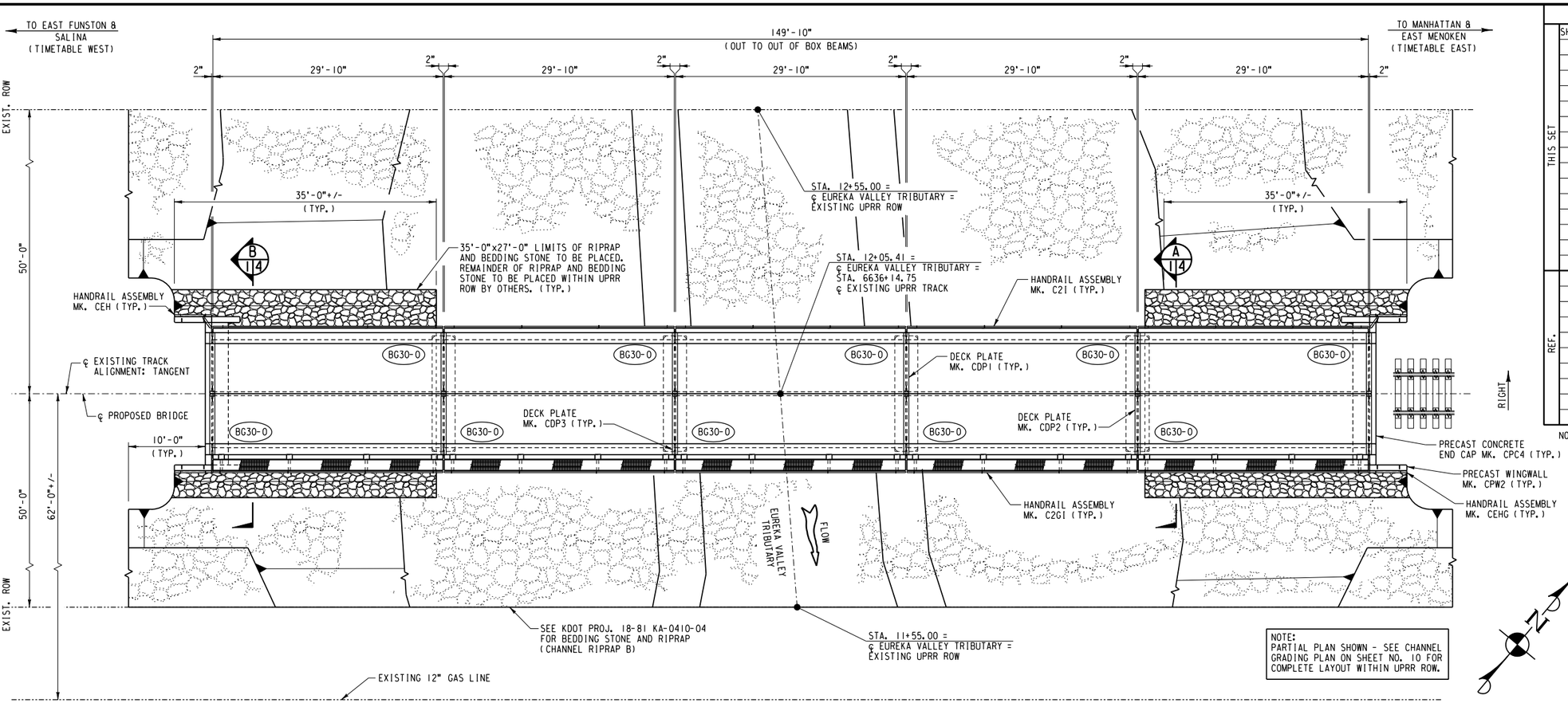
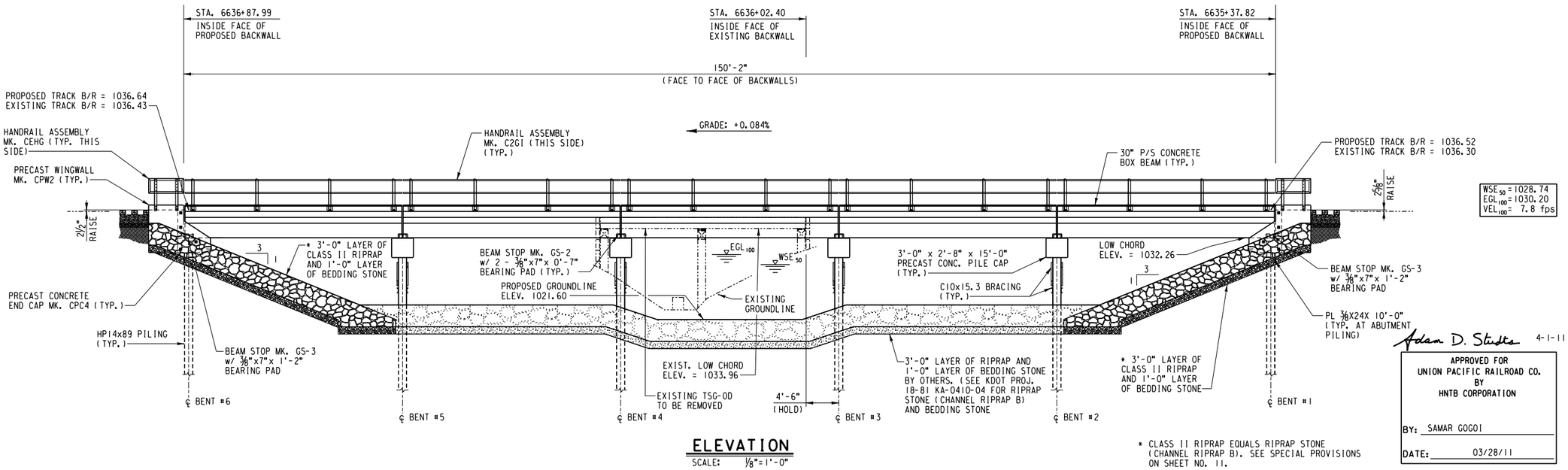


NOTE: PARTIAL PLAN SHOWN - SEE CHANNEL GRADING PLAN ON SHEET NO. 10 FOR COMPLETE LAYOUT WITHIN UPRR ROW.

PLAN
SCALE: 1/8"=1'-0"



ELEVATION
SCALE: 1/8"=1'-0"

* CLASS II RIPRAP EQUALS RIPRAP STONE (CHANNEL RIPRAP B). SEE SPECIAL PROVISIONS ON SHEET NO. 11.

DRAWING SCHEDULE

THIS SET

SHEET NO.	DESCRIPTION
1	GENERAL ARRANGEMENT
2	PILE LAYOUT
3	BILL OF MATERIAL AND CONSTRUCTION NOTES
4	TYPICAL SECTIONS
5	TOP OF RAIL PROFILE
6	PHASE I CHANNEL EXCAVATION - GENERAL ARRANGEMENT
7	PHASE II CHANNEL EXCAVATION - GENERAL ARRANGEMENT
8	PHASE III CHANNEL EXCAVATION - GENERAL ARRANGEMENT
9	CHANNEL EXCAVATION PHASING - SECTIONS AND DETAILS
10	CHANNEL GRADING PLAN AND CONSTRUCTION STAGING AREA
11	SPECIAL PROVISIONS
12	BORING LOG B-01 (1 OF 2)
13	BORING LOG B-01 (2 OF 2)
14	BORING LOG B-02 (1 OF 2)
15	BORING LOG B-02 (2 OF 2)

REF.

NO.	DWG. NO.	SHEET NO.	REV. NO.	DESCRIPTION
1	500000	BG1-BG3	F	30"x7'-0" DOUBLE BOX BEAM
2	530000	A1-A5, B3-B4	A	BOX BEAMS, GENERAL CONSTRUCTION PLANS
3	501000	C1-C2	-	PRECAST CONCRETE PILE CAP
4	501000	A1	-	PRECAST CONCRETE END CAP FOR 30" BOX BEAM
5	531010	1	-	PRECAST CONCRETE PILE CAP BEARING PADS
6	501000	A1	-	PRECAST CONCRETE WINGWALL MK. CPW2
7	502000	1	A	DECK PLATES AND BEAM STOPS DETAILS
8	502000	2-4	A	HANDRAIL ASSEMBLY DETAILS
9	530000	A2	A	H-PILE SPLICE AND PILE TIP DETAILS

NOTE: UPRR TO PROVIDE ALL REFERENCE DRAWINGS.

POSTCONSTRUCTION COMPLIANCE

Contractor or UPRR Manager in charge of construction to provide to the office of the Director Structures Design as-built drawings confirming that the project was constructed in compliance with the plans and indicating any construction variances.

SIGNED

In Charge of Construction _____ Date _____

SECTION DESIGNATION

LETTER SERIES
SHEET NO. CUT ON — SHEET NO. SHOWN ON

EST. LIFTING WT. OF PRECAST CONC. MEMBERS

PRECAST END CAP MK. CPC4 = 24,500 LB. (12.3 TONS)
PRECAST WINGWALL MK. CPW2 = 4,900 LB. (2.5 TONS)
PRECAST 15' LONG PILE CAP = 19,700 LB. (9.9 TONS)
EST. LIFTING WT. OF 30" P/S BOX
MK. BG30-0 = 52,300 LB. EA. (26.2 TON)

NO.	DATE	REVISIONS
	/ /	
	/ /	
	/ /	
	/ /	

FORMER BRIDGE NO. 126.32

STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION:
BR. 126.31 SALINA SUB.
8.0 MILES WEST OF MANHATTAN, KS

FACILITY:
5 SPAN PCB x 150' REPLACING
2 SPAN TSG-OD x 28'

DWG TITLE:
GENERAL ARRANGEMENT

Adam D. Stubbs 4-1-11

APPROVED FOR UNION PACIFIC RAILROAD CO. BY HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

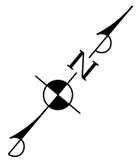
PROJECT ID: -	ENGINEER: UP - ADS HNTB - SG	LATITUDE: 39°08'47.5"N LONGITUDE: 96°38'53.5"W
WORK ORDER: -		
DESIGN BY: SG		
CHECKED BY: JCF		
DRAWN BY: GVS	SHEET NO. 1 of 15	C E NUMBER 118426
CHECKED BY: JCF		
SCALE: AS SHOWN		

FILE NAME: P:\Estation\dgn\sal12631.bks

PLOTTED: 4/1/2011 6:57:46 AM

TO EAST FUNSTON & SALINA (TIMETABLE WEST)

TO MANHATTAN & EAST MENOKEN (TIMETABLE EAST)



BORING NO. B-02

BORING NO. B-01

148'-10" (CENTER TO CENTER OF PILES)

29'-5" | 30'-0" | 30'-0" | 30'-0" | 29'-5"

STA. 6636+87.32 | STA. 6636+57.90 | STA. 6636+27.90 | STA. 6635+97.90 | STA. 6635+67.90 | STA. 6635+38.49

PLUMB PILE

℄ HP 14x89 PILING SEE PILE DRIVING DIAGRAM, THIS SHEET

℄ EXISTING TRACK ALIGNMENT: TANGENT

6'-0"

6'-0"

RIGHT

STA. 6635+85.65 INSIDE FACE OF EXISTING BACKWALL

4'-0" (HOLD)

PILE CUTOFF

℄ BENT #6 ELEV. = 1030.33

℄ BENT #5 ELEV. = 1029.63

℄ BENT #4 ELEV. = 1029.60

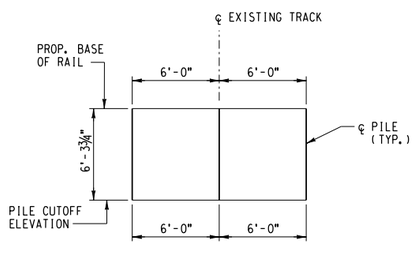
℄ BENT #3 ELEV. = 1029.58

℄ BENT #2 ELEV. = 1029.55

℄ BENT #1 ELEV. = 1030.20

PILE LAYOUT

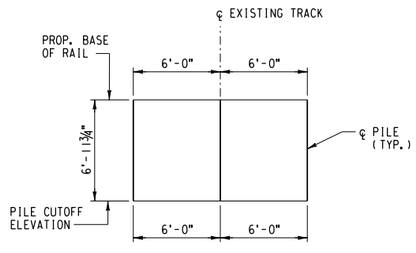
SCALE: 1/8"=1'-0" AT PILE CUTOFF



PILE DRIVING DIAGRAM

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

(BENTS #1 & #6)



PILE DRIVING DIAGRAM

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

(BENTS #2 THRU #5)

Adam D. Studtz 4-1-11

APPROVED FOR UNION PACIFIC RAILROAD CO. BY HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

NO.	DATE	REVISIONS
	/ /	
	/ /	
	/ /	
	/ /	

STATE OF KANSAS DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD

Office of AVP Engineering Design/Construction

LOCATION: BR. 126.31 SALINA SUB. 8.0 MILES WEST OF MANHATTAN, KS

FACILITY: 5 SPAN PCB x 150' REPLACING 2 SPAN TSG-OD x 28'

DWG TITLE: PILE LAYOUT

PROJECT ID: -	ENGINEER: UP - ADS HNTB - SG	LATITUDE: 39°08'47.5"N
WORK ORDER: -		LONGITUDE: 96°38'53.5"W
DESIGN BY: SG		
CHECKED BY: JCF	SHEET NO. 2 of 15	C E NUMBER 118426
DRAWN BY: GVS		
CHECKED BY: JCF		
SCALE: AS SHOWN		

FILE NAME: P:\station\dgn\sal12631.bks

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CONSTRUCTION NOTES

NOTES

1. All work requirements shown on these drawings and not otherwise detailed shall be accomplished as specified in Union Pacific Railroad Specifications and the most current American Engineering and Maintenance-of-Way Association (AREMA) Manual for Railway Engineering. In the event of conflicts between the UPRR Specifications, drawings and the AREMA Manual the more restrictive will apply. The UPRR Guidelines and Specifications are available at http://www.uprr.com/aboutup/operations/specs/index.shtml.
2. The proposed structure has been designed for Cooper E-80 live loading plus impact and 30 inches total depth of ballast.
3. All information shown on these plans regarding location of the existing track, existing bridge and existing ground elevations are based on information provided by KDOT including drawings of existing bridge and site location survey, dated 04/23/09.
4. Contractor shall perform excavation as required for construction of the new substructure and replace the areas removed and disturbed in the course of construction to a condition equal to or better than existing.
5. The existing bridge is to remain in service during H-Pile driving.
6. Rail stationing is based on West Face of the East Backwall of the existing Bridge No. 126.32 at Station 6636+02.40 as shown in UPRR Right-of-Way Map.
7. Local Datum: BM #30 - A standard disk stamped R 263 1940 set in the SE wingwall of bridge under East Bound K-18 Highway. Sta. 6636+01.61; 59.66' RT. Elev. = 1036.92
8. For additional information on channel see plans and specifications for State Highway K-18 (Riley County), KDOT Project No. 18-81 KA-0410-04.
9. For Geotechnical Investigation see KDOT Bridge Foundation Geology Report, Project No. 18-81-KA 0410-01, UPRR Over Eureka Valley Tributary and HWS Report dated 6/5/2009.
10. **Contact the Union Pacific "Call Before You Dig"number 90 days (not less than 60 days) prior to proposed construction start date. Prior to construction, confirm that all necessary relocations have been completed. The CBYD number is: 1-800-336-9193.**

DIVISION OF RESPONSIBILITY

A. RAILROAD

1. Remove existing track and provide and install new ballast and track. Refer to UPRR Standard Track Plans and Specifications for installation of ballast and track.
2. Install bridge marker signs at ends of proposed bridge.

B. CONTRACTOR

1. Coordinate all construction activities with the Railroad and KDOT.
2. Before ordering any materials, the contractor shall make a detailed field inspection of the site verifying all pertinent dimensions and elevations. Any variations in dimensions or elevations from those shown on the plans shall be reported immediately to UPRR Project Manager.
3. Verify the location, relocation, abandonment, and/or temporary support of all utilities affected by the construction of the structure and embankment and coordinate these activities with the appropriate utility companies, agencies and/or authorities. For information on, and relocation of, fiber optic cable, and other utilities call 1-800-336-9193 and Kansas One Call 1-800-344-7233.
4. KDOT has obtained all required permits associated with the project improvements as detailed in KDOT Proj. 18-81 KA-0410-04 and these drawings, which may not be all inclusive depending upon the Contractors preferred means and methods. The Contractor shall coordinate with KDOT to determine that the constraints of the permits will cover these proposed work activities. Otherwise the Contractor shall be responsible for securing additional permits.
5. Provide the Railroad with a detailed construction plan defining the activity, schedule and procedure for each aspect of the work. Construction shall not begin until the construction plan has been approved by the Railroad. Construction Plan to address H-Pile driving while existing bridge is in service. Installation of superstructure will be during a train free window.
6. Furnish all material including items shown in the Bill of Material and incidental material not shown.
7. Remove existing bridge and timber pile up to limits of Phase II excavation.
8. Construct new bridges per specification.
9. Perform all work not performed by the Railroad.
10. Direct channel flow as required to perform work.
11. Provide all temporary shoring and/or bracing required to support and protect the existing embankment, bridge abutments and piers affected by the work. Provide the Railroad with details, design and procedure for all temporary shoring and/or bracing. All temporary shoring and bracing shall be designed, signed and sealed by a professional engineer registered in the state of Kansas. All temporary shoring and bracing must be approved by the UPRR Office of AVP Engineering Design/Construction prior to beginning construction. The provisions of UPRR standard Dwg. No. 106613 shall be met.
12. Provide and place all fill and subballast material per UPRR Grading Specifications. Perform grading as required to provide proposed top of rail profile.
13. Accomplish activities within the schedule specified in the approved construction plan.
14. Perform Stage I and Stage II excavation as shown in the drawings.
15. Place 12" bedding stone and riprap as shown at the abutment slopes.
16. Access to staging area shown on Sheet No. 10 is from EB-K18 and grade crossing at approximate Sta. 6655+00. Temporary grade crossing will be required across the tracks north of the bridge.
17. Pick up HP14x89 piles provided by KDOT from storage site. Contact Jerry Haug, Construction Manager, 785-456-2353.
18. Relocate existing riprap and place temporary berm as shown in plans.

C. KDOT

1. Traffic control along EB-K18 to be provided by KDOT to facilitate truck entrance into staging area.
2. KDOT to provide HP14x89 piling as shown in the bill of material for use by the Contractor.
3. KDOT to perform Phase III channel excavation beyond Phase II as required per the final final grading of the channel. (See KDOT Proj. 18-81 KA-0410-04).
4. KDOT to remove any remaining timber piles to limits of Phase III excavation.
5. KDOT to place remainder of 12" bedding stone and riprap across the new channel bottom after Phase III excavation is complete.

D. MATERIALS

1. Stone for bedding and riprap shall be per Special Provisions on Sheet No. 11.
2. Material certification showing that Special Provisions are being met shall be provided for review.

GENERAL NOTES

GENERAL:

Field verify all dimensions, stations and elevations prior to start of construction.

SITE LAYOUT INFORMATION:

Profile: See Top of Rail profile, Sheet No. 5
2⅝" Raise WFEBW
2½" Raise EFWBW

Track Alignment: Tangent

Right Of Way: 50' Left of existing Main Line Track centerline
50' Right of existing Main Line Track centerline

PILE DRIVING:

All numbered pile shall be driven to 138 ton capacity. If any numbered pile cannot be driven to this capacity the Office of AVP Engineering Design/Construction must be notified.

Estimated capacity of driving piles shall be calculated using the modified ENR formula with factor of safey of 5. Direct questions to the structures design group, Office of AVP Engineering Design/Construction.

FIELD WELDING:

Welding must be accomplished with the SMAW Process. Welding must be in compliance with the requirements specified in AWS D1.5-95, except 5/16 in. fillet welds may be made with a single pass. Welding electrodes must be E7018. Welders must possess valid certification.

DESIGN NOTES

This structure was designed for Cooper E80 Live Load with 30" ballast and impact.

DESIGN PILE LOAD:

End bent = 76 Ton
Interior Bent = 138 Ton

BILL OF MATERIAL

	REQ'D	UNIT	DESCRIPTION	STORE ITEM NO.	ORDERED BY
PRECAST CONCRETE	10	EA.	BOX BEAM, P/S CONCRETE 30" DEEP x 30', TYPE I, W/ SLOPED CURB, MK. BG30-0 (PER REF. 1 & 2) (BUY AMERICA)	511-7828	UPRR MANAGER TRACK PROJECTS
	2	EA.	PRECAST CONCRETE END CAP MK. CPC4 W/ BEARING PADS FOR 30" P/S CONCRETE BOX BEAM (PER REF. 4 & 5) (BUY AMERICA)	511-0035	
	4	EA.	PRECAST CONCRETE PILE CAP 3'-0" x 2'-8" x 15'-0" W/ BEARING PADS FOR 30" P/S CONCRETE BOX BEAM (PER REF. 3 & 5) (BUY AMERICA)	511-0350	
	4	EA.	PRECAST CONCRETE WINGWALL MK. CPW2 FOR 30" CONC. BOX BEAM (PER REF. 6) (BUY AMERICA)	511-0036	
PILING	3	EA.	HP14x89x 40'-0" STEEL PILING (A572, GR. 50) (BUY AMERICA)	510-7557	
	9	EA.	HP14x89x 60'-0" STEEL PILING (A572, GR. 50) (BUY AMERICA)	510-7593	
	18	EA.	PILE SPLICER FOR HP14x89 STEEL PILE (PER REF. 9) (BUY AMERICA)	510-8065	
	18	EA.	TIP REINFORCEMENT HARD-BITE POINT MODEL HP-77600-B (BUY AMERICA)	510-8063	
STEEL BRACING	16	EA.	C10x15.3 x 20'-0" BRACE (A36, PLAIN) (BUY AMERICA)	247-6649	
MISC. STEEL & FASTENERS	8	EA.	BEAM STOP MK. GS-2, (PER REF. 7) (BUY AMERICA)	510-0595	
	4	EA.	BEAM STOP MK. GS-3, (PER REF. 7) (BUY AMERICA)	510-0596	
	6	EA.	DECK PLATE MK. CDP1, GALVANIZED (PER REF. 7) (BUY AMERICA)	510-0590	
	6	EA.	DECK PLATE MK. CDP2, GALVANIZED (PER REF. 7) (BUY AMERICA)	510-0591	
	12	EA.	DECK PLATE MK. CDP3, GALVANIZED (PER REF. 7) (BUY AMERICA)	510-0592	
	5	EA.	HANDRAIL ASSEMBLY FOR 29'-10" CONCRETE INTERIOR SPAN ASSEMBLY C2I (PER REF. 8) (BUY AMERICA)	510-0472	
	5	EA.	HANDRAIL ASSEMBLY FOR 29'-10" CONCRETE INTERIOR SPAN ASSEMBLY C2GI W/ GRATING (PER REF. 8) (BUY AMERICA)	510-0564	
	2	EA.	END HANDRAIL ASSEMBLY CEH (PER REF. 8) (BUY AMERICA)	513-3020	
	2	EA.	END HANDRAIL ASSEMBLY CEHG W/ GRATING (PER REF. 8) (BUY AMERICA)	513-3021	
	4	EA.	PL⅜x 24x 10'-0" (A36, PLAIN) (BUY AMERICA)	510-7650	
	48	EA.	½"x28"x 6'-4" PREMOLDED ASPHALT IMPREGNATED FIBER EXPANSION JOINT FILLER, PER ASTM D1751 (BUY AMERICA)	511-8213	
	16	EA.	⅜"x7"x 0'-7" NEOPRENE BEARING PAD (PER REF. 2) (BUY AMERICA)	510-3635	
	4	EA.	⅜"x7"x 1'-2" NEOPRENE BEARING PAD (PER REF. 2) (BUY AMERICA)	510-3637	
	1770	CU. YD.	CHANNEL EXCAVATION (STAGE I AND STAGE II)		CONTRACTOR
	18	CU. YD.	WELL GRADED 1½" MAXIMUM CRUSHED ROCK	562-2764	
	74	TON	BEDDING STONE		
	425	TON	RIPRAP, CLASS II	562-3430	
	9	EA.	HP14x89x 18'-0"+/- STEEL PILING (A588, GR. 50)		KDOT
	2	EA.	HP14x89x 25'-0" STEEL PILING (A588, GR. 50)		
	1	EA.	HP14x89x 25'-3" STEEL PILING (A588, GR. 50)		
	9	EA.	HP14x89x 50'-0" STEEL PILING (A588, GR. 50)		
	2710	CU. YD.	CHANNEL EXCAVATION (REMAINDER WITHIN UPRR ROW, PER SHEET NOS. 1, 3 & 8)		
	660	TON	BEDDING STONE (REMAINDER WITHIN UPRR ROW, PER SHEET NOS. 1, 3 & 8)		
	1980	TON	RIPRAP, CLASS II (REMAINDER WITHING UPRR ROW, PER SHEET NOS. 1, 3 & 8)		
	2	EA.	BRIDGE MARKER PER ENGINEERING STANDARDS DRAWING NO. 0507	P00-2616	UPRR MGR. BRIDGE CONSTRUCTION

EST. WT. OF MISCELLANEOUS STEEL (NOT INCL. BOLTS) = 9,760 LB.
EST. WT. OF STEEL PILING HP 14x89 = 120,710 LB.
EST. WT. OF STEEL BRACING = 4,900 LB.

NOTE:
CLASS II RIPRAP EQUALS RIPRAP STONE (CHANNEL RIPRAP B).
SEE SPECIAL PROVISIONS ON SHEET NO. 11.

Adam D. Studtes 4-1-11

APPROVED FOR
UNION PACIFIC RAILROAD CO.
BY
HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

NO.	DATE	REVISIONS
	/ /	
	/ /	
	/ /	
	/ /	

STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION: BR. 126.31 SALINA SUB.
8.0 MILES WEST OF MANHATTAN, KS

FACILITY: 5 SPAN PCB x 150' REPLACING
2 SPAN TSG-OD x 28'

DWG TITLE: BILL OF MATERIAL AND CONSTRUCTION NOTES

PROJECT ID: -	ENGINEER: UP - ADS HNTB - SG	LATITUDE: 39°08'47.5"N
WORK ORDER: -		LONGITUDE: 96°38'53.5"W
DESIGN BY: SG		
CHECKED BY: JCF		
DRAWN BY: CVS	SHEET NO. 3 of 15	C E NUMBER 118426
CHECKED BY: JCF		
SCALE: AS SHOWN		

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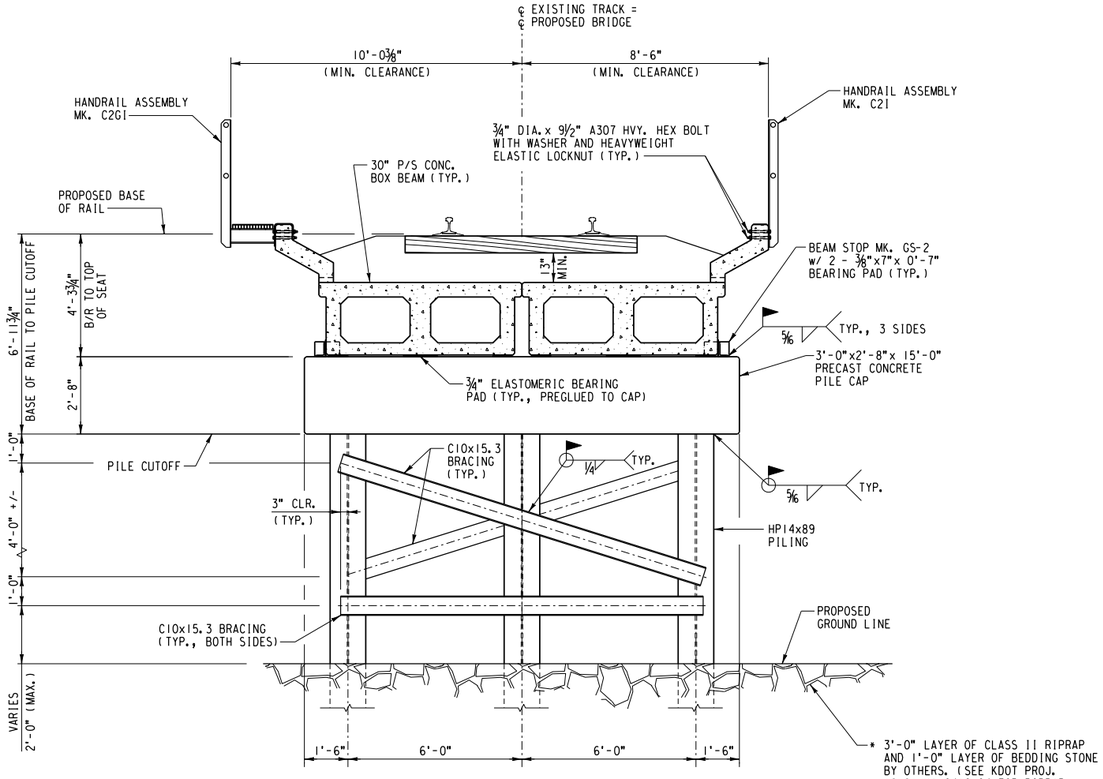
PLOTTED: 4/1/2011 6:57:54 AM

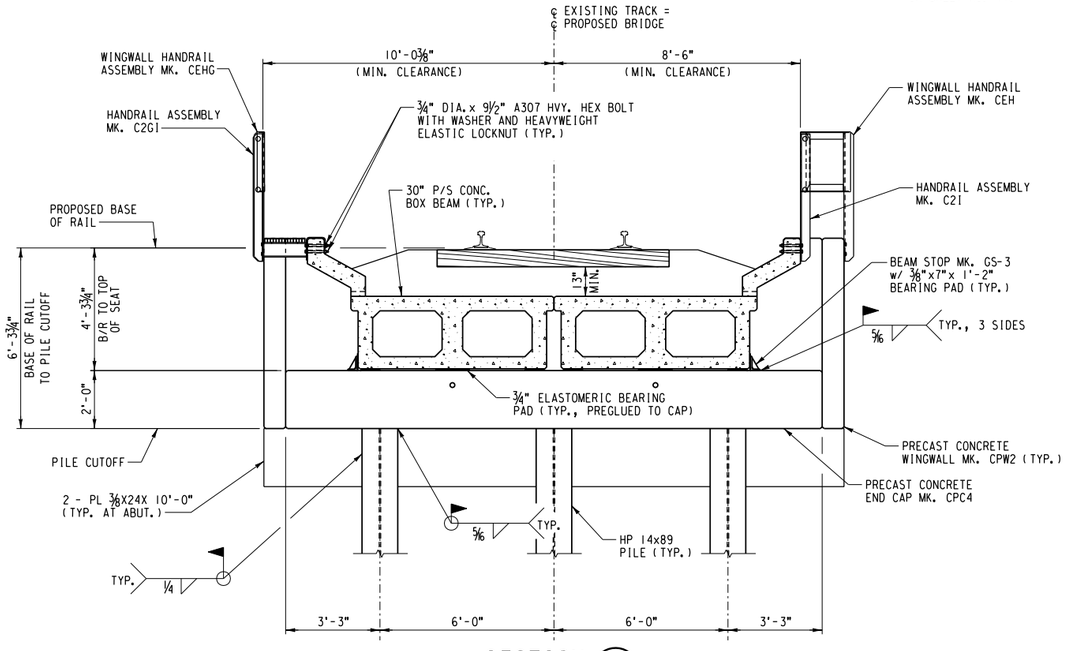


SECTION A 114

SCALE: ⅜"=1'-0"

(BENT #2 SHOWN, BENTS #3 THRU #5 SIMILAR)

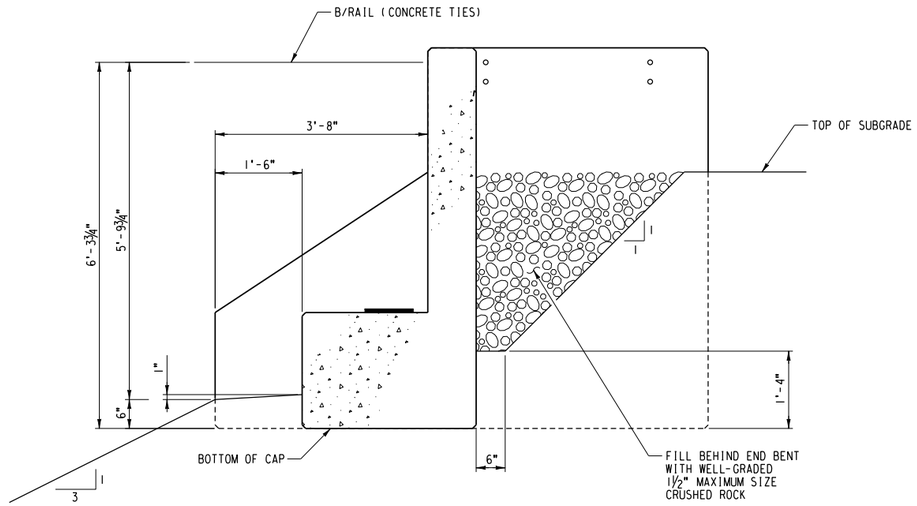
* CLASS II RIPRAP EQUALS RIPRAP STONE (CHANNEL RIPRAP B). SEE SPECIAL PROVISIONS ON SHEET NO. 11.



SECTION B 114

SCALE: ⅜"=1'-0"

(BENT #6 SHOWN, BENT #1 SIMILAR)



HEAD OF BANK DETAILS

SCALE: ¾"=1'-0"

Adam D. Stubbs 4-1-11

APPROVED FOR UNION PACIFIC RAILROAD CO. BY HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

NO.	DATE	REVISIONS
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STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION: BR. 126.31 SALINA SUB.
8.0 MILES WEST OF MANHATTAN, KS

FACILITY: 5 SPAN PCB x 150' REPLACING 2 SPAN TSG-OD x 28'

DWG TITLE: TYPICAL SECTIONS

PROJECT ID: -	ENGINEER: UP - ADS HNTB - SG	LATITUDE: 39°08'47.5"N
WORK ORDER: -		LONGITUDE: 96°38'53.5"W
DESIGN BY: SG		
CHECKED BY: JCF	SHEET NO. 4 of 15	C E NUMBER 118426
DRAWN BY: GVS		
CHECKED BY: JCF		
SCALE: AS SHOWN		

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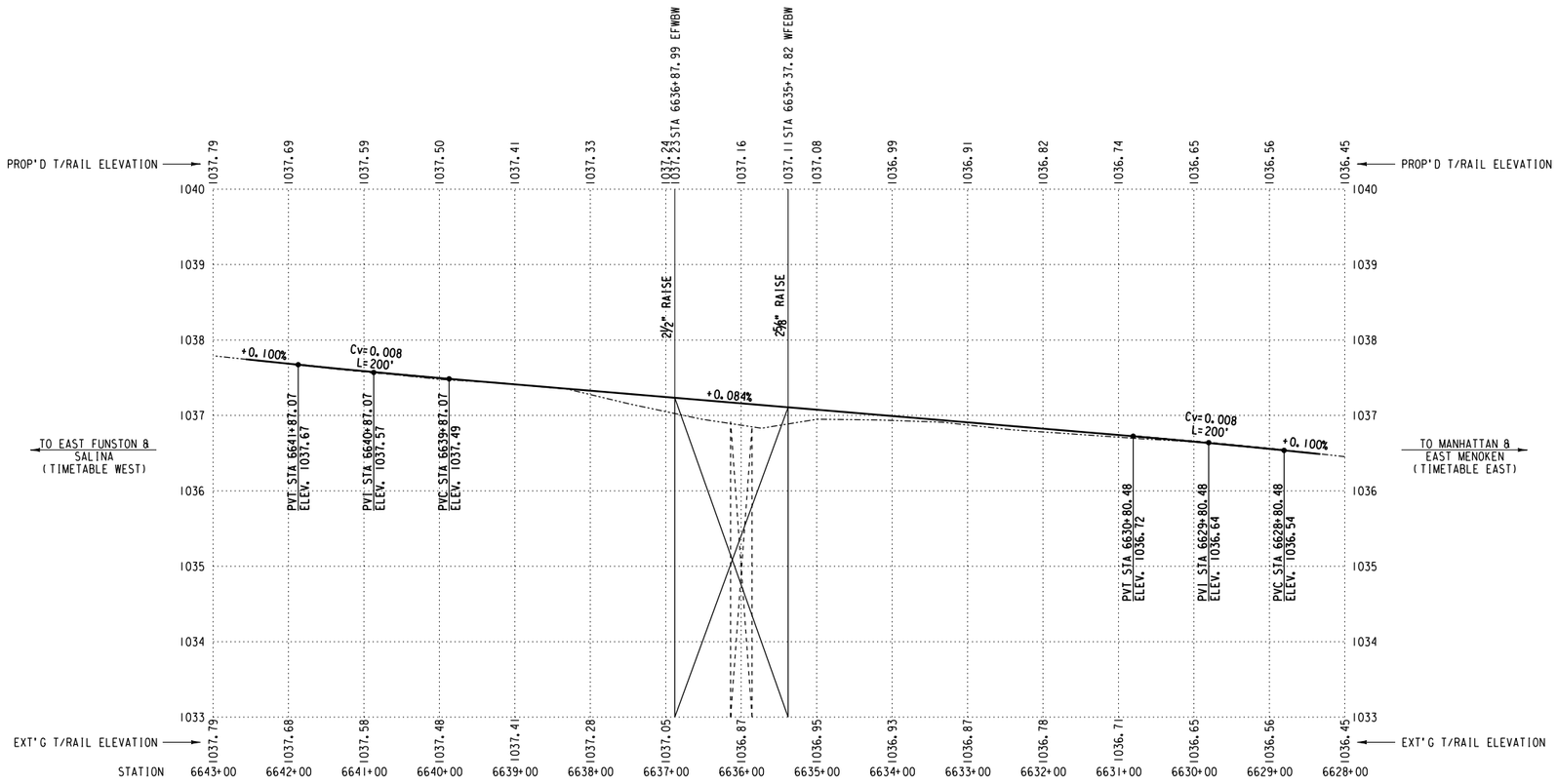

TOP OF RAIL PROFILE

SCALE: 1"=100' HORIZ.
1"=1' VERT.

Adam D. Stubbs 4-1-11

APPROVED FOR
UNION PACIFIC RAILROAD CO.
BY
HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

NO.	DATE	REVISIONS
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STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION: BR. 126.31 SALINA SUB.
8.0 MILES WEST OF MANHATTAN, KS

FACILITY: 5 SPAN PCB x 150' REPLACING 2 SPAN TSG-OD x 28'

DWG TITLE: TOP OF RAIL PROFILE

PROJECT ID: -	ENGINEER: UP - ADS HNTB - SG	LATITUDE: 39°08'47.5"N
WORK ORDER: -		LONGITUDE: 96°38'53.5"W
DESIGN BY: SG		
CHECKED BY: JCF	SHEET NO. 5 of 14	C E NUMBER 118426
DRAWN BY: GVS		
CHECKED BY: JCF		
SCALE: AS SHOWN		

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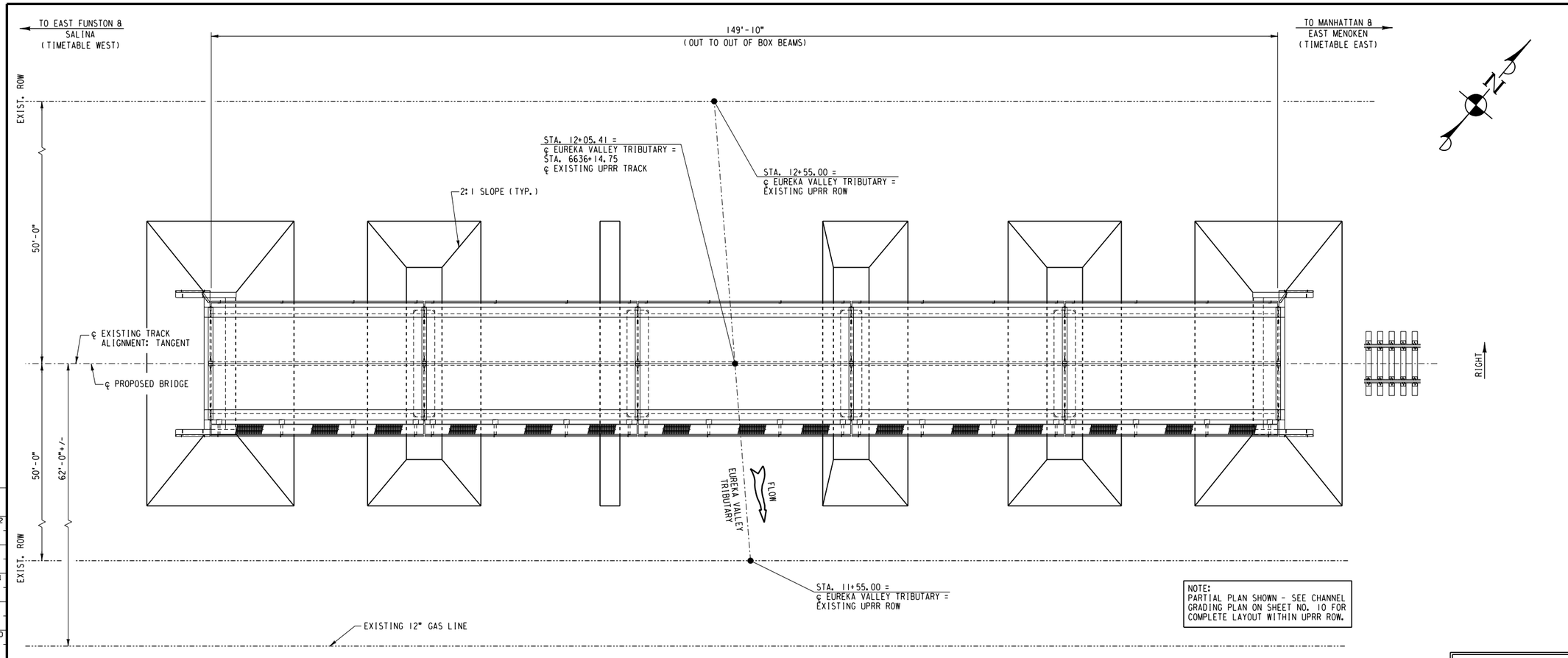
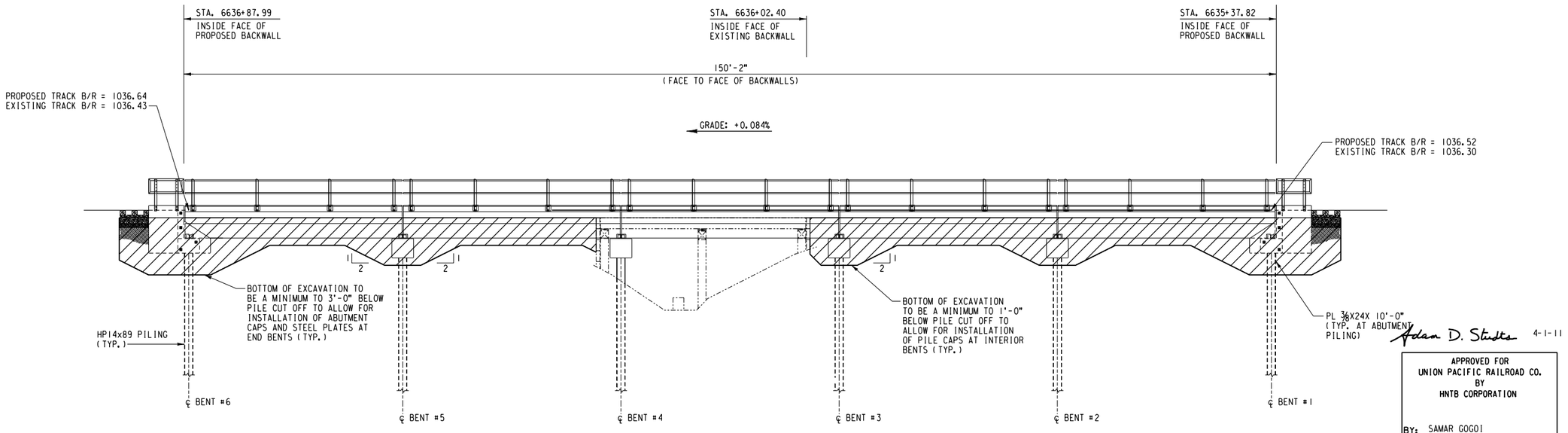


NOTE:
PARTIAL PLAN SHOWN - SEE CHANNEL GRADING PLAN ON SHEET NO. 10 FOR COMPLETE LAYOUT WITHIN UPRR ROW.

PHASE I CHANNEL EXCAVATION - PLAN

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

NOT FOR CONSTRUCTION



PHASE I CHANNEL EXCAVATION - ELEVATION

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

Adam D. Stubbs 4-1-11

APPROVED FOR
UNION PACIFIC RAILROAD CO.
BY
HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

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	/ /	

FORMER BRIDGE NO. 126.32

STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION:
BR. 126.31 SALINA SUB.
8.0 MILES WEST OF MANHATTAN, KS

FACILITY:
5 SPAN PCB x 150' REPLACING
2 SPAN TSG-OD x 28'

DWG TITLE:
PHASE I CHANNEL EXCAVATION
GENERAL ARRANGEMENT

PROJECT ID: -	ENGINEER:	LATITUDE:
WORK ORDER: -	UP - ADS	39°08'47.5"N
DESIGN BY: SG	HNTB - SG	LONGITUDE:
CHECKED BY: JCF		96°38'53.5"W
DRAWN BY: GVS	SHEET NO.	C E NUMBER
CHECKED BY: JCF	6 of 15	118426
SCALE: AS SHOWN		

FILE NAME: P:\Estation\dgn\sal12631.bks

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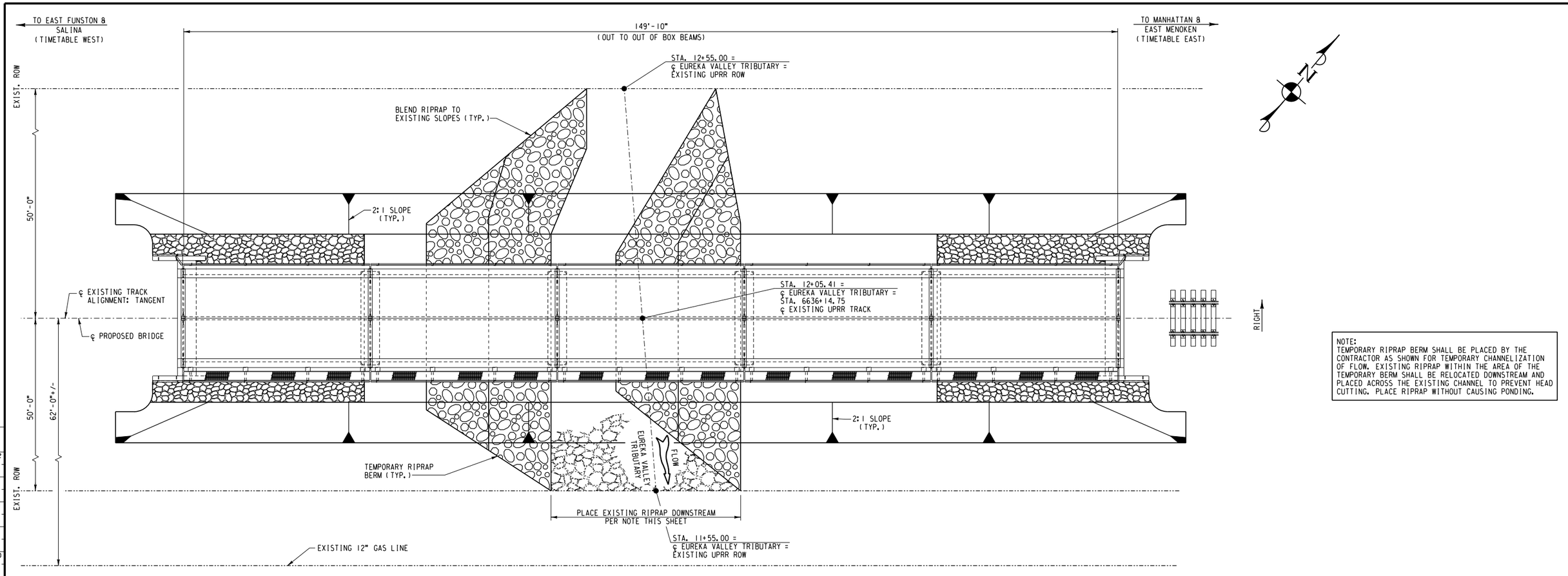
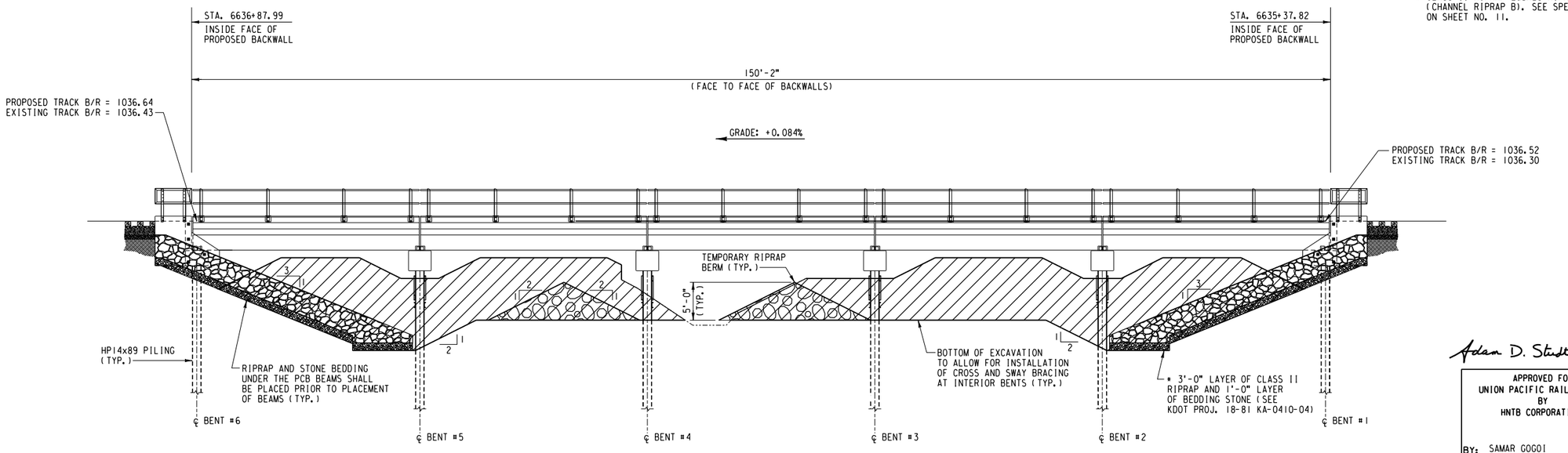


NOTE:
TEMPORARY RIPRAP BERM SHALL BE PLACED BY THE CONTRACTOR AS SHOWN FOR TEMPORARY CHANNELIZATION OF FLOW. EXISTING RIPRAP WITHIN THE AREA OF THE TEMPORARY BERM SHALL BE RELOCATED DOWNSTREAM AND PLACED ACROSS THE EXISTING CHANNEL TO PREVENT HEAD CUTTING. PLACE RIPRAP WITHOUT CAUSING PONDING.

PHASE II CHANNEL EXCAVATION - PLAN

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



PHASE II CHANNEL EXCAVATION - ELEVATION

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

* CLASS II RIPRAP EQUALS RIPRAP STONE (CHANNEL RIPRAP B). SEE SPECIAL PROVISIONS ON SHEET NO. 11.

Adam D. Studtes 4-1-11

APPROVED FOR
UNION PACIFIC RAILROAD CO.
BY
HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

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FORMER BRIDGE NO. 126.32

STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION:
BR. 126.31 SALINA SUB.
8.0 MILES WEST OF MANHATTAN, KS

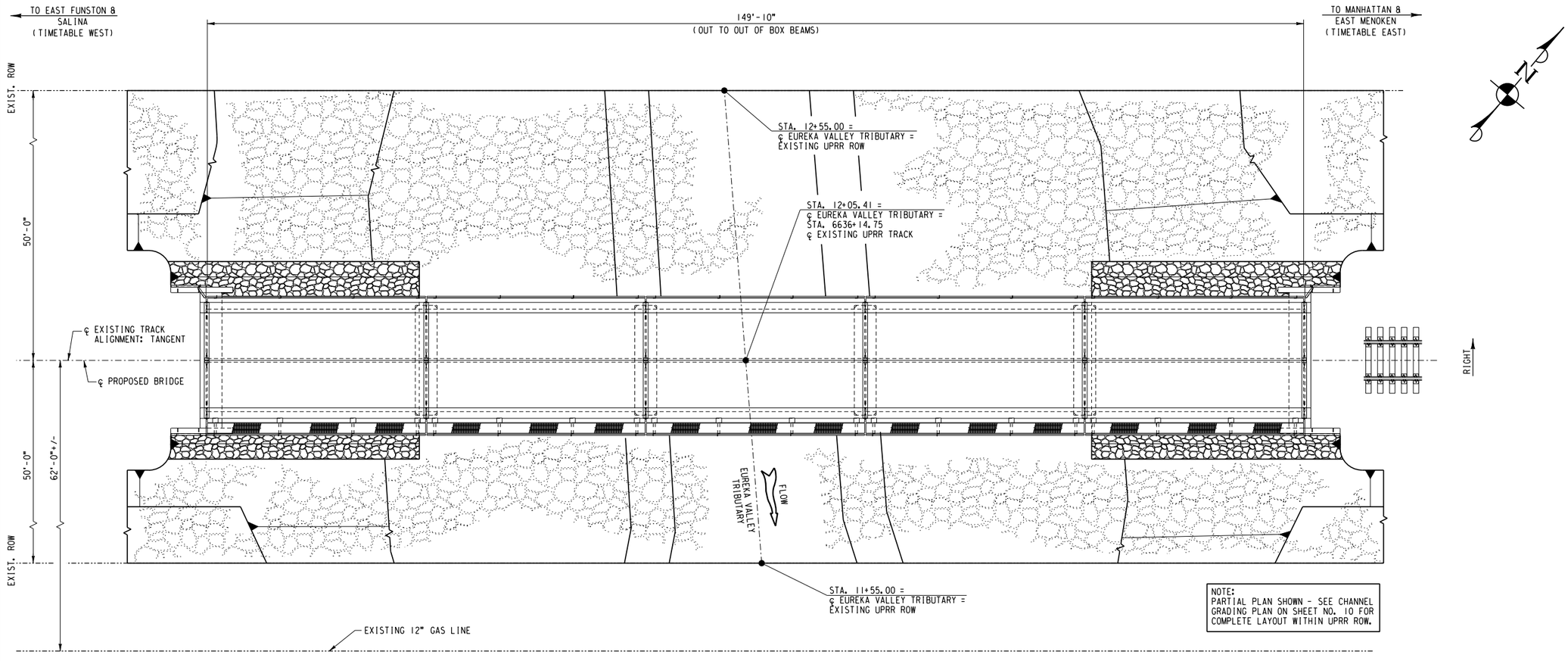
FACILITY:
5 SPAN PCB x 150' REPLACING
2 SPAN TSG-OD x 28'

DWG TITLE:
PHASE II CHANNEL EXCAVATION
GENERAL ARRANGEMENT

PROJECT ID: -	ENGINEER:	LATITUDE:
WORK ORDER: -	UP - ADS	39°08'47.5"N
DESIGN BY: SG	HNTB - SG	LONGITUDE:
CHECKED BY: JCF		96°38'53.5"W
DRAWN BY: GVS	SHEET NO.	C E NUMBER
CHECKED BY: JCF	7 of 15	118426
SCALE: AS SHOWN		

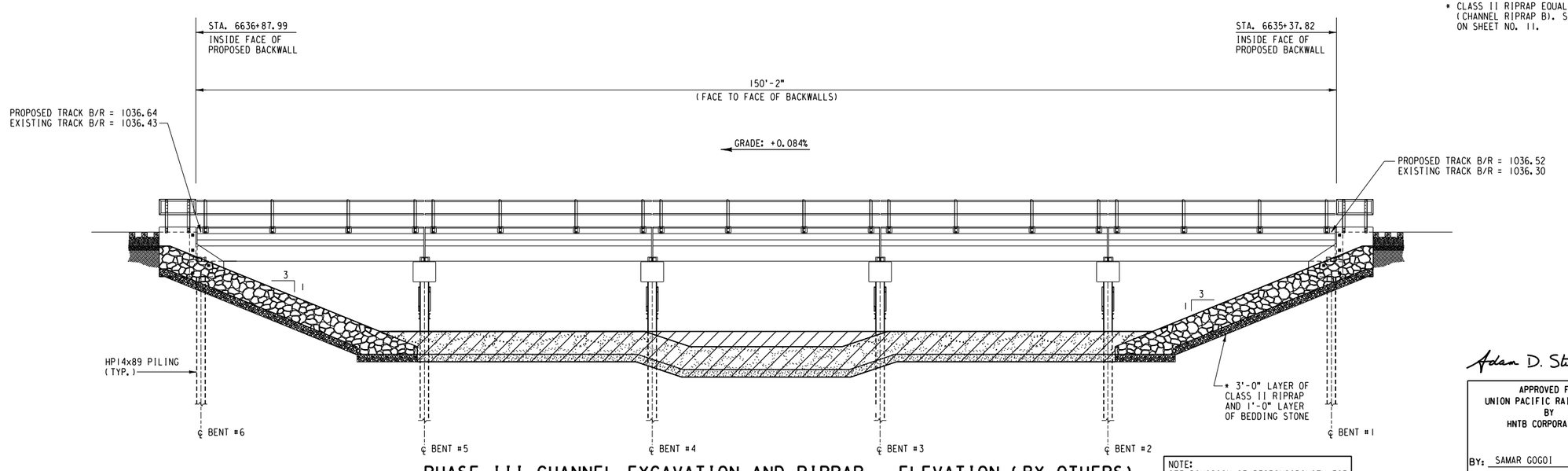
FILE NAME: P:\Estation\dgn\sal12631.bks

PLOTTED: 4/1/2011 6:58:09 AM



PHASE III CHANNEL EXCAVATION AND RIPRAP - PLAN (BY OTHERS)

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



PHASE III CHANNEL EXCAVATION AND RIPRAP - ELEVATION (BY OTHERS)

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

* CLASS II RIPRAP EQUALS RIPRAP STONE (CHANNEL RIPRAP B). SEE SPECIAL PROVISIONS ON SHEET NO. 11.

NOTE: SEE DIVISION OF RESPONSIBILITY FOR PHASE III EXCAVATION AND PLACEMENT OF RIPRAP.

Adam D. Stubbs 4-1-11

APPROVED FOR UNION PACIFIC RAILROAD CO. BY HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

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FORMER BRIDGE NO. 126.32

STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION: BR. 126.31 — SALINA SUB. — 8.0 MILES WEST OF MANHATTAN, KS

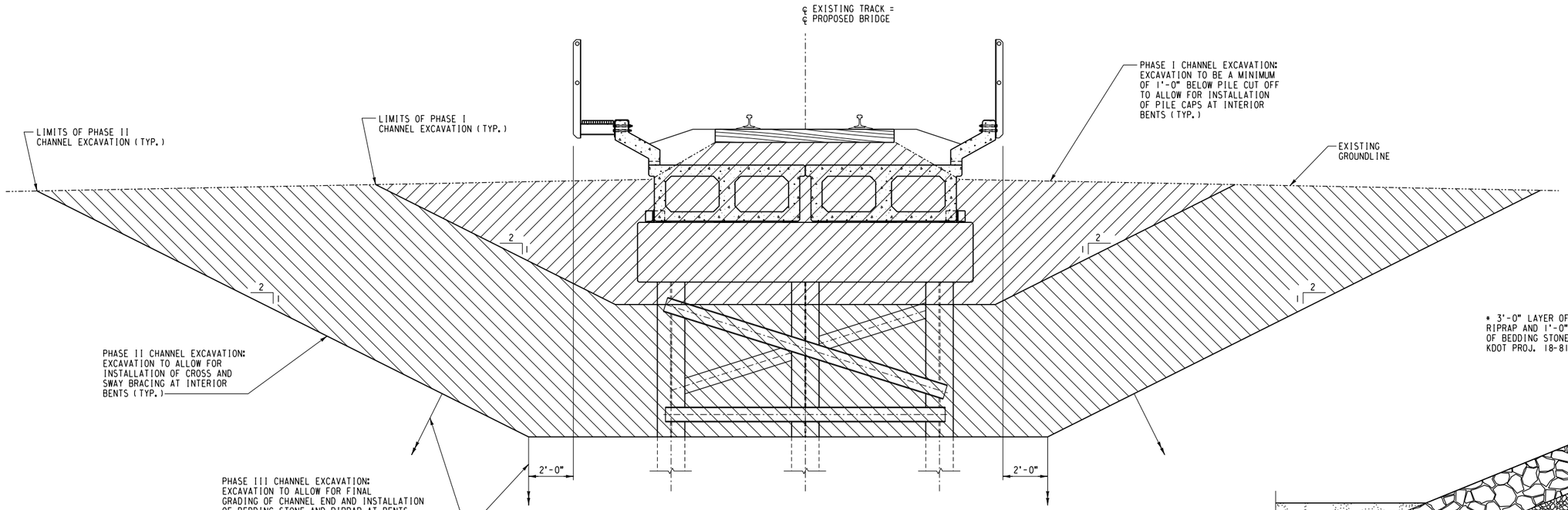
FACILITY: 5 SPAN PCB x 150' REPLACING 2 SPAN TSG-OD x 28'

DWG TITLE: PHASE III CHANNEL EXCAVATION GENERAL ARRANGEMENT

PROJECT ID: -	ENGINEER: UP - ADS, HNTB - SG	LATITUDE: 39°08'47.5"N
WORK ORDER: -		LONGITUDE: 96°38'53.5"W
DESIGN BY: SG		
CHECKED BY: JCF		
DRAWN BY: GVS	SHEET NO. 8 of 15	C E NUMBER 118426
CHECKED BY: JCF		
SCALE: AS SHOWN		

FILE NAME: P:\Estation\dgn\sal12631.bks

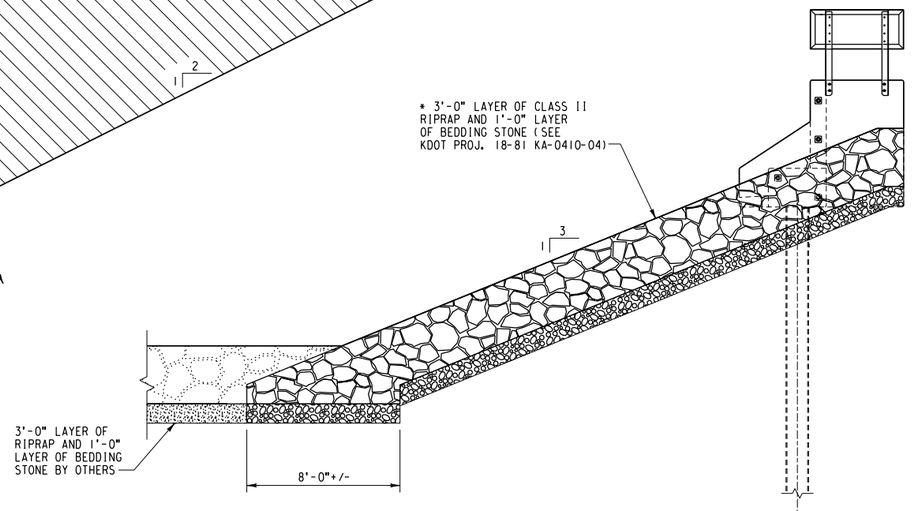
PLOTTED: 4/1/2011 6:58:11 AM



PHASED EXCAVATION AT INTERIOR BENTS

SCALE: 3/8"=1'-0"

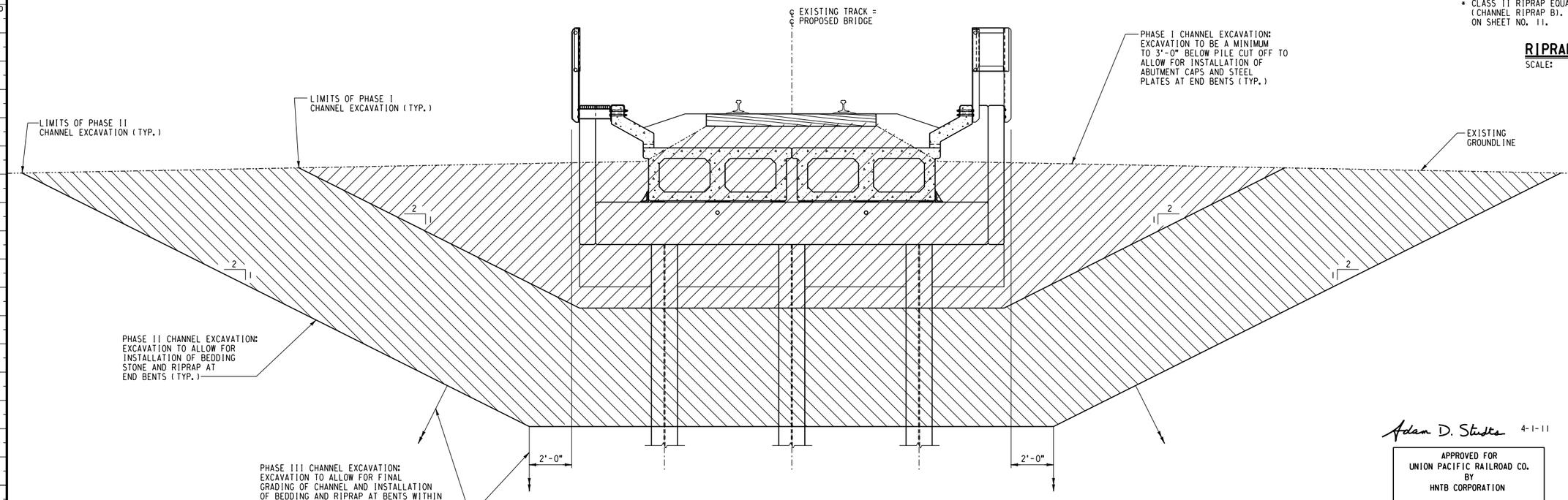
(BENT #2 SHOWN, BENTS #3 THRU #5 SIMILAR)



* CLASS II RIPRAP EQUALS RIPRAP STONE (CHANNEL RIPRAP B). SEE SPECIAL PROVISIONS ON SHEET NO. 11.

RIPRAP DETAILS

SCALE: NONE



PHASED EXCAVATION AT END BENTS

SCALE: 3/8"=1'-0"

(BENT #6 SHOWN, BENT #1 SIMILAR)

NO.	DATE	REVISIONS
	/ /	
	/ /	
	/ /	
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FORMER BRIDGE NO. 126.32

STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION: BR. 126.31 — SALINA SUB.
8.0 MILES WEST OF MANHATTAN, KS

FACILITY: 5 SPAN PCB x 150' REPLACING 2 SPAN TSG-OD x 28'

DWG TITLE: CHANNEL EXCAVATION PHASING SECTIONS AND DETAILS

Adam D. Studtes 4-1-11

APPROVED FOR UNION PACIFIC RAILROAD CO. BY HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

PROJECT ID: -	ENGINEER: UP - ADS HNTB - SG	LATITUDE: 39°08'47.5"N	
WORK ORDER: -		LONGITUDE: 96°38'53.5"W	
DESIGN BY: SG			
CHECKED BY: JCF			
DRAWN BY: GVS	SHEET NO. 9 of 15	C E NUMBER 118426	
CHECKED BY: JCF			
SCALE: AS SHOWN			

FILE NAME: P:\station\dgn\sal12631.bls

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EXISTING EAST BOUND HWY K-18

EXISTING HIGHWAY BOX CULVERT

EXIST. UPRR ROW

TO EAST FUNSTON 8
SALINA
(TIMETABLE WEST)

TO MANHATTAN 8
EAST MENOKEN
(TIMETABLE EAST)

5 SPAN PCB x 150'-0" REPLACING
2 SPAN TSG-OD x 28'-0"

℄ EXISTING TRACK ALIGNMENT: TANGENT

RIGHT

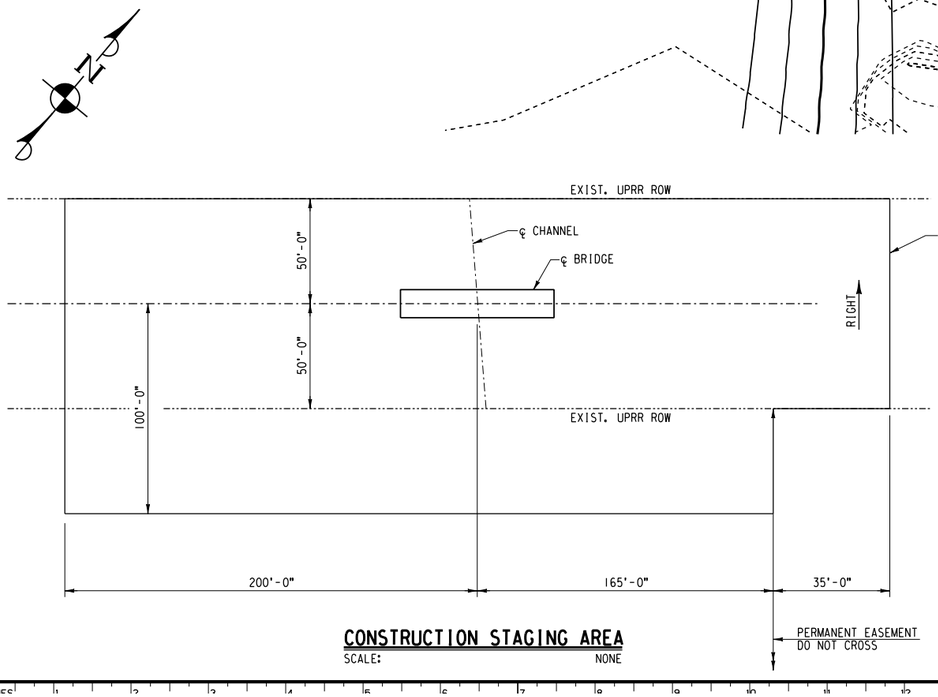
50'-0"

50'-0"

1030

1035

EXIST. UPRR ROW



CONSTRUCTION STAGING AREA

SCALE: NONE

FLOW
EUREKA VALLEY TRIBUTARY

PROPOSED FINAL CHANNEL GRADING PLAN

SCALE: 1/12 "=1'-0"

(AFTER PHASE III EXCAVATION)

LEGEND

3'-0" LAYER OF CLASS II RIPRAP (CHANNEL RIPRAP B) AND 1'-0" LAYER OF BEDDING STONE PER THIS CONTRACT.

3'-0" LAYER OF CLASS II RIPRAP (CHANNEL RIPRAP B) AND 1'-0" LAYER OF BEDDING STONE BY OTHERS.

Adam D. Stubbs 4-1-11

APPROVED FOR
UNION PACIFIC RAILROAD CO.
BY
HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

NO.	DATE	REVISIONS
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	/ /	

STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION:
BR. 126.31 SALINA SUB.
8.0 MILES WEST OF MANHATTAN, KS

FACILITY:
5 SPAN PCB x 150' REPLACING
2 SPAN TSG-OD x 28'

DWG TITLE:
CHANNEL GRADING PLAN AND CONSTRUCTION STAGING AREA

PROJECT ID: -	ENGINEER:	LATITUDE:
WORK ORDER: -	UP - ADS	39°08'47.5"N
DESIGN BY: SG	HNTB - SG	LONGITUDE:
CHECKED BY: JCF		96°38'53.5"W
DRAWN BY: GVS	SHEET NO.	C E NUMBER
CHECKED BY: JCF	10 of 15	118426
SCALE: AS SHOWN		

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KANSAS DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION TO THE
STANDARD SPECIFICATIONS, 2007 EDITION

SECTION 1114

STONE FOR RIPRAP, DITCH LINING AND OTHER MISCELLANEOUS USES

Page 1100-35, subsection 1114.1. Add to this subsection:

- Riprap Stone (Channel Riprap B)

Page 1100-37, subsection 1114.2. Add to this subsection:

i. Stone for Riprap Stone (Channel Riprap B)

(1) Class. Provide the class for installation as specified in the Contract Documents.

(2) Quality.

- Specific Gravity (S.S.D.), min. (KT-6, Procedure I) 2.57
- Soundness, minimum (KTMR-21) 0.85
- Wear, maximum (KTMR-25) 45%

(3) Product Control.

- Deleterious Substances. Provide stone for riprap that is free from earth, soapstone, shale, shalelike or other easily disintegrated material that decrease the durability of the material after placement.
- Size. The class requirements are given in **TABLE 1114-5**.

TABLE 1114-5: STONE FOR RIPRAP

Class	Percent Heavier Than							
	1300 lbs	1000 lbs	700 lbs	525 lbs	325 lbs	175 lbs	45 lbs	30 lbs
Channel Riprap B	0	5-15			50-70		85+	

j. Bedding for Channel Rip Rap.

(1) Composition. Provide either singly or in combination, crushed stone or gravel for filter course material as specified in the Contract Documents.

(2) Quality.

- Specific Gravity (S.S.D.), min. (KT-6, Procedure I) 2.30
- Soundness, minimum (KTMR-21) 0.85
- Wear, maximum (KTMR-25) 45%

(3) Product Control.

- Size. The permissible limits are given in **TABLE 1114-7**.

TABLE 1114-7: BEDDING FOR CHANNEL RIP RAP

Material	Percent Retained on Sieve Size			
	6"	3"	1"	¼"
Bedding Stone	0	5-25	40-60	75-95

Adam D. Stubbs 4-1-11

APPROVED FOR
UNION PACIFIC RAILROAD CO.
BY
HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

NO.	DATE	REVISIONS
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	/ /	
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STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION: BR. 126.31 — SALINA SUB.
8.0 MILES WEST OF MANHATTAN, KS

FACILITY: 5 SPAN PCB x 150' REPLACING 2 SPAN TSG-OD x 28'

DWG TITLE: SPECIAL PROVISIONS

PROJECT ID: -	ENGINEER: UP - ADS HNTB - SG	LATITUDE: 39°08'47.5"N
WORK ORDER: -		LONGITUDE: 96°38'53.5"W
DESIGN BY: SG		
CHECKED BY: JCF		
DRAWN BY: GVS	SHEET NO. 11 of 15	C E NUMBER 118426
CHECKED BY: JCF		
SCALE: AS SHOWN		

FILE NAME: P:\sstation\dgn\sal12631.bks

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HWS Solutions Through Service
825 J Street
Lincoln, NE 68501
402-479-2200 * Fax: 402-479-2276
www.hws.com

PROJECT: K-18 / UPRR Realignment
MP 126.13 to MP 129.32 Saline Subdivision

LOCATION: Sta. 6635+17, 25' Rt.
Manhattan to Ogden, KS

JOB NO.: 57-79-1003.0002
RIG / METHOD: CME 550 / Hollow-Stem
CREW: CL & SG

BORING LOG

BORING No.: B-01
SHEET 1 of 4
DATE: 4-27-2009

WATER LEVELS ▼ 18.5 IAD

ELEV (NAVD88)	DEPTH (ft)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	SPT	qu (tsf)	DRY DENSITY (pcf)	MOISTURE (%)	DUTCH CONE DATA: Tip Resistance qc (tsf) (3 6 15 30 67)	DUTCH CONE DATA: SLEEVE FRICTION fs (tsf) (1 2 3 4)
1034.6	0.0		CL - LEAN CLAY with Gravel; 20-30% fine to coarse gravel; 15-25% fine to coarse sand; medium plasticity; black with dark olive brown; wet; medium stiff; with coal and brick rubble. (Fill)			1.3*				0.0
1032.9	1.7		CL - LEAN CLAY; medium plasticity; olive brown; wet; stiff. (Alluvium)	11		1.3*	90.2	25		2.5
1032.1	2.5		ML - SILT with Sand; 20-30% fine to medium sand; nonplastic; light olive brown; wet; loose. (Alluvium)			2.2*				5.0
1031.1	3.5		SM - SILTY SAND; 60-70% fine sand; nonplastic; light yellowish brown; wet; medium dense. (Alluvium)		2 3 5 (8)					
1029.1	5.5		SM - SILTY SAND; 60-70% fine sand; nonplastic; light grayish brown; wet; medium dense. (Alluvium)	12			108.6	8.9		7.5
1024.1	10.5		SP - POORLY GRADED SAND; fine to medium sand; nonplastic; yellowish brown; wet; medium dense. (Alluvium)		2 4 6 (10)					10.0
					3 4 5 (9)					12.5
										15.0
1016.1	18.5 ▼		Same as above except saturated. (Alluvium)							17.5
1014.6	20.0				3 5 7 (12)					20.0

* Unconfined compressive strength was estimated using a calibrated hand penetrometer.

Figure Ca

HWS Solutions Through Service
825 J Street
Lincoln, NE 68501
402-479-2200 * Fax: 402-479-2276
www.hws.com

PROJECT: K-18 / UPRR Realignment
MP 126.13 to MP 129.32 Saline Subdivision

LOCATION: Sta. 6635+17, 25' Rt.
Manhattan to Ogden, KS

JOB NO.: 57-79-1003.0002
RIG / METHOD: CME 550 / Hollow-Stem
CREW: CL & SG

BORING LOG

BORING No.: B-01
SHEET 2 of 4
DATE: 4-27-2009

WATER LEVELS ▼ 18.5 IAD

ELEV (NAVD88)	DEPTH (ft)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	SPT	qu (tsf)	DRY DENSITY (pcf)	MOISTURE (%)	DUTCH CONE DATA: Tip Resistance qc (tsf) (3 6 15 30 67)	DUTCH CONE DATA: SLEEVE FRICTION fs (tsf) (1 2 3 4)
			SP - POORLY GRADED SAND; fine to coarse sand; nonplastic; gray; saturated; medium dense. (Alluvium)		4 8 8 (16)					20.0
										22.5
										25.0
										27.5
1004.6	30.0		SP - POORLY GRADED SAND; fine to coarse sand; nonplastic; dark yellowish brown; saturated; medium dense. (Alluvium)		6 8 9 (17)					30.0
					4 6 7 (13)					32.5
										35.0
										37.5
994.6	40.0				2 4 6 (10)					40.0

* Unconfined compressive strength was estimated using a calibrated hand penetrometer.

Figure Cb

Adam D. Studtz 4-1-11

APPROVED FOR
UNION PACIFIC RAILROAD CO.
BY
HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

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STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION:
BR. 126.31 SALINA SUB.
8.0 MILES WEST OF MANHATTAN, KS

FACILITY:
5 SPAN PCB x 150' REPLACING
2 SPAN TSG-OD x 28'

DWG TITLE:
BORING LOG B-01
(1 OF 2)

PROJECT ID: -	ENGINEER: UP - ADS HNTB - SG	LATITUDE: 39°08'47.5"N	
WORK ORDER: -		LONGITUDE: 96°38'53.5"W	
DESIGN BY: SG			
CHECKED BY: JCF			
DRAWN BY: GVS	SHEET NO. 12 of 15	C E NUMBER 118426	
CHECKED BY: JCF			
SCALE: AS SHOWN			

FILE NAME: P:\station\dgn\sal12632.bks

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825 J Street
Lincoln, NE 68501
402-479-2200 * Fax: 402-479-2276
www.hws.com

PROJECT: K-18 / UPRR Realignment
MP 126.13 to MP 129.32 Saline Subdivision

LOCATION: Sta. 6635+17, 25' Rt.
Manhattan to Ogden, KS

JOB NO.: 57-79-1003.0002
RIG / METHOD: CME 550 / Hollow-Stem
CREW: CL & SG

BORING LOG
BORING No.: B-01
SHEET 3 of 4
DATE: 4-27-2009

WATER LEVELS ▽ 18.5 IAD

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	SPT	qu (tsf)	DRY DENSITY (pcf)	MOISTURE (%)	DUTCH CONE DATA: Tip Resistance qc (tsf) (3 6 15 30 67)	DUTCH CONE DATA: SLEEVE FRICTION fs (tsf) (1 2 3 4)
			SP - POORLY GRADED SAND; 0-5% fine gravel; fine to coarse sand; nonplastic; dark yellowish brown; saturated; medium dense. (Alluvium)		10 12 12 (24)					40.0 42.5 45.0
					6 12 13 (25)					47.5 50.0
983.4	51.2		SHALE; gray; highly weathered; calcareous. (Howe)							52.5
980.8	53.8		SHALE; very dark gray to black; clayey		52 26 41 (67)					55.0
									RECOVERY = 88% RQD = 88%	
977.6	57.0		LIMESTONE; dark gray and light gray; shaly; less shale with depth; fossiliferous. (Howe)							57.5
975.9	58.7								RECOVERY = 82% RQD = 82%	
975.6	59.0		LIMESTONE; light gray; slightly fossiliferous; grading to black shale with depth							60.0
974.6	60.0									

BORING LOG K-18 UPRR BRIDGES.GPJ HWS.GDT 11/17/09

* Unconfined compressive strength was estimated using a calibrated hand penetrometer.

Figure Cc

HWS Solutions Through Service
825 J Street
Lincoln, NE 68501
402-479-2200 * Fax: 402-479-2276
www.hws.com

PROJECT: K-18 / UPRR Realignment
MP 126.13 to MP 129.32 Saline Subdivision

LOCATION: Sta. 6635+17, 25' Rt.
Manhattan to Ogden, KS

JOB NO.: 57-79-1003.0002
RIG / METHOD: CME 550 / Hollow-Stem
CREW: CL & SG

BORING LOG
BORING No.: B-01
SHEET 4 of 4
DATE: 4-27-2009

WATER LEVELS ▽ 18.5 IAD

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	SPT	qu (tsf)	DRY DENSITY (pcf)	MOISTURE (%)	DUTCH CONE DATA: Tip Resistance qc (tsf) (3 6 15 30 67)	DUTCH CONE DATA: SLEEVE FRICTION fs (tsf) (1 2 3 4)
			SHALE; black; clayey; shell fragments edn orbiculoida. (Bennet) Same as above. (Bennet)							60.0
973.0	61.6		LIMESTONE; gray; highly fossiliferous; unit-bedded. (Glenrock)						RECOVERY = 82% RQD = 82%	
971.6	63.0		SHALE; dark gray; laminated; moderately hard; limy seams. (Johnson)							62.5
									RECOVERY = 92% RQD = 92%	65.0
966.6	68.0		LIMESTONE; dark gray; very shaly; shell fossils. (Johnson)							67.5
964.1	70.5		SHALE; dark gray; laminated; moderately hard; limy seams. (Johnson)						RECOVERY = 78% RQD = 78%	70.0
962.6	72.0		LIMESTONE; gray; very shaly; fossils. (Johnson)							72.5
962.1	72.5		SHALE; black to gray; laminated; clayey; some shell fragments. (Johnson)						RECOVERY = 83% RQD = 83%	75.0
960.4	74.2		LIMESTONE; gray; slightly fossiliferous; slightly shaly in lower 0.4 feet; fossils. (Johnson)							77.5
959.4	75.2		SHALE; gray; calcareous. (Johnson)							80.0
958.6	76.0		Boring Terminated at: 76.0ft							

BORING LOG K-18 UPRR BRIDGES.GPJ HWS.GDT 11/17/09

* Unconfined compressive strength was estimated using a calibrated hand penetrometer.

Figure Cd

Adam D. Stubbs 4-1-11

APPROVED FOR
UNION PACIFIC RAILROAD CO.
BY
HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

NO.	DATE	REVISIONS
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STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION: BR. 126.31 SALINA SUB.
8.0 MILES WEST OF MANHATTAN, KS

FACILITY: 5 SPAN PCB x 150' REPLACING
2 SPAN TSG-OD x 28'

DWG TITLE: BORING LOG B-01
(2 OF 2)

PROJECT ID: -	ENGINEER: UP - ADS HNTB - SG	LATITUDE: 39°08'47.5"N
WORK ORDER: -		LONGITUDE: 96°38'53.5"W
DESIGN BY: SG		
CHECKED BY: JCF		
DRAWN BY: GVS	SHEET NO. 13 of 15	C E NUMBER 118426
CHECKED BY: JCF		
SCALE: AS SHOWN		

FILE NAME: P:\station\dgn\sal12631.bks

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HWS Solutions Through Service
825 J Street
Lincoln, NE 68501
402-479-2200 * Fax: 402-479-2276
www.hws.com

PROJECT: K-18 / UPRR Realignment
MP 126.13 to MP 129.32 Saline Subdivision

LOCATION: Sta. 6636+81, 25' Rt.
Manhattan to Ogden, KS

JOB NO.: 57-79-1003.0002
RIG / METHOD: CME 550 / Hollow-Stem
CREW: CL & SG

BORING LOG

BORING No.: B-02
SHEET 1 of 4
DATE: 4-27-2009

WATER LEVELS ▼ 15.0 on 4-28-2009

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	SPT	qu (tsf)	DRY DENSITY (pcf)	MOISTURE (%)	DUTCH CONE DATA: Tip Resistance qc (tsf)	DUTCH CONE DATA: SLEEVE FRICTION fs (tsf)
1034.7	0.0		CL - LEAN CLAY; medium plasticity; brown heavily mixed with dark brown; wet; medium stiff; with silt seams. (Fill)		2 3 2 (5)					
1029.7	5.0		CL - LEAN CLAY; medium plasticity; very dark gray mottled with light grayish brown; wet; medium stiff. (Alluvium)	21		0.8*	87.6	31.6		
1029.2	5.5		ML - SILT; 5-15% fine sand; low plasticity; grayish brown; wet; loose. (Alluvium)			0.3*				
1028.2	6.5		CH - FAT CLAY; high plasticity; dark gray; wet; medium stiff. (Alluvium)			1.2*				
1026.7	8.0		CL/ML - SILTY CLAY; low to medium plasticity; olive brown; wet; stiff. (Alluvium)		7 4 4 (8)					
1023.2	11.5		CL - LEAN CLAY; medium plasticity; dark brown; wet; medium stiff; with small fat clay seams. (Alluvium)		2 2 2 (4)					
1019.7	15.0		CL - LEAN CLAY; medium plasticity; very dark grayish brown; saturated; medium stiff. (Alluvium)	22		0.5* 0.7	86.6	30.3		
1016.7	18.0		SP-SM - POORLY GRADED SAND with Silt; 85-95% fine to coarse sand; nonplastic; gray; saturated; loose; with silty sand seams. (Alluvium)		2 2 3 (5)	0.5* 1.2*				
1014.7	20.0									

DUTCH CONE DATA: Tip Resistance qc (tsf) 3 6 15 30 67; SLEEVE FRICTION fs (tsf) 1 2 3 4; 0.0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 20.0

* Unconfined compressive strength was estimated using a calibrated hand penetrometer.

Figure Ca

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ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	SPT	qu (tsf)	DRY DENSITY (pcf)	MOISTURE (%)	DUTCH CONE DATA: Tip Resistance qc (tsf)	DUTCH CONE DATA: SLEEVE FRICTION fs (tsf)
			Same as above. (Alluvium)							
1013.2	21.5		SP - POORLY GRADED SAND; fine to coarse sand; nonplastic; gray; saturated; loose; with silty sand seams. (Alluvium)		1 1 2 (3)					
1006.7	28.0		SP - POORLY GRADED SAND; fine to coarse sand; nonplastic; gray; saturated; dense; with silty sand seams. (Alluvium)		9 14 14 (28)					
1004.7	30.0		SP - POORLY GRADED SAND; 0-5% fine gravel; fine to coarse sand; nonplastic; dark yellowish brown; saturated; medium dense. (Alluvium)		3 5 4 (9)					
994.7	40.0				3 4 5 (9)					

DUTCH CONE DATA: Tip Resistance qc (tsf) 3 6 15 30 67; SLEEVE FRICTION fs (tsf) 1 2 3 4; 20.0 22.5 25.0 27.5 30.0 32.5 35.0 37.5 40.0

* Unconfined compressive strength was estimated using a calibrated hand penetrometer.

Figure Cb

Adam D. Studtz 4-1-11

APPROVED FOR
UNION PACIFIC RAILROAD CO.
BY
HNTB CORPORATION

BY: SAMAR GOGOI

DATE: 03/28/11

NO.	DATE	REVISIONS
	/ /	
	/ /	
	/ /	
	/ /	

STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION

HNTB

UNION PACIFIC RAILROAD
Office of AVP Engineering Design/Construction

LOCATION: BR. 126.31 SALINA SUB.
8.0 MILES WEST OF MANHATTAN, KS

FACILITY: 5 SPAN PCB x 150' REPLACING
2 SPAN TSG-OD x 28'

DWG TITLE: BORING LOG B-02
(1 OF 2)

PROJECT ID: -	ENGINEER: UP - ADS HNTB - SG	LATITUDE: 39°08'47.5"N	
WORK ORDER: -		LONGITUDE: 96°38'53.5"W	
DESIGN BY: SG			
CHECKED BY: JCF			
DRAWN BY: GVS	SHEET NO. 14 of 15	C E NUMBER 118426	
CHECKED BY: JCF			
SCALE: AS SHOWN			

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BORING LOG

BORING No.: B-02
SHEET 3 of 4
DATE: 4-27-2009

WATER LEVELS ▼ 15.0 on 4-28-2009

ELEV (NAVD88)	DEPTH (feet)	LOG	LITHOLOGY DESCRIPTION	SAMPLE	SPT	qu (tsf)	DRY DENSITY (pcf)	MOISTURE (%)	DUTCH CONE DATA: Tip Resistance qc (tsf)	DUTCH CONE DATA: SLEEVE FRICTION fs (tsf)
			SP - POORLY GRADED SAND; 0-5% fine gravel; fine to coarse sand; nonplastic; dark yellowish brown; saturated; medium dense. (Alluvium)		6 7 7 (14)					
					5 8 8 (16)					
981.7	53.0		SP - POORLY GRADED SAND; 0-5% fine gravel; fine to coarse sand; nonplastic; yellowish red; saturated; medium dense. (Alluvium)		5 6 9 (15)					
977.7	57.0		LIMESTONE; light gray; moderately hard; moderately weathered; shaly; fusilinids. (Howe)							
976.5	58.2		SHALE; light gray; silty; very limy; firm. (Howe)		100 in 10"					
976.1	58.6		LIMESTONE; light gray; highly fossiliferous; shaly in lower. (Howe)						RECOVERY = 93% RQD = 93%	

40.0 42.5 45.0 47.5 50.0 52.5 55.0 57.5 60.0

BORING LOG K-18 UPRR BRIDGES.GPJ HWS.GDT 1/17/08

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Figure Cc

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974.8	60.1		SHALE; black; fissile; orbiculoid fossils. (Bennett)						RECOVERY = 93% RQD = 93%	
972.6	62.1		LIMESTONE; gray; hard; unit-bedded, fossiliferous. (Glenrock)							
971.3	63.4		SHALE; dark gray; limy seams; competent. (Johnson)						RECOVERY = 100% RQD = 100%	
957.3	67.4		Boring Terminated at: 67.4ft							

60.0 62.5 65.0 67.5 70.0 72.5 75.0 77.5 80.0

BORING LOG K-18 UPRR BRIDGES.GPJ HWS.GDT 1/17/08

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Figure Cd

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BORING LOG B-02
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BY: SAMAR GOGOI

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