STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	KDOT: 87N-0160-01 FHWA: HPD-N016(001) City: 472-84071	2005		

CITY OF WICHITA

CENTRAL CORRIDOR RAILROAD GRADE SEPARATION

25TH STREET TO WATERMAN

VOLUME 2

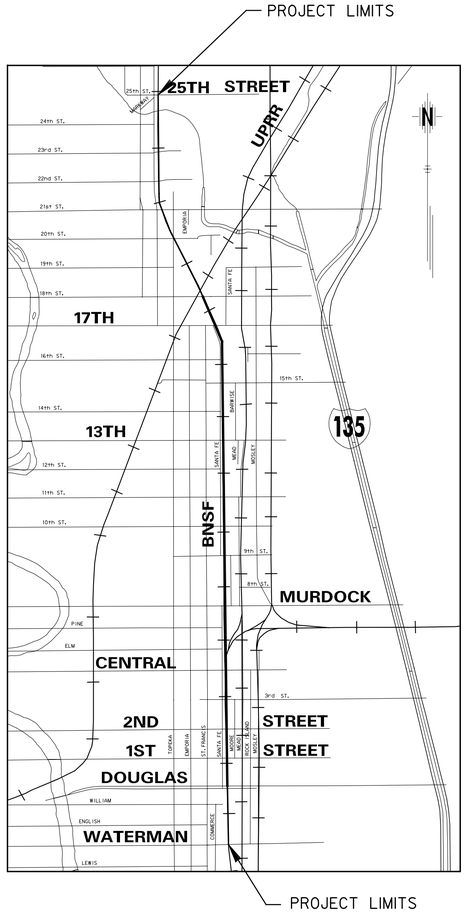
(Bridge and Retaining Wall)

FEDERAL AID PROJECT

SEDGWICK COUNTY

PROJECT NUMBER

KDOT: 87N–0160–01
FHWA: HPD–N016(001)
City: 472–84071
City OCA: 715235



	HNTB CORPORATION *John Hronek* *Bridge Sheets B2.1 - B9.4*
	HNTB CORPORATION *Claude Perdue* *Retaining Wall Sheets W1.1 - W4.24*
	HNTB CORPORATION *Chris O. Rops* *Project Manager* *P.E. #15655*

NOTE:

This is the second bid of this project. These plan sets stand alone and exclude the set that was printed in 2004.

RECOM. FOR APPROVAL-DATE January 11, 2005

Jim Armour, P.E.
INTERIM CITY ENGINEER
CITY OF WICHITA

VOLUME 1

GENERAL

G1.1 to G1.2 General Notes
G2.1 to G2.3 Recapitulation of Quantities

RAILROAD

R0.1 to R0.2 Construction Sequencing
R1.1 to R1.39 Phase 1 Plans and Details
R2.1 to R2.17 Phase 2 Plans and Details
R3.1 to R3.32 Phase 3 Plans and Details
R4.1 to R4.20 Phase 4 Plans and Details
R5.1 to R5.17 Railroad Details
R6.1 to R6.33 Phase 1 Cross Sections
R7.1 to R7.37 Phase 2 Cross Sections
R8.1 to R8.23 Phase 3 Cross Sections
R9.1 to R9.34 Phase 4 Cross Sections

VOLUME 2

BRIDGE

~~B1.1~~ (NOT USED)
B2.1 to B2.29 13th Street Bridge
B3.1 to B3.28 Murdock Bridge
B4.1 to B4.28 Central Bridge
B5.1 to B5.29 2nd Street Bridge
B6.1 to B6.29 1st Street Bridge
~~B7.1~~ (NOT USED)
B8.1 to B8.23 Douglas Avenue Bridge
B9.1 to B9.4 11th Street Utility Protection

RETAINING WALL

W1.1 to W1.7 Wall Layout
W2.1 to W2.26 Concrete Bin Wall and T-Wall Alternates
W3.1 to W3.12 Temporary MSE Walls
W4.1 to W4.24 Cast-in-Place Walls (sheets W4.2 through W4.6 DELETED)

VOLUME 3

STREET

S1.1 to S1.1 Construction Sequencing
S2.1 to S2.5 Typical Sections
S3.1 to S3.8 Cross Street Plan Sheets
S4.1 to S4.19 Santa Fe Plan Sheets
S5.1 to S5.5 Joint Layout
S6.2 to S6.13 Misc. Details (S6.1 NOT USED)
~~S7.1~~ (NOT USED)
S8.1 to S8.10 Storm Sewer Plans
S9.1 to S9.5 Sanitary Sewer Plans
S10.1 to S10.9 Waterline Plans
S11.2 to S11.5 UPRR Crossing Plans (S11.1 NOT USED)
S12.1 to S12.5 Temporary Project Water Pollution Control
S13.1 to S13.8 Signing and Marking Plans
S14.1 to S14.6 Traffic Control Plans and Details
S15.1 to S15.27 Cross Sections

LANDSCAPE

L1.00 to L1.23 Landscapeing Layout
~~L2.00~~ (NOT USED)
~~L3.00~~ (NOT USED)
L4.01 to L4.12 Street Lighting Plans and Details

ALTERNATE 1- WHITE CONCRETE

WC1.1 Retaining Wall
WC2.3; 2.6 13th Street Bridge
WC3.3; 3.6 Murdock Bridge
WC4.3; 4.6 Central Bridge
WC5.3; 5.6 2nd Street Bridge
WC6.3; 6.6 1st Street Bridge

ALTERNATE 2 /3 STEEL PIPE BOLLARDS/BRICK PAVERS

BP1.1 to BP1.6 PAVER LAYOUT

ALTERNATE 4 - LANDSCAPING

~~LS1.1~~ (NOT USED)
LS2.1 to LS2.7 Planting Plan
LS3.1 to LS3.15 Irrigation
LS4.1 to LS4.3 Electrical

ALTERNATE 5 - BOLLARD LIGHTING

BL1.1 to BL1.7 Bollard Lighting Details
BL2.1; 2.2; 2.3; 2.6; 2.9; 2.19; 2.20; 2.21; 2.22 13th Street Bridge
BL3.1; 3.2; 3.3; 3.6; 3.9; 3.18; 3.19; 3.20; 3.21 Murdock Bridge
BL4.1; 4.2; 4.3; 4.6; 4.9; 4.18; 4.19; 4.20; 4.21 Central Bridge
BL5.1; 5.2; 5.3; 5.6; 5.9; 5.18; 5.19; 5.20; 5.21 2nd Street Bridge
BL6.1; 6.2; 6.3; 6.6; 6.9; 6.18; 6.19; 6.20; 6.21 1st Street Bridge

ALTERNATE 6 - WALL WASH LIGHTS

WL1.1 WL1.7 Lighting

ALTERNATE 7 - COLD CATHODE LIGHTING

CL1.1 CL1.3 Lighting

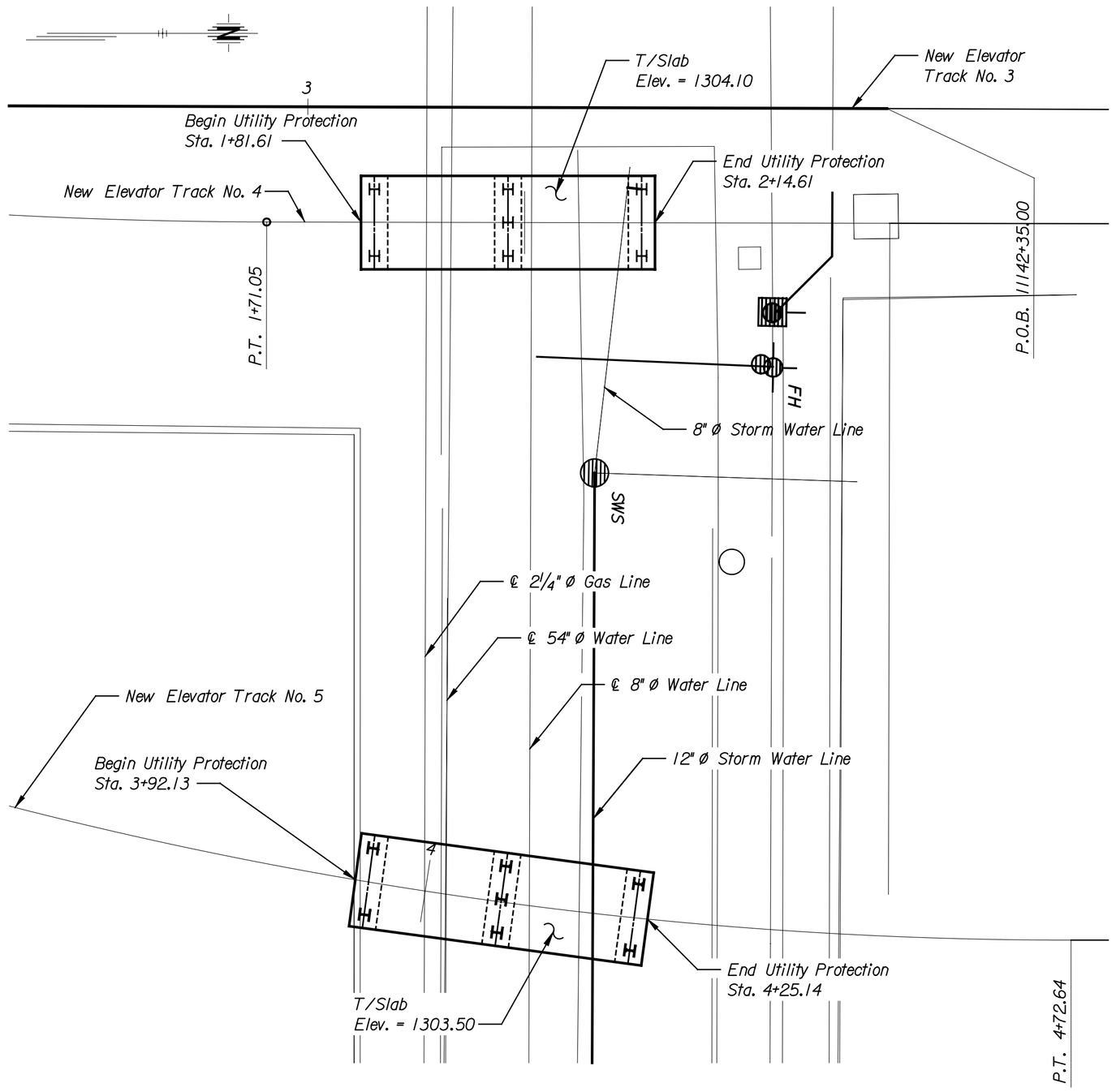
ALTERNATE 8 - DOUGLAS AVENUE

DA1.1 DA1.23 Bridge

DATE	BY

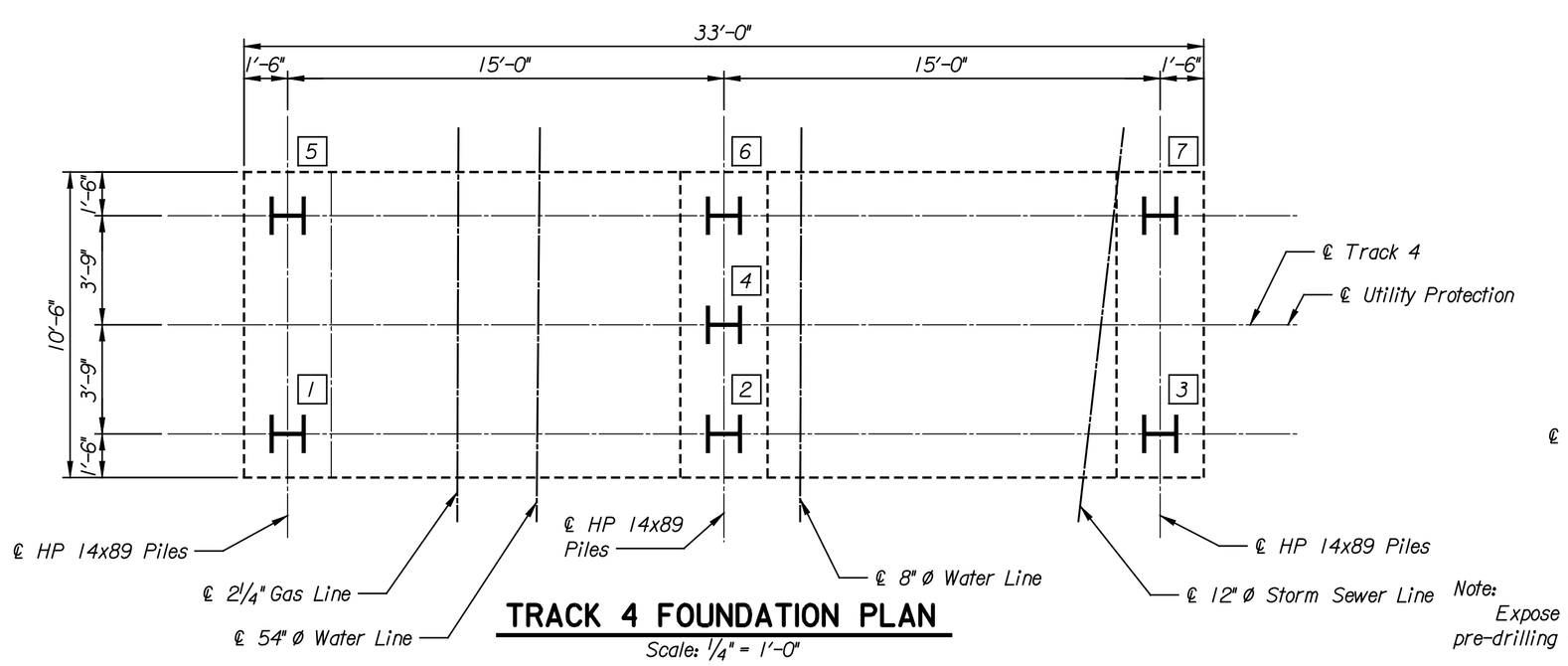
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DATE	BY



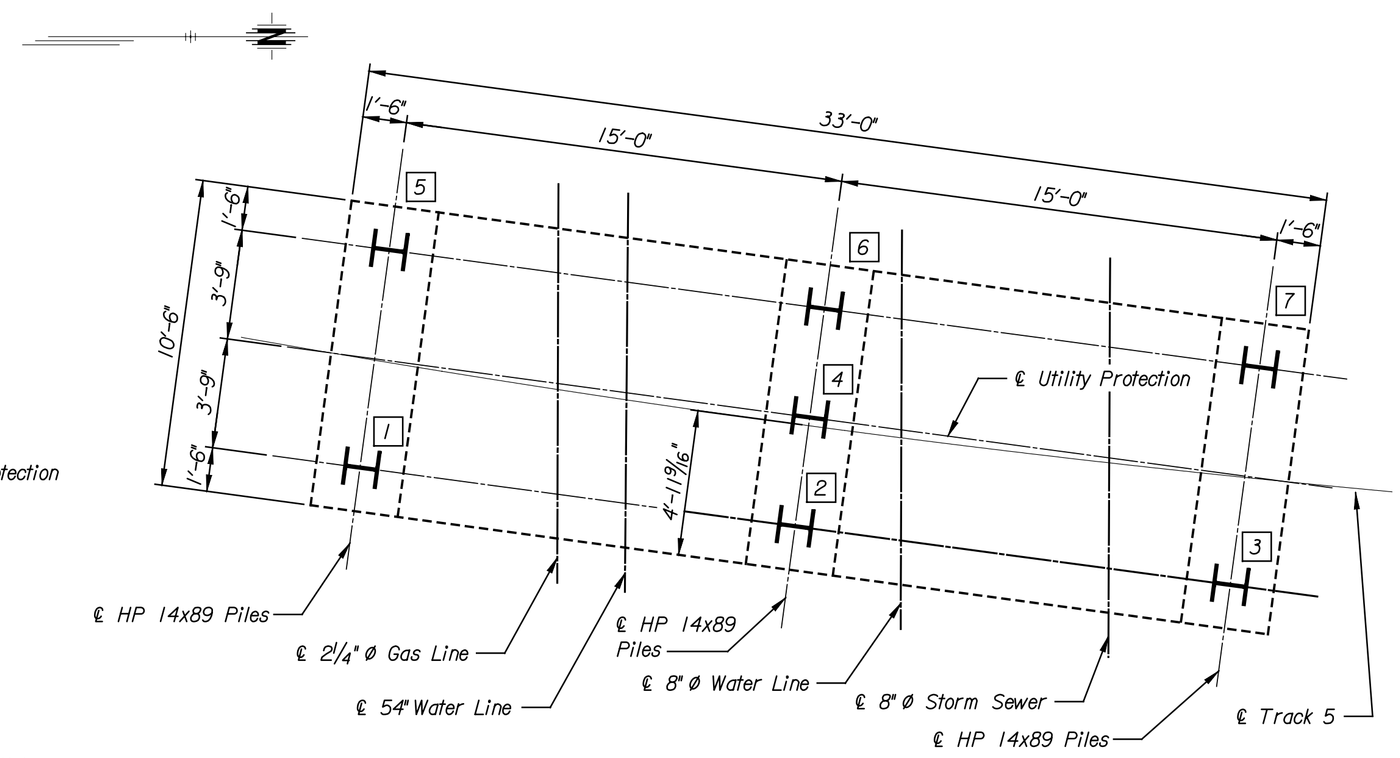
PLAN

Scale: 3/32" = 1'-0"



TRACK 4 FOUNDATION PLAN

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



TRACK 5 FOUNDATION PLAN

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

Note:
Expose utilities to verify locations & sizes prior to pre-drilling or driving piles.

This sheet designed by:

HNTB
ARCHITECTS ENGINEERS PLANNERS

TRACK No. 4 UTILITY PROTECTION PILE DATA

PILE NO.	PILE TYPE	BOTTOM OF FOOTING (FT.)	PILE CUT-OFF ELEV. (FT.)	ESTIMATED PILE TIP ELEV. (FT.)	ESTIMATED PILE LENGTH (FT.)	DESIGN PILE BEARING (TONS/PILE)
1, 3, 5, 7	HP14x89	1301.60	1303.10	1250.10	53.00	38
2, 4, 6	HP14x89	1301.60	1303.10	1232.10	71.00	74

TRACK No. 5 UTILITY PROTECTION PILE DATA

PILE NO.	PILE TYPE	BOTTOM OF FOOTING (FT.)	PILE CUT-OFF ELEV. (FT.)	ESTIMATED PILE TIP ELEV. (FT.)	ESTIMATED PILE LENGTH (FT.)	DESIGN PILE BEARING (TONS/PILE)
1, 3, 5, 7	HP14x89	1301.00	1302.50	1249.50	53.00	38
2, 4, 6	HP14x89	1301.00	1302.50	1231.50	71.00	74

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	472-84071	2005	B9.1	

NOTES:
RAILROAD BRIDGE DESIGN SPECIFICATIONS:
AREMA Manual for Railway Engineering, 2002.

RAILROAD BRIDGE DESIGN LOADS:
Dead Load:
Unit Weight of Ballast, 120 pcf
Unit Weight of Backfill, 120 pcf
Unit Weight of Concrete, 150 pcf
Unit Weight of Steel, 490 pcf

Live Load:
Cooper's E80 and Alternate Live Load with diesel impact for rolling equipment without hammer blow.

Other Loads:
As specified in AREMA.

Steel for piles shall conform to ASTM A572, Grade 50.

Steel for H-pile splices shall conform to ASTM A572, Grade 50.

Pile spacing is shown at the bottom of the footing.

Pile lengths shown on the plans are estimated pile lengths for bidding purposes. Actual pile order lengths will be provided following completion of Dynamic Pile Analysis at the 13th Street Bridge site.

Piles shall be driven to penetrate the Wellington Shale Formation. Drive all piles to the minimum tip elevation and driving criteria determined from the Dynamic Pile Analysis performed on the test piles as outlined in the special provisions. Final tip elevations will be established by the Engineer, based on meeting the driving criteria.

Driving shall stop when, in the opinion of the Engineer, additional driving may damage the pile. At any locations where problems are experienced, pile damage is suspected, or apparent refusal occurs significantly above the minimum tip elevation, the Engineer may request that additional Dynamic Pile Analysis be performed.

Install prefabricated H-pile splices in accordance with the manufacturer's recommendations and specifications.

Drill pilot holes for each pile to a depth 5'-0" below the nearest underground utility.

A vibration monitoring program shall be required in accordance with the specifications during pile driving and other construction activities.

Excavations may encounter contaminated groundwater and/or soils. Federal, State and City of Wichita requirements for handling contaminated materials shall be followed.

REFERENCES:
Railroad Alignments. Refer to RI.2-RI.4, R2.2, R3.2-R3.4, R4.2-R4.3, RI.15, R2.11, R3.18, R4.9.

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

CITY OF WICHITA

WICHITA CENTRAL CORRIDOR

11TH STREET
GENERAL PLAN - UTILITY PROTECTION

SHEET NO.	OF	SCALE AS NOTED	APP'D		
DESIGNED	FKD	DETAILED DJJ	QUANTITIES DJJ	TRACED	DJJ
DESIGN CK.	DMH	DETAIL CK. DMH	QUAN.CK. DMH	TRACE CK.	DMH

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	472-84071	2005	B9.2	

SUMMARY OF BRIDGE QUANTITIES

ITEM	ITEM QUANTITY	UNIT
Excavation (Class III)	64	CY
Concrete Grade 4.0 (AE)	49	CY
Reinforcing Steel (Gr. 60) (Epoxy-Coated)	20,350	LBS
Steel Piles (HP 14x89)	694	LF
Steel Test Piles (HP 14x89)	116	LF

DATE

BY

BRIDGE GENERAL NOTES

RAILROAD BRIDGE DESIGN SPECIFICATIONS:
AREMA Manual for Railway Engineering, 2002.

CONSTRUCTION SPECIFICATIONS
"Wichita Central Corridor Railroad Grade Separation Project, 25th Street to Waterman, Wichita, Kansas-Project Specifications", HNTB Corporation, 2004.

MATERIAL and TESTING SPECIFICATIONS:
The material and test specifications, current as of the publication of the project specifications, will be used. In cases of discontinuance or material changes to the specification, the engineer will be contacted for guidance.

REFERENCES:
"Wichita Central Corridor Railroad Grade Separation Project, Douglas Avenue to 21st Street, Wichita, Kansas-Final Geotechnical Investigation Report", HNTB Corporation, September 2003.

"Wichita Central Corridor Railroad Grade Separation Project, Douglas Avenue to 21st Street, Wichita, Kansas-Hazardous Materials Screening Report", HNTB Corporation, September 2000.

"BNSF Railway Guidelines", 2002.

BNSF Railway / Union Pacific Railroad Standard Drawings

HORIZONTAL & VERTICAL GEOMETRY CONTROL:
Refer to Railroad and Street plans for horizontal and vertical geometry control.

The track profile grade is at the top of rail.

All elevations shown are U.S.G.S. Datum (NGVD 29) (City Datum = U.S.G.S. Datum - 1187.4).

STRUCTURAL EXCAVATION:
Structural excavation shall be in accordance with the plans and specifications.

STRUCTURAL BACKFILL:
Structural backfill shall be located with in the limits identified in the plans and specifications. Backfill shall consist of a compacted granular fill with a minimum effective internal friction angle of 32 degrees. The material should be free of organic matter and debris and less than 10% by weight should pass the No. 200 sieve. The fill should be placed in loose lifts of 8 inches or less and compacted. At the time of placement and compaction, the moisture content of the fill should be within the range of 3% below to 3% above the optimum moisture content value (MR-3-3) determined by the standard Proctor test (ASTM D-698). The fill should be compacted to at least 100% of the material's maximum standard Proctor dry density (ASTM D-698).

REINFORCING:
All bar bending dimensions and tolerances are in accordance with CRSI's "Manual of Standard Practice".

Reinforcing bars will be designated as follows: SSCCNN
SS = Bar Size (No. 3 to No. 18)

CC = Component Designator, as follows:

A-Abutment	F-Footing	D-Dowell
P-Pier	PB-Pier Beam	PC-Pier Column
PW-Pier Wall	S-Slab/Deck	R-Railing
C-Curb		

NN = Bar Mark Sequence (00-99)

Reinforcing Bar Annotation Example:
11A12
A #11 Bar, located in the abutment, 12th bar in bar size/location sequence

PROTECTIVE SHORING:
Provide protective shoring as required by federal, state and local regulations.

Provide protective shoring as indicated in the plans and specifications. Additional shoring may be required.

Protective shoring plans & calculations shall be designed and sealed by a professional engineer licensed in the State of Kansas.

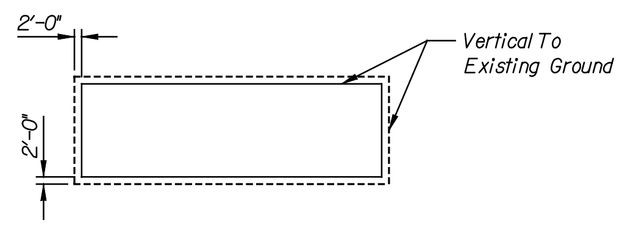
Protective shoring calculations, plans and details shall be submitted eight (8) weeks prior to commencing shoring operations.

Protective shoring calculations, plans and details shall be submitted to the Engineer and distributed to the BNSF, UPRR and WUTA for approval. Protective shoring construction shall not begin until approved by the Engineer and the railroads.

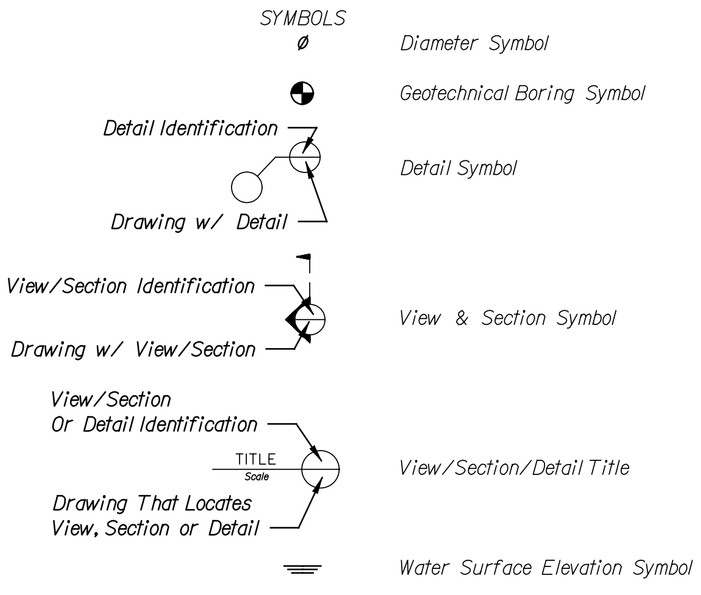
QUANTITIES:
Items not listed separately in the Summary of Bridge Quantities are subsidiary to other items.

ABBREVIATIONS:

AASHTO	American Association of State Highway & Transportation Officials	IN.	Inches
		KIP	1000 Pounds
ACI	American Concrete Institute	KSF	Kips per Square Foot
AISC	American Institute of Steel Construction	L.F.	Linear Feet
		Lbs.	Pounds
ANSI	American National Standards Institute	mils	0.001 inches
AREMA	American Railway Engineering and Maintenance-of-Way Association	Min.	Minimum
		Max.	Maximum
ASME	American Society of Mechanical Engineers	N/A	Not Applicable
		N.F.	Near Face
ASTM	American Society of Testing & Materials	PCF	Concrete Institute
AWS	American Welding Society	PLF	Pounds per Cubic Foot
		P.I.	Pounds per Linear Foot
B/	Bottom of	P.V.C.	Point of Intersection (Horizontal Curves)
BNSF	Burlington Northern and Santa Fe Railway Company	P.V.I.	Point of Vertical Curvature
Btm	Bottom	P.V.T.	Point of Vertical Intersection Point of Vertical Tangency
CRSI	Concrete Reinforcing Steel Institute (www.crsi.org)	R	Radius
C.F.	Cubic Feet	S.C.	Spiral to Curve Point
C.S.	Curve to Spiral Point	Sim.	Similar
C.Y.	Cubic Yards	S.T	Spiral to Tangent Point
dft	dry film thickness	SSPC	SSPC: The Society for Protective Coatings
		SY	Square Yards
E.F.	Each Face		
E.S.	Equal Spaces	T/	Top of
E.W.	Each Way	T.S.	Tangent to Spiral Point
		Typ.	Typical
f'c	Minimum 28-day Concrete Compressive Strength	U.N.O.	Unless Noted Otherwise
F	Fahrenheit	USACOE	U.S. Army Corps of Engineers
F.F.	Far Face		
FT.	Feet	UPRR	Union Pacific Railroad
Galv.	Galvanized	WUTA	Wichita Union Terminal Association



EXCAVATION FOR PAYMENT



NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

CITY OF WICHITA

WICHITA CENTRAL CORRIDOR

11TH STREET
SUMMARY OF QUANTITIES AND GENERAL NOTES

SHEET NO.	OF	SCALE AS NOTED	APP'D				
DESIGNED	FKD	DETAILED	DJJ	QUANTITIES	DJJ	TRACED	DJJ
DESIGN CK.	DMH	DETAIL CK.	DMH	QUAN.CK.	DMH	TRACE CK.	DMH

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ARCHITECTS ENGINEERS PLANNERS

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	472-84071	2005	B9.3	

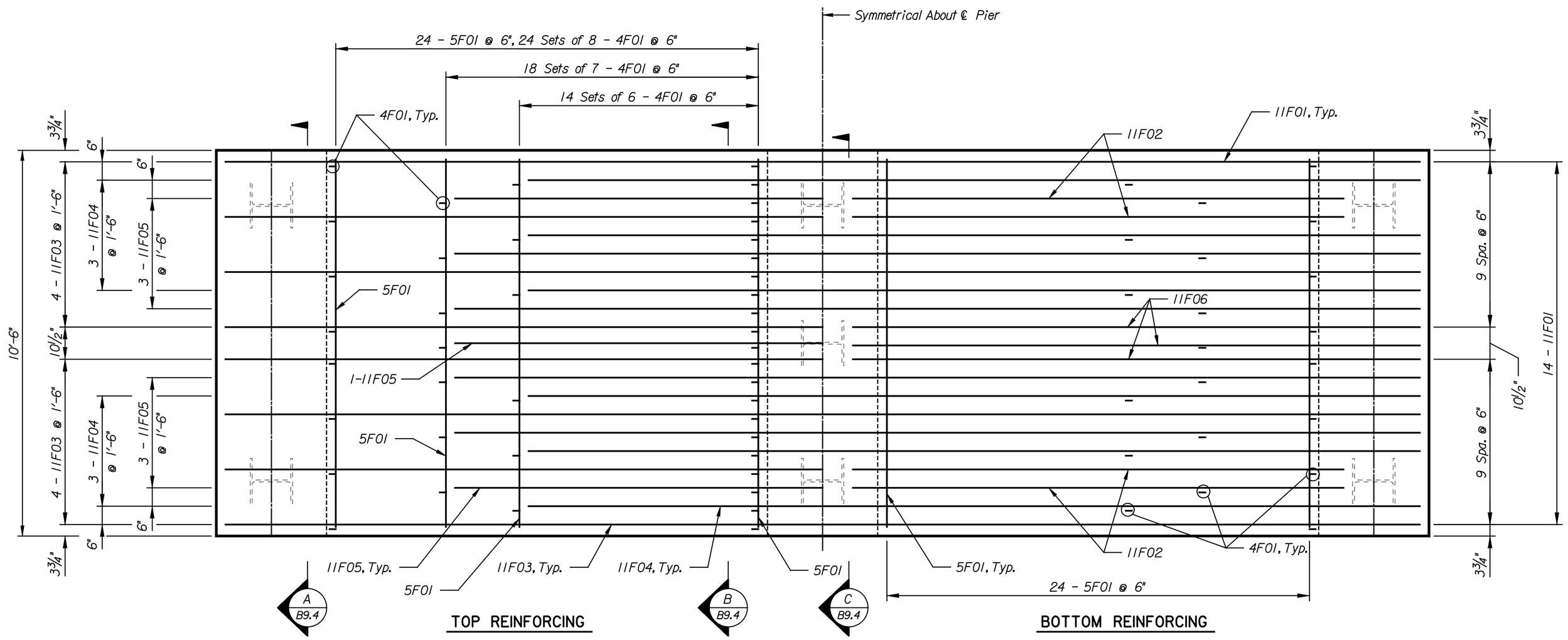
NOTES:
All concrete shall be Grade 4.0 in accordance with the specifications, with f'c=4000 psi.

All reinforcing steel shall conform to ASTM A615, Grade 60.

All epoxy-coated reinforcing shall conform to ASTM A775.

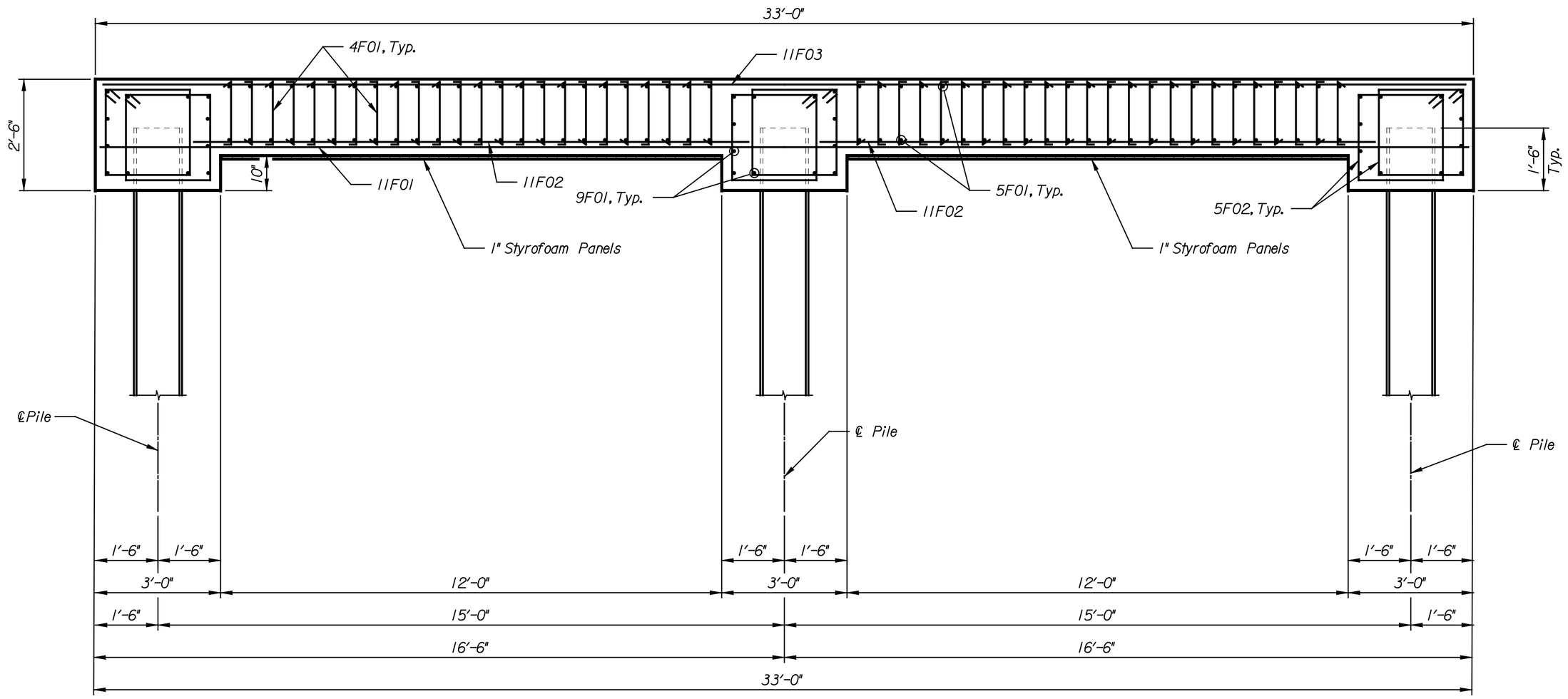
All reinforcing shall be epoxy-coated.

Exposed concrete edges shall be chamfered ¾", unless noted otherwise



PLAN
Scale: ½" = 1'-0"

Note:
Form Vertical Surfaces.



ELEVATION
Scale: ½" = 1'-0"

This sheet designed by:

HNTB
ARCHITECTS ENGINEERS PLANNERS

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

CITY OF WICHITA

WICHITA CENTRAL CORRIDOR

11TH STREET
UTILITY PROTECTION DETAILS

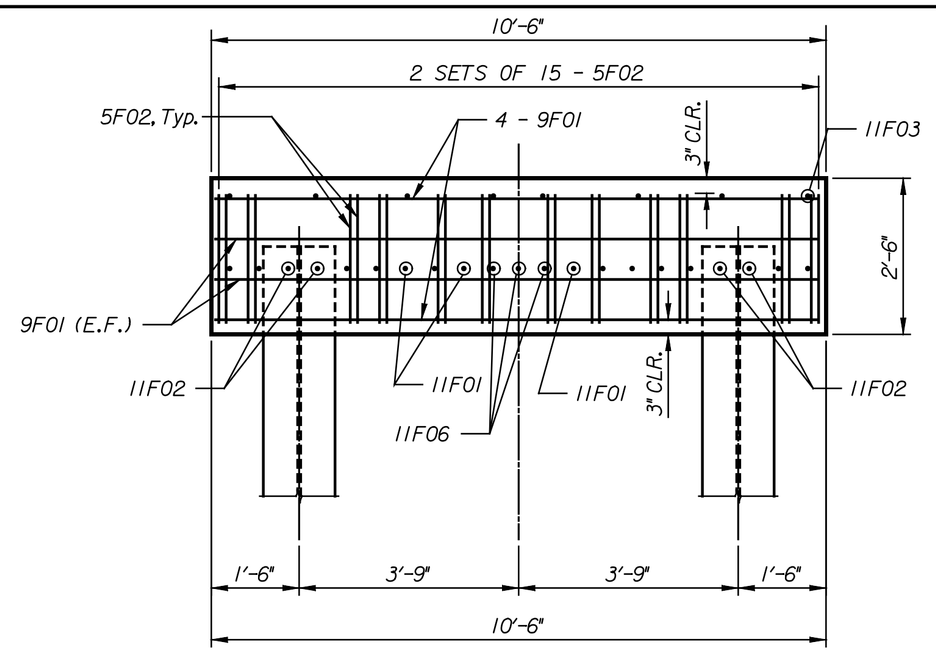
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DATE	BY

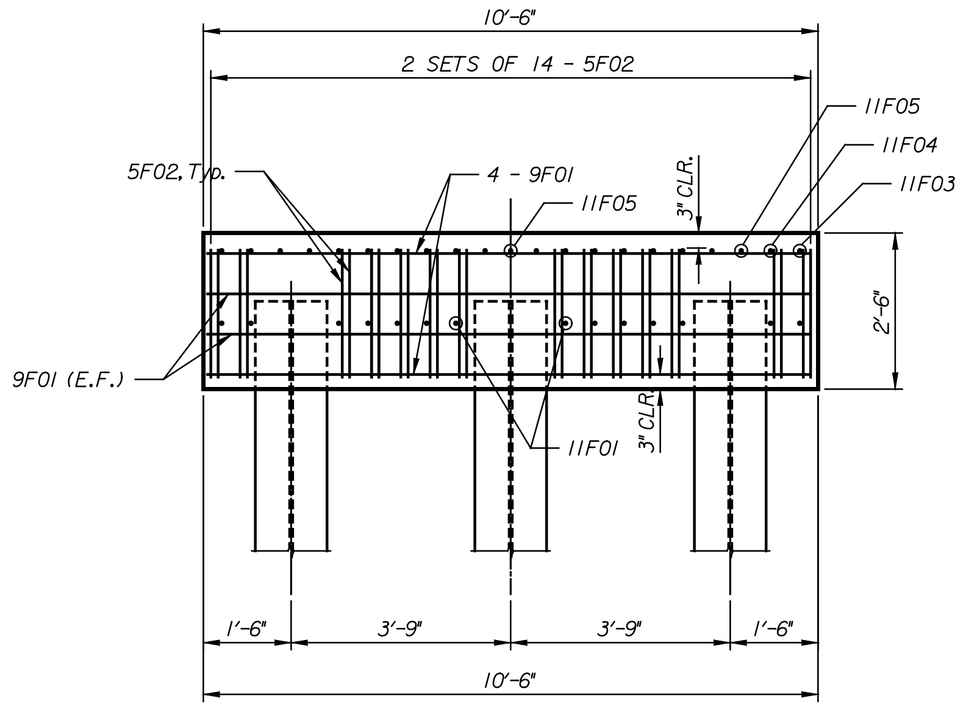
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DATE			
BY			

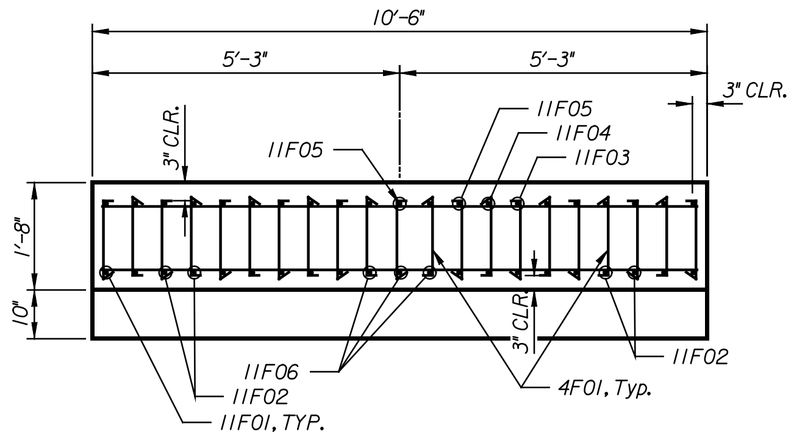
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TRACK 4 UTILITY PROTECTION	*	4F01	S	4	804	2'-0"	4 1/2"	1'-3"	4 1/2"	2"	
	*	5F01	A	5	96	10'-0"	10'-0"				
	*	5F02	H	5	76	10'-2"	2'-6"	2'-1"	6"		
	*	9F01	A	9	36	10'-0"	10'-0"				
	*	11F01	A	11	14	32'-6"	32'-6"				
	*	11F02	A	11	8	13'-4"	13'-4"				
	*	11F03	A	11	8	32'-6"	32'-6"				
	*	11F04	A	11	6	16'-0"	16'-0"				
	*	11F05	A	11	7	20'-0"	20'-0"				
	*	11F06	A	11	6	14'-2"	14'-2"				
TRACK 5 UTILITY PROTECTION	*	4F01	S	4	804	2'-0"	4 1/2"	1'-3"	4 1/2"	2"	
	*	5F01	A	5	96	10'-0"	10'-0"				
	*	5F02	H	5	76	10'-2"	2'-6"	2'-0"	6"		
	*	9F01	A	9	36	10'-0"	10'-0"				
	*	11F01	A	11	14	32'-6"	32'-6"				
	*	11F02	A	11	8	13'-4"	13'-4"				
	*	11F03	A	11	8	32'-6"	32'-6"				
	*	11F04	A	11	6	16'-0"	16'-0"				
	*	11F05	A	11	7	20'-0"	20'-0"				
	*	11F06	A	11	6	14'-2"	14'-2"				



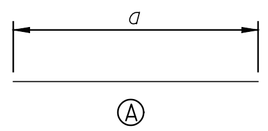
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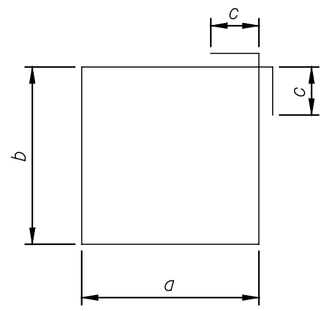


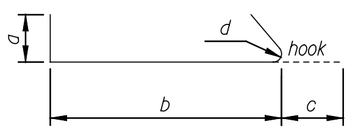
SECTION C
Scale: 1/2" = 1'-0" B9.3



SECTION B
Scale: 1/2" = 1'-0" B9.3







d = pin diameter

Ⓢ

Note:
Bar dimensions are out-to-out.

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	472-84071	2005	B9.4	

This sheet designed by:

HNTB
ARCHITECTS ENGINEERS PLANNERS

NO.	DATE	REVISIONS	BY	APP'D
3				
2				
1				

CITY OF WICHITA

WICHITA CENTRAL CORRIDOR

11TH STREET
UTILITY PROTECTION DETAILS

SHEET NO.	OF	SCALE AS NOTED	APP'D		
DESIGNED	FKD	DETAILED DJJ	QUANTITIES DJJ	TRACED	DJJ
DESIGN CK.	DMH	DETAIL CK. DMH	QUAN.CK. DMH	TRACE CK.	DMH

Plotted on: 04-JAN-2005 13:47 $time$
djamison Plot Queue: $queue$
Plot Scale: $scale$ Pen Table: $pentable$
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