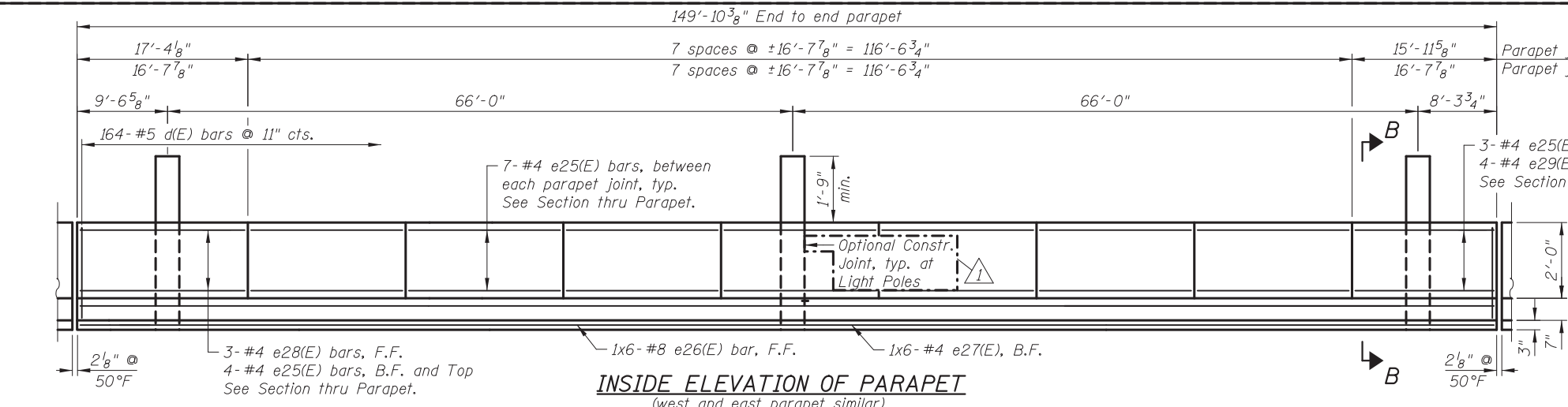
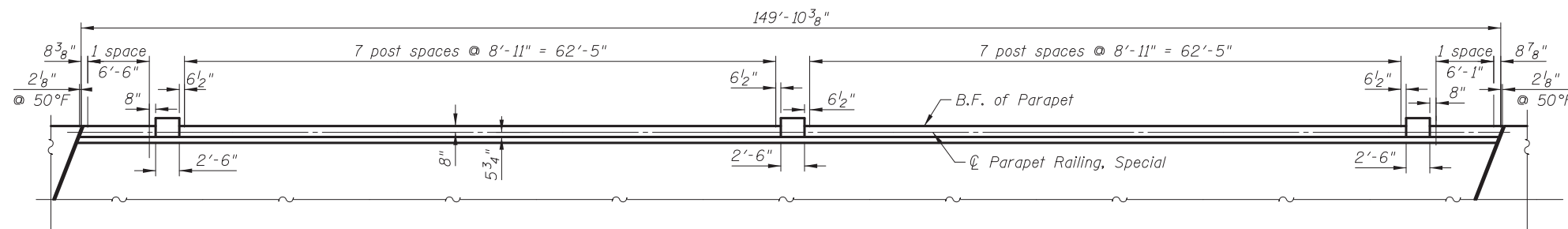


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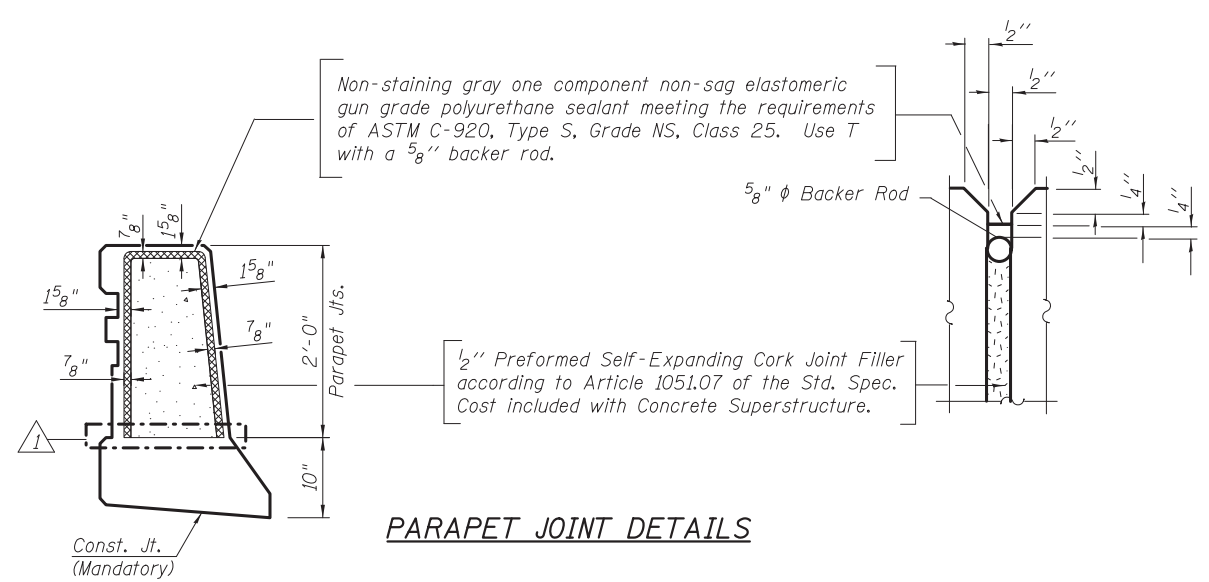


INSIDE ELEVATION OF PARAPET
(west and east parapet similar)

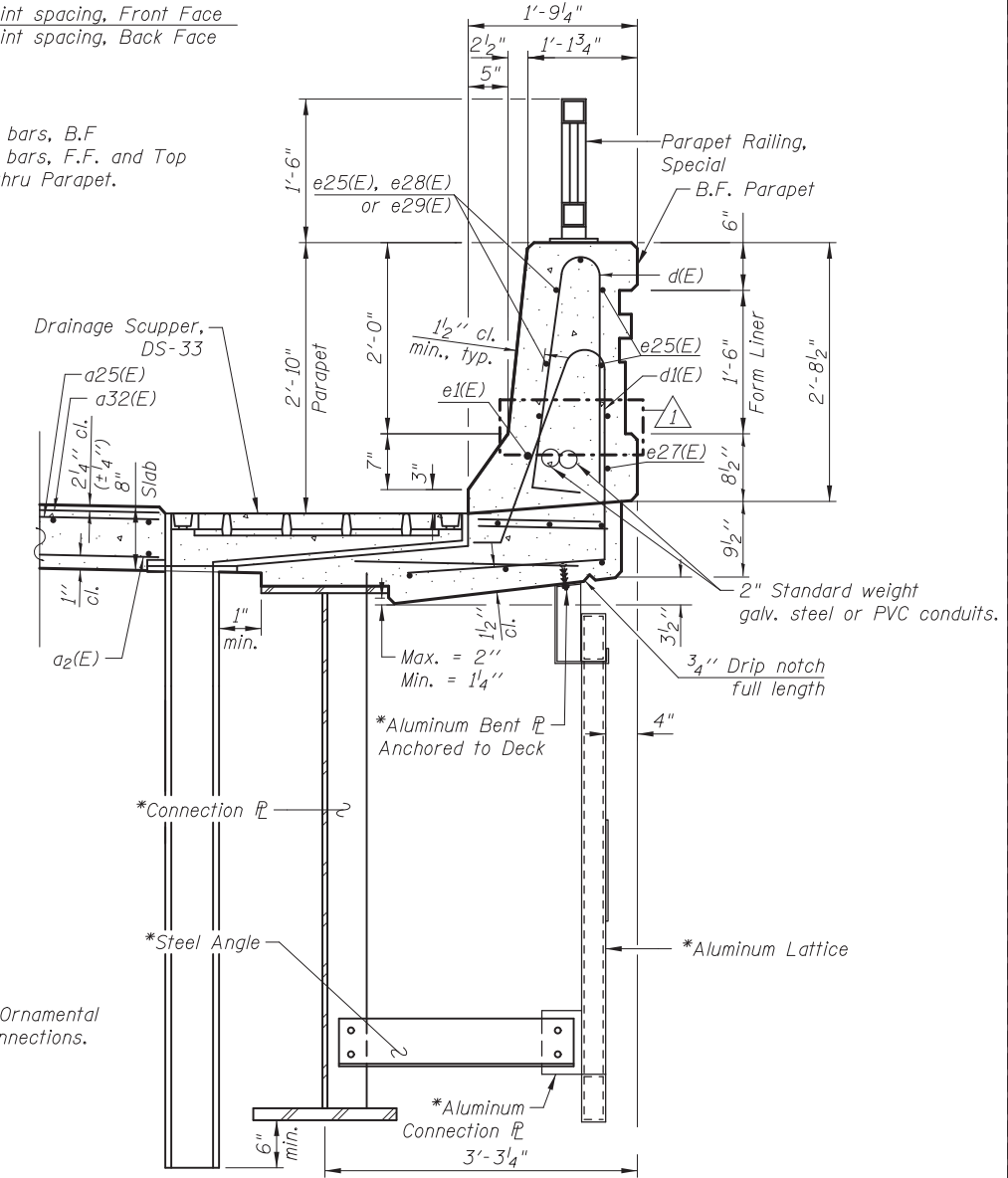


PLAN - PARAPET AND PARAPET RAILING
(Parapet Railing Post Spacing along \bar{C} Parapet Railing)
(West Parapet shown - East Parapet is a mirror image)

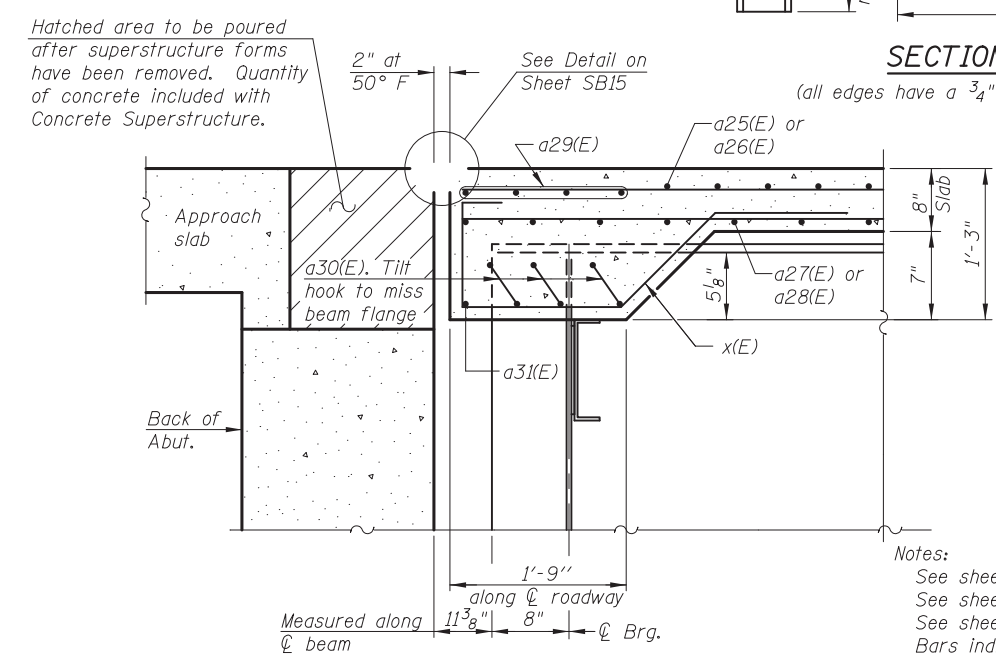
MINIMUM BAR LAP
(Parapet)
#4 bar = 2'-0"
#8 bar = 5'-2"



PARAPET JOINT DETAILS



SECTION THRU PARAPET
(all edges have a 3/4" chamfer except at form liner locations)



SECTION A-A

Notes:
See sheet SB14 for Parapet Railing details.
See sheet SB11 for Parapet Form Liner details.
See sheet SB9 for Section B-B.
Bars indicated thus 1x6-#8 etc. indicates 1 line of bars with 6 lengths per line.
Drains shall be located clear of all diaphragms.

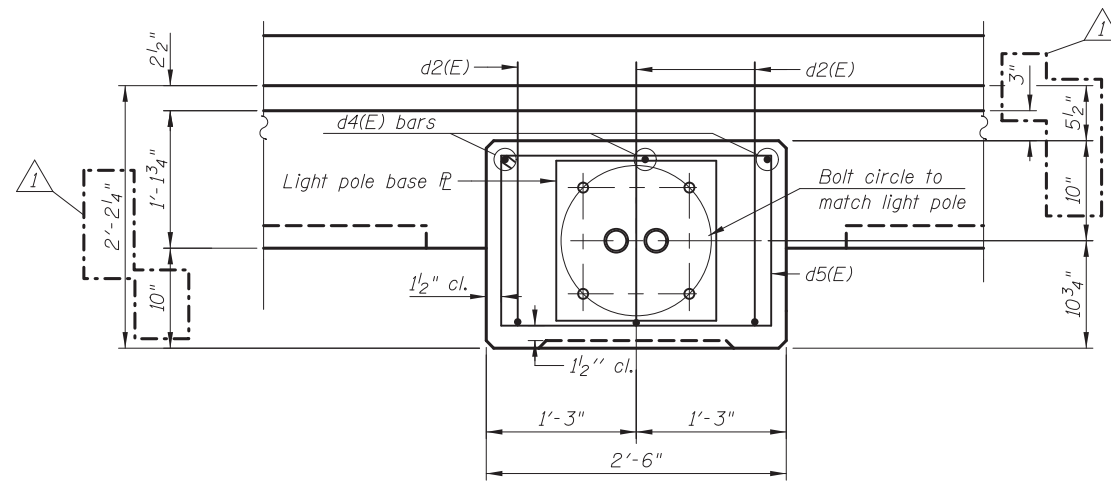
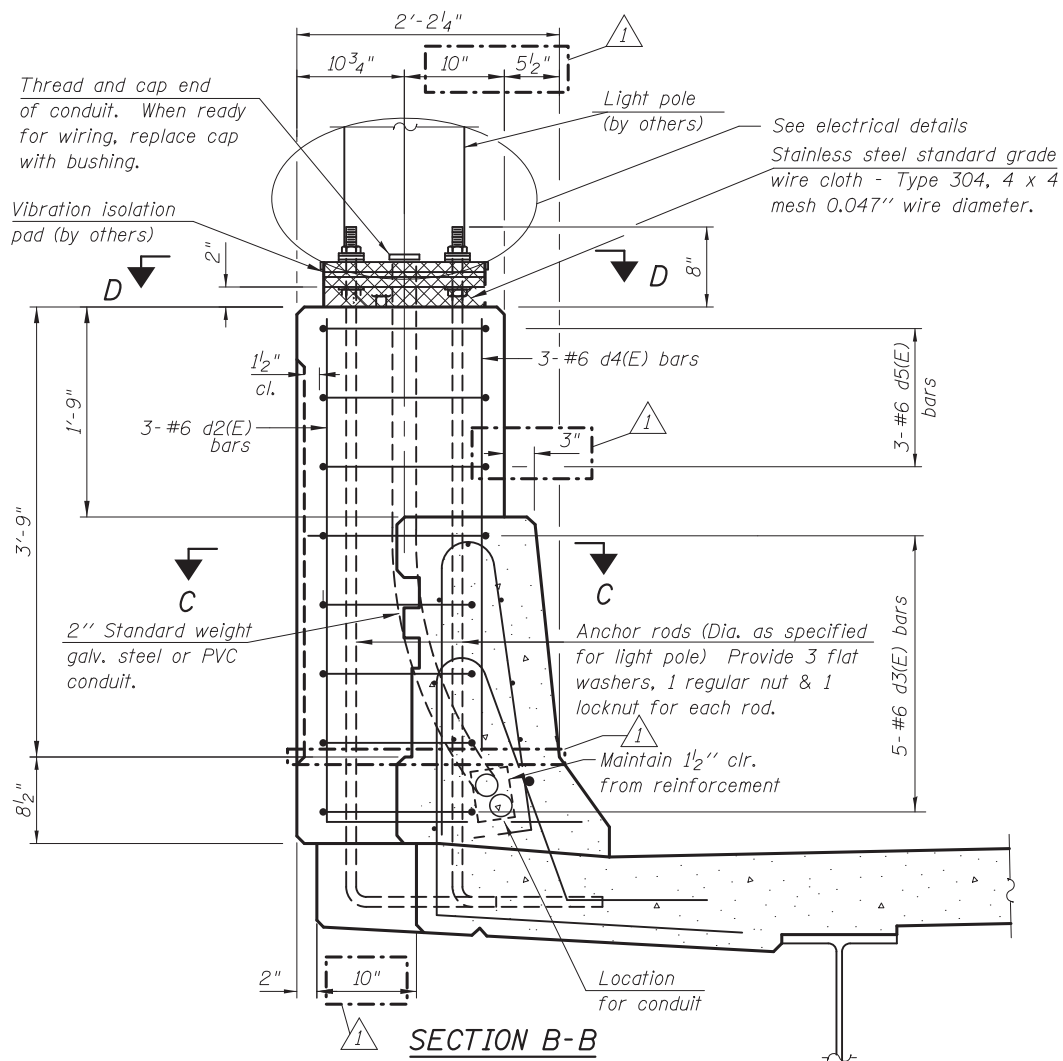
DRAWN	- M. LANGE	REVISED	- 5/2/12 D.L.A.
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	501
CONTRACT NO. 60F72			ILLINOIS FED. AID PROJECT	

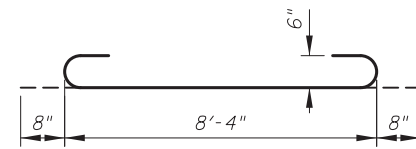
**SUPERSTRUCTURE
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a8(E)	16	#5	2'-0"	—
a25(E)	648	#5	25'-0"	—
a26(E)	324	#5	34'-9"	—
a27(E)	398	#5	30'-0"	—
a28(E)	198	#5	24'-9"	—
a29(E)	24	#5	30'-2"	—
a30(E)	54	#6	9'-8"	—
a31(E)	6	#6	30'-7"	—
a32(E)	646	#6	6'-6"	—
b(E)	510	#5	27'-8"	—
b1(E)	483	#5	24'-2"	—
c(E)	150	#5	2'-6"	—
c1(E)	300	#5	2'-4"	—
d(E)	328	#5	5'-7"	—
d1(E)	328	#5	7'-11"	—
d2(E)	18	#6	6'-2"	—
d3(E)	30	#6	8'-11"	—
d4(E)	18	#6	3'-5"	—
d5(E)	18	#6	8'-8"	—
e25(E)	112	#4	16'-4"	—
e26(E)	12	#8	29'-3"	—
e27(E)	12	#4	26'-7"	—
e28(E)	6	#4	17'-0"	—
e29(E)	8	#4	15'-8"	—
x(E)	144	#5	6'-5"	—
Item	Unit	Quantity		
Concrete Superstructure	Cu. Yd.	358.2		
Bridge Deck Grooving	Sq. Yd.	1,199		
Protective Coat	Sq. Yd.	1,408		
Reinforcement Bars, Epoxy Coated	Pound	91,370		
Form Liner Texture Surface, Special	Sq. Ft.	392		

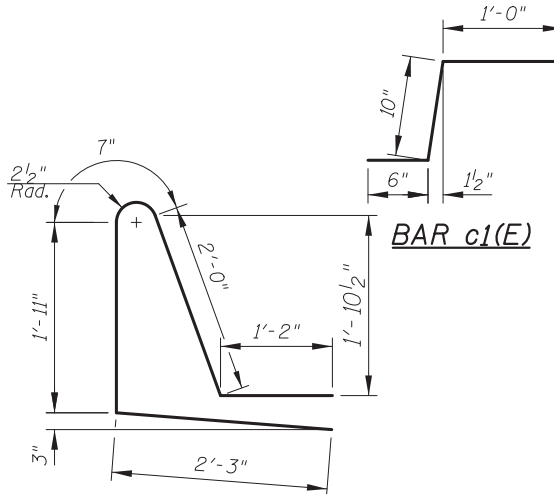
Bars indicated thus 1 x 3-#8 etc. indicates 1 line of bars with 3 lengths per line.



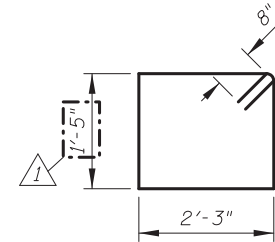
**VIEW D-D
LIGHT POLE FOUNDATION PLAN**



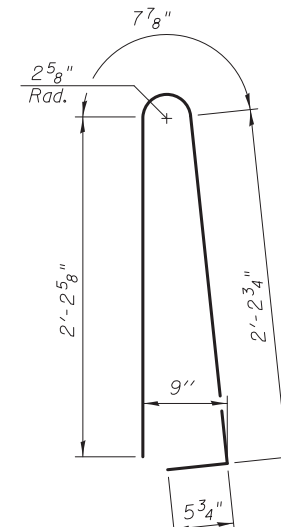
BAR a30(E)



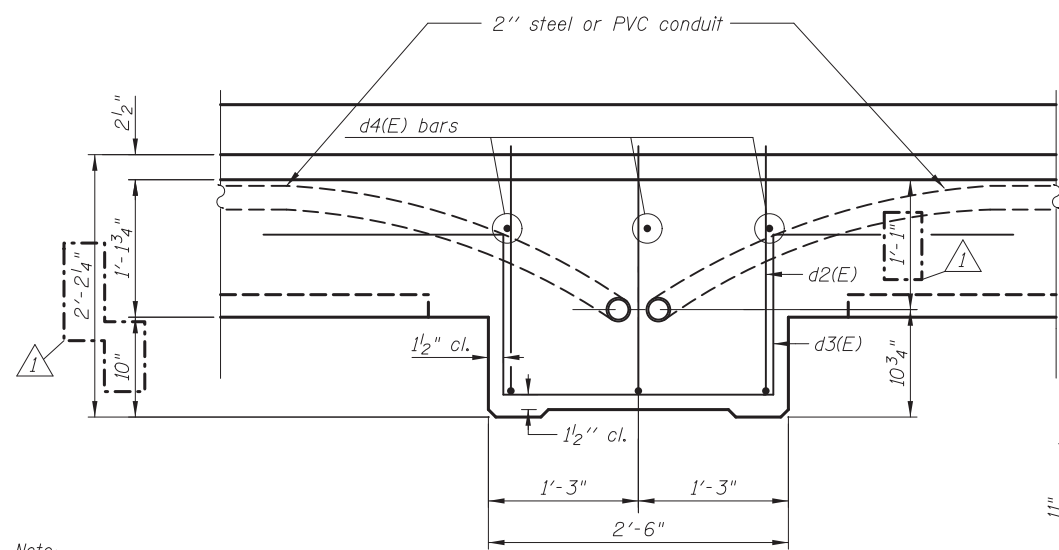
BAR c1(E)



BAR d5(E)

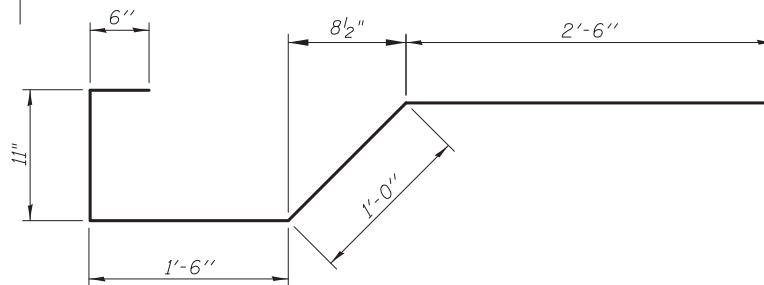


BAR d(E)

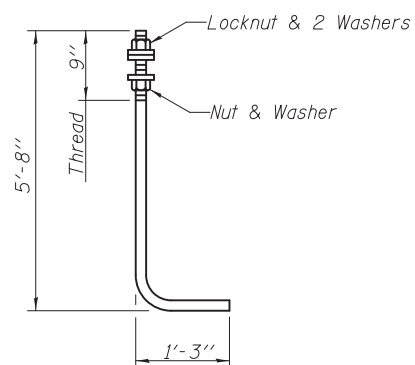


SECTION C-C

Note:
Cost of anchor rods and conduit is included with Concrete Superstructure. See sheet SB8 for Section A-A.

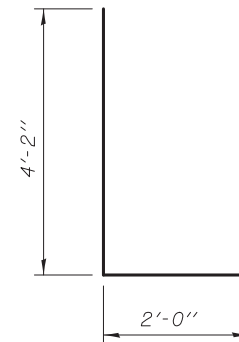


BAR x(E)

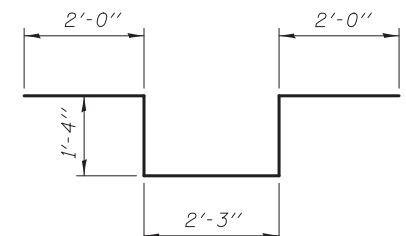


ANCHOR ROD

Diameter as specified for light poles. (ASTM F 1554 Grade 105)

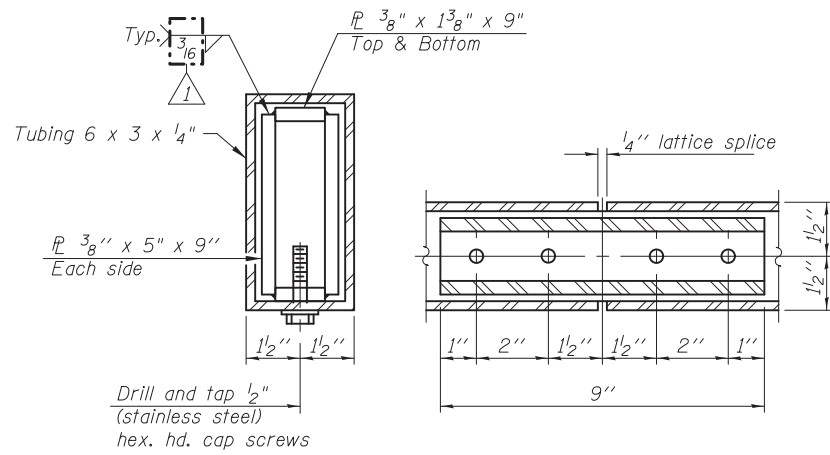


BAR d2(E)

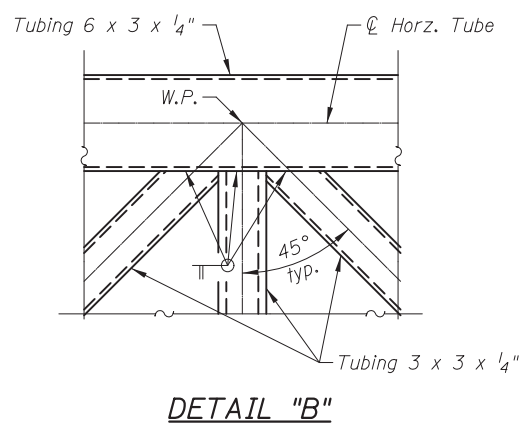


BAR d3(E)

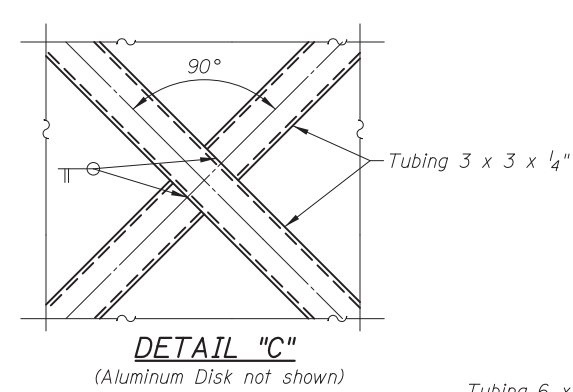
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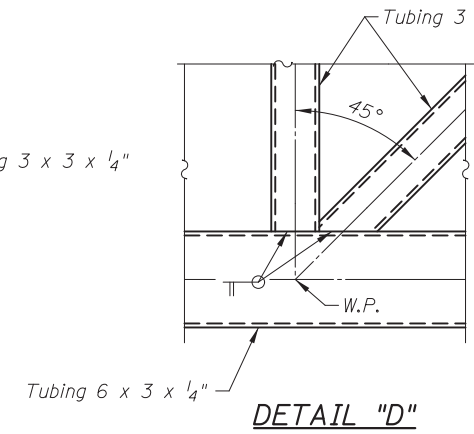
HORIZONTAL BAR SPLICE



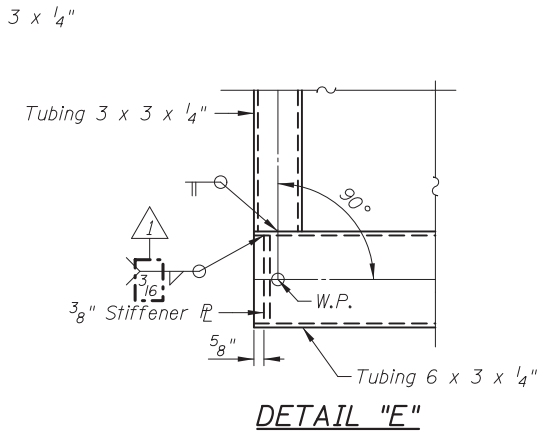
DETAIL "B"



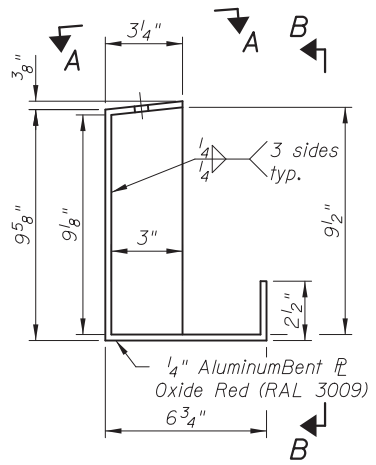
DETAIL "C"
(Aluminum Disk not shown)



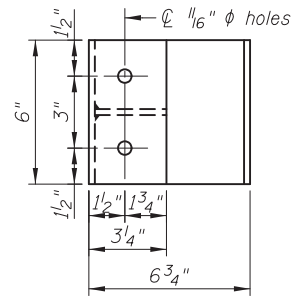
DETAIL "D"



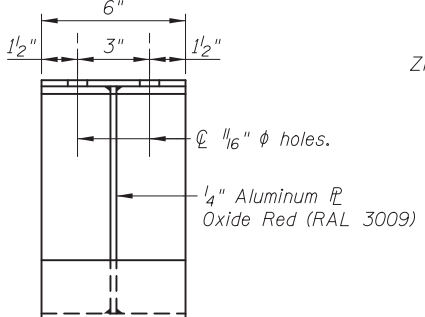
DETAIL "E"



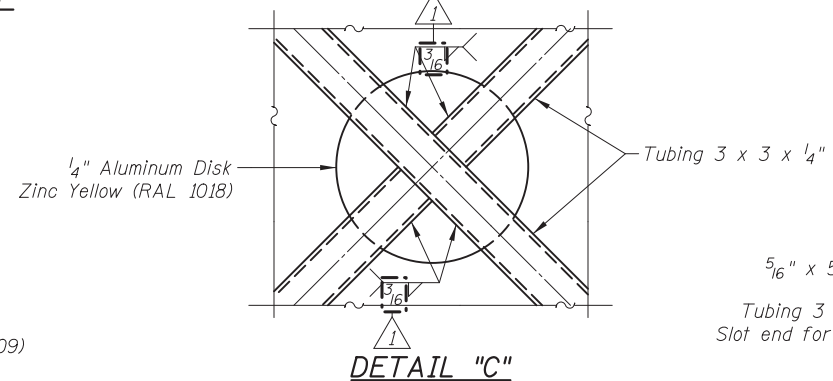
HANGER DETAIL



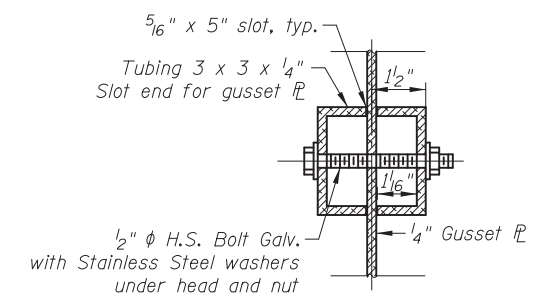
SECTION A-A



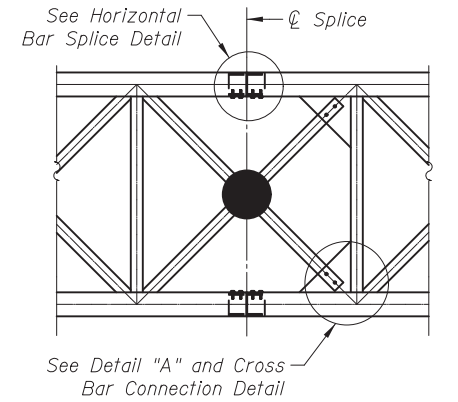
SECTION B-B



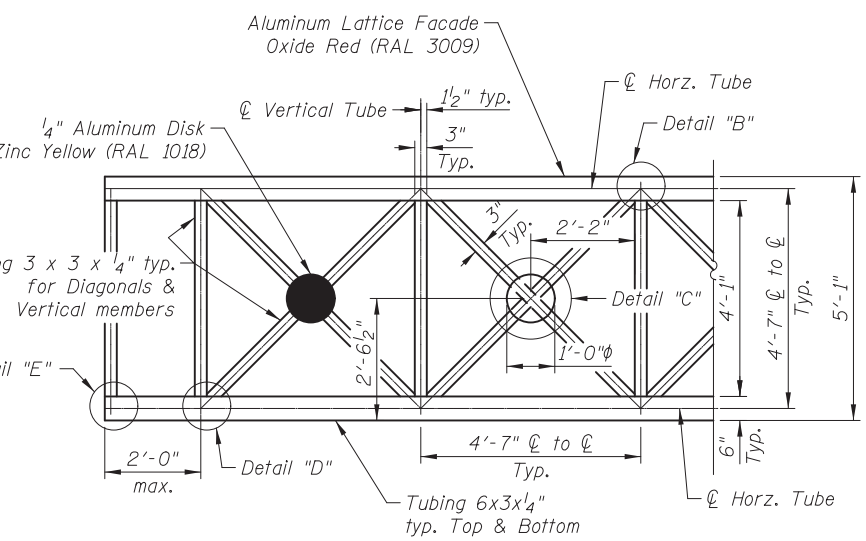
DETAIL "C"



CROSS BAR CONNECTION

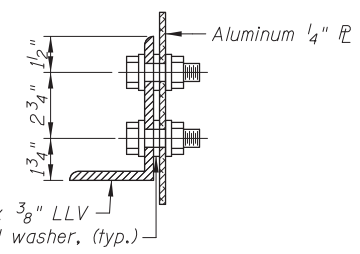


LATTICE SPLICE

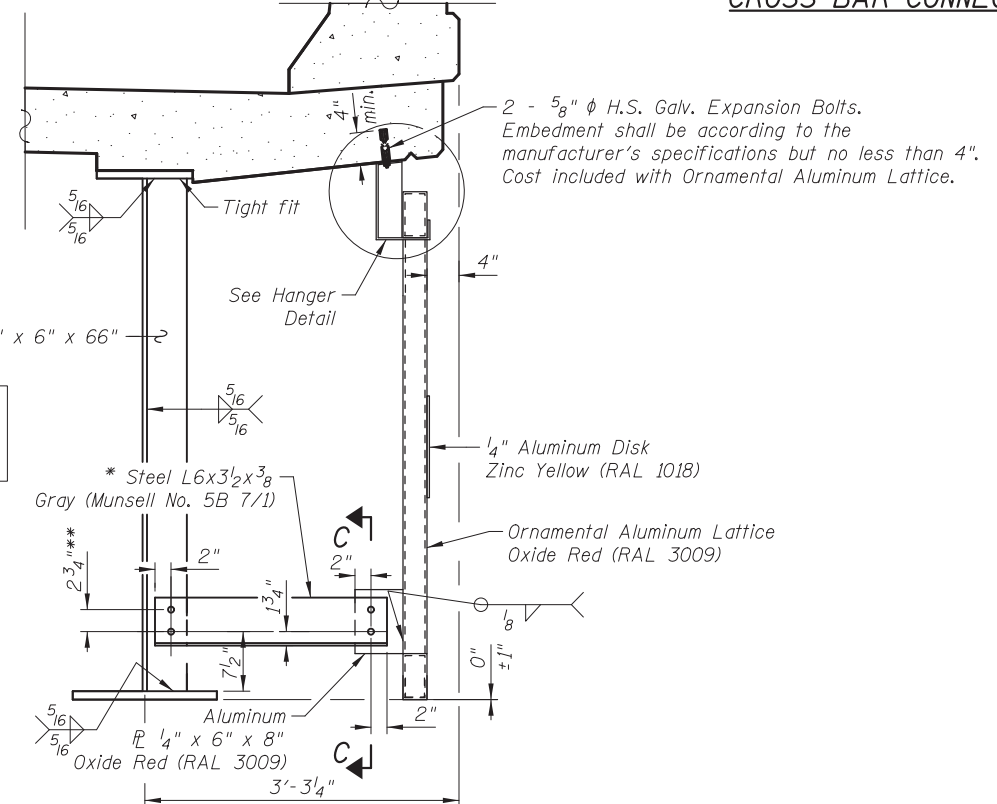


ALUMINUM LATTICE ELEVATION

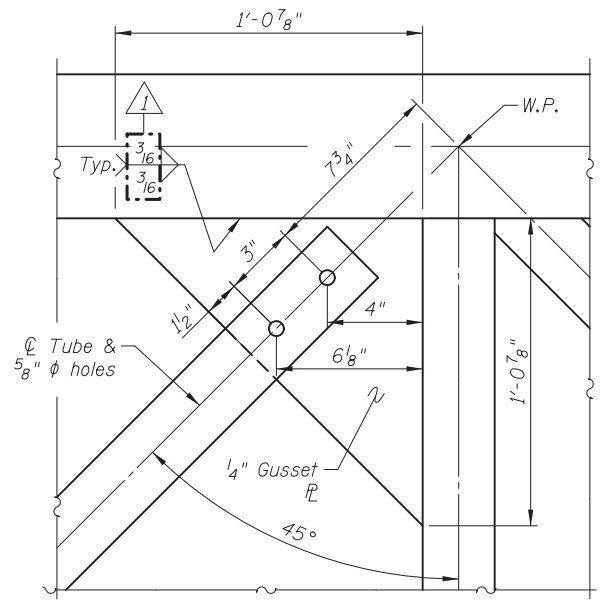
* Coordinate locations of Connection Plate with Steel Fabricator. Cost included with Furnishing and Erecting Structural Steel



SECTION C-C



TYPICAL ALUMINUM LATTICE LATERAL BRACING



DETAIL "A"

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Ornamental Aluminum Lattice	Foot	294

Notes:
Hangers and aluminum plates to be included in the cost of Ornamental Aluminum Lattice.
All aluminum welds shall be Filler Alloy 5356 with a min. allowable stress of 7 ksi.
See sheet SA12 for Elevation View of the Exterior Fascia of the beams.
W.P. indicates work point.

CIVILTECH
450 E Devon Ave, Suite 300
Itasca, Illinois 60143
Tel: 630.773.3900 Fax: 630.773.3975
www.civiltechinc.com

DRAWN	- M. LANGE	REVISED	- 5/23/2012 D.L.A.
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

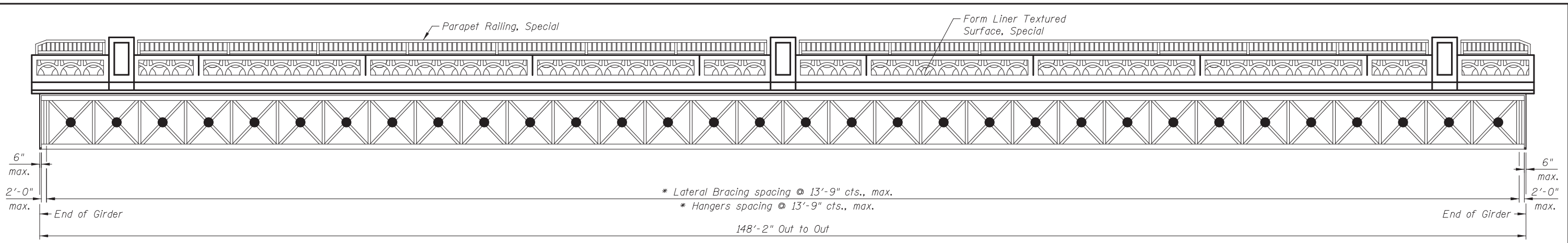
STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

ORNAMENTAL ALUMINUM LATTICE ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD STRUCTURE NO. 056-0081
SHEET NO. SB10 OF SB32 SHEETS

O.R. RTÉ.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	503
			CONTRACT NO. 60F72	

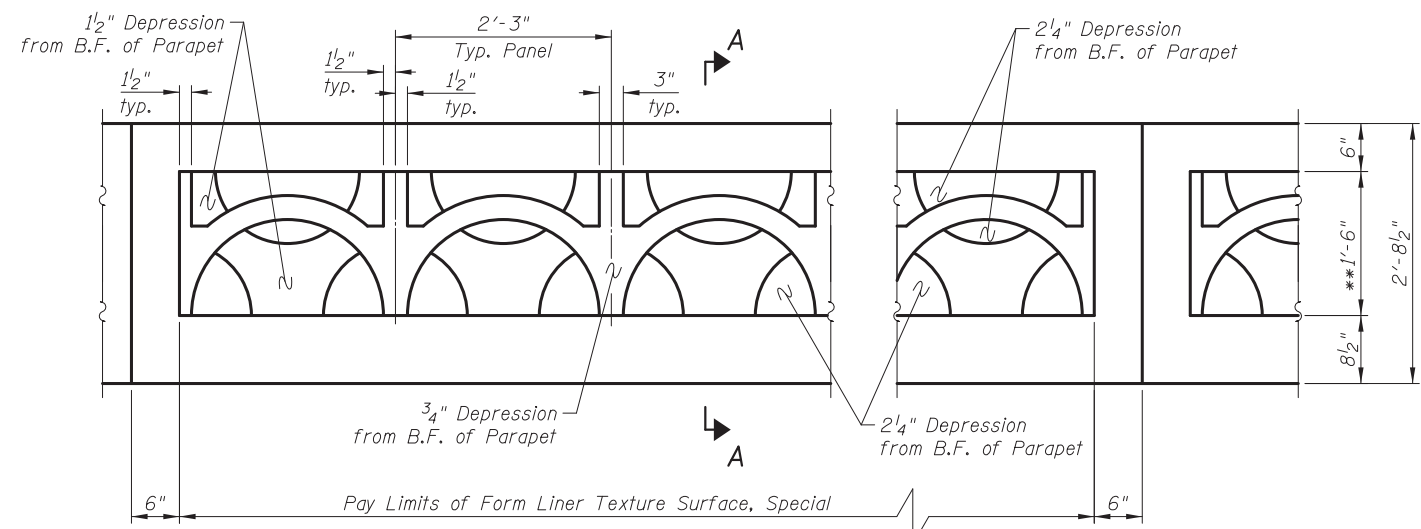
ILLINOIS FED. AID PROJECT

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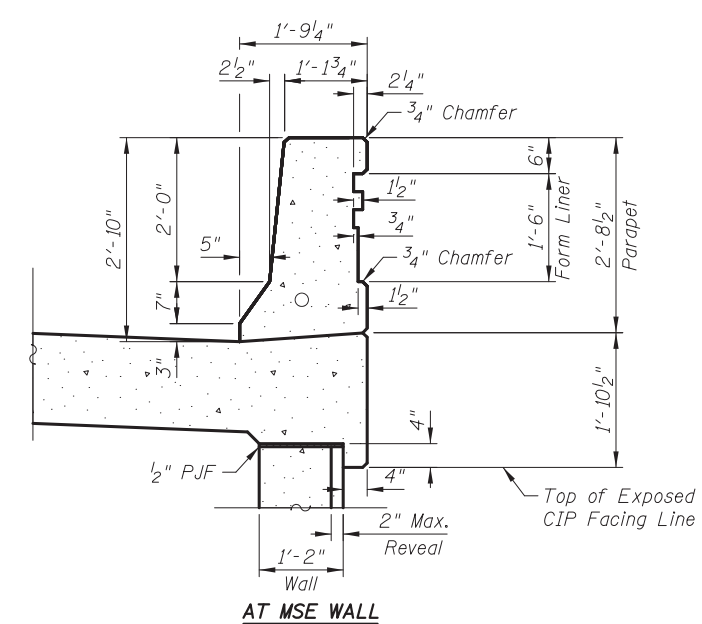
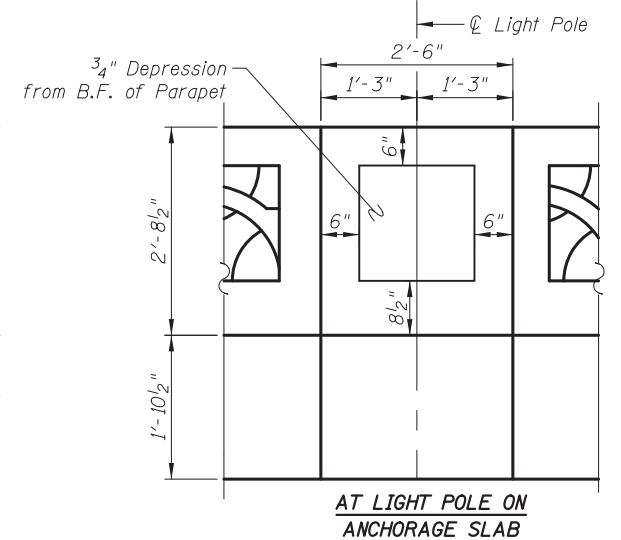
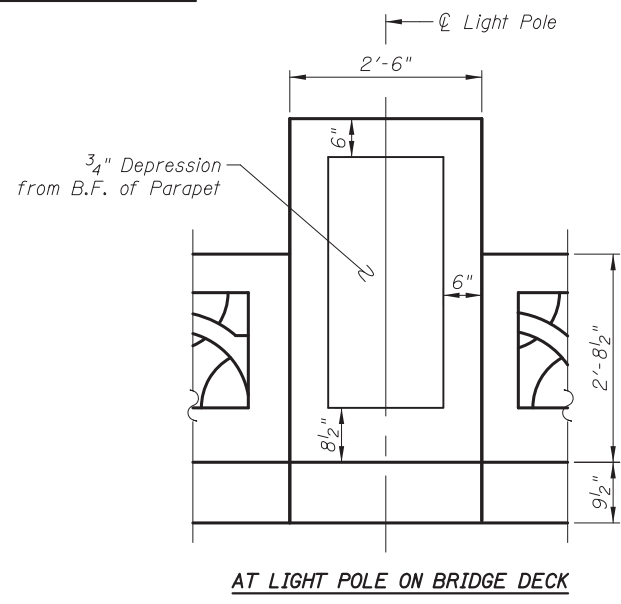


ELEVATION - EXTERIOR FASCIA

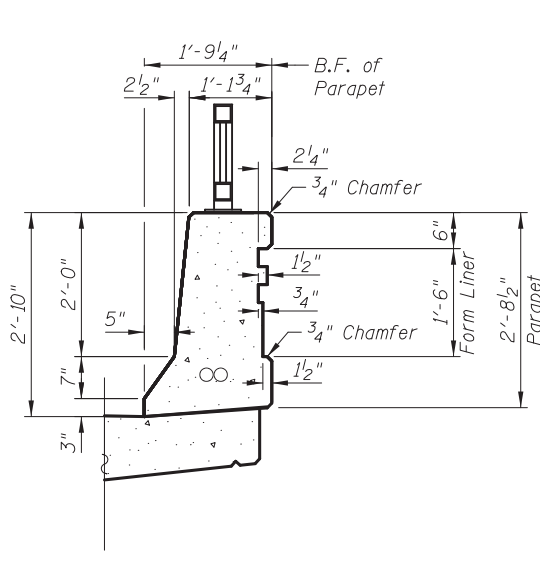
* Lateral Bracing connections shall occur at the vertical aluminum tubes and Hangers shall occur in mid span of lattice. Contractor to layout locations and submit shop drawings for approval.



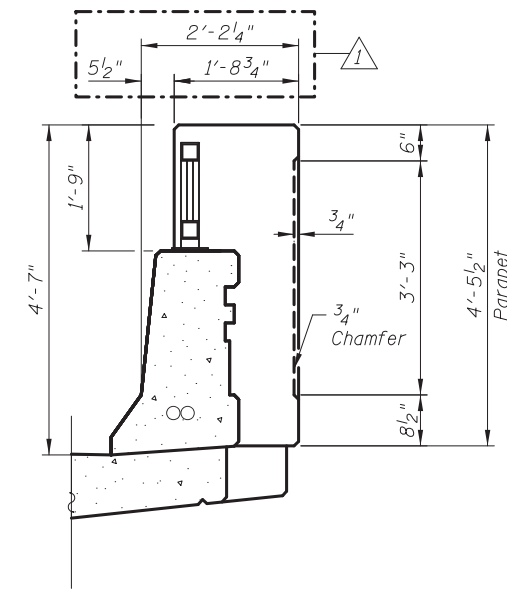
ELEVATION - OUTSIDE FACE OF PARAPET
** Pay Limits of Form Liner Texture Surface, Special



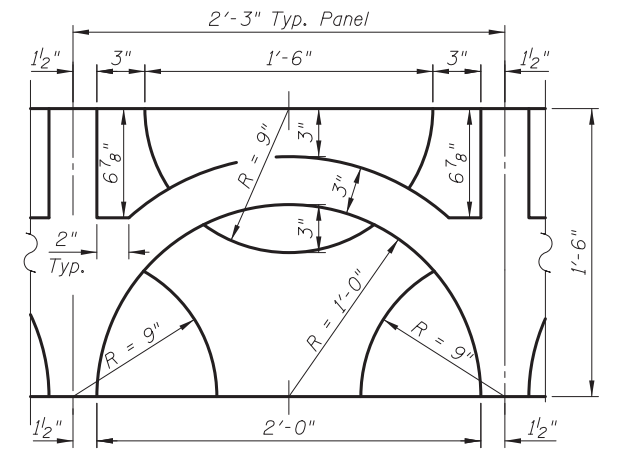
AT MSE WALL



AT BRIDGE DECK



AT LIGHT POLE



FORM LINER TEXTURE SURFACE, SPECIAL DETAIL

Notes:
Parapet, railing, lighting and all other details not specifically pertaining to the lattice are shown for graphics purposes only and will be structure dependant. See Sheet SB10 for Hanger and Lateral Bracing Details.

SECTION A-A

5/21/2012 10:52:20 AM I:\2154\cad\sheet\Roadway\20-Structures & Walls\02-SN_056-008\056008-60F72-II-AD_rev2.dgn

CIVILTECH
 450 E Devon Ave, Suite 300
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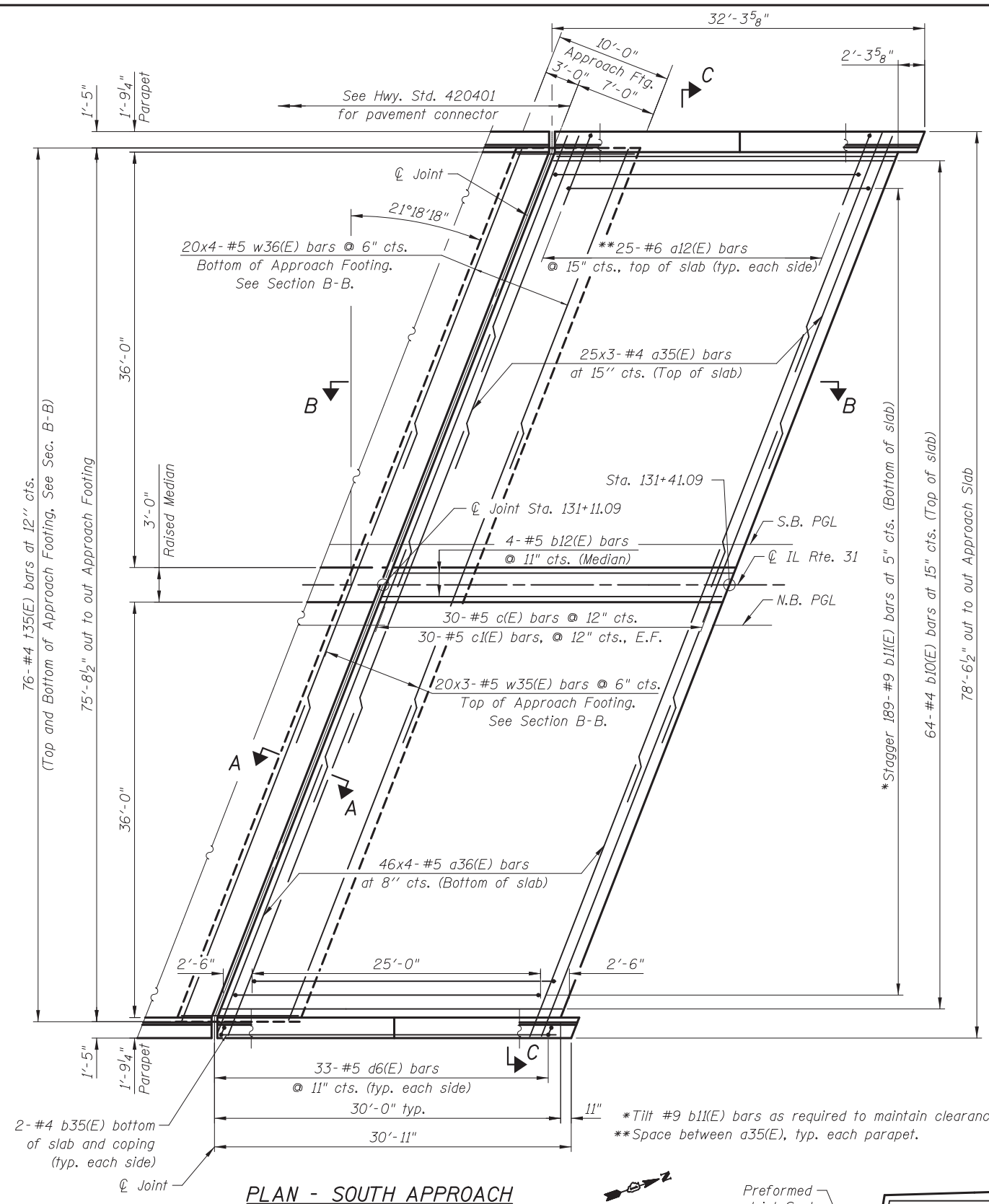
DRAWN	- M. LANGE	REVISED	- 5/4/12 K.L.B.
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

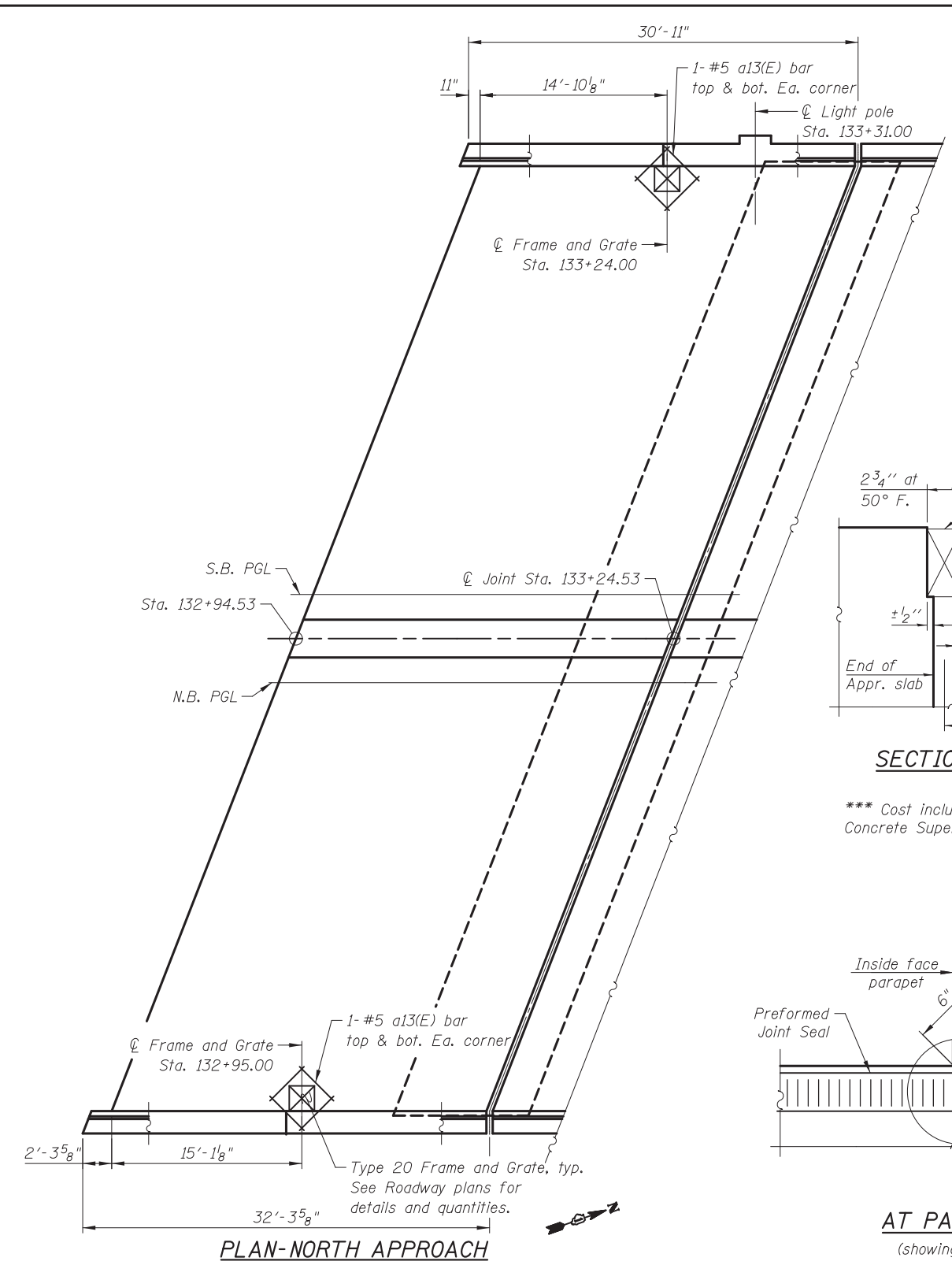
**ARCHITECTURAL DETAILS
ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD
STRUCTURE NO. 056-0081**
SHEET NO. SB 11 OF SB32 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	504
CONTRACT NO. 60F72			ILLINOIS FED. AID PROJECT	

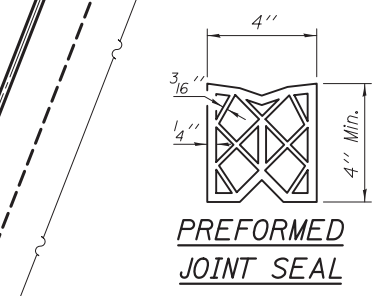
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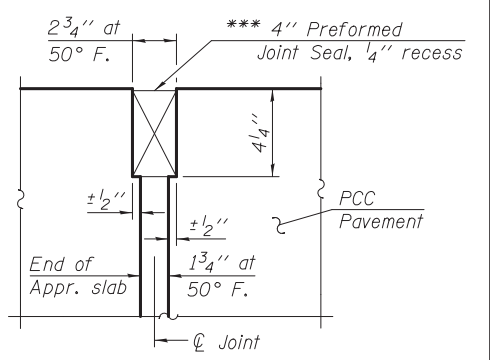
PLAN - SOUTH APPROACH



PLAN-NORTH APPROACH

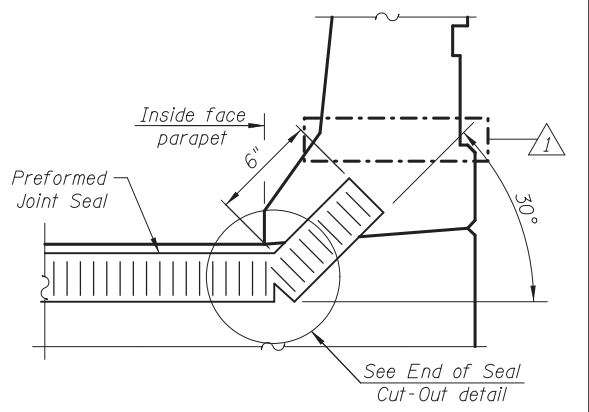


PREFORMED JOINT SEAL

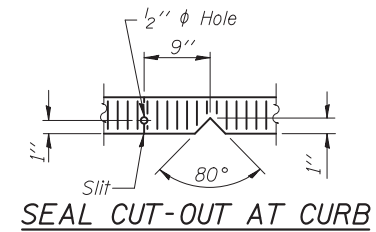


SECTION A-A

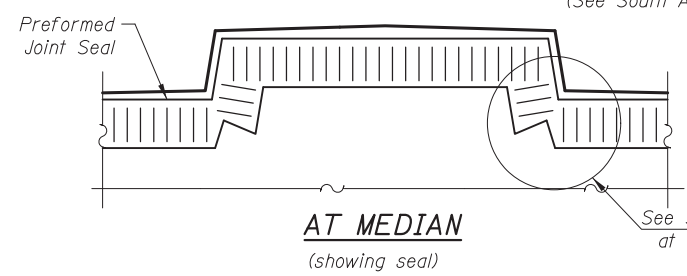
*** Cost included with Concrete Superstructures



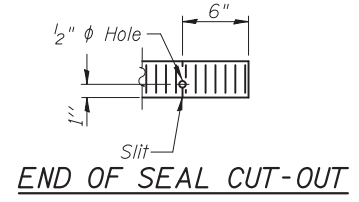
AT PARAPET (showing seal)



SEAL CUT-OUT AT CURB



AT MEDIAN (showing seal)



END OF SEAL CUT-OUT

MINIMUM BAR LAP
 (Approach Slab)
 #4 bar = 2'-7"
 #5 bar = 3'-3"

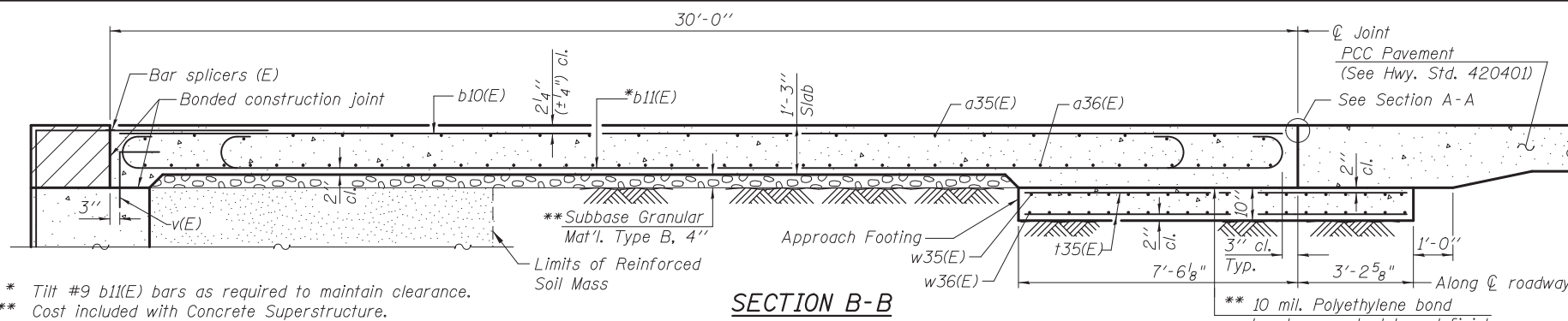
(See South Approach for remainder of dimensions and reinforcement)

Notes:
 See sheet SB13 for Sections B-B and C-C.
 See sheet SB13 for Bill of Material, Schedule of Reinforcement, and Bar Diagrams.
 a35(E), a36(E), c(E) and c1(E) bar spacings measured along ϕ of roadway.
 Order a35(E), a36(E), b10(E) and b11(E) bars full length, cut in field to fit drainage structures.

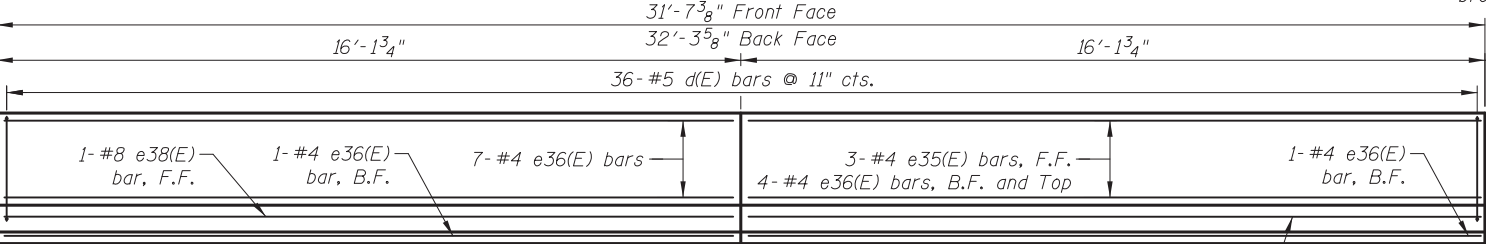
**TWO APPROACHES
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a12(E)	100	#6	7'-10"	┌
a13(E)	16	#5	3'-6"	┌
a35(E)	150	#4	29'-9"	┌
a36(E)	368	#5	23'-5"	┌
b10(E)	128	#4	29'-8"	┌
b11(E)	378	#9	29'-9"	┌
b12(E)	8	#5	29'-8"	┌
b35(E)	8	#4	29'-8"	┌
c(E)	60	#5	2'-6"	┌
c1(E)	120	#5	2'-4"	┌
d(E)	142	#5	5'-7"	┌
d3(E)	5	#6	8'-11"	┌
d6(E)	132	#5	7'-11"	┌
d7(E)	3	#6	4'-5"	┌
e35(E)	32	#4	15'-2"	┌
e36(E)	32	#4	15'-10"	┌
e37(E)	4	#8	15'-2"	┌
e38(E)	4	#8	15'-10"	┌
t35(E)	304	#4	10'-4"	┌
w35(E)	120	#5	29'-2"	┌
w36(E)	160	#5	22'-8"	┌
Item	Unit	Quantity		
Concrete Structures	Cu. Yd.	50.2		
Concrete Superstructures	Cu. Yd.	264.5		
Bridge Deck Grooving	Sq. Yd.	480		
Protective Coat	Sq. Yd.	564		
Reinforcement Bars, Epoxy Coated	Pound	67,360		
Form Liner Textured Surface, Special	Sq. Ft.	172		

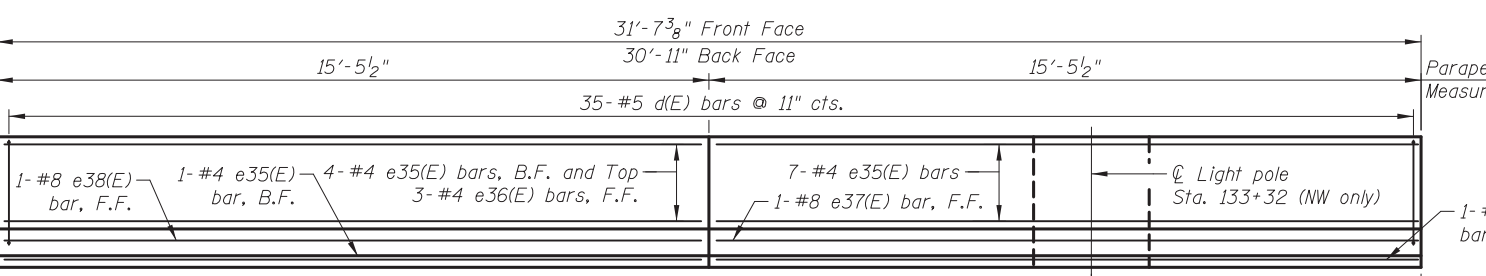
Bars indicated thus 1 x 3-#8 etc. indicates 1 line of bars with 3 lengths per line.



* Tilt #9 b11(E) bars as required to maintain clearance.
** Cost included with Concrete Superstructure.



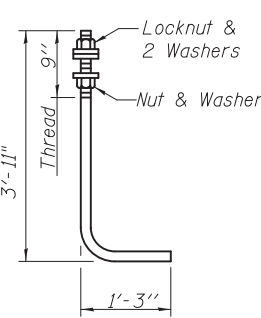
INSIDE FACE OF NORTHEAST & SOUTHWEST PARAPETS



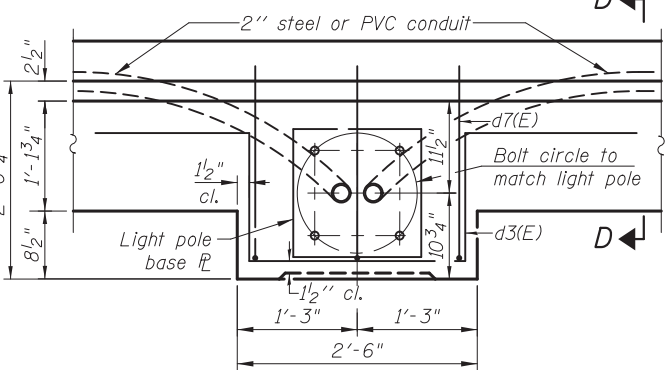
INSIDE FACE OF NORTHWEST & SOUTHEAST PARAPETS

Hatched area to be poured after superstructure false work has been removed. See Abutment Sheets SB20 thru SB22.

Notes:
See sheet SB12 for Section A-A.
Approach slab and parapet concrete shall be paid for as Concrete Superstructure.
Approach footing concrete shall be paid for as Concrete Structures.
Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.
For v(E) bar details on sheet SB22.
The approach footing maximum applied service bearing pressure (Qmax) = 2.0 ksf.
For bar splicer details, see sheet SB28.
Cost of excavation for approach footing included with Concrete Structures.
For additional parapet details, see sheet SB11 for dimensions and for parapet formliner details and sheet SB26 for Parapet Joint Details.
Cost of anchor rods and conduit is included with Concrete Superstructure.



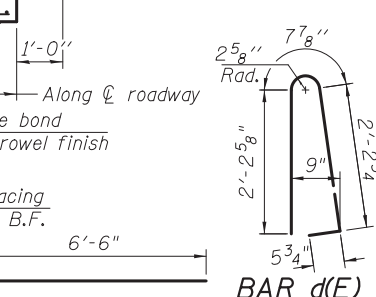
ANCHOR ROD
Diameter as specified for light poles.
(ASTM F 1554 Grade 105)



LIGHT POLE FOUNDATION PLAN



BAR b11(E)

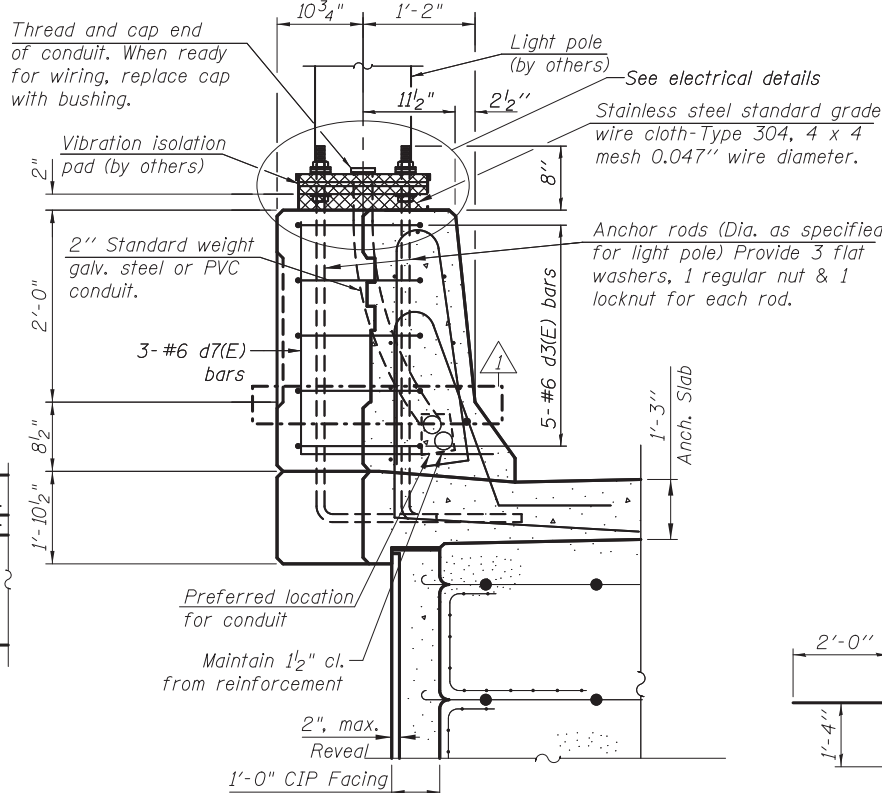


BAR a12(E)

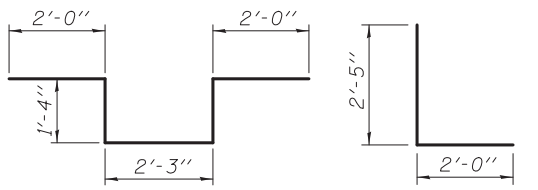
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BAR d6(E)

BAR c1(E)

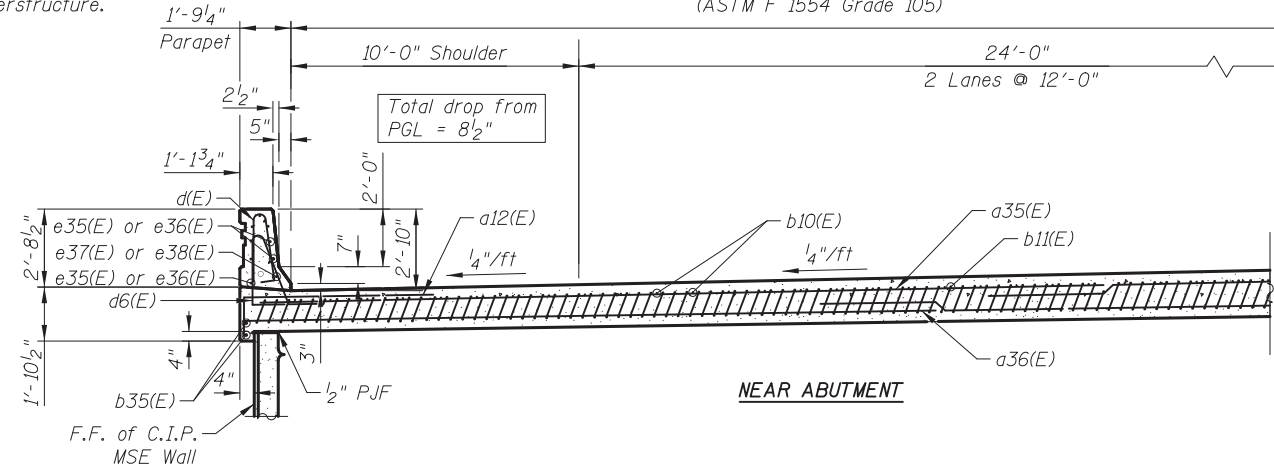


SECTION D-D

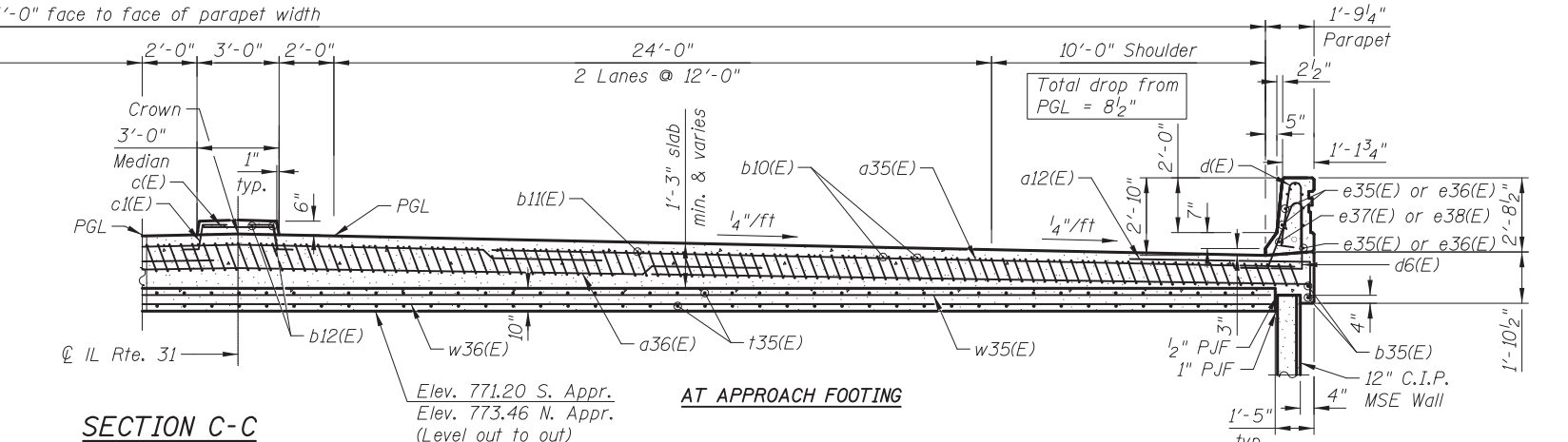


BAR d3(E)

BAR d7(E)



NEAR ABUTMENT



SECTION C-C

AT APPROACH FOOTING

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450 E Devon Ave, Suite 300
Itasca, Illinois 60143
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DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

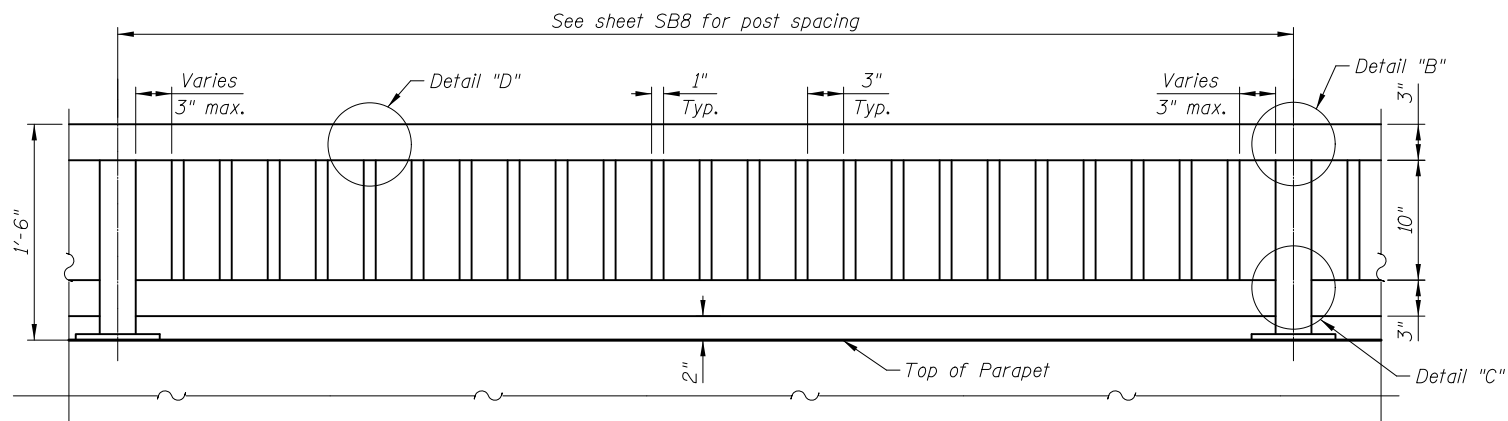
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**BRIDGE APPROACH SLAB DETAILS
ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD
STRUCTURE NO. 056-0081**

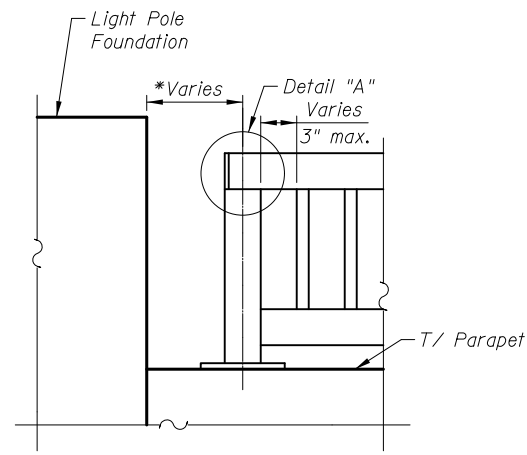
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	506
			CONTRACT NO. 60F72	

SHEET NO. SB13 OF SB32 SHEETS

ILLINOIS FED. AID PROJECT

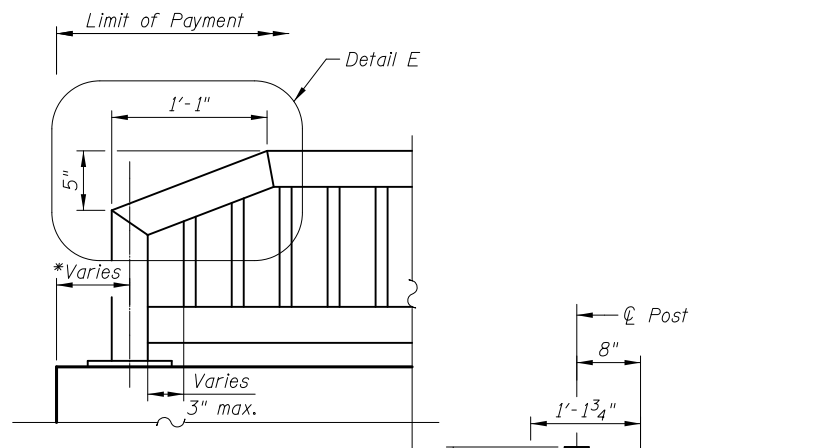


ELEVATION

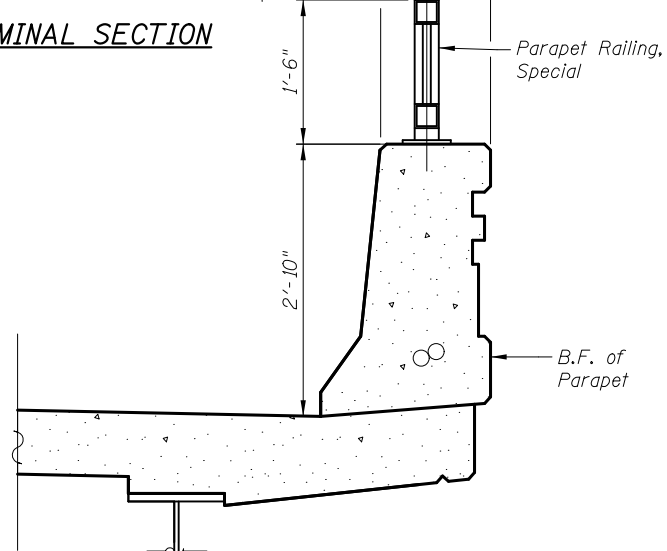
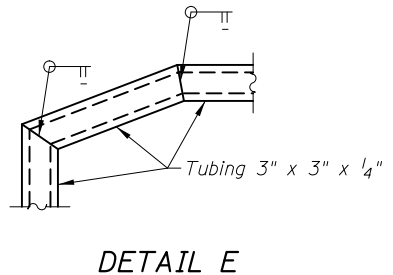
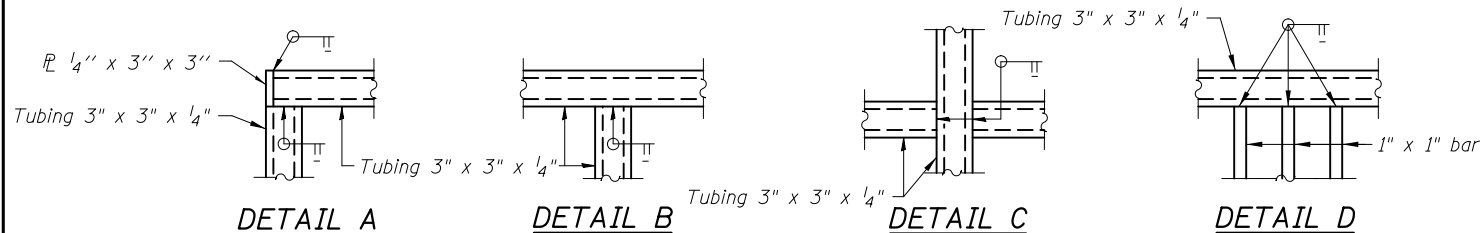


END TREATMENT AT LIGHT POLE FOUNDATION

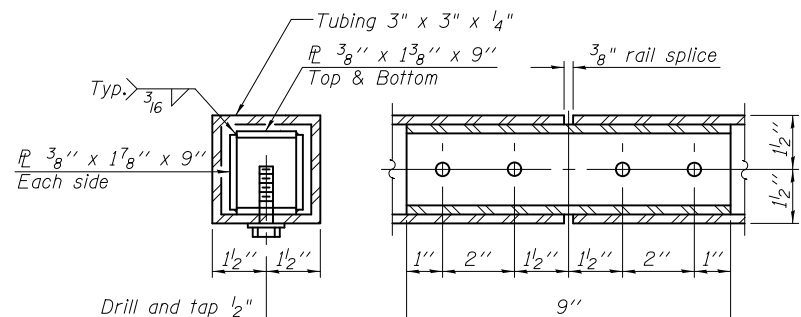
* See bridge plans for dimension



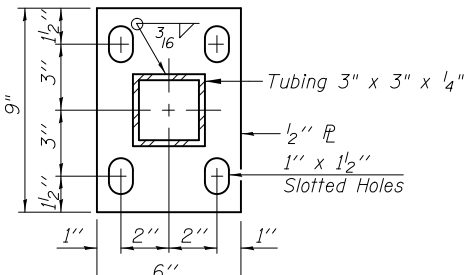
TERMINAL SECTION



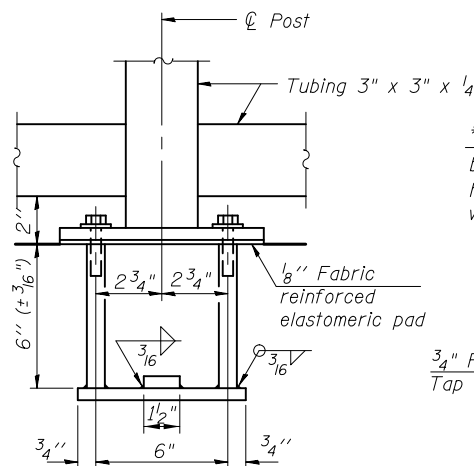
SECTION THRU PARAPET



RAIL SPLICE

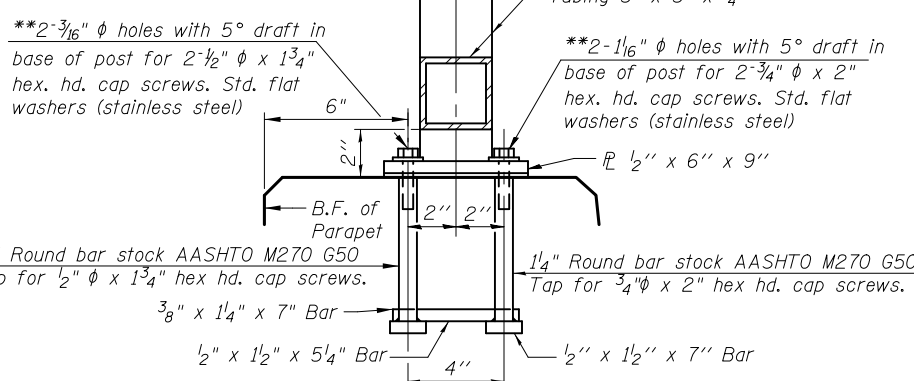


BASE PL



ANCHOR BOLT DETAILS

** In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting stainless steel anchor rods of the same diameter and grade as the specified cap screws according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.

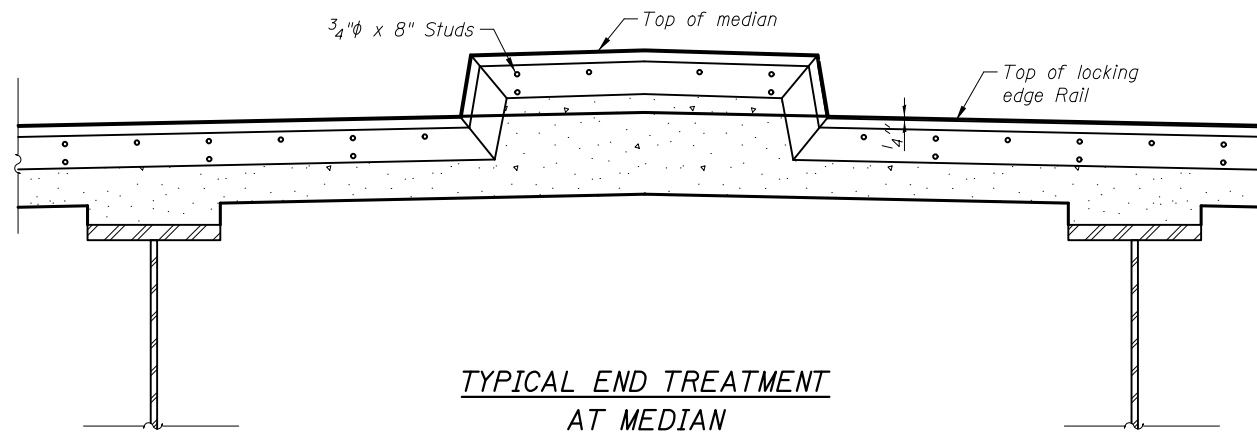
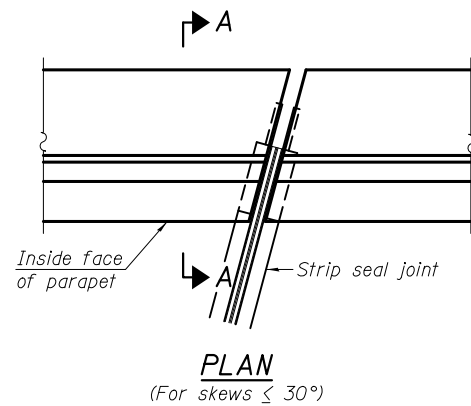


BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Parapet Railing, Special	Foot	300

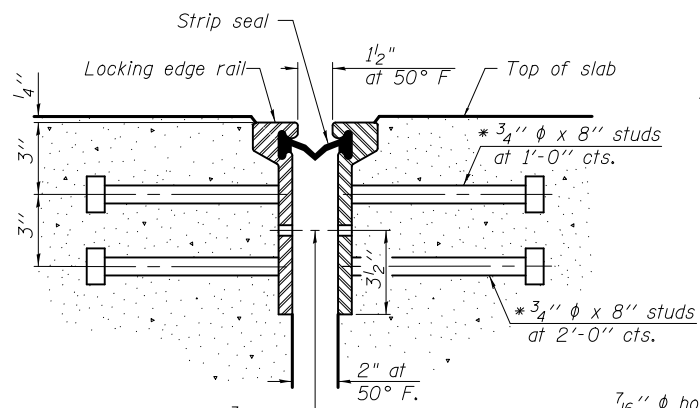
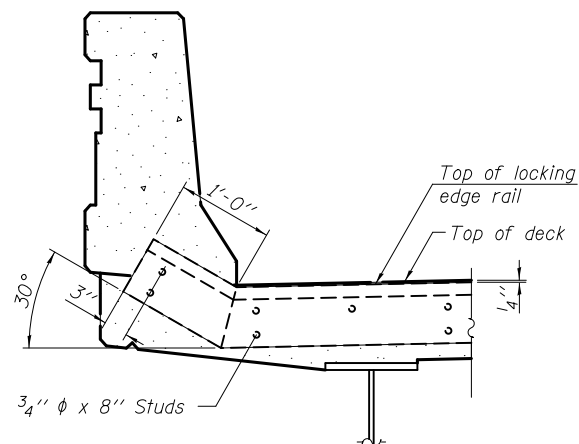
Notes:
 All post, railing, splices, anchor devices, and plates shall be painted the color Traffic Black (RAL 9017).
 All posts shall be normal to the parapet.
 All joints in rail shall be spliced detail.
 All exposed rail ends shall be capped per detail.
 Provide (1) 1/8" and (2) 1/16" aluminum shims for 25% of the posts.
 Rail elements shall be parallel to grade - High spots shall be ground and low spots shimmed. Cost included in Parapet Railing, Special.

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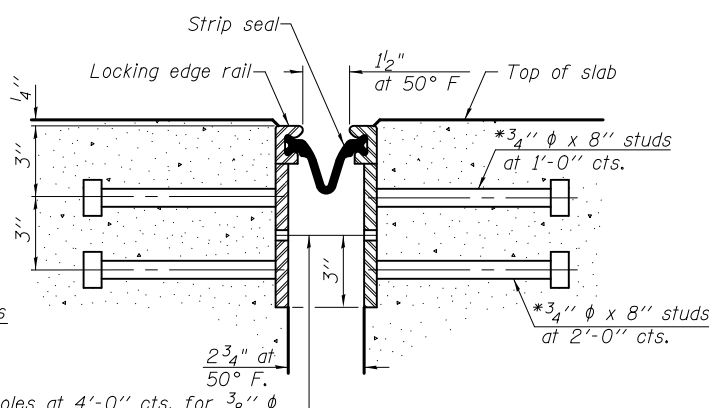


Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.

Notes:
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.
The Locking Edge Rails depicted are conceptual only, except for the minimum dimensions shown. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities.
The manufacturer's recommended installation methods shall be followed.
The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State.
All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.



3/8" phi holes at 4'-0" cts. for 3/8" phi bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.



3/8" phi holes at 4'-0" cts. for 3/8" phi bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

ROLLED EXTRUDED RAIL

WELDED RAIL

LOCKING EDGE RAIL SPLICE

The inside of the locking edge rail groove shall be free of weld residue.
Rolled rail shown, welded rail similar.

LOCKING EDGE RAILS

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	167

* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

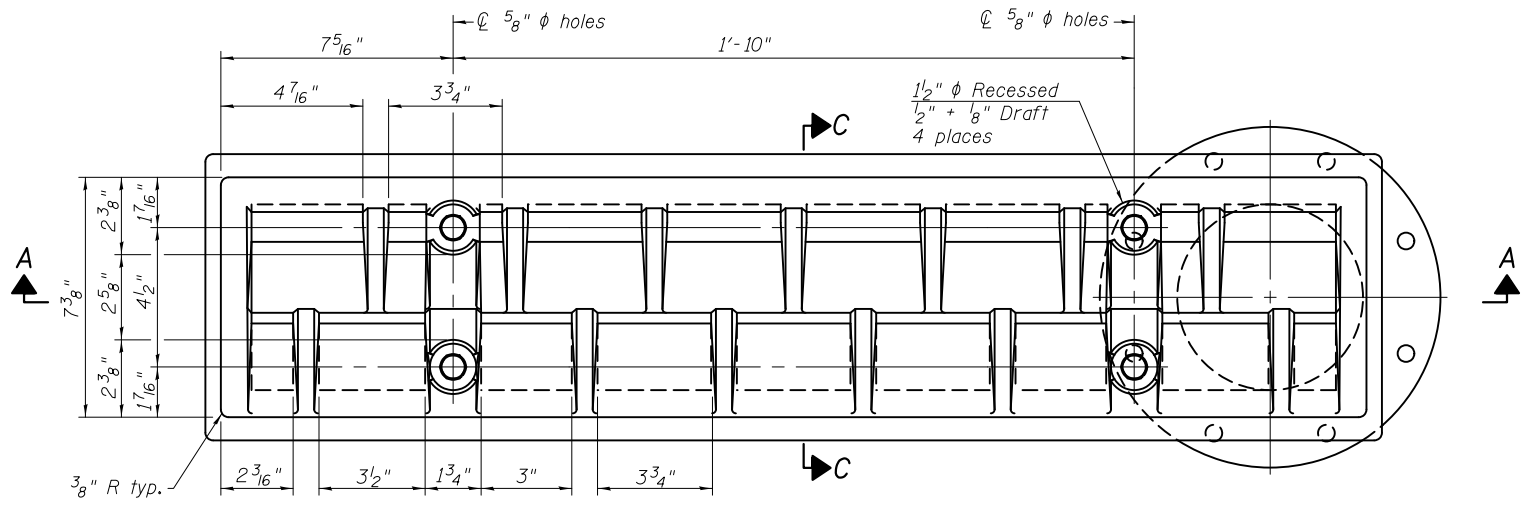
PREFORMED JOINT STRIP SEAL ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD STRUCTURE NO. 056-0081

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	508
				CONTRACT NO. 60F72

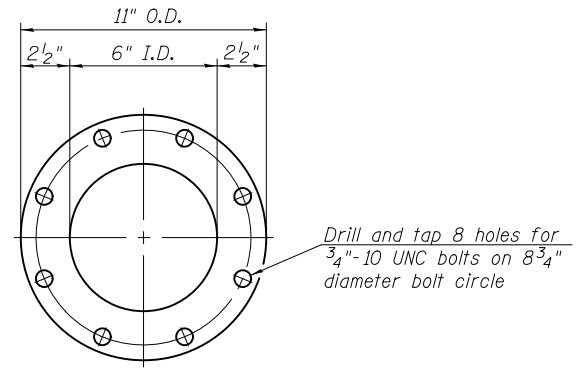
SHEET NO. SB15 OF SB32 SHEETS

ILLINOIS FED. AID PROJECT

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DATE	- 5/3/2012	REVISED	-

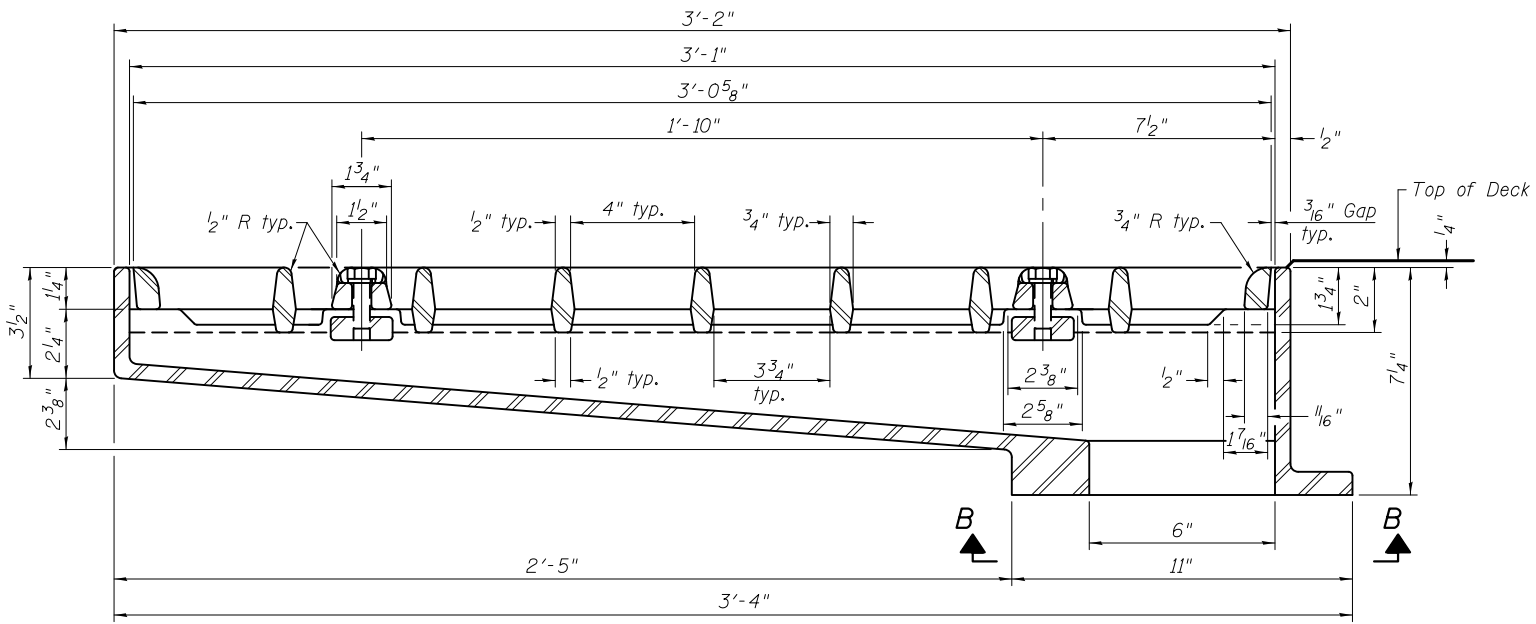


PLAN



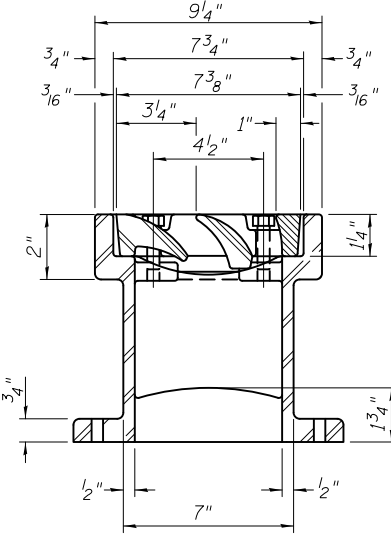
VIEW B-B

Notes:
 All cast iron parts shall be gray iron conforming to the requirements of AASHTO M 105, Class 35B.
 Bolts, anchor studs, washers and nuts shall conform to the requirements of ASTM A 307 and shall be galvanized according to AASHTO M 232.
 Downspouts located on the exterior side of a painted steel fascia beam shall be painted with the finish coat specified for the exterior side of the fascia beam.
 As an alternate, bolts, anchor studs, washers and nuts may be stainless steel according to Article 1006.29(d) of the Standard Specifications.
 Structural steel weldments of equal sections and of the same configuration may be substituted for the cast iron scupper frame. Fillet or full penetration welds shall be used for the weldments. Details shall be submitted to the Engineer for approval. Structural steel weldments shall not be substituted for the cast iron scupper grate. Structural steel frames and downspouts shall be galvanized according to AASHTO M111.
 The Contractor shall take appropriate measures to assure that Protective Coat is not applied to the scupper.
 Cost of the Grate, Frame, Downspout, Anchor Studs, Bolts, Washers and Nuts including complete installation of the scupper shall be paid for at the contract unit price each for Drainage Scupper, DS-33.
 Alternate fiberglass downspout conforming to ASTM D 2996 with a short-time rupture strength hoop tensile stress of 30,000 psi min. may be used in lieu of the cast iron or steel equivalent.

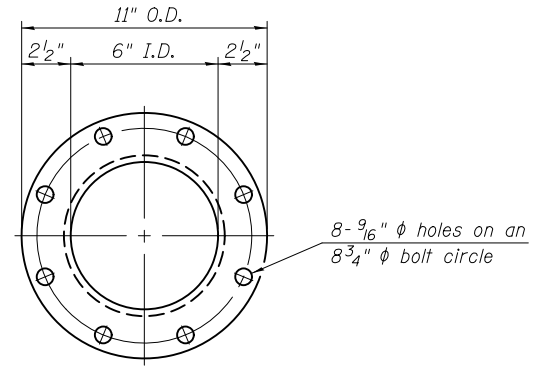


SECTION A-A

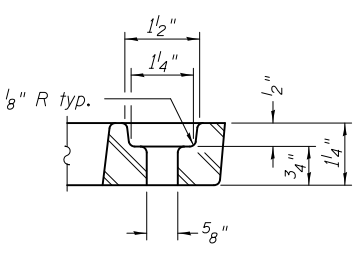
See sheet SA9 for scupper location relative to parapet.



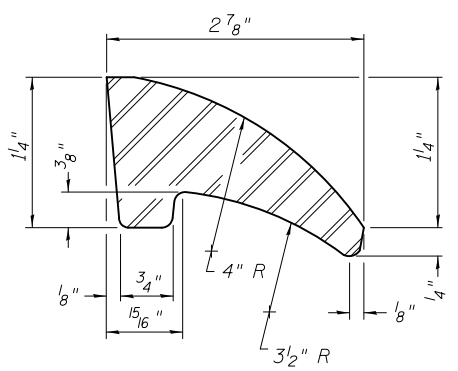
SECTION C-C



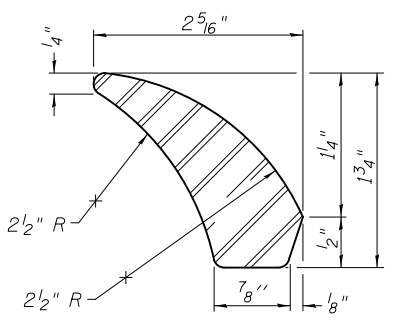
DOWNSPOUT



BOLT HOLE DETAIL



FIRST VANE DETAIL



SECOND VANE DETAIL

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Drainage Scupper, DS-33	Each	2

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DS-33

7-1-10

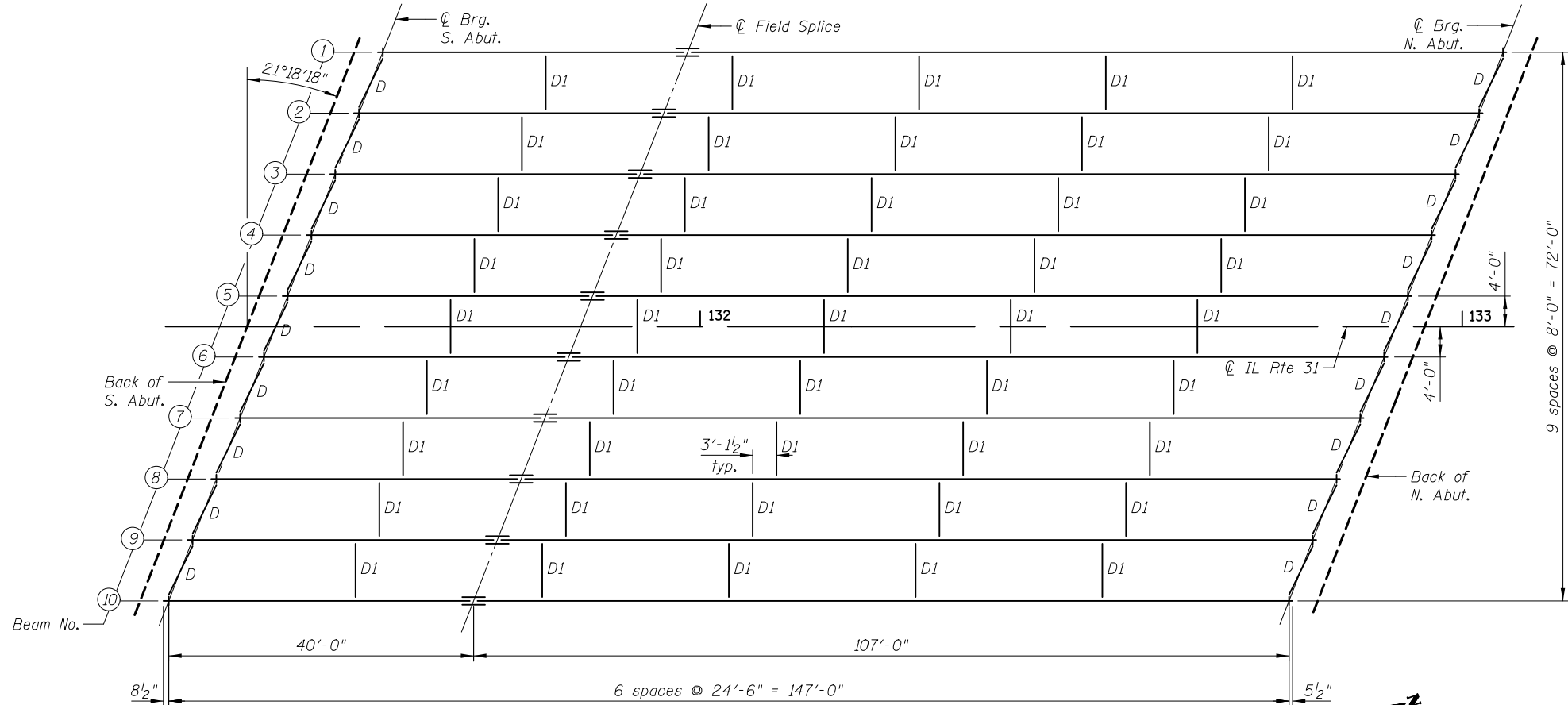
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DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 5/3/2012	REVISED -

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

DRAINAGE SCUPPER, DS-33
 ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD
 STRUCTURE NO. 056-0081
 SHEET NO. SB16 OF SB32 SHEETS

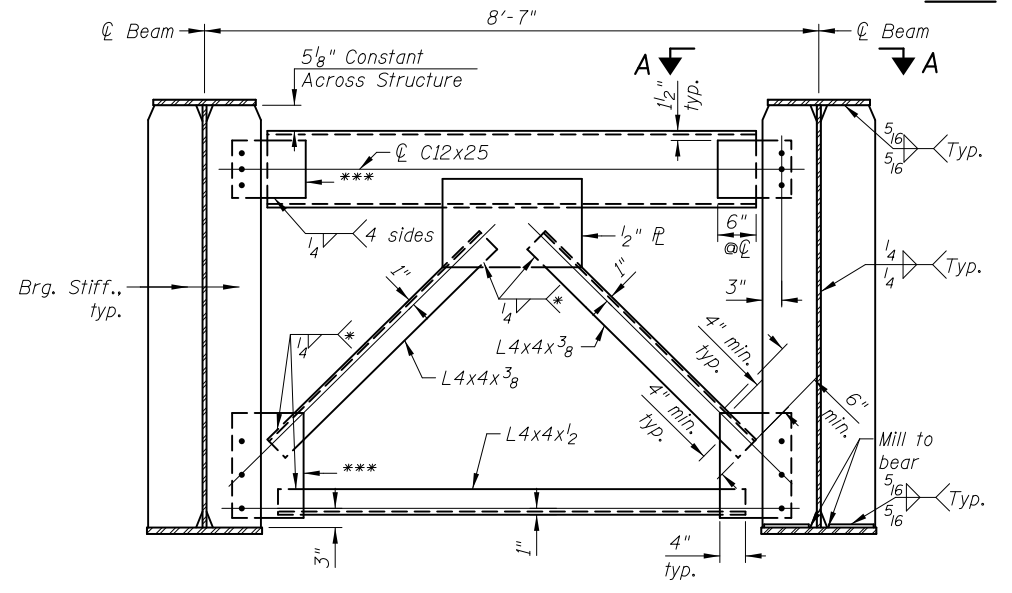
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	509
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				



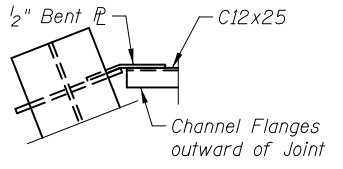
INTERIOR GIRDER MOMENT TABLE		
0.5 Span		
I_s	(in ⁴)	59,000
$I_c(n)$	(in ⁴)	137,842
$I_c(3n)$	(in ⁴)	98,709
S_s	(in ³)	2,027
$S_c(n)$	(in ³)	2,695
$S_c(3n)$	(in ³)	2,454
DC1	(k/ft)	1.137
M _{DC1}	(k)	3,071
DC2	(k/ft)	0.142
M _{DC2}	(k)	384
DW	(k/ft)	0.360
M _{DW}	(k)	972
M _{L + IM}	(k)	2,872
M _u (Strength I)	(k)	10,803
$\phi_r M_n$	(k)	13,887
f_s DC1	(ksi)	18.19
f_s DC2	(ksi)	1.88
f_s DW	(ksi)	4.76
f_s 1.3(L+IM)	(ksi)	16.62
f_s (Service II)	(ksi)	41.44
f_s (Total)(Strength I)	(ksi)	—
V _r	(k)	32.7

INTERIOR GIRDER REACTION TABLE		
Abutment		
R _{DC1}	(k)	83.6
R _{DC2}	(k)	10.4
R _{DW}	(k)	26.5
R _{L + IM}	(k)	120.0
R _{Total}	(k)	240.5

PLAN

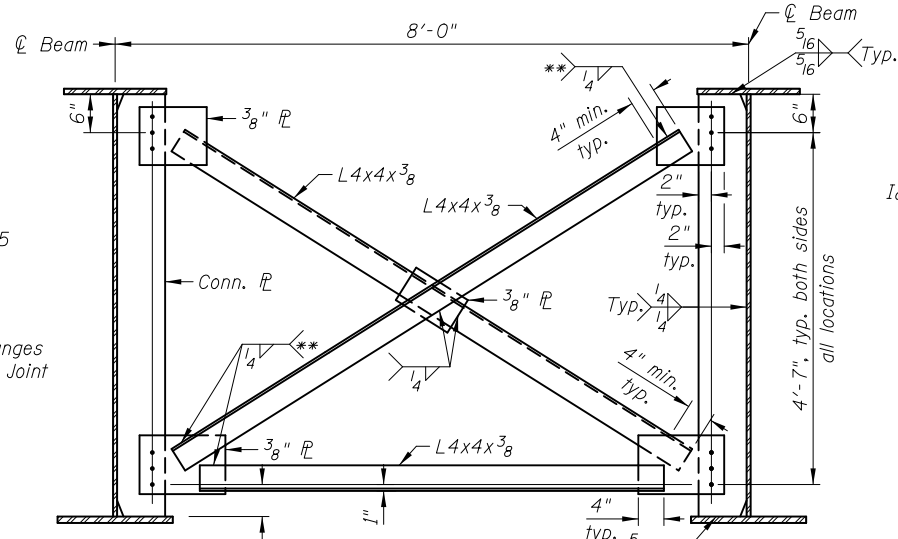


END CROSS FRAME D
(18 Required)



SECTION A-A

*Weld on near side of 1/2" plate.
 **Fillet weld angles along 3 sides on one face of gusset plate.
 ***1/2" Plates to be bent for skew



INTERIOR CROSS FRAME D1
(45 Required)

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads (in⁴ and in³).

$I_c(n), S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) due to short-term composite live loads (in⁴ and in³).

$I_c(3n), S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) due to long-term composite (superimposed) dead loads (in⁴ and in³).

DC1: Un-factored non-composite dead load (kips/ft.).

M_{DC1}: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

M_{DC2}: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

M_{DW}: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

M_{L + IM}: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

M_u (Strength I): Factored design moment (kip-ft.).
 $1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{L + IM}$

$\phi_r M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).

f_s (Service II): Sum of stresses as computed from the moments below (ksi).
 $M_{DC1} + M_{DC2} + M_{DW} + 1.3 M_{L + IM}$

f_s (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).
 $1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{L + IM}$

V_r: Maximum factored shear range in composite portion of span computed according to Article 6.10.10.

Notes:
 Detail 5/16" ϕ holes for all 3/4" ϕ bolts
 Two hardened washers required for each set of oversized holes.
 Place diaphragm with channel flanges and outstanding angle legs outward from abutment backwall.
 All cross frames shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames at supports may be temporarily disconnected to install bearing anchor rods.

DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
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DATE	- 5/3/2012	REVISED	-

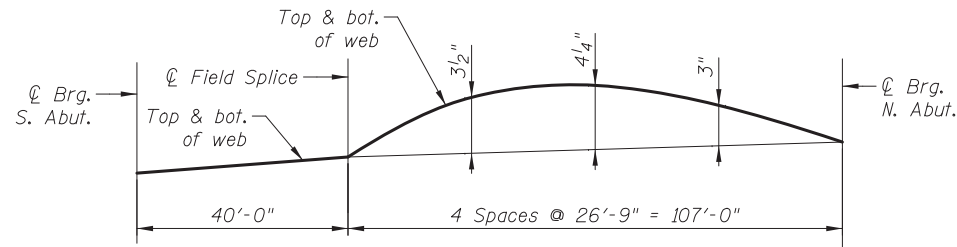
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	510
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

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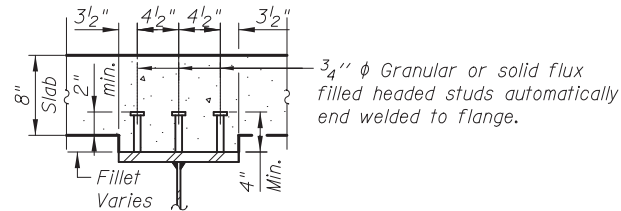
TOP OF WEB ELEVATIONS

(For Fabrication Only)

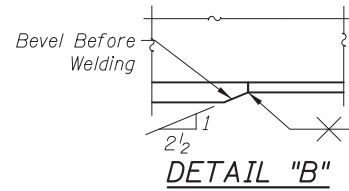
GIRDER	℄ Brg. S. Abut.	℄ Field Splice	℄ Brg. N. Abut.
1	773.25	774.15	774.87
2	773.38	774.28	775.00
3	773.52	774.41	775.13
4	773.65	774.54	775.27
5	773.78	774.68	775.40
6	773.75	774.64	775.36
7	773.55	774.44	775.16
8	773.34	774.24	774.96
9	773.14	774.04	774.76
10	772.94	773.84	774.56



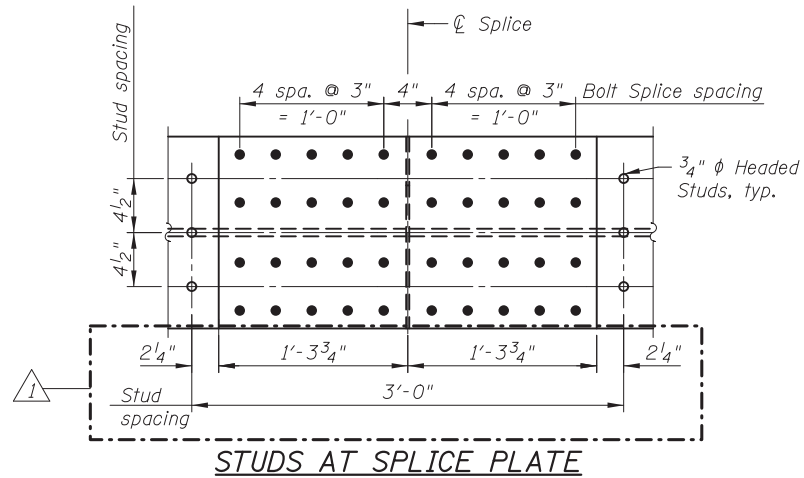
CAMBER DIAGRAM



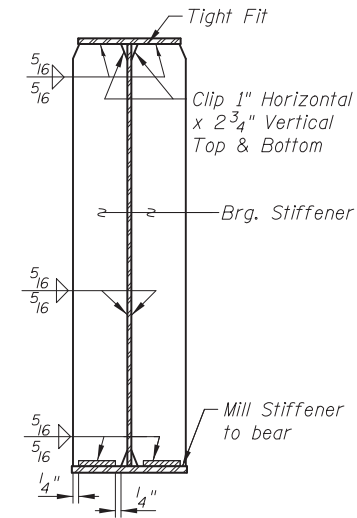
SECTION A-A



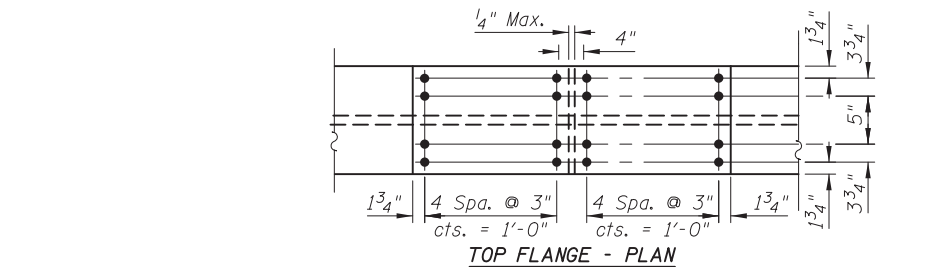
DETAIL B



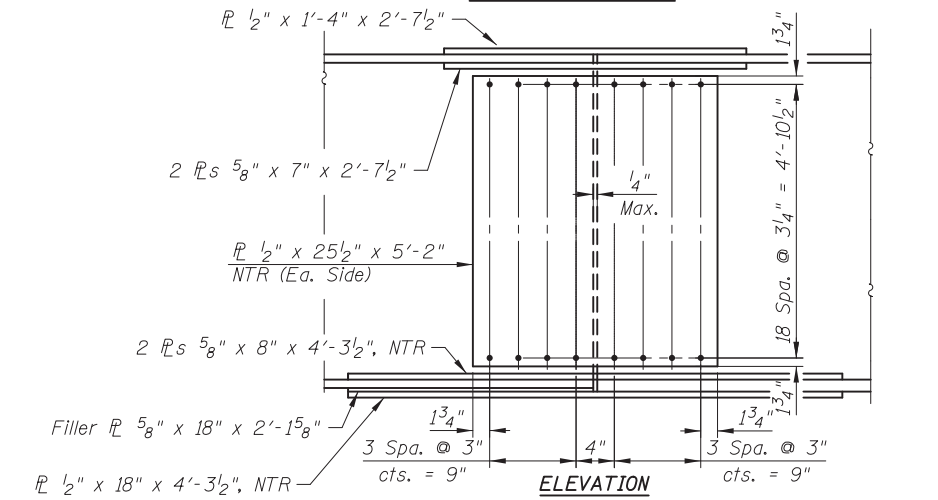
STUDS AT SPLICE PLATE



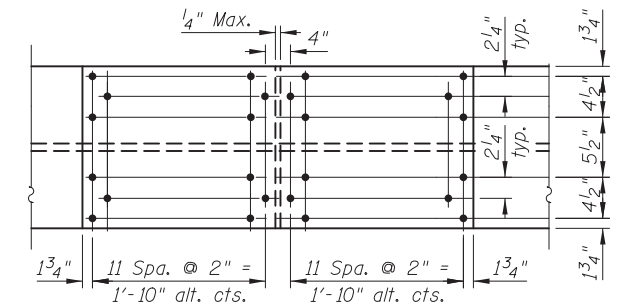
SECTION AT ABUTMENT



TOP FLANGE - PLAN

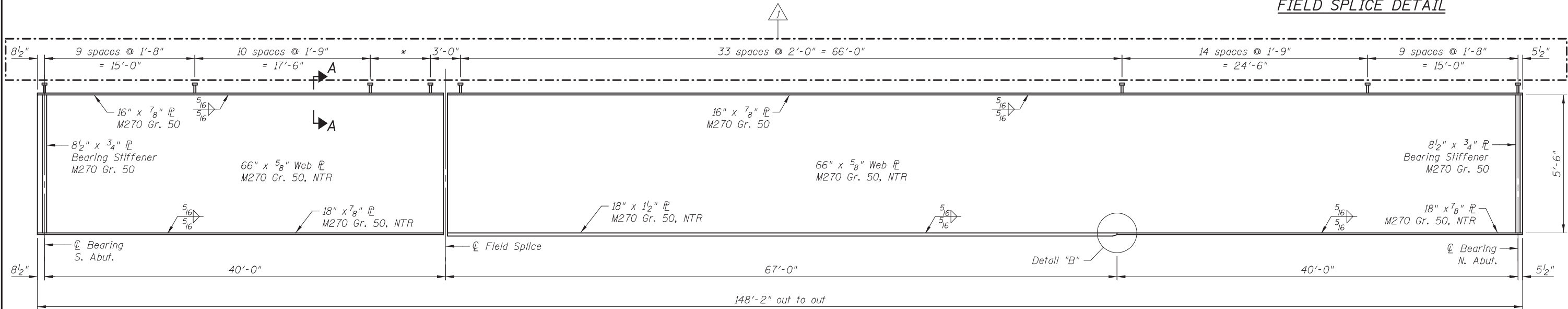


ELEVATION



BOTTOM FLANGE FIELD SPLICE DETAIL

Notes:
 Load carrying components designated "NTR" shall conform to the Impact Testing Requirements, Zone 2.
 HS Bolts shall be 7/8" φ AASHTO M164/ASTM A325, with 15/16" φ holes.
 All splices are symmetrical about ℄ splice except for fills.
 Splice plates shall be AASHTO M270 Gr. 50.
 Refer to sheets SB10 and SB11 for the Ornamental Aluminum Lattice for the West Fascia of Beam 1 and the East Fascia of Beam 10.



GIRDER ELEVATION

BILL OF MATERIAL

Item	Unit	Total
Furnishing and Erecting Structural Steel	L. Sum	0.36
Stud Shear Connectors	Each	2,400

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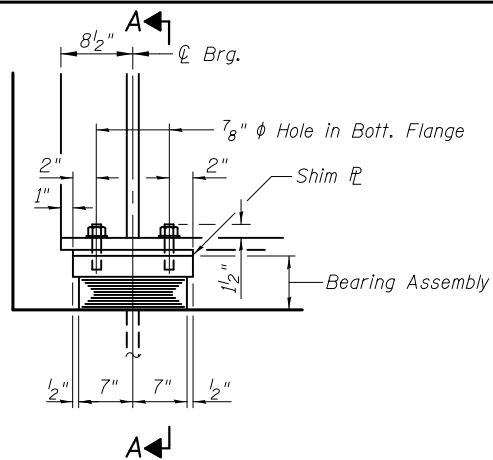
DRAWN - M. LANGE	REVISED - 5/23/12 D.L.A.
DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 5/3/2012	REVISED -

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

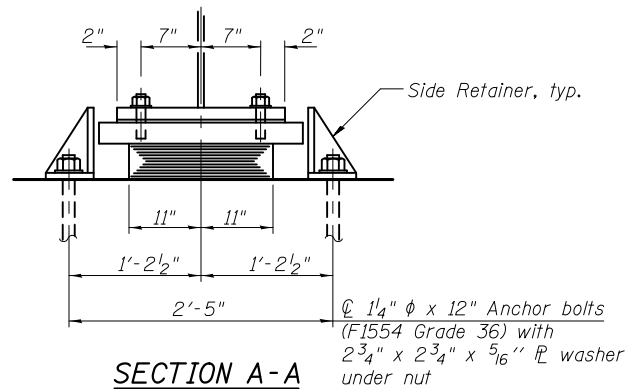
**PLATE GIRDER DETAILS
 ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD
 STRUCTURE NO. 056-0081**

O.R. RTE. 0003	SECTION 18A-2	COUNTY MCHENRY	TOTAL SHEETS 825	SHEET NO. 511
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60F72	

SHEET NO. SB18 OF SB32 SHEETS

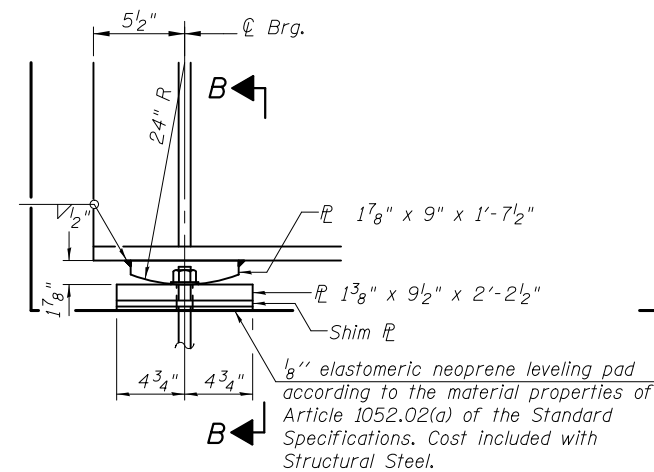


ELEVATION AT S. ABUT.

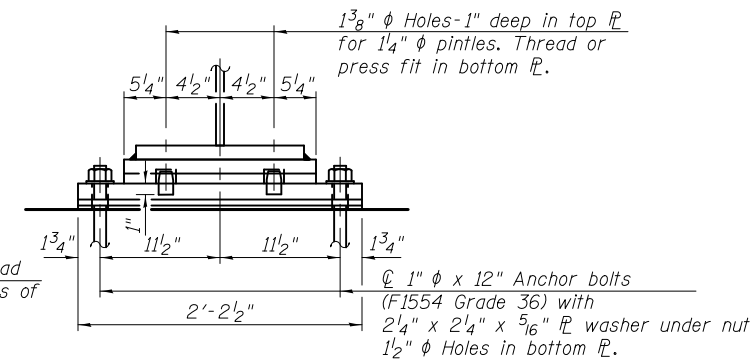


SECTION A-A

TYPE I ELASTOMERIC EXP. BRG.



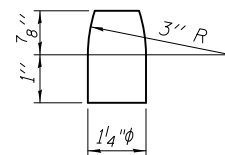
ELEVATION AT N. ABUTMENT



SECTION B-B

FIXED BEARING

(No. Required = 10)



PINTLE

Notes:

Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

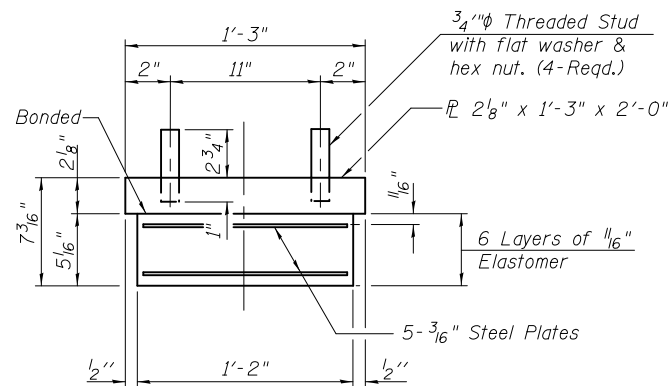
Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.

Anchor bolts for side retainers may be cast in place or installed in holes drilled before or after members are in place.

Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.

Side retainers and other steel members required for the elastomeric bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.

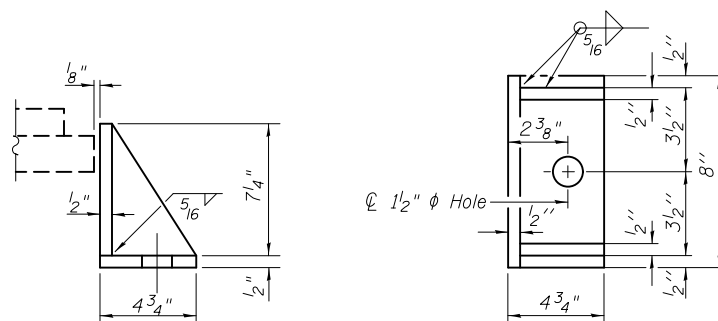
The structural steel plates for the fixed and elastomeric expansion bearings shall conform to the requirements of AASHTO M 270 Grade 50.



BEARING ASSEMBLY

Note:

Shim plates shall not be placed under Bearing Assembly.



SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	10
Anchor Bolts, 1"	Each	20
Anchor Bolts, 1/4"	Each	20

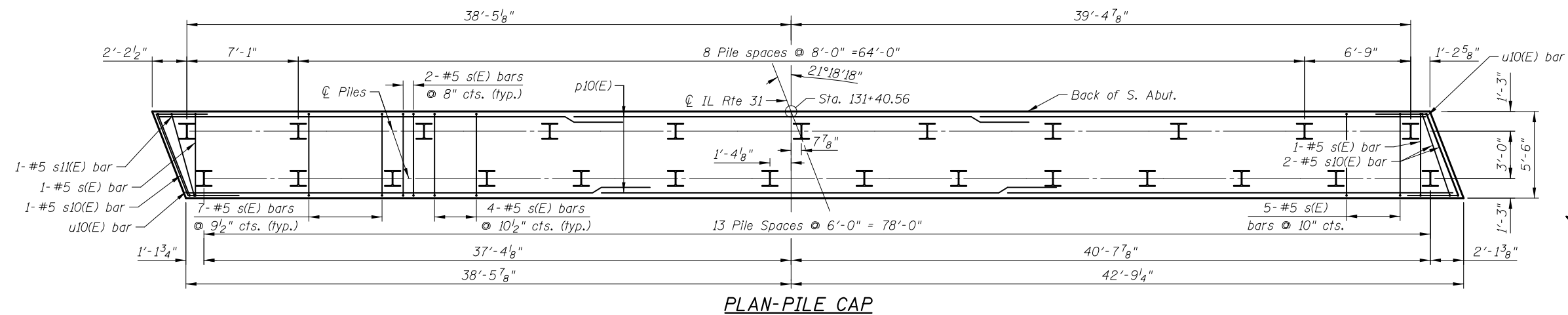
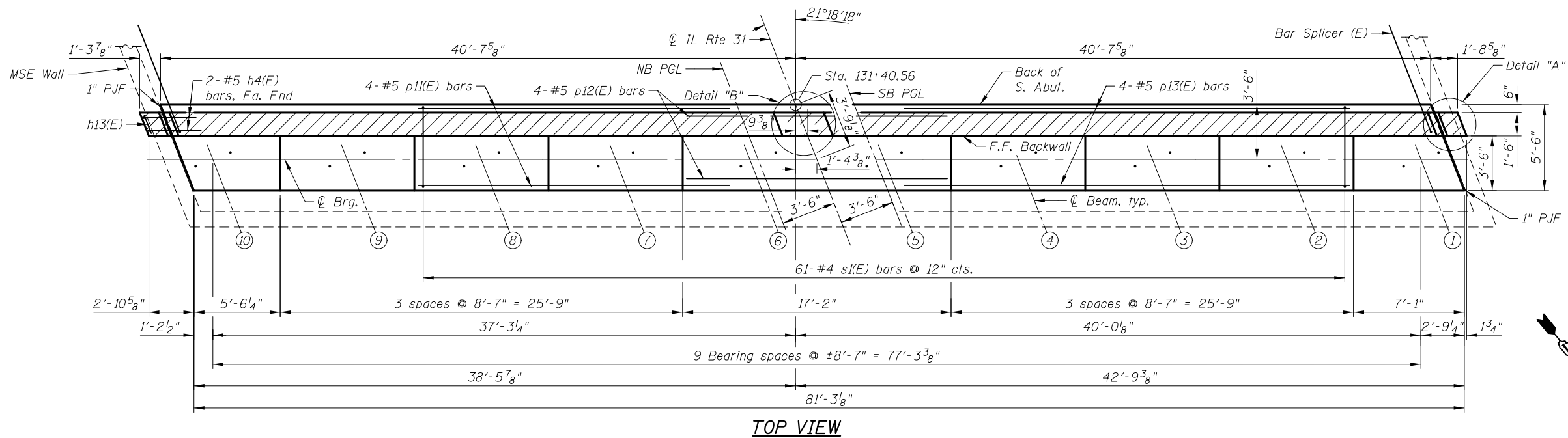
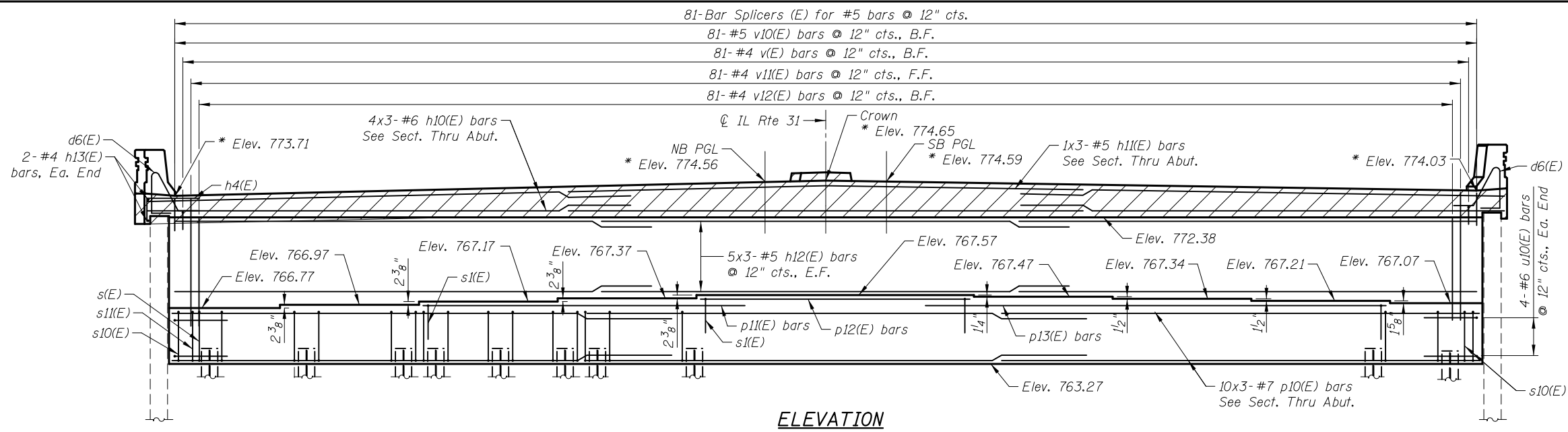
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 5/2/2012

PILE DATA

Type: Steel HP 14x73
 Nominal Required Bearing: 480 kips
 Factored Resistance Available: 264 kips
 Est. Length: 83 feet
 No. Production Piles: 24
 No. Test Piles: 1

MINIMUM BAR LAP

#5 bar = 3'-8"
 #6 bar = 4'-5"
 #7 bar = 5'-10"



Hatched area to be poured after superstructure false work has been removed.

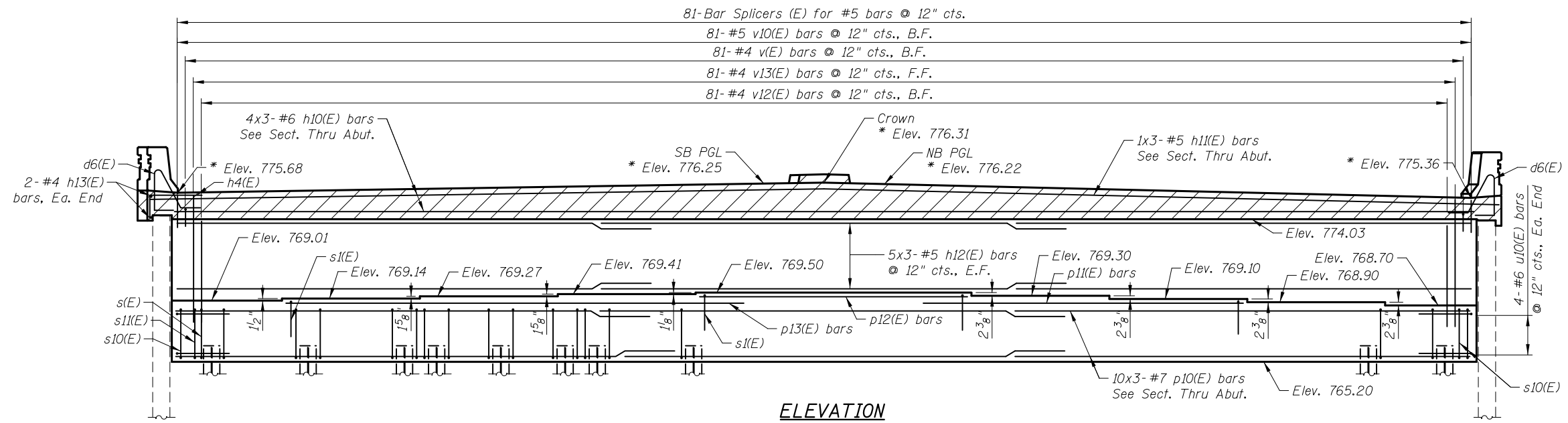
Parapets to be poured with the approach slabs.

See Sheet SB22 for Details A & B.

5/2/2012 4:18:03 PM I:\2154\cad\sheet\Roadway\20-Structures & Walls\02-SN 056-008\056008-60F72-20-SAB.dgn

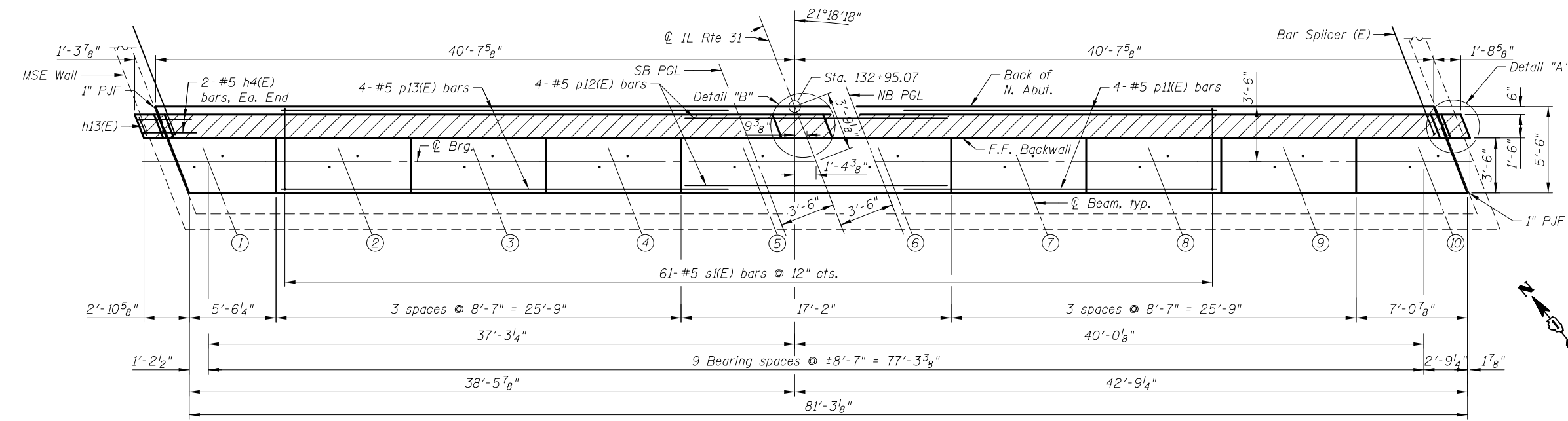
DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	513
CONTRACT NO. 60F72			ILLINOIS FED. AID PROJECT	

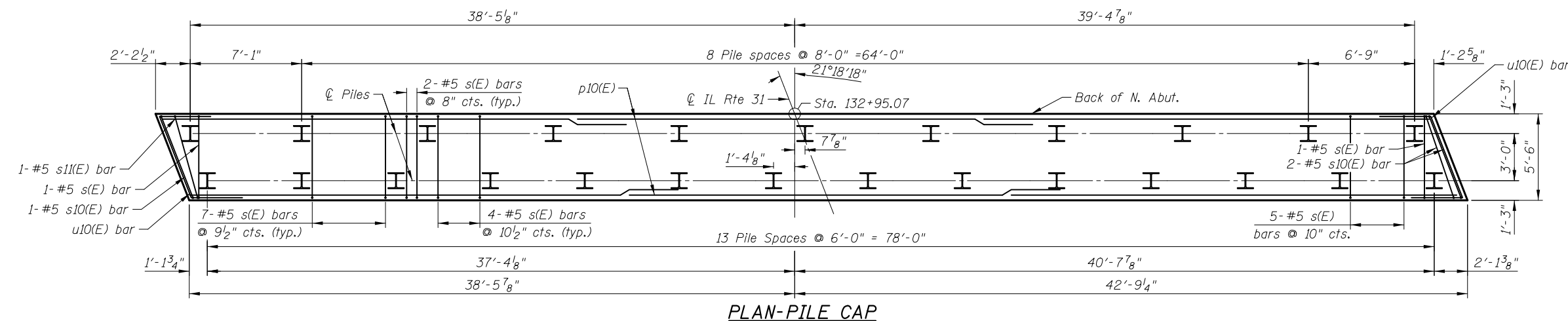


ELEVATION

* Elevations given at F.F. of backwall.



TOP VIEW



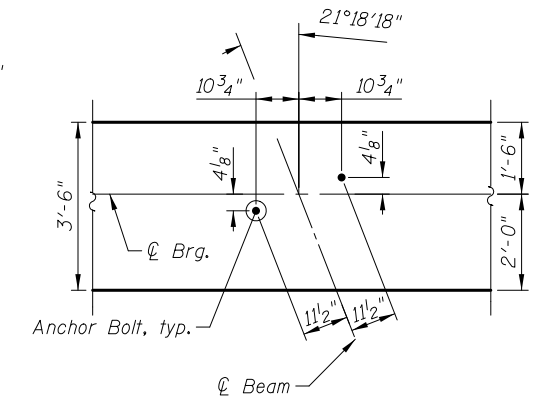
PLAN-PILE CAP

PILE DATA

Type: Steel HP 14x73
 Nominal Required Bearing: 480 kips
 Factored Resistance Available: 264 kips
 Est. Length: 83 feet
 No. Production Piles: 24
 No. Test Piles: 1

MINIMUM BAR LAP

#5 bar = 3'-8"
 #6 bar = 4'-5"
 #7 bar = 5'-10"



ANCHOR BOLT DIAGRAM

Hatched area to be poured after superstructure false work has been removed.

Parapets to be poured with the Approach Slabs.

See Sheet SB22 for Details A & B.

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BILL OF MATERIAL

(For 2 Abutments)

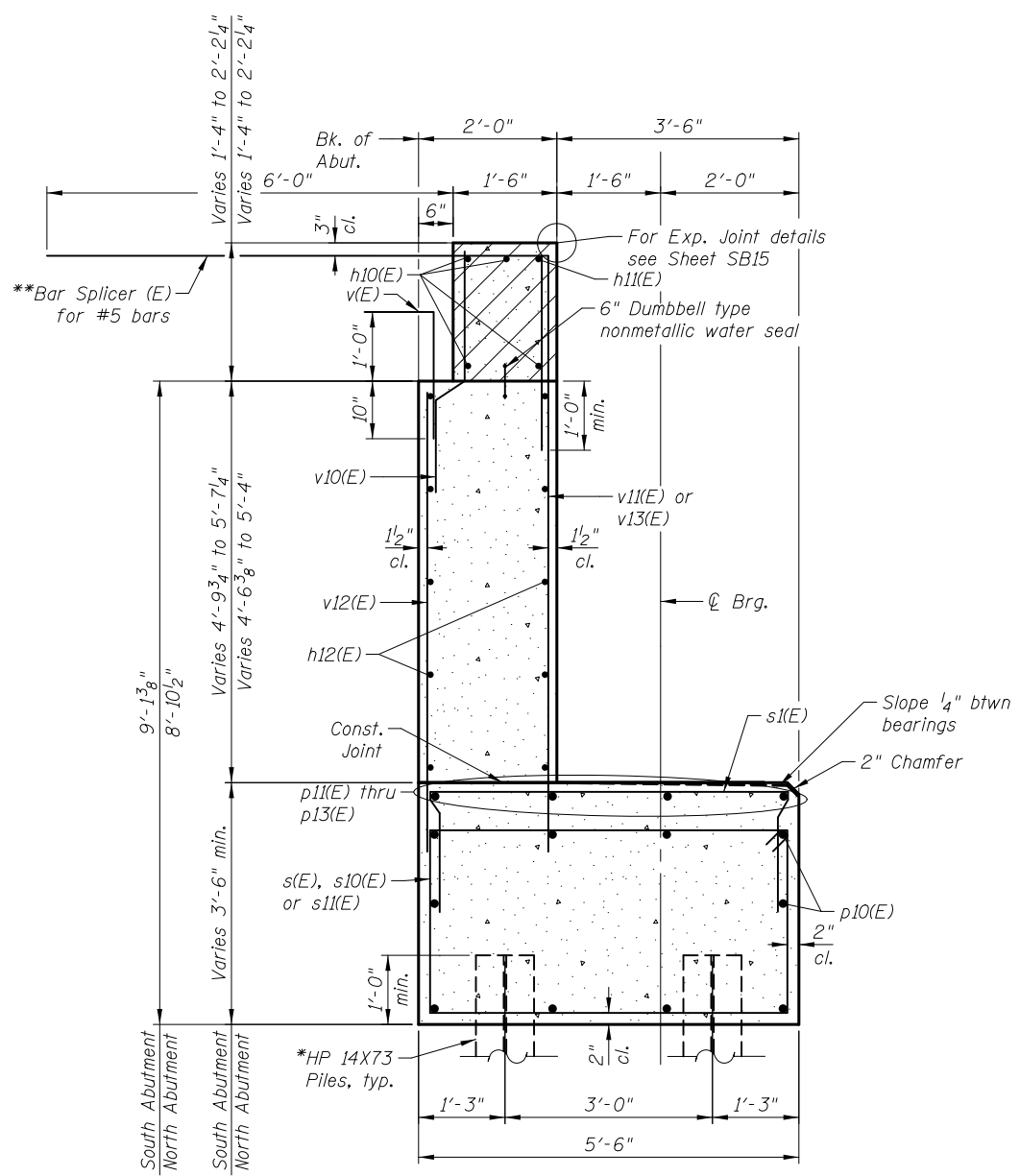
Bar	No.	Size	Length	Shape
b30(E)	8	#5	1'-4"	—
c(E)	4	#5	2'-11"	—
c1(E)	8	#5	2'-4"	┌
d6(E)	8	#5	7'-11"	└
h4(E)	8	#5	4'-7"	┌
h10(E)	24	#6	31'-0"	—
h11(E)	6	#5	30'-6"	—
h12(E)	60	#5	29'-5"	—
h13(E)	8	#4	1'-4"	—
p10(E)	60	#7	30'-11"	—
p11(E)	8	#5	20'-0"	—
p12(E)	8	#5	16'-10"	—
p13(E)	8	#5	28'-7"	—
s(E)	170	#5	17'-7"	□
s1(E)	122	#4	9'-4"	□
s10(E)	6	#5	18'-3"	□
s11(E)	2	#5	17'-11"	□
u10(E)	16	#6	13'-1"	└
v(E)	162	#4	3'-9"	┌
v10(E)	162	#5	3'-11"	┌
v11(E)	81	#4	7'-10"	—
v12(E)	162	#4	6'-7"	—
v13(E)	81	#4	7'-7"	—

Item	Unit	Quantity
Concrete Structures	Cu. Yd.	193.3
Concrete Superstructure	Cu. Yd.	17.8
Bridge Deck Grooving	Sq. Yd.	26
Protective Coat	Sq. Yd.	27
Reinforcement Bars, Epoxy Coated	Pound	14,830
Furnishing Steel Piles HP 14x73	Foot	4,080
Driving Piles	Each	4,080
Test Pile Steel HP 14x73	Each	2
Pile Shoes	Each	50
Concrete Sealer	Sq. Ft.	1,380

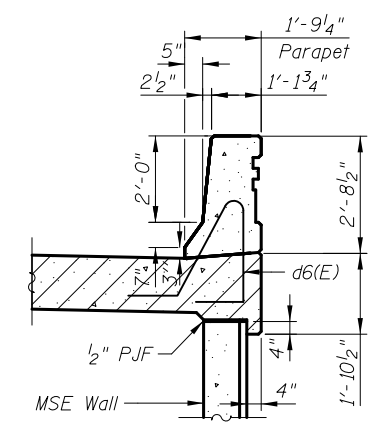
Bars indicated thus 9x2-#5 etc. indicates 9 lines of bars with 2 lengths per line.

Notes:

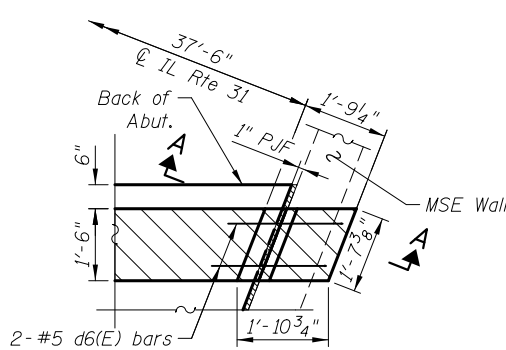
Hatched area to be poured after superstructure false work has been removed. Quantity of concrete included with Concrete Superstructure.
Parapet area to be poured with the Approach slabs. Space reinforcement in cap to miss anchor bolts. Pour steps monolithically with cap.
For details of Bar Splicers see sheet SB28.
For Pile Details see sheet SB23.
Concrete Sealer shall be applied to the designated areas of the backwalls and bridge seats of the abutments.



SECTION THRU ABUTMENT

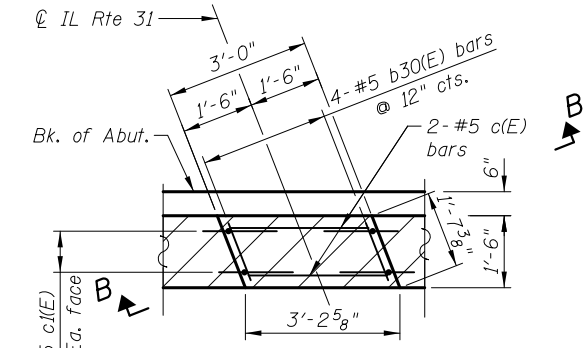


SECTION A-A



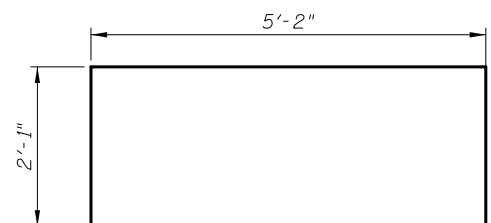
DETAIL "A"

(S. Abut. West Parapet shown, all other similar)



DETAIL "B"

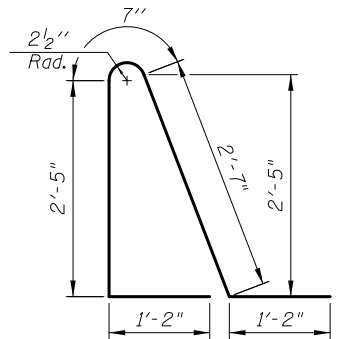
(S. Abut. shown, N. Abut. similar)



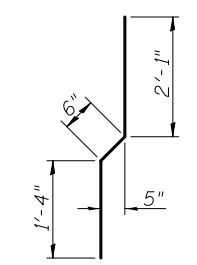
BAR s1(E)

* Piles shall be driven prior to placement of the reinforced select fill and coated with coal tar epoxy from the bottom of the select fill to 1" above the base of the abutment. The cost of the coal tar epoxy coating shall be included with the cost of the Furnishing Piles.

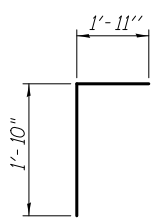
** Bar splicers shall be parallel to approach slab reinforcement.



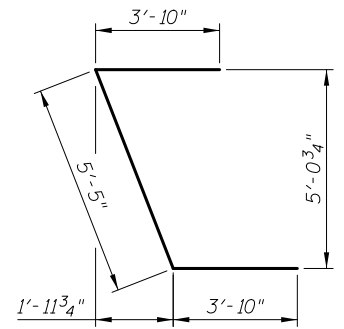
BAR d6(E)



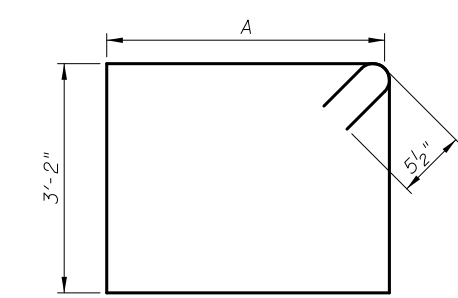
BAR v10(E)



BAR v(E)

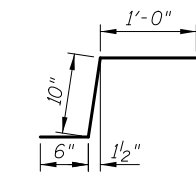


BAR u10(E)

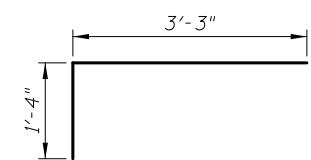


BAR s(E) & s10(E) thru s11(E)

Bar	A
s(E)	5'-2"
s10(E)	5'-6"
s11(E)	5'-4"



BAR c1(E)



BAR h4(E)

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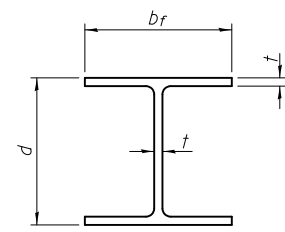
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DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**ABUTMENT DETAILS
 ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD
 STRUCTURE NO. 056-0081**

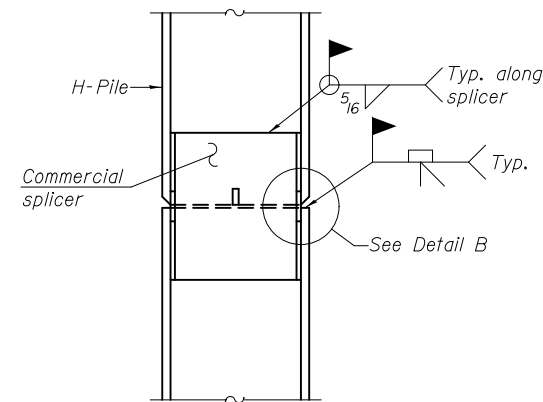
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	515
CONTRACT NO. 60F72				

ILLINOIS FED. AID PROJECT

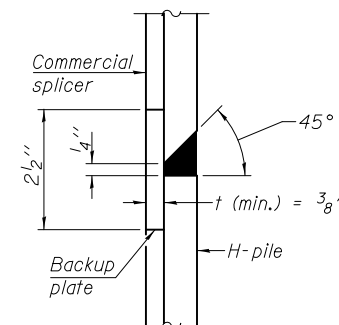


STEEL PILE TABLE

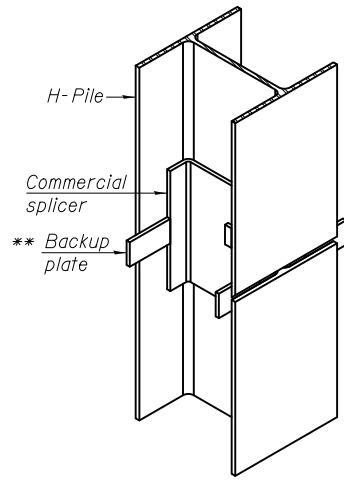
Designation	Depth d	Flange width br	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/4"	14 7/8"	1 3/16"	30"
x102	14"	14 3/4"	1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11 3/4"	12"	7/16"	24"
HP 10x57	10"	10 1/4"	9/16"	24"
x42	9 3/4"	10 1/8"	7/16"	24"
HP 8x36	8"	8 1/8"	7/16"	18"



ELEVATION

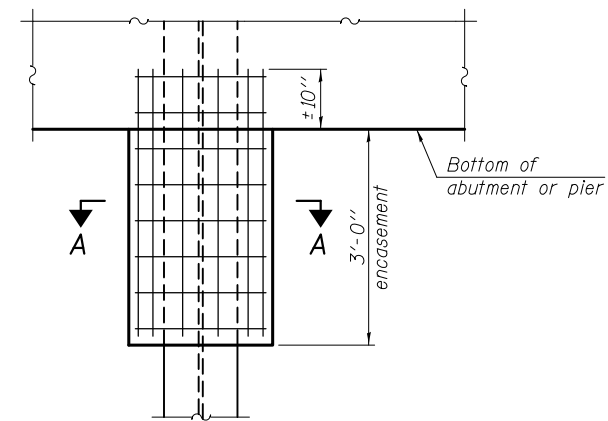


DETAIL "B"



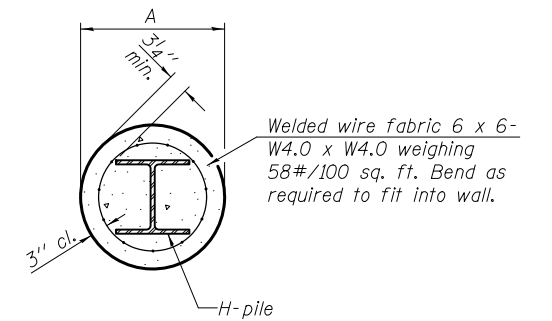
ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE



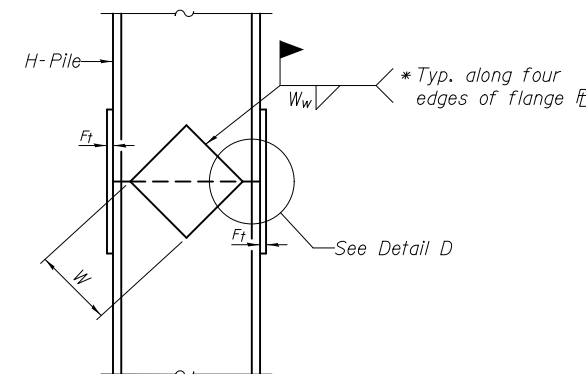
ELEVATION

PILE ENCASEMENT

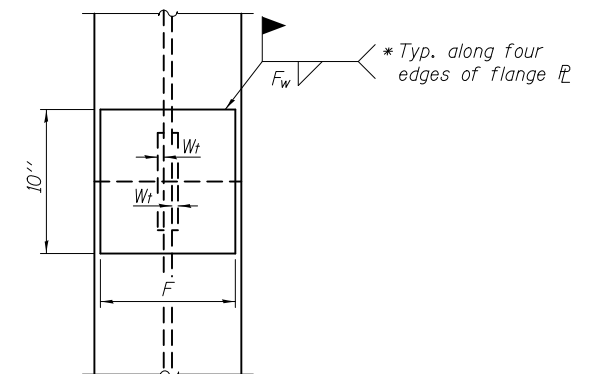


SECTION A-A

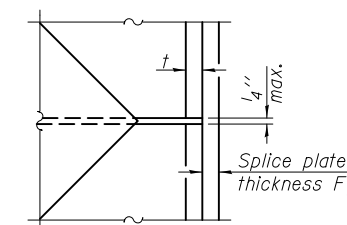
Note:
Forms for encasement may be omitted when soil conditions permit.



ELEVATION



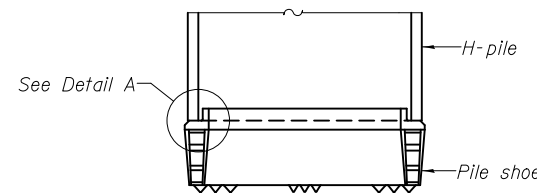
END VIEW



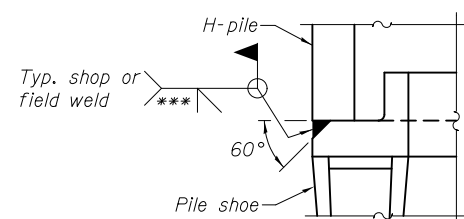
DETAIL D

WELDED PLATE FIELD SPLICE

Designation	F	Ft	Fw	W	Wt	Ww
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5/8"	1/2"
x89	12 1/2"	3/4"	1/16"	7 3/4"	5/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5/8"	1/2"
HP 12x84	10"	7/8"	1/16"	6 1/2"	5/8"	1/2"
x74	10"	7/8"	1/16"	6 1/2"	5/8"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"

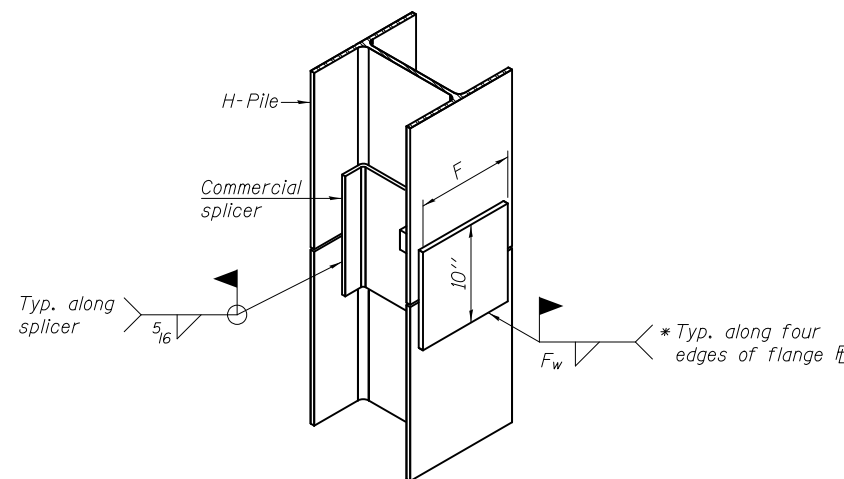


ELEVATION



DETAIL A

H-PILE SHOE ATTACHMENT



ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE ALTERNATE

- * Interrupt welds 1/4" from end of web and/or each flange.
- ** Remove portions of backup plates that extend outside the flanges.
- *** Weld size per pile shoe manufacturer (5/16" min.).

Note:
The steel H-piles shall be according to AASHTO M270 Grade 50.

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F-HP 7-1-10

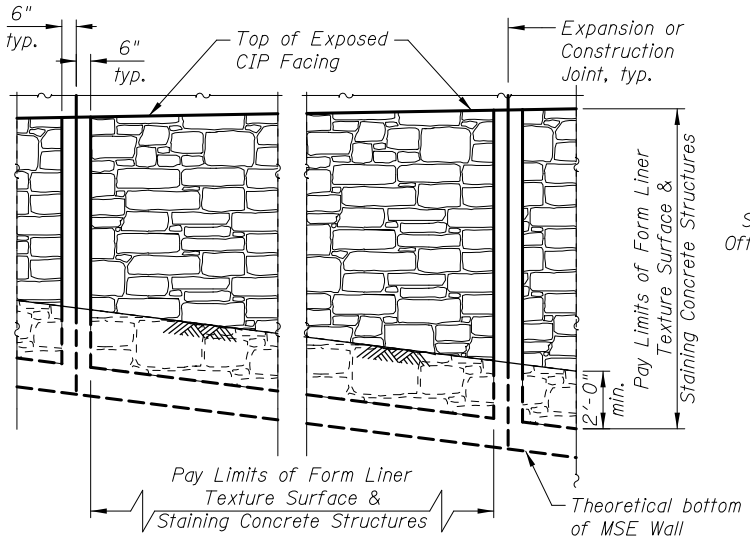
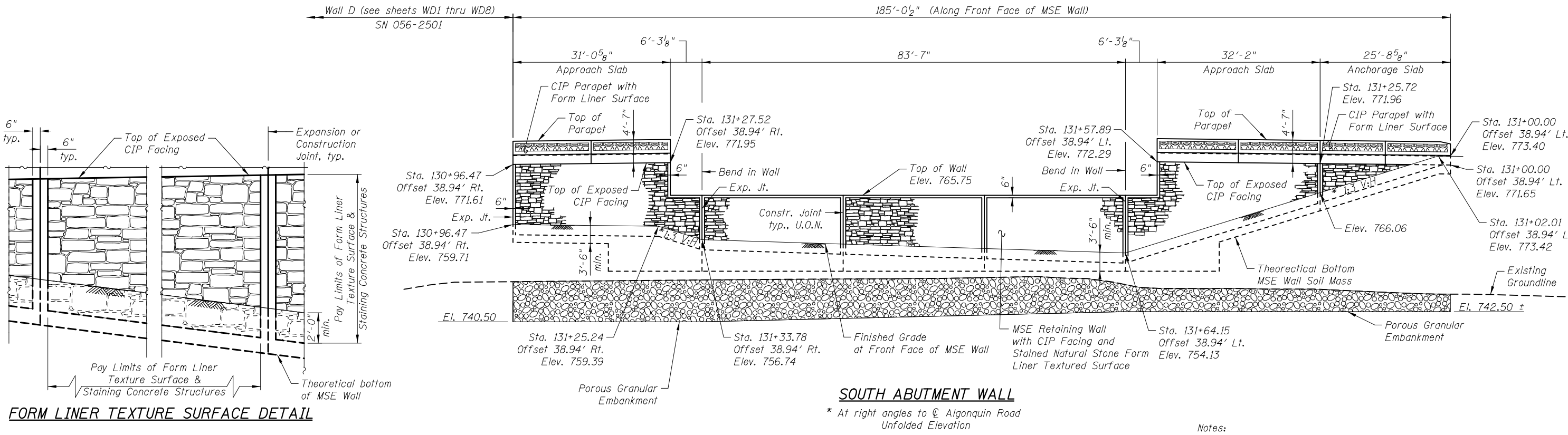
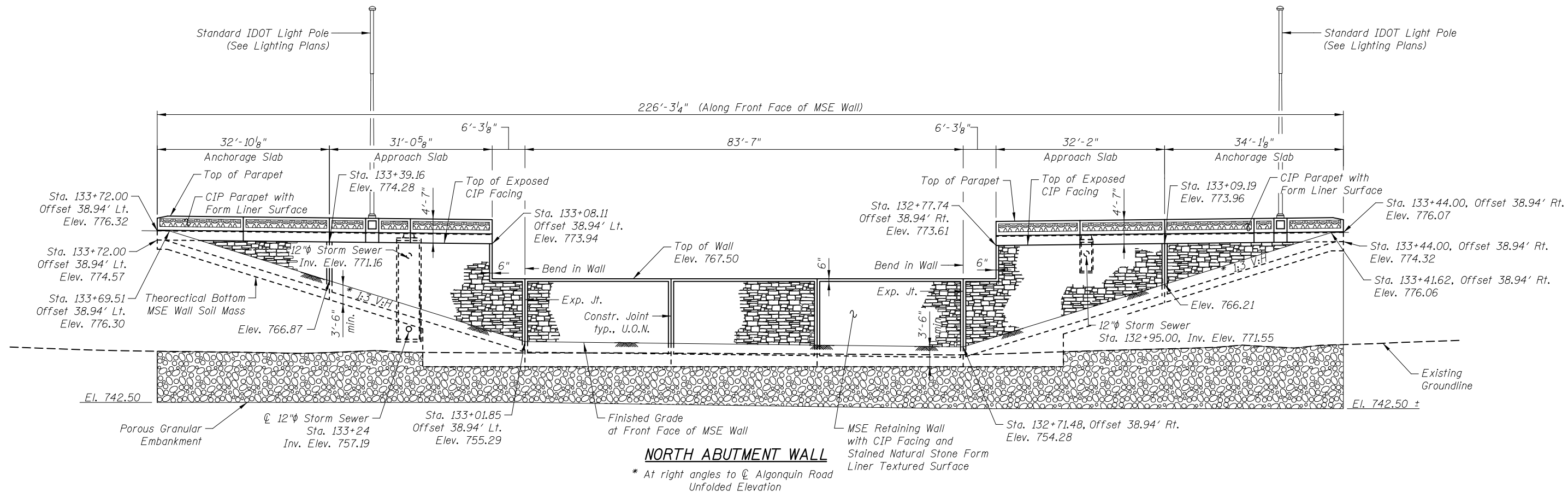
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DRAWN - M. LANGE	REVISED -
DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 5/3/2012	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**PILE DETAILS
ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD
STRUCTURE NO. 056-0081**
SHEET NO. SB 23 OF SB 32 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	516
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				



Notes:
See Sheet SB1 for Plan view.
See sheet SB11 for Parapet Formliner details.
Offsets are measured from \odot IL Rte 31 to front face of CIP facing.

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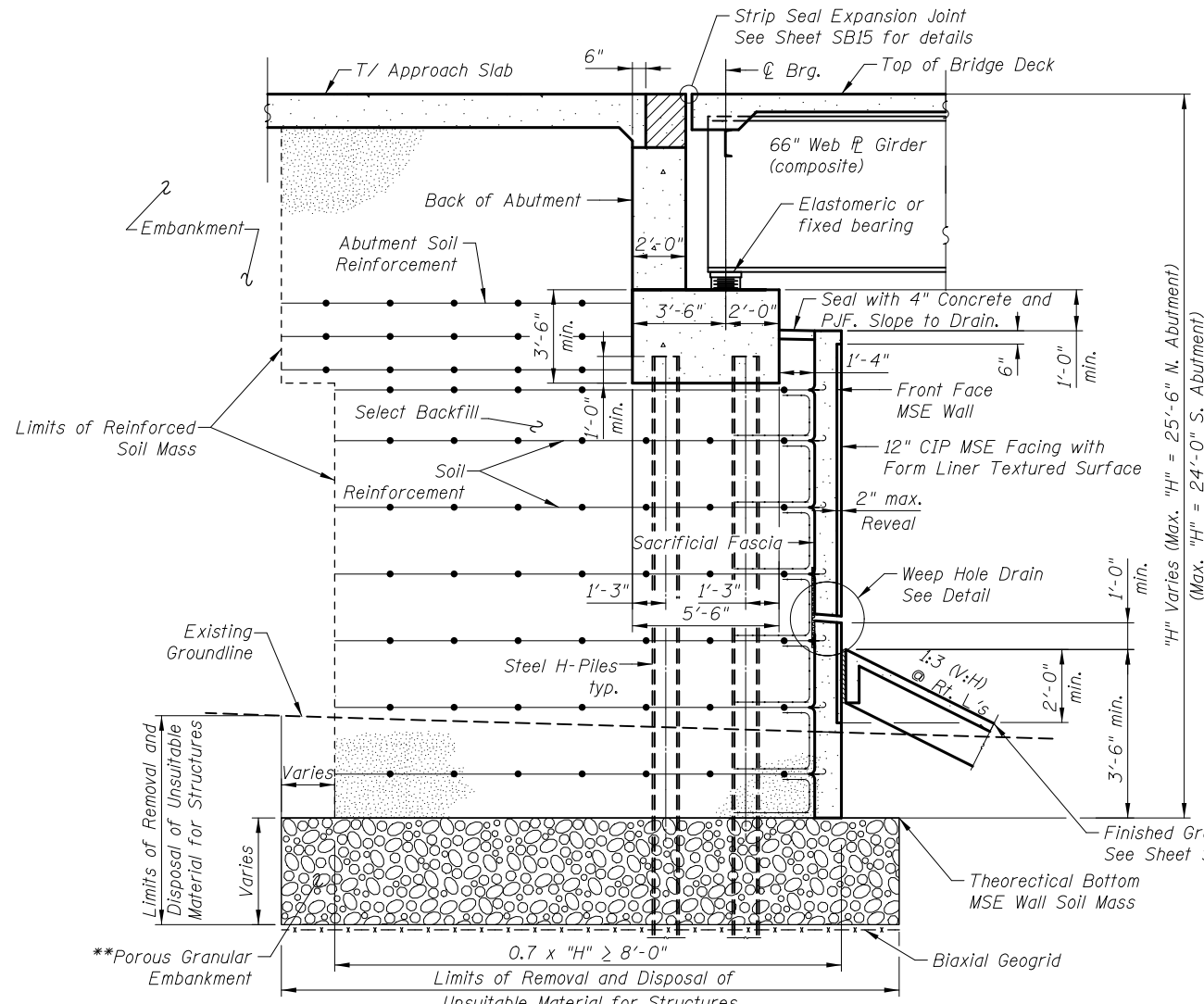
DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**MSE WALLS
ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD
STRUCTURE NO. 056-0081**
SHEET NO. SB24 OF SB32 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	517
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

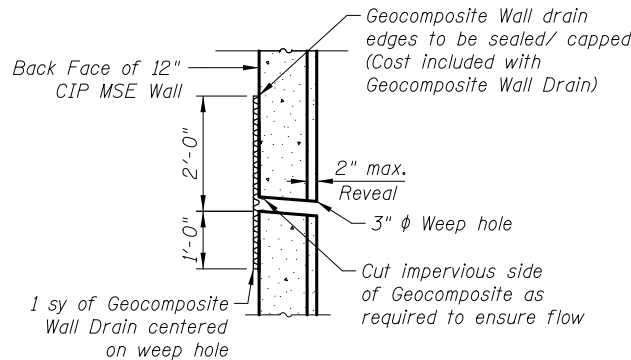
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SECTION THRU ABUTMENT
Horizontal Dimensions @ right angles

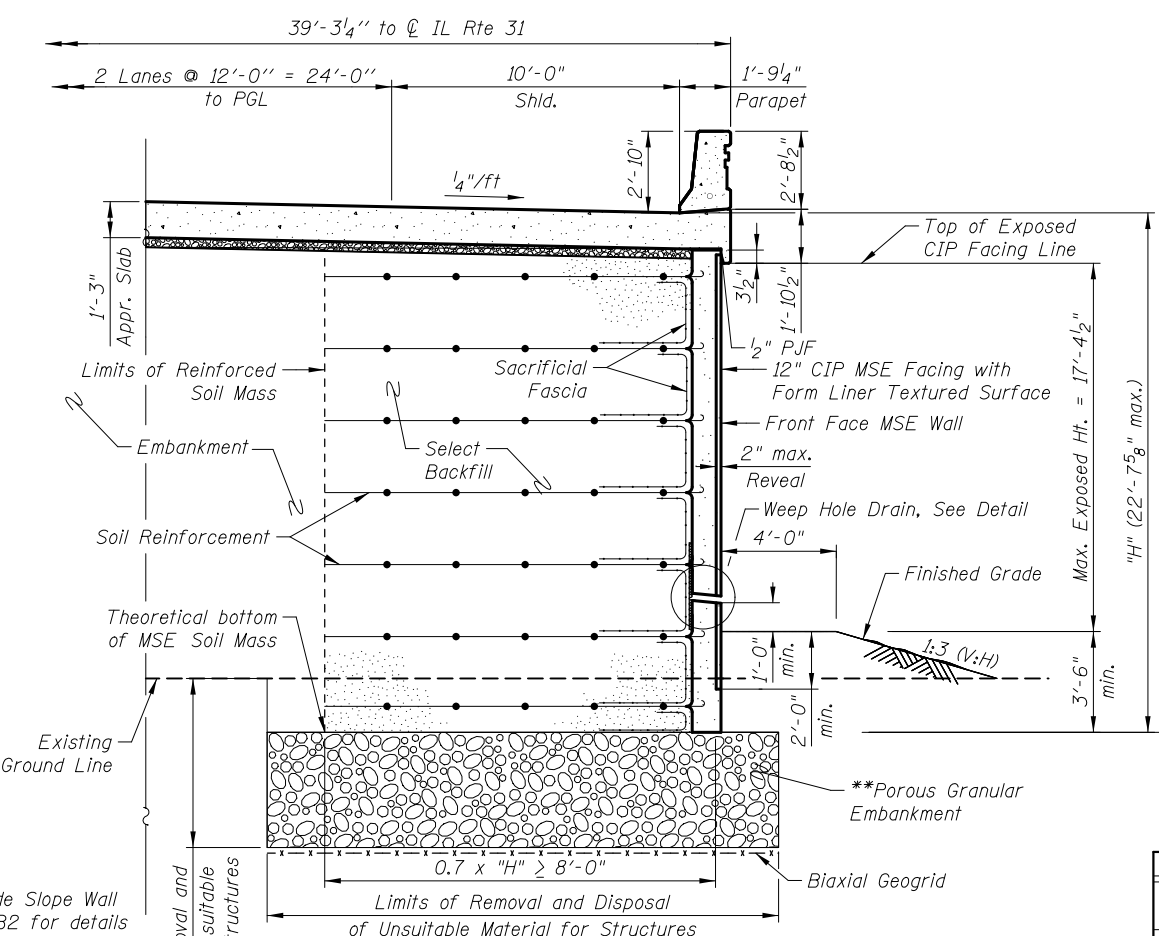
**For limits of Porous Granular Embankment see sheet SBI.

The M.S.E. wall supplier shall design the abutment soil reinforcement to resist an unfactored horizontal force of 5.0 kips/ft. of abutment.
The MSE wall supplier's internal stability design shall account for the anchorage slab's bearing pressure surcharge of 1.0 ksf and horizontal sliding force of 0.5 kips/ft. of wall.

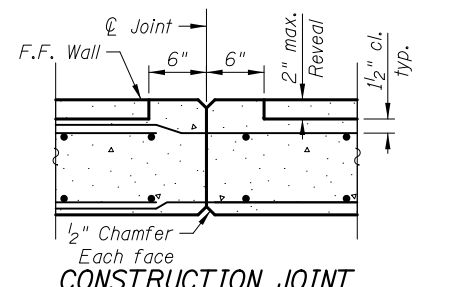


WEEP HOLE DRAIN DETAIL

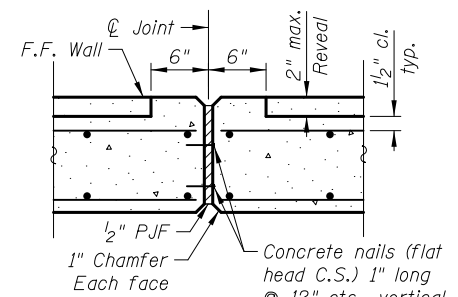
Weep hole spacing shall be at ±8'-0" horizontally



SECTION THRU APPROACH SLAB AND MSE WING WALLS
Horizontal Dimensions @ right angles



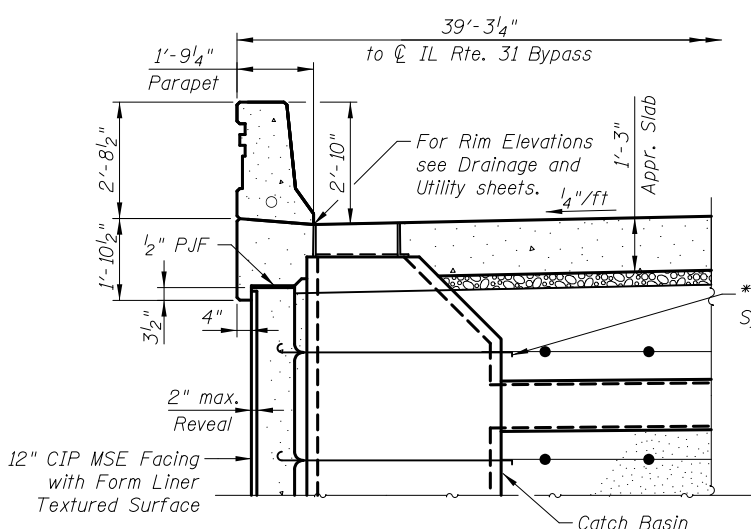
CONSTRUCTION JOINT



EXPANSION JOINT

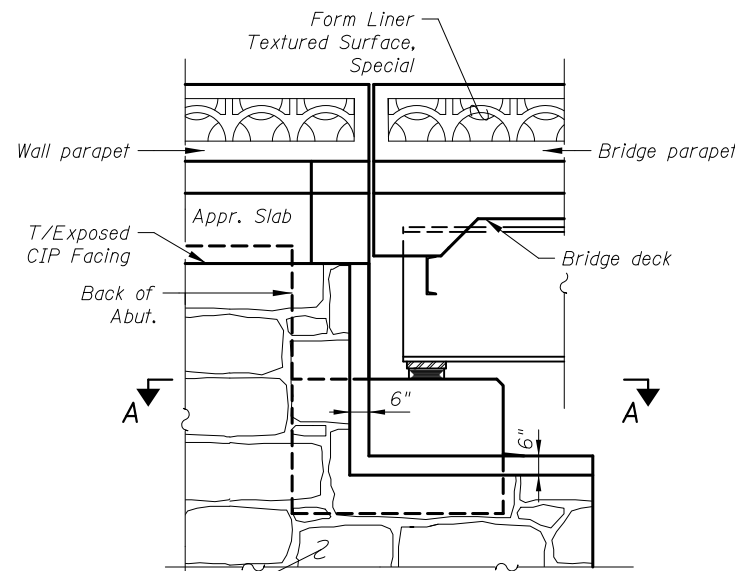
BILL OF MATERIAL

ITEM	UNIT	TOTAL
Porous Granular Embankment	Cu. Yd.	4,233
Removal and Disposal of Unsuitable Material for Structures	Cu. Yd.	4,378
Concrete Structures	Cu. Yd.	2.7
Form Liner Textured Surface	Sq. Ft.	4,511
Geocomposite Wall Drain	Sq. Yd.	53
Biaxial Geogrid	Sq. Yd.	1,445
Mechanically Stabilized Earth Retaining Wall	Sq. Ft.	5,773
Staining Concrete Structures	Sq. Yd.	501

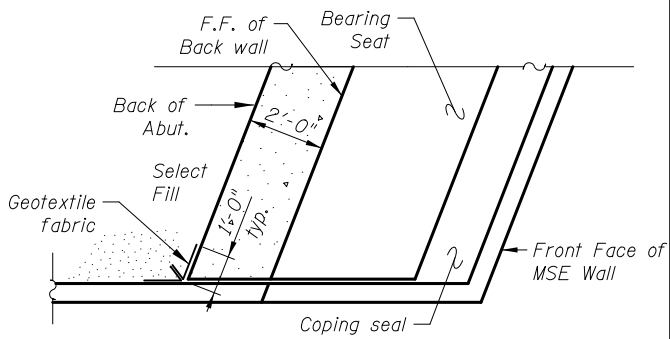


SECTION THRU DRAINAGE STRUCTURE

* M.S.E. supplier to design load transfer system to accommodate concrete pipe and catch basin



ABUTMENT END VIEW



SECTION A-A

Notes:
See Sheet SB27 for anchorage slab details.
Coping Seal shall be paid for as concrete structures
Geotextile fabric shall be paid for as Mechanically Stabilized Earth Retaining Wall.
For Form Liner Textured Surface details see sheet SB24.

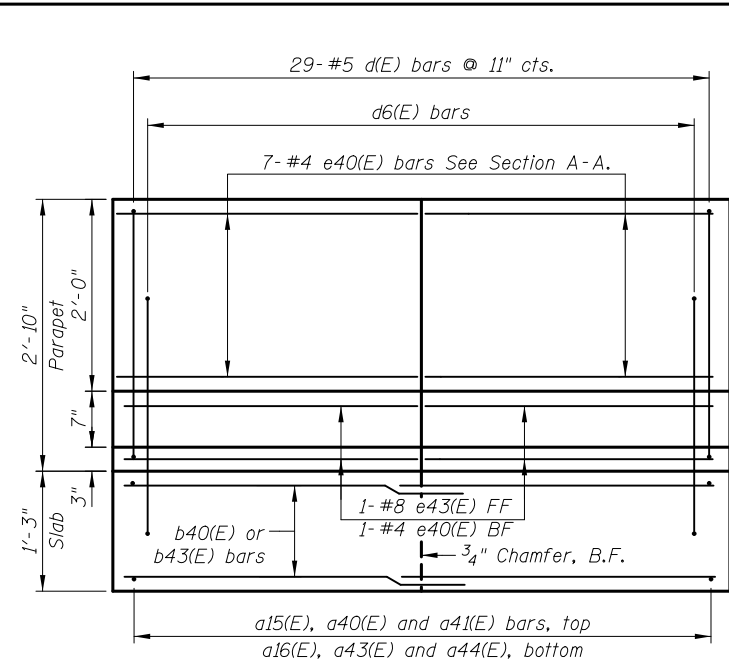
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DATE	- 5/3/2012	REVISED	-

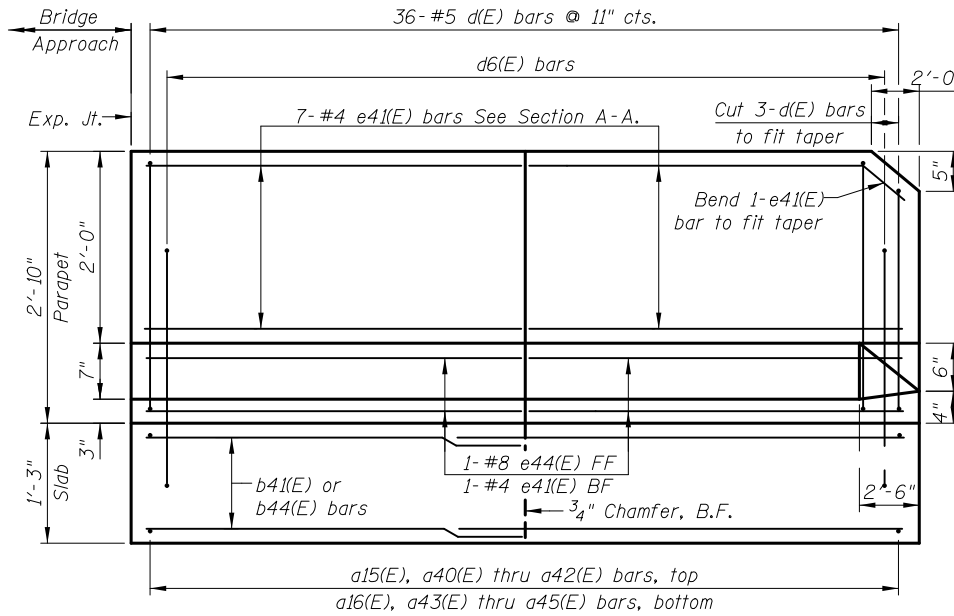
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**MSE WALL DETAILS
ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD
STRUCTURE NO. 056-0081**
SHEET NO. SB25 OF SB32 SHEETS

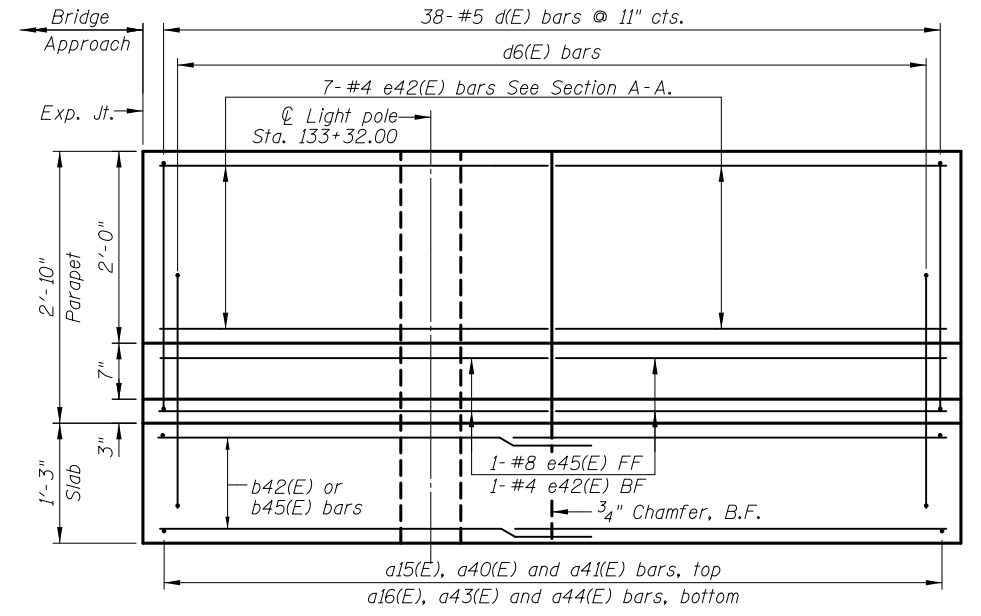
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	518
			CONTRACT NO. 60F72	
ILLINOIS FED. AID PROJECT				



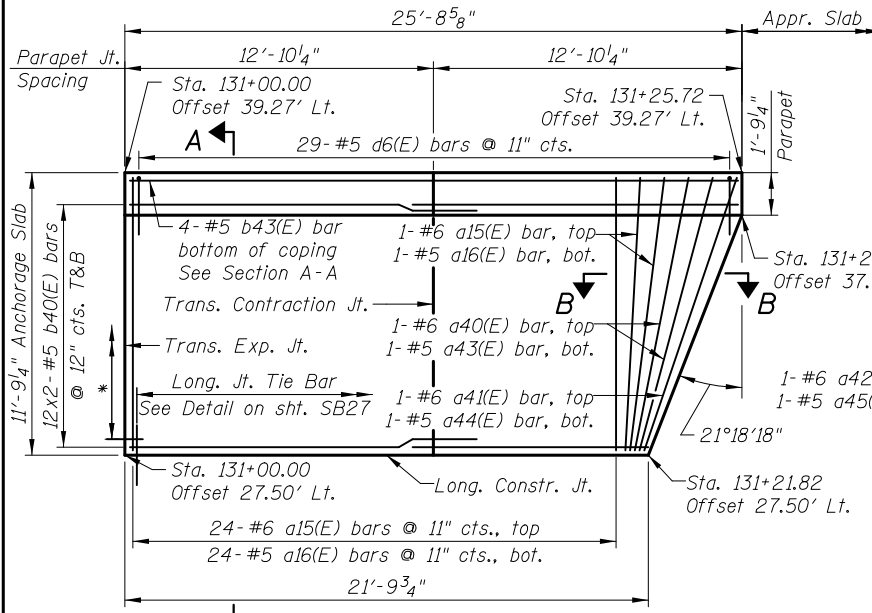
ELEVATION SW ANCHORAGE SLAB
(Front face of parapet)



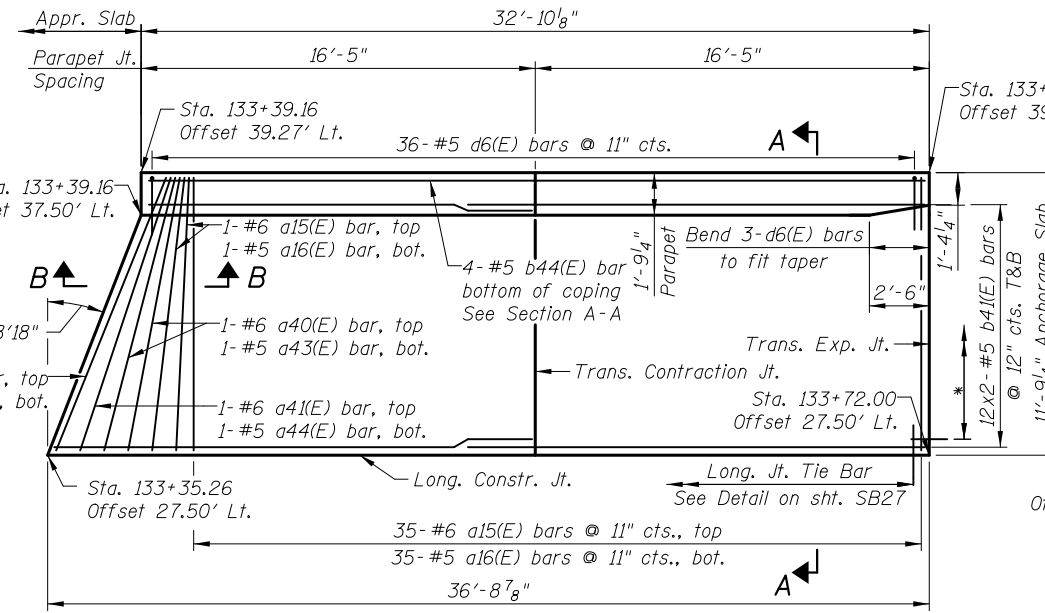
ELEVATION NW ANCHORAGE SLAB
(Front face of parapet)



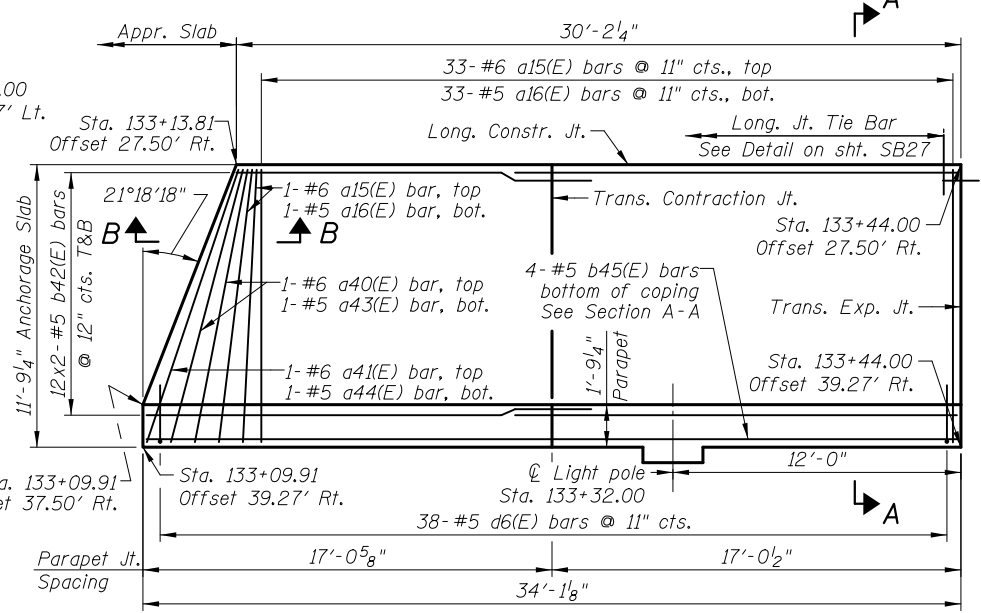
ELEVATION NE ANCHORAGE SLAB
(Front face of parapet)



PLAN SW ANCHORAGE SLAB



PLAN NW ANCHORAGE SLAB

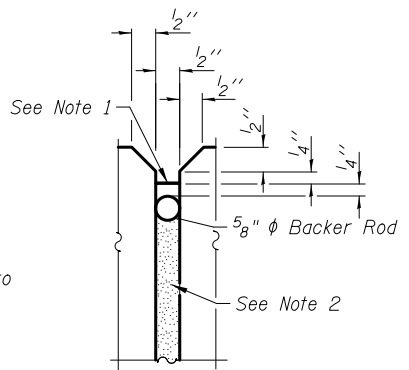


PLAN NE ANCHORAGE SLAB

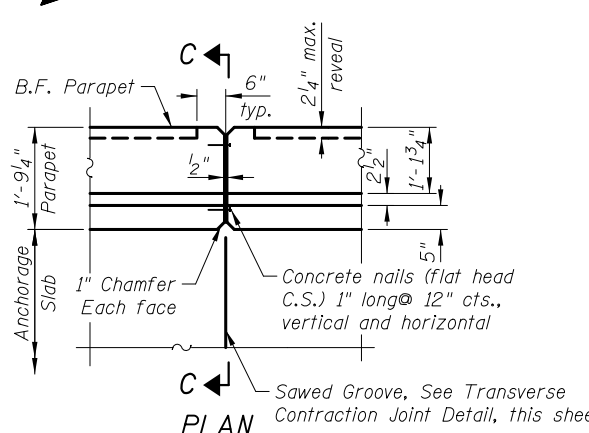
MINIMUM BAR LAP
#5 bar = 3'-3"

- Parapet Joint Notes:**
- Non-staining gray one component non-sag elastomeric gun grade polyurethane sealant meeting the requirements of ASTM C-920, Type S, Grade NS, Class 25, use T with a 5/8" backer rod.
 - 1/2" Preformed Self-Expanding Cork Joint Filler according to Article 1051.07 of the Std. Spec. Cost included with Concrete Superstructure.

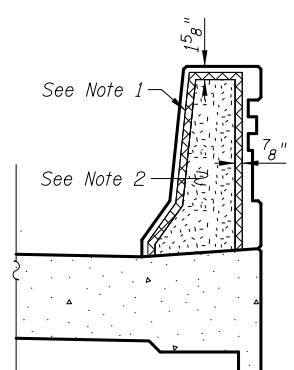
Sheet Notes:
See sheet SB27 for Bill of Material, Reinforcement Schedule and Bar Diagrams.
See sheet SB27 for Section A-A and B-B.
* Dowels into PCC Shld. See Transverse Expansion Joint Detail on Sheet SB27



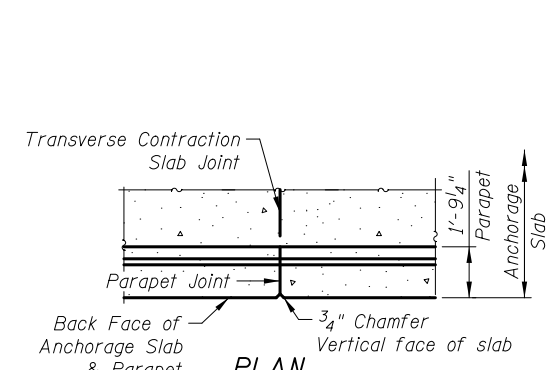
PARAPET JOINT DETAILS



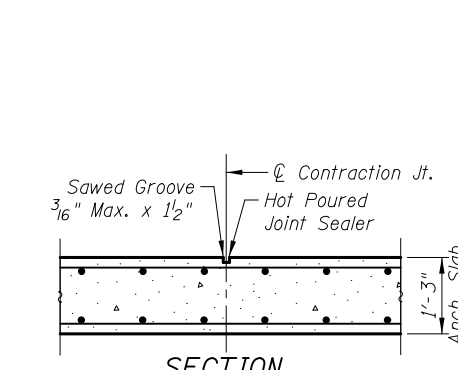
SECTION C-C



SECTION C-C



TRANSVERSE CONTRACTION JOINT



SECTION

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DATE	- 5/3/2012	REVISED	-

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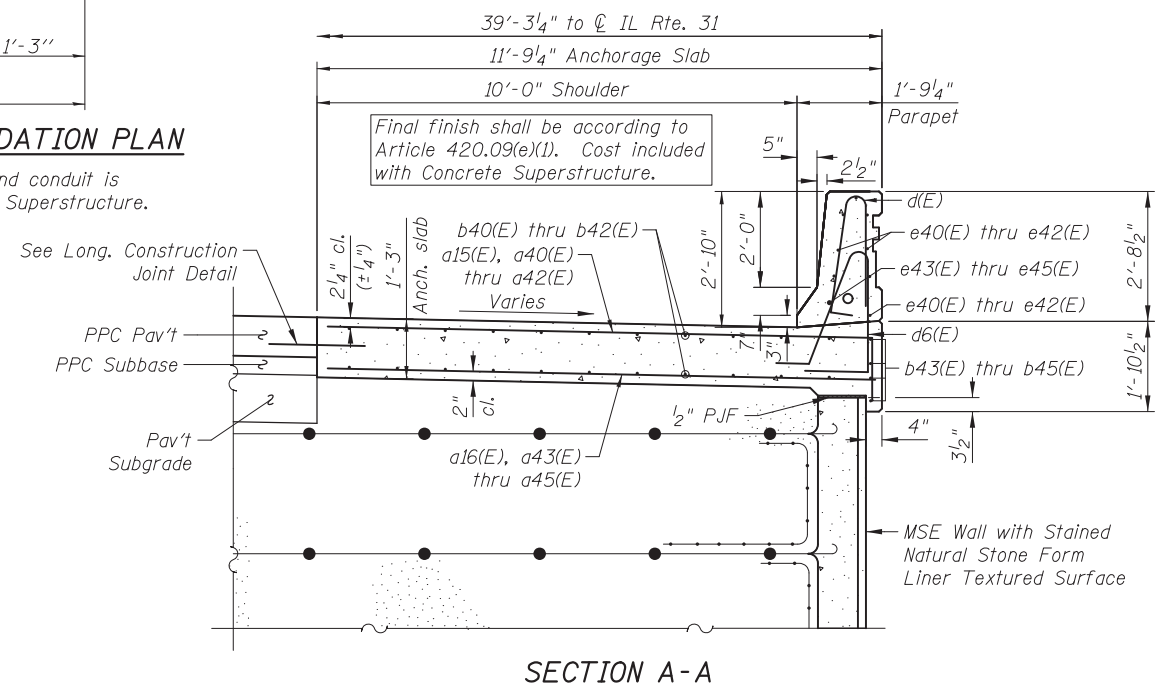
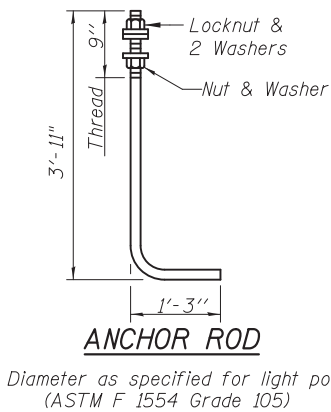
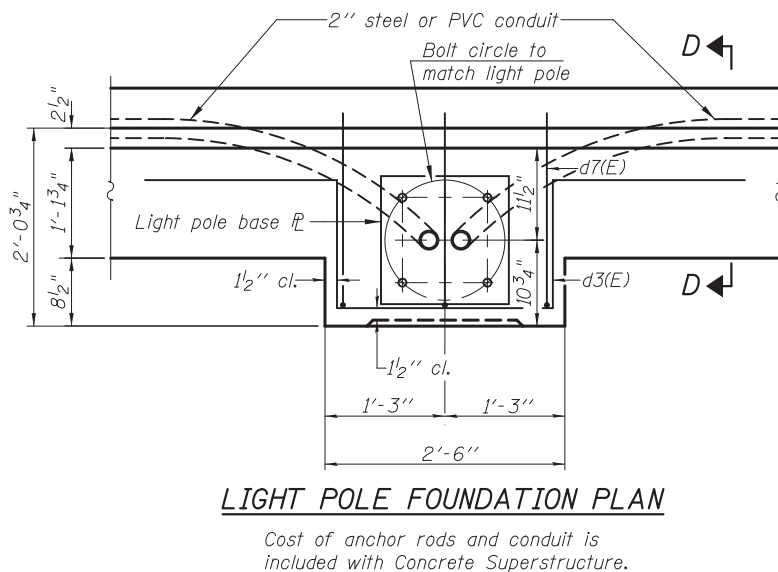
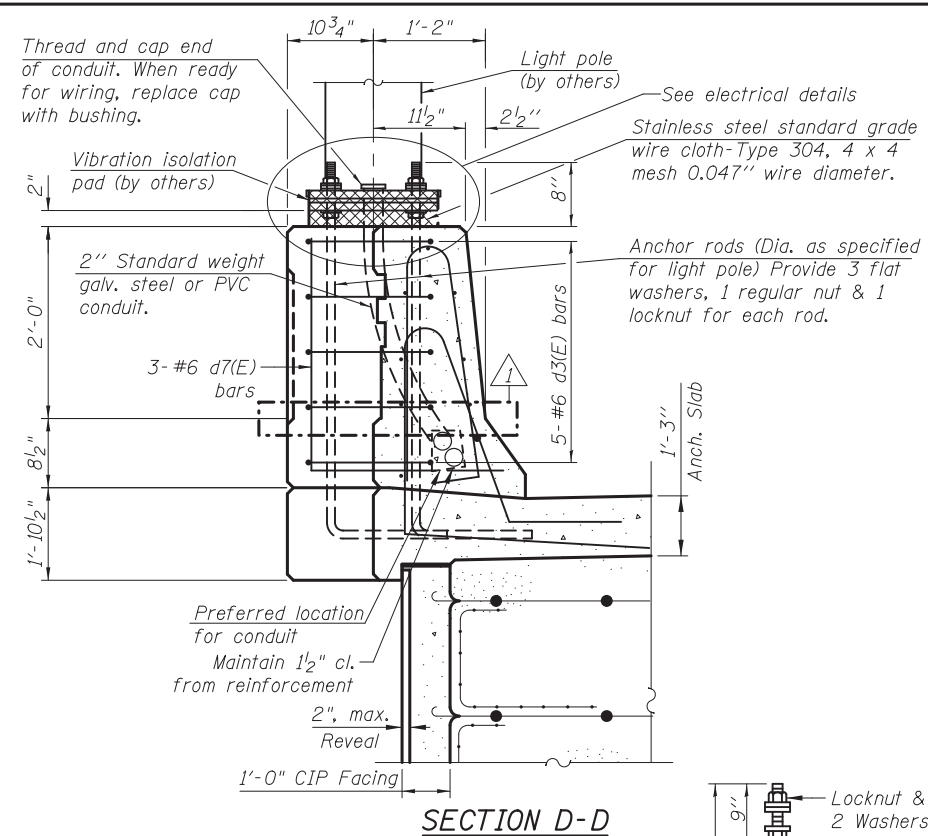
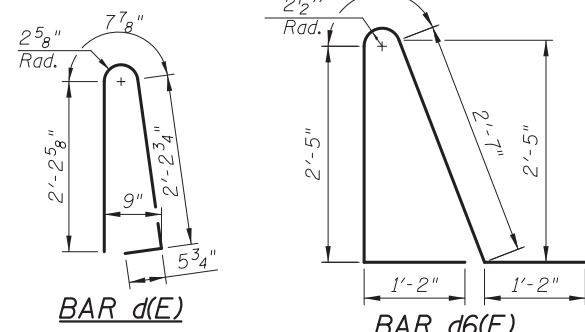
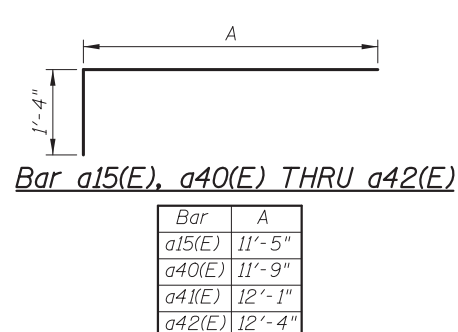
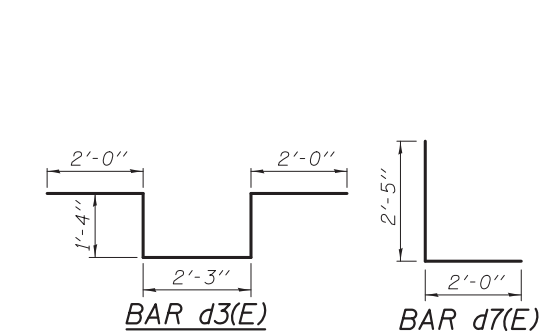
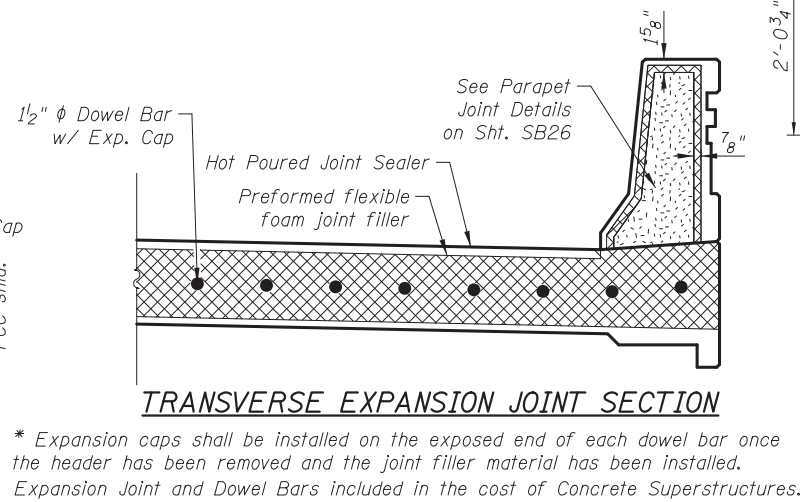
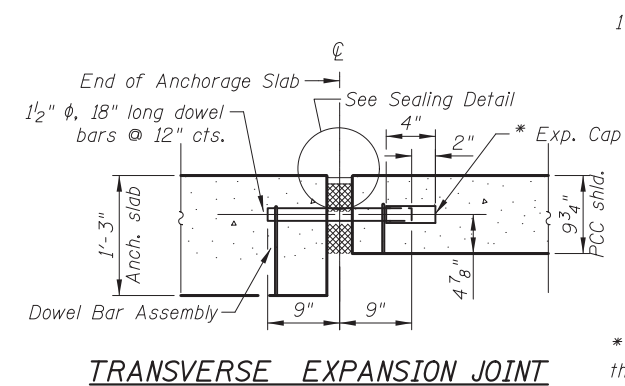
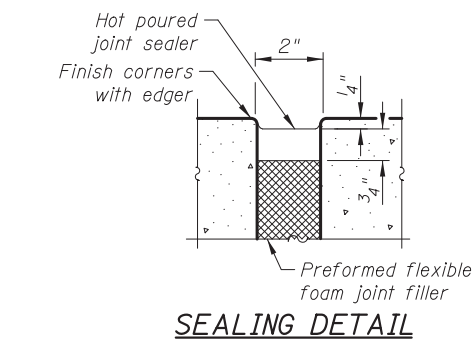
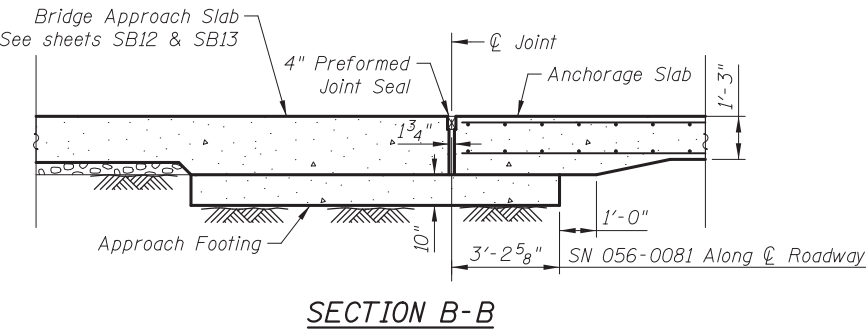
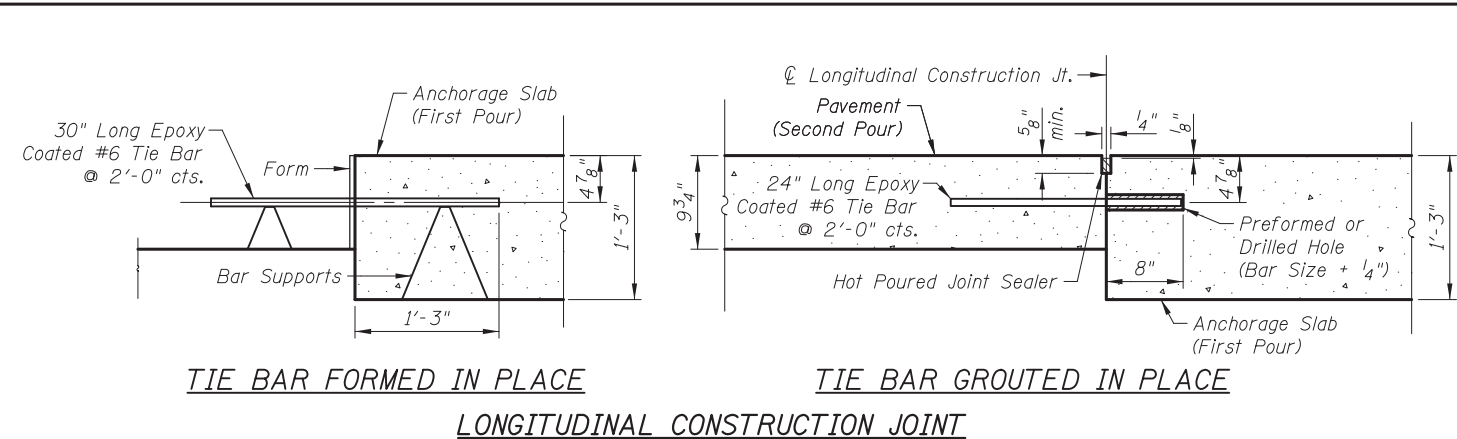
ANCHORAGE SLABS
ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD
STRUCTURE NO. 056-0081

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	519
CONTRACT NO. 60F72				

SHEET NO. SB26 OF SB32 SHEETS

ILLINOIS FED. AID PROJECT

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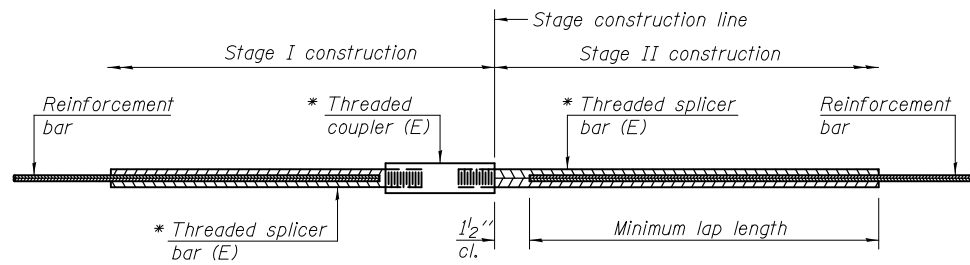


**ANCHORAGE SLABS
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a15(E)	98	#6	12'-9"	┌
a16(E)	98	#5	11'-5"	┌
a40(E)	6	#6	13'-1"	┌
a41(E)	3	#6	13'-5"	┌
a42(E)	1	#6	13'-8"	┌
a43(E)	6	#5	11'-9"	┌
a44(E)	3	#5	12'-1"	┌
a45(E)	1	#5	12'-4"	┌
b40(E)	48	#5	14'-4"	┌
b41(E)	48	#5	19'-10"	┌
b42(E)	48	#5	18'-6"	┌
b43(E)	4	#5	25'-4"	┌
b44(E)	4	#5	32'-6"	┌
b45(E)	4	#5	33'-9"	┌
d(E)	103	#5	5'-7"	└
d3(E)	5	#6	8'-11"	└
d6(E)	103	#5	7'-11"	└
d7(E)	3	#6	5'-7"	└
e40(E)	16	#4	12'-6"	┌
e41(E)	16	#4	16'-1"	┌
e42(E)	16	#4	16'-9"	┌
e43(E)	2	#8	12'-6"	┌
e44(E)	2	#8	16'-1"	┌
e45(E)	2	#8	16'-9"	┌
Item	Unit	Quantity		
Concrete Superstructure	Cu. Yds.	65.9		
Protective Coat	Sq. Yd.	143		
Reinforcement Bars, Epoxy Coated	Pound	8,650		
Form Liner Textured Surface	Sq. Ft.	131		

Bars indicated thus 8x2 - #5 etc. indicates 8 lines of bars with 2 length per line

Notes:
See Structural Standards sheet SB11 for Parapet Form Liner details.
See sheet SB25 for MSE Wall Details.



STANDARD BAR SPLICER ASSEMBLY

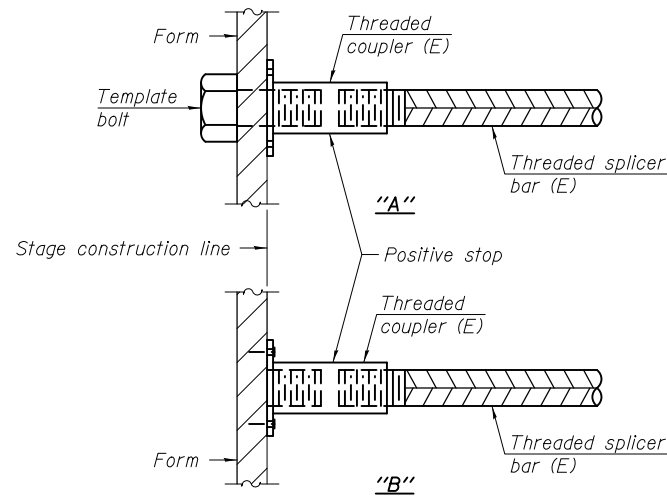
Minimum Lap Lengths					
Bar size to be spliced	Table 1	Table 2	Table 3	Table 4	Table 5
3, 4	1'-5"	1'-11"	2'-1"	2'-4"	2'-3"
5	1'-9"	2'-5"	2'-7"	2'-11"	2'-10"
6	2'-1"	2'-11"	3'-1"	3'-6"	3'-4"
7	2'-9"	3'-10"	4'-2"	4'-8"	4'-6"
8	3'-8"	5'-1"	5'-5"	6'-2"	5'-10"
9	4'-7"	6'-5"	6'-10"	7'-9"	7'-5"

- Table 1: Black bar, 0.8 Class C
- Table 2: Black bar, Top bar lap, 0.8 Class C
- Table 3: Epoxy bar, 0.8 Class C
- Table 4: Epoxy bar, Top bar lap, 0.8 Class C
- Table 5: Epoxy bar, Top bar lap, Class B

Threaded splicer bar length = min. lap length + 1/2" + thread length

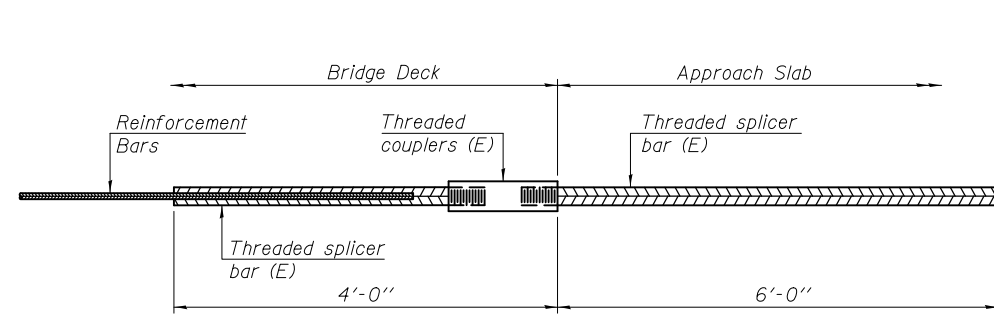
* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Table for minimum lap length



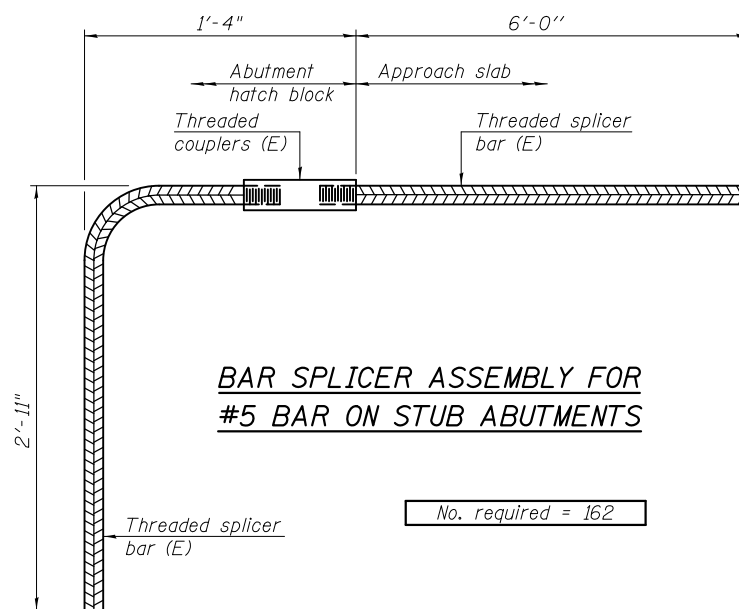
INSTALLATION AND SETTING METHODS

"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.



BAR SPLICER ASSEMBLY FOR #5 BAR ON INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

No. required =



BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS

No. required = 162

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 and mechanical splicers for alternatives.

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PROJECT		BRIDGE		DATE			
IL. 31 - Algonquin Bypass		Mainline Route 31		12/30/08, 12/31/08			
ROUTE		BORED BY					
IL. Route 31 at IL. Route 62		SPE					
SECTION		STATION		CHECKED BY			
		131+50 to 133+20		WJW			
COUNTY		WATER LEVEL DURING DRILLING					
McHenry		11.0'					
BORING		Rotary Mud Drilling, Hole Grouted at Completion					
BB-1							
STATION		Depth		Qu		W	
133+45		N/6"		tsf		%	
OFFSET		Depth		Qu		W	
26' L of CL		N/6"		tsf		%	
GROUND SURFACE EL.		Ft		Ft			
753.0							
3" GRAVEL over Brown Clay LOAM to LOAM, A-6: FILL		Pinkish-Grey Clay LOAM A-6, hard		733.0			
		3		9			
		7		15		6.01	
		7		22		B	
		12					
		17					
Black Clay LOAM, A-7-6, stiff		3		9			
750.0		6		15		4.73	
		6		21		B	
		12					
		18					
Brown Silty Clay LOAM, A-6, stiff		3		11			
747.5		4		26		4.22	
		6		30		BS	
		12					
		18					
Brown Gravelly LOAM, A-2-4		3		7			
743.7		7		13		3.91	
		9		16		B	
		15					
		21					
Brown SAND and GRAVEL, A-1		11					
742.5		13					
		17					
dense to medium dense							
occasional Cobbles and Boulders							
		4		6			
		7		10		3.68	
		13		14		B	
		19					
Grey		12					
		12					
		14					
		16		5			
		34		10		2.75	
				14		B	
				20			
				40			

BORING		Depth		Qu		W	
BB-1		N/6"		tsf		%	
CONTINUED		Ft		Ft			
Pinkish-Grey Clay LOAM, A-6, very stiff		713.0		Grey SAND and GRAVEL, A-1, dense		688.0	
		7		17		19	
		12		26		-	
		17		26			
		45					
		5		19		10	
		9		23		-	
		12		19			
		50					
		8		80		ROCK CORE	
		16		25			
		25					
		55					
		6		85		ROCK CORE	
		7		15		-	
		15					
		60					
		10		90		ROCK CORE	
		17		21		-	
		21					
		65					

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DATE	- 5/3/2012	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BORING LOGS I
ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD
STRUCTURE NO. 056-0081
 SHEET NO. SB29 OF SB32 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	522
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

PROJECT	IL. 31 - Algonquin Bypass			BRIDGE	Mainline Route 31			DATE	1/5/09						
ROUTE	IL. Route 31 at IL. Route 62			BORED BY	SPE										
SECTION				STATION	131+50 to 133+20			CHECKED BY	WJW						
COUNTY	McHenry							WATER LEVEL DURING DRILLING 10.5'							
BORING	BB-2							Rotary Mud Drilling, Hole Grouted at Completion							
STATION	133+23							Depth	N/6"	Qu	W				
OFFSET	19' R of CL							tsf	%						
GROUND SURFACE EL.	752.9							Ft				Ft			
Brown and Yellow-Brown Silty Clay LOAM, A-6: FILL, stiff				Grey Clay LOAM, A-6, very stiff to hard				732.9							
5				5											
Black Clay LOAM, A-7-6, stiff				749.9				5							
Brown Clay LOAM, A-6, stiff				746.4				5							
Brown and Grey mottled Silty CLAY, A-6, stiff				744.9				10							
Brown SAND (F-c) and GRAVEL, A-2, medium dense to dense				742.4				10							
with occasional Cobbles and Boulders								15							
								20				continued			
								20				40			

BORING BB-2																													
						Depth	N/6"	Qu	W																				
						tsf	%																						
CONTINUED						Ft							Ft																
Grey Clay LOAM A-6						712.9						Grey SAND, A-2, dense						687.9											
						45												70											
						50												75											
Black Organic PEAT, A-8, very stiff, compressed						701.4												weathered Grey Dolomite Bedrock						676.9					
Blueish-Grey Organic Silty CLAY, A-7-6, hard						698.4						55						80											
Grey SAND, A-2, dense						691.4																							
						65																							

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DATE	- 5/3/2012	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BORING LOGS II
ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD
STRUCTURE NO. 056-0081

SHEET NO. SB30 OF SB32 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	523
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

PROJECT IL 31 - Algonquin Bypass		BRIDGE Mainline Route 31		DATE 12/23/08	
ROUTE IL Route 31 at IL Route 62		BORED BY SPE			
SECTION		STATION 131+50 to 133+20		CHECKED BY WJW	
COUNTY	McHenry	WATER LEVEL DURING DRILLING 5.5'			
BORING	BB-3	Rotary Mud Drilling, Hole Grouted at Completion			
STATION	131+52	Depth	N/6"	Qu tsf	W %
OFFSET	54' L of CL	Depth	N/6"	Qu tsf	W %
GROUND SURFACE EL. 748.0	Ft				
Bituminous Concrete over SAND and GRAVEL					
Brown and Black Silty Clay LOAM, A-6: FILL		7			
		5			24
		7			
Brown SAND and GRAVEL, A-2: FILL	745.7				
Grey Silty Clay LOAM, A-6, stiff	745.0	7			
		4		1.20	28
		6		BS	
Brown and Grey SAND (f-c) and GRAVEL, A-1, medium dense to very dense	742.5				
		10			
		11			17
		14			
		27			
		50/3*			14
		11			
		28			18
		43			
Cobbles or Boulders throughout					
		11			
		18			7
		28			
		11			
		23			8
		24			
Cobbles					
		35			
		32			13
Red-Brown Clay LOAM, A-6	728.5	20		2.10	B
		15			
		40			

BORING BB-3		Depth		Qu	W	Depth		Qu	W
		N/6"	tsf	%			N/6"	tsf	%
CONTINUED	Ft								
Brown-Grey Clay LOAM, A-6, 708.0 stiff					Grey SAND (f-c) and GRAVEL, A-1	683.0			
		4							
		8		3.62					9
		12		B					
	45				Grey Dolomite Bedrock, weathered	678.5	70		
Brown and Black Silty CLAY, A-7-6	701.0								
		4			End of Boring @ 73.0'	675.0			
		8		2.75					
		19		B					
Blue-Grey Clay LOAM, A-6, very stiff	698.8						75		
		7							
		15							
		23							
Grey SAND (f-m), A-2, dense	696.3								
		6							
		10							
		15							
Grey SAND (f-c) and GRAVEL, A-1, dense to extremely dense	691.5								
		15							
		18							
		19							8
	60								
		38							
		40							6
		50							
	65								

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BORING LOGS III
ILLINOIS ROUTE 31 OVER ALGONQUIN ROAD
STRUCTURE NO. 056-0081
 SHEET NO. SB31 OF SB32 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	524
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

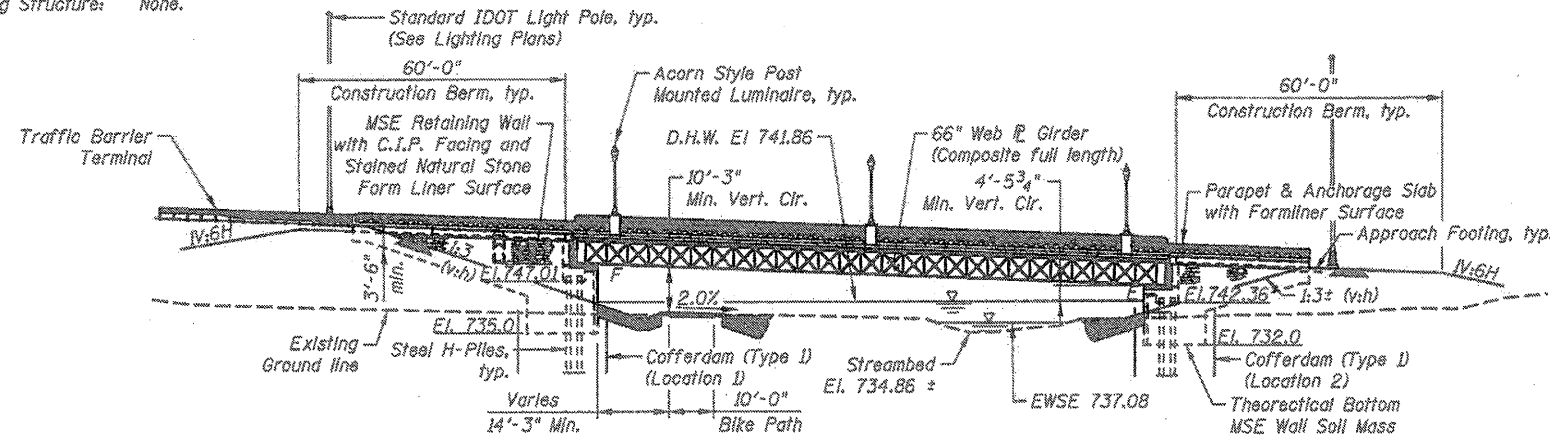
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 5/2/2012

PROJECT		IL. 31 - Algonquin Bypass		BRIDGE		Mainline Route 31		DATE		12/24/09, 12/30/09	
ROUTE		IL. Route 31 at IL. Route 62		BORED BY		SPE		SECTION		STATON 131+50 to 133+20	
COUNTY		McHenry		CHECKED BY		WJW		WATER LEVEL DURING DRILLING		5.5'	
BORING		BB-4		Rotary Mud Drilling, Hole Grouted at Completion		Depth		N/6"		Qu tsf W %	
STATION		130+75		Depth		N/6"		Qu tsf		W %	
OFFSET		39' R of CL		Depth		N/6"		Qu tsf		W %	
GROUND SURFACE EL.		746.0		Ft				Ft			
Brown SAND and GRAVEL, A-1: FILL				Brown-Grey Clay LOAM, A-6, very stiff		726.0					
		6 9 5				8 11 11		3.72 B		13	
Dark Grey to Black Silty Clay LOAM, A-6: FILL, stiff		743.0		5		2 2		1.20 3		21	
		2 2				8 10 13		3.67 B		14	
Brown SAND and GRAVEL A-1, wet, medium dense to dense		740.5		10		7 9 14		2.51 B		15	
		10 16 9				6 9 10		2.71 B		13	
		6 10 23									
		16 17 19									
		6 14 21				8 10 14		2.5 P		15	
Brown-Grey Clay LOAM, A-6, very stiff		730.5		15							
		13 14 16									
		8 10 8				13 14 8		4.33 B		16	
		8 10 8				8 10 14		3.10 B		10	
		20				40		ST 3.63 B		14	

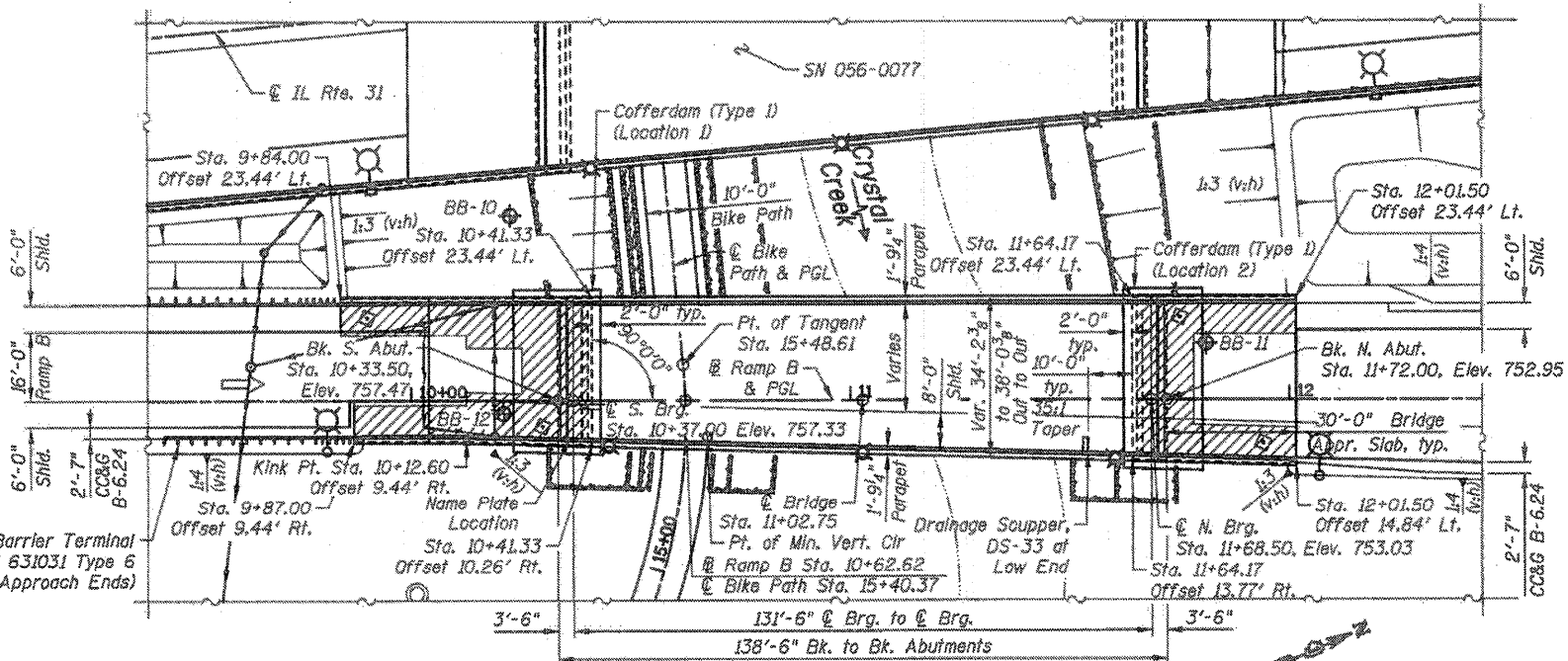
BORING		BB-4		Depth		N/6"		Qu tsf		W %	
CONTINUED		Ft		Ft							
Brown-Grey Clay LOAM, A-6(6)*, very stiff		706.0		Grey SAND and GRAVEL, A-1, medium dense		681.0					
		45				5 7 13		1.74 B		15	
		70				14 13 13				8	
Grey SAND and GRAVEL, A-2, medium dense		699.2		Grey Dolomite Bedrock moderately to highly weathered, fine to medium grained, medium horizontal bedding, numerous horizontal fractures with frequent vertical fractures, moderately porous		673.0					
		50				8 10 16		-		10	
		75								ROCK CORE	
Brown-Grey Clay LOAM, A-6, stiff		694.0		Core Run 1 Recovery = 99% RQD = 43%		80					
		55				2 3 6		1.43 BS		20	
Brown Sandy Clay LOAM, A-6 to A-4, medium dense		690.0		End of Boring @ 83.0'		663.0					
		60				6 10 14		2.38 B		10	
Grey Sandy Clay LOAM, A-4		686.0				85					
Grey SAND and GRAVEL, A-1, dense		684.3				65					
		65				13 15 17		-		7	

Benchmark: Control Point CP10, 5/8" Iron Rod with oop set, Ramp B Station 11+51.26, offset 2.12 feet left; Elev. 737.99

Existing Structure: None.



ELEVATION
(Looking West)



PLAN

Settlement platforms shall be erected in accordance with article 204.06 except that the platforms shall be placed at the bottom of the MSE soil mass. Cost shall be included in the cost of Mechanically Stabilized Earth Retaining Wall.

- ☐ Settlement Platforms
- Sta. 11+94, 10-ft. Right
- Sta. 11+75, 19-ft. Left
- Sta. 9+90, 19-ft. Left
- Sta. 6+88, 6-ft. Right

CURVE DATA

Bike Path
 $\Delta = 111^\circ 07' 21.00''$ (LT)
 $D = 44^\circ 04' 25.24''$
 $T = 189.59'$
 $L = 252.13'$
 $E = 99.87'$
 $R = 130.00'$
 $SE = 2.0\%$
P.C. = Sta. 12+96.48
P.T. = Sta. 15+48.61
P.I. = Sta. 14+86.07

WATERWAY INFORMATION

Drainage Area = 26.5 Square Miles Low Grade El. 749.05 @ Sta. 8+99.51 (Ramp B)

Flood	Freq. Yr.	Q C.F.S.	Opening	Sq. Ft. Wat. Exist.	Prop. H.W.E.	Head - Ft. Exist.	Prop. Headwater El. Exist.	Prop. Headwater El.
Design	10	1469	-	432.1	740.89	-	0.00	740.89
Design	50	2647	-	551.4	741.86	-	0.00	741.86
Design	100	3518	-	621.4	742.44	-	0.00	742.44
Overtopping								
Max. Calc.	500	5209	-	728.1	743.33	-	0.05	743.33

DESIGN SCOUR ELEVATION TABLE

Design Scour Elevation (ft.)	S. Abut.	N. Abut.
	739.21	734.04

STATION 11+02.75
 BUILT 2011 BY
 STATE OF ILLINOIS
 O.R. 0003 SEC. 18A-2
 LOADING HL-93
 STRUCTURE NO. 056-0079

NAME PLATE
 See Std. 515001

CIVILTECH ENGINEERING, INC.
 GREGORY J. HATLESTAD, S.E.



GREGORY J. HATLESTAD, S.E.
 # 081-005562

EXP 11/30/12

DATE 3/15/12

DESIGN STRESSES

FIELD UNITS
 $f'_c = 3,500$ psi
 $f_y = 60,000$ psi (Reinforcement)
 $f_y = 50,000$ psi (AASHTO M270 Gr. 50 - Main Girders)
 $f_y = 36,000$ psi (AASHTO M270 Gr. 36 - Secondary Members)

LOADING HL-93

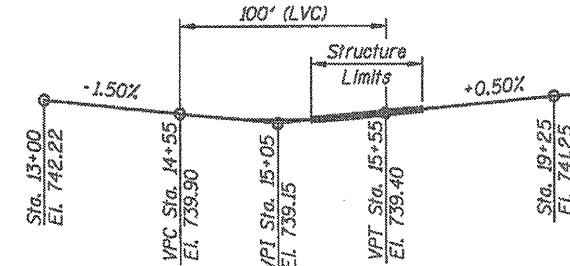
Allow 50#/sq. ft. for future wearing surface.

SEISMIC DATA

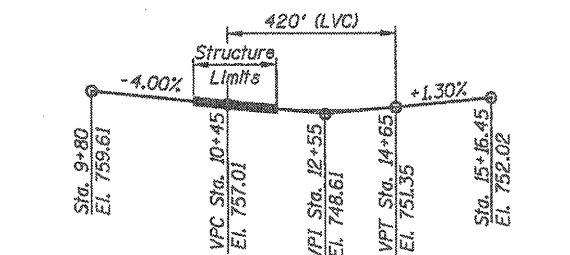
Seismic Performance Zone (SPZ) = 1
 Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.081
 Design Spectral Acceleration at 0.2 sec. (S_{D5}) = 0.142
 Soil Site Class = D

DESIGN SPECIFICATIONS

2010 AASHTO LRFD Bridge Design Specifications
 with 2010 Interims



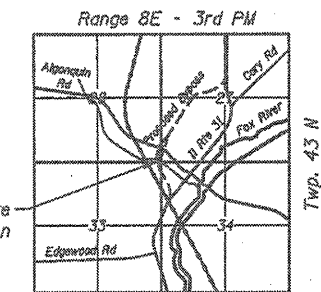
PROPOSED PROFILE
BIKE PATH



PROPOSED PROFILE
NB EXIT RAMP (RAMP B)

APPROVED
 For Structural Adequacy Only

Carl Perry
 Engineer of Bridges & Structures



LOCATION SKETCH

GENERAL PLAN & ELEVATION
NB EXIT RAMP (RAMP B) OVER CRYSTAL CREEK
O.R. 0003 SECTION 18A-2
McHENRY COUNTY
STATION 11+02.75. STRUCTURE NO. 056-0079

DRAWN - M. LANGE	REVISED -
DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 3/23/2012	REVISED -

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	526
			CONTRACT NO. 60F72	
ILLINOIS/FED. AID PROJECT				

GENERAL NOTES

- Fasteners shall be AASHTO M164 Type 1, mechanically galvanized bolts. Bolts $\frac{7}{8}$ in. ϕ , holes $\frac{5}{16}$ in. ϕ , unless otherwise noted.
- Calculated weight of Structural Steel = 164,820 lbs (AASHTO M270 GR. 50)
Calculated weight of Structural Steel = 13,260 lbs (AASHTO M270 GR. 36)
- No field welding is permitted except as specified in the contract documents.
- Reinforcement bars designated (E) shall be epoxy coated.
- If the Contractor elects to use cantilever forming brackets on the exterior beams or girders, the brackets shall be placed at the same locations as required for the hardwood blocks in Article 503.06(b) of the Standard Specifications. If additional cantilever forming brackets are required, hardwood blocking shall be wedged between the exterior and first interior beam at each of these additional bracket locations.
- Concrete Sealer shall be applied to the designated areas of the backwalls and bridge seats of the abutments.
- The Organic Zinc Rich Primer / Epoxy / Urethane Paint System shall be used for painting of new structural steel except where otherwise noted. The entire system shall be shop applied, with the exception that masked off connection surfaces, field installed fasteners and damaged areas shall be touched up in the field. The color of the final finish coat for all steel surfaces shall be Gray, Munsell No. 5B 7/1.
- The embankment configuration shown shall be the minimum that must be placed and compacted prior to construction of the abutments.
- Neither the MSE wall cast-in-place concrete facing, anchorage slab & parapet, approach slabs, nor approach roadway pavements shall be constructed until after the roadway embankment and reinforced select fill have been in place for 1 month, after which time less than 1 inch of the total anticipated $3\frac{3}{4}$ inches settlement is assumed to remain, without the prior approval of the Engineer. The settlement period may be shortened at the discretion of the Engineer if the monitoring data indicates a lesser than predicted settlement.
- Slipforming of the parapets is not allowed.

11. Layout of slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Stone Riprap, Class A5	Sq. Yd.	-	362	362
Filter Fabric	Sq. Yd.	-	362	362
Cofferdam Excavation	Cu. Yd.	-	297	297
Cofferdam (Type 1) (Location 3)	Each	-	1	1
Cofferdam (Type 1) (Location 4)	Each	-	1	1
Concrete Structures	Cu. Yd.	-	98.4	98.4
Concrete Superstructures	Cu. Yd.	317.8	-	317.8
Bridge Deck Grooving	Sq. Yd.	713	-	713
Form Liner Textured Surface	Sq. Ft.	-	1,775	1,775
Protective Coat	Sq. Yd.	944	-	944
Furnishing and Erecting Structural Steel	L. Sum	0.15	-	0.15
Stud Shear Connectors	Each	1,020	-	1,020
Reinforcement Bars, Epoxy Coated	Pound	175,760	9,850	185,610
Bar Splicers	Each	-	68	68
Furnishing Steel Piles HP14x73	Foot	-	1,599	1,599
Driving piles	Foot	-	1,599	1,599
Test Pile Steel HP14x73	Each	-	2	2
Pile Shoes	Each	-	27	27
Name Plates	Each	1	-	1
Preformed Joint Strip Seal	Foot	70	-	70
Elastomeric Bearing Assembly, Type I	Each	5	-	5
Anchor Bolts, 1"	Each	10	-	10
Anchor Bolts, 1 1/4"	Each	10	-	10
Concrete Sealer	Sq. Ft.	-	581	581
Geocomposite Wall Drain	Sq. Yd.	-	34	34
Parapet Railing, Special	Foot	269	-	269
Drainage Scuppers, DS-33	Each	1	-	1
Mechanically Stabilized Earth Retaining Wall	Sq. Ft.	-	2,846	2,846
Staining Concrete Structures	Sq. Yd.	-	197	197
Form Liner Textured Surface, Special	Sq. Ft.	596	-	596
Ornamental Aluminum Lattice	Foot	263	-	263

INDEX OF SHEETS

- SC1 General Plan & Elevation
- SC2 General Data
- SC3 Riprap Details
- SC4 Top of Slab Elevations I
- SC5 Top of Slab Elevations II
- SC6 Top of Approach Slab Elevations
- SC7 Superstructure
- SC8 Superstructure Details I
- SC9 Superstructure Details II
- SC10 Ornamental Aluminum Lattice
- SC11 Architectural Details
- SC12 Bridge Approach Slab
- SC13 Bridge Approach Slab Details
- SC14 Parapet Railing, Special
- SC15 Preformed Joint Strip Seal
- SC16 Drainage Scuppers, DS-33
- SC17 Framing Plan
- SC18 Plate Girder Details
- SC19 Bearing Details
- SC20 Abutments
- SC21 Abutment Details
- SC22 Pile Details
- SC23 MSE Walls
- SC24 MSE Wall Details
- SC25 Anchorage Slabs
- SC26 Bar Splicer Assembly Details
- SC27 Boring Logs I
- SC28 Boring Logs II
- SC29 Boring Logs III

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

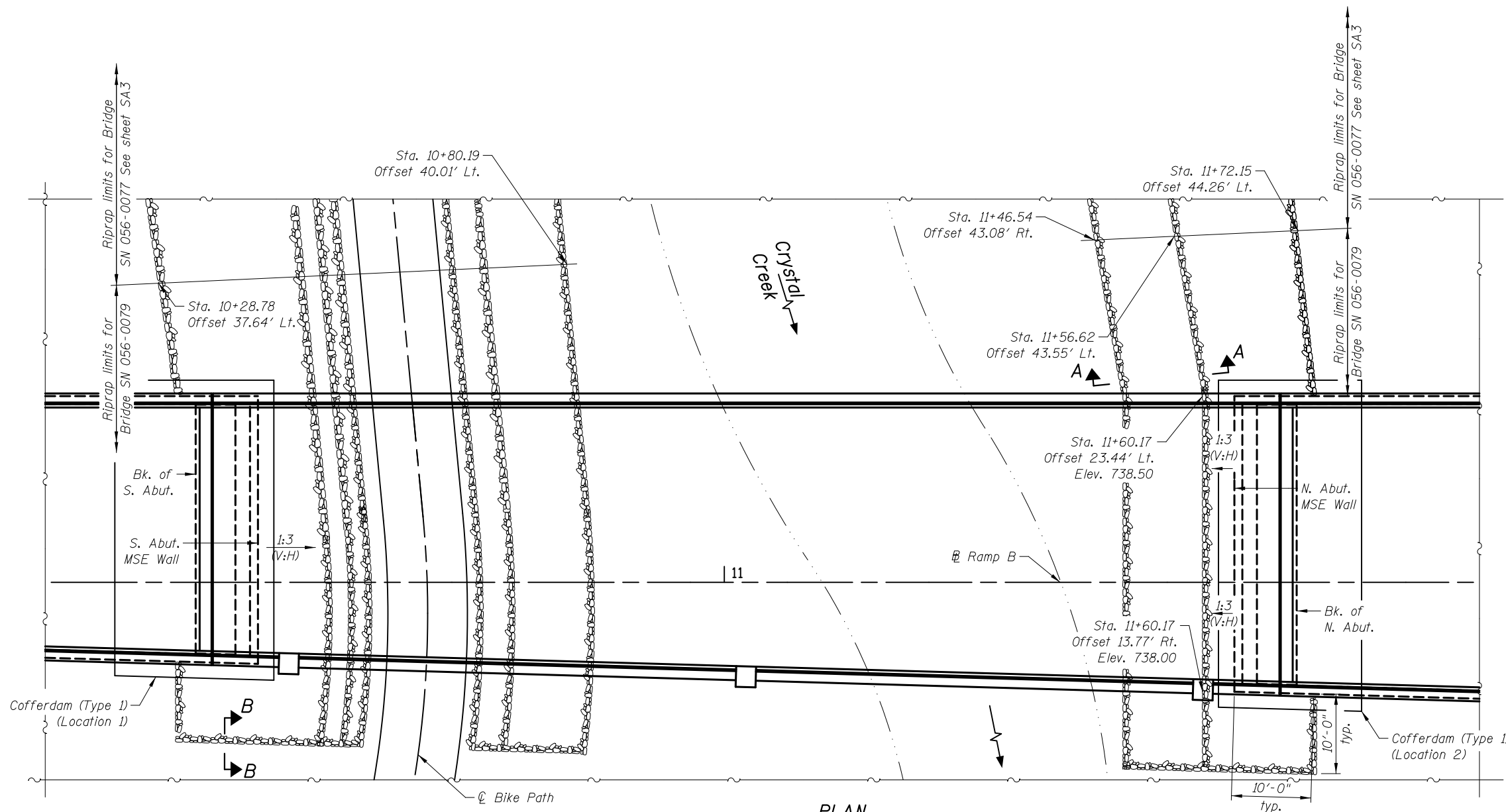
GENERAL DATA
NB EXIT RAMP (RAMP B) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0079

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	527
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

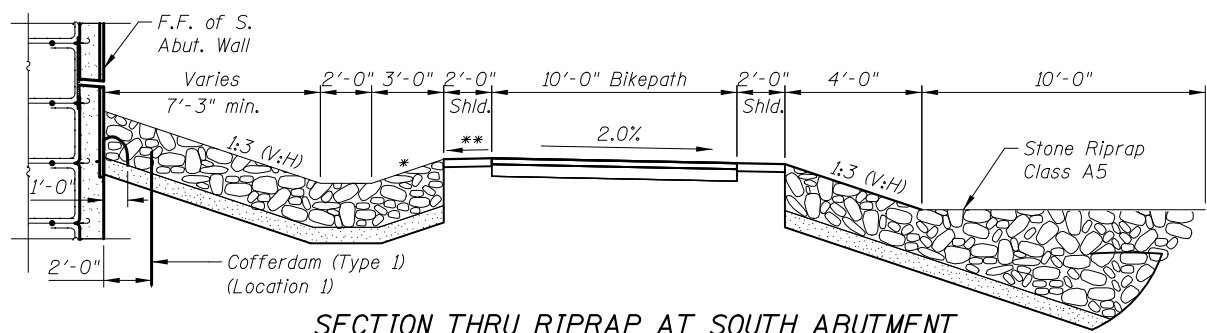
SHEET NO. SC2 OF SC29 SHEETS

DRAWN - M. LANGE	REVISED - 5/4/12 K.L.B.
DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 5/3/2012	REVISED -

CIVILTECH
450 E Devon Ave, Suite 300
Itasca, Illinois 60143
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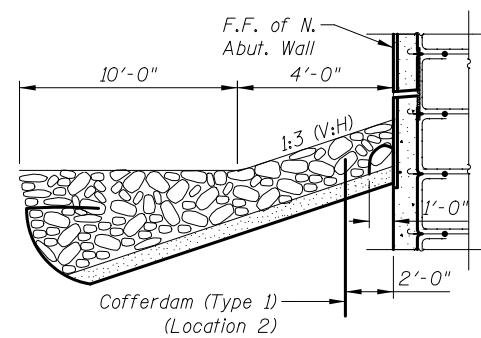
PLAN



SECTION THRU RIPRAP AT SOUTH ABUTMENT

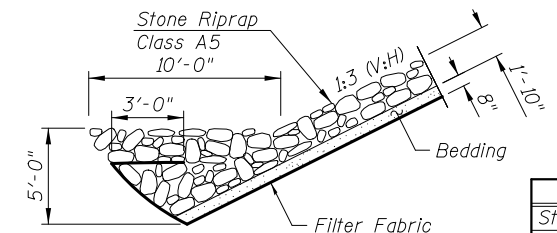
Dimensions and slopes measured at Rt. L's to the Bikepath
See Section A-A for balance of information

* 1:3 (V:H)
** 2.0%



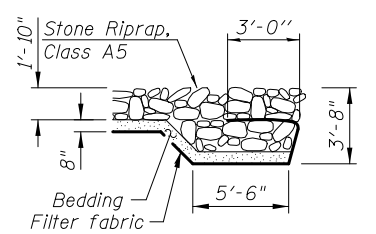
SECTION THRU RIPRAP AT NORTH ABUTMENT

Dimensions and slopes measured at Rt. L's to Abutment
See Section A-A for balance of information



SECTION A-A

Bedding to be included in the cost of Stone Riprap



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Stone Riprap, Class A5	Sq. Yd.	362
Filter Fabric	Sq. Yd.	362
Cofferdam Excavation	Cu. Yd.	297
Cofferdam (Type 1) (Location 3)	Each	1
Cofferdam (Type 1) (Location 4)	Each	1

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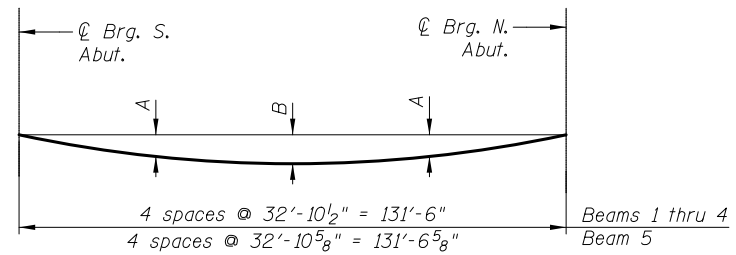
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DRAWN - M. LANGE	REVISED -
DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 5/3/2012	REVISED -

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**RIPRAP DETAILS
 NB EXIT RAMP (RAMP B) OVER CRYSTAL CREEK
 STRUCTURE NO. 056-0079**
 SHEET NO. SC3 OF SC29 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	528
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				



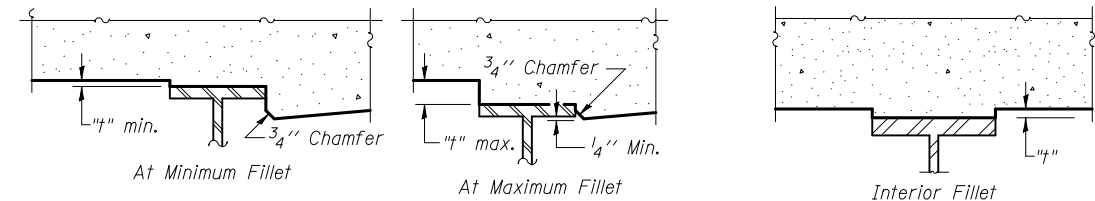
Beam	A	B
1 thru 3	3 1/4"	4 1/2"
4 & 5	3"	4 1/8"

DEAD LOAD DEFLECTION DIAGRAM

(Includes weight of concrete only.)

Note:

The above deflections are not for use in the field if the Engineer is working from the Theoretical Grade Elevations Adjusted for Dead Load Deflection as shown on SC5.

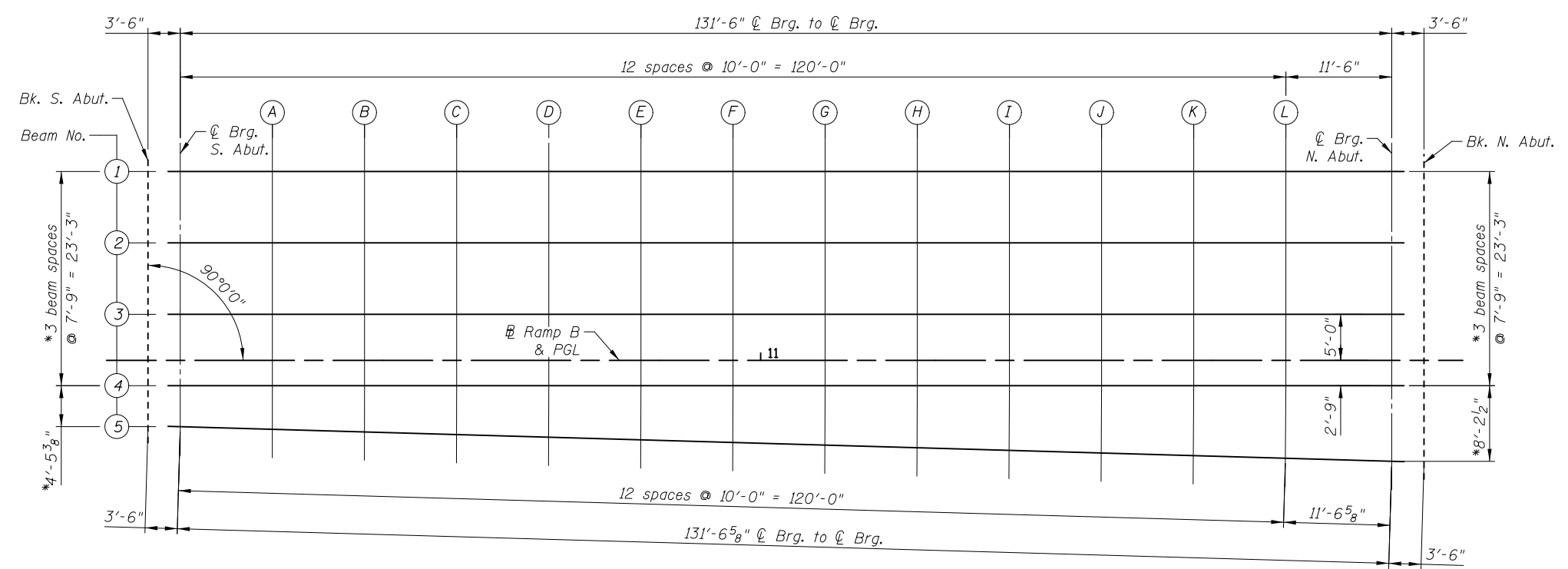


EXTERIOR BEAMS

INTERIOR BEAMS

To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" shown on sheet SC5, minus slab thickness, equals the fillet heights "t" above top flange of beams.

FILLET HEIGHTS



PLAN

* Beam spaces measured at Cl Brg.

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DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**TOP OF SLAB ELEVATIONS I
 NB EXIT RAMP (RAMP B) OVER CRYSTAL CREEK
 STRUCTURE NO. 056-0079**

SHEET NO. SC4 OF SC29 SHEETS

O.R. RTÉ.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	529
CONTRACT NO. 60F72				

ILLINOIS FED. AID PROJECT

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S Abut.	10+33.50	-20.50	757.79	757.79
☉ Brg. S Abut.	10+37.00	-20.50	757.65	757.65
A	10+47.00	-20.50	757.25	757.34
B	10+57.00	-20.50	756.86	757.03
C	10+67.00	-20.50	756.48	756.73
D	10+77.00	-20.50	756.11	756.42
E	10+87.00	-20.50	755.76	756.11
F	10+97.00	-20.50	755.42	755.79
G	11+07.00	-20.50	755.09	755.46
H	11+17.00	-20.50	754.78	755.13
I	11+27.00	-20.50	754.47	754.79
J	11+37.00	-20.50	754.18	754.44
K	11+47.00	-20.50	753.91	754.09
L	11+57.00	-20.50	753.64	753.75
☉ Brg. N Abut.	11+68.50	-20.50	753.35	753.35
Bk. N Abut.	11+72.00	-20.50	753.27	753.27

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S Abut.	10+33.50	-12.75	757.67	757.67
☉ Brg. S Abut.	10+37.00	-12.75	757.53	757.53
A	10+47.00	-12.75	757.13	757.22
B	10+57.00	-12.75	756.74	756.91
C	10+67.00	-12.75	756.36	756.61
D	10+77.00	-12.75	755.99	756.30
E	10+87.00	-12.75	755.64	755.99
F	10+97.00	-12.75	755.30	755.67
G	11+07.00	-12.75	754.97	755.34
H	11+17.00	-12.75	754.66	755.01
I	11+27.00	-12.75	754.35	754.67
J	11+37.00	-12.75	754.06	754.32
K	11+47.00	-12.75	753.79	753.97
L	11+57.00	-12.75	753.52	753.62
☉ Brg. N Abut.	11+68.50	-12.75	753.23	753.23
Bk. N Abut.	11+72.00	-12.75	753.15	753.15

BEAM 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S Abut.	10+33.50	-5.00	757.55	757.55
☉ Brg. S Abut.	10+37.00	-5.00	757.41	757.41
A	10+47.00	-5.00	757.01	757.10
B	10+57.00	-5.00	756.62	756.79
C	10+67.00	-5.00	756.24	756.49
D	10+77.00	-5.00	755.87	756.18
E	10+87.00	-5.00	755.52	755.87
F	10+97.00	-5.00	755.18	755.55
G	11+07.00	-5.00	754.85	755.22
H	11+17.00	-5.00	754.54	754.89
I	11+27.00	-5.00	754.23	754.55
J	11+37.00	-5.00	753.94	754.20
K	11+47.00	-5.00	753.67	753.85
L	11+57.00	-5.00	753.40	753.50
☉ Brg. N Abut.	11+68.50	-5.00	753.11	753.11
Bk. N Abut.	11+72.00	-5.00	753.03	753.03

RAMP B & PGL

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S Abut.	10+33.50	0.00	757.47	757.47
☉ Brg. S Abut.	10+37.00	0.00	757.33	757.33
A	10+47.00	0.00	756.93	757.02
B	10+57.00	0.00	756.54	756.71
C	10+67.00	0.00	756.16	756.41
D	10+77.00	0.00	755.79	756.10
E	10+87.00	0.00	755.44	755.79
F	10+97.00	0.00	755.10	755.47
G	11+07.00	0.00	754.77	755.14
H	11+17.00	0.00	754.46	754.81
I	11+27.00	0.00	754.15	754.47
J	11+37.00	0.00	753.86	754.12
K	11+47.00	0.00	753.59	753.77
L	11+57.00	0.00	753.32	753.43
☉ Brg. N Abut.	11+68.50	0.00	753.03	753.03
Bk. N Abut.	11+72.00	0.00	752.95	752.95

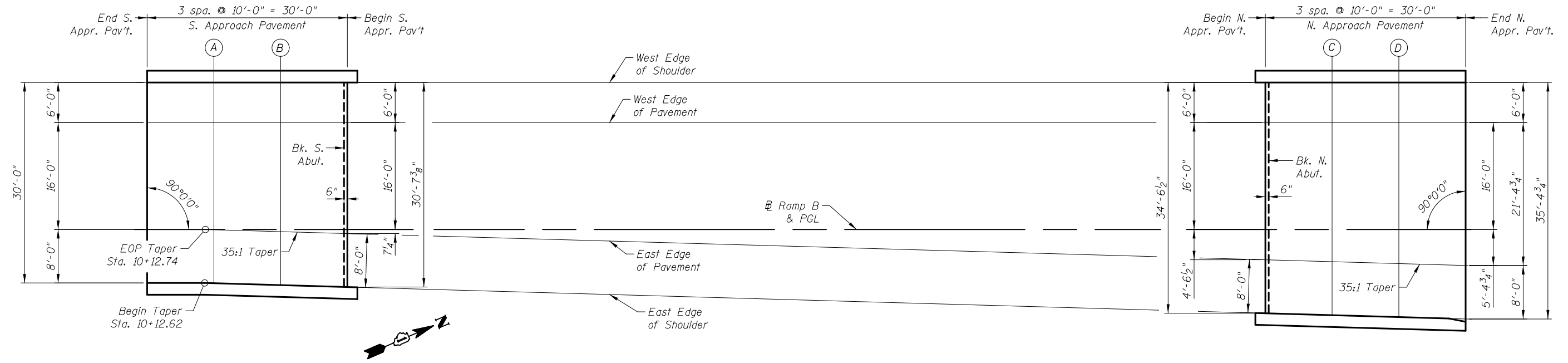
BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S Abut.	10+33.50	2.75	757.42	757.42
☉ Brg. S Abut.	10+37.00	2.75	757.28	757.28
A	10+47.00	2.75	756.88	756.96
B	10+57.00	2.75	756.49	756.65
C	10+67.00	2.75	756.11	756.34
D	10+77.00	2.75	755.75	756.03
E	10+87.00	2.75	755.40	755.72
F	10+97.00	2.75	755.06	755.40
G	11+07.00	2.75	754.73	755.07
H	11+17.00	2.75	754.41	754.74
I	11+27.00	2.75	754.11	754.40
J	11+37.00	2.75	753.82	754.06
K	11+47.00	2.75	753.54	753.72
L	11+57.00	2.75	753.28	753.38
☉ Brg. N Abut.	11+68.50	2.75	752.99	752.99
Bk. N Abut.	11+72.00	2.75	752.91	752.91

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S Abut.	10+33.50	7.10	757.33	757.33
☉ Brg. S Abut.	10+37.00	7.20	757.18	757.18
A	10+47.00	7.48	756.78	756.86
B	10+57.00	7.77	756.38	756.54
C	10+67.00	8.05	756.00	756.23
D	10+76.99	8.34	755.63	755.91
E	10+86.99	8.63	755.27	755.59
F	10+96.98	8.91	754.93	755.27
G	11+06.98	9.20	754.60	754.94
H	11+16.98	9.48	754.28	754.60
I	11+26.97	9.77	753.97	754.26
J	11+36.97	10.05	753.67	753.91
K	11+46.96	10.34	753.39	753.56
L	11+56.96	10.63	753.12	753.22
☉ Brg. N Abut.	11+68.50	10.96	752.83	752.83
Bk. N Abut.	11+72.00	11.06	752.74	752.74

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 5/2/2012



PLAN

WEST EDGE OF SHOULDER

Location	Station	Offset	Theoretical Grade Elevation
End S. Appr. Pav't	10+04.00	-22.00	758.99
A	10+14.00	-22.00	758.59
B	10+24.00	-22.00	758.19
Begin S. Appr. Pav't	10+34.00	-22.00	757.79
Begin N. Appr. Pav't	11+71.50	-22.00	753.30
C	11+81.50	-22.00	753.07
D	11+91.50	-22.00	752.85
End N. Appr. Pav't	12+01.50	-22.00	752.64

WEST EDGE OF PAVEMENT

Location	Station	Offset	Theoretical Grade Elevation
End S. Appr. Pav't	10+04.00	-16.00	758.90
A	10+14.00	-16.00	758.50
B	10+24.00	-16.00	758.10
Begin S. Appr. Pav't	10+34.00	-16.00	757.70
Begin N. Appr. Pav't	11+71.50	-16.00	753.21
C	11+81.50	-16.00	752.98
D	11+91.50	-16.00	752.76
End N. Appr. Pav't	12+01.50	-16.00	752.55

RAMP B & PGL

Location	Station	Offset	Theoretical Grade Elevation
End S. Appr. Pav't	10+04.00	0.00	758.65
A	10+14.00	0.00	758.25
B	10+24.00	0.00	757.85
Begin S. Appr. Pav't	10+34.00	0.00	757.45
Begin N. Appr. Pav't	11+71.50	0.00	752.96
C	11+81.50	0.00	752.73
D	11+91.50	0.00	752.51
End N. Appr. Pav't	12+01.50	0.00	752.30

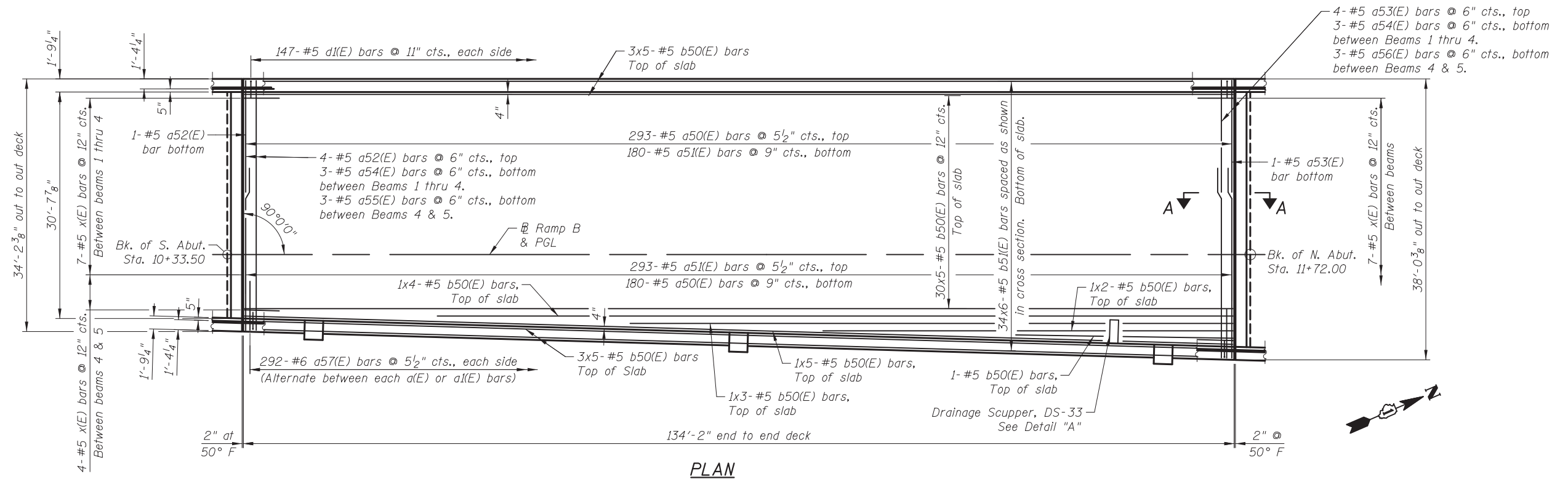
EAST EDGE OF PAVEMENT

Location	Station	Offset	Theoretical Grade Elevation
End S. Appr. Pav't	10+04.00	0.00	758.65
A	10+14.00	0.04	758.25
B	10+24.00	0.32	757.84
Begin S. Appr. Pav't	10+34.00	0.61	757.44
Begin N. Appr. Pav't	11+71.50	4.54	752.89
C	11+81.50	4.82	752.65
D	11+91.50	5.11	752.43
End N. Appr. Pav't	12+01.50	5.39	752.21

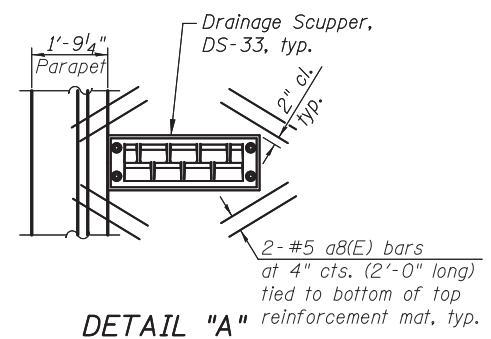
EAST EDGE OF SHOULDER

Location	Station	Offset	Theoretical Grade Elevation
End S. Appr. Pav't	10+04.00	8.00	758.48
A	10+14.00	8.04	758.08
B	10+24.00	8.33	757.68
Begin S. Appr. Pav't	10+34.00	8.61	757.27
Begin N. Appr. Pav't	11+71.50	12.54	752.72
C	11+81.50	12.83	752.48
D	11+91.50	13.11	752.26
End N. Appr. Pav't	12+01.50	13.40	752.05

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 5/2/2012

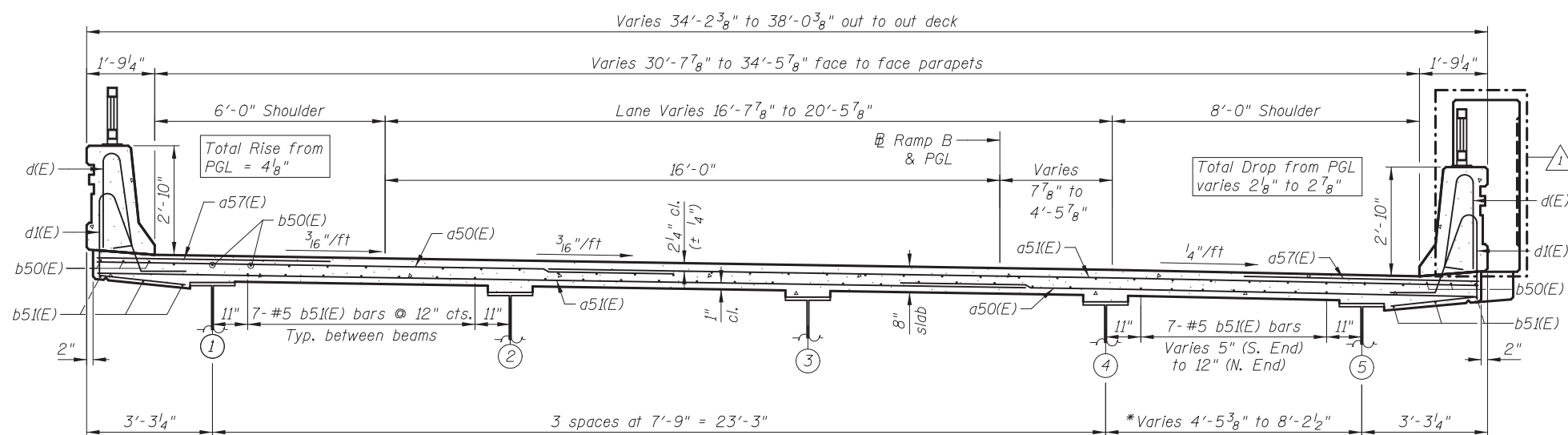


PLAN



DETAIL "A"

(Cut longitudinal reinforcement to clear drainage scuppers.)



CROSS SECTION

(Looking North)
(Drainage Scupper not shown)

* Measured at \bar{C} Bearings

Notes:
See Sheet SC9 for Bill of Materials, Bar Diagrams and Reinforcement Schedule.
Bars indicated thus 12 x 2-#5 etc. indicates 12 lines of bars with 2 lengths per line.
See sheet SC8 for Section A-A, Section Thru Parapet and parapet reinforcement.
See sheet SC16 for Drainage Scupper DS-33 details.
Dimensions are based on a Rolled Rail Strip Seal Joint. If the Contractor elects to use the Welded Rail Strip Seal Joint, deck dimensions may require adjustments to satisfy the details on sheet SC15.

MINIMUM BAR LAP

(Deck)
#5 bar = 3'-3"
#6 bar = 3'-10"

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CIVILTECH
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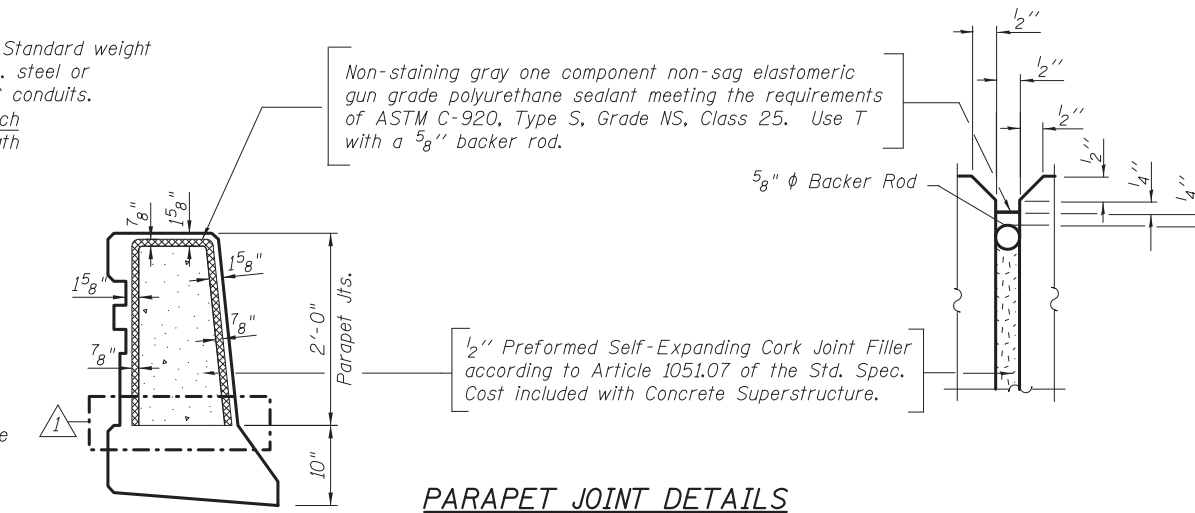
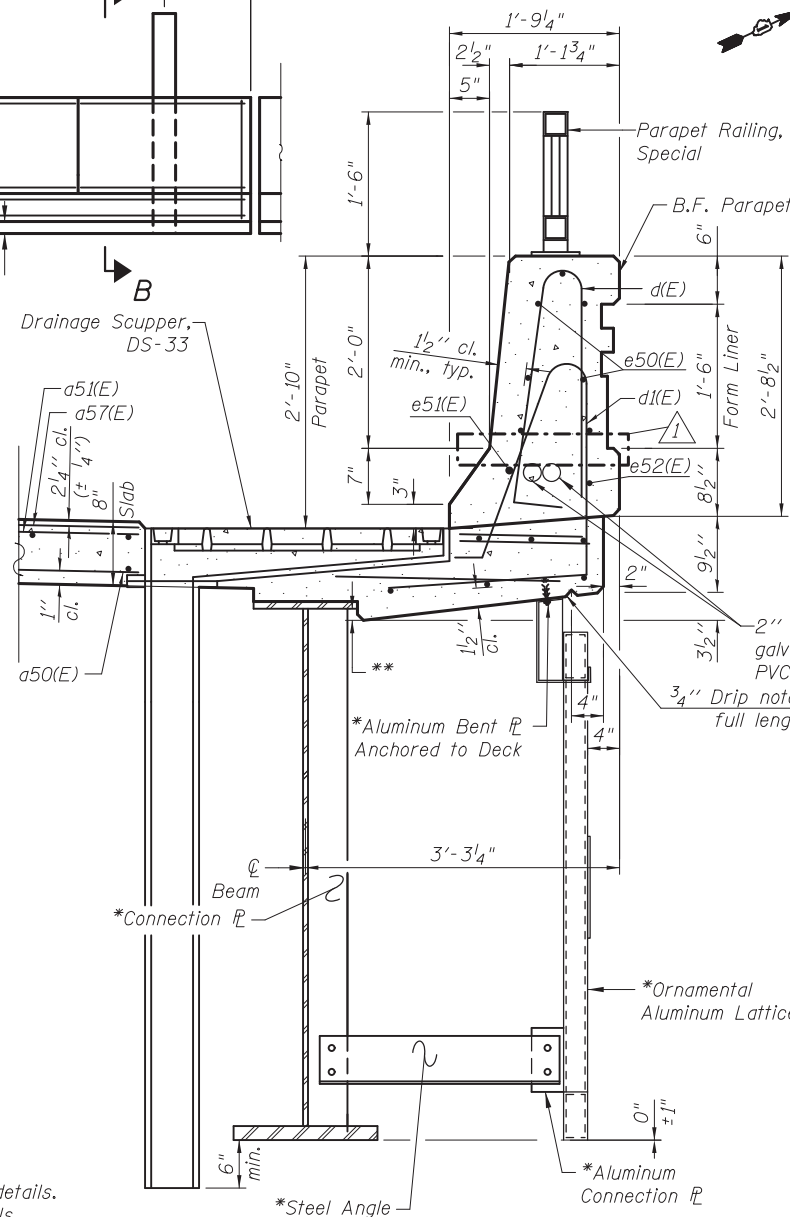
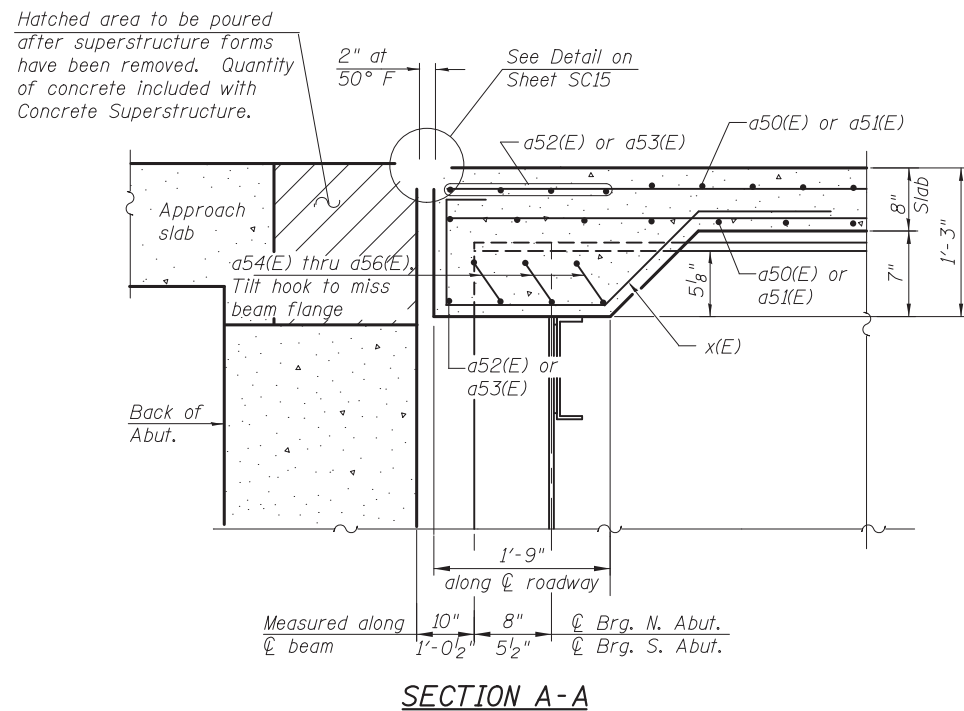
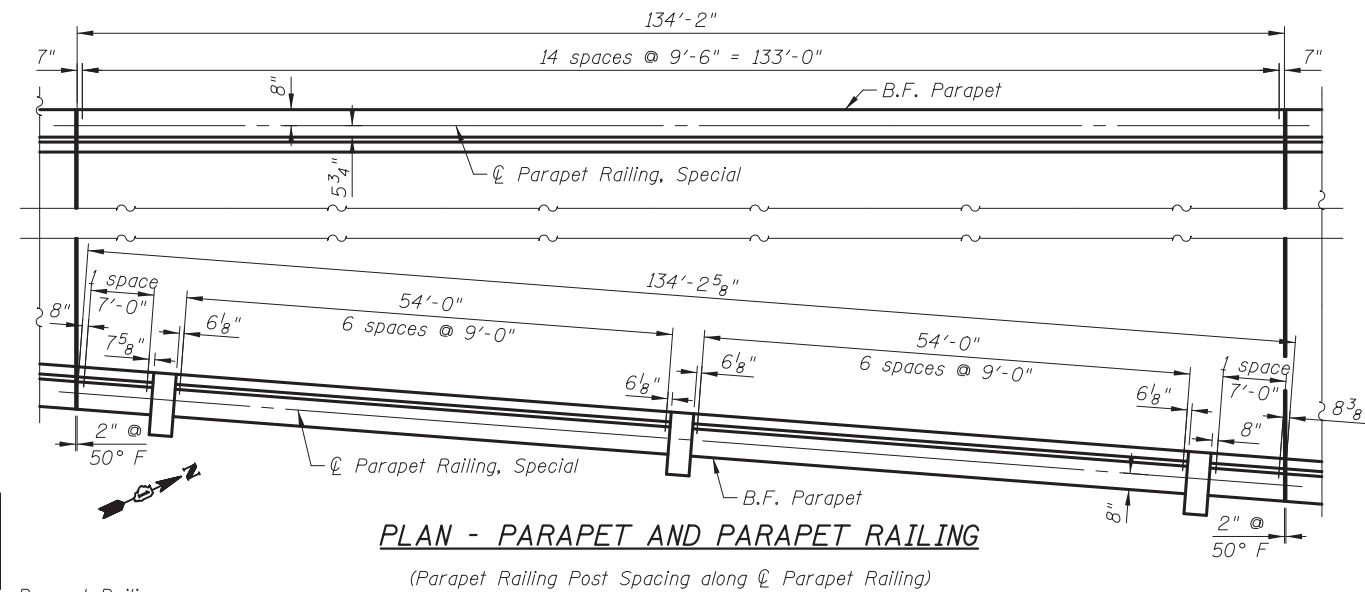
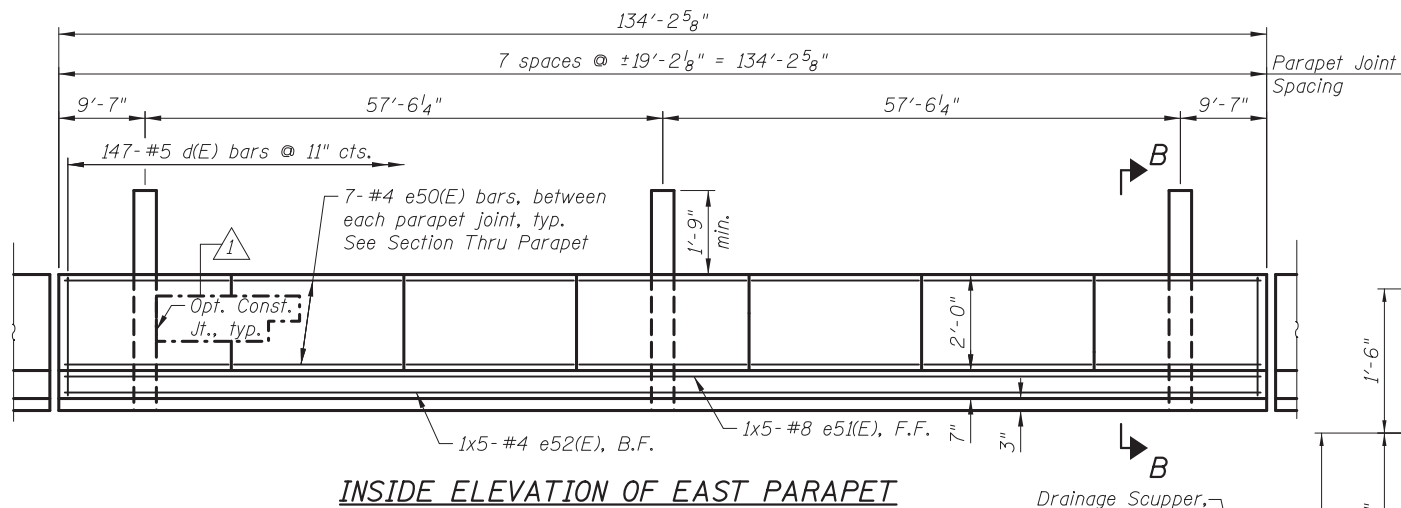
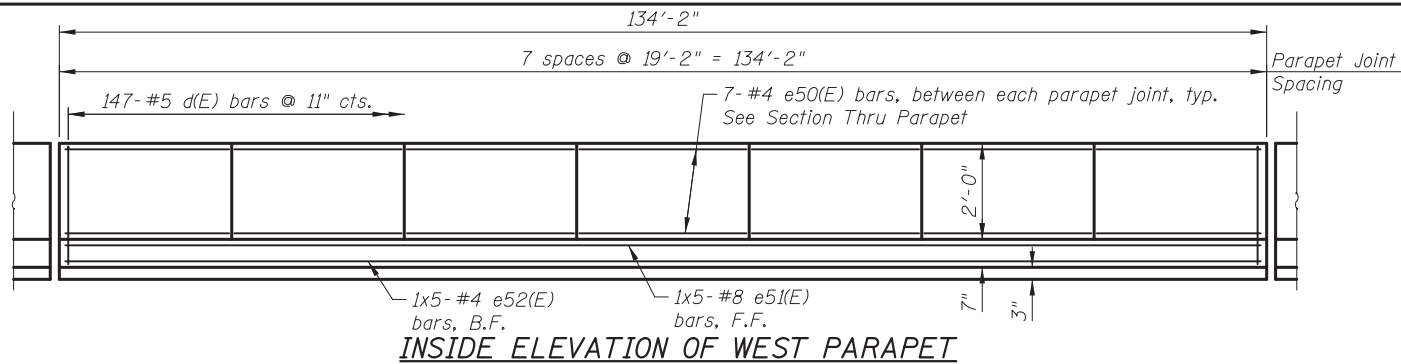
DRAWN	- M. LANGE	REVISED	- 5/3/12 K.L.B.
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUPERSTRUCTURE
NB EXIT RAMP (RAMP B) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0079

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	532
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

SHEET NO. SC7 OF SC29 SHEETS



MINIMUM BAR LAP
(Parapet)
#4 bar = 2'-0"
#8 bar = 5'-2"

Notes:
See sheet SC11 for Parapet Form Liner details.
See sheet SC14 for Parapet Railing details.
See sheet SC16 for Drainage Scupper, DS-33 details.
See sheet SC9 for Section B-B.
Bars indicated thus 1x5-#8 indicates 1 line of bars with 5 lengths per line.
Drains shall be located clear of all diaphragms.

SECTION THRU PARAPET
(All edges have a 3/4" chamfer except at form liner locations)

* For Ornamental Aluminum Lattice connections and details see sheets SC10 and SC11.
** East overhang: Max. = 2", Min. = 1 3/4"
West overhang: Max. = 1 3/8", Min. = 1 1/8"

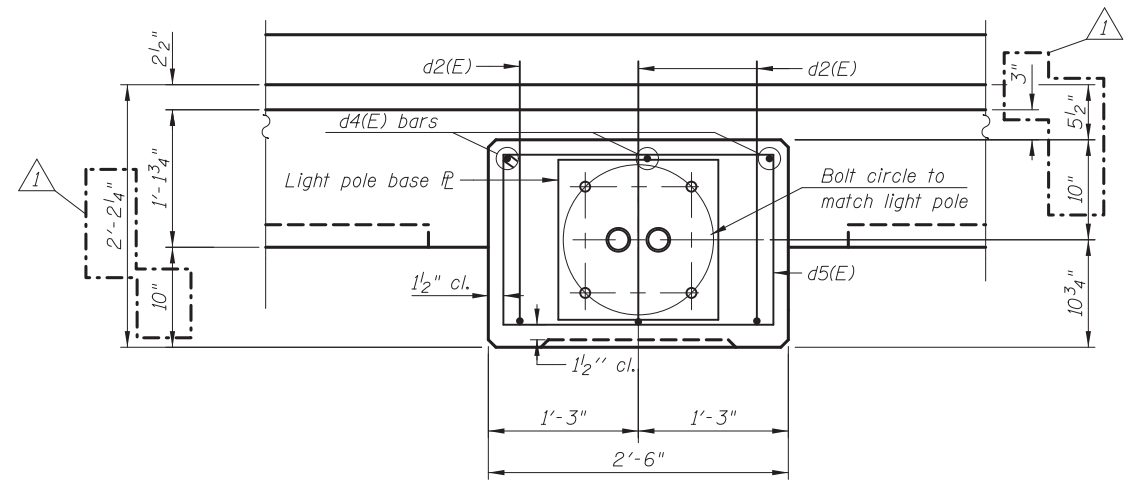
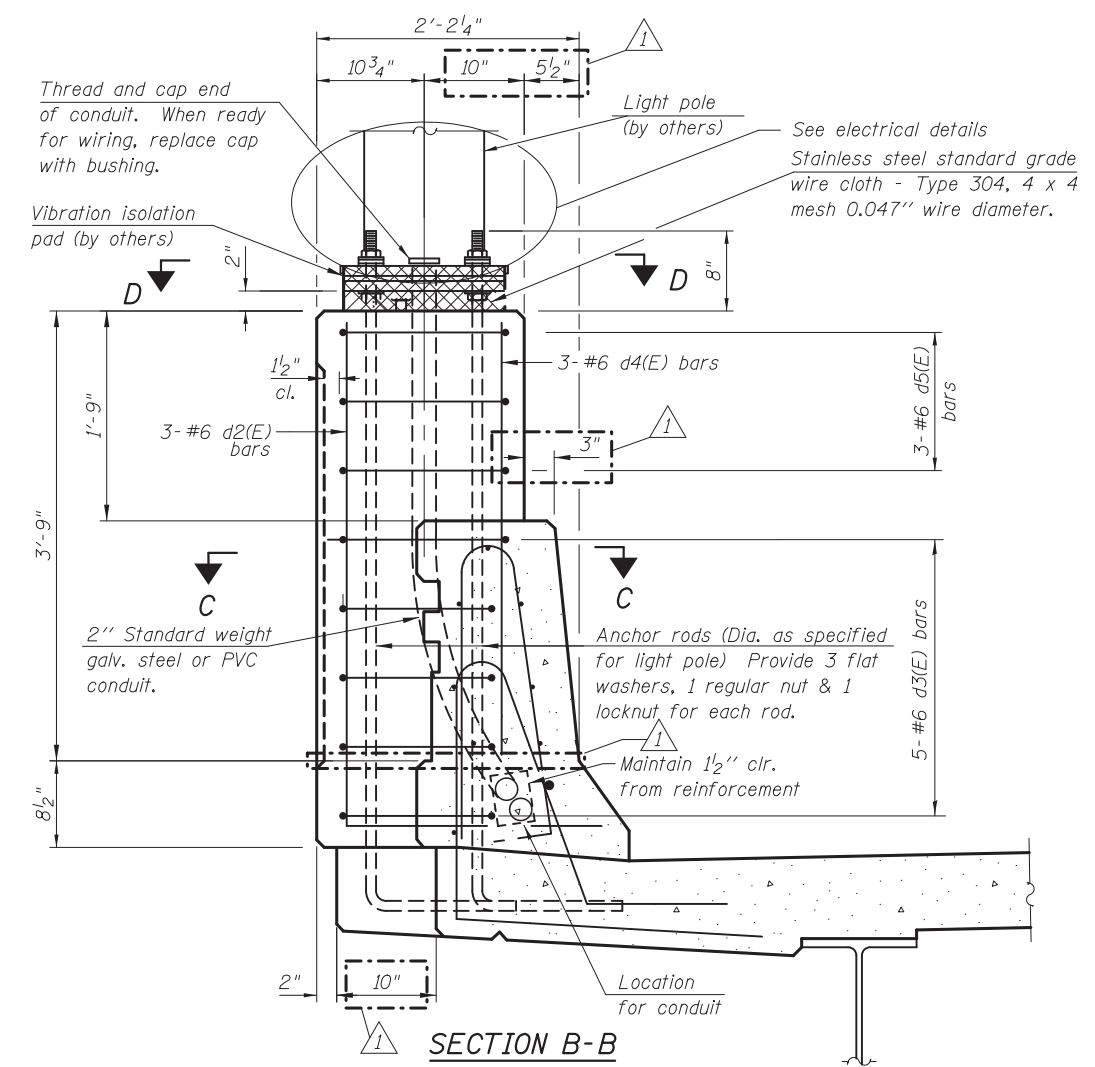
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**SUPERSTRUCTURE
BILL OF MATERIAL**

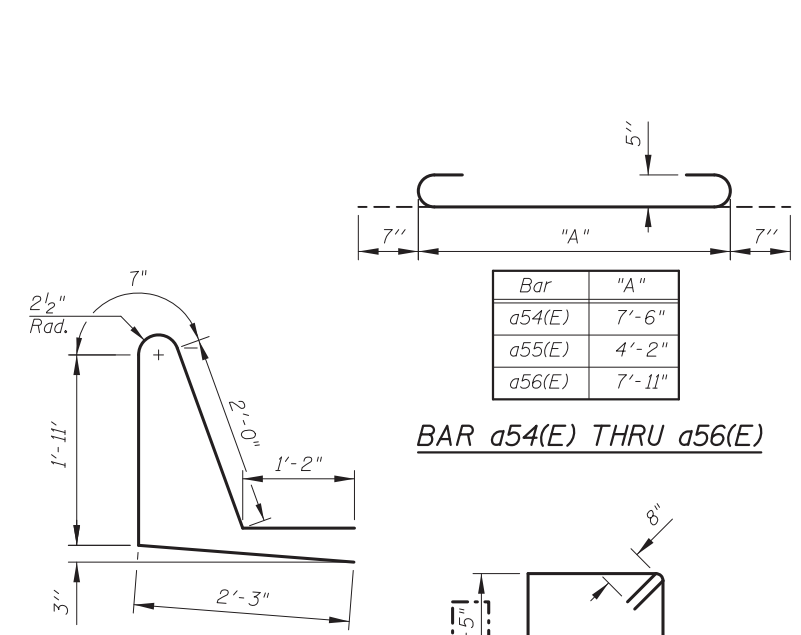
Bar	No.	Size	Length	Shape
a8(E)	8	#5	2'-0"	—
a50(E)	473	#5	15'-0"	—
a51(E)	473	#5	25'-7"	—
a52(E)	5	#5	33'-7"	—
a53(E)	5	#5	37'-4"	—
a54(E)	18	#5	8'-8"	—
a55(E)	3	#5	5'-4"	—
a56(E)	3	#5	9'-1"	—
a57(E)	584	#6	6'-6"	—
b50(E)	195	#5	29'-5"	—
b51(E)	204	#5	25'-0"	—
d(E)	294	#5	5'-7"	—
d1(E)	294	#5	7'-11"	—
d2(E)	9	#6	6'-2"	L
d3(E)	15	#6	8'-11"	—
d4(E)	9	#6	3'-5"	—
d5(E)	9	#6	8'-8"	—
e50(E)	98	#4	18'-10"	—
e51(E)	10	#8	30'-11"	—
e52(E)	10	#4	28'-5"	—
x(E)	53	#5	6'-5"	—

Item	Unit	Quantity
Concrete Superstructures	Cu. Yds.	164.5
Bridge Deck Grooving	Sq. Yds.	485
Protective Coat	Sq. Yds.	613
Reinforcement Bars, Epoxy Coated	Pound	44,810
Form Liner Textured Surface, Special	Sq. Ft.	366

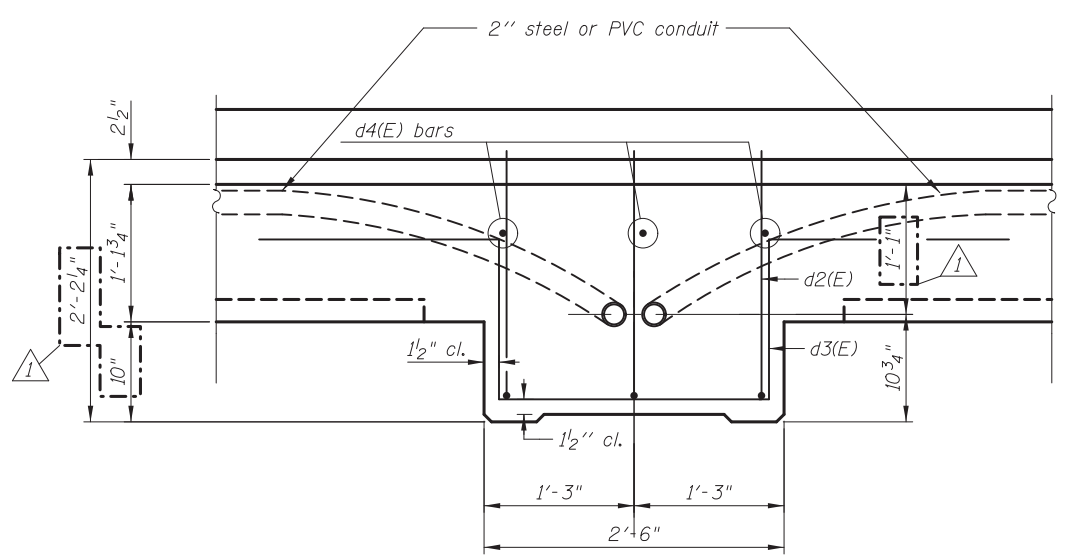
Bars indicated thus 1 x 3-#8 etc. indicates 1 line of bars with 3 lengths per line.



**VIEW D-D
LIGHT POLE FOUNDATION PLAN**

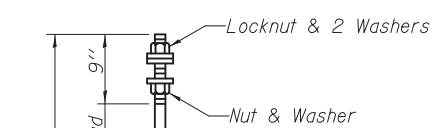
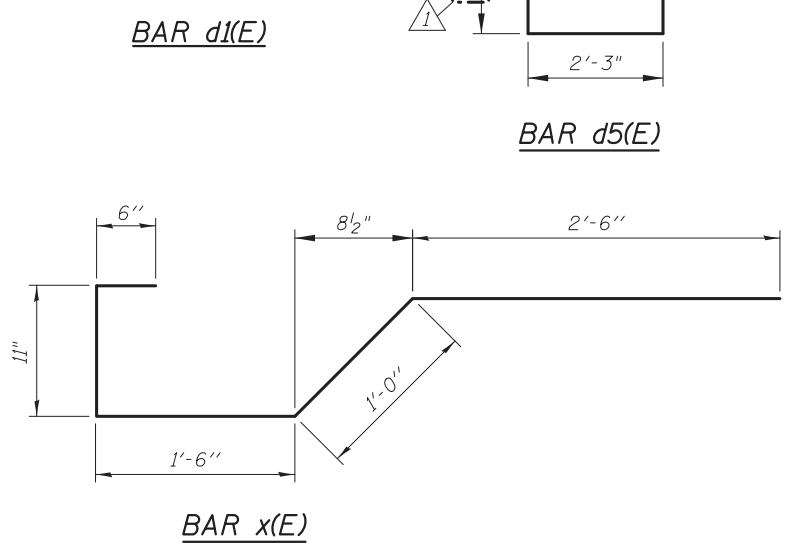


BAR a54(E) THRU a56(E)



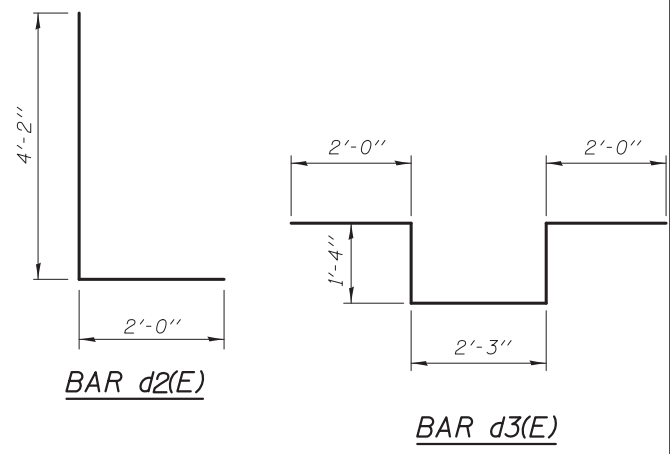
SECTION C-C

Note:
Cost of anchor rods and conduit is included with Concrete Superstructure. See sheet SC8 for Section A-A.



ANCHOR ROD

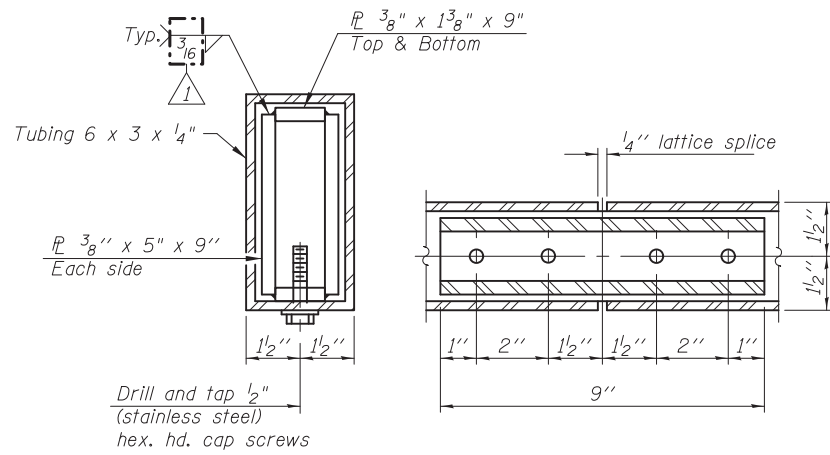
Diameter as specified for light poles. (ASTM F 1554 Grade 105)



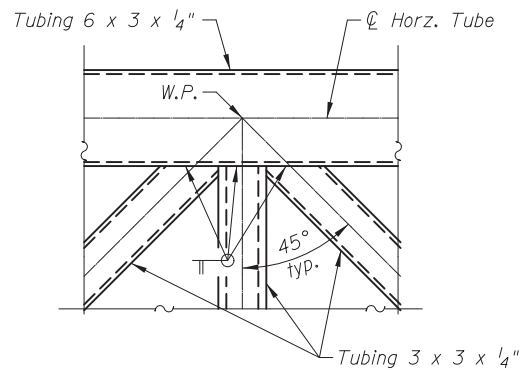
BAR d2(E)

BAR d3(E)

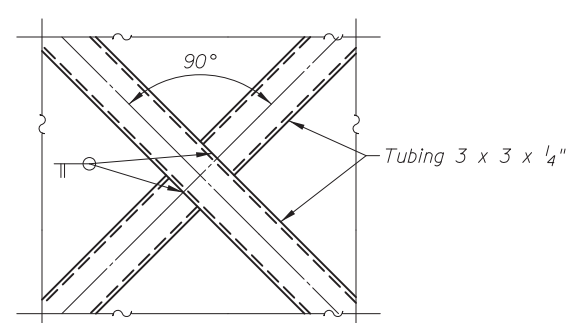
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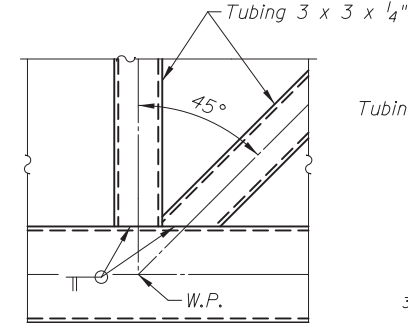
HORIZONTAL BAR SPLICE



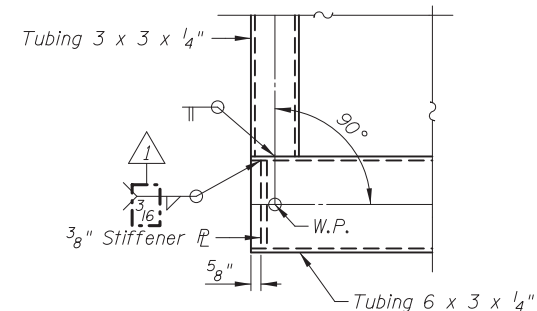
DETAIL "B"



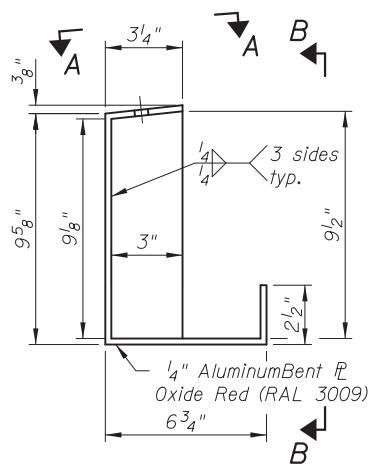
DETAIL "C"
(Aluminum Disk not shown)



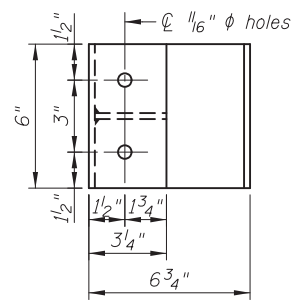
DETAIL "D"



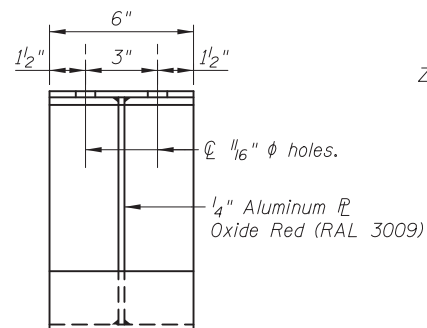
DETAIL "E"



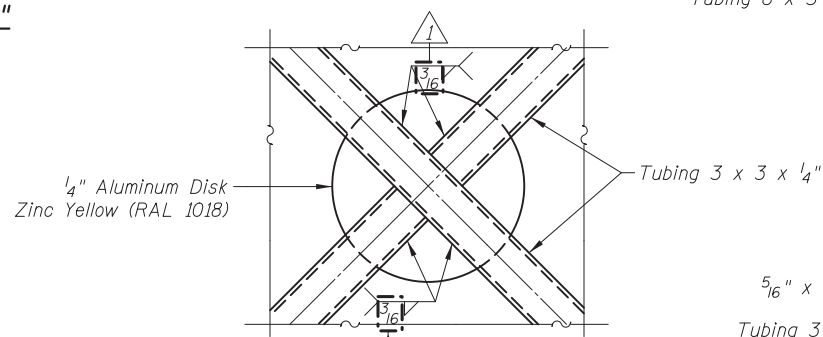
HANGER DETAIL



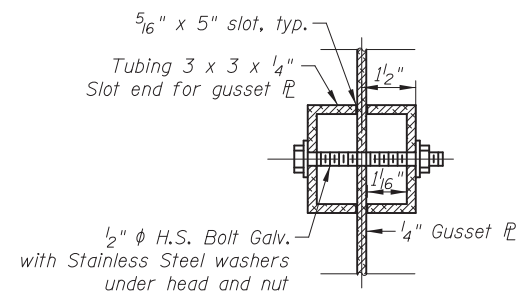
SECTION A-A



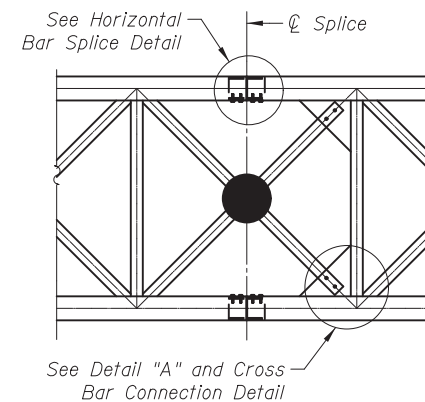
SECTION B-B



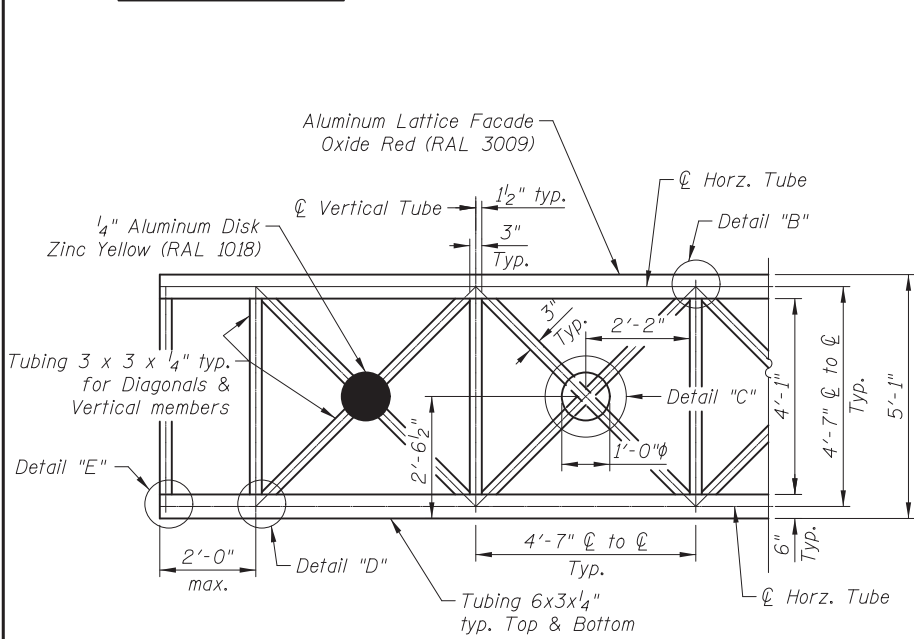
DETAIL "C"



CROSS BAR CONNECTION



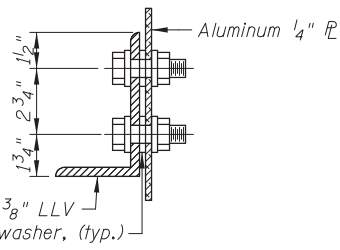
LATTICE SPLICE



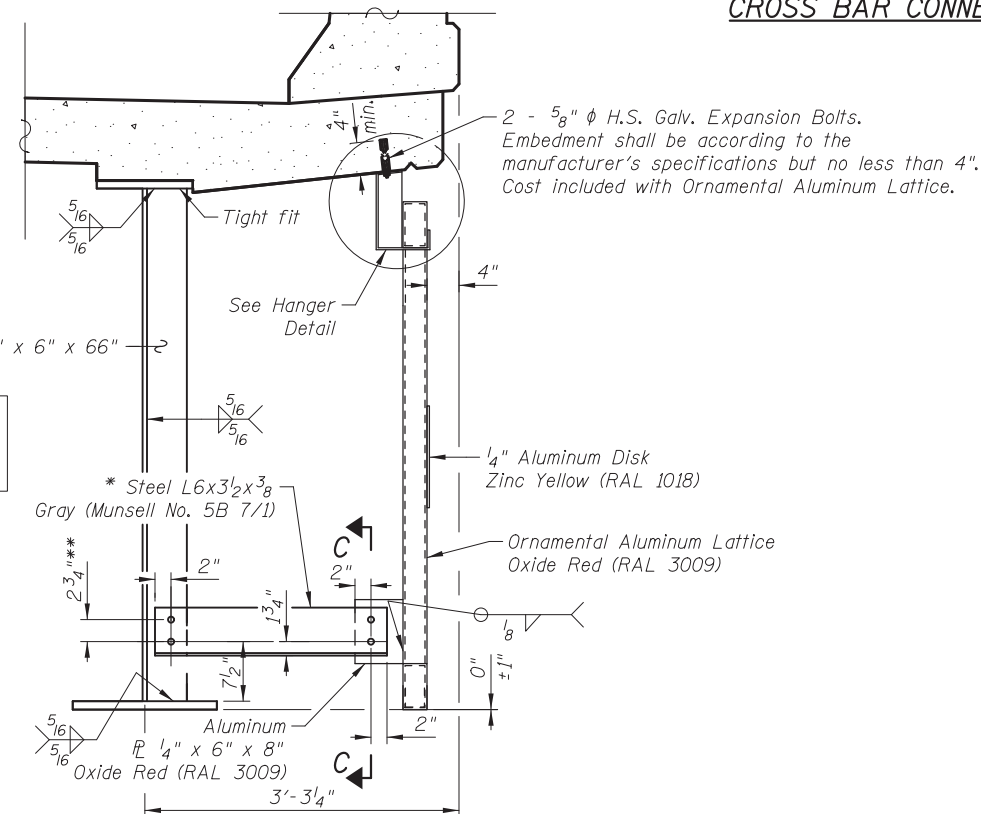
ALUMINUM LATTICE ELEVATION

Notes:
Hangers and aluminum plates to be included in the cost of Ornamental Aluminum Lattice.
All aluminum welds shall be Filler Alloy 5356 with a min. allowable stress of 7 ksi.
See sheet SA12 for Elevation View of the Exterior Fascia of the beams.
W.P. indicates work point.

* Coordinate locations of Connection Plate with Steel Fabricator. Cost included with Furnishing and Erecting Structural Steel

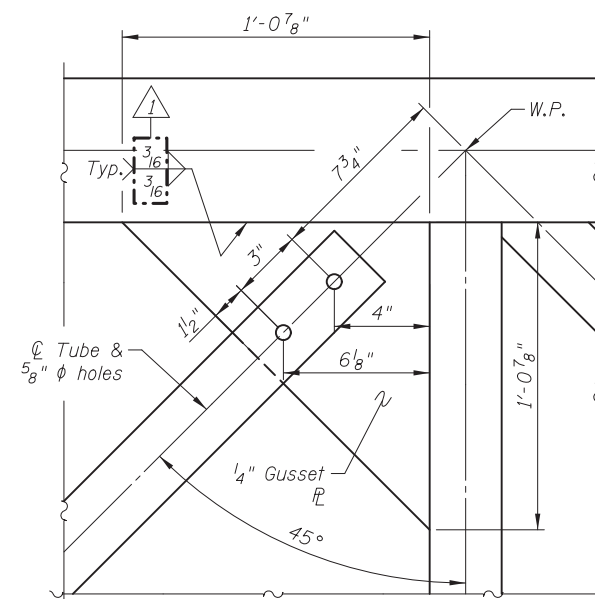


SECTION C-C



TYPICAL ALUMINUM LATTICE LATERAL BRACING

** 3/4 inch bolts AASHTO M164 Type 1 with 15/16 inch diameter Holes



DETAIL "A"

BILL OF MATERIAL

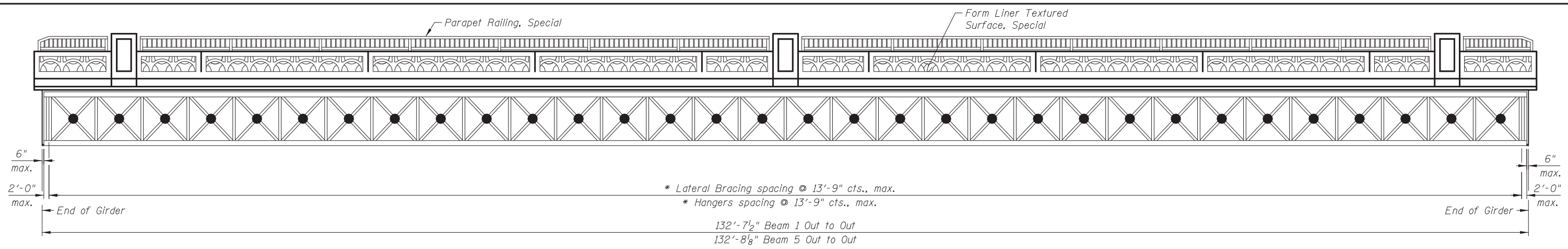
ITEM	UNIT	QUANTITY
Ornamental Aluminum Lattice	Foot	263

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DRAWN	- M. LANGE	REVISED	- 5/23/2012 D.L.A.
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

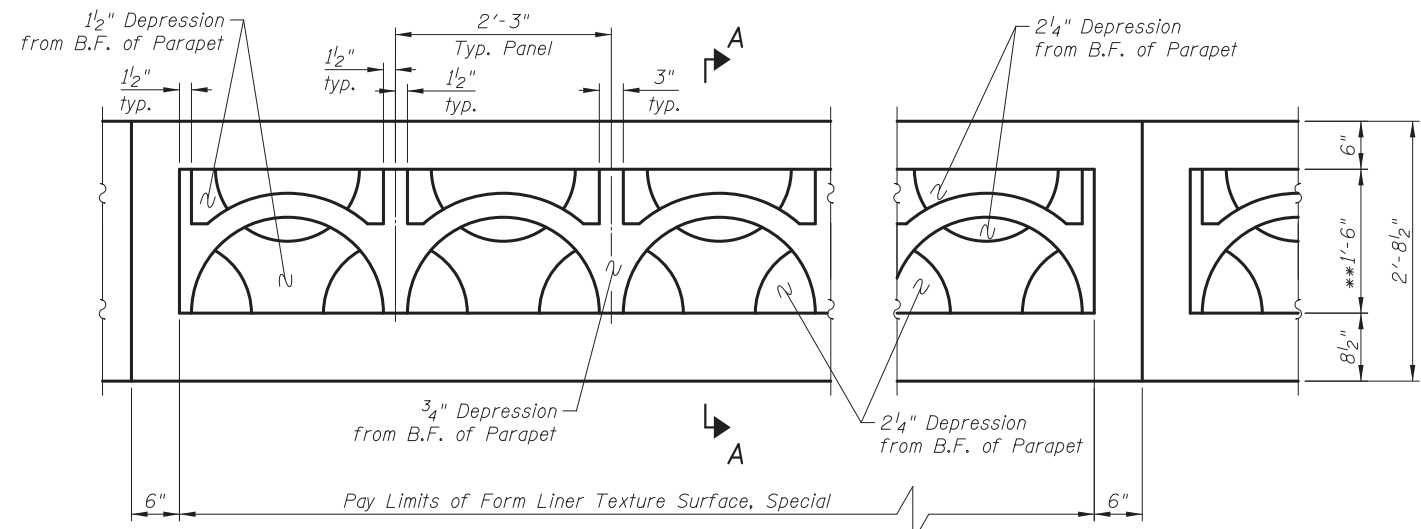
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	535
			CONTRACT NO. 60F72	
ILLINOIS FED. AID PROJECT				

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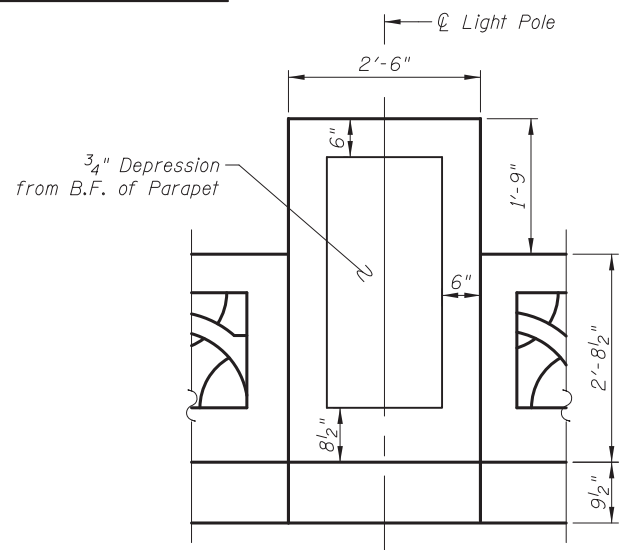
ELEVATION - EXTERIOR FASCIA

* Lateral Bracing connections shall occur at the vertical aluminum tubes and Hangers shall occur in mid span of lattice. Contractor to layout locations and submit shop drawings for approval.

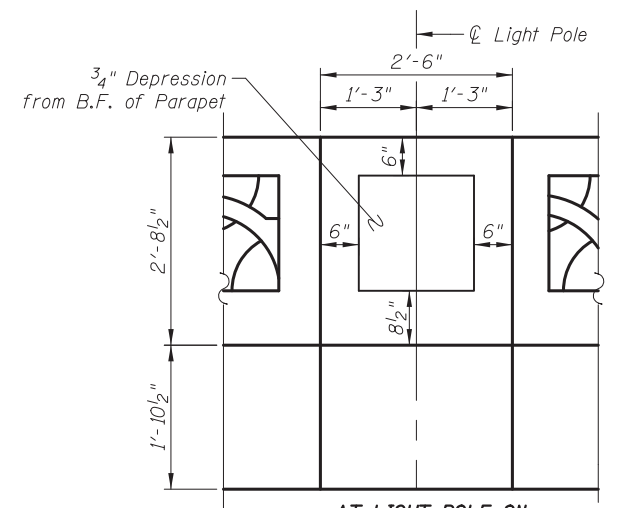


ELEVATION - OUTSIDE FACE OF PARAPET

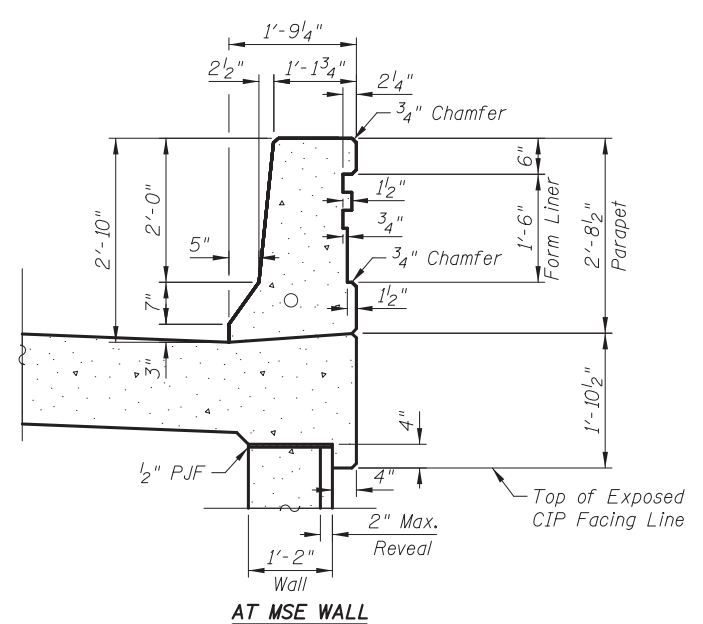
** Pay Limits of Form Liner Texture Surface, Special



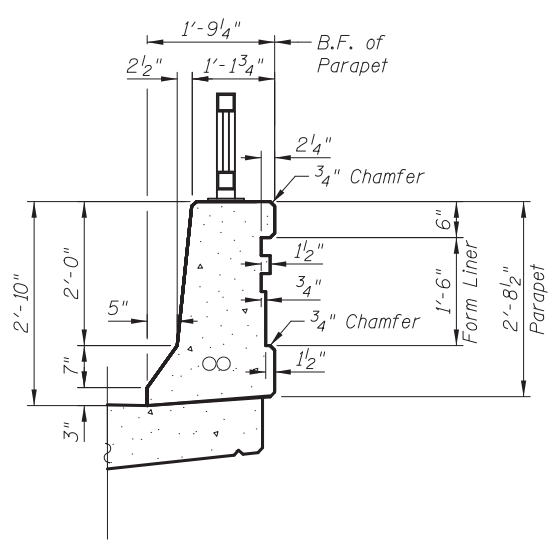
AT LIGHT POLE ON BRIDGE DECK



AT LIGHT POLE ON ANCHORAGE SLAB

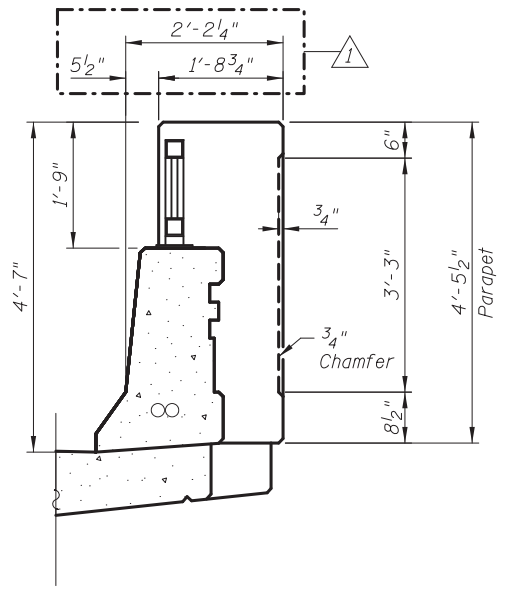


AT MSE WALL

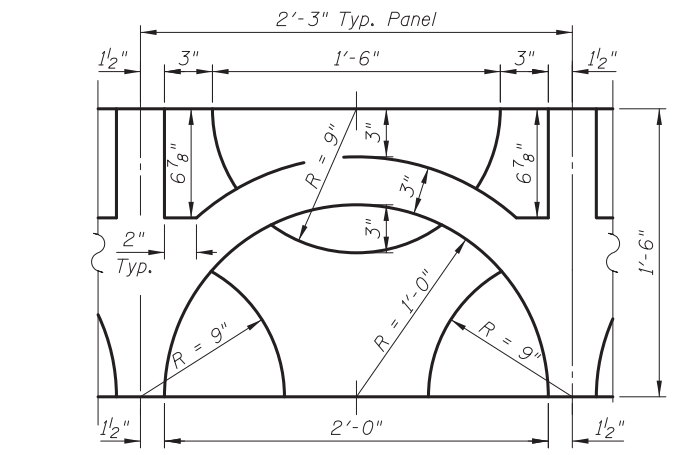


AT BRIDGE DECK

SECTION A-A



AT LIGHT POLE



FORM LINER TEXTURE SURFACE, SPECIAL DETAIL

Notes:
 Parapet, railing, lighting and all other details not specifically pertaining to the lattice are shown for graphics purposes only.
 See Sheet SC10 for Hanger and Lateral Bracing Details.

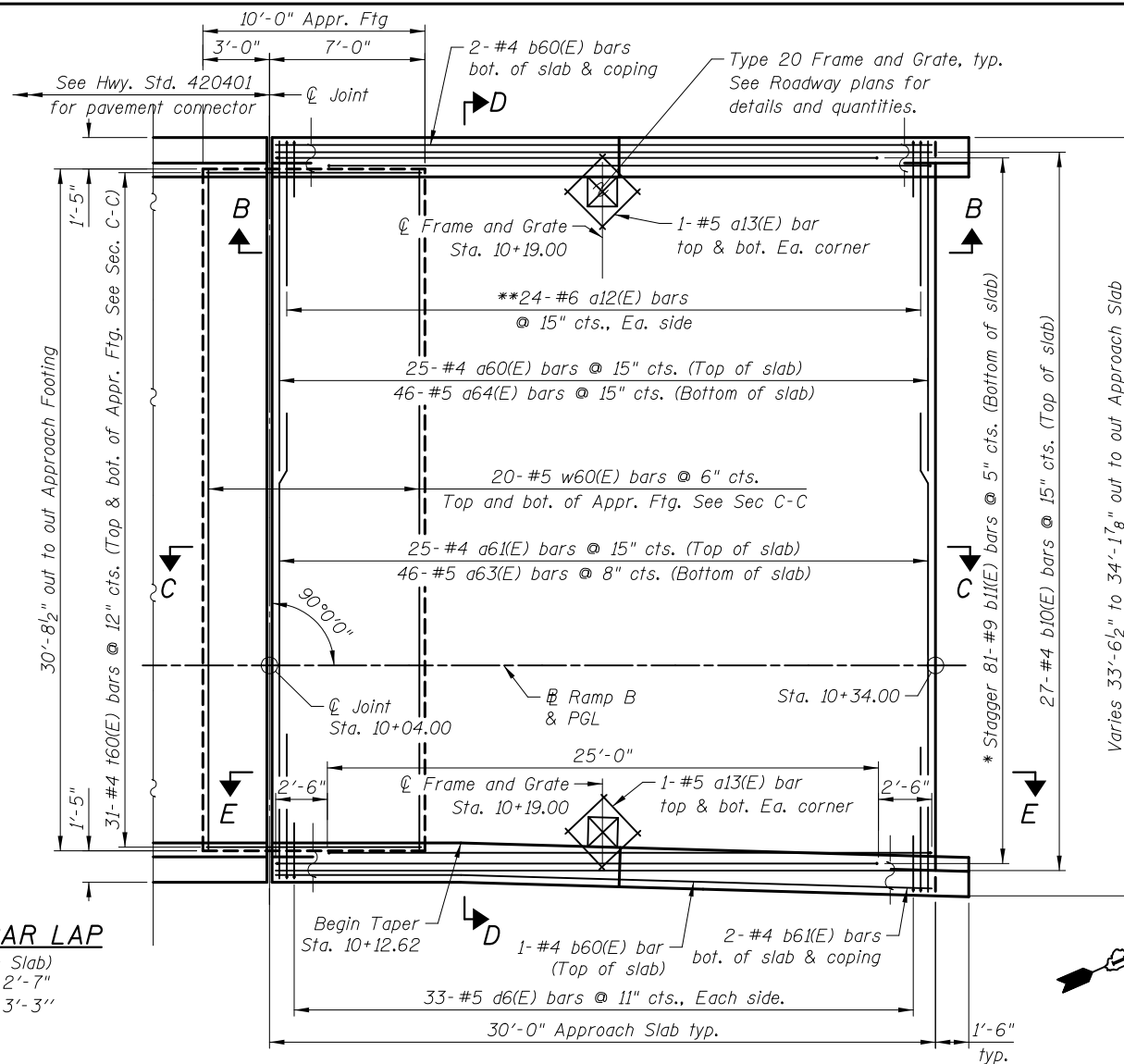
450 E Devon Ave, Suite 300
 Itasca, Illinois 60143
 Tel: 630.773.3900 Fax: 630.773.3975
 www.civiltechinc.com

DRAWN - M. LANGE	REVISED - 5/3/12 K.L.B.
DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 5/3/2012	REVISED -

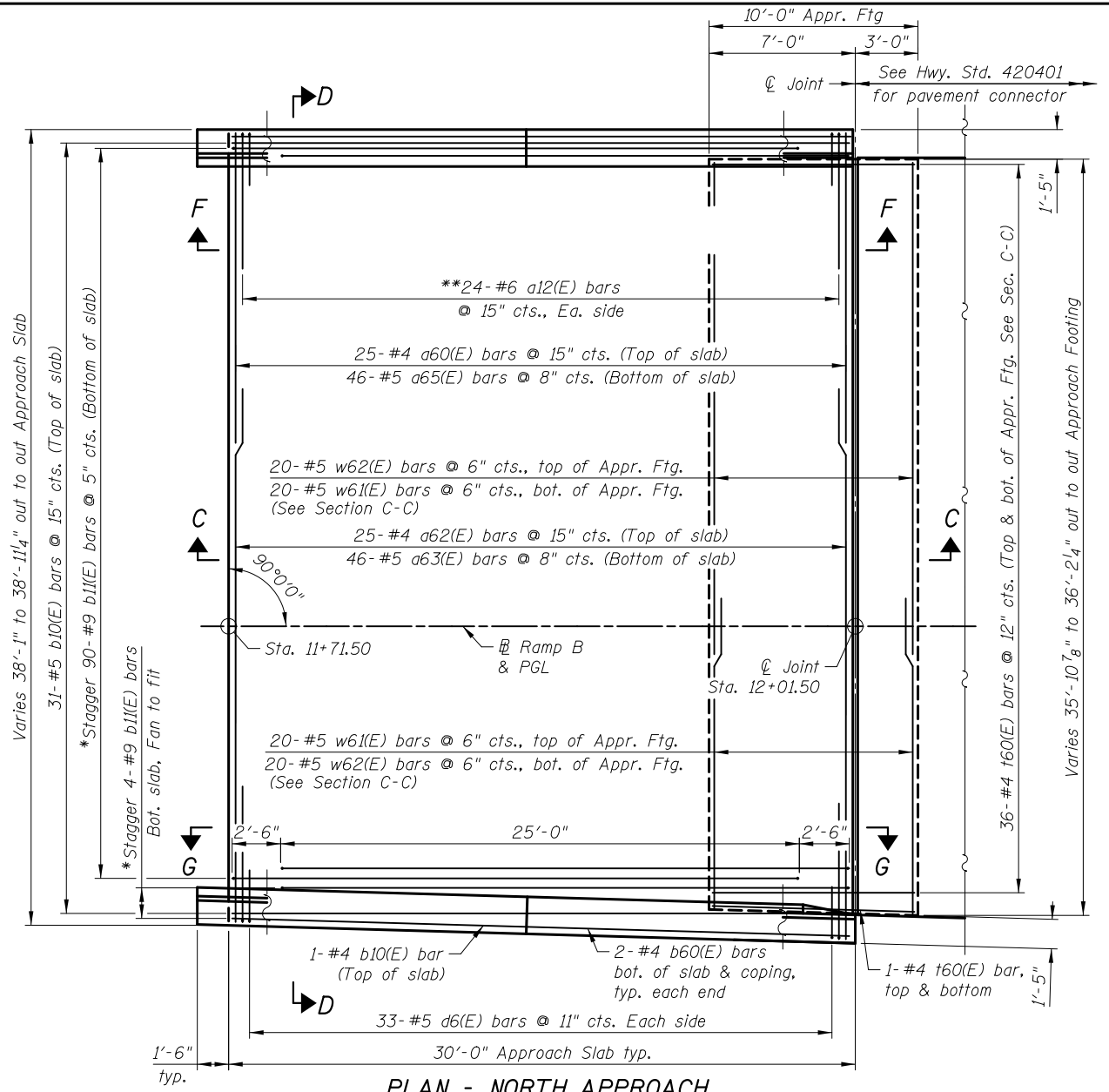
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ARCHITECTURAL DETAILS
NB EXIT RAMP (RAMP B) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0079
 SHEET NO. SC11 OF SC29 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	536
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				



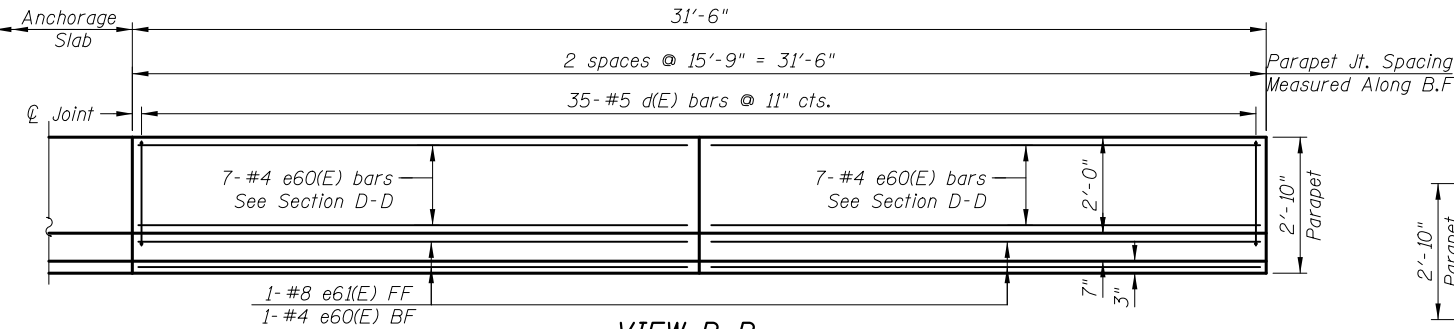
PLAN - SOUTH APPROACH



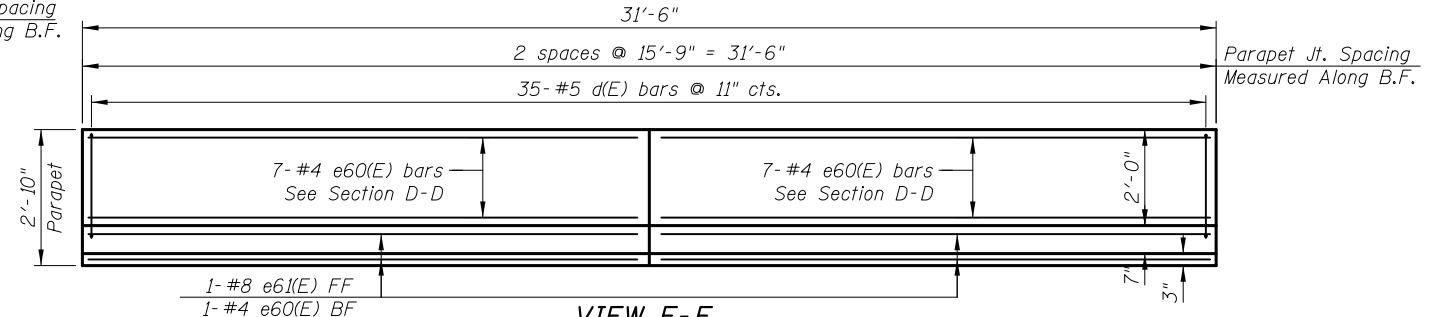
PLAN - NORTH APPROACH

MINIMUM BAR LAP
 (Approach Slab)
 #4 bar = 2'-7"
 #5 bar = 3'-3"

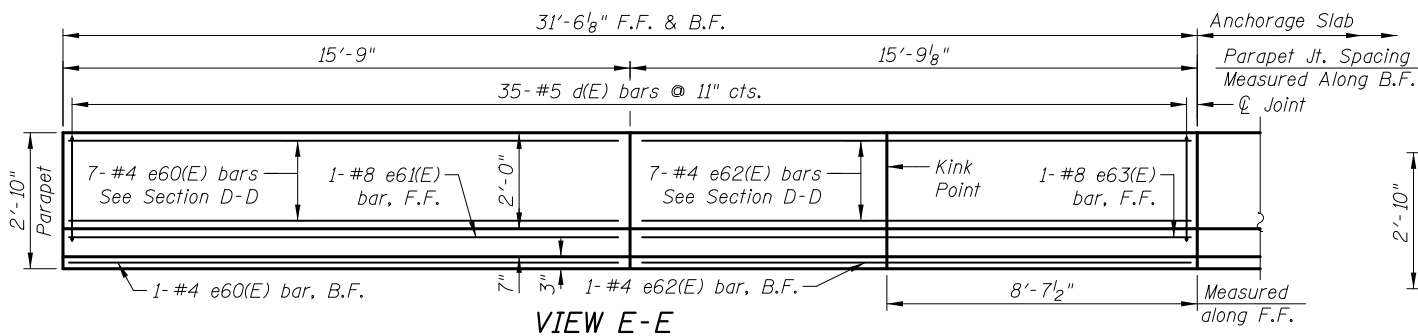
* Tilt #9 b11(E) bars as required to maintain clearance.
 ** Space between a60(E) thru a62(E) top bars.



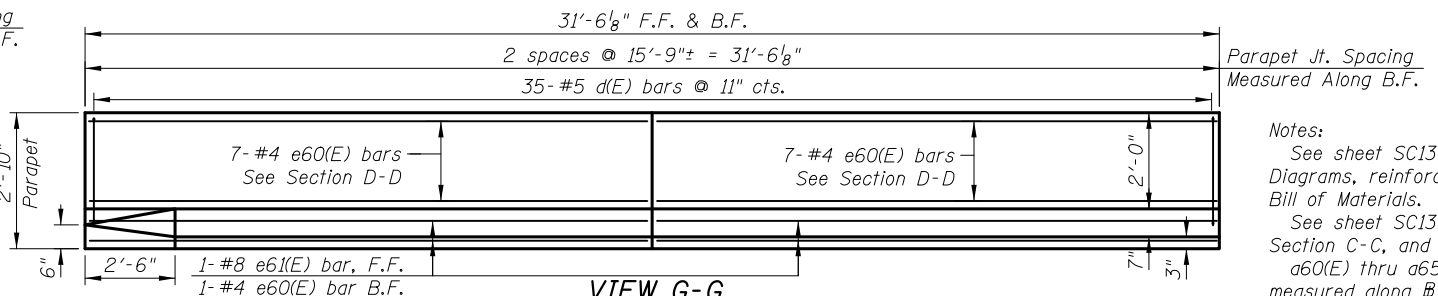
VIEW B-B



VIEW F-F



VIEW E-E



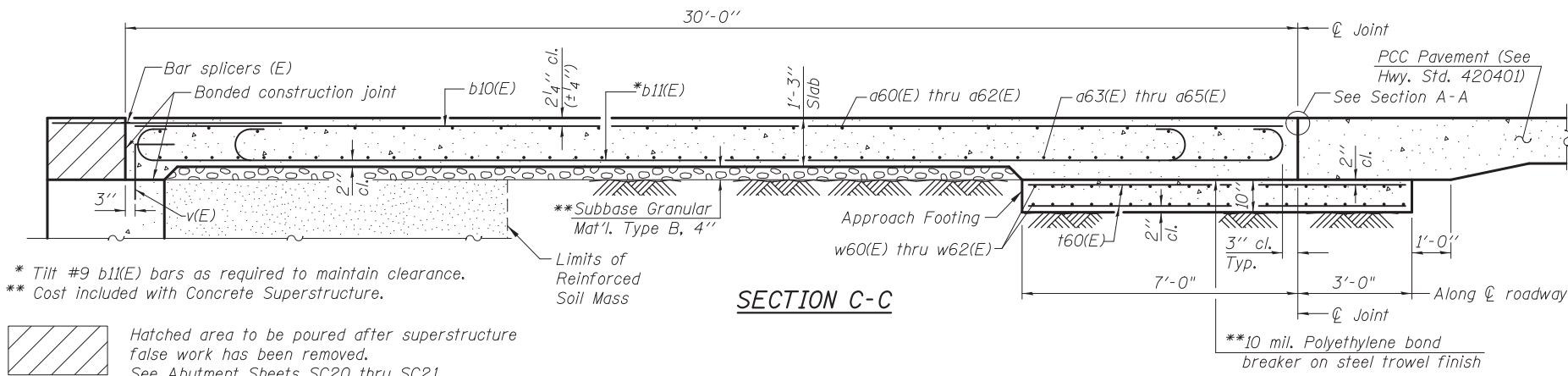
VIEW G-G

Notes:
 See sheet SC13 for Bar Bending Diagrams, reinforcement Schedule & Bill of Materials.
 See sheet SC13 for Detail A, Section C-C, and D-D.
 a60(E) thru a65(E) bar spacings measured along Ramp B.

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DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	537
CONTRACT NO. 60F72				



* Tilt #9 b11(E) bars as required to maintain clearance.
 ** Cost included with Concrete Superstructure.

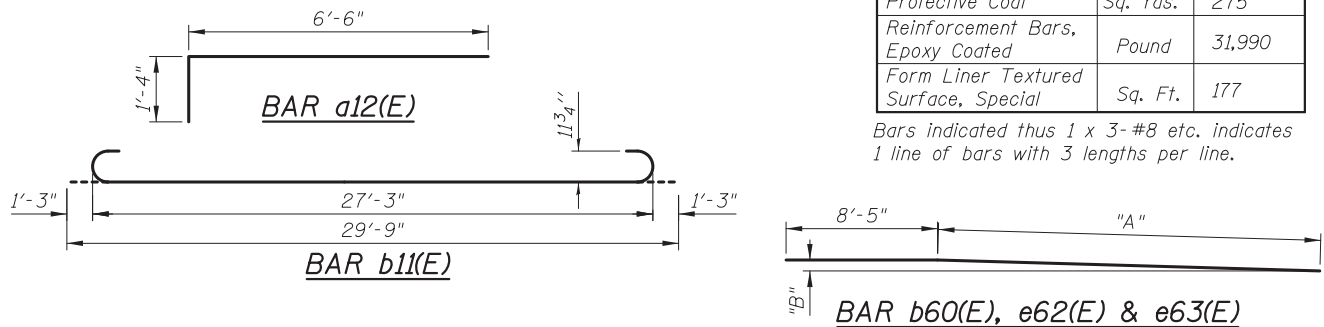
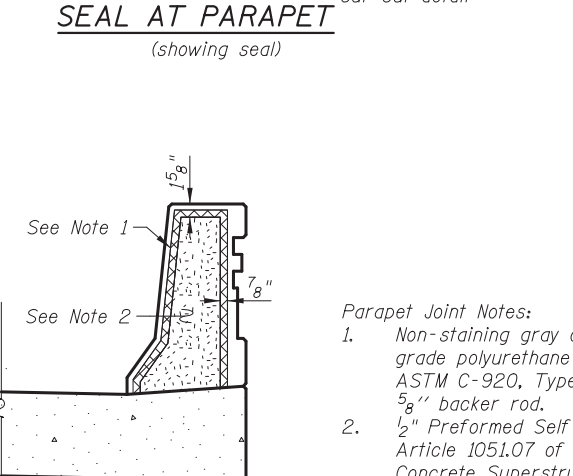
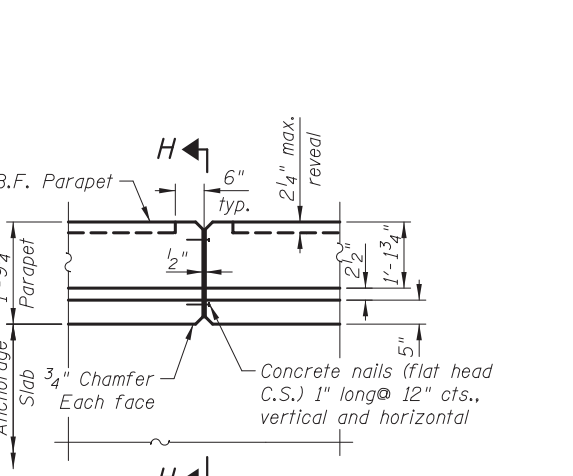
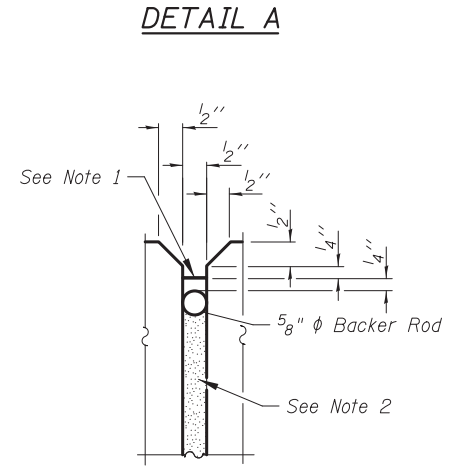
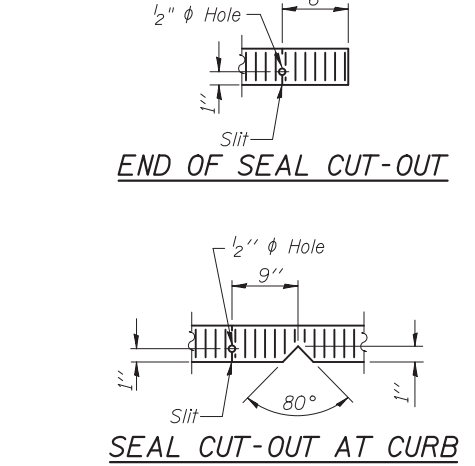
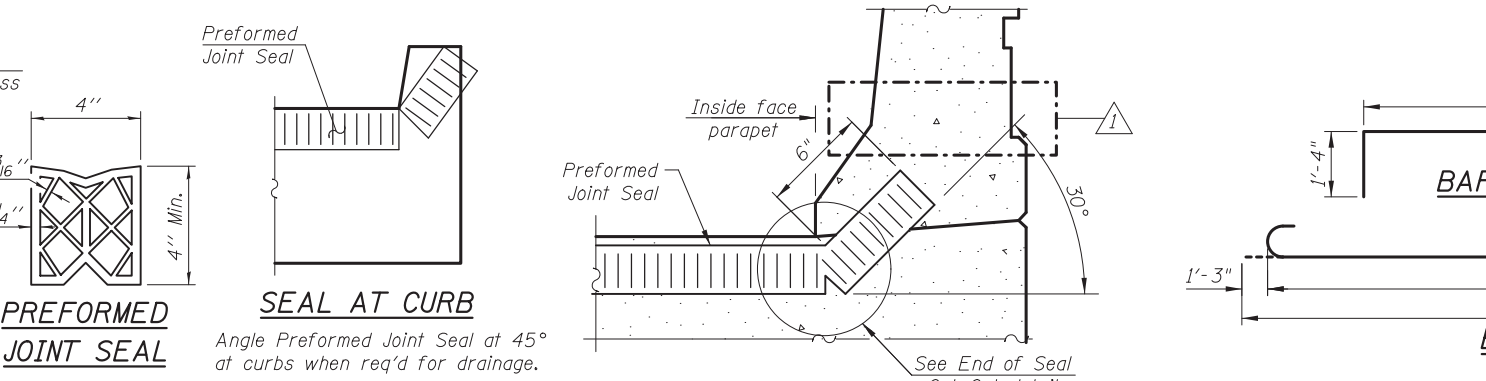
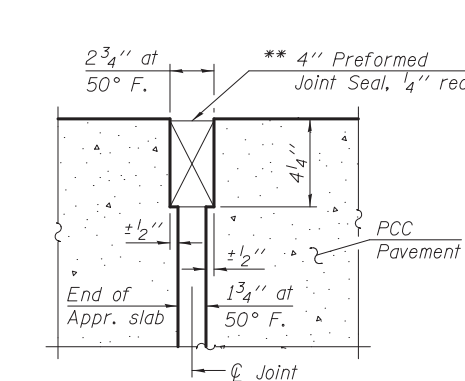
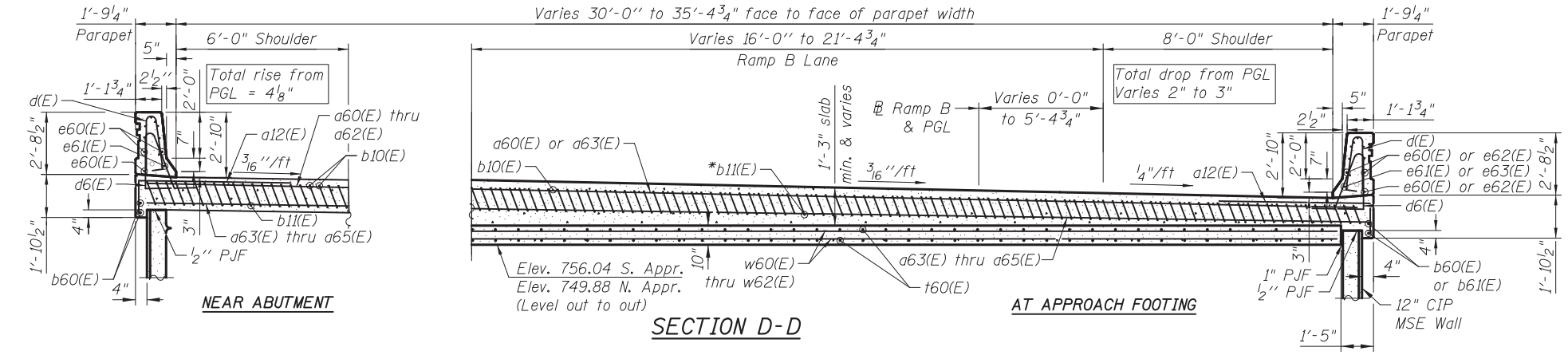
Hatched area to be poured after superstructure false work has been removed. See Abutment Sheets SC20 thru SC21.

Notes:
 See sheet SC12 for View B-B, E-E, F-F & G-G.
 Approach slab and parapet concrete shall be paid for as Concrete Superstructure.
 Approach footing concrete shall be paid for as Concrete Structures.
 Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.
 For v(E) bar details, see sheets SC20 & SC21.
 The approach footing maximum applied service bearing pressure (Q_{max}) = 2.0 ksf.
 For bar splicer details see sheet SC26.
 Cost of excavation for approach footing included with Concrete Structures.
 For additional parapet details, see sheet SC11 for dimensions and for formliner details.

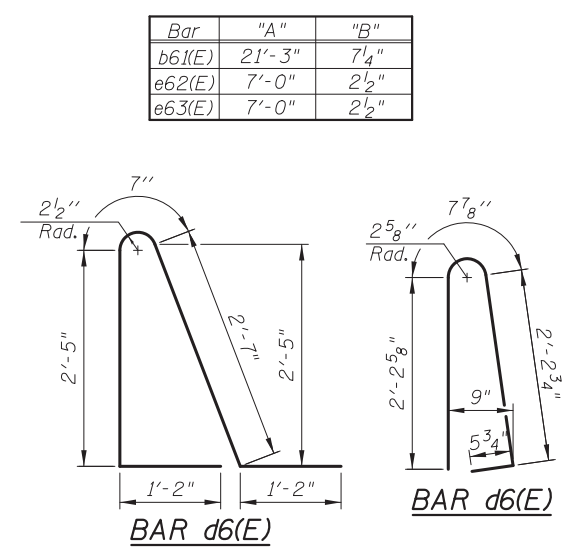
BILL OF MATERIAL
 (For 2 Approaches)

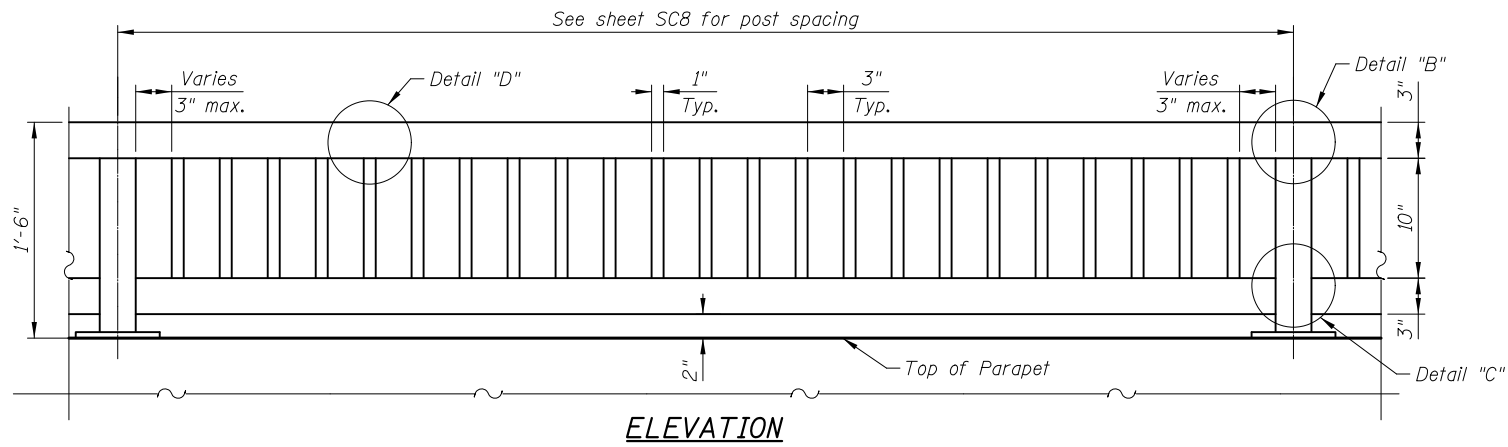
Bar	No.	Size	Length	Shape
a12(E)	96	#6	7'-10"	
a13(E)	16	#5	3'-6"	
a60(E)	50	#4	15'-0"	
a61(E)	25	#4	21'-4"	
a62(E)	25	#4	26'-2"	
a63(E)	92	#5	15'-0"	
a64(E)	46	#5	22'-1"	
a65(E)	46	#5	26'-10"	
b10(E)	59	#4	29'-8"	
b11(E)	175	#9	29'-9"	
b60(E)	7	#4	29'-8"	
b61(E)	2	#4	29'-8"	
d(E)	140	#5	5'-7"	
d6(E)	132	#5	7'-11"	
e60(E)	56	#4	15'-5"	
e61(E)	7	#8	15'-5"	
e62(E)	8	#4	15'-5"	
e63(E)	1	#8	15'-5"	
t60(E)	136	#4	9'-8"	
w60(E)	40	#5	30'-4"	
w61(E)	40	#5	15'-0"	
w62(E)	40	#5	24'-0"	

Item	Unit	Quantity
Concrete Structures	Cu. Yds.	20.6
Concrete Superstructures	Cu. Yds.	125.0
Bridge Deck Grooving	Sq. Yds.	217
Protective Coat	Sq. Yds.	275
Reinforcement Bars, Epoxy Coated	Pound	31,990
Form Liner Textured Surface, Special	Sq. Ft.	177

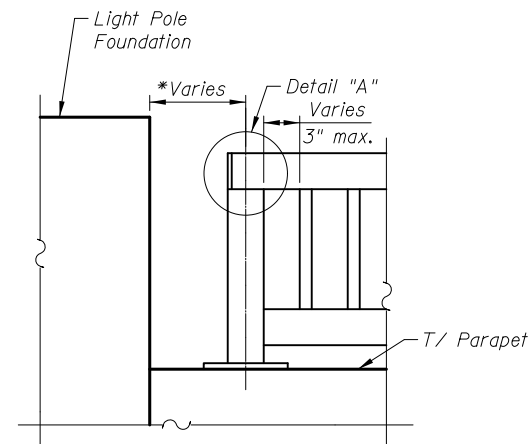


Parapet Joint Notes:
 1. Non-staining gray one component non-sag elastomeric gun grade polyurethane sealant meeting the requirements of ASTM C-920, Type S, Grade NS, Class 25, use T with a 5/8" backer rod.
 2. 1/2" Preformed Self-Expanding Cork Joint Filler according to Article 1051.07 of the Std. Spec. Cost included with Concrete Superstructure.



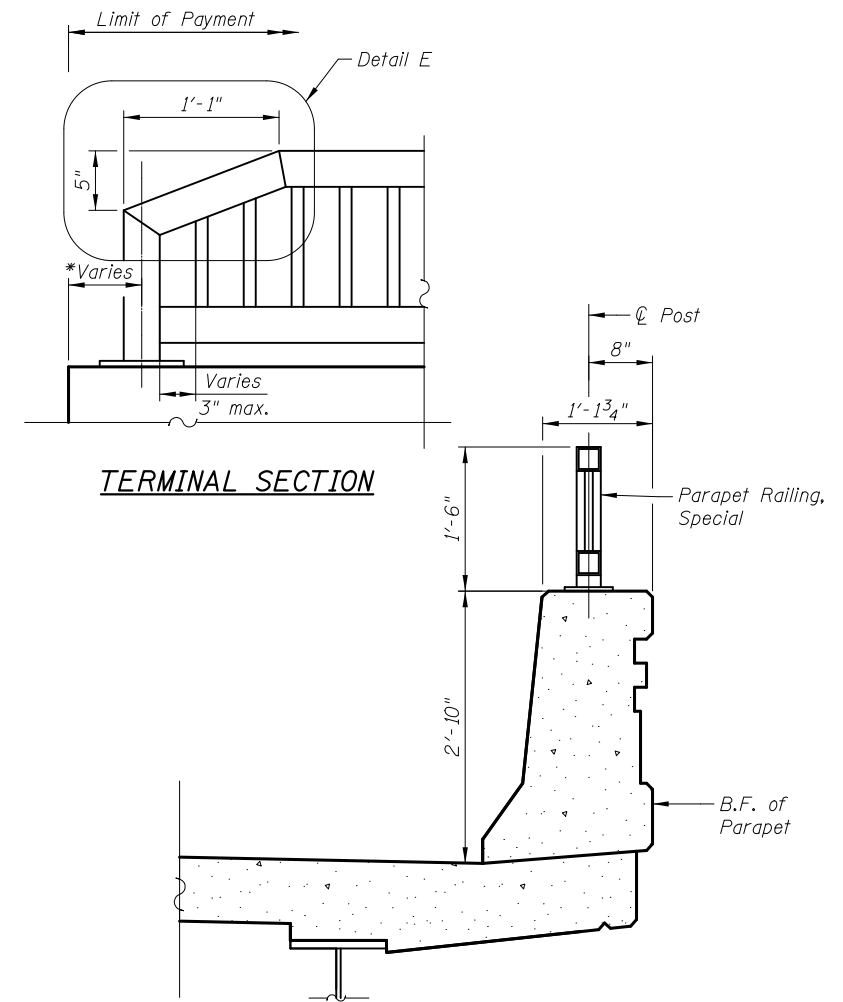


ELEVATION

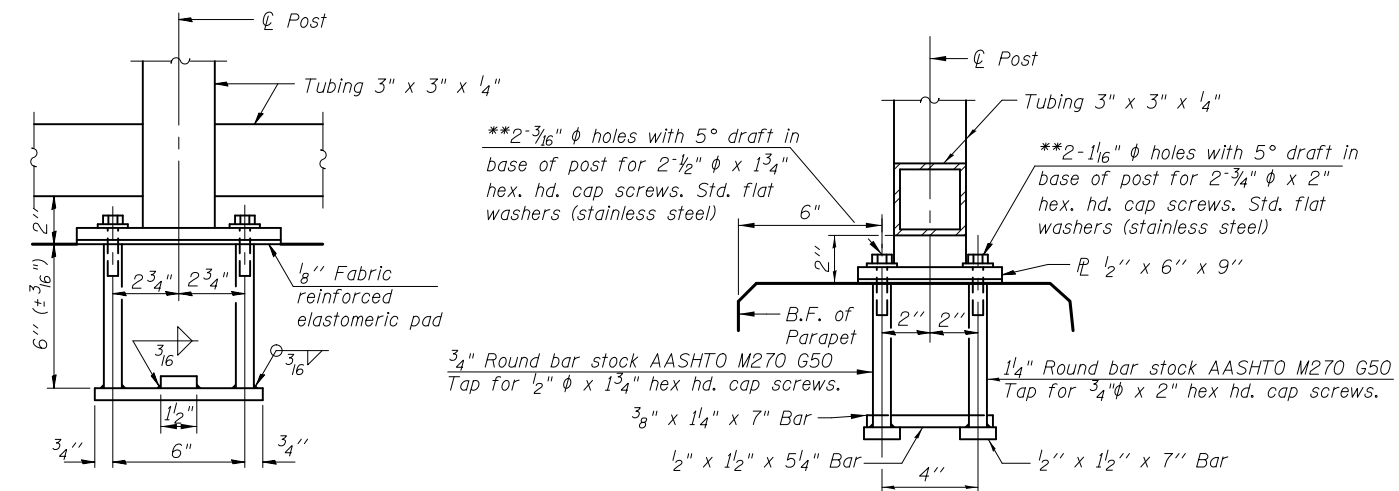
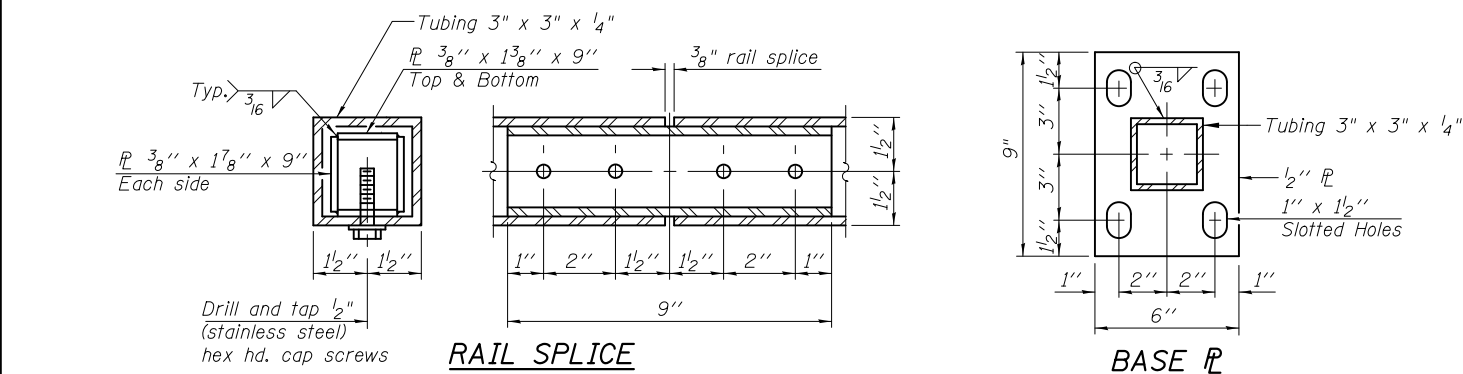
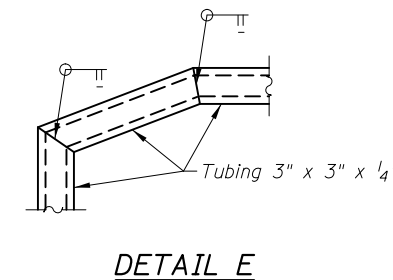
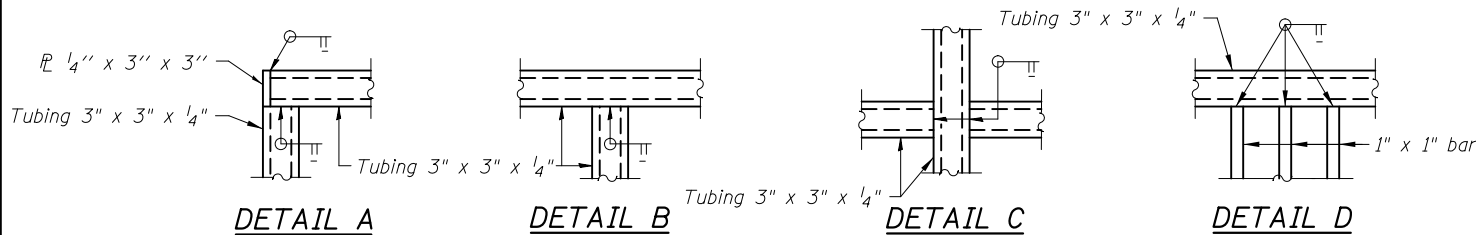


END TREATMENT AT LIGHT POLE FOUNDATION

* See bridge plans for dimension



SECTION THRU PARAPET



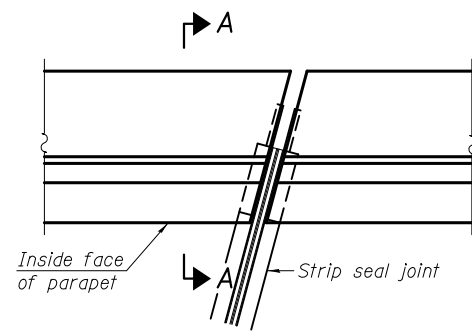
** In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting stainless steel anchor rods of the same diameter and grade as the specified cap screws according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.

Notes:
 All post, railing, splices, anchor devices, and plates shall be painted the color Traffic Black (RAL 9017).
 All posts shall be normal to the parapet.
 All joints in rail shall be spliced detail.
 All exposed rail ends shall be capped per detail.
 Provide (1) 1/8" and (2) 1/16" aluminum shims for 25% of the posts.
 Rail elements shall be parallel to grade - High spots shall be ground and low spots shimmed. Cost included in Parapet Railing, Special.

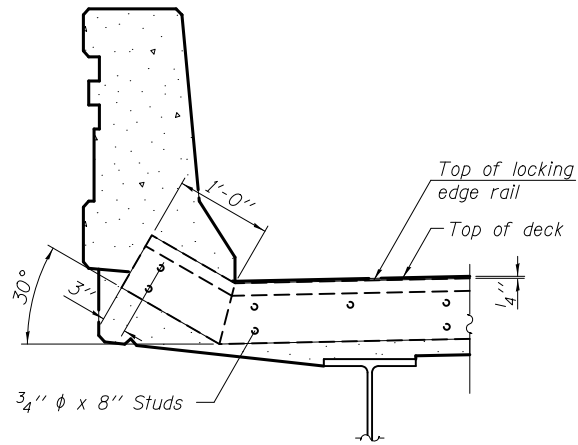
BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Parapet Railing, Special	Foot	269

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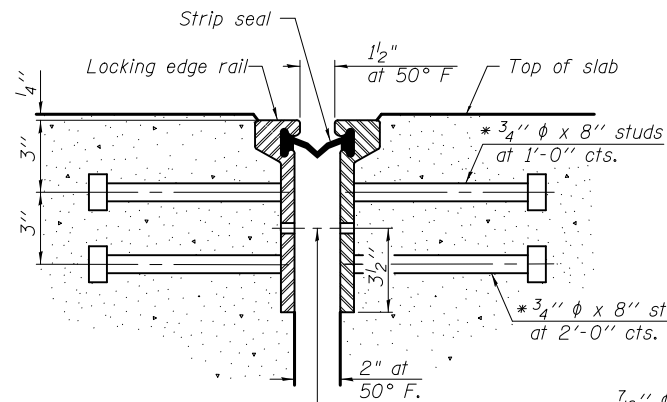


PLAN
(For skews $\leq 30^\circ$)

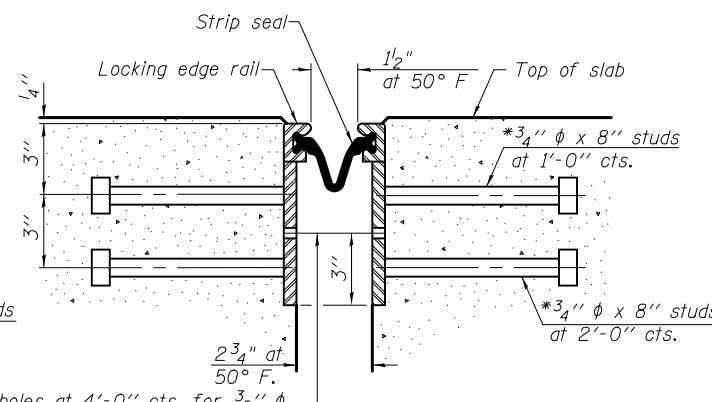


SECTION A-A

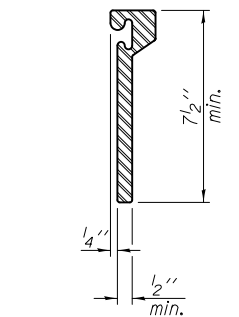
Notes:
 The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches.
 The Locking Edge Rails depicted are conceptual only, except for the minimum dimensions shown. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities.
 The manufacturer's recommended installation methods shall be followed.
 The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State.
 All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.



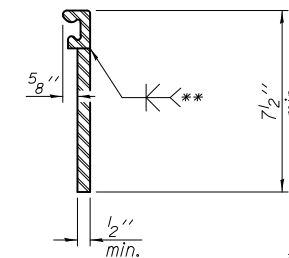
SECTION THRU ROLLED RAIL JOINT



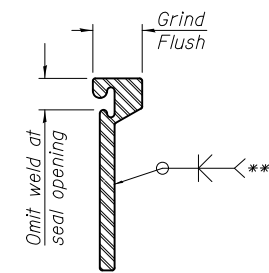
SECTION THRU WELDED RAIL JOINT



ROLLED EXTRUDED RAIL



WELDED RAIL



LOCKING EDGE RAIL SPLICE

** Back gouge not required if complete joint penetration is verified by mock-up.

The inside of the locking edge rail groove shall be free of weld residue.
 Rolled rail shown, welded rail similar.

LOCKING EDGE RAILS

7/16" ϕ holes at 4'-0" cts. for 3/8" ϕ bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

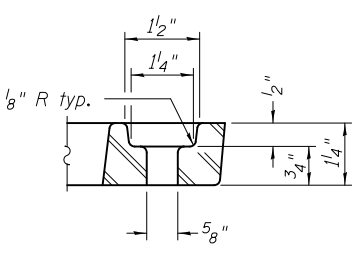
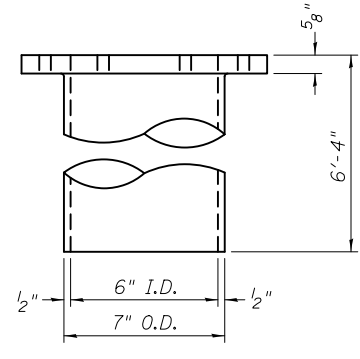
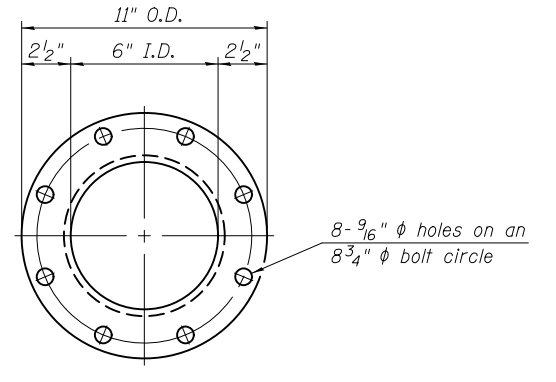
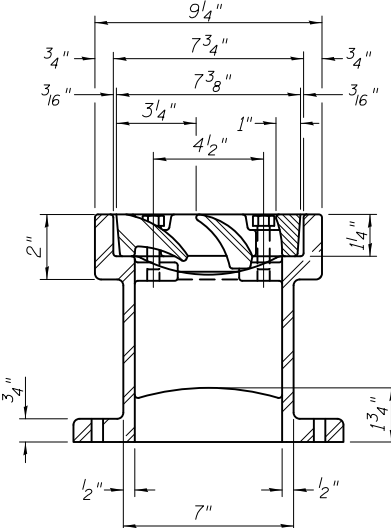
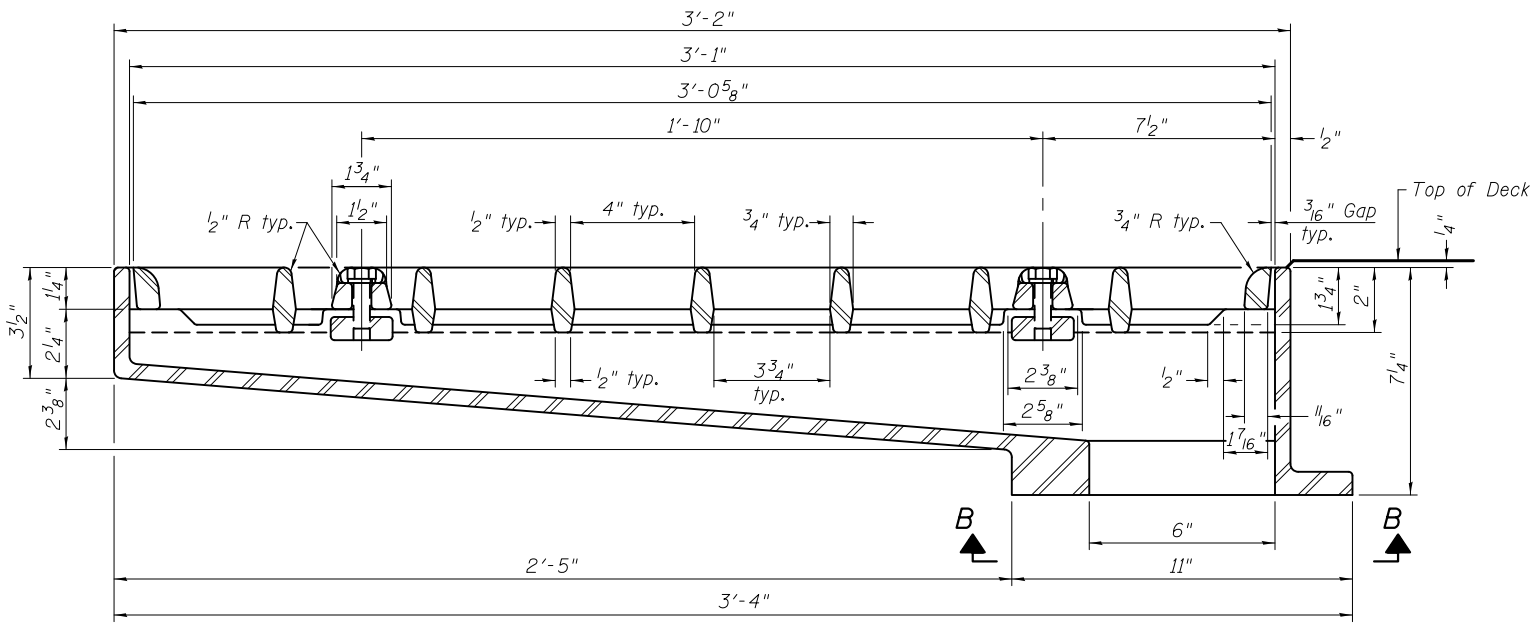
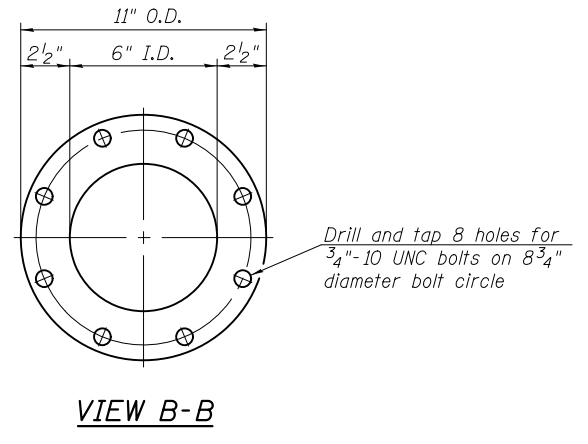
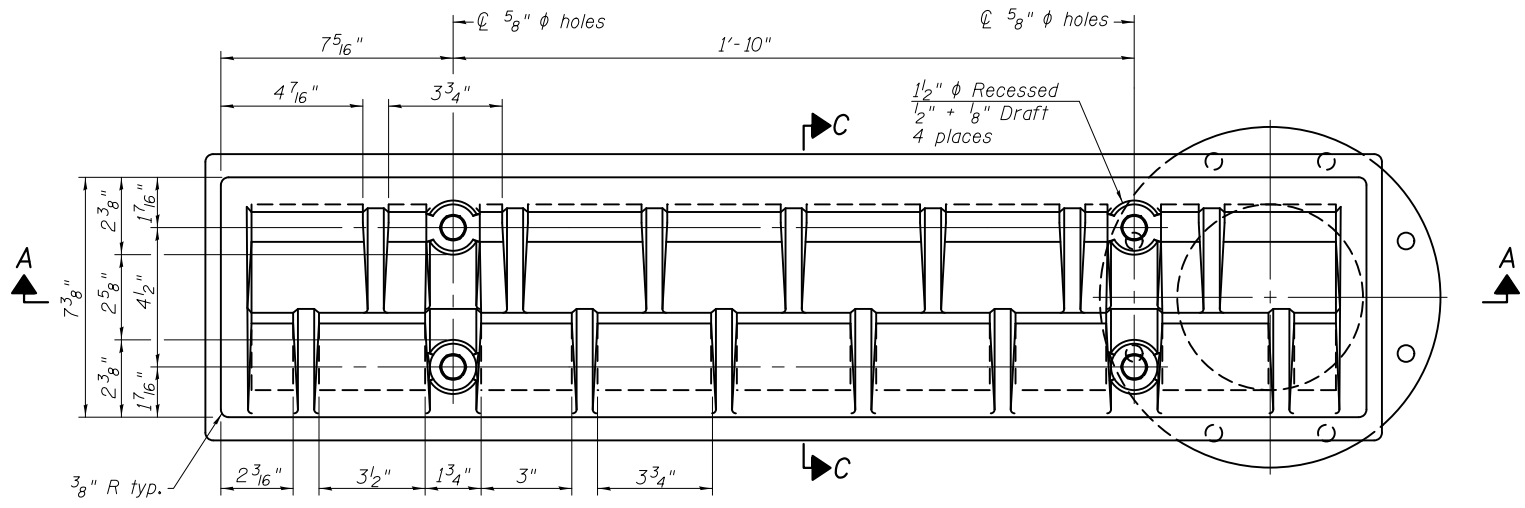
7/16" ϕ holes at 4'-0" cts. for 3/8" ϕ bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.

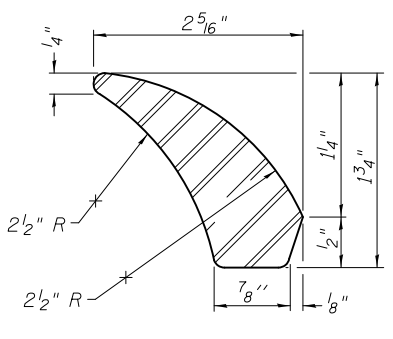
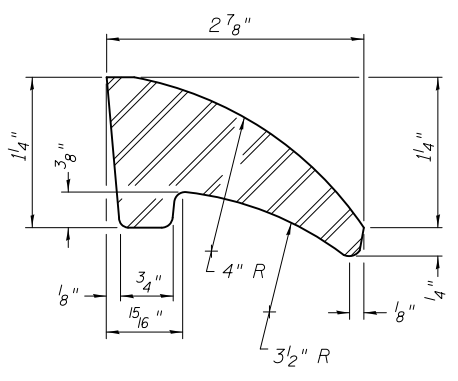
BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	70

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SECTION A-A
See sheet SC8 for scupper location relative to parapet.



BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Drainage Scupper, DS-33	Each	1

DS-33

7-1-10

CIVILTECH
450 E Devon Ave, Suite 300
Itasca, Illinois 60143
Tel: 630.773.3900 Fax: 630.773.3975
www.civiltechinc.com

DRAWN - M. LANGE	REVISED -
DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 5/3/2012	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

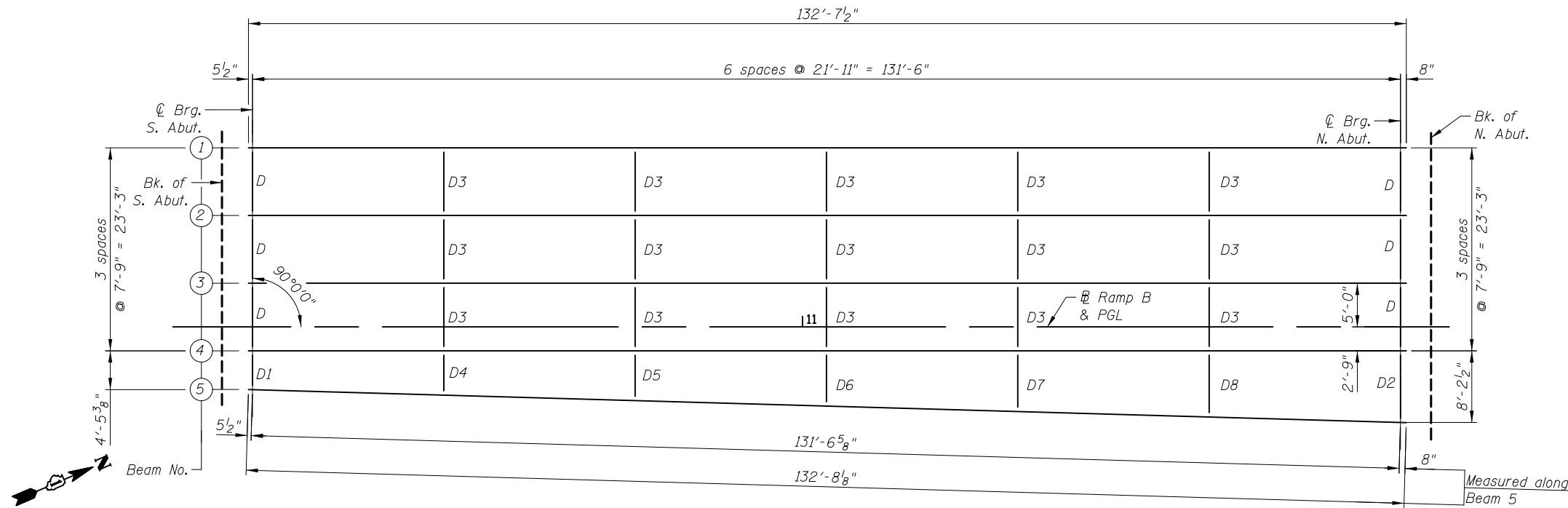
DRAINAGE SCUPPER, DS-33
NB EXIT RAMP (RAMP B) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0079

SHEET NO. SC16 OF SC29 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	541
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60F72	

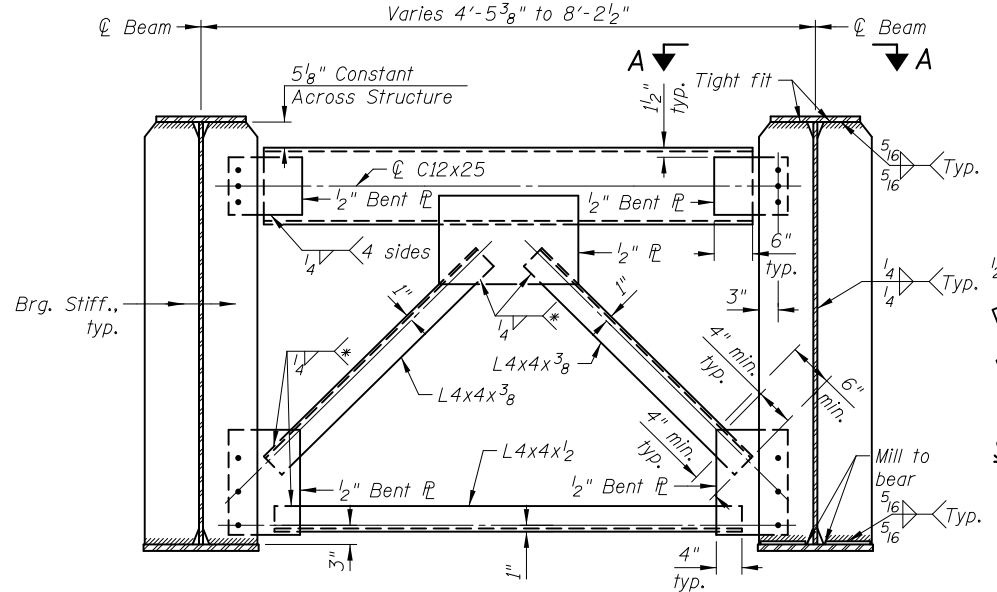
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Notes:
All cast iron parts shall be gray iron conforming to the requirements of AASHTO M 105, Class 35B.
Bolts, anchor studs, washers and nuts shall conform to the requirements of ASTM A 307 and shall be galvanized according to AASHTO M 232.
Downspouts located on the exterior side of a painted steel fascia beam shall be painted with the finish coat specified for the exterior side of the fascia beam.
As an alternate, bolts, anchor studs, washers and nuts may be stainless steel according to Article 1006.29(d) of the Standard Specifications.
Structural steel weldments of equal sections and of the same configuration may be substituted for the cast iron scupper frame. Fillet or full penetration welds shall be used for the weldments. Details shall be submitted to the Engineer for approval. Structural steel weldments shall not be substituted for the cast iron scupper grate. Structural steel frames and downspouts shall be galvanized according to AASHTO M111.
The Contractor shall take appropriate measures to assure that Protective Coat is not applied to the scupper.
Cost of the Grate, Frame, Downspout, Anchor Studs, Bolts, Washers and Nuts including complete installation of the scupper shall be paid for at the contract unit price each for Drainage Scupper, DS-33.
Alternate fiberglass downspout conforming to ASTM D 2996 with a short-time rupture strength hoop tensile stress of 30,000 psi min. may be used in lieu of the cast iron or steel equivalent.

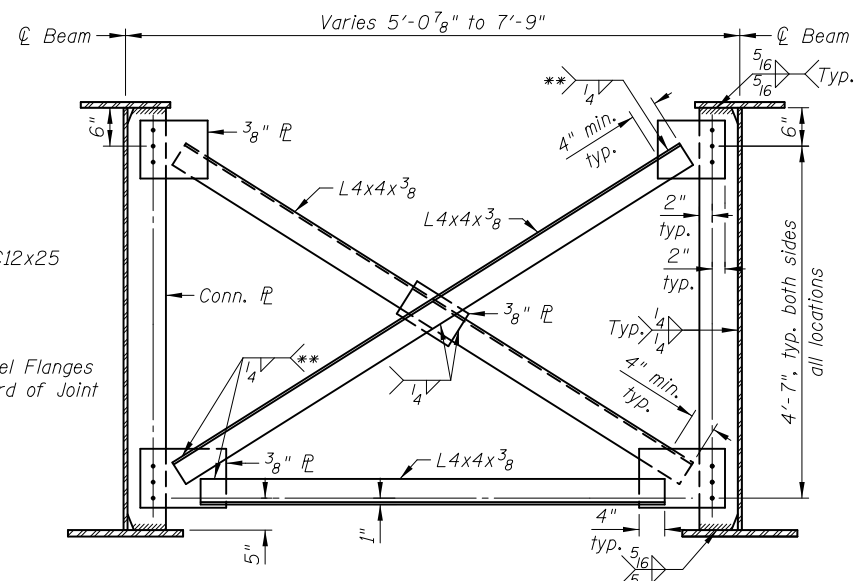


INTERIOR GIRDER MOMENT TABLE		
0.5 Span		
I_s	(in ⁴)	48,350
$I_c(n)$	(in ⁴)	111,925
$I_c(3n)$	(in ⁴)	81,250
S_s	(in ³)	1,545
$S_c(n)$	(in ³)	2,110
$S_c(3n)$	(in ³)	1,908
DC1	(k/')	1.084
M _{DC1}	(k)	2,343
DC2	(k/')	0.235
M _{DC2}	(k)	508
DW	(k/')	0.326
MDW	(k)	704
$M_L + IM$	(k)	2,441
M_u (Strength I)	(k)	8,892
$\phi_r M_n$	(k)	11,583
f_s DC1	(ksi)	18.20
f_s DC2	(ksi)	3.19
f_s DW	(ksi)	4.43
f_s 1.3(L+IM)	(ksi)	18.05
f_s (Service II)	(ksi)	43.87
f_s (Total)(Strength I)	(ksi)	—
V _r	(k)	29.9

INTERIOR GIRDER REACTION TABLE		
Abutment		
R _{DC1}	(k)	71.3
R _{DC2}	(k)	15.5
R _{DW}	(k)	21.4
R _{L + IM}	(k)	104.4
R _{Total}	(k)	212.5



END CROSS FRAMES D THRU D2
(8 Required)



INTERIOR CROSS FRAMES D3 THRU D8
(20 Required)

CROSS FRAME LENGTHS	
Cross Frame	Length (ft.)
D	7'-9"
D1	4'-5 3/8"
D2	8'-2 1/2"
D3	7'-9"
D4	5'-0 7/8"
D5	5'-8 3/8"
D6	6'-4"
D7	6'-11 1/2"
D8	7'-7"

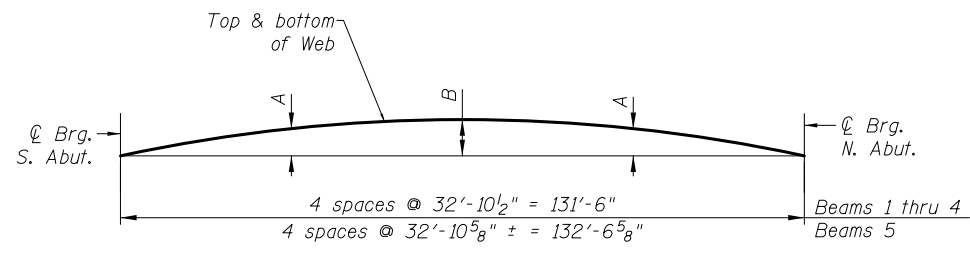
(Lengths measured from \varnothing Beam to \varnothing Beam)

- * Weld on near side of 1/2" plate.
- ** Fillet weld angles along 3 sides on one face of gusset plate.

Notes:
Detail 1 5/16" ϕ holes for all 3/4" ϕ bolts
Two hardened washers required for each set of oversized holes.
Place diaphragm with channel flanges and outstanding angle legs outward from abutment backwall.
All cross frames shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames at supports may be temporarily disconnected to install bearing anchor rods.

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads (in⁴ and in³).
 $I_c(n), S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) due to short-term composite live loads (in⁴ and in³).
 $I_c(3n), S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) due to long-term composite (superimposed) dead loads (in⁴ and in³).
DC1: Un-factored non-composite dead load (kips/ft.).
M_{DC1}: Un-factored moment due to non-composite dead load (kip-ft.).
DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).
M_{DC2}: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).
DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).
MDW: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).
 $M_L + IM$: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).
 M_u (Strength I): Factored design moment (kip-ft.).
 $1.25 (M_{DC1} + M_{DC2}) + 1.5 MDW + 1.75 M_L + IM$
 $\phi_r M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).
 f_s (Service II): Sum of stresses as computed from the moments below (ksi).
 $M_{DC1} + M_{DC2} + MDW + 1.3 M_L + IM$
 f_s (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).
 $1.25 (M_{DC1} + M_{DC2}) + 1.5 MDW + 1.75 M_L + IM$
V_r: Maximum factored shear range in composite portion of span computed according to Article 6.10.10.

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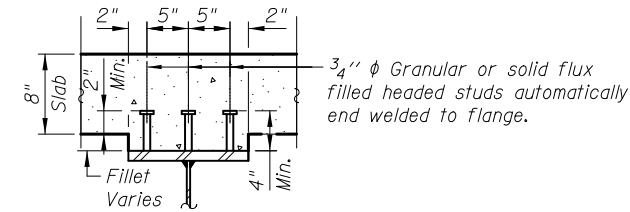
CAMBER DIAGRAM

GIRDER	A	B
1 thru 3	1 3/4"	2 1/2"
4 & 5	1 1/2"	2 1/4"

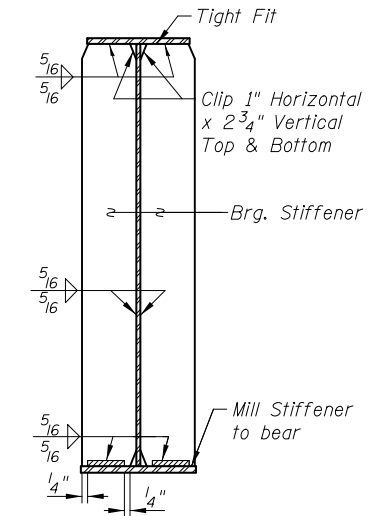
TOP OF WEB ELEVATIONS

(For Fabrication Only)

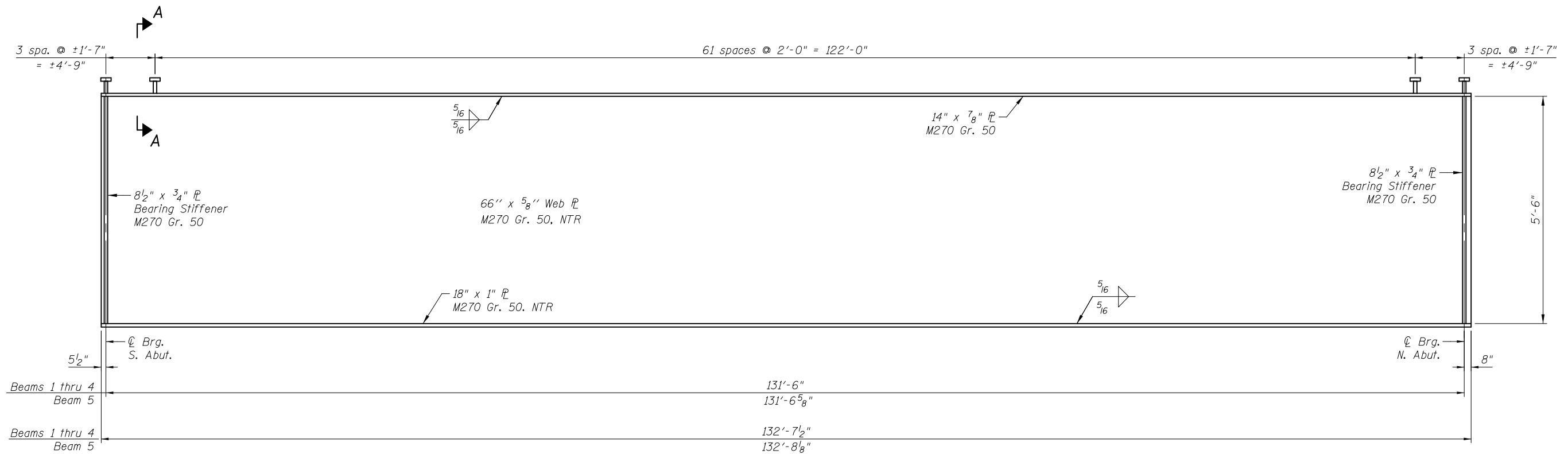
GIRDER	℄ Brg. S. Abut.	℄ Brg. N. Abut.
1	756.83	752.53
2	756.71	752.41
3	756.59	752.29
4	756.45	752.17
5	756.36	752.01



SECTION A-A



SECTION AT ABUTMENT



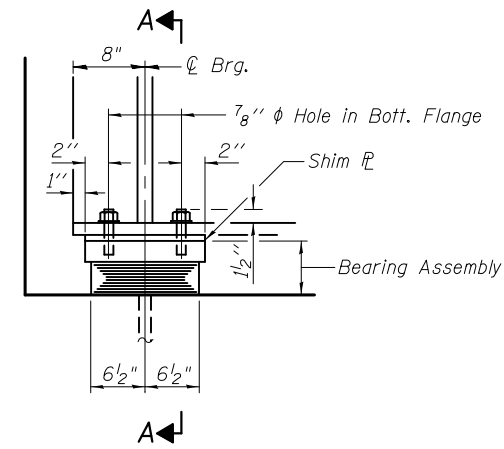
GIRDER ELEVATION

Note:
 Load carrying components designated "NTR" shall conform to the Impact Testing Requirements, Zone 2.
 Refer to sheets SC10 and SC11 for Ornamental Aluminum Lattice for the West Fascia of Beam 1 and the East Fascia of Beam 5.

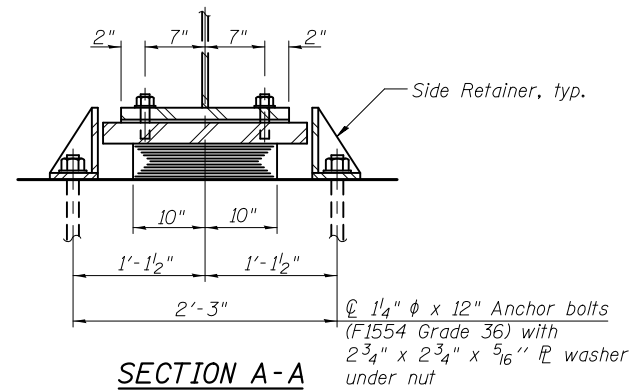
TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Furnishing and Erecting Structural Steel	L. Sum	0.15
Stud Shear Connectors	Each	1,020

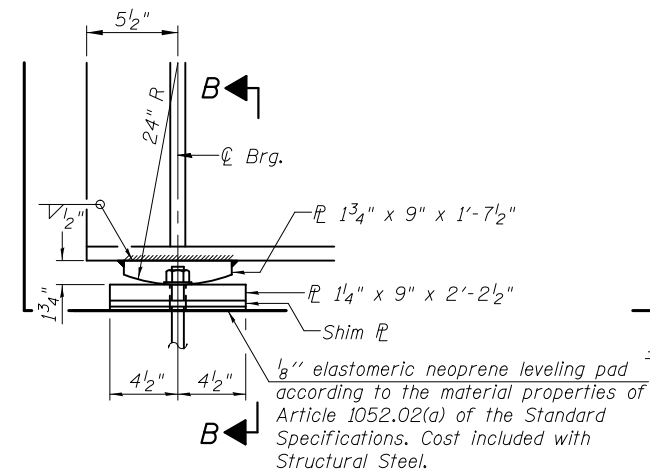
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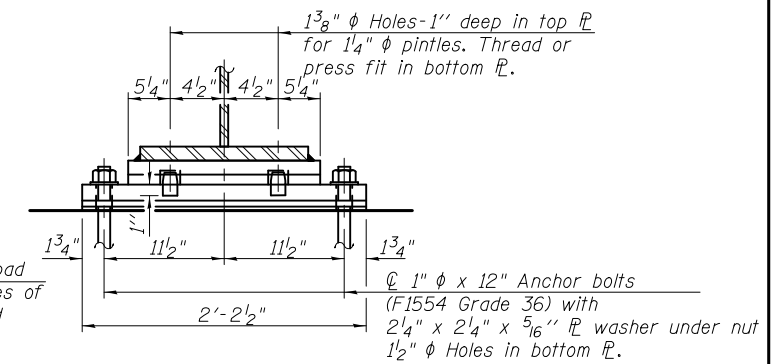
ELEVATION AT N. ABUT.



SECTION A-A



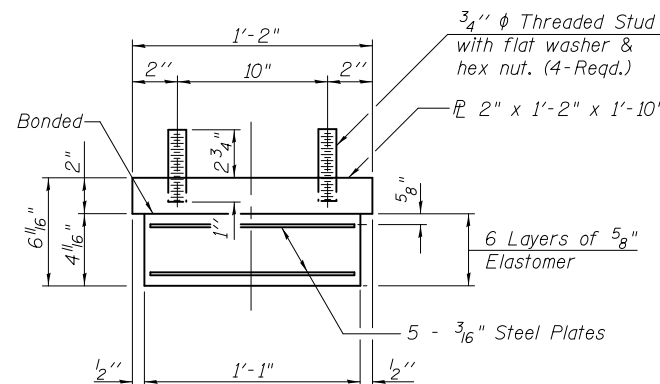
ELEVATION AT S. ABUTMENT



SECTION B-B

TYPE I ELASTOMERIC EXP. BRG.

(5 Required)



BEARING ASSEMBLY

Note:
Shim plates shall not be placed under Bearing Assembly.

Notes:

Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

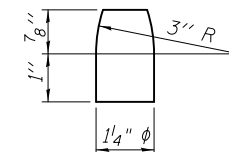
Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.

Anchor bolts for side retainers may be cast in place or installed in holes drilled before or after members are in place.

Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.

Side retainers and other steel members required for the elastomeric bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.

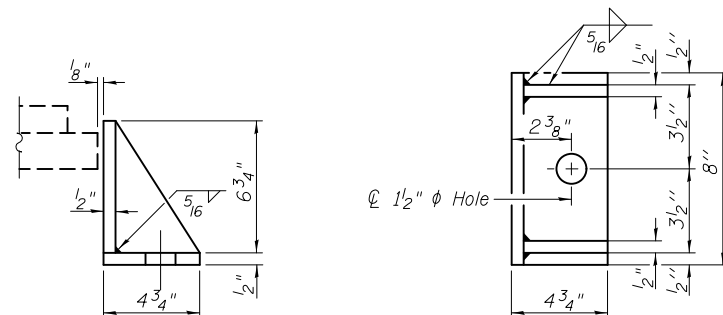
The structural steel plates for the fixed and elastomeric expansion bearings shall conform to the requirements of AASHTO M270 Grade 50.



PINTLE

FIXED BEARING

(5 Required)



SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

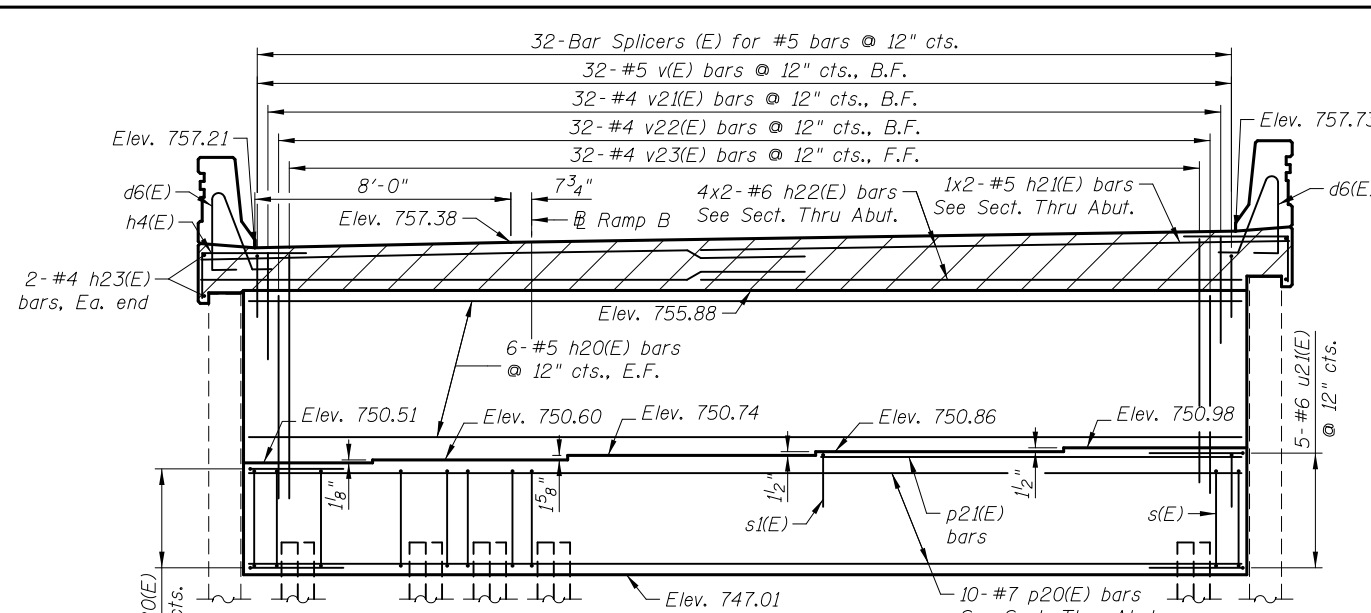
BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	5
Anchor Bolts, 1"	Each	10
Anchor Bolts, 1 1/4"	Each	10

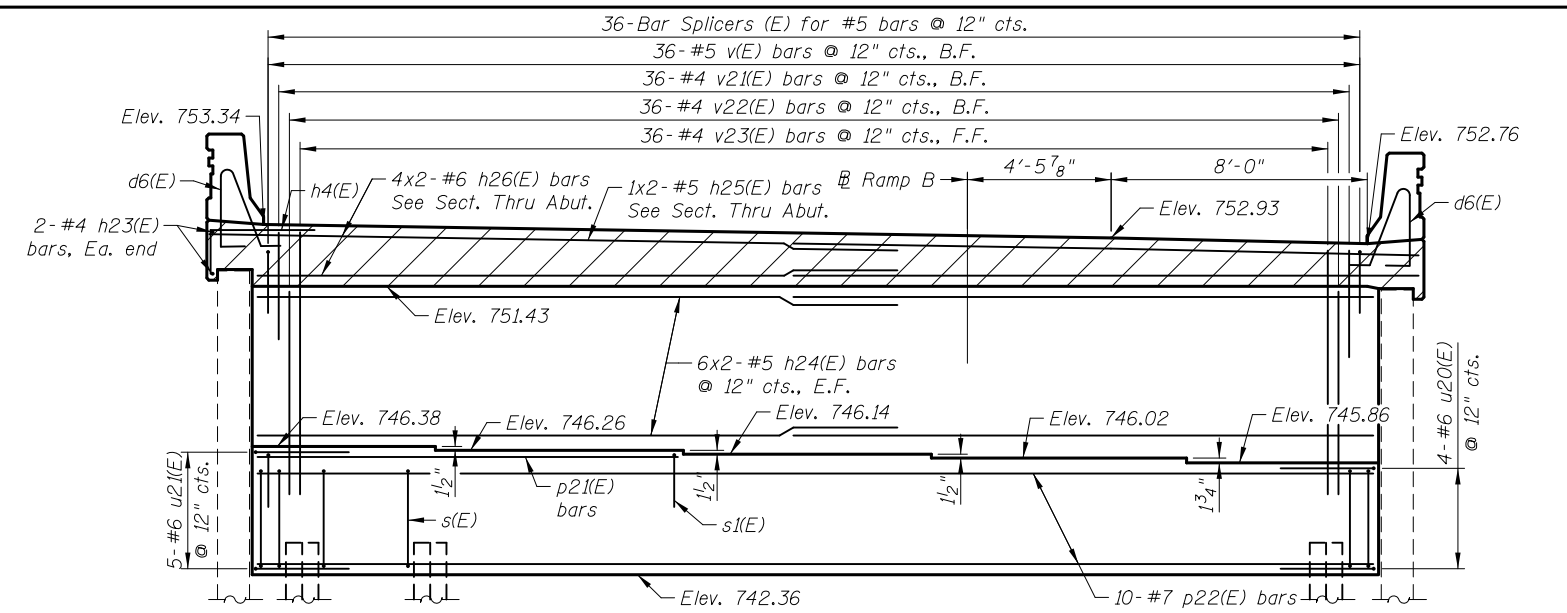
I-2E-1

7-1-10

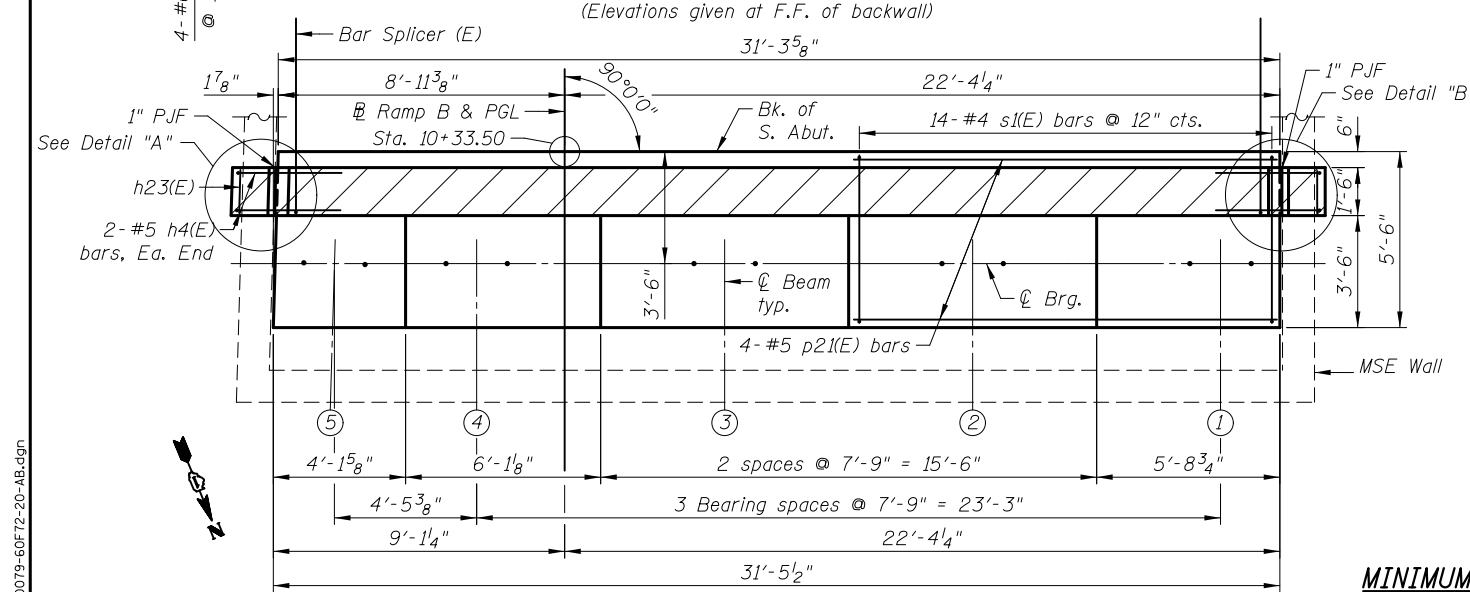
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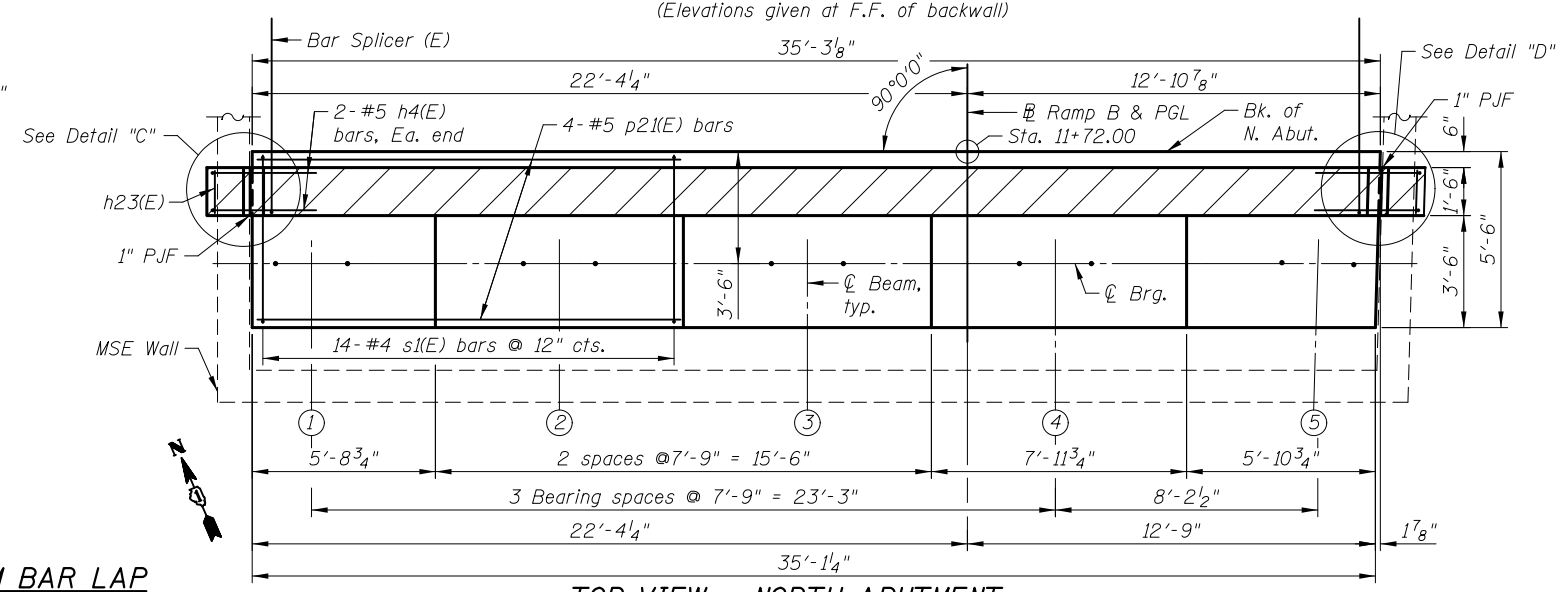
ELEVATION - SOUTH ABUTMENT
(Elevations given at F.F. of backwall)



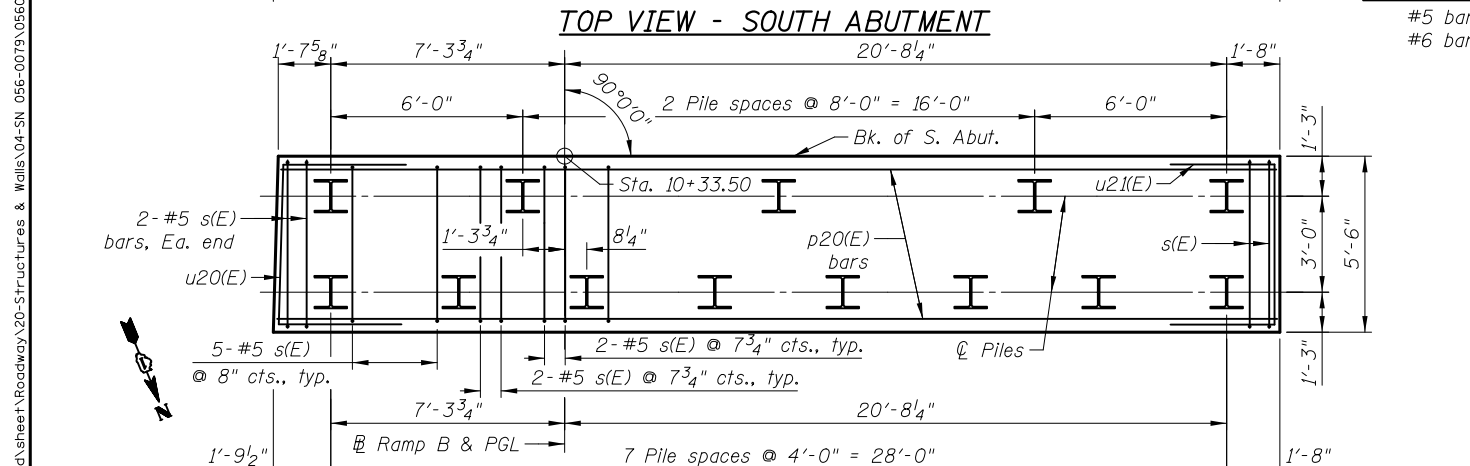
ELEVATION - NORTH ABUTMENT
(Elevations given at F.F. of backwall)



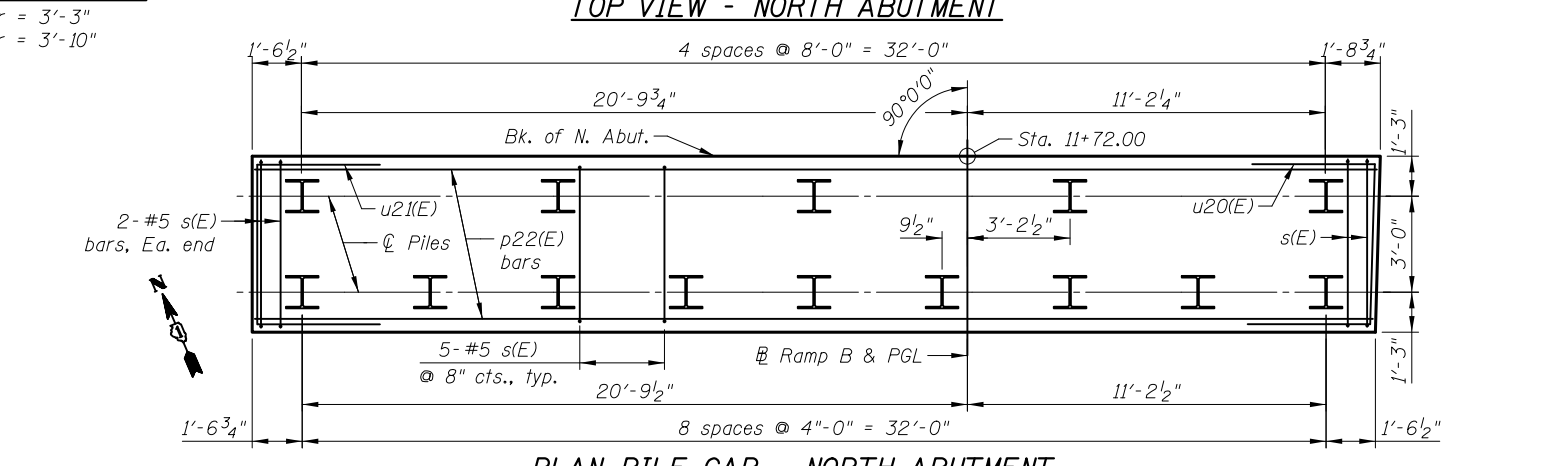
TOP VIEW - SOUTH ABUTMENT



TOP VIEW - NORTH ABUTMENT



PLAN-PILE CAP - SOUTH ABUTMENT



PLAN-PILE CAP - NORTH ABUTMENT

MINIMUM BAR LAP
 #5 bar = 3'-3"
 #6 bar = 3'-10"

Notes:
 Space reinforcement in cap to miss anchor bolts.
 Pour steps monolithically with cap.
 See sheet SC21 for Details "A" thru "D".
 See sheet SC26 for details of Bar Splicers.
 See sheet SC21 for Bill of Material, Bar Bending diagrams, Section Thru Abutment & Anchor Bolt Diagrams.
 Bars indicated thus 4x3-#5 indicate 4 lines of bars with 3 lengths per line.

Hatched area to be poured after superstructure false work has been removed. Quantity of concrete included with Concrete Superstructure.
 Parapets to be poured with the Approach Slabs.

PILE DATA
S. ABUTMENT
 Type: HP14x73
 Nominal Required Bearing: 400 kips
 Factored Resistance Available: 220 kips
 Est. Length: 65 feet
 No. Production Piles: 12
 No. Test Piles: 1

PILE DATA
N. ABUTMENT
 Type: HP14x73
 Nominal Required Bearing: 400 kips
 Factored Resistance Available: 220 kips
 Est. Length: 63 feet
 No. Production Piles: 13
 No. Test Piles: 1

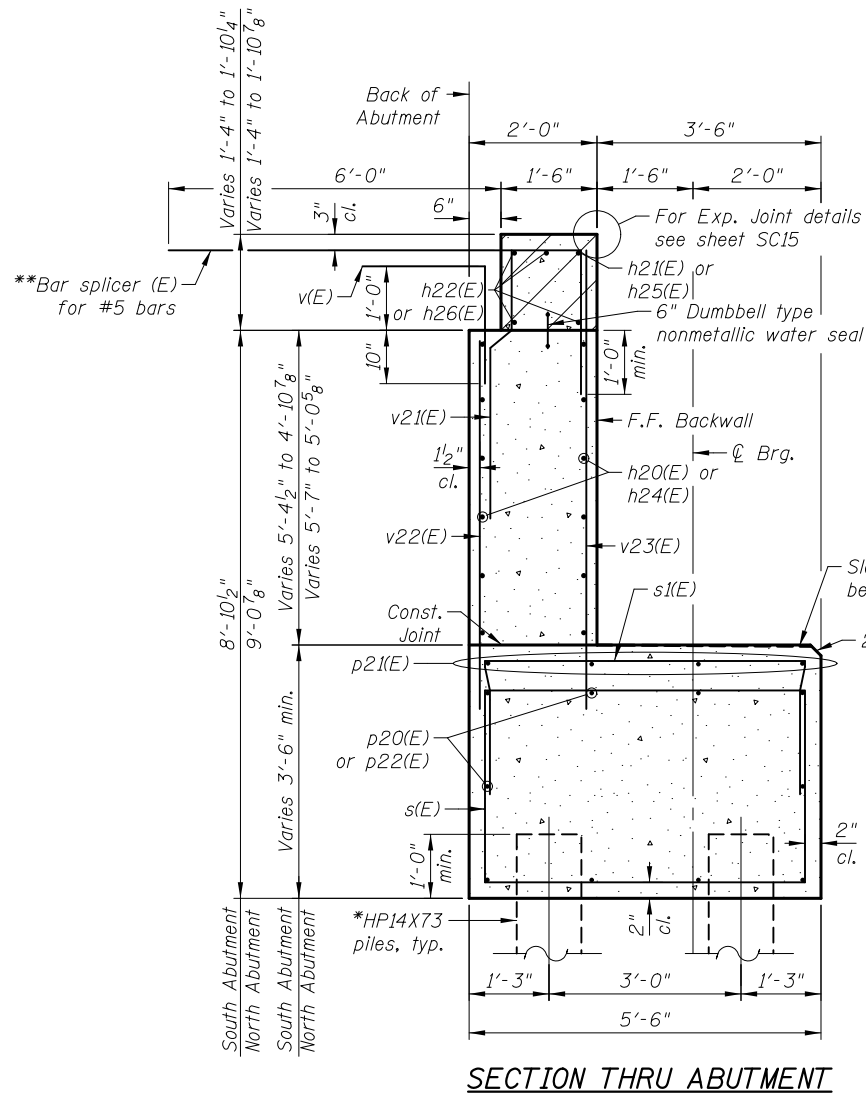
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DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 5/3/2012	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ABUTMENTS
NB EXIT RAMP (RAMP B) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0079
 SHEET NO. SC20 OF SC29 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	545
CONTRACT NO. 60F72			ILLINOIS FED. AID PROJECT	



* Piles shall be driven prior to placement of the reinforced select fill and coated with coal tar epoxy from the bottom of the select fill to 1" above the base of the abutment. The cost of the coal tar epoxy coating shall be included with the cost of the Furnishing Piles.

** Bar Splicers shall be parallel to the Approach Slab reinforcement.

Notes:

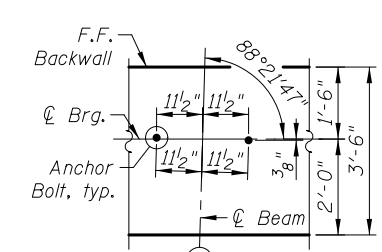
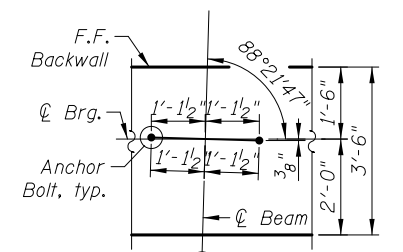
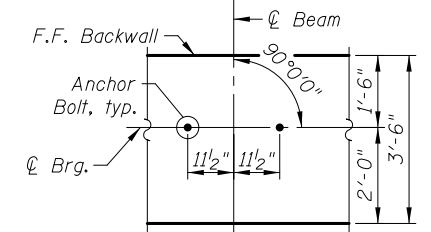
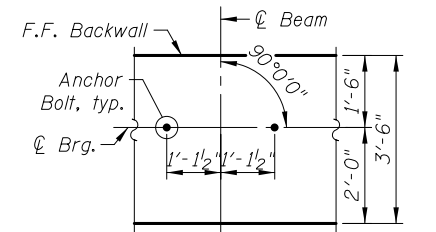
Parapets to be poured with the Approach Slabs.

Concrete Sealer shall be applied to the designated areas of the backwalls and bridge seats of the abutments.

Space reinforcement in cap to miss anchor bolts.

For details of Bar Splicers see sheet SC26.

For Pile Details see sheet SC22.

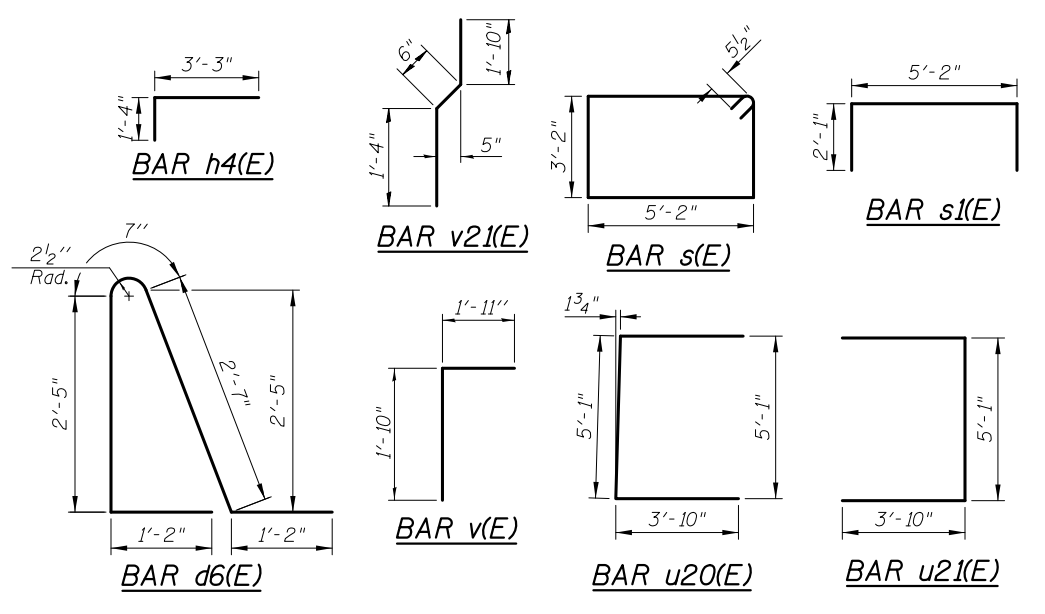
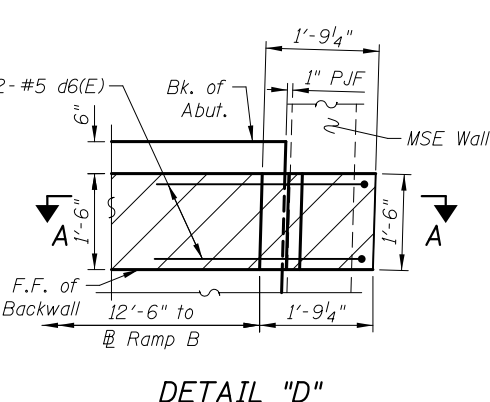
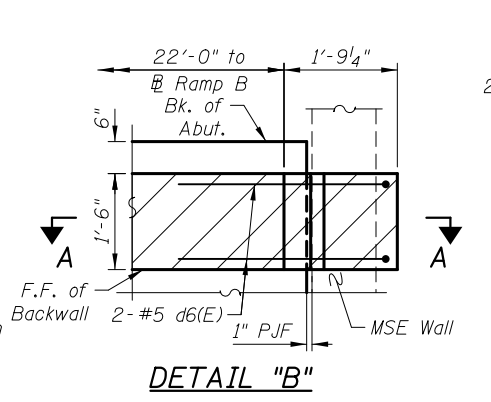
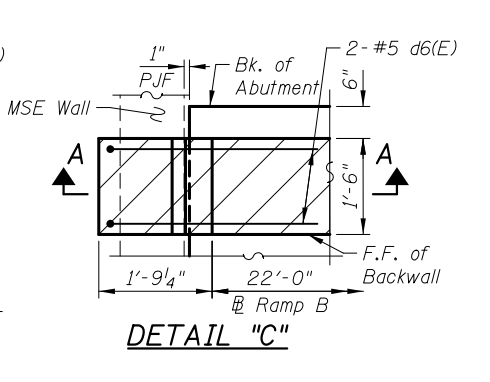
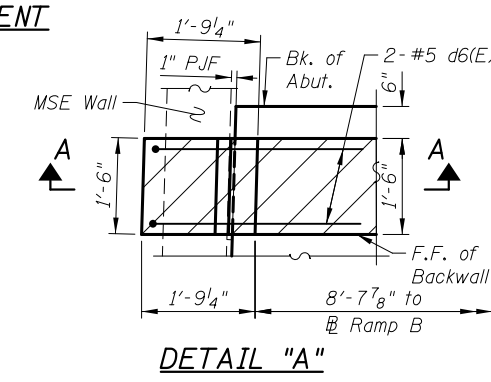
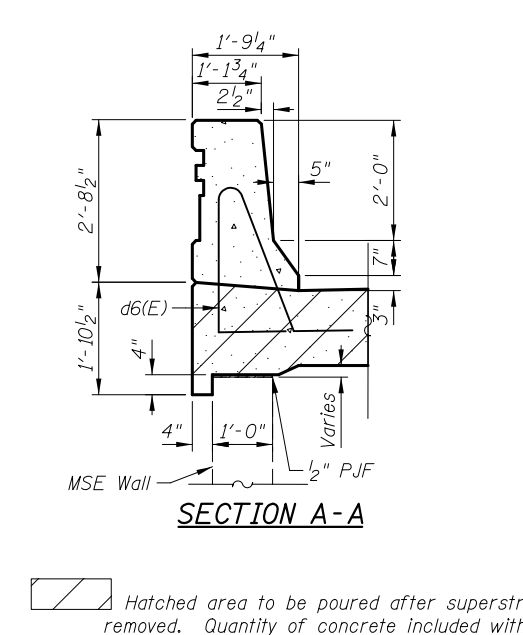


BILL OF MATERIAL

(For 2 Abutments)

Bar	No.	Size	Length	Shape
d6(E)	8	#5	7'-11"	
h4(E)	8	#5	4'-7"	
h20(E)	12	#5	31'-0"	
h21(E)	2	#5	18'-7"	
h22(E)	8	#6	18'-11"	
h23(E)	8	#4	1'-2"	
h24(E)	24	#5	19'-1"	
h25(E)	2	#5	20'-6"	
h26(E)	8	#6	20'-10"	
p20(E)	10	#7	31'-0"	
p21(E)	8	#5	13'-2"	
p22(E)	10	#7	34'-11"	
s(E)	80	#5	17'-7"	
s1(E)	28	#4	9'-4"	
u20(E)	8	#6	12'-9"	
u21(E)	10	#6	12'-9"	
v(E)	68	#5	3'-9"	
v21(E)	68	#4	3'-8"	
v22(E)	68	#4	6'-7"	
v23(E)	68	#4	8'-0"	
Item	Unit	Quantity		
Concrete Structures	Cu. Yd.	76.7		
Concrete Superstructures	Cu. Yd.	6.5		
Bridge Deck Grooving	Sq. Yd.	11		
Protective Coat	Sq. Yd.	11		
Reinforcement Bars, Epoxy Coated	Pound	6,080		
Furnishing Steel Piles, HP14X73	Foot	1,599		
Driving Piles	Foot	1,599		
Test Pile Steel HP14X73	Each	2		
Pile Shoes	Each	27		
Concrete Sealer	Sq. Ft.	581		

Bars indicated thus 4x3-#5 etc. indicate 4 lines of bars with 3 lengths per line.



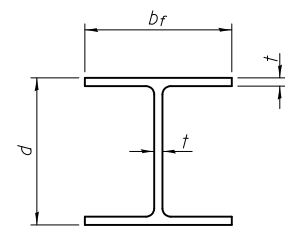
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DATE	- 5/3/2012	REVISED	-

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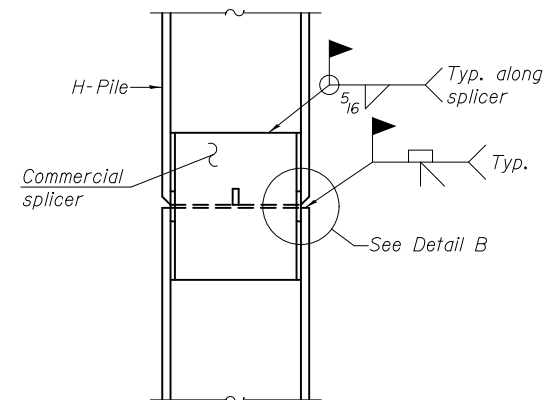
ABUTMENT DETAILS
NB EXIT RAMP (RAMP B) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0079
 SHEET NO. SC21 OF SC29 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	546
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

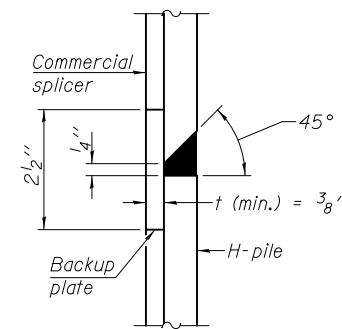


STEEL PILE TABLE

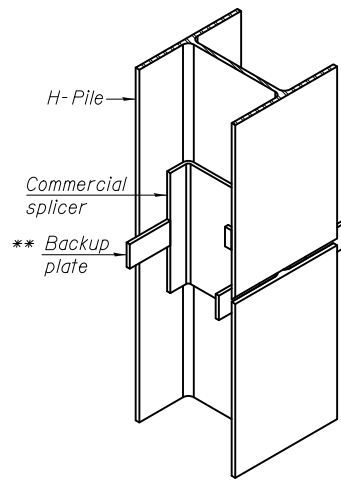
Designation	Depth d	Flange width br	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/4"	14 7/8"	1 3/16"	30"
x102	14"	14 3/4"	1 1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1 1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11 3/4"	12"	7/16"	24"
HP 10x57	10"	10 1/4"	9/16"	24"
x42	9 3/4"	10 1/8"	7/16"	24"
HP 8x36	8"	8 1/8"	7/16"	18"



ELEVATION

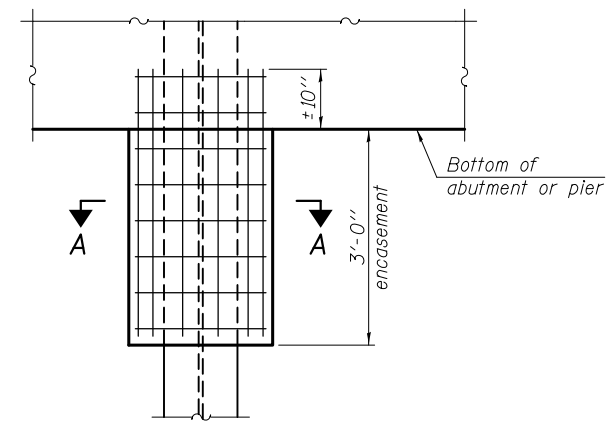


DETAIL "B"



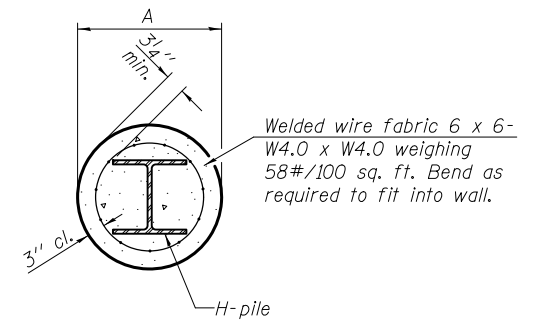
ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE



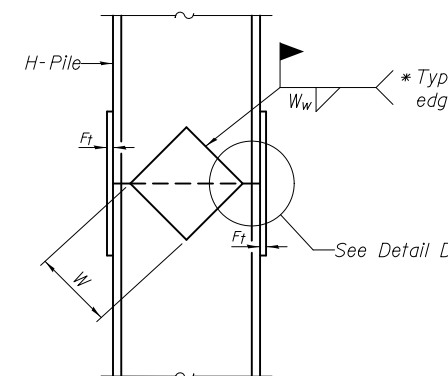
ELEVATION

PILE ENCASEMENT

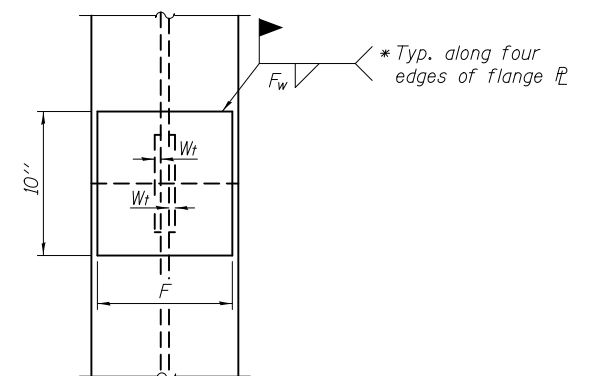


SECTION A-A

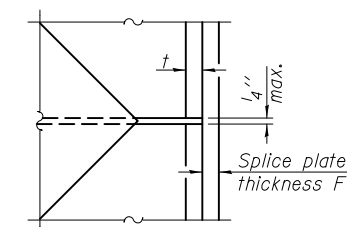
Note:
Forms for encasement may be omitted when soil conditions permit.



ELEVATION



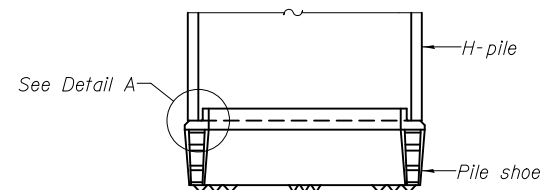
END VIEW



DETAIL D

WELDED PLATE FIELD SPLICE

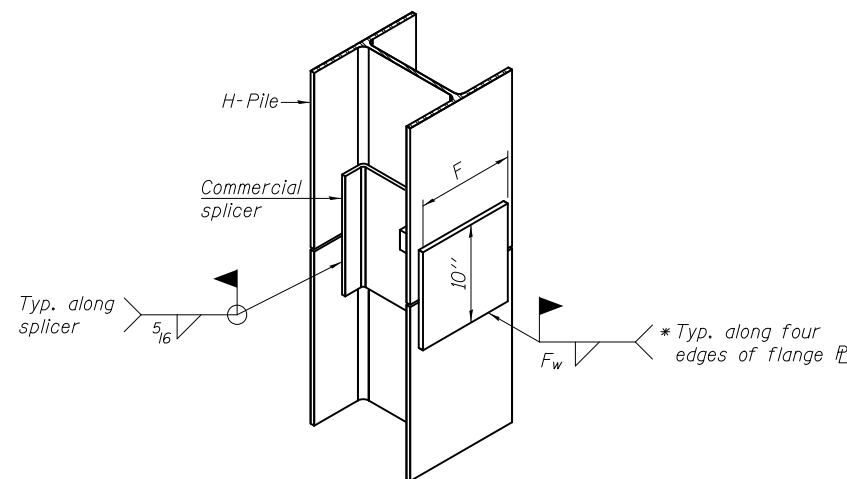
Designation	F	F _t	F _w	W	W _t	W _w
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5/8"	1/2"
x89	12 1/2"	3/4"	1 1/16"	7 3/4"	5/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5/8"	1/2"
HP 12x84	10"	7/8"	1 1/16"	6 1/2"	5/8"	1/2"
x74	10"	7/8"	1 1/16"	6 1/2"	5/8"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"



ELEVATION

DETAIL A

H-PILE SHOE ATTACHMENT



ISOMETRIC VIEW

WELDED COMMERCIAL SPLICE ALTERNATE

- * Interrupt welds 1/4" from end of web and/or each flange.
- ** Remove portions of backup plates that extend outside the flanges.
- *** Weld size per pile shoe manufacturer (5/16" min.).

Note:
The steel H-piles shall be according to AASHTO M270 Grade 50.

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F-HP 7-1-10

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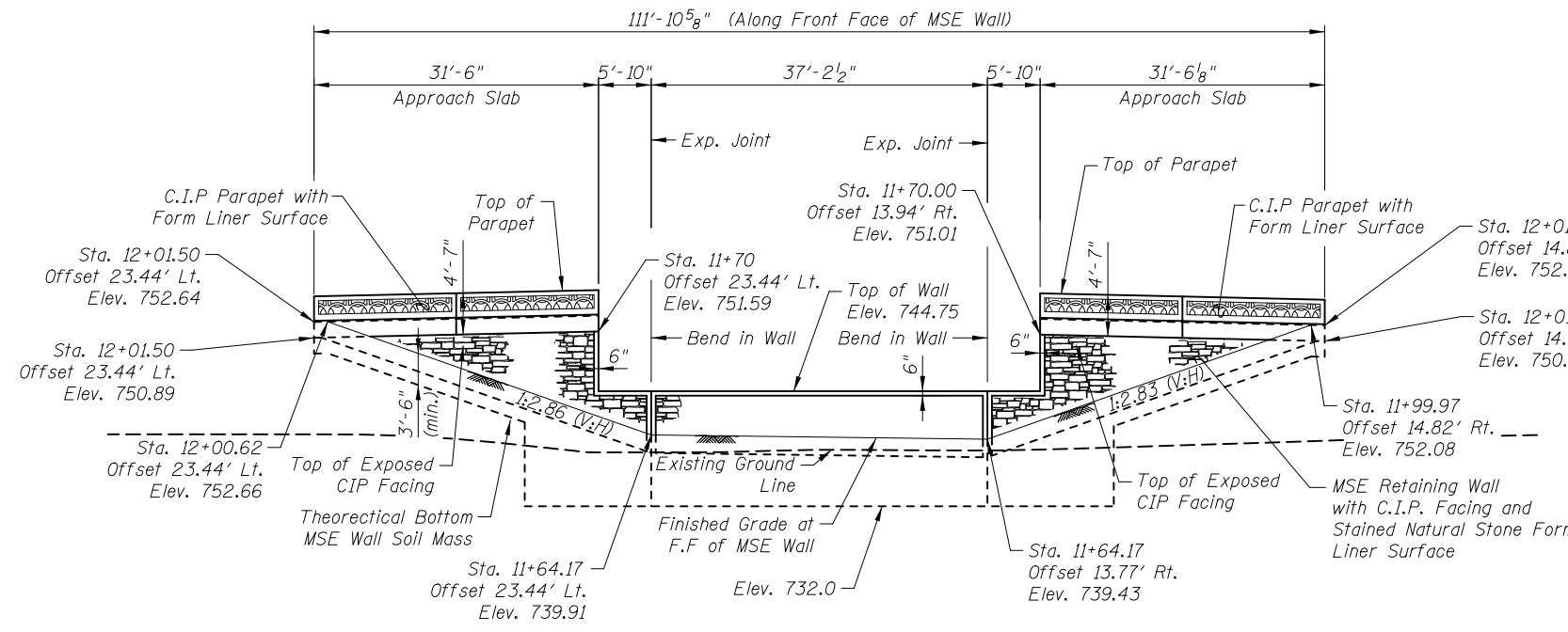
DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

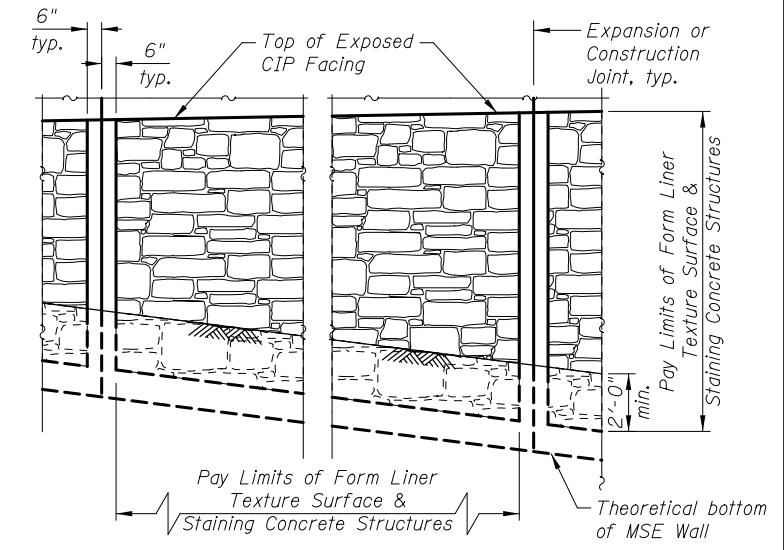
**PILE DETAILS
NB EXIT RAMP (RAMP B) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0079**

SHEET NO. SC22 OF SC29 SHEETS

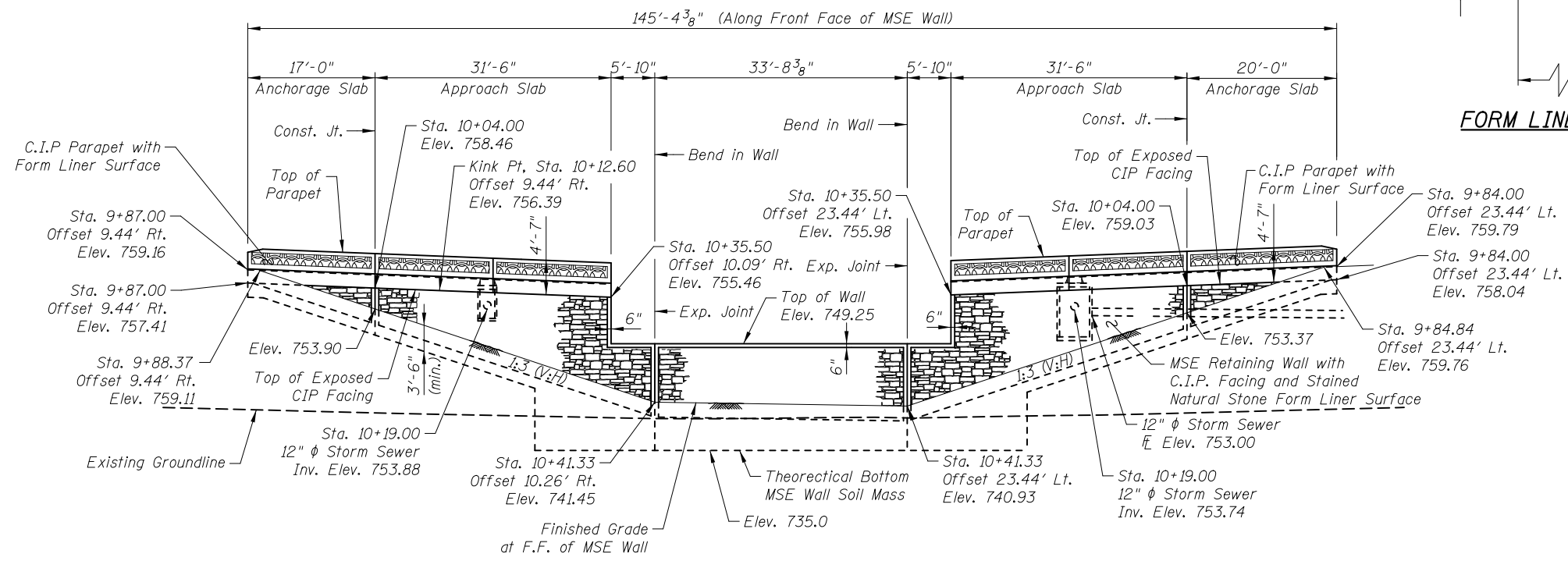
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	547
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				



NORTH ABUTMENT WALL
Unfolded Elevation



FORM LINER TEXTURE SURFACE DETAIL



SOUTH ABUTMENT WALL
Unfolded Elevation

Notes:
See sheet SC1 for Plan view.
See sheet SC11 for Parapet formliner details.
Offsets are measured from \square Ramp B to the Front Face of MSE Wall.

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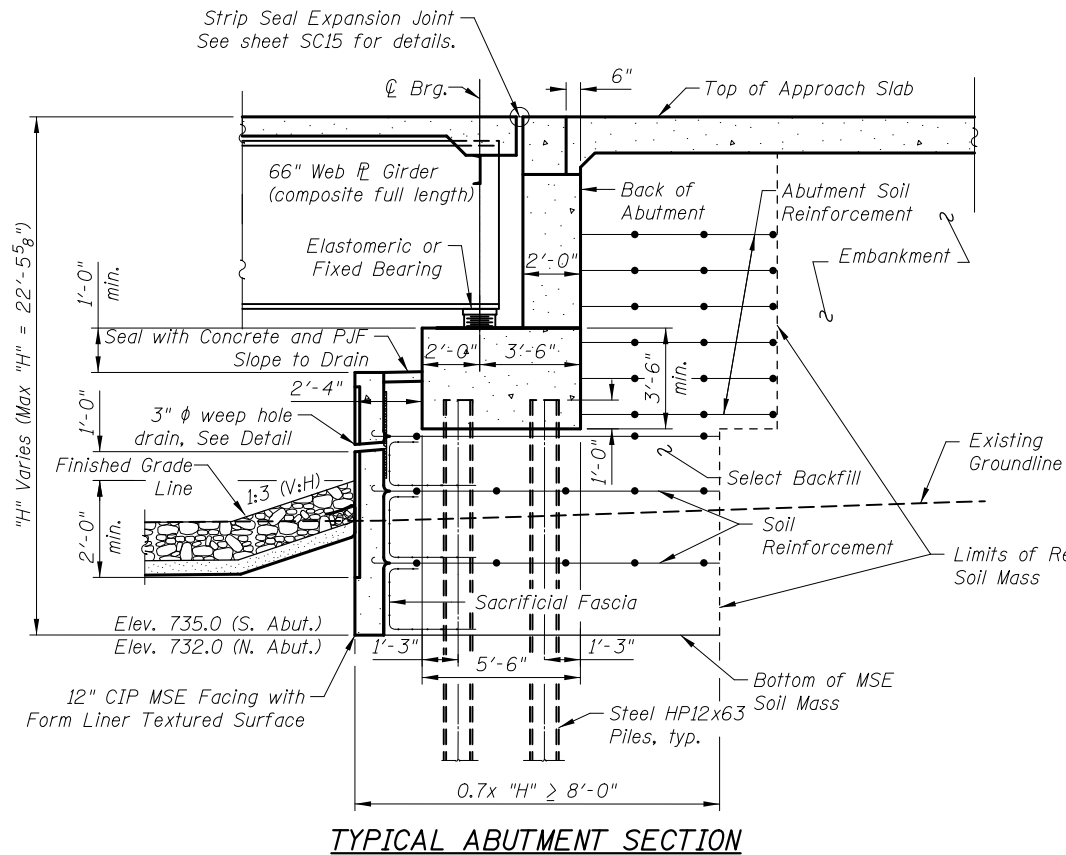
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DATE	- 5/3/2012	REVISED	-

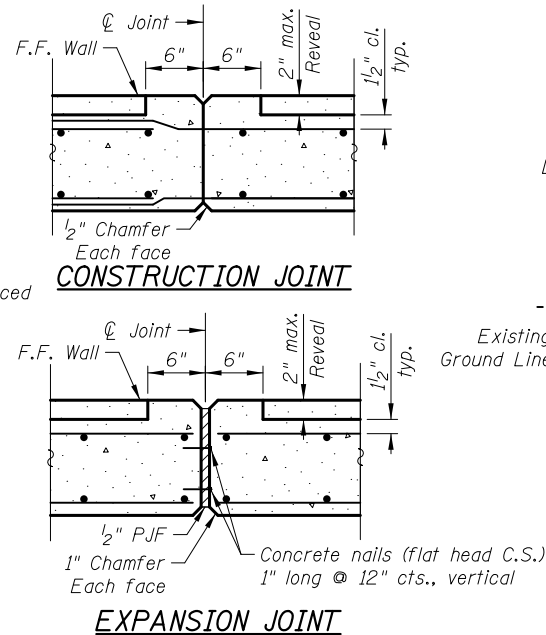
STATE OF ILLINOIS
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MSE WALLS
NB EXIT RAMP (RAMP B) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0079
SHEET NO. SC23 OF SC29 SHEETS

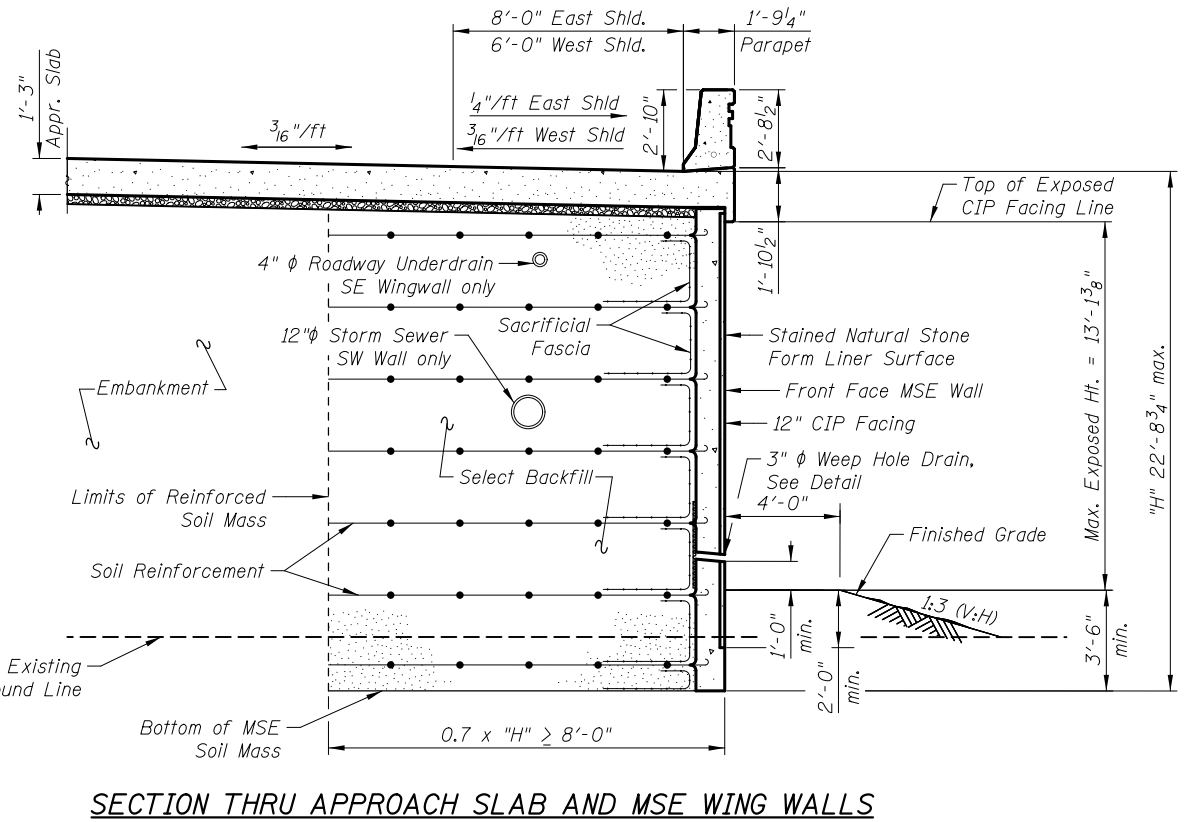
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	548
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				



TYPICAL ABUTMENT SECTION



EXPANSION JOINT

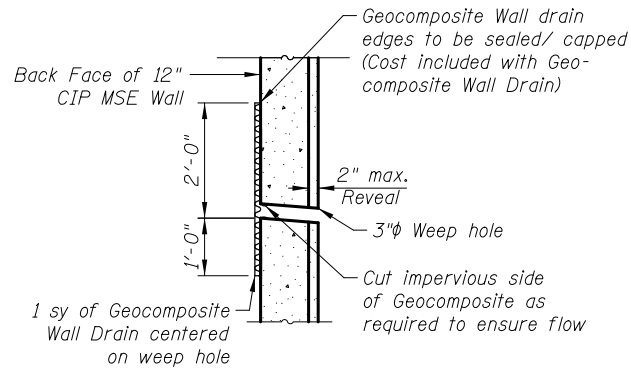


SECTION THRU APPROACH SLAB AND MSE WING WALLS

BILL OF MATERIAL

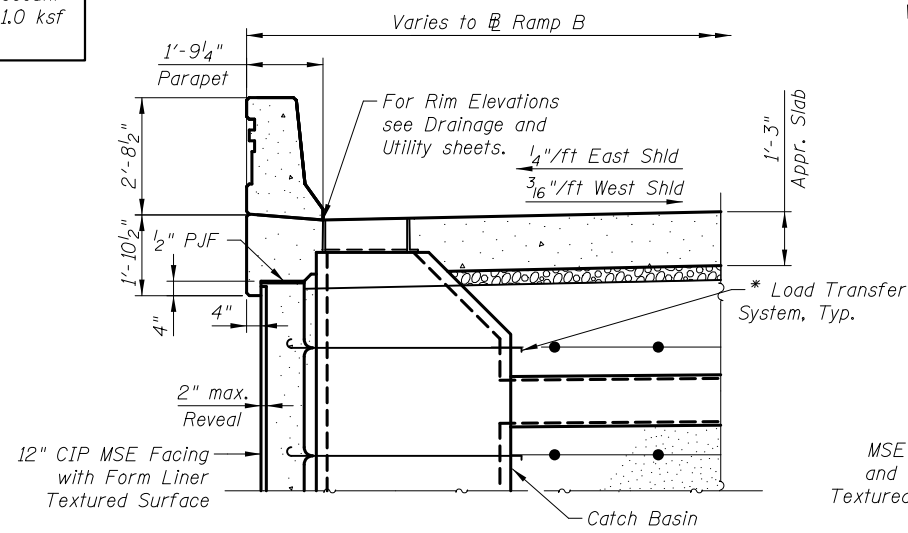
ITEM	UNIT	TOTAL
Concrete Structures	Cu. Yd.	1.1
Form Liner Textured Surface	Sq. Ft.	1,775
Geocomposite Wall Drain	Sq. Yd.	34
Mechanically Stabilized Earth Retaining Wall	Sq. Ft.	2,846
Staining Concrete Structures	Sq. Yd.	197

The MSE Wall supplier shall design the abutment soil reinforcement to resist an unfactored horizontal force of 4.1 kips/ft. of abutment.
 The MSE wall supplier's internal stability design shall account for the anchorage slab's bearing pressure surcharge of 1.0 ksf and horizontal sliding force of 0.5 kips/ft. of wall.



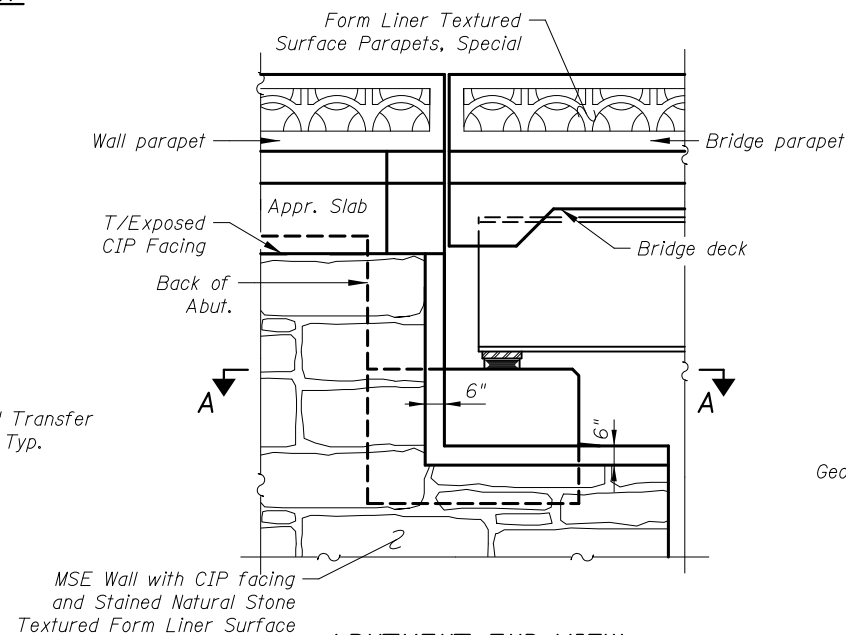
WEEP HOLE DRAIN DETAIL

Weep hole spacing shall be at ±8'-0" horizontally

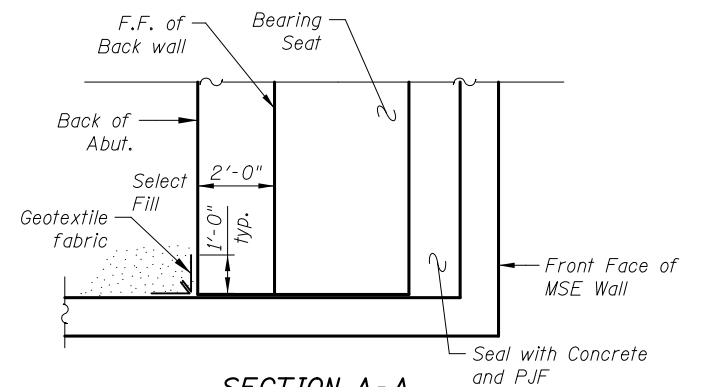


SECTION THRU DRAINAGE STRUCTURE

* M.S.E. supplier to design load transfer system to accommodate concrete pipe and catch basin



ABUTMENT END VIEW

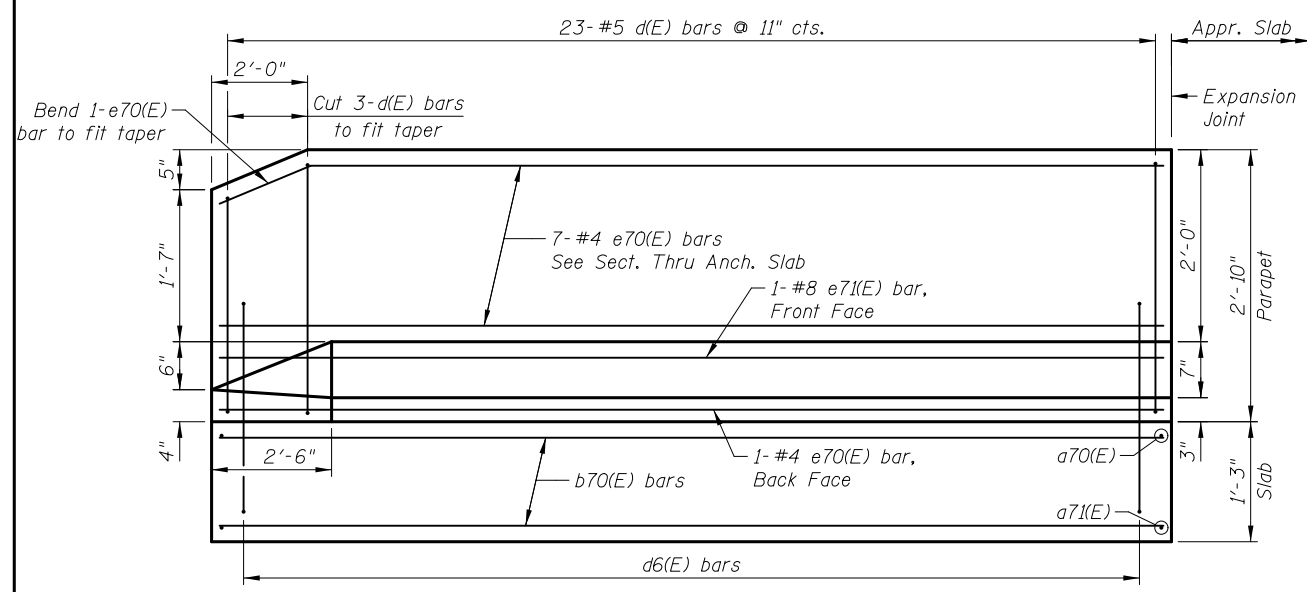


SECTION A-A

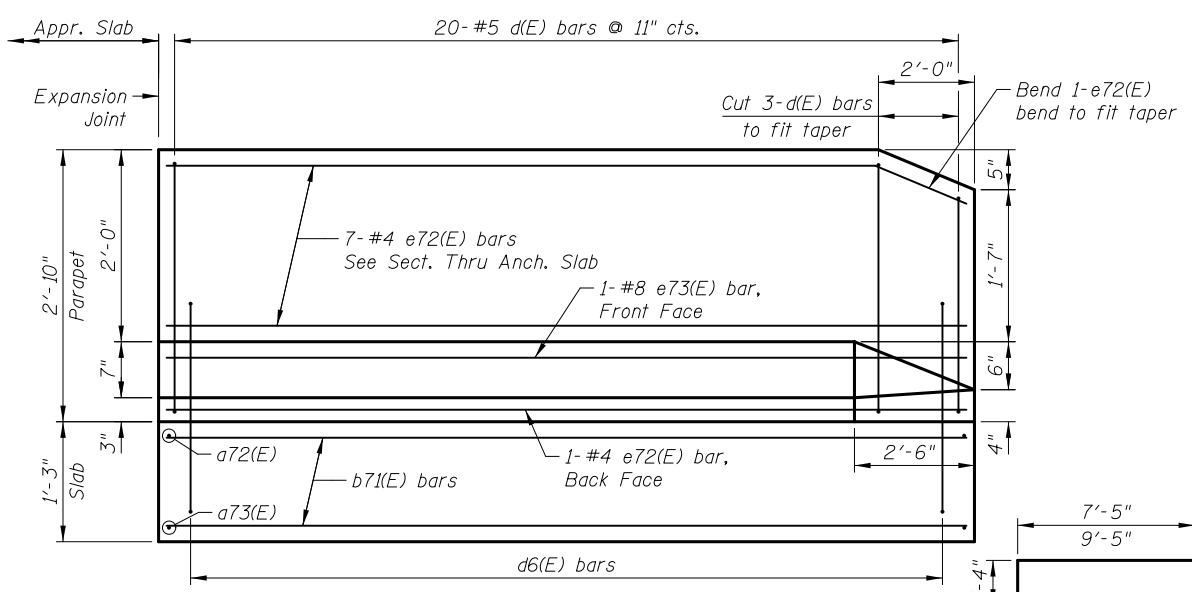
Notes:
 For Section Thru Anchorage Slabs see sheet SC25.
 Seal with Concrete and P.J.F shall be paid for as Concrete Structures.
 Geotextile Fabric shall be paid for as Mechanically Stabilized Earth Retaining Wall.
 For Form Liner Texture Surface Details see sheet SC23.

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ELEVATION SW ANCHORAGE SLAB
(Front Face of parapet)

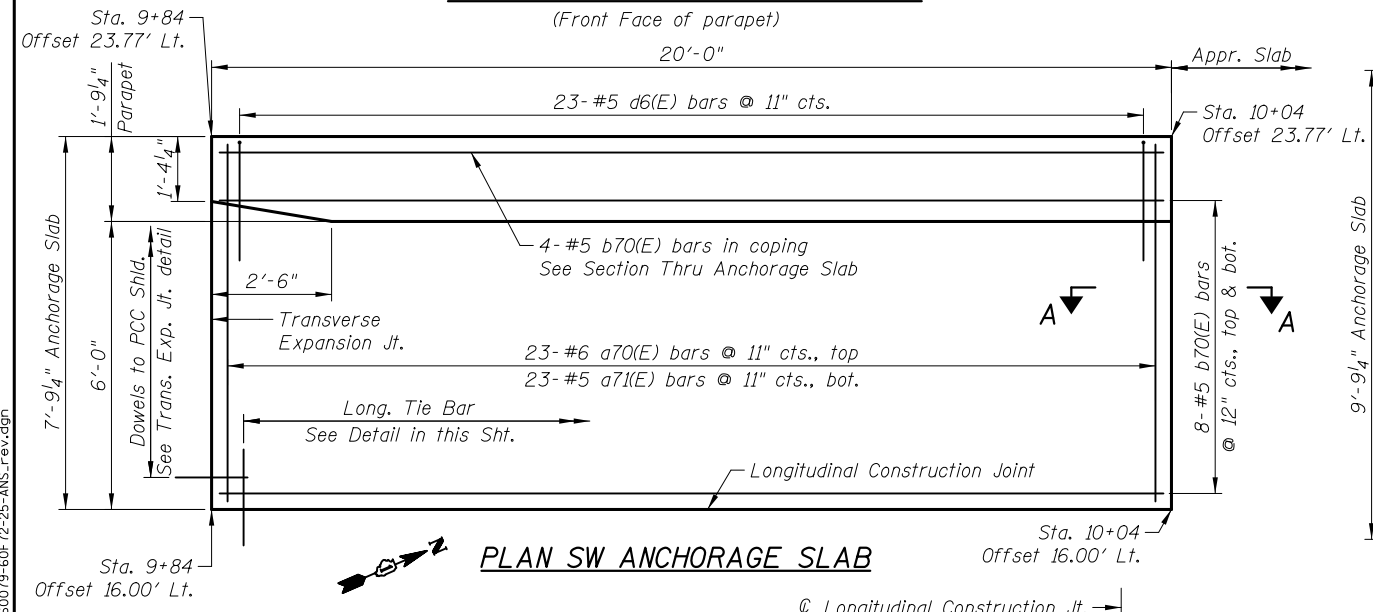


ELEVATION SE ANCHORAGE SLAB
(Front Face of parapet)

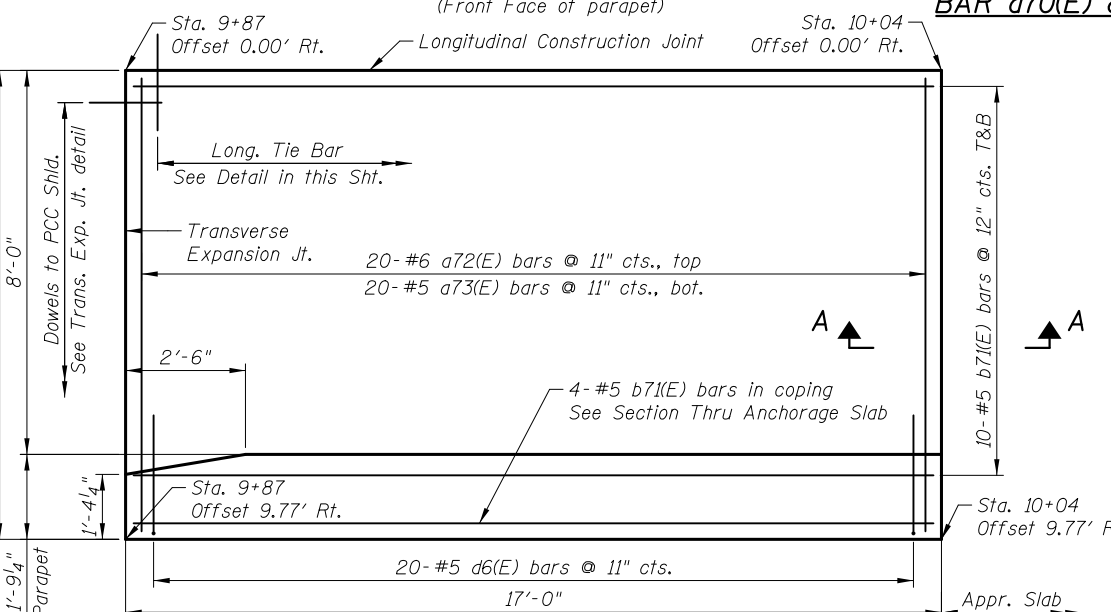
**ANCHORAGE SLAB
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a70(E)	23	#6	8'-9"	┌
a71(E)	23	#5	7'-5"	┌
a72(E)	20	#6	10'-9"	┌
a73(E)	20	#5	9'-5"	┌
b70(E)	20	#5	19'-8"	—
b71(E)	24	#5	16'-8"	—
d(E)	43	#5	5'-7"	└
d6(E)	43	#5	7'-11"	└
e70(E)	8	#4	19'-8"	—
e71(E)	1	#8	19'-8"	—
e72(E)	8	#4	16'-8"	—
e73(E)	1	#8	16'-8"	—

Item	Unit	Quantity
Concrete Superstructures	Cu. Yds.	21.8
Protective Coat	Sq. Yd.	45
Reinforcement Bars, Epoxy Coated	Pound	2,730
Form Liner Textured Surface, Special	Sq. Ft.	53

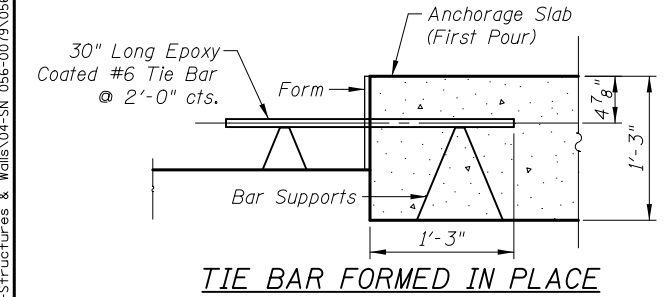
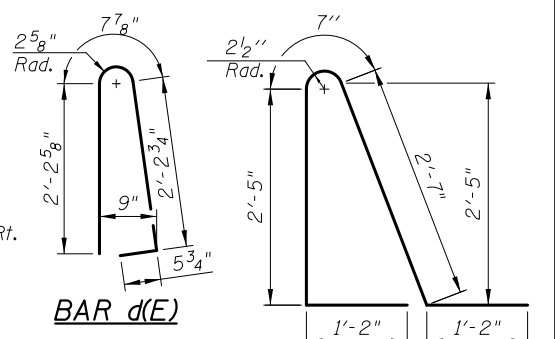


PLAN SW ANCHORAGE SLAB

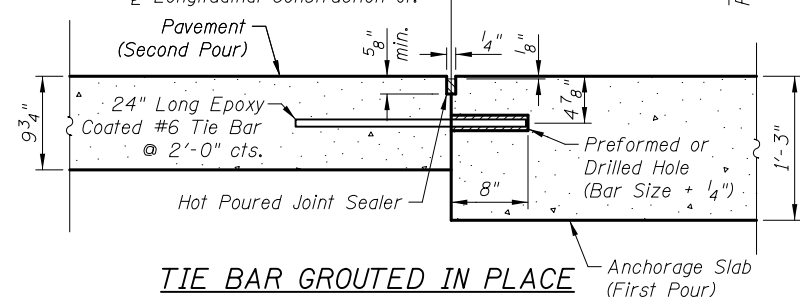


PLAN SE ANCHORAGE SLAB

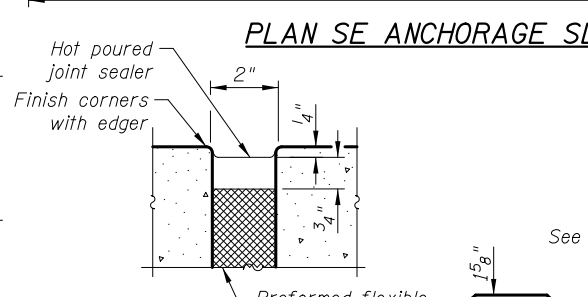
Sheet Notes:
 See sheet SC11 for Parapet Form Liner details and SC13 for Parapet Joint Detail.
 Expansion Joint and Dowel Bars included in the cost of Concrete Superstructures.



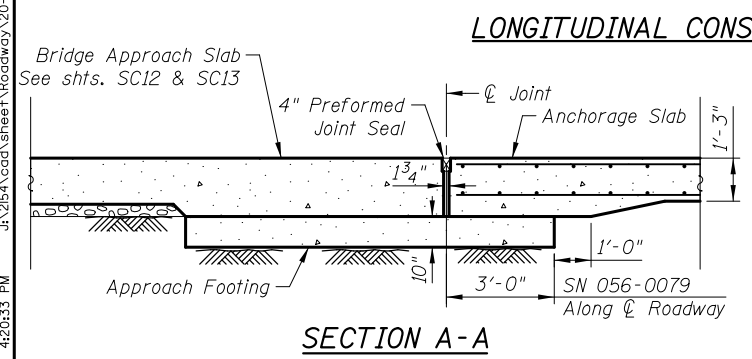
TIE BAR FORMED IN PLACE



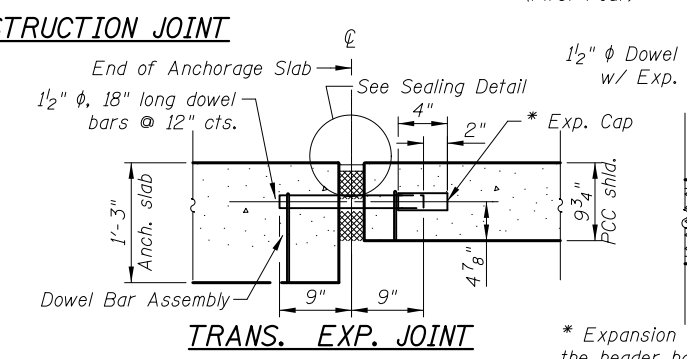
TIE BAR GROUTED IN PLACE



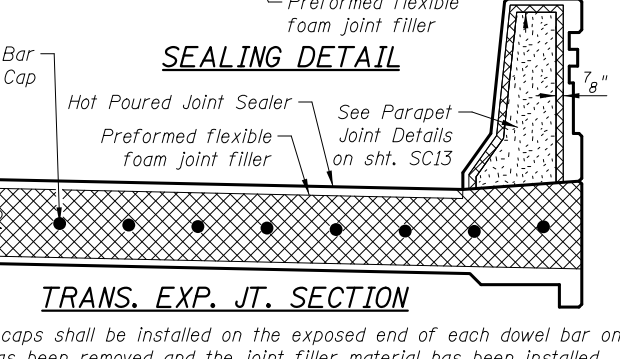
SEALING DETAIL



SECTION A-A

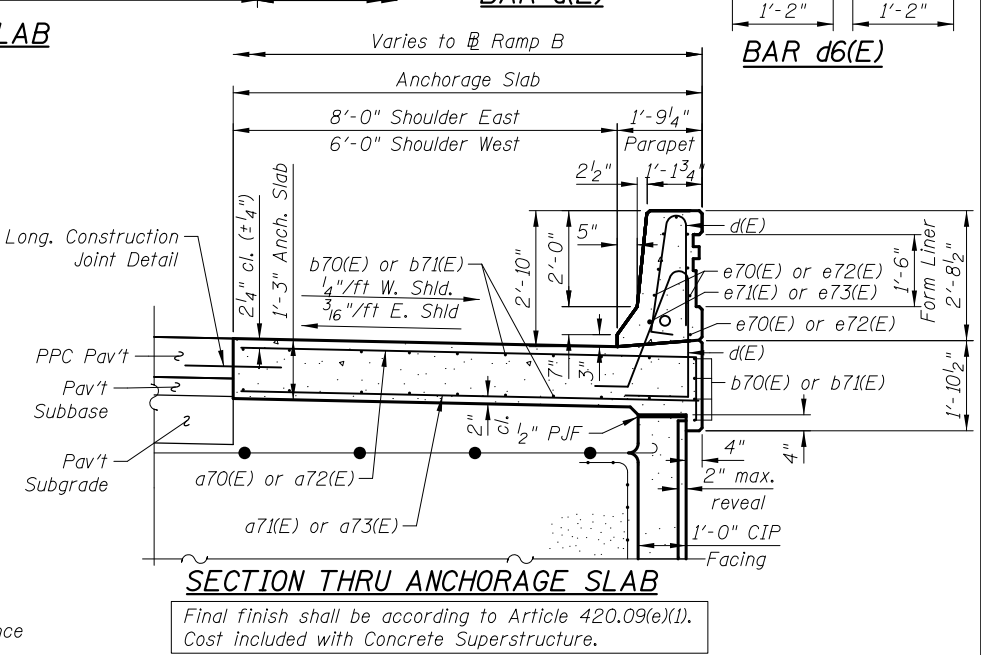


TRANS. EXP. JOINT



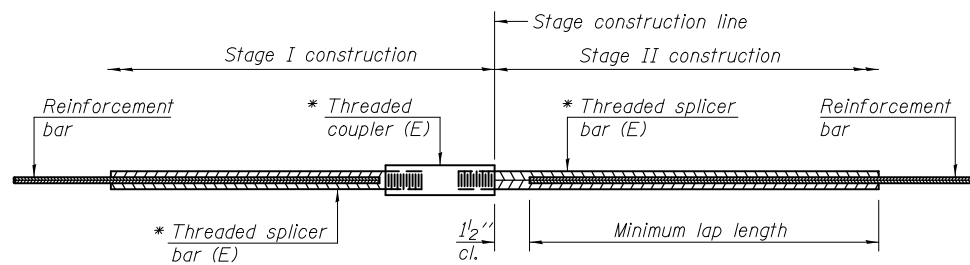
TRANS. EXP. JT. SECTION

* 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.



SECTION THRU ANCHORAGE SLAB

Final finish shall be according to Article 420.09(e)(1).
 Cost included with Concrete Superstructure.



STANDARD BAR SPLICER ASSEMBLY

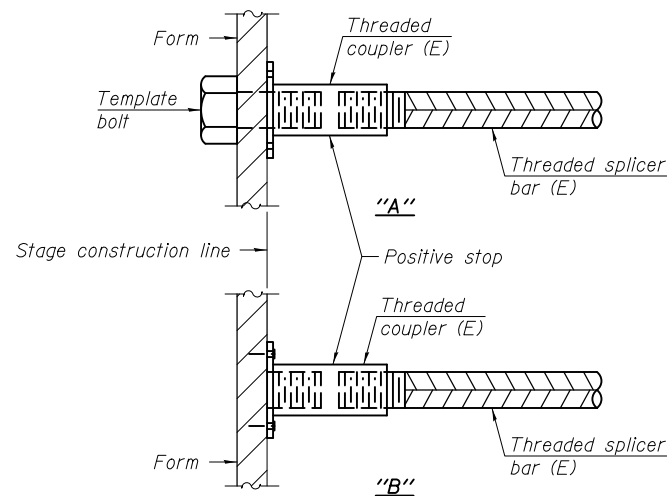
Minimum Lap Lengths					
Bar size to be spliced	Table 1	Table 2	Table 3	Table 4	Table 5
3, 4	1'-5"	1'-11"	2'-1"	2'-4"	2'-3"
5	1'-9"	2'-5"	2'-7"	2'-11"	2'-10"
6	2'-1"	2'-11"	3'-1"	3'-6"	3'-4"
7	2'-9"	3'-10"	4'-2"	4'-8"	4'-6"
8	3'-8"	5'-1"	5'-5"	6'-2"	5'-10"
9	4'-7"	6'-5"	6'-10"	7'-9"	7'-5"

- Table 1: Black bar, 0.8 Class C
- Table 2: Black bar, Top bar lap, 0.8 Class C
- Table 3: Epoxy bar, 0.8 Class C
- Table 4: Epoxy bar, Top bar lap, 0.8 Class C
- Table 5: Epoxy bar, Top bar lap, Class B

Threaded splicer bar length = min. lap length + 1/2" + thread length

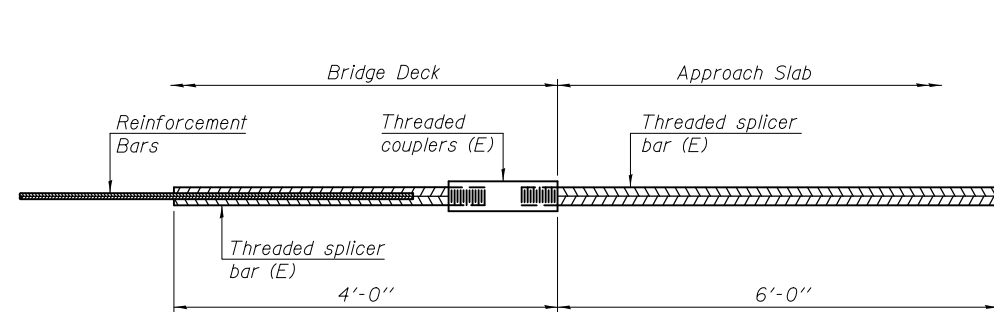
* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Table for minimum lap length



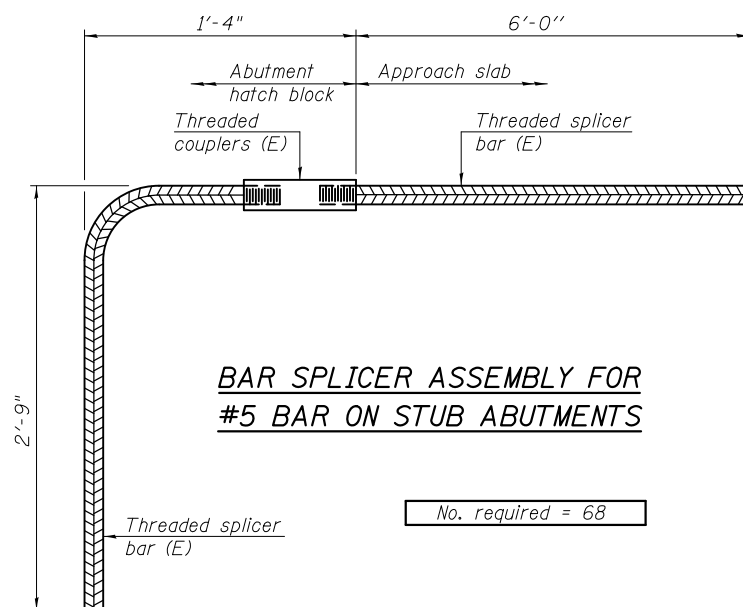
INSTALLATION AND SETTING METHODS

"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.



BAR SPLICER ASSEMBLY FOR #5 BAR ON INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

No. required =



BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS

No. required = 68

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 and mechanical splicers for alternatives.

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MIDLAND STANDARD ENGINEERING & TESTING, INC.

BRIDGE FOUNDATION BORING LOG

SHEET 1 OF 2

PROJECT IL. 31 - Algonquin Bypass BRIDGE Ramp B over Crystal Creek DATE 12/31/08, 1/7/09

ROUTE IL. Route 31 - Ramp B (Northbound Exit to Route 62) BORED BY SPE

SECTION STATION 10+20 to 11+80 CHECKED BY WJW

COUNTY McHenry
BORING BB-11
STATION 11+81
OFFSET 13' L of CL

WATER LEVEL DURING DRILLING 1.5'				Rotary Mud Drilling, Hole Grouted at Completion			
Depth	N/6"	Qu tsf	W %	Depth	N/6"	Qu tsf	W %
GROUND SURFACE EL. 739.5				Ft			
Black Silty CLAY, A-7-6				719.5			
Grey SAND and GRAVEL, A-1, medium dense to dense				738.2			
3	5	-	9	6	10	2.56	13
7	13	-	8	5	10	2.40	13
15	15	-	10	12	12	3.41	12
21	58	-	8	8	13	3.57	13
11	15	-	7	13	21	3.28	15
Grey Clay LOAM, A-6				726.5			
5	7	3.09	14	4	8	2.09	13
7	12	2.05	14	12	16	-	20
Grey and Brown Clay LOAM, A-6(7)*				720			
ST	2.52	B	14	5	18	3.28	15

N-Standard Penetration Test- Blows per foot to drive 2 inch O.D. Split Spoon Sampler 12 inches with 140 lbs. hammer falling 30 inches

Qu- Unconfined Compressive Strength (tsf)
W- Water Content-percentage of oven dry weight (%)
* - Classification Test Results on Form BBS 2640

Type failure:
B- Bulge Failure
S- Shear Failure
E- Estimated Value
P-Penetrometer

MIDLAND STANDARD ENGINEERING & TESTING, INC.

BRIDGE FOUNDATION BORING LOG

SHEET 2 OF 2

BORING BB-11

Depth	N/6"	Qu tsf	W %	Depth	N/6"	Qu tsf	W %
CONTINUED				Ft			
Grey Clay LOAM, A-6				699.5			
Grey SAND and GRAVEL, A-1, medium dense				698.5			
13	12	-	7	Grey Gravelly Silt LOAM, A-4, dense			
12	12	-	7	674.5			
8	10	-	18	Grey Dolomite Bedrock moderately to highly weathered, fine to medium grained, thin horizontal bedding with numerous horizontal fractures, slightly porous			
10	12	-	19	671.0			
12	16	-	20	Core Run 1 Recovery = 100% RQD = 11%			
10	12	-	19	End of Boring @ 78.5'			
12	14	-	20	661.0			
14	16	-	20	Grey Gravelly Silt LOAM, A-4, dense			
16	15	-	5	678.0			
15	26	-	5	continued			

ROCK CORE

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450 E Devon Ave, Suite 300
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www.civiltechinc.com

DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BORING LOGS II
NB EXIT RAMP (RAMP B) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0079

SHEET NO. SC28 OF SC29 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	553
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

MIDLAND STANDARD ENGINEERING & TESTING, INC.

BRIDGE FOUNDATION BORING LOG

SHEET 1 OF 2

PROJECT IL. 31 - Algonquin Bypass BRIDGE Ramp B over Crystal Creek DATE 1/12/09
 ROUTE IL. Route 31 - Ramp B (Northbound Exit) BORED BY SPE
 SECTION _____ STATION 10+20 to 11+80 CHECKED BY WJW

COUNTY <u>McHenry</u>		WATER LEVEL DURING DRILLING <u>2.5'</u>		WATER LEVEL DURING DRILLING <u>2.5'</u>					
BORING <u>BB-12</u>		GROUND WATER AT COMPLETION <u>2.7'</u>		GROUND WATER AT COMPLETION <u>2.7'</u>					
STATION <u>10+21</u>		GROUTED AT COMPLETION		GROUTED AT COMPLETION					
OFFSET <u>3' R of CL</u>		Depth	N/6"	Qu	W	Depth	N/6"	Qu	W
		Ft		tsf	%	Ft		tsf	%
GROUND SURFACE EL. <u>739.8</u>									
Black Silty CLAY/TOPSOIL									
Brown SAND and GRAVEL, A-1, medium dense <u>738.8</u>		6		-	11	6		2.60	13
		5				8		B	
		7				11			
		13		-	5	12		2.25	14
		10				10		B	
to dense		7				5			
		11		-	9	10		3.71	14
		27				16		B	
Cobble @ 9.5'		28				8			
		50/2"		-	8	12		3.79	13
						13		B	
Brown-Grey Clay LOAM, A-6, very stiff to hard <u>726.8</u>		11				8			
		7		3.60	13	10		2.56	14
		11		B		13		B	
		6							
		9		3.33	13				
		14		B					
		6				6			
		10		4.26	13	8		2.52	13
		16		B		11		B	

N-Standard Penetration Test- Blows per foot to drive 2 inch O.D. Split Spoon Sampler 12 inches with 140 lbs. hammer falling 30 inches
 Qu- Unconfined Compressive Strength (tsf)
 W- Water Content-percentage of oven dry weight (%)
 Type failure: B- Bulge Failure
 S- Shear Failure
 E- Estimated Value
 P-Penetrometer

MIDLAND STANDARD ENGINEERING & TESTING, INC.

BRIDGE FOUNDATION BORING LOG

SHEET 2 OF 2

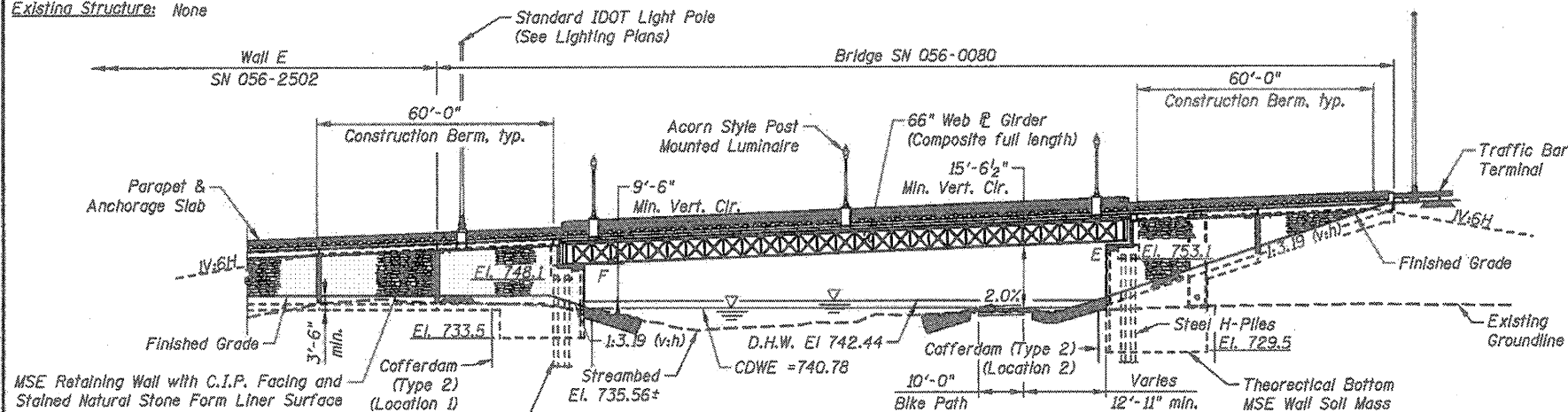
BORING BB-12

Depth	N/6"	Qu	W	Depth	N/6"	Qu	W
Ft		tsf	%	Ft		tsf	%
CONTINUED							
Grey SAND and GRAVEL, A-1, medium dense	699.8						
	6						
	11		6				
	16						
Grey SAND, A-2	693.3						
	10						
	10		16				
	17						
End of Boring @ 50.0'	689.8						

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Benchmark: Control Point CP43, Mag Nail Set, Station 10+30.54, Offset 94.55' Rt.
Elev. 820.0

Existing Structure: None

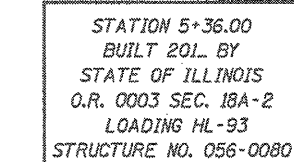


DESIGN SCOUR ELEVATION TABLE

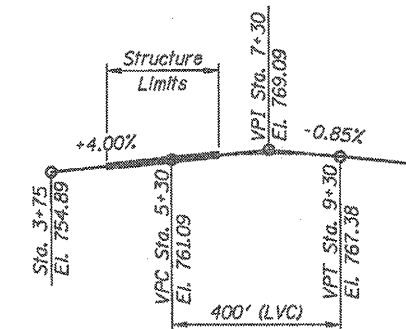
Design Scour Elevation (ft.)	S. Abut.	N. Abut.
	731.85	735.81

ELEVATION
(Looking East)

PROPOSED PROFILE
BIKE PATH



PROPOSED PROFILE
IL RTE. 31 RAMP C



NAME PLATE
See Std. 515001

CIVILTECH ENGINEERING, INC.
GREGORY J. HATLESTAD, S.E.



GREGORY J. HATLESTAD, S.E.
081-005562

EXP 11/30/12

DATE 3/15/12

APPROVED
For Structural Adequacy Only

Gregory J. Hatlestad
Engineer of Bridges & Structures

DESIGN SPECIFICATIONS

2010 AASHTO LRFD Bridge Design Specifications
With 2010 Interims

DESIGN STRESSES

FIELD UNITS

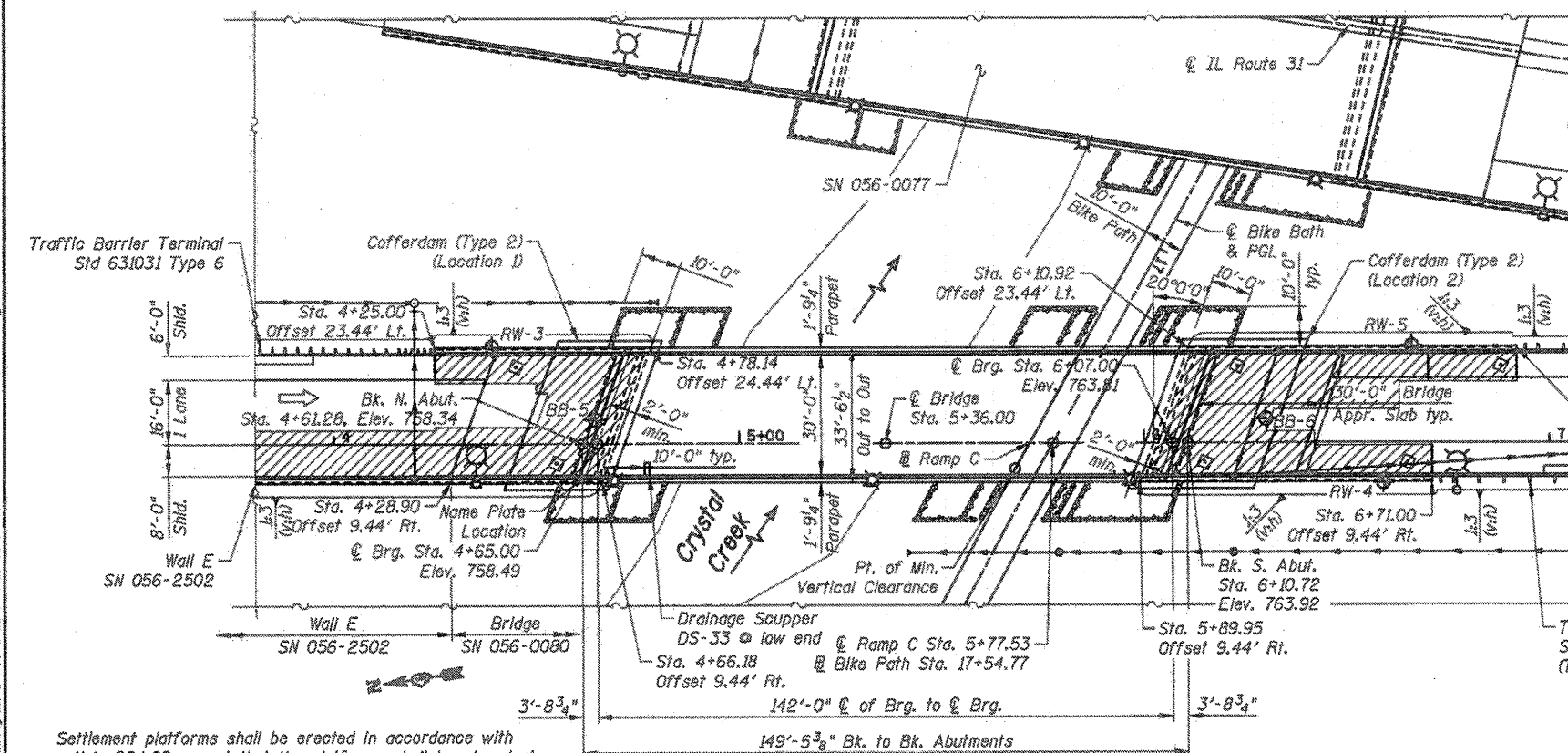
f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (AASHTO M270 Gr. 50 - Main Girders)
fy = 36,000 psi (AASHTO M270 Gr. 36 - Secondary Members)

LOADING HL-93

Allow 50#/sq. ft. for future wearing surface.

SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.081
Design Spectral Acceleration at 0.2 sec. (S_{D2}) = 0.142
Soil Site Class = D

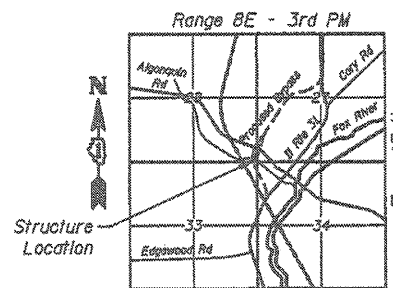


PLAN

WATERWAY INFORMATION

Drainage Area = 26.5 Square Miles		Low Grade Elev. 751.09 @ Sta. 7+80.8					
Flood	Yr.	Q C.F.S.	Head - Ft.	Headwater El.			
		Exlst.	Prop.	Exlst.	Prop.		
Design	50	2647	547.6	742.44	0.64	742.44	743.08
Base	100	3518	619.0	742.99	0.89	742.99	743.88
Overlapping							
Max. Calc.	500	5209	735.0	743.88	1.09	743.88	744.97

Note: MSE Abutment wall offsets are measured from the @ Ramp C to the front face of the MSE wall.



LOCATION SKETCH

GENERAL PLAN & ELEVATION
SB. ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK

O.R. 0003 SECTION 18A-2

McHENRY COUNTY

STATION 5+36.00

STRUCTURE NO. 056-0080

CIVILTECH
450 E Devon Ave, Suite 300
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www.civiltechinc.com

DRAWN - M. LANGE	REVISED -
DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 3/23/2012	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION
SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0080
SHEET NO. SD 1 OF SD30 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	McHENRY	825	555
ILLINOIS FED. AID PROJECT			CONTRACT NO. 60F72	

GENERAL NOTES

- Fasteners shall be AASHTO M164 Type 1, mechanically galvanized bolts. Bolts $\frac{7}{8}$ in. ϕ , holes $\frac{15}{16}$ in. ϕ , unless otherwise noted.
- Calculated weight of Structural Steel = 189,630 lbs (AASHTO M270 GR. 50)
Calculated weight of Structural Steel = 14,840 lbs (AASHTO M270 GR. 36)
- No field welding is permitted except as specified in the contract documents.
- Reinforcement bars designated (E) shall be epoxy coated.
- If the Contractor elects to use cantilever forming brackets on the exterior beams or girders, the brackets shall be placed at the same locations as required for the hardwood blocks in Article 503.06(b) of the Standard Specifications. If additional cantilever forming brackets are required, hardwood blocking shall be wedged between the exterior and first interior beam at each of these additional bracket locations.
- Concrete Sealer shall be applied to the designated areas of the backwalls and bridge seats of the abutments.
- The Organic Zinc Rich Primer / Epoxy / Urethane Paint System shall be used for painting of new structural steel except where otherwise noted. The entire system shall be shop applied, with the exception that masked off connection surfaces, field installed fasteners and damaged areas shall be touched up in the field. The color of the final finish coat for all steel surfaces shall be Gray, Munsell No. 5B 7/1.
- The embankment configuration shown shall be the minimum that must be placed and compacted prior to construction of the abutments.
- Neither the MSE wall cast-in-place concrete facing, anchorage slab & parapet, approach slabs, nor approach roadway pavements shall be constructed until after the roadway embankment and reinforced select fill have been in place for 4 months, after which time less than 1 inch of the total anticipated 6 inches settlement is assumed to remain, without the prior approval of the Engineer. The settlement period may be shortened at the discretion of the Engineer if the monitoring data indicates a lesser than predicted settlement.
- Slipforming of the parapets is not allowed.
- Layout of slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.

INDEX OF SHEETS

- SD1 General Plan & Elevation
- SD2 General Data
- SD3 Riprap Details
- SD4 Top of Slab Elevations I
- SD5 Top of Slab Elevations II
- SD6 Top of Approach Slab Elevations
- SD7 Superstructure
- SD8 Superstructure Details I
- SD9 Superstructure Details II
- SD10 Ornamental Aluminum Lattice
- SD11 Architectural Details
- SD12 Approach Slabs
- SD13 Approach Slab Details
- SD14 Parapet Railing, Special
- SD15 Preformed Joint Strip Seal
- SD16 Drainage Scuppers, DS-33
- SD17 Framing Plan
- SD18 Plate Girder Details
- SD19 Bearing Details
- SD20 Abutments
- SD21 Abutment Details
- SD22 Pile Details
- SD23 MSE Walls
- SD24 MSE Wall Details
- SD25 Anchorage Slabs
- SD26 Anchorage Slab Details
- SD27 Bar Splicer Assembly Details
- SD28 Boring Logs I
- SD29 Boring Logs II
- SD30 Boring Logs III

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Stone Riprap, Class A5	Sq. Yd.	-	340	340
Filter Fabric	Sq. Yd.	-	340	340
Structure Excavation	Cu. Yd.	-	30	30
Cofferdam Excavation	Cu. Yd.	-	766	766
Cofferdam (Type 2) (Location 1)	Each	-	1	1
Cofferdam (Type 2) (Location 2)	Each	-	1	1
Concrete Structures	Cu. Yd.	-	96.6	96.6
Concrete Superstructures	Cu. Yd.	349.2	-	349.2
Bridge Deck Grooving	Sq. Yd.	694	-	694
Form Liner Textured Surface	Sq. Ft.	-	3,364	3,364
Protective Coat	Sq. Yd.	1,000	-	1,000
Furnishing and Erecting Structural Steel	L. Sum	0.17	-	0.17
Stud Shear Connectors	Each	1,095	-	1,095
Reinforcement Bars, Epoxy Coated	Pound	72,400	9,750	82,150
Bar Splicers	Each	68	-	68
Furnishing Steel Piles HP 14x73	Foot	-	1,536	1,536
Driving piles	Foot	-	1,536	1,536
Test Pile Steel HP 14x73	Each	-	2	2
Pile Shoes	Each	-	26	26
Name Plates	Each	1	-	1
Preformed Joint Strip Seal	Foot	68	-	68
Elastomeric Bearing Assembly, Type I	Each	5	-	5
Anchor Bolts, 1"	Each	10	-	10
Anchor Bolts, 1 1/4"	Each	10	-	10
Concrete Sealer	Sq. Ft.	-	555	555
Geocomposite Wall Drain	Sq. Yd.	-	42	42
Parapet Railing, Special	Foot	290	-	290
Drainage Scuppers, DS-33	Each	1	-	1
Mechanically Stabilized Earth Retaining Wall	Sq. Ft.	-	5,334	5,334
Staining Concrete Structures	Sq. Yd.	-	374	374
Form Liner Textured Surface, Special	Sq. Ft.	695	-	695
Ornamental Aluminum Lattice	Foot	284	-	284

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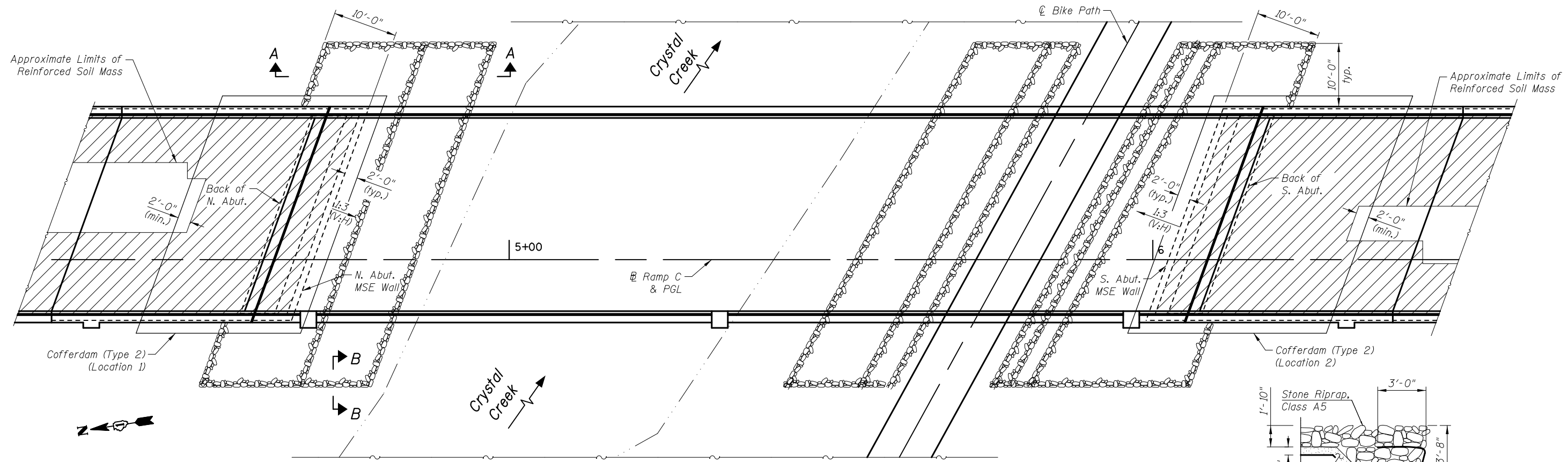
DRAWN - M. LANGE	REVISED - Δ 5/4/12 K.L.B.
DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 5/3/2012	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

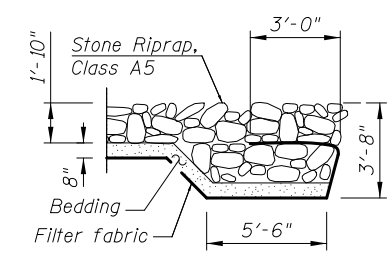
**GENERAL DATA
SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0080**

SHEET NO. SD2 OF SD30 SHEETS

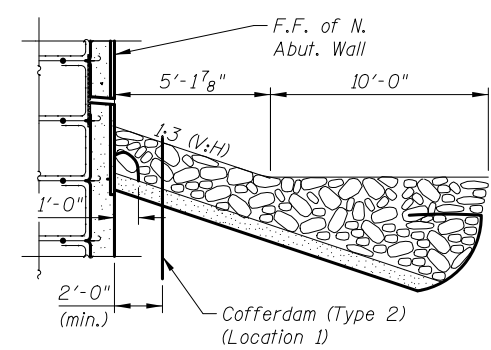
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	556
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				



PLAN

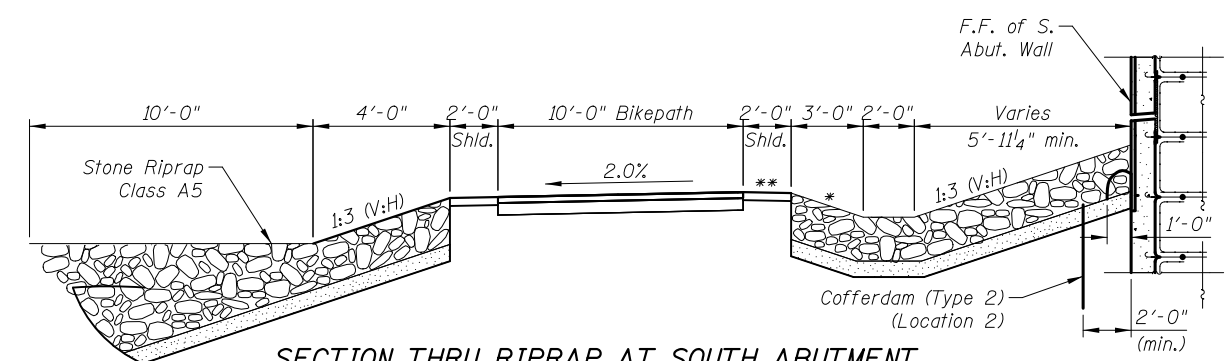


SECTION B-B



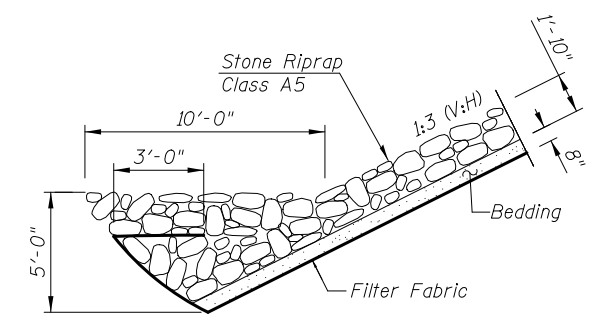
SECTION THRU RIPRAP AT NORTH ABUTMENT

Dimensions and slopes measured at Rt. L's to Abutment
See Section A-A for balance of information



SECTION THRU RIPRAP AT SOUTH ABUTMENT

Dimensions and slopes measured at Rt. L's to the Bikepath
See Section A-A for balance of information



SECTION A-A

Bedding to be included in the cost of Stone Riprap, Class A5

BILL OF MATERIAL

Item	Unit	Total
Stone Riprap, Class A5	Sq. Yd.	340
Filter Fabric	Sq. Yd.	340
Cofferdam Excavation	Cu. Yd.	766
Cofferdam (Type 2) (Location 1)	Each	1
Cofferdam (Type 2) (Location 2)	Each	1

* 1:3 (V:H)
** 2.00%

Note:
Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.

4/2/18 PM
 5/2/2012
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 Tel: 630.773.3900 Fax: 630.773.3975
 www.civiltechinc.com

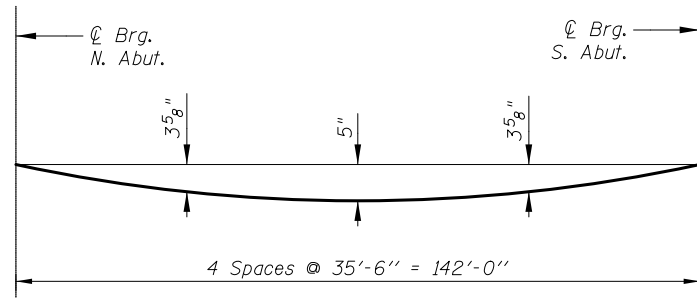
DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

RIPRAP DETAILS
SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0080

SHEET NO. SD3 OF SD30 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	557
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

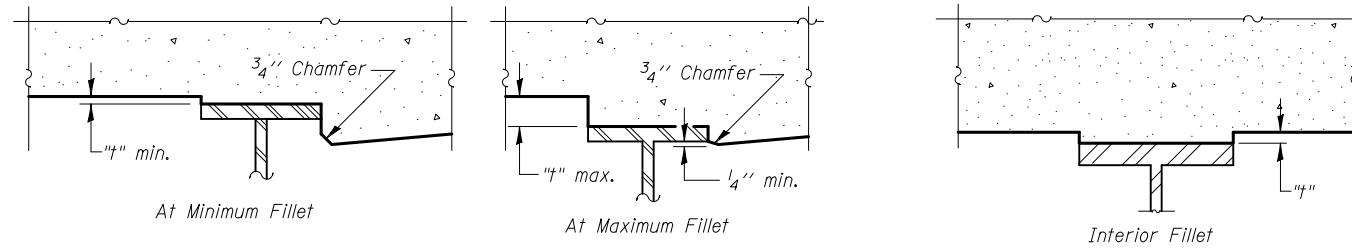


DEAD LOAD DEFLECTION DIAGRAM

(Includes weight of concrete only.)

Note:

The above deflections are not for use in the field if the Engineer is working from the "Theoretical Grade Elevations adjusted for Dead Load Deflection on Sheet SD5."

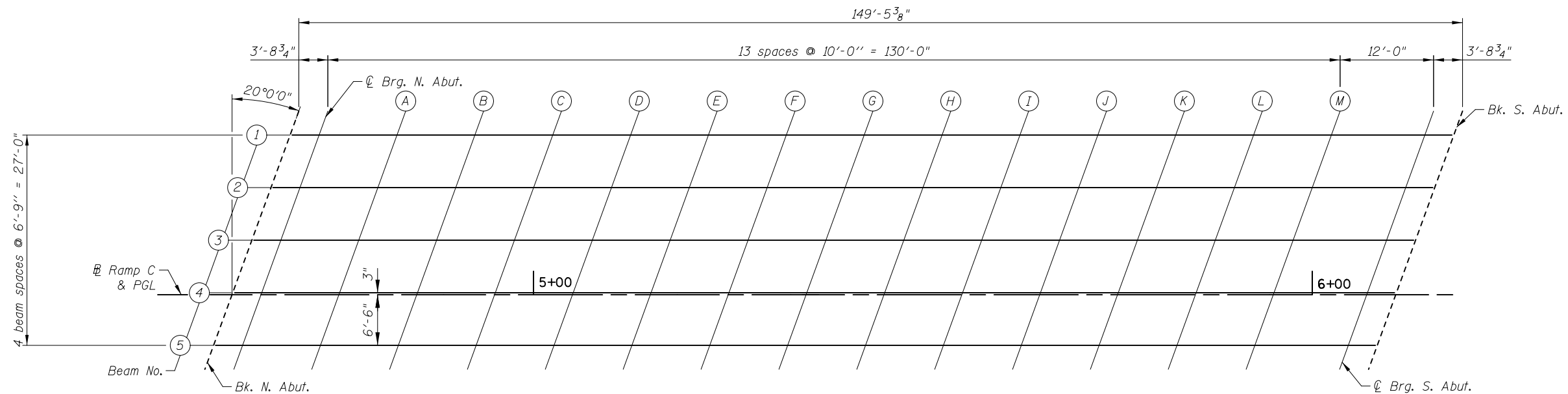


Exterior Beams

To determine "t": After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" shown on sheet SD5, minus slab thickness, equals the fillet heights "t" above top flange of beams.

Interior Beams

FILLET HEIGHTS



PLAN



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DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

O.R. RTÉ.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	558
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N Abut.	4+68.74	-20.50	758.96	758.96
⊕ Brg. N Abut.	4+72.46	-20.50	759.11	759.11
A	4+82.46	-20.50	759.51	759.60
B	4+92.46	-20.50	759.91	760.09
C	5+02.46	-20.50	760.31	760.57
D	5+12.46	-20.50	760.71	761.04
E	5+22.46	-20.50	761.11	761.48
F	5+32.46	-20.50	761.51	761.91
G	5+42.46	-20.50	761.90	762.32
H	5+52.46	-20.50	762.28	762.70
I	5+62.46	-20.50	762.64	763.03
J	5+72.46	-20.50	763.00	763.34
K	5+82.46	-20.50	763.34	763.63
L	5+92.46	-20.50	763.67	763.88
M	6+02.46	-20.50	763.99	764.10
⊕ Brg. S Abut.	6+14.46	-20.50	764.36	764.36
Bk. S Abut.	6+18.19	-20.50	764.47	764.47

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N Abut.	4+66.28	-13.75	758.76	758.76
⊕ Brg. N Abut.	4+70.00	-13.75	758.90	758.90
A	4+80.00	-13.75	759.30	759.40
B	4+90.00	-13.75	759.70	759.89
C	5+00.00	-13.75	760.10	760.37
D	5+10.00	-13.75	760.50	760.84
E	5+20.00	-13.75	760.90	761.28
F	5+30.00	-13.75	761.30	761.71
G	5+40.00	-13.75	761.70	762.12
H	5+50.00	-13.75	762.08	762.50
I	5+60.00	-13.75	762.45	762.83
J	5+70.00	-13.75	762.81	763.15
K	5+80.00	-13.75	763.15	763.44
L	5+90.00	-13.75	763.49	763.70
M	6+00.00	-13.75	763.81	763.92
⊕ Brg. S Abut.	6+12.00	-13.75	764.18	764.18
Bk. S Abut.	6+15.73	-13.75	764.29	764.29

BEAM 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N Abut.	4+63.82	-7.00	758.55	758.55
⊕ Brg. N Abut.	4+67.55	-7.00	758.70	758.70
A	4+77.55	-7.00	759.10	759.20
B	4+87.55	-7.00	759.50	759.69
C	4+97.55	-7.00	759.90	760.17
D	5+07.55	-7.00	760.30	760.64
E	5+17.55	-7.00	760.70	761.07
F	5+27.55	-7.00	761.10	761.50
G	5+37.55	-7.00	761.50	761.92
H	5+47.55	-7.00	761.88	762.30
I	5+57.55	-7.00	762.26	762.64
J	5+67.55	-7.00	762.62	762.96
K	5+77.55	-7.00	762.96	763.25
L	5+87.55	-7.00	763.30	763.51
M	5+97.55	-7.00	763.62	763.74
⊕ Brg. S Abut.	6+09.55	-7.00	764.00	764.00
Bk. S Abut.	6+13.27	-7.00	764.11	764.11

BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N Abut.	4+61.37	-0.25	758.35	758.35
⊕ Brg. N Abut.	4+65.09	-0.25	758.50	758.50
A	4+75.09	-0.25	758.90	758.99
B	4+85.09	-0.25	759.30	759.48
C	4+95.09	-0.25	759.70	759.96
D	5+05.09	-0.25	760.10	760.43
E	5+15.09	-0.25	760.50	760.87
F	5+25.09	-0.25	760.90	761.30
G	5+35.09	-0.25	761.30	761.71
H	5+45.09	-0.25	761.68	762.10
I	5+55.09	-0.25	762.06	762.44
J	5+65.09	-0.25	762.42	762.76
K	5+75.09	-0.25	762.77	763.06
L	5+85.09	-0.25	763.11	763.32
M	5+95.09	-0.25	763.44	763.55
⊕ Brg. S Abut.	6+07.09	-0.25	763.82	763.82
Bk. S Abut.	6+10.82	-0.25	763.93	763.93

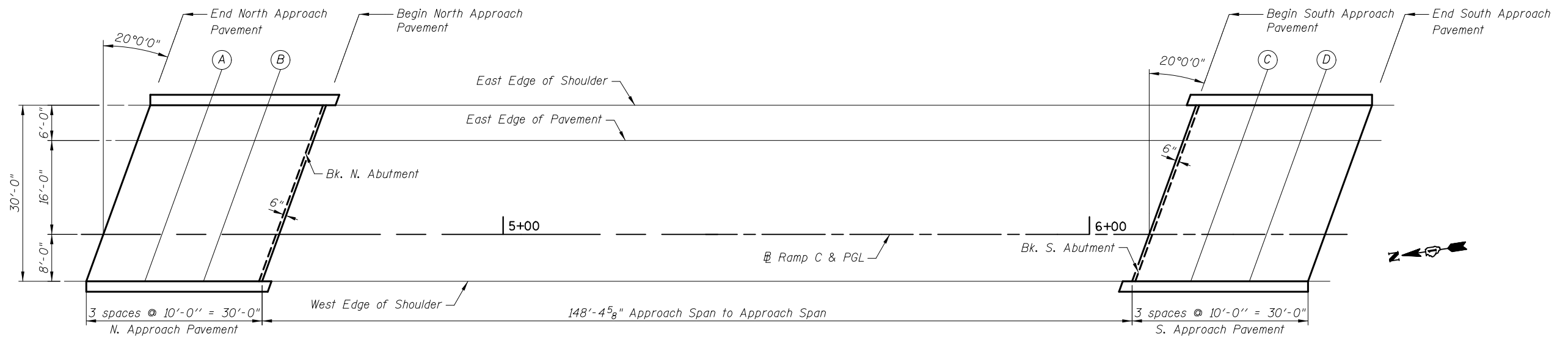
RAMP C & PGL

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N Abut.	4+61.28	0.00	758.34	758.34
⊕ Brg. N Abut.	4+65.00	0.00	758.49	758.49
A	4+75.00	0.00	758.89	758.99
B	4+85.00	0.00	759.29	759.48
C	4+95.00	0.00	759.69	759.96
D	5+05.00	0.00	760.09	760.43
E	5+15.00	0.00	760.49	760.83
F	5+25.00	0.00	760.89	761.27
G	5+35.00	0.00	761.29	761.69
H	5+45.00	0.00	761.68	762.10
I	5+55.00	0.00	762.05	762.47
J	5+65.00	0.00	762.42	762.84
K	5+75.00	0.00	762.77	763.15
L	5+85.00	0.00	763.11	763.45
M	5+95.00	0.00	763.43	763.78
⊕ Brg. S Abut.	6+07.00	0.00	763.81	764.10
Bk. S Abut.	6+10.72	0.00	763.92	764.13

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. N Abut.	4+58.91	6.50	758.11	758.11
⊕ Brg. N Abut.	4+62.63	6.50	758.26	758.26
A	4+72.63	6.50	758.66	758.76
B	4+82.63	6.50	759.06	759.24
C	4+92.63	6.50	759.46	759.72
D	5+02.63	6.50	759.86	760.19
E	5+12.63	6.50	760.26	760.63
F	5+22.63	6.50	760.66	761.06
G	5+32.63	6.50	761.06	761.48
H	5+42.63	6.50	761.45	761.87
I	5+52.63	6.50	761.83	762.21
J	5+62.63	6.50	762.20	762.54
K	5+72.63	6.50	762.55	762.83
L	5+82.63	6.50	762.89	763.10
M	5+92.63	6.50	763.22	763.34
⊕ Brg. S Abut.	6+04.63	6.50	763.60	763.60
Bk. S Abut.	6+08.36	6.50	763.72	763.72

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PLAN

EAST EDGE OF SHOULDER

Location	Station	Offset	Theoretical Grade Elevations
End N. Appr. Pav't	4+39.81	-22.00	757.83
A	4+49.81	-22.00	758.23
B	4+59.81	-22.00	758.63
Begin N. Appr. Pav't	4+69.81	-22.00	759.03
Begin S. Appr. Pav't	6+18.20	-22.00	764.49
C	6+28.20	-22.00	764.78
D	6+38.20	-22.00	765.05
End S. Appr. Pav't	6+48.20	-22.00	765.31

EAST EDGE OF PAVEMENT

Location	Station	Offset	Theoretical Grade Elevations
End N. Appr. Pav't	4+37.63	-16.00	757.65
A	4+47.63	-16.00	758.05
B	4+57.63	-16.00	758.45
Begin N. Appr. Pav't	4+67.63	-16.00	758.85
Begin S. Appr. Pav't	6+16.02	-16.00	764.33
C	6+26.02	-16.00	764.62
D	6+36.02	-16.00	764.90
End S. Appr. Pav't	6+46.02	-16.00	765.16

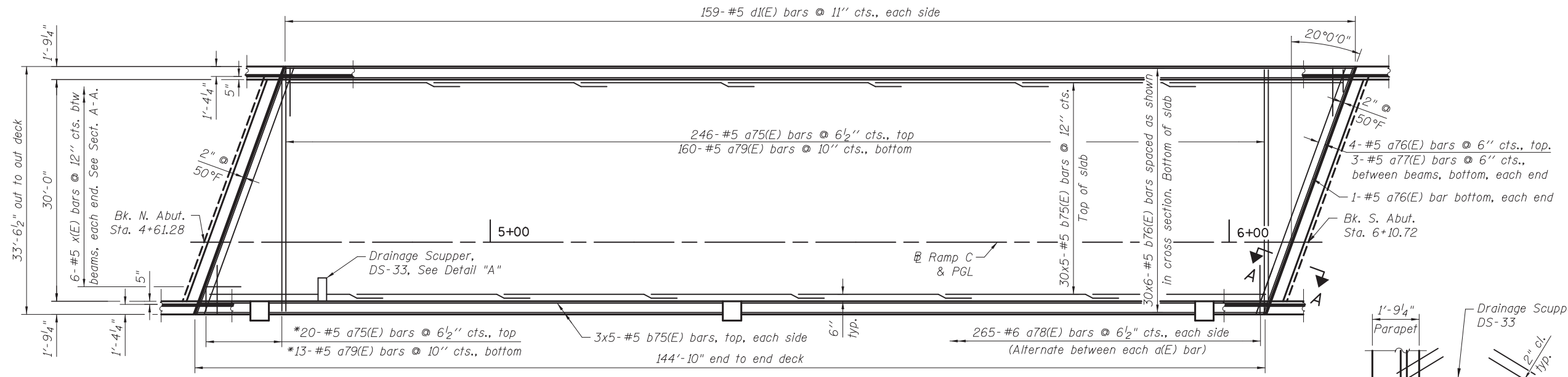
RAMP C, & PGL

Location	Station	Offset	Theoretical Grade Elevations
End N. Appr. Pav't	4+31.81	0.00	757.16
A	4+41.81	0.00	757.56
B	4+51.81	0.00	757.96
Begin N. Appr. Pav't	4+61.81	0.00	758.36
Begin S. Appr. Pav't	6+10.19	0.00	763.91
C	6+20.19	0.00	764.20
D	6+30.19	0.00	764.49
End S. Appr. Pav't	6+40.19	0.00	764.76

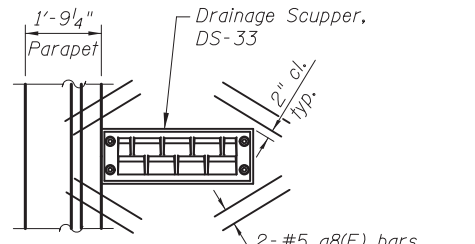
WEST EDGE OF SHOULDER

Location	Station	Offset	Theoretical Grade Elevations
End N. Appr. Pav't	4+28.90	8.00	756.88
A	4+38.90	8.00	757.28
B	4+48.90	8.00	757.68
Begin N. Appr. Pav't	4+58.90	8.00	758.08
Begin S. Appr. Pav't	6+07.28	8.00	763.65
C	6+17.28	8.00	763.95
D	6+27.28	8.00	764.24
End S. Appr. Pav't	6+37.28	8.00	764.52

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PLAN

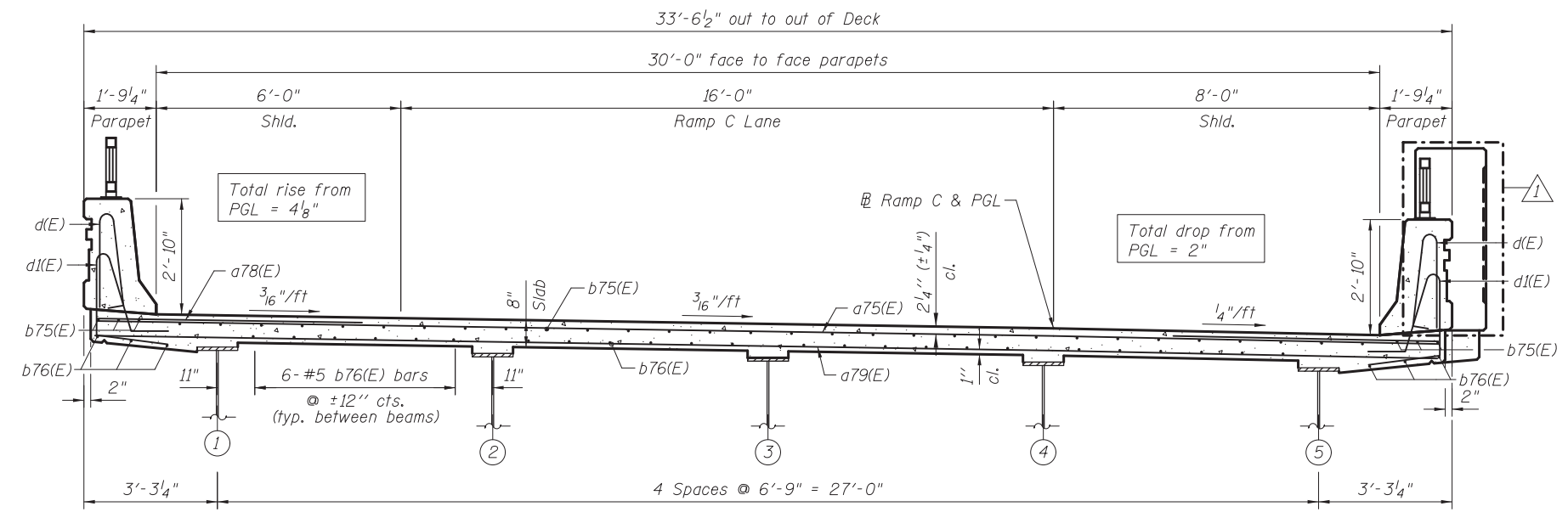


DETAIL "A"

*Order a75(E) bars full length. Cut to fit skew and use remainder of bars in opposite end.

MINIMUM BAR LAP
(Deck)
#5 bar = 3'-3"

Notes:
See Sheet SD9 for Bill of Materials, Bar Diagrams and Reinforcement Schedule.
Bars indicated thus 12 x 2-#5 etc. indicates 12 lines of bars with 2 lengths per line.
See sheet SD8 for Section A-A.
See sheet SD8 for Section Thru Parapet and for parapet reinforcement.
See sheet SD16 for Drainage Scupper DS-33 details.



CROSS SECTION
(Looking South)

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CIVILTECH
450 E Devon Ave, Suite 300
Itasca, Illinois 60143
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DRAWN - M. LANGE	REVISED - 5/3/12 K.L.B.
DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 5/3/2012	REVISED -

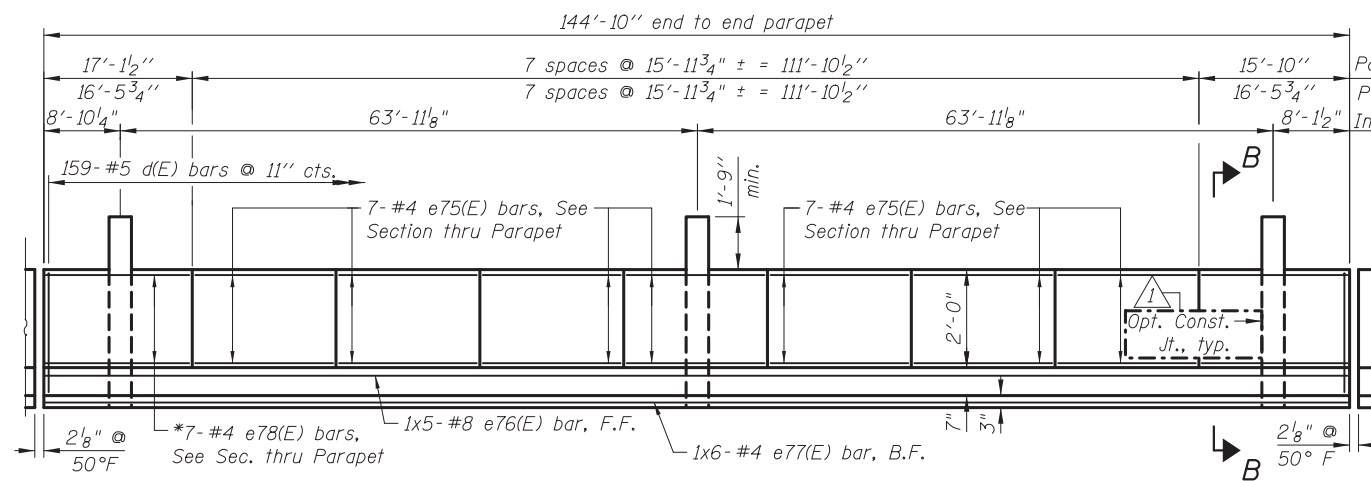
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUPERSTRUCTURE
SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0080

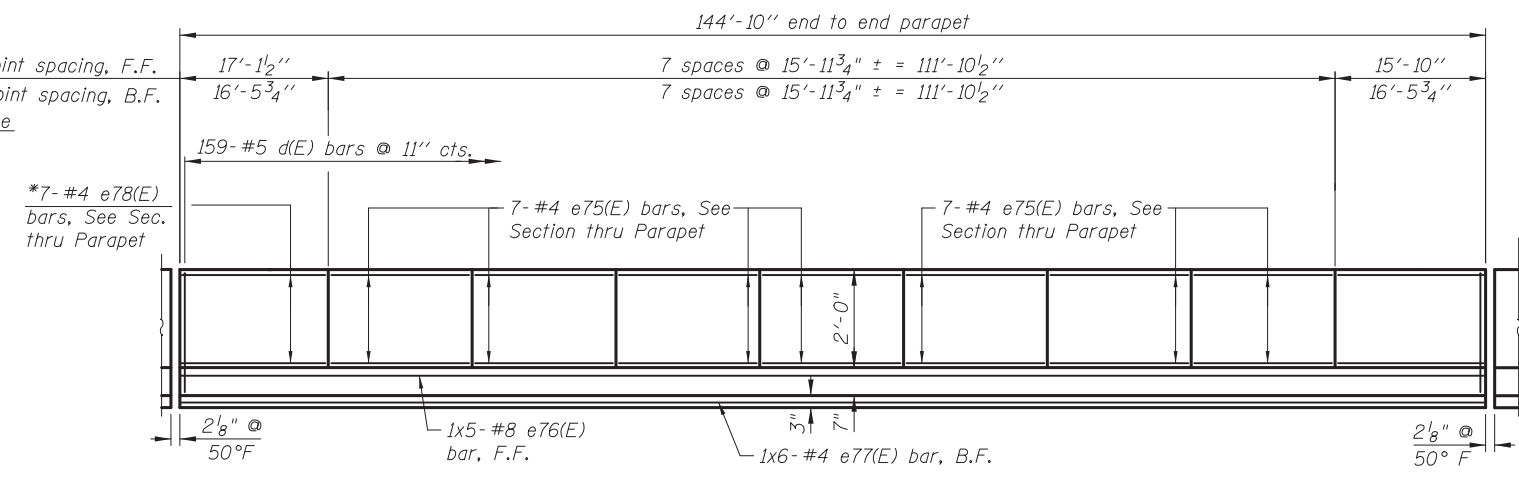
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	561
CONTRACT NO. 60F72				

SHEET NO. SD7 OF SD30 SHEETS

ILLINOIS FED. AID PROJECT

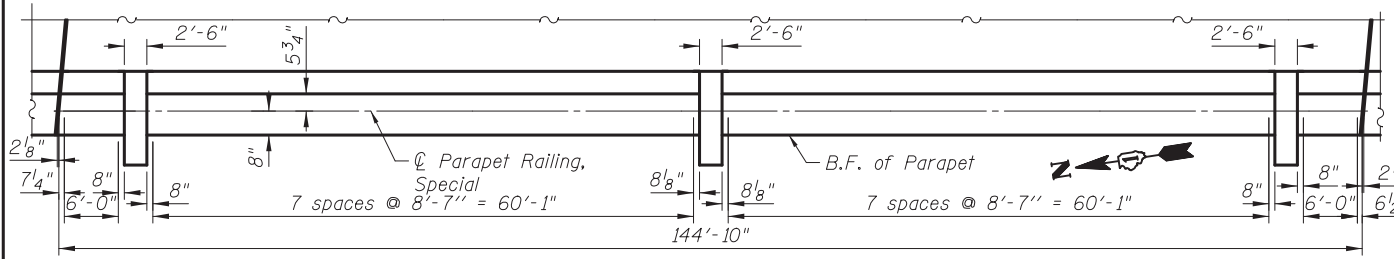


INSIDE ELEVATION OF WEST PARAPET

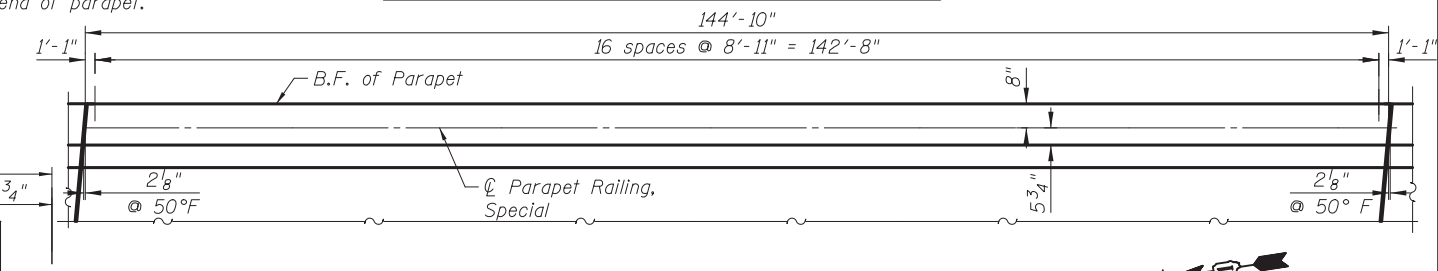


INSIDE ELEVATION OF EAST PARAPET

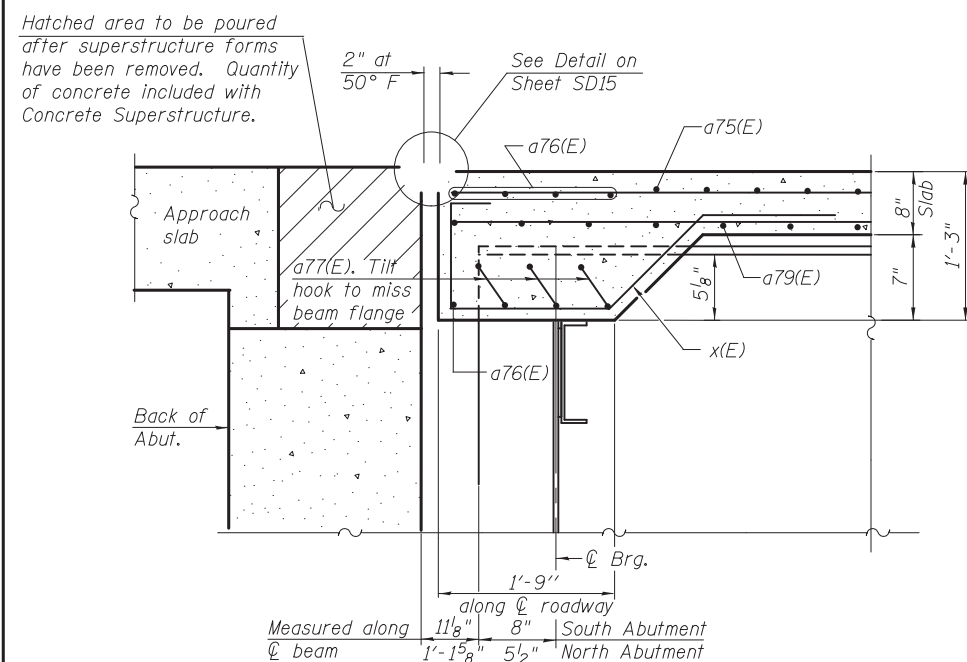
* Field cut to fit and use remainder of bars in opposite end of parapet.



PLAN - WEST PARAPET AND PARAPET RAILING
(Parapet Railing Post Spacing along ϕ Parapet Railing)



PLAN - EAST PARAPET AND PARAPET RAILING
(Parapet Railing Post Spacing along ϕ Parapet Railing)

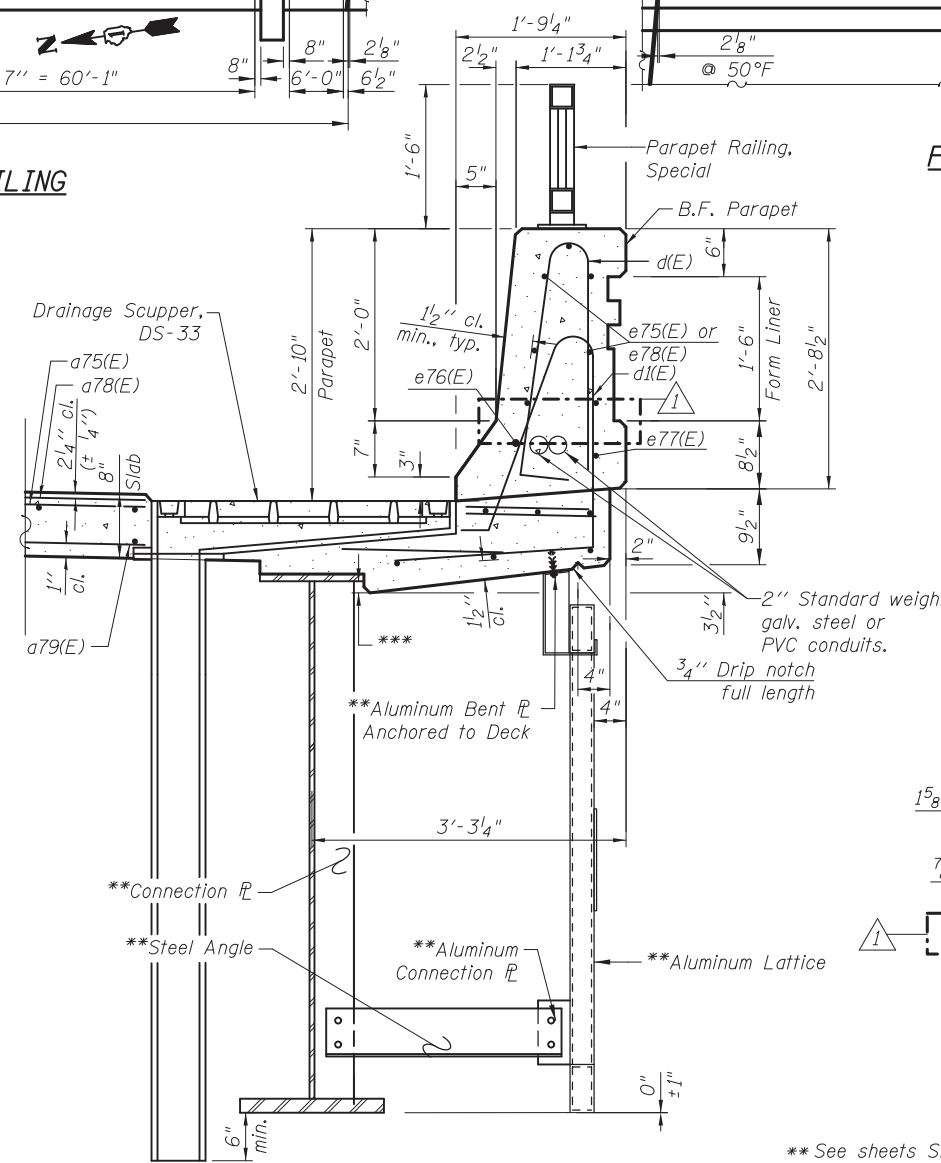


SECTION A-A

MINIMUM BAR LAP

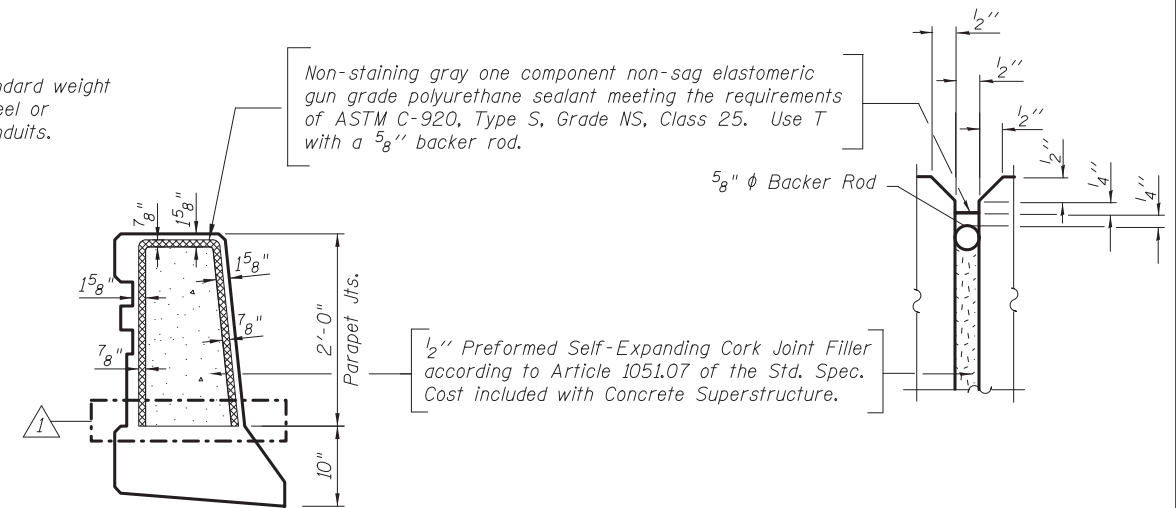
(Parapet)
#4 bar = 2'-0"
#8 bar = 5'-2"

Notes:
See sheet SD11 for Parapet Form Liner details.
See sheet SD14 for Parapet Railing details.
See sheet SD16 for Drainage Scupper DS-33 details.
See sheet SD9 for Section B-B.
Drains shall be located clear of all diaphragms.



SECTION THRU PARAPET

(all edges have a 3/4" chamfer)



PARAPET JOINT DETAILS

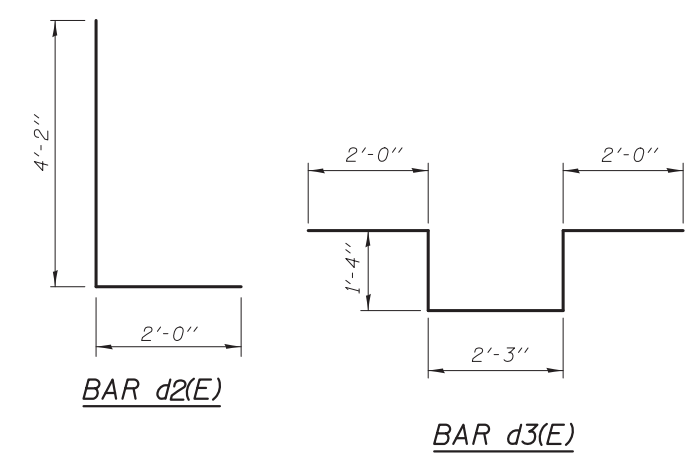
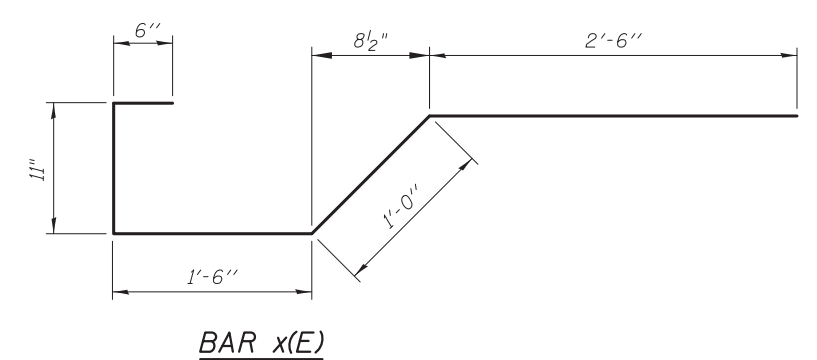
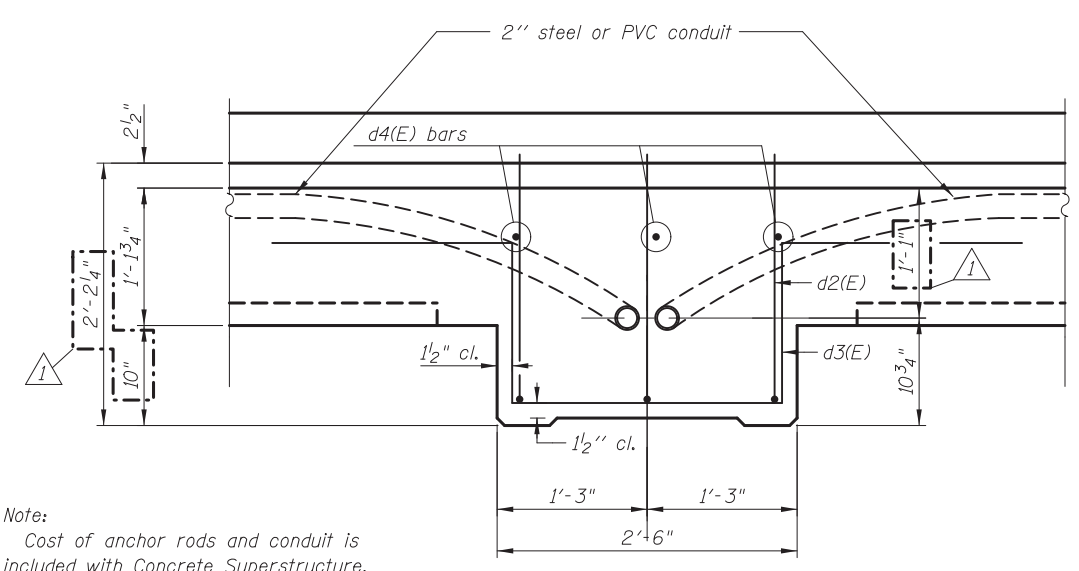
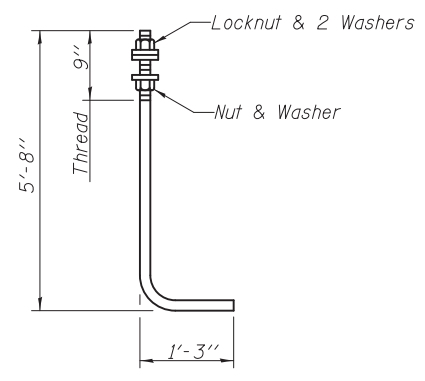
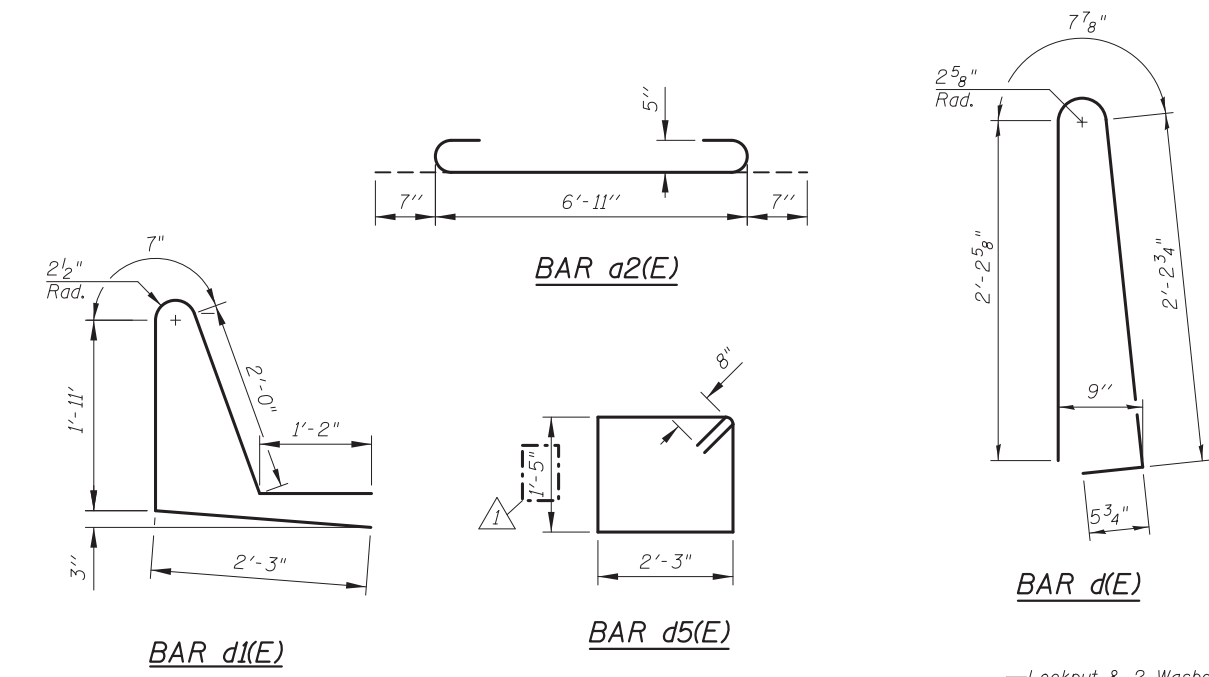
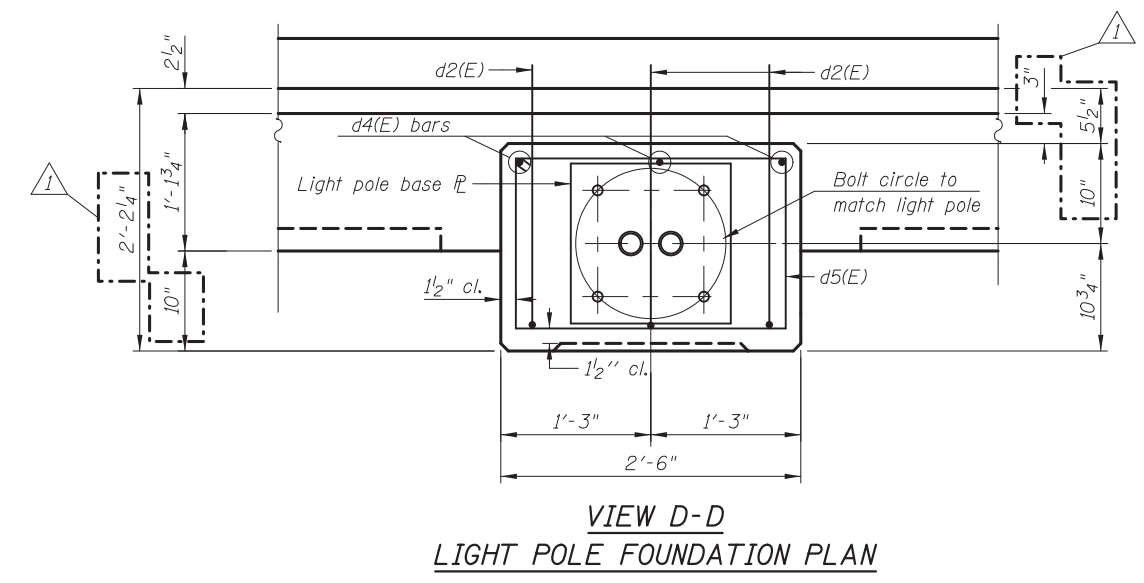
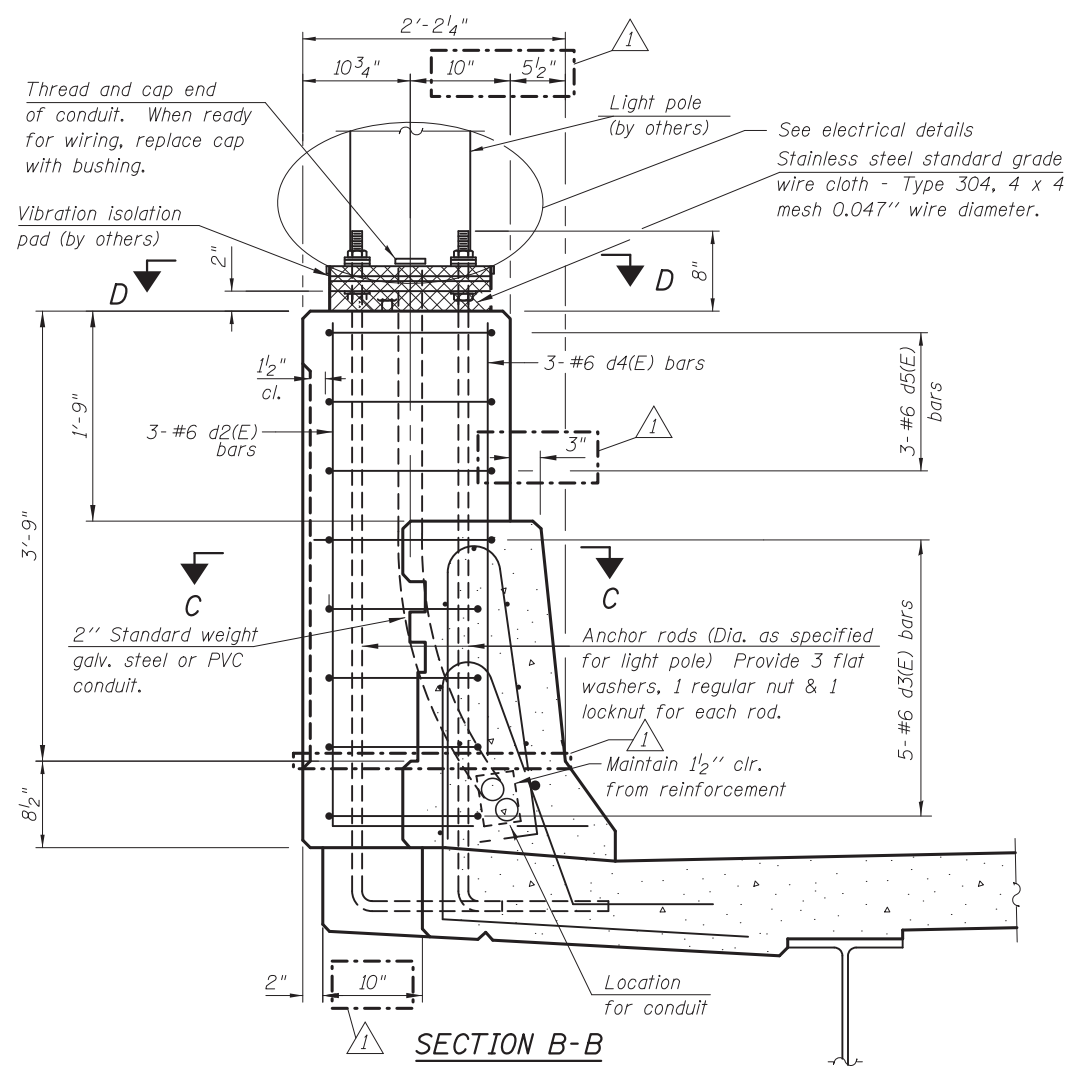
** See sheets SD10 and SD11 for Ornamental Aluminum Lattice connections and details.
*** East overhang: Max. = 1 3/8", Min. = 1/2"
West overhang: Max. = 2", Min. = 1 1/4"

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**SUPERSTRUCTURE
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a8(E)	8	#5	2'-0"	—
a75(E)	266	#5	32'-10"	—
a76(E)	10	#5	35'-0"	—
a77(E)	24	#5	8'-1"	—
a78(E)	530	#6	6'-6"	—
a79(E)	173	#5	31'-4"	—
b75(E)	180	#5	31'-6"	—
b76(E)	180	#5	26'-10"	—
d(E)	318	#5	5'-7"	—
d1(E)	318	#5	7'-11"	—
d2(E)	9	#6	6'-2"	—
d3(E)	15	#6	8'-11"	—
d4(E)	9	#6	3'-5"	—
d5(E)	9	#6	8'-8"	—
e75(E)	98	#4	15'-8"	—
e76(E)	10	#8	33'-1"	—
e77(E)	12	#4	25'-9"	—
e78(E)	14	#4	32'-8"	—
x(E)	48	#5	6'-5"	—
Item	Unit	Quantity		
Concrete Superstructures	Cu. Yd.	167.7		
Bridge Deck Grooving	Sq. Yd.	483		
Protective Coat	Sq. Yd.	620		
Reinforcement Bars, Epoxy Coated	Pound	39,150		
Form Liner Textured Surface, Special	Sq. Ft.	392		

Bars indicated thus 1 x 3-#8 etc. indicates 1 line of bars with 3 lengths per line.



Note: Cost of anchor rods and conduit is included with Concrete Superstructure. See sheet SDB for Section A-A.

SECTION C-C

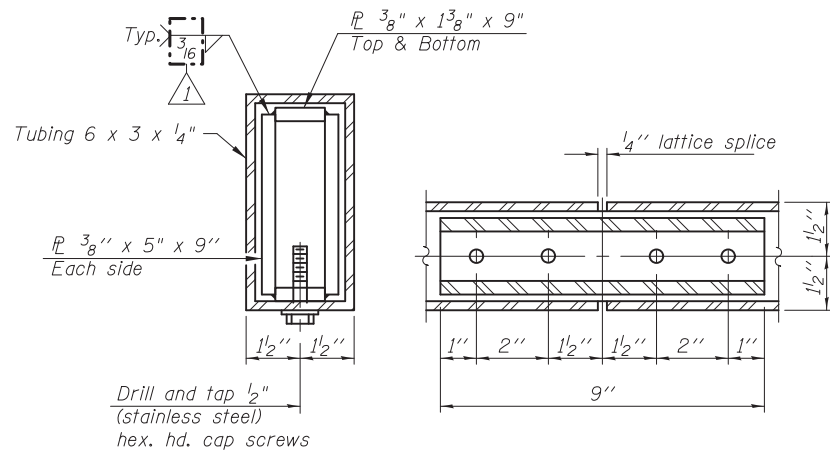
BAR x(E)

ANCHOR ROD

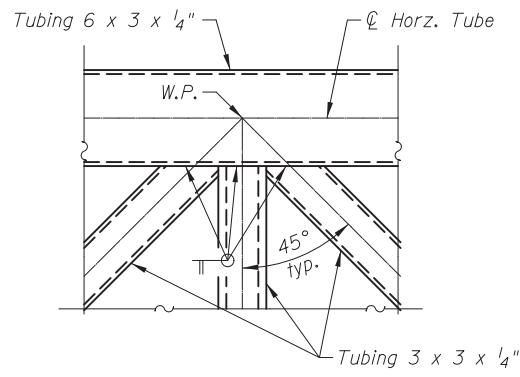
BAR d2(E)

BAR d3(E)

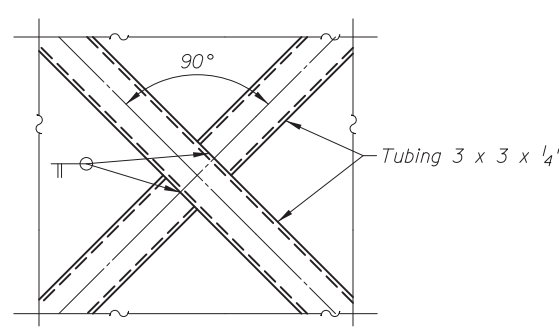
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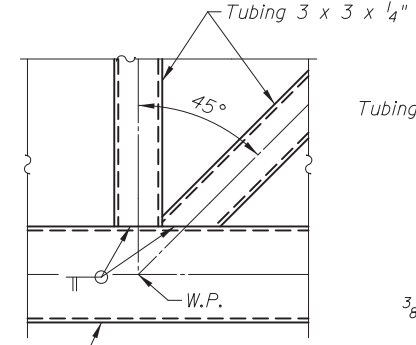
HORIZONTAL BAR SPLICE



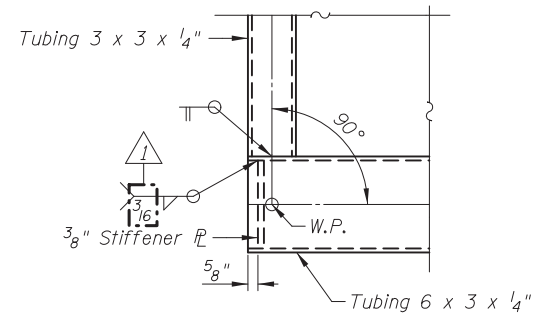
DETAIL "B"



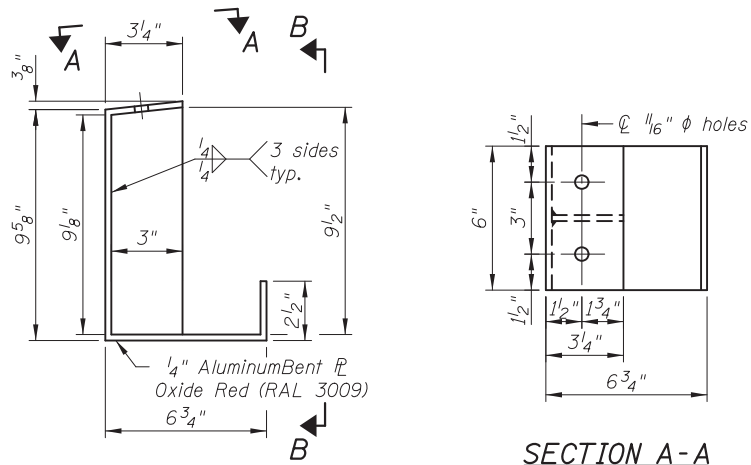
DETAIL "C"
(Aluminum Disk not shown)



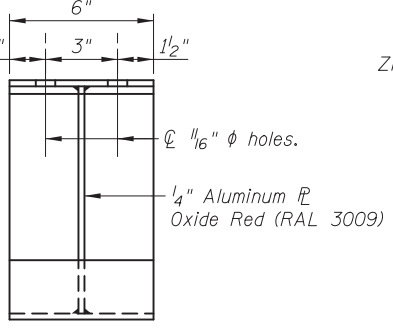
DETAIL "D"



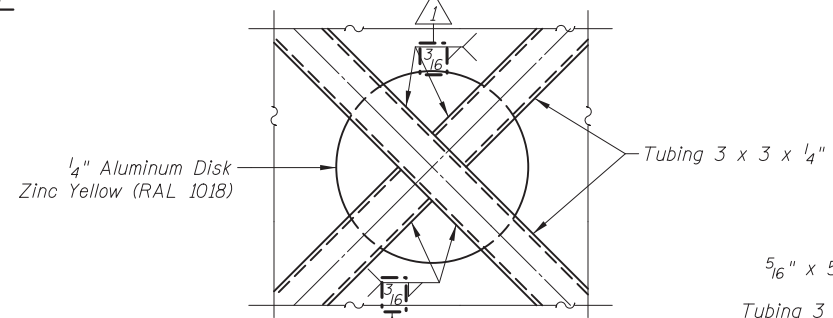
DETAIL "E"



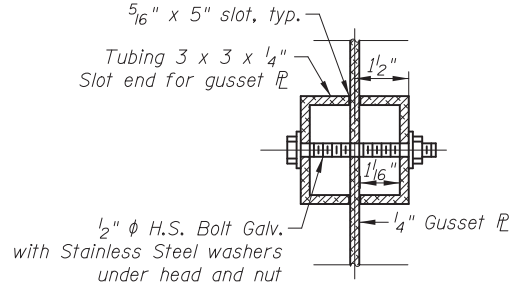
HANGER DETAIL



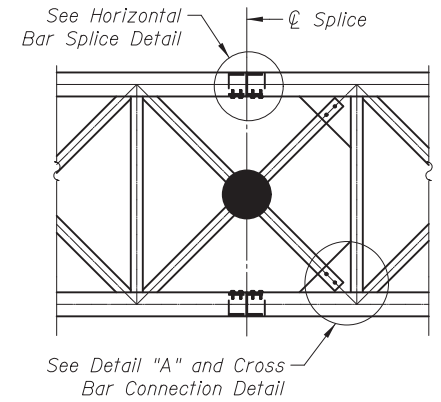
SECTION B-B



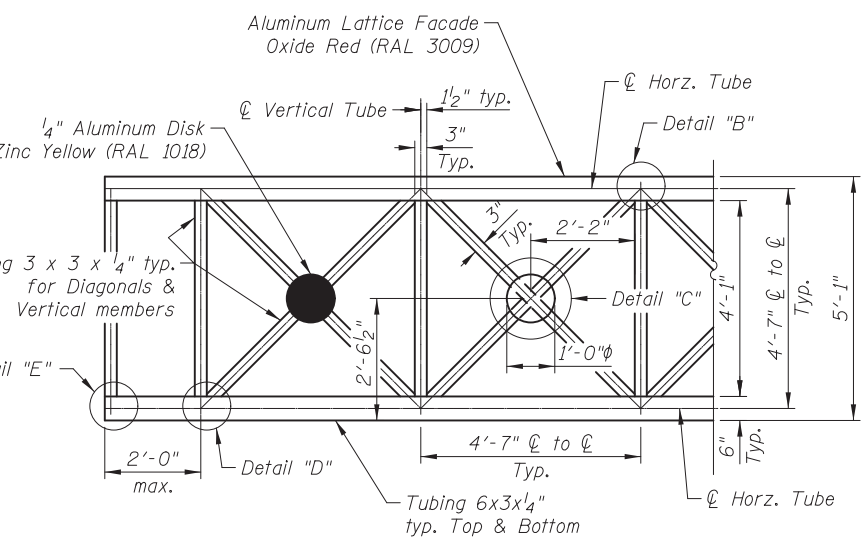
DETAIL "C"



CROSS BAR CONNECTION

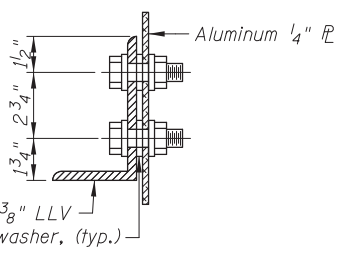


LATTICE SPLICE

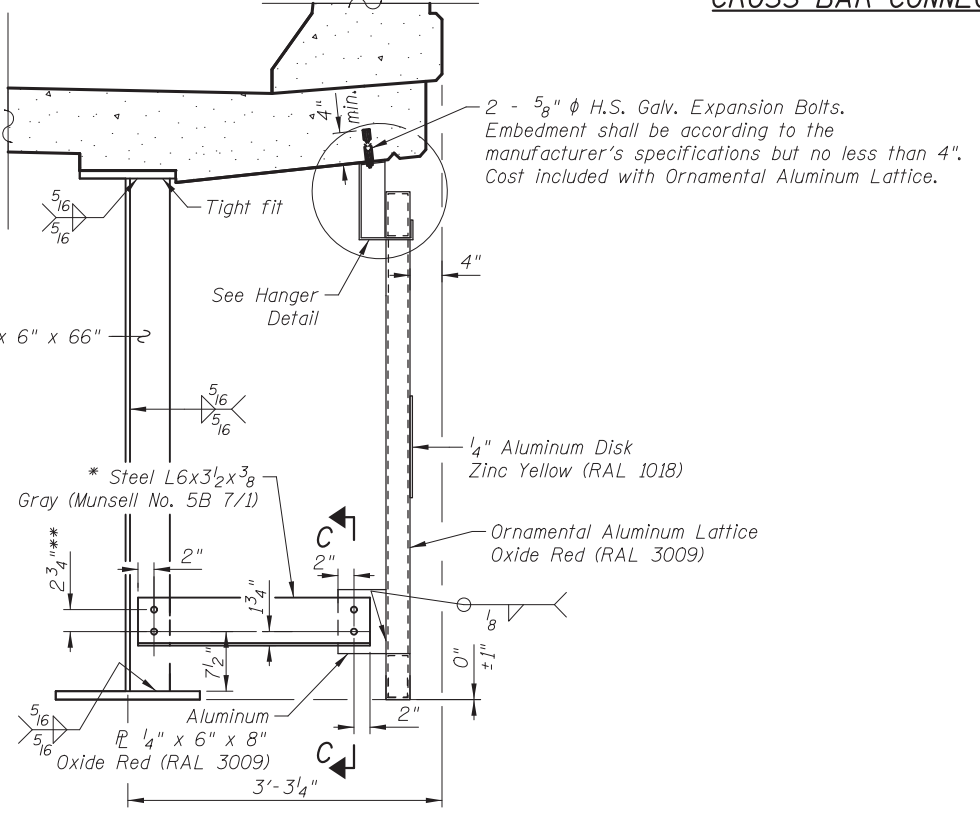


ALUMINUM LATTICE ELEVATION

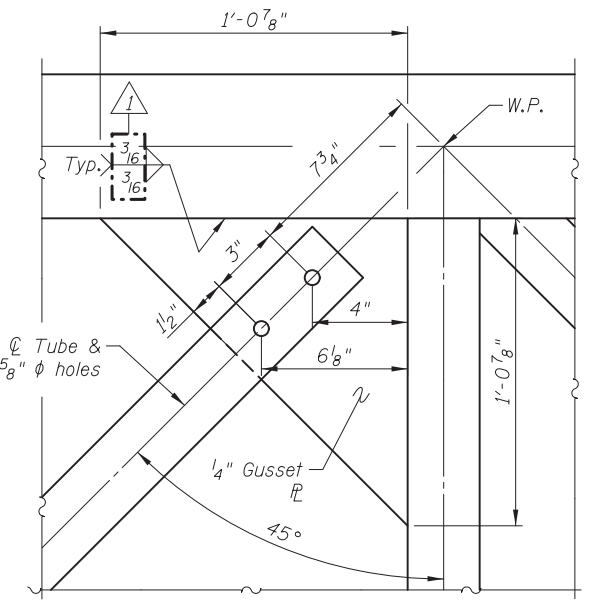
* Coordinate locations of Connection Plate with Steel Fabricator. Cost included with Furnishing and Erecting Structural Steel



SECTION C-C



TYPICAL ALUMINUM LATTICE LATERAL BRACING



DETAIL "A"

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Ornamental Aluminum Lattice	Foot	284

5/24/2012 9:30:05 AM I:\2164\cad\sheet\Roadway\20-Structures & Walls\05-SN 056-0080\0560080-60F12-10-DAL_rev2.dgn

Notes:
 Hangers and aluminum plates to be included in the cost of Ornamental Aluminum Lattice.
 All aluminum welds shall be Filler Alloy 5356 with a min. allowable stress of 7 ksi.
 See sheet SA12 for Elevation View of the Exterior Fascia of the beams.
 W.P. indicates work point.

CIVILTECH
 450 E Devon Ave, Suite 300
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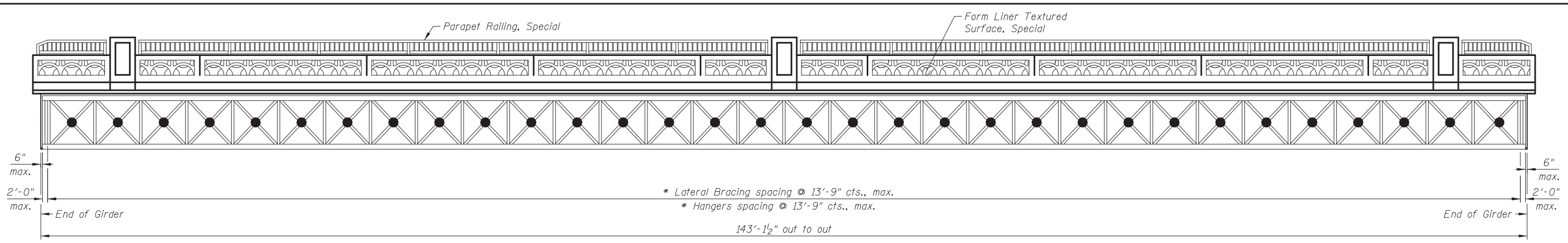
DRAWN	- M. LANGE	REVISED	- 5/23/2012 D.L.A.
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

ORNAMENTAL ALUMINUM LATTICE SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK STRUCTURE NO. 056-0080
 SHEET NO. SD10 OF SD30 SHEETS

O.R. RTÉ.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	564
			CONTRACT NO. 60F72	
ILLINOIS FED. AID PROJECT				

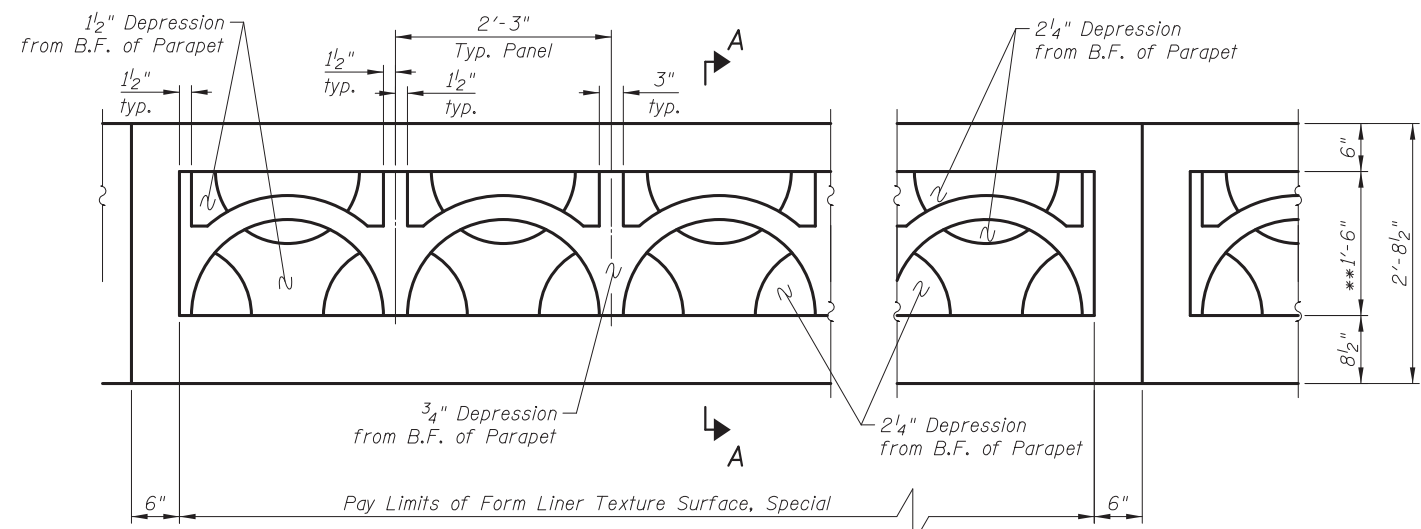
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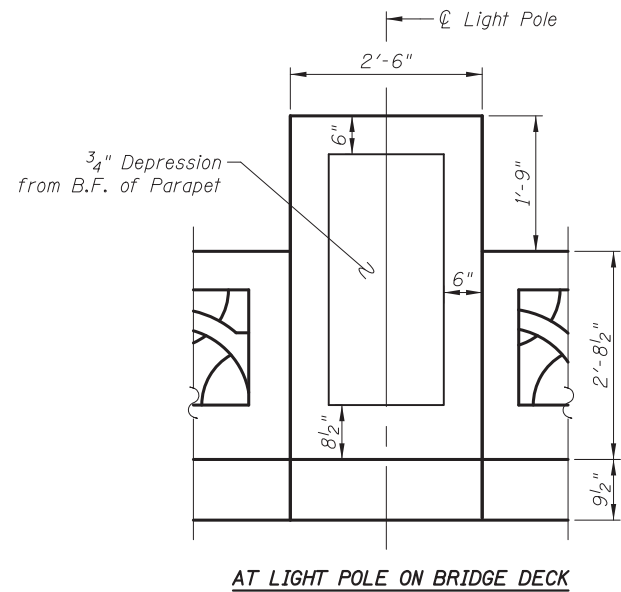
* Lateral Bracing spacing @ 13'-9" cts., max.
 * Hangers spacing @ 13'-9" cts., max.

ELEVATION - EXTERIOR FASCIA

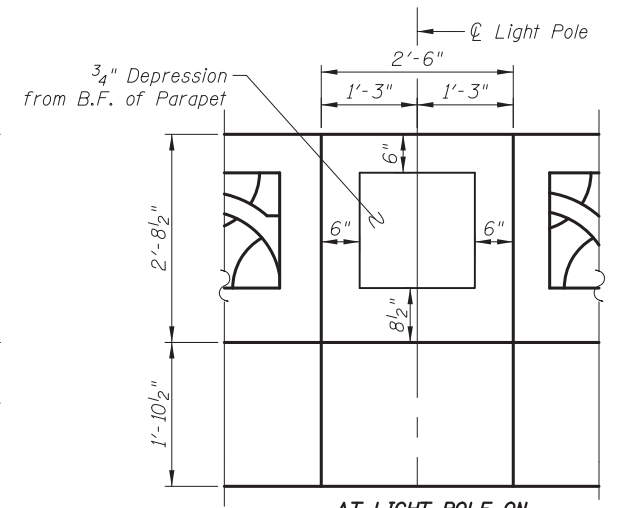
* Lateral Bracing connections shall occur at the vertical aluminum tubes and Hangers shall occur in mid span of lattice. Contractor to layout locations and submit shop drawings for approval.



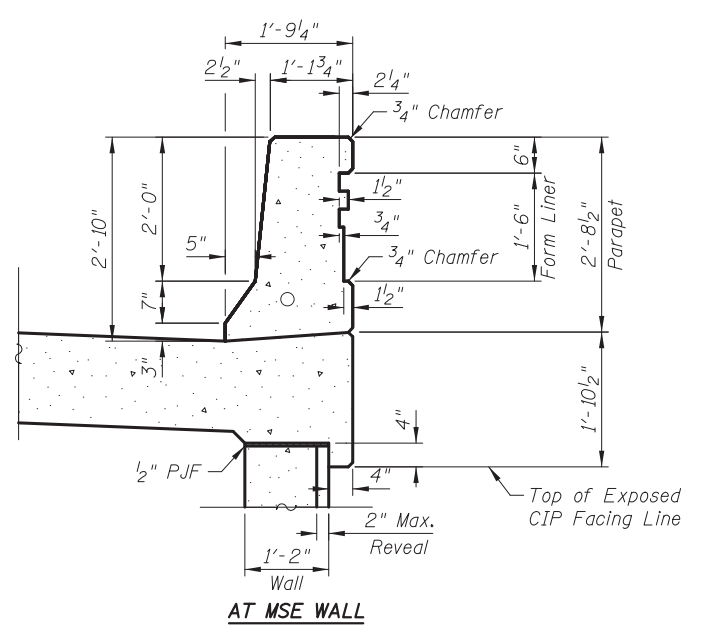
ELEVATION - OUTSIDE FACE OF PARAPET
 ** Pay Limits of Form Liner Texture Surface, Special



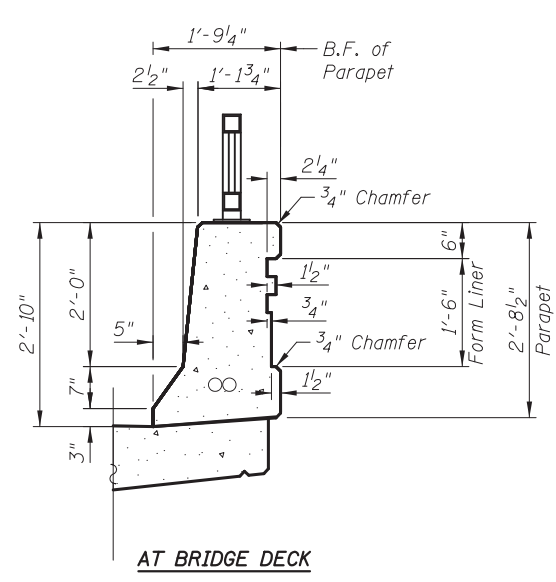
AT LIGHT POLE ON BRIDGE DECK



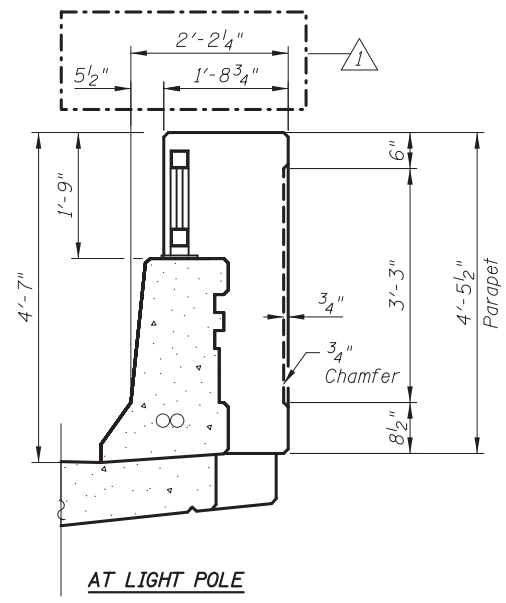
AT LIGHT POLE ON ANCHORAGE SLAB



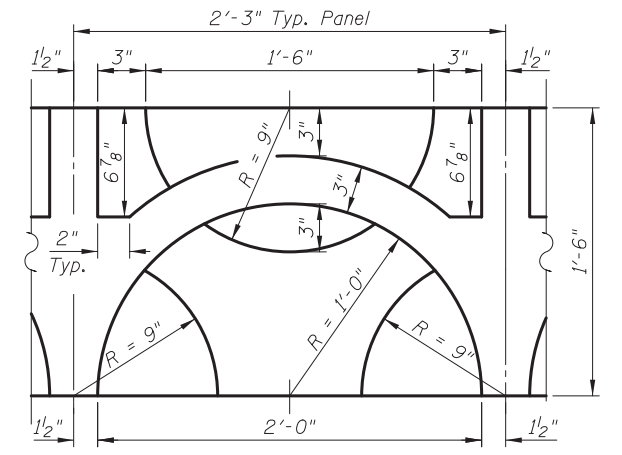
AT MSE WALL



AT BRIDGE DECK



AT LIGHT POLE



FORM LINER TEXTURE SURFACE, SPECIAL DETAIL

Notes:
 Parapet, railing, lighting and all other details not specifically pertaining to the lattice are shown for graphics purposes only.
 See Sheet SD10 for Hanger and Lateral Bracing Details.

SECTION A-A

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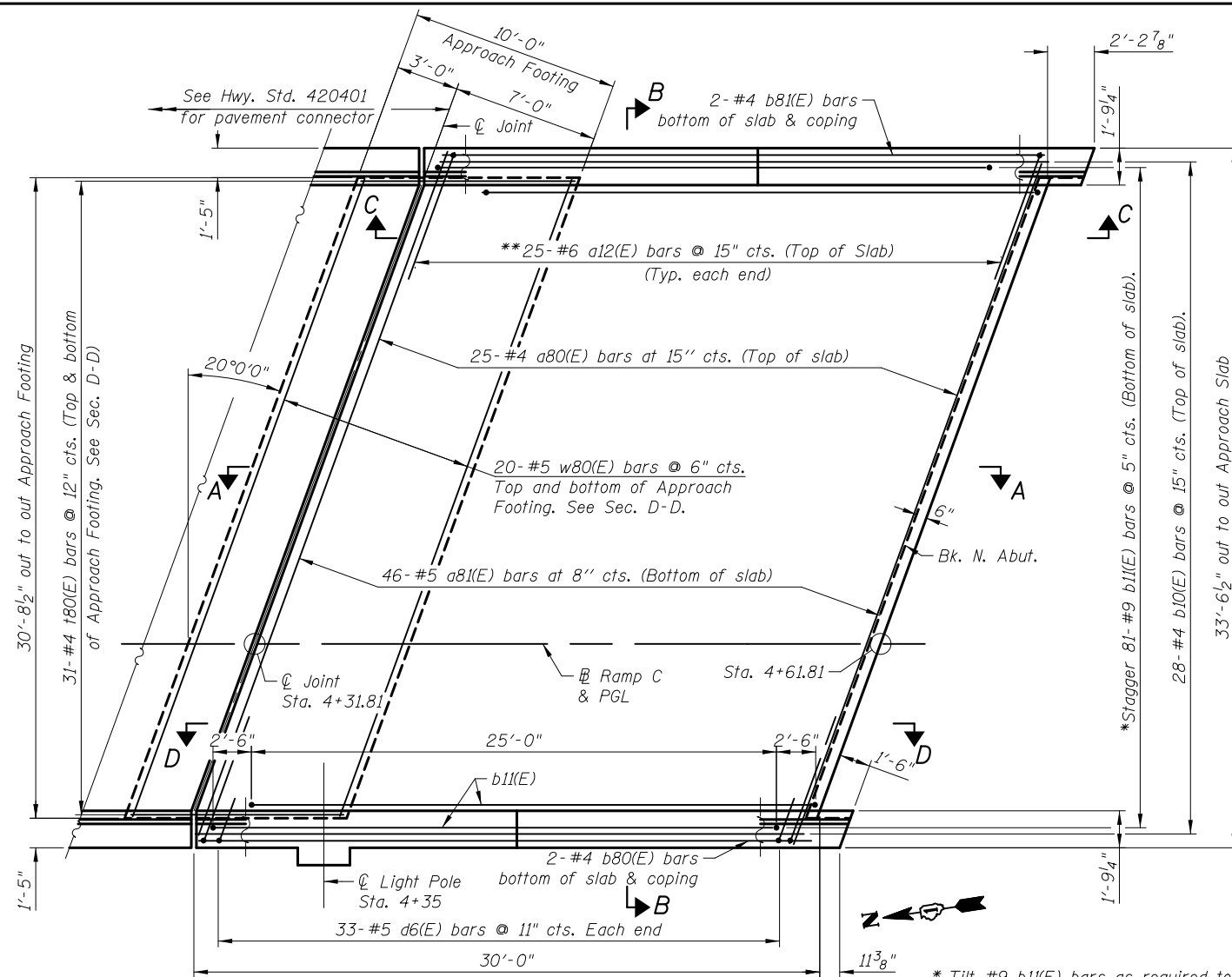
DRAWN	- M. LANGE	REVISED	- 5/3/12 K.L.B.
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ARCHITECTURAL DETAILS
SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0080
 SHEET NO. SD11 OF SD30 SHEETS

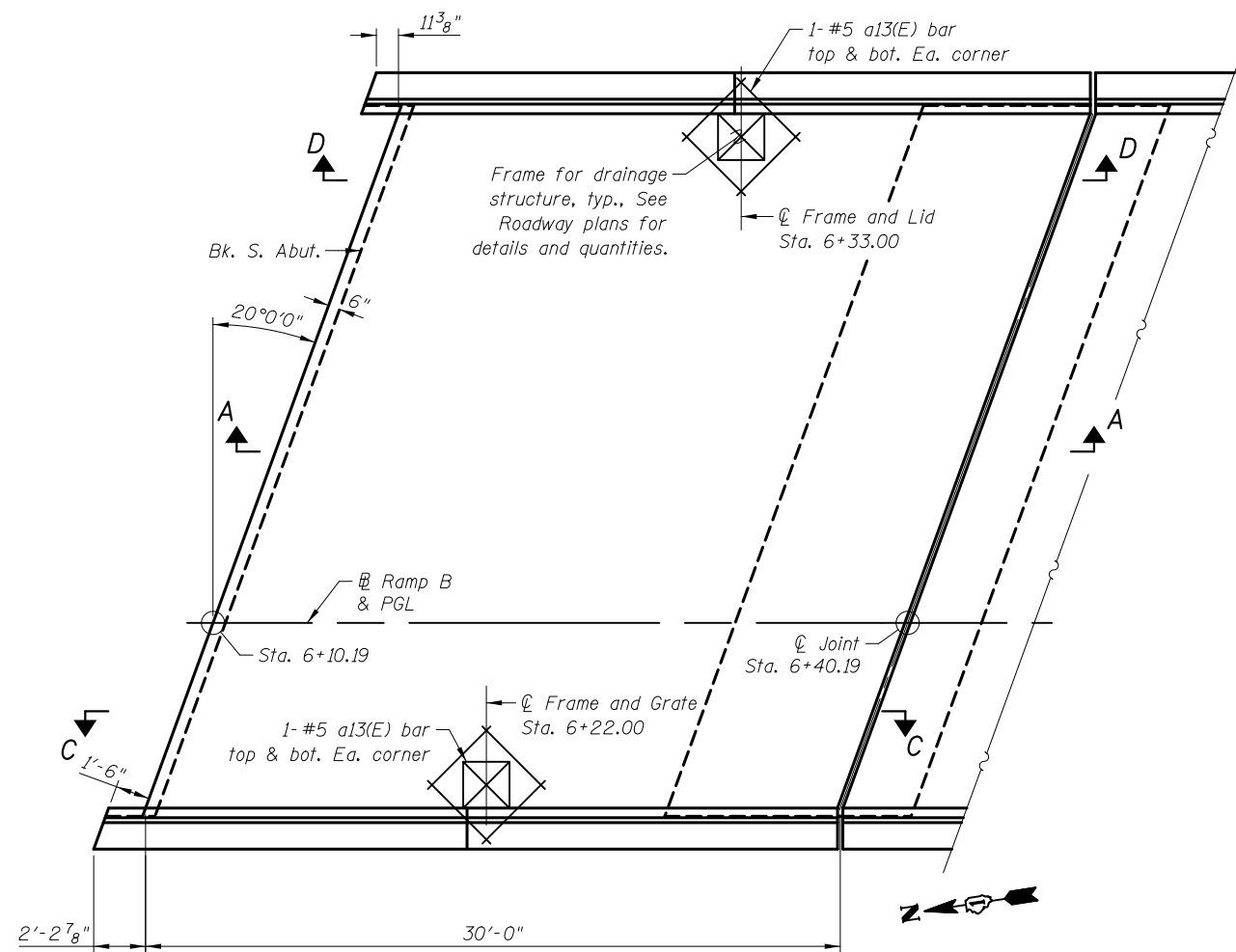
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	565
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

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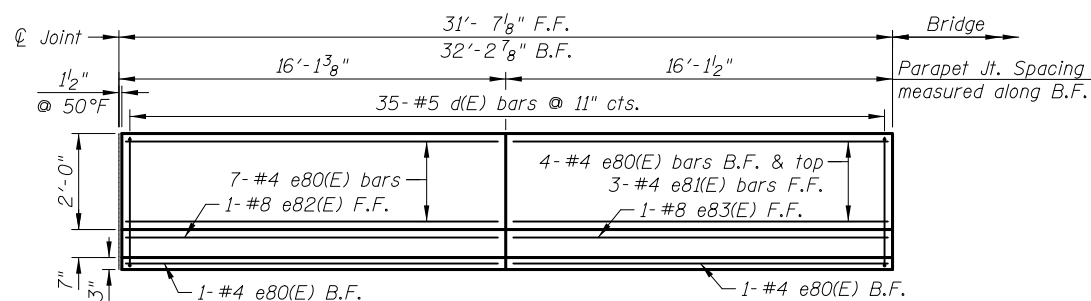
PLAN - NORTH APPROACH

* Tilt #9 b11(E) bars as required to maintain clearance.
 ** Space between a80(E) bars, typ. each parapet

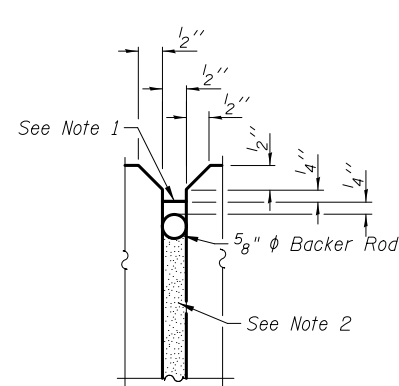


PLAN - SOUTH APPROACH

(See North Approach for remainder of dimensions and reinforcement)

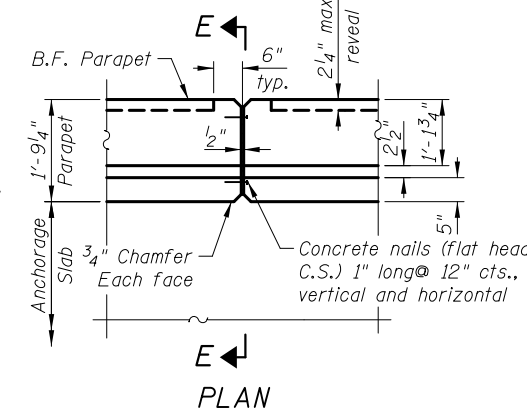


VIEW C-C

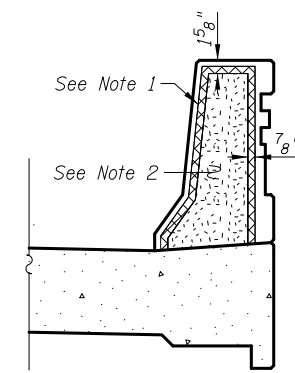


PARAPET JOINT DETAILS

- Parapet Joint Notes:
- Non-staining gray one component non-sag elastomeric gun grade polyurethane sealant meeting the requirements of ASTM C-920, Type S, Grade NS, Class 25, use T with a 5/8" backer rod.
 - 1/2" Preformed Self-Expanding Cork Joint Filler according to Article 1051.07 of the Std. Spec. Cost included with Concrete Superstructure.



SECTION E-E



SECTION E-E

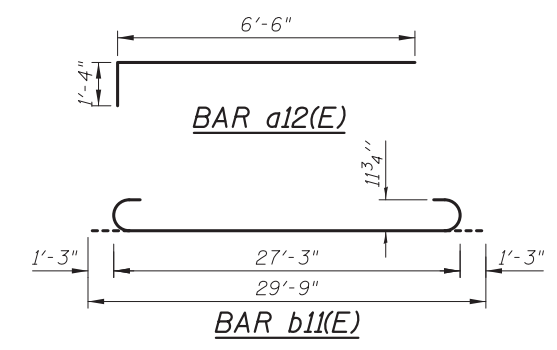
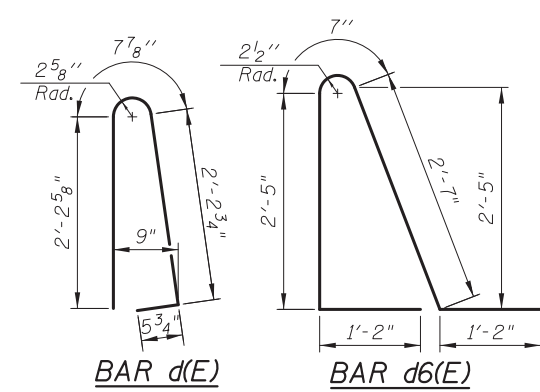
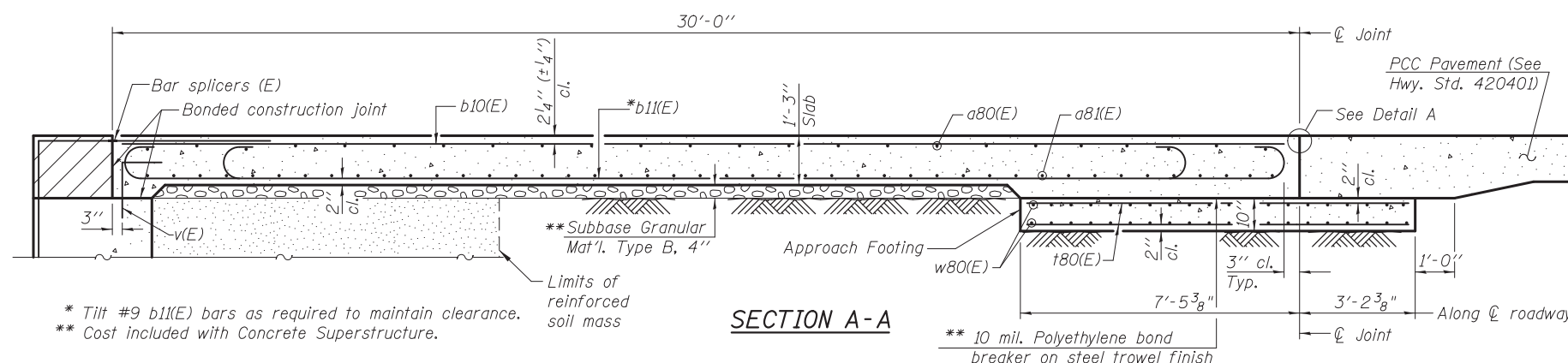
Notes:
 See sheet SD13 for Detail G, Section A-A and B-B and for Light Pole Foundation Plan.
 a80(E) and a81(E) measured along Ramp C.

Hatched area to be poured after superstructure false work has been removed. See sheets SD20 & SD21 for more information.

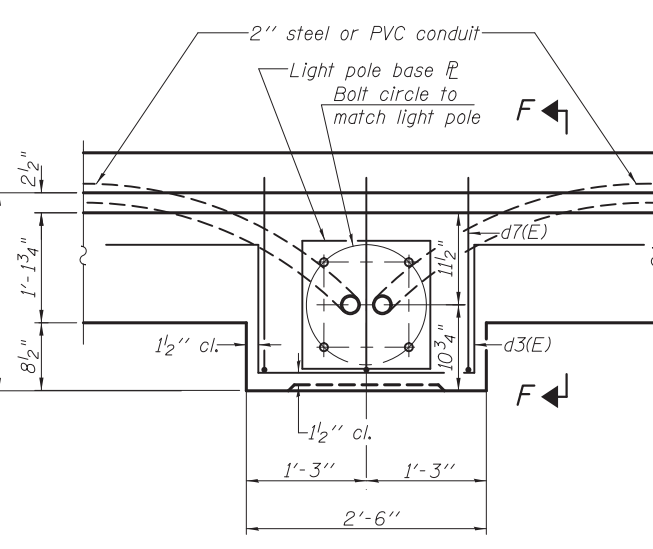
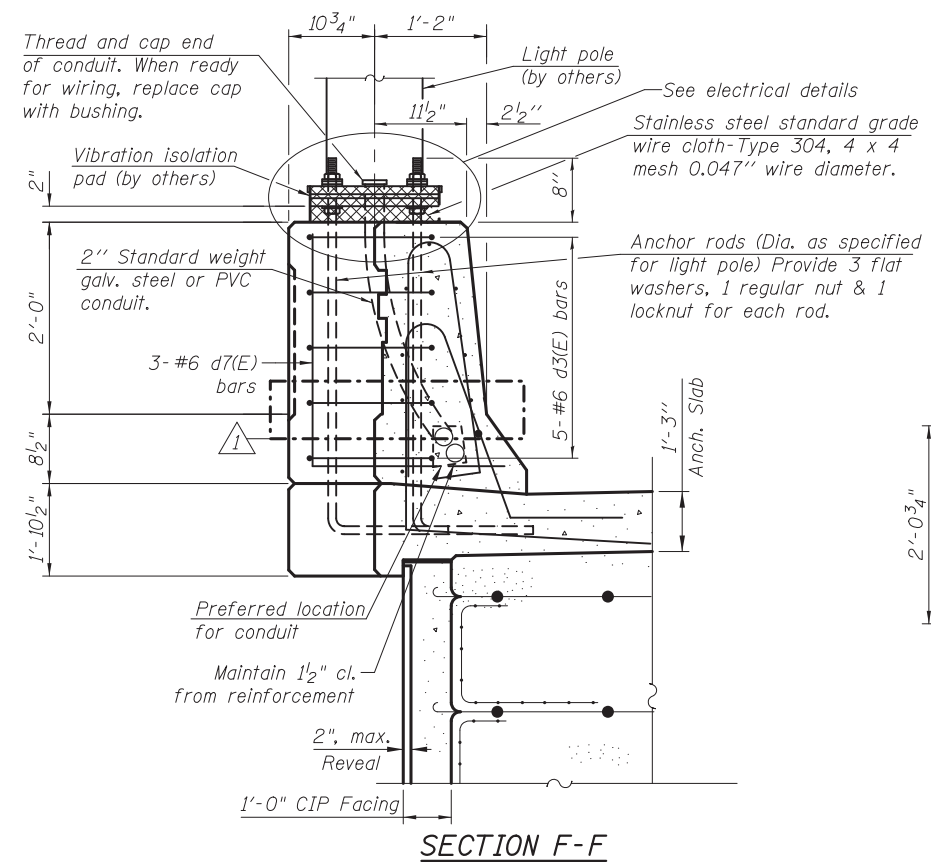
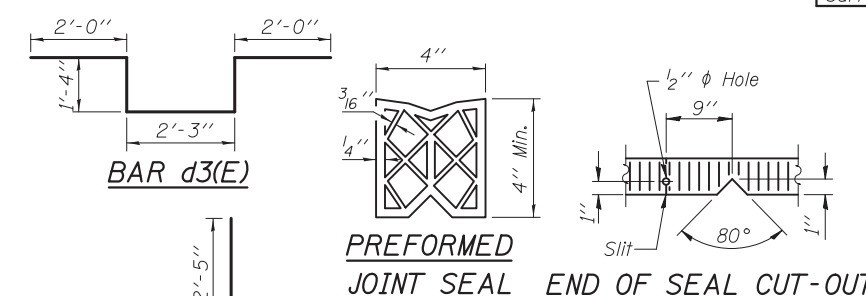
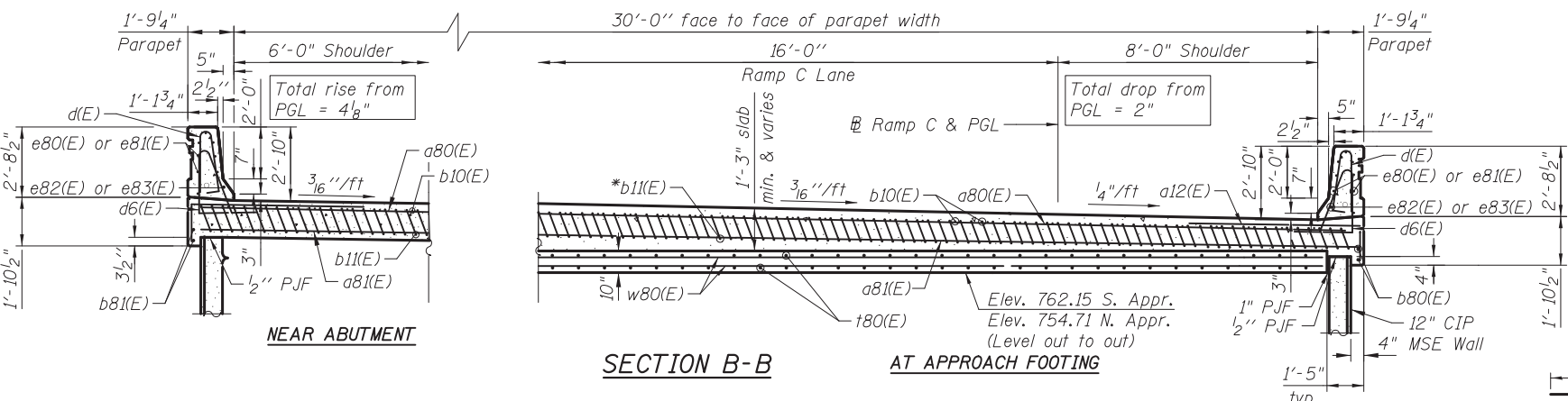
BILL OF MATERIAL

(For 2 Approaches)

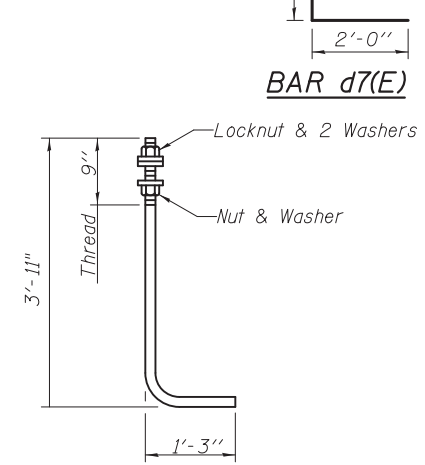
Bar	No.	Size	Length	Shape
a12(E)	100	#6	7'-10"	┌
a13(E)	16	#5	3'-6"	—
a80(E)	50	#4	35'-4"	—
a81(E)	92	#5	35'-4"	—
b10(E)	56	#4	29'-8"	—
b11(E)	162	#9	29'-9"	┌
b80(E)	4	#4	30'-3"	—
b81(E)	4	#4	29'-1"	—
d(E)	140	#5	5'-7"	┌
d3(E)	5	#6	8'-11"	┌
d6(E)	132	#5	7'-11"	┌
d7(E)	3	#6	4'-5"	┌
e80(E)	32	#4	15'-9"	—
e81(E)	32	#4	15'-1"	—
e82(E)	4	#8	15'-9"	—
e83(E)	4	#8	15'-1"	—
t80(E)	124	#4	10'-4"	—
w80(E)	80	#5	32'-4"	—
Item	Unit	Quantity		
Concrete Structures	Cu. Yds.	20.2		
Concrete Superstructures	Cu. Yds.	122.1		
Bridge Deck Grooving	Sq. Yds.	200		
Protective Coat	Sq. Yds.	259		
Reinforcement Bars, Epoxy Coated	Pound	29,990		
Form Liner Textured Surface, Special	Sq. Ft.	172		



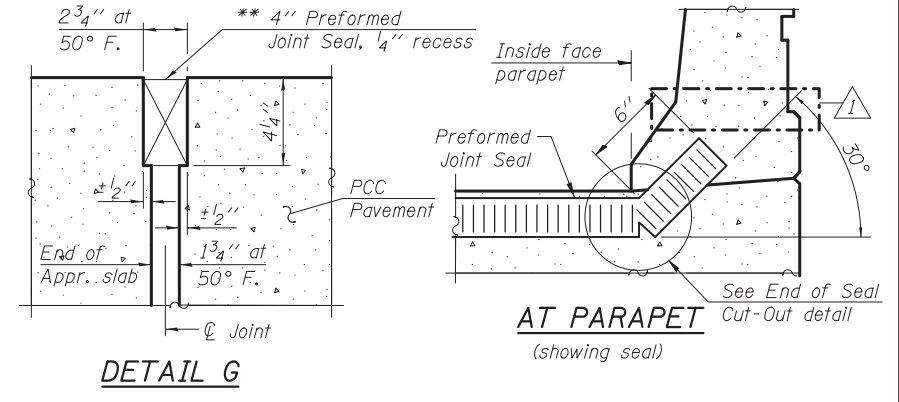
Hatched area to be poured after superstructure false work has been removed. See Abutment Sheets SD20 & SD21.



LIGHT POLE FOUNDATION PLAN
Cost of anchor bolts is included with Concrete Superstructure.



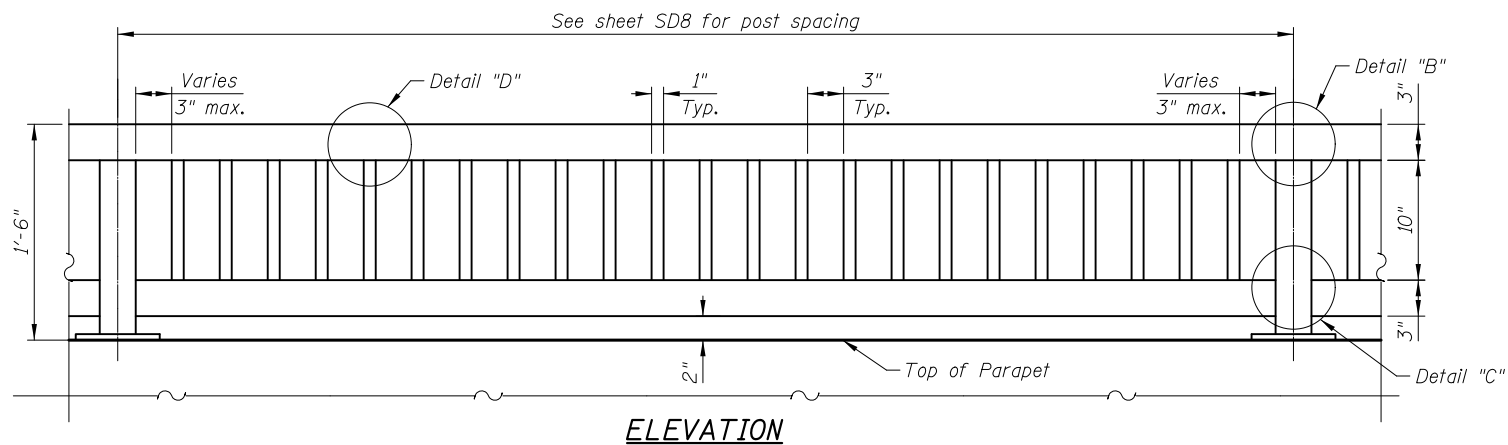
ANCHOR ROD
Diameter as specified for light poles. (ASTM F 1554 Grade 105)



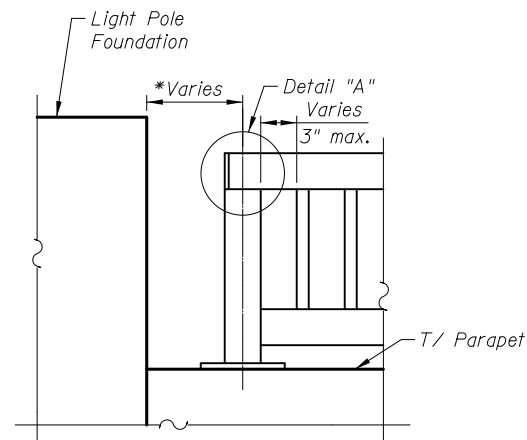
DETAIL G

Notes:
Approach slab and parapet concrete shall be paid for as Concrete Superstructure.
Approach footing concrete shall be paid for as Concrete Structures.
Reinforcement shall be paid for as Reinforcement Bars, Epoxy Coated.
For (V)E bar details, see sheet SD20 & SD21.
The approach footing maximum applied service bearing pressure (Qmax) = 2.0 ksf.
For bar splicer details, see sheet SD27.
Cost of excavation for approach footing included with Concrete Structures.
For additional parapet details, see sheet SD11 for dimensions and for form liner details.

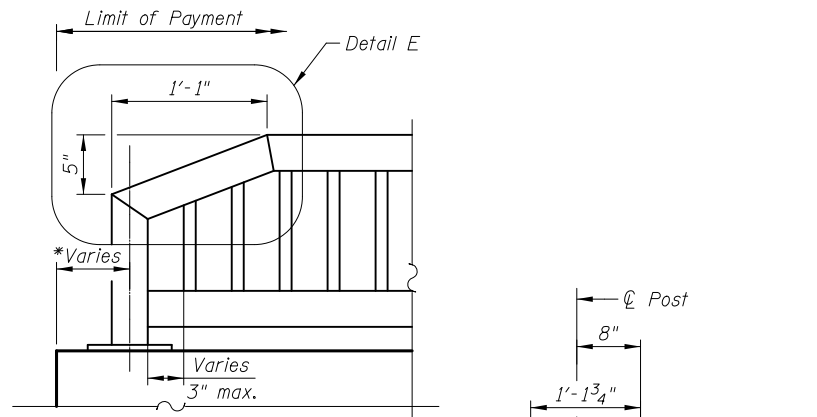
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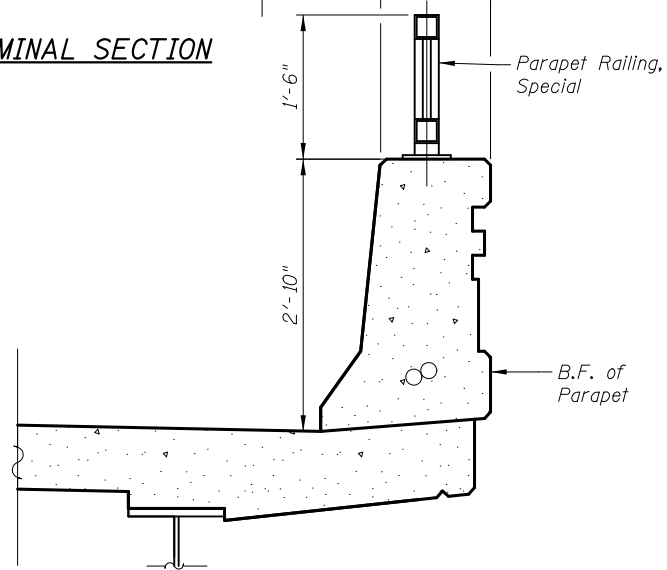
ELEVATION



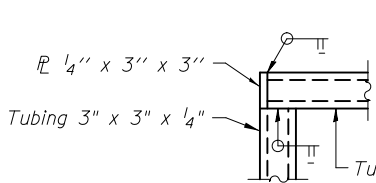
END TREATMENT AT LIGHT POLE FOUNDATION



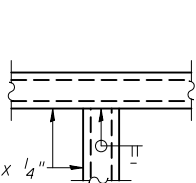
TERMINAL SECTION



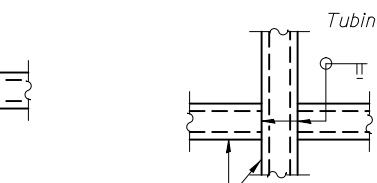
SECTION THRU PARAPET



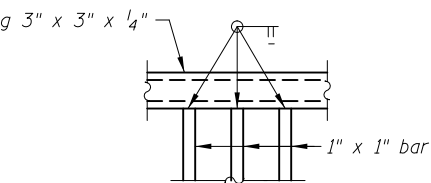
DETAIL A



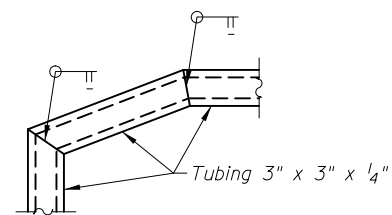
DETAIL B



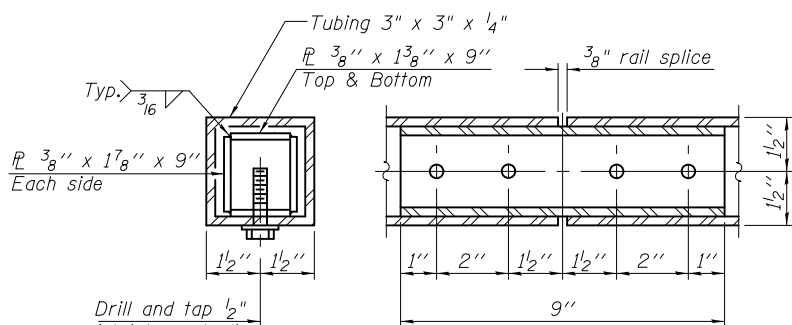
DETAIL C



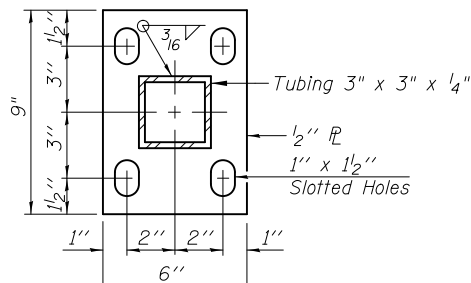
DETAIL D



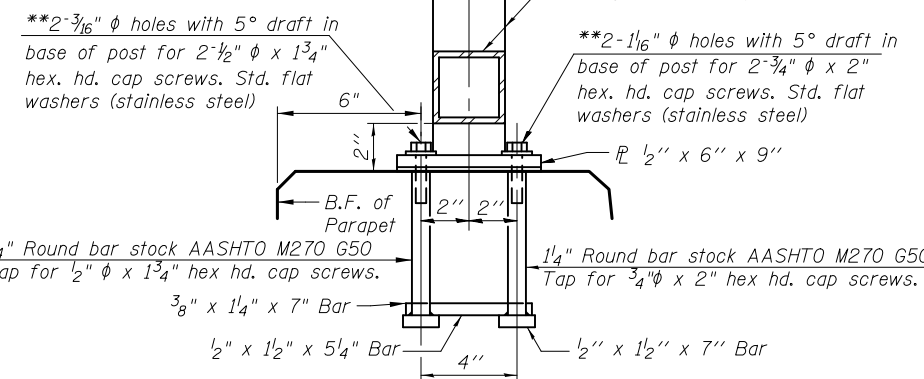
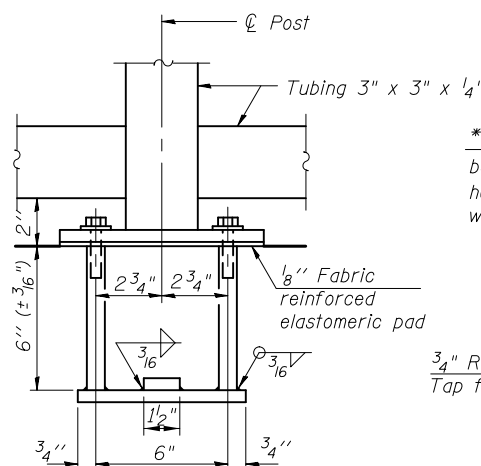
DETAIL E



RAIL SPLICE



BASE PL



ANCHOR BOLT DETAILS

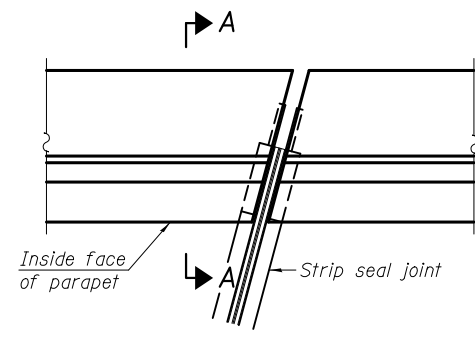
** In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting stainless steel anchor rods of the same diameter and grade as the specified cap screws according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.

BILL OF MATERIAL

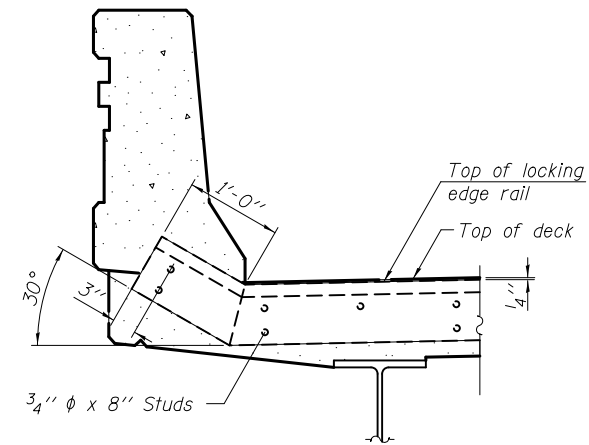
ITEM	UNIT	QUANTITY
Parapet Railing, Special	Foot	290

Notes:
 All post, railing, splices, anchor devices, and plates shall be painted the color Traffic Black (RAL 9017).
 All posts shall be normal to the parapet.
 All joints in rail shall be spliced detail.
 All exposed rail ends shall be capped per detail.
 Provide (1) 1/8" and (2) 1/16" aluminum shims for 25% of the posts.
 Rail elements shall be parallel to grade - High spots shall be ground and low spots shimmed. Cost included in Parapet Railing, Special.

5/2/2012 4:21:32 PM J:\2154\cad\sheet\Roadway\20-Structures & Walls\05-SN_056-0080\0560080-60F72-14-PRS.dgn

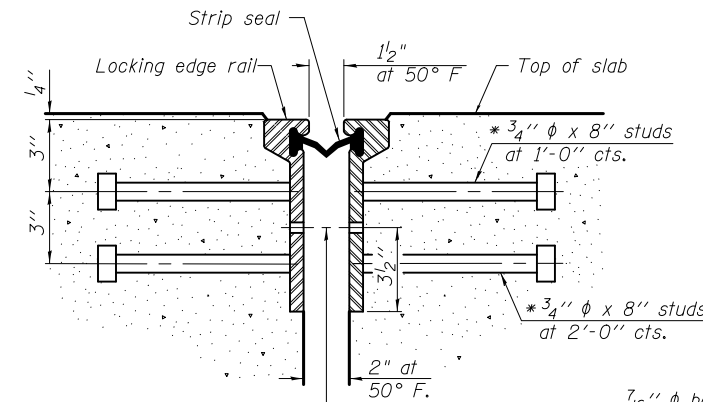


PLAN
(For skews $\leq 30^\circ$)

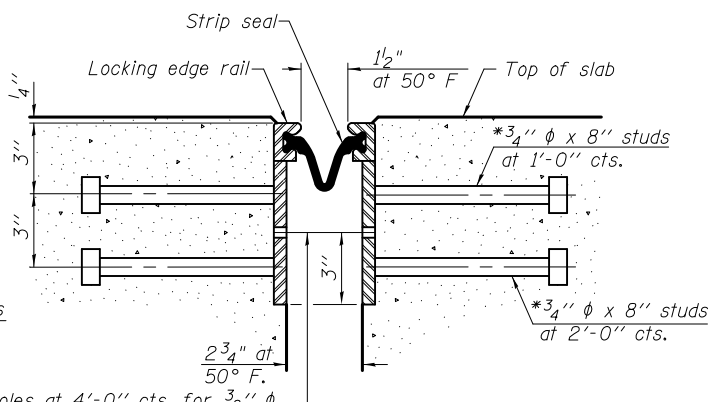


SECTION A-A

Notes:
 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.
 The Locking Edge Rails depicted are conceptual only, except for the minimum dimensions shown. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities.
 The manufacturer's recommended installation methods shall be followed.
 The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State.
 All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.



SECTION THRU ROLLED RAIL JOINT

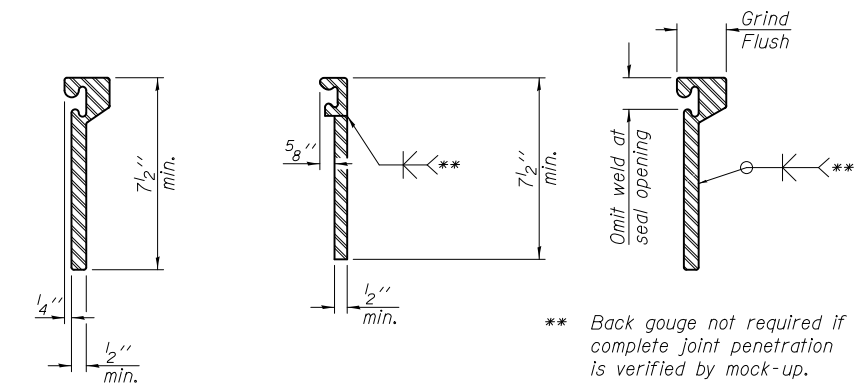


SECTION THRU WELDED RAIL JOINT

7/16" phi holes at 4'-0" cts. for 3/8" phi bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

7/16" phi holes at 4'-0" cts. for 3/8" phi bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.



ROLLED EXTRUDED RAIL

WELDED RAIL

LOCKING EDGE RAIL SPLICE

** Back gouge not required if complete joint penetration is verified by mock-up.

The inside of the locking edge rail groove shall be free of weld residue.
 Rolled rail shown, welded rail similar.

LOCKING EDGE RAILS

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	68

5/2/2012 4:21:33 PM I:\2154\cad\sheet\Roadway\20-Structures & Walls\05-SN 056-0080\0560080-60F72-15-P.J.S.dgn

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 450 E Devon Ave, Suite 300
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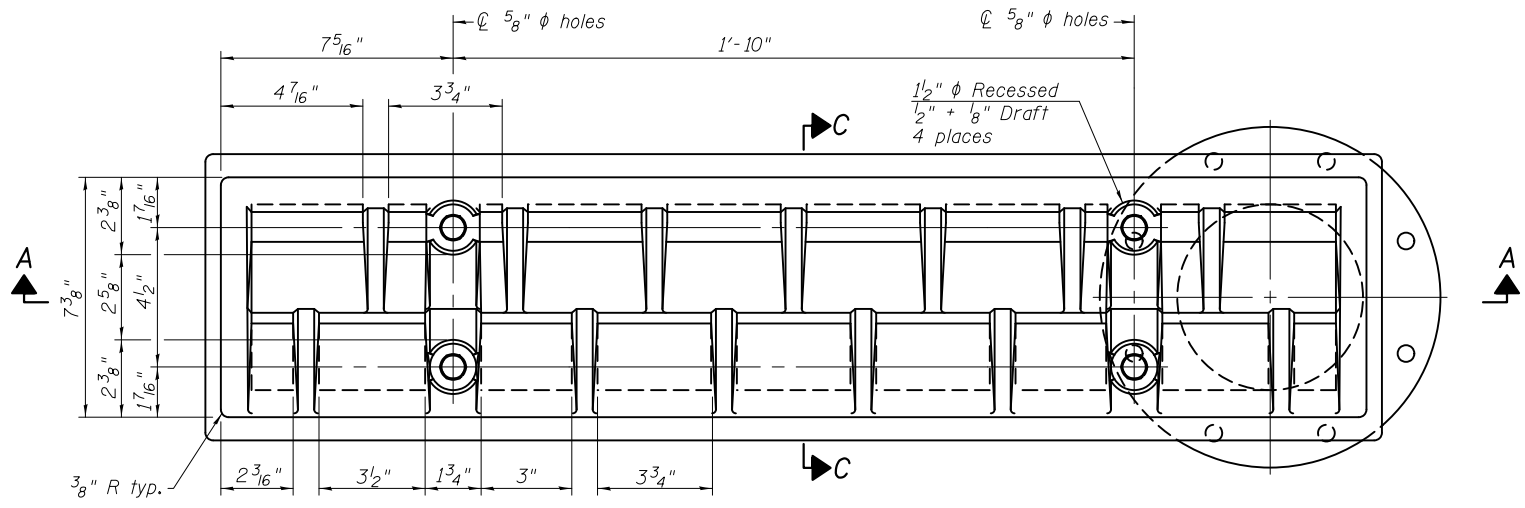
DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

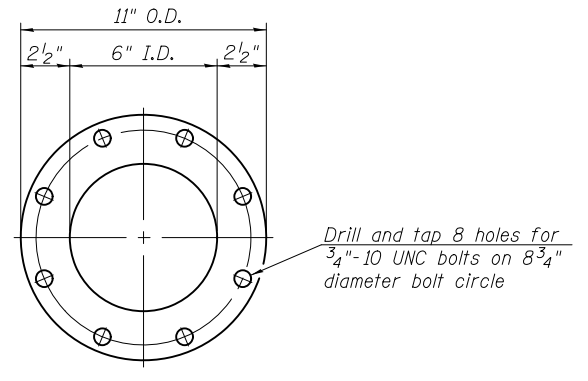
**PREFORMED JOINT STRIP SEAL
 SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
 STRUCTURE NO. 056-0080**

O.R. RTÉ.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	569
			CONTRACT NO. 60F72	
ILLINOIS FED. AID PROJECT				

SHEET NO. SD 15 OF SD30 SHEETS

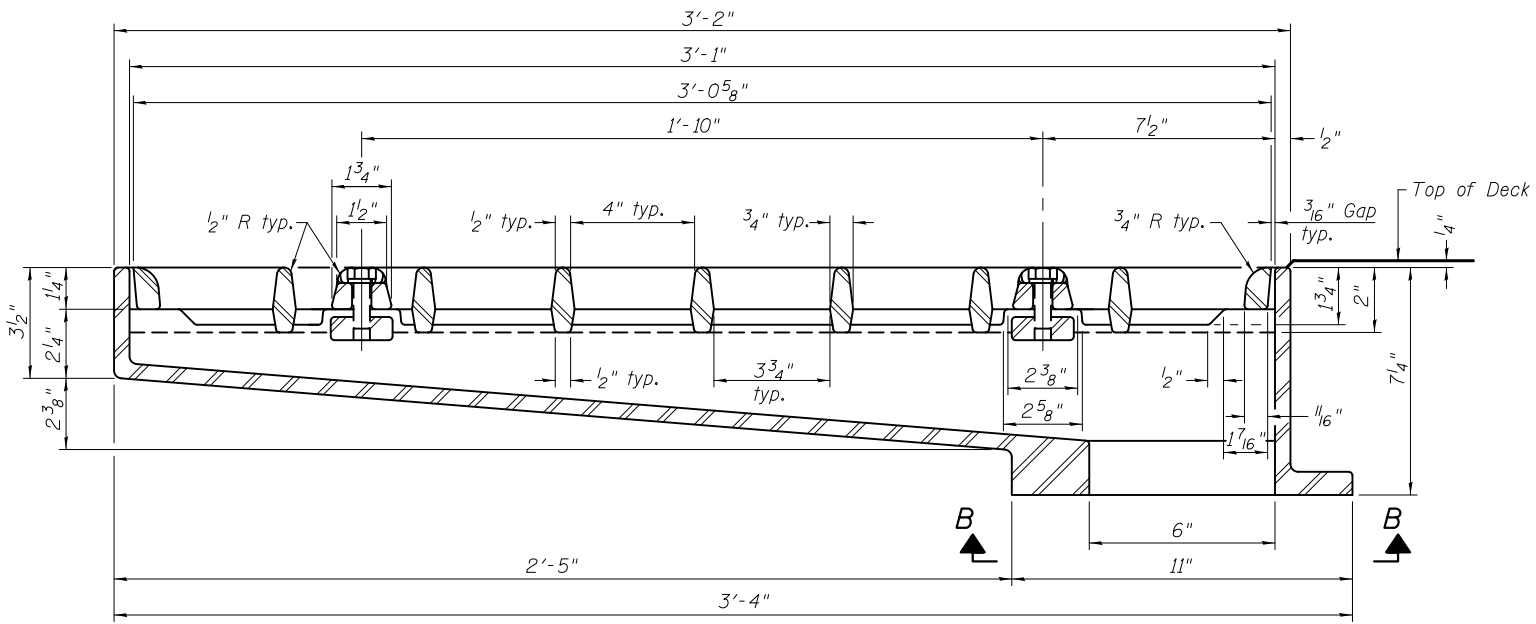


PLAN



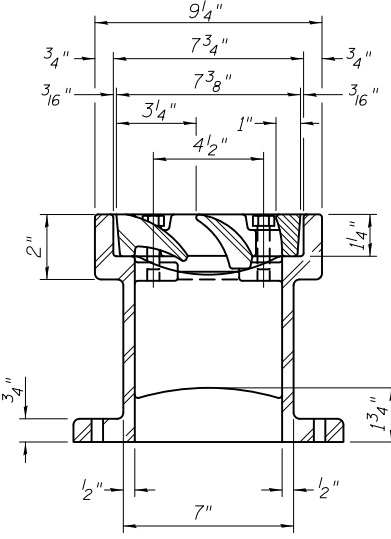
VIEW B-B

Drill and tap 8 holes for 3/4"-10 UNC bolts on 8 3/4" diameter bolt circle

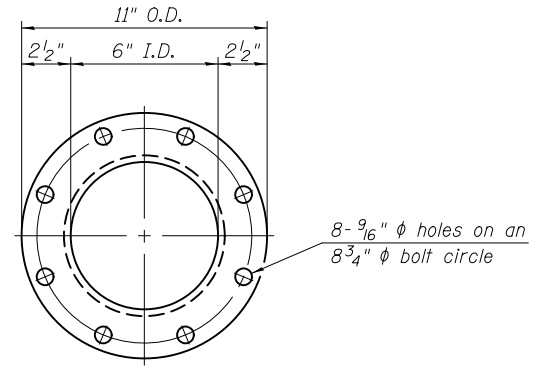


SECTION A-A

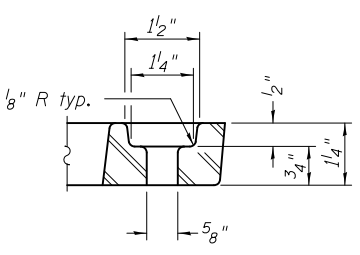
See sheet SDB for scupper location relative to parapet.



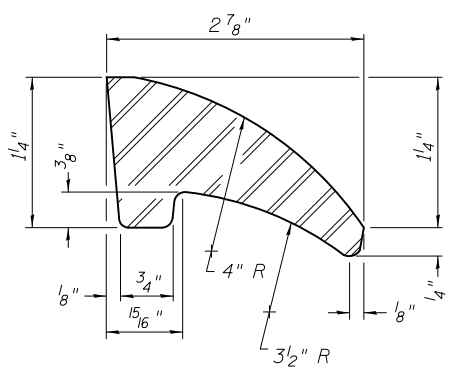
SECTION C-C



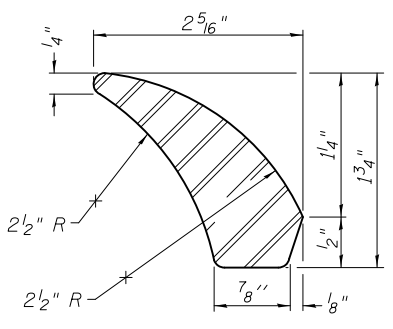
DOWNSPOUT



BOLT HOLE DETAIL



FIRST VANE DETAIL



SECOND VANE DETAIL

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Drainage Scupper, DS-33	Each	1

DS-33

7-1-10

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 450 E Devon Ave, Suite 300
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DRAWN - M. LANGE	REVISED -
DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 5/3/2012	REVISED -

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

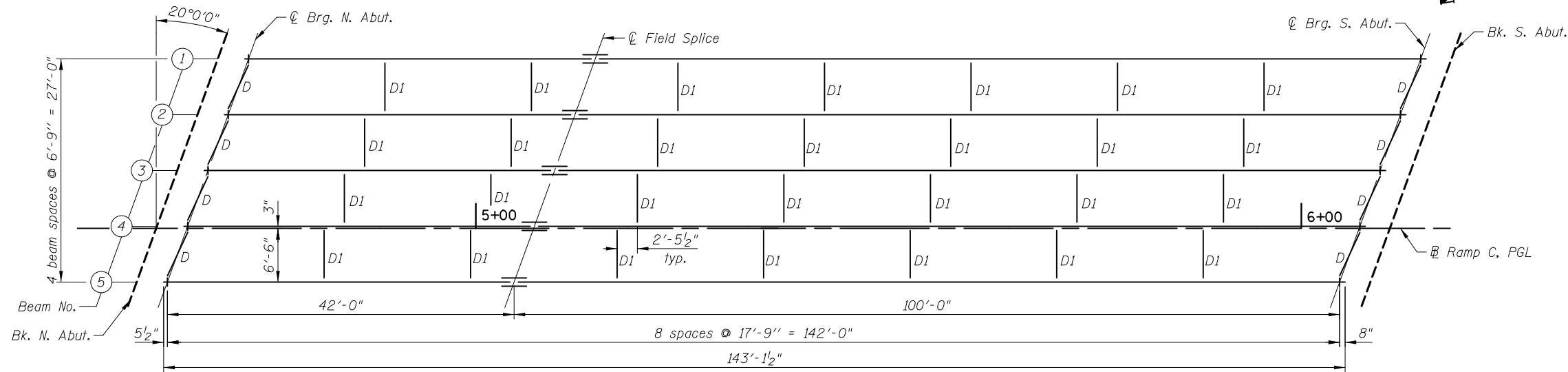
DRAINAGE SCUPPER, DS-33
SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0080

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	570
CONTRACT NO. 60F72				

SHEET NO. SD16 OF SD30 SHEETS

ILLINOIS FED. AID PROJECT

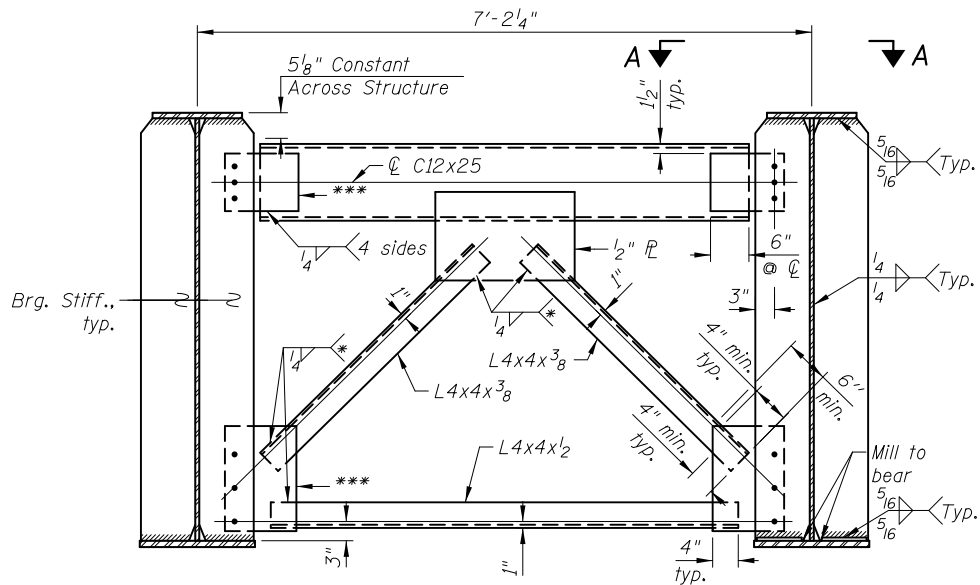
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 4/21/13 PM
 5/2/2012



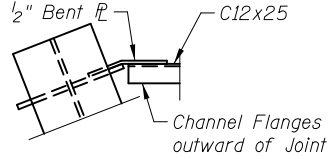
PLAN

INTERIOR GIRDER MOMENT TABLE		
0.5 Span		
I_s	(in ⁴)	56,305
$I_c(n)$	(in ⁴)	130,626
$I_c(3n)$	(in ⁴)	92,399
S_s	(in ³)	1,992
$S_c(n)$	(in ³)	2,661
$S_c(3n)$	(in ³)	2,406
DC1	(k/')	0.993
M _{DC1}	(k)	2,503
DC2	(k/')	0.231
M _{DC2}	(k)	582
DW	(k/')	0.300
M _{DW}	(k)	756
M _{ℓ + IM}	(k)	2,445
M _u (Strength I)	(k)	9,270
φ _r M _n	(k)	12,491
f _s DC1	(ksi)	15.08
f _s DC2	(ksi)	2.91
f _s DW	(ksi)	3.77
f _s 1.3(ℓ+IM)	(ksi)	14.34
f _s (Service II)	(ksi)	36.09
f _s (Total)(Strength I)	(ksi)	—
V _r	(k)	30.1

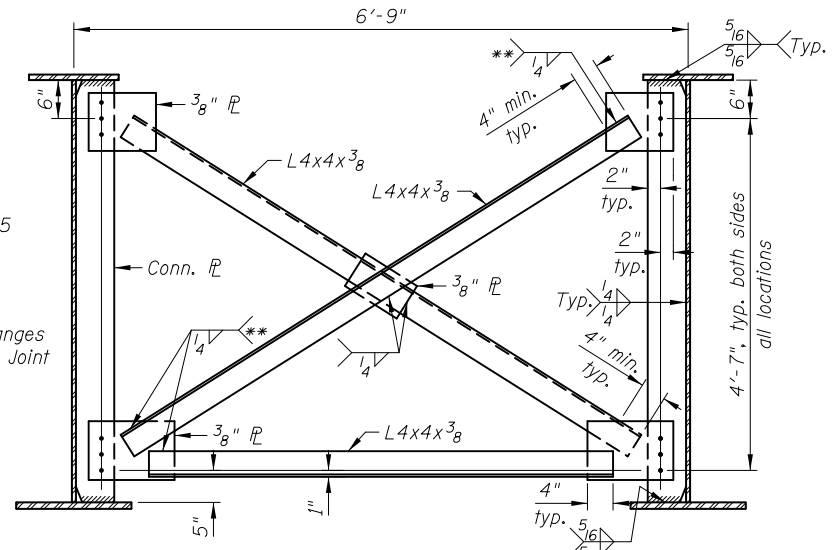
INTERIOR GIRDER REACTION TABLE		
Abutment		
R _{DC1}	(k)	70.5
R _{DC2}	(k)	16.4
R _{DW}	(k)	21.3
R _{ℓ + IM}	(k)	105.0
R _{Total}	(k)	213.2



END CROSS FRAME D
(8 Required)



SECTION A-A



INTERIOR CROSS FRAME D1
(28 Required)

- * Weld on near side of 1/2" plate.
- ** Fillet weld angles along 3 sides on one face of gusset plate.
- *** 1/2" Plates to be bent for skew

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads (in⁴ and in³).

$I_c(n), S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) due to long-term composite (superimposed) dead loads (in⁴ and in³).

$I_c(3n), S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) due to long-term composite (superimposed) dead loads (in⁴ and in³).

DC1: Un-factored non-composite dead load (kips/ft.).

M_{DC1}: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

M_{DC2}: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

M_{DW}: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

M_{ℓ + IM}: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

M_u (Strength I): Factored design moment (kip-ft.).

1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{ℓ + IM}

φ_rM_n: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).

f_s (Service II): Sum of stresses as computed from the moments below (ksi).

M_{DC1} + M_{DC2} + M_{DW} + 1.3 M_{ℓ + IM}

f_s (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).

1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{ℓ + IM}

V_r: Maximum factored shear range in composite portion of span computed according to Article 6.10.10.

Notes:
 Detail 15/16" φ holes for all 3/4" φ bolts.
 Two hardened washers required for each set of oversized holes.
 Place diaphragm with channel flanges and outstanding angle legs outward from abutment backwall.
 All cross frames shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames at supports may be temporarily disconnected to install bearing anchor rods.

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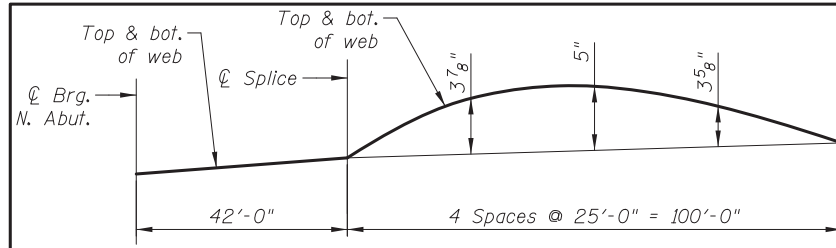
DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN
SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0080

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	571
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

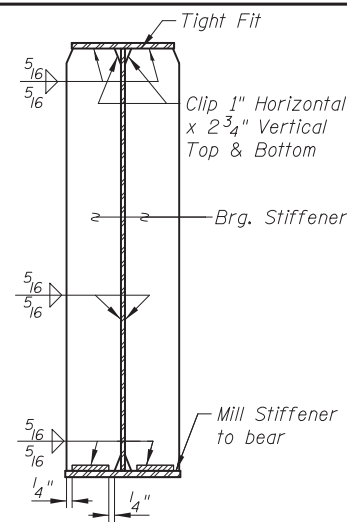
SHEET NO. SD17 OF SD30 SHEETS



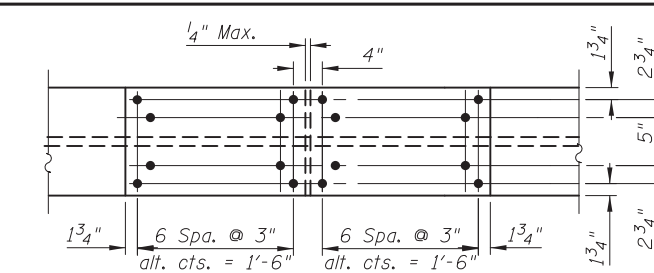
CAMBER DIAGRAM

TOP OF WEB ELEVATIONS
(For Fabrication Only)

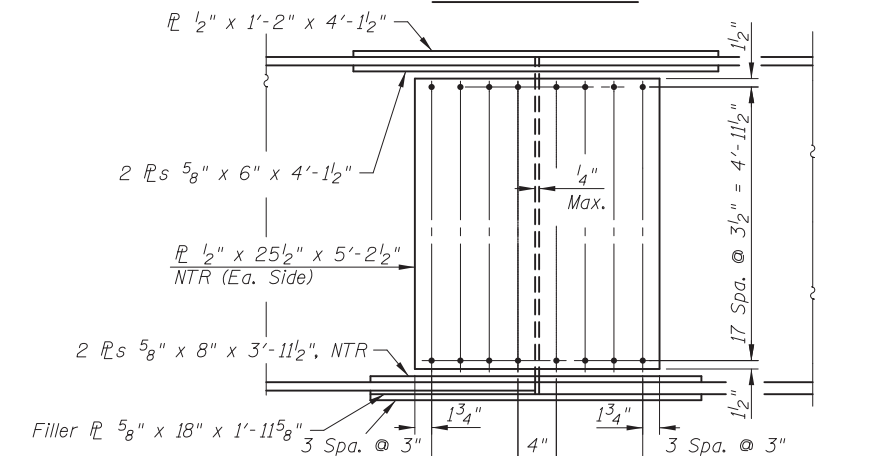
GIRDER	Q Brg. N. Abut.	Q Field Splice	Q Brg. S. Abut.
1	758.29	760.38	763.53
2	758.08	760.18	763.35
3	757.88	759.97	763.17
4	757.67	759.77	762.99
5	757.44	759.53	762.78



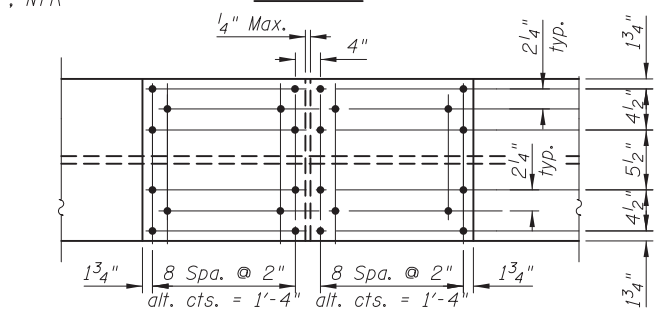
SECTION AT ABUTMENT



TOP FLANGE - PLAN

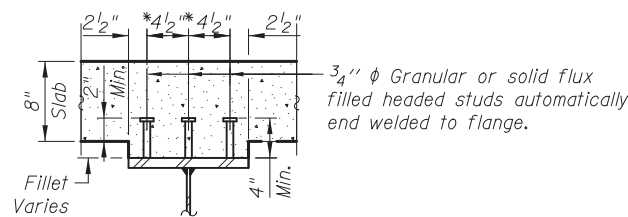


ELEVATION



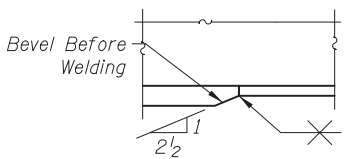
BOTTOM FLANGE

FIELD SPLICE DETAIL

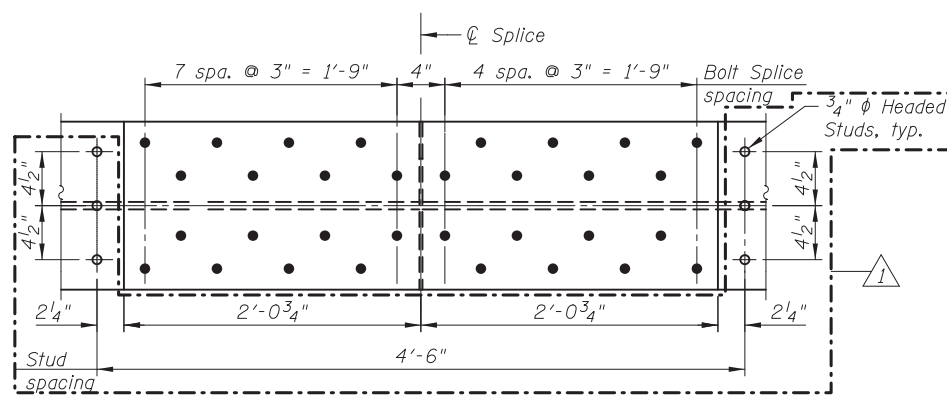


SECTION A-A

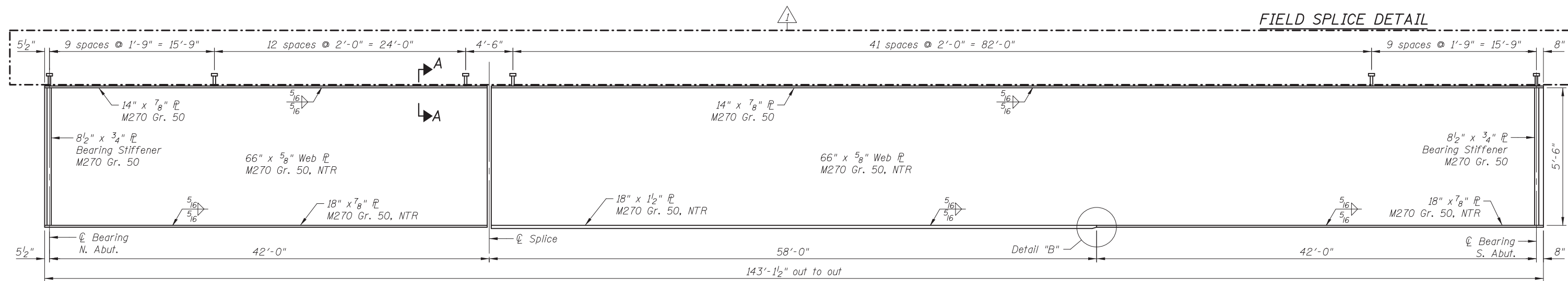
* See Studs at Splice Plate Detail for spacing



DETAIL "B"



STUDS AT SPLICE PLATE



GIRDER ELEVATION

Notes:
 Load carrying components designated "NTR" shall conform to the Impact Testing Requirements, Zone 2.
 HS Bolts shall be 7/8" AASHTO M164/ASTM A325, with 15/16" holes.
 All splices are symmetrical about Q splice except for fills.
 Refer to sheets SD10 and SD11 for the Ornamental Aluminum Lattice for the East Fascia of Beam 1 and the West Fascia of Beam 5.
 Splice plates shall be AASHTO M270 Gr 50.

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Furnishing and Erecting Structural Steel	L. Sum	0.17
Stud Shear Connectors	Each	1,095

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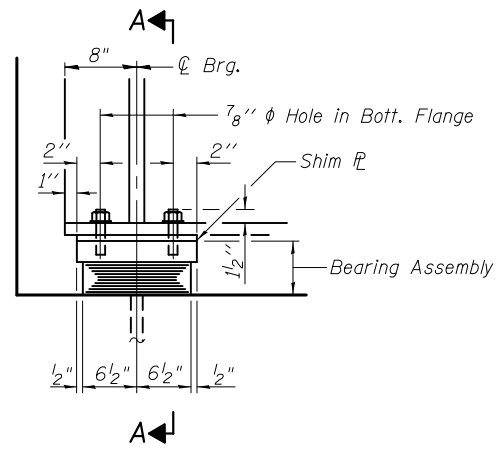
DRAWN - M. LANGE	REVISED - 5/23/2012 D.L.A.
DESIGNED - D. ATKINS	REVISED -
CHECKED - G. HATLESTAD	REVISED -
DATE - 5/3/2012	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

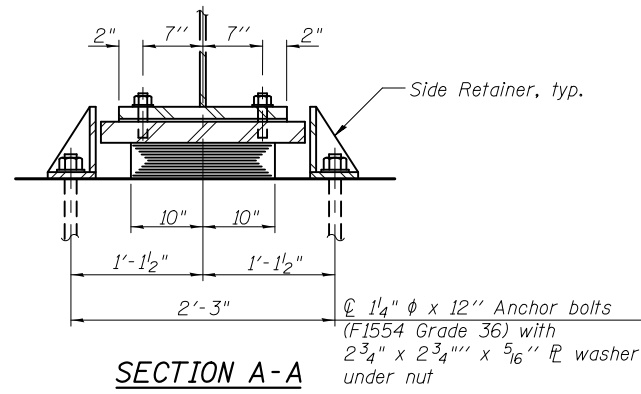
PLATE GIRDER DETAILS
SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0080
 SHEET NO. SD18 OF SD30 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	572

CONTRACT NO. 60F72
 ILLINOIS FED. AID PROJECT

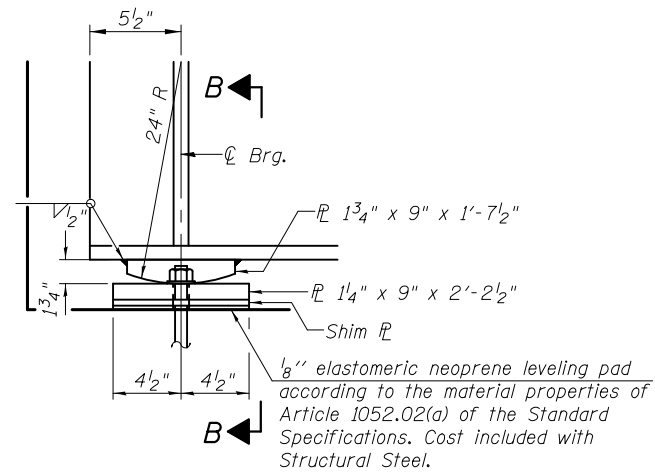


ELEVATION AT S. ABUT.

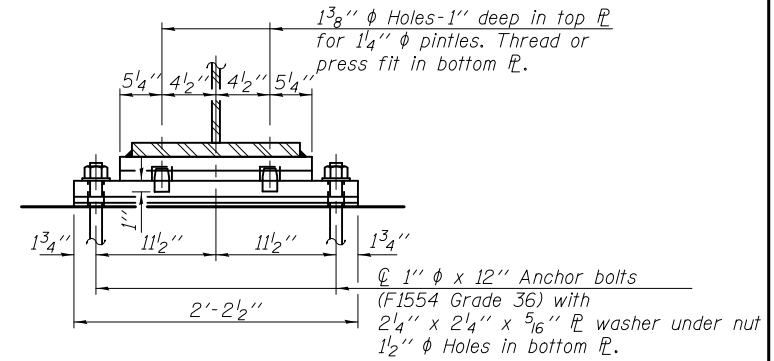


SECTION A-A

TYPE I ELASTOMERIC EXP. BRG.



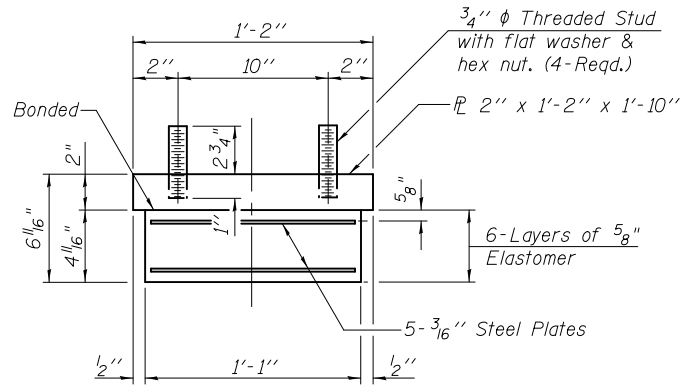
ELEVATION AT N. ABUTMENT



SECTION B-B

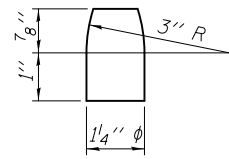
FIXED BEARING

(5 Required)



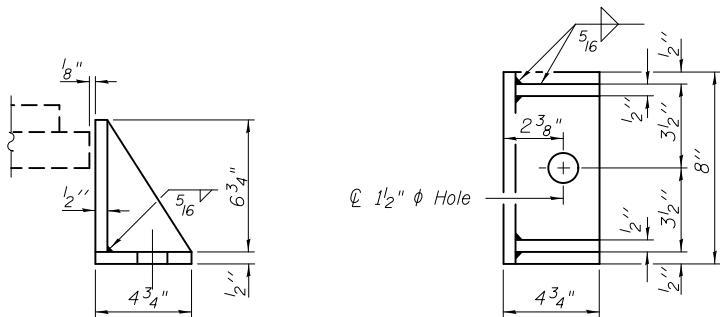
BEARING ASSEMBLY

Note:
Shim plates shall not be placed under Bearing Assembly.



PINTLE

Notes:
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.
Anchor bolts for side retainers may be cast in place or installed in holes drilled before or after members are in place.
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
Side retainers and other steel members required for the elastomeric bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.
The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M 270 Grade 50.



SIDE RETAINER

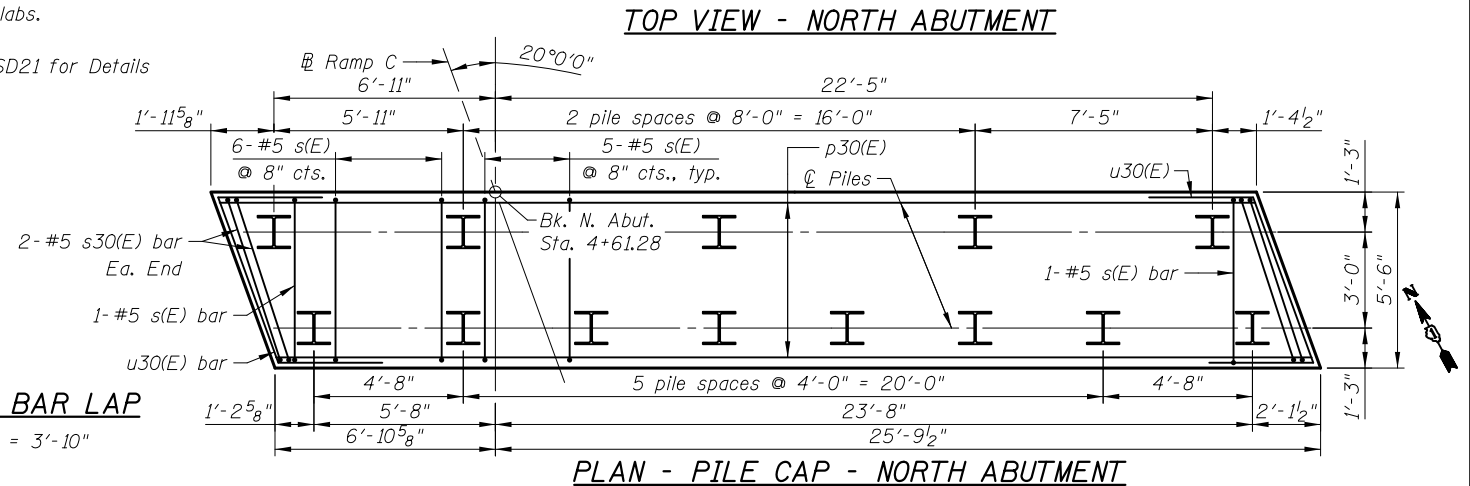
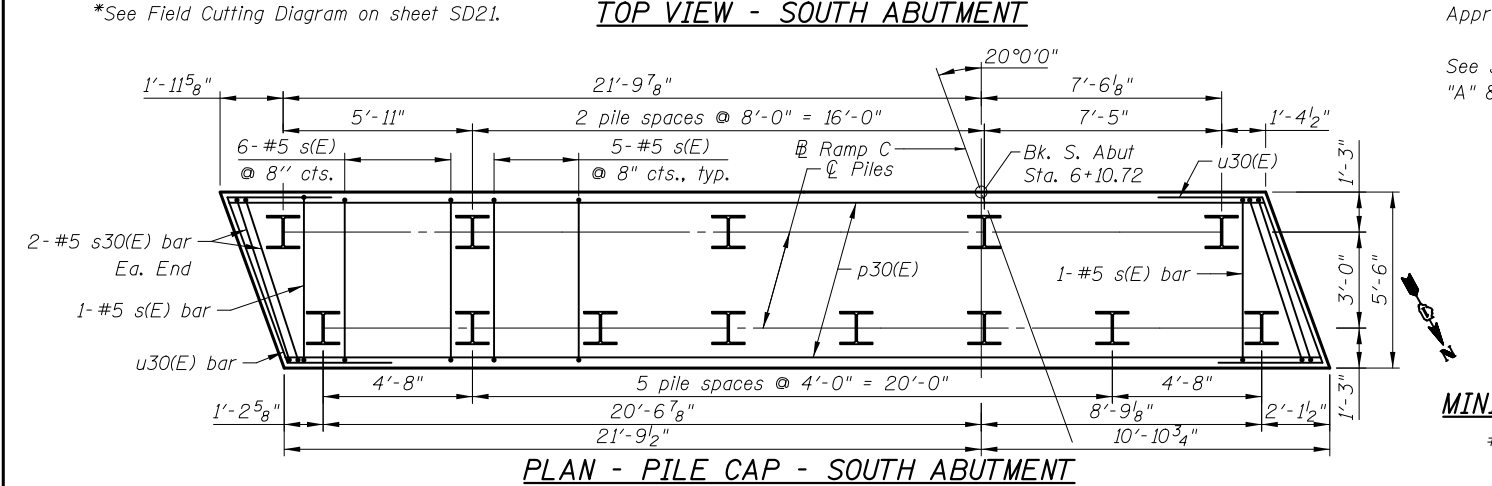
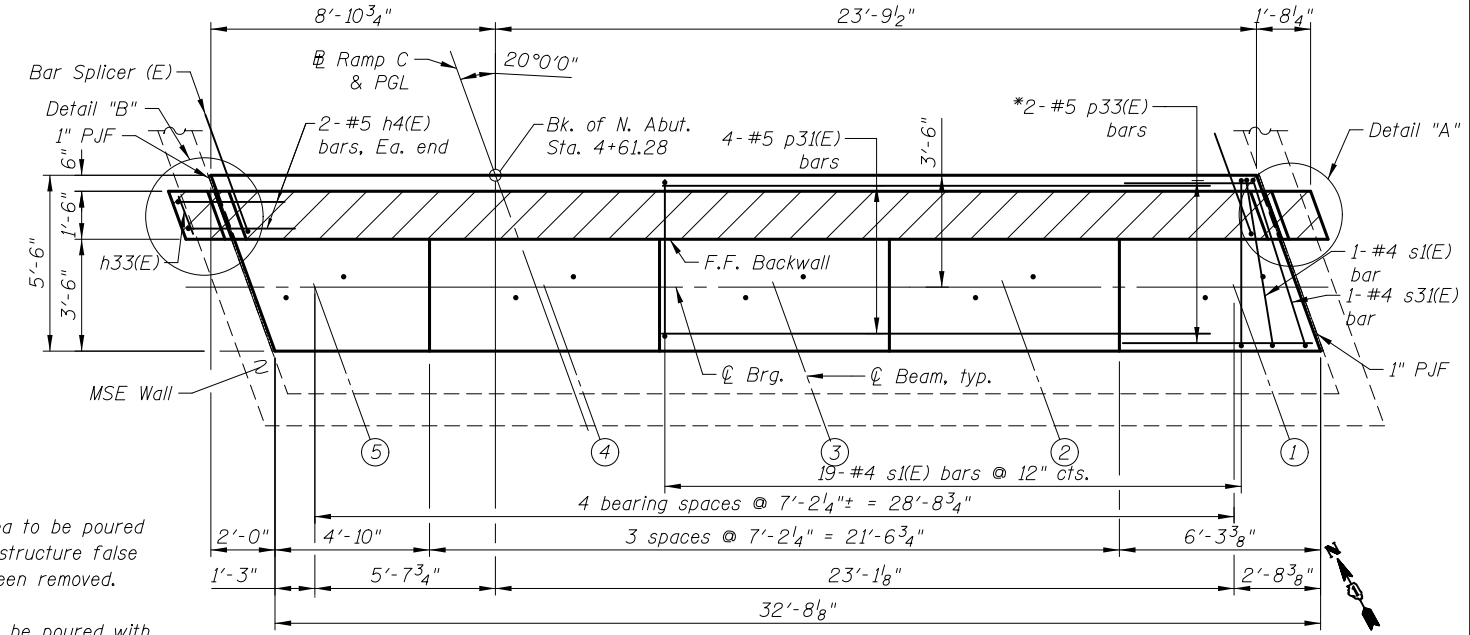
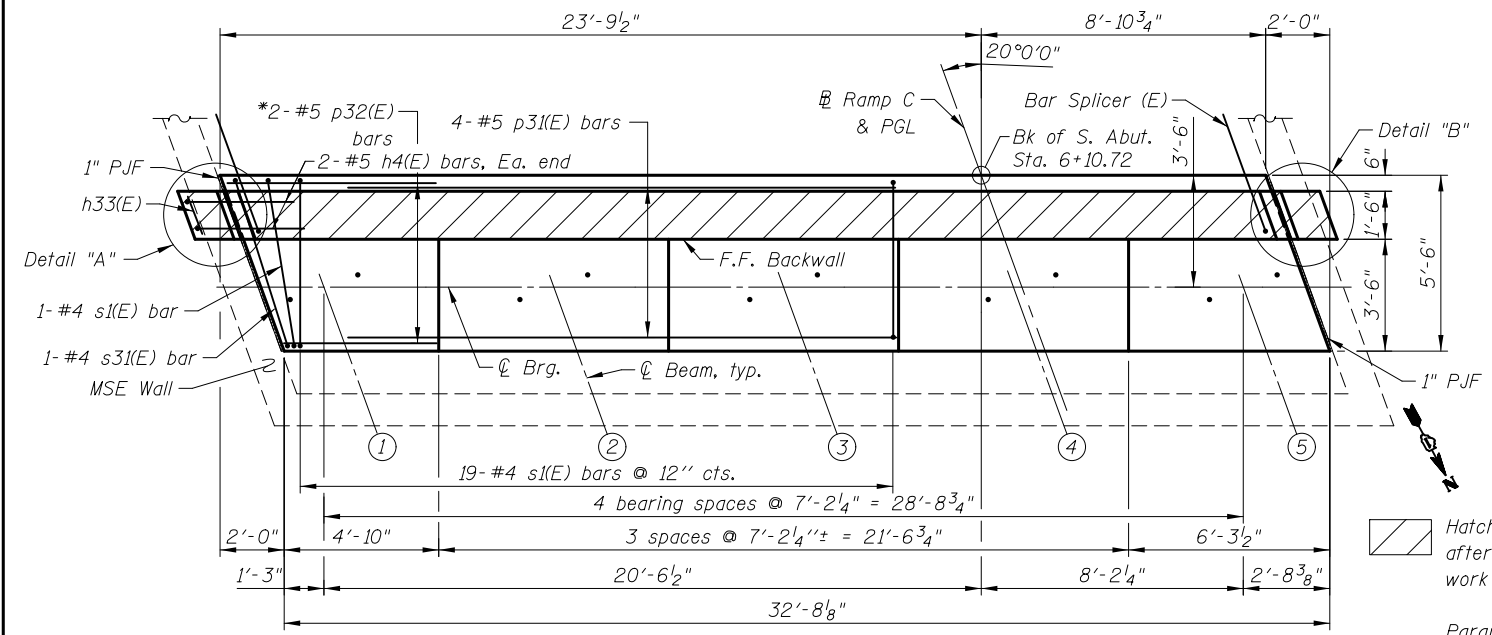
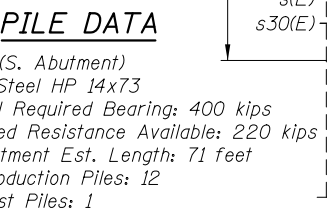
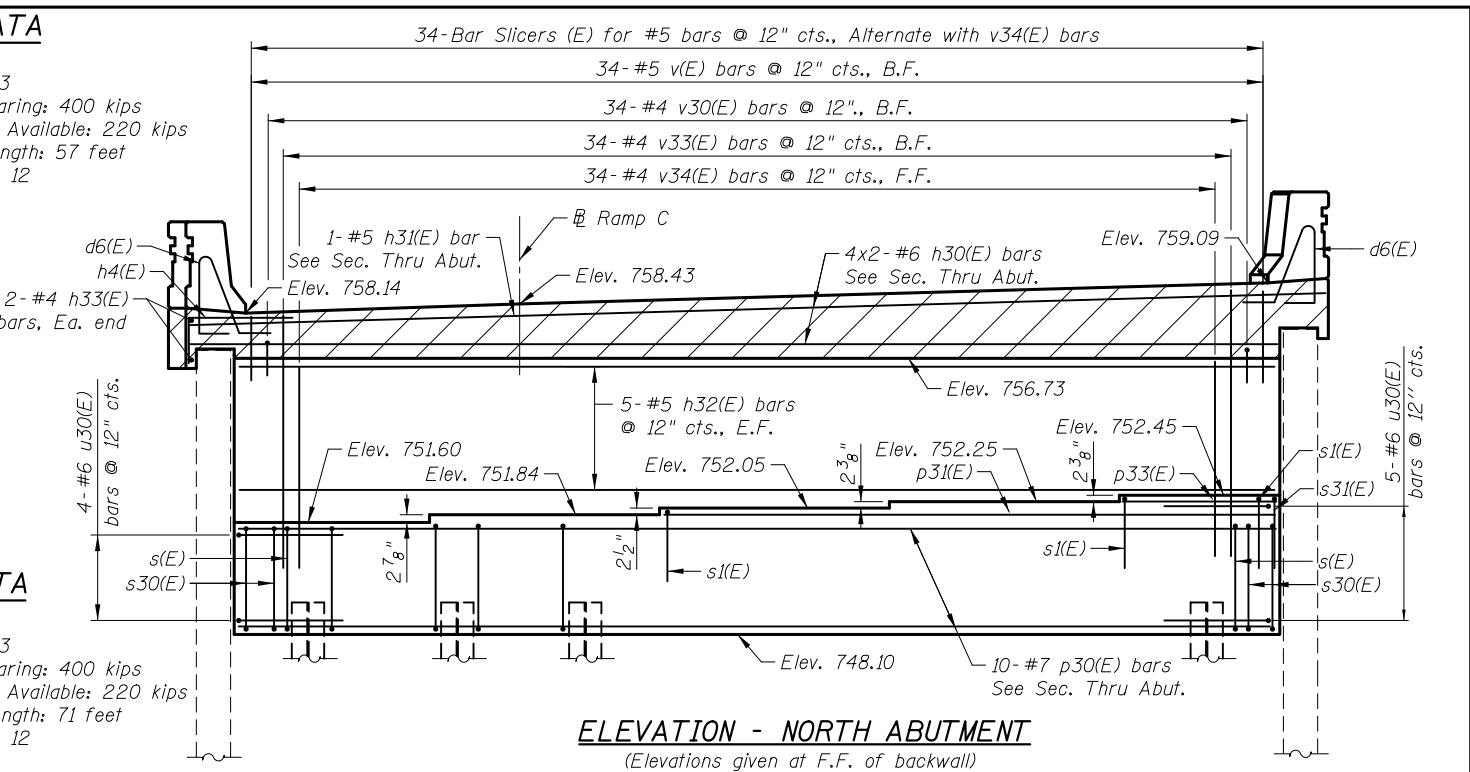
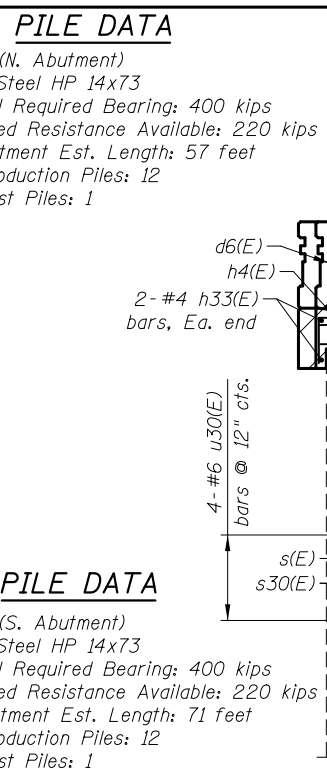
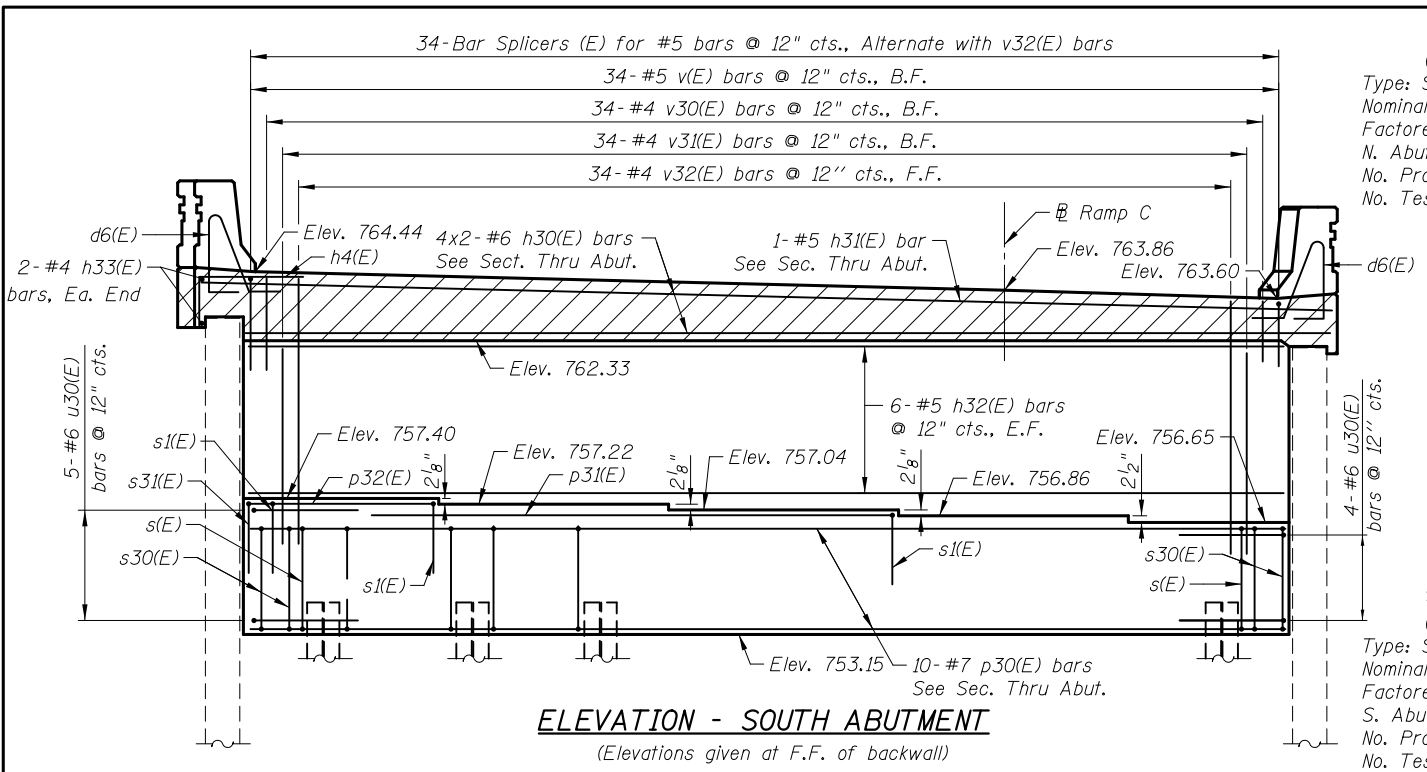
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	5
Anchor Bolts, 1"	Each	10
Anchor Bolts, 1 1/4"	Each	10

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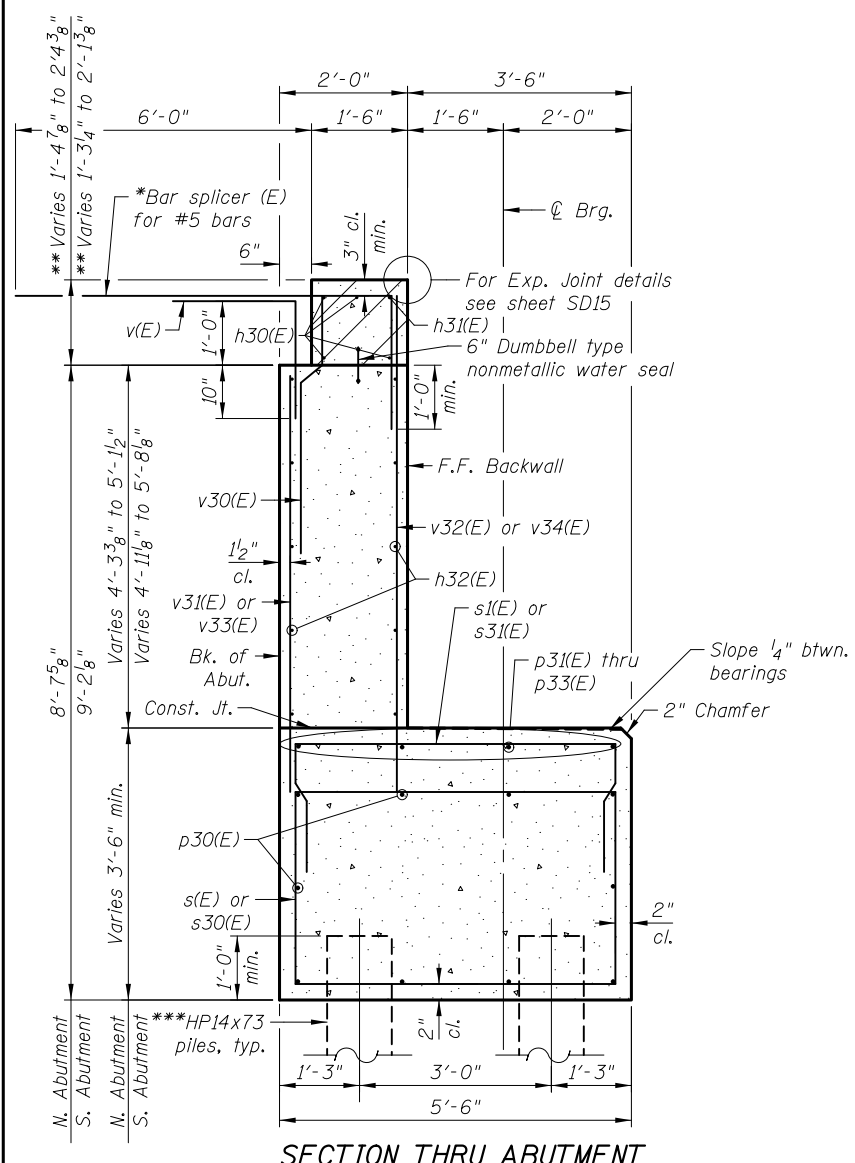
Hatched area to be poured after superstructure false work has been removed.
 Parapets to be poured with Approach Slabs.
 See sheet SD21 for Details "A" & "B".

MINIMUM BAR LAP
 #6 bar = 3'-10"

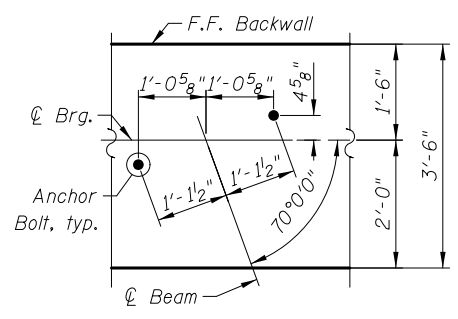
DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	574
CONTRACT NO. 60F72			ILLINOIS FED. AID PROJECT	

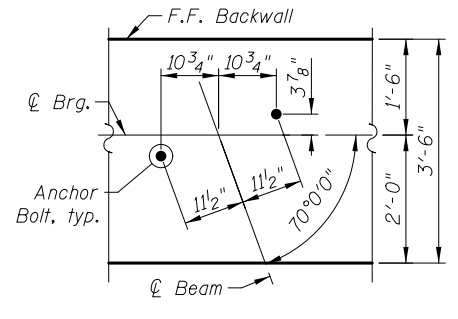
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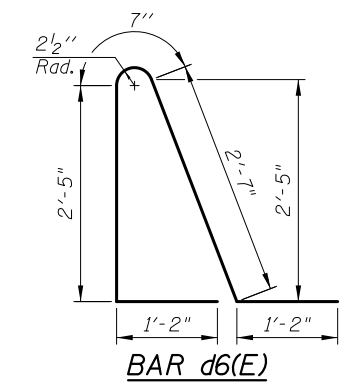
SECTION THRU ABUTMENT



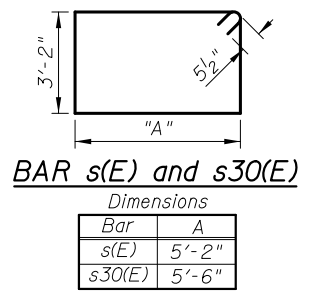
ANCHOR BOLT DIAGRAM
SOUTH ABUTMENT



ANCHOR BOLT DIAGRAM
NORTH ABUTMENT

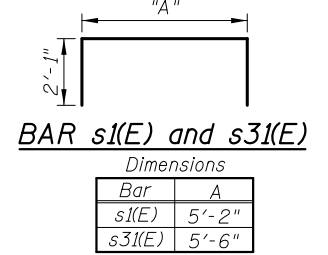


BAR d6(E)



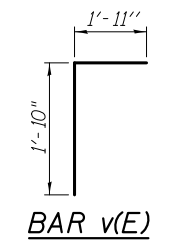
BAR s(E) and s30(E)

Dimensions	
Bar	A
s(E)	5'-2"
s30(E)	5'-6"

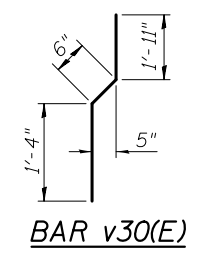


BAR s1(E) and s31(E)

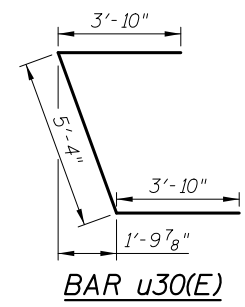
Dimensions	
Bar	A
s1(E)	5'-2"
s31(E)	5'-6"



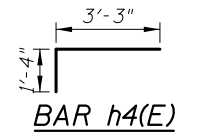
BAR v(E)



BAR v30(E)



BAR u30(E)



BAR h4(E)

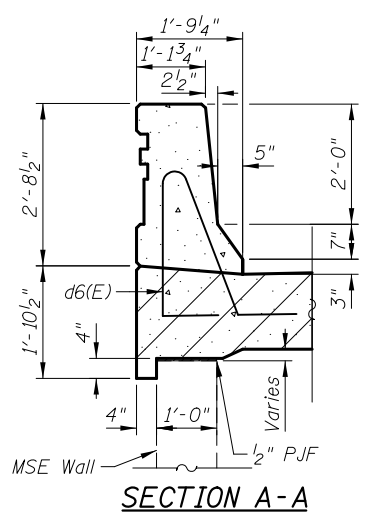
ABUTMENTS
BILL OF MATERIAL
(For 2 Abutments)

Bar	No.	Size	Length	Shape
d6(E)	8	#5	7'-11"	
h4(E)	8	#5	4'-7"	
h30(E)	16	#6	19'-7"	
h31(E)	2	#5	35'-4"	
h32(E)	22	#5	32'-4"	
h33(E)	8	#4	1'-4"	
p30(E)	20	#7	32'-4"	
p31(E)	8	#5	17'-0"	
p32(E)	2	#5	11'-0"	
p33(E)	2	#5	9'-10"	
s(E)	78	#5	17'-7"	
s1(E)	40	#4	9'-4"	
s30(E)	8	#5	18'-3"	
s31(E)	2	#4	9'-8"	
u30(E)	18	#6	13'-0"	
v(E)	68	#5	3'-9"	
v30(E)	68	#4	3'-11"	
v31(E)	34	#4	6'-8"	
v32(E)	34	#4	8'-1"	
v33(E)	34	#4	6'-3"	
v34(E)	34	#4	7'-7"	
ITEM	UNIT	QUANTITY		
Concrete Structures	Cu. Yd.	75.3		
Concrete Superstructures	Cu. Yd.	7.2		
Bridge Deck Grooving	Sq. Yd.	11		
Protective Coat	Sq. Yd.	11		
Reinforcement Bars, Epoxy Coated	Pound	6,200		
Furnishing Steel Piles, HP14X73	Foot	1,536		
Driving Piles	Foot	1,536		
Test Pile Steel HP14x73	Each	2		
Pile Shoes	Each	26		
Concrete Sealer	Sq. Ft.	555		

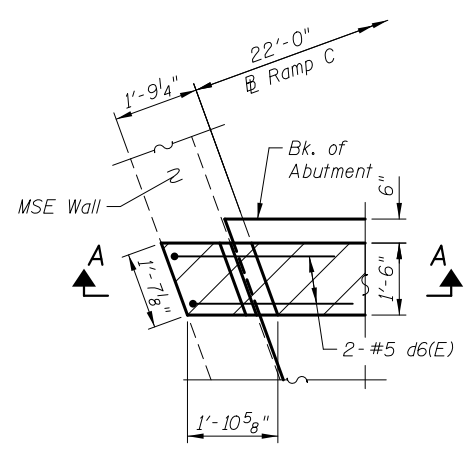
* Bar Splicers shall be placed parallel to the Approach Slab reinforcement.

** Measured at F.F. of Backwall.

*** Piles shall be driven after excavating to the bottom of the MSE wall and prior to placement of the reinforced select fill and coated with coal tar epoxy from the bottom of the select fill to 1" above the base of the abutment. The cost of the coal tar epoxy coating shall be included with the cost of the Furnishing Piles.

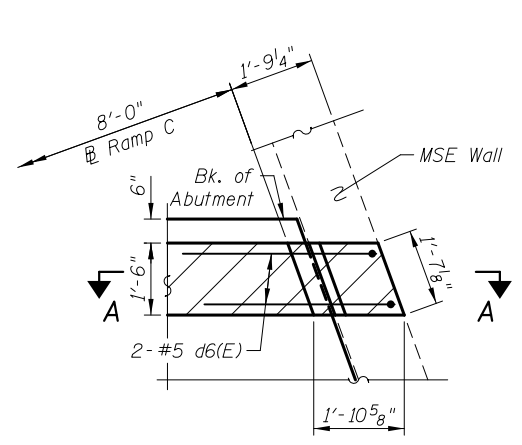


SECTION A-A



DETAIL "A"

(S. Abut. shown - N. Abut. mirror view)



DETAIL "B"

(S. Abut. shown - N. Abut. mirror view)

Hatched area to be poured after superstructure false work has been removed.

Notes:
Parapets to be poured with the Approach Slab.
Space reinforcement in cap to miss anchor bolts.
Pour steps monolithically with cap.
For details of Bar Splicers, see sheet SD27.
Concrete Sealer shall be applied to the designated areas of the backwalls and bridge seats of the abutments.

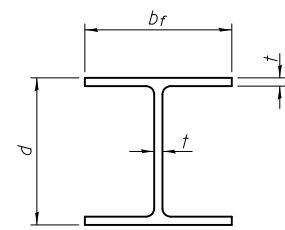


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DATE	- 5/3/2012	REVISED	-

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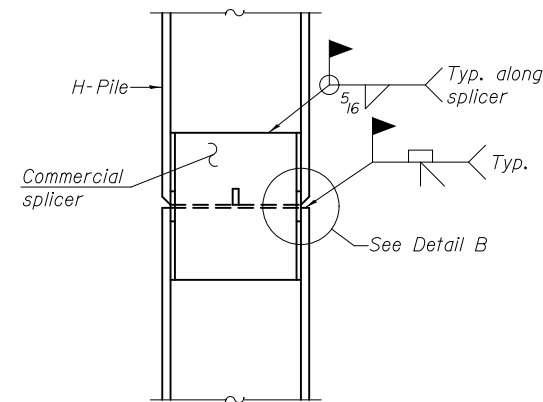
ABUTMENT DETAILS
SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0080
SHEET NO. SD 21 OF SD30 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	575
CONTRACT NO. 60F72			ILLINOIS FED. AID PROJECT	

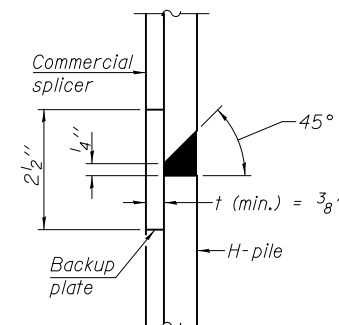


STEEL PILE TABLE

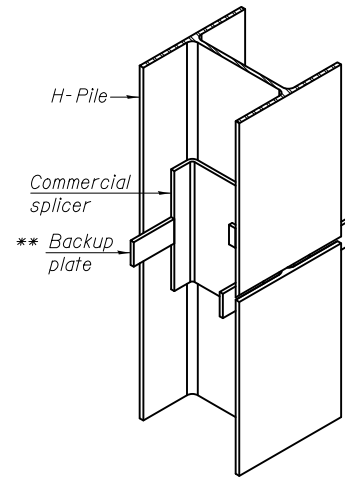
Designation	Depth d	Flange width br	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/4"	14 7/8"	1 3/16"	30"
x102	14"	14 3/4"	1/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	1/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11 3/4"	12"	7/16"	24"
HP 10x57	10"	10 1/4"	9/16"	24"
x42	9 3/4"	10 1/8"	7/16"	24"
HP 8x36	8"	8 1/8"	7/16"	18"



ELEVATION

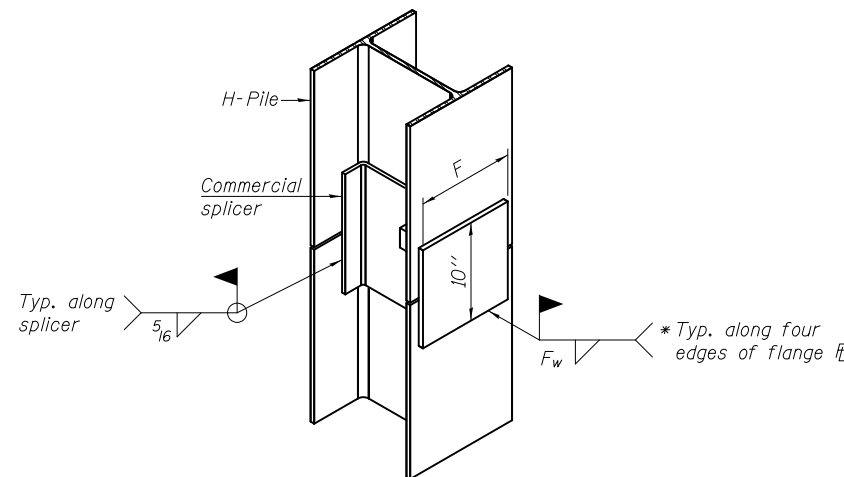


DETAIL "B"



ISOMETRIC VIEW

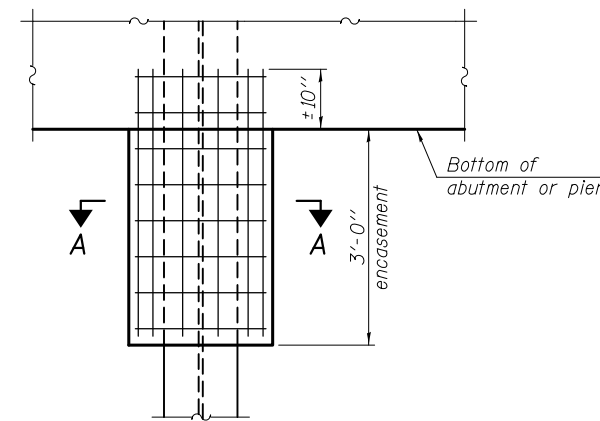
WELDED COMMERCIAL SPLICE



ISOMETRIC VIEW

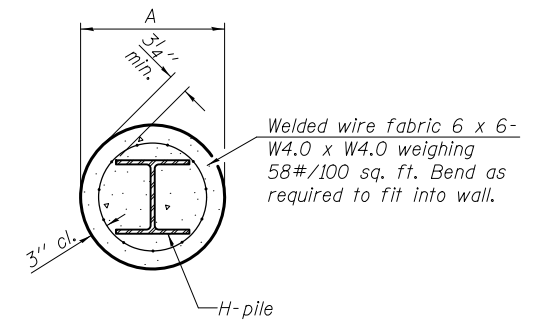
WELDED COMMERCIAL SPLICE ALTERNATE

- * Interrupt welds 1/4" from end of web and/or each flange.
- ** Remove portions of backup plates that extend outside the flanges.
- *** Weld size per pile shoe manufacturer (5/16" min.).



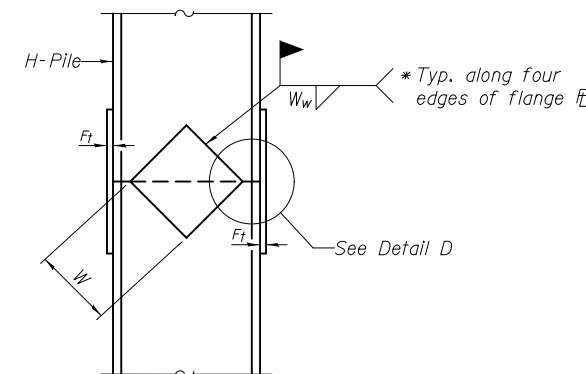
ELEVATION

PILE ENCASEMENT

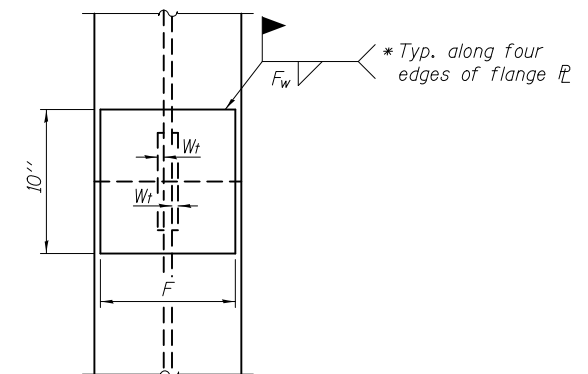


SECTION A-A

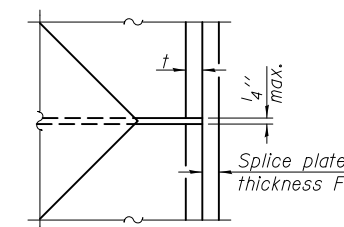
Note:
Forms for encasement may be omitted when soil conditions permit.



ELEVATION



END VIEW

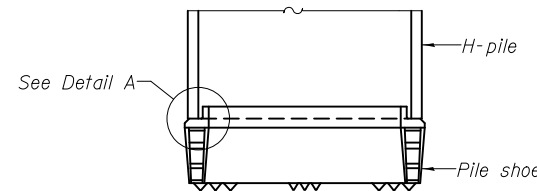


DETAIL D

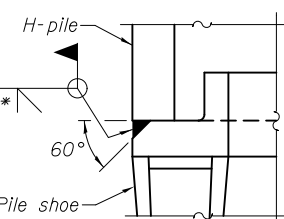
WELDED PLATE FIELD SPLICE

Designation	F	Ft	Fw	W	Wt	Ww
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5/8"	1/2"
x89	12 1/2"	3/4"	1/16"	7 3/4"	5/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5/8"	1/2"
HP 12x84	10"	7/8"	1/16"	6 1/2"	5/8"	1/2"
x74	10"	7/8"	1/16"	6 1/2"	5/8"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"

Note:
The steel H-piles shall be according to AASHTO M270 Grade 50.



ELEVATION



DETAIL A

H-PILE SHOE ATTACHMENT

F-HP 7-1-10

CIVILTECH
450 E Devon Ave, Suite 300
Itasca, Illinois 60143
Tel: 630.773.3900 Fax: 630.773.3975
www.civiltechinc.com

DRAWN - M. LANGE
DESIGNED - D. ATKINS
CHECKED - G. HATLESTAD
DATE - 5/3/2012

REVISED -
REVISED -
REVISED -
REVISED -

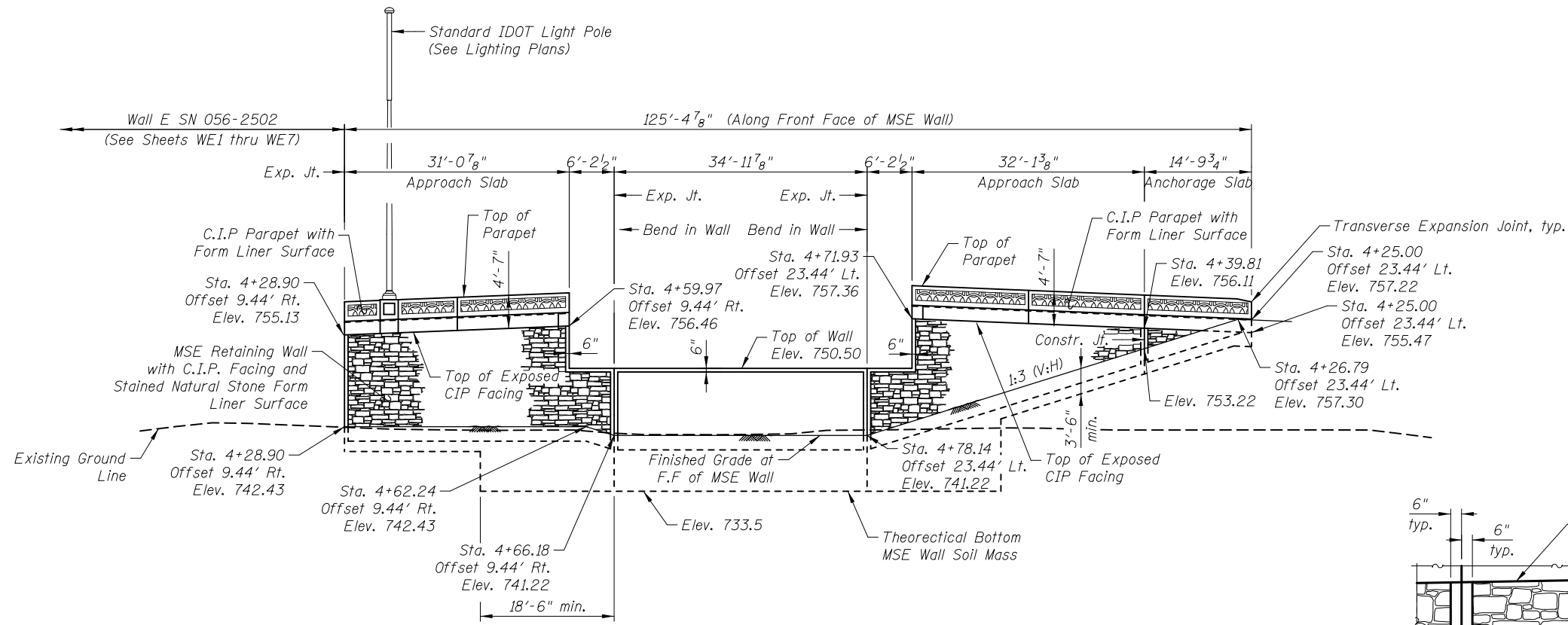
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**PILE DETAILS
SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0080**

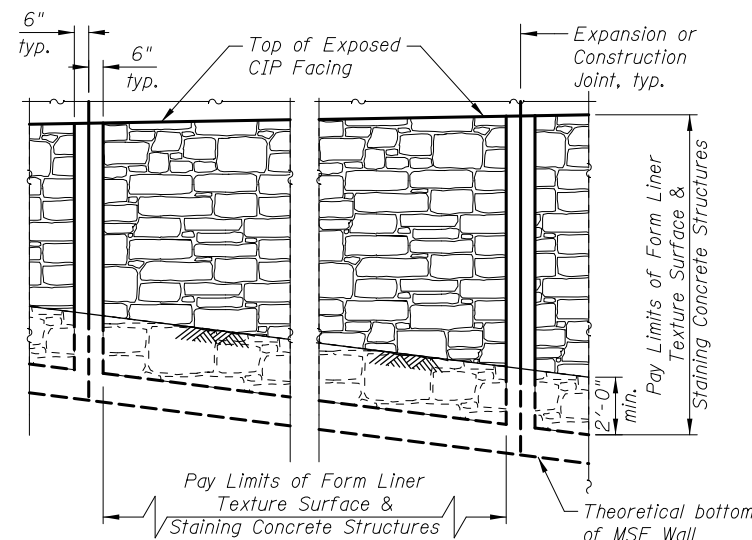
SHEET NO. SD22 OF SD30 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	576
CONTRACT NO. 60F72				

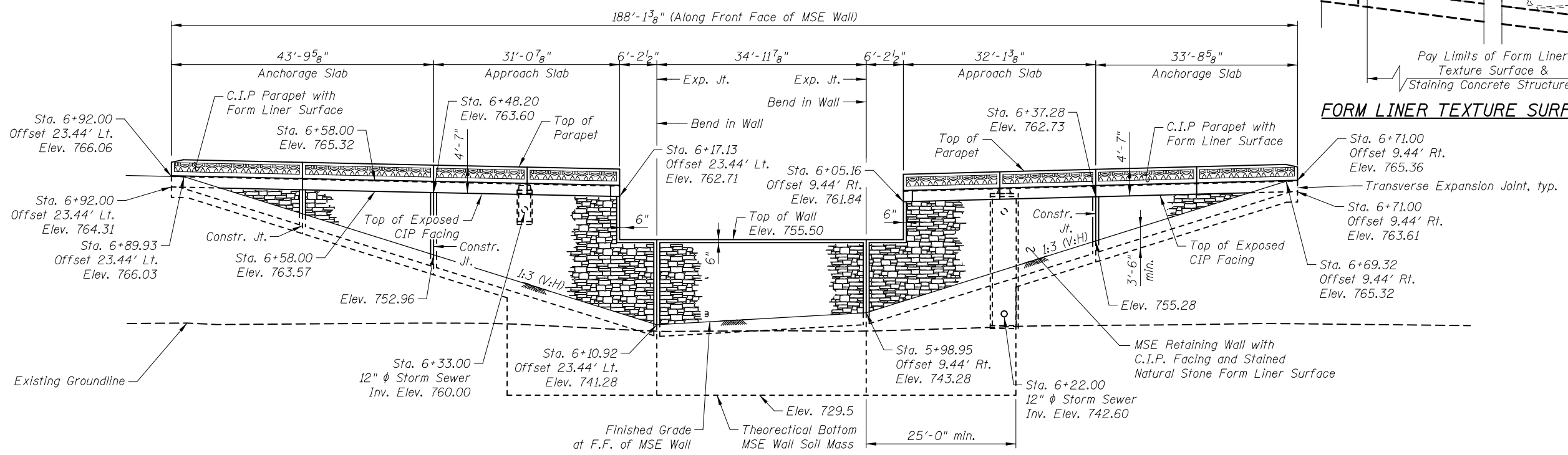
ILLINOIS FED. AID PROJECT



NORTH ABUTMENT MSE WALL
Unfolded Elevation



FORM LINER TEXTURE SURFACE DETAIL



SOUTH ABUTMENT MSE WALL
Unfolded Elevation

Notes:
See sheet SD1 for Plan View.
See sheet SD11 for Parapet Form Liner Details.
Offsets are measured from @ Ramp C to Front Face of MSE wall.

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CIVILTECH
450 E Devon Ave, Suite 300
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Tel: 630.773.3900 Fax: 630.773.3975
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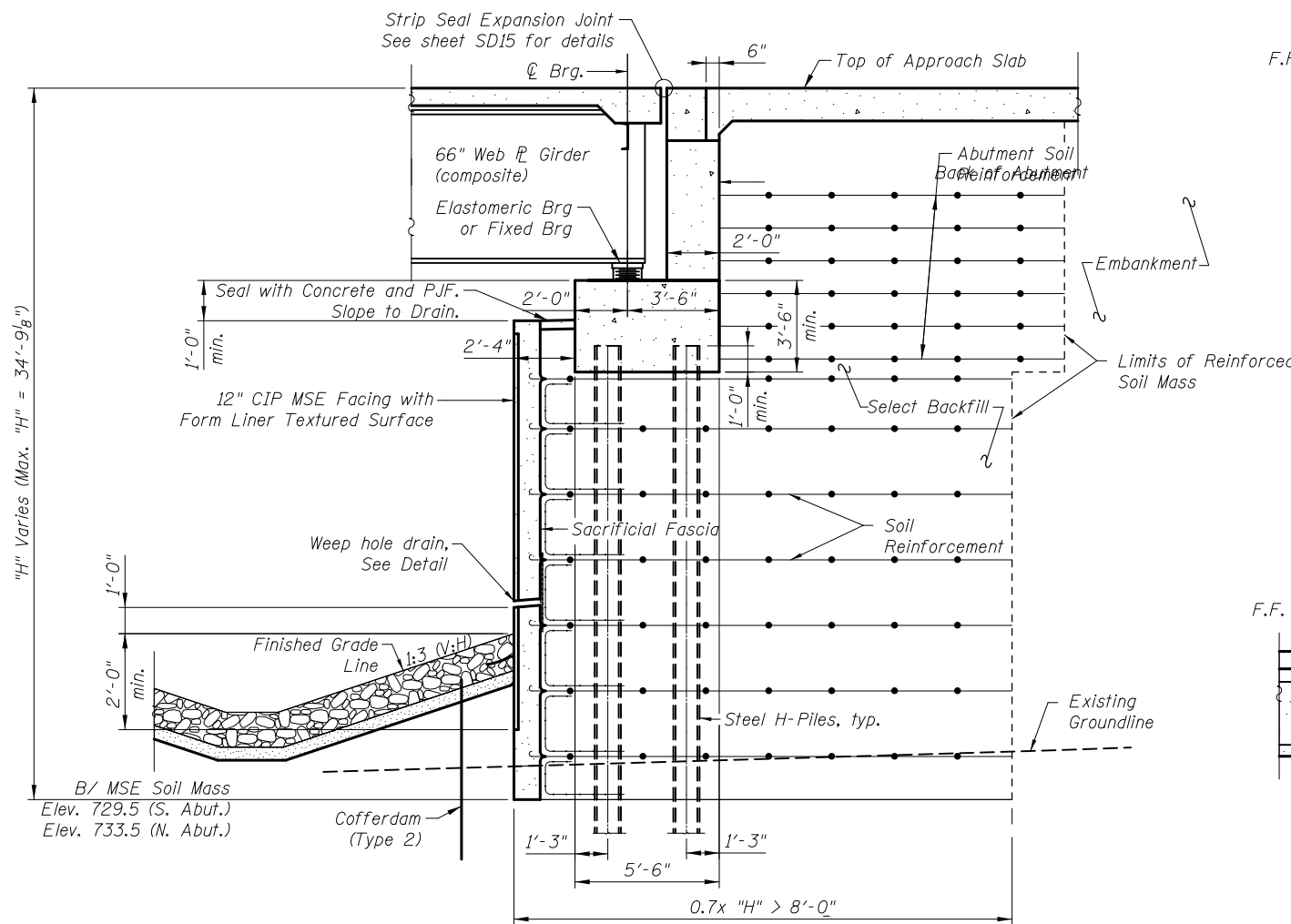
DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MSE WALLS
SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0080
SHEET NO. SD23 OF SD30 SHEETS

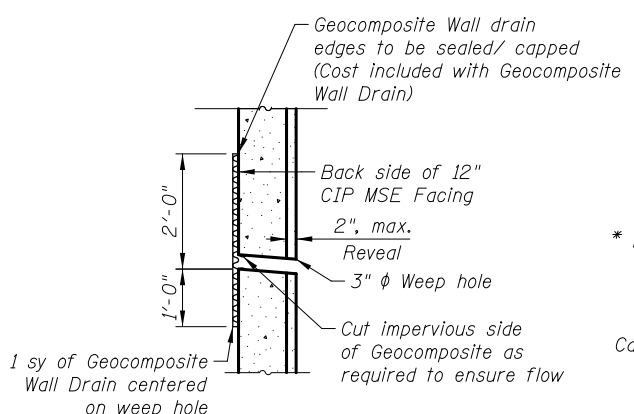
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	577
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

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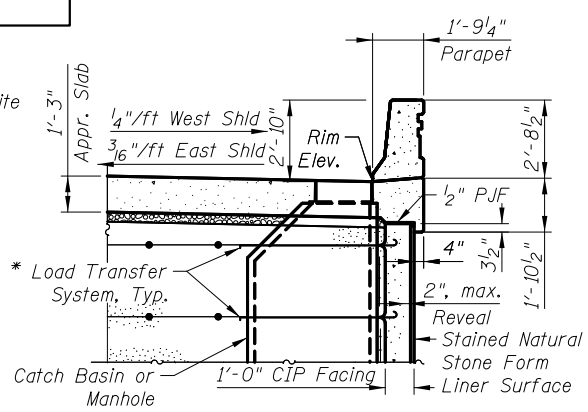


TYPICAL ABUTMENT SECTION
Horizontal dimensions are at right angles

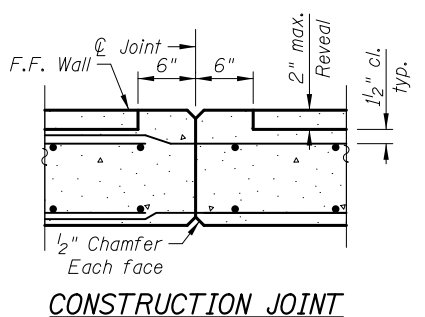
The MSE Wall supplier shall design the abutment soil reinforcement to resist an unfactored horizontal force of 3.3 kips/ft. of abutment.
The MSE wall supplier's internal stability design shall account for the anchorage slab's bearing pressure surcharge of 1.0 ksf and horizontal sliding force of 0.5 kips/ft. of wall.



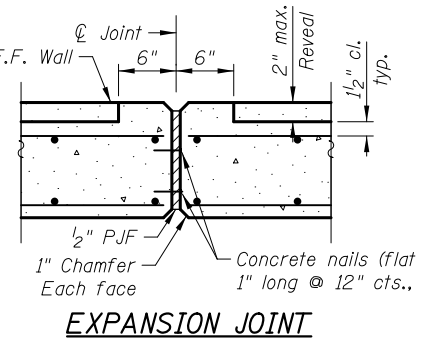
WEEP HOLE DRAIN DETAIL
Weep hole spacing shall be at ±8'-0" horizontally



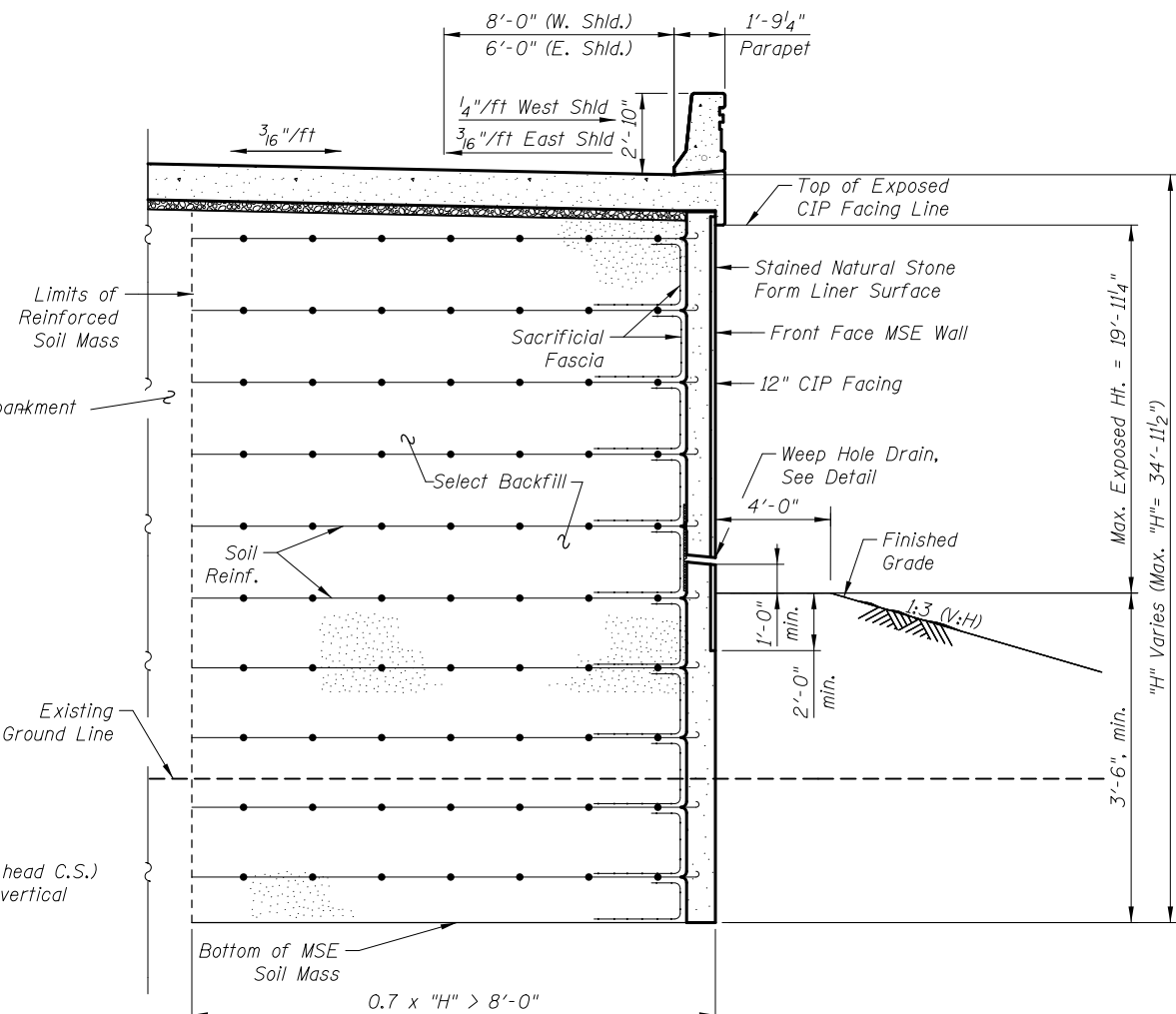
SECTION THRU DRAINAGE STRUCTURE
* M.S.E. supplier to design load transfer system to accommodate concrete pipe and catch basin



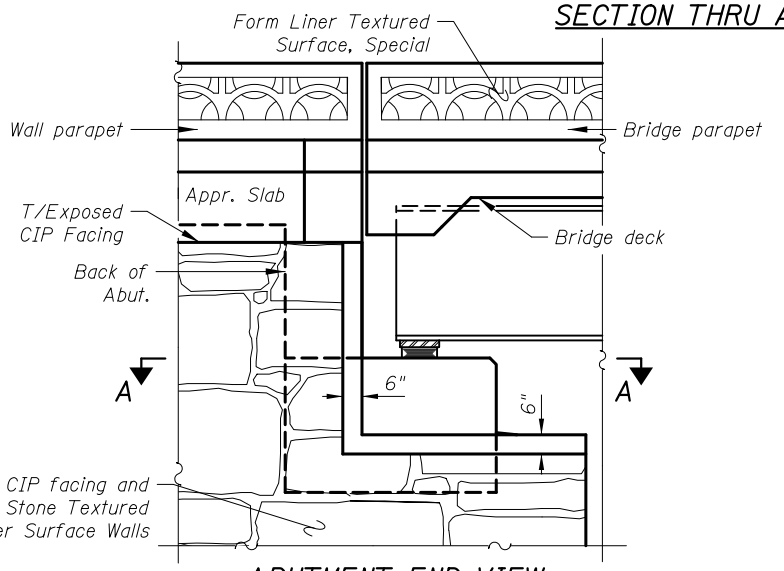
CONSTRUCTION JOINT



EXPANSION JOINT



SECTION THRU APPROACH SLAB AND MSE WING WALLS
(Horiz. Dim. @ Rt. L's)

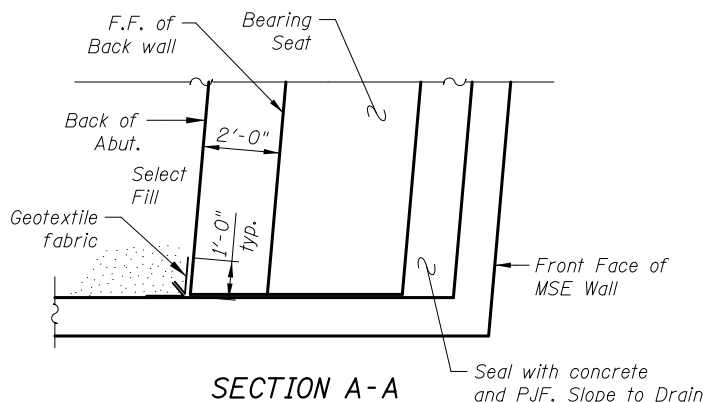


ABUTMENT END VIEW

Notes:
For Section Thru Anchorage Slabs see sheet SD26.
Seal with Concrete and P.J.F. shall be paid for as Concrete Structures.
Geotextile Fabric shall be paid for as Mechanically Stabilized Earth Retaining Wall.
For Form Liner Texture Surface Details see sheet SD23.
See sheet SD1 for layout of settlement platforms.

BILL OF MATERIAL

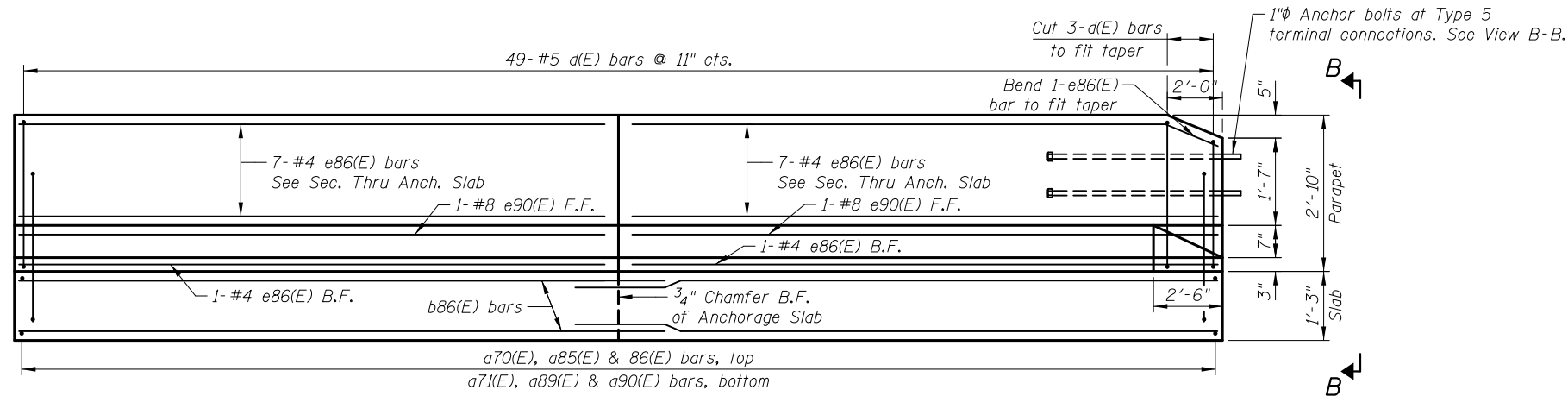
ITEM	UNIT	TOTAL
Structure Excavation	Cu. Yd.	30
Concrete Structures	Cu. Yd.	1.1
Form Liner Textured Surface	Sq. Ft.	3,364
Geocomposite Wall Drain	Sq. Yd.	42
Mechanically Stabilized Earth Retaining Wall	Sq. Ft.	5,334
Staining Concrete Structures	Sq. Yd.	374



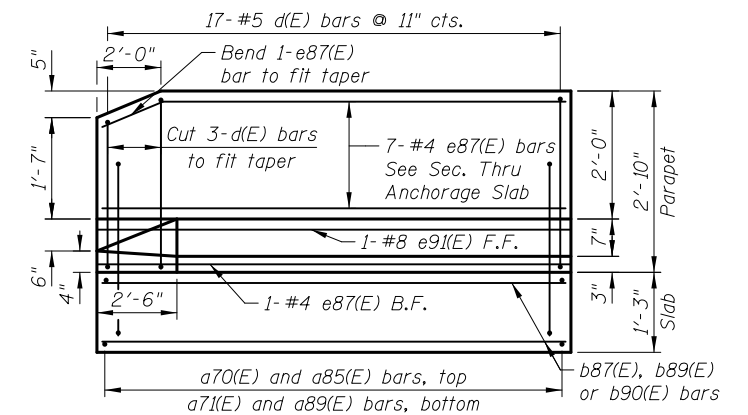
SECTION A-A

MINIMUM BAR LAP

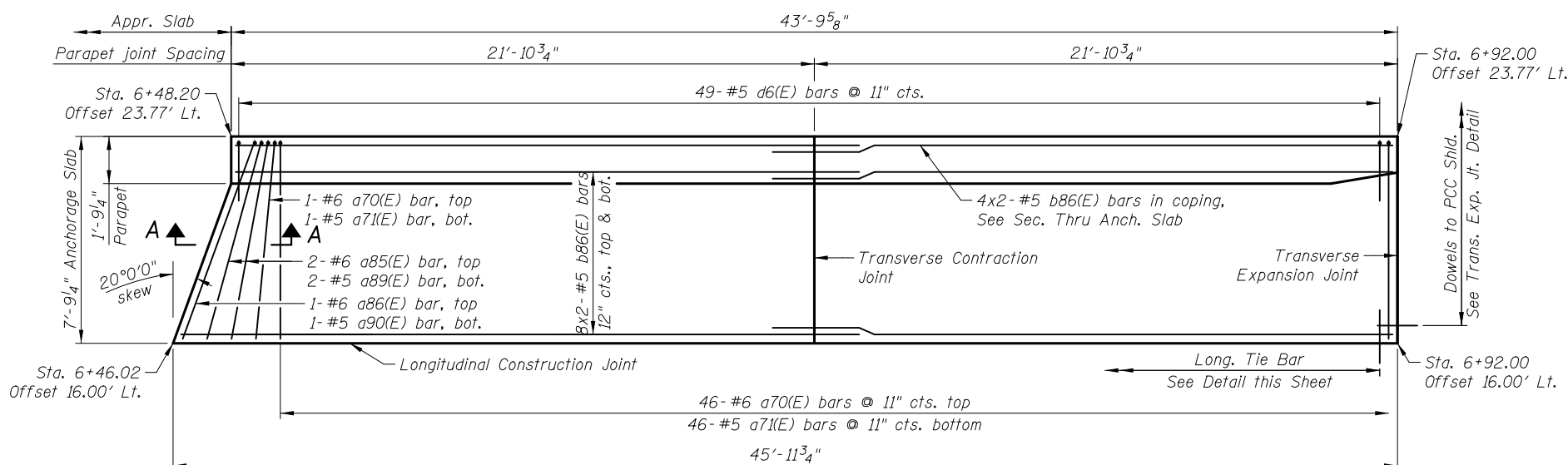
#5 bar = 3'-3"



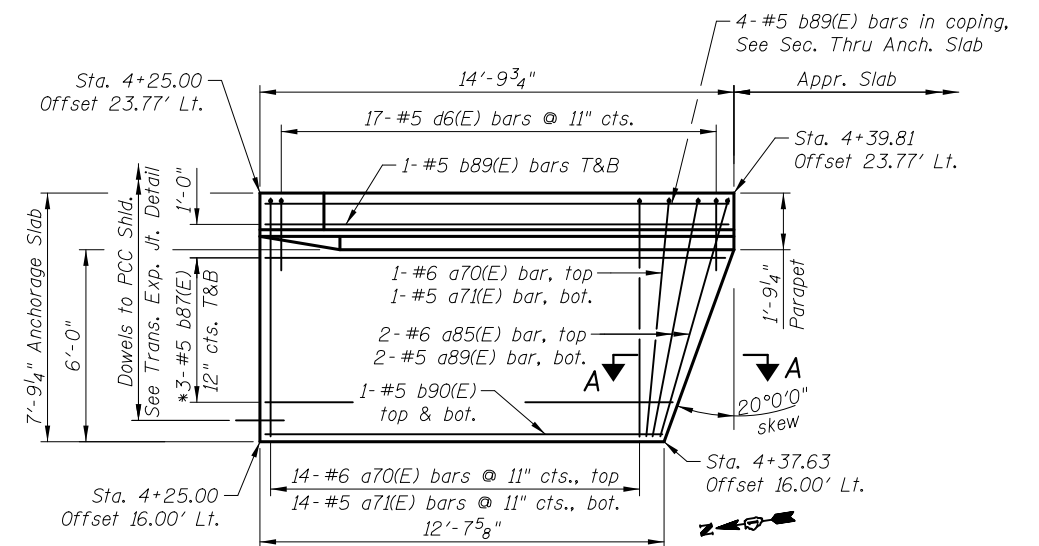
ELEVATION SE ANCHORAGE SLAB
(Front face of parapet)



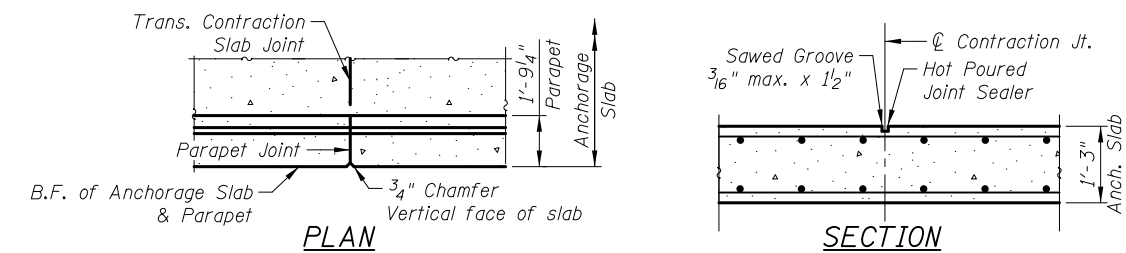
ELEVATION NE ANCHORAGE SLAB
(Front face of parapet)



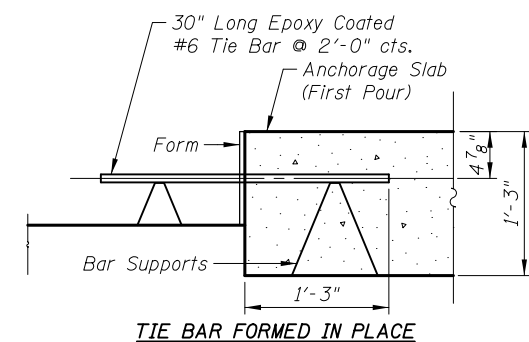
PLAN SE ANCHORAGE SLAB



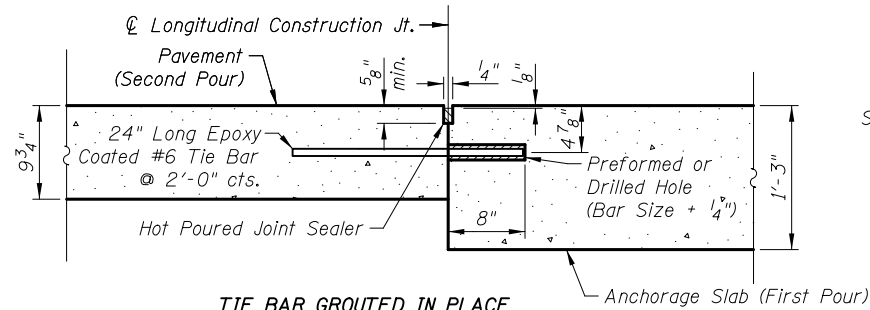
PLAN NE ANCHORAGE SLAB



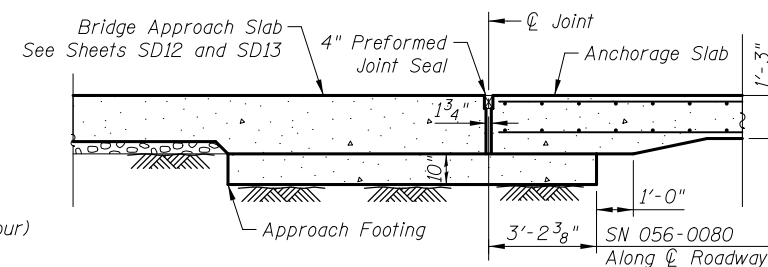
TRANSVERSE CONTRACTION JOINT
See Art. 420.05(c) of Standard Specifications



TIE BAR FORMED IN PLACE



TIE BAR GROUTED IN PLACE



SECTION A-A

LONGITUDINAL CONSTRUCTION JOINT

* See Field Cutting Diagram on sheet SD26.

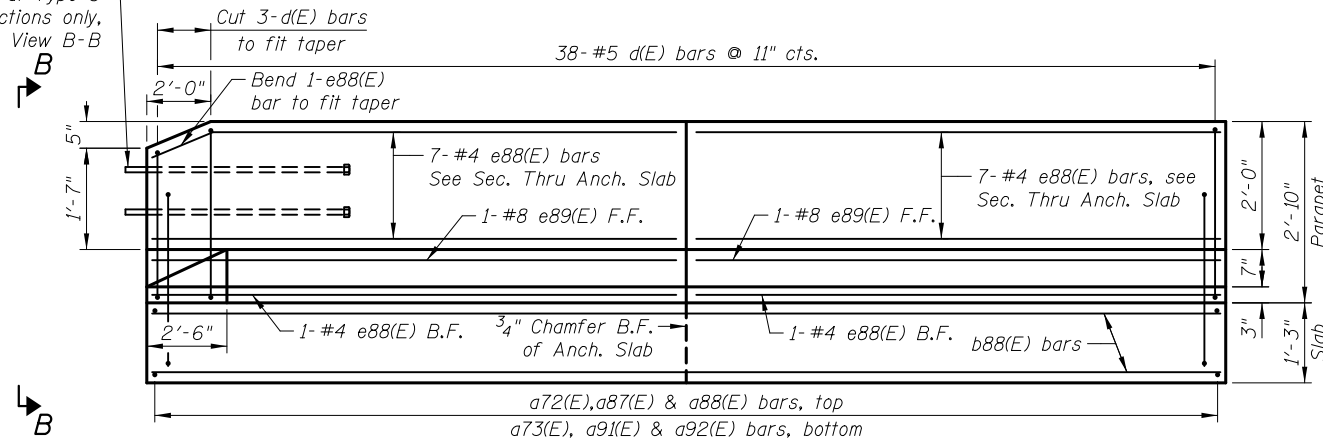
Notes:
See sheet SD26 for View B-B, Section Thru Anchorage Slab and Transverse Expansion Joint Detail.
See sheet SD26 for Bill of Materials and Bar Diagrams.

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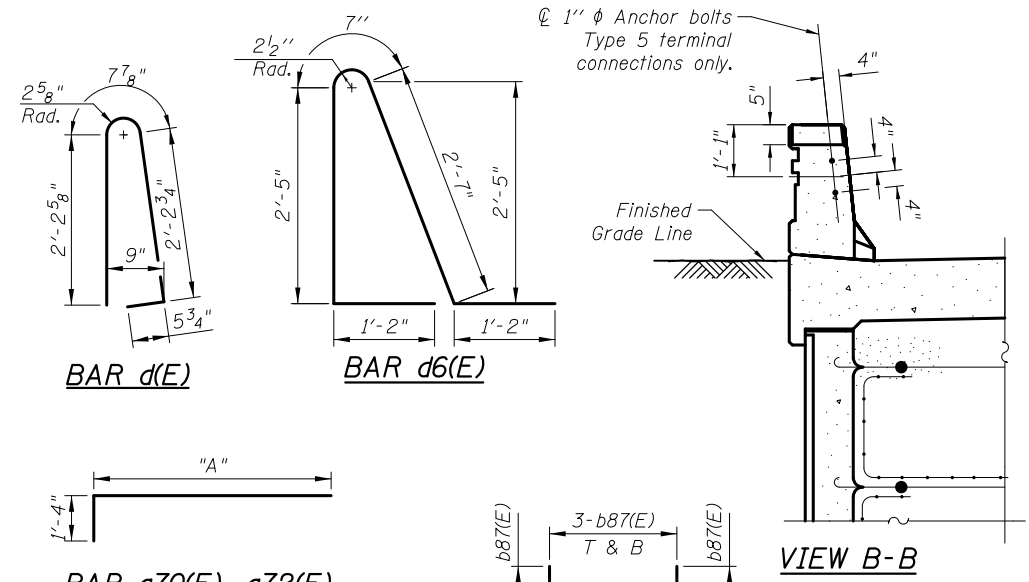
DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	579
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

1" Anchor bolts at Type 5 terminal connections only. See View B-B



ELEVATION SW ANCHORAGE SLAB
(Front face of parapet)



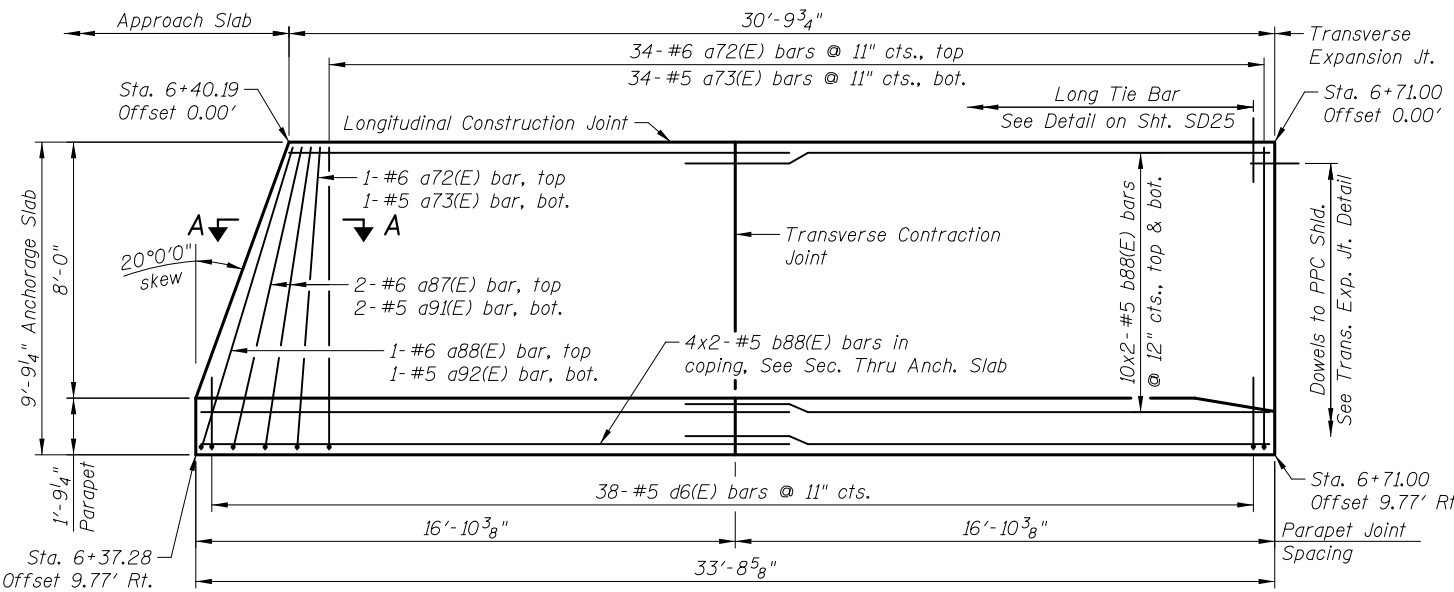
BAR a70(E), a72(E), & a85(E) thru a88(E)

Bar	"A"
a70(E)	7'-5"
a72(E)	9'-5"
a85(E)	7'-7"
a86(E)	7'-11"
a87(E)	9'-7"
a88(E)	9'-10"

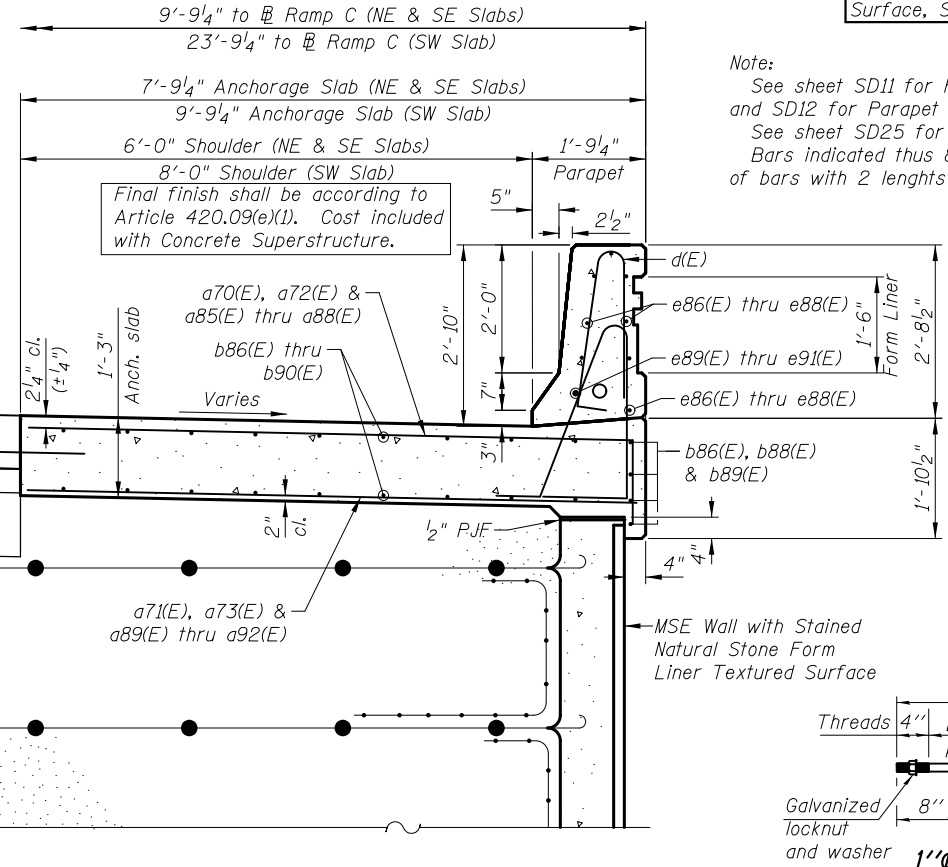
FIELD CUTTING DIAGRAM
T & B indicates top and Bottom

**ANCHORAGE SLABS
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a70(E)	62	#6	8'-9"	
a71(E)	62	#5	7'-5"	
a72(E)	35	#6	10'-9"	
a73(E)	35	#5	9'-5"	
a85(E)	4	#6	8'-11"	
a86(E)	1	#6	9'-3"	
a87(E)	2	#6	10'-11"	
a88(E)	1	#6	11'-2"	
a89(E)	4	#5	7'-7"	
a90(E)	1	#5	7'-11"	
a91(E)	2	#5	9'-7"	
a92(E)	1	#5	9'-10"	
b86(E)	40	#5	24'-6"	
b87(E)	6	#5	27'-0"	
b88(E)	48	#5	18'-4"	
b89(E)	6	#5	14'-6"	
b90(E)	2	#5	12'-4"	
d(E)	104	#5	5'-7"	
d6(E)	104	#5	7'-11"	
e86(E)	16	#4	21'-7"	
e87(E)	8	#4	14'-6"	
e88(E)	16	#4	16'-7"	
e89(E)	2	#8	16'-7"	
e90(E)	2	#8	21'-7"	
e91(E)	1	#8	14'-6"	
Item	Unit	Quantity		
Concrete Superstructures	Cu. Yd.	52.2		
Protective Coat	Sq. Yd.	110		
Reinforcement Bars, Epoxy Coated	Pound	6,810		
Form Liner Textured Surface, Special	Sq. Ft.	110		

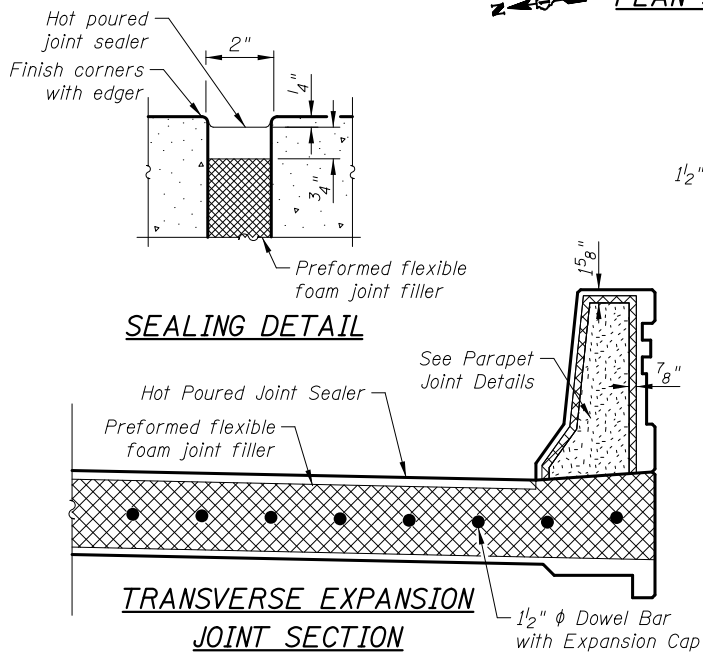


PLAN SW ANCHORAGE SLAB



SECTION THRU ANCHORAGE SLAB

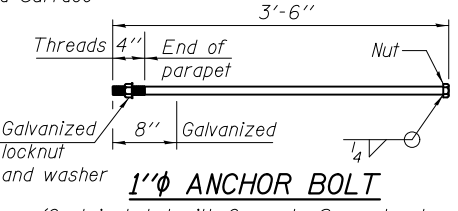
Note:
See sheet SD11 for Parapet Form Liner details and SD12 for Parapet Joint Details.
See sheet SD25 for Section A-A.
Bars indicated thus 8x2-#5 etc. indicate 8 lines of bars with 2 lengths per line.



SEALING DETAIL

TRANSVERSE EXPANSION JOINT

* 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.
Expansion Joint and Dowel Bars included in the cost of Concrete Superstructures.



1" ANCHOR BOLT
(Cost included with Concrete Superstructure)

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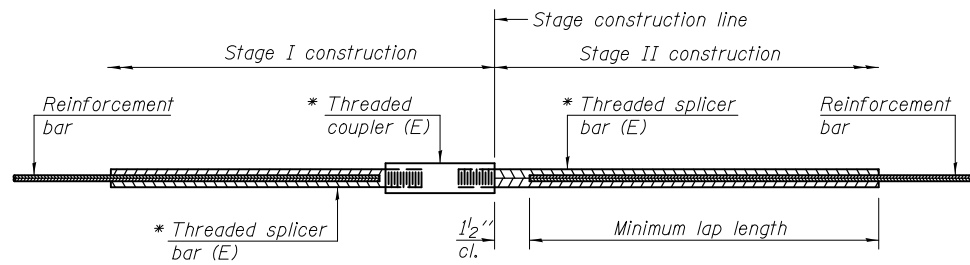
CIVILTECH
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www.civiltechinc.com

DRAWN	- M. LANGE	REVISED	-
DESIGNED	- D. ATKINS	REVISED	-
CHECKED	- G. HATLESTAD	REVISED	-
DATE	- 5/3/2012	REVISED	-

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**ANCHORAGE SLAB DETAILS
SB ENTR. RAMP (RAMP C) OVER CRYSTAL CREEK
STRUCTURE NO. 056-0080**
SHEET NO. SD26 OF SD30 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	580
CONTRACT NO. 60F72			ILLINOIS FED. AID PROJECT	



STANDARD BAR SPLICER ASSEMBLY

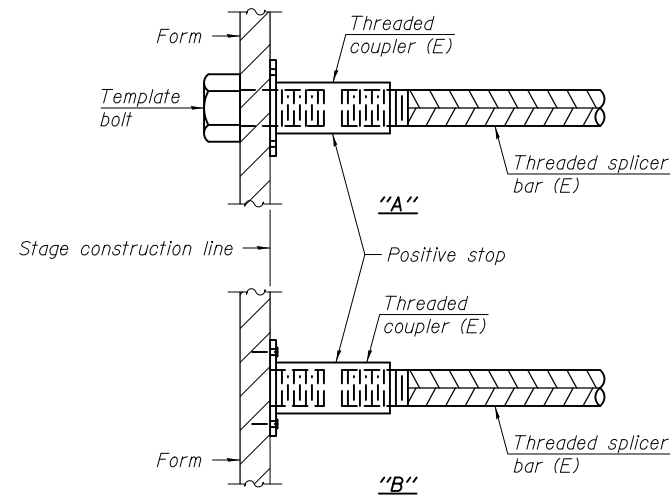
Minimum Lap Lengths					
Bar size to be spliced	Table 1	Table 2	Table 3	Table 4	Table 5
3, 4	1'-5"	1'-11"	2'-1"	2'-4"	2'-3"
5	1'-9"	2'-5"	2'-7"	2'-11"	2'-10"
6	2'-1"	2'-11"	3'-1"	3'-6"	3'-4"
7	2'-9"	3'-10"	4'-2"	4'-8"	4'-6"
8	3'-8"	5'-1"	5'-5"	6'-2"	5'-10"
9	4'-7"	6'-5"	6'-10"	7'-9"	7'-5"

- Table 1: Black bar, 0.8 Class C
- Table 2: Black bar, Top bar lap, 0.8 Class C
- Table 3: Epoxy bar, 0.8 Class C
- Table 4: Epoxy bar, Top bar lap, 0.8 Class C
- Table 5: Epoxy bar, Top bar lap, Class B

Threaded splicer bar length = min. lap length + 1/2" + thread length

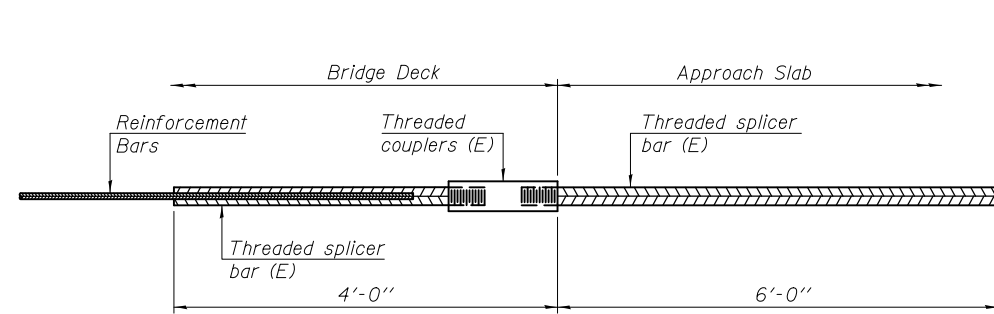
* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Table for minimum lap length



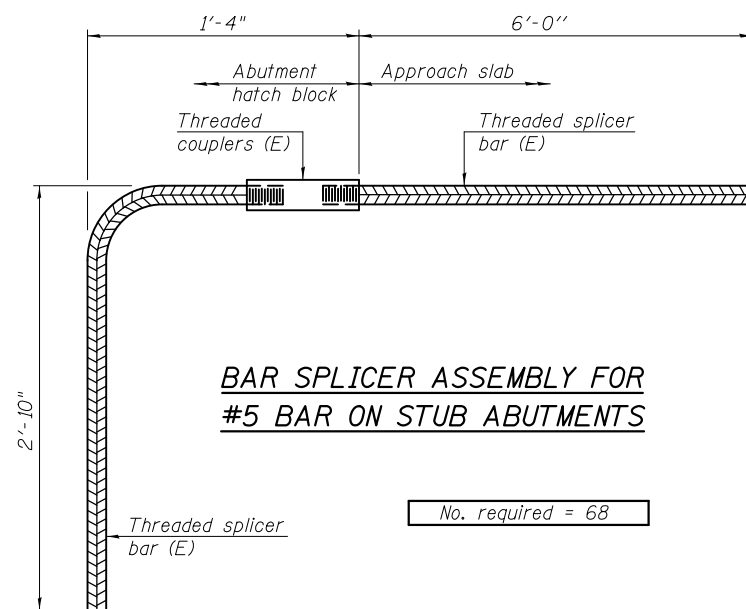
INSTALLATION AND SETTING METHODS

"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.



BAR SPLICER ASSEMBLY FOR #5 BAR ON INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

No. required =



BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS

No. required = 68

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 and mechanical splicers for alternatives.

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 4/24/12 PM
 5/2/2012

MIDLAND STANDARD ENGINEERING & TESTING, INC.

BRIDGE FOUNDATION BORING LOG

SHEET 1 OF 2

PROJECT IL 31 - Algonquin Bypass BRIDGE Ramp C over Crystal Creek DATE 11/20/08
 ROUTE IL Route 31 - Ramp C (Southbound Entrance) BORED BY SPE
 SECTION STATION 4+65 to 6+30 CHECKED BY WJW

COUNTY	McHenry	WATER LEVEL		DURING DRILLING		GROUND WATER			
BORING	BB-6	6.5'		6.5'		4.3'			
STATION	6+30	Grouted at Completion		Grouted at Completion		Grouted at Completion			
OFFSET	6' L of CL	Depth	N/6"	Qu	W	Depth	N/6"	Qu	W
		Ft		tsf	%	Ft		tsf	%
GROUND SURFACE EL.	741.7								
±15" Black Silty CLAY/TOPSOIL									
Dark Brown Sandy LOAM, A-4	740.5	2		-	18	6		2.79	13
Brown SAND (f-c) and GRAVEL, A-1, dense to medium dense numerous Cobbles	738.7	6		-	6	6		4.50	13
Grey Clay LOAM, A-6, hard to very stiff	733.7	7				6		3.91	12
Boulder @ 12.0'		11		10.66	12	10		4.0	11
		15		4.30	13	13			
		19		3.56	14	13		3.10	12
		20		6.05	12	8		7.60	20
				2.95	13	9			11
						10			

N Standard Penetration Test- Blows per foot to drive 2 inch O.D. Split Spoon Sampler 12 inches with 140 lbs. hammer falling 30 inches
 Qu- Unconfined Compressive Strength (tsf)
 W- Water Content-percentage of oven dry weight (%)
 Type failure: B- Bulge Failure S- Shear Failure E- Estimated Value P-Penetrometer

MIDLAND STANDARD ENGINEERING & TESTING, INC.

BRIDGE FOUNDATION BORING LOG

SHEET 2 OF 2

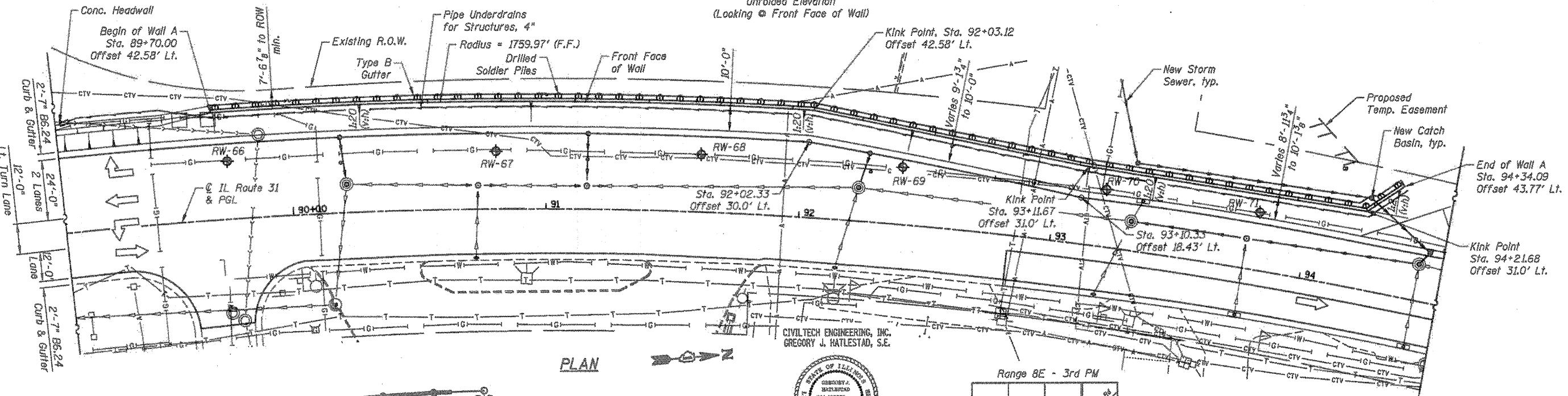
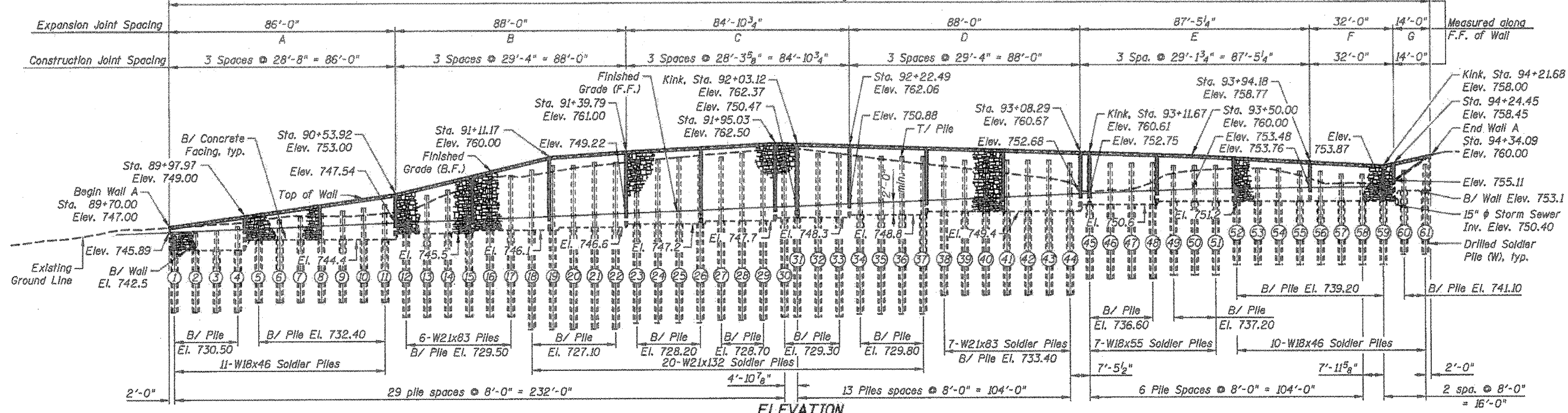
BORING BB-6

Depth	N/6"	Qu	W	Depth	N/6"	Qu	W
Ft		tsf	%	Ft		tsf	%
CONTINUED							
Grey SAND (f-m), A-2, medium dense							
701.7							
45		-	18				
50		-	12				
Enc of Boring @ 50.0'							
691.7							

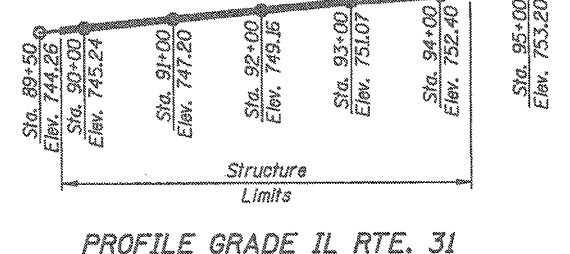
Benchmark: Control Point CP36, Mag nail set, IL Route 31 Station 94+24.18, Offset 29.47 feet Lt., Elev. 754.23

Existing Structure: None.

480'-4" End to End Retaining Wall Limits

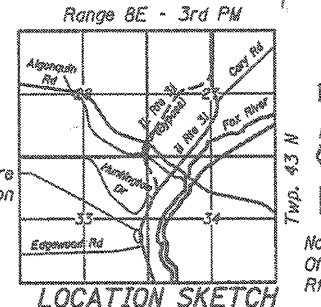


- LEGEND**
- ◆ Soil Borings
 - Existing Storm Sewer
 - Existing Water
 - Existing Gasline
 - Existing Cable TV
 - Existing Aerial Lines
 - Existing Telephone



APPROVED
For Structural Adequacy Only
Gregory J. Hatlestad
Engineer of Bridges & Structures

CIVILTECH ENGINEERING, INC.
GREGORY J. HATLESTAD, S.E.
081-005562
EXP 11/30/12
DATE 3/15/12



GENERAL PLAN AND ELEVATION
WALL A; IL RTE 31 (O.R. 0003)
SECTION 18 A-2, MCHENRY COUNTY
STA. 89+70 TO STA. 94+34.09
STRUCTURE NO. 056-2507

Note: Offsets are measured from @ of IL Rte. 31 to the Front Face of Wall

CIVILTECH
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Hawes, Illinois 60143
Tel: 630.773.3900 Fax: 630.773.3975
www.civiltechinc.com

DRAWN - M. LANGE
DESIGNED - M. LANGE
CHECKED - G. HATLESTAD
DATE - 3/23/2012

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION
WALL A; IL RTE 31
STRUCTURE NO. 056-2507
SHEET NO. WALL OF WALL SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	585
			CONTRACT NO. 60F72	

ILLINOIS FED. AID PROJECT

GENERAL NOTE

- Reinforcement bars designated (E) shall be epoxy coated.

DESIGN STRESSES

FIELD UNITS

$f'c = 3,500$ psi
 $f_y = 60,000$ psi (Reinforcement)
 $f_y = 50,000$ psi (M270 Grade 50, Soldier Piles)

DESIGN SPECIFICATIONS

2002 AASHTO Standard Specification for Highway Bridges, 17th Ed.

CURVE DATA

(IL Route 31)
 $\Delta = 34^\circ 33' 54.51''$ (Rt.)
 $D = 3^\circ 20' 10.35''$
 $T = 534.34'$
 $L = 1,036.06'$
 $E = 81.20'$
 $R = 1,717.39'$
P.C. = Sta. 86+51.78
P.T. = Sta. 96+87.84
P.I. = Sta. 91+86.12
 $e = 2.32\%$

SOLDIER PILE LOCATION AND ELEVATIONS

Pile No.	☉ Pile Station	☉ Pile Offset	Top of Pile Elevation	Stud Shear Connectors
1	89+71.95	-44.50	745.40	4
2	89+79.76	-44.50	746.00	5
3	89+87.56	-44.50	746.50	5
4	89+95.37	-44.50	747.10	6
5	90+03.18	-44.50	747.70	5
6	90+10.98	-44.50	748.20	5
7	90+18.79	-44.50	748.80	6
8	90+26.60	-44.50	749.30	6
9	90+34.40	-44.50	749.90	7
10	90+42.21	-44.50	750.40	7
11	90+50.02	-44.50	751.00	8
12	90+57.82	-44.50	751.80	8
13	90+65.63	-44.50	752.70	9
14	90+73.44	-44.50	753.70	10
15	90+81.24	-44.50	754.60	11
16	90+89.05	-44.65	755.60	11
17	90+96.86	-44.65	756.50	12
18	91+04.66	-44.65	757.50	13
19	91+12.47	-44.65	758.30	13
20	91+20.28	-44.65	758.30	13
21	91+28.08	-44.65	758.90	14
22	91+35.89	-44.65	758.90	14
23	91+43.70	-44.65	759.40	14
24	91+51.50	-44.65	759.40	14
25	91+59.31	-44.65	759.80	14
26	91+67.12	-44.65	759.80	14
27	91+74.92	-44.65	759.80	14
28	91+82.73	-44.65	760.45	14
29	91+90.53	-44.65	760.45	14
30	91+98.34	-44.65	760.45	14
31	92+03.34	-44.61	760.45	14
32	92+11.13	-43.57	760.45	14
33	92+18.87	-42.54	760.45	14
34	92+26.62	-41.55	759.80	12
35	92+34.37	-40.60	759.80	12
36	92+42.14	-39.68	759.80	12
37	92+49.91	-38.79	759.80	12
38	92+57.69	-37.94	759.80	12
39	92+65.48	-37.17	759.10	11
40	92+73.28	-36.36	759.10	11
41	92+81.08	-35.62	759.10	11
42	92+88.89	-34.91	759.10	11
43	92+96.70	-34.25	759.10	11
44	93+04.51	-33.47	758.50	11
45	93+11.77	-32.93	758.50	9
46	93+19.58	-32.68	758.50	9
47	93+27.43	-32.48	758.50	9
48	93+35.28	-32.32	758.50	9
49	93+43.13	-32.19	758.00	8
50	93+50.98	-32.10	758.00	8
51	93+58.84	-32.04	758.00	8
52	93+66.69	-32.02	757.40	8
53	93+74.54	-32.04	757.40	8
54	93+82.40	-32.10	757.40	8
55	93+90.25	-32.19	756.90	7
56	93+98.10	-32.32	756.90	7
57	94+05.95	-32.48	756.30	7
58	94+13.80	-32.68	756.30	7
59	94+20.86	-32.93	756.30	7
60	94+25.89	-38.02	757.00	5
61	94+31.39	-43.70	757.90	6

Offsets are measured from ☉ of IL Route 31 to the ☉ of the soldier pile.

INDEX OF SHEETS

- WA1 General Plan and Elevation
- WA2 General Data
- WA3 Retaining Wall I
- WA4 Retaining Wall II
- WA5 Retaining Wall III
- WA6 Retaining Wall Details I
- WA7 Retaining Wall Details II
- WA8 Boring Logs I
- WA9 Boring Logs II

TOTAL BILL OF MATERIALS

ITEM	UNIT	TOTAL QUANTITY
Structure Excavation	Cu. Yd.	458
Concrete Structures	Cu. Yd.	213.6
Form Liner Textured Surface	Sq. Ft.	4,515
Stud Shear Connectors	Each	602
Reinforcement Bars, Epoxy Coated	Pound	16,860
Geocomposite Wall Drain	Sq. Yd.	317
Drilling and Setting Soldier Piles (In Soil)	Cu. Ft.	4,621
Untreated Timber Lagging	Sq. Ft.	3,868
Furnishing Soldier Piles (W Section)	Foot	1,455
Pipe Underdrains for Structures 4"	Foot	575
Staining Concrete Structures	Sq. Yd.	502

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450 E Devon Ave, Suite 300
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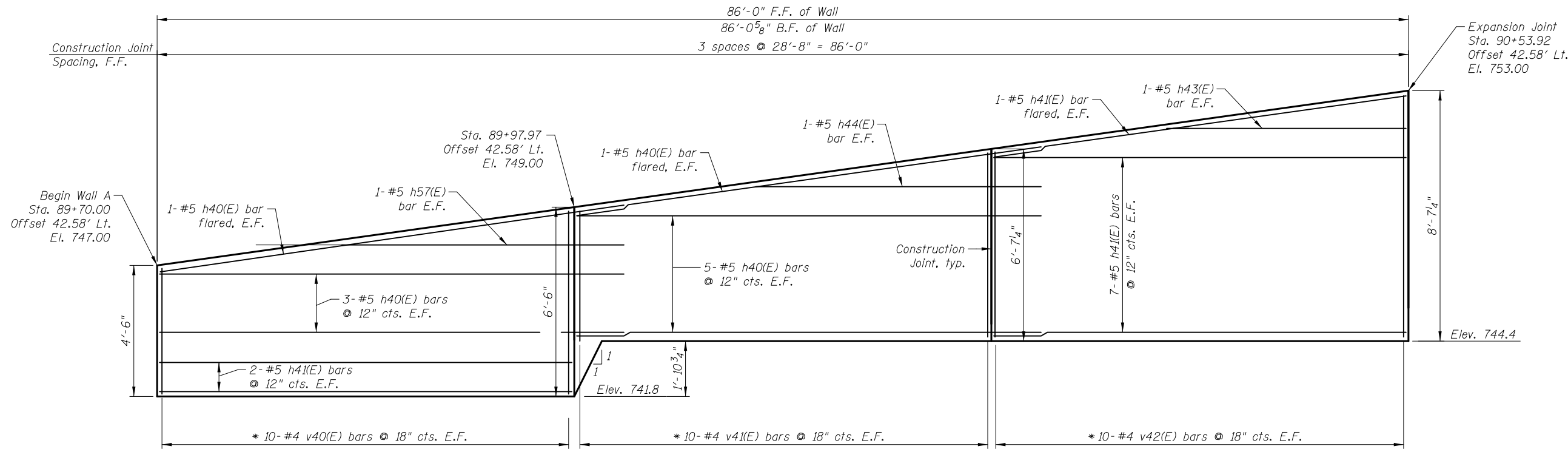
DRAWN	-	M. LANGE
DESIGNED	-	M. LANGE
CHECKED	-	G. HATLESTAD
DATE	-	5/3/2012

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

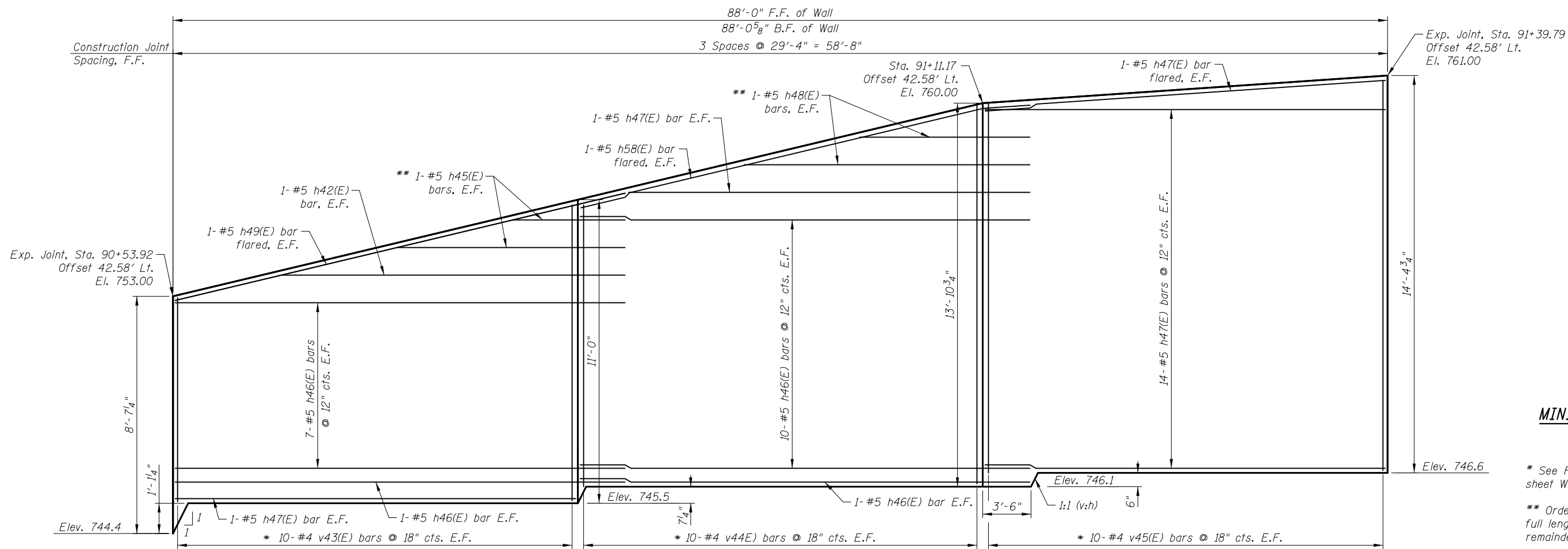
**GENERAL DATA
 WALL A: IL RTE 31
 STRUCTURE NO. 056-2507**

SHEET NO. WA2 OF WA9 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	586
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				



ELEVATION A



ELEVATION B

MINIMUM BAR LAP

#5 bar = 3'-3"

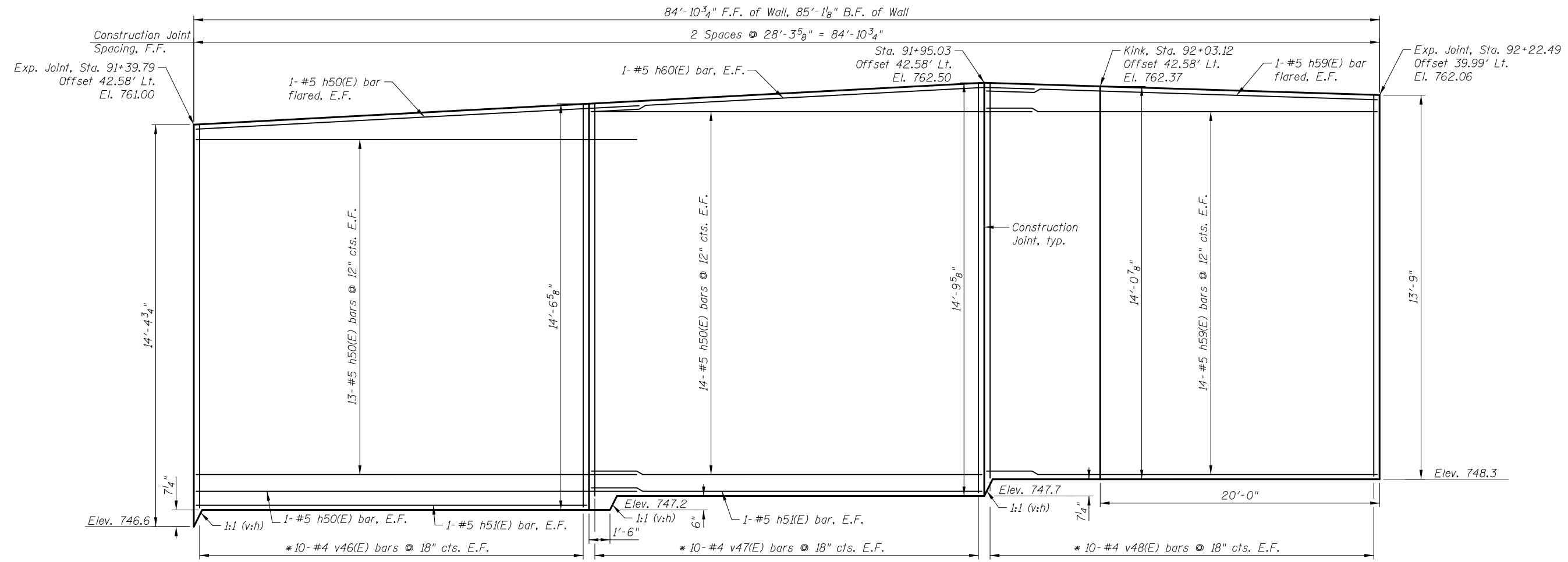
* See Field Cutting Diagram on sheet WA7.

** Order h45(E) and h48(E) bars full length. Cut to fit and use remainder as designated.

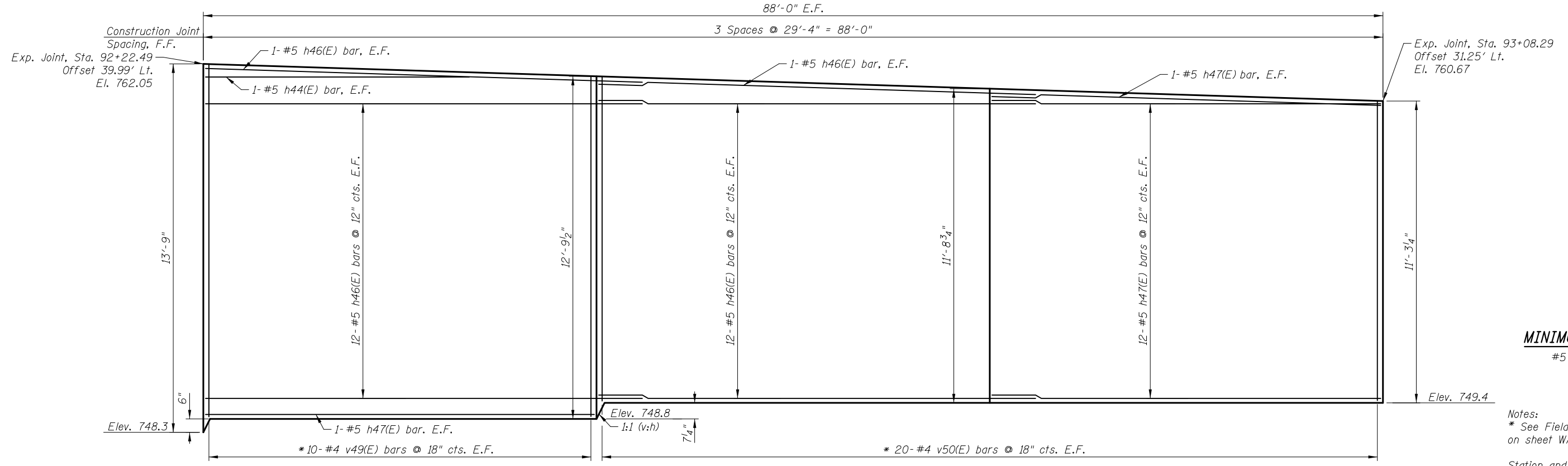
Station and offsets are taken from front face of wall.

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ELEVATION C



ELEVATION D

MINIMUM BAR LAP
#5 bar = 3'-3"

Notes:
* See Field Cutting Diagram on sheet WA7.
Station and offsets are taken at front face of wall.

CIVILTECH
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DRAWN - M. LANGE
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CHECKED - G. HATLESTAD
DATE - 5/3/2012

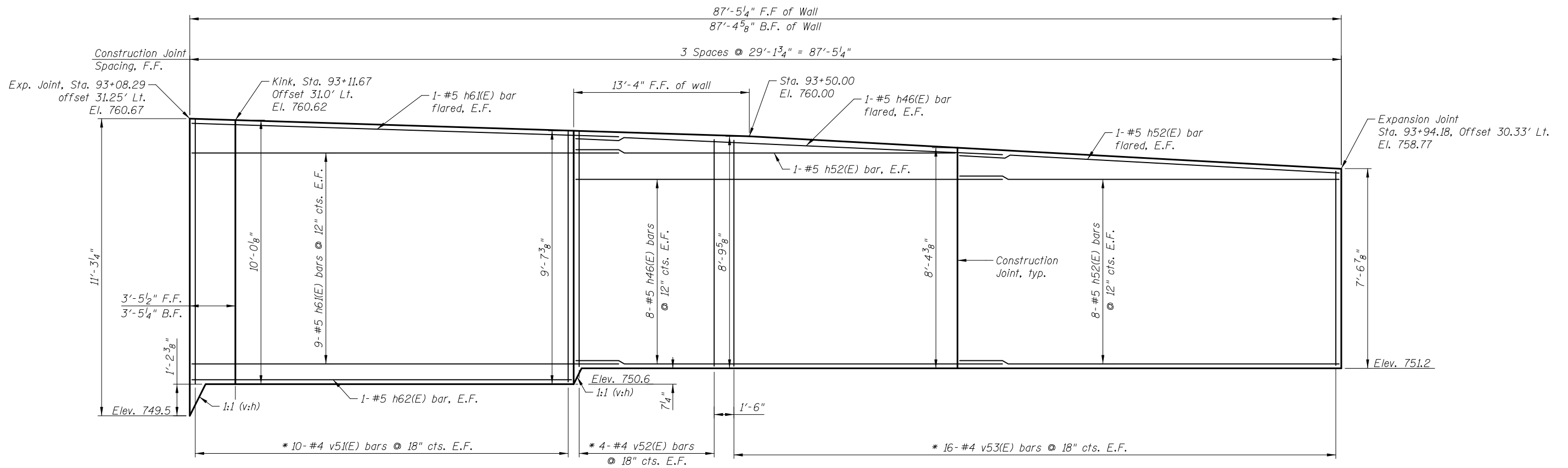
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**RETAINING WALL II
WALL A: IL RTE 31
STRUCTURE NO. 056-2507**

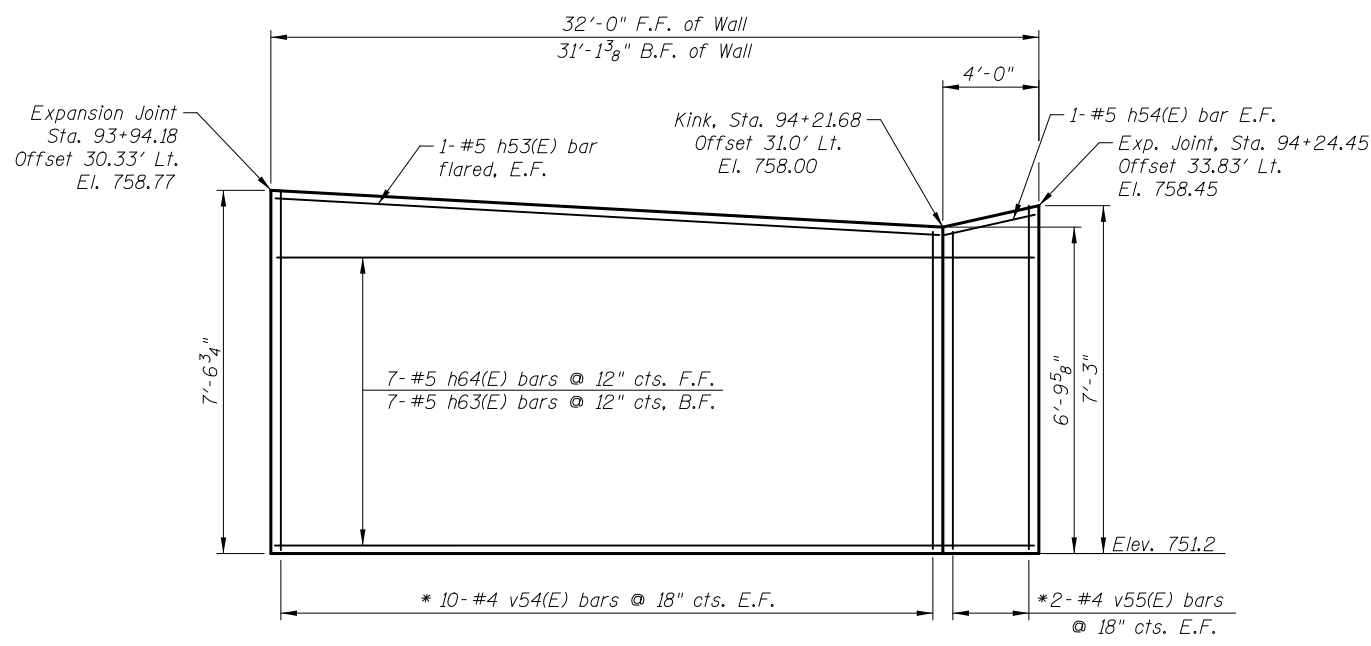
O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	588
CONTRACT NO. 60F72				

SHEET NO. WA4 OF WA9 SHEETS

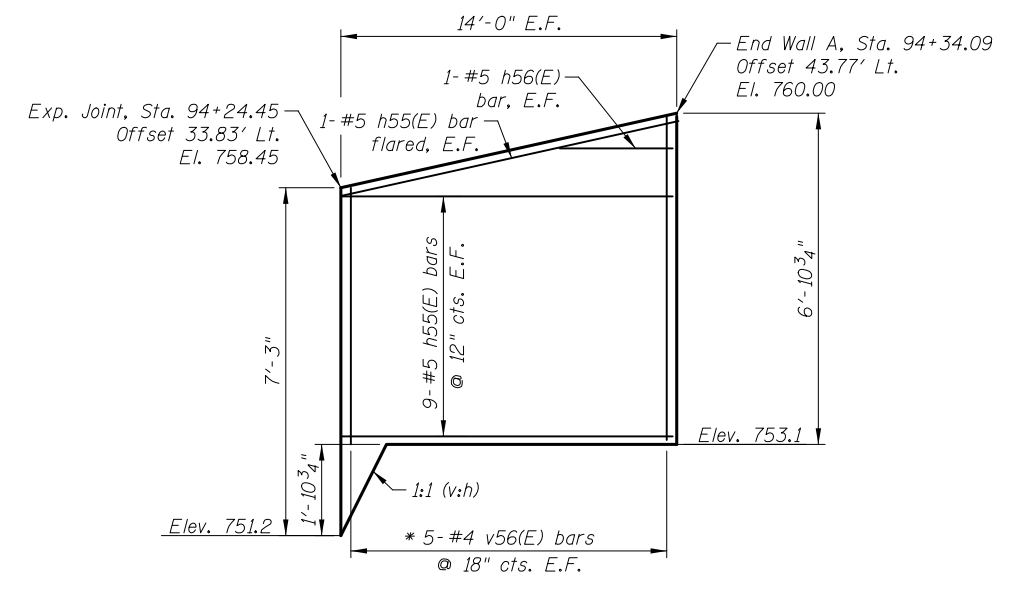
ILLINOIS FED. AID PROJECT



ELEVATION E



ELEVATION F



ELEVATION G

Notes:
 * See Field Cutting Diagram on sheet WA7.
 Stations and offsets are taken at front face of wall.

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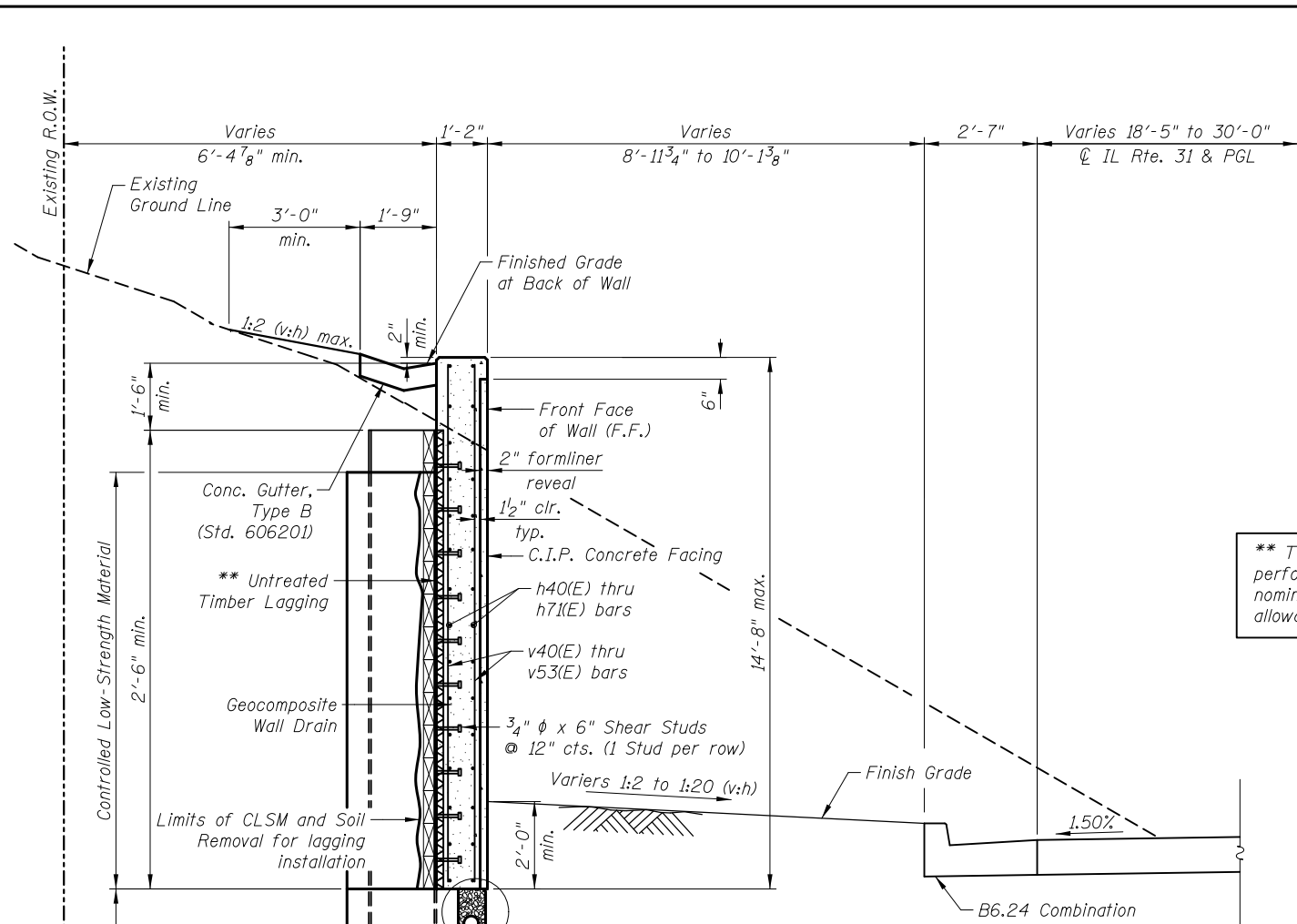
DRAWN	-	M. LANGE
DESIGNED	-	M. LANGE
CHECKED	-	G. HATLESTAD
DATE	-	5/3/2012

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

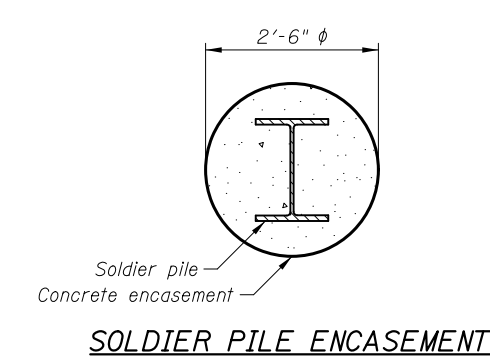
RETAINING WALL III
WALL A; IL RTE 31
STRUCTURE NO. 056-2507
 SHEET NO. WA5 OF WA9 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	589
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

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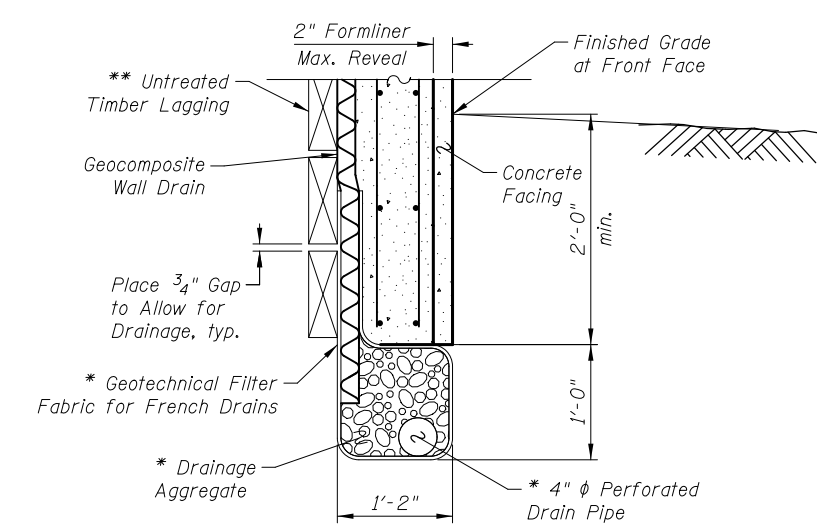


TYPICAL SECTION THRU SOLDIER PILE WALL

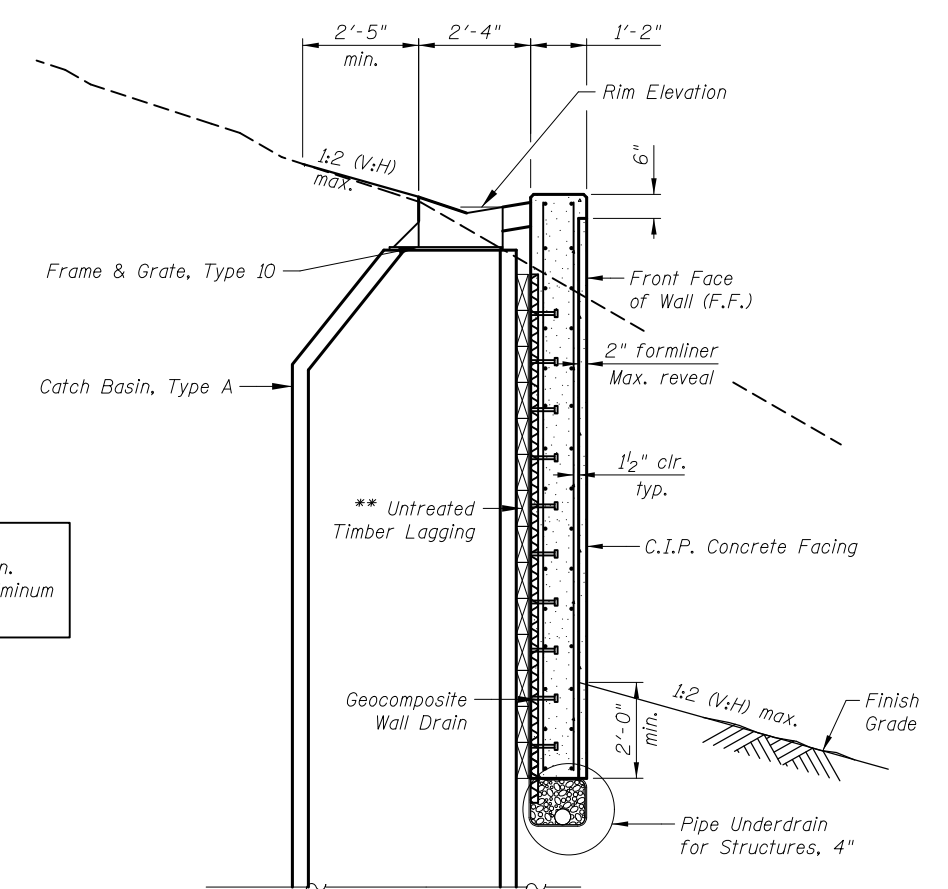


SOLDIER PILE ENCASEMENT

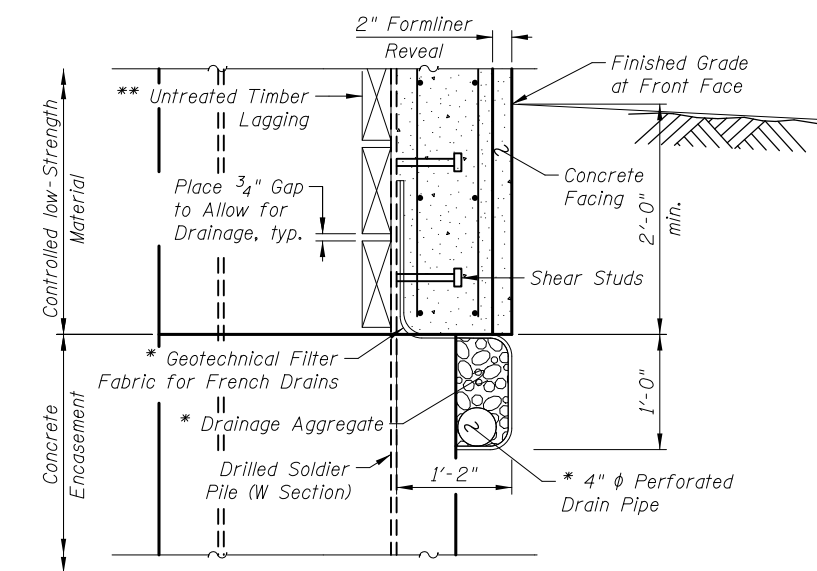
** The Contractor is responsible for the design and performance of the lagging using no less than a 3 in. nominal rough-sawn thickness and timber with a minimum allowable bending stress of 1000 psi.



PIPE UNDERDRAIN FOR STRUCTURES BETWEEN SOLDIER PILES



SECTION AT DRAINAGE STRUCTURE



PIPE UNDERDRAIN FOR STRUCTURES AT SOLDIER PILES

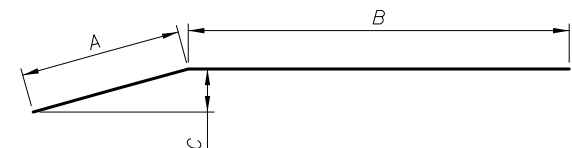
* Included in the cost of pipe Underdrains for Structures, 4"

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h40(E)	20	#5	31'-11"	
h41(E)	20	#5	28'-4"	
h42(E)	2	#5	24'-10"	
h43(E)	2	#5	30'-3"	
h44(E)	4	#5	19'-8"	
h45(E)	2	#5	24'-8"	
h46(E)	108	#5	32'-7"	
h47(E)	62	#5	29'-0"	
h48(E)	2	#5	33'-0"	
h49(E)	2	#5	32'-9"	
h50(E)	58	#5	31'-7"	
h51(E)	4	#5	27'-11"	
h52(E)	20	#5	28'-10"	
h53(E)	2	#5	27'-8"	
h54(E)	2	#5	3'-9"	
h55(E)	20	#5	13'-8"	
h56(E)	2	#5	4'-10"	
h57(E)	2	#5	21'-10"	
h58(E)	2	#5	32'-10"	
h59(E)	30	#5	28'-1"	
h60(E)	2	#5	31'-8"	
h61(E)	20	#5	32'-5"	
h62(E)	2	#5	28'-11"	
h63(E)	7	#5	30'-10"	
h64(E)	7	#5	31'-5"	

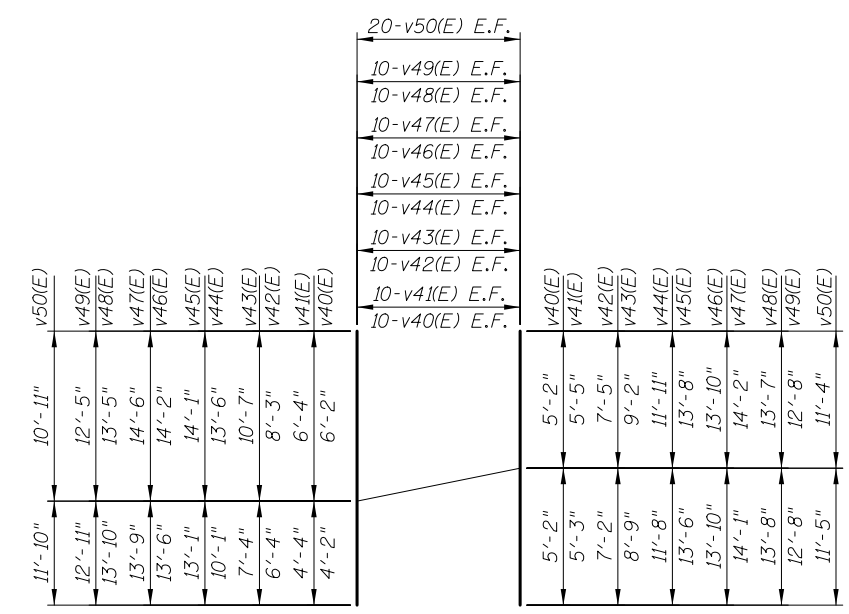
v40(E)	20	#4	10'-4"	
v41(E)	20	#4	10'-8"	
v42(E)	20	#4	14'-7"	
v43(E)	20	#4	17'-11"	
v44(E)	20	#4	23'-7"	
v45(E)	20	#4	27'-2"	
v46(E)	20	#4	27'-8"	
v47(E)	20	#4	28'-3"	
v48(E)	20	#4	27'-3"	
v49(E)	20	#4	25'-4"	
v50(E)	40	#4	22'-9"	
v51(E)	20	#4	19'-0"	
v52(E)	8	#4	17'-2"	
v53(E)	32	#4	15'-9"	
v54(E)	20	#4	13'-9"	
v55(E)	4	#4	13'-5"	
v56(E)	10	#4	11'-7"	

Item	Unit	Quantity
Structure Excavation	Cu. Yd.	458
Concrete Structures	Cu. Yd.	213.6
Form Liner Textured Surface	Sq. Ft.	4,515
Stud Shear Connectors	Each	602
Reinforcement Bars, Epoxy Coated	Pound	16,860
Geocomposite Wall Drain	Sq. Yd.	317
Drilling and Setting Soldier Piles (In Soil)	Cu. Ft.	4,621
Untreated Timber Lagging	Sq. Ft.	3,868
Furnishing Soldier Piles (W Section)	Foot	1,455
Pipe Underdrains for Structures 4"	Foot	575
Staining Concrete Structures	Sq. Yd.	502

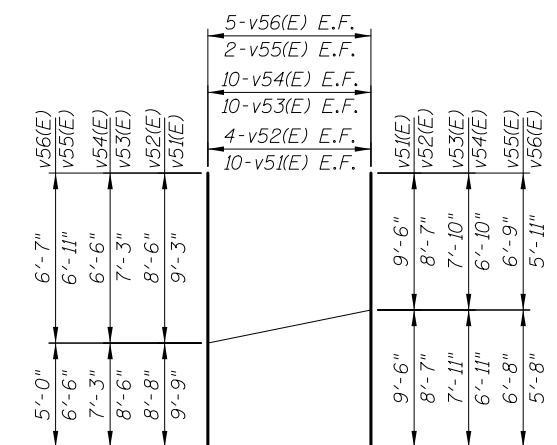


Bar	A	B	C
h58(E)	3'-5"	29'-5"	3 1/2"
h59(E)	8'-2"	19'-11"	1'-1 1/2"
h60(E)	28'-1"	3'-7"	1'-2 1/4"
h61(E)	3'-4"	29'-1"	1 5/8"
h62(E)	3'-4"	25'-7"	1 5/8"
h63(E)	3'-5"	27'-5"	2'-4"
h64(E)	3'-9"	27'-8"	2'-6 3/4"

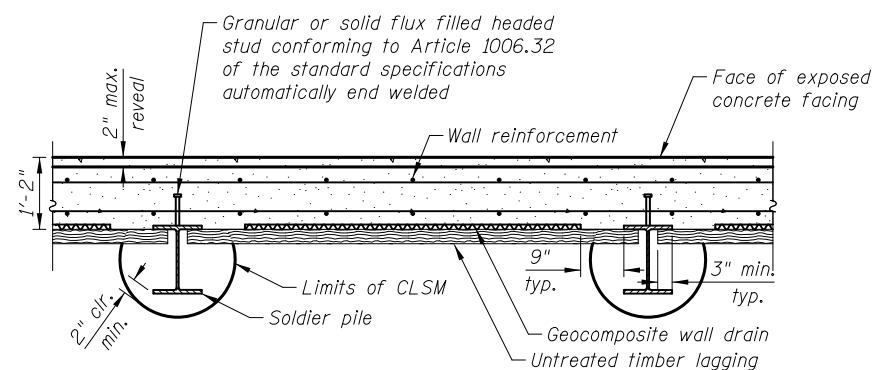
BARS h57(E) thru h64(E)



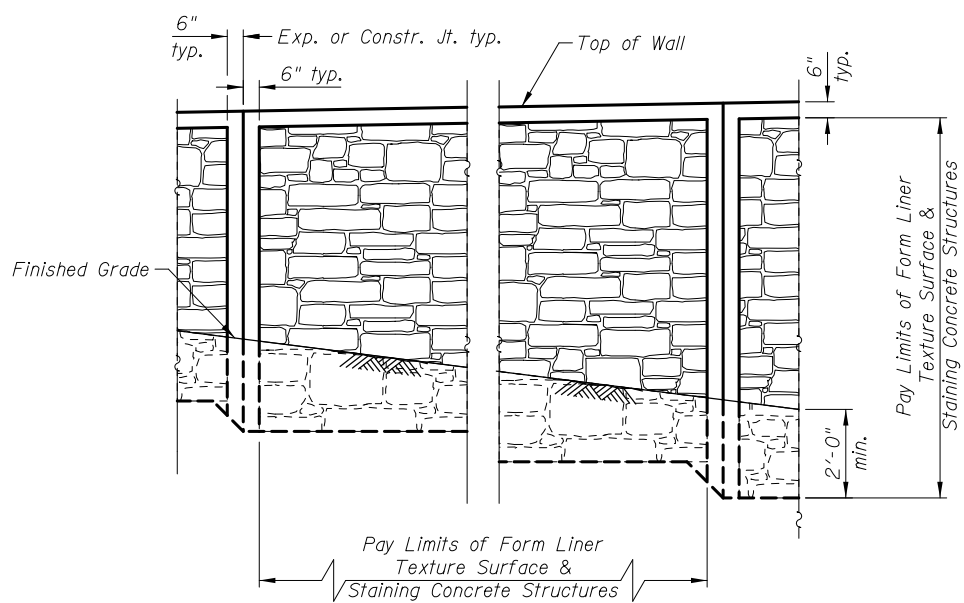
FIELD CUTTING DIAGRAM



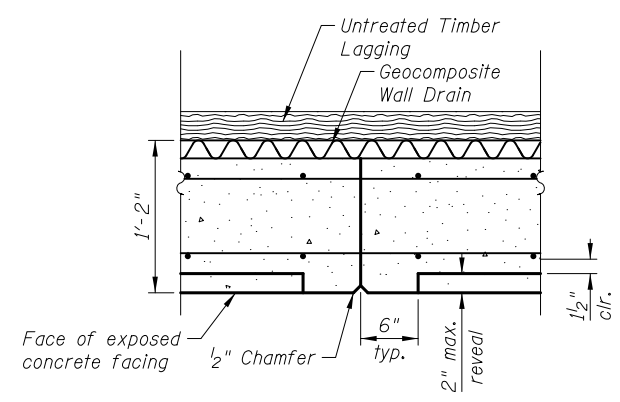
FIELD CUTTING DIAGRAM



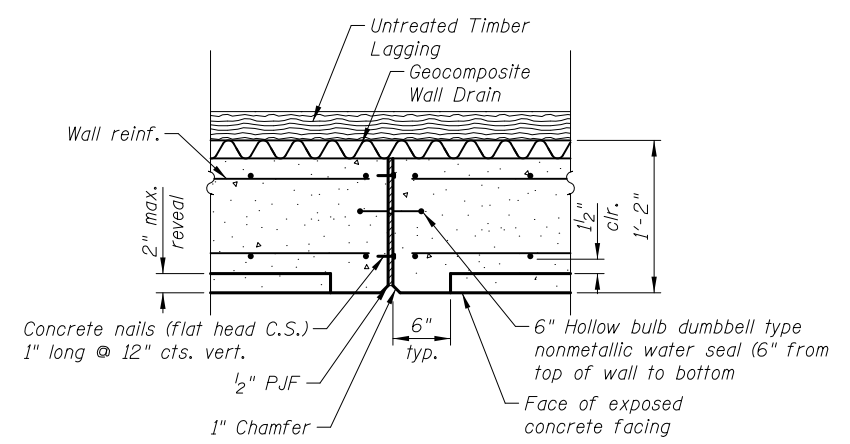
SECTION THRU DRILLED SOLDIER PILE WALL



FORM LINER TEXTURE SURFACE DETAIL



CONSTRUCTION JOINT



EXPANSION JOINT

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DRAWN	-	M. LANGE
DESIGNED	-	M. LANGE
CHECKED	-	G. HATLESTAD
DATE	-	5/3/2012

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**RETAINING WALL DETAILS II
 WALL A: IL RTE 31
 STRUCTURE NO. 056-2507**

SHEET NO. WAT OF WA9 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	591

CONTRACT NO. 60F72
 ILLINOIS FED. AID PROJECT

MIDLAND STANDARD ENGINEERING & TESTING, INC.

BORING LOG

SHEET 1 OF 1

PROJECT Algonquin Bypass Retaining Wall - IL. Route 31 DATE 3/17/09
 ROUTE FAP 339/ILL 31 BORED BY CD
 SECTION 96-00209-00-PV STATION 89+00 to 94+00 CHECKED BY WJW

COUNTY <u>McHenry</u>		WATER LEVEL DURING DRILLING <u>none</u>		WATER LEVEL AT COMPLETION <u>dry</u>			
Depth	N/6"	Qu tsf	W %	Depth	N/6"	Qu tsf	W %
GROUND SURFACE EL. <u>744.6</u>				Grey Clay LOAM A-6 <u>724.6</u>			
12-1/4" Bituminous Concrete over 6-3/4" Crushed Limestone Base Course							
6	7	2.05	13	8	9	3.49	11
7	6	BS		14	BS		
Dark Brown and Grey Silty Clay LOAM, A-6: FILL							
3	4	1.32	16	7	9	6.78	10
4	4	B		12	RS		
Brown Silty Clay LOAM, A-6 <u>742.1</u>				End of Boring @ 25.0' <u>719.6</u>			
2	5	2.67	14				
5	6	BS					
6	8	2.05	11				
8	11	BS					
thin, wet Sand seam							
7	7	3.68	13				
9	9	BS					
Grey Clay LOAM A-6 <u>732.6</u>							
8	9	4.73	11				
9	10	BS					
9	10	3.99	11				
10	10	BS					
7	9	7.52	10				
9	15	BS					

N-Standard Penetration Test- Blows per foot to drive 2 inch
 O.D. Split Spoon Sampler 12 inches with 140 lbs. hammer falling 30 inches
 Qu- Unconfined Compressive Strength (tsf)
 W- Water Content-percentage of oven dry weight (%)
 Type failure: B- Bulge Failure
 S- Shear Failure
 E- Estimated Value
 P-Penetrometer

MIDLAND STANDARD ENGINEERING & TESTING, INC.

BORING LOG

SHEET 1 OF 1

PROJECT Algonquin Bypass Retaining Wall - IL. Route 31 DATE 3/17/09
 ROUTE FAP 339/ILL 31 BORED BY CD
 SECTION 96-00209-00-PV STATION 89+00 to 94+00 CHECKED BY WJW

COUNTY <u>McHenry</u>		WATER LEVEL DURING DRILLING <u>5.0'</u>		WATER LEVEL AT COMPLETION <u>6.1'</u>			
Depth	N/6"	Qu tsf	W %	Depth	N/6"	Qu tsf	W %
GROUND SURFACE EL. <u>746.8</u>				Brown Clay LOAM, A-6 <u>726.8</u>			
13" Bituminous Concrete over 8" Crushed Limestone Base Course							
6	5	2.5	18	8	10	3.76	13
5	5	P		12	B		
Brown Silty Clay LOAM, A-6 <u>745.0</u>							
6	5	1.74	14	7	9	2.33	13
5	3	B		11	BS		
few thin, wet Sand seams				End of Boring @ 25.0' <u>721.8</u>			
5	6	-	12				
5	6						
Brown SAND and GRAVEL, A-1 <u>741.8</u>							
9	10	3.72	14				
10	12	B					
Brown Clay LOAM, A-6 <u>737.8</u>							
6	8	3.5	13				
8	11	P					
Grey							
8	10	6.98	11				
10	15	BS					
7	11	5.12	12				
11	15	BS					
8	12	3.06	12				
12	14	B					

N-Standard Penetration Test- Blows per foot to drive 2 inch
 O.D. Split Spoon Sampler 12 inches with 140 lbs. hammer falling 30 inches
 Qu- Unconfined Compressive Strength (tsf)
 W- Water Content-percentage of oven dry weight (%)
 Type failure: B- Bulge Failure
 S- Shear Failure
 E- Estimated Value
 P-Penetrometer

MIDLAND STANDARD ENGINEERING & TESTING, INC.

BORING LOG

SHEET 1 OF 1

PROJECT Algonquin Bypass Retaining Wall - IL. Route 31 DATE 3/16/09
 ROUTE FAP 339/ILL 31 BORED BY CD
 SECTION 96-00209-00-PV STATION 89+00 to 94+00 CHECKED BY WJW

COUNTY <u>McHenry</u>		WATER LEVEL DURING DRILLING <u>none</u>		WATER LEVEL AT COMPLETION <u>dry</u>			
Depth	N/6"	Qu tsf	W %	Depth	N/6"	Qu tsf	W %
GROUND SURFACE EL. <u>748.2</u>				Brown-Grey Clay LOAM, A-6 <u>728.2</u>			
12-1/2" Bituminous Concrete over 6-1/2" Crushed Limestone Base Course							
4	3	-	12	7	9	4.88	12
3	2			11	BS		
Brown and Dark Grey SAND and GRAVEL, A-1: FILL							
3	3	1.67	14	6	7	2.79	13
3	3	B		9	BS		
Brown Silty Clay LOAM, A-6 <u>746.2</u>				End of Boring @ 25.0' <u>723.2</u>			
4	7	1.82	13				
7	9	B					
intermittent thin, wet Sand seams							
5	8	2.87	12				
5	11	BS					
Brown-Grey Clay LOAM, A-6 <u>740.2</u>							
5	9	3.80	10				
9	12	BS					
7	10	3.37	11				
10	12	BS					
10	10	2.98	11				
10	13	BS					
9	11	4.34	9				
11	13	BS					

N-Standard Penetration Test- Blows per foot to drive 2 inch
 O.D. Split Spoon Sampler 12 inches with 140 lbs. hammer falling 30 inches
 Qu- Unconfined Compressive Strength (tsf)
 W- Water Content-percentage of oven dry weight (%)
 Type failure: B- Bulge Failure
 S- Shear Failure
 E- Estimated Value
 P-Penetrometer

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MIDLAND STANDARD ENGINEERING & TESTING, INC.

BORING LOG

SHEET 1 OF 1

PROJECT Algonquin Bypass Retaining Wall - IL. Route 31 DATE 3/16/09
 ROUTE FAP 339/ILL 31 BORED BY CD
 SECTION 96-00209-00-PV STATION 89+00 to 94+00 CHECKED BY WJW

Depth	N/6"	Qu	W	WATER LEVEL DURING DRILLING	Depth	N/6"	Qu	W
		tsf	%	15.0'				
				GROUND WATER AT COMPLETION				
				15.6'				
GROUND SURFACE EL. 750.0								
11-17/4" Bituminous Concrete over 7-3/4" Crushed Limestone Base Course				Grey SAND and GRAVEL, A-3 730.0				
Brown and Dark Grey SAND and GRAVEL, A-1: FILL	5		5	Grey Clay LOAM A-6 729.0	9	11	5.31	12
Brown Silty Clay LOAM, A-6 747.5	3				12			
	3	2.52	14		8	3.29	12	
	5	2.52	14	End of Boring @ 25.0' 725.0	13			
	4	2.52	14					
	5	2.52	14					
	7	2.91	11					
Grey-Brown Clay LOAM, A-6(5)* 740.5	8	3.5	13					
	ST							
	6	4.0	13					
Grey	7	7.83	11					
	11							
few wet Sand seams	5	7.83	11					
	6	5.62	8					
	7							
	12							

N-Standard Penetration Test- Blows per foot to drive 2 inch
 O.D. Split Spoon Sampler 12 inches with 140 lbs. hammer falling 30 inches
 Qu- Unconfined Compressive Strength (tsf)
 W- Water Content-percentage of oven dry weight (%)
 ST- Shelby Tube Sample
 * - Classification Test Results on Form BBS 2640
 Type failure: B- Bulge Failure
 S- Shear Failure
 E- Estimated Value
 P-Penetrometer

MIDLAND STANDARD ENGINEERING & TESTING, INC.

BORING LOG

SHEET 1 OF 1

PROJECT Algonquin Bypass Retaining Wall - IL. Route 31 DATE 3/16/09
 ROUTE FAP 339/ILL 31 BORED BY CD
 SECTION 96-00209-00-PV STATION 89+00 to 94+00 CHECKED BY WJW

Depth	N/6"	Qu	W	WATER LEVEL DURING DRILLING	Depth	N/6"	Qu	W
		tsf	%	6.5'				
				GROUND WATER AT COMPLETION				
				7.2'				
GROUND SURFACE EL. 751.6								
12-17/4" Bituminous Concrete over 6-3/4" Crushed Limestone Base Course				Grey Clay LOAM, A-6 731.6				
Brown and Dark Grey SAND and GRAVEL, A-1: FILL	5		10		11	4.26	12	
Brown Silty Clay LOAM, A-6 749.1	3				12			
	2	0.97	16		14	5.04	12	
	3			End of Boring @ 25.0' 726.6	10			
Brown SAND and GRAVEL, A-1 746.6	5		12		13			
	5				17			
	12							
	9	1.47	15					
Red-Brown Clay LOAM, A-6 742.1	6							
	2							
	5	3.57	12					
Grey Clay LOAM, A-6 739.6	10							
	10							
	7	8.60	10					
	10							
	17							
	9	9.96	11					
	11							
	13							
	8	4.07	12					
	15							
	21							

N-Standard Penetration Test- Blows per foot to drive 2 inch
 O.D. Split Spoon Sampler 12 inches with 140 lbs. hammer falling 30 inches
 Qu- Unconfined Compressive Strength (tsf)
 W- Water Content-percentage of oven dry weight (%)
 Type failure: B- Bulge Failure
 S- Shear Failure
 E- Estimated Value
 P-Penetrometer

MIDLAND STANDARD ENGINEERING & TESTING, INC.

BORING LOG

SHEET 1 OF 1

PROJECT Algonquin Bypass Retaining Wall - IL. Route 31 DATE 3/16/09
 ROUTE FAP 339/ILL 31 BORED BY CD
 SECTION 96-00209-00-PV STATION 89+00 to 94+00 CHECKED BY WJW

Depth	N/6"	Qu	W	WATER LEVEL DURING DRILLING	Depth	N/6"	Qu	W
		tsf	%	4.2'				
				GROUND WATER AT COMPLETION				
				18.8'				
GROUND SURFACE EL. 752.5								
12" Bituminous Concrete over 5" Crushed Limestone Base Course				Grey Gravelly CLAY, A-2-4 732.5				
Dark Brown Clay LOAM, A-6 751.1	9			Grey Clay LOAM, A-6 732.0	8			
	4	2.79	13		10	2.71	13	
	4				11			
Dark Brown Silty SAND, A-2-4 749.5	2		24		5	4.07	13	
	2			End of Boring @ 25.0' 727.5	10			
	6							
Brown SAND (f), A-3 746.5	2		18					
	3							
	3							
Red-Brown Clay LOAM, A-6 744.5	3	0.97	17					
	6							
Cobble	14							
	12	0.78	13					
	14							
	8							
Grey-Brown Clay LOAM, A-6 739.5	10	5.62	11					
	13							
Grey	14							
	10	4.84	11					
	15							
	15							
	10							
	15							
	15							
	12	4.5+	6					
Grey Gravelly CLAY, A-2-4 733.5	16							
	16							

N-Standard Penetration Test- Blows per foot to drive 2 inch
 O.D. Split Spoon Sampler 12 inches with 140 lbs. hammer falling 30 inches
 Qu- Unconfined Compressive Strength (tsf)
 W- Water Content-percentage of oven dry weight (%)
 Type failure: B- Bulge Failure
 S- Shear Failure
 E- Estimated Value
 P-Penetrometer

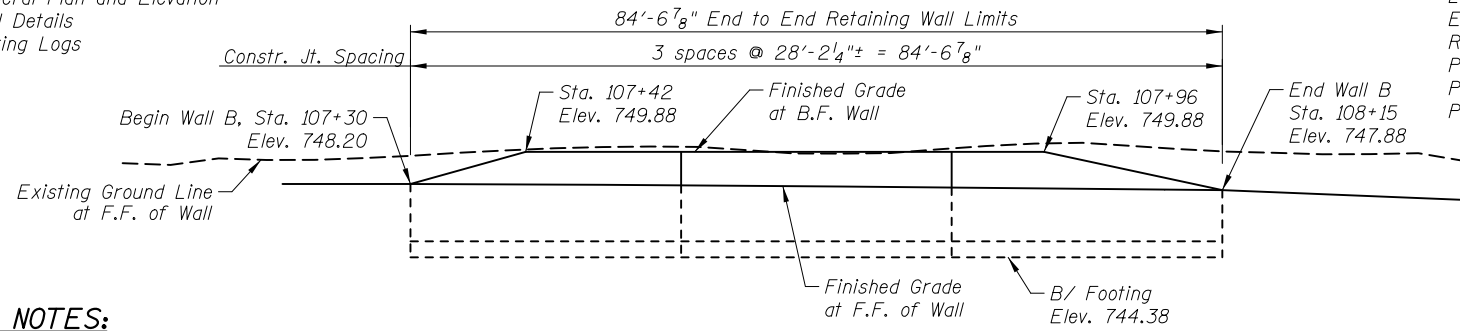
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Bench Mark: Control Point 1, X-cut in Walk Set, IL Route 31 Sta. 106+40.34, Offset 44.02 feet Rt., Elev. 743.84

Existing Structure: None

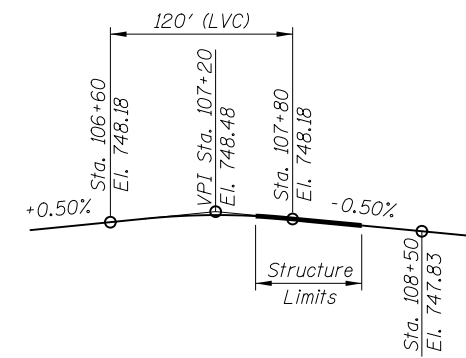
INDEX OF SHEETS

- WB1 General Plan and Elevation
- WB2 Wall Details
- WB3 Boring Logs



CURVE DATA

(IL Rte. 31)
 $\Delta = 45^\circ 11' 23.25''$ (Lt.)
 $D = 8^\circ 51' 43.06''$
 $T = 269.06'$
 $L = 509.93'$
 $E = 53.75'$
 $R = 646.54'$
 $P.C. = Sta. 108+06.38$
 $P.T. = Sta. 113+16.31$
 $P.I. = Sta. 110+75.44$



TOTAL BILL OF MATERIALS

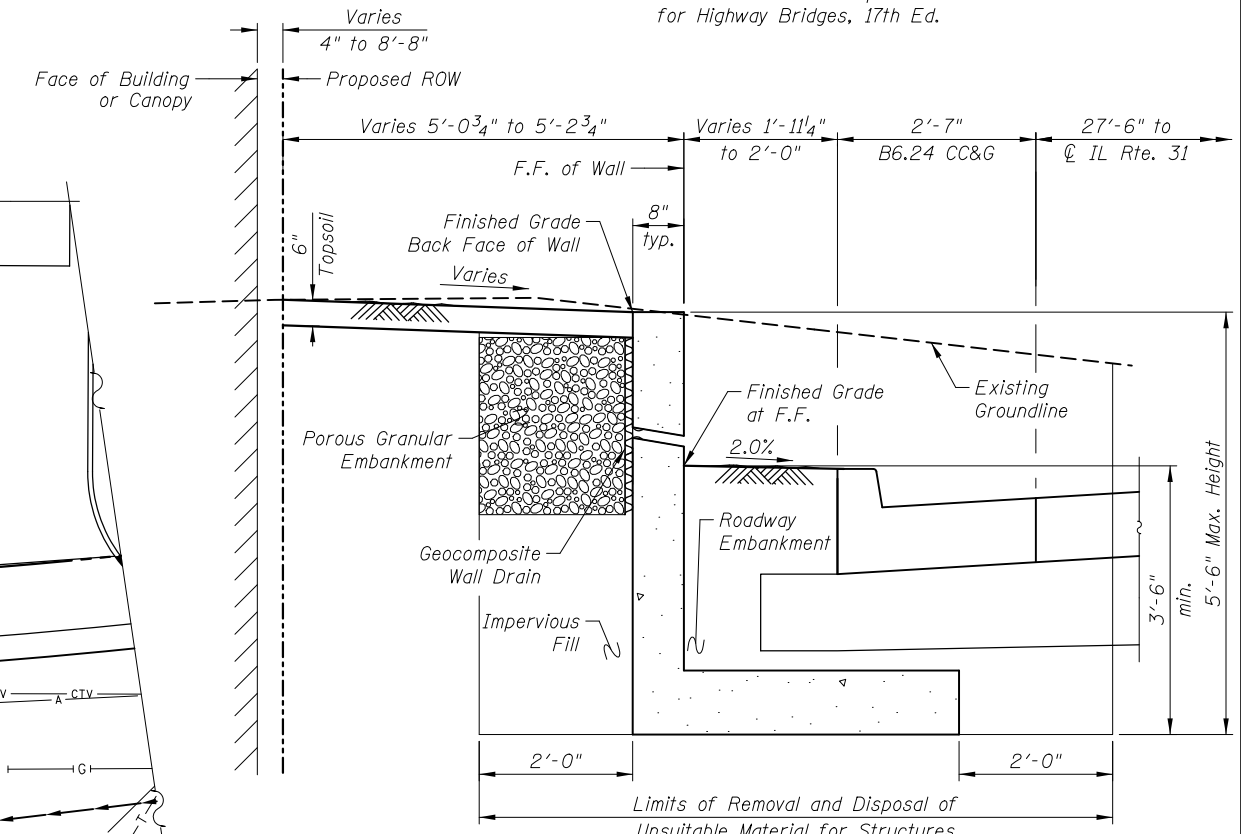
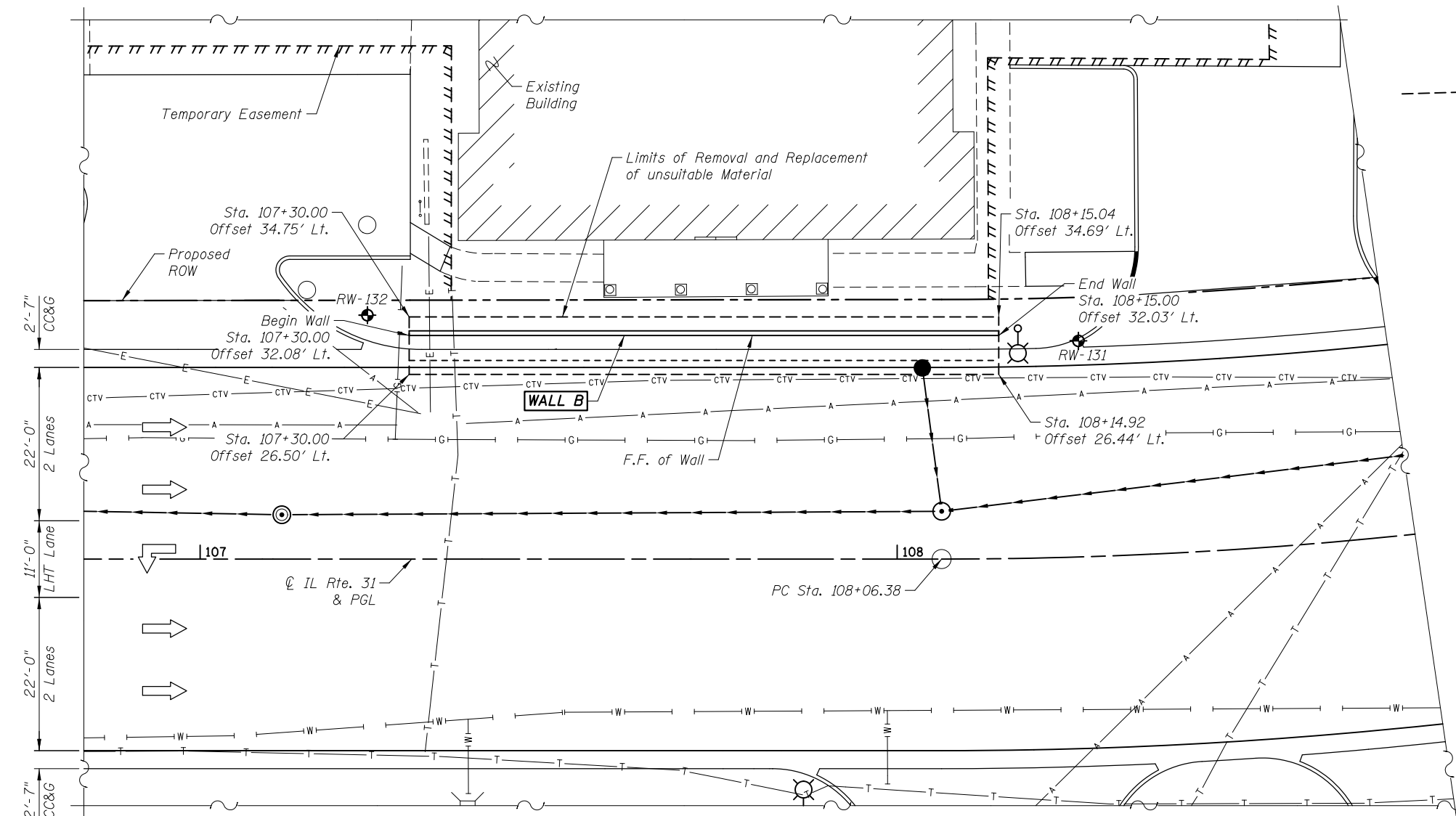
ITEM	UNIT	TOTAL QUANTITY
Porous Granular Embankment	Cu. Yd.	13
Removal & Disposable of Unsuitable Materials for Structures	Cu. Yd.	155
Concrete Structures	Cu. Yd.	20.2
Reinforcement Bars, Epoxy Coated	Pound	1,600
Geocomposite Wall Drain	Sq. Yd.	19

GENERAL NOTES:

1. Reinforcement bars designated (E) shall be epoxy coated.

DESIGN SPECIFICATIONS

2002 AASHTO Standard Specifications for Highway Bridges, 17th Ed.

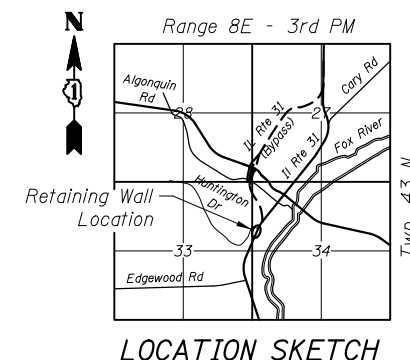


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LEGEND

⊕ Soil Borings	—E— Existing Electrical
—A— Existing Aerial Lines	—ctv— Existing Cable
—T— Existing Telephone	—W— Existing Water
—G— Existing Gasline	—S— Proposed Storm Sewer

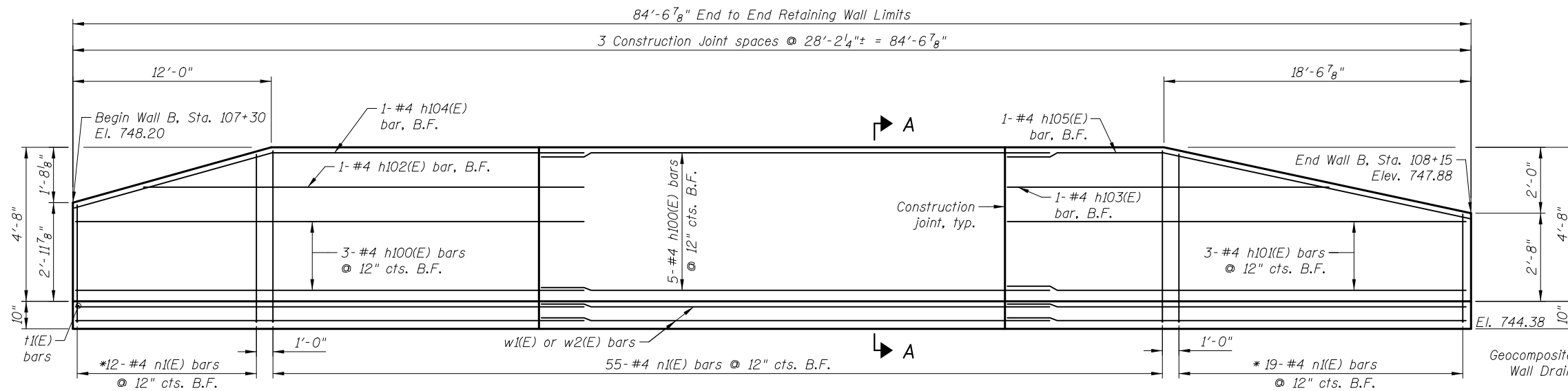
Notes:
 Offsets are measured from the ϕ of IL Rte. 31 to the Front Face of Wall.
 F.F. - Front Face
 B.F. - Back Face



GENERAL PLAN AND ELEVATION
WALL B; IL RTE 31
SECTION 18A-2, McHENRY COUNTY
STA. 107+30 TO STA. 108+15

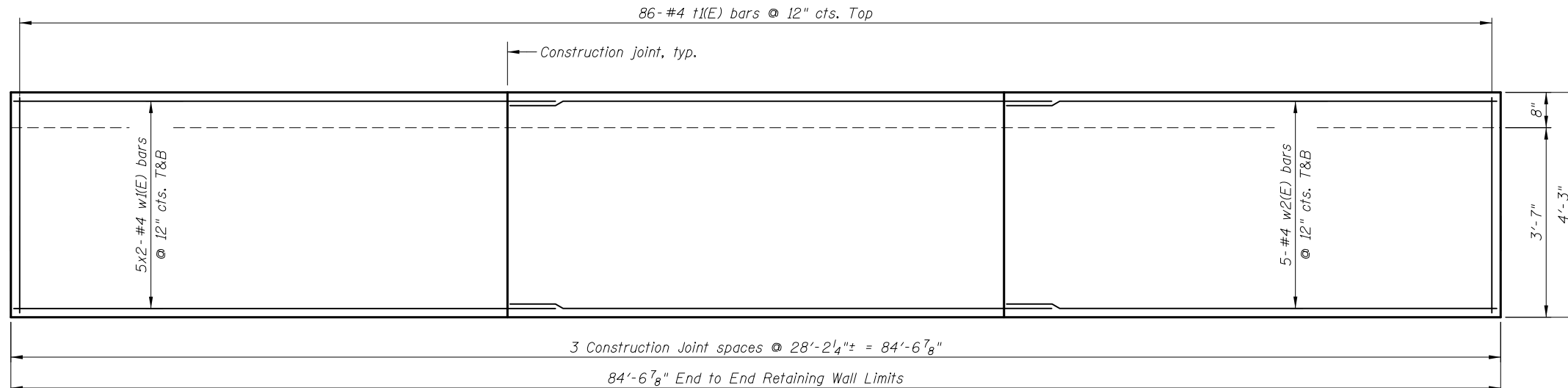
MINIMUM BAR LAP

#4 bar = 2'-7"

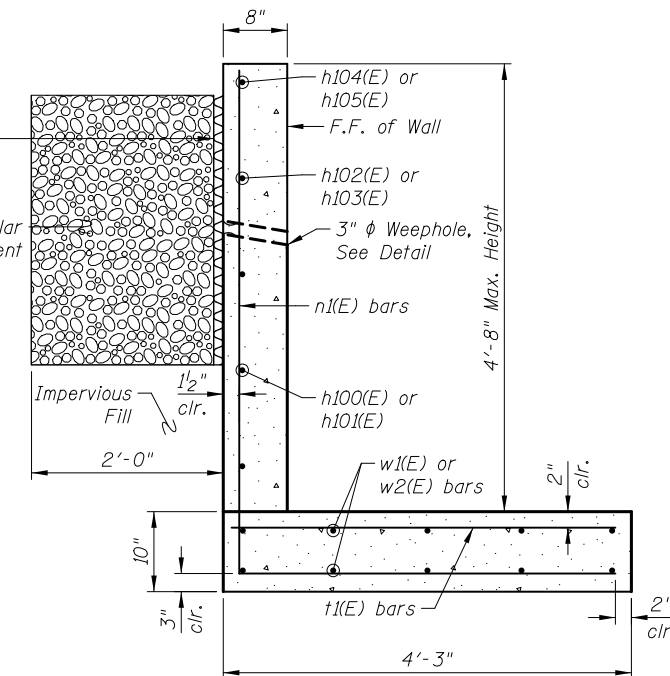


ELEVATION

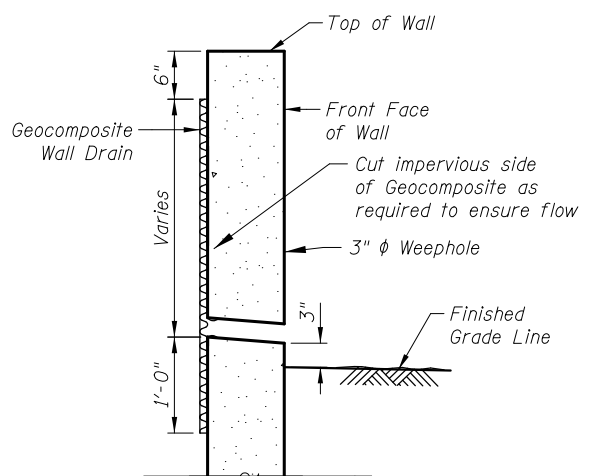
* Cut to fit.



PLAN

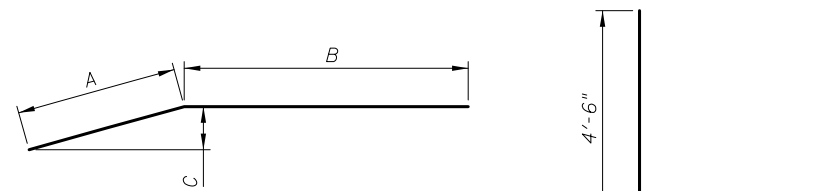


SECTION A-A



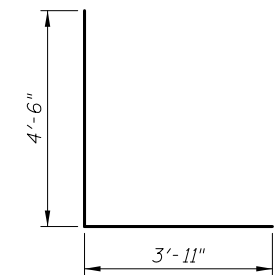
WEEP HOLE DRAIN DETAIL

Weep hole spacing shall be at 8'-0" horizontally



Bar	A	B	C
h104(E)	12'-0"	18'-11"	1'-7 7/8"
h105(E)	18'-7"	9'-5"	1'-11 7/8"

BARS h104(E) & h105(E)



n1(E) BAR

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h100(E)	8	#4	30'-9"	—
h101(E)	3	#4	27'-10"	—
h102(E)	1	#4	26'-8"	—
h103(E)	1	#4	19'-6"	—
h104(E)	1	#4	30'-11"	—
h105(E)	1	#4	28'-0"	—
n1(E)	86	#4	8'-5"	L
t1(E)	86	#4	3'-11"	—
w1(E)	20	#4	30'-9"	—
w2(E)	10	#4	27'-10"	—
Item		Unit	Quantity	
Concrete Structures		Cu. Yd.	20.2	
Reinforcement Bars, Epoxy Coated		Pound	1,600	

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CIVILTECH
 450 E Devon Ave, Suite 300
 Itasca, Illinois 60143
 Tel: 630.773.3900 Fax: 630.773.3975
 www.civiltechinc.com

DRAWN	-	M. LANGE
DESIGNED	-	M. LANGE
CHECKED	-	G. HATLESTAD
DATE	-	5/3/2012

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**WALL DETAILS
 WALL B; IL RTE 31**

SHEET NO. WB2 OF WB3 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	595
CONTRACT NO. 60F72				

ILLINOIS FED. AID PROJECT

MIDLAND STANDARD ENGINEERING & TESTING, INC.

STRUCTURE FOUNDATION BORING LOG

SHEET 1 OF 1

PROJECT Algonquin Bypass STRUCTURE Retaining Wall B DATE 7/19/10
 ROUTE FAP 339/ILL 31 BORED BY SPE
 SECTION 96-00209-00-PV STATION 107+20 to 108+15 CHECKED BY WJW

COUNTY McHenry WATER SURFACE EL. none
 BORING RW-131 GROUND WATER AT COMPLETION dry
 STATION 108+27 AFTER -- HOURS --
 OFFSET 31' L of CL

Depth	N/6"	Qu	W	Depth	N/6"	Qu	W
M (Ft)				M (Ft)			
GROUND SURFACE EL. 749.7 M (Ft)							
Dark Brown Clay LOAM, A-6 Stiff to firm							
1							
2		1.24	22				
2		BS					
to Black							
1							
2		0.74	26				
2		BS					
Brown Clay LOAM, A-6 744.2 Stiff to firm							
3							
3		1.71	25				
4		BS					
Brown LOAM to Sandy LOAM, 739.2 A-4, Slightly dense							
1							
3		--	18				
5							
Brown SAND, A-2, wet 737.7 Slightly dense							
3							
4		2.56	13				
5		BS					
Pinkish-Brown Silty CLAY, A-6 735.7 Very stiff							
End of Boring @ 15' 734.7							

N-Standard Penetration Test- Blows per foot to drive 2 inch
 O.D. Split Spoon Sampler 12 inches with 140 lbs. hammer falling 30 inches

Qu- Unconfined Compressive Strength (tsf)
 W- Water Content-percentage of oven dry weight (%)

Type failure: B- Bulge Failure
 S- Shear Failure
 E- Estimated Value
 P-Penetrometer

MIDLAND STANDARD ENGINEERING & TESTING, INC.

STRUCTURE FOUNDATION BORING LOG

SHEET 1 OF 1

PROJECT Algonquin Bypass STRUCTURE Retaining Wall B DATE 7/19/10
 ROUTE FAP 339/ILL 31 BORED BY SPE
 SECTION 96-00209-00-PV STATION 107+20 to 108+15 CHECKED BY WJW

COUNTY McHenry WATER SURFACE EL. none
 BORING RW-132 GROUND WATER AT COMPLETION dry
 STATION 107+24 AFTER -- HOURS --
 OFFSET 35' L of CL

Depth	N/6"	Qu	W	Depth	N/6"	Qu	W
M (Ft)				M (Ft)			
GROUND SURFACE EL. 749.6 M (Ft)							
Dark Brown Clay LOAM, A-6							
5							
11		--	13				
12							
Brown Silty Clay LOAM, A-6 746.6 Hard to Very Stiff							
4							
5		5.77	17				
7		BS					
to Pinkish-Brown Clay LOAM							
2							
4		2.41	18				
5		BS					
Yellow-Brown SAND (f-c) and 742.6 Gravel, A-2, dry Slightly Dense							
3							
4		--	8				
3							
Pinkish-Brown Silty Clay LOAM, 740.1 A-6, Stiff							
3							
4		1.09	16				
4		B					
Brown SAND (f-c), little 737.6 Gravel, A-2, wet, Slightly Dense							
4							
7		5.04	13				
11		BS					
Pinkish-Brown Silty CLAY, 736.6 A-6, Hard							
End of Boring @ 15' 734.6							

N-Standard Penetration Test- Blows per foot to drive 2 inch
 O.D. Split Spoon Sampler 12 inches with 140 lbs. hammer falling 30 inches

Qu- Unconfined Compressive Strength (tsf)
 W- Water Content-percentage of oven dry weight (%)

Type failure: B- Bulge Failure
 S- Shear Failure
 E- Estimated Value
 P-Penetrometer

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DRAWN - M. LANGE
 DESIGNED - M. LANGE
 CHECKED - G. HATLESTAD
 DATE - 5/3/2012

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

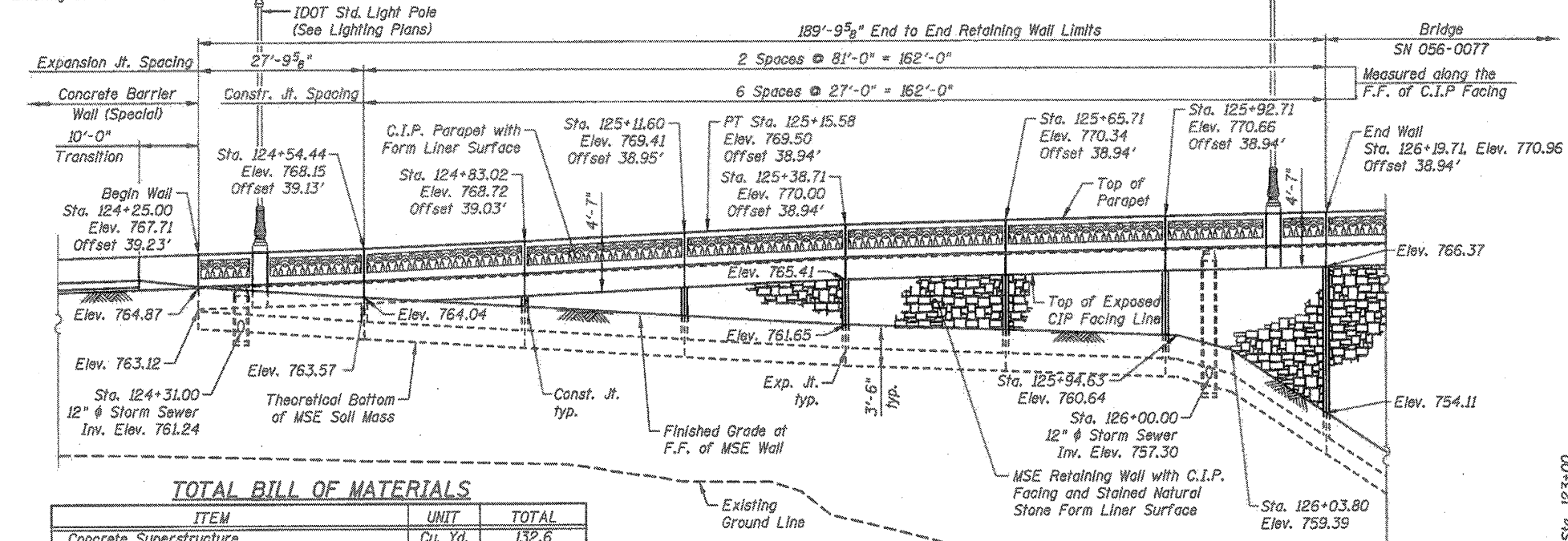
BORING LOGS
 WALL B; IL RTE 31

SHEET NO. WB3 OF WB3 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	596
CONTRACT NO. 60F72				

ILLINOIS FED. AID PROJECT

Bench Mark: Control Point CP10, 5/8" Iron Rod with cap set, Ramp B Station 11+51.26, Offset 2.12 feet Left; Elev. 737.99
 Existing Structure: None



TOTAL BILL OF MATERIALS

ITEM	UNIT	TOTAL
Concrete Superstructure	Cu. Yd.	132.6
Form Liner Textured Surface	Sq. Ft.	912
Protective Coat	Sq. Yd.	300
Reinforcement Bars, Epoxy Coated	Pound	17,490
Geocomposite Wall Drain	Sq. Yd.	25
Staining Concrete Structures	Sq. Yd.	101
Mechanically Stabilized Earth Retaining Walls	Sq. Ft.	1,232
Form Liner Textured Surface, Special	Sq. Ft.	264

ELEVATION
 (Unfolded Elevation)
 (Looking at Front Face of Wall)

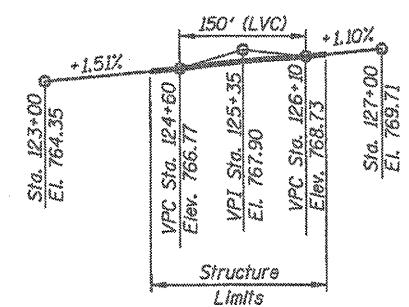
Settlement Platforms
 Sta. 125+00, 33-ft. Right
 Sta. 125+50, 33-ft. Right
 Sta. 126+00, 33-ft. Right
 Settlement Platforms shall be erected in accordance with Article 204.06 except that the platforms shall be placed at the bottom of the MSE soil mass. Cost shall be included in the cost of Mechanically Stabilized Earth Retaining Wall.

GENERAL NOTES

1. Reinforcement bars designated (E) shall be epoxy coated.
2. Neither the MSE wall cast-in-place concrete facing, anchorage slab & parapet, nor roadway pavement shall be constructed until after the roadway embankment and reinforced select fill have been in place for 4 months, after which time less than 1 inch of the total anticipated settlement of 6 inches is assumed to remain, without the prior approval of the Engineer. The settlement period may be shortened at the discretion of the Engineer if the monitoring data indicates a lesser than predicted settlement.

CURVE DATA

@ IL Rte 31
 $\Delta = 45^\circ 06' 40''$ (RT)
 $D = 8^\circ 07' 36''$
 $T = 292.84'$
 $L = 555.10'$
 $E = 58.40'$
 $R = 705.04'$
 P.C. = Sta. 119+58.42
 P.T. = Sta. 125+13.52
 P.I. = Sta. 122+51.26
 $S.E. = 4.00\%$
 $S.E. \text{ Runoff} = 63.9'$ (NB)
 $S.E. \text{ Runoff Sta. } 124+70 \text{ to } 125+33.9$ (NB)



PROPOSED PROFILE

IL ROUTE 31
 (Along NB PGL)

CURVE DATA

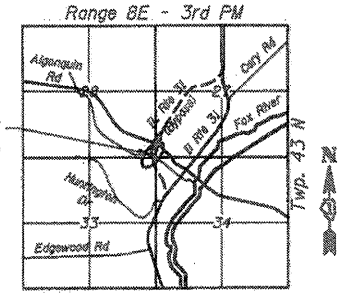
NB PGL
 $\Delta = 45^\circ 06' 40''$ (RT)
 $D = 8^\circ 12' 31''$
 $T = 289.91'$
 $L = 549.56'$
 $E = 57.81'$
 $R = 698.00'$
 P.C. = Sta. 119+62.42, offset 5.99' Rt.
 P.T. = Sta. 125+15.58, offset 3.50' Rt.
 P.I. = Sta. 122+39.00, Offset 53.26' Lt.

INDEX OF SHEETS

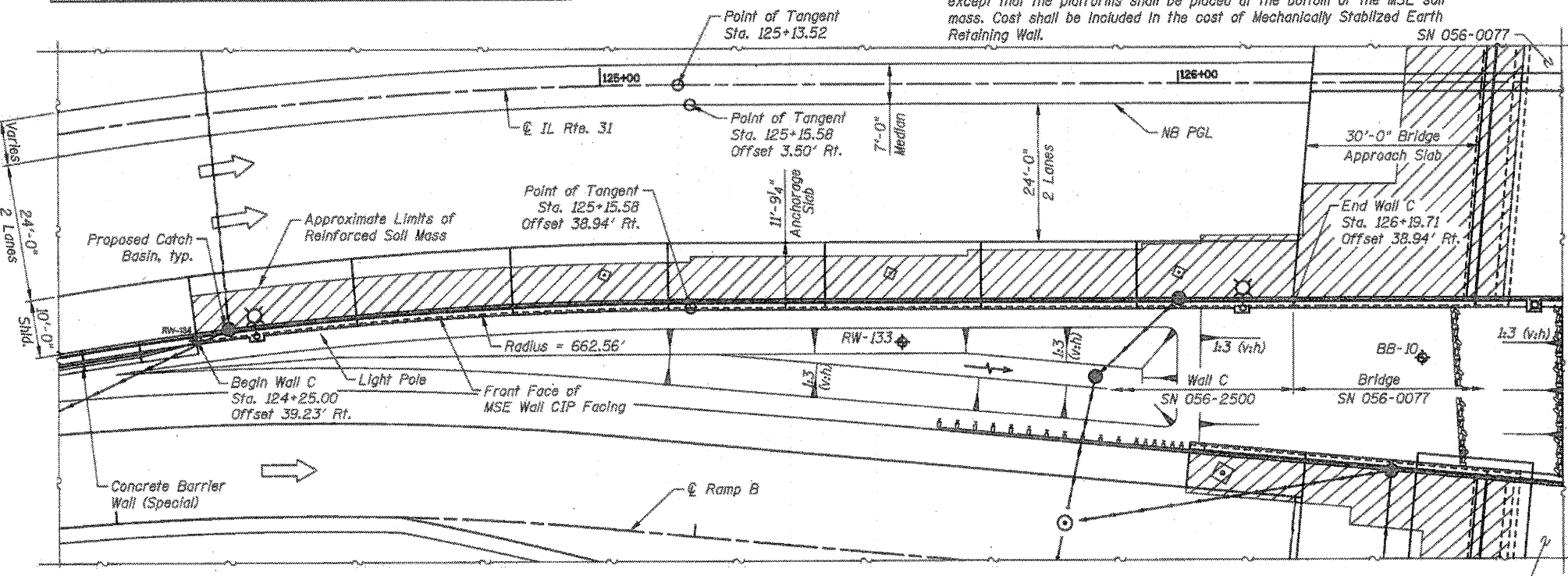
- WC1 General Plan & Elevation
- WC2 MSE Wall Details
- WC3 Anchorage Slab I
- WC4 Anchorage Slab II
- WC5 Anchorage Slab Details
- WC6 Architectural Details
- WC7 Boring Logs I
- WC8 Boring Logs II

APPROVED
 For Structural Adequacy Only

Gregory J. Hatlestad
 Engineer of Bridges & Structures
 CIVILTECH ENGINEERING, INC.
 GREGORY J. HATLESTAD, S.E.



LOCATION SKETCH



PLAN

DESIGN STRESSES

FIELD UNITS
 $f'_c = 3,500 \text{ psi}$
 $f_y = 60,000 \text{ psi}$ (Reinforcement)

DESIGN SPECIFICATIONS
 2002 AASHTO Standard Specifications
 For Highway Bridges, 17th Ed.

LEGEND

- Soil Boring
- Flow
- Proposed Storm Sewer
- Proposed Pipe Underdrain

Notes:
 Wall offsets measured from @ IL Rte. 31 to front face of CIP facing.
 F.F. - Front Face of Wall

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DESIGNED	- D. ATKINS
CHECKED	- G. HATLESTAD
DATE	- 3/23/2012

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

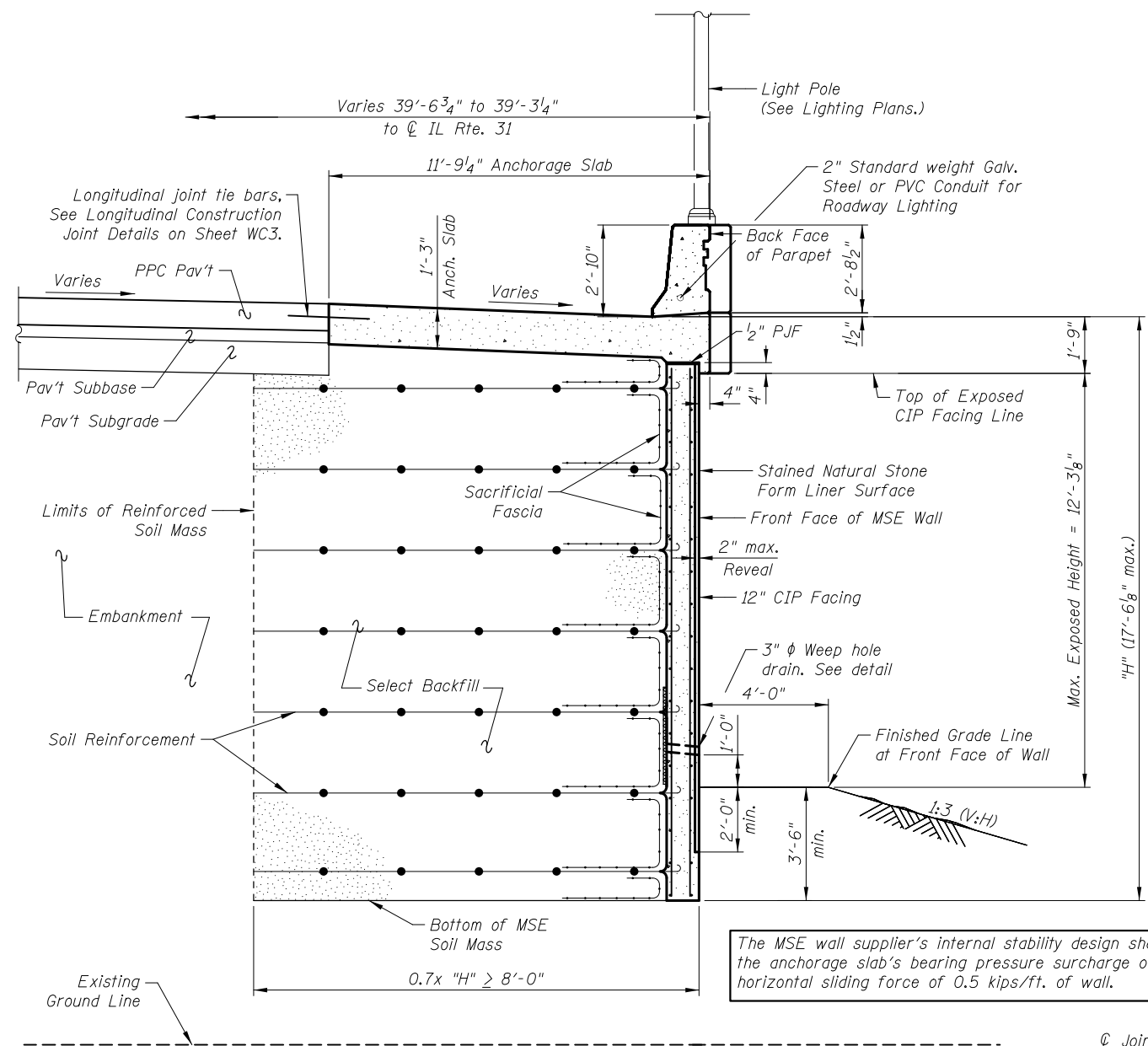
GENERAL PLAN & ELEVATION
WALL C: IL RTE 31
STRUCTURE NO. 056-2500
 SHEET NO. WC1 OF WC8 SHEETS

D.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
3003	18A-2	MCHENRY	825	597

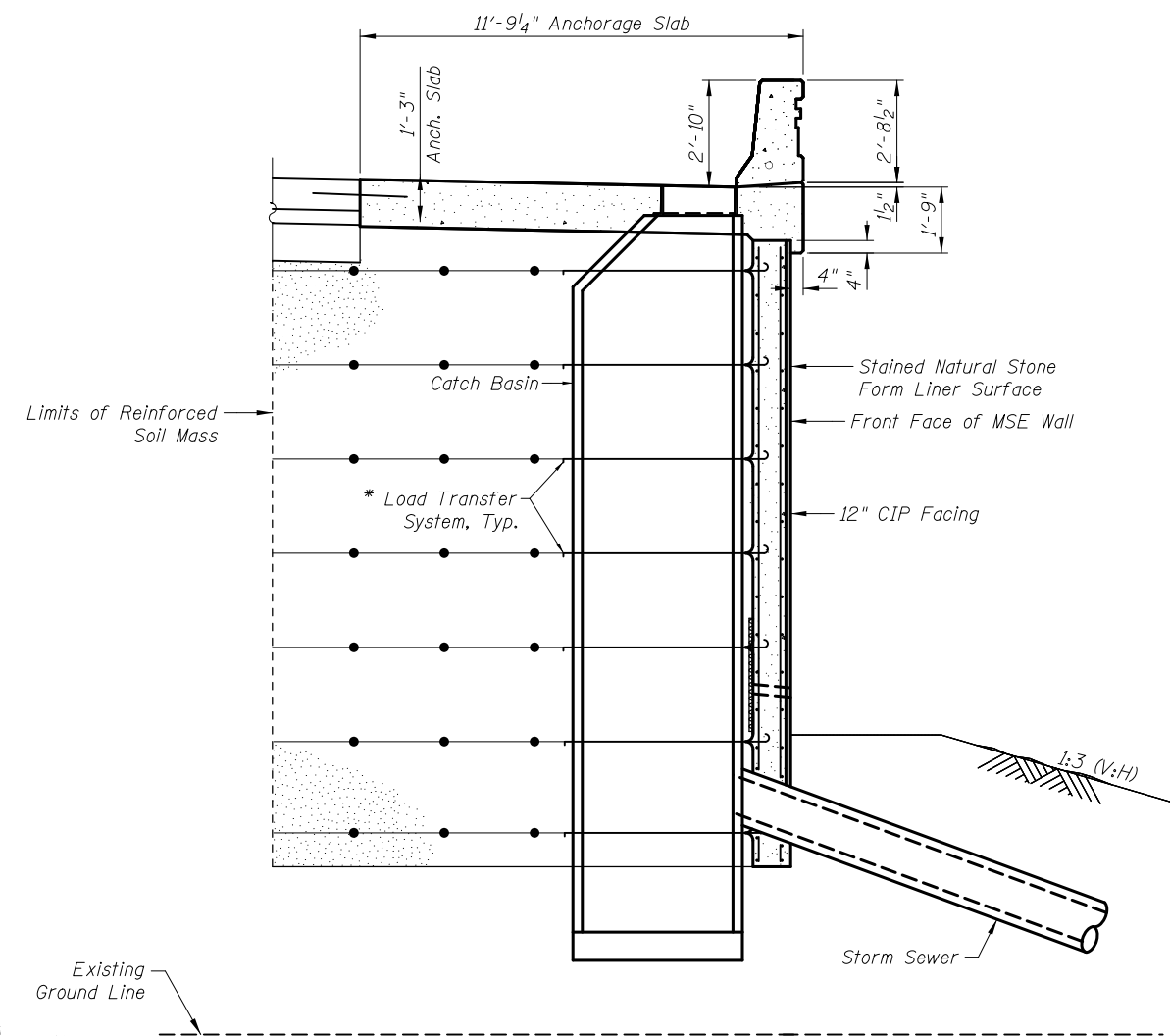
CONTRACT NO. 60F72
 ILLINOIS FED. AID PROJECT

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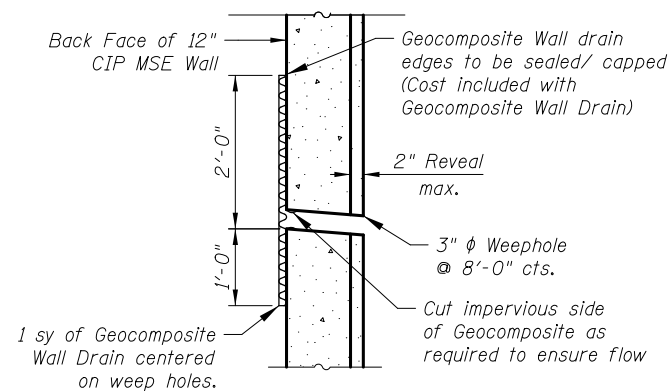


TYPICAL WALL SECTION
(Looking North)

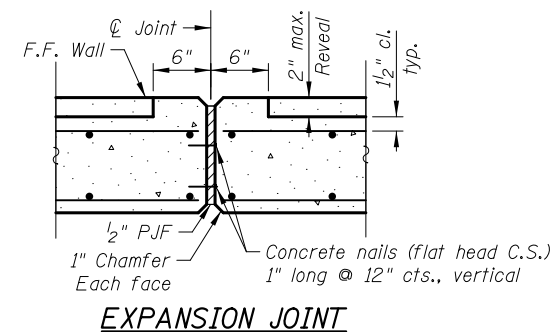
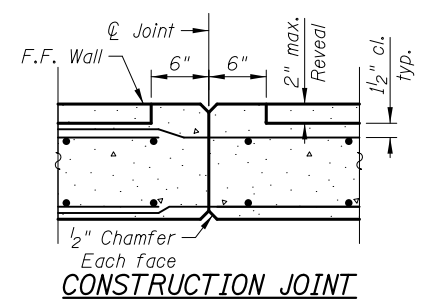


SECTION AT DRAINAGE STRUCTURE
(Looking North)
(See Typical Wall Section for remainder of details)

* MSE supplier to design load transfer system to accommodate concrete pipe and catch basin.



WEEP HOLE DRAIN DETAIL
Weep hole spacing shall be at 8'-0\"/>

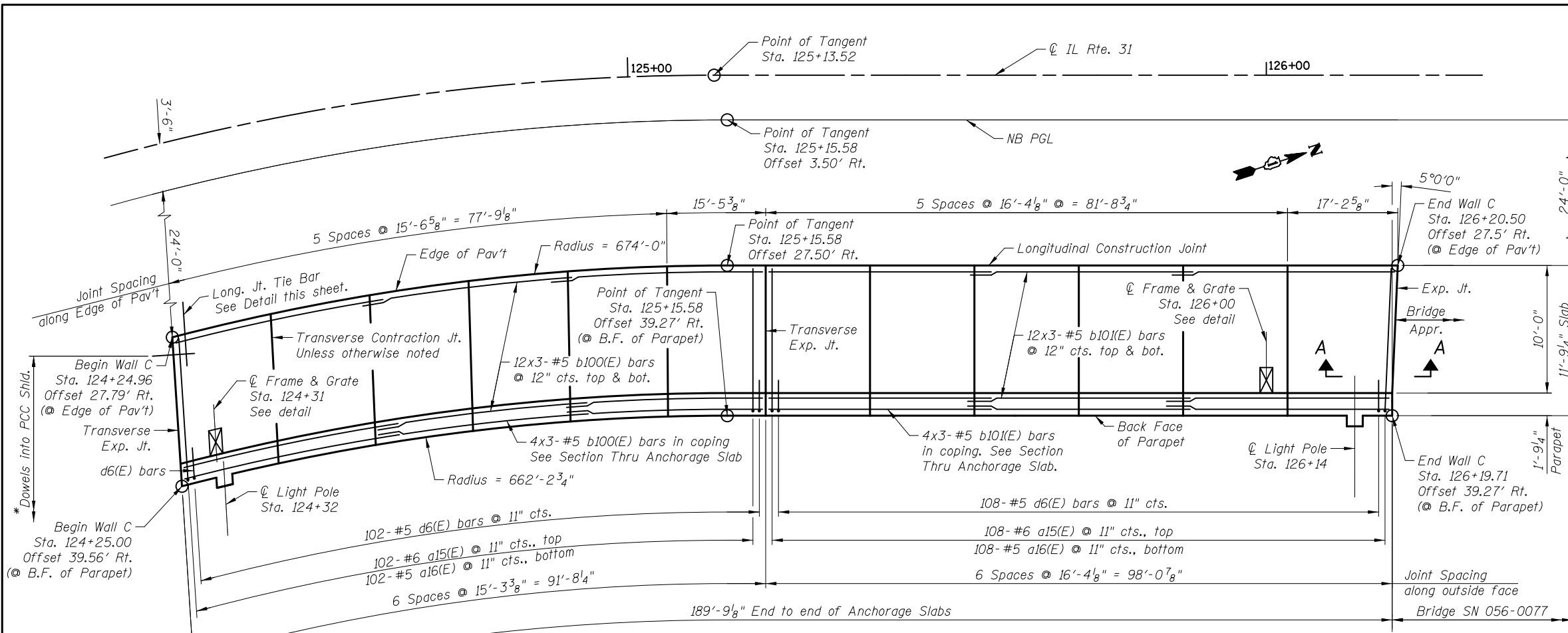


The MSE wall supplier's internal stability design shall account for the anchorage slab's bearing pressure surcharge of 1.0 ksf and horizontal sliding force of 0.5 kips/ft. of wall.

**MSE WALL
BILL OF MATERIAL**

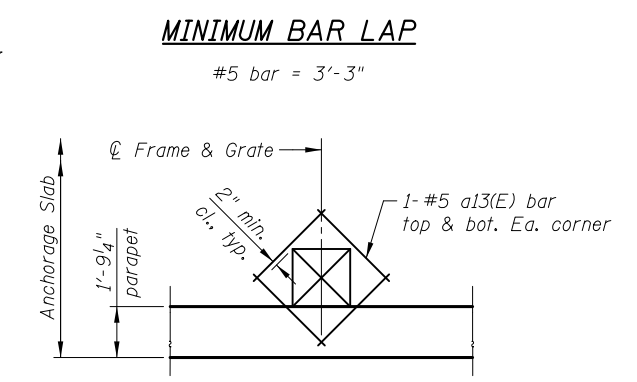
ITEM	UNIT	TOTAL
Form Liner Textured Surface	Sq. Ft.	940
Geocomposite Wall Drain	Sq. Yd.	25
Staining Concrete Structures	Sq. Yd.	104
Mechanically Stabilized Earth Retaining Walls	Sq. Ft.	1,232

Notes:
 For Frame & Grate type, catch basin type, and rim elevations, see Drainage & Utility Plans.
 See sheet WC5 for dimensions and reinforcement of Anchorage Slab.
 See sheet WC6 for Form Liner Textured Surface details.



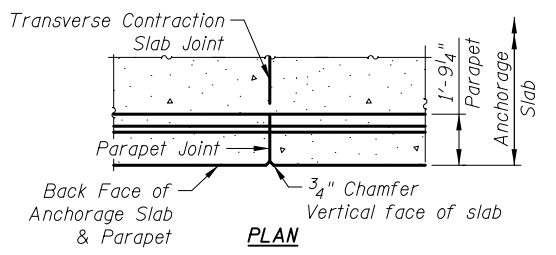
PLAN

* Indicates dowels into PCC Shld. See Transverse Expansion Joint Detail, sheet WC5.

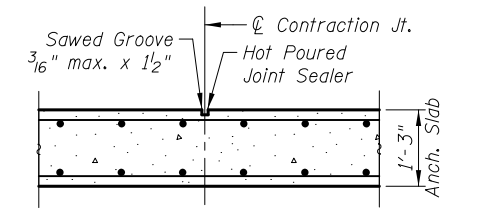


DETAIL OF REINFORCEMENT AT DRAINAGE STRUCTURES

(Cut longitudinal bars to clear drainage structure)



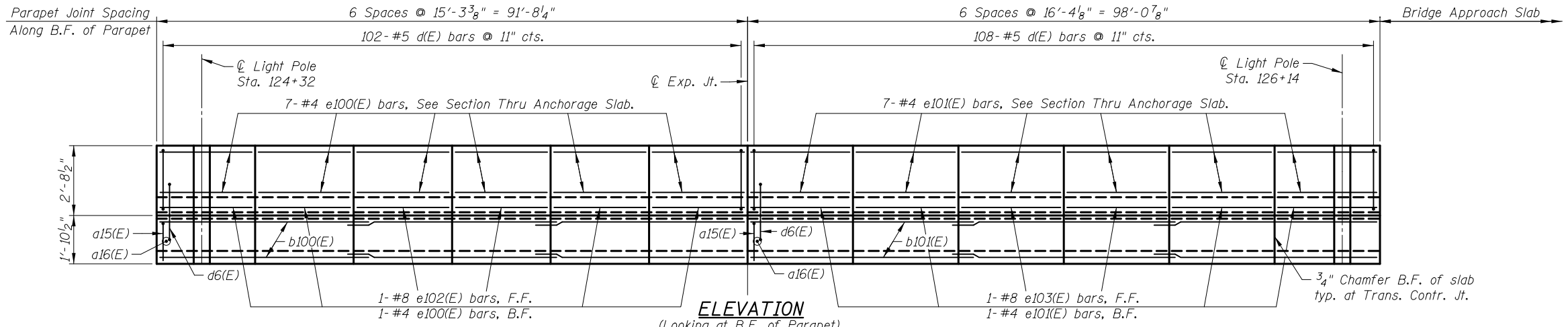
PLAN



SECTION

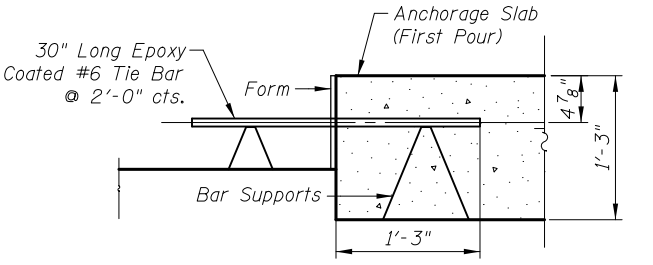
TRANSVERSE CONTRACTION JOINT

See Art. 420.05(c) of Standard Specifications

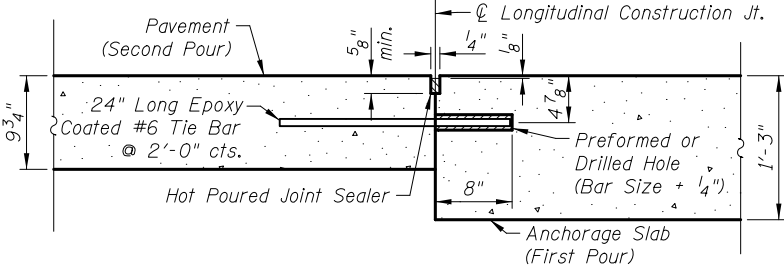


ELEVATION

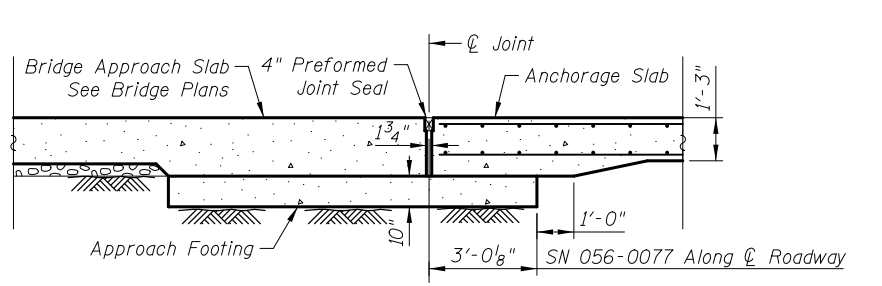
(Looking at B.F. of Parapet)



TIE BAR FORMED IN PLACE



TIE BAR GROUTED IN PLACE



SECTION A-A

Notes:
 See sheet WC5 for Bill of Material, Light Pole Foundation details and Section Thru Anchorage Slab.
 See sheet WC5 for Transverse Expansion Joint details.
 Field Cut bars as required around Frame and Grate.
 Bars indicated thus 11x2-#5 etc. indicate 11 lines of bars at 2 lengths per line.
 Joints in the adjacent pavement shall be in line with the anchorage slab joints.

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STATE OF ILLINOIS
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ANCHORAGE SLAB
WALL C: IL RTE 31
STRUCTURE NO. 056-2500
 SHEET NO. WC3 OF WC8 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	599
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				

SHEET INTENTIONALLY LEFT BLANK

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DATE	-	5/3/2012

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WALL C: IL RTE 31
STRUCTURE NO. 056-2500

SHEET NO. WC4 OF WC8 SHEETS

O.R. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
0003	18A-2	MCHENRY	825	600
CONTRACT NO. 60F72				
ILLINOIS FED. AID PROJECT				