SOIL BORING LOG

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

Page 1 of 1 — Date 5/5/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) **DESCRIPTION** Union Pacific Rail Bridge over IL 132 **LOGGED BY** RJC

SECTION 125X-N **LOCATION** NE Ret. Wall, **SEC.** 13, **TWP.** 45N, **RNG.** 11E, 3rd **PM**,
Latitude 42°22'14.71307" N, **Longitude** 87°53'42.99138" W

COUNTY Lake **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

STRUCT. NO. ____ Station ____

BORING NO. B-7 (STA IL Rte 132)
Station 23+56.75
Offset 17.78ft LT
Ground Surface Elev. 680.41 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 656.9 ft ▼
Upon Completion 647.4 ft ▽
After - Hrs. - ft

Description	Elev. (ft)	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
9 inches Concrete Pavement	679.66				7
Dark Brown, Moist SAND (Fill), trace gravel and clay	678.41		17, 15, 8	5.1 B	16
Brown, Moist SILTY LOAM	676.91				
Very Stiff Gray, Moist SILTY CLAY LOAM Encountered Cobble at 3.5'		-5	25, 15, 8	3.3 P	19
			14, 17, 20	2.0 P	15
	669.41	-10	4, 5, 8	3.7 B	22
Loose to Medium Dense Gray, Fine to Medium grain, Moist SAND, trace gravel Encountered Cobble at 11'			7, 13, 10		4
Wet at 13.5'	664.41	-15	3, 4, 5		17
Stiff Gray, Moist SILTY LOAM, trace gravel			4, 5, 6	1.6 B	13
		-20	3, 5, 7	2.0 B	12
Stiff Gray, Moist SILTY LOAM, trace gravel *(continued)*	656.91 ▼		3, 5, 6	2.0 B	12
Loose Gray, Fine to Coarse grain, Wet SAND, with gravel	653.41	-25	3, 4, 5		20
			8, 4, 5	2.8 P	10
Very Stiff Gray, Moist SILTY LOAM, trace gravel		-30	3, 6, 8	3.5 B	13
	▽	-35	6, 9, 13	3.9 B	15
	640.41	-40	5, 7, 10	3.5 B	14

End of Boring

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

BBS, form 137 (Rev. 8-99)

SOIL BORING LOG

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

Page 1 of 1 — Date 5/5/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) **DESCRIPTION** Union Pacific Rail Bridge over IL 132 **LOGGED BY** RJC

SECTION 125X-N **LOCATION** NE Ret. Wall, **SEC.** 13, **TWP.** 45N, **RNG.** 11E, 3rd **PM**,
Latitude 42°22'14.70889" N, **Longitude** 87°53'41.93790" W

COUNTY Lake **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

STRUCT. NO. ____ Station ____

BORING NO. B-8 (STA IL Rte 132)
Station 24+35.81
Offset 19.65ft LT
Ground Surface Elev. 681.34 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 655.3 ft ▼
Upon Completion 647.3 ft ▽
After - Hrs. - ft

Description	Elev. (ft)	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
9 inches Concrete Pavement	680.59				12
Dark Brown SAND (Fill), trace of gravel and clay	677.84		5, 10, 6		5
Very Stiff Brown and Gray, Moist SILTY CLAY LOAM	676.84	-5	3, 4, 6	2.6 B	6
Gray, Moist SILTY CLAY LOAM	675.34				
Very Stiff Gray, Moist SILTY LOAM					22
	669.84	-10	3, 4, 7	2.9 B	20
Medium Dense Gray, Fine to Medium grain, Moist SAND	666.84		3, 4, 7		23
		-15	2, 4, 5	2.0 P	5
Stiff to Very Hard Gray, Moist SILTY LOAM			2, 4, 10	1.6 B	16
Encountered Cobble at 18.5'		-20	7, 11, 14		20
Stiff to Very Hard Gray, Moist SILTY LOAM *(continued)*			8, 12, 15	8.5 P	12
	▼ 654.84	-25	4, 7, 8	6.1 B	11
Medium Dense Gray, Fine to Coarse grain, Wet SAND, with gravel			4, 8, 9		14
Blowing Sand at 28.5'	647.84	-30			12
Hard Gray, Moist SILTY LOAM, trace gravel	▽	-35	8, 11, 15	5.5 B	8
	641.34	-40	14, 26, 57	5.5 B	13

End of Boring

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

BBS, form 137 (Rev. 8-99)

SOIL BORING LOG

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

Page 1 of 1 — Date 4/29/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) **DESCRIPTION** Union Pacific Rail Bridge over IL 132 **LOGGED BY** RJC

SECTION 125X-N **LOCATION** NE Ret. Wall, **SEC.** 13, **TWP.** 45N, **RNG.** 11E, 3rd **PM**,
Latitude 42°22'15.12871" N, **Longitude** 87°53'40.97554" W

COUNTY Lake **DRILLING METHOD** HSA **HAMMER TYPE** AUTO

STRUCT. NO. ____ Station ____

BORING NO. B-9 (STA IL Rte 132)
Station 25+06.79
Offset 64.22ft LT
Ground Surface Elev. 696.97 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 663.5 ft ▼
Upon Completion 658.0 ft ▽
After - Hrs. - ft

Description	Elev. (ft)	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Black to Dark Brown, Moist TOPSOIL	694.97				34
			2, 5, 3	4.0 P	23
Brown, Moist SILTY CLAY LOAM, trace organics and gravel	693.47				
Very Stiff to Hard Brown and Gray, Moist SILTY LOAM		-5	2, 3, 4	4.0 P	17
			3, 5, 8	3.3 B	19
		-10	6, 8, 12	4.7 B	14
	684.97		5, 8, 8	4.3 B	17
Brown, Fine to Medium grain, Moist SAND	683.47				
Very Stiff Brown and Gray, Moist SILTY LOAM, trace organics and gravel	680.97	-15	3, 4, 5	2.9 B	21
Very Stiff Gray, Moist SILTY LOAM, trace gravel			2, 5, 6	2.6 B	19
3 inch layer of SAND, Gray, Fine to Medium grain at 19.7'		-20	2, 4, 7	3.1 B	19
Very Stiff Gray, Moist SILTY LOAM, trace gravel *(continued)*	674.97		3, 10, 20	2.3 P	19
Very Stiff Gray SILTY CLAY LOAM, trace gravel Encountered Cobble at 22.5'		-25	10, 8, 8	2.6 B	18
			2, 5, 7	2.6 B	22
	667.47	-30	3, 5, 9	0.8 B	8
Gray, Fine to Medium grain, Moist SAND, with gravel	663.47 ▼				
Very Stiff Gray SILTY LOAM, trace gravel		-35	3, 3, 6	2.2 B	13
	▽ 656.97	-40	4, 6, 8	3.0 B	13

End of Boring

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GBG CONSULTANTS INC.

SOIL BORING LOG

Page 1 of 1

Date 4/28/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 (Grand Ave.) LOGGED BY RJC

SECTION 125X-N LOCATION NE Ret. Wall, SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'15.15370" N, Longitude 87°53'40.11997" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-10 (STA IL Rte 132)
Station 25+70.91
Offset 68.60ft LT
Ground Surface Elev. 693.93 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 660.4 ft ▼
Upon Completion 660.4 ft ▽
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
693.93			
5 inches Asphalt Pavement 7 inches Crushed Aggregate Base Course			6
692.93	3		
Hard Brown, Moist SILTY CLAY LOAM	3 5	5.8 P	14
690.43			
Very Stiff Brown, Moist SILTY LOAM, trace gravel	4 6 22	3.9 B	14
-5			
687.43	3		
Very Stiff Gray, Moist SILTY CLAY LOAM	4 7	2.4 B	16
685.43			
Very Stiff Gray, Moist SILTY LOAM	3 5 6	2.5 B	17
-10			
682.93			
Very Stiff Gray, Moist SILTY CLAY LOAM	3 5 7	2.4 B	19
680.43	1		
	4 8	3.5 B	19
-15			
677.93			
Very Stiff to Hard Gray, Moist SILTY LOAM	2 7 8	2.9 B	17
675.43	5		
	8 10	4.9 B	15
-20			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
672.93			
Very Stiff to Hard Gray, Moist SILTY CLAY LOAM, trace gravel	2 5 6	2.0 B	17
-25			
	2 5 7	2.7 B	21
	3 5 8	2.9 B	21
-30			
	3 6 10	4.1 B	15
660.43 ▼			
Stiff to Hard Gray, Moist SILTY LOAM	3 5 6	1.6 B	19
-35			
	5 8 10	4.9 B	15
653.93			
End of Boring			
-40			

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GBG CONSULTANTS INC.

SOIL BORING LOG

Page 1 of 1

Date 4/29/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION NE Ret. Wall, SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'15.09277" N, Longitude 87°53'39.17377" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-11 (STA IL Rte 132)
Station 26+42.08
Offset 64.49ft LT
Ground Surface Elev. 694.22 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 683.2 ft ▼
Upon Completion 659.2 ft ▽
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
694.22			
4 inches Asphalt Pavement 8 inches Crushed Aggregate Base Course			9
693.22	3		
Very Stiff Brown and Gray, Moist SILTY CLAY LOAM	5 4	2.6 B	14
-5			
	3 4 6	3.7 B	16
688.22	4		
Very Stiff to Hard Brown and Gray, Moist SILTY LOAM	7 13	4.9 B	16
	2 4 8	2.9 B	17
-10			
683.22 ▼	2		
Stiff to Very Stiff Gray, Moist SILTY CLAY LOAM	9 8	2.4 B	19
	2 3 5	1.8 B	21
-15			
678.22	3		
Very Stiff Gray, Moist SILTY LOAM	5 6	3.0 P	18
675.72	4		
Very Stiff to Hard Gray, Moist SILTY CLAY LOAM	6 10	3.7 B	16
-20			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff to Hard Gray, Moist SILTY CLAY LOAM *(continued)*			
-25	2 4 7	2.6 B	18
	3 5 6	4.1 B	20
	4 6 8	2.4 B	22
-30			
	2 5 8	3.1 B	23
660.22	1		
Very Stiff Gray trace Orange/Red, Moist SILTY CLAY	3 5	3.0 P	16
▽ -35			
655.72	5		
Very Stiff Gray, Moist SILTY CLAY LOAM	7 10	2.6 B	13
654.22			
End of Boring			
-40			

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GBG CONSULTANTS INC.

SOIL BORING LOG

Page 1 of 1

Date 4/29/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION NE Ret. Wall, SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'15.03018" N, Longitude 87°53'38.21449" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-12 (STA IL Rte 132)
Station 27+14.25
Offset 60.24ft LT
Ground Surface Elev. 694.08 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 656.1 ft ▼
Upon Completion 656.1 ft ▽
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
694.08			
5 inches Asphalt Pavement 8 inches Crushed Aggregate Base Course			7
693.00	3		
Loose Brown and Gray, Moist SANDY LOAM	3 3	1.8 P	16
692.08			
Stiff to Hard Brown, Moist SILTY LOAM	2		
-5	3 5	1.2 B	17
	3 8 11	5.1 B	16
685.08	3		
Stiff to Hard Gray, Moist SILTY CLAY LOAM	6 9	4.3 B	20
-10			
	1 3 5	2.4 B	23
	2 3 4	1.8 B	26
-15			
677.58	2		
Very Stiff Brownish Gray, Moist SILTY LOAM	3 8	3.0 P	19
675.08	3		
Very Stiff, Gray, Moist, SILTY LOAM, with fine grain gravel	4 5	3.5 P	13
674.28			
-20			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Stiff, Gray trace Red/Orange, Moist, SILTY CLAY LOAM *(continued)*			
673.08	7		
Very Stiff Gray, Moist SILTY LOAM, trace gravel	11 12	3.9 B	15
670.08	3		
Stiff to Very Stiff Gray, Moist SILTY CLAY LOAM, trace gravel	4 5	2.0 B	18
-25			
	3 4 5	2.4 B	19
	2 4 6	2.7 B	23
-30			
660.38	3		
Stiff to Very Stiff Gray, Moist SILTY LOAM, trace gravel	4 9	1.8 P	13
-35			
▼	3		
	8 12	3.9 B	12
654.08			
End of Boring			
-40			

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

BBS, form 137 (Rev. 8-99)

FILE NAME = ...\049W047-60K80-018.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312-346-1131		CHECKED - DNB	REVISED -
	PLOT SCALE = 0:2.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

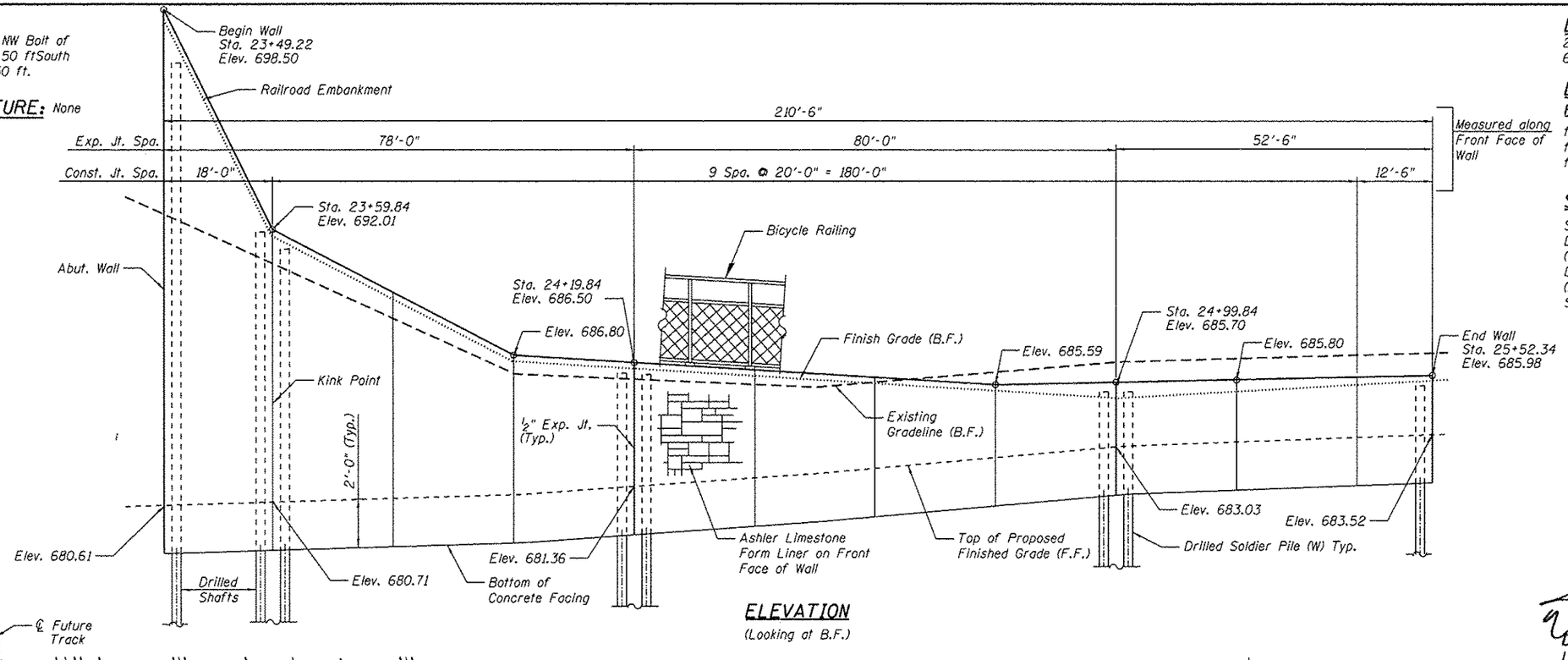
SOIL BORING LOGS – SHEET 4
STRUCTURE NO. 049–W047
SHEET NO. 18 OF 18 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	202
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			

BENCH MARK:

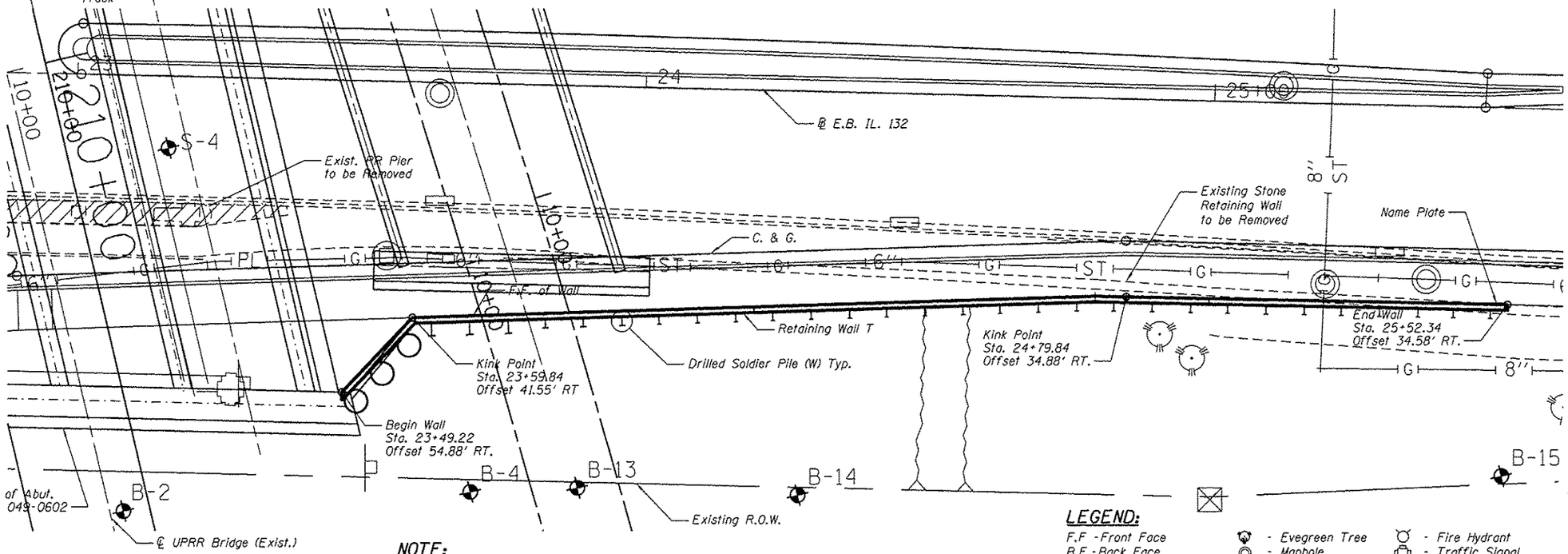
TMB "A" - Elev. 696.20. NW Bolt of Old billbord Foundation +/-50 ftSouth of Rte. 132 C.L. and +/-50 ft. West of Pine Grove Ave.

EXISTING STRUCTURE: None



ELEVATION

(Looking at B.F.)



NOTE:

1. Offsets are given from Baseline E.B. IL. 132 to F.F. of Wall.

PLAN

LEGEND:

F.F - Front Face
B.F. - Back Face
B-1 - Borehole B-1
- Tree
- Bush
- Evegreen Tree
- Manhole
- Catch Basin
- Power Pole
- Hand Hole
- Fire Hydrant
- Traffic Signal
- Light Pole
- Sign

DESIGN SPECIFICATIONS

2012 AASHTO LRFD Bridge Design, 6th Edition

DESIGN STRESSES

FIELD UNITS

f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)
fy = 36,000 psi (Structural Steel M270 Grade 36)

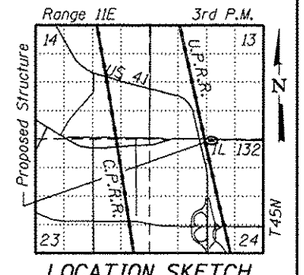
SEISMIC DATA

Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.054g
Design Spectral Acceleration at 0.2 sec. (S_{DS}) = 0.092g
Soil Site Class = C

DAVID N. BILOW
81003186
LICENSED STRUCTURAL ENGINEER
ILLINOIS

DATE: 6/21/16
LICENSE EXPIRES 11/30/16

APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures



LOCATION SKETCH

GENERAL PLAN & ELEVATION
RETAINING WALL T
IL. ROUTE 132 (GRAND AVE.)
F.A.P. 346 - SEC. 125X-N&J-SB-B
LAKE COUNTY
STATION 23+49.22 TO
STATION 25+52.34
STRUCTURE NO. 049-W048

FILE NAME = ...\049W048-60K80-001.dgn	USER NAME = eofitzpatrick	DESIGNED - MMH	REVISED -
HOH 3366		CHECKED - DNB	REVISED -
	PLOT SCALE = 21.3333 ' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

HARRY G. HOYER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS, 55 East Jackson Blvd., Suite 600, Chicago, Illinois 60604, 312/346-1133

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

IL. ROUTE 132 E.B. RETAINING WALL T
GENERAL PLAN AND ELEVATION
SHEET NO. 1 OF 13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	203
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		

INDEX OF SHEETS:

GENERAL NOTES:

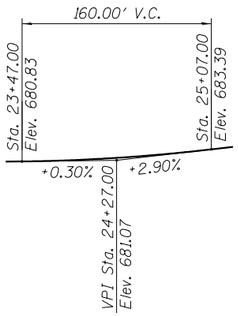
1. Wall stations and offsets are given to the front face of the concrete facing, and are measured from E.B. IL 132 Baseline.
2. Existing utilities in conflict with soldier pile wall construction shall be abandoned or relocated according to direction given in roadway plans
3. Reinforcement Bars designated (E) shall be Epoxy Coated.
4. All exposed concrete edges shall be chamfered $\frac{3}{4}$" except as noted.
5. Steel piling shall be according to AASHTO M270, Grade 50.
6. No field welding is permitted execept as specified in the contract documents.

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Structure Excavation	Cu. Yd.	203
Concrete Structures	Cu. Yd.	58
Stud Shear Connectors	Each	312
Untreated Timber Lagging	Sq. Ft.	1,570
Furnishing Soldier Piles (W Section)	Foot	560
Reinforcement Bars	Pound	21,670
Reinforcement Bars, Epoxy Coated	Pound	7,120
Drilled Shaft in Soil	Cu. Yd.	60
Geocomposite Wall Drain	Sq. Yd.	174
Pipe Underdrains for Structures, 4"	Foot	250
Drilling and Setting Soldier Piles (in Soil)	Cu. Ft.	3,064
Bicycle Railing	Foot	207
Name Plates	Each	1
Form Liner Textured Surface	Sq. Ft.	1,400
Furnish and Place Sandfill	Cu. Yd.	570
Staining Concrete Structure	Sq. Ft.	1400

STATION
23+49.22 to 25+52.34
E.B. IL 132
BUILT 20-- BY
STATE OF ILLINOIS
STRUCTURE NO. 049-W048

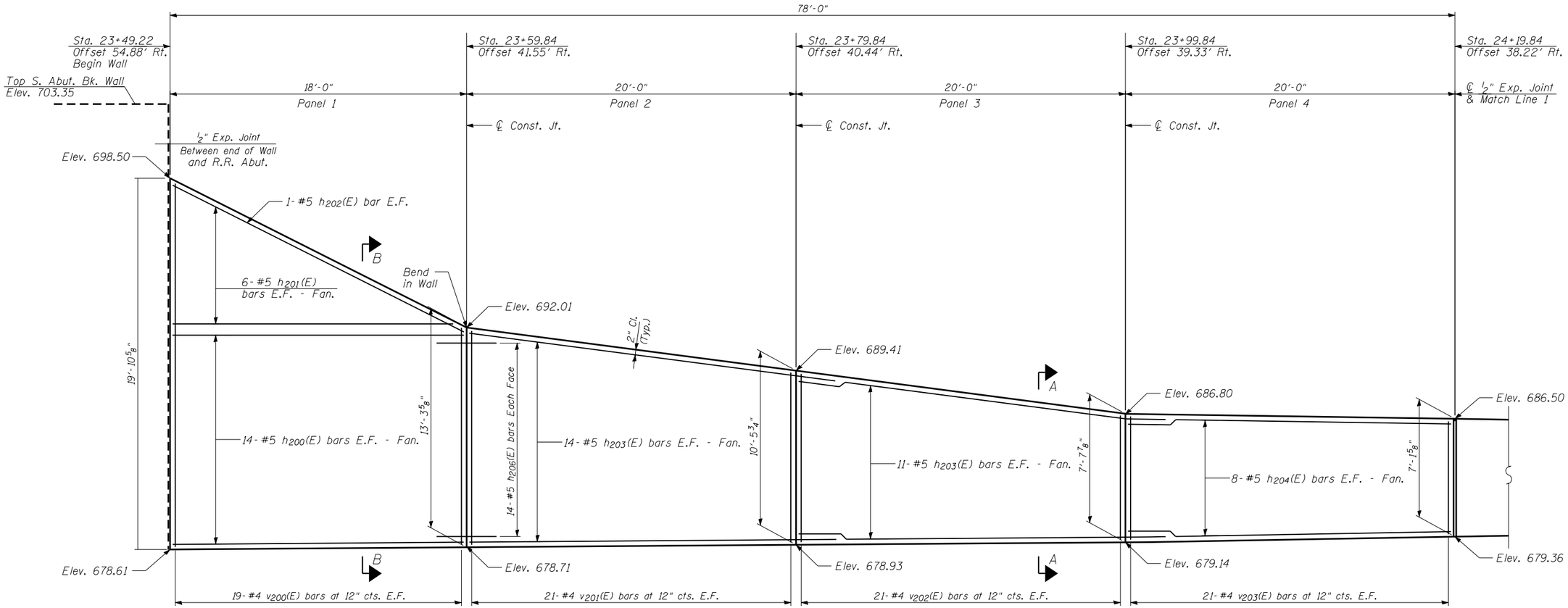
NAME PLATE
See Std. 515001



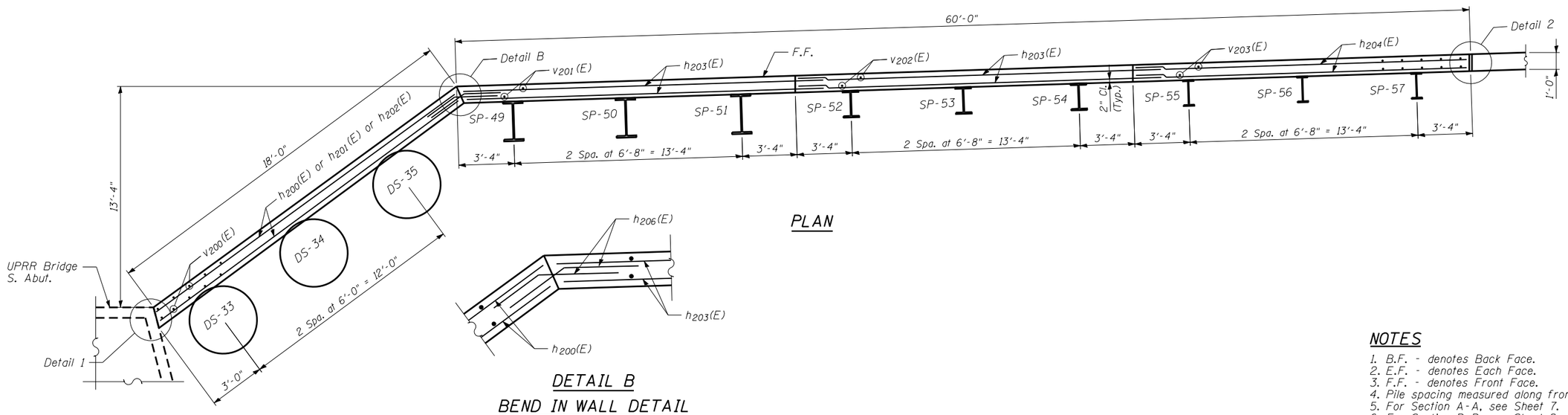
PROFILE GRADE
IL. 132 E.B. & W.B.

FILE NAME = ...\049W048-60K80-002.dgn	USER NAME = lestrada	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL NOTES, INDEX OF SHEETS, TOTAL BILL OF MATERIAL STRUCTURE NO. 049-W048
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -		SHEET NO. 2 OF 13 SHEETS
PROJECT NUMBER 3366	PLOT SCALE = 2:0.0000 ':' / ft.	DRAWN - R.VEJAR	REVISED -		
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131	PLOT DATE = 12/7/2016	CHECKED - BCS	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	204
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



ELEVATION



PLAN

DETAIL B
BEND IN WALL DETAIL

NOTES

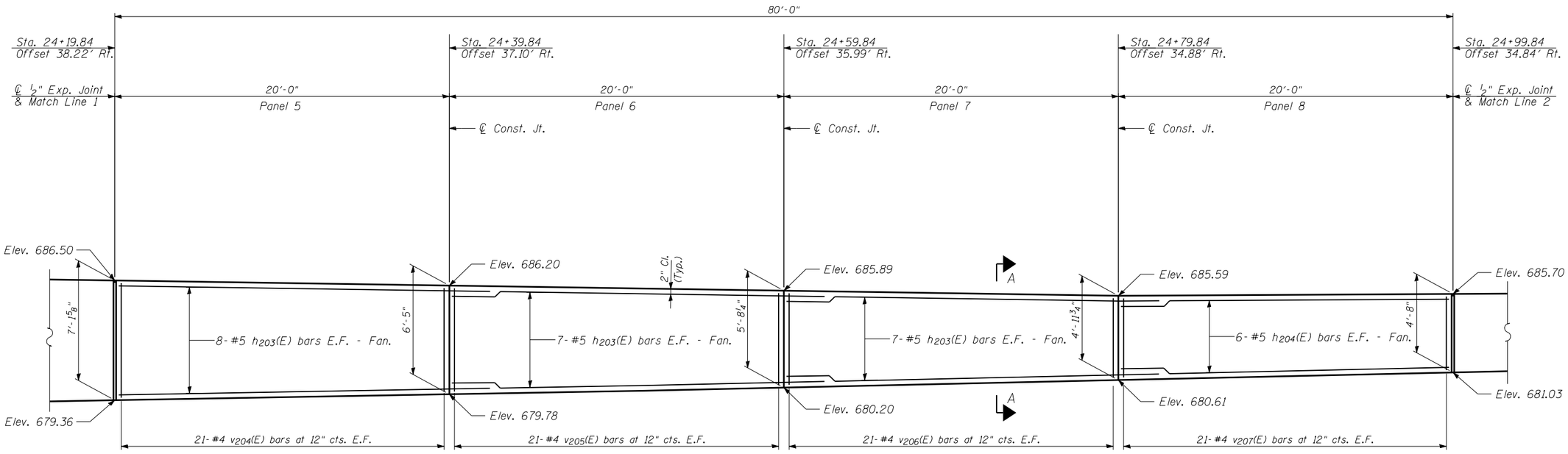
1. B.F. - denotes Back Face.
2. E.F. - denotes Each Face.
3. F.F. - denotes Front Face.
4. Pile spacing measured along front face of wall.
5. For Section A-A, see Sheet 7.
6. For Section B-B, see Sheet 8.

FILE NAME = ...\049W04B-60K80-003.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8311 PROJECT NUMBER 3366		CHECKED - DNB	REVISED -
	PLOT SCALE = 5:4.0000 '' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

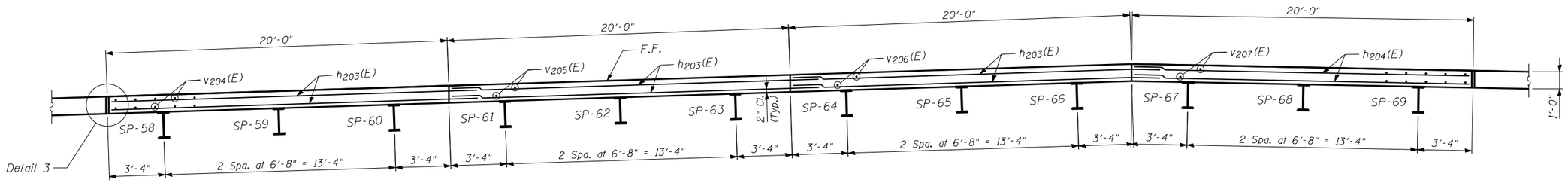
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PLAN AND ELEVATION STA. 23+49.22 TO STA. 24+19.84
STRUCTURE NO. 049-W048
SHEET NO. 3 OF 13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	205
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



ELEVATION



PLAN

NOTES

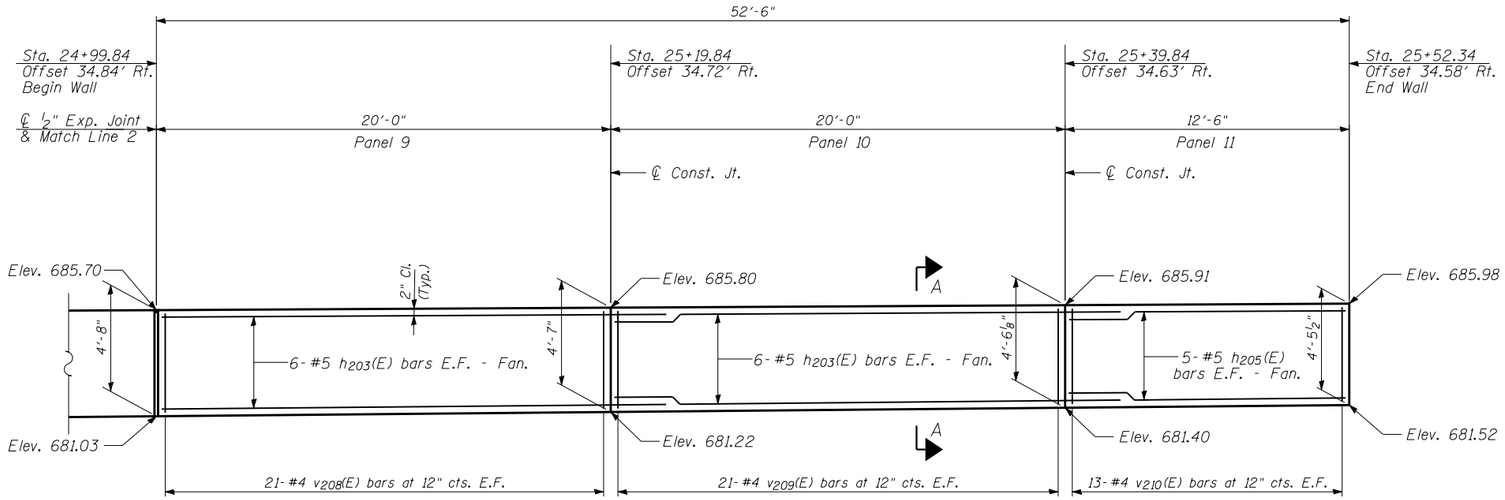
1. B.F. - denotes Back Face.
2. E.F. - denotes Each Face.
3. F.F. - denotes Front Face.
4. Pile spacing measured along front face of wall.
5. For Section A-A, see Sheet 7.

FILE NAME = ...\049W048-60K80-004.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366 — 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131	PLOT SCALE = 5:4.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

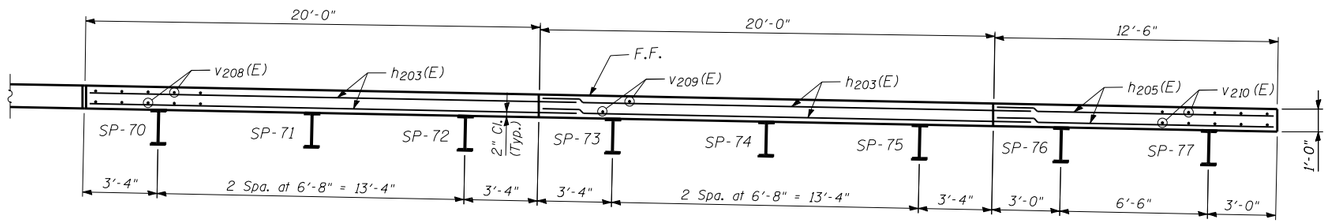
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PLAN AND ELEVATION STA. 24+19.84 TO STA. 24+99.84
STRUCTURE NO. 049-W048
SHEET NO. 4 OF 13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	206
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



ELEVATION



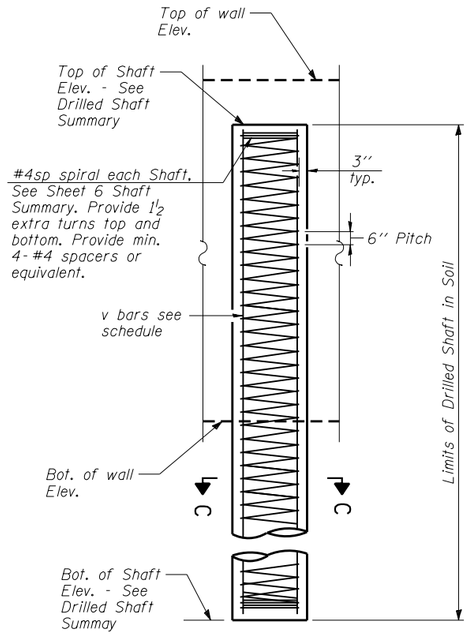
PLAN

NOTES

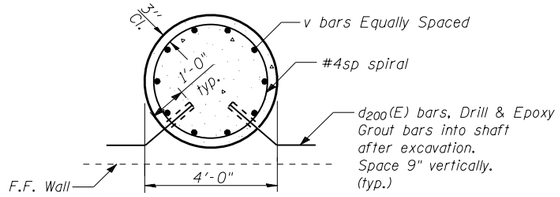
1. B.F. - denotes Back Face.
2. E.F. - denotes Each Face.
3. F.F. - denotes Front Face.
4. Pile spacing measured along front face of wall.
5. For Section A-A, see Sheet 7.

FILE NAME = ...\049W048-60K80-005.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PLAN AND ELEVATION STA. 24+99.84 TO STA. 25+52.34 STRUCTURE NO. 049-W048
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -		SHEET NO. 5 OF 13 SHEETS
PROJECT NUMBER 3366	PLOT SCALE = 5:4.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -		
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	207
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



DRILLED SHAFT ELEVATION

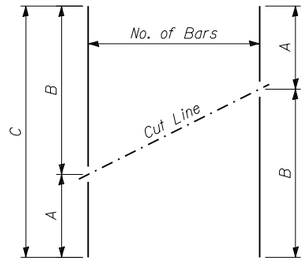


SECTION C-C

Drill & Epoxy Grout $d_{100}(E)$ bars according to Article 584 of the Standard Specifications. The cost shall be included with "Reinforcement Bars, Epoxy Coated".

BAR LIST AND BILL OF MATERIAL

Bar	No. of Sets Required	No. of Bars Per Set	A	B	C
$h_{201}(E)$	1	6	2'-5"	14'-10"	17'-3"
$v_{200}(E)$	1	19	12'-11"	19'-6"	32'-5"
$v_{201}(E)$	1	21	10'-1"	12'-11"	23'-0"
$v_{202}(E)$	1	21	7'-3"	10'-1"	17'-4"



SERIES OF BAR CUTTING DIAGRAM

See table for dimensions.
Order Bars Full Length. Cut as Shown Normal to Bar Axis and Use Remainder of Bars in Opposite Face.

BAR LIST AND BILL OF MATERIAL

	Bar	Number	Size	Length	Shape
	$d_{200}(E)$	350	#5	3'-0"	
	$h_{200}(E)$	28	#5	17'-8"	
	$h_{201}(E)$	6	#5	17'-3"	
	$h_{202}(E)$	2	#5	18'-9"	
	$h_{203}(E)$	118	#5	19'-8"	
	$h_{204}(E)$	28	#5	22'-0"	
	$h_{205}(E)$	10	#5	12'-2"	
	$h_{206}(E)$	28	#5	4'-4"	
	$v_{200}(E)$	19	#4	32'-5"	
	$v_{201}(E)$	21	#4	23'-0"	
	$v_{202}(E)$	21	#4	17'-4"	
	$v_{203}(E)$	42	#4	6'-9"	
	$v_{204}(E)$	42	#4	6'-1"	
	$v_{205}(E)$	42	#4	5'-4"	
	$v_{206}(E)$	42	#4	4'-8"	
	$v_{207}(E)$	42	#4	4'-4"	
	$v_{208}(E)$	42	#4	4'-3"	
	$v_{209}(E)$	42	#4	4'-2"	
	$v_{210}(E)$	26	#4	4'-1"	
**	sp_{200}	1	#4	45'-0"	
**	sp_{201}	1	#4	43'-0"	
**	sp_{202}	1	#4	41'-0"	
	v_{211}	28	#11	44'-8"	
	v_{212}	28	#11	42'-8"	
	v_{213}	28	#11	40'-8"	
	Reinforcement Bars, Epoxy Coated			Pound	7,120
	Concrete Structures			Cu. Yd.	58
	Furnishing Soldier Piles (W Section)			Foot	560
	Drilling and Setting Soldier Piles (in Soil)			Cu. Ft.	3,064
	Drilled Shaft in Soil			Cu. Yd.	60
	Reinforcement Bars			Pound	21,670

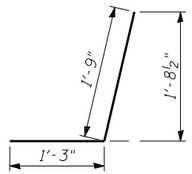
Minimum Lap for Spirals = 1½Turns
** Length is Height of Spiral.

DRILLED SHAFT SUMMARY

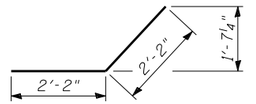
Shaft Mark	Diameter	Length	Top Elevation	Bottom Elevation	Reinforcing (Vertical)	Reinforcing (Horizontal)
DS-33	4'-0"	45	695.13	650.13	28v211	sp200
DS-34	4'-0"	43	692.97	649.97	28v212	sp201
DS-35	4'-0"	41	690.80	649.80	28v213	sp202

LAP SPLICES

Bar	Lap
#4	1'-8"
#5	2'-2"
#6	2'-7"
#8	4'-6"
#11	9'-0"



BAR $d_{200}(E)$



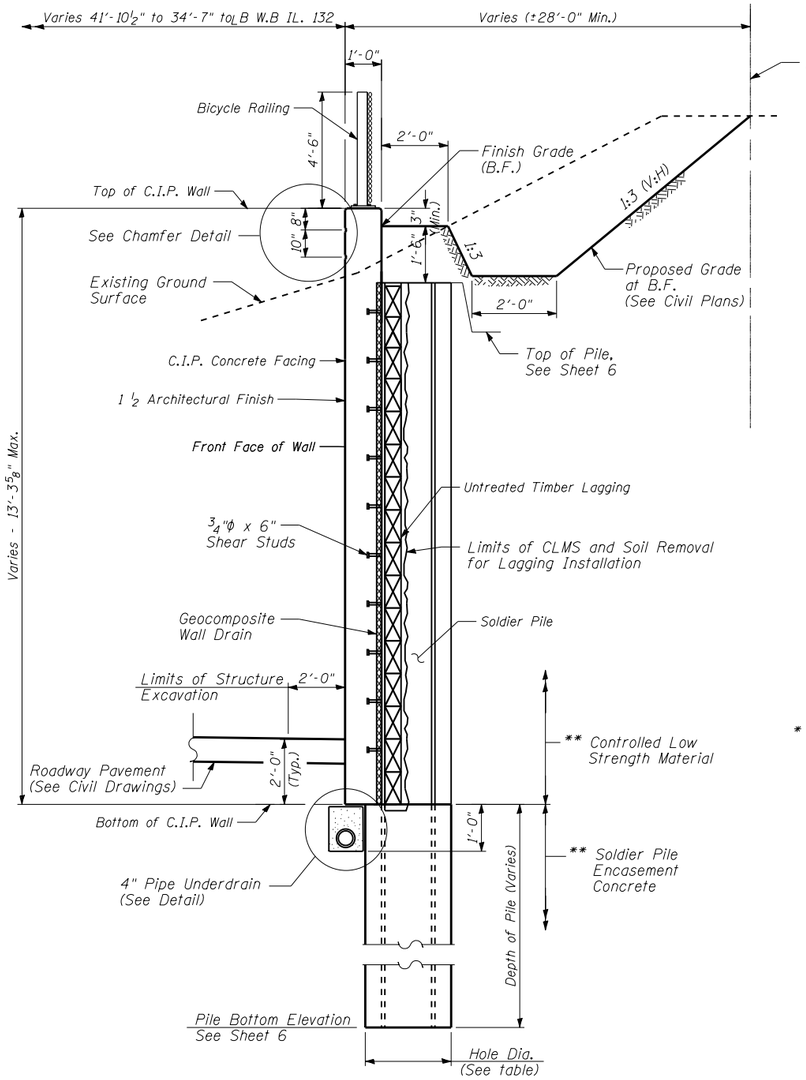
BAR $h_{206}(E)$

FILE NAME = ...\049W048-60K80-006.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131		CHECKED - DNB	REVISED -
	PLOT SCALE = 8:0.0000 '' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

REINFORCING DETAILS, DRILLED SHAFT & PILE SUMMARY
STRUCTURE NO. 049-W048
SHEET NO. 6 OF 13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	208
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			

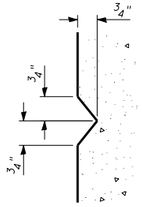


SECTION A-A

Sta. 23+59.85 to Sat. 25+52.34
(Drilled Soldier Pile Wall)

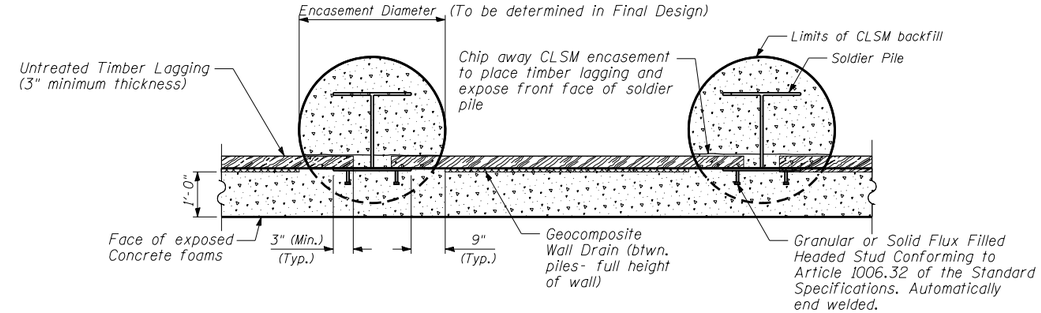
HOLE DIA.	
Pile Size	Hole Dia.
W36	4'-0"
W33	3'-6"
W30	3'-0"
W21	2'-6"
W18	2'-6"

** Included in the cost of "Drilling and Setting Soldier Piles (in Soil)".

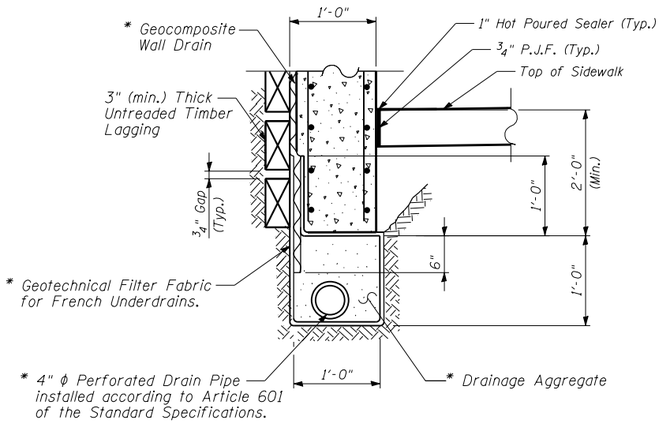


CHAMFER DETAIL

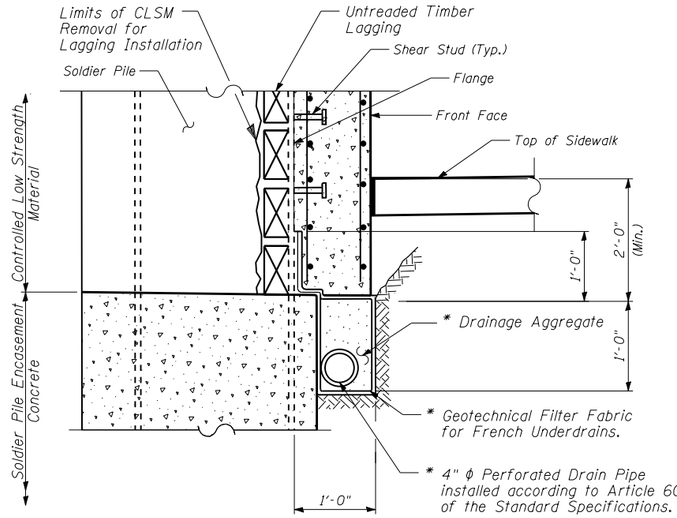
Cost of Chamfer included with "Concrete Structures"



TYPICAL SECTION THRU DRILLED SOLDIER PILE WALL



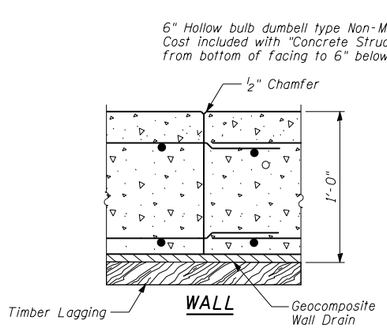
PIPE UNDERDRAIN DETAIL BETWEEN SOLDIER PILES



PIPE UNDERDRAIN DETAIL AT SOLDIER PILE

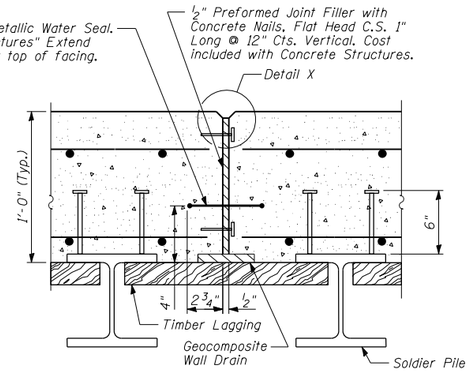
* Included in the cost of "Pipe Underdrains for Structures".

* Geotechnical Filter Fabric for French Underdrains.

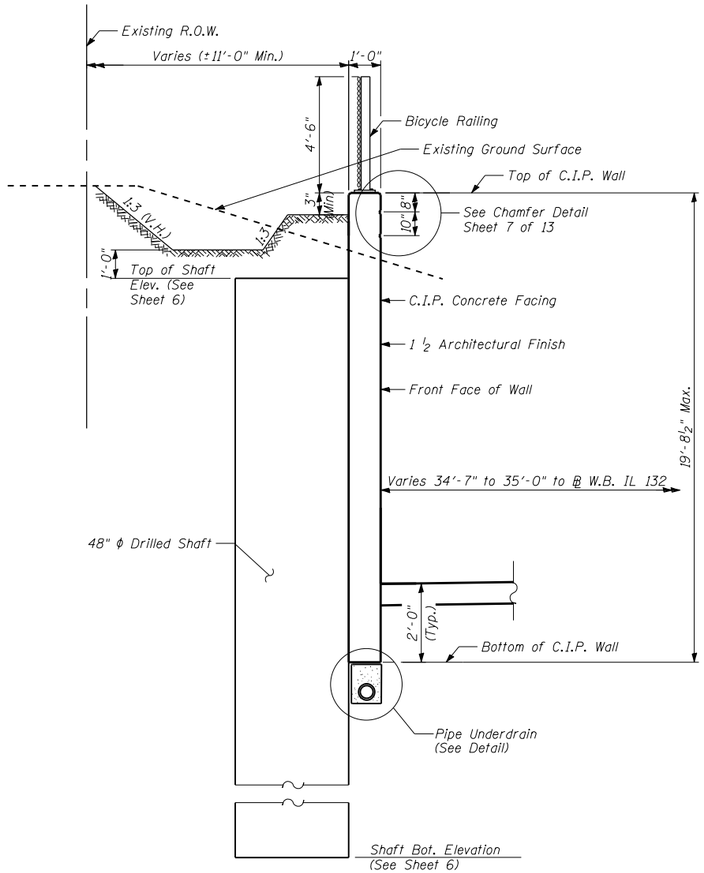


CONSTRUCTION JOINT DETAIL

WALL

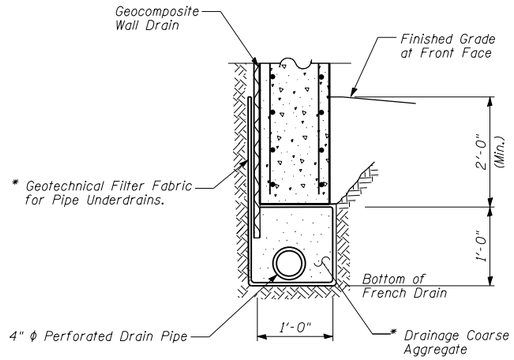


EXPANSION JOINT DETAIL AT SOLDIER PILE WALL DETAIL 2

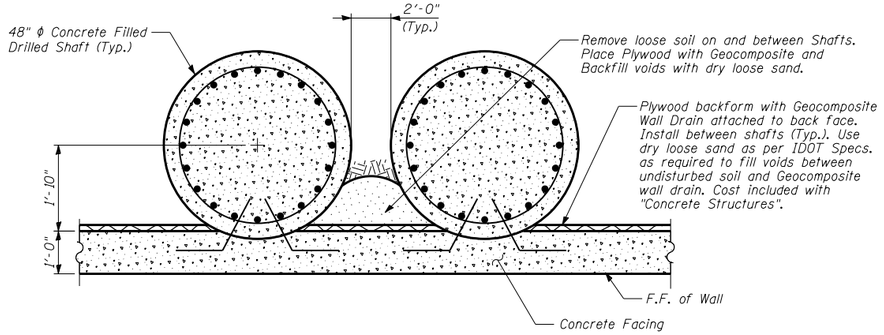


SECTION B-B

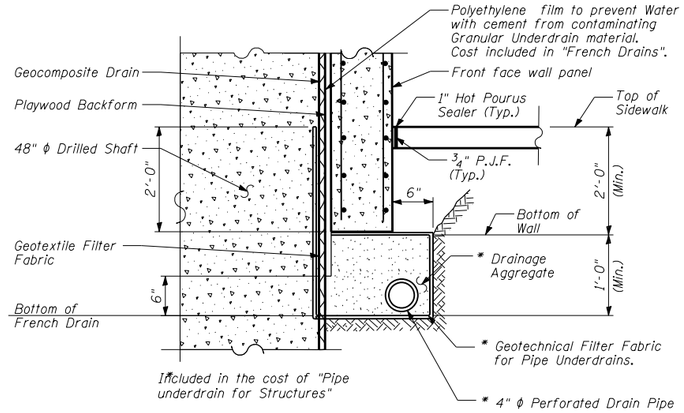
Sta. 23+47.75 to Sta. 23+59.84
(Tangent Pile Wall)



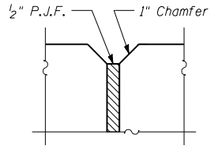
PIPE UNDERDRAIN DETAIL BETWEEN DRILLED SHAFTS



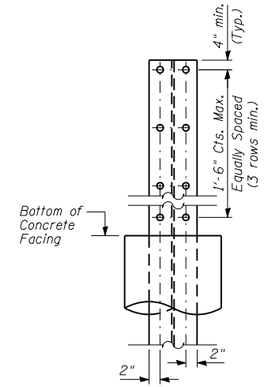
TYPICAL SECTION THRU TANGENT PILE WALL



PIPE UNDERDRAIN DETAIL AT DRILLED SHAFT



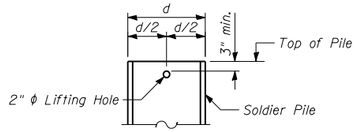
DETAIL X



SHEAR STUD CONNECTOR DETAIL

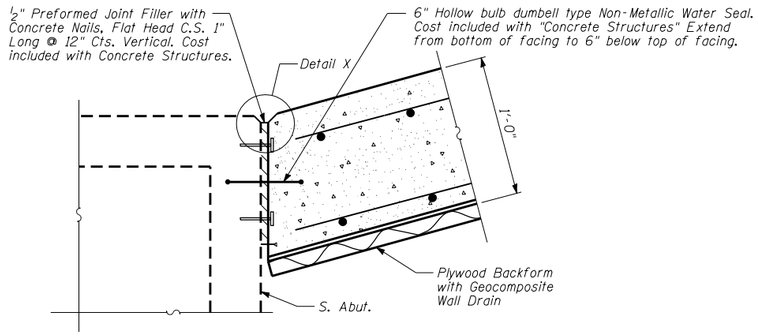
SOLDIER PILE SUMMARY

Pile Label	Pile Size	Length (ft.)	Top of Pile Elevation	Bot. of Pile Elevation
SP-49	W33X130	31	689.83	658.83
SP-50	W33X130	31	688.97	657.97
SP-51	W33X130	30	688.09	658.09
SP-52	W33X99	26	687.23	661.23
SP-53	W33X99	25	686.36	661.36
SP-54	W33X99	24	685.48	661.48
SP-55	W21X73	21	685.00	664.00
SP-56	W21X73	21	684.90	663.90
SP-57	W21X73	21	684.80	663.80
SP-58	W21X73	21	684.70	663.70
SP-59	W21X73	21	684.60	663.60
SP-60	W21X73	21	684.50	663.50
SP-61	W18X55	18	684.50	666.50
SP-62	W18X55	18	684.50	666.50
SP-63	W18X55	18	684.50	666.50
SP-64	W18X40	16	684.09	668.09
SP-65	W18X40	16	683.99	667.99
SP-66	W18X40	16	683.89	667.89
SP-67	W18X40	15	683.86	668.86
SP-68	W18X40	15	683.90	668.90
SP-69	W18X40	15	683.93	668.93
SP-70	W18X40	15	683.97	668.97
SP-71	W18X40	15	684.00	669.00
SP-72	W18X40	15	684.03	669.03
SP-73	W18X40	15	684.07	669.07
SP-74	W18X40	15	684.11	669.11
SP-75	W18X40	15	684.14	669.14
SP-76	W18X40	15	684.17	669.17
SP-77	W18X40	15	684.19	669.19



LIFTING HOLE DETAIL

Lifting hole to be provided if necessary. Cost included with "Furnishing Soldier Piles (W Section)"



DETAIL 1

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Structure Excavation	Cu. Yd.	203
Stud Shear Connectors	Each	312
Untreated Timber Lagging	Sq. Ft.	1,570
Geocomposite Wall Drain	Sq. Yd.	174
Pipe Underdrains for Structures, 4"	Foot	250

NOTES:

1. The Geocomposite Wall Drain shall be constructed according to Section 591 of the Standard Specifications.
2. The Contractor is responsible for the design and performance of the lagging using no less than 3" nominal rough-sawn thickness and the minimum tabulated unit stress in bending (f_b), used in the design of timber lagging shall be 1000 psi.
3. Stud shear connectors shall be 3/4" ϕ x 6" granular or solid flux filled headed studs, automatically end welded to the front flange of the soldier piles.

FILE NAME = ...\049W04B-60K80-008.dgn
USER NAME = aafitzpatrick
PLOT SCALE = 5:4.0000 '' / in.
PLOT DATE = 10/7/2016

DESIGNED - MMH
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DRAWN - R.VEJAR
CHECKED - BCS

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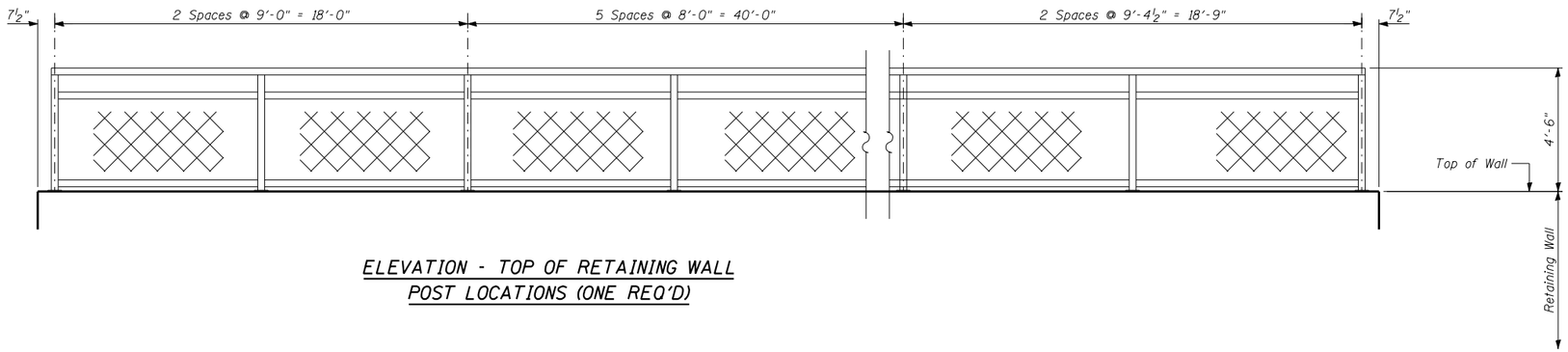
REVISED -
REVISED -
REVISED -

HOH — HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS — 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131 — PROJECT NUMBER 3366

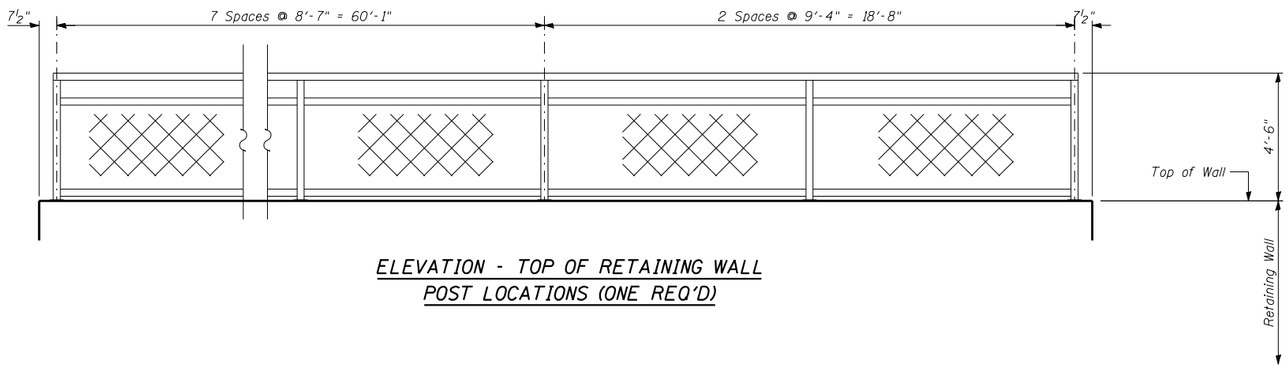
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WALL SECTIONS AND DETAILS – SHEET 2
STRUCTURE NO. 049-W048
SHEET NO. 8 OF 13 SHEETS

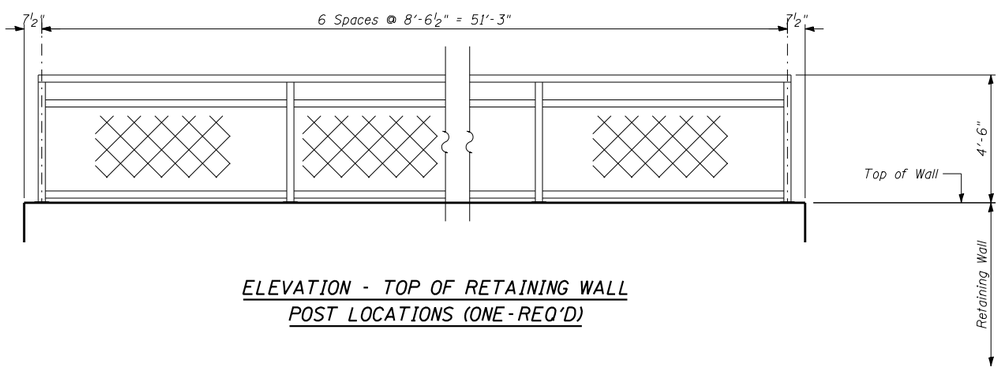
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	210
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



ELEVATION - TOP OF RETAINING WALL
POST LOCATIONS (ONE REQ'D)



ELEVATION - TOP OF RETAINING WALL
POST LOCATIONS (ONE REQ'D)



ELEVATION - TOP OF RETAINING WALL
POST LOCATIONS (ONE-REQ'D)

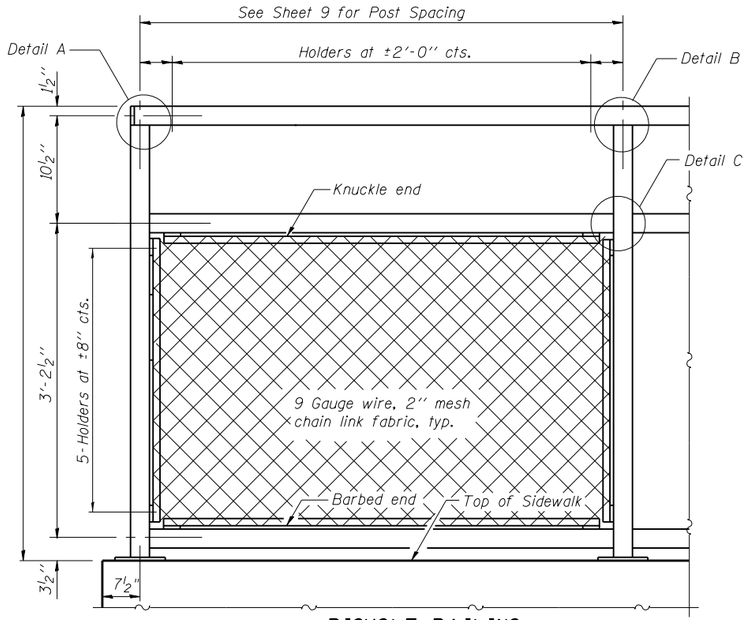
Note:
Posts are to be vertical. Fabricate railing sections to fit changes/slopes of wall top & maintain vertical orientation of posts.

FILE NAME = ...\049W048-60K80-009.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366	55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8311	DRAWN - R.VEJAR	REVISED -
	PLOT SCALE = 5:4.0000 '1' / in.	CHECKED - BCS	REVISED -
	PLOT DATE = 10/7/2016		

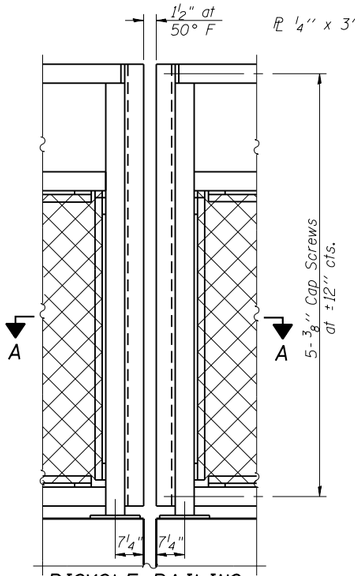
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BICYCLE RAILING – POST LOCATIONS
STRUCTURE NO. 049-W048
SHEET NO. 9 OF 13 SHEETS

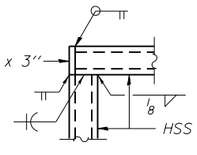
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	211
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



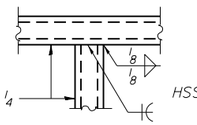
BICYCLE RAILING



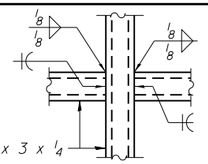
BICYCLE RAILING



DETAIL A

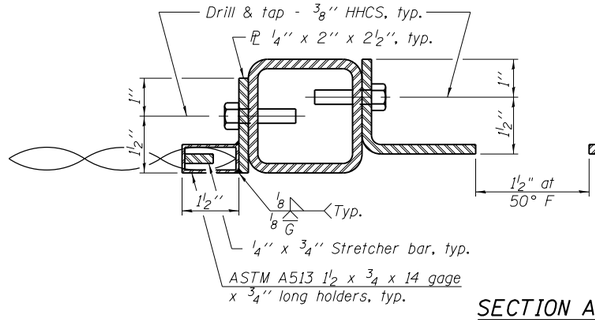


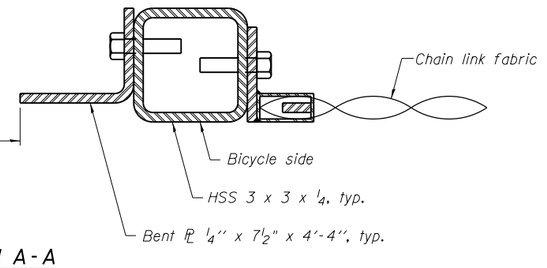
DETAIL B



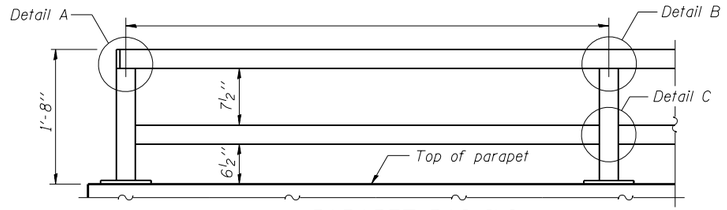
DETAIL C

All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specifications.

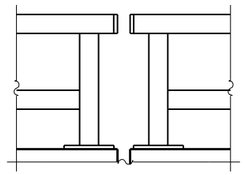




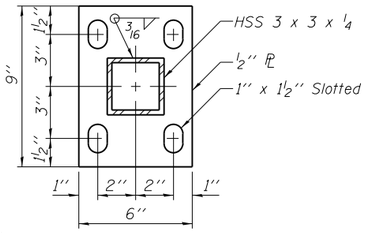
SECTION A-A



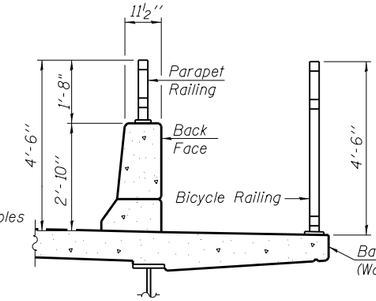
PARAPET RAILING ELEVATION
(Inside Face of Two Element Rail)



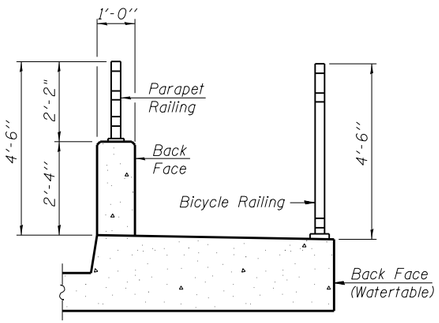
PARAPET RAILING ELEVATION AT EXPANSION JOINT
(Two Element Rail Shown - Three Element Rail Similar)



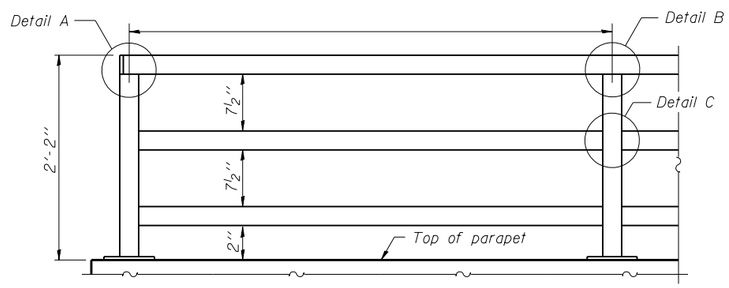
BASE PL



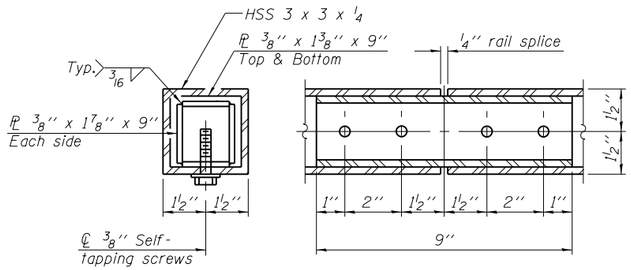
SECTION THRU DECK



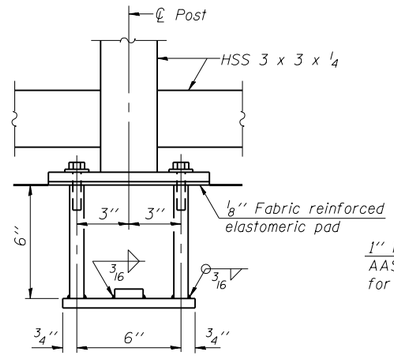
SECTION THRU SIDEWALK

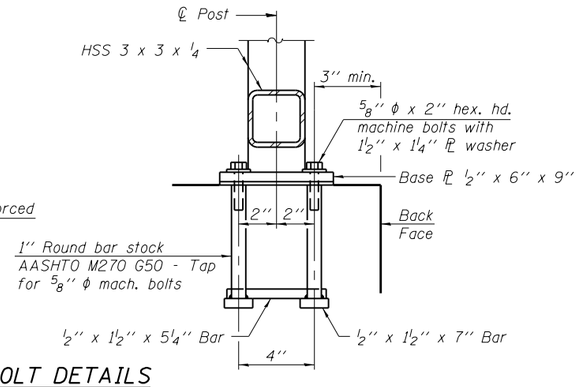


PARAPET RAILING ELEVATION
(Inside Face of Three Element Rail)



RAIL SPLICE





ANCHOR BOLT DETAILS

In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting ⅝" ϕ anchor rods according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.

BILL OF MATERIAL

Item	Unit	Quantity
Bicycle Railing	Foot	206.8
Parapet Railing	Foot	

R-29

1-12-15

(10'-0" Maximum Post Spacing)

FILE NAME = ...\049W048-60K80-010.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS, 55 East Jackson Blvd., Suite 600, Chicago, Illinois 60604, 312/346-8131, PROJECT NUMBER 3366		CHECKED - DNB	REVISED -
	PLOT SCALE = 0:2.0000 '' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BICYCLE RAILING DETAILS
STRUCTURE NO. 049-W048

SHEET NO. 10 OF 13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	212
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/26/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'13.79422" N, Longitude 87°53'43.55376" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-2 (STA IL Rte 132)
Station 23+17.24
Offset 76.41ft RT
Ground Surface Elev. 700.00 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 671.5 ft
Upon Completion NA ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
699.67			
4 inches crushed granite (ballast stone)			
698.50	3		7
Brown and Dark Brown SAND (Fill), some gravel	2 3		25
Very Stiff Black and Dark Gray, Moist SILTY LOAM	1		
-5	2 3	2.3 P	29
	1		
693.00	2 3	1.0 P	37
Very Stiff to Hard Gray and Brown, Moist SILTY LOAM	1		
-10	3 5	2.0 P	38
	3		
	7 9	4.7 B	16
686.50	5		
Very Stiff to Hard Brown with occasional trace of Gray, Moist SILTY LOAM, trace gravel	7 9	5.7 B	23
-15	2		
	4 6	3.3 P	18
	5		
-20	5 9	4.7 B	13

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
678.60	3		
Very Stiff to Hard Gray, Moist SILTY LOAM, trace gravel	4 6	2.2 B	18
	3		
-25	4 5	2.2 B	21
Encountered Cobble at 26'	6		
	8 10		26
Wet at 28.5'	4		
-30	7 7	4.5 B	24
	2		
665.10	4 5		17
11 inch layer of SAND, trace gravel, Gray, Fine to Coarse grain, Wet at 34'			
Very Stiff Gray, Moist SILTY LOAM	4		
-40	7 11	3.5 P	14

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

BBS, form 137 (Rev. 8-99)

Date 5/26/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'13.79422" N, Longitude 87°53'43.55376" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-2 (STA IL Rte 132)
Station 23+17.24
Offset 76.41ft RT
Ground Surface Elev. 700.00 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 671.5 ft
Upon Completion NA ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff Gray, Moist SILTY LOAM *(continued)*	3		
-45	8 13	3.8 P	12
653.00			
Gray, Fine to Coarse grain, Wet SAND, trace gravel Switched to mud rotary at 47' Sand blow in at 47' Switched to mud rotary at 47' Drilled to 53' to clear out augers			
646.50	6		
Very Stiff Gray, Moist SILTY LOAM, trace gravel	10 11	3.9 B	14
-55	5		
	8 10	2.4 B	16

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff Gray, Moist SILTY LOAM, trace gravel *(continued)*	2		
-65	3 5	3.1 B	15
631.50			
Medium Dense to Dense Gray, Fine to Medium grain, Wet SAND, trace gravel	10		
-70	12 11		20
	16		
-75	20 27		15
621.50			
Very Stiff Gray, Moist SILTY LOAM, trace gravel	4		
-80	6 8	2.7 B	16

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

BBS, form 137 (Rev. 8-99)

Date 5/26/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'13.79422" N, Longitude 87°53'43.55376" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-2 (STA IL Rte 132)
Station 23+17.24
Offset 76.41ft RT
Ground Surface Elev. 700.00 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 671.5 ft
Upon Completion NA ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff Gray, Moist SILTY LOAM, trace gravel *(continued)*	5		
-85	7 12		19
	10		
	10 13	3.3 P	17
610.00			
End of Boring			
-100			

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

BBS, form 137 (Rev. 8-99)

FILE NAME = ...\049W048-60K80-011.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366	PLOT SCALE = 0:2.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS – SHEET 1
STRUCTURE NO. 049–W048
SHEET NO. 11 OF 13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	213
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		

Illinois Department of Transportation
Division of Highways
GBG CONSULTANTS INC.

SOIL BORING LOG

Date 6/1/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'13.82437" N, Longitude 87°53'42.74013" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. _____
Station _____

BORING NO. B-4 (STA IL Rte 132)
Station 23+78.20
Offset 71.60ft RT
Ground Surface Elev. 692.10 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 667.9 ft
Upon Completion NA ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown and Dark Brown, Moist SILTY CLAY LOAM (Fill), some organics, trace gravel 691.10	4		21
Brown and Dark Brown, Moist SILTY LOAM (Fill), trace gravel	3 5	2.6 B	17
688.00	3		
Brown, Dark Brown, and Black, Moist SILTY LOAM (Fill), trace gravel -5	6 4	4.8 P	19
	2		
684.80	3 4	2.5 P	18
Very Stiff Brown, Moist SILTY LOAM, trace gravel	4		
-10	5 7	2.2 B	13
	5		
	7 10	4.0 P	19
677.70	3		
Hard Brown and Gray, Moist SILTY LOAM, trace gravel -15	6 8	7.3 B	18
676.10	5		
Very Stiff Gray, Moist SILTY LOAM, trace gravel	6 10	3.3 B	19
	4		
-20	6 9	3.5 B	20
Very Stiff Gray, Moist SILTY LOAM, trace gravel (continued)	3		
	3 6	2.6 B	24
	2		
6 inch layer of SAND, trace gravel, Gray, Fine to Medium grain, Wet at 24' -25	7 6	1.0 P	13
	4		
	6 6	2.5 P	15
	3		
-30	4 7	2.6 B	13
	5		
Water used to flush sand in augers starting at 35' -35	10 13	4.5 B	12
653.60	13		
Medium Dense Brown and Gray, Fine to Medium grain, Wet SAND 652.30 -40	13 13		19

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GBG CONSULTANTS INC.

SOIL BORING LOG

Date 6/1/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'13.82437" N, Longitude 87°53'42.74013" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. _____
Station _____

BORING NO. B-4 (STA IL Rte 132)
Station 23+78.20
Offset 71.60ft RT
Ground Surface Elev. 692.10 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 667.9 ft
Upon Completion NA ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Medium Dense Gray, Medium to Coarse grain, Wet SAND, trace gravel (continued)	7		
647.60	8 8	5.1 B	14
Hard Gray, Moist SILTY LOAM, trace gravel -45	8 8	4.8 P	15
	3		
-50	6 8	4.8 P	15
	6		
-55	9 13	4.9 B	14
	12		
632.70	13 23	3.5 P	17
Medium Dense Gray, Fine to Medium grain, Wet SAND (continued)	13		
	16 19		17
-65			
623.60	14		
Medium Dense Gray, Medium to Coarse grain, Wet SAND, trace gravel -70	14 13		12
618.60	3		
Stiff to Very Stiff Gray, Moist SILTY LOAM, trace gravel -75	6 9	2.2 B	23
	7		
-80	10 12	2.2 B	13

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GBG CONSULTANTS INC.

SOIL BORING LOG

Date 6/1/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'13.82437" N, Longitude 87°53'42.74013" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. _____
Station _____

BORING NO. B-4 (STA IL Rte 132)
Station 23+78.20
Offset 71.60ft RT
Ground Surface Elev. 692.10 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 667.9 ft
Upon Completion NA ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Stiff to Very Stiff Gray, Moist SILTY LOAM, trace gravel (continued)	7		
	9 16	3.3 B	14
-85	15		
	19 21	2.9 B	
	21		
	22 22	1.8 B	
603.60			
End of Boring			15
-90			
-95			
-100			

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

BBS, form 137 (Rev. 8-99)

FILE NAME = ...\049W048-60K80-012.dgn
USER NAME = aafitzpatrick
PLOT SCALE = 0:2.0000 ':' / in.
PLOT DATE = 10/7/2016

HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS
PROJECT NUMBER 3366
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131

DESIGNED - MMH	CHECKED - DNB	DRAWN - R.VEJAR	CHECKED - BCS
REVISED -	REVISED -	REVISED -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS – SHEET 2
STRUCTURE NO. 049-W048
SHEET NO. 12 OF 13 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	214
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Page 1 of 1

Date 5/31/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION SE Ret. Wall, SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'13.83067" N, Longitude 87°53'42.48955" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-13 (STA IL Rte 132)
Station 23+96.98
Offset 70.42ft RT
Ground Surface Elev. 692.09 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 667.5 ft
Upon Completion 667.5 ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown and Dark Brown, Moist SILTY CLAY LOAM (Fill), with organics, trace gravel			
691.09			
	4		20
Brown and Black, Moist SILTY CLAY LOAM (Fill), trace organics, gravel	5 6	2.6 B	24
	4		
687.19 -5	5 8	4.0 P	20
Hard Brown, Moist SILTY LOAM, trace gravel	2		
	2 4	4.8 P	20
	4		
-10	5 9	6.0 P	17
680.59	5		
Hard Gray and Brown, Moist SILTY LOAM, trace gravel	7 10	4.7 B	16
678.59	3		
Very Stiff to Hard Gray, Moist SILTY LOAM, trace gravel	6 7 -15	2.4 B	18
	5		
	6 8	2.2 B	19
	3		
-20	7 9	7.0 P	22
Very Stiff to Hard Gray, Moist SILTY LOAM, trace gravel (continued)	3		
	4 6	2.9 B	19
	4		
-25	8 10	1.5 P	14
666.09	6		
Medium Dense Gray, Fine to Coarse grain, Wet SAND, trace gravel	6 6	2.5 P	19
665.19 / 664.59			
Very Stiff Gray, Wet SILTY LOAM			
End of Boring			
-30			
-35			
-40			

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Page 1 of 1

Date 5/31/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION SE Ret. Wall, SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'13.81423" N, Longitude 87°53'41.85325" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-14 (STA IL Rte 132)
Station 24+44.78
Offset 70.70ft RT
Ground Surface Elev. 693.00 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 670.0 ft
Upon Completion 670.0 ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown and Black, Moist SILTY CLAY LOAM (Fill), with organics	5		21
690.90	6 7	7.0 P	
Grayish Brown, Moist SILTY LOAM (Fill), trace organics	3		
-5	8 9	6.5 P	18
686.10	8		
Very Stiff Gray and Brown, Moist SILTY LOAM	10	3.3 B	22
684.50	4		
Hard Grayish Brown, Moist SILTY LOAM	7 10 -10	7.3 B	14
682.00	4		
Very Stiff Gray, Moist SILTY CLAY LOAM, trace gravel	6 9	2.9 B	17
	5		
-15	5 7	2.6 B	18
	5		
	6 9	3.3 B	21
	3		
-20	6 9	3.7 B	17
Very Stiff Gray, Moist SILTY CLAY LOAM, trace gravel (continued)	5		
	6 8	2.9 B	24
	3		
-25	5 8	2.4 B	24
667.00	2		
Loose Gray, Fine to Medium grain, Wet SAND, trace gravel	2 4		24
665.50			
End of Boring			
-30			
-35			
-40			

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Page 1 of 1

Date 5/3/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION SE Ret. Wall, SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'13.84290" N, Longitude 87°53'40.32374" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-15 (STA IL Rte 132)
Station 25+59.46
Offset 64.48ft RT
Ground Surface Elev. 692.24 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 665.2 ft
Upon Completion 665.2 ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Black to Dark Brown, Moist TOPSOIL			
691.91 / 691.24			22
Brown, Moist SILTY LOAM	3		
Brown and Gray, Moist SILTY LOAM	6 8		20
688.74	4		
Hard Brown, Moist SILTY LOAM	8 11 -5	6.3 P	18
	4		
	8 11	6.8 P	19
	3		
-10	6 11	6.3 B	20
681.24	6		
Medium Dense Brown, Fine to Medium grain, Moist SAND, trace gravel	6 6	6.9 B	13
680.24			
Hard Brown, Moist SILTY LOAM	4		
678.74			
Very Stiff to Hard Gray, Moist SILTY LOAM, trace gravel	6 12 -15	5.3 B	18
	3		
	5 8	2.9 B	12
	2		
-20	5 7	4.1 B	19
Very Stiff to Hard Gray, Moist SILTY LOAM, trace gravel (continued)	5		
	7 9	3.9 B	22
	2		
-25	5 8	2.0 P	24
	6		
665.24 / 664.74	8 7	2.0 P	18
Gray, Fine to Coarse grain, Wet SAND, trace gravel			
End of Boring			
-30			
-35			
-40			

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

BBS, form 137 (Rev. 8-99)

FILE NAME = ...\049W048-60K80-013.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SOIL BORING LOGS – SHEET 3 STRUCTURE NO. 049–W048
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -		
PROJECT NUMBER 3366	PLOT SCALE = 0i2.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -		SHEET NO. 13 OF 13 SHEETS
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1833	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	215
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		

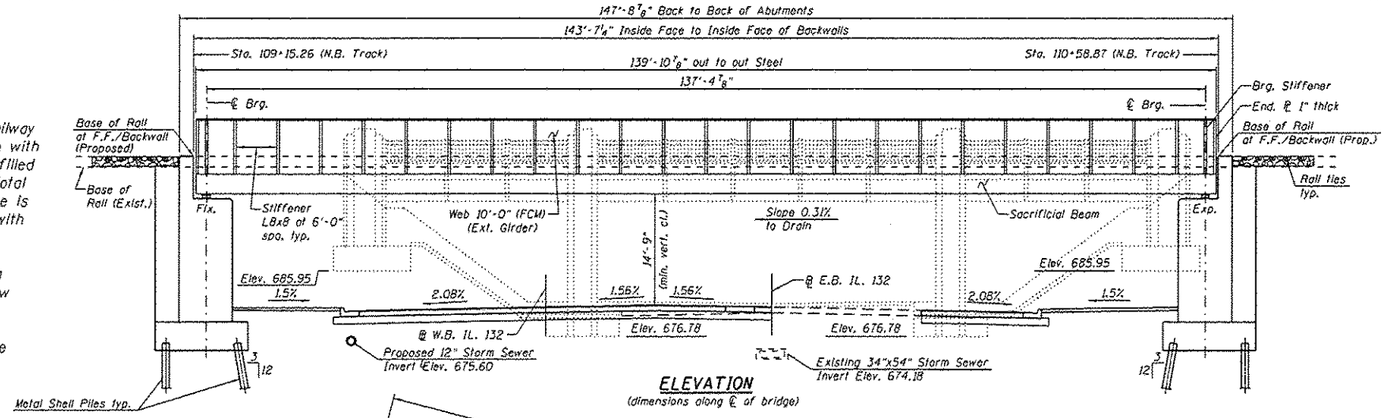
BENCH MARK:

TMB "A" - Elev. 696.20. NW Bolt of old billbord foundation ±50 ft. south of Rte. 132 ℄ and ±50 ft. west of Pine Grove Ave.

EXISTING STRUCTURE:

Existing bridge S.N. 049-0106 was constructed in 1938 for C&NW Railway as Bridge No. 296 in Wisconsin Division. It is a three span structure with four steel beam stringers for each track supporting steel T-frames filled with concrete. The middle span is 51'-7" with end spans of 31'-6" Total length of the deck is 114'-7" and a width of 46 ft. Bridge center line is skewed 14°-33'. Substructure consists of wall type open abutments with slope walls and multi-column piers supported on spread footings.

The existing structure will be completely removed and replaced with a single span through girder superstructure. The total length of the new bridge will be 128'-0" between abutment faces at right angle to the centerline of IL 132. The deck width will be 63'-0" feet and it will have closed abutments on pile foundations. A temporary shoofly bridge will be constructed to maintain railroad traffic during construction. No salvage.



ELEVATION

(dimensions along ℄ of bridge)

DESIGN SPECIFICATIONS

2010 AREMA Manual for Railway Engineering
2007 BNSF Railway-Union Pacific Railroad Guide for Railroad Grade Separation Project

DESIGN STRESSES

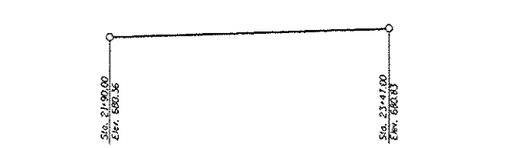
FIELD UNITS
f'c = 4,000 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (Structural Steel ASTM A709 Grade 50)

LOADING

Cooper E80 or Alternative Load on 4 Axles per AREMA Manual
Sacrificial beam vehicle impact load = 100 Kips

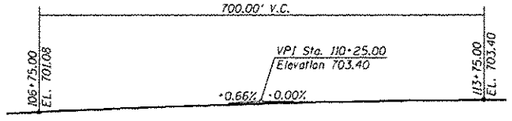
SEISMIC DATA

Base Acceleration Coefficient (AR) = 4.0%g (100yr.)
Site Coefficient (S) = 1.0
Damping Adjustment Factor (D) = 1.0
Seismic Response Coefficent = 10.0 (100yr.)



TOP OF RAIL PROFILE (PROPOSED)

(Southbound Main Track)

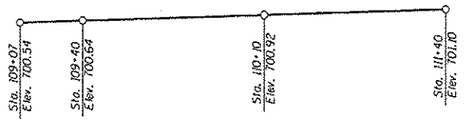


TOP OF RAIL PROFILE (PROPOSED)

(Northbound Main Track)

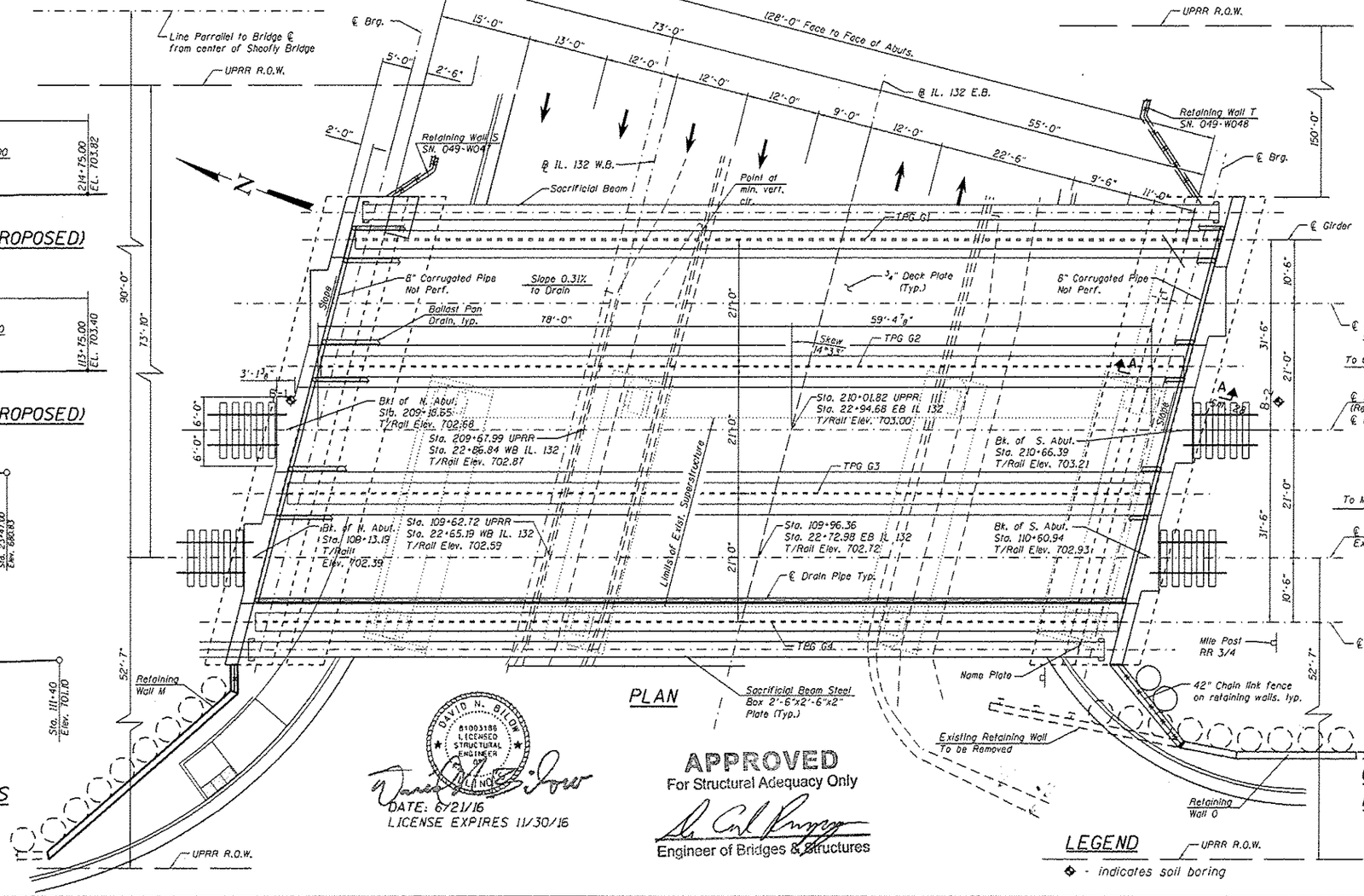
PROFILE GRADE

(Along Proposed ℄ EB and ℄ WB IL 132)



TOP OF RAIL ELEVATIONS

S.B. Track - East Rail (Existing)



PLAN

LOCATION SKETCH

DAVID N. BILOW
81003186
LICENSED STRUCTURAL ENGINEER
ILLINOIS

DATE: 6/21/16
LICENSE EXPIRES 11/30/16

APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures

LEGEND

◆ - indicates soil boring

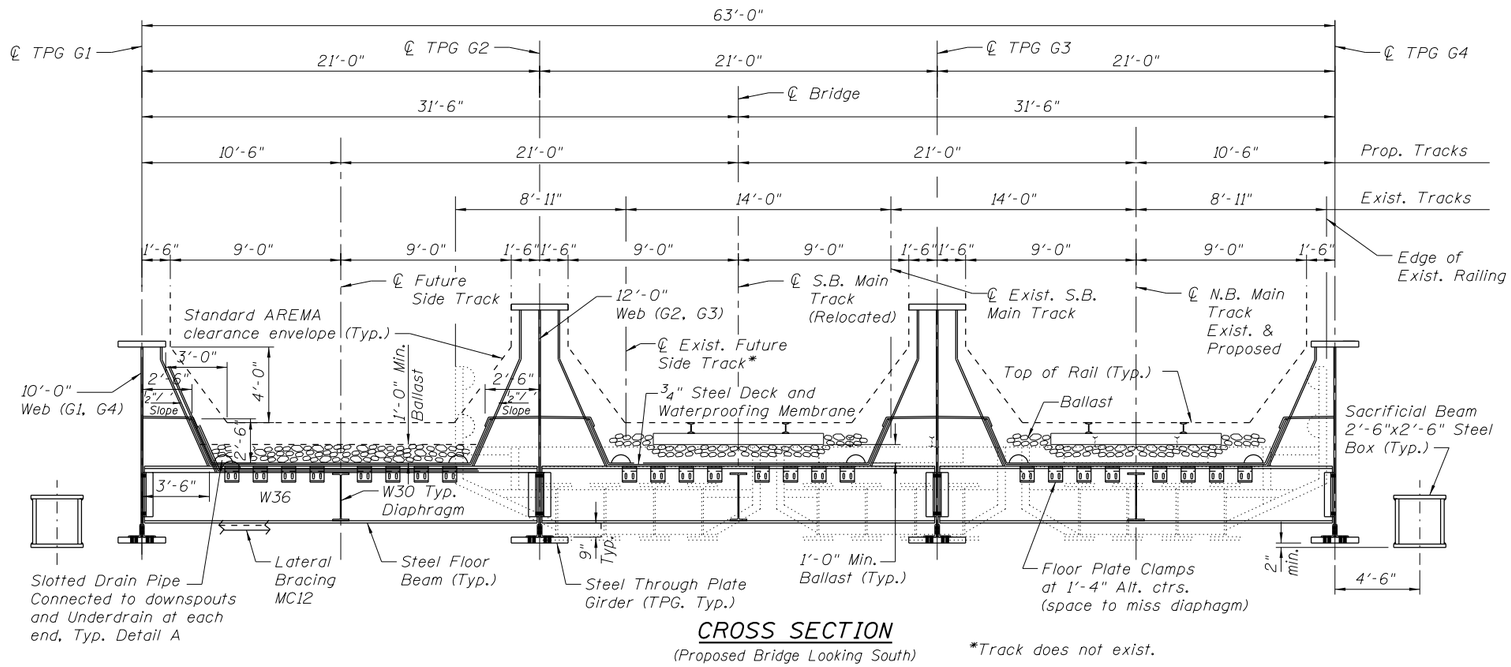
GENERAL PLAN
UPRR BRIDGE MP 37.75
MILWAUKEE SUBDIVISION
OVER IL. ROUTE 132 (GRAND AVE.)
F.A.P. 346 - SEC. 125X-N&J-SB-B
GURNEE, LAKE COUNTY, ILLINOIS
STATION 22+94.68EB
STRUCTURE NO. 049-0602

FILE NAME = ...\049Ø6202-60KB0-001.dgn	USER NAME = lestrada	DESIGNED - MMH	REVISED -
HOH 3366		CHECKED - DNB	REVISED -
	PLOT SCALE = 256±0.0000 '/ in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 12/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION
STRUCTURE NO. 049-0602
SHEET NO. 1 OF 43 SHEETS

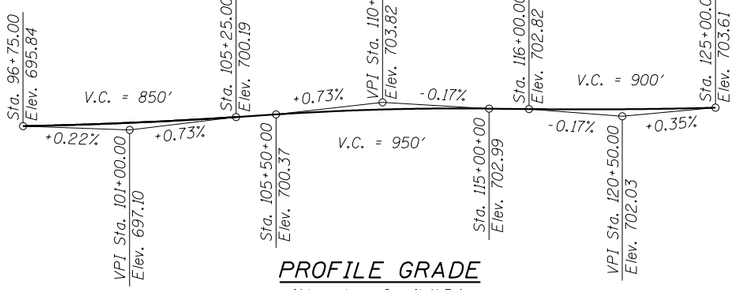
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	216
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		



CROSS SECTION

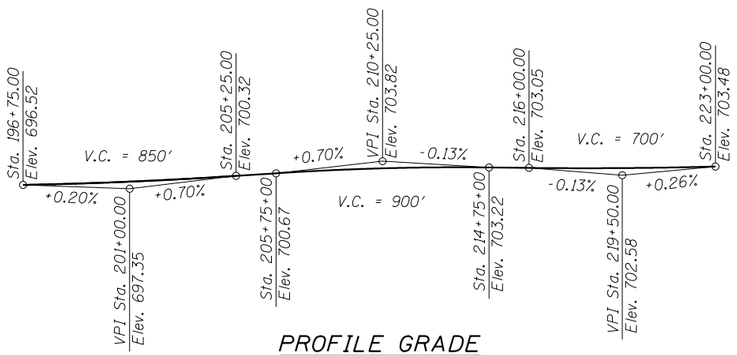
(Proposed Bridge Looking South)

*Track does not exist.



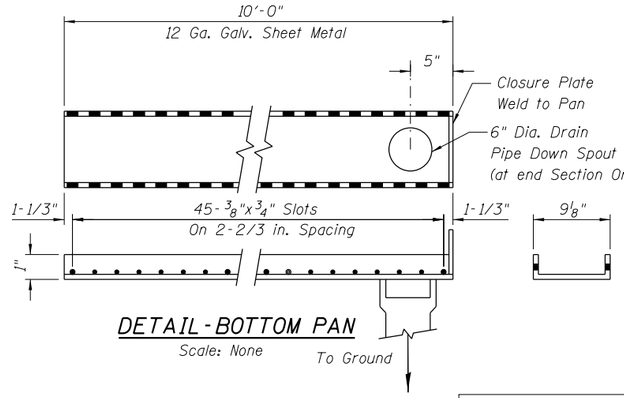
PROFILE GRADE

(Along top of rail N.B.)



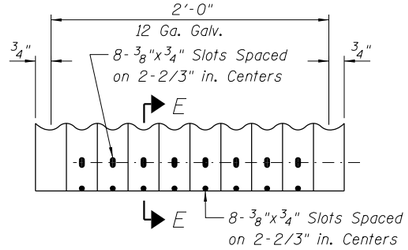
PROFILE GRADE

(Along top of rail S.B.)



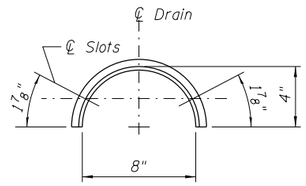
DETAIL-BOTTOM PAN

Scale: None

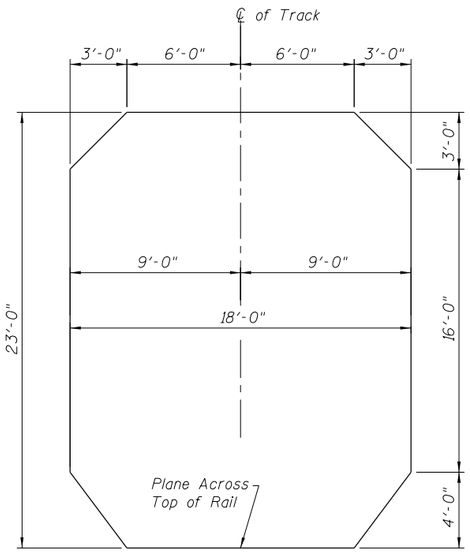


DETAIL-DRAIN PIPE

Note: Lap Drain Pipe one Corrugation at each end



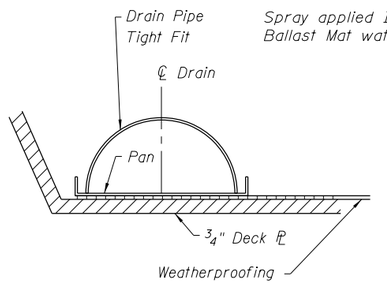
SECTION E-E



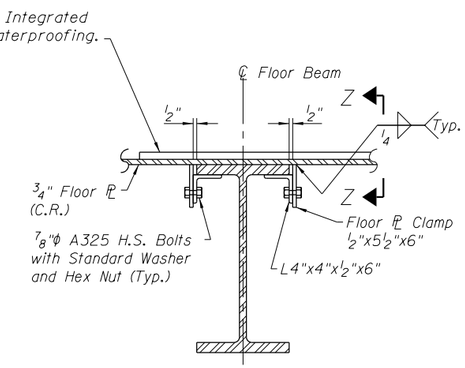
MINIMUM CLEARANCE ON TANGENT TRACK

NOTE:

For curved track lateral clearance at each side of ℄ shall be increased 1½" per degree of curvature.



DETAIL-A

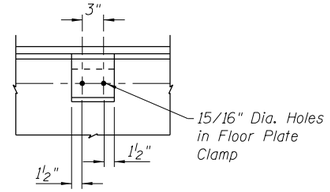


SECTION THRU FLOOR BEAM

U.P.R.R.
BUILT 20-- BY
STATE OF ILLINOIS
F.A.P. 346 SEC 125X-N&J-SB-B
STATION 22+94.68 (EB)
LOADING COOPER E80 & ALT.
STRUCTURE NO. 049-0602

NAME PLATE

SEE Std. 515001



SECTION Z-Z

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HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-83		CHECKED - DNB	REVISED -
	PLOT SCALE = 192:0.0000 ':' / ft.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 12/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CROSS SECTION AND DETAILS
STRUCTURE NO. 049-0602
SHEET NO. 2 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	217
DATE: 9/20/2013		CONTRACT NO. 60K80		
ILLINOIS FED. AID PROJECT				

GENERAL NOTES

1. Workmanship and materials shall be in accordance with the GENERAL CONDITIONS AND SPECIFICATIONS Adopted by the Union Pacific Engineering Department and dated April 13, 2011 (UP General Conditions and Specification) except as modified by IDOT and the AREMA MANUAL for RAILWAY ENGINEERING dated 2010.
2. For any procedure, including demolition of existing structures, earth excavation, temporary shoring, sheeting installation, and erection that may affect rail operations, the
3. Contractor shall submit for Engineer's review both work plans and shop drawings.
4. Dust shall be controlled by uniform applications of sprinkled water, only when directed by the Engineer.
5. Procurement of all permits, and payment thereof, shall be the Contractor's responsibility.
6. The Contractor shall be responsible for verifying all existing conditions and elevations at the site and must adapt this work to actual conditions in a manner approved by the Engineer.
   All construction debris shall be removed by the Contractor.
   It shall be Contractor's responsibility to verify the location of all utilities prior to
7. starting construction. Contact j.u.l.i.e. at 800-892-0123.
8. No construction joints except those shown on the plans will be allowed unless approved by the Engineer.
9. Do not scale drawings for construction.
10. Dowel holes shall be drilled $\frac{1}{4}$" larger than the diameter of the dowel.
11. Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of $\frac{1}{8}$" inch. Adjustment shall be made either by grinding the surface or by shimming the bearing. Two $\frac{1}{8}$" stainless steel adjusting shims of the dimensions of the bottom bearing plate shall be provided for each bearing in addition to all other plates or shims.
12. If cantilevered sheet piling is not feasible, additional members or other retention systems may be necessary. The Contractor shall submit a temporary soil retention system design including plan details and calculations for review and acceptance by the Engineer.
13. Backfill shall be placed behind the abutment after the superstructure has been poured and falsework removed. See Article 502.10 of the Standard Specifications.
14. All temporary shoring designs and details shall be signed and sealed by a structural engineer licensed in illinois and submitted to the UPRR & IDOT for review.

SITE WORK

1. Site work shall be performed in accordance with DIVISION 2 SITE WORK SPECIFICATIONS of the UP General Conditions and Specification.

CAST-IN-PLACE CONCRETE

1. Cast-in-Place Concrete material, placement, and workmanship shall be in accordance with DIVISION 3 CONCRETE of the UP General Conditions and Specification and Chapter 8 of the AREMA Manual dated 2010.
   Minimum Compressive strength - fc' = 4000 psi at 28 days.
2. Exposed surfaces shall be formed in a manner that will produce a smooth and uniform appearance without rubbing or plastering. Exposed edges of 90 degrees or less are to be chamfered $\frac{3}{4}$"x$\frac{3}{4}$". Top surface to have a smooth finish, free of all float or trowel marks with the exception that a broom finish be used on all walkway surfaces.
3. Surface finish for bearing surfaces shall conform to American National Standard Institute Surface Roughness Requirements (A.N.S.I. B46.1 Surface Texture)
4. Cement shall be Type I, II or III Portland Cement per ASTM C150.
5. Fine aggregate shall be natural sand.
6. Admixtures, other than air entrainment, shall not be used without approval.
7. Membrane curing compound shall conform to ASTM C309 Type 2.
8. All construction joints shall be bonded.

REINFORCING STEEL

1. Reinforcing Steel shall be deformed, new billet bars per current ASTM A706 Specifications and meet Grade 60 requirements.
   Reinforcing Steel requiring field welding shall conform to ASTM A706 Specifications, Grade 60.
2. Fabrication of reinforcing steel shall be per Chapter 7 of the CRSI Manual of Standard Practice. Dimensions of bending details shall be out to out of bars.
3. Reinforcing steel is to be blocked to proper location and securely wired against displacement. Tack welding of reinforcing is prohibited. Minimum concrete cover not otherwise noted shall meet current AREMA requirements.

STRUCTURAL STEEL

1. Structural Steel material, fabrication, and erection shall be in accordance with Chapter 15 of the AREMA Manual dated 2010.
2. All structural steel shall conform to ASTM A709 Grade 50 unless otherwise noted on the plans or in the special provisions. Structural Steel is to be paid for at the Contract Lump Sum Price for "Furnishing and Erecting Structural Steel".
   Calculated Wt. of A709 Grade 50 steel is 1,927482.0 Lbs, calculated Wt. of A709 Grade 50W Corrosion Resistant (c.r.) Steel is 54,163.0 Lbs, calculated Wt. of A325 Bolts is 31,739.0 Lbs. Total Weight is 2,013,384.0 Lbs.
3. The weights of structural steel, floor plate, sacrificial beams, nuts and high strength bolts are included in the weight of structural steel.
4. All bolted connections shall be made with galvanized high strength bolts conforming to ASTM A325. Bolts shall be $\frac{7}{8}$" diameter unless otherwise noted. Holes shall be $\frac{1}{16}$" larger than bolt size unless otherwise noted. Holes for shop fasteners shall be subpunched or subdrilled and reamed through a template in accordance with AREMA specifications and as specified in special provisions.
5. All welding, electrodes, flux, procedures, welder qualification, inspection, and testing must be in accordance with Article 505.04 (q), Welding of the IDOT Standard Specifications for Fracture Critical Members, and AREMA pg. 15-1-10 welding requirements.
6. Electro-slag, Electro-gas and FCAW Welding will not be permitted.
7. Structural steel for bridge must be fabricated by a fabricator certified under the American Institute of Steel Construction Quality Certification Program, Category III, Major Steel Bridges including Fracture Critical members in accordance with AREMA Specifications.
8. All tee and corner groove weld joints shall be ultrasonically inspected. All fillet welds shall be inspected by Magnetic Particle Procedure.
9. Steel for the Upper Floor Plate must have a raised pattern conforming to ASTM A786.
10. Steel deck shall conform to A709 specifications, Grade 50.
11. Anchor rods/ bolts shall conform to ASTM F1554 Grade 36 specifications.
12. End welded studs shall be C1015, C1017 or C1020 cold drawn steel, which conforms to ASTM A108 specification.
13. Cover plate, closure plates and anchor rods/bolts shall be galvanized after fabrication in accordance with ASTM A123, thickness Grade 100 if shown on plans.
14. Anchor rod washers shall be zinc coated in accordance with ASTM A153 specification if shown on plans.
15. No field welding is permitted except as specified in the contract documents.
16. All cross frames or diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.
17. The webs and tension flanges of the through-plate girders are designated as "Fracture Critical Members" and shall conform to the fracture control plan for fracture critical members of the AREMA Specifications for zone 2. These members are noted on plans as (FCM). For all FCM members NTR shall be applied.
18. The main load carrying conponents subjected to tensile stress, other than fracture critical members, shall conform to supplemental requirements for notch toughness, Zone 2. These components are the wide flange beams and other components of main girders and are noted on the plans (NTR).
19. 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. See IDOT Standard Specification for Road and Bridge Construction. Painting of the structural steel will not be paid separately, but is included in the pay item "Furnish and Erect Structural Steel."

WATER PROOFING

1. Water proofing materials and installation shall be cold liquid applied Elastomeric Membrane with Integrated Ballast Mat in accordance with the AREMA MANUAL dated 2010 Chapter 8 Part 29 and special provision #7102.

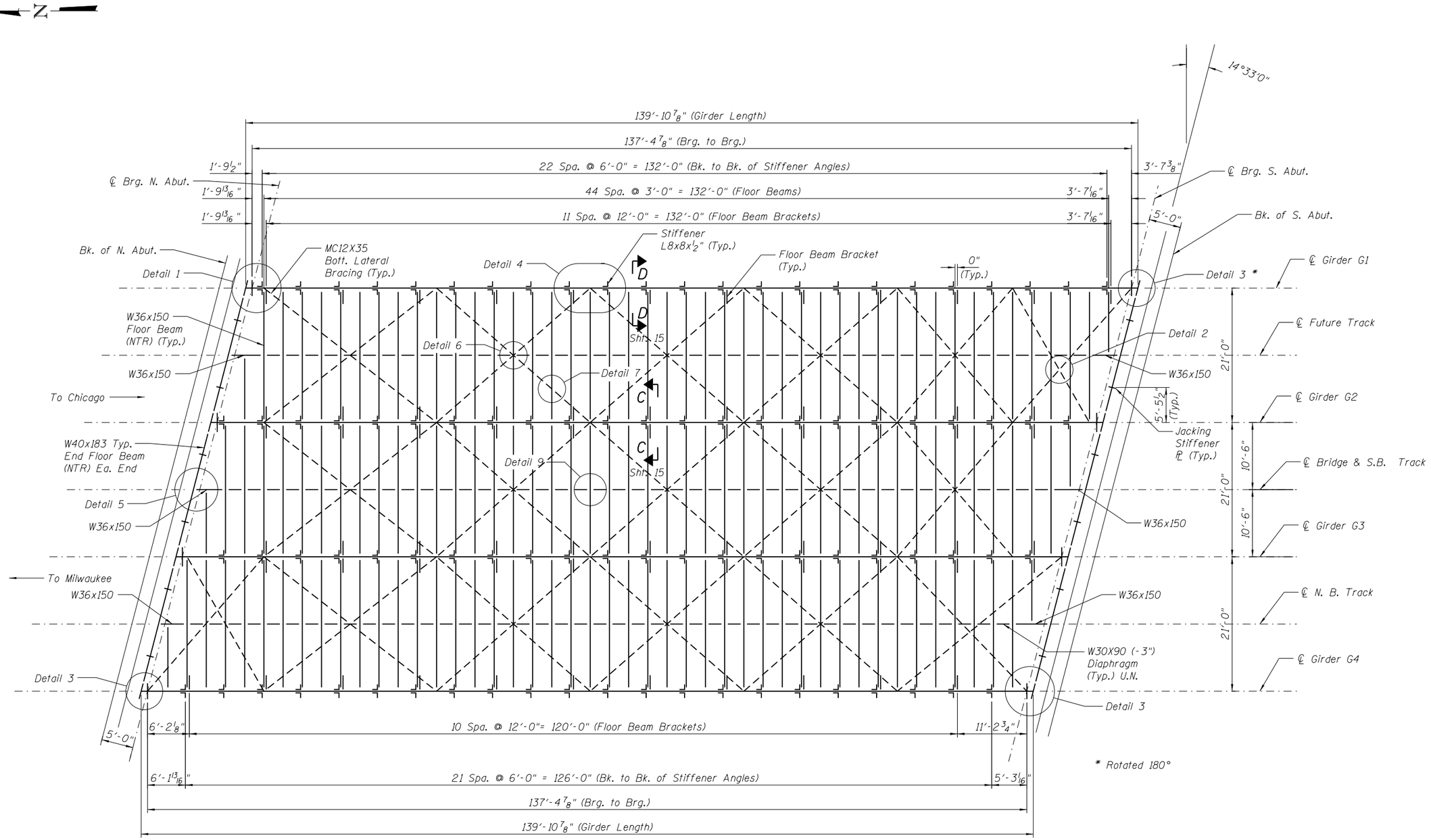
FOUNDATIONS

1. Metal shell piles shall be installed per IDOT Standard Specifications for Road and Bridge Construction Section 512. Use 14"Φ with 0.312" walls. Estimated pile length 40 feet. Qu = 543 Kips, Qa = 181 Kips. Driving shoes shall be used.
2. Drilled Shafts for Wing Walls shall be installed per IDOT Standard Specification for Road and Bridge Construction Section 516.
3. Visually monitor for the presence of natural gas during pile driving. (See SGR pg 8.

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Structure Excavation	Cu. Yd.	-	2,305	2,305
Removal of Existing Structures No. 1	Each	-	1	1
Granular Backfill for Structures	Cu. Yd.	-	1,200	1,200
Concrete Structures	Cu. Yd.	-	1,429	1,429
Furnishing and Erecting Structural Steel	L Sum	0.82	-	0.82
Reinforcement Bars	Pound	-	15,796	15,796
Reinforcement Bars, Epoxy Coated	Pound	-	125,070	125,070
Drilled Shaft in Soil	Cu. Yd.	-	49	49
Furnishing Metal Shell Piles-14"x.312"	Foot	-	5,760	5,760
Driving Piles	Foot	-	5,760	5,760
Test Pile Metal Shells	Each	-	2	2
Membrane Waterproofing (Special)	Sq. Ft.	8,530	-	8,530
Geocomposite Wall Drain	Sq. Yd.	-	460	460
Pipe Underdrain for Structures 6"	Foot	-	220	220
Steel Bearing Assembly	Each	-	8	8
Drainage System	L Sum	0.7	-	0.7
Chain Link Fence, 42" Attached to Structure (Special)	Foot	-	93	93
Name Plates	Each	-	1	1
Deck Protection Ballast	Cu. Yd.	-	115	115
Concrete Sealer	S.F.	-	6610	6610
Pile Shoes	Each		144	144
Anchor Bolt 1¼"	Each		8	8
Anchor Bolt 1½"	Each		8	8
Anchor Bolt 2"	Each		8	8
Anchor Bolt 2½"	Each		8	8
Asphalt Waterproofing	Sq. Yd.	-	366	366
Rubbed Finish	Sq. Ft.		3,740	3,740
Structure Marker Sign-up	Each		4	4

INDEX OF SHEETS



* Rotated 180°

STEEL FRAMING PLAN

Scale: 1/8" = 1'-0"

NOTE:
For Details see Sheets 11 & 12.

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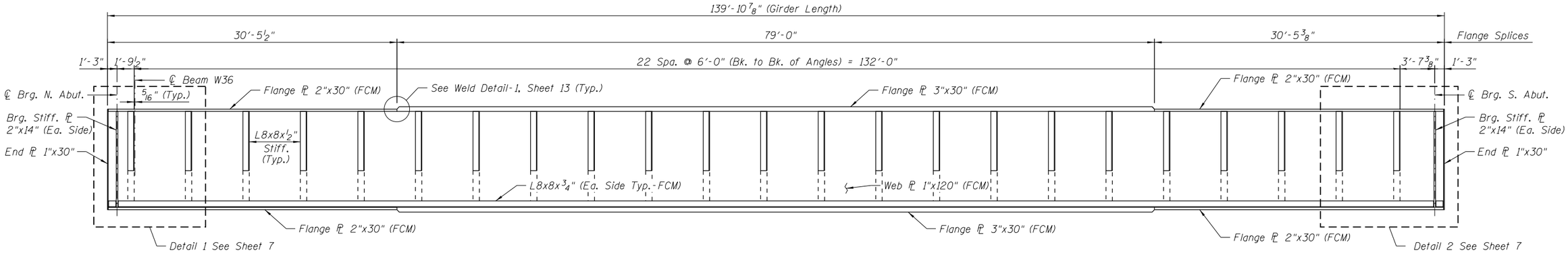
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS; PROJECT NUMBER 3366; 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131		CHECKED - DNB	REVISED -
	PLOT SCALE = 16:0.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

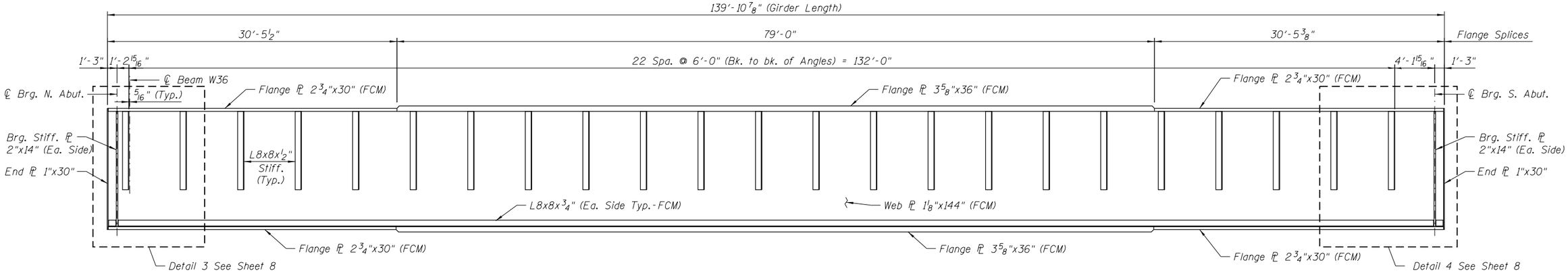
STEEL FRAMING PLAN
STRUCTURE NO. 049-0602
SHEET NO. 4 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	219
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



GIRDER G1 ELEVATION

Scale: 3/16"=1'-0"
(Looking East)

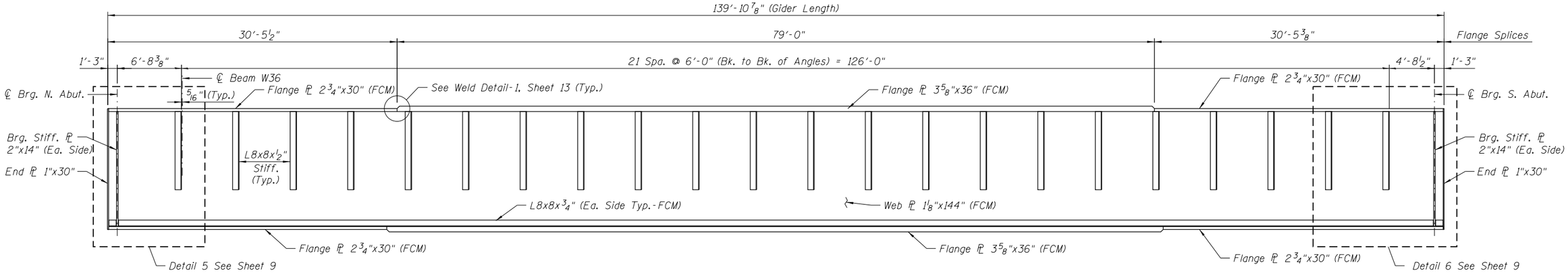


GIRDER G2 ELEVATION

Scale: 3/16"=1'-0"
(Looking East)

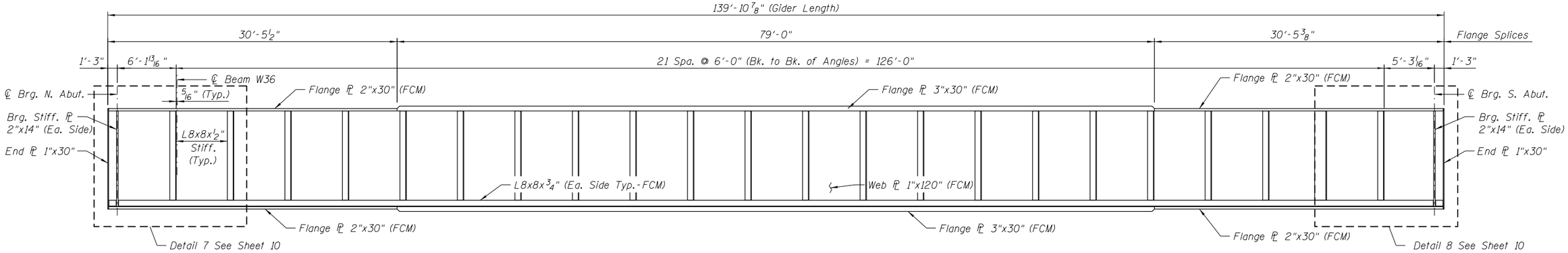
FILE NAME = ...\04906202-60K80-005.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	**STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION**	**GIRDERS G1 & G2 STRUCTURE NO. 049-0602**
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1313		CHECKED - DNB	REVISED -		
PROJECT NUMBER 3366	PLOT SCALE = 8.0000 '/ in.	DRAWN - R.VEJAR	REVISED -		SHEET NO. 5 OF 43 SHEETS
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	220
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		



GIRDER G3 ELEVATION

Scale: 3/16"=1'-0"
(Looking East)



GIRDER G4 ELEVATION

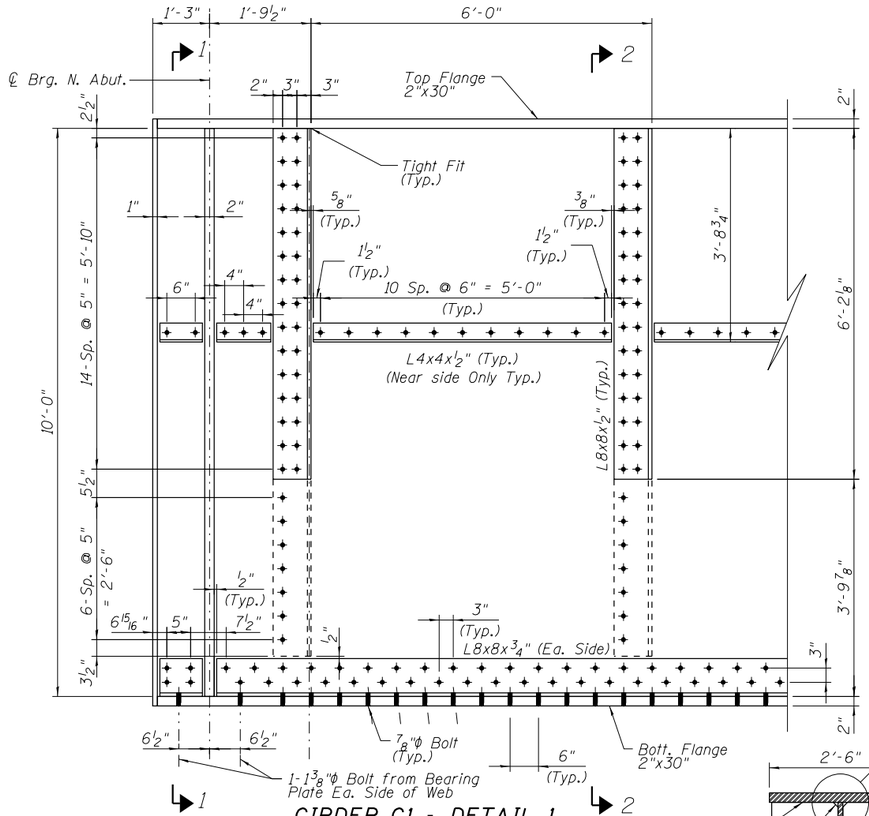
Scale: 3/16"=1'-0"
(Looking East)

FILE NAME = ...\04906202-60K80-006.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366	PLOT SCALE = 8:0.0000 '/ in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

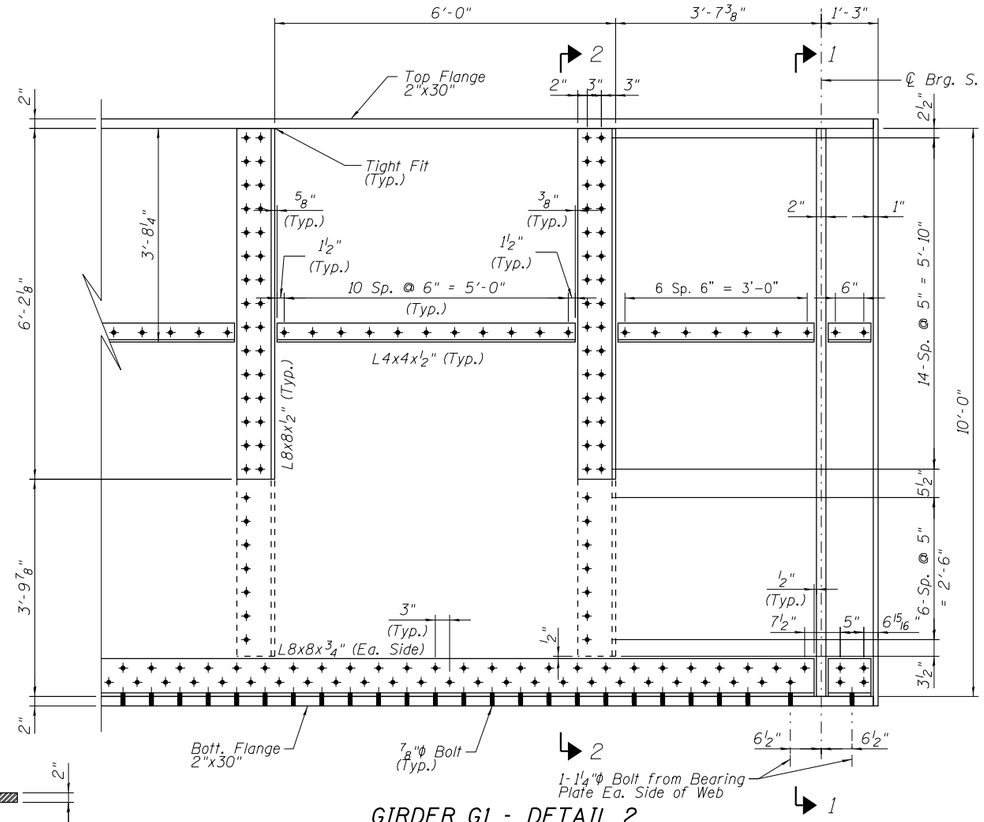
GIRDERS G3 & G4
STRUCTURE NO. 049-0602
SHEET NO. 6 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	221
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		



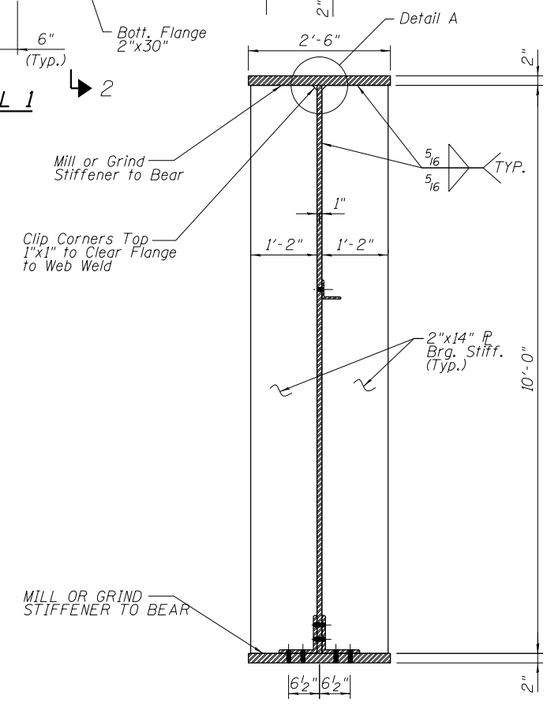
GIRDER G1 - DETAIL 1

Scale: ¾"= 1'-0"



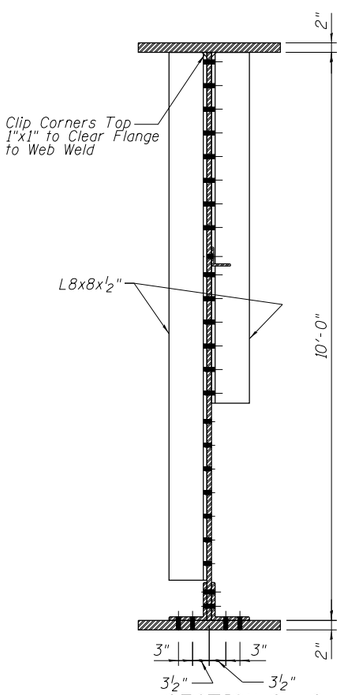
GIRDER G1 - DETAIL 2

Scale: ¾"= 1'-0"



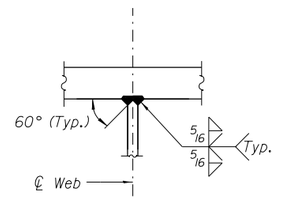
SECTION 1 -1

Scale: ¾"= 1'-0"

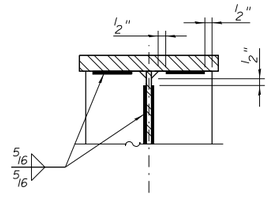


SECTION 2 -2

Scale: ¾"= 1'-0"



WEB TO FLANGE CONNECTION DETAIL-TYP.



DETAIL A

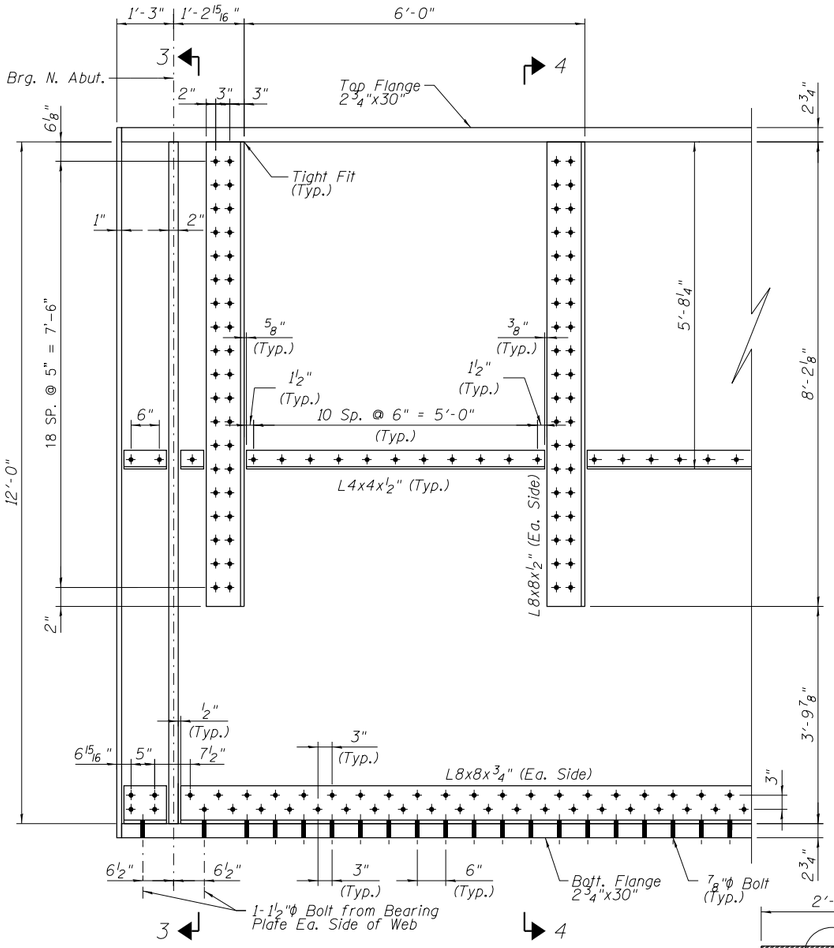
NOTE:
Full penetration of joint required. Weld to be symmetrical about ℄ web. Excessive unbalance shall be cause for rejection. See Specifications for weld qualification. Gouge root to sound metal before welding second side.

FILE NAME = ...\04906202-60K80-007.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366	PLOT SCALE = 2:8ø 's' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

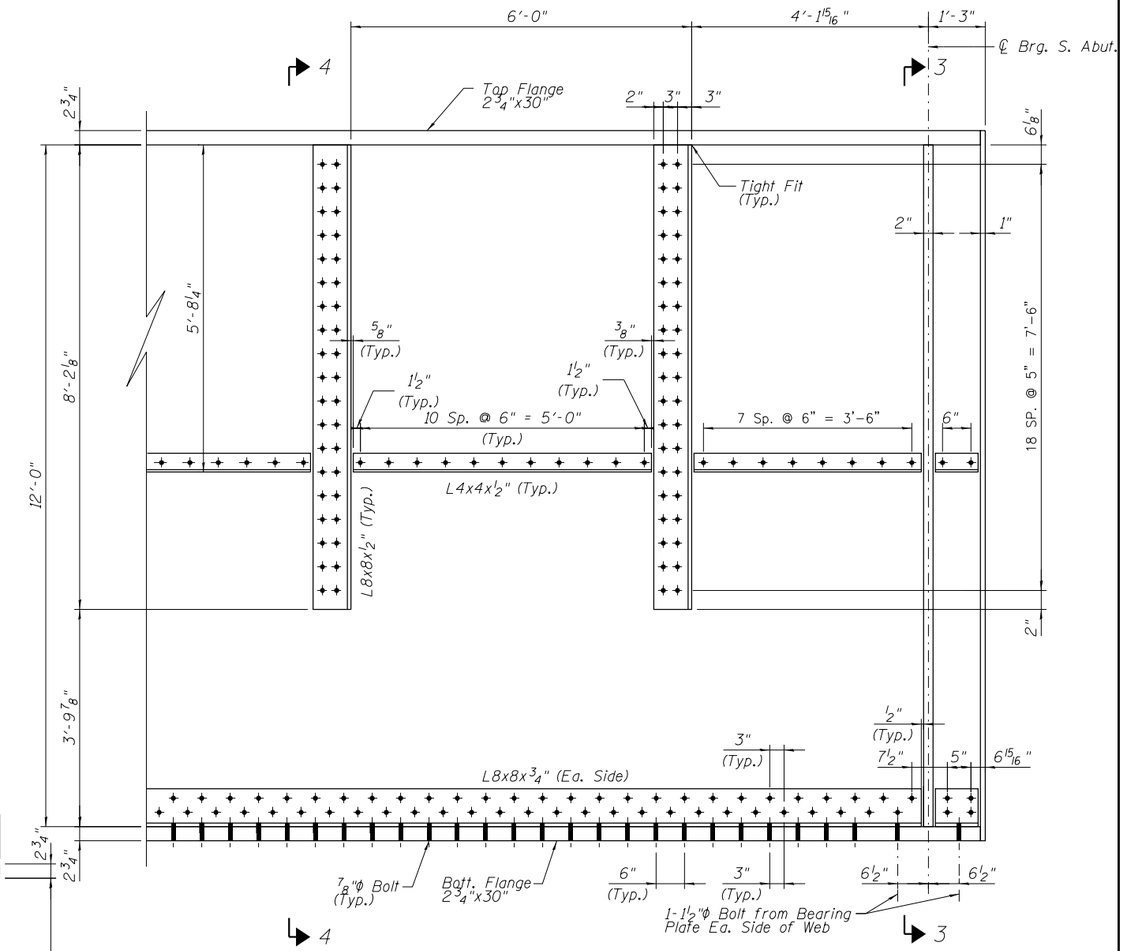
GIRDER G1 DETAILS
STRUCTURE NO. 049-0602
SHEET NO. 7 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	222
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		



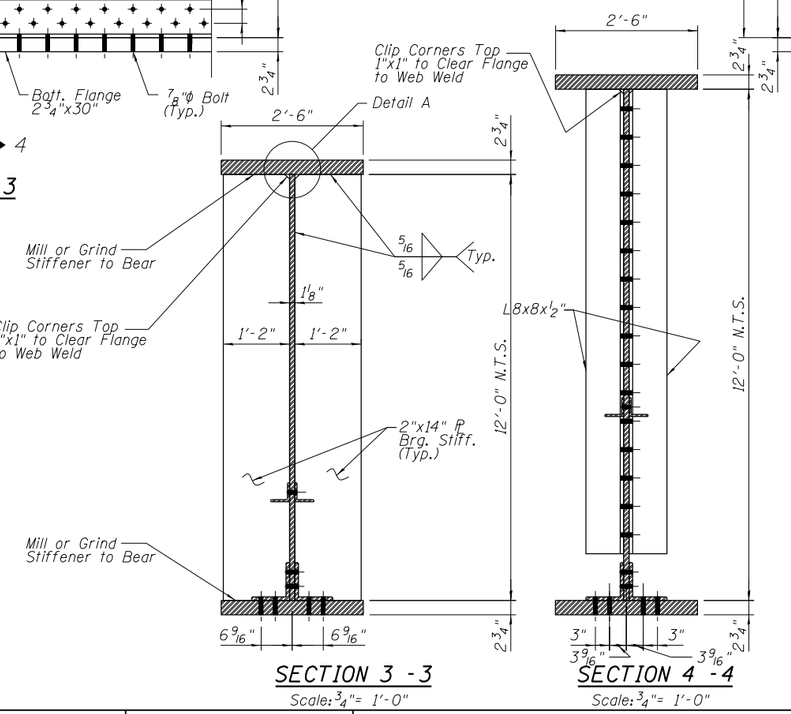
GIRDER G2 - DETAIL 3

Scale: 3/4"= 1'-0"



GIRDER G2 - DETAIL 4

Scale: 3/4"= 1'-0"

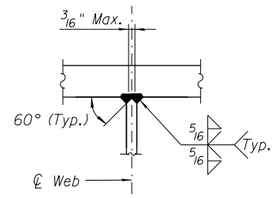


SECTION 3 -3

Scale: 3/4"= 1'-0"

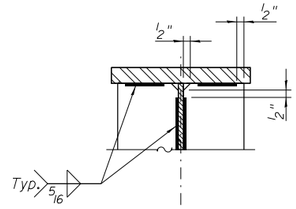
SECTION 4 -4

Scale: 3/4"= 1'-0"



WEB TO FLANGE CONNECTION DETAIL-TYP.

NOTE:
Full penetration of joint required. Weld to be symmetrical about ℄ web. Excessive unbalance shall be cause for rejection. See Specifications for weld qualification. Gouge root to sound metal before welding second side.



DETAIL A

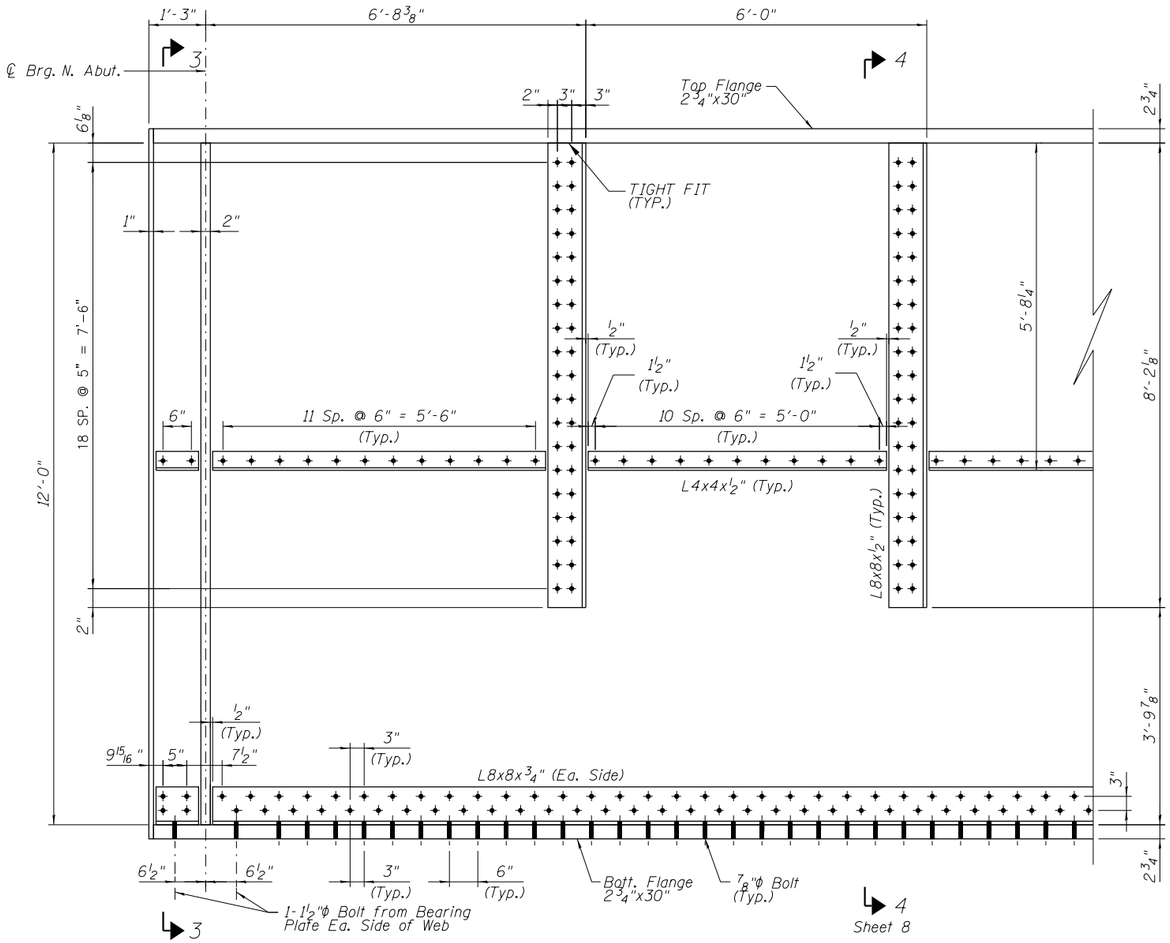
NOTE:
1. For Floor Beam and Bracket Connection Details, See Sheets 11, 12 & 13.

FILE NAME = ...\04906202-60K80-008.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS; PROJECT NUMBER 3366; 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-83		CHECKED - DNB	REVISED -
	PLOT SCALE = 2:80 ':' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

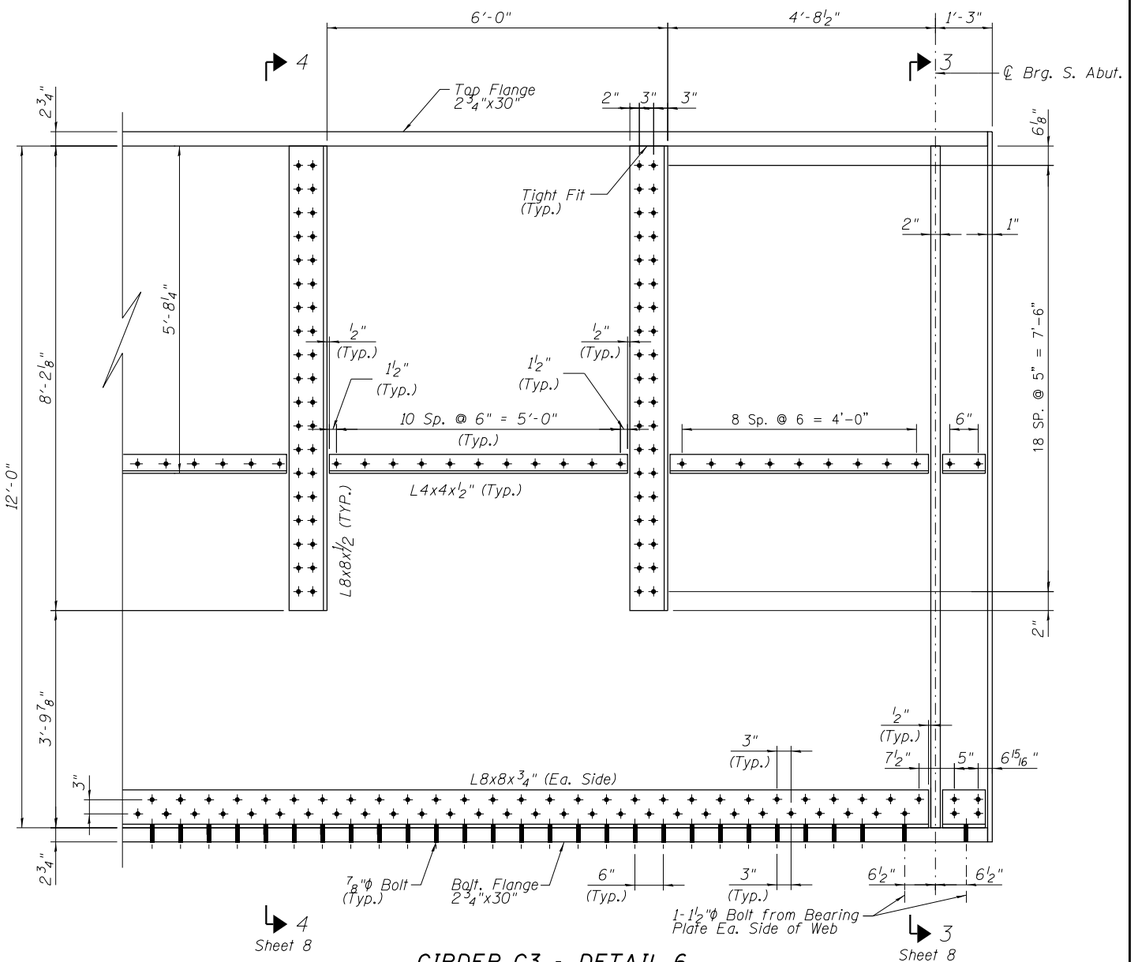
GIRDER G2 DETAILS
STRUCTURE NO. 049-0602
SHEET NO. 8 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	223
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



GIRDER G3 - DETAIL 5

Scale: 3/4"= 1'-0"



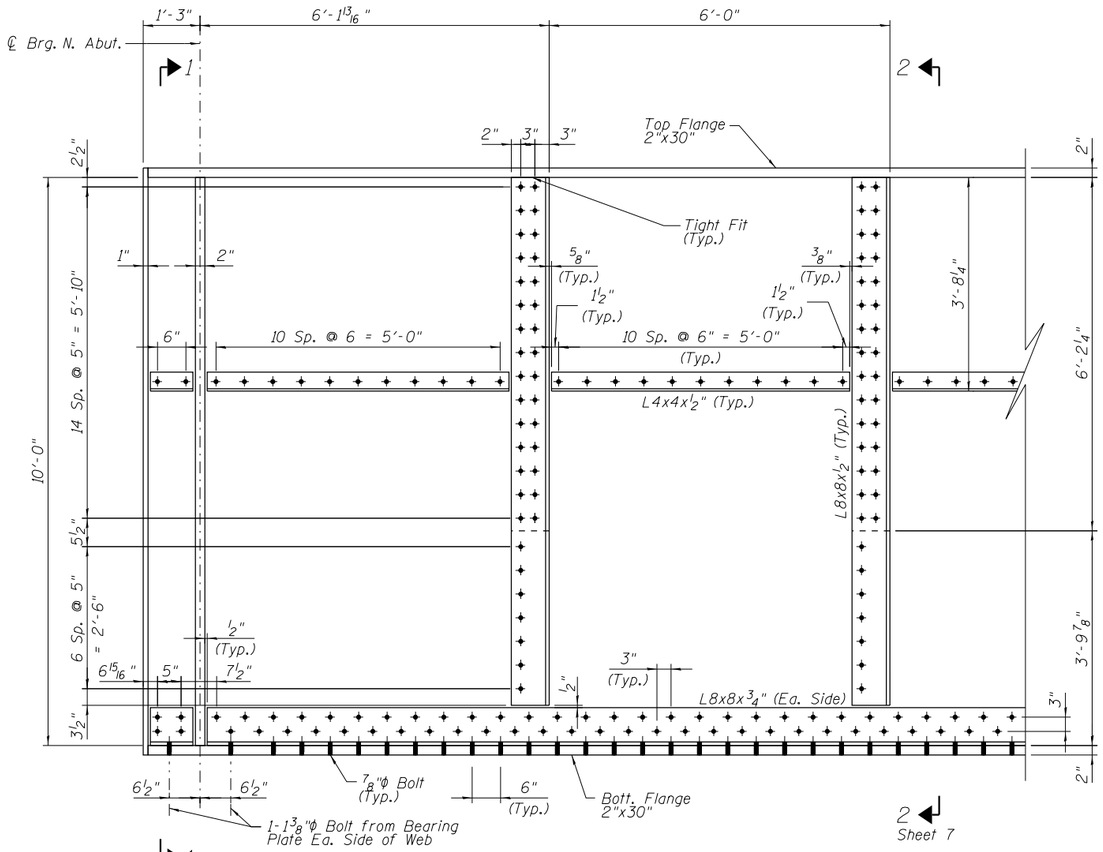
GIRDER G3 - DETAIL 6

Scale: 3/4"= 1'-0"

NOTE:
1. For Floor Beam and Bracket Connection Details, See Sheets 11, 12 & 13.

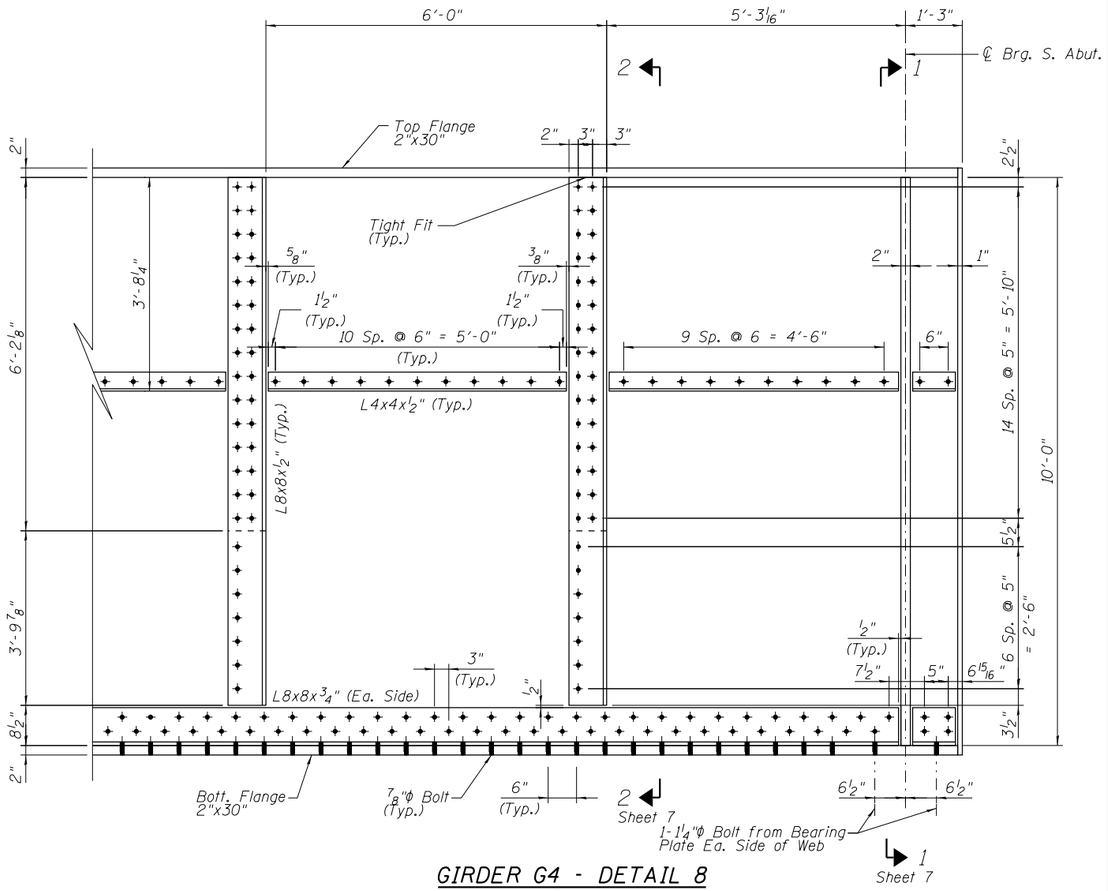
FILE NAME = ...\04906202-60K80-009.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GIRDER G3 DETAILS
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -		STRUCTURE NO. 049-0602
PROJECT NUMBER 3366	PLOT SCALE = 2:8Ø ':' / in.	DRAWN - R.VEJAR	REVISED -		SHEET NO. 9 OF 43 SHEETS
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	224
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



GIRDER G4 - DETAIL 7

Scale: 3/4"= 1'-0"



GIRDER G4 - DETAIL 8

Scale: 3/4"= 1'-0"

NOTE:
1. For Floor Beam and Bracket Connection Details, See Sheets 11, 12 & 13.

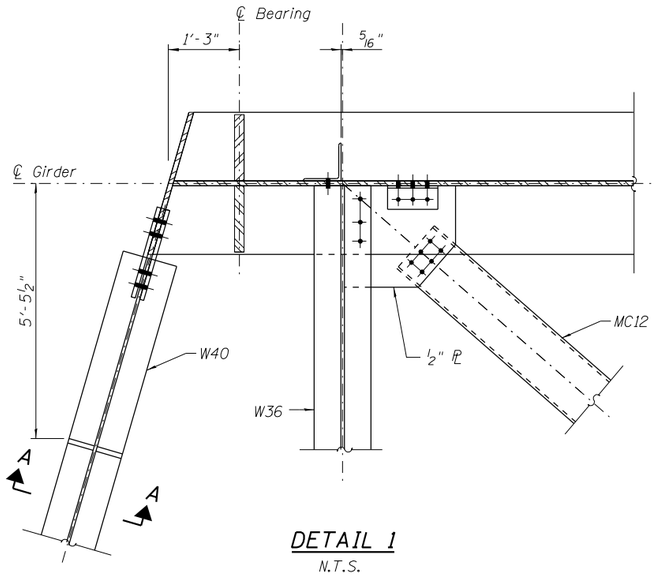
FILE NAME = ...\04906202-60K80-010.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH PROJECT NUMBER 3366 — HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS, 55 East Jackson Blvd., Suite 600, Chicago, Illinois 60604, 312/346-8311		CHECKED - DNB	REVISED -
	PLOT SCALE = 2:8@ ':' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

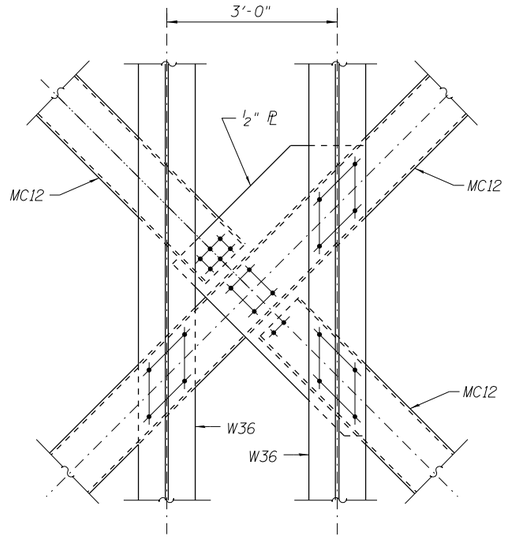
GIRDER G4 DETAILS
STRUCTURE NO. 049-0602

SHEET NO. 10 OF 43 SHEETS

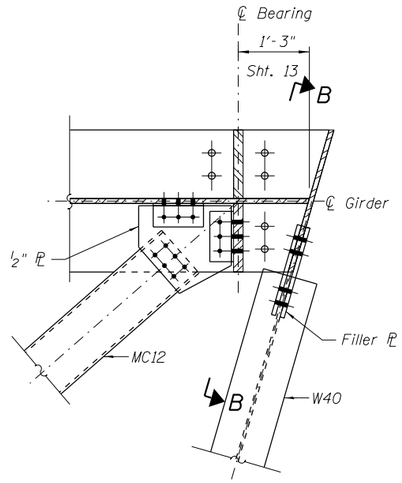
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	225
		CONTRACT NO. 60K80		
	ILLINOIS	FED. AID PROJECT		



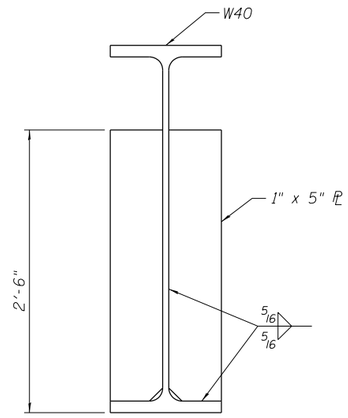
DETAIL 1
N.T.S.



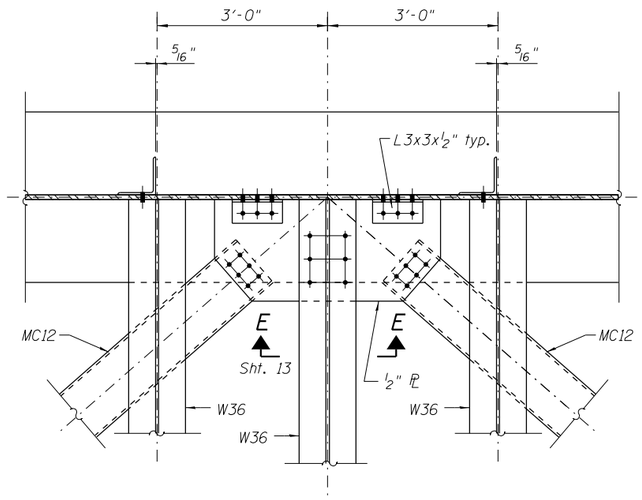
DETAIL 2
N.T.S.



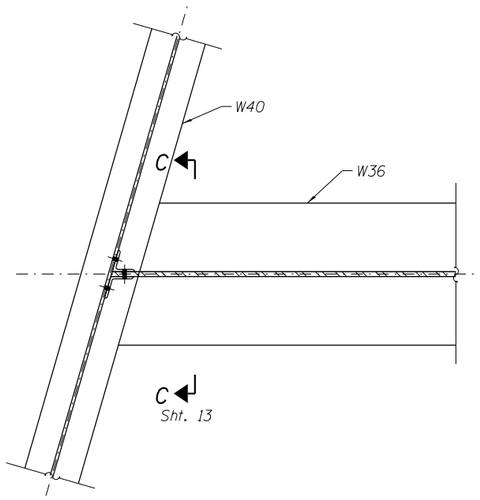
DETAIL 3
N.T.S.



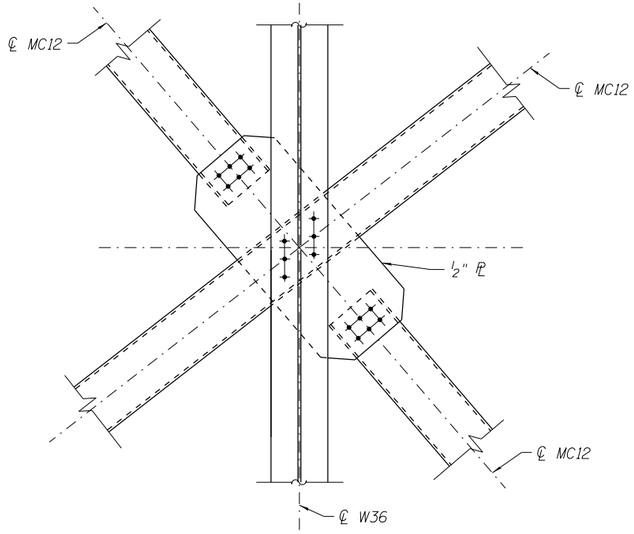
JACKING STIFFENER PLATE
SECTION A-A
N.T.S.
(12 PLACES)



DETAIL 4
N.T.S.



DETAIL 5
N.T.S.

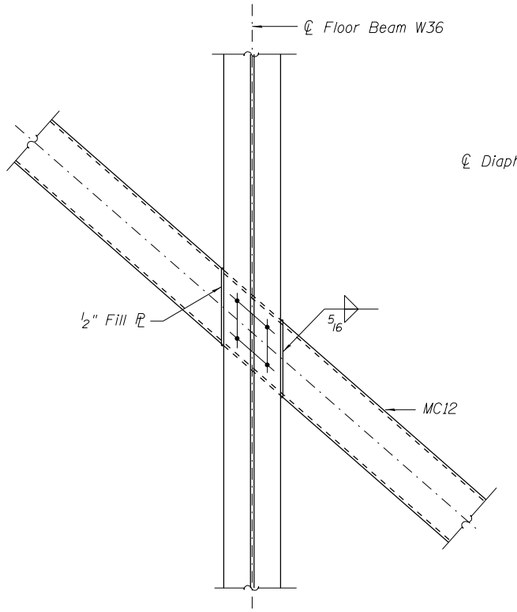


DETAIL 6
N.T.S.

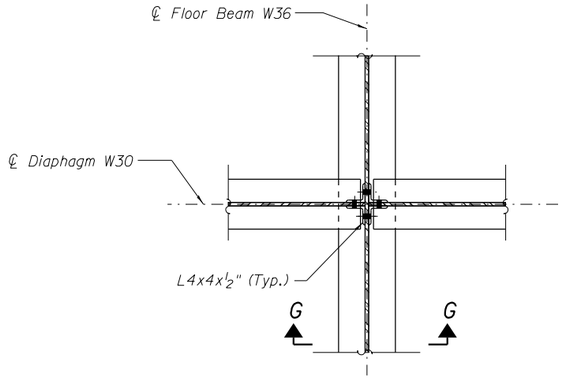
NOTES:
1. For Sections see Sheet 13.
2. For Connection Plates 1 and 2 see Sheet 13.
3. For Detail locations see Sheet 4.

FILE NAME = ...\04906202-60K80-011.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STEEL DETAILS – 1 STRUCTURE NO. 049–0602 SHEET NO. 11 OF 43 SHEETS
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131		CHECKED - DNB	REVISED -		
	PLOT SCALE = 8:0.0000 '=' / in.	DRAWN - R.VEJAR	REVISED -		
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

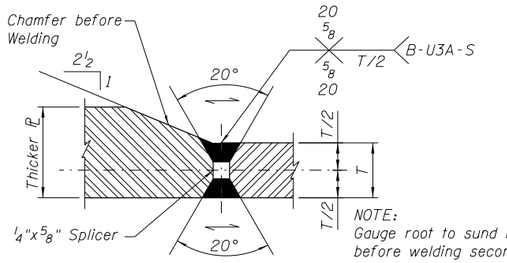
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	226
		CONTRACT NO. 60K80		
	ILLINOIS	FED. AID PROJECT		



DETAIL 7
N.T.S.

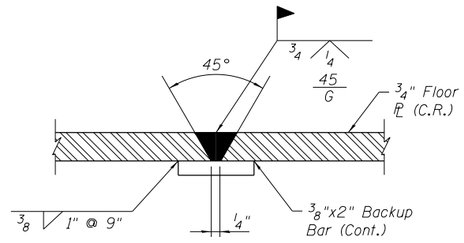


DETAIL 9
N.T.S.

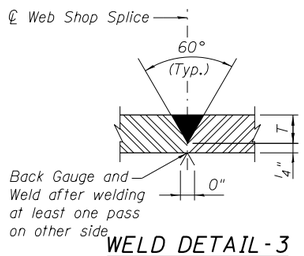


NOTE:
Gauge root to sund metal before welding second side. Grind flush both sides.
⟷ Indicates direction of grinding.

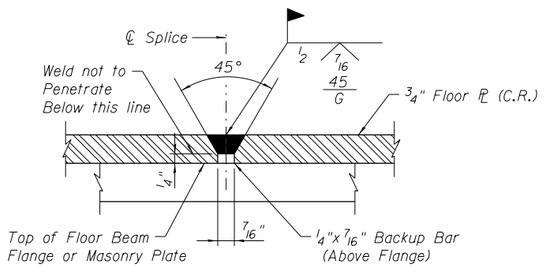
WELD DETAIL-1
FLANGE TO FLANGE WELD



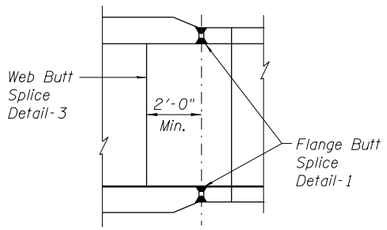
WELD DETAIL-2
FLOOR PLATE FIELD SPLICE
BALLAST STOP PLATE SPLICE SIMILAR



WELD DETAIL-3
WEB TO WEB BUTT WELD



WELD DETAIL-4
FIELD SPLICE OVER BEAM FLANGE

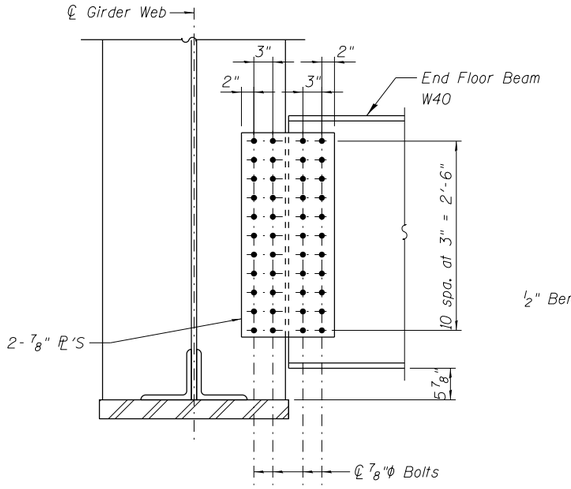


GIRDER SHOP SPLICE

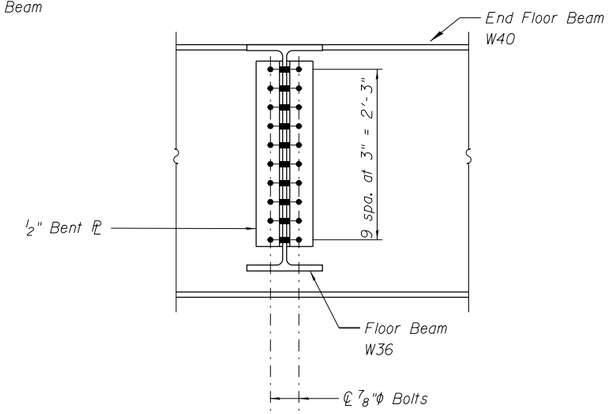
NOTES:
1. For Sections see Sheet 13.
2. For Detail Locations see Sheet 4.
3. Girders shall be shop fabricated. Field spice will not be allowed.

FILE NAME = ...\04906202-60K80-012.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STEEL DETAILS – 2 STRUCTURE NO. 049-0602
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131		CHECKED - DNB	REVISED -		SHEET NO. 12 OF 43 SHEETS
	PLOT SCALE = 8:0.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -		
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

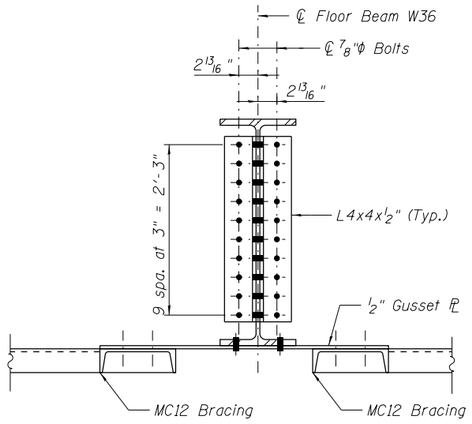
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	227
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



SECTION B-B
Scale: 1"=1'-0"



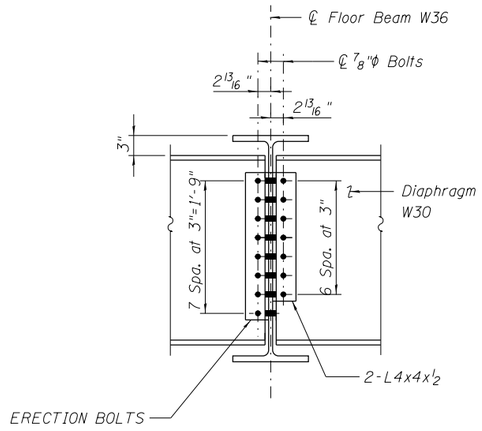
SECTION C-C
Scale: 1"=1'-0"



(Typ. Beam Connection at Girders G1 & G4)

SECTION E-E
Scale: 1"=1'-0"

(Typ. Beam Connection)



SECTION G-G
Scale: 1"=1'-0"

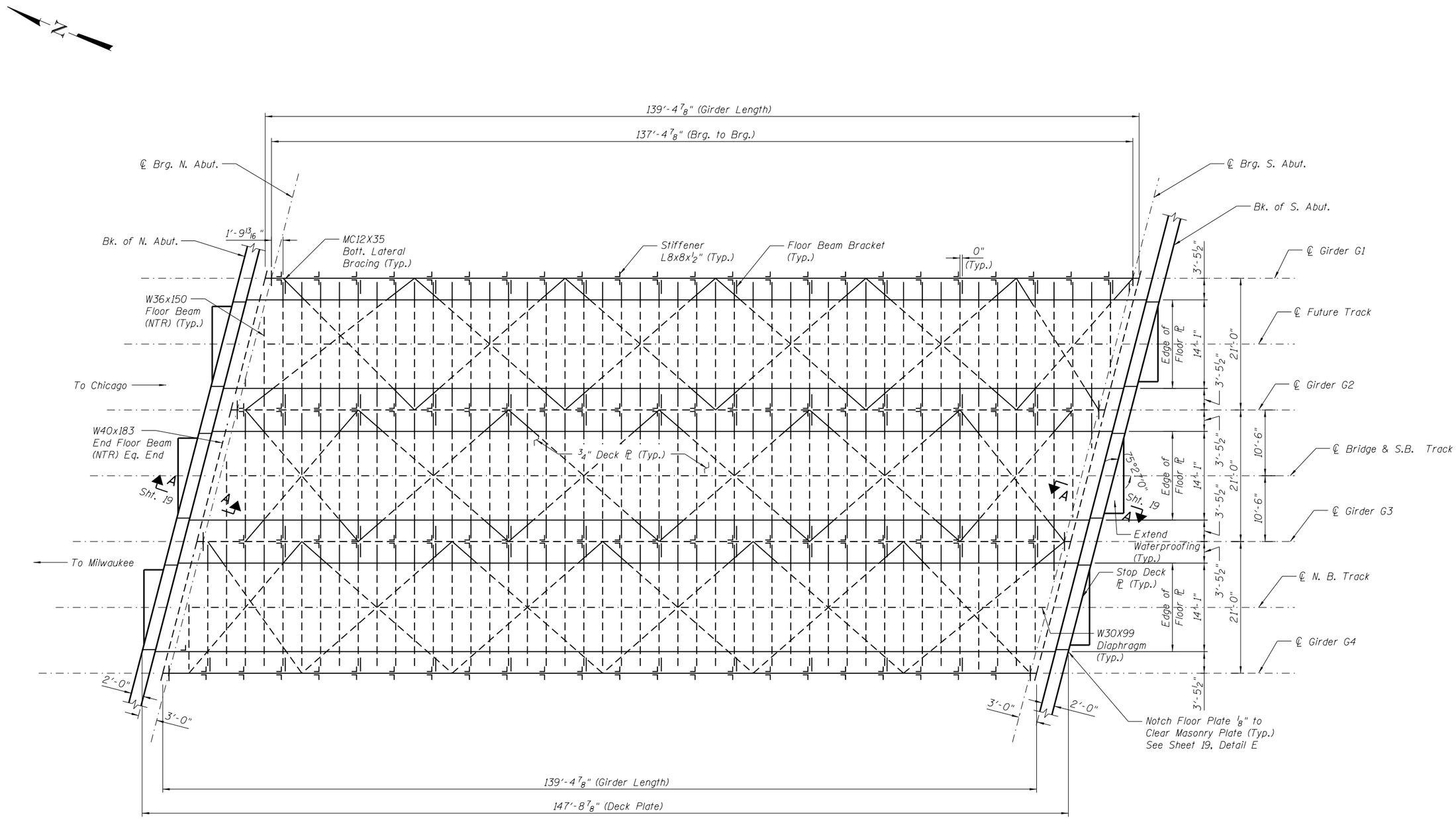
NOTE:
Work this Sheet with Sheet 11 & 12.

FILE NAME = ...\04906202-60K80-013.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366	PLOT SCALE = 2.00 '/ in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FLOOR BEAM CONNECTION DETAILS
STRUCTURE NO. 049-0602
SHEET NO. 13 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	228
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



FLOOR DECK PLATE PLAN

Scale: 1/8" = 1'-0"

NOTE:
See Sheet 19 for Section A-A.

H:\Projects\3366\Drawings\Structural\Bridge Plans\FINAL PLANS\84906202-60K80-014.dgn

HOH® HARRY O. HEFTER-ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS
55 East Jackson Blvd. Chicago, Illinois 60604 312/346-8131

FILE NAME =

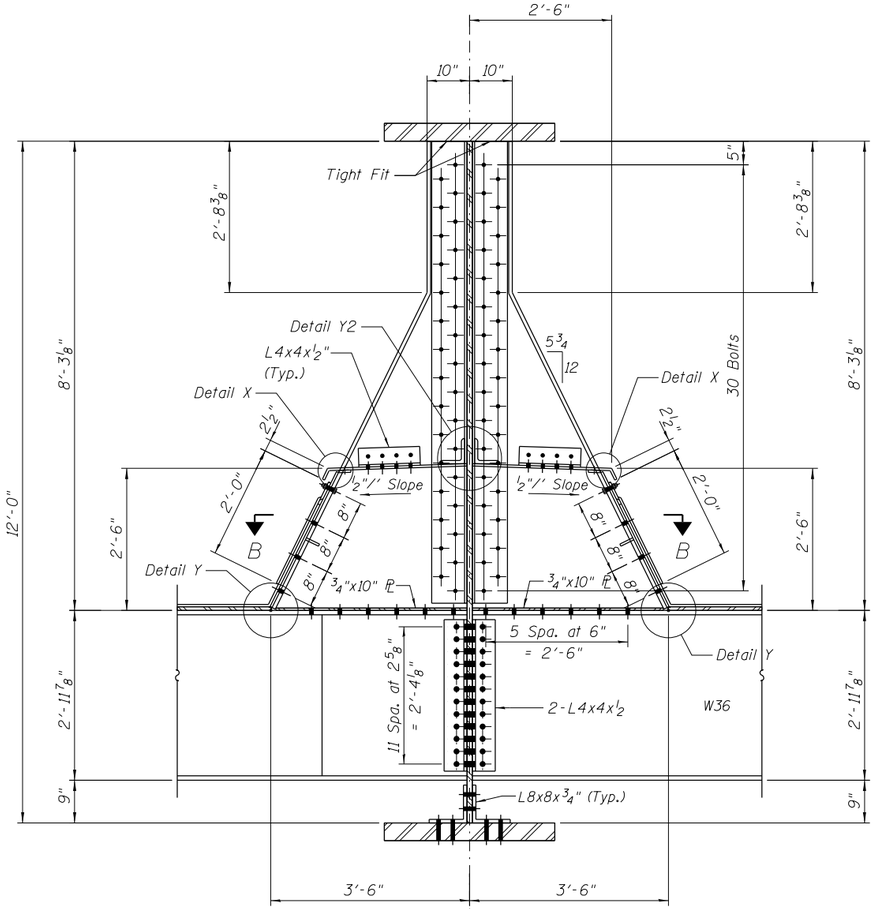
PROJECT NO. 3366

USER NAME = eafitzpatrick	DESIGNED - MMH	REVISED -
	CHECKED - DNB	REVISED -
PLOT SCALE = 16:0.0000 '1' / in.	DRAWN - R.VEJAR	REVISED -
PLOT DATE = 10/7/2016	CHECKED - DNB	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

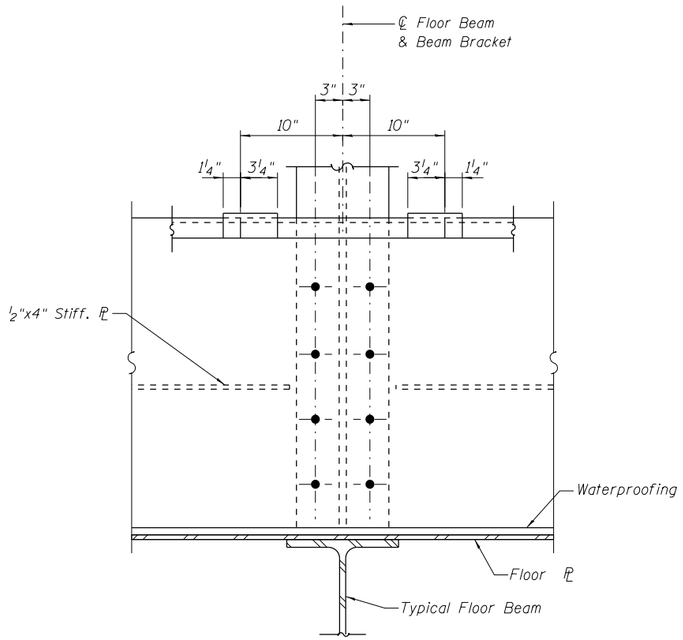
FLOOR DECK PLATE PLAN
STRUCTURE NO. 049-0602
SHEET NO. 14 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
1218	125X-N	LAKE	361	229
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



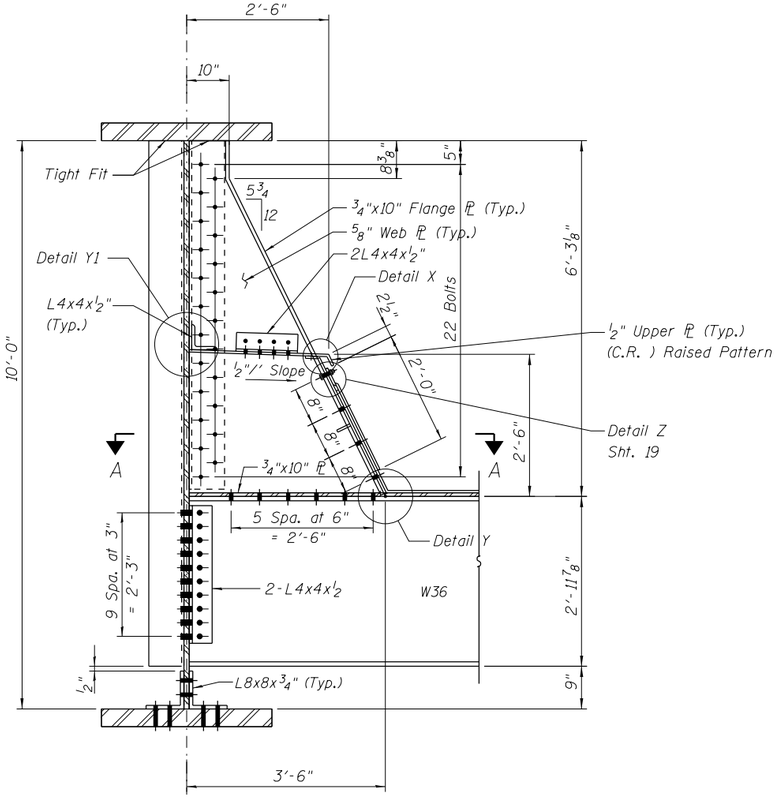
SECTION C-C

Girders G2 & G3
(At Beam Brackets)
N.T.S.
See Sheet 4 for Section Location
See Sheet 13 for Floor Beam Connections



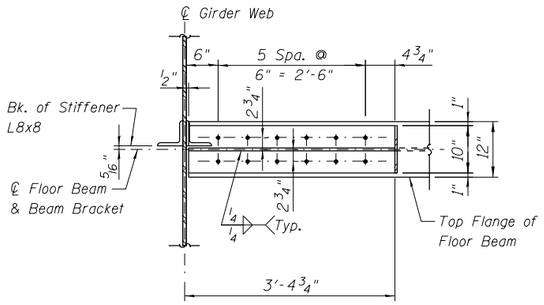
BALLAST PLATE ELEVATION

(At Beam Bracket Typical)
N.T.S.



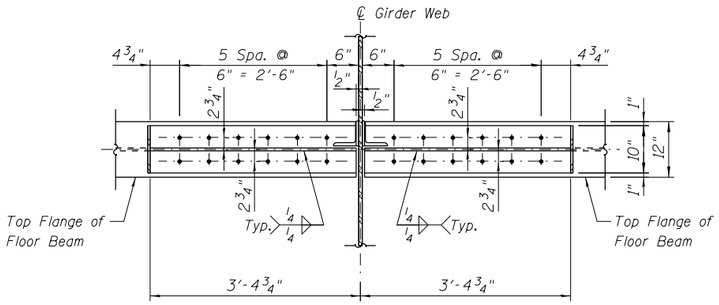
SECTION D-D

Girders G1 & G4
(At Beam Brackets)
N.T.S.



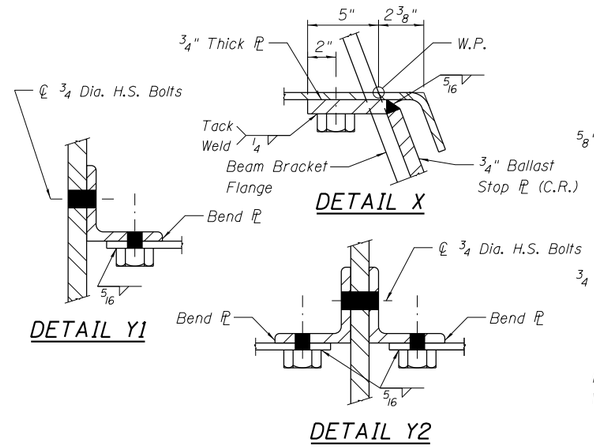
SECTION A-A

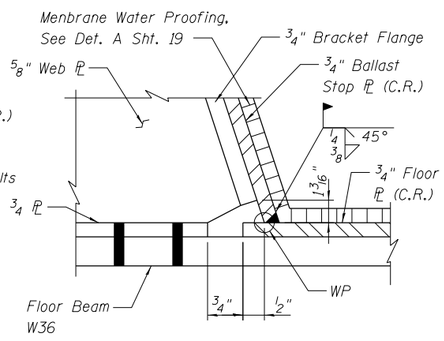
N.T.S.



SECTION B-B

N.T.S.





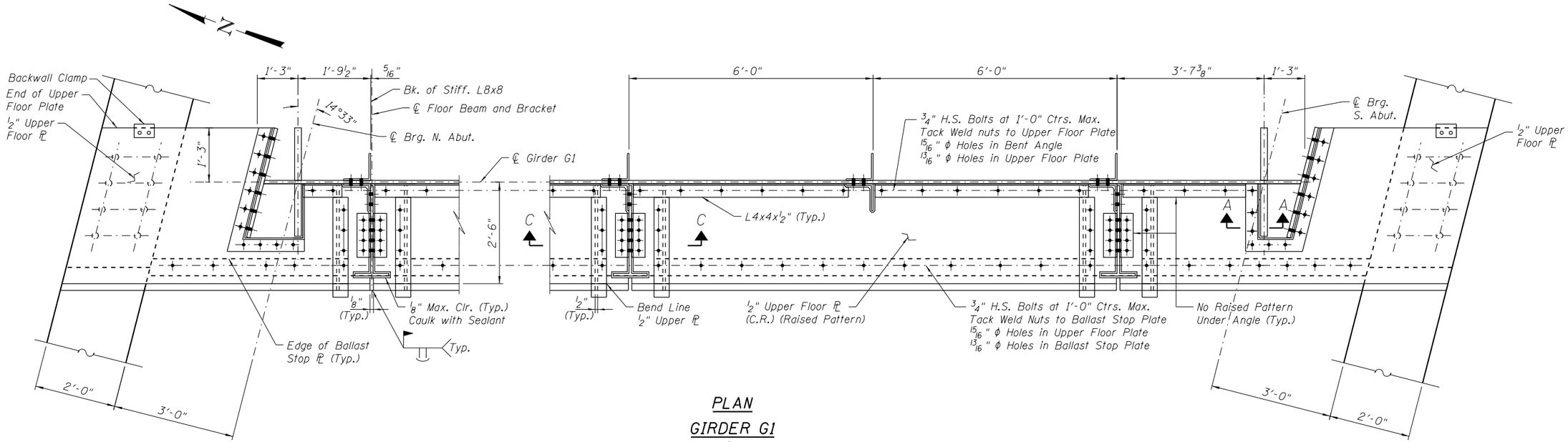
DETAIL Y

FILE NAME = ...\04906202-60K80-015.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS; PROJECT NUMBER 3366; 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8311		CHECKED - DNB	REVISED -	
	PLOT SCALE = 2.0000 ' / in.	DRAWN - R.VEJAR	REVISED -	
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -	

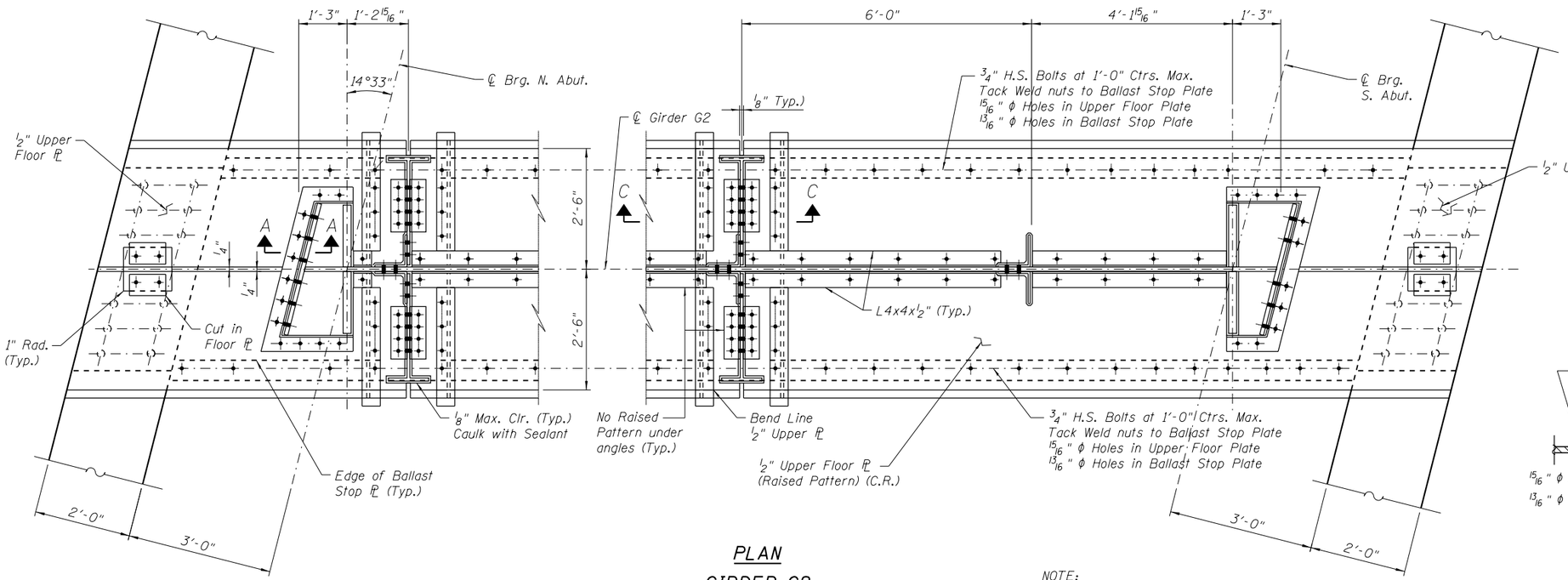
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SECTIONS AND DETAILS
STRUCTURE NO. 049-0602
SHEET NO. 15 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	230
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			

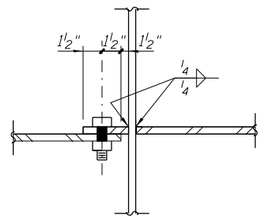


PLAN
GIRDER G1
Scale: 1/4"=1'-0"

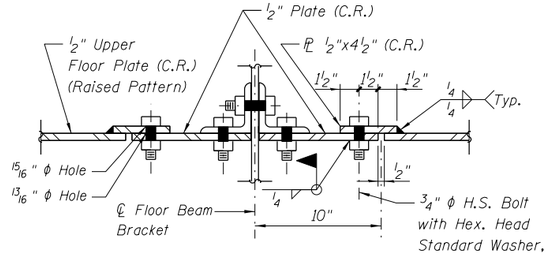


PLAN
GIRDER G2
Scale: 1/4"=1'-0"

NOTE:
1. Steel designated "C.R." shall meet the requirements of ASTM A588.
2. Field weld all openings to form a water tight surface.



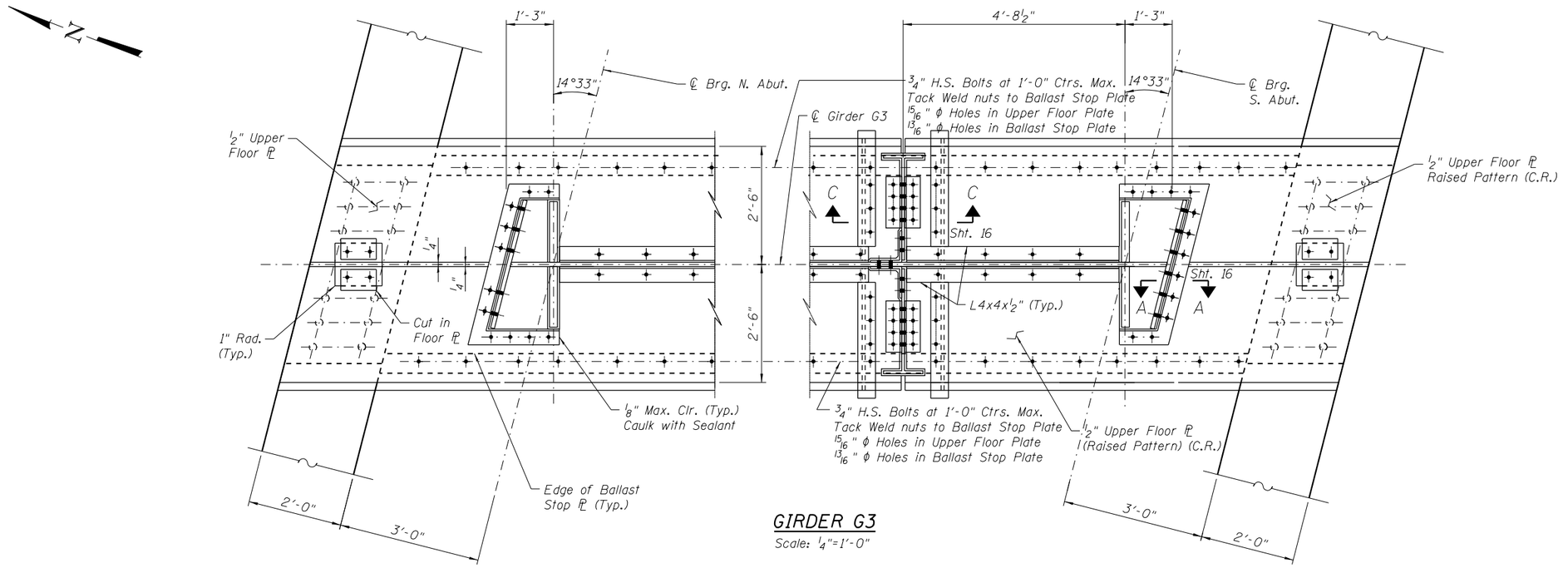
SECTION A-A
N.T.S.



SECTION C-C
N.T.S.

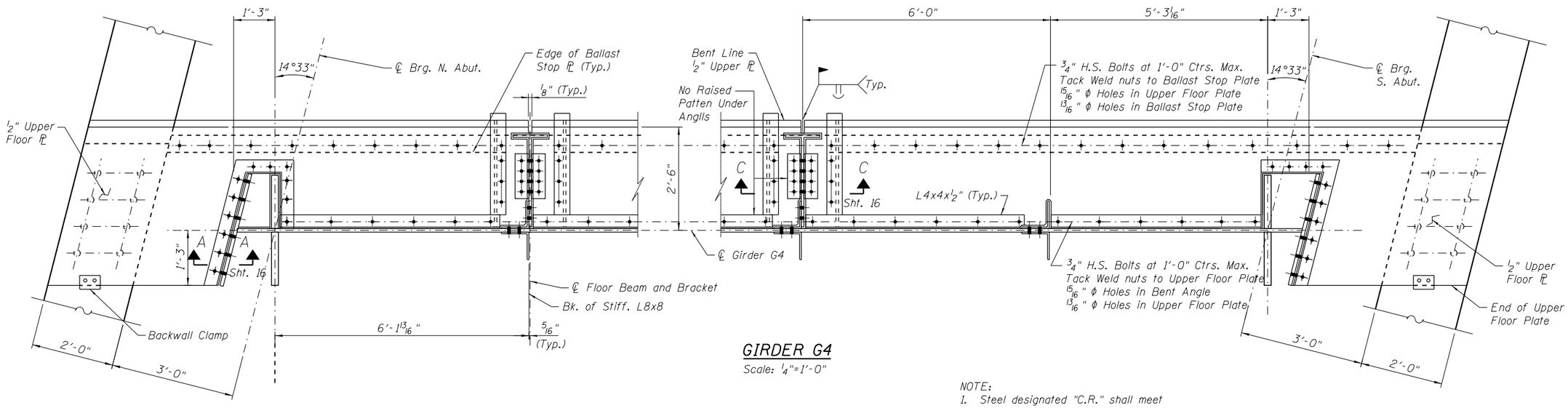
FILE NAME = ...\04906202-60K80-016.dgr	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	UPPER FLOOR PLATE PLAN – 1 STRUCTURE NO. 049-0602
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -		SHEET NO. 16 OF 43 SHEETS
PROJECT NUMBER 3366	PLOT SCALE = 8:0.0000 '' / in.	DRAWN - R.VEJAR	REVISED -		
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	231
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		



GIRDER G3

Scale: ¼"=1'-0"



GIRDER G4

Scale: ¼"=1'-0"

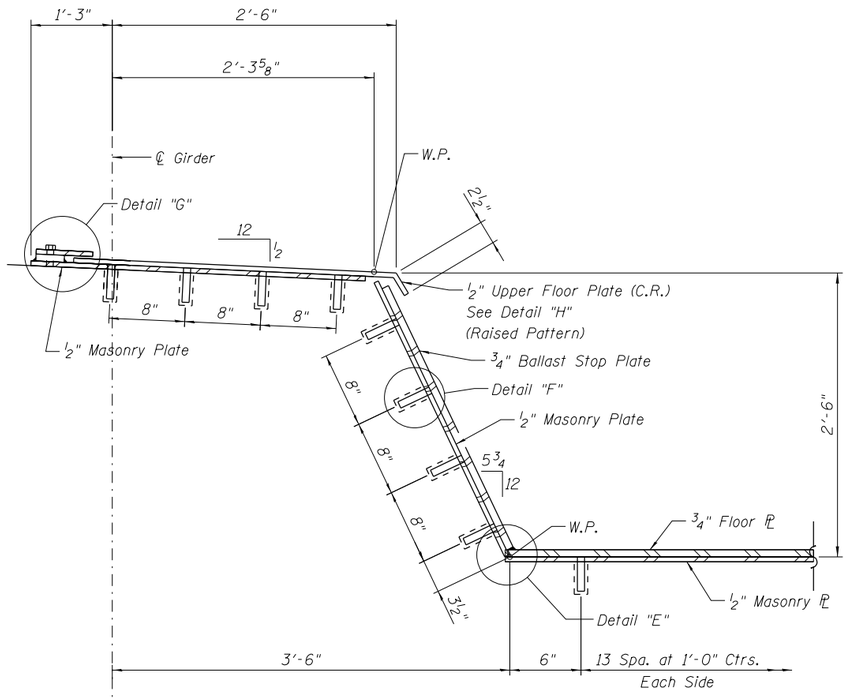
NOTE:
1. Steel designated "C.R." shall meet the requirements of ASTM A588.
2. Field weld all openings to form a water tight surface.

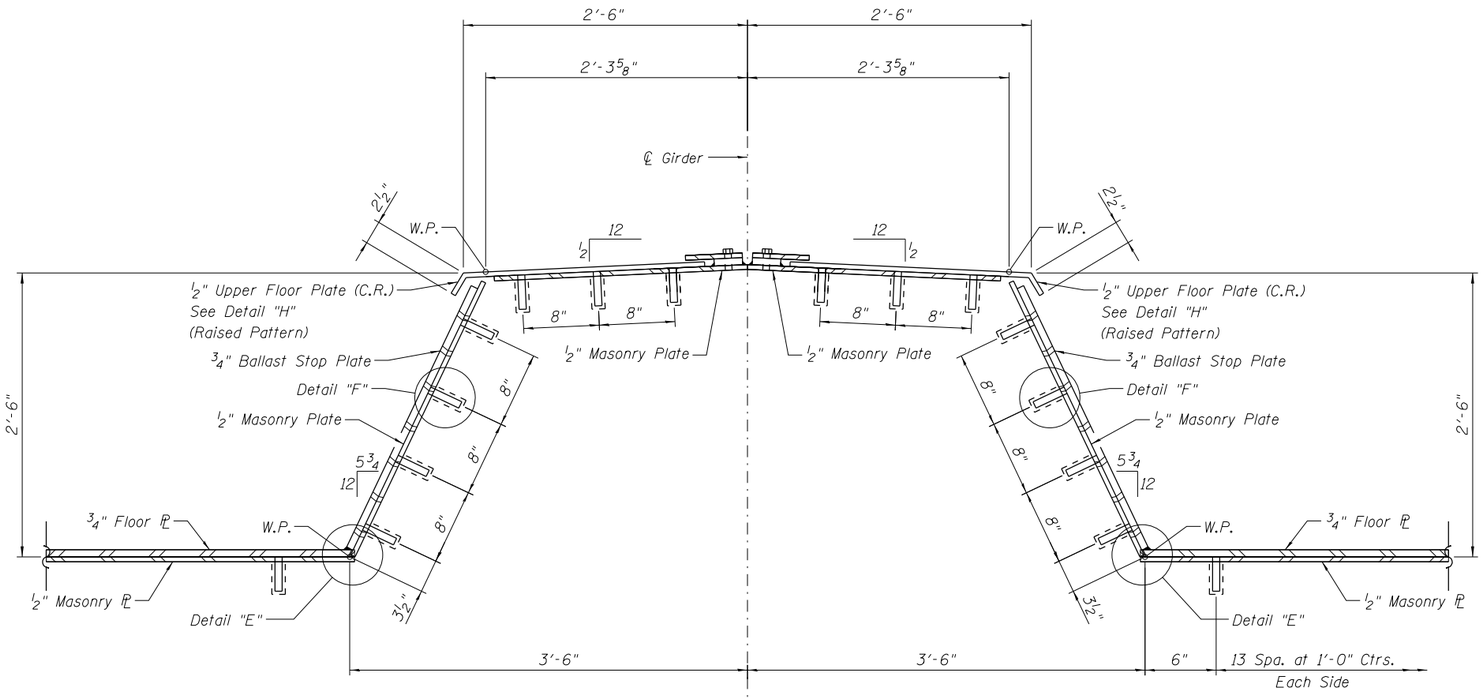
FILE NAME = ...\04906202-60K80-017.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS; PROJECT NUMBER 3366; 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131		CHECKED - DNB	REVISED -
	PLOT SCALE = 8:0.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

UPPER FLOOR PLATE PLAN – 2
STRUCTURE NO. 049-0602
SHEET NO. 17 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	232
		CONTRACT NO. 60K80		
	ILLINOIS	FED. AID PROJECT		



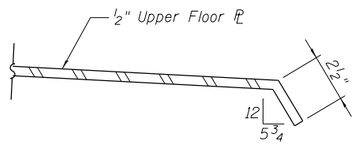


ELEVATION

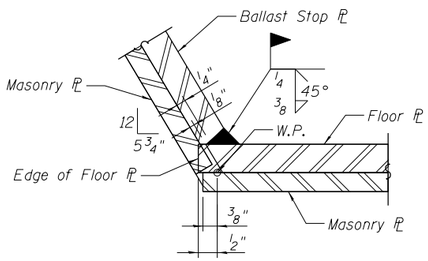
FLOOR PLATE DETAILS

N.T.S.
(Looking North at North Abutment)
(South Abutment is Similar)
All horizontal dimensions are at rt. angle to ℄ Girders.

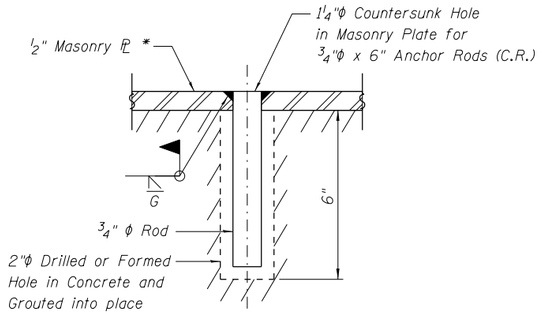
Notes:
1. Steel designated "C.R." shall meet the requirements of ASTM AS88
2. Embedded masonry plates and rods included in the cost of membrane waterproofing.



DETAIL "H"
N.T.S.

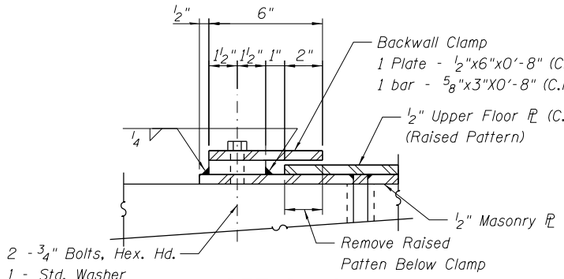


DETAIL "E"
N.T.S.



DETAIL "F"
N.T.S.

* Masonry plates to be welded to anchor rods in field and ground smooth.



DETAIL "G"
N.T.S.

Note:
Hold 1/8" gap between backwall clamp and upper floor plate at expansion end.

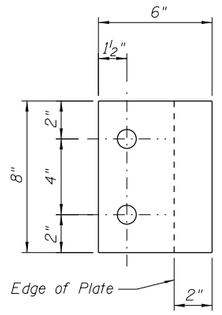
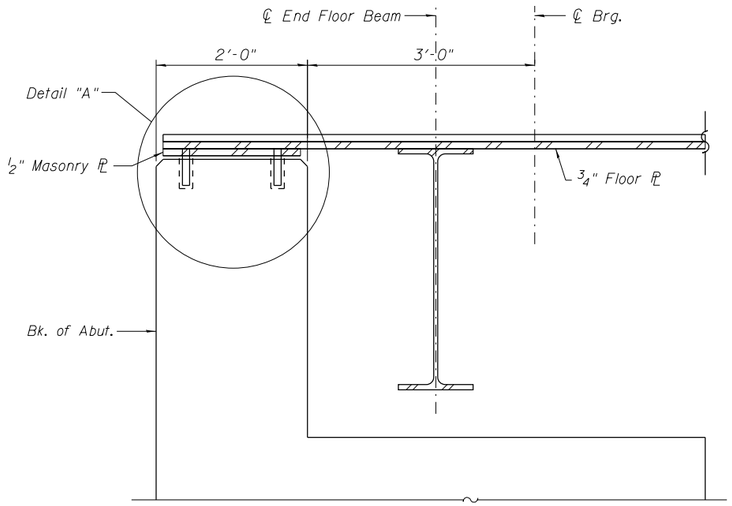
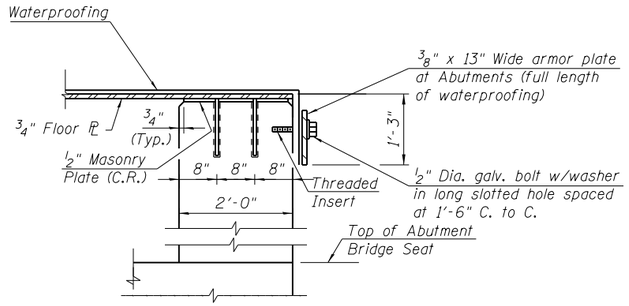


PLATE DETAIL
N.T.S.

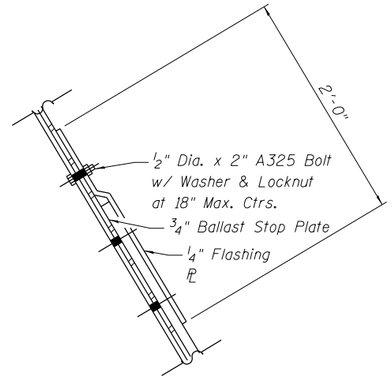
FILE NAME = ...\04906202-60K80-018.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	FLOOR PLATE DETAILS – 1 STRUCTURE NO. 049–0602	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
HOH PROJECT NUMBER 3366 — HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS, 55 East Jackson Blvd., Suite 600, Chicago, Illinois 60604, 312/346-8131		CHECKED - DNB	REVISED -			346	125X-N&J-SB-B	LAKE	361	233
	PLOT SCALE = 2.0000 ' / in.	DRAWN - R.VEJAR	REVISED -		SHEET NO. 18 OF 43 SHEETS				CONTRACT NO. 60K80	
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -					ILLINOIS	FED. AID PROJECT	



SECTION A-A
N.T.S.



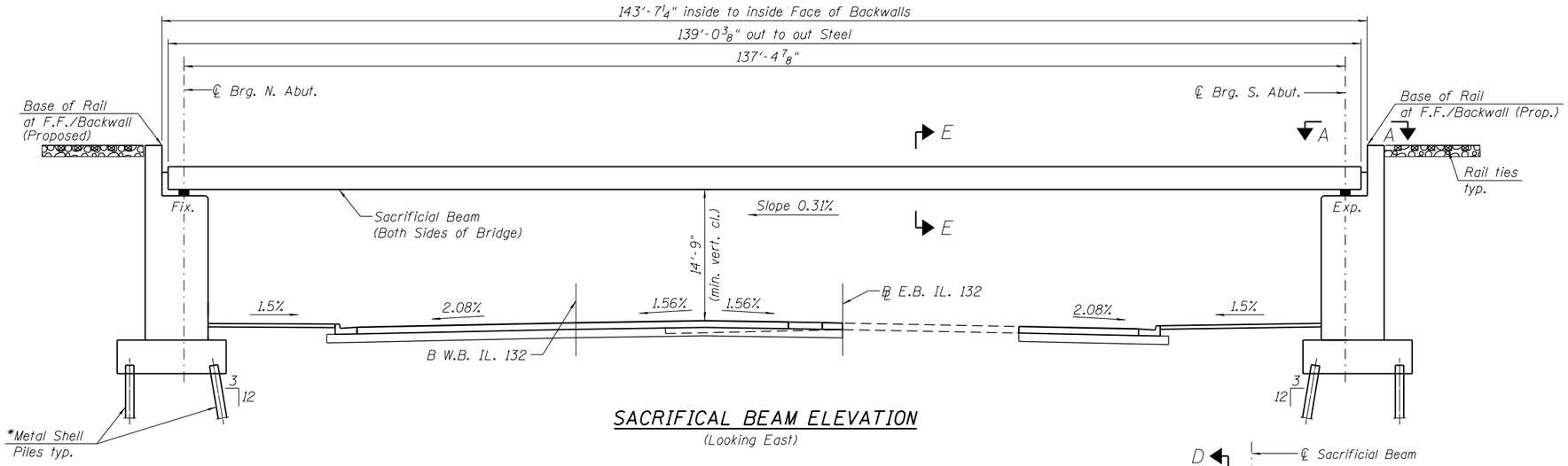
WATERPROOFING AT ABUTMENT BACKWALL
DETAIL A



DETAIL Z
Scale: 1 1/2"=1'-0"
Sheet 16

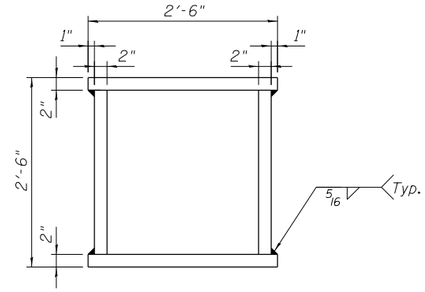
FILE NAME = ...\04906202-60K80-019.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	FLOOR PLATE DETAILS – 2 STRUCTURE NO. 049-0602
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131		CHECKED - DNB	REVISED -		SHEET NO. 19 OF 43 SHEETS
	PLOT SCALE = 2.0000 ' / in.	DRAWN - R.VEJAR	REVISED -		
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	234
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			

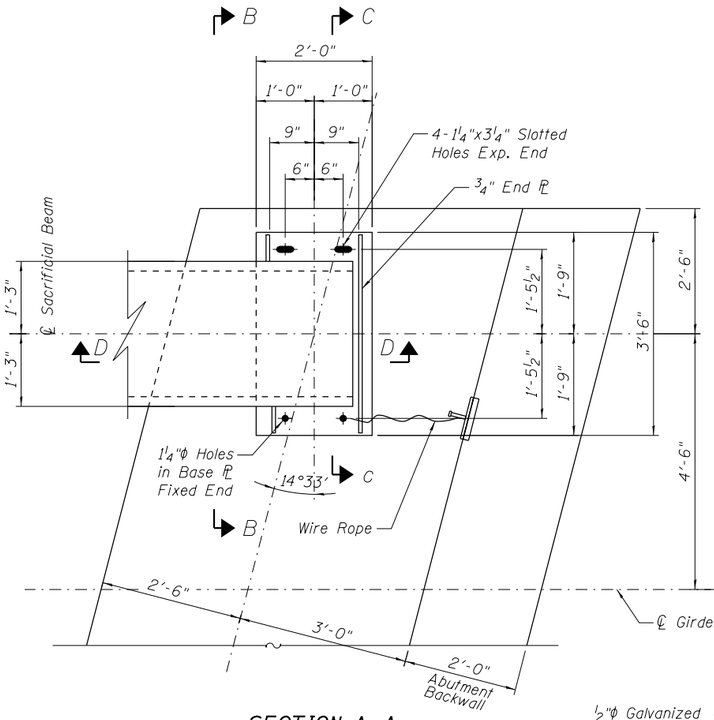


SACRIFICAL BEAM ELEVATION

(Looking East)

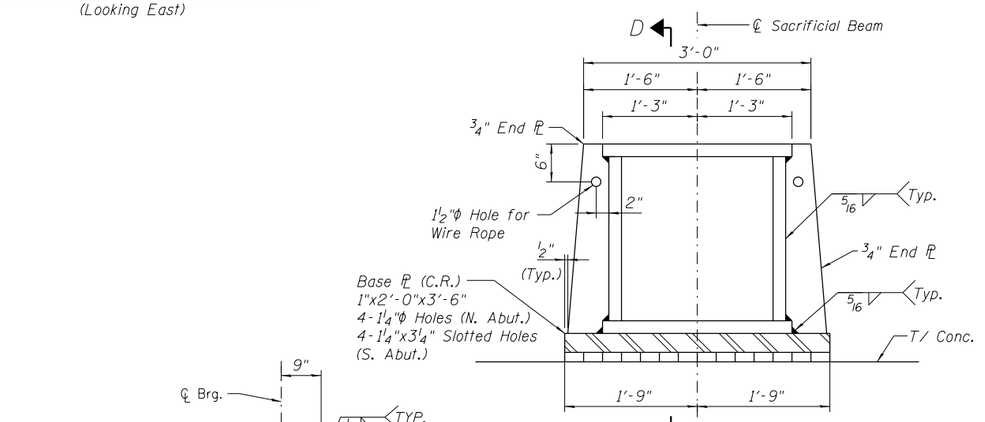


SECTION E-E

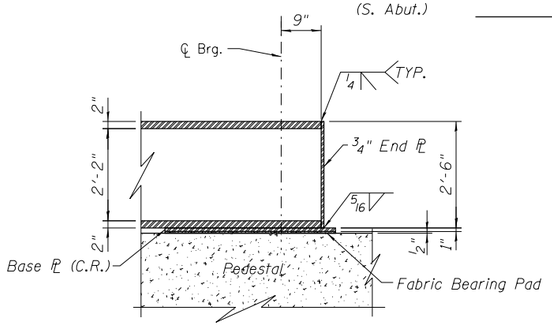


SECTION A-A

N.T.S.

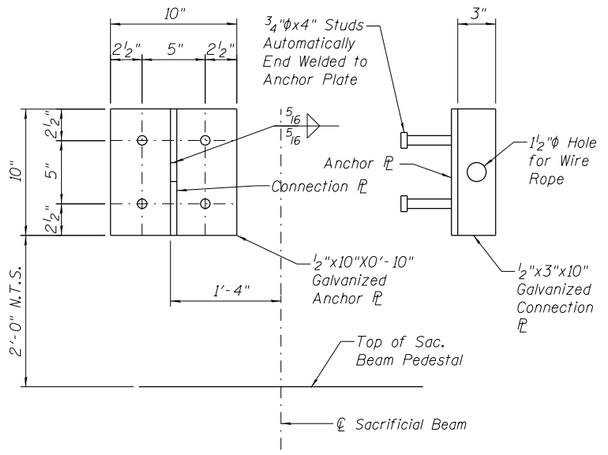


SECTION C-C

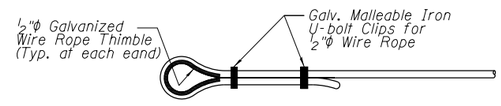


SECTION D-D

N.T.S.

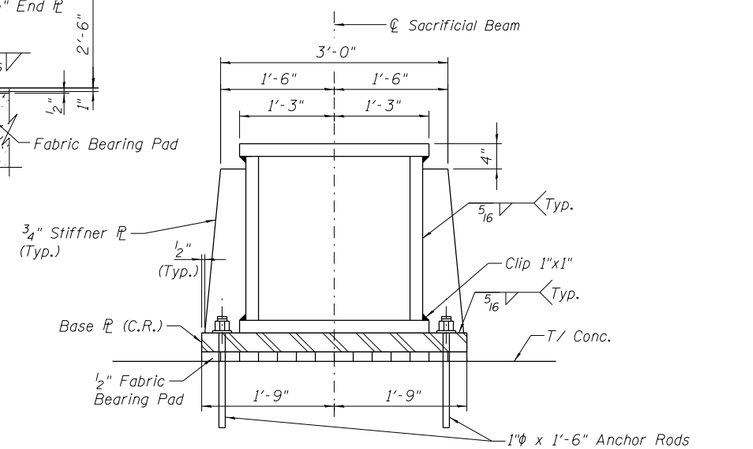


ANCHOR PLATE DETAIL

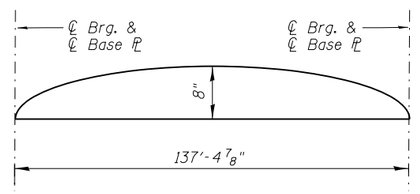


WIRE ROPE DETAIL

N.T.S.



SECTION B-B



CAMBER DIAGRAM

(PARABOLIC CURVE)

FILE NAME = ...\04906202-60K80-020.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312-346-1131 PROJECT NUMBER 3366		CHECKED - DNB	REVISED -	
	PLOT SCALE = 2.0000 ' / in.	DRAWN - R.VEJAR	REVISED -	
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SACRIFICIAL BEAM DETAILS
STRUCTURE NO. 049-0602
SHEET NO. 20 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	235
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			

PLATE GIRDER (G1 & G4) MOMENT AND SHEAR

MOMENT	
Description	At 0.5L
Dead Load	11,202.4
Live Load (E80)	11,957.8
Impact	2,570.9
Total	25,731.1
Web	1"
Flange	3"x30"
Gross I Furn.	895,700 in^4
Net I Furn.	815,117 in^4
Net Sect. Mod. - Bot.	13,107 in^3
Allow Max. Tensile Stress in Flange	27.5 ksi
Actual Max. Tensile Stress in Flange	23.6 ksi
Allow Max. Deflection (Live Load + Impact)	2.6 in
Actual Max. Deflection (Live Load + Impact)	2.0 in
SHEAR	
Dead Load	322.3 k
Live Load (E80)	384.8 k
Impact	82.7 k
Total	789.8 k
Web Shear	6.6 ksi
End Stiffener Column Area Reqd.	54.7 in^2
Section (2 Plates)	2"x14"
End Stiffener Column Area Furn.	68.0 in

PLATE GIRDER (G2 & G3) MOMENT AND SHEAR

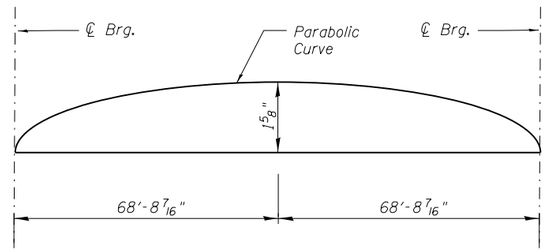
MOMENT	
Description	At 0.5L
Dead Load	20,348.3 ft-k
Live Load (E80)	23,915.7 ft-k
Impact	5,165.8 ft-k
Total	49,929.8 ft-k
Web	$1\frac{1}{8}$"
Flange	$3\frac{5}{8}$"x36"
Gross I Furn.	1,808,000 in^4
Net I Furn.	1,605,625 in^4
Net Sect. Mod. - Bot.	21,773 in^3
Allow Max. Tensile Stress in Flange	27.5 ksi
Actual Max. Tensile Stress in Flange	27.3 ksi
Allow Max. Deflection (Live Load + Impact)	2.6 in
Actual Max. Deflection (Live Load + Impact)	2.1 in
SHEAR	
Dead Load	588.9 k
Live Load (E80)	769.5 k
Impact	166.2 k
Total	1,521.6 k
Web Shear	9.4 ksi
End Stiffener Column Area Reqd.	55.5 in^2
Section (2 Plates)	2"x14"
End Stiffener Column Area Furn.	71.2 in

FLOOR BEAM MOMENT AND SHEAR

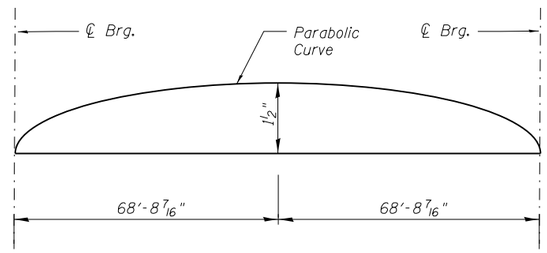
MOMENT		
Description	Floor Beam (A709, GR.50) W36x150	End Floor Beam (A709, GR.50) W40x183
Dead Load	66.3 ft-k	1,451 ft-k (Jacking) 46.8 ft-k (Bridge)
Live Load (E80)	276.0 ft-k	253.1 ft-k
Impact	111.1 ft-k	99.2 ft-k
Knee Brace	647.4 ft-k	-
Total	1,106.8 ft-k	1,451 ft-k (Jacking) 399.1 ft-k (Bridge)
Section	W36x150	W40x183
Gross I Furn.	9,040 in^4	13,300 in^4
Net I Furn.	8,893 in^4	8,886 in^4
Net Sect. Mod. - Bot.	496.0 in^3	498.8 in^3
Allow Max. Tensile Stress in Flange	27.5 ksi	27.5 ksi
Actual Max. Tensile Stress in Flange	26.8 ksi	25.52 ksi (Jacking) 9.6 ksi (Bridge)
Allow Max. Deflection (Live Load + Impact)	0.394 in	0.367 in
Actual Max. Deflection (Live Load + Impact)	0.132 in	0.063 in
SHEAR		
Dead Load	10.4 k	322.3 k (Jacking) 9.3 k (Bridge)
Live Load (E80)	34.5 k	34.5 k (Bridge)
Impact	13.9 k	13.5 k (Bridge)
Knee Brace	185.0	-
Total	243.8 k	322.3 k (Jacking) 57.3 k (Bridge)
Web Shear	10.2 ksi	14.7 ksi (Jacking) 2.6 ksi (Bridge)

BEARING ON CONCRETE

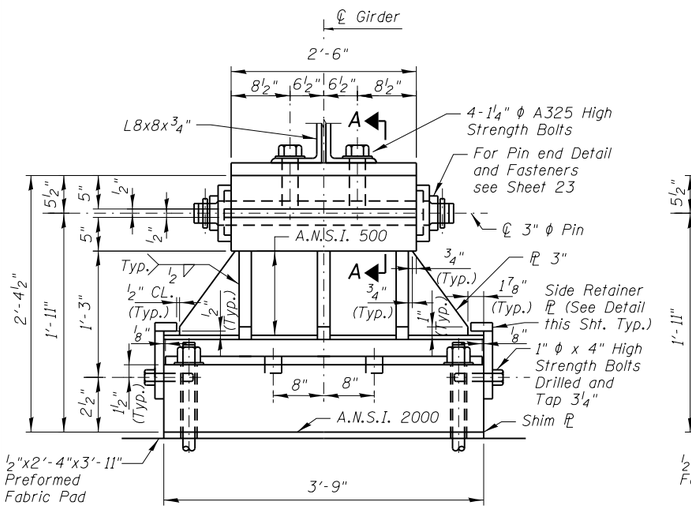
Description	Girder G1 or G4	Girder G2 or G3
Total Reaction	791 k	1,526 k
Bearing Area Furnished	1,170 in	1,536 in
Average Brg. Pressure	0.68 ksi	1.00 ksi



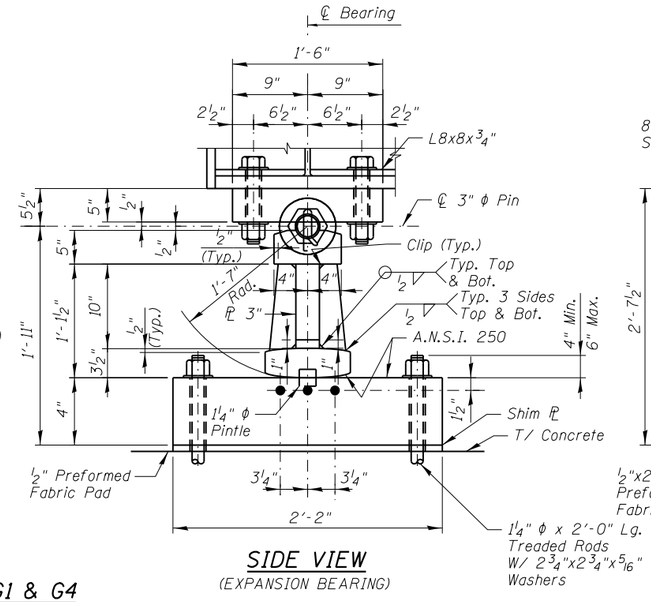
CAMBER DIAGRAM (GIRDERS G1 & G4)



CAMBER DIAGRAM (GIRDERS G2 & G3)

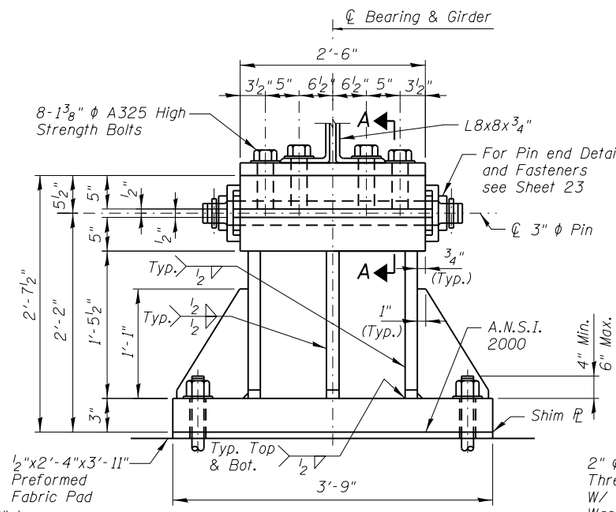


ELEVATION
(EXPANSION BEARING)
(S. Abutment)

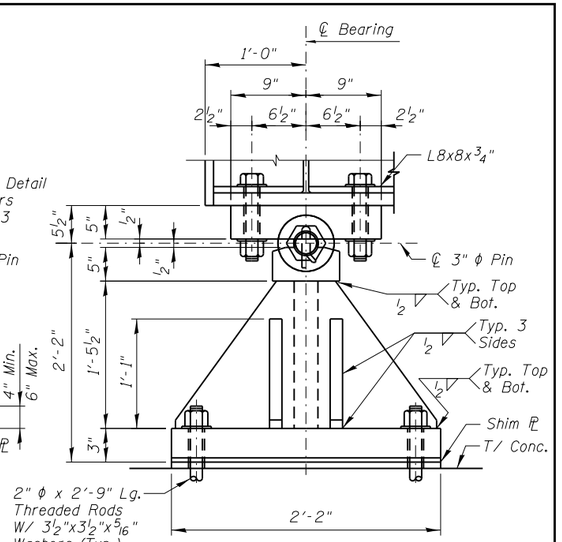


SIDE VIEW
(EXPANSION BEARING)

GIRDERS G1 & G4

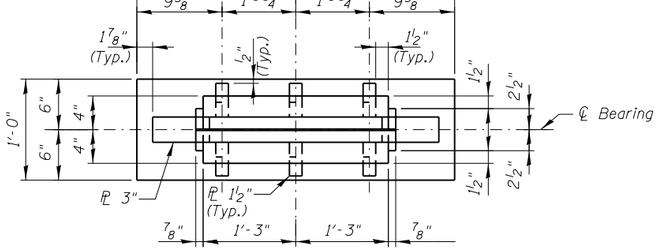


ELEVATION
(FIXED BEARING)
(N. Abutment)

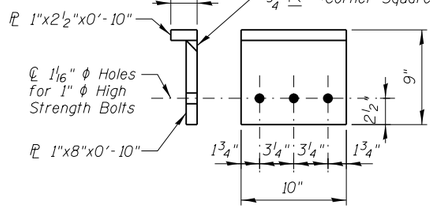


SIDE VIEW
(FIXED BEARING)

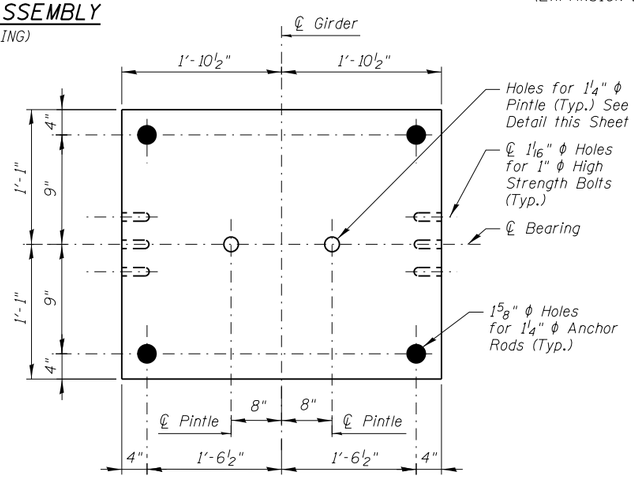
GIRDERS G1 & G4



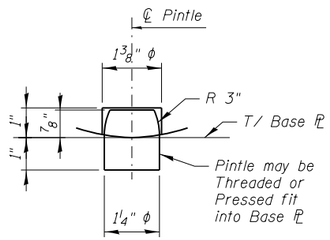
LOWER BEARING ASSEMBLY
(EXPANSION BEARING)



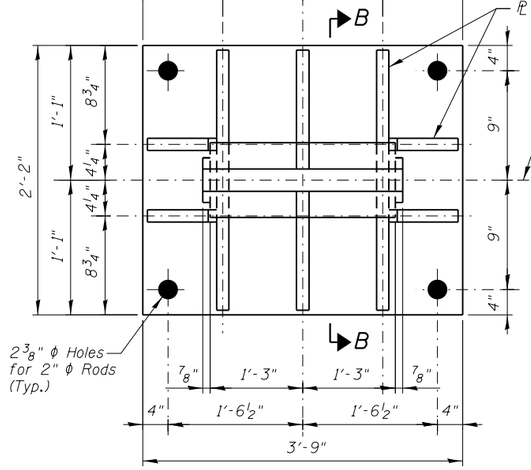
SIDE RETAINER DETAIL
(EXPANSION BEARING)



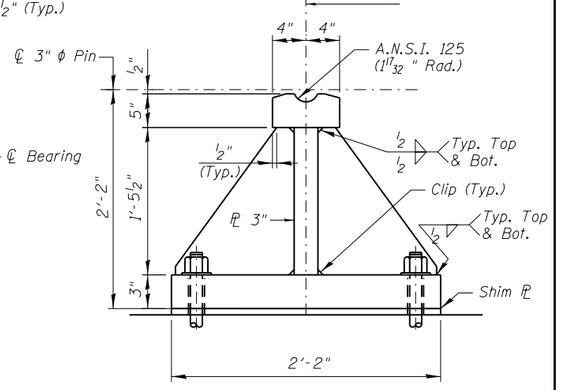
BASE PLATE PLAN
(EXPANSION BEARING)



PINTLE DETAIL
(EXPANSION BEARING)



BOTTOM PLAN
(FIXED BEARING)



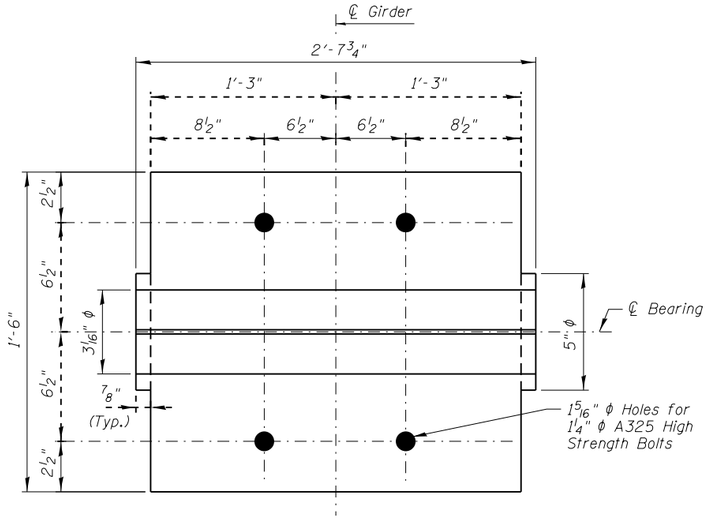
SECTION B_B
(FIXED BEARING)

NOTES :

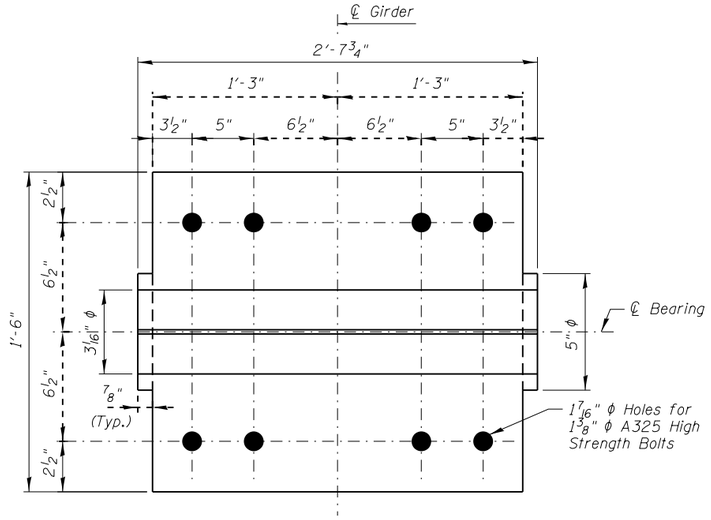
1. For Section A-A and Upper Bearing Assembly, See Sheet No. 23.
2. For Additional Notes See Sheet No. 23.
3. Grease Bearing Assembly before Installaion.
4. Grease hole/fitting shall be on street side of Bearing.
5. Bearings shall be blocked during construction.

FILE NAME = ...\04906202-60K80-022.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STEEL BEARING – 1 GIRDERS G1 & G4 STRUCTURE NO. 049-0602
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131		CHECKED - DNB	REVISED -		SHEET NO. 22 OF 43 SHEETS
	PLOT SCALE = 24:0.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -		
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	237
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



UPPER BEARING ASSEMBLY BOTTOM VIEW (EXPANSION BEARING)



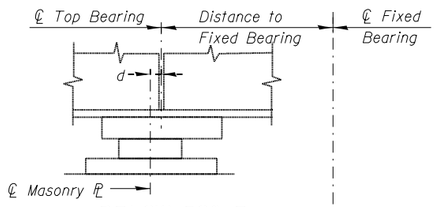
UPPER BEARING ASSEMBLY BOTTOM VIEW (FIXED BEARING)

NOTES :

1. Pin material must be ASTM A-668 Class F, harden to a Brinell Hardness of 200.
2. Material for bearing component parts must be ASTM A709, Grade 50, except as noted.
3. Bearing assembly weldments must be stress relieved by heat treating per AWS D1.1 prior to finish machining.
4. The parts of members in contact must be faced and bearing surfaces must be planed smooth before any welding is started.
5. Pintles must be stainless steel conforming to ASTM A276, Type 410 annealed.
6. Bearing pins or rockers and all surfaces in contact with pins or rockers must be given an all-over smooth finish.
7. Bearing seat surfaces will be constructed or adjusted to the designated elevations within a tolerance of 1/8". Adjustment must be made by grinding the surface or by shimming the bearing. Two 1/8" adjusting shims, of the dimensions of the bottom bearing plates, will be provided for each bearing in addition to all other plates or shims.
8. Shim plates will be placed between the base plate and the preformed fabric pad. Shim plates will match the footprint of the base plate. Heights of individual shim plates will be a minimum of 3/8" and a maximum of 2". The fabricator will determine the thickness of individual plates to obtain the equivalent shim height required.
9. Concrete surface under bearing to be ground to a smooth level to give even bearing. Laminated fabric pads with 1/2" thickness and specified durometer hardness will be placed under each bearing.
10. The cost of all steel weldments, plate washers, pins, recessed nuts, cap washers and preformed fabric pads is included in the cost of "Steel Bearing Assembly".

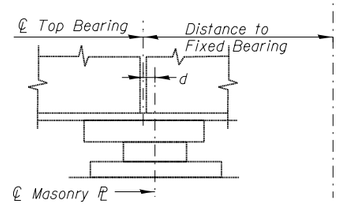
NOTE :

A.I.S.I. 1000 for Plates in Contract Unless noted Otherwise (typ.)



BELOW 50° F

(Move masonary ℄ away from fixed bearing)

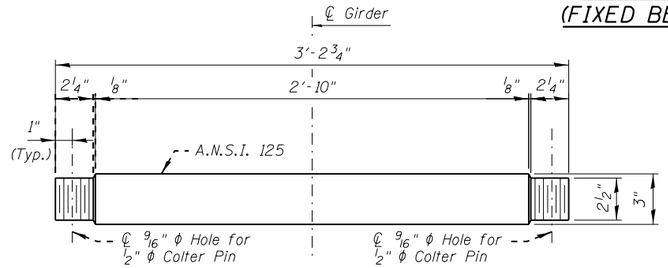


ABOVE 50° F

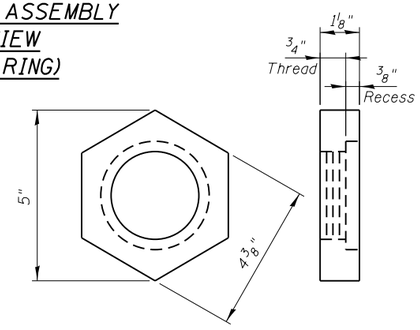
(Move masonary ℄ toward fixed bearing)

SETTING ANCHOR BOLTS AT EXPANSION BEARINGS

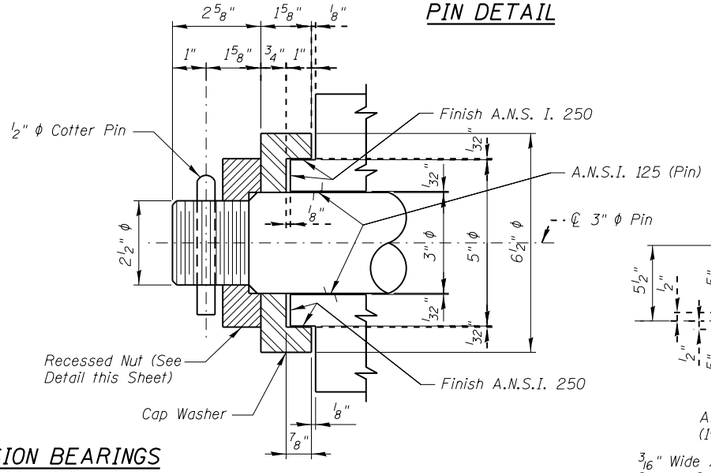
d='1/8" per each 100' of expansion for every 15° F temperature change from the normal temperature of 50° F.



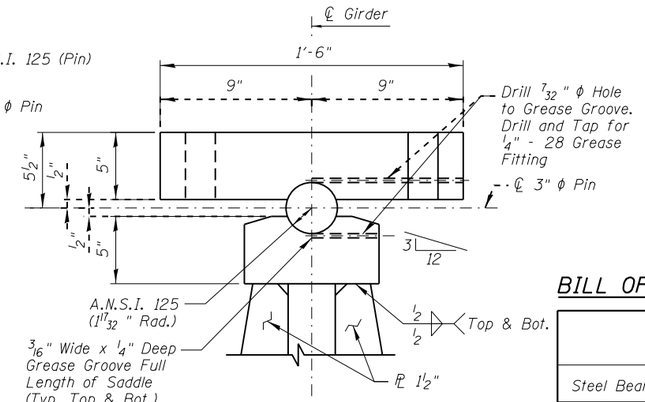
PIN DETAIL



RECESSED NUT DETAIL



PIN END DETAIL



SECTION A-A

BILL OF MATERIAL

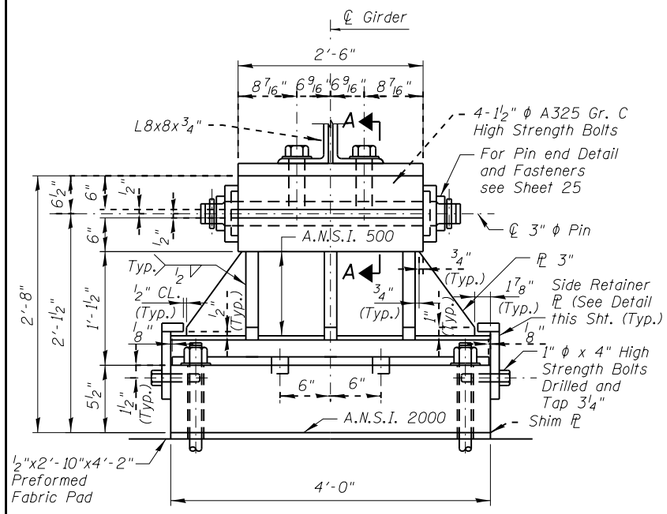
ITEM	UNIT	QUANTITY
Steel Bearing Assembly	Each	4
Anchor Bolts 1 1/4"	Each	8
Anchor Bolts 2"	Each	8

FILE NAME = ...\04906202-60K80-023.dgn	USER NAME = roltean	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS, 55 East Jackson Blvd., Suite 600, Chicago, Illinois 60604, 312/346-83		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366	PLOT SCALE = 24:0.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 12/8/2016	CHECKED - BCS	REVISED -

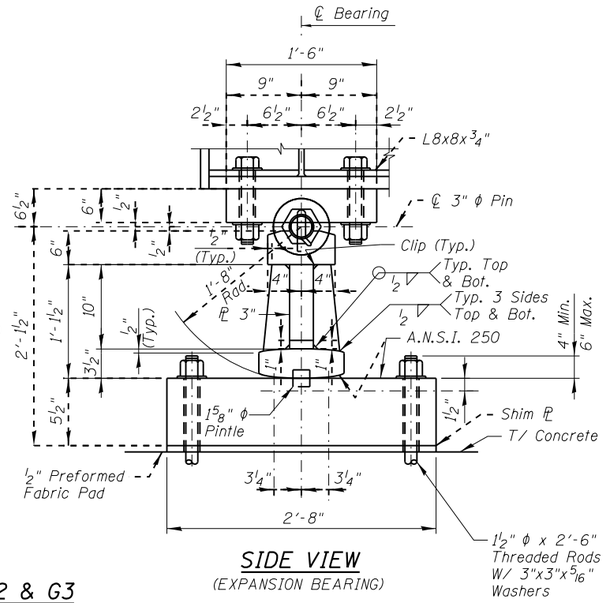
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL BEARING – 2 GIRDERS G1 & G4
STRUCTURE NO. 049-0602
SHEET NO. 23 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	238
		CONTRACT NO. 60K80		
ILLINOIS	FED. AID PROJECT			

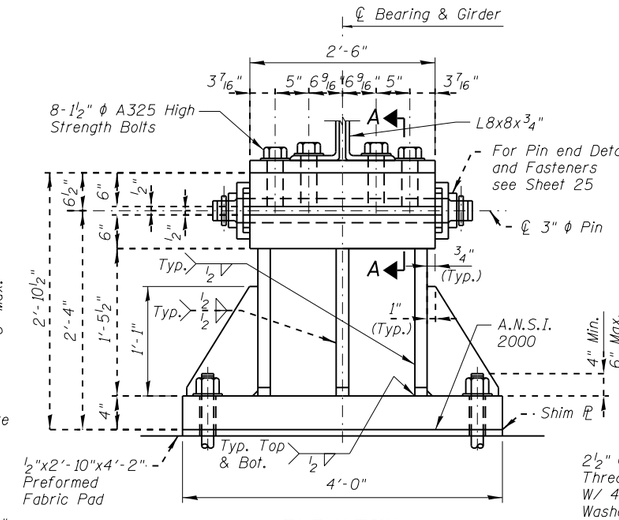


ELEVATION
(EXPANSION BEARING)
(S. Abutment)

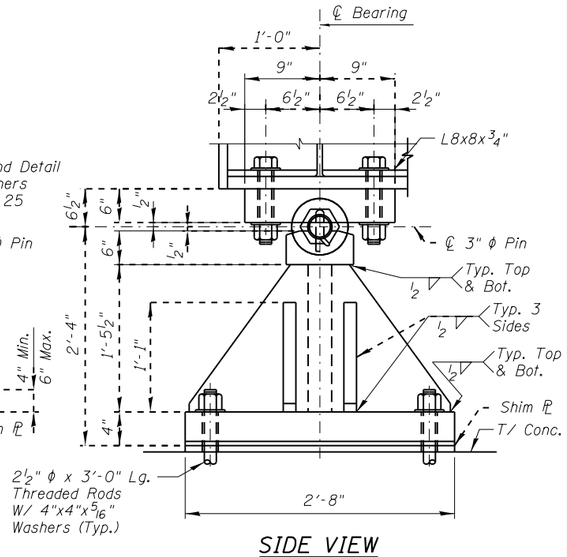


SIDE VIEW
(EXPANSION BEARING)

GIRDERS G2 & G3

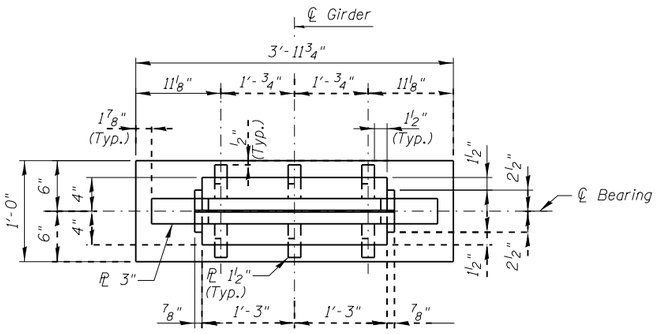


ELEVATION
(FIXED BEARING)
(N. Abutment)

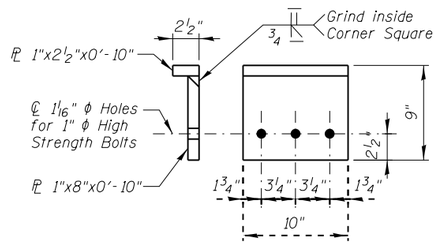


SIDE VIEW
(FIXED BEARING)

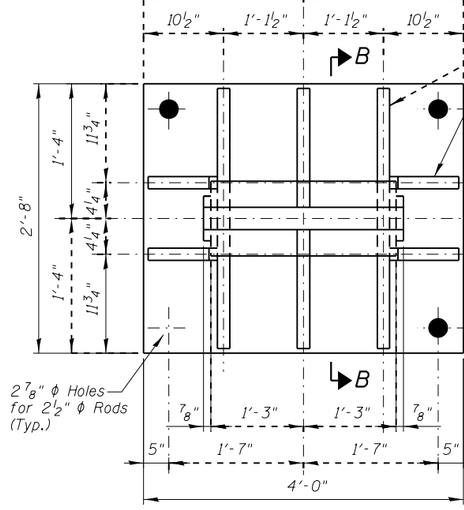
GIRDERS G2 & G3



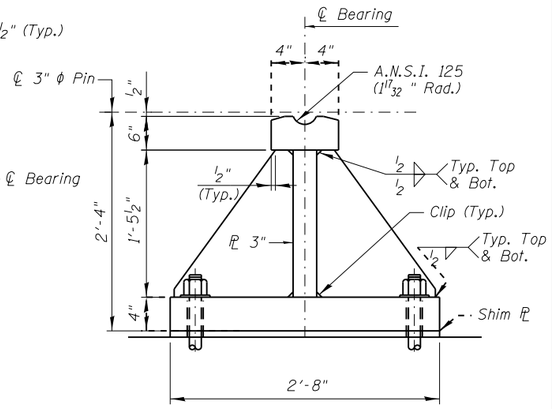
LOWER BEARING ASSEMBLY
(EXPANSION BEARING)



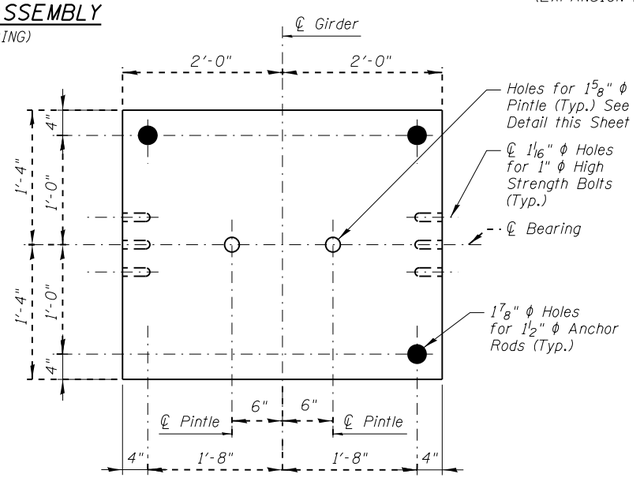
SIDE RETAINER DETAIL
(EXPANSION BEARING)



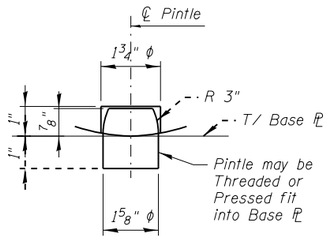
BOTTOM PLAN
(FIXED BEARING)



SECTION B-B
(FIXED BEARING)



BASE PLATE PLAN
(EXPANSION BEARING)



PINTLE DETAIL
(EXPANSION BEARING)

BILL OF MATERIAL

ITEM		UNIT	QUANTITY
Anchor Bolt	1 1/2"	Each	8
Anchor Bolt	2 1/2"	Each	8

NOTES :

1. For Section A-A and Upper Bearing Assembly, See Sheet No. 25.
2. For Additional Notes See Sheet No. 25.
3. Grease Bearing Assembly before Installation.
4. Grease Hole/fitting shall be on street side of Bearing.
5. Bearing shall be blocked during construction.

FILE NAME = ...\04906202-60K80-024.dgn
USER NAME = roltean
PLOT SCALE = 24:0.0000 ':' / in.
PLOT DATE = 12/8/2016

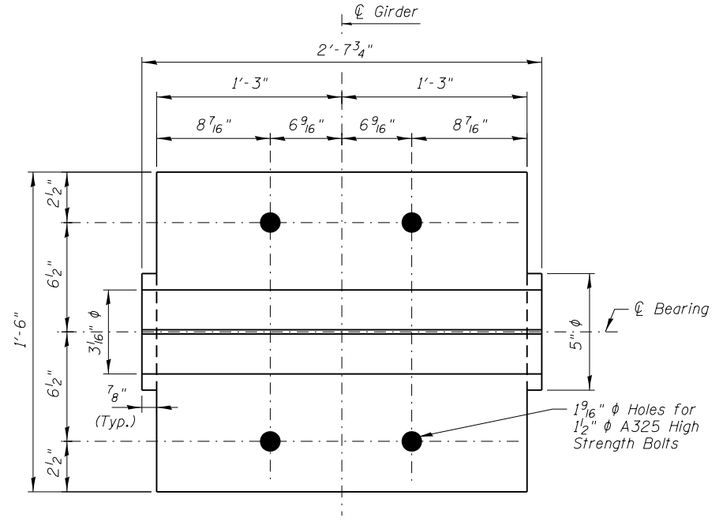
DESIGNED -	MMH	REVISED -
CHECKED -	DNB	REVISED -
DRAWN -	R.VEJAR	REVISED -
CHECKED -	BCS	REVISED -

HOH — HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS
PROJECT NUMBER 3366
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131

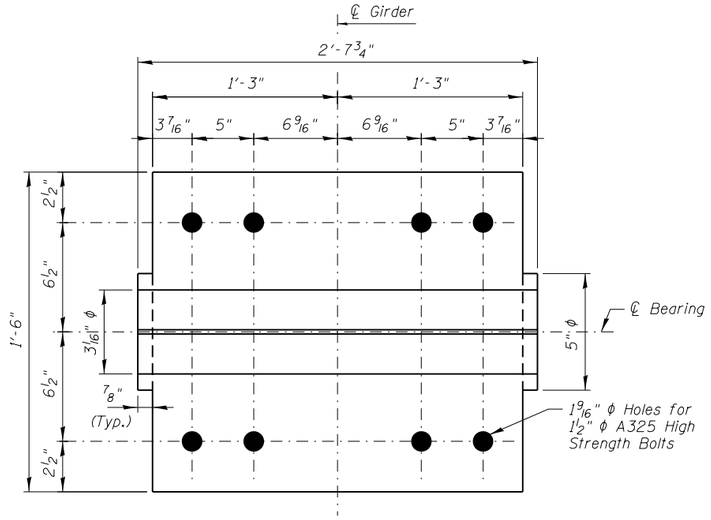
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL BEARING - 3 GIRDERS G2 & G3
STRUCTURE NO. 049-0602
SHEET NO. 24 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	239
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



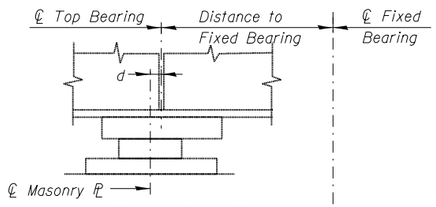
UPPER BEARING ASSEMBLY BOTTOM VIEW (EXPANSION BEARING)



UPPER BEARING ASSEMBLY BOTTOM VIEW (FIXED BEARING)

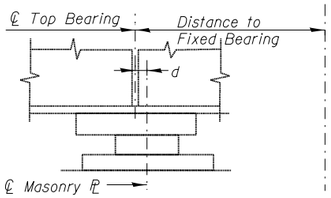
NOTE :

A.I.S.I. 1000 for Plates in Contract Unless noted Otherwise (typ.)



BELOW 50° F

(Move masonary ℄ away from fixed bearing)

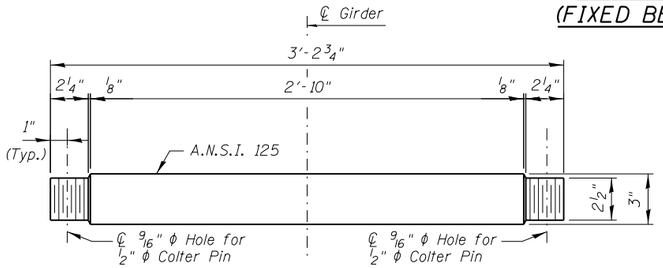


ABOVE 50° F

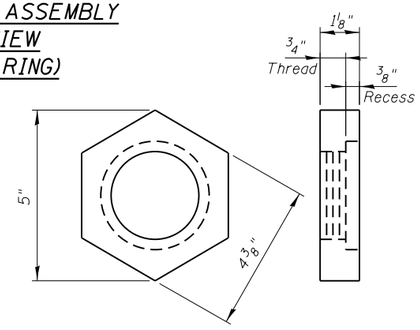
(Move masonary ℄ toward fixed bearing)

SETTING ANCHOR BOLTS AT EXPANSION BEARINGS

d= 1/8" per each 100' of expansion for every 15° F temperature change from the normal temperature of 50° F.

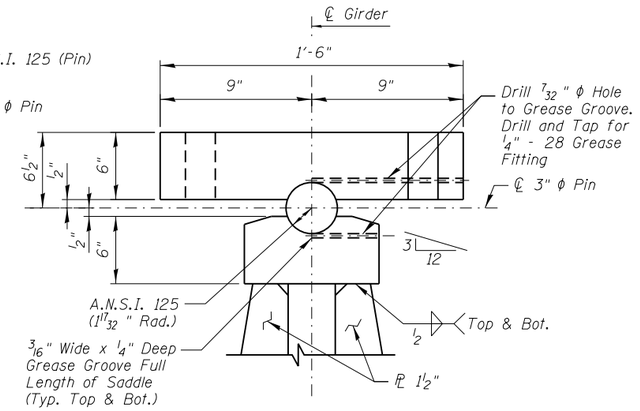


PIN DETAIL



RECESSED NUT DETAIL

PIN END DETAIL



SECTION A-A

NOTES :

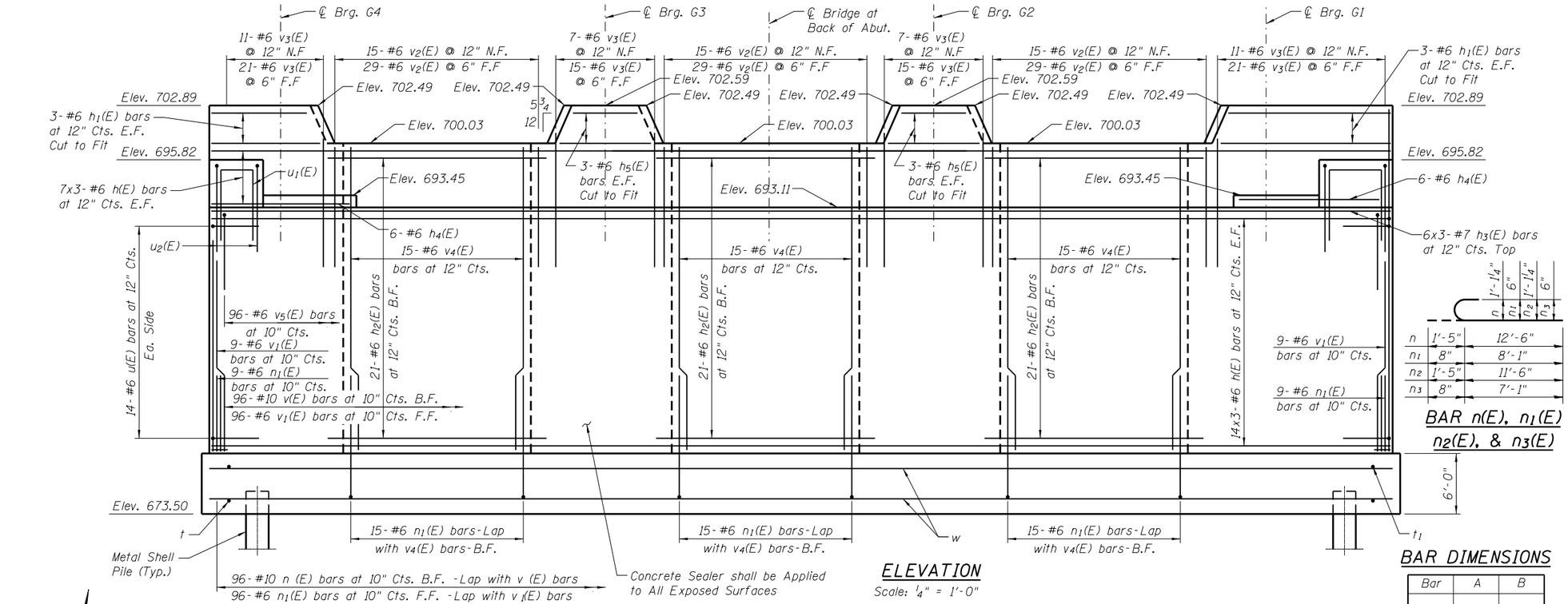
1. Pin material must be ASTM A-668 Class F. harden to a Brinell Hardness of 200.
2. Material for bearing component parts must be ASTM A709, Grade 50, except as noted.
3. Bearing assembly weldments must be stress relieved by heat treating per AWS D1.1 prior to finish machining.
4. The parts of members in contact must be faced and bearing surfaces must be planed smooth before any welding is started.
5. Pintles must be stainless steel conforming to ASTM A276, Type 410 annealed.
6. Bearing pins or rockers and all surfaces in contact with pins or rockers must be given an all-over smooth finish.
7. Bearing seat surfaces will be constructed or adjusted to the designated elevations within a tolerance of 1/8". Adjustment must be made by grinding the surface or by shimming the bearing. Two 1/8" adjusting shims, of the dimensions of the bottom bearing plates, will be provided for each bearing in addition to all other plates or shims.
8. Shim plates will be placed between the base plate and the preformed fabric pad. Shim plates will match the footprint of the base plate. Heights of individual shim plates will be a minimum of 3/8" and a maximum of 2". The fabricator will determine the thickness of individual plates to obtain the equivalent shim height required.
9. Concrete surface under bearing to be ground to a smooth level to give even bearing. Laminated fabric pads with 1/2" thickness and specified durometer hardness will be placed under each bearing.
10. The cost of all steel weldments, pins, recessed nuts, cap washers and preformed fabric pads in the cost of "Steel Bearing Assembly".

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Steel Bearing Assembly	Each	4

FILE NAME = ...\04906202-60K80-025.dgn	USER NAME = lestrada	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STEEL BEARING – 4 GIRDERS G2 & G3 STRUCTURE NO. 049-0602
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-83		CHECKED - DNB	REVISED -		SHEET NO. 25 OF 43 SHEETS
	PLOT SCALE = 288.0000 '' / ft.	DRAWN - R.VEJAR	REVISED -		
	PLOT DATE = 12/7/2016	CHECKED - BCS	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	240
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



ELEVATION

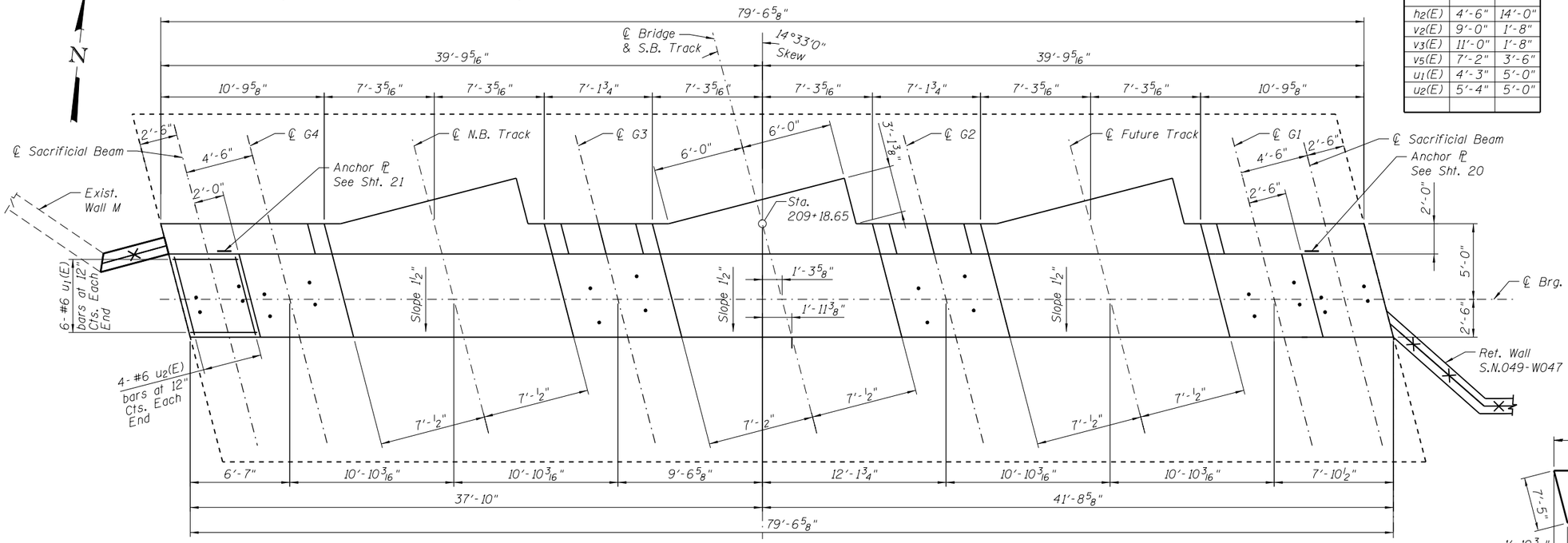
Scale: 1/4" = 1'-0"

	n	n1	n2	n3
	1'-5"	8"	1'-5"	8"
	12'-6"	8'-1"	11'-6"	7'-1"

BAR n(E), n1(E) n2(E), & n3(E)

BAR DIMENSIONS

Bar	A	B
h2(E)	4'-6"	14'-0"
v2(E)	9'-0"	1'-8"
v3(E)	11'-0"	1'-8"
v5(E)	7'-2"	3'-6"
u1(E)	4'-3"	5'-0"
u2(E)	5'-4"	5'-0"



TOP VIEW

Scale: 1/4" = 1'-0"

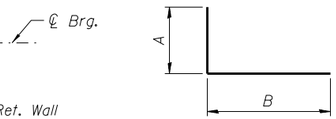
ABUTMENT BILL OF MATERIAL (TWO ABUTMENTS)

Bar	No.	Size	Length	Shape
h(E)	252	#6	28'-2"	
h1(E)	24	#6	10'-5"	
h2(E)	126	#6	18'-6"	
h3(E)	36	#7	28'-8"	
h4(E)	24	#6	10'-5"	
h5(E)	24	#6	6'-9"	
n(E)	96	#10	13'-11"	
n1(E)	159	#6	8'-9"	
n2(E)	96	#10	12'-11"	
n3(E)	159	#6	7'-9"	
t(E)	146	#10	22'-8"	
t1(E)	95	#9	22'-8"	
t2(E)	145	#10	19'-8"	
t3(E)	80	#9	19'-8"	
u(E)	56	#6	13'-5"	
u1(E)	24	#6	14'-3"	
u2(E)	16	#6	15'-4"	
v(E)	96	#10	13'-5"	
v1(E)	114	#6	13'-5"	
v2(E)	264	#6	10'-8"	
v3(E)	216	#6	12'-8"	
v4(E)	45	#6	20'-4"	
v5(E)	192	#6	14'-2"	
v6(E)	45	#6	20'-8"	
v7(E)	96	#10	14'-0"	
v8(E)	114	#6	14'-0"	
w(E)	258	#6	28'-2"	

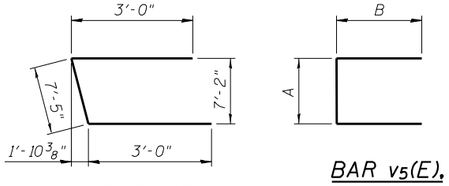
Structure Excavation	Cu. Yd.	2,305
Concrete Structures	Cu. Yd.	1,367
Reinforcement Bars Epoxy Coated	Pound	115,632
Furnishing Metal Shell Piles, 14"Φx0.312" Walls	Foot	5,760
Driving Piles	Foot	5,760
Test Pile Metal Shells	Each	2
Concrete Sealer	S.F.	4710
Asphalt Waterproofing	Sq. Yd.	366

NOTES:

1. Bars designated (E) shall be Epoxy Coated.
2. Bars indicated thus 1x3- #5 Etc. indicates 1 line of bar with 3 lengths.



BAR h2(E), v2(E) & v3(E)



BAR u(E)

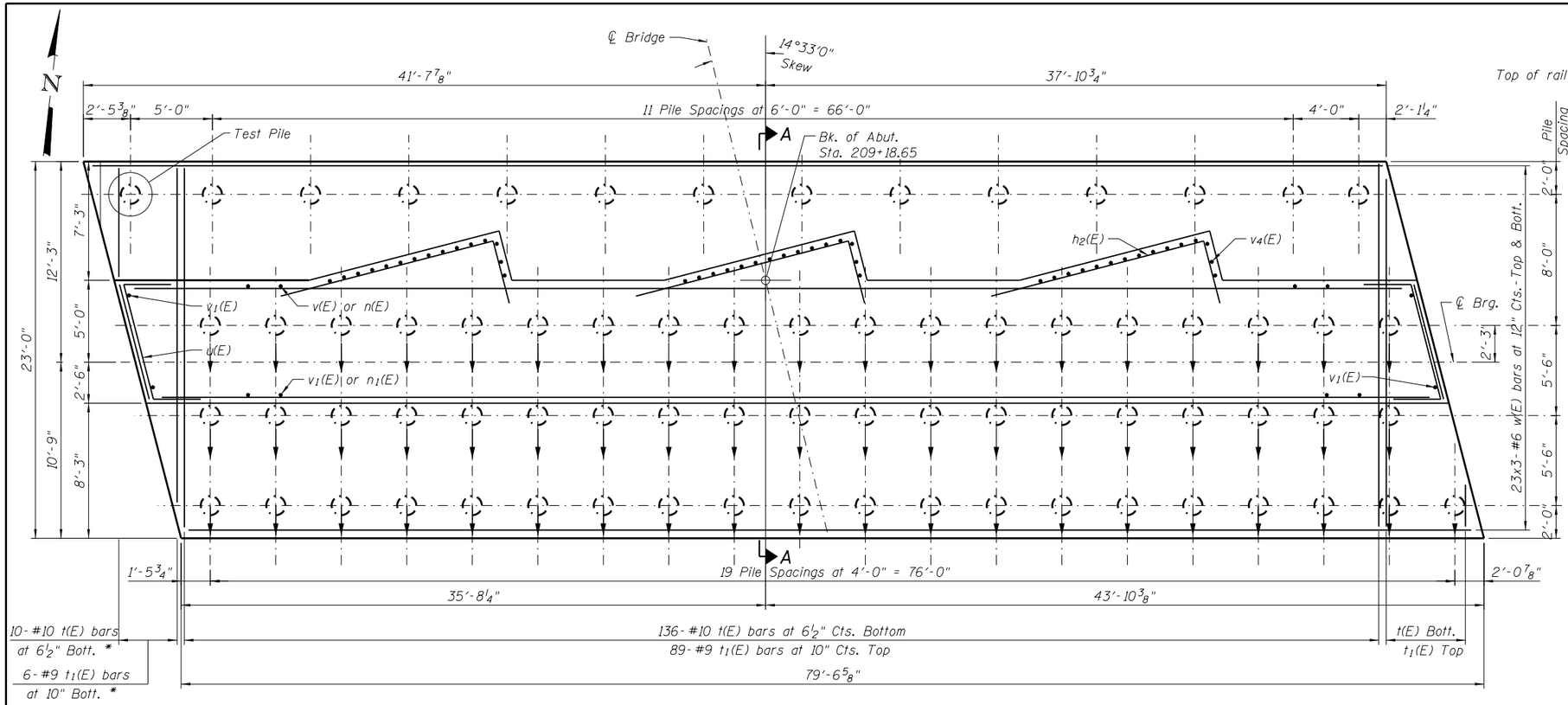
BAR v5(E), u1(E) & u2(E)

FILE NAME = ...\04906202-60K80-026.dgn	USER NAME = roltean	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-83 PROJECT NUMBER 3366		CHECKED - DNB	REVISED -
	PLOT SCALE = 8:0.0000 '/ in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 12/8/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

NORTH ABUTMENT – 1
STRUCTURE NO. 049-0602
SHEET NO. 26 OF 43 SHEETS

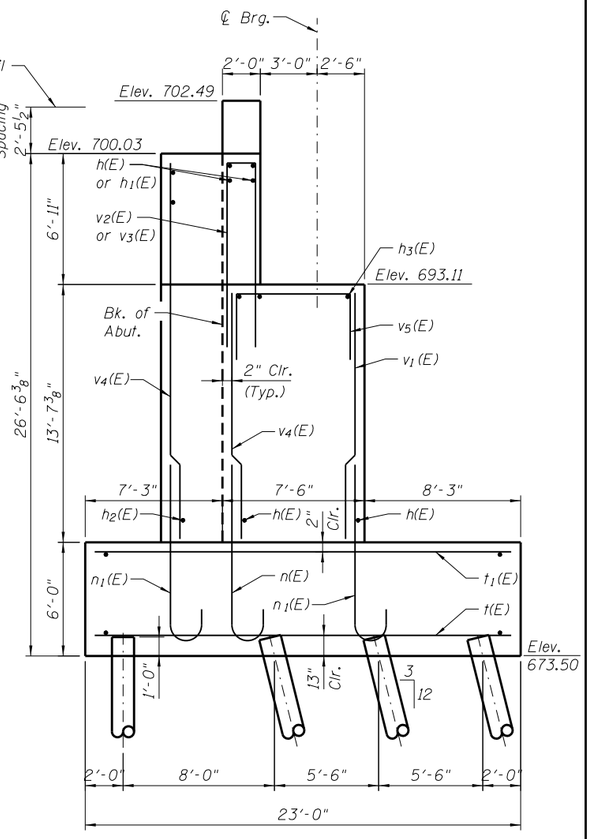
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	241
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



FOUNDATION PLAN

Scale: 1/4" = 1'-0"

* Order t(E) and t_1(E) bars full length. Cut to fit skew and use remainder of bars in opposite corners.

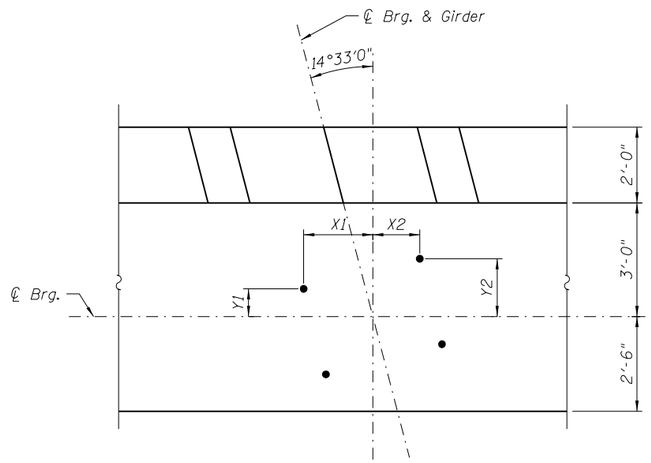


SECTION A-A

Scale: 1/4" = 1'-0"

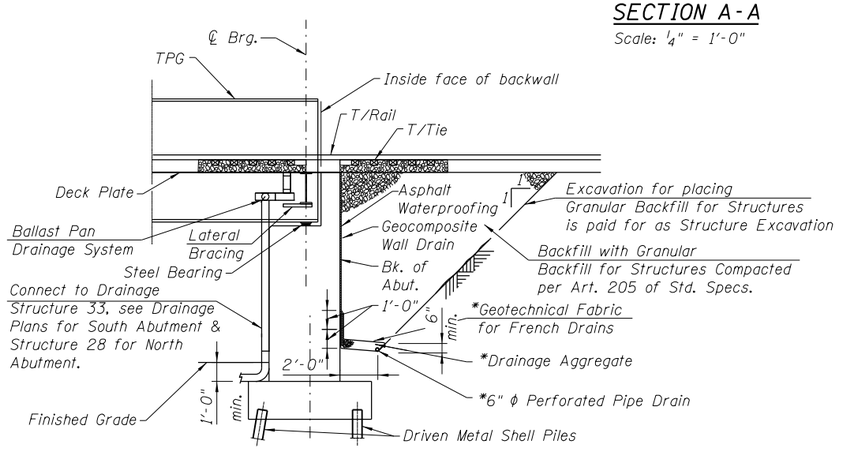
ANCHOR ROD LOCATION DIMENSION TABLE

Location	X1	Y1	X2	Y2
G1 & G4-S. Abut.	1'-8 3/16"	4 1/16"	1'-3 5/8"	1'-1 3/8"
G1 & G4-N. Abut.	1'-8 3/16"	4 1/16"	1'-3 5/8"	1'-1 3/8"
G2 & G3-S. Abut.	1'-10 3/8"	6 5/8"	1'-4 3/8"	1'-4 5/8"
G2 & G3-N. Abut.	1'-9 15/16"	8 3/4"	1'-2 7/8"	1'-6 5/16"
Sacrificial Beam	1'-6 7/16"	1 7/16"	1'-3 7/16"	10 3/16"



ANCHOR BOLT LOCATION PLAN

N.T.S.



* Included in cost of Pipe Underdrain for Structures.

Note:
Backfill & drainage details are applicable to both abutments.

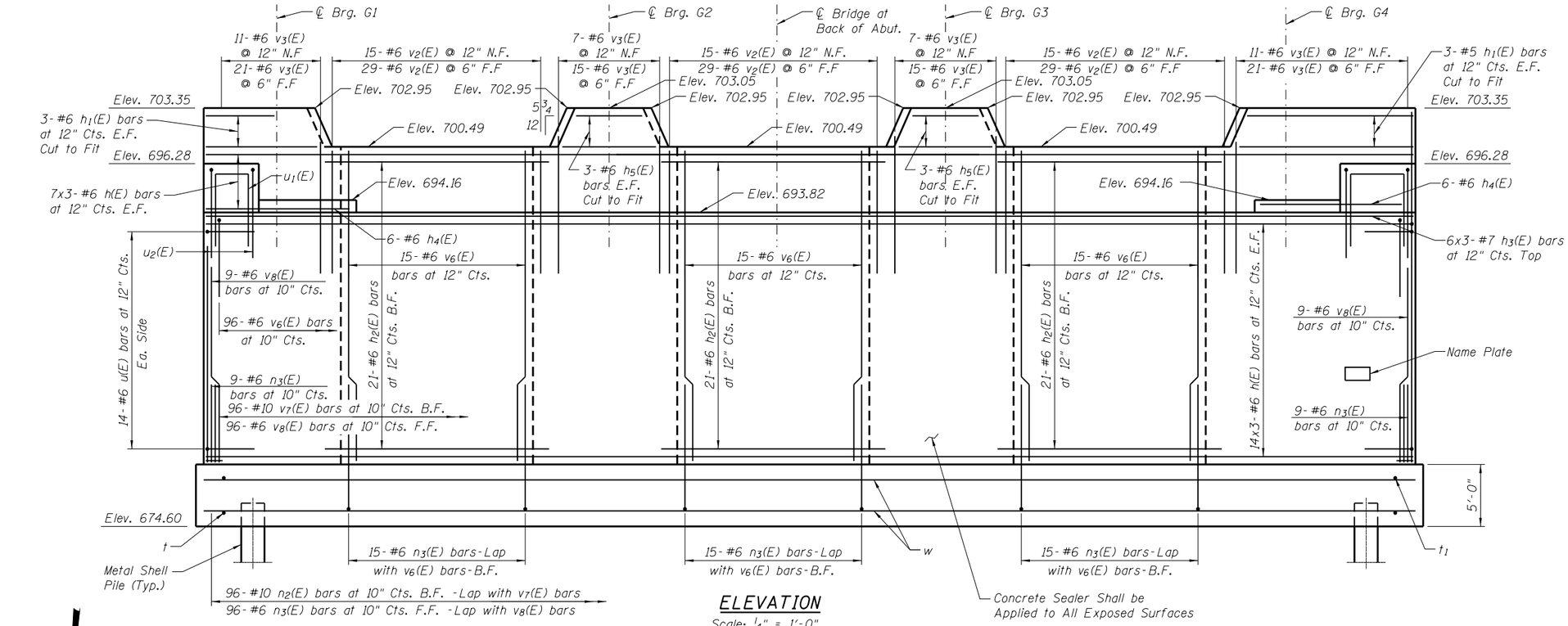
SECTION A-A ABUTMENT SECTION

FILE NAME = ...\04906202-60K80-027.dgn	USER NAME = lestrada	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366 — 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-83	PLOT SCALE = 96.0.0000 ':' / ft.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 12/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

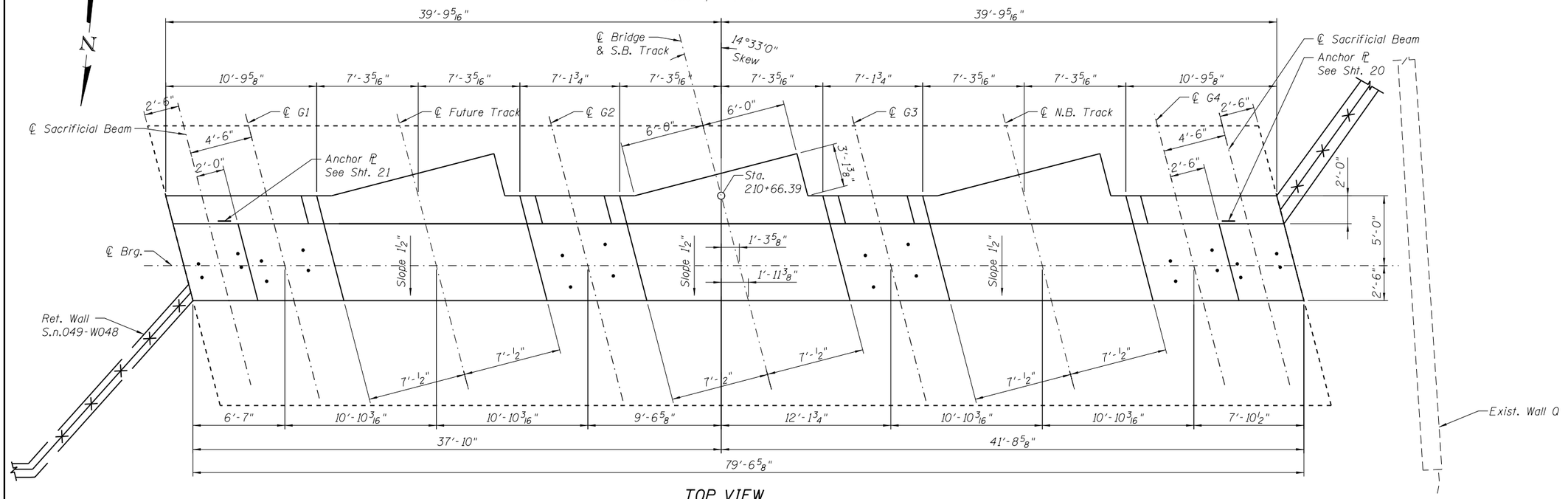
NORTH ABUTMENT – 2
STRUCTURE NO. 049-0602
SHEET NO. 27 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	242
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		



ELEVATION

Scale: 1/4" = 1'-0"



TOP VIEW

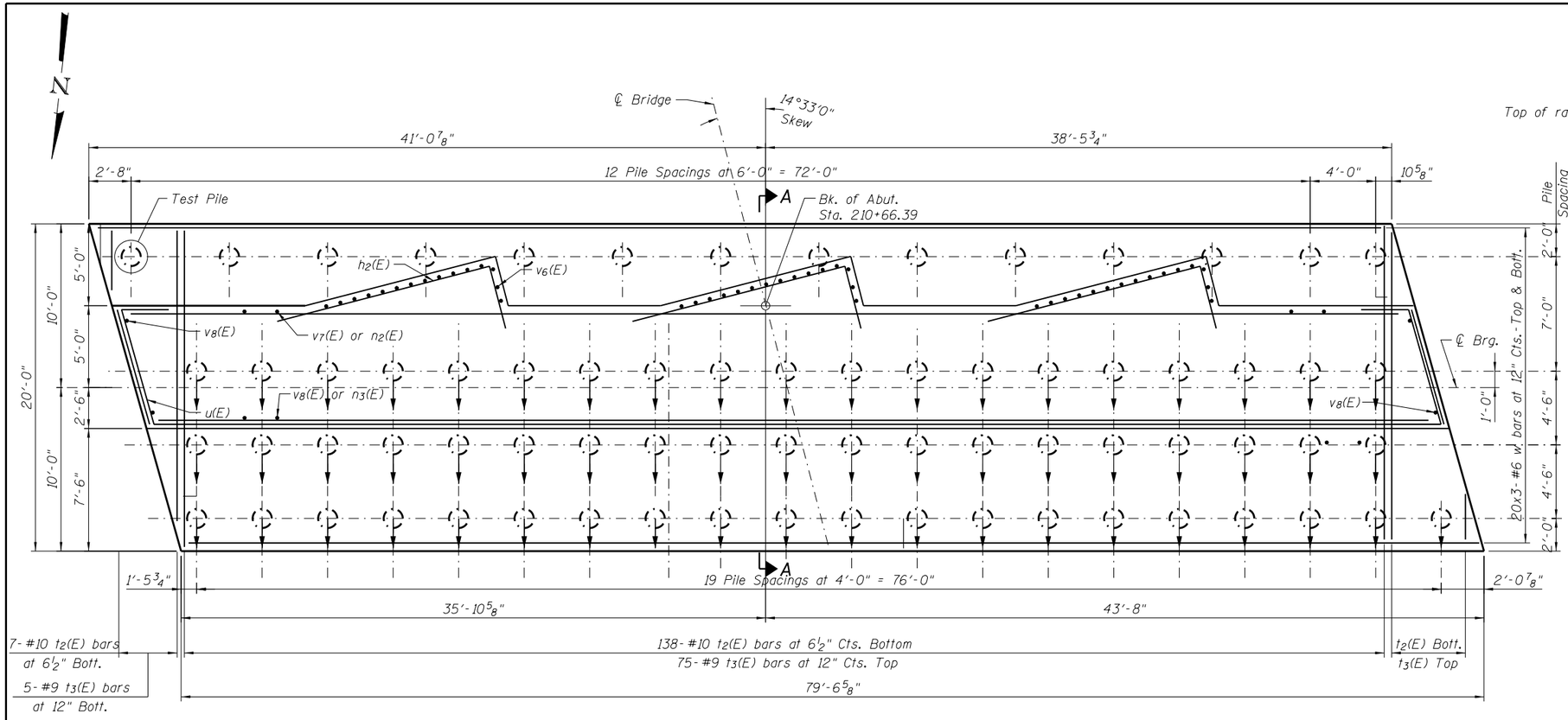
Scale: 1/4" = 1'-0"

FILE NAME = ...\04906202-60K80-028.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-83 PROJECT NUMBER 3366		CHECKED - DNB	REVISED -
	PLOT SCALE = 8:0.0000 '1' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOUTH ABUTMENT – 1
STRUCTURE NO. 049–0602
SHEET NO. 28 OF 43 SHEETS

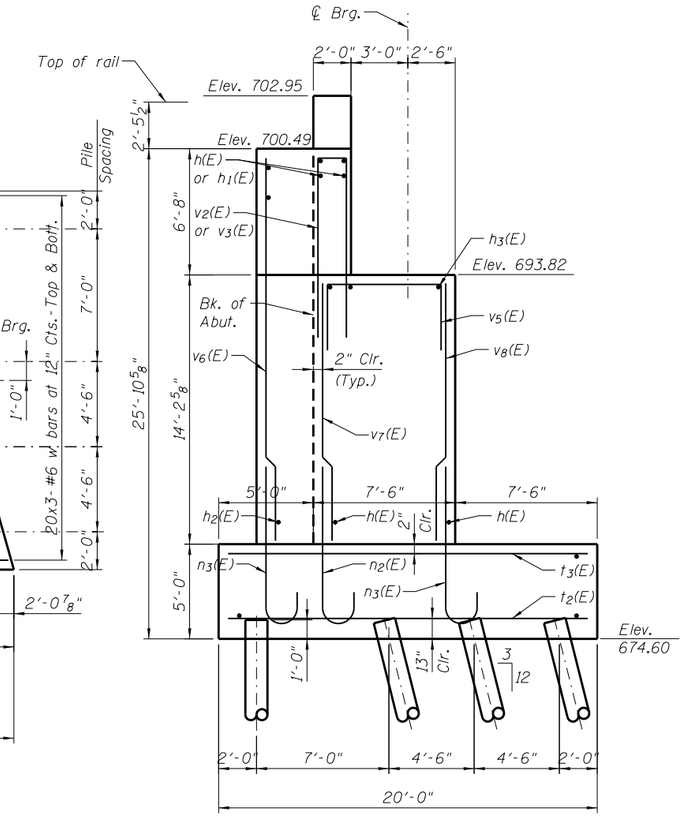
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	243
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



* Order t(E) and t_1(E) bars full length. Cut to fit skew and use remainder of bars in opposite corners.

FOUNDATION PLAN

Scale: 1/4" = 1'-0"



SECTION A-A

Scale: 1/4" = 1'-0"

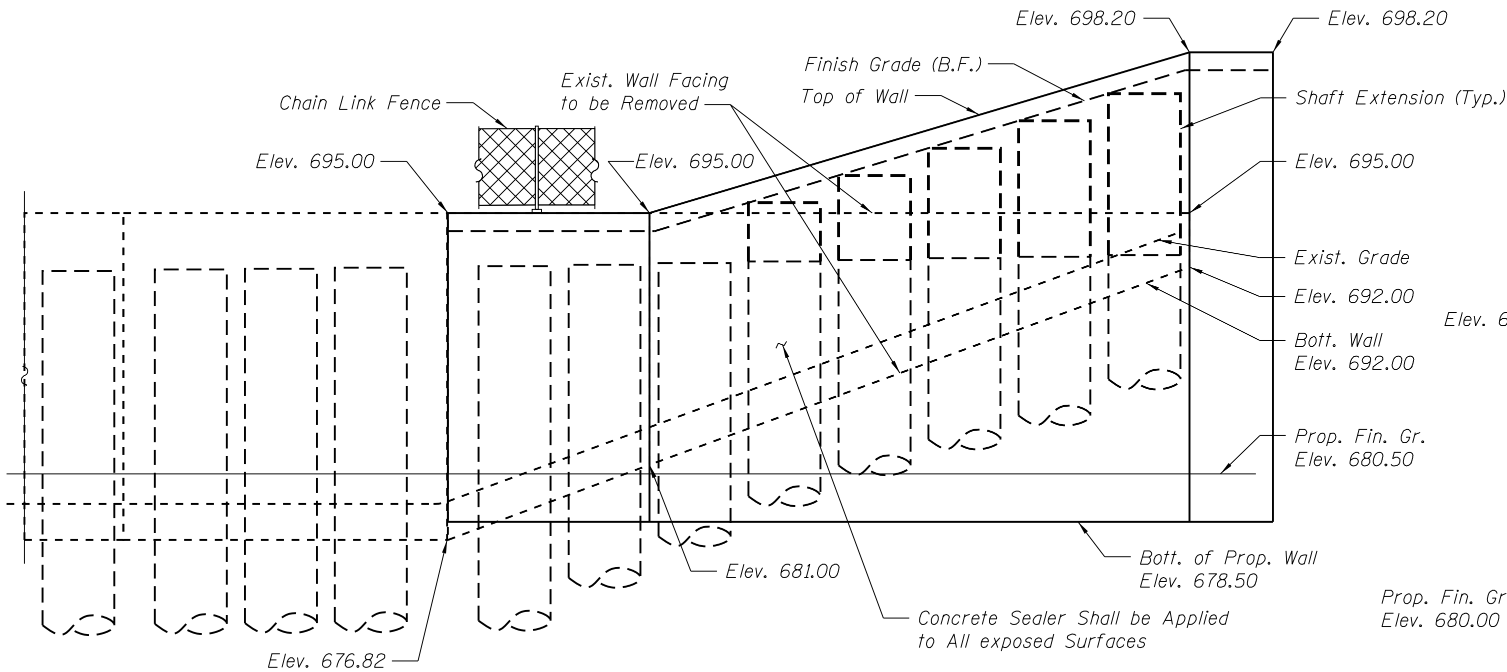
Pile Data for North and South Abutments

Type:	Metal Shell 14" dia. x .312 walls with pile shoes
Nominal Required Bearing:	516 Kips
Allowable Resistance Available:	172 Kips
Est. Length:	40 feet (vertical)
No. Required:	144 (includes 2 test piles)

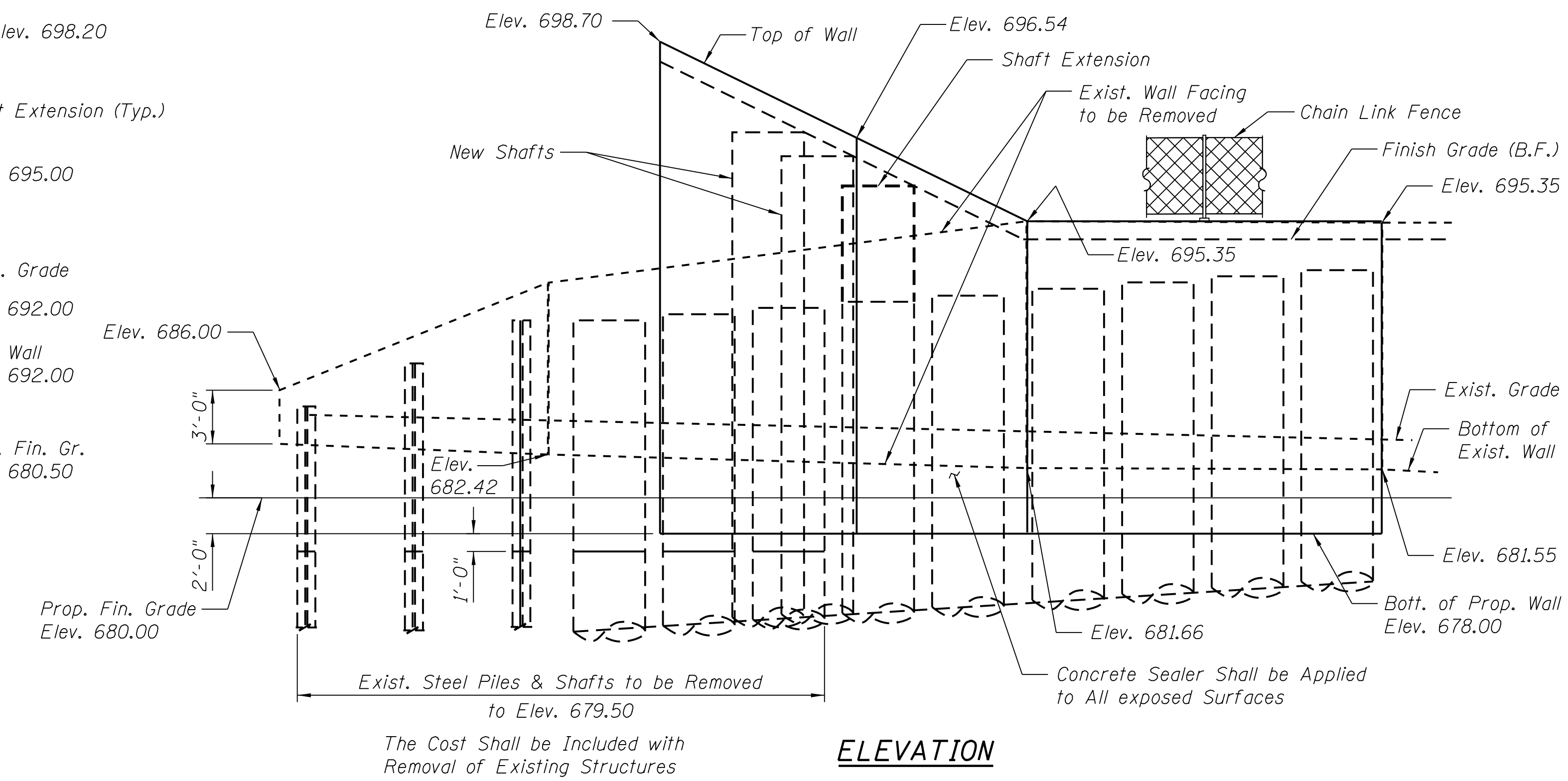
Straight (no batter)

Battered Pile

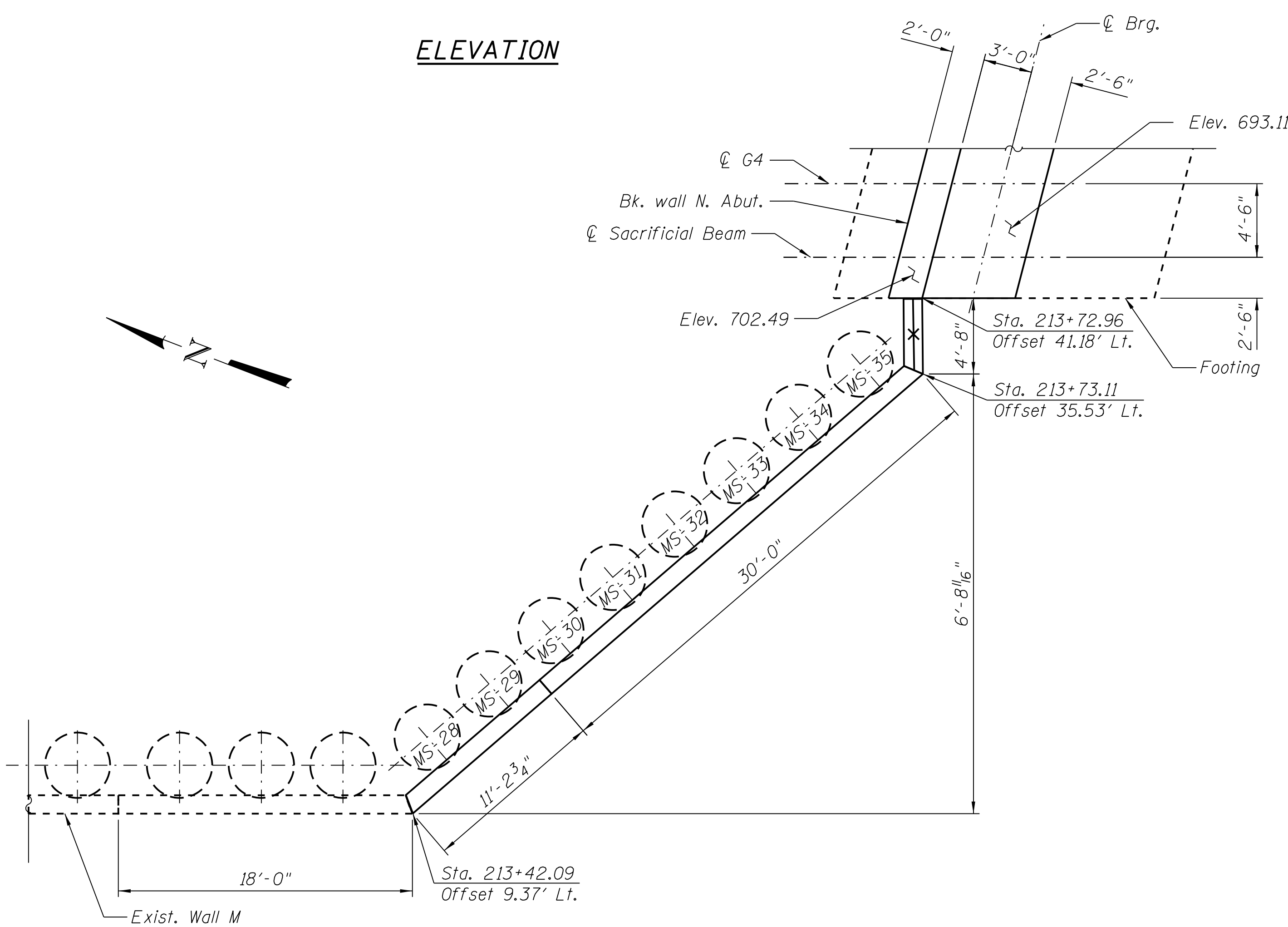
FILE NAME = ...\04906202-60K80-029.dgn	USER NAME = lestrada	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SOUTH ABUTMENT – 2 STRUCTURE NO. 049-0602	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -			346	125X-N&J-SB-B	LAKE	361	244
PROJECT NUMBER 3366	PLOT SCALE = 96.0000 ':' / ft.	DRAWN - R.VEJAR	REVISED -		SHEET NO. 29 OF 43 SHEETS				CONTRACT NO. 60K80	
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131	PLOT DATE = 12/7/2016	CHECKED - BCS	REVISED -					ILLINOIS	FED. AID PROJECT	



ELEVATION

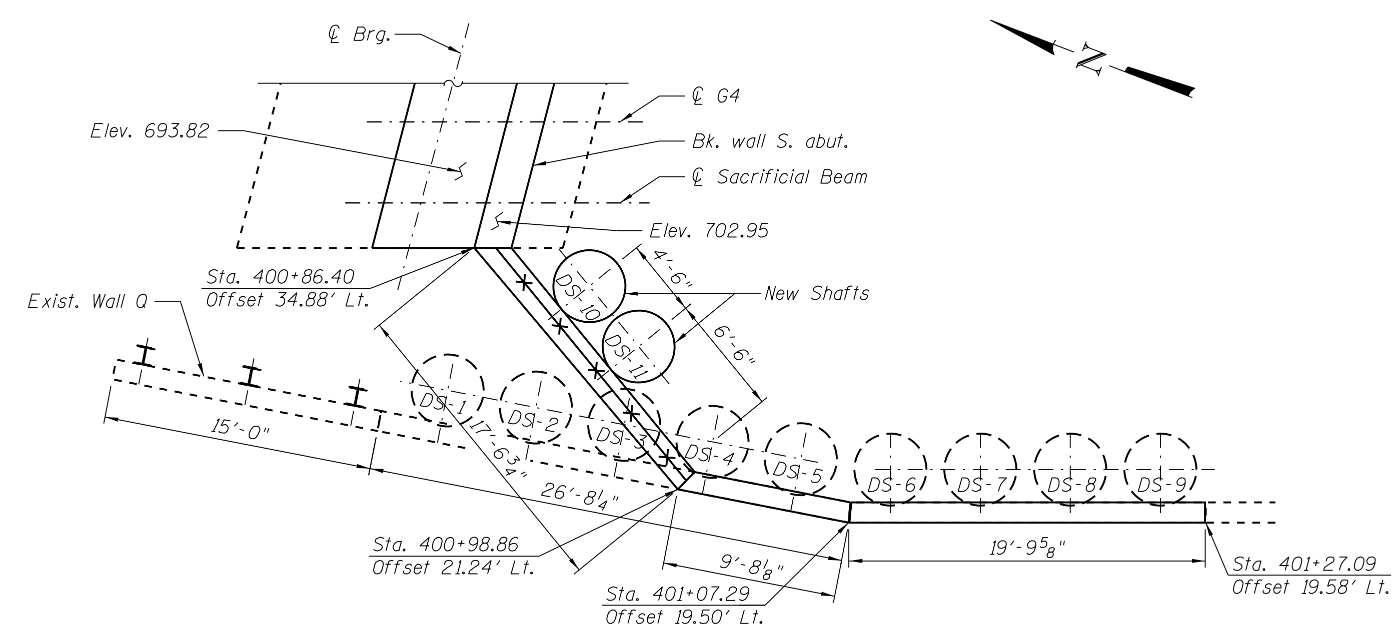


ELEVATION



PLAN

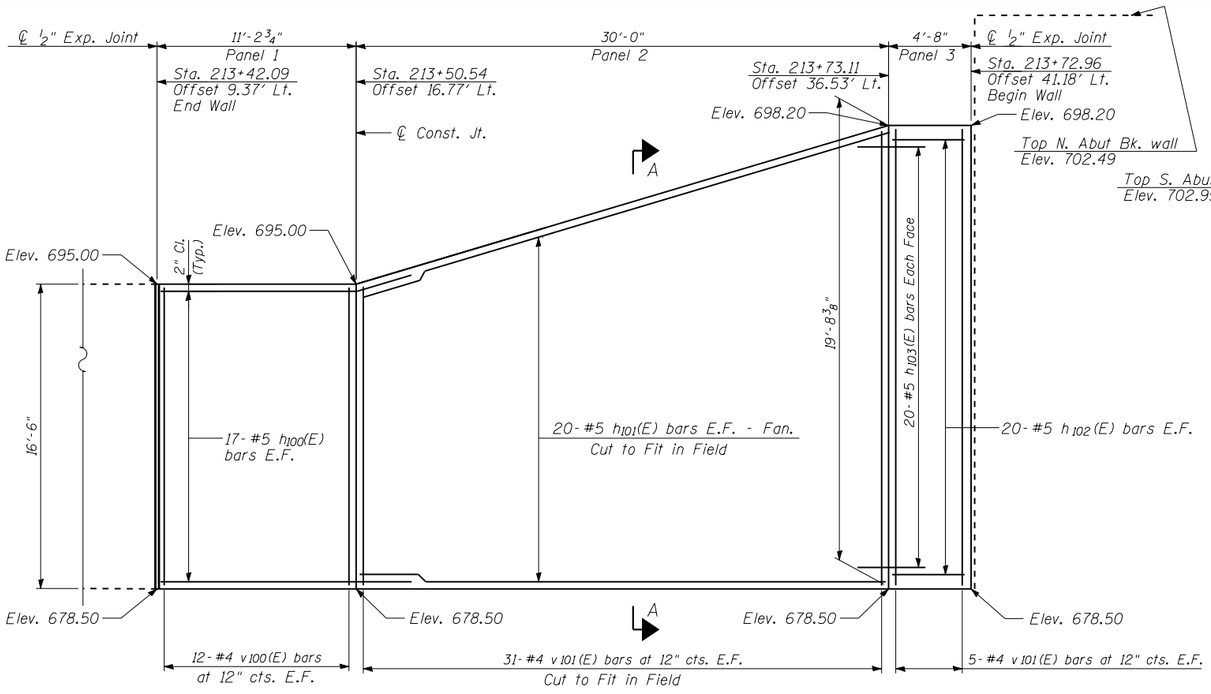
N. Abutment



PLAN

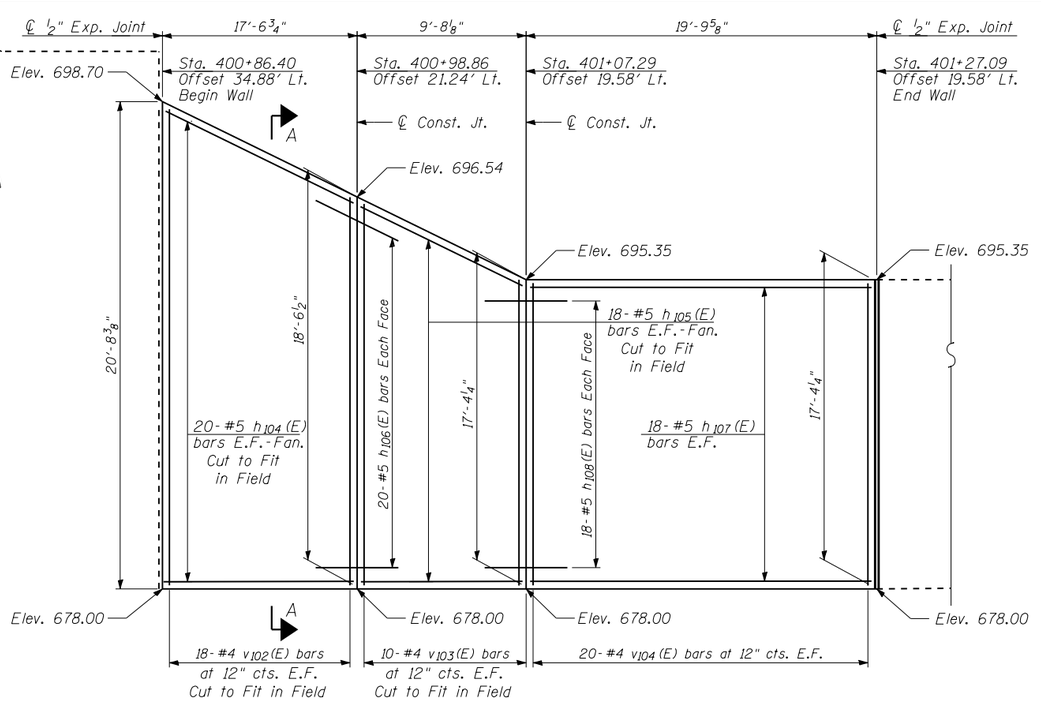
S. Abutment

FILE NAME = ...\04906202-60K80-030.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	WEST WING WALLS – GENERAL PLAN AND ELEVATION STRUCTURE NO. 049-0602	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -			346	125X-N&J-SB-B	LAKE	361	245
PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1831	PLOT SCALE = 8:0.0000 ' / in.	DRAWN - R.VEJAR	REVISED -			CONTRACT NO. 60K80				
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		SHEET NO. 30 OF 43 SHEETS	ILLINOIS FED. AID PROJECT				



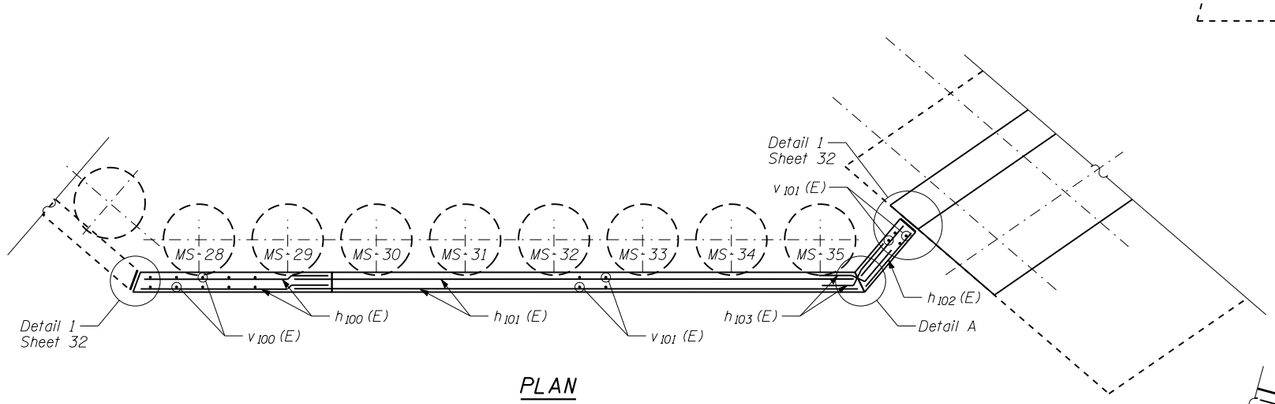
ELEVATION

(Offset are Given from Baseline Ramp B)

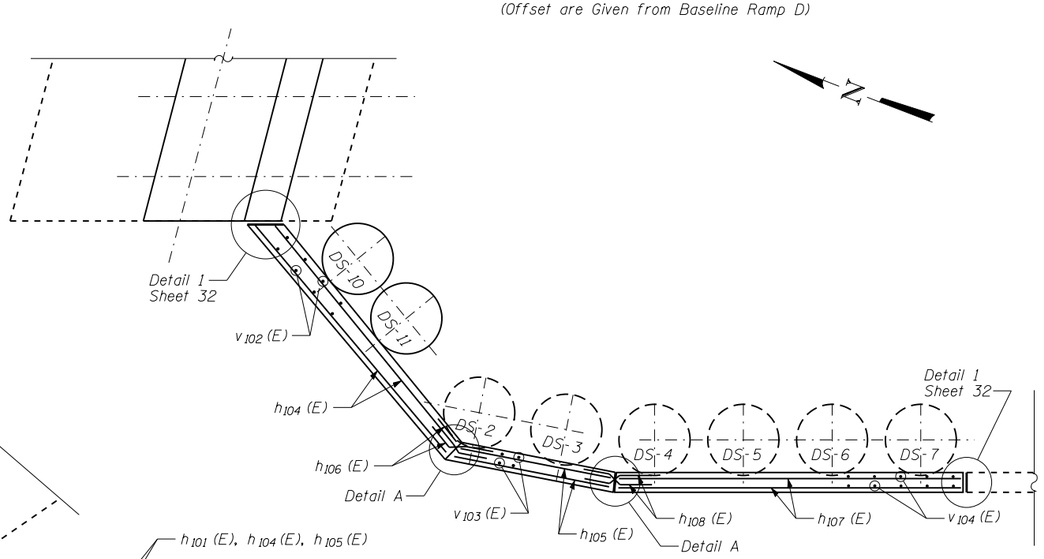


ELEVATION

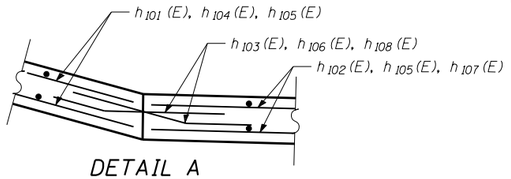
(Offset are Given from Baseline Ramp D)



PLAN



PLAN



DETAIL A

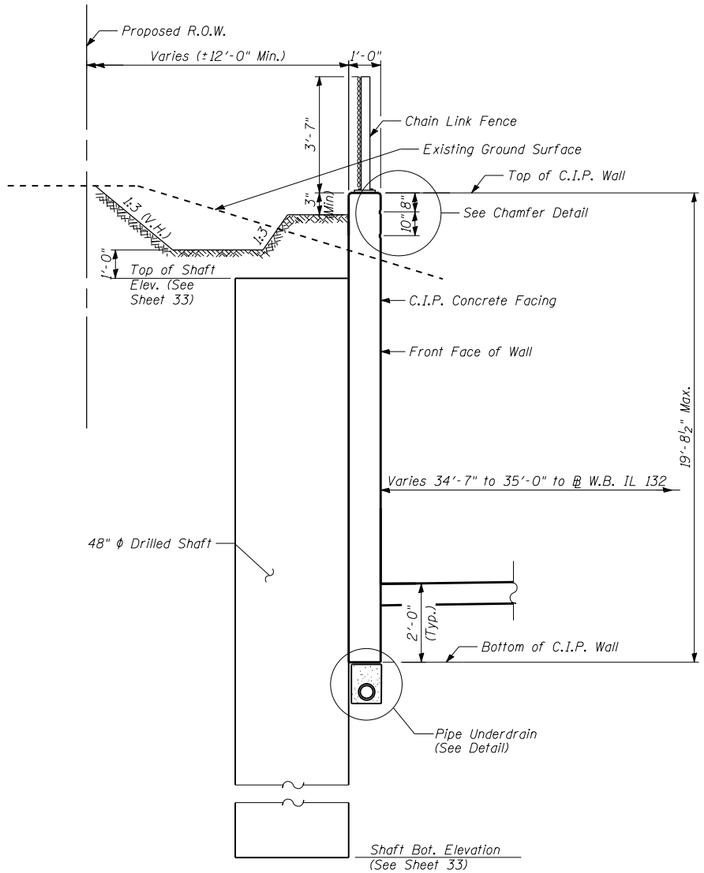
BEND IN WALL DETAIL

NOTES

1. B.F. - denotes Back Face.
2. E.F. - denotes Each Face.
3. F.F. - denotes Front Face.
4. For Section A-A, see Sheet 32.

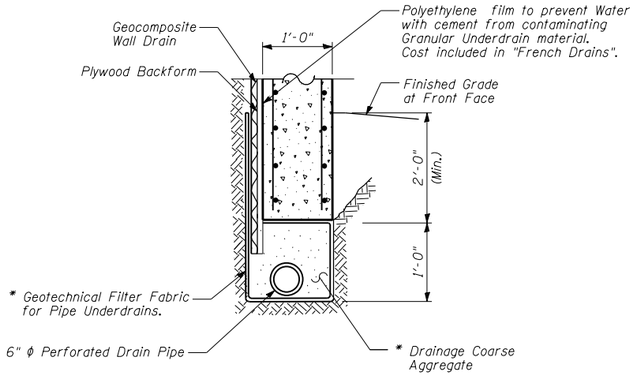
FILE NAME = ...\04906202-60K80-031.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	WEST WING WALL REINFORCING DETAILS STRUCTURE NO. 049-0602
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -		SHEET NO. 31 OF 43 SHEETS
PROJECT NUMBER 3366	PLOT SCALE = 5:4.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -		
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	246
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			

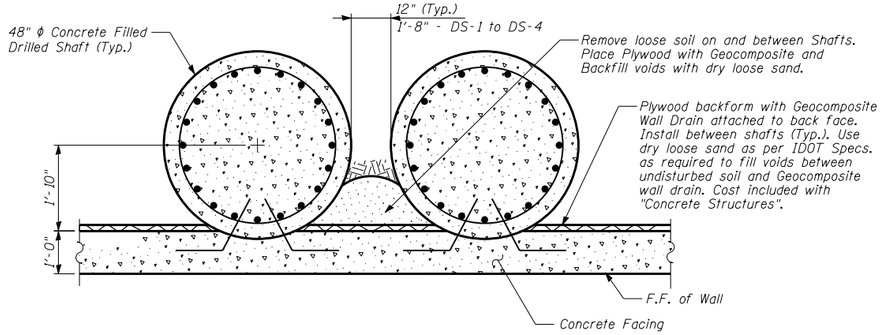


SECTION A-A

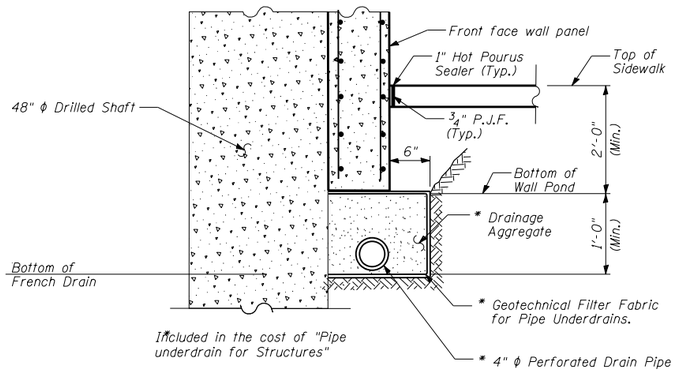
(Tangent Pile Wall)



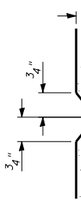
PIPE UNDERDRAIN DETAIL BETWEEN DRILLED SHAFTS



TYPICAL SECTION THRU TANGENT PILE WALL

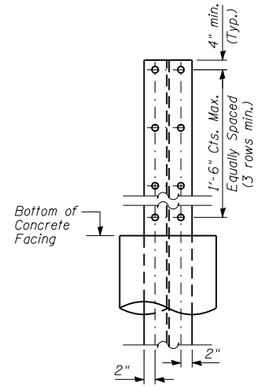


PIPE UNDERDRAIN DETAIL AT DRILLED SHAFT



CHAMFER DETAIL

Cost of Chamfer included with "Concrete Structures"



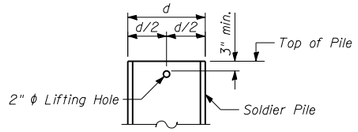
SHEAR STUD CONNECTOR DETAIL

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Geocomposite Wall Drain	Sq. Yd.	460
Pipe Underdrains for Structures 6"	Foot	220

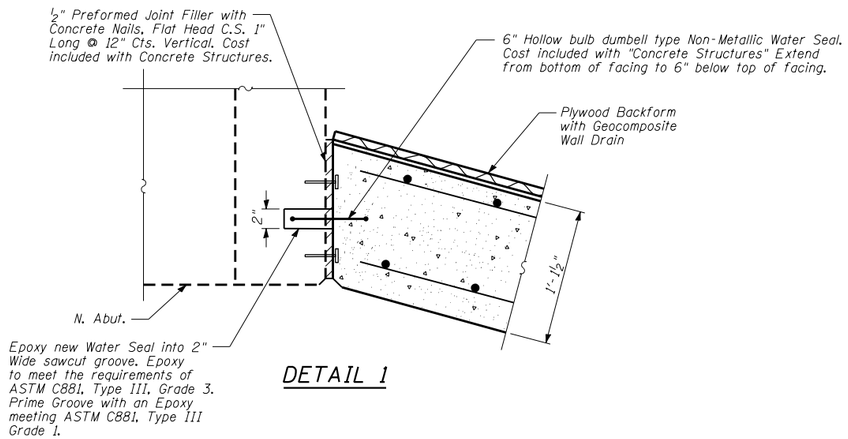
NOTES:

1. The Geocomposite Wall Drain shall be constructed according to Section 591 of the Standard Specifications.

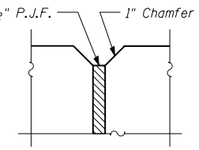


LIFTING HOLE DETAIL

Lifting hole to be provided if necessary. Cost included with "Furnishing Soldier Piles (W Section)"



DETAIL 1



DETAIL X

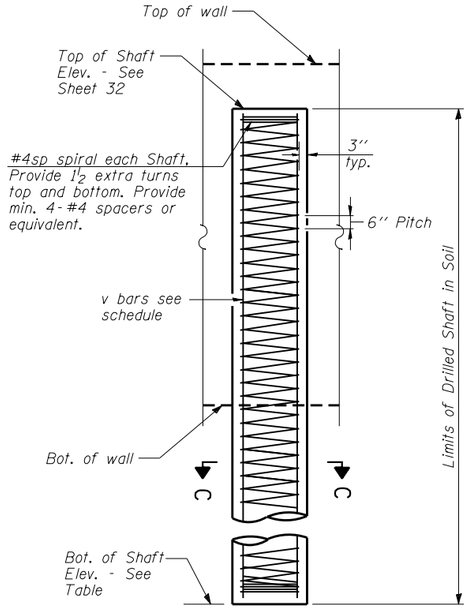
FILE NAME = ...\04906202-60K80-032.dgn	USER NAME = lestrada	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8311 PROJECT NUMBER 3366		CHECKED - DNB	REVISED -
	PLOT SCALE = 64:0.0000 '=' / ft.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 12/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST WING WALLS DETAILS
STRUCTURE NO. 049-0602

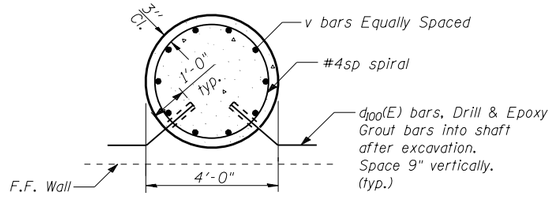
SHEET NO. 32 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	247
		CONTRACT NO. 60K80		
	ILLINOIS	FED. AID PROJECT		



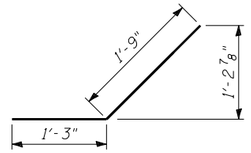
DRILLED SHAFT ELEVATION

Shafts DS-10 & DS-11

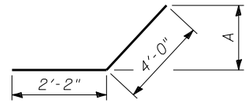


SECTION C-C

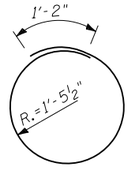
Drill & Epoxy Grout d_{100}(E) bars according to Article 584 of the Standard Specifications. The cost shall be included with "Reinforcement Bars, Epoxy Coated".



BAR d_{100} (E)



BAR h_{103} (E), h_{106} (E) & h_{108} (E)



BAR s_{100}

LAP SPLICES

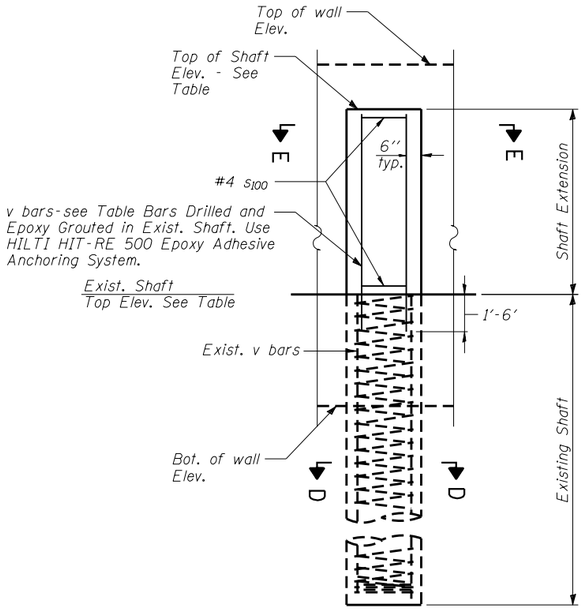
Bar	Lap
#4	1'-8"
#5	2'-2"
#6	2'-7"
#8	4'-6"
#11	9'-0"

Bar	A
h_{103} (E)	3'-0"
h_{106} (E)	1'-6"
h_{108} (E)	0'-9"

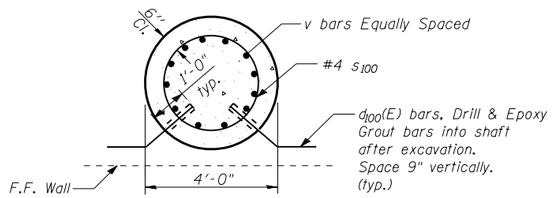
BAR LIST AND BILL OF MATERIAL

	Bar	Number	Size	Length	Shape
	d_{100}(E)	844	#5	3'-0"	
	h_{100}(E)	34	#5	13'-0"	
	h_{101}(E)	40	#5	29'-8"	
	h_{102}(E)	40	#5	4'-3"	
	h_{103}(E)	40	#5	6'-2"	
	h_{104}(E)	40	#5	17'-3"	
	h_{105}(E)	36	#5	9'-4"	
	h_{106}(E)	40	#5	6'-2"	
	h_{107}(E)	36	#5	19'-5"	
	h_{108}(E)	36	#5	6'-2"	
	v_{100}(E)	24	#4	16'-2"	
	v_{101}(E)	72	#4	19'-4"	
	v_{102}(E)	36	#4	20'-4"	
	v_{103}(E)	20	#4	18'-2"	
	v_{104}(E)	40	#4	17'-0"	
**	sp_{100}	2	#4	44'-6"	
	s_{100}	34	#4	10'-4"	
	v_{124}	56	#11	44'-8"	
	v_{125}	12	#8	3'-2"	
	v_{126}	12	#8	3'-6"	
	v_{127}	12	#8	3'-9"	
	v_{128}	12	#8	4'-1"	
	v_{129}	12	#8	4'-5"	
	Reinforcement Bars, Epoxy Coated			Pound	9,438
	Concrete Structures			Cu. Yd.	62
	Drilled Shaft in Soil			Cu. Yd.	49
	Reinforcement Bars			Pound	15,796
	Concrete Sealer			S.F.	1,900

Minimum Lap for Spirals = 1½Turns
** Length is Height of Spiral.

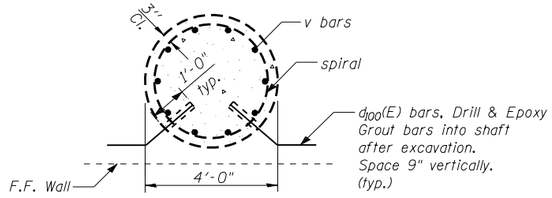


DRILLED SHAFT EXTENSION



SECTION E-E

Drill & Epoxy Grout d_{100}(E) bars according to Article 584 of the Standard Specifications. The cost shall be included with "Reinforcement Bars, Epoxy Coated".



SECTION D-D

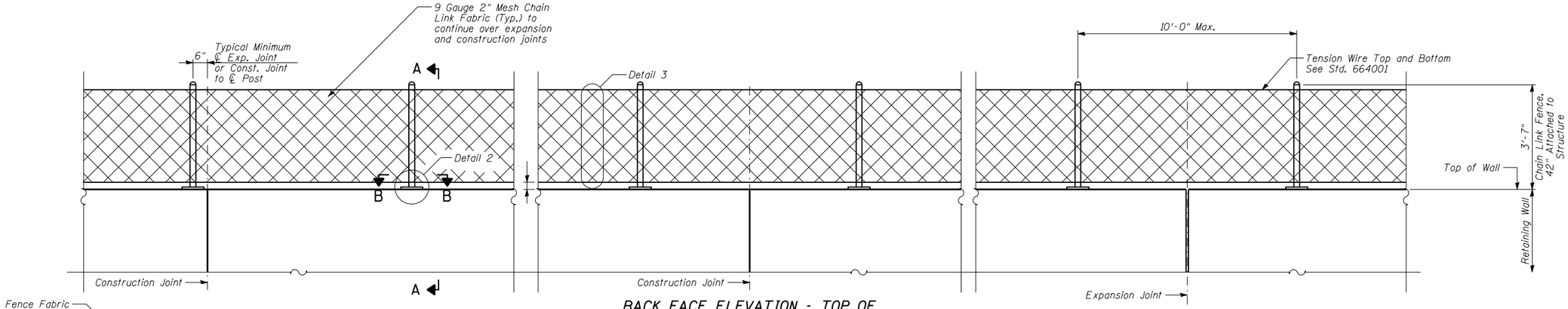
Drill & Epoxy Grout d_{100}(E) bars according to Article 584 of the Standard Specifications. The cost shall be included with "Reinforcement Bars, Epoxy Coated".

EXISTING SHAFT EXTENSION

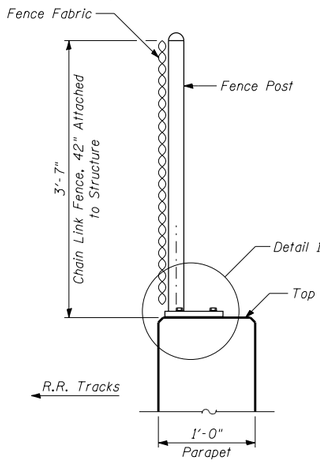
Shaft Mark	Diameter	Prop. Top Elevation	Exist. Top Elevation	Extension (Ft.)	Reinforcing (Vertical)	Reinforcing (Ties)
MS-31	4'-0"	694.11	692.31	1.80	12-v125	4-s100
MS-32	4'-0"	694.51	692.39	2.12	12-v126	5-s100
MS-33	4'-0"	694.91	692.48	2.43	12-v127	6-s100
MS-34	4'-0"	695.31	692.57	2.74	12-v128	6-s100
MS-35	4'-0"	695.71	692.66	3.05	12-v129	7-s100
DS-4	4'-0"	694.25	691.85	2.40	12-v127	6-s100

DRILLED SHAFT SUMMARY

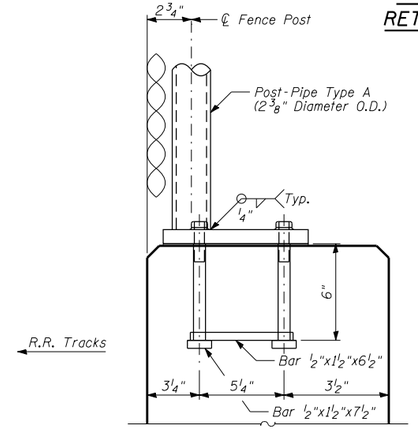
Shaft Mark	Diameter	Top Elevation	Bottom Elevation	Length	Reinforcing (Vertical)	Reinforcing (Spiral)
DS-10	4'-0"	696.41	651.41	45'-0"	28-v124	sp100
DS-11	4'-0"	696.41	651.41	45'-0"	28-v124	sp100



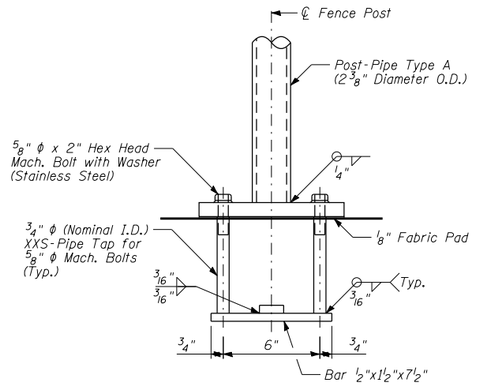
BACK FACE ELEVATION - TOP OF RETAINING WALL CHAIN LINK FENCE



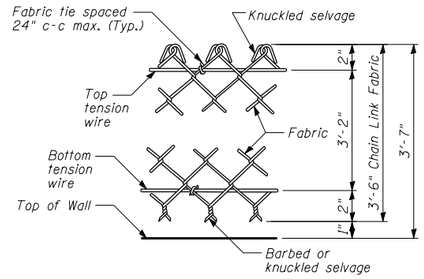
SECTION A-A



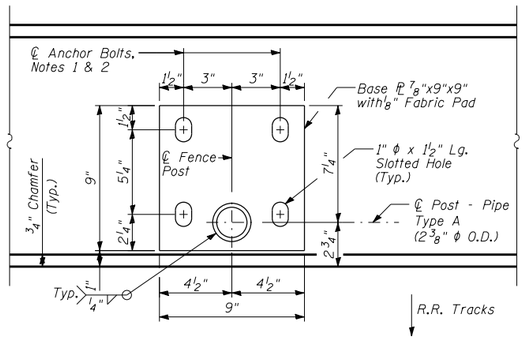
DETAIL 1



DETAIL 2



DETAIL 3



SECTION B-B
BASE PLATE PLAN

ITEM	UNIT	TOTAL
Chain Link Fence, 42" Attached to Structure (Special)	FOOT	93'-0"

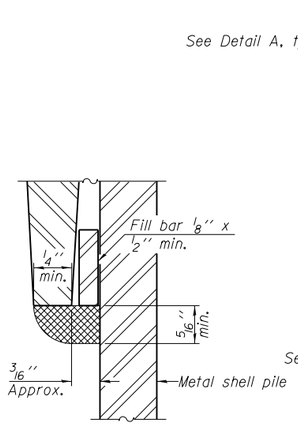
BILL OF MATERIAL

NOTES:

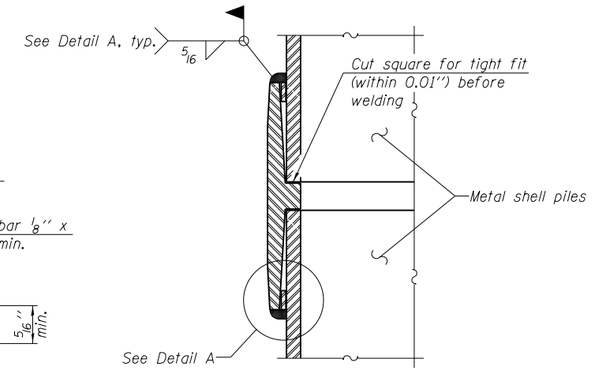
1. In lieu of the cast-in-place anchor bolt assembly shown, the Contractor has the option of drilling and epoxy grouting 5/8" diameter anchor rods with 1 1/4" diameter washers. The Contractor shall use the capsule or the adhesive cartridge type anchor rods that have been previously tested and given prior approval by the Department. The Contractor shall install these anchor rods in pre-drilled holes according to the manufacturer's recommendations and procedures. The capsule or adhesive cartridge shall be sealed with pre-measured amounts of adhesive chemical. Anchor rod threading to be peened after nuts are installed.
2. For additional chain link details, see Standard 664001.
3. Adjust fence and post spacing to clear light pole.
4. Fence post shall be vertical.

METAL SHELL PILE TABLE

Designation and outside diameter	Wall thickness t	Weight per foot (Lbs./ft.)	Inside volume (yd.³ /ft.)
PP12	0.179''	22.60	0.0274
PP12	0.250''	31.37	0.0267
PP14	0.250''	36.71	0.0368
PP14	0.312''	45.61	0.0361

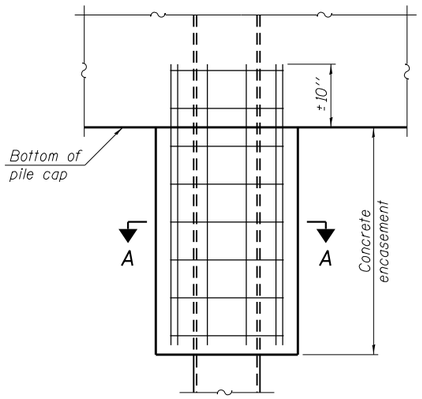


DETAIL A

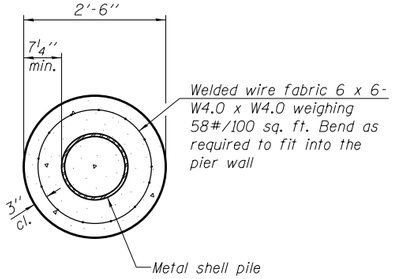


Notes:
The 1/8'' x 1/2'' min. fill bar may be constructed of 2 bars with a 1/8'' max. gap between them.
Pile segments shall be driven to solid contact with splicer before welding.

WELDED COMMERCIAL SPLICE



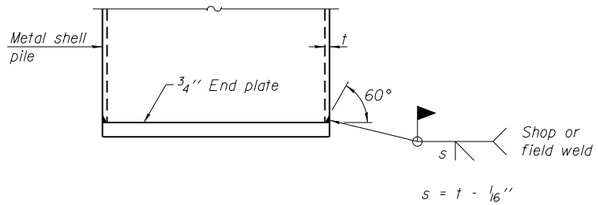
ELEVATION



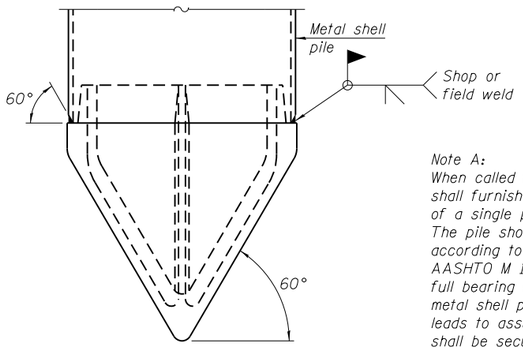
SECTION A-A

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

CONCRETE ENCASEMENT AT PIERS



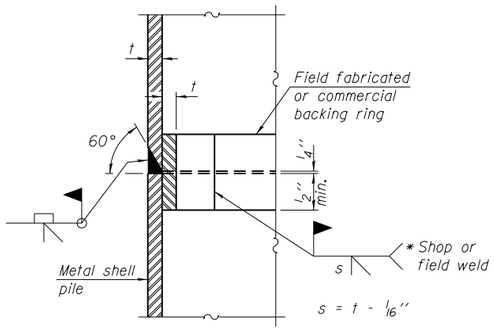
END PLATE ATTACHMENT



Note A:
When called for on the plans, the Contractor shall furnish metal shell pile shoes consisting of a single piece conical pile point as shown. The pile shoes shall be cast in one piece steel according to either ASTM A 148 Grade 90-60 or AASHTO M 103 Grade 65-35 and shall provide full bearing over the full circumference of the metal shell pile. The pile shoe shall have tapered leads to assure proper alignment and fitting and shall be secured to the pile with a circumferential weld.

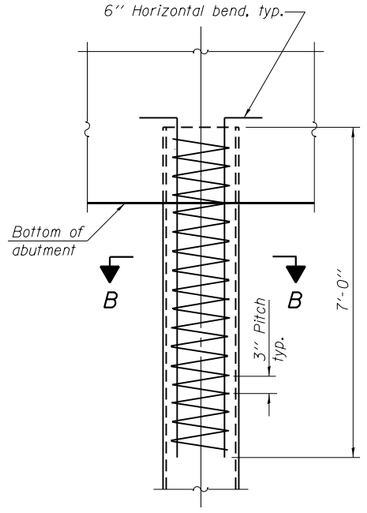
METAL SHELL PILE SHOE ATTACHMENT

(See Note A)

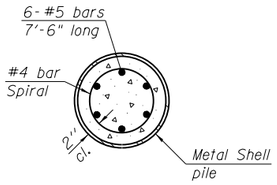


COMPLETE PENETRATION WELD SPLICE

* Field fabricated backing ring may be made from pile shell by removing segment to allow reducing circumference and vertically rejoin with partial joint penetration weld.



ELEVATION



SECTION B-B

METAL SHELL REINFORCEMENT AT ABUTMENTS

Note:
The metal shell piles shall be according to ASTM A 252 Grade 3.

F-MS 1-27-12

FILE NAME = ...\04906202-60K80-035.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY O. HEITER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131 PROJECT NUMBER 3366		CHECKED - DNB	REVISED -
	PLOT SCALE = 2.0000 '/ in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

METAL SHELL PILE DETAILS
STRUCTURE NO. 049-0602
SHEET NO. 35 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	250
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/24/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 (Grand Ave.) LOGGED BY RJC

SECTION 125X-N LOCATION N. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'15.35958" N, Longitude 87°53'44.03487" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-1 (STA IL Rte 132)
Station 22+76.56
Offset 80.94ft LT
Ground Surface Elev. 699.70 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft
Groundwater Elev.:
First Encounter 664.9 ft ▼
Upon Completion NA ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
699.20 6 inches crushed granite (ballast stone)			
698.70 Dark Brown, Moist SILTY LOAM (Fill), some gravel	8		12
Brown, Fine to Medium Grain, Moist SAND (Fill), trace gravel	9 9		8
695.70	1		
695.20 Gray and Black, Moist SILTY CLAY LOAM (Fill)	3 3	2.5 P	25
-5 Very Stiff Dark Gray to Black, Moist SILTY CLAY LOAM, trace organics	3		
	3 5	2.0 P	32
691.20	2		
Very Stiff to Hard Brown and Gray, Moist SILTY LOAM	4 8	4.3 B	16
-10	5		
	7 10	6.9 B	19
	5		
	9 13	7.8 B	18
-15	4		
	5 8	3.5 B	21
	3		
	7 11	4.8 P	15
-20			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
678.70			
Very Stiff Gray, Moist SILTY LOAM, trace gravel	4		
	5 8	3.5 B	18
	4		
-25	7 8	3.9 B	17
	4		
	5 8	2.2 B	18
	2		
	5 7	2.9 B	24
-30	3		
	7 10	2.9 B	23
664.90 ▼ -35 Gray, Fine to Coarse Grain, Wet SAND			
661.20	4		
Medium Dense Gray, Moist SANDY LOAM 660.20	6 8	2.8 P	11
-40			

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/24/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 (Grand Ave.) LOGGED BY RJC

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COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-1 (STA IL Rte 132)
Station 22+76.56
Offset 80.94ft LT
Ground Surface Elev. 699.70 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft
Groundwater Elev.:
First Encounter 664.9 ft ▼
Upon Completion NA ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Stiff to Very Hard Gray, Moist SILTY LOAM *(continued)*			
	12		
	6 9	3.5 B	18
-45			
	5		
	8 9	5.5 B	13
-50			
Encountered Cobble at 53.5'	7		
	10 14	1.3 P	16
-55 Switched to mud rotary at 55'			
	8		
	9 12	4.3 B	15
-60			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Stiff to Very Hard Gray, Moist SILTY LOAM *(continued)*			
	6		
635.20	9		18
-65 Medium Dense to Dense Gray, Fine to Medium Grain, Wet SAND, trace gravel	11		
	7		
	12 12		18
-70			
	20		
	19 23		14
-75			
621.20	7		
Very Stiff to Hard Gray, Moist SILTY LOAM, trace gravel	9 12	4.3 B	14
-80			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
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BBS, form 137 (Rev. 8-99)

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SOIL BORING LOG

Date 5/24/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 (Grand Ave.) LOGGED BY RJC

SECTION 125X-N LOCATION N. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM
Latitude 42°22'15.35958" N, Longitude 87°53'44.03487" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-1 (STA IL Rte 132)
Station 22+76.56
Offset 80.94ft LT
Ground Surface Elev. 699.70 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 664.9 ft ▼
Upon Completion NA ft
After - Hrs. - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff to Hard Gray, Moist SILTY LOAM, trace gravel *(continued)*				
		5		
	-85	9 12	2.8 P	17
		14		
	609.70 -90	14 22	4.1 B	16
End of Boring				
	-95			
	-100			

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/26/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM
Latitude 42°22'13.79422" N, Longitude 87°53'43.55376" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-2 (STA IL Rte 132)
Station 23+17.24
Offset 76.41ft RT
Ground Surface Elev. 700.00 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 671.5 ft ▼
Upon Completion NA ft
After - Hrs. - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
4 inches crushed granite (ballast stone) 699.67				7
Brown and Dark Brown SAND (Fill), some gravel 698.50		3		
Very Stiff Black and Dark Gray, Moist SILTY LOAM		2 3		25
		1		
	-5	2 3	2.3 P	29
		1		
693.00		2 3	1.0 P	37
Very Stiff to Hard Gray and Brown, Moist SILTY LOAM		1		
	-10	3 5	2.0 P	38
		3		
		7 9	4.7 B	16
686.50		5		
Very Stiff to Hard Brown with occasional trace of Gray, Moist SILTY LOAM, trace gravel	-15	7 9	5.7 B	23
		2		
		4 6	3.3 P	18
		5		
	-20	5 9	4.7 B	13
678.60				
		3		
Very Stiff to Hard Gray, Moist SILTY LOAM, trace gravel		4 6	2.2 B	18
		3		
	-25	4 5	2.2 B	21
Encountered Cobble at 26'		6		
		8 10		26
Wet at 28.5'		4		
	-30	7 7	4.5 B	24
		2		
11 inch layer of SAND, trace gravel, Gray, Fine to Coarse grain, Wet at 34' 665.10	-35	4 5		17
Very Stiff Gray, Moist SILTY LOAM		4		
	-40	7 11	3.5 P	14

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Page 2 of 3

Date 5/26/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM
Latitude 42°22'13.79422" N, Longitude 87°53'43.55376" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. ______
Station ______

BORING NO. B-2 (STA IL Rte 132)
Station 23+17.24
Offset 76.41ft RT
Ground Surface Elev. 700.00 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 671.5 ft ▼
Upon Completion NA ft
After - Hrs. - ft

Description	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff Gray, Moist SILTY LOAM *(continued)*		3 8 13	3.8 P	12
	-45			
653.00 Gray, Fine to Coarse grain, Wet SAND, trace gravel Switched to mud rotary at 47' Sand blow in at 47' Switched to mud rotary at 47' Drilled to 53' to clear out augers				
	-50			
646.50 Very Stiff Gray, Moist SILTY LOAM, trace gravel		6 10 11	3.9 B	14
	-55			
		5 8 10	2.4 B	16
	-60			

Description	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff Gray, Moist SILTY LOAM, trace gravel *(continued)*		2 3 5	3.1 B	15
	-65			
631.50 Medium Dense to Dense Gray, Fine to Medium grain, Wet SAND, trace gravel		10 12 11		20
	-70			
		16 20 27		15
	-75			
621.50 Very Stiff Gray, Moist SILTY LOAM, trace gravel		4 6 8	2.7 B	16
	-80			

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Page 3 of 3

Date 5/26/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM
Latitude 42°22'13.79422" N, Longitude 87°53'43.55376" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. ______
Station ______

BORING NO. B-2 (STA IL Rte 132)
Station 23+17.24
Offset 76.41ft RT
Ground Surface Elev. 700.00 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 671.5 ft ▼
Upon Completion NA ft
After - Hrs. - ft

Description	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff Gray, Moist SILTY LOAM, trace gravel *(continued)*		5 7 12		19
	-85			
		10 10 13	3.3 P	17
610.00	-90			
End of Boring				
	-95			
	-100			

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/27/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION N. of Bridge, SEC. 13, TWP. 45N, RNG. 11E, 3rd PM,
Latitude 42°22'15.84251" N, Longitude 87°53'44.17840" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-5 (STA: U.P. RR)
Station 8+70.68
Offset 17.23ft LT
Ground Surface Elev. 699.70 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 666.2 ft ▼
Upon Completion 664.7 ft ▽
After - Hrs. - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
4 inches crushed granite (ballast stone) 699.37				
				10
Brown, Fine to Medium grain, Moist SAND (Fill), trace gravel		6		
		8		8
		9		
696.20				
Brown and Gray, Moist SILTY LOAM (Fill)		3		
		3		22
	-5	5		
		3		
		5	2.4	18
		6	B	
		5		
		8	8.4	16
	-10	10	B	
688.70				
Hard to Very Hard Brown, Moist SILTY LOAM, trace gravel		5		
		10	9.5	17
		13	P	
		4		
		8	7.5	20
	-15	12	B	
		2		
		5	3.5	21
		8	B	
Gray trace Brown from 18.5' - 19.5'		5		
		6	3.5	13
	-20	8	B	
Hard to Very Hard Brown, Moist SILTY LOAM, trace gravel (continued) 677.60		3		
		6	4.1	16
		7	B	
Stiff Gray, Moist SILTY CLAY LOAM		2		
		2	2.0	18
	-25	5	B	
673.70				
Very Stiff to Hard Gray, Moist SILTY LOAM		2		
		5	4.3	21
		7	B	
		3		
		5	3.5	24
	-30	8	B	
666.20 ▼				
Medium Dense Gray, Fine to Coarse grain, Wet SAND, trace gravel		6		
		6		15
	▽-35			
661.20				
Very Stiff Gray, Moist SILTY LOAM		7		
		7	2.2	12
659.70	-40	7	B	

End of Boring

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/25/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. of Bridge, SEC. 13, TWP. 45N, RNG. 11E, 3rd PM,
Latitude 42°22'13.31428" N, Longitude 87°53'43.39424" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-6 (STA: U.P. RR)
Station 11+33.30
Offset 17.45ft LT
Ground Surface Elev. 699.50 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter NONE ft
Upon Completion NONE ft
After - Hrs. - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
4 inches crushed granite (ballast stone) 699.17				
Brown, Fine to Medium grain, Moist SAND (Fill), trace gravel		3		
697.50		3	2.8	20
Gray and Black, Moist SILTY LOAM (Fill), trace gravel		2	P	
		1		
	-5	1		
		2		
693.00		1		
Gray, Moist SILTY LOAM (Fill) 692.50		1	2.5	23
		3	P	
Black, Moist SILTY LOAM (Fill) 691.00				
Gray, Moist SILTY LOAM (Fill)		1		
		2	2.8	25
	-10	4	P	
		3		
687.50		5	2.4	25
Very Stiff Brown and Gray, Moist SILTY LOAM, trace gravel 686.00		7	B	
Hard Brown, Moist SILTY LOAM, trace gravel Encountered Cobble at 14.5'		3		
		5	5.1	23
	-15	7	B	
		7		
		18	5.3	14
		19	P	
		4		
		6	4.5	20
	-20	9	P	
Hard Brown, Moist SILTY LOAM, trace gravel (continued) 677.50		4		
		5	5.0	19
		9	P	
Very Stiff Brown and Gray, Moist SILTY LOAM, trace gravel		4		
		5	3.9	20
	-25	11	B	
673.00		3		
Stiff to Very Stiff Gray, Moist SILTY CLAY LOAM, trace gravel		5	3.8	22
		7	P	
		3		
		4	1.8	23
	-30	6	B	
666.00				
Stiff to Very Hard Gray, Moist SILTY LOAM, trace gravel		4		
		4	1.5	14
	-35	5	P	
		9		
		13	13.0	10
659.50	-40	18	B	

End of Boring

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

BBS, form 137 (Rev. 8-99)

FILE NAME = ...\04906202-60K80-039.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366 — 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131	PLOT SCALE = 24:0.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS – 4
STRUCTURE NO. 049-0602
SHEET NO. 39 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	254
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		

Illinois Department of Transportation

Bridge Foundation Boring Log

P-91-804-76 Sh. 1 of 2 Sh.

PROJECT _____ BRIDGE C&NW Railroad over _____ Date February 10, 1984

ROUTE FAP 120 Route 132 Bored By D. Grow

SEC. 125-HB-1R STA. _____ Checked By _____

COUNTY Lake

Boring No. S-1
Station 16+09
Offset 28'LT of C.L.

Surface Water El. _____
Groundwater El. at Completion Wash
After _____ Hours _____

	Elevation	N	Qu t/s.f.	w (%)
Ground Surface	682.4			
Silty Clay (Fill)	679.4	3	B	
Very Stiff, Brown Silty Clay (Till)		12 6	3.9	19
(Gray)	-5	5	B	
		4 5	2.3	22
		4	B	
		4 6	2.7	21
	-10	4	B	
		5 6	3.3	20
		3	S(20)%	
		5 6	3.3	22
	-15	4	B	
	665.9	6 8	3.5	23
Medium, Gray, Wet Sand Very coarse		7		
		7 7		
	-20	Begin Wash		
		4		
		6 6		
Medium, Gray Sand	659.4	5	B	
Very Stiff, Gray Clay (Till)		11 15	2.3	17
	-25	5	B	
		7 10	2.1	17
		5	B	
		8 9	2.0	17
	-30	4	B	
		6 8	2.6	19
	649.9	6		
Hard, Gray Clay (Till)		9 12	4.8	14
	647.4 -35	6	B	
Very Stiff, Gray Clay (Till)		9 12	3.1	15
		6		
		8 10	3.2	15
	-40	5		
		9 11	3.5	14
		4	B	
		6 10	2.5	16
	-45			

N-Standard Penetration Test-Blows per foot to drive 2" O.D. Split Spoon Sampler 12" with 140 No. hammer falling 30".

Qu-Unconfined Compressive Strength - t/sf

w - Water Content - percentage of oven dry weight-%.

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

BD 137 (Rev. 4-78)

FORM NO. B D 187 REV. 9-80 Sh. 2 of 2 Sh.

BRIDGE FOUNDATION BORING LOG

FAP 120
Section 125-HB-1R
Lake County
S-1 (Cont.)

	Elevation	N	Qu t/s.f.	w (%)
Very Stiff, Gray Clay (Till)	-45	4	B	
		6 9	2.3	24
	634.4	5		
Medium, Gray Sand (Medium grained)		9 12		
	631.9 -50	7		
Dense, Gray Sand		16 18		
		7		
		14 16		
	627.4 -55	4		
Medium, Gray Sand		5 7		
		5		
	623.4	8 11		
End of Boring.	-60			
	-65			
	-70			
	-75			
	-80			
	-85			
	-90			
	-95			

FILE NAME = ...\04906202-60K80-040.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1833		CHECKED - DNB	REVISED -
	PLOT SCALE = 24:0.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS – 5
STRUCTURE NO. 049-0602
SHEET NO. 40 OF 43 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	255
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			

Illinois Department of Transportation

Bridge Foundation Boring Log

Sh. 1 of 2 Sh.

P-91-804-76
PROJECT ______ BRIDGE C&NW Railroad Date February 15, 1984

ROUTE FAP 120 over Route 132 Bored By D. Grow

SEC. 125-HB-1R STA. ______ Checked By ______

COUNTY Lake

Boring No. S-4
Station 17+00
Offset 24'RT of C.L.

Surface Water El. ______
Groundwater El. at Completion Wash
After ______ Hours ______

Description	Elevation	N	Qu t/s.f.	w (%)
Ground Surface 681.9	0			
Road Gravel 680.9			E 0.6	
Stiff, Brown Silty Clay 679.4				
Very Loose, Brown, Wet Sandy Loam (Fill)		2		
		1 3		
676.9	-5			
Very Stiff, Gray Silty Clay (Till)		3	B	
		5 6	3.1	21
		5	B	
		6 8	3.7	21
	-10	4	B	
		5 6	3.1	23
		3		
668.4				
Medium, Gray, Dry Sand (Coarse grained) with some 2"-3" clay seams. (2.5TSF)		8 7		
	-15	3		
		6 6		
663.9		4	B	
Stiff, Pink to Gray Silty Clay (Till)		8 9	1.7	12
661.9	-20	3	B	
Very Stiff, Gray Silty Clay (Till)		7 9	2.3	12

Description	Elevation	N	Qu t/s.f.	w (%)
Very Stiff, Gray Silty Clay (Till)		3	B	
		7 8	2.5	11
656.9	-25			
Medium, Gray, Wet Sand Coarse grained with some gravel and some clay lenses.		5		
		10 12		
		9	Begin Wash	
		10 19		
652.4	-30			
Very Stiff, Gray Silty Clay (Till)		5	B	
		6 7	2.9	12
		6	B	
		11 12	3.1	13
	-35	7	B	
		12 14	3.5	13
		6	B	
		9 10	3.9	14
	-40	9	B	
		10 16	2.4	15
		6	B	
Poor Recovery		9 9	2.3	
	-45			

N-Standard Penetration Test- Blows per foot to drive 2" O.D. Split Spoon Sampler 12" with 140 No. hammer falling 30".

Qu-Unconfined Compressive Strength - t/sf

w - Water Content - percentage of oven dry weight-%.

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

BD 137 (Rev. 4-78)

FORM NO. B D 137 REV. 9-80

Sh. 2 of 2 Sh

BRIDGE FOUNDATION BORING LOG

FAP 120
Section 125-HB-1R
Lake County
S-4 (Cont.)

Description	Elevation	N	Qu t/s.f.	w (%)
Very Stiff, Gray Silty Clay (Till)	-45	6	B	
		8 10	2.7	22
633.9		14		
Dense, Gray Sand, Coarse Grained		14 18		
	-50	7		
		15 20		
629.9				
Medium, Gray Sand, Coarse Grained		11		
		11 16		
627.4				
Very Dense, Gray Sand with some Gravel	-55	12		
		24 30		
		16		
		17 23		
	-60	6		
620.9				
Very Stiff Gray Clay 620.4		9 12	P 2.5	16
End of Boring.				
	-65			
	-70			

Elevation	N	Qu t/s.f.
-75		
-80		
-85		
-90		
-95		

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/3/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION N. of Bridge, SEC. 13, TWP. 45N, RNG. 11E, 3rd PM,
Latitude 42°22'15.74706" N, Longitude 87°53'43.27555" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-22 (STA: U.P. RR)
Station 8+95.24
Offset 81.13ft LT
Ground Surface Elev. 699.41 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 664.4 ft ▼
Upon Completion 664.4 ft ▽
After - Hrs. - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Black to Dark Brown, Moist TOPSOIL 698.91				16
Brown and Dark Brown, Moist SILTY LOAM (Fill), trace gravel and organics		4		
		3	3.0	14
		5	P	
		3		
NOTE: A large amount of concrete debris and obstructions were encountered between 1' and 12'	-5	12	3.0	17
		6	P	
693.41				
Brown and Black, Moist GRAVEL, trace sand brick fragments, slag (Fill)		15		
		11		11
		8		
		7		
	-10	6		15
		2		
688.41				
Brown and Dark Gray, Moist SILTY CLAY LOAM (Fill), trace gravel and brick fragments		4		
		5		25
		9		
685.91				
Hard Brown and Gray, Moist SILTY LOAM, trace gravel		4		
		7	7.0	13
	-15	7	P	
683.41				
Very Stiff Gray, Moist SILTY CLAY LOAM		3		
		5	2.6	
		7	B	
680.91				
Stiff to Hard Gray, Moist SILTY LOAM, trace gravel		2		
		3	2.9	20
	-20	5	B	

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Stiff to Hard Gray, Moist SILTY LOAM, trace gravel *(continued)*				
		4		
		6	3.7	16
		11	B	
		3		
		4	3.7	17
	-25	7	B	
		3		
		5	5.3	18
		10	B	
		2		
		4	3.3	20
	-30	6	B	
		7		
2" Layer of gravel, Gray, Wet at 35'	▽-35	5	1.0	14
		2	P	
		6		
		8	2.4	13
659.41 End of Boring	-40	8	B	

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/31/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. of Bridge, SEC. 13, TWP. 45N, RNG. 11E, 3rd PM,
Latitude 42°22'13.16175" N, Longitude 87°53'42.54124" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-23 (STA: U.P. RR)
Station 11+62.65
Offset 76.41ft LT
Ground Surface Elev. 692.30 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 677.5 ft ▼
Upon Completion 664.3 ft ▽
After - Hrs. - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown and Dark Brown, Moist SILTY CLAY LOAM (Fill), with organics 690.80		5		24
Brown, Moist SILTY LOAM (Fill)		5	6.3	21
		6	B	
688.80				
Gray, Moist SILTY LOAM (Fill), trace gravel		2		
		2	2.3	20
687.50	-5	3	P	
Brown and Black, Moist SILTY LOAM (Fill), trace gravel 686.30		4		
Brown, Moist SILTY LOAM (Fill), trace gravel		3	4.5	32
685.10		3	B	
Black, Moist SILTY LOAM, with organics 683.80		3		
Hard Brown, Moist SILTY LOAM, trace gravel		6	4.5	18
	-10	8	B	
680.80		7		
Hard Gray, Moist SILTY LOAM, trace gravel		10	4.9	16
		14	B	
		3		
		8	5.7	14
3 inch layer of SAND, Brown, Fine to Coarse grain, at 14.8'	▽-15	13	B	
676.30		4		
Very Stiff to Hard Gray, Wet SILTY LOAM, trace gravel		5	4.3	19
		8	B	
		6		
		10	5.7	19
	-20	13	B	

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff to Hard Gray, Wet SILTY LOAM, trace gravel *(continued)*		7		
		8	3.5	25
		10	B	
		3		
		4	2.6	26
	-25	6	B	
		2		20
6 inch layer of SAND, Gray, Fine to Medium grain, Wet at 26.6' 665.10		5	4.0	20
		6	P	
Stiff ▽ Gray, Moist SILTY LOAM		7		
		7	1.3	18
	-30	5	P	
		2		13
8 inch layer of SAND, Gray, Fine to Coarse grain, Wet at 33.5' 658.10		4	4.9	22
SAND	-35	9	B	
Hard Gray, Moist SILTY LOAM		4		
		10	5.5	12
652.30 End of Boring	-40	13	B	

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/25/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. of Bridge, SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'12.34823" N, Longitude 87°53'43.11715" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-24 (STA: U.P. RR)
Station 12+33.27
Offset 15.88ft LT
Ground Surface Elev. 699.70 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

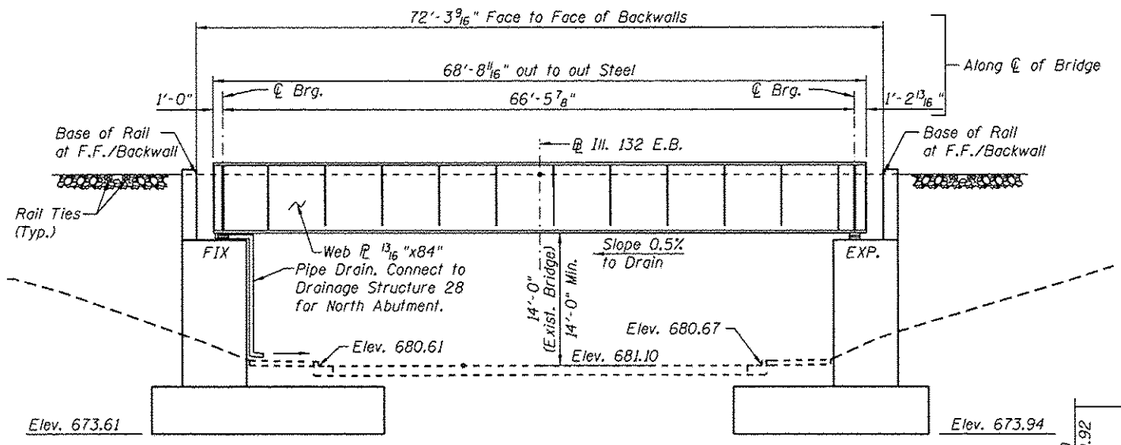
Groundwater Elev.:
First Encounter 664.9 ft ▼
Upon Completion 661.7 ft ▽
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
			11	Dark Brown to Black, Moist GRAVEL (Fill), some sand
698.70				
	2			Brown, Fine to Coarse grain, Moist SAND (Fill), trace gravel
	3			
	3			
696.10				
	1			Brownish-Gray with trace of Black, Moist SILTY CLAY LOAM (Fill), trace gravel
-5	2	1.3 P	23	
	2			
693.70				
	1			Gray and Brown with trace of Black, Moist SILTY LOAM (Fill), trace gravel
	2	3.3 P	21	
	4			
	1			
	2	2.3 P	22	
-10	4			
	2			
	4	2.5 P	30	
687.60	5			
				Black, Moist SILTY LOAM (Fill)
686.20				
	4			Brown and Gray, Moist SILTY LOAM (Fill), trace gravel
	4	3.5 B	16	
684.80	7			
-15				Very Stiff Dark Gray with trace of Black, Moist SILTY LOAM
683.50	5			
	7	6.9 B	16	Hard Brown and Gray, Moist SILTY LOAM, trace gravel
	11			
681.20				
	6			Hard Brown, Moist SILTY LOAM, trace gravel
	9	6.7 B	17	
-20	12			
678.70				
	5			Very Stiff to Hard Gray, Moist SILTY LOAM
	9	4.5 P	14	
	11			
	4			
	7	3.9 B	17	
-25	11			
	3			
	5	3.7 B	19	
	7			
	3			
	3	2.2 B	21	
-30	5			
	3			
	4	3.0 P	18	2 inch layer of SAND, trace gravel, Gray, Fine to Medium grain, Moist at34.3'
664.90	7			
-35				Gray, Fine to Medium grain, Wet SAND, trace gravel
▽ 661.20				
	5			Very Stiff Gray, Moist SILTY LOAM, trace gravel
659.70	7	3.5 P	12	
-40	11			

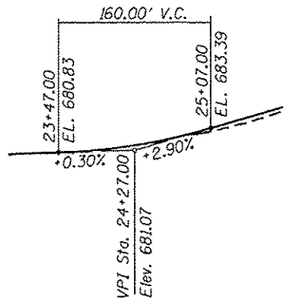
End of Boring

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

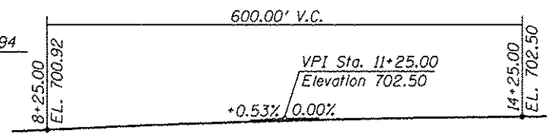
BBS, form 137 (Rev. 8-99)



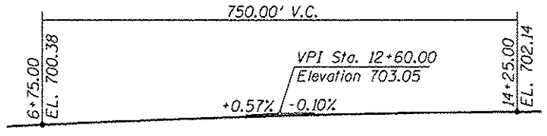
ELEVATION



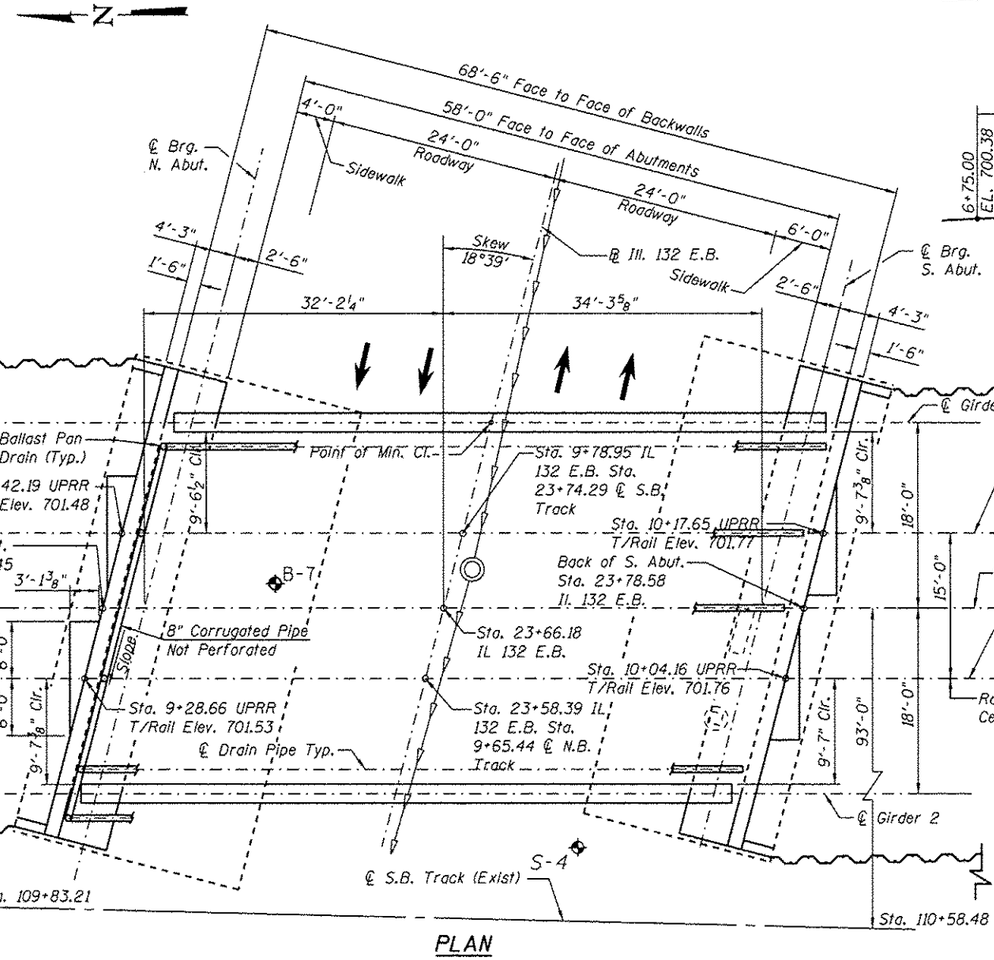
PROFILE GRADE
(ALONG EB IL 132)



TOP OF RAIL PROFILE
(Track B South Bound)



TOP OF RAIL PROFILE
(North Bound)



PLAN

PROP. CURVE TRB11C2
PI STA. = 11+69.41
Δ = 10° 15' 10" (RT)
D = 2° 00' 00"
R = 2,864.93'
T = 257.02'
L = 512.67'
E = 11.51'
e = 2½"
Ls = 122.5'
P.C. STA. = 9+12.39
P.T. STA. = 14+25.06

PROP. CURVE TRA11C2
PI STA. = 11+59.99
Δ = 10° 15' 10" (RT)
D = 2° 00' 00"
R = 2,864.93'
T = 257.02'
L = 512.67'
E = 11.51'
e = 2½"
Ls = 122.5'
P.C. STA. = 9+02.97
P.T. STA. = 14+15.63

LEGEND

- B-3 = Borehole B-3
- S-4 = Borehole S-4 (Exist.)

DESIGN SPECIFICATIONS

2010 AREMA Manual for Railway Engineering
2007 BNSF Railway-Union Pacific Railroad Guide for Railroad Grade Separation Project

LOADING

Cooper E80 or Alternative Load on 4 Axles per AREMA Manual

SEISMIC DATA

Base Acceleration Coefficient (AR) =4.0%g (100yr.)
Site Coefficient (S) = 1.0
Damping Adjustment Factor (D) = 1.0
Seismic Response Coefficent = 10.0 (100yr.)

NOTES:

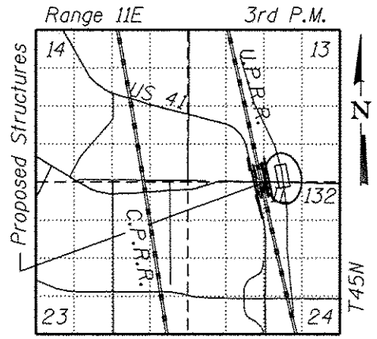
1. For limits of temporary soil retention system, existing contours, and existing and proposed utilities see Sht. 3.
2. For North Abutment see Sheets 17 and 18.
3. For South Abutment see Sheets 19 and 20.
4. The net allowable bearing capacity recommended for the design of foundations and retaining walls bearing on the materials described is 4,000 pounds per square foot (psf).

DAVID N. BILOW
081003186
LICENSED STRUCTURAL ENGINEER
ILLINOIS

DATE: 6/21/16
LICENSE EXPIRES 11/30/16

I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shownon the plans. The design is an ecomomocal one for the style of structure and complies with the requirements of the current AREMA Manual for Railroad Engineering (2010).

APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures



LOCATION SKETCH

GENERAL PLAN & ELEVATION
SHOOFLY BRIDGE OVER
IL. ROUTE 132 (GRAND AVE.)
F.A.P. 346 - SEC. 125X-N&J-SB-B
LAKE COUNTY
STATION 23+66.18 EB

FILE NAME = ...\SHOOFLY-60K80-001.dgn	USER NAME = eafitzpatrick	DESIGNED - MMH	REVISED -	
HOH 3366		CHECKED - DNB	REVISED -	
	PLOT SCALE = 16.0000 '/ in.	DRAWN - R.VEJAR	REVISED -	
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 1 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	259
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		

GENERAL NOTES

1 Workmanship and materials shall be in accordance with the GENERAL CONDITIONS AND SPECIFICATIONS Adopted by the Union Pacific Engineering Department and dated April 13, 2011 (UP General Conditions and Specification) except as modified by IDOT and the AREMA MANUAL for RAILWAY ENGINEERING dated 2010.
2. For any procedure, including demolition of existing structures, earth excavation, temporary shoring, sheeting installation, and erection that may affect rail operations, the Contractor shall submit for Engineer's review both work plans and shop drawings.
3 Dust shall be controlled by uniform applications of sprinkled water, only when directed by the Engineer.
4. Procurement of all permits, and payment thereof, shall be the Contractor's responsibility.
5. The Contractor shall be responsible for verifying all existing conditions and elevations at
6. the site and must adapt this work to actual conditions in a manner approved by the
7. Engineer.
All construction debris shall be removed by the Contractor.
8. It shall be Contractor's responsibility to verify the location of all utilities prior to starting construction. Contact j.u.l.i.e. at 800-892-0123.
9. No construction joints except those shown on the plans will be allowed unless approved by
10. the Engineer.
11. Do not scale drawings for construction.
Dowel holes shall be drilled $\frac{1}{4}$" larger than the diameter of the dowel.
Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of $\frac{1}{8}$" inch. Adjustment shall be made either by grinding the surface or by
12. shimming the bearing. Two $\frac{1}{8}$" adjusting shims of the dimensions of the bottom bearing plate shall be provided for each bearing in addition to all other plates or shims.
If cantilevered sheet piling is not feasible, additional members or other retention systems
13. may be necessary. The Contractor shall submit a temporary soil retention system design including plan details and calculations for review and acceptance by the Engineer.
14. Backfill shall be placed behind the abutment after the superstructure has been poured and falsework removed. See Article 502.10 of the Standard Specifications.
All temporary shoring designs and details shall be signed and sealed by a structural engineer licensed in illinois and submitted to the UPRR & IDOT for review.

SITE WORK

1. Site work shall be performed in accordance with DIVISION 2 SITE WORK SPECIFICATIONS of the UP General Conditions and Specification.
requirements.

CAST-IN-PLACE CONCRETE

1. Cast-in-Place Concrete material, placement, and workmanship shall be in accordance with DIVISION 3 CONCRETE of the UP General Conditions and Specification and Chapter 8 of the AREMA Manual dated 2010.
2 Minimum Compressive strength - fc' = 4000 psi at 28 days.
3 Exposed surfaces shall be formed in a manner that will produce a smooth and uniform appearance without rubbing or plastering. Exposed edges of 90 degrees or less are to be chamfered $\frac{3}{4}$"x$\frac{3}{4}$". Top surface to have a smooth finish, free of all float or trowel marks with the exception that a broom finish be used on all walkway surfaces.
4. Surface finish for bearing surfaces shall conform to American National Standard Institute Surface Roughness Requirements (A.N.S.I. B46.1 Surface Texture)
5. Cement shall be Type I, II or III Portland Cement per ASTM C150.
6. Fine aggregate shall be natural sand.
7. Admixtures, other than air entrainment, shall not be used without approval.
8. Membrane curing compound shall conform to ASTM C309 Type 2.
9.. All construction joints shall be bonded.

REINFORCING STEEL

1. Reinforcing Steel shall be deformed, new billet bars per current ASTM A706 Specifications and meet Grade 60 requirements.
2. Reinforcing Steel requiring field welding shall conform to ASTM A706 Specifications, Grade 60.
3. Fabrication of reinforcing steel shall be per Chapter 7 of the CRSI Manual of Standard Practice. Dimensions of bending details shall be out to out of bars.
4. Reinforcing steel is to be blocked to proper location and securely wired against displacement. Tack welding of reinforcing is prohibited. Minimum concrete cover not otherwise noted shall meet current AREMA requirements.

STRUCTURAL STEEL

1. Structural Steel material, fabrication, and erection shall be in accordance with Chapter 15 of the AREMA Manual dated 2010.
2. All structural steel shall conform to ASTM A709 Grade 50 unless otherwise noted on the plans or in the special provisions. Structural Steel is to be paid for at the Contract Lump Sum Price for "Furnishing and Erecting Structural Steel".
Calculated Wt. of A709 Grade 50 steel is 435,100 pounds.
3. The weights of structural steel floor plate, nuts and high strength bolts are included in the weight of structural steel.
4 All bolted connections shall be made with galvanized high strength bolts conforming to ASTM A325. Bolts shall be $\frac{7}{8}$" diameter unless otherwise noted. Holes shall be $\frac{1}{16}$" larger than bolt size unless otherwise noted. Holes for shop fasteners shall be subpunched or subdrilled and reamed through a template in accordance with AREMA specifications and as specified in special provisions.
5. All welding, electrodes, flux, procedures, welder qualification, inspection, and testing must be in accordance with Article 505.04 (q), Welding of the IDOT Standard Specifications for Fracture Critical Members, and Arema pg. 15-1-10 welding requirement
6. Electro-slag, Electro-gas and FCAW Welding will not be permitted.
7. Structural steel for bridge must be fabricated by a fabricator certified under the American Institute of Steel Construction Quality Certification Program, Category III, Major Steel Bridges including Fracture Critical members in accordance with AREMA Specifications.
8. All tee and corner groove weld joints shall be ultrasonically inspected. All fillet welds shall be inspected by Magnetic Particle Procedure.
9. Steel for the Upper Floor Plate must have a raised pattern conforming to ASTM A786.
10. Steel deck shall conform to A709 specifications, Grade 50.
11. Anchor rods/ bolts shall conform to ASTM F1554 Grade 36 specifications.
12. End welded studs shall be C1015, C1017 or C1020 cold drawn steel, which conforms to ASTM A108 specification.
13. Cover plate, closure plates and anchor rods/bolts shall be galvanized after fabrication in accordance with ASTM A123, thickness Grade 100 if shown on plans.
14. Anchor rod washers shall be zinc coated in accordance with ASTM A153 specification if shown on plans.
15. No field welding is permitted except as specified in the contract documents.
16. All cross frames or diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.
17. The webs and tension flanges of the through-plate girders are designated as "Fracture Critical Members" and shall conform to the fracture control plan for fracture critical members of the AREMA Specifications for zone 2. These members are noted on plans as (FCM). For all FCM members NTR shall be applied.
18. The main load carrying conponents subjected to tensile stress, other than fracture critical members, shall conform to supplemental requirements for notch toughness, Zone 2. These components are the wide flange beams and other components of main girders and are noted on the plans (NTR).
19. 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 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. See IDOT Standard Specification for Road and Bridge Construction.

WATER PROOFING

1. Water proofing materials and installation shall be cold liquid applied Elastomeric Membrane with integrated ballast mat in accordance with the AREMA MANUAL dated 2010 Chapter 8 Part 29 and special provision #7102..

TEMPORARY SOIL RETENTION SYSTEM

1. Driving sheet piling at the North shoofly abutment may be difficult because of existing rubble.

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Structure Excavation	Cu. Yd.	-	1,000	1,000
Granular Backfill for Structures	Cu. Yd.	-	183	183
Concrete Structures	Cu. Yd.	-	919	919
Furnishing and Erecting Structural Steel	L Sum	0.18	-	0.18
Reinforcement Bars	Pound	-	69,837	69,837
Pipe Handrail	Foot	148	-	148
Membrane Waterproofing (Special)	Sq. Ft.	2,640	-	2,640
Geocomposite Wall Drain	Sq. Yd.	-	300	300
Pipe Underdrain for Structures 6"	Foot	-	160	160
Temporary Soil Retention System	Sq. Ft.	-	17,700	17,700
Steel Bearing Assembly	Each	-	4	4
Drainage System	L Sum	0.3	-	0.3
Deck Protection Ballast	Cu. Yd.		31	31
Removal of Existing Structures No. 2	Each		1	1
Anchor Bolts 1$\frac{1}{4}$"	Each		8	8
Anchor Bolts 2"	Each		8	8

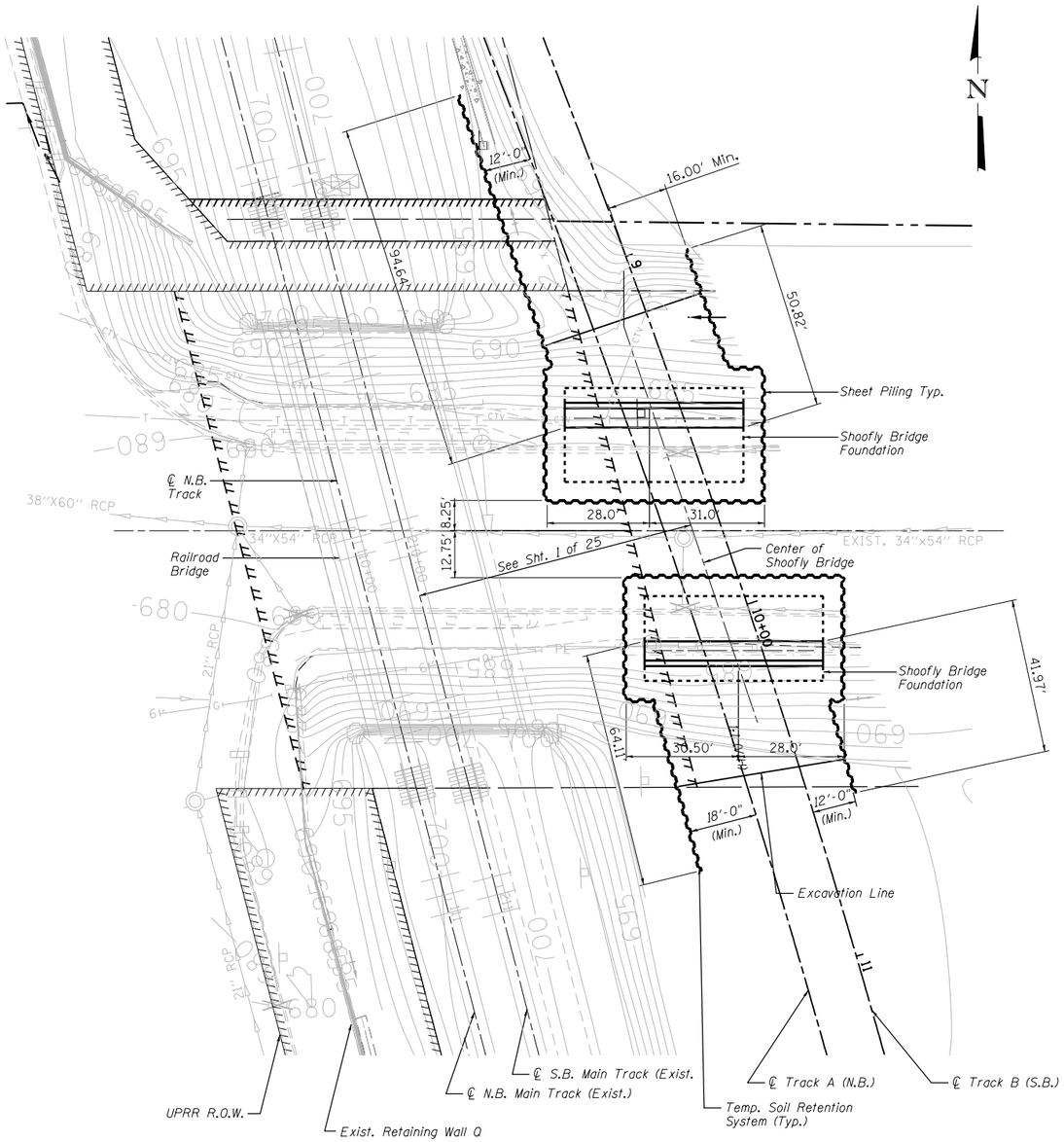
INDEX OF SHEETS

HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS
PROJECT NUMBER 3366
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES AND BILL OF MATERIAL
SHOOFLY BRIDGE OVER IL RTE 132

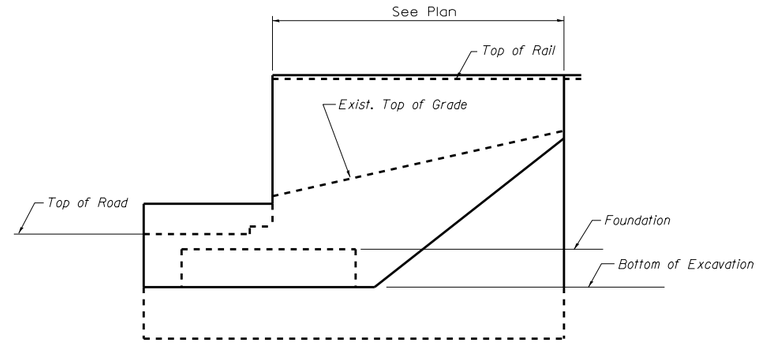
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	260
		CONTRACT NO. 60K80		
	ILLINOIS	FED. AID PROJECT		



PLAN

NOTES:

1. Prior to commencing any work, the Contractor shall submit for approval by the Railroad detailed plans indicating the nature and extent of the track protection shoring proposed. The Contractor shall install the temporary soil retention system per the approved plans. Design of the temporary soil retention system (shoring) to comply with Union Pacific Railroad "Guidelines for Temporary Shoring". Plans and calculations must be signed and stamped by a Structural Engineer registered in Illinois & submitted to IDOT & UPRR for review.
2. At the north abutment location of shoofly bridge, all concrete, construction debris and unsuitable material shall be excavated and removed and replaced with structural fill as per structural geotechnical report Sec. S.2 See Appendix B of SAR for over excavation limits.
3. Temporary shoring at north abutment of shoofly bridge shall be designed to be able to penetrate the rubble/debris. If encountered, and support the existing mainline approach embackment shoring over excavation efforts mentioned in note 2.



TYPICAL SHEET PILE ELEVATION AT FOOTINGS

SEQUENCE OF CONSTRUCTION:

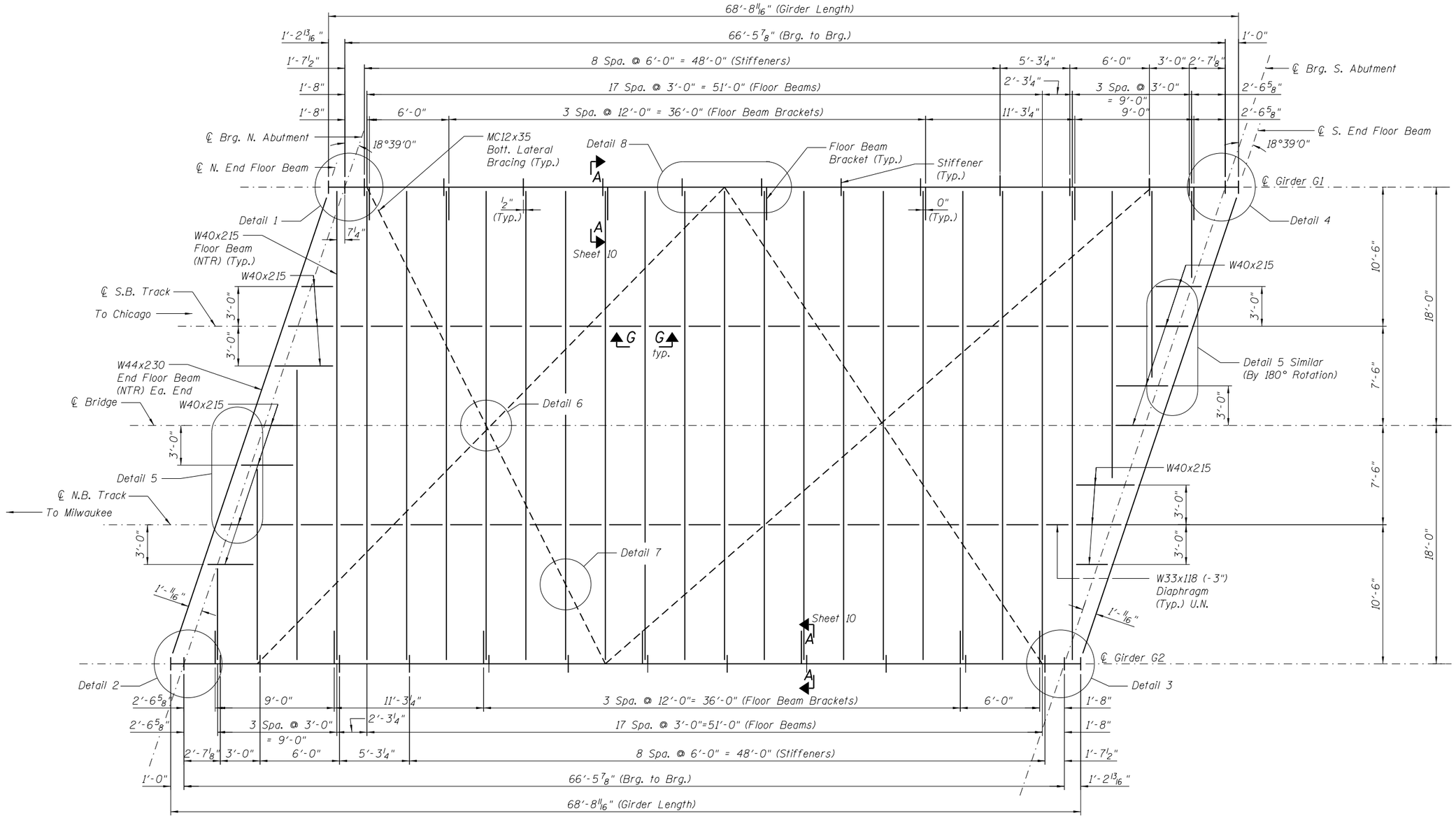
1. Relocate utilities as required.
2. Install temporary soil retention system along shoofly tracks.
3. Construct Shoofly Bridge for two tracks.
4. Relocate existing N.B. Track and existing S.B. Track to Shoofly Bridge for West side Retaining Walls.
5. Install temporary soil retention system at each end of the railroad bridge for West side Retaining Walls.
6. Remove existing bridge superstructure and substructure.
7. Construct new bridge structure and West side Retaining Walls.
8. Remove temporary soil retention system at each end of the railroad bridge and complete railroad embankment.
9. Relocate N.B. Track and S.B. Track from Shoofly Bridge to new bridge structure.
10. Remove Shoofly structure and remaining soil retention system.
11. Construct retaining walls S & T.
12. Complete remaining work.

FILE NAME = ...\SHOOFLY-60K80-003.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-83		CHECKED - DNB	REVISED -
	PLOT SCALE = 40.0000 ' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TEMPORARY SOIL RETENTION SYSTEM
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 3 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	261
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



STEEL FRAMING PLAN

Scale: 1/4"=1'-0"

NOTE:
1. For Details see sheet 7.
2. For Sect. G-G, see sheet 8.
3. For Floor Beam Brackets, see sheet 11.

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HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -
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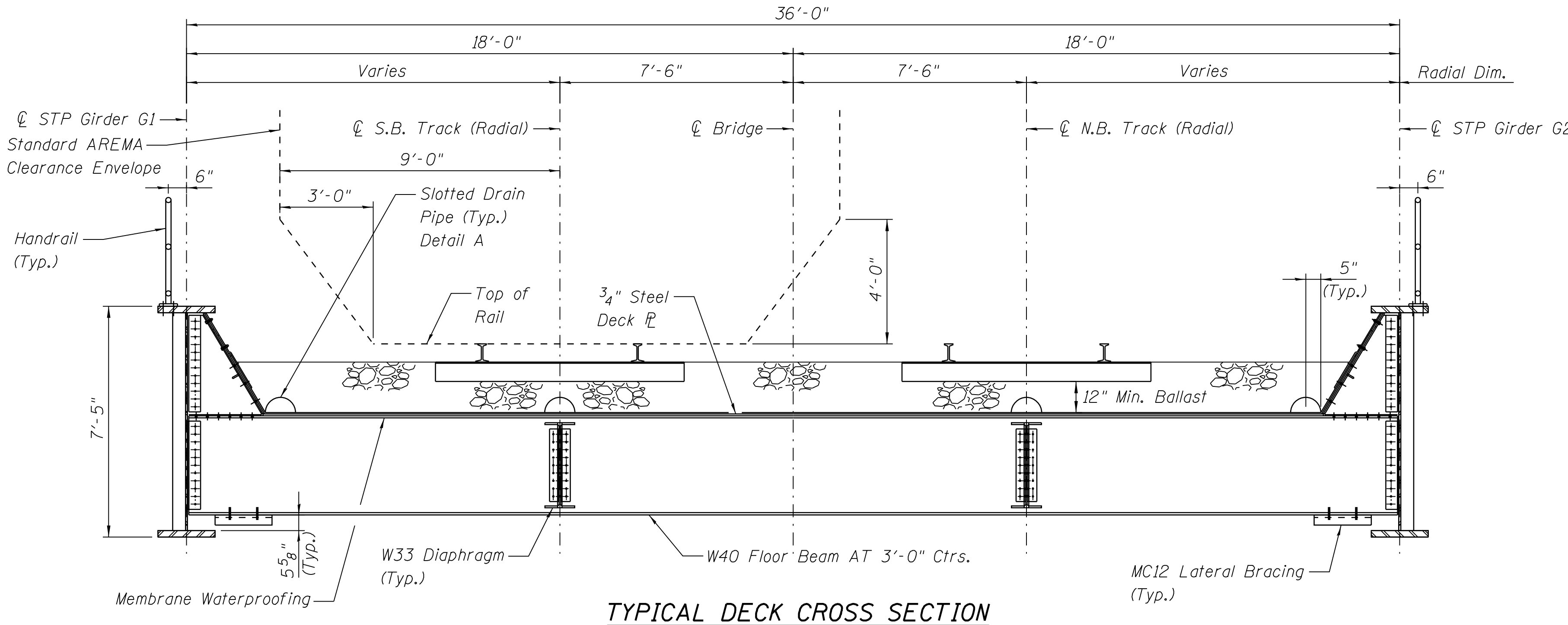
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

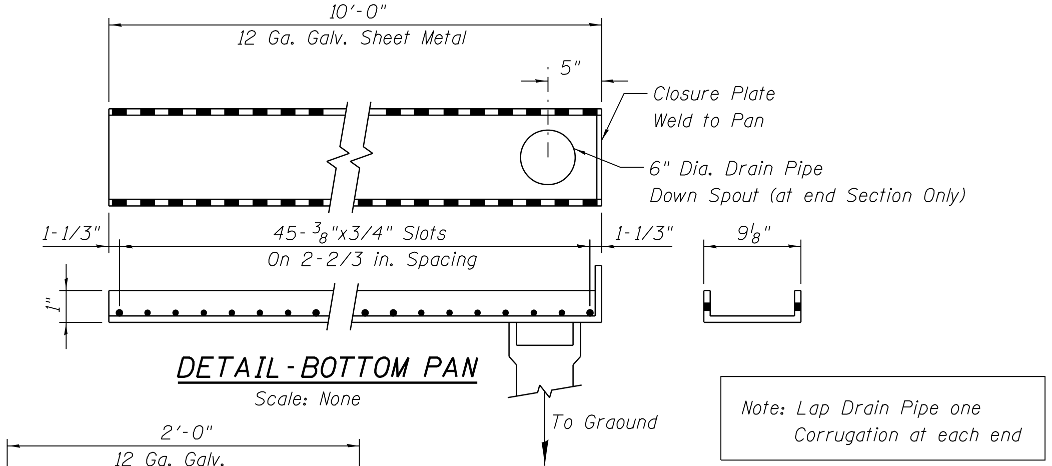
STEEL FRAMING PLAN
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 4 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	262
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



TYPICAL DECK CROSS SECTION

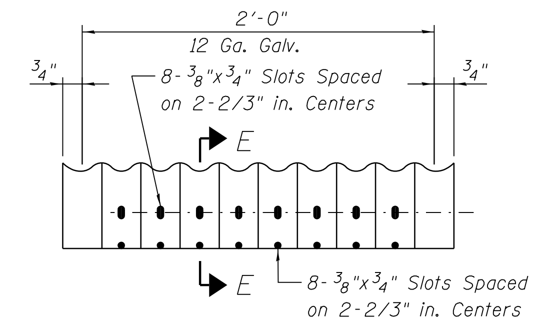
(Looking South)
Scale: $\frac{3}{8}$"=1'-0"



DETAIL-BOTTOM PAN

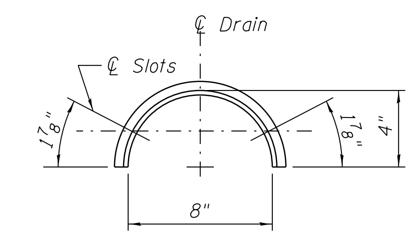
Scale: None

Note: Lap Drain Pipe one Corrugation at each end



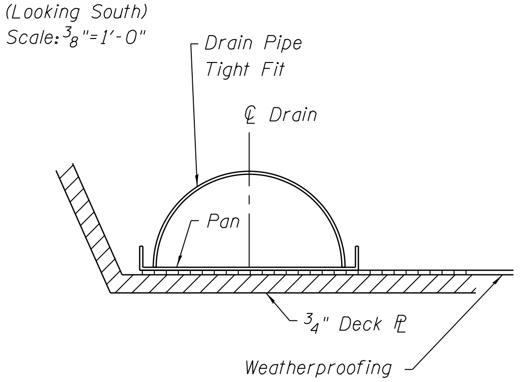
DETAIL-DRAIN PIPE

Scale: None

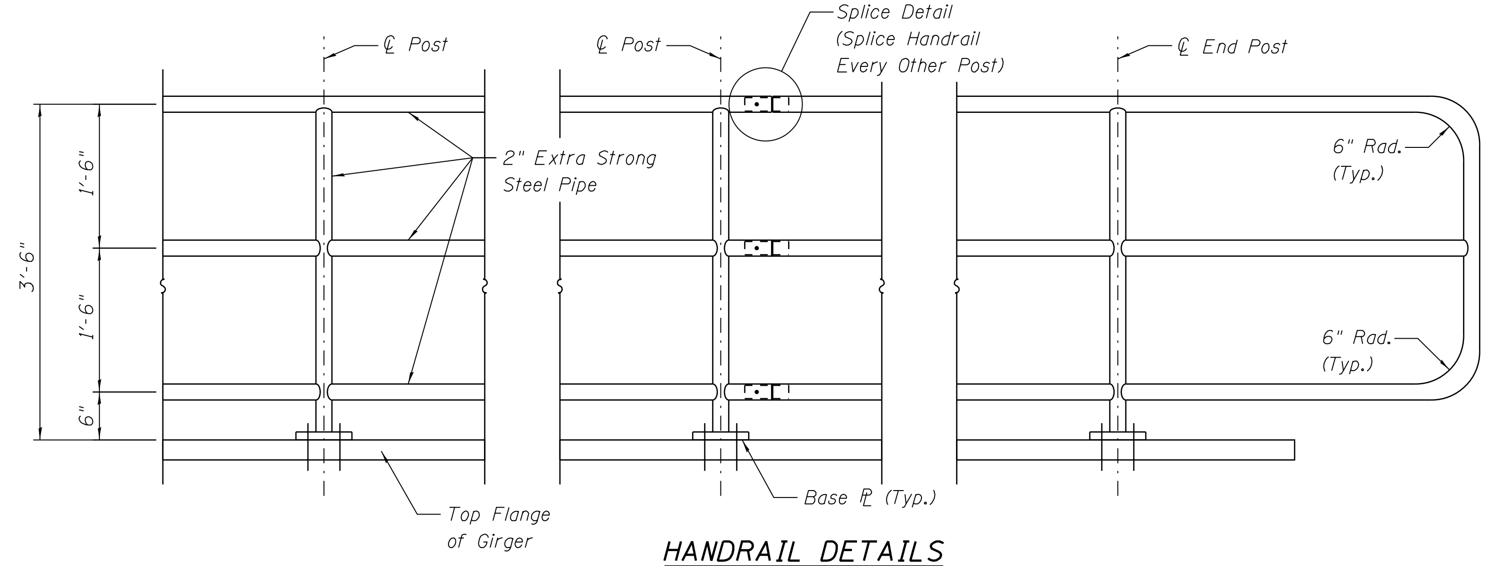


SECTION E-E

Scale: None

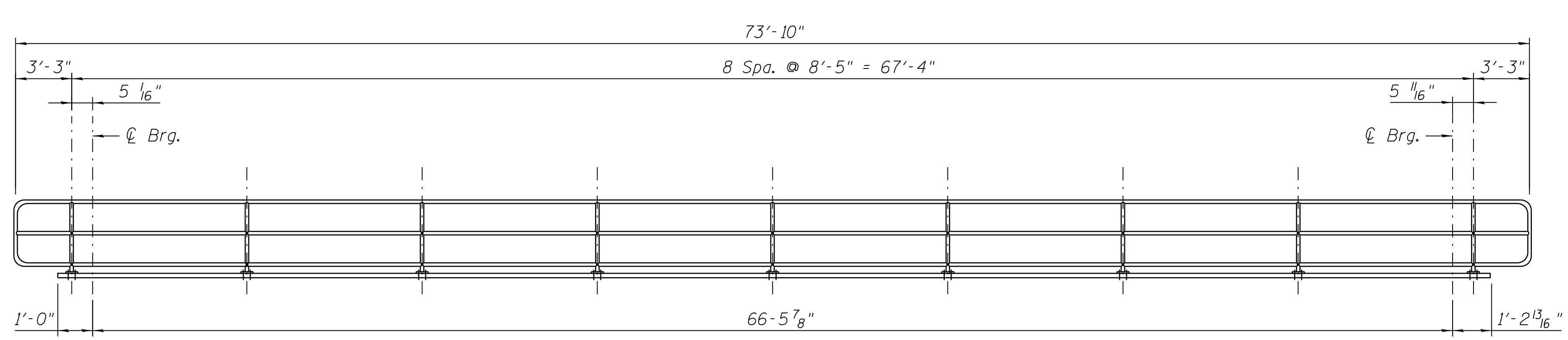


DETAIL-A



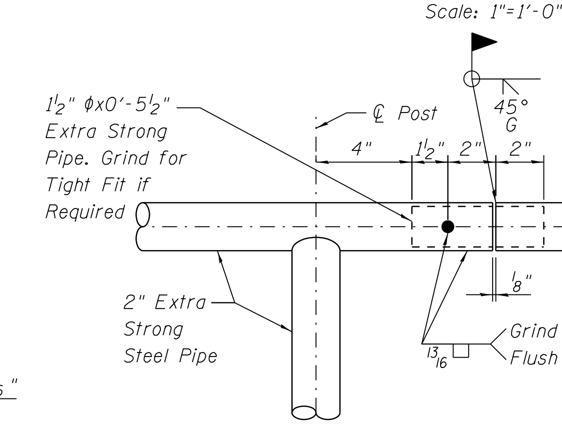
HANDRAIL DETAILS

Scale: 1"=1'-0"



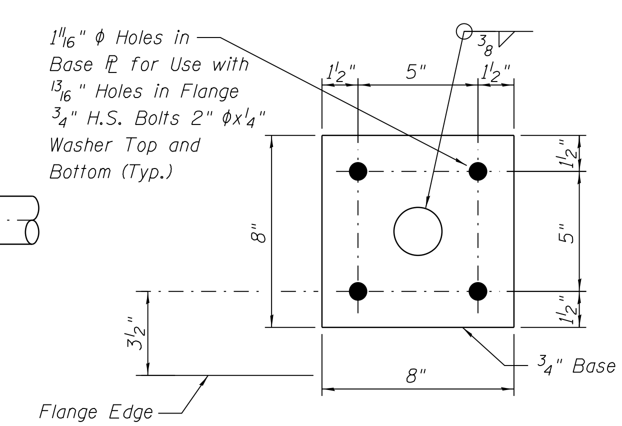
HANDRAIL OUTSIDE ELEVATION (GIRDER G1)

Gieder G2 Similar with 180° Rotation
Scale: ¼"=1'-0"



SPLICE DETAIL

Scale: 3"=1'-0"

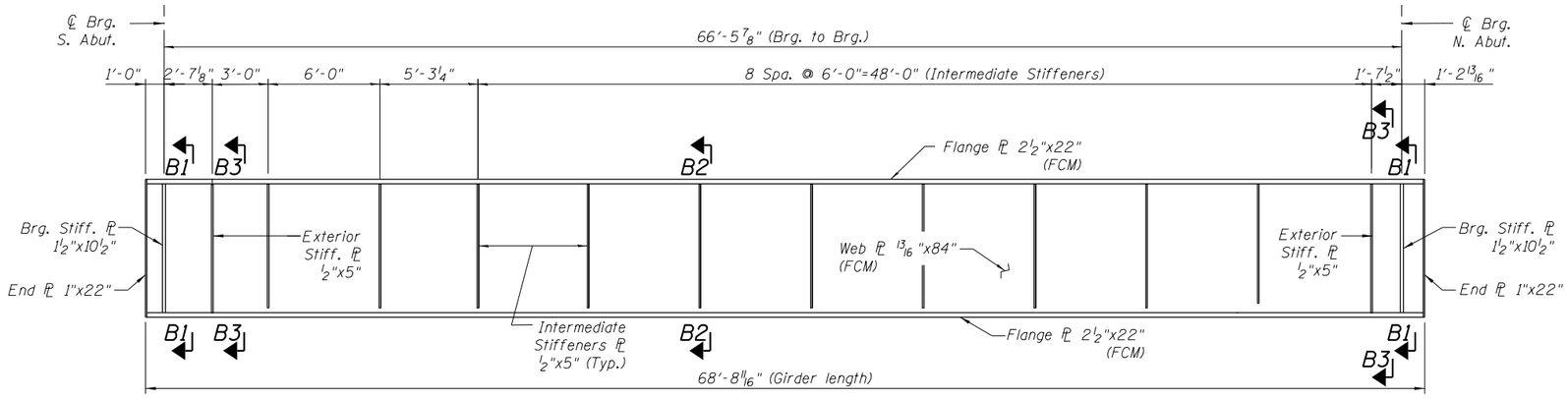


BASE PLATE DETAILS

Scale: 3"=1'-0"

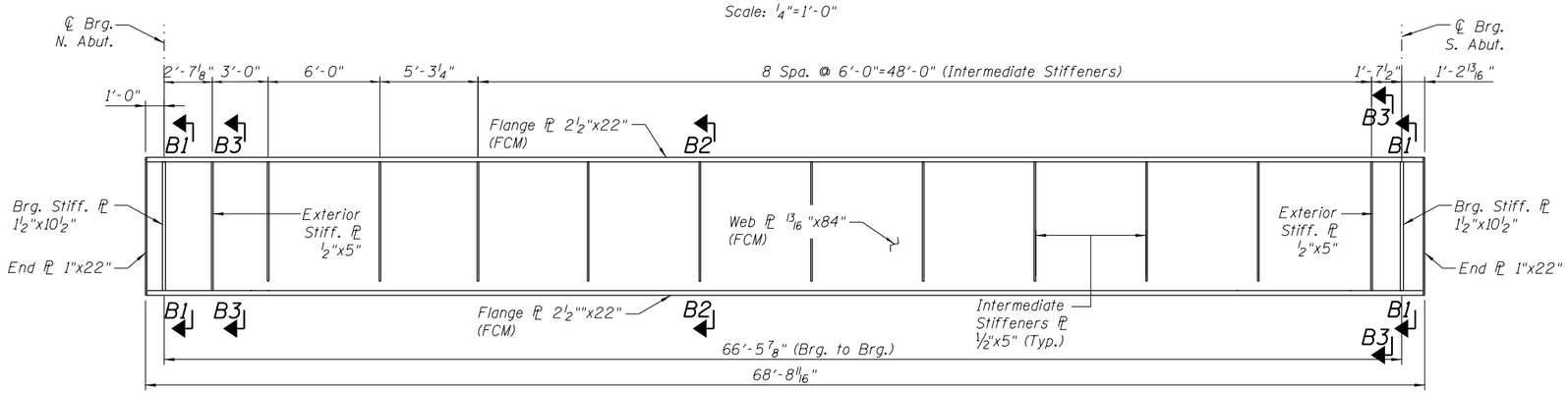
FILE NAME = ...\SHOOFLY-60K80-005.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	TYPICAL CROSS SECTION AND HANDRAIL DETAILS SHOOFLY BRIDGE OVER IL RTE 132
HOH PROJECT NUMBER 3366		CHECKED - DNB	REVISED -		
	PLOT SCALE = 2.0000 ' / in.	DRAWN - R.VEJAR	REVISED -		
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		SHEET NO. 5 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	263
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		



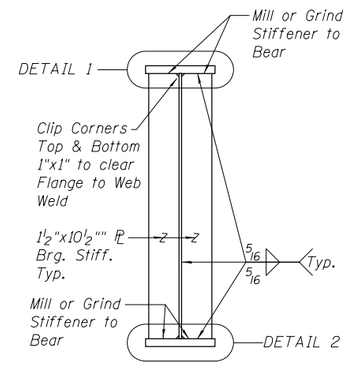
GIRDER G1 ELEVATION

(Looking West)
Scale: 1/4"=1'-0"

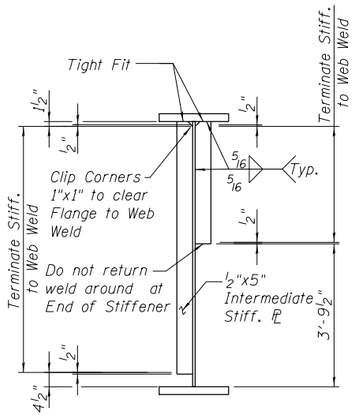


GIRDER G2 ELEVATION

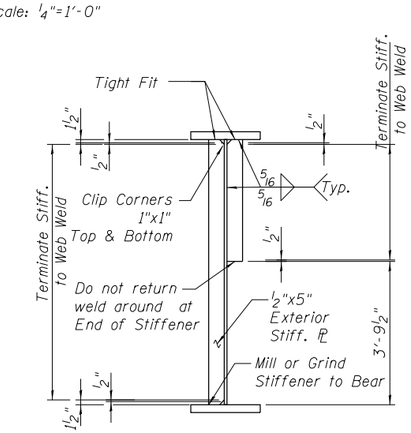
(Looking East)
Scale: 1/4"=1'-0"



SECTION B1-B1 AT BEARING

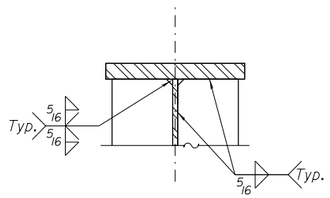


SECTION B2-B2 AT INTERMEDIATE

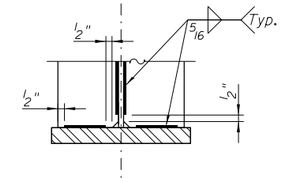


SECTION B3-B3 AT EXTERIOR

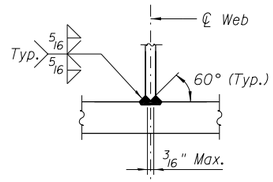
TYPICAL STIFFENER DETAILS



DETAIL 1

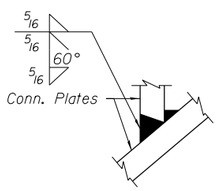


DETAIL 2

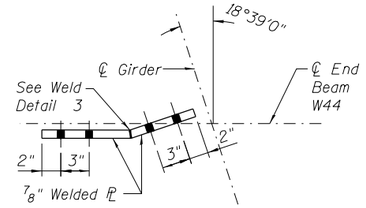


WEB TO FLANGE CONNECTION DETAIL-TYP.

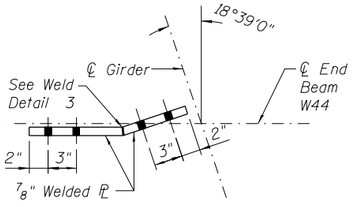
NOTE:
Full penetration of joint required. Weld to be symmetrical about ℄ web. Excessive unbalance shall be cause for rejection. See Specifications for weld qualification. Gouge root to sound metal before welding second side.



WELD DETAIL-4

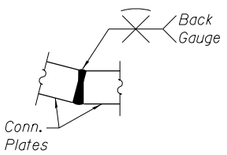


CONN. PLATE-1

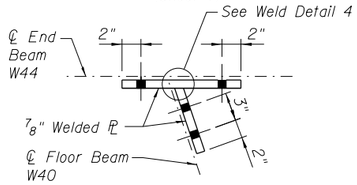


CONN. PLATE-2

(Sheet 7)



WELD DETAIL 3



CONN. PLATE-4

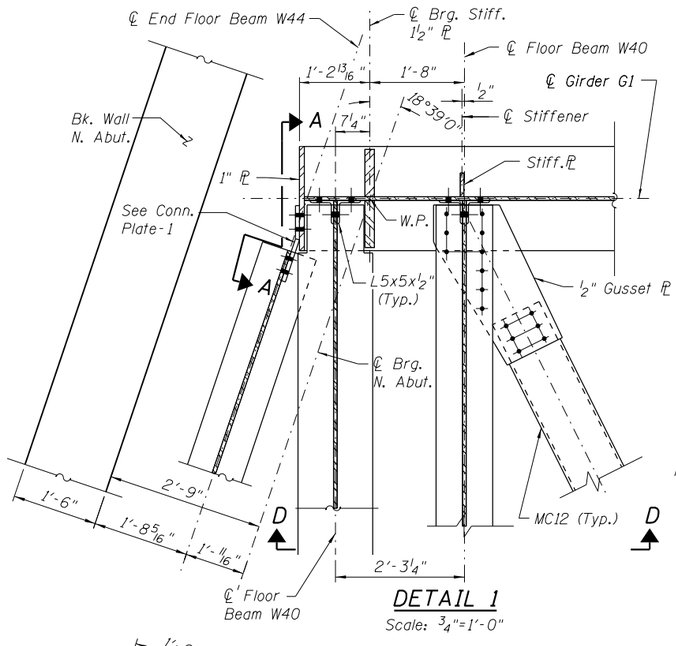
(Sheet 7)

FILE NAME = ...\SHOOFLY-60K80-006.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366 — 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131	PLOT SCALE = 8:0.0000 '' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

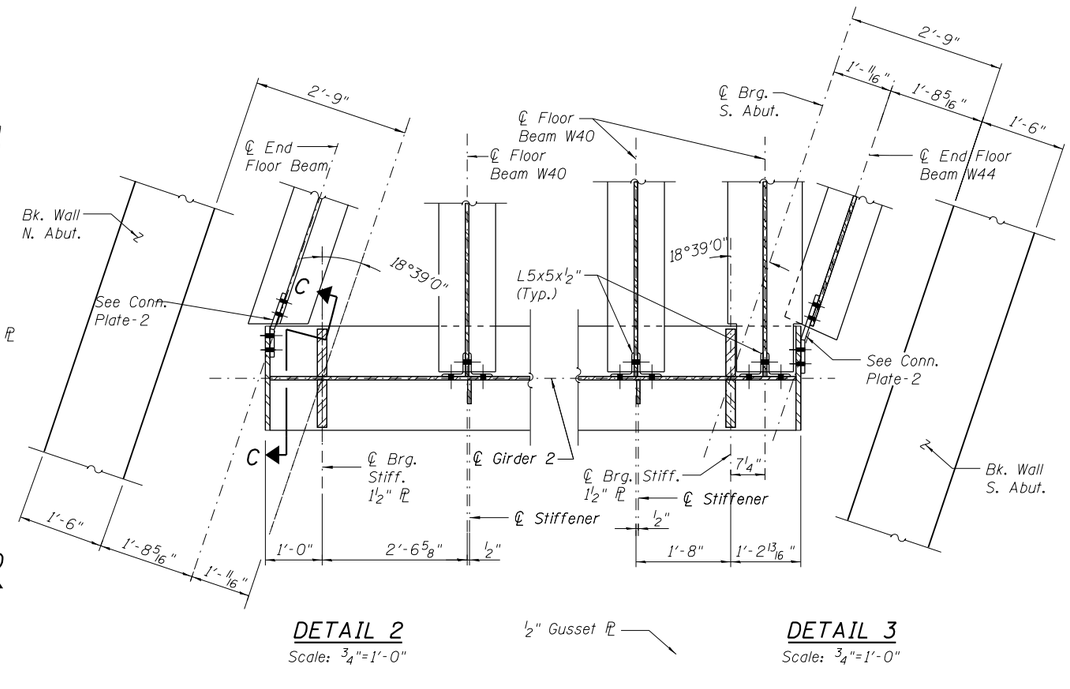
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER DETAILS
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 6 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	264
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



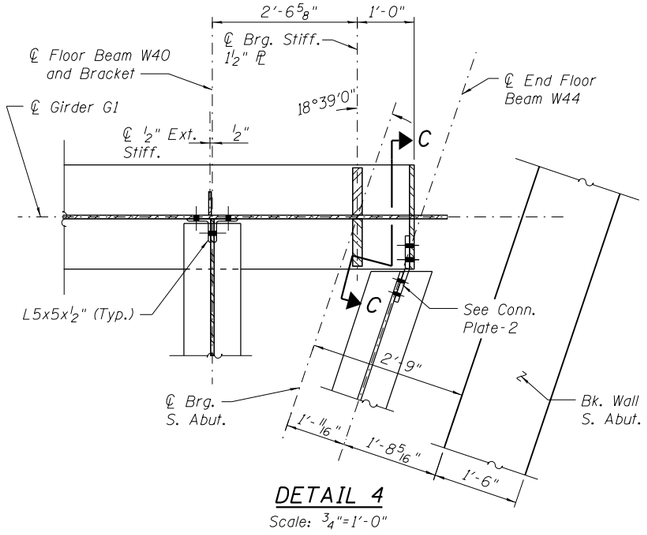
DETAIL 1
Scale: 3/4"=1'-0"



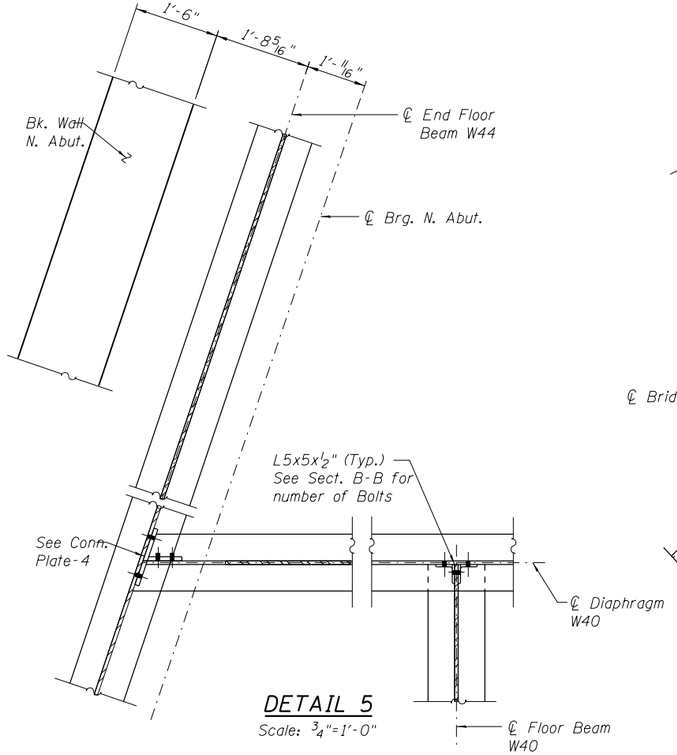
DETAIL 2
Scale: 3/4"=1'-0"

1'2" Gusset PL

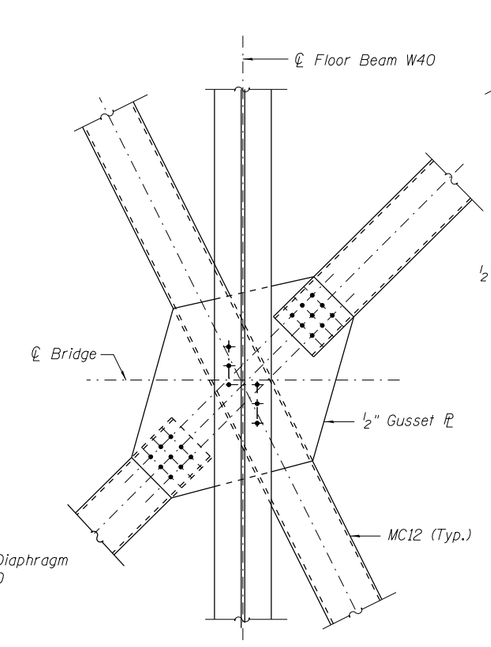
DETAIL 3
Scale: 3/4"=1'-0"



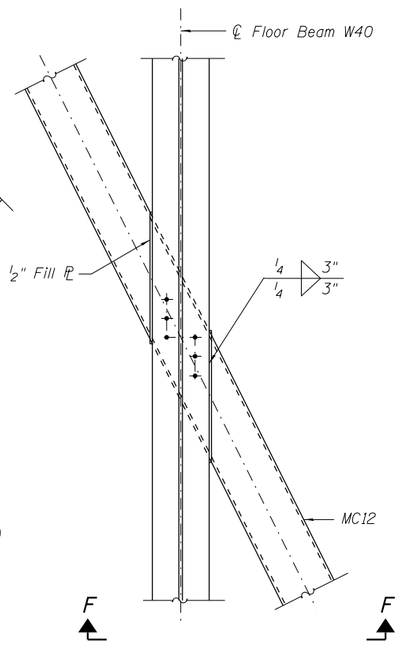
DETAIL 4
Scale: 3/4"=1'-0"



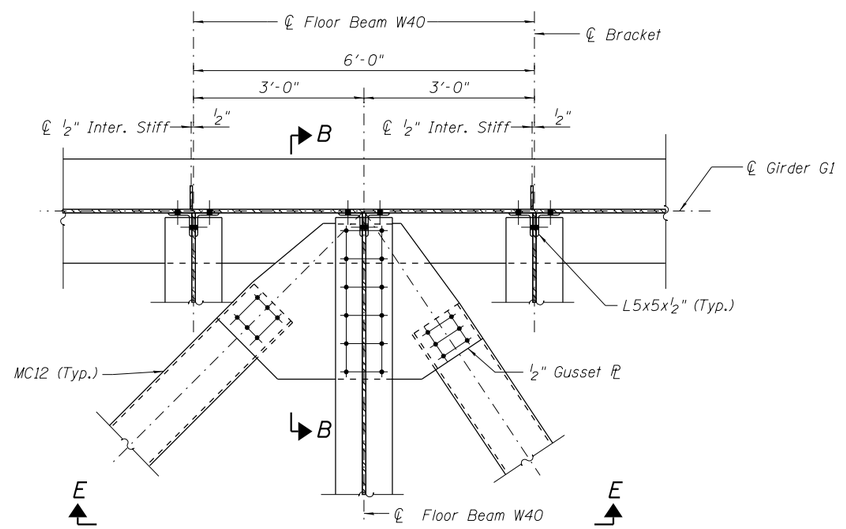
DETAIL 5
Scale: 3/4"=1'-0"



DETAIL 6
Scale: 3/4"=1'-0"



DETAIL 7
Scale: 3/4"=1'-0"



DETAIL 8
Scale: 3/4"=1'-0"

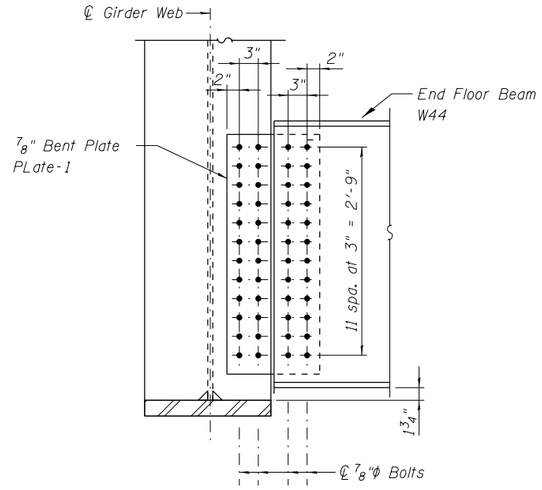
NOTES:
1. For Sections see Sheet 8.
2. For Connection Plates 1, 2 and 3 see Sheet 6.
3. For Plan View on which Details are located see Sheet 4.
4. All Details are looking down from top of bottom Flange of Floor Beams.

FILE NAME = ...\SHOOFLY-60K80-007.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366	PLOT SCALE = 8:0.0000 '1' / in.	DRAWN - R.VEJAR	REVISED -
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1613	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

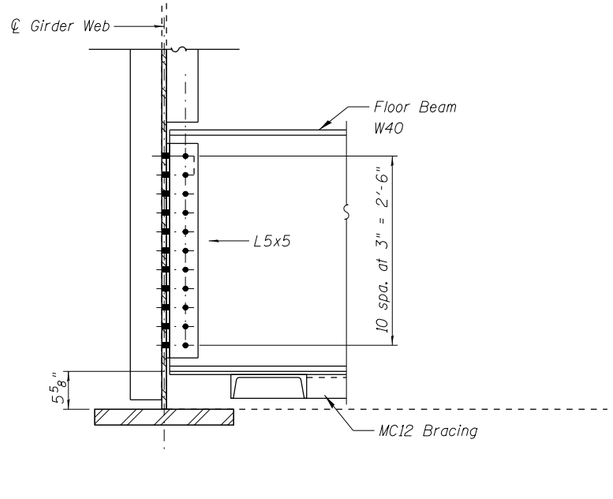
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL DETAILS – 1
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 7 OF 25 SHEETS

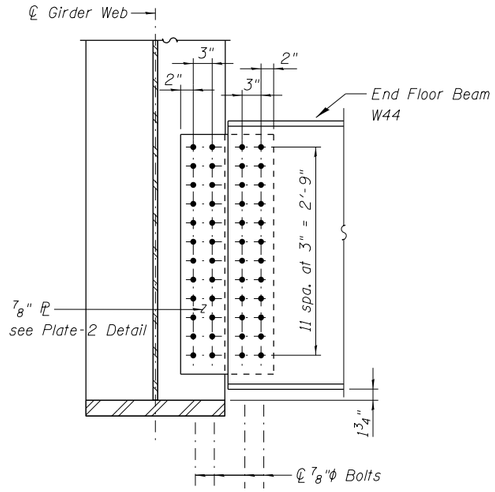
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	265
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		



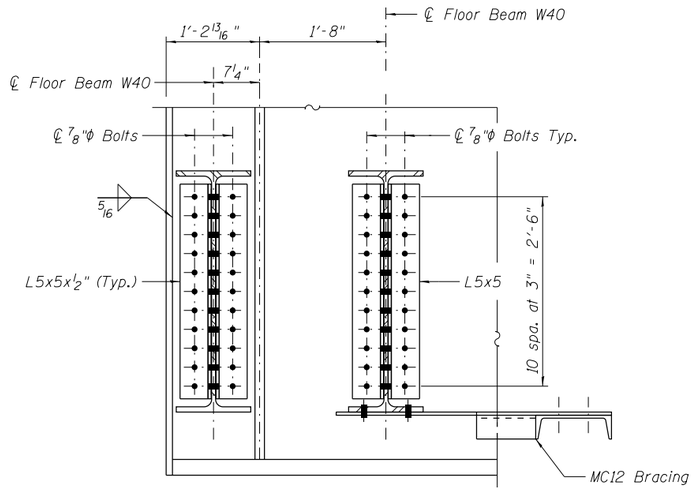
SECTION A-A
Scale: 1"=1'-0"



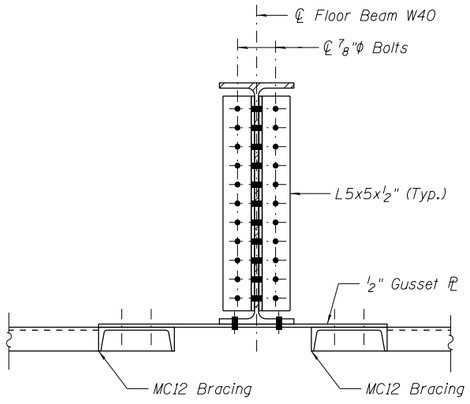
SECTION B-B
Scale: 1"=1'-0"



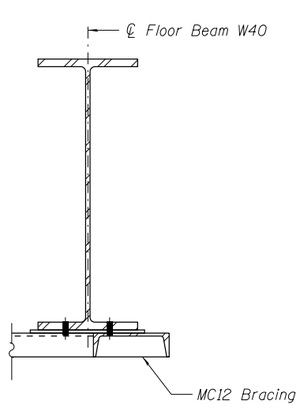
SECTION C-C
Scale: 1"=1'-0"



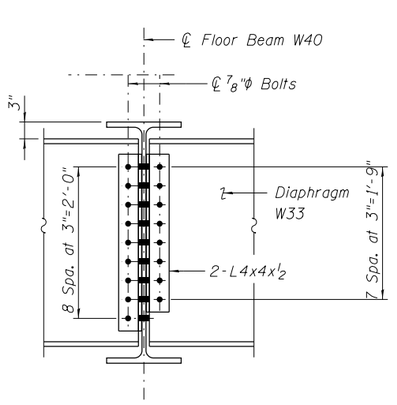
SECTION D-D
Scale: 1"=1'-0"



SECTION E-E
Scale: 1"=1'-0"



SECTION F-F
Scale: 1"=1'-0"



SECTION G-G
Scale: 1"=1'-0"

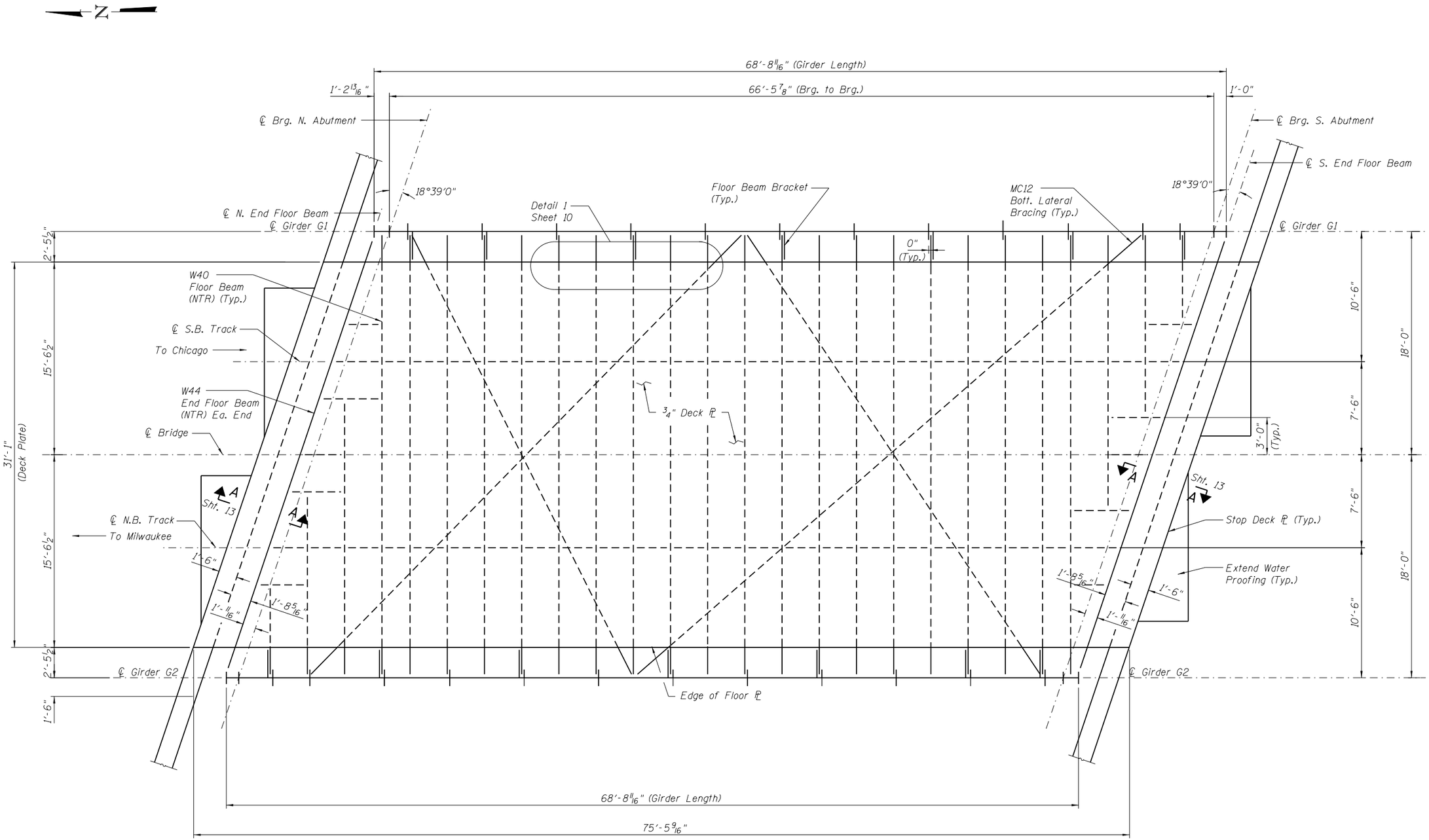
NOTE:
Work this Sheet with Sheet 4 & 7.

FILE NAME = ...\SHOOFLY-60K80-008.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS — PROJECT NUMBER 3366 — 55 East Jackson Blvd. Suite 600 Chicago, Illinois 60604 312/346-8131		CHECKED - DNB	REVISED -
	PLOT SCALE = 2:0:0 ':' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL DETAILS – 2
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 8 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	266
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



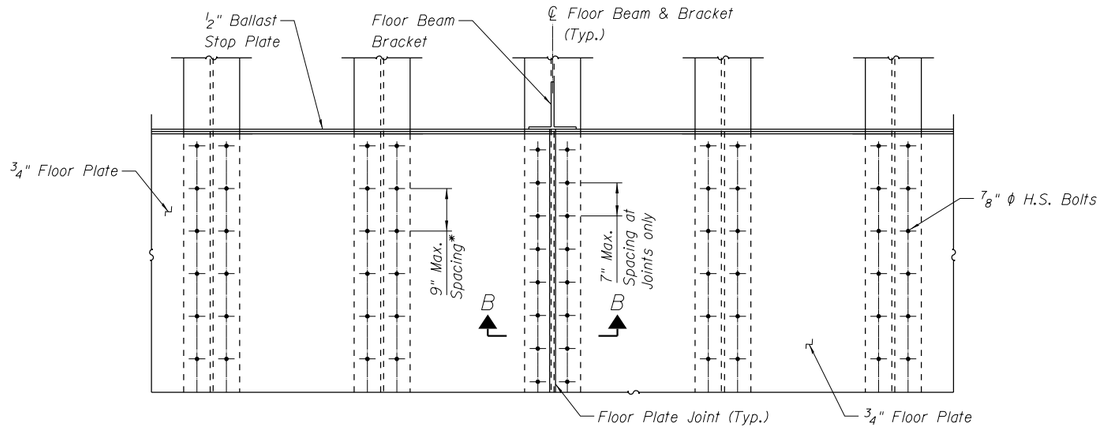
FLOOR PLATE PLAN

Scale: 1/4"=1′-0"

NOTE:
See Sheet 13 for Section A-A.

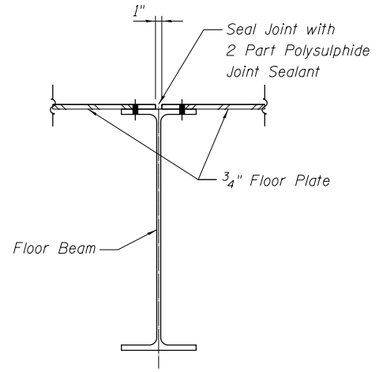
FILE NAME = ...\SHOOFLY-60K80-009.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	FLOOR PLATE PLAN SHOOFLY BRIDGE OVER IL RTE 132 SHEET NO. 9 OF 25 SHEETS
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131		CHECKED - DNB	REVISED -		
	PLOT SCALE = 8.0.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -		
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	267
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



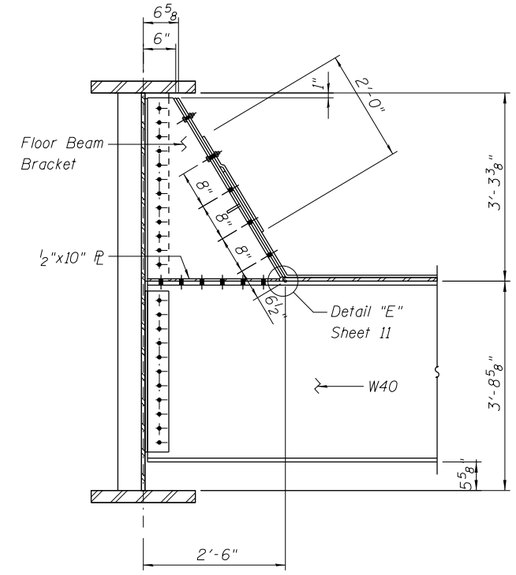
DETAIL 1
TYPICAL FLOOR PLATE CONNECTION PLAN

Scale: 3/4"=1'-0"



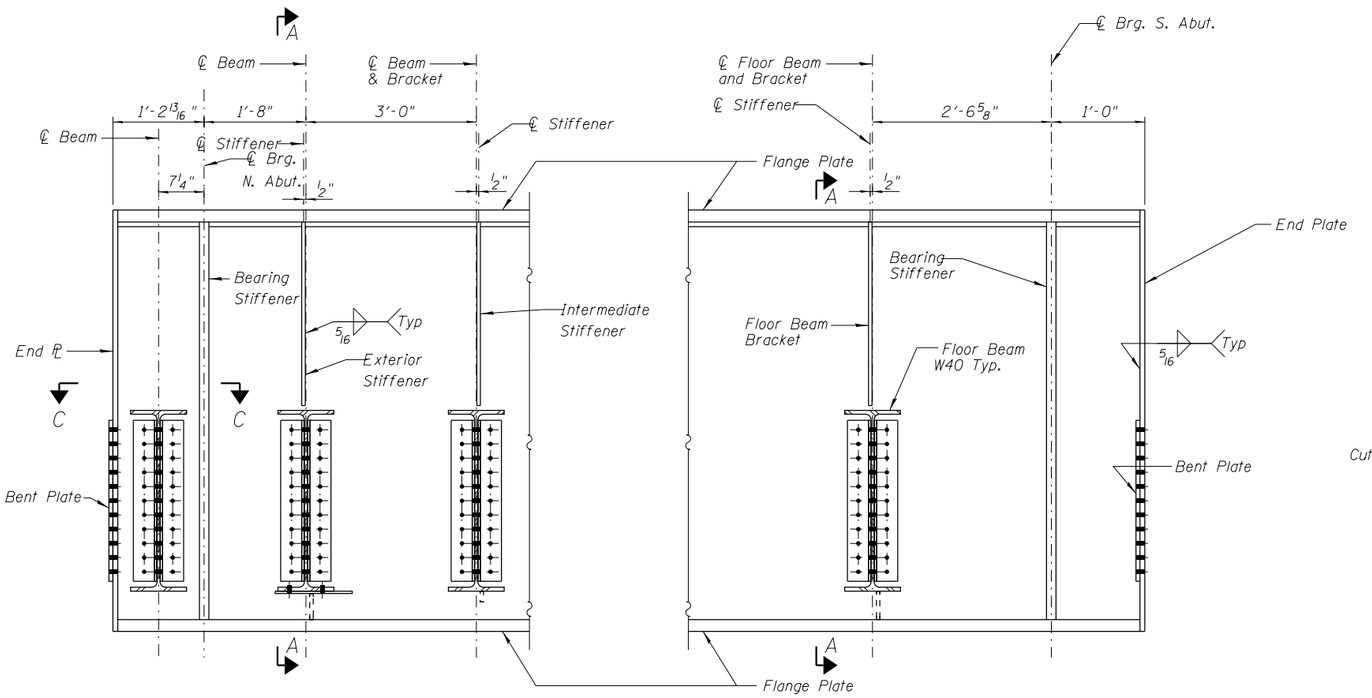
SECTION B-B
TYPICAL FLOOR PLATE JOINT DETAIL

Scale: 1"=1'-0"



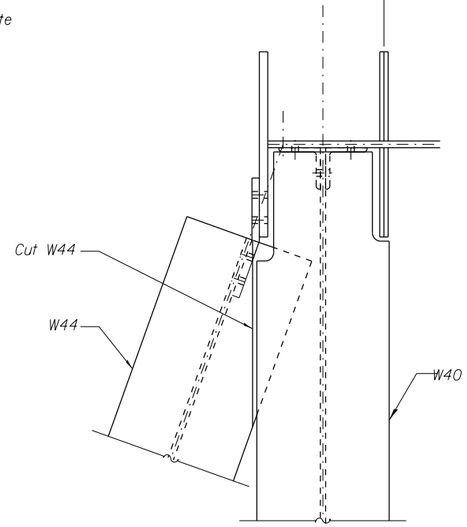
SECTION A-A

Scale: 3/4"=1'-0"



INSIDE ELEVATION - GIRDER G1

(Girder G2 Similar by 180° Rotation)
Scale: 3/4"= 1'-0"



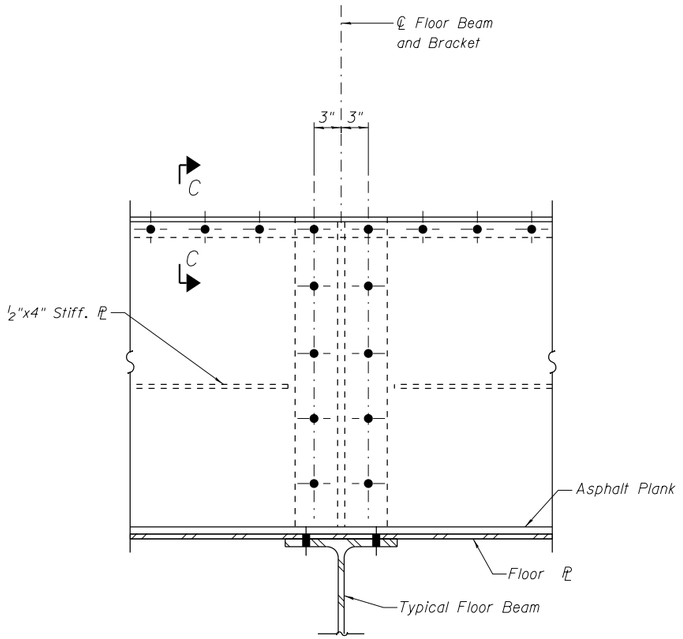
SECTION C-C

FILE NAME = ...\SHOOFLY-60K80-010.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366	PLOT SCALE = 2.0000 ' / in.	DRAWN - R.VEJAR	REVISED -
55 East Jackson Blvd. Suite 600 Chicago, Illinois 60604 312/346-8311	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SECTIONS AND DETAILS - 1
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 10 OF 25 SHEETS

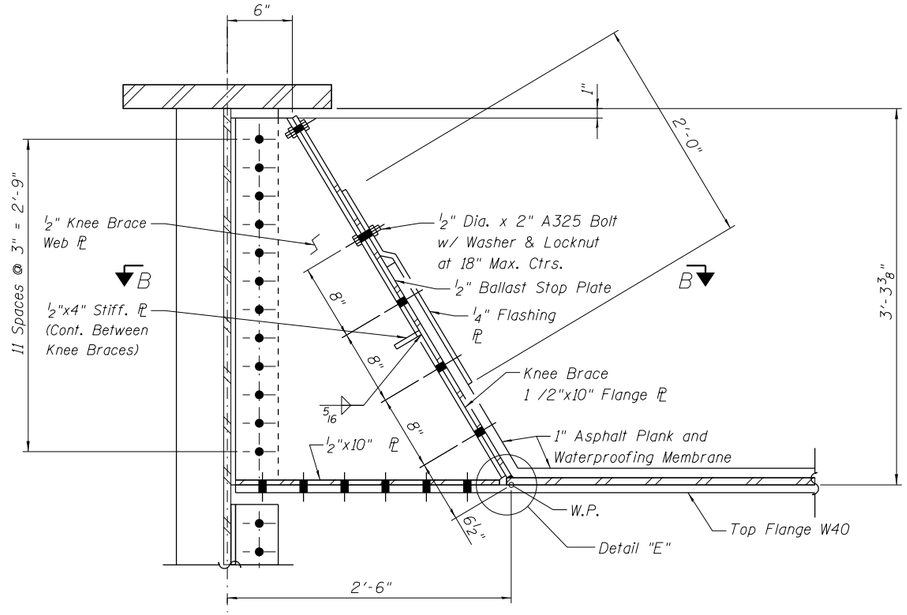
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	268
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



BALLAST PLATE ELEVATION

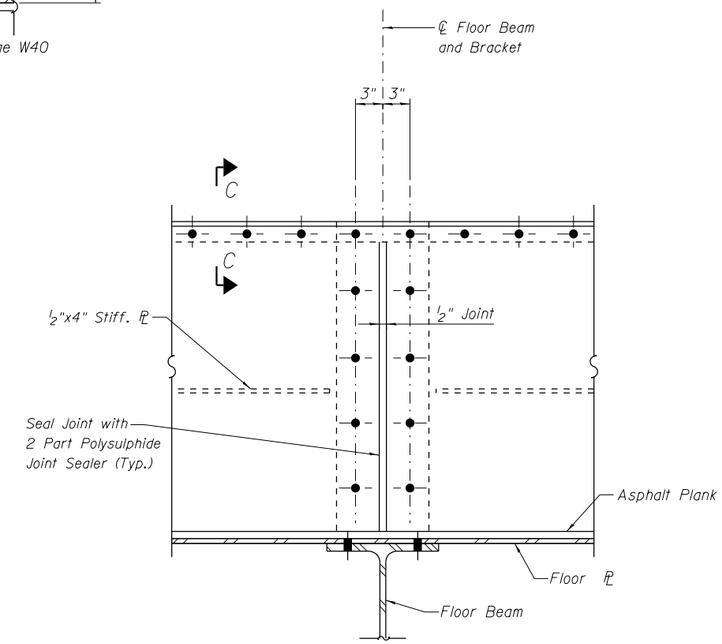
(At Knee Brace Typical)

Scale: 1½"=1'-0"



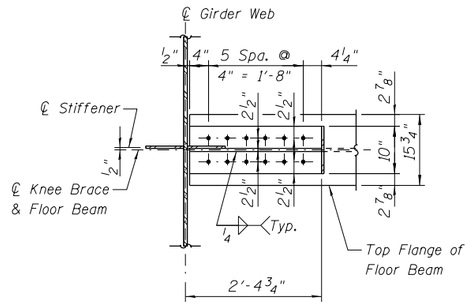
FLOOR BEAM BRACKET DETAIL

Scale: 1½"=1'-0"



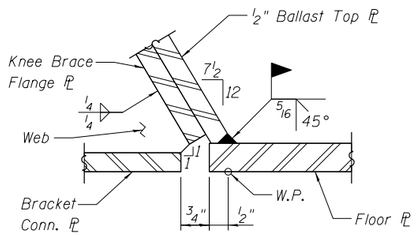
ELEVATION AT BALLAST STOP PLATE SPLICE

Scale: 1½"=1'-0"



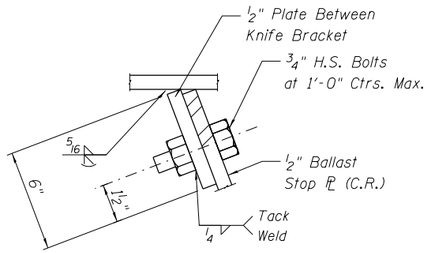
SECTION B-B

Scale: ¾"=1'-0"



DETAIL "E"

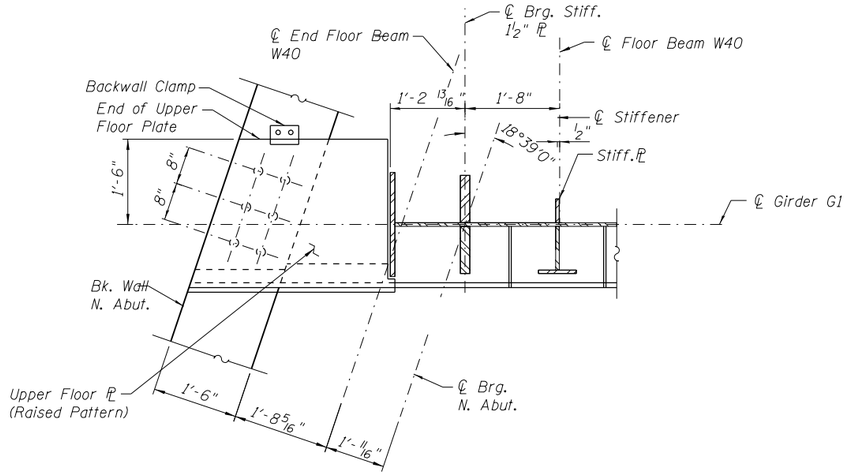
N.T.S.

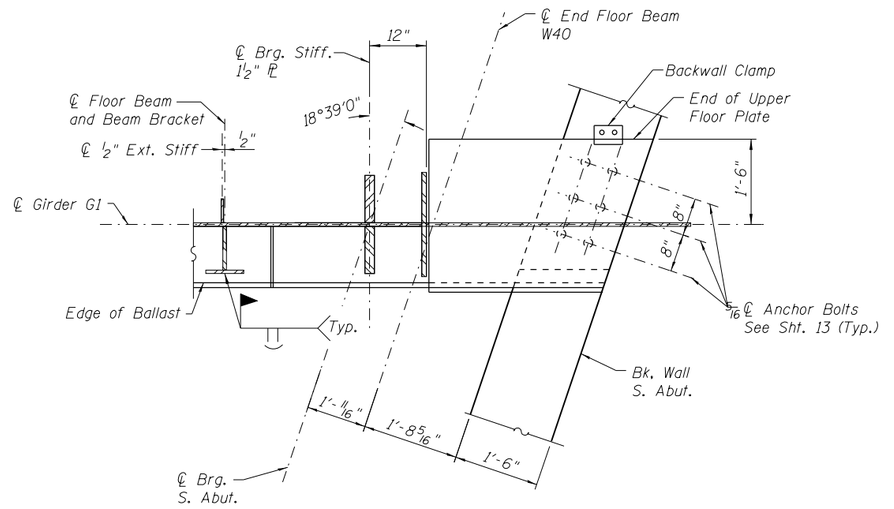


SECTION C-C

FILE NAME = ...\SHOOFLY-60K80-011.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	**STATE OF ILLINOIS**	**SECTIONS AND DETAILS – 2**
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -	**DEPARTMENT OF TRANSPORTATION**	**SHOOFLY BRIDGE OVER IL RTE 132**
PROJECT NUMBER 3366 — 55 East Jackson Blvd., Suite 600, Chicago, Illinois 60604, 312/346-1131	PLOT SCALE = 2.0000 ' / in.	DRAWN - R.VEJAR	REVISED -		SHEET NO. 11 OF 25 SHEETS
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

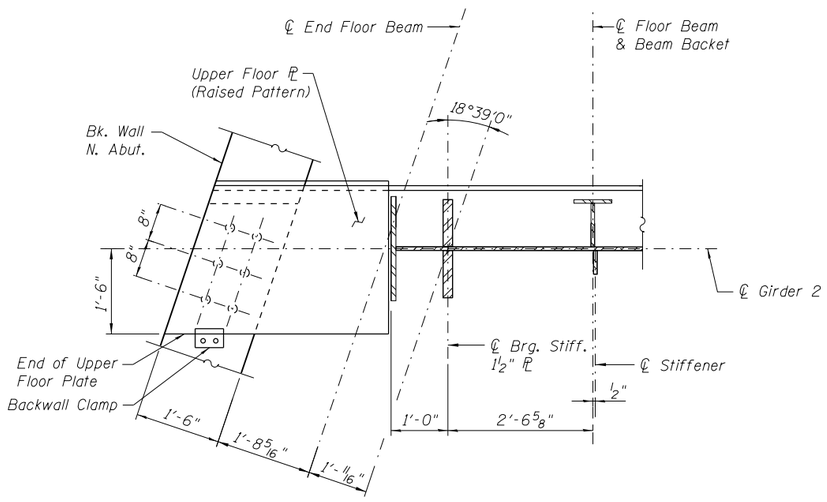
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	269
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			

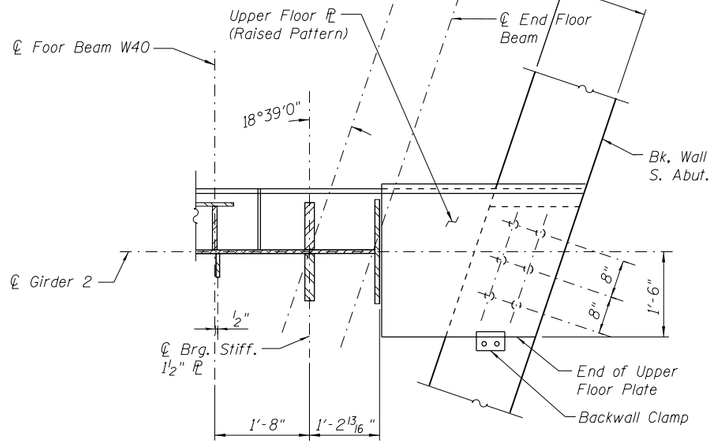




UPPER FLOOR PLATE PLAN AT GIRDER G1 (PART PLAN)

Scale: 1/4"=1'-0"





UPPER FLOOR PLATE PLAN AT GIRDER G2 (PART PLAN)

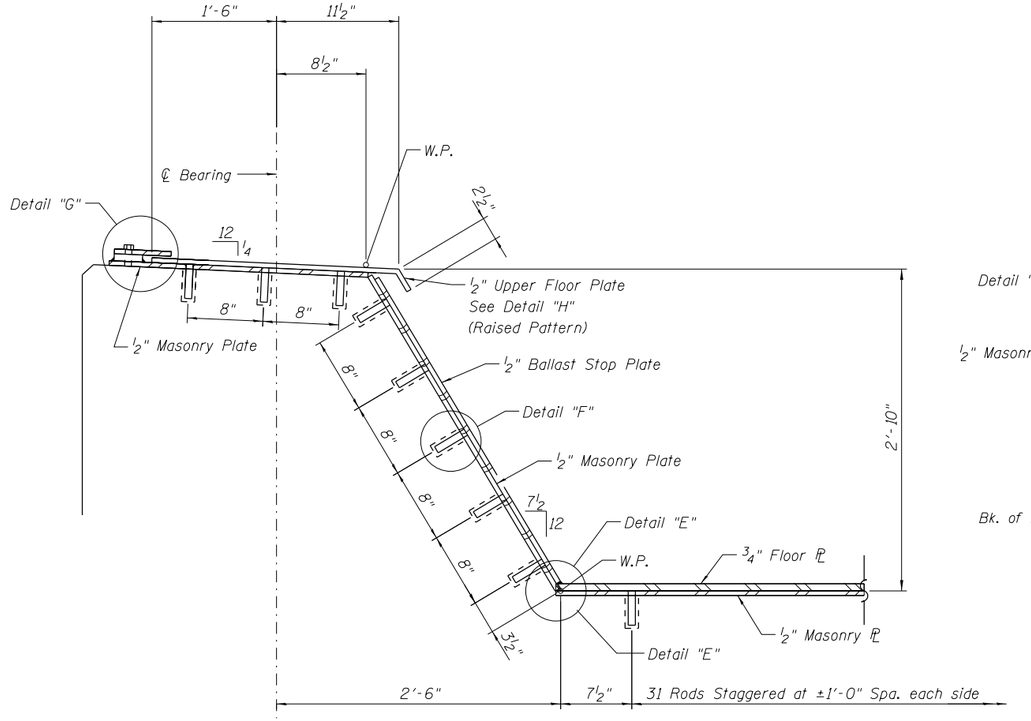
Scale: 1/4"=1'-0"

FILE NAME = ...\SHOOFLY-60K80-012.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366 — 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1131	PLOT SCALE = 8:0.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

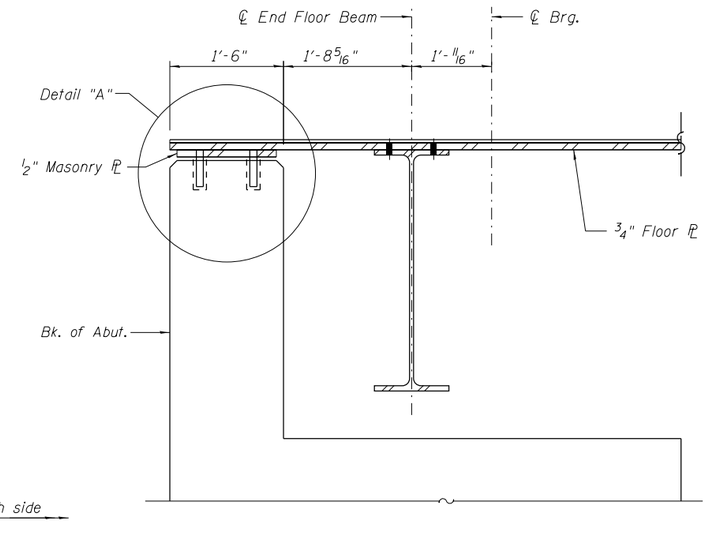
UPPER FLOOR PLATE AND DETAILS
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 12 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	270
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



BALLAST STOP PLATE DETAIL

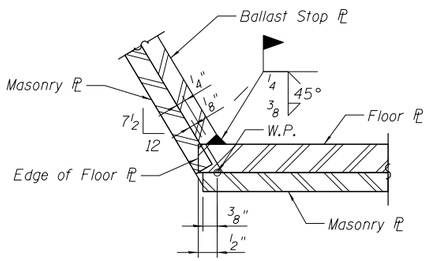
N.T.S.



SECTION A-A

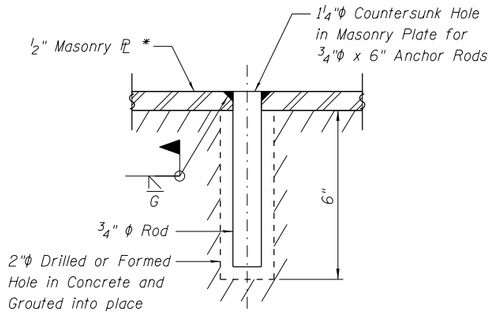
N.T.S.

NOTE:
For Waterproofing at abutment wall see Detail A.



DETAIL "E"

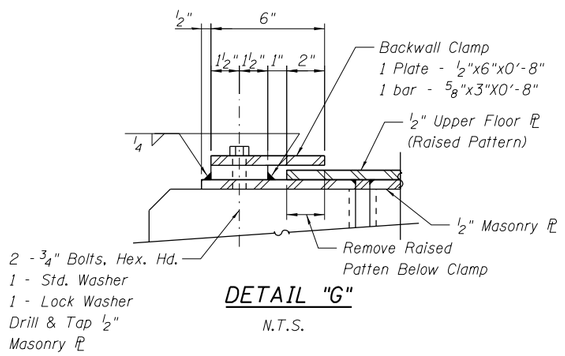
N.T.S.



DETAIL "F"

N.T.S.

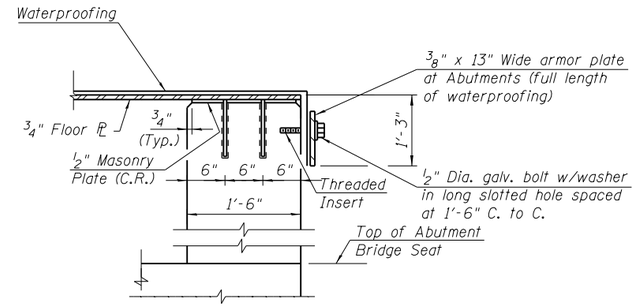
* Masonry plates to be welded to anchor rods in field and ground smooth.



DETAIL "G"

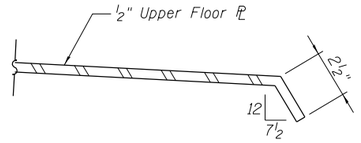
N.T.S.

Note:
Hold ⅛" gap between backwall clamp
and upper floor plate at expansion end.



WATERPROOFING AT ABUTMENT BACKWALL

DETAIL A



DETAIL "H"

N.T.S.

FILE NAME = ...\SHOOFLY-60K80-013.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	FLOOR PLATE DETAILS SHOOFLY BRIDGE OVER IL RTE 132 SHEET NO. 13 OF 25 SHEETS
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1831		CHECKED - DNB	REVISED -		
	PLOT SCALE = 2.0000 ' / in.	DRAWN - R.VEJAR	REVISED -		
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	271
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			

PLATE GIRDER
MOMENT AND SHEAR

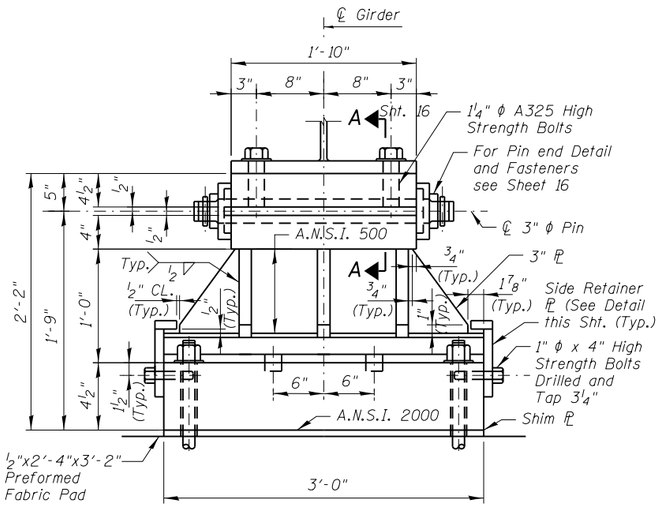
MOMENT	
Description	Girder (A709, GR.50)
Dead Load	4,046 ft-k
Live Load (E80)	6,233 ft-k
Impact	1,977 ft-k
Total	12,256 ft-k
Web	$^{13}/_{16}$"
Flange	$2^{1}/_{2}$"x22"
Gross I Furn.	246,000 in^4
Net I Furn.	242,692 in^4
Net Sect. Mod. - Bot.	5,527 in^3
Allow Max. Tensile Stress in Flange	27.5 ksi
Actual Max. Tensile Stress in Flange	26.6 ksi
Allow Max. Deflection (Live Load + Impact)	1.22 in
Actual Max. Deflection (Live Load + Impact)	0.81 in
SHEAR	
Dead Load	243 k
Live Load (E80)	417 k
Impact	133 k
Total	793 k
Web Shear	11.7 ksi
End Stiffener Column Area Reqd.	19.3 in^2
Section (2 Plates)	$1^{1}/_{2}$"x$10^{1}/_{2}$"
End Stiffener Column Area Furn.	39.4 in^2

FLOOR BEAM
MOMENT AND SHEAR

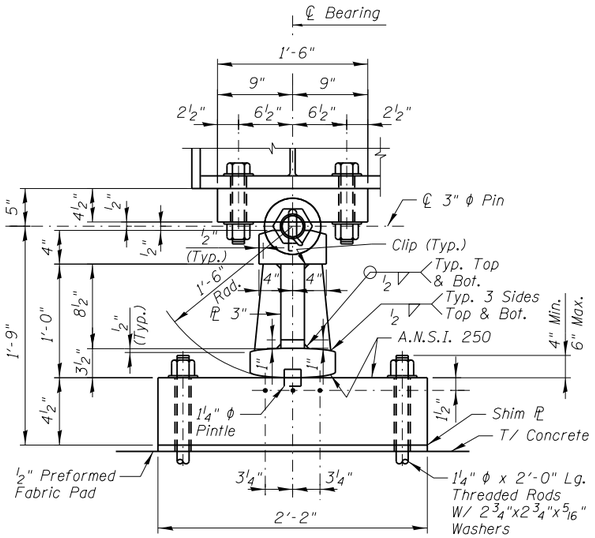
MOMENT		
Description	Typical Floor Beam (A709, GR.50) W40x215	End Floor Beam (A709, GR.50) W44X230
Dead Load	209.8 ft-k	421.1 ft-k
Live Load (E80)	724.5 ft-k	764.7 ft-k
Impact	245 ft-k	258.6 ft-k
Total	1179.3 ft-k	1,444.4 ft-k
Section	W40x215	W44x230
Gross I Furn.	16,700 in^4	20,800 in^4
Net I Furn.	15,571 in^4	20,140 in^4
Net Sect. Mod. - Bot.	859 in^3	971 in^3
Allow Max. Tensile Stress in Flange	27.5 ksi	27.5 ksi
Actual Max. Tensile Stress in Flange	16.5 ksi	17.85 ksi
Allow Max. Deflection (Live Load + Impact)	0.675 in	0.755 in
Actual Max. Deflection (Live Load + Impact)	0.61 in	0.574 in
SHEAR		
Dead Load	19.9 k	39.1 k
Live Load (E80)	69.0 k	69.0 k
Impact	23.3 k	23.3 k
Knee Brace	63.6 k	____
Total	175.8 k	131.4 k
Web Shear	6.93 ksi	4.31 ksi

BEARING ON MASONRY

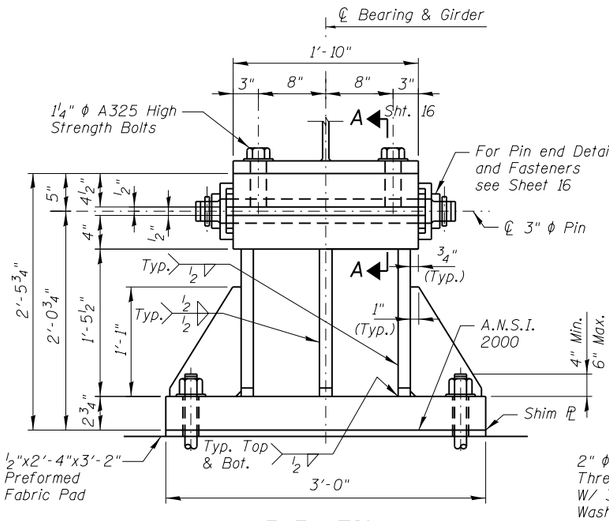
Description	Girder G1 or G2
Total Reaction	790.2 k
Bearing Area Furnished	936 in^2
Average Brg. Pressure	0.84 ksi



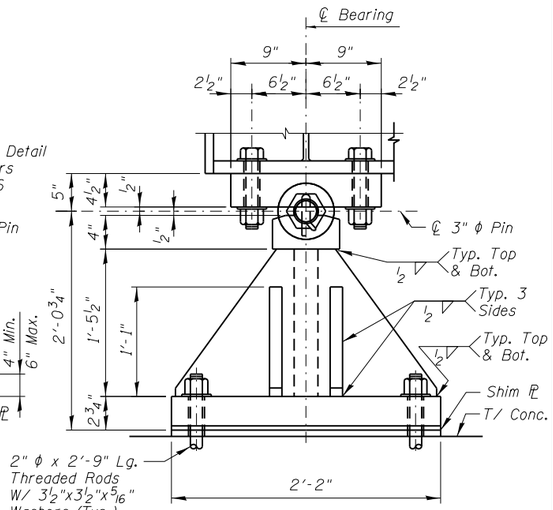
ELEVATION
(EXPANSION BEARING)
(S. Abutment)



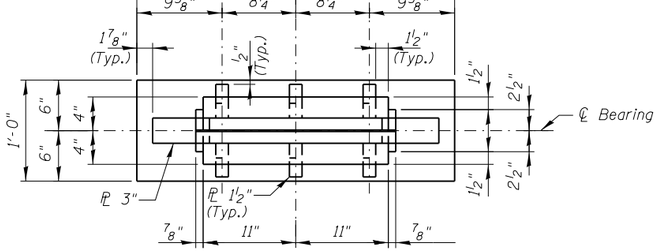
SIDE VIEW
(EXPANSION BEARING)



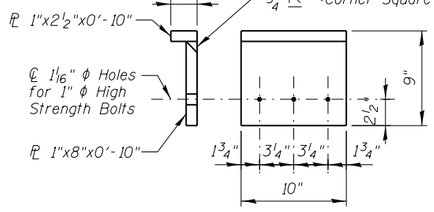
ELEVATION
(FIXED BEARING)
(N. Abutment)



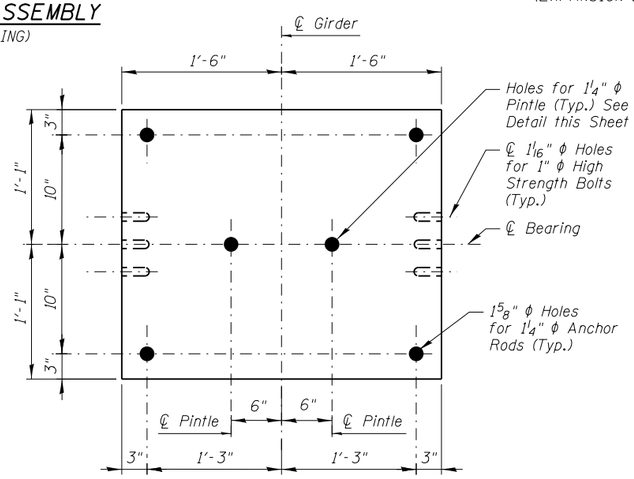
SIDE VIEW
(FIXED BEARING)



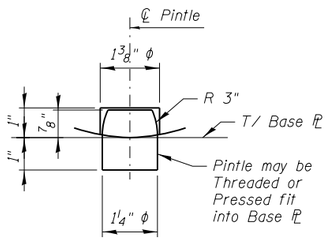
LOWER BEARING ASSEMBLY
(EXPANSION BEARING)



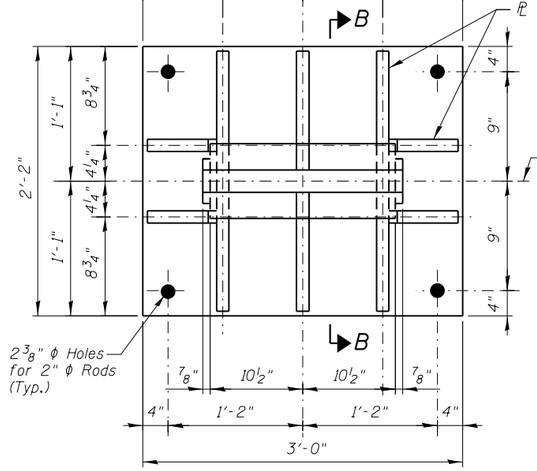
SIDE RETAINER DETAIL
(EXPANSION BEARING)



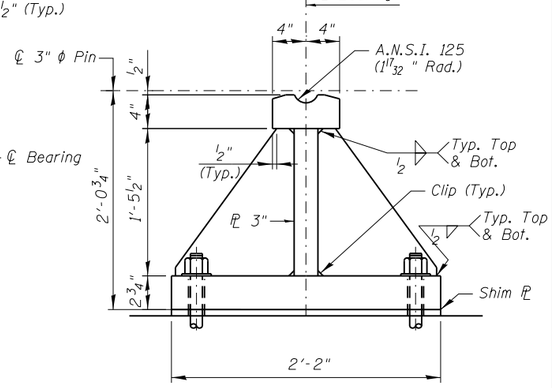
BASE PLATE PLAN
(EXPANSION BEARING)



PINTLE DETAIL
(EXPANSION BEARING)



BOTTOM PLAN
(FIXED BEARING)



SECTION B_B
(FIXED BEARING)

BILL OF MATERIAL

ITEM		UNIT	QUANTITY
Anchor Bolt	1¼"	Each	8
Anchor Bolt	2"	Each	8

NOTES :

1. For Section A-A and Upper Bearing Assembly, See Sheet No. 16.
2. For Additional Notes See Sheet No. 16.
3. Grease bearing assembly before installation.
4. Grease hose/fitting shall be steel side of bearing.
5. Bearings shall be blocked during construction.

FILE NAME = ...\SHOOFLY-60K80-015.dgn
USER NAME = aafitzpatrick
PLOT SCALE = 24:0.0000 ':' / in.
PLOT DATE = 10/7/2016

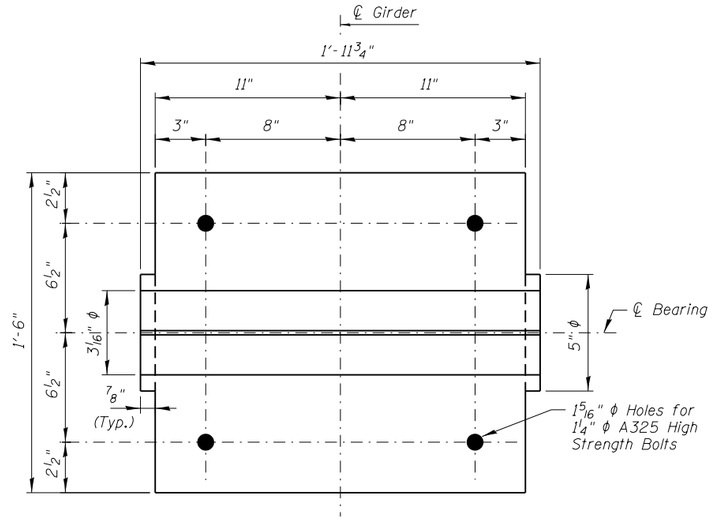
HOH — HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS
PROJECT NUMBER 3366
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1515

DESIGNED - MMH	REVISED -	
CHECKED - DNB	REVISED -	
DRAWN - R.VEJAR	REVISED -	
CHECKED - BCS	REVISED -	

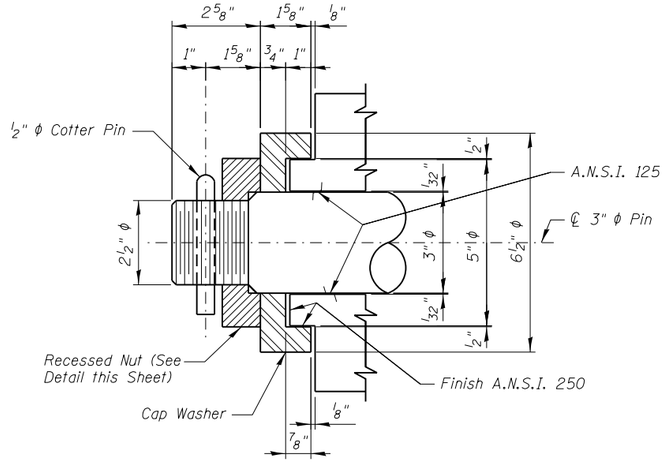
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL BEARING - 1
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 15 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	273
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



UPPER BEARING ASSEMBLY BOTTOM VIEW



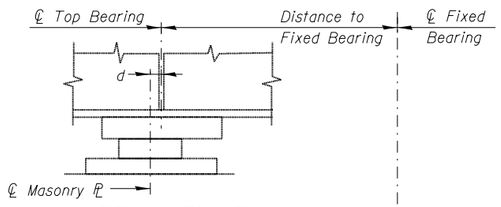
PIN END DETAIL

NOTES :

1. Pin material must be ASTM A-668 Class F, harden to a Brinell Hardness of 200.
2. Material for bearing component parts must be ASTM A709, Grade 50, except as noted.
3. Bearing assembly weldments must be stress relieved by heat treating per AWS D1.1 prior to finish machining.
4. The parts of members in contact must be faced and bearing surfaces must be planed smooth before any welding is started.
5. Pintles must be stainless steel conforming to ASTM A276, Type 410 annealed.
6. Bearing pins or rockers and all surfaces in contact with pins or rockers must be given an all-over smooth finish.
7. Bearing seat surfaces will be constructed or adjusted to the designated elevations within a tolerance of 1/8". Adjustment must be made by grinding the surface or by shimming the bearing. Two 1/8" adjusting shims, of the dimensions of the bottom bearing plates, will be provided for each bearing in addition to all other plates or shims.
8. Shim plates will be placed between the base plate and the preformed fabric pad. Shim plates will match the footprint of the base plate. Heights of individual shim plates will be a minimum of 3/8" and a maximum of 2". The fabricator will determine the thickness of individual plates to obtain the equivalent shim height required.
9. Concrete surface under bearing to be ground to a smooth level to give even bearing. Laminated fabric pads with 1/2" thickness and specified durometer hardness will be placed under each bearing.
10. The cost of all steel weldments, pins, recessed nuts, cap washers and preformed fabric pads, is included in the cost of "Steel Bearing Assembly".

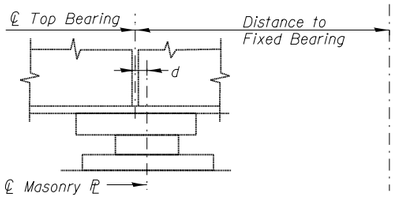
NOTE :

A.I.S.I. 1000 for Plates in Contract Unless noted Otherwise (typ.)



BELOW 50° F

(Move masonary ℄ away from fixed bearing)

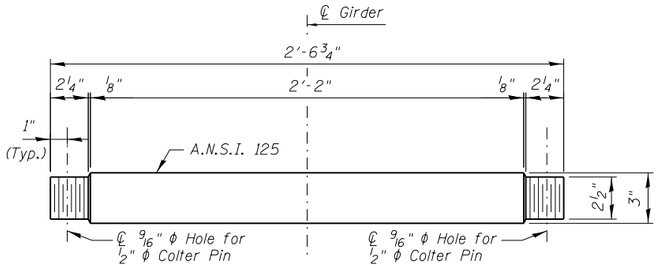


ABOVE 50° F

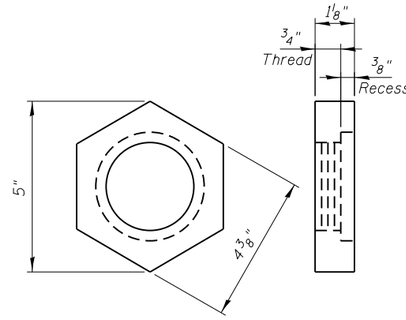
(Move masonary ℄ toward fixed bearing)

SETTING ANCHOR BOLTS AT EXPANSION BEARINGS

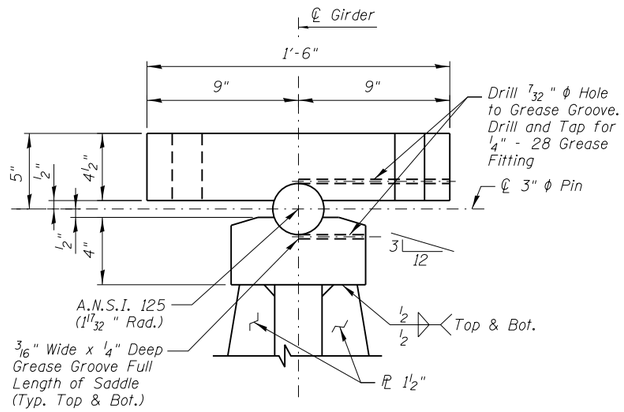
d= 1/8" per each 100' of expansion for every 15° F temperature change from the normal temperature of 50° F.



PIN DETAIL



RECESSED NUT DETAIL



SECTION A-A

BILL OF MATERIAL

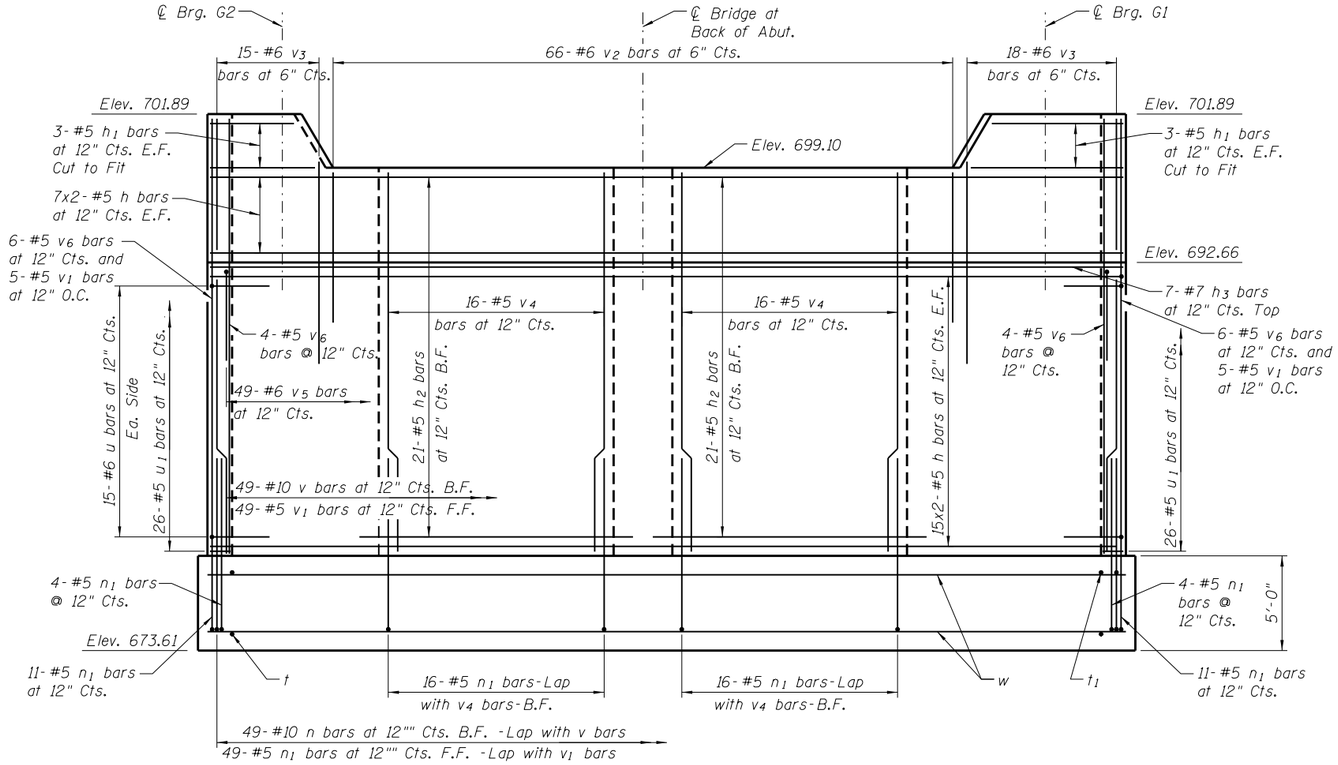
ITEM	UNIT	QUANTITY
Steel Bearing Assembly	Each	4

FILE NAME = ...\SHOOFLY-60K80-016.dgn	USER NAME = lestrada	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS; PROJECT NUMBER 3366; 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131		CHECKED - DNB	REVISED -
	PLOT SCALE = 288.0000 '' / ft.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 12/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

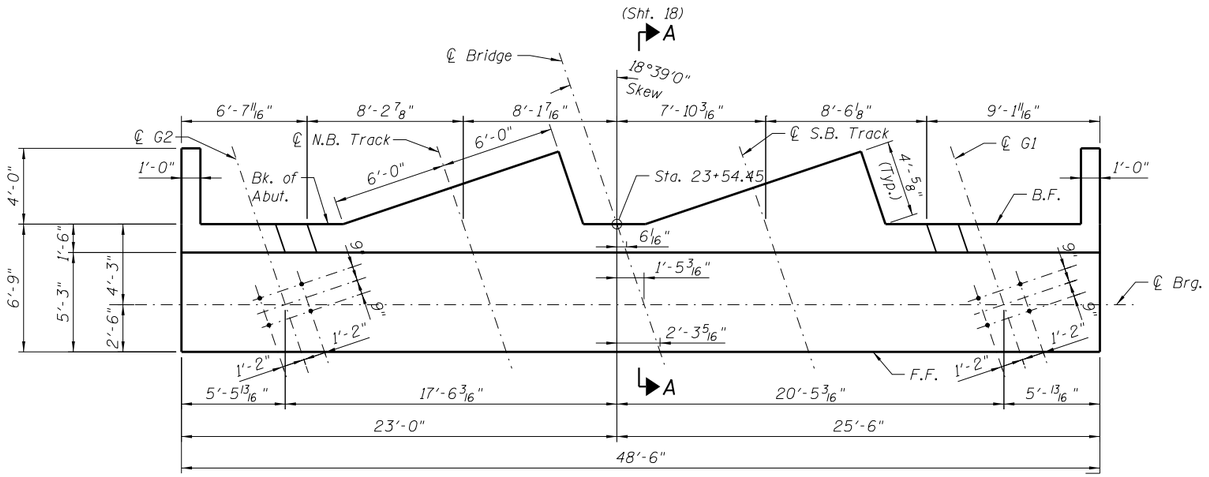
STEEL BEARING - 2
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 16 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	274
		CONTRACT NO. 60K80		
		ILLINOIS FED. AID PROJECT		



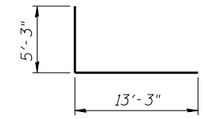
ELEVATION

Scale: 1/4" = 1'-0"

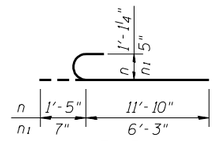


TOP VIEW

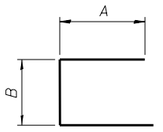
Scale: 1/4" = 1'-0"



BAR h_2



BAR n, n_1



BAR u, u_1, v_2, v_3, v_5

BAR DIMENSIONS

Bar	A	B
u	3'-0"	6'-5"
u_1	5'-2"	0'-8"
v_2	8'-10"	1'-2"
v_3	11'-7"	1'-2"
v_5	2'-7"	6'-5"

ABUTMENT BILL OF MATERIAL (TWO ABUTMENTS)

Bar	No.	Size	Length	Shape
h	176	#5	25'-2"	
h_1	24	#5	8'-9"	
h_2	84	#5	18'-6"	
h_3	28	#7	25'-9"	
n	98	#10	13'-3"	
n_1	222	#5	6'-10"	
t	91	#10	25'-0"	
t_1	50	#9	25'-0"	
t_2	91	#10	22'-8"	
t_3	50	#9	22'-8"	
u	60	#6	12'-5"	
u_1	104	#5	11'-0"	
v	49	#10	13'-10"	
v_1	69	#5	13'-10"	
v_2	132	#6	18'-10"	
v_3	66	#6	24'-4"	
v_4	64	#5	20'-4"	
v_5	98	#6	11'-7"	
v_6	40	#5	25'-4"	
v_7	49	#10	14'-1"	
v_8	49	#5	14'-1"	
w	200	#6	25'-11"	
Structure Excavation		Cu. Yd.	1.000	
Concrete Structures		Cu. Yd.	919	
Reinforcement Bars		Pound	69,837	

FILE NAME = ...\SHOOFLY-60K80-017.dgn
USER NAME = aafitzpatrick
PLOT SCALE = 8:0.0000 '' / in.
PLOT DATE = 10/7/2016

DESIGNED - MMH
CHECKED - DNB
DRAWN - R.VEJAR
CHECKED - BCS

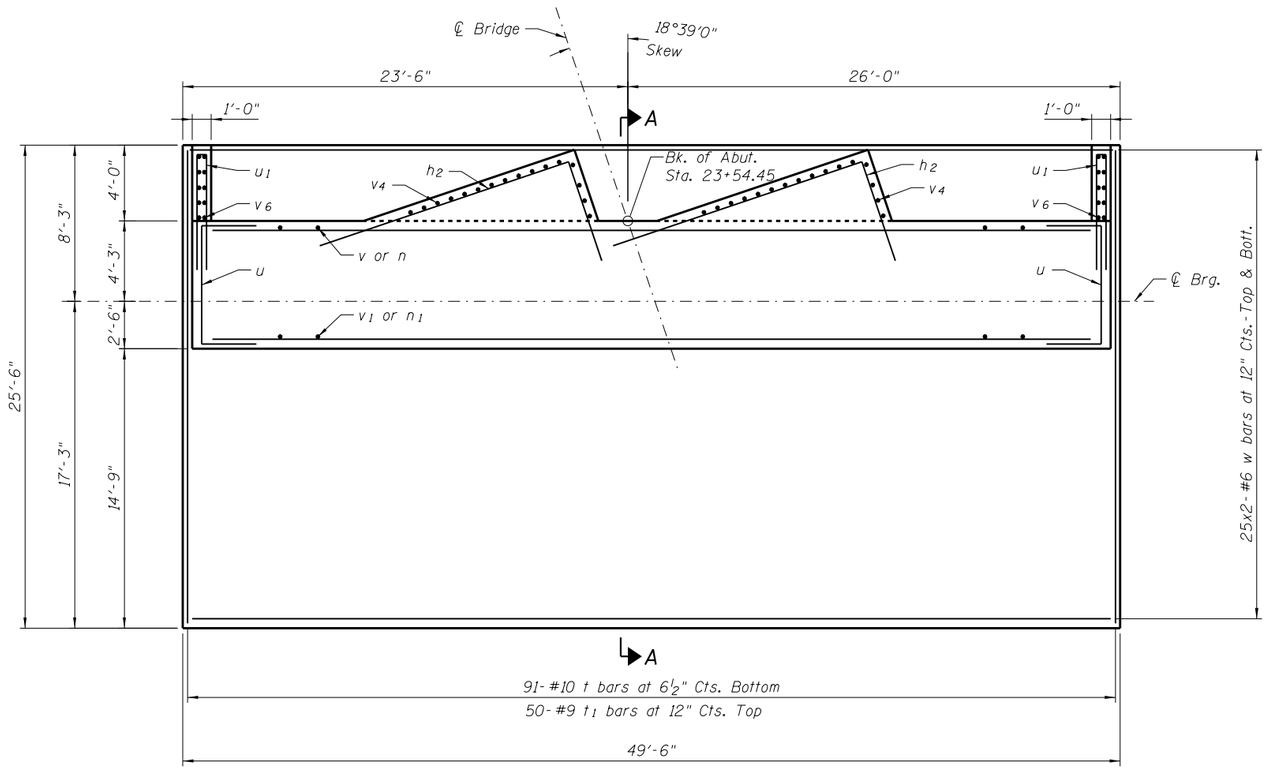
REVISED -
REVISED -
REVISED -
REVISED -

HOH — HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS
PROJECT NUMBER 3366
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8131

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

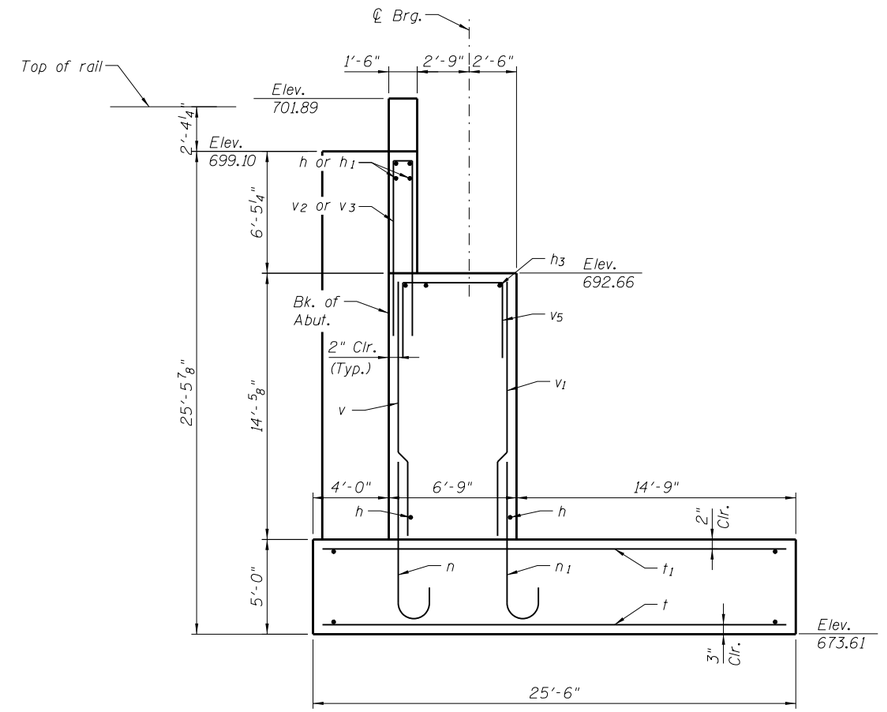
NORTH ABUTMENT – 1
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 17 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	275
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



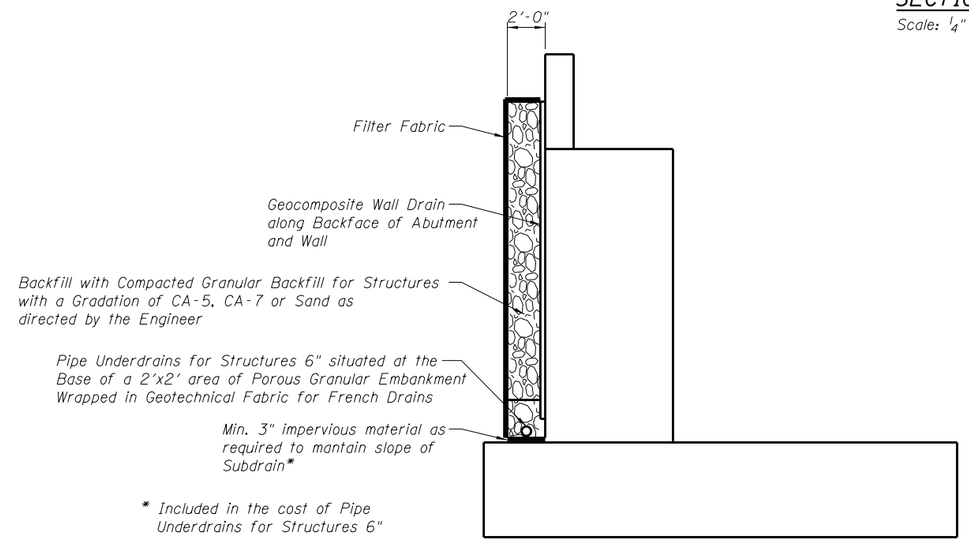
FOUNDATION PLAN

Scale: 1/4" = 1'-0"



SECTION A-A

Scale: 1/4" = 1'-0"



TYPICAL DRAINAGE SECTION - NORTH AND SOUTH ABUTMENT

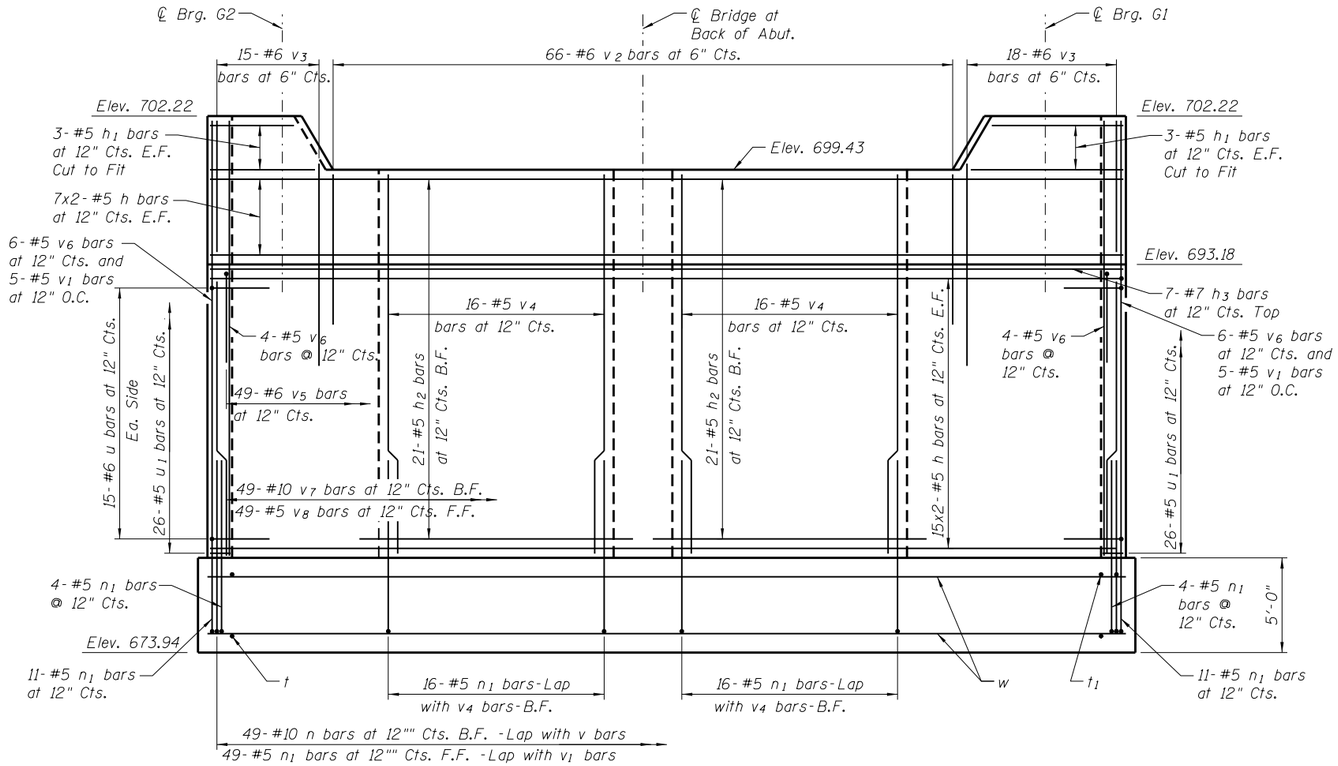
(Abutments)

FILE NAME = ...\SHOOFLY-60K80-018.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY O. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS PROJECT NUMBER 3366 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-8311		CHECKED - DNB	REVISED -
	PLOT SCALE = 8:0.0000 '1' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

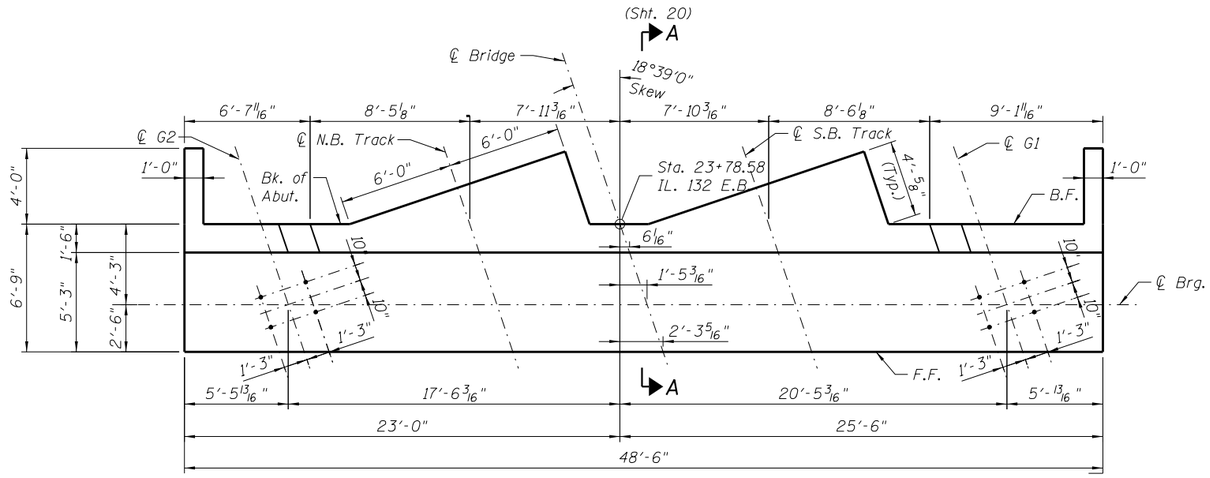
NORTH ABUTMENT – 2
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 18 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	276
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



ELEVATION

Scale: 1/4" = 1'-0"



TOP VIEW

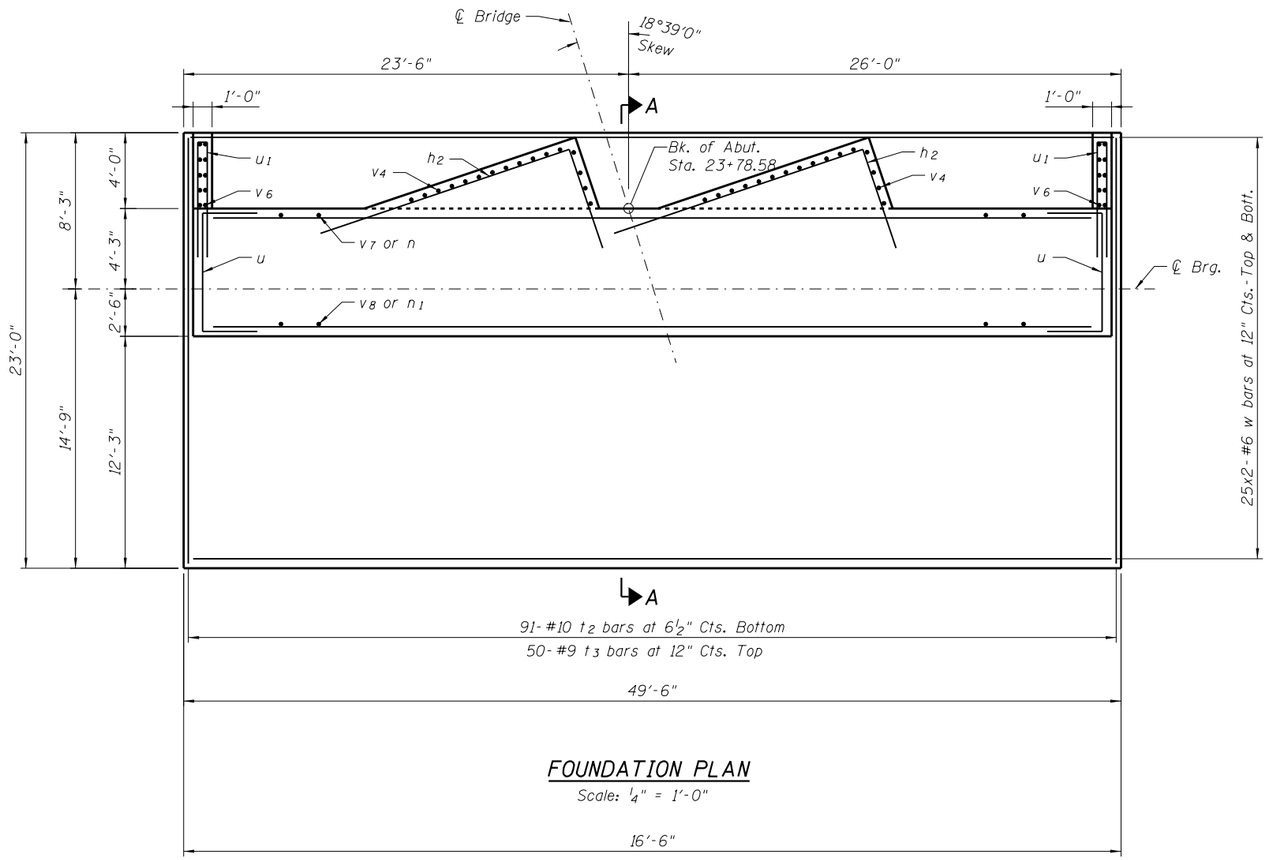
Scale: 1/4" = 1'-0"

FILE NAME = ...\SHOOFLY-60K80-019.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -
PROJECT NUMBER 3366 — 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1833	PLOT SCALE = 8:0.0000 '' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

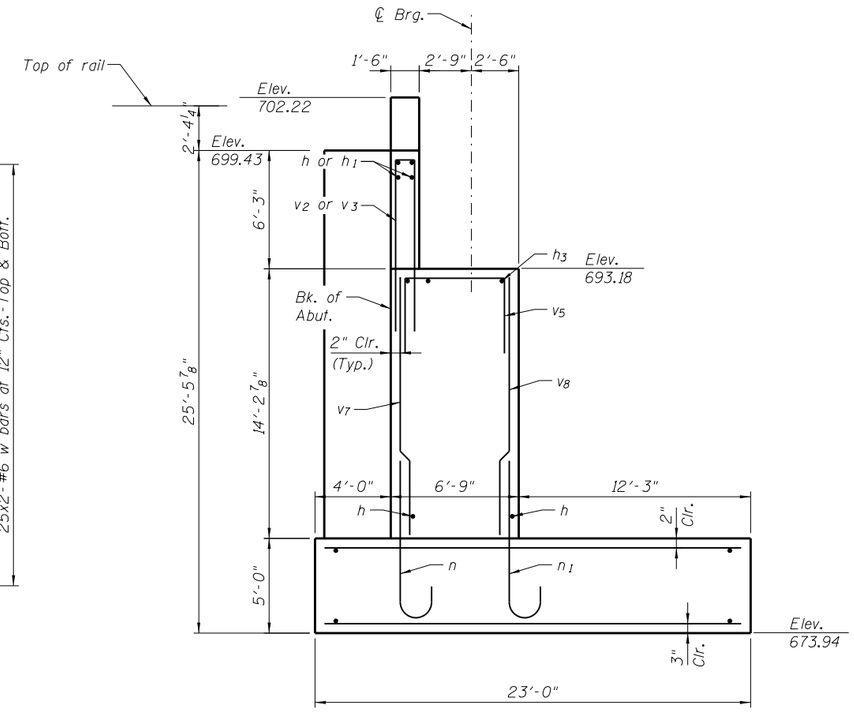
SOUTH ABUTMENT – 1
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 19 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	277
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			



FOUNDATION PLAN

Scale: ¼" = 1'-0"



SECTION A-A

Scale: ¼" = 1'-0"

FILE NAME = ...\SHOOFLY-60K80-020.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SOUTH ABUTMENT – 2 SHOOFLY BRIDGE OVER IL RTE 132	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS		CHECKED - DNB	REVISED -			346	125X-N&J-SB-B	LAKE	361	278
PROJECT NUMBER 3366	PLOT SCALE = 8:0.0000 '1' / in.	DRAWN - R.VEJAR	REVISED -		SHEET NO. 20 OF 25 SHEETS				CONTRACT NO. 60K80	
55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1313	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -					ILLINOIS	FED. AID PROJECT	

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/2/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION N. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM,
Latitude 42°22'15.54542" N, Longitude 87°53'43.06994" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-3 (STA: U.P. RR)
Station 9+18.58
Offset 91.62ft LT
Ground Surface Elev. 699.36 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 683.4 ft
Upon Completion NA ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
			16	Dark Brown, Moist TOPSOIL - trace, organics, sand, gravel
698.36	3			
	25	4.0	19	Brown and Gray, Moist SILTY CLAY LOAM (Fill), trace organics and gravel
	2	P		
	6			
	6	2.5	21	NOTE: A large amount of concrete debris and obstructions were encountered between 1' and 12'
-5	6	P		
	4			
	4		12	
	4			
	1			Brick Fragments at 8.5'
	2		15	
-10	4			
	7			
	19		15	
686.86	6			
	4			Very Stiff Brown, Moist SILTY CLAY LOAM, trace gravel
	4	3.9	22	
-15	6	B		
	7			Water encountered at 16'
682.26	6	3.9	21	
	8	B		Very Stiff Gray, Moist SILTY CLAY LOAM, trace gravel
	4			
679.36 -20	6	2.9	21	
	8	B		

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
	3			Very Stiff Gray, Moist SILTY CLAY LOAM, trace gravel
	5	2.2	19	
	7	B		
	6			
	7	2.2	20	
-25	9	B		
673.36	3			
	4	2.6	22	Very Stiff Gray, Moist SILTY LOAM, trace gravel
	6	B		
670.86	3			
	4	3.3	22	Very Stiff Gray, Moist SILTY CLAY LOAM
-30	6	B		
	3			
665.36	3	1.3	14	6 inch layer of SAND, trace gravel, Gray, Medium to Coarse grain, Wet at 33.5'
-35	4	P		
				Stiff Greenish Gray, Moist SILTY LOAM, trace gravel
660.86	3			
	6	2.9	14	Very Stiff Gray, Moist SILTY CLAY LOAM, trace gravel
-40	8	B		

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/2/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION N. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM,
Latitude 42°22'15.54542" N, Longitude 87°53'43.06994" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-3 (STA: U.P. RR)
Station 9+18.58
Offset 91.62ft LT
Ground Surface Elev. 699.36 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 683.4 ft
Upon Completion NA ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				Very Stiff Gray, Moist SILTY CLAY LOAM, trace gravel *(continued)*
655.86	6			Very Stiff to Very Hard Gray, Moist SILTY LOAM, trace gravel Wet at 44' 1 inch layer of SAND, Gray, Coarse grain, Wet at 44'
	11	2.0	18	
-45	13	B		
	6			
	7	2.5	13	
-50	8	B		
	7			
	8	3.7	14	
-55	11	B		
	10			
	11	7.0	14	Switched to mud rotary at 60'
639.36 -60	14	P		

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				Medium Dense to Very Dense Gray, Fine to Medium grain, Wet SAND, trace gravel
	14			
	21		14	2 inch layer of gravel, medium grain at 64.3'
-65	32			
	7			
	12		14	4 inch layer of gravel, medium grain at 69.3'
-70	13			
625.86	32			Very Dense Gray, Fine to Coarse grain, Wet SAND, trace gravel
	32		6	
-75	30			
620.86	6			Very Stiff Gray traces of Orange/Red, Moist SILTY LOAM, trace gravel
-80	9	2.9	21	
		B		

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/2/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION N. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'15.5454" N, Longitude 87°53'43.06994" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. _____
Station _____

BORING NO. B-3 (STA: U.P. RR)
Station 9+18.58
Offset 91.62ft LT
Ground Surface Elev. 699.36 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 683.4 ft
Upon Completion NA ft
After - Hrs. - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff Gray traces of Orange/Red, Moist SILTY LOAM, trace gravel *(continued)*				
		10		
	-85	11 16	2.7 B	25
		11		
		14 18	3.1 B	16
	609.36 -90			
End of Boring				
	-95			
	-100			

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 6/1/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'13.82437" N, Longitude 87°53'42.74013" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. _____
Station _____

BORING NO. B-4 (STA IL Rte 132)
Station 23+78.20
Offset 71.60ft RT
Ground Surface Elev. 692.10 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 667.9 ft
Upon Completion NA ft
After - Hrs. - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown and Dark Brown, Moist SILTY CLAY LOAM (Fill), some organics, trace gravel	691.10			21
		4		
Brown and Dark Brown, Moist SILTY LOAM (Fill), trace gravel		3 5	2.6 B	17
	688.00	3		
Brown, Dark Brown, and Black, Moist SILTY LOAM (Fill), trace gravel	-5	6 4	4.8 P	19
		2		
	684.80	3 4	2.5 P	18
Very Stiff Brown, Moist SILTY LOAM, trace gravel		4		
	-10	5 7	2.2 B	13
		5		
		7 10	4.0 P	19
		3		
	677.70	6 8	7.3 B	18
Hard Brown and Gray, Moist SILTY LOAM, trace gravel	-15			
	676.10	5		
Very Stiff Gray, Moist SILTY LOAM, trace gravel		6 10	3.3 B	19
		4		
		6 9	3.5 B	20
	-20			

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff Gray, Moist SILTY LOAM, trace gravel *(continued)*		3		
		3 6	2.6 B	24
		2		
6 inch layer of SAND, trace gravel, Gray, Fine to Medium grain, Wet at 24'	-25	7 6	1.0 P	13
		4		
		6 6	2.5 P	15
		3		
	-30	4 7	2.6 B	13
		5		
		10 13	4.5 B	12
Water used to flush sand in augers starting at 35'	-35			
	653.60	13		
Medium Dense Brown and Gray, Fine to Medium grain, Wet SAND	652.30 -40	13 13		19

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 6/1/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'13.82437" N, Longitude 87°53'42.74013" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-4 (STA IL Rte 132)
Station 23+78.20
Offset 71.60ft RT
Ground Surface Elev. 692.10 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 667.9 ft ▼
Upon Completion NA ft
After - Hrs. - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Medium Dense Gray, Medium to Coarse grain, Wet SAND, trace gravel *(continued)*		7		
	647.60	8 8	5.1 B	14
Hard Gray, Moist SILTY LOAM, trace gravel	-45	8		
		3		
	-50	6 8	4.8 P	15
		6		
	-55	9 13	4.9 B	14
		12		
	632.70	13 23	3.5 P	17
	-60			

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Medium Dense Gray, Fine to Medium grain, Wet SAND, trace gravel *(continued)*		13		
		16 19		17
	-65			
	623.60	14		
Medium Dense Gray, Medium to Coarse grain, Wet SAND, trace gravel		14 13		12
	-70			
	618.60	3		
Stiff to Very Stiff Gray, Moist SILTY LOAM, trace gravel		6 9	2.2 B	23
	-75			
		7		
	-80	10 12	2.2 B	13

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 6/1/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION S. Abut., SEC. 13, TWP. 45N, RNG. 11E, 3rd PM.
Latitude 42°22'13.82437" N, Longitude 87°53'42.74013" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO.
Station

BORING NO. B-4 (STA IL Rte 132)
Station 23+78.20
Offset 71.60ft RT
Ground Surface Elev. 692.10 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 667.9 ft ▼
Upon Completion NA ft
After - Hrs. - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Stiff to Very Stiff Gray, Moist SILTY LOAM, trace gravel *(continued)*		7		
		9 16	3.3 B	14
	-85	15		
		19 21	2.9 B	
		21		
		22 22	1.8 B	
	603.60			
End of Boring				15
	-90			
	-95			
	-100			

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

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation

Bridge Foundation Boring Log

P-91-804-76 — Sh. 1 of 2 Sh.

PROJECT ____ BRIDGE C&NW Railroad Date February 15, 1984

ROUTE FAP 120 over Route 132 Bored By D. Grow

SEC. 125-HB-1R STA. ____ Checked By ____

COUNTY Lake

Boring No. S-4
Station 17+00
Offset 24'RT of C.L.

Surface Water El. ____
Groundwater El. at Completion Wash
After ____ Hours ____

	Elevation	N	Qu t/s.f.	w (%)
Ground Surface	681.9			
Road Gravel	680.9			
Stiff, Brown Silty Clay	679.4	E 0.6		
Very Loose, Brown, Wet Sandy Loam (Fill)	676.9	2		
Very Stiff, Gray Silty Clay (Till)		1/3		
		3	B	
		5/6	3.1	21
		5	B	
		6/8	3.7	21
		4	B	
		5/6	3.1	23
	668.4	3		
Medium, Gray, Dry Sand (Coarse grained) with some 2"-3" clay seams. (2.5TSF)		8/7		
		3		
		6/6		
	663.9	4	B	
Stiff, Pink to Gray Silty Clay (Till)		8/9	1.7	12
	661.9	3	B	
Very Stiff, Gray Silty Clay (Till)		7/9	2.3	12
				Poor Recovery
Very Stiff, Gray Silty Clay (Till)	656.9	3	B	
		7/8	2.5	11
Medium, Gray, Wet Sand Coarse grained with some gravel and some clay lenses.		5		
		10/12		
		Begin Wash		
		9		
		10/19		
	652.4	5	B	
Very Stiff, Gray Silty Clay (Till)		6/7	2.9	12
		6	B	
		11/12	3.1	13
		7	B	
		12/14	3.5	13
		6	B	
		9/10	3.9	14
		9	B	
		10/16	2.4	15
		6	B	
		9/9	2.3	

N-Standard Penetration Test-Blows per foot to drive 2" O.D. Split Spoon Sampler 12" with 140 No. hammer falling 30".

Qu-Unconfined Compressive Strength - t/sf

w - Water Content - percentage of oven dry weight-%.

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

BD 137 (Rev. 4-78)

FORM NO. B D 137 REV. 9-80 — Sh. 2 of 2 Sh.

BRIDGE FOUNDATION BORING LOG

FAP 120
Section 125-HB-1R
Lake County
S-4 (Cont.)

	Elevation	N	Qu t/s.f.	w (%)
Very Stiff, Gray Silty Clay (Till)	-45	6	B	
		8/10	2.7	22
	633.9	14		
Dense, Gray Sand, Coarse Grained		14/18		
	-50	7		
		15/20		
	629.9			
Medium, Gray Sand, Coarse Grained		11		
		11/16		
	627.4			
Very Dense, Gray Sand with some Gravel	-55	12		
		24/30		
		16		
		17/23		
	-60			
	620.9	6/9	P	
Very Stiff Gray Clay	620.4	12	2.5	16
End of Boring.				

	Elevation	N	Qu t/s.f.
	-75		
	-80		
	-85		
	-90		
	-95		

FILE NAME = ...\SHOOFLY-60K80-024.dgn	USER NAME = aafitzpatrick	DESIGNED - MMH	REVISED -
HOH HARRY G. HEFTER ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS — PROJECT NUMBER 3366 — 55 East Jackson Blvd., Suite 600 Chicago, Illinois 60604 312/346-1613		CHECKED - DNB	REVISED -
	PLOT SCALE = 24#0.0000 ':' / in.	DRAWN - R.VEJAR	REVISED -
	PLOT DATE = 10/7/2016	CHECKED - BCS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS – 4
SHOOFLY BRIDGE OVER IL RTE 132
SHEET NO. 24 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
346	125X-N&J-SB-B	LAKE	361	282
		CONTRACT NO. 60K80		
	ILLINOIS FED. AID PROJECT			

Illinois Department of Transportation
Division of Highways
GSG CONSULTANTS INC.

SOIL BORING LOG

Date 5/31/11

ROUTE FAU 1218 (Illinois Route 132 / Grand Avenue) DESCRIPTION Union Pacific Rail Bridge over IL 132 LOGGED BY RJC

SECTION 125X-N LOCATION SE Ret. Wall, SEC. 13, TWP. 45N, RNG. 11E, 3rd PM,
Latitude 42°22'13.83067" N, Longitude 87°53'42.48955" W

COUNTY Lake DRILLING METHOD HSA HAMMER TYPE AUTO

STRUCT. NO. _____
Station _____

BORING NO. B-13 (STA IL Rte 132)
Station 23+96.98
Offset 70.42ft RT
Ground Surface Elev. 692.09 ft

Surface Water Elev. NA ft
Stream Bed Elev. NA ft

Groundwater Elev.:
First Encounter 667.5 ft ▼
Upon Completion 667.5 ft ▽
After - Hrs. - ft

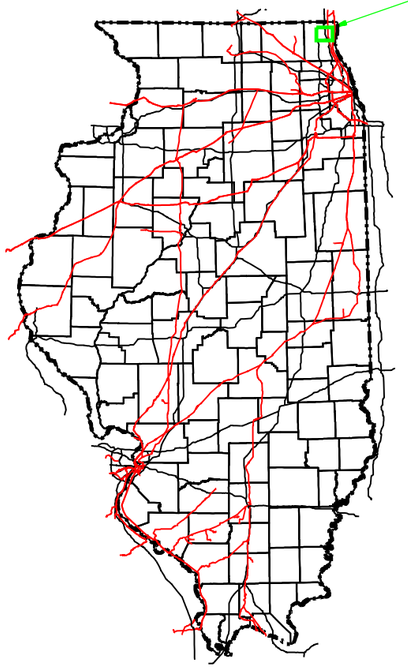
DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Brown and Dark Brown, Moist SILTY CLAY LOAM (Fill), with organics, trace gravel			
691.09			20
	4		
Brown and Black, Moist SILTY CLAY LOAM (Fill), trace organics, gravel	5	2.6	24
	6	B	
	4		
687.19 -5	5	4.0	20
Hard Brown, Moist SILTY LOAM, trace gravel	8	P	
	2		
	2	4.8	20
	4	P	
	4		
-10	5	6.0	17
	9	P	
680.59	5		
Hard Gray and Brown, Moist SILTY LOAM, trace gravel	7	4.7	16
678.59	10	B	
Very Stiff to Hard Gray, Moist SILTY LOAM, trace gravel	3		
	6	2.4	18
-15	7	B	
	5		
	6	2.2	19
	8	B	
	3		
	7	7.0	22
-20	9	P	

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff to Hard Gray, Moist SILTY LOAM, trace gravel *(continued)*	3		
	4	2.9	19
	6	B	
	4		
▽ -25	8	1.5	14
	10	P	
666.09	6		
Medium Dense Gray, Fine to Coarse grain, Wet SAND, trace gravel	6	2.5	19
665.19 664.59	6	P	
Very Stiff Gray, Wet SILTY LOAM			
End of Boring			
-30			
-35			
-40			

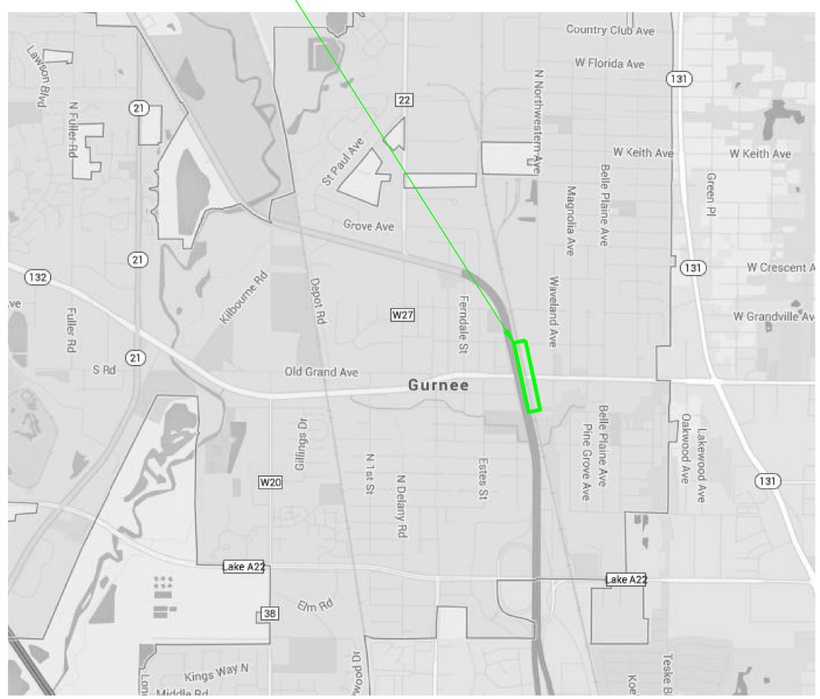
The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

ENGINEERING
DESIGN & CONSTRUCTION



State of Illinois



Project Location Map

GURNEE, ILLINOIS
MILWAUKEE SUBDIVISION
MILE POST 37.5 TO 38.00
UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)

WORK ORDER:
PROJECT NUMBER:
BUDGET REFERENCE:

FINAL
NOT FOR CONSTRUCTION

LAST REVISED
JUNE 7, 2016

PROJECT NUMBER 3366
55 East Jackson Blvd. Suite 500 Chicago, IL 60604 312-346-8131
HARRY O. HEFTER-ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS ©
H O H

PROJECT INDEX

PROJECT DESIGN	DESCRIPTION
G001	COVER SHEET WITH VICINITY MAP
G002	PROJECT INDEX & REVISION SHEET
G003	GENERAL NOTES & PROJECT CONTACTS
G004	ABBREVIATIONS & LEGEND
G005	CONTROL POINTS AND GEOMETRY
G006	WORK SCHEDULE
G007 to G008	SUGGESTED TRACK STAGING PLAN
G009	TRACKWORK SCOPE OF WORK
C001	SHOOFLY TRACKS - TYPICAL SECTIONS
C002	MAINLINE TRACKS - TYPICAL SECTIONS
C003 to C004	SHOOFLY TRACK 1 - PLAN AND PROFILE
C005 to C006	SHOOFLY TRACK 2 - PLAN AND PROFILE
C007 to C09	MAINLINE TRACK 1 - PLAN AND PROFILE
C010 to C012	MAINLINE TRACK 2 - PLAN AND PROFILE
C013	MAINLINE SPUR TRACK 812 - PLAN AND PROFILE
X001 to X008	SHOOFLY TRACKS - CROSS SECTIONS
X009 to X018	MAINLINE TRACKS - CROSS SECTIONS

PROJECT INDEX (CONTINUED)

STANDARDS	DESCRIPTION
Std. Dwg. 0001C	Roadbed Section Heavy Tonnage
Std. Dwg. 0010E	Ballast and Subballlast Gradation Table
Std. Dwg. 0013A	Grain Size Distribution for Subgrade Soils - Subballast Thickness
Std. Dwg. 0015	Curve Marking Standard
Std. Dwg. 0021E	Superelevation of Curves, 1" Unbalance
Std. Dwg. 0025D	Rail Markings for Engines, Cars or Equipment Clear of Road Grade Crossings
Std. Dwg. 0026B	Clearance Point Marking
Std. Dwg. 0030C	Standard Earth Dumber for End of Spur Track
Std. Dwg. 0045B	Rail Laying Temperatures for Continuous Welded Rail
Std. Dwg. 0441B	Double Shoulder Tie Plate for 132 Lb. And 136 Lb. Rail
Std. Dwg. 0453D	Spiking Pattern
Std. Dwg. 0460G	Rail Anchor Patterns
Std. Dwg. 0519B	Culvert Location Tie Marking
Std. Dwg. 0575B	Standard Barricade for Placement at Bridge Backwalls
Std. Dwg. 2006	Single Switch Point Derail
Std. Dwg. 6010L	Approved Trackwork Suppliers
Com. Std. Dwg. 130005	6" Track Spike
Com. Std. Dwg. 343000	No. 11 Turnout 136/141 Lb. Panel No. 1 476
Com. Std. Dwg. 343001	No. 11 Turnout 136/141 Lb. Panel No. 2 270
Com. Std. Dwg. 343002	No. 11 Turnout 136/141 Lb. Panel No. 3 With RBM Frog
Com. Std. Dwg. 343003	No. 11 Turnout 136/141 Lb. Panel No. 4 155
Com. Std. Dwg. 343004	No. 11 Turnout 136/141 Lb. Panel No. 3 SMSG Frog
Com. Std. Dwg. 343005	No. 11 Turnout 136/141 Lb. Panel No. 3 with Optional Jump Frog
Com. Std. Dwg. 343100	No. 11 Turnout 19'-6" Curved Switch, Turnout Geometry
Com. Std. Dwg. 343200	No. 11 Turnout with RBM, SMSG, and Spring Frogs, Bill of Materials
Com. Std. Dwg. 680000	General Notes and Details for Round Steel Pipe Culverts
Com. Std. Dwg. 680010	Construction Notes and Tables for Smooth Steel Pipe Culverts
Com. Std. Dwg. 680020	Construction Notes and Tables for Corrugated Steel Pipe Culverts

PROJECT INDEX (CONTINUED)

STRUCTURES DESIGN	DESCRIPTION
SEE SEPARATE BRIDGE DRAWING SETS (PREPARED BY HARRY O. HEFTER-ASSOCIATES. INC)	

MECHANICAL DESIGN	DESCRIPTION

ELECTRICAL DESIGN	DESCRIPTION

			PROJECT REVISIONS	
REV. #	BY	DATE:	SHEET:	DESCRIPTION

UNION PACIFIC RAILROAD
Office of Assistant Vice President Engineering Design/Construction

DRAWN BY: AAF-HOH
CHECKED BY: BAP-HOH
DATE: 06/07/16
SHEET NUMBER: G002 of 009

LOCATION & DESCRIPTION: GURNEE, LAKE COUNTY, ILLINOIS
MILWAUKEE SUBDIVISION
MP 37.50 TO MP 38.00
UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)

SHEET TITLE: PROJECT INDEX & REVISIONS

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PROJECT NUMBER 3366
55 East Jackson Blvd. Suite 800 Chicago, IL 60604 312-346-8131
HARRY O. HEFTER-ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS
H O H

GENERAL NOTES

1. Contractors shall notify Service Alert, (800) 642-2444 and UPRR Fiber Optics Hotline (800) 336-9193, 48 hours prior to any excavation. The USA Authorization Numbers shall be kept at the job site.
2. No work whatsoever shall be commenced without first notifying the UPRR Engineer.
3. The Contractor shall comply with all Federal, State, County, and City Laws and Ordinances and Regulations of the Department of Industrial Relations, OSHA, NPDES and Industrial Accident Commission related to the safety and character of the work, equipment and labor personnel.
4. Contractor shall be responsible for coordinating with all Utility agencies.
5. Contractor shall protect in place (by any means necessary) all existing utilities to remain unless otherwise specified herein, contractor shall be responsible for the complete repair at his expense, for any damage to existing utilities, structures, or other site features, as a result of his work.
6. Prior to placing curbs, pavements, base, subbase, track, etc., all underground utilities shall be installed, backfill completed, and the Engineer notified by each of the utility companies having facilities within the work area, that the utility installation has satisfactorily passed acceptance tests.
7. All existing underground utilities, that are not to be re-used shall be abandoned in place. All existing pipelines to be abandoned in place shall be cement slurry filled and capped at least 3'-0" below top of proposed subgrade.
8. Contractor shall verify locations and elevations of existing utilities whether known or unknown prior to beginning construction.
9. Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, and pipelines not located prior to construction shall be brought to the attention of the engineer for determiniation of appropriate action such as removal or treatment in a manner judged suitable to the engineer.
10. Contractor shall coordinate location of all proposed utilities with UPRR to assure accuracy of utility connections and compliance with local codes.
11. Any existing conditions found to be a variance with these drawings must be immediately reported to the Engineer.
12. Contractor shall maintain and clean to the satisfaction of the Engineer, all access and service roads used during construction.
13. Contractor shall perform all construction in such a manner as to protect adjacent existing buildings, and other site elements which are to remain in service.
14. Contractor shall provide As-built Drawings for all improvements.
15. No field changes will be permitted without direct written authorization from the UPRR Engineer or his representative.
16. Contractor shall coordinate work which affects adjacent property owners. Any questions or agreements between adjacent property owners and contractor shall be made in writing. A copy of such agreement shall be provided to the UPRR Engineer or his representative.
17. The contractor is responsible for preparing a Stormwater Pollution Prevention Plan (SWPPP) to comply with State regulations. General specifications and typical erosion control details are included in the plan set.
18. Right-of-way lines shown on the plans were taken from existing UPRR right-of-way map and are approximate.
19. Match lines for sheets are based on the existing Main Line stationing unless otherwise specified.
20. Track laying, ballasting, and installation of road crossing panels will be done by UPRR unless otherwise stated.
21. Where existing culverts are to be extended, the contractor shall expose existing drainage structures and field verify size and type before ordering.
22. The contractor is responsible for the removal of all pavement markings that will be in conflict with the proposed work.
23. Contractor shall comply with all STATE and CITY standard specifications for construction of public improvements requirements. CITY standard specifications shall prevail.
24. Contractor shall maintain at least one access to all affected business. If necessary, multiphase construction shall be utilized.
25. All demolished and surplus track material shall become the property of the IDOT Contractor and shall be removed from the site.
26. Contractor shall comply with the UPRR Specifications as provided in Section B of the Special Provisions.

DESIGN CRITERIA

1. UPRR standard plans and trackworks
2. Illinois Department of Transportation Roadway Standards

SURVEY NOTES

1. Railroad stationing for project profiles and alignments is based on stations established for chord definition spiraled curves at the centerline of the existing UPRR Main Line unless otherwise noted.
2. The contractor is responsible for the preservation of all survey control monuments. In the event monuments are damaged or destroyed by the contractor, the Engineer will replace the monument solely at the contractor's expense.

	DATUM
HORIZONTAL	NAD 83
VERTICAL	NAVD 88

TRAFFIC NOTES

1. All barricades, warning signs, lights, devices, etc. for the guidance of vehicle traffic and pedestrians must conform to the installation shown in the Manual on Uniform Traffic Control Devices (MUTCD), current edition.
2. Contractor shall make twice daily inspections of barricades and flashing lights to ensure proper placement and functioning of warning devices.
3. Grade crossings closed to traffic during construction shall be barricaded in accordance with the MUTCD.
4. At all grade crossings, all grade crossing warning signs (crossbuck) shall temporarily be relocated during construction and reset after the grade crossings construction is completed to a point adjacent to the roadway and 15 feet from the centerline of the near track as stated in the MUTCD except where automatic grade crossing warning signals/gates exisit. All automatic warning devices are the responsibility of UPRR. At no time shall a crossing be left open without proper warning signs in place.
5. Contractor shall submit traffic control plans to CITY Traffic Department for approval at least 2 weeks prior to each road closure. Plans shall be 11" x 17" engineered drawings, sealed by a professional engineer from the STATE.
6. The contractor is responsible for the prompt replacememt and/or repair of all traffic control devices and appurtenances damaged or disturbed due to construction.

PROJECT CONTACTS

CONTACT	PHONE NUMBER	UPRR
JOHN VENICE	(312) 777-2043	
JAMES NUDERA	(708) 649-5280	MANAGER OF TRACK PROJECTS

CONTACT	PHONE NUMBER	FIBER
CARL DONOHUE	(847) 705-4257	AT&T
JIM BURTON	(847) 318-3100	SPRINT
KEVIN HUFF	(708) 388-9684	QUEST/CENTURY LINK
ROBERT SCHULTER	(630) 600-6349	COMCAST

CONTACT	PHONE NUMBER	UTILITIES
CARL DONOHUE	(847) 705-4257	TELEPHONE (AT&T)
TOM RIGWOOD	(847) 599-7550	WATER (VILLAGE OF GURNEE)
GERRY GLOGOVSKY	(708) 327-6611	GAS (NORTH SHORE GAS)
ROBERT SCHULTER	(630) 600-6349	COMCAST CABLE

CONTACT	PHONE NUMBER	FEDERAL AND LOCAL GOVERMENT AGENCY
CRAIG BAUER	(847) 705-4265	ILLINOIS DEPARTMENT OF TRANSPORATATION

PHONE NUMBER	GENERAL
(800) 336-9193	UPRR CALL BEFORE YOU DIG
(888) 258-0808	CALL BEFORE YOU DIG (NATIONAL DIRECTORY)
(888) 877-7267	UPRR Response Management Communications Center (RMCC)

DRAWN BY: AAF-HOH
CHECKED BY: BAP-HOH
DATE: 06/07/16
SHEET NUMBER: G003 of 009

UNION PACIFIC RAILROAD
Office of Assistant Vice President Engineering Design/Construction

LOCATION & DESCRIPTION: GURNEE, LAKE COUNTY, ILLINOIS
MILWAUKEE SUBDIVISION
MP 37.50 TO MP 38.00
UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)

SHEET TITLE: GENERAL NOTES AND PROJECT CONTACTS

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PROJECT NUMBER 3366
55 East Jackson Blvd. Suite 500 Chicago, IL 60604 312-346-8131
HARRY O. HEFTER-ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS ©
HOH

ABBREVIATIONS

MISCELLANEOUS

Ac.	Acres
Ave.	Avenue
Blvd.	Boulevard
Bldg.	Building
BNSF	BNSF Railway
C.Y.	Cubic Yards
Conc.	Concrete
°	Degree (s)
Dia.	Diameter
Dr.	Drive
Dwg.	Drawing
E	East
Elev.	Elevation
Exist.	Existing
'	Foot, Feet or Minute (s)
F.S.	Finished Surface
Horiz.	Horizontal
"	Inch, Inches or Second (s)
Inv.	Invert
Lt.	Left
L	Length
L.F.	Lineal Feet
Max.	Maximum
Min.	Minimum
N	North
NTS	Not to Scale
No.	Number
OH	Overhead
Prop.	Proposed
RR	Railroad
Rwy	Railway
ROW	Right of Way
Rt.	Right
S	South
S.F.	Square Feet
Sta.	Station
Std.	Standard
St.	Street
Twp.	Township
Typ.	Typical
UG	Underground
UPRR	Union Pacific Railroad
V	Velocity
Wt.	Weight
W	West
X-ing	Crossing

SIGNAL

ABS	Automatic Block Signal
ATC	Automatic Train Control
CTC	Centralized Traffic Control
DED	Dragging Equipment Detector
DTC	Direct Traffic Control
ELTO	Electric Lock Turnout
HBD	Hot Box Detector
HTTO	Hand Throw Turnout
HWD	High Wide Dectector
POTO	Power Operated Turnout
TWC	Track Warrant Control
WILD	Wheel Impact Load Dectector

STRUCTURES

Bldg.	Building
Br.	Bridge
CB	Catch Basin
CPT	Concrete Pile Trestle - Ballast Deck
CIP	Cast Iron Pipe
CMP	Corrugated Metal Pipe
CMPA	Corrugated Metal Pipe Arch
CSP	Corrugated Steel Pipe
Culv.	Culvert
DI	Drop Inlet
DPGBD	Deck Plate Girder - Ballast Deck
DPGOD	Deck Plate Girder - Open Deck
EBW	East Backwall
F.L.	Flowline
F.F.	Finished Floor
GIP	Galvanized Iron Pipe
Hdwl	Headwall
NBW	North Backwall
PSCT	Prestressed Concrete Trestle
RCA	Reinforced Concrete Arch
RCB	Reinforced Concrete Box
RCP	Reinforced Concrete Pipe
SBW	South Backwall
SSP	Smooth Steel Pipe
SPTBD	Steel Pile Trestle - Ballast Deck
SPTOD	Steel Pile Trestle - Open Deck
SPP	Structural Plate Pipe
TPGBD	Through Plate Girder - Ballast Deck
TPGOD	Through Plate Girder - Open Deck
TPTBD	Timber Pile Trestle - Ballast Deck
TPTOD	Timber Pile Trestle - Open Deck
TTBD	Through Truss - Ballast Deck
TTOD	Through Truss - Open Deck
TWB	Treated Wood Box
VCP	Vitrified Clay Pipe
Viad.	Viaduct
WBW	West Backwall
WIP	Wrought Iron Pipe

TRACK

ATR	Above Top of Rail
Align.	Alignment
BBR	Below Base of Rail
Cntrs.	Centers
CWR	Continuous Welded Rail
D	Degree of Curvature
DSPD	Double Switch Point Derail
EOT	End of Track
HH	Head Hardened
Jtd.	Jointed Rail
LH	Left Hand
L/C	Length of Curve
L/S	Length of Spiral
ML	Main Line
MM	Mile Marker
MP	Mile Post
NSC	Not Sufficient Clearance
OTM	Other Track Material
PCC	Point of Compound Curve
PC	Point of Curve
PCS	Point of Curve to Spiral
POC	Point on Curve
PF	1/2" Point of Frog
PI	Point of Intersection
PITO	Point of Intersection of Turnout
PS	Point of Spiral
PSC	Point of Spiral to Curve
POS	Point on Spiral
PT	Point of Tangent
POT	Point on Tangent
Pt. Sw.	Point of Switch
PVC	Point of Vertical Curve
PVI	Point of Vertical Intersection
PVT	Point of Vertical Tangent
Rel.	Relocate
RH	Right Hand
SE	Superelevation
SH	Second Hand
SSPD	Single Switch Point Derail
TC	Track Centers
Temp.	Temporary
T.F.	Track Feet
T/R	Top of Rail
Trk.	Track
UXO	Universal Cross-Over
X-Over	Cross-Over

UTILITIES

- AIR — Compressed Air
- F/O — Fiber Optic Cable
- G — Gas Pipeline
- OHP — Overhead Power Line
- SS — Sanitary Sewer
- Overhead Signal Line
- UGS — Underground Signal Line
- Steam Line
- S — Storm Sewer
- T — Telephone
- UGE — Underground Electric
- W — Water Main
- Underground Wire
- UD — Under Drain
- Tree Line

- IN. — Inlet
- C.B. — Catch Basin
- M.H. — Manhole
- P.P. — Power Pole
- D.H. — Double Handhole
- T.S. — Traffic Signal
- T.P. — Telephone Pole
- Control Cabinet

TRACK

- Existing
- Proposed
- Remove
- Shift
- Future
- Turnout
- Earthen Bumber
- Single Switch Point Derail

PROPERTY

- Proposed IDOT Right of Way
- Existing Right of Way
- Proposed Permanent Easement
- Existing Permanent Easement
- Temporary Easement

SYMBOLS

ROAD CROSSING WARNING DEVICES

- Crossbuck Sign
- Flashing Light Warning Device
- Flashing Light Warning Device with Gate
- Cantilever Flashing Light Warning Device
- Cantilever Flashing Light Signal with Gate

SIGNAL

- Absolute Signal
- Signal Bridge
- Cantilever Signal
- ACS or CTC Signal
- Dwarf Signal
- Begin CTC
- Microwave Tower
- AEI — AEI
- BB — Battery Box
- Dragging Equipment Detector
- GEN. — Generator
- Hot Box Detector

STRUCTURES

- Culvert
- Culvert with Headwalls
- Exist. Building — Building
- Flag Pole
- Bridge Temporary Sheet Piling

LIGHTING

- Light Pole
- Light Tower

SIGNS

- Stop
- Yard Limit
- 1 Mile to Yard Limit
- W — Whistle Post
- Flanger
- Station
- Reduce Speed
- Resume Speed
- General Purpose

FENCES

- x x x — Barbed Wire
- Chain Link
- Snow / Sand
- Cattle Guard

ROADS

- Paved Road
- Unimproved Road
- 80 — Interstate Highway
- 20 — Federal Highway
- 58 — State Highway
- C3 — County Highway

OTHER

- Wetlands
- River or Lake
- Existing Tree
- Embankment
- Flow Line
- Milepost
- MM — Milemarker
- 15 — Control Point
- 1 — Revision Number
- Revision Cloud

CONSTRUCTION

- Note — Note (Shift by UPRR)
- Note — Note (Proposed by Contractor)
- Note — Note (Removal by Contractor)
- Cut Lines
- Fill Lines

DRAWN BY:	AAF-HOH
CHECKED BY:	BAP-HOH
DATE:	06/07/16
SHEET NUMBER	G004 of 009

UNION PACIFIC RAILROAD
Office of Assistant Vice President Engineering Design/Construction

LOCATION & DESCRIPTION: GURNEE, LAKE COUNTY, ILLINOIS
MILWAUKEE SUBDIVISION
MP 37.50 TO MP 38.00
UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)

SHEET TITLE: ABBREVIATIONS & LEGEND

PROJECT NUMBER 3366
55 East Jackson Blvd. Suite 500 Chicago, IL 60604 312-346-8131
HARRY O. HEFTER-ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS
H O H

Horizontal Curves Control Points Table

Description	Station	Northing	Easting
Shoofly Track 1			
Curve 1			
PS	0+00.00	2078903.29	1102327.22
PSC	1+22.50	2078784.23	1102356.04
PI	2+28.53	2078681.49	1102382.45
PCS	3+34.57	2078580.97	1102416.35
PT	4+57.07	2078465.46	1102457.14
Curve 2			
PS	7+81.34	2078160.47	1102567.29
PSC	9+03.84	2078044.96	1102608.07
PI	11+60.17	2077801.41	1102690.18
PCS	14+16.50	2077547.14	1102727.63
PT	15+39.00	2077425.70	1102743.75
Curve 3			
PS	19+72.30	2076995.78	1102797.71
PSC	20+94.80	2076874.35	1102813.83
PI	21+85.52	2076784.57	1102827.04
PCS	22+76.23	2076695.80	1102845.88
PT	23+98.73	2076576.34	1102873.01
Shoofly Track 2			
Curve 1			
PS	0+00.00	2078914.83	1102338.89
PSC	1+14.19	2078795.77	1102367.71
PI	2+19.88	2078693.88	1102393.92
PCS	3+25.57	2078594.18	1102427.54
PT	4+48.44	2078478.67	1102468.32
Curve 2			
PS	7+81.34	2078165.57	1102581.39
PSC	9+03.52	2078050.06	1102622.18
PI	11+60.17	2077804.94	1102704.86
PCS	14+16.82	2077549.00	1102742.52
PT	15+39.00	2077427.57	1102758.64
Curve 3			
PS	19+81.80	2076988.23	1102813.78
PSC	21+04.66	2076866.80	1102829.90
PI	21+95.04	2076777.80	1102843.01
PCS	22+85.42	2076689.81	1102861.67
PT	23+98.73	2076570.35	1102888.79
Prop. Main Track 2			
Curve 1			
PS	197+03.68	2079249.31	1102260.44
PSC	197+36.68	2079217.19	1102267.99
PI	197+95.17	2079160.25	1102281.43
PCS	198+53.67	2079103.46	1102295.45
PT	198+86.67	2079071.43	1102303.39
Curve 2			
PS	202+38.49	2078729.99	1102388.21
PSC	202+71.49	2078697.96	1102396.15
PI	203+29.98	2078641.17	1102410.17
PCS	203+88.48	2078584.24	1102423.61
PT	204+21.48	2078552.11	1102431.16
Curve 3			
PS	215+70.45	2077433.50	1102693.53
PSC	216+03.45	2077401.37	1102701.05
PI	216+61.99	2077344.35	1102714.34
PCS	217+20.54	2077287.20	1102727.04
PT	217+53.54	2077254.98	1102734.17
Curve 4			
PS	221+04.90	2076911.88	1102809.92
PSC	221+37.90	2076879.66	1102817.05
PI	221+96.45	2076822.51	1102829.75
PCS	222+54.99	2076765.49	1102843.04
PT	222+87.99	2076733.35	1102850.56
Prop. Spur 812			
Pt. Sw.	0+00.00	2078412.38	1102463.93
End	4+39.55	2078847.13	1102400.01

VERTICAL CONTROL POINTS
TBM H
SQUARE CUT ON E'LY SIDE OF CONCRETE BASE FOR LIGHT POLE AT THE NORTH SIDE OF US 41 AND IL RTE 132 NE EXIT RAMP +/- 800 FT SOUTH OF IL RTE 132
N 2077269.505
E 1102654.015
EL 690.08
STA 17+22.86 (UPRR)
OFFSET 61.9' RT
TBM K
SQUARE CUT ON E'LY SIDE OF CONCRETE BASE FOR LIGHT POLE AT THE NE CORNER OF US RTE 41 AND GRANDVILLE AVE. BETWEEN US RTE 41 AND RAILROAD TRACKS
N 2079356.954
E 1102184.255
EL 695.69
STA N/A
OFFSET N/A

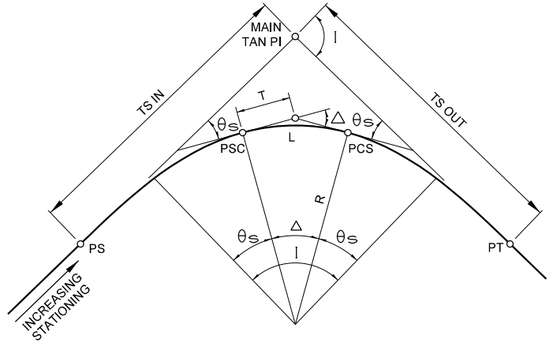

FIGURE A
CIRCULAR CURVES WITH SPIRAL TRANSITION

I - TOTAL INTERSECTION ANGLE

θ_S - SPIRAL ANGLE = $\frac{A L^2}{2}$

Δ - CENTRAL ANGLE OF CIRCULAR CURVE = $I - 2\theta_S$

Dc - DEGREE OF CURVE

A - RATE OF CHANGE OF DEGREE OF CURVE PER 100-ft. OF LENGTH = $\frac{Dc}{L}$

R - RADIUS OF CIRCULAR CURVE

T - TANGENT LENGTH OF CIRCULAR CURVE = $R \tan\frac{\Delta}{2}$

L - LENGTH OF CIRCULAR CURVE = $\frac{\Delta}{Dc} \times 100$

PS - TANGENT TO SPIRAL

PSC - SPIRAL TO CURVE

PCS - CURVE TO SPIRAL

PT - SPIRAL TO TANGENT

MAIN TAN PI - POINT OF INTERSECTION OF MAIN TANGENTS

(TS IN) (TS OUT) - TANGENT LENGTH OF COMPLETE CURVE = $(R+o)\tan\frac{I}{2} + t$

(WHEN SPIRALS OF EQUAL LENGTH ARE USED ON BOTH SIDES OF CIRCULAR CURVE, SEE FIGURE C. FOR o AND t).

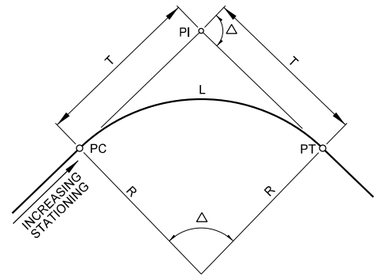

FIGURE B
SIMPLE CIRCULAR CURVE

R = RADIUS OF CIRCULAR CURVE

Δ = CENTRAL ANGLE OF CIRCULAR CURVE

$T = R \tan\frac{\Delta}{2}$

$L = \frac{\Delta}{Dc} \times 100$

$Dc = 2 \sin^{-1}(50/R)$ = DEGREE OF CURVE (CHORD DEFINITION)

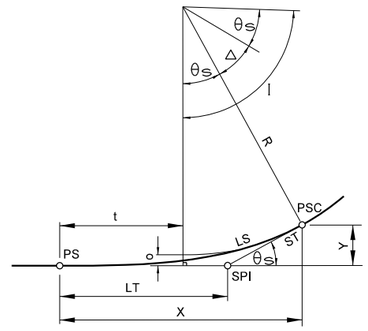

FIGURE C
SPIRAL TRANSITION CURVE

SPIRAL TRANSITION CURVE DATA:
THE SPIRAL USED IS DEFINED BY THE TALBOT SPIRAL.

LS = LENGTH OF SPIRAL (TS TO PSC)

$\theta_S = \frac{A L^2}{2}$

$X = 100 L_1 - 0.000762 A^2 L_1^5$

$Y = 0.291 A L_1^3 - 0.00000158 A^3 L_1^7$

$o = 0.0727 A L_1^3$

$t = 50 L_1 - 0.000127 A^2 L_1^5$

$ST = \frac{Y}{\sin\theta_S}$

$LT = X - \frac{Y}{\tan\theta_S}$

$Dc = 2 \sin^{-1}(50/R)$ = DEGREE OF CURVE (CHORD DEFINITION)

L_1 - TOTAL NO. OF STATIONS IN SPIRAL

SPI - SPIRAL POINT OF INTERSECTION

NOTE: Dc, θ_S, Δ , AND I ARE IN DEGREES.
ALL OTHERS DIMENSIONS ARE FEET.

SURVEY CONTROL POINTS			
#1000	#1001	# 1002	#1004
FOUND CUT CROSS IN SIDEWALK	FND MAG NAIL	FOUND IRON ROD	FOUND CUT CROSS IN SIDEWALK
N 2078031.487	N 2076150.872	N 2080159.781	N 2077888.344
E 1101005.327	E 1102838.977	E 1101172.359	E 1100790.203
EL 683.79	EL 686.89	EL 687.32	EL 678.83
#1005	#1006	#1007	#1008
FOUND CUT CROSS IN SIDEWALK	SET CUT CROSS IN SIDEWALK	SET CUT CROSS ON W. SIDE OF ISLAND	SET CUT CROSS IN SIDEWALK
N 2078049.961	N 2077972.982	N 2077962.101	N 2077949.961
E 1101270.947	E 1101836.102	E 1102308.960	E 1102820.533
EL 686.59	EL 686.81	EL 680.79	EL 684.50
#1009	#1010	#1011	#1012
SET CUT CROSS IN SIDEWALK	SET CUT CROSS IN SIDEWALK	SET IRON ROD	SET IRON ROD
N 207935.315	N 2077992.583	N 2079275.563	N 2078119.784
E 1103462.925	E 1103796.570	E 1102218.603	E 1102494.451
EL 694.52	EL 694.11	EL 694.88	EL 695.87
#1013	#1016	#2541	#2547
SET IRON ROD W/ CAP	SET IRON ROD	SET CUT CROSS ON SIDEWALK	SET CUT CROSS ON CONCRETE BASE
N 2078740.279	N 2076645.146	N 2077945.523	N 2077580.150
E 1102343.387	E 1102886.622	E 1102397.196	E 1102602.617
EL 696.64	EL 699.83	EL 680.09	EL 690.50

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DATE: 06/07/16
SHEET NUMBER: G005 of 009

UNION PACIFIC RAILROAD
Office of Assistant Vice President Engineering Design/Construction

LOCATION & DESCRIPTION: GURNEE, LAKE COUNTY, ILLINOIS
MILWAUKEE SUBDIVISION
MP 37.50 TO MP 38.00
UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)

SHEET TITLE: CONTROL POINTS AND GEOMETRY

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PROJECT NUMBER 3366
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HARRY O. HEFTER-ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS
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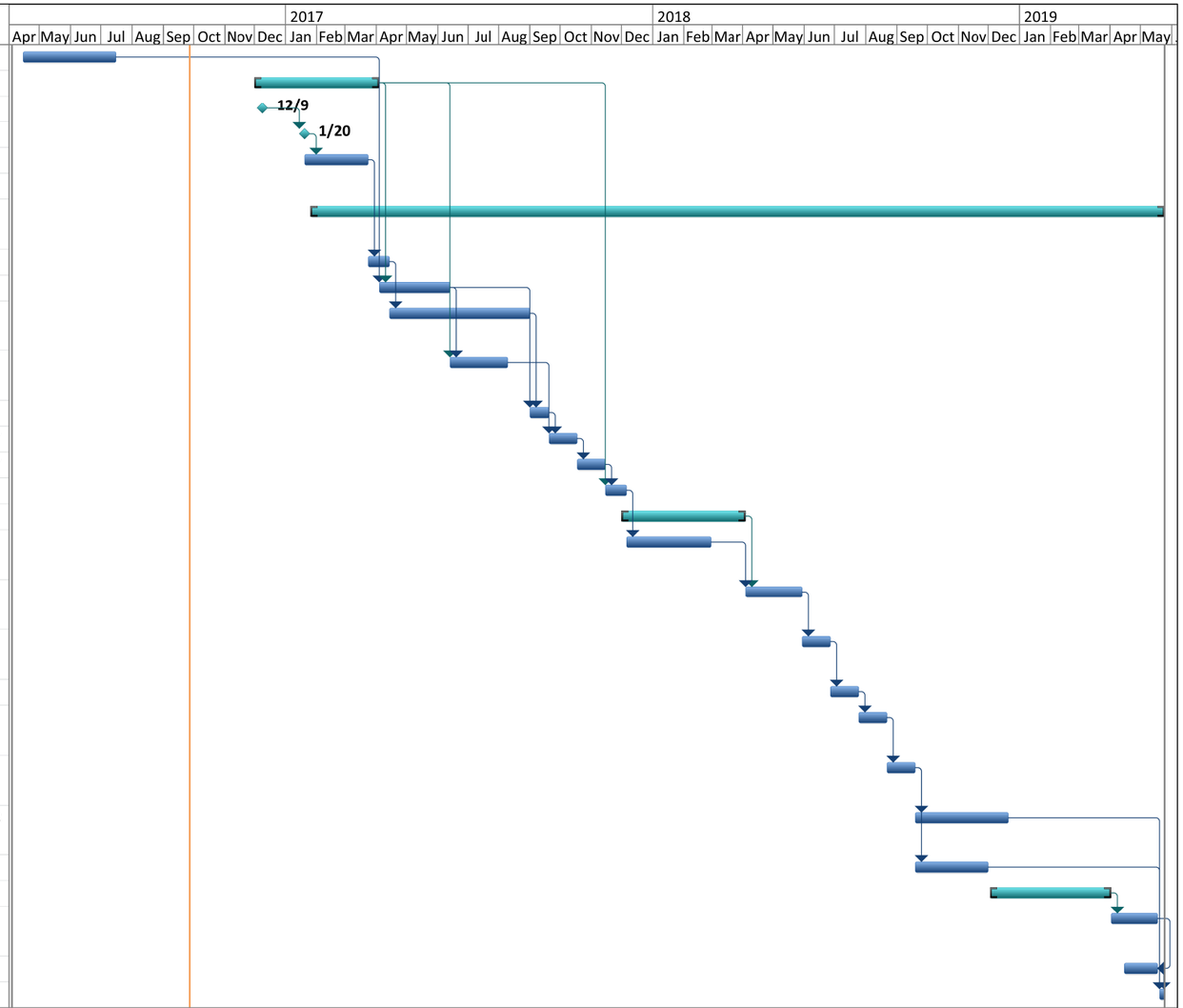
ID	Task Mode	Task Name	Duration	Start	Finish
20		Utility Relocation by Others	66 days	Fri 4/15/16	Fri 7/15/16
8		Weather Delay	88 days	Thu 12/1/16	Mon 4/3/17
1		Bulletin Advertisement	0 days	Fri 12/9/16	Fri 12/9/16
2		Letting Date	0 days	Fri 1/20/17	Fri 1/20/17
3		Award Construction	45 days	Fri 1/20/17	Thu 3/23/17
27					
28		Estimate of Time Working Days	607 days	Thu 1/26/17	Fri 5/24/19
4		Start of Construction	15 days	Fri 3/24/17	Thu 4/13/17
6		Shoofly Bridge Substructure	50 days	Tue 4/4/17	Mon 6/12/17
5		Structural Steel (fabrication & delivery)	100 days	Fri 4/14/17	Thu 8/31/17
9		Construct Shoofly Embankment	42 days	Tue 6/13/17	Wed 8/9/17
7		Shoofly Bridge Superstructure	13 days	Fri 9/1/17	Tue 9/19/17
10		Shoofly Track Construction	20 days	Wed 9/20/17	Tue 10/17/17
11		UPRR Bridge Demolition	20 days	Wed 10/18/17	Tue 11/14/17
12		New UPRR Bridge - Piles	15 days	Wed 11/15/17	Tue 12/5/17
15		Weather Delay	88 days	Fri 12/1/17	Tue 4/3/18
13		NEW UPRR Bridge - Substructure	60 days	Wed 12/6/17	Tue 2/27/18
14		New UPRR Bridge - Superstructure	40 days	Wed 4/4/18	Tue 5/29/18
18		Complete Mainline Embankment & Ballast	20 days	Wed 5/30/18	Tue 6/26/18
16		Mainline Trackwork & Shifts	20 days	Wed 6/27/18	Tue 7/24/18
17		Shoofly Bridge & Embankment Demolition	20 days	Wed 7/25/18	Tue 8/21/18
19		Retaining Walls S & T Construction	20 days	Wed 8/22/18	Tue 9/18/18
21		Earthwork, Removals, Drainage, Paving, Concrete	67 days	Wed 9/19/18	Thu 12/20/18
23		Traffic Signals & Lighting	53 days	Wed 9/19/18	Fri 11/30/18
22		Weather Delay	86 days	Mon 12/3/18	Mon 4/1/19
24		Earthwork, Removals, Drainage, Paving, Concrete	34 days	Tue 4/2/19	Fri 5/17/19
25		Landscaping & Striping	25 days	Mon 4/15/19	Fri 5/17/19
26		Complete all work	5 days	Mon 5/20/19	Fri 5/24/19



Project: UPRR over IL 132
Gurnee, IL - Construction Sched.
Date: Tue 9/27/16

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline	
Split	External Tasks	Inactive Summary	Manual Summary	Progress	
Milestone	External Milestone	Manual Task	Start-only		
Summary	Inactive Task	Duration-only	Finish-only		

Page 1

PRELIMINARY WORK SCHEDULE

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DATE:	06/07/16
SHEET NUMBER	G006 of 009

UNION PACIFIC RAILROAD
Office of Assistant Vice President Engineering Design/Construction

LOCATION & DESCRIPTION: GURNEE, LAKE COUNTY, ILLINOIS
MILWAUKEE SUBDIVISION
MP 37.50 TO MP 38.00
UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)

SHEET TITLE: WORK SCHEDULE

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312-346-8131
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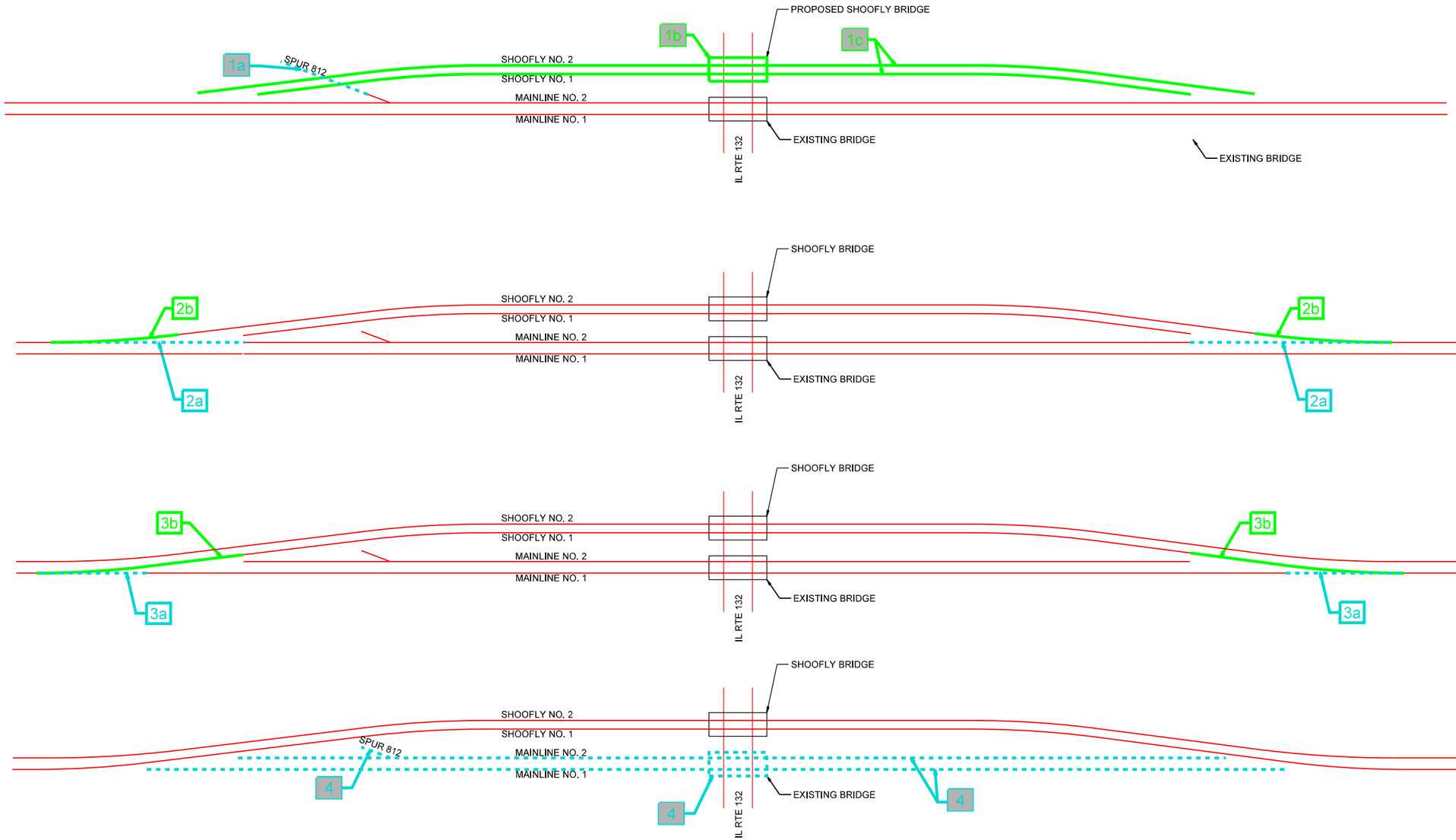

PRESTAGE:
PRIOR TO TRACK CONSTRUCTION, THE AREA OF THE SHOOFLY EMBANKMENT WILL BE CLEARED AND THE SHOOFLY EMBANKMENT WILL BE CONSTRUCTED ALONG WITH THE CULVERT AND OTHER DRAINAGE COMPONENTS AND EROSION CONTROL FEATURES. SEE THE MAINTENANCE OF TRAFFIC SHEETS WHICH ARE PART OF IL 132 RECONSTRUCTION.

1a REMOVE SPUR TRACK 812 TO 13' CLEAR POINT OF MAINLINE 2. (BY IDOT CONTRACTOR)

1b CONSTRUCT SHOOFLY BRIDGE.
(BY IDOT CONTRACTOR)

1c CONSTRUCT SHOOFLY TRACKS TO 13' CLEAR POINT OF MAINLINE 2.
(BY IDOT CONTRACTOR)

2a REMOVE MAINLINE 2 TO 13' CLEAR POINT AT SHOOFLY 1
(BY UPRR).

2b CONSTRUCT NEW TRACK ON MAINLINE 2 AND AND CONNECT MAINLINE 2 TO SHOOFLY 2.
(BY UPRR)
PLACE MAINLINE TRACK 2/SHOOFLY TRACK 2 INTO SERVICE.
(BY UPRR)

3a REMOVE MAINLINE 1 TO 13' CLEAR POINT AT SHOOFLY 1
(BY UPRR).

3c CONSTRUCT NEW TRACK ON SHOOFLY 1 TO 13' CLEAR POINT AT MAINLINE 2.
(BY UPRR)

4 REMOVE REMAINING PORTIONS OF MAINLINE 1, 2 AND SPUR TRACK 812 INCLUDING BALLAST AND SUBBALLAST.
(BY IDOT CONTRACTOR)
DEMOLISH EXISTING UPRR BRIDGE.
(BY IDOT CONTRACTOR)

200 0 200 400
SCALE IN FEET

NOTES:

1. THE INFORMATION IS SUBJECT TO REVIEW BY UPRR CIVIL/TRACK CONSTRUCTION.
2. ANY TRACK AND TIES THAT ARE REMOVED SHALL BECOME THE PROPERTY OF THE IDOT CONTRACTOR.

LEGEND

Existing
Proposed
Remove
Shift

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SHEET NUMBER G007 of 009	SHEET TITLE: SUGGESTED TRACK STAGING PLAN

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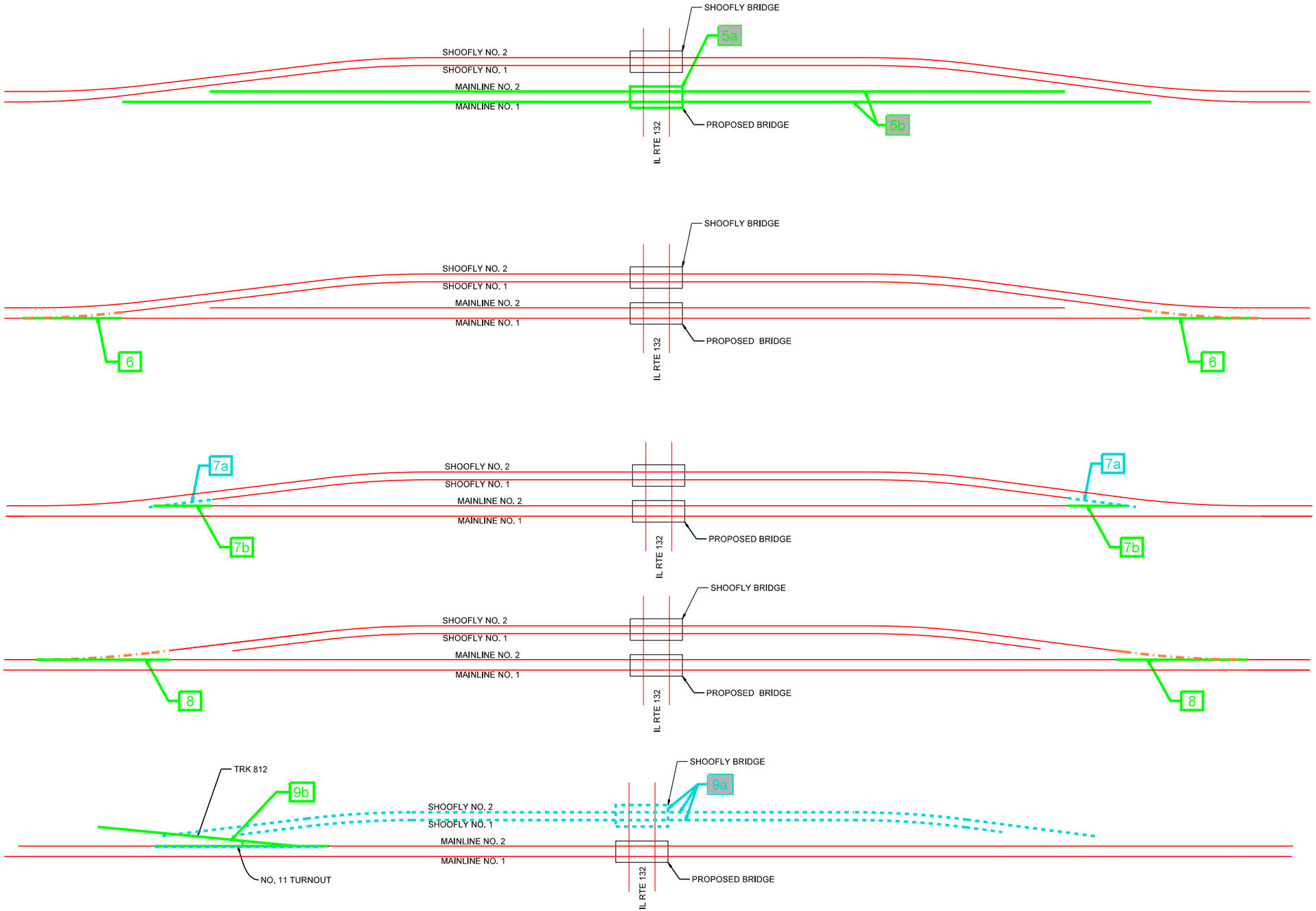

5a CONSTRUCT BRIDGE.
(BY IDOT CONTRACTOR)

5b CONSTRUCT NEW MAINLINE TRACKS TO 13' CLEAR POINT OF SHOOFLY 1.
(BY IDOT CONTRACTOR)

6 SHIFT TRACK AND CONNECT EXISTING MAINLINE 1 TO NEW MAINLINE 1
(BY UPRR)
PLACE MAINLINE TRACK 1 INTO SERVICE
(BY UPRR)

7a REMOVE SHOOFLY 1 TO 13' CLEAR POINT AT NEW MAINLINE 2
(BY UPRR).

7b EXTEND NEW MAINLINE 2 TO 13' CLEAR POINT AT SHOOFLY 2 - (SOUTH END ONLY)
(BY UPRR).

8 SHIFT TRACK AND CONNECT EXISTING MAINLINE 2 TO NEW MAINLINE 2
(BY UPRR)

9a REMOVE REMAINING PORTIONS OF SHOOFLY TRACKS AND SHOOFLY BRIDGE.
(BY IDOT CONTRACTOR)
REMOVE SHOOFLY EMBANKMENT.
(BY IDOT CONTRACTOR)

9b REMOVE MAINLINE TRACK (AT TURNOUT AREA), INSTALL TURNOUT AND CONSTRUCT SPUR TRACK 812.
PLACE MAINLINE TRACK 2 AND SPUR TRACK 812 INTO SERVICE.
(BY UPRR)

200 0 200 400
SCALE IN FEET

LEGEND

Existing
Proposed
Remove
Shift

NOTES:

1. THE INFORMATION IS SUBJECT TO REVIEW BY UPRR CIVIL/TRACK CONSTRUCTION.
2. ANY TRACK AND TIES THAT ARE REMOVED SHALL BECOME THE PROPERTY OF THE IDOT CONTRACTOR.

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DATE: 06/07/16
SHEET NUMBER G008 of 009

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Office of Assistant Vice President Engineering Design/Construction

LOCATION & DESCRIPTION: GURNEE, LAKE COUNTY, ILLINOIS
MILWAUKEE SUBDIVISION
MP 37.50 TO MP 38.00
UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)

SHEET TITLE: SUGGESTED TRACK STAGING PLAN

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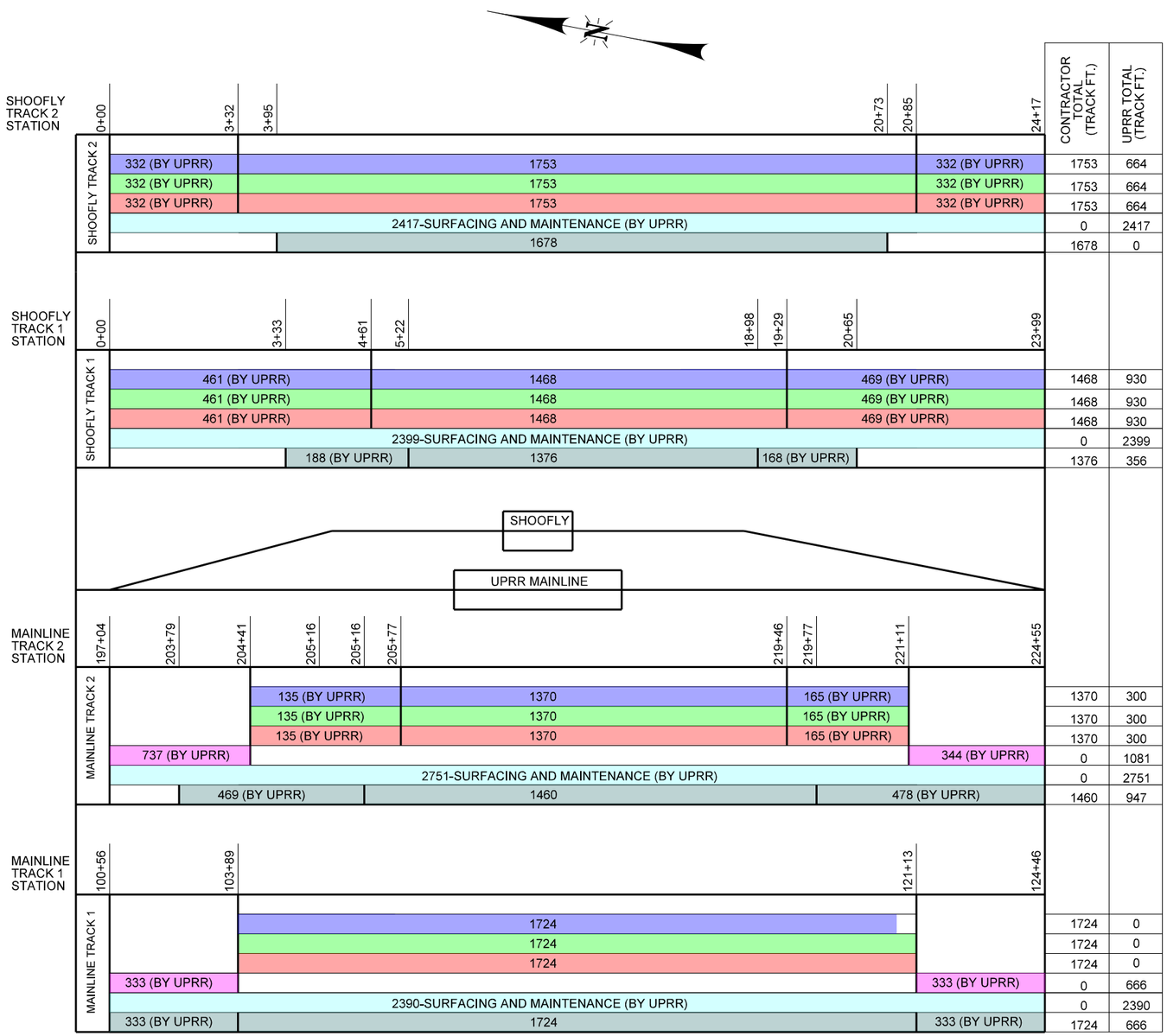

CONTRACTOR TOTAL (TRACK FT.)	UPRR TOTAL (TRACK FT.)
1753	664
1753	664
1753	664
0	2417
1678	0
1468	930
1468	930
1468	930
0	2399
1376	356
1370	300
1370	300
1370	300
0	1081
0	2751
1460	947
1724	0
1724	0
1724	0
0	666
0	2390
1724	666

SUMMARY OF QUANTITIES - RAIL WORK*

ITEM	UNIT	BY IDOT CONTRACTOR	BY UPRR	TOTAL
TREE REMOVAL (6 TO 16 UNITS)	UNIT	32		32
TREE REMOVAL, ACRES	ACRE	2		2
EARTH EXCAVATION	CUYD	35,467		35,467
BORROW EXCAVATION, EMBANKMENT AND OTHER FILLS	CUYD	11,174		11,174
TEMPORARY SOIL RETENTION SYSTEM	SQ FT	5,100		5,100
BALLAST (ON BRIDGE DECKS)	CUYD	146		146
PORUOUS GRANULAR EMBANKMENT	CUYD	3,846		3846
TOPSOIL FURNISH AND PLACE, 4"	SQ YD	9,669		9669
SEEDING, CLASS 2A	ACRE	2		2
NITROGEN FERTILIZER NUTRIENT	POUND	120		120
POTASSIUM FERTILIZER NUTRIENT	POUND	120		120
RAILROAD PROTECTIVE LIABLITY INSURANCE	L SUM	1		1
TRACK REMOVAL	TRACK FT	6,717	2,095	8,811
SINGLE SWITCH POINT DERAIL, TYPE 1	EACH		1	1
TRACK WORK (SEE NOTE 1)	TRACK FT	6,315	2,223	8,538
TRACK SHIFT	TRACK FT		1,747	1,747
SUBBALLAST	CUYD	9,170		9,170
INSTALL TURNOUT, NO 11 (SEE NOTE 3)	EACH		1	1
TURNOUT REMOVAL	EACH	1		1
UPRR TRACKWORK MATERIALS ONLY (SEE NOTE 2)	TRACK FT	10,285		10,285
REMOVAL AND DISPOSAL OF UNSUITABLES	CUYD	3,845		3,845
PAVEMENT REPLACEMENT, SPECIAL	SQ YD	220		220
PIPE CULVERTS, CLASS A, TYPE 3 30", TEMPORARY	FOOT	80		80
PIPE CULVERTS, SSP, 24"	FOOT	148		148
CHAIN LINK FENCE REMOVAL	FOOT	800		800
FENCING INSTALLATION, 6" CHAIN LINK	FOOT	800		800

*Bridge quantities not included in this table, for bridge quantities refer to the Bridge plans (separate package).
**Quanties shown are not final quantities and may be adjusted in the Final IDOT submittal package.

Summary of Quantity Notes:

1. Track construction Foot of Track includes ballast, labor, ties, rails etc.
2. Providing all track materials for installation by UPRR Foot of Track
3. Installation only, track materials to be provided by IDOT Contractor.

LEGEND

- CONSTRUCT SUBBALLAST
- INSTALL TIES
- INSTALL RAIL & BALLAST
- TRACK REMOVAL - INCLUDES BALLAST AND SUBBALLAST
- TRACK SURFACING AND MAINTENANCE
- TRACK SHIFT-INCLUDES BALLAST AND SUBBALLAST

UPRR OVER IL132 - CONTRACT 60K80
TRACKWORK SCOPE OF WORK AND MATERIALS
SCHEMATIC DIAGRAM IN LINEAR FEET

Notes:

1. All work shall be performed by the IDOT contractor except where noted "by UPRR".
2. All materials shall be provided by the IDOT contractor.
3. Proposed spur track 812 quantities are not shown in the schematic diagram but are included in the summary of quantities totals.

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LOCATION & DESCRIPTION: GURNEE, LAKE COUNTY, ILLINOIS MILWAUKEE SUBDIVISION MP 37.50 TO MP 38.00 UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)
SHEET TITLE: TRACKWORK SCOPE OF WORK

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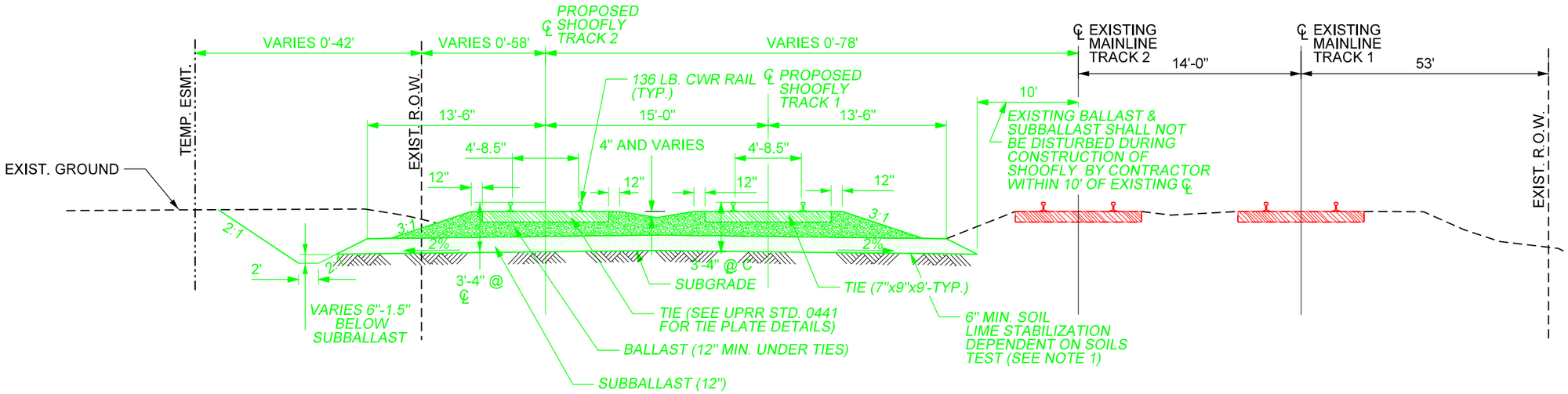
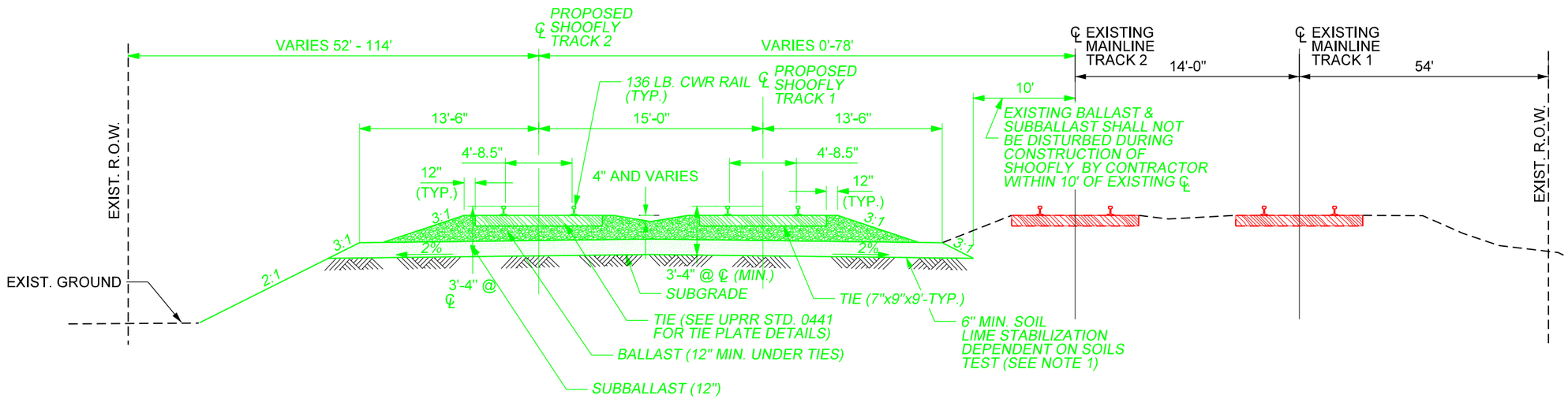


SHOOFLY TRACKS NORTH OF IL. RTE. 132
TYPICAL SECTION

SHOOFLY TRACK 1 (STA. 0+00.00 TO STA. 9+36.87)
SHOOFLY TRACK 2 (STA. 0+00.00 TO STA. 9+34.81)



SHOOFLY TRACKS SOUTH OF IL. RTE. 132
TYPICAL SECTION

SHOOFLY TRACK 1 (STA. 10+12.76 TO STA. 23+98.73)
SHOOFLY TRACK 2 (STA. 10+09.87 TO STA. 24+16.85)

NOTE 1
AS PER THE GEOTECHNICAL REPORT, UNDERCUTTING MAY BE REQUIRED FROM STA. 8+00 TO THE SHOOFLY BRIDGE.

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DATE: 06/07/16		
SHEET NUMBER C001 of 014	SHEET TITLE:	SHOOFLY TRACKS - TYPICAL SECTIONS

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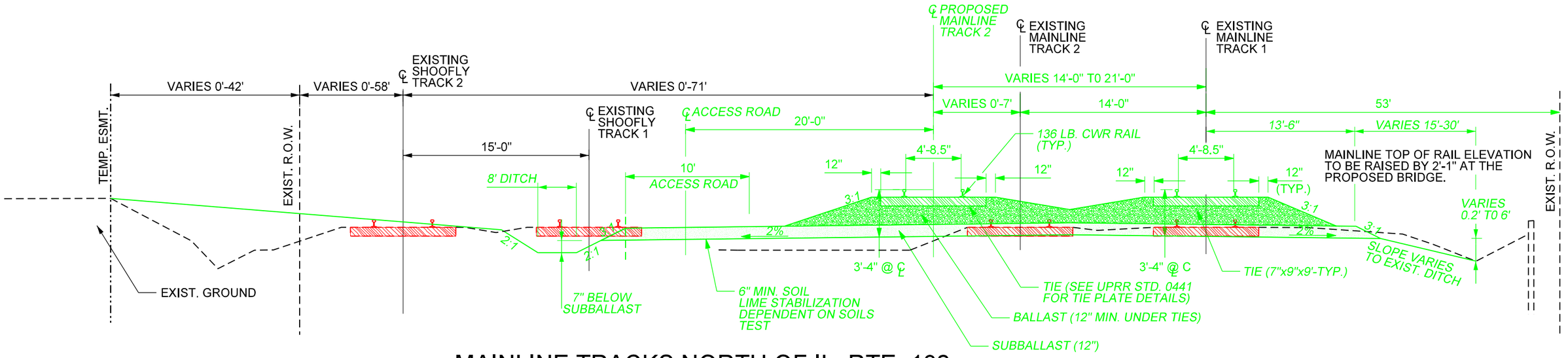
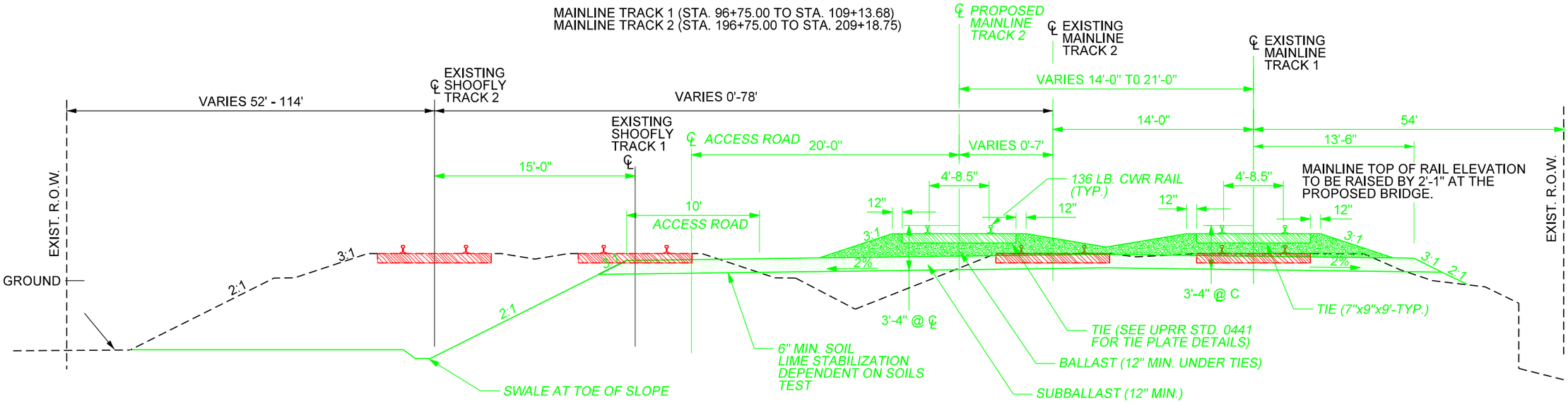


MAINLINE TRACKS NORTH OF IL. RTE. 132
TYPICAL SECTION

MAINLINE TRACK 1 (STA. 96+75.00 TO STA. 109+13.68)
MAINLINE TRACK 2 (STA. 196+75.00 TO STA. 209+18.75)



MAINLINE TRACKS SOUTH OF IL. RTE. 132
TYPICAL SECTION

MAINLINE TRACK 1 (STA. 110+60.82 TO STA. 125+00.00)
MAINLINE TRACK 2 (STA. 210+66.31 TO STA. 225+00.00)

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UNION PACIFIC RAILROAD
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UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)

SHEET TITLE: MAINLINE TRACKS - TYPICAL SECTIONS

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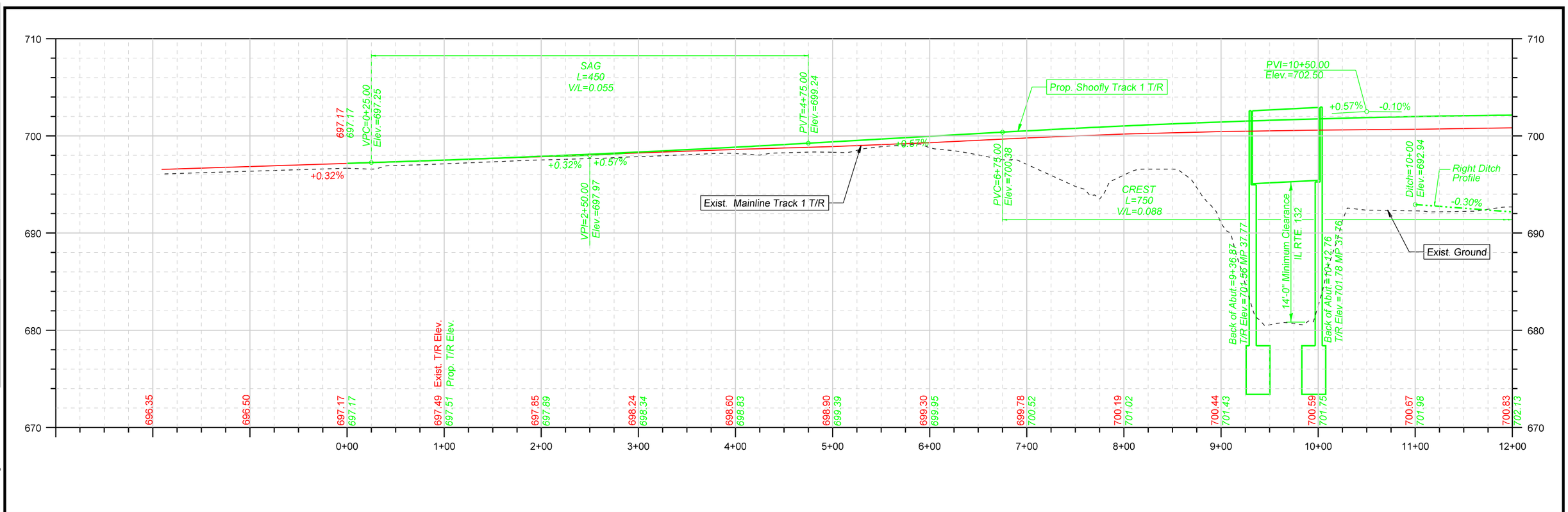

To Milwaukee
(Timetable North)

To Chicago
(Timetable South)

Construct 1468 TF
136# CWR, ISHH, Wood

Construct Shoofly Bridge

Delta = 4° 13' 08" (LT)
D = 1° 59' 22"
SE = 2.5" - 50mph
L/C = 210.32'
L/S = 122.5'

GRANDVIEW AVE.
MP 37.89

EXIST. BUILDING

See Shoofly Track 2 Sheets for Removal Items North of the Shoofly Bridge

IL 132 (GRAND AVE.)
MP 37.75

Shoofly Bridge MP 37.75

Sheet Piling (Typ.)

Shoofly Track 2
Shoofly Track 1
Clearing

Quest F/O
Sprint F/O
AT&T F/O

Exist. Mainline Track 2
Exist. Mainline Track 1

Spur Track 812

Exist. Retaining Wall

Exist. UPRR Bridge over Il. 132 MP 37.75

9+06 Underground Fiber Optic
9+24 Underground Fiber Optic
9+31 Underground Water
9+34 Underground Telephone
9+68 Underground Storm
10+00 Underground Gas

6+60 Underground Fiber Optic
7+18 Underground Fiber Optic

US 41 NB ENTRANCE RAMP

US 41 NB EXIT RAMP

MATCHLINE - STA. 12+00

Exist. 115lb Rail, Wood Ties, Timetable Speed=50mph

Construct 136# to 115# Transition Rail

100+55.81 (Exist. Track 1)
0+00.00 (Shoofly Track 1)
Begin Shoofly Track 1

Construct 461 TF
136# CWR, ISHH, Wood

REMOVE 333 TF

REMOVE 1724 TF

100 0 100 200
SCALE IN FEET

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SHEET NUMBER	C003 of 013

UNION PACIFIC RAILROAD
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MP 37.50 TO MP 38.00
UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)

SHEET TITLE: SHOOFLY TRACK 1-PLAN AND PROFILE
STA 00+00 TO STA 12+00

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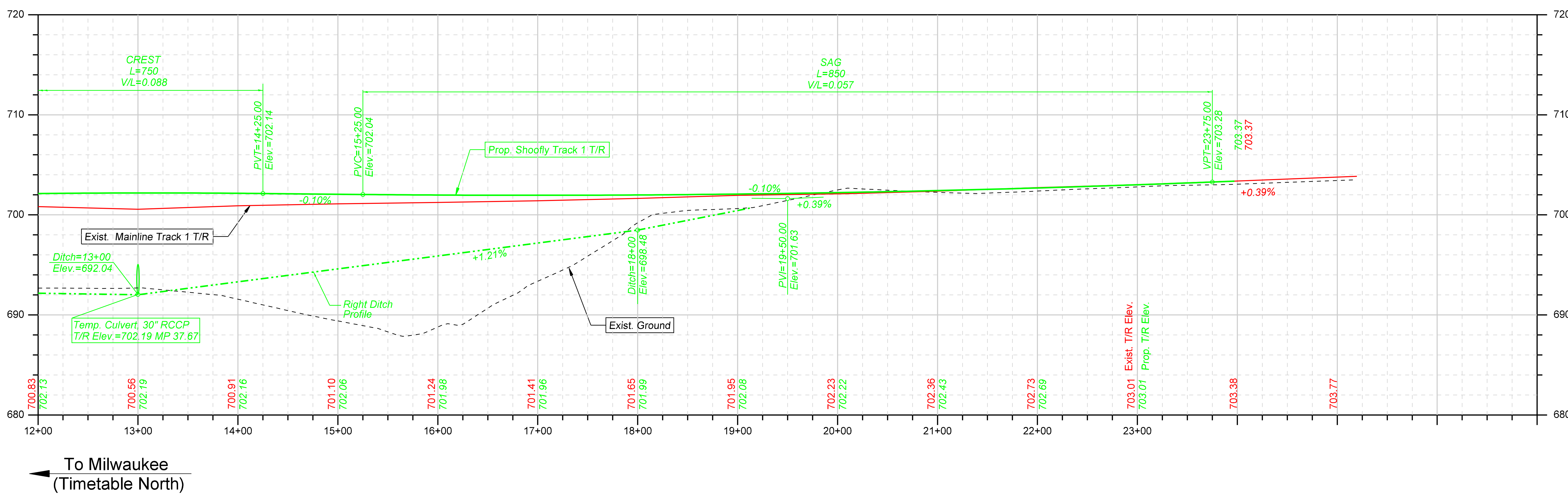

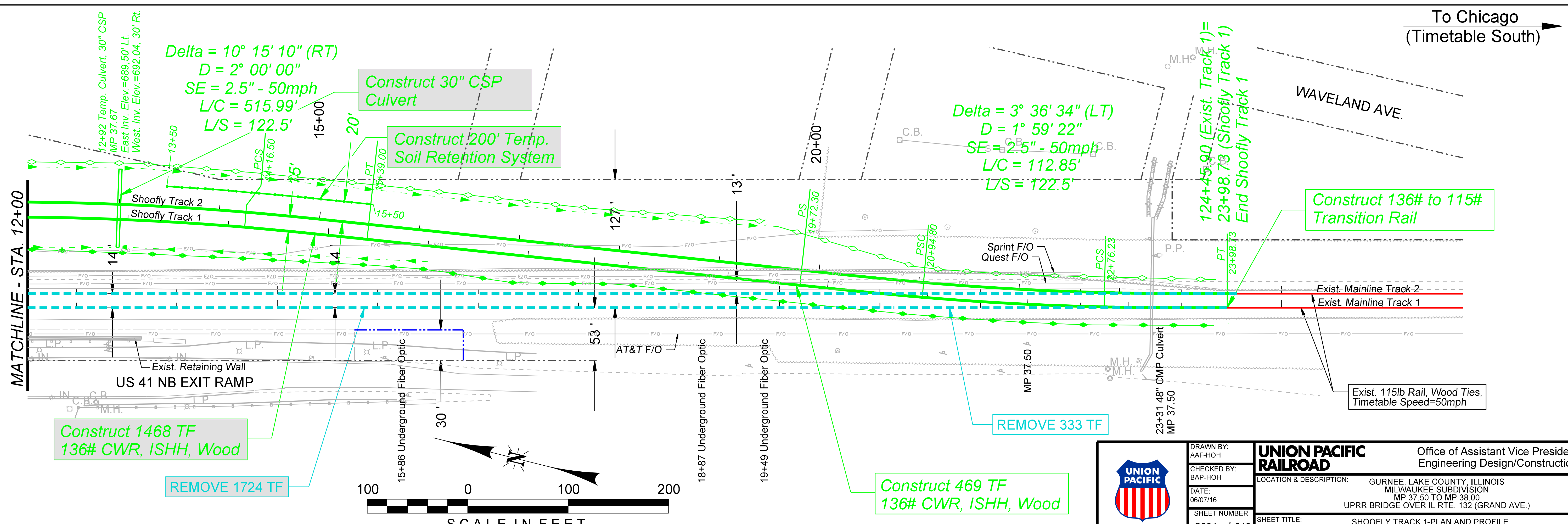

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DATE: 06/07/16	
SHEET NUMBER C004 of 013	SHEET TITLE: SHOOFLY TRACK 1-PLAN AND PROFILE STA 12+00 TO STA 24+00

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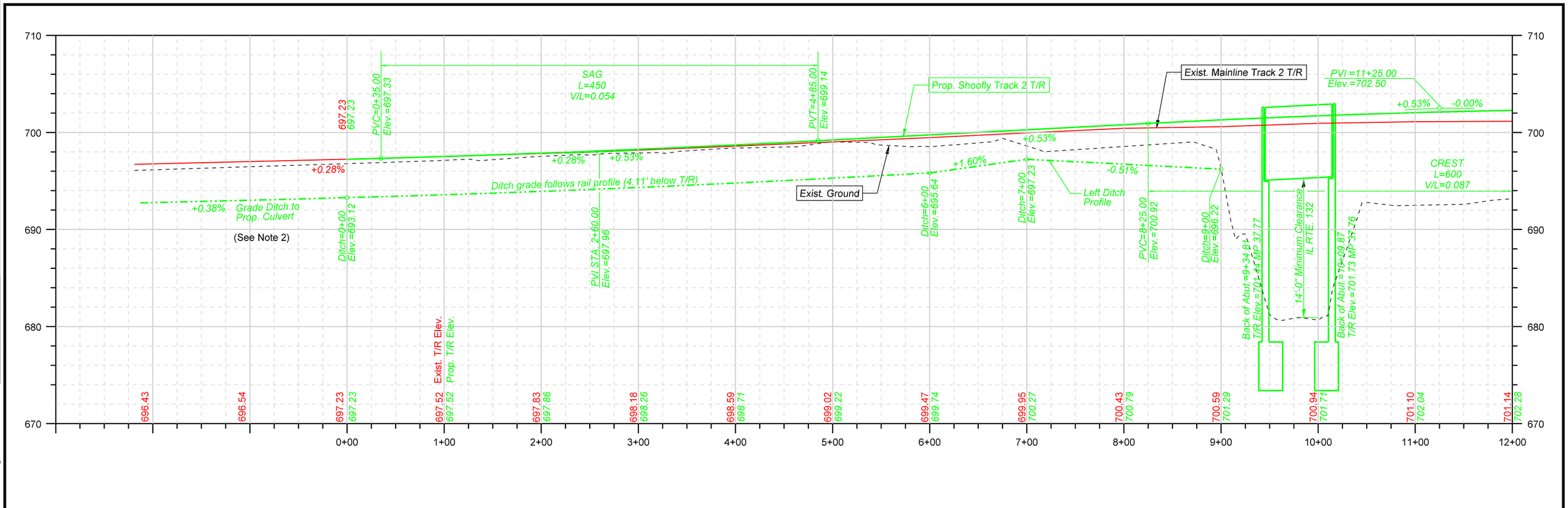

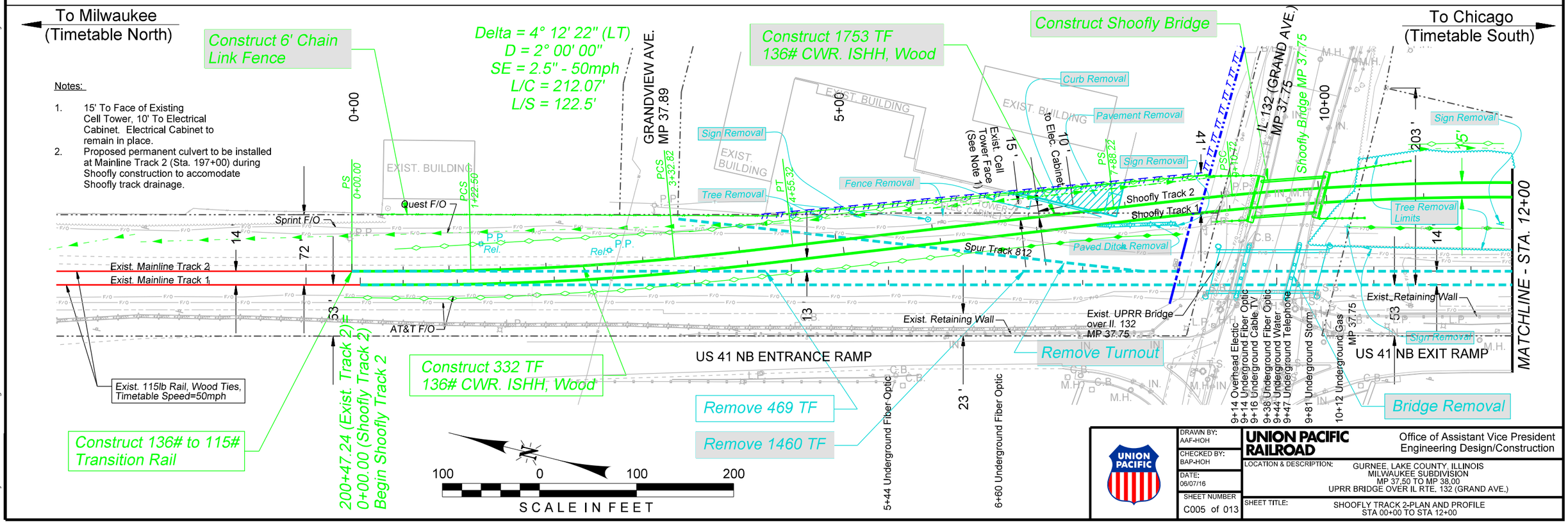

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UNION PACIFIC RAILROAD

Office of Assistant Vice President Engineering Design/Construction

LOCATION & DESCRIPTION: GURNEE, LAKE COUNTY, ILLINOIS
MILWAUKEE SUBDIVISION
MP 37.50 TO MP 38.00
UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)

SHEET TITLE: SHOOFLY TRACK 2-PLAN AND PROFILE
STA 00+00 TO STA 12+00

10/7/2016
12:29:4 PM
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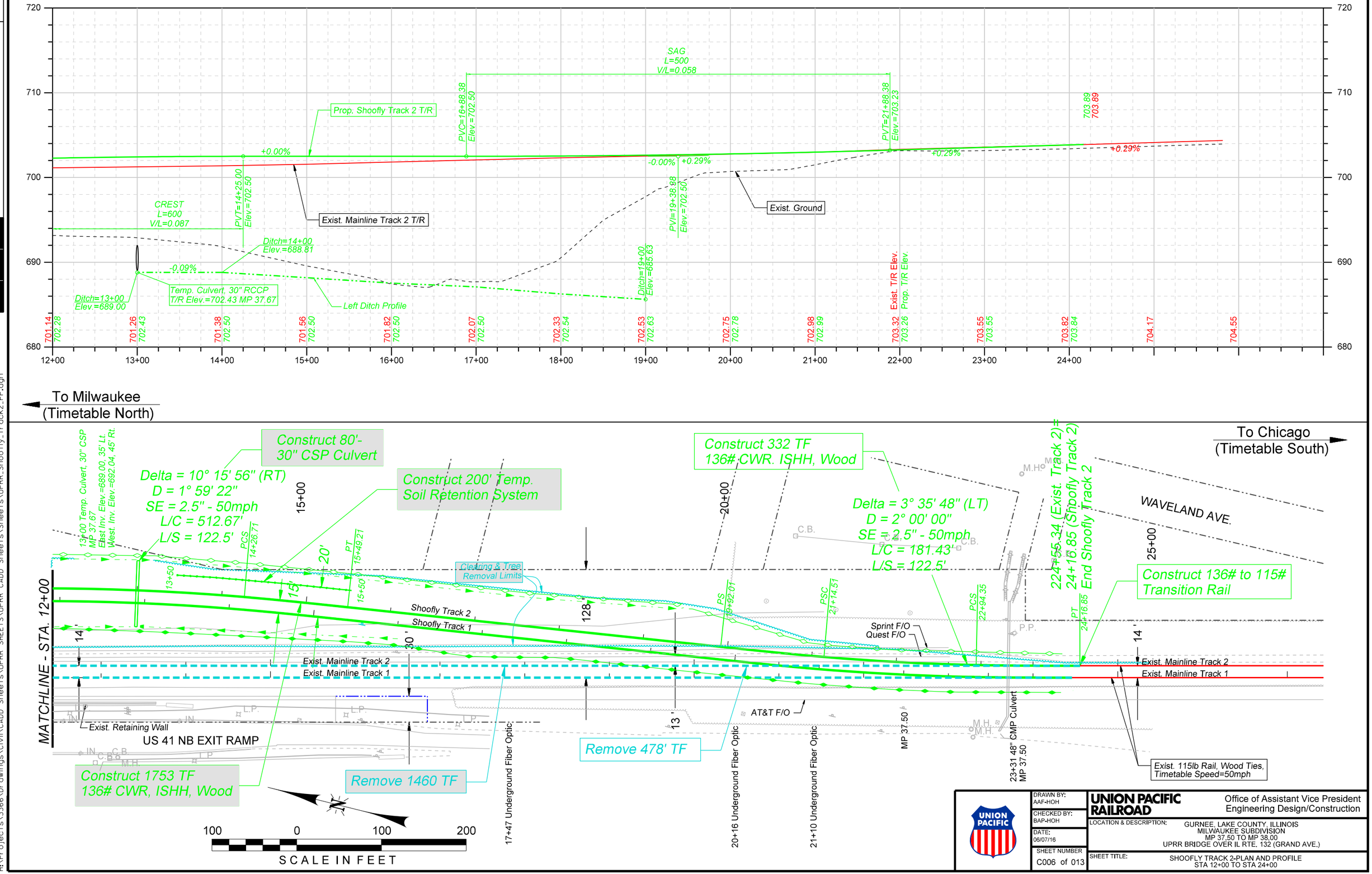
PROJECT NUMBER 3366
55 East Jackson Blvd. Suite 800 Chicago, IL 60604 312-346-8131
HARRY O. HEFTER-ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS
HOH



To Milwaukee
(Timetable North)

To Chicago
(Timetable South)

DRAWN BY: AAF-HOH	UNION PACIFIC RAILROAD — Office of Assistant Vice President Engineering Design/Construction
CHECKED BY: BAP-HOH	LOCATION & DESCRIPTION: GURNEE, LAKE COUNTY, ILLINOIS MILWAUKEE SUBDIVISION MP 37.50 TO MP 38.00 UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)
DATE: 06/07/16	
SHEET NUMBER C006 of 013	SHEET TITLE: SHOOFLY TRACK 2-PLAN AND PROFILE STA 12+00 TO STA 24+00

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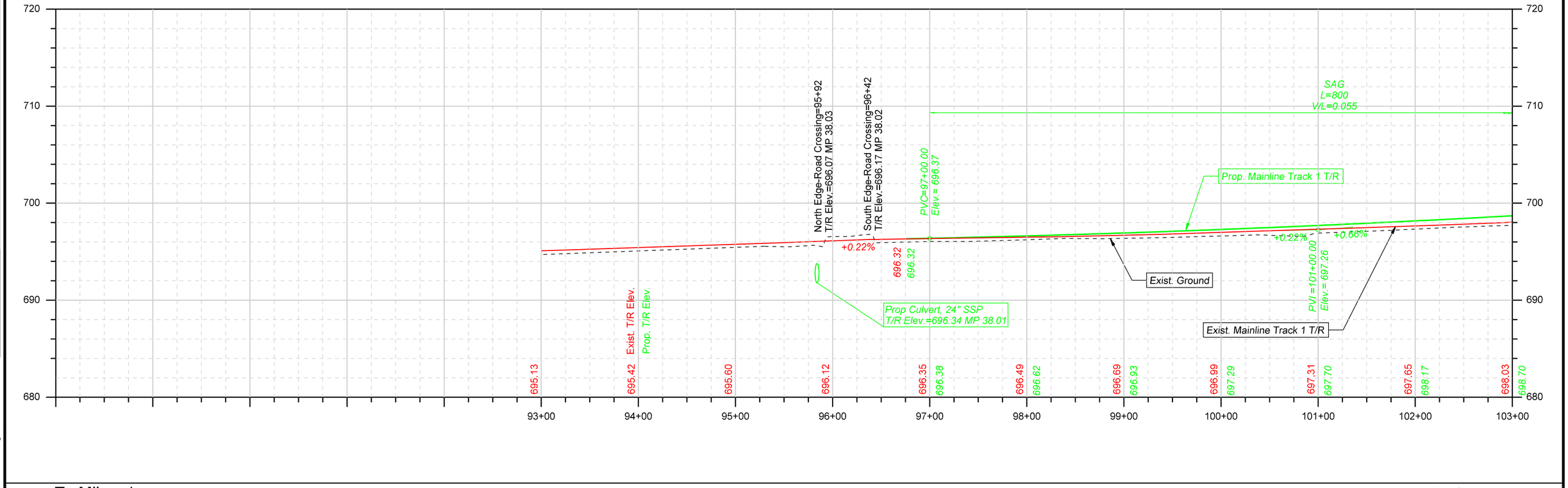
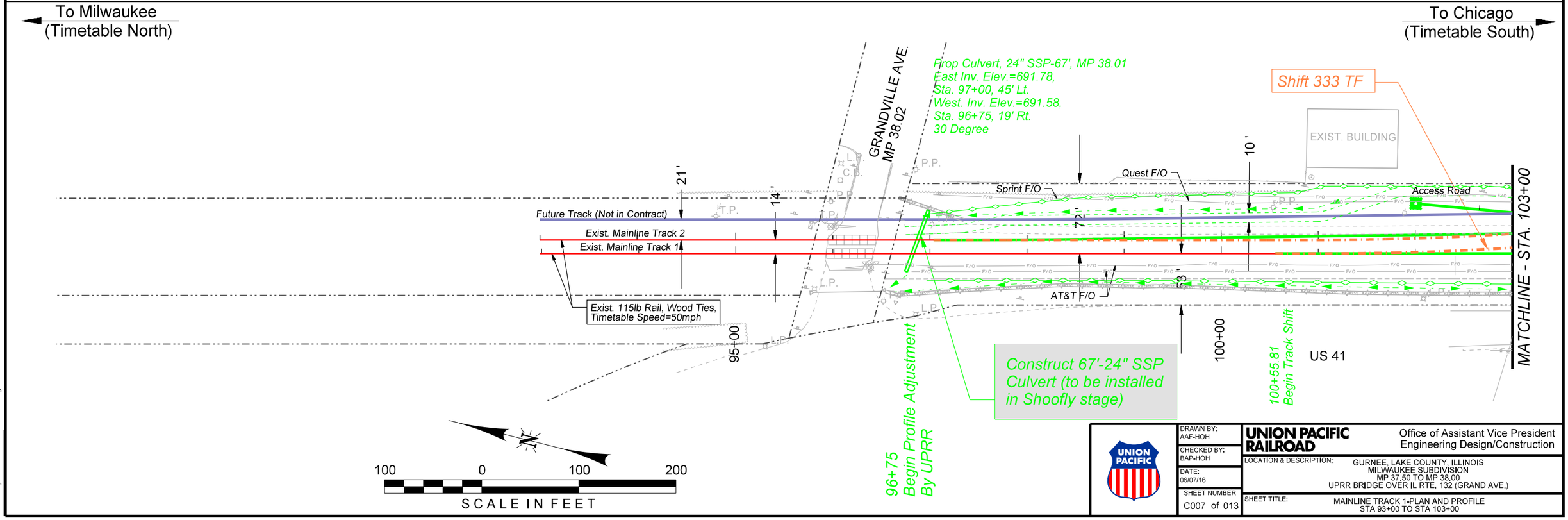
55 East Jackson Blvd. Suite 800 Chicago, IL 60604 312-346-8131
HARRY O. HEFTER-ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS
H O H





DRAWN BY: AAF-HOH	UNION PACIFIC RAILROAD — Office of Assistant Vice President Engineering Design/Construction
CHECKED BY: BAP-HOH	LOCATION & DESCRIPTION: GURNEE, LAKE COUNTY, ILLINOIS MILWAUKEE SUBDIVISION MP 37.50 TO MP 38.00 UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)
DATE: 06/07/16	
SHEET NUMBER C007 of 013	SHEET TITLE: MAINLINE TRACK 1-PLAN AND PROFILE STA 93+00 TO STA 103+00

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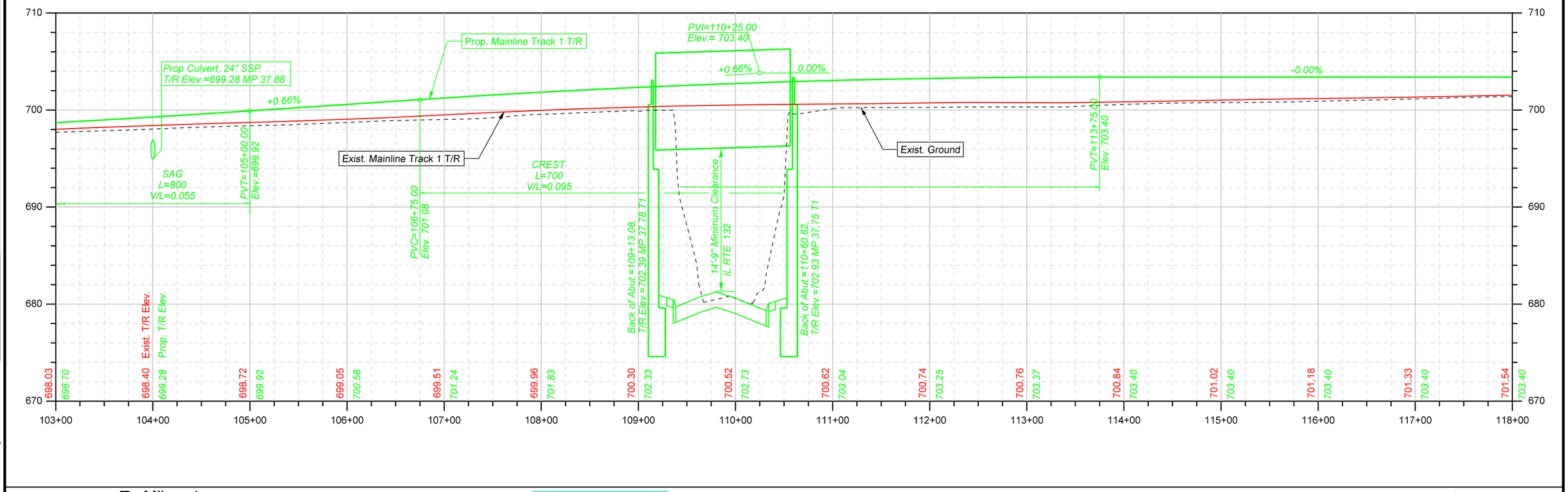
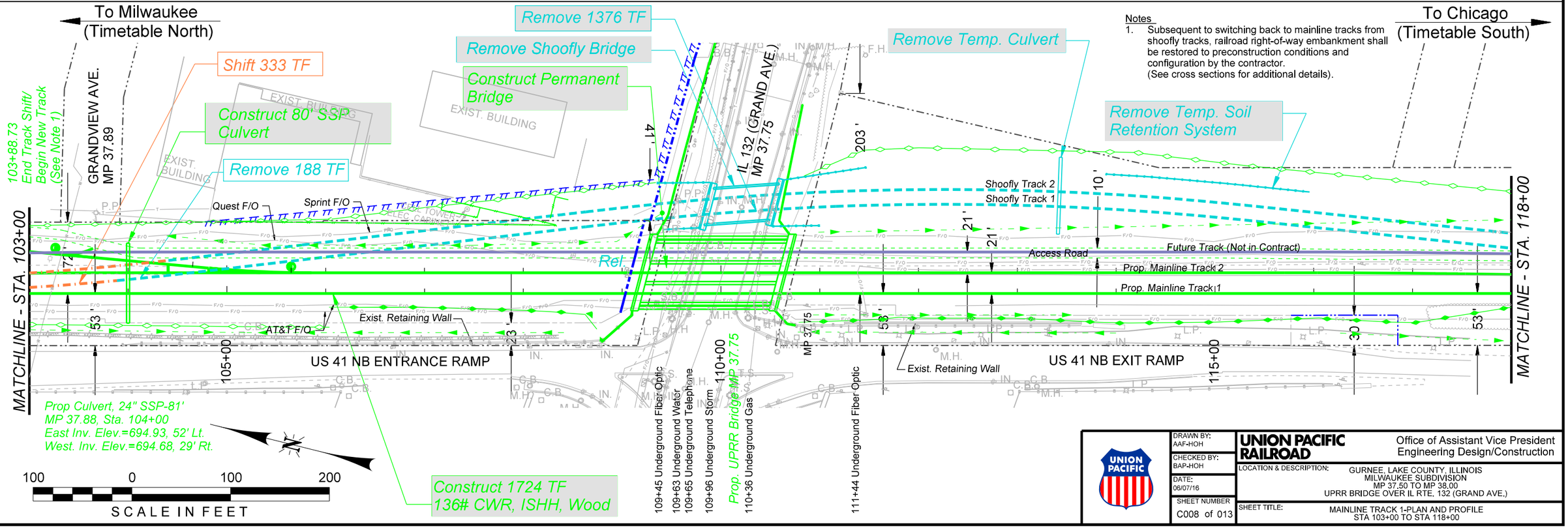
PROJECT NUMBER 3366
55 East Jackson Blvd. Suite 800 Chicago, IL 60604 312-346-8131
HARRY O. HEFTER-ASSOCIATES, INC. DESIGN AND CONSULTING ENGINEERS
H O H





Notes
1. Subsequent to switching back to mainline tracks from shoofly tracks, railroad right-of-way embankment shall be restored to preconstruction conditions and configuration by the contractor. (See cross sections for additional details).

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CHECKED BY: BAP-HOH	LOCATION & DESCRIPTION:	GURNEE, LAKE COUNTY, ILLINOIS MILWAUKEE SUBDIVISION MP 37.50 TO MP 38.00 UPRR BRIDGE OVER IL RTE. 132 (GRAND AVE.)
DATE: 06/07/16	SHEET TITLE:	MAINLINE TRACK 1-PLAN AND PROFILE STA 103+00 TO STA 118+00
SHEET NUMBER C008 of 013		

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