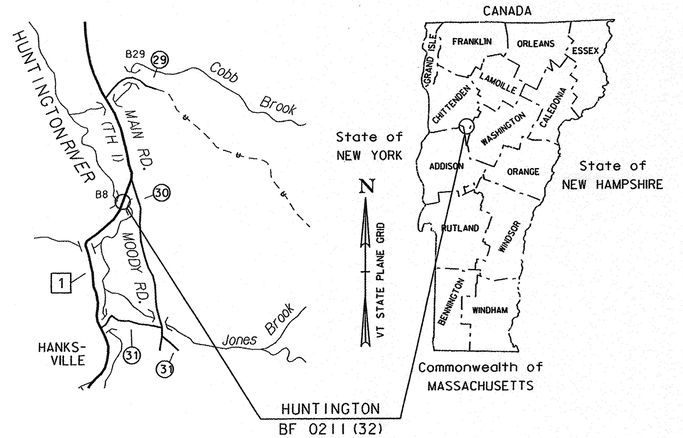
STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
BRIDGE PROJECT

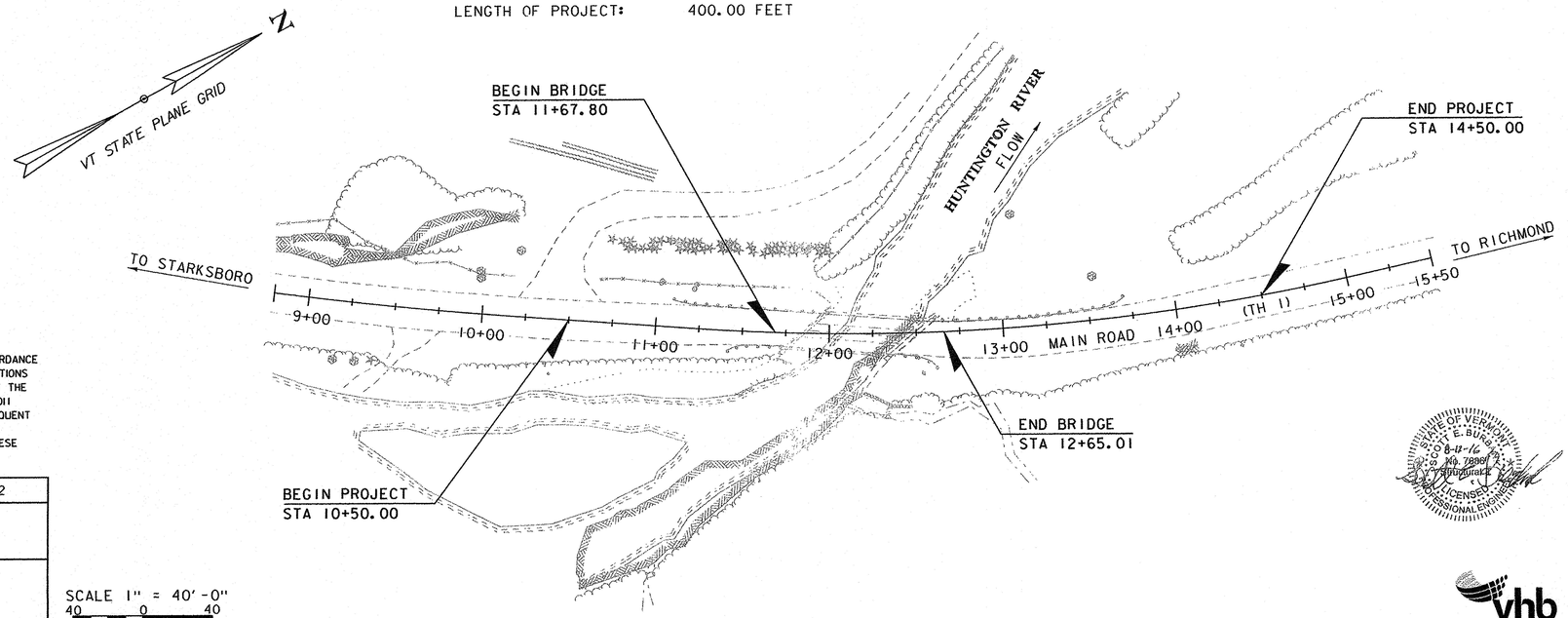
TOWN OF HUNTINGTON
COUNTY OF CHITTENDEN
TH-1, RURAL MAJOR COLLECTOR, FAS ROUTE 0211, BRIDGE NO 8



PROJECT LOCATION: LOCATED IN THE COUNTY OF CHITTENDEN, TOWN OF HUNTINGTON, ON TH 1 (FAS 0211), BRIDGE NO. 8 OVER HUNTINGTON RIVER, APPROXIMATELY 3.9 MILES NORTH OF TH 1'S JUNCTION WITH VT ROUTE 17.

PROJECT DESCRIPTION: WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES REMOVAL AND REPLACEMENT OF BRIDGE NO. 8 ON A NEW ALIGNMENT WITH ASSOCIATED ROADWAY AND CHANNEL WORK.

LENGTH OF STRUCTURE: 97.21 FEET
LENGTH OF ROADWAY: 302.79 FEET
LENGTH OF PROJECT: 400.00 FEET



SCALE 1" = 40'-0"
40 0 40

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

QUALITY ASSURANCE PROGRAM : LEVEL 2	
SURVEYED BY :	L. ORVIS
SURVEYED DATE :	06/17/2013
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD 83 (2011)

RECORD PLANS

CONTRACTOR: S. D. IRELAND CONC. CONST. CORP - BURLINGTON, VT

RESIDENT ENGINEER: GREG WILCOX

CONSTRUCTION BEGAN: JUNE 19, 2017

CONSTRUCTION COMPLETE: SEPTEMBER 1, 2017

RECORD PLANS BY: GREG WILCOX & JESSE IVES

I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY _____ RESIDENT ENGINEER

DATE 4/10/18

NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.

STATE OF VERMONT
SCOTT E. BUSHEY
8-11-14
No. 7896
LICENSED PROFESSIONAL ENGINEER

DIRECTOR OF PROJECT DELIVERY
APPROVED _____ DATE 8/22/2014

PROJECT MANAGER : ROBERT YOUNG, P.E.

PROJECT NAME : HUNTINGTON
PROJECT NUMBER : BF 0211(32)

SHEET 1 OF 62 SHEETS

vhb

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version
LRFD

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STANDARDS LIST

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E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
G-1BM	BOX BEAM GUARDRAIL	06-13-1997
S-364A	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	02-10-2014
S-364B	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	02-10-2014
S-364C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	02-10-2014
S-364D	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
T-1	TRAFFIC CONTROL GENERAL NOTES	04-25-2016
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
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T-35	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS	08-06-2012
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T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013
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STRUCTURES DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	2/9/2012
SD-502.00	CONCRETE DETAILS AND NOTES	10/10/2012
SD-516.10	BRIDGE JOINT ASHPALTIC PLUG	8/9/2011
SD-601.00	STRUCTURAL STEEL DETAILS AND NOTES	6/4/2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	5/2/2011

HIGHWAY SAFETY & DESIGN DETAILS

HSD-400.01	SAFETY EDGE DETAILS	3/29/2016

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2016	1100	150	65	9.8	85
2036	1200	160	65	12.9	120

20 year ESAL for flexible pavement from 2016 to 2036 : 558000
40 year ESAL for flexible pavement from 2016 to 2056 : 1253000
Design Speed : 45 mph

AS BUILT "REBAR" DETAIL

LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: April 2015

DRAINAGE AREA : 18.4 sq. mi.
CHARACTER OF TERRAIN : Mostly forested, rural
STREAM CHARACTERISTICS : Sinuous and alluvial
NATURE OF STREAMBED : Cobbles, gravel and sand

PEAK FLOW DATA

Q 2.33 =	850 cfs	Q 50 =	2800 cfs
Q 10 =	1700 cfs	Q 100 =	3400 cfs
Q 25 =	2300 cfs	Q 500 =	4700 cfs

DATE OF FLOOD OF RECORD Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY : @ Q50 = 11.7 fps
ICE CONDITIONS : Monderate
DEBRIS: Low
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No
IS ORDINARY RISE RAPID? No
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
IF YES, DESCRIBE:

WATERSHED STORAGE: <1%
HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single span rolled beam bridge
YEAR BUILT: 1934
CLEAR SPAN(NORMAL TO STREAM): 42'
VERTICAL CLEARANCE ABOVE STREAMBED: ~15.5'
WATERWAY OF FULL OPENING: 485 sq. ft.
DISPOSITION OF STRUCTURE: Remove and replace
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	779.5'	VELOCITY =	7.9 fps
Q10 =	782.0'	"	12.2 fps
Q25 =	783.5'	"	13.4 fps
Q50 =	784.6'	"	14.3 fps
Q100 =	785.9'.	"	15.3 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: 792.1'
DISCHARGE OVER ROAD @Q100:

UPSTREAM STRUCTURE

TOWN: Huntington — DISTANCE: 5000'
HIGHWAY # : TH 31 — STRUCTURE #: BR 40
CLEAR SPAN: 50' — CLEAR HEIGHT:
YEAR BUILT: 1964, reconstructed 2010 — FULL WATERWAY:
STRUCTURE TYPE: Prestress void slab

DOWNSTREAM STRUCTURE

TOWN: Huntington — DISTANCE: 9970'
HIGHWAY # : TH 28 — STRUCTURE #: BR 38
CLEAR SPAN: 71' — CLEAR HEIGHT:
YEAR BUILT: 1977 — FULL WATERWAY:
STRUCTURE TYPE: Rolled beam

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
TONNAGE	**20**	**36**	**36**	**66**	**30**	**34.5**	**38**
INVENTORY	1.82	1.17					
POSTING							
OPERATING	2.37	1.55	1.89	1.19	1.82	1.62	1.66
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span steel beam

CLEAR SPAN(NORMAL TO STREAM): 86'
VERTICAL CLEARANCE ABOVE STREAMBED: ~16.5'
WATERWAY OF FULL OPENING: 970 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	779.3'	VELOCITY=	6.2 fps
Q10 =	781.1'	"	8.7 fps
Q25 =	782.1'	"	10.2 fps
Q50 =	782.9'	"	11.3 fps
Q100 =	783.8'	"	12.6 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: 792.3'
DISCHARGE OVER ROAD @Q100:

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 789.5'
VERTICAL CLEARANCE: @ Q50 = 6.6'

SCOUR: 6.0' - Minimum design scour depth or to ledge

REQUIRED CHANNEL PROTECTION: Stone Fill Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW:	40 cfs	
ORDINARY LOW WATER:	20 cfs	776'
ORDINARY HIGH WATER:	370 cfs	778'

DEPTH OR ELEVATION:

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: None required
CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY

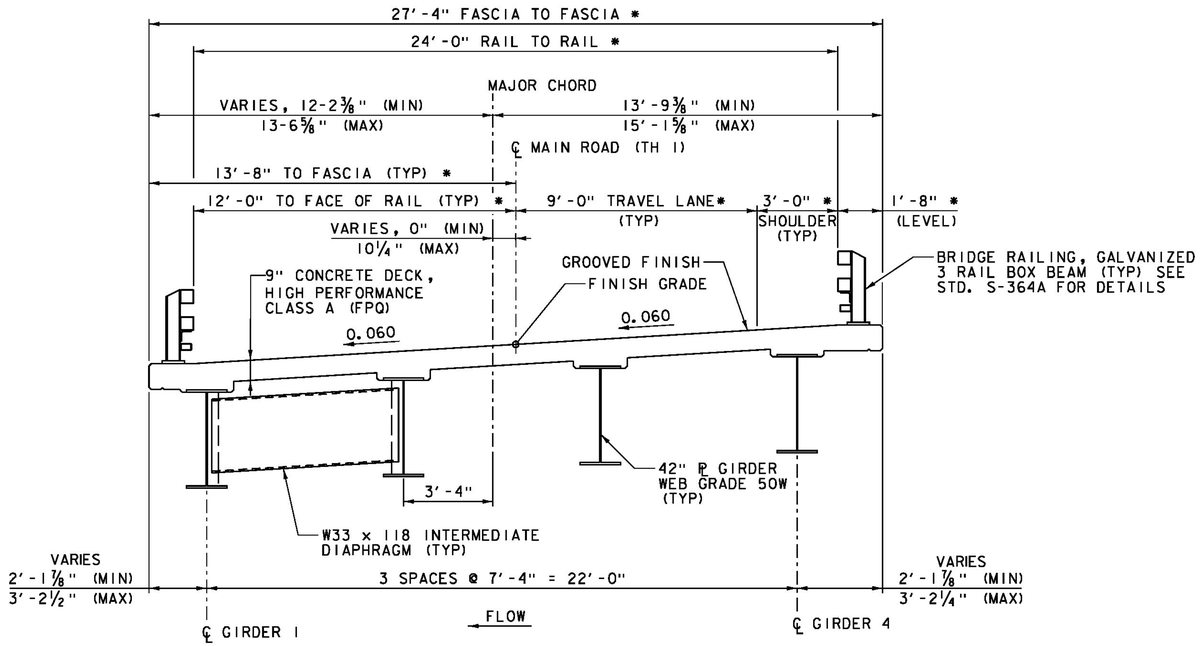
DESIGN VALUES

1. DESIGN LIVE LOAD		HL-93
2. FUTURE PAVEMENT	d_P:	2.5 INCH
3. DESIGN SPAN	L:	94.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	- - -
5. PRESTRESSING STRAND	f_y:	- - -
6. PRESTRESSED CONCRETE STRENGTH	f'_c:	- - -
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	- - -
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	- - -
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	3.5 KSI
11. CONCRETE, CLASS C	f'_c:	3.0 KSI
12. REINFORCING STEEL	f_y:	60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	f_y:	50 KSI
14. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	- - -
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	- - -
16. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	70.0 KSF
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	0.45
18. PILE RESISTANCE FACTOR	ϕ:	0.65
19. LATERAL PILE DEFLECTION	Δ:	0.06 INCH
20. BASIC WIND SPEED	V_{3s}:	- - -
21. MINIMUM GROUND SNOW LOAD	p_g:	- - -
22. SEISMIC DATA PGA: 0.65	S_s:	- - -
	S_1:	- - -
23.		- - -
24.		- - -
25.		- - -
26.		- - -

PROJECT NAME: **HUNTINGTON**
PROJECT NUMBER: **BF 0211(32)**

FILE NAME: **z13j080pi.dgn**
PROJECT LEADER: **S.E. BURBANK**
DESIGNED BY: **S.E. BURBANK**
PRELIMINARY INFORMATION SHEET 1

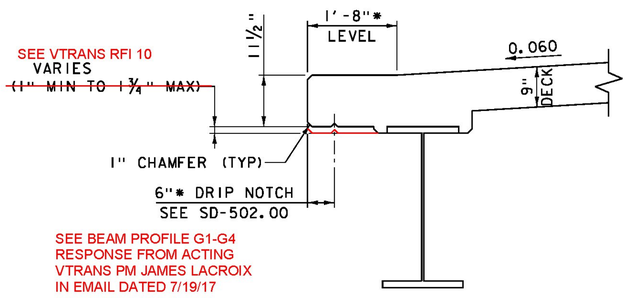
PLOT DATE: 3/15/2016
DRAWN BY: **A.J. GOUDREAU**
CHECKED BY: **E.F. LAWES**
SHEET 2 OF 62



* - DIMENSIONS ARE RADIAL

TYPICAL BRIDGE SECTION

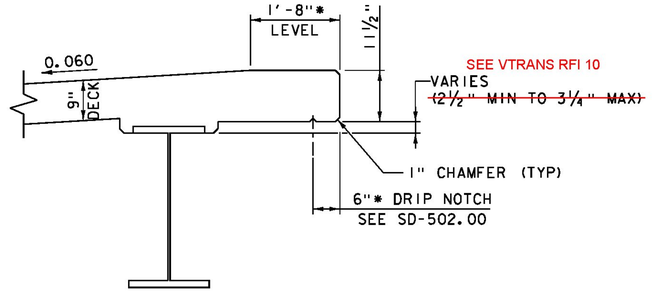
SCALE ⅜" = 1'-0"



* - DIMENSIONS ARE RADIAL

GIRDER 1 FASCIA & DRIP NOTCH DETAIL

SCALE ¾" = 1'-0"



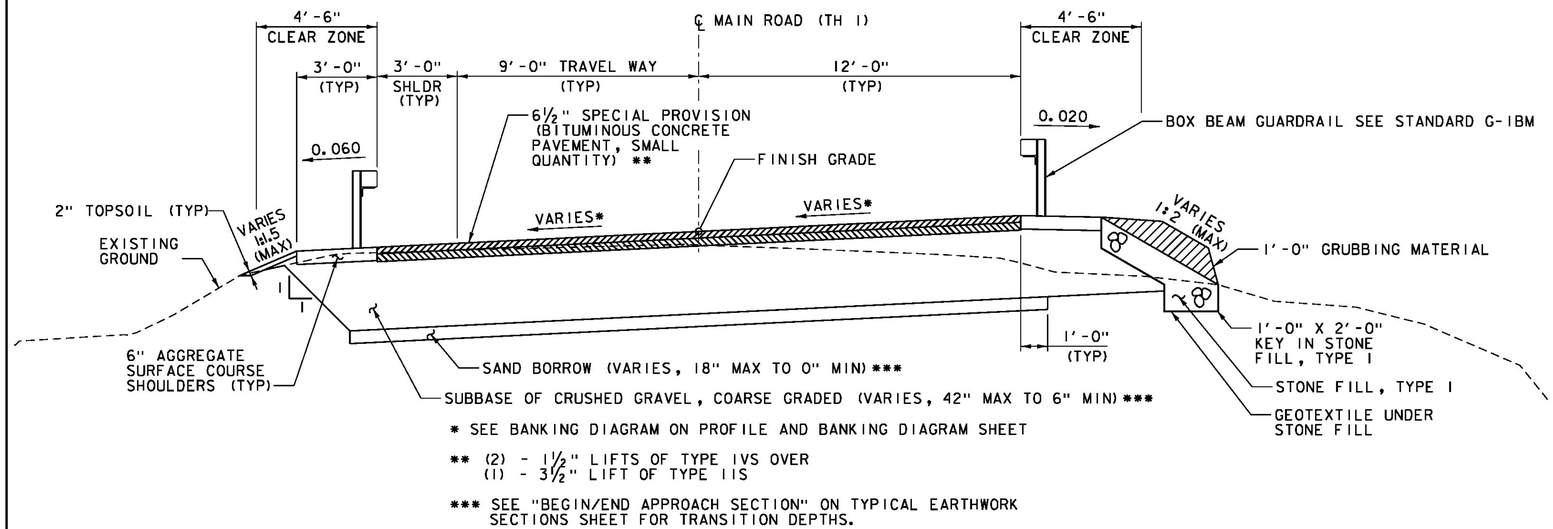
* - DIMENSIONS ARE RADIAL

GIRDER 4 FASCIA & DRIP NOTCH DETAIL

SCALE ¾" = 1'-0"

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 021I(32)
FILE NAME: z13J080typ.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: E.F. LAWES	CHECKED BY: S.E. BURBANK
TYPICAL BRIDGE SECTION	SHEET 3 OF 62

VHB 57737



* SEE BANKING DIAGRAM ON PROFILE AND BANKING DIAGRAM SHEET

** (2) - 1½" LIFTS OF TYPE IVS OVER
(1) - 3½" LIFT OF TYPE IIS

*** SEE "BEGIN/END APPROACH SECTION" ON TYPICAL EARTHWORK SECTIONS SHEET FOR TRANSITION DEPTHS.

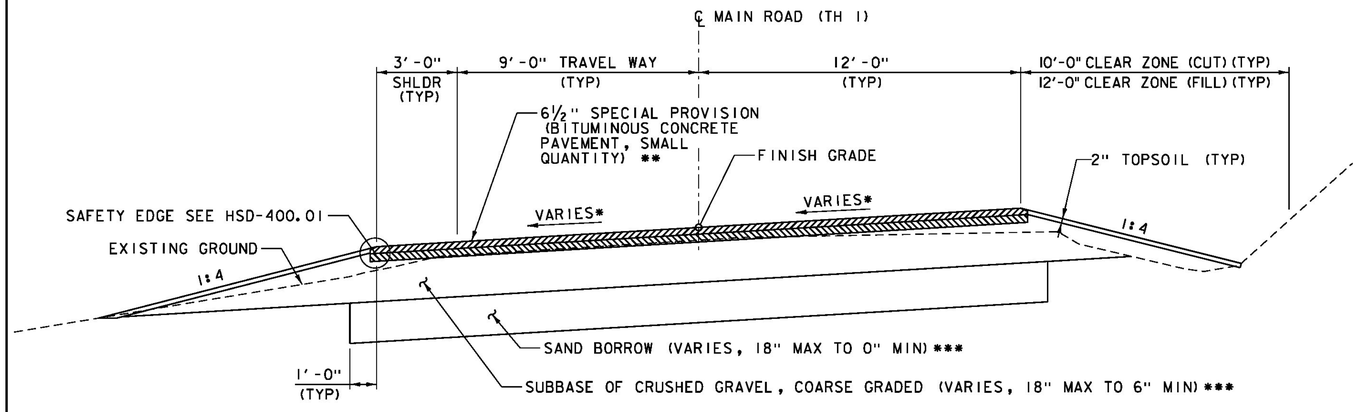
TYPICAL ROADWAY SECTION

SCALE ⅜" = 1'-0"

MATERIAL TOLERANCES

(IF USED ON PROJECT)

SURFACE	
PAVEMENT (TOTAL THICKNESS)	+/- ¼"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"



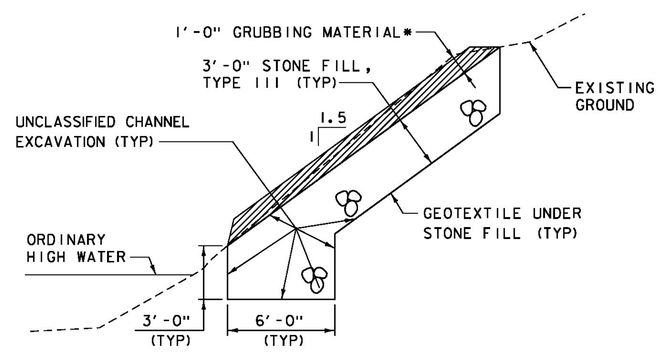
* SEE BANKING DIAGRAM ON PROFILE AND BANKING DIAGRAM SHEET

** (2) - 1½" LIFTS OF TYPE IVS OVER
(1) - 3½" LIFT OF TYPE IIS

*** SEE "BEGIN/END APPROACH SECTION" ON TYPICAL EARTHWORK SECTIONS SHEET FOR TRANSITION DEPTHS.

TYPICAL NON-GUARDRAIL SECTION

SCALE ⅜" = 1'-0"



TYPICAL CHANNEL SECTION

NOT TO SCALE

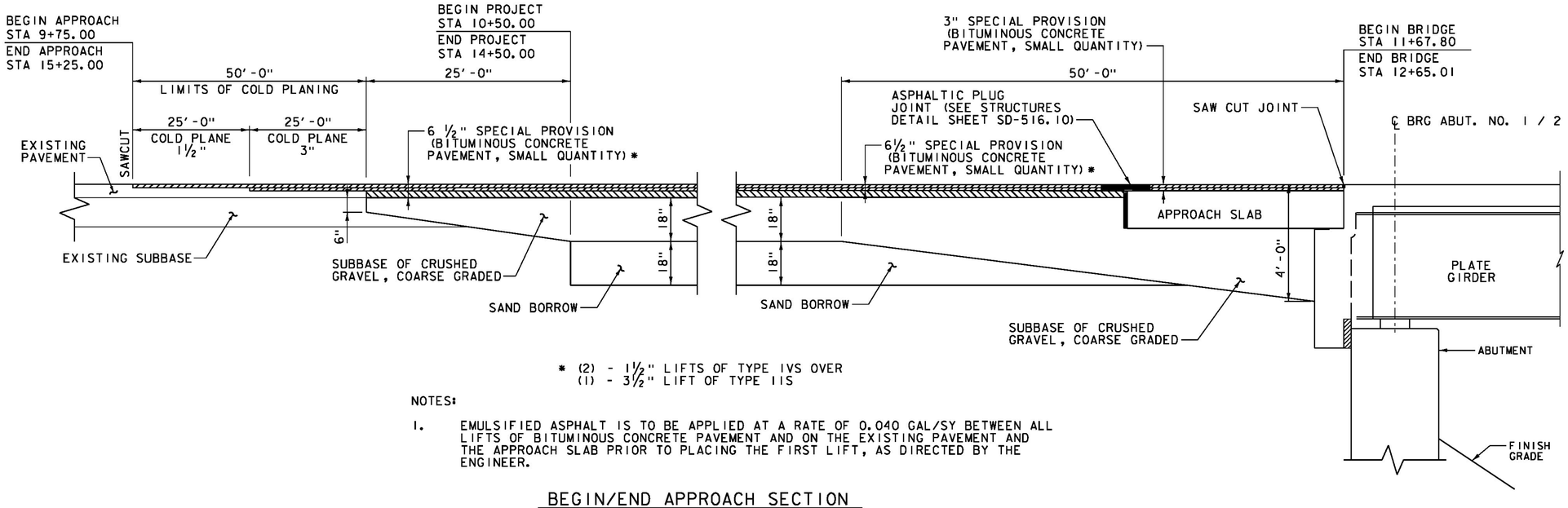
* GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

vhb

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 021I(32)

FILE NAME: z13J080typ.dgn	PLOT DATE: 9/22/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: J.D. KEENER	CHECKED BY: S.E. BURBANK
TYPICAL ROADWAY SECTIONS	SHEET 4 OF 62

VHB 57737

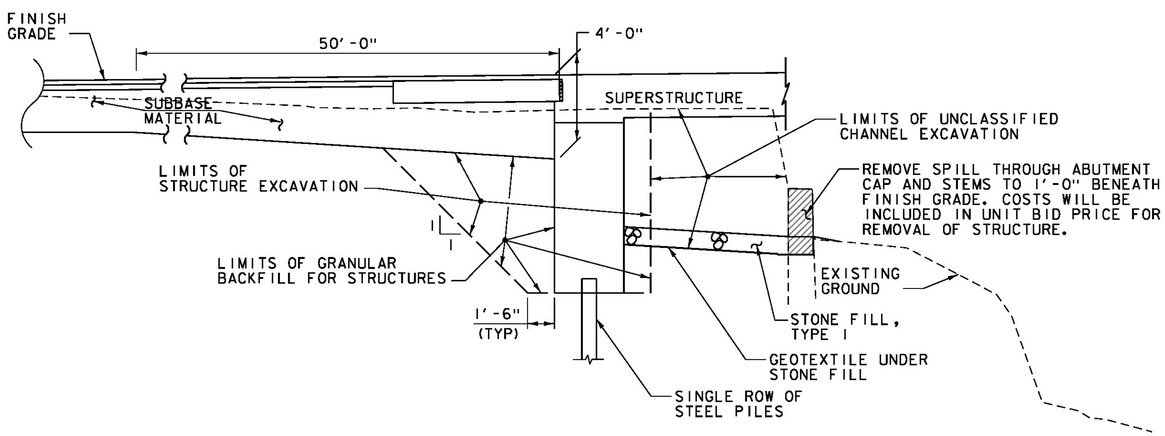


* (2) - 1½" LIFTS OF TYPE IVS OVER
(1) - 3½" LIFT OF TYPE IIS

NOTES:

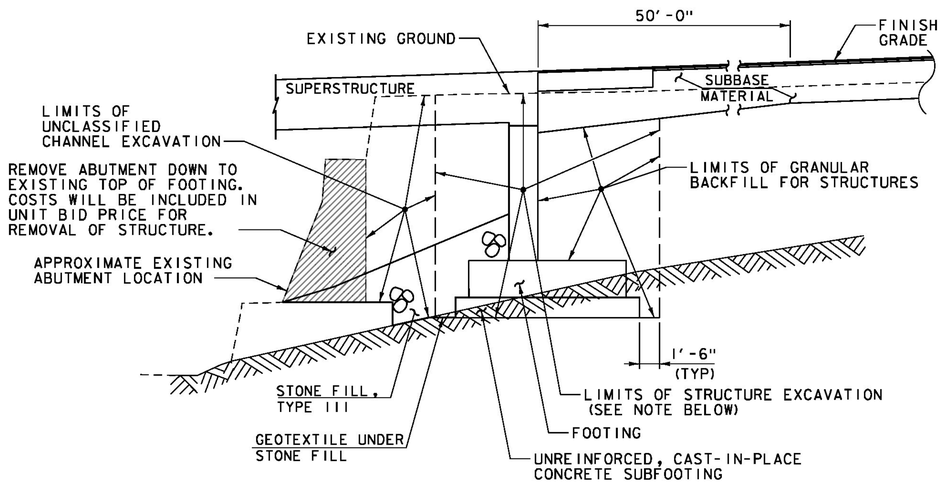
1. EMULSIFIED ASPHALT IS TO BE APPLIED AT A RATE OF 0.040 GAL/SY BETWEEN ALL LIFTS OF BITUMINOUS CONCRETE PAVEMENT AND ON THE EXISTING PAVEMENT AND THE APPROACH SLAB PRIOR TO PLACING THE FIRST LIFT, AS DIRECTED BY THE ENGINEER.

BEGIN/END APPROACH SECTION
NOT TO SCALE



NOTE: ACTUAL STRUCTURE EXCAVATION LIMITS SHALL BE DETERMINED BY THE CONTRACTOR. HOWEVER, ONLY THE EXCAVATION BETWEEN THE LIMITS SHOWN FOR STRUCTURE EXCAVATION WILL BE PAID FOR UNDER ITEM 204.25 "STRUCTURE EXCAVATION". EXCAVATION OUTSIDE OF THESE LIMITS OR OUTSIDE THE UNCLASSIFIED CHANNEL EXCAVATION WILL BE AT THE EXPENSE OF THE CONTRACTOR.

ABUTMENT 1 EARTHWORK SECTION
NOT TO SCALE



NOTE: STRUCTURE EXCAVATION INCLUDES ANY REQUIRED REMOVAL OF BEDROCK

ABUTMENT 2 EARTHWORK SECTION
(NOT TO SCALE)

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 021I(32)
FILE NAME: z13J080typ.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: J.D. KEENER	CHECKED BY: S.E. BURBANK
TYPICAL EARTHWORK SECTIONS	SHEET 5 OF 62

VHB 57737

PROJECT NOTES

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND ITS LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION, AND ITS LATEST REVISIONS.

2. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.

3. THE BRIDGE IS DESIGNED FOR HL-93 LIVE LOAD WITH A 2.5 INCH ALLOWANCE FOR FUTURE PAVEMENT.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING CONSISTENCY BETWEEN THE FABRICATOR'S SHOP DRAWINGS OF RELATED COMPONENTS AND ENSURING THE FIT-UP OF ALL COMPONENTS. FABRICATION DRAWINGS SHALL SHOW RELATED COMPONENTS AND INDICATE AS SUCH.

5. THE EXISTING BRIDGE CONTAINS STRUCTURAL STEEL. THE STRUCTURAL STEEL MAY BE PAINTED WITH MATERIAL THAT MAY CONTAIN LEAD. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE REGULATIONS WHEN HANDLING AND WORKING WITH THIS STEEL. THE REMOVED STRUCTURAL STEEL IS THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE, ITS OFFICERS, AND EMPLOYEES HARMLESS CONCERNING THE CONTRACTOR'S USE OR DISPOSITION OF THE REMOVED EXISTING STRUCTURAL STEEL.

6. THE REMOVAL OF THE EXISTING BRIDGE WILL BE PAID FOR UNDER ITEM 529.15, "REMOVAL OF STRUCTURE". THIS WORK WILL INCLUDE THE COMPLETE REMOVAL AND DISPOSAL OF THE EXISTING BRIDGE SUPERSTRUCTURE, INCLUDING ALL BEARINGS, ANCHOR BOLTS, AND THE BRIDGE SUBSTRUCTURE THAT FALLS OUTSIDE THE LIMITS COVERED BY THE CONTRACT EXCAVATION ITEMS.

TRAFFIC CONTROL

7. DURING THE CLOSURE PERIOD, TRAFFIC SHALL BE MAINTAINED BY AN OFF-SITE DETOUR TO BE SIGNED BY THE TOWN OF HUNTINGTON. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CLOSURE SIGNAGE AND PCMS AS SHOWN ON SHEETS 17 AND 18 IN ACCORDANCE WITH THE LATEST EDITION OF THE MUTCD AND VTRANS STANDARDS.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND IMPLEMENTATION OF A SITE SPECIFIC TRAFFIC CONTROL PACKAGE IDENTIFYING CONSTRUCTION ACTIVITIES BEFORE, DURING, AND AFTER THE BRIDGE CLOSURE PERIOD. THE CONTRACTOR SHALL SUBMIT A DETAILED TRAFFIC CONTROL PLAN TO THE PROJECT MANAGER FOR ALL STAGES OF CONSTRUCTION, FOR APPROVAL. ALL COSTS WILL BE INCLUDED IN ITEM 900.645, "SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)".

9. ALL ITEMS REQUIRED TO IMPLEMENT THE CONTRACTOR'S TRAFFIC CONTROL PLAN WILL NOT BE PAID FOR DIRECTLY BUT WILL BE INCLUDED IN THE BID PRICE FOR ITEM 900.645, "SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)".

10. THE CONTRACTOR SHALL NOTIFY THE TOWN AND RESIDENTS WITHIN THE PROJECT LIMITS IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS.

11. FULL ACCESS TO ALL SIDE ROADS AND DRIVES WITHIN THE PROJECT LIMITS SHALL BE MAINTAINED AT ALL TIMES. THIS WORK WILL BE CONSIDERED INCIDENTAL TO 900.645, "SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)".

12. PAYMENT FOR UNIFORMED TRAFFIC OFFICERS AND FLAGGERS WILL BE MADE UNDER ITEM 630.10, "UNIFORMED TRAFFIC OFFICERS" AND ITEM 630.15, "FLAGGERS" RESPECTIVELY. PAYMENT FOR PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) WILL BE MADE UNDER ITEM 641.15, "PORTABLE CHANGEABLE MESSAGE SIGN".

13. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE 2009 EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), AND ITS LATEST REVISIONS AND THE 2004 EDITION OF THE "STANDARD HIGHWAY SIGNS AND MARKINGS" BOOK (SHSM), AND ITS 2012 SUPPLEMENT, PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).

EARTHWORK

14. COMPACTION OF THE SUBBASE MATERIAL SHALL BE IN ACCORDANCE WITH SUBSECTION 301.06.

15. THE CONTRACTOR MAY SUBSTITUTE SUBBASE MATERIAL FOR THE SAND BORROW SHOWN IN THE MATERIALS TRANSITION. THE SUBBASE MATERIAL SHALL BE THE TYPE SPECIFIED IN THE CONTRACT AND SHALL BE PLACED TO MEET THE SUBBASE SPECIFICATIONS. IF SUBBASE IS PLACED IN LIEU OF SAND BORROW, A GEOTEXTILE MEETING THE REQUIREMENTS OF ITEM 649.11, "GEOTEXTILE FOR ROADBED SEPARATOR" SHALL BE PLACED BETWEEN THE SUBGRADE AND SUBBASE MATERIAL. ALL COSTS ASSOCIATED WITH THE SUBSTITUTION INCLUDING THE GEOTEXTILE WILL BE INCIDENTAL TO ITEM 203.31, "SAND BORROW".

16. STONE FILL SHALL BE PLACED IN FRONT OF THE ABUTMENTS BEFORE THE NEW GIRDERS ARE SET, AS SHOWN ON THE PLANS.

H-PILES

17. ABUTMENT NO. 1 PILES
    A. THE PILES SHALL BE HP 12x63.
    B. THE PILES SHALL BE DRIVEN TO A NOMINAL PILE DRIVING RESISTANCE (RNDR) OF 350 KIPS, PROVIDED A MINIMUM PENETRATION OF 25.5 FEET BELOW THE BOTTOM OF PILE CAP HAVE BEEN ACHIEVED.

    NOT ALL PILES MET THIS-SEE VTRANS RFI #2

18. TO PREVENT DAMAGE TO THE PILES, PILE SHOES ARE REQUIRED AND SHALL CONFORM TO SUBSECTION 505.04 (f).

19. A MINIMUM OF TWO DYNAMIC TESTS ARE REQUIRED AT ABUTMENT NO. 1 DURING PILE INSTALLATION. PAYMENT IS ITEM 505.45, "DYNAMIC PILE LOADING TEST".

20. THE TOPS OF THE PILES AFTER INSTALLATION SHALL NOT VARY FROM THE POSITION SHOWN ON THE PLANS BY MORE THAN 3 INCHES. THE PILE ORIENTATION SHALL NOT VARY BY MORE THAN 5 DEGREES. THE CONTRACTOR SHALL DEMONSTRATE TO THE SATISFACTION OF THE ENGINEER HOW THE TOLERANCES WILL BE MET. THESE MEASURES SHALL BE DEMONSTRATED IN A SUBMITTAL TO BE ACCEPTED BEFORE PILE DRIVING COMMENCES.

21. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL IN PLACE LENGTHS MAY VARY.

STRUCTURAL STEEL

22. ALL STRUCTURAL STEEL WILL BE PAID UNDER ITEM 506.55, "STRUCTURAL STEEL, PLATE GIRDER (FPQ)" SHALL CONFORM TO AASHTO M270M/M270 GRADE 50W.

23. ALL STRUCTURAL STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC).

24. ALL MEMBERS MARKED (CVN) MUST MEET THE CHARPY V-NOTCH TESTING REQUIREMENTS AS INDICATED IN SUBSECTION 714.01.

25. ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH-STRENGTH BOLTS IN 15/16" DIAMETER HOLES, PER SECTION 506.

26. ALL WELDING SHALL CONFORM TO THE PROVISIONS OF SUBSECTION 506.10.

27. ANY CONNECTIONS THAT ARE NOT DETAILED ON THE PLANS SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STRUCTURES ENGINEER FOR APPROVAL.

28. AFTER THE STRUCTURAL STEEL HAS BEEN SET ON THE BEARINGS, ELEVATIONS SHALL BE TAKEN ALONG THE TOP OF EACH GIRDER UNDER THE DIRECTION OF THE RESIDENT ENGINEER. THESE ELEVATIONS SHALL BE USED IN DETERMINING THE FINAL GRADE.

29. ANY HOLES IN FASCIA GIRDERS NOT OTHERWISE FILLED SHALL BE FILLED WITH BOLTS CONFORMING TO ASTM A325 TYPE III. THESE BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH SUBSECTION 506.19

30. BEARING STIFFENERS AND GIRDER ENDS SHALL BE VERTICAL UNDER FULL DEAD LOAD DEFLECTION.

CONCRETE

31. AN OPTIONAL HORIZONTAL CONSTRUCTION JOINT IS SHOWN FOR THE ABUTMENT NO. 1 AND NO. 2 CHEEKWALLS, AND WINGWALL NO. 3 AND NO. 4 (ABOVE THE BRIDGE SEAT ELEVATION). THIS IS ALLOWED IN ORDER TO REDUCE THE WEIGHT OF THE ABUTMENTS FOR HANDLING AND PLACEMENT, IF NECESSARY. THE CONTRACTOR HAS THE OPTION TO USE PRECAST OR CAST-IN-PLACE CONCRETE ABOVE THE HORIZONTAL CONSTRUCTION JOINT (IF USED), AS INDICATED IN THE TABLE ON PROJECTS NOTES (2 OF 2). ALL COSTS ASSOCIATED WITH CONSTRUCTING THE OPTIONAL CONSTRUCTION JOINT AND CONSTRUCTING THE CHEEKWALLS AND WINGWALLS (ABOVE THE CONSTRUCTION JOINT) WILL BE INCLUDED IN THE COST OF THE APPROPRIATE PRECAST CONCRETE ITEM. THIS WILL INCLUDE BUT NOT BE LIMITED TO PRECAST OR CAST-IN-PLACE CONCRETE, REINFORCING STEEL, AND MECHANICAL SPLICE CONNECTORS. ALL REINFORCING ACROSS THE HORIZONTAL CONSTRUCTION JOINT (IF USED) SHALL BE ADEQUATELY DEVELOPED BY MEANS OF THE DETAILS IN THE PLANS OR THE USE OF MECHANICAL SPLICE CONNECTORS. IF MECHANICAL SPLICE CONNECTORS ARE USED THEY SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR LEVEL I (EPOXY COATED).

32. IN ACCORDANCE WITH SUBSECTION 506.23 (a) AND AS DIRECTED BY THE RESIDENT ENGINEER, THE CONTRACTOR SHALL TAKE MEASURES NECESSARY TO PROTECT ALL SUBSTRUCTURE CONCRETE FROM STAINING DUE TO OXIDE FORMATION ON THE STRUCTURAL STEEL PRIOR TO PLACEMENT OF THE DECK. THESE MEASURES WILL NOT BE PAID FOR SEPARATELY BUT WILL BE CONSIDERED INCIDENTAL TO THE ADJACENT CONCRETE ITEM. ANY SUCH STAINING THAT OCCURS PRIOR TO DECK PLACEMENT SHALL BE REMOVED AT NO ADDITIONAL COST TO THE STATE.

33. RELATIVE TO GRADE, ALL DECK POURS SHALL BEGIN FROM THE LOW ELEVATION END AND PROCEED TOWARDS THE HIGH ELEVATION END.

34. FLEMING BRACKETS OR SIMILAR FALSE WORK SHALL BE DESIGNED BY THE CONTRACTOR AND PLACED AT A MAXIMUM SPACING OF 4'-0". THE BRACKETS SHALL BEAR NEAR THE BOTTOM FLANGE AND IN NO CASE SHALL THEY BEAR ABOVE THE BOTTOM QUARTER OF THE WEB DEPTH.

35. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1" UNLESS OTHERWISE NOTED.

36. ITEM 514.10, "WATER REPELLENT, SILANE", SHALL BE APPLIED TO ALL EXPOSED CONCRETE ON THE BRIDGE SUPERSTRUCTURE AND SUBSTRUCTURE EXCEPT THE UNDERSIDE OF THE DECK BETWEEN DRIP NOTCHES.

37. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.

38. SURFACES OF BRIDGE SEATS UNDER BEARING DEVICES SHALL BE LEVEL. THE ENTIRE BRIDGE SEAT SURFACE SHALL BE SMOOTH STEEL TROWEL FINISHED.

39. ALL FORM SUPPORTS AND FORM TIES THAT ARE TO REMAIN PERMANENTLY IN THE CONCRETE ABOVE THE BRIDGE SEAT SHALL BE AT A MINIMUM PROTECTION LEVEL OF GALVANIZED AND CONFORM TO SECTION 726 OF THE SPECIFICATIONS.

40. THE CONCRETE CURING REQUIREMENTS OF FOR CONCRETE, CLASS C IN THE SUBFOOTING MAY BE WAIVED WHEN THE CONCRETE HAS ACHIEVED THE SPECIFIIED 28-DAY COMPRESSIVE STRENGTH.

PRECAST CONCRETE PILE CAP AND ABUTMENT

41. PRECAST CONCRETE COMPRESSIVE STRENGTH: f'c = 5,000 PSI.

42. ALL LIFTING POINTS IN THE SUBSTRUCTURES SHALL BE REMOVABLE TO A MINIMUM DEPTH OF 3". THE LIFTING POINTS SHALL BE DETAILED IN THE APPROPRIATE FABRICATION DRAWING. PAYMENT FOR THIS WORK WILL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE PRECAST ITEM.

43. ALL RECESSED LIFTING POINTS AND BLOCKOUTS SHALL BE FILLED WITH A TYPE IV MORTAR MEETING THE REQUIREMENTS OF SUBSECTION 707.03 OR OTHER PRODUCT FROM THE "VERMONT AGENCY OF TRANSPORTATION APPROVED PRODUCTS LIST" (APL) AS APPROVED BY THE ENGINEER. PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE PRECAST ITEM.

44. THE METHOD OF FORMING FOR SUBSEQUENT CONCRETE PLACEMENTS AFTER PLACING PRECAST UNITS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR IS ENCOURAGED TO WORK WITH THE FABRIACTOR IF ADDITIONAL SUPPORTS MAY BE REQUIRED. IN NO CASE SHALL THE CONTRACTOR ATTACH ADDITIONAL FORM SUPPORTS BY DRILLING OR SIMILAR MEANS INTO ANY PRECAST UNIT.

45. SHEET MEMBRANE WATERPROOFING, PREFORMED SHEET SHALL BE INSTALLED WHERE SHOWN ON THE PLANS AND MEET THE REQUIREMENTS OF SUBSECTION 726.11. PAYMENT FOR SHEET MEMBRANE WATERPROOFING, PREFORMED SHEET WILL BE CONSIDERED INCIDENTAL TO THE ADJACENT PRECAST ITEM.

REINFORCING STEEL

46. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).

47. TEST BARS SHALL BE PROVIDED IN ACCORDANCE WITH THE "VERMONT AGENCY OF TRANSPORTATION MATERIAL SAMPLING MANUAL" AVAILABLE ON THE AGENCY WEBSITE. ALL COSTS ASSOCIATED WITH PROVIDING BARS FOR TESTING WILL BE INCLUDED IN THE UNIT BID PRICE FOR THE APPROPRIATE REINFORCING STEEL OR PRECAST CONCRETE ITEM.

48. THE CONTRACTOR SHALL PROVIDE THREE (3) ASSEMBLED SPLICE TUBES PER SPLICE CONNECTOR SIZE FOR TESTING. THE CONNECTION SHALL BE ASSEMBLED IN THE FIELD BY THE CONTRACTOR AND WITNESSED BY THE ENGINEER. THE DOWEL BAR MECHANICAL SPLICE CONNECTORS WILL BE PAID FOR UNDER ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1)" OR ITEM 900.645, "SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE) (ABUTMENT NO. 1)" AS APPROPRIATE.

49. MINIMUM COVER FOR REINFORCING STEEL SHALL BE 2" ALONG THE BACK FACES OF WALLS AGAINST EARTH, 1½" ALONG THE BOTTOM SURFACE OF THE DECK AND 3" ELSEWHERE, UNLESS OTHERWISE NOTED.

50. REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE:

    SPACING +/- 1"
    CLEARANCE +/- ¼"

51. CUTTING AND REPAIRING DAMAGED AREAS OF COATED REINFORCING STEEL SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 507.04.

vhb

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 021I(32)
FILE NAME: zl3J080pn.dgn	PLOT DATE: 9/22/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: S.E. BURBANK
PROJECT NOTES (1 OF 2)	SHEET 6 OF 62

SUBSTRUCTURE ON BEDROCK

52. FOOTINGS AND SUB-FOOTINGS SHALL BE FOUNDED ON BEDROCK WHICH HAS BEEN CLEANED OF ALL LOOSE ROCK AND DEBRIS TO ENSURE THAT SUBSTRUCTURES ARE PLACED ON COMPETENT ROCK.

53. UPON COMPLETION OF THE EXCAVATION FOR SUBSTRUCTURES FOUNDED ON BEDROCK AND PRIOR TO PLACING FORMWORK, THE ENGINEER SHALL NOTIFY THE PROJECT MANAGER AND THE VTRANS STATE GEOLOGIST. THE GEOLOGIST WILL DETERMINE IF THE BEDROCK IS COMPETENT TO OBTAIN THE REQUIRED NOMINAL BEARING RESISTANCE. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 72 HOURS PRIOR TO WHEN THE ANALYSIS WILL BE NEEDED.

54. BEDROCK THAT IS EXCAVATED FOR PLACEMENT OF FOOTINGS SHALL BE EXCAVATED TO PROVIDE A LEVEL SURFACE, OR AS DIRECTED BY THE ENGINEER.

55. A MAXIMUM OF 6" OVERBREAKAGE SHALL BE REPLACED WITH "CONCRETE, CLASS C". OVERBREAKAGE BEYOND 6" SHALL BE REPLACED WITH "CONCRETE, CLASS C" AT THE EXPENSE OF THE CONTRACTOR.

56. THE LIMITS OF THE SUBFOOTING SHALL BE 1'-0" OUTSIDE THE LIMITS OF THE FOOTING.

57. THE SUBSTRUCTURE UNITS HAVE BEEN DESIGNED FOR THE ELEVATIONS SHOWN ON THE PLANS. FOR ALL SUBSTRUCTURE UNITS, BEDROCK SHALL BE EXCAVATED DOWN (IF NECESSARY) TO ALLOW FOR THE INDICATED SUBFOOTING TO BE POURED USING "CONCRETE, CLASS C" TO A MINIMUM THICKNESS OF 1'-0".

58. #8 DOWELS SHALL BE DRILLED AND GROUTED INTO THE BEDROCK AS SHOWN ON THE PLANS. THE DOWELS SHALL HAVE A 2'-0" EMBEDMENT INTO THE BEDROCK AND SHALL EXTEND INTO THE SUBFOOTING 2'-0". WHERE THE SUBFOOTING DEPTH IS INSUFFICIENT TO OBTAIN A 2'-0" EMBEDMENT THE MAXIMUM EMBEDMENT SHALL BE 9" WHILE MAINTAINING 3" OF CLEAR COVER. #8 DOWELS WILL ALSO BE USED AT THE INTERFACE BETWEEN THE SUBFOOTING AND THE PRECAST CONCRETE FOOTING AS SHOWN ON THE PLANS. THE DRILLING AND GROUTING OF THESE DOWELS WILL BE PAID FOR UNDER ITEM 507.16, "DRILLING AND GROUTING DOWELS". DOWELS DRILLED AND GROUTED INTO BEDROCK AS WELL AS DOWELS DRILLED AND GROUTED INTO THE SUBFOOTING WILL BE PAID FOR UNDER ITEM 507.11, "REINFORCING STEEL, LEVEL I".

APPROACH SLABS

59. PRECAST CONCRETE COMPRESSIVE STRENGTH: f'c = 5,000 PSI.

60. CORRUGATED POST-TENSIONING DUCTS IN THE PRECAST APPROACH SLABS FOR DOWEL CONNECTIONS SHALL BE CONSTRUCTED FROM EITHER POLYETHYLENE OR POLYPROPYLENE. THE DUCT SHALL HAVE A MINIMUM MATERIAL THICKNESS OF 0.080 IN. +/- 0.010 IN. AND SHALL HAVE A WHITE COATING ON THE OUTSIDE OR SHALL BE OF WHITE MATERIAL WITH ULTRAVIOLET STABILIZERS ADDED. POLYETHYLENE DUCT SHALL BE FABRICATED FROM RESINS MEETING OR EXCEEDING THE REQUIREMENTS OF ASTM D 3350 WITH A CELL CLASSIFICATION OF 345464A. POLYPROPYLENE DUCT SHALL BE FABRICATED FROM RESINS MEETING OR EXCEEDING THE REQUIREMENTS OF ASTM D 4101 WITH A CELL CLASSIFICATION RANGE OF PP0340B44544 TO PP340B65884. ALL COSTS ASSOCIATED WITH PLACING THE DUCTS WILL BE INCLUDED IN THE BID PRICE FOR THE APPROPRIATE PRECAST APPROACH SLAB.

61. GROUT USED TO FILL DOWEL DUCTS IN THE PRECAST APPROACH SLABS FOR DOWEL CONNECTION SHALL BE MORTAR TYPE IV IN ACCORDANCE WITH SECTION 540 - PRECAST CONCRETE OR OTHER PRODUCT FROM THE "VERMONT AGENCY OF TRANSPORTATION APPROVED PRODUCTS LIST" (APL) AS APPROVED BY THE ENGINEER. ALL COSTS ASSOCIATED WITH PROVIDING AND PLACING GROUT FOR THE PRECAST SLAB DOWEL CONNECTION WILL BE INCLUDED IN THE BID FOR THE APPROPRIATE PRECAST APPROACH SLAB.

62. THE CONCRETE EDGES ALONG THE LONGITUDINAL CLOSURE POURS SHALL BE TREATED TO PROVIDE A ROUGHENED/EXPOSED AGGREGATE SURFACE. THE AMPLITUDE OF THE EXPOSED AGGREGATE SURFACE SHALL BE A MINIMUM OF 1/8" AND BE COMPLETED PRIOR TO ERECTION OF THE APPROACH SLABS. THE FABRICATOR SHALL INDICATE THE METHOD USED TO ACHIEVE THIS PROFILE ON THE FABRICATION DRAWINGS AND METHOD USED TO PROTECT THE REINFORCING STEEL.

PRECAST CONCRETE RETAINING WALL

63. THE DESIGN, CONSTRUCTION, HANDLING, AND ASSEMBLY OF THE PRECAST CONCRETE RETAINING WALL SHALL BE IN ACCORDANCE WITH THE SPECIAL PROVISIONS. HANDLING AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AS APPLICABLE.

64. THE PRECAST CONCRETE RETAINING WALL SHALL BE SELECTED FROM THE LIST OF WALLS ON THE APPROVED RETAINING WALL DOCUMENT AVAILABLE FROM VAOT GEOTECHNICAL SECTION WEBSITE: (https://outside.vermont.gov/agency/vtrans/external/docs/construction/03GeotechEng/Engineering/MandRSoilAPPROVED_Retaining_Walls_8-2012_Final%20Engineering.pdf)

65. THE PRECAST CONCRETE RETAINING WALL WILL BE PAID FOR UNDER ITEM 900.670, "SPECIAL PROVISION (RETAINING WALL).

66. THE PRECAST CONCRETE RETAINING WALL SHALL BE DESIGNED BY THE FABRICATOR IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS REFERENCED IN PROJECT NOTE 1. THE DESIGN SHALL INCLUDE THE EFFECTS OF ALL APPLICABLE LOADS INCLUDING VEHICULAR SURCHARGE. DESIGN CALCULATIONS SHALL BE SUBMITTED WITH FABRICATION DRAWINGS STAMPED BY AN ENGINEER REGISTERED IN THE STATE OF VERMONT.

67. THE DESIGN OF THE WALL SHALL INCORPORATE PROVISIONS FOR ADJACENT OBSTRUCTIONS SUCH AS DRAINAGE FEATURES AND GUARDRAIL POSTS IF NECESSARY. ANY CHANGES TO THE WALL SYSTEM SHALL BE DETAILED IN THE FABRICATION DRAWINGS.

68. DESIGN VALUES:

    A. BACKFILL SOIL PARAMETERS (704.08 - GRANULAR BACKFILL FOR STRUCTURES)
        i. UNIT WEIGHT = 140 LB/FT^3
        ii. FRICTION ANGLE = 34°
    B. BEARING STRATUM AND RETAINED SOIL PARAMETERS
        i. UNIT WEIGHT = 110 LB/FT^3
        ii. FRICTION ANGLE = 32°
    C. REQUIRED DESIGN LIFE = 75 YEARS
    D. FACTORED BEARING RESISTANCE AT STRENGTH LIMIT STATE (EFFECTIVE FOOTING WIDTH) = 7.5 KIPS/FT^2 (6-FEET)
    E. VEHICULAR SURCHARGE = PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

WALL DESIGN SHALL INCLUDE DRAINAGE PROVISIONS TO PREVENT HYDROSTATIC PRESSURE BEHIND WALL

CONCRETE		REINFORCING STEEL	
STRUCTURAL ELEMENT:	CONTRACT ITEM:	TO MEET THE REQUIREMENTS FOR:	PAYMENT TO BE INCLUDED IN:
CAST-IN-PLACE SUBFOOTING	ITEM 541.30, "CONCRETE, CLASS C".	REINFORCING STEEL, LEVEL I	ITEM 507.11, "REINFORCING STEEL, LEVEL I".
ABUTMENT NO. 1 PRECAST PILE CAP AND CHEEKWALLS	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, "SPECIAL PROVISION ~~(CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)"~~*, AS APPROPRIATE.	REINFORCING STEEL, LEVEL I (EPOXY)	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, ~~"SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)"~~*, AS APPROPRIATE.
ABUTMENT NO. 2 PRECAST FOOTING, ABUTMENT STEM, CHEEKWALLS AND WINGWALL STEMS	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, "SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)", AS APPROPRIATE.	REINFORCING STEEL, LEVEL I (FOOTINGS) REINFORCING STEEL, LEVEL I (EPOXY) (STEMS AND CHEEKWALLS)	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, "SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)", AS APPROPRIATE.
ABUTMENT NO. 1 PILE CAP VOIDS AND ABUTMENT NO. 2 REINFORCING VOIDS	ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)"	N/A	N/A
APPROACH SLAB CLOSURE POUR CONCRETE	ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)"	REINFORCING STEEL, LEVEL I (EPOXY)	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, "SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE), AS APPROPRIATE.
PRECAST APPROACH SLABS	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, "SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)", AS APPROPRIATE.	REINFORCING STEEL, LEVEL I (EPOXY)	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, "SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)", AS APPROPRIATE.
WINGWALLS NO. 1 AND 2	~~ITEM 501.33, "CONCRETE, HIGH PERFORMANCE CLASS A (FPQ)"~~*	REINFORCING STEEL, LEVEL I (EPOXY)	~~ITEM 507.11, "REINFORCING STEEL, LEVEL I"~~ *
CAST-IN-PLACE WINGWALLS/CHEEKWALLS, ABOVE THE OPTIONAL HORIZONTAL CONSTRUCTION JOINT (IF USED)	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, "SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)", AS APPROPRIATE.	REINFORCING STEEL, LEVEL I (EPOXY)	ITEM 540.10, "PRECAST CONCRETE STRUCTURE" OR ITEM 900.645, "SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)", AS APPROPRIATE.
CAST-IN-PLACE DECK AND BACKWALLS	ITEM 501.33, "CONCRETE, HIGH PERFORMANCE CLASS A (FPQ)"	REINFORCING STEEL, LEVEL I (EPOXY)	ITEM 507.11, "REINFORCING STEEL, LEVEL I"
NOTE: PAYMENT FOR REINFORCING STEEL PROJECTING FROM A PRECAST CONCRETE ELEMENT AND PLACED WITHIN A PRECAST CONCRETE ELEMENT REINFORCING VOID WILL BE MADE UNDER THE APPROPRIATE ADJACENT PRECAST CONCRETE ITEM.			

SEE CONTRACTOR RFI #2 FOR ADDED 540.10 PRE-CAST ITEMS

vhb

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

FILE NAME: z13J080pn.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: K.C. BARRY
PROJECT NOTES (2 OF 2)

PLOT DATE: 8/15/2016
DRAWN BY: K.C. BARRY
CHECKED BY: S.E. BURBANK
SHEET 7 OF 62

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

| SUMMARY OF ESTIMATED QUANTITIES | | |

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES									TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
						ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
													BEGIN OPTION DD					
								1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB NO. 2)	540.10				
								1		1		LS	~~SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)~~ (APPROACH SLAB NO. 2)	900.645				
													END OPTION DD					
								43		43		CY	CONCRETE, CLASS C	541.30				
						1				1		MGAL	DUST CONTROL WITH WATER	609.10				
						130				130		CY	STONE FILL, TYPE I	613.10				
								315		315		CY	STONE FILL, TYPE III	613.12				
						30				30		LF	REMOVAL OF EXISTING FENCE	620.55				
						204				204		LF	BOX BEAM GUARDRAIL	621.30				
						4				4		EACH	MANUFACTURED TERMINAL SECTION, TANGENT	621.51				
						4				4		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	621.725				
						260				260		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
						20				20		HR	UNIFORMED TRAFFIC OFFICERS	630.10				
						400				400		HR	FLAGGERS	630.15				
									1	1		LS	FIELD OFFICE, ENGINEERS	631.10				
									1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16				
									1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17				
									3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26				
						1				1		LS	MOBILIZATION/DEMOBILIZATION	635.11				
						2				2		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15				
						1100				1100		LF	4 INCH YELLOW LINE	646.21				
							680			680		SY	GEOTEXTILE UNDER STONE FILL	649.31				
							630			630		SY	GEOTEXTILE FOR SILT FENCE	649.51				
							65			65		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61				
							25			25		LB	SEED	651.15				
							200			200		LB	FERTILIZER	651.18				
							1			1		TON	AGRICULTURAL LIMESTONE	651.20				
							0.5			0.5		TON	HAY MULCH	651.25				
							26			26		CY	TOPSOIL	651.35				
							620			620		SY	GRUBBING MATERIAL	651.40				
							1			1		LS	EPSC PLAN	652.10				
							65			65		HR	MONITORING EPSC PLAN	652.20				
							1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30				
							620			620		SY	TEMPORARY EROSION MATTING	653.20				
							35			35		CY	VEHICLE TRACKING PAD	653.35				
							230			230		LF	BARRIER FENCE	653.50				
							760			760		LF	PROJECT DEMARCATION FENCE	653.55				
						12				12		SF	TRAFFIC SIGNS, TYPE A	675.20				

vhb

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

FILE NAME: z13j080qs.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: R.H. BARNES
QUANTITY SHEET #2

PLOT DATE: 09/22/2016
DRAWN BY: R.H. BARNES
CHECKED BY: S.E. BURBAN

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 3

SUMMARY OF ESTIMATED QUANTITIES									TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
						ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
						15				15		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341				
						5				5		EACH	REMOVING SIGNS	675.50				
								11		11		CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)	900.608				
						76000				76000		DL	SPECIAL PROVISION (INCENTIVE/DISINCENTIVE) (N.A.B.I.)	900.615				
								6		6		EACH	SPECIAL PROVISION (CPM SCHEDULE)	900.620				
						1				1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)	900.645				
						1				1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY)(N.A.B.I.)	900.650				
						1				1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.)	900.650				
								95		95		SF	SPECIAL PROVISION (RETAINING WALL)	900.670				
						370				370		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

vhb

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

FILE NAME: z13j080qs.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: R.H. BARNES
QUANTITY SHEET #3

PLOT DATE: 09/22/2016
DRAWN BY: R.H. BARNES
CHECKED BY: S.E. BURBAN

GENERAL INFORMATION

SYMBOLOGY LEGEND NOTE

THE SYMBOLOGY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLOGY. THE SYMBOLOGY IS USED FOR EXISTING & PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROJECT ANNOTATION, AS NOTED ON PROJECT PLAN SHEETS. THIS LEGEND SHEET COVERS THE BASICS. SYMBOLOGY ON PLANS MAY VARY, PLAN ANNOTATIONS AND NOTES SHOULD BE USED TO CLARIFY AS NEEDED.

R.O.W. ABBREVIATIONS (CODES) & SYMBOLS

POINT	CODE	DESCRIPTION
	CH	CHANNEL EASEMENT
	CONST	CONSTRUCTION EASEMENT
	CUL	CULVERT EASEMENT
	D&C	DISCONNECT & CONNECT
	DIT	DITCH EASEMENT
	DR	DRAINAGE EASEMENT
	DRIVE	DRIVEWAY EASEMENT
	EC	EROSION CONTROL
	HWY	HIGHWAY EASEMENT
	I&M	INSTALL & MAINTAIN EASEMENT
	LAND	LANDSCAPE EASEMENT
	R&RES	REMOVE & RESET
	R&REP	REMOVE & REPLACE
	SR	SLOPE RIGHT
	UE	UTILITY EASEMENT
	(P)	PERMANENT EASEMENT
	(T)	TEMPORARY EASEMENT
■	BNDNS	BOUND SET
⧈	BNDNS	BOUND TO BE SET
●	IPNS	IRON PIN SET
◎	IPNS	IRON PIN TO BE SET
⊠	CALC	EXISTING ROW POINT
○	PROW	PROPOSED ROW POINT
[LENGTH]		LENGTH CARRIED ON NEXT SHEET

COMMON TOPOGRAPHIC POINT SYMBOLS

POINT	CODE	DESCRIPTION
#	APL	BOUND APPARENT LOCATION
▫	BM	BENCHMARK
▫	BND	BOUND
⧈	CB	CATCH BASIN
⏚	COMB	COMBINATION POLE
⧈	DITHR	DROP INLET THROATED DNC
⏚	EL	ELECTRIC POWER POLE
⚬	FPOLE	FLAGPOLE
⊙	GASFIL	GAS FILLER
⊙	GP	GUIDE POST
⋈	GSO	GAS SHUT OFF
⚬	GUY	GUY POLE
⚬	GUYW	GUY WIRE
⋈	GV	GATE VALUE
❀	H	TREE HARDWOOD
△	HCTRL	CONTROL HORIZONTAL
▲	HVCTRL	CONTROL HORIZ. & VERTICAL
◇	HYD	HYDRANT
●	IP	IRON PIN
●	IPIPE	IRON PIPE
⏚	LI	LIGHT - STREET OR YARD
⚥	MB	MAILBOX
○	MH	MANHOLE (MH)
▫	MM	MILE MARKER
●	PM	PARKING METER
▫	PMK	PROJECT MARKER
⚬	POST	POST STONE/WOOD
⚥	RRSIG	RAILROAD SIGNAL
◆	RRSL	RAILROAD SWITCH LEVER
✳	S	TREE SOFTWOOD
⚬	SAT	SATELLITE DISH
❀	SHRUB	SHRUB
⚥	SIGN	SIGN
⚥	STUMP	STUMP
⏚	TEL	TELEPHONE POLE
⚬	TIE	TIE
⚥	TSIGN	SIGN W/DOUBLE POST
⅄	VCTRL	CONTROL VERTICAL
⚬	WELL	WELL
⋈	WSO	WATER SHUT OFF

THESE ARE COMMON VAOT SURVEY POINT SYMBOLS FOR EXISTING FEATURES, ALSO USED FOR PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROPOSED ANNOTATION.

PROPOSED GEOMETRY CODES

CODE	DESCRIPTION
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
CC	CENTER OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
POB	POINT OF BEGINNING
POE	POINT OF ENDING
STA	STATION PREFIX
AH	AHEAD STATION SUFFIX
BK	BACK STATION SUFFIX
D	CURVE DEGREE OF (100FT)
R	CURVE RADUIS OF
T	CURVE TANGENT LENGTH
L	CURVE LENGTH OF
E	CURVE EXTERNAL DISTANCE

UTILITY SYMBOLOGY

UNDERGROUND UTILITIES

- UGU — UTILITY (GENERIC-UNKNOWN)
- UT — TELEPHONE
- UE — ELECTRIC
- UC — CABLE (TV)
- UEC — ELECTRIC+CABLE
- UET — ELECTRIC+TELEPHONE
- UCT — CABLE+TELEPHONE
- UECT — ELECTRIC+CABLE+TELEP.
- G — GAS LINE
- W — WATER LINE
- S — SANITARY SEWER (SEPTIC)

ABOVE GROUND UTILITIES (AERIAL)

- AGU — UTILITY (GENERIC-UNKNOWN)
- T — TELEPHONE
- E — ELECTRIC
- C — CABLE (TV)
- EC — ELECTRIC+CABLE
- ET — ELECTRIC+TELEPHONE
- AER E&T — ELECTRIC+TELEPHONE
- CT — CABLE+TELEPHONE
- ECT — ELECTRIC+CABLE+TELEP.
- UTILITY POLE GUY WIRE

PROJECT CONSTRUCTION SYMBOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOGY

- CLEAR ZONE (CZ)
- PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

- TOP OF CUT SLOPE
- TOE OF FILL SLOPE
- STONE FILL
- BOTTOM OF DITCH ℄
- CULVERT PROPOSED
- STRUCTURE SUBSURFACE
- PROJECT DEMARCATION FENCE (PDF)
- BARRIER FENCE (BF)
- TREE PROTECTION ZONE (TPZ)
- STRIPING LINE REMOVAL
- SHEET PILES

CONVENTIONAL BOUNDARY SYMBOLOGY

BOUNDARY LINES

- TOWN LINE — TOWN BOUNDARY LINE
- COUNTY LINE — COUNTY BOUNDARY LINE
- STATE LINE — STATE BOUNDARY LINE
- PROPOSED STATE R.O.W. (LIMITED ACCESS)
- PROPOSED STATE R.O.W.
- STATE ROW (LIMITED ACCESS)
- STATE ROW
- TOWN ROW
- PERMANENT EASEMENT LINE (P)
- TEMPORARY EASEMENT LINE (T)
- SURVEY LINE
- PROPERTY LINE (P/L)
- SR SR SR — SLOPE RIGHTS
- 6F — 6F PROPERTY BOUNDARY
- 4F — 4F PROPERTY BOUNDARY
- HAZ — HAZ HAZARDOUS WASTE

EPSC LAYOUT PLAN SYMBOLOGY

EPSC MEASURES

- FILTER CURTAIN
- SILT FENCE
- SILT FENCE WOVEN WIRE
- CHECK DAM
- DISTURBED AREAS REQUIRING RE-VEGETATION
- EROSION MATTING

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLOGY

ENVIRONMENTAL RESOURCES

- WETLAND BOUNDARY
- RIPARIAN BUFFER ZONE
- WETLAND BUFFER ZONE
- SOIL TYPE BOUNDARY
- T&E — THREATENED & ENDANGERED SPECIES
- HAZ — HAZ HAZARDOUS WASTE AREA
- AG — AGRICULTURAL LAND
- HABITAT — FISH & WILDLIFE HABITAT
- FLOOD PLAIN — FLOOD PLAIN
- OHW — ORDINARY HIGH WATER (OHW)
- STORM WATER
- USDA FOREST SERVICE LANDS
- WILDLIFE HABITAT SUIT/CONN

ARCHEOLOGICAL & HISTORIC

- ARCH — ARCHEOLOGICAL BOUNDARY
- HISTORIC DIST — HISTORIC DISTRICT BOUNDARY
- HISTORIC — HISTORIC AREA
- Ⓗ HISTORIC STRUCTURE

CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

EXISTING FEATURES

- ROAD EDGE PAVEMENT
- ROAD EDGE GRAVEL
- DRIVEWAY EDGE
- DITCH
- FOUNDATION
- FENCE (EXISTING)
- FENCE WOOD POST
- FENCE STEEL POST
- GARDEN
- ROAD GUARDRAIL
- RAILROAD TRACKS
- CULVERT (EXISTING)
- STONE WALL
- WALL
- WOOD LINE
- BRUSH LINE
- HEDGE
- BODY OF WATER EDGE
- LEDGE EXPOSED

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080LegendSheet.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: VTRANS	CHECKED BY: S.E. BURBANK
CONVENTIONAL SYMBOLOGY LEGEND	SHEET 11 OF 62

vhb

GPS CONTROL POINTS

SHAKE AZ MK

NORTH = 650571.420
EAST = 1518446.317
ELEV. = 710.960

SHAKE AZ MK
TO REACH FROM THE INTERSECTION OF VT ROUTE 116 AND HINESBURG HOLLOW ROAD IN SOUTH HUNTINGTON, GO EAST ALONG HINESBURG HOLLOW ROAD FOR 5.0MI TO THE T-INTERSECTION OF MAIN ROAD (HUNTINGTON ROAD). TURN RIGHT AND GO SOUTH ALONG MAIN ROAD FOR 2.7MI TO THE SITE OF THE MARK ON THE LEFT ABOUT 40 M (131.2 FT) SOUTH OF HOUSE NO 5726.

THE MARK IS SET 20 CM (8 INCHES) BELOW GROUND SURFACE IN THE TOP OF A FENO STYLE MONUMENT.

IT IS 5.9 M (19.4 FT) EAST OF AND ABOUT 0.3 M (1.0 FT) LOWER THAN THE CENTERLINE OF MAIN ROAD, 13.3 M (43.6 FT) EAST OF AND ACROSS THE ROAD FROM POLE NO 33/119A AND 72.1 M (236.5 FT) SOUTH OF TELEPHONE JUNCTION BOX NO 5/50.

SHAKE

NORTH = 651682.260
EAST = 1518644.275
ELEV. = 709.745

SHAKE
TO REACH FROM THE INTERSECTION OF VT ROUTE 116 AND HINESBURG HOLLOW ROAD IN SOUTH HUNTINGTON, GO EAST ALONG HINESBURG HOLLOW ROAD FOR 5.0MI TO THE T-INTERSECTION OF MAIN ROAD (HUNTINGTON ROAD). TURN RIGHT AND GO SOUTH ALONG MAIN ROAD FOR 2.5MI TO THE SITE OF THE MARK ON THE RIGHT ABOUT 35 M (114.8 FT) NORTHEAST OF THE INTERSECTION OF SHAKER MOUNTAIN ROAD RIGHT.

THE MARK IS SET 20 CM (8 INCHES) BELOW GROUND SURFACE IN THE TOP OF A FENO STYLE MONUMENT.

IT IS 5.3 M (17.4 FT) NORTHWEST OF AND ABOUT 5 CM (2 INCHES) LOWER THAN THE CENTERLINE OF MAIN ROAD, 20.7 M (67.9 FT) NORTHEAST OF POLE NO 48/00, 1.4 M (4.6 FT) NORTHWEST OF THE NORTHWEST EDGE OF PAVEMENT OF MAIN ROAD AND 42.0 M (137.8 FT) NORTHEAST OF THE EAST END OF A BRIDGE CURB.

SHELDRAKE

NORTH=644259.00
EAST1520182.804
ELEV=815.258

TO REACH FROM THE INTERSECTION OF US ROUTE 2 AND VT ROUTE 100 NORTH IN WATERBURY, GO WEST ALONG US ROUTE 2 FOR 9.6 MI (15.4 KM) TO THE INTERSECTION OF STAGE ROAD RIGHT AND COCHRAN PAVED ROAD LEFT, IN JONESVILLE. TURN LEFT, IMMEDIATELY CROSSING THE NEW ENGLAND CENTRAL RAILROAD AND THE COCHRAN ROAD BRIDGE OVER THE WINOOSKI RIVER AND GO SOUTH AND WEST ALONG COCHRAN ROAD FOR 0.45 MI (0.7 KM) TO THE Y-INTERSECTION OF THE ROAD TO HUNTINGTON GORGE (DUGWAY ROAD) LEFT AND COCHRAN ROAD RIGHT. BEAR LEFT AND GO SOUTHWEST ALONG DUGWAY ROAD FOR 3.2 MI (5.1 KM) TO THE INTERSECTION OF HUNTINGTON MAIN ROAD. BEAR LEFT AND GO SOUTH ALONG HUNTINGTON MAIN ROAD FOR 5.4 MI (8.7 KM) TO THE INTERSECTION OF CAMELS HUMP ROAD LEFT, IN HUNTINGTON CENTER. CONTINUE STRAIGHT AHEAD AND GO SOUTH ALONG HUNTINGTON MAIN ROAD FOR 2.2 MI (3.5 KM) TO THE SITE OF THE MARK ON THE RIGHT. IT IS JUST SOUTH OF THE SHELDRAKE ONE AND ONE-HALF STORY HOUSE AND BARN.

THE MARK IS SET FLUSH WITH THE GROUND SURFACE IN THE TOP OF A FENO STYLE MONUMENT.

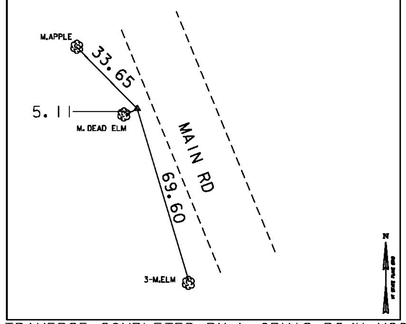
IT IS 5.7 M (18.7 FT) WEST OF AND ABOUT 0.2 M (0.7 FT) LOWER THAN THE CENTERLINE OF HUNTINGTON MAIN ROAD, 29.2 M (95.8 FT) NORTHEAST OF THE NORTHEAST CORNER OF THE HOUSE, 39.9 M (130.9 FT) NORTHWEST OF POLE NO 167, 51.4 M (168.6 FT) SOUTH-SOUTHWEST OF POLE NO CTC 5/166 AND 0.6 M (2.0 FT) EAST OFA FIBERGLASS WITNESS POST.

GPS CONTROL SET BY VTRANS GSU JUNE 6,2013

TRAVERSE TIES

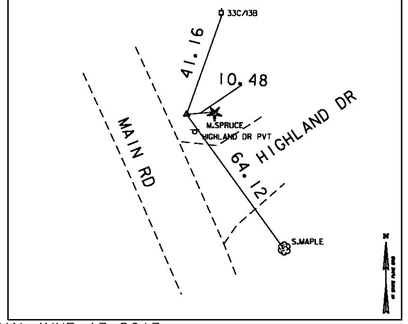
HVCTRL #8

NORTH =646355.214
EAST =1519362.564
ELEV. = 780.240



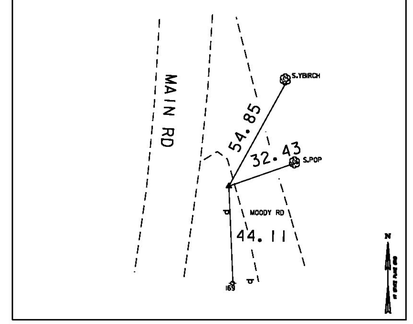
HVCTRL #9

NORTH=645573.809
EAST=1519799.134
ELEV.=784.805



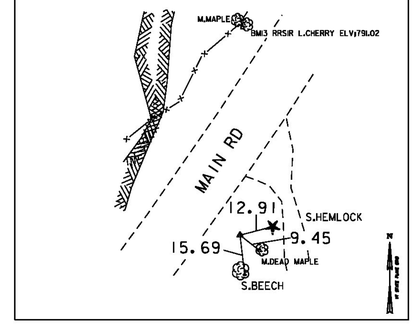
HVCTRL #12

NORTH=643636.391
EAST=1520305.421
ELEV.=836.752



HVCTRL #13

NORTH=642696.174
EAST=1519930.177
ELEE.=792.044



NORTH =
EAST =
ELEV. =

TRAVERSE COMPLETED BY L.ORVIS PC/H.MCGOWAN JUNE 17,2013

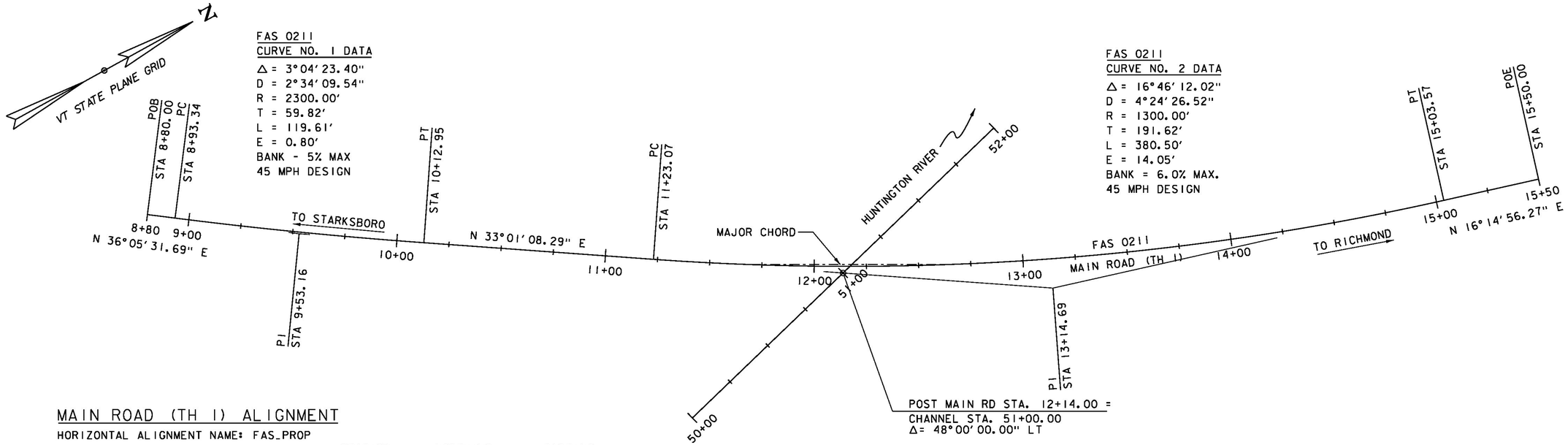
DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD 83 (2011)
ADJUSTMENT	COMPASS

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 021I(32)

FILE NAME: z13J0801t1.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: VTRANS
TIE SHEET

PLOT DATE: 8/15/2016
DRAWN BY: VTRANS
CHECKED BY:
SHEET 12 OF 62

VHB 57737.00



MAIN ROAD (TH 1) ALIGNMENT

HORIZONTAL ALIGNMENT NAME: FAS_PROP

		STATION	NORTHING	EASTING
ELEMENT:	LINEAR			
	POB	8+80.00	642669.4735	1519882.4528
	PC	8+93.34	642680.2502	1519890.3090
	TANGENT DIRECTION:	N 36°05'31.69" E		
	TANGENT LENGTH:	13.34		
ELEMENT:	CIRCULAR			
	PC	8+93.34	642680.2502	1519890.3090
	PI	9+53.16	642728.5885	1519925.5478
	PT	10+12.95	642778.7466	1519958.1444
	RADIUS:	2230.00		
	DELTA:	3°04'23.40" LEFT		
	DEGREE OF CURVATURE (ARC):	2°34'09.54"		
	LENGTH:	119.61		
	TANGENT:	59.82		
	CHORD:	119.60		
	MIDDLE ORDINATE:	0.80		
	EXTERNAL:	0.80		
ELEMENT:	LINEAR			
	PT	10+12.95	642778.7466	1519958.1444
	PC	11+23.07	642871.0875	1520018.1548
	TANGENT DIRECTION:	N 33°01'08.29" E		
	TANGENT LENGTH:	110.13		
ELEMENT:	CIRCULAR			
	PC	11+23.07	642871.0875	1520018.1548
	PI	13+14.69	643031.7586	1520122.5715
	PT	15+03.57	643215.7240	1520176.1889
	RADIUS:	1300.00		
	DELTA:	16°46'12.02" LEFT		
	DEGREE OF CURVATURE (ARC):	4°24'26.52"		
	LENGTH:	380.50		
	TANGENT:	191.62		
	CHORD:	379.14		
	MIDDLE ORDINATE:	13.90		
	EXTERNAL:	14.05		
ELEMENT:	LINEAR			
	PT	15+03.57	643215.7240	1520176.1889
	POE	15+50.00	643260.2960	1520189.1795
	TANGENT DIRECTION:	N 16°14'56.27" E		
	TANGENT LENGTH:	46.43		

CHANNEL ALIGNMENT

HORIZONTAL ALIGNMENT NAME: BR8CHANNEL

		STATION	NORTHING	EASTING
ELEMENT:	LINEAR			
	POB	50+00.00	642850.7268	1520093.5517
	POE	52+00.00	643043.9291	1520041.8518
	TANGENT DIRECTION:	N 14°58'51.71" W		
	TANGENT LENGTH:	200.00		

SCALE 1" = 25'-0"
25 0 25

vhb

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME:	z13J080allgn.dgn
PROJECT LEADER:	S.E. BURBANK
DESIGNED BY:	D.M. PECK
ALIGNMENT SHEET	
PLOT DATE:	8/15/2016
DRAWN BY:	E.F. LAWES
CHECKED BY:	S.E. BURBANK
SHEET	13 OF 62

VHB 57737

N

VT STATE PLANE GRID

REMOVE FENCE
STA. 11+73 - 12+02, LT

CONSTRUCT DRIVE WITH 13' PAVED APRON
STA. 10+13 - 10+74, LT

LIMITS OF COLD PLANING
STA. 9+75 - 10+25, LT & RT
STA. 14+75 - 15+25, LT & RT

SPECIAL PROVISION (RETAINING WALL)
STA. 12+76 - 12+98, LT

REMOVAL AND DISPOSAL OF GUARDRAIL
STA. 11+09 - 11+96, LT
STA. 11+41 - 11+75, RT
STA. 12+38 - 12+62, RT
STA. 12+60 - 13+71, LT

MANUFACTURED TERMINAL SECTION, TANGENT
STA. 10+81 - 10+95, RT
STA. 10+89 - 11+03, LT
STA. 13+28 - 13+42, RT
STA. 14+00 - 14+14, LT

BOX BEAM GUARDRAIL
STA. 10+95 - 11+31, RT
STA. 11+03 - 11+39, LT
STA. 12+92 - 13+28, RT
STA. 13+03 - 14+00, LT

STONE FILL, TYPE I
STA. 11+51 - 11+86, RT
STA. 11+60 - 12+07, LT
STA. 12+34 - 12+75, RT
STA. 12+78 - 13+75, LT

GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM
STA. 11+31 - 11+63, RT
STA. 11+39 - 11+71, LT
STA. 12+60 - 12+92, RT
STA. 12+71 - 13+03, LT

BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM
STA. 11+63 - 12+60, RT
STA. 11+71 - 12+71, LT

BEGIN BRIDGE
STA 11+67.80
F.G. 793.49

END BRIDGE
STA 12+65.01
F.G. 796.09

HUNTINGTON RIVER

END PROJECT
STA 14+50.00

STONE FILL, TYPE III

STONE FILL, TYPE I

PT
STA 10+12.95

PC
STA 11+23.07

PT
STA 15+03.57

POE
STA 15+50.00

END APPROACH
STA 15+25.00

70° 0' 0" (TYP)

R = 17' (TYP)

GRAVEL DRIVE

"NO SWIMMING"

BARBED WIRE FENCE

SIGN (W13-5)

TO STARKSBORO

TO RICHMOND

TOWN ROW

MAIN ROAD (TH 1)

SIGN (DEER AND MOOSE CROSSING) (W16-4P) (NEXT 1.5 MILES)

BEGIN APPROACH
STA 9+75.00

BEGIN PROJECT
STA 10+50.00

STONE FILL, TYPE I (TYP)

STONE FILL, TYPE I

MAJOR CHORD

STONE FILL, TYPE III

PI
STA 13+14.69

POST MAIN RD STA. 12+14.00 =
CHANNEL STA. 51+00.00
Δ = 48° 00' 00.00" LT

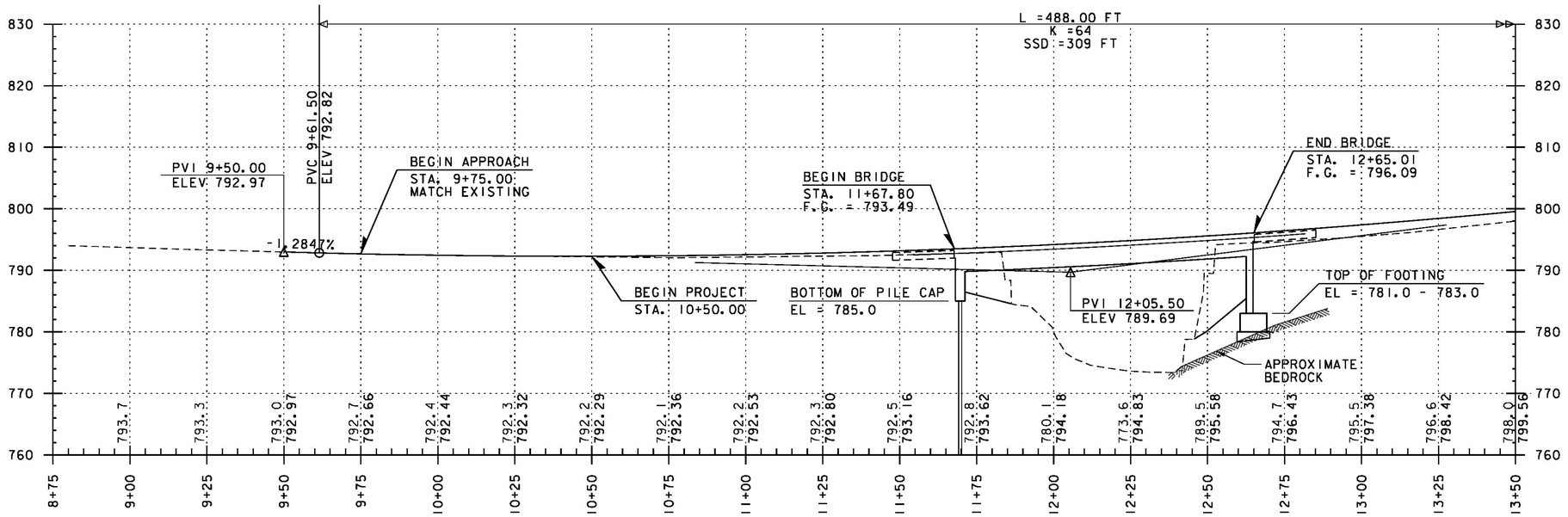
10+00 11+00 12+00 13+00 14+00 15+00 15+50 50+00 51+00 52+00

EXISTING BRIDGE DATA:
SINGLE SPAN ROLLED BEAMS WITH
CAST-IN-PLACE DECK BUILT IN 1934.
SPAN LENGTH = 63'-0"
DECK WIDTH OUT TO OUT = 23'-6"
BRIDGE WIDTH RAIL TO RAIL = 20'-6"

LAYOUT
SCALE 1" = 20'-0"
20 0 20

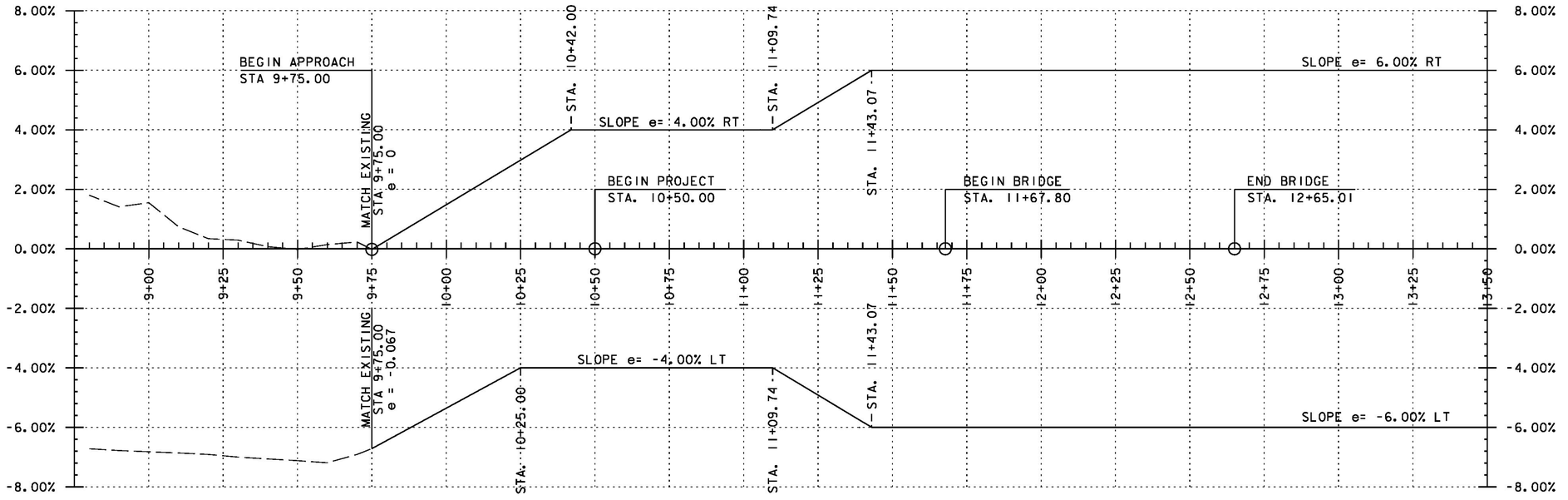
PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080bdr_nul.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: J.D. KEENER	CHECKED BY: S.E. BURBANK
LAYOUT SHEET	SHEET 14 OF 62

VHB 57737.00



MAIN ROAD (TH 1) PROFILE

SCALE 1" = 20' HORIZONTAL
1" = 10' VERTICAL



THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT.

THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISH GRADES ALONG THE PROPOSED ALIGNMENT.

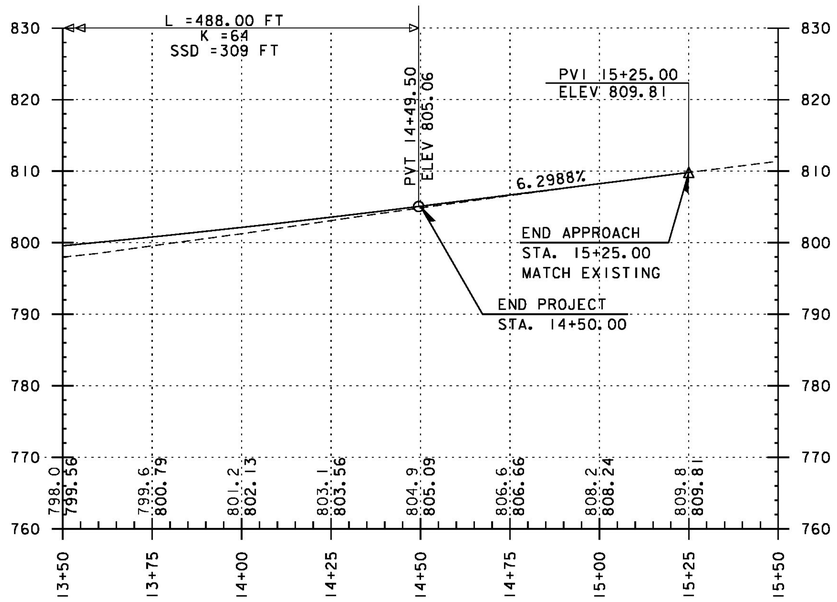
BANKING DIAGRAM

SCALE HORIZONTAL: 1" = 20'
VERTICAL: 1" = 0.02 FT/FT

vhb

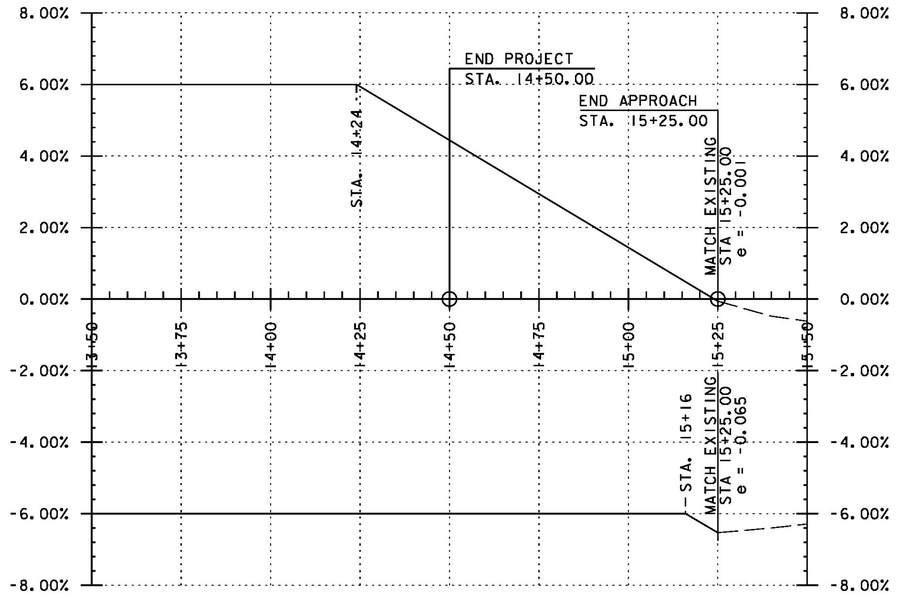
PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 021I(32)
FILE NAME: z13J080pro.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: D.M. PECK
DESIGNED BY: D.M. PECK	CHECKED BY: E.F. LAWES
PROFILE & BANKING DIAGRAM (1 OF 2)	SHEET 15 OF 62

VHB 57737.00



MAIN ROAD (TH 1) PROFILE

SCALE 1" = 20' HORIZONTAL
1" = 10' VERTICAL



BANKING DIAGRAM

SCALE HORIZONTAL: 1" = 20'
VERTICAL: 1" = 0.02 FT/FT

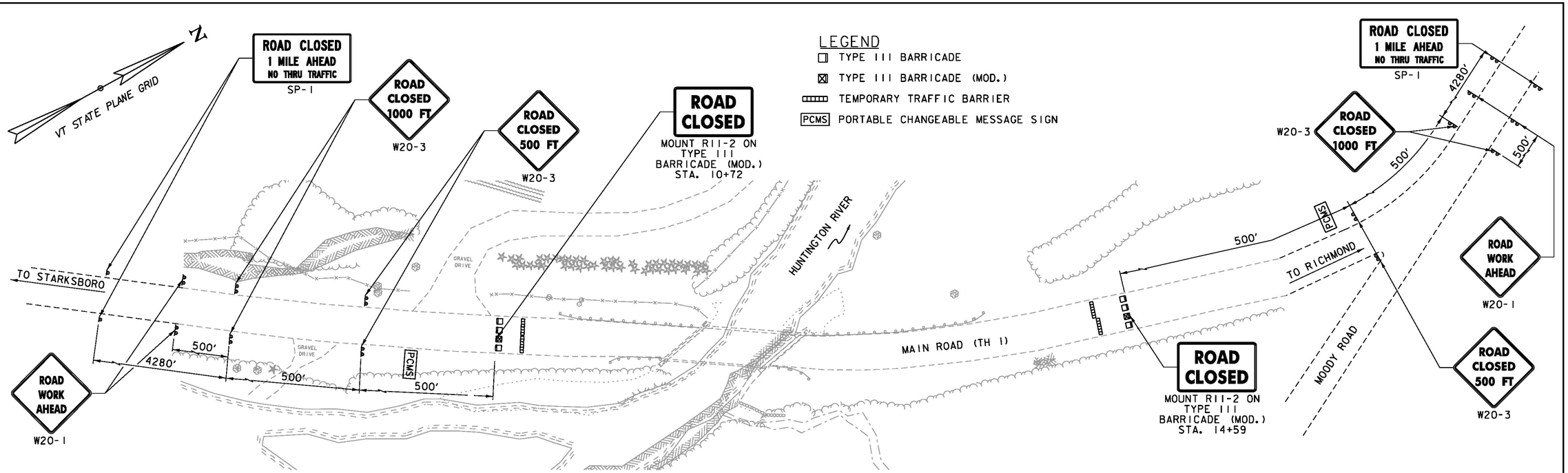
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT.

THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISH GRADES ALONG THE PROPOSED ALIGNMENT.

vhb

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 021I(32)
FILE NAME: z13J080pro.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: D.M. PECK
DESIGNED BY: D.M. PECK	CHECKED BY: E.F. LAWES
PROFILE & BANKING DIAGRAM (2 OF 2)	SHEET 16 OF 62

VHB 57737.00



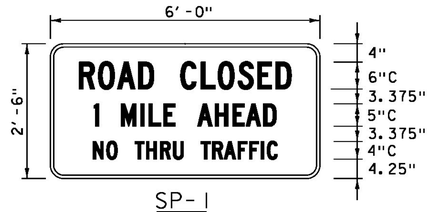
TRAFFIC CONTROL PLAN -
ROAD CLOSED TO TRAFFIC
NOT TO SCALE

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH (IN)	SIZE OF SIGN HEIGHT (IN)	TEXT	NUMBER OF SIGNS REQ'D	AREA (SQ FT)	TOTAL AREA (SQ FT)	REMARKS
R11-2	48	30	ROAD CLOSED	2	10.00	20.00	MOUNT ON TYPE III BARRICADE (MOD.)
W20-1	48	48	ROAD WORK AHEAD	4	16.0	64.00	MOUNT ON TWO POSTS
W20-3	48	48	ROAD CLOSED 500 FT	4	16.0	64.00	MOUNT ON TWO POSTS
W20-3	48	48	ROAD CLOSED 1000 FT	4	16.0	64.00	MOUNT ON TWO POSTS
SP-1	72	30	ROAD CLOSED 1 MILE AHEAD NO THRU TRAFFIC	4	15.0	60.00	MOUNT ON TWO POSTS
SP-2	72 72	12 30	SEEK ALTERNATE ROUTE BRIDGE CLOSED 10 MILES AHEAD MAIN ROAD HUNTINGTON	1 1	6.0 15.0	6.00 15.00	MOUNT ON TWO POSTS
SP-3	72 72	12 36	SEEK ALTERNATE ROUTE BRIDGE CLOSED MAIN ROAD HUNTINGTON 4 MILES NORTH OF VT 17 INTERSECTION	2 2	6.0 18.00	12.00 36.00	MOUNT ON TWO POSTS

MESSAGES FOR PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) - AT BRIDGE

MESSAGE 1	MESSAGE 2	
MAIN RD	MMMM DD	(DATE) **
BRIDGE	TO	
CLOSED	MMMM DD	(DATE) **

** - MONTH SHALL BE SPELLED OUT - JUNE 10 NOT 6/10



SP-1
NOT TO SCALE

NOTE:
1. COLORS FOR THE SP-1 SIGN SHALL BE BLACK TEXT AND BORDER ON RETROREFLECTIVE FLUORESCENT WHITE BACKGROUND. TWO ORANGE FLAGS (ONE EACH SIDE) SHALL BE PLACED AT THE TOP OF THE SP-1 SIGNS.

NOTES:

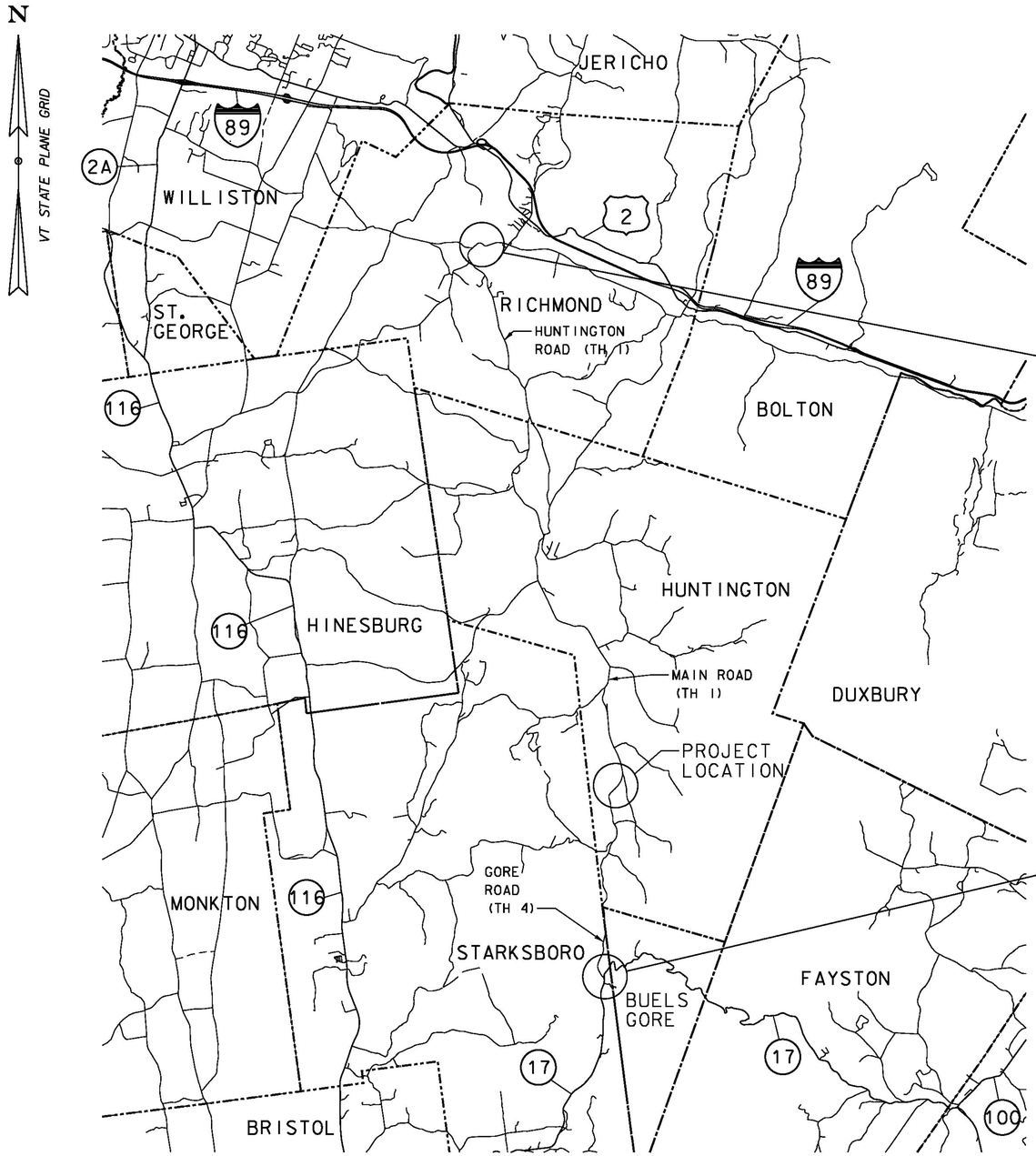
1. THE NUMBER OF TYPE III BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BASED ON INDIVIDUAL ROADWAY CLOSURE REQUIREMENTS.
2. THE PCMS AT THE BRIDGE SITE SHALL DISPLAY THE MESSAGE SHOWN ONE WEEK (7 DAYS) PRIOR TO THE CLOSURE OF THE BRIDGE. THE PCMS SHALL BE REMOVED ONCE CONSTRUCTION BEGINS.
3. THE PCMS SHALL BE PLACED OFF THE EDGE OF ROADWAY, OUTSIDE THE CLEAR ZONE, BUT SHALL BE VISIBLE FROM THE ROADWAY. ANY VEGETATION THAT INTERFERES WITH VISIBILITY OF THE PCMS SHALL BE REMOVED. REMOVAL OF THE VEGETATION WILL BE CONSIDERED INCIDENTAL TO ITEM 641.15, "PORTABLE CHANGEABLE MESSAGE SIGN".
4. THE PCMS SHALL BE USED IN ACCORDANCE WITH SECTION 6F.60 OF THE MUTCD.
5. ALL SIGNS SHALL BE LOCATED SO THEY ARE VISIBLE AND ABLE TO BE READ BY THE TRAVELING PUBLIC. SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS.
6. SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, AND UPON COMPLETION OF THE WORK, WITH THE EXCEPTION OF SIGNS PROVIDING ADVANCED NOTIFICATION. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
7. WHERE SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL BE "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 AND MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) COMPLIANT. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POST(S). WHEN ANCHORS ARE INSTALLED STUB SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.

vhb

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

FILE NAME: z13J080tcp.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: E.F. LAWES
TRAFFIC CONTROL SHEET (1 OF 2)
PLOT DATE: 8/15/2016
DRAWN BY: E.F. LAWES
CHECKED BY: S.E. BURBANK
SHEET 17 OF 62

VHB 57737

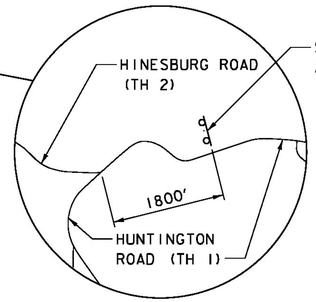


REGIONAL TRAFFIC PLAN - ADVANCED SIGN LOCATIONS

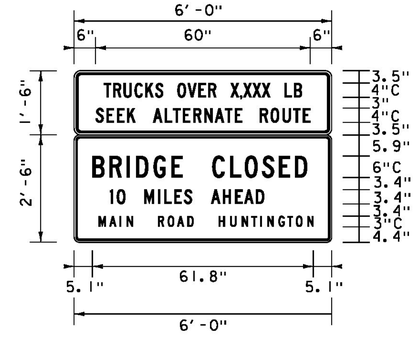
NOT TO SCALE

NOTES:

1. SIGN LOCATIONS SHOWN ON THIS SHEET ARE APPROXIMATE AND THE EXACT LOCATION SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. SEE TRAFFIC CONTROL SHEET (1 OF 2) FOR ADDITIONAL NOTES REGARDING SIGNS.
3. THE CONTRACTOR SHALL COORDINATE WITH THE TOWN OF RICHMOND REGARDING PLACEMENT OF THE SP-2 SIGN ASSEMBLY ON HUNTINGTON ROAD (TH 1) WITHIN THE TOWN'S RIGHT-OF-WAY.
4. FLAGS SHALL BE FLOURESCENT ORANGE IN COLOR, 16" SQUARE OR LARGER AND MOUNTED AT THE UPPER CORNERS OF THE SP-2 AND SP-3 SIGNS, SHALL BE ORIENTED SO AS TO BE 45 DEGREES TO THE VERTICAL ABOVE THE SIGN AND SHALL BE IN ACCORDAND WITH SHSM AND MUTCD STANDARDS.

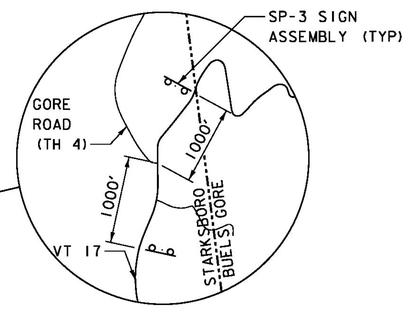


SIGNAGE ON HUNTINGTON ROAD (TH 1)

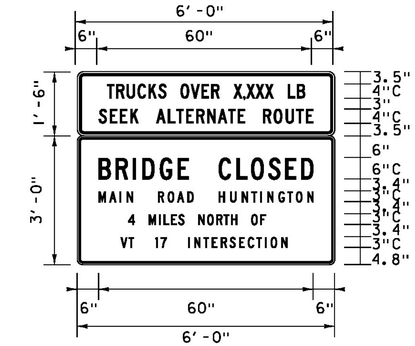


SP-2

NOT TO SCALE



SIGNAGE ON VT 17



SP-3

NOT TO SCALE

NOTES:

1. COLORS FOR THE SP-2 AND SP-3 SIGN ASSEMBLIES SHALL BE AS FOLLOWS:

   SEEK ALTERNATE ROUTE - BLACK TEXT AND BORDER ON RETROREFLECTIVE FLUORESCENT ORANGE BACKGROUND.

   BRIDGE CLOSED - BLACK TEXT AND BORDER ON RETROREFLECTVE FLUORESCENT WHITE BACKGROUND.

2. TWO ORANGE FLAGS (ONE EACH SIDE) SHALL BE PLACED AT THE TOP OF THE SP-2 AND SP-3 SIGN ASSEMBLIES.

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080tcp.dgn	PLOT DATE: 8/26/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: R.H. BARNES
DESIGNED BY: R.H. BARNES	CHECKED BY: S.E. BURBANK
TRAFFIC CONTROL SHEET (2 OF 2)	SHEET 18 OF 62

vhb

VHB 57737

N

VT STATE PLANE GRID

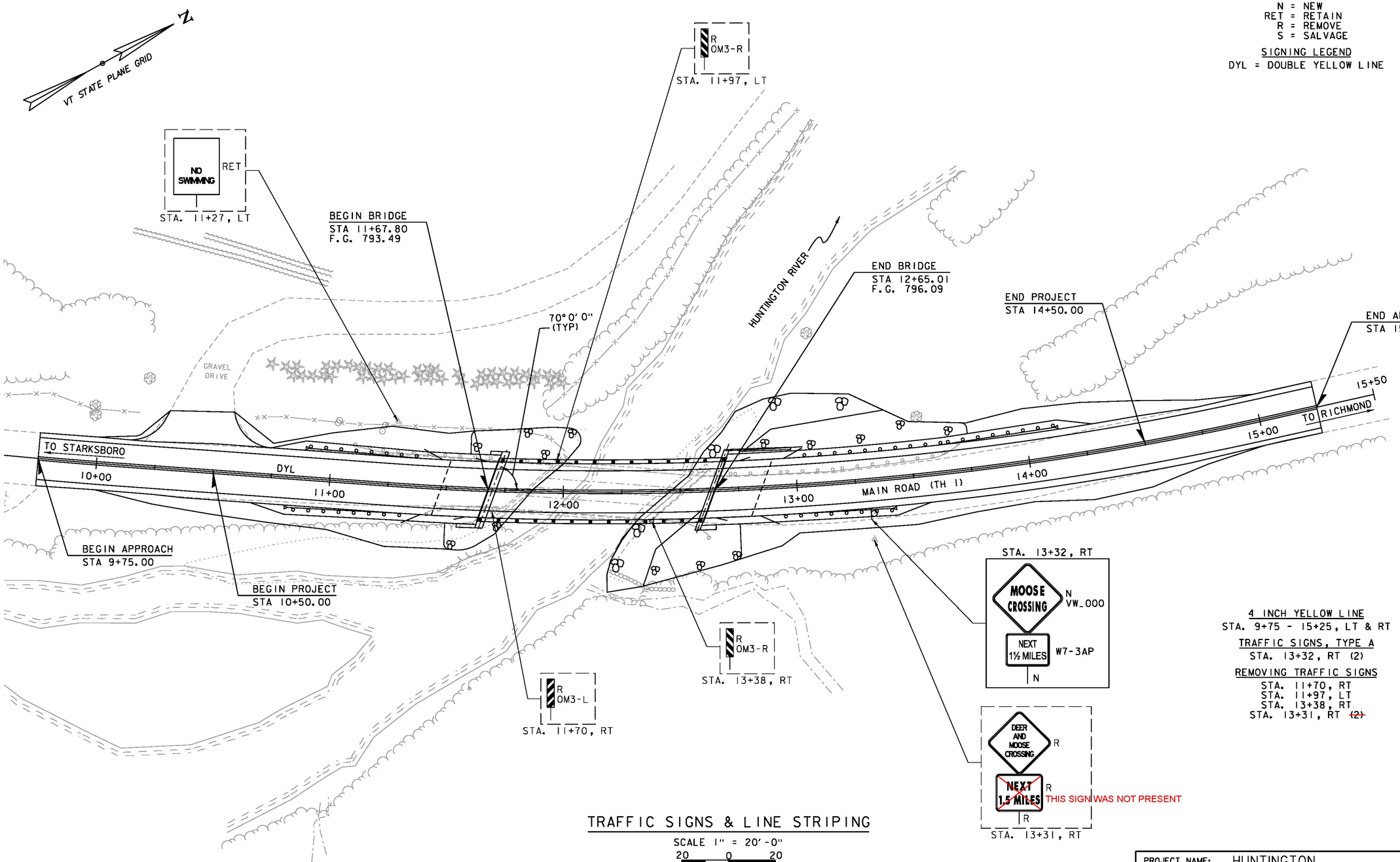
NEW 20' BI-SECT ANCHOR
EXISTING POLE (RETAIN)
EXISTING LINE (RETAIN)
RETIRE EXISITNG LINE
BEGIN BRIDGE
STA 11+67.80
F.G. 793.49
STA. 12+36.44,
84.07' LT
NEW POLE
HUNTINGTON RIVER
FLOW
END BRIDGE
STA 12+65.01
F.G. 796.09
EXISTING
POLE (RETAIN)
EXISTING LINE (RETAIN)
NEW 20' ANCHOR
END PROJECT
STA 14+50.00
END APPROACH
STA 15+25.00
TOWN ROW
70° 0' 0"
(TYP)
R = 17' (TYP)
GRAVEL
DRIVE
FENCE
SIGN
"NO SWIMMING"
BARBED WIRE
FENCE
SIGN
OM3-R
CZ
10+00
11+00
12+00
13+00
14+00
15+00
15+50
GRAVEL
DRIVEWAY
UT
TELEPHONE
GUY
BEGIN APPROACH
STA 9+75.00
BEGIN PROJECT
STA 10+50.00
EXISTING POLE
(RETAIN)
EXISTING LINE (RETAIN)
SIGN
(DEER AND MOOSE
CROSSING)
W16-4P
(NEXT 3.3 MILES)
TELEPHONE
TOWN ROW
EXISTING POLE (RETAIN)
EXISTING LINE (RETAIN)
EXISTING
LINE (RETAIN)
EXISTING LINE (RETAIN)
WATER COURSE
STA. 12+91.95,
21.63' RT
NEW POLE
NEW 13' BI-SECT ANCHOR
EXISTING POLE TO BE
REMOVED
" DIA IRON PIPE
@ 18" ABOVE GROUND
COMB
33C
19

SCALE 1" = 20'-0"
20 0 20

vhb

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13080bdr _utility.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: L. WHEELER	CHECKED BY: S.E. BURBANK
UTILITY LAYOUT SHEET	SHEET 19 OF 62

VHB 57737.00



SIGNING LEGEND
N = NEW
RET = RETAIN
R = REMOVE
S = SALVAGE

SIGNING LEGEND
DYL = DOUBLE YELLOW LINE

4 INCH YELLOW LINE
STA. 9+75 - 15+25, LT & RT

TRAFFIC SIGNS, TYPE A
STA. 13+32, RT (2)

REMOVING TRAFFIC SIGNS
STA. 11+70, RT
STA. 11+97, LT
STA. 13+38, RT
STA. 13+31, RT ~~(2)~~

TRAFFIC SIGNS & LINE STRIPING

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080tsl.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: E.F. LAWES
DESIGNED BY: E.F. LAWES	CHECKED BY: S.E. BURBANK
TRAFFIC SIGNS & LINE STRIPING SHEET	SHEET 20 OF 62

VHB 57737

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILE MARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (IN)	HEIGHT (IN)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL LB/FT 1.12	2.0	3.0	SQUARE STEEL (IN) 1.75	2.0	2.5	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (IN) 3.0	4.0	4.0 MOD	FOUNDATION	TUBULAR STEEL Ø (IN) 3.0	3.5	4.0	5.0	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN REMOVED	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
											OPTION ITEMS	LB/FT			LB/FT					LB/FT				LB/FT											
TH 1												1.12	2.0	3.0	1.88	2.42	3.35			1.3	1.7	1.7		7.6	9.0	10.8	14.6								
13+32, RT		1	36	36	9						1				X			X														VW-000		T-80
		1	24	18	3.0																											W7-3AP		SHSM
AVERAGE POST LENGTH = 15 FEET FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE VTRANS "SIGN POST DESIGN GUIDELINE."												FT	FT	FT	FT 15	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB								
	TOTALS				SF 12.0	SF	EA.	SF				FT			FT 15					LB			EA.	LB				EA.	EA.	LB					

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)

FILE NAME: z13J080tss.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: E.F. LAWES
DESIGNED BY: E.F. LAWES	CHECKED BY: S.E. BURBANK
TRAFFIC SIGN SUMMARY SHEET	SHEET 21 OF 62

vhb

SOIL CLASSIFICATION

AASHTO	
A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

COMMONLY USED SYMBOLS

▼	Water Elevation
⊗	Standard Penetration Boring
⊕	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1⅜" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1⅛"
BX	Core Size 1⅝"
NX	Core Size 2 ⅛"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	Top of Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)
VTSPG	NAD83 - See Note 7

COLOR

blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.

BOULDER - A rock fragment with an average dimension > 12 inches.

COBBLE - Rock fragments with an average dimension between 3 and 12 inches.

GRAVEL - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).

SAND - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

SILT - Soil< 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

CLAY - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

VARVED - Alternate layers of silt and clay.

HARDPAN - Extremely dense soil, cemented layer, not softened when wet.

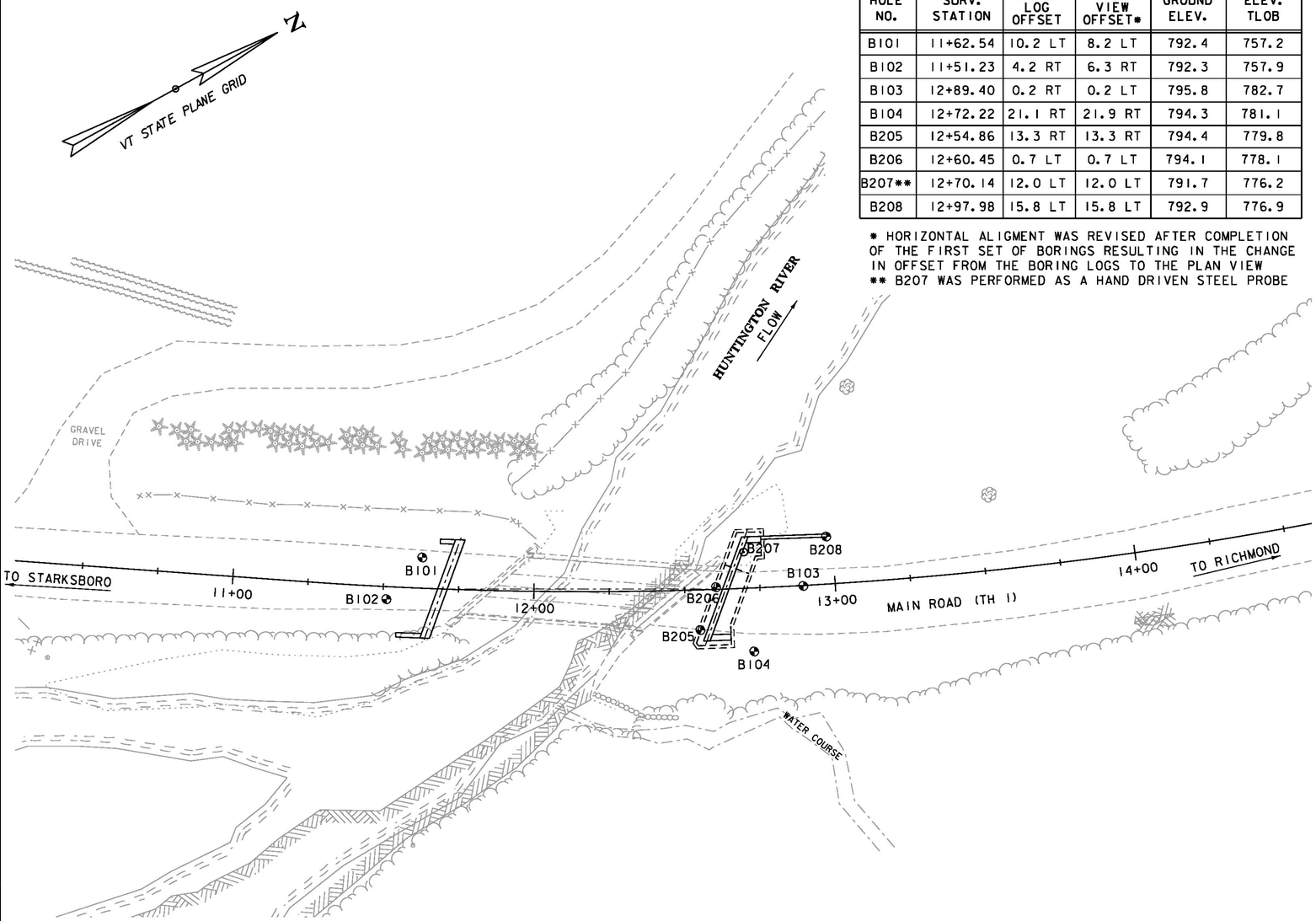
MUCK - Soft organic soil (containing > 10% organic material.

MOISTURE CONTENT - Weight of water divided by dry weight of soil.

FLOWING SAND - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

STRIKE - Angle from magnetic north to line of intersection of bed with a horizontal plane.

DIP - Inclination of bed with a horizontal plane.



BORING CHART

HOLE NO.	SURV. STATION	BORING LOG OFFSET	PLAN VIEW OFFSET*	GROUND ELEV.	ELEV. TLOB
B101	11+62.54	10.2 LT	8.2 LT	792.4	757.2
B102	11+51.23	4.2 RT	6.3 RT	792.3	757.9
B103	12+89.40	0.2 RT	0.2 LT	795.8	782.7
B104	12+72.22	21.1 RT	21.9 RT	794.3	781.1
B205	12+54.86	13.3 RT	13.3 RT	794.4	779.8
B206	12+60.45	0.7 LT	0.7 LT	794.1	778.1
B207**	12+70.14	12.0 LT	12.0 LT	791.7	776.2
B208	12+97.98	15.8 LT	15.8 LT	792.9	776.9

* HORIZONTAL ALIGMENT WAS REVISED AFTER COMPLETION OF THE FIRST SET OF BORINGS RESULTING IN THE CHANGE IN OFFSET FROM THE BORING LOGS TO THE PLAN VIEW
** B207 WAS PERFORMED AS A HAND DRIVEN STEEL PROBE

GENERAL NOTES

1. The subsurface explorations B101-B104 shown herein were made between September 4 and September 9, 2014 by the Agency. B205-208 explorations shown herein were made between July 6 and July 8, 2015 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
7. Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

vhb

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 021I(32)

FILE NAME: zi3j080bor.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: VTrans
BORING INFORMATION SHEET

PLOT DATE: 8/15/2016
DRAWN BY: J.D. KEENER
CHECKED BY: S.E. BURBANK
SHEET 22 OF 62

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

HUNTINGTON
BF 0211(32)
TH-1 BR-8

Boring No.: **B-101**
Page No.: 1 of 1
Pin No.: 13J080
Checked By: MLM

Boring Crew: DAIGNEAULT, JUDKINS, HOOK
Date Started: 9/08/14 Date Finished: 9/09/14
VTSPG NAD83: N 642909.79 ft E 1520030.44 ft
Station: 11+62 Offset: -8.20
Ground Elevation: 792.4 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C SKID	C_E = 1.33

Groundwater Observations		
Date	Depth (ft)	Notes
09/09/14	16.7	AM

BOTTOM OF CAP
EL=785.0

ESTIMATED PILE TIP
EL=757.2

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.68 ft								
		A-2-4, SiSa, brn, Moist, Rec. = 1.2 ft				11-8-7-7 (15)	16.1	13.5	57.0	29.5
		A-2-4, SiSa, brn, Moist, Rec. = 1.1 ft				9-8-7-6 (15)	13.6	12.3	58.6	29.1
		A-2-4, SiSa, brn, Moist, Rec. = 1.1 ft, Cleaned out casing.				8-14-18-14 (32)	13.9	19.1	55.2	25.7
		A-1-a, SaGr, brn, Moist, Rec. = 0.9 ft, Lab Note: Lots of Broken Rock was within sample.				8-10-20-15 (30)	9.2	57.0	33.0	10.0
10		A-1-a, SaGr, brn, Moist, Rec. = 0.6 ft, Lab Note: Broken Rock was within sample.				12-18-28-17 (46)	9.4	57.5	32.4	10.1
		A-1-a, Gr, red-brn, Moist, Rec. = 0.5 ft, Lab Note: Lots of Broken Rock was within sample.				10-11-10-6 (21)	8.1	72.4	19.6	8.0
		A-1-a, SaGr, brn, Moist, Rec. = 0.6 ft, Lab Note: Lots of Broken Rock was within sample.				6-6-4-4 (10)	9.4	68.2	23.9	7.9
		A-4, GrSi, brn, MTW, Rec. = 0.8 ft, Cleaned out casing.				5-4-3-3 (7)	23.3	22.6	18.1	59.3
		A-4, SaSi, brn, MTW, Rec. = 0.4 ft				2-2-3-4 (5)	29.6	1.8	21.1	77.1
		A-4, Si, brn, MTW, Rec. = 0.8 ft				3-10-11-11 (21)	27.3	3.8	10.7	85.5
20		A-2-4, SiGrSa, brn, Moist, Rec. = 0.9 ft				27-25-24-29 (49)	14.0	32.9	37.0	30.1
		A-4, SaGrSi, brn, Moist, Rec. = 1.2 ft				14-29-30-R@3.5" (59)	14.8	32.6	31.0	36.4
		Field Note:, Cleaned out casing.				R@2.5"				
30		A-2-4, SiSa, brn, Moist, Rec. = 1.1 ft					15.6	19.2	55.7	25.1
		Field Note:, Cleaned out casing.								
		Field Note:, No Recovery	1	96	4	Top of Bedrock @ 35.2 ft				
		35.2 ft - 40.2 ft, Gray, Muscovite-chlorite-biotite-feldspar-quartz Metagraywacke, and schist with lenses of quartz. Hard, Unweathered, Very good rock, NXMDC, RMR = 84	(25)	(96)	6 6 5 5					
40		40.2 ft - 45.2 ft, Gray, Muscovite-chlorite-biotite-feldspar-quartz Metagraywacke, and schist with lenses of quartz. Hard, Unweathered, Very good rock, NXMDC, RMR = 81	2 (25)	100 (86)	5 5 5 5 6					
		Hole stopped @ 45.2 ft								
50		Remarks: 1. Hole collapsed at 15.7 ft. 2. Offsets were taken from the proposed centerline, not existing.								

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 HUNTINGTON BF 0211(32).GPJ VERMONT.AOT.GDT 9/11/14

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

HUNTINGTON
BF 0211(32)
TH-1 BR-8

Boring No.: **B-102**
Page No.: 1 of 1
Pin No.: 13J080
Checked By: MLM

Boring Crew: DAIGNEAULT, JUDKINS, HOOK
Date Started: 9/05/14 Date Finished: 9/05/14
VTSPG NAD83: N 642892.67 ft E 1520036.77 ft
Station: 11+51 Offset: 6.30
Ground Elevation: 792.3 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C SKID	C_E = 1.33

Groundwater Observations		
Date	Depth (ft)	Notes
09/05/14	7.0	After drilling.

BOTTOM OF CAP
EL=785.0

ESTIMATED PILE TIP
EL=757.9

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.98 ft								
		A-2-4, SiSa, brn, Moist, Rec. = 1.3 ft				7-6-3-4 (9)	15.4	16.1	53.4	30.5
		A-2-4, SiSa, brn, Moist, Rec. = 1.6 ft				6-5-4-3 (9)	14.4	16.6	60.0	23.4
5		A-1-b, GrSa, brn, Moist, Rec. = 1.1 ft, Lab Note: Broken Rock was within sample.				1-3-4-6 (7)	15.5	42.1	43.8	14.1
		A-1-a, SaGr, brn, Moist, Rec. = 1.6 ft, Lab Note: Broken Rock was within sample.				9-15-18-31 (33)	4.7	57.8	32.6	9.6
10		A-1-a, SaGr, brn-white, Moist, Rec. = 1.4 ft, Lab Note: Broken Rock was within sample.				17-20-27-19 (47)	4.3	57.6	29.5	12.9
		A-1-b, SiSaGr, brn, Moist, Rec. = 0.7 ft, Lab Note: Broken Rock was within sample.				13-17-12-9 (29)	12.9	51.1	25.9	23.0
		A-4, Si, brn, Moist, Rec. = 0.3 ft				8-8-8-9 (16)	21.6	19.5	15.5	65.0
15		A-4, SaSi, brn, MTW, Rec. = 0.9 ft				4-5-4-4 (9)	19.3	16.9	40.4	42.7
		A-4, SaSi, brn, MTW, Rec. = 0.9 ft				2-3-5-5 (8)	19.4	16.9	33.3	49.8
20		A-1-b, SiSaGr, red-brn, Moist, Rec. = 0.7 ft, Lab Note: Broken Rock was within sample.				11-13-17-7 (30)	13.2	43.3	36.0	20.7
25		A-1-b, GrSa, brn, Moist, Rec. = 1.2 ft, Lab Note: Broken Rock was within sample.				12-14-22-25 (36)	11.1	33.7	53.9	12.4
30		A-2-4, SiGrSa, brn, Moist, Rec. = 1.1 ft, Lab Note: Broken Rock was within sample.				26-27-33-R@1.0" (60)	12.9	31.9	45.8	22.3
35		34.4 ft - 39.4 ft, Gray, Muscovite-chlorite-biotite-feldspar-quartz Metagraywacke, and schist with lenses of quartz. Hard, Unweathered, Good rock, NXMDC, RMR = 72	1 (25)	72 (30)	5 5 5 5 5	Top of Bedrock @ 34.4 ft				
40		39.4 ft - 44.4 ft, Gray, Muscovite-chlorite-biotite-feldspar-quartz Metagraywacke, and schist with lenses of quartz. Hard, Unweathered, Very good rock, NXMDC, RMR = 84	2 (25)	94 (94)	5 6 5 5 6					
45		Hole stopped @ 44.4 ft								
		Remarks: 1. Offsets were taken from the proposed centerline, not existing.								

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 HUNTINGTON BF 0211(32).GPJ VERMONT.AOT.GDT 9/11/14

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

FILE NAME: z13J080borlogs.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: VTRANS
BORING LOGS (1 OF 4)

PLOT DATE: 8/15/2016
DRAWN BY: J.D. KEENER
CHECKED BY: S.E. BURBANK
SHEET 23 OF 62

VHB 57570

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

HUNTINGTON
BF 0211(32)
TH-1 BR-8

Boring No.: **B-103**
Page No.: 1 of 1
Pin No.: 13J080
Checked By: MLM

Boring Crew: DAIGNEAULT, JUDKINS
Date Started: 9/04/14 Date Finished: 9/04/14
VTSPG NAD83: N 643015.89 ft E 1520099.77 ft
Station: 12+89 Offset: 0.90
Ground Elevation: 795.8 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C SKID	C_E = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
09/04/14	6.1	After drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 0.77 ft								
		A-1-b, SaGr, brn, Moist, Rec. = 1.2 ft				11-10-7-5 (17)	7.5	45.8	42.2	12.0
		A-1-b, SiGrSa, brn, Moist, Rec. = 1.1 ft				4-2-3-4 (5)	15.9	35.4	43.8	20.8
5		A-1-b, GrSa, brn, Moist, Rec. = 0.7 ft				3-2-3-2 (5)	11.1	45.3	46.4	8.3
		A-1-b, Sa, brn, Moist, Rec. = 0.2 ft				3-3-3-4 (6)	10.8	18.5	65.4	16.1
		A-1-b, GrSa, brn, Moist, Rec. = 0.5 ft				5-4-3-3 (7)	6.5	35.4	52.7	11.9
10		A-1-b, GrSa, brn, Moist, Rec. = 0.6 ft				3-2-2-3 (4)	14.3	36.1	46.6	17.3
		A-4, SiSa, gry, Moist, Rec. = 0.1 ft				R@1.0"	12.0	15.3	48.6	36.1
		13.1 ft - 18.1 ft, Gray, Muscovite-chlorite-biotite-feldspar-quartz Metagraywacke, and schist with lenses of quartz. Hard, Unweathered, Very good rock, NXMDC, RMR = 81	1 (50)	78 (78)	5 5 5 5 5	Top of Bedrock @ 13.1 ft				
15										
		18.1 ft - 23.1 ft, Gray, Muscovite-chlorite-biotite-feldspar-quartz Metagraywacke, and schist with lenses of quartz. Hard, Unweathered, Very good rock, NXMDC, RMR = 84	2 (50)	94 (94)	5 6 5 5 5					
20										
		Hole stopped @ 23.1 ft								
25		Remarks: 1. Hole collapsed at 8.2 ft. 2. Offsets were taken from the proposed centerline, not existing.								

BOTTOM OF FOOTING EL=779.0

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

HUNTINGTON
BF 0211(32)
TH-1 BR-8

Boring No.: **B-104**
Page No.: 1 of 1
Pin No.: 13J080
Checked By: MLM

Boring Crew: DAIGNEAULT, JUDKINS, HOOK
Date Started: 9/09/14 Date Finished: 9/09/14
VTSPG NAD83: N 642991.15 ft E 1520110.94 ft
Station: 12+72 Offset: 21.90
Ground Elevation: 794.3 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C SKID	C_E = 1.33

Groundwater Observations

Date	Depth (ft)	Notes
09/09/14	2.8	After drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-1-b, GrSa, Dk/brn, Moist, Rec. = 1.1 ft				2-3-5-6 (8)	5.4	44.6	45.9	9.5
		A-1-a, SaGr, brn-gry, Moist, Rec. = 0.8 ft, Lab Note: Lots of Broken Rock was within sample.				41-R@4.5" (R)	1.7	56.8	28.9	14.3
5		A-1-a, SaGr, brn, Moist, Rec. = 0.7 ft, Lab Note: Lots of Broken Rock was within sample.				3-4-6-7 (10)	11.0	50.5	39.7	9.8
		Field Note:, No Recovery, Cleaned out casing.				5-3-2-1 (5)				
		A-4, GrSiSa, brn, MTW, Rec. = 0.1 ft, Lab Note: Broken Rock was within sample.				1-1-2-2 (3)	18.2	22.8	39.6	37.6
10		Field Note:, No Recovery				3-3-1-1 (4)				
		A-2-4, SiSa, brn, MTW, Rec. = 1.1 ft				WH-WH-R@2.5" (R)	27.6	4.5	66.9	28.6
		13.2 ft - 18.2 ft, Gray, Muscovite-chlorite-biotite-feldspar-quartz Metagraywacke, and schist with lenses of quartz. Hard, Unweathered, Very good rock, NXMDC, RMR = 84	1 (25)	100 (100)	7 7 8 10 9	Top of Bedrock @ 13.2 ft				
15										
		18.2 ft - 23.2 ft, Gray, Muscovite-chlorite-biotite-feldspar-quartz Metagraywacke, and schist with lenses of quartz. Hard, Unweathered, Very good rock, NXMDC, RMR = 84	2 (25)	98 (98)	6 6 6 6 6					
20										
		Hole stopped @ 23.2 ft								
25		Remarks: 1. Hole collapsed at 6.9 ft. 2. Offsets were taken from the proposed centerline, not existing.								

BOTTOM OF FOOTING EL=781.0

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 HUNTINGTON BF 0211(32).GPJ VERMONT AOT.GDT 9/11/14

BORING LOG 2 HUNTINGTON BF 0211(32).GPJ VERMONT AOT.GDT 9/11/14

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

FILE NAME: z13J080borlogs.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: VTRANS
BORING LOGS (2 OF 4)

PLOT DATE: 8/15/2016
DRAWN BY: J.D. KEENER
CHECKED BY: S.E. BURBANK
SHEET 24 OF 62

VHB 57570

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

HUNTINGTON
BF 0211(32)
TH-1 BR-8

Boring No.: **B-205**
Page No.: 1 of 1
Pin No.: 13J080
Checked By: MLM

Boring Crew: GARROW, JUDKINS
Date Started: 7/07/15 Date Finished: 7/08/15
VTSPG NAD83: N 642978.94 ft E 1520096.10 ft
Station: 12+55 Offset: 13.30
Ground Elevation: 794.4 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C TRACK	C_E = 1.34

Groundwater Observations

Date	Depth (ft)	Notes
07/08/15		No water to 13 ft.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 1.0 ft								
		A-2-4, SiGrSa, brn, Moist, Rec. = 0.9 ft				5-5-5-5 (10)	12.9	29.9	45.2	24.9
		A-1-b, SiGrSa, brn, Moist, Rec. = 0.6 ft, Cleaned out with roller cone.				5-4-3-3 (7)	12.6	37.3	40.5	22.2
5		A-2-4, SiGrSa, brn, Moist, Rec. = 0.5 ft, Cleaned out with roller cone.				3-3-2-3 (5)	13.3	33.7	38.5	27.8
		A-1-b, SiGrSa, brn, Moist, Rec. = 0.9 ft, Cleaned out with roller cone.				3-3-3-3 (6)	16.8	37.5	38.9	23.6
		A-2-4, SiGrSa, brn, Moist, Rec. = 0.9 ft				4-3-2-2 (5)	18.6	27.1	46.3	26.6
10		A-4, SaSi, brn-gry, Moist, Rec. = 0.9 ft, Lab Note: Large Wood chunks were within sample.				4-3-1-2 (4)	35.5	8.7	43.6	47.7
BOTTOM OF FOOTING EL=781.0		Visual Description:, Wood pieces & chunks with silty sand, Dk/gry, Moist, Rec. = 0.2 ft				2-3-2-R@1.0" (5)	71.0			
15		14.6 ft - 19.6 ft, Gray, Muscovite-biotite-chlorite-albite-quartz SCHIST, with joints that are rust stained. Hard, Very slightly weathered, Good rock, NXMDC, RMR = 68	1 (30)	100 (87)	3 4 4 3 3	Top of Bedrock @ 14.6 ft				
20		19.6 ft - 24.6 ft, Gray, Muscovite-biotite-chlorite-albite-quartz SCHIST, Hard, Unweathered, Very good rock, NXMDC, RMR = 84	2 (25-30)	100 (100)	3 3 3 3 3					
25		Hole stopped @ 24.6 ft								

Remarks:
1. Hole collapsed at 18.4 ft.
2. Offsets were taken from the proposed centerline, not existing.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 HUNTINGTON BF 0211(32).GPJ VERMONT AOT.GDT 7/15/15

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

HUNTINGTON
BF 0211(32)
TH-1 BR-8

Boring No.: **B-206**
Page No.: 1 of 1
Pin No.: 13J080
Checked By: MLM

Boring Crew: GARROW, JUDKINS
Date Started: 7/07/15 Date Finished: 7/07/15
VTSPG NAD83: N 642990.35 ft E 1520086.14 ft
Station: 12+60 Offset: -0.70
Ground Elevation: 794.1 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C TRACK	C_E = 1.34

Groundwater Observations

Date	Depth (ft)	Notes
07/07/15	14.6	While drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		Asphalt Pavement, 0.0 ft - 1.0 ft								
		A-1-b, GrSa, brn, Moist, Rec. = 0.7 ft				11-14-10-10 (24)	7.5	36.2	46.4	17.4
		Field Note:, Cleaned out with roller cone								
5		A-1-b, GrSa, brn, Moist, Rec. = 0.8 ft				5-4-6-6 (10)	14.2	41.3	42.2	16.5
		Field Note:, Cleaned out with roller cone								
10		A-1-b, SaGr, brn, Moist, Rec. = 0.8 ft, Lab Note: Broken Rock was within sample.				7-6-6-6 (12)	11.3	56.7	28.1	15.2
BOTTOM OF FOOTING EL=781.0		Field Note:, NXDC, Cleaned out casing								
15		Field Note:, No Recovery				R@0.0" (R)				
		16.0 ft - 21.0 ft, Gray, Muscovite-biotite-chlorite-albite-quartz SCHIST, Hard, Very slightly weathered, Good rock, NXMDC, RMR = 71	1 (35-40)	92 (96)	3 3 4 3 3	Top of Bedrock @ 16.0 ft				
20		21.0 ft - 26.0 ft, Gray, Muscovite-biotite-chlorite-albite-quartz SCHIST, Hard, Unweathered, Good rock, NXMDC, RMR = 79	2 (20)	100 (100)	3 4 4 3 3					
25		Hole stopped @ 26.0 ft								

Remarks:
1. Hole collapsed at 15.4 ft.
2. Offsets were taken from the proposed centerline, not existing.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 HUNTINGTON BF 0211(32).GPJ VERMONT AOT.GDT 7/15/15

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080borlogs.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: VTRANS	CHECKED BY: S.E. BURBANK
BORING LOGS (3 OF 4)	SHEET 25 OF 62

STATE OF VERMONT
AGENCY OF TRANSPORTATION
CONSTRUCTION AND
MATERIALS BUREAU
CENTRAL LABORATORY

BORING LOG

HUNTINGTON
BF 0211(32)
TH-1 BR-8

Boring No.: **B-208**
Page No.: 1 of 1
Pin No.: 13J080
Checked By: MLM

Boring Crew: DAIGNEAULT, GARROW, NIETO
Date Started: 7/06/15 Date Finished: 7/06/15
VTSPG NAD83: N 643030.44 ft E 1520089.09 ft
Station: 12+98 Offset: -15.80
Ground Elevation: 792.9 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C TRACK	C_E = 1.34

Groundwater Observations

Date	Depth (ft)	Notes
07/06/15	13.2	After drilling.

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
5		A-1-a, SaGr, brn, Moist, Rec. = 0.6 ft, Lab Note: Lots of Broken Rock was within sample.				1-2-2-4 (4)	8.1	60.6	28.1	11.3
		A-1-b, SaGr, brn-gry, Moist, Rec. = 0.6 ft, Lab Note: Lots of Broken Rock was within sample.				15-3-3-3 (6)	8.4	51.0	35.1	13.9
		A-1-a, SaGr, brn, Moist, Rec. = 0.3 ft, NXDC, Cleaned out casing. Lab Note: Lots of Broken Rock was within sample.				3-2-1-3 (3)	12.7	61.2	31.0	7.8
		A-1-a, Gr, brn-gry, Moist, Rec. = 0.3 ft, NXDC, Cleaned out casing. Lab Note: Very clean (washed) sample.				2-2-1-2 (3)	6.7	86.5	12.5	1.0
		A-2-4, SiSa, brn, Moist, Rec. = 0.4 ft, NXDC, Cleaned out casing.				4-1-1-1 (2)	25.5	16.3	53.6	30.1
10		A-1-a, SaGr, brn-gry, Moist, Rec. = 0.4 ft, NXDC, Cleaned out casing. Lab Note: Lots of Broken Rock was within sample.				3-4-6-10 (10)	8.6	63.1	27.8	9.1
		A-1-a, SaGr, rust-gry, Moist, Rec. = 0.9 ft, NXDC, Cleaned out casing. Lab Note: Lots of Broken Rock was within sample.				16-15-9-13 (24)	11.0	62.6	27.9	9.5
15		A-1-b, SaGr, gry, Moist, Rec. = 1.1 ft, NXDC, Cleaned out casing. Lab Note: Lots of Broken Rock was within sample.				29-40-R@3.5" (R)	10.5	55.3	28.8	15.9
		Field Note:, NXDC, Cleaned out casing								
		16.0 ft - 18.0 ft, Gray, Muscovite-biotite-chlorite-albite-quartz SCHIST, Hard, Unweathered, Good rock, NXMDC, RMR = 68	1 (20)	40 (78)	3 3	Top of Bedrock @ 16.0 ft				
20		18.0 ft - 22.0 ft, Gray, Muscovite-biotite-chlorite-albite-quartz SCHIST, Hard, Unweathered, Good rock, NXMDC, RMR = 79	2 (20-25)	78 (100)	3 3 3 3					
		22.0 ft - 26.0 ft, Gray, Muscovite-biotite-chlorite-albite-quartz SCHIST, Hard, Unweathered, Good rock, NXMDC, RMR = 71	3 (20-25)	80 (100)	4 4 4 4					
25		Hole stopped @ 26.0 ft								

Remarks:
1. Hole collapsed at 4.5 ft.
2. Offsets were taken from the proposed centerline, not existing.

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C_E is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

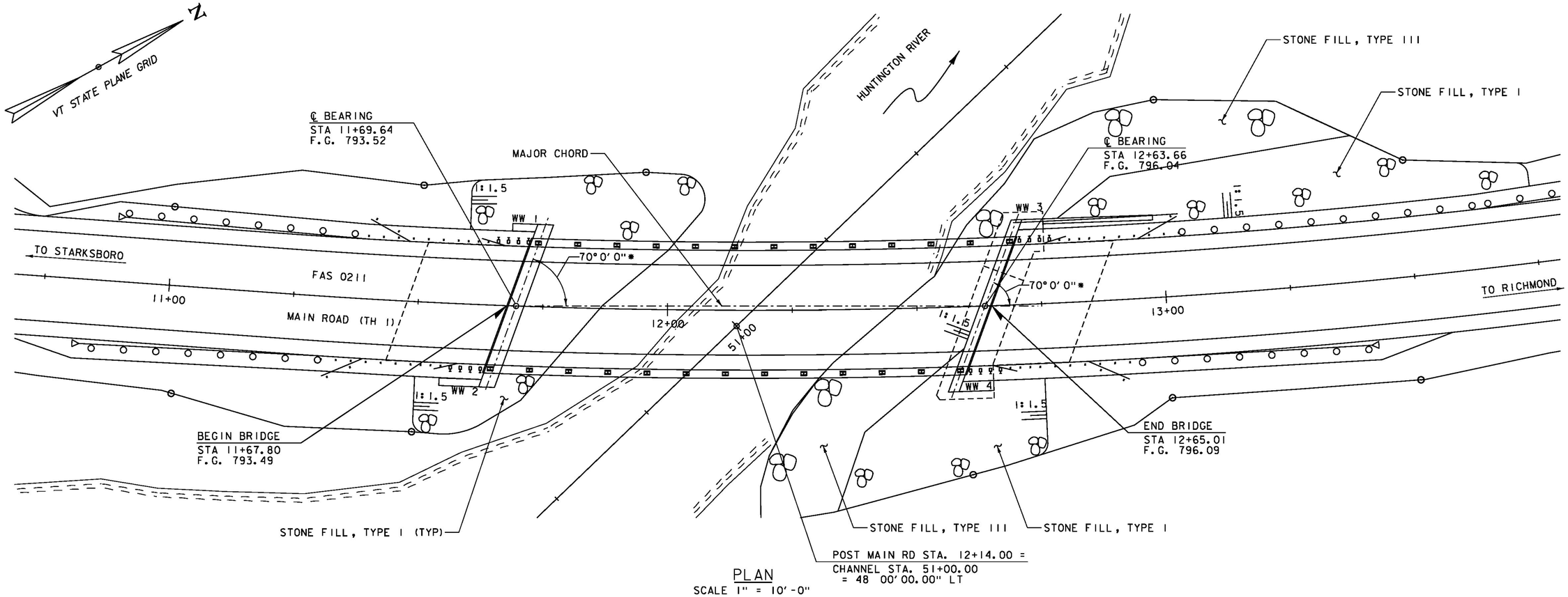
BORING LOG 2 HUNTINGTON BF 0211(32).GPJ VERMONT AOT.GDT 7/15/15

NOTE: B207 WAS PERFORMED AS A HAND DRIVEN STEEL PROBE, THEREFORE NO BORING LOG IS PROVIDED. SEE BORING INFORMATION SHEET FOR DEPTH TO REFUSAL.

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

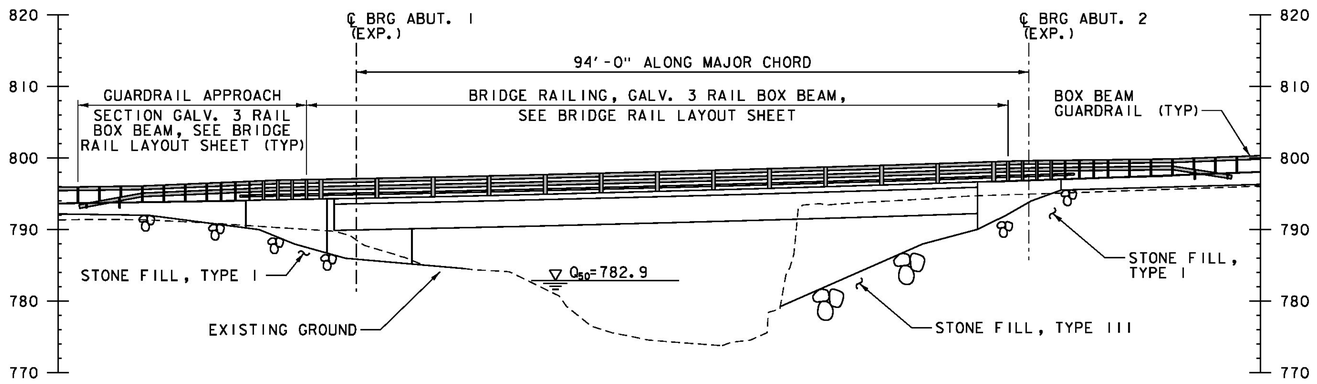
FILE NAME: z13J080borlogs.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: VTRANS
BORING LOGS (4 OF 4)

PLOT DATE: 8/15/2016
DRAWN BY: J.D. KEENER
CHECKED BY: S.E. BURBANK
SHEET 26 OF 62



PLAN
SCALE 1" = 10'-0"

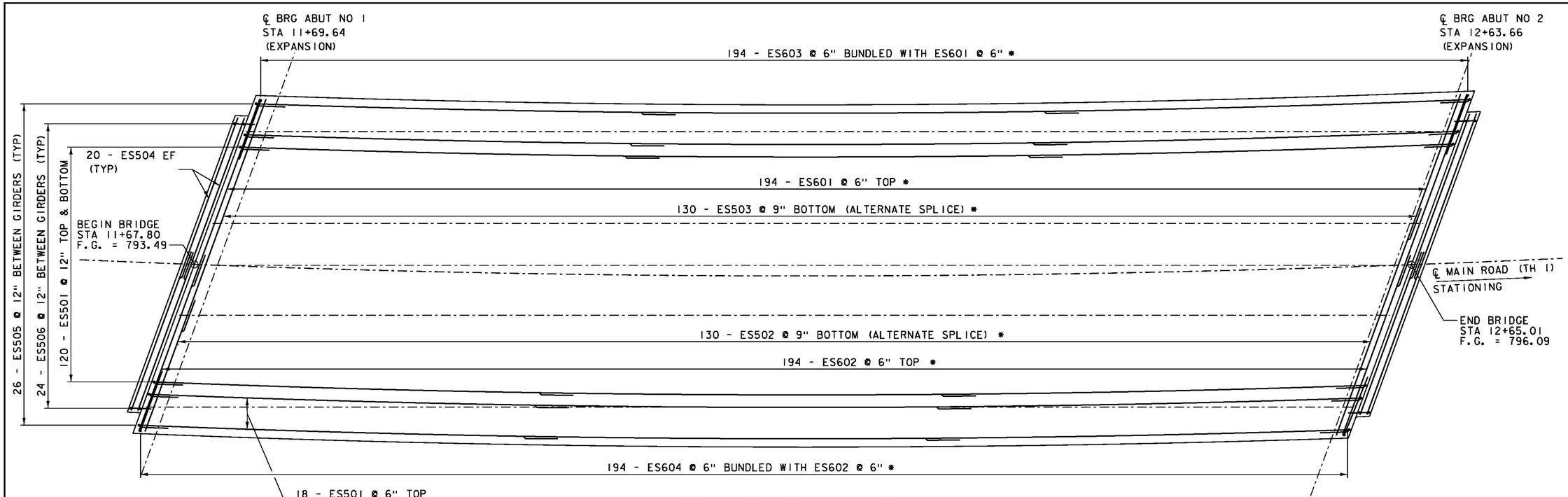
* THE ANGLE FOR THE CENTERLINE OF BEARING AT BOTH ABUTMENTS IS MEASURED FROM THE MAJOR CHORD.



ELEVATION
SCALE 1" = 10'-0"

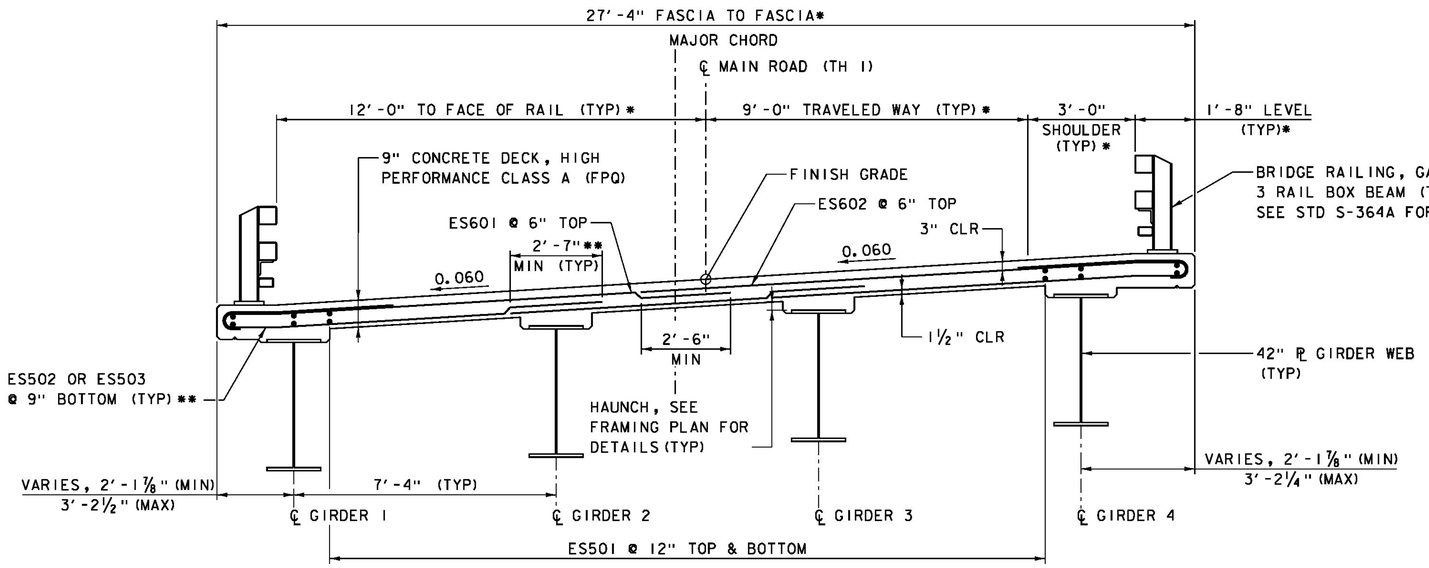
PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080pe.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: E.F. LAWES
DESIGNED BY: E.F. LAWES	CHECKED BY: S.E. BURBANK
PLAN AND ELEVATION	SHEET 27 OF 62

VHB 57737



DECK REINFORCING PLAN

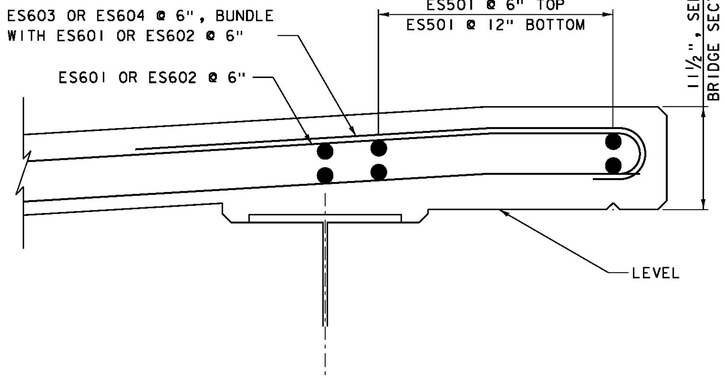
SCALE 1/4" = 1'-0"
* SPACING ALONG MAJOR CHORD



DECK TYPICAL SECTION

SCALE ½" = 1'-0"

* DIMENSIONS ARE RADIAL
** LAP TO ALTERNATE OVER GIRDER 2 AND GIRDER 3



TYPICAL OVERHANG REINFORCEMENT

SCALE 1½" = 1'-0"

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

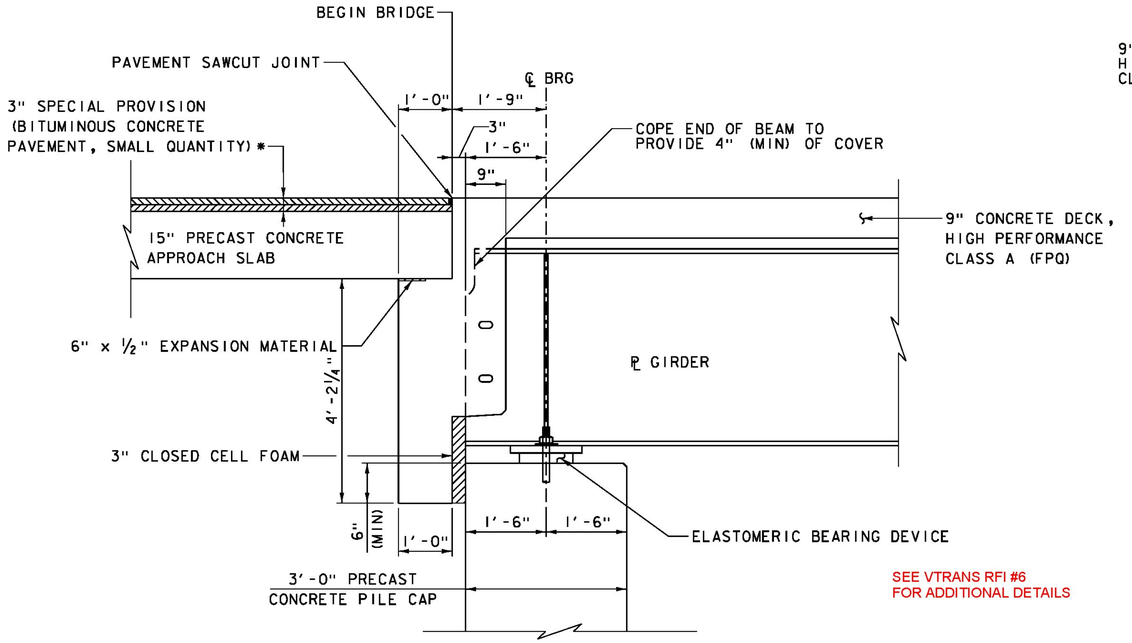
vhb

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

FILE NAME: z13J080deck.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: J.D. KEENER
DECK REINFORCING DETAILS

PLOT DATE: 8/15/2016
DRAWN BY: R.H. BARNES
CHECKED BY: S.E. BURBANK
SHEET 28 OF 62

VHB 57737

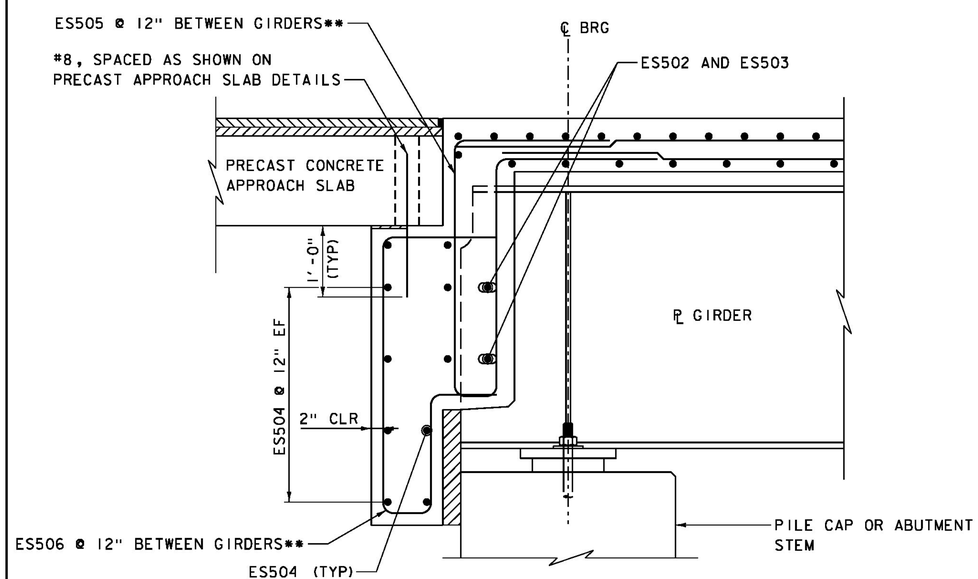


SEE VTRANS RFI #6
FOR ADDITIONAL DETAILS

ABUTMENT NO 1 BRIDGE END DETAIL

SCALE ¾" = 1'-0"

* (2) - 1½" LIFTS OF TYPE IVS

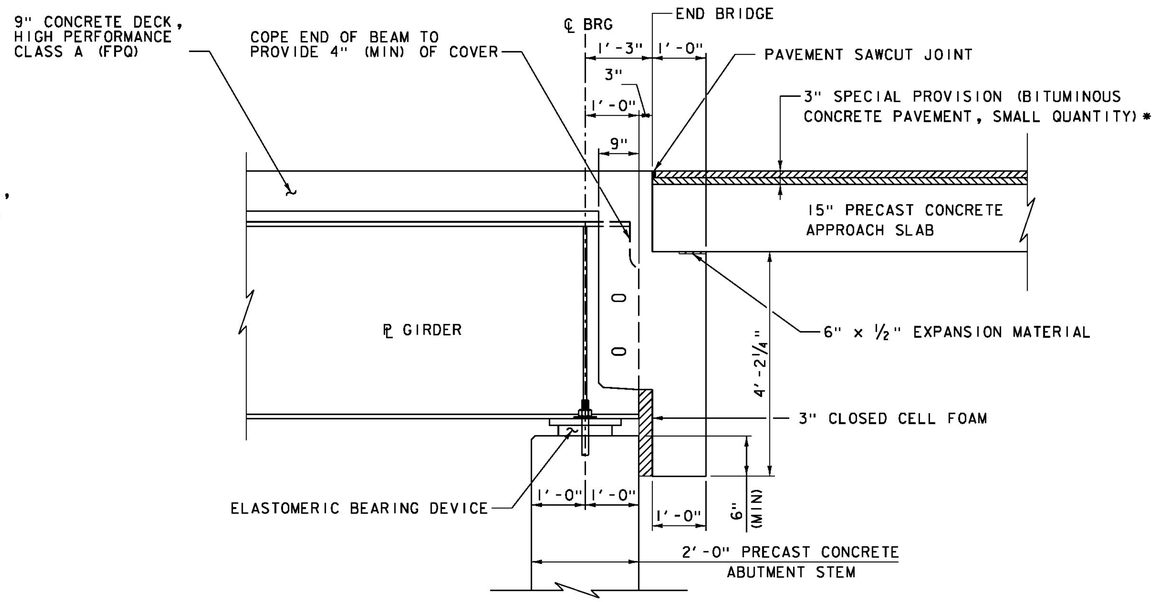


BRIDGE END DETAIL REINFORCING TYPICAL

SCALE 1" = 1'-0"

** REINFORCING TO BE PLACED PARALLEL TO LONGITUDINAL DECK REINFORCING

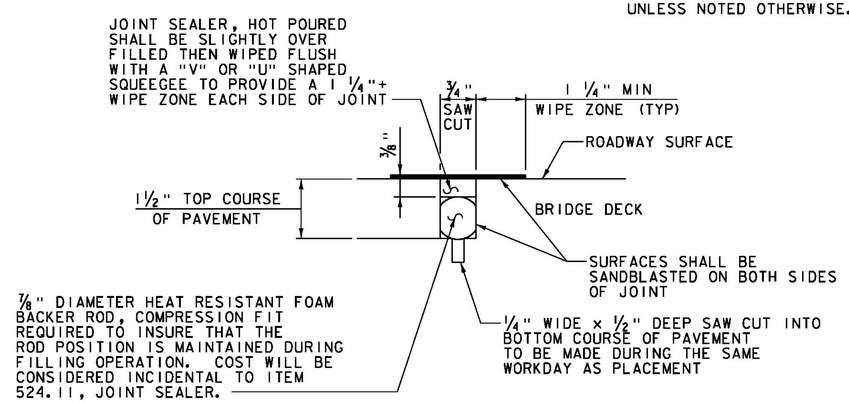
NOTE: APPROACH SLAB AND ABUTMENT REINFORCING NOT SHOWN FOR CLARITY.



ABUTMENT NO 2 BRIDGE END DETAIL

SCALE ¾" = 1'-0"

NOTE: HORIZONTAL DIMENSIONS PROVIDED IN BRIDGE END DETAILS ARE PERPENDICULAR TO ℄ BRG UNLESS NOTED OTHERWISE.



SAW CUT JOINT DETAIL

NOT TO SCALE

1. JOINT IS TO BE LOCATED ACCURATELY BY STRING LINING OR OTHER MEANS, PRIOR TO PAVING, SO THAT THE SAW CUTS WILL BE MADE DIRECTLY OVER THE END OF THE CONCRETE DECK. JOINT SHALL BE CUT DRY IN A SINGLE PASS AND BE SEALED WITHIN 24 HOURS OR PRIOR TO EXPOSURE TO TRAFFIC. JOINT SHALL BE CLEANED PRIOR TO APPLYING THE JOINT SEALER.
2. SAW CUT JOINT WILL BE PAID FOR UNDER ITEM 524.11, "JOINT SEALER, HOT POURED".

NOTE:

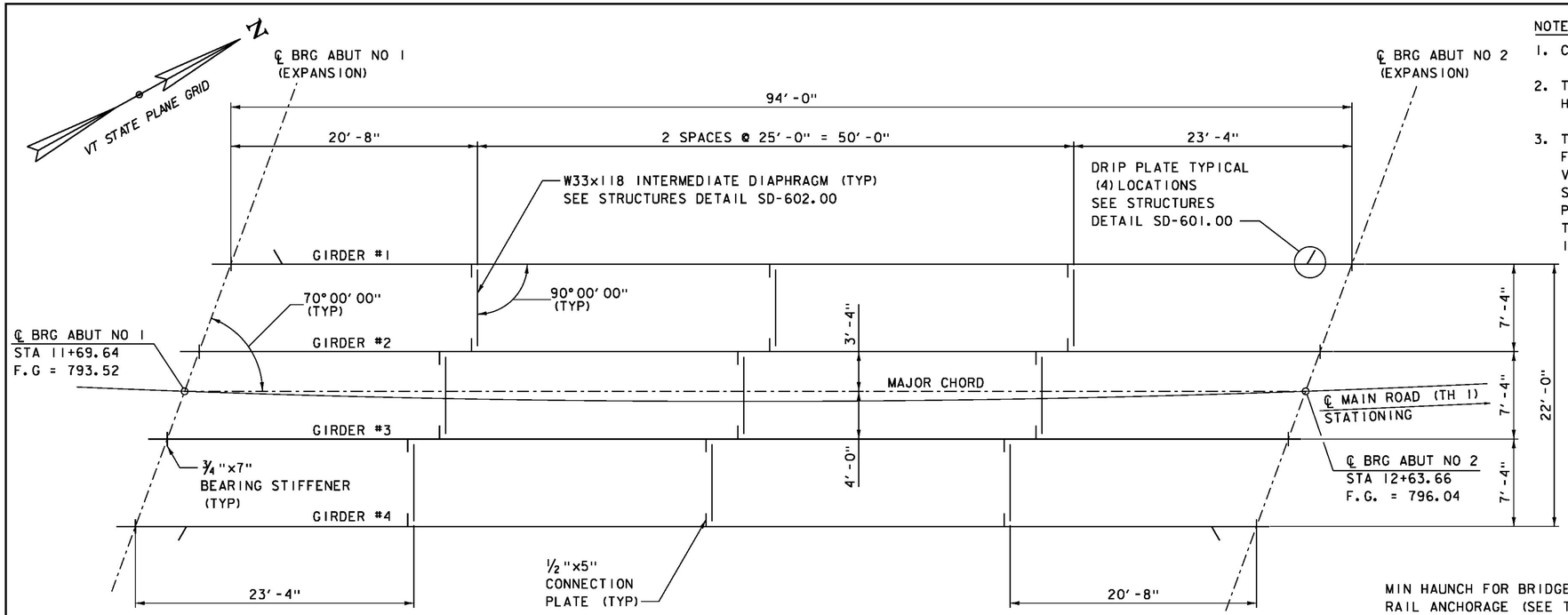
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 021I(32)

FILE NAME: z13J080sup.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: J.D. KEENER
BRIDGE END DETAILS

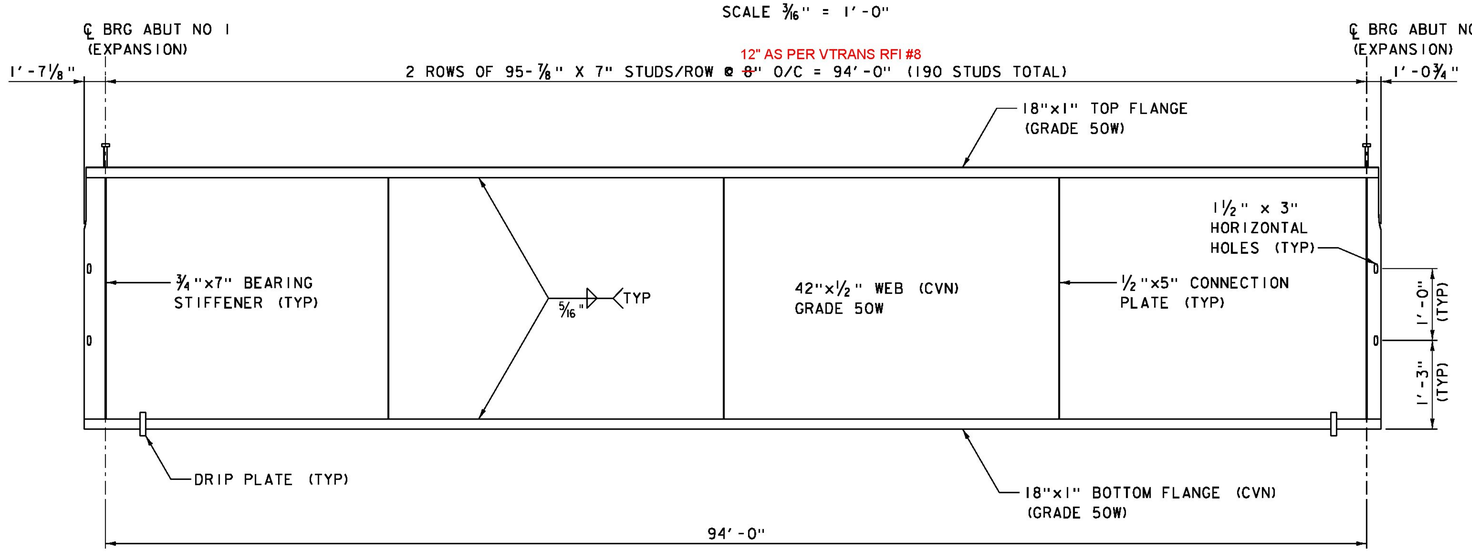
PLOT DATE: 9/22/2016
DRAWN BY: J.D. KEENER
CHECKED BY: R.H. BARNES
SHEET 29 OF 62

VHB 57737.00



FRAMING PLAN

SCALE 3/16" = 1'-0"

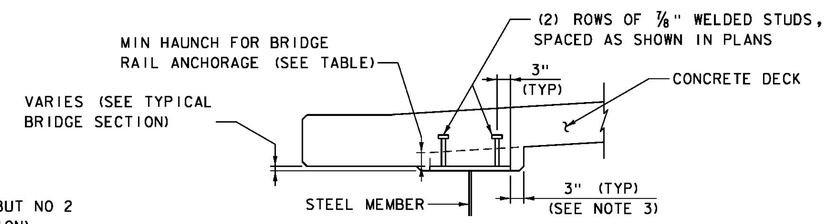


TYPICAL GIRDER ELEVATION

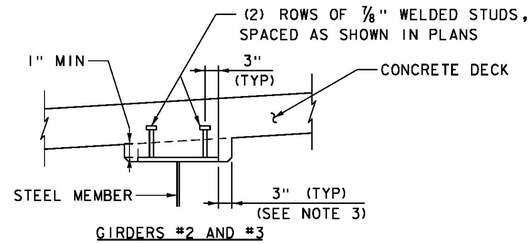
HORIZONTAL SCALE 3/16" = 1'-0"
VERTICAL NOT TO SCALE

NOTES:

1. CVN DENOTES THAT CHARPY V-NOTCH TEST IS REQUIRED.
2. TWO ROWS OF 7/8" DIA. WELDED STUD CONNECTORS AT 8". SEE HAUNCH AND SHEAR CONNECTOR DETAIL, THIS SHEET.
3. THE 3" HORIZONTAL SECTION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR THE CONSTRUCTION OF VERTICAL HAUNCHES. ANY VOIDS RESULTING FROM FORMING SYSTEM ELEMENTS SHALL BE FILLED WITH JOINT SEALER, POLYURETHANE MEETING THE REQUIREMENTS OF SECTION 524. THE COST OF THE JOINT SEALER, POLYURETHANE WILL BE INCIDENTAL TO THE ADJACENT CONCRETE.



GIRDERS #1 AND #4
(GIRDER #1 SHOWN, GIRDER #4 SIMILAR)



GIRDERS #2 AND #3

	MINIMUM HAUNCH	
	AT ABUTMENTS	AT MIDSPAN
GIRDER #1	3 1/8"	2 1/2"
GIRDER #4	1 5/8"	1"

HAUNCH AND SHEAR CONNECTOR DETAILS

NOT TO SCALE

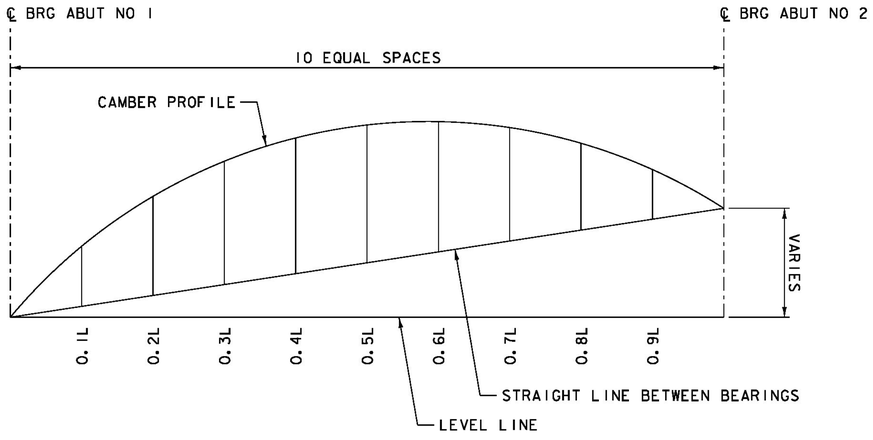
PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

FILE NAME: zl3j080sup.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: J.D. KEENER
FRAMING PLAN

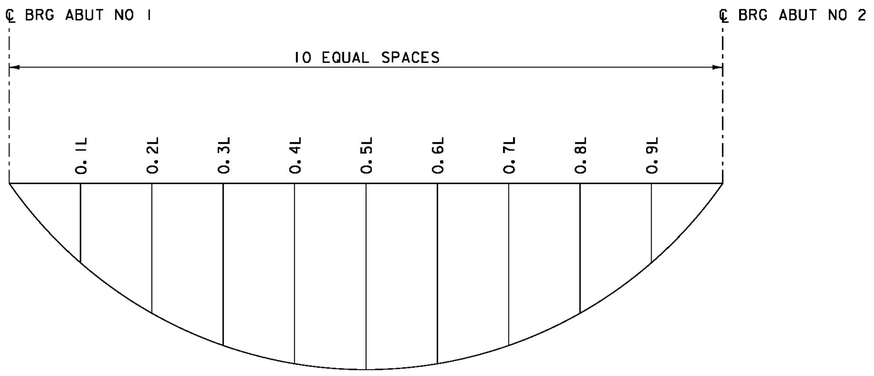
PLOT DATE: 9/22/2016
DRAWN BY: R.H. BARNES
CHECKED BY: S.E. BURBANK
SHEET 30 OF 62

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		CAMBER TABLE @ 1/10 POINTS (INCHES)										
	POINT ON GIRDER	℄ BRG. ABUT #1	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	℄ BRG. ABUT #2
GIRDER 1 - 4	STEEL DL	0.00	0.20	0.38	0.53	0.62	0.65	0.62	0.53	0.38	0.20	0.00
	CONCRETE SLAB	0.00	0.96	1.82	2.49	2.91	3.06	2.91	2.49	1.82	0.96	0.00
	SUPERIMPOSED DL	0.00	0.14	0.26	0.35	0.41	0.43	0.41	0.35	0.26	0.14	0.00
	TOTAL DEFLECTION	0.00	1.30	2.46	3.36	3.94	4.14	3.94	3.36	2.46	1.30	0.00
	RESIDUAL CAMBER	0.00	-0.96	-1.72	-2.24	-2.57	-2.68	-2.57	-2.24	-1.72	-0.96	0.00
	TOTAL CAMBER	0.00	0.34	0.74	1.12	1.37	1.46	1.37	1.12	0.74	0.34	0.00



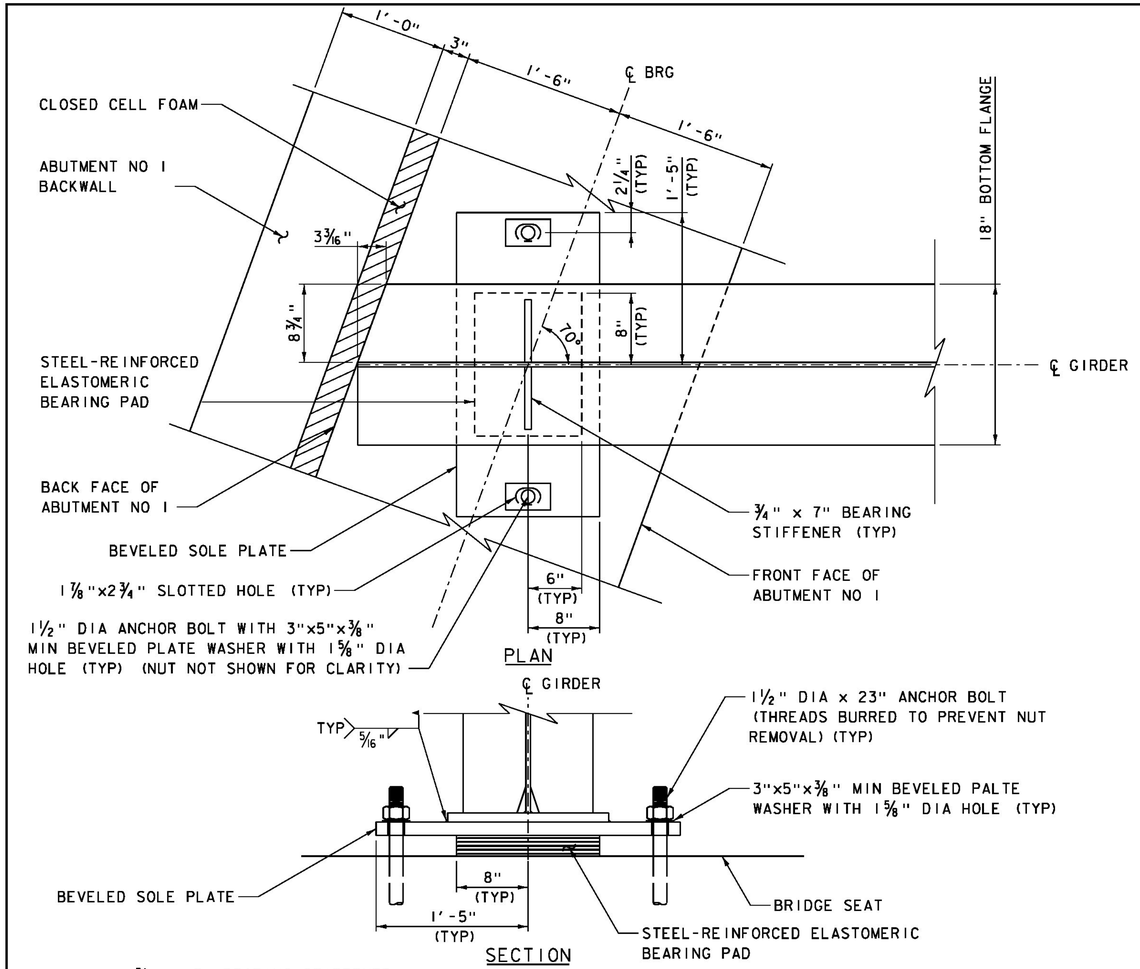
CAMBER DIAGRAM



DEFLECTION DIAGRAM

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)

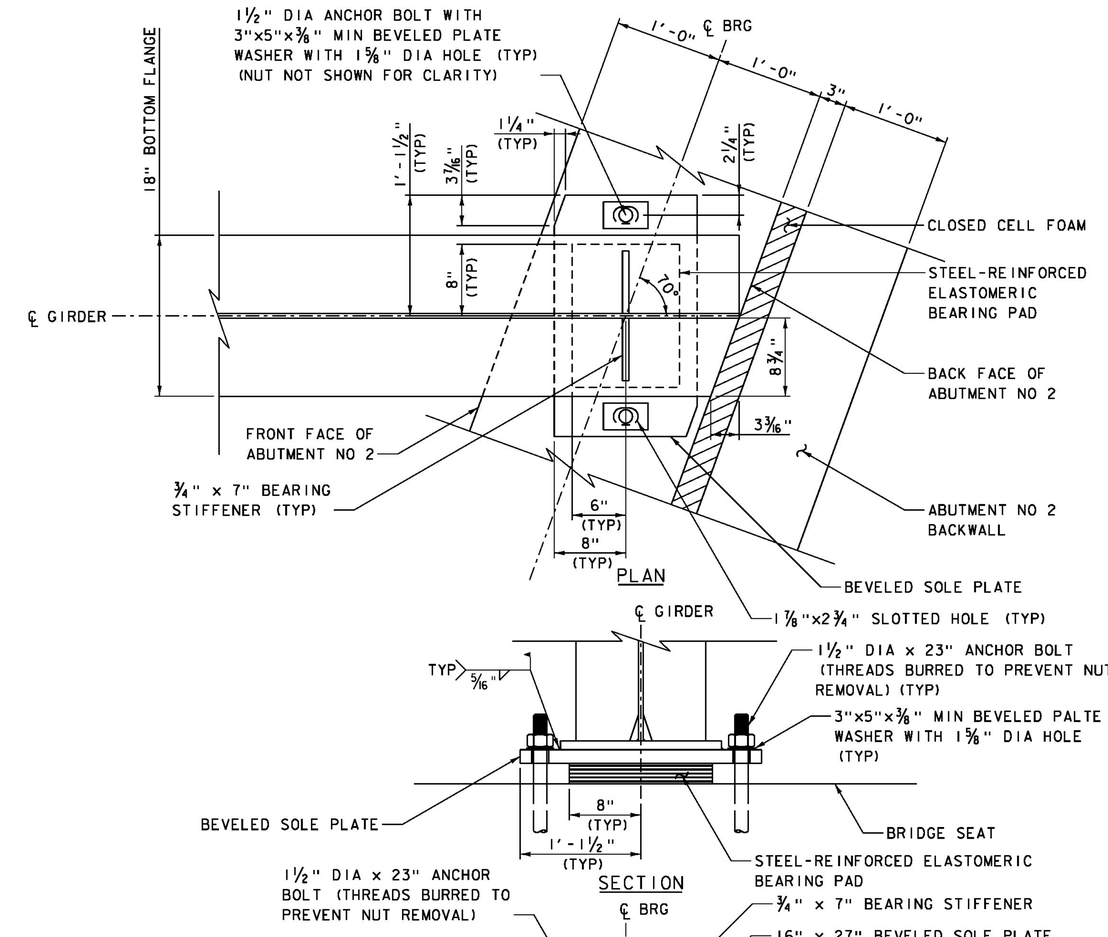
FILE NAME: z13J080sup.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: R.H. BARNES
DESIGNED BY: R.H. BARNES	CHECKED BY: S.E. BURBANK
CAMBER AND DEFLECTION	SHEET 31 OF 62



ABUTMENT NO 1 - EXPANSION BEARING DETAILS

SCALE 1 1/2" = 1'-0"

NOTE: SEE BEARING DETAILS (2 OF 2) FOR ELASTOMERIC BEARING NOTES AND STEEL-REINFORCED ELASTOMERIC BEARING PAD DETAILS.

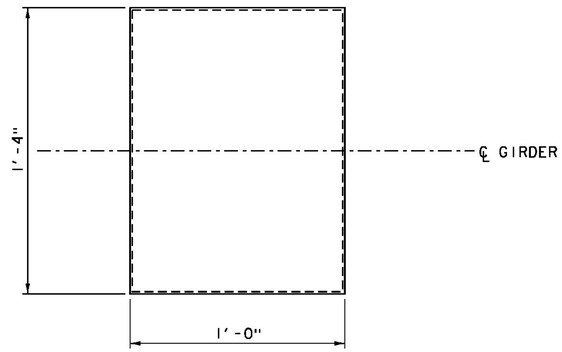


ABUTMENT NO 2 - EXPANSION BEARING DETAILS

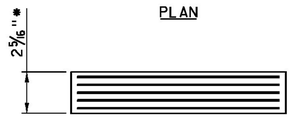
SCALE 1 1/2" = 1'-0"

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: zl3J080brg.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: R.H. BARNES
DESIGNED BY: R.H. BARNES	CHECKED BY: S.E. BURBANK
BEARING DETAILS (1 OF 2)	SHEET 32 OF 62

VHB 57737.00



PLAN



SECTION

* 2 - 1/4" EXTERIOR LAYERS OF ELASTOMER
4 - 3/8" INTERIOR LAYERS OF ELASTOMER
5 - 1/16" STEEL REINFORCING PLATES

ELASTOMERIC BEARING DETAIL

SCALE 3" = 1'-0"

ELASTOMERIC BEARING NOTES

1. BEARINGS SHALL CONFORM TO THE APPLICABLE SUBSECTIONS OF STANDARD SPECIFICATIONS SECTIONS 531 AND 731.
2. ALL STEEL IN BEARING DEVICES SHALL BE AASHTO M270M/M270 GRADE 36 AND SHALL BE GALVANIZED PER SUBSECTION 531.04(b).
3. ALL ANCHOR BOLTS SHALL BE EMBEDDED A MINIMUM OF 15" AND SHALL MEET THE REQUIREMENTS OF SUBSECTION 714.08.
4. ANCHOR BOLT NUTS SHALL BE HAND TIGHTENED AND BACKED OFF 1/8". THREADS SHALL BE BURRED ABOVE THE NUT TO PREVENT NUT REMOVAL.
5. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMER SHALL BE STEEL AASHTO M270M/M270 GRADE 36. ALL INTERNAL STEEL PLATES SHALL BE SAND BLASTED AND FREE OF COATINGS, RUST, AND MILL SCALE. THE PLATES SHALL BE FREE OF SHARP EDGES AND BURRS.
6. STEEL REINFORCED ELASTOMERIC BEARINGS SHALL HAVE A MINIMUM 1/8" EDGE SEAL OF ELASTOMER INTEGRAL WITH BEARING OVER ALL INTERNAL PLATES.
7. THE STEEL REINFORCED ELASTOMERIC BEARING PADS SHALL BE VULCANIZED TO THE STEEL SOLE PLATES. THE STEEL SURFACES TO BE BONDED TO THE PAD SHALL NOT BE METALIZED.
8. THE ELASTOMER WAS DESIGNED WITH A SHEAR MODULUS OF 130 PSI +/- 15%.
9. THE ELASTOMER SHALL MEET THE REQUIREMENTS OF LOW TEMPERATURE ZONE D, GRADE 4.
10. THE CONCRETE UNDER THE BEARING DEVICE SHALL BE LEVEL.
11. ALL DESIGNS DONE FOR THE BEARINGS SHALL BE PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS REFERENCED ON THE PROJECT NOTES SHEET.
12. ALTERNATE CONFIGURATIONS FOR BEARINGS MAY BE SUBMITTED FOR APPROVAL. ANY ALTERNATE SUBMITTED SHALL BE DESIGNED AND CERTIFIED TO MEET THE DESIGN LOADS AND CRITERIA SHOWN ON THE PLANS.
13. BRIDGE SEAT ELEVATIONS MAY BE REVISED TO ACCOMMODATE AN ALTERNATIVE CONFIGURATION.

DESIGN CRITERIA (SERVICE LIMIT STATE)

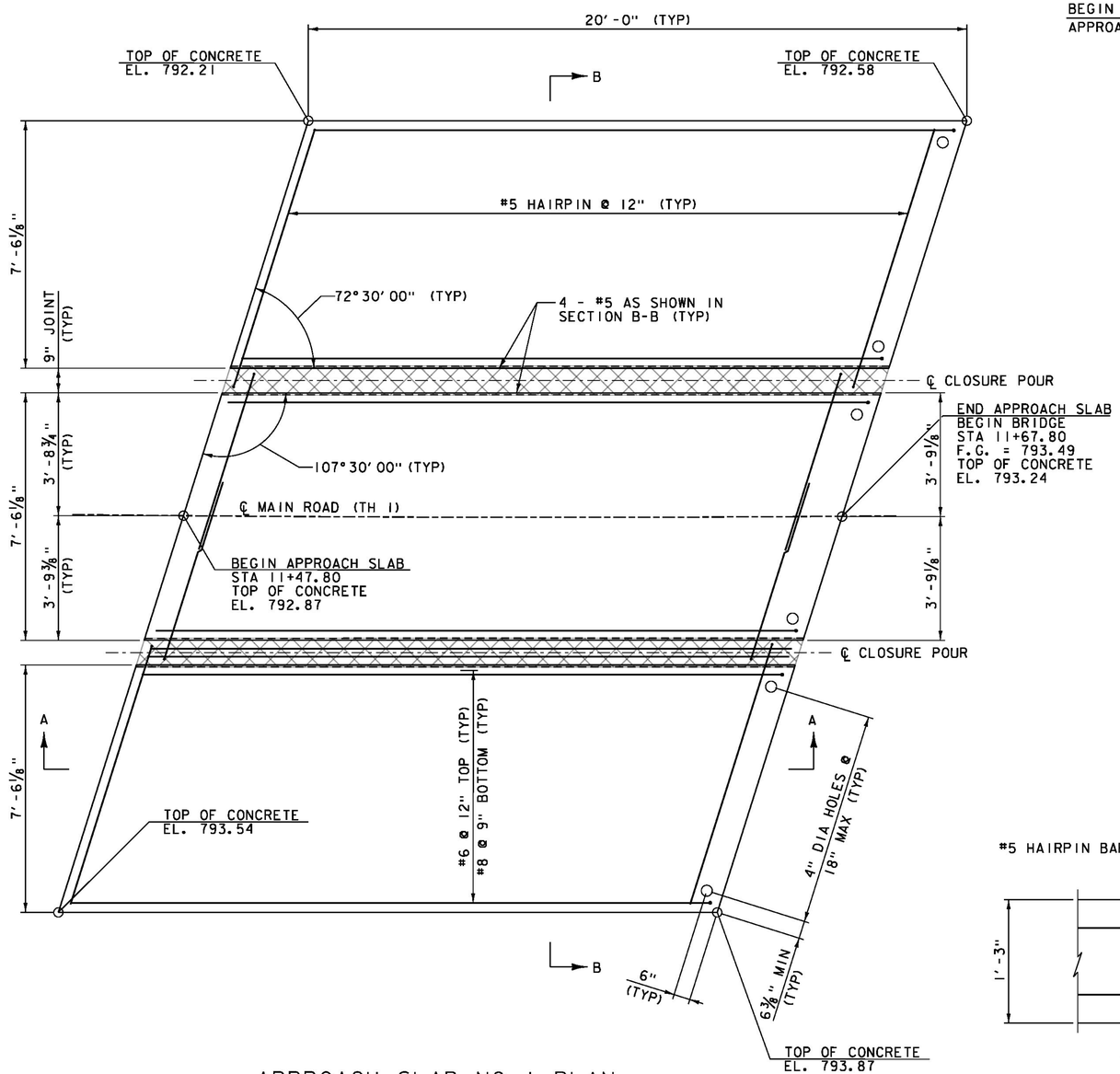
AASHTO METHOD A
DEAD LOAD = 62.7 KIPS
LIVE LOAD = 96.7 KIPS
LONGITUINDAL MOVEMENT = 0.30 IN. (ABUTMENT NO 1 & 2)

vhb

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

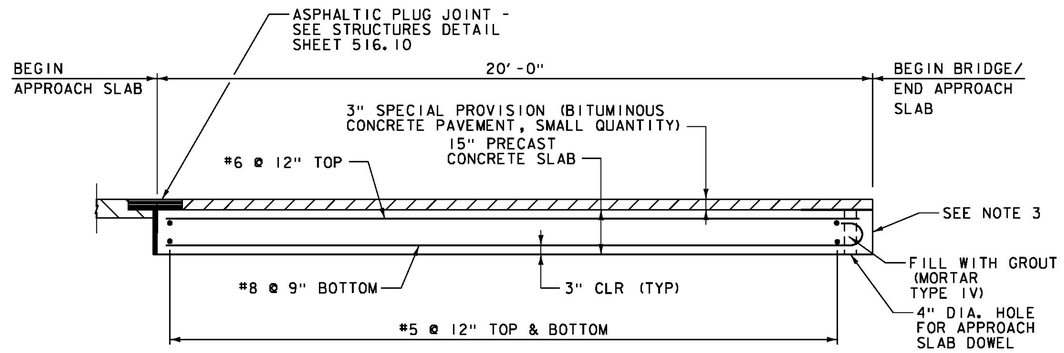
FILE NAME: z13J080brg.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: R.H. BARNES
BEARING DETAILS (2 OF 2)

PLOT DATE: 8/15/2016
DRAWN BY: R.H. BARNES
CHECKED BY: S.E. BURBANK
SHEET 33 OF 62



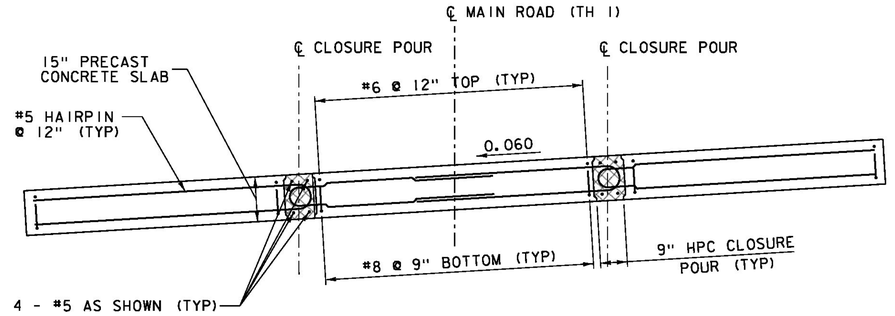
APPROACH SLAB NO 1 PLAN

SCALE ½" = 1'-0"



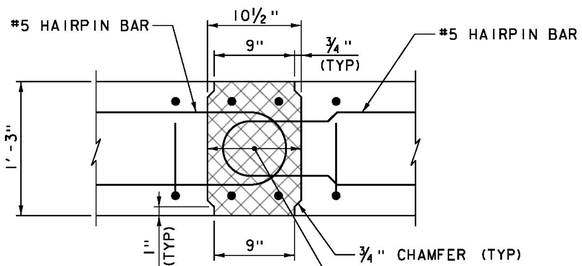
SECTION A-A

SCALE ½" = 1'-0"



SECTION B-B

SCALE ½" = 1'-0"



JOINT DETAIL

SCALE 1½"=1'-0"

LIMITS OF SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ) CLOSURE POUR

NOTES:

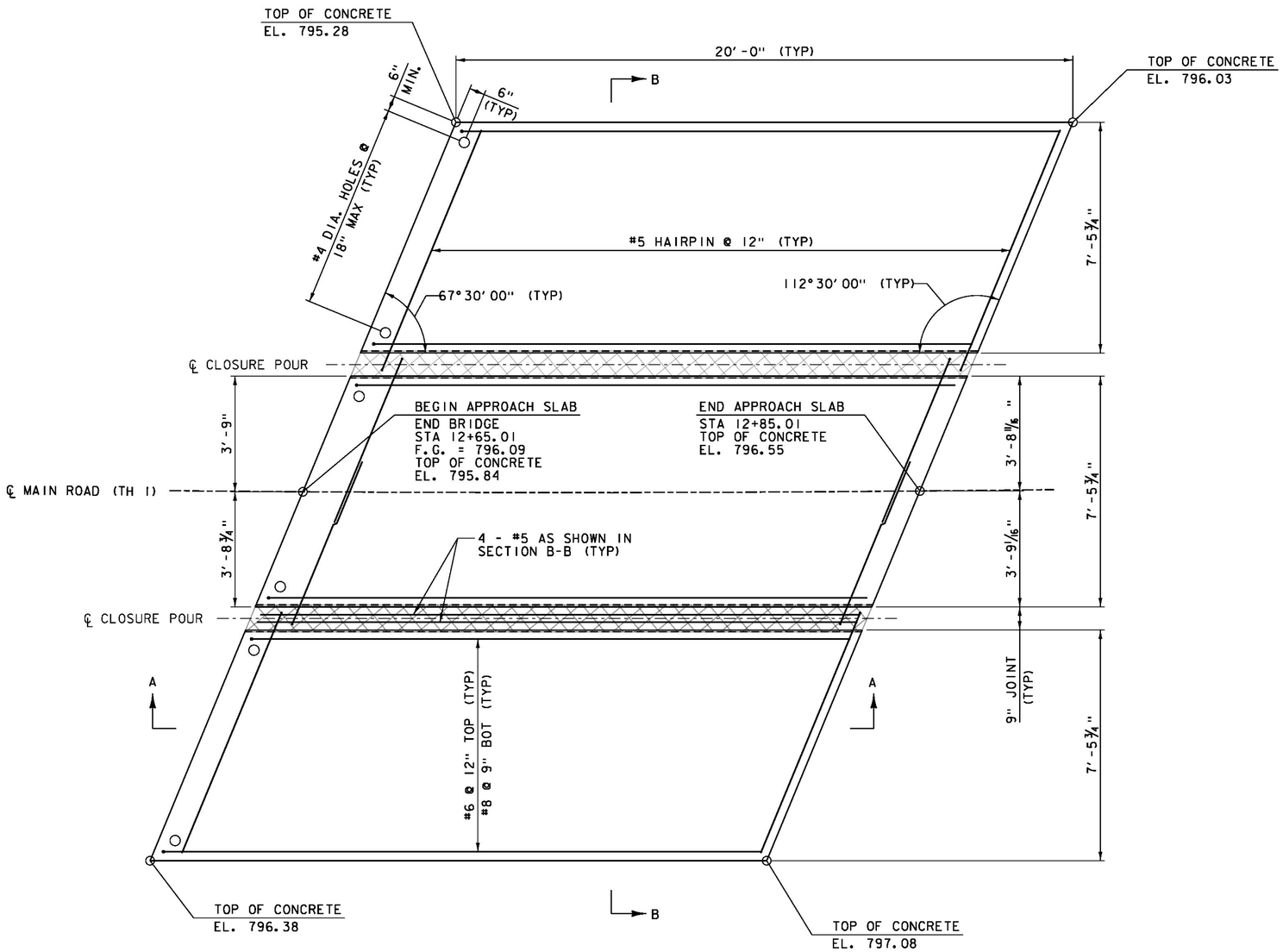
1. LIFTING POINTS IN APPROACH SLABS TO BE DESIGNED BY PRECASTER AND SUBMITTED WITH CALCULATIONS.
2. CONTRACTOR SHALL INCLUDE IN THE FABRICATION DRAWINGS THE METHOD AND DETAILS FOR ESTABLISHING CONTINUOUS CONTACT WITH SUBGRADE AND SUPPORT FOR PRECAST APPROACH SLABS.
3. FRONT FACE OF APPROACH SLAB SHALL BE VERTICAL WHEN PLACED ON APPROACH SLAB SEAT.

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080slab.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: R.H. BARNES
DESIGNED BY: R.H. BARNES	CHECKED BY: S.E. BURBANK
PRECAST APPROACH SLAB DETAILS (1OF 2)	SHEET 34 OF 62

VHB 57737.00



APPROACH SLAB NO 2 PLAN

SCALE ½" = 1'-0"

LIMITS OF SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ) CLOSURE POUR

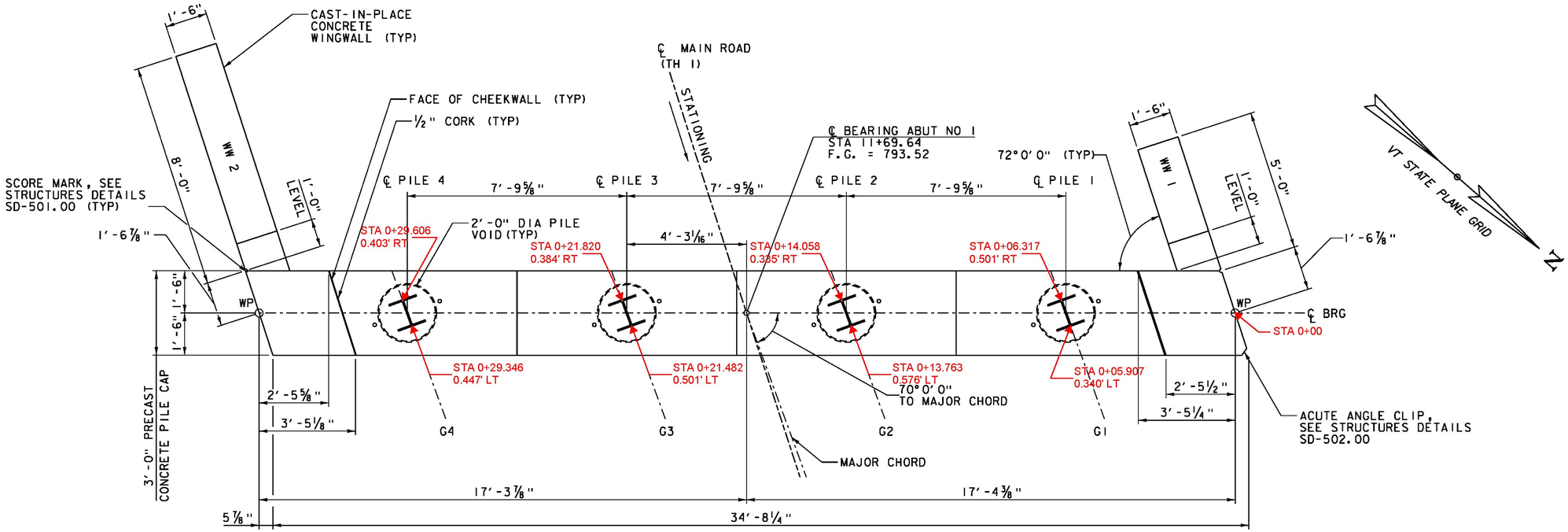
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

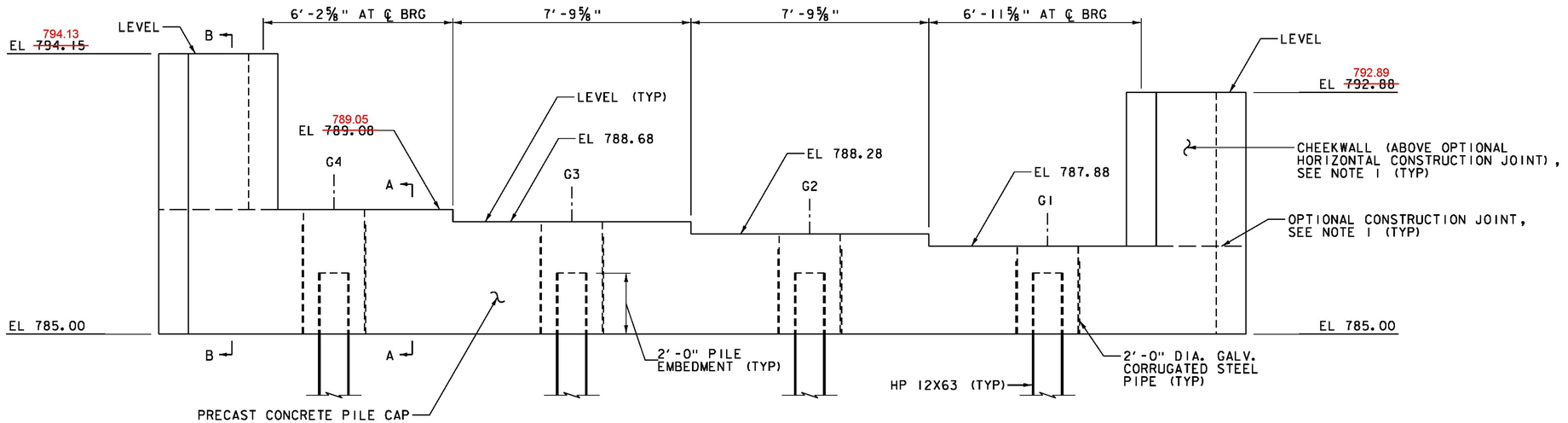
NOTE:

1. SEE "PRECAST APPROACH SLAB DETAILS (1 OF 2)" SHEET FOR NOTES AND SECTIONS A-A AND B-B.

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080slab.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: R.H. BARNES
DESIGNED BY: R.H. BARNES	CHECKED BY: S.E. BURBANK
PRECAST APPROACH SLAB DETAILS (2 OF 2)	SHEET 35 OF 62



ABUTMENT NO 1 PLAN
SCALE ½"=1'-0"



ABUTMENT NO 1 ELEVATION
SCALE ½"=1'-0"

NOTES:

1. THE CONTRACTOR HAS THE OPTION FOR PRECAST OR CAST-IN-PLACE CONCRETE CHEEKWALLS ABOVE THE HORIZONTAL CONSTRUCTION JOINT (IF USED). PAYMENT WILL BE INCLUDED UNDER THE APPROPRIATE PRECAST CONCRETE ITEM. SEE PROJECT NOTES FOR DETAILS.
2. SEE ABUTMENT NO 1 SECTIONS SHEET FOR SECTIONS A-A AND B-B.

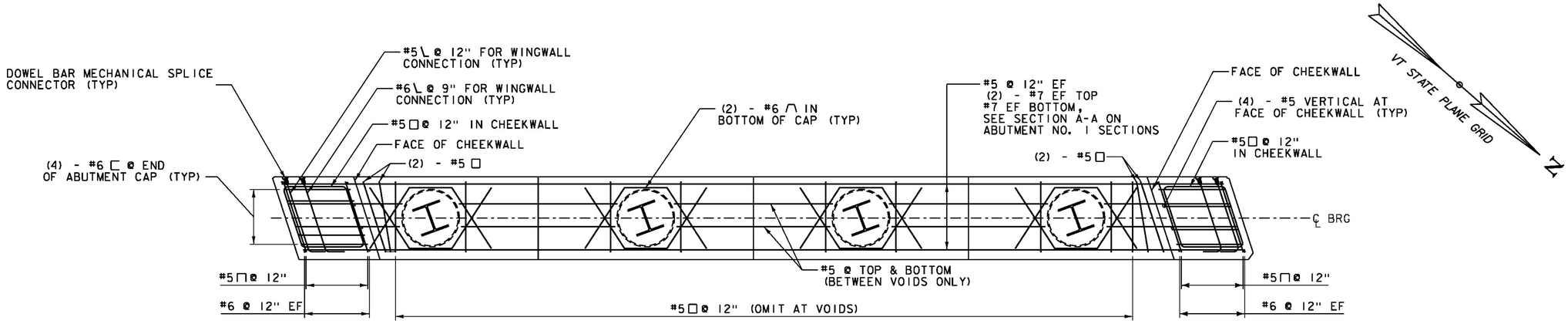
vhb

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

FILE NAME: z13J080subl.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: R.H. BARNES
ABUTMENT NO 1 PLAN & ELEVATION

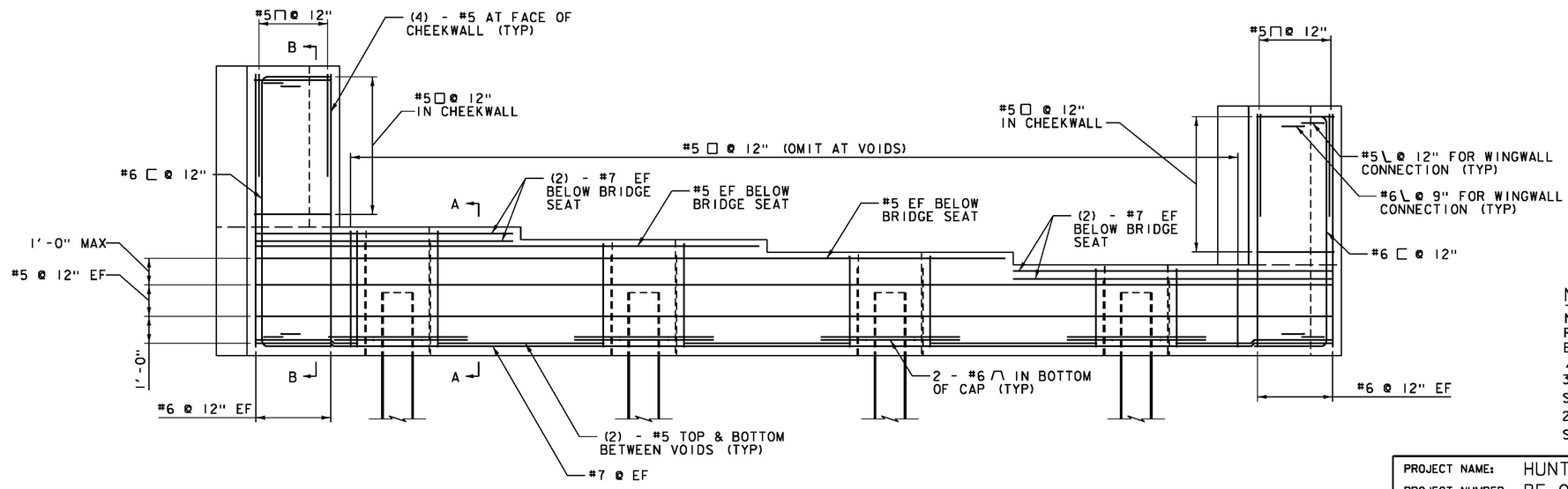
PLOT DATE: 8/15/2016
DRAWN BY: J.D. KEENER
CHECKED BY: R.H. BARNES
SHEET 36 OF 62

VHB 57737.00



ABUTMENT NO 1 PLAN

SCALE ½"=1'-0"



ABUTMENT NO 1 ELEVATION

SCALE ½"=1'-0"

NOTE:

1. SEE ABUTMENT NO 1 SECTIONS SHEET FOR SECTIONS A-A AND B-B.

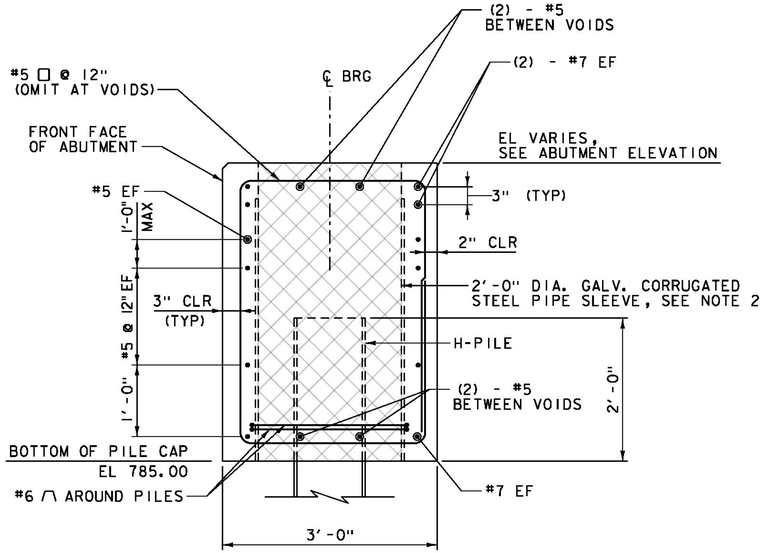
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

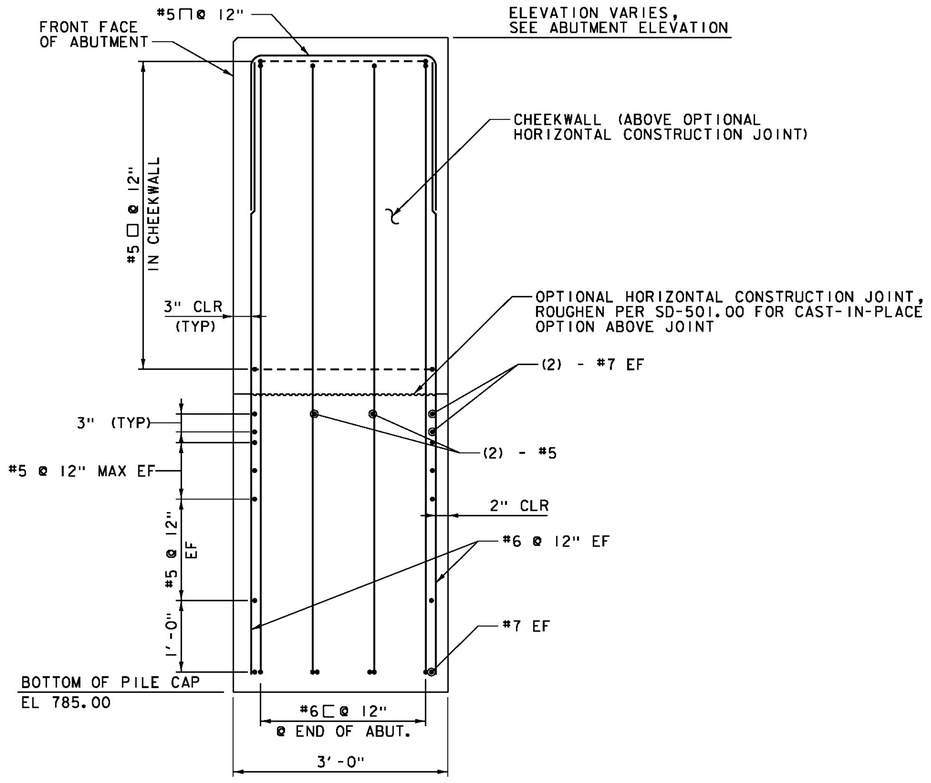
PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)

FILE NAME: z13J080subl.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: R.H. BARNES	CHECKED BY: R.H. BARNES
ABUTMENT NO 1 REINFORCING	SHEET 37 OF 62

VHB 57737.00



SECTION A-A
SCALE 1"=1'-0"



SECTION B-B
SCALE 1"=1'-0"

NOTES:

1. ABUTMENTS SHALL BE PRECAST CONCRETE ACCORDING TO THE APPROPRIATE PRECAST ITEM.
2. USE GALVANIZED STEEL PIPE THAT CONFORMS TO SUBSECTION 711.01 FOR PILE AND STEM VOIDS. FORM TOP 6" WITH REMOVABLE FORM TO ELIMINATE EXPOSED CORRUGATED STEEL ON THE TOP OF THE BRIDGE SEAT AND TOP OF WINGWALL. AT THE ABUTMENT NO. 2 BRIDGE SEATS, FORM TOP 18" WITH REMOVABLE FORM TO ALLOW DRILLING AND GROUTING ANCHOR BOLTS.
3. SEE PROJECT NOTES FOR ADDITIONAL FABRICATION, CONSTRUCTION, AND SEQUENCE NOTES.

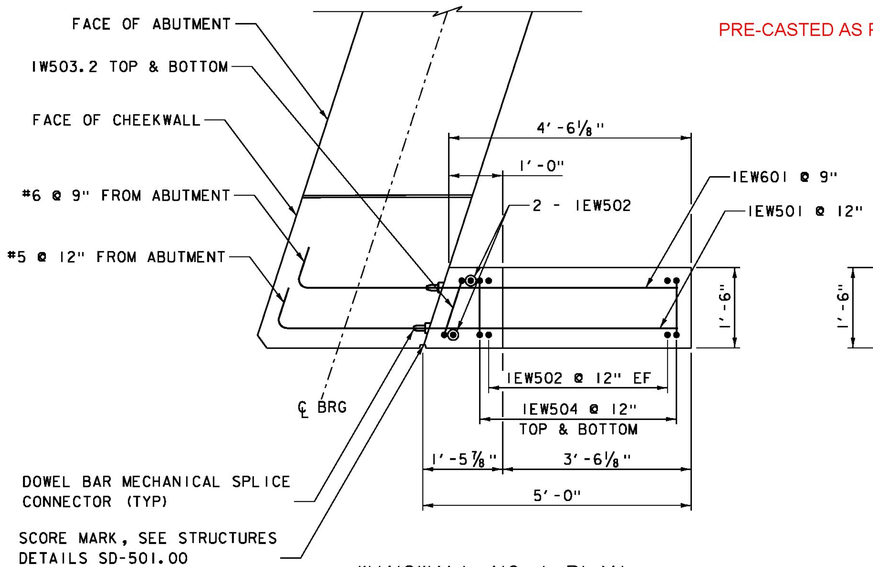
LIMITS OF SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ) CLOSURE POUR

NOTE:
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

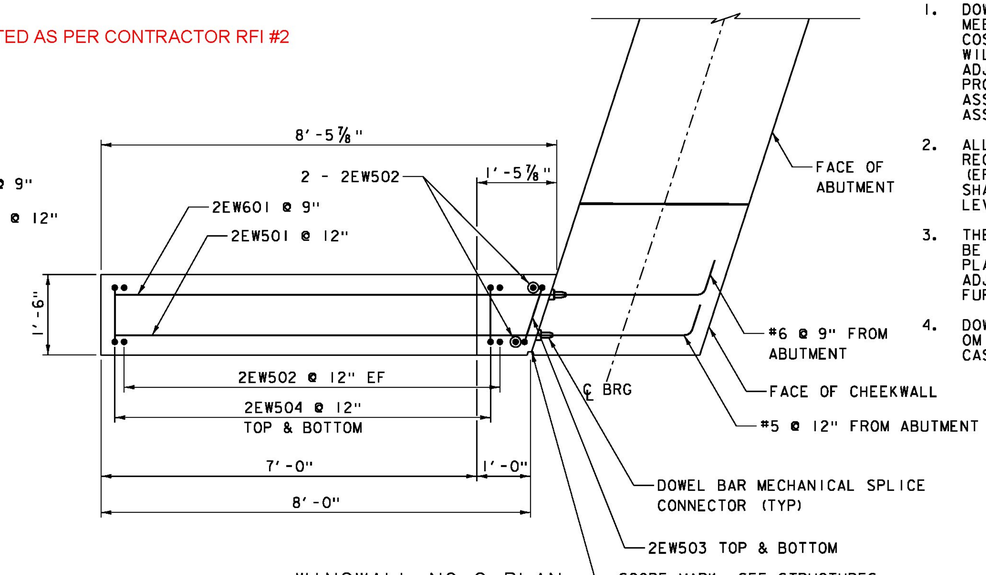
vhb

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080subI.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: R.H. BARNES	CHECKED BY: R.H. BARNES
ABUTMENT NO 1 SECTIONS	SHEET 38 OF 62

PRE-CASTED AS PER CONTRACTOR RFI #2



WINGWALL NO 1 PLAN
SCALE 3/4"=1'-0"



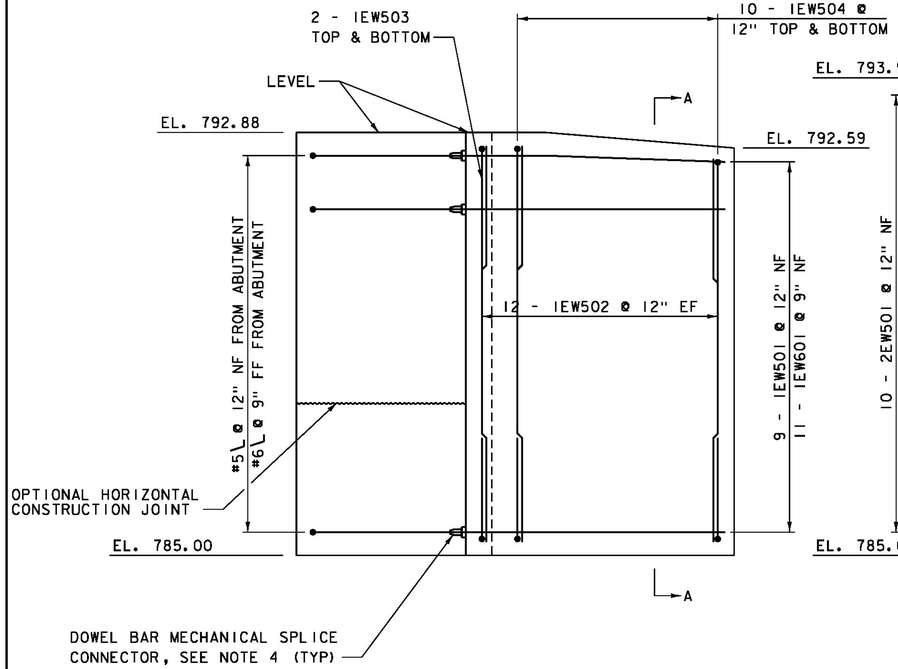
WINGWALL NO 2 PLAN
SCALE 3/4"=1'-0"

NOTES:

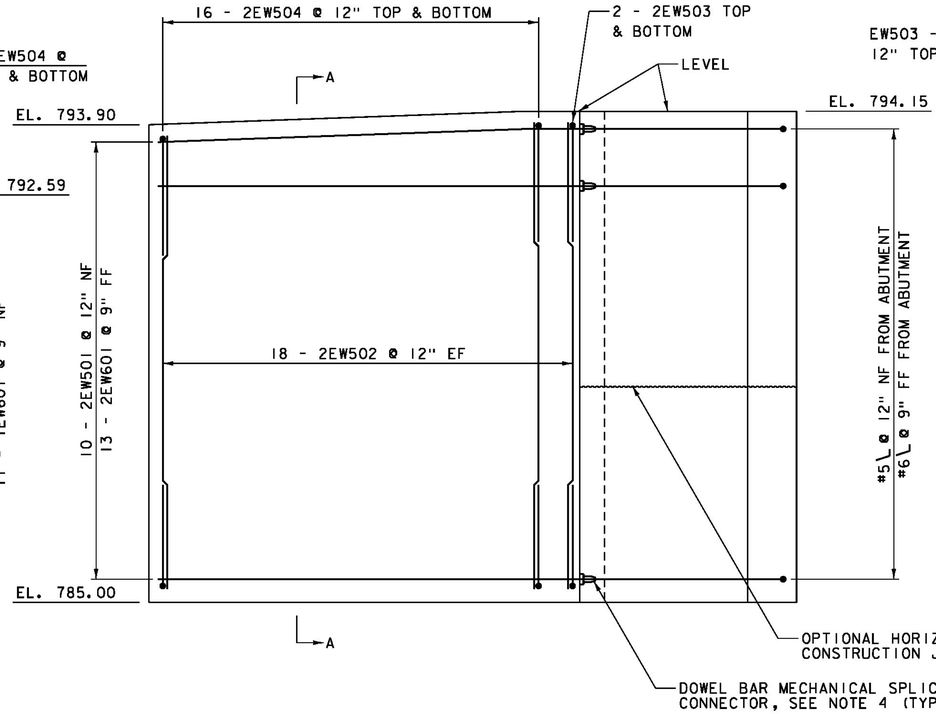
1. DOWEL BAR MECHANICAL SPLICE CONNECTORS SHALL MEET THE REQUIREMENTS OF SUBSECTION 713.02. THE COST FOR DOWEL BAR MECHANICAL SPLICE CONNECTORS WILL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE ADJACENT PRECAST ITEM. THE CONTRACTOR SHALL PROVIDE THREE (3) MECHANICAL CONNECTORS ASSEMBLED PER SPLICE SIZE FOR TESTING. THE ASSEMBLY SHALL BE WITNESSED BY THE ENGINEER.
2. ALL REINFORCING STEEL IN WINGWALLS SHALL MEET REQUIREMENTS OF SECTION 507 FOR LEVEL 1 (EPOXY) REINFORCING. ALL MECHANICAL CONNECTORS SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR LEVEL 1 (EPOXY COATED) REINFORCING.
3. THE BRIDGE PLAQUE FURNISHED BY THE AGENCY SHALL BE CAST INTO WINGWALL 2. ALL WORK TO INSTALL THE PLAQUE SHALL BE INCIDENTAL TO THE APPROPRIATE ADJACENT CONCRETE ITEM. SEE SD-502.00 FOR FURTHER DETAILS.
4. DOWEL BAR MECHANICAL SPLICE CONNECTORS SHALL BE OMITTED ABOVE THE CONSTRUCTION JOINT WITH THE CAST-IN-PLACE CHEEKWALL OPTION.

NOTE:

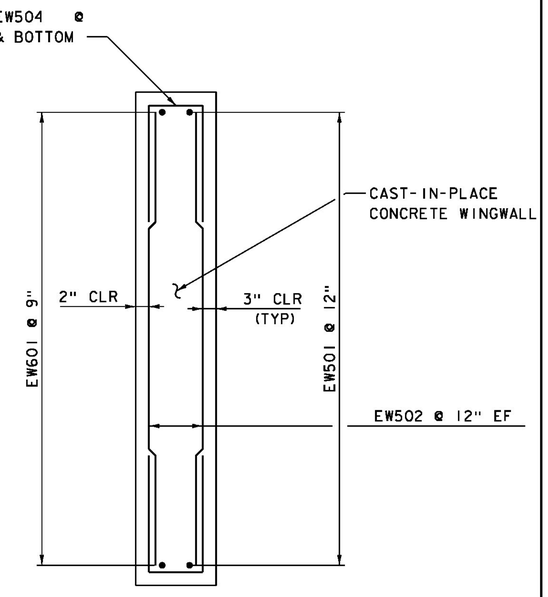
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.



WINGWALL NO 1 ELEVATION
SCALE 3/4"=1'-0"



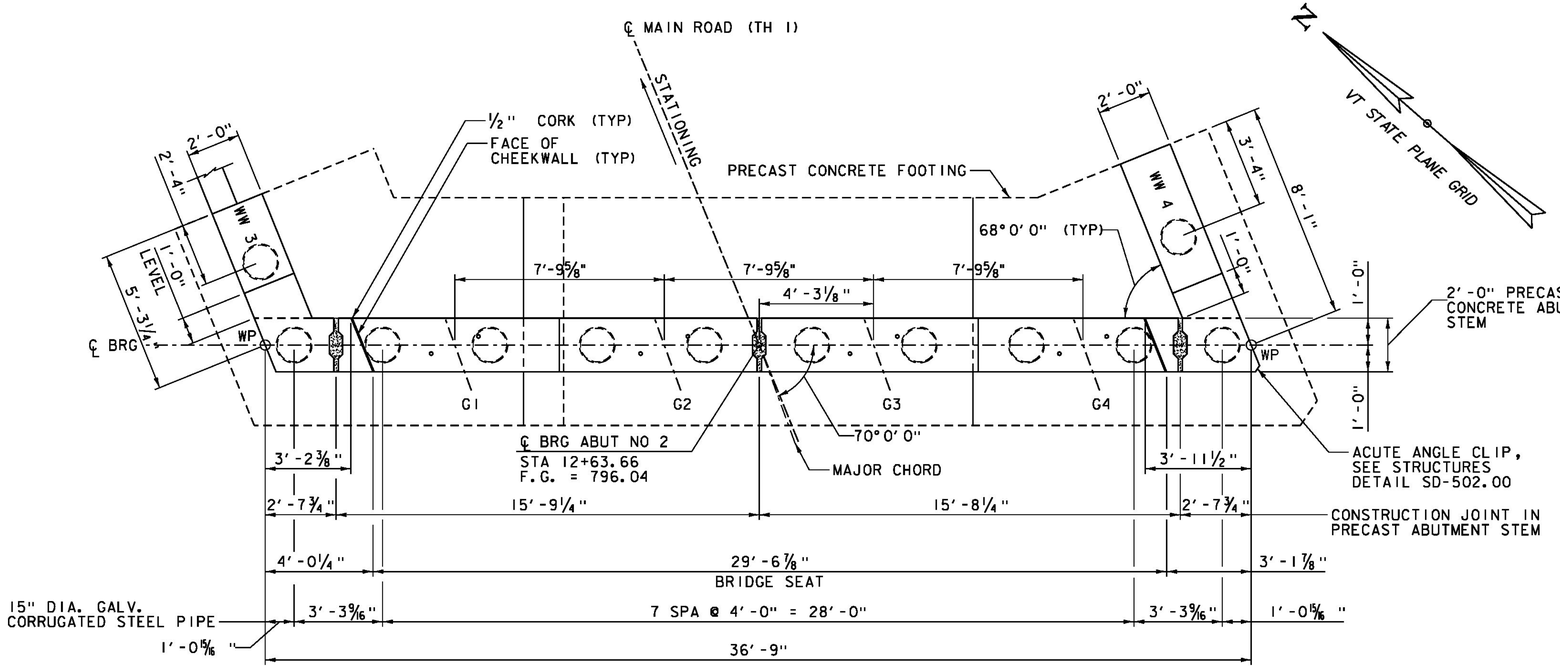
WINGWALL NO 2 ELEVATION
SCALE 3/4"=1'-0"



SECTION A-A
SCALE 3/4"=1'-0"

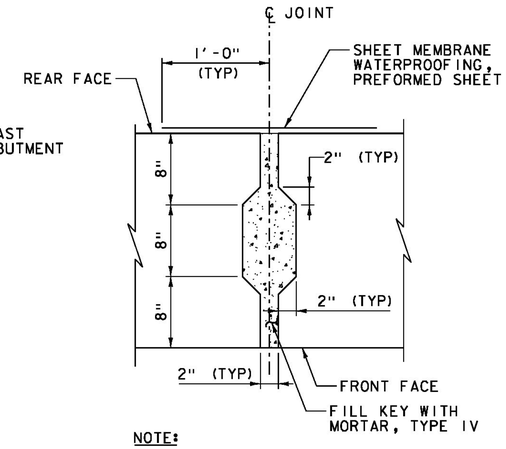
PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080subl.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: R.H. BARNES	CHECKED BY: R.H. BARNES
ABUTMENT NO 1 WINGWALL DETAILS	SHEET 39 OF 62

VHB 57737



ABUTMENT NO 2 PLAN

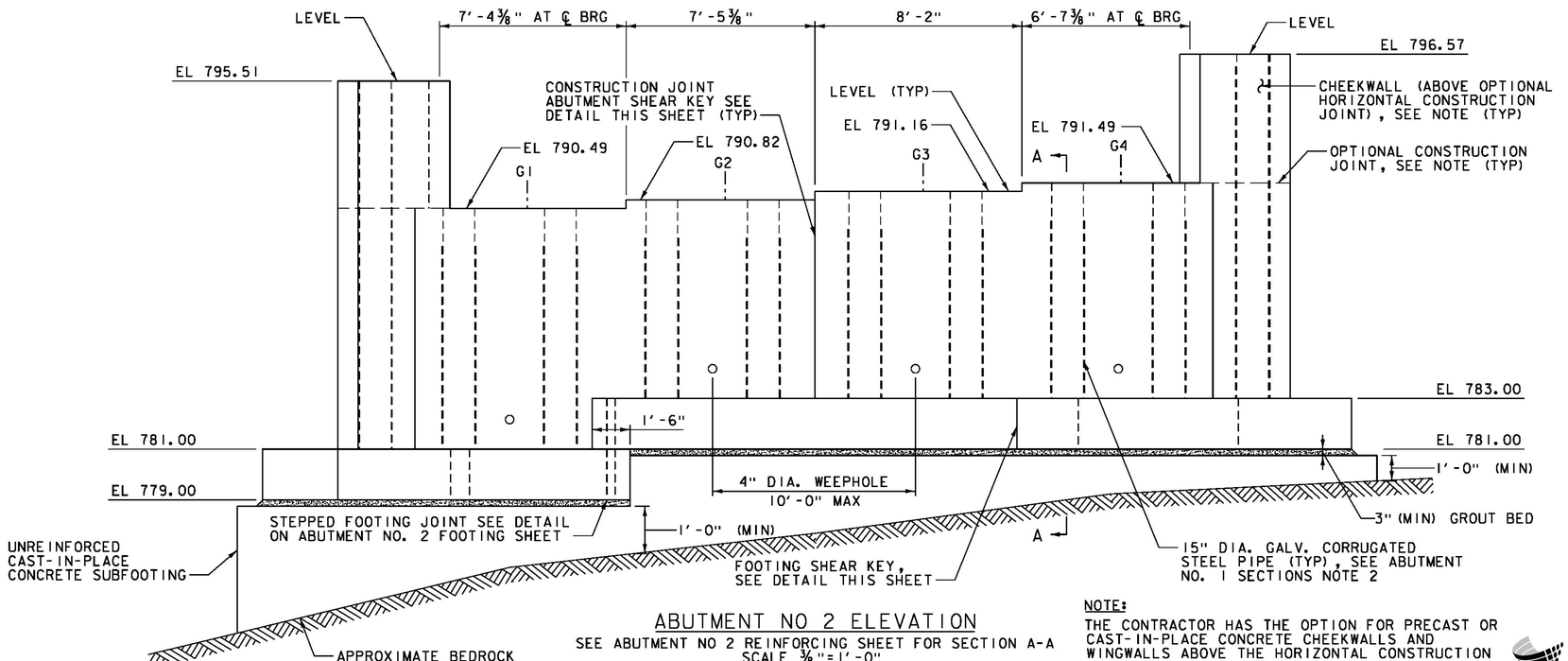
SCALE ⅜"=1'-0"



NOTE:
CONTRACTOR TO FORM JOINT TO SUPPORT WET GROUT

ABUTMENT SHEAR KEY PLAN VIEW

SCALE 1½"=1'-0"

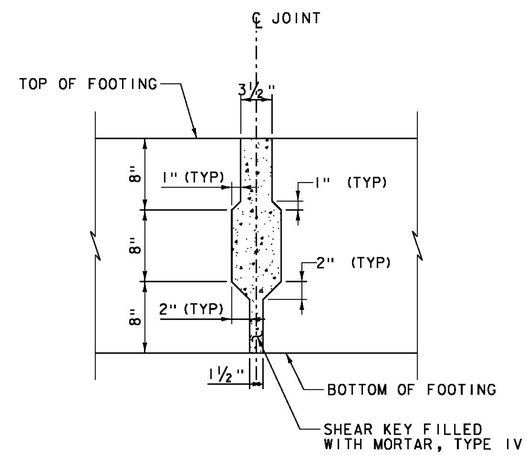


ABUTMENT NO 2 ELEVATION

SEE ABUTMENT NO 2 REINFORCING SHEET FOR SECTION A-A

SCALE ⅜"=1'-0"

NOTE:
THE CONTRACTOR HAS THE OPTION FOR PRECAST OR CAST-IN-PLACE CONCRETE CHEEKWALLS AND WINGWALLS ABOVE THE HORIZONTAL CONSTRUCTION JOINT (IF USED). PAYMENT WILL BE INCLUDED UNDER THE APPROPRIATE PRECAST CONCRETE ITEM. SEE PROJECT NOTES FOR DETAILS.



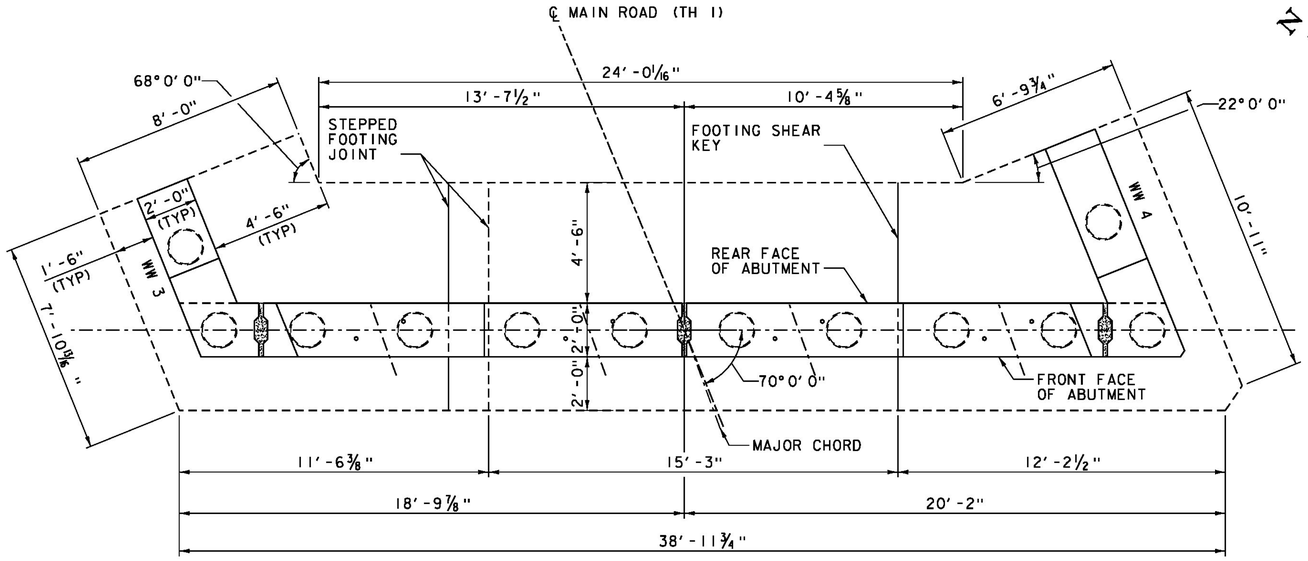
NOTE:
CONTRACTOR TO DESIGN FORM JOINT TO RETAIN KEY GROUT ON BOTH FACES OF THE ELEMENT

FOOTING SHEAR KEY ELEVATION VIEW

SCALE 1½"=1'-0"

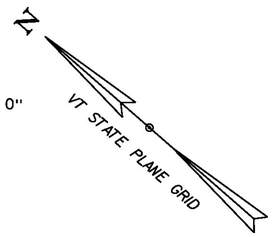
vhb

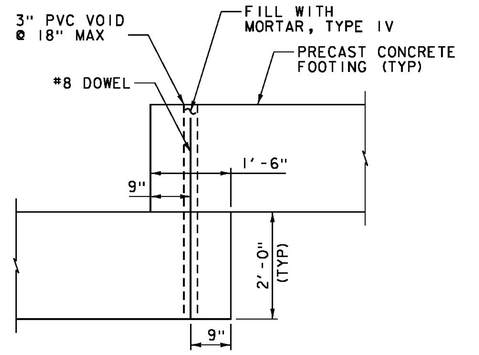
PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13080sub2.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: R.H. BARNES	CHECKED BY: R.H. BARNES
ABUTMENT NO 2 PLAN & ELEVATION	SHEET 40 OF 62



ABUTMENT NO 2 FOOTING MASONRY PLAN

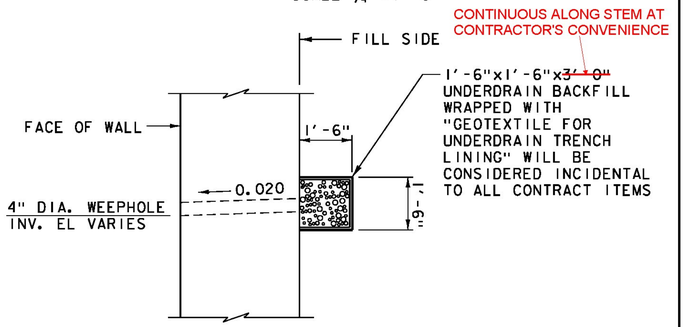
SCALE 3/8"=1'-0"





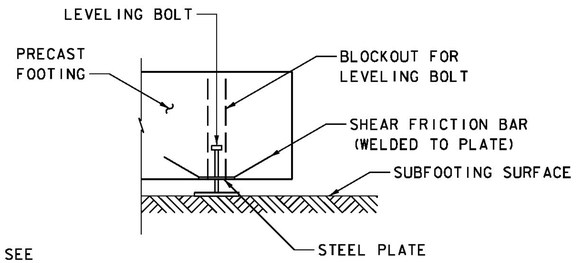
STEPPED FOOTING DETAIL

SCALE 3/4"=1'-0"



TYPICAL WEEPHOLE DETAIL

NOT TO SCALE

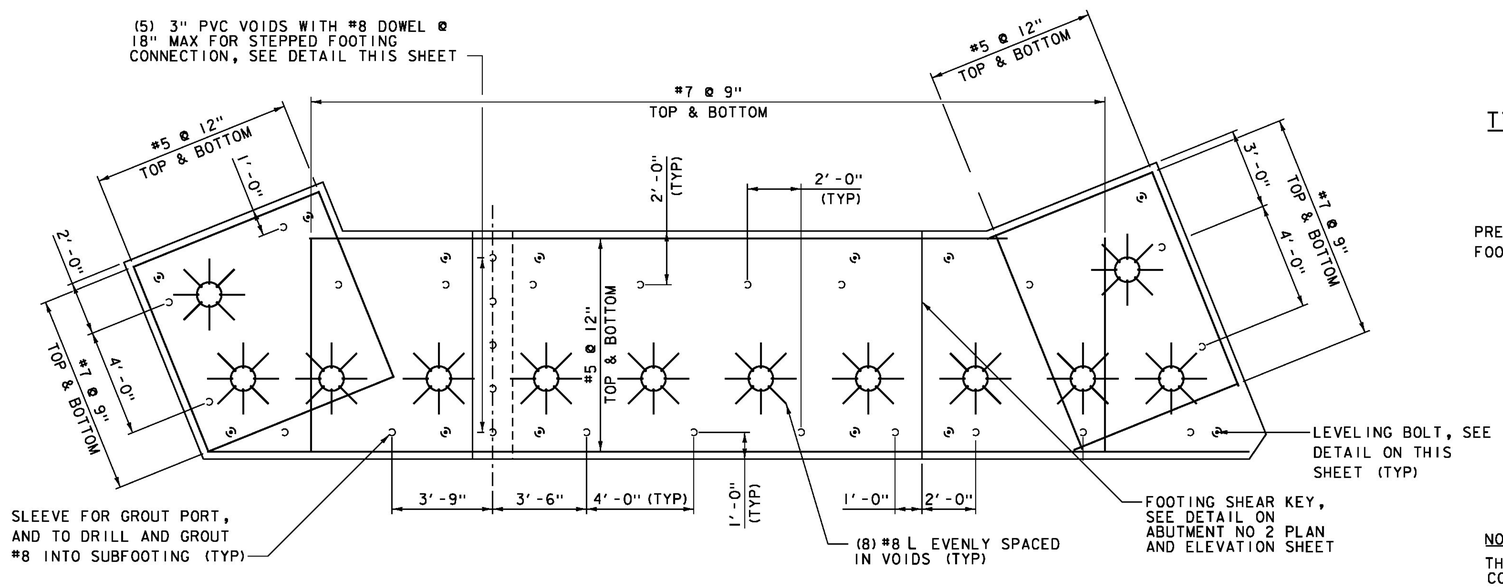


LEVELING BOLT DETAIL

SCALE 3/4" = 1'-0"

NOTE:

THE LEVELING BOLT DETAIL SHOWN IS CONCEPTUAL. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND DETAILING OF THE LEVELING DEVICE BASED ON THE WEIGHT OF THE PRECAST UNIT AND THE NUMBER OF DEVICES.



ABUTMENT NO 2 FOOTING REINFORCING PLAN

SCALE 3/8"=1'-0"

NOTE:

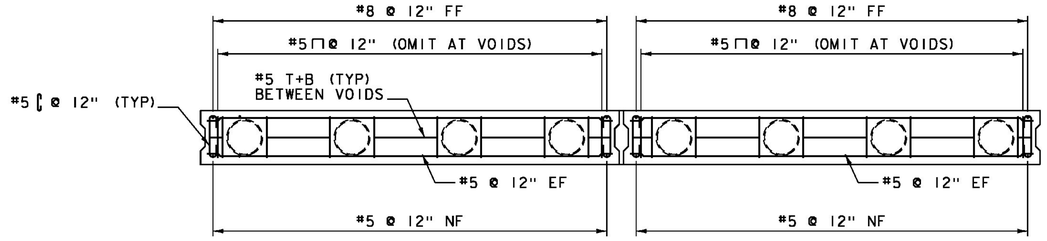
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080sub2.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: R.H. BARNES	CHECKED BY: R.H. BARNES
ABUTMENT NO 2 FOOTING	SHEET 41 OF 62

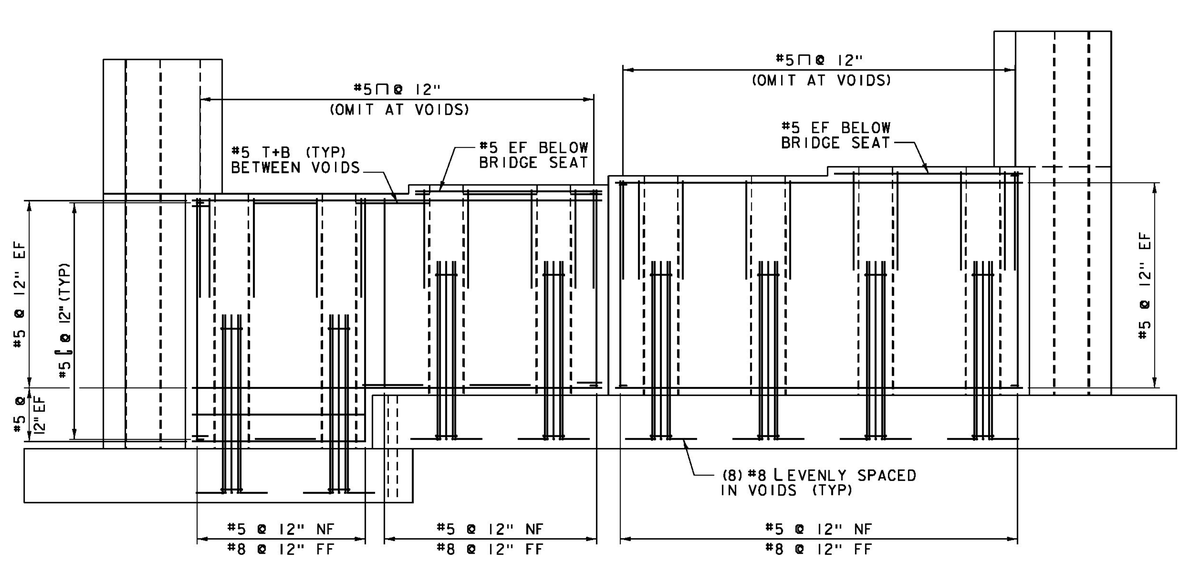
VHB 57737.00

NOTES:

1. PLASTIC SHIMS SHALL BE CAPABLE OF SUPPORTING THE WEIGHT OF THE PRECAST UNITS AND SPACED AS REQUIRED BETWEEN THE CORRUGATED STEEL PIPE VOIDS TO PROVIDE A 1" MINIMUM GAP TO ALLOW FOR THE PLACEMENT OF 1" OF MORTAR, TYPE IV. SHIMS SHALL ALSO ALLOW FOR FINAL GRADE ADJUSTMENTS AS NECESSARY. MORTAR, TYPE IV SHALL HAVE REACHED ITS FINAL SET PRIOR TO FILLING THE CORRUGATED PIPE VOIDS WITH HIGH PERFORMANCE CONCRETE, RAPID SET.
2. MECHANICAL CONNECTORS MAY BE USED BY THE FABRICATOR FOR THE REINFORCING THAT PROJECTS FROM THE FOOTING INTO THE STEM. IF MECHANICAL CONNECTORS ARE USED , THEY SHALL BE KEPT CLEAN OF DIRT AND DEBRIS UNTIL PLACEMENT OF REINFORCING. PAYMENT FOR MECHANICAL CONNECTORS, IF USED, SHALL BE CONSIDERED INCIDENTAL TO THE APPLICABLE PRECAST ITEM.
3. LEVELING BOLTS ALONG THE TOE TO BE LOCATED BETWEEN GROUT PORTS.
4. WINGWALL REINFORCING NOT SHOWN IN ELEVATION FOR CLARITY.



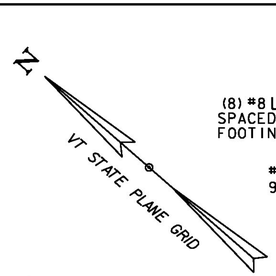
ABUTMENT NO 2 STEM REINFORCING PLAN
SCALE 3/8"=1'-0"

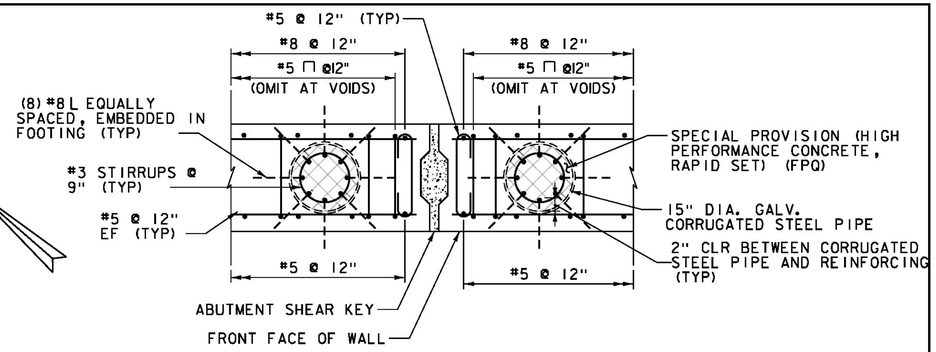


ABUTMENT NO 2 STEM REINFORCING ELEVATION
SCALE 3/8"=1'-0"

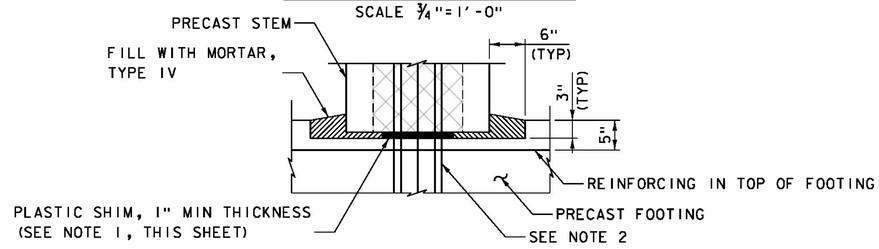
NOTE:

T+B = TOP AND BOTTOM
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
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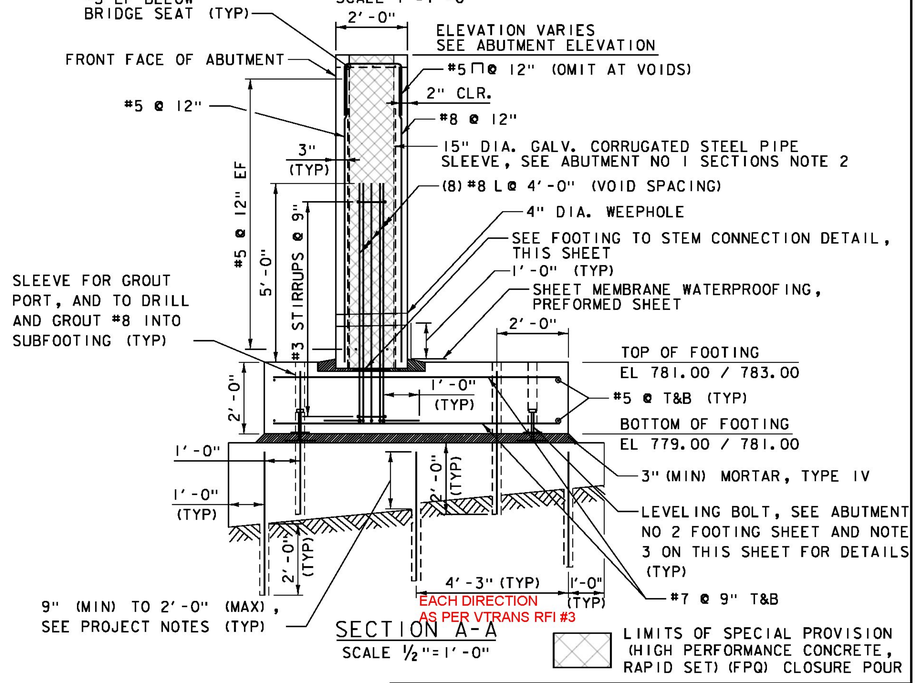




ABUTMENT STEM DETAIL
SCALE 3/4"=1'-0"



FOOTING TO STEM CONNECTION DETAIL
SCALE 1"=1'-0"

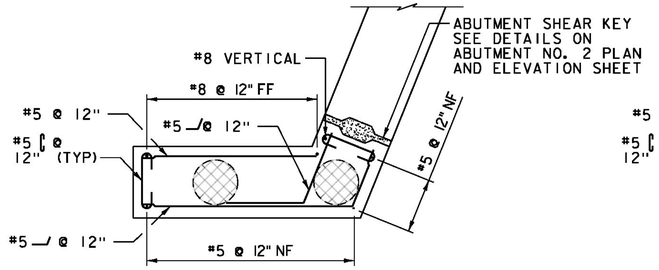


SECTION A-A
SCALE 1/2"=1'-0"

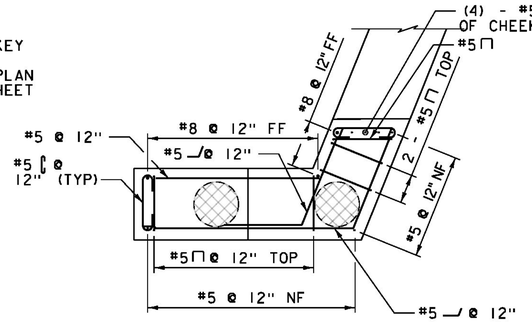
LIMITS OF SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ) CLOSURE POUR

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 021I(32)
FILE NAME: z13J080sub2.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: R.H. BARNES	CHECKED BY: R.H. BARNES
ABUTMENT NO 2 REINFORCING	SHEET 42 OF 62

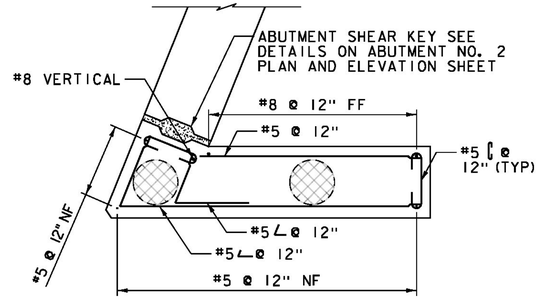
VHB 57737.00



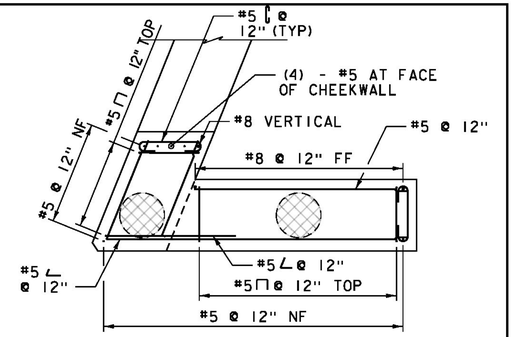
WW NO 3 REINFORCING
BELOW BRIDGE SEAT
SCALE ½"=1'-0"



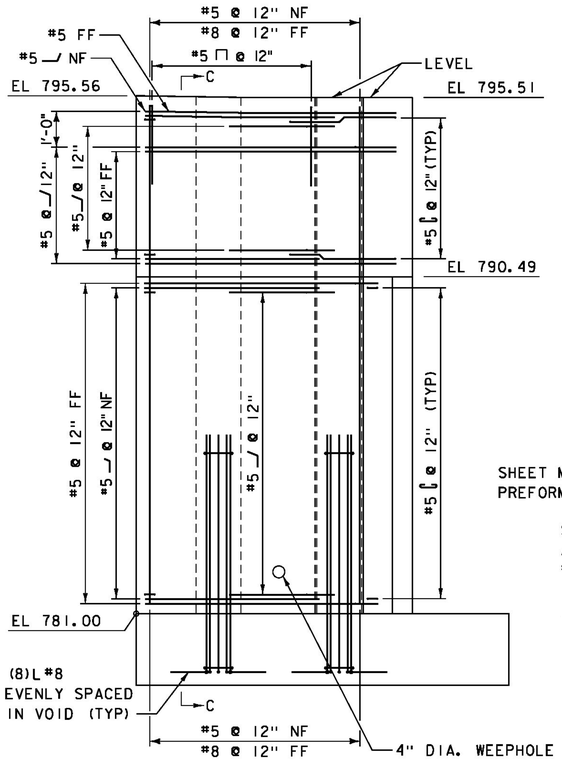
WW NO 3 REINFORCING
ABOVE BRIDGE SEAT
SCALE ½"=1'-0"



WW NO 4 REINFORCING
BELOW BRIDGE SEAT
SCALE ½"=1'-0"

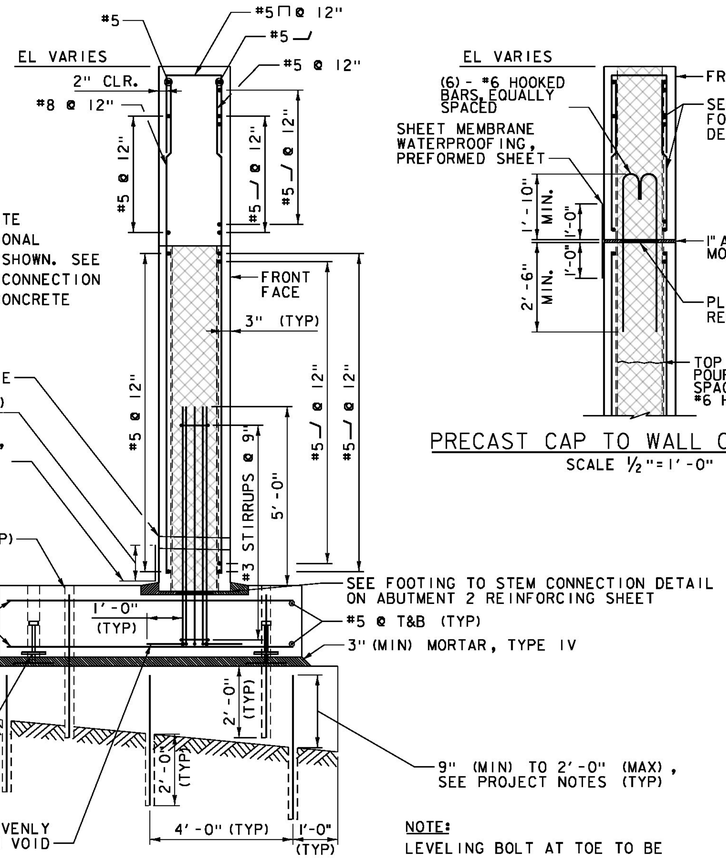


WW NO 4 REINFORCING
ABOVE BRIDGE SEAT
SCALE ½"=1'-0"



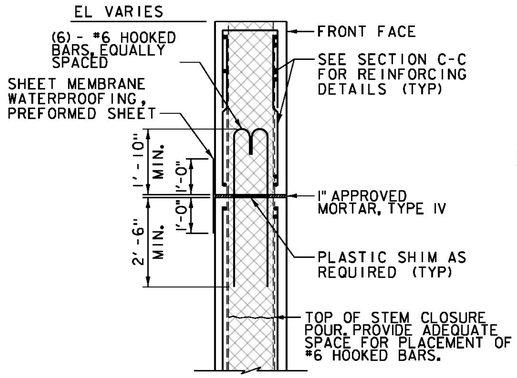
WINGWALL NO 3 ELEVATION
SCALE ½"=1'-0"

NOTE:
CAST-IN-PLACE CONCRETE WINGWALL (ABOVE OPTIONAL CONSTRUCTION JOINT) SHOWN. SEE PRECAST CAP TO WALL CONNECTION DETAIL FOR PRECAST CONCRETE OPTION DETAILS.

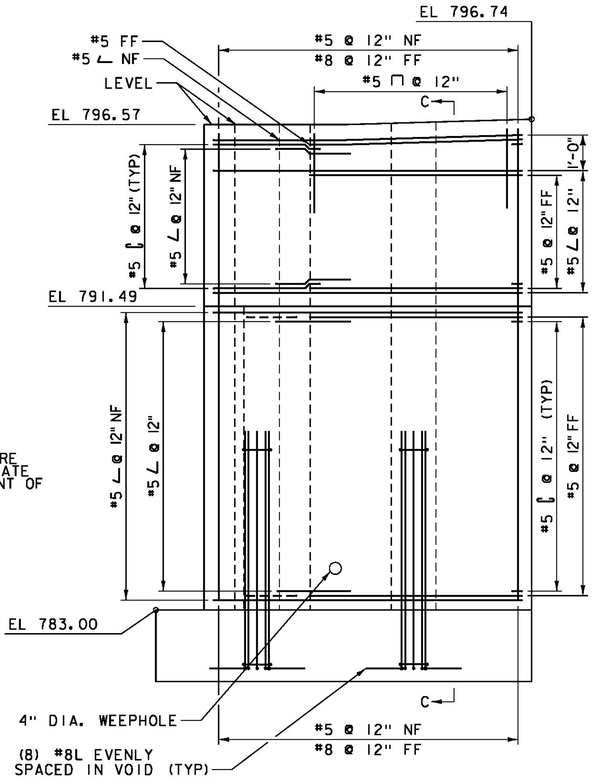


SECTION C-C
SCALE ½"=1'-0"

NOTE:
LEVELING BOLT AT TOE TO BE LOCATED BETWEEN GROUT PORTS.



PRECAST CAP TO WALL CONNECTION
SCALE ½"=1'-0"



WINGWALL NO 4 ELEVATION
SCALE ½"=1'-0"

NOTE:
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EF = EACH FACE
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3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

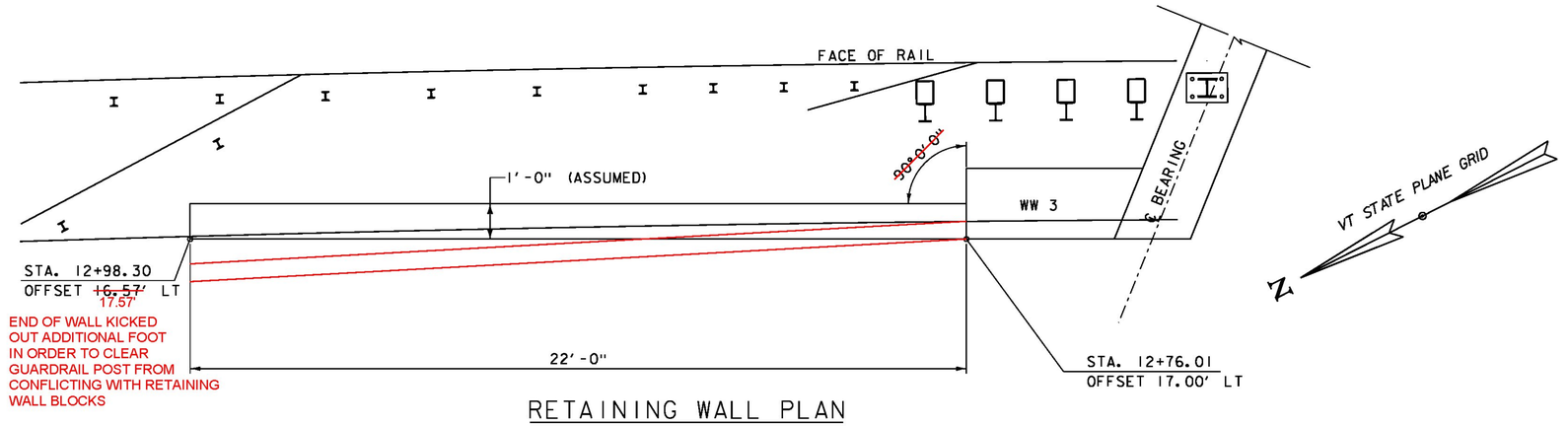
LIMITS OF SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ) CLOSURE POUR

vhb

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 021I(32)

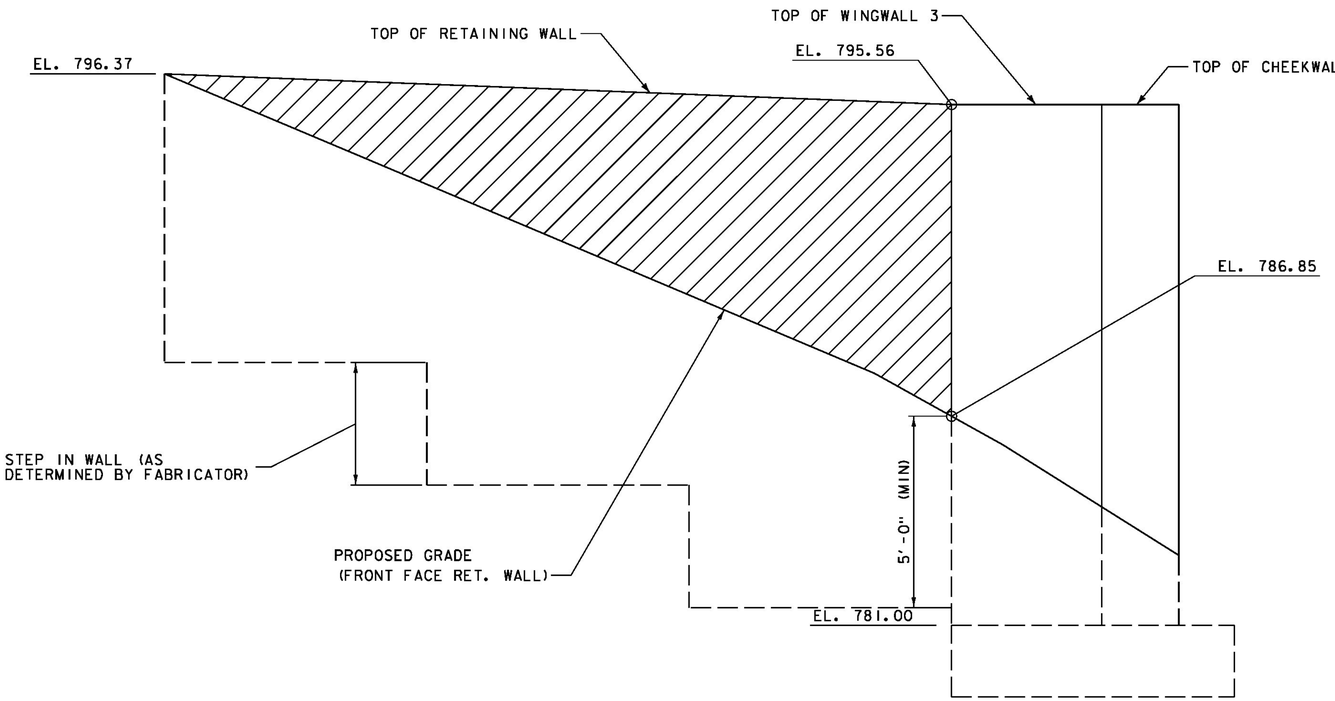
FILE NAME: zI3I080sub2.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: R.H. BARNES
ABUTMENT NO 2 WINGWALL DETAILS
PLOT DATE: 8/15/2016
DRAWN BY: J.D. KEENER
CHECKED BY: R.H. BARNES
SHEET 43 OF 62

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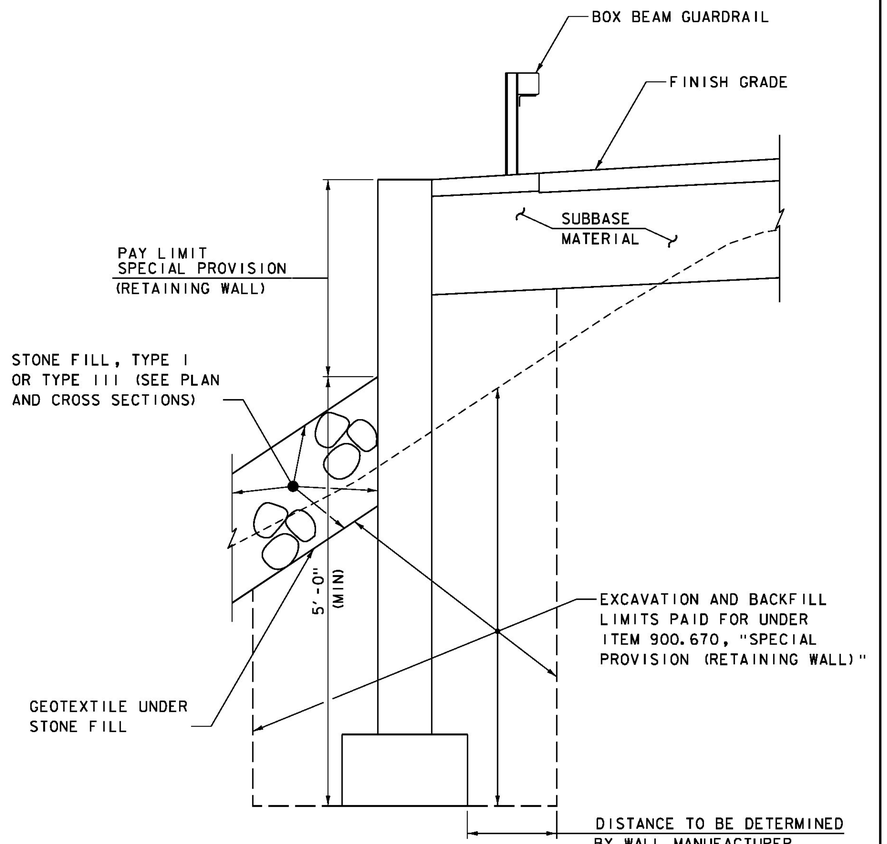
RETAINING WALL PLAN

SCALE ½" = 1'-0"



RETAINING WALL ELEVATION

SCALE ½" = 1'-0"



TYPICAL SECTION

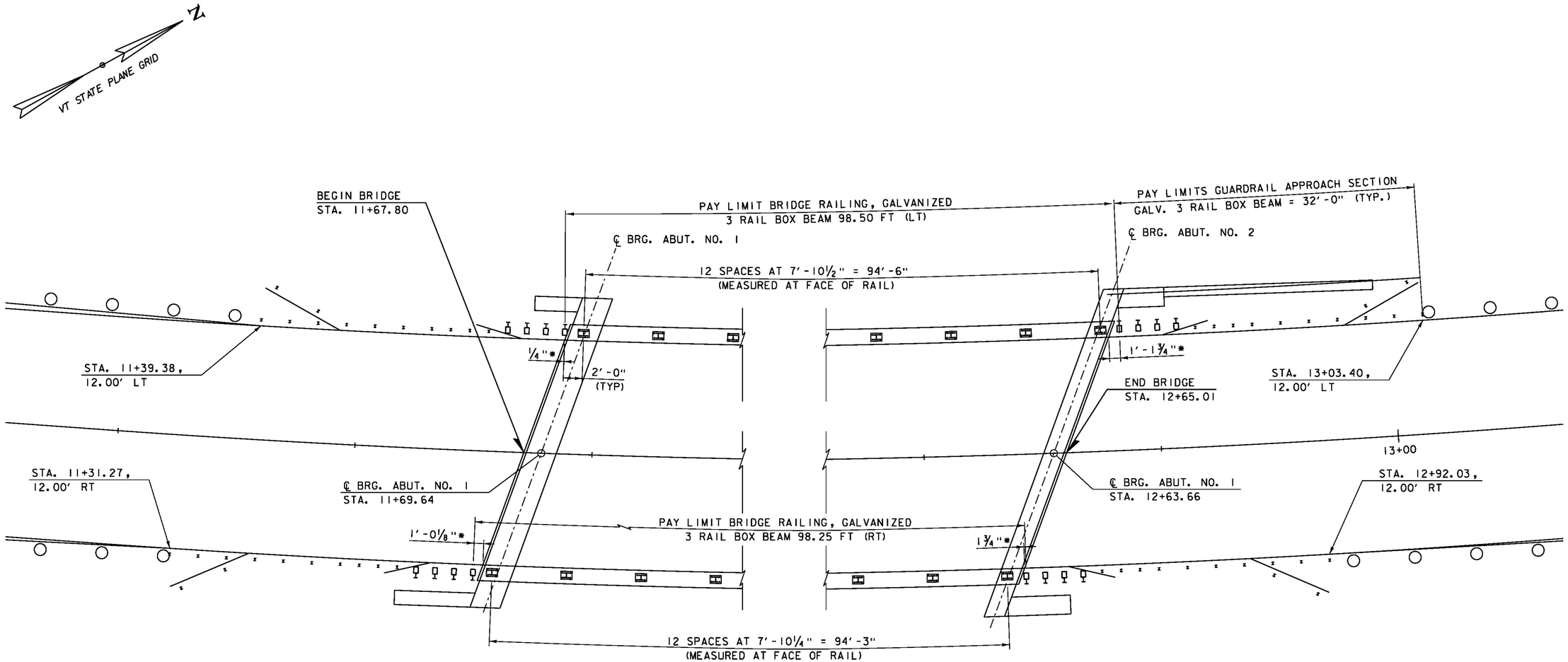
SCALE ½" = 1'-0"

PAY LIMITS OF ITEM 900.670, "SPECIAL PROVISION (RETAINING WALL)"

NOTE: SEE PROJECT NOTES SHEET FOR PRECAST CONCRETE RETAINING WALL NOTES.

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080retwall.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: R.H. BARNES	CHECKED BY: R.H. BARNES
RETAINING WALL DETAILS	SHEET 44 OF 62

VHB 57737.00



BRIDGE RAIL LAYOUT

SCALE 3/16" = 1'-0"

* DIMENSION FROM END OF DECK TO POST 1 AT FACE OF RAIL

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13080brail.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: E.F. LAWES
DESIGNED BY: E.F. LAWES	CHECKED BY: S.E. BURBANK
BRIDGE RAIL LAYOUT	SHEET 45 OF 62

VHB 57737.00

STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	DECK																
✳	181	5	33'- 9"	ES501	STR	33'- 9"											
	40	5	14'- 0"	ES504	STR	14'- 0"											
	134	5	12'- 3"	ES502	22		1'- 5"	10'- 10"	---				0'- 1"		1'- 5"		
	134	5	20'- 0"	ES503	22		1'- 5"	18'- 7"	---				0'- 1"		1'- 5"		
	52	5	11'- 8"	ES505	S5	2'- 2"	3'- 6"	0'- 7"	3'- 3"			2'- 2"					
	48	5	8'- 7"	ES506	S5	1'- 7"	3'- 9"	0'- 7"	1'- 8"			1'- 0"					
✳	195	6	16'- 3"	ES601	3	0'- 6"	1'- 5"	14'- 4"	---	---	---	---	0'- 10"	✱✱	14'- 4"		
	194	6	16'- 3"	ES602	3	0'- 6"	1'- 5"	14'- 4"	---	---	---	---	0'- 10"		14'- 4"		
	194	6	5'- 7"	ES603	3	0'- 6"	1'- 5"	3'- 8"	---	---	---	---	0'- 3"	✱✱	3'- 8"		
	194	6	5'- 7"	ES604	3	0'- 6"	1'- 5"	3'- 8"	---	---	---	---	0'- 3"		3'- 8"		
	WINGWALL #1																
	9	5	4'- 7"	1EW501	STR	✱✱✱											
	12	5	7'- 7"	1EW502	STR												
	11	6	4'- 4"	1EW601	STR	✱✱✱											
	2	5	5'- 10"	1EW503	17		2'- 4"	1'- 2"	2'- 4"								
	10	5	5'- 9"	1EW504	17		2'- 4"	1'- 1"	2'- 4"								
	WINGWALL #2																
	10	5	7'- 10"	2EW501	STR												
	18	5	8'- 4"	2EW502	STR												
	13	6	8'- 1"	2EW601	STR												
	2	5	5'- 10"	2EW503	17		2'- 4"	1'- 2"	2'- 4"								
	16	5	5'- 9"	2EW504	17		2'- 4"	1'- 1"	2'- 4"								
	ADDITIONAL BARS REQUIRED																
	20	5	5'		STR	5'											

NOT CAST-IN-PLACE, SEE RFI #2 AND CORRESPONDING CHANGE OF DESIGN

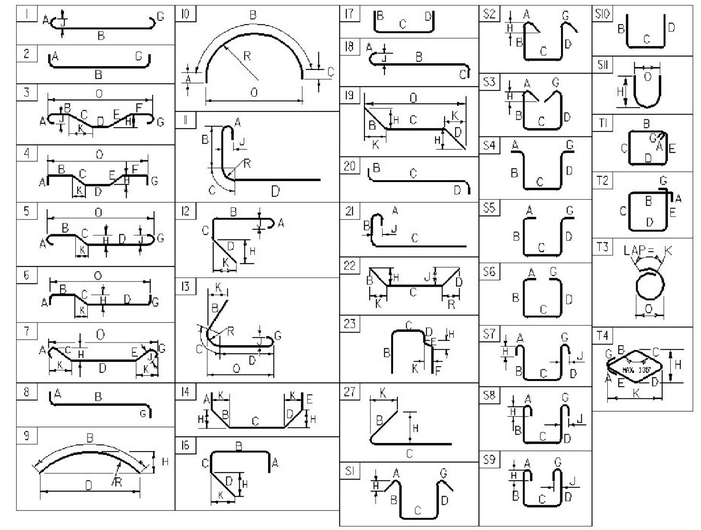
ES504 NOT LONG ENOUGH AT 14'-0" TO HAVE 2"-2" MIN. SPLICE, THESE 20 BARS REQUIRED

5'X1.043#/FT X 20= 104.3 LB

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	#																
	6371.43																
	584.08																
	1712.08																
	2795.24																
	632.76																
	429.71																
	4759.46																
	4735.06																
	1626.91																
	1626.91																
	104.3																
	25,378 LB																

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. ✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION DIAMETER INCHES	AREA INCHES^2	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

✱✱ INDICATES DIMENSION IN OPPOSITE DIRECTION SHOWN IN BEND DIAGRAM

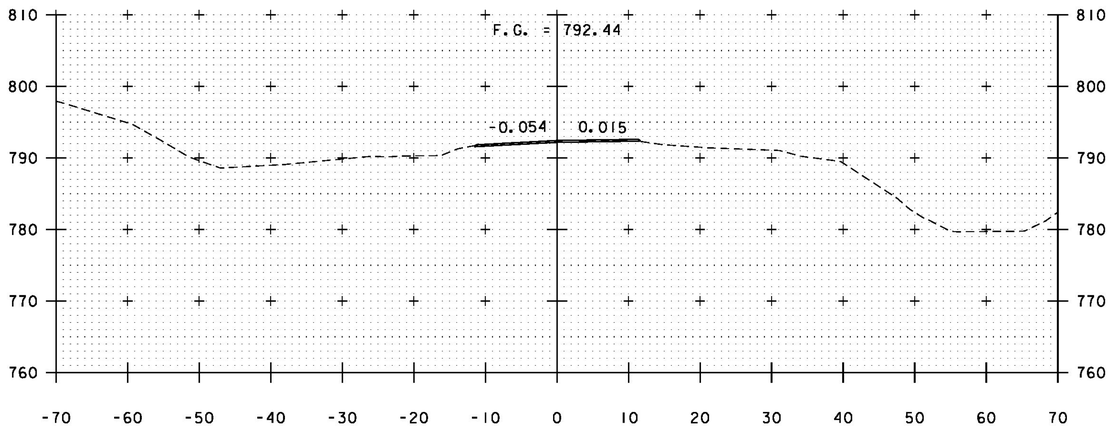
✱✱✱ EXCLUDES BAR LENGTH INTO ABUTMENT

PROJECT NAME: **HUNTINGTON**
PROJECT NUMBER: **BF 0211(32)**

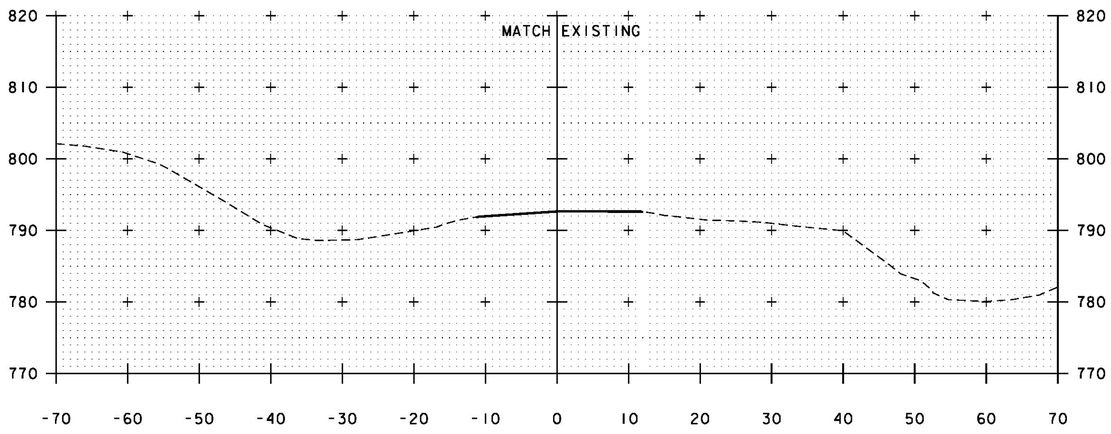
FILE NAME: **z13j080rss.dgn**
PROJECT MANAGER: **S.E. BURBANK**
DESIGNED BY: **R.H. BARNES**
REINFORCING STEEL SCHEDULE SHEET #1

PLOT DATE: **8/12/2016**
DRAWN BY: **R.H. BARNES**
CHECKED BY: **S.E. BURBANK**
SHEET **46** OF **62**

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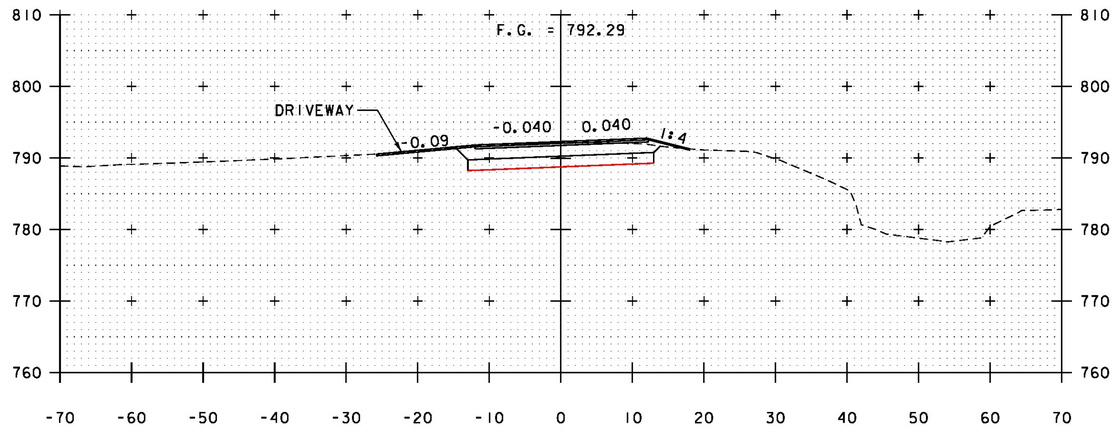


10+00



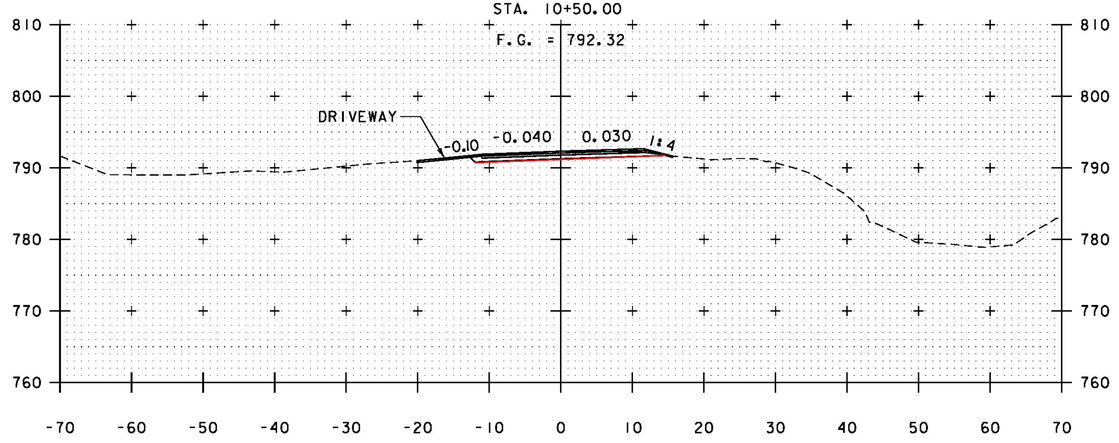
9+75

BEGIN APPROACH
STA. 9+75.00



10+50

BEGIN PROJECT
STA. 10+50.00



10+25

FINAL X-SECTIONS FILE (DATA)
SAVED ON Z DRIVE

ROADWAY CROSS SECTIONS

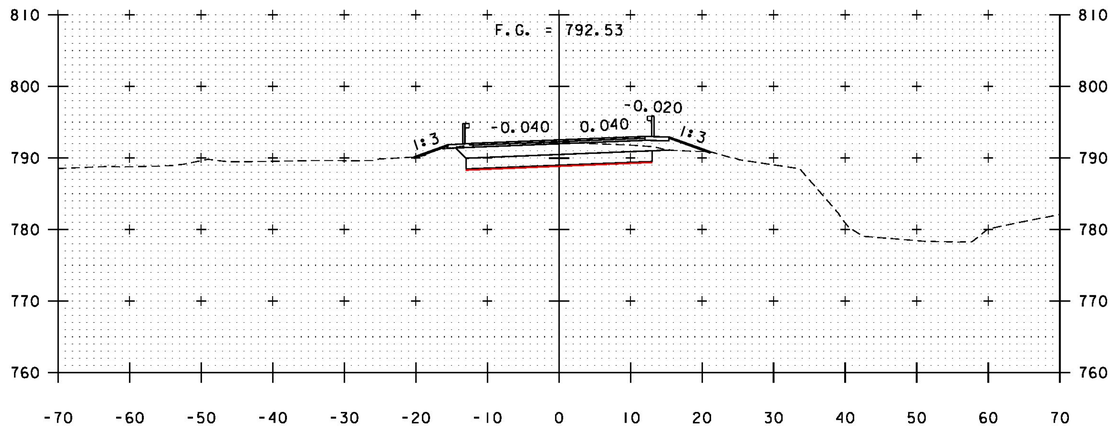
SCALE 1" = 10'-0"

STA. 9+75 - 10+50

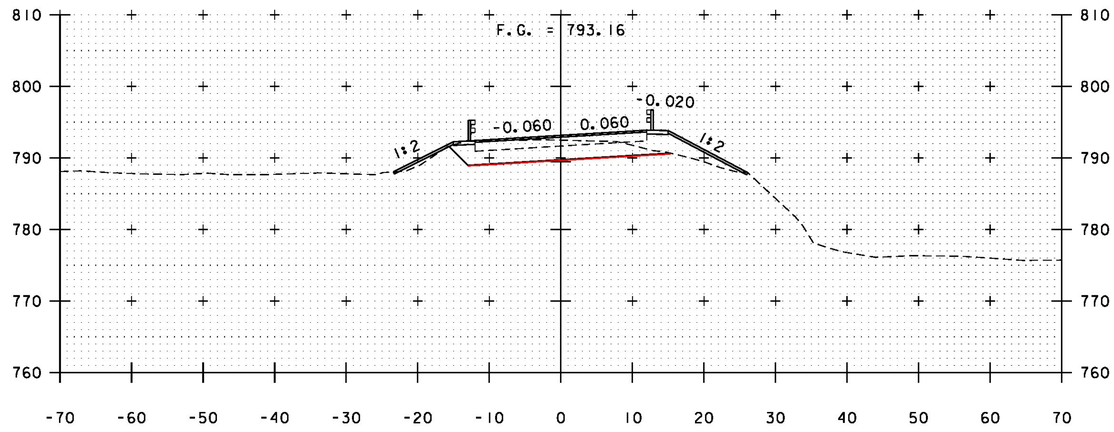
BOTTOM OF EXCAVATION
FIELD CHECKED BY QA STAFF
NO EXCEPTIONS TO DESIGN
GRADES. TYPICAL PER
CROSS SECTION SHEETS

vhb

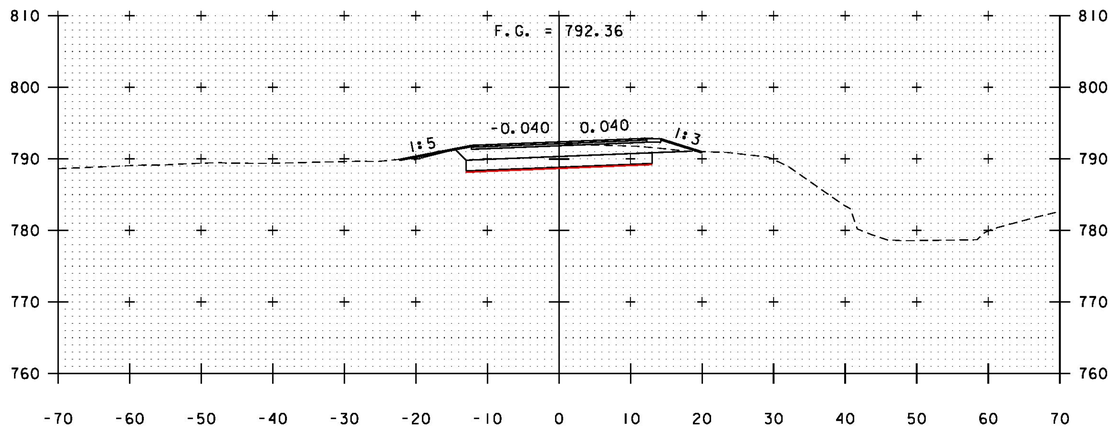
PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 021I(32)
FILE NAME: z13J080xsl.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: E.F. LAWES
ROADWAY CROSS SECTIONS (1 OF 6)	SHEET 47 OF 62



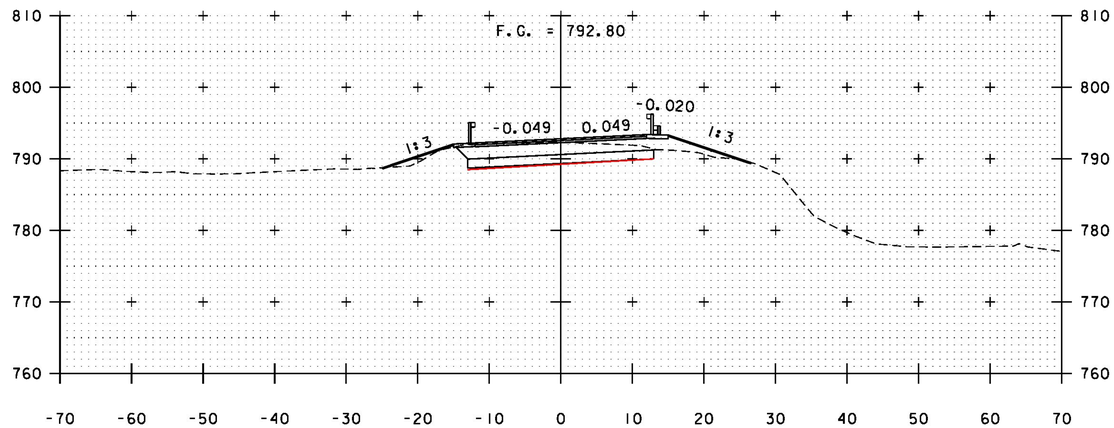
11+00



11+50



10+75



11+25

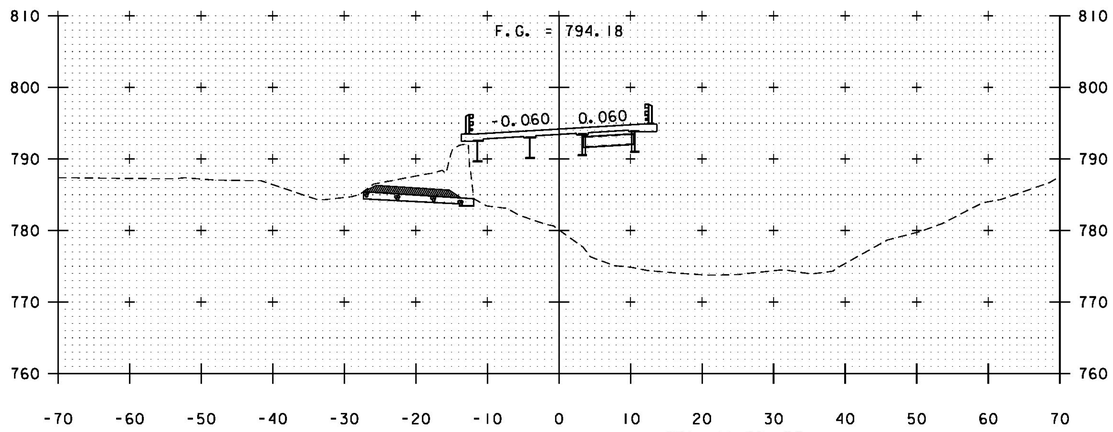
ROADWAY CROSS SECTIONS

SCALE 1" = 10'-0"

STA. 10+75 - 11+50

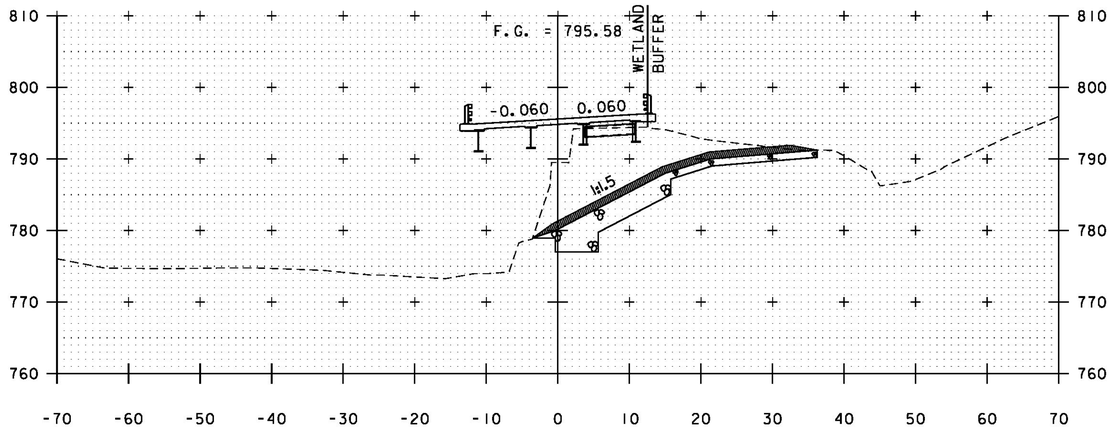
PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080xsl.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: E.F. LAWES
ROADWAY CROSS SECTIONS (2 OF 6)	SHEET 48 OF 62

VHB 57737



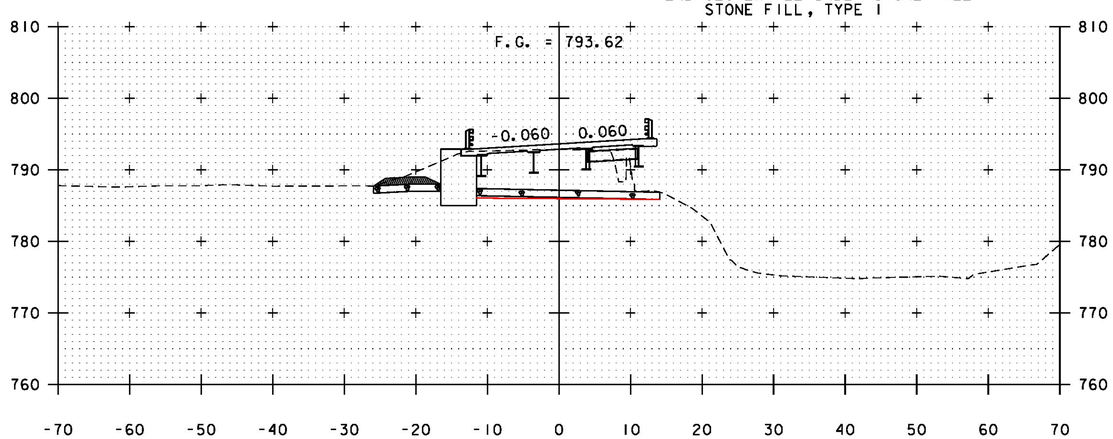
12+00

STA. 11+76, RT
END GRUBBING MATERIAL
STA. 11+86, RT
END GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE I



12+50

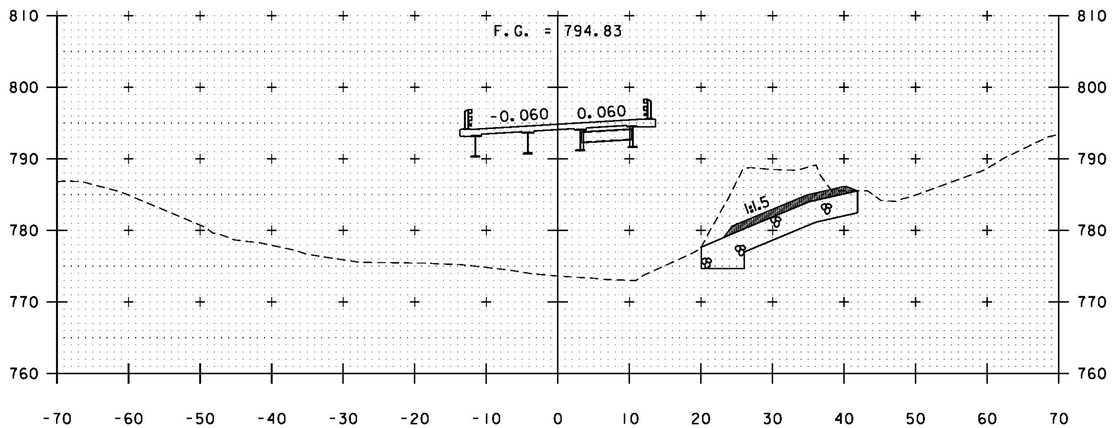
STA. 12+34, RT
BEGIN GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE I, & GRUBBING MATERIAL



STA 11+60, LT
BEGIN GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE I, & GRUBBING MATERIAL

11+75
BEGIN BRIDGE
STA. 11+67.80

STA 11+51, RT
BEGIN GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE I, & GRUBBING MATERIAL



STA. 12+07, LT
END GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE I, & GRUBBING MATERIAL

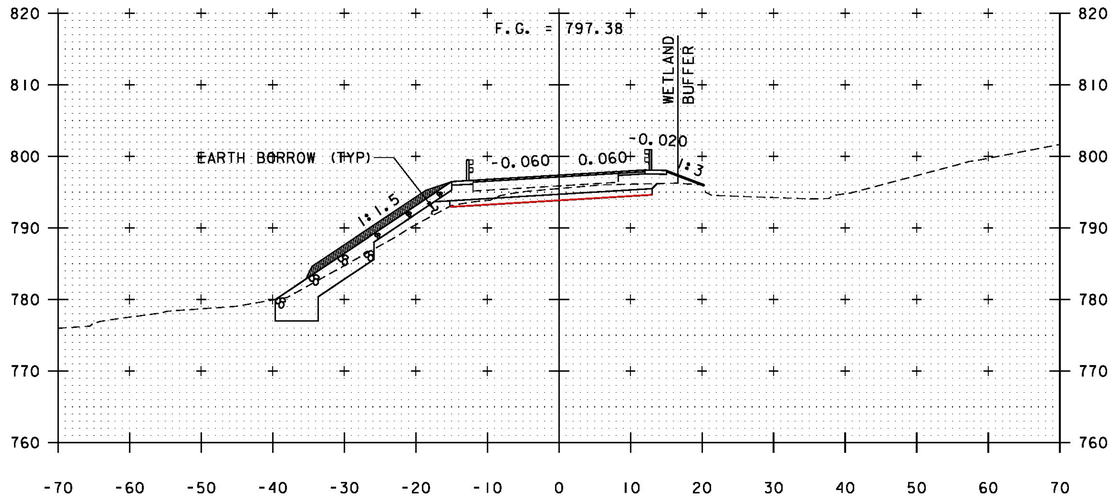
12+25

ROADWAY CROSS SECTIONS

SCALE 1" = 10'-0"

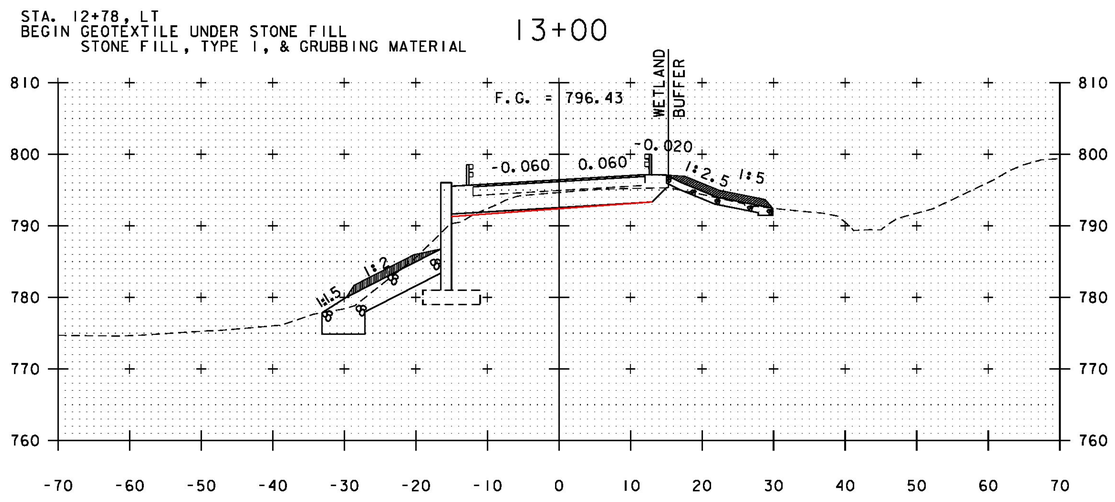
STA. 11+75 - 12+50

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BR 021I(32)
FILE NAME: z13J080xsl.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: E.F. LAWES
ROADWAY CROSS SECTIONS (3 OF 6)	SHEET 49 OF 62



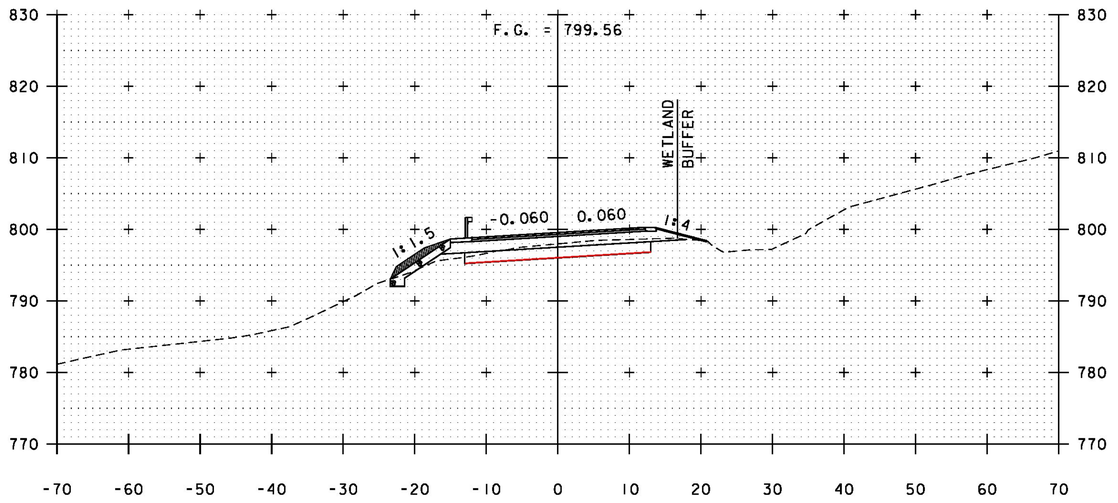
13+00

STA. 12+78, LT
BEGIN GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE I, & GRUBBING MATERIAL

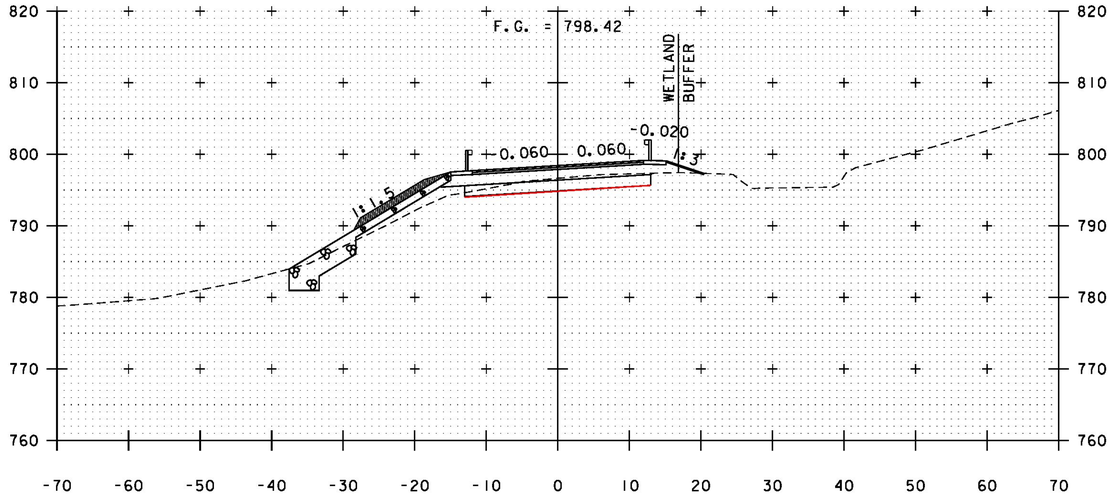


12+75
END BRIDGE
STA. 12+65.01

STA. 12+75, RT
END GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE I, & GRUBBING MATERIAL



13+50



13+25

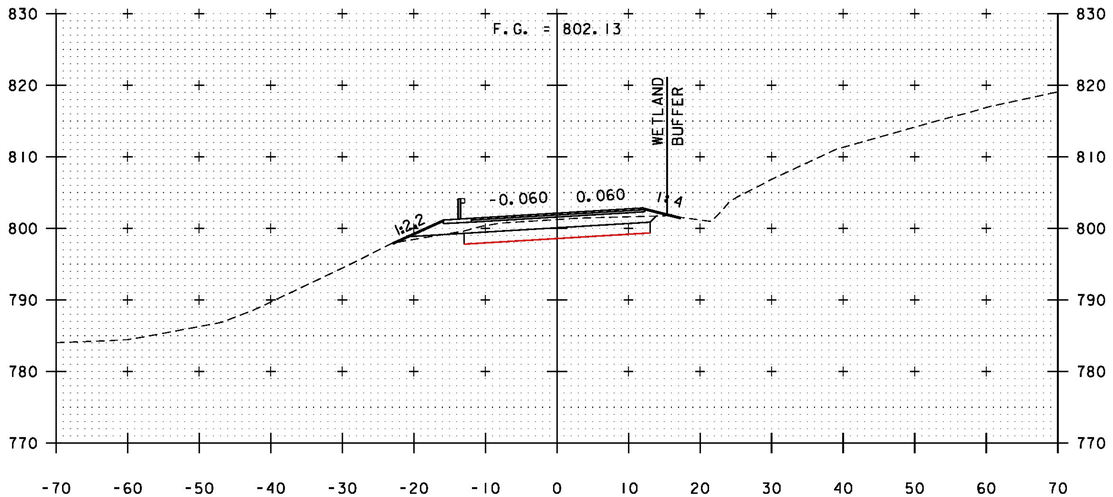
ROADWAY CROSS SECTIONS

SCALE 1" = 10'-0"

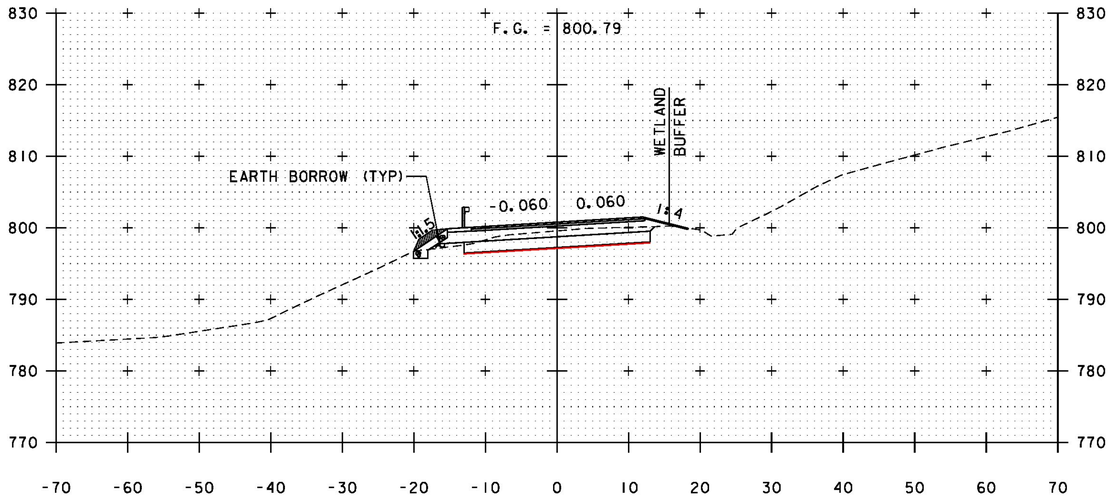
STA. 12+75 - 13+50

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 021I(32)
FILE NAME: z13J080xsl.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: E.F. LAWES
ROADWAY CROSS SECTIONS (4 OF 6)	SHEET 50 OF 62

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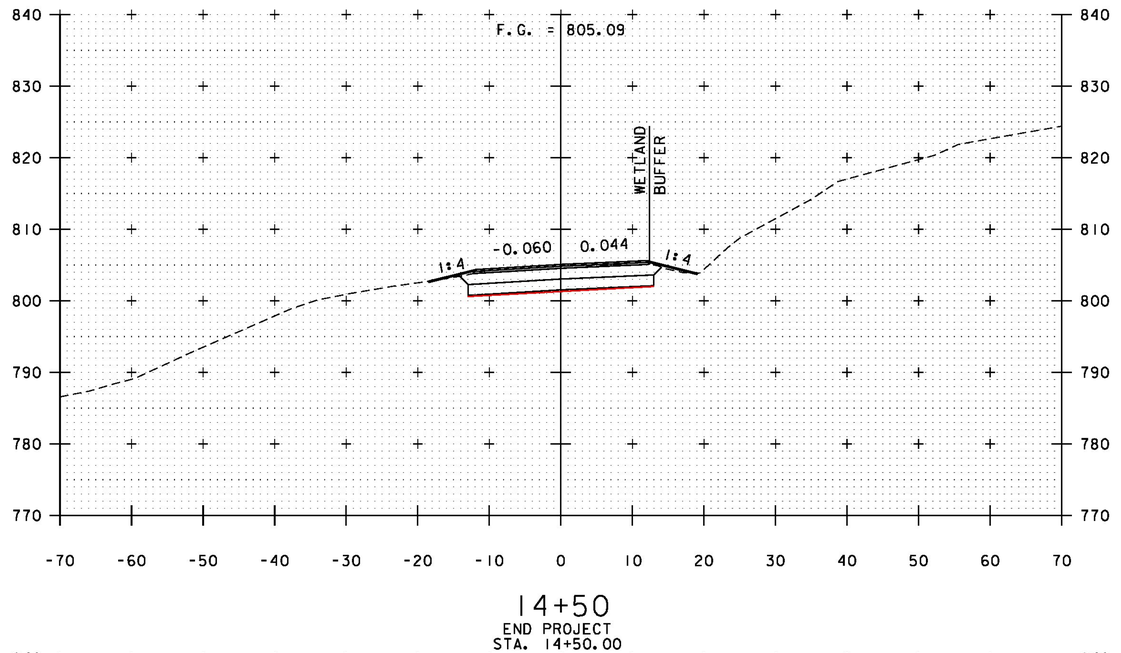


14+00

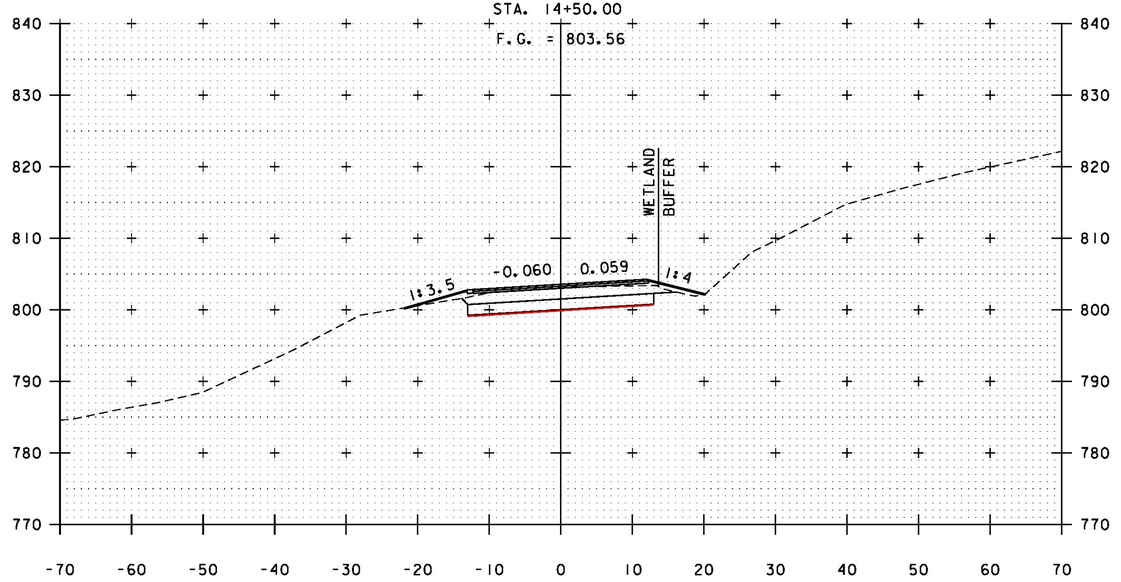


STA. 13+75, LT
END GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE 1, & GRUBBING MATERIAL

13+75



14+50
END PROJECT
STA. 14+50.00



14+25

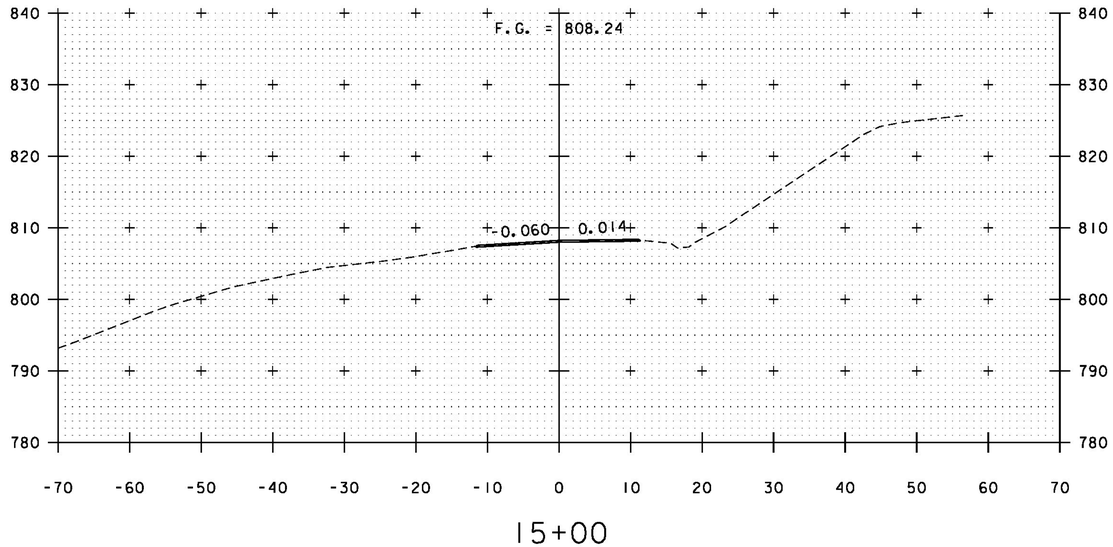
ROADWAY CROSS SECTIONS

SCALE 1" = 10'-0"

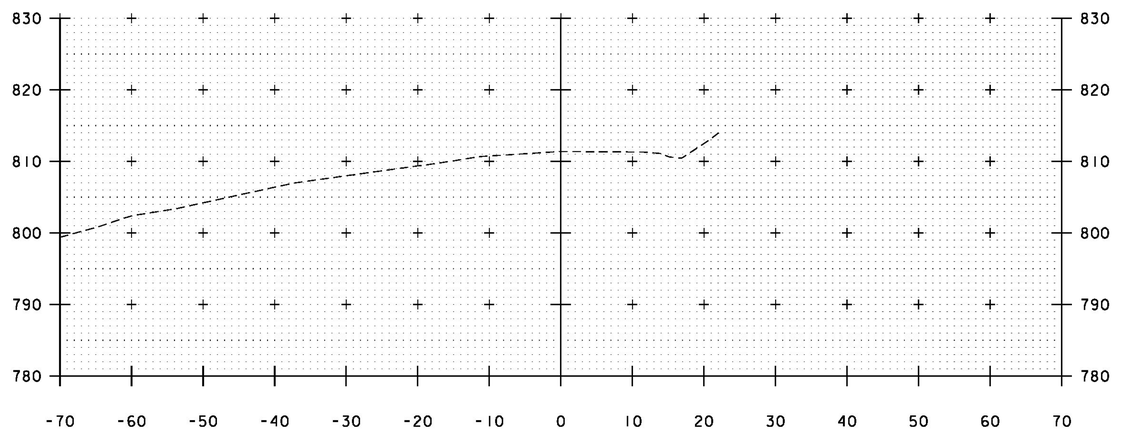
STA. 13+75 - 14+50

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 021I(32)
FILE NAME: z13J080xsl.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: E.F. LAWES
ROADWAY CROSS SECTIONS (5 OF 6)	SHEET 51 OF 62

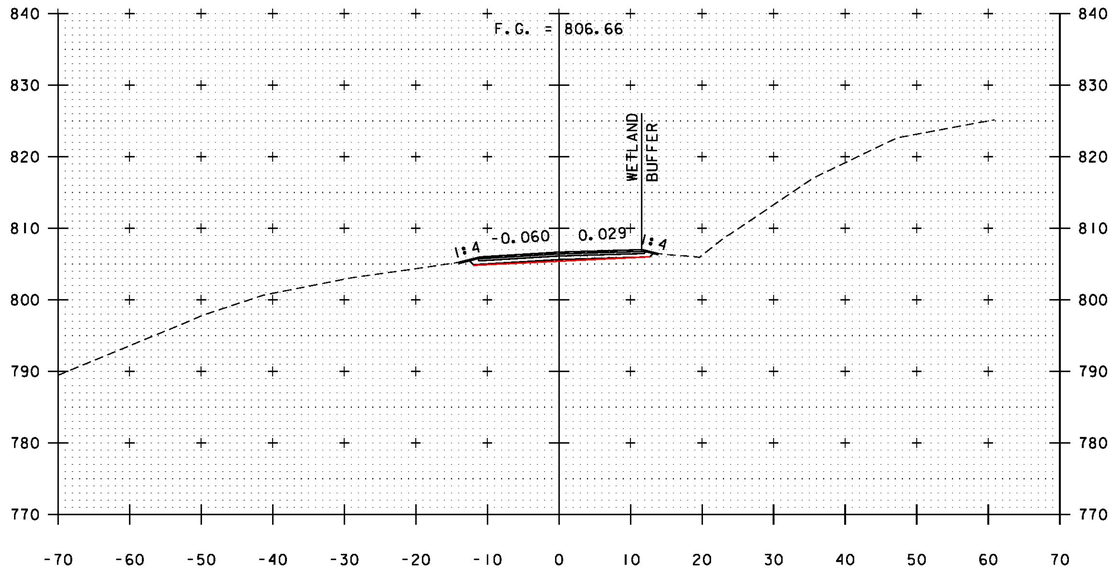
VHB 57737



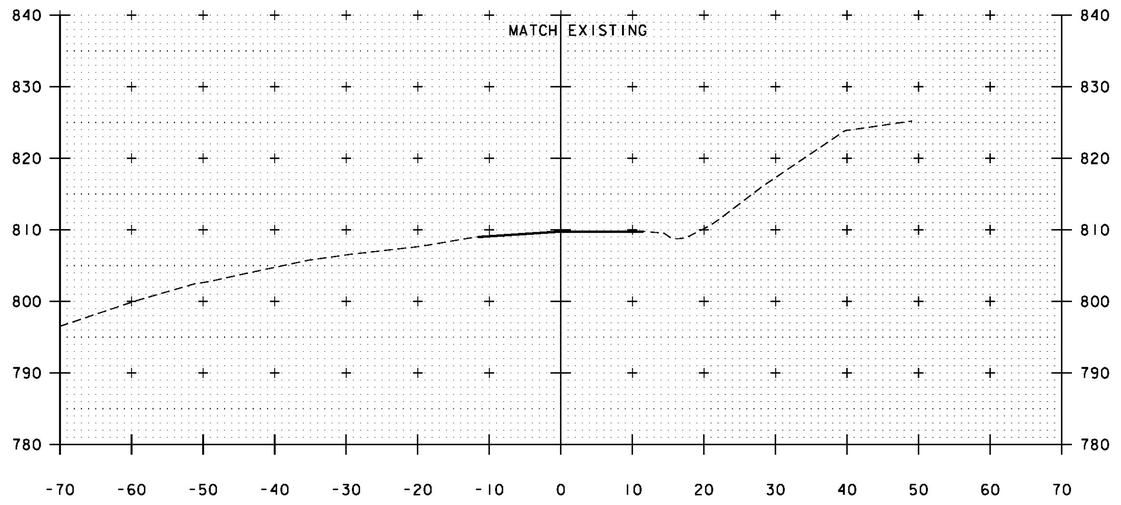
15+00



15+50



14+75



15+25
END APPROACH
STA. 15+25.00

ROADWAY CROSS SECTIONS

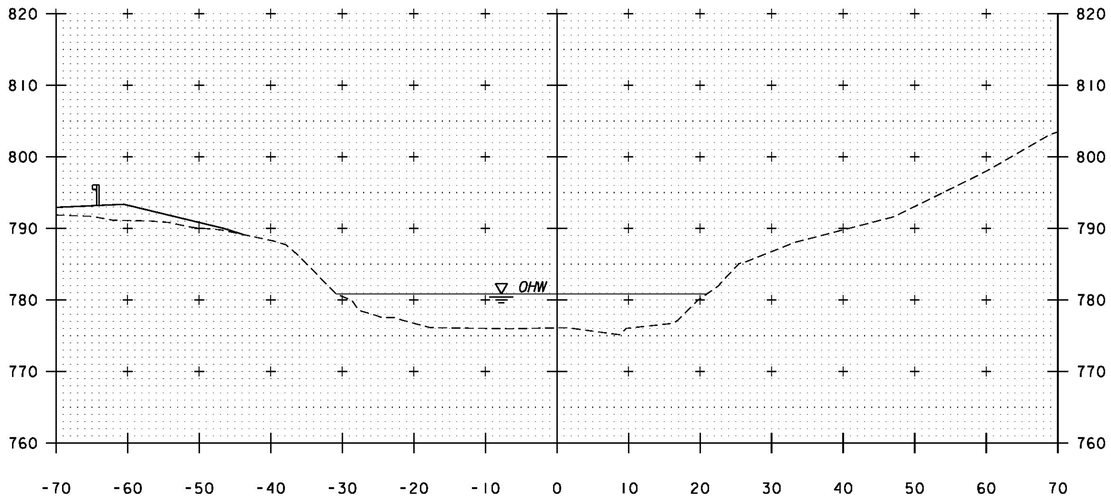
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STA. 14+75 - 15+50

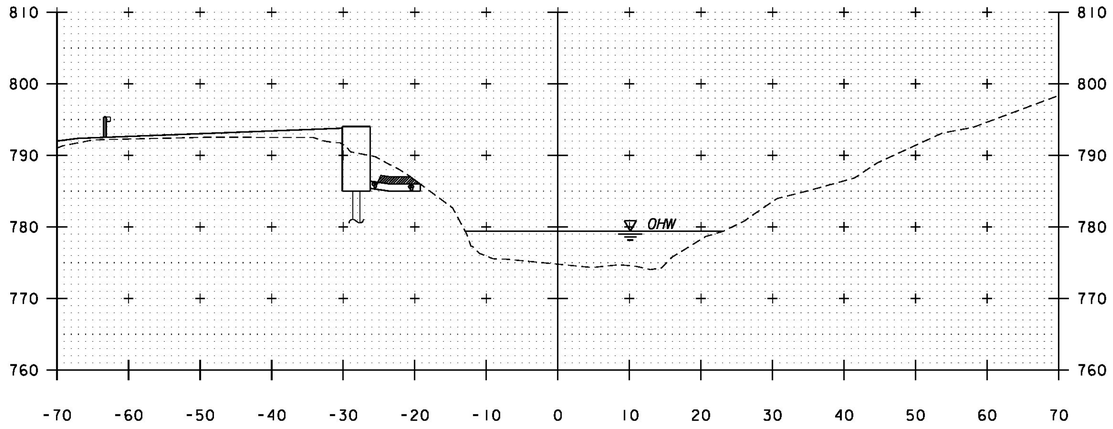
vhb

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 021I(32)
FILE NAME: z13J080xsl.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C BARRY	CHECKED BY: E.F. LAWES
ROADWAY CROSS SECTIONS (6 OF 6)	SHEET 52 OF 62

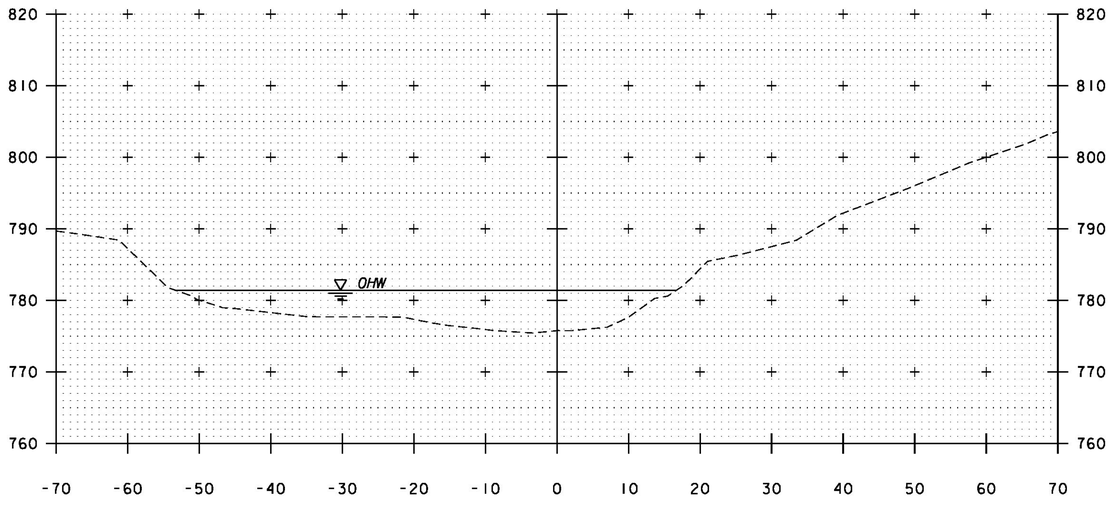
VHB 57737



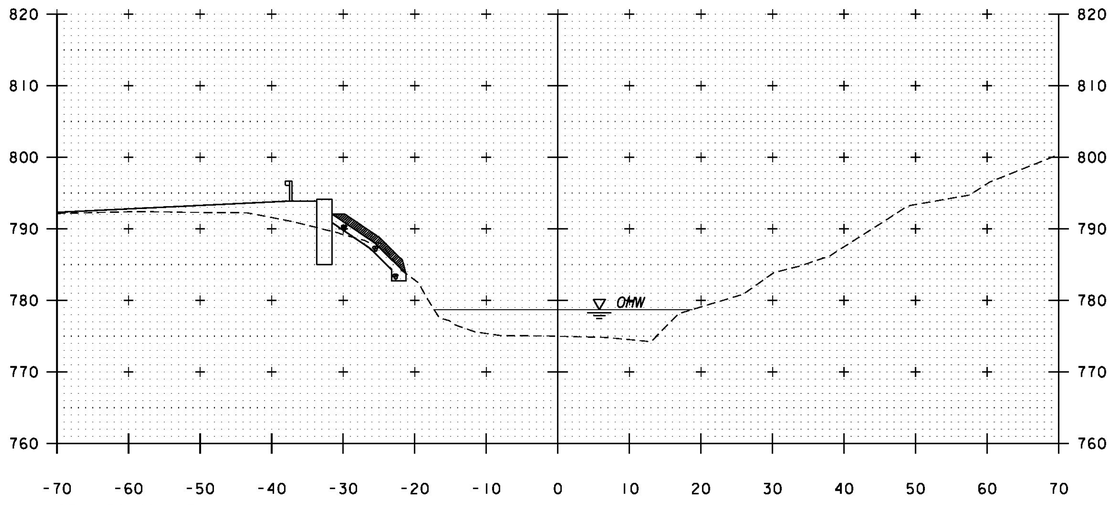
50+25



50+60



50+00



STA. 50+40, LT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE I, & GRUBBING MATERIAL

50+50

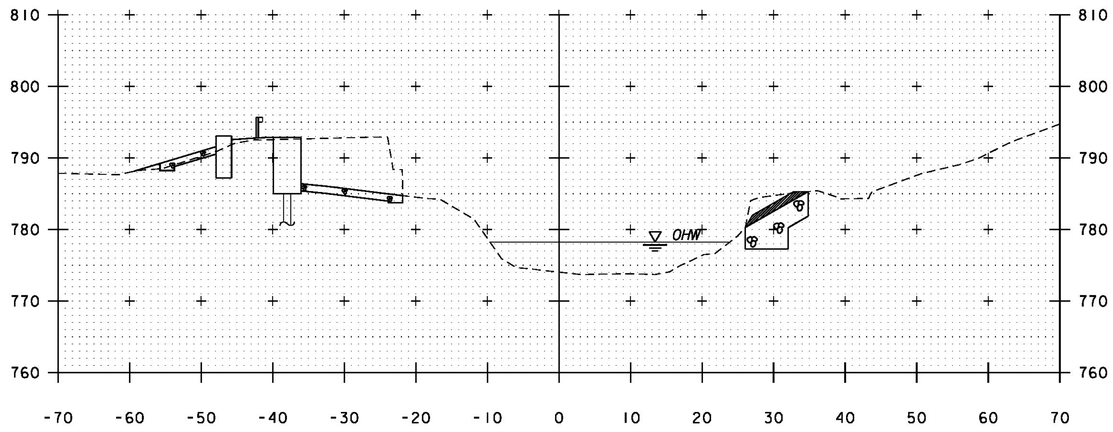
CHANNEL CROSS SECTIONS

SCALE 1" = 10'-0"

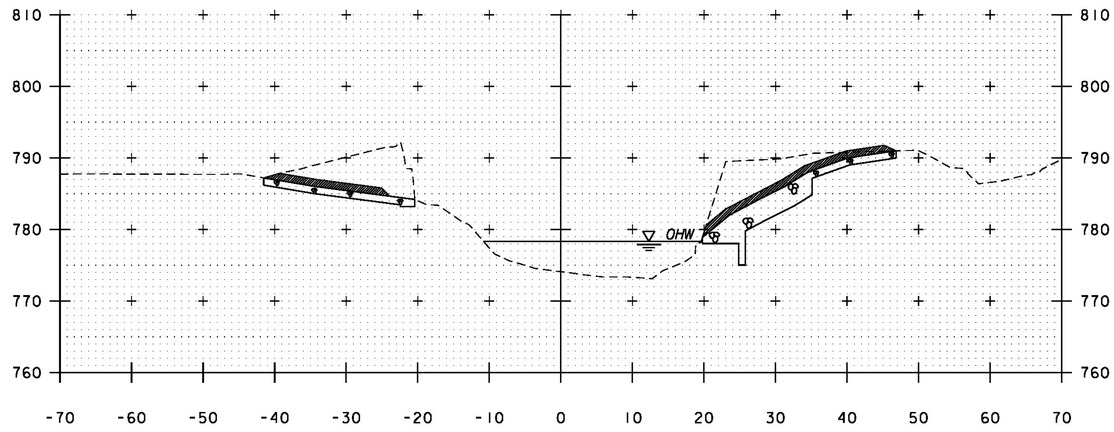
STA. 50+00 - 50+60

PROJECT NAME: HUNTINGTON	
PROJECT NUMBER: BR 02II(32)	
FILE NAME: z13J080xsI.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: E.F. LAWES
CHANNEL CROSS SECTIONS (1 OF 4)	SHEET 53 OF 62

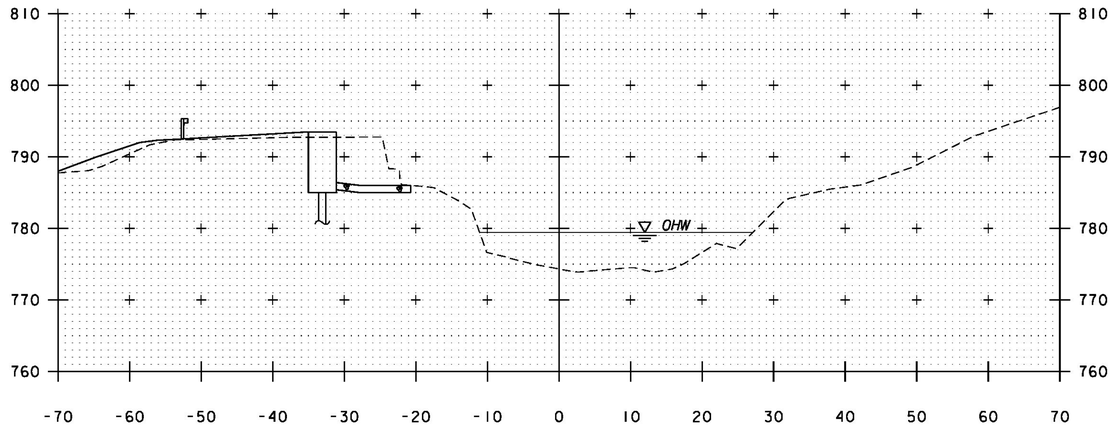
VHB 57737



50+80

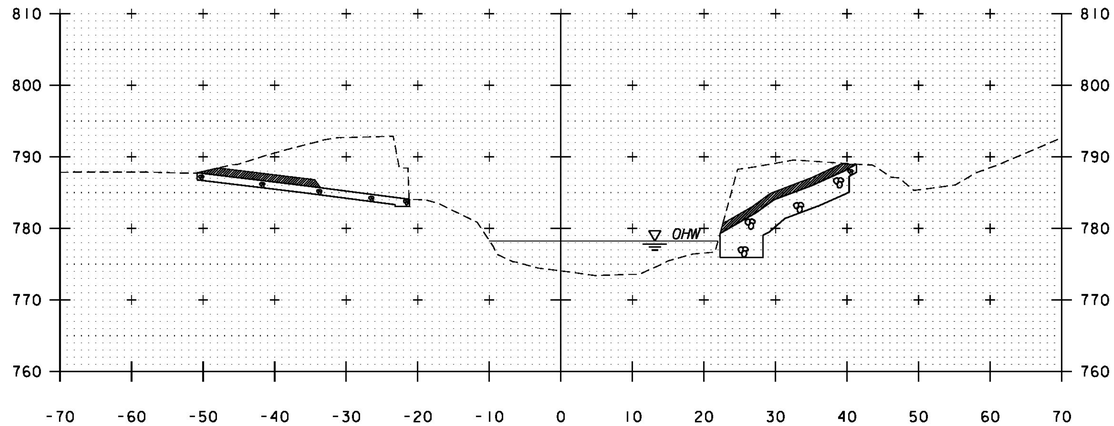


51+00



STA. 50+65, LT
END GRUBBING MATERIAL

50+70



STA. 50+85, LT
BEGIN GRUBBING MATERIAL

50+90

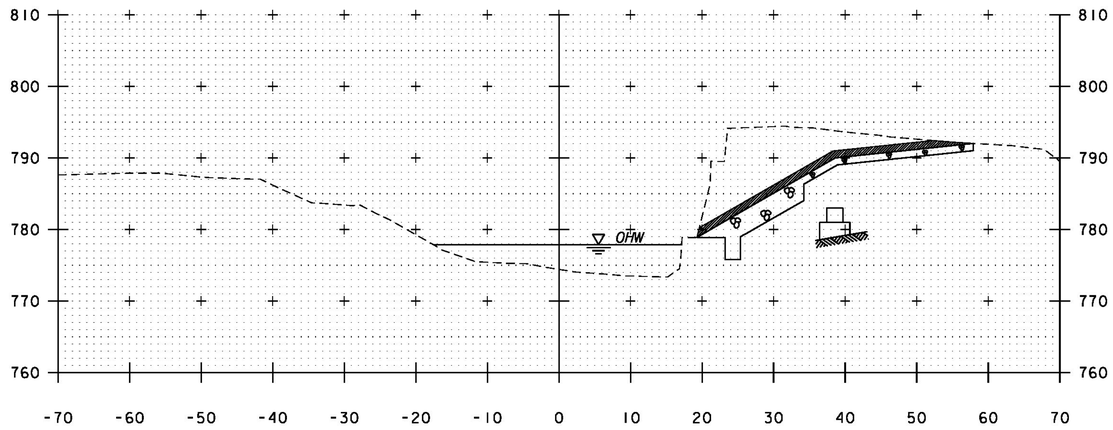
STA. 50+83, RT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE III, & GRUBBING MATERIAL

CHANNEL CROSS SECTIONS

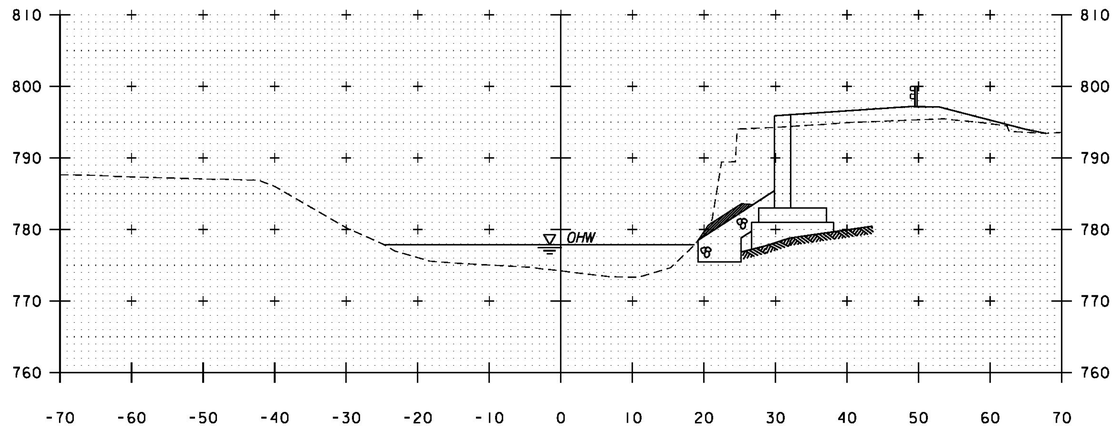
SCALE 1" = 10'-0"

STA. 50+70 - 51+00

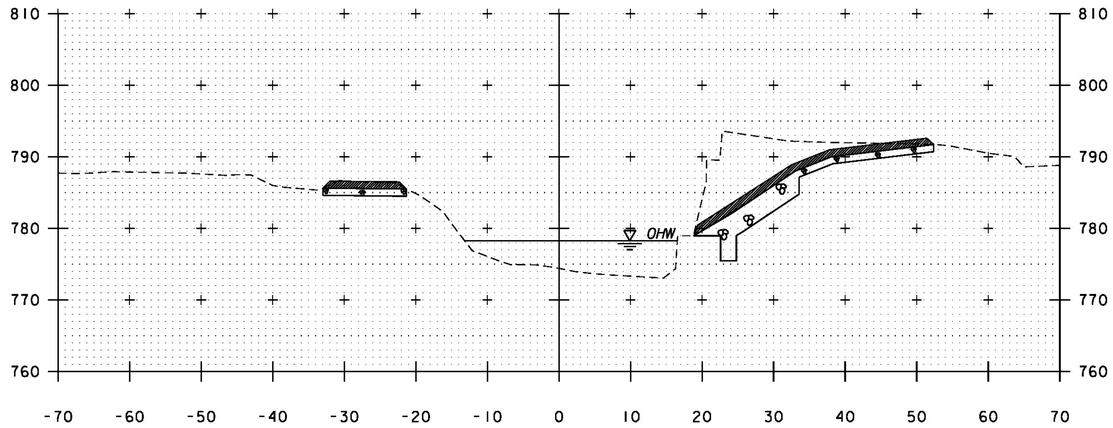
PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BR 0211(32)
FILE NAME: z13J080xsl.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: E.F. LAWES
CHANNEL CROSS SECTIONS (2 OF 4)	SHEET 54 OF 62



51+20

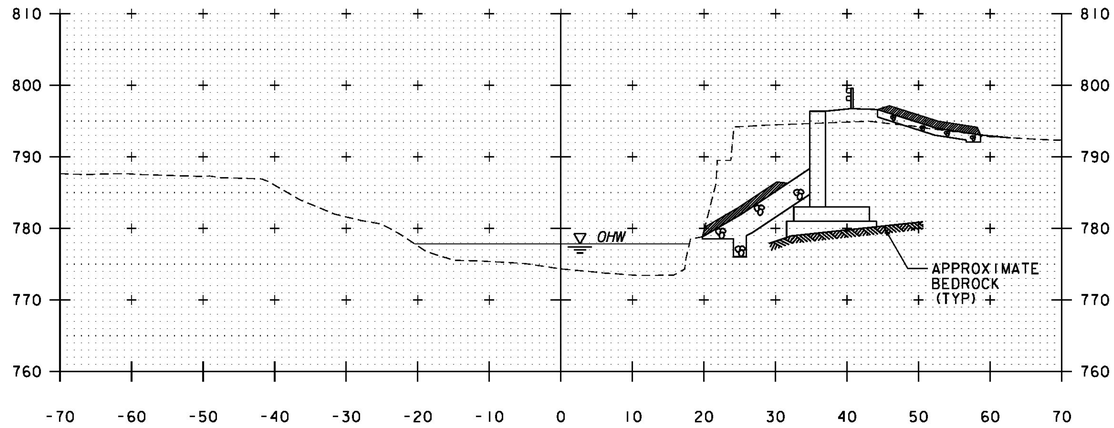


51+40



STA. 51+15, LT
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GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE I, & GRUBBING MATERIAL

51+10



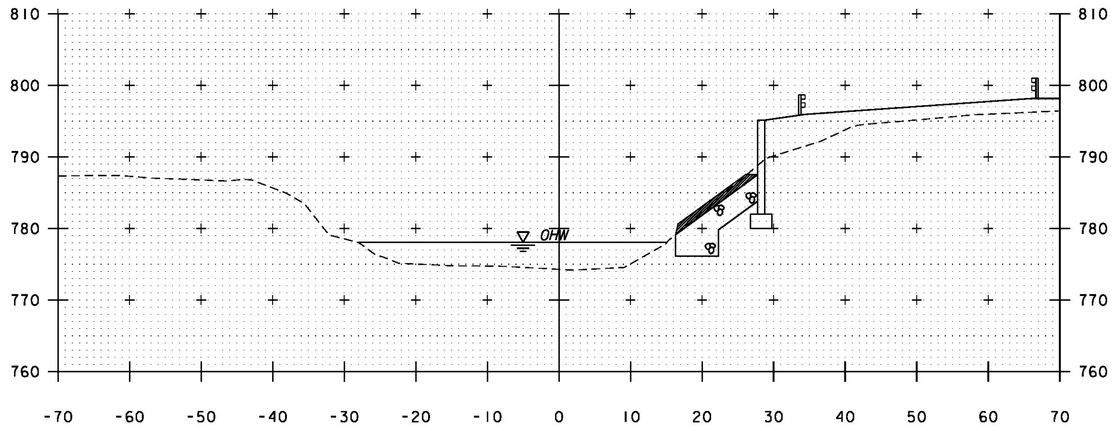
51+30

CHANNEL CROSS SECTIONS

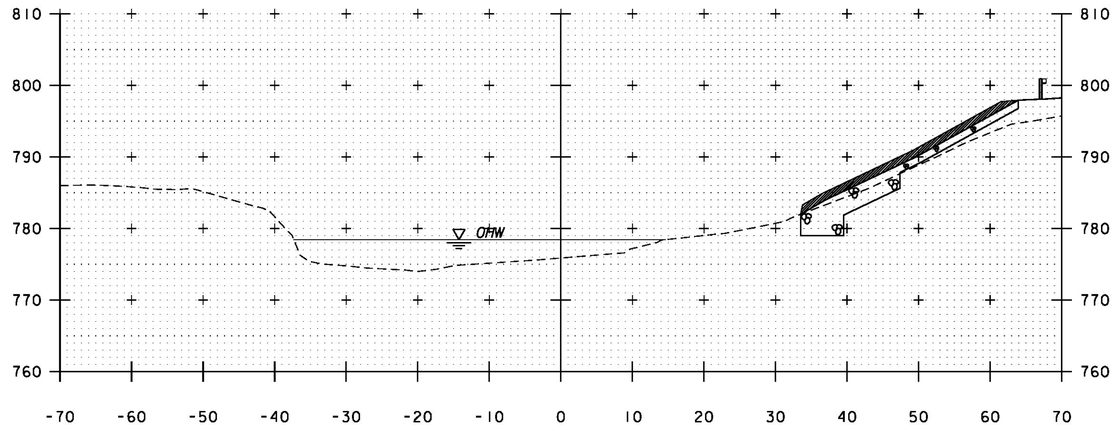
SCALE 1" = 10'-0"

STA. 51+10 - 51+40

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BR 0211(32)
FILE NAME: z13J080xsl.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: E.F. LAWES
CHANNEL CROSS SECTIONS (3 OF 4)	SHEET 55 OF 62

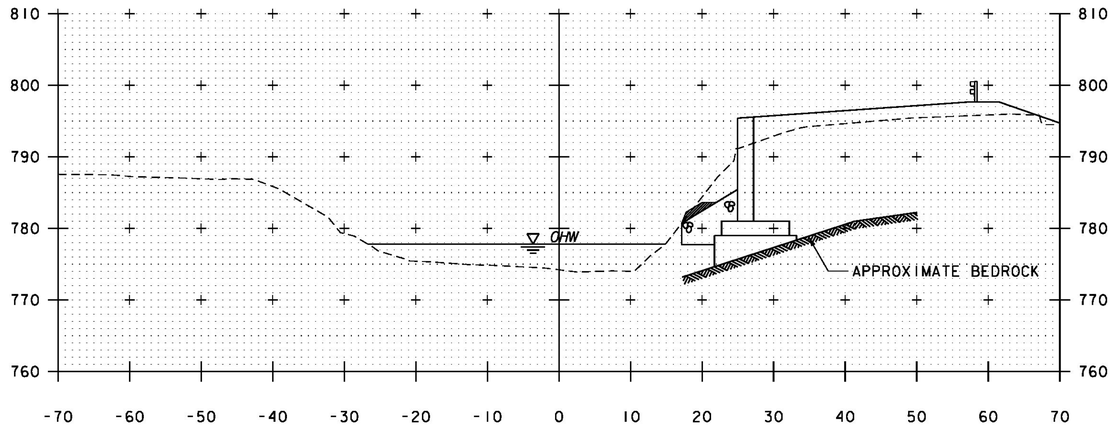


51+60

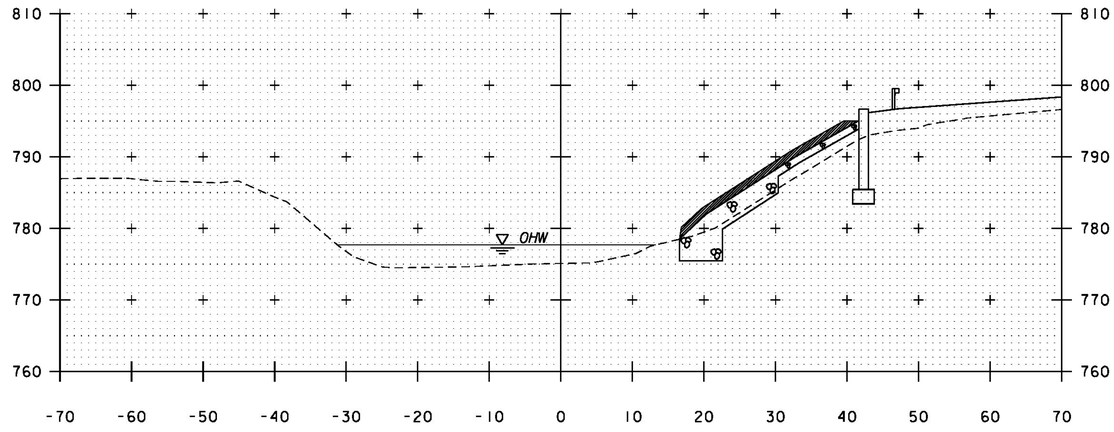


52+00

STA. 52+00, RT
END UNCLASSIFIED CHANNEL EXCAVATION
GEOTEXTILE UNDER STONE FILL
STONE FILL, TYPE III, & GRUBBING MATERIAL



51+50



51+75

CHANNEL CROSS SECTIONS

SCALE 1" = 10'-0"

STA. 51+50 - 52+00

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BR 021I(32)
FILE NAME: z13J080xsl.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: K.C. BARRY
DESIGNED BY: K.C. BARRY	CHECKED BY: E.F. LAWES
CHANNEL CROSS SECTIONS (4 OF 4)	SHEET 56 OF 62

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REMOVAL AND REPLACEMENT OF BRIDGE NO. 8 OVER THE HUNTINGTON RIVER IN HUNTINGTON, VT. BRIDGE NO. 8 IS LOCATED ON MAIN ROAD (TH 1) APPROXIMATELY 3.9 MILES NORTH OF THE INTERSECTION OF MAIN ROAD AND VT ROUTE 17 AND CONSISTS OF A ROLLED STEEL BEAM SUPERSTRUCTURE ON CONCRETE ABUTMENTS. THE EXISTING BRIDGE NO. 8 WILL BE REMOVED ALONG WITH PARTIAL REMOVAL OF THE EXISTING ABUTMENTS AND REPLACED WITH A NEW STEEL PLATE GIRDER BRIDGE SPANNING 94 FT OVER THE HUNTINGTON RIVER ON NEW ABUTMENTS AND ON A NEW ALIGNMENT.

THE BRIDGE REPLACEMENT INCLUDES THE REMOVAL OF THE EXISTING ROLLED STEEL BEAM SUPERSTRUCTURE, PARTIAL REMOVAL OF THE SPILL THROUGH ABUTMENT 1 DOWN TO GRADE, REMOVAL OF ABUTMENT 2 DOWN TO THE TOP OF FOOTING, AND CONSTRUCTION OF A 94'-0" SINGLE SPAN BRIDGE. THE NEW BRIDGE WILL CONSIST OF STEEL PLATE GIRDERS, A CAST-IN-PLACE CONCRETE OVERLAY TO CREATE A BRIDGE WIDTH OF 27'-4", AND NEW PRECAST CONCRETE ABUTMENTS. ABUTMENT 1 WILL BE AN INTEGRAL ABUTMENT ON H-PILES AND ABUTMENT 2 WILL BE A FIXED ABUTMENT ON LEDGE. CONSTRUCTION WILL ALSO INCLUDE THE ASSOCIATED APPROACH WORK, INSTALLATION OF BRIDGE APPROACH SLABS, REALIGNMENT OF ROADWAY, AND NEW GUARDRAIL.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, AS WELL AS WASTE, BORROW AND STAGING AREAS, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.65 ACRES.

IT IS ANTICIPATED THAT THIS PROJECT WILL LAST ONE CONSTRUCTION SEASON.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE AREA IS A TRANSITION FROM STEEPER FORESTED AREA ON THE EAST SIDE TO A GENERALLY FLAT AREA TO THE WEST WITH BOTH OPEN AGRICULTURAL FIELDS AND WOODED AREAS. THE PROJECT IS LOCATED IN A LARGELY UNDEVELOPED RURAL AREA WITH A FEW HOUSES OUTSIDE THE PROJECT AREA WITH FIELD AND FOREST BUFFERS. TOWN HIGHWAY 1 AND AN ACCESS DRIVE ARE WITHIN THE PROJECT SITE.

1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

THE HUNTINGTON RIVER IS THE ONLY WATER SOURCE ON THE PROJECT SITE, ALTHOUGH AN INTERMITTENT STREAM IS LOCATED JUST TO THE EAST OF THE PROJECT. AT THE PROJECT LOCATION THE HUNTINGTON RIVER IS CHARACTERIZED AS AN INCISED CHANNEL HAVING A SANDY GRAVEL STREAMBED WITH SOME BOULDERS AND STONE FILL AROUND THE EXISTING ABUTMENTS. THE TRIBUTARY AREA AT THE BRIDGE CROSSING IS 18.4 SQUARE MILES. THERE IS A CLASS II FORESTED WETLAND LOCATED TO THE NORTHEAST WHICH THE PROJECT LIMITS EXTEND INTO.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF HARDWOOD AND SOFTWOOD TREES AND UNDERGROWTH. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY REPLACEMENT OF THE EXISTING BRIDGE. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF CHITTENDEN, VERMONT. SOILS ON THE SOUTHEAST OF THE PROJECT SITE ARE CABOT SILT LOAM, 3% TO 25% SLOPES, "K FACTOR" = 0.49. TO THE SOUTHWEST SOIL CONSISTS OF STETSON GRAVELLY FINE SANDY LOAM, 5% TO 12% SLOPES, "K FACTOR" = 0.15. ON THE WEST SIDE AND NORTHEAST BANK OF THE HUNTINGTON RIVER SOILS CONSIST OF HADLEY VERY FINE SANDY LOAM FREQUENTLY FLOODED, 0% TO 3% SLOPES "K-FACTOR" = 0.32. THE NORTHEAST PORTION OF THE SITE CONSIST OF PERU EXTREMELY STONY LOAM, 20% TO 60% SLOPES, "K FACTOR" = 0.28. THE SOIL IN THE IMMEDIATE VICINITY OF THE BRIDGE ARE CONSIDERED HIGHLY ERODIBLE DUE TO SIGNIFICANT SLOPES.

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:
0.0-0.23 = LOW EROSION POTENTIAL
0.24-0.36 = MODERATE EROSION POTENTIAL
0.37 AND HIGHER = HIGH EROSION POTENTIAL

1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO
HISTORICAL OR ARCHEOLOGICAL AREAS: YES. ARCHEOLOGICAL AREAS HAVE BEEN IDENTIFIED TO THE NORTHEAST AND NORTHWEST OF THE SITE. DUE TO THEIR VICINITY TO THE PROJECT AREAS TO THE NORTHEAST WILL BE PROTECTED BY BARRIER FENCE TO ENSURE CONSTRUCTION ACTIVITIES DO NOT IMPACT THESE AREAS.
PRIME AGRICULTURAL LAND: YES. THE BRIDGE REPLACEMENT WILL NOT LIKELY REDUCE THE AGRICULTURAL POTENTIAL OF THE LAND.
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: HUNTINGTON RIVER
WETLANDS: YES. A CLASS II WETLAND FEATURE WAS LOCATED ON THE OUTSIDE OF THE PROJECT AREA EAST OF THE BRIDGE.

1.3 RISK EVALUATION

THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED.

PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES. BECAUSE OF THE ARCHEOLOGIC AREAS TO THE NORTHEAST, BARRIER FENCE SHALL BE USED ADJACENT TO THOSE AREAS.

1.4.2 LIMIT DISTURBANCE AREA

PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

1.4.3 SITE ENTRANCE/EXIT STABILIZATION

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTORS PROGRESS SCHEDULE.

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES.

1.4.4 INSTALL SEDIMENT BARRIERS

SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

FILTER CURTAIN WILL BE INSTALLED WHERE WORK MUST TAKE PLACE WITHIN THE LIMITS OF THE HUNTINGTON RIVER AS PROPOSED ON THE EPSC PLAN.

1.4.5 DIVERT UPLAND RUNOFF

DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCTION SITE.

DIVERSION MEASURES ARE NOT ANTICIPATED FOR THIS PROJECT.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSIVE POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

CHECK STRUCTURES ARE NOT ANTICIPATED FOR THIS PROJECT.

1.4.7 CONSTRUCT PERMANENT CONTROLS

PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS.

PERMANENT EROSION CONTROL STRUCTURES ARE NOT ANTICIPATED FOR THIS PROJECT.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION.

SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3.

THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION

VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK SITE HANDBOOK FOR GUIDANCE.

1.4.10 STABILIZE SOIL AT FINAL GRADE

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

1.4.11 DE-WATERING ACTIVITIES

DISCHARGE FROM DEWATERING ACTIVITIES THAT FLOWS OFF OF THE CONSTRUCTION SITE MUST NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE VERMONT WATER QUALITY STANDARDS.

TREATMENT OF DEWATERING IS NOT ANTICIPATED.

1.4.12 INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR CONSTRUCTION GENERAL PERMIT AUTHORIZATION STIPULATIONS.

1.5 SEQUENCE AND STAGING

THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

1.5.1 CONSTRUCTION SEQUENCE

1.5.2 OFF-SITE ACTIVITIES

IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SUBSECTIONS 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

vhb

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 021I(32)

FILE NAME: z13J080epsc_narrative.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: J.D. KEENER
EPSC NARRATIVE

PLOT DATE: 8/15/2016
DRAWN BY: J.D. KEENER
CHECKED BY: E.F. LAWES
SHEET 57 OF 62

N

VT STATE PLANE GRID

STETSON GRAVELLY FINE SANDY LOAM
5% - 12% SLOPES
LOW EROSION POTENTIAL
K = 0.15

HADLEY VERY FINE SANDY LOAM
FREQUENTLY FLOODED
0% - 3% SLOPES
LOW EROSION POTENTIAL
K = 0.32

PERU EXTREMLY STONY LOAM
20% - 60% SLOPES
MODERATE EROSION POTENTIAL
K = 0.28

CABOT SILT LOAM
3% - 25% SLOPES
HIGH EROSION POTENTIAL
K = 0.49

BEGIN BRIDGE
STA 11+67.80
F.G. 793.49

END BRIDGE
STA 12+65.01
F.G. 796.09

BEGIN APPROACH
STA 9+75.00

BEGIN PROJECT
STA 10+50.00

END PROJECT
STA 14+50.00

END APPROACH
STA 15+25.00

RIPARIAN BUFFER

70° 0' 0" (TYP)

HUNTINGTON RIVER

TO STARKSBORO

TO RICHMOND

MAIN ROAD (TH 1)

TOWN ROW

WETLAND BUFFER

10+00 11+00 12+00 13+00 14+00 15+00 15+50

OHW MHW

SCALE 1" = 20'-0"
20 0 20

vhb

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080bdr_ero.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: J.D. KEENER	CHECKED BY: E.F. LAWES
EPSC EXISTING SITE PLAN	SHEET 58 OF 62

N

VT STATE PLANE GRID

BEGIN BRIDGE
STA 11+67.80
F.G. 793.49

END BRIDGE
STA 12+65.01
F.G. 796.09

END PROJECT
STA 14+50.00

END APPROACH
STA 15+25.00

BEGIN APPROACH
STA 9+75.00

BEGIN PROJECT
STA 10+50.00

RIPARIAN BUFFER

70° 0' 0" (TYP)

HUNTINGTON RIVER

STONE FILL, TYPE III

STONE FILL, TYPE I

STONE FILL, TYPE I (TYP)

STONE FILL, TYPE I

MAJOR CHORD

STONE FILL, TYPE III

POST MAIN RD STA. 12+14.00 =
CHANNEL STA. 51+00.00
Δ = 48° 00' 00.00" LT

TO STARKSBORO

TO RICHMOND

MAIN ROAD (TH 1)

TOWN ROW

GRAVEL DRIVE

TELEPHONE

GUY

OHW

MHD

CZ

PDF

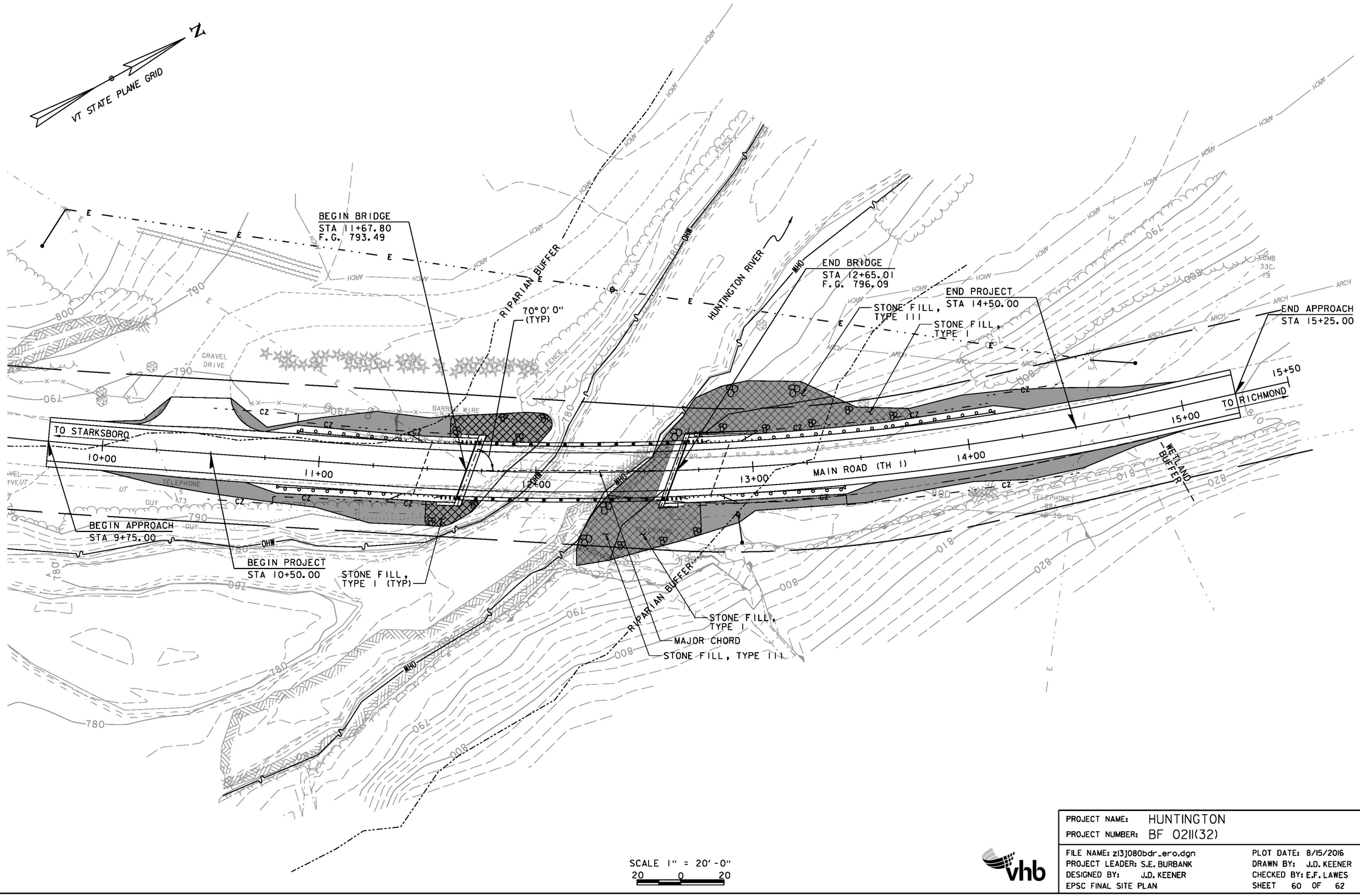
BF

ARCH

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME:	z13J080bdr_ero.dgn
PROJECT LEADER:	S.E. BURBANK
DESIGNED BY:	J.D. KEENER
EPSC CONSTRUCTION SITE PLAN	
PLOT DATE:	8/15/2016
DRAWN BY:	J.D. KEENER
CHECKED BY:	E.F. LAWES
SHEET	59 OF 62

vhb



PROJECT NAME:	HUNTINGTON
PROJECT NUMBER:	BF 0211(32)
FILE NAME: z13J080bdr_ero.dgn	PLOT DATE: 8/15/2016
PROJECT LEADER: S.E. BURBANK	DRAWN BY: J.D. KEENER
DESIGNED BY: J.D. KEENER	CHECKED BY: E.F. LAWES
EPSC FINAL SITE PLAN	SHEET 60 OF 62

VAOT RURAL AREA MIX					
	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
37.5%	22.5	45	CREEPING RED FESCUE	85%	98%
37.5%	22.5	45	TALL FESCUE	90%	95%
5.0%	3	6	RED TOP	90%	95%
15.0%	9	18	BIRDSFOOT TREFOIL	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	85%	95%
100%	60	120			

VAOT URBAN AREA MIX					
	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
42.5%	34	68	CREEPING RED FESCUE	85%	98%
10.0%	8	16	PERENNIAL RYE GRASS	90%	95%
42.5%	34	68	KENTUCKY BLUE GRASS	85%	85%
5.0%	4	8	ANNUAL RYE GRASS	85%	95%
100%	80	160			

SOIL AMENDMENT GUIDANCE			
FERTILIZER		LIME	
BROADCAST	HYDROSEED	BROADCAST	HYDROSEED
10-20-10	*FOLLOW*	PELLETIZED	*FOLLOW*
500 LBS/AC	*MANUFACTURER*	2 TONS/AC	*MANUFACTURER*

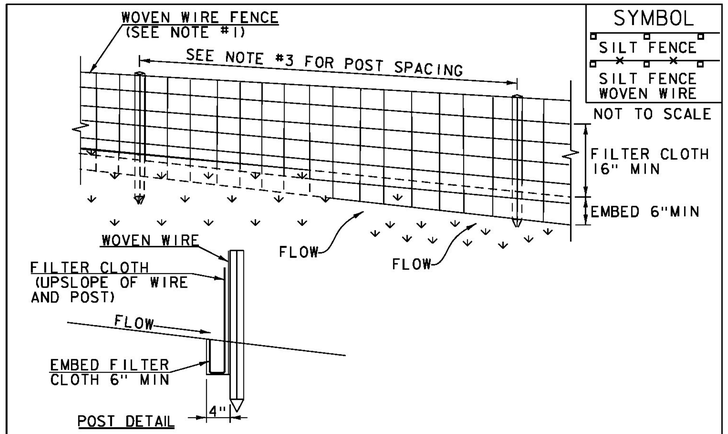
CONSTRUCTION GUIDANCE

1. RURAL SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
2. URBAN SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED LAWN AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
7. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED
8. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

REVISIONS	
JUNE 23, 2009	WHF
JANUARY 15, 2010	WHF
FEBRUARY 16, 2011	WHF



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

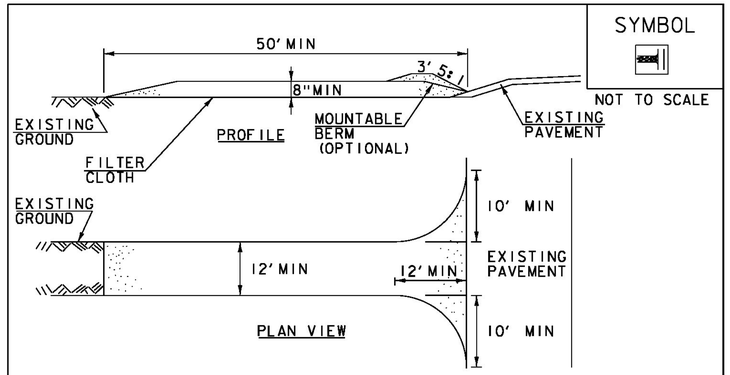
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) ~~OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).~~

REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
JANUARY 13, 2009	WHF



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

vhb

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

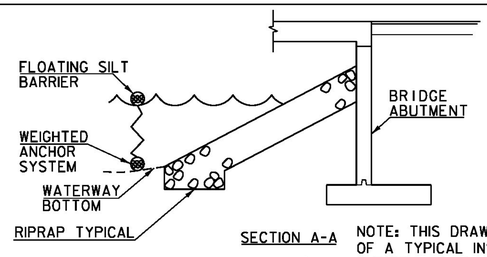
FILE NAME: zl3J080details_ero.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: VTRANS
EPSC DETAILS (1 OF 2)

PLOT DATE: 9/22/2016
DRAWN BY: E.F. LAWES
CHECKED BY: S.E. BURBANK
SHEET 61 OF 62

VHB 57737

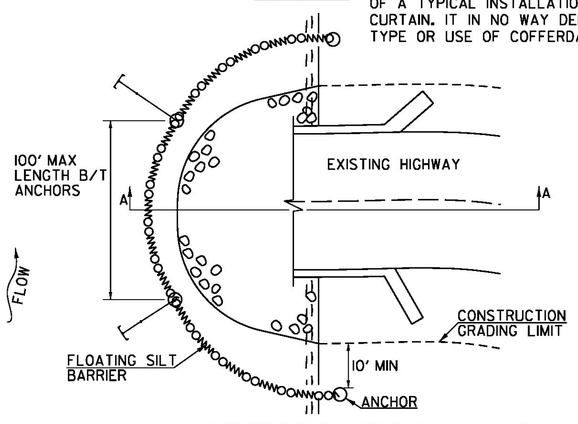
SYMBOL

NOT TO SCALE



SECTION A-A

NOTE: THIS DRAWING IS A DEPICTION OF A TYPICAL INSTALLATION OF FILTER CURTAIN. IT IN NO WAY DEFINES THE TYPE OR USE OF COFFERDAM IF USED.



CONSTRUCTION SPECIFICATIONS

1. FILTER CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FEET/SECOND.
2. MAXIMUM 100' LENGTH BETWEEN ANCHORS.
3. LAST SECTION SHALL TERMINATE A MINIMUM OF 10' BEYOND LIMIT OF DISTURBANCE.
4. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE WHICH ALLOWS THE CURTAIN TO CONFORM TO THE BOTTOM OF THE WATERWAY.
5. THE CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE MINIMIZING THE ESCAPE OF SEDIMENTS INTO WATERWAY.

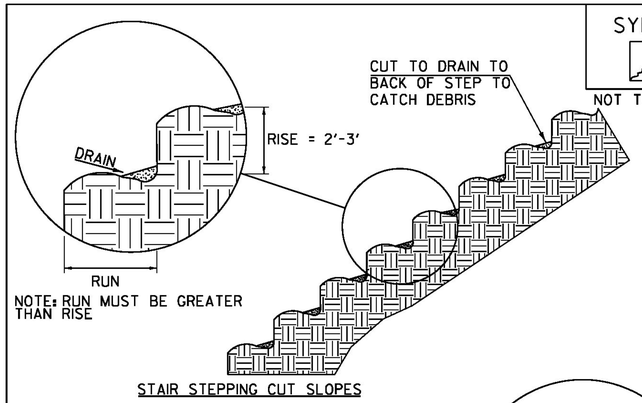
FILTER CURTAIN

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY ITEM 649.61).

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF
SEPTEMBER 4, 2009	WHF

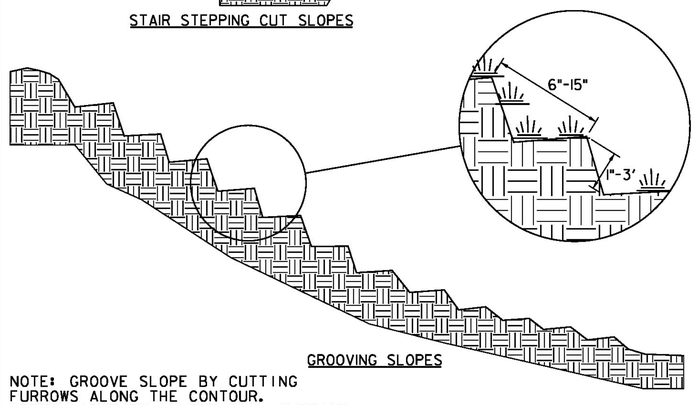
SYMBOL

NOT TO SCALE



NOTE: RUN MUST BE GREATER THAN RISE

STAIR STEPPING CUT SLOPES



GROOVING SLOPES

NOTE: GROOVE SLOPE BY CUTTING FURROWS ALONG THE CONTOUR. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER AND RETAIN LIME, FERTILIZER AND SEED.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SURFACE ROUGHENING

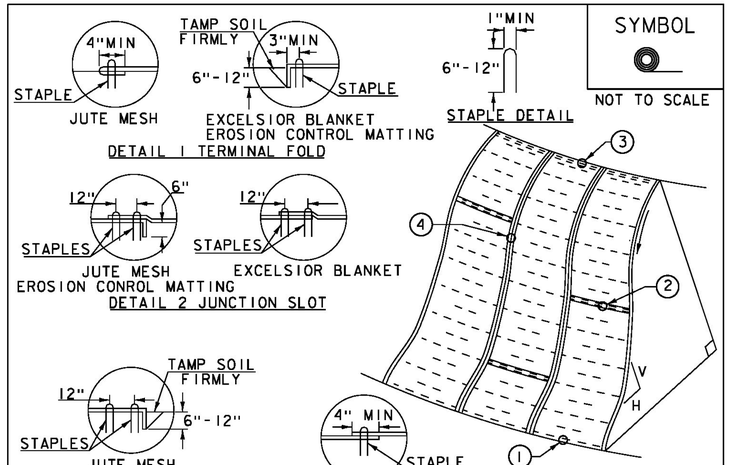
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF

SYMBOL

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. APPLY TO SLOPES GREATER THAN 3H: IV OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) ~~OR PERMANENT EROSION MATTING (PAY ITEM 653.21).~~

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF

PROJECT NAME: HUNTINGTON
PROJECT NUMBER: BF 0211(32)

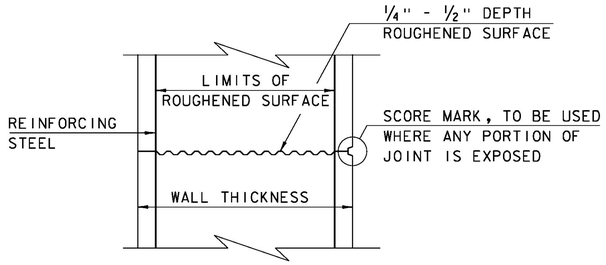
FILE NAME: z13J080details_ero.dgn
PROJECT LEADER: S.E. BURBANK
DESIGNED BY: VTRANS
EPSC DETAILS (2 of 2)

PLOT DATE: 8/15/2016
DRAWN BY: E.F. LAWES
CHECKED BY: S.E. BURBANK
SHEET 62 OF 62

VHB 57737

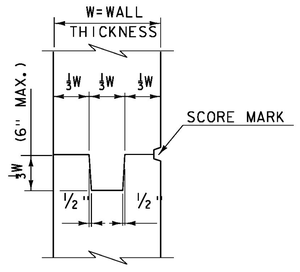
CONCRETE GENERAL NOTES

1. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1"
2. REINFORCING STEEL SIZE AND SPACING SHOWN IN THE PLANS IS BASED ON 60 KSI STEEL, UNLESS NOTED OTHERWISE. WITH THE ENGINEER'S PERMISSION, BAR SIZE AND SPACING MAY BE MODIFIED ACCORDING TO THE LATEST AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND STRUCTURES DESIGN MANUAL WHEN USING HIGHER STRENGTH STEEL.

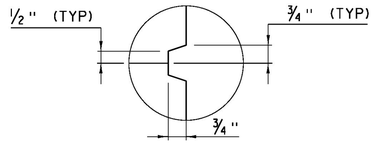


TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

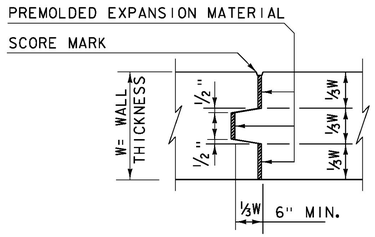
1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



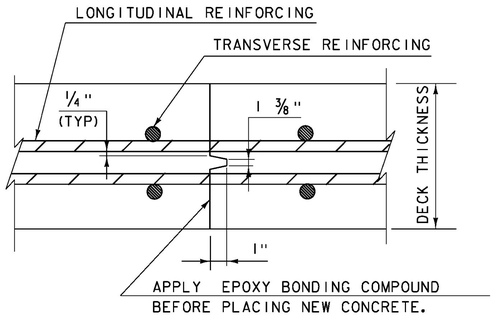
TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



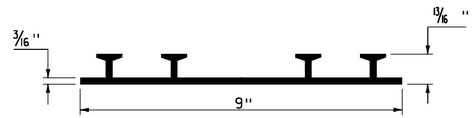
SCORE MARK DETAIL
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



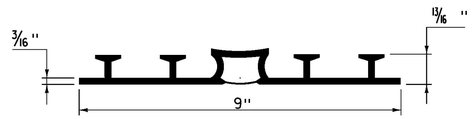
TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



P.V.C. WATERSTOP FOR CONSTRUCTION JOINTS
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

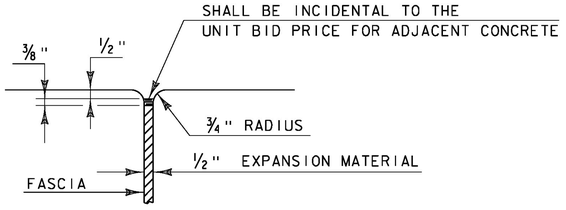
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



P.V.C. WATERSTOP FOR EXPANSION JOINTS
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



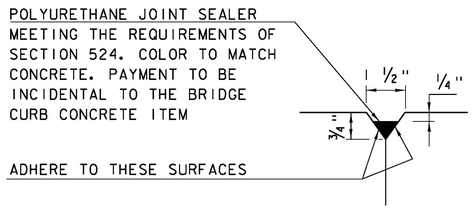
JOINT BETWEEN FASCIA AND WINGWALL
(NOT TO SCALE)

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
FEBRUARY 9, 2012	REBAR SUBSTITUTION ALLOWANCE ADDED TO CONCRETE GENERAL NOTES.

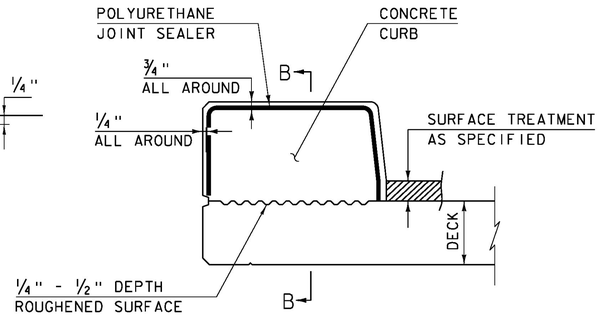
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-501.00

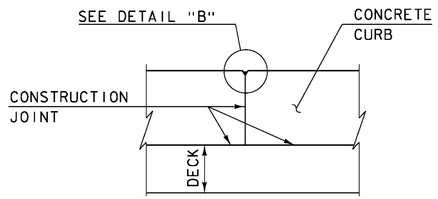


DETAIL "B"
(NOT TO SCALE)

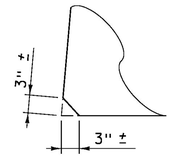


CONCRETE CURB JOINT SECTION
(NOT TO SCALE)

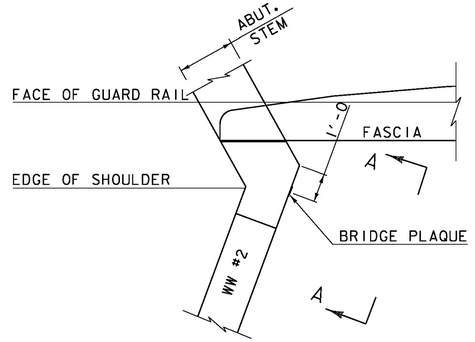
1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



SECTION B - B
(NOT TO SCALE)



ACUTE ANGLE CLIP DETAIL
(NOT TO SCALE)



PLAN

CONCRETE CURB JOINT NOTES

1. CONCRETE CURBS MAY BE PLACED IN ONE CONTINUOUS OPERATION IF AN APPROVED SHRINKAGE REDUCING ADMIXTURE LISTED IN THE SPECIAL PROVISIONS IS USED WITH THE CONCRETE MIX DESIGN. PAYMENT FOR THE SHRINKAGE REDUCING ADMIXTURE WILL BE INCIDENTAL TO THE BRIDGE CURB CONCRETE ITEM.

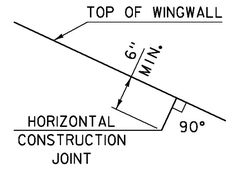
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.

3. ON MULTI-SPAN CONTINUOUS SUPERSTRUCTURES, REGARDLESS OF WHETHER APPROVED SHRINKAGE REDUCING ADMIXTURE IS USED, CURB JOINTS SHALL BE LOCATED OVER THE CENTERLINE OF PIERS AND 7'-0" EACH SIDE OF THE CENTERLINE OF EACH PIER.

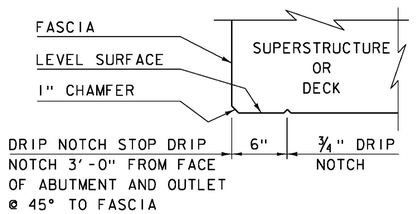
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.

5. LONGITUDINAL REINFORCING SHALL BE CONTINUOUS THROUGH CURB CONSTRUCTION JOINTS. CURB STIRRUP BARS SHALL BE TURNED AS NECESSARY TO MAINTAIN COVER IN THE FLARED CURB ENDS.

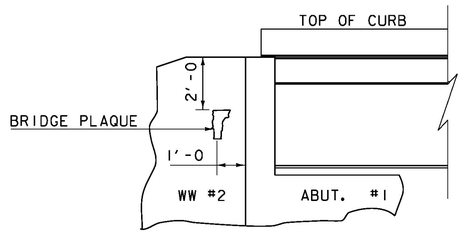
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



HORIZONTAL WINGWALL CONSTRUCTION JOINT
(NOT TO SCALE)



DRIP NOTCH DETAIL
(NOT TO SCALE)



VIEW "A - A"

BRIDGE PLAQUE
(NOT TO SCALE)

THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT #1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

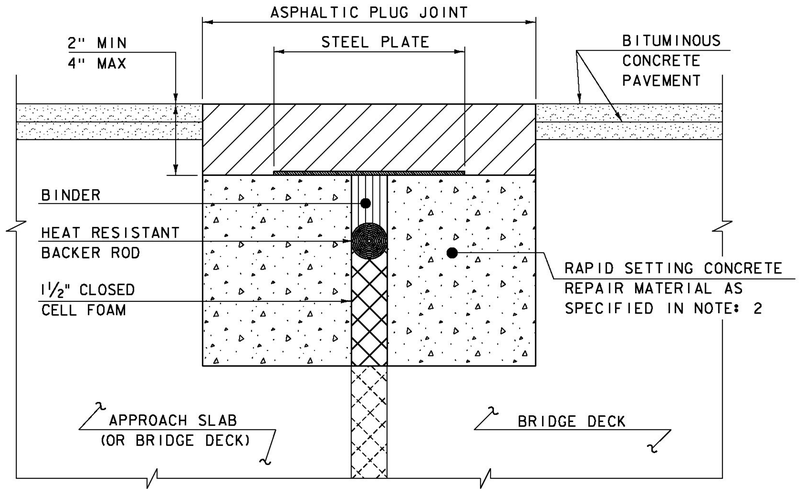
PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED AND ADDED TWO DETAILS
OCTOBER 10, 2012	MODIFIED HORZ. JOINT WINGWALL ADD 6" MIN. DIMENSION

CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-502.00



ASPHALTIC PLUG JOINT DETAIL - REHAB

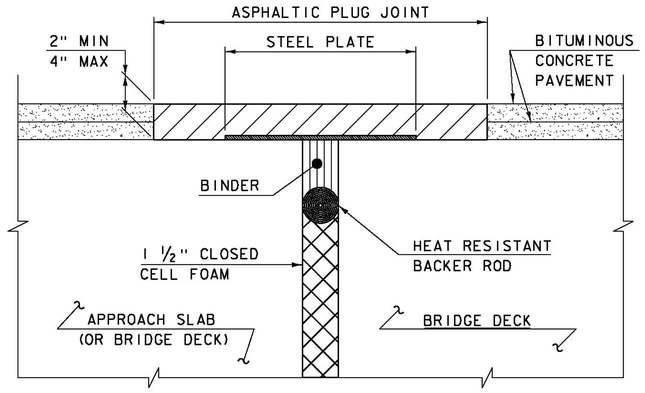
NOTES:

1. THE CONTRACTOR SHALL REMOVE ALL ASPHALTIC PLUG JOINT MATERIAL AND DETERIORATED CONCRETE AS DIRECTED BY THE ENGINEER. REMOVAL OF THE FIRST 4 INCHES OF MATERIAL SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 516.10 BRIDGE EXPANSION JOINT, ASPHALTIC PLUG. ANY REMOVAL OF MATERIAL GREATER THAN 4 INCHES SHALL BE INCLUDED IN THE BID PRICE OF ITEM 580.20 RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE.

2. THE CONTRACTOR SHALL REPLACE REMOVED MATERIAL THAT IS LESS THAN 4" FROM FINISHED GRADE WITH ASPHALTIC PLUG JOINT MATERIAL MEETING THE REQUIREMENTS OF SUBSECTION 707.15. ALL REMOVED MATERIAL THAT IS GREATER THAN 4 INCHES FROM FINISHED GRADE SHALL BE REPLACED WITH RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE MEETING THE REQUIREMENTS OF SUBSECTION 780.04.

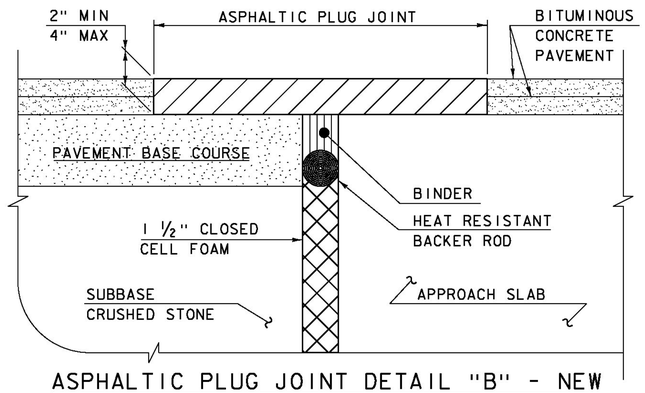
3. REINFORCING STEEL NOT SHOWN FOR CLARITY.

4. PLACE 1/4" THICK BY 8" WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE THE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRE-STAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER. THE STEEL PLATES MAY BE OMITTED WHERE THE ENGINEER DETERMINES THAT THE APPROACH SLAB OR BRIDGE DECK WILL PROVIDE INADEQUATE SUPPORT AND WHERE VERTICAL MOVEMENT OF THE PLATES MIGHT OCCUR.



ASPHALTIC PLUG JOINT DETAIL "A" - NEW

NOTE:
PLACE 1/4" THICK BY 8" WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE THE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRE-STAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER.



ASPHALTIC PLUG JOINT DETAIL "B" - NEW

ASPHALTIC PLUG JOINT NOTES

INSTALLATION:

1. LOCATE THE JOINT CENTRALLY OVER THE DECK OVERLAY EXPANSION GAP OR FIXED JOINT, MARKED OUT TO THE MANUFACTURER'S RECOMMENDED WIDTH.
2. REMOVE THE BITUMINOUS CONCRETE PAVEMENT FULL DEPTH AS SHOWN ON THE PLANS. THE PAVEMENT SHALL BE DRY AND SAW CUT TO THE LIMITS REQUIRED TO PLACE THE JOINT. A PNEUMATIC HAMMER AND CHISEL MAY BE USED ADJACENT TO THE CURB ONLY WHEN SAW CUTTING IS NOT POSSIBLE.
3. BLAST CLEAN THE JOINT AREA OF DEBRIS, ASPHALT AND SHEET MEMBRANE. THOROUGHLY DRY THE JOINT AREA WITH COMPRESSED AIR PRIOR TO APPLYING BINDER MATERIAL.
4. PLACE PROPERLY SIZED HEAT RESISTANT BACKER ROD IN THE MOVEMENT GAP ALLOWING FOR 1" +/- OF BINDER ABOVE THE ROD.
5. HEAT AND PLACE THE BINDER MATERIAL AS RECOMMENDED BY THE MANUFACTURER.
6. IMMEDIATELY AFTER TOP COATING, CAST AN ANTI-SKID MATERIAL OVER THE JOINT TO REDUCE THE RISK OF TRACKING.

WEATHER LIMITATIONS

APPLY BINDER MATERIAL ONLY WHEN THE FOLLOWING CONDITIONS PREVAIL OR AS RECOMMENDED BY THE MANUFACTURER:

1. THE AMBIENT AIR TEMPERATURE IS AT LEAST 10 DEG C (50 DEG F) AND RISING.
2. THE ROAD SURFACE IS DRY.
3. WEATHER CONDITIONS OR OTHER CONDITIONS ARE FAVORABLE AND ARE EXPECTED TO REMAIN SO FOR THE PERFORMANCE OF SATISFACTORY WORK.

DETAILS ON THIS SHEET ARE NOT TO SCALE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
AUGUST 29, 2011	ADD DETAIL "B" AND REV. NOTES

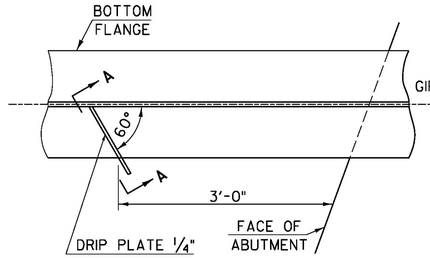
BRIDGE JOINT
ASPHALTIC PLUG

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - DIVISION

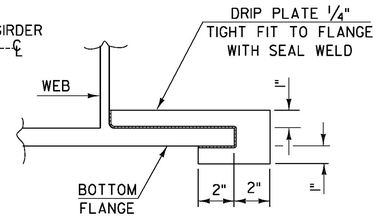
STRUCTURES DETAIL
SD-516.10

STRUCTURAL STEEL GENERAL NOTES:

1. ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH-STRENGTH BOLTS IN 15/16" DIAMETER HOLES, PER SUBSECTION 506.19, UNLESS OTHERWISE SPECIFIED.
2. ALL HOLES IN THE WEBS OF THE FASCIA GIRDERS THAT ARE NOT OTHERWISE FILLED, SHALL BE FILLED WITH EITHER BUTTON HEAD OR HEX HEAD BOLTS. THESE BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH SUBSECTION 506.19.
3. ALL WELDING SHALL CONFORM TO THE PROVISIONS OF SUBSECTION 506.10.
4. ANY CONNECTIONS THAT ARE NOT DETAILED ON THE PLANS SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STRUCTURES ENGINEER FOR APPROVAL.
5. STRUCTURAL STEEL MEMBERS DESIGNATED "CVN" IN THE PLANS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH SUBSECTION 714.01 OF THE STANDARD SPECIFICATIONS.
6. ENDS OF GIRDERS ARE TO BE VERTICAL IN THEIR FINAL POSITION.
7. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF THE GIRDERS SHALL BE TAKEN AS DIRECTED BY THE RESIDENT ENGINEER FOR USE IN DETERMINING FINISHED GRADES.

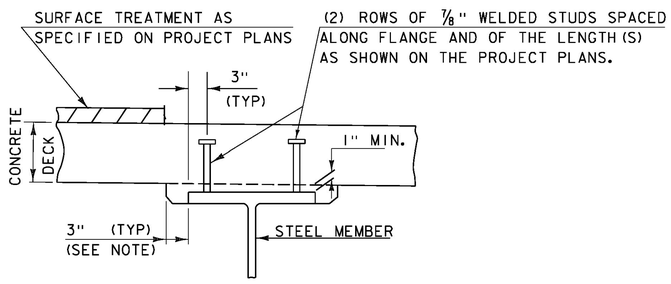


PLAN DRIP PLATE



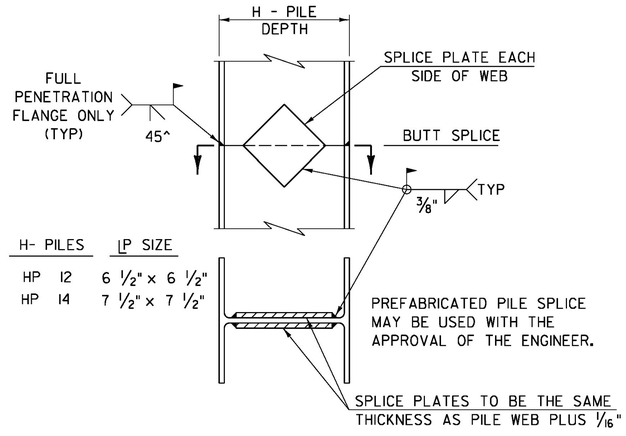
SECTION A - A

NOTE: DRIP PLATES SHALL BE PLACED ON OUTSIDE EDGE OF FASCIA GIRDERS ON THE HIGH SIDE OF ALL PIERS AND ABUTMENTS OR AS INDICATED ON PROJECT PLANS.



NOTE:
THE 3" HORIZONTAL SECTION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR THE CONSTRUCTION OF VERTICAL HAUNCHES. ANY VOIDS RESULTING FROM FORMING SYSTEM ELEMENTS SHALL BE FILLED WITH JOINT SEALER, POLYURETHANE MEETING THE REQUIREMENTS OF SECTION 524. THE COST OF THE JOINT SEALER, POLYURETHANE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

HAUNCH AND SHEAR CONNECTOR DETAIL



DETAIL OF PILE SPLICE

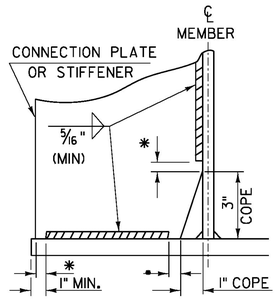
DETAILS ON THIS SHEET ARE "NOT TO SCALE" UNLESS NOTED OTHERWISE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED NOTES

STRUCTURAL STEEL DETAILS & NOTES

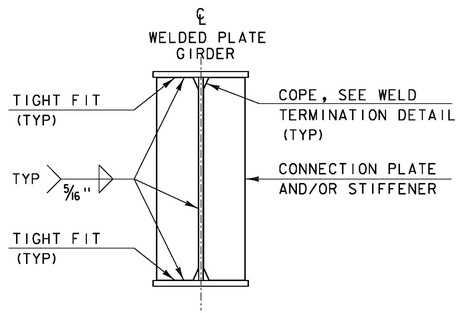
VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-601.00



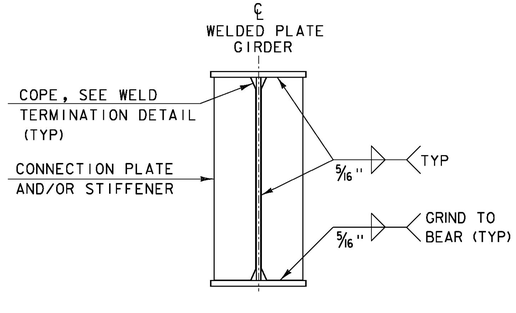
WELD TERMINATION AND COPING DETAILS FOR STEEL MEMBERS

*NO WELD FOR 3/8" MIN. 7/8" MAX. (EXCEPT MUST MAINTAIN 1" MINIMUM FROM EDGE OF FLANGE)

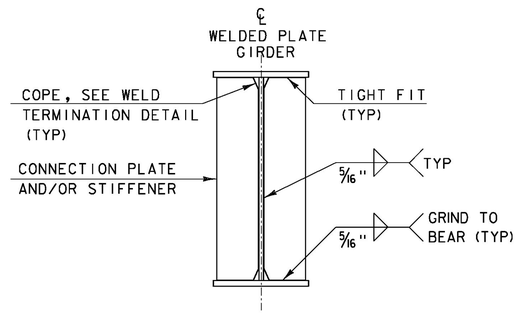


INTERMEDIATE CONNECTION PLATES AND/OR STIFFENERS FOR WELDED PLATE GIRDERS

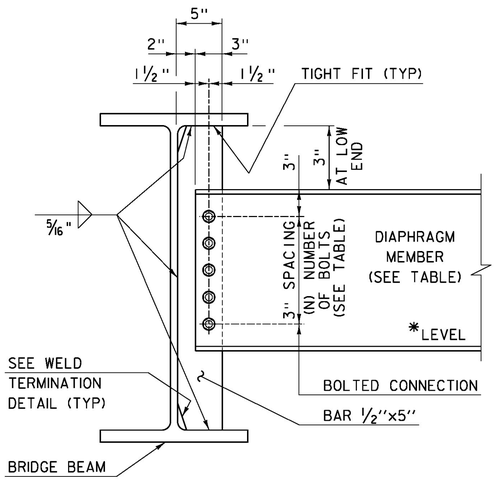
INTERMEDIATE DETAIL IS ONLY USED WHEN PLATE DOES NOT OCCUR AT AN ABUTMENT OR PIER.



ABUTMENT BEARING STIFFENERS AND/OR CONNECTION PLATES FOR WELDED PLATE GIRDERS



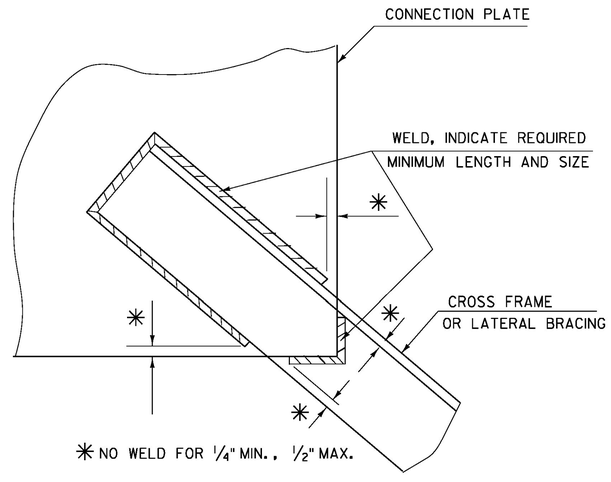
PIER BEARING STIFFENERS AND/OR CONNECTION PLATES FOR WELDED PLATE GIRDERS



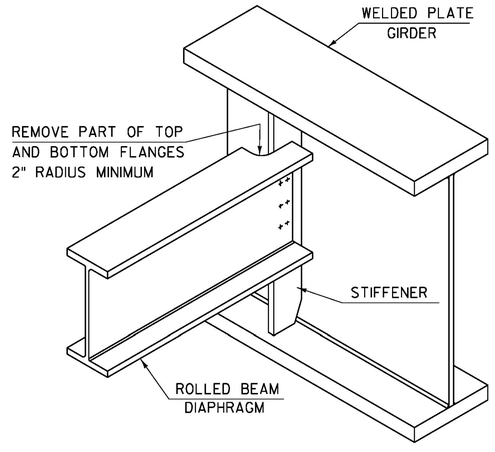
DEPTH		DIAPHRAGM MEMBER	(N) BOLTS
ROLLED BEAM	24" 30"	CI5x33.9	4
	31" 36"	MCI8x42.7	5
	37" 42"	W21x44	6
PLATE GIRDER WEB	31" 36"	W27x84	7
	37" 42"	W33x118	9
	43" 48"	W36x135	10

INTERMEDIATE DIAPHRAGMS FOR 24" TO 48" BRIDGE BEAMS

*IF CLEARANCE CANNOT BE MET, DIAPHRAGM MAY BE SLOPED.



WELD LOCATION DETAIL AT CROSS FRAMES AND LATERAL BRACING



SEE CONTRACT DRAWINGS FOR SIZES OF MEMBERS AND CONNECTION DETAILS

ROLLED BEAM USED AS DIAPHRAGM

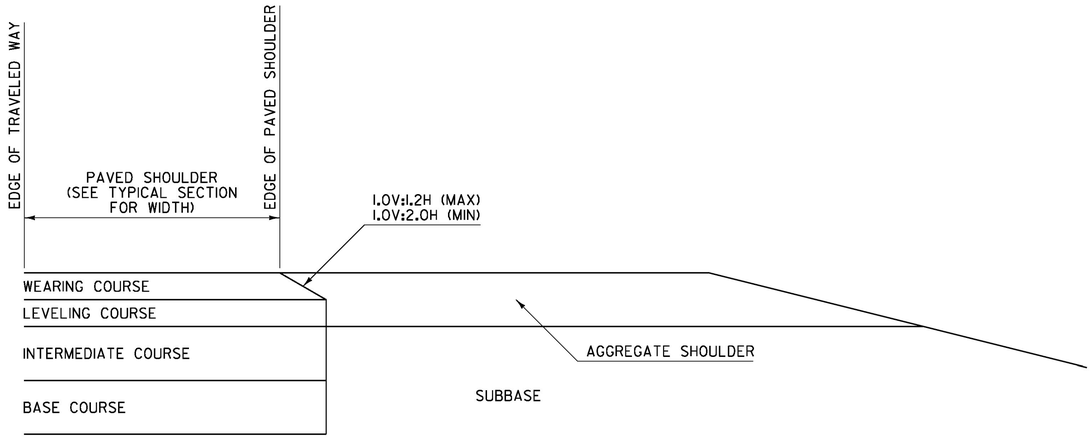
DETAILS ON THIS SHEET ARE "NOT TO SCALE" UNLESS NOTED OTHERWISE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
MAY 2, 2011	ADD INTERMEDIATE DIAPHRAGMS DETAIL & ADD NOT TO SCALE NOTE

STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

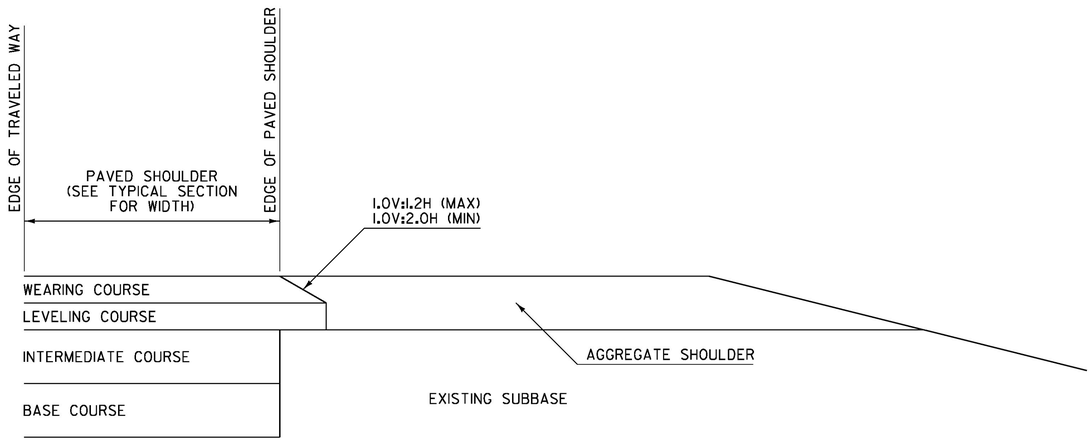
STRUCTURES DETAIL
SD-602.00



SAFETY EDGE DETAIL
FOR PAVING BELOW WEARING COURSE

NOTES:

1. THIS DETAIL IS INTENDED FOR WHEN PAVING EXTENDS BELOW THE WEARING COURSE.
2. PRIOR TO PLACEMENT OF THE LEVELING AND/OR WEARING COURSE, THE SUBBASE LOCATED BENEATH THE AGGREGATE SHOULDER SHALL BE PREPARED FLUSH WITH THE BOTTOM OF THE LEVELING COURSE.
3. BASE COURSE LIMITS MAY VARY, SEE TYPICAL SECTIONS FOR WIDTH.



SAFETY EDGE DETAIL
FOR PAVING WEARING COURSE ONLY

NOTES:

1. THIS DETAIL IS INTENDED FOR WHEN ONLY THE LEVELING AND/OR WEARING COURSE IS TO BE PLACED.
2. PAVEMENT COURSES MAY VARY, SEE TYPICAL SECTIONS FOR ACTUAL PAVEMENT COURSES REQUIRED.

REV.	DATE	DESCRIPTION
0	MAR. 29, 2016	ORIGINAL APPROVAL
OTHER DETAILS REQUIRED: NONE		
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN		

SAFETY EDGE WIDTH BASED ON WEARING COURSE THICKNESS AND A IV:1.6H SLOPE	
WEARING COURSE THICKNESS (INCHES)	NOMINAL SAFETY EDGE WIDTH (INCHES)
1.25	2.000
1.50	2.375
1.75	2.750
2.00	3.125
2.25	3.500
2.50	4.000

GENERAL NOTES:

1. PLACEMENT OF THE WEARING COURSE SHALL INCLUDE THE SAFETY EDGE, UNLESS THE FOLLOWING APPLIES:
   - A. THE ADJACENT SLOPE IS STEEPER THAN THE SAFETY EDGE.
   - B. THE EDGE OF PAVEMENT BEING PLACED ABUTS BOUND MATERIAL.
   - C. VEHICLES ARE RESTRICTED FROM LEAVING THE PAVED SURFACE (EXAMPLE: GUARDRAIL).
2. THE SAFETY EDGE SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE SLOPE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTIVE EFFORT WILL NOT BE ALLOWED.
3. THE SAFETY EDGE SHALL NOT BE CONSIDERED PART OF THE PAVED SHOULDER.
4. THIS WORK SHALL BE INCIDENTAL TO THE RESPECTIVE BITUMINOUS CONCRETE PAVEMENT ITEM.

SAFETY EDGE DETAILS

VTrans Working to Get You There
VERMONT AGENCY OF TRANSPORTATION

HIGHWAY SAFETY & DESIGN DETAIL

HSD-400.01

CIVIL DESIGN PROFESSIONALS
INNOVATIVE ENGINEERING SOLUTIONS

S.D. Ireland
Huntington BF 0211(32)
Project # 16-1034

The project quantities are as follows:

- The unit area and volume quantities are neat quantities. Contractor shall confirm the quantities and add in any additional necessary factors (i.e., waste, compaction, etc.)
- Drainage aggregate includes 12" zone behind blocks, core fill and/or voids between blocks.
- Retained zone is a 1H:1V up from the bottom back corner of the base block and includes quantity of 1" crushed stone up to 1-foot above the 100-yr HWL.

Wall	*Wall Length*	*Block Area*	*Ret. Grav.*	*Leveling Pad*	*Drainage Aggregate*
	(FT)	*(SF)*	*(CY)*	*(CY)*	*(CY)*
1	22.00	226.67	*58.00*	*3.00*	*11.00*
TOTAL:	*22.00*	*226.67*	*58.00*	*3.00*	*11.00*

Unit	SF/Unit	Wall 1	Area	Total Units	Total SF
T	5.33	5.00	26.67	5.00	26.67
HT	2.67	1.00	2.67	1.00	2.67
24M	5.33	13.00	69.33	13.00	69.33
2H	2.67	3.00	8.00	3.00	8.00
39M	5.33	13.00	69.33	13.00	69.33
3H	2.67	1.00	2.67	1.00	2.67
60M	5.33	5.00	26.67	5.00	26.67
6H	2.67	1.00	2.67	1.00	2.67
60B	5.33	1.00	5.33	1.00	5.33
72M	5.33	1.00	5.33	1.00	5.33
72B	5.33	1.00	5.33	1.00	5.33
7H	2.67	1.00	2.67	1.00	2.67
	TOTAL:	Wall 1	226.67	TOTAL SF	226.67

Vermont Agency of Transportation
Accepted as Noted
By Rob at 8:23 am, Apr 12, 2017

16-1034 4/4/2017 COPYRIGHT (c) 2011 - 2016 BY CIVIL DESIGN PROFESSIONALS. THIS DRAWING IS BEING FURNISHED FOR THIS SPECIFIC PROJECT ONLY. COPY AND/OR REUSE WITHOUT THE CONSENT OF CIVIL DESIGN PROFESSIONALS IS PROHIBITED.

HUNTINGTON BF 0211(32)
HUNTINGTON, VERMONT

GENERAL NOTES:

QUALITY ASSURANCE PROVISIONS:

1. MULTIPLE CONTRACTORS (FENCE, WALL, GRADING, ETC.) MAY BE USED TO COMPLETE THE OVERALL PROJECT AS SHOWN ON THESE SHOP DRAWINGS. PLANS DO NOT DEFINE SCOPE OF WORK FOR INDIVIDUAL ENTITIES. SEE CONTRACT DOCUMENTS FOR SPECIFIC DETAILS ON THE SCOPE OF WORK THAT WILL BE PROVIDED BY ALL PARTIES.

2. WALL CONSTRUCTION SHALL BE SUPERVISED BY A QUALIFIED ENGINEER OR TECHNICIAN TO VERIFY FIELD AND SITE SOIL CONDITIONS. IF THIS WORK IS NOT PERFORMED BY THE SITE GEOTECHNICAL ENGINEER, A QUALIFIED GEOTECHNICAL ENGINEER/TECHNICIAN SHALL BE CONSULTED IN THOSE MATTERS PERTAINING TO THE SOIL CONDITIONS AND WALL PERFORMANCE.

3. THE FOUNDATION SOILS AT THE BASE OF THE WALL(S) SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER. ANY UNSUITABLE SOILS OR IMPROPERLY COMPACTED EMBANKMENT MATERIAL SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER PRIOR TO WALL CONSTRUCTION TO PROVIDE ADEQUATE BEARING CAPACITY AND MINIMIZE SETTLEMENT.

4. ALL WALL EXCAVATION AND RETAINED SOILS SHALL BE INSPECTED FOR GROUNDWATER CONDITIONS. ANY ADDITIONAL DRAINAGE PROVISIONS REQUIRED IN THE FIELD SHALL BE INCORPORATED INTO THE WALL CONSTRUCTION AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

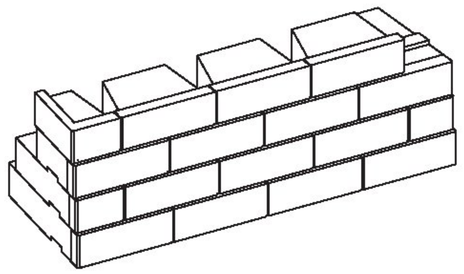
5. WALL BACKFILL MATERIAL SHALL BE TESTED AND APPROVED BY THE ENGINEER, MEETING THE MINIMUM REQUIREMENTS OF THE APPROVED DESIGN PLANS OR SPECIFICATIONS.

6. ALL SOIL BACKFILL SHALL BE TESTED BY THE GEOTECHNICAL ENGINEER FOR MOISTURE, DENSITY, AND COMPACTION PERIODICALLY (EVERY 2' VERTICALLY, 100'-200' C/C) MEETING THE MINIMUM REQUIREMENTS OF THE APPROVED DESIGN PLANS OR SPECIFICATIONS.

7. THE CONTRACTOR SHALL ESTABLISH AND MAINTAIN QUALITY CONTROL FOR THE CONSTRUCTION OF THE WALL TO ASSURE COMPLIANCE WITH CONTRACT REQUIREMENTS AND MAINTAIN RECORDS OF ITS QUALITY CONTROL.

8. ALL WALL ELEVATIONS, GRADES, AND BACK SLOPE CONDITIONS SHALL BE VERIFIED BY THE ENGINEER IN THE FIELD FOR CONFORMANCE WITH APPROVED DESIGN PLANS. ANY REVISIONS TO THE STRUCTURE GEOMETRY OR DESIGN CRITERIA SHALL REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

9. THE STATE SHALL PROVIDE THE SITE GEOTECHNICAL ENGINEER DURING THE EXCAVATION AND CONSTRUCTION OF THE WALL.



SHEET INDEX

SHEET	DESCRIPTION
1.00	TITLE SHEET
2.00	SITE PLAN
3.00	SPECIFICATIONS
4.00	DETAILS (TYPICAL)
4.01	DETAILS (TYPICAL)
5.00	SECTION A - A
6.00	WALL 1 ELEVATION

GENERAL NOTES:

DESIGN PROVISIONS:

1. THE WALL IS DESIGNED TO MEET THE FOLLOWING DESIGN PARAMETERS AND MAXIMUM SURCHARGE LOADINGS:

UNIT TYPE:	RECON SERIES 50
BATTER:	3.6°
REINFORCEMENT:	GRAVITY
DESIGN METHOD:	AASHTO LRFD
LIVE LOAD:	250 PSF
DEAD LOAD:	0 PSF
TOE SLOPE:	1.5H:1V
BACK SLOPE:	NONE
SEISMIC:	N/A
HYDROSTATIC:	N/A (DRAINAGE PROVIDED)

(SEE AASHTO LRFD STANDARD SPECIFICATIONS FOR LOAD FACTORS)

2. THE FOUNDATION SOILS AT THE WALL LOCATIONS SHALL BE CAPABLE OF SAFELY SUPPORTING THE MAXIMUM APPLIED BEARING PRESSURE AS SHOWN ON THE WALL PROFILES WITHOUT FAILURE OR EXCESSIVE SETTLEMENT. LOCAL BEARING CAPACITY SHALL BE CONFIRMED BY THE SITE GEOTECHNICAL ENGINEER AFTER FOUNDATION EXCAVATION AND PRIOR TO WALL CONSTRUCTION.

3. THE FOLLOWING EFFECTIVE STRENGTH PARAMETERS WERE USED IN THE PREPARATION OF THE STRUCTURAL CALCULATIONS FOR THE RECON RETAINING WALL SYSTEM:

	Φ	c	γ	SOIL TYPE
SELECT BACKFILL	34°	0 PSF	140 PCF	704.08 - GRANULAR BACKFILL FOR STRUCTURES
RETAINED SOIL	32°	0 PSF	110 PCF	SAND
FOUNDATION SOIL	32°	0 PSF	110 PCF	SAND
LEVELING PAD	40°	0 PSF	110 PCF	CRUSHED STONE

4. SOILS INFORMATION OBTAINED FROM THE GEOTECHNICAL REPORT ADDENDUM PREPARED BY VERMONT AGENCY OF TRANSPORTATION LAST DATED 9/16/2015. THE FOUNDATION SOILS SHALL BE EVALUATED BY A GEOTECHNICAL ENGINEER OR OTHER QUALIFIED REPRESENTATIVE OF THE OWNER TO ENSURE THAT THE BEARING SOILS MEET OR EXCEED THE DESIGN CONDITIONS OR ASSUMPTIONS.

✳5. CDP HAS NOT PERFORMED A GLOBAL STABILITY ANALYSIS. PER SECTION 5.2.2 OF THE GEOTECHNICAL REPORT ADDENDUM, VERMONT AGENCY OF TRANSPORTATION SHALL PERFORM A FINAL GLOBAL STABILITY ANALYSIS AND CONFIRM THE RESULTS WITH CDP PRIOR TO CONSTRUCTION. IF A FINAL GLOBAL STABILITY ANALYSIS HAS NOT BEEN PERFORMED THEN THESE PLANS ARE VOID.

Vermont Agency of Transportation
Accepted as Noted
By Rob at 8:24 am, Apr 12, 2017

STATE OF VERMONT
MICHAEL ROBERT JOHNSON
NO. 8619
CIVIL
LICENSED
PROFESSIONAL ENGINEER

MICHAEL R. JOHNSON, P.E. Date: 4/4/17

CIVIL DESIGN PROFESSIONALS
2609 LYNDALE AVENUE SOUTH, SUITE 200 BLOOMINGTON, MN 55420
PHONE: (952) 303-5262 | FAX: (763) 392-4959 | WEBSITE: WWW.CDPUS.COM
REGISTERED PROFESSIONAL ENGINEER, D.C.D.S.A. CIVIL DESIGN PROFESSIONALS

No.	Date	Revision	By
1	3/6/17	PER STATE COMMENTS	JBC
2	4/4/17	PER STATE COMMENTS	JBC
3			
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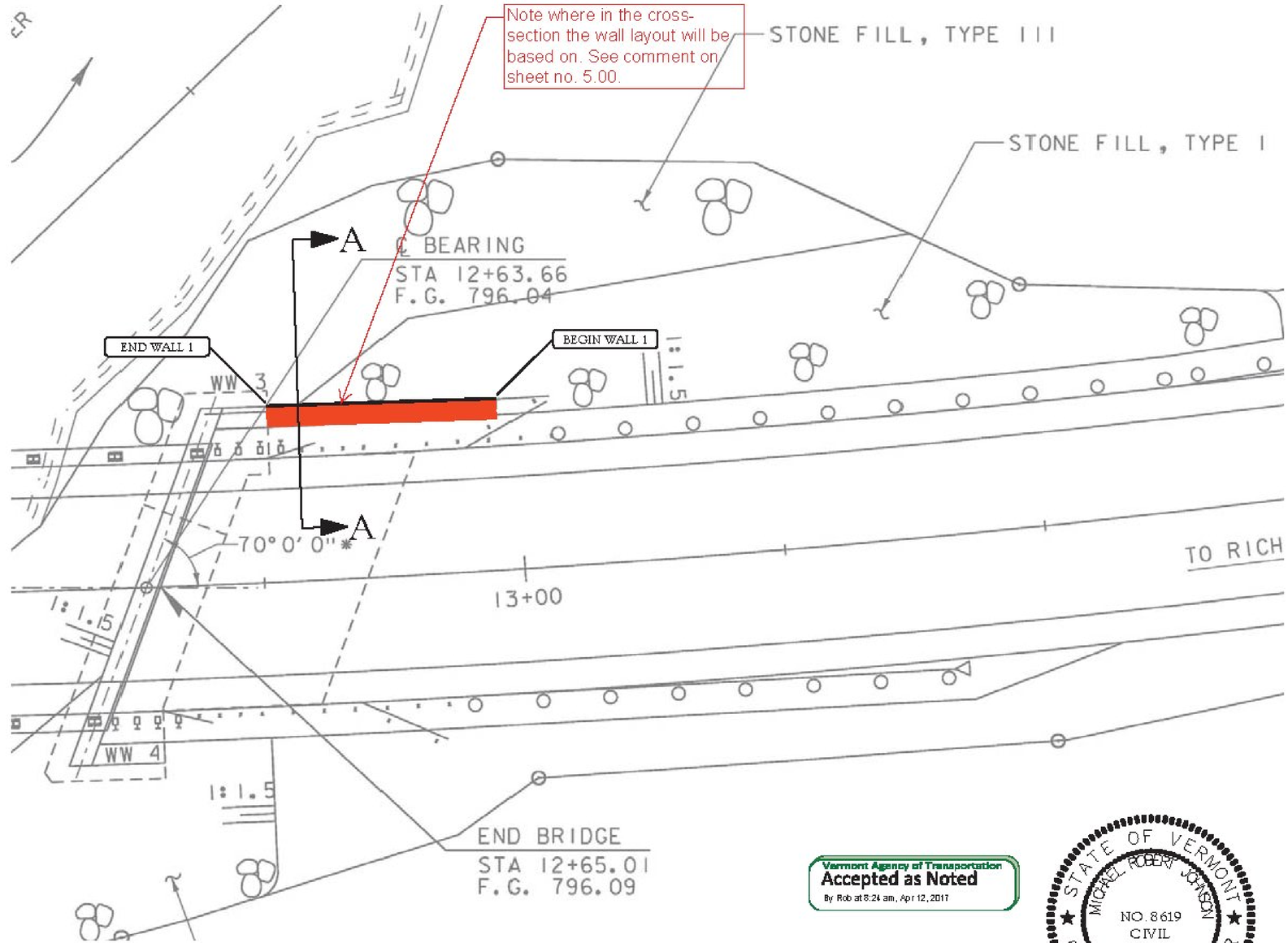
Designed By: JBC	Project: HUNTINGTON BF 0211(32) HUNTINGTON, VERMONT	Registration No: 8619
Scale: N.T.S.		Project No: 161034
Date: JAN 10, 2017	Title: TITLE SHEET	Sheet No: 1.00

NOTES:

1. THE SITE PLAN SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY. IT WAS REPRODUCED FROM VHB PLAN AND ELEVATION PLAN (PROJECT #BF 0211 (32) DATED 8/22/2016.
2. THE WALLS ARE NOT DESIGNED FOR CONCENTRATED FLOW DIRECTED TO THE BACK OF THE WALL, INCLUDING BUT NOT LIMITED TO: SWALES, DOWNSPOUTS, ETC. GRADING SHALL DIRECT WATER AROUND THE ENDS OF THE WALLS WHEN POSSIBLE OR INTO COLLECTOR DRAINS.
3. THE APPROXIMATE LOCATION OF UTILITIES KNOWN TO EXIST AS SHOWN ON THE PLANS ARE BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME OF PLAN PREPARATION.
4. THE CONTRACTOR SHALL VERIFY INVERTS OF PROPOSED AND EXISTING UTILITIES TO ENSURE THERE ARE NO CONFLICTS. THE ENGINEER SHALL BE CONTACTED IF CONFLICTS ARISE AND AN ALTERNATIVE DESIGN MAY BE REQUIRED.

LEGEND:

WALL LOCATION



0 10 20 30

GRAPHIC SCALE IN FEET

Know what's below. Call before you dig.

Vermont Agency of Transportation
Accepted as Noted
By Rob at 8:24 am, Apr 12, 2017

STATE OF VERMONT
MICHAEL ROBERT JOHNSON
NO. 8619
CIVIL
PROFESSIONAL ENGINEER
LICENSED

MICHAEL R. JOHNSON, P.E. Date: 4/4/17

CIVIL DESIGN PROFESSIONALS

No.	Date	Revision	By
1	3/6/17	PER STATE COMMENTS	JBC
2	4/4/17	PER STATE COMMENTS	JBC
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Designed By: JBC	Project: HUNTINGTON BF 0211(32) HUNTINGTON, VERMONT	Registration No.: 8619
Scale: 1" = 10'	Title: SITE PLAN	Project No.: 16-1034
Date: JAN 10, 2017		Sheet No.: 2.00

M:\40-34\4/2017 - 2:04 PM CONTENT(s)\2011-2014 BY CDP. DESIGN PROFESSIONALS. THIS DRAWING IS BEING FURNISHED FOR THIS SPECIFIC PROJECT ONLY. CONTAINED/OR/EMBODIED IN THIS DRAWING IS THE COPYRIGHT OF CDP. DESIGN PROFESSIONALS IS PROHIBITED.

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PART 1: GENERAL

1.01 DESCRIPTION

A. THE WORK TO BE PERFORMED INCLUDES SOURCING, PROVIDING AND INSTALLING CONCRETE RETAINING WALL BLOCKS TO THE LINES AND GRADES AS SPECIFIED ON THE PROJECT CONSTRUCTION DRAWINGS AND AS MAY BE FURTHER SPECIFIED HEREIN.

B. WORK INCLUDES PREPARING FOUNDATION SOIL, FURNISHING AND INSTALLING LEVELING PAD, DRAINAGE AGGREGATE, AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS.

C. WORK INCLUDES FURNISHING AND INSTALLING ALL RELATED MATERIALS REQUIRED FOR CONSTRUCTION OF THE RETAINING WALL AS SHOWN ON THE CONSTRUCTION SHOP DRAWINGS.

1.02 REFERENCE STANDARDS

A. ASTM D448 STANDARD CLASSIFICATION FOR SIZES OF AGGREGATE FOR ROAD AND BRIDGE CONSTRUCTION.

B. ASTM D698 STANDARD TEST METHOD FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING STANDARD EFFORT (12 400 FT-LBF/FT³).

1.03 QUALITY ASSURANCE

A. OWNER/STATE SHALL BE RESPONSIBLE FOR SOIL TESTING AND INSPECTION DURING EARTHWORK OPERATIONS. QUALITY CONTROL SHALL BE PER THE SPECIAL PROVISION.

PART 2: MATERIALS

2.01 DEFINITIONS

A. RETAINING WALL UNIT - A PRECAST CONCRETE, SEGMENTAL FACING BLOCK PROVIDED BY AN AUTHORIZED MANUFACTURER.

B. DRAINAGE AGGREGATE - CLEAN 1" CRUSHED ANGULAR ROCK LOCATED WITHIN AND IMMEDIATELY BEHIND THE RETAINING WALL UNITS TO FACILITATE DRAINAGE.

C. FOUNDATION SOIL - SOIL ZONE IMMEDIATELY BENEATH THE RETAINING WALL FACING UNITS, THE WALL LEVELING PAD, AND THE REINFORCED SOIL ZONE.

D. LEVELING PAD - COMPACTED CRUSHED STONE PAD WHICH SERVES AS A FLAT SURFACE FOR PLACING THE INITIAL COURSE OF PRECAST UNITS.

E. RETAINED BACKFILL - SOIL IMMEDIATELY BEHIND THE RETAINING WALL DRAINAGE AGGREGATE.

F. SUBSURFACE DRAINAGE SYSTEM - A SYSTEM FOR REMOVING WATER FROM BEHIND THE WALL AND CHANNELING IT TO A POINT OF POSITIVE DRAINAGE.

2.02 RECON RETAINING WALL UNITS

A. RECON WALL UNITS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI. STANDARD WEIGHT CONCRETE SHALL HAVE A 7% (+/- 2%) AIR ENTRAINMENT BY VOLUME. WEIGHT OF CONCRETE SHALL BE 145 PCF.

B. BLOCKS SHALL BE CONSISTENT AND FREE OF STAINS, DEFECTS, CRACKS, OR CHIPS. UNITS THAT CONTAIN VISIBLE DEFECTS SUCH AS, BUT NOT LIMITED TO, VERTICAL OR HORIZONTAL SEAMS, CONSPICUOUS STAINS, FORM MARKS, OR COLOR STREAKS SHALL BE REPAIRED TO THE SATISFACTION OF THE PROJECT ENGINEER OR REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

C. TEXTURE AND COLOR ON THE FACE OF THE BLOCK SHALL BE THE NORTH SHORE GRANITE TEXTURE IN NATURAL CONCRETE GRAY COLOR.

D. PRODUCTION: POUR BLOCKS INSIDE HEATED PLANT. PLACE INSULATED BLANKETS OVER BLOCKS AFTER POURING. STRIP BLOCKS THE FOLLOWING DAY AT MINIMUM 1,500 PSI. KEEP THE BLOCKS FROM PREVIOUS DAY INSIDE PLANT AND PLACE DAMP BURLENE/POLY OVER THE BLOCKS FOR A PERIOD OF 24 HOURS. PALLETIZE BLOCKS AND PLACE IN PRECAST YARD WHEN CONCRETE SURFACE TEMPERATURES SHALL NOT BE SUBJECT TO AN AMBIENT TEMPERATURE CHANGE GREATER THAN 40°F IN A 24-HOUR PERIOD. PRECAST BLOCKS SHALL NOT BE SUBJECT TO TEMPERATURES LESS THAN 36°F PRIOR TO MEETING DESIGN STRENGTHS. DUNNAGE IS NOT USED.

2.03 LEVELING PAD MATERIAL

A. MATERIAL SHALL CONSIST OF COMPACTED CRUSHED STONE AS SHOWN ON THE CONSTRUCTION DRAWING.

2.04 DRAINAGE AGGREGATE (PHI 40°)

A. DRAINAGE AGGREGATE SHALL HAVE AT LEAST TWO FRACTURED FACES AND SHALL NOT BE RIVER ROCK OR PEA GRAVEL.

B. DRAINAGE AGGREGATE SHALL CONSIST OF CLEAN 1" CRUSHED STONE MEETING THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING
1"	100
3/4"	100 - 75
NO. 4	0 - 10
NO. 50	0 - 5

2.05 BACKFILL

A. SELECT BACKFILL (704.08 GRANULAR BACKFILL FOR STRUCTURES MINIMUM PHI 34°) SHALL BE OBTAINED FROM APPROVED SOURCES. IT SHALL CONSIST OF SATISFACTORILY GRADED, FREE DRAINING GRANULAR MATERIAL REASONABLY FREE FROM LOAM, SILT, CLAY, AND ORGANIC MATERIAL. GRANULAR BACKFILL FOR STRUCTURES SHALL MEET THE GRADATION REQUIREMENTS MEETING THE FOLLOWING GRADATION AS DETERMINED IN ACCORDANCE WITH AASHTO T 27 AND AASHTO T 11:

SIEVE SIZE	% PASSING
3"	100
NO. 4	45 - 75
NO. 100	0 - 12
NO. 200	0 - 6

B. THE MAXIMUM AGGREGATE SIZE SHALL BE LIMITED TO 3" UNLESS FIELD TESTS HAVE BEEN PERFORMED TO EVALUATE POTENTIAL STRENGTH REDUCTION TO INSTALLATION.

C. MATERIAL CAN BE SITE EXCAVATED MATERIAL WHEN THE ABOVE REQUIREMENTS ARE MET. UNSUITABLE SOILS FOR BACKFILL (HIGH PLASTIC CLAYS OR ORGANIC MATERIALS) SHALL NOT BE USED IN THE REINFORCED SOIL MASS.

D. CONTRACTOR SHALL SUBMIT REINFORCED FILL SAMPLE AND TEST RESULTS TO THE ARCHITECT/ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

2.06 SUBSURFACE DRAINAGE SYSTEM

A. SUBSURFACE DRAINAGE SYSTEM SHALL CONSIST OF PERFORATED POLYETHYLENE (PE) PIPE. IF THE PIPE IS NOT PLACED WITHIN CLEAN CRUSHED STONE IT SHALL BE WRAPPED IN A GEOTEXTILE FABRIC OR NON-PERFORATED WHERE REQUIRED.

B. NON-PERFORATED PIPE SHALL BE USED TO CONNECT DRAINS FROM THE WALL TO DRAINAGE STRUCTURES OR HEADWALLS.

C. FITTINGS SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

2.07 GEOTEXTILE FILTER FABRIC

A. GEOTEXTILE FABRIC SHALL BE AN 8-OZ. MINIMUM NON-WOVEN POLYPROPYLENE FABRIC SOURCED FROM A VENDOR LISTED ON THE VERMONT AGENCY OF TRANSPORTATION APPROVED PRODUCTS LIST.

PART 3: EXECUTION

3.01 EXCAVATION

A. CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. CONTRACTOR SHALL BE CAREFUL NOT TO DISTURB EMBANKMENT AND FOUNDATION MATERIALS BEYOND LINES SHOWN.

3.02 FOUNDATION SOIL PREPARATION

A. FOUNDATION SOIL SHALL BE EXCAVATED AS REQUIRED FOR LEVELING PAD DIMENSIONS SHOWN ON THE CONSTRUCTION DRAWINGS, OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

B. UNSUITABLE SOILS SHALL BE REMOVED AND REPLACED WITH ACCEPTABLE MATERIAL.

C. OVER-EXCAVATED AREAS SHALL BE BACKFILLED WITH APPROVED COMPACTED BACKFILL MATERIAL.

3.03 BASE LEVELING PAD

A. LEVELING PAD MATERIALS SHALL BE PLACED UPON APPROVED FOUNDATION AS SHOWN ON THE CONSTRUCTION DRAWINGS TO A MINIMUM THICKNESS OF 6".

B. AGGREGATE MATERIAL SHALL BE COMPACTED TO PROVIDE A DENSE, LEVEL SURFACE ON WHICH TO PLACE THE FIRST COURSE OF MODULAR UNITS. COMPACTION SHALL BE TO 95% OF STANDARD PROCTOR DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D698.

C. CRUSHED STONE SHALL BE PLACED IN MAXIMUM 6" LIFTS AND SHALL BE WELL COMPACTED WITH A VIBRATORY PLATE COMPACTOR OR OTHER SUITABLE EQUIPMENT.

3.04 UNIT INSTALLATION

A. THE FIRST COURSE OF CONCRETE MODULAR WALL UNITS SHALL BE CAREFULLY PLACED ON THE BASE LEVELING PAD. EACH UNIT SHALL BE CHECKED FOR LEVEL AND ALIGNMENT.

B. UNITS ARE PLACED SIDE BY SIDE FOR FULL LENGTH OF WALL ALIGNMENT. ALIGNMENT MAY BE DONE BY MEANS OF A STRING LINE OR OFFSET FROM A BASE LINE.

C. SWEEP EXCESS MATERIAL FROM TOP OF UNITS AND INSTALL NEXT COURSE. ENSURE THAT EACH COURSE IS COMPLETELY UNIT FILLED, BACKFILLED AND COMPACTED PRIOR TO PROCEEDING TO NEXT COURSE.

3.05 DRAINAGE SYSTEM PLACEMENT

A. A DRAINAGE SYSTEM SHALL BE PROVIDED AT THE BASE OF THE WALL SYSTEM BEHIND THE WALL UNITS.

B. THE DRAINAGE SYSTEM SHALL CONSIST OF 4" PERFORATED POLYETHYLENE (PE) PIPE WRAPPED WITH GEOTEXTILE FABRIC.

C. THE PIPE SHALL BE INSTALLED WITH POSITIVE DRAINAGE, 1% MINIMUM.

3.06 FILL PLACEMENT

A. BACKFILL MATERIAL SHALL BE PLACED WITH A MAXIMUM OF 8" LIFTS AND COMPACTED TO 95% OF STANDARD PROCTOR DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D698. THE IN PLACE MOISTURE CONTENT SHALL NOT EXCEED THE OPTIMUM MOISTURE CONTENT AS DETERMINED IN ACCORDANCE WITH ASTM D698 AND BE NO LOWER THAN 2% BELOW OPTIMUM MOISTURE CONTENT.

B. COMPACTION WITHIN 3 FEET OF BACK FACE OF WALL SHALL BE ACHIEVED BY MEANS OF A MINIMUM 3 PASSES WITH A LIGHTWEIGHT MECHANICAL TAMPER, ROLLER, OR VIBRATORY SYSTEM. MAXIMUM LIFT SIZE SHALL NOT EXCEED 8 INCHES LOOSE.

Note that per subsection 540.08(a)(1), precast concrete structure components shall be cured until the design strength has been achieved.

Vermont Agency of Transportation
Accepted as Noted
By Rob at 8:24 am, Apr 12, 2017

STATE OF VERMONT
MICHAEL ROBERT JOHNSON
NO. 8619
CIVIL
LICENSED
PROFESSIONAL ENGINEER

MICHAEL R. JOHNSON, P.E. Date: 4/4/17

CIVIL DESIGN PROFESSIONALS
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PHONE: (952) 303-5262 | FAX: (763) 392-4929 | WEBSITE: WWW.CDPUS.COM
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1	3/6/17	PER STATE COMMENTS	JBC
2	4/4/17	PER STATE COMMENTS	JBC
3			
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Designed By: JBC
Scale: N.T.S.
Date: JAN 10, 2017

Project: HUNTINGTON BF 0211(32)
HUNTINGTON, VERMONT

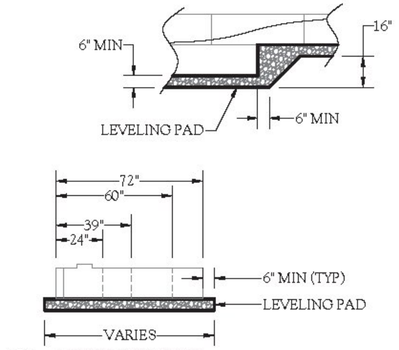
Title: SPECIFICATIONS

Registration No: 8619
Project No: 161034
Sheet No: 3.00

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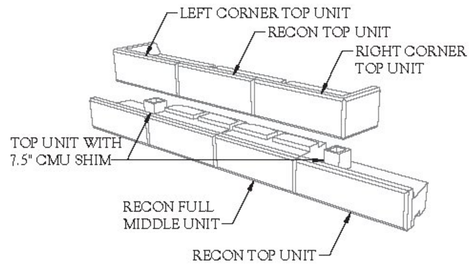
1. THE LEVELING PAD SHALL BE CONSTRUCTED OF CRUSHED STONE.
2. THE CONTRACTOR SHALL HAVE A QUALIFIED GEOTECHNICAL ENGINEER VERIFY THE FOUNDATION SOILS TO ENSURE THAT IT MEETS OR EXCEEDS THE MINIMUM BEARING CAPACITY REQUIREMENTS.
3. THE BASE FOUNDATION SHALL BE APPROVED PRIOR TO PLACEMENT OF THE LEVELING PAD.



1 4.00 LEVELING PAD
SCALE: N.T.S.

NOTES:

1. IT WILL BE NECESSARY FOR BLOCK STABILITY TO ADD A CONCRETE SHIM BENEATH THE PORTION OF THE TOP CORNER UNIT THAT BEARS ON PART OF ANOTHER UNIT LOCATED BELOW.
2. THE SHIM IS TYPICALLY A STANDARD CONCRETE MASONRY UNIT (CMU). USING ADHESIVE ON THE SHIM WILL RESIST MOVEMENT DURING CONSTRUCTION.

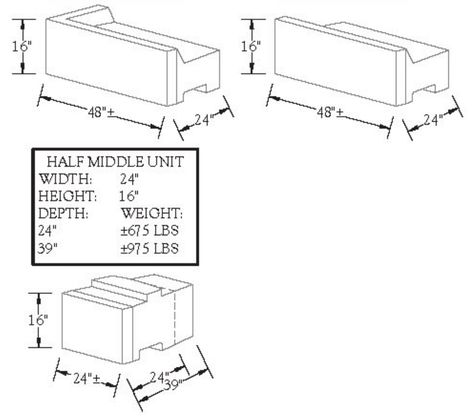


2 4.00 STANDARD TOP OF WALL STEP
SCALE: N.T.S.

CORNER TOP	
WIDTH:	48"
DEPTH:	24"
HEIGHT:	16"
WEIGHT:	±1,103 LBS

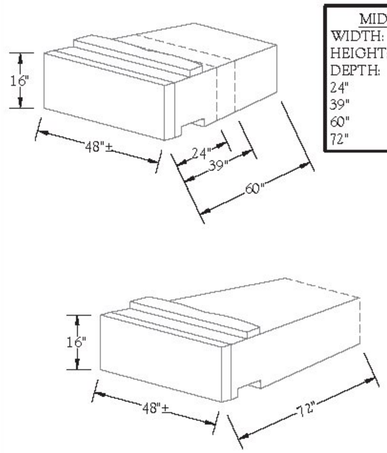
TOP UNIT	
WIDTH:	48"
DEPTH:	24"
HEIGHT:	16"
WEIGHT:	±971 LBS

HALF MIDDLE UNIT	
WIDTH:	24"
HEIGHT:	16"
DEPTH:	WEIGHT:
24"	±675 LBS
39"	±975 LBS



3 4.00 RECON UNITS
SCALE: N.T.S.

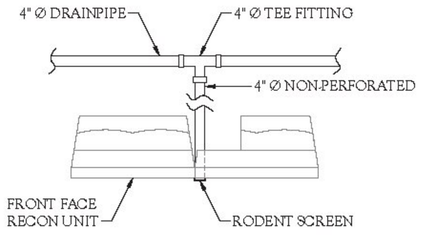
MIDDLE UNIT	
WIDTH:	48"
HEIGHT:	16"
DEPTH:	WEIGHT:
24"	±1,411 LBS
39"	±2,201 LBS
60"	±3,115 LBS
72"	±3,611 LBS



4 4.00 RECON MIDDLE UNITS
SCALE: N.T.S.

NOTES:

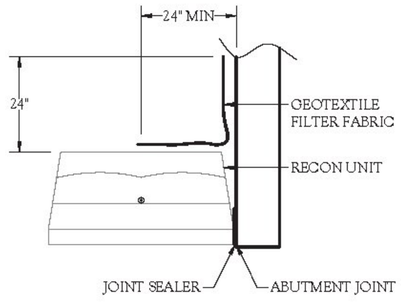
1. 4" DIAMETER CORRUGATED PERFORATED PLASTIC DRAINPIPE WRAPPED WITH A GEOTEXTILE FABRIC.
2. PROVIDE RODENT SCREEN AND 4" DIAMETER NON-PERFORATED PLASTIC PIPE OUTLET THROUGH WALL.
3. OUTLET INTO ONSITE DRAINAGE SYSTEM, THROUGH FACE OF WALL AT 10' O.C. MAXIMUM, AND/OR LOW POINTS ALONG WALL.



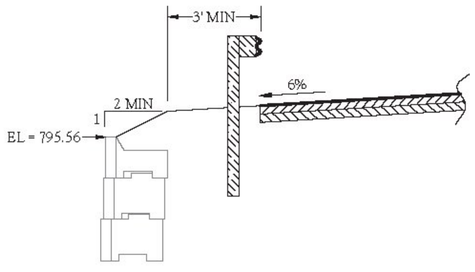
5 4.00 DRAINPIPE OUTLET
SCALE: N.T.S.

NOTES:

1. A GEOTEXTILE FABRIC SHALL BE PLACED WHERE THE RETAINING WALLS ABUT TO EXISTING FOUNDATIONS AS SHOWN ON THE RETAINING WALL SITE PLAN. OVERLAP ALL ABUTMENT JOINTS 24" WITH A MINIMUM 48" WIDE FABRIC.
2. JOINT SEALER MATERIAL SHALL MEET THE REQUIREMENTS OF SUBSECTION(S) 707.06, 707.07, 707.08 OR 707.09



6 4.00 ABUTMENT WRAP
SCALE: N.T.S.



7 4.00 TOP OF WALL GRADING
SCALE: N.T.S.

Vermont Agency of Transportation
Accepted as Noted
By Rob at 8:24 am, Apr 12, 2017

STATE OF VERMONT
MICHAEL ROBERT JOHNSON
NO. 8619
CIVIL
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MICHAEL R. JOHNSON, P.E. Date: 4/4/17

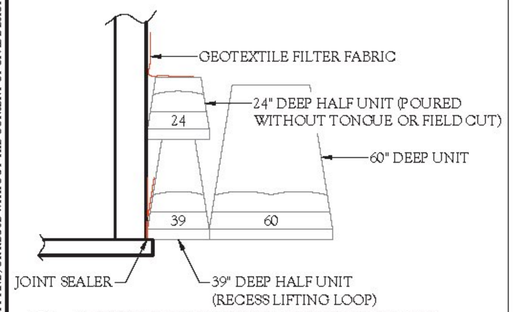
CIVIL DESIGN PROFESSIONALS
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Designed By: JBC	Project: HUNTINGTON BF 0211(32) HUNTINGTON, VERMONT	Registration No: 8619
Scale: AS NOTED		Project No: 161034
Date: JAN 10, 2017	Title: DETAILS (TYPICAL)	Sheet No: 4.00

NOTES:

1. WHEN DOUBLE STACKING HALF UNITS, THE FRONT BLOCK SHALL BE CAST WITH THE REAR LIFTING LOOP RECESSED.
2. THE REAR BLOCK SHALL BE CAST WITHOUT A TONGUE IF THE TONGUE WILL PREVENT THE BLOCK PLACED ABOVE THE DOUBLE STACK FROM RESTING ON A LEVEL SURFACE.
3. A GEOTEXTILE FABRIC SHALL BE PLACED WHERE THE RETAINING WALLS ABUT TO EXISTING FOUNDATIONS AS SHOWN ON THE RETAINING WALL SITE PLAN. OVERLAP ALL ABUTMENT JOINTS 24" WITH A MINIMUM 48" WIDE FABRIC.

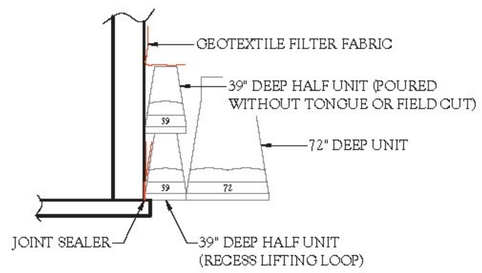


2 / 4.01 DOUBLE STACKING ABUTMENT (60")

SCALE: N.T.S.

NOTES:

1. WHEN DOUBLE STACKING HALF UNITS, THE FRONT BLOCK SHALL BE CAST WITH THE REAR LIFTING LOOP RECESSED.
2. THE REAR BLOCK SHALL BE CAST WITHOUT A TONGUE IF THE TONGUE WILL PREVENT THE BLOCK PLACED ABOVE THE DOUBLE STACK FROM RESTING ON A LEVEL SURFACE.
3. A GEOTEXTILE FABRIC SHALL BE PLACED WHERE THE RETAINING WALLS ABUT TO EXISTING FOUNDATIONS AS SHOWN ON THE RETAINING WALL SITE PLAN. OVERLAP ALL ABUTMENT JOINTS 24" WITH A MINIMUM 48" WIDE FABRIC.



3 / 4.01 DOUBLE STACKING ABUTMENT (72")

SCALE: N.T.S.

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Designed By: JBC	Project: HUNTINGTON BF 0211(32) HUNTINGTON, VERMONT	Registration No: 8619
Scale: AS NOTED		Project No: 161034
Date: JAN 10, 2017	Title: DETAILS (TYPICAL)	Sheet No: 4.01

Vermont Agency of Transportation
Accepted as Noted
By Rob at 8:24 am, Apr 12, 2017

STATE OF VERMONT
MICHAEL ROBERT JOHNSON
NO. 8619
CIVIL
LICENSED
PROFESSIONAL ENGINEER

MICHAEL R. JOHNSON, P.E. Date: 4/4/17

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GENERAL NOTES:

1. THE SECTION SHOWN IS A REPRESENTATIVE WALL SECTION. THE WALL HEIGHTS, ELEVATIONS, TOE SLOPES, AND BACK SLOPES VARY ACCORDING TO THE ELEVATION PLAN AND SITE PLAN RESPECTIVELY.

2. UPON EXCAVATION, WHERE UNSUITABLE SOILS ARE FOUND, SUBCUT TO DEPTH "D" AS REQUIRED BY THE ONSITE GEOTECHNICAL ENGINEER AND REPLACE WITH SUITABLE COMPACTED STRUCTURAL FILL TO ACHIEVE THE REQUIRED BEARING CAPACITY. THE STRUCTURAL FILL SHALL BE COMPACTED TO A MINIMUM 95% STANDARD PROCTOR DENSITY.

✳ 5. CDP HAS NOT PERFORMED A GLOBAL STABILITY ANALYSIS. PER SECTION 5.2.2 OF THE GEOTECHNICAL REPORT ADDENDUM, VERMONT AGENCY OF TRANSPORTATION SHALL PERFORM A FINAL GLOBAL STABILITY ANALYSIS AND CONFIRM THE RESULTS WITH CDP PRIOR TO CONSTRUCTION. IF A FINAL GLOBAL STABILITY ANALYSIS HAS NOT BEEN PERFORMED THEN THESE PLANS ARE VOID.

6. APPROXIMATE LIMITS OF EXCAVATION VARIES WHERE SUBCUT IS REQUIRED. ACTUAL LIMITS AND SIDE SLOPES SHALL BE DETERMINED BY OSHA REGULATIONS AND MATCH FIELD CONDITIONS AS DETERMINED BY THE CONTRACTOR.

7. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL STATE, COUNTY AND CITY REGULATIONS AND CODES AS WELL AS OSHA STANDARDS.

GENERAL NOTES:

8. WALL SHALL BE BACKFILLED IN THE RETAINED ZONE WITH 1" CLEAN CRUSHED STONE AT A 1H:1V UP FROM THE BACK BOTTOM CORNER OF THE BASE BLOCK TO AN ELEVATION 1-FOOT ABOVE THE 100-YR HWL. CLEAN CRUSHED STONE SHALL BE WRAPPED IN AN 8-OZ. FILTER FABRIC.

9. THE WALL IS DESIGNED AS A GRAVITY WALL REQUIRING NO GEOGRID REINFORCEMENT AND SHALL BE CONSTRUCTED WITH RECON 24", 39", 60" AND 72" DEEP UNITS USING THE 3.6° BATTER.

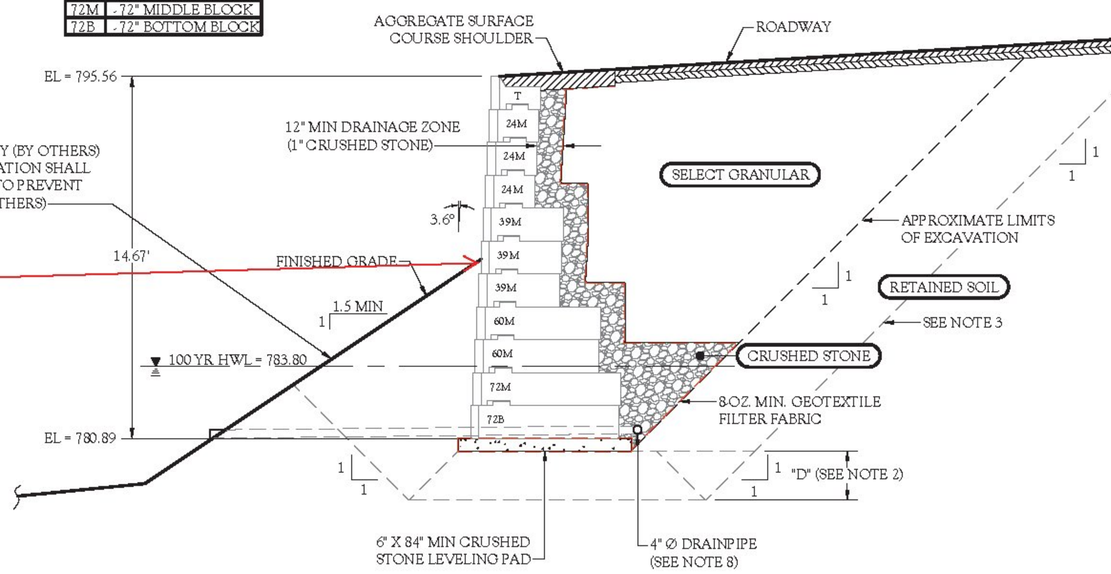
10. 4" CORRUGATED PERFORATED DRAINPIPE WRAPPED WITH GEOTEXTILE INSTALLED AS LOW AS POSSIBLE WITH POSITIVE DRAINAGE. OUTLET INTO ONSITE DRAINAGE OR THROUGH WALL FACE AT LOW ENDS OF WALL.

11. INSPECT EXCAVATION SLOPES FOR ACTIVE SEEPAGE AND PLACE ADDITIONAL DRAINS WHERE SEEPAGE OCCURS.

12. DO NOT BRING HEAVY COMPACTION OR PAVING EQUIPMENT WITHIN 3' OF THE BACK OF THE RECON RETAINING WALL.

13. SEE MANUFACTURER'S INFORMATION FOR ADDITIONAL DETAILS ON THE RECON RETAINING WALL SYSTEM. THE MANUFACTURER INFORMATION SHALL ACCOMPANY THE CONSTRUCTION PLANS.

T	- 24" TOP BLOCK
24M	- 24" MIDDLE BLOCK
39M	- 39" MIDDLE BLOCK
60M	- 60" MIDDLE BLOCK
72M	- 72" MIDDLE BLOCK
72B	- 72" BOTTOM BLOCK



Please indicate where on the cross-section the wall layout will be based. The concern is if the layout is based on the bottom block (El. 780.89), the relative displacement at the top of wall due to the batter is approx. 1-foot. This displacement would be undesirable where this wall abuts the vertical wingwall and it would produce a steep slope on top of the wall, at the beginning of wall. The layout should be based on the minimum exposed elevation (Approx. el. 786.85), resulting in a relative displacement at the top of wall of approx. 6".

GRAVITY WALL SECTION A - A

(WALL 1 SECTION SHOWN AT STA 19')

Vermont Agency of Transportation
Accepted as Noted
By Rob at 8:24 am, Apr 12, 2017

CIVIL DESIGN PROFESSIONALS
3609 LYNDALE AVENUE SOUTH, SUITE 200 BLOOMINGTON, MN 55420
PHONE: (952) 303-5362 | FAX: (763) 392-4959 | WEBSITE: WWW.CDPUS.COM

No.	Date	Revision	By
1	3/6/17	PER STATE COMMENTS	JBC
2	4/4/17	PER STATE COMMENTS	JBC
3			
4			
5			
6			

Designed By: JBC	Project: HUNTINGTON BF 0211(32) HUNTINGTON, VERMONT		Registration No: 8619
Scale: 1"=5'			Project No: 161034
Date: JAN 10, 2017	Title: SECTION A - A		Sheet No: 5.00

STATE OF VERMONT
MICHAEL ROBERT JOHNSON
NO. 8619
CIVIL
LICENSED
PROFESSIONAL ENGINEER

MICHAEL R. JOHNSON, P.E. Date: 4/4/17

161034 4/4/2017 COPYRIGHT © 2011 - 2016 BY CIVIL DESIGN PROFESSIONALS. THIS DRAWING IS BEING FURNISHED FOR THIS SPECIFIC PROJECT ONLY. COPY AND/OR REUSE WITHOUT THE CONSENT OF CIVIL DESIGN PROFESSIONALS IS PROHIBITED.

GENERAL NOTES:

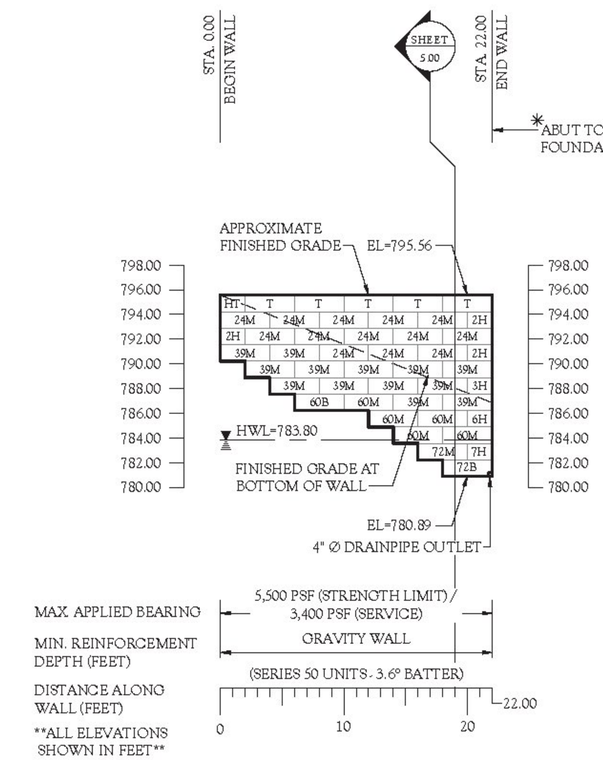
1. THE WALL IS DESIGNED AS A GRAVITY WALL REQUIRING NO GEOGRID REINFORCEMENT AND SHALL BE CONSTRUCTED WITH RECON 24", 39", 60" AND 72" DEEP UNITS USING THE 3.6° BATTER.

✳ 2. A GEOTEXTILE FABRIC SHALL BE PLACED WHERE RETAINING WALLS ABUT TO EXISTING FOUNDATIONS AS SHOWN ON SITE PLAN (SHEET 2.00). OVERLAP ALL ABUTMENT JOINTS 24" WITH A MINIMUM 48" WIDE FABRIC TO PREVENT THE COREFILL AND BACKFILL FROM MIGRATING THROUGH THE ABUTMENT JOINTS.

3. SEE MANUFACTURER INFORMATION FOR ADDITIONAL CONSTRUCTION DETAILS FOR THE RECON RETAINING WALL SYSTEM. THE MANUFACTURER INFORMATION SHALL ACCOMPANY THE CONSTRUCTION PLANS.

RECON BLOCK KEY:					
T	24" DEEP TOP BLOCK	5	60M	60" DEEP FULL MIDDLE	5
HT	24" DEEP HALF TOP BLOCK	1	6H	DOUBLE STACK 2H AND 3H UNITS	1
24M	24" DEEP FULL MIDDLE	13	60B	60" DEEP FULL BOTTOM	1
2H	24" DEEP HALF MIDDLE	3	72B	72" DEEP FULL BOTTOM	1
39M	39" DEEP FULL MIDDLE	13	72M	72" DEEP FULL MIDDLE	1
3H	39" DEEP HALF MIDDLE	1	7H	DOUBLE STACK 3H UNITS	1
WWW.RECONWALLS.COM					

CONTRACTOR SHALL CONFIRM ALL QUANTITIES



RECON WALL 1 - FRONT FACE ELEVATION

Vermont Agency of Transportation
Accepted as Noted
By Rob at 8:24 am, Apr 12, 2017

STATE OF VERMONT
MICHAEL ROBERT JOHNSON
NO. 8619
CIVIL
LICENSED PROFESSIONAL ENGINEER

MICHAEL R. JOHNSON, P.E. Date: 4/4/17

CIVIL DESIGN PROFESSIONALS
2409 LTNDALE AVENUE SOUTH, SUITE 200 BLOOMINGTON, MN 55420
PHONE: (952) 303-5262 | FAX: (763) 362-4969 | WEBSITE: WWW.CIVILDP.COM
SERVICES FROM BEMIDJI, & CDP.A.CIVIL DESIGN PROFESSIONALS

No.	Date	Revision	By
1	3/6/17	PER STATE COMMENTS	JBC
2	4/4/17	PER STATE COMMENTS	JBC
3			
4			
5			
6			

Designed By: JBC
Scale: 1" = 10'
Date: JAN 10, 2017
Project: HUNTINGTON BF 0211(32) HUNTINGTON, VERMONT
Title: WALL 1 ELEVATION
Registration No: 8619
Project No: 161034
Sheet No: 6.00

Proposed Bridge Improvement Project

HUNTINGTON BF 0211(32)

Abutments & Approach Slabs on FAS Route 0211 Bridge #8

Concrete:

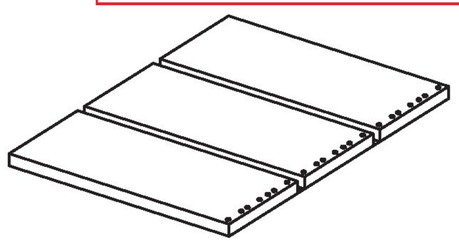
Mix Designation: P50TER

1. Specified Mix Design	5000 PSI
2. Proposed Mix Design	5000 PSI
3. Stripping Strength	3000 PSI
4. Handling Strength	3000 PSI
5. Shipping Strength	5000 PSI
6. Install Strength	5000 PSI
7. Traffic Loading	5000 PSI

Fabrication Tolerances:

1. Width	±1/4"
2. Height	±1/4"
3. Length	±1/2"
4. Rebar Cover	3" Min. (Unless Noted Otherwise)
5. Rebar Spacing	±1"
6. Rebar Clearance	±1/4"
7. Insert Placement	±1/4"
8. Pile Sleeve Placement	±1/2"

Per email from Matt Wheeler on 4/27/2017 in regards to the horizontal load: Q: "For the installation of Wingwalls 1 & 2, you're planning on applying a horizontal load to join the pieces prior to grouting the splice sleeves and securing in-place with waste blocks. We're interested in the planned method of applying the horizontal load to ensure that this has been considered and will adequately close the joint."
A: "The load will be applied to the wingwalls via come-alongs and or/jacks. Excavation machinery will not be applied to close this joint."



Reinforcing:

General Notes:

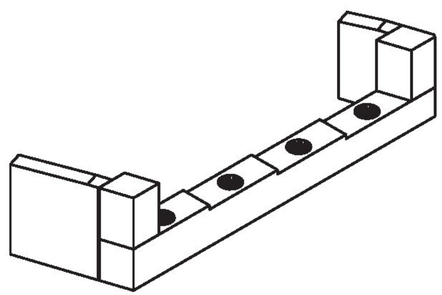
1. Reinforcing Steel - ASTM A615, Grade 60, Level I, Epoxy Coated.
2. Perimeter bar tied at every intersection. Internal bars spaced less than 12" on center tied every other intersection.
3. NMB Rebar Splice Sleeves to be epoxy coated.
4. Two test bars of each size shall be randomly selected for testing. State shall indicate with and asterisk which group of bars they want to select from and extra bars will be ordered for the indicated groups.
5. Repairing of damaged portions of coating to be repaired in accordance with subsection 507.04.
6. Minimum Exposed Length for Protruding Bars(Used in rebar splice sleeves):
   #5 = 4¼"
   #6 = 5"
7. ▲ Indicates bars to be cut to length in field, if needed.
8. Three test samples, of each bar size, will be provided for the NMB rebar splice sleeves. These sleeves will be grouted in the field and handed over to the state.

Tolerances:

1. Spacing ±1"
2. Clearance ±1/4"
3. Clear Cover 3" U.N.O.

Lap Lengths:

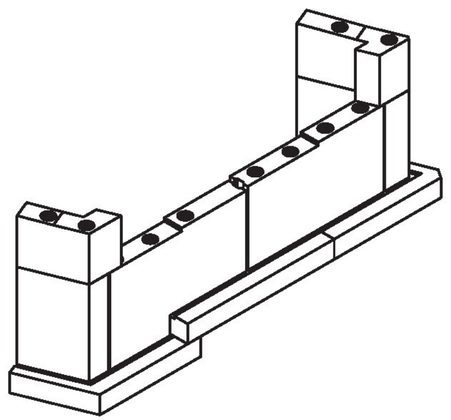
Per Contract Plans:
2'-2" Lap Unless Noted Otherwise



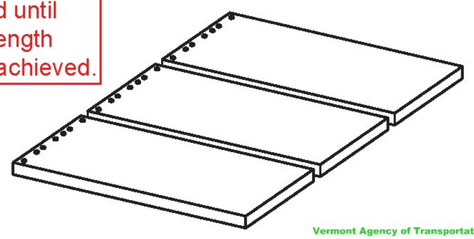
The concrete waste blocks shall be of adequate number and size so as not to permit opening of the joint between the wingwall and pile cap/cheekwall and to prevent transverse movement. The waste blocks shall be in-place until the rebar splice sleeves have achieved the required capacity.

General Notes:

1. All lifting anchor pockets, shear keys, and grout sleeves in footings to be grouted after install(by site contractor) with type IV mortar per note 43, sheet 6 of contract plans.
2. All rebar spacing chairs to be plastic.
3. All exposed edges to be chamfered 1" U.N.O.
4. Silane sealer applied at plant on all exposed surfaces after pieces have reached 14 days old.
5. All lifting anchors and pile cavity sleeves to be galvanized.
6. All tie wire to be epoxy coated
7. Approach Slab Install: Gravel subgrade tolerance ±⅛" to insure continuous contact with the underside of approach slab. Scarify top ⅛" of material with rake to allow for uniform settlement from dead load of approach slab.
8. All lift anchors are to be galvanized and will remain in place and grouted by site contractor with VAOT approved material.
9. When installing Wingwall1 & 2 a horizontal load shall be applied to close the gap between adjoining pieces, and held in place by waste block, throughout grouting and curing process of NMB splice sleeves.
10. Precast Footings for Abutment 2 shall be set to grade by use of shim packs. See detail on sheet 20.
11. Refer to sheet 6 and sheet 12 for indication of match cast joints. When match casting joints, a 1" grout bed is not used.
12. Curing: After pouring, cover all formwork with poly/blankets. When and where practical, leave all edge forms in place and pieces covered with damp burlene for 72 hours min and move on to casting adjacent pieces. If formwork needs to be removed prior to 72 hours, these pieces shall be covered with damp burlene until the 72 hour period has expired. Pieces shall not be exposed to temperatures below 36°F prior to reaching design strength.



Per 540.08(a)(1), cure shall be maintained until design strength has been achieved.



Vermont Agency of Transportation
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BY Rob Young DATE 04/28/2017

CONTRACTORS VTSPE:

LEGEND:

Ⓐ Oxford A750-7	Ⓓ 3" Pipe	Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
Ⓑ P52:20T x 10" Lift	Ⓔ Ø 24" Galv. Corrugated Steel Pipe	Ⓗ P53 Lift w/ Tension Bar
Ⓒ 4" Pipe	Ⓕ Ø 15" Galv. Corrugated Steel Pipe	Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS
PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

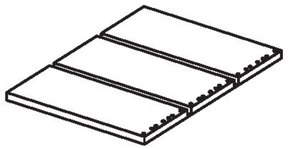
INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

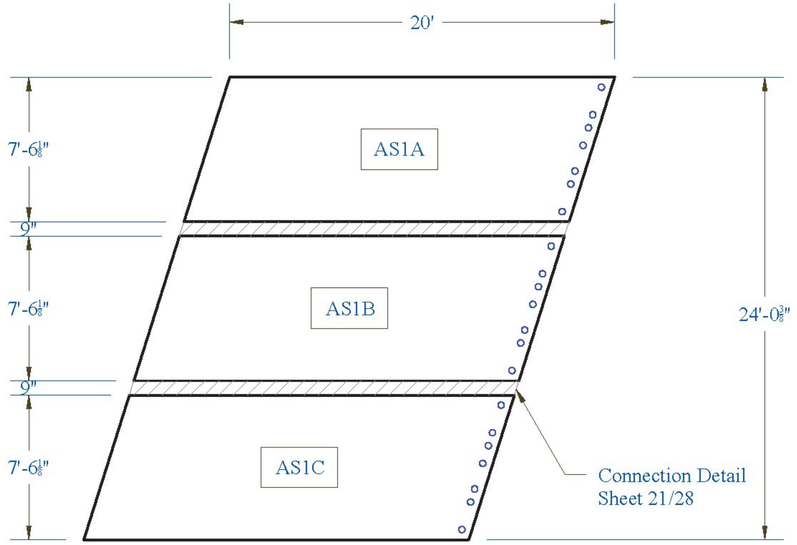
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

04/20/17 | OVERVIEW | 1/29

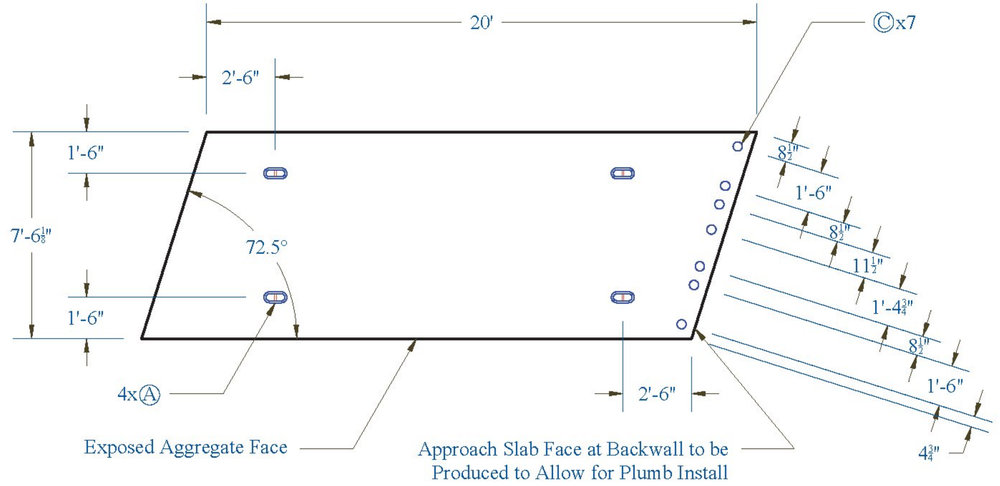
Approach Slab 1:





Approach Slab 1A:

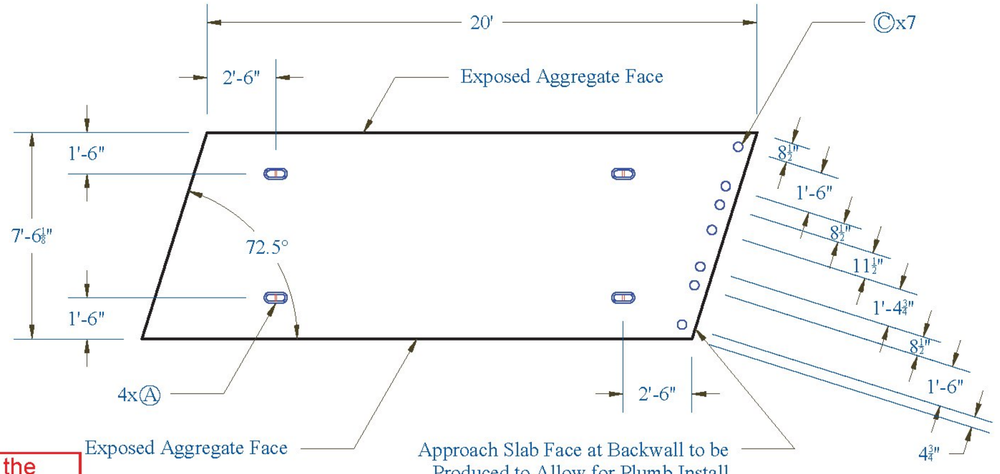
Weight: 27,720 lbs



Note: 15" Thick Slab

Approach Slab 1B:

Weight: 27,720 lbs

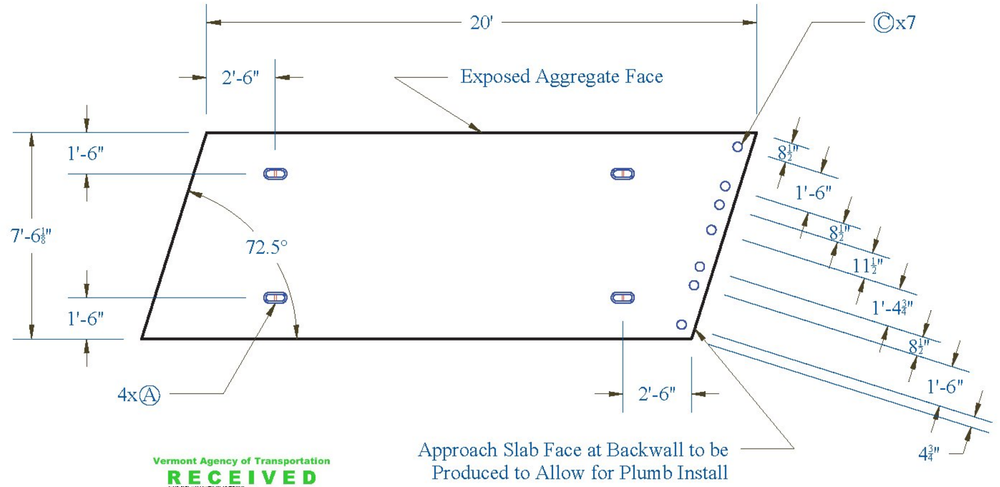


Please state the material, so that it's clear from these drawings.

Note: 15" Thick Slab

Approach Slab 1C:

Weight: 27,720 lbs



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BY Rob Young DATE 04/28/2017

Note: 15" Thick Slab

CONTRACTORS VTSPE:

LEGEND:

Ⓐ Oxford A750-7	Ⓓ 3" Pipe	Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
Ⓑ P52:20T x 10" Lift	Ⓔ Ø 24" Galv. Corrugated Steel Pipe	Ⓗ P53 Lift w/ Tension Bar
Ⓒ 4" Pipe	Ⓕ Ø 15" Galv. Corrugated Steel Pipe	Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

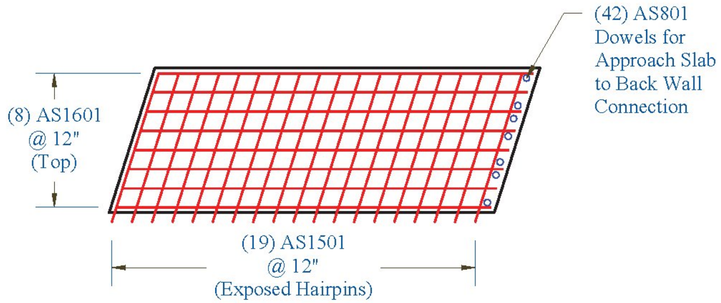
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

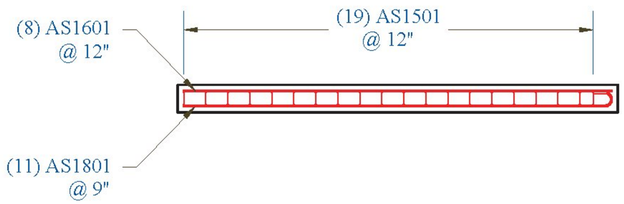
SD Ireland PRECAST

04/20/17 | APPROACH_SLAB_1 | 2/29

Approach Slab 1A: Reinforcing

Note: • Reinforcing 3" Clear from All Faces
• See Sheet 21 for Closure Pour Detail

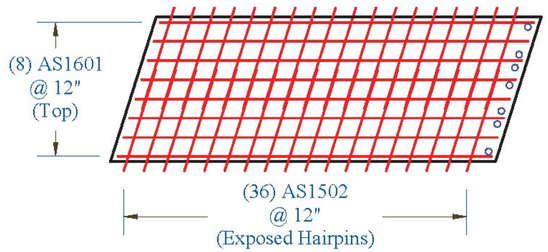


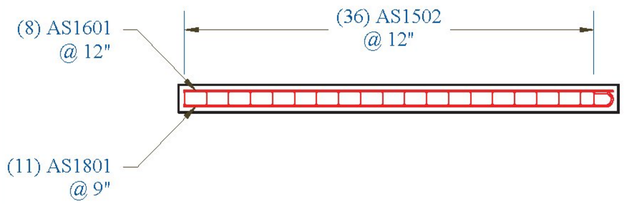




Approach Slab 1B: Reinforcing

Note: • Reinforcing 3" Clear from All Faces
• See Sheet 21 for Closure Pour Detail

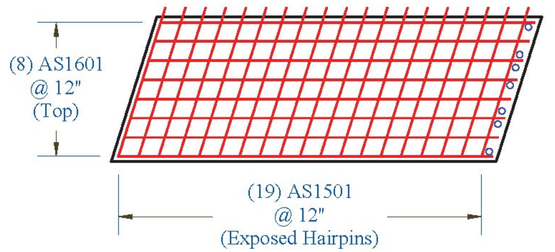


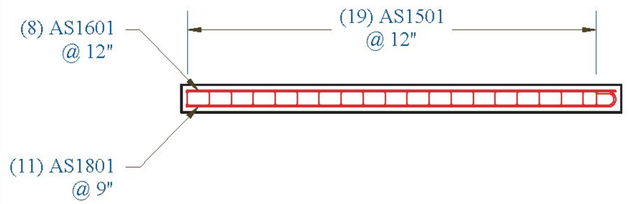




Approach Slab 1C: Reinforcing

Note: • Reinforcing 3" Clear from All Faces
• See Sheet 21 for Closure Pour Detail







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CONTRACTORS VTSPE:

LEGEND:

- Ⓐ Oxford A750-7
- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

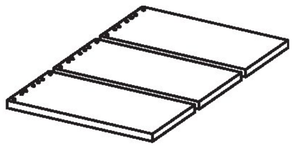
INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

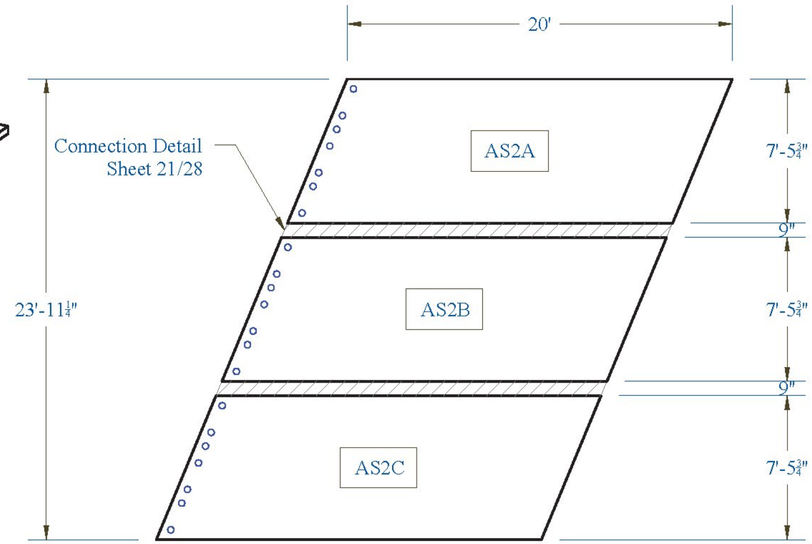
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

04/20/17 | APPROACH_SLAB_1_REINFORCING | 3/29

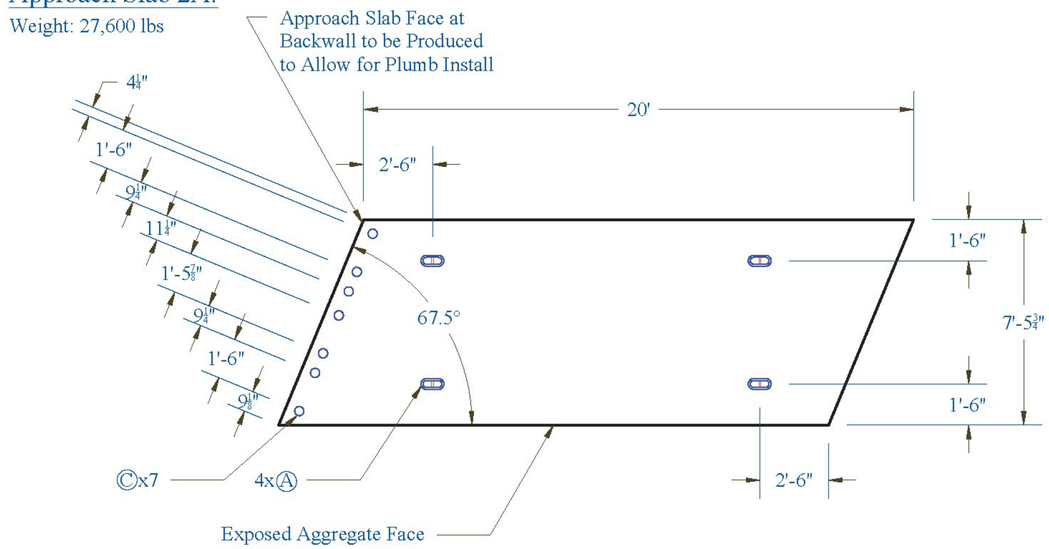
Approach Slab 2:





Approach Slab 2A:

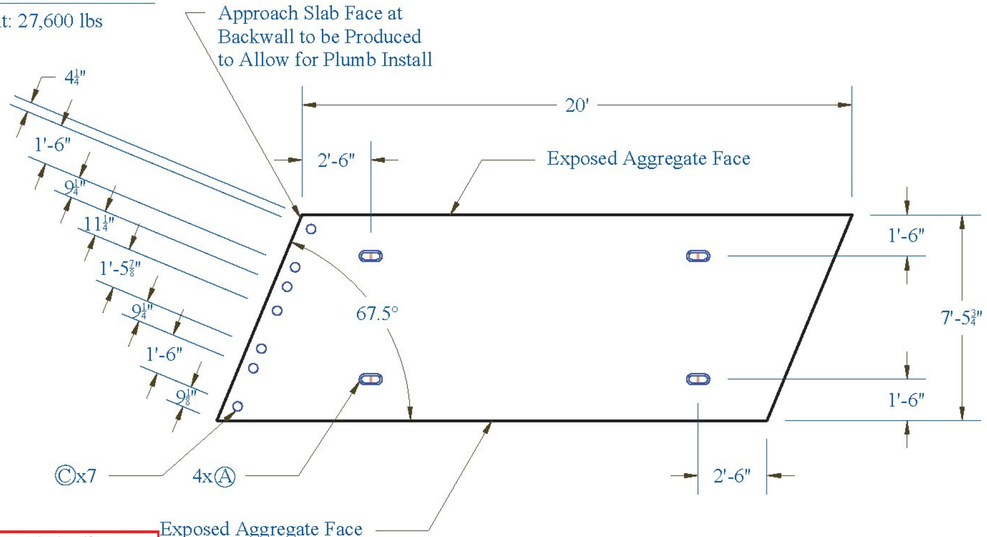
Weight: 27,600 lbs



Note: 15" Thick Slab

Approach Slab 2B:

Weight: 27,600 lbs

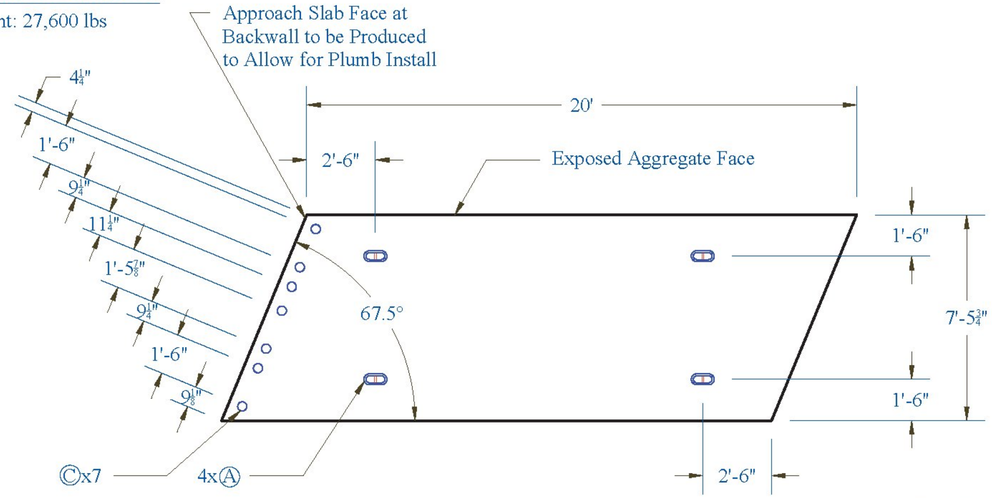


Please state the material, so that it's clear from these drawings.

Note: 15" Thick Slab

Approach Slab 2C:

Weight: 27,600 lbs



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Note: 15" Thick Slab

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- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

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SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

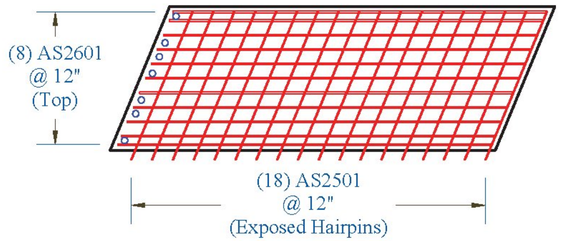
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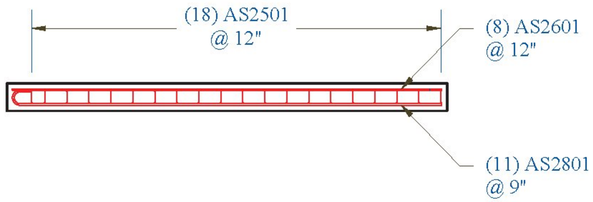
SD Ireland PRECAST

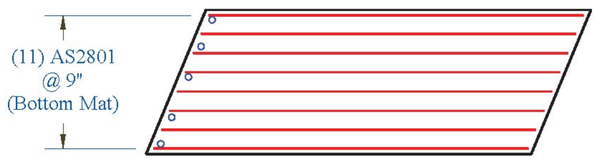
04/20/17 | APPROACH_SLAB_2 | 4/29

Approach Slab 2A: Reinforcing

Note: • Reinforcing 3" Clear from All Faces
• See Sheet 21 for Closure Pour Detail

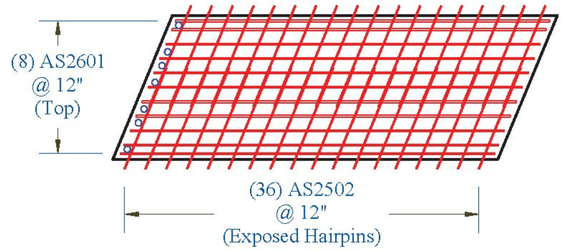


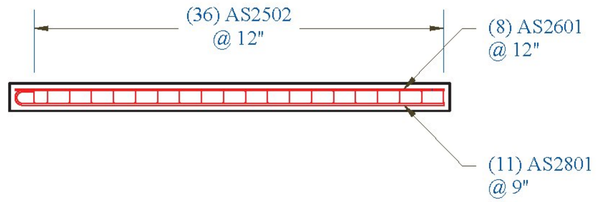


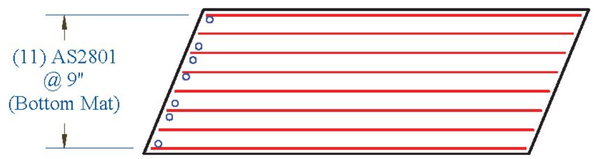


Approach Slab 2B: Reinforcing

Note: • Reinforcing 3" Clear from All Faces
• See Sheet 21 for Closure Pour Detail

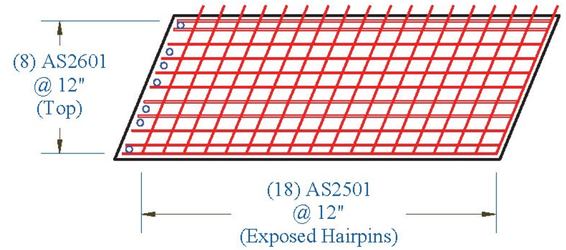


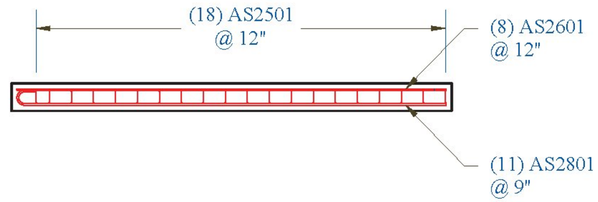


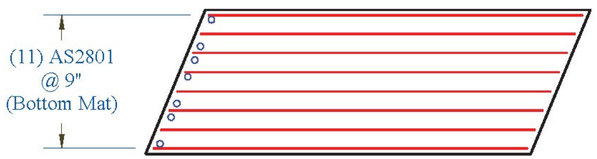


Approach Slab 2C: Reinforcing

Note: • Reinforcing 3" Clear from All Faces
• See Sheet 21 for Closure Pour Detail







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CONTRACTORS VTSPEC:

LEGEND:

- Ⓐ Oxford A750-7
- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

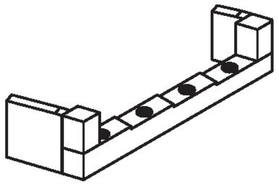
INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

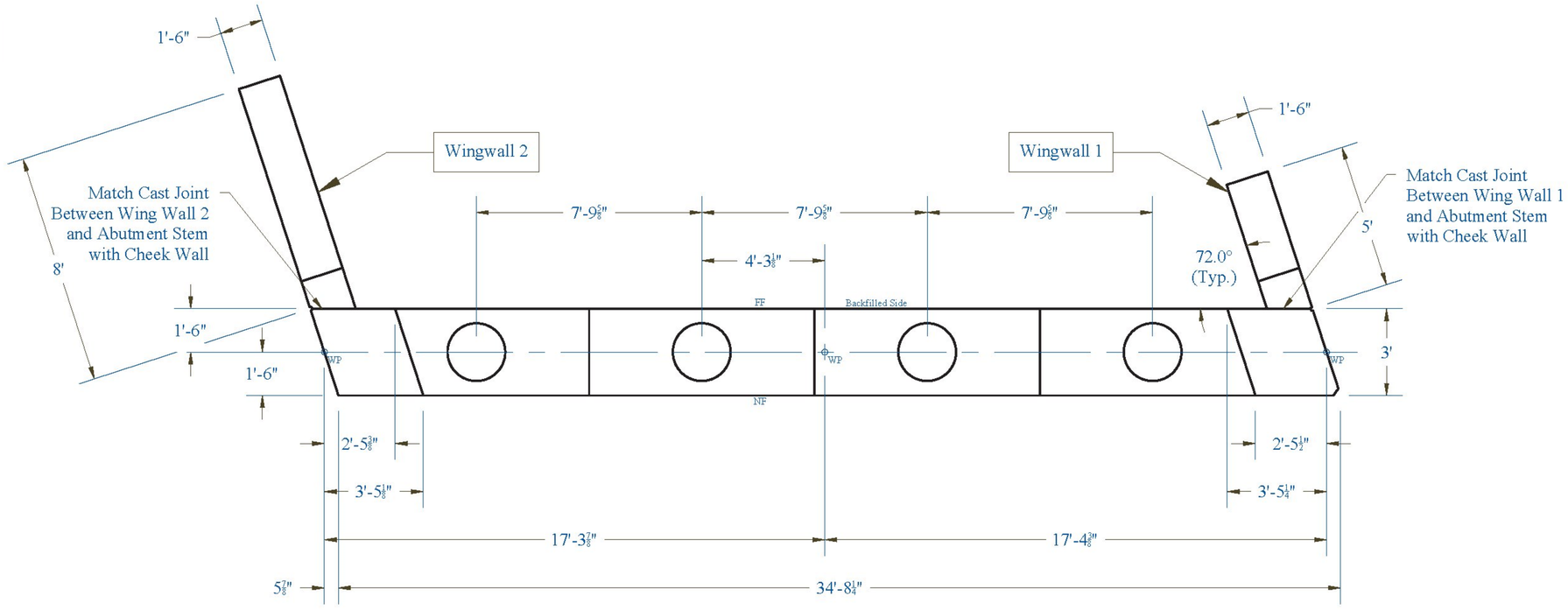
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

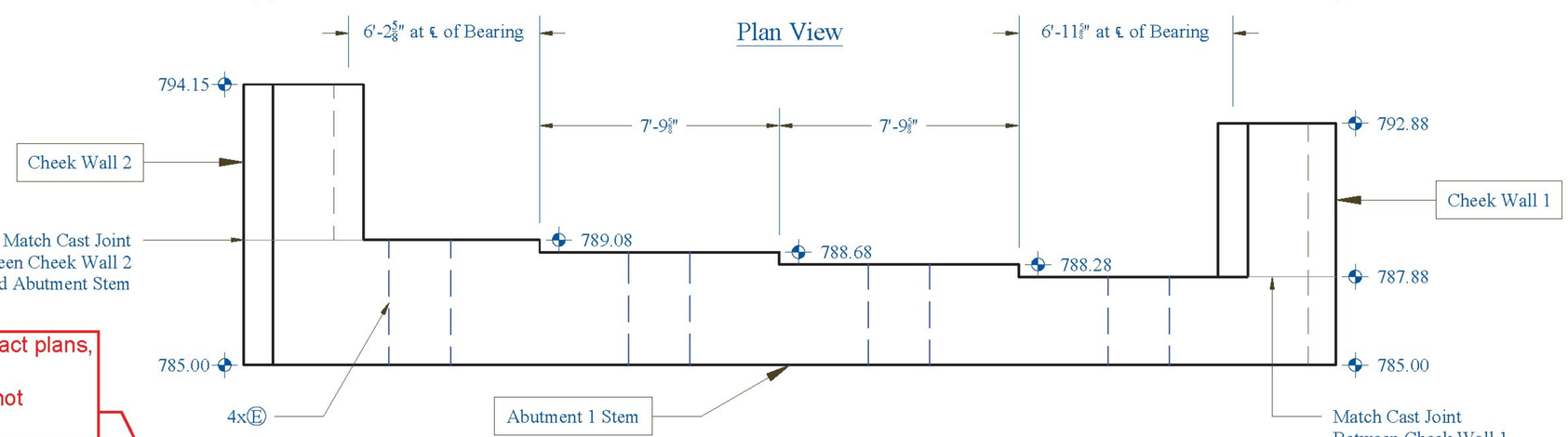
04/20/17 | APPROACH_SLAB_2_REINFORCING | 5/29

Abutment 1: Overview





Plan View



Section View

Note that per contract plans, min. anchor bolt embedment does not require this depth.

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CONTRACTORS VTSPEC:

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- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
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WILLISTON, VT 05495
Ph: (802) 863-6222

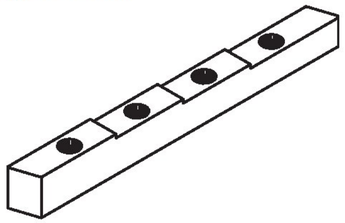
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

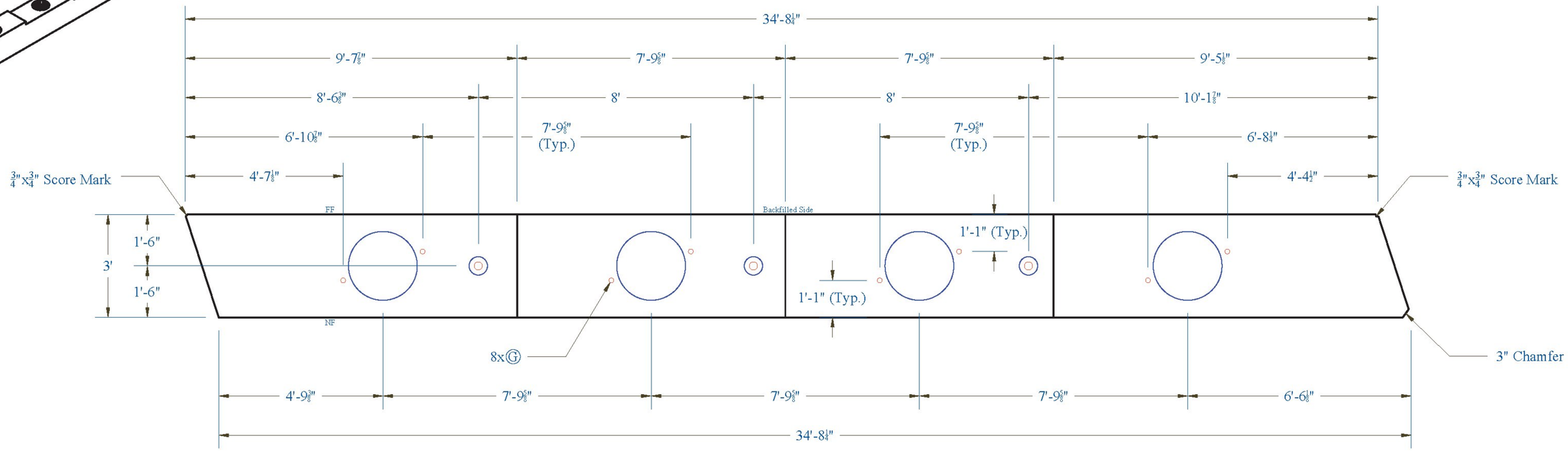
SD Ireland PRECAST

04/20/17 | ABUTMENT_1_OVERVIEW | 6/29

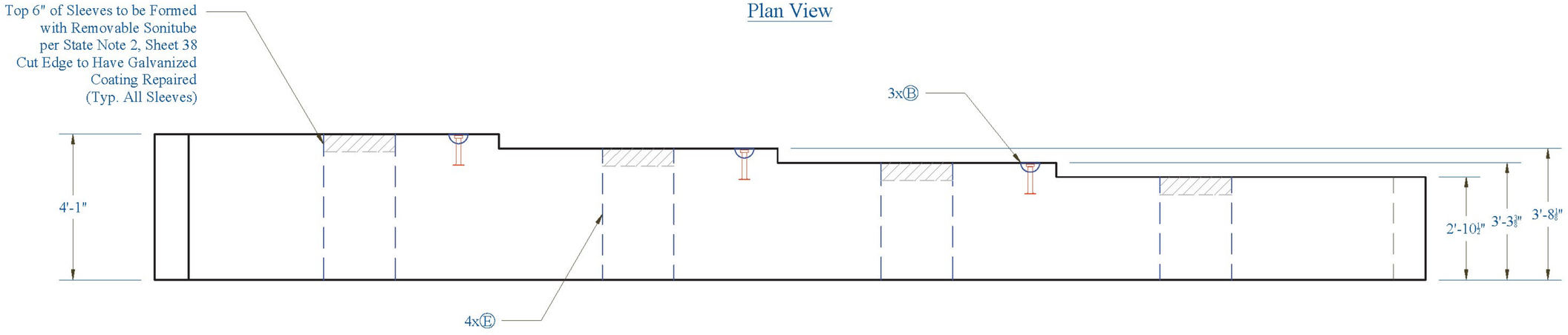
Abutment 1 Stem:

Weight: 46,960 lbs





Plan View



Section View

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PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

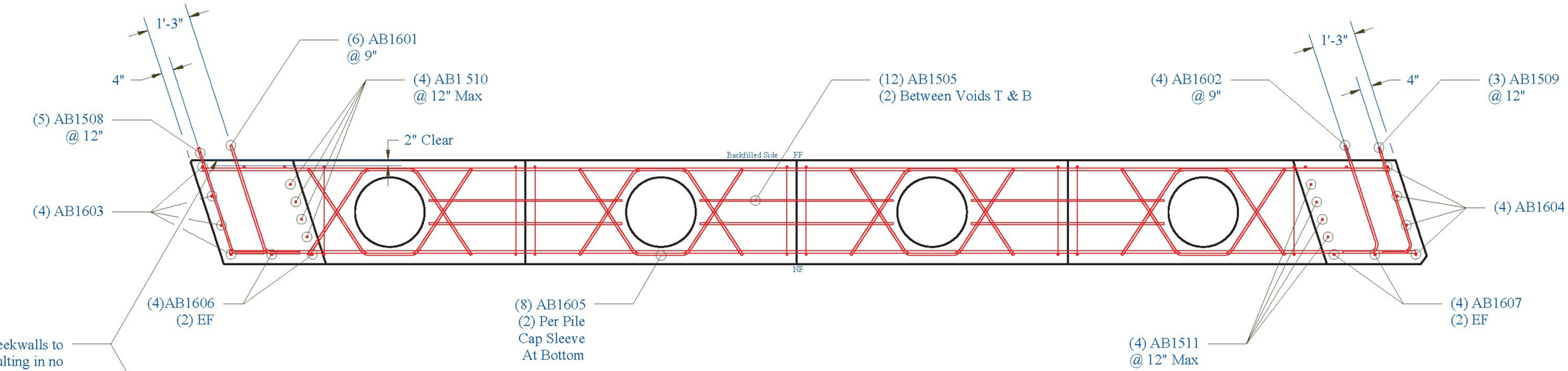
INSTALLER:
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WILLISTON, VT 05495
Ph: (802) 863-6222

FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

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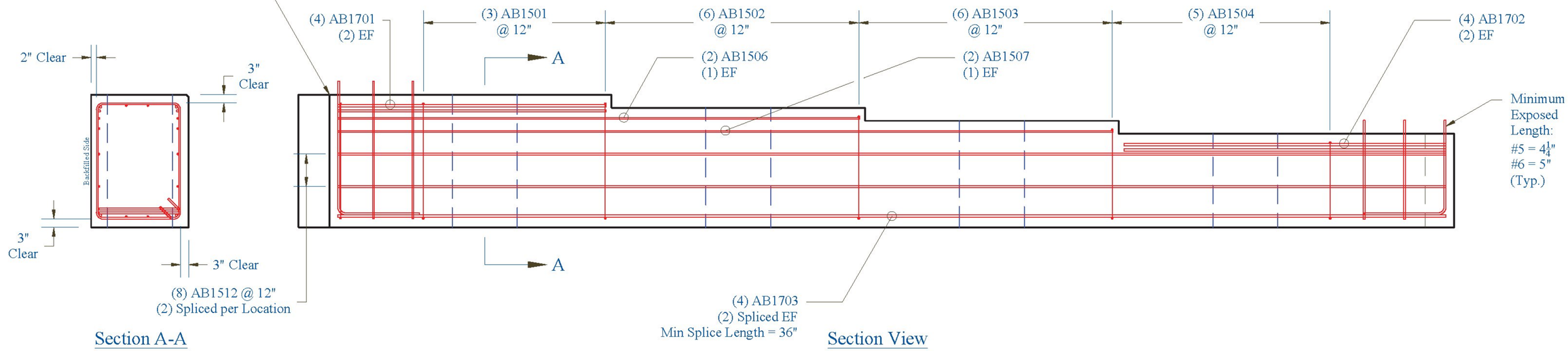
04/20/17 | ABUTMENT_1_STEM | 7/29

Abutment 1 Stem: Reinforcing



Plan View

Wingwalls and Cheekwalls to be Match Cast, Resulting in no Need to be Grouted. Site Contractor to Apply Vtrans Approved Polyethylene Caulk to Joint. No Backer Rod Needed.



Section A-A

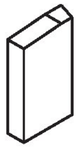
Section View

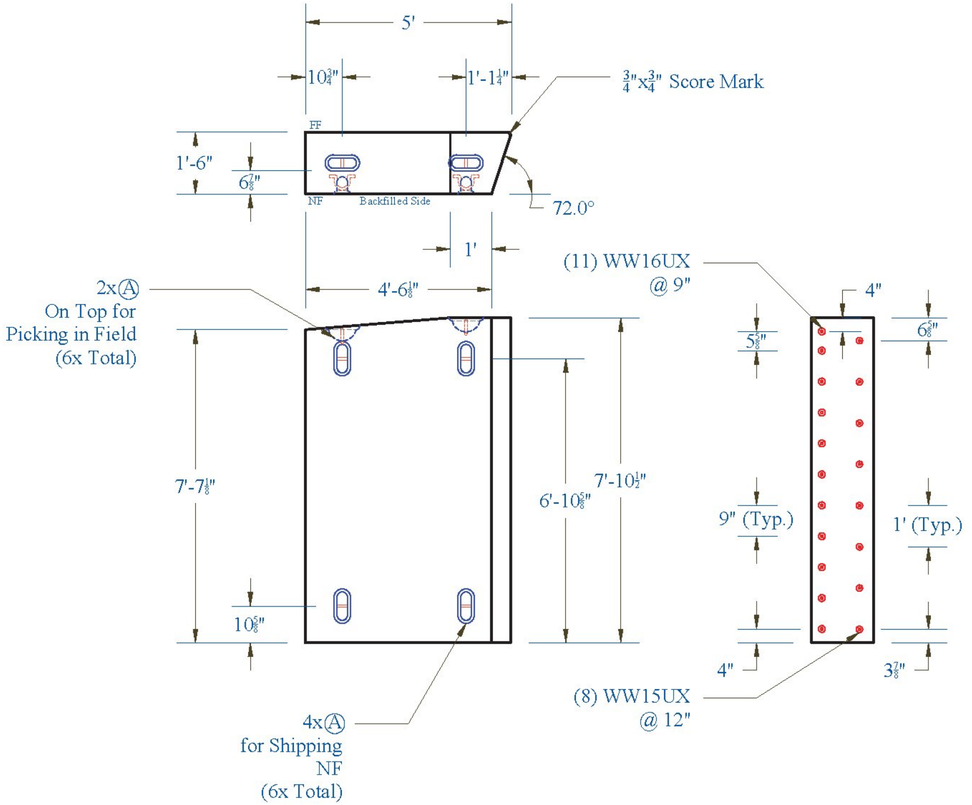
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CONTRACTORS VTSPE:	LEGEND: Ⓐ Oxford A750-7 Ⓑ P52:20T x 10" Lift Ⓒ 4" Pipe Ⓓ 3" Pipe Ⓔ Ø 24" Galv. Corrugated Steel Pipe Ⓕ Ø 15" Galv. Corrugated Steel Pipe Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve Ⓗ P53 Lift w/ Tension Bar Ⓘ 1" Chamfer	PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544) SUPERVISOR: E. Barendse DETAILER: I. ADAMS CHECKER: E. Barendse ENGINEER: CONCRETE ENG. SOLUTIONS PROJ. NAME: HUNTINGTON PROJECT #: BF 0211(32) LOCATION: HUNTINGTON, VT	INSTALLER: S.D. IRELAND CONCRETE WILLISTON, VT 05495 Ph: (802) 863-6222 FABRICATOR: 193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 863-6222 SD Ireland PRECAST 04/20/17 | ABUTMENT_1_STEM_REINFORCING | 8/29

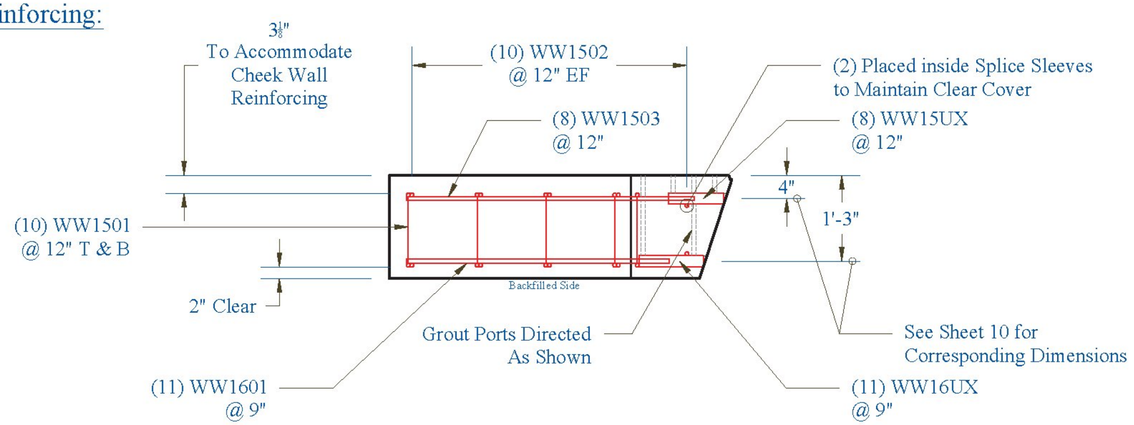
Wingwall 1:

Weight: 8,200 lbs



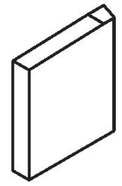


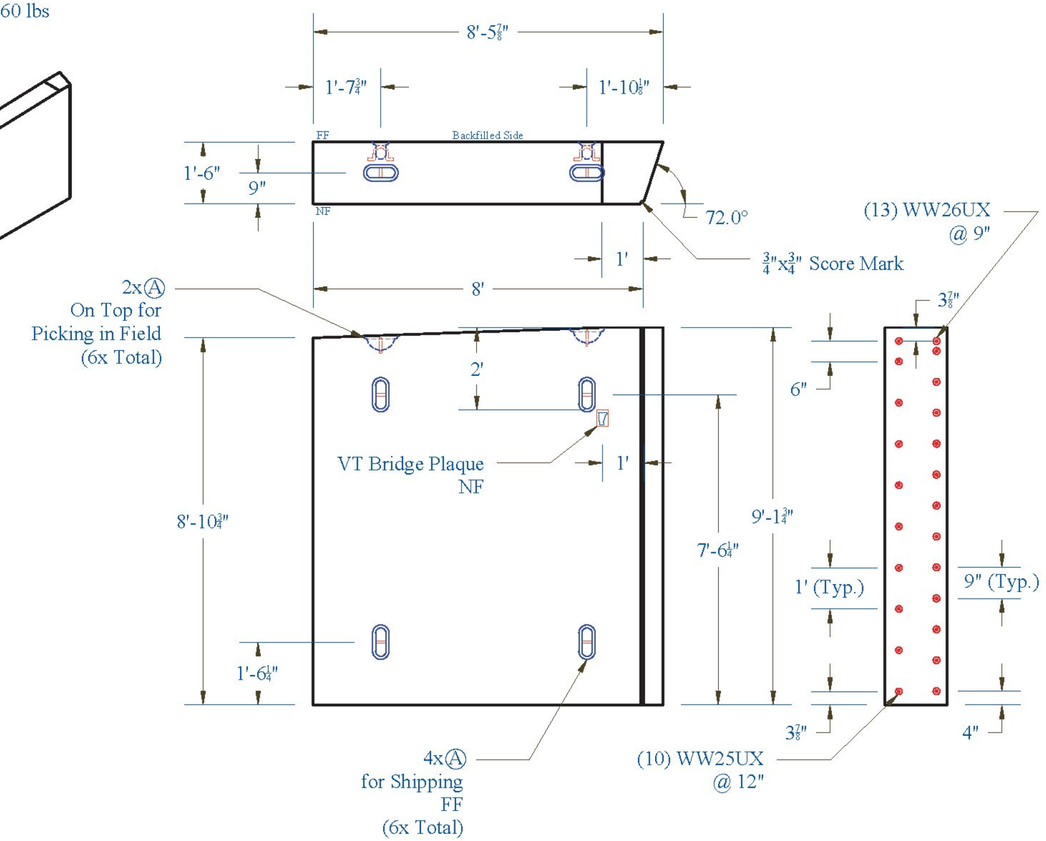
Reinforcing:



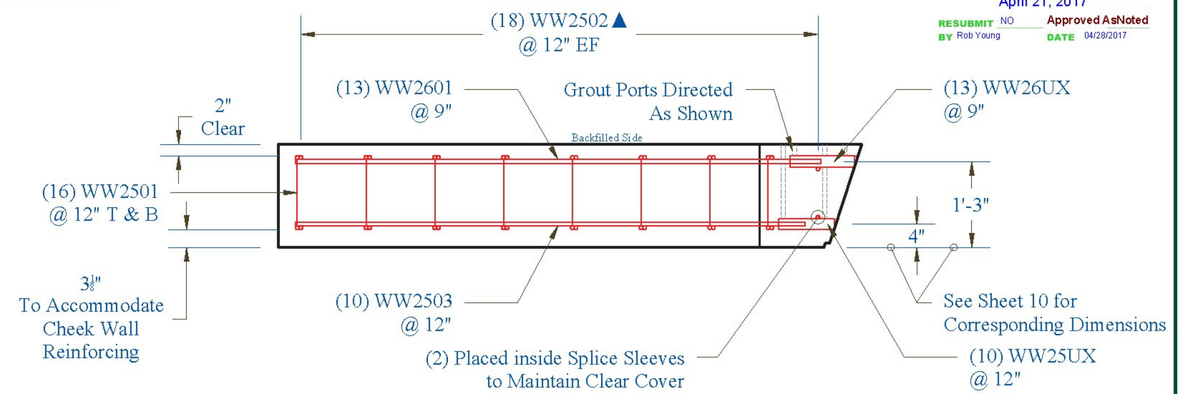
Wingwall 2:

Weight: 16,560 lbs





Reinforcing:



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CONTRACTORS VTSPEC:

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- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

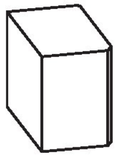
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

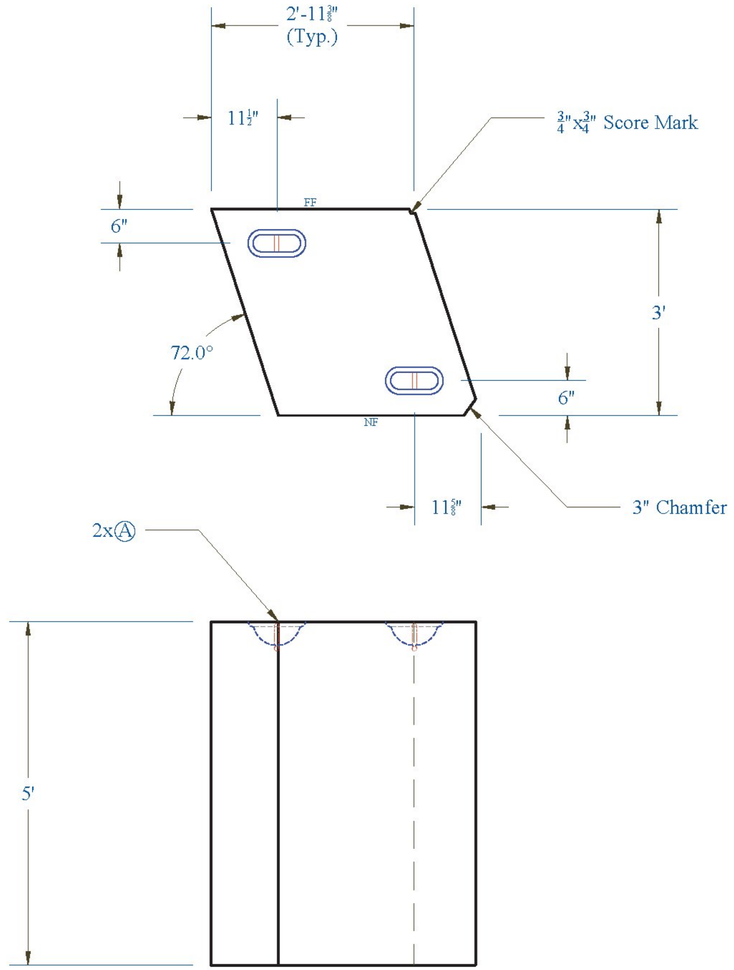
SD Ireland PRECAST

04/20/17 | WINGWALL_1_&_2 | 9/29

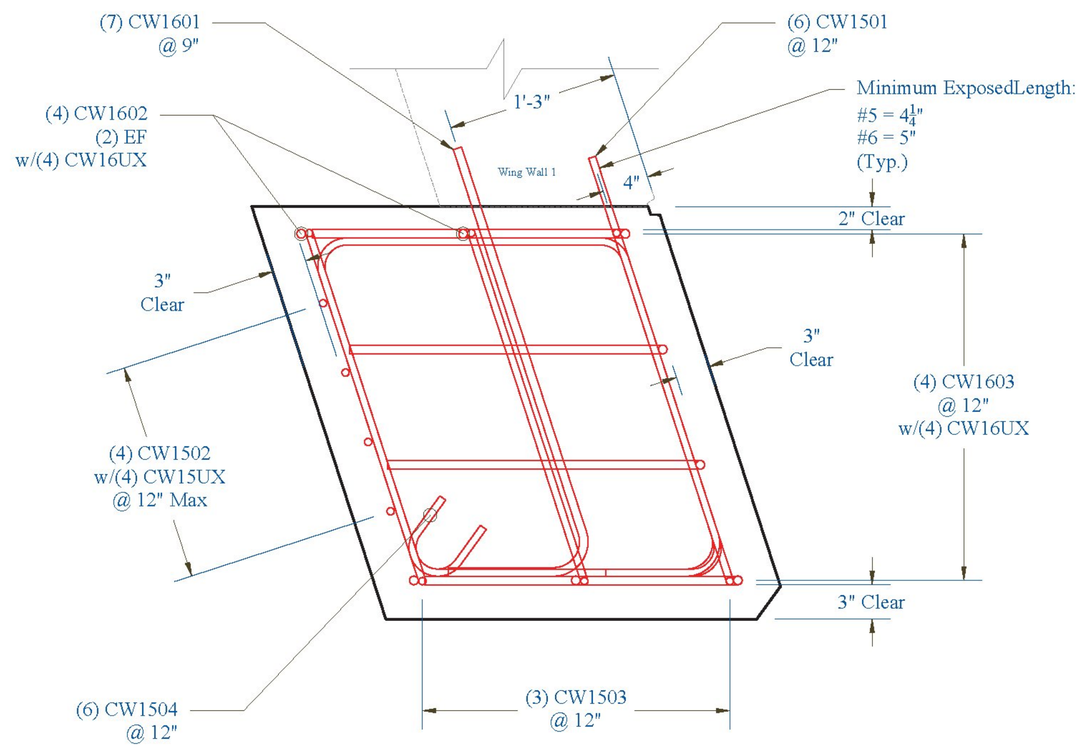
Cheekwall 1:

Weight: 6,520 lbs

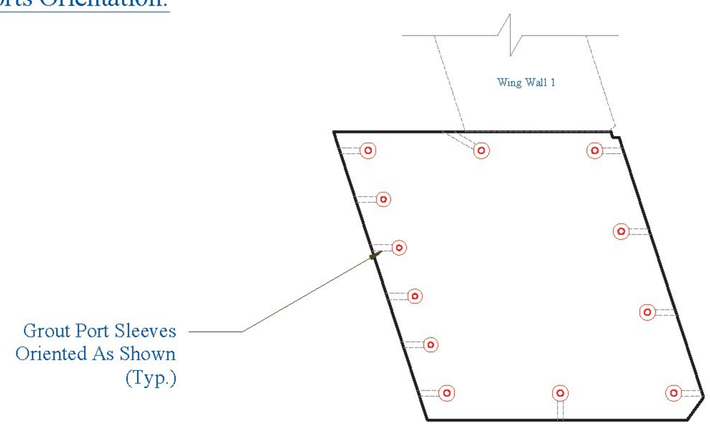




Reinforcing:



Grout Ports Orientation:



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- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
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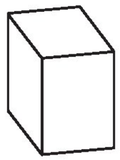
FABRICATOR:
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Ph: (802) 863-6222

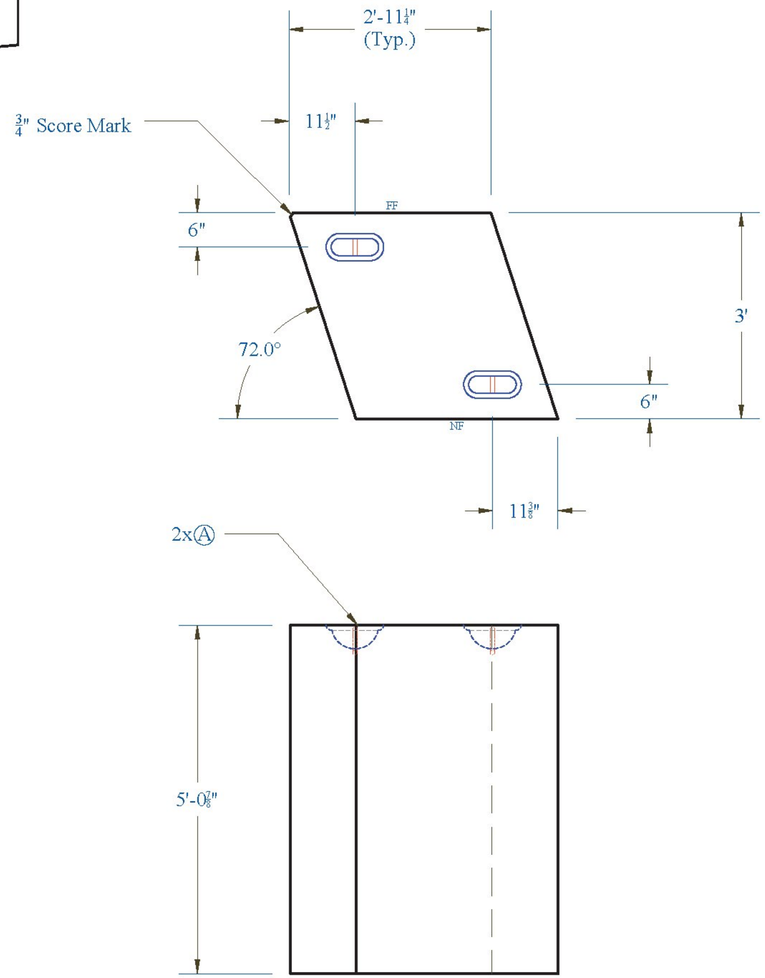
SD Ireland PRECAST

04/20/17 | CHEEKWALL_1 | 10/29

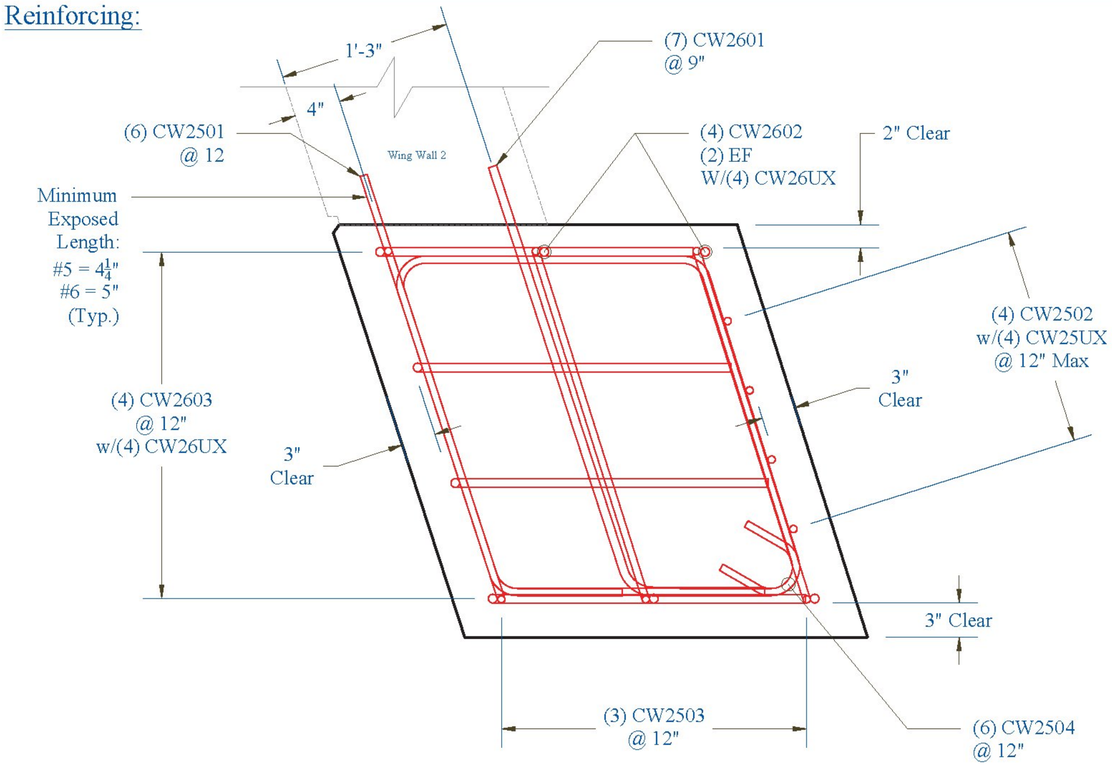
Cheekwall 2:

Weight: 6,640 lbs

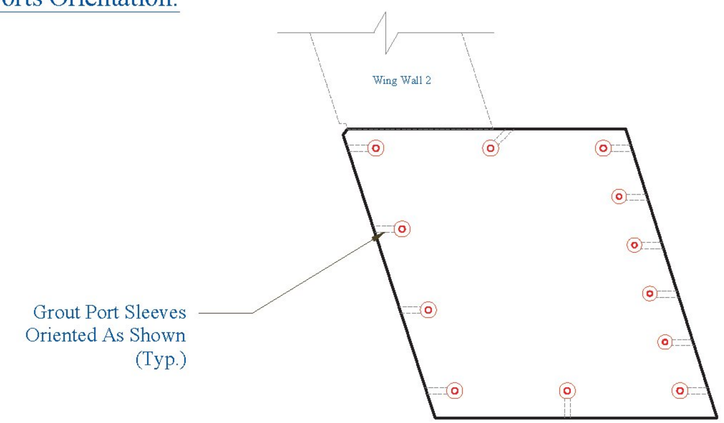




Reinforcing:



Grout Ports Orientation:



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PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

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DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

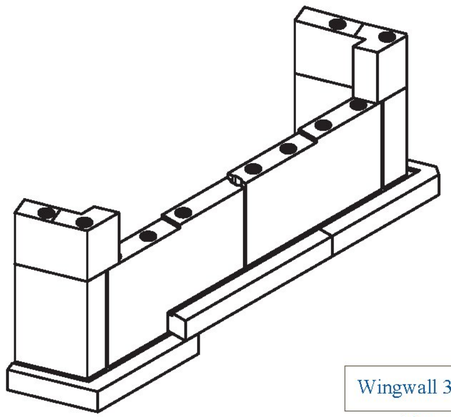
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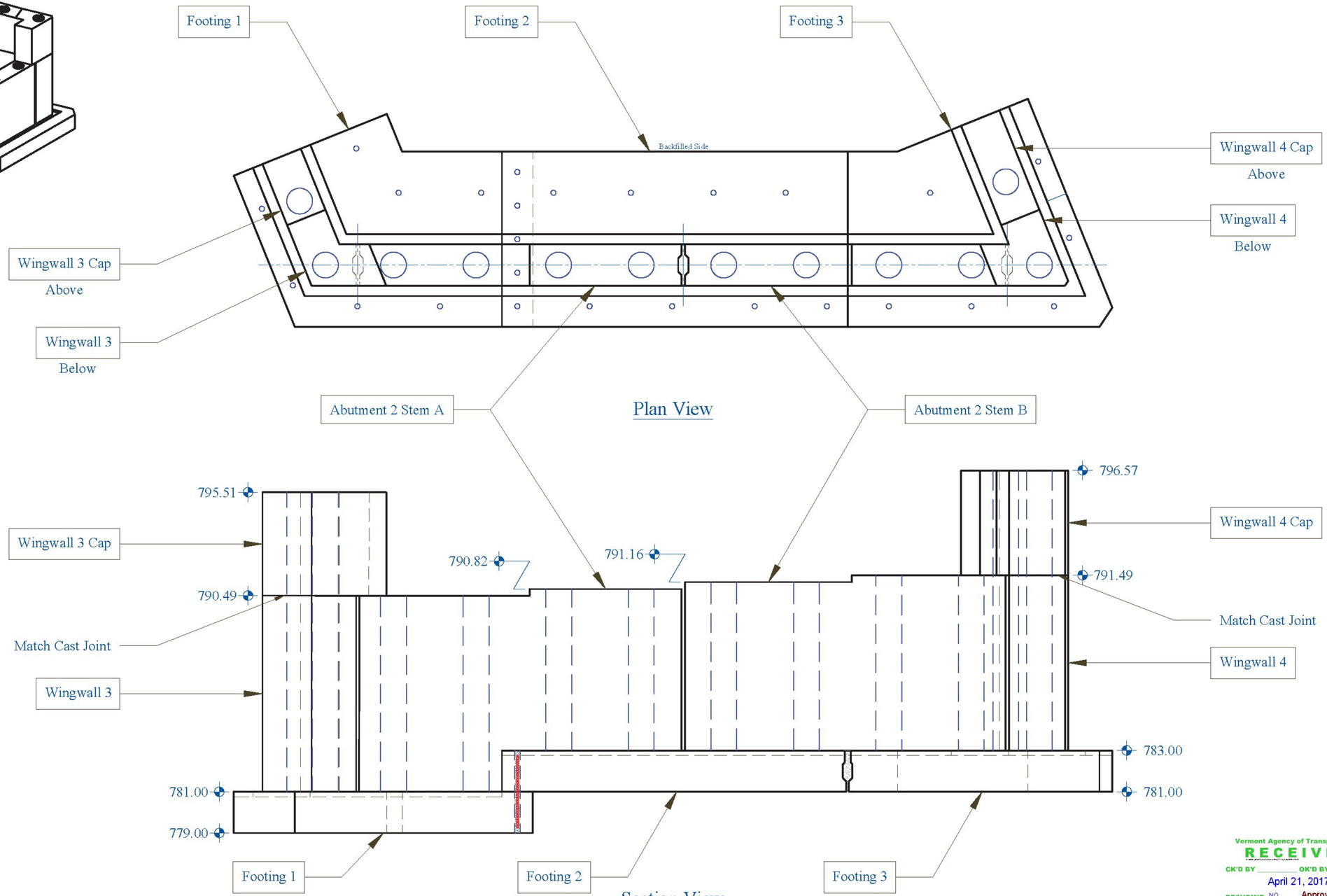
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

04/20/17 | CHEEKWALL_2 | 11/29

Abutment 2: Abutment and Footings





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- (E) Ø 24" Galv. Corrugated Steel Pipe
- (F) Ø 15" Galv. Corrugated Steel Pipe
- (G) Ø 3" x 24" Plastic Corrugated Sleeve
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LOCATION: HUNTINGTON, VT

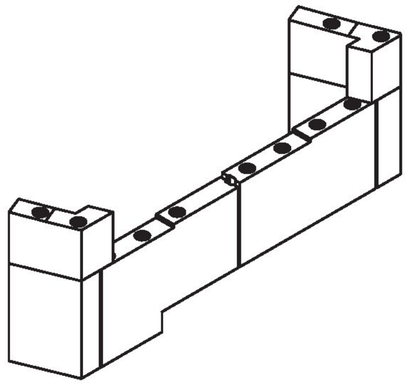
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WILLISTON, VT 05495
Ph: (802) 863-6222

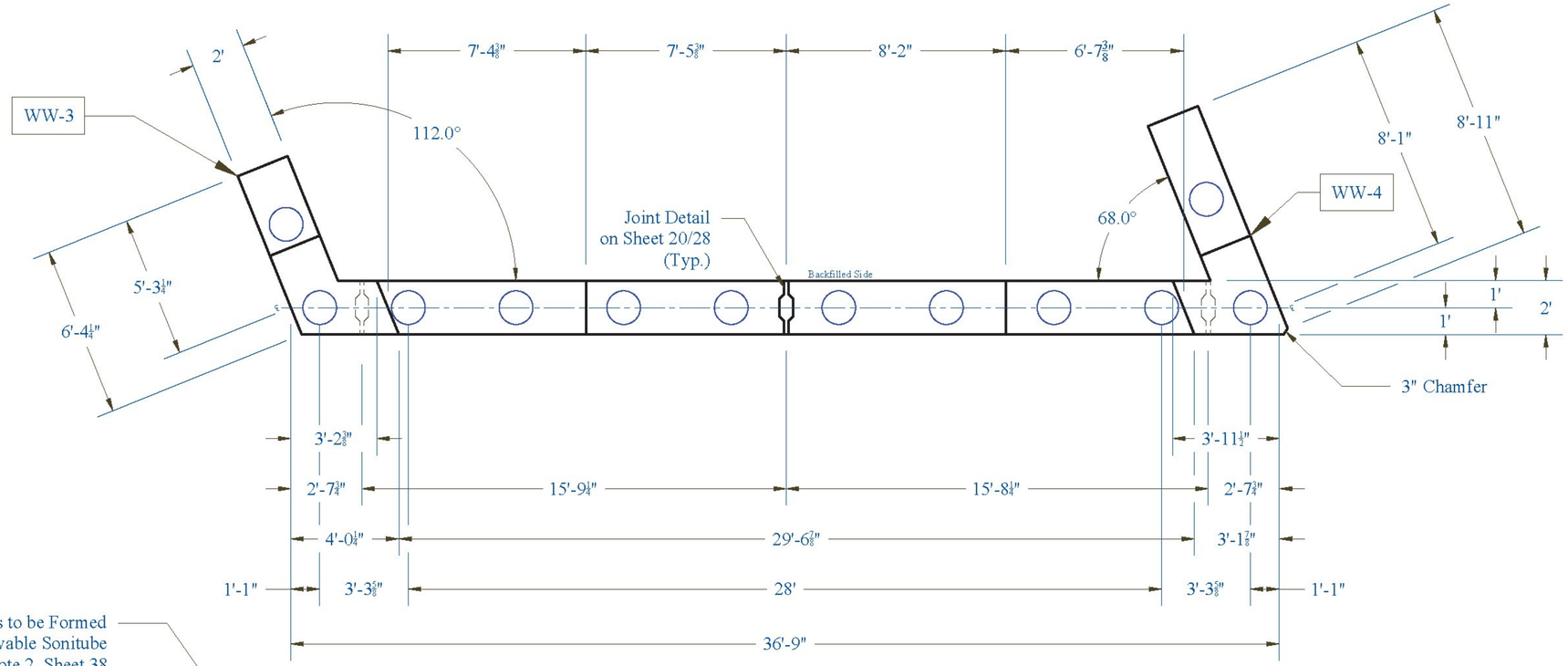
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

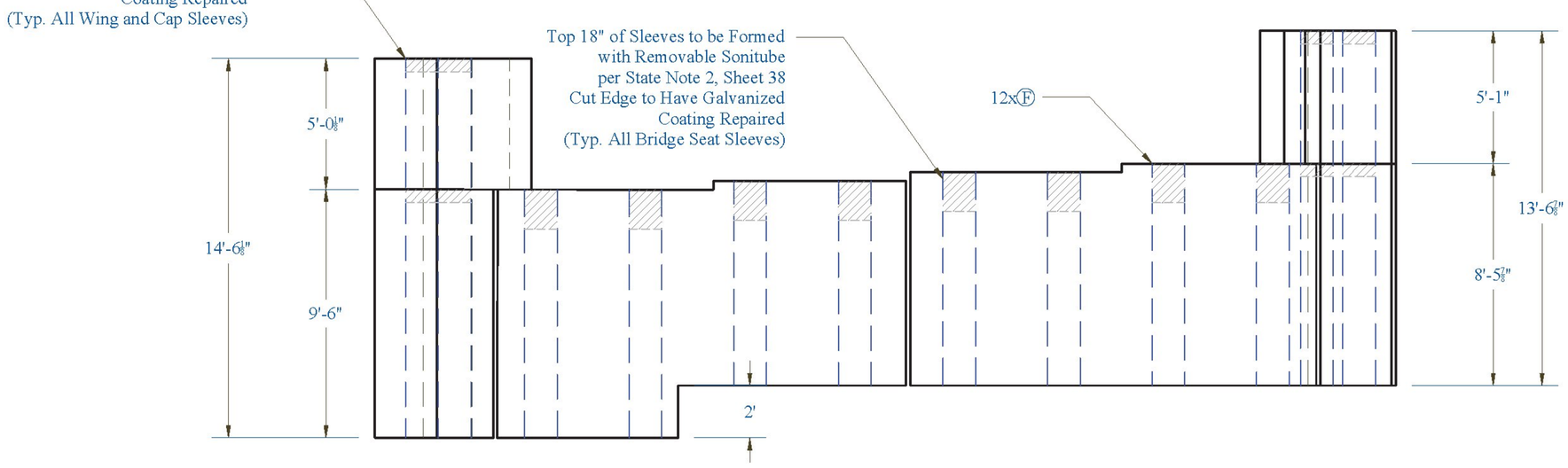
04/20/17 | ABUTMENT_2_AND_FOOTING_OVERVIEW | 12/29

Abutment 2: Overview





Plan View



Section View

Vermont Agency of Transportation
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CONTRACTORS VTSPE:

LEGEND:

- Ⓐ Oxford A750-7
- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

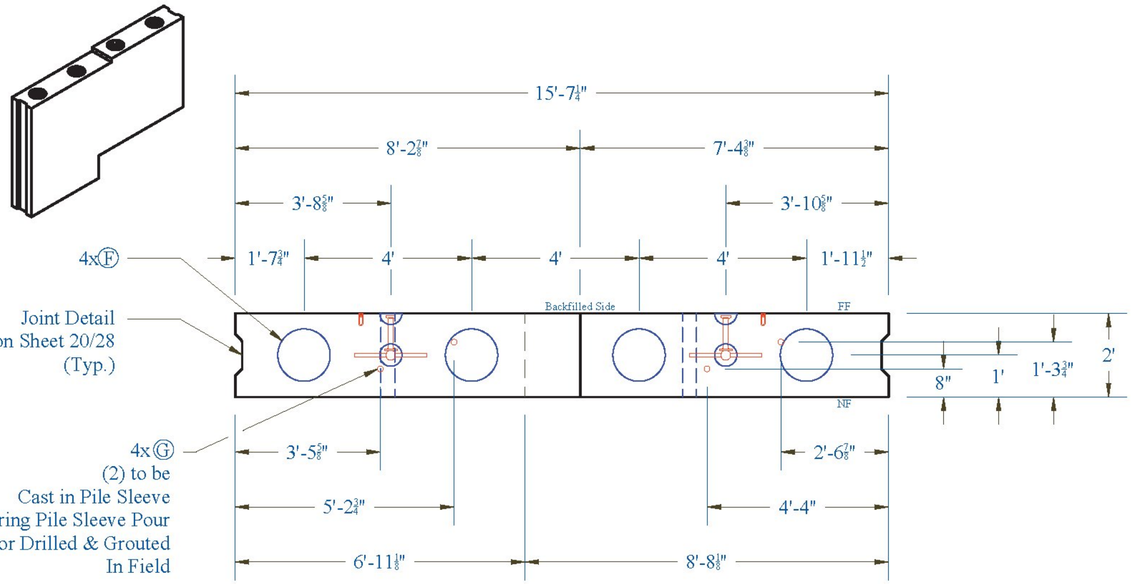
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

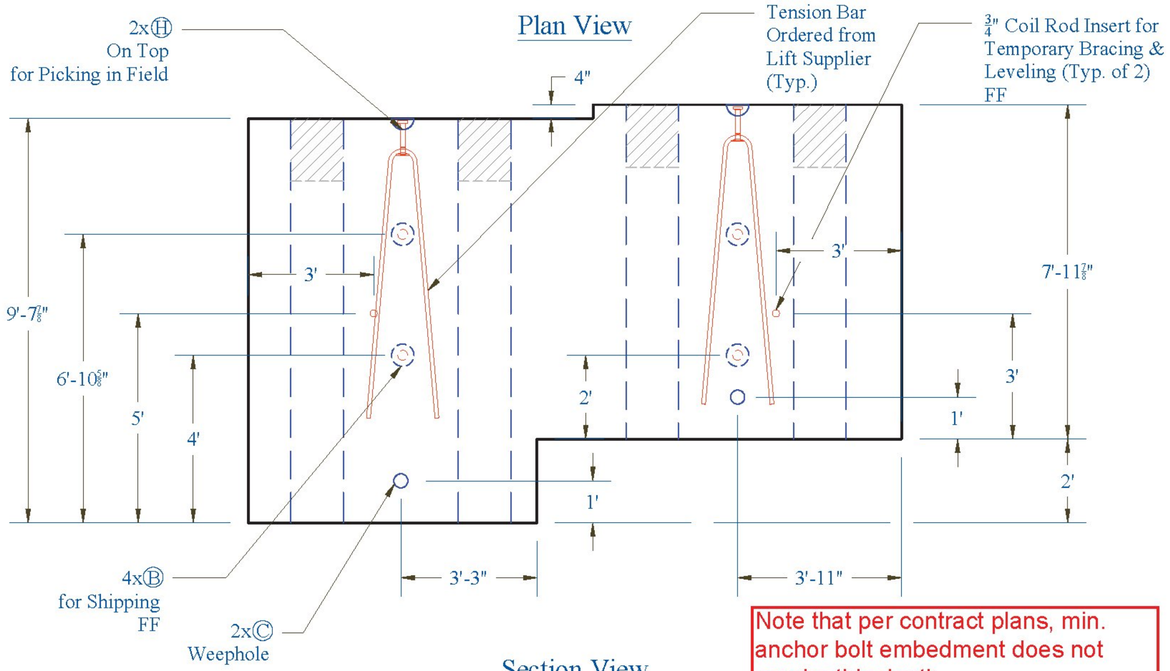
04/20/17 | ABUTMENT_2_STEM_OVERVIEW | 13/29

Abutment 2 Stem A:

Weight: 34,880 lbs



Plan View

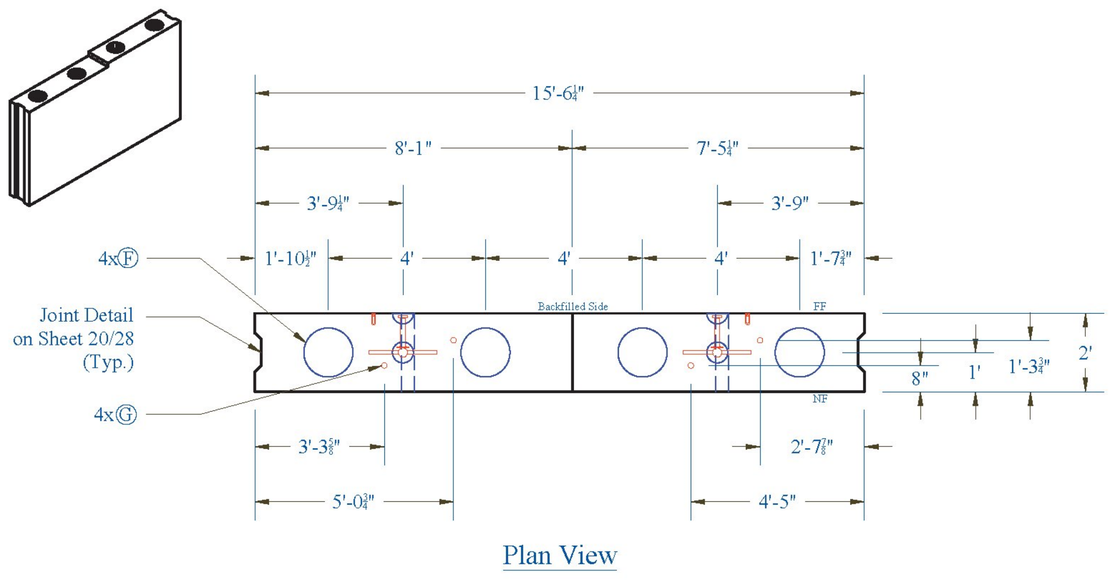


Section View

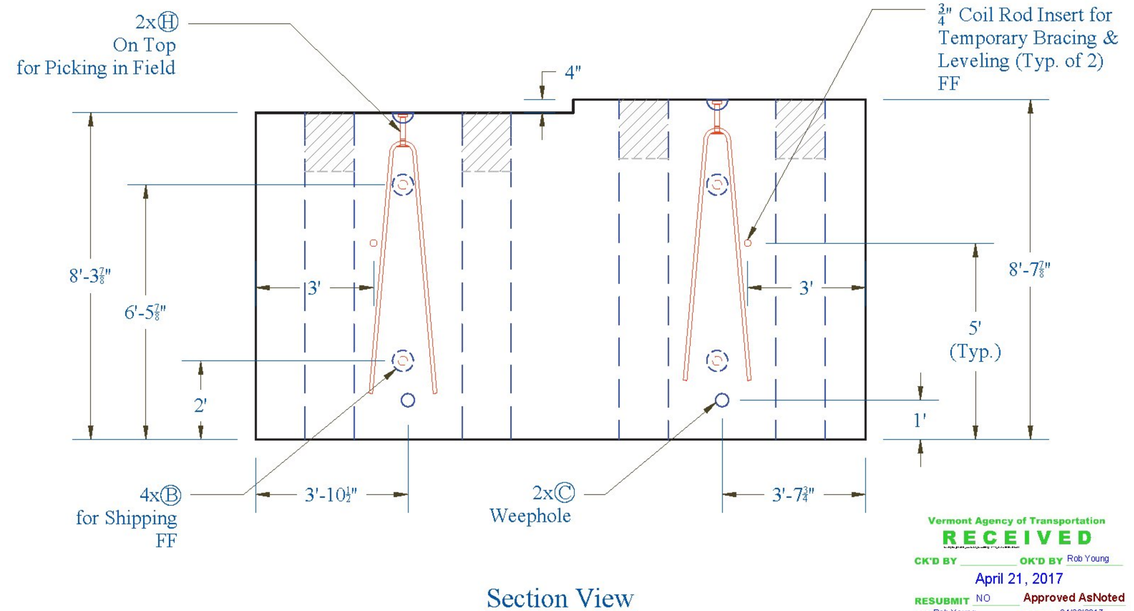
Note that per contract plans, min. anchor bolt embedment does not require this depth.

Abutment 2 Stem B:

Weight: 32,480 lbs



Plan View



Section View

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CONTRACTORS VTSPE:

LEGEND:

- Ⓐ Oxford A750-7
- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

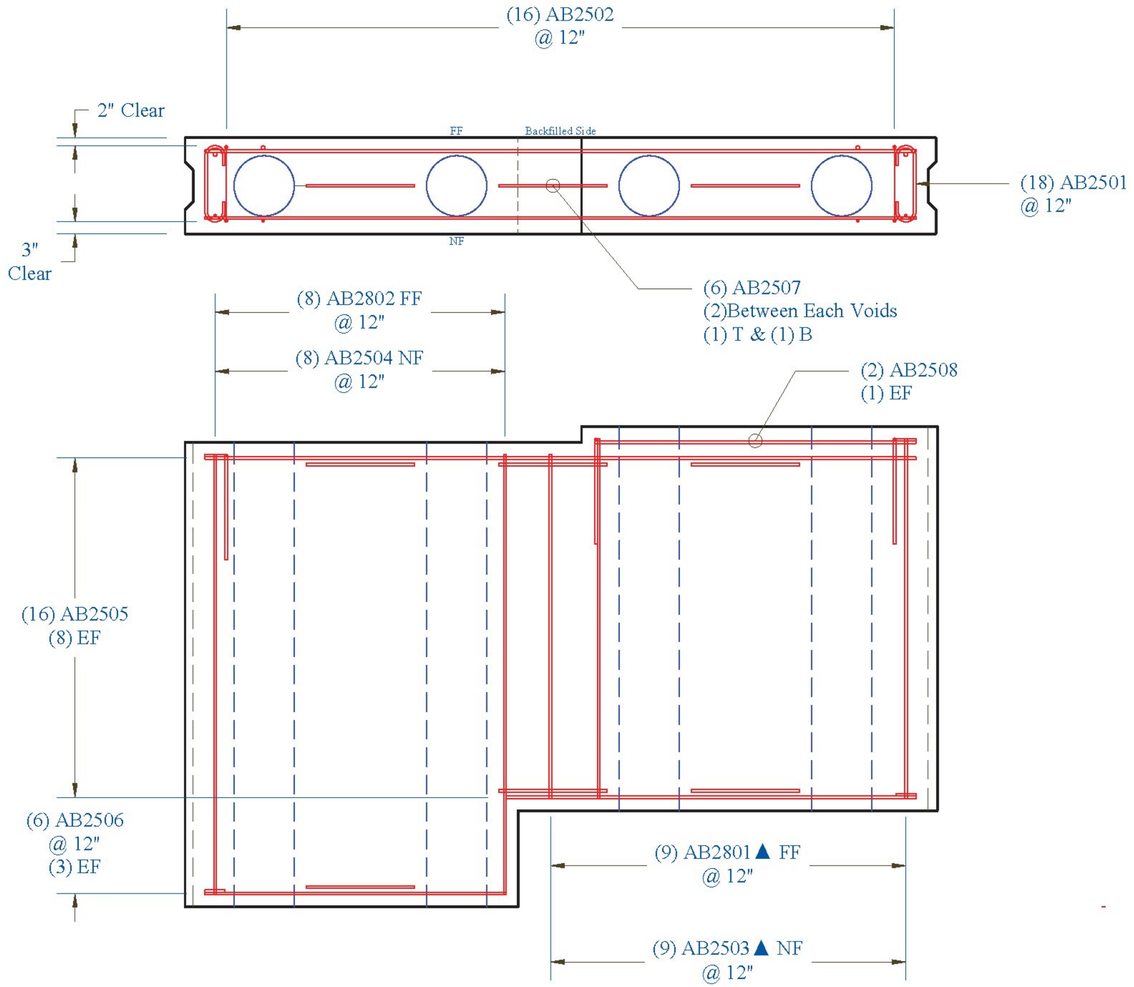
INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

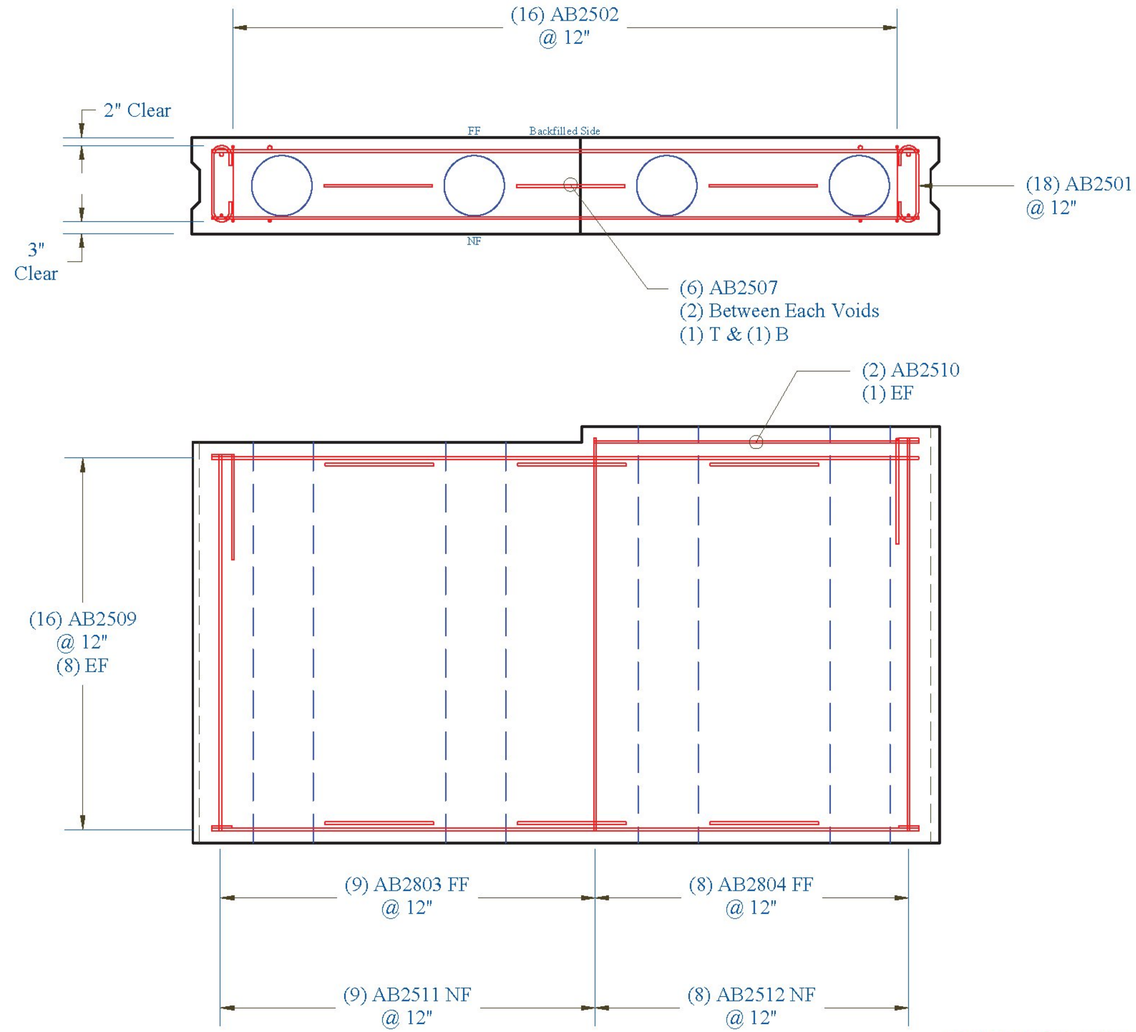
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04/20/17 | ABUTMENT_2_STEMS | 14/29

Abutment 2 Stem A: Reinforcing



Abutment 2 Stem B: Reinforcing



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CONTRACTORS VTSPEC

LEGEND:

- Ⓐ Oxford A750-7
- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

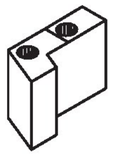
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

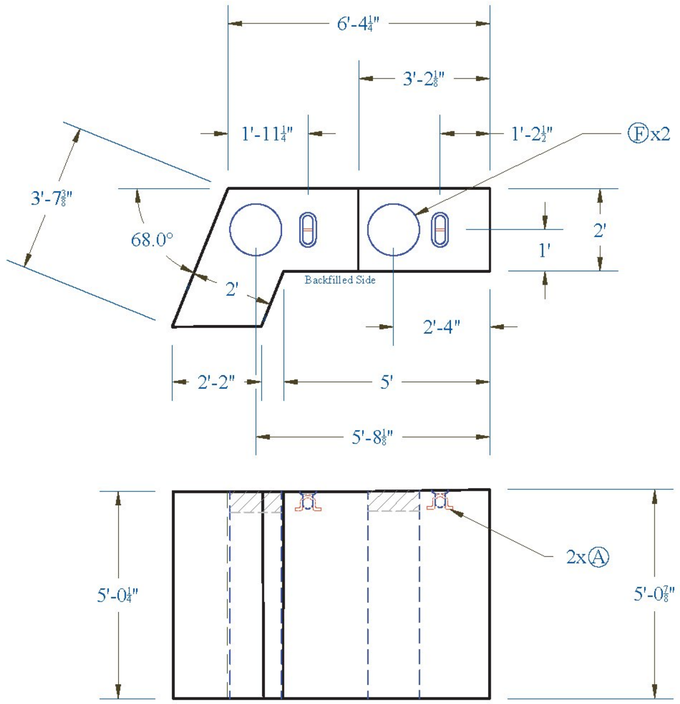
SD Ireland PRECAST

04/20/17 | ABUTMENT_2_STEMS_REINFORCING | 15/29

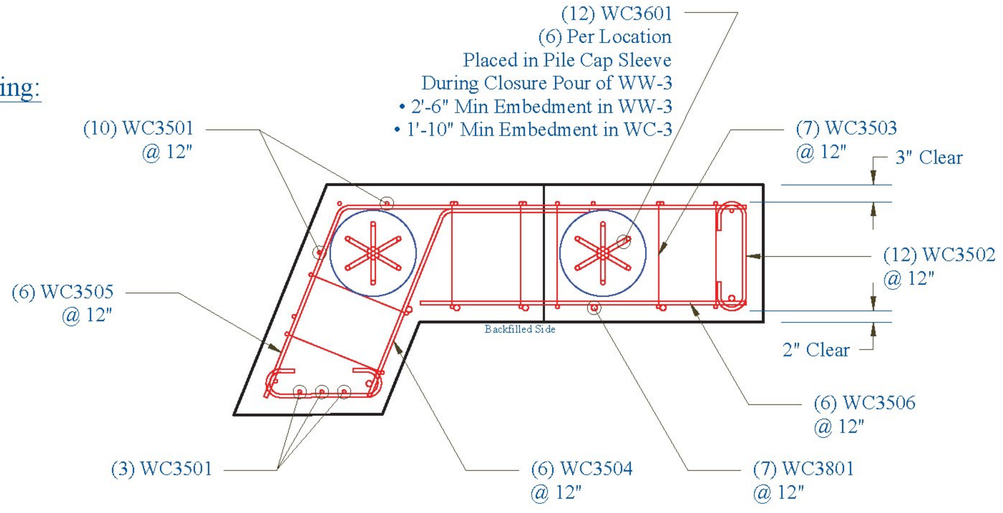
Wingwall 3 Cap:

Weight: 12,240 lbs



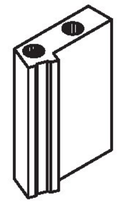


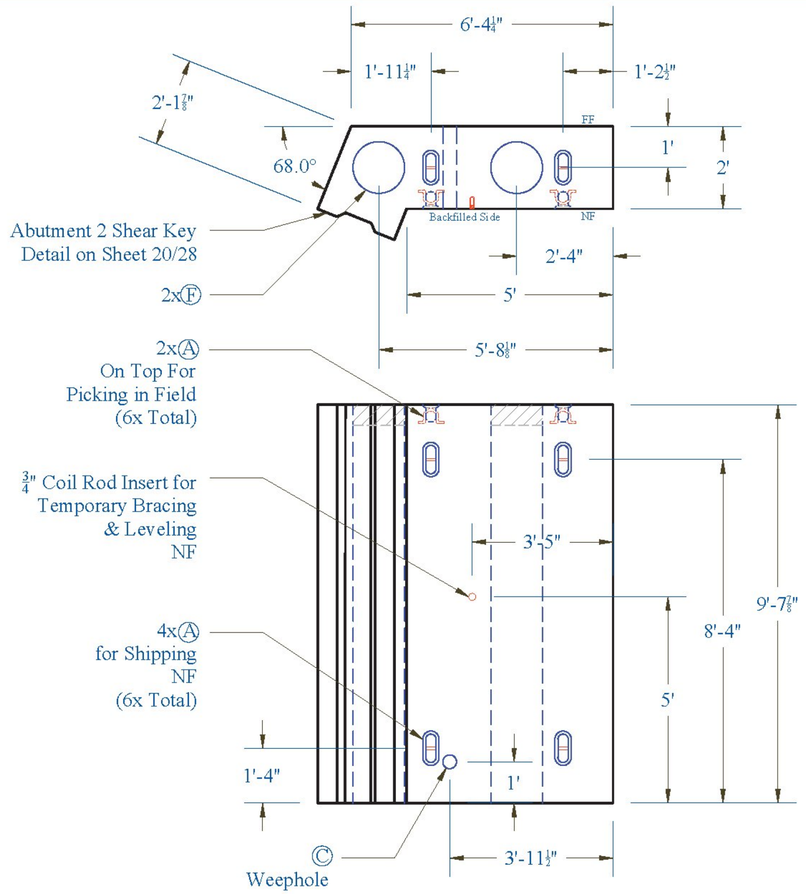
Reinforcing:



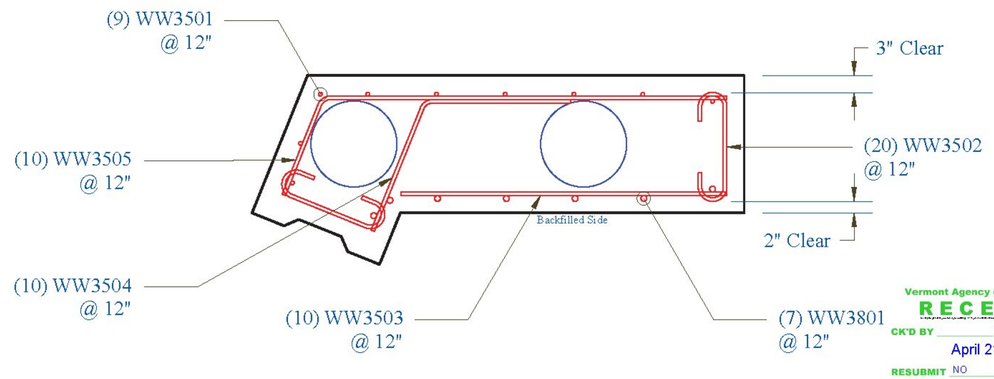
Wingwall 3:

Weight: 16,760 lbs





Reinforcing:



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CONTRACTORS VTSPE:

LEGEND:

- Ⓐ Oxford A750-7
- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

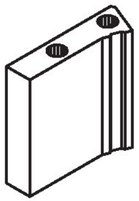
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

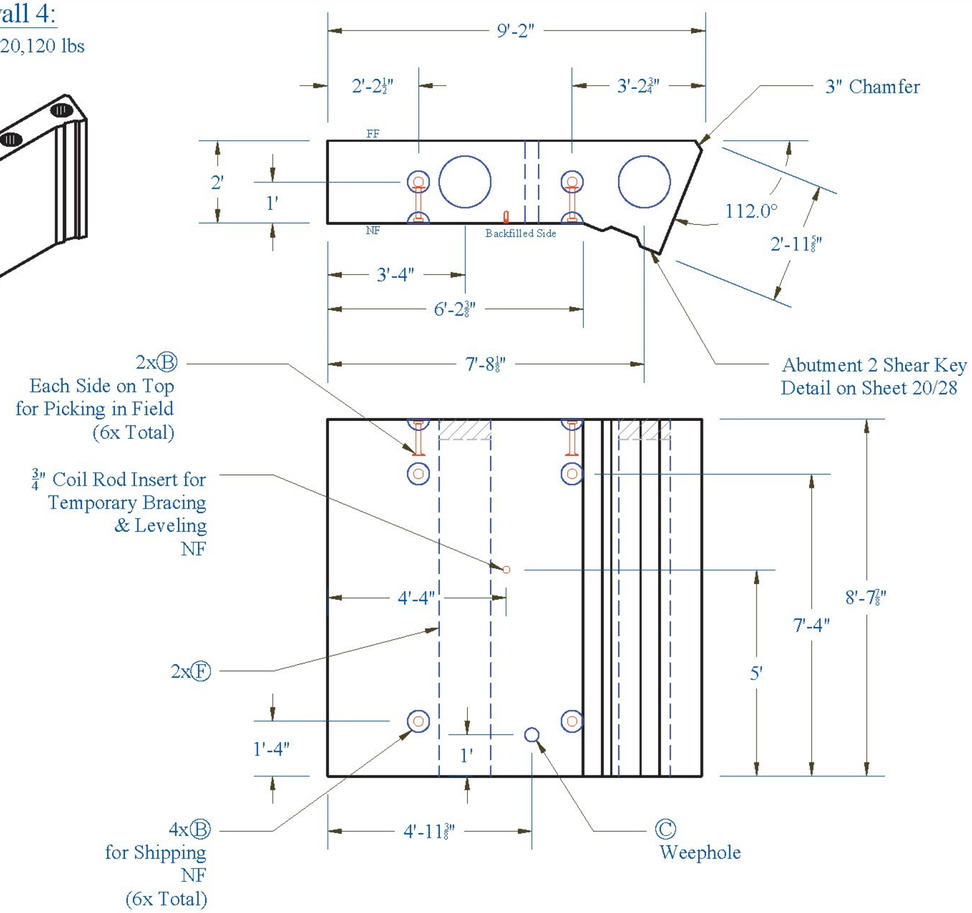
SD Ireland PRECAST

04/20/17 | WINGWALL_3_AND_WINGWALL_3_CAP | 16/29

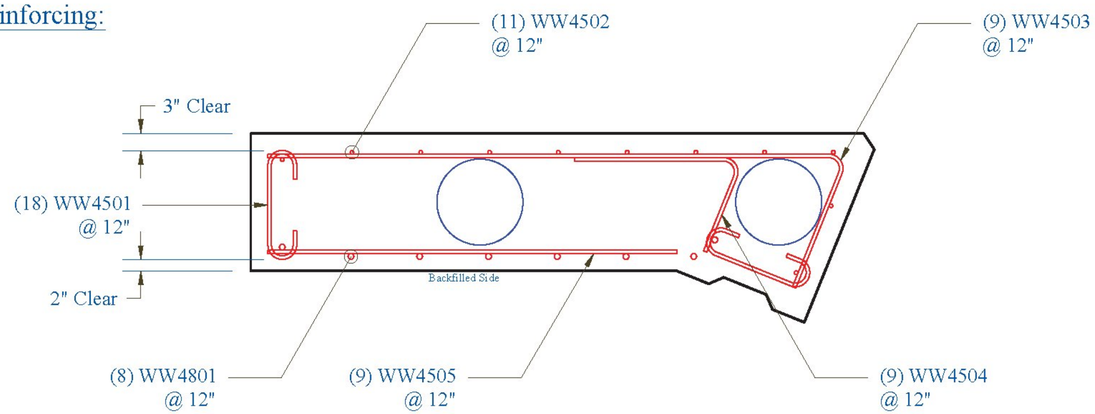
Wingwall 4:

Weight: 20,120 lbs



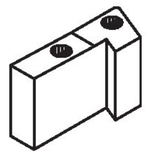


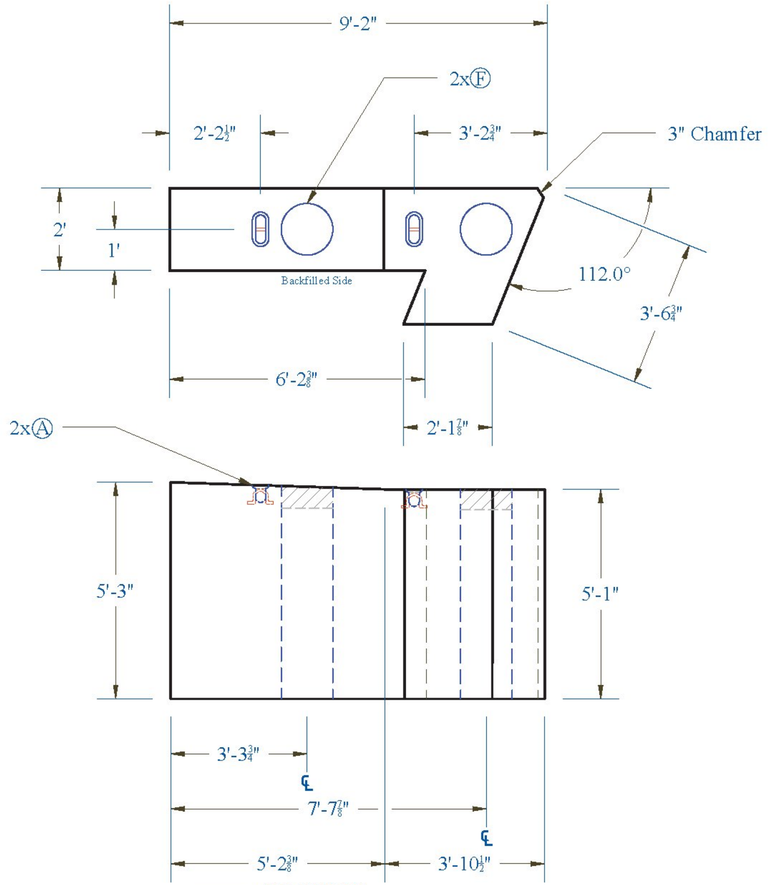
Reinforcing:



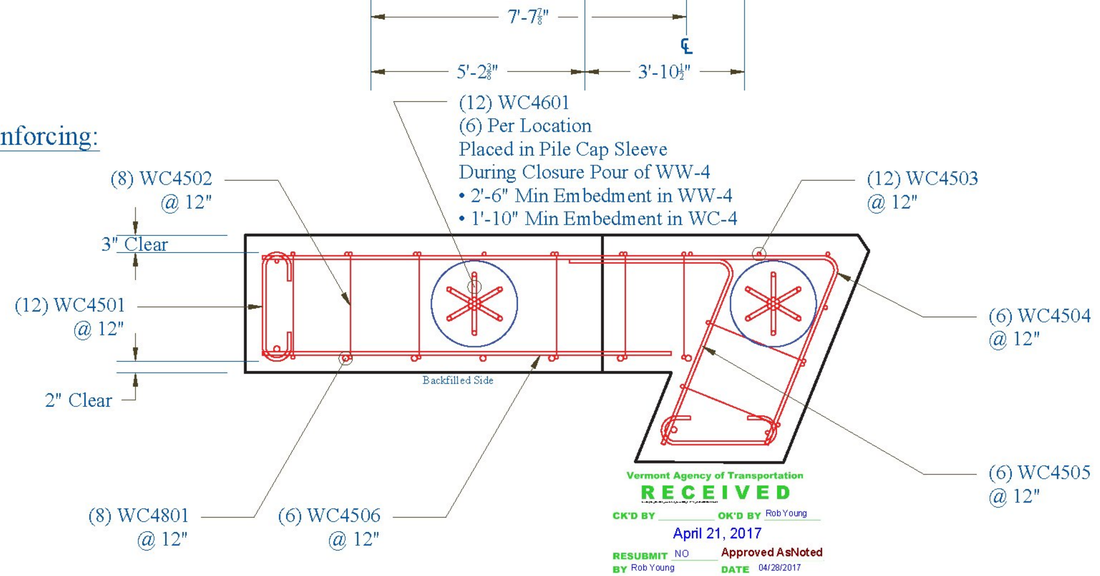
Wingwall 4 Cap:

Weight: 15,400 lbs





Reinforcing:



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CONTRACTORS VTSPEC:

LEGEND:

- Ⓐ Oxford A750-7
- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

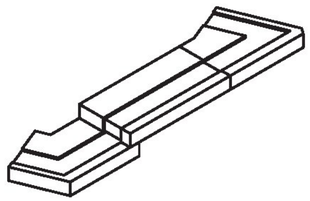
INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

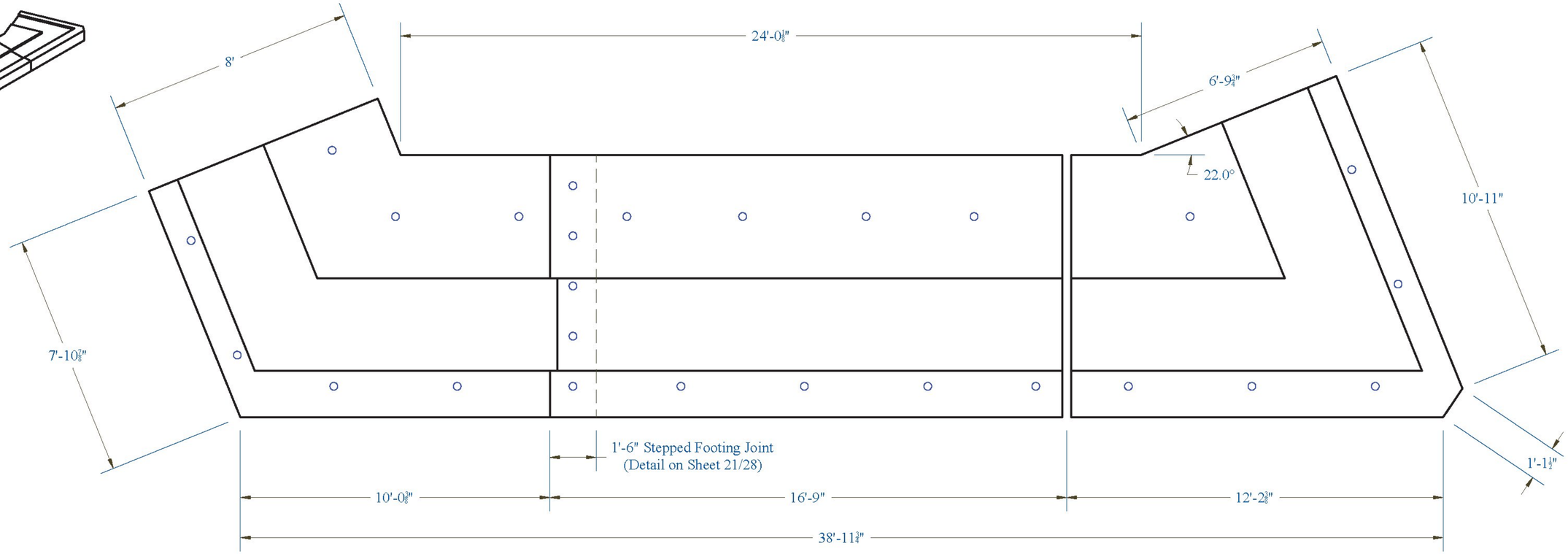
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

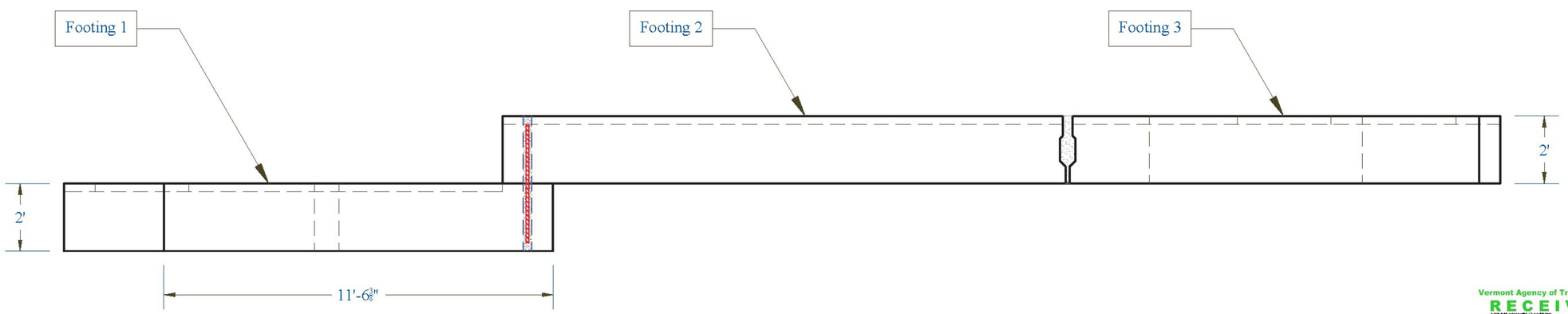
04/20/17 | WINGWALL_4_AND_WINGWALL_4_CAP | 17/29

Abutment 2: Footing Overview





Plan View



Section View

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CONTRACTORS VTSPE:

LEGEND:

- Ⓐ Oxford A750-7
- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

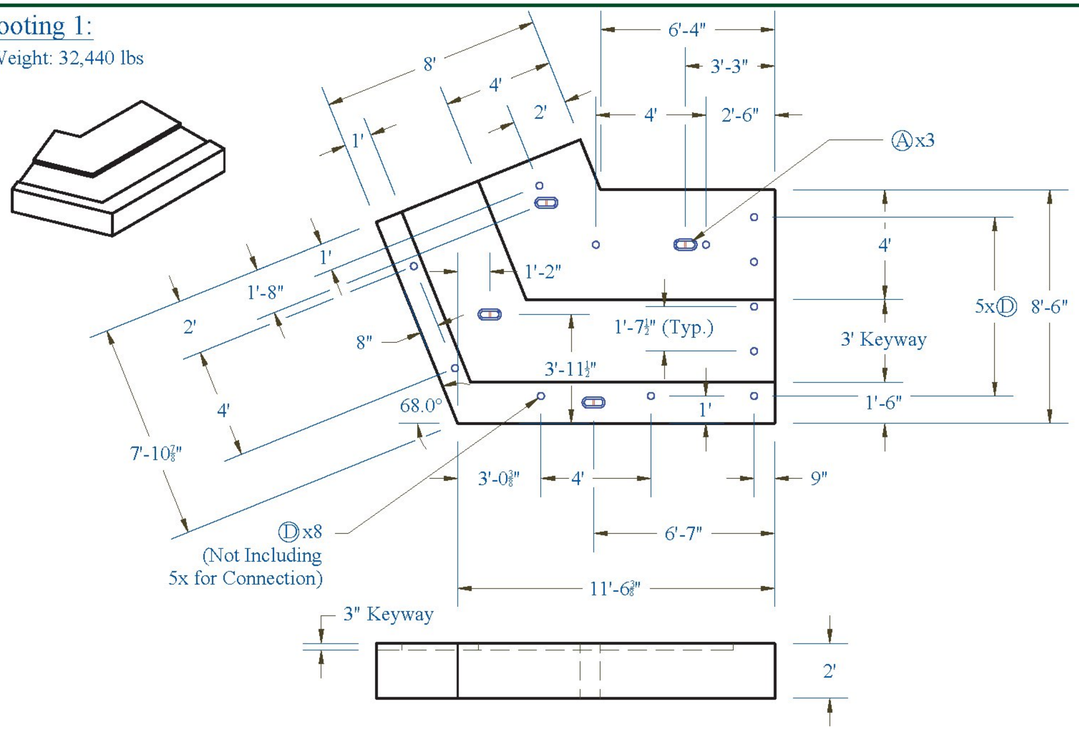
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

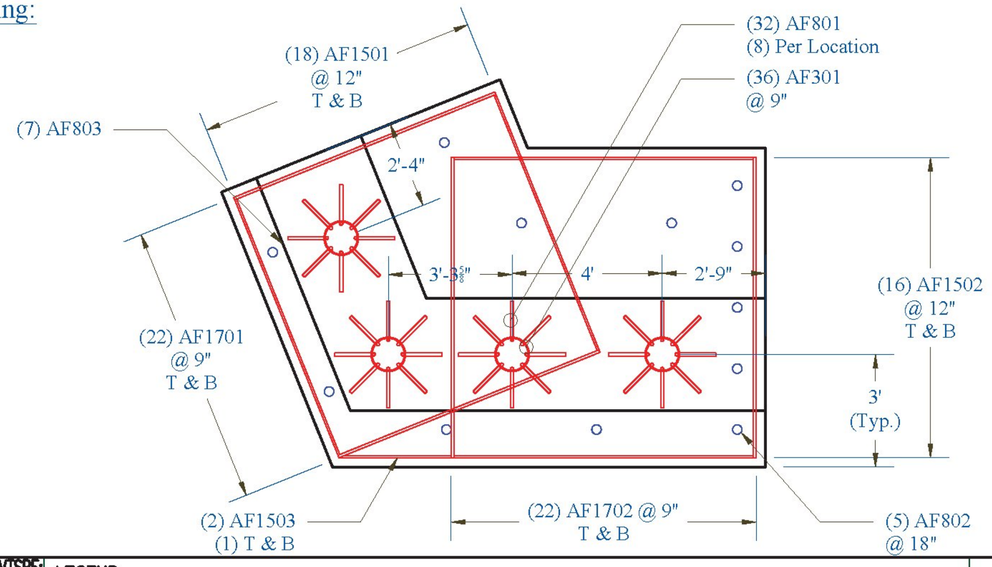
04/20/17 | ABUTMENT_2_FOOTING_OVERVIEW | 18/29

Footing 1:

Weight: 32,440 lbs

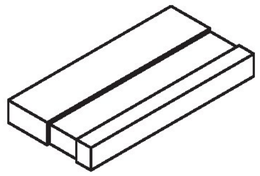


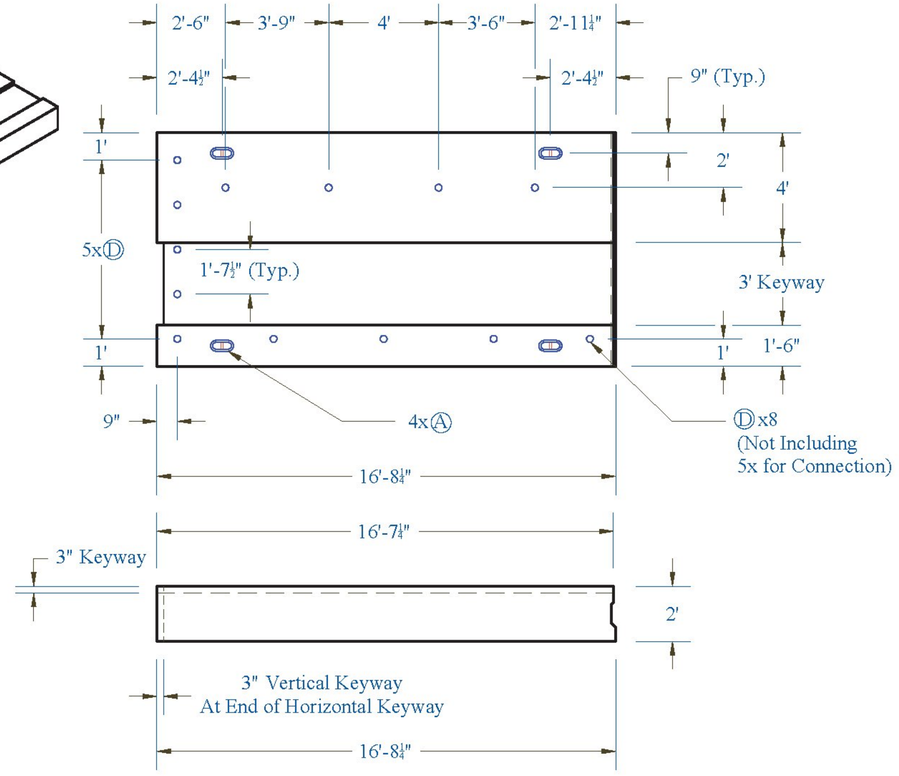
Reinforcing:



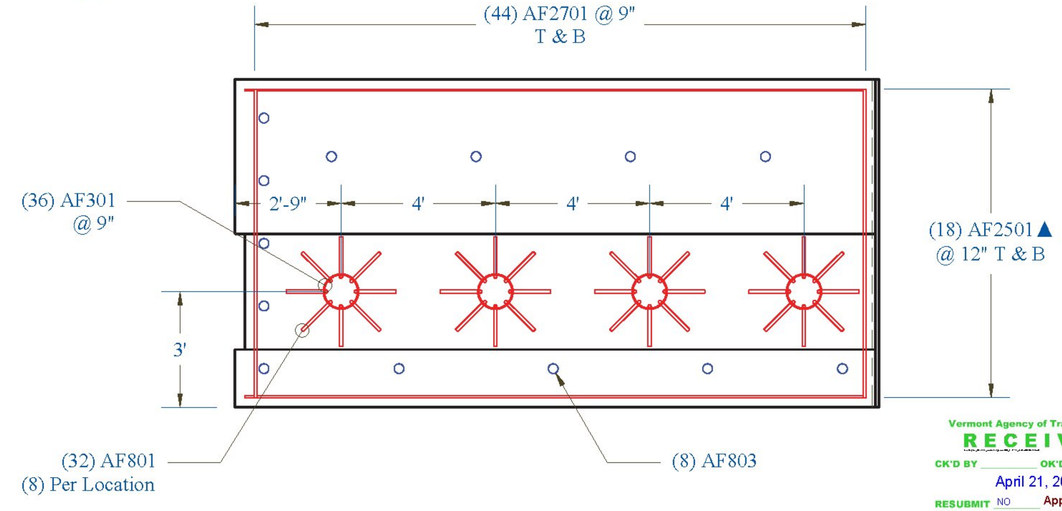
Footing 2:

Weight: 40,320 lbs





Reinforcing:



Vermont Agency of Transportation
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RESUBMIT NO Approved AsNoted
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CONTRACTORS VTSPE:

LEGEND:

Ⓐ Oxford A750-7	Ⓓ 3" Pipe	Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
Ⓑ P52:20T x 10" Lift	Ⓔ Ø 24" Galv. Corrugated Steel Pipe	Ⓗ P53 Lift w/ Tension Bar
Ⓒ 4" Pipe	Ⓕ Ø 15" Galv. Corrugated Steel Pipe	Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

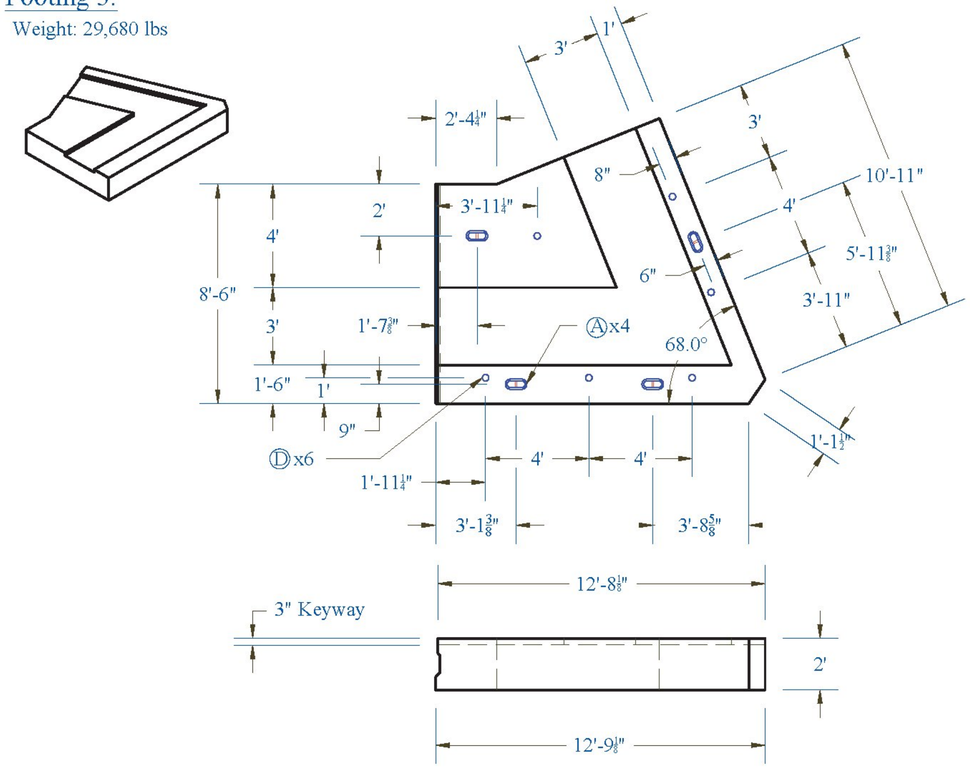
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

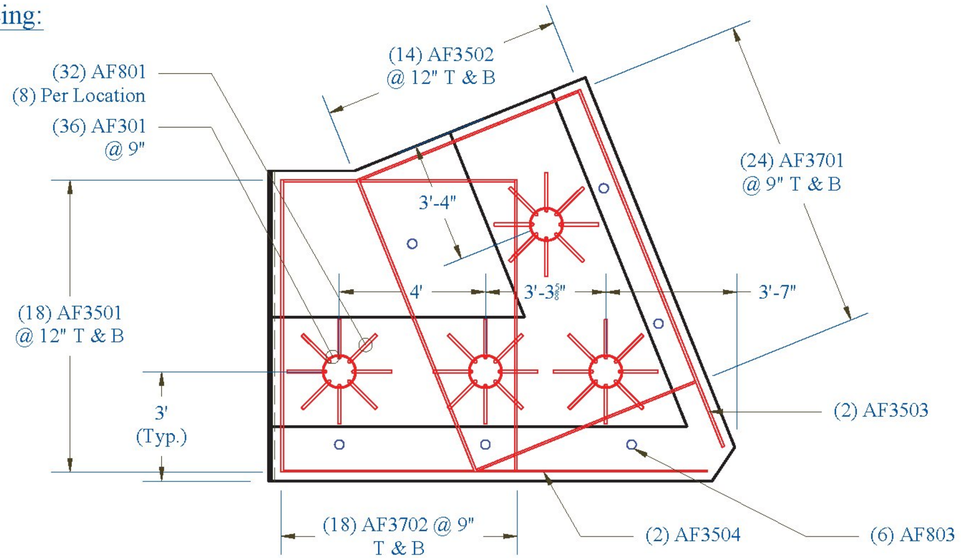
04/20/17 | ABUTMENT_2_FOOTING_1_AND_2 | 19/29

Footing 3:

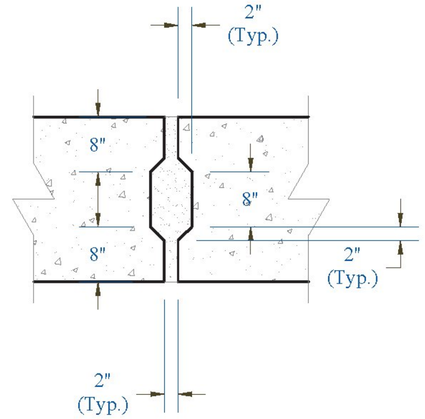
Weight: 29,680 lbs



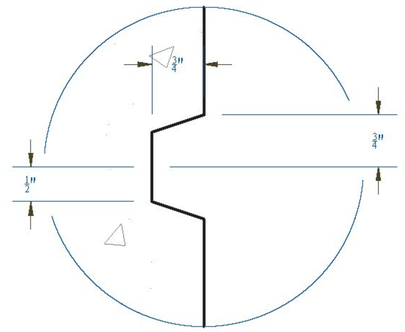
Reinforcing:



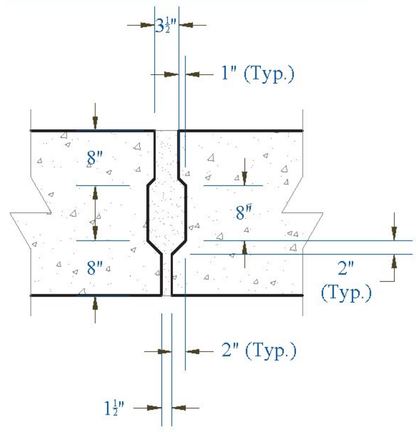
Abutment 2 Shear Key: Plan View



Score Mark Detail:

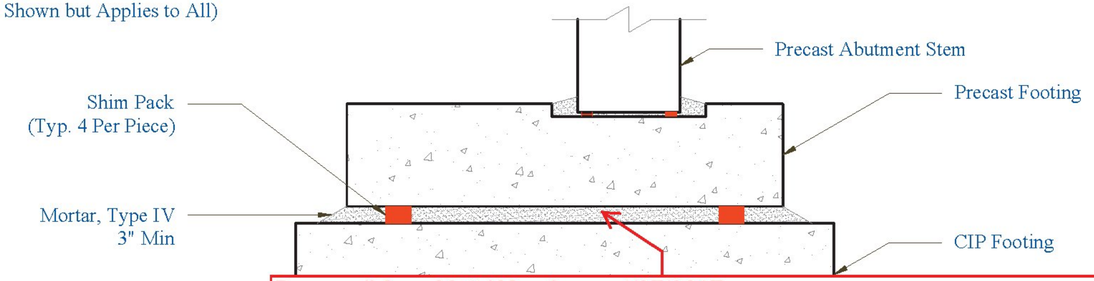


Footing Shear Key: Section View



Footing Shim Detail: Section View

(Footing 2 Shown but Applies to All)



Vermont Agency of Transportation
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RESUBMIT NO Approved AsNoted
BY Rob Young DATE 04/28/2017

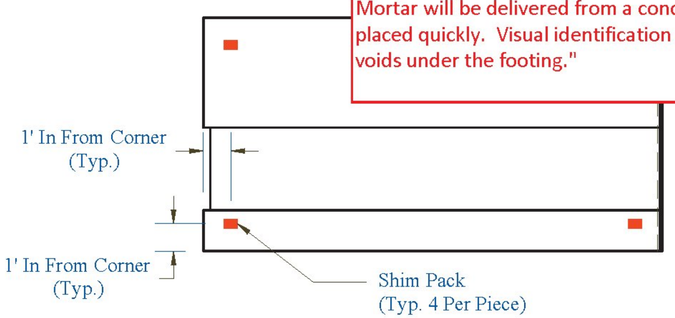
Per email from Matt Wheeler on 4/27/2017:

Q: "For the Abutment No. 2 footing, shims are shown instead of leveling bolts. We're interested in the planned method for placement of the grout under the footing so that the intended grout thickness is achieved."

A: "Shims will be placed on the CIP footing and checked to ensure the elevation of the top of the shims are equal for setting the precast footing piece. Type IV Mortar is then placed with an intended "wet" thickness of ½" above the shim and cover the entire bed. The precast footing piece is then placed on the uncured mortar. The excess half inch will squeeze out of the edges and ensure that total contact is made. The Mortar will be delivered from a concrete plant via a truck and pumped if necessary to ensure that it is placed quickly. Visual identification of solid contact is made if all of the 3" tubes in the footing indicate no voids under the footing."

Footing Shim Detail: Plan View

(Footing 2 Shown but Applies to All)



∴ Shim Compressive Capacity	240,000 lbs
∴ (4x) Shim Compressive Capacity	960,000 lbs
Heaviest Footing Weight	40,320 lbs
960,000 lbs > 40,320 lbs ✓	

Note: Additional shims to be used as needed for leveling purposes.

CONTRACTORS VTSPE:

LEGEND:

- Ⓐ Oxford A750-7
- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

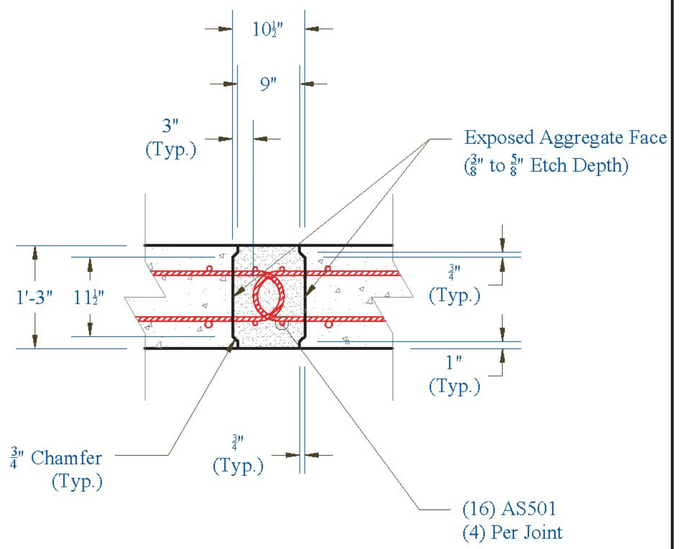
INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
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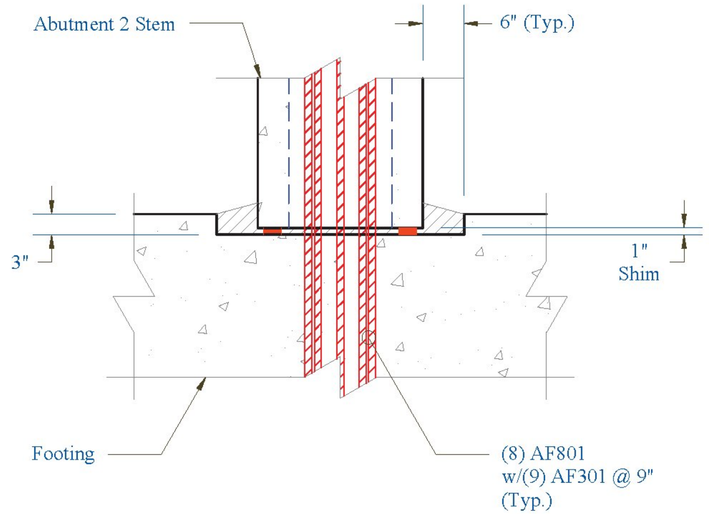
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04/20/17 | ABUTMENT_FOOTING_3_&_MISC_DETAILS | 20/29

Approach Slab Closure Pour Detail: Section View

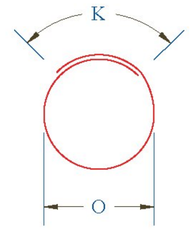


Abutment 2 Keyway: Plan View

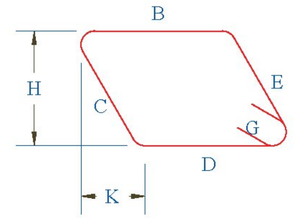


Rebar Bend Types:

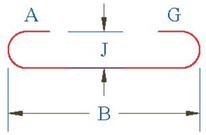
T3:



T1:

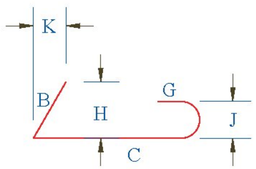


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14:

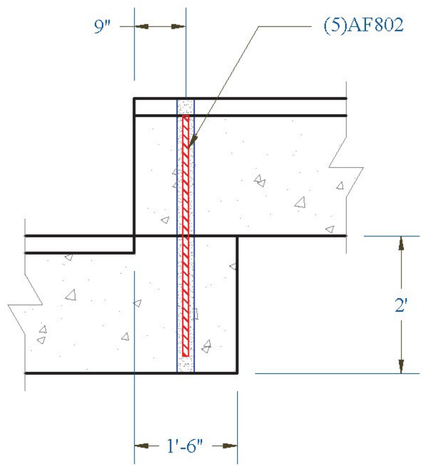
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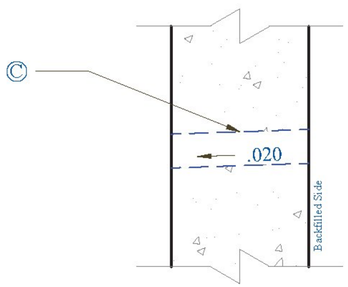
17:



Footing Step Joint: Section View



Weep Hole Detail



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- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

04/20/17 | DETAILS | 21/29

Reinforcing Schedule

Qty	Size	Length	Mark	Type	A	B	C	D	E	G	H	J	K
38	#5	16'-10 1/4"	AS1501	1	8'-1 1/2"	8'-1 1/2"						7 1/4"	
36	#5	11'-7 3/4"	AS1502	1	5'-6 1/2"	5'-6 1/2"						7 1/4"	
24	#6	19'-5 1/2"	AS1601	Str									
33	#8	19'-5 1/2"	AS1801	1	6"	19'-5 1/2"						8 1/4"	
36	#5	17'-3 1/4"	AS2501	1	8'-4"	8'-4"						7 1/4"	
36	#5	11'-10 3/4"	AS2502	1	5'-7 3/4"	5'-7 3/4"						7 1/4"	
24	#6	19'-5"	AS2601	Str									
33	#8	20'-7 1/2"	AS2801	1	6"	19'-5 1/2"						8 1/4"	
16	#5	5'-5"	WW2501	17		2'-2"	1'-1"	2'-2"					
18	#5	8'-7 3/4"	WW2502	Str									
10	#5	7'-4 7/8"	WW2503	Str									
13	#6	7'-7 5/8"	WW2601	Str									
10	#5		WW25UX										
13	#6		WW26UX										
6	#5	4'-1"	CW2501	14		3'-2 1/4"	10 3/4"				3'-0 3/8"		11 7/8"
4	#5	4'-4 3/4"	CW2502	Str									
3	#5	7'-0 1/2"	CW2503	17		2'-2"	2'-8 1/2"	2'-2"					
6	#5	10'-2 1/2"	CW2504	T1		2'-3"	2'-6 1/2"	2'-3"	2'-6 1/2"	3 3/4"	2'-5"		9 3/8"
7	#6	4'-3"	CW2601	14		3'-3"	1'-0"				3'-1 1/8"		1'-0"
4	#6	4'-4"	CW2602	Str									
4	#6	6'-7 1/2"	CW2603	17		2'-3 1/2"	4'-4"						
4	#5		CW25UX										
8	#6		CW26UX										
3	#5	12'-11 1/2"	AB1501	T1		2'-7"	3'-7"	2'-7"	3'-7"	3 3/4"			
6	#5	12'-1 3/4"	AB1502	T1		2'-7"	3'-2 1/8"	2'-7"	3'-2 1/8"	3 3/4"			
6	#5	11'-4 1/4"	AB1503	T1		2'-7"	2'-9 3/8"	2'-7"	2'-9 3/8"	3 3/4"			
5	#5	10'-6 1/2"	AB1504	T1		2'-7"	2'-4 1/2"	2'-7"	2'-4 1/2"	3 3/4"			
12	#5	5'-6 5/8"	AB1505	Str									
2	#5	16'-0 3/4"	AB1506	Str									
2	#5	23'-10 3/8"	AB1507	Str									
5	#5	4'-1"	AB1508	14		3'-2 1/4"	10 3/4"				3'-0 3/8"		11 7/8"
3	#5	4'-0 3/4"	AB1509	30		3'-2 1/8"	10 5/8"				3'-0 1/4"		11 3/4"
4	#5	4'-2 1/2"	AB1510	Str									

Reinforcing Schedule

Qty	Size	Length	Mark	Type	A	B	C	D	E	G	H	J	K
4	#5	3'-0 1/2"	AB1511	Str									
8	#5	20'-0"	AB1512	Str									
6	#6	4'-3"	AB1601	14		3'-3"	1'-0"				3'-1 1/8"		1'-0"
4	#6	4'-5 3/8"	AB1602	30		3'-2 7/8"	1'-0 3/4"				3'-1"		12"
4	#6	6'-9"	AB1603	17		2'-3 1/2"	4'-5 1/2"						
4	#6	5'-4 1/2"	AB1604	17		2'-3 1/2"	3'-1"						
8	#6	7'-4"	AB1605	14		2'-11"	1'-6"	2'-11"					
4	#6	4'-5 1/2"	AB1606	Str									
4	#6	3'-1"	AB1607	Str									
4	#6	8'-3 1/8"	AB1701	Str									
4	#7	9'-11"	AB1702	Str									
4	#7	20'	AB1703	Str									
10	#5	5'-5"	WW1501	17		2'-2"	1'-1"	2'-2"					
10	#5	7'-4 1/2"	WW1502	Str									
8	#5	4'-2 1/4"	WW1503	Str									
11	#6	3'-10"	WW1601	Str									
8	#5		WW15UX										
11	#6		WW16UX										
6	#5	4'-0 3/4"	CW1501	30		3'-2 1/8"	10 5/8"				3'-0 1/4"		11 3/4"
4	#5	4'-3 7/8"	CW1502	Str									
3	#5	7'-0 1/2"	CW1503	Str									
6	#5	10'-2 1/2"	CW1504	T1		2'-3"	2'-6 1/2"	2'-3"	2'-6 1/2"	3 3/4"	2'-5"		9 3/8"
7	#6	4'-5 3/8"	CW1601	30		3'-2 7/8"	1'-0 3/4"				3'-1"		12"
4	#6	4'-3 1/8"	CW1602	Str									
4	#6	6'-6 5/8"	CW1603	17		2'-3 1/2"	4'-3 1/8"						
4	#5		CW15UX										
8	#6		CW16UX										
13	#5	4'-1"	WC3501	Str									
12	#5	3'-4"	WC3502	1	5"	1'-8"				5"		5"	
7	#5	5'-10 5/8"	WC3503	17		2'-2"	1'-6 5/8"	2'-2"					
6	#5	5'-0 3/8"	WC3504	14		2'-11"	2'-1 3/8"				2'-8 3/8"		3'-2 1/2"
6	#5	8'-10 3/8"	WC3505	14		2'-11 3/4"	5'-10 5/8"				2'-9 1/8"		6'-11 7/8"
6	#5	4'-9"	WC3506	Str									

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LEGEND:

- Ⓐ Oxford A750-7
- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

04/20/17 | REINFORCING_SCHEDULE | 22/29

Reinforcing Schedule

Qty	Size	Length	Mark	Type	A	B	C	D	E	G	H	J	K
12	#6	5'-2½"	WC3601	1	4½"	4'-5"						5"	
7	#8	4'-1"	WC3801	Str									
9	#5	9'-1⅞"	WW3501	Str									
20	#5	3'-3"	WW3502	1	5"	1'-7"				5"		5"	
10	#5	4'-9"	WW3503	Str									
10	#5	4'-1¾"	WW3504	14		2'-0⅜"	2'-1⅜"				1'-10⅝"		9⅛"
10	#5	7'-4⅞"	WW3505	14		1'-6¼"	5'-10⅝"				1'-4⅞"		6¾"
7	#8	9'-1⅞"	WW3801	Str									
36	#5	3'-4"	AB2501	1	5"	1'-8"				5"		5"	
32	#5	5'-11"	AB2502	17		2'-2"	1'-7"	2'-2"					
9	#5	7'-6"	AB2503	Str									
8	#5	9'-2"	AB2504	Str									
16	#5	14'-9"	AB2505	Str									
6	#5	6'-3"	AB2506	Str									
12	#5	2'-3"	AB2507	Str									
2	#5	6'-8"	AB2508	Str									
16	#5	14'-8¼"	AB2509	Str									
2	#5	6'-9"	AB2510	Str									
9	#5	7'-10"	AB2511	Str									
8	#5	8'-2"	AB2512	Str									
9	#8	7'-6"	AB2801	Str									
8	#8	9'-2"	AB2802	Str									
9	#8	7'-10"	AB2803	Str									
8	#8	8'-2"	AB2804	Str									
12	#5	3'-4"	WC4501	1	5"	1'-8"				5"		5"	
8	#5	5'-10⅝"	WC4502	17		2'-2"	1'-6⅝"	2'-2"					
12	#5	4'-7"	WC4503										
6	#5	11'-4¼"	WC4504	30		2'-11⅜"	8'-5⅛"				2'-8⅝"		1'-1⅛"
6	#5	5'-3¾"	WC4505	30		2'-10½"	2'-5¼"				2'-7⅞"		1'-0⅞"
6	#5	5'-11½"	WC4506										
12	#6	5'-2½"	WC4601	1	4½"	4'-5"						5"	
8	#8	4'-7"	WC4801										

Reinforcing Schedule

Qty	Size	Length	Mark	Type	A	B	C	D	E	G	H	J	K	O
18	#5	3'-4"	WW4501	1	5"	1'-8"				5"		5"		
11	#5	8'-1⅞"	WW4502											
9	#5	10'-7 1/8"	WW4503	30		2'-0¾"	8'5⅛"				1'-11"		9¼"	
9	#5	3'-10½"	WW4504	30		1'-5¼"	2'-5¼"				1'-4"		6½"	
9	#5	5'-11½"	WW4505	Str										
8	#8	8'-1⅞"	WW4801	Str										
18	#5	7'-5¾"	AF1501	Str										
16	#5	8'-0"	AF1502	Str										
2	#5	11'-1½"	AF1503	Str										
22	#7	7'-6"	AF1701	Str										
22	#7	8'-0"	AF1702	Str										
18	#5	16'-1¼"	AF2501	Str										
44	#7	8'-0"	AF2701	Str										
18	#5	6'-7½"	AF3501	Str										
14	#5	8'-7½"	AF3502	Str										
2	#5	10'-6½"	AF3503	Str										
2	#5	11'-8"	AF3504	Str										
24	#7	6'-7½"	AF3701	Str										
18	#7	8'-0"	AF3702	Str										
108	#3	3'-3⅜"	AF301	T3									6"	10⅝"
96	#8	7'-8"	AF801	17		6'-8"	12"							
5	#8	3'-6"	AF802	Str										
21	#8	4'-1"	AF803	Str										
16	#5	19'-6"	AS501	Str										
36	#8	4'-0"	SF801	Str	Black Bar Used for C.I.P. Footing Dowels									
42	#8	2'-0"	AS801	Str	Epoxy Dowel Bars for Approach Slab to Back Wall Connection									

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SD Ireland PRECAST

04/20/17 | REINFORCING_SCHEDULE | 23/29

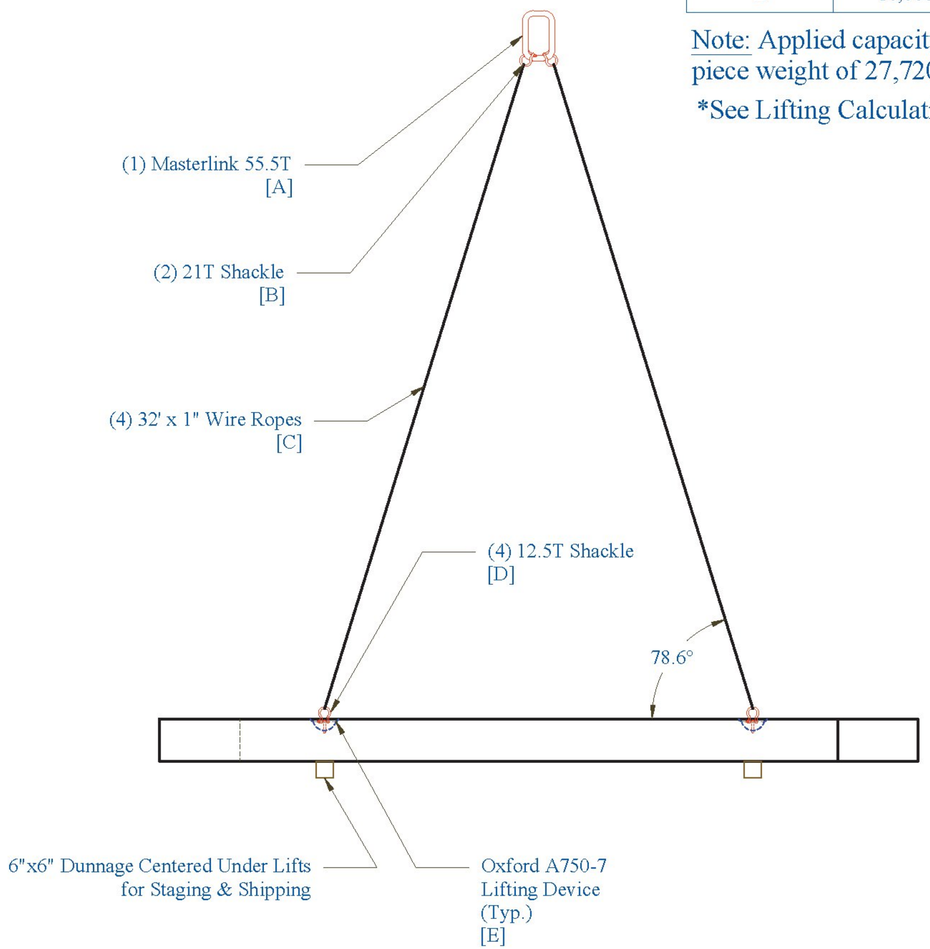
Approach Slab 1B: Lifting & Handling

Note:
- All other approach slabs are similar.
- Shown for staging and install.

Approach Slab Lifting Details		
Mark	Rated Capacity (lbs)	Applied Capacity (lbs)
A	111,000	27,720
B	42,000	13,860
C	19,600	6,930
D	25,000	6,930
E	10,000	6,930

Note: Applied capacity based upon piece weight of 27,720 lbs.

*See Lifting Calculations



Stripping & Installation Position

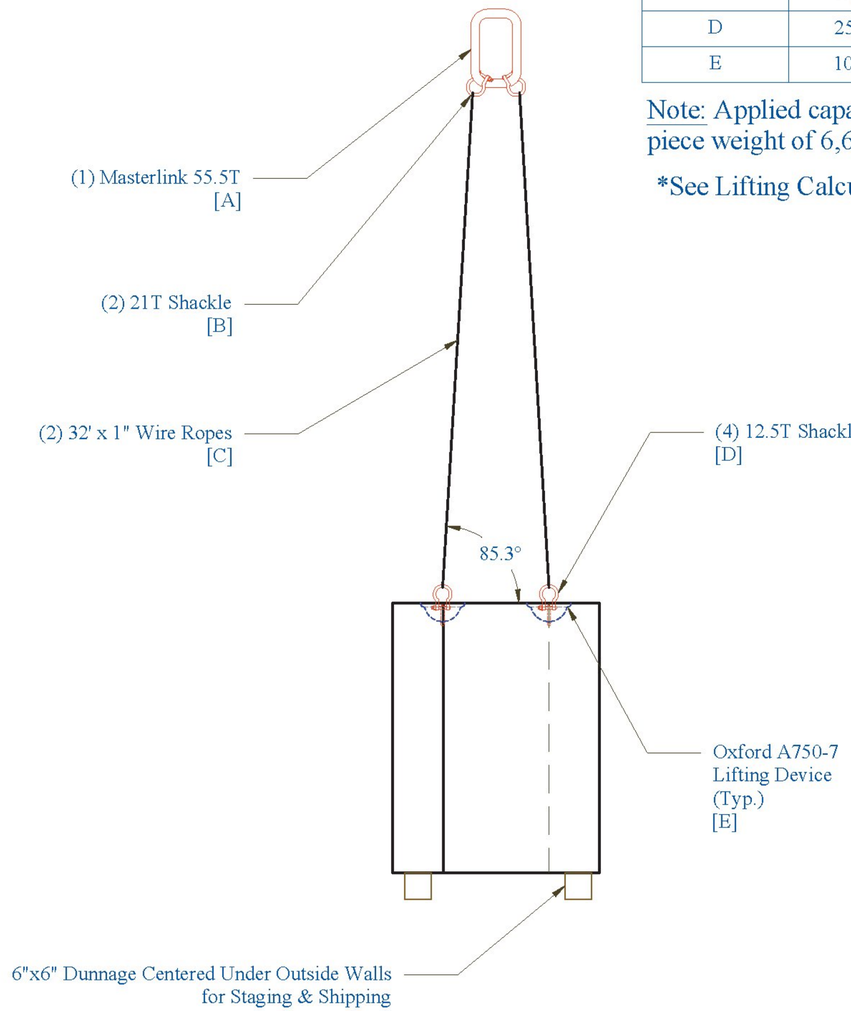
Cheekwall 2: Lifting & Handling

Note: Cheekwall 1 similar.

Cheekwall 2 Lifting Details		
Mark	Rated Capacity (lbs)	Applied Capacity (lbs)
A	111,000	6,640
B	42,000	3,320
C	19,600	3,320
D	25,000	3,320
E	10,000	3,320

Note: Applied capacity based upon piece weight of 6,640 lbs.

*See Lifting Calculations



Stripping & Installation Position

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Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

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DETAILER: I. ADAMS
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ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
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SD Ireland PRECAST

04/20/17 | AS_&_CW_LIFTING | 24/29

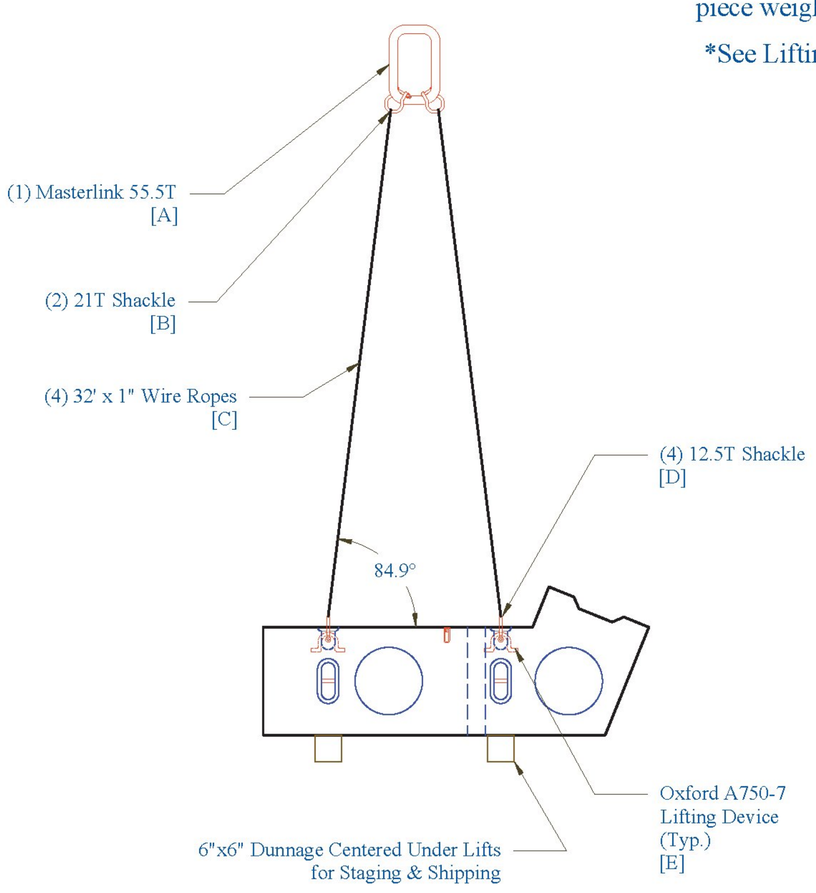
Wingwall 3: Lifting & Handling

Note: Wingwall 1, Wingwall 2, Wingwall 4, Wingwall 3 Cap, & Wingwall 4 Cap similar.

Wingwall 3 Lifting Details		
Mark	Rated Capacity (lbs)	Applied Capacity (lbs)
A	111,000	16,760
B	42,000	8,380
C	19,600	4,190
D	25,000	4,190
E	10,000	4,190

Note: Applied capacity based upon piece weight of 16,760 lbs.

*See Lifting Calculations

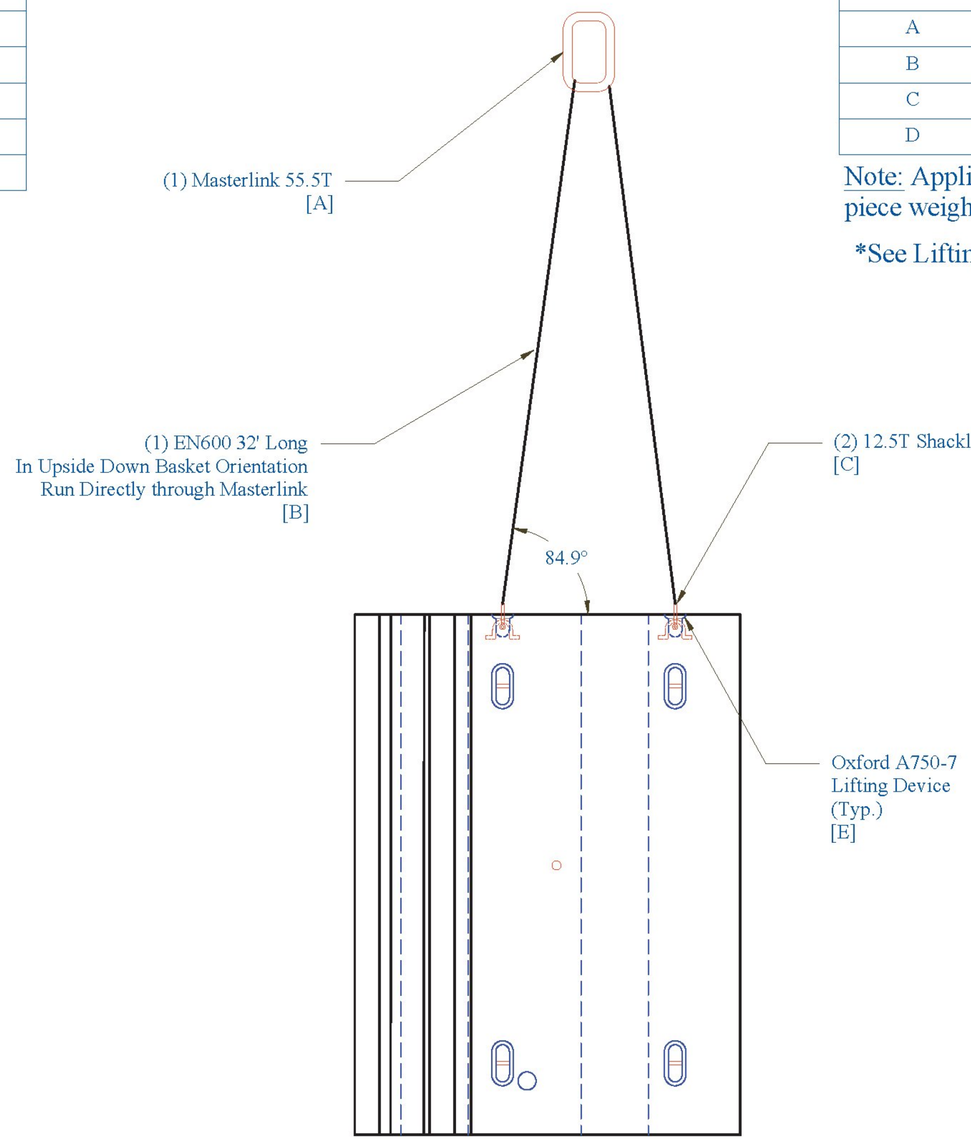


Shipping & Handling Position

Wingwall 3 Lifting Details		
Mark	Rated Capacity (lbs)	Applied Capacity (lbs)
A	111,000	16,760
B	106,000	16,760
C	25,000	8,380
D	10,000	8,380

Note: Applied capacity based upon piece weight of 16,760 lbs.

*See Lifting Calculations



Install Position

Vermont Agency of Transportation
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CK'D BY _____ OK'D BY Rob Young
April 21, 2017
RESUBMIT NO Approved AsNoted
BY Rob Young DATE 04/28/2017

CONTRACTORS VTSPE:

LEGEND:

- (A) Oxford A750-7
- (B) P52:20T x 10" Lift
- (C) 4" Pipe
- (D) 3" Pipe
- (E) Ø 24" Galv. Corrugated Steel Pipe
- (F) Ø 15" Galv. Corrugated Steel Pipe
- (G) Ø 3" x 24" Plastic Corrugated Sleeve
- (H) P53 Lift w/ Tension Bar
- (I) 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

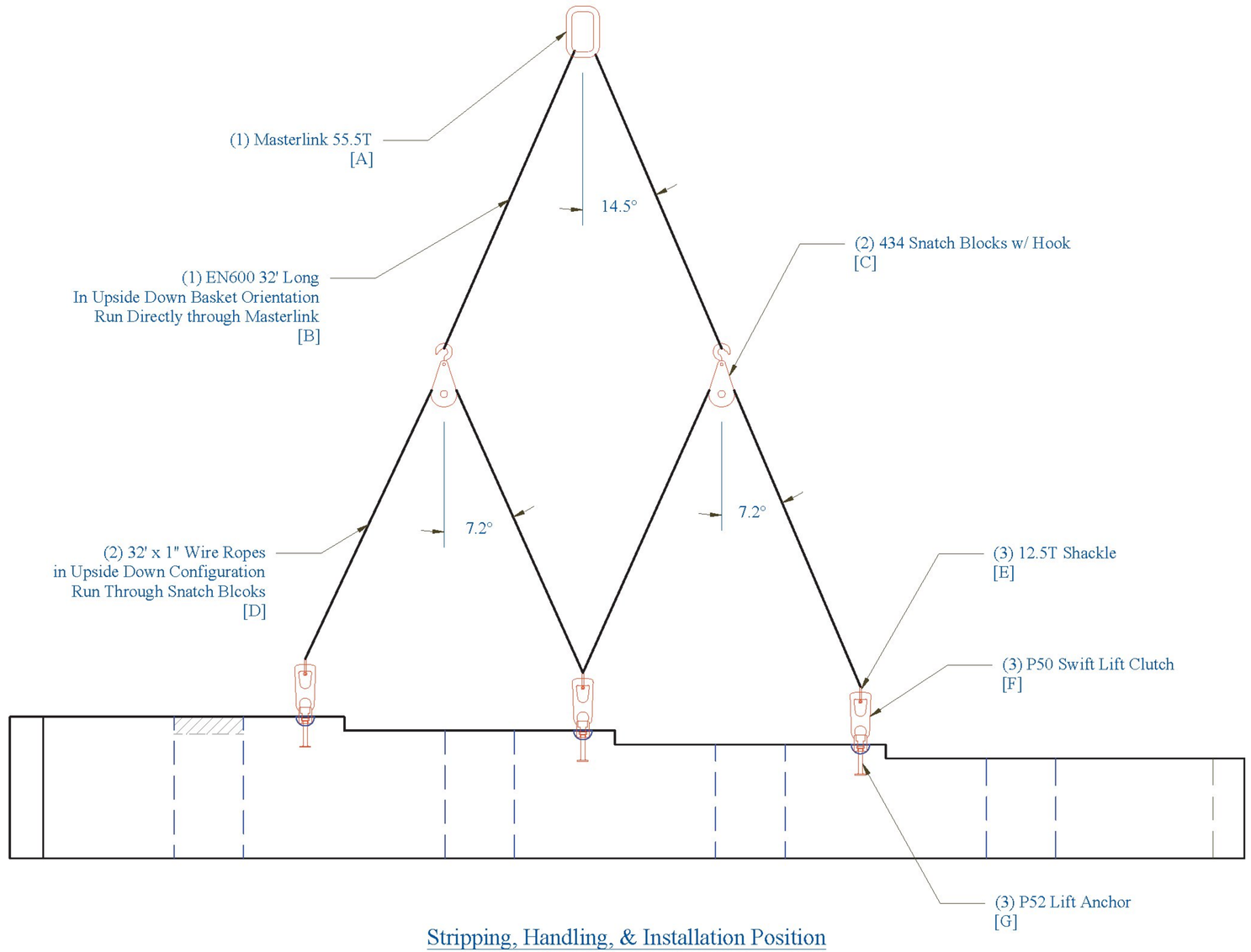
04/20/17 | WINGWALL_LIFTING | 25/29

Abutment 1: Lifting & Handling

Abutment 1 Lifting Details		
Mark	Rated Capacity (lbs)	Applied Capacity (lbs)
A	111,000	46,960
B	106,000	46,960
C	60,000	23,480
D	40,000	23,480
E	25,000	15,653
F	40,000	15,653
G	40,000	15,653

Note: Applied capacity based upon piece weight of 46,960 lbs.

*See Lifting Calculations



Stripping, Handling, & Installation Position

Vermont Agency of Transportation
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CONTRACTORS VTSPE:

LEGEND:

- Ⓐ Oxford A750-7
- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

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193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

04/20/17 | ABUTMENT_1_LIFTING | 26/29

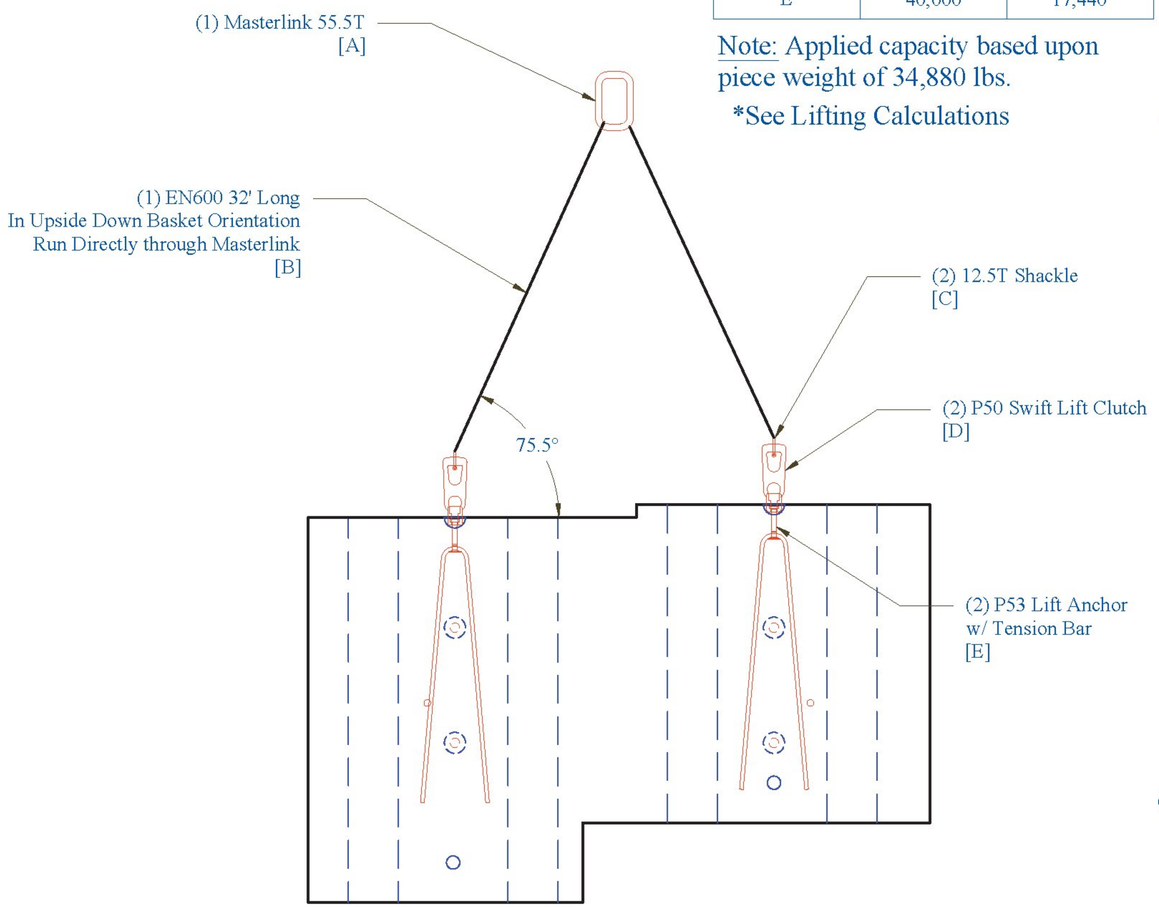
Abutment 2 Stem A: Lifting & Handling

Note: Abutment 2 Stem B similar.

Abutment 2 Stem A Lifting Details		
Mark	Rated Capacity (lbs)	Applied Capacity (lbs)
A	111,000	34,880
B	106,000	34,880
C	25,000	17,440
D	40,000	17,440
E	40,000	17,440

Note: Applied capacity based upon piece weight of 34,880 lbs.

*See Lifting Calculations

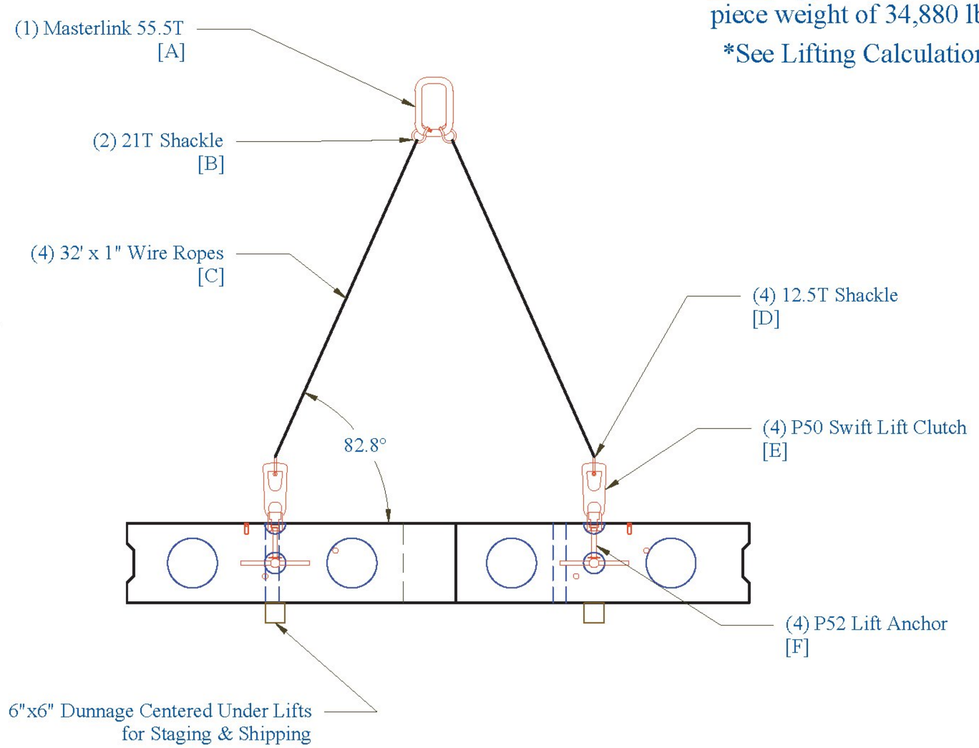


Installation Position

Abutment 2 Stem A Lifting Details		
Mark	Rated Capacity (lbs)	Applied Capacity (lbs)
A	111,000	34,880
B	42,000	17,440
C	19,600	8,720
D	25,000	8,720
E	40,000	8,720
E	40,000	8,720

Note: Applied capacity based upon piece weight of 34,880 lbs.

*See Lifting Calculations



Storage & Shipping Position

Vermont Agency of Transportation
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CONTRACTORS VTSPE:

LEGEND:

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- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
- Ⓕ Ø 15" Galv. Corrugated Steel Pipe
- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

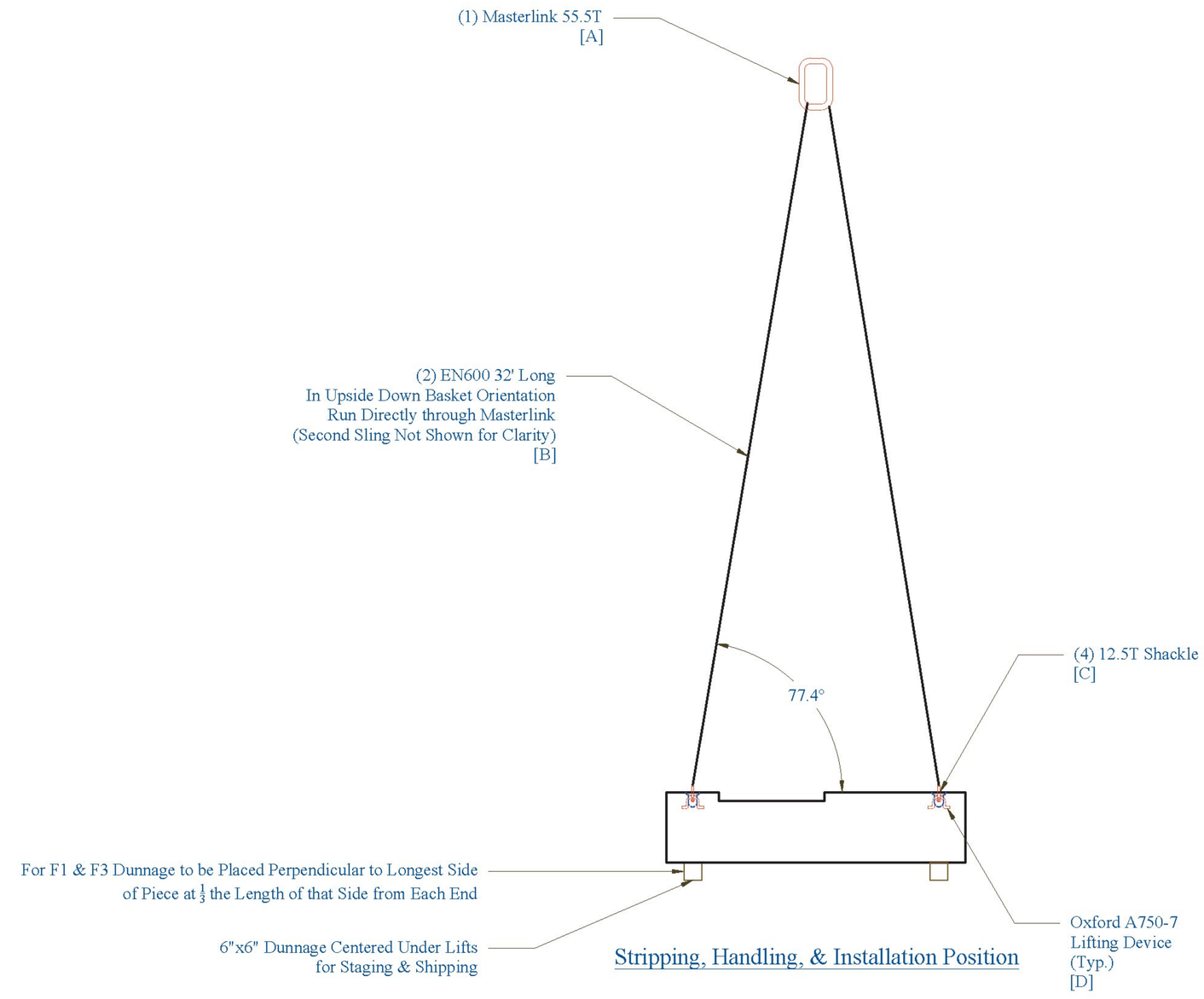
04/20/17 | ABUTMENT_2_LIFTING | 27/29

Abutment 2 Footing 2: Lifting & Handling

Note: Footing 1 and Footing 3 similar. Sling angles for F1 & F3 shall be less severe than F2.

Abutment 2 Footing 2 Lifting Details		
Mark	Rated Capacity (lbs)	Applied Capacity (lbs)
A	111,000	40,320
B	106,000	20,160
C	25,000	10,080
D	10,000	10,080

Note: Applied capacity based upon piece weight of 40,320 lbs.



Stripping, Handling, & Installation Position

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CONTRACTORS VTSPE:

LEGEND:

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- Ⓑ P52:20T x 10" Lift
- Ⓒ 4" Pipe
- Ⓓ 3" Pipe
- Ⓔ Ø 24" Galv. Corrugated Steel Pipe
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- Ⓖ Ø 3" x 24" Plastic Corrugated Sleeve
- Ⓗ P53 Lift w/ Tension Bar
- Ⓘ 1" Chamfer

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

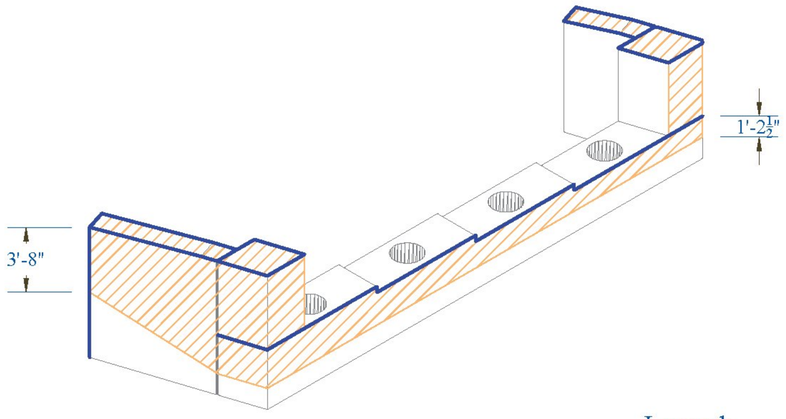
INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

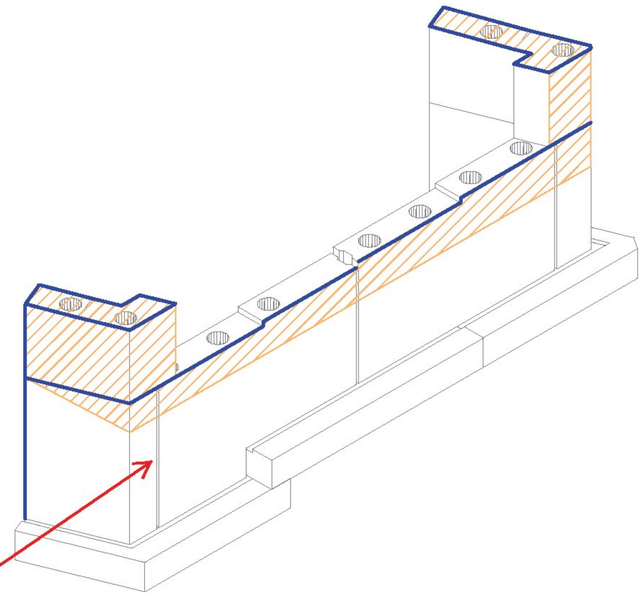
SD Ireland PRECAST

04/20/17 | FOOTING_LIFTING | 28/29

Abutment 1: Sealer & Chamfer Detail



Abutment 2: Sealer & Chamfer Detail

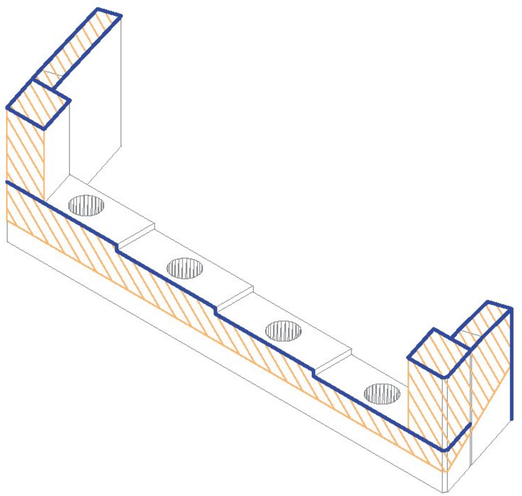


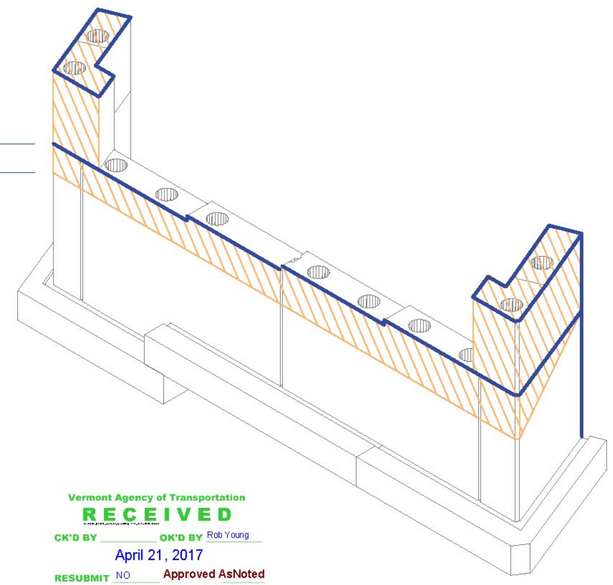
Legend:

Indicates Areas to be Sealed with Silane Sealer

Indicates Ⓘ

At this end of the abutment and wingwall #3, the grade will be significantly lower than 2'-0" below the bridge seat, recommend increasing this or applying silane on the entire face of the stem.





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PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #18544)

SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: CONCRETE ENG. SOLUTIONS

PROJ. NAME: HUNTINGTON
PROJECT #: BF 0211(32)
LOCATION: HUNTINGTON, VT

INSTALLER:
S.D. IRELAND CONCRETE
WILLISTON, VT 05495
Ph: (802) 863-6222

FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 863-6222

SD Ireland PRECAST

04/20/17 | SILANE_DETAIL | 29/29

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS

ALL MATERIAL AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011 WITH LATEST REVISIONS AND THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS FOR HIGHWAY BRIDGES 6th EDITION, AND ITS LATEST REVISIONS.

MATERIAL SPECIFICATIONS

1) ALL STEEL TO BE UNPAINTED AASHTO M270 (ASTM A709) GRADE 50W (UW).

2) MATERIAL NOTED 'CVN' OR 'T2' ON DETAIL DRAWINGS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF VERMONT STANDARD SPECIFICATIONS SECTION 714.01.

3) HIGH STRENGTH BOLTS:
   -ASTM A325 (AASHTO M164) TYPE 3 W/ A563 GRADE C3 NUTS, F436 (TYPE 3) WASHERS,
   ⚠ F959 (TYPE 3) DIRECT TENSION INDICATORS.

   BOLTS & NUTS SHALL BE ROTATIONAL CAPACITY TESTED. DO NOT MIX NUTS & BOLTS FROM DIFFERENT CONTAINERS UNLESS ALL BOLTS & NUTS HAVE THE SAME LOT NUMBER.

FABRICATION

1) ALL FINS, SLIVERS AND TEARS SHALL BE REMOVED.

2) ALL ROUGH SURFACES SHALL BE GROUND SMOOTH.

WELDING

1) THE CONFIGURATION OF THE WELD JOINTS AND ALL WELDING PROCEDURES SHALL BE IN ACCORDANCE WITH THE CURRENT AASHTO/AWS D1.5 BRIDGE WELDING CODE AND IN ADDITION TO SPECIFICATIONS SHOWN ABOVE. ALL WELDING WILL BE DETAILED TO PRE-QUALIFIED JOINTS, UNLESS PROHIBITED BY THE DESIGNER.

2) WELDING OF MAIN LOAD CARRYING MEMBERS AND ATTACHMENTS SHALL BE PERFORMED USING THE AUTOMATIC SUBMERGED ARC & SHIELDED METAL ARC PROCESSES. ALL WELDS ARE CONTINUOUS U.N.

3) NON DESTRUCTIVE TESTING OF WELDS SHALL BE IN ACCORDANCE WITH THE REFERENCED SPECIFICATION.

4) SEE DETAIL "WTI" ON THIS DRAWING FOR WELD TERMINATION DETAIL.

WELD PROCEDURE

THE FOLLOWING CASCO WELDING PROCEDURES SHALL BE USED:

	WELD DESCRIPTION		MAT'L GRADE	WP	CASCO WELD PROC.
GIRDERS	GIRDER WEB TO FLANGE FILLET WELD		M270-50W TO M270-50W	SMAW	201
	GIRDER WEB BUTT WELDS	CJP-Lin-01	M270-50W TO M270-50W	SMAW	202
	GIRDER FLANGE BUTT WELDS	CJP-Lin-02	M270-50W TO M270-50W	SMAW	203
	GIRDER STIFFENER TO WEB FILLET WELDING		M270-50W TO M270-50W	SMAW	230
	GIRDER STIFFENER TO FLANGE FILLET WELDING		M270-50W TO M270-50W	SMAW	480
	SHOP PLATE TO GIRDER FLANGE		M270-50W TO M270-50W	SMAW	480 or 540

WPS's to be used are in the tails of the weld.

CONNECTIONS

1) ALL CONNECTIONS SHALL BE MADE WITH A-325 HB BOLTS, INSTALLED PER SECTION 506.19(e).

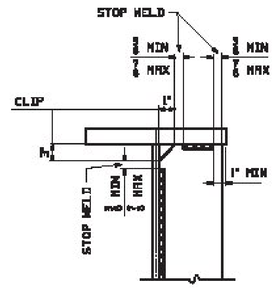
⚠ 2) BOLTS SHALL HAVE HEAVY HEX NUT, HEAVY HEX HEAD, DTI, AND AT LEAST ONE HARDENED FLAT WASHER EACH. WASHER TO BE PLACED UNDER TURNED ELEMENT.

3) PIECE MARKS WILL BE LOCATED AS SHOWN ON ERECTION DRAWINGS.

CLEANING & PAINTING:

UNPAINTED STEEL SHALL BE BLAST CLEANED TO SSPC SP-10 TO ACHIEVE A UNIFORM WEATHERED APPEARANCE.

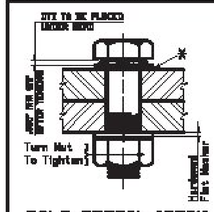
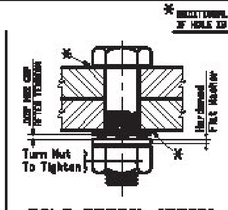
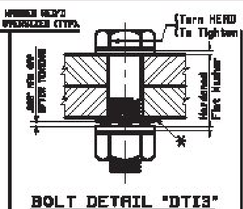
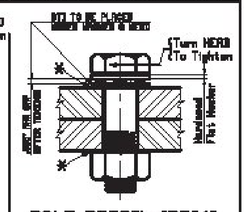
ALL STEEL SHALL BE UNPAINTED.



DETAIL "WTI"

STIFFENER WELD TERMINATION

⚠ DETAILS FOR POSITIONING DTI (LIW) WASHERS (PER ASTM F-959)

DTI UNDER HEAD - TURN NUT	DTI UNDER NUT - TURN NUT	DTI UNDER NUT - TURN HEAD	DTI UNDER HEAD - TURN HEAD
			
BOLT DETAIL "DTI1" THIS IS THE PREFERED METHOD.	BOLT DETAIL "DTI2" DTI UNDER NUT FOR VISIBILITY.	BOLT DETAIL "DTI3" DTI UNDER NUT FOR VISIBILITY. 2 HARD FLAT WASHERS ARE REQ'D	BOLT DETAIL "DTI4" DTI UNDER HEAD FOR VISIBILITY.

Vermont Agency of Transportation
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NOTE TO ENGINEER:
SOME ITEMS ARE NOT INTENDED TO BE ALL INCLUSIVE AND COMPLIANCE WITH RELEVANT SPECIFICATIONS REMAIN MANDATORY.

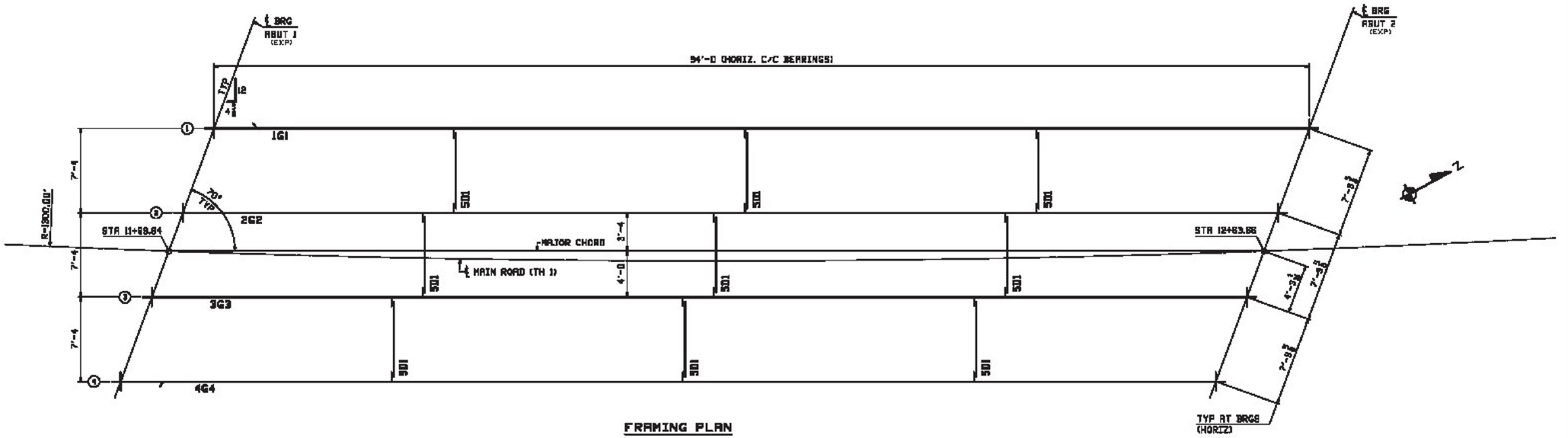
REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
⚠ D	2/15/17	APPROVAL COMMENTS	JTB	DBH		

MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS:

DESCRIPTION: GENERAL NOTES

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX (207) 780-6725

STRUCTURE:	TH-1, FAS RT. 0211 / HUNTINGTON RIVER RURAL MAJOR COLLECTOR BRIDGE 8 COUNTY OF CHITTENDEN	DRAWN: JTB	DATE: 01/12
		CHKD: DBH	DATE: 01/16
LOCATION:	TOWN OF HUNTINGTON, VERMONT	JOB NO.	DWG NO.
PROJ NO.	STATE PROJ. BF-0211(32)	695-1	GN1
CUSTOMER:	VERMONT AGENCY OF TRANSPORTATION		REV. ⚠



FRAMING PLAN

FIELD BOLT LIST							A325 Type 3 BOLTS							
LINE	QR REQ'D.	BOLT DIAM.	BOLT LEN.	NO. TYP. / DIAM.	# OF DIAM.	SHOP	THICKNESS OF PCS. CONNECTED						PIECE	PIECES CONNECTED AND MARKED
1														DIMENSIONS
⚠ 2	LW3	I	2½	II	38	I½	⅝	½					L1	DIMENSION WEB TO STIFFENER

WASHER CODES

⚠ L1: 1 Flat, 1 Load Ind.
LW @ head,hard wa. @ nut

FIELD BOLT SUMMARY				2% + 2 ADDED, MIN. 2 EXTRA		
LINE	NO. OF BOLTS	BOLT DIAM.	TYPE	BOLT LEN	ACTUAL COUNT	REMARKS
1	157	¾	A325 Type 3	2½	160	
2						
3	307	Hard Flat Washers for ¾" BOLT			ORCTURAL LWB	07488-31
⚠ 4	307	Load Ind. Washers for ¾" BOLT			ORCTURAL LWB	07888-31
5						
6						

Vermont Agency of Transportation
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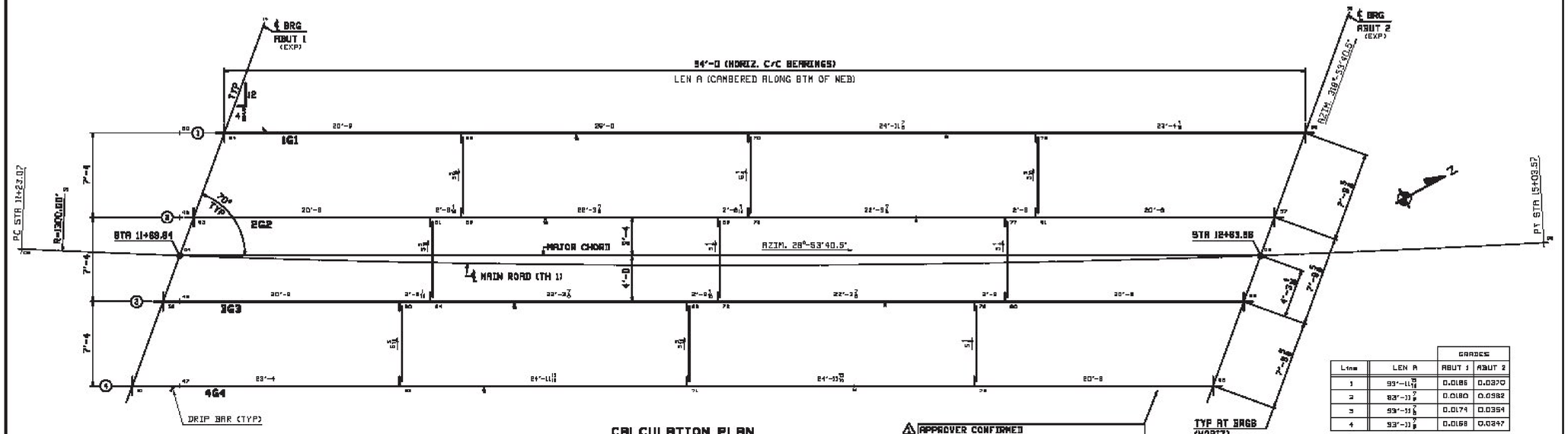
REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
⚠ 1	2/15/17	APPROVAL COMMENTS	JTB	DBH		
0						

MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS:

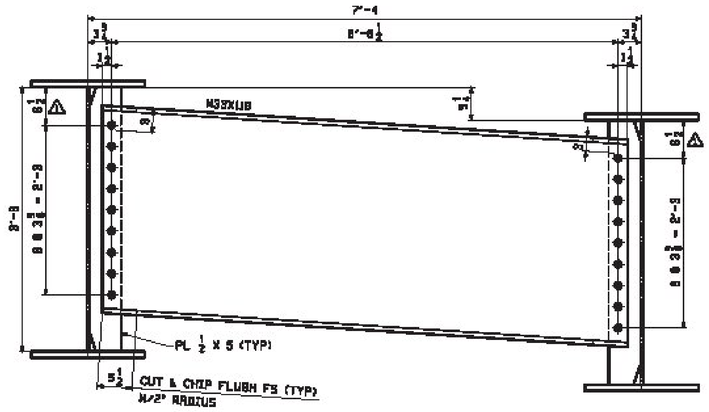
DESCRIPTION: FRAMING PLAN & FIELD BOLTS

CASCO BAY STEEL STRUCTURES, INC.
1 HALLOWS AVE.
SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722
FAX. (207) 780-6728

STRUCTURE:	TH-1, FAS RT. 0211 / HUNTINGTON RIVER RURAL MAJOR COLLECTOR BRIDGE 8 COUNTY OF CHITTENDEN	DRAWN: JTB	DATE: 01/18
		CHKD: DBH	DATE: 01/18
LOCATION:	TOWN OF HUNTINGTON, VERMONT	JOB NO.	DWG NO.
PROJ NO.	STATE PROJ. BF-0211(32)	695-1	E1
CUSTOMER:	VERMONT AGENCY OF TRANSPORTATION		REV. ⚠



		GRADES	
Line	LEN A	ABUT 1	ABUT 2
1	93'-11 15/16"	0.0186	0.0370
2	93'-11 9/16"	0.0180	0.0382
3	93'-11 3/16"	0.0174	0.0394
4	93'-10 13/16"	0.0168	0.0347



TYPICAL INT. DIAPHRAGM
(LOOKING BACK-STATION)

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REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
1	2/15/17	APPROVAL COMMENTS	JTB	DBH		

MATERIAL: | SURFACE PREP. & PAINT: | HOLES: | SHOP BOLTS:

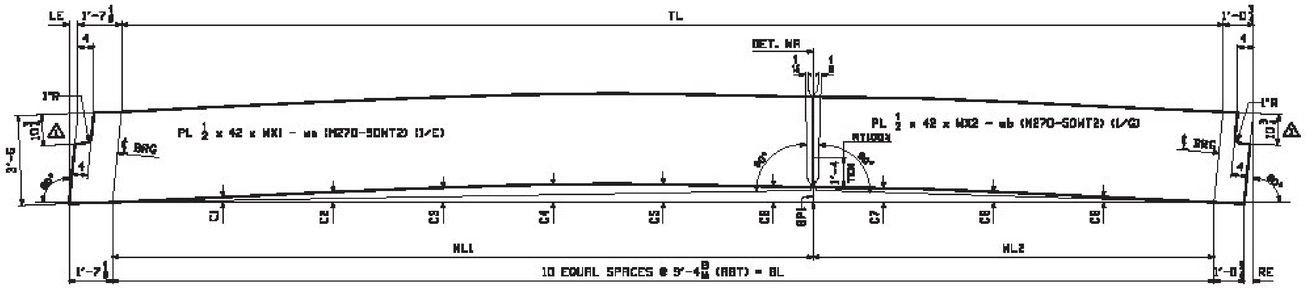
DESCRIPTION: CALCULATION PLAN & DIAPHRAM LAYOUT

GASCO BAY STEEL STRUCTURES, INC.
1 MALLARD DRIVE, NORTH PORTLAND, ME 04038
PHONE (207) 780-6722 FAX (207) 780-6728

STRUCTURE:	TH-1, FAS RT. 0211 / HUNTINGTON RIVER RURAL MAJOR COLLECTOR BRIDGE 8 COUNTY OF CHITTENDEN	DRAWN: JTB	DATE: 01/11
		CHKD: DBH	DATE: 01/16
LOCATION:	TOWN OF HUNTINGTON, VERMONT	JOB NO.	DWG NO.
PROJ NO.	STATE PROJ. BF-0211(32)	695-1	HS1
CUSTOMER:	VERMONT AGENCY OF TRANSPORTATION		REV. 1

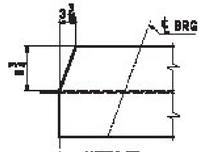
** NOTE **
THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION. THIS DWG IS SUBMITTED FOR INFORMATION ONLY AND IS NOT INTENDED FOR SHOP FABRICATION.

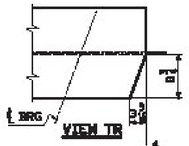
CALCULATION PLAN NOTES:
1. LONGITUDINAL DIMENSIONS ARE SLOPING ALONG BTM OF GIRDERS WITH CORRECTIONS MADE FOR DL CAMBER, V.C. & GRADE (UN).
2. TRANSVERSE DIMENSIONS ARE IN A HORIZONTAL PLANE (UN).
3. ARROW POINTS TOWARD LOW END OF MEMBER.
4. ENDS OF GIRDERS & BRG STIFFENERS ARE VERTICAL AFTER DL ROTATION.
5. CROSSFRAME STIFFENERS ARE NORMAL TO GRADE.
6. BOTTOM POINT NUMBERS = TOP POINT NUMBERS + 1000
7. CROSSFRAME DROPS ARE CALCULATED IN THE FINAL CONDITION.
8. COMBINE DROPS +/- 1/16.

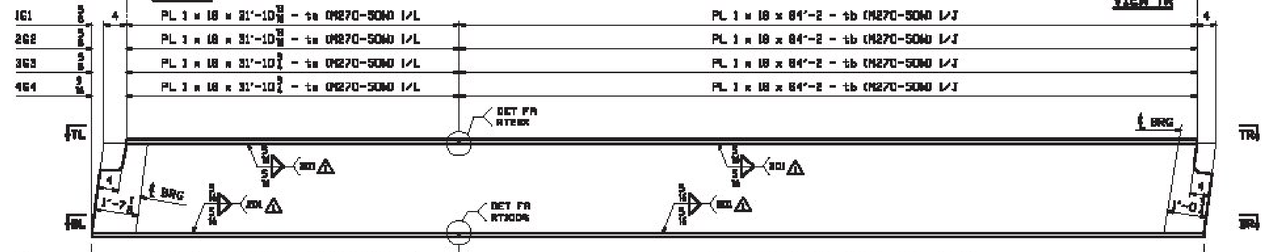


CAMBER DIAGRAM FOR 1G1, 2G2, 3G3, 4G4

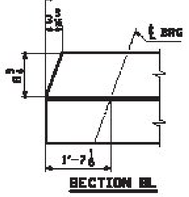
MARK	TL	BL	LE	RE	WL1	WL2	WX1	WX2	SP1	C1	C2	C3	C4	C5	C6	C7	C8	C9
1G1	84'-0 5/16	83'-11 5/16	3/8	1 5/16	82'-10 7/16	31'-1 1/16	84'-6 1/16	32'-3 7/16	1 1/8	3/8	3/4	1 3/16	1 5/16	1 7/16	1 5/16	1 1/16	3/4	3/8
2G2	84'-0 5/16	83'-11 7/16	3/8	1 5/16	82'-10 5/16	31'-1 1/16	84'-6	32'-3 1/2	1 1/16	3/8	3/4	1 1/8	1 1/8	1 7/16	1 1/8	1 1/8	3/4	3/8
3G3	84'-0 7/16	83'-11 7/16	3/8	1 3/8	82'-10 7/16	31'-1	84'-6 1/16	32'-3 3/8	1 1/4	3/8	3/4	1 1/8	1 1/8	1 1/2	1 1/8	1 1/8	3/4	3/8
4G4	84'-0 7/16	83'-11 7/16	1/4	1 3/8	82'-10 5/16	31'-0 15/16	84'-6 1/16	32'-3 1/4	1 1/4	3/8	13/16	1 1/8	1 1/8	1 1/2	1 1/8	1 1/8	13/16	3/8



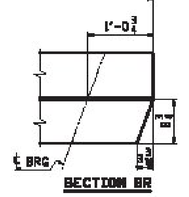




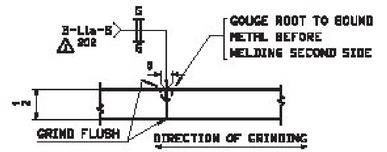
FLANGE DIAGRAM FOR 1G1, 2G2, 3G3, 4G4



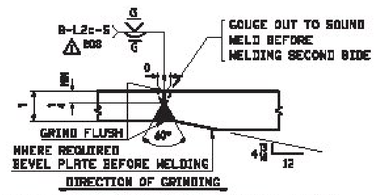
SECTION BL



SECTION BR



WEB PLATE SPLICE DETAIL "WA"



FLANGE PLATE SPLICE DETAIL "FA"

NOTES:
1. FOR GENERAL NOTES SEE DRAWING GN1.
2. T2 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TEST AT H FREQ. FOR ZONE 2

Vermont Agency of Transportation
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RESUBMIT _____ Approved As Noted
BY Rob Young DATE 03/09/2017

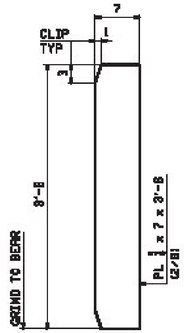
REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
1	2/15/17	APPROVAL COMMENTS	JTB	DBH		
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270-50WT2	SEE DWG GN1		

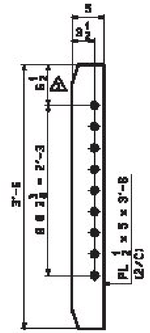
DESCRIPTION: CAMBER & FLANGE DIAGRAMS

CASCO BAY STEEL STRUCTURES, INC.
1 HALLOWAY AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-0782 FAX (207) 780-0788
TENNANT 2451

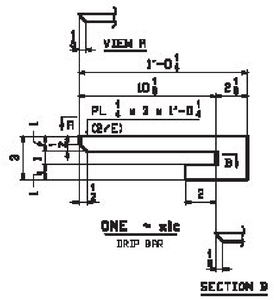
STRUCTURE:	TH-1, FAS RT. 0211 / HUNTINGTON RIVER RURAL MAJOR COLLECTOR BRIDGE 8 COUNTY OF CHITTENDEN	DRAWN: JTB	DATE: 01/11
		CHKD: DBH	DATE: 01/16
LOCATION:	TOWN OF HUNTINGTON, VERMONT	JOB NO.	DWG NO.
PROJ NO.	STATE PROJ. BF-0211(32)	695-1	C1
CUSTOMER:	VERMONT AGENCY OF TRANSPORTATION		REV. 1



B5 ~ x1a
BRG STIFF

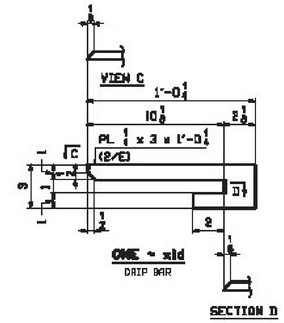


B8 ~ x1b
DIAPH CONN PL



ONE ~ x1c
DRIP BAR

SECTION B



ONE ~ x1d
DRIP BAR

SECTION D

Vermont Agency of Transportation
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NOTE:
FOR GENERAL NOTES SEE DRAWING GN1.

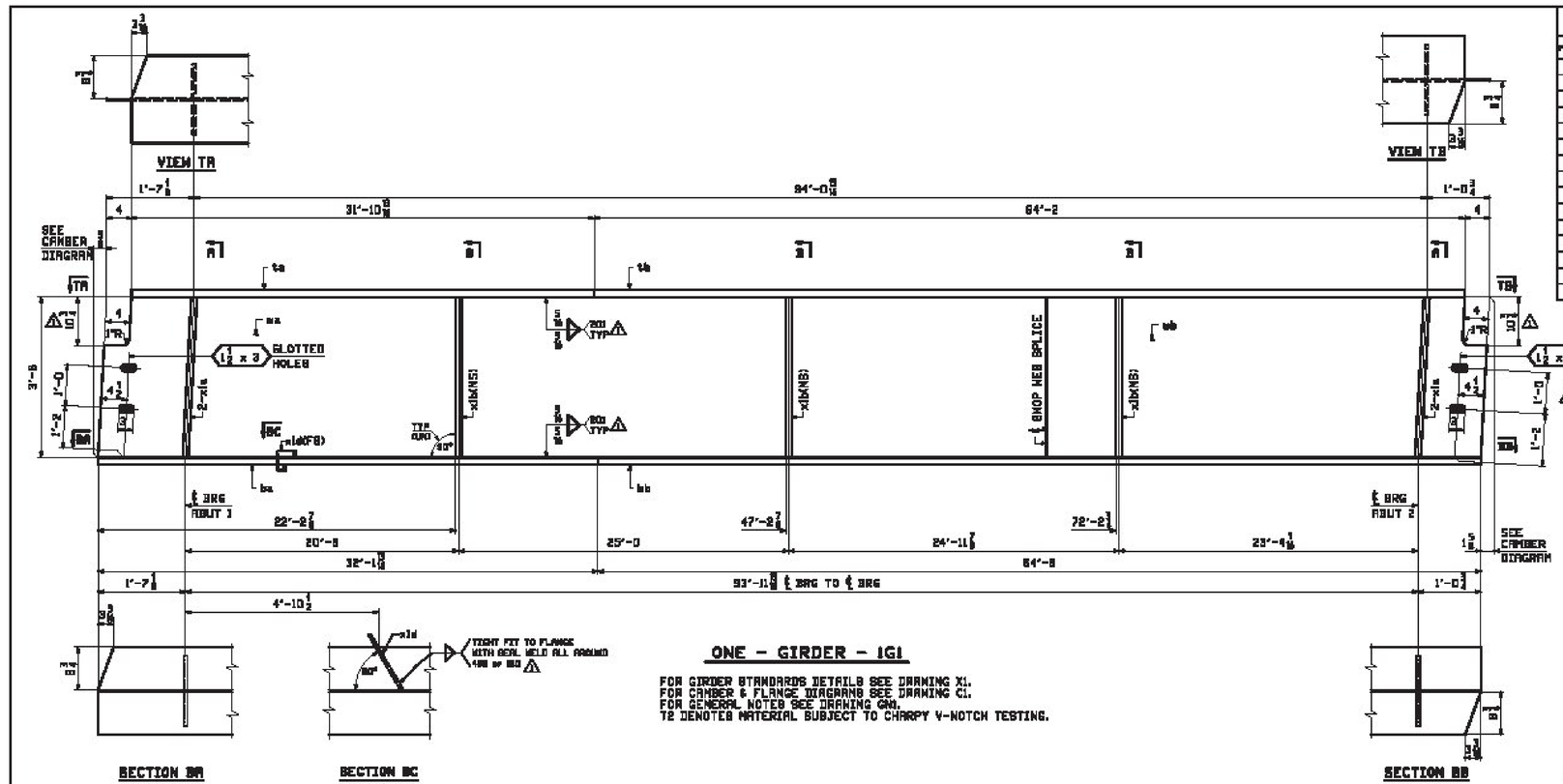
REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
1	2/15/17	APPROVAL COMMENTS	JTB	DBH		
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270-50W	SEE DWG GN1	15/16" ø	NONE

DESCRIPTION: STANDARDS DETAILS

CASCO BAY STEEL STRUCTURES, INC.
1 HALLOWS AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722 FAX. (207) 780-6728
TEMPORARY 2431

STRUCTURE:	TH-1, FAS RT. 0211 / HUNTINGTON RIVER RURAL MAJOR COLLECTOR BRIDGE 8 COUNTY OF CHITTENDEN	DRAWN: JTB	DATE: 01/18
		CHKD: DBH	DATE: 01/18
LOCATION:	TOWN OF HUNTINGTON, VERMONT	JOB NO.	DWG NO.
PROJ NO.	STATE PROJ. BF-0211(32)	695-1	X1
CUSTOMER:	VERMONT AGENCY OF TRANSPORTATION		REV. 1



PART DATA		SHOP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
								695-1	1	
TYPE	LOC	MARK	QTY	PIECE	DESCRIPTION	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
		DGI	1		GIRDER				18063	
1	E		1	u.s.	PL $\frac{1}{2}$x42	84	8 $\frac{1}{16}$	A270-50W T2	4609	
1	G		1	ub	PL $\frac{1}{2}$x42	32	3 $\frac{7}{16}$	A270-50W T2	2307	
1	L		1	tn	PL 1x18	30	10 $\frac{15}{16}$		1834	
1	J		1	tk	PL 1x18	84	8		5530	
1	C		1	bm	PL 1x18	32	1 $\frac{15}{16}$	A270-50W T2	1969	
1	A		1	bb	PL 1x18	59	6	A270-50W T2	3951	
2	B		4	s3e	PL $\frac{3}{4}$x7	3	8	4PLCS	83	
2	C		3	s3b	PL $\frac{3}{4}$x5	3	6		80	
2	E		1	s1d	PL $\frac{1}{2}$x3	1	0 $\frac{1}{2}$		3	

⚠ APPROVER CONFIRMED FOR THE GIRDER ENDS, PLEASE CONFIRM WEB COPE SIZE AND THE POSITION OF SLOTTED HOLES ARE ACCEPTABLE (TYP).

Vermont Agency of Transportation
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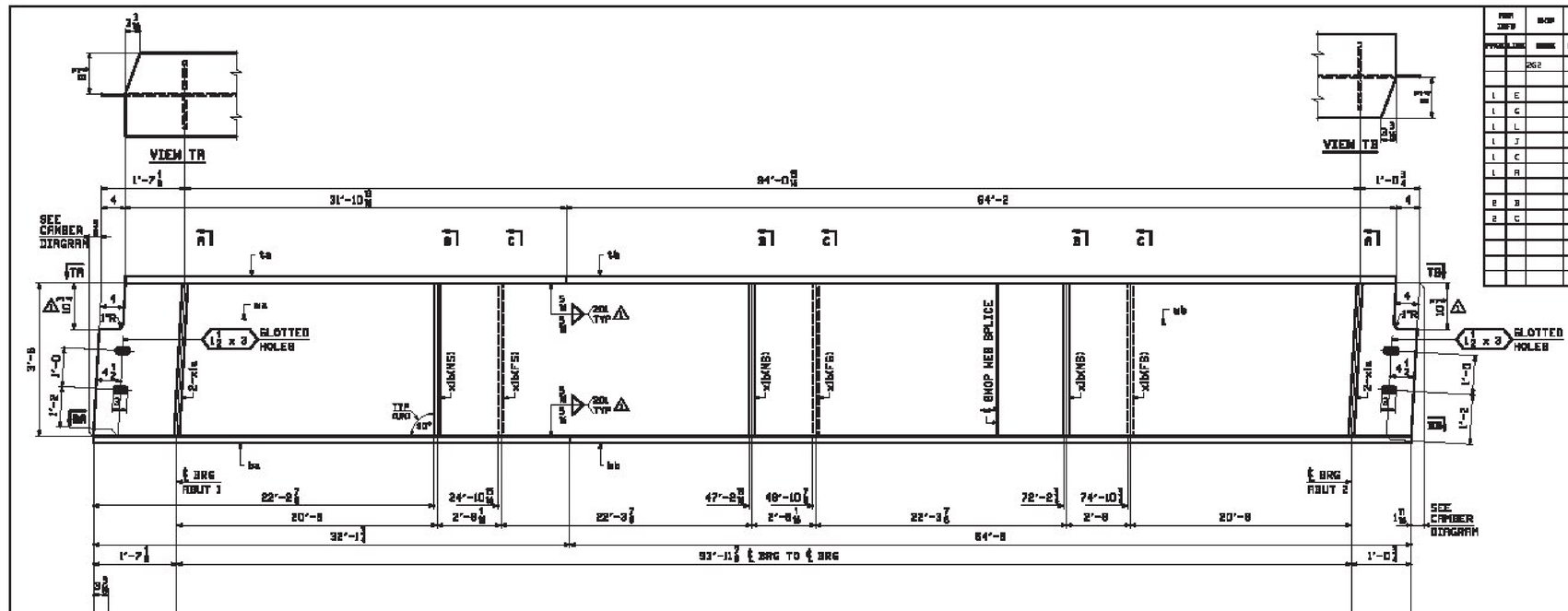
REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
⚠ 1	2/15/17	APPROVAL COMMENTS	JTB	DBH		
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270-50W (UN)	SEE DWG GN1	15 11/8 (UN)	NONE

DESCRIPTION: GIRDER IG1

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-0782 FAX. (207) 780-0788

STRUCTURE:	TH-1, FAS RT. 0211 / HUNTINGTON RIVER RURAL MAJOR COLLECTOR BRIDGE 8 COUNTY OF CHITTENDEN	DRAWN: JTB	DATE: 01/18
		CHKD: DBH	DATE: 01/18
LOCATION:	TOWN OF HUNTINGTON, VERMONT	JOB NO. 695-1	DWG NO. 1
PROJ NO.	STATE PROJ. BF-0211(32)		REV. ⚠ 1
CUSTOMER:	VERMONT AGENCY OF TRANSPORTATION		

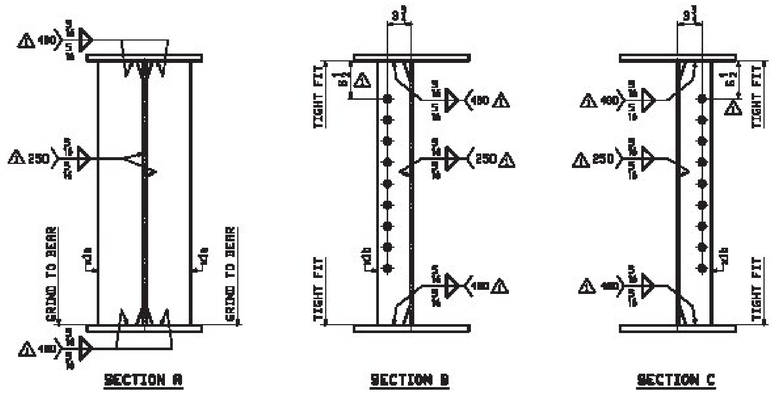


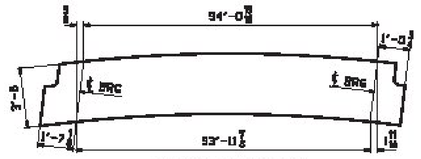
ONE - GIRDER - 2G2

FOR GIRDER STANDARDS DETAILS SEE DRAWING X1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
T2 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.

SECTION BA

SECTION BB





ORIENTATION DIAGRAM
FOR CAMBER SEE DRAWING C1

BILL OF MATERIAL

PART TYPE	PART LOC	MARK	QTY	PIECE	DESCRIPTION	LENGTH FT	LENGTH INCHES	REMARKS	WT	FABRICATION SHOP
		2G2	1		GIRDER				18748	
L	E		1	a,e	PL 1/2x42	84	8	A270-50W T2	4609	
L	G		1	b,h	PL 1/2x42	32	3 1/2	A270-50W T2	2308	
L	L		1	k	PL 1x18	30	10 7/8		1834	
L	J		1	c,k	PL 1x18	84	8		5490	
L	C		1	b,m	PL 1x18	32	1 1/2	A270-50W T2	1969	
L	A		1	b,k	PL 1x18	59	6	A270-50W T2	3951	
S	B		4	a,m	PL 3/8x7	3	8	STUD	83	
S	C		6	k,k	PL 3/8x5	3	6		80	

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
1	2/15/17	APPROVAL COMMENTS	JTB	DBH		
0						

MATERIAL: M270-50W (UN) | SURFACE PREP. & PAINT: SEE DWG GN1 | HOLES: 6 1"ø (UN) | SHOP BOLTS: NONE

DESCRIPTION: GIRDER 2G2

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-0722 FAX (207) 780-0728

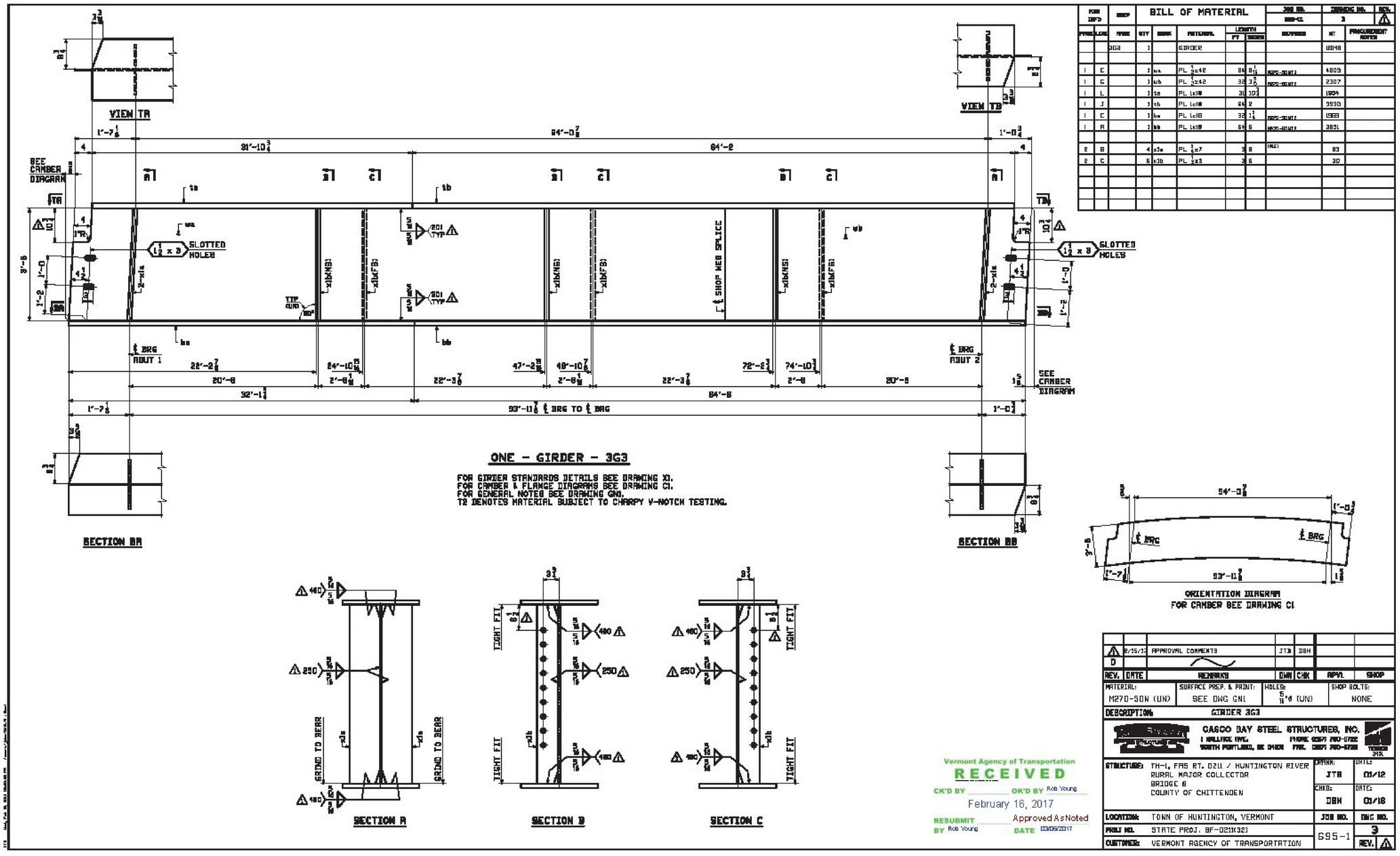
STRUCTURE: TH-1, FAS RT. 0211 / HUNTINGTON RIVER
RURAL MAJOR COLLECTOR
BRIDGE 8
COUNTY OF CHITTENDEN

DRAWN: JTB DATE: 01/18
CHKD: DBH DATE: 01/18

LOCATION: TOWN OF HUNTINGTON, VERMONT
PROJ NO.: STATE PROJ. BF-0211(32)
CUSTOMER: VERMONT AGENCY OF TRANSPORTATION

JOB NO.: 695-1
DWG NO.: 2
REV.: 1

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BY Rob Young DATE 03/09/2017



ONE - GIRDER - 3G3

FOR GIRDER STANDARDS DETAILS SEE DRAWING G1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
T2 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.

ORIENTATION DIAGRAM
FOR CAMBER SEE DRAWING C1

BILL OF MATERIAL

FOR INFO PYNE	LOC	SHOP PYNE	QTY	REMK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
		3G3	1		GIRDER				18948	
1	E		1	wa	PL 1/2x42	84	8 1/4	ASTM-709T2	4809	
1	G		1	wb	PL 1/2x42	32	3 5/8	ASTM-709T2	2307	
1	L		1	ta	PL 1x18	31	10 3/4		1954	
1	J		1	tb	PL 1x18	84	2		3930	
1	C		1	ba	PL 1x18	32	11 1/4	ASTM-709T2	1969	
1	A		1	bb	PL 1x18	84	6	ASTM-709T2	3851	
2	B		4	s3a	PL 1/2x7	3	8	PAIR	83	
2	C		6	s3b	PL 1/2x5	3	6		30	

JOB NO.	DRAWING NO.	REV.
695-1	3	

Vermont Agency of Transportation
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BY Rob Young DATE 03/09/2017

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
1	2/15/17	APPROVAL COMMENTS	JTB	DBH		
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270-50W (UN)	SEE DWG GN1	15/16"ø (UN)	NONE

DESCRIPTION: GIRDER 3G3

CASCO BAY STEEL STRUCTURES, INC.
1 MALLARD AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-0732 FAX (207) 780-0788

STRUCTURE:	TH-1, FAS RT. 0211 / HUNTINGTON RIVER RURAL MAJOR COLLECTOR BRIDGE 8 COUNTY OF CHITTENDEN	DRAWN: JTB	DATE: 01/12
		CHKD: DBH	DATE: 01/16
LOCATION:	TOWN OF HUNTINGTON, VERMONT	JOB NO. 695-1	DWG NO. 3
PROJ NO.	STATE PROJ. BF-0211(32)		REV.
CUSTOMER:	VERMONT AGENCY OF TRANSPORTATION		

MARK	SIZE	LENGTH	QTY	PIECE MARK	DESCRIPTION	LENGTH FT	LENGTH INCHES	REMARKS	WT	FIELD SHIPMENT NUMBER
		4G4	1		GIRDER				18061	
L	E		1	a,a	PL 1/2x42	84	8 1/8	A270-50W T2	4610	
L	G		1	a,b	PL 1/2x42	32	3 1/4	A270-50W T2	2306	
L	L		1	b,b	PL 1x18	30	10 1/2		1834	
L	J		1	c,b	PL 1x18	84	8		5530	
L	C		1	b,a	PL 1x18	32	1/2	A270-50W T2	1969	
L	A		1	b,b	PL 1x18	59	6	A270-50W T2	3931	
S	B		4	a,a	PL 3/8x7	3	8	WELD	83	
S	C		3	a,b	PL 3/8x5	3	6		80	
S	E		1	a,a	PL 3/8x3	1	0 1/2		3	

VIEW TA

VIEW TB

SEE CAMBER DIAGRAM

1 1/2 x 3 SLOTTED HOLES

2-#16

#10(FB)

#10(NB)

BNOP NEB SPLICE

℄ BRG ABUT 1

℄ BRG ABUT 2

84'-0 7/8

31'-10 3/4

84'-2

84'-10 7/8

23'-4

32'-1 1/2

24'-11 5/8

48'-10 5/8

24'-11 5/8

74'-10 3/4

20'-8

84'-8

93'-11 7/8 ℄ BRG TO ℄ BRG

4'-4

1'-7 1/8

1'-0 3/4

3'-6

1'-0

1'-2

10 1/2

4 1/2

TYP

TIP ORD

SECTION BA

SECTION BC

SECTION BB

TIGHT FIT TO FLANGE WITH BEVEL WELD ALL AROUND AWS or BOS

ONE - GIRDER - 4G4

FOR GIRDER STANDARDS DETAILS SEE DRAWING X1.
FOR CAMBER & FLANGE DIAGRAMS SEE DRAWING C1.
FOR GENERAL NOTES SEE DRAWING GN1.
T2 DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TESTING.

GRIND TO BEAR

TIGHT FIT

SECTION A

SECTION B

94'-0 3/8

93'-11 7/8

ORIENTATION DIAGRAM
FOR CAMBER SEE DRAWING C1

Vermont Agency of Transportation
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BY Rob Young
DATE 03/06/2017

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
1	2/15/17	APPROVAL COMMENTS	JTB	DBH		
0						

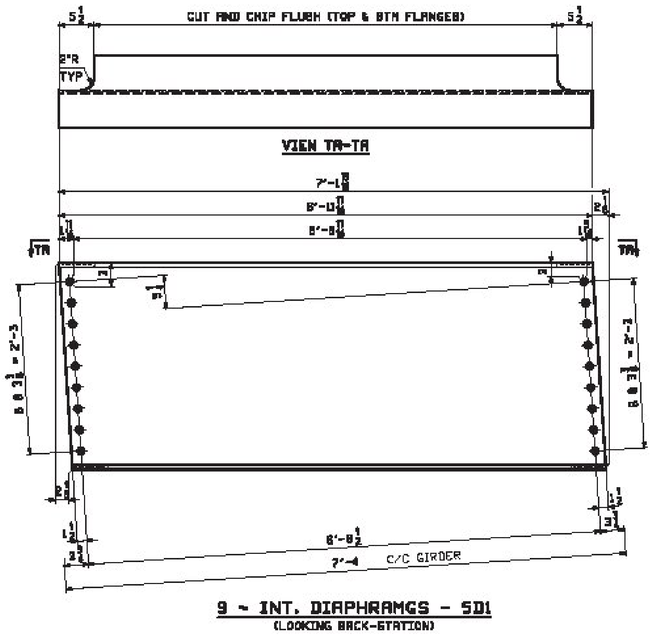
MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270-50W (UN)	SEE DWG GN1	5 11/8 (UN)	NONE

DESCRIPTION: GIRDER 4G4

CASCO BAY STEEL STRUCTURES, INC.
1 WILLIAMS AVE. SOUTH PORTLAND, ME 04106
PHONE (207) 780-0702 FAX. (207) 780-0708

STRUCTURE:	TH-1, FAS RT. 0211 / HUNTINGTON RIVER RURAL MAJOR COLLECTOR BRIDGE 8 COUNTY OF CHITTENDEN	DRAWN: JTB	DATE: 01/18
		CHKD: DBH	DATE: 01/18
LOCATION:	TOWN OF HUNTINGTON, VERMONT	JOB NO.	DWG NO.
PROJ NO.	STATE PROJ. BF-0211(32)	695-1	4
CUSTOMER:	VERMONT AGENCY OF TRANSPORTATION		REV. 1

PART IDENT	MARK	BILL OF MATERIAL						JOB NO.	DRAWING NO.	REV.
								8888-18	8	
TYPE	LINE	MARK	QTY	PIECE	SPECIFICATION	LENGTH FT	LENGTH INCHES	DESCRIPTION	WT	PROCUREMENT NOTES
					DIAPHRAGMS					
2	H		8	DDL	M 28XLW	7	1 1/2		899	



9 ~ INT. DIAPHRAMGS - SD1
(LOOKING BACK-STATION)

NOTE:
FOR GENERAL NOTES SEE DRAWING GN1.

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
M270-50W	SEE DWG GN1	15/16" ø	NONE

DESCRIPTION: DIAPHRAGMS

CASCO BAY STEEL STRUCTURES, INC.
1 HALLOWS AVE.
SOUTH PORTLAND, ME 04106
PHONE (207) 780-6722
FAX. (207) 780-6728

STRUCTURE:	TH-1, FAS RT. 0211 / HUNTINGTON RIVER RURAL MAJOR COLLECTOR BRIDGE 8 COUNTY OF CHITTENDEN	DRAWN: JTB	DATE: 01/18
		CHKD: DBH	DATE: 01/18
LOCATION:	TOWN OF HUNTINGTON, VERMONT	JOB NO.	DWG NO.
PROJ NO.	STATE PROJ. BF-0211(32)	895-1	5
CUSTOMER:	VERMONT AGENCY OF TRANSPORTATION		REV. 0

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One Wallace Avenue, South Portland ME 04106

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	201 Revision 2	Qualified to	AWS D1.5
Date	4/24/2014	Company name	Casco Bay Steel Structures
Supporting PQR(s) Reference docs.	SAW DC + FCM 2-21-14 - Rev 1		

Scope	Fillet, no PWHT (As-welded)
Joint	Joint details for this welding procedure specification in: JOINTS section of this WPS

BASE METALS

Type	Gr50/Gr50W	P-no.	Grp-no. -
Welded to	Gr50/Gr50W	P-no.	Grp-no. -
Backing:	None	P-no.	Grp-no. -
Retainers			
Notes	All A709 steels with 50 ksi or less are also qualified		

THICKNESS RANGE QUALIFIED (in.)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Complete pen.	-	-	-	-
Impact tested	-	-	-	-
Partial pen.	-	-	-	-
Fillet welds	1/8	All	-	-

DIAMETER RANGE QUALIFIED (in.)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
			-	-

FILLER METALS

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	THICKNESS RANGE QUALIFIED (in.) As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
SAW	5.23	ENi1K	6		Lincolnweld LA-75	1/8	All	-	-
Flux	-	-	-	-	- Lincolnweld 960	- None -			
Sup. filler	-	-	-	-	-	- None -			

WELDING PROCEDURE

Welding process		SAW
Type		Machine
Minimum preheat/interpass temperature	(°F)	See Backpage
Maximum interpass temperature	(°F)	490
Filler metal size	(in.)	5/32
Layer number		
Position		H
Current/polarity		DCEP
Amperes		604
Volts		29.5
Travel speed	(in./min)	17.1
Maximum heat input	(kJ/in.)	62.5193
Wire feed type		Hot wire
Wire feed speed	(in./min)	N/A
String or weave		Stringer
C.T.W.D	(in.)	
Multi/Single pass per side		Single or Multiple passes
Multiple or single layer		Single or Multiple layer
Oscillation		None
Multi/single electrode		Single electrode
Electrode angle	(deg.)	As needed
Maximum pass thickness	(in.)	See Backpage
Weld deposit chemistry		F8A2-ENi1K-Ni1-H8
Notes		

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Rural Major Collector
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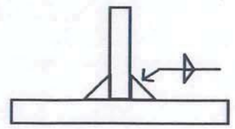
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AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	201	Revision 2	Qualified to	AWS D1.5
Date	4/24/2014		Company name	Casco Bay Steel Structures

JOINTS: Typical joint(s). See actual production drawings and engineering specifications for details.



5/16 single pass Horizontal

	Amps		Volts		Travel Speed
AVG	**604**	**/**	**29.5**	**/**	**17.1 IPM**
MIN	569	/	27.4	/	15.5 **IPM**
MAX	625.1	/	31.0	/	18.7 **IPM**

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Type of groove	Fillet weld	Minimum groove angle	(deg.)	N/A
		Minimum root opening	(in.)	N/A
		Maximum root face	(in.)	N/A

PREHEAT TABLE

Applicable standard	
AWS D1.5 Bridge Welding Code	For thickness 1/8 to 3/4(in.): 50(°F). Preheat to 70(°F) if the base metal temperature is below 32(°F). Over 3/4 thru 1-1/2(in.): 70(°F). Over 1-1/2 thru 2-1/2(in.): 150(°F). Over 2-1/2(in.): 225(°F). Refer to AWS D1.5 2010 Table 4.3 (pg 85)

TECHNIQUE

Supplementary MF control	
Peening	
Surface preparation	Grind/Blast/chemical/wirebrush clean to be free of moisture, slag, millscale, oils, dust
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

NOTES

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Date	
6/2/2014	

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Name	Signature
Date	

Signature 3

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Date	

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Name	Signature
Date	

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AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	202 Revision 3	Qualified to	AWS D1.5
Date	4/24/2014	Company name	Casco Bay Steel Structures
Supporting PQR(s) Reference docs.	SAW DC + FCM 2-21-14 - Rev 1		

Scope	Groove, no PWHT (As-welded)
Joint	Joint details for this welding procedure specification in: JOINTS section of this WPS

BASE METALS

Type	Gr50/Gr50W	P-no.	Grp-no. -
Welded to	Gr50/Gr50W	P-no.	Grp-no. -
Backing:	None	P-no.	Grp-no. -
Retainers Notes	All A709 steels with 50 ksi or less are also qualified		

THICKNESS RANGE QUALIFIED (in.)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Complete pen.	1/8	5/8	-	-
Impact tested	-	-	-	-
Partial pen.	NO	-	-	-
Fillet welds	-	-	-	-

DIAMETER RANGE QUALIFIED (in.)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
			-	-

FILLER METALS

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	THICKNESS RANGE QUALIFIED (in.) As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
SAW	5.23	ENi1K	6		Lincolnweld LA-75	1/8	5/8	-	-
Flux	5.23	F8A2	6		Lincolnweld 960	- Required -			
Sup. filler	-	-	-	-	-	- None -			

Flux type	
Flux from recrush. slag	No

WELDING PROCEDURE

Welding process		SAW
Type		Machine
Minimum preheat/interpass temperature	(°F)	See Backpage
Maximum interpass temperature	(°F)	490
Filler metal size	(in.)	5/32
Layer number		
Position		F
Current/polarity		DCEP
Amperes		604
Volts		29.5
Travel speed	(in./min)	17.1
Maximum heat input	(kJ/in.)	62.5193
Wire feed type		Hot wire
Wire feed speed	(in./min)	N/A
String or weave		Stringer
C.T.W.D	(in.)	
Multi/Single pass per side		Single or Multiple passes
Multiple or single layer		Single or Multiple layer
Oscillation		None
Multi/single electrode		Single electrode
Electrode angle	(deg.)	As needed
Maximum pass thickness	(in.)	
Weld deposit chemistry		F8A2-ENi1K-Ni1-H8
Notes		

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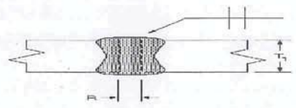
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AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	202	Revision 3	Qualified to	AWS D1.5
Date	4/24/2014		Company name	Casco Bay Steel Structures

JOINTS: Typical joint(s). See actual production drawings and engineering specifications for details.



	Amps	Volts	Travel Speed
AVG	604 /	29.5 /	17.1 IPM
MIN	569 /	27.4 /	15.5 IPM
MAX	625.1 /	31.0 /	18.7 IPM

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B-L1a-S

* Second side shall be ground out and/or backgouged to sound metal prior to welding

Type of groove	Square-groove	Minimum groove angle	(deg.)	0
		Minimum root opening	(in.)	0 to 1/16
		Maximum root face	(in.)	5/8

PREHEAT TABLE

Applicable standard	
AWS D1.5 Bridge Welding Code	For thickness 1/8 to 3/4(in.): 50(°F). Preheat to 70(°F) if the base metal temperature is below 32(°F). Over 3/4 thru 1-1/2(in.): 70(°F). Over 1-1/2 thru 2-1/2(in.): 150(°F). Over 2-1/2(in.): 225(°F). Refer to AWS D1.5 2010 Table 4.3 (pg85)

TECHNIQUE

Supplementary MF control	
Peening	
Surface preparation	Grind/Blast/chemical/wirebrush clean to be free of moisture, slag, millscale, oils, dust
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	Grinding or Air Carbon Arc Gouging

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Date	

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AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	203 Revision 2	Qualified to	AWS D1.5
Date	4/24/2014	Company name	Casco Bay Steel Structures
Supporting PQR(s) Reference docs.	SAW DC + FCM 2-21-14 - Rev 1		

Scope	Groove, no PWHT (As-welded)
Joint	Joint details for this welding procedure specification in: JOINTS section of this WPS

BASE METALS

Type	Gr50/Gr50W	P-no.	Grp-no. -
Welded to	Gr50/Gr50W	P-no.	Grp-no. -
Backing:	None	P-no.	Grp-no. -
Retainers Notes	All A709 steels with 50 ksi or less are also qualified		

THICKNESS RANGE QUALIFIED (in.)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Complete pen.	over 1/2	2	-	-
Impact tested	-	-	-	-
Partial pen.	NO	-	-	-
Fillet welds	-	-	-	-

DIAMETER RANGE QUALIFIED (in.)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
			-	-

FILLER METALS

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	THICKNESS RANGE QUALIFIED (in.) As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
SAW	5.23	ENi1K	6		Lincolnweld LA-75	over 1/2	2	-	-
Flux	5.23	F8A2	6		Lincolnweld 960	- Required -			
Sup. filler	-	-	-	-	-	- None -			

Flux type	
Flux from recrush. slag	No

WELDING PROCEDURE

Welding process		SAW
Type		Machine
Minimum preheat/interpass temperature	(°F)	See Backpage
Maximum interpass temperature	(°F)	490
Filler metal size	(in.)	5/32
Layer number		
Position		F
Current/polarity		DCEP
Amperes		604
Volts		29.5
Travel speed	(in./min)	17.1
Maximum heat input	(kJ/in.)	62.5193
Wire feed type		Hot wire
Wire feed speed	(in./min)	N/A
String or weave		Stringer
C.T.W.D	(in.)	
Multi/Single pass per side		Single or Multiple passes
Multiple or single layer		Single or Multiple layer
Oscillation		None
Multi/single electrode		Single electrode
Electrode angle	(deg.)	As needed
Maximum pass thickness	(in.)	
Weld deposit chemistry		F8A2-ENi1K-Ni1-H8
Notes		

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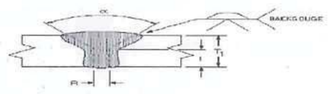
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AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	203	Revision 2	Qualified to	AWS D1.5
Date	4/24/2014		Company name	Casco Bay Steel Structures

JOINTS: Typical joint(s). See actual production drawings and engineering specifications for details.



	Amps	Volts	Travel Speed
AVG	604 /	29.5 /	17.1 IPM
MIN	569 /	27.4 /	15.5 IPM
MAX	625.1 /	31.0 /	18.7 IPM

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BL2c-S

Over 1/2" to 1" (1/4 root face min)
Over 1" to 1-1/2" (3/8 root face min)
Over 1-1/2" to 2" (1/2 root face min)

*backside shall be backgouged prior to welding

Type of groove	Single-V-groove	Minimum groove angle	(deg.)	55 to 70
		Minimum root opening	(in.)	0 to 1/16
		Maximum root face	(in.)	varies

PREHEAT TABLE

Applicable standard	
AWS D1.5 Bridge Welding Code	For thickness 1/8 to 3/4(in.): 50(°F). Preheat to 70(°F) if the base metal temperature is below 32(°F). Over 3/4 thru 1-1/2(in.): 70(°F). Over 1-1/2 thru 2-1/2(in.): 150(°F). Over 2-1/2(in.): 225(°F). Refer to AWS D1.5 2010 Table 4.3 (pg 85)

TECHNIQUE

Supplementary MF control	
Peening	
Surface preparation	Grind/Blast/chemical/wirebrush clean to be free of moisture, slag, millscale, oils, dust
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	Grinding or Air Carbon Arc Gouging

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AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	250 Revision 1	Qualified to	AWS D1.5
Date	6/10/2014	Company name	Casco Bay Steel Structures
Supporting PQR(s) Reference docs.	SAW FCM 3/32 DC- 5/7/14		

Scope	Fillet, no PWHT (As-welded), impact testing
Joint	Joint details for this welding procedure specification in: JOINTS section of this WPS

BASE METALS

Type	Gr50/Gr50W	P-no.	Grp-no. -
Welded to	Gr50/Gr50W	P-no.	Grp-no. -
Backing:	none	P-no.	Grp-no.
Retainers Notes	All A709 with 50 ksi or less are also qualified		

THICKNESS RANGE QUALIFIED (in.)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Complete pen.	-	-	-	-
Impact tested	-	-	-	-
Partial pen.	-	-	-	-
Fillet welds	1/8	no max.	-	-

DIAMETER RANGE QUALIFIED (in.)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
	N/A	N/A	-	-

FILLER METALS

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	THICKNESS RANGE QUALIFIED (in.) As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
SAW	5.23	ENi1K	6		LincolnElectric LA-75	1/8	no max.	-	-
Flux Sup. filler	5.23	F8A2			LIncolnElectric Lincolnweld960	- Required - - Required -			

Flux type	
Flux from recrush. slag	No
Suppl. filler metal vol. (ft³)	N/A

WELDING PROCEDURE

Welding process		SAW
Type		Machine
Minimum preheat/interpass temperature	(°F)	See Back Page
Maximum interpass temperature	(°F)	400
Filler metal size	(in.)	3/32
Layer number		
Position		H
Current/polarity		DCEN (straight polarity)
Amperes		363.3
Volts		31.6
Travel speed	(in./min)	12.8
Maximum heat input	(kJ/in.)	53.8138
Wire feed type		Cold wire
Wire feed speed	(in./min)	N/A
String or weave		Stringer
C.T.W.D	(in.)	
Multi/Single pass per side		Single or Multiple passes
Multiple or single layer		Single or Multiple layer
Oscillation		None
Multi/single electrode		Single electrode
Electrode angle	(deg.)	Varies
Maximum pass thickness	(in.)	See Back Page
Weld deposit chemistry		F8A2-ENi1K-Ni1-H8
Notes		

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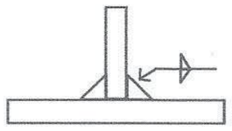
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AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	250	Revision	1	Qualified to	AWS D1.5
Date	6/10/2014			Company name	Casco Bay Steel Structures

JOINTS: Typical joint(s). See actual production drawings and engineering specifications for details.



5/16 single pass Horizontal

	Amps		Volts		Travel Speed
AVG	363.3	/	31.6	/	12.8
MIN	324.9	/	29.9	/	11.7
MAX	379.2	/	33.2	/	13.5

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Type of groove	Fillet weld	Minimum groove angle	(deg.)	N/A
		Minimum root opening	(in.)	N/A
		Maximum root face	(in.)	N/A

PREHEAT TABLE

Applicable standard	
AWS D1.5 Bridge Welding Code	For thickness 1/8 to 3/4(in.): 50(°F). Preheat to 70(°F) if the base metal temperature is below 32(°F). Over 3/4 thru 1-1/2(in.): 70(°F). Over 1-1/2 thru 2-1/2(in.): 150(°F). Over 2-1/2(in.): 225(°F). Refer to AWS D1.5 2010 Table 4.3 (pg 85)

TECHNIQUE

Supplementary MF control	
Peening	Not used
Surface preparation	Grind/Blast/chemical/wirebrush clean to be free of moisture, slag, millscale, oils, dust
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	None

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Date		Date	
6/10/14			

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Date		Date	

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AWS - Prequalified Welding Procedure Specification (pWPS)

WeldOffice WPS

Identification #	480 Rev. 1
Originated by	Matthew Cote
Date	7/22/2014
Authorized by	Matthew J Cote
Date	7/22/2014

Company name	Casco Bay Steel Structures
Welding process	SMAW
Process type	Manual

Joint design used

Joint type		T - T joint
Joint design		Fillet Weld
Backing		No
Backing material		Not Applicable
Root opening (R)*	(in.)	
Root face (f)*	(in.)	
Groove angle (a)*	(deg.)	
Radius (J - U)*	(deg.)	
Back gouging		No
Back gouging method		None

Base metals * Datum, As Detailed (As Fit-Up)

Spec., type or grade			Gr 50/ Gr50W
Thickness:	Groove	(in.)	
	Fillet	(in.)	1/8" and above
Diameter (Pipe)		(in.)	

Filler metals

AWS Specification	A5.5
AWS Classification	E-8018 H4R

Shielding

Flux		-
Electrode-flux (class)		-
Gas composition		-
Gas flow rate	(cfh)	-
Gas cup size	(in.)	-

Position

Welding position:	Groove	
	Fillet	All
Vertical progression		Up

Electrical characteristics

Transfer mode (GMAW)	N/A
Current type	Other
Other	DC+ and AC

Technique

Stringer or weave bead			Stringer or Weave
Multi/single pass (per side)			Single or Multiple
Number of electrodes			Varies
Spacing:	Longitudinal	(in.)	-
	Lateral	(in.)	-
	Angle	(deg.)	-
Contact tube to work		(in.)	-
Peening			Not permitted
Interpass cleaning			Brushing or grinding

Preheat

Preheat temp.:	Min.	(°F)	See notes
Interpass temp.:	Min.	(°F)	See notes
	Max.	(°F)	450

Post weld heat treatment

Temperature	(°F)	None
Time	(hrs)	-

Welding procedure

Layer	Pass	Process	Filler metal class	Filler metal diameter (in.)	Current type / polarity	Amps	Wire feed speed (in./min)	Volts	Travel speed (in./min)	Joint details
1	All	SMAW	E-8018 H4R	1/8	DCEP	100-160	-	n/a	varies	
1	All	SMAW	E-8018 H4R	1/8	AC	90-160	-	n/a	varies	
1	All	SMAW	E-8018 H4R	5/32	DCEP	140-210	-	n/a	varies	
1	All	SMAW	E-8018 H4R	5/32	AC	130-210	-	n/a	varies	
1	All	SMAW	E-8018 H4R	3/16	DCEP	200-300	-	n/a	varies	
1	All	SMAW	E-8018 H4R	3/16	AC	180-300	-	n/a	varies	
								Designation		FILLET

Not allowed for vertical or overhead welds

Notes

LINCOLN ELECTRIC EXCALIBUR 8018-C3 MR

SEE BACKSIDE FOR MORE DETAILS

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Rural Major Collector
BR 8 Proj BF-0211(32) CBSS 695

Vermont Agency of Transportation
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February 16, 2017
RESUBMIT _____ Approved As Noted
BY Rob Young DATE 03/06/2017

Signature 1		Signature 2	
Name	Signature	Name	Signature
Matthew J Cote			
Date		Date	
7/22/2014			

Matthew J Cote
CWI 08051341
QC1 EXP 5/1/2017

Signature 3		Signature 4	
Name	Signature	Name	Signature
Date		Date	

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Identification #	480	Rev.

AWS D1.5

Single Pass Fillet weld in 1F position, No bigger than 3/8 in a single pass
Single Pass Fillet weld in 2F, 4F position, No bigger than 5/16 in a single pass
Single Pass Fillet weld in 3F position, No biger than 1/2 in a single pass

For thickness 1/8 to 3/4(in.): 50°F). Preheat to 70(°F) if the base metal temperature is below 32(°F).
Over 3/4 thru 1-1/2(in.): 70(°F).
Over 1-1/2 thru 2-1/2(in.): 150(°F).
Over 2-1/2(in.): 225(°F).

ALL VERTICAL WELDING SHALL BE DONE UPWARD
DO NOT US E 3/16 ELECTRODE FOR VERTICAL WELDS

IF A GAP FROM 1/16 TO 3/16 IS EVIDENT, INCREASE WELD SIZE 1/16 FOR EACH 1/16 GAP

EX 1/16 GAP IS +1/16 FROM DETAILED SIZE
1/8 GAP IS +1/8 FROM DETAILED SIZE
3/16 GAP IS +3/16 FROM DETAILED SIZE

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TH1 FAS RT 0211 Huntington River
Rural Major Collector
BR 8 Proj BF-0211(32) CBSS 695

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Casco Bay Steel Structures

One Wallace Ave, South Portland ME 04106

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	610	Revision	1	Qualified to	AWS D1.5
Date	2/1/2017			Company name	Casco Bay Steel Structures
Supporting PQR(s) Reference docs.	418				

Scope	Fillet
Joint	Joint details for this welding procedure specification in: JOINTS section of this WPS, Production drawings

BASE METALS

Type	Gr50/Gr50W	P-no.	Grp-no. -
Welded to	Gr50/Gr50W	P-no.	Grp-no. -
Backing:		P-no.	Grp-no.
Retainers			
Notes	All A709 steels with 50ksi or less are also qualified		

THICKNESS RANGE QUALIFIED (in.)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
Complete pen.	-	-	-	-
Impact tested	-	-	-	-
Partial pen.	-	-	-	-
Fillet welds	1/8	no max	-	-

DIAMETER RANGE QUALIFIED (in.)

	As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
	-	-	-	-

FILLER METALS

	SFA	Classification	F-no.	A-no.	Chemical analysis or Trade name	THICKNESS RANGE QUALIFIED (in.) As-welded Min.	As-welded Max.	With PWHT Min.	With PWHT Max.
GMAW	5.28	E80C-Ni1	6	10	ESAB Coreweld 88-HS Ni1	1/8	no max	-	-
Sup. filler	-	-	-	-	-	- None -			

WELDING PROCEDURE

Welding process		GMAW
Type		Semi-automatic
Minimum preheat/interpass temperature	(°F)	See Backpage
Maximum interpass temperature	(°F)	440
Filler metal size	(in.)	.052
Layer number		
Position		,H
Weld progression		Not applicable
Current/polarity		DCEP
Amperes		307
Volts		29.2
Travel speed	(in./min)	15.5
Maximum heat input	(kJ/in.)	34.8
Wire feed speed	(in./min)	
Arc transfer mode		Spray
Shielding: Gas type		Argon/CO2, 90/10
Flow rate	(cfh)	35
Trailing: Gas type		
Flow rate	(cfh)	
Backing: Gas type		
Flow rate	(cfh)	
String or weave		Stringer or Weave
Orifice/gas cup size		
C.T.W.D	(in.)	5/8
Multi/Single pass per side		Single or Multiple passes
Multi/single electrode		Single electrode
Maximum pass thickness	(in.)	
Weld deposit chemistry		E80C-Ni1-H8
Notes		

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Casco Bay Steel Structures

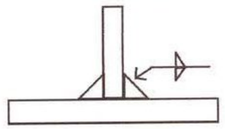
One Wallace Ave, South Portland ME 04106

AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

WPS record number	610	Revision	1	Qualified to	AWS D1.5
Date	2/1/2017			Company name	Casco Bay Steel Structures

JOINTS: Typical joint(s). See actual production drawings and engineering specifications for details.



	Amps	Volts	TS
Avg	307	29.2	15.5
Min	307	29.2	14.7
Max	327	31.2	15.5

TH1 FAS RT 0211 Huntington River
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5/16 SINGLE PASS FILLET WELD

Type of groove	Fillet weld	Minimum groove angle	(deg.)	N/A
		Minimum root opening	(in.)	N/A
		Maximum root face	(in.)	N/A

PREHEAT TABLE

Applicable standard	
AWS D1.5 Bridge Welding Code	For thickness 1/8 to 3/4(in.): 50(°F). Preheat to 70(°F) if the base metal temperature is below 32(°F). Over 3/4 thru 1-1/2(in.): 70(°F). Over 1-1/2 thru 2-1/2(in.): 150(°F). Over 2-1/2(in.): 225(°F). Refer to AWS D1.5 2010 Table 4.3 (pg 85)

TECHNIQUE

Peening	Not used
Surface preparation	Grind/Blast/chemical/wirebrush clean to be free of moisture, slag, millscale, oils, dust
Initial/interpass cleaning	Brushing and Grinding
Back gouging method	Grinding or Air Carbon Arc Gouging

NOTES

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Signature 1

Name	Signature
Matthew Cote	Matthew J Cote CWI 08051341 QC1 EXP 5/1/2017
Date 2/1/17	

Signature 2

Name	Signature
Date	

Signature 3

Name	Signature
Date	

Signature 4

Name	Signature
Date	

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GENERAL NOTES:

1. MATERIALS SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011 AND ITS THE LATEST REVISIONS, CONTRACT PLANS, AND THE SPECIAL PROVISIONS. GENERAL SHOP PRACTICES, STRUCTURAL FABRICATION, WELDING AND ASSEMBLY SHALL BE GOVERNED BY ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

2. THESE SHOP DRAWINGS WERE PREPARED IN ACCORDANCE WITH THE CONTRACT PLANS AND SPECIFICATIONS. THE D.S. BROWN COMPANY DOES NOT ACCEPT LIABILITY FOR THE DESIGN OF THE PRODUCTS DETAILED IN THESE SHOP DRAWINGS.

3. THE D.S. BROWN COMPANY TO SUPPLY ONLY THE PARTS SHOWN ON THESE SHOP DRAWINGS.

4. THE BEARINGS SHALL BE SUBJECT TO RANDOM IN-HOUSE ELASTOMER TESTING AND IN-HOUSE PROOF LOAD TESTING IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 14 (METHOD 'A') AND AASHTO LRFD CONSTRUCTION SPECIFICATIONS SECTION 18.

5. IN ACCORDANCE WITH STANDARD SPECIFICATION, FABRICATOR MAY USE NATURAL RUBBER FOR THE ELASTOMER.

6. ALL STEEL SHALL BE PRODUCED IN THE UNITED STATES OF AMERICA.

7. ALL CORNERS AND EDGES OF STEEL PLATES SHALL BE GROUND TO A 1/16" RADIUS FOR GALVANIZING.

8. ALL EXTERNAL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 SPECIFICATIONS. IN ACCORDANCE WITH SECTION 726.08 OF THE STANDARD SPECIFICATIONS, REPAIR DAMAGED GALVANIZING PER ASTM A780, ANNEX A2. THE PAINT USED IN THE REPAIR SHALL BE ORGANIC-ZINC, CONTAINING 92% MINIMUM ZINC BY WEIGHT IN THE DRY FILM. THE PAINT SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS TO A THICKNESS EQUIVALENT TO THE SURROUNDING GALVANIZING.

9. GALVANIZATION LIFTING DEVICES MAY BE WELDED TO PARTS IF NECESSARY. WHEN THEIR USE IS COMPLETE, REMOVE AND GRIND FLUSH ALL CONNECTION LOCATIONS. REPAIR AREA PER ASTM A780, ANNEX A2.

10. HOLES FOR ANCHORAGE MAY BE THERMALLY CUT.

11. BEARING MANUFACTURING FACILITY AND REPRESENTATIVE FOR COORDINATING PRODUCTION:
THE D.S. BROWN COMPANY
300 EAST CHERRY STREET
NORTH BALTIMORE, OHIO 45872
CSR - ERIC JOHNSON - (419) 257-3561

Any grinding shall be completed such that the base metal is not undercut or nicked.

MARKING NOTES:

1. EACH BEARING SHALL BE PERMANENTLY MARKED. THE MARKING SHALL CONSIST OF THE ORDER NUMBER, LOT NUMBER, PAD IDENTIFICATION NUMBER, UP STATION, AND ELASTOMER TYPE AND GRADE. WHERE POSSIBLE, THE MARKING SHALL BE ON A FACE WHICH IS VISIBLE AFTER ERECTION OF THE STRUCTURE.

2. MARK THE THICKER EDGE OF THE BEVELED PLATE FOR IDENTIFICATION IN THE FIELD.

TESTING NOTES:

1. THE BEARING SHALL BE SAMPLED AND TESTED IN ACCORDANCE WITH AASHTO M251, APPENDIX X1.

CONTRACTOR NOTES:

1. WELDING PROCEDURES SHALL BE ESTABLISHED BY THE CONTRACTOR TO RESTRICT THE TEMPERATURE TO A MAXIMUM OF 200°F (93°C) FOR SURFACES IN CONTACT WITH THE ELASTOMER. TEMPERATURES SHALL BE DETERMINED BY TEMPERATURE INDICATING WAX PENCILS OR OTHER SUITABLE MEANS.

TOLERANCE TABLE	
DESCRIPTION	TOLERANCE (INCHES U.N.O.)
ELASTOMERIC BEARING DESIGN THICKNESS ≤ 1.250"	−0, +0.1181
ELASTOMERIC BEARING DESIGN THICKNESS > 1.250"	−0, +0.2362
ELASTOMERIC BEARING PLAN DIMENSIONS ≤ 36"	−0, +0.2362
ELASTOMERIC BEARING PLAN DIMENSIONS > 36"	−0, +0.4724
THICKNESS OF INDIMDUAL LAYERS OF ELASTOMER (LAMINATED BEARINGS ONLY) AT ANY POINT WITHIN THE BEARING	±0.1181
VARIATION FROM A PLANE PARALLEL TO THE THEORETICAL SURFACE (AS DETERMINED BY MEASUREMENTS AT THE EDGE OF THE BEARINGS) (PARALLELISM):	
TOP & BOTTOM	±0.005 RAD
SIDES	±0.2362
POSITION OF EXPOSED CONNECTION MEMBERS	±0.1181
ELASTOMERIC EDGE COVER	−0, +0.1181
ELASTOMERIC BEARING HOLE OR SLOT SIZE	±0.1181
ELASTOMERIC BEARING HOLE OR SLOT LOCATION	±0.1181
STEEL PLATE THICKNESS	±0.063
STEEL PLATE PLAN DIMENSIONS ≤ 30"	±0.250
STEEL PLATE PLAN DIMENSIONS > 30"	±0.250
STEEL PLATE FLATNESS IN CONTACT WITH BEARING	0.001 X NOM. DIMENSION
STEEL PLATE FLATNESS: GROUT OR CONCRETE SIDE	0.005 X NOM. DIMENSION
STEEL PLATE FLATNESS: STEEL GIRDER SIDE	0.002 X NOM. DIMENSION
STEEL PLATE FLATNESS: STEEL PLATE SIDE	0.001 X NOM. DIMENSION
STEEL PLATE SURFACE FINISH IN CONTACT WITH BEARING	125 μ" RMS
BEVEL SLOPE	±0.002 RAD
ANCHOR HOLE OR SLOT SIZE	±1/8
ANCHOR HOLE OR SLOT LOCATION	±1/8
NOTE: SURFACE FINISH & FLATNESS TOLERANCES ARE PRIOR TO COATING.	

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D.S. BROWN
A GIBRALTAR INDUSTRIES COMPANY
THE D.S. BROWN COMPANY
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332
WWW.DSBROWN.COM

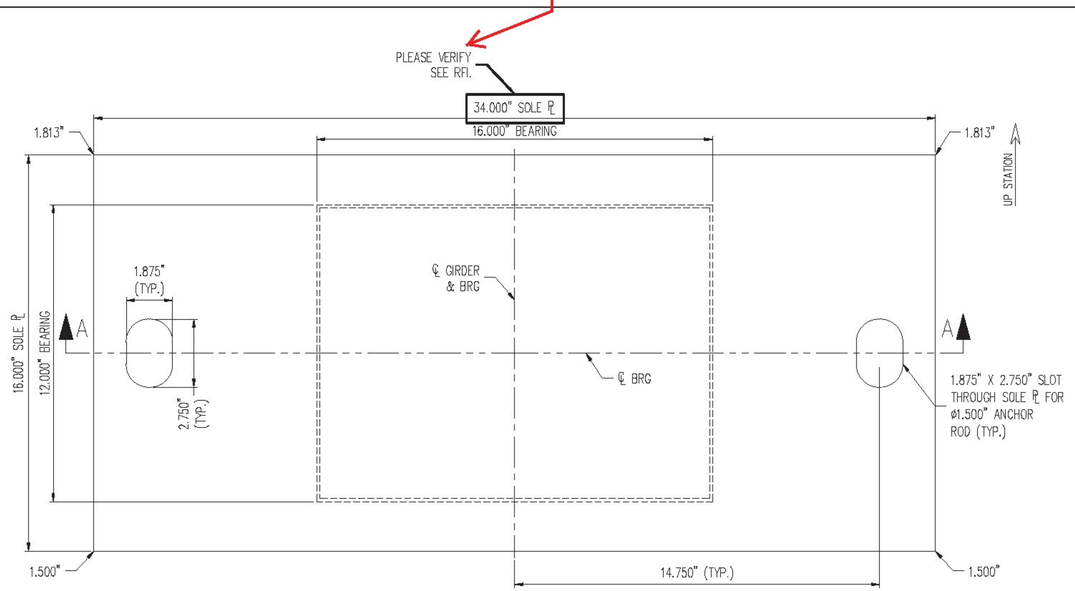
LOCATION — TH-1, RURAL MAJOR COLLECTOR, FAS ROUTE 0211
BRIDGE — NO. 8
PROJECT — BF 0221 (32)
PROJECT NAME — HUNTINGTON
P.O. NO. — 8495
DESIGNER — VHB
CUSTOMER — S.D. IRELAND BROTHERS CORP.

ITEM	QUANTITY
–	–
–	–
–	–
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DESCRIPTION:
GENERAL NOTES
CHITTENDEN CO., VT

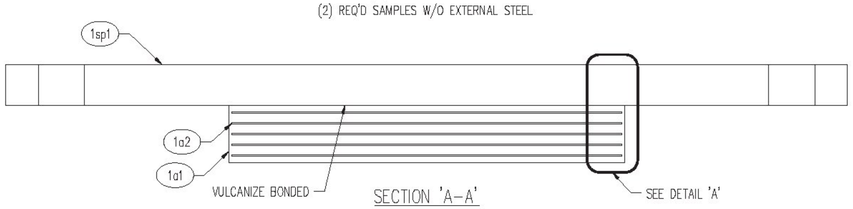
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N.T.S.	DA	ECW	2/1/17	–
PROJECT NUMBER	PRODUCT CODE	RELEASE	SHEET	
51887	1104	1	GN1	

Yes, this is the correct length.

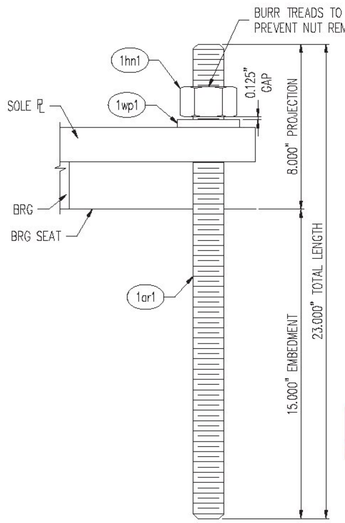


PLAN VIEW

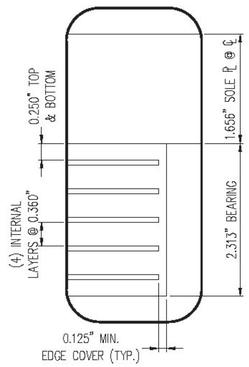
ELASTOMERIC BEARING
(4) REQ'D @ ABUT. 1
(2) REQ'D SAMPLES W/O EXTERNAL STEEL



SECTION 'A-A'



ANCHOR ROD DETAIL



DETAIL 'A'

This substitution is acceptable.

16 GA SHIMS HAVE A TENDENCY TO DEFORMED/WHILE BEING MOLDED CREATING TOLERANCE ISSUES. WE WOULD LIKE SUBSTITUTE USING 14 GA. PLEASE VERIFY

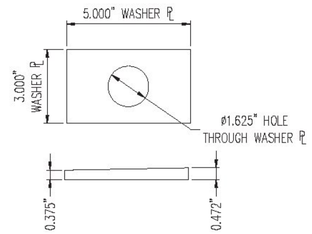
DUE TO AVAILABILITY D.S. BROWN WOULD LIKE TO HAVE THE OPTION TO ORDER EITHER MATERIAL, PLEASE VERIFY

This material option is acceptable.

~~Please indicate the material specification~~. AASHTO M 251 per subsection 731.03 of the specifications.

MK	QTY	DESCRIPTION	MATERIAL	LENGTH	REMARKS	WT*	REV
1A	4	ELASTOMERIC BEARING	51887.1104.1			317	
1a1	4	2.313" X 16.000"	NATURAL RUBBER	12.000"	130 PSI +/-15% GR. 4	18	
1a2	20	14 GA. X 15.750"	A1011 GR 36	11.750"	PLAIN	4	
1sp1	4	1.813" X 34.000"	A709 GR 36	16.000"	A123-HDG	280	
1B	8	THREADED ROD	51887.1101.HDWR			12	
1ar1	8	ø1.500" X 23.000" THREADED ROD	F1554 GR 36 OR 55-S1		A153-HDG	12	
1C	8	HEAVY HEX NUT	51887.1101.HDWR			1	
1hn1	8	ø1.500" HEX NUT	A563-DH OR A194-2H HEAVY HEX		A153-HDG, DRY LUBE & DYE	1	
1D	8	WASHER PLATE	51887.1101.HDWR			2	
1wp1	8	0.473" X 3.000"	A36	5.000"	ø1.563" HOLE @ CENTER, SEE WASHER ℄ DETAIL; A123-HDG	2	
1F	2	ELASTOMERIC BEARING SAMPLES	51887.1103.1			37	
1a1	2	2.313" X 16.000"	NATURAL RUBBER	12.000"	130 PSI +/-15% GR. 4	18	
1a2	10	14 GA. X 15.750"	A1011 GR 36	11.750"	PLAIN	4	
		*Approx. Gross Wt. Lbs Per Single Unit			1/31/17 2:37:10 PM		

1.625" per detail and contract plans.



BEVELED WASHER DETAIL

LOAD TABLE (KIPS)	
DEAD LOAD	LIVE LOAD
62.7	96.7

SEE SHT. GN1 FOR GENERAL NOTES & COATING LIMITS.

REV.	DESCRIPTION	DATE	DET.	CKD.

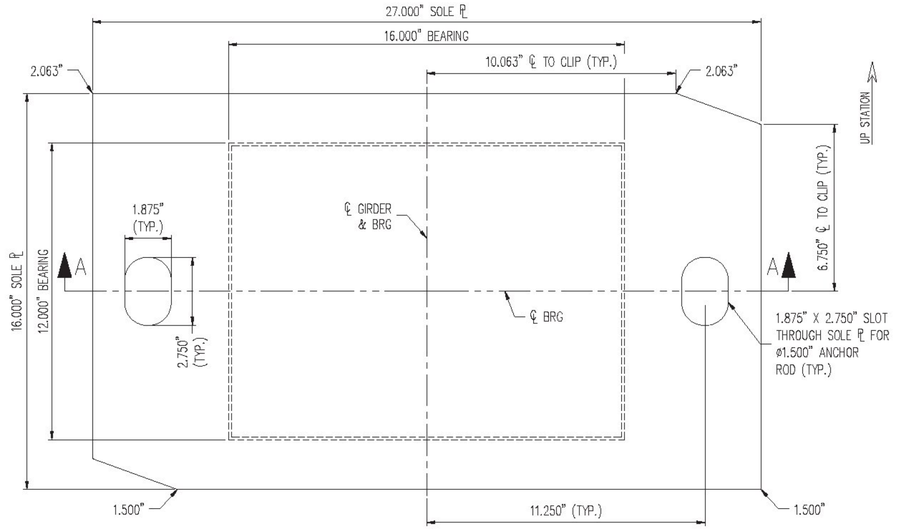
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THE D.S. BROWN COMPANY
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332
WWW.DSBROWN.COM

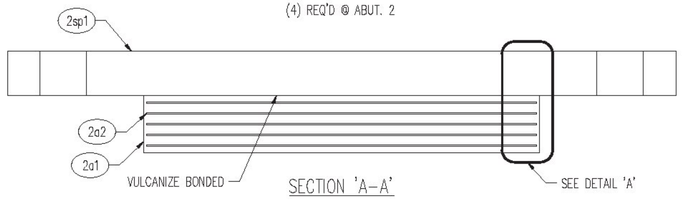
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LOCATION — TH-1, RURAL MAJOR COLLECTOR, FAS ROUTE 0211	–
BRIDGE — NO. 8	–
PROJECT — BF 0221 (32)	–
PROJECT NAME — HUNTINGTON	–
P.O. NO. — 8495	–
DESIGNER — VHB	–
CUSTOMER — S.D. IRELAND BROTHERS CORP.	–
	–

DESCRIPTION:
VERSIFLEX ELASTOMERIC BEARING
CHITTENDEN CO., VT

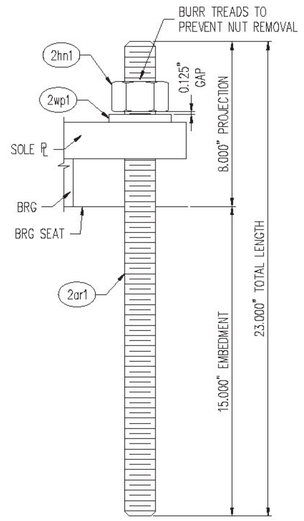
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N.T.S.	DA	ECW	2/1/17	–
PROJECT NUMBER: 51887	PRODUCT CODE: 1104	RELEASE: 1	SHEET: 01	



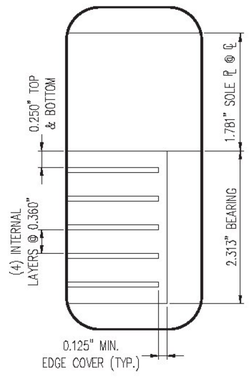
PLAN VIEW
ELASTOMERIC BEARING
(4) REQ'D @ ABUT. 2



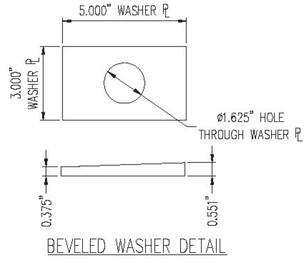
SECTION 'A-A'



ANCHOR ROD DETAIL



DETAIL 'A'



BEVELED WASHER DETAIL

LOAD TABLE (KIPS)	
DEAD LOAD	LIVE LOAD
62.7	96.7

16 GA SHIMS HAVE A TENDENCY TO DEFORMEDWHILE BEING MOLDED CREATING TOLERANCE ISSUES. WE WOULD LIKE SUBSTITUTE USING 14 GA. PLEASE VERIFY

DUE TO AVAILABILITY D.S. BROWN WOULD LIKE TO HAVE THE OPTION TO ORDER EITHER MATERIAL, PLEASE VERIFY

This substitution is acceptable.

Please indicate the material specification. AASHTO M 251 per subsection 731.03 of the specifications.

This material option is acceptable.

1.625" per detail and contract plans.

MK	QTY	DESCRIPTION	MATERIAL	LENGTH	REMARKS	WT*	REV
2A	4	ELASTOMERIC BEARING	51887.1104.1			290	
2a1	4	2.313" X 16.000"	NATURAL RUBBER	12.000"	130 PSI +/-15% GR. 4	18	
2a2	20	14 GA. X 15.750"	A1011 GR 36	11.750"	PLAIN	4	
2sp1	4	2.063" X 27.000"	A709 GR 36	16.000"	A123-HDG	253	
2B	8	THREADED ROD	51887.1101.HDWR			12	
2ar1	8	ø1.500" X 23.000" THREADED ROD	F1554 GR 36 OR 55-S1		A153-HDG	12	
2C	8	HEAVY HEX NUT	51887.1101.HDWR			1	
2hn1	8	ø1.500" HEX NUT	A563-DH OR A194-2H HEAVY HEX		A153-HDG, DRY LUBE & DYE	1	
2D	8	WASHER PLATE	51887.1101.HDWR			2	
2wp1	8	0.551" X 3.000"	A36	5.000"	ø1.563" HOLE @ CENTER, SEE WASHER ℄ DETAIL; A123-HDG	2	
		*Approx. Gross Wt. Lbs Per Single Unit			1/31/17 2:37:10 PM		

SEE SHT. GN1 FOR GENERAL NOTES & COATING LIMITS.

REV.	DESCRIPTION	DATE	DET.	CK'D.

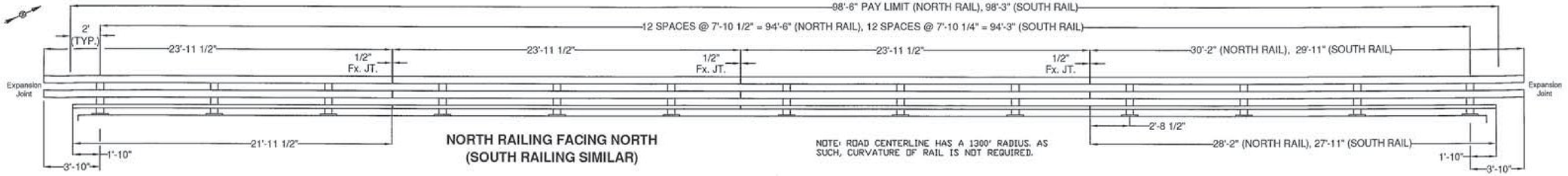
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WWW.DSBROWN.COM

	ITEM	QUANTITY
LOCATION — TH-1, RURAL MAJOR COLLECTOR, FAS ROUTE 0211	–	–
BRIDGE — NO. 8	–	–
PROJECT — BF 0221 (32)	–	–
PROJECT NAME — HUNTINGTON	–	–
P.O. NO. — 8495	–	–
DESIGNER — VHB	–	–
CUSTOMER — S.D. IRELAND BROTHERS CORP.	–	–
	–	–

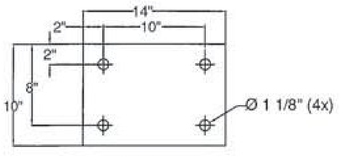
DESCRIPTION:
VERSIFLEX ELASTOMERIC BEARING
CHITTENDEN CO., VT

SCALE:	DRAWN BY:	CHECKED BY:	DATE:	
N.T.S.	DA	ECW	2/1/17	–
PROJECT NUMBER	PRODUCT CODE	RELEASE	SHEET	
51887	1104	1	02	

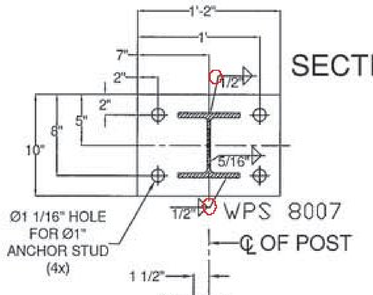


NORTH RAILING FACING NORTH
(SOUTH RAILING SIMILAR)

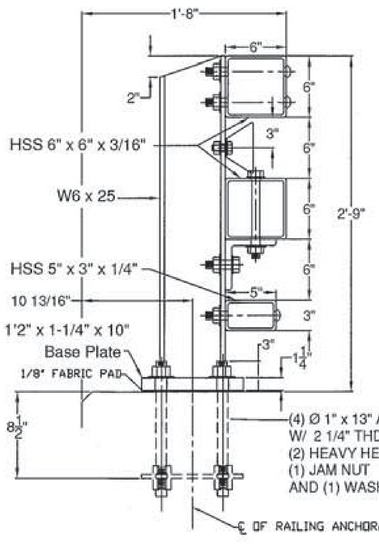
NOTE: ROAD CENTERLINE HAS A 1300' RADIUS. AS SUCH, CURVATURE OF RAIL IS NOT REQUIRED.



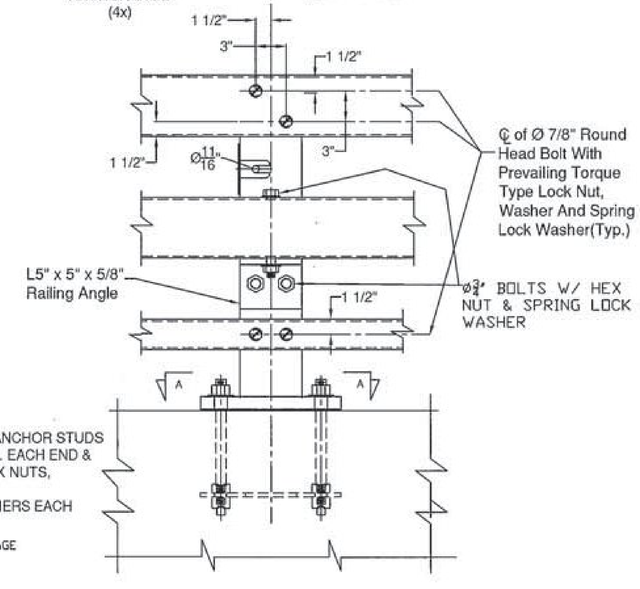
1/8" FABRIC PAD



SECTION A-A



SECTION



ELEVATION

STEEL BRIDGE RAILING

Vermont Agency of Transportation
RECEIVED
CK'D BY OK'D BY Rob Young
February 15, 2017
RESUBMIT No Approved
BY Rob Young DATE 02/23/2017

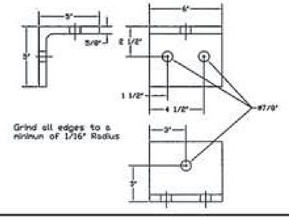
BILL OF MATERIAL

ITEM #	QTY	PART #	DESCRIPTION	ASTM DESIGNATION
1	26	0033.03610	W6x25, THREE RAIL POST @ 2'-9" DA DN 1 1/4x10x1'-2" B.P.	A572 Gr. 50
2	2	TBD	HSS 3" X 5" X 1/4" RAIL @ 21'-11 1/2"	A500 Gr. B
3	4	TBD	HSS 3" X 5" X 1/4" RAIL @ 23'-11 1/2"	A500 Gr. B
4N	1	TBD	HSS 3" X 5" X 1/4" RAIL @ 28'-2" (NORTH RAIL)	A500 Gr. B
4S	1	TBD	HSS 3" X 5" X 1/4" RAIL @ 27'-11" (SOUTH RAIL)	A500 Gr. B
5	12	TBD	HSS 6" X 6" X 3/16" RAIL @ 23'-11 1/2"	A500 Gr. B
6N	4	TBD	HSS 6" X 6" X 3/16" RAIL @ 30'-2" (NORTH RAIL)	A500 Gr. B
6S	4	TBD	HSS 6" X 6" X 3/16" RAIL @ 29'-11" (SOUTH RAIL)	A500 Gr. B
8	6	0033.00840	2-1/8" X 4-1/4" FIX. SPLICE BAR @ 2'-3"	A572 Gr. 50
9	12	0033.00640	HSS 5" X 5" X 5/16" FIX. SPLICE TUBE @ 2'-3"	A500 Gr. B, A572 Gr. 50
10	26	0033.00220	3/8" X 10" X 14" ANCHOR PLATES	A572 Gr. 50
11	26	0033.00050	1/8" X 10" X 14" FABRIC PAD	AASHTO M251
12	106*	0042.21013	Ø 1" X 13" ANCHOR STUDS, W/ 2 1/4" THD. EACH END	A449
13	210*	0080.18901	Ø 1" HEAVY HEX NUTS	A563 DH
14	104	0080.18911	Ø 1" FLAT WASHERS	F436
15	104	0080.18905	Ø 1" HEX JAM NUTS	A563 DH
16	104	0080.07500	Ø 7/8" X 8" ROUND HEAD BOLT, NUT, SQ. WASHER, L.W.	A449, A563 DH, F436, ASME D18.2
17	26	0080.06400	Ø 3/4" X 8" HEX BOLT, NUT, (2) F.W., & L.W.	A325, A563 DH, F436, & ASME D18.2
18	52	0080.06140	Ø 3/4" X 2-3/4" HEX BOLT, NUT, (2) F.W., & L.W.	A325, A563 DH, F436, & ASME D18.2
19	48	0080.06340	Ø 3/4" X 7-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563 DH, & F436
20	24	0080.06255	Ø 3/4" X 4-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563 DH, & F436
21	26	0033.00500	L5" X 5" X 5/8" RAILING ANGLE @ 6"	A572 Gr. 50
22	6	--	DELINEATORS - NOT SHOWN	(** - SUPPLIED BY CUSTOMER)

*-2 EXTRA FOR VOAT TESTING

GENERAL NOTES:

1) ALL RAILING IS TO BE FABRICATED AND ERECTED ACCORDING TO SECTION 525 OF THE STANDARD SPECIFICATIONS.
2) PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16".
3) ALL POST SHALL BE SET NORMAL TO GRADE. THE MAXIMUM CENTER TO CENTER SPACING OF BRIDGE RAIL POST IS 8'-3".
4) SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO BRIDGE POSTS AND PREFERABLY TO AT LEAST 4 POSTS.
5) RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING THE END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUPER STRUCTURE EXPANSION JOINTS. EXPANSION JOINT WIDTH SHALL BE 4"@ 68°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
6) STD. SPLICE HOLES ONLY IN BRIDGE RAIL TUBES. REST TO BE DRILLED BY CUSTOMER. FIELD DRILLED HOLES TO BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO INSTALLATION.
7) BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 FT-LB).
8) SEE STANDARD DRAWING G-lb FOR DETAILS OF DELINEATORS. A DELINEATOR SHALL BE INSTALLED AT 30 FOOT SPACING OR THE NEAREST POST. WHITE IS TO BE INSTALLED ON THE DRIVER'S RIGHT. FOR ONE WAY BRIDGES, YELLOW IS TO BE INSTALLED ON THE DRIVER'S LEFT. PAYMENT FOR DELINEATORS SHALL BE INCIDENTAL TO OTHER ITEMS.
9) ANY BENDING OF RAIL SHALL BE DONE AT THE FABRICATION PLANT ACCORDING TO A PROCEDURE PROVIDED BY THE FABRICATOR.
10) THE MINIMUM DISTANCE FROM THE POST TO AN EXPANSION JOINT SHALL BE DETERMINED BY THE MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD TO THE END OF THE SLAB, OR THE EXPANSION JOINT RECESS POUR, IF ONE IS USED.
11) PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE BOX BEAM RAILS, SPLICE TUBES AND FILL PLATES.
12) THIS RAILING MEETS THE REQUIREMENTS FOR A TL-4 SERVICE LEVEL.



ITEM #: 525.335

SHEET 1 OF 2

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

BRIDGE RAIL DETAILS SHEET

TH-1, RURAL MAJOR COLLECTOR, FAS ROUTE 0211, BRIDGE # 8
TOWN OF HUNTINGTON, COUNTY OF CHITTENDEN, VT.

R	NO.	DATE	DESCRIPTION	BY
E	1	2/8/17	REVISED PER 12/16/16 MARK-UP	EP
V				

R	NO.	DATE	DESCRIPTION	BY
E				
V				

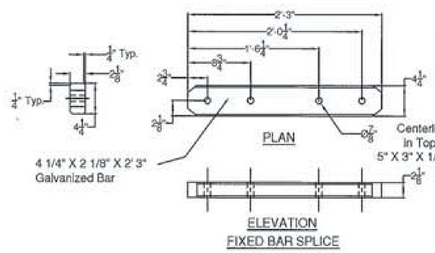
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com, epeek@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

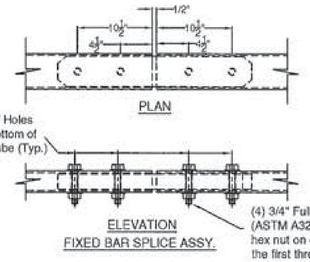
AISC CERTIFIED FABRICATOR

DRAWN	E.P.	12/14/16
CHECKED	D.L.	.
APPROVED	.	.
SCALE	SCHEMATIC	

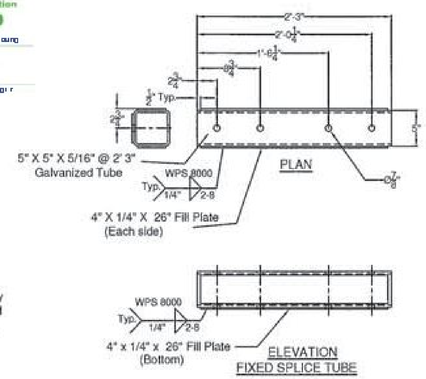
DRAWING NO. F.R.L.-HUNTINGTON-(32)

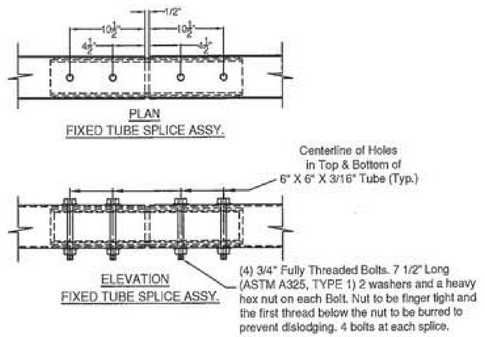
SPLICE BAR - FIXED





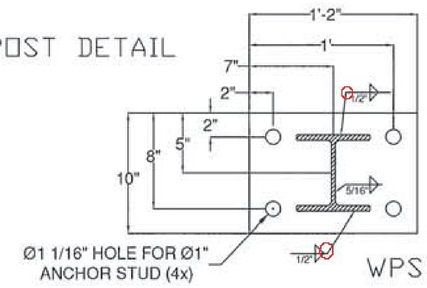
Vermont Agency of Transportation
RECEIVED
CK'D BY OK'D BY Rob Young
February 15, 2017
RESUBMIT No Approved
BY Rob Young DATE 02/22/2017





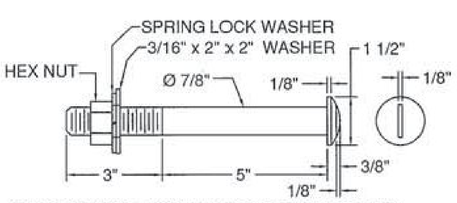
SPLICE TUBE - FIXED

BRIDGE POST DETAIL

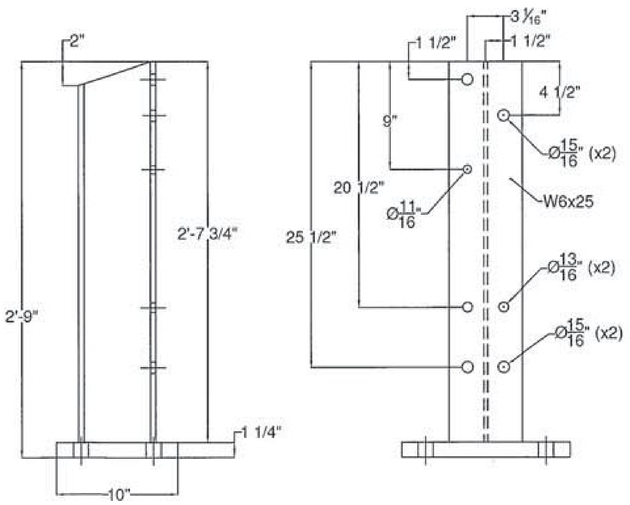


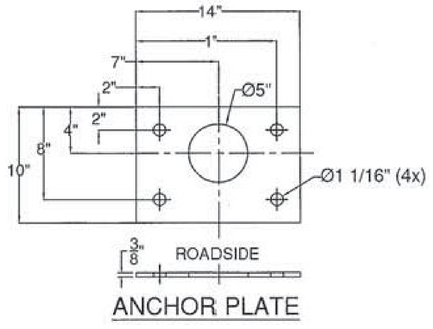
WPS 8007

HARDWARE NOTES	
ITEM #	FUNCTION
12	ANCHOR STUDS, (4) PER POST ON BASE (ITEM #1)
13	(2) PER ANCHOR STUD
14	(1) PER ANCHOR STUD
15	(1) PER ANCHOR STUD
16	BOLT TOP & BOTTOM RAIL TO PAST (ITEM #1), (4) PER POST
17	BOLT CENTER RAIL TO SHELF ANGLES (ITEM #21)
18	BOLT RAILING ANGLE (ITEM #21) TO POST (ITEM #1)
19	BOLT THRU RAILING & TUBE SPLICES (ITEM #9)
20	BOLT THRU RAILING & BAR SPLICES (ITEM #8)

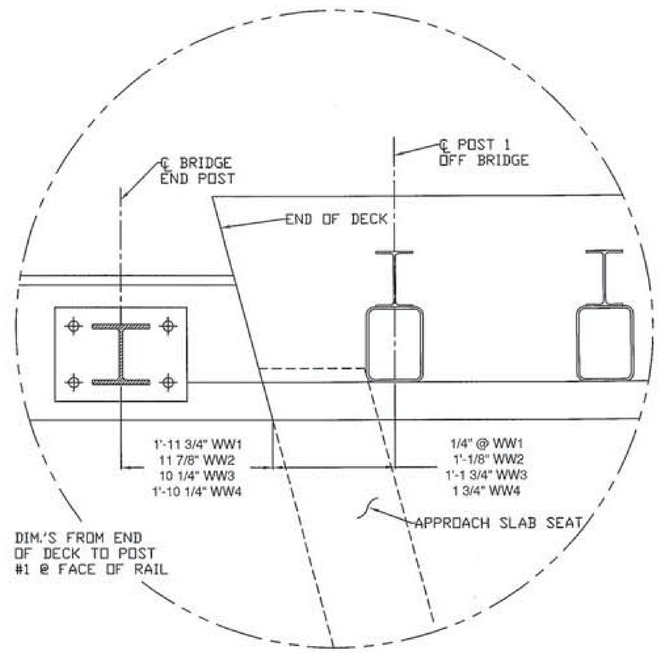


SLOTTED ROUND HEAD BOLT





ANCHOR PLATE



ITEM #: 525.335

SHEET 2 OF 2

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

BRIDGE RAIL DETAILS SHEET

TH-1, RURAL MAJOR COLLECTOR, FAS ROUTE 0211, BRIDGE # 8
TOWN OF HUNTINGTON, COUNTY OF CHITTENDEN, VT.

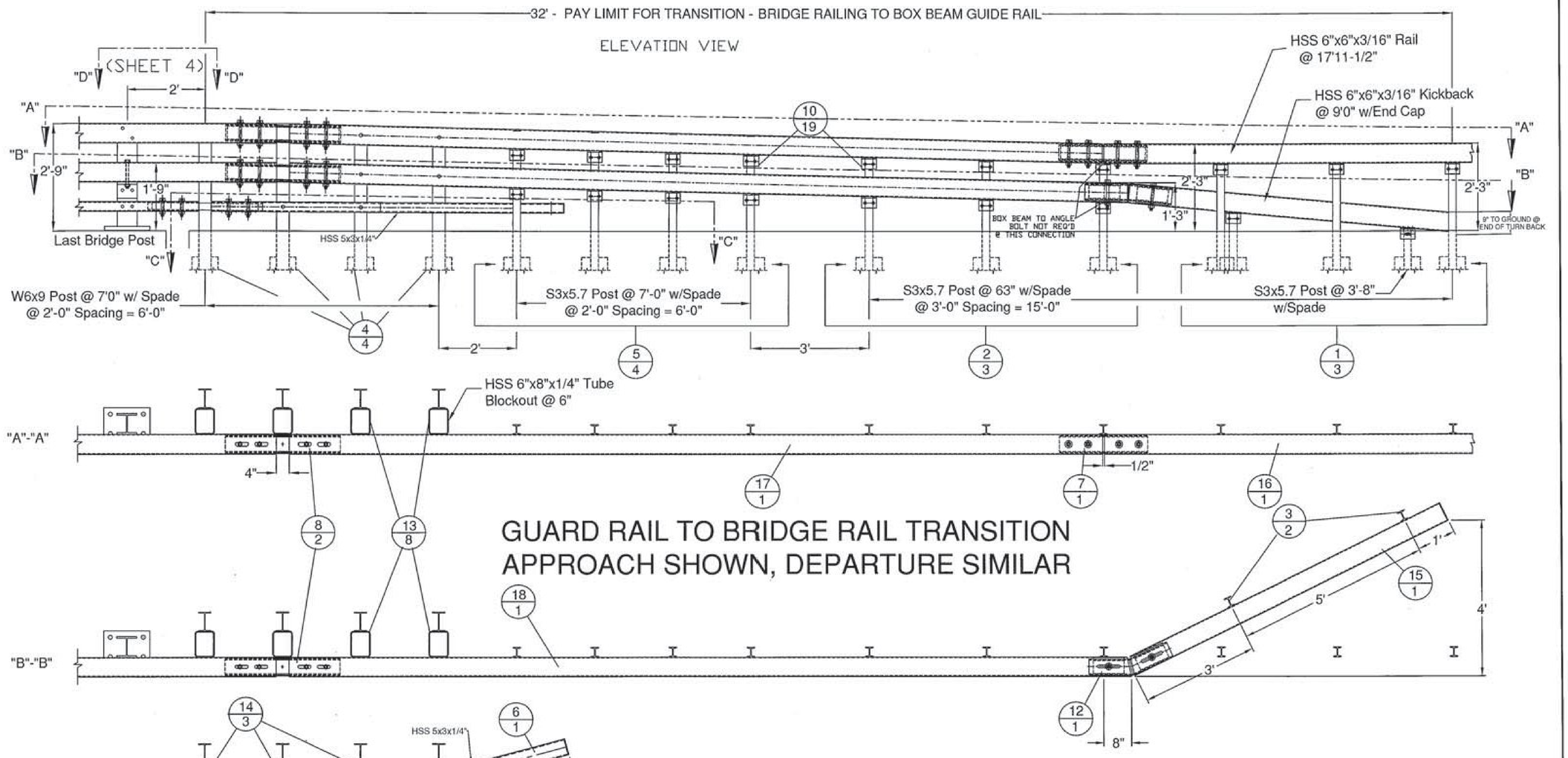
R E V	NO.	DATE	DESCRIPTION	BY
	1	2/8/17	REVISED PER 12/16/16 MARK-UP	EP

R E V	NO.	DATE	DESCRIPTION	BY

ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com, epeek@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

CERTIFIED FABRICATOR

DRAWN	E.P.	12/14/16
CHECKED	D.L.	.
APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L.-HUNTINGTON (SP)	



GUARD RAIL TO BRIDGE RAIL TRANSITION
APPROACH SHOWN, DEPARTURE SIMILAR

Vermont Agency of Transportation
RECEIVED
CK'D BY OK'D BY Rob Young
February 15, 2017
RESUBMIT No Approved
BY Rob Young DATE 02122201 r

ITEM #: 621.725

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

SHEET 1 OF 5

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TH-1, RURAL MAJOR COLLECTOR, FAS ROUTE 0211, BRIDGE # 8
TOWN OF HUNTINGTON, COUNTY OF CHITTENDEN, VT.

R	NO.	DATE	DESCRIPTION	BY
E	1	2/8/17	REVISED PER 12/16/16 MARK-UP	EP
V				

R	NO.	DATE	DESCRIPTION	BY
E				
V				

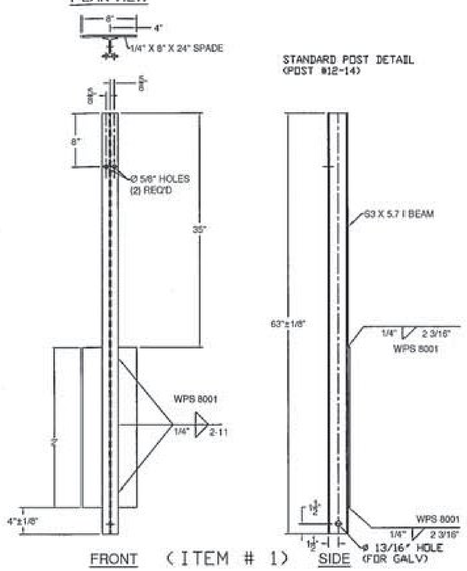
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
email: dlong@elderlee.com / epeek@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

CERTIFIED FABRICATOR

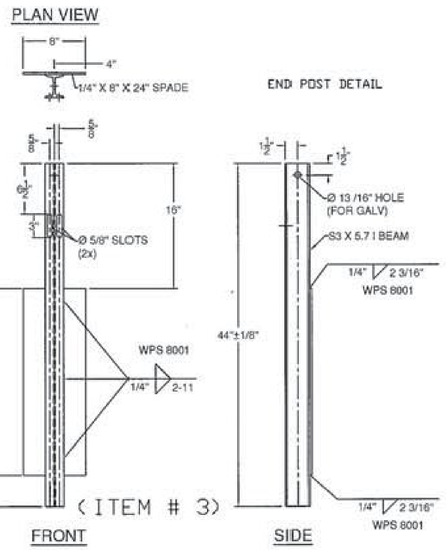
DRAWN	E.P.	12/14/16
CHECKED	D.L.	
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L. HUNTINGTON-(32)-T	

ORTHOGRAPHIC PROJECTION

PLAN VIEW



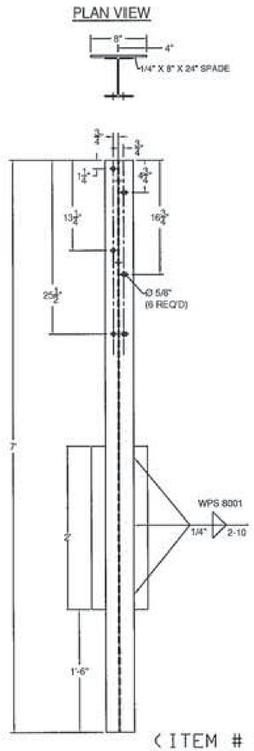
PLAN VIEW



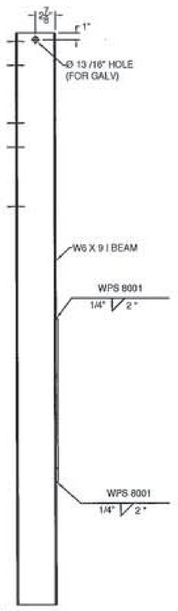
GENERAL NOTES:

1) ALL RAILING IS TO BE FABRICATED AND ERECTED ACCORDING TO SECTION 621 OF THE STANDARD SPECIFICATIONS.
2) BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 FT-LB).
3) PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE BOX BEAM RAILS, SPLICE TUBES AND FILL PLATES.
4) BOX BEAM TUBE AND STEEL POST MATERIALS, DIMENSION SIZES AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL, UNLESS OTHERWISE NOTED.
5) ANY BENDING OF RAIL SHALL BE DONE AT THE FABRICATION PLANT. RADII GREATER THAN 16' TO BE CURVED ON A TUBE BENDING MACHINE, RADII EQUAL OR LESS THAN 16' TO BE "PIE CUT" AND WELDED. CURVED RAILING WILL HAVE AN 18" LENGTH ON EACH END STRAIGHT TO ACCOMADATE SPLICES. "PIE CUTS ARE LOCATED SO AS TO NOT CONFLICT WITH POST FASTENING HOLES. PIE CUTS WILL BE WELDED ACCORDING TO PROCEDURE WPS-3026.

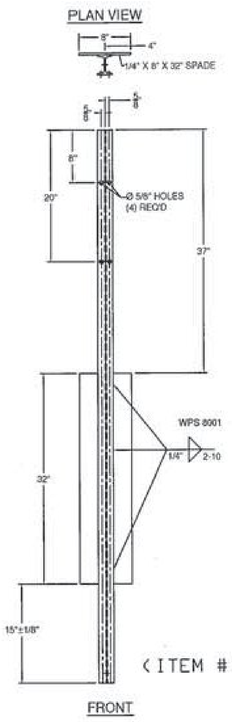
PLAN VIEW



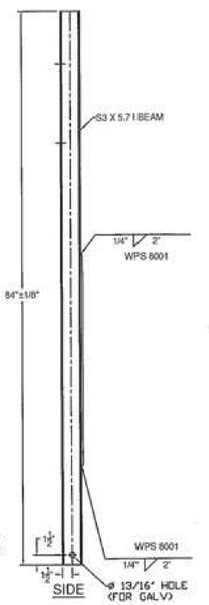
HEAVY POST DETAIL
(POST #1 ~ 4)



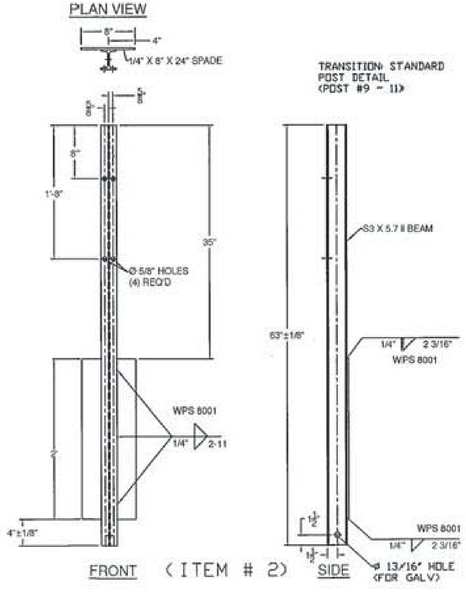
PLAN VIEW



TRANSITION POST DETAIL
(POST #5 ~ 9)



PLAN VIEW



BILL OF MATERIALS (EACH CORNER)

ITEM #	QTY.	COMPONENT #	DESCRIPTION	MATERIAL (ASTM)
1	3	0013.57021	S3 X 5.7 POST, PUNCH 8' W/SPD @ 63" LG	ASTM A572 Gr. 50
2	3	0013.57025	S3 X 5.7 POST, PUNCH 8', & 20' W/SPD @ 63" LG	ASTM A572 Gr. 50
3	2	0013.57060	S3 X 5.7 END POST W/SPD @ 3'-8" LG	ASTM A572 Gr. 50
4	4	0013.09001	W6 X 9 POST @ 7' W/SPD & 5/8" HOLES	ASTM A572 Gr. 50
5	4	0013.57010	S3 X 5.7 POST, PUNCH 8' & 20', W/8X32" SPADE @ 7'	ASTM A572 Gr. 50
6	1	0033.80403	3 X 5' BTM TRANS RAIL W/ 5'-0" KB, EXP END	A500 Gr. B
7	1	0033.00640	HSS 5X5 TUBE SPLICE @ 27" LG W/ 1/4" SHIMS	A500 Gr. B / A572 Gr 50
8	2	0033.00730	HSS 5x5 EXP TUBE SPLICE @ 36" LG W/ 1/4" SHIMS	A500 Gr. B / A572 Gr 50
9	1	0033.00930	BR EXP BAR SPLICE 2-1/8" X 4-1/4" @ 36" LG	ASTM A36
10	19	0054.00050	REG BB SHELF ANGLES @ 4-1/2"	ASTM A36
12	1	0054.00074	HSS 5 X 5 X 5/16" DBL BEND TUBE SPL @ 27" LG.	A500 Gr. B / A572 Gr 50
13	8	0054.00563	6 X 8 X 1/4" TRANS. TUBE B/O @ 6' LG	A500 Gr. B
14	3	0054.00565	6 X 8 X 1/4" TRANS. TUBE B/O @ 3' LG	A500 Gr. B
15	1	0054.09000	6 X 6 x 3/16" BB @ 9'-0" KICKBACK, W/ CAP, & MITER	A500 Gr. B / A36
16	1	0054.18000	6 X 6 x 3/16" BB @ 9'-0" (THIS PAY ITEM), DRILL 3' CC	A500 Gr. B
17	1	0054.90092	6 X 6 x 3/16" BB TOP TRANS @ 20'-9 5/8" LG W/EXP END	A500 Gr. B
18	1	0054.90093	6 X 6 x 3/16" BB BTM TRANS @ 21'-4 5/8" LG W/ EXP END	A500 Gr. B
19	18	0080.03355	3/8" X 7 1/2" BOLT, NUT, & 2 FW	A307, A563 DH, F436
20	19	0080.04100	1/2" x 1-1/2" BOLT, NUT, & FW	A307, A563 DH, F436
21	22	0080.04120	1/2" x 1-1/2" BOLT, NUT, 2 FW & LW	A307, A563 DH, F436
22	4	0080.06255	3/4" X 4-1/2" BOLT, NUT, 2 FW	A325, A563 DH, F436
23	12	0080.06340	3/4" X 7-1/2" BOLT, NUT, 2 FW	A325, A563 DH, F436
24	6	0080.06370	3/4" X 8" CARR BOLT, NUT, FW & LW	A307, A563 DH, F436
25	2	0080.06400	3/4" X 8" BOLT, NUT, 2 FW, & LW	A325, A563 DH, F436

HARDWARE NOTES

ITEM #	FUNCTION
19	BOLT RAIL TO SHELF ANGLE (ITEM #10)
20	BOLT SHELF ANGLE (ITEM #'S 10 & 11) TO POST
21	BOLT BLOCK-OUTS (ITEM #'S 13 & 14) TO HEAVY POST
22	(4) PER SPLICE BAR (ITEM #9)
23	(4) PER SPLICE TUBING (ITEM #'S 7 & 8)
24	BOLT RAIL (ITEMS #'S 6,17, & 18 TO BLOCK-OUTS (ITEM #'S 13 & 14) [WHERE FASTENED]
25	BOLT DOUBLE BEND SPLICE TUBE (ITEM #12) TO RAIL (ITEM #18) & KICKBACK (ITEM #15)

APPLICABLE NOTES IN THE BRIDGE RAIL DRAWING SHALL ALSO BE APPLICABLE ON THESE DRAWINGS

Vermont Agency of Transportation
RECEIVED
CK'D BY ____ OK'D BY Rob Young
February 15, 2017
RESUBMIT No ____ Approved
BY Rob Young DATE 02/23/2017

ITEM #: 621.725

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

SHEET 2 OF 5

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TH-1, RURAL MAJOR COLLECTOR, FAS ROUTE 0211, BRIDGE # 8
TOWN OF HUNTINGTON, COUNTY OF CHITTENDEN, VT.

R	NO.	DATE	DESCRIPTION	BY
E	1	2/8/17	REVISED PER 12/16/16 MARK-UP	EP
V				

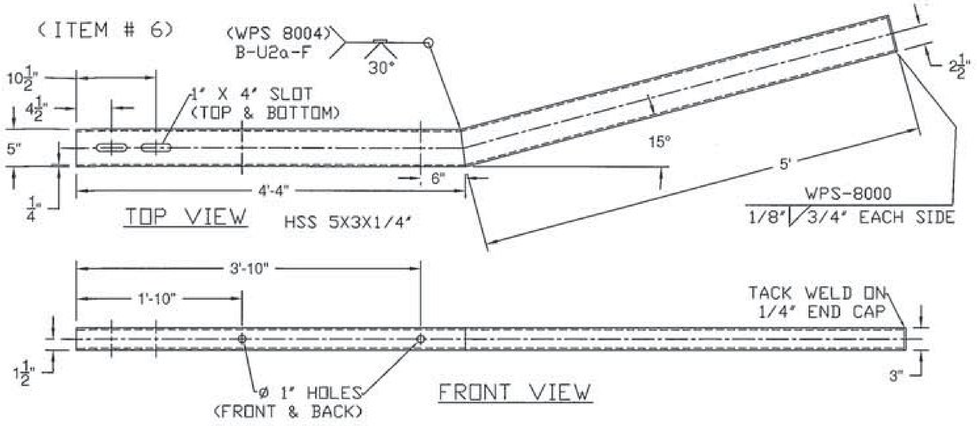
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E				
V				

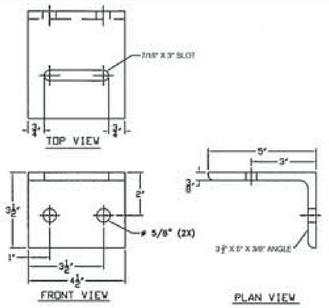
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
email: dlong@elderlee.com / epeck@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

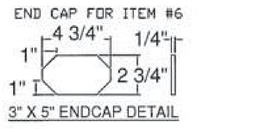
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ORTHOGRAPHIC PROJECTION

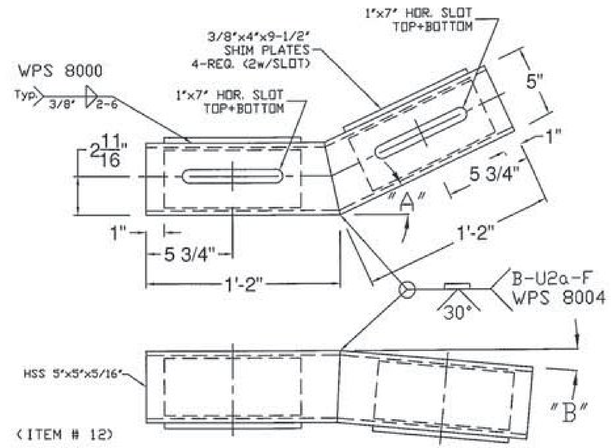
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CHECKED	D.L.	.
APPROVED	.	.
SCALE	SCHEMATIC	

DRAWING NO. F.R.L. HUNTINGTON-(32)-T

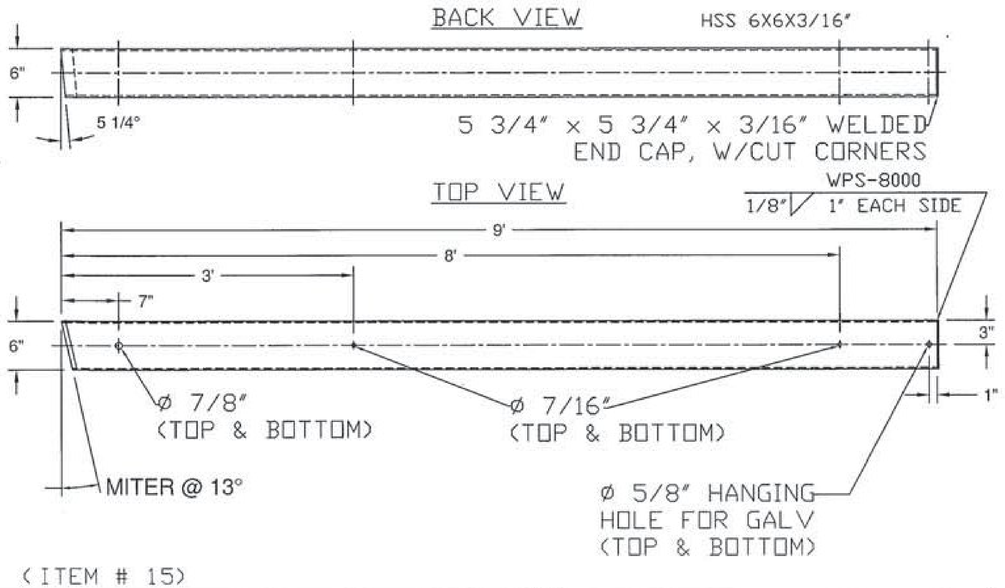


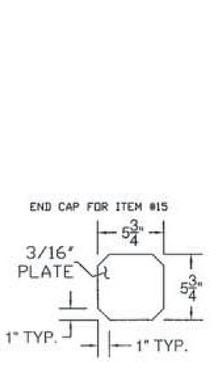


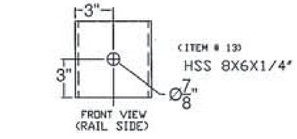


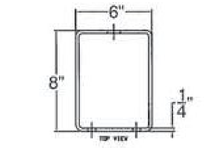


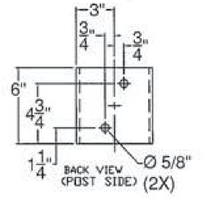
'A' - SEE PLAN FOR TURN BACK DISTANCE, SET ANGLE ACCORDINGLY.
'B' - TURN DOWN ANGLE SET BY THE 9" MEASURMENT AT THE END OF THE BOX BEAM.
HARDWARE PER SHEET 2, HARDWARE NOTES

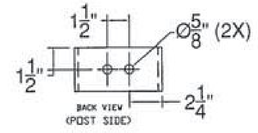


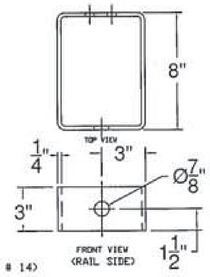












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ITEM #: 621.725

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TH-1, RURAL MAJOR COLLECTOR, FAS ROUTE 0211, BRIDGE # 8
TOWN OF HUNTINGTON, COUNTY OF CHITTENDEN, VT.

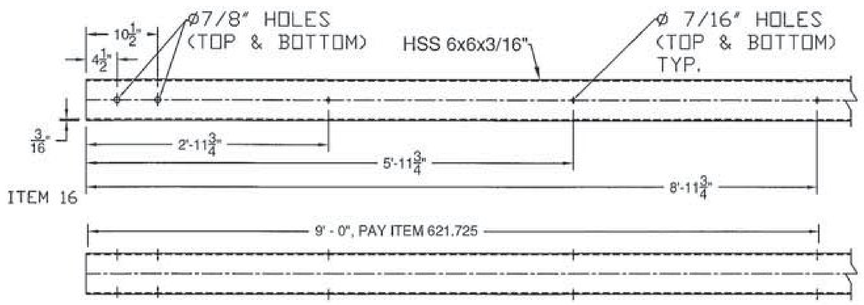
R E V	NO.	DATE	DESCRIPTION	BY
	1	2/8/17	REVISED PER 12/16/16 MARK-UP	EP

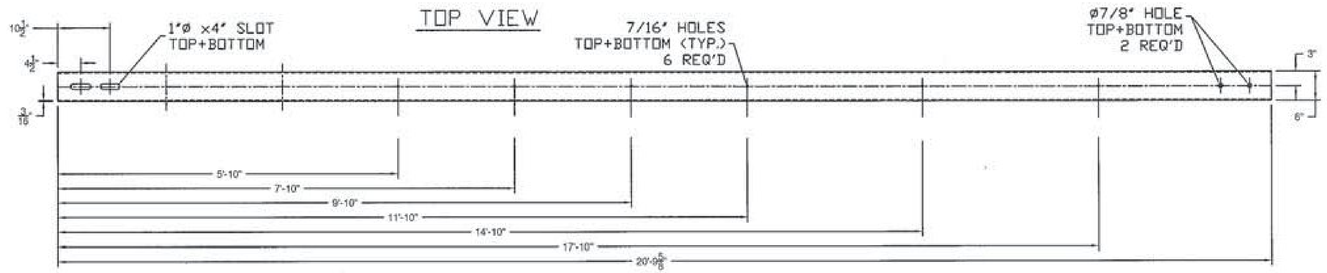
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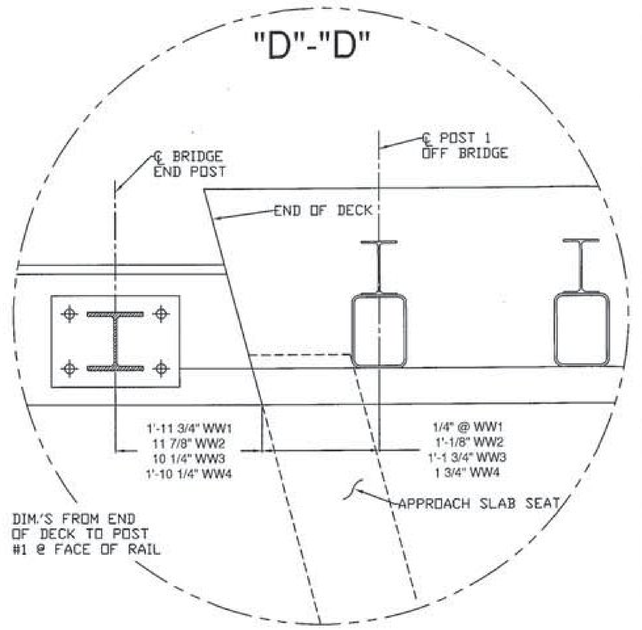
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email: dlong@elderlee.com / epeek@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

CERTIFIED FABRICATOR
ORTHOGRAPHIC PROJECTION

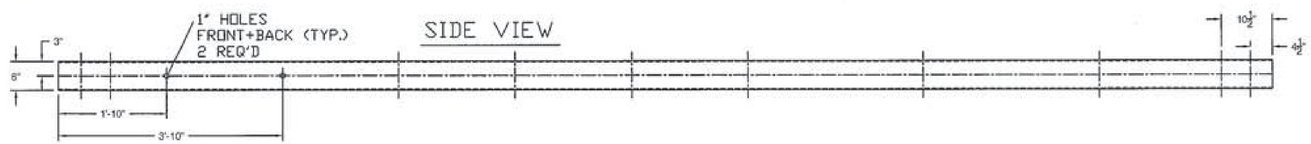
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CHECKED	D.L.	
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L. HUNTINGTON (32)-T	

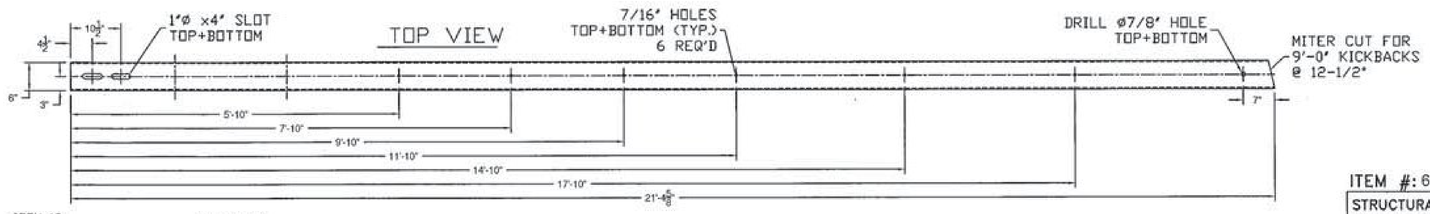




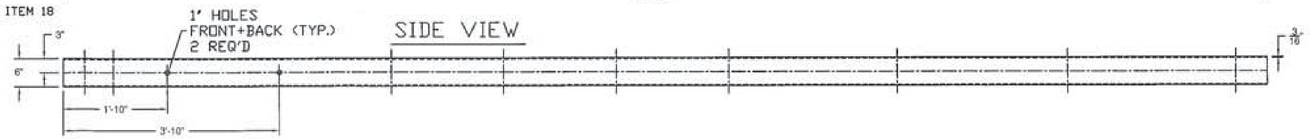


ITEM 17





ITEM 18



Vermont Agency of Transportation
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BY Rob Young DATE 02/23/2017

ITEM #: 621.725

SHEET 4 OF 5

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TH-1, RURAL MAJOR COLLECTOR, FAS ROUTE 0211, BRIDGE # 8
TOWN OF HUNTINGTON, COUNTY OF CHITTENDEN, VT.

R	NO.	DATE	DESCRIPTION	BY
E	1	2/8/17	REVISED PER 12/16/16 MARK-UP	EP
V				

R	NO.	DATE	DESCRIPTION	BY
E				
V				

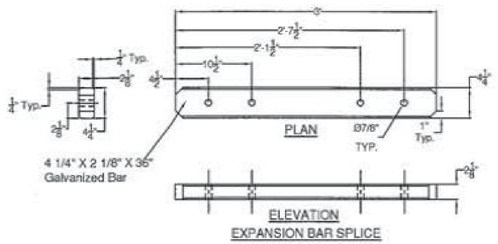
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
email: dlong@elderlee.com / epeek@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

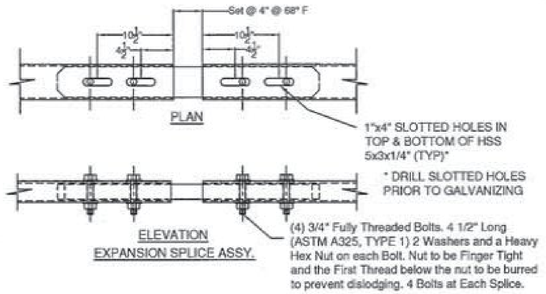
CERTIFIED FABRICATOR
ORTHOGRAPHIC PROJECTION

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CHECKED	D.L.	-
APPROVED	-	
SCALE	SCHEMATIC	

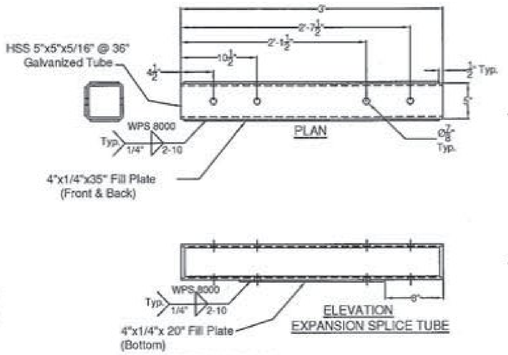
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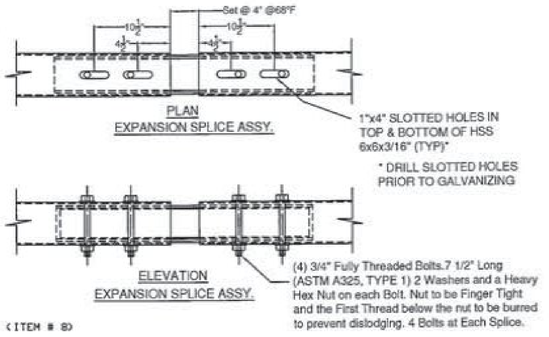
SPLICE BAR - EXPANSION





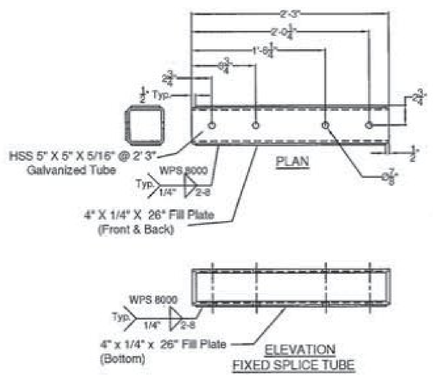
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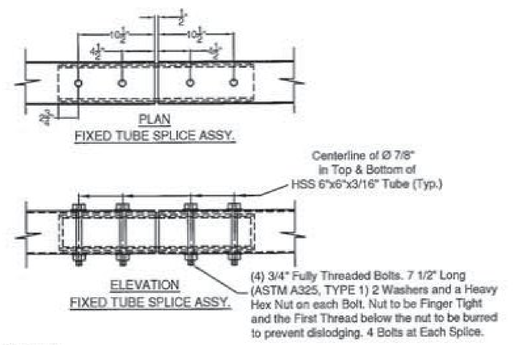




(ITEM # 8)

SPLICE TUBE - EXPANSION





(ITEM # 7)

SPLICE TUBE - FIXED

Vermont Agency of Transportation
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BY Rob Young DATE 03221201?

ITEM #: 621.725

SHEET 5 OF 5

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

TOLERANCE UNLESS OTHERWISE NOTED:
FRACTIONS = ± 1/16"
ANGLES = ± 1/2°
DIAMETERS = ± 1/32"

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

TH-1, RURAL MAJOR COLLECTOR, FAS ROUTE 0211, BRIDGE # 8
TOWN OF HUNTINGTON, COUNTY OF CHITTENDEN, VT.

R	NO.	DATE	DESCRIPTION	BY	R	NO.	DATE	DESCRIPTION	BY
E	1	2/8/17	REVISED PER 12/16/16 MARK-UP	EP	E				
V					V				

ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
email: dlong@elderlee.com / epeek@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

NCERTIFIED FABRICATOR
ORTHOGRAPHIC PROJECTION

DRAWN	E.P.	12/14/16
CHECKED	D.L.	.
APPROVED	.	.
SCALE	SCHEMATIC	

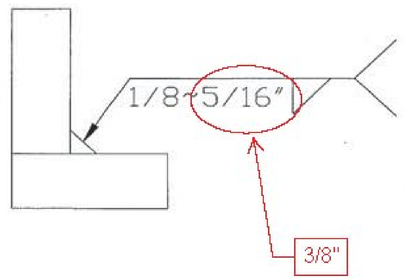
DRAWING NO. F.R.L. HUNTINGTON-(32)-T

WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE # 3

Material Specification	A36/A500GR.B/A53/A572GR.36/50/A709GR.36/50/A108 / A307/A325/A563/A449				
Welding Process	FCAW				
Manual or Machine	SEMAUTOMATIC				
Position of Welding	FLAT/HORIZONTAL				
Filler Metal Specification	A5.29				
Filler Metal Classification	E81T1-NI1C-JH4	LINCOLN ULTERCORE 81i1C-H			
Flux	N/A				
Shielding Gas	CO 2	Dew Point -40DEG F	Flow Rate	50CFH	
Single or Multiple Pass	SINGLE			(45 TO 63 CFH)	
Single or Multiple Arc	SINGLE				
Welding Current	DC				
Polarity	REVERSE ELECTRODE POSITIVE		CTWD 3/4"		
Welding Progression	STRINGER				
Root Treatment	ROOT SHALL BE CLEAN AND FREE OF FOREIGN MATTER				
Preheat and Interpass Temperature	MIN PREHEAT 50 DEG ≤ 0.75" 70 DEG > 0.75" MAX INTERPASS 400 DEG				
Postheat Temperature	NONE				
Heat Input	Min 33.92		Max 50.42		

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current Amperes	Welding Current Volts	Travel speed	Joint detail
1	1/16	310	25	11	
		320 TO 285	26 TO 24	12.1 TO 9.9	

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. 8000
Revision No. 1

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 2/7/2017

Form III-2

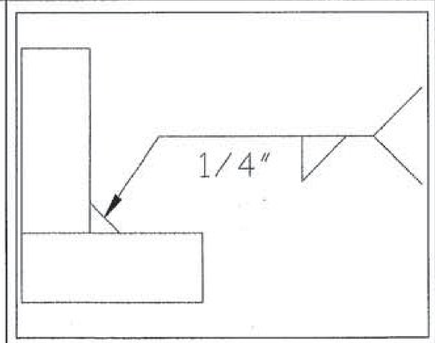
Vermont Agency of Transportation
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February 15, 2017
RESUBMIT No Approved AsNoted
BY Rob Young DATE 02/22/2017

WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE #4

Material Specification	A36/A572 GR. 36 / 50 / A709 GR. 36 / 50
Welding Process	GMAW
Manual or Machine	SEMAUTOMATIC ROBOTIC
Position of Welding	FLAT
Filler Metal Specification	A5.18
Filler Metal Classification	L-56 ER70S-6 LINCOLN
Flux	N/A
Shielding Gas	90% ARGON / 10% CO2 Dew Point -40DEG F Flow Rate 45CFH
Single or Multiple Pass	SINGLE
Single or Multiple Arc	SINGLE
Welding Current	DC
Polarity	REVERSE ELECTRODE POSITIVE CTWD 3/4"
Welding Progression	STRINGER
Root Treatment	ROOT SHALL BE CLEAN AND FREE OF FOREIGN MATTER
Preheat and Interpass Temperature	MIN PREHEAT 50 DEG ≤ 0.75" 70 DEG > 0.75" MAX INTERPASS 400 DEG
Postheat Temperature	NONE
Heat Input	Min 10.56 Max 15.84

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current Amperes	Welding Current Volts	Travel speed	Joint detail
1	.045	190	22	19	
		171 TO 200	20 TO 23	18 TO 21	

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. 8001
Revision No. 1

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 2/7/2017

Form III-2

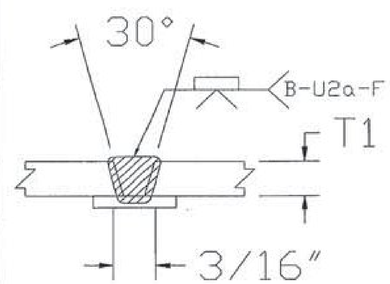
Vermont Agency of Transportation
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WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE #3

Material Specification	A36/A500GR.B/A53/A572GR.36/50/A709GR.36/50/A108				
Welding Process	FCAW				
Manual or Machine	SEMAUTOMATIC				
Position of Welding	FLAT				
Filler Metal Specification	A5.29				
Filler Metal Classification	E81T1-NI1C-JH4	LINCOLN ULTERCORE 81i1C-H			
Flux	N/A				
Shielding Gas	CO 2	Dew Point	-40DEG F	Flow Rate	50CFH (45 TO 63 CFH)
Single or Multiple Pass	SINGLE				
Single or Multiple Arc	SINGLE				
Welding Current	DC				
Polarity	REVERSE	ELECTRODE POSITIVE		CTWD 3/4"	
Welding Progression	STRINGER				
Root Treatment	ROOT SHALL BE CLEAN AND FREE OF FOREIGN MATTER				
Preheat and Interpass Temperature	MIN PREHEAT 50 DEG ≤ 0.75" 70 DEG > 0.75"			MAX INTERPASS 400 DEG	
Postheat Temperature	NONE				
Heat Input	Min	33.92	Max	50.42	

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current Amperes	Welding Current Volts	Travel speed	Joint detail
1	1/16	310	25	11	
		320 TO 285	26 TO 24	12.1 TO 9.9	

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. 8004
Revision No. 1

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 2/7/2017

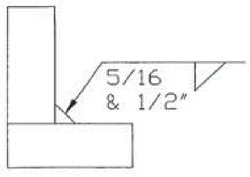
Form III-2

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BY Rob Young
DATE 02/22/2017

WELDING PROCEDURE SPECIFICATION

Material Specification	ASTM A36 / A572 / A709 GR. 36 / 50
Welding Process	FCAW
Manual or Machine	SEMI AUTOMATIC
Position of Welding	FLAT
Filler Metal Specification	A5.20
Filler Metal Classification	E70 LINCOLN OUTERSHEILD E70T-1
Flux	N/A
Shielding Gas	CO 2 Dew Point -40DEG F Flow Rate 50 CFM (45 TO 63 CFH)
Single or Multiple Pass	SINGLE
Single or Multiple Arc	N/A
Welding Current	DC
Polarity	DCEP CTWD 3/4"
Welding Progression	STRINGER
Root Treatment	ROOT SHALL BE CLEAN AND FREE OF FOREIGN MATTER
Preheat and Interpass Temperature	MIN PREHEAT 50 DEG ≤ 0.75" 70 DEG > 0.75" MAX INTERPASS 400 DEG
Postheat Temperature	NONE
Heat Input	Min 42 Max 63.84

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current Amperes	Welding Current Volts	Travel speed	Joint detail
1	3/32	390 350 TO 418	27 26 TO 28	12 11 TO 13	

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. 8007
Revision No. 1

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 2/8/2017

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