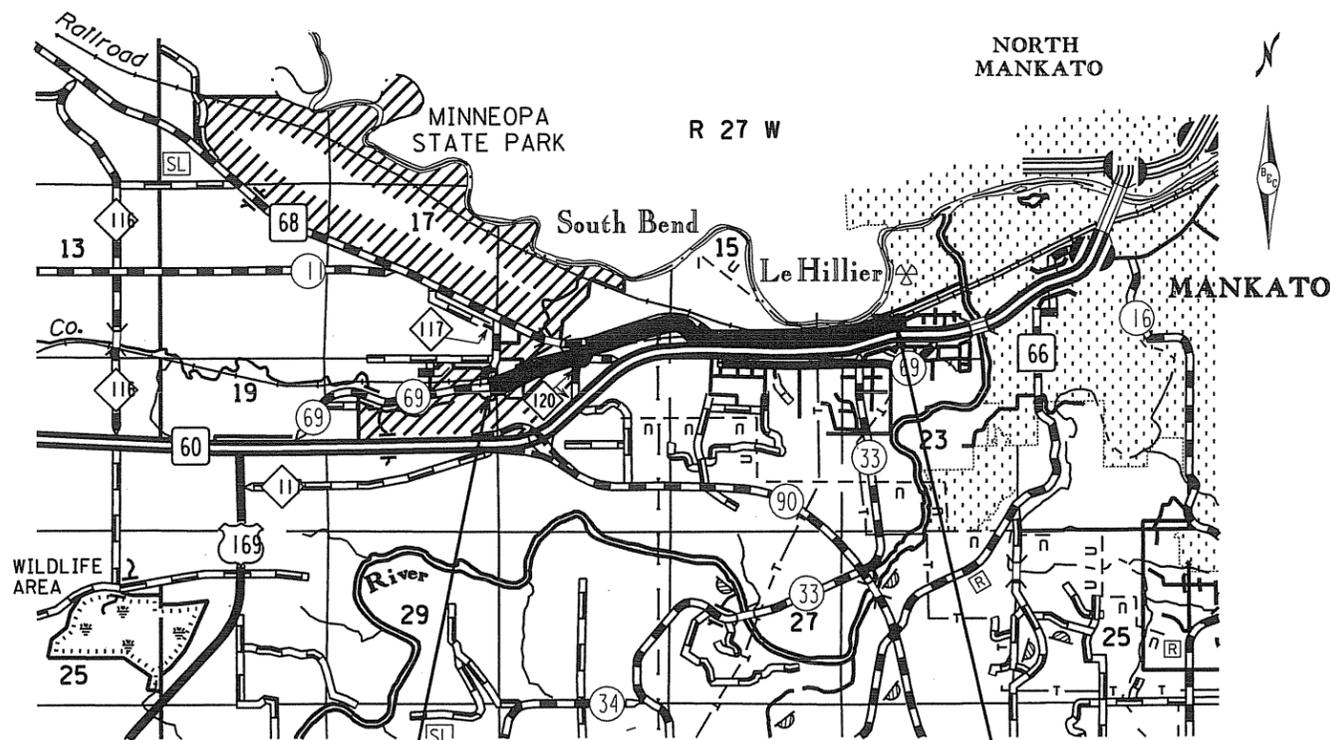


MINNESOTA DEPARTMENT OF TRANSPORTATION BLUE EARTH COUNTY DEPARTMENT OF PUBLIC WORKS CONSTRUCTION PLANS FOR MINNEOPA BIKE TRAIL STAGE 1

STATE PROJECT NO. 07-090-02 & SP0713-72
BETWEEN MINNEOPA PARK & LE HILLIER
FROM THE W 1/4 SEC 21-108-27 TO THE NORTH 1/4 COR. SEC 23-108-27

GROSS LENGTH	12.715	FEET	2.408	MILES
BRIDGE-LENGTH		FEET		MILES
EXCEPTIONS-LENGTH		FEET		MILES
NET LENGTH	12.715	FEET	2.408	MILES



BEGIN PROJECT 07-090-02
STA 93+85

END PROJECT 07-090-02
STA 221+00

DESIGN DESIGNATION

DESIGN SPEED 20 MPH
BASED ON STOPPING SIGHT DISTANCE
HEIGHT OF EYE 3.75 - HEIGHT OF OBJECT 0.0
DESIGN SPEED NOT ACHIEVED AT :

Station To	Station	Standards	Design
159+46 -	159+57	20 mph	9 mph
160+91 -	161+31	20 mph	9 mph
162+08 -	162+38	20 mph	17 mph
162+95 -	163+58	20 mph	17 mph
163+60 -	164+20	20 mph	17 mph
158+83 -	159+53	20 mph	18 mph
160+85 -	161+25	20 mph	12 mph

PROJECT LOCATION



BLUE EARTH COUNTY

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL

MINN. PROJ. No. TEAX 0798(202)

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

INDEX OF SHEETS

SHEET No'S	1	TITLE
SHEET No'S	2	EST. QUANTITIES
SHEET No'S	3 - 4	TYPICAL SECTIONS
SHEET No'S	5 - 8	TABULATIONS & DETAILS
SHEET No'S	9 - 19	EROSION CONTROL
SHEET No'S	20	UTILITIES
SHEET No'S	21 - 27	PLAN & PROFILES
SHEET No'S	28 - 43	X-SECTIONS
THIS PLAN CONTAINS 43 SHEETS		

BRIDGE PLANS 07578 & 07590 CONTAINS 28 SHEETS
BOX CULVERT PLAN 07J18 CONTAINS 7 SHEETS

THIS PLAN SET CONTAINS 3 SEPARATE PLANS FOR A TOTAL OF 78 SHEETS

SCALE

PLAN	100'
PROFILE	100' HORIZ. 10' VERT.
INDEX MAP	1/2 MILE
CROSS SECTIONS	10' HORIZ. 10' VERT.

UTILITIES

DNE CALL:	1-800-252-1166
ELECTRIC:	
MNDOT	1-651-366-5750
EXCEL	1-507-387-9632
COMMUNICATIONS:	
HICKORY TECH	1-507-387-1730
SPRINT	1-800-521-0579
CHARTER COMM	1-507-388-3930
GAS:	
MAGELLAN	1-507-625-1628
CENTER POINT	1-507-387-1111

EXISTING UTILITY INFORMATION SHOWN ON THIS PLAN HAS BEEN PROVIDED BY THE UTILITY OWNER. THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY GOPHER STATE ONE-CALL AT 1-800-252-1166 OR 612-454-0002.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH, IN THE CONSTRUCTION OF THIS PROJECT.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Alan Rowley COUNTY ENGINEER 21 April 09 DATE
REG. No. 14720

A. E. Haeder DIST. STATE AID ENGR' R 4/22/09 DATE
REVIEWED FOR COMPLIANCE WITH STATE-AID RULES/POLICY

APPROVED FOR STATE AID & FEDERAL AID FUNDING: STATE AID ENGINEER DATE

James M. Swanson RECOMMENDED FOR APPROVAL: DISTRICT ENGINEER 4/22/09 DATE

Kevin Weston RECOMMENDED FOR APPROVAL: STATE BRIDGE ENGINEER FOR 4/30/09 DATE

RECOMMENDED FOR APPROVAL: STATE PRE-LETTING ENGINEER DATE

RECOMMENDED FOR APPROVAL: DIRECTOR, OFFICE OF LAND MANAGEMENT DATE

APPROVED: STATE DESIGN ENGINEER DATE

S.P. 0713-72 S.P. 07-090-02 SHEET No. 1 OF 43 SHEETS

**MINNESOTA DEPARTMENT OF TRANSPORTATION
BLUE EARTH COUNTY**

MN. PROJ. NO. _____
GOVERNING SPECIFICATIONS
THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

CONSTRUCTION PLAN FOR PEDESTRIAN BRIDGES NO. 07578 & 07590 & RETAINING WALLS

LOCATED AT THE JCT. OF T.H. 68 & T.H. 169, ON THE MINNEOPA BIKE TRAIL OVER THE UNION PACIFIC RAILROAD, IN SOUTH BEND TOWNSHIP, MN. (Geographical Description)

SEC. 15 TWP. 108 N R 27 W (Legal Description)

STATE PROJ. NO. 07-090-02

PROP. BR. NO. 07578
PROP. BR. NO. 07590
S.P. 07-090-02

DESIGN DESIGNATION

DESIGN SPEED 20 MPH
BASED ON STOPPING SIGHT DISTANCE
HEIGHT OF EYE = 3.75 FT.
HEIGHT OF OBJECT = 0.0 FT.

DESIGN SPEED NOT ACHIEVED AT:
STA. 159+46 - STA. 159+57 ~ 9 MPH
STA. 160+91 - STA. 161+31 ~ 9 MPH
STA. 162+08 - STA. 162+38 ~ 17 MPH
STA. 162+95 - STA. 163+58 ~ 17 MPH

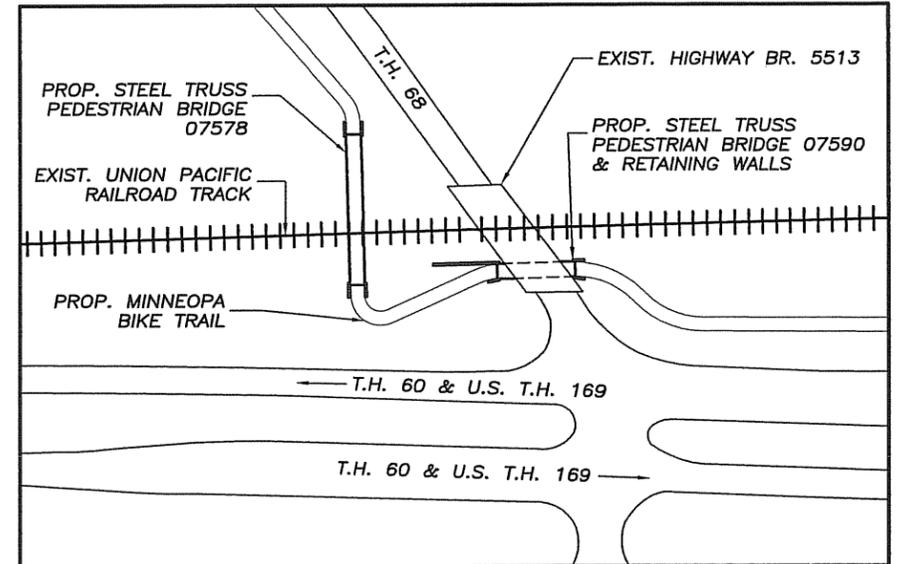
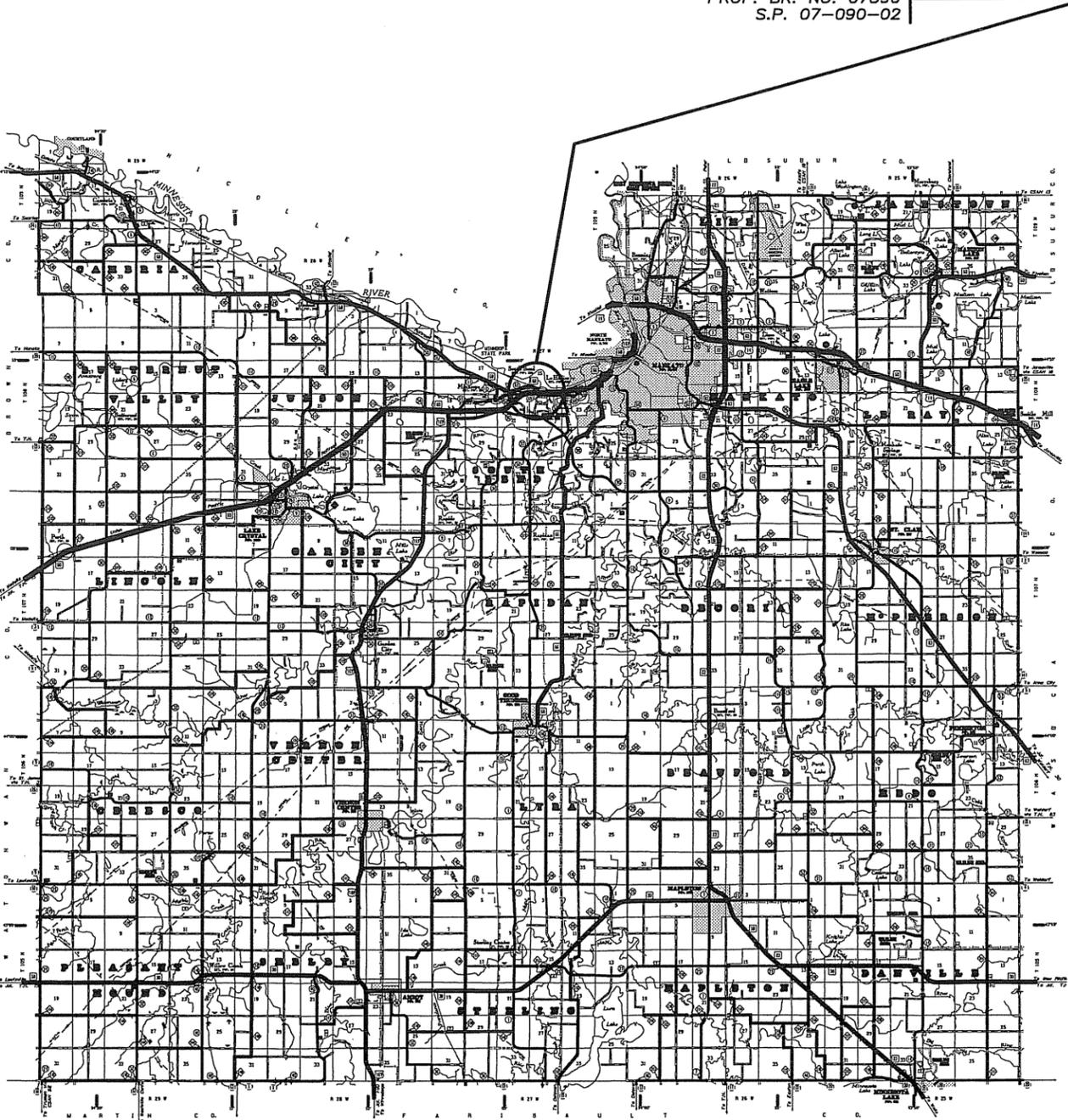
LIST OF SHEETS

NO.	TITLE
1	TITLE SHEET
2	GENERAL NOTES & QUANTITIES
3	GENERAL PLAN & ELEVATION ~ BR. 07578
4	BRIDGE LAYOUT ~ BR. 07578
5	ABUTMENT DETAILS ~ BR. 07578
6	GENERAL PLAN & ELEVATION ~ BR. 07590
7	SITE LAYOUT ~ BR. 07590
8	BRIDGE LAYOUT ~ BR. 07590
9-13	ABUTMENT DETAILS ~ BR. 07590
14-21	RETAINING WALL DETAILS ~ BR. 07590
22-23	APPROACH RAIL DETAILS
24	SLOPE PAVING DETAILS
25	MISC. BRIDGE DETAILS
26	BRIDGE SURVEY
27	BRIDGE SURVEY ~ PLAN & PROFILE ~ BR. 07578
28	BRIDGE SURVEY ~ PLAN & PROFILE ~ BR. 07590

THIS PLAN CONTAINS 28 SHEETS.

PLAN SYMBOLS

COUNTY LINE	---
TOWNSHIP OR RANGE LINE	----
SECTION LINE	-----
QUARTER LINE	-----
SIXTEENTH LINE	-----
EXISTING R/W	=====
NEW R/W	=====
TEMP EASE	=====
RAILROAD R/W	=====
UNSURFACED RD. OR SHLD.	=====
EDGE OF LAKE	=====
SWAMP BOUNDARY	=====
MISCELLANEOUS BOUNDARY	=====
CORPORATE OR CITY LIMITS	=====
WACATED PLATTED PROPERTY	=====
RECREATIONAL TRAIL	=====
ALIGNMENT STATIONS	1+00 ----- 1+12
ALIGNMENT POINTS	-----
RIVER OR CREEK	-----
DRAINAGE DITCH	-----
BRIDGE	-----
RAILROAD (SINGLE TRACK)	-----
RR CROSSING PAVEMENT MARKING	-----
RR CROSSING GATE	-----
RR CROSSBUCK SIGN	-----
RR CROSSBUCK SIGN W/LIGHTS	-----
BARBED WIRE FENCE	-----
CHAIN LINK FENCE	-----
WOVEN WIRE, COMBINATION WOVEN AND BARB	-----
WOOD FENCE	-----
BILLBOARD	-----
RETAINING WALL	-----
GUARDRAIL (CABLE)	-----
GUARDRAIL (PLATE BEAM)	-----
DRAIN TILE	-----
CULVERT	-----
CULVERT WITH APRONS	-----
WOODS OR BRUSH, NURSERY	-----
DECIDUOUS TREES	-----
CONIFER (EVERGREEN) TREES	-----
HEDGE	-----
BUSH OR SHRUB	-----
STUMP	-----
SWAMP OR MARSH	-----
MONUMENT (CLACT, ACP, BCP, ...)	-----
CONCRETE OR STONE MONUMENT	-----
IRON PIPE	-----
IRON PIN OR REBAR	-----
IRON PIN WITH BRASS DISK	-----
NAIL, PK NAIL, SPIKE, SFP, T-BAR, ...	-----
VERTICAL CONTROL	-----
HORIZONTAL CONTROL	-----
POWER POLE	-----
LIGHT POLE	-----
LIGHT AND TELEPHONE POLE	-----
LIGHT, TELEPHONE AND POWER POLE	-----
GUY POLE	-----
POLE ANCHOR	-----
TELEPHONE POLE	-----
TELEPHONE AND POWER POLE	-----
UNDERGROUND CABLE PEDESTAL	-----
TELEPHONE MANHOLE (VAULT)	-----
ELECTRIC CABLE IN CONDUIT	-----
TELEPHONE CABLE IN CONDUIT	-----
BURIED ELECTRIC CABLE	-----
BURIED TELEPHONE CABLE	-----
GAS LINE	-----
WATER LINE	-----
VALVE	-----
FIRE HYDRANT	-----
WATER MANHOLE	-----
WELL	-----
LAWN SPRINKLER HEAD	-----
MANHOLE	-----
CATCH BASIN	-----
SEPTIC TANK	-----
FORCE MAIN LIFT STA.	-----
SEWER LINE	-----
PERMANENT BARRICADE	-----
TRAFFIC SIGNAL LIGHT	-----
HAND HOLE	-----
ENTRANCE	-----
BUILDING	-----
SATELLITE DISH	-----
STEEL TOWER	-----
FLAG POLE	-----

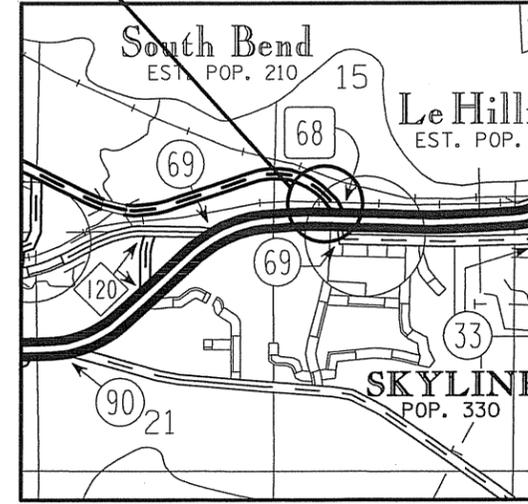


PROJECT LOCATION

Outline Map of Minnesota showing location of the County within the State.



BLUE EARTH COUNTY



C.M. Schall-Karwacki C.M. SCHALL-KARWACKI
DESIGN ENGINEER: I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE Mar. 18, 2009 LICENSE NUMBER 15656

Alan Bayley APPROVED: COUNTY ENGINEER DATE 26 Mar 09

Kevin Weston RECOMMEND FOR APPROVAL: STATE BRIDGE ENGINEER DATE 4/30/09

D.E. Haeder DISTRICT STATE AID ENGINEER: REVIEWED FOR COMPLIANCE WITH STATE-AID RULES/POLICY DATE 4/22/09

APPROVED FOR STATE-AID & FEDERAL-AID FUNDING: STATE-AID ENGINEER DATE _____



STATE PROJ. NO. 07-090-02

STATE AID PROJ. NO. _____

SHEET NO. 1 OF 28 SHEETS

CONSTRUCTION NOTES

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE IN MILLIMETERS. BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

THE SURVEY USED IN DEVELOPING THIS BRIDGE PLAN MUST BE VERIFIED WITH THE ACTUAL RAILROAD AND EXISTING BRIDGE LOCATIONS AT THE TIME OF CONSTRUCTION STAKING. IF THE PROPOSED BRIDGE POSITIONS ARE NOT COMPATIBLE WITH THE RAILROAD OR EXISTING BRIDGE LOCATIONS, THE ENGINEER SIGNING THESE PLANS SHALL BE NOTIFIED. IF STATIONING IS CHANGED, THE REVISED PLANS SHALL BE SUBMITTED TO THE OWNER AND THE STATE AID BRIDGE UNIT FOR APPROVAL.

BRIDGE SEAT REINFORCEMENT SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR BOLTS.

SUPERSTRUCTURE ERECTION PLANS SHALL BE APPROVED BY THE UNION PACIFIC RAILROAD.

TRUSS DESIGN REQUIREMENTS

APPLICABLE CODES:

DESIGN SHALL BE GOVERNED BY THE CURRENT EDITION OF AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS (AASHTO), SUPPLEMENTED WITH THE CURRENT EDITION OF AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) INCLUDING THE DESIGN SPECIFICATION FOR STEEL HOLLOW STRUCTURAL SECTIONS, FURTHER SUPPLEMENTED WITH THE CURRENT EDITION OF AMERICAN WELDING SOCIETY (AWS) D1.1 STRUCTURAL WELDING CODE, AS MODIFIED AND FURTHER SUPPLEMENTED HEREIN. STRUCTURAL MEMBERS SHALL BE DESIGNED IN ACCORDANCE WITH RECOGNIZED ENGINEERING PRACTICES AND PRINCIPLES.

TRUSS STYLE:

THE TRUSS TYPE SHALL BE PARALLEL CHORD WITH VERTICAL ENDS WITH A WEB MEMBER STYLE OF PRATT AS DEPICTED IN THESE PLANS.

TRUSSES WITH AN ODD NUMBER OF BAYS SHALL HAVE CROSSED DIAGONALS IN THE MIDDLE BAY. ANY CROSSED DIAGONALS SHALL BE OF EQUAL DIMENSION.

SPAN LENGTHS:

SPAN LENGTHS (128'-11" AND 66'-0") SHALL BE MEASURED FROM OUT-TO-OUT OF BRIDGE END POSTS.

DECK WIDTH:

BRIDGE CLEAR DECK WIDTH SHALL BE 12'-0" AS MEASURED BETWEEN RAILING ELEMENTS.

SUPERSTRUCTURE LOADING:

IN ADDITION TO DEAD LOADS AS SPECIFIED BY AASHTO, THE BRIDGES SHALL BE DESIGNED TO ACCOMMODATE THE FOLLOWING LOADS:

PEDESTRIAN LIVE LOAD = 85 PSF WITH NO REDUCTIONS.

LATERAL WIND LOAD = 35 PSF ON THE FULL HEIGHT OF THE BRIDGE AS IF ENCLOSED.

UPLIFT WIND LOAD = 20 PSF APPLIED AT THE WINDWARD QUARTER POINT OF THE BRIDGE WIDTH

POINT LOAD = 1000 LBS PLUS 33% IMPACT, APPLIED AT A SINGLE POINT.

IN ADDITION TO THE LOAD COMBINATIONS SPECIFIED BY AASHTO, WHEN BRIDGE STRUCTURAL MEMBERS SUPPORT OR SERVE AS RAILING MEMBERS, THE BRIDGE SHALL BE DESIGNED FOR THE SIMULTANEOUS APPLICATION OF RAIL LOAD PLUS DEAD LOAD PLUS 50% OF LIVE LOAD.

VIBRATION:

THE FREQUENCY OF THE FIRST HARMONIC FOR THE UNLOADED BRIDGE SHALL BE NO LESS THAN 3.0 HZ EXCEPT WHEN THE WEIGHT OF THE STRUCTURE WITH NO LIVE LOAD EXCEEDS 180 X EXP(-0.35XFREQ).

DEFLECTION:

WIND DEFLECTIONS OF THE TRUSS, AS MEASURED AT DECK LEVEL, SHALL BE LIMITED TO L/500. DEFLECTIONS IN PLANKS DUE TO POINT LOAD SHALL BE LIMITED TO L/300 OR 0.1". IMPACT SHALL BE INCLUDED IN DEFLECTION CHECKS AS APPLICABLE.

DEFLECTION OF THE TRUSS DUE TO UNIFORM LIVE LOAD SHALL BE LIMITED TO L/500. THE LOAD MAY BE REDUCED BASED ON LOADED AREA FOR THE PURPOSE OF CALCULATING TRUSS DEFLECTION ONLY TO NO LESS THAN 65 PSF. DEFLECTIONS IN LONGITUDINAL DECK MEMBERS DUE TO UNIFORM LIVE LOAD SHALL BE LIMITED TO L/500.

NO OTHER SERVICE DEFLECTION LIMITS NEED BE CONSIDERED.

TRUSS MATERIAL:

ALL MEMBERS OF THE TRUSS AND DECK SYSTEM SHALL BE FABRICATED FROM SQUARE/RECTANGULAR HOLLOW STRUCTURAL SECTIONS (HSS), WITH THE EXCEPTION THAT FLOOR BEAMS MAY BE WIDE FLANGE (W) SHAPES. OPEN ENDS OF END POSTS AND FLOOR BEAMS SHALL BE CAPPED. OPEN SHAPED (NON-TUBULAR) STRINGERS WILL BE ALLOWED ONLY IF ADEQUATE LATERAL OR TORSIONAL BRACING IS PROVIDED.

STEEL MATERIAL SHALL BE CORROSION RESISTANT HIGH-STRENGTH LOW-ALLOY MATERIAL MEETING ASTM A242, A588, A606, OR A847 WITH A MINIMUM CORROSION INDEX OF 5.8 PER ASTM G101.

MINIMUM THICKNESS OF TUBULAR STEEL MEMBERS (NOT INCLUDING RAILINGS) SHALL BE 1/4".

WHERE WATER COLLECTION INSIDE OF STRUCTURAL TUBING IS POSSIBLE DURING CONSTRUCTION OR SERVICE, WEEP HOLES SHALL BE PROVIDED AT LOW POINTS.

STEEL FINISH:

ALL STEEL SHALL BE UNPAINTED AND SELF-WEATHERING. ALL SURFACES SHALL BE BLAST CLEANED IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL SURFACE PREPARATION SPECIFICATIONS NO. 6, LATEST EDITION, (SSPC-SP6) COMMERCIAL BLAST CLEANING.

FIELD SPLICE:

FIELD SPLICES SHALL BE FULLY BOLTED SLIP CRITICAL CONNECTIONS, UTILIZING TENSION INDICATING WASHERS. TACK WELDING OF HIGH STRENGTH HARDWARE IS PROHIBITED.

SPLICES NOT IMMEDIATELY AT OR ADJACENT TO PANEL POINTS SHALL BE DESIGNED FOR 100% OF THE MEMBER BENDING MOMENT CAPACITY FOR PRIMARY COMPRESSION MEMBERS, AND 75% FOR BRACING MEMBERS OR TENSION MEMBERS SUBJECT TO LOAD REVERSAL, INCLUDING SLIP RESISTANCE, AND SLIP RESISTANCE SHALL FURTHER MEET THE SAME AASHTO REQUIRED STRENGTH AS WITH OTHER FAILURE MODES.

SPLICES FOR TRUSS MEMBERS, BRACING, AND FLOOR BEAMS, WHEN USED, SHALL BE MADE WITH ASTM A325 OR A490 HIGH STRENGTH BOLTS. TYPE 3 BOLTS SHALL BE USED WHEN THE TRUSS IS REQUIRED TO BE OF WEATHERING STEEL. OTHER SPLICES SHALL BE MADE WITH THE ABOVE MENTIONED MATERIAL OR ASTM A307.

RAILINGS:

HORIZONTAL SAFETY RAILS SHALL BE PLACED TO A HEIGHT OF EXACTLY 54" AND SHALL PREVENT A SPHERE WITH A DIAMETER OF 4" FROM PASSING THROUGH. SAFETY RAILS SHALL BE PLACED ON THE INSIDE OF THE TRUSS AND SHALL BE DESIGNED FOR THE CRITICAL LOAD CASE OF EITHER A 50 LB/FT UNIFORM LOAD OR A 200 LB POINT LOAD, APPLIED EITHER HORIZONTALLY OR VERTICALLY.

A 6" STEEL CHANNEL RUB RAIL SHALL BE PLACED WITH ITS TOP AT 42" PLUS OR MINUS 2" ABOVE THE DECK SURFACE.

A 6" STEEL CHANNEL TOE RAIL SHALL BE PLACED WITH ITS TOP AT 8" ABOVE THE DECK SURFACE.

RUB RAILS AND TOE RAILS SHALL BE DESIGNED PER AASHTO AS HORIZONTAL RAILS.

ALL RAILS SHALL BE OF A SMOOTH, CONTINUOUS NATURE THAT PREVENTS SNAGGING AND SCRAPING.

DECKING:

THE BRIDGE DECK SHALL BE TRANSVERSE SOUTHERN YELLOW PINE PLANKS. PLANKS SHALL BE NOMINAL 3" X 8", SURFACED FOUR SIDES (S4S), GRADED AS NUMBER 1 AS PER THE SOUTHERN PINE INSPECTION BUREAU (SPIB). SEE SPECIAL PROVISIONS FOR PRESERVATIVE REQUIREMENTS. PLANKS SHALL BE PLACED TIGHT TOGETHER. DRAINAGE OF BRIDGE DECK SHALL BE BETWEEN DECK PLANKS (NO DECK DRAINS ALLOWED), EFFECT WILL BE SIMILAR TO EXISTING CONDITION WITH NO CONCENTRATED DISCHARGES.

DECK TIE-DOWNS SHALL BE PROVIDED AT PLANK ENDS AND TWO INTERMEDIATE POINTS LOCATED NEAR THE THIRD POINTS OF THE DECK WIDTH. EDGE TIE-DOWNS SHALL BE MADE WITH A CONTINUOUS STEEL ANGLE MEMBER ABOVE THE PLANKS. INTERMEDIATE TIE-DOWNS SHALL BE MADE WITH TWO CARRIAGE BOLTS PER PLANK PER TIE-DOWN. TO RESIST WARPING FORCES, DECK TIE-DOWN SYSTEMS SHALL BE DESIGNED TO RESIST AN UPLIFT FORCE OF 500 LBS PER PLANK PER TIE-DOWN LOCATION, ASSUMING WET SERVICE CONDITIONS. ALL DECK ATTACHMENTS SHALL BE MADE WITH CARRIAGE BOLTS AND LOCKING HARDWARE. THE OWNER WILL BE RESPONSIBLE FOR TIGHTENING LOOSE HARDWARE AFTER INITIAL ACCEPTANCE.

OTHER REQUIREMENTS:

SELF-TAPPING AND SELF-DRILLING SCREWS ARE NOT ACCEPTABLE FOR ANY PORTION OF THE STRUCTURE, EXCEPT WHERE SPECIFIED OTHERWISE.

COVER PLATES SHALL BE PROVIDED TO COVER EXPANSION GAPS WHEN PEDESTRIAN USAGE IS SPECIFIED. COVER PLATES SHALL FIT TIGHT TO THE TOP OF THE ABUTMENT BACKWALL WITHOUT ANY BRIDGE WEIGHT BEARING ON THE BACKWALL. CONSIDER JOINT SIZE REGARDING PLATE THICKNESS.

ANCHORS SHALL BE OF THE DRILLED TYPE, INSTALLED WITH A CHEMICAL ADHESIVE SYSTEM, EXCEPT THAT WHEN DESIGN FORCES EXCEED THE STRENGTH OF TYPICAL CHEMICAL SYSTEMS, CAST-IN-PLACE ANCHORS MAY BE USED. ANCHOR SYSTEMS SHALL BE DESIGNED AND SUPPLIED BY THE BRIDGE MANUFACTURER. ANCHOR BOLTS SHALL CONFORM TO ASTM A307, A193, OR F1554.

ALL HARDWARE (OTHER THAN TYPE 3 HIGH STRENGTH) SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.

EXPANSION BEARINGS SHALL INCLUDE TEFLON OR STAINLESS STEEL SLIDING SURFACES PER AASHTO OR ELASTOMERIC PADS. CONSIDERATION OF DEAD LOAD ROTATION IS REQUIRED IN ALL CASES.

CEMENTITIOUS NON-SHRINK GROUT, WHEN APPLICABLE, SHALL MEET ASTM C-1107, 7000 PSI MINIMUM.

MATERIALS NOT SPECIFIED SHALL CONFORM TO APPLICABLE ASTM OR AASHTO SPECIFICATIONS.

- ① THE BRIDGE SHALL BE FABRICATED FROM STEEL MEETING THE REQUIREMENTS OF THE TRUSS MATERIALS NOTES ON THIS SHEET. ALL OTHER STEEL SHALL CONFORM TO SPEC 3309.
- ② NON-PARTICIPATING, FOR DESIGN OF STEEL SUPERSTRUCTURE AND METAL APPROACH RAILING.
- ③ REINFORCEMENT FOR RETAINING WALLS IS INCLUDED IN PRICE BID FOR "2411.501 - STRUCTURAL CONCRETE (3Y43)".
- ④ SEE NOTE 1 ON SHEET 23.
- ⑤ STRUCTURE EXCAVATION (CLASS U) INCLUDES REMOVAL OF ROCK AS NEEDED FOR CONSTRUCTION OF BRIDGE AND RETAINING WALL FOUNDATIONS. THE SOIL BORINGS INDICATE THE ROCK REMOVAL IS EXPECTED TO BE WEATHERED DOLOSTONE, SANDSTONE, AND SHALE. SOME ROCK REMOVAL MAY BE LARGER PIECES. DRILLING AND BLASTING WILL NOT BE PERMITTED FOR ANY ROCK REMOVAL. EXTENT OF ROCK REMOVAL SHALL BE AS DIRECTED BY THE ENGINEER IN THE FIELD.

DESIGN DATA

2007 A.A.S.H.T.O. L.R.F.D. BRIDGE DESIGN SPECS. LOAD & RESISTANCE FACTOR DESIGN METHOD.

1,000 LB. POINT LOAD
85 PSF PEDESTRIAN LOAD

MAXIMUM ALLOWABLE DESIGN STRESSES:

REINFORCED CONCRETE:
f'c = 4,000 PSI n = 8
fy = 60,000 PSI REINFORCEMENT
STRUCTURAL STEEL:
fy = 50,000 PSI SPEC. 3309 ①

DECK AREA = 1,547 SQ. FT. ~ BR. 07578
DECK AREA = 792 SQ. FT. ~ BR. 07590

LIST OF SHEETS

NO.	TITLE
1	TITLE SHEET
2	GENERAL NOTES & QUANTITIES
3	GENERAL PLAN & ELEVATION ~ BR. 07578
4	BRIDGE LAYOUT ~ BR. 07578
5	ABUTMENT DETAILS ~ BR. 07578
6	GENERAL PLAN & ELEVATION ~ BR. 07590
7	SITE LAYOUT ~ BR. 07590
8	BRIDGE LAYOUT ~ BR. 07590
9-13	ABUTMENT DETAILS ~ BR. 07590
14-21	RETAINING WALL DETAILS ~ BR. 07590
22-23	APPROACH RAIL DETAILS
24	SLOPE PAVING DETAILS
25	MISC. BRIDGE DETAILS
26	BRIDGE SURVEY
27	BRIDGE SURVEY ~ PLAN & PROFILE ~ BR. 07578
28	BRIDGE SURVEY ~ PLAN & PROFILE ~ BR. 07590

REVISION CHART

REV.	DESCRIPTION	DATE	INIT.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

C.M. Schall-Karwacki
C.M. SCHALL-KARWACKI

DATE: Mar. 18, 09 LIC. NO. 15656

PLANS PREPARED BY:
 ERICKSON ENGINEERING
9330 JAMES AVENUE SOUTH
BLOOMINGTON, MN 55431

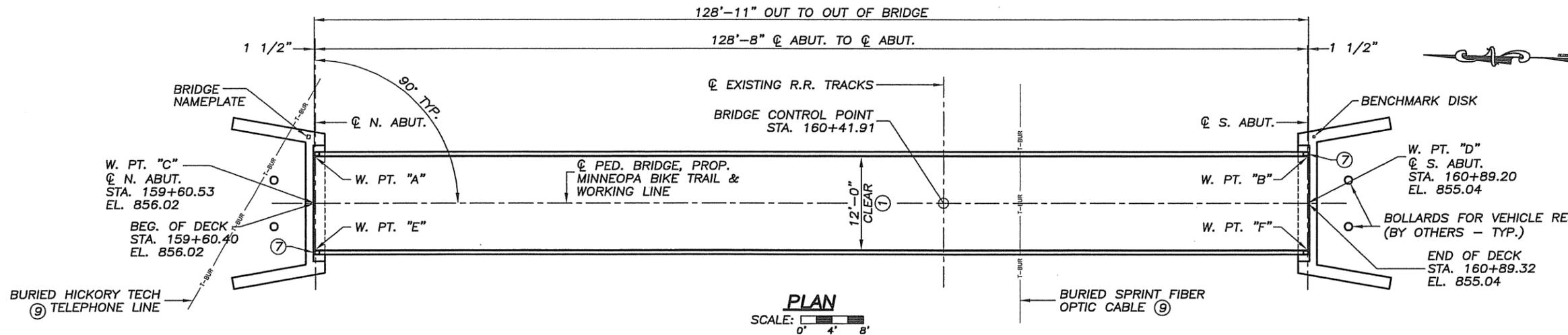
MINNEOPIA BIKE TRAIL BLUE EARTH COUNTY
MINNESOTA DEPARTMENT
OF TRANSPORTATION

GENERAL NOTES & QUANTITIES

S.P. 07-090-02
SHEET 2 OF 28 SHEETS
DES.: DJR DRN.: NBB
CHK.: RAB CHK.: CSK **07578 & 07590**

SCHEDULE OF ESTIMATED QUANTITIES

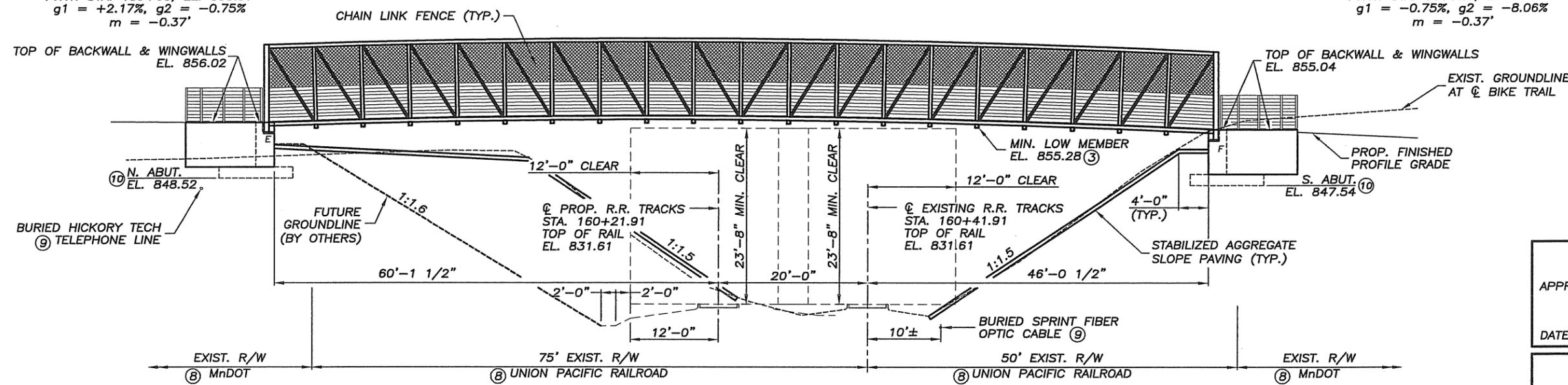
KEYNOTE	ITEM NO.	ITEM DESCRIPTION	UNIT	07578	07590	RET. WALLS	TOTAL
	2021.501	MOBILIZATION	LUMP SUM	0.6	0.3	0.1	1
2	2011.601	DESIGN	LUMP SUM	0.7	0.3	-	1
	2105.522	SELECT GRANULAR BORROW (CV)	CU. YD.	140	260	260	660
	2105.607	AGGREGATE BACKFILL (CV)	CU. YD.	14	12	14	40
	2401.501	STRUCTURAL CONCRETE (3Y43)	CU. YD.	53	81	-	134
	2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	6,260	7,950	-	14,210 (P)
	2401.601	SLOPE PREPARATION	LUMP SUM	0.7	0.3	-	1
1	2402.601	PEDESTRIAN BRIDGE (SUPERSTRUCTURE)	LUMP SUM	0.8	0.2	-	1
3	2411.501	STRUCTURAL CONCRETE (3Y43)	CU. YD.	-	-	66	66
5	2411.511	STRUCTURE EXCAVATION (CLASS U)	CU. YD.	270	950	140	1,360
	2514.503	AGGREGATE SLOPE PAVING	SQ. YD.	440	130	-	570
4	2540.603	METAL RAILING	LIN. FT.	48	40	48	136



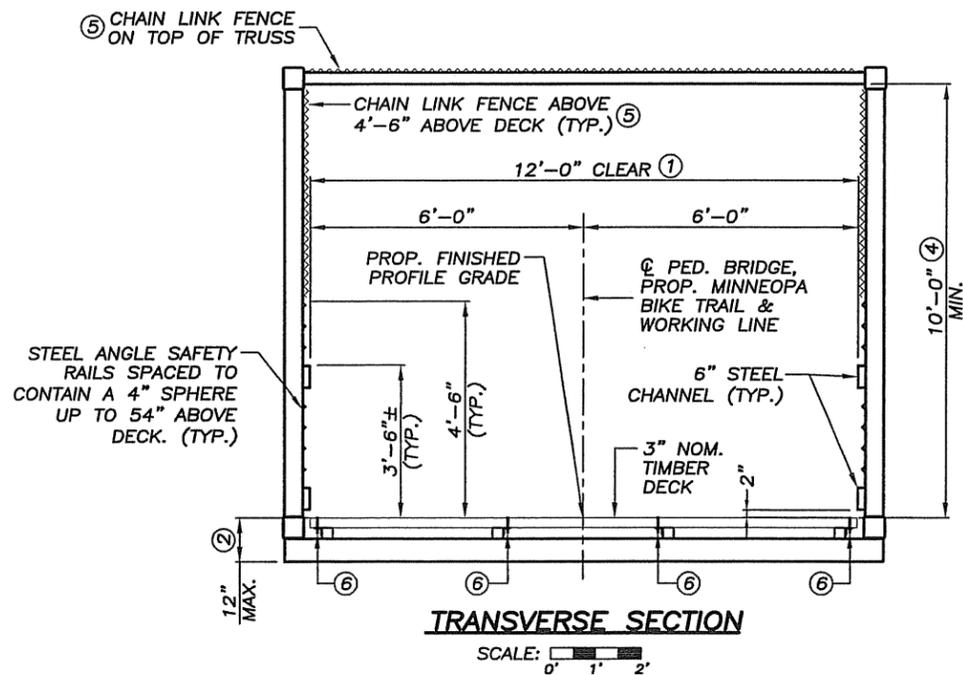
BRIDGE 07578 DESIGN NOTES:
OVERHEAD (PORTAL) BRACING IS REQUIRED.
THE BRIDGE SHALL BE CAMBERED TO OFFSET THE CALCULATED DEAD LOAD DEFLECTION PLUS 15.5".

100' VERTICAL CURVE DATA
P.V.C. STA. 158+68, EL. 855.27
P.V.I. STA. 159+18, EL. 856.35
P.V.T. STA. 159+68, EL. 855.97
g1 = +2.17%, g2 = -0.75%
m = -0.37'

40' VERTICAL CURVE DATA
P.V.C. STA. 160+85, EL. 855.09
P.V.I. STA. 161+05, EL. 854.94
P.V.T. STA. 161+25, EL. 853.33
g1 = -0.75%, g2 = -8.06%
m = -0.37'



ELEVATION
SCALE: 0' 4' 8'



TRANSVERSE SECTION
SCALE: 0' 1' 2'

- ① CLEAR SHALL BE ACTUAL CLEAR OPENING MEASURED BETWEEN INSIDES OF THE 6" CHANNEL.
- ② THE MAXIMUM DISTANCE FROM THE TOP OF THE DECK TO THE BOTTOM OF THE LOWEST MEMBER ON THE TRUSSES (INCLUDING UNDERHUNG FLOOR BEAMS) SHALL BE 12".
- ③ NO PART OR ELEMENT OF THE STEEL SUPERSTRUCTURE SHALL PROJECT LOWER THAN LOW MEMBER ELEVATION SHOWN WITHIN DASHED CLEAR ZONE AS REQUIRED BY THE RAILROAD.
- ④ VERTICAL CLEAR HEIGHT ABOVE THE DECK SURFACE SHALL BE 10'-0" MINIMUM.
- ⑤ CHAIN LINK FENCING SHALL BE PLACED ON THIS SPAN AS SHOWN ON THIS SHEET. FENCING SHALL RUN FROM THE TOPMOST SAFETY RAIL (54" ABOVE THE DECK SURFACE) TO THE BOTTOM OF THE TOP CHORD ON THE INSIDE OF THE TRUSS AND SHALL RUN OVERHEAD ACROSS THE BRIDGE WIDTH ON TOP OF THE OVERHEAD BRACING FROM FACE TO FACE OF THE TOP CHORD. SEE SPECIAL PROVISIONS FOR ADDITIONAL FENCING REQUIREMENTS.
- ⑥ FOR TIE DOWN REQUIREMENTS SEE DECKING NOTES ON SHEET 2.
- ⑦ PLACE PLAQUE WITH "NO VEHICLE ALLOWED".
- ⑧ NO BRIDGE CONSTRUCTION OR MAINTENANCE ACCESS FROM UNION PACIFIC RAILROAD RIGHT-OF-WAY WILL BE ALLOWED. ACCESS SHALL ONLY BE VIA MnDOT RIGHT-OF-WAY AT EITHER END OF PROPOSED BRIDGE.
- ⑨ FIELD VERIFY ALL UTILITIES. RELOCATION BY OTHERS AS NECESSARY.
- ⑩ ALL SOIL AND WEATHERED ROCK SHALL BE EXCAVATED BY CONVENTIONAL MEANS DOWN TO THE MINIMUM ABUTMENT AND RETAINING WALL ELEVATIONS GIVEN IN THESE PLANS. IF SOLID ROCK IS PRESENT ABOVE THE MINIMUM ELEVATION, THE FOOTING ELEVATION MAY BE RAISED. IF A FOOTING ELEVATION IS RAISED, THE FOOTING DEPTH AS SHOWN IN THESE PLANS SHALL BE MAINTAINED WITH A MINIMUM OF 12 INCHES OF COVER (MEASURED PERPENDICULAR TO THE SOIL SLOPE) ABOVE THE FOOTING.

APPROVED: *Celia Forsley*
COUNTY ENGINEER
BLUE EARTH COUNTY
DATE: 13 April 09

CERTIFIED BY: *CMS Schall Karwacki*
PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI
LIC. NO. 15656 3-18 2009

MINNEOPA BIKE TRAIL BLUE EARTH COUNTY
MINNESOTA DEPARTMENT
OF TRANSPORTATION

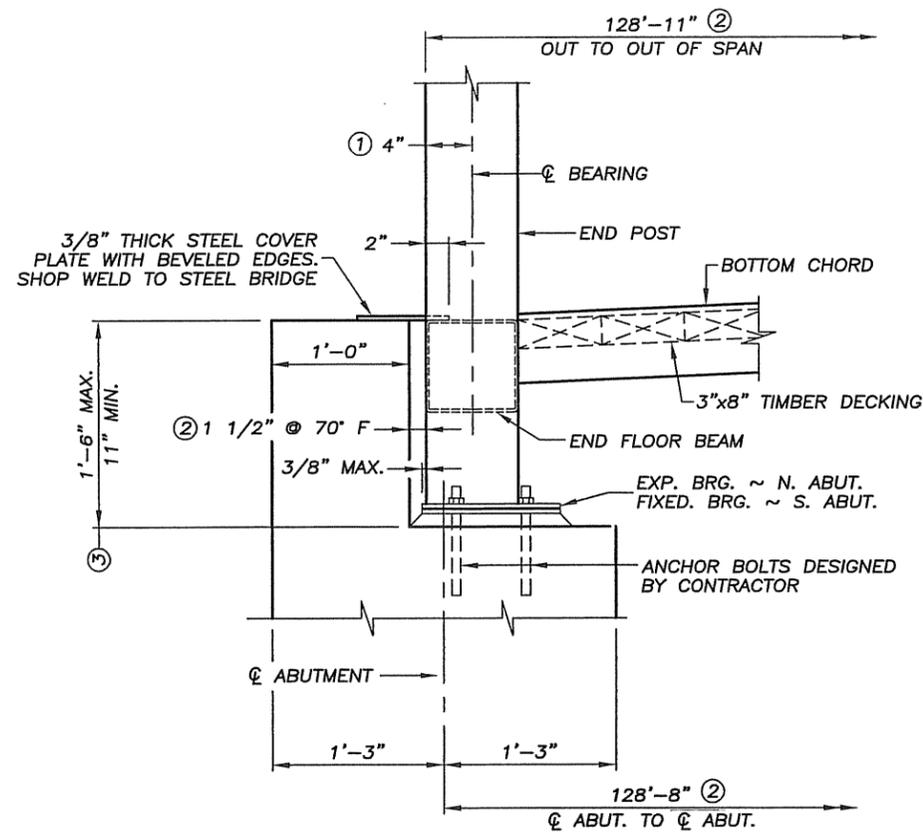
BRIDGE NO. 07578
LOCATED 0.1 MILES WEST OF JCT. T.H. 68 &
U.S. T.H. 169 ON THE MINNEOPA BIKE TRAIL
OVER THE UNION PACIFIC RAILROAD.

129' STEEL TRUSS PEDESTRIAN BRIDGE
12 FT. CLEAR WALKWAY
SPAN IDENTIFICATION NO. 303

**GENERAL PLAN &
ELEVATION**

SEC. 15 TWP. 108 N R 27 W
TOWNSHIP: SOUTH BEND
COUNTY: BLUE EARTH
APPROVED: *Kevin Weston*
STATE BRIDGE ENGINEER
DATE: 4/30/09

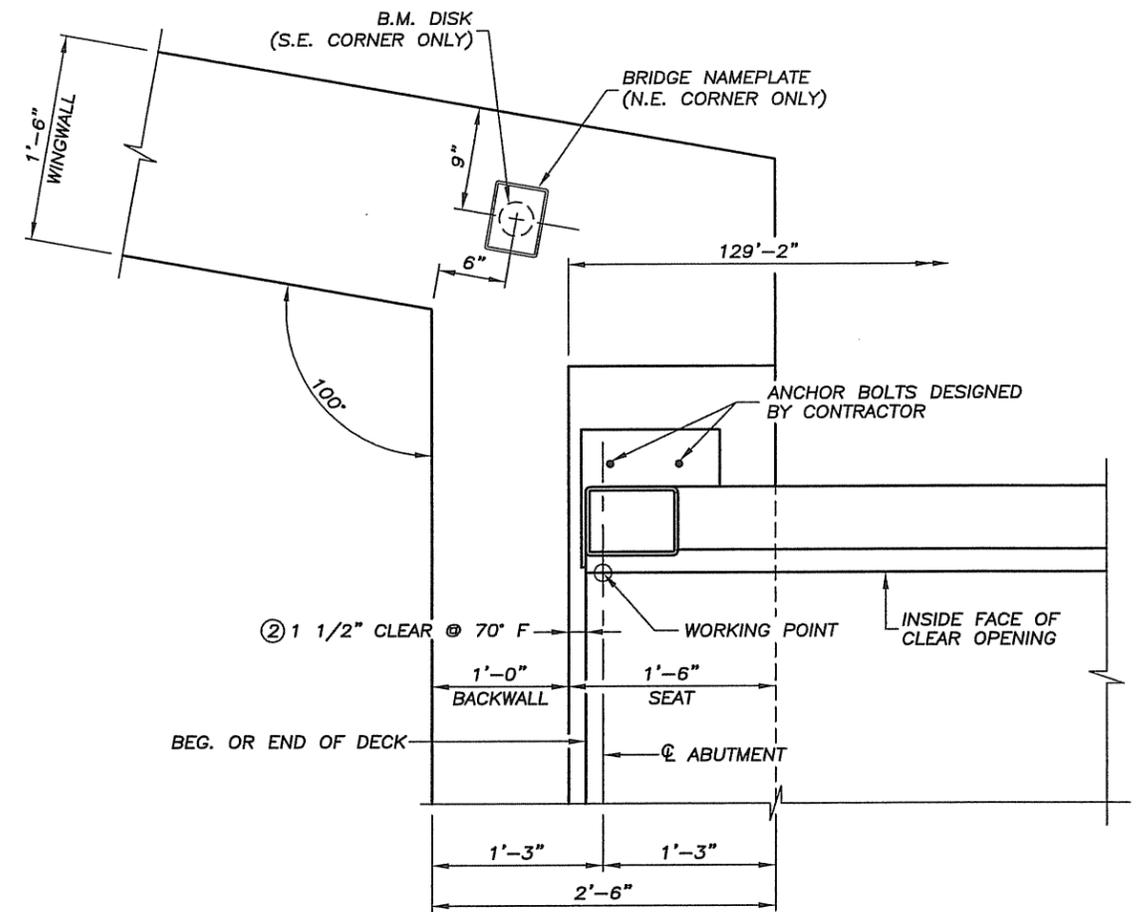
S.P. 07-090-02
SHEET 3 OF 28 SHEETS
DES.: DJR DRN.: NBB
CHK.: RAB CHK.: CSK **07578**



ABUTMENT BEARING DETAIL

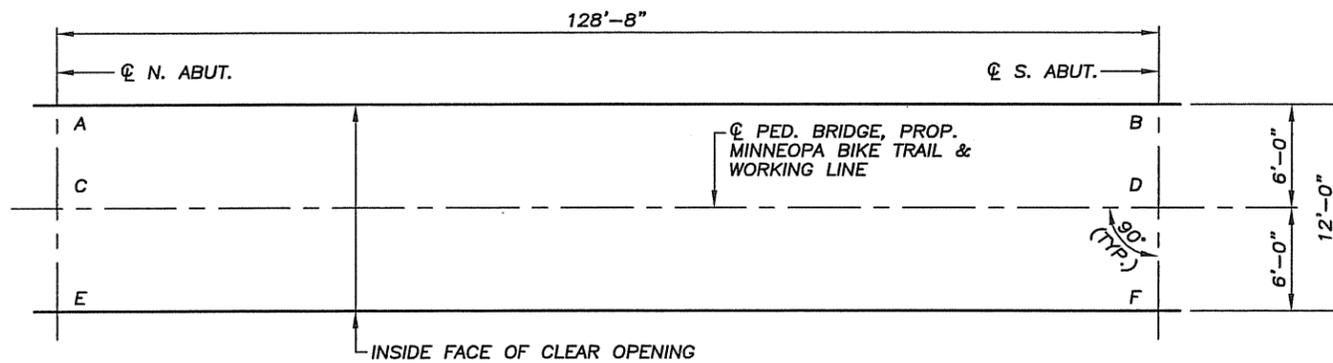
SCALE: 0' 1' 2'

- ① DIMENSION ASSUMED, MAY VARY.
- ② DIMENSION SHALL BE MAINTAINED.
- ③ EXACT ABUTMENT BACKWALL HEIGHT SHALL BE VERIFIED WITH BRIDGE MANUFACTURER.
- ④ IF REACTIONS SHOWN ARE EXCEEDED, ABUTMENT DESIGNER SHALL BE NOTIFIED.



TYPICAL CORNER DETAIL

SCALE: 0' 1' 2'



LAYOUT SHOWING WORKING POINTS

(NOT TO SCALE)

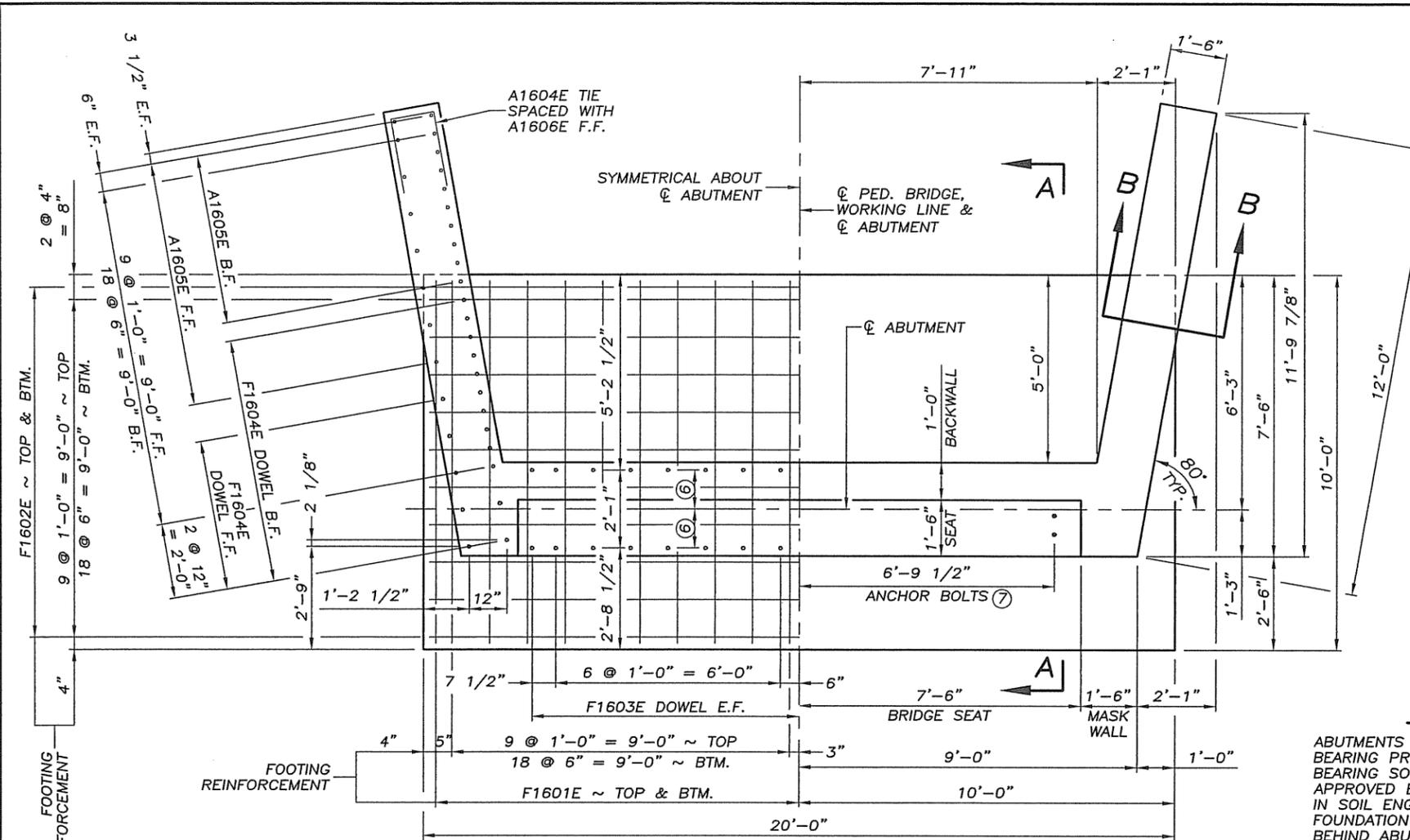
DIMENSIONS BETWEEN WORKING POINTS							ELEVATIONS				
POINT	STATION	A	B	C	D	E	F	TOP OF DECK	③ DECK TO BRIDGE SEAT	③ BRIDGE SEAT	POINT
A	159+60.53		128.67	6.00	128.81		129.23	856.02	1.50	854.52	A
B	160+89.20				6.00	129.23		855.04	1.50	853.54	B
C	159+60.53				128.67	6.00	128.81	856.02	1.50	854.52	C
D	160+89.20						6.00	855.04	1.50	853.54	D
E	159+60.53						128.67	856.02	1.50	854.52	E
F	160+89.20							855.04	1.50	853.54	F

BRIDGE REACTIONS ④			
COMBINE REACTIONS AS PER LOCAL OR GOVERNING BUILDING CODES AS REQUIRED		+ DOWNWARD LOAD - UPWARD LOAD	
REACTIONS ARE NOT TO BE EXCEEDED WITHOUT INFORMING THE ENGINEER SEALING THE ABUTMENT PLANS.			
LOAD	P lbs	H lbs	L lbs
DEAD	27,000		
UNIFORM LIVE	32,900		
WIND		27,000	18,000
WINDWARD	-26,000		
LEEWARD	13,200		
THERMAL			4,500

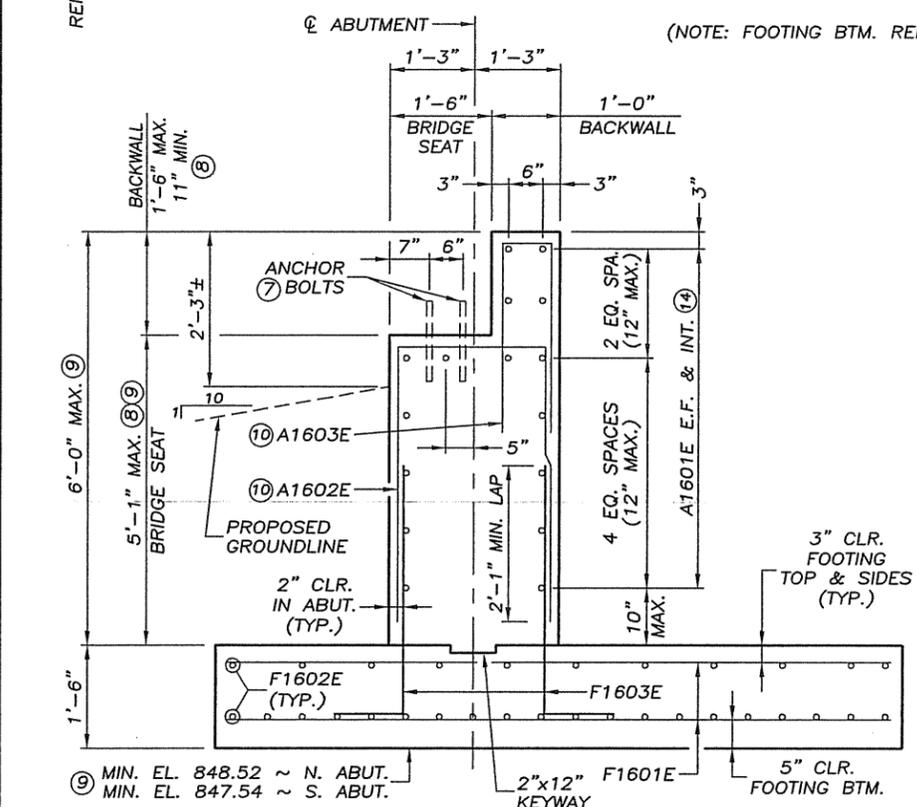
"P" - VERTICAL LOAD EACH BASE PLATE (4 PER SPAN)
"H" - HORIZONTAL LOAD EACH END OF BRIDGE (2 PER SPAN)
"L" - LONGITUDINAL LOAD EACH BASE PLATE (4 PER SPAN)

CERTIFIED BY *CMSchallKawacki*
PROFESSIONAL ENGINEER/C.M. SCHALL-KAWACKI
LIC. NO. 15656 **3-18-** 2009

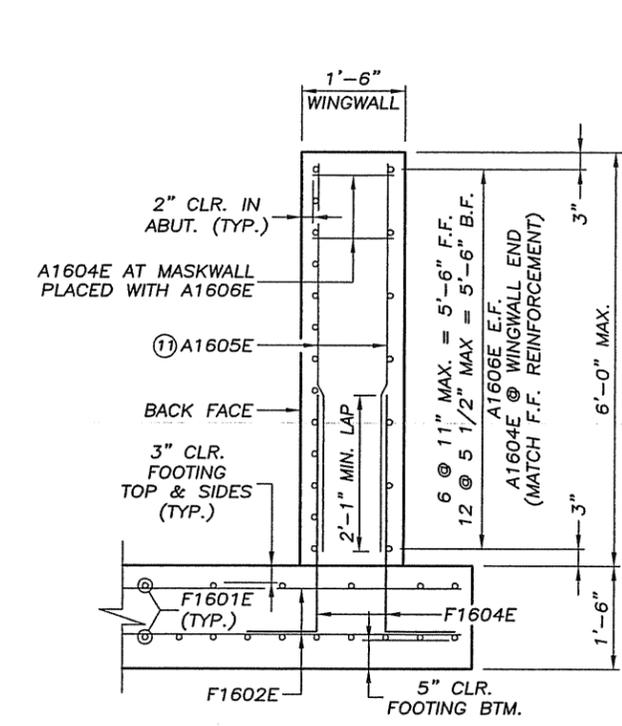
MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 07578
BRIDGE LAYOUT
APPROVED:
S.P. 07-090-02
SHEET 4 OF 28 SHEETS
DES.: DJR DRN.: NBB
CHK.: RAB CHK.: CSK **07578**



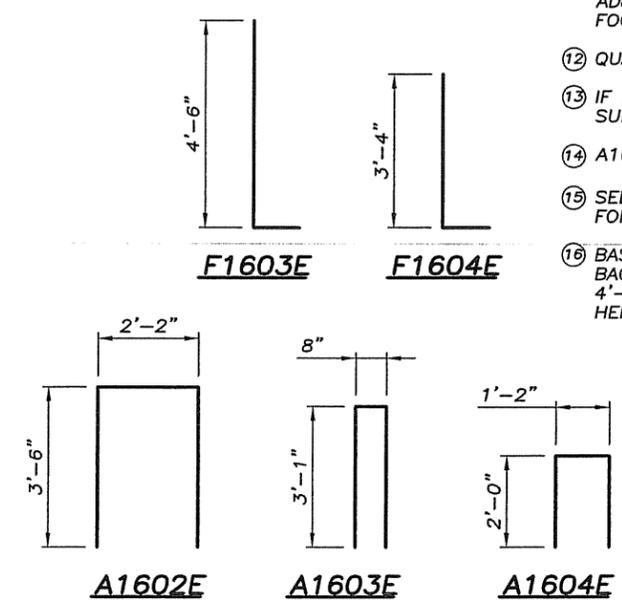
PLAN
(NOTE: FOOTING BTM. REINF. @ 6" NOT SHOWN FOR CLARITY)



SECTION A-A THRU ABUTMENT SEAT



SECTION B-B THRU WINGWALL



NOTE:
F.F. = FRONT FACE
B.F. = BACK FACE
E.F. = EACH FACE

BILL OF REINFORCEMENT ~ 2 ABUTMENTS (12)				
BAR	NO.	LENGTH	SHAPE	LOCATION
F1601E	124	9'-6"	STRT.	FOOTING ~ TRANSVERSE
F1602E	62	19'-6"	STRT.	FOOTING ~ LONGITUDINAL
F1603E	64	5'-4"	BENT	FOOTING ~ DOWEL
F1604E	68	4'-2"	BENT	FOOTING ~ DOWEL
A1601E	32	17'-8"	STRT.	SEAT ~ HORIZONTAL
A1602E	32	9'-2"	BENT	SEAT ~ TIE
A1603E	32	6'-10"	BENT	BACKWALL ~ TIE
A1604E	36	5'-2"	BENT	WINGWALL ~ HORIZONTAL TIE
A1605E	140	5'-8"	STRT.	WINGWALL ~ VERTICAL
A1606E	80	11'-8"	STRT.	WINGWALL ~ HORIZONTAL

SUMMARY OF QUANTITIES ~ 2 ABUTMENTS (12)		
116	STRUCTURAL CONCRETE (3Y43)	53 CU. YD.
2	REINFORCEMENT BARS (EPOXY COATED)	6,260 POUND
	STRUCTURE EXCAVATION (CLASS U)	270 CU. YD.
3	SELECT GRANULAR BORROW (CV)	140 CU. YD.
	AGGREGATE SLOPE PAVING	440 SQ. YD.
15	METAL RAILING	48 LIN. FT.
13	AGGREGATE BACKFILL (CV)	14 CU. YD.
45	BENCHMARK DISK	1 EACH
5	BRIDGE NAMEPLATE (SEE DETAIL B101 ON SHEET 26)	1 EACH

DESIGN NOTES

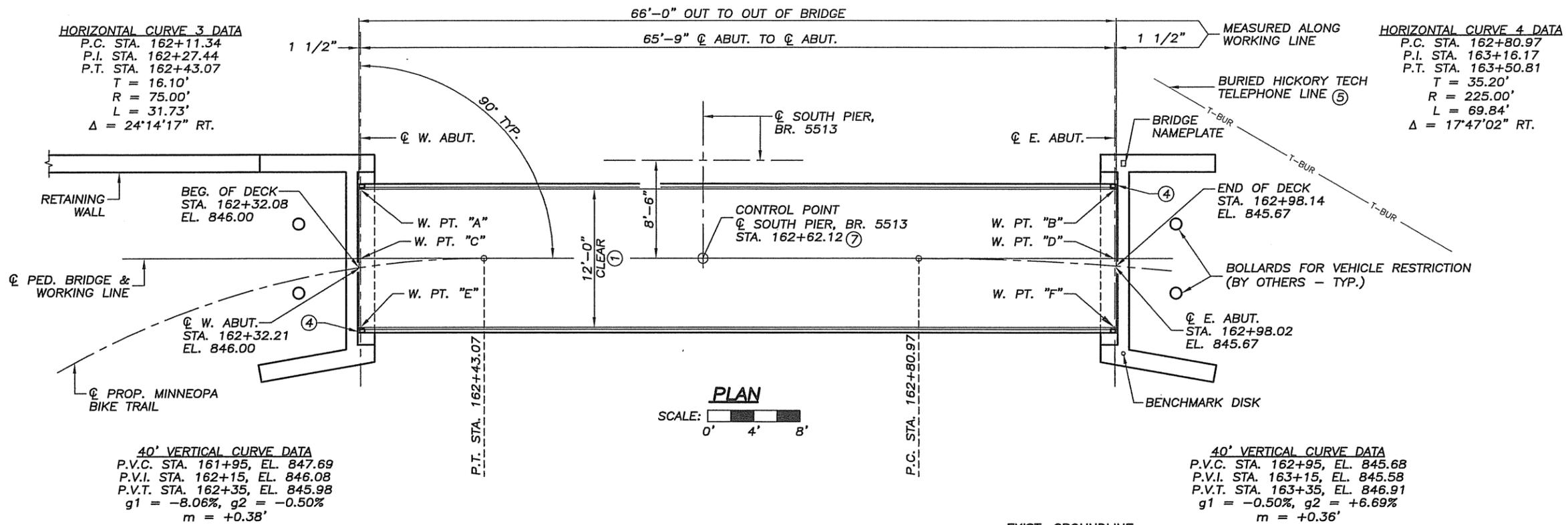
ABUTMENTS ARE DESIGNED FOR AN ALLOWABLE BEARING PRESSURE OF 2000 PSF. FOOTING BEARING SOILS SHALL BE INSPECTED AND APPROVED BY A REGISTERED ENGINEER QUALIFIED IN SOIL ENGINEERING. SEE SHEET 20 FOR FOUNDATION OPTIONS. FILL IN FRONT OF AND BEHIND ABUTMENT SHALL ALSO BE APPROVED BY SAME ENGINEER. SEE GEOTECHNICAL ENGINEERING REPORT BY CHOSEN VALLEY TESTING, INC. (PROJECT NO. R2007.249) DATED NOVEMBER 29, 2007 FOR COMPLETE RECOMMENDATIONS.

ABUTMENT IS DESIGNED FOR SUPERSTRUCTURE LOADS AS GIVEN ON SHEET 4.

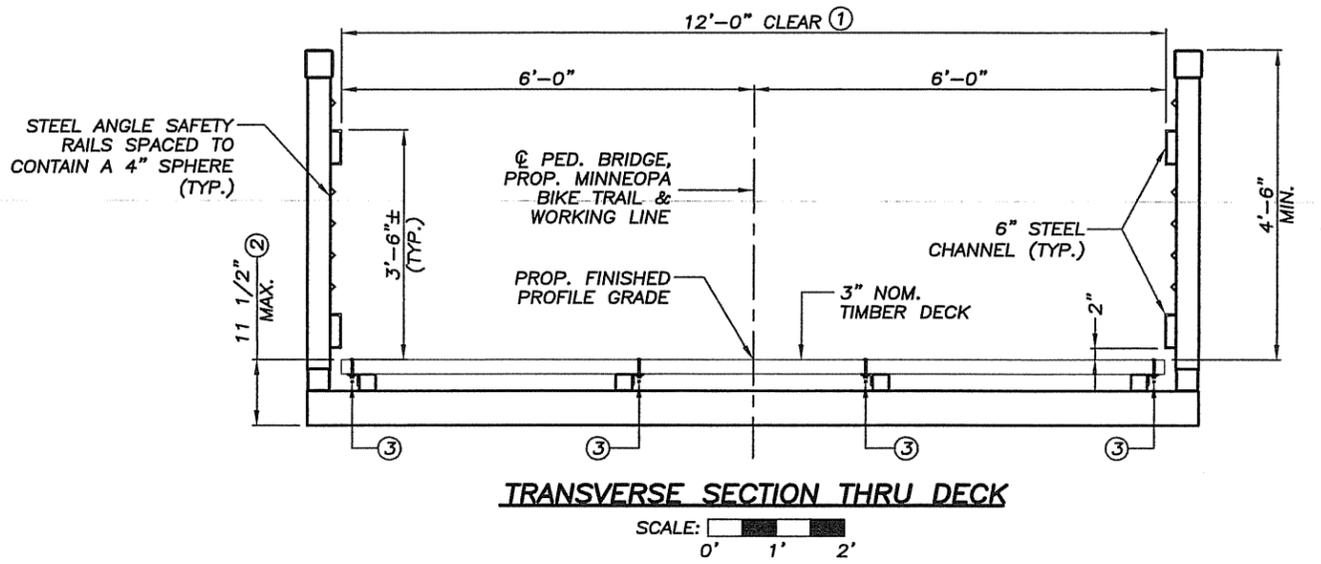
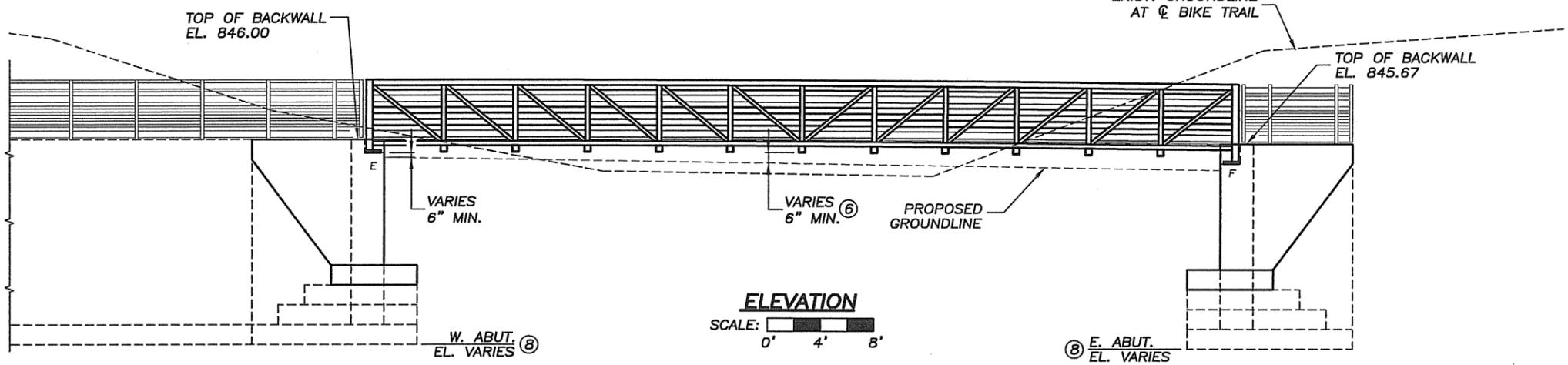
- CONCRETE SHALL HAVE $f'_c = 4,000$ PSI.
- ALL REINFORCING STEEL SHALL BE GRADE 60 AND EPOXY COATED. THE FIRST TWO DIGITS OF EACH BAR MARK INDICATES THE BAR SIZE IN MILLIMETERS.
- BACKFILL BEHIND ABUTMENTS SHALL BE SELECT GRANULAR BORROW, PER SPEC. 3149.2B2. SEE SURVEY SHEET FOR PLACEMENT LIMITS. BACKFILL DENSITY SHALL BE IN ACCORDANCE WITH REPORT BY CHOSEN VALLEY TESTING, INC. AS APPROVED BY THE ENGINEER IN THE FIELD. SEE SPECIAL PROVISIONS.
- COUNTY WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE.
- PAYMENT SHALL BE CONSIDERED INCIDENTAL TO CONCRETE PAY ITEM.
- 12 1/2"
- VERIFY ANCHOR BOLT LOCATIONS WITH STEEL PEDESTRIAN BRIDGE MANUFACTURER.
- DIMENSION MAY VARY BASED UPON THE REQUIREMENTS OF THE SELECTED BRIDGE MANUFACTURER.
- FINAL FOOTING ELEVATIONS AND ABUTMENT HEIGHT SHALL BE DETERMINED IN THE FIELD WITHIN THE CONSTRAINTS SHOWN ON THIS PLAN. FIELD VERIFICATION OF THE FOOTING SOILS IS REQUIRED (SEE DESIGN NOTES ON THIS SHEET). THE ABUTMENT HEIGHT MAY BE DECREASED AS NECESSARY IF REQUIRED LAPS ARE MAINTAINED AND REQUIRED SPACING AND EMBEDMENT AS SHOWN ARE MAINTAINED. THE TOTAL ABUTMENT HEIGHT (INCLUDING THE FOOTING) SHALL NOT BE LESS THAN 5'-0".
- PLACE A1602E & A1603E WITH F1603E.
- PLACE A1605E WITH F1604E. LENGTH OF A1605E MAY REQUIRE ADJUSTMENT BASED UPON FINAL BACKWALL HEIGHT AND/OR FINAL FOOTING ELEVATIONS (SEE KEYNOTE 9).
- QUANTITIES ARE BASED ON THE DIMENSIONS SHOWN IN THIS PLAN.
- IF AGGREGATE BACKFILL IS NOT REQUIRED FOR FOUNDATION SUPPORT, BID ITEM SHALL BE DELETED.
- A1601E BRIDGE SEAT REINFORCING MAX SPACING SHALL BE 12".
- SEE SHEETS 22 & 23 FOR DETAILS.
- BASED ON 1'-6" BACKWALL HEIGHT AND 4'-6" BRIDGE SEAT HEIGHT.

CERTIFIED BY *CMS Small Karwacki*
PROFESSIONAL ENGINEER/C.E.M. SCHALL-KARWACKI
LIC. NO. 15656 3-18-2009

MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 07578
ABUTMENT DETAILS
APPROVED:
S.P. 07-090-02
SHEET 5 OF 28 SHEETS
DES.: DJR DRN.: NBB
CHK.: RAB CHK.: CSK **07578**



BRIDGE 07590 DESIGN NOTES:
 OVERHEAD (PORTAL) BRACING IS PROHIBITED.
 THIS BRIDGE SHALL HAVE UNDERHUNG FLOOR BEAMS ATTACHED TO THE BOTTOM OF THE BOTTOM CHORD AS DEPICTED ON THIS SHEET.
 THE BRIDGE SHALL BE CAMBERED TO OFFSET THE CALCULATED DEAD LOAD DEFLECTION PLUS 0.75".



- ① CLEAR SHALL BE ACTUAL CLEAR OPENING MEASURED BETWEEN INSIDES OF THE 6" CHANNEL.
- ② THE MAXIMUM DISTANCE FROM THE TOP OF THE DECK TO THE BOTTOM OF THE LOWEST MEMBER ON THE TRUSSES (INCLUDING UNDERHUNG FLOOR BEAMS) SHALL BE 11.5".
- ③ FOR TIE DOWN REQUIREMENTS SEE DECKING NOTES ON SHEET 2.
- ④ PLACE PLAQUE WITH "NO VEHICLE ALLOWED".
- ⑤ FIELD VERIFY ALL UTILITIES. RELOCATION BY OTHERS AS NECESSARY.
- ⑥ EXCAVATION SHALL PROVIDE 6" MIN. CLEARANCE TO ALL STEEL TRUSS BRIDGE MEMBERS INCLUDING BOTTOM CHORD, UNDERHUNG FLOOR BEAMS, ETC. THIS EXCAVATION SHALL BE INCLUDED IN PRICE BID FOR STRUCTURE EXCAVATION.
- ⑦ SEE SITE LAYOUT ON SHEET 7.
- ⑧ ALL SOIL AND WEATHERED ROCK SHALL BE EXCAVATED BY CONVENTIONAL MEANS DOWN TO THE MINIMUM ABUTMENT AND RETAINING WALL ELEVATIONS GIVEN IN THESE PLANS. IF SOLID ROCK IS PRESENT ABOVE THE MINIMUM ELEVATION, THE FOOTING ELEVATION MAY BE RAISED. IF A FOOTING ELEVATION IS RAISED, THE FOOTING DEPTH AS SHOWN IN THESE PLANS SHALL BE MAINTAINED WITH A MINIMUM OF 12 INCHES OF COVER (MEASURED PERPENDICULAR TO THE SOIL SLOPE) ABOVE THE FOOTING.

APPROVED: _____
 COUNTY ENGINEER
 BLUE EARTH COUNTY
 DATE: _____

CERTIFIED BY *C.M. Schall-Karwacki*
 PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI
 LIC. NO. 15656 3-18-2009

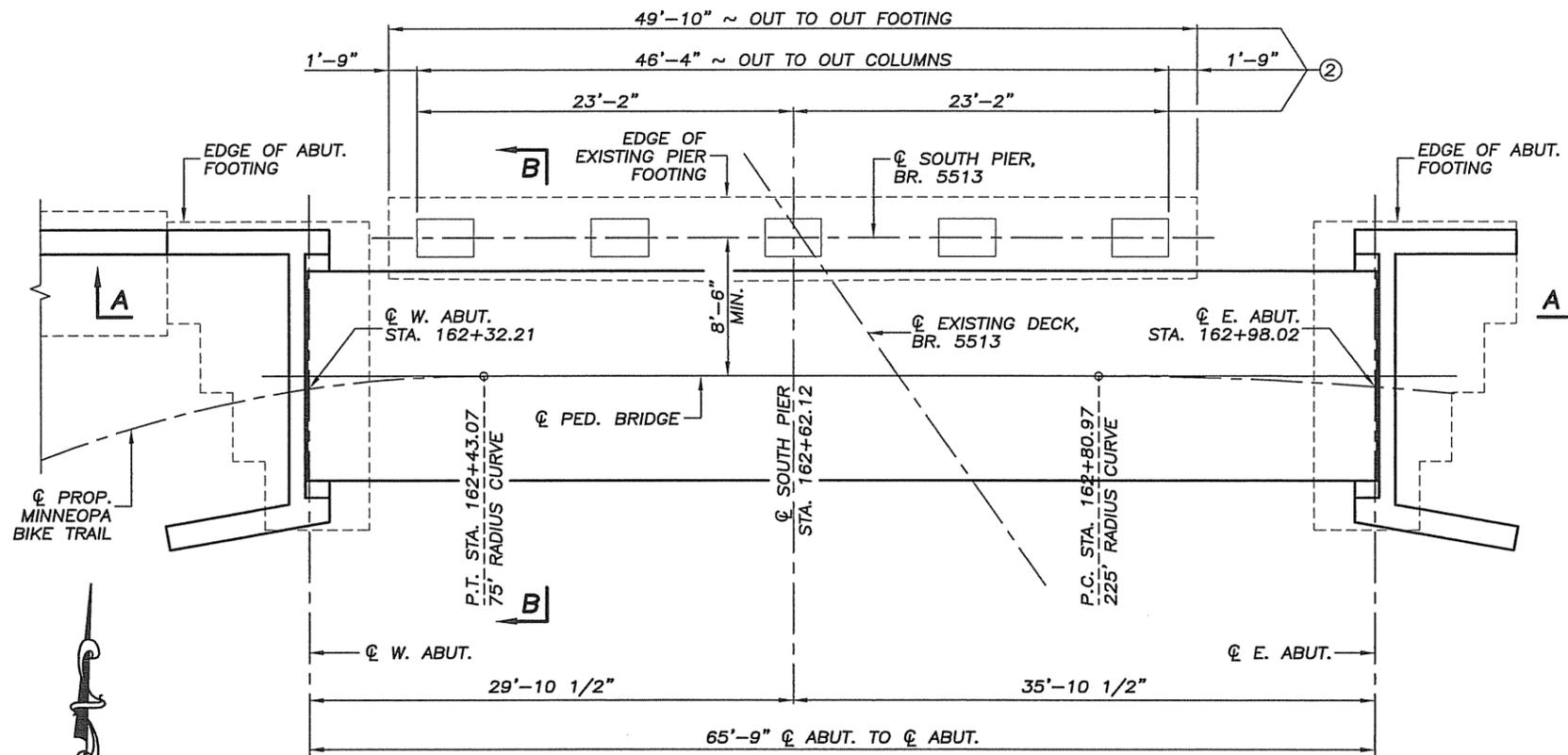
MINNEOPA BIKE TRAIL BLUE EARTH COUNTY
 MINNESOTA DEPARTMENT
 OF TRANSPORTATION

BRIDGE NO. 07590
 LOCATED 0.1 MILES WEST OF JCT. T.H. 68 &
 U.S. T.H. 169 ON THE MINNEOPA BIKE TRAIL
 UNDER EXISTING BRIDGE 5513.

66'-0" STEEL TRUSS PEDESTRIAN BRIDGE
 12 FT. CLEAR WALKWAY
 SPAN IDENTIFICATION NO. 303
**GENERAL PLAN &
 ELEVATION**

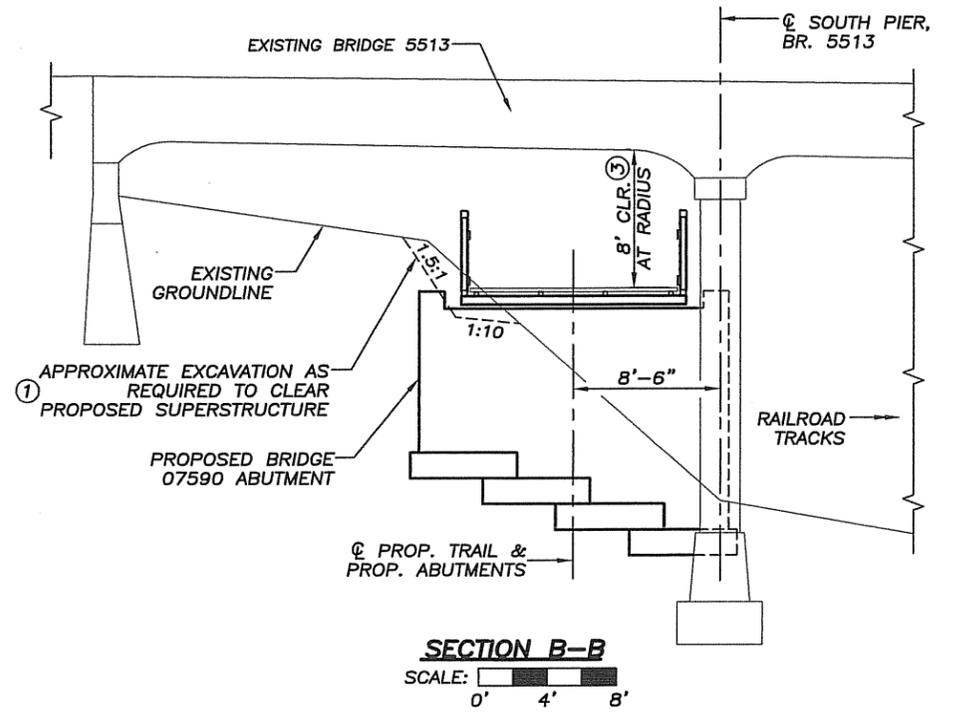
SEC. 15 TWP. 108 N R 27 W
 TOWNSHIP: SOUTH BEND
 COUNTY: BLUE EARTH
 APPROVED: *R. West*
 STATE BRIDGE ENGINEER
 DATE: 4/30/09

S.P. 07-090-02
 SHEET 6 OF 28 SHEETS
 DES.: DJR DRN.: NBB
 CHK.: RAB CHK.: CSK **07590**

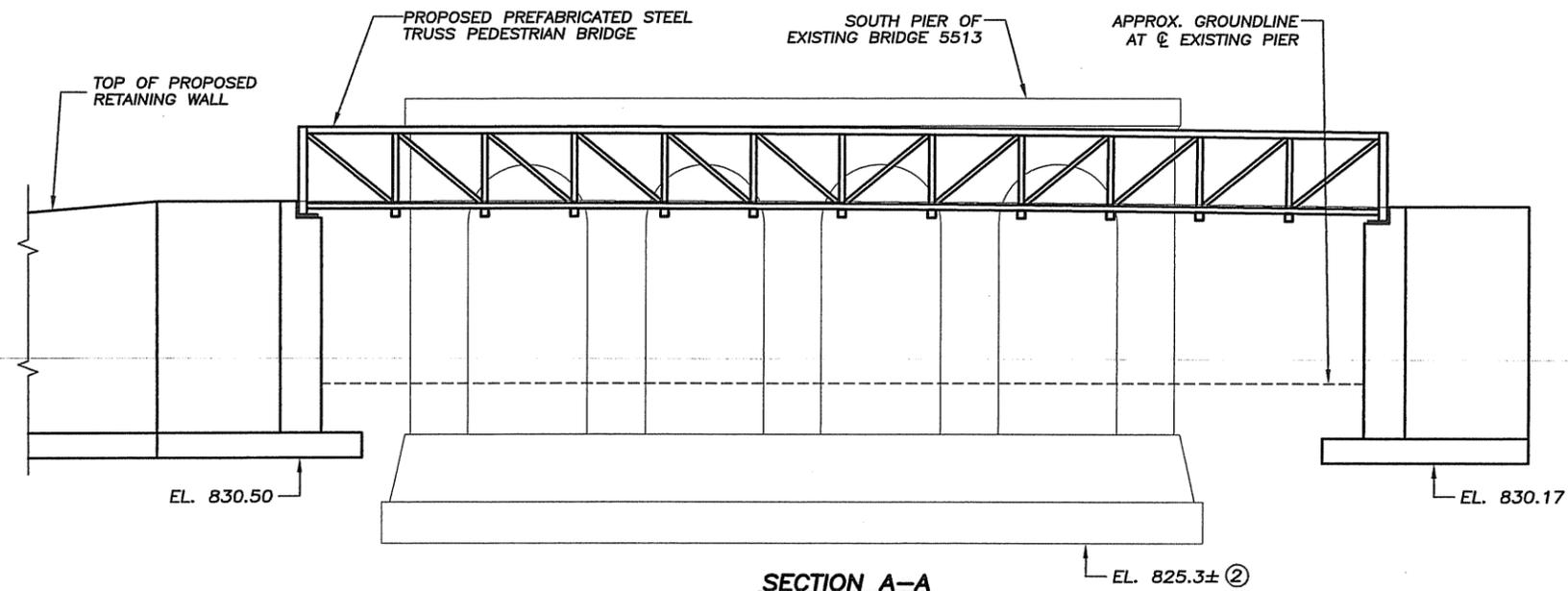


PLAN
SCALE: 0' 4' 8'

- ① EXCAVATION SHALL PROVIDE 6" MIN. CLEARANCE TO ALL STEEL TRUSS BRIDGE MEMBERS INCLUDING BOTTOM CHORD, UNDERHUNG FLOOR BEAMS, ETC. THIS EXCAVATION SHALL BE INCLUDED IN PRICE BID FOR STRUCTURE EXCAVATION.
- ② EXISTING BRIDGE DATA TO BE VERIFIED BY CONTRACTOR.
- ③ VERTICAL CLEARANCE ACCOUNTS FOR 0.75" OF RESIDUAL CAMBER OF THE TRUSS BRIDGE.



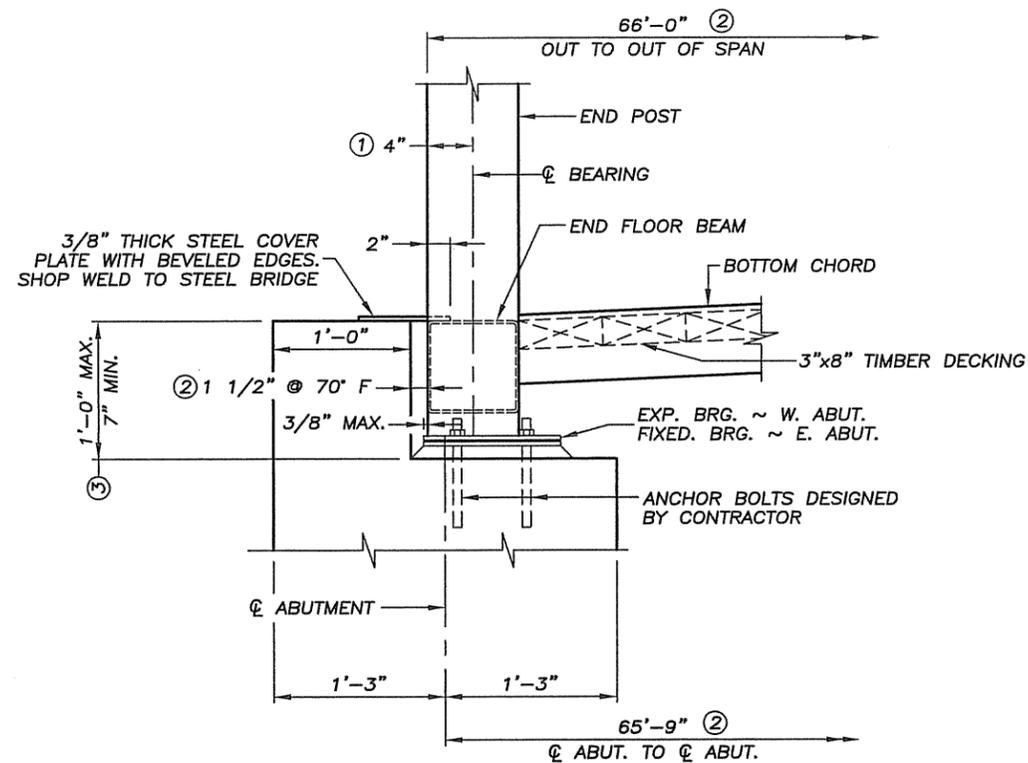
SECTION B-B
SCALE: 0' 4' 8'



SECTION A-A
(BR. 5513 DECK NOT SHOWN)
SCALE: 0' 4' 8'

CERTIFIED BY *EMS Schall-Karwacki*
PROFESSIONAL ENGINEER/C.E.M. SCHALL-KARWACKI
LIC. NO. 15656 3-18-2009

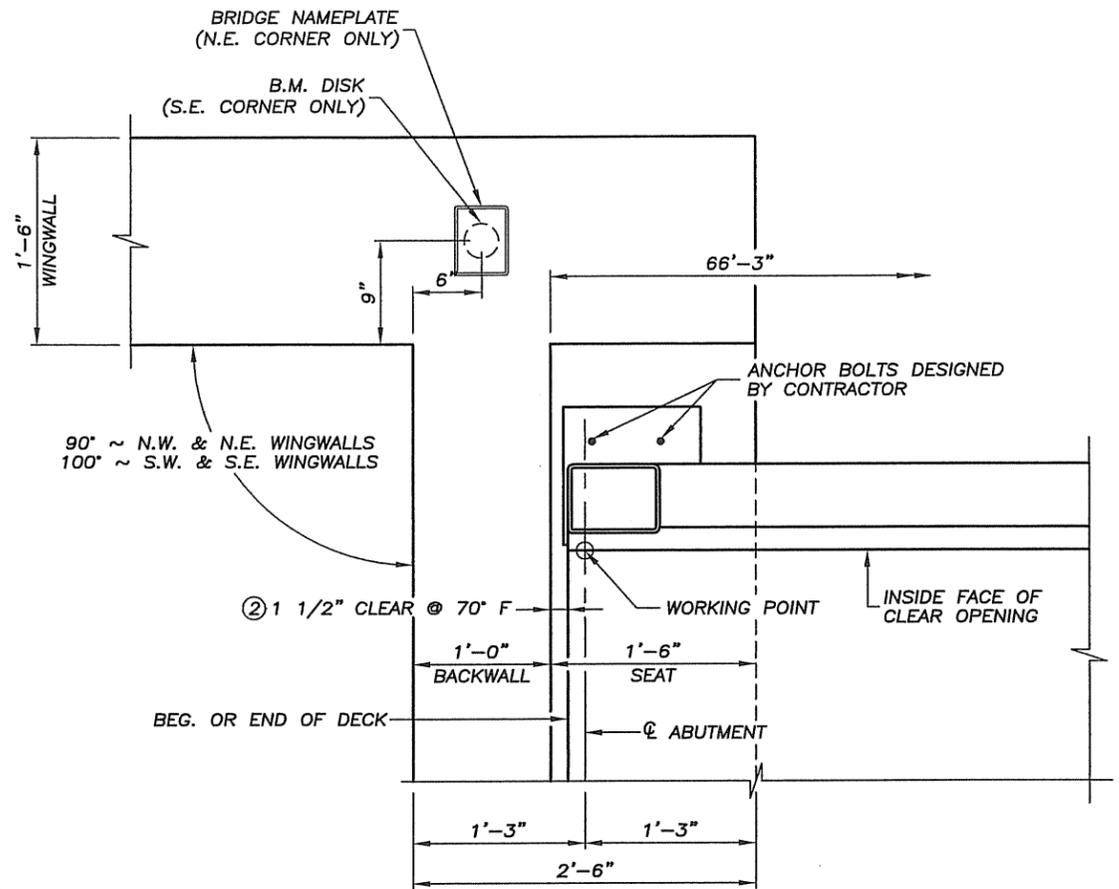
MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 07590
SITE LAYOUT
APPROVED:
S.P. 07-090-02
SHEET 7 OF 28 SHEETS
DES.: DJR DRN.: NBB
CHK.: RAB CHK.: GSK **07590**



ABUTMENT BEARING DETAIL

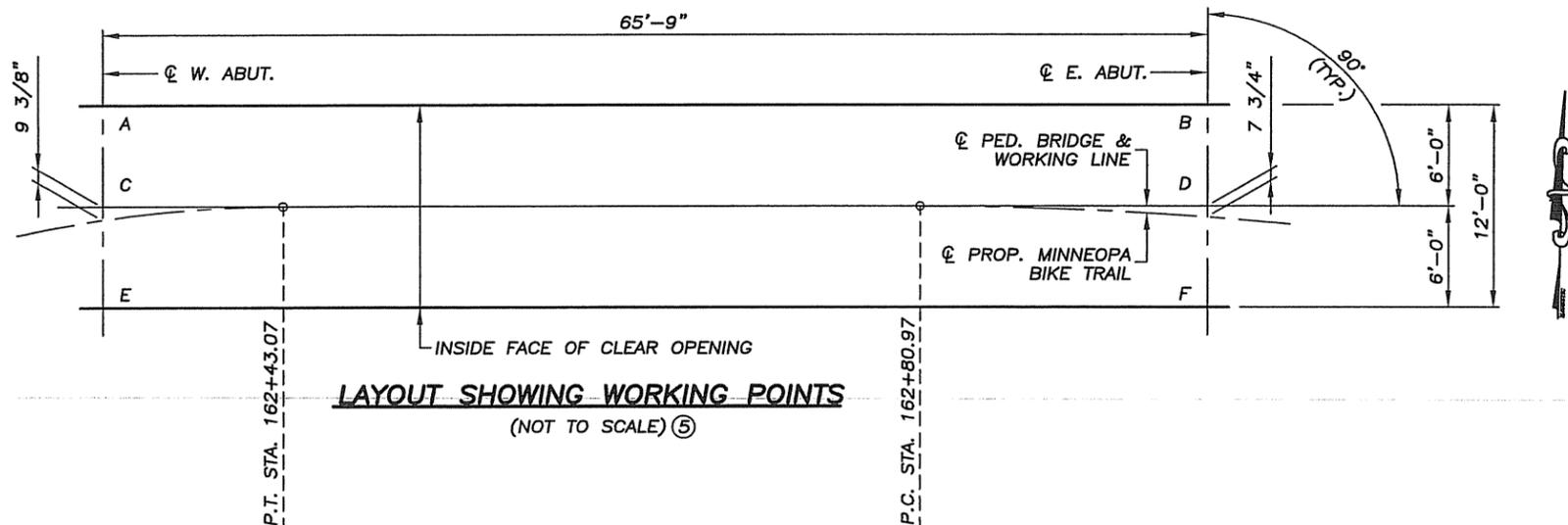
SCALE: 0' 1' 2'

- ① DIMENSION ASSUMED, MAY VARY.
- ② DIMENSION SHALL BE MAINTAINED.
- ③ EXACT ABUTMENT BACKWALL HEIGHT SHALL BE VERIFIED WITH BRIDGE MANUFACTURER.
- ④ IF REACTIONS SHOWN ARE EXCEEDED, ABUTMENT DESIGNER SHALL BE NOTIFIED.
- ⑤ SEE SHEET 6 FOR HORIZONTAL CURVE DATA.



TYPICAL CORNER DETAIL

SCALE: 0' 1' 2'



LAYOUT SHOWING WORKING POINTS

(NOT TO SCALE) ⑤

BRIDGE REACTIONS ④			
COMBINE REACTIONS AS PER LOCAL OR GOVERNING BUILDING CODES AS REQUIRED		+ DOWNWARD LOAD	
REACTIONS ARE NOT TO BE EXCEEDED WITHOUT INFORMING THE ENGINEER SEALING THE ABUTMENT PLANS.		- UPWARD LOAD	
LOAD	P lbs	H lbs	L lbs
DEAD	7,500		
UNIFORM LIVE	16,800		
WIND		6,300	4,200
WINDWARD	-7,900		
LEEWARD	1,500		
THERMAL			1,400

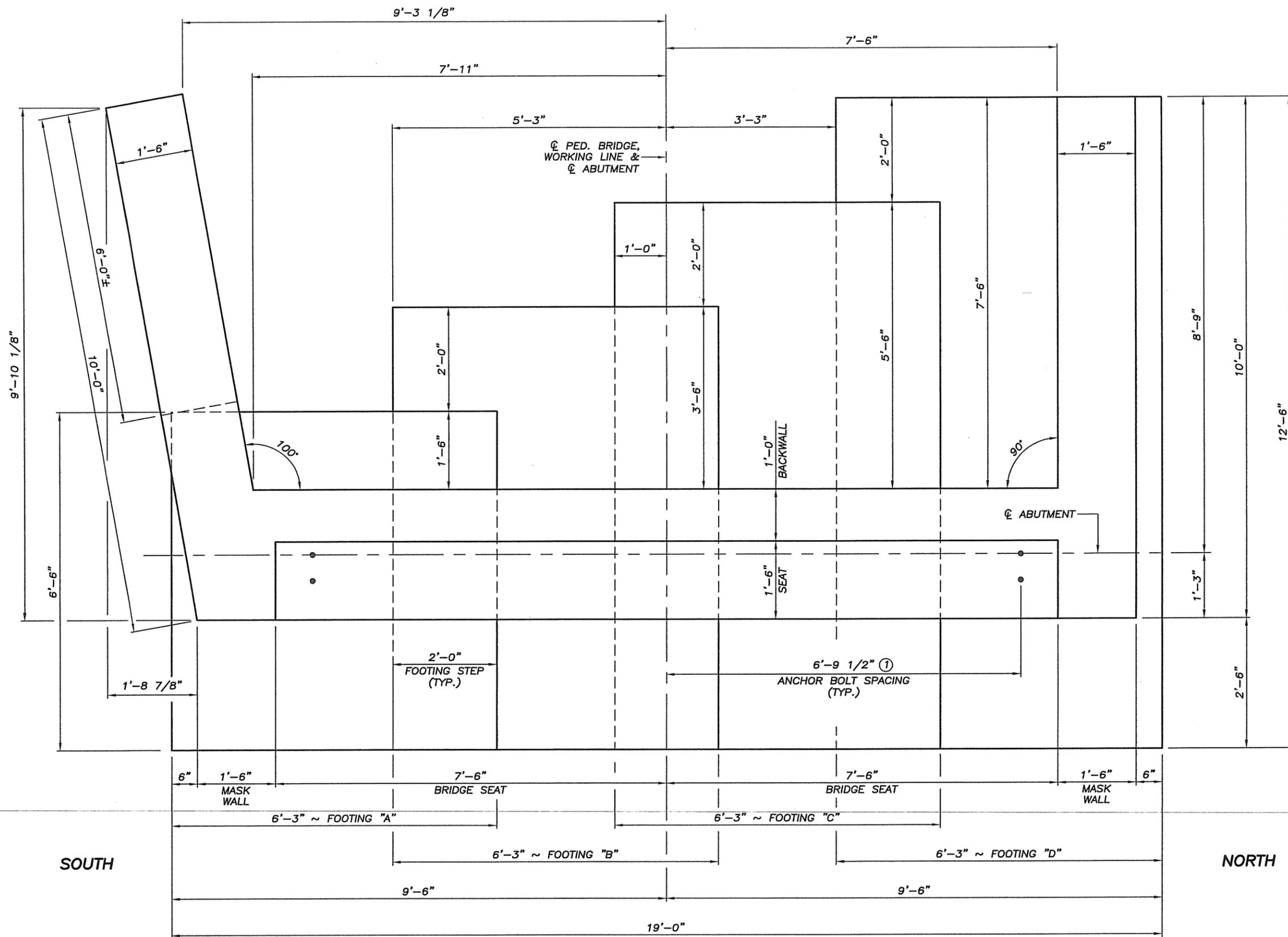
"P" - VERTICAL LOAD EACH BASE PLATE (4 PER SPAN)
 "H" - HORIZONTAL LOAD EACH END OF BRIDGE (2 PER SPAN)
 "L" - LONGITUDINAL LOAD EACH BASE PLATE (4 PER SPAN)

CERTIFIED BY: *CM Schall-Karwacki*
 PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI
 LIC. NO. 15656 3-18-2009

MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 07590
BRIDGE LAYOUT
 APPROVED:
 S.P. 07-090-02
 SHEET 8 OF 28 SHEETS
 DES.: DJR DRN.: NBB
 CHK.: RAB CHK.: CSK **07590**

DIMENSIONS BETWEEN WORKING POINTS							ELEVATIONS				
POINT	STATION	A	B	C	D	E	F	TOP OF DECK	③ DECK TO BRIDGE SEAT	③ BRIDGE SEAT	POINT
A	162+33.11		65.75	6.00	66.02		66.84	846.00	1.50	844.50	A
B	162+97.53				6.00	66.84		845.67	1.50	844.17	B
C	162+32.32				65.75	6.00	66.02	846.00	1.50	844.50	C
D	162+97.97						6.00	845.67	1.50	844.17	D
E	162+31.40						65.75	846.00	1.50	844.50	E
F	162+98.43							845.67	1.50	844.17	F

① VERIFY ANCHOR BOLT LOCATIONS WITH STEEL PEDESTRIAN BRIDGE MANUFACTURER.

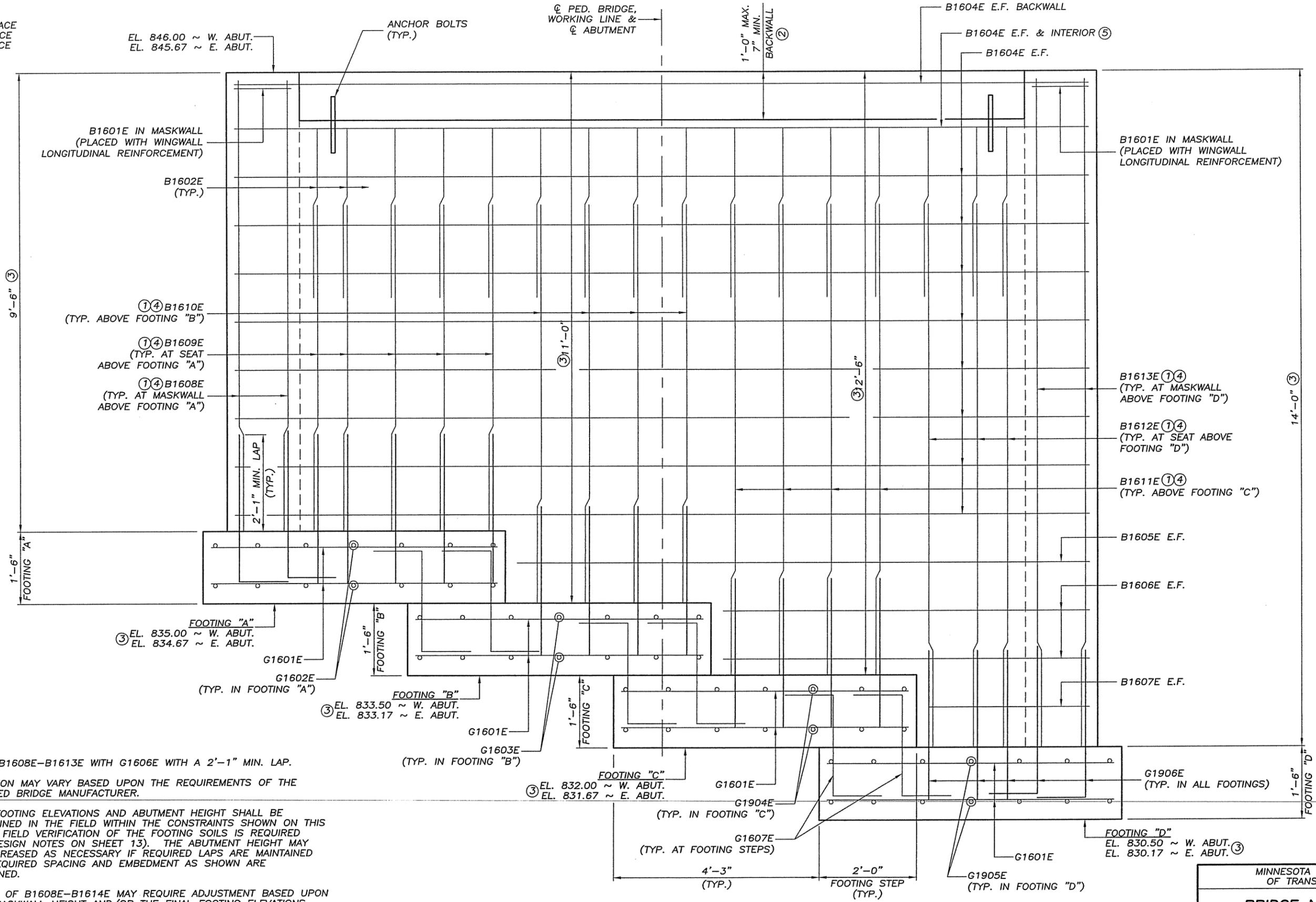


PLAN
(WEST ABUTMENT SHOWN, EAST ABUTMENT OPPOSITE HAND)

CERTIFIED BY *CMS Schall-Karwacki*
PROFESSIONAL ENGINEER/C.E.M. SCHALL-KARWACKI
LIC. NO. 15656 3-18-2009

MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 07590
ABUTMENT DETAILS
APPROVED:
S.P. 07-090-02
SHEET 9 OF 28 SHEETS
DES.: DJR DRN.: NBB
CHK.: RAB CHK.: CSK **07590**

NOTE:
 F.F. = FRONT FACE
 B.F. = BACK FACE
 E.F. = EACH FACE



SOUTH

NORTH

- ① PLACE B1608E-B1613E WITH G1606E WITH A 2'-1" MIN. LAP.
- ② DIMENSION MAY VARY BASED UPON THE REQUIREMENTS OF THE SELECTED BRIDGE MANUFACTURER.
- ③ FINAL FOOTING ELEVATIONS AND ABUTMENT HEIGHT SHALL BE DETERMINED IN THE FIELD WITHIN THE CONSTRAINTS SHOWN ON THIS PLAN. FIELD VERIFICATION OF THE FOOTING SOILS IS REQUIRED (SEE DESIGN NOTES ON SHEET 13). THE ABUTMENT HEIGHT MAY BE DECREASED AS NECESSARY IF REQUIRED LAPS ARE MAINTAINED AND REQUIRED SPACING AND EMBEDMENT AS SHOWN ARE MAINTAINED.
- ④ LENGTH OF B1608E-B1614E MAY REQUIRE ADJUSTMENT BASED UPON FINAL BACKWALL HEIGHT AND/OR THE FINAL FOOTING ELEVATIONS (SEE KEYNOTE 3).
- ⑤ B1604E BRIDGE SEAT REINFORCING MAXIMUM SPACING SHALL BE 12"

ELEVATION
 (WEST ABUTMENT SHOWN, EAST ABUTMENT OPPOSITE HAND)
 (VERTICAL DIMENSIONS SHOWN AT FRONT FACE OF ABUTMENT)
 (B1602E & B1603E BRIDGE SEAT REINF. NOT SHOWN FOR CLARITY)

CERTIFIED BY *C.M. Schall-Karwacki*
 PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI
 LIC. NO. 15656 3-18-2009

MINNESOTA DEPARTMENT OF TRANSPORTATION			
BRIDGE NO. 07590			
ABUTMENT DETAILS			
APPROVED:			
S.P. 07-090-02			
SHEET 11 OF 28 SHEETS			
DES.:	DJR	DRN.:	NBB
CHK.:	RAB	CHK.:	CSK
			07590

NOTE:
 F.F. = FRONT FACE
 B.F. = BACK FACE
 E.F. = EACH FACE

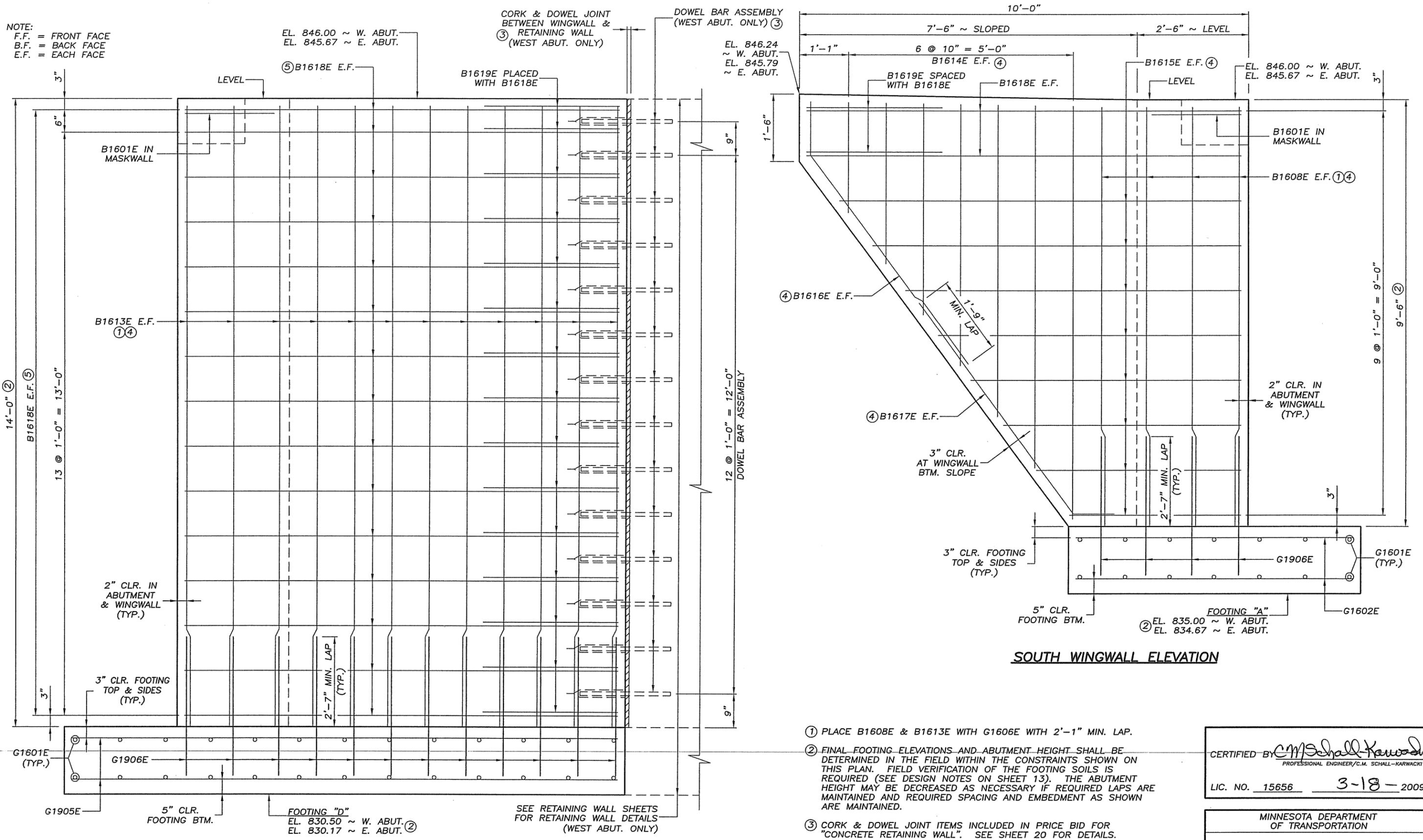
EL. 846.00 ~ W. ABUT.
 EL. 845.67 ~ E. ABUT.

CORK & DOWEL JOINT
 BETWEEN WINGWALL &
 RETAINING WALL
 (WEST ABUT. ONLY) ③

DOWEL BAR ASSEMBLY
 (WEST ABUT. ONLY) ③

EL. 846.24
 ~ W. ABUT.
 EL. 845.79
 ~ E. ABUT.

EL. 846.00 ~ W. ABUT.
 EL. 845.67 ~ E. ABUT.



NORTH WINGWALL ELEVATION

SOUTH WINGWALL ELEVATION

- ① PLACE B1608E & B1613E WITH G1606E WITH 2'-1" MIN. LAP.
- ② FINAL FOOTING ELEVATIONS AND ABUTMENT HEIGHT SHALL BE DETERMINED IN THE FIELD WITHIN THE CONSTRAINTS SHOWN ON THIS PLAN. FIELD VERIFICATION OF THE FOOTING SOILS IS REQUIRED (SEE DESIGN NOTES ON SHEET 13). THE ABUTMENT HEIGHT MAY BE DECREASED AS NECESSARY IF REQUIRED LAPS ARE MAINTAINED AND REQUIRED SPACING AND EMBEDMENT AS SHOWN ARE MAINTAINED.
- ③ CORK & DOWEL JOINT ITEMS INCLUDED IN PRICE BID FOR "CONCRETE RETAINING WALL". SEE SHEET 20 FOR DETAILS.
- ④ LENGTH OF B1608E-B1616E MAY REQUIRE ADJUSTMENT BASED UPON FINAL BACKWALL HEIGHT AND/OR THE FINAL FOOTING ELEVATIONS (SEE KEYNOTE 2).
- ⑤ HORIZONTAL WINGWALL BARS TO BE PLACED 2" CLEAR FROM FACE. VERTICAL BARS TO BE PLACED INSIDE OF HORIZONTAL BARS.

CERTIFIED BY *CMSchall-Karwacki*
 PROFESSIONAL ENGINEER/C.E. SCHALL-KARWACKI
 LIC. NO. 15656 3-18-2009

MINNESOTA DEPARTMENT
 OF TRANSPORTATION
BRIDGE NO. 07590
ABUTMENT DETAILS
 APPROVED:
 S.P. 07-090-02
 SHEET 12 OF 28 SHEETS
 DES.: DJR DRN.: NBB
 CHK.: RAB CHK.: CSK **07590**

BILL OF REINFORCEMENT ~ 2 ABUTMENTS (12)

BAR	NO.	LENGTH	SHAPE	LOCATION
G1601E	160	5'-9"	STRT.	FOOTING ~ TRANSVERSE
G1602E	28	6'-0"	STRT.	FOOTING "A" ~ LONGITUDINAL
G1603E	28	8'-0"	STRT.	FOOTING "B" ~ LONGITUDINAL
G1904E	28	10'-0"	STRT.	FOOTING "C" ~ LONGITUDINAL
G1905E	28	12'-0"	STRT.	FOOTING "D" ~ LONGITUDINAL
G1906E	128	4'-8"	BENT	FOOTING ~ DOWEL
G1607E	108	4'-2"	BENT	FOOTING ~ TIE
B1601E	4	5'-2"	BENT	MASKWALL ~ TIE
B1602E	32	9'-2"	BENT	SEAT ~ TIE
B1603E	32	5'-10"	BENT	BACKWALL ~ TIE
B1604E	44	17'-8"	STRT.	SEAT ~ HORIZONTAL
B1605E	4	11'-11"	STRT.	SEAT ~ HORIZONTAL
B1606E	8	7'-8"	STRT.	SEAT ~ HORIZONTAL
B1607E	4	3'-5"	STRT.	SEAT ~ HORIZONTAL
(10)(11) B1608E	16	9'-4"	STRT.	SEAT & SOUTH W.W. ~ VERTICAL
(10)(11) B1609E	20	7'-0"	STRT.	SEAT ~ VERTICAL
(10)(11) B1610E	16	8'-6"	STRT.	SEAT ~ VERTICAL
(10)(11) B1611E	16	10'-0"	STRT.	SEAT ~ VERTICAL
(10)(11) B1612E	12	11'-6"	STRT.	SEAT ~ VERTICAL
(10)(11) B1613E	48	13'-10"	STRT.	SEAT & N. WINGWALL ~ VERTICAL
(11) B1614E	4 SER. OF 7	FROM 2'-5" TO 9'-2"	STRT.	SOUTH WINGWALL ~ VERTICAL
(11) B1615E	4 SER. OF 8	FROM 3'-9" TO 8'-11"	STRT.	SOUTH WINGWALL ~ HORIZONTAL
(11) B1616E	4	7'-1"	BENT	SOUTH WINGWALL ~ DIAGONAL
(11) B1617E	4	6'-10"	BENT	SOUTH WINGWALL ~ DIAGONAL
B1618E	68	9'-8"	STRT.	WINGWALL ~ HORIZONTAL
B1619E	34	7'-2"	BENT	WINGWALL ~ END TIE

SUMMARY OF QUANTITIES ~ 2 ABUTMENTS (12)

(1)(15) STRUCTURAL CONCRETE (3Y43)	81 CU. YD.
(2) REINFORCEMENT BARS (EPOXY COATED)	7,950 POUND
STRUCTURE EXCAVATION (CLASS U)	950 CU. YD.
(3) SELECT GRANULAR BORROW (CV)	260 CU. YD.
AGGREGATE SLOPE PAVING	130 SQ. YD.
(13) METAL RAILING	40 LIN. FT.
(14) AGGREGATE BACKFILL (CV)	12 CU. YD.
(4)(5) BENCHMARK DISK	1 EACH
(5) BRIDGE NAMEPLATE (SEE DETAIL B101 ON SHEET 26)	1 EACH

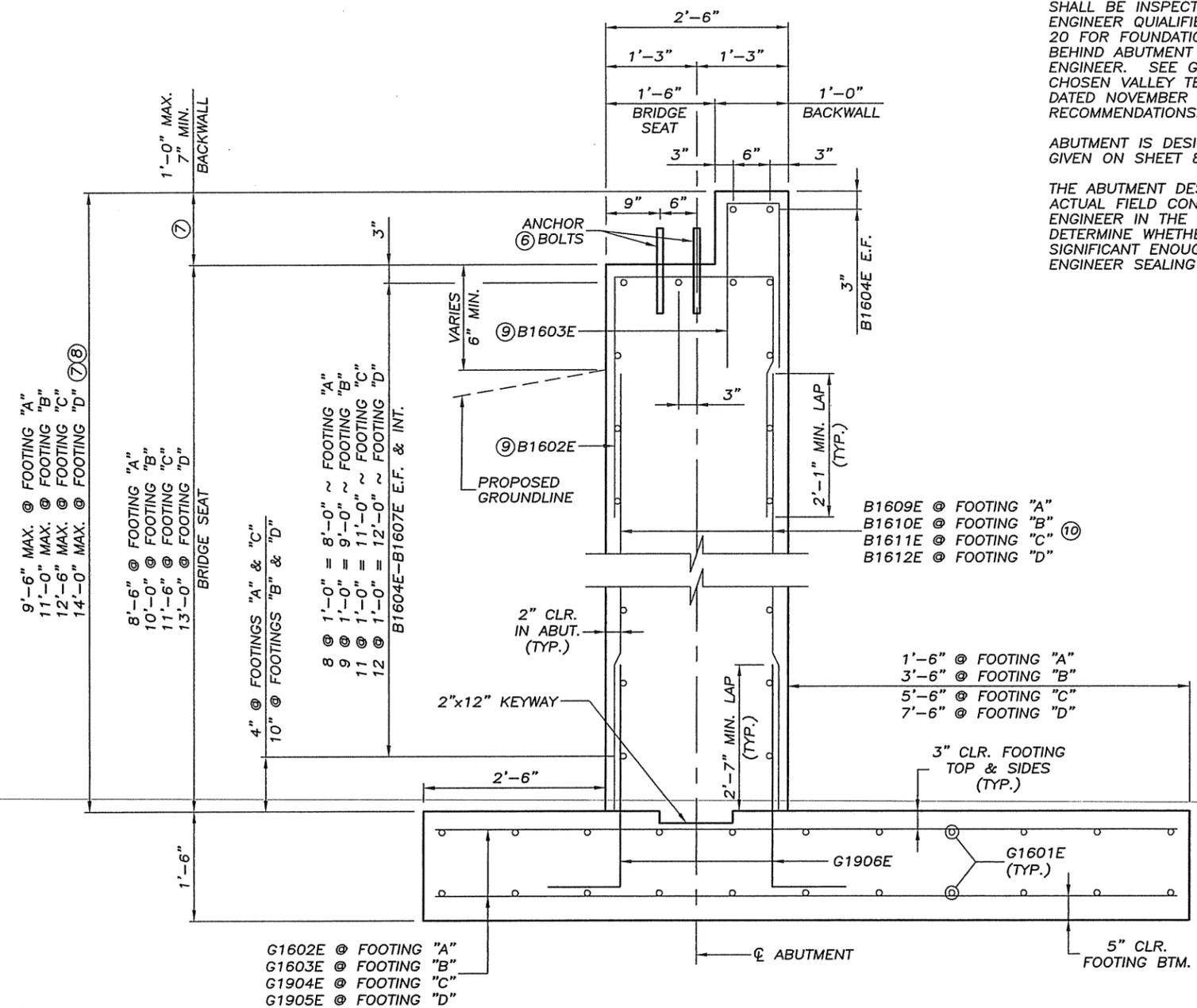
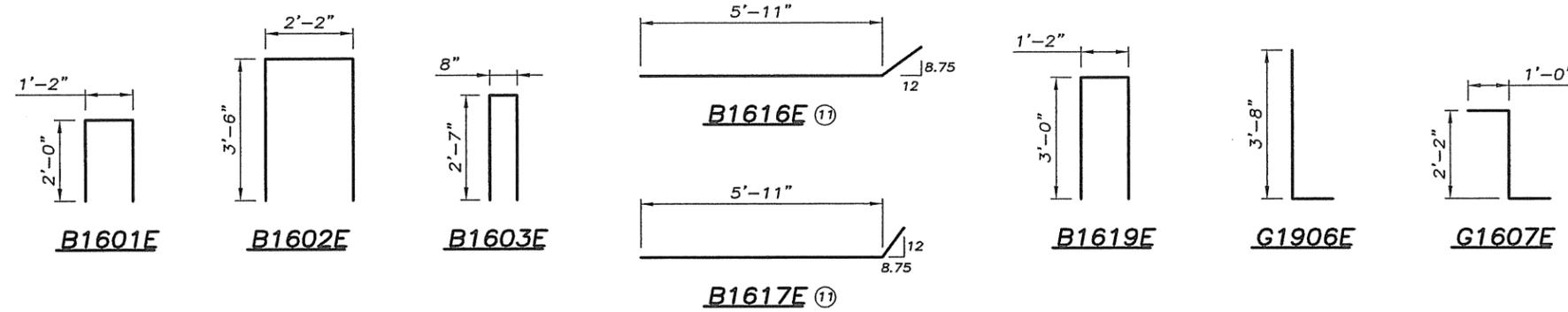
DESIGN NOTES

ABUTMENTS ARE DESIGNED FOR AN ALLOWABLE BEARING PRESSURE OF 3500 PSF. FOOTING BEARING SOILS SHALL BE INSPECTED AND APPROVED BY A REGISTERED ENGINEER QUALIFIED IN SOIL ENGINEERING. SEE SHEET 20 FOR FOUNDATION OPTIONS. FILL IN FRONT OF AND BEHIND ABUTMENT SHALL ALSO BE APPROVED BY SAME ENGINEER. SEE GEOTECHNICAL ENGINEERING REPORT BY CHOSEN VALLEY TESTING, INC. (PROJECT NO. R2007.249) DATED NOVEMBER 29, 2007 FOR COMPLETE RECOMMENDATIONS.

ABUTMENT IS DESIGNED FOR SUPERSTRUCTURE LOADS AS GIVEN ON SHEET 8.

THE ABUTMENT DESIGN MAY BE ADJUSTED BASED UPON ACTUAL FIELD CONDITIONS PER THE APPROVAL OF THE ENGINEER IN THE FIELD. THAT SAME ENGINEER SHALL DETERMINE WHETHER THE PROPOSED ADJUSTMENTS ARE SIGNIFICANT ENOUGH TO REQUIRE A SUBMITTAL TO THE ENGINEER SEALING THESE PLANS FOR REVIEW.

- CONCRETE SHALL HAVE $f'_c = 4,000$ PSI.
- ALL REINFORCING STEEL SHALL BE GRADE 60 AND EPOXY COATED. THE FIRST DIGIT OF EACH BAR MARK INDICATES THE BAR SIZE IN MILLIMETERS.
- BACKFILL BEHIND ABUTMENTS SHALL BE SELECT GRANULAR BORROW, PER SPEC. 3149.2B2. SEE SURVEY SHEET FOR PLACEMENT LIMITS. BACKFILL DENSITY SHALL BE IN ACCORDANCE WITH REPORT BY CHOSEN VALLEY TESTING, INC. AS APPROVED BY THE ENGINEER IN THE FIELD. SEE SPECIAL PROVISIONS.
- COUNTY WILL FURNISH DISK. BEND PRONGS OUTWARD TO ANCHOR DISK IN CONCRETE. BOTTOM OF DISK TOP TO BE PLACED FLUSH WITH CONCRETE.
- PAYMENT SHALL BE CONSIDERED INCIDENTAL TO CONCRETE PAY ITEM.
- VERIFY ANCHOR BOLT LOCATIONS WITH STEEL PEDESTRIAN BRIDGE MANUFACTURER.
- DIMENSION MAY VARY BASED UPON THE REQUIREMENTS OF THE SELECTED BRIDGE MANUFACTURER.
- FINAL FOOTING ELEVATIONS AND ABUTMENT HEIGHT SHALL BE DETERMINED IN THE FIELD WITHIN THE CONSTRAINTS SHOWN ON THIS PLAN. FIELD VERIFICATION OF THE FOOTING SOILS IS REQUIRED (SEE DESIGN NOTES ON THIS SHEET). THE ABUTMENT HEIGHT MAY BE DECREASED AS NECESSARY IF REQUIRED LAPS ARE MAINTAINED AND REQUIRED SPACING AND EMBEDMENT AS SHOWN ARE MAINTAINED.
- PLACE B1602E & B1603E WITH B1609E-B1612E.
- PLACE B1608E-B1613E WITH G1606E.
- LENGTH OF B1608E-B1617E MAY REQUIRE ADJUSTMENT BASED UPON FINAL BACKWALL HEIGHT AND/OR THE FINAL FOOTING ELEVATIONS (SEE KEYNOTE 8).
- QUANTITIES ARE BASED ON THE DIMENSIONS SHOWN IN THIS PLAN.
- SEE SHEETS 22 & 23 FOR DETAILS.
- IF AGGREGATE BACKFILL IS NOT REQUIRED FOR FOUNDATION SUPPORT, BID ITEM SHALL BE DELETED.
- BASED ON 1'-0" BACKWALL HEIGHT.

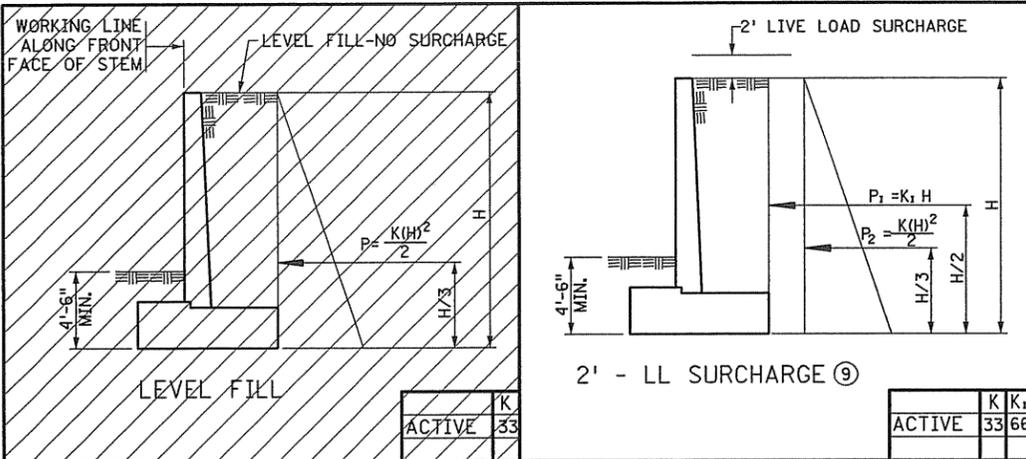


TYPICAL SECTION THRU ABUTMENT SEAT

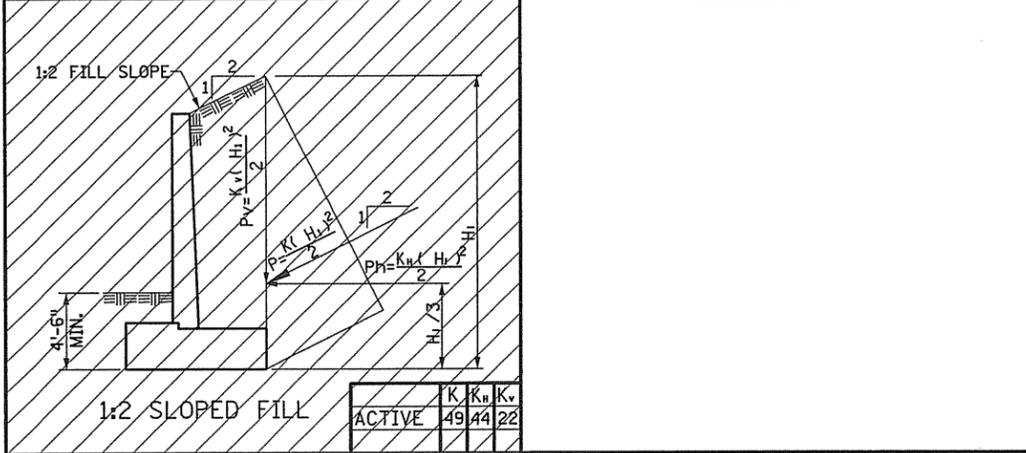
NOTE:
 F.F. = FRONT FACE
 B.F. = BACK FACE
 E.F. = EACH FACE

CERTIFIED BY *CMSchall-Karwacki*
 PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI
 LIC. NO. 15656 3-18-2009

MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 07590
ABUTMENT DETAILS
 APPROVED:
 S.P. 07-090-02
 SHEET 13 OF 28 SHEETS
 DES.: DJR DRN.: NBB
 CHK.: RAB CHK.: CSK **07590**



	K	K ₁
ACTIVE	33	66



	K	K ₁	K _v
ACTIVE	49	44	22

LOADING CASES

DESIGN CRITERIA

1992 AASHTO DESIGN SPECIFICATIONS
 WORKING STRESS-STABILITY, FOUNDATIONS
 LOAD FACTOR DESIGN-REINFORCED CONCRETE
 f'c=4000 PSI n=8
 fy =60000 PSI

⑨ FOUNDATION TYPE SHALL BE SPREAD FOOTING.

ALLOWABLE BENDING (LATERAL LOAD) PER PILE:
 60 TON CIP PILE: 13 KIPS
 55 TON HP PILE: 12 KIPS
 50 TON CIP PILE: 11 KIPS
 30 TON TIMBER PILE: 7.5 KIPS

BACKFILL CHARACTERISTICS:
 INTERNAL ANGLE OF FRICTION: 35°
 EQUIVALENT FLUID PRESSURE (k), IN PCF, IS SHOWN IN LOADING CASE TABLES.
 UNIT WEIGHT: 125 PCF
 COEFFICIENT OF FRICTION: 0.55
 βe = 1.0

BAR LAP (CLASS C)

BAR SIZE	PLAIN ④	EPOXY ④
16	2'-5"	2'-11"
19	2'-11"	3'-10"
22	3'-8"	4'-11"
25	4'-10"	6'-5"
29	6'-1"	8'-1"

BAR LAP (CLASS A)

BAR SIZE	EPOXY ④
16	1'-11"
19	2'-3"
22	2'-11"
25	3'-9"
29	4'-9"

SUMMARY OF QUANTITIES FOR RETAINING WALLS

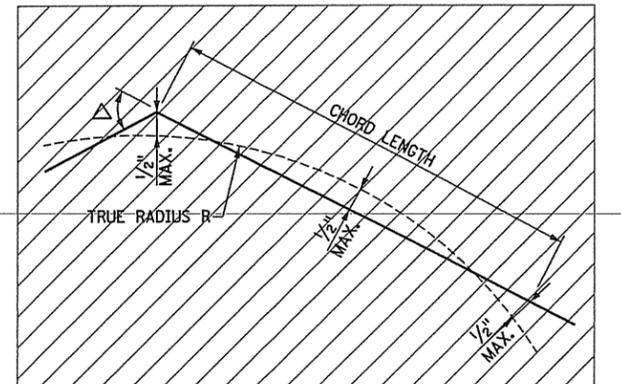
PANEL	STRUCTURAL CONCRETE		REINFORCEMENT BARS ⑩		STRUCTURE EXCAVATION	SELECT GRANULAR BORROW (CV) ⑨	AGGREGATE BACKFILL (CV) ⑬	METAL RAILING ⑭
	FOOTING	STEM	FOOTING	STEM	CLASS U ⑪	CU YD	CU YD	LIN FT
	3Y43 ⑨	3Y43 ⑫		⑥ ⑦				
A	11	22	1490	1380	70	125	7	24
B	11	22	1490	1380	70	135	7	24
TOTAL=	22	44	2980	2760	140	260	14	48

NOTES:

- FOOTING QUANTITIES REQUIRED ARE INCIDENTAL TO THE UNIT BID PRICE OF SQ. FT. FOR BID ITEM "CONCRETE RETAINING WALL".
- ALL EXCAVATION FOR THE RETAINING WALLS SHALL BE INCLUDED IN THE PRICE BID FOR UNCLASSIFIED EXCAVATION.
- BACKFILL BEHIND RETAINING WALLS SHALL BE SELECT GRANULAR BORROW PER SPEC 3149.2B2. BACKFILL DENSITY SHALL BE IN ACCORDANCE WITH REPORT BY CHOSEN VALLEY TESTING, INC. AS APPROVED BY THE ENGINEER IN THE FIELD.
- ① MODIFIED TO LESS THAN 10% PASSING A NO. 200 SIEVE. SPEC. 3149.2B.
- ② COMPACT TO 100% DENSITY IN ACCORDANCE WITH SPEC. 2105.3F1 UNLESS RECOMMENDED OTHERWISE BY THE SOILS ENGINEER.
- ③ LIMITING CRITERIA.
- ④ LAPS ARE GIVEN FOR THE TOP BAR CONDITION.
- ⑤ CURVED FORMS MAY BE USED FOR ANY WALL WITH A RADIUS, BUT MUST BE USED ON WALLS WITH RADIUS LESS THAN 23 FEET.
- ⑥ DOWELED JOINTS/CONSTRUCTION JOINTS ARE SHOWN ON STANDARD PLAN 5-297.624 (3 OF 3). THESE JOINTS ARE INCIDENTAL FOR WHICH NO DIRECT PAYMENT WILL BE MADE.
- ⑦ DOWELED JOINT/CONSTRUCTION JOINT QUANTITIES ARE NOT INCLUDED.
- ⑧ QUANTITIES FOR THE FOUNDATION WITH AGGREGATE BACKFILL OPTION ONLY.
- ⑨ DETAIL MODIFIED
- ⑩ REINFORCEMENT BARS FOR RETAINING WALLS ARE INCIDENTAL TO THE PRICE BID FOR "2411.501 - STRUCTURAL CONCRETE (3Y43)". APPROXIMATE QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
- ⑪ ESTIMATED QUANTITY DOES NOT INCLUDE EXCAVATION REQUIRED FOR PLACEMENT OF AGGREGATE BACKFILL.
- ⑫ BASED ON PANEL DIMENSIONS SHOWN IN PLAN.
- ⑬ IF AGGREGATE BACKFILL IS NOT REQUIRED FOR FOUNDATION SUPPORT, BID ITEM SHALL BE DELETED.
- ⑭ SEE SHEETS 23 & 24 FOR DETAILS.

CURVED RETAINING WALLS ALLOWABLE CHORD LENGTH ⑮

MAXIMUM DEGREE OF CURVE	RADIUS	ALLOWABLE CHORD LENGTH	DEVIATION FROM TRUE RADIUS	MAXIMUM DEFLECTION ANGLE Δ
4°-00'	1432'	30'-6"	± 1/2" (3)	1'-15"
8°-00'	716'	21'-10"	± 1/2" (3)	1'-45"
16°-30'	347'	15'-3"	± 1/2" (3)	2'-30"
23°-00'	249'	12'-11"	± 1/2" (3)	2'-57"
65°-30'	87'	7'-7 1/2"	± 1/2"	5'-00" (3)
114°-30'	50'	4'-4 5/16"	± 1/4"	5'-00" (3)
250°-00'	23'	2'-0"	± 1/8"	5'-00" (3)



GENERAL NOTES:

UTILITIES:
 EXISTING AND PROPOSED UTILITIES ARE SHOWN IN THE GRADING PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING FACILITIES AND SHALL EXERCISE CARE IN ADJACENT CONSTRUCTION.

EXCAVATION AND EARTHWORK:
 ALL EXCAVATION AND EMBANKMENT WORK SHALL CONFORM TO SPEC. 2451.

CONCRETE:
 TRANSVERSE CONSTRUCTION JOINTS IN FOOTING ARE PERMISSIBLE. KEYWAYS AND CONTINUOUS REINFORCEMENT ARE REQUIRED THROUGH THESE JOINTS.
 THE THICKNESS OF THE ARCHITECTURAL CONCRETE TEXTURE VARIES WITH THE TEXTURE RELIEF. THE STRUCTURAL CONCRETE 3Y43 QUANTITIES DO NOT INCLUDE THE MATERIAL WITHIN THE ARCHITECTURAL CONCRETE TEXTURE. CONCRETE NEEDED FOR THE TEXTURING IS INCIDENTAL FOR WHICH NO DIRECT PAYMENT WILL BE MADE. SEE SPECIAL PROVISIONS 2411.

POURING SEQUENCE:
 THE POURING SEQUENCE SHALL BE AT THE CONTRACTOR'S OPTION BUT MUST BE SUBMITTED (WITH ADEQUATE APPROVAL TIME) TO THE ENGINEER FOR APPROVAL PRIOR TO BEGINNING THE FIRST POUR.

CONSTRUCTION:
 CONSTRUCTION SHALL BE IN ACCORDANCE WITH SPEC. 2411, EXCEPT AS NOTED.

REINFORCING STEEL:
 REINFORCEMENT BARS SHALL BE DEFORMED BILLET STEEL BARS CONFORMING TO SPEC. 3301, GRADE 60 AND EPOXY COATED EXCEPT AS NOTED.

THE CLEAR DISTANCE BETWEEN REINFORCEMENT BARS AND FACE OF CONCRETE SHALL BE 3 INCHES IN FOOTINGS, 5 INCHES IN BOTTOM OF SPREAD FOOTINGS, 2 INCHES ON ARCHITECTURAL CONCRETE TEXTURE, AND 2 INCHES ELSEWHERE UNLESS OTHERWISE NOTED.

THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR NUMBER WHICH APPROXIMATES THE NOMINAL DIAMETER OF THE BAR IN MILLIMETERS (mm).

ALL BENT BAR DIMENSIONS ARE GIVEN OUT-TO-OUT.
 ALL BARS SHALL BE EPOXY COATED.

THE CONTRACTOR HAS THE OPTION OF SUBSTITUTING 60'-0" LONG BARS FOR THE LONGITUDINAL FOOTING STEEL SHOWN. CHANGES IN THE BILL OF REINFORCEMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PAYMENT WILL BE BASED ON QUANTITIES SHOWN.

THE CONSTRUCTION JOINT FOR CONCRETE RAIL MAY BE LOCATED AT TOP OR BOTTOM OF COPE, AT THE CONTRACTOR'S OPTION. PAYMENT WILL BE BASED ON QUANTITIES SHOWN, WHICH IS BASED ON CONSTRUCTION JOINT ABOVE COPE.

FOR VARIABLE STEM HEIGHTS, VARY THE LAP LENGTH OF THE VERTICAL REINFORCEMENT. MINIMUM LAP LENGTHS ARE GIVEN IN THE TABLE ON THIS SHEET. SMALLER BAR GOVERNS LAP LENGTH.

DOWEL BAR ASSEMBLIES:
 DOWELED JOINTS/CONSTRUCTION JOINTS ARE SHOWN ON STANDARD PLAN 5-297.624 (3 OF 3). THESE JOINTS ARE INCIDENTAL FOR WHICH NO DIRECT PAYMENT WILL BE MADE.

CONSTRUCTION JOINTS MAY BE SUBSTITUTED FOR SOME OF THE CORK & DOWEL JOINTS AT THE CONTRACTOR'S OPTION. CORK & DOWEL JOINTS MUST BE SPACED AT 91'-6" MAXIMUM.

CORK & DOWEL JOINTS MUST BE USED IN VERTICAL JOINTS AT FOOTING STEP LOCATIONS.

GEOMETRICS AND GRADES: ⑨
 SEE LAYOUT SHEETS FOR RETAINING WALL ALIGNMENT.

CHANGES TO FINAL WALL GEOMETRY SHALL BE DETERMINED IN THE FIELD AS APPROVED BY THE FIELD ENGINEER.

IF NEEDED, FOOTINGS SHALL BE STEPPED. SLOPING THE FOOTINGS IS NOT ALLOWED.

SHEET INDEX

NO.	TITLE
14	GENERAL NOTES
15	GENERAL LAYOUT
16	SPREAD FOOTING GEOMETRY AND DATA
17	WALL REINFORCEMENT
18	PANEL TABULATIONS
19-21	MISCELLANEOUS DETAILS

REVISED:

APPROVED: MAY 31, 2006

Daniel J. Karwacki
 STATE BRIDGE ENGINEER

CERTIFIED BY *C.M. Schall-Karwacki* PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI

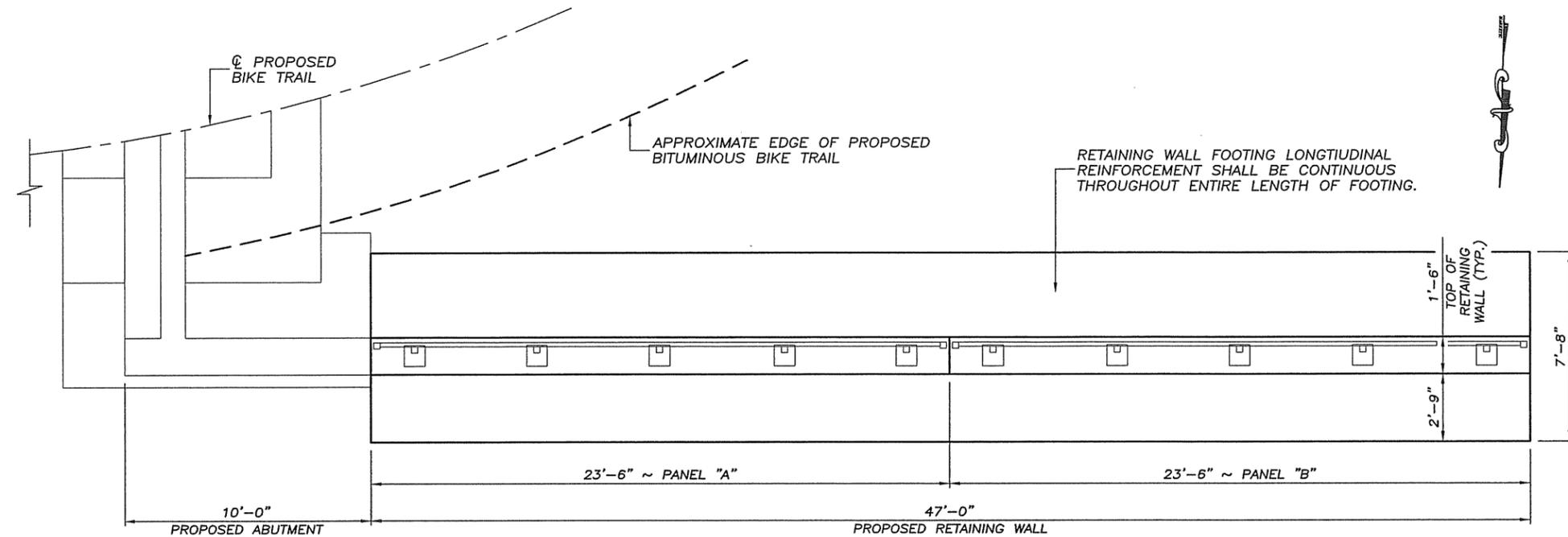
STANDARD SHEET NO. 5-297.620 MOD.
 STANDARD APPROVED: MAY 31, 2006

TITLE: **RETAINING WALL GENERAL NOTES**

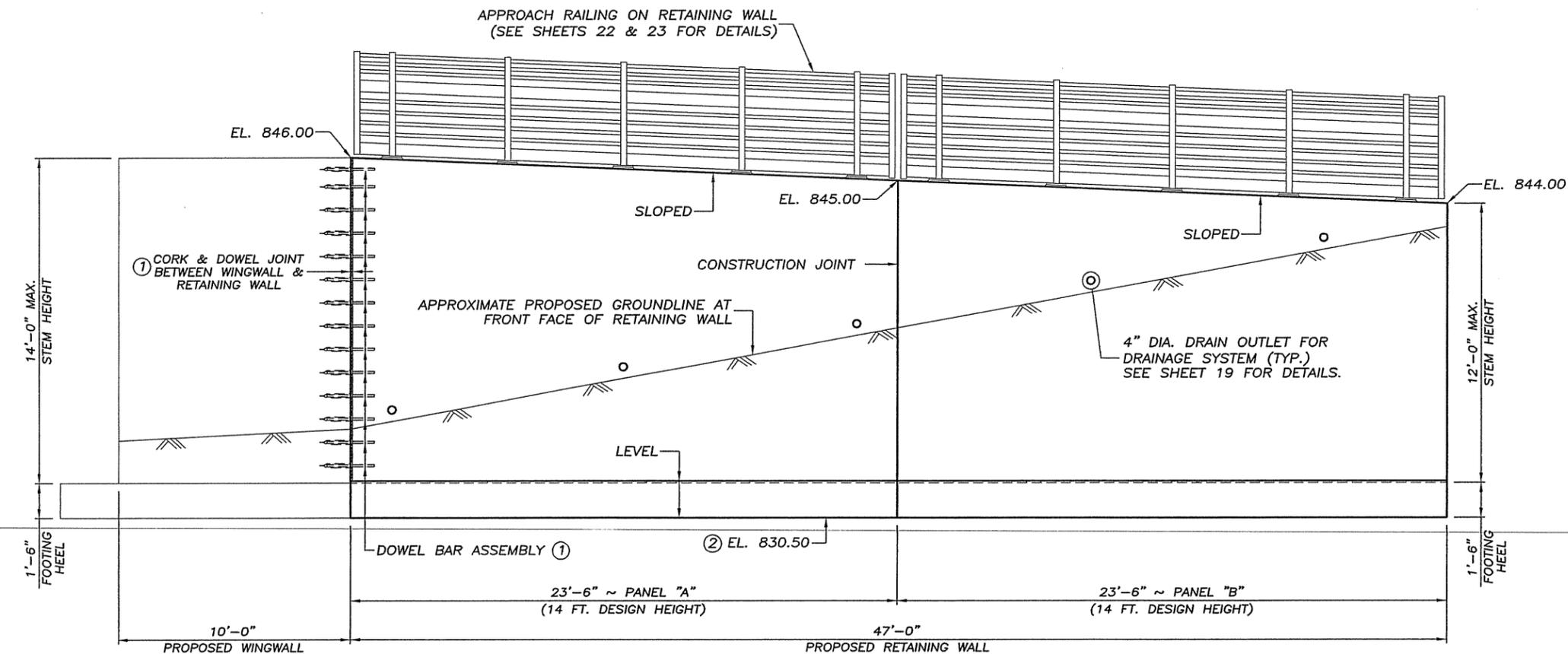
DES: DJR DRN: NBB
 CHK: RAB CHK: CSK

BRIDGE NO. 07590

LIC. NO. 15656 3-18-2009 STATE PROJECT NO. 07-090-02 SHEET NO. 14 OF 28 SHEETS



RETAINING WALL PLAN



RETAINING WALL ELEVATION

DESIGN NOTES

RETAINING WALLS ARE DESIGNED FOR AN ALLOWABLE BEARING PRESSURE OF 3500 PSF. FOOTING BEARING SOILS SHALL BE INSPECTED AND APPROVED BY A REGISTERED ENGINEER QUALIFIED IN SOIL ENGINEERING. SEE SHEET 20 FOR FOUNDATION OPTIONS. FILL IN FRONT OF AND BEHIND WALLS SHALL ALSO BE APPROVED BY SAME ENGINEER. SEE GEOTECHNICAL ENGINEERING REPORT BY CHOSEN VALLEY TESTING, INC. (PROJECT NO. R2007.249) DATED NOVEMBER 29, 2007 FOR COMPLETE RECOMMENDATIONS.

THE WALL DESIGN MAY BE ADJUSTED BASED UPON ACTUAL FIELD CONDITIONS PER THE APPROVAL OF THE ENGINEER IN THE FIELD. THAT SAME ENGINEER SHALL DETERMINE WHETHER THE PROPOSED ADJUSTMENTS ARE SIGNIFICANT ENOUGH TO REQUIRE A SUBMITTAL TO THE ENGINEER SEALING THESE PLANS FOR REVIEW.

- ① CORK & DOWEL JOINT ITEMS INCLUDED IN PRICE BID FOR "2411.501 - STRUCTURAL CONCRETE (3Y43)". SEE SHEET 21 FOR DETAILS.
- ② FINAL FOOTING ELEVATIONS AND WALL HEIGHTS SHALL BE DETERMINED IN THE FIELD WITHIN THE CONSTRAINTS SHOWN ON THIS PLAN. FIELD VERIFICATION OF THE FOOTING SOILS IS REQUIRED (SEE DESIGN NOTES ON THIS SHEET). THE WALL HEIGHT MAY BE DECREASED AS NECESSARY IF REQUIRED LAPS ARE MAINTAINED AND REQUIRED SPACING AND EMBEDMENT AS SHOWN ARE MAINTAINED.

CERTIFIED BY <i>C.M. Schall-Karwacki</i> PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI LIC. NO. 15656	TITLE:	DES: DJR	DRN: NBB
	NORTHWEST RETAINING WALL LAYOUT	CHK: RAB	CHK: CSK
LIC. NO. 15656	STATE PROJECT NO. 07-090-02	BRIDGE NO. 07590	
3-18-2009	SHEET NO. 15 OF 28 SHEETS		

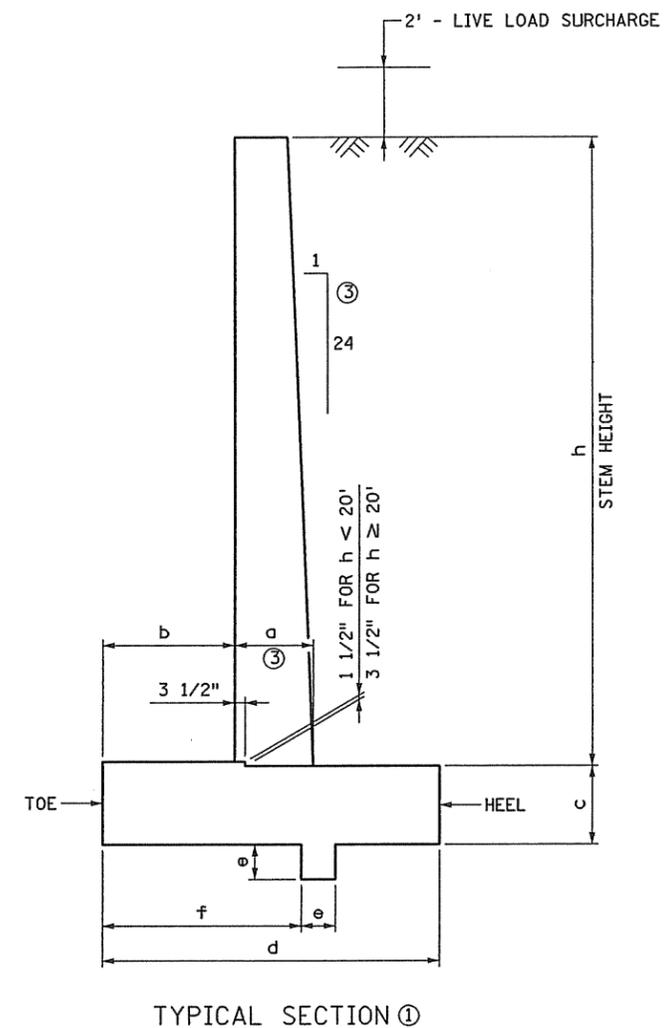
WALL LOADING CASE:
2' - LIVE LOAD SURCHARGE

WALL GEOMETRICS AND DATA - SPREAD FOOTING							QUANTITIES PER FOOT - SPREAD FOOTING				BASE PRESSURE KIPS/SQ. FT.		
STEM HEIGHT h	STEM WIDTH a ③	TOE WIDTH b	FOOTING THICKNESS c	FOOTING WIDTH d	SHEAR KEY SIZE e	SHEAR KEY LOCATION f	STRUCTURAL CONCRETE		REINFORCEMENT		WALL DETAILING SCHEME ①	TOE	HEEL
							3Y43 (CU.YD.) ② FOOTING	3Y43 (CU.YD.) STEM	PLAIN (POUND)	EPOXY (POUND) ②			
5	1'-8"	1'-0"	1'-5"	3'-6"	N/A	N/A	0.187	0.296	15.38	38.16	SHORT	1.670	0.070
6	1'-9"	1'-2"	1'-5"	4'-0"	N/A	N/A	0.211	0.360	16.43	41.74	SHORT	1.820	0.090
7	1'-9"	1'-4"	1'-5"	4'-6"	N/A	N/A	0.235	0.425	19.70	45.34	SHORT	1.970	0.120
8	1'-10"	1'-6"	1'-5"	5'-0"	N/A	N/A	0.259	0.492	20.75	48.89	SHORT	2.110	0.150
9	1'-10"	1'-8"	1'-5"	5'-6"	N/A	N/A	0.283	0.561	24.13	52.69	SHORT	2.250	0.180
10	1'-11"	1'-9"	1'-5"	6'-0"	N/A	N/A	0.324	0.631	25.18	57.67	MEDIUM	2.446	0.199
11	1'-11"	2'-0"	1'-5"	6'-6"	N/A	N/A	0.331	0.703	31.28	66.85	MEDIUM	2.536	0.239
12	2'-0"	2'-3"	1'-5"	6'-9"	1'-0"	3'-10"	0.380	0.776	35.38	72.23	MEDIUM	2.758	0.156
13	2'-0 1/2"	2'-6"	1'-5"	7'-0"	1'-0"	4'-2 1/8"	0.417	0.851	40.30	117.12	MEDIUM	2.986	0.013
14	2'-1"	2'-9"	1'-5"	7'-8"	1'-0"	4'-5 3/4"	0.477	0.928	40.48	122.2	MEDIUM	3.147	0.078
15	2'-1 1/2"	3'-0"	1'-6"	8'-2"	1'-0"	4'-9 1/2"	0.506	1.006	40.10	99.57	TALL	3.239	0.111
16	2'-2"	3'-3"	1'-9"	8'-8"	1'-0"	5'-0 1/2"	0.615	1.088	41.38	105.97	TALL	3.494	0.086
17	2'-2 1/2"	3'-6"	1'-9"	9'-2"	1'-0"	5'-4 1/2"	0.649	1.166	49.02	111.90	TALL	3.586	0.089
18	2'-3"	3'-9"	1'-9"	9'-8"	1'-0"	5'-7 1/2"	0.682	1.249	50.52	129.74	TALL	3.879	0.121
19	2'-3 1/2"	4'-0"	2'-0"	10'-2"	1'-0"	5'-11 1/2"	0.810	1.333	54.26	137.41	TALL	3.935	0.066
20	2'-4"	4'-3"	2'-0"	10'-8"	1'-0"	6'-3"	0.875	1.417	61.38	165.51	TALL	4.056	0.090
21	2'-4 1/2"	4'-6"	2'-0"	11'-2"	1'-0"	6'-6 1/2"	0.916	1.504	71.34	174.30	TALL	4.151	0.122
22	2'-5"	4'-9"	2'-3"	11'-8"	1'-0"	6'-10 1/2"	1.064	1.593	85.93	183.51	TALL	4.407	0.067
23	2'-5 1/2"	5'-0"	2'-6"	12'-2"	1'-0"	7'-1 1/2"	1.221	1.683	84.82	224.48	TALL	4.663	0.012
24	2'-6"	5'-3"	2'-9"	12'-9"	1'-0"	7'-5 1/2"	1.396	1.775	94.03	234.03	TALL	4.872	0.028
25	2'-6 1/2"	5'-6"	2'-9"	13'-3"	1'-0"	7'-8 1/2"	1.449	1.869	100.13	288.16	TALL	4.967	0.052
26	2'-7"	5'-10"	3'-0"	13'-9"	1'-0"	8'-1 1/2"	1.631	1.963	102.26	299.67	TALL	5.189	0.008
27	2'-7 1/2"	6'-2"	3'-3"	14'-4"	1'-0"	8'-6 1/2"	1.832	2.059	127.34	315.84	TALL	5.364	0.000
28	2'-8"	6'-6"	3'-3"	15'-0"	1'-0"	8'-10 1/2"	1.916	2.157	140.92	394.98	TALL	5.334	0.140
29	2'-8 1/2"	6'-10"	3'-6"	15'-6"	1'-0"	9'-3 1/2"	2.123	2.257	148.00	407.90	TALL	5.558	0.077
30													

NOTE:
EPOXY REINFORCEMENT QUANTITY ASSUMES AN EXPANSION JOINT IS USED ON BOTH PANEL ENDS. THE QUANTITY MUST BE ADJUSTED WHEN CONSTRUCTION JOINTS ARE USED. QUANTITIES ON THIS SHEET DO NOT INCLUDE RAILING. SEE RAILING SHEETS FOR RAIL REINFORCEMENT (EPOXY) AND RAIL CONCRETE (3Y46).

- ① SEE SHEETS 17 & 18 FOR REINFORCING DETAILS.
- ② DETAIL MODIFIED
- ③ DIMENSION "a" VARIES ALONG WITH STEM HEIGHT "h". SLOPE OF 1:24 ON THE BACK FACE OF THE WALL SHALL BE MAINTAINED.

DESIGN CRITERIA
1992 A.A.S.H.T.O. DESIGN SPECIFICATIONS
DESIGN METHOD:
WORKING STRESS - STABILITY, FOUNDATIONS
LOAD FACTOR DESIGN - REINFORCED CONCRETE
f'c = 4,000 PSI
fy = 60,000 PSI
FACTOR OF SAFETY OVERTURNING: 2.0 MINIMUM
FACTOR OF SAFETY SLIDING: 1.5 MINIMUM
LOCATION OF RESULTANT: MIDDLE 1/3 OF FOOTING
NEGLECTING SOIL IN FRONT OF WALL.
SEE FOUNDATION REPORT FOR ALLOWABLE BEARING PRESSURE AND COEFFICIENT OF FRICTION.
BACKFILL CHARACTERISTICS:
INTERNAL ANGLE OF FRICTION: 35°
= 33 PCF EQUIVALENT FLUID PRESSURE ACTIVE STATE
= 53 PCF EQUIVALENT FLUID PRESSURE AT REST STATE
βe = 1.0
COEFFICIENT OF FRICTION: 0.55
UNIT WEIGHT: 125 PCF



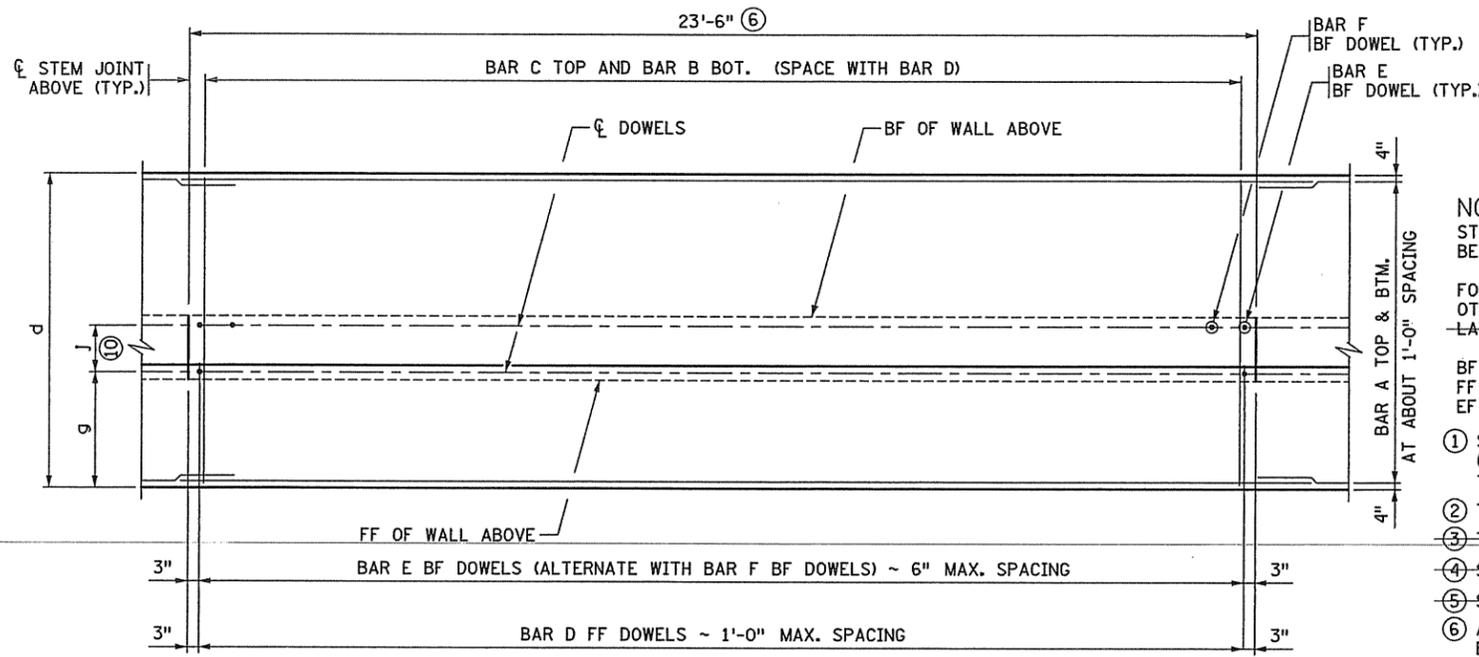
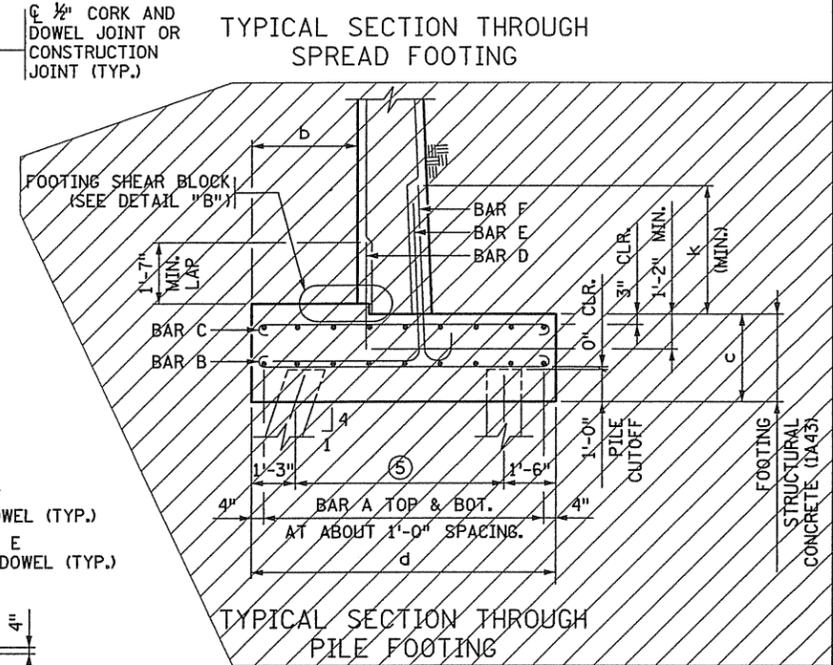
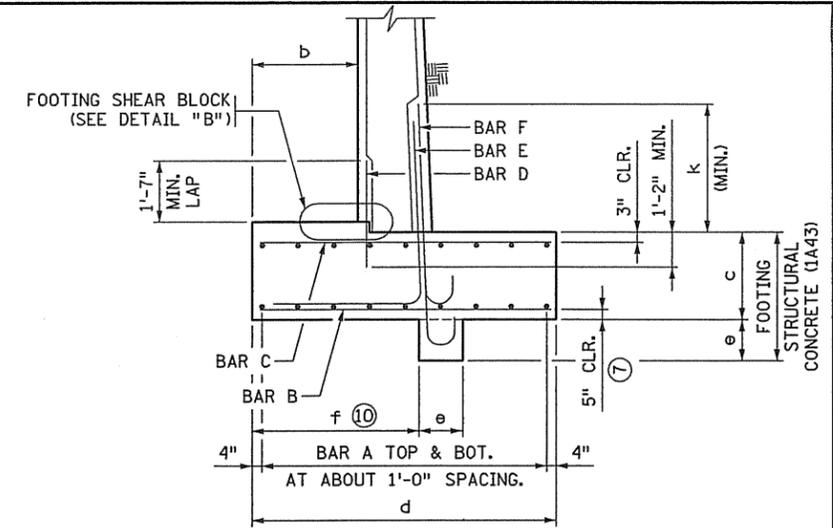
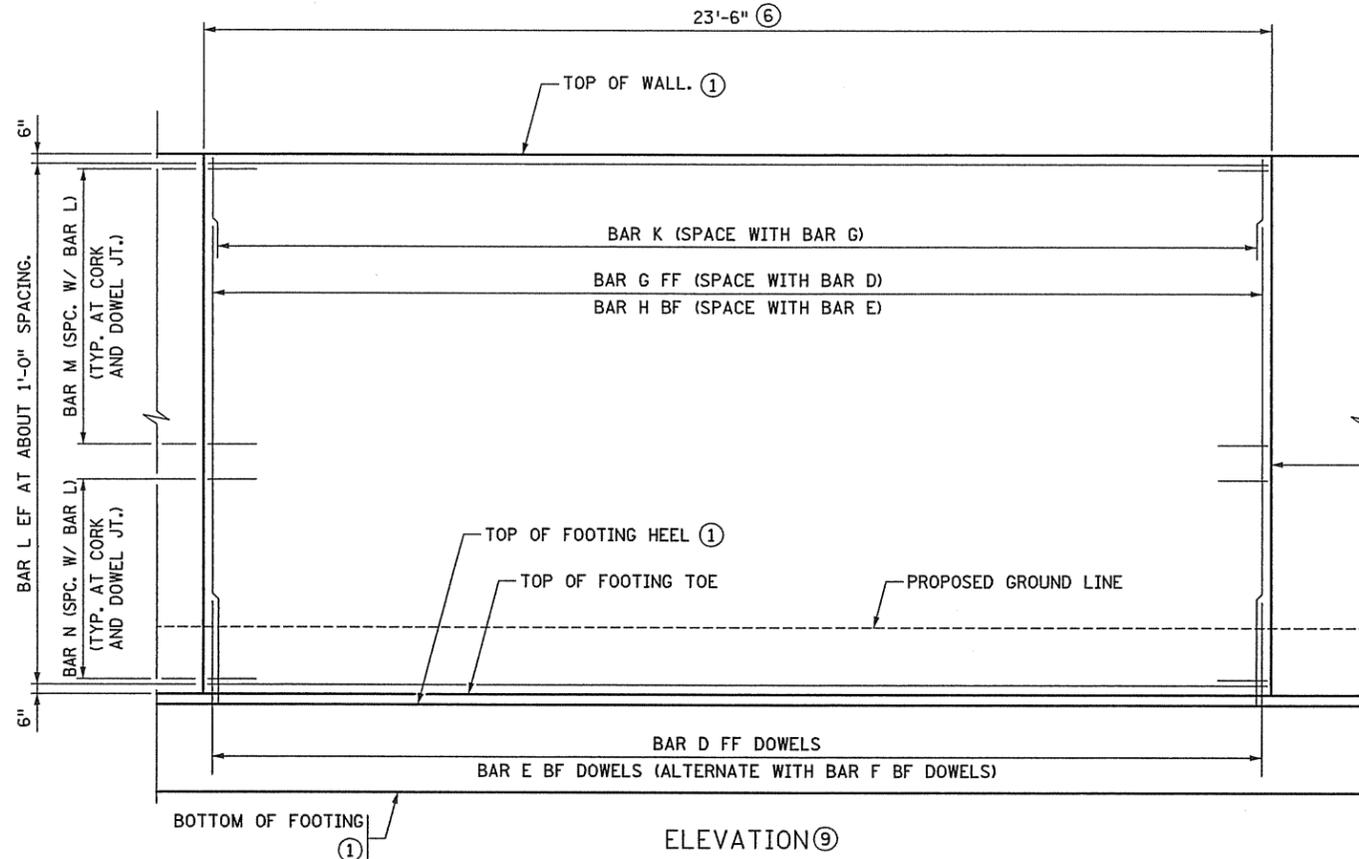
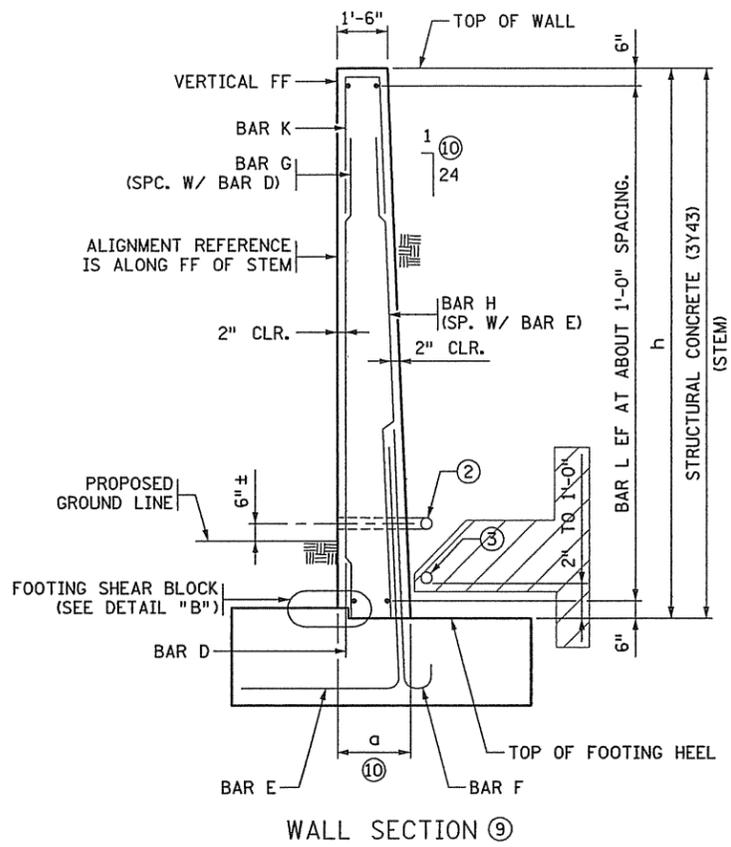
REVISED:
APPROVED: MAY 31, 2006
David J. Johnson
STATE BRIDGE ENGINEER

CERTIFIED BY *C.M. Schall-Karwacki*
PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI
LIC. NO. 15656 3-18-2009

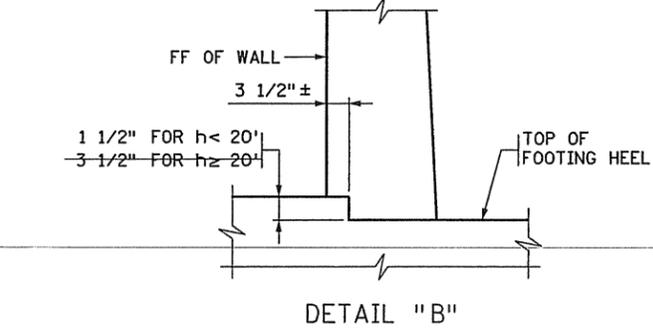
STANDARD SHEET NO. 5-297.632 MOD. (1 OF 4)
STANDARD APPROVED: MAY 31, 2006

TITLE: RETAINING WALL (LIVE LOAD SURCHARGE)
SPREAD FOOTING GEOMETRY AND DATA
STATE PROJECT NO. 07-090-02
SHEET NO. 16 OF 28 SHEETS

DES: DJR DRN: NBB
CHK: RAB CHK: CSK
BRIDGE NO. 07590



- NOTES:**
- STEM REINFORCEMENT IS TO BE SYMMETRICALLY/EQUALLY SPACED BETWEEN STEM JOINTS.
 - FOOTING REINFORCEMENT SYMMETRICAL ABOUT STEM JOINT ABOVE UNLESS OTHERWISE NOTED. -SEE RETAINING WALL TABLES FOR PILE SPACING AND LAYOUT-
 - BF DENOTES BACK FACE. FF DENOTES FRONT FACE. EF DENOTES EACH FACE.
 - ① STRAIGHT LINE BETWEEN ELEVATIONS SHOWN ON WALL ELEVATION (EXCEPT FOR STEPPED CONDITIONS). IF A BARRIER IS NOT USED, TOPS OF RETAINING WALLS COULD BE USED.
 - ② TYPE I DRAIN. SEE DETAIL "A" ON STANDARD PLAN 5-297.624 (1).
 - ③ TYPE II DRAIN. SEE DETAIL "A" ON STANDARD PLAN 5-297.624 (1).
 - ④ SEE STANDARD PLAN 5-297.624 (1).
 - ⑤ SEE GENERAL PLAN FOR PILE SPACING.
 - ⑥ AT THE CONTRACTOR'S OPTION, PANEL LENGTHS MAY VARY UP TO ± 1'-0". BAR CUTTING LISTS SHALL BE REVISED ACCORDINGLY BY THE CONTRACTOR.
 - ⑦ 5" CLR. FOR ALL BARS EXCEPT 2" CLR. MIN. FOR BAR D.
 - ⑧ SEE DETAIL "C" ON STANDARD PLAN 5-297.624(1).
 - ⑨ DETAIL MODIFIED
 - ⑩ DIMENSIONS "a", "f" & "j" VARY ALONG WITH THE STEM HEIGHT "h". SLOPE OF 1:24 ON THE BACK FACE OF THE WALL SHALL BE MAINTAINED.



REVISED:
 APPROVED: MAY 31, 2006
 STATE BRIDGE ENGINEER

CERTIFIED BY *CMSchall-Karwacki*
 PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI
 L.C. NO. 15656 3-18-2009

STANDARD SHEET NO. 5-297.622 MOD.
 STANDARD APPROVED: MAY 31, 2006

TITLE: RETAINING WALL REINFORCEMENT DETAILS (MEDIUM WALLS) (PANELS A & B)

STATE PROJECT NO. 07-090-02

DES: DJR DRN: NBB
 CHK: RAB CHK: CSK

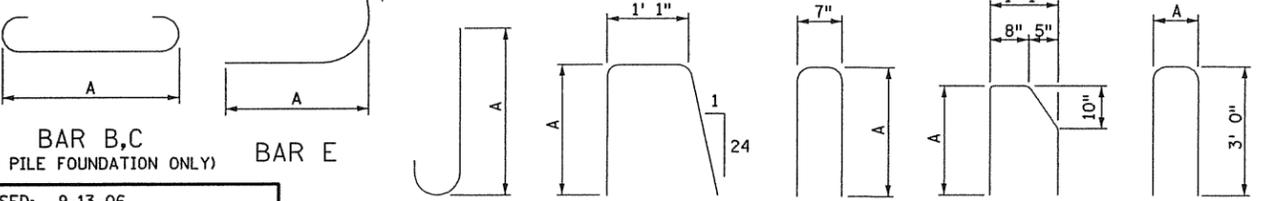
SHEET NO. 17 OF 28 SHEETS

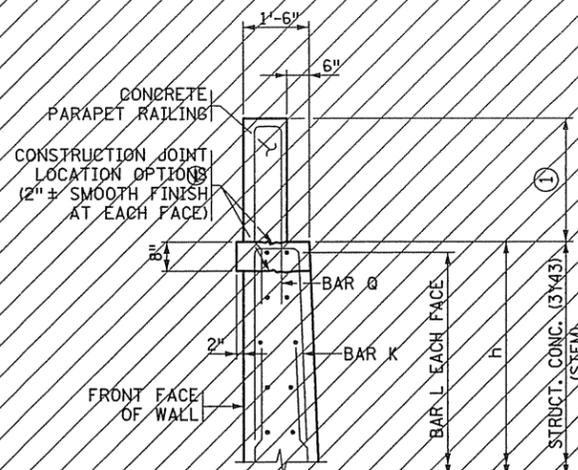
BRIDGE NO. 07590

BAR	MARK	NO.	LENGTH	A	LOCATION	WT.	DIMENSIONS & QUANTITIES		BAR	MARK	NO.	LENGTH	A	LOCATION	WT.	DIMENSIONS & QUANTITIES		BAR	MARK	NO.	LENGTH	A	LOCATION	WT.	DIMENSIONS & QUANTITIES		BAR	MARK	NO.	LENGTH	A	LOCATION	WT.	DIMENSIONS & QUANTITIES									
h = 12' PANELS: L=30'-6"								h = 13' PANELS: L=30'-6"								h = 14' PANELS: A & B L=23'-6" (3)								h = PANELS: L=																			
SPREAD FOOTING REINFORCEMENT								SPREAD FOOTING REINFORCEMENT								SPREAD FOOTING REINFORCEMENT								SPREAD FOOTING REINFORCEMENT																			
DIMENSIONS								DIMENSIONS								DIMENSIONS								DIMENSIONS																			
A	F1601	14	32'-11"	STR.	LONG T & B	481	SPREAD FOOTING		A	F1601	14	32'-11"	STR.	LONG T & B	481	SPREAD FOOTING		A	F1601E	16	25'-11"	STR.	LONG T & B	432	SPREAD FOOTING		A	F_01			STR.	LONG T & B		SPREAD FOOTING									
B	F2202	31	6'-3"	STR.	TRANS BOT	386	b	2'-3"	e	1'-0"	B	F2502	31	6'-6"	STR.	TRANS BOT	538	b	2'-6"	e	1'-0"	B	F2202E	24	7'-2"	STR.	TRANS BOT	351	b	2'-9"	e	1'-0"	B	F_02			STR.	TRANS BOT		b		e	
C	F1603	31	6'-3"	STR.	TRANS TOP	202	c	1'-5"	f	3'-10 5/8"	C	F1603	31	6'-6"	STR.	TRANS TOP	210	c	1'-5"	f	4'-2 1/8"	C	F1603E	24	7'-2"	STR.	TRANS TOP	180	c	1'-6"	f	4'-5 3/4"	C	F_03			STR.	TRANS TOP		c		f	
							d	6'-9"	g	2'-5 9/16"							d	7'-0"	g	2'-8 3/8"								d	7'-8"	g	2'-11 9/16"								d		g		
PILE FOUNDATION REINFORCEMENT								PILE FOUNDATION REINFORCEMENT								PILE FOUNDATION REINFORCEMENT								PILE FOUNDATION REINFORCEMENT																			
PILE FOUNDATION								PILE FOUNDATION								PILE FOUNDATION								PILE FOUNDATION																			
A	F_01	14		STR.	LONG T & B		b	2'-4"	d	7'-0"	A	F_01	16		STR.	LONG T & B		b	2'-6"	d	7'-6"																						
B	F_02	31		STR.	TRANS BOT		c		g	2'-6 5/16"	B	F_02	31		STR.	TRANS BOT		c		g	2'-8 5/16"								a	2'-1"	k	6'-3"	B	F_02			STR.	TRANS BOT		c		g	
C	F1603	31	7'-8"	STR.	TRANS TOP	248					C	F1603	31	8'-2"	STR.	TRANS TOP	264													J	1'-8 3/8"												
							d	2'-0"	k	4'-3"								d	2'-0 1/2"	k	5'-3"													a		k							
							l	1'-7 3/8"										j	1'-7 3/8"														j										
FOOTING DOWELS & STEM REINFORCEMENT								FOOTING DOWELS & STEM REINFORCEMENT								FOOTING DOWELS & STEM REINFORCEMENT								FOOTING DOWELS & STEM REINFORCEMENT																			
QUANTITIES								QUANTITIES								QUANTITIES (2)								QUANTITIES																			
D	F1604E	31	3'-0"	STR.	DOWEL FF	97	STRUCTURAL CONCRETE (1A43)		D	F1604E	31	3'-0"	STR.	DOWEL FF	97	STRUCTURAL CONCRETE (1A43)		D	F1604E	24	3'-0"	STR.	DOWEL FF	75	STRUCTURAL CONCRETE (3Y43)		D	F1604E	31	3'-0"	STR.	DOWEL FF	97	STRUCTURAL CONCRETE (1A43)									
E	F1605E	31	6'-10"	0'-10"	DOWEL BF	221	(FOOTING)		E	F1605E	31	7'-10"	0'-10"	DOWEL BF	253	(FOOTING)		E	F1605E	24	8'-10"	0'-10"	DOWEL BF	222	FOOTING 11.2 CU YD		E	F_05E						DOWEL BF									
F	F1606E	30	7'-3"	6'-3"	DOWEL BF	227	SPREAD	12.3	CU YD	F	F1606E	30	8'-3"	7'-3"	DOWEL BF	258	SPREAD	12.8	CU YD	F	F1606E	23	9'-6"	8'-6"	DOWEL BF	228	STEM	21.8	CU YD	F	F_06E						SPREAD		CU YD				
G	S1301E	31	9'-3"	STR.	VERT FF	182	PILE		CU YD	G	S1301E	31	10'-3"	STR.	VERT FF	212	PILE		CU YD	G	S1301E	24	11'-3"	STR.	VERT FF	180																	
H	S1602E	31	9'-3"	STR.	VERT BF	299	STRUCTURAL CONCRETE (3Y43)	H	S1602E	31	10'-3"	STR.	VERT BF	331	STRUCTURAL CONCRETE (3Y43)	H	S1602E	24	11'-3"	STR.	VERT BF	282	REINFORCEMENT (EPOXY)	H	S_02E						STRUCTURAL CONCRETE (3Y43)												
J	S1603E			STR.	VERT BF		(STEM)			J	S1603E			STR.	VERT BF		(STEM)			J	S1603E			STR.	VERT BF		FOOTING	1488	LB														
K	S1604E	31	10'-7"	4'-9"	TIE	342		23.7	CU YD	K	S1604E	31	10'-7"	4'-9"	TIE	342		26.0	CU YD	K	S1604E	24	10'-7"	4'-9"	TIE	265	STEM	1375	LB														
L	S1305E	24	30'-0"	STR.	HORIZ EF	481	REINFORCEMENT (PLAIN)	L	S1305E	26	30'-0"	STR.	HORIZ EF	521	REINFORCEMENT (PLAIN)	L	S1305E	28	23'-0"	STR.	HORIZ EF	430																					
M	S1606E	20	7'-4"	1'-4"	EXP JT TIE	153	SPREAD	1078	LB	M	S1606E	20	7'-4"	1'-4"	EXP JT TIE	153	SPREAD	1229	LB	M	S1606E	20	7'-4"	1'-4"	EXP JT TIE	153																	
N	S1607E	4	7'-9"	1'-9"	EXP JT TIE	32	PILE		LB	N	S1607E	6	7'-9"	1'-9"	EXP JT TIE	48	PILE		LB	N	S1607E	8	7'-9"	1'-9"	EXP JT TIE	65																	
P	S1608E			8'-2"	2'-2"	EXP JT TIE	REINFORCEMENT (EPOXY)	P	S1608E				8'-2"	2'-2"	EXP JT TIE	REINFORCEMENT (EPOXY)	P	S1608E				8'-2"	2'-2"	EXP JT TIE	REINFORCEMENT (EPOXY)																		
Q	S1609E	38	8'-7"	4'-0"	RAIL DOWEL	340		2044	LB	Q	S1609E	38	8'-7"	4'-0"	RAIL DOWEL	340		2215	LB	Q	S1609E	38	8'-7"	4'-0"	RAIL DOWEL	340																	
R	S1609E	36	6'-1"	2'-8"	F-RAIL DOWEL	229				R	S1609E	36	6'-1"	2'-8"	F-RAIL DOWEL	229				V (1)	F1607E				STEP TIE																		

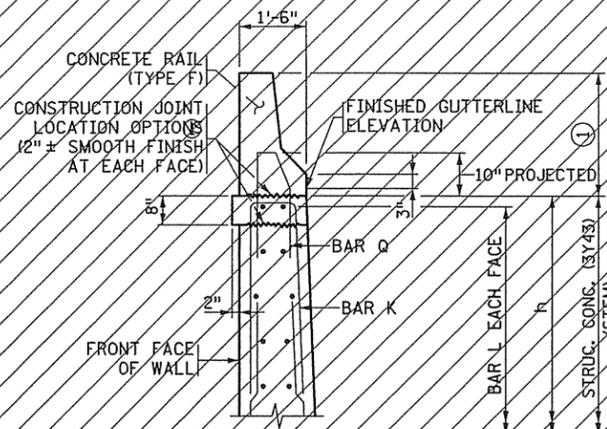
BAR	MARK	NO.	LENGTH	A	LOCATION	WT.	DIMENSIONS & QUANTITIES		BAR	MARK	NO.	LENGTH	A	LOCATION	WT.	DIMENSIONS & QUANTITIES		BAR	MARK	NO.	LENGTH	A	LOCATION	WT.	DIMENSIONS & QUANTITIES		BAR	MARK	NO.	LENGTH	A	LOCATION	WT.	DIMENSIONS & QUANTITIES									
h = 15' PANELS: L=30'-6"								h = 16' PANELS: L=30'-6"								h = 17' PANELS: L=30'-6"								h = PANELS: L=																			
SPREAD FOOTING REINFORCEMENT								SPREAD FOOTING REINFORCEMENT								SPREAD FOOTING REINFORCEMENT								SPREAD FOOTING REINFORCEMENT																			
DIMENSIONS								DIMENSIONS								DIMENSIONS								DIMENSIONS																			
A	F1601	18	32'-11"	STR.	LONG T & B	618	SPREAD FOOTING		A	F1601	18	32'-11"	STR.	LONG T & B	618	SPREAD FOOTING		A	F1601	20	32'-11"	STR.	LONG T & B	687	SPREAD FOOTING		A	F_01			STR.	LONG T & B		SPREAD FOOTING									
B	F1902	31	7'-8"	STR.	TRANS BOT	357	b	3'-0"	e	1'-0"	B	F1902	31	8'-2"	STR.	TRANS BOT	380	b	3'-3"	e	1'-0"	B	F1902	31	8'-8"	STR.	TRANS BOT	404	b	3'-6"	e	1'-0"	B	F_02			STR.	TRANS BOT		b		e	
C	F1603	31	7'-8"	STR.	TRANS TOP	248	c	1'-6"	f	4'-9 1/4"	C	F1603	31	8'-2"	STR.	TRANS TOP	264	c	1'-9"	f	5'-0 7/8"	C	F1903	31	8'-8"	STR.	TRANS TOP	404	c	1'-9"	f	5'-4 3/8"	C	F_03			STR.	TRANS TOP		c		f	
							d	8'-2"	g	3'-2 5/16"							d	8'-8"	g	3'-5 5/16"								d	9'-2"	g	3'-8 5/16"								d		g		
PILE FOUNDATION REINFORCEMENT								PILE FOUNDATION REINFORCEMENT								PILE FOUNDATION REINFORCEMENT								PILE FOUNDATION REINFORCEMENT																			
PILE FOUNDATION								PILE FOUNDATION								PILE FOUNDATION								PILE FOUNDATION																			
A	F_01	18		STR.	LONG T & B		b	3'-0"	d	8'-6"	A	F2501	18	35'-4"	STR.	LONG T & B	1698	b	3'-3"	d	9'-0"	A	F_01	20		STR.	LONG T & B		b	3'-6"	d	9'-6"	A	F_01			STR.	LONG T & B		b		d	
B	F1902	31	9'-4"	STR.	TRANS BOT	435	c		g	3'-2 5/16"	B	F1902	31	9'-10"	8'-6"	TRANS BOT	458	c		g	3'-5 5/16"	B	F_02	31		STR.	TRANS BOT		c		g	3'-8 5/16"	B	F_02			STR.	TRANS BOT		c		g	
C	F1603	31	9'-2"	STR.	TRANS TOP	296					C	F1603	31	9'-8"	8'-6"	TRANS TOP	313					C	F1603	31	10'-2"	9'-0"	TRANS TOP	329															
							a	2'-1 1/2"	k	2'-6"							a	2'-2"	k	3'-6"								a	2'-2 1/2"	k	4'-6"												
							j	1'-8 3/16"									j	1'-9 5/16"										j	1'-9 5/16"														
FOOTING DOWELS & STEM REINFORCEMENT								FOOTING DOWELS & STEM REINFORCEMENT								FOOTING DOWELS & STEM REINFORCEMENT								FOOTING DOWELS & STEM REINFORCEMENT																			
QUANTITIES								QUANTITIES								QUANTITIES								QUANTITIES																			
D	F1604E	31	3'-0"	STR.	DOWEL FF	97	STRUCTURAL CONCRETE (1A43)		D	F1604E	31	3'-0"	STR.	DOWEL FF	97	STRUCTURAL CONCRETE (1A43)		D	F1604E	31	3'-0"	STR.	DOWEL FF	97	STRUCTURAL CONCRETE (1A43)		D	F1604E	31	3'-0"	STR.	DOWEL FF	97	STRUCTURAL CONCRETE (1A43)									
E	F1905E	31	8'-10"	4'-7"	DOWEL BF	411	(FOOTING)		E	F1905E	31	10'-2"	4'-11"	DOWEL BF	473	(FOOTING)		E	F1905E	31	11'-5"	5'-2"	DOWEL BF	532	(FOOTING)		E	F_05E						DOWEL BF									
F	F1906E	30	5'-9"	4'-9"	DOWEL BF	258	SPREAD	15.4	CU YD	F	F1906E	30	7'-0"	6'-0"	DOWEL BF	315	SPREAD	18.8	CU YD	F	F1906E	30	8'-0"	7'-0"	DOWEL BF	360	SPREAD	19.8	CU YD	F	F_06E						SPREAD		CU YD				
G	S1301E	31	12'-3"	STR.	VERT FF	254	PILE		CU YD	G	S1301E	31	13'-3"	STR.	VERT FF	274	PILE		CU YD	G	S1301E	31	14'-3"	STR.	VERT FF	295	PILE		CU YD														
H	S1602E	31	12'-3"	STR.	VERT BF	396	STRUCTURAL CONCRETE (3Y43)	H	S1602E	31	13'-3"	STR.	VERT BF	428	STRUCTURAL CONCRETE (3Y43)	H	S1602E	31	14'-3"	STR.	VERT BF	461	STRUCTURAL CONCRETE (3Y43)	H	S_02E						STRUCTURAL CONCRETE (3Y43)												
J	S1603E	30	7'-3"	STR.	VERT BF	227	(STEM)			J	S1603E	30	8'-3"	STR.	VERT BF	258	(STEM)			J	S1603E	30	9'-3"	STR.	VERT BF	289	(STEM)																
K	S1604E	31	10'-7"	4'-9"	TIE	342		30.7	CU YD	K	S1604E	31	10'-7"	4'-9"	TIE	342		33.1	CU YD	K	S1604E	31	10'-7"	4'-9"	TIE	342		35.6	CU YD														
L	S1305E	30	30'-0"	STR.	HORIZ EF	601	REINFORCEMENT (PLAIN)	L	S1305E	32	30'-0"	STR.	HORIZ EF	641	REINFORCEMENT (PLAIN)	L	S1305E	34	30'-0"	STR.	HORIZ EF	681	REINFORCEMENT (PLAIN)	L	S1305E			STR.	HORIZ EF		REINFORCEMENT (PLAIN)												
M	S1606E	20	7'-4"	1'-4"	EXP JT TIE	153	SPREAD	1223	LB	M	S1606E	20	7'-4"	1'-4"	EXP JT TIE	153	SPREAD	1262	LB	M	S1606E	20	7'-4"	1'-4"	EXP JT TIE	153	SPREAD	1495	LB														
N	S1607E	10	7'-9"	1'-9"	EXP JT TIE	81	PILE		LB	N	S1607E	12	7'-9"	1'-9"	EXP JT TIE	97	PILE	2471	LB	N	S1607E	14	7'-9"	1'-9"	EXP JT TIE	113	PILE		LB														
P	S1608E			8'-2"	2'-2"	EXP JT TIE	REINFORCEMENT (EPOXY)	P	S1608E				8'-2"	2'-2"	EXP JT TIE	REINFORCEMENT (EPOXY)	P	S1608E				8'-2"	2'-2"	EXP JT TIE	REINFORCEMENT (EPOXY)																		
Q	S1609E	38	8'-7"	4'-0"	RAIL DOWEL	340		2821	LB	Q	S1609E	38	8'-7"	4'-0"	RAIL DOWEL	340		3078	LB	Q	S1609E	38	8'-7"	4'-0"	RAIL DOWEL	340		3323	LB														
R	S1609E	36	6'-1"	2'-8"	F-RAIL DOWEL	229				R	S1609E	36	6'-1"	2'-8"	F-RAIL DOWEL	229																											

- ① BAR "V" TO BE USED IF STEPPED FOOTING IS NEEDED. SEE DETAIL ON SHEET 20.
- ② DIMENSIONS "a" & "j" VARY ALONG WITH STEM HEIGHT "h". SLOPE OF 1:24 ON THE BACK FACE OF THE WALL SHALL BE MAINTAINED.
- ③ DETAIL MODIFIED.

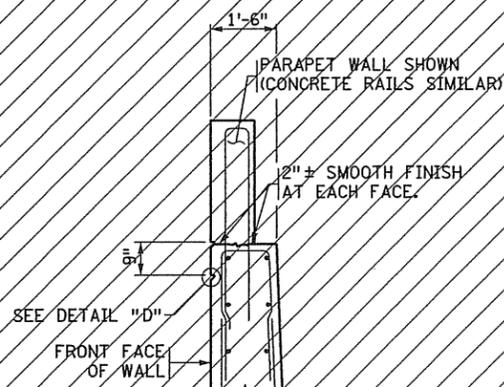




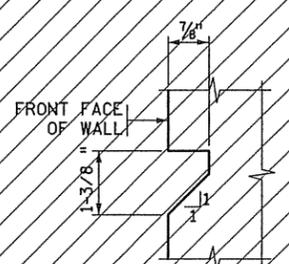
CONCRETE PARAPET RAILING DETAIL
2" COPING OPTION SHOWN



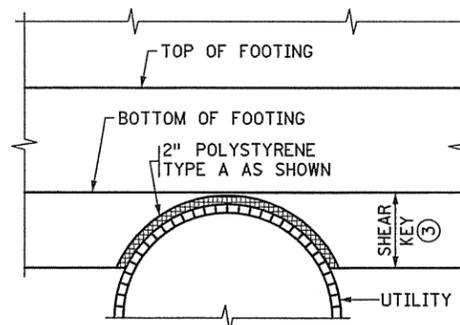
TYPE F RAILING DETAIL
2" COPING OPTION SHOWN



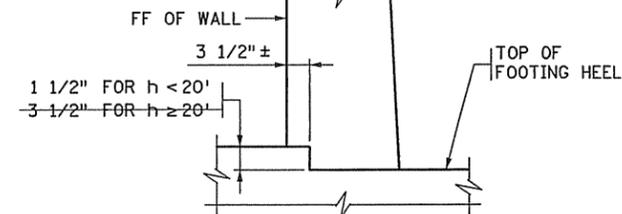
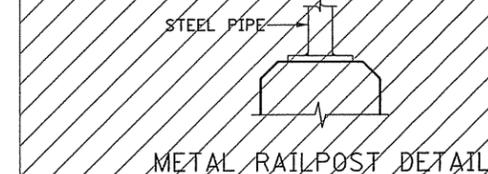
RAIL BASE DETAIL
HORIZONTAL REVEAL OPTION SHOWN



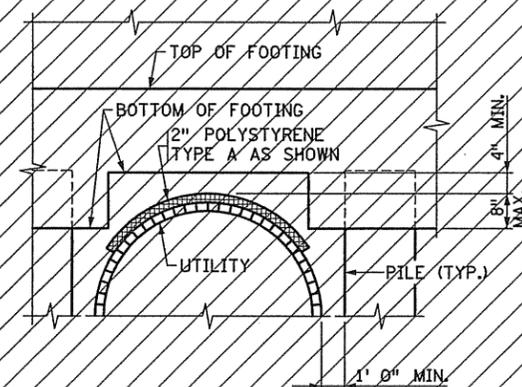
DETAIL "D"



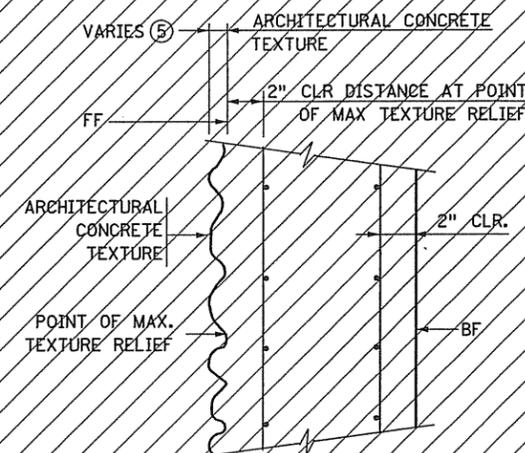
PIPE UNDER SPREAD FOOTING (THROUGH SHEAR KEY)
CHECK PIPE TO DETERMINE IF IT CAN TAKE THE LOAD



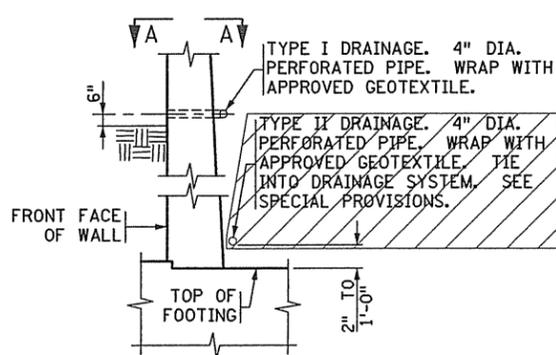
DETAIL "B"



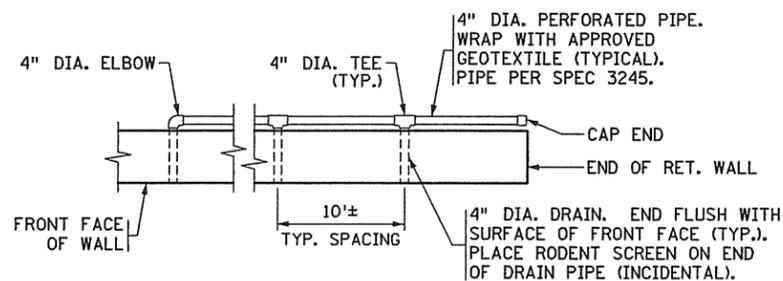
PIPE THROUGH PILE FOOTING



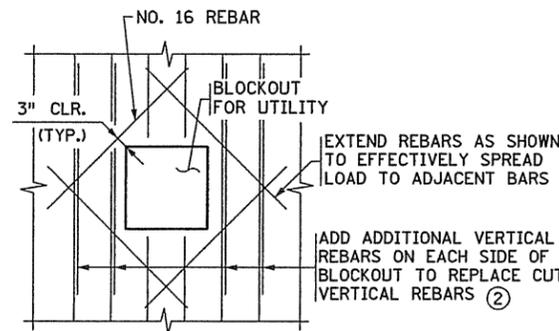
DETAIL "C"



DETAIL "A"



SECTION A-A (6)
TYPE I DRAINAGE DETAIL



UTILITY BLOCKOUT DETAIL

NOTES:

- ARCHITECTURAL TREATMENT OPTION ON FRONT FACE OF RETAINING WALL TO BE DETERMINED BY Mn/DOT-
- ① ALL CONCRETE ABOVE JOINT LOCATION SHALL BE STRUCTURAL CONCRETE (3Y46).
- ② FIELD CUT/ADJUST VERTICAL AND HORIZONTAL REINFORCEMENT AS NECESSARY TO CLEAR BLOCKOUT. PLACE REINFORCEMENT AS SHOWN.
- ③ MODIFY FOR INTERRUPTION.
- ④ DRAINAGE SYSTEM SHALL BE PER SPEC. 2502 AND SHALL BE INCLUDED IN THE PRICE BID FOR "CONCRETE RETAINING WALL".
- ⑤ THE THICKNESS OF THE ARCHITECTURAL CONCRETE TEXTURE VARIES WITH THE TEXTURE RELIEF. THE STRUCTURAL CONCRETE 3Y43 QUANTITIES DO NOT INCLUDE THE MATERIAL WITHIN THE ARCHITECTURAL CONCRETE TEXTURE. MATERIAL NEEDED FOR THE TEXTURING SHALL BE INCIDENTAL FOR WHICH NO DIRECT PAYMENT WILL BE MADE. SEE SPECIAL PROVISIONS 2411. TEXTURE RELIEF SHALL ADHERE TO FHWA CRASH BARRIER GUIDANCE WHENEVER THE WALL FACE IS INSIDE OR NEAR THE CLEAR ZONE.
- ⑥ DETAIL MODIFIED
- ⑦ PERFORATED PIPE IS CONTINUOUS ENTIRE LENGTH OF RETAINING WALL SEGMENT.

SUMMARY OF DRAINAGE QUANTITIES (4)

ITEM	UNIT	WALL A	WALL B	TOTAL
⑦ 4" DIA. PERFORATED PIPE	LIN. FT.	22	24	46
4" DIA. DRAIN PIPE	LIN. FT.	6	4	10
⑦ END CAP	EACH	0	1	1
4" DIA. TEE-FITTING	EACH	2	2	4
4" DIA. ELBOW	EACH	1	0	1

REVISED:

APPROVED: MAY 31, 2006

Samuel Johnson
STATE BRIDGE ENGINEER

CERTIFIED BY *CMSchall-Karwacki*
PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI
LIC. NO. 15656

STANDARD SHEET NO.
5-297.624 MOD. (1 OF 3)
STANDARD APPROVED:
MAY 31, 2006

TITLE:
RETAINING WALL MISCELLANEOUS DETAILS

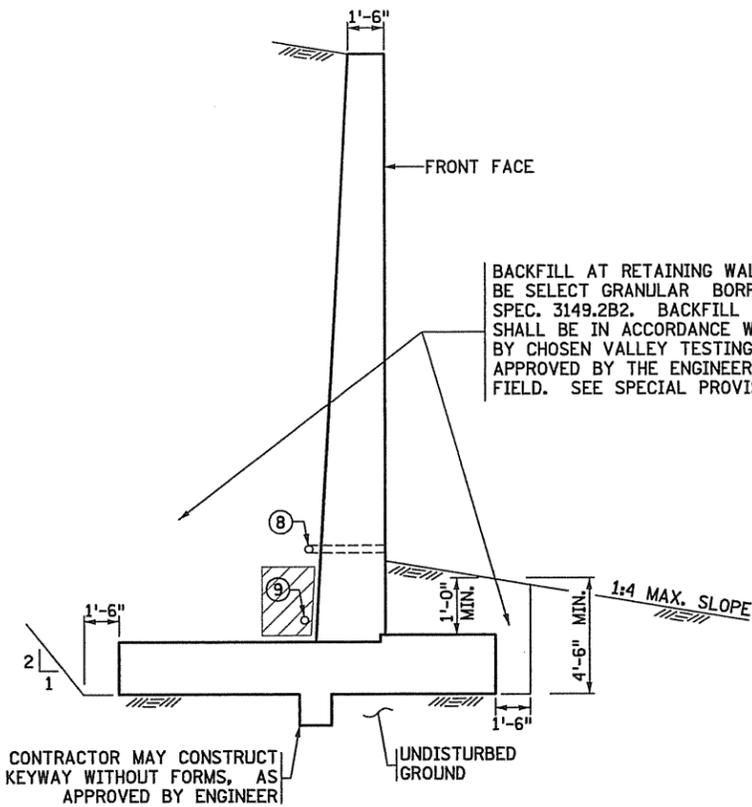
DES: DJR DRN: NBB
CHK: RAB CHK: CSK

BRIDGE NO.
07590

STATE PROJECT NO. 07-090-02

SHEET NO. 19 OF 28 SHEETS

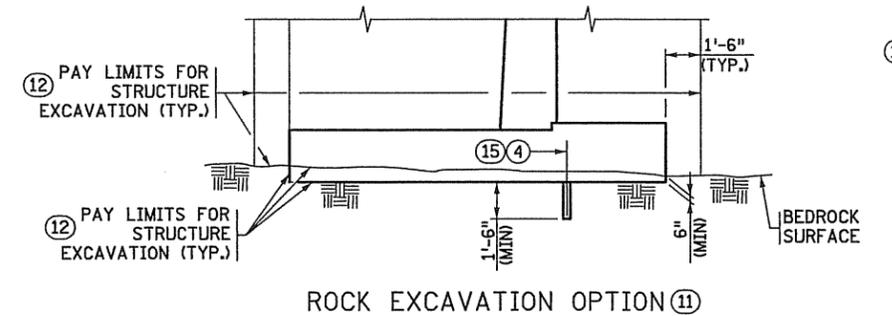
3-18-2009



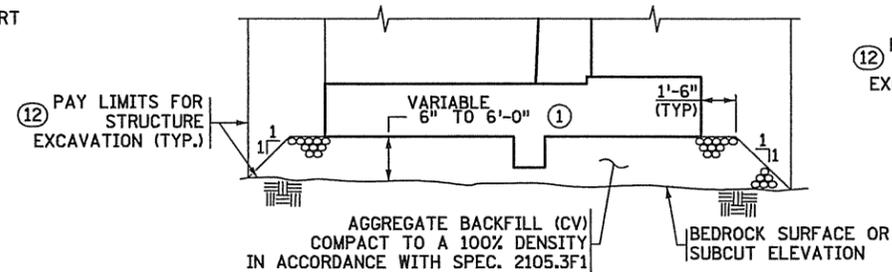
TYPICAL SECTION (11)(12)
INPLACE SOIL OPTION SHOWN

CONTRACTOR MAY CONSTRUCT
KEYWAY WITHOUT FORMS, AS
APPROVED BY ENGINEER

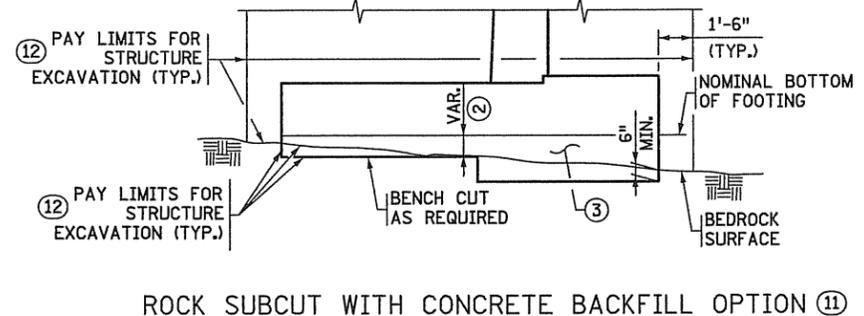
BACKFILL AT RETAINING WALL SHALL
BE SELECT GRANULAR BORROW, PER
SPEC. 3149.2B2. BACKFILL DENSITY
SHALL BE IN ACCORDANCE WITH REPORT
BY CHOSEN VALLEY TESTING, INC. AS
APPROVED BY THE ENGINEER IN THE
FIELD. SEE SPECIAL PROVISIONS.



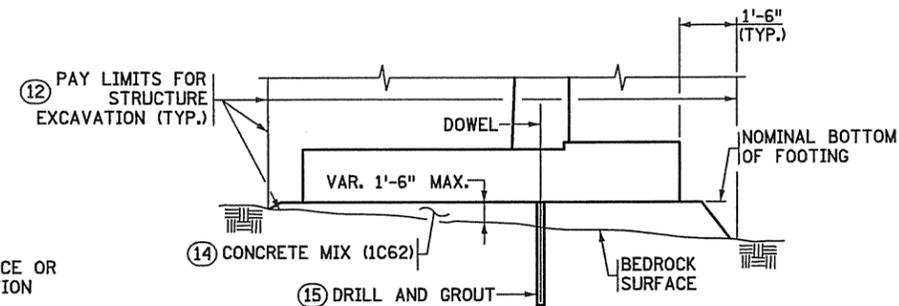
ROCK EXCAVATION OPTION (11)



AGGREGATE BACKFILL OPTION (11)(12)

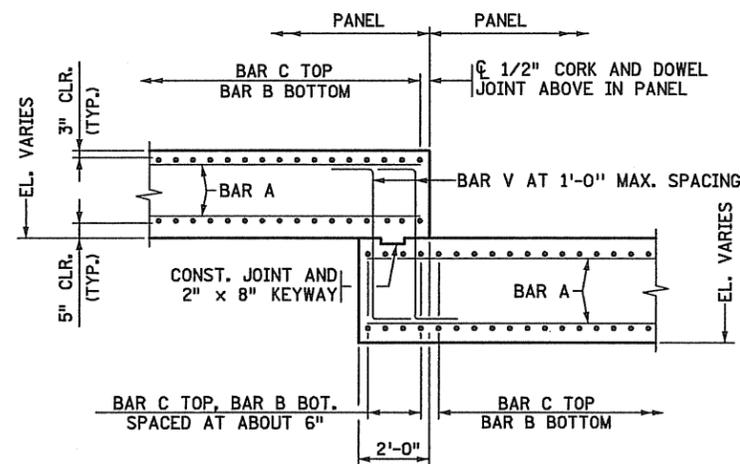


ROCK SUBCUT WITH CONCRETE BACKFILL OPTION (11)



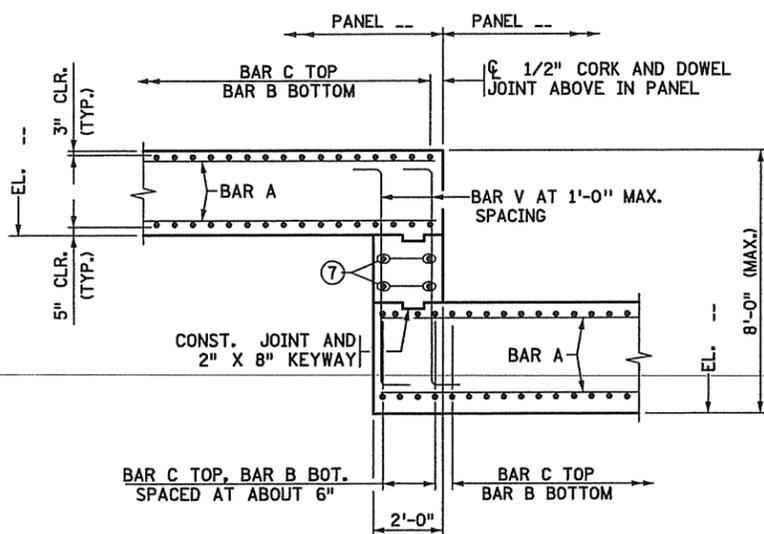
DOWEL AND LEAN CONCRETE BACKFILL OPTION (11)

FOUNDATION OPTIONS (11)(12)



STEPPED FOOTING DETAIL - LONGIT. SECTION (5)(6)(13)

TYPE 2 - MINIMUM STEP HEIGHT
(SPREAD FOOTING SHOWN)



STEPPED FOOTING DETAIL - LONGIT. SECTION (5)(6)(13)

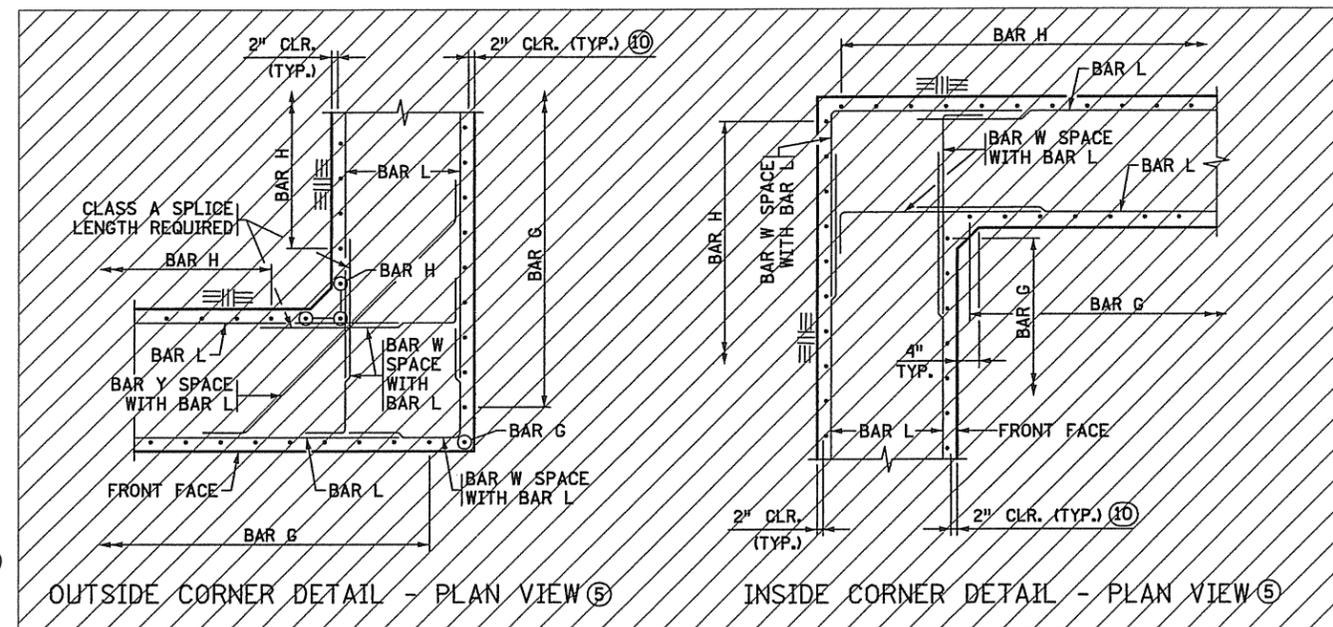
TYPE 1 - VARIABLE STEP HEIGHT
(SPREAD FOOTING SHOWN)

NOTES:

- (1) MINIMUM DEPTH 6 INCH OR SHEAR KEY DEPTH. DESIGNER TO DETERMINE MAXIMUM DEPTH.
- (2) SEE SPECIAL PROVISIONS FOR PAYMENT OF ADDITIONAL CONCRETE.
- (3) STRUCTURAL CONCRETE (3Y43) OR LEAN CONCRETE BACKFILL (1C62), AS APPROVED BY ENGINEER. (12)
- (4) CERTAIN ROCKS (SHALE, ETC.) BREAK OFF IN LAYERS. IN SUCH CASES, DRILL HOLES FOR ANCHORS TO KEY FOOTING TO ROCK.
- (5) ALL BARS RELATED TO STEPPED FOOTING AND CORNER CONSTRUCTION SHALL BE INCIDENTAL WITH NO DIRECT COMPENSATION.
- (6) ALL STRUCTURAL CONCRETE (3Y43) RELATED TO THE STEPPED FOOTING SHALL BE INCIDENTAL WITH NO DIRECT COMPENSATION.

- (7) 6 INCH MAX. SPACING. BARS TO BE SAME TYPE AS BAR B OF THE LOWER FOOTING. NO BARS REQUIRED IF DISTANCE BETWEEN FOOTINGS IS LESS THAN 6 INCHES.
- (8) TYPE I DRAIN. SEE DETAIL "A" ON STANDARD PLAN 5-297.624 (1 OF 3).
- (9) TYPE II DRAIN. SEE DETAIL "A" ON STANDARD PLAN 5-297.624 (1 OF 3).
- (10) SEE DETAIL "C" ON STANDARD PLAN 5-297.624(1).
- (11) FOUNDATION OPTIONS USED ON RETAINING WALLS AND ABUTMENTS FOR BRIDGES 07578 & 07590 SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER AND ENGINEER IN THE FIELD.
- (12) DETAIL MODIFIED
- (13) USE AS NEEDED

- (14) CONCRETE MIX (1C62) SHALL BE INCLUDED WITH "2411.501 - STRUCTURAL CONCRETE (3Y43)" FOR PAYMENT.
- (15) DRILLING AND GROUTING IS INCIDENTAL TO PRICE BID FOR "2411.501 - STRUCTURAL CONCRETE (3Y43)". SEE SPECIAL PROVISIONS.



OUTSIDE CORNER DETAIL - PLAN VIEW (5)

INSIDE CORNER DETAIL - PLAN VIEW (5)

REVISED:
APPROVED: MAY 31, 2006
Daniel A. Horgan
STATE BRIDGE ENGINEER

CERTIFIED BY *CMSchall-Karwacki*
PROFESSIONAL ENGINEER/C.E.M. SCHALL-KARWACKI
LIC. NO. 15656 3-18-2009

STANDARD SHEET NO.
5-297.624 MOD. (2 OF 3)
STANDARD APPROVED:
MAY 31, 2006

TITLE:
RETAINING WALL MISCELLANEOUS DETAILS

DES: DJR DRN: NBB
CHK: RAB CHK: CSK

STATE PROJECT NO. 07-090-02 SHEET NO. 20 OF 28 SHEETS

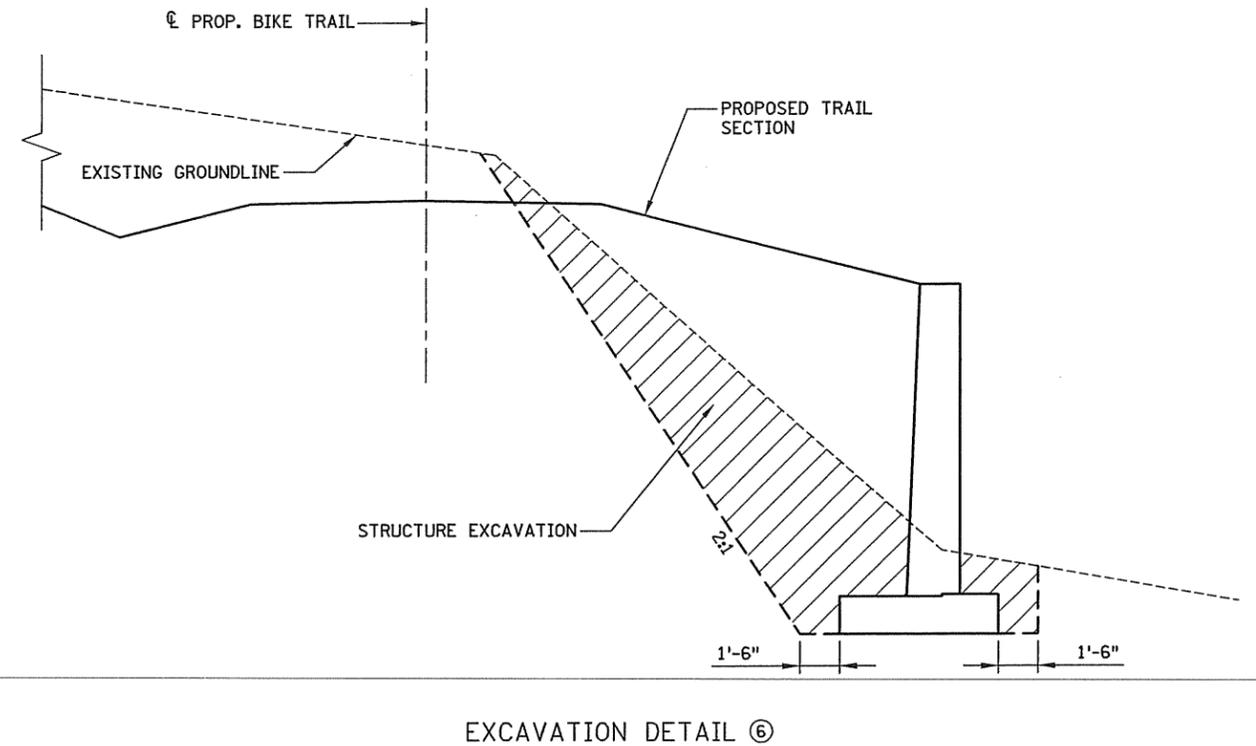
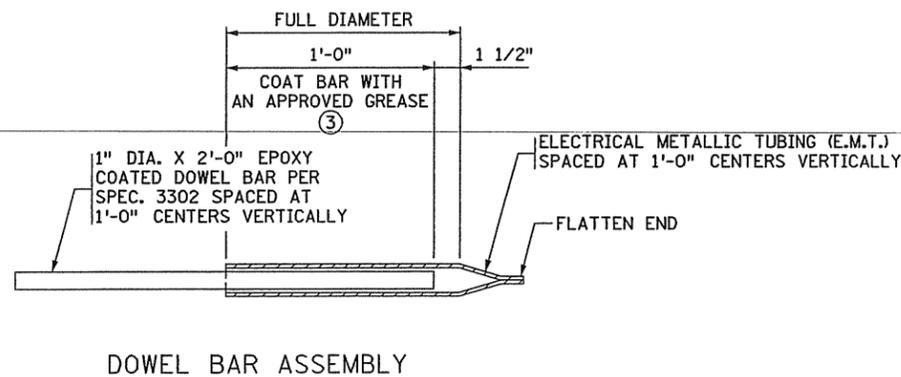
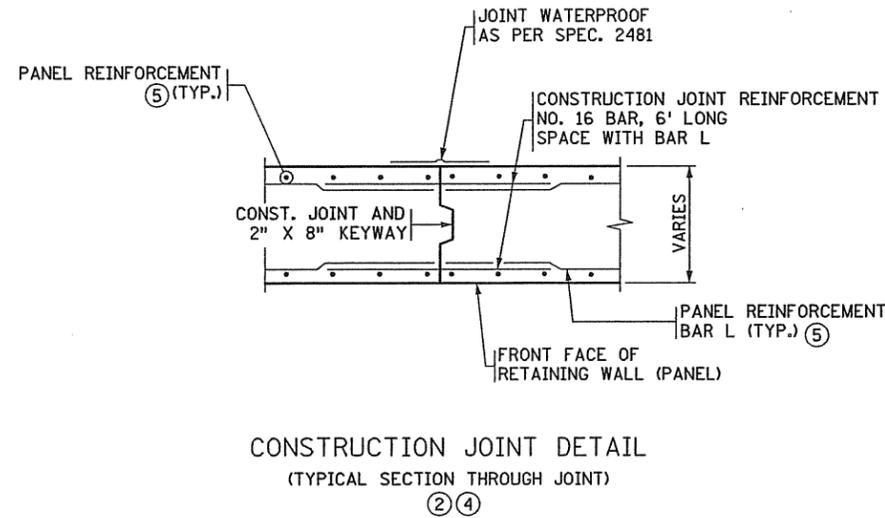
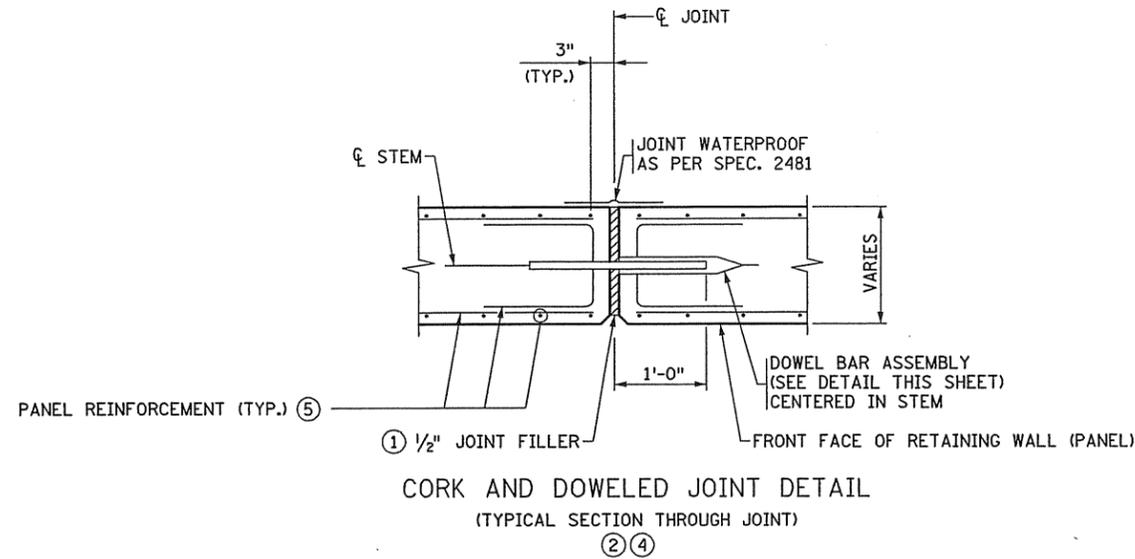
BRIDGE NO.
07590

NOTES:

THE MATERIALS AND PLACEMENT OF THE CORK AND DOWEL JOINT/ CONSTRUCTION JOINT (DOWEL BAR ASSEMBLIES, NO. 16 REINFORCING BARS, JOINT FILLER, AND JOINT WATERPROOFING) ARE INCIDENTAL FOR WHICH NO DIRECT PAYMENT WILL BE MADE.

THE CONTRACTOR SHALL ASSIGN TO THE REINFORCING BAR SUPPLIER THE RESPONSIBILITY OF SUPPLYING THE NECESSARY MATERIALS ASSOCIATED WITH THE DETAILS SHOWN ON THIS SHEET.

- ① JOINT FILLER SHALL BE CORK (SPEC. 2401.3E3).
- ② CONSTRUCTION JOINT(S) MAY BE SUBSTITUTED FOR SOME OF THE CORK AND DOWEL JOINT(S) AT THE CONTRACTOR'S OPTION. CORK AND DOWEL JOINT(S) MUST BE SPACED AT 9'-6" MAXIMUM. CORK AND DOWEL JOINT(S) MUST BE USED IN VERTICAL JOINT(S) AT FOOTING AND AS SHOWN ON SHEET 15.
- ③ GREASE SHALL BE AN APPROVED HIGH PRESSURE TYPE THAT IS EFFECTIVE OVER THE FULL RANGE OF EXPECTED TEMPERATURES AND
- ④ DOWEL BAR ASSEMBLY MUST BE INSTALLED PERPENDICULAR TO JOINT AND PARALLEL TO THE WALL FACE, AND TO EACH OTHER.
- ⑤ SEE PANEL SHEETS FOR REINFORCING DETAILS.
- ⑥ DETAIL ADDED.



REVISED:
APPROVED: MAY 31, 2006
Daniel J. Bergeson
STATE BRIDGE ENGINEER

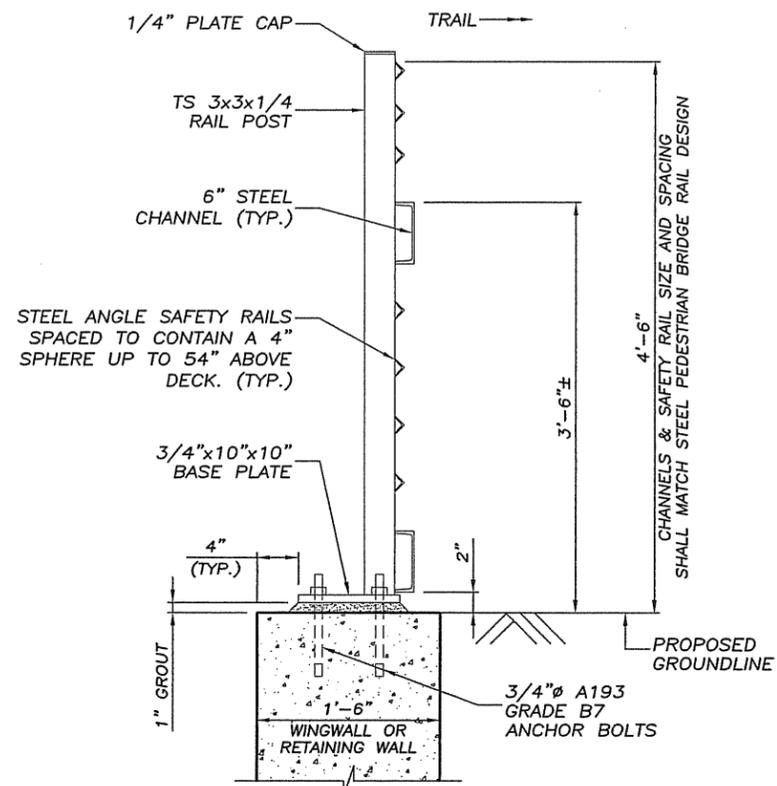
CERTIFIED BY *C.M. Schall-Karwacki*
PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI
LIC. NO. 15656 3-18-2009

STANDARD SHEET NO. 5-297.624 MOD. (3 OF 3)
STANDARD APPROVED: MAY 31, 2006

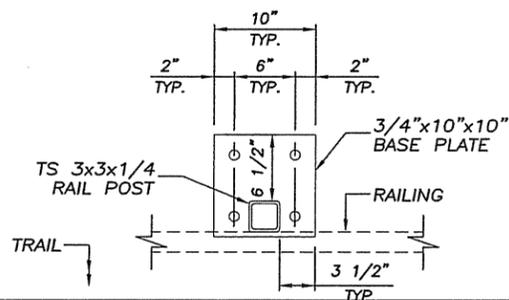
TITLE: RETAINING WALL MISCELLANEOUS DETAILS
STATE PROJECT NO. 07-090-02

DES: DJR DRN: NBB
CHK: RAB CHK: CSK
BRIDGE NO. 07590

SHEET NO. 21 OF 28 SHEETS



TYPICAL SECTION THRU APPROACH RAIL



BASE PLATE DETAIL

BEARING AND ANCHOR BOLT NOTES

ANCHOR BOLTS SHALL HAVE AN EMBEDMENT DEPTH OF 6". THE CHEMICAL ADHESIVE SHALL BE HAMMER CAPSULE OR EQUAL AS APPROVED BY THE SEALING ENGINEER. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

CEMENTITIOUS NON-SHRINK GROUT SHALL MEET ASTM C-1107, 7000 PSI MINIMUM, UNLESS SPECIFIED OTHERWISE.

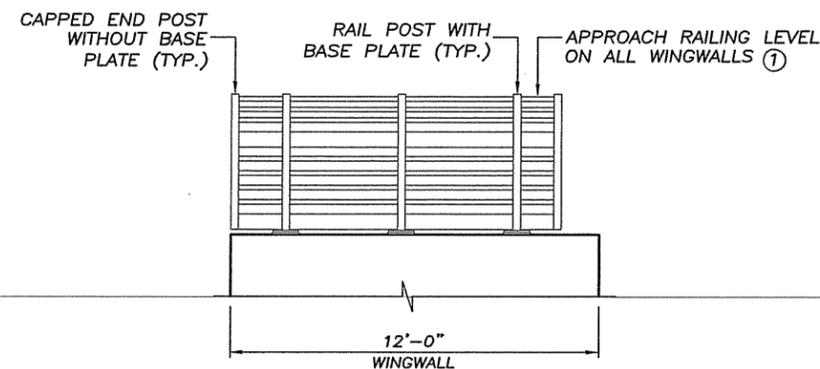
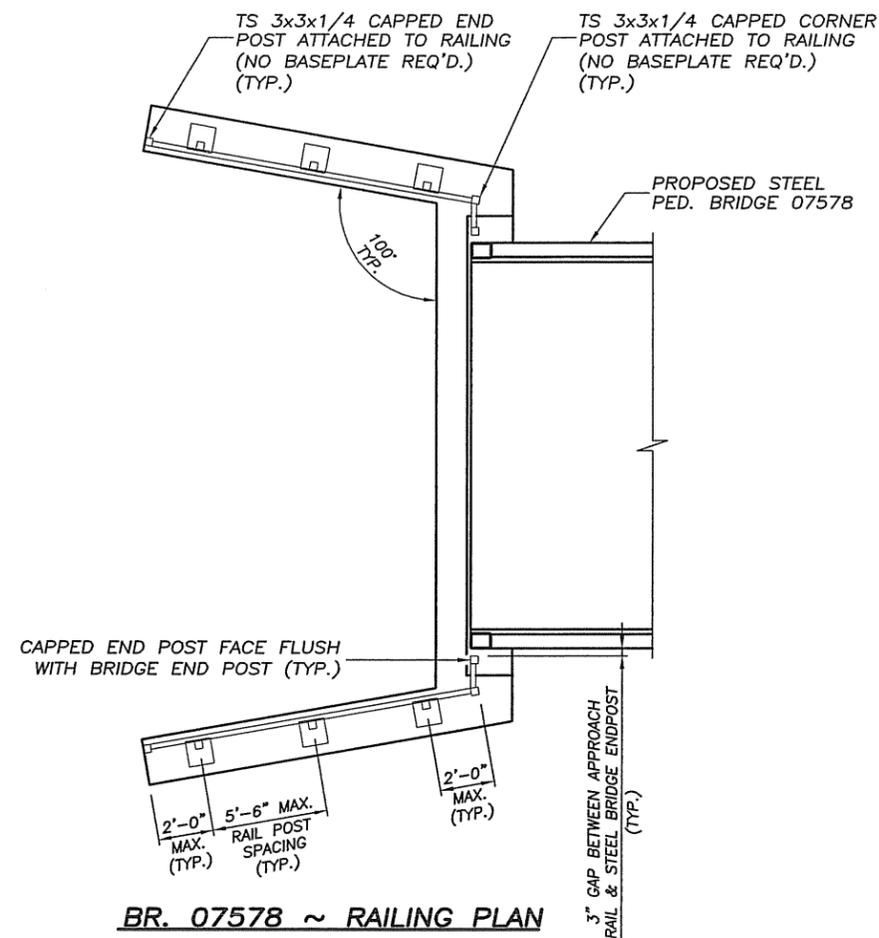
WINGWALL & RETAINING WALL REINFORCEMENT SHALL BE CAREFULLY PLACED TO AVOID ANCHOR RODS, 2" CLEARANCE REQUIRED. ANCHORS SHALL BE SURROUNDED BY AT LEAST ONE BAR ON ALL SIDES.

FINAL ELEVATION ADJUSTMENT OF THE APPROACH RAILING WILL BE MADE WITH 2"x2" SQUARE SHIMS (PROVIDED). ALL SHIM PLATES SHALL BE SNUG BEFORE FINAL TIGHTENING OF THE ANCHOR BOLTS.

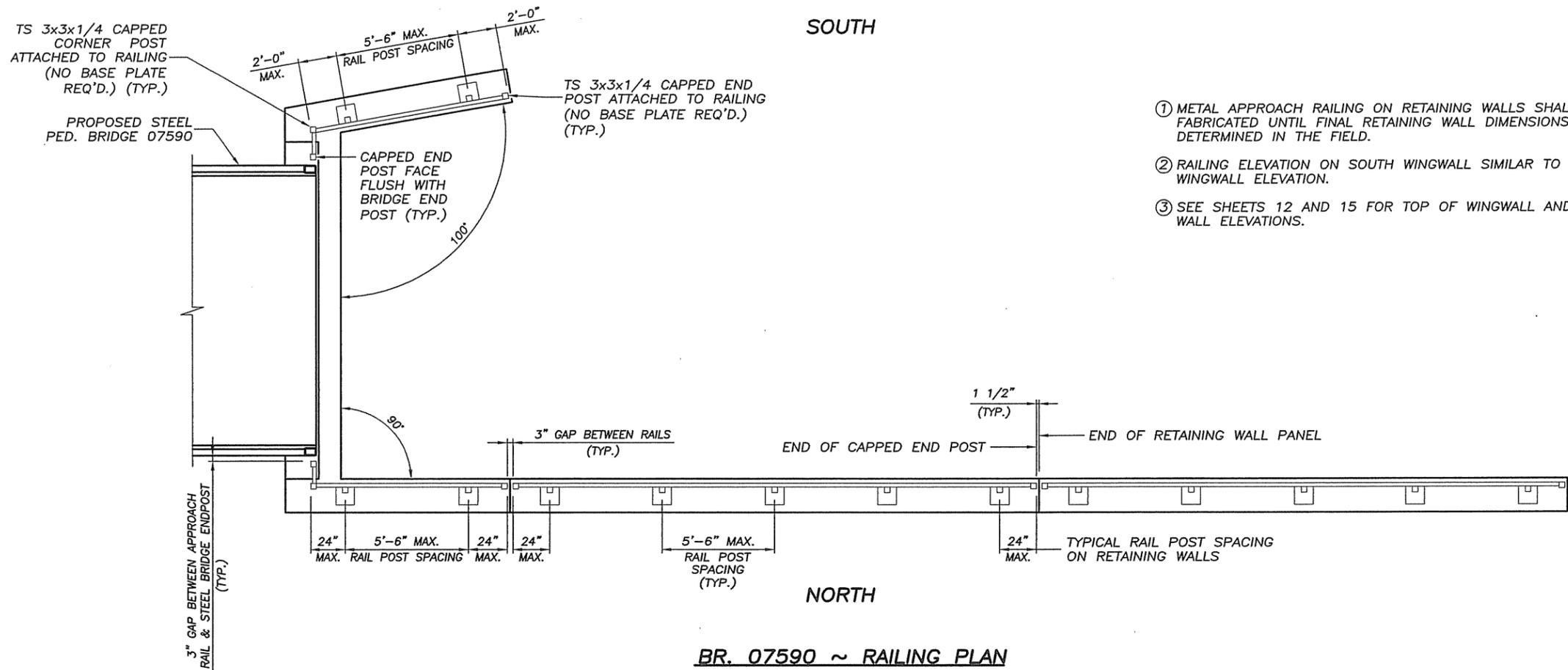
THE BASE PLATES SHALL NOT BE GROUTED UNTIL AFTER ANCHOR BOLTS HAVE BEEN TIGHTENED. THE CONTRACTOR SHALL ENSURE STABILITY PRIOR TO GROUTING.

ALL RAIL POSTS SHALL BE VERTICAL AND PLUMB.

① SEE SHEET 3 FOR TOP OF WINGWALL ELEVATIONS.

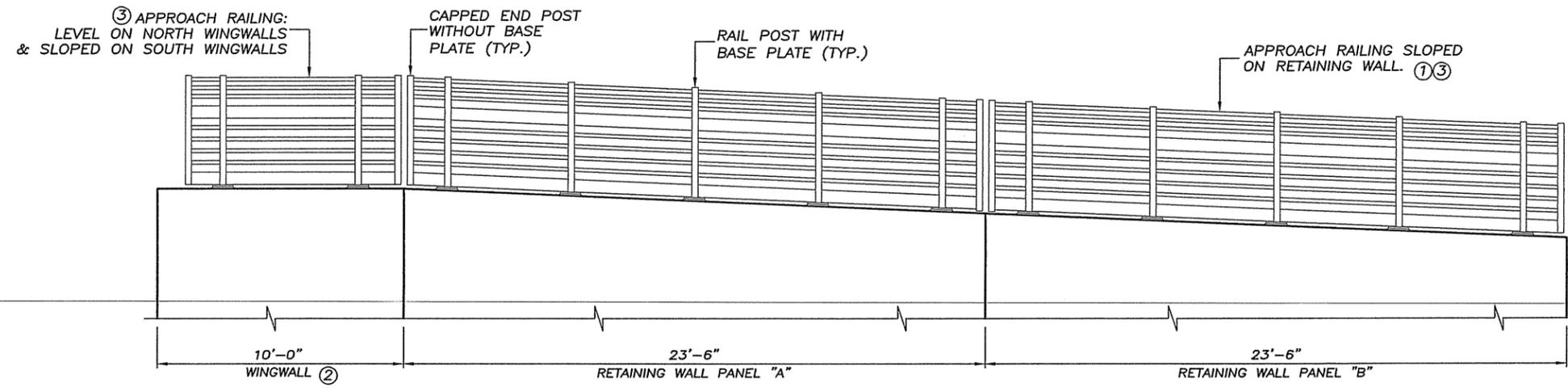


CERTIFIED BY <i>CMSchall-Kawachi</i> PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI LIC. NO. 15656	TITLE:	DES: DJR	DRN: NBB
	APPROACH RAILING DETAILS	CHK: RAB	CHK: CSK
STATE PROJECT NO. 07-090-02	SHEET NO. 22 OF 28 SHEETS	BRIDGE NO. 07578 & 07590	



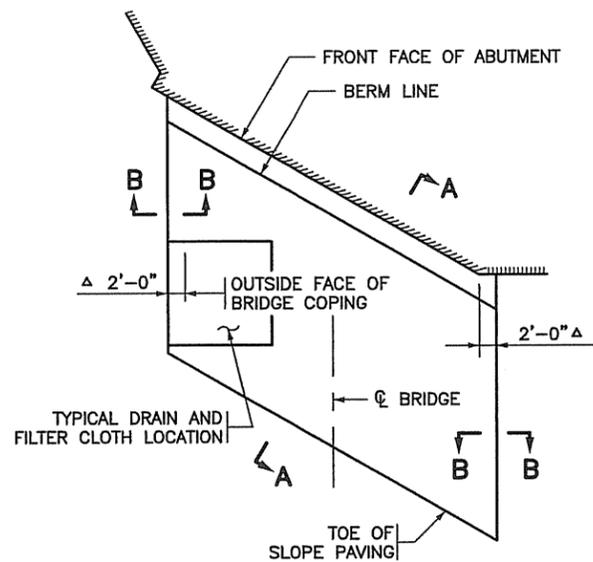
- ① METAL APPROACH RAILING ON RETAINING WALLS SHALL NOT BE FABRICATED UNTIL FINAL RETAINING WALL DIMENSIONS ARE DETERMINED IN THE FIELD.
- ② RAILING ELEVATION ON SOUTH WINGWALL SIMILAR TO NORTH WINGWALL ELEVATION.
- ③ SEE SHEETS 12 AND 15 FOR TOP OF WINGWALL AND RETAINING WALL ELEVATIONS.

BR. 07590 ~ RAILING PLAN

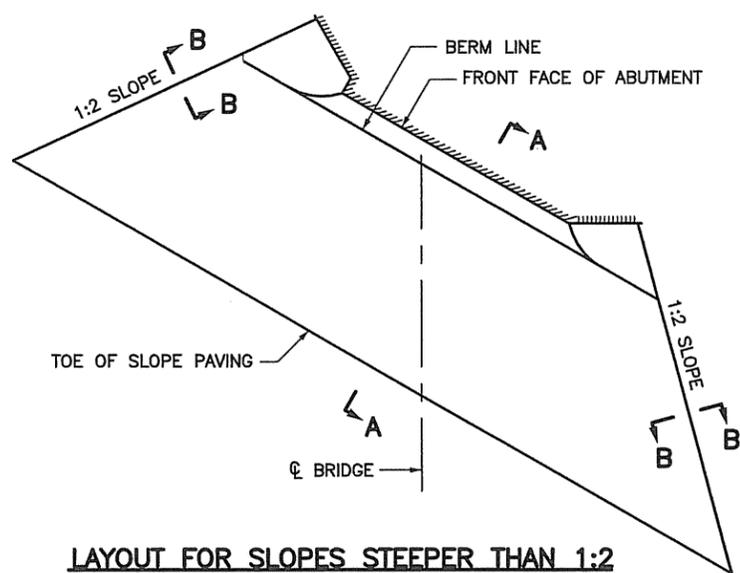


BR. 07590 ~ NORTH RAILING ELEVATION

CERTIFIED BY <i>C.M. Schall-Karwacki</i> <small>PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI</small> LIC. NO. 15656 3-18 2009	TITLE:	APPROACH RAILING DETAILS		DES: DJR	DRN: NBB
	STATE PROJECT NO. 07-090-02	SHEET NO. 23 OF 28 SHEETS	CHK: RAB	CHK: CSK	BRIDGE NO. 07578 & 07590

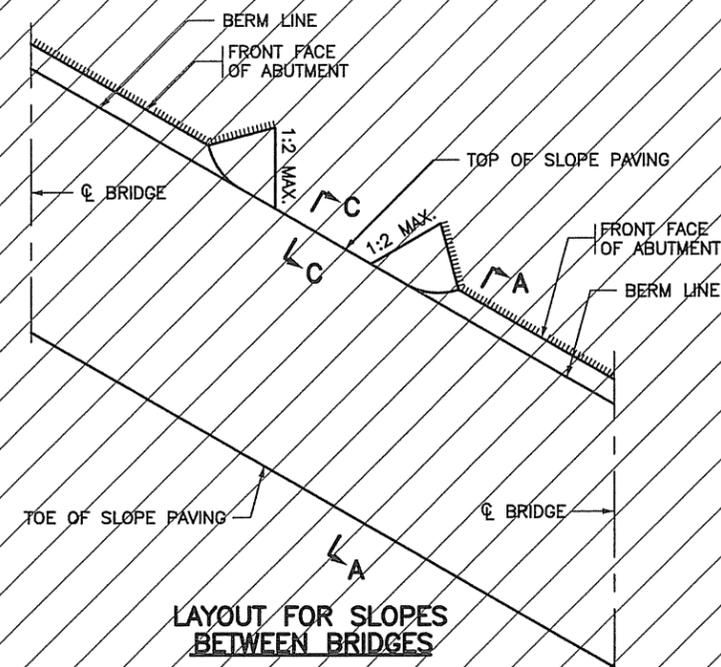


LAYOUT FOR SLOPES 1:2 OR FLATTER

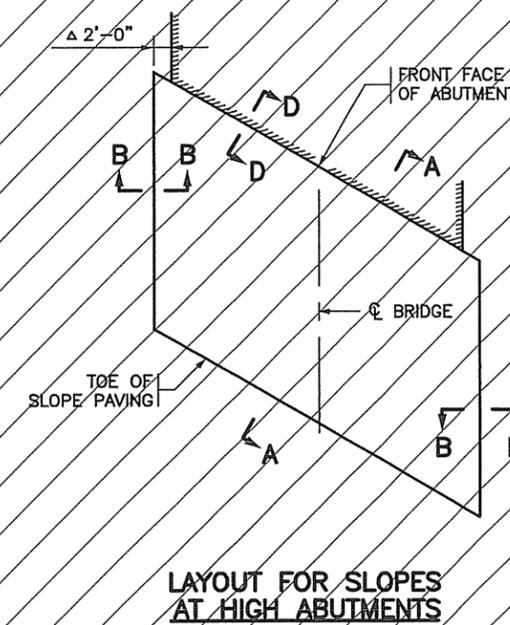


LAYOUT FOR SLOPES STEEPER THAN 1:2

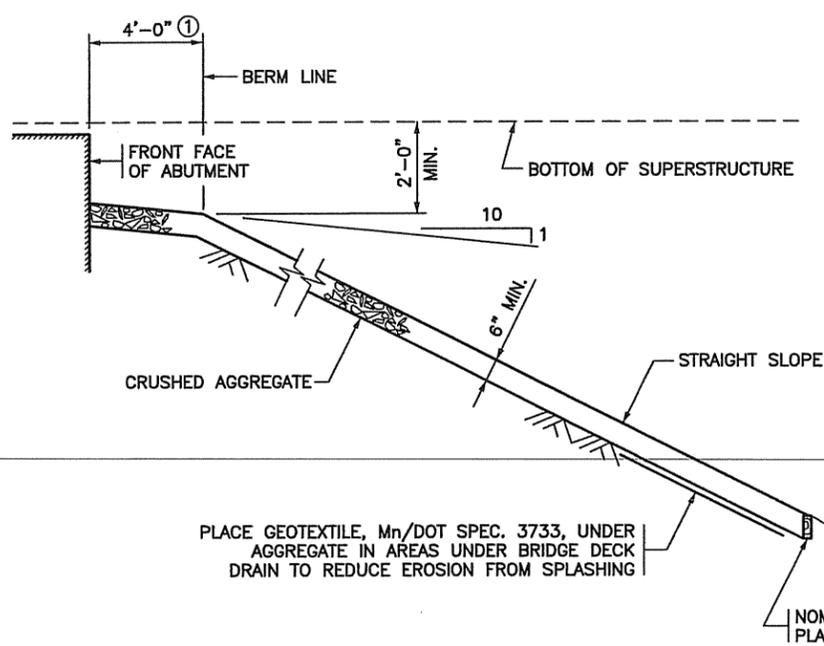
Δ 2'-0" FOR TANGENT BRIDGE SUPERSTRUCTURES. VARIES 2'-0" MINIMUM FOR CURVED BRIDGE SUPERSTRUCTURES.



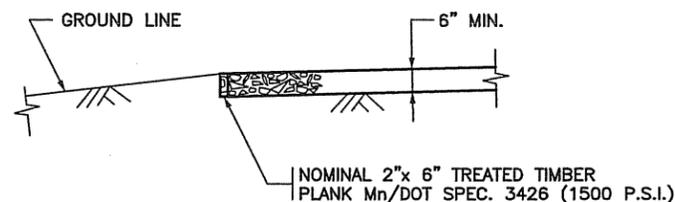
LAYOUT FOR SLOPES BETWEEN BRIDGES



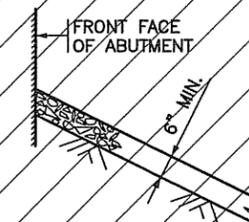
LAYOUT FOR SLOPES AT HIGH ABUTMENTS



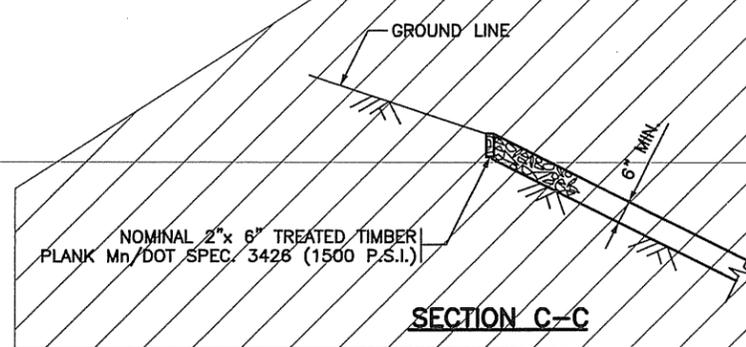
SECTION A-A



SECTION B-B



SECTION D-D
HIGH ABUTMENTS



SECTION C-C

GENERAL NOTE

SLOPES ARE EXPRESSED AS A RATIO OF VERTICAL DISTANCE: HORIZONTAL DISTANCE.

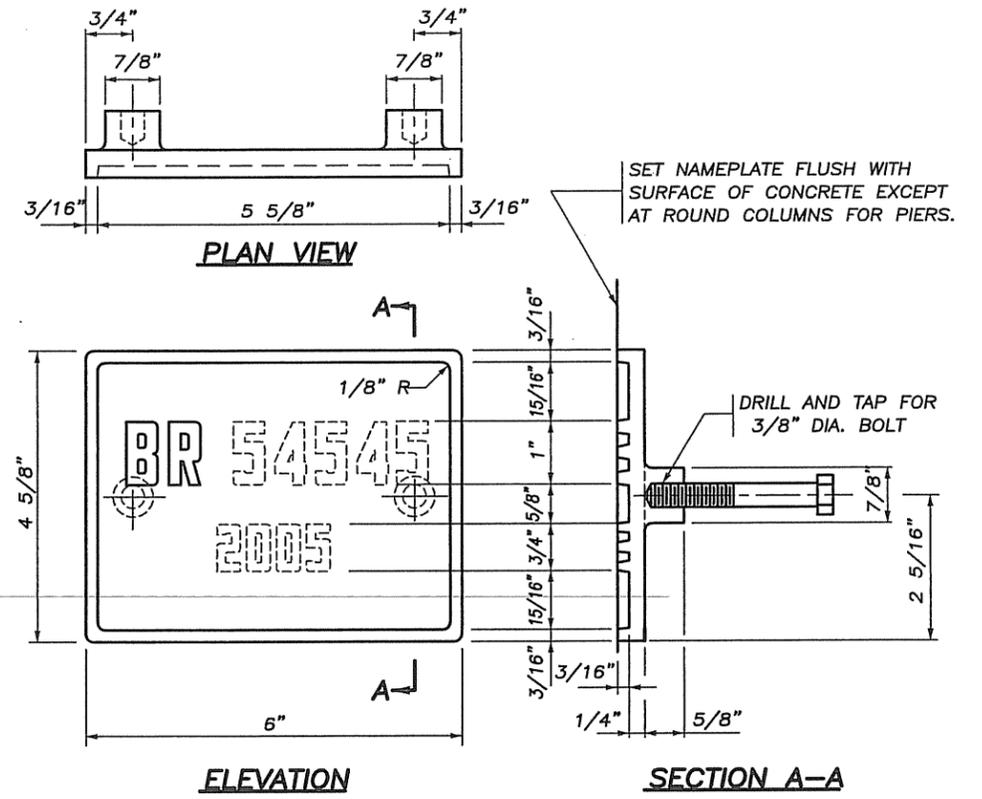
① DETAIL MODIFIED

REVISION:
APPROVED: SEPTEMBER 26, 2003
Daniel J. Anderson
STATE BRIDGE ENGINEER

CERTIFIED BY *C.M. Schall-Karwacki*
PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI
LIC. NO. 15656
3-18-2009

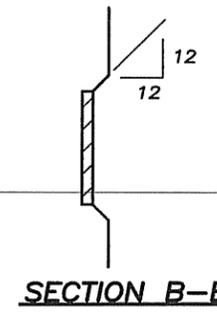
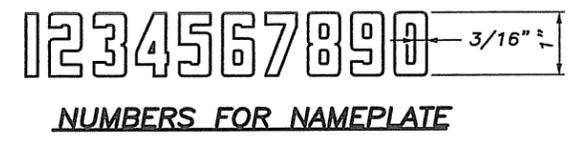
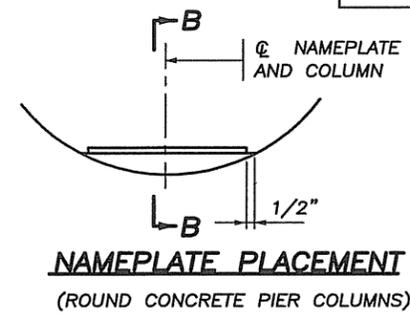
STABILIZED AGGREGATE SLOPE PAVING UNDER BRIDGES

S.P. 07-090-02		FIG. 5-397.302 MOD.	
DES: DJR	DRN: NBB	APPROVED:	
CHK: RAB	CHK: CSK	BRIDGE NOS. 07578 & 07590	
SHEET NO. 24 OF 28 SHEETS			



THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION. DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

BRIDGE	07578	OR	BRIDGE	07590
YEAR	2009		YEAR	2009



NOTES:

NO SHOP DRAWING REQUIRED.

MATERIAL SHALL COMPLY WITH Mn/DOT SPEC. 3327.

LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.

DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".

HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.

TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.

FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.

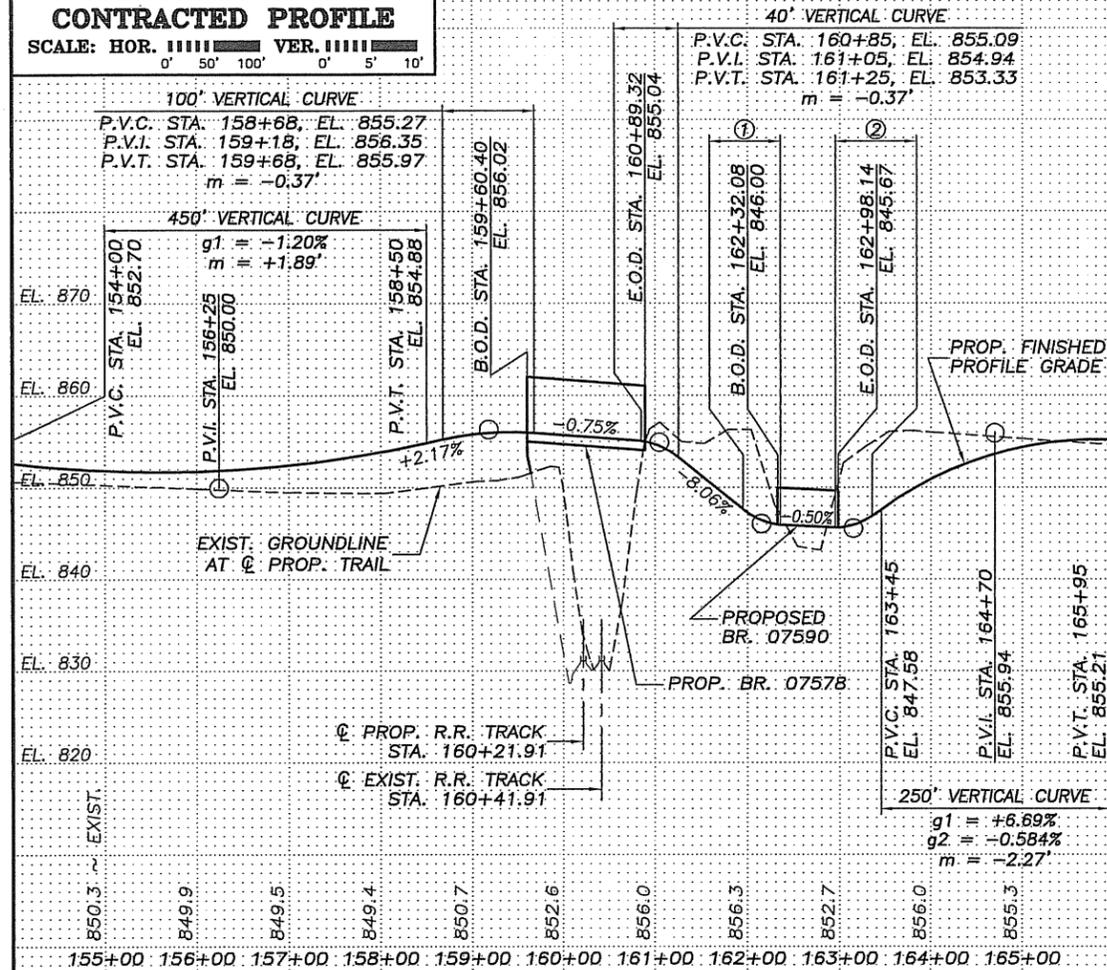
ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
<i>Daniel J. Morgan</i> STATE BRIDGE ENGINEER	BRIDGE NAMEPLATE (FOR NEW BRIDGES)		B101

CERTIFIED BY <i>CMSchall-Karwacki</i> PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI	MISC. BRIDGE DETAILS	DES.: DJR DRN.: NBB APPROVED: CHK.: RAB CHK.: CSK	BRIDGE NO. 07578 & 07590
LIC. NO. 15656	3-18-2009	S.P. 07-090-02	SHEET 25 OF 28 SHEETS

CONTRACTED PROFILE

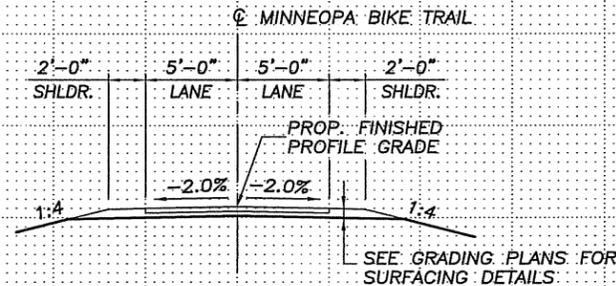
SCALE: HOR. 1"=100' VER. 1"=10'



TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN

- ① 40' VERTICAL CURVE
 P.V.C. STA. 161+95, EL. 847.69
 P.V.I. STA. 162+15, EL. 846.08
 P.V.T. STA. 162+35, EL. 845.98
 m = +0.38'
- ② 40' VERTICAL CURVE
 P.V.C. STA. 162+95, EL. 845.68
 P.V.I. STA. 163+15, EL. 845.58
 P.V.T. STA. 163+35, EL. 846.91
 g2 = +6.69%, m = +0.36'



TYPICAL SECTION THRU PROPOSED BIKE TRAIL ADJACENT TO RAILROAD

Fed. Proj. No.

LOCATION ENGINEER'S OBSERVATION AT BRIDGE SITE

- DATE
- Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, rec. boats.
 - Other bridges or culverts over the same stream (particularly structures which carry high water without overflow of roadway): Given location, type, length, height above high water, cross-sectional area, etc.
 - Apparent highwater elevation..... Obtained from.....
 - Other data: Approx. velocity of water at time of survey

HYDRAULIC ENGINEER'S RECOMMENDATION

DATE *N/A*

Stream or ditch designation

Drainage area

Max. flood on record..... Design flood (..... yr. freq.)..... C.F.S.

Max. observed highwater elev. Design highwater elev.

Design mean velocity through structure F.P.S.

Low superstructure at or above elevation

Flowline elevation..... Skew angle

Waterway area req'd below elev. = Square Feet @ right angles to channel

In the interest of flood plain zoning the regional flood (100 yr. freq.) is C.F.S. at stage..... and mean velocity of F.P.S. with Ft. swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of Natural Resources.

ENGINEER'S RECOMMENDATION

DATE *10-8-2007*

BR. 07578: 129' STEEL TRUSS PEDESTRIAN BRIDGE
BR. 07590: 66' STEEL TRUSS PEDESTRIAN BRIDGE
0° SKEW, 12 FT. CLEAR WALKWAY

Bridge survey sheets made from: *SURVEY NOTES FROM*
BLUE EARTH COUNTY

Benchmark elevation... *none*

Location:

STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

ON *MINNEOPA BIKE TRAIL*

PROPOSED BRIDGE LOCATED *0.1* MILES *WEST* OF
JCT. T.H. 68 & U.S. T.H. 169

SEC. *15* TWP. *108 N* R. *27 W*

TOWNSHIP *SOUTH BEND* COUNTY *BLUE EARTH*

EXIST. BRIDGE NO. *none*

PROP. BRIDGE NOS. *07578 & 07590*

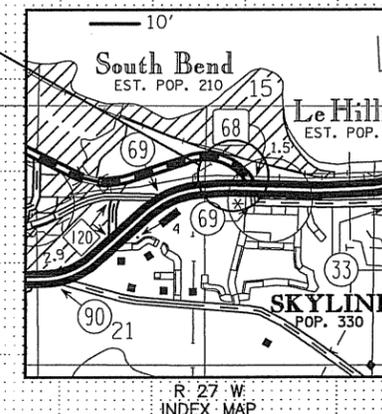
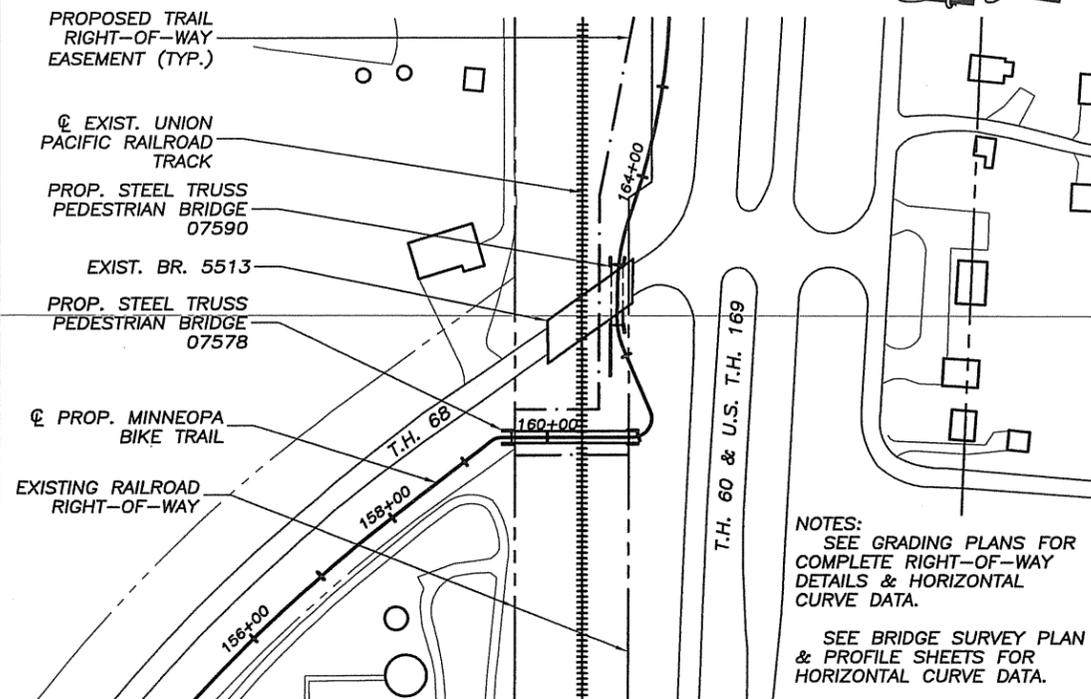
PLAT

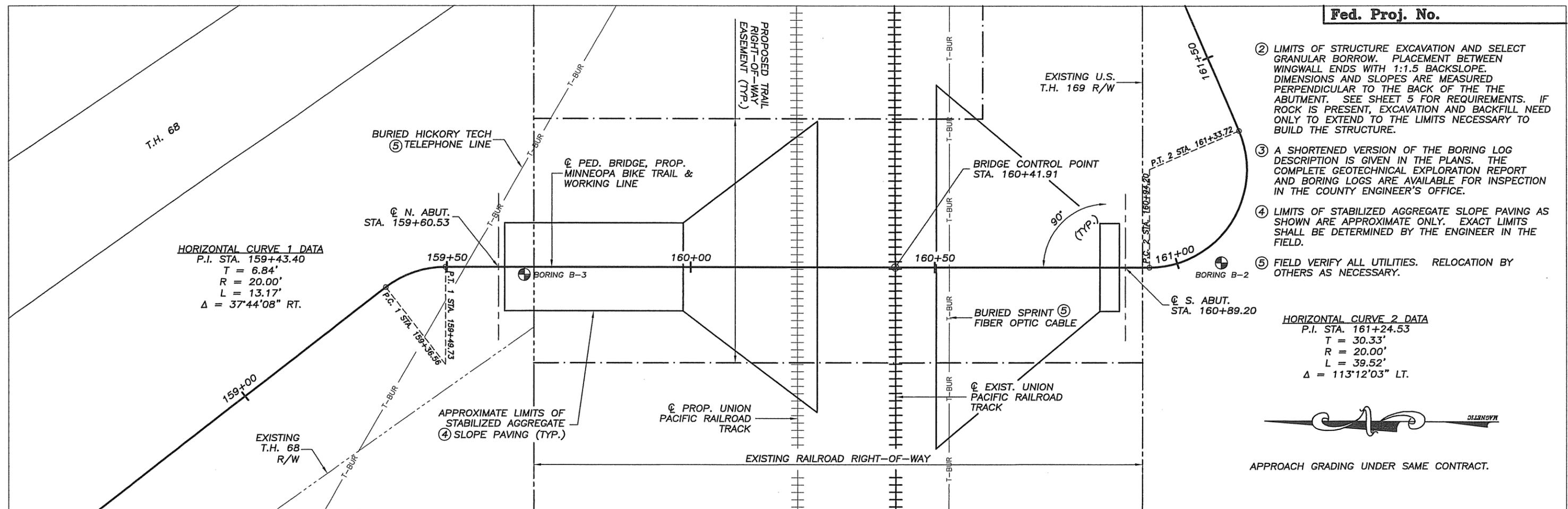
SCALE: 1"=100'

UTILITY INFORMATION

WARNING: DIAL GOPHER STATE ONE CALL AT 1-800-252-1166 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS TO OBTAIN COMPLETE UTILITY PROPERTY OWNERSHIP AND LOCATION INFORMATION.

UTILITY INFO AVAILABLE FOR PLAN PREPARATION:
 SEE GRADING PLANS FOR COMPLETE UTILITY INFORMATION.
 NOTE: FIELD VERIFY ALL UTILITIES.

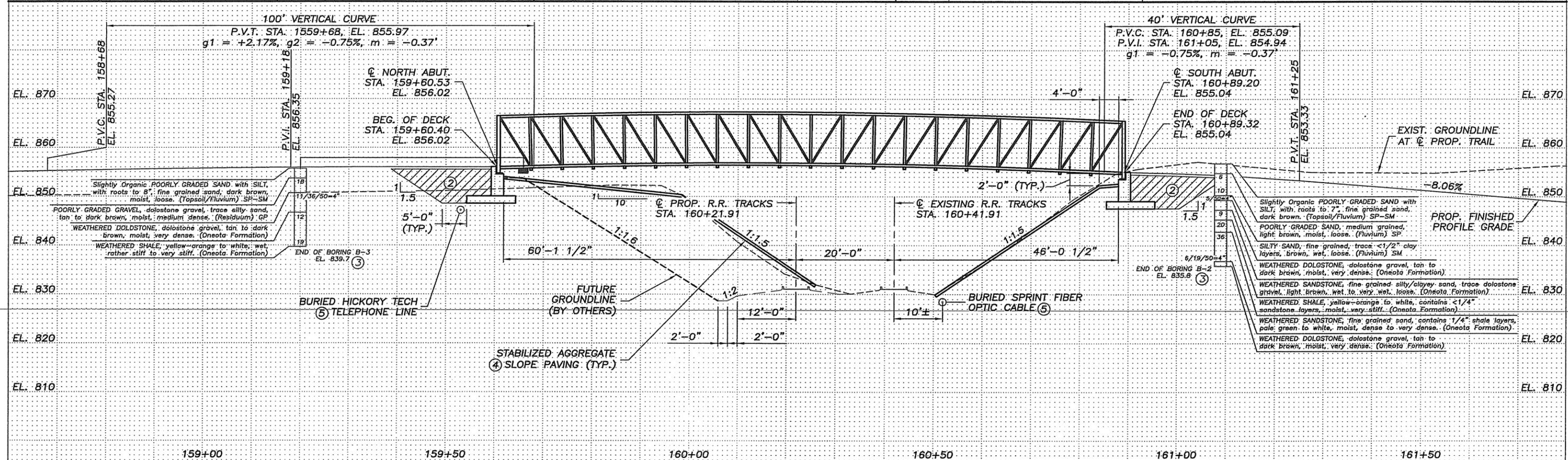




- ② LIMITS OF STRUCTURE EXCAVATION AND SELECT GRANULAR BORROW. PLACEMENT BETWEEN WINGWALL ENDS WITH 1:1.5 BACKSLOPE. DIMENSIONS AND SLOPES ARE MEASURED PERPENDICULAR TO THE BACK OF THE THE ABUTMENT. SEE SHEET 5 FOR REQUIREMENTS. IF ROCK IS PRESENT, EXCAVATION AND BACKFILL NEED ONLY TO EXTEND TO THE LIMITS NECESSARY TO BUILD THE STRUCTURE.
- ③ A SHORTENED VERSION OF THE BORING LOG DESCRIPTION IS GIVEN IN THE PLANS. THE COMPLETE GEOTECHNICAL EXPLORATION REPORT AND BORING LOGS ARE AVAILABLE FOR INSPECTION IN THE COUNTY ENGINEER'S OFFICE.
- ④ LIMITS OF STABILIZED AGGREGATE SLOPE PAVING AS SHOWN ARE APPROXIMATE ONLY. EXACT LIMITS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
- ⑤ FIELD VERIFY ALL UTILITIES. RELOCATION BY OTHERS AS NECESSARY.



APPROACH GRADING UNDER SAME CONTRACT.



BORINGS SHOWN B-2 & B-3 WITH STD 140 LB HAMMER 30 INCH DROP 2 INCH O.D. SAMPLER	TAKEN	CERTIFIED BY <i>CMSchall-Karwacki</i> PROFESSIONAL ENGINEER/C.M. SCHALL-KARWACKI LIC. NO. 15656	4-14-2009	BRIDGE SURVEY PLAN & PROFILE State Proj. No. 07-090-02	DES.: DJR DRN.: NBB CHK.: RAB CHK.: CSK	APPROVED:	Bridge No. 07578
------------------------------------------------------------------------------------------	-------	-------------------------------------------------------------------------------------------------------	-----------	----------------------------------------------------------------------	--------------------------------------------	-----------	---------------------

APPROACH GRADING UNDER SEPARATE CONTRACT.

EXIST. UNION PACIFIC RAILROAD TRACK

BURIED SPRINT FIBER OPTIC CABLE

PED. BRIDGE & WORKING LINE

BURIED HICKORY TECH TELEPHONE LINE

PROPOSED TRAIL RIGHT-OF-WAY EASEMENT

HORIZONTAL CURVE 5 DATA
 P.I. STA. 164+75.77
 P.T. STA. 165+82.38
 T = 108.24'
 R = 716.78'
 L = 214.85'
 Δ = 17°10'27" LT.

EXISTING RAILROAD & U.S. T.H. 169 RIGHT-OF-WAY

HORIZONTAL CURVE 4 DATA
 P.I. STA. 163+16.17
 T = 35.20'
 R = 225.00'
 L = 69.84'
 Δ = 17°47'02" RT.

APPROXIMATE LIMITS OF STABILIZED AGGREGATE
 ③ SLOPE PAVING (TYP.)

HORIZONTAL CURVE 3 DATA
 P.I. STA. 162+27.44
 T = 16.10'
 R = 75.00'
 L = 31.73'
 Δ = 24°14'17" RT.

HORIZONTAL CURVE 2 DATA
 P.I. STA. 161+24.53
 T = 30.33'
 R = 20.00'
 L = 39.52'
 Δ = 113°12'03" LT.

- ① LIMITS OF STRUCTURE EXCAVATION AND SELECT GRANULAR BORROW. PLACEMENT BETWEEN WINGWALL ENDS WITH 1:1.5 BACKSLOPE. DIMENSIONS AND SLOPES ARE MEASURED PERPENDICULAR TO THE BACK OF THE THE ABUTMENT. SEE SHEET 13 FOR REQUIREMENTS. IF ROCK IS PRESENT, EXCAVATION AND BACKFILL NEED ONLY TO EXTEND TO THE LIMITS NECESSARY TO BUILD THE STRUCTURE.
- ② A SHORTENED VERSION OF THE BORING LOG DESCRIPTION IS GIVEN IN THE PLANS. THE COMPLETE GEOTECHNICAL EXPLORATION REPORT AND BORING LOGS ARE AVAILABLE FOR INSPECTION IN THE COUNTY ENGINEER'S OFFICE.
- ③ LIMITS OF STABILIZED AGGREGATE SLOPE PAVING AS SHOWN ARE APPROXIMATE ONLY. EXACT LIMITS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

