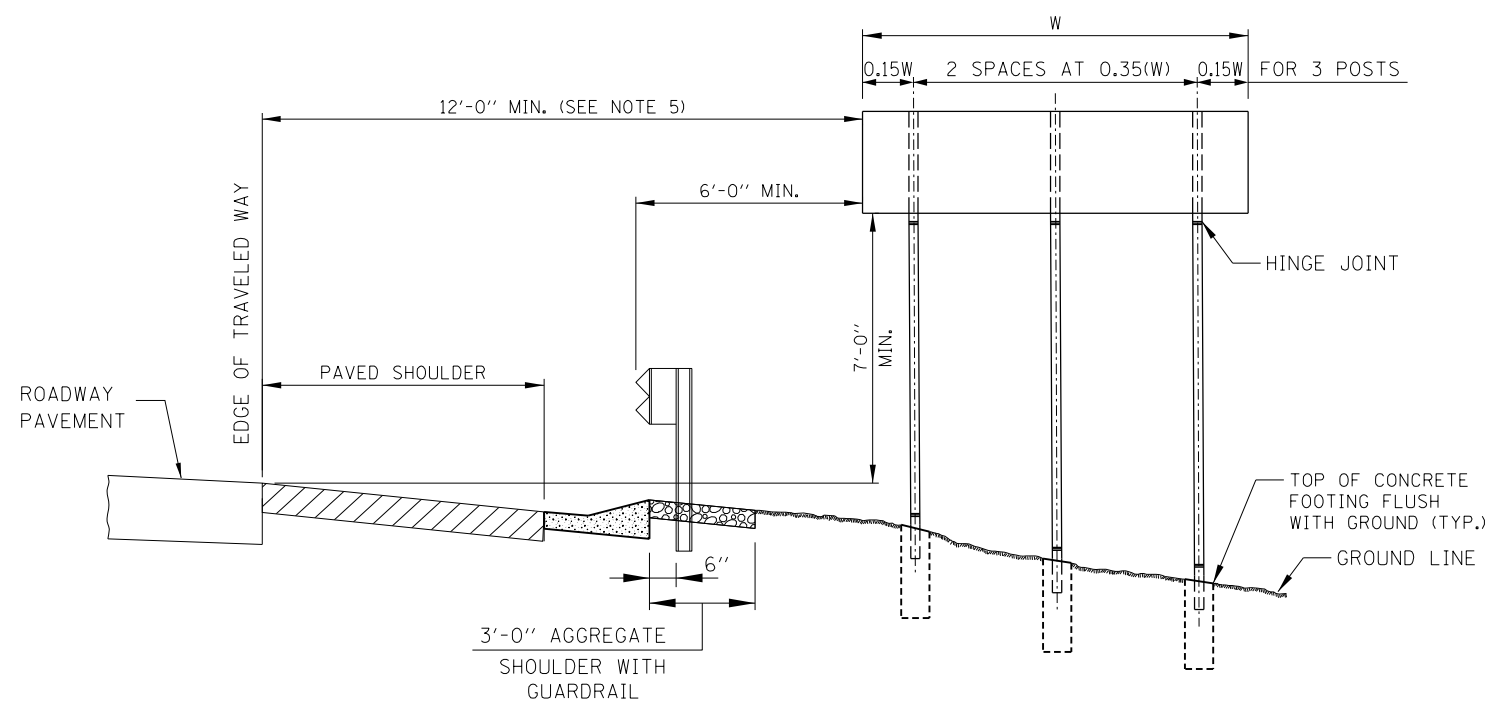
APPROVED: *Paul Kovacs*  
 CHIEF ENGINEER DATE 1-1-2010



CONDITION 1 - SIGN INSTALLATION



CONDITION 3 - SIGN INSTALLATION



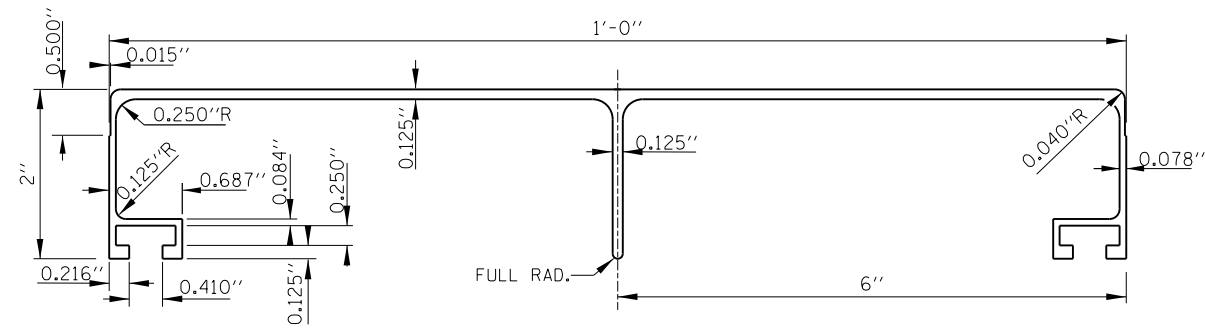
CONDITION 2 - SIGN INSTALLATION

SHIELDED SLOPE

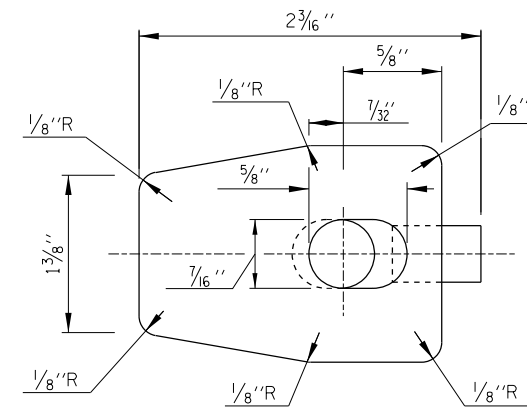
NOTES:

1. SEE SIGN INSTALLATION SCHEDULE IN CONTRACT PLANS FOR DIMENSIONS.
2. THE DIMENSIONS OF ALL POSTS FOR GROUND MOUNTED SIGNS ARE BASED ON DESIGN CROSS SECTIONS. THE CONTRACTOR SHALL VERIFY REQUIRED POST LENGTHS IN THE FIELD, PRIOR TO SUBMITTING SHOP DRAWINGS AND POST FABRICATION TO MAINTAIN THE CLEARANCES SHOWN.
3. SIGN FOUNDATION ELEVATIONS TO BE BASED ON FINISHED SLOPES.
4. ANY ADDITIONAL SIGN TO BE ADDED LATER MUST BE SUPPORTED BY THE EXISTING SIGN PANEL AND NOT THE SIGN POST. MINIMUM CLEARANCES SHALL BE MAINTAINED.
5. SIGNS THAT ARE PLACED WELL OUTSIDE THE CLEAR ZONE MAY BE INSTALLED WITH A MINIMUM HEIGHT OF 5 FEET, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE HORIZONTAL ELEVATION OF THE NEAR EDGE OF TRAVELED ROADWAY.
6. MINIMUM HEIGHT OF LOWEST POST SHALL BE 7'-0" MEASURED BETWEEN STUB PROJECTION AND HINGE JOINT.
7. FOR TWO POSTS SPACED LESS THAN 7 FEET APART, EACH POST SHALL HAVE A MASS LESS THAN 18 lb/ft.
8. WHEN THE TOTAL COMBINED WEIGHT OF THE TWO POSTS LOCATED WITHIN 7 FEET OF EACH OTHER EXCEEDS 600 lbs., THE SIGN SHALL BE PLACED WELL OUTSIDE THE CLEAR ZONE OR BE SHIELDED FROM VEHICULAR IMPACT.

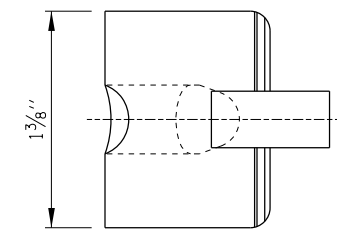




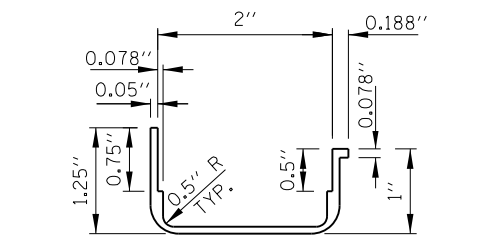
12" PANEL  
TYPE B SIGN PANEL EXTRUSIONS



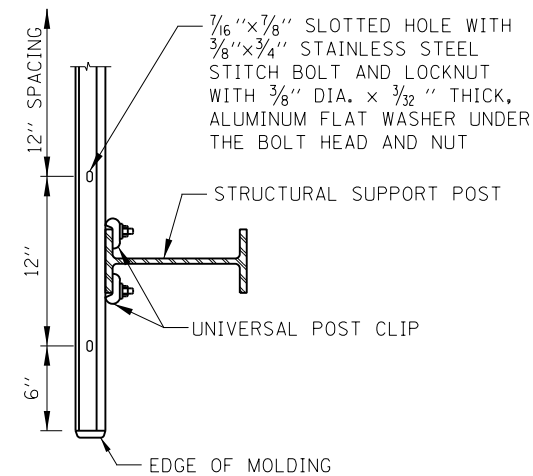
PLAN VIEW



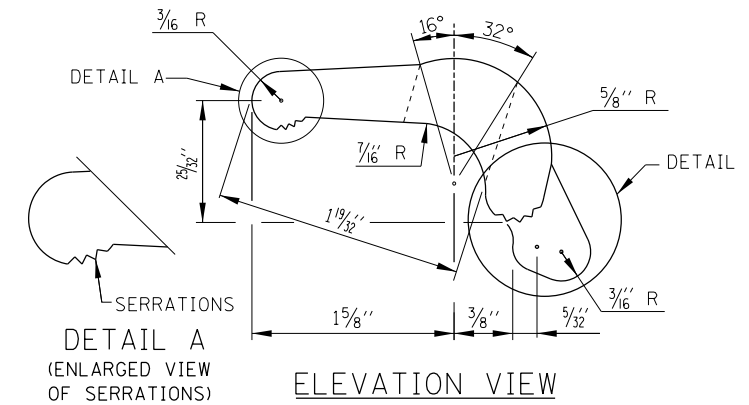
END VIEW



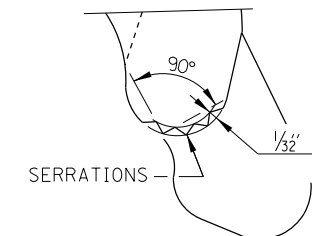
EDGE MOLDING SECTION  
FOR SIGN PANEL



SECTION C-C

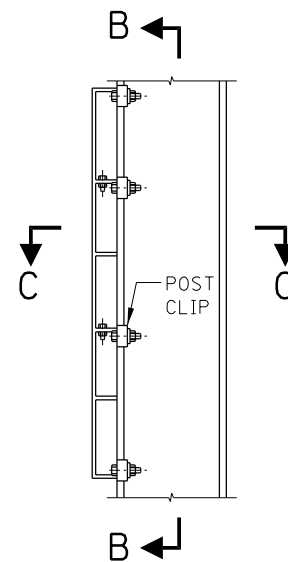


ELEVATION VIEW

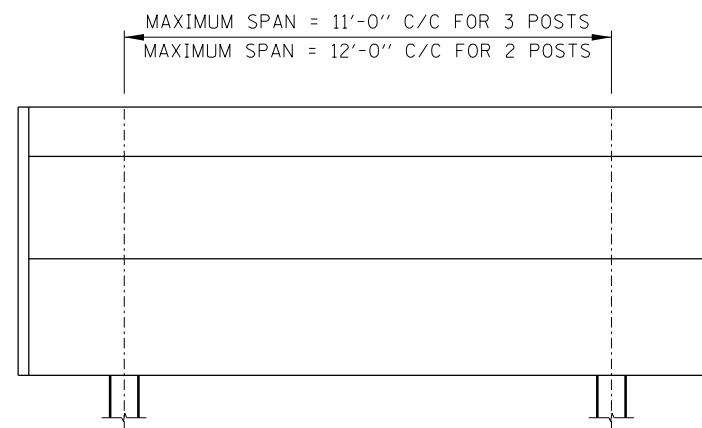


DETAIL B  
(ENLARGED DETAIL  
OF SERRATIONS)

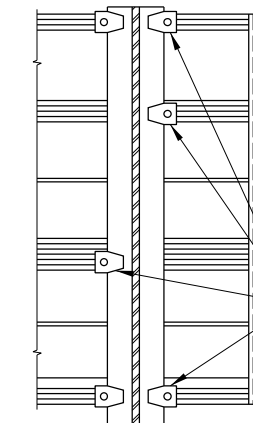
ALUMINUM CLIP DETAIL



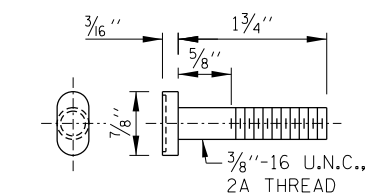
SECTION A-A



FACE OF SIGN PANEL



SECTION B-B



POST CLIP BOLT  
STAINLESS STEEL

PROVIDE TWO (2) POST CLIPS AT TOP AND BOTTOM. ALTERNATE INTERIOR POST CLIPS ON SIGNS UNDER 24 FEET LONG AND OVER HEAD MOUNTED SIGNS. DO NOT ALTERNATE INTERIOR CLIPS ON OTHER SIGNS. A 3/8" DIA. x 3/32" THICK, ALUMINUM FLAT WASHER SHALL BE USED UNDER EACH NUT TO PREVENT GOUGING OF THE CLIP.

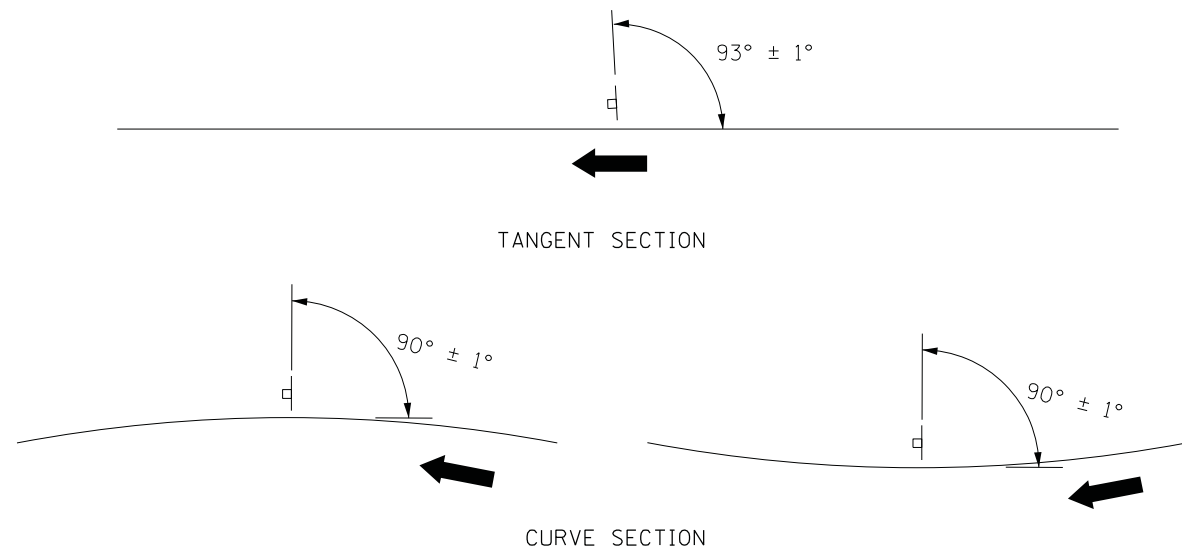


DATE	REVISIONS
1-1-2009	MODIFIED TYPE B SIGN PANEL DIM.
	MODIFIED POST CLIP DETAIL
2-7-2012	REMOVED DETAIL FOR MOUNTING 2 PANEL SIGN
3-11-2015	ADDED WASHERS TO CONNECTION DETAILS

MISCELLANEOUS DETAILS  
AND ALUMINUM SIGN PANELS

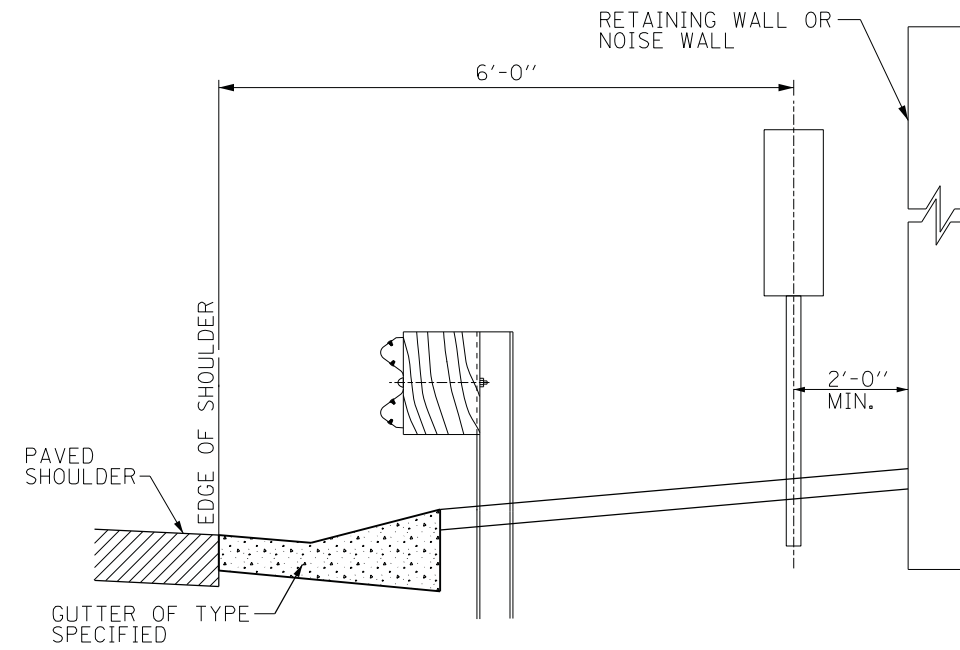
STANDARD F10-03

APPROVED...  
Paul Kovacs  
CHIEF ENGINEER  
DATE 2-7-2012...



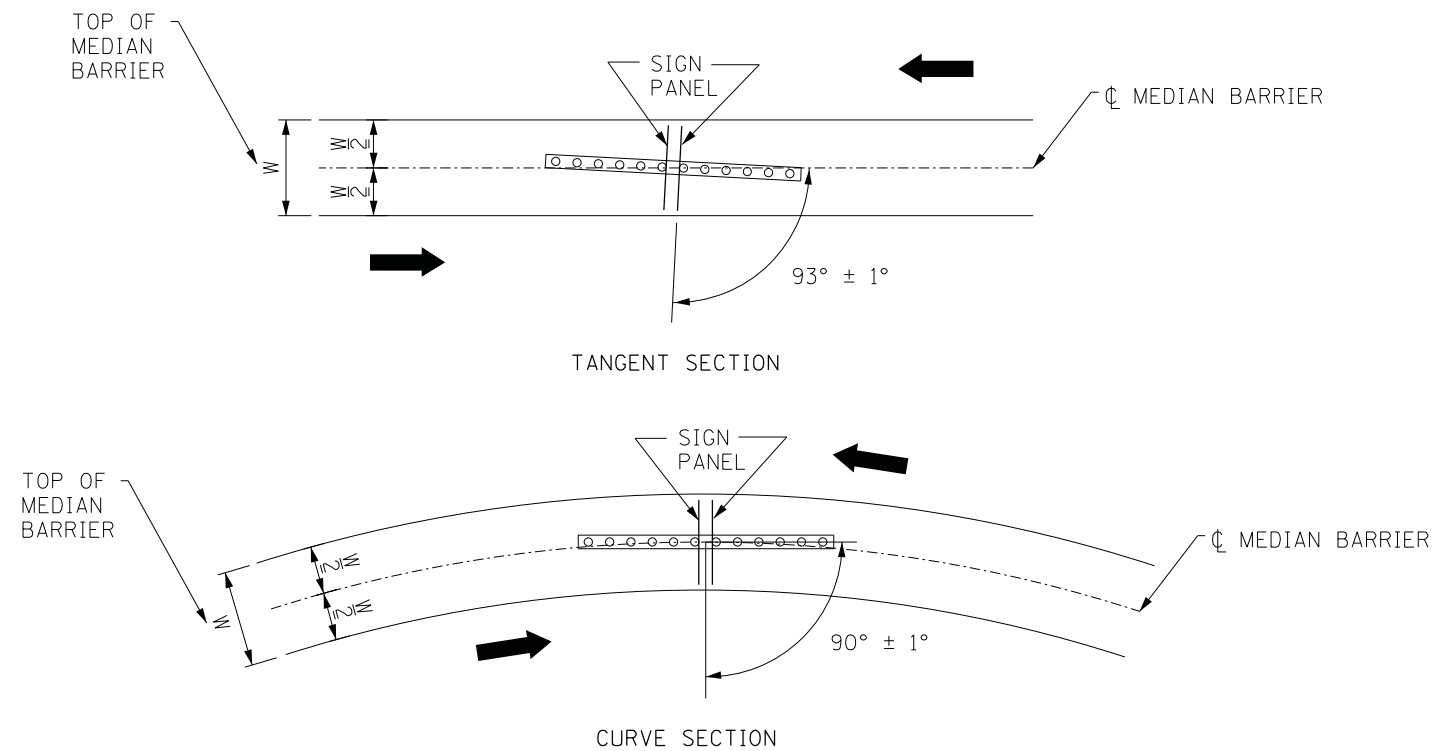
GROUND MOUNT SIGN POSITIONING

NOT TO SCALE



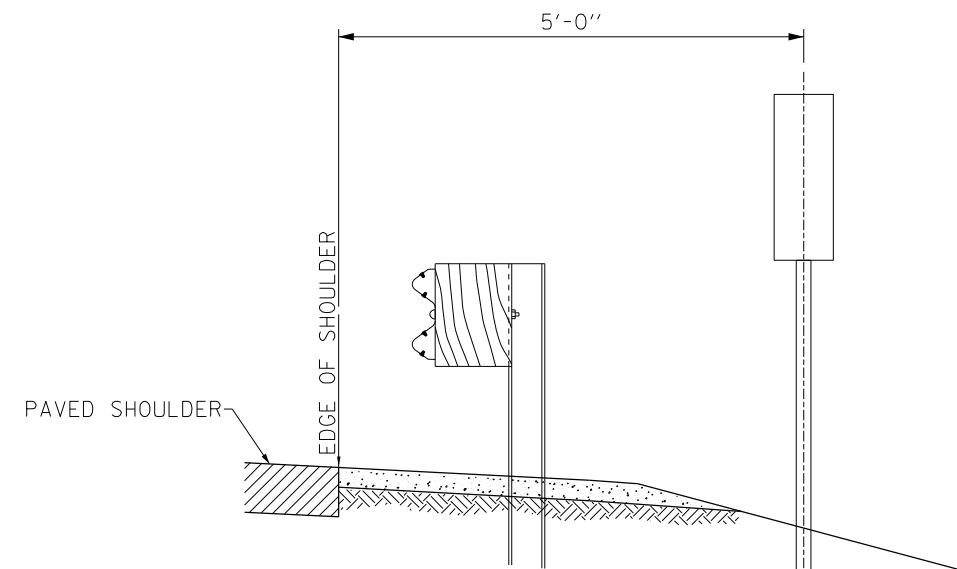
SECTION WITH GUTTER

NOT TO SCALE



MEDIAN BARRIER SIGN POSITIONING

NOT TO SCALE



SECTION WITHOUT GUTTER

NOT TO SCALE

← DIRECTION OF TRAFFIC

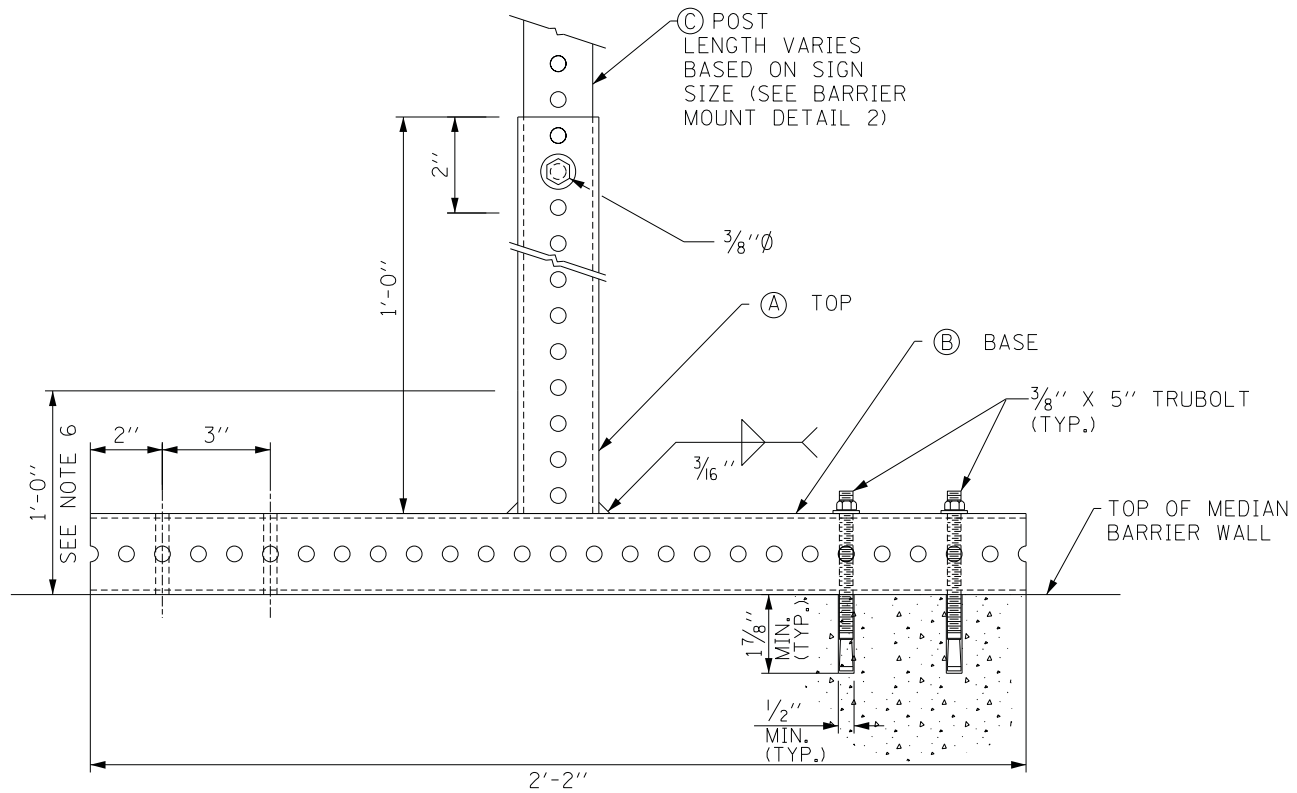


MILEPOST MARKER

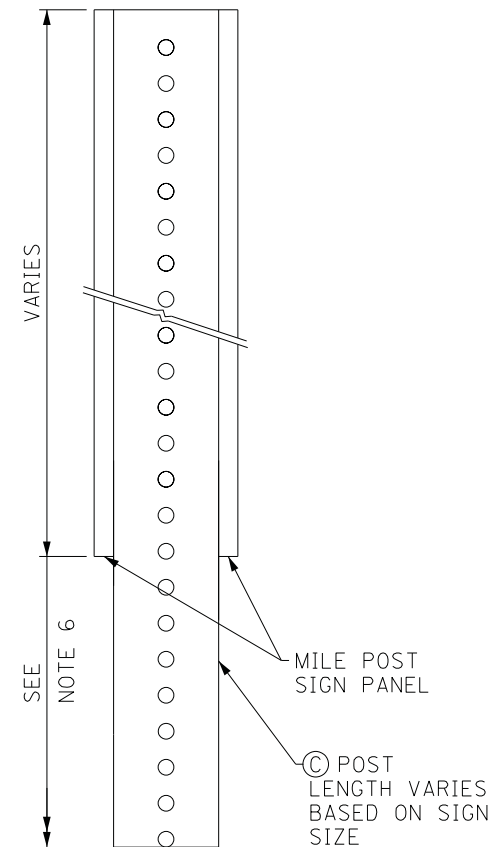
STANDARD F11-04

DATE	REVISIONS
5-8-2009	POSITIONING DETAILS
8-1-2009	REVISED BARRIER WALL MOUNT
3-1-2013	REMOVED MILE POST SIGNS
3-31-2016	REVISED BOLT NOTE

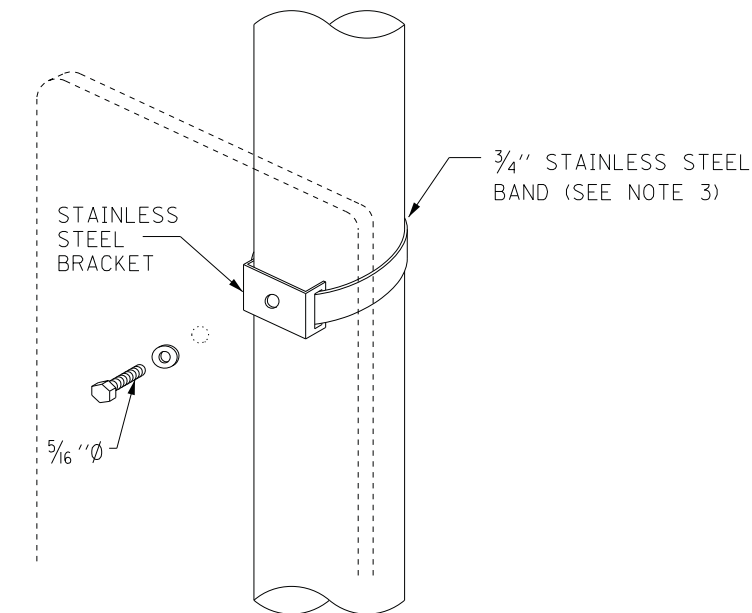
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 4-6-2009



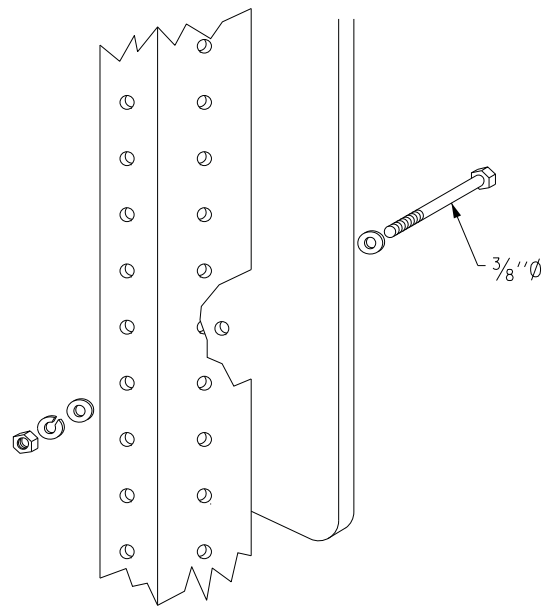
**BARRIER WALL MOUNT DETAIL**  
NOT TO SCALE



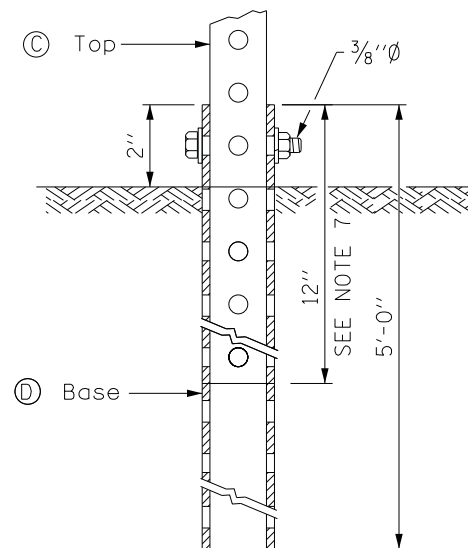
**BARRIER WALL MOUNT DETAIL 2**  
NOT TO SCALE



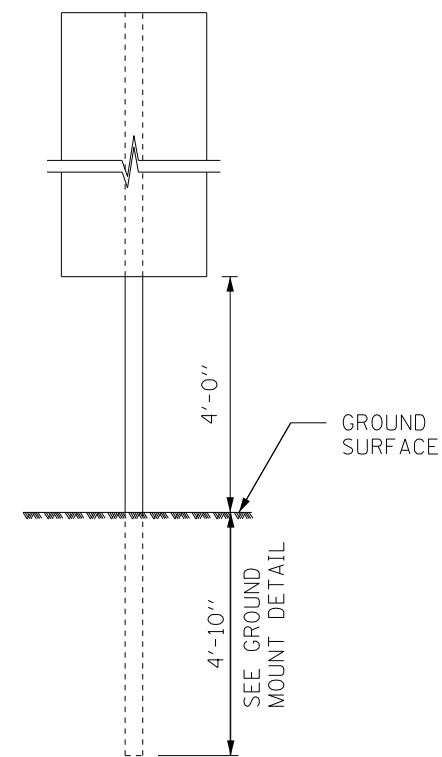
**LIGHT POLE/SIGN STRUCTURE MOUNT DETAIL**  
NOT TO SCALE



**TELESCOPING STEEL POSTS**  
NOT TO SCALE



**GROUND MOUNT DETAIL**  
NOT TO SCALE



**ONE POST INSTALLATION**  
NOT TO SCALE

**GENERAL NOTES:**

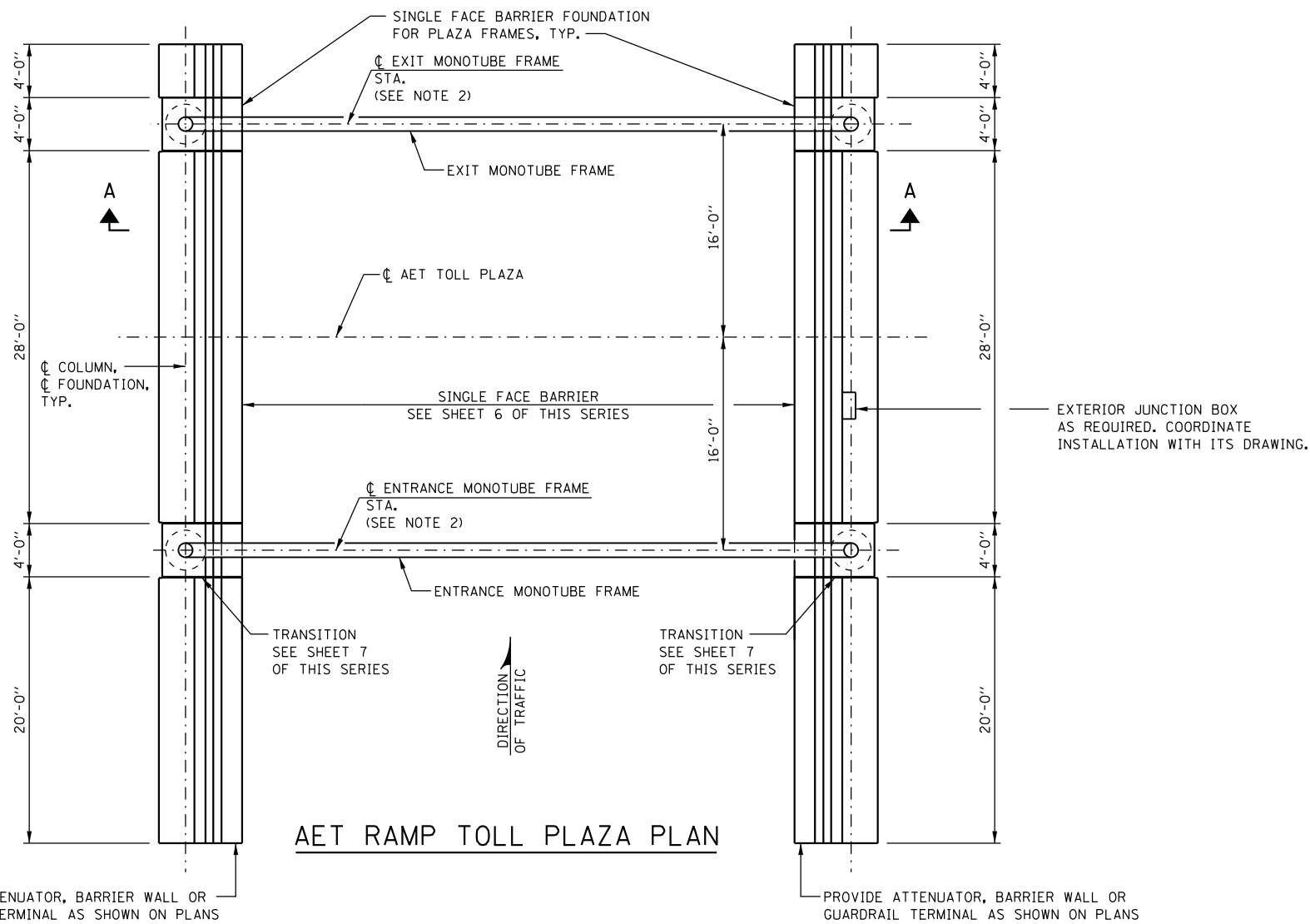
1. ALL ANCHOR BOLTS FOR MEDIAN BARRIER MOUNT DETAIL SHALL BE 3/8" DIA. RED HEAD "TRUBOLT" OR APPROVED EQUAL.
2. ALL DIMENSIONS ARE IN INCHES UNLESS SHOWN OTHERWISE.
3. FOLLOWING ARE THE STEPS FOR FASTENING THE MILEPOST MARKER SIGN PANEL. ALL MOUNTING DETAILS SHOWN ON THIS SHEET APPLY:
  - a. CENTER ALL FASTENERS ON THE SIGN PANEL.
  - b. START AND FINISH THE FASTENER SPACING USING A MINIMUM OF 3" TO A MAXIMUM OF 6" FROM THE TOP AND BOTTOM EDGE OF THE SIGN PANEL.
  - c. THE DISTANCE BETWEEN SUCCESSIVE FASTENERS SHALL NOT EXCEED 2'-0".
4. CENTER THE 5/16" DIA. BOLT IN THE MIDDLE OF THE SIGN.
5. USE THE SAME ATTACHMENT FOR BACK TO BACK MILEPOST MARKER SIGN.
6. DISTANCE FROM THE GROUND TO THE BOTTOM OF THE MILEPOST MARKER SIGN SHALL HAVE A MINIMUM OF 4'-0" REGARDLESS OF BARRIER TYPE.
7. THE TOP SECTION SHALL BE TELESCOPED INTO THE BASE SECTION 12 INCHES AND FASTENED TOGETHER.
8. FOR ATTACHMENT TO BRIDGE PARAPET USE BARRIER MOUNT WALL DETAIL. ONLY ONE PANEL REQUIRED WHEN ATTACHED TO PARAPET ALONG OUTSIDE SHOULDER.

(A)	2 1/4" x 2 1/4" x 1'-0" (12 GA.)
(B)	2 1/4" x 2 1/4" x 2'-2" (12 GA.)
(C)	2" x 2" x VARIES (12 GA.)
(D)	2 1/2" x 2 1/2" x 5'-0" (12 GA.)

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 4-6-2009

**MILEPOST MARKER**

**STANDARD F11-04**



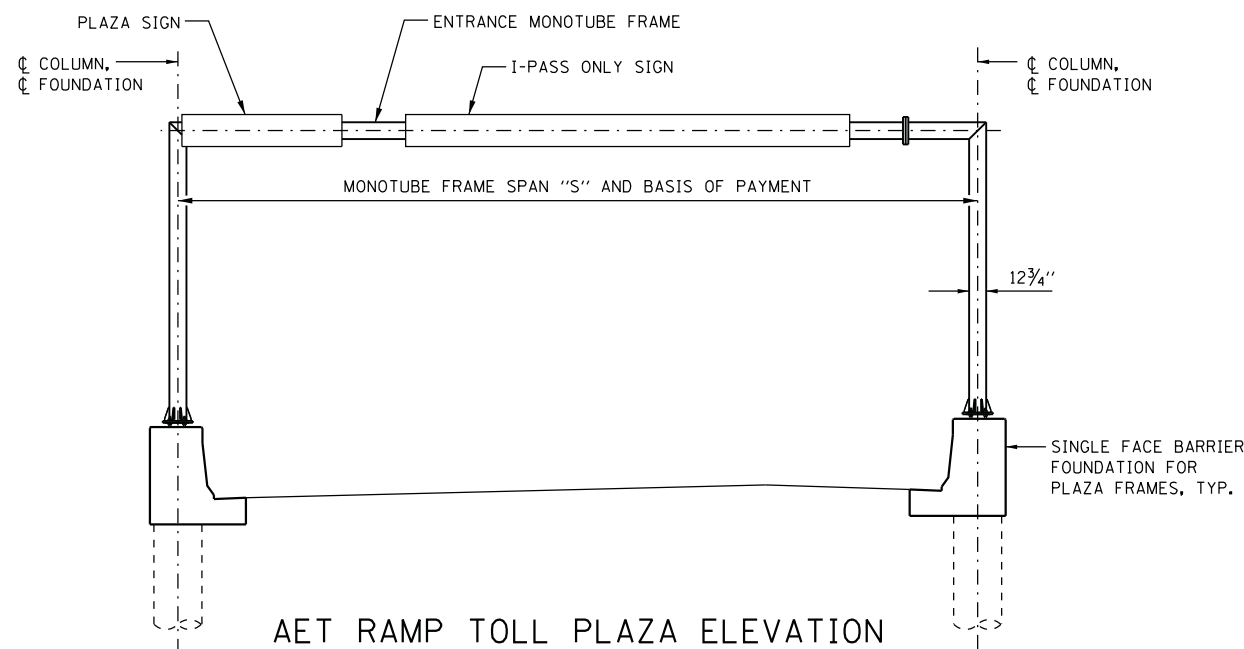
AET RAMP TOLL PLAZA PLAN

SIGN TABLE

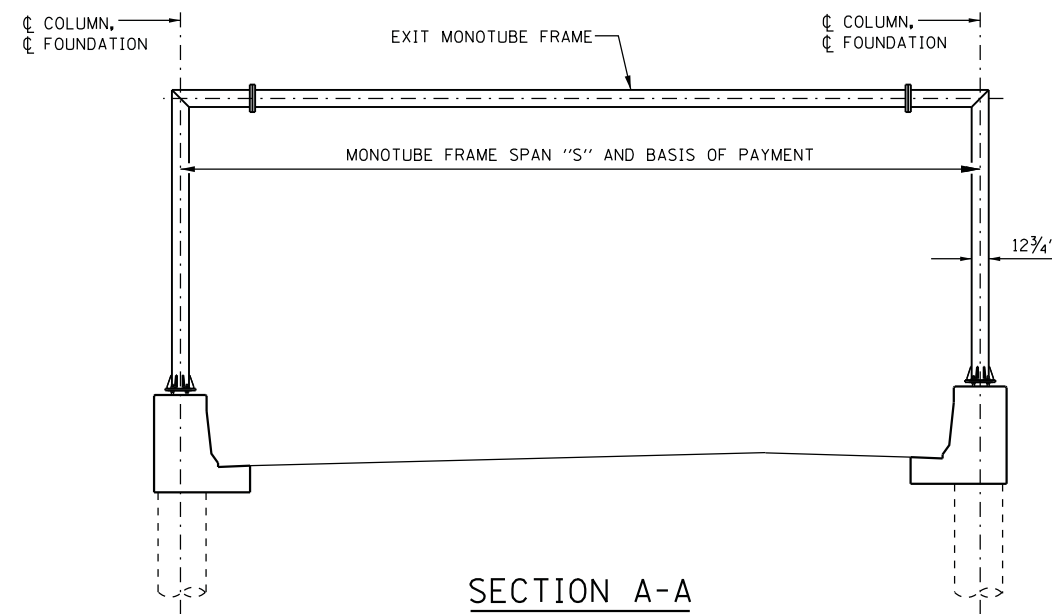
SIGN	MAXIMUM AREA	MAXIMUM LENGTH
PLAZA SIGN	24 S.F.	8'-0"
I-PASS ONLY SIGN	60 S.F.	20'-0"

NOTE:

1. SEE CONTRACT PLANS FOR SIGN SIZE AND LOCATION.
2. PROVIDE ENTRANCE AND EXIT MONOTUBE FRAME STATIONS IN CONTRACT PLANS.



AET RAMP TOLL PLAZA ELEVATION



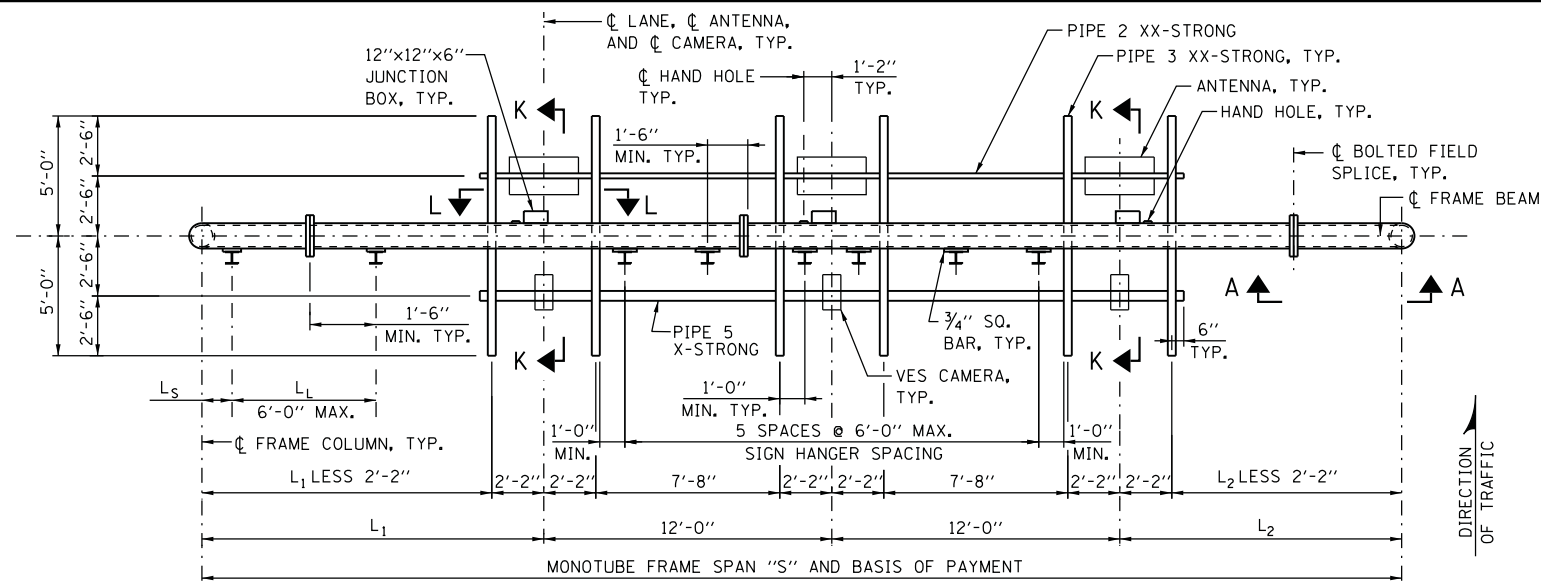
SECTION A-A



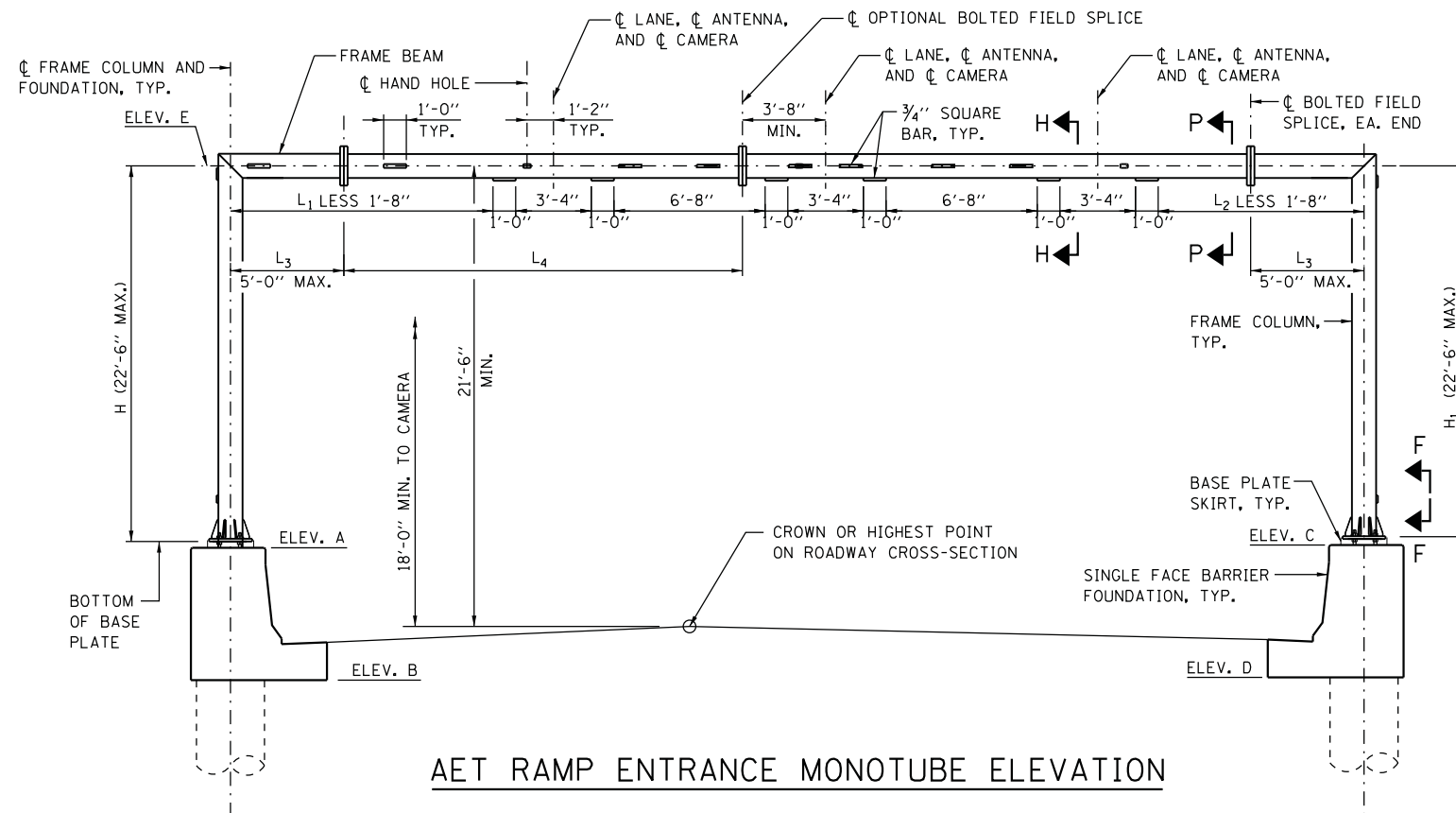
OVERHEAD SIGN STRUCTURE  
MONOTUBE TYPE (STEEL)  
STRUCTURE DETAILS  
FOR AET RAMP  
STANDARD F15-02

DATE	REVISIONS
3-31-2016	REVISED FOUNDATION NOTE
3-31-2017	REVISED I-PASS ONLY SIGN

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 10-14-2014



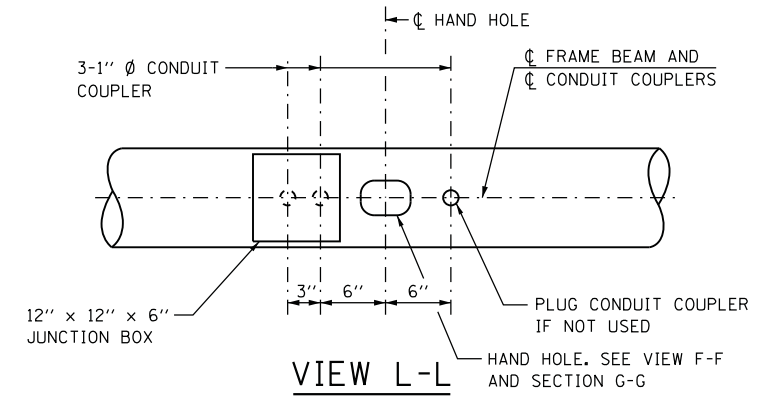
**AET RAMP ENTRANCE MONOTUBE PLAN**



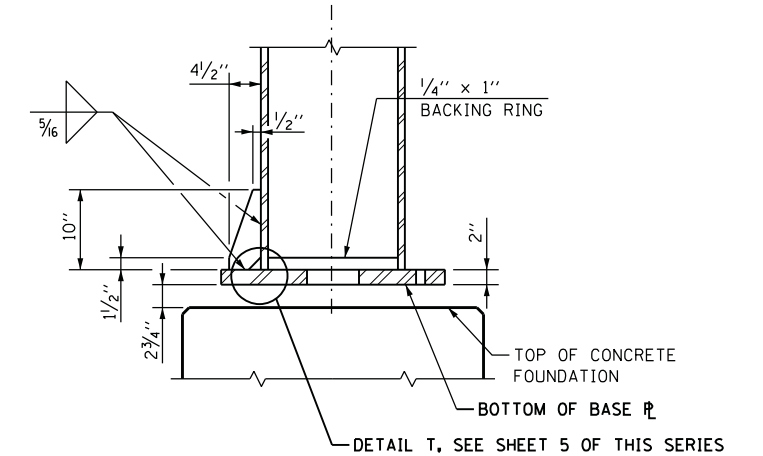
**AET RAMP ENTRANCE MONOTUBE ELEVATION**

**NOTES:**

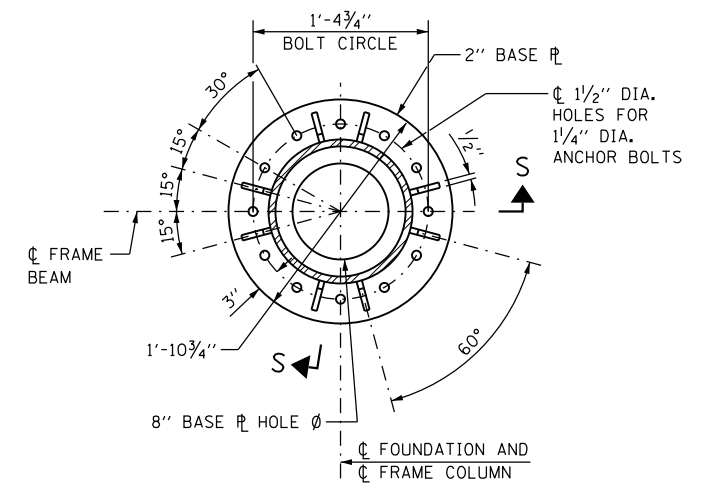
1. FOUNDATIONS FOR MONOTUBE FRAMES ARE SHOWN ON SHEET 6 OF THIS SERIES.
2. SEE SHEET 5 OF THIS SERIES FOR SECTIONS A-A, G-G, H-H, K-K, VIEW F-F AND BASE PLATE SKIRT.
3. SEE SHEET 4 OF THIS SERIES FOR SECTION P-P.
4. PROVIDE CAMBER AT MIDSPAN OF STRUCTURE.
5. LOCATE OPTIONAL BOLTED FIELD SPLICE NEAR MIDSPAN.
6. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURE ENTRANCE MONOTUBE TYPE (STEEL) AET RAMP SUMMARY AND TOTAL BILL OF MATERIAL SHEET.



**VIEW L-L**



**SECTION S-S**



**BASE PLATE PLAN  
ENTRANCE AND EXIT MONOTUBE**

**ENTRANCE MONOTUBE FRAME TABLE**

SPAN "S"	FRAME COLUMN	FRAME BEAM	CAMBER
50' MAX.	HSS 12.75x0.500	HSS 12.75x0.500	1 3/4"

SEE ILLINOIS TOLLWAY STANDARD DRAWING F13 FOR SPANS GREATER THAN 50'.

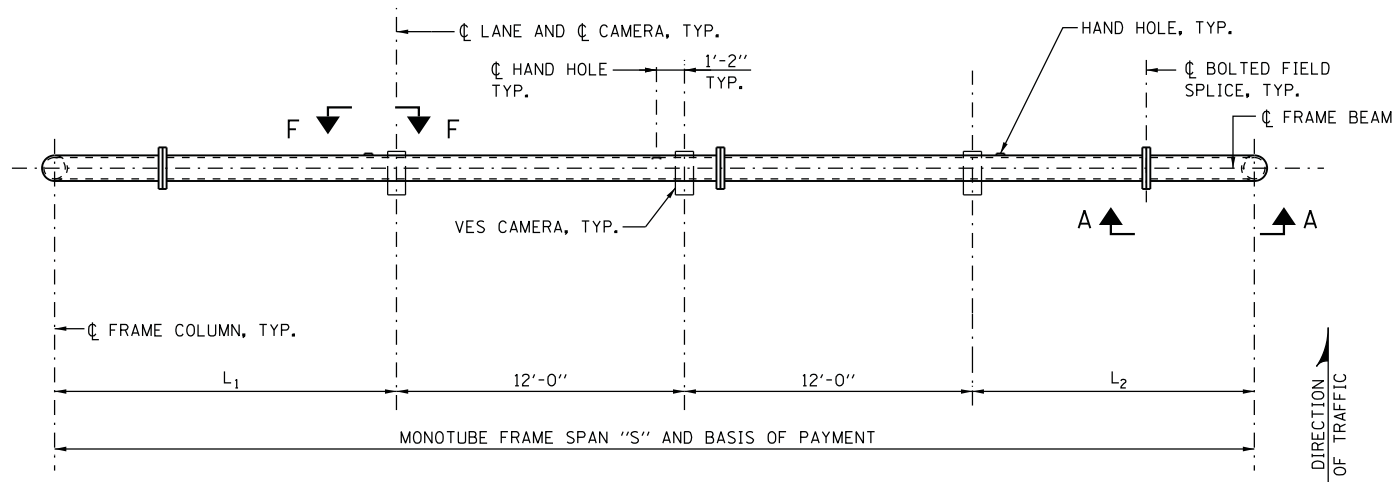


OVERHEAD SIGN STRUCTURE  
MONOTUBE TYPE (STEEL)  
STRUCTURE DETAILS  
FOR AET RAMP

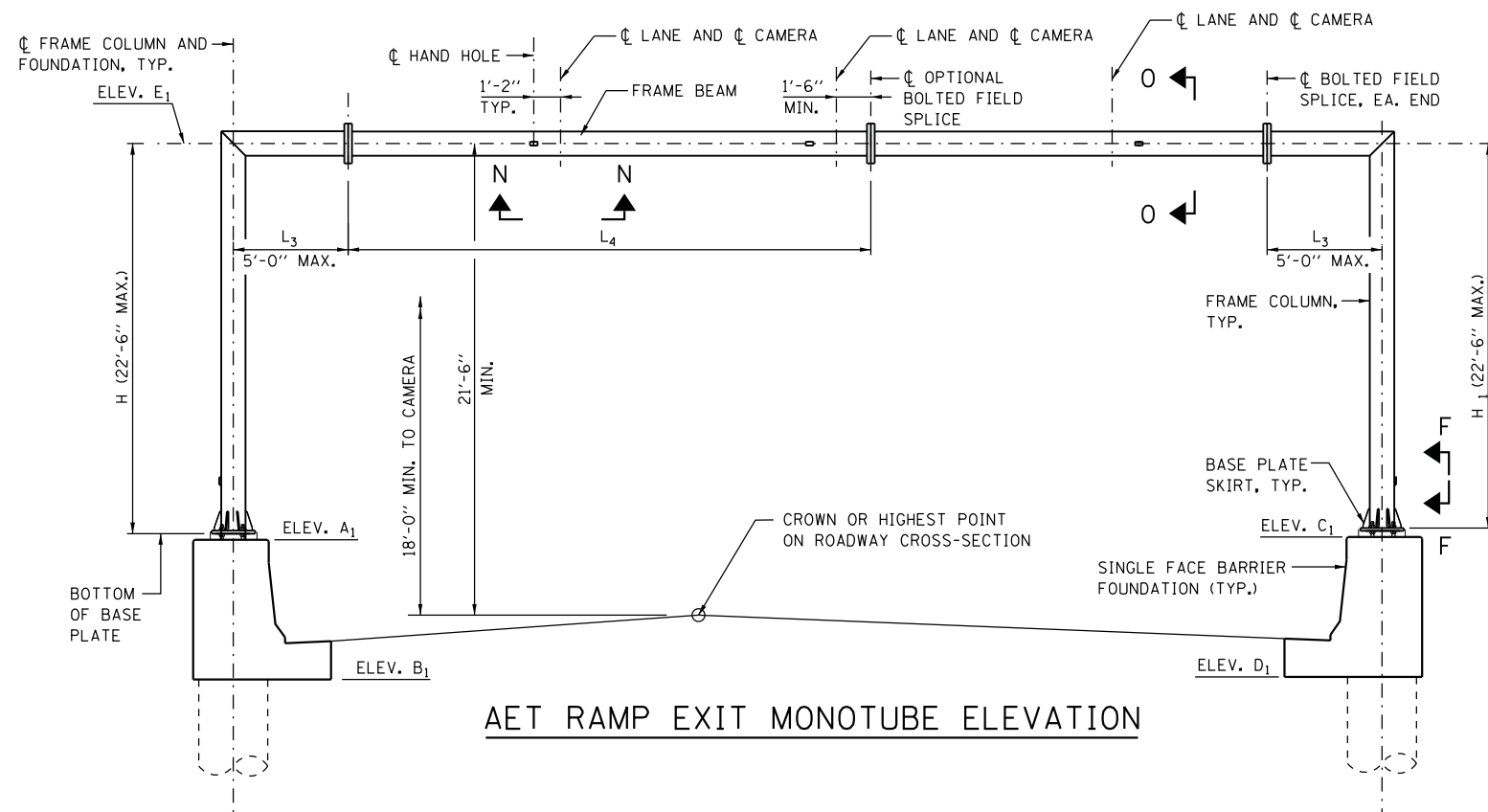
STANDARD F15-02

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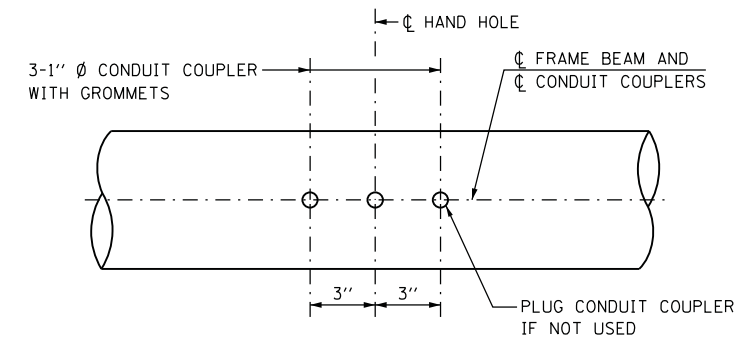




**AET RAMP EXIT MONOTUBE PLAN**



**AET RAMP EXIT MONOTUBE ELEVATION**



**VIEW N-N (CONDUIT COUPLER DETAIL)**

**EXIT MONOTUBE FRAME TABLE**

SPAN "S"	FRAME COLUMN	FRAME BEAM	CAMBER
50' MAX.	HSS 12.75x0.500	HSS 12.75x0.500	1 3/4"

SEE STANDARD F13 FOR SPANS GREATER THAN 50'.

**NOTES:**

1. SEE SHEET 2 OF THIS SERIES FOR SECTION S-S, BASE PLAN AND ADDITIONAL NOTES.
2. SEE SHEET 4 OF THIS SERIES FOR SECTION O-O.
3. SEE SHEET 5 OF THIS SERIES FOR SECTIONS A-A AND G-G, AND BASE PLATE SKIRT.
4. WORK THIS SHEET WITH, OVERHEAD SIGN STRUCTURE EXIT MONOTUBE TYPE (STEEL) AET RAMP SUMMARY AND TOTAL BILL OF MATERIAL SHEET.

APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 10-14-2014



**GENERAL NOTES:**

1. AFTER ADJUSTMENTS TO LEVEL FRAME BEAM AND ENSURE ADEQUATE VERTICAL CLEARANCE, TIGHTEN ALL TOP AND LEVELING NUTS AGAINST THE BASE PLATE WITH A MINIMUM TORQUE OF 200 LB.-FT. THEN PLACE STAINLESS STEEL MESH AROUND THE PERIMETER OF THE BASE PLATE. SECURE TO BASE PLATE WITH STAINLESS STEEL BANDING.
2. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.

**STRUCTURAL STEEL:**

1. MATERIAL FOR THE MONOTUBE FRAME SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B. BASE PLATE AND STIFFENER PLATE SHALL CONFORM TO ASTM A709 GRADE 50. OTHER STRUCTURAL STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, UNLESS NOTED OTHERWISE.
2. PIPES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A53 GRADE B.
3. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1554 (AASHTO M314) GRADE 55, WITH A MINIMUM TENSILE STRENGTH OF 75,000 PSI. THEY SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 (AASHTO M232). SEE SHEET 6 OF THIS SERIES FOR GALVANIZED LENGTH.
4. U-BOLTS SHALL BE STAINLESS STEEL. PROVIDE STAINLESS STEEL WASHERS AND NUTS FOR U-BOLTS.
5. BOLTS (EXCLUDING ANCHOR BOLTS AND U-BOLTS) SHALL BE HIGH STRENGTH STEEL BOLTS.
6. TUBES FOR MONOTUBE FRAME, PIPES, STRUCTURAL STEEL SHAPES AND PLATES SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION.
7. THE MONOTUBE FRAME BEAM, COLUMNS, BASE PLATE MATERIAL, AND SPLICES ARE CONSIDERED TENSION MEMBERS AND SHALL CONFORM TO THE IMPACT TESTING REQUIREMENT, ZONE 2.

**DESIGN LOADING:**

WIND LOAD CRITERIA

SIGN PANEL	35 P.S.F.
COLUMN/BEAM	35 P.S.F.

**EQUIPMENT LOADS:**

CAMERA ASSEMBLY	8 LB.
ANTENNA	20 LB.

**DESIGN STRESSES FOR REINFORCED CONCRETE:**

f'c = COMPRESSIVE STRENGTH OF CONCRETE (CLASS SI)	= 3,500 P.S.I.
f'c = COMPRESSIVE STRENGTH OF CONCRETE (CLASS DS)	= 4,000 P.S.I.
fy = YIELD STRENGTH OF REINFORCEMENT BARS (GRADE 60)	= 60,000 P.S.I.

**FOUNDATION:**

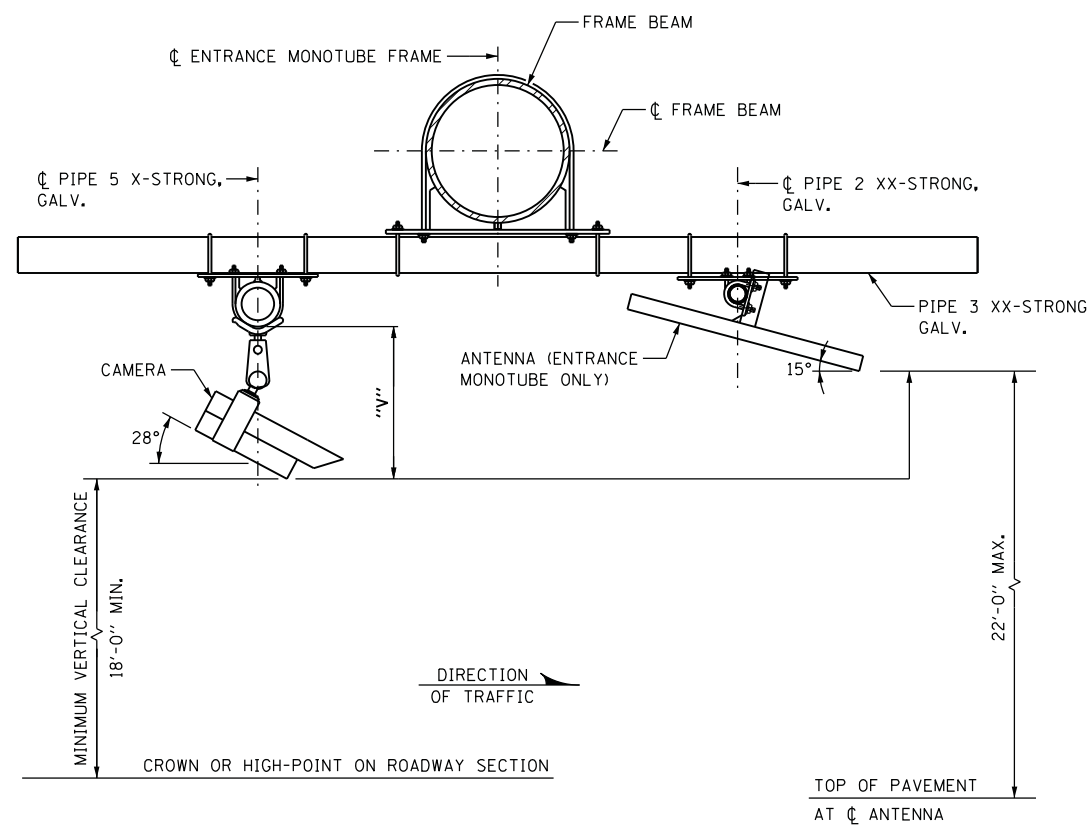
MINIMUM UNCONFINED COMPRESSIVE STRENGTH, Qu FOR ALL LAYERS OF COHESIVE SOILS (CLAYS) SHALL BE 1.25 TON/SQ.FT. AT MONOTUBE FRAMES.

**DESIGN SPECIFICATIONS:**

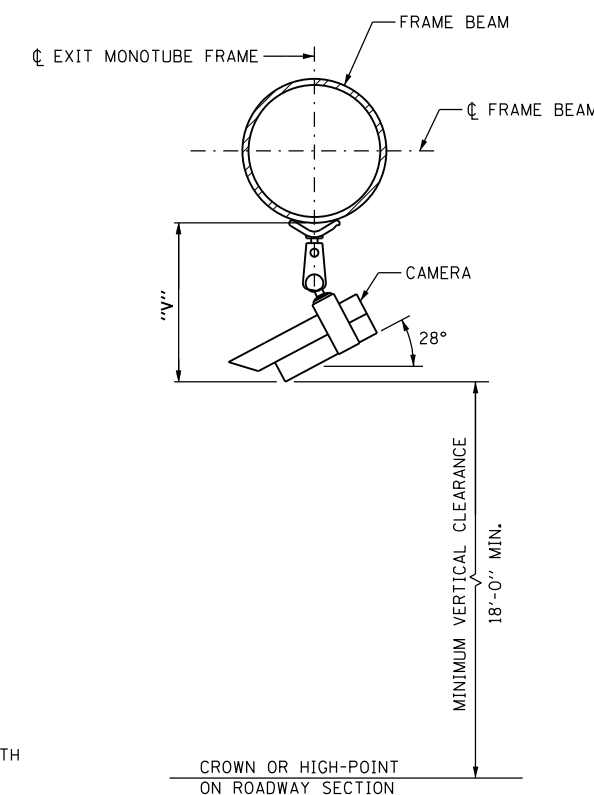
1. STRUCTURE DESIGN MANUAL, LATEST EDITION.
2. AASHTO STANDARD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 6TH EDITION.
3. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION DATED FEBRUARY 2012.
4. ILLINOIS DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL, JANUARY 2012

**CONSTRUCTION SPECIFICATIONS:**

1. ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS TO THE ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
2. ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.



**SECTION P-P**



**SECTION 0-0**

**NOTE:**  
VERIFY DIMENSION "v" WITH CAMERA MANUFACTURER.

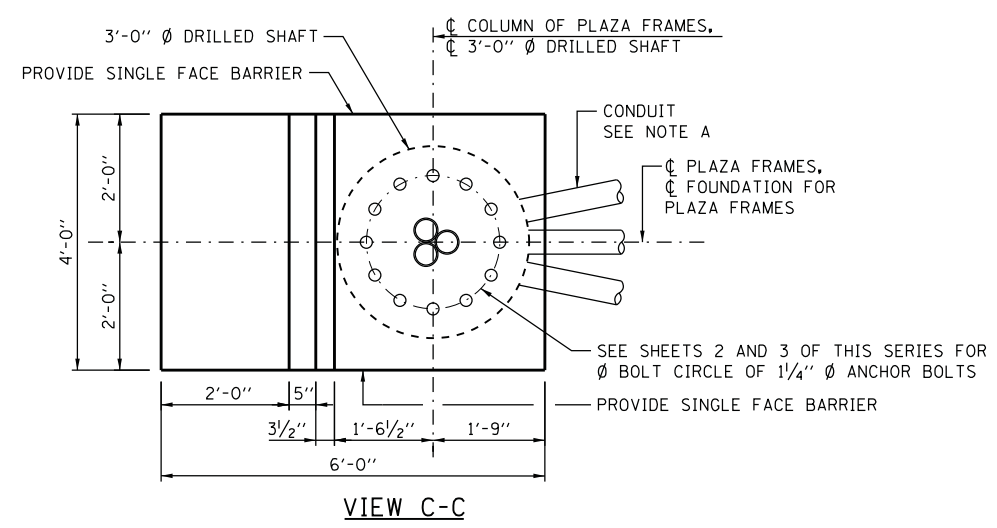
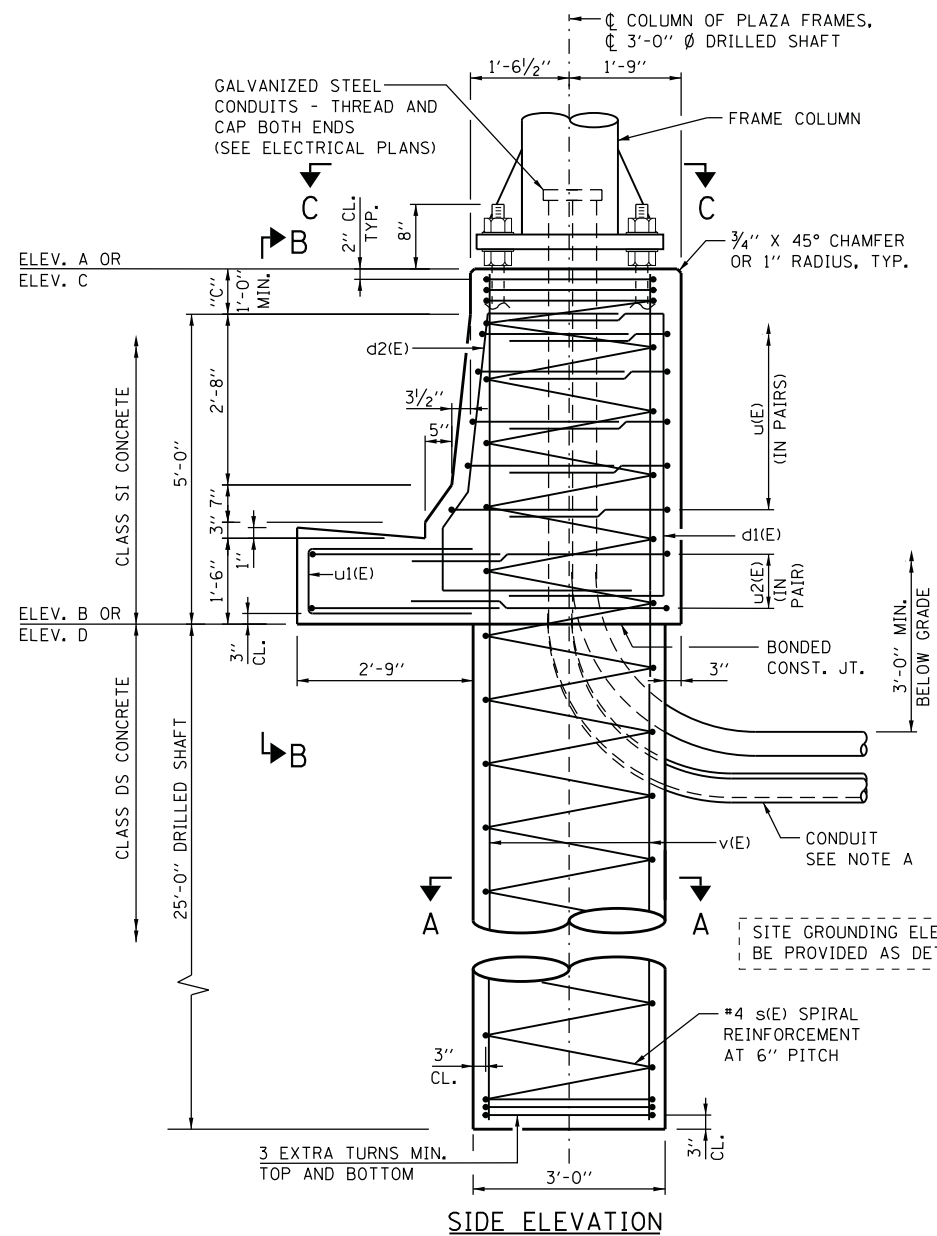
APPROVED: *Paul Kovacs* CHIEF ENGINEER DATE 10-14-2014



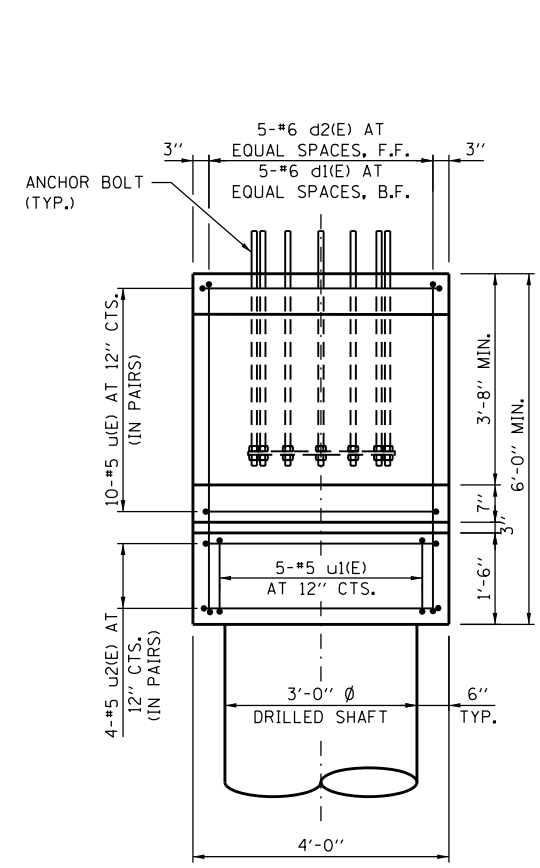
OVERHEAD SIGN STRUCTURE  
MONOTUBE TYPE (STEEL)  
STRUCTURE DETAILS  
FOR AET RAMP

STANDARD F15-02

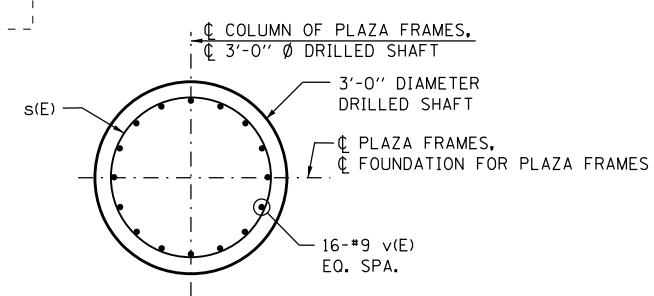




**SINGLE FACE BARRIER FOUNDATION FOR PLAZA FRAMES**



**VIEW B-B**



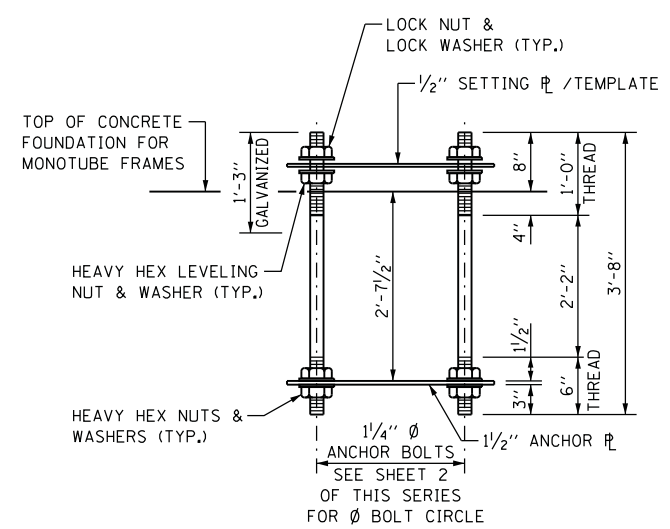
**SECTION A-A**

- NOTE A:**
- COORDINATE CONDUIT SIZE, LOCATION AND QUANTITY WITH ELECTRICAL PLANS. PROVIDE CONDUIT COUPLERS AS REQUIRED.
  - CONDUITS SHALL BE PLACED TO MISS REINFORCEMENT. CUTTING OF REINFORCEMENT SHALL NOT BE ALLOWED.
- NOTE B:**
- PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER AND TOP OF GUTTER

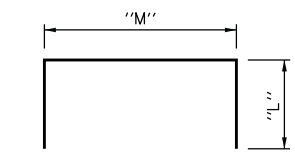
**FOUNDATION NOTE:**

THE FOUNDATION DETAILS SHOWN ARE BASED ON THE PRESENCE OF MOSTLY COMMON COHESIVE SOIL CONDITIONS (SILTY OR SANDY CLAY), WITH AN AVERAGE UNCONFINED COMPRESSIVE STRENGTH (QU) > 1.25 TON/SQ. FT. WHICH MUST BE DETERMINED BY PREVIOUS SOIL INVESTIGATIONS AT THE JOBSITE. WHEN OTHER CONDITIONS ARE INDICATED, THE BORING DATA SHALL BE INCLUDED IN THE PLANS AND THE FOUNDATION DIMENSIONS SHOWN SHALL BE THE RESULT OF SITE SPECIFIC DESIGNS. IF CONDITIONS ENCOUNTERED IN THE FIELD ARE DIFFERENT THAN THOSE INDICATED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO DETERMINE IF THE FOUNDATION DIMENSIONS NEED TO BE MODIFIED.

**LEGEND:**  
 F.F. - FRONT FACE  
 B.F. - BACK FACE  
 CTS. - CENTERS

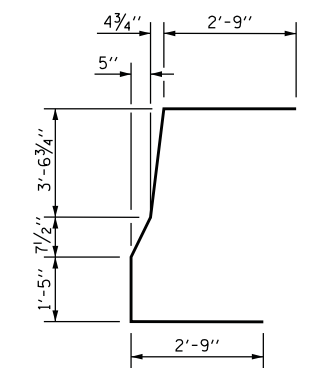


**ANCHOR BOLT ASSEMBLY**



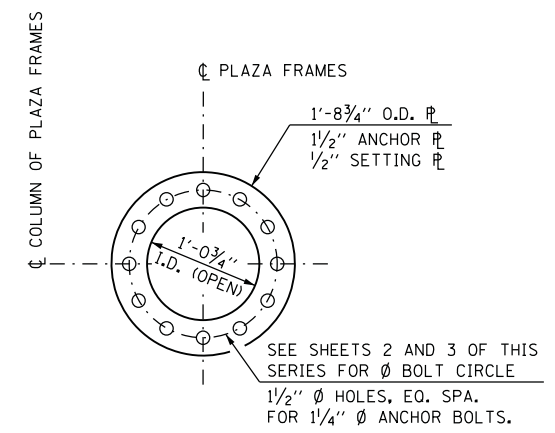
BAR	"L"	"M"
d1(E)	2'-9"	5'-7"
u1(E)	2'-9"	3'-8"
u1(E)	3'-3"	1'-1"
u2(E)	3'-10"	3'-8"

**BARS d1(E), u1(E), u2(E)**



**BAR d2(E)**

FRAME COLUMN	ANCHOR BOLT
HSS 12.75x0.500	12



**ANCHOR PLATE / SETTING PLATE**

**BAR LIST-ONE FOUNDATION**

BAR	NO.	SIZE	LENGTH	SHAPE
** d1(E)	5	#6	11'-1"	
** d2(E)	5	#6	11'-3"	
* s(E)	1	#4	30'-7"	
** v(E)	16	#9	30'-7"	
u(E)	10	#5	9'-2"	
u1(E)	5	#5	7'-7"	
u2(E)	4	#5	11'-4"	

- \* THE LENGTH OF SPIRAL SHOWN IS THE HEIGHT OF SPIRAL, COMPUTED USING "C" = 1'-0". ADJUST LENGTH ACCORDINGLY IF "C" IS GREATER THAN 1'-0".
- \*\* BAR LENGTH IS COMPUTED USING "C" = 1'-0". ADJUST BAR LENGTH ACCORDINGLY IF "C" IS GREATER THAN 1'-0".

**ESTIMATED QUANTITY**

ITEM	UNIT	SINGLE FACE BARRIER FDN.
CLASS SI CONCRETE	CU. YD.	3.7
CLASS DS CONCRETE	CU. YD.	6.6
REINFORCEMENT BARS, EPOXY COAT	POUND	2,360
PROTECTIVE COAT	SQ. YD.	5.0

**NOTE:**

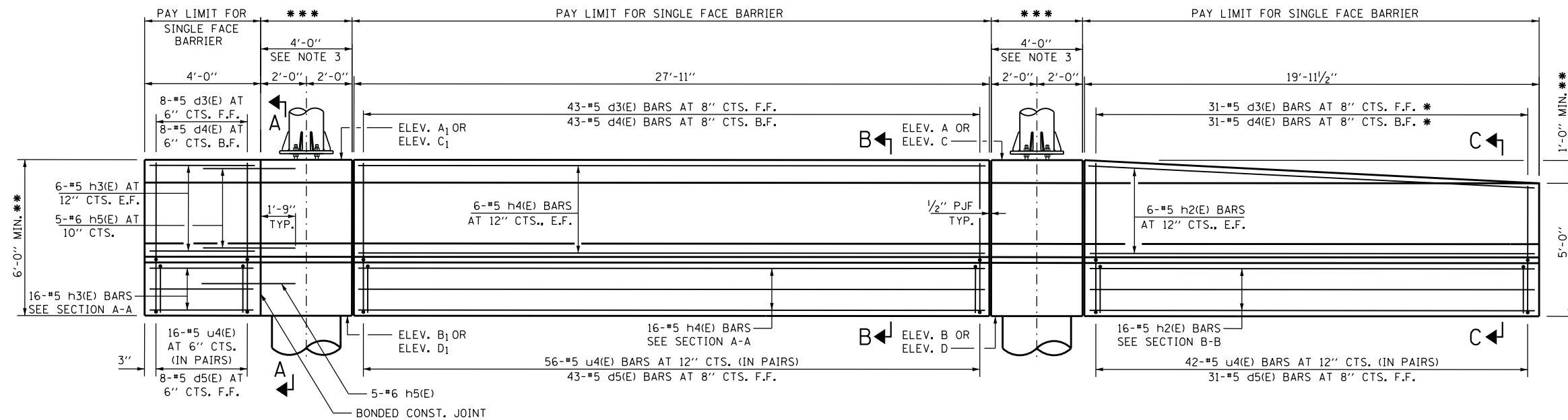
QUANTITIES FOR SINGLE FACE BARRIER FOUNDATION ARE DETERMINED USING "C" = 1'-0". IF DIMENSION "C" IS GREATER THAN 1'-0", ADJUST QUANTITIES ACCORDINGLY.



OVERHEAD SIGN STRUCTURE  
 MONOTUBE TYPE (STEEL)  
 STRUCTURE DETAILS  
 FOR AET RAMP

STANDARD F15-02

APPROVED: *Paul Kovacs* CHIEF ENGINEER DATE 10-14-2014



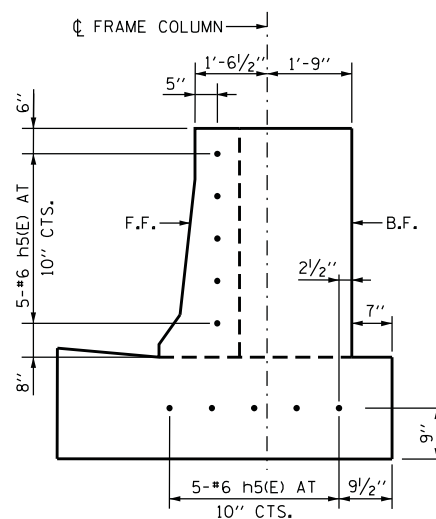
**BAR LIST - FOR ONE BARRIER**

BAR	NO.	SIZE	LENGTH	SHAPE
d3(E)	82	#5	5'-0"	
d4(E)	82	#5	6'-7"	
d5(E)	82	#5	4'-7"	
h2(E)	28	#5	19'-7"	
h3(E)	28	#5	3'-8"	
h4(E)	28	#5	27'-7"	
h5(E)	10	#6	3'-9"	
u4(E)	114	#5	8'-3"	

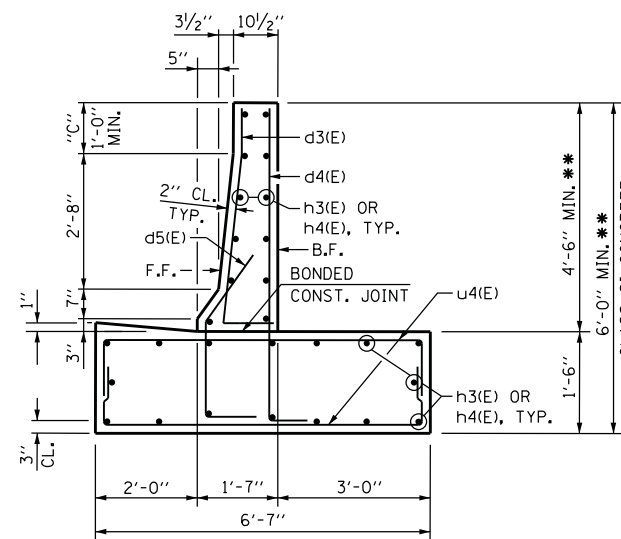
**SINGLE FACE BARRIER AND BARRIER BASE ELEVATION**

INSIDE FACE OF RIGHT BARRIER IS SHOWN  
(MIRROR ELEVATION OF LEFT BARRIER)

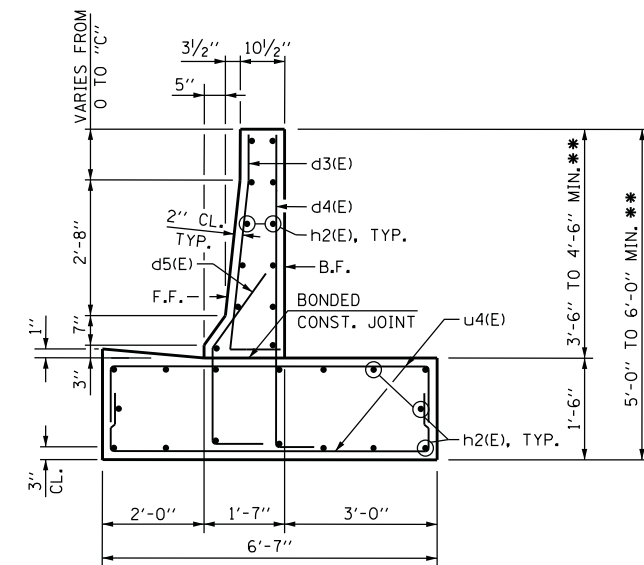
- \* CUT IN FIELD AS REQUIRED TO FIT TAPER
- \*\* BASED ON DIMENSION "C" = 1'-0"
- \*\*\* PAY LIMIT FOR FOUNDATION FOR OVERHEAD SIGN STRUCTURE



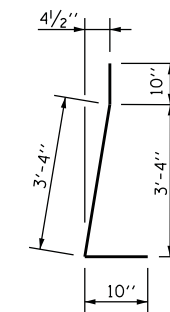
**SECTION A-A**



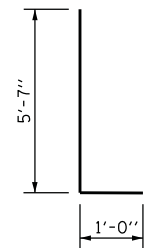
**SECTION B-B**



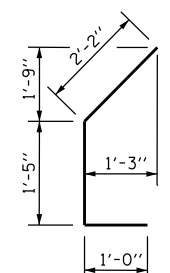
**SECTION C-C**



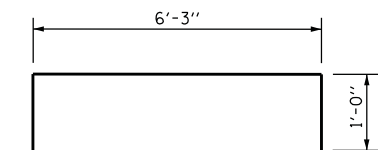
**BAR d3(E)**



**BAR d4(E)**



**BAR d5(E)**



**BAR u4(E)**

**ESTIMATED QUANTITY**

(FOR ONE SINGLE FACE BARRIER)

ITEM	UNIT	TOTAL
CONCRETE STRUCTURES	CU. YD.	28.2
REINFORCEMENT BARS, EPOXY COATED	POUND	3,910
PROTECTIVE COAT	SQ. YD.	43.0

**NOTES:**

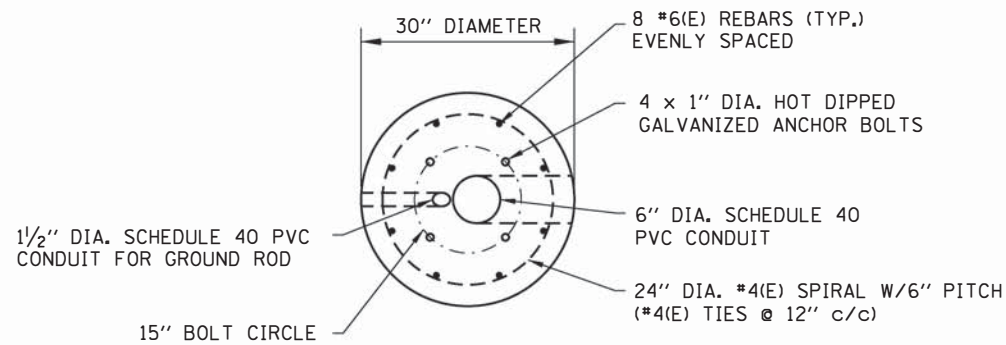
1. PROTECTIVE COAT SHALL BE APPLIED TO THE TRAFFIC AND TOP FACES OF THE BARRIER, GUTTER AND TO THE ENTRANCE SIDE FACE (AT THE BEGINNING OF THE RAMP PLAZA PAVEMENT) FOR THE FULL HEIGHT OF THE BARRIER.
2. ELECTRICAL JUNCTION BOXES SHALL BE EXTERIOR MOUNTED ON THE BACK FACE OF BARRIER.
3. FOR SINGLE FACE BARRIER FOUNDATION DETAILS FOR MONOTUBE FRAMES, SEE SHEET 6 OF THIS SERIES.
4. QUANTITIES FOR SINGLE FACE BARRIER ARE DETERMINED USING "C" = 1'-0". IF DIMENSION "C" IS GREATER THAN 1'-0", ADJUST QUANTITIES ACCORDINGLY.
5. SEE OVERHEAD SIGN STRUCTURE ENTRANCE MONOTUBE TYPE (STEEL) AET RAMP SUMMARY AND TOTAL BILL OF MATERIAL IN CONTACT PLANS FOR COMPLETE BILL OF MATERIAL.



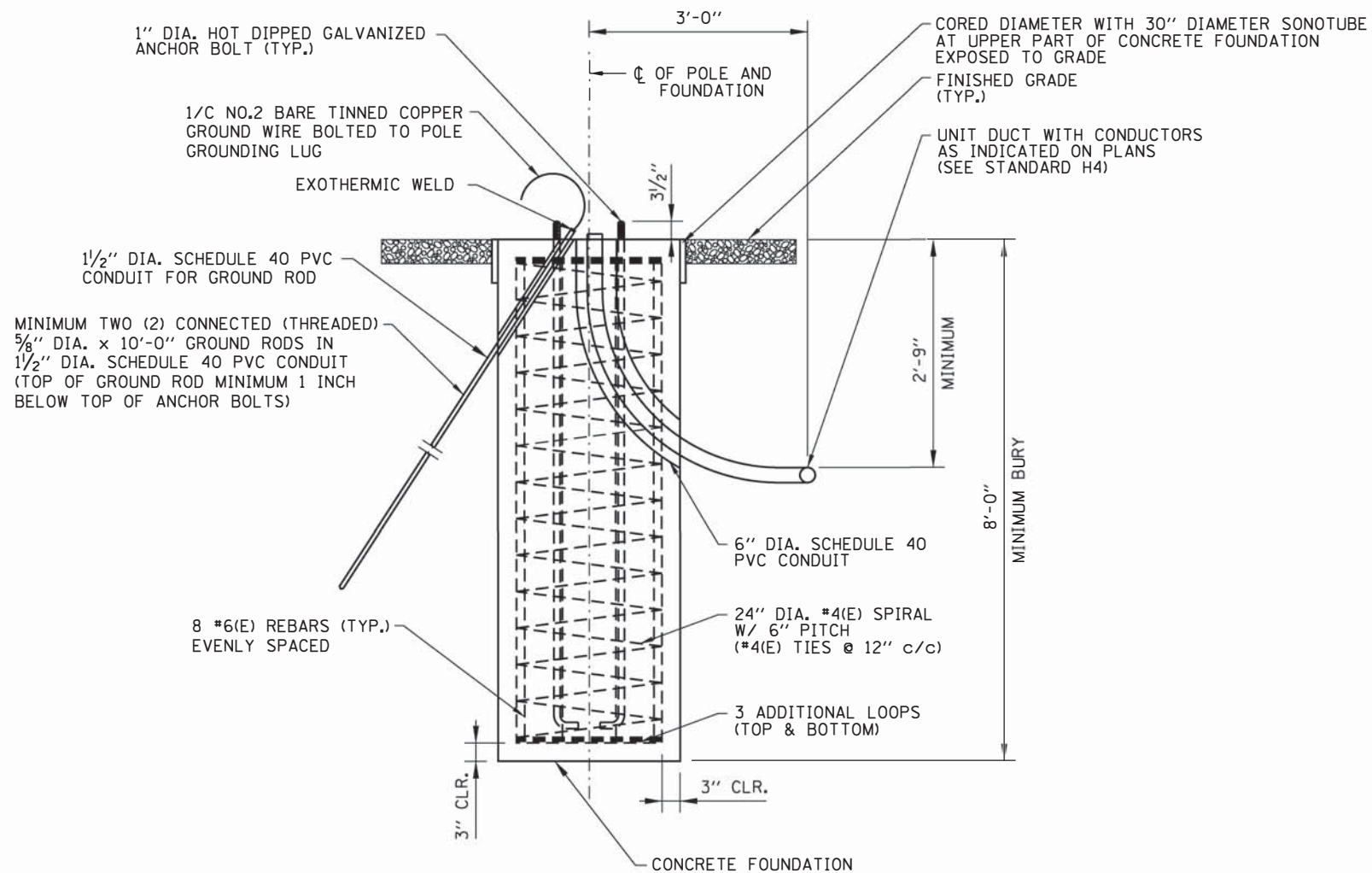
OVERHEAD SIGN STRUCTURE  
MONOTUBE TYPE (STEEL)  
STRUCTURE DETAILS  
FOR AET RAMP

STANDARD F15-02

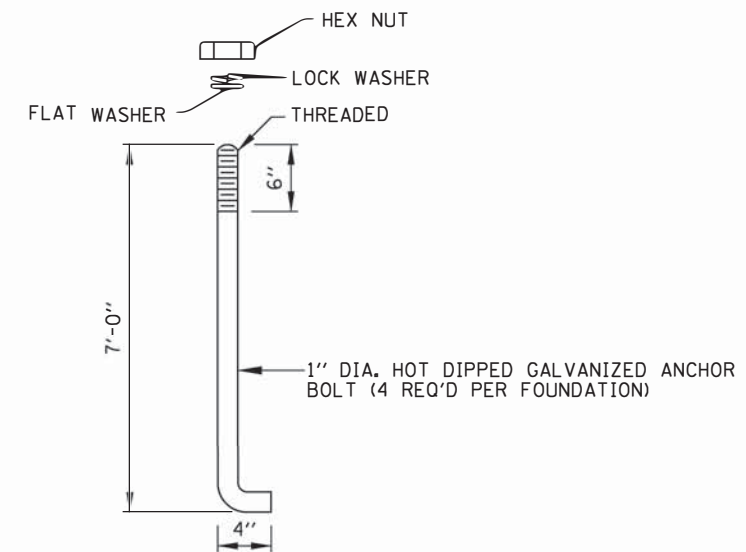
APPROVED: *Paul Kovacs* CHIEF ENGINEER DATE 10-14-2014



PLAN



ELEVATION



ANCHOR BOLT DETAIL

NOTES:

1. AT LOCATIONS NOT SHIELDED BY GUARDRAIL, THE LIGHT POLE FOUNDATION SHALL BE FLUSH WITH SURROUNDING GRADED ON ALL SIDES. THE SURROUNDING AREA SHALL BE A LEVEL GRADED AREA CONSTRUCTED OF AGGREGATE SHOULDERS WITH FILTER FABRIC, TYPE B, 4".
2. PROVIDE SEEDING, POTASIMUM FERTILIZER NUTRIENT, AND EROSION CONTROL BLANKET AS REQUIRED.
3. THE TOP OF FOUNDATION SHALL BE AT THE SAME ELEVATION AS THE ADJACENT TOP OF GUTTER OR WHEN ADJACENT TO AGGREGATE SHOULDER, AT THE SAME ELEVATION AS THE OUTSIDE EDGE OF THE AGGREGATE SHOULDER SLOPED A MAXIMUM 6% AWAY FROM THE PAVED SHOULDER.
4. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
5. ALL GROUND MOUNTED LIGHT POLES SHALL BE PROVIDED WITH AN ACCEPTED FHWA BREAKAWAY BASE OR DEVICE PER THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS SECTION 1070.
6. FOR DETAILS OF FUSE HOLDER, POLE BASE WIRING AND CONDUCTOR SPLICE SEE STANDARD H2.
7. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED.
8. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
9. FOR ALL MEDIAN BARRIER FOUNDATIONS, THE ANCHOR BOLTS SHALL BE CENTERED AROUND THE MEDIAN BARRIER WALL CENTERLINE.

LIGHT STANDARD FOUNDATION DETAILS - CONCRETE  
(GROUND MOUNTED UNITS)

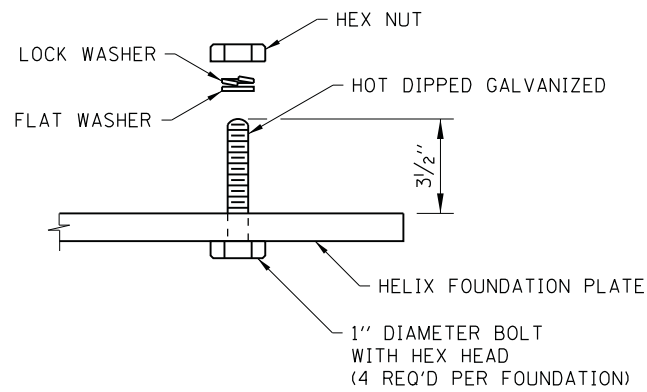
APPROVED: *Paul Kovacs* DATE 2-7-2012  
CHIEF ENGINEERING OFFICER



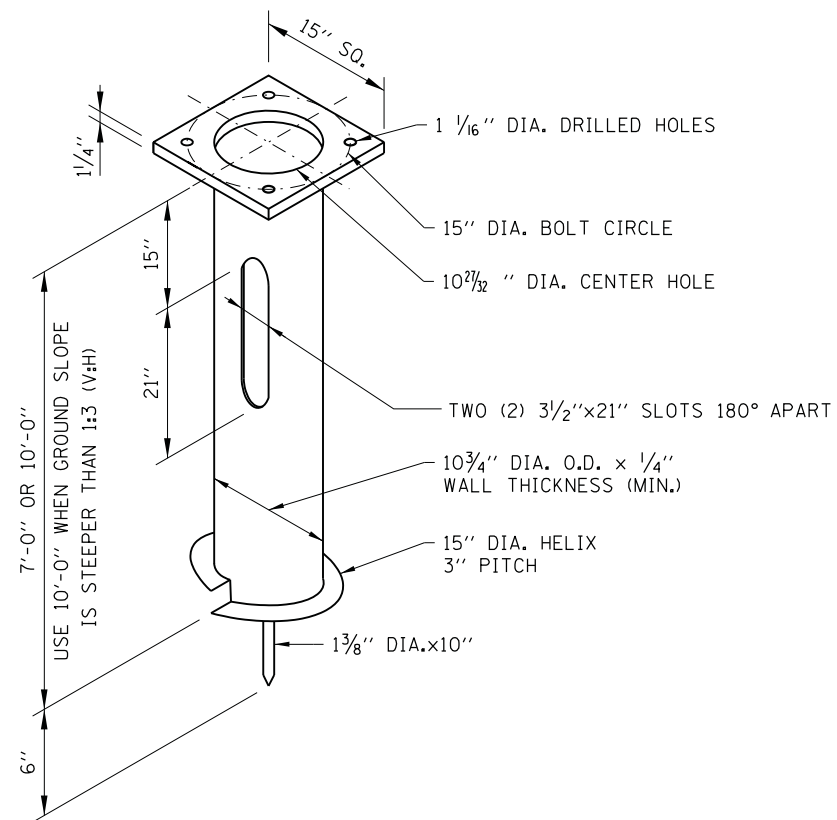
LIGHT STANDARD FOUNDATION

STANDARD H1-07

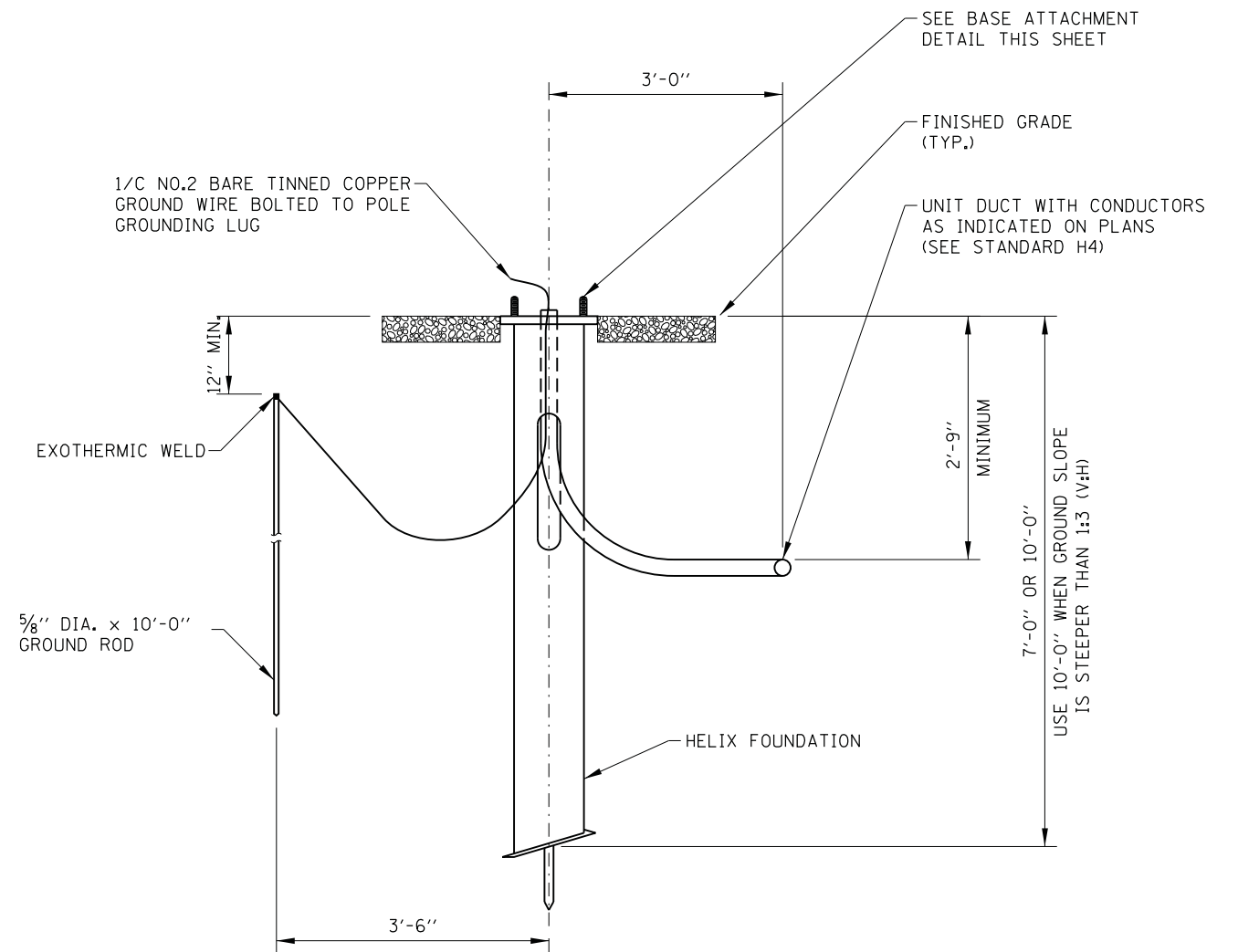
DATE	REVISIONS
11-01-2012	ADDED CONTROLLER NUMBER
3-31-2014	REVISED HELIX FOUNDATION, NEW DETAIL "A", AND GRADED AREA
3-11-2015	MOVED MEDIAN BARRIER MOUNTED FOUNDATION DETAILS.
3-31-2016	REVISED MEDIAN FOUNDATION ANCHOR BOLTS.
3-31-2017	ADDED HELIX FOUNDATION DEPTH INFORMATION.
3-01-2018	INCREASED POLE SETBACK.



**BASE ATTACHMENT DETAIL**



**ISOMETRIC**



**ELEVATION**



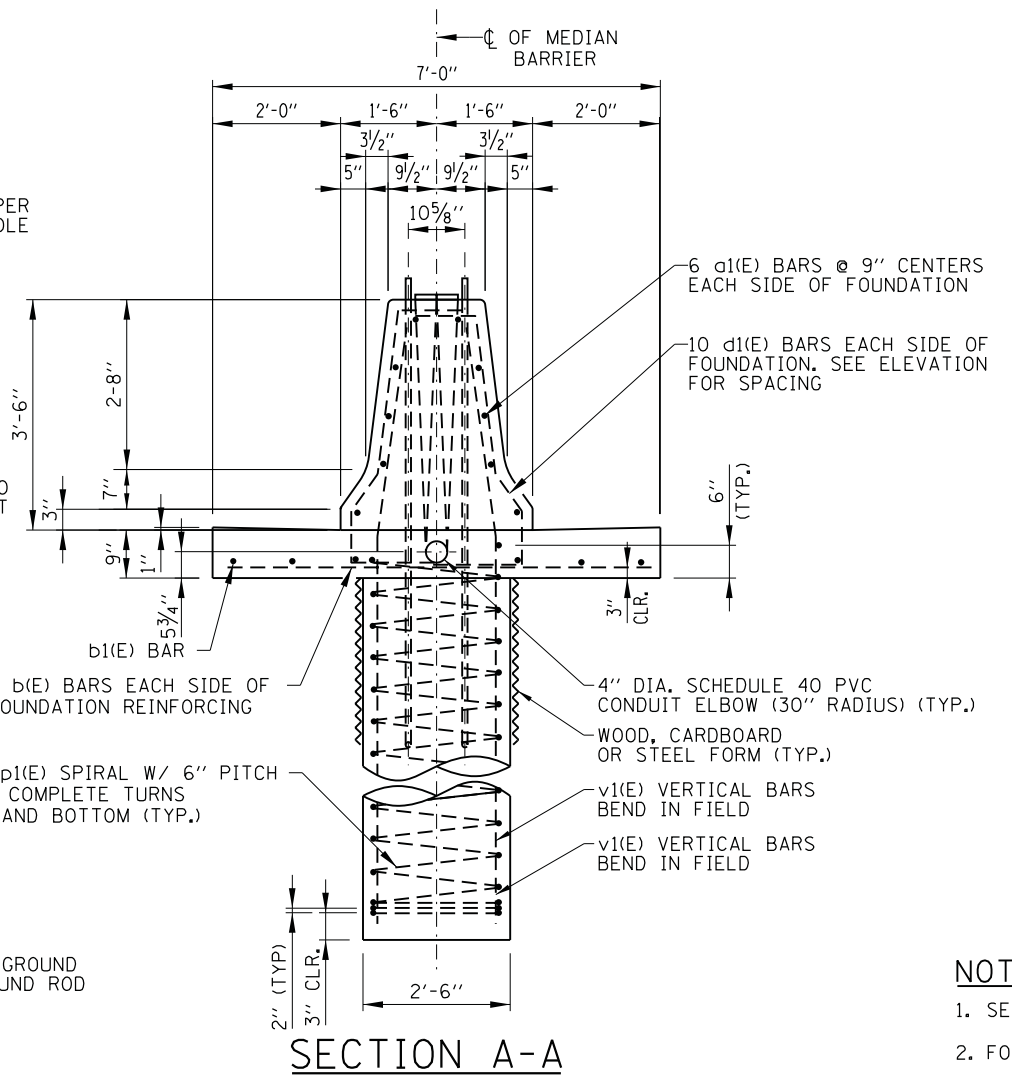
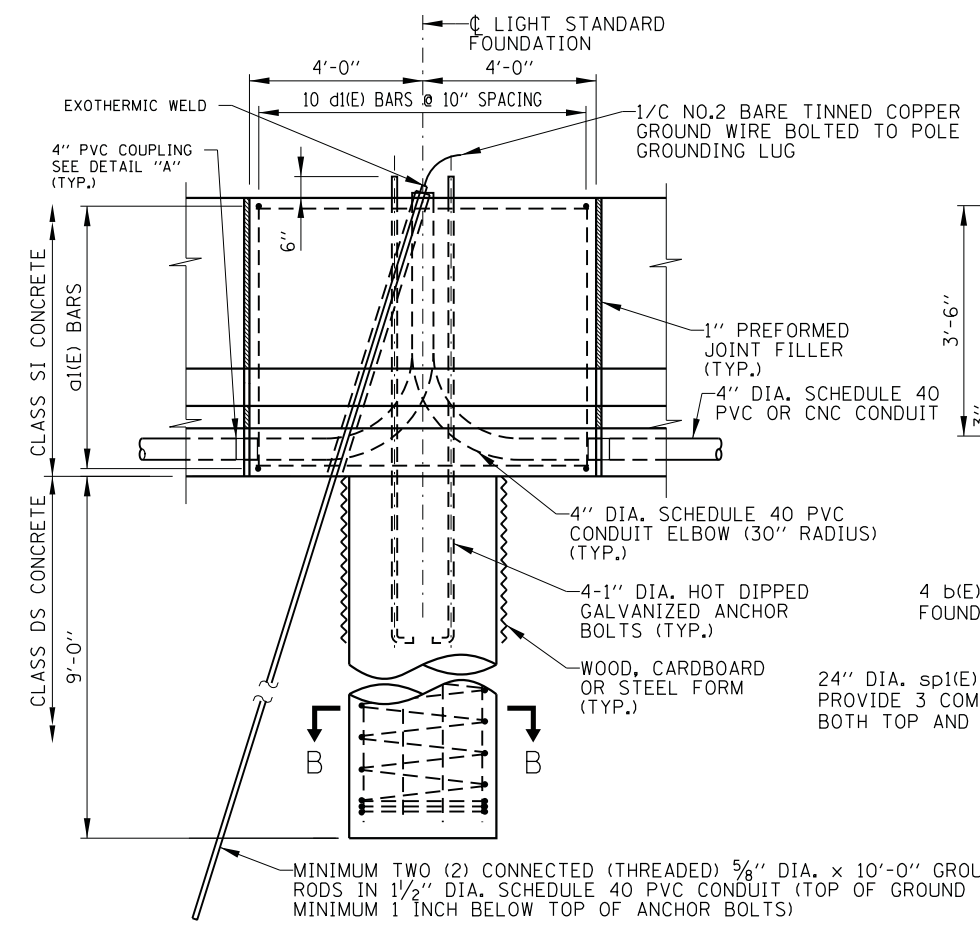
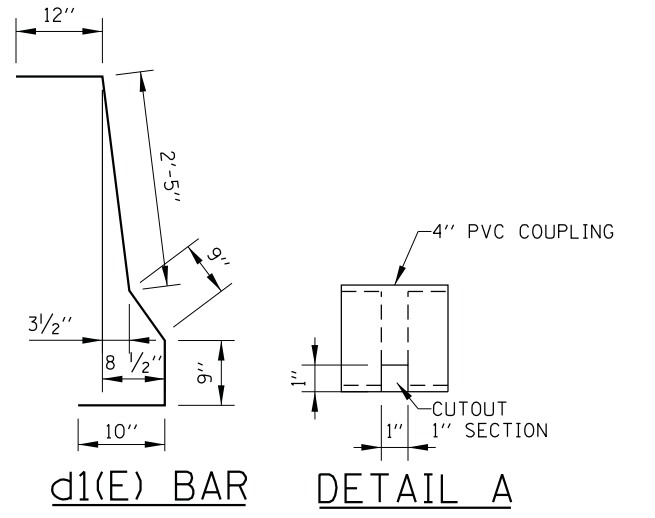
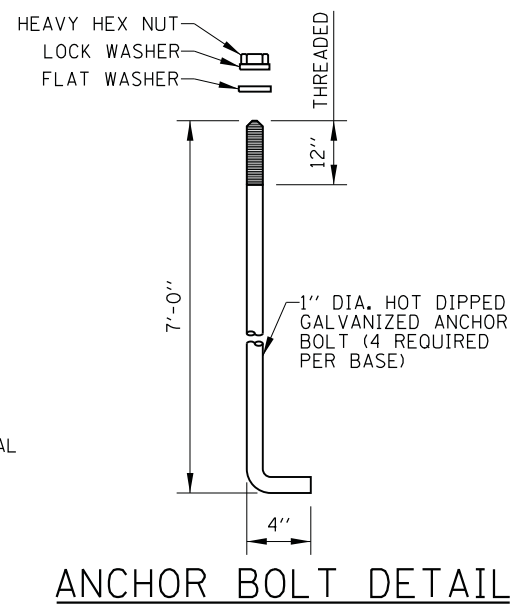
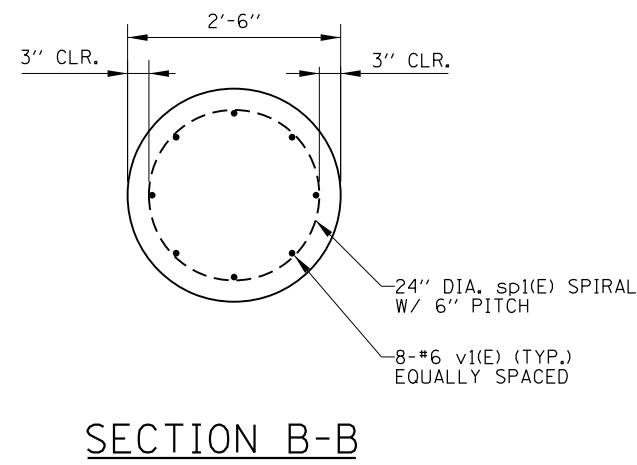
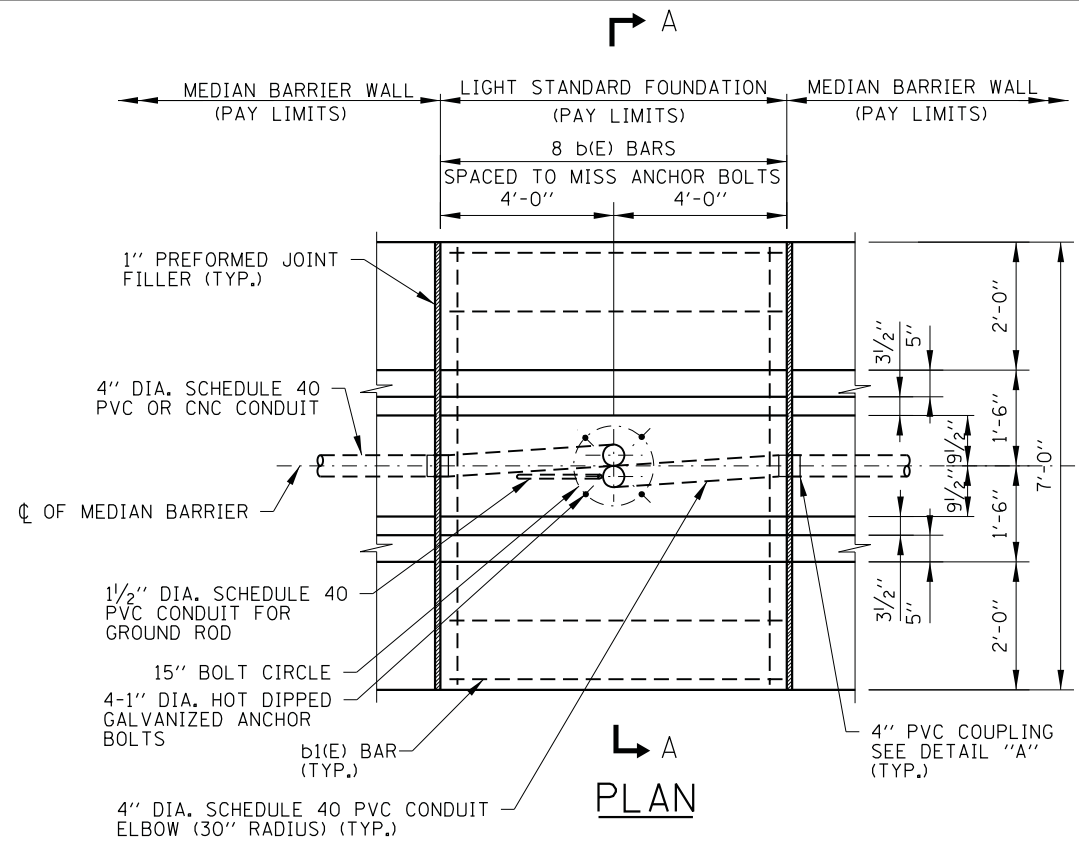
LIGHT STANDARD FOUNDATION

STANDARD H1-07

**LIGHT STANDARD FOUNDATION DETAILS - HELIX  
(GROUND MOUNTED UNITS)**

**NOTES:**  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

*Paul Kovacs*  
APPROVED, CHIEF ENGINEERING OFFICER DATE 2-7-2012



REINFORCEMENT BARS SCHEDULE					
BAR	NO.	SIZE	LENGTH	WT. LB.	SHAPE
d1(E)	12	#4	7'-6"	60	—
b(E)	8	#4	6'-6"	35	—
b1(E)	4	#4	7'-8"	21	—
d1(E)	20	#4	5'-9"	77	⌋
sp1(E)	1	#4	*		⌋
v1(E)	8	#6	11'-9"	142	—

\* SEE SECTION A-A

- NOTES:**
- SEE SHEET 1 OF THIS SERIES FOR NOTES.
  - FOR SLIP FORM, SEE SHEET 6 OF THIS SERIES.



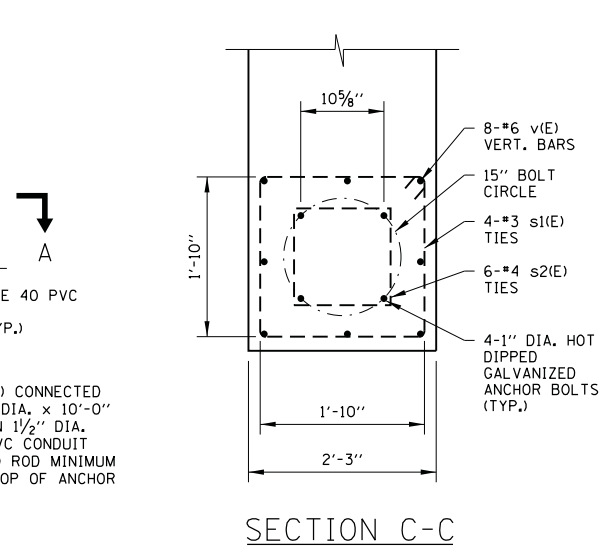
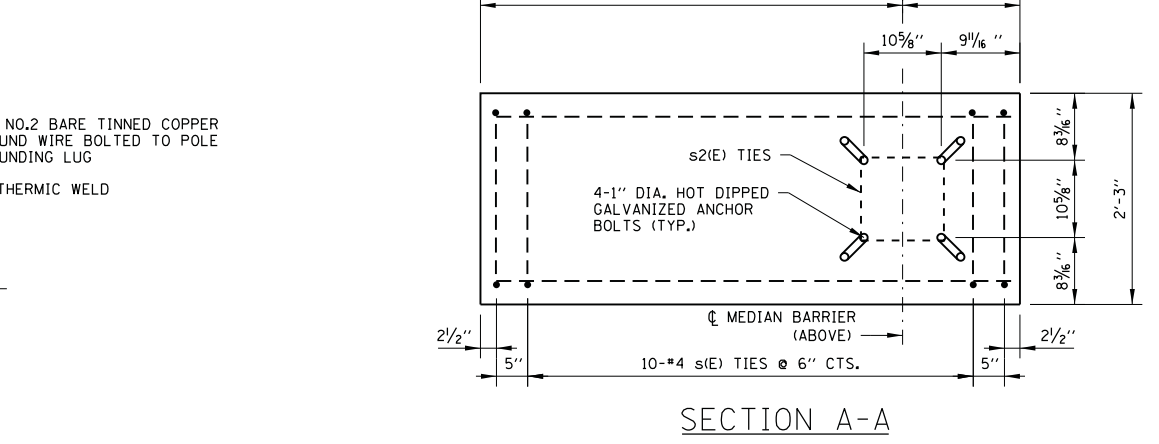
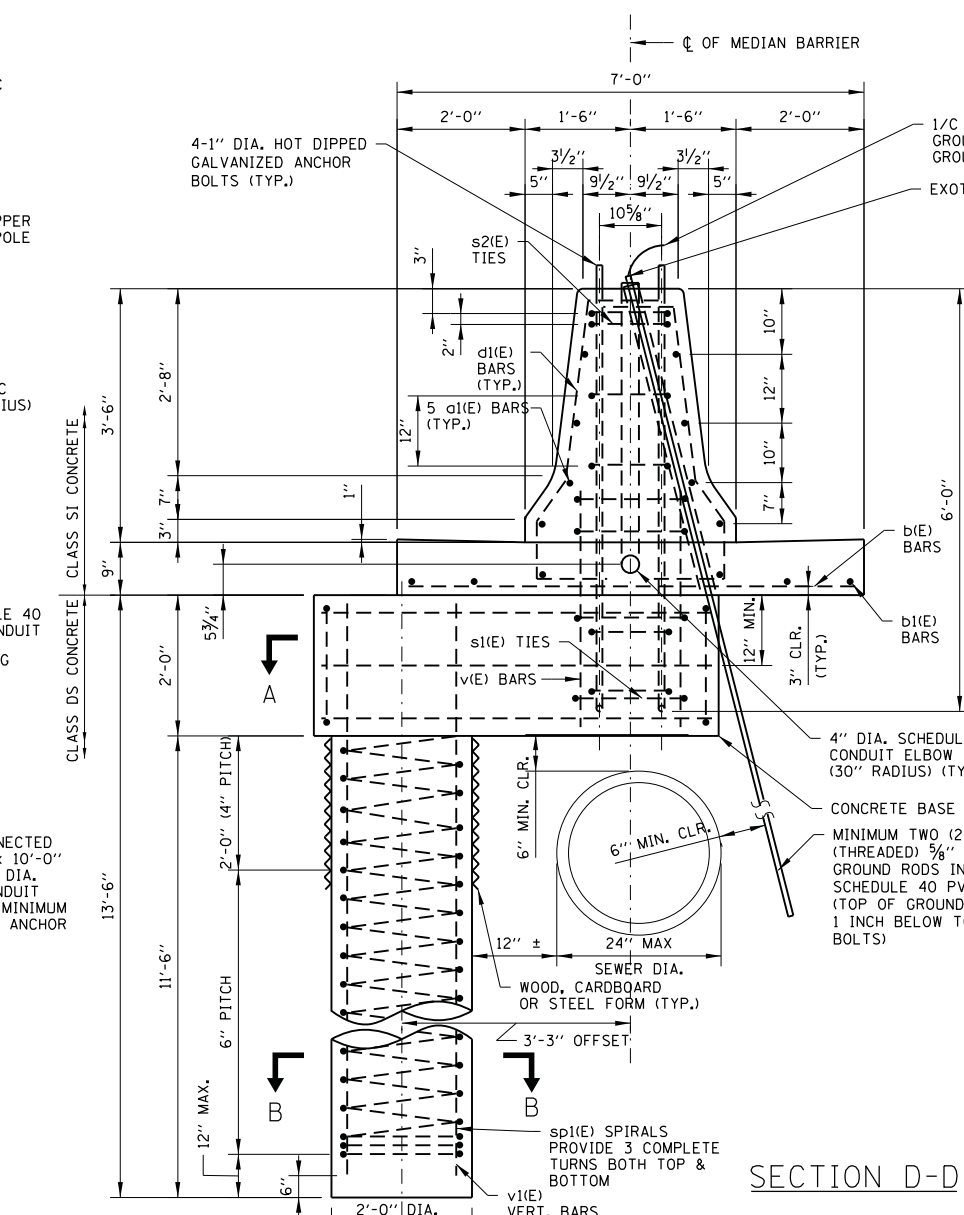
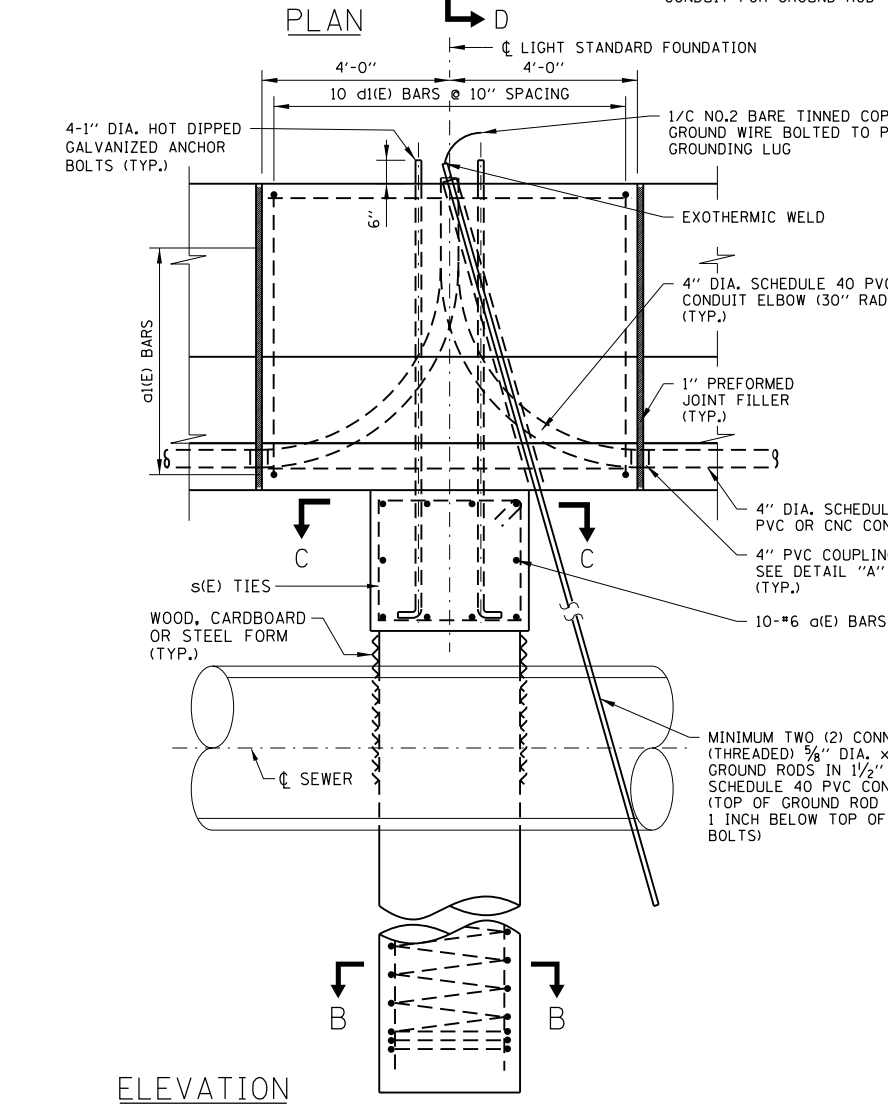
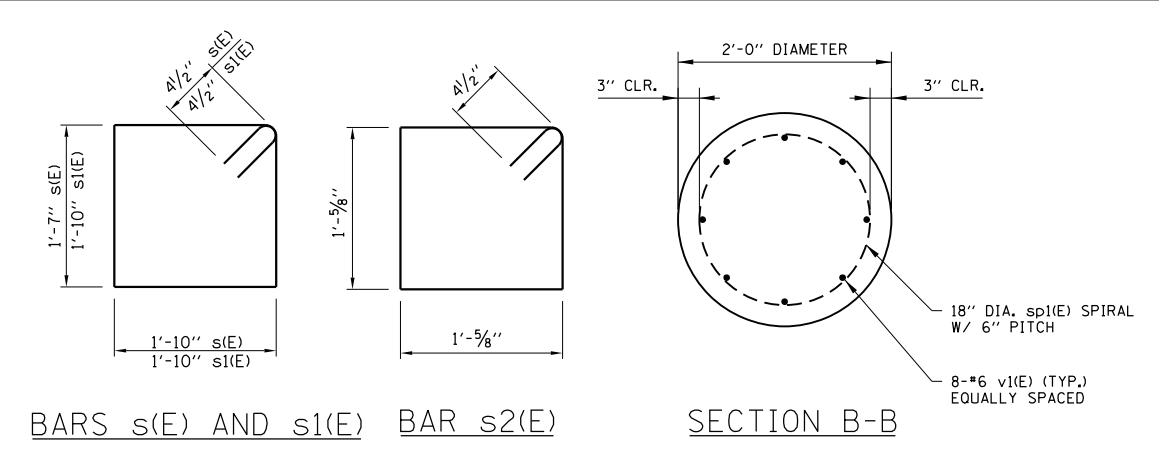
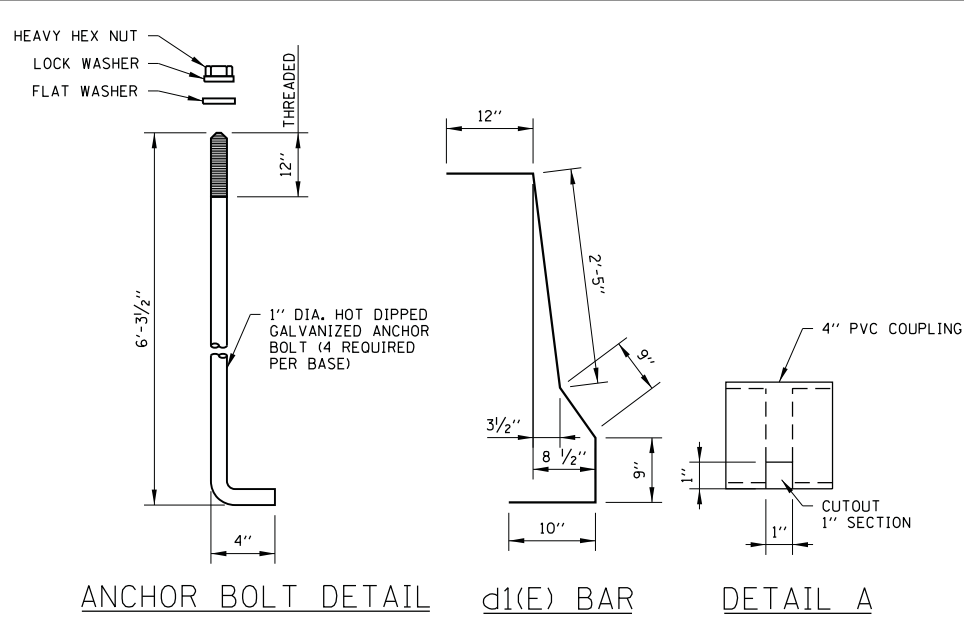
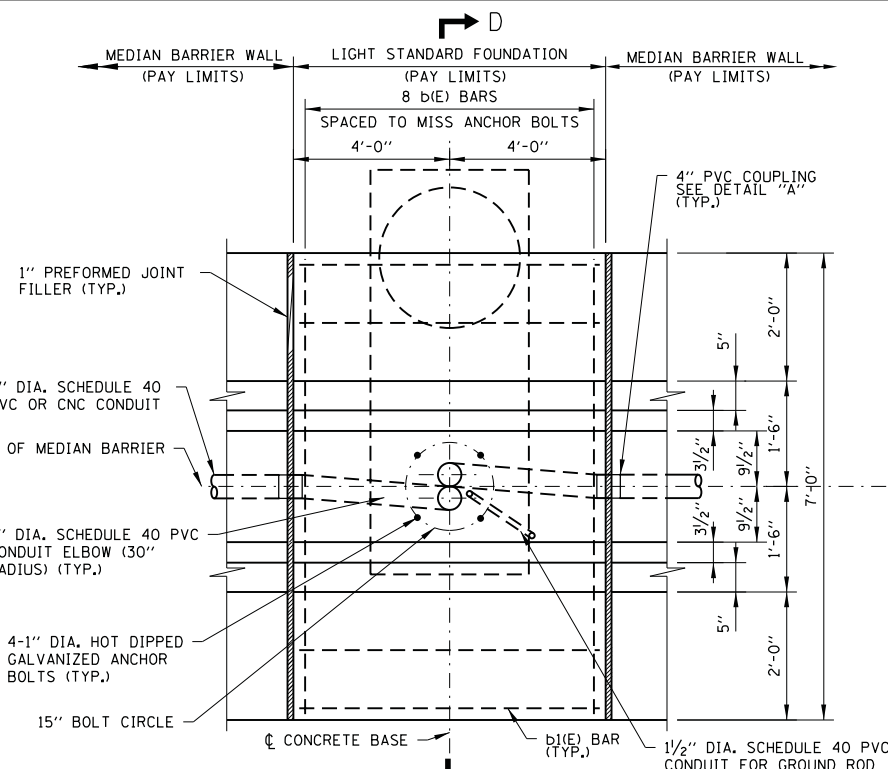
LIGHT STANDARD FOUNDATION

STANDARD H1-07

LIGHT STANDARD FOUNDATION DETAILS - MEDIAN BARRIER  
(TYPE 1 CENTERED CAISSON, 42" BARRIER)

APPROVED: *Paul Kovacs*  
CHIEF ENGINEERING OFFICER DATE 2-7-2012





REINFORCEMENT BARS SCHEDULE					
BAR	NO.	SIZE	LENGTH	WT. LB.	SHAPE
a(E)	10	#6	5'-6"	83	
a1(E)	10	#4	7'-6"	50	
b(E)	8	#4	6'-6"	35	
b1(E)	4	#4	7'-8"	21	
d1(E)	20	#4	5'-9"	77	
s(E)	12	#4	7'-7"	61	
s1(E)	4	#4	8'-1"	22	
s2(E)	6	#4	5'-0"	20	
sp1(E)	1	#4	*		
v(E)	8	#6	3'-2"	38	
v1(E)	8	#6	12'-6"	150	

\* SEE D-D



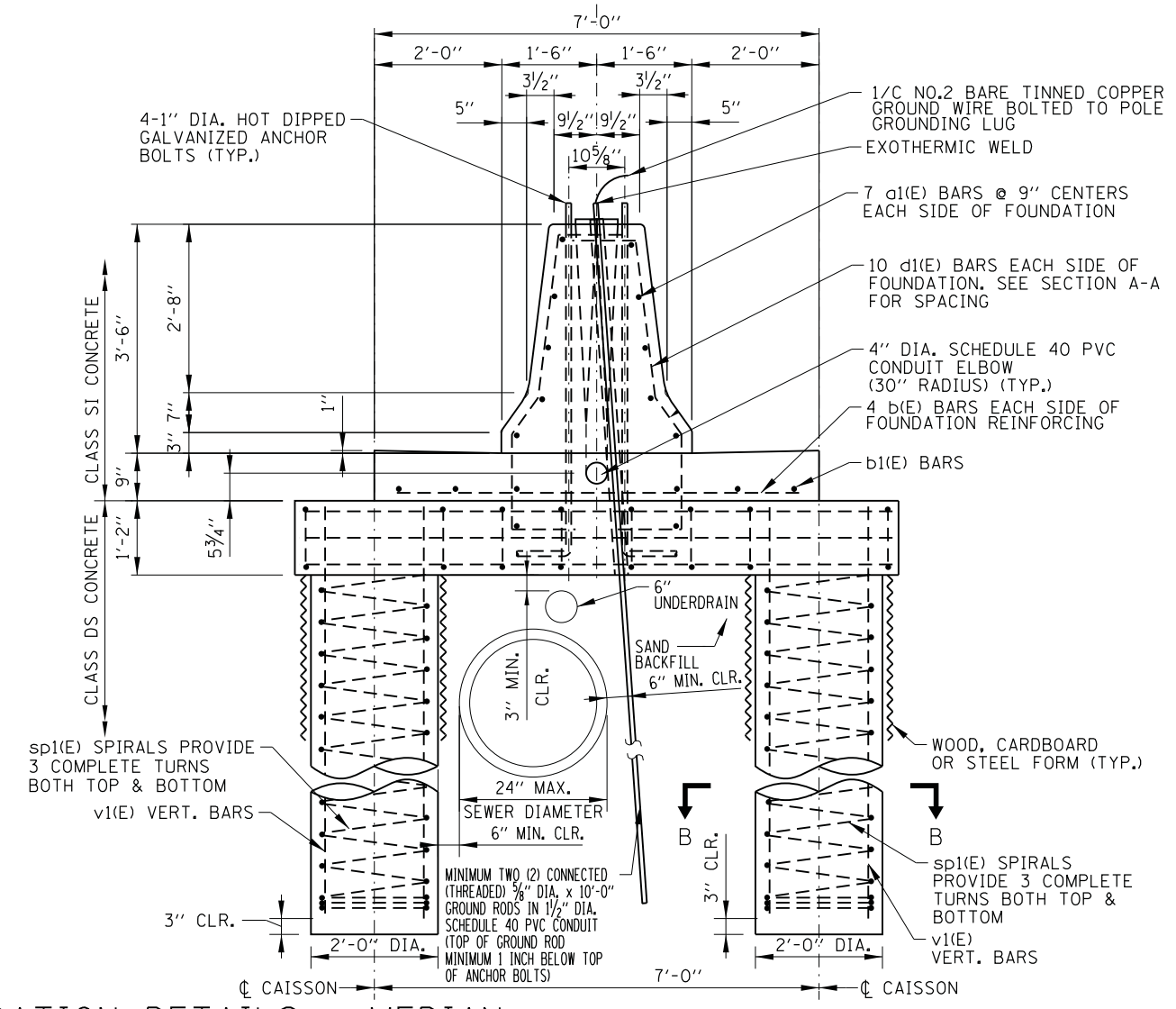
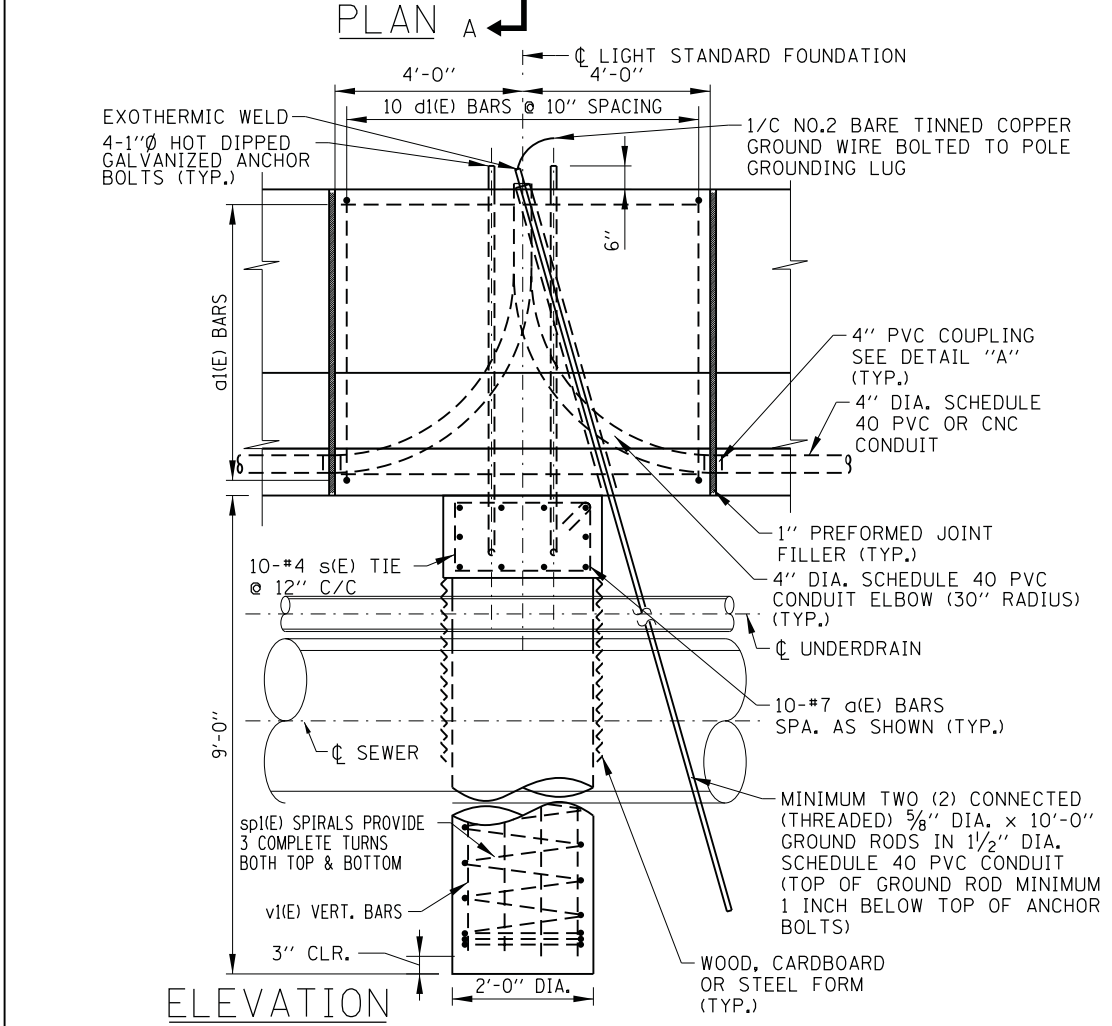
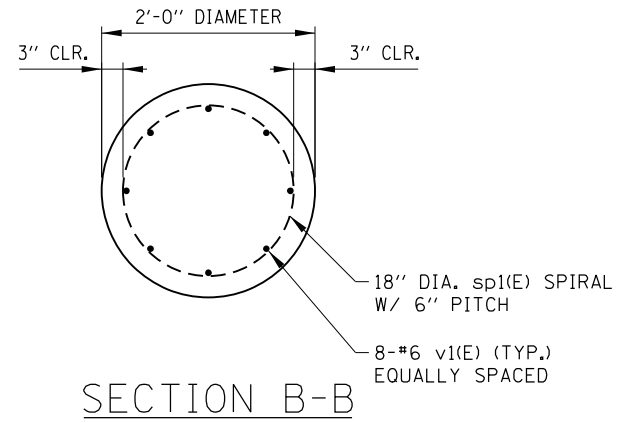
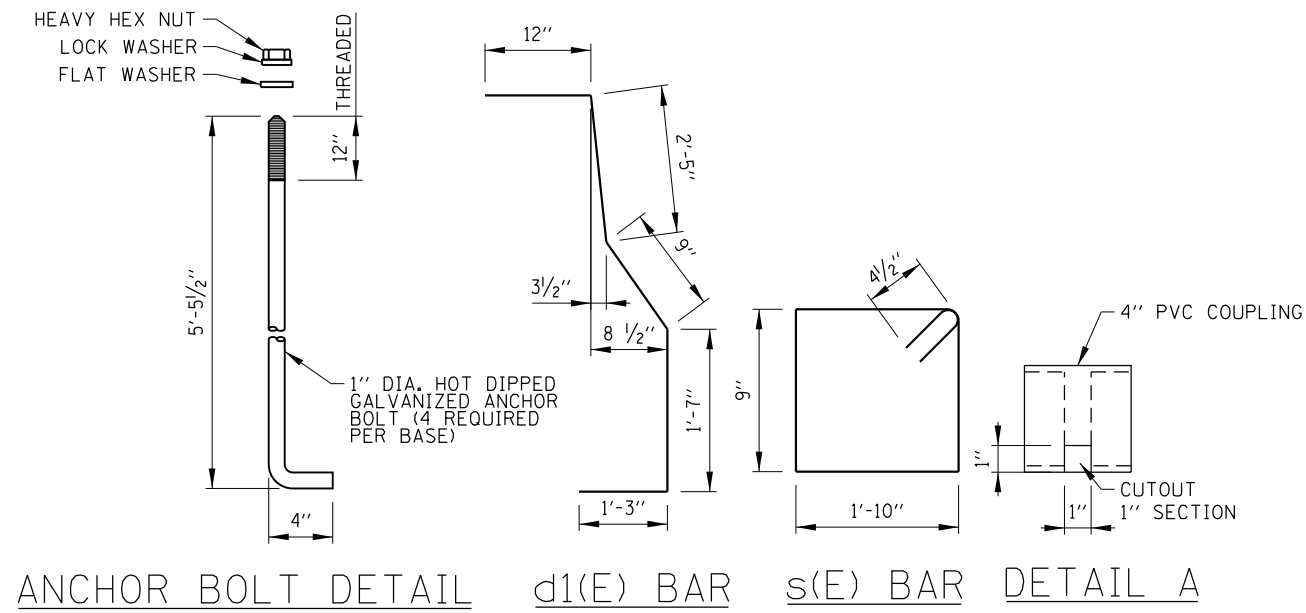
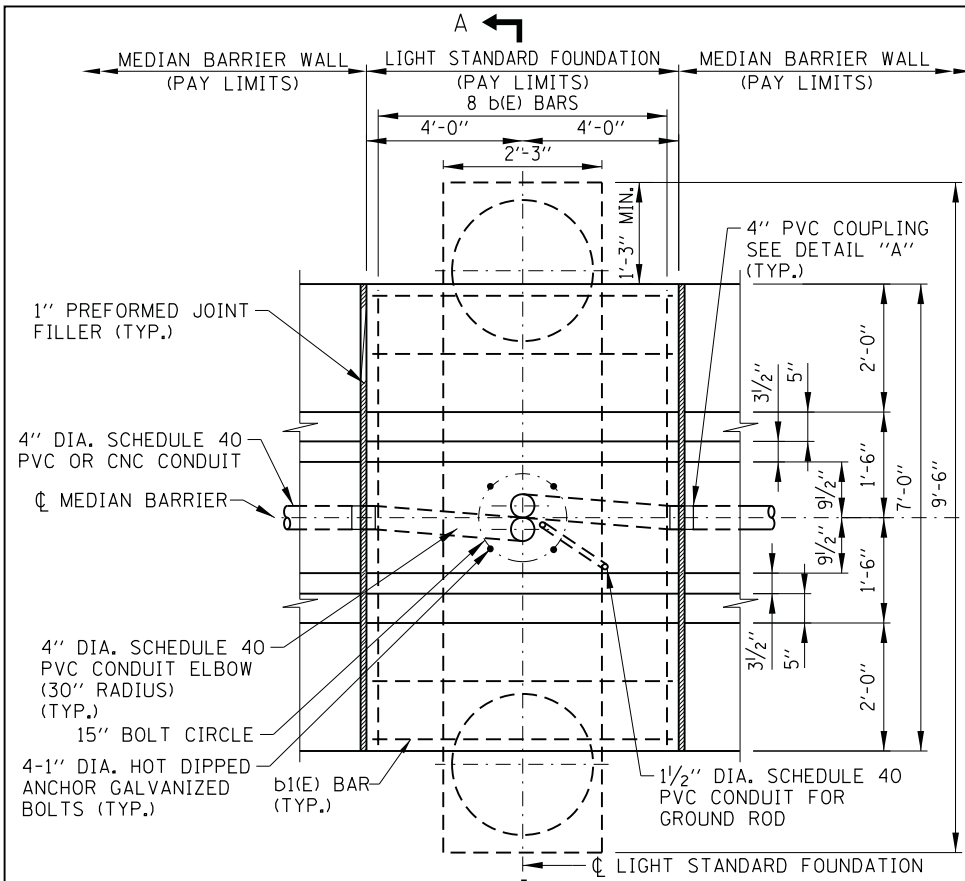
LIGHT STANDARD FOUNDATION

STANDARD H1-07

APPROVED: *Paul Kovacs*  
CHIEF ENGINEERING OFFICER  
DATE 2-7-2012

LIGHT STANDARD FOUNDATION DETAILS - MEDIAN BARRIER  
(TYPE 2 OFFSET CAISSON, 42" BARRIER)

- NOTES:
- SEE SHEET 1 OF THIS SERIES FOR NOTES.
  - FOR SLIP FORM, SEE SHEET 6 OF THIS SERIES



REINFORCEMENT BARS SCHEDULE					
BAR	NO.	SIZE	LENGTH	WT. LB.	SHAPE
a(E)	10	#7	9'-0"	184	—
a1(E)	14	#4	7'-6"	70	—
b(E)	8	#4	6'-6"	35	—
b1(E)	4	#4	7'-8"	21	—
d1(E)	20	#4	6'-7"	88	⌋
s(E)	10	#4	5'-11"	40	⌋
sp1(E)	2	#4	*		⌋
v1(E)	16	#6	9'-9"	235	—

\* SEE ELEVATION

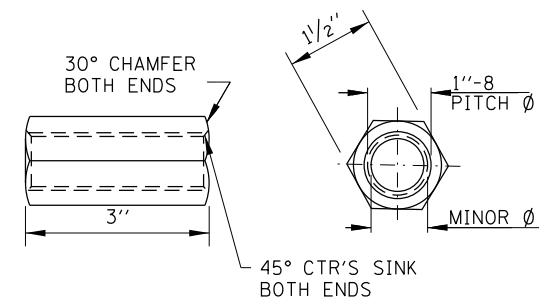
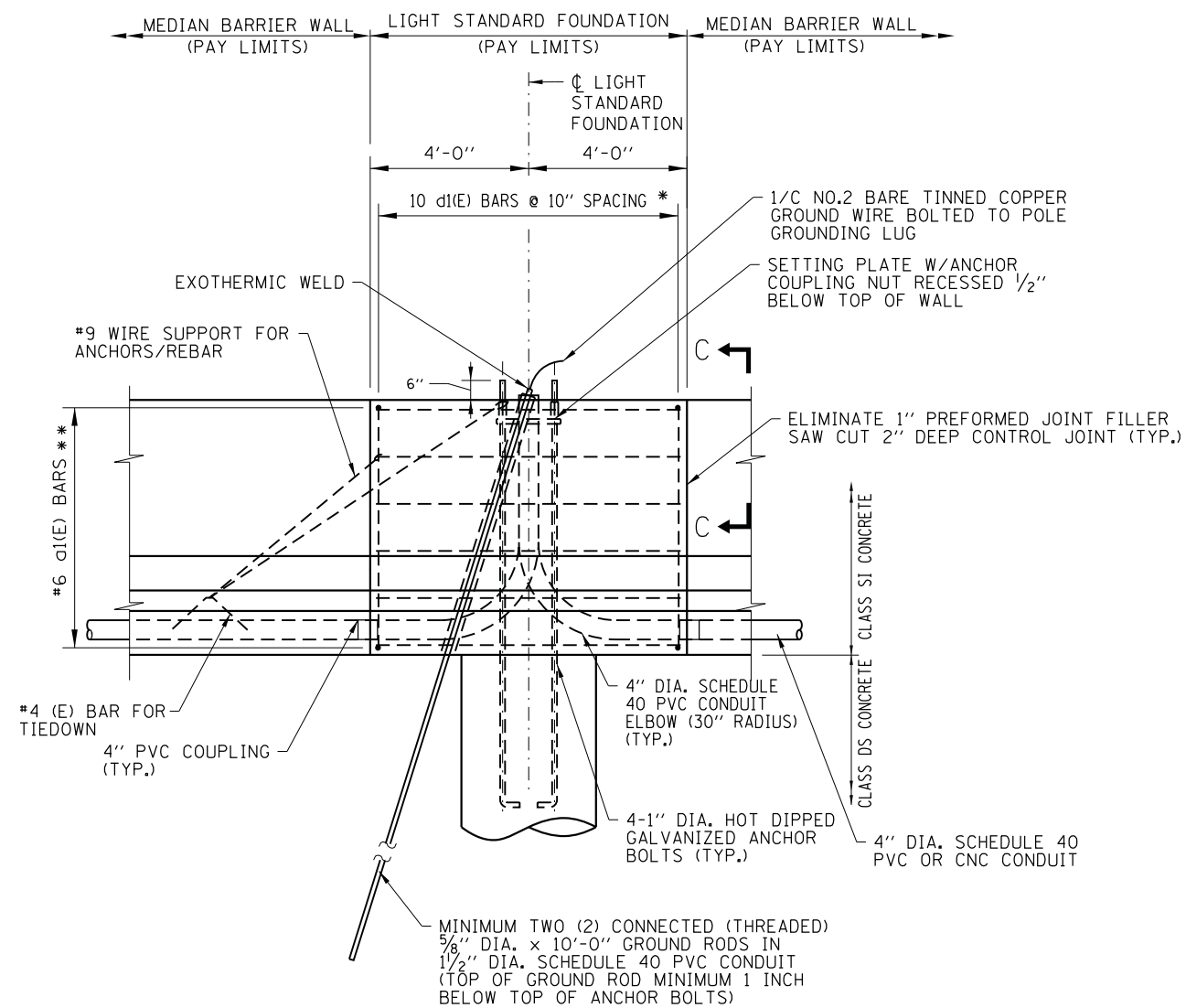
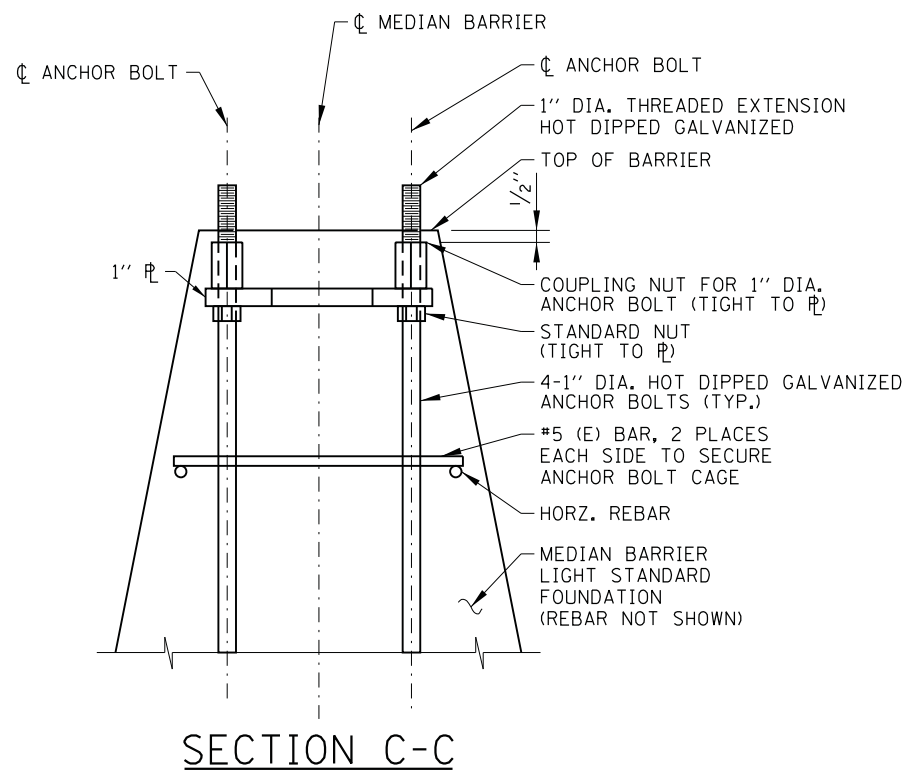
- NOTES:**
- SEE SHEET 1 OF THIS SERIES FOR NOTES.
  - FOR SLIP FORM, SEE SHEET 6 OF THIS SERIES.

APPROVED: *Paul Kovacs*  
 CHIEF ENGINEERING OFFICER  
 DATE 2-7-2012

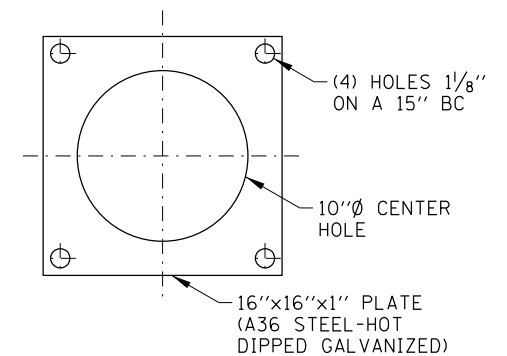
**LIGHT STANDARD FOUNDATION DETAILS - MEDIAN BARRIER (TYPE 3 STRADDLED CAISSON, 42" BARRIER)**

**SECTION A-A**

LIGHT STANDARD FOUNDATION  
 STANDARD H1-07



**COUPLING NUT**



**SETTING PLATE**

\* #6 d1(E) BAR REPLACES #4 d1(E) BAR  
 \*\* #6 d1(E) BAR REPLACES #4 d1(E) BAR

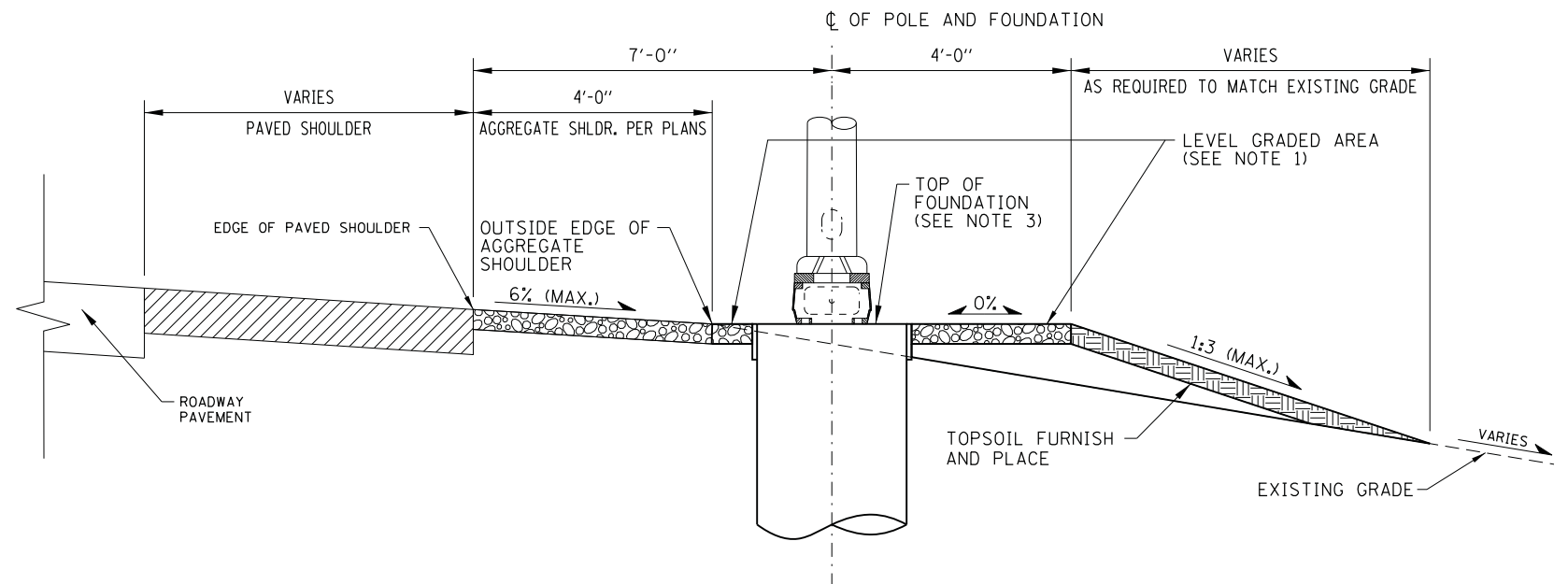
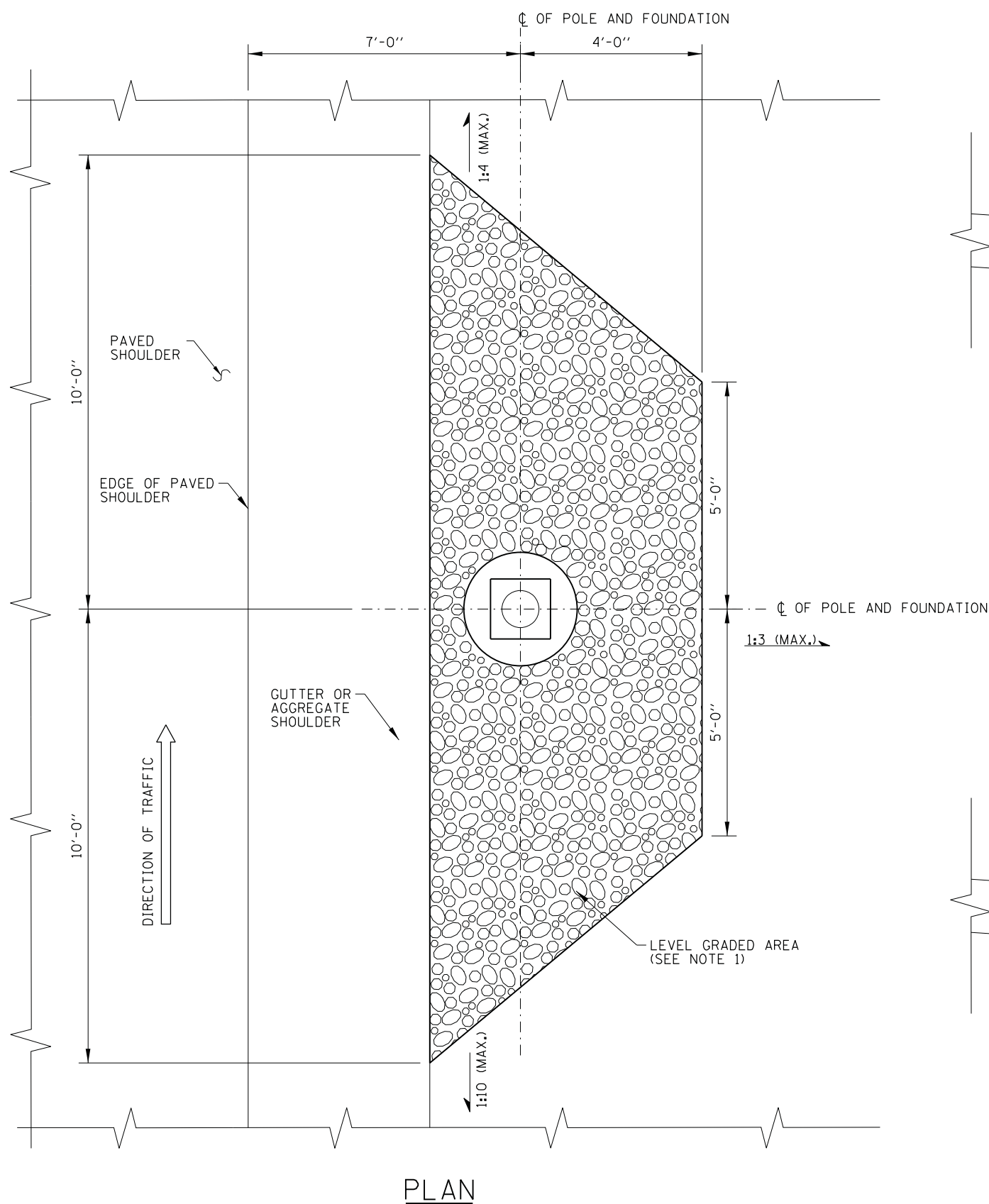
**LIGHT STANDARD FOUNDATION DETAILS - MEDIAN BARRIER  
 (MODIFICATIONS FOR SLIPFORM POUR, 42" BARRIER)**

APPROVED: *Paul Kovacs*  
 CHIEF ENGINEERING OFFICER DATE 2-7-2012

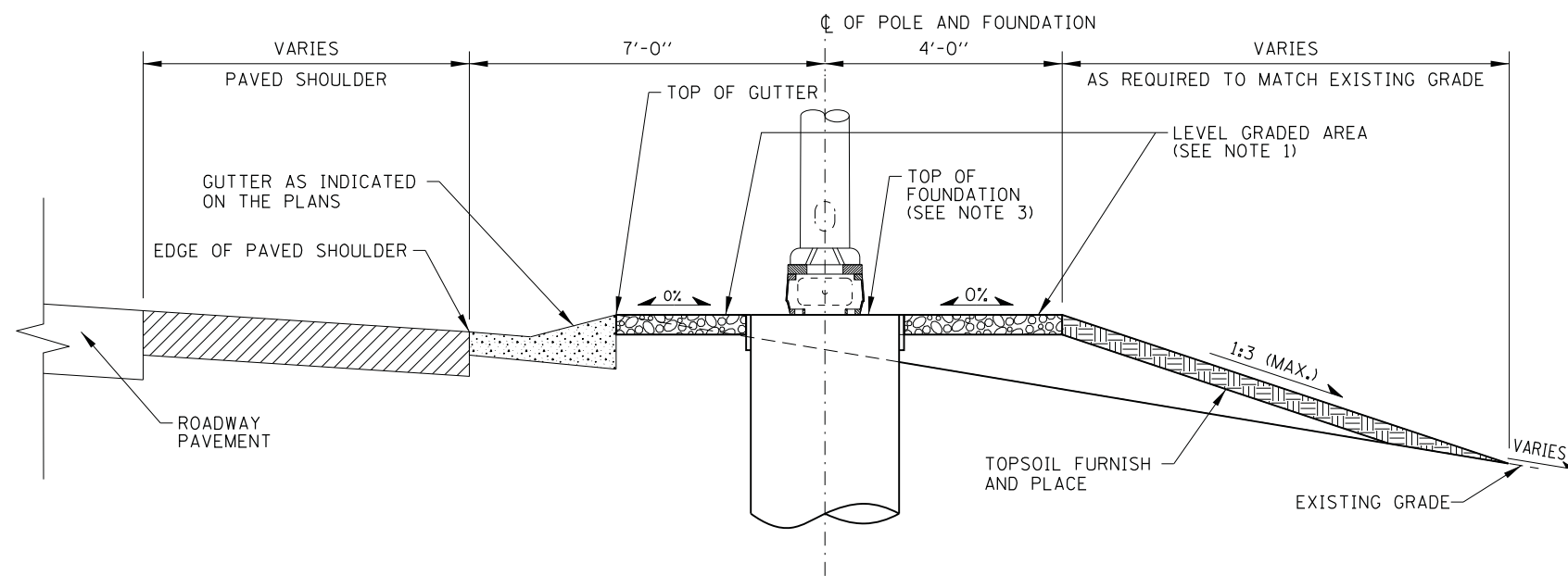
**NOTES:**

- SEE SHEET 1 OF THIS SERIES FOR NOTES.
- PLUG TOP OF COUPLER WITH PLASTIC PLUG OR COVER WHILE PLACING CONCRETE.





LIGHT STANDARD FOUNDATION  
ADJACENT TO AGGREGATE SHOULDER



LIGHT STANDARD FOUNDATION  
ADJACENT TO GUTTER

LIGHT STANDARD FOUNDATION DETAILS - GRADING W/ FORESLOPE  
(GROUND MOUNTED UNITS)

APPROVED: *Paul Kovacs*  
CHIEF ENGINEERING OFFICER DATE 2-7-2012

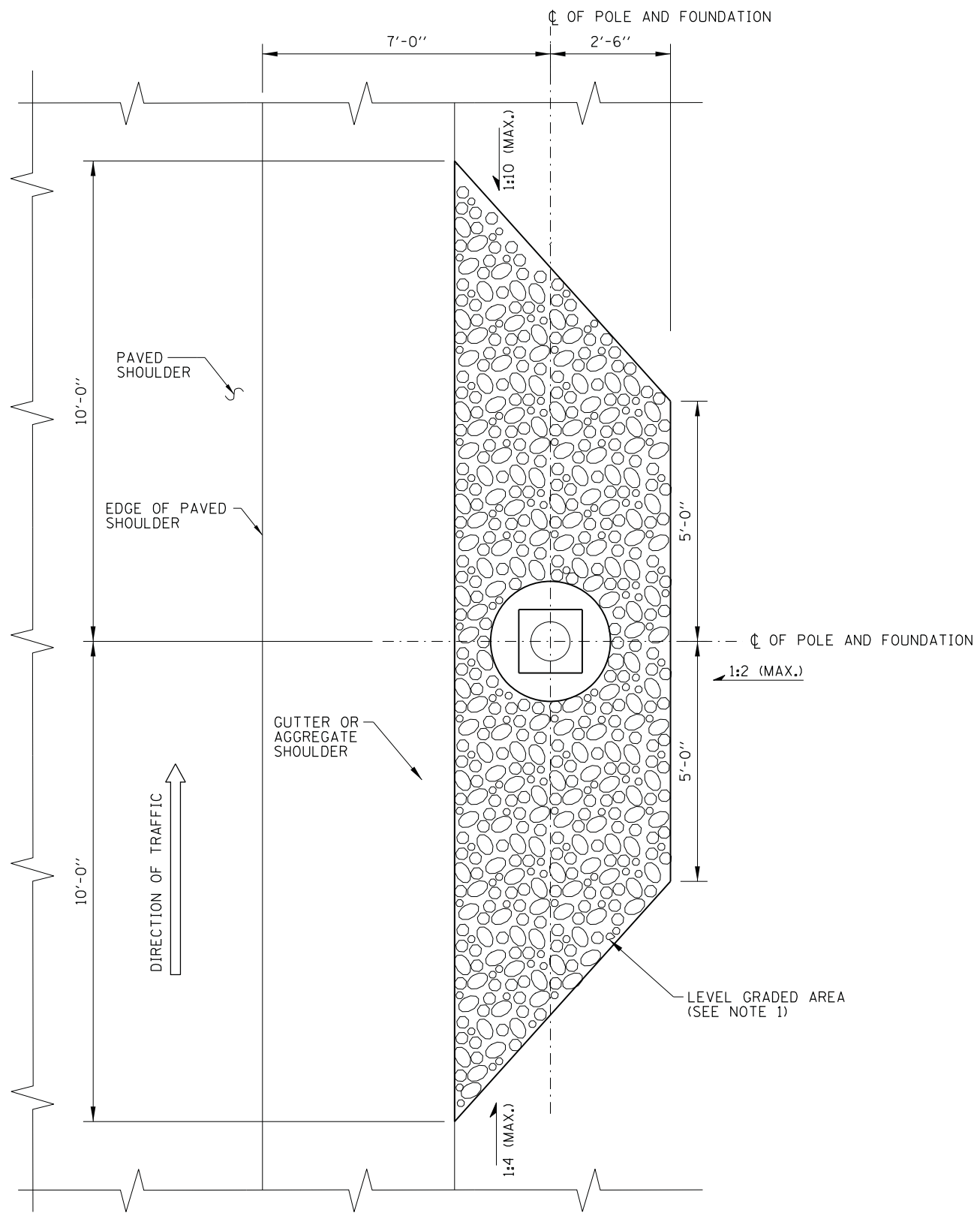
NOTE:  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

SHEET 7 OF 9

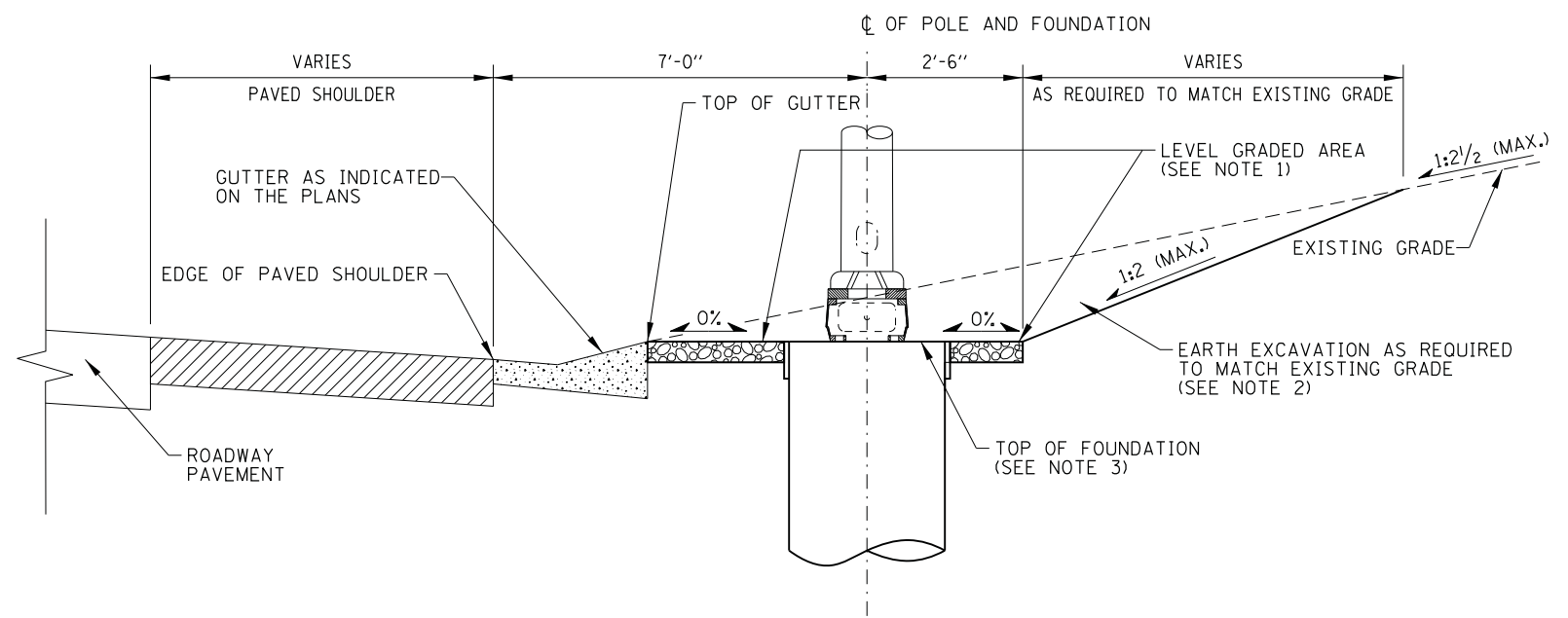


LIGHT STANDARD  
FOUNDATION

STANDARD H1-07



PLAN



LIGHT STANDARD FOUNDATION  
ADJACENT TO GUTTER

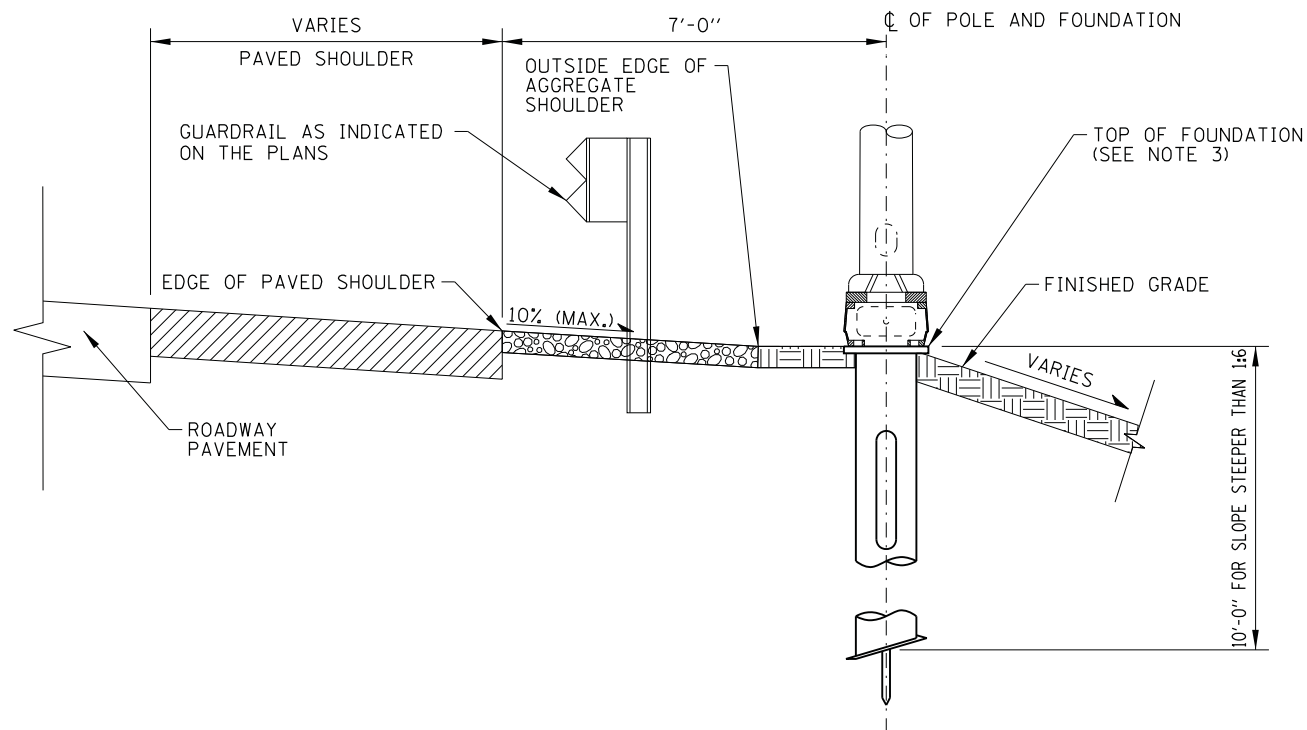
LIGHT STANDARD FOUNDATION DETAILS - GRADING W/ BACKSLOPE  
(GROUND MOUNTED UNITS)

APPROVED: *Paul Kovacs* CHIEF ENGINEERING OFFICER DATE 2-7-2012

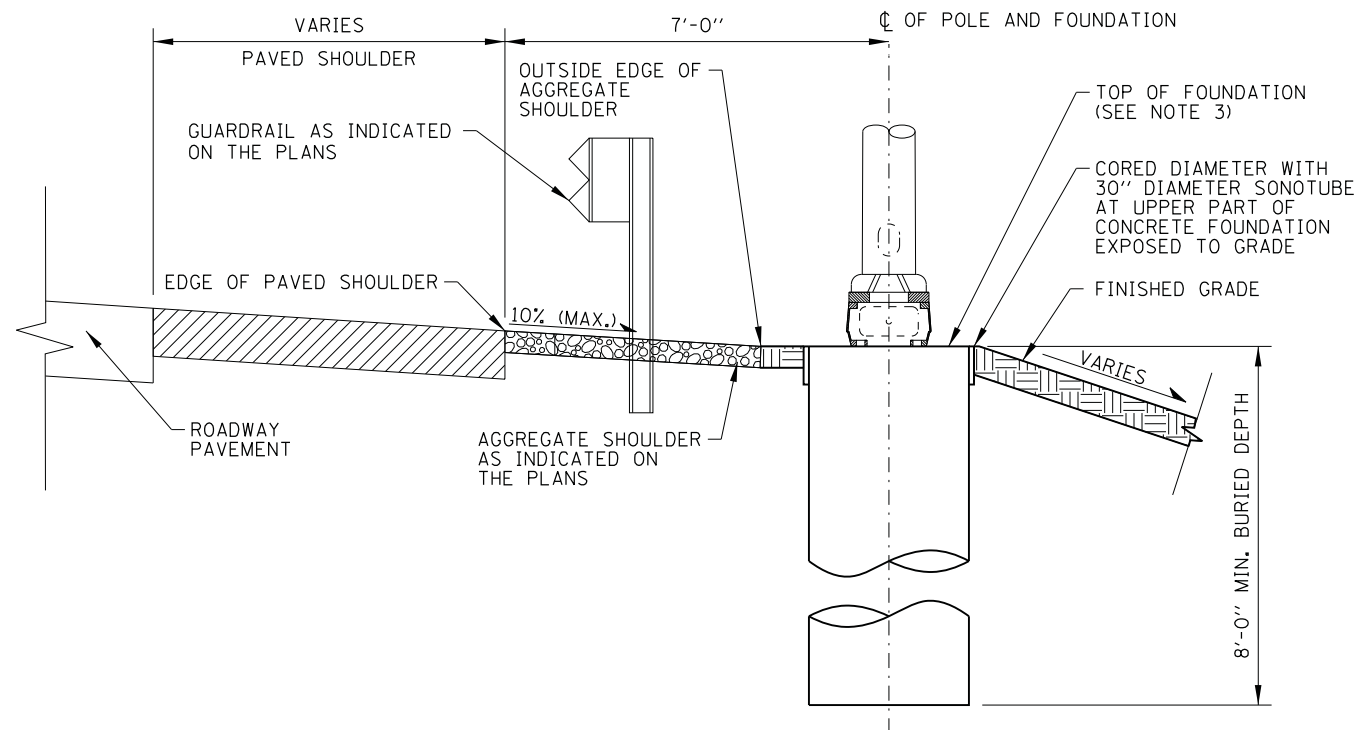
NOTE:  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

LIGHT STANDARD  
FOUNDATION

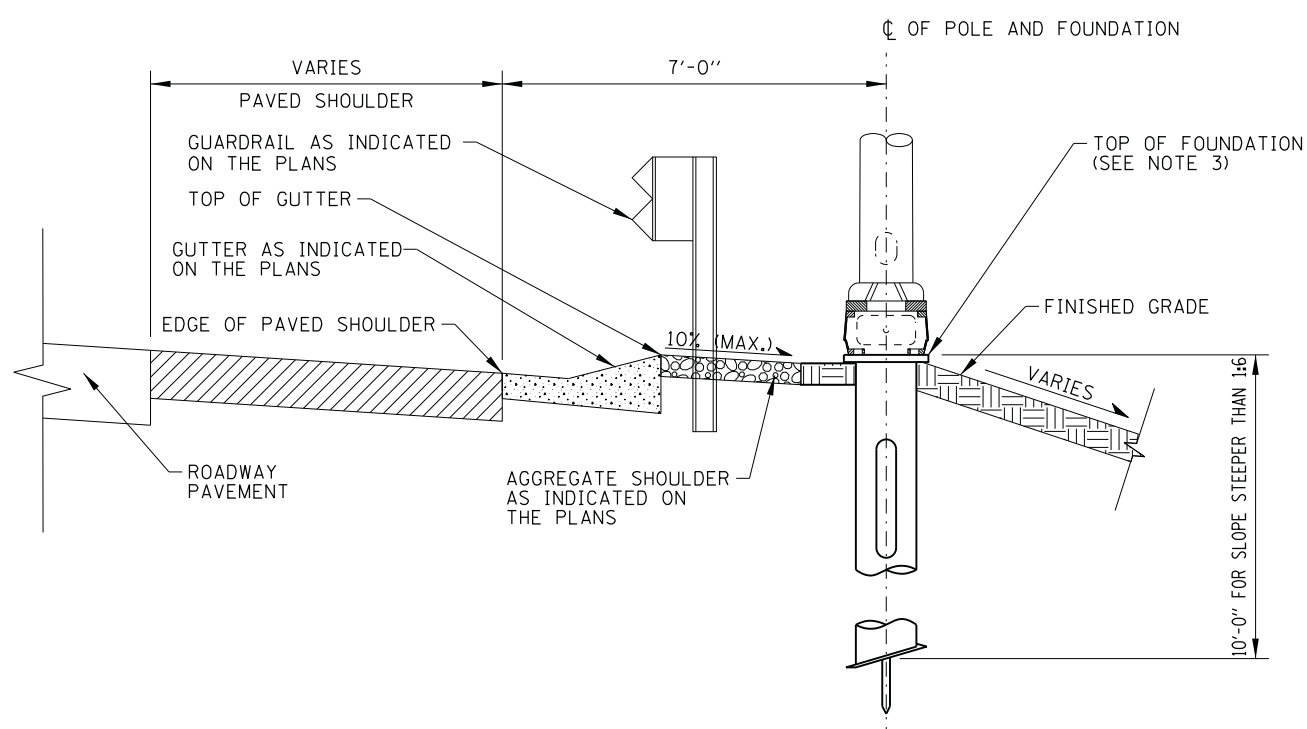
STANDARD H1-07



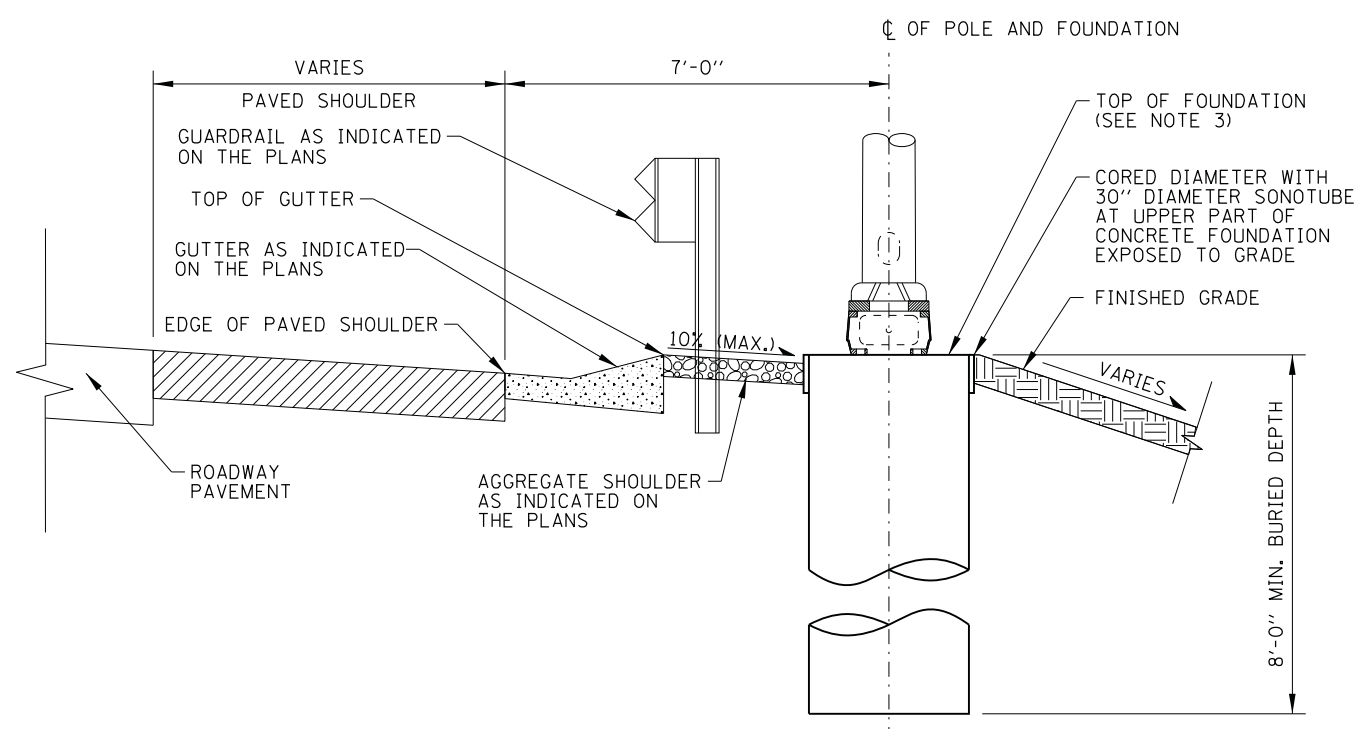
LIGHT STANDARD FOUNDATION - HELIX  
ADJACENT TO AGGREGATE SHOULDER



LIGHT STANDARD FOUNDATION - CONCRETE  
ADJACENT TO AGGREGATE SHOULDER



LIGHT STANDARD FOUNDATION - HELIX  
ADJACENT TO GUTTER



LIGHT STANDARD FOUNDATION - CONCRETE  
ADJACENT TO GUTTER

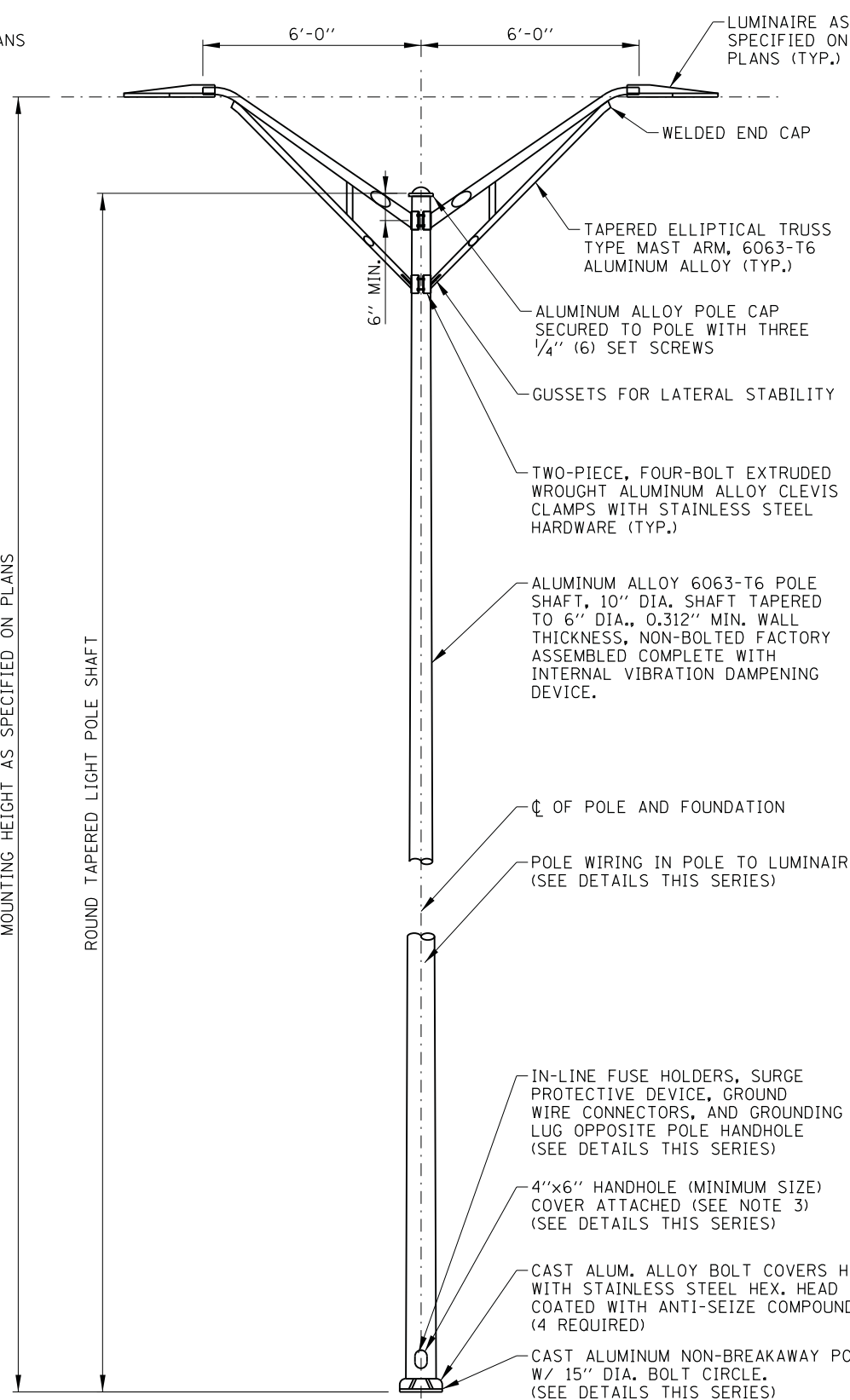
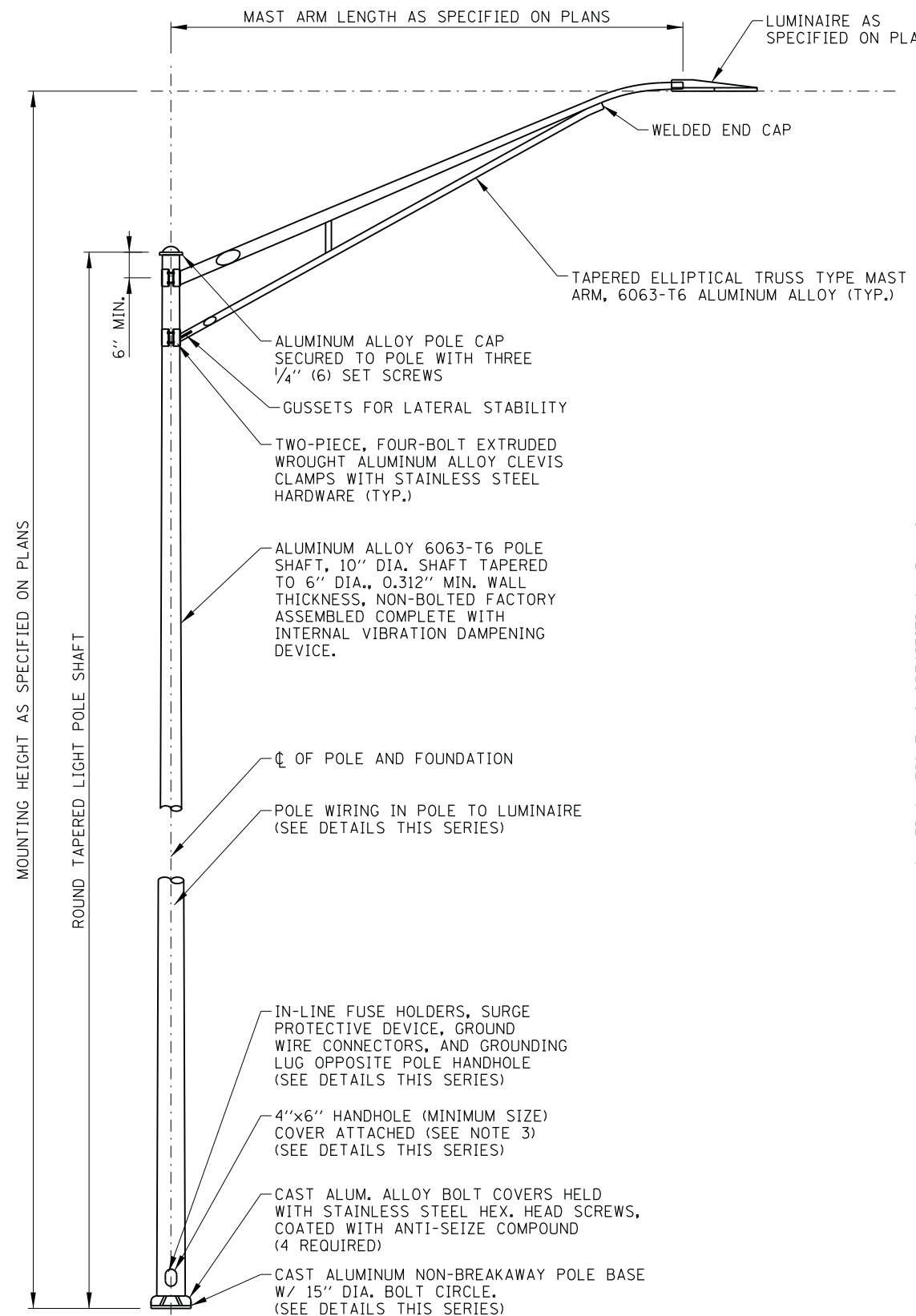
LIGHT STANDARD FOUNDATION DETAILS - ADJACENT TO GUARDRAIL  
(GROUND MOUNTED UNITS)

APPROVED: *Paul Kovacs* CHIEF ENGINEERING OFFICER DATE: 2-7-2012

NOTE:  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

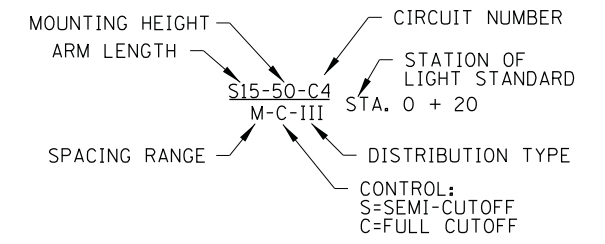
SHEET 9 OF 9

LIGHT STANDARD FOUNDATION  
STANDARD H1-07

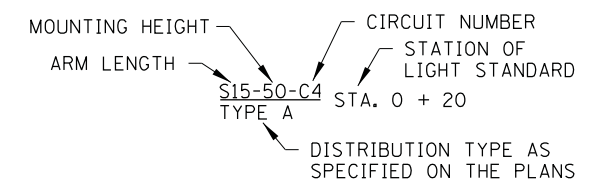


**NOTES:**

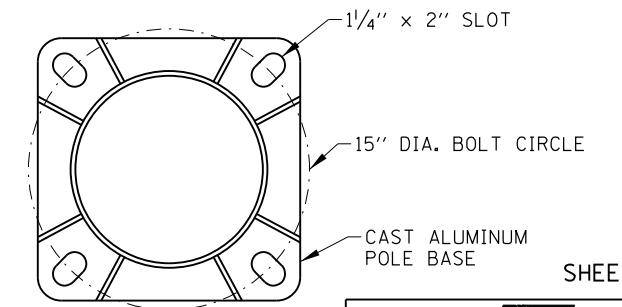
1. ALL LIGHT STANDARDS, BOTH NEW AND EXISTING, ARE SHOWN ON PLANS WITH THE SAMPLE DESCRIPTIONS SHOWN ON THIS SHEET.
2. FOR FOUNDATION DETAILS SEE STANDARD H1. FOR STRUCTURAL PARAPET FOUNDATION DETAILS, SEE STRUCTURAL PLANS.
3. HANDHOLE COVERS SHALL BE FASTENED USING TWO STAINLESS STEEL SCREWS WITH CAPTIVE STAINLESS STEEL NUTS OR INSERTS, PER ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATION SECTION 1069.
4. PROVIDE A 24" LONG POLYETHYLENE TUBE TO PROTECT CABLES WHERE THEY PASS THROUGH THE GROMMETTED OPENING AT THE POLE/MAST ARM JUNCTION.
5. ALL GROUND MOUNTED LIGHT POLES SHALL BE PROVIDED WITH AN ACCEPTED FHWA BREAKAWAY BASE OR DEVICE PER THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS SECTION 1070.
6. EACH BRIDGE MOUNTED LIGHT STANDARD SHALL BE PROVIDED WITH SHOCK ABSORBING VIBRATION PADS, NUTS, WASHERS, LEVELING PLATE AND WIRE MESH FOR ITS ERECTION ON THE FOUNDATION AS SHOWN ON THE PLANS.
7. LIGHT STANDARD WIRING DETAIL FOR INSTALLATION WITH CONCRETE FOUNDATION SHOWN. DETAIL FOR INSTALLATION WITH HELIX FOUNDATION IS SIMILAR.
8. LIGHT STANDARD WIRING DETAILS SHOWN FOR TWIN MAST ARM (2 LUMINAIRES PER POLE) INSTALLATIONS. SINGLE MAST ARM (1 LUMINAIRE PER POLE) INSTALLATIONS SHALL OMIT TWO (2) IN-LINE FUSE HOLDERS, ONE SURGE PROTECTION DEVICE AND ASSOCIATED WIRING.
9. CONDUCTORS EXTENDED INTO LIGHT POLE BASE SHALL BE OF SUFFICIENT LENGTH TO WITHDRAW SPLICES AND/OR INSULATED JOINTS A MINIMUM 18" OUT OF THE POLE HANDHOLE.
10. ALL CONDUCTORS ORIGINATING IN POLE SHALL BE A 1/C NO. 10 AWG UNLESS OTHERWISE NOTED.
11. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
12. WASHERS BETWEEN HEX NUTS AND POLE BASES SHALL BE 2.5" OUTER DIAMETER. WASHERS ON PARAPET OR MEDIAN MOUNTED LIGHT POLES SHALL BE MINIMUM 1/4" THICK. BENT OR DEFORMED WASHERS OR DAMAGED POLE BASES WILL NOT BE ACCEPTED. MULTIPLE STACKED WASHERS SHALL NOT BE SUBSTITUTED FOR APPROPRIATELY SIZED WASHERS.
13. ANCHOR BOLTS SHALL EXTEND OVER THE TOP OF HEX NUTS AND SHALL HAVE SUFFICIENT THREAD EXPOSED FOR LOCK NUT TABS TO MAKE CONTACT.



**LIGHT STANDARD DESCRIPTION - HPS LUMINAIRES**



**LIGHT STANDARD DESCRIPTION - LED LUMINAIRES**



**POLE BASE**

**LIGHT STANDARD - SINGLE MAST ARM**

**LIGHT STANDARD - TWIN MAST ARM**

**LIGHT STANDARD DETAILS**

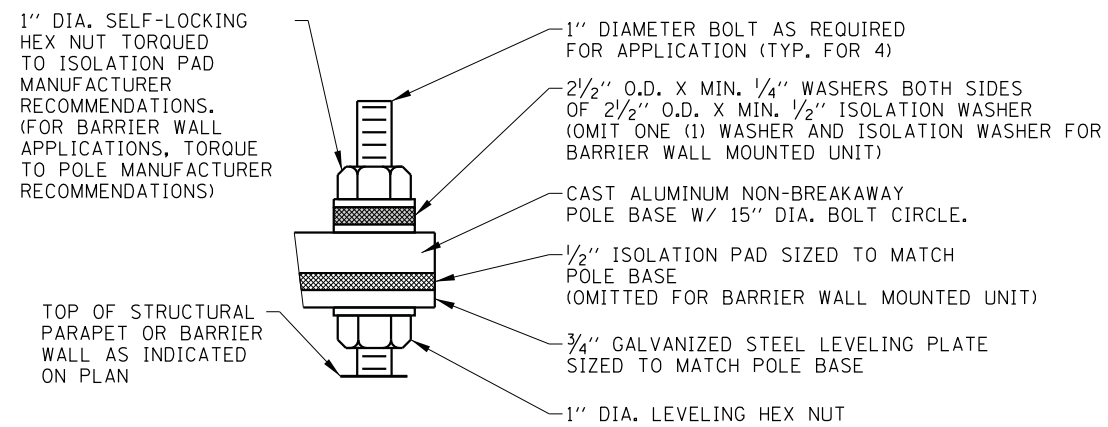
APPROVED: *Paul Kovacs*  
 CHIEF ENGINEERING OFFICER DATE 2-7-2012

DATE	REVISIONS
03-31-14	REVISED WIRING DIAGRAM.
3-11-2015	REVISED LIGHT STANDARD POLE WIRING DETAILS.
3-31-2016	REVISED BARRIER WALL UNIT MOUNTING DETAILS.
3-31-2017	REVISED LIGHT POLE AND MAST ARM DETAILS.
	REVISED WIRING DETAILS: GROUNDING AND SPLICES.
3-01-2018	REVISED LIGHT POLE AND MAST ARM DETAILS.

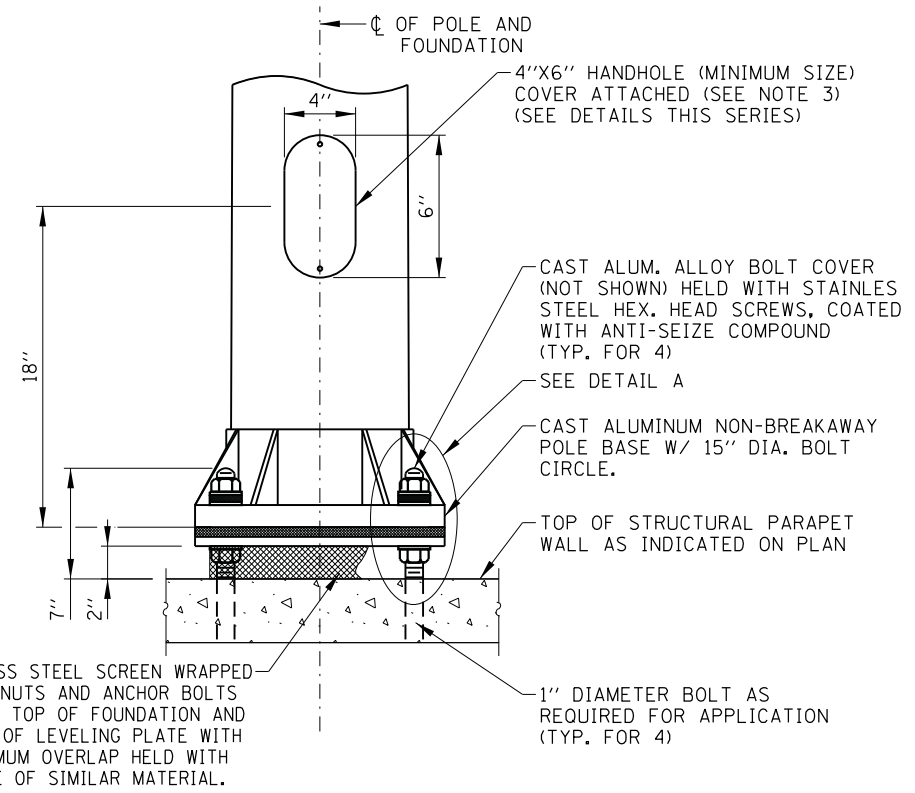
**Illinois Tollway**

**LIGHT STANDARD DETAILS**

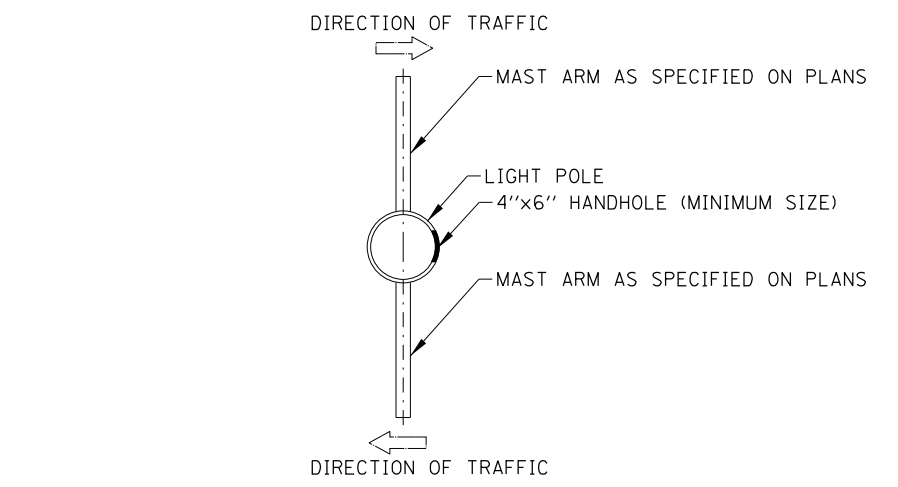
**STANDARD H2-06**



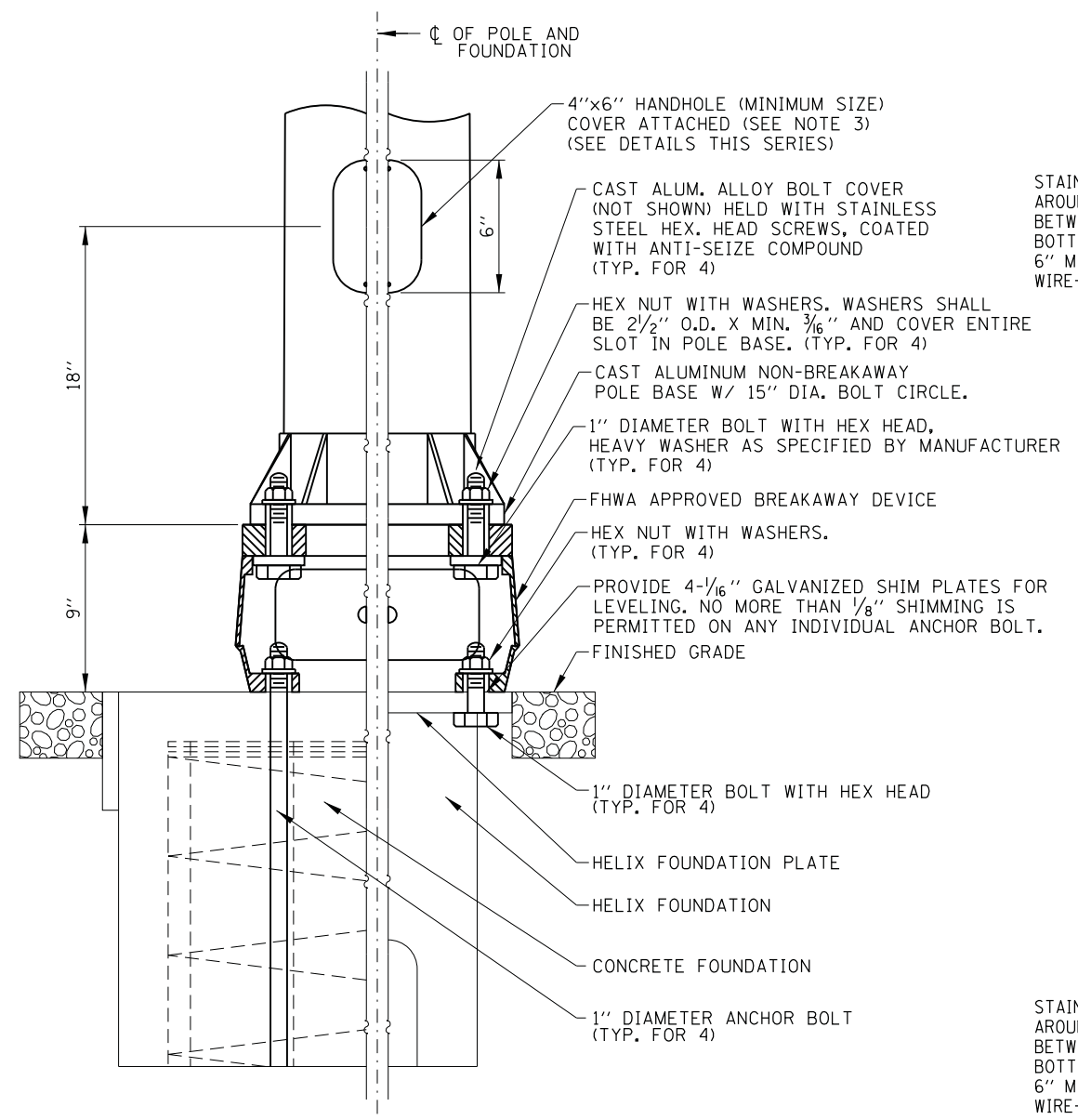
**DETAIL A**



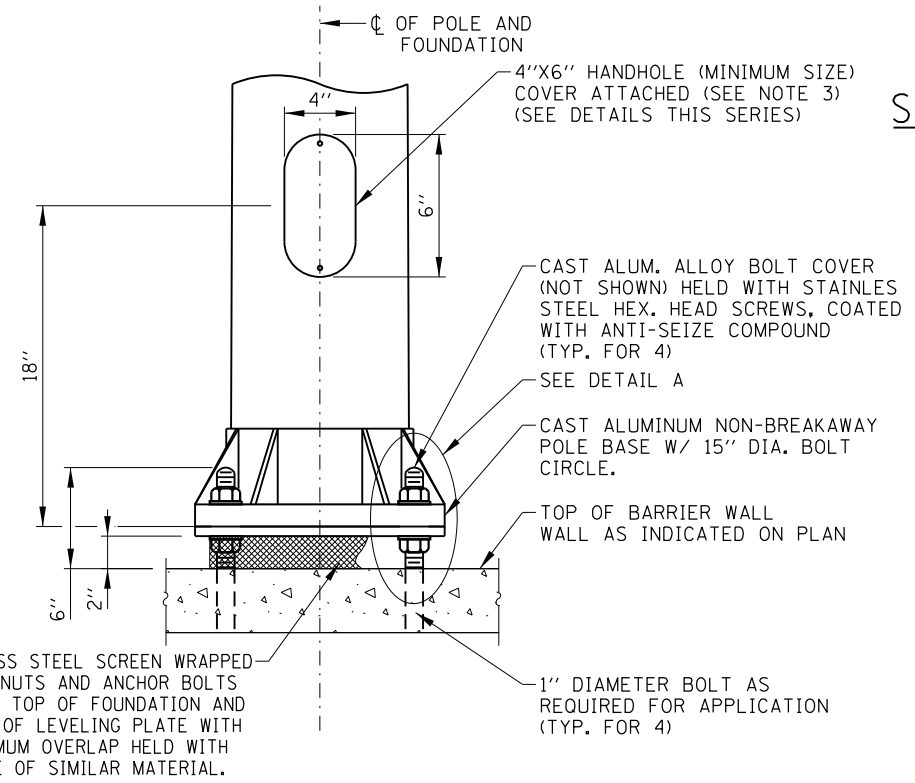
**LIGHT STANDARD MOUNTING DETAIL (BRIDGE MOUNTED UNITS)**



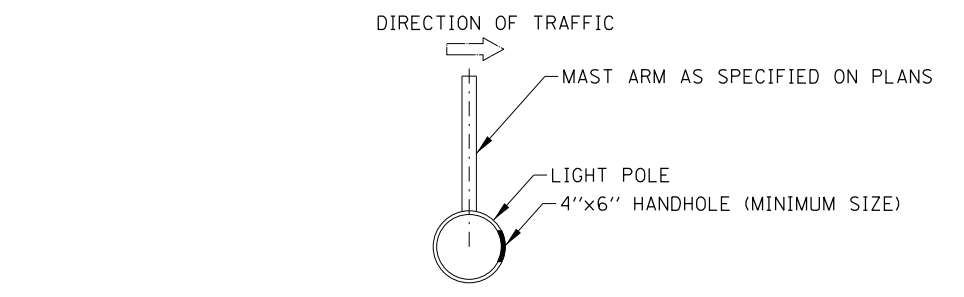
**MEDIAN BARRIER WALL MOUNTED UNITS**



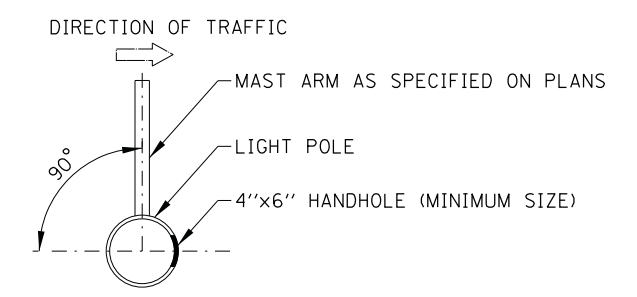
**LIGHT STANDARD MOUNTING DETAIL (GROUND MOUNTED UNITS)**



**LIGHT STANDARD MOUNTING DETAIL (BARRIER WALL MOUNTED UNITS)**



**STRUCTURAL PARAPET WALL MOUNTED UNITS**



**GROUND MOUNTED UNITS**

**LIGHT STANDARD HANDHOLE ORIENTATION DETAIL**

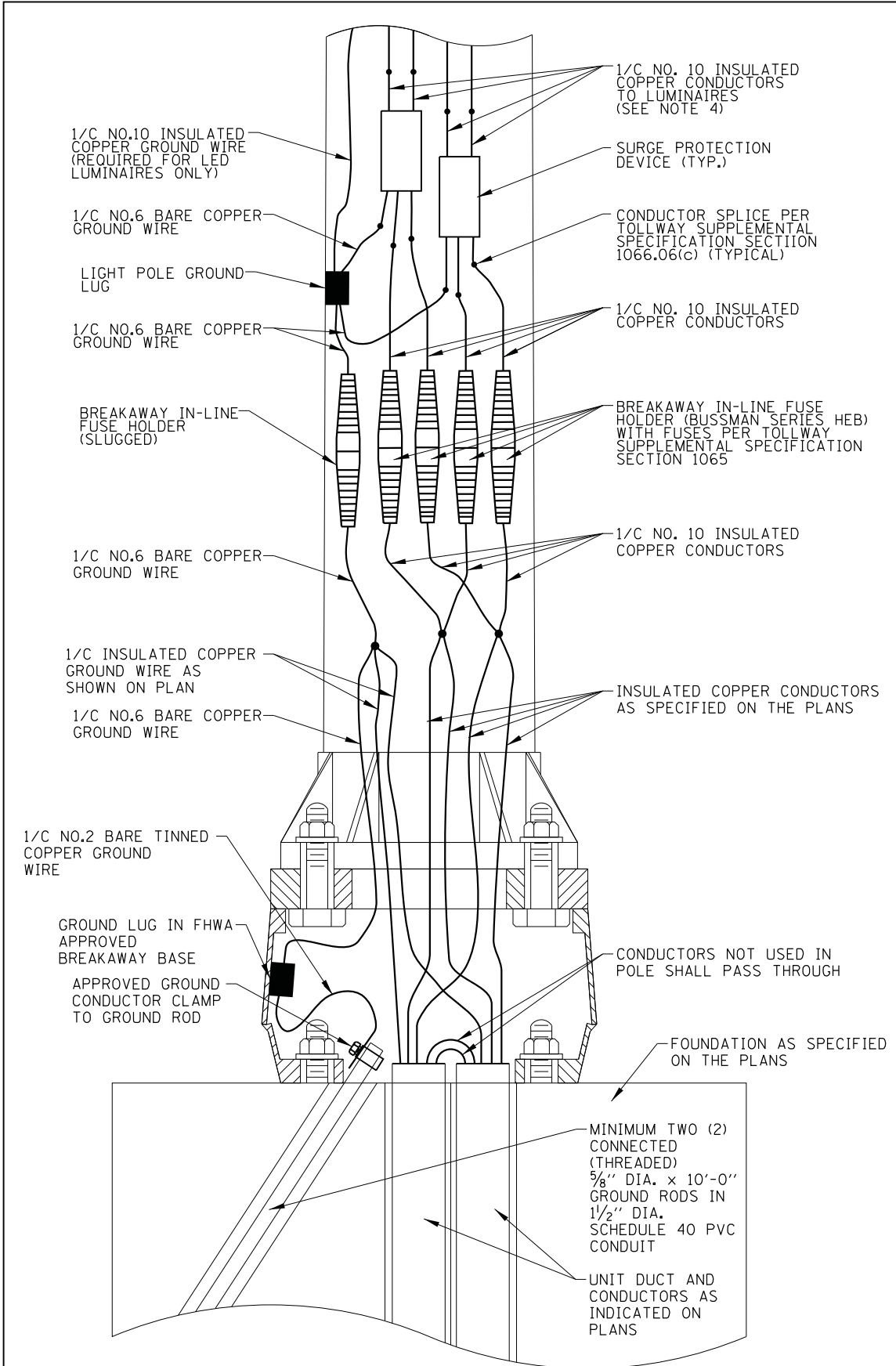


*Paul Kovacs*  
APPROVED. CHIEF ENGINEERING OFFICER DATE 2-7-2012.

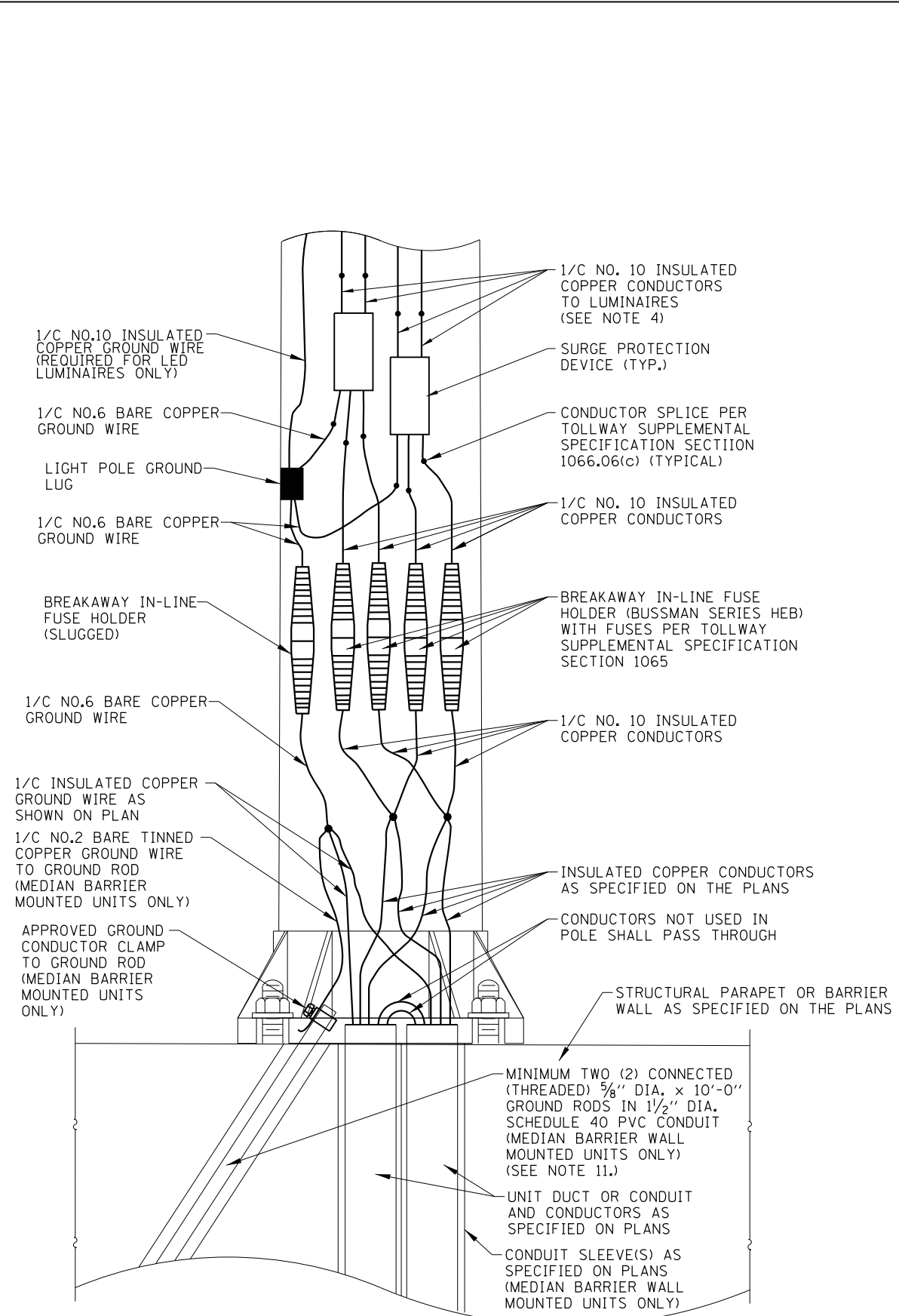
**LIGHT STANDARD MOUNTING DETAILS**

**NOTE:**  
SEE SHEET 1 OF THIS SERIES FOR NOTES.

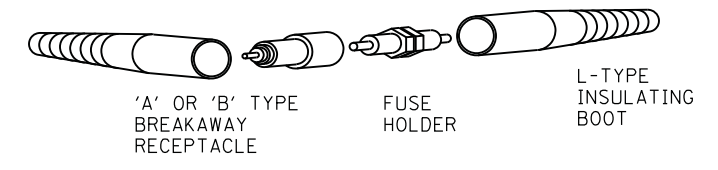




**LIGHT STANDARD WIRING DETAIL**  
**(GROUND MOUNTED UNITS)**  
 (SEE NOTES 7 & 8)



**LIGHT STANDARD WIRING DETAIL**  
**(STRUCTURAL AND BARRIER WALL MOUNTED UNITS)**



**IN-LINE FUSE HOLDER WITH BREAKAWAY FEATURE DETAIL**

*Paul Kovacs*  
 APPROVED, CHIEF ENGINEERING OFFICER  
 DATE: 2-7-2012

**LIGHT STANDARD WIRING DETAILS**

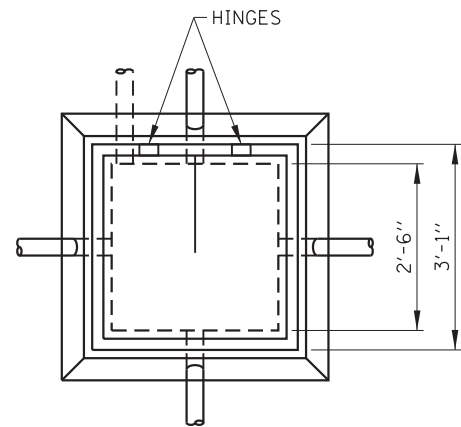
**NOTE:**  
 SEE SHEET 1 OF THIS SERIES FOR NOTES.

SHEET 3 OF 3

LIGHT STANDARD DETAILS

STANDARD H2-06

DIRECTION OF TRAFFIC



PLAN



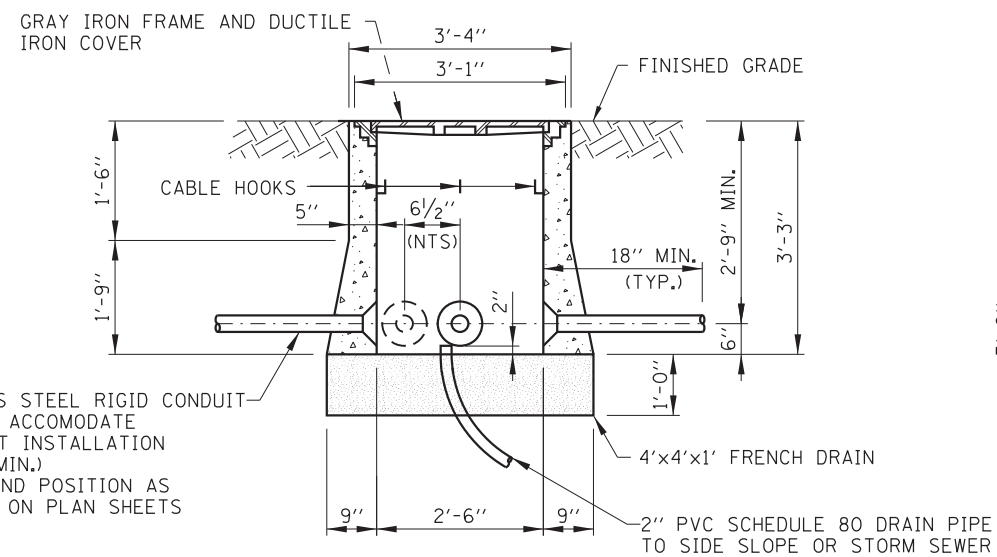
EAST JORDAN  
EJ 8216



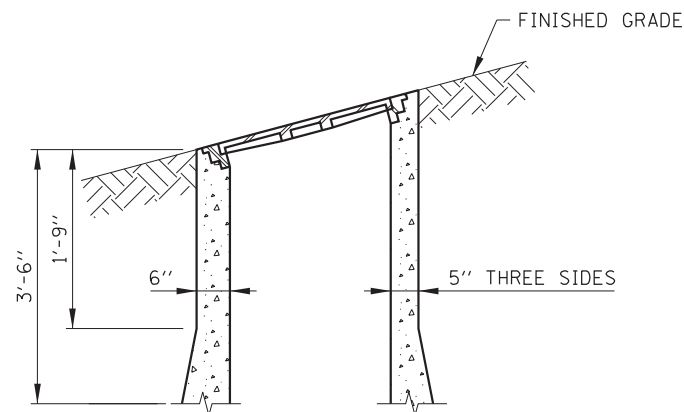
NEENAH  
R-6662-PS

NOTES:

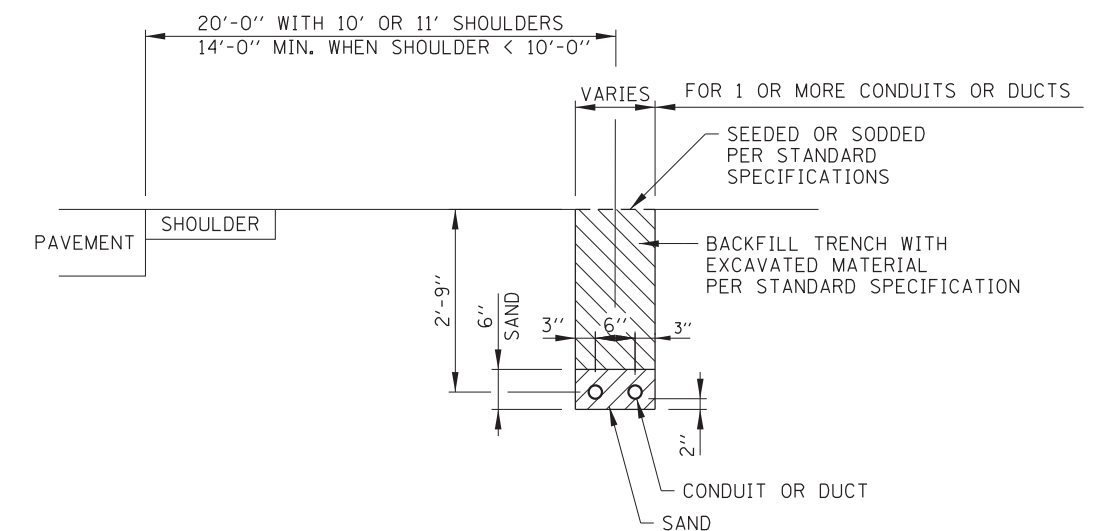
1. HEAVY-DUTY HANDHOLE LOCATED IN UNPAVED AREAS AND NOT SHIELDED BY GUARDRAIL SHALL BE CONSTRUCTED WITH THE TOP FLUSH WITH THE ADJACENT SLOPE.
2. HEAVY-DUTY HANDHOLE SHALL BE CONSTRUCTED IN NON-PAVED AREAS. THE FRAME AND HINGED COVER SHALL BE EITHER NEENAH FOUNDRY R-6662-PS WITH TYPE G LIFTING HANDLE OR EAST JORDAN IRON WORKS EJ 8216 WITH MPIC OR APPROVED EQUAL. THE HINGED COVER SHALL BE PROVIDED WITH A LIFT ASSIST MECHANISM. THERE SHALL BE TWO SETS OF HINGES AND THE DESIGN SHALL ALLOW FOR THE COVER TO OPEN > 90 DEGREES. THE COVER SHALL BE PROVIDED WITH A HOLD OPEN SAFETY ARM THAT CATCHES TO PREVENT ACCIDENTAL CLOSURE. THE COVER SHALL ALSO BE ABLE TO BE MADE FULLY REMOVABLE. THE FRAME COVER SHALL BE INSTALLED WITH THE HINGES TO THE SIDE FACING APPROACHING TRAFFIC.
3. AGGREGATE FOR FRENCH DRAIN SHALL BE PER ARTICLE 1003.04 OF THE STANDARD SPECIFICATIONS.
4. 10 FEET OF EXTRA CABLE SHALL BE COILED IN EACH HANDHOLE.
5. ALL METALLIC COMPONENTS OF THE HANDHOLE SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS SECTION 814, THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
6. THE HANDHOLE COVER SHALL BE LETTERED "ELECTRIC". LETTERING SHALL BE 2" FLAT FACE GOTHIC AND BE FLUSH WITH THE SLIP RESISTANT SURFACE.



ELEVATION



SLOPE INSTALLATION



TRENCHING FOR CONDUIT IN NON-PAVED AREAS

HEAVY-DUTY HANDHOLE DETAILS

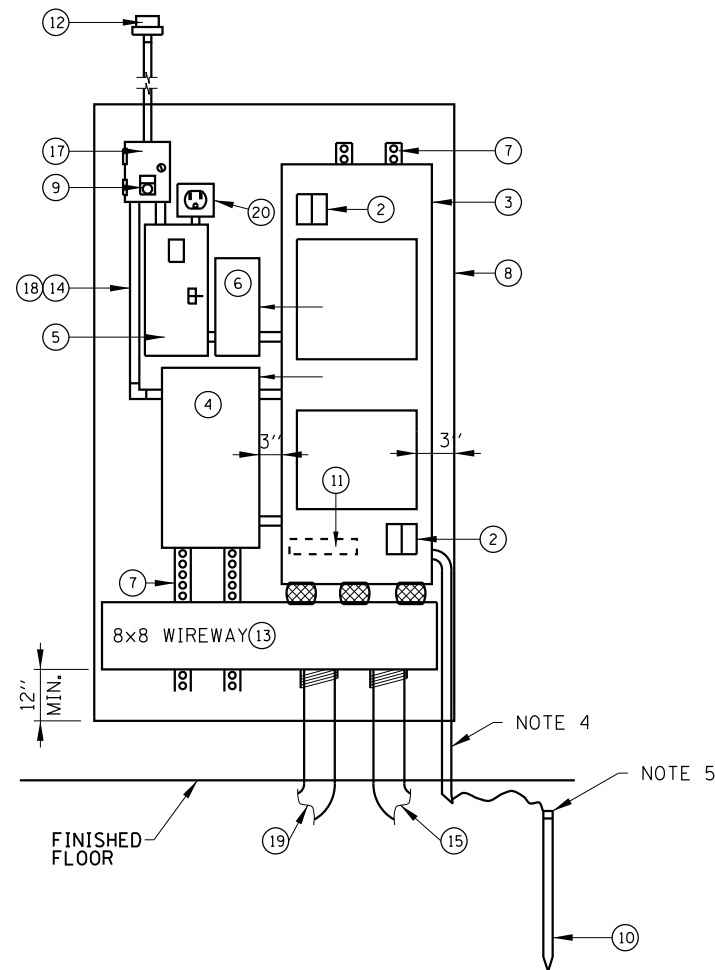
APPROVED *Paul Kovacs* CHIEF ENGINEER DATE 2-7-2012

DATE	REVISIONS
2-07-2012	MODIFY TRENCH DETAIL, NEW HANDHOLE DETAILS AND REVISED NOTES.
3-11-2015	DELETED NON HEAVY-DUTY HANDHOLE.
3-31-2016	NEW HINGED COVER AND REVISED NOTES.
3-31-2017	REVISED NOTES. REMOVED GROUND ROD FROM DETAIL.

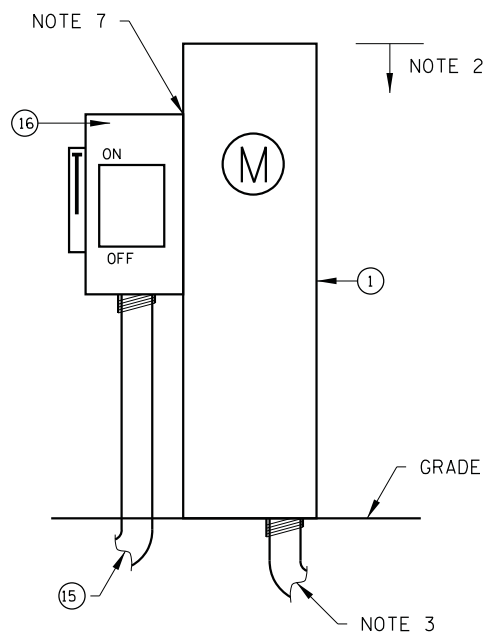


HEAVY-DUTY HANDHOLE AND BURIED WIRING DETAILS

STANDARD H4-04



INTERIOR EQUIPMENT LAYOUT



SERVICE ENTRANCE DETAIL

**NOTES:**

1. PROVIDE POWER UTILITY CO. METER HOUSING AS INDICATED ON PLANS.
2. 5'-0" MAXIMUM HEIGHT ABOVE GRADE.
3. STAINLESS STEEL CONDUIT TO UTILITY SERVICE AS INDICATED ON PLANS.
4. 3/4" PVC CONDUIT.
5. EXOTHERMIC WELD NO. 2 BARE TINNED COPPER GROUND CABLE TO GROUND ROD 12"-24" BELOW GRADE.
6. TO POWER UTILITY COMPANY, SERVICE AS INDICATED ON PLANS.
7. CONDUIT AND CABLE BETWEEN METER FITTING AND DISCONNECT SWITCH. CONDUIT AND CABLE SHALL BE THE SAME AS THE SERVICE.
8. LABEL ALL EQUIPMENT AS "ROADWAY LIGHTING" + DEVICE AND BUILDING\* (IF APPLICABLE).
9. FOR WIRING DIAGRAM SEE SHEET 2 OF THIS SERIES.
10. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.

**ITEM**

**DESCRIPTION**

- | ITEM | DESCRIPTION  |
|------|--|
| ①    | METER HOUSING, MILBANK U8436-0.  |
| ②    | SECONDARY SURGE ARRESTERS, 2 POLE, 650 VOLT.   |
| ③    | MAIN PANELBOARD IN A NEMA 1 ENCLOSURE, 480/240 VOLT, 1 PHASE, 3 WIRE, 2 SECTION, 200 AMP, 2 POLE MAIN CIRCUIT BREAKER 65,000 AMPERES SYMMETRICAL INTERRUPTING CAPACITY WITH CIRCUIT BREAKERS PER SCHEDULE ON PLANS. DOOR HINGES ON RIGHT SIDE. |
| ④    | LIGHTING CONTACTOR, ELECTRICALLY HELD, 480 VOLT, 200 AMP, 2 POLE, 120 VOLT CONTROL, WITH 250 VOLT, 15 AMP CONTROL LINE FUSE, IN A NEMA 1 ENCLOSURE.  |
| ⑤    | SECONDARY BREAKER, 15 AMPERE TRIP, 120 VOLT, SINGLE POLE, 65,000 AMPERES SYMMETRICAL INTERRUPTING CAPACITY IN A NEMA 1 SURFACE MOUNTED ENCLOSURE.  |
| ⑥    | STEP DOWN TRANSFORMER, 1500 VA, 480 VOLT PRIMARY, 120 VOLT SECONDARY, SINGLE PHASE, 60 HERTZ, DRY TYPE, NEMA 3R ENCLOSURE.   |
| ⑦    | 1/4" X 3/4" C-CHANNEL (UNISTRUT) FOR ALL EQUIPMENT STANDOFF  |
| ⑧    | 1/2" EQUIPMENT MOUNTING PANEL (4' W X 7' H)  |
| ⑨    | HAND-OFF-AUTO SELECTOR SWITCH WITH LEGEND PLATE. MOUNTED IN THE COVER OF ITEM 17.  |
| ⑩    | ROUTED TO BUILDING GROUND SYSTEM. IF NO GROUND AVAILABLE CONTRACTOR SHALL PROVIDE 5/8" DIA. X 10'-0" LONG GROUND ROD WITHIN GROUND WELL.   |
| ⑪    | GROUND BUS MOUNTED IN PANELBOARD ENCLOSURE.  |
| ⑫    | PHOTO ELECTRIC CONTROL SWITCH MOUNTED ON SOUTH EXTERIOR SIDE OF BUILDING (VIEW UNOBSTRUCTED).  |
| ⑬    | 8"x8" WIREWAY WITH 3-3" NIPPLES.   |
| ⑭    | INTERNAL CONTROL WIRING SHALL BE #12 AWG, STRANDED, INSULATED NEC TYPE THWN/THHN RATED 600 VOLT, WITH SUITABLE COLOR CODING TO BE APPROVED BY THE ENGINEER BEFORE CONSTRUCTION.  |
| ⑮    | 2" STAINLESS STEEL CONDUIT FROM SERVICE SAFETY SWITCH TO LIGHTING CONTROLLER WIREWAY.  |
| ⑯    | SERVICE SAFETY SWITCH, 200 AMP, 600 VOLT, NON-FUSED, NEMA 4X STAINLESS STEEL ENCLOSURE.  |
| ⑰    | NEMA TYPE 1, 8"x6"x4" JUNCTION BOX & COVER WITHOUT KNOCKOUTS. ITEM 9 IS MOUNTED IN THE COVER.  |
| ⑱    | INTERNAL CONDUIT AND FITTINGS SHALL BE 3/4" MINIMUM.   |
| ⑲    | (2) 4" STAINLESS STEEL CONDUIT TO LIGHTING CONTROLLER HANDHOLE. REFER TO SITE PLAN FOR LOCATION.   |
| ⑳    | GCFI OUTLET.   |



INTERIOR  
CONTROL CONSOLE  
DETAILS

STANDARD H8-03

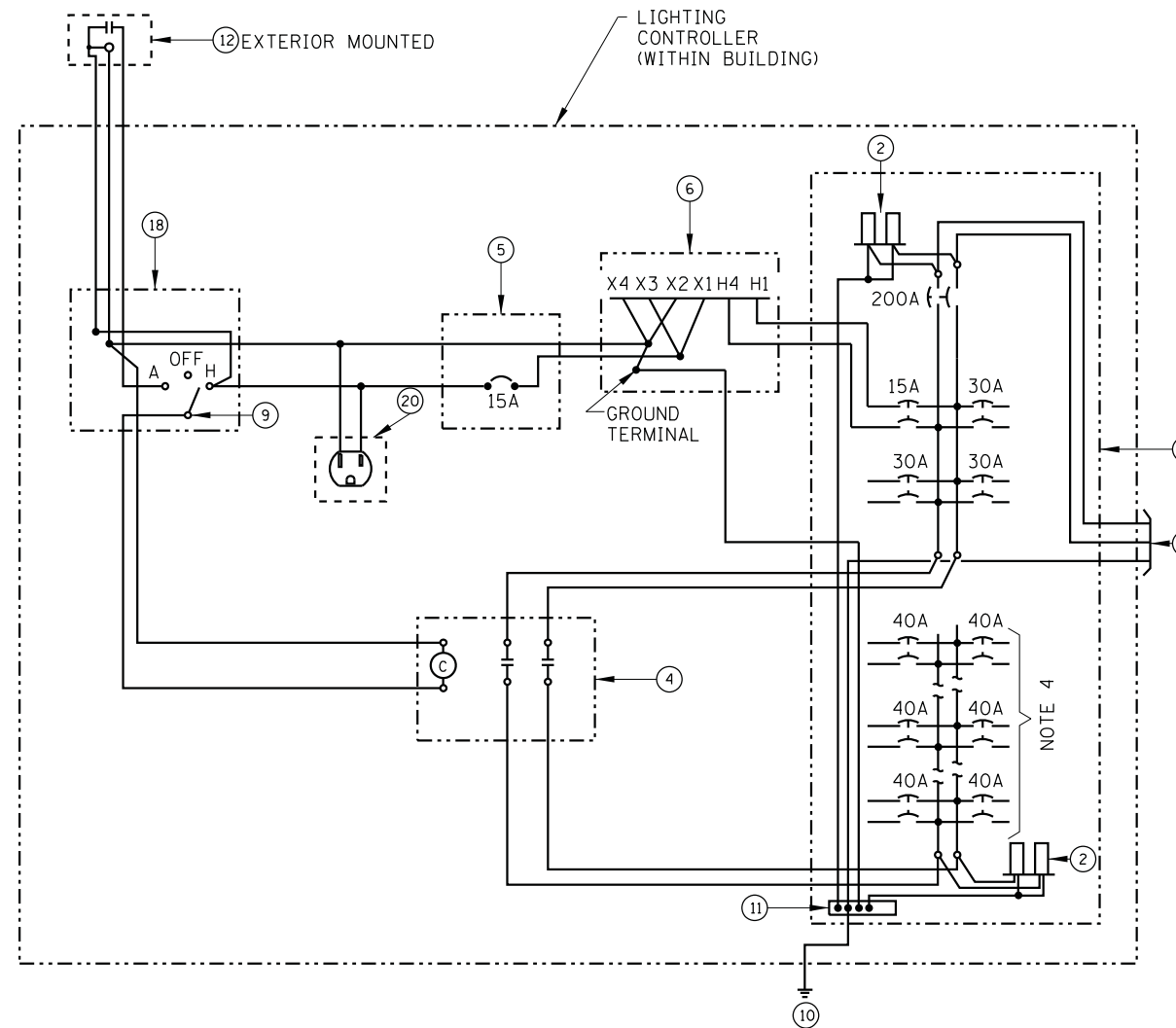
DATE	REVISIONS
3-31-2016	REVISED NOTE 2.
3-01-2017	REMOVED MFR. & PART NUMBERS
3-01-2018	REMOVED CONTACTOR RELAY, ADDED GCFI OUTLET.

CONTROL CONSOLE DETAILS  
(INTERIOR INSTALLATION)

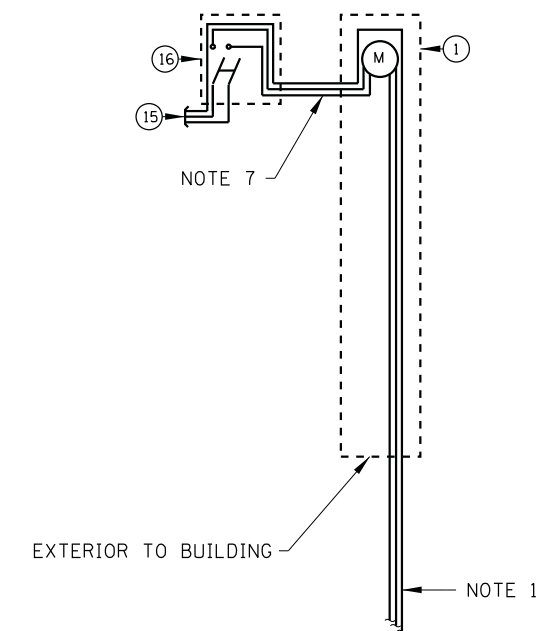
*Paul Kovacs*  
APPROVED CHIEF ENGINEERING OFFICER DATE 2-7-2012

**NOTES:**

1. TO UTILITY SERVICE. 480/240V, 1 PHASE, 3 WIRE, GROUNDED, WHEN A METER HOUSING IS REQUIRED (FED FROM PAD MOUNTED UTILITY TRANSFORMER WITHIN ILLINOIS TOLLWAY RIGHT-OF-WAY).
2. TO SERVICE PEDESTAL, 480/240V, 1 PHASE, 3 WIRE, GROUNDED. SEE STANDARD H5.
3. ITEM NUMBERS REFER TO EQUIPMENT LIST ON SHEET 1 OF THIS SERIES.
4. PROVIDE CIRCUIT BREAKERS PER SCHEDULE ON THE CONTRACT PLANS (MINIMUM OF 12).
5. FOR INTERIOR EQUIPMENT LAYOUT SEE SHEET 1 OF THIS SERIES.
6. ALL EQUIPMENT SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THE NATIONAL ELECTRICAL SAFETY CODE.
7. CONDUIT AND CABLE BETWEEN METER FITTING AND DISCONNECT SWITCH ROUTED BETWEEN CONTROL CONSOLE AND CONCRETE FOUNDATION, WHEN A METER HOUSING IS REQUIRED. CONDUIT AND CABLE SHALL BE THE SAME AS THE SERVICE.



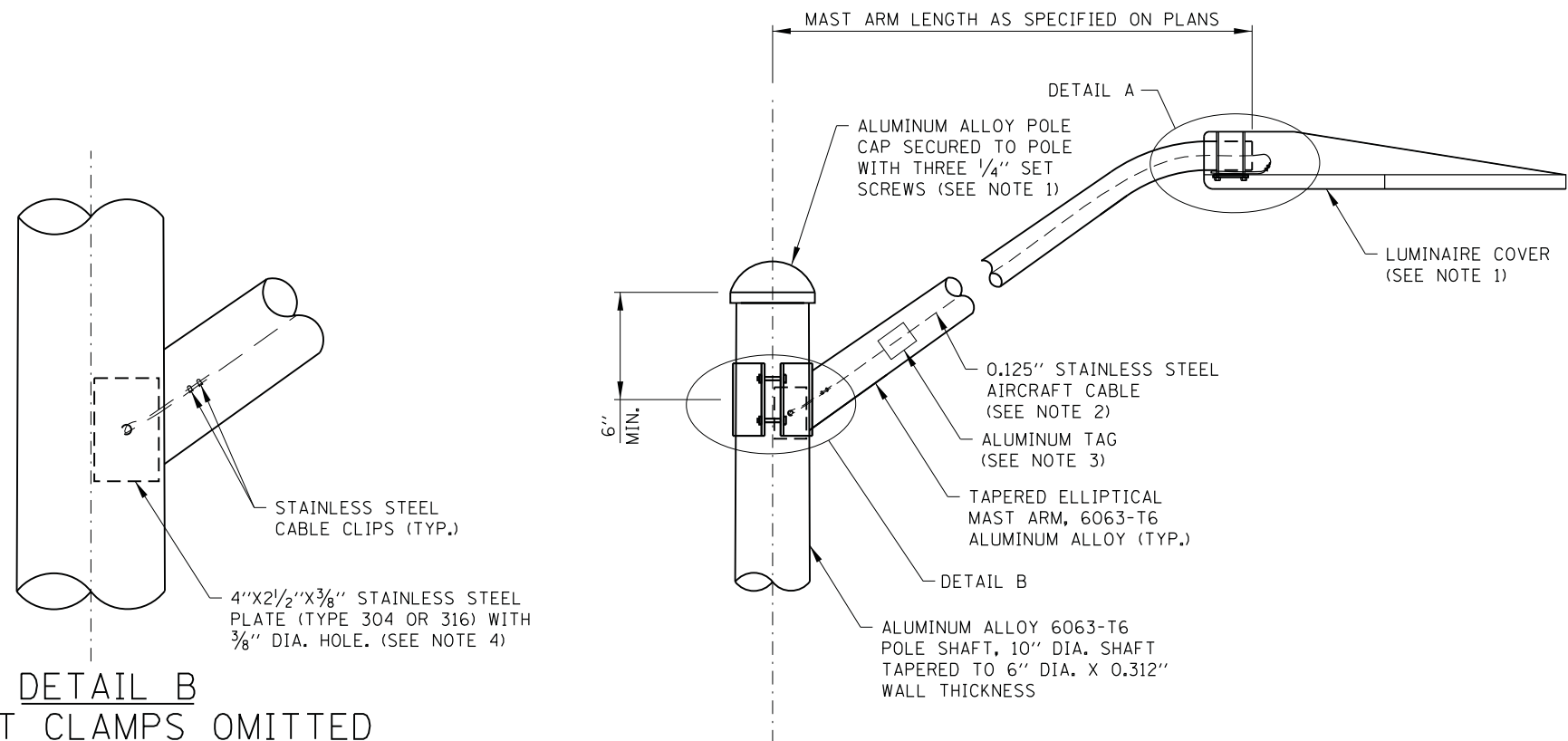
CONTROL CONSOLE WIRING DIAGRAM



CONTROL CONSOLE DETAILS  
(INTERIOR INSTALLATION)

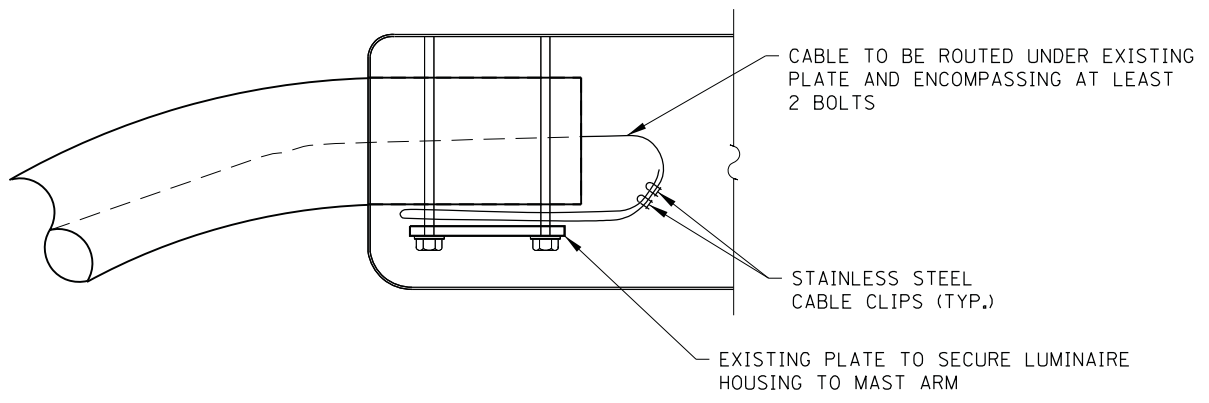
APPROVED *Paul Kovacs* CHIEF ENGINEERING OFFICER DATE 2-7-2012



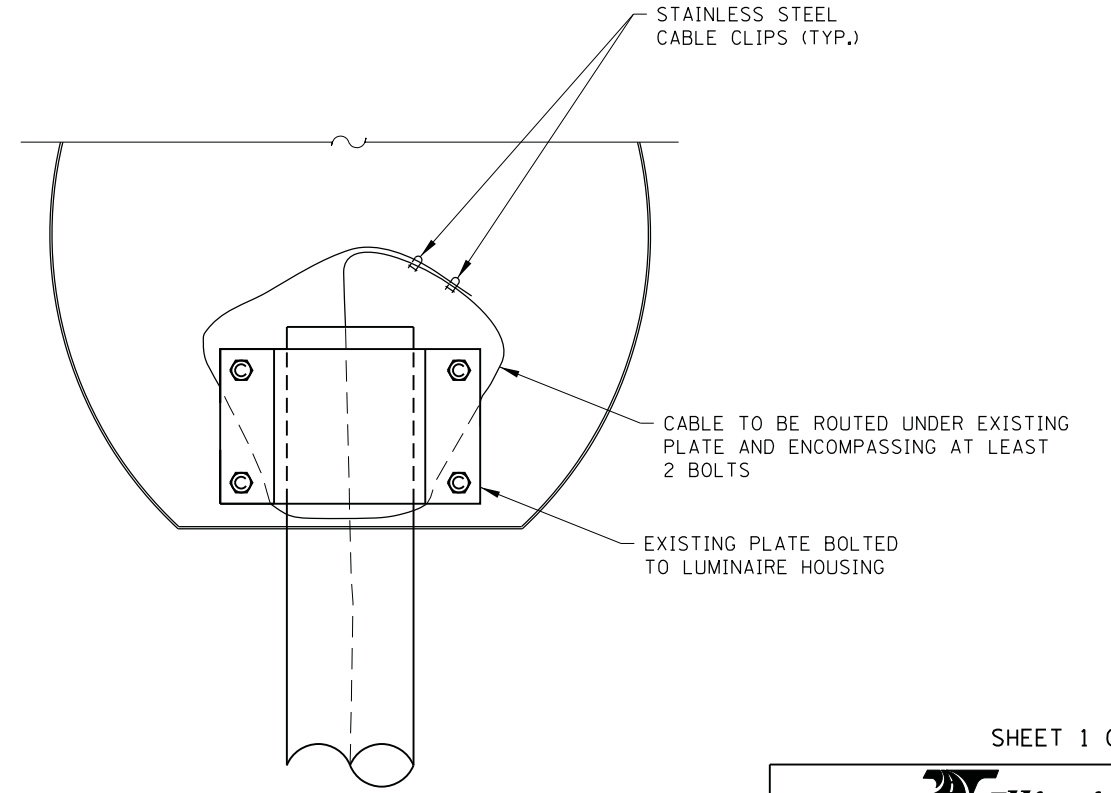


DETAIL B  
(BRACKET CLAMPS OMITTED FOR CLARITY)  
N.T.S.

LIGHT STANDARD - MAST ARM  
(SINGLE MAST ARM SHOWN, TRUSS TYPE SINGLE MAST ARM SIMILAR)  
N.T.S.



DETAIL A  
N.T.S.



BOTTOM VIEW  
N.T.S.


**NOTES:**

1. POLE CAP TO BE REMOVED AND LUMINAIRE LID TO BE OPENED FOR PLACEMENT OF THE CABLE ASSEMBLY AND PUT BACK IN PLACE. NEW CAP SCREWS SHALL BE USED.
2. THE BREAKING STRENGTH OF THE ASSEMBLED CABLE SHALL BE 1,700 POUNDS MINIMUM. ALLOW FOR MAXIMUM 6" SLACK IN THE CABLE.
3. ALUMINUM TAG WITH POLE IDENTIFICATION NUMBERS AS PER SPECIAL PROVISIONS.
4. ALL PLATE EDGES SHALL BE SMOOTH.

*Paul Kovacs*  
APPROVED, CHIEF ENGINEERING OFFICER DATE 2-22-2018

DATE	REVISIONS

SHEET 1 OF 1



MAST ARM  
CABLE ASSEMBLY  
(SINGLE MAST ARM)

STANDARD H17

**GENERAL NOTES - EROSION AND SEDIMENT CONTROLS**

1. THE WORK DESCRIBED ON THESE DRAWINGS IS AN INTEGRAL PART OF THE STORM WATER POLLUTION PREVENTION PLAN USED TO OBTAIN A NPDES PERMIT FROM IEPA FOR THE CONSTRUCTION OF THIS PROJECT.
2. THE PURPOSE OF THE EROSION AND SEDIMENT CONTROL MEASURES INCLUDED FOR THIS PROJECT IS TO LIMIT THE SEDIMENT POLLUTION IMPACT OF ANY STORM WATER DISCHARGES THAT ORIGINATE ON THIS SITE OR OFF-SITE FLOWS THAT FLOW OVER THE DISTURBED AREAS.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT SEDIMENT TRANSPORT OFF THE SITE IS REDUCED BY A COMBINATION OF MINIMIZATION OF EROSION AT THE SOURCE AND INSTALLATION OF SPECIFIC MEASURES TO CONTROL OR REDUCE THE TRANSPORT OF SEDIMENT. A COPY OF THE EROSION AND SEDIMENT CONTROL PLAN, NOI, SWPPP, AND INSPECTION LOG BEING IMPLEMENTED BY THE CONTRACTOR SHALL BE ON THE CONSTRUCTION SITE AT ALL TIMES.
4. TO THE MAXIMUM EXTENT POSSIBLE EROSION SHALL BE MINIMIZED AT THE SOURCE. ALL FLOWS ORIGINATING OFF THE CONSTRUCTION SITE SHALL BE DIVERTED AROUND DISTURBED AREAS OR SHALL BE CONVEYED THROUGH THE SITE IN A MANNER THAT UNTREATED ON-SITE RUNOFF, SHALL BE MINIMIZED AND DOES NOT MIX WITH THE OFF-SITE RUNOFF.
5. ALL RUNOFF ORIGINATING ON DISTURBED AREAS ASSOCIATED WITH THIS PROJECT WILL PASS THROUGH ONE OR MORE MEASURES THAT WILL MINIMIZE THE OFF-SITE SEDIMENT IMPACTS OF THE CONSTRUCTION ACTIVITY.
6. ALL PERMANENT SEDIMENT BASINS, PERMANENT STORM WATER CONTROL MEASURES, AND RUNOFF CONTROL MEASURES REQUIRED TO KEEP OFF-SITE RUNOFF FROM FLOWING OVER THE CONSTRUCTION AREA WILL BE INSTALLED BEFORE CLEARING AND STRIPPING OF THE SITE PROCEEDS. PRIOR TO PROCEEDING WITH EARTHWORK ON A PROJECT THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A PROPOSED EARTHWORK AND STABILIZATION SCHEDULE FOR REVIEW AND APPROVAL.
7. A MAXIMUM OF 10 ACRES IS ALLOWED TO BE IN SOME STAGE OF GRADING AT A SINGLE TIME. ADDITIONAL AREAS (UP TO 10 ACRES) MAY BE CLEARED BUT SHALL NOT BE STRIPPED OF VEGETATION UNTIL THE GRADED AREAS HAVE BEEN PROTECTED FROM EROSION THROUGH INSTALLATION OF EITHER TEMPORARY OR PERMANENT MEASURES. WHENEVER POSSIBLE, THE GRADING SHALL BE COMPLETED TO THE DESIGN GRADE AND THE PERMANENT VEGETATION PLAN IMPLEMENTED PRIOR TO STARTING GRADING ACTIVITIES ON THE NEXT SITE.
  - A. WHEN BALANCING EARTHWORK (BORROW FROM A CUT USED AS FILL AT A LOCATION DISTANT FROM THE CUT) THE CHIEF ENGINEER WILL CONSIDER ALLOWING MORE THAN 10 ACRES OF CONSTRUCTION WORK AREAS AND STORAGE AREAS.
  - B. WHERE NEW INTERCHANGES ARE BEING CONSTRUCTED THE ALLOWABLE AREA BEING GRADED MAY BE LARGER THAN 10 ACRES WHEN THE CONTRACT DRAWINGS AND SWPPP DEFINE SUCH INCREASES.
  - C. VARIATIONS TO THE ABOVE MAY BE CONSIDERED BY THE CHIEF ENGINEER UNDER ALL THE FOLLOWING CONDITIONS:
    - IF THE CONTRACTOR FALLS BEHIND SCHEDULE THROUGH NO FAULT OF HIS OWN.
    - THE CONTRACTOR MUST PRESENT A SCHEDULE DEMONSTRATING THE NEED FOR SUCH VARIATION IN ORDER TO COMPLETE THE WORK ON TIME.
    - THE CONTRACTOR MUST COMPLY WITH ALL OTHER CONTRACT AND PERMIT REQUIREMENTS.
8. DISTURBED AREAS ARE TO BE PROTECTED FROM EROSION IN A TIMELY MANNER. UPON COMPLETION OF GRADING OR CONSTRUCTION, THE AREA SHALL BE STABILIZED (USING PERMANENT MEASURES WHEN POSSIBLE) WITHIN 7 CALENDAR

9. DAYS. TEMPORARY STABILIZATION THROUGH USE OF GROUND COVER, MULCHING, OR OTHER APPROVED MEASURES WILL BE INSTALLED WHENEVER SITE DEVELOPMENT WORK, GRADING OR OTHER EARTH DISTURBING ACTIVITIES CEASE TO BE CONTINUOUS FOR A PERIOD EXCEEDING 14 CALENDAR DAYS. THE 7/14 DAY REQUIREMENT IS TAKEN TO MEAN THAT THE STABILIZATION OPERATION IS COMPLETE OR NEARING COMPLETION IN THE DEFINED TIME.
9. STABILIZATION OF CUT OR FILL SLOPES WITH TEMPORARY OR PERMANENT EROSION CONTROL MEASURES IS REQUIRED WHENEVER THE CUT OR FILL ACTIVITY REACHES 15 FEET VERTICALLY OR THE FINISHED SLOPE EQUALS 50 FEET, WHICHEVER IS MORE RESTRICTIVE. ONCE THE STABILIZATION MEASURES ARE INSTALLED, THE PLACEMENT OF FILL OR EXCAVATION ACTIVITIES ARE ALLOWED TO PROCEED.
10. THE CONTRACTOR SHALL DESIGNATE ONE OF HIS EMPLOYEES AS EROSION AND SEDIMENT CONTROL MANAGER. THIS PERSON WILL BE RESPONSIBLE FOR IMPLEMENTATION OF THE EROSION AND SEDIMENT CONTROL PLAN ON ALL DISTURBED AREAS. THIS PERSON SHALL POSSESS THE NECESSARY TRAINING AND CERTIFICATION ON EROSION AND SEDIMENT CONTROL MEASURES FOR ACCEPTANCE BY THE ILLINOIS TOLLWAY. THIS EMPLOYEE IS TO HAVE THE AUTHORITY TO CARRY OUT THE IMPLEMENTATION OF ANY INSTRUCTIONS CONCERNING THE EROSION AND SEDIMENT CONTROL PLAN GIVEN BY THE ENGINEER. ALL MEASURES WILL BE INSPECTED BY THIS INDIVIDUAL AND THE ENGINEER ON A REGULAR BASIS (AT LEAST ONCE EVERY 7 DAYS) AND AFTER ANY RAINFALL EVENT GREATER THAN 0.5 INCHES, OR EQUIVALENT SNOWFALL (I.E. + 5").
11. SEDIMENT TRAPS, SEDIMENT BASINS, DITCHES, SILT FENCES, FENCES, STONE OUTLET STRUCTURES, EARTH BERMS, ETC. SHALL BE MAINTAINED DURING THE CONSTRUCTION SEASON AS WELL AS THE WINTER MONTHS AND OTHER TIMES WHEN THE PROJECT IS CLOSED DOWN. TRAPS WILL BE CLEANED WHEN THEY ARE 50% FILLED. SILT FENCE AND STONE OUTLET STRUCTURES SHALL HAVE SEDIMENT REMOVED WHEN IT REACHES 50% THE HEIGHT OF THE CONTROL DEVICE. THESE SPOILS WILL BE REMOVED TO AN APPROVED SITE.
12. SALVAGED TOPSOIL SHALL BE PLACED ON WELL DRAINED LAND AWAY FROM INTERMITTENT AND LIVE STREAMS OR WETLANDS WITH THE APPROPRIATE RUNOFF CONTROL AND SEDIMENT CONTROL MEASURES INSTALLED AROUND THE STORAGE SITE. SALVAGED TOPSOIL SHALL BE STABILIZED WITH STRAW MULCH IMMEDIATELY AFTER SHAPING OF THE PILE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS. SILT FENCE SHALL BE PROVIDED AT THE PERIMETER OF THE STOCKPILE.
13. MATERIALS EXCAVATED FOR THE CONSTRUCTION OR CLEAN OUT OF SEDIMENT TRAPS SHALL NOT BE STOCKPILED IN THE VICINITY OF THE TRAP. IT SHALL BE PLACED IN AN EMBANKMENT OR WASTED AS DIRECTED BY THE ENGINEER.
14. EXCAVATION TO BE USED FOR EMBANKMENTS SHALL NOT BE STOCKPILED UNLESS PERIMETER CONTROLS ARE UTILIZED. WHEN THIS MATERIAL IS STOCKPILED FOR THE CONVENIENCE OF THE CONTRACTOR THE COST OF PROVIDING THE CONTROLS ARE THE RESPONSIBILITY OF THE CONTRACTOR. IF THE MATERIAL IS STOCKPILED AT THE DIRECTION OF THE ENGINEER THE ILLINOIS TOLLWAY WILL ASSUME THE COSTS OF THE CONTROLS.
15. SEDIMENT LADEN DEWATERING DISCHARGE MUST BE DIRECTED TO AN APPROVED SEDIMENT TRAPPING MEASURE PRIOR TO RELEASE FROM THE SITE.
16. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONSIDERED TEMPORARY. THESE MEASURES WILL BE REMOVED BY THE CONTRACTOR AS DESIGNATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. DISTURBED AREAS ARE TO BE RESTORED UPON REMOVAL.

17. WHEN THE CONTRACTOR REQUESTS A CHANGE TO POSTPONE COMPLETION OF THE EXCAVATION OF A SPECIFIC AREA AS A CONTINUOUS OPERATION AND PLACING THE TOPSOIL AS DEFINED IN THE STANDARD SPECIFICATIONS, THE ENGINEER MAY ALLOW THE CONTRACTOR TO STABILIZE THE AREA USING TEMPORARY STABILIZATION WITH STRAW MULCH PROVIDING THE FOLLOWING CONDITIONS ARE MET:
  - A. ALL AREAS BEING STABILIZED ARE 1:3 (V:H) SLOPES OR FLATTER.
  - B. THE COST OF PREPARING THE SEED BED AND STABILIZING THE AREA WITH TEMPORARY STABILIZATION WITH STRAW MULCH IS THE RESPONSIBILITY OF THE CONTRACTOR.
  - C. ALL REQUIRED SEDIMENT CONTROL MEASURES FOR THE SECTION OF ROAD IN QUESTION HAVE BEEN INSTALLED AND ARE BEING MAINTAINED.
18. THE CONTRACTOR SHALL PREPARE A SKETCH SHOWING DIMENSIONS FROM TWO ADJACENT OBJECTS TO ALL DRAINAGE STRUCTURES THAT HAVE BEEN PROTECTED. THIS IS TO LOCATE THE STRUCTURE IN CASE OF HEAVY RAINFALL AND THE STRUCTURE IS BLOCKED OR FLOODED. THE ENGINEER SHALL BE PROVIDED WITH A COPY OF THE SKETCH.
19. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN ACCORDANCE WITH THE STANDARD DRAWINGS AND SPECIAL PROVISION (S.P.) 111, STORM WATER POLLUTION PREVENTION PLAN INCLUDING CONTROLS AND SPILL PREVENTION-MATERIAL MANAGEMENT PRACTICES. THE CONTRACTOR AND ALL SUBCONTRACTORS SHALL SIGN THE CONTRACTOR'S CERTIFICATION STATEMENT. LIST THE MATERIALS OR SUBSTANCES EXPECTED TO BE PRESENT ON-SITE IN THE INVENTORY FOR POLLUTION PREVENTION PLAN AND SHALL NAME TWO ADDITIONAL INDIVIDUALS TO ASSIST IN SPILL PREVENTION AND CLEAN UP AT THE PRECONSTRUCTION CONFERENCE. SEE S.P. 111.
20. AT THE TIME OF THE PRECONSTRUCTION CONFERENCE, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL THE PROPOSED CONCRETE TRUCK WASHOUT LOCATIONS AS REQUIRED IN SPECIAL PROVISION 111. RUNOFF FROM WASH AREAS SHALL BE CONTAINED IN DESIGNATED AREAS SO THAT RUNOFF DOES NOT REACH THE STORM SEWER OR DITCH SYSTEMS. WASHOUT WATER SHALL BE TAKEN TO AN APPROVED DISCHARGE LOCATION.
21. IF AN ALTERNATIVE SIZE DITCH CHECK IS PROPOSED BY THE CONTRACTOR FOR USE ON THE PROJECT, A CONTRACT DITCH CHECK SPACING WILL NEED TO BE RECALCULATED BY THE CONTRACTOR IN ACCORDANCE WITH THE ILLINOIS TOLLWAY EROSION AND SEDIMENT CONTROL, LANDSCAPE DESIGN CRITERIA MANUAL. ANY RESULTING QUANTITY CHANGES MUST BE APPROVED BY THE ENGINEER PRIOR TO START OF WORK.
22. ALL RUNOFF, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE LOCATED OUTSIDE THE CLEAR ZONE. THE CONTRACTOR SHALL REVIEW THE LOCATIONS OF ALL MEASURES AND PERFORM A BARRIER WARRANT ANALYSIS IF NECESSARY TO ENSURE ROADSIDE OBSTACLES ARE NOT CREATED.
23. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).

*Paul Kovacs*  
 APPROVED..... CHIEF ENGINEERING OFFICER DATE 2-7-2012..

DATE	REVISIONS
3-31-2014	REVISED GENERAL NOTES.
3-11-2015	REVISED NOTES.
3-31-2016	REMOVED TEMPORARY DITCH CHECKS
3-01-2018	REVISED BUFFER WIDTHS AND DETAIL.



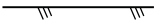





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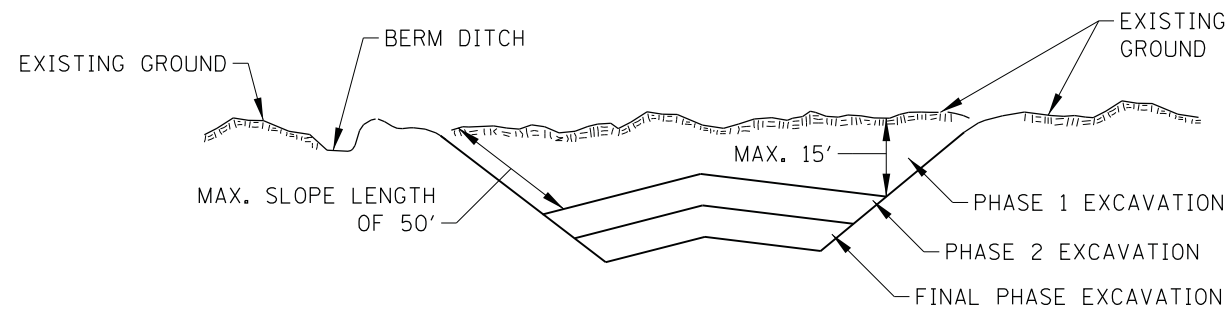


**TEMPORARY EROSION AND SEDIMENT CONTROLS**

STANDARD K1-07

## STANDARD SYMBOLS

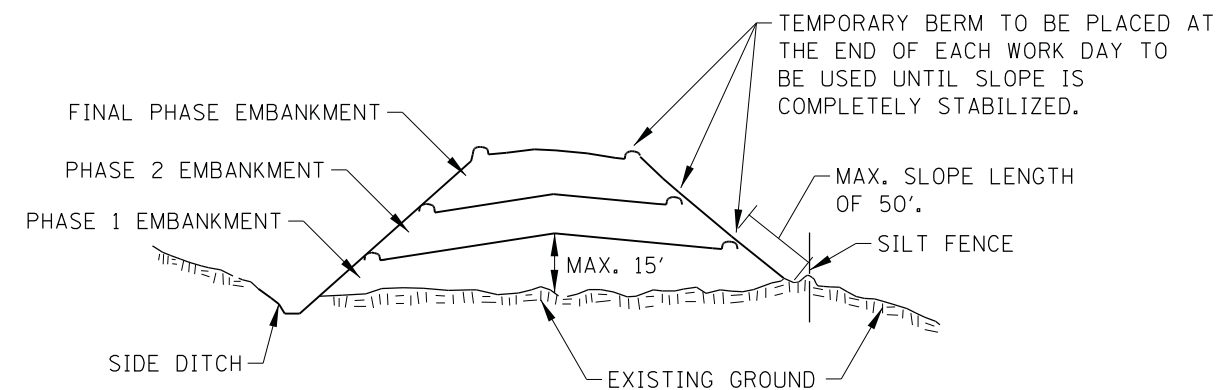
	CLEARING & GRADING LIMITS (LIMITS OF CONSTRUCTION)		SILT FENCE
	CULVERT INLET PROTECTION-FENCE		STABILIZED CONSTRUCTION ENTRANCE
	CULVERT INLET PROTECTION-STONE		STONE OUTLET STRUCTURE SEDIMENT TRAP
	CIP		STREAM DIVERSION
	DEWATERING BASINS		SUPER SILT FENCE
	DIVERSION DIKE		TEMPORARY DITCH CHECK
	DRAINAGE DIVIDE		TEMPORARY PIPE SLOPE DRAIN
	EXISTING DRAINAGE PATH		TEMPORARY RIPRAP
	FILTER FABRIC INLET PROTECTION, COVER TYPE		TEMPORARY ROCK CHECK DAM
	FILTER FABRIC INLET PROTECTION, BASKET TYPE		TEMPORARY STREAM CROSSING
	FLOTATION BOOM		TEMPORARY SWALE
	INITIAL CONSTRUCTION ITEM		TREE PROTECTION
	PROPOSED DRAINAGE PATH		
	RECTANGULAR INLET PROTECTION		
	SEDIMENT BASIN AGGREGATE BERM		
	SEDIMENT BASIN		



**NOTES:**

1. ALL CUT SLOPES SHALL BE EXCAVATED AND STABILIZED (PLACE TOPSOIL, PREPARE SEEDBED, APPLY SEED, PROTECT SLOPE WITH MULCH OR EROSION BLANKET) AS THE WORK PROGRESSES.
2. CONSTRUCTION SEQUENCE:
  - A) EXCAVATE AND STABILIZE BERM, SIDE AND OUTLET DITCHES, PROVIDE SEDIMENT TRAPS FOR DITCHES.
  - B) PERFORM PHASE 1 EXCAVATION AND STABILIZE SLOPES WITH PERMANENT SEEDING.
  - C) PERFORM PHASE 2 EXCAVATION AND STABILIZE SLOPES WITH PERMANENT SEEDING. OVER SEED PHASE 1 SLOPES, IF REQUIRED.
  - D) PERFORM FINAL PHASE EXCAVATION, DRESS, SEED AND MULCH SLOPES WITH PERMANENT SEEDING. STABILIZE SURFACE DRAIN DITCHES. OVER SEED PHASE 1 & 2 SLOPES, IF REQUIRED, AS DETERMINED BY THE ENGINEER.
3. IF PERMANENT SEEDING CANNOT BE PLACED DUE TO CONTRACT REQUIREMENTS REGARDING PLANTING SEASONS, THE CUT SLOPE IS TO HAVE TOPSOIL PLACED AND SEEDING PREPARED PRIOR TO USING TEMPORARY STABILIZATION WITH STRAW MULCH OR TEMPORARY SEEDING WITH EROSION BLANKET.
4. THE CONTRACTOR HAS THE OPTION OF DELAYING TOPSOIL SEEDING BEYOND THE 15 FOOT LIMITATION. IF THIS OPTION IS CHOSEN, THE CUT SLOPE MUST BE "TEMPORARY STABILIZED" AT NO COST TO THE ILLINOIS TOLLWAY.
5. ONCE THE EXCAVATION WITHIN A SPECIFIC AREA HAS BEGUN, THE OPERATION SHALL BE CONTINUOUS FROM STRIPPING THROUGH THE COMPLETION OF THE GRADING AND PLACEMENT OF SLOPE STABILIZATION MEASURES. ANY INTERRUPTIONS IN THE OPERATION OF 14 DAYS OR MORE MUST BE APPROVED BY THE ENGINEER. ANY VIOLATION OF THIS REQUIREMENT WILL RESULT IN THE CONTRACTOR ASSUMING THE RESPONSIBILITY OF PLACING TEMPORARY STABILIZATION AT HIS OWN COST AND EXPENSE.

EXCAVATION PHASING PLAN - CUT SECTION



**NOTES:**


1. THE EMBANKMENT WILL BE MADE IN STAGES NOT TO EXCEED 15' IN HEIGHT OR 50' IN SLOPE LENGTH. THE EMBANKMENT SLOPES WILL BE STABILIZED USING TEMPORARY MEASURES BEFORE BEGINNING NEXT STAGE.
2. AT THE END OF EACH WORK DAY TEMPORARY BERMS (EARTH) AND TEMPORARY PIPE SLOPE DRAINS WILL BE CONSTRUCTED ALONG THE TOP EDGE(S) OF THE EMBANKMENT TO INTERCEPT SURFACE RUNOFF.
3. CONSTRUCTION SEQUENCE:
  - A) EXCAVATE AND STABILIZE SIDE DITCH AND/OR INSTALL PROPOSED PERIMETER CONTROLS AT THE TOE OF SLOPE.
  - B) PLACE PHASE 1 EMBANKMENT AND STABILIZE WITH TEMPORARY SEEDING AND MULCH.
  - C) PLACE PHASE 2 EMBANKMENT AND STABILIZE WITH TEMPORARY SEEDING AND MULCH.
  - D) PLACE FINAL PHASE EMBANKMENT AND STABILIZE WITH PERMANENT VEGETATIVE PLAN ON THE ENTIRE SLOPE.
4. ONCE THE PLACEMENT OF FILL WITHIN A SPECIFIC AREA HAS BEGUN, THE OPERATION SHALL BE CONTINUOUS FROM STRIPPING THROUGH THE COMPLETION OF THE GRADING AND PLACEMENT OF PERMANENT VEGETATIVE PLAN. ANY INTERRUPTIONS IN THE OPERATION OF 14 DAYS OR MORE MUST BE APPROVED BY THE ENGINEER. ANY VIOLATION OF THIS REQUIREMENT WILL RESULT IN THE CONTRACTOR ASSUMING THE RESPONSIBILITY OF PLACING TEMPORARY STABILIZATION AT HIS OWN COST AND EXPENSE.

EMBANKMENT PHASING PLAN - FILL SECTION

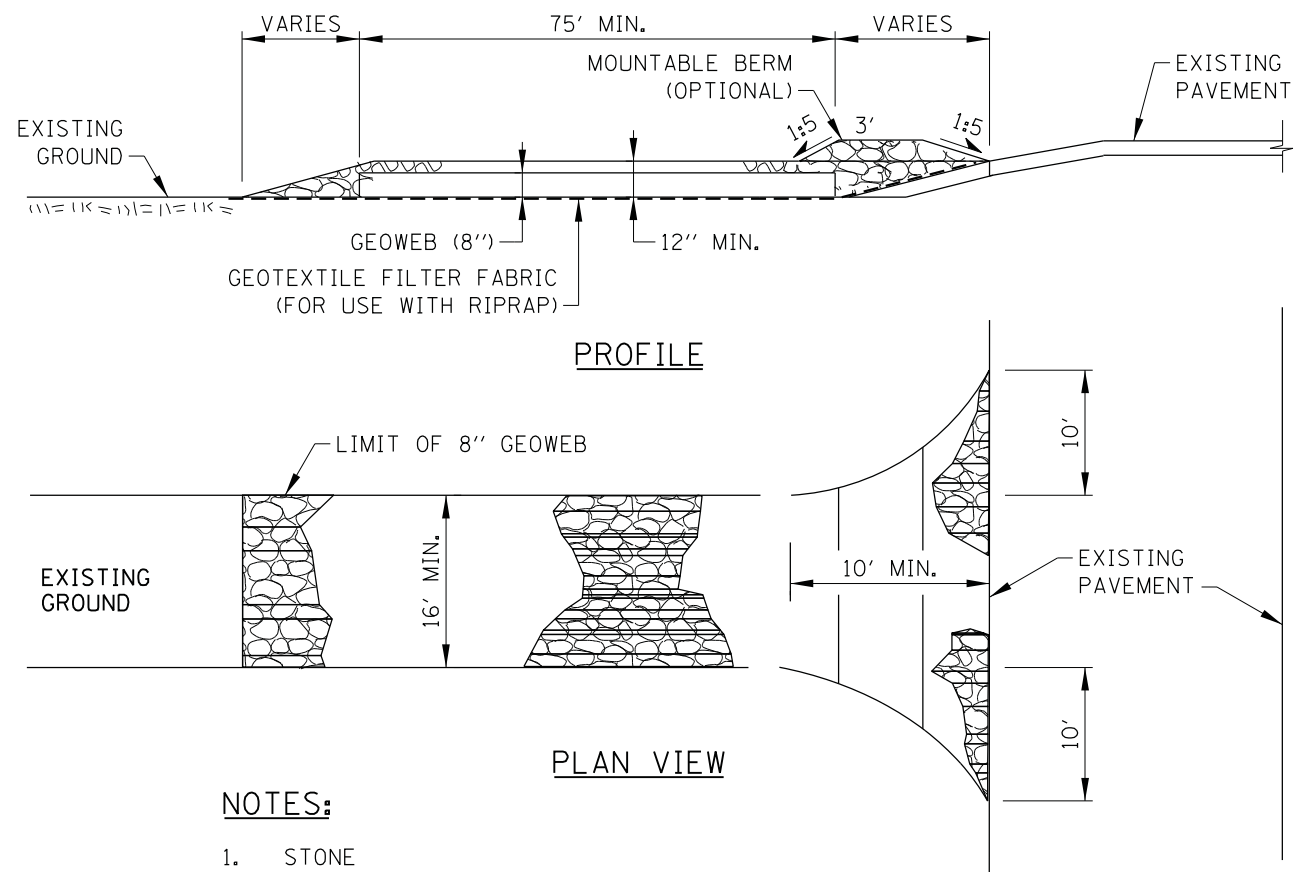


TEMPORARY EROSION AND SEDIMENT CONTROLS

STANDARD K1-07

  
 APPROVED..... DATE 2-7-2012..  
CHIEF ENGINEERING OFFICER

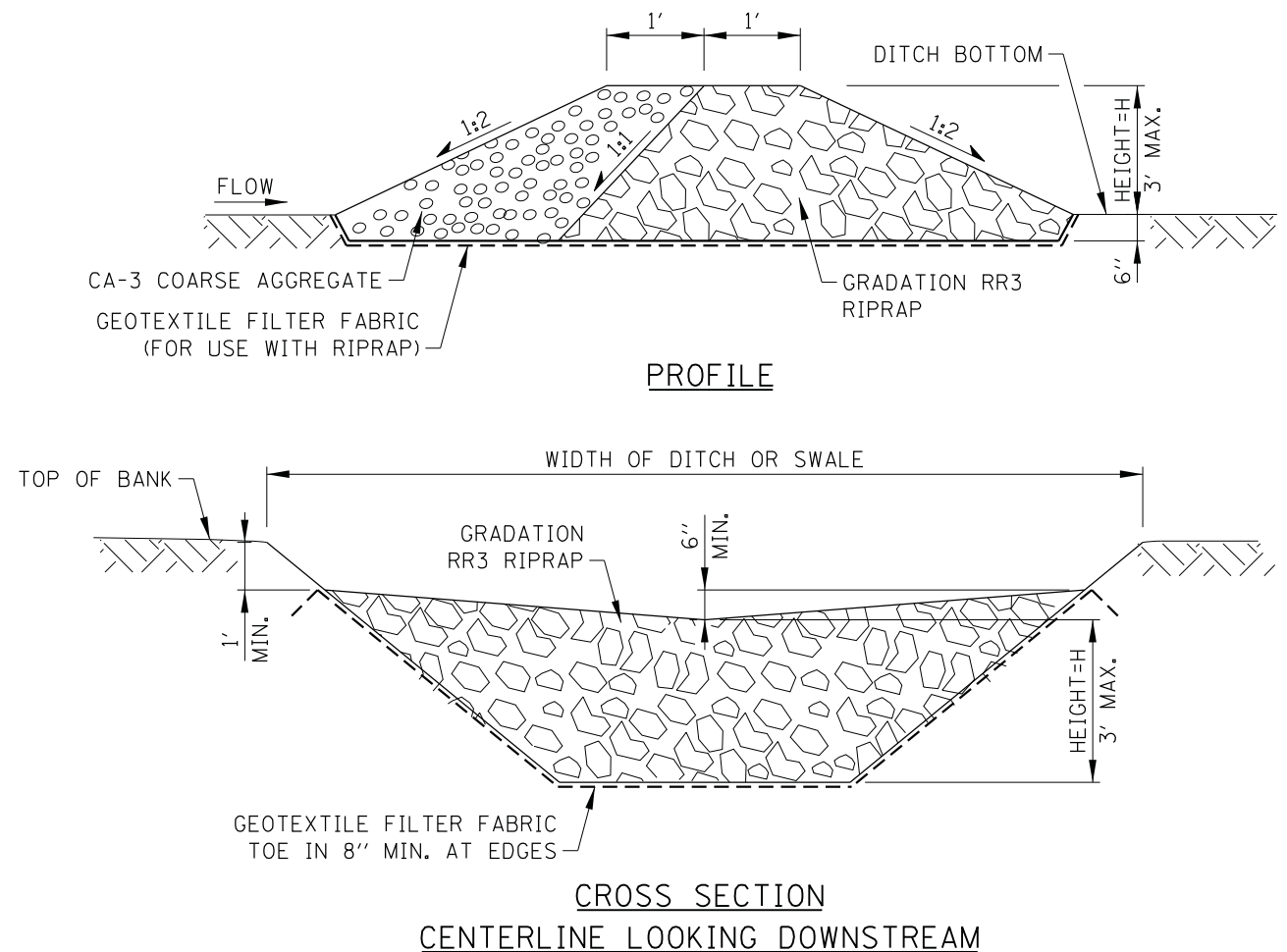
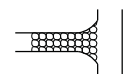




**NOTES:**

1. STONE
  - A. STONE SIZE - CA-3
  - B. LENGTH - AS REQUIRED, BUT NOT LESS THAN 75'.
  - C. THICKNESS - NOT LESS THAN 4" ABOVE TOP OF GEOWEB.
2. WIDTH - 16' MINIMUM FOR ONE WAY TRAFFIC; 24' MINIMUM FOR TWO-WAY TRAFFIC; BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
3. GEOWEB NOT LESS THAN 8" IN DEPTH WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
4. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 1:5 SLOPES WILL BE PERMITTED.
5. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHALL BE REMOVED IMMEDIATELY.
6. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER HEAVY USE AND EACH RAINFALL EVENT.
7. TO BE USED TO REDUCE OR ELIMINATE TRACKING OF SEDIMENT ONTO PUBLIC STREETS. PLACE AT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS. DISTURBED AREAS TO BE RESTORED UPON REMOVAL.

**STABILIZED CONSTRUCTION ENTRANCE**  
STANDARD SYMBOL

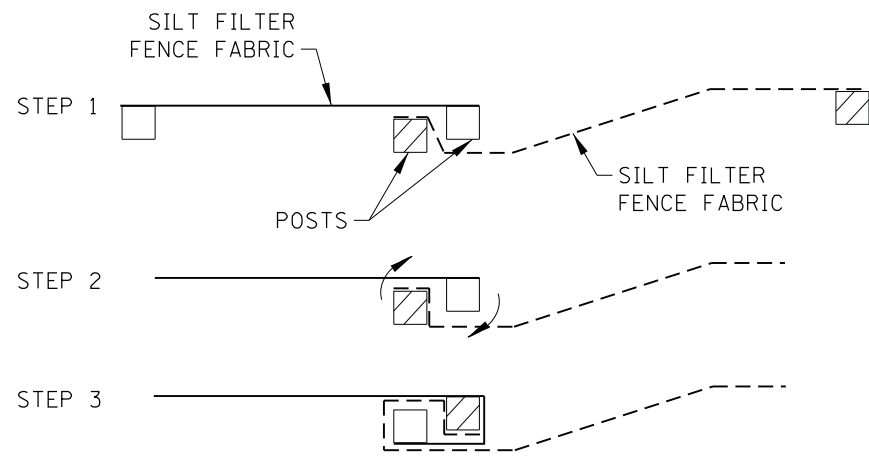


**NOTES:**

1. FOR LOCATIONS AND HEIGHTS OF ROCK CHECK DAMS REFER TO CONSTRUCTION DRAWINGS.
2. TEMPORARY ROCK CHECK DAMS SHALL BE REPLACED WHEN THEY CEASE TO FUNCTION AS INTENDED DUE TO WASHOUT OR CONSTRUCTION TRAFFIC DAMAGE.
3. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 50% OF DAM HEIGHT. THIS PRACTICE IS NOT A SUBSTITUTE FOR MAJOR PERIMETER TRAPPING SUCH AS A TEMPORARY SEDIMENT TRAP OR BASIN.
4. SPACING BETWEEN DAMS SHALL BE SUCH THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS TOP OF RIPRAP AT THE CENTER OF THE DOWNSTREAM DAM.
5. WHEN A TEMPORARY ROCK CHECK DAM IS IN THE CLEAR ZONE, IT MUST BE MADE TRAVERSABLE TO AN ERRANT VEHICLE. THE MAXIMUM UNSHIELDED TRANSVERSE SLOPE ALLOWED TO FACE TRAFFIC SHALL BE 1:10 (V:H) AND THE MAXIMUM TRANSVERSE FACING AWAY FROM TRAFFIC SHALL BE 1:4 (V:H). AN UNSHIELDED TEMPORARY ROCK CHECK DAM SHALL HAVE AN ADDITIONAL LAYER OF CA-3 COURSE AGGREGATE (6" MIN.) PLACED ON THE DOWNSTREAM SIDE OF THE ROCK CHECK DAM. THE GEOTEXTILE FILTER FABRIC SHALL BE PLACED ALONG THE ENTIRE BASE OF THE TEMPORARY ROCK CHECK DAM.

**TEMPORARY ROCK CHECK DAM**  
STANDARD SYMBOL

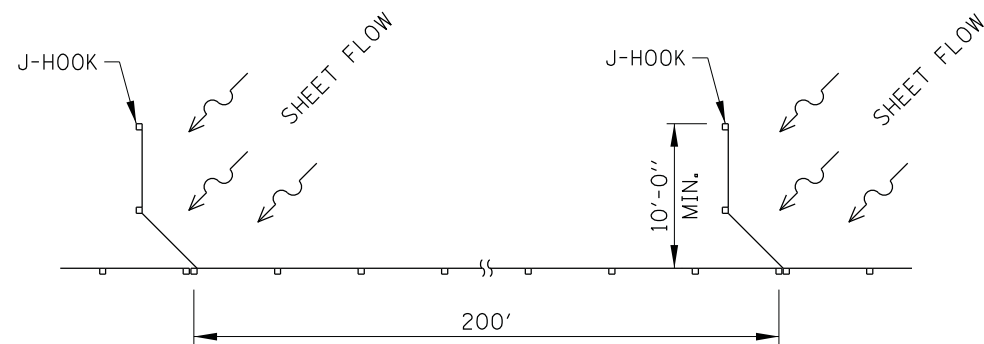




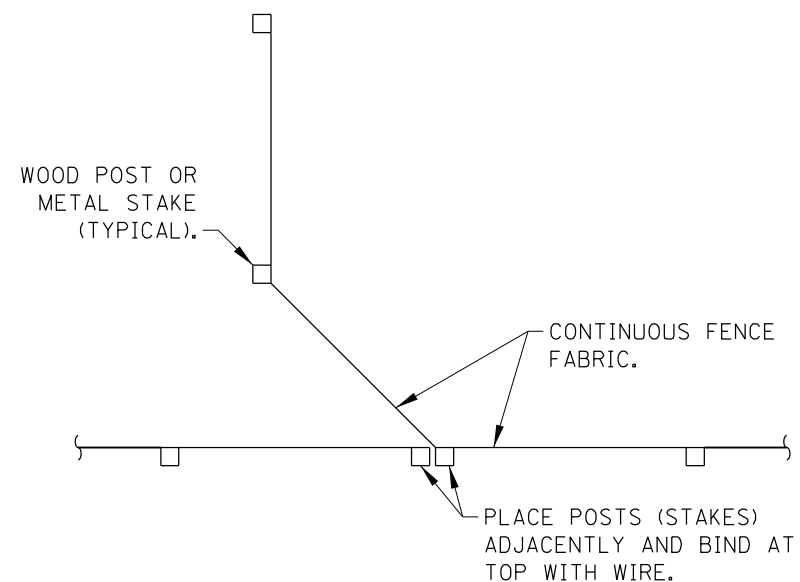
**NOTES:**

1. PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL.
3. DRIVE BOTH POSTS A MINIMUM OF 24" INTO THE GROUND.

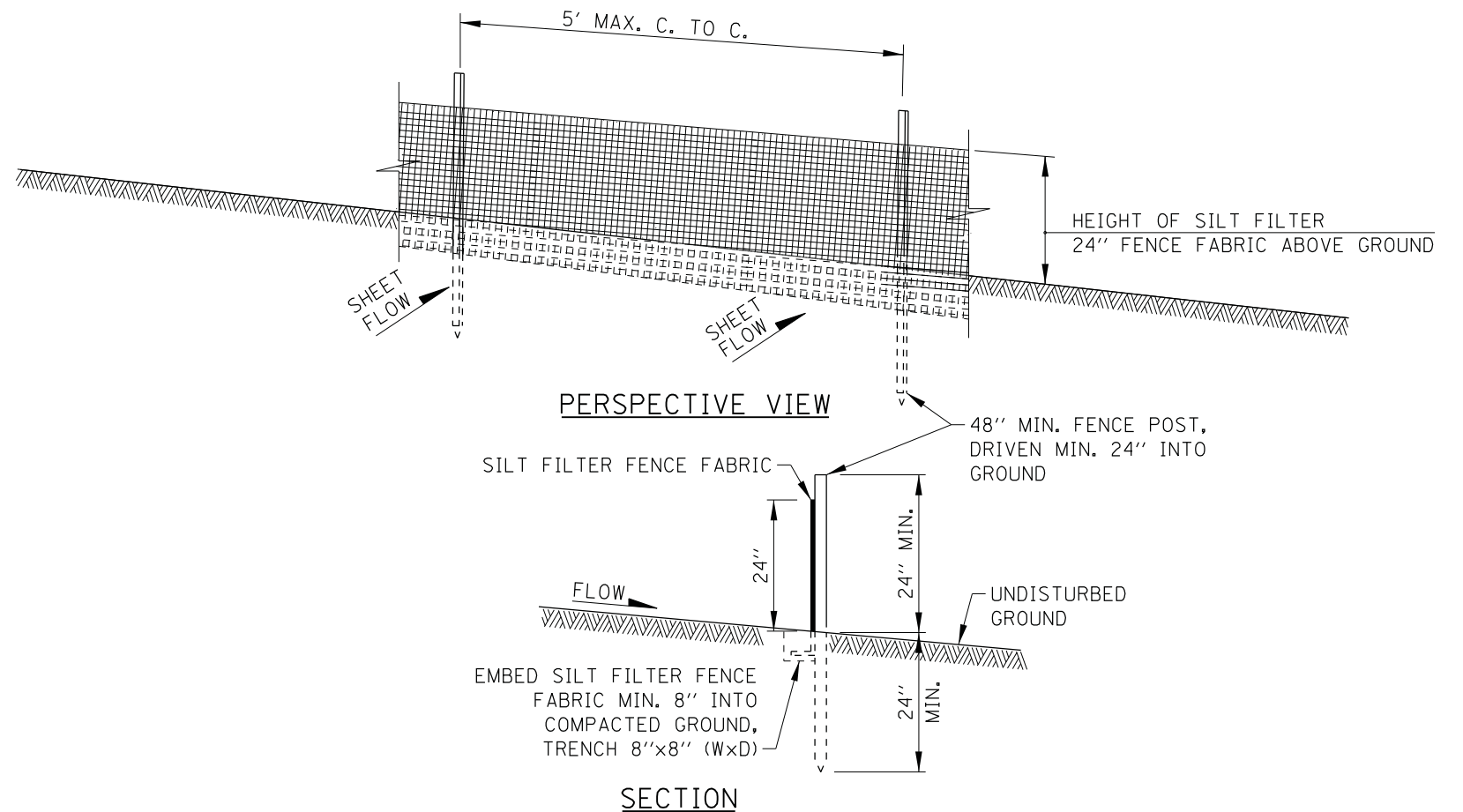
**ATTACHING TWO SILT FENCES**



**SILT FILTER J-HOOK PLACEMENT**



**J-HOOK**



**NOTES:**

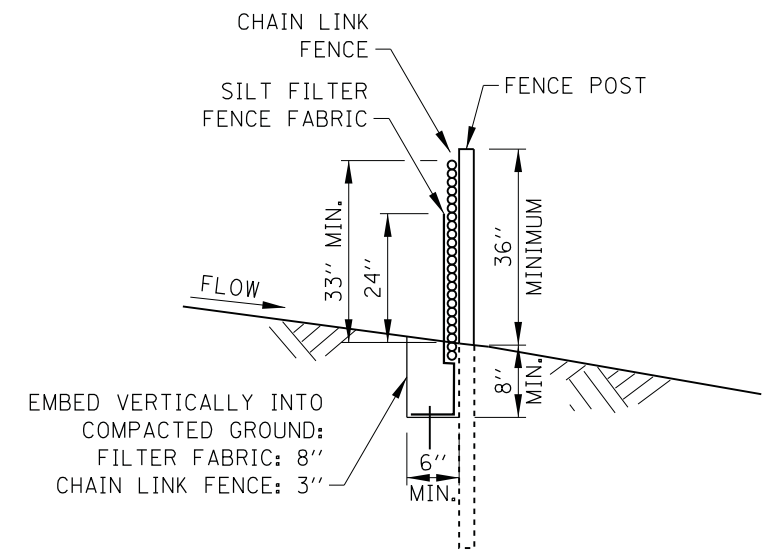
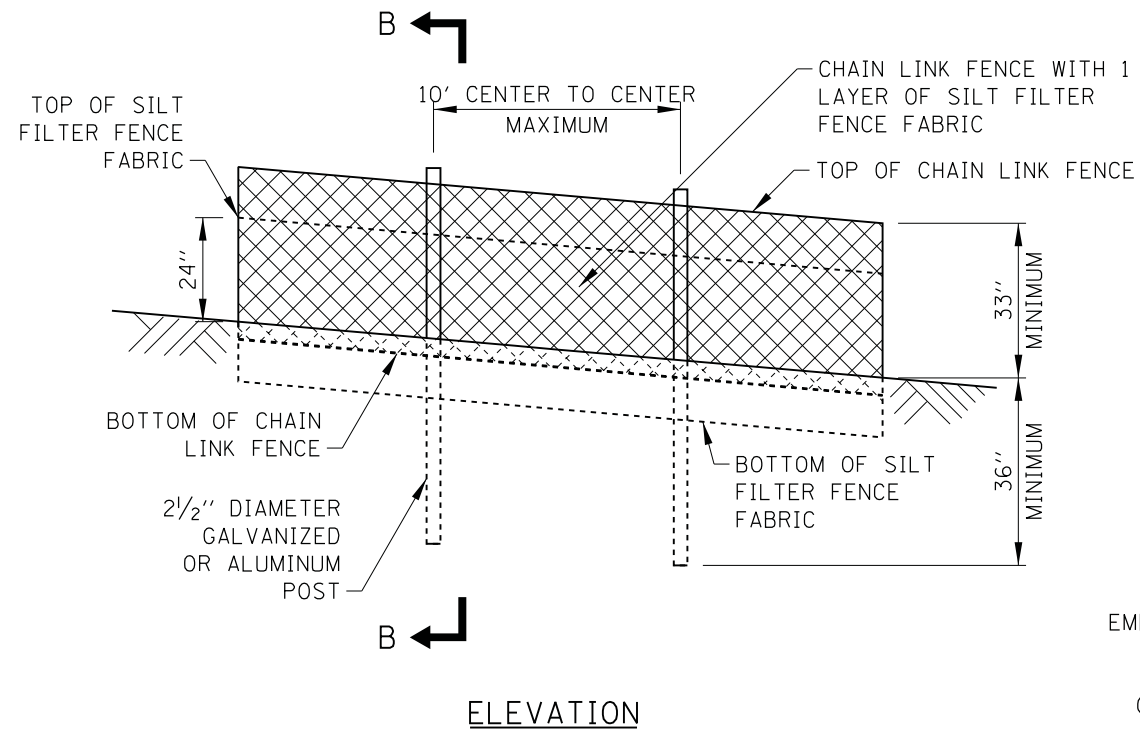
1. SILT FILTER FENCE FABRIC TO BE FASTENED SECURELY TO FENCE POSTS.
2. WHEN TWO SECTIONS OF SILT FILTER FENCE FABRIC ADJOIN EACH OTHER THEY SHALL BE SECURELY FASTENED PER THE DETAIL ATTACHING TWO SILT FENCES.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED. SILT BUILD UP AGAINST FENCE SHALL BE REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE, OR WHEN SILT REACHES 50% OF FENCE HEIGHT.
4. FENCE POSTS: 2"x2" (NOMINAL) HARDWOOD OR SCHEDULE 40 METAL PIPE OR 1.33 LB/FT MIN. STANDARD T OR U SECTION STEEL POSTS.
5. THIS DEVICE IS TO CONTROL SHEET FLOW ONLY. DO NOT USE FOR CONCENTRATED FLOWS, DRAINAGE CHANNELS, ABOVE OR BELOW DRAINAGE PIPES.

**SILT FENCE (SF)**  
STANDARD SYMBOL

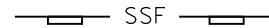


**NOTES:**

1. FENCING SHALL BE 36" IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH ILLINOIS TOLLWAY STANDARD DRAWING D1, RIGHT-OF-WAY FENCE, TYPE 1. THE SPECIFICATION FOR A 6' FENCE SHALL BE USED, SUBSTITUTING 36" FABRIC AND 6' LENGTH POSTS.
2. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES. THE LOWER TENSION WIRE, BRACE AND TRUSS RODS, DRIVE ANCHORS AND POST CAPS ARE NOT REQUIRED. PULL POSTS, CORNER POSTS, HORIZONTAL BRACING AND TIE RODS ARE NOT REQUIRED.
3. SILT FILTER FENCE FABRIC SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.
4. WHEN TWO SECTIONS OF SILT FILTER FENCE FABRIC ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED 2' HORIZONTALLY.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED. SILT BUILD-UP AGAINST FENCE SHALL BE REMOVED WHEN SILT REACHES 50% OF FENCE HEIGHT.
6. SUPER SILT FENCE IS TO BE USED TO PROTECT ENVIRONMENTALLY SENSITIVE AREAS AND CONTROL SEDIMENT RUNOFF FROM CONSTRUCTION SITES WHEN ADDITIONAL REINFORCEMENT IS REQUIRED DUE TO SLOPE OF SITE OR VOLUME OF STORM WATER RUNOFF.



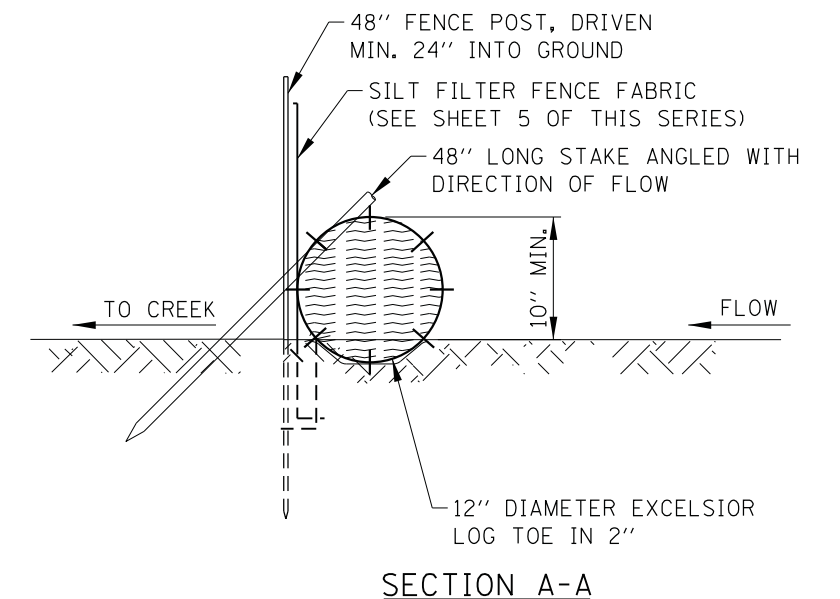
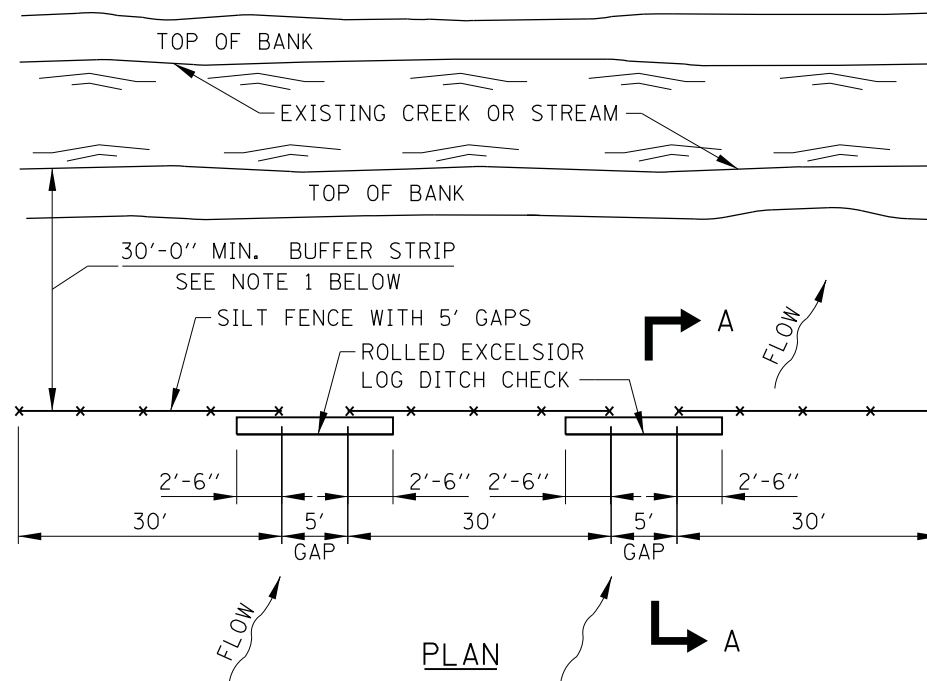
**SUPER SILT FENCE (SSF)**  
STANDARD SYMBOL



**SECTION B-B**

**NOTES:**

1. A MINIMUM 30' WIDE VEGETATED BUFFER STRIP SHALL BE PRESERVED AND/OR RE-ESTABLISHED WHERE POSSIBLE ALONG EXISTING CHANNELS.
  - a. FOR ANY WATERS OF THE U.S. DETERMINED TO BE A HIGH-QUALITY AQUATIC RESOURCE, THE BUFFER MUST BE A MINIMUM OF 100'.
  - b. FOR ANY WATERS OF THE U.S. THAT DO NOT QUALIFY AS WETLAND (FOR EXAMPLE LAKES, RIVERS, PONDS, ETC.), THE BUFFER MUST BE A MINIMUM OF 50' FROM THE ORDINARY HIGH WATER MARK (OHWM).
  - c. FOR ANY JURISDICTIONAL WETLAND FROM 0.25 ACRES UP TO 0.50 ACRES IN SIZE, THE BUFFER MUST BE A MINIMUM OF 30'.
  - d. FOR ANY JURISDICTIONAL WETLAND OVER 0.50 ACRES IN SIZE, THE BUFFER MUST BE A MINIMUM OF 50'.
2. THE 5' GAPS IN THE SILT FENCE AND THE 20" DIAMETER TEMPORARY DITCH CHECKS ARE TO ALLOW FLOODWATER FLOW INTO THE CREEK FROM THE SITE WITHOUT DAMAGE TO THE SILT FENCE.
3. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SILT SHALL BE REMOVED WHEN IT REACHES 50% OF ROLL HEIGHT. WHEN ROLLED EXCELSIOR LOG BECOMES LESS THAN 10" IT SHALL BE REPLACED.

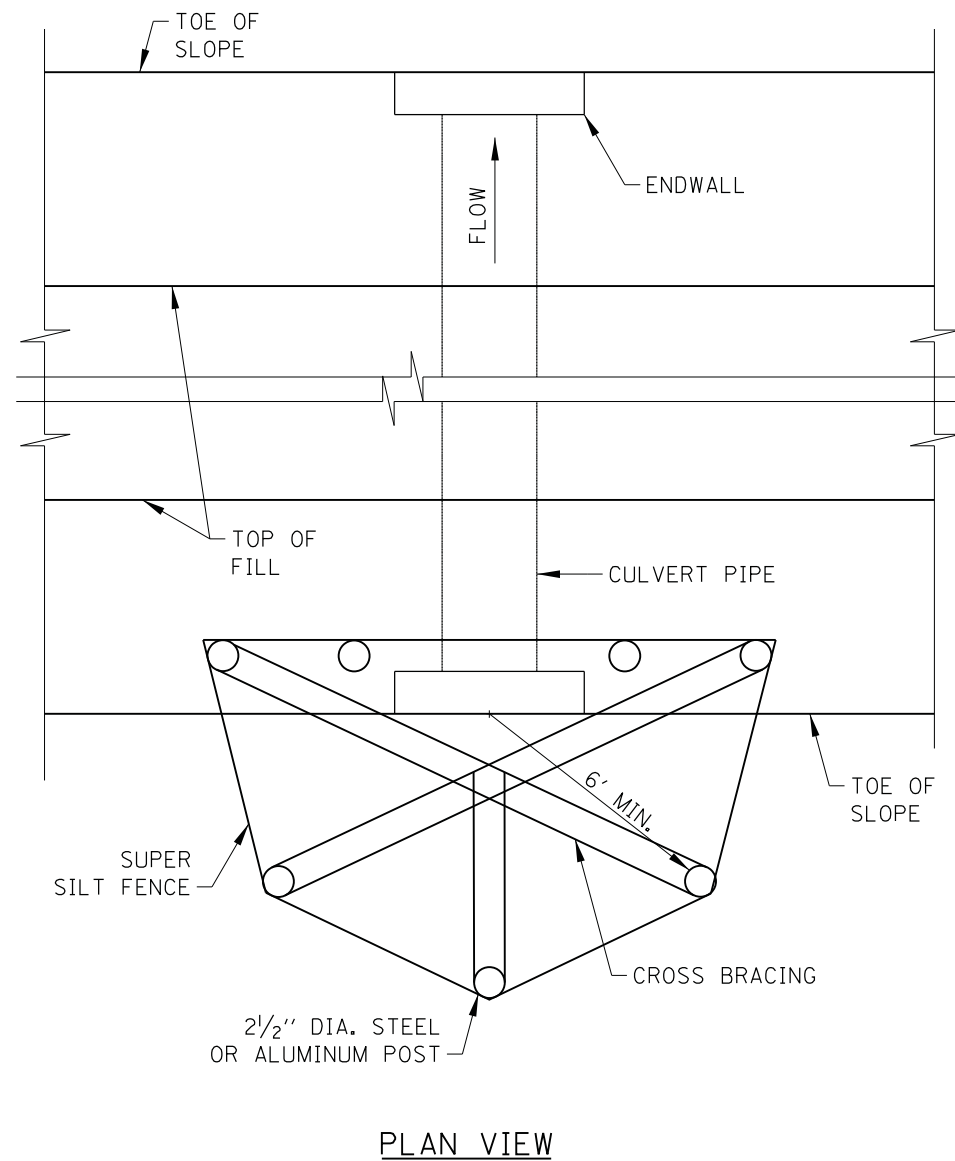


**SECTION A-A**



**CREEK BUFFER STRIP AND SILT FENCE**

APPROVED: *Paul Kovacs* DATE 2-7-2012  
CHIEF ENGINEERING OFFICER



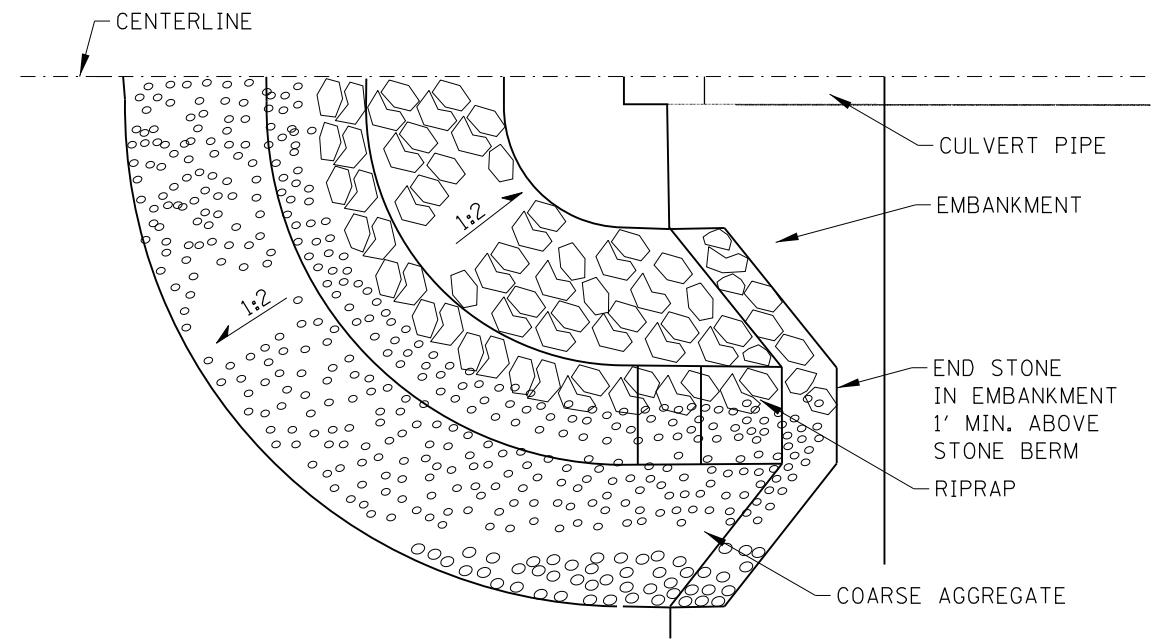
PLAN VIEW

**NOTES:**

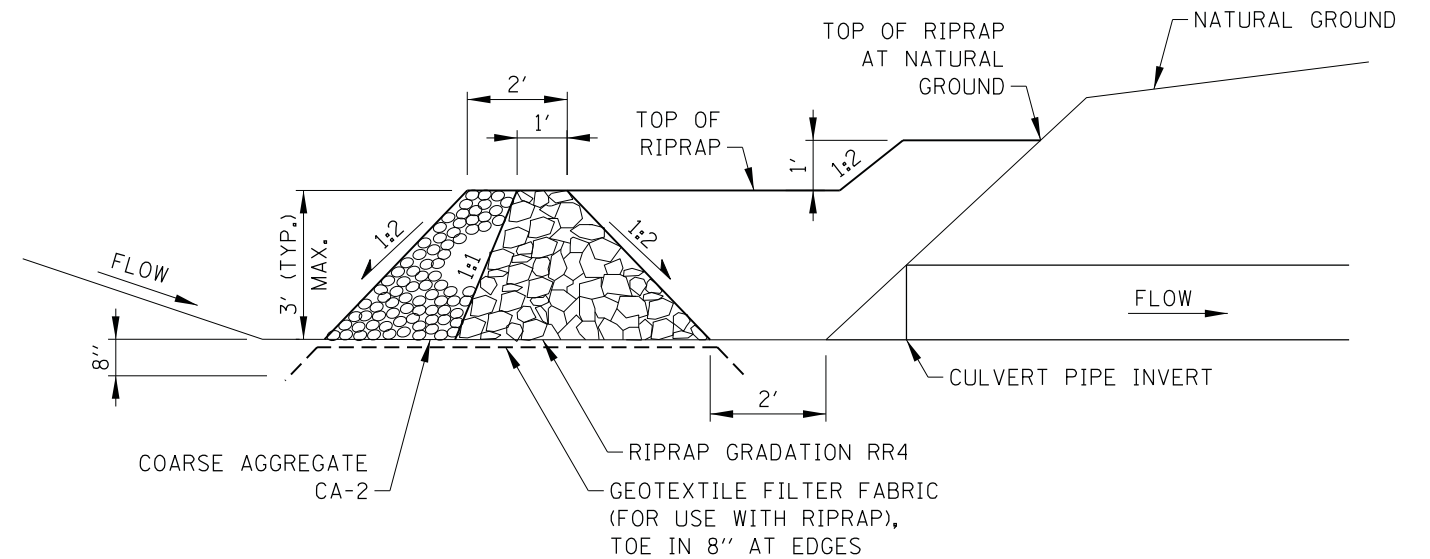
1. CONSTRUCT SUPER SILT FENCE PER SHEET 6 IN THIS SERIES, EXCEPT THE MAXIMUM POST SPACING SHALL BE 3 FEET AND THE TOPS OF POSTS SHALL BE CROSSED BRACED.
2. MAINTENANCE SHALL BE PERFORMED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 50% OF THE FENCE HEIGHT.
3. THE CULVERT INLET PROTECTION AND SEDIMENT SHALL BE REMOVED WHEN CONSTRUCTION IS COMPLETE.
4. THE CULVERT INLET PROTECTION - FENCE TO BE MEASURED AND PAID FOR AS SUPER SILT FENCE.

**CULVERT INLET PROTECTION - FENCE**

STANDARD SYMBOL



HALF PLAN VIEW



CENTERLINE CROSS SECTION

**NOTES:**

1. MAINTENANCE SHALL BE PERFORMED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 50% OF THE STONE HEIGHT.
2. THE CULVERT INLET PROTECTION AND SEDIMENT SHALL BE REMOVED WHEN CONSTRUCTION IS COMPLETE.
3. THE CULVERT INLET PROTECTION - STONE TO BE MEASURED AND PAID FOR AS TEMPORARY RIPRAP.

**CULVERT INLET PROTECTION - STONE**

STANDARD SYMBOL



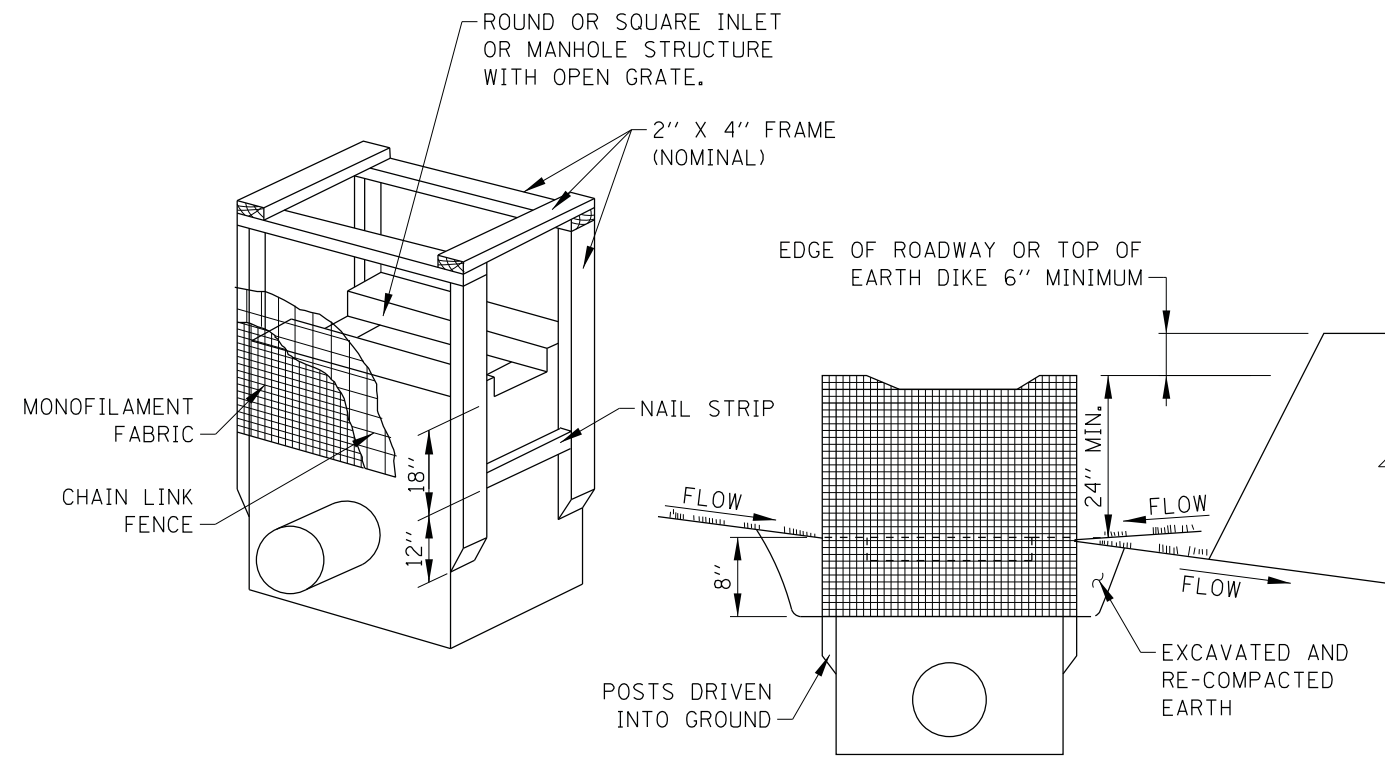
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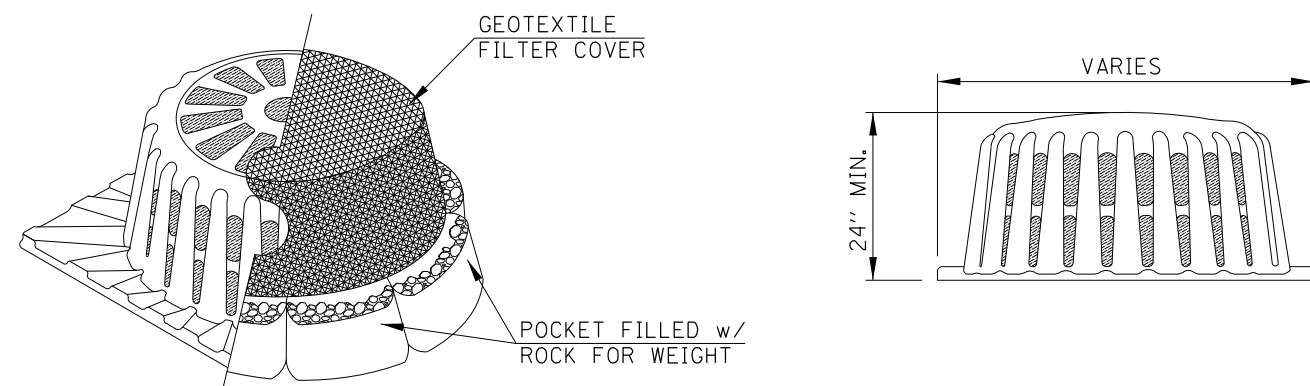
TEMPORARY EROSION AND SEDIMENT CONTROLS

STANDARD K1-07

APPROVED: *Paul Kovacs* DATE 2-7-2012  
CHIEF ENGINEERING OFFICER



**WOOD FRAME**



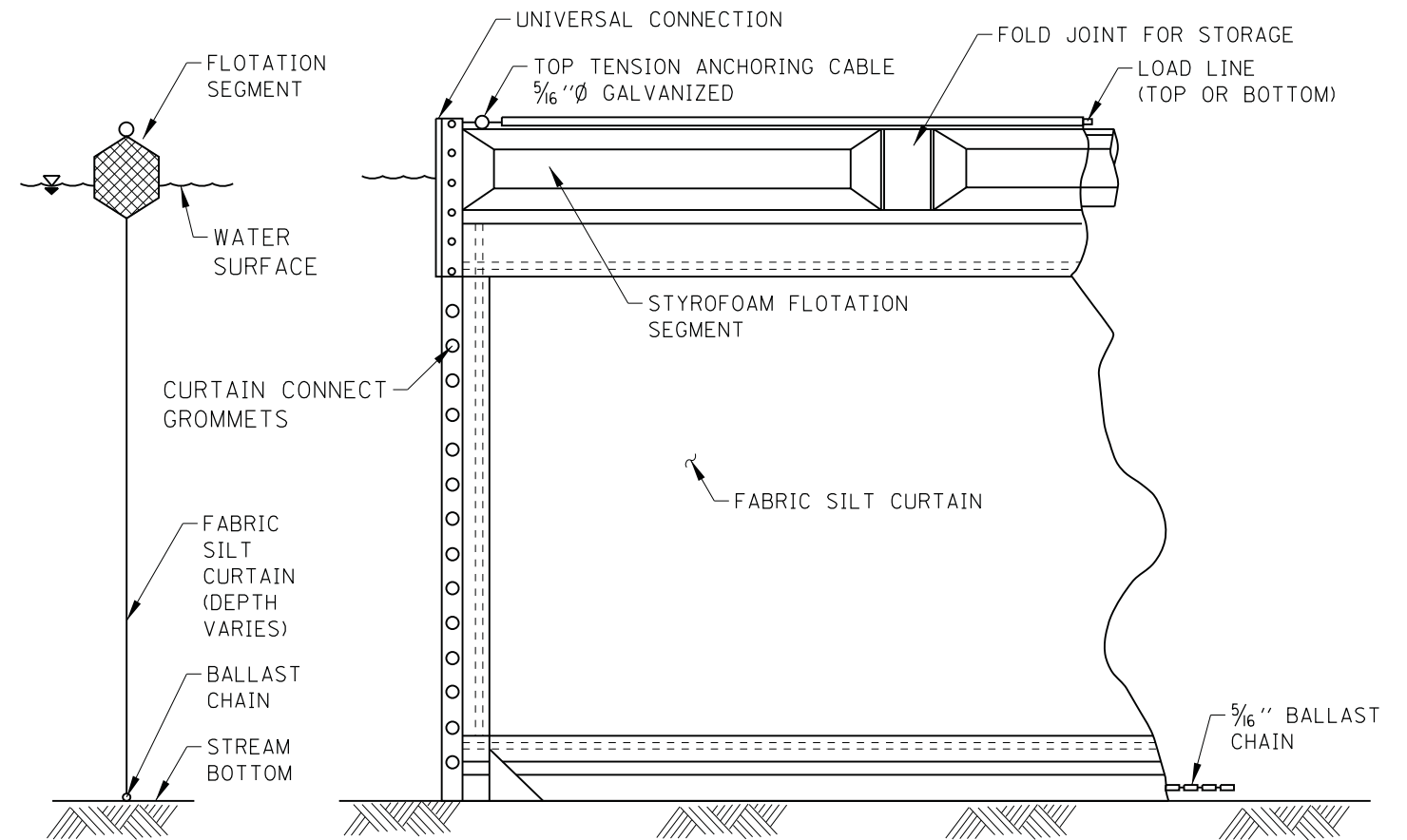
**POLYETHYLENE FRAME**

**NOTES:**

1. WOODEN FRAME IS TO BE CONSTRUCTED OF 2"x4" CONSTRUCTION GRADE LUMBER. IF CONTRACTOR PREFERENCES, SUPER SILT FENCE CAN BE CONSTRUCTED AROUND THE INLET PER SHEET 6 IN THIS SERIES.
2. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SILT REMOVED WHEN IT REACHES 50% OF FENCE HEIGHT.
3. TO BE USED TO PROTECT EXISTING AND NEW INLETS, CATCH BASINS AND MANHOLES WITH OPEN LIDS IN NON-PAVED AREAS.

**RECTANGULAR INLET PROTECTION**

STANDARD SYMBOL



**SECTION**

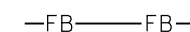
**ELEVATION**

**NOTES:**

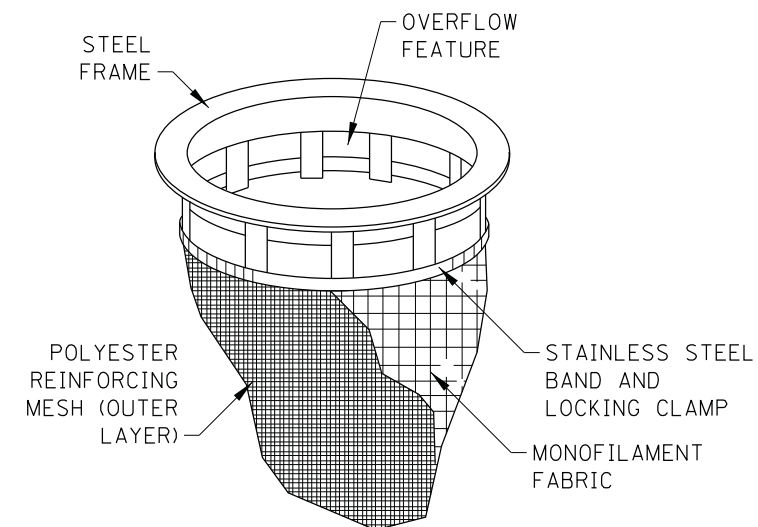
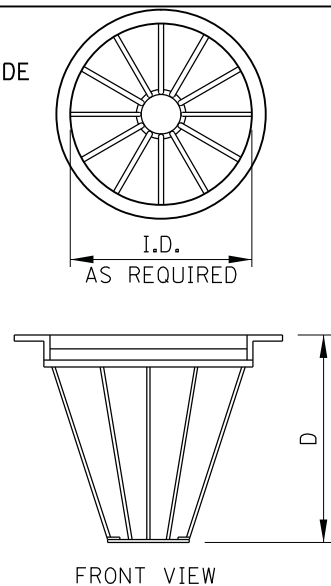
1. FLOTATION BOOM FOR USE IN MOVING WATER SHALL BE ANCHORED TO PREVENT DRIFT SHOREWARD OR DOWNSTREAM. ANCHORAGES SHALL BE INSTALLED ON BOTH SHORE AND STREAM SIDE. BOOMS ARE NOT TO BE INSTALLED ACROSS FLOWING BODY OF WATER.
2. SHORE ANCHORS SHALL CONSIST OF A POST WITH DEADMAN OR APPROVED EQUAL. STREAM ANCHORS SHALL BE OF SUFFICIENT SIZE TO STABILIZE THE BARRIER WITH NUMBER AND SPACING DEPENDENT ON WATERWAY VELOCITIES.
3. FABRIC SECTIONS SHALL BE CONNECTED END TO END WITH MINIMUM 5/8" DIAMETER POLYPROPYLENE ROPE.
4. DESIGN OF BOOM AND ANCHORAGE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. BOTTOM OF BOOM SHALL REACH BOTTOM OF WATERWAY USING ONE VERTICAL SECTION AS REQUIRED.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED. CONTRACTOR SHALL REMOVE THE BOOM AT COMPLETION OF WORK IN A MANNER THAT WILL PREVENT SILTATION OF THE WATERWAY.
6. CONSTRUCTION DEBRIS/MATERIALS SHALL BE REMOVED IMMEDIATELY TO PREVENT DAMAGE TO THE CURTAIN AND ENTRY INTO THE WATERWAY.
7. FLOTATION BOOMS TO BE USED TO CONTROL TURBIDITY WHEN WORKING IN WATERWAYS.

**FLOTATION BOOM**

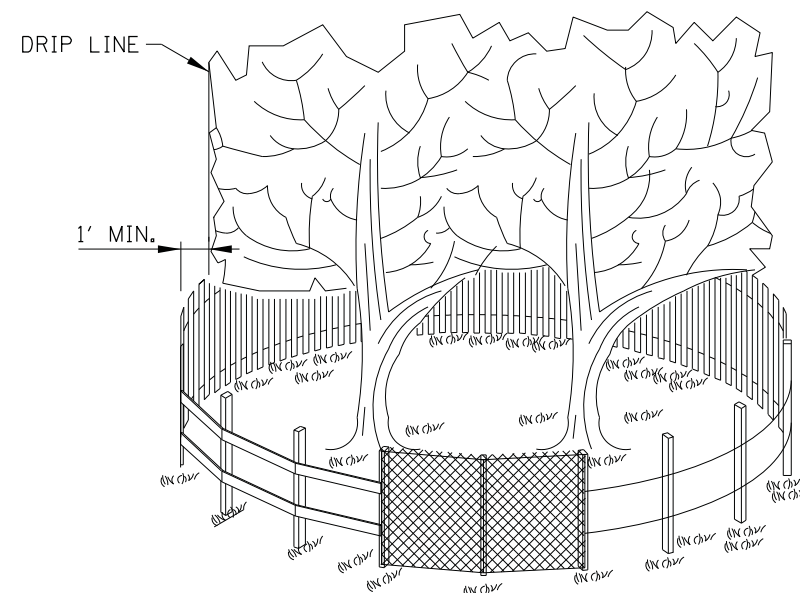
STANDARD SYMBOL



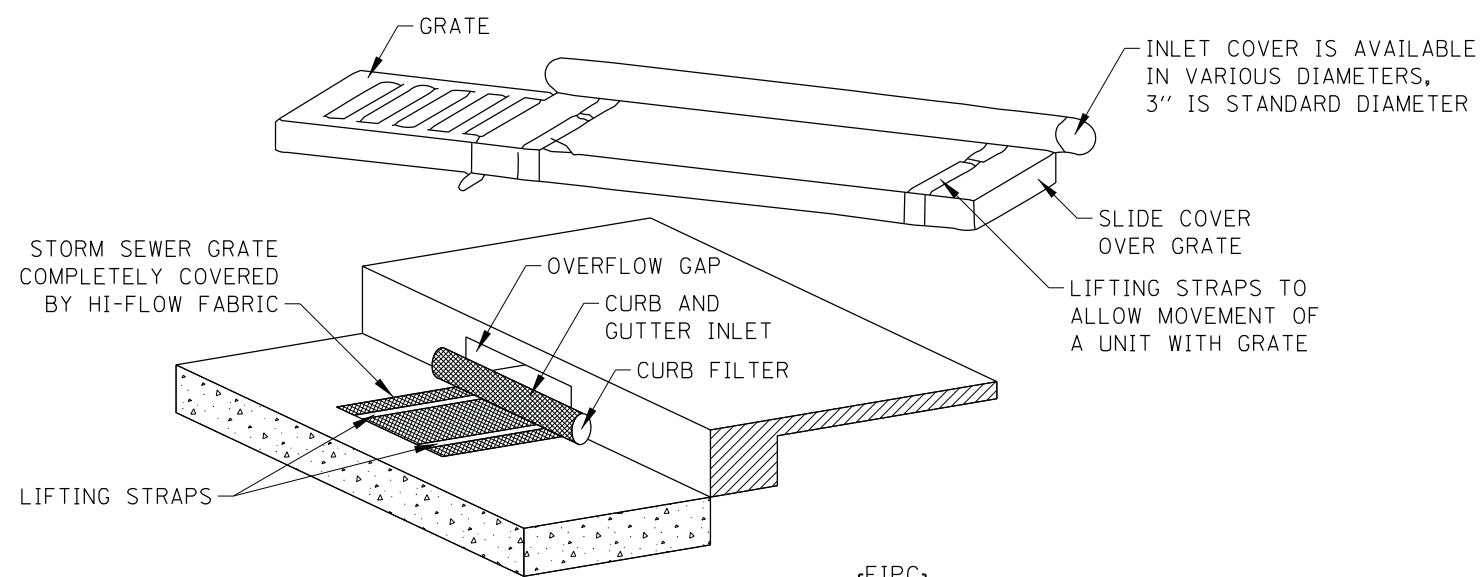
CIRCULAR  
SPECIFY INSIDE  
DIMENSION



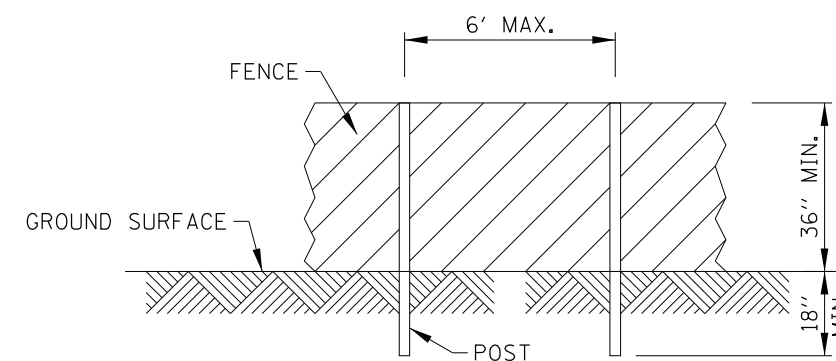
**INLET BASKET** FIPB STANDARD SYMBOL  
(SEE NOTE 3 BELOW)



**SIDE VIEW**



**INLET COVER** FIPC STANDARD SYMBOL



**POST AND FENCE DETAIL**

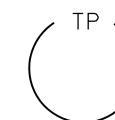
**NOTES:**

1. MONOFILAMENT FABRIC INLET PROTECTION SHALL CONSIST OF INLET BASKET, FRAME AND FABRIC INSERT.
2. DEVICE SHALL BE EQUIPPED WITH AN OVERFLOW FEATURE SO DRAINAGE TO INLET IS NOT COMPLETELY BLOCKED IF DEVICE IS FULL OF SILT.
3. INLET BASKET IS AVAILABLE TO FIT ROUND, RECTANGULAR, BEEHIVE OR CURB INLET CASTINGS.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED. REMOVE SILT FROM FABRIC INSERT WHEN 50% OF CAPACITY IS REACHED. REMOVE SILT FROM INTERIOR AND EXTERIOR OF INLET COVER WHEN 50% OF COVER HEIGHT IS REACHED.

**NOTES:**

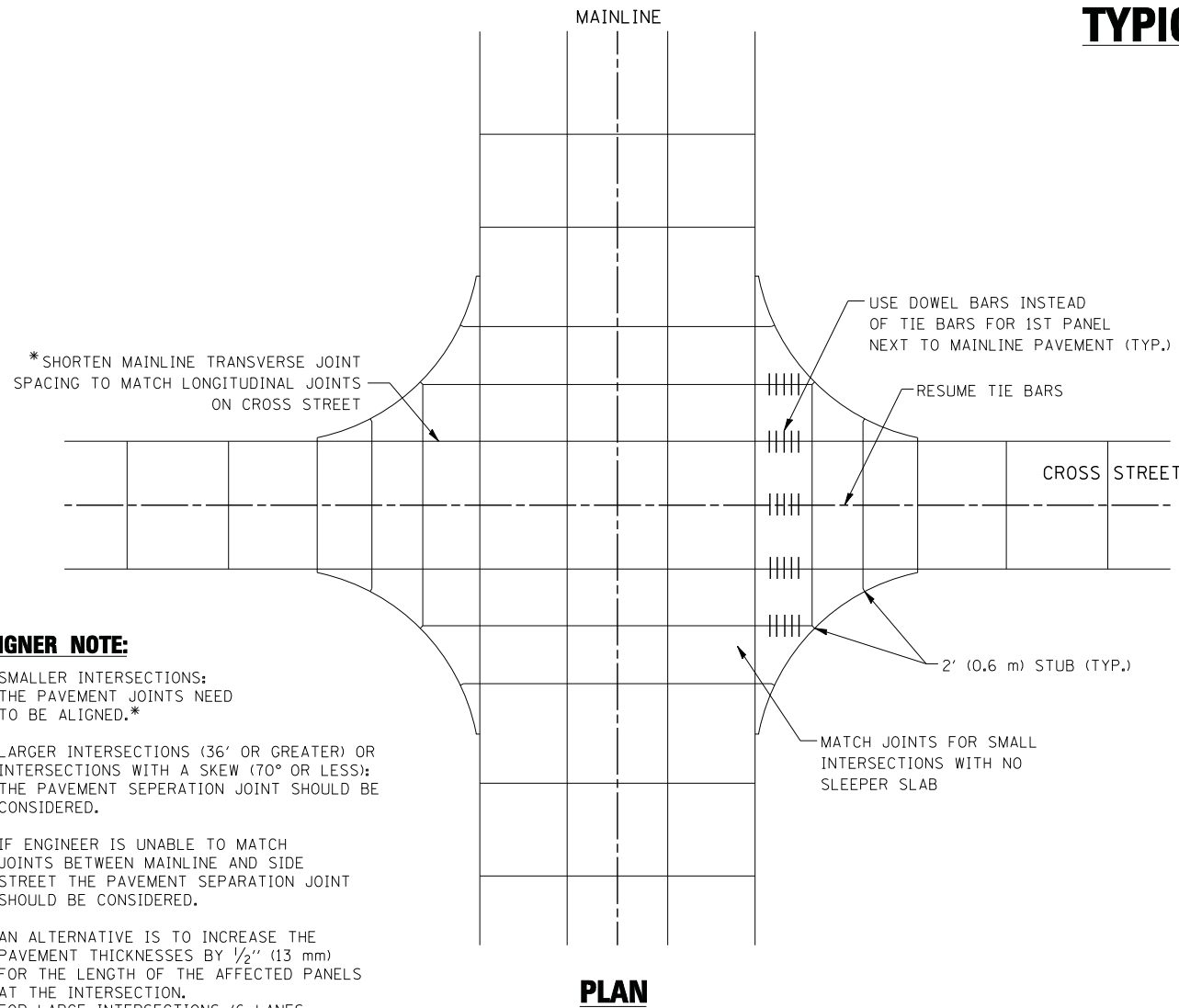
1. THE FENCE SHALL BE LOCATED 1 FOOT MINIMUM OUTSIDE THE DRIP LINE OF THE TREE TO BE SAVED AND IN NO CASE CLOSER THAN 5 FEET TO THE TRUNK OF ANY TREE.
2. THE FENCE SHALL BE HIGH VISIBILITY PLASTIC OR WOOD LATH SNOW FENCE TO CLEARLY DELINEATE THE PROTECTION AREA.
3. USED TO PROTECT TREES FROM DISTURBANCE AND FROM EQUIPMENT TRAVELING OVER THE ROOT ZONE.

**TREE PROTECTION**  
STANDARD SYMBOL



# TYPICAL APPLICATION

**THE USE OF CROSS STREET PAVEMENT SEPARATION JOINTS FOR SKEWED OR LARGE INTERSECTIONS WHERE JOINTS MAY NOT MATCH**



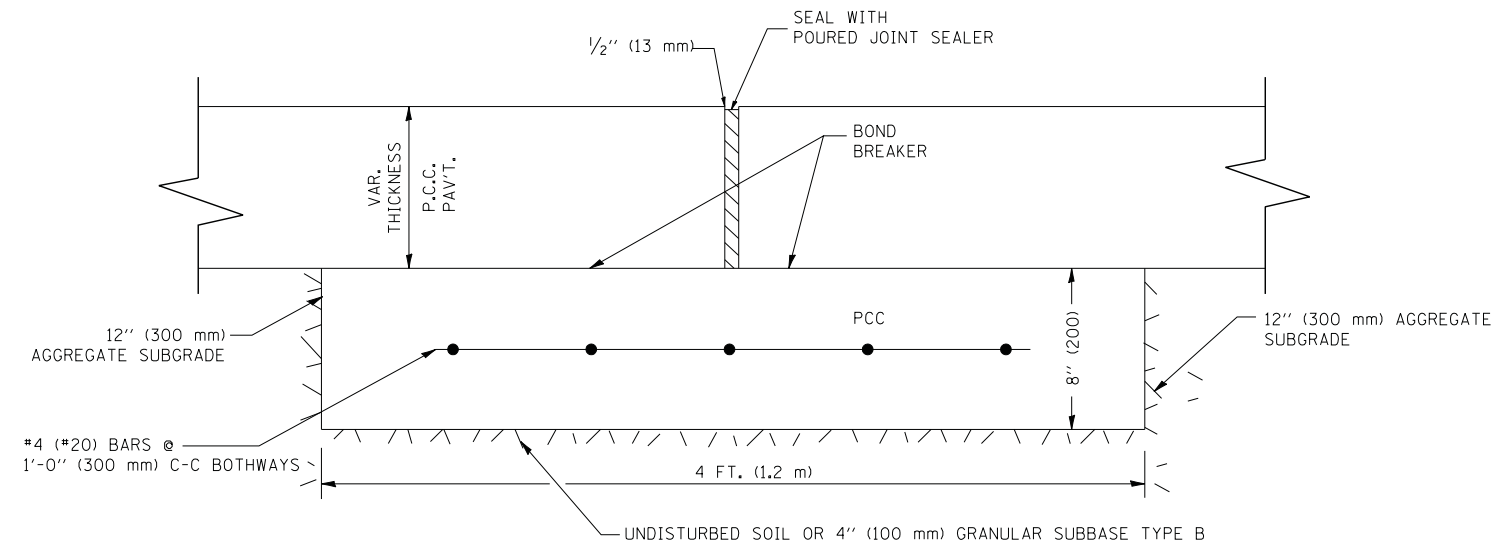
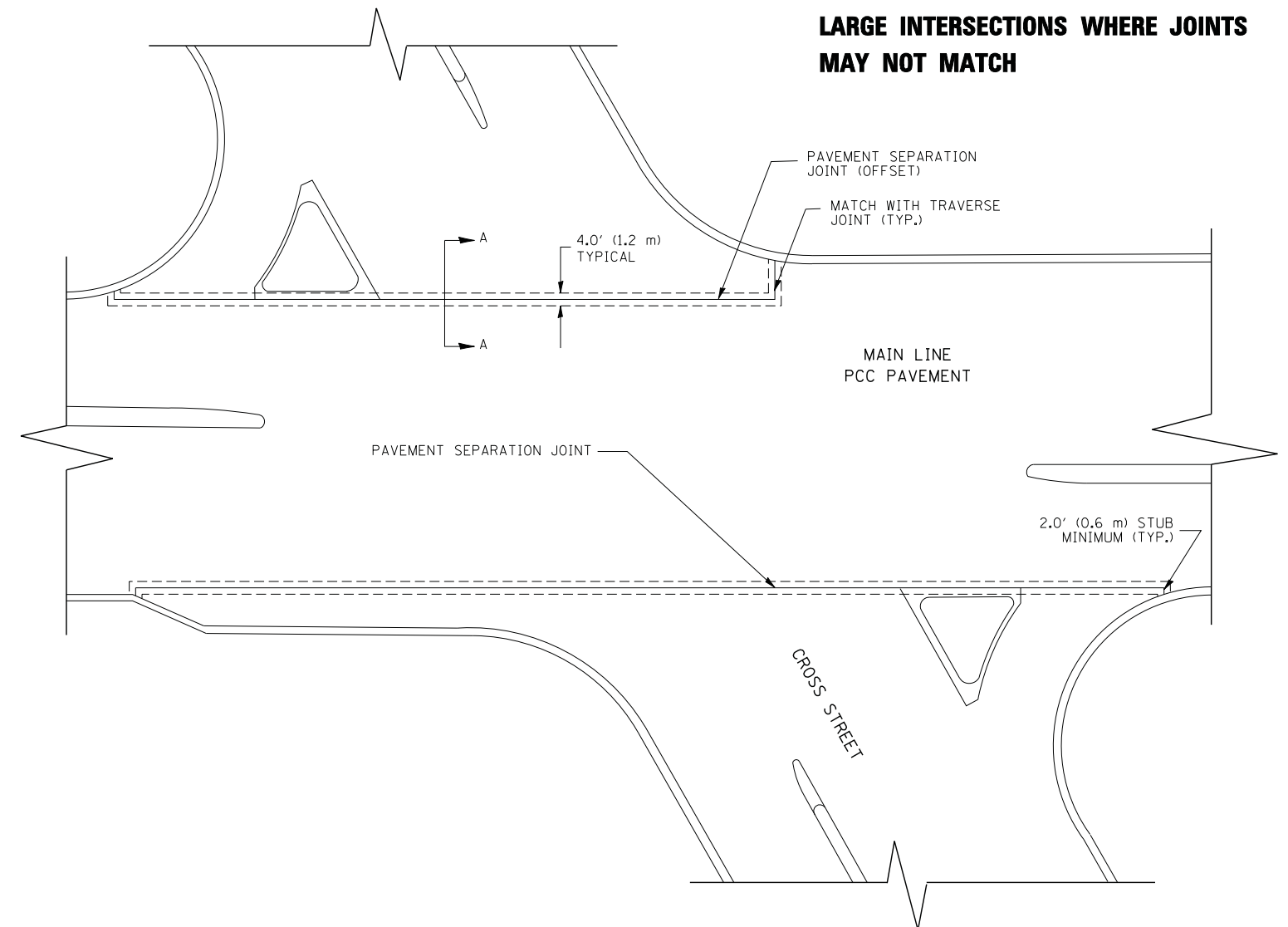
**PLAN**

**DESIGNER NOTE:**

1. SMALLER INTERSECTIONS: THE PAVEMENT JOINTS NEED TO BE ALIGNED.\*
2. LARGER INTERSECTIONS (36' OR GREATER) OR INTERSECTIONS WITH A SKEW (70° OR LESS): THE PAVEMENT SEPERATION JOINT SHOULD BE CONSIDERED.
3. IF ENGINEER IS UNABLE TO MATCH JOINTS BETWEEN MAINLINE AND SIDE STREET THE PAVEMENT SEPERATION JOINT SHOULD BE CONSIDERED.
4. AN ALTERNATIVE IS TO INCREASE THE PAVEMENT THICKNESSES BY 1/2" (13 mm) FOR THE LENGTH OF THE AFFECTED PANELS AT THE INTERSECTION. FOR LARGE INTERSECTIONS (6 LANES OR MORE) WHERE JOINTS CAN BE MATCHED, USE #8 (25) DOWEL BARS INSTEAD OF #8 (25) TIE BARS AT EDGE OF MAINLINE PAVEMENT WHEN NO PAVEMENT SEPERATION JOINTS USED.

**NOTE:**

1. JOINT FILLER SHALL CONSIST OF A SHEET OF 1/2" (13 mm) BITUMINOUS PREFORMED FIBER JOINT FILLER CONFORMING TO ARTICLE 1051.03 OF THE STANDARD SPECIFICATIONS.
2. THE JOINT SHALL BE SEALED WITH A HOT POUR JOINT SEALER CONFORMING TO ARTICLE 1050.02 OF THE STANDARD SPECIFICATIONS.
3. A SINGLE LAYER OF FELT ROOFING PAPER SHALL SERVE AS A BOND BREAKER.
4. JOINT SHALL CONTINUE THROUGH COMBINATION CURB & GUTTER OR PCC SHOULDER.
5. PAVEMENT SEPERATION JOINT IS TO BE PAID FOR AS "SLEEPER SLAB" AND IS TO BE MEASURED IN PLACE BY THE LINEAL FOOT.
6. BOND BREAKER AND 1/2" (13 mm) JOINT AND FILLER SHALL BE INCIDENTAL TO THE PAY ITEM "SLEEPER SLAB".



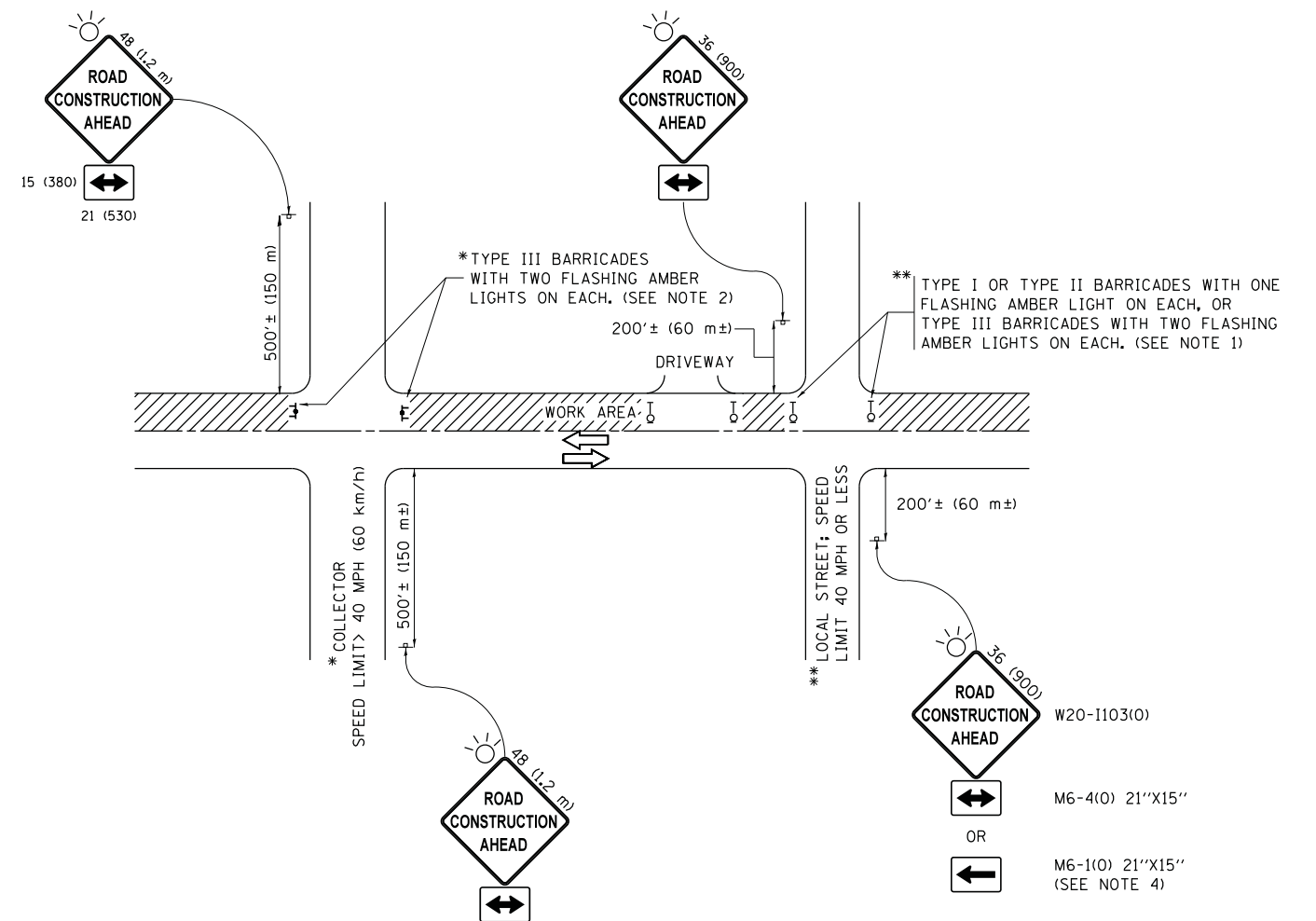
**PROPOSED SECTION A-A**

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	PLOT SCALE = 49.9999' / IN.	CHECKED -	REVISED -
	PLOT DATE = 2/25/2011	DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

DETAIL OF PAVEMENT SEPARATION JOINT FOR JOINTED PCC PAVEMENTS AT INTERSECTIONS			
SCALE: NONE	SHEET NO. 1 OF 1 SHEETS	STA.	TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	<b>BD52</b>			
CONTRACT NO.			ILLINOIS FED. AID PROJECT	



**NOTES:**

1. SIDE ROAD WITH A SPEED LIMIT OF 40 MPH (60 km/h) OR LESS AS SHOWN ON THE DRAWING AND AS DIRECTED BY THE ENGINEER:
  - a) ONE "ROAD CONSTRUCTION AHEAD" SIGN 36 x 36 (900x900) WITH A FLASHER MOUNTED ON IT APPROXIMATELY 200' (60 m) IN ADVANCE OF THE MAIN ROUTE.
  - b) THE CLOSED PORTION OF THE MAIN ROUTE SHALL BE PROTECTED BY BLOCKING WITH TYPE I, TYPE II OR TYPE III BARRICADES, 1/3 OF THE CROSS SECTION OF THE CLOSED PORTION.
2. SIDE ROAD WITH A SPEED LIMIT GREATER THAN 40 MPH (60 km/h) AS SHOWN ON THE DRAWING AND AS DIRECTED BY THE ENGINEER:
  - a) ONE "ROAD CONSTRUCTION AHEAD" SIGN 48 x 48 (1.2 m x 1.2 m) WITH A FLASHER MOUNTED ON IT APPROXIMATELY 500' (150 m) IN ADVANCE OF THE MAIN ROUTE.
  - b) THE CLOSED PORTION OF THE MAIN ROUTE SHALL BE PROTECTED BY BLOCKING WITH TYPE III BARRICADES, 1/2 OF THE CROSS SECTION OF THE CLOSED PORTION.
3. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS AT HALF THE SPACING DURING DAY OPERATIONS. CONES SHALL BE A MINIMUM OF 28 (710) IN HEIGHT.
4. WHEN THE SIDE ROAD LIES BETWEEN THE BEGINNING OF THE MAINLINE SIGNING AND THE WORK ZONE, A SINGLE HEADED ARROW (M6-1) SHALL BE USED IN LIEU OF THE DOUBLE HEADED ARROW (M6-4).
5. WHEN WORK IS BEING PERFORMED ON A SIDE ROAD OR DRIVEWAY, FOLLOW THE APPLICABLE STANDARD(S). THE DIRECTIONAL ARROW (M6-1 OR M6-4) SHALL BE COVERED OR REMOVED WHEN NO LONGER CONSISTENT WITH THE TRAFFIC CONTROL SET-UP.
6. ADVANCE WARNING SIGNS ARE TO BE OMITTED ON DRIVEWAYS UNLESS OTHERWISE SPECIFIED IN THE PLANS OR BY THE ENGINEER.
7. THE TRAFFIC CONTROL AND PROTECTION FOR SIDE ROADS, INTERSECTIONS, AND DRIVEWAYS SHALL BE INCLUDED IN THE COST OF SPECIFIED TRAFFIC CONTROL STANDARDS OR ITEMS.

All dimensions are in inches (millimeters) unless otherwise shown.

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	PLOT DATE = 9/15/2016	DATE - 06-89	REVISED - A. SCHUETZE 09-15-16

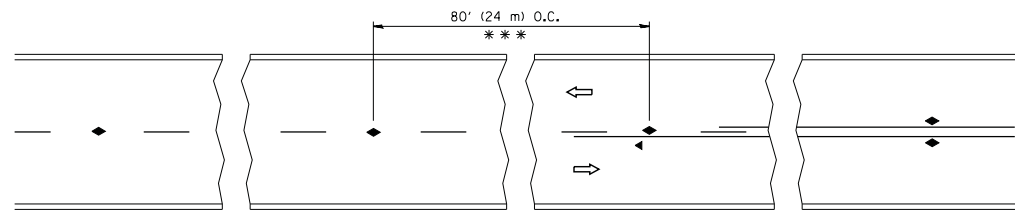
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TRAFFIC CONTROL AND PROTECTION FOR  
SIDE ROADS, INTERSECTIONS, AND DRIVEWAYS**

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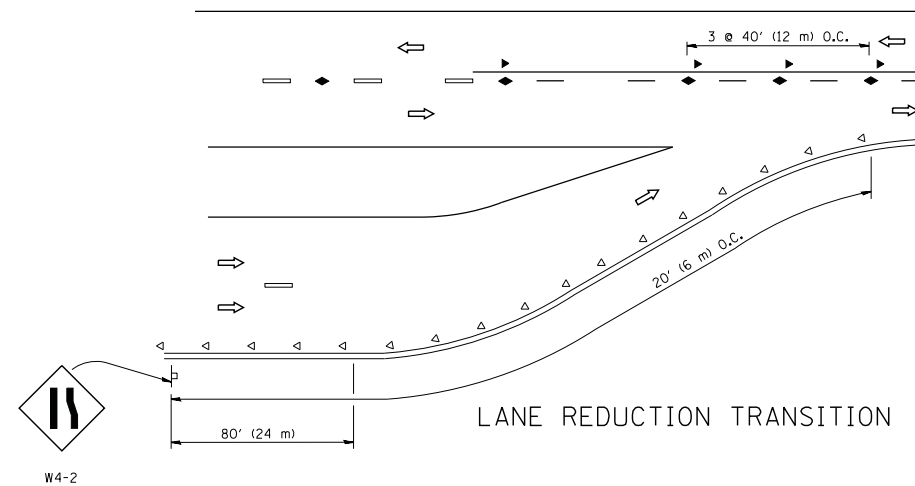
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<b>TC-10</b>			<b>CONTRACT NO.</b>	
ILLINOIS FED. AID PROJECT				



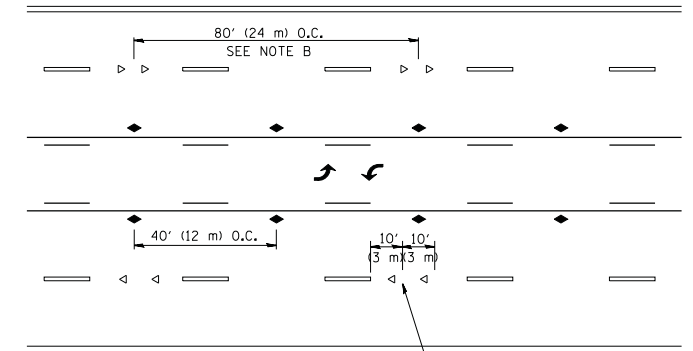


\*\*\* REDUCE TO 40' (12 m) O.C. ON CURVES WITH POSTED OR ADVISORY SPEED 45 M.P.H. (70 km/h) OR LESS.

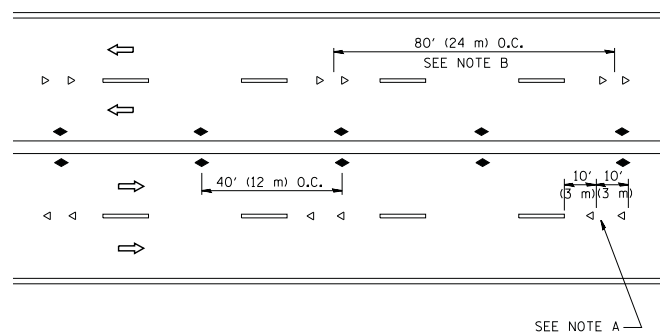
TWO-LANE/TWO-WAY



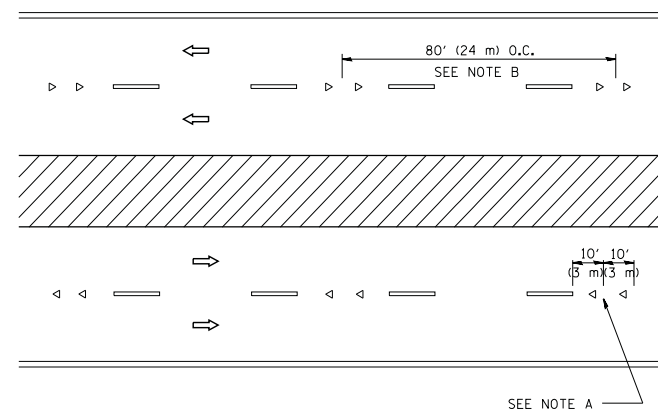
LANE REDUCTION TRANSITION



TWO-WAY LEFT TURN



MULTI-LANE/UNDIVIDED



MULTI-LANE/DIVIDED

GENERAL NOTES

1. MARKERS USED WITH DASHED LINES SHALL BE CENTERED IN THE GAP BETWEEN SEGMENTS.
2. MARKERS USED ADJACENT TO SOLID LINES SHALL BE OFFSET 2 TO 3 (50 TO 75) TOWARD TRAFFIC AS SHOWN.
3. MARKERS THROUGH TANGENTS LESS THAN 500' (150 m) IN LENGTH BETWEEN CURVES SHALL BE INSTALLED AT THE LESSER OF THE TWO CURVE SPACINGS.

SYMBOLS

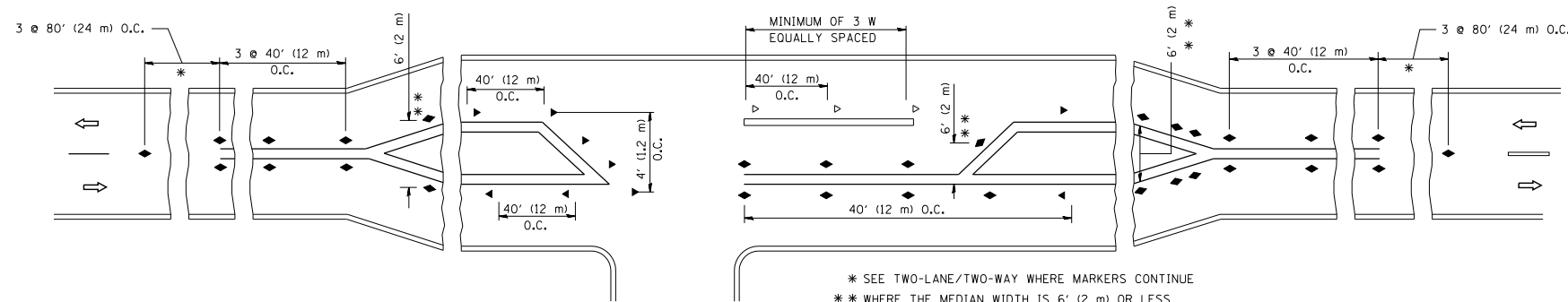
- YELLOW STRIPE
- WHITE STRIPE
- ◀ ONE-WAY AMBER MARKER
- ◁ ONE-WAY CRYSTAL MARKER (W/O)
- ◆ TWO-WAY AMBER MARKER

LANE MARKER NOTES

- A. USE DOUBLE LANE LINE MARKERS SPACED AS SHOWN.
- B. REDUCE TO 40' (12 m) O.C. ON CURVES WHERE ADVISORY SPEEDS ARE 10 M.P.H (20 km/h) LOWER THAN POSTED SPEEDS.

DESIGN NOTES

1. DOUBLE LANE LINE MARKERS SHALL BE USED UNLESS SPECIFIED OTHERWISE.
2. EXCEPT AS SHOWN ON THE LANE REDUCTION TRANSITION AND FREEWAY EXIT RAMP DETAIL, MARKERS ARE NOT TO BE SPECIFIED ON RIGHT EDGE LINES.
3. THE EXACT MARKER LIMITS, SPACING, AND COLOR SHALL BE INCLUDED IN THE PLANS WHEN STANDARD SPECIFICATIONS ARE NOT BEING USED.
4. MARKERS SHOULD NOT BE USED ALONGSIDE CURBS EXCEPT FOR EXTREMELY SHORT SECTIONS OF CURBS WHERE NOT MORE THAN TWO MARKERS WOULD BE INVOLVED.



LEFT TURN

\* SEE TWO-LANE/TWO-WAY WHERE MARKERS CONTINUE  
 \*\* WHERE THE MEDIAN WIDTH IS 6' (2 m) OR LESS USE TWO-WAY MARKERS.

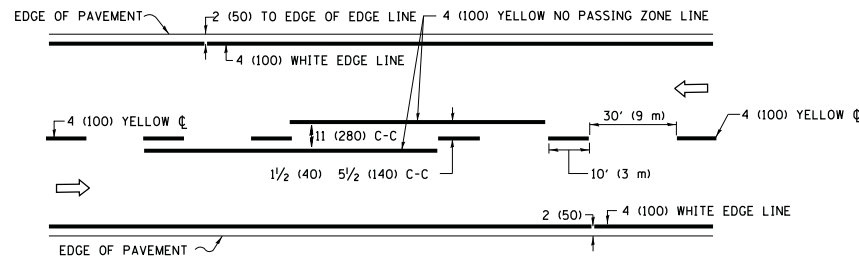
All dimensions are in inches (millimeters) unless otherwise shown.

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		DATE -	REVISED - C. JUCIUS 09-09-09

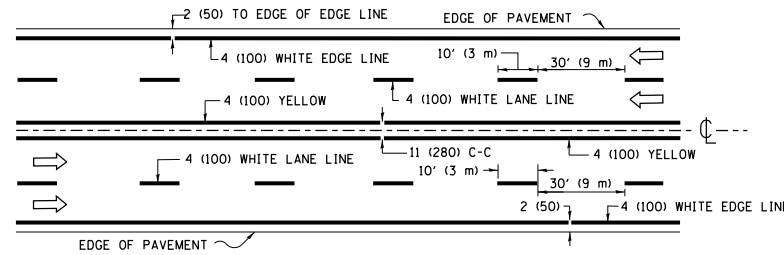
STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

TYPICAL APPLICATIONS			
RAISED REFLECTIVE PAVEMENT MARKERS (SNOW-PLOW RESISTANT)			
SCALE: NONE	SHEET NO. 1 OF 1 SHEETS	STA.	TO STA.

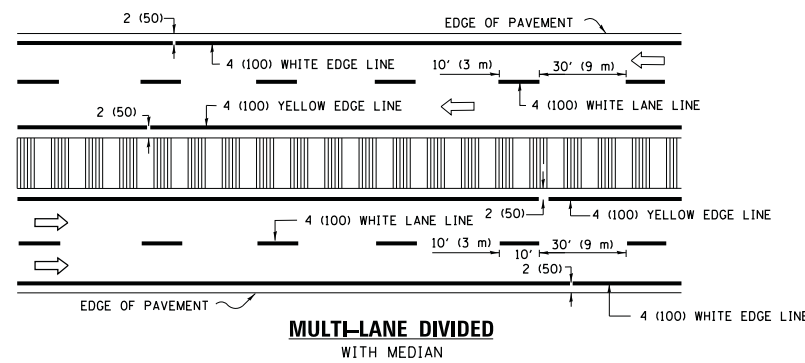
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TC-11		CONTRACT NO.		
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				



**2-LANE ROADWAY**

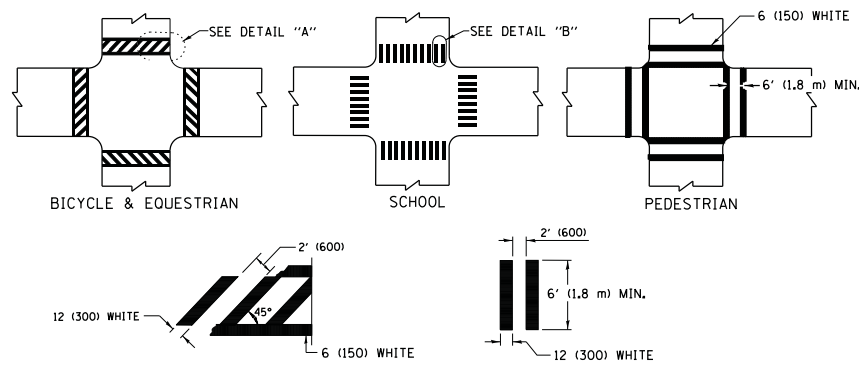


**MULTI-LANE UNDIVIDED**



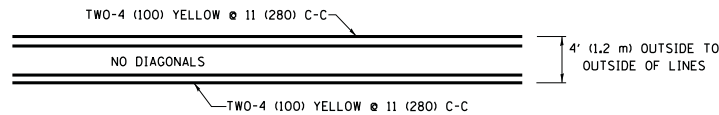
**MULTI-LANE DIVIDED WITH MEDIAN**

**TYPICAL LANE AND EDGE LINE MARKING**

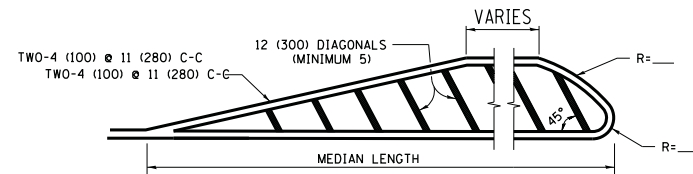


**DETAIL "A"      DETAIL "B"**  
**TYPICAL CROSSWALK MARKING**

\* MARKINGS SHALL BE INSTALLED PARALLEL TO THE CENTERLINE OF THE ROAD WHICH IT CROSSES



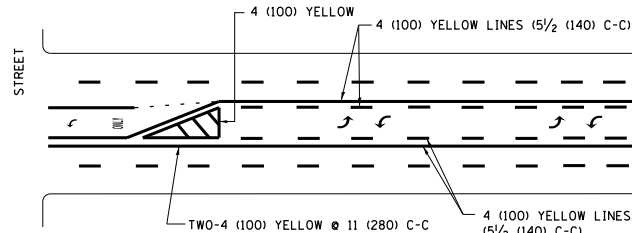
**4' (1.2 m) WIDE MEDIANS ONLY**



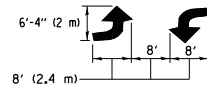
FOR MEDIAN LENGTHS WHERE DIAGONAL SPACING CANNOT BE ATTAINED, USE 5 (FIVE) EQUALLY SPACED DIAGONAL LINES.

DIAGONAL LINE SPACING: 50' (15 m) C-C (LESS THAN 30MPH (50 km/h))  
75' (25 m) C-C 30MPH (50 km/h) TO 45MPH (70 km/h)  
150' (45 m) C-C (MORE THAN 45MPH (70 km/h))

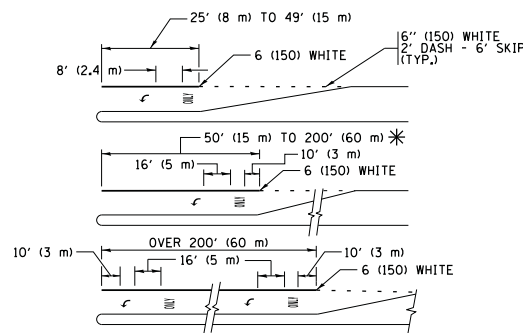
**MEDIANS OVER 4' (1.2 m) WIDE**



A MINIMUM OF TWO PAIRS OF TURN ARROWS SHALL BE USED, WHITE IN COLOR. ADDITIONAL PAIRS SHALL BE PLACED AT 200' (60 m) TO 300' (90 m) INTERVALS.



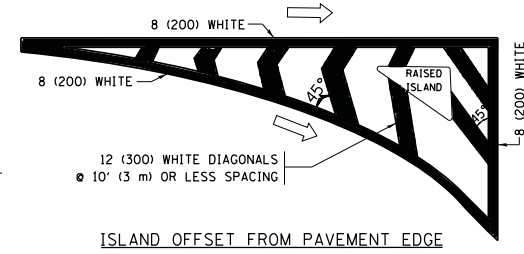
**MEDIAN WITH TWO-WAY LEFT TURN LANE**  
**TYPICAL PAINTED MEDIAN MARKING**



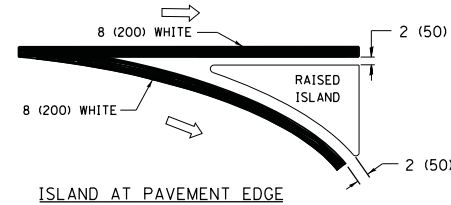
FULL SIZE LETTERS 8' (2.4 m) AND ARROWS SHALL BE USED.  
AREA = 15.6 SQ. FT. (1.5 m<sup>2</sup>) ONLY AREA = 20.8 SQ. FT. (1.9 m<sup>2</sup>)

\* TURN LANES IN EXCESS OF 400' (120 m) IN LENGTH MAY HAVE AN ADDITIONAL SET OF ARROW - "ONLY" INSTALLED MIDWAY BETWEEN THE OTHER TWO SETS OF ARROW - "ONLY".

**TYPICAL LEFT (OR RIGHT) TURN LANE**  
**TYPICAL TURN LANE MARKING**

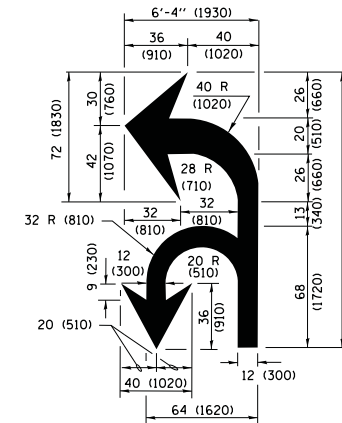


**ISLAND OFFSET FROM PAVEMENT EDGE**

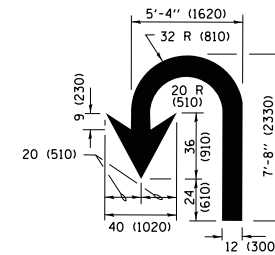


**ISLAND AT PAVEMENT EDGE**

**TYPICAL ISLAND MARKING**



**COMBINATION LEFT AND U-TURN**



**U-TURN**

**LANE REDUCTION TRANSITION**

\* LANE REDUCTION ARROWS REQUIRED AT SPEEDS OF 45 MPH OR GREATER OR WHEN SPECIFIED IN PLANS.

D(FT)	SPEED LIMIT
345	30
425	35
500	40
580	45
665	50
750	55

TYPE OF MARKING	WIDTH OF LINE	PATTERN	COLOR	SPACING /REMARKS
CENTERLINE ON 2 LANE PAVEMENT	4 (100)	SKIP-DASH	YELLOW	10' (3 m) LINE WITH 30' (9 m) SPACE
CENTERLINE ON MULTI-LANE UNDIVIDED PAVEMENT	2 @ 4 (100)	SOLID	YELLOW	11 (280) C-C
NO PASSING ZONE LINES FOR ONE DIRECTION FOR BOTH DIRECTIONS	4 (100) 2 @ 4 (100)	SOLID SOLID	YELLOW YELLOW	5 1/2 (140) C-C FROM SKIP-DASH CENTERLINE 11 (280) C-C OMIT SKIP-DASH CENTERLINE BETWEEN
LANE LINES	4 (100) 5 (125) ON FREEWAYS	SKIP-DASH SKIP-DASH	WHITE WHITE	10' (3 m) LINE WITH 30' (9 m) SPACE
DOTTED LINES (EXTENSIONS OF CENTER, LANE OR TURN LANE MARKINGS)	SAME AS LINE BEING EXTENDED	SKIP-DASH	SAME AS LINE BEING EXTENDED	2' (600) LINE WITH 6' (1.8 m) SPACE
EDGE LINES	4 (100)	SOLID	YELLOW-LEFT WHITE-RIGHT	OUTLINE MEDIANS IN YELLOW
TURN LANE MARKINGS	6 (150) LINE; FULL SIZE LETTERS & SYMBOLS (8' (2.4m))	SOLID	WHITE	SEE TYPICAL TURN LANE MARKING DETAIL
TWO WAY LEFT TURN MARKING	2 @ 4 (100) EACH DIRECTION 8' (2.4m) LEFT ARROW	SKIP-DASH AND SOLID IN PAIRS	YELLOW WHITE	10' (3 m) LINE WITH 30' (9 m) SPACE FOR SKIP-DASH; 5 1/2 (140) C-C BETWEEN SOLID LINE AND SKIP-DASH LINE SEE TYPICAL TWO-WAY LEFT TURN MARKING DETAIL
CROSSWALK LINES (PEDESTRIAN) A. DIAGONALS (BIKE & EQUESTRIAN) B. LONGITUDINAL BARS (SCHOOL)	2 @ 6 (150) 12 (300) @ 45° 12 (300) @ 90°	SOLID SOLID SOLID	WHITE WHITE WHITE	NOT LESS THAN 6' (1.8 m) APART 2' (600) APART 2' (600) APART SEE TYPICAL CROSSWALK MARKING DETAILS.
STOP LINES	24 (600)	SOLID	WHITE	PLACE 4' (1.2 m) IN ADVANCE OF AND PARALLEL TO CROSSWALK, IF PRESENT, OTHERWISE, PLACE AT DESIRED STOPPING POINT, PARALLEL TO CROSSROAD CENTERLINE, WHERE POSSIBLE
PAINTED MEDIANS	2 @ 4 (100) WITH 12 (300) DIAGONALS @ 45° NO DIAGONALS USED FOR 4' (1.2 m) WIDE MEDIANS	SOLID	YELLOW; TWO WAY TRAFFIC WHITE; ONE WAY TRAFFIC	11 (280) C-C FOR THE DOUBLE LINE SEE TYPICAL PAINTED MEDIAN MARKING.
GORE MARKING AND CHANNELIZING LINES	8 (200) WITH 12 (300) DIAGONALS @ 45°	SOLID	WHITE	DIAGONALS: 15' (4.5 m) C-C (LESS THAN 30MPH (50 km/h)) 20' (6 m) C-C 30MPH (50 km/h) TO 45MPH (70 km/h) 30' (9 m) C-C (OVER 45MPH (70 km/h))
RAILROAD CROSSING	24 (600) TRANSVERSE LINES; "RR" IS 6' (1.8 m) LETTERS; 16 (400) LINE FOR "X"	SOLID	WHITE	SEE STATE STANDARD 780001 AREA OF: "R"=3.6 SQ. FT. (0.33 m <sup>2</sup> ) EACH "X"=54.0 SQ. FT. (5.0 m <sup>2</sup> )
SHOULDER DIAGONALS (REQUIRED FOR SHOULDERS ≥ 8')	12 (300) @ 45°	SOLID	WHITE - RIGHT YELLOW - LEFT	50' (15 m) C-C (LESS THAN 30MPH (50 km/h)) 75' (25 m) C-C (30 MPH (50 km/h) TO 45MPH (70 km/h)) 150' (45 m) C-C (OVER 45MPH (70 km/h))
U TURN ARROW	SEE DETAIL	SOLID	WHITE	16.3 SF
2 ARROW COMBINATION LEFT AND U TURN	SEE DETAIL	SOLID	WHITE	30.4 SF

FOR FURTHER DETAILS ON PAVEMENT MARKING REFER TO STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND STATE STANDARD 780001.

All dimensions are in inches (millimeters) unless otherwise shown.

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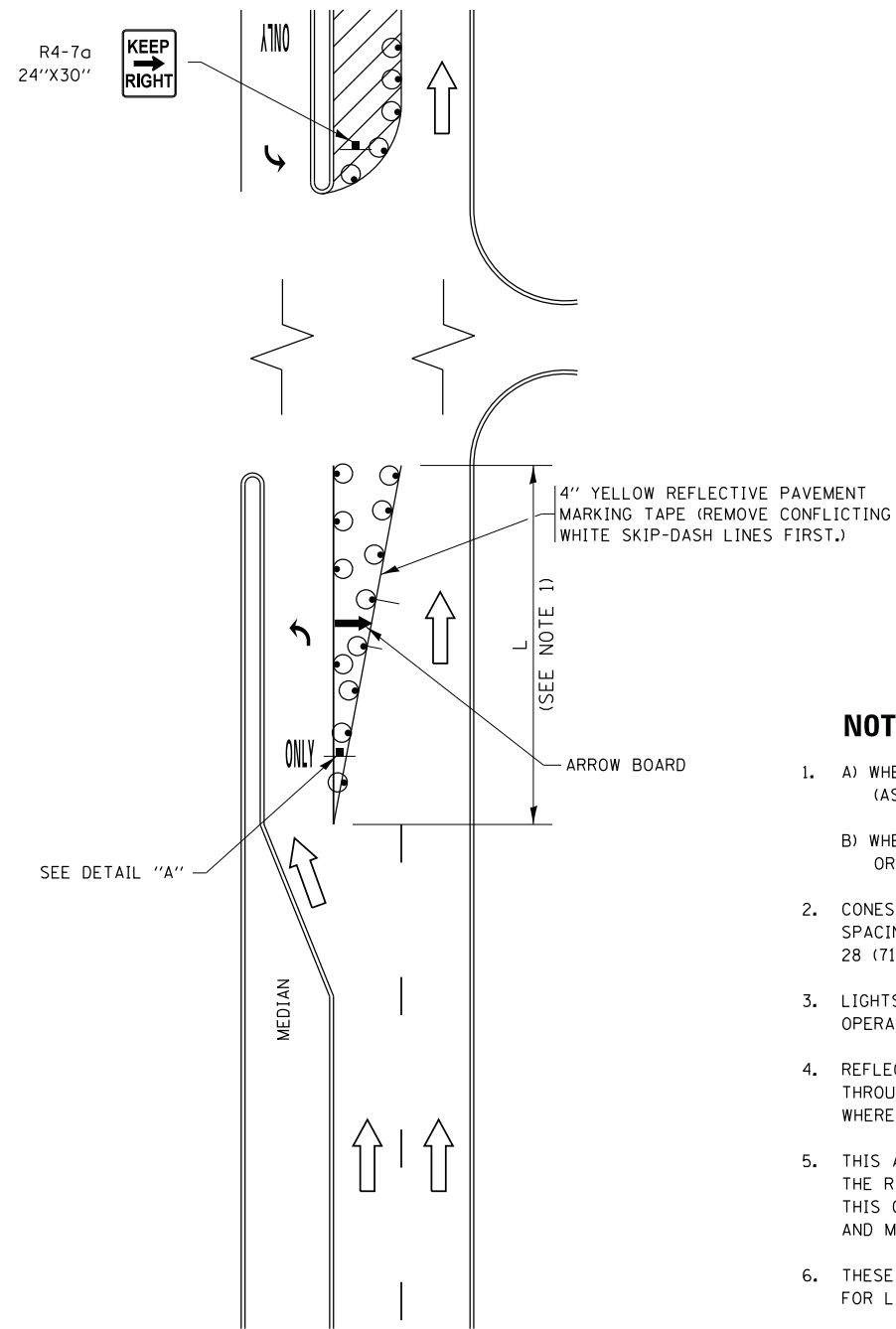
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**DISTRICT ONE  
TYPICAL PAVEMENT MARKINGS**

SCALE: NONE SHEET 1 OF 1 SHEETS STA. TO STA.

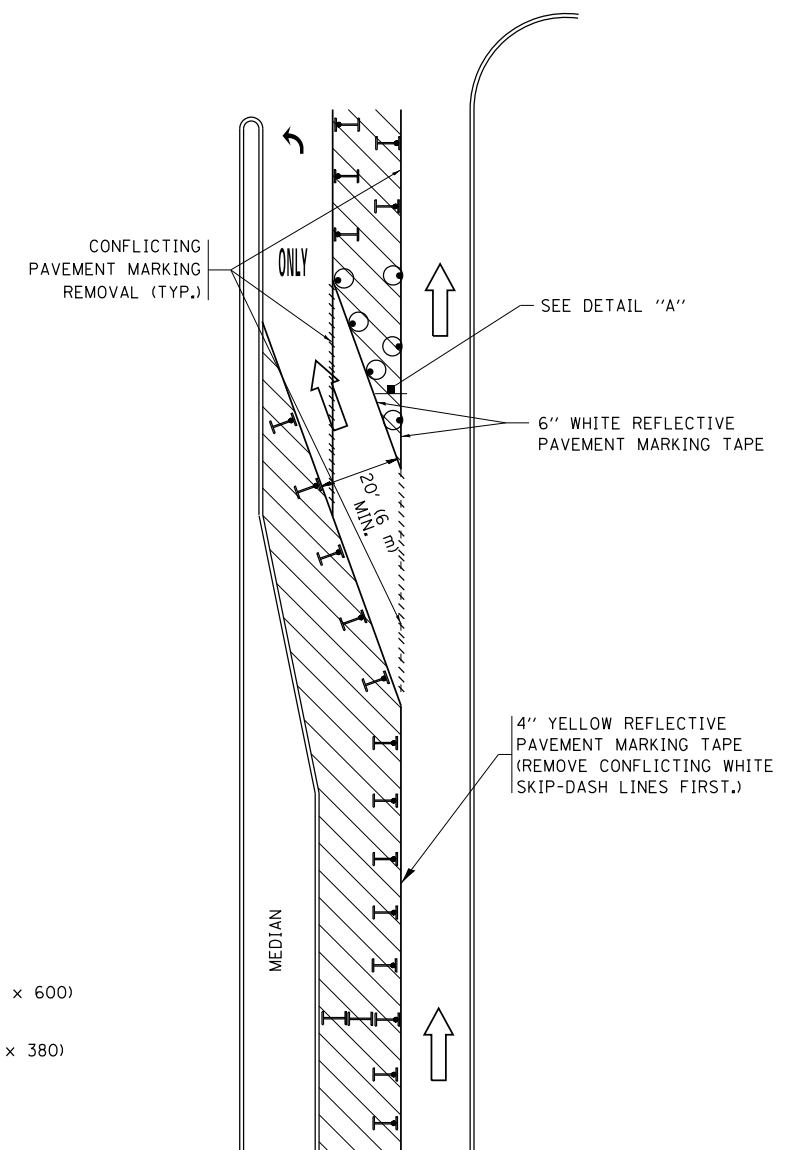
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	<b>TC-13</b>			
		CONTRACT NO.		
ILLINOIS FED. AID PROJECT				

# TURN BAY ENTRANCE AT START OF LANE CLOSURE TAPER



**FIGURE 1**

# TURN BAY ENTRANCE WITHIN A LANE CLOSURE



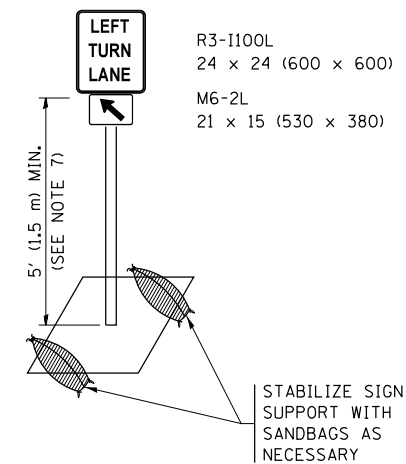
**FIGURE 2**

## LEGEND

- WORK AREA
- LANE OPEN TO TRAFFIC
- ARROW BOARD
- TYPE I OR II BARRICADE OR DRUM WITH STEADY BURN LIGHT
- DRUM WITH STEADY BURN LIGHT
- SIGN ASSEMBLY
- TYPE I OR II CHECK BARRICADE WITH FLASHING LIGHT

## NOTES:

1. A) WHEN "L" IS  $\leq$  THE STORAGE LENGTH OF THE TURN LANE (AS SHOWN IN FIG. 1), USE FIGURE 1.  
B) WHEN "L" IS  $>$  THE STORAGE LENGTH OF THE TURN LANE OR THE TURN LANE IS WITHIN THE LANE CLOSURE, USE FIGURE 2.
2. CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS AT HALF THE SPACING DURING DAY OPERATIONS. CONES SHALL BE A MINIMUM OF 28 (710) IN HEIGHT.
3. LIGHTS WILL NOT BE REQUIRED ON BARRICADES OR DRUMS FOR DAY OPERATIONS. ALL LIGHTS SHALL BE MONODIRECTIONAL.
4. REFLECTIVE TEMPORARY PAVEMENT MARKINGS SHALL BE PLACED THROUGHOUT THE BARRICADED AREAS OF EACH TURN BAY AS SHOWN WHERE THE CLOSURE TIME IS GREATER THAN FOURTEEN (14) DAYS.
5. THIS APPLICATION ALSO APPLIES WHEN WORK IS BEING PERFORMED IN THE RIGHT LANE(S) AND THE RIGHT TURN BAY IS TO REMAIN OPEN. UNDER THIS CONDITION, "RIGHT TURN LANE" R3-1100R 24 x 24 (600 x 600) AND M6-2R 21 x 15 (530 x 380) SHALL BE USED.
6. THESE CONTROLS SHALL SUPPLEMENT MAINLINE TRAFFIC CONTROL FOR LANE CLOSURES.
7. THE SIGNS SHALL BE MOUNTED ABOVE THE BARRICADES/DRUMS ON SEPARATE SIGN SUPPORTS THAT MEET NCHRP 350 OR MASH PREQUIREMENTS.
8. TRAFFIC CONTROL AND PROTECTION AT TURN BAYS (TO REMAIN OPEN TO TRAFFIC) SHALL BE INCLUDED IN THE COST OF SPECIFIED TRAFFIC CONTROL STANDARDS OR ITEMS.

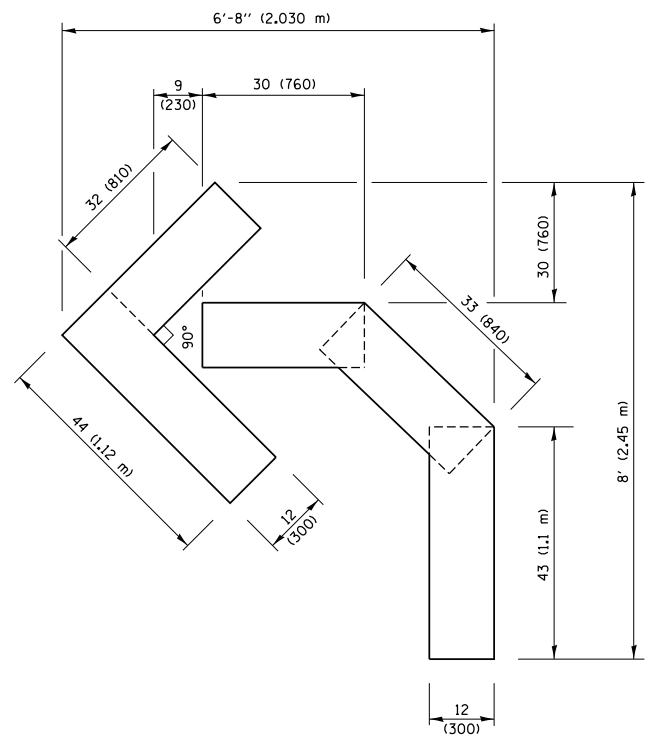


**DETAIL A**

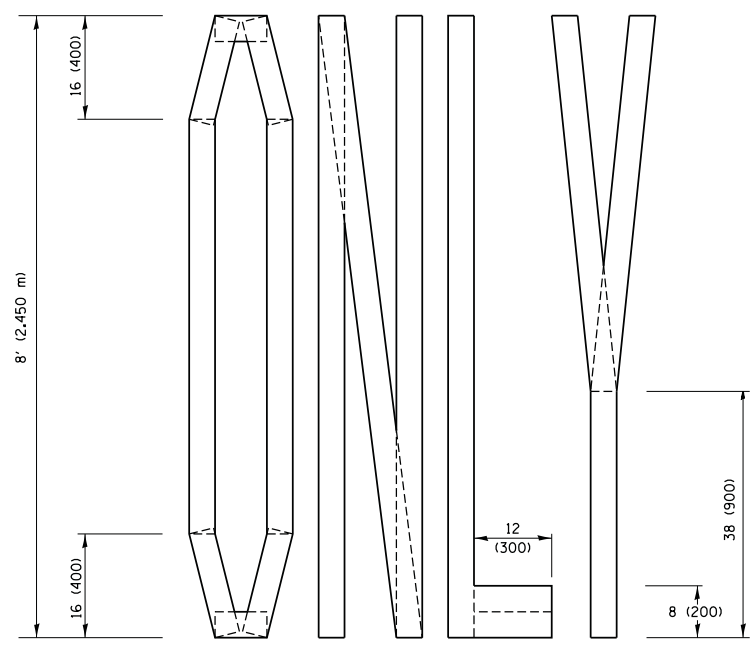
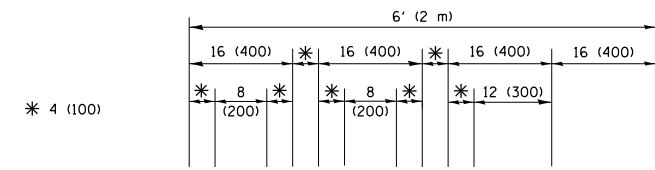
All dimensions are in inches (millimeters) unless otherwise shown.

FILE NAME =	USER NAME = footemj	REVISED - T. RAMMACHER 09-08-94	REVISED - R. BORO 09-14-09	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>TRAFFIC CONTROL AND PROTECTION AT TURN BAYS (TO REMAIN OPEN TO TRAFFIC)</b>			F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
Default		REVISED - A. HOUSEH 10-07-95	REVISED - A. SCHUETZE 07-01-13					<b>TC-14</b>		<b>CONTRACT NO.</b>		
		REVISED - A. HOUSEH 10-12-96	REVISED - A. SCHUETZE 09-15-16					ILLINOIS FED. AID PROJECT				

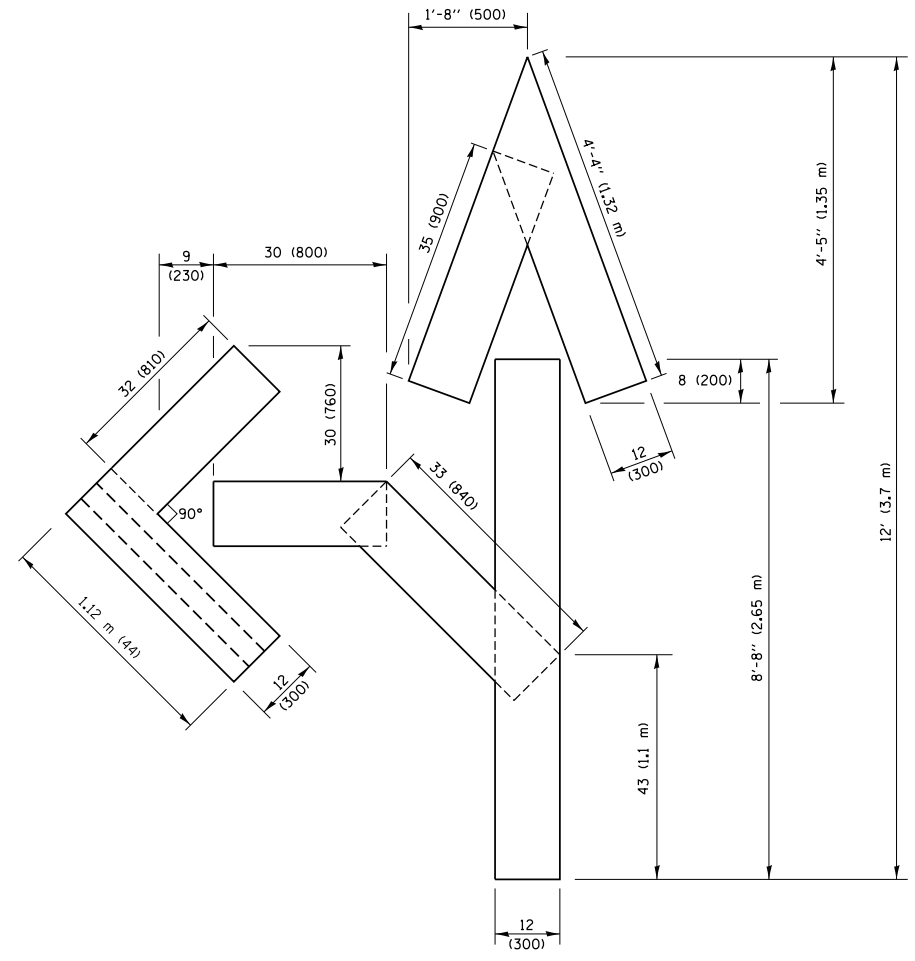
SCALE: NONE SHEET 1 OF 1 SHEETS STA. TO STA.



**QUANTITY**  
 4 (100) LINE = 45.5 ft. (13.9 m)  
 15.2 sq. ft. (1.41 sq. m)

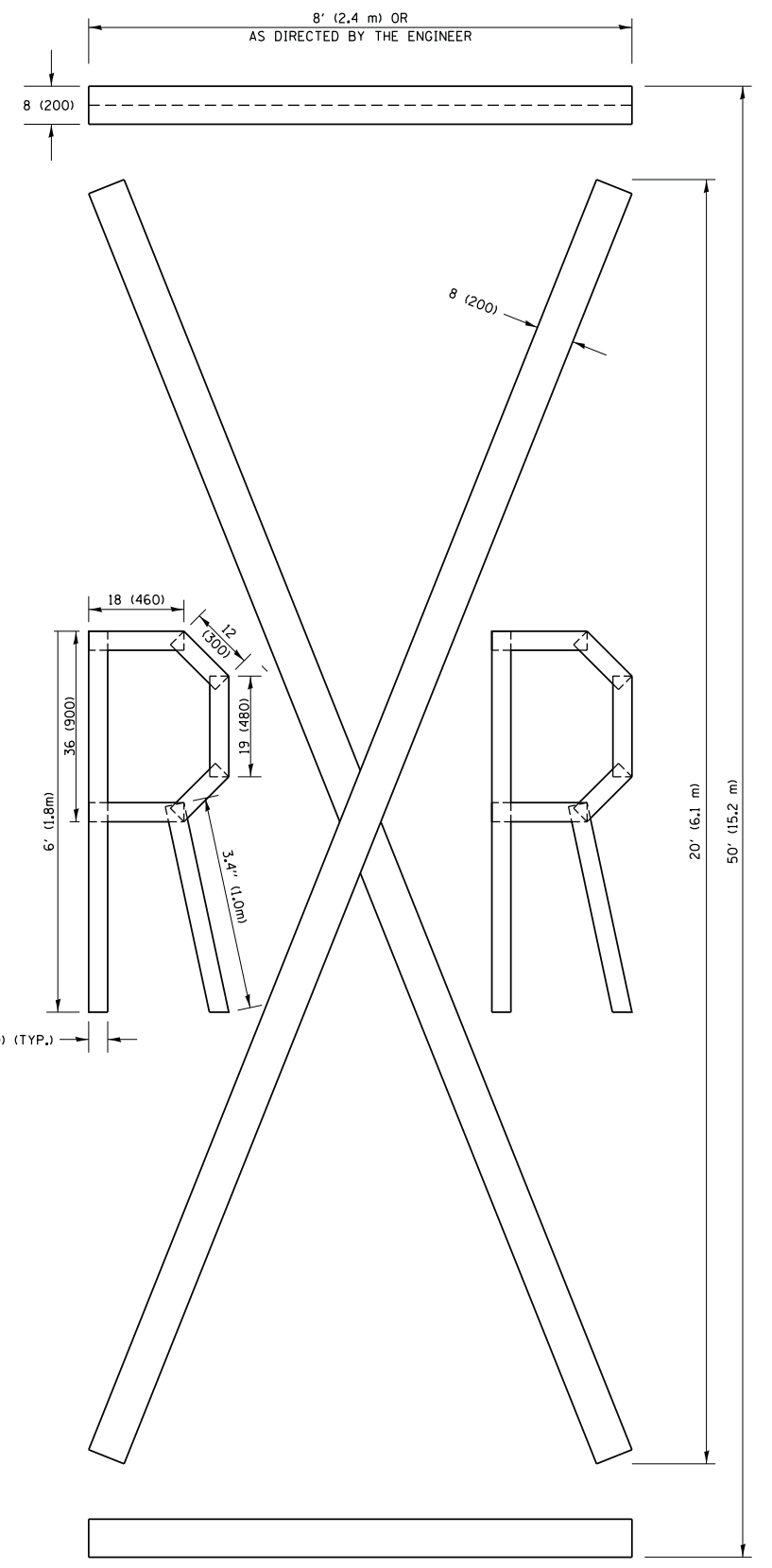


**QUANTITY**  
 4 (100) LINE = 64.1 ft. (19.5 m)  
 21.4 sq. ft. (1.99 sq. m)



**QUANTITY**  
 4 (100) LINE = 82.5 ft. (25.1 m)  
 27.5 sq. ft. (2.53 sq. m)

**NOTE:**  
 ALL QUANTITIES OF PLACEMENT ARE REPRESENTED IN LINEAR FEET OF 4" LINES TO MATCH THE 4" TEMPORARY TAPE PAY ITEM AND REPRESENTS THE TOTAL QUANTITY OF 4" TAPE REQUIRED.



**QUANTITY**  
 4 (100) LINE = 225.9 ft. (68.9 m)  
 75.3 sq. ft. (6.99 sq. m)

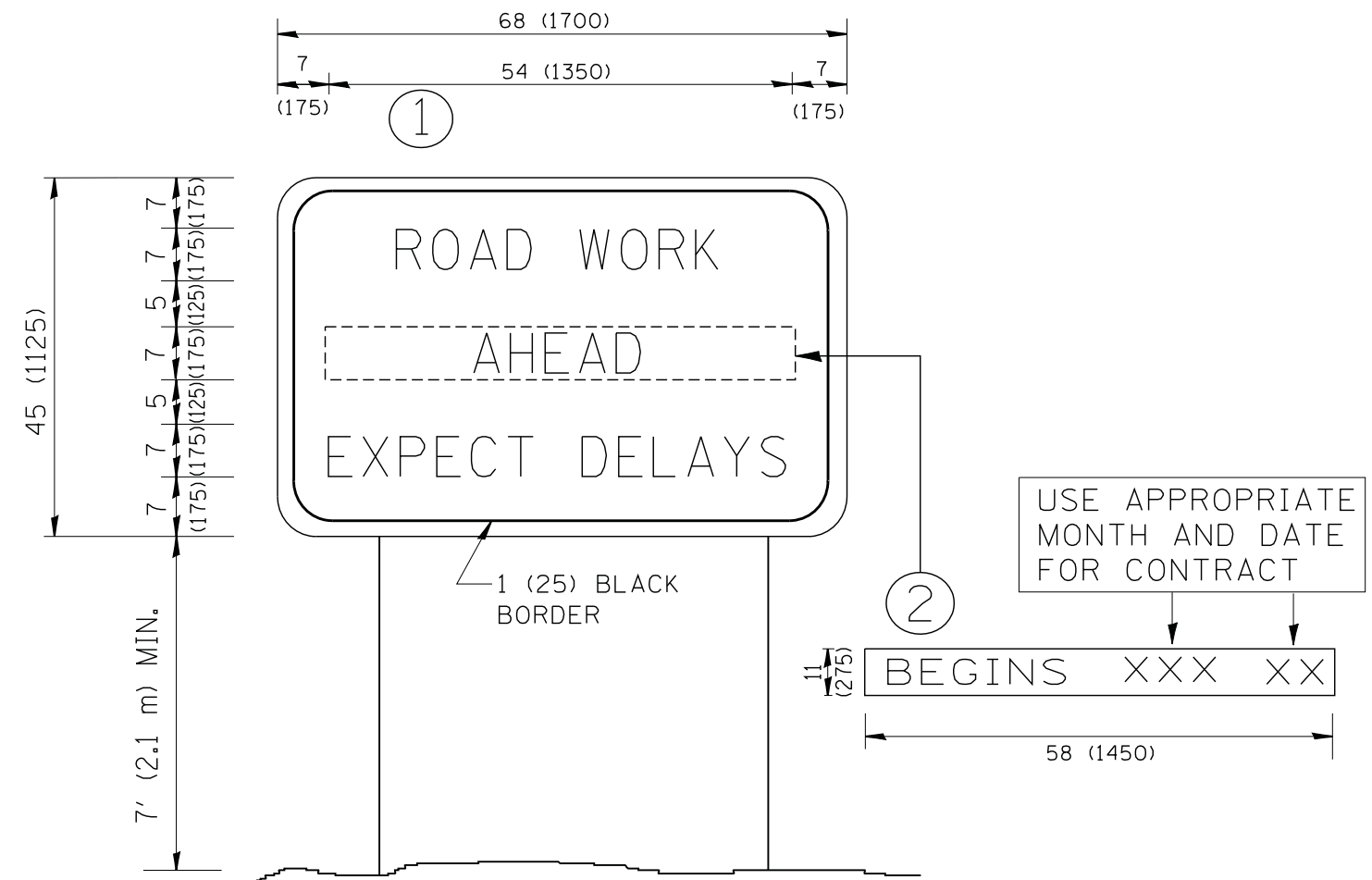
All dimensions are in inches (millimeters) unless otherwise shown.

FILE NAME =	USER NAME = footemj	DESIGNED -	REVISED - T. RAMMACHER 03-02-98
pw:\11\084EBIDINTEG\111nois.gov\PIWID\Documents\IDOT Offices\District 1\Projects\Dist 1\084EBIDINTEG\CADD\Drawings\to16.dgn		CHECKED -	REVISED - E. GOMEZ 08-28-00
		DATE - 09-18-94	REVISED - E. GOMEZ 08-28-00
			REVISED - A. SCHUETZE 09-15-16

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

<b>SHORT TERM PAVEMENT MARKING LETTERS AND SYMBOLS</b>			
SCALE: NONE	SHEET NO. 1 OF 1 SHEETS	STA.	TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	TC-16			
FED. ROAD DIST. NO. 1		ILLINOIS FED. AID PROJECT		



**NOTES:**

1. USE BLACK LETTERING ON ORANGE BACKGROUND.
2. ERECT SIGNS IN ADVANCE OF THE LOCATION FOR THE "ROAD CONSTRUCTION AHEAD" SIGN AT LOCATIONS AS DIRECTED BY THE ENGINEER.
3. ERECT SIGN ① WITH INSTALLED PANEL ② ONE WEEK PRIOR TO THE START OF CONSTRUCTION.
4. REMOVE PANEL ② SOON AFTER THE START OF CONSTRUCTION.
5. SEE SPECIAL PROVISION FOR "TEMPORARY INFORMATION SIGNING" FOR ADDITIONAL INFORMATION.
6. ONE SIGN ASSEMBLY EQUALS 25.70 SQ. FT. (2.3 SQ. M.)
7. SHALL BE PAID FOR AS TEMPORARY INFORMATION SIGNING.

ALL DIMENSIONS ARE IN INCHES (MILLIMETERS) UNLESS OTHERWISE SHOWN.

FILE NAME = W:\diststd\22x34\tc22.dgn	USER NAME = gaglianobt	DESIGNED - DRAWN -	REVISED - REVISED -
		REVISOR - CHECKED -	REVISOR - CHECKED -
		DATE -	DATE -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**ARTERIAL ROAD  
INFORMATION SIGN**

SCALE: NONE SHEET NO. 1 OF 1 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
TC-22		CONTRACT NO.		
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				