Proposed Bridge Improvement Project

Woodstock - BRO 1444 (55)

Bridge #23 Over Bridgewater Brook

Concrete:

Required Strengths:
1. Mix Design - 6000 PSI
2. Striping Strength - 4500 PSI
3. Handling Strength - 4500 PSI
4. Shipping Strength - 4500 PSI
5. Placement Strength - 6000 PSI

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

Design Notes:
1. Design is in accordance w/ ASTM C1433, PCI MNL135, VAOT540 & AASHTO 2010 LRFD Bridge Design Specs Fifth Edition
2. Any conlfict between tolerances listed above shal result in the usage of the stricter tolerance
3. Design Live Load = AASHTO HL-93
4. Rails: TL-3
5. Materials and Manufacturing shall conform to ASTM C1433

Coating Units:
1. Water repellant; Silane shall be applied to all the exposed concrete surfaces except the under side of the rigid frame with sprayer.

Installation:

1. Sub Base for footing to be compacted and level
2. Precast footers to be installed and bolted together
3. Bearing Pad/Shim packs to be used for leveling and elevating of rigid frame within groove/pocket provided in footers
4. Bolt rigid frame units together w/ provided hardware
5. Clean granular fill used for backfill for footers and rigid frame units so water can reach weep holes if applicable
6. Fill all lifting holes, bolt pockets, fotting/rigid frame grooves and seams w/ non-shrink grout

Reinforcing:

General Notes:
1. Reinforing Steel - ASTM A615, Grade 60 (Unless Noted Otherwise)
   a. Precast Pedestal Walls and Footings shall be Level I
   b. Precast Frame, Wingwalls & Headwalls shall be Level II
2. Materials and Manufacturing shall conform to ASTM C1433
3. Bar Spacing 12" or Greater Tied at Every Intersection

Tolerances:
1. Spacing ±1"
2. Clearance ±1/4"

Lap Lengths:
1. Per AASHTO 5.11.2.1.1 & 5.11.5.3.1

Lap Length for Level I (Plain):
#4 Bar=12" #6 Bar=23"
#5 Bar=17" #7 Bar=31"
#8 Bar=41"

Lap Lengths for Level II:
#4 Bar=17" #6 Bar=39"
#5 Bar=27" #7 Bar=53"
#8 Bar=69"

Joint Treatment:

Vertical Seams:
Per VTrans Approved Product List 780.02
Overhead & Vertical Concrete Repair Mortar

Horizontal Seams / Grout:
Per VTrans Approved Product List 707.03
Mortar, Type IV

Waterproofing:

1. Membrane waterproofing will be specified by the Bridge Preservation Company in a seperate attachment.
2. Silane 40 shall be applied on all exposed concrete surfaces.

Miscellaneous:

1. All exposed hardware to be galvanized.
2. All Exposed Threaded Bar, Couplers & Hardware for dead men is to be Galvanized and Coated After Install w/ Bituminous Coating
3. All bolts & threaded rods to be ASTM F1554 Grade 105 Unless Noted Otherwise
4. Guardrail spacing has been coordinated with these shop drawings. Any interference in the field is to be adjusted as needed in the field
5. All Exposed Edges of Concrete Shall be Chamfered 1"x1"

Legend:

(A) Starcon 20T-19¾" Lift Anchor

(B) Mechanical Bolt Pocket (A.L. Patterson w/ 1"Ø Galv. Rod)

(C) Oxford A750-7 Lifting Device

(D) 1½"x3½" Continuous Keyway

(E) ⅝" Zinc Insert (P.A. Insert Corp.)

(F) Solid Lines Indicate 1" Chamfered Edge (Isometrics)

(G) 1¼" Galvanized Threaded Insert (Meadow Burke CX-51) 7½" Long

(H) 8"x8"x3" Pocket w/ 2" Ø PVC Sleeve

(I) 1½"x5½" Continuous Keyway

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	29.0	41.8	54.4	96.4	49.2	68.3	71.4
Posting							
Operating	37.6	54.4	70.2	125.4	63.9	88.7	92.3

CONTRACTORS VTSPE:

STATE OF VERMONT DAVID W. BOEHM No. 3581 REGISTERED PROFESSIONAL ENGINEER

1 06/24/13 - Modified Per State Review

Vermont Agency of Transportation
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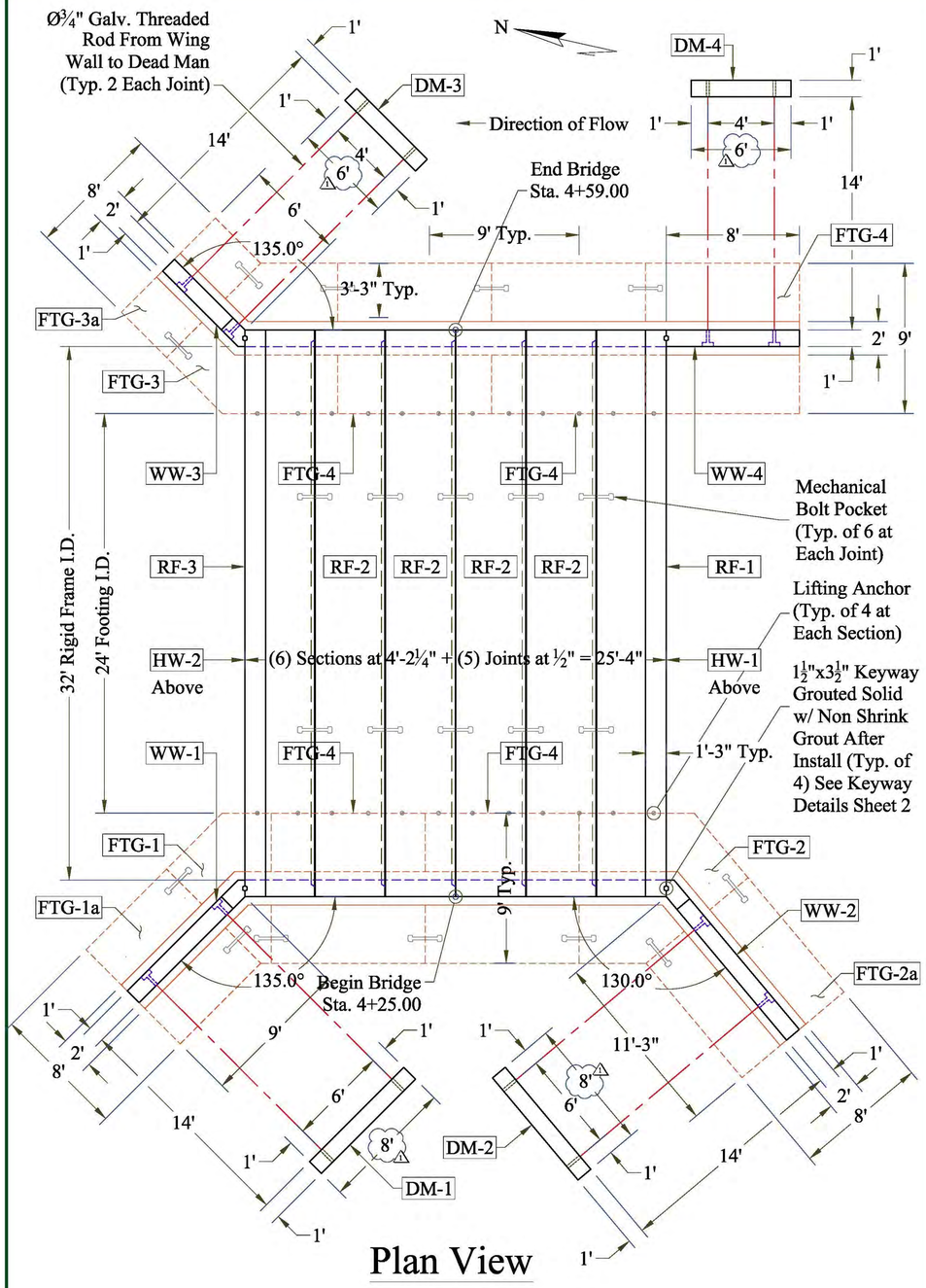
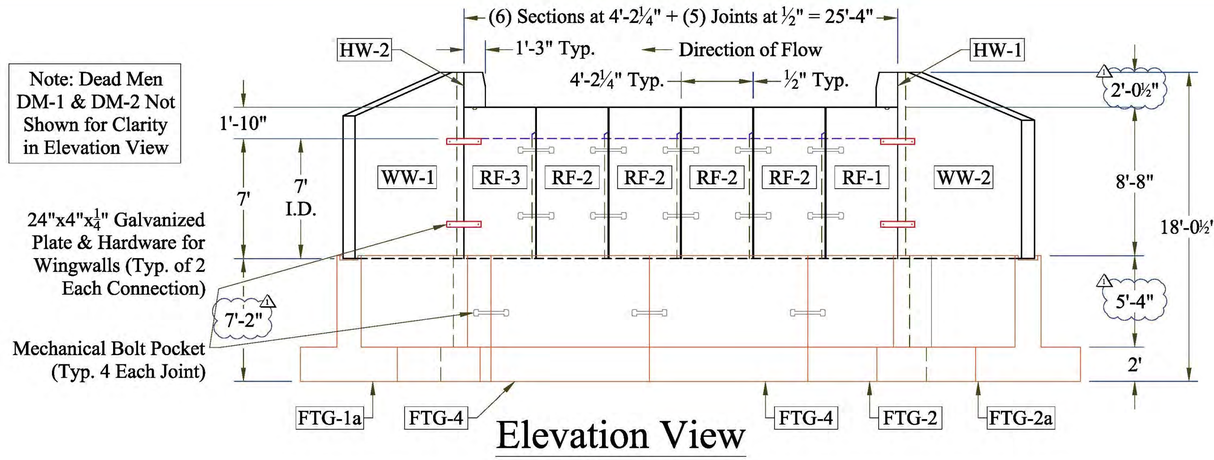
RESUBMIT NO Approved
BY KH DATE 7-31-2013

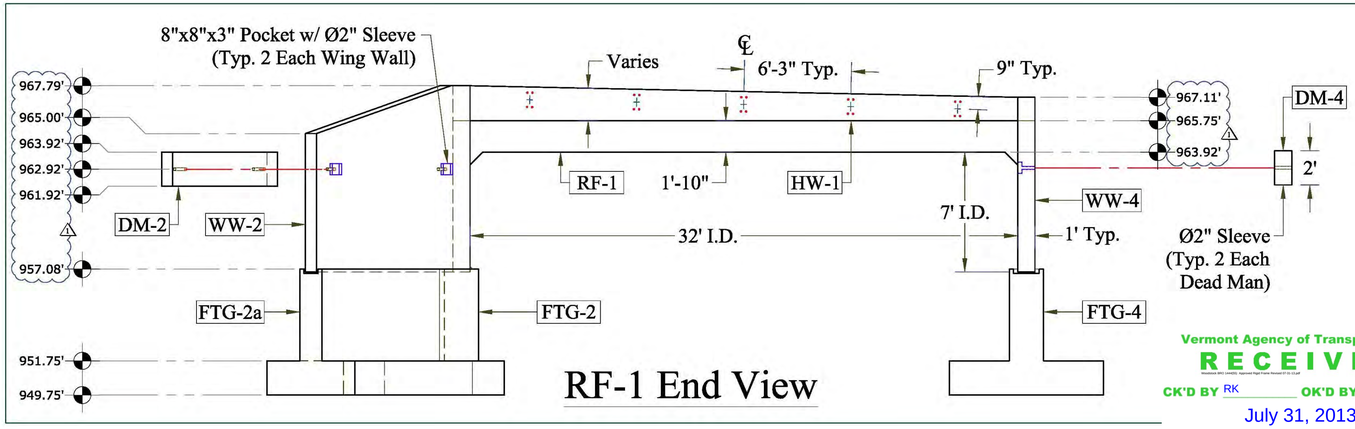
PRECAST CONCRETE RIGID FRAME SHOP DRAWINGS (SDI JOB# 13429)		CONTRACTOR: B.U.R. CONSTRUCTION CLAREMONT, NH 03743 Ph: (603) 542-2801	FABRICATOR: 193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0201 SD Ireland Precast Division
SUPERVISOR: M. WHEELER	PROJECT NAME: WOODSTOCK		
DETAILER: C. DUPLANTIS	PROJECT #: BRO 1444 (55)		
CHECKER: M. WHEELER	LOCATION: WOODSTOCK, VT		
ENGINEER: ENGINEERING VENTURES	BRIDGE: #23 ON TOWN HWY 6	05/30/13	PRECAST NOTES, SPECIFICATIONS AND LEGEND | 1 OF 6



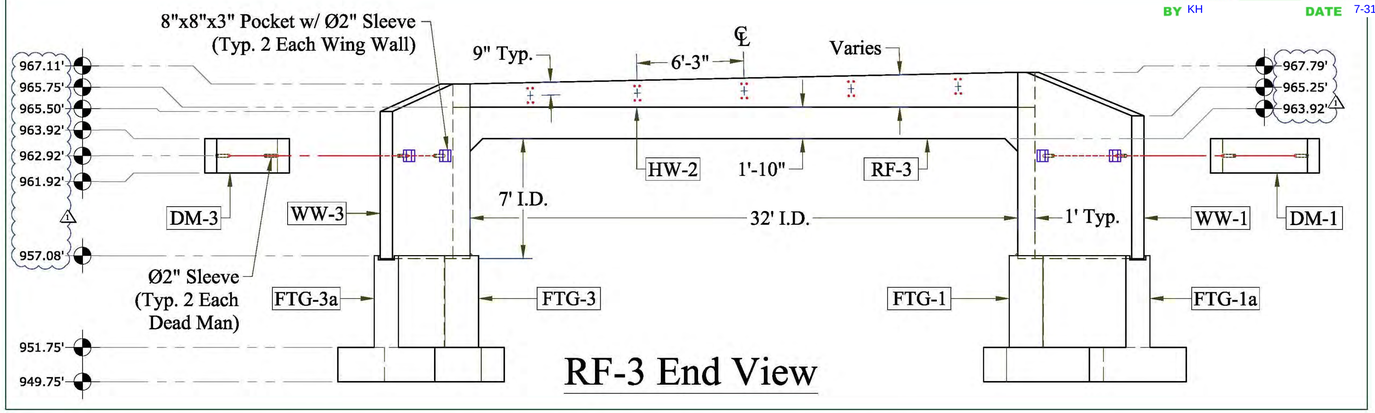
Plan View



Elevation View



RF-1 End View



RF-3 End View

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Table of Units * RF-1 & RF-3 Includes Headwall Weights ** Weights May Vary

Name	Qty	Length	Vol (CY)	Wt (lbs)**	Name	Qty	Length	Vol (CY)	Wt (lbs)**	Name	Qty	Length	Vol (CY)	Wt (lbs)**
RF-1*	1	4'-2¼"	14.54	58,185	FTG-2a	1	8'-11⅝"	8.73	34,920	WW-3	1	6'-0"	2.18	8,735
RF-2	4	4'-2¼"	11.93	47,705	FTG-3	1	10'-3½"	8.37	33,475	WW-4	1	8'-0"	2.84	11,355
RF-3*	1	4'-2¼"	14.54	58,185	FTG-3a	1	3'-10⅛"	3.75	14,970	DM-1	1	8'-0"	.59	2,370
FTG-1	1	6'-3½"	4.18	16,710	FTG-4	5	9'-3"	9.69	38,770	DM-2	1	8'-0"	.59	2,370
FTG-1a	1	6'-10⅛"	6.66	26,655	WW-1	1	9'-0"	3.31	13,225	DM-3	1	6'-0"	.44	1,780
FTG-2	1	10'-2"	8.19	32,790	WW-2	1	11'-3"	3.06	16,230	DM-4	1	6'-0"	.44	1,780

CONTRACTORS VTSPE:

STATE OF VERMONT DAVID W. BOOTH No. 3581 REGISTERED PROFESSIONAL ENGINEER

PRECAST CONCRETE RIGID FRAME SHOP DRAWINGS (SDI JOB# 13429)

SUPERVISOR: M. WHEELER
DETAILER: C. DUPLANTIS
CHECKER: M. WHEELER
ENGINEER: ENGINEERING VENTURES

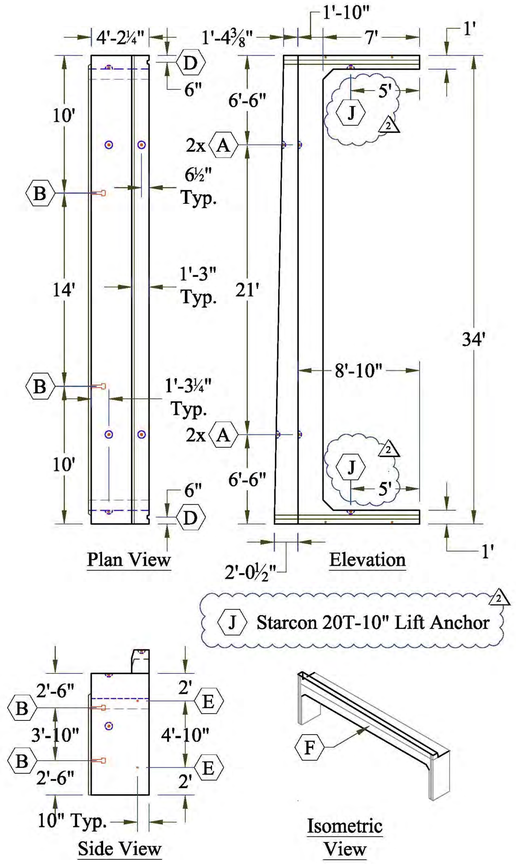
PROJECT NAME: WOODSTOCK
PROJECT #: BRO 1444 (55)
LOCATION: WOODSTOCK, VT
BRIDGE: #23 ON TOWN HWY 6

CONTRACTOR:
B.U.R. CONSTRUCTION
CLAREMONT, NH 03743
Ph: (603) 542-2801

FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 658-0201

SD Ireland Precast Division

05/30/13 | PRECAST RIGID FRAME LAYOUT & ELEVATIONS | 2 of 6



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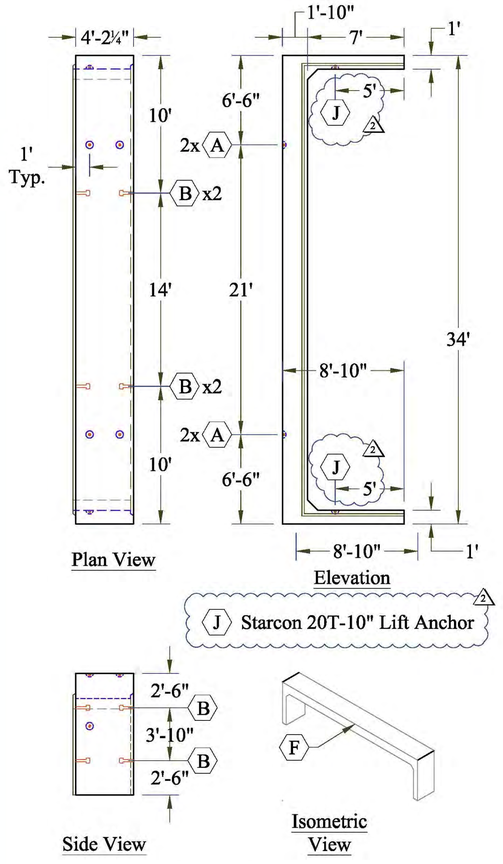
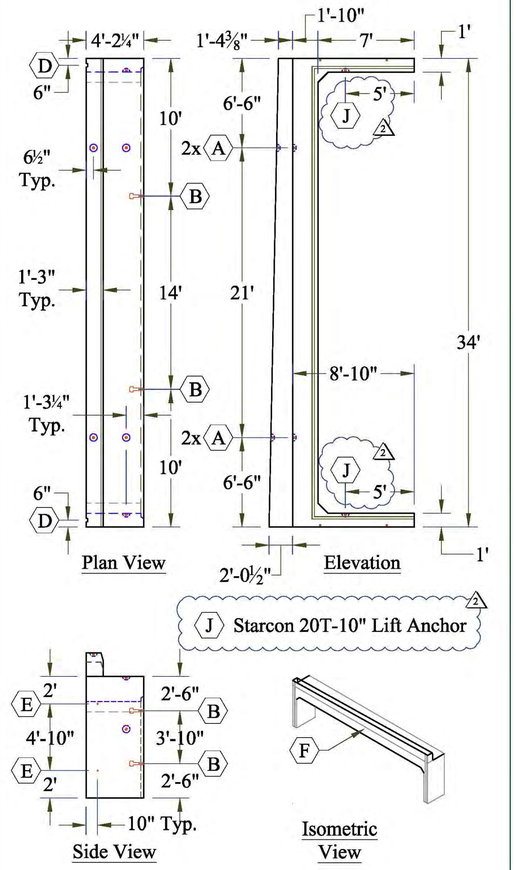


RF-2 Details



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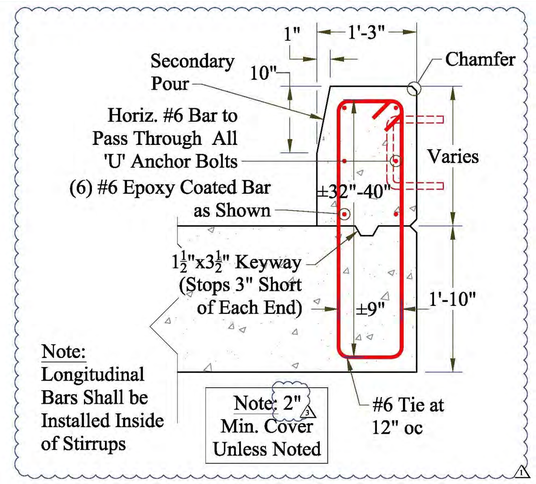

Head Wall Details

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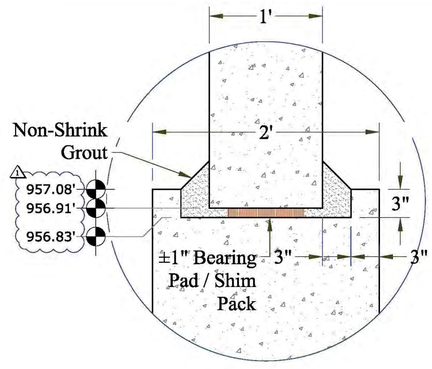
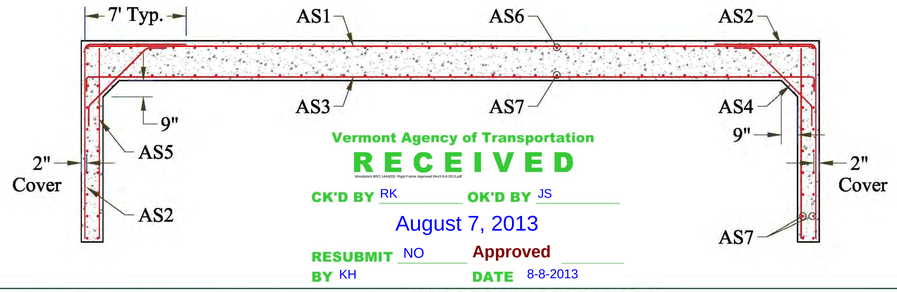


Rigid Frame to Wing Wall Joint

All 'A' Dimensions are Horizontal, All 'B' Dimesnsions are Vertical (Except Where Shown Otherwise)



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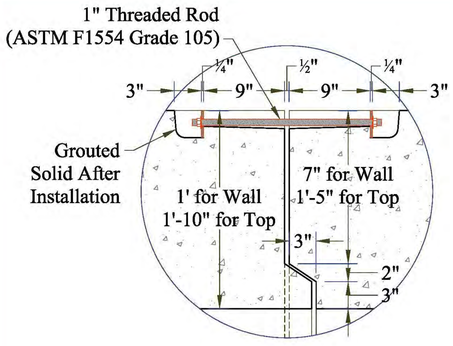
Rebar Reinforcing

Mark	Size	Max Spacing	Length	Type	A	B
As1	#4	10"	33'-8"	Straight	404"	
As2	#8	5"	15'-6"	L-Bar	84"	102"
As3	#8	5"	36'-4"	Hook End	404"	16"
As4	#5	10"	8'-8"	Hook End	50"	27"
As5	#5	10"	8'-6"	Straight	102"	
As6	#4	18"	3'-10¼"	Straight	46¼"	
As7	#4	18"	3'-10¼"	Straight	46¼"	



Rigid Frame Joint Detials

CONTRACTORS VTSPE:

* - Rebar to be Epoxy Coated

Note: 2" Min. Cover Typ. Unless Noted Otherwise

Note: All Rigid Frame & Headwall Reinforcing Shall be Level II

1 06/24/13 - Modified Per State Review
2 07/29/13 - Lifting Inserts Modified
3 08/07/13 - Headwall Tie Civer Modified

PRECAST CONCRETE RIGID FRAME SHOP DRAWINGS (SDI JOB# 13429)

SUPERVISOR: M. WHEELER
DETAILER: C. DUPLANTIS
CHECKER: M. WHEELER
ENGINEER: ENGINEERING VENTURES

PROJECT NAME: WOODSTOCK
PROJECT #: BRO 1444 (55)
LOCATION: WOODSTOCK, VT
BRIDGE: #23 ON TOWN HWY 6

CONTRACTOR:
B.U.R. CONSTRUCTION
CLAREMONT, NH 03743
Ph: (603) 542-2801

FABRICATOR:
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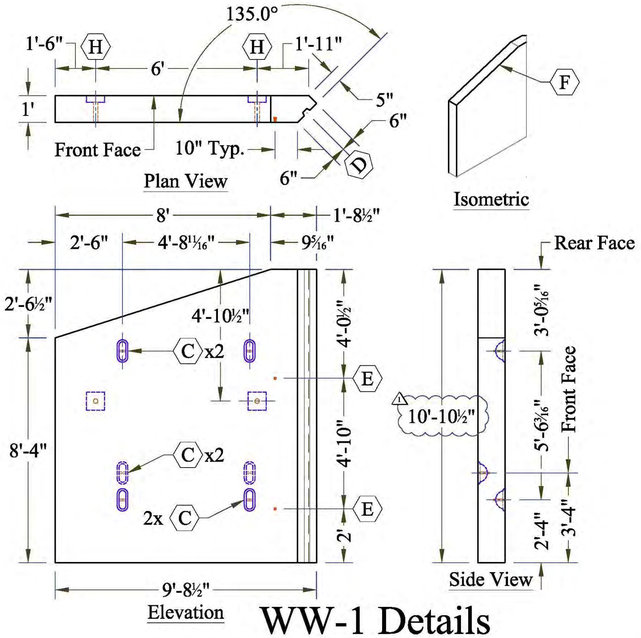
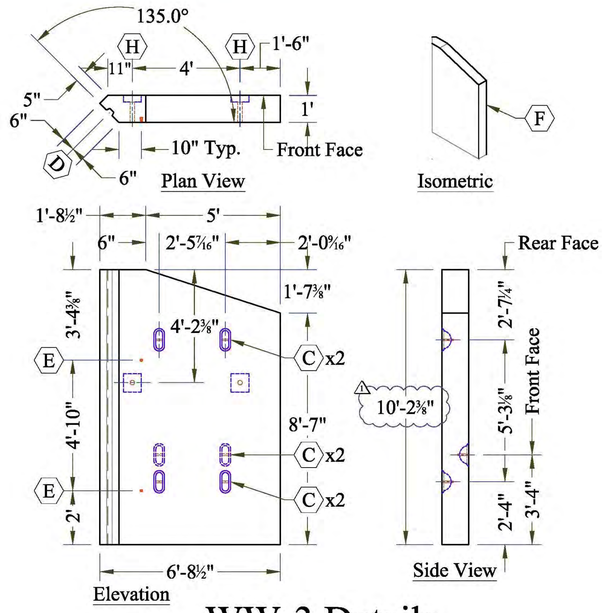
SD Ireland Precast Division

05/30/13 | PRECAST RIGID FRAME DETAILS & SECTIONS | 3 of 6



WW-1 Details



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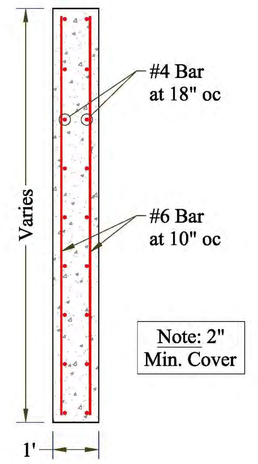
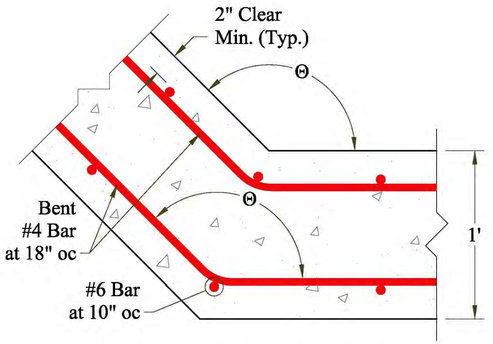


Rebar Reinforcing



Corner Rebar Detail

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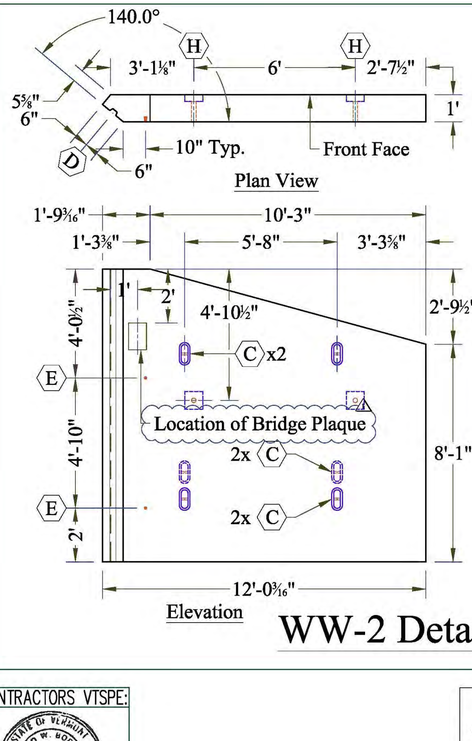
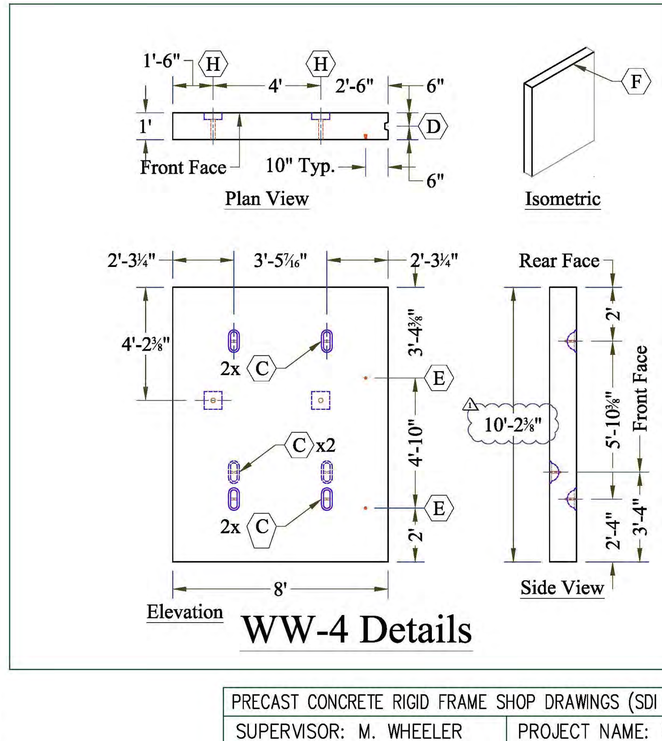
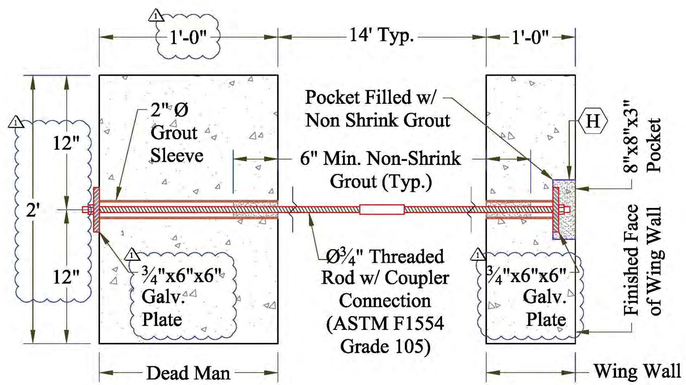


WW-2 Details



WW-4 Details



Dead Man/Wing Wall Connection

CONTRACTORS VTSPE:

STATE OF VERMONT DAVID W. BOEHM No. 3581 REGISTERED PROFESSIONAL ENGINEER

Note: Bridge Plaque Provided by Others. To be Cast Into WW-2 by the Precast Manufacturer or to be Installed in the Field by Contractor

⚠ 06/24/13 - Modified Per State Review

PRECAST CONCRETE RIGID FRAME SHOP DRAWINGS (SDI JOB# 13429)

SUPERVISOR: M. WHEELER	PROJECT NAME: WOODSTOCK
DETAILER: C. DUPLANTIS	PROJECT #: BRO 1444 (55)
CHECKER: M. WHEELER	LOCATION: WOODSTOCK, VT
ENGINEER: ENGINEERING VENTURES	BRIDGE: #23 ON TOWN HWY 6

CONTRACTOR:
B.U.R. CONSTRUCTION
CLAREMONT, NH 03743
Ph: (603) 542-2801

FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 658-0201

SD Ireland Precast Division

05/30/13 | WING WALL DETAILS, REINFORCING & SECTIONS | 4 of 6

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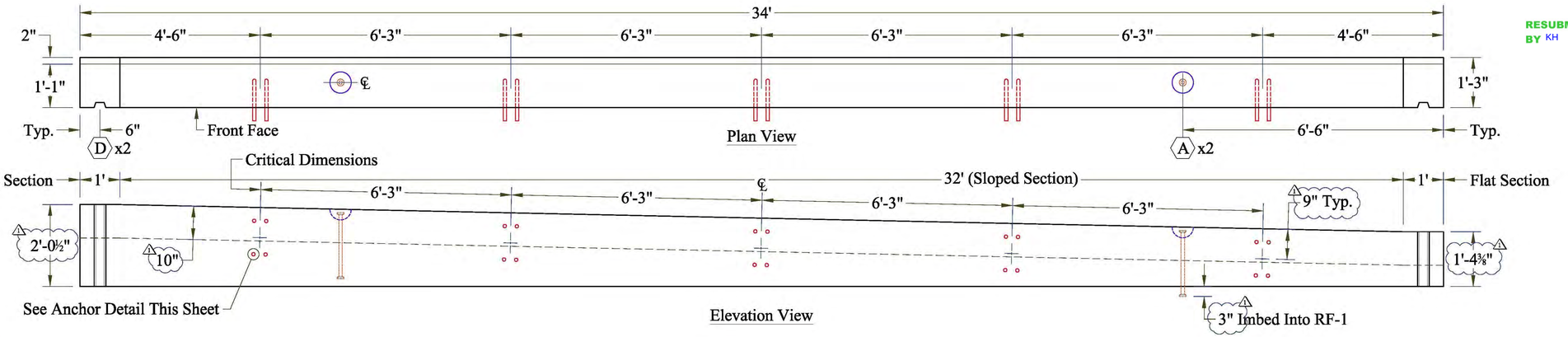
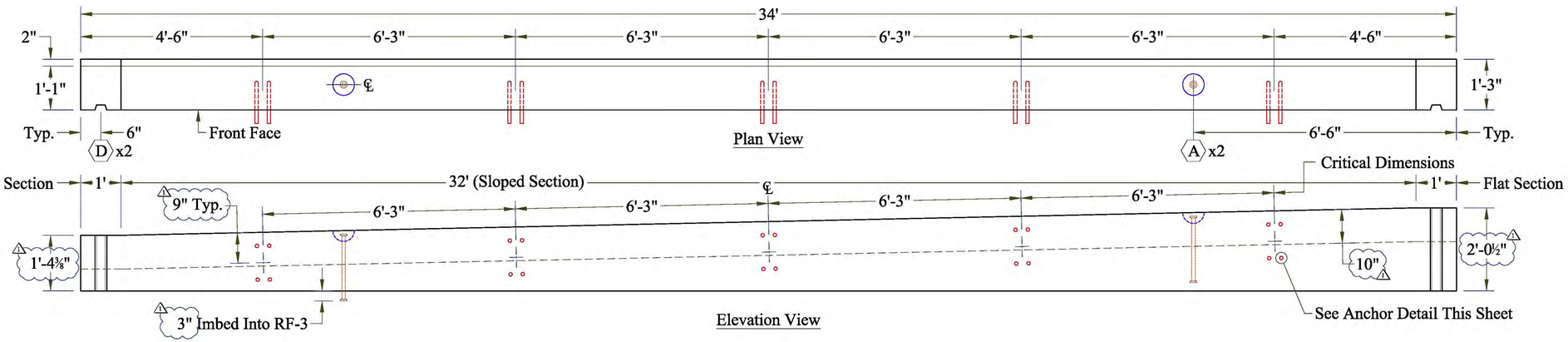
Note": See Sheet 3 for Section and Reinforcing



⚠1 06/24/13 - Modified Per State Review

HW-1 Details

Note": See Sheet 3 for Section and Reinforcing



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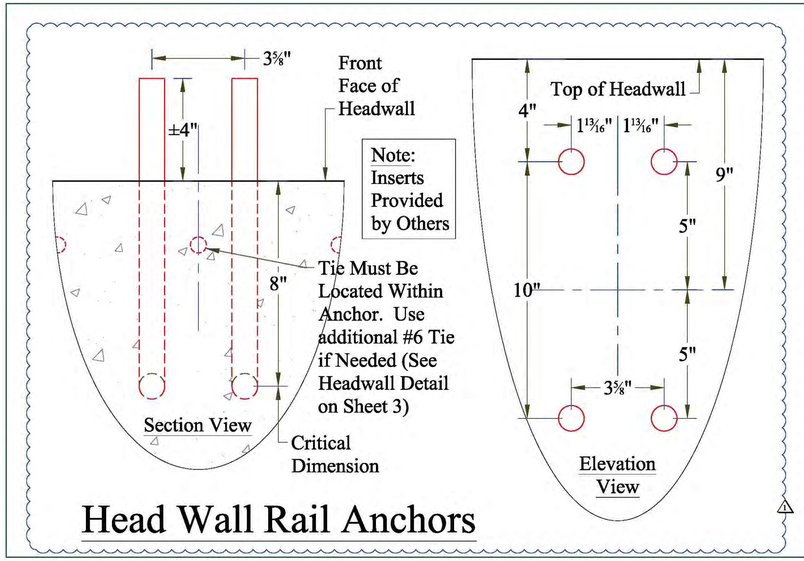
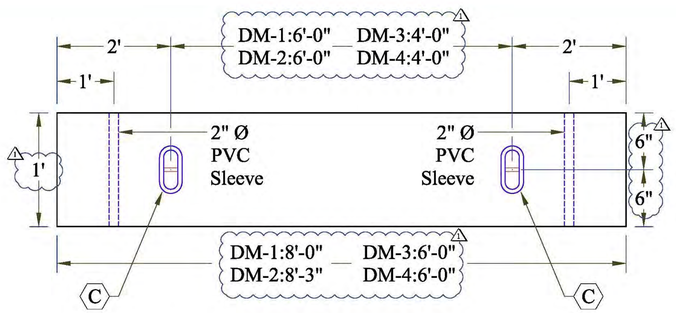
HW-2 Details

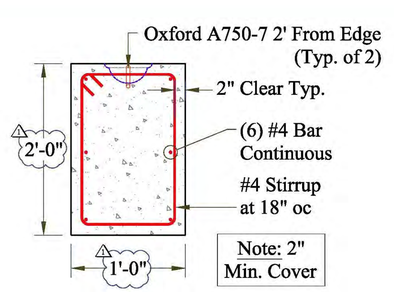


Head Wall Rail Anchors



Dead Man Plan View

⚠1 06/24/13 - Modified Per State Review



Dead Man Rebar

⚠1 06/24/13 - Modified Per State Review

CONTRACTORS VTSPE:

STATE OF VERMONT DAVID W. BOLDUC No. 3581 REGISTERED PROFESSIONAL ENGINEER

PRECAST CONCRETE RIGID FRAME SHOP DRAWINGS (SDI JOB# 13429)

SUPERVISOR: M. WHEELER	PROJECT NAME: WOODSTOCK
DETAILER: C. DUPLANTIS	PROJECT #: BRO 1444 (55)
CHECKER: M. WHEELER	LOCATION: WOODSTOCK, VT
ENGINEER: ENGINEERING VENTURES	BRIDGE: #23 ON TOWN HWY 6

CONTRACTOR:
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WILLISTON, VT 05495
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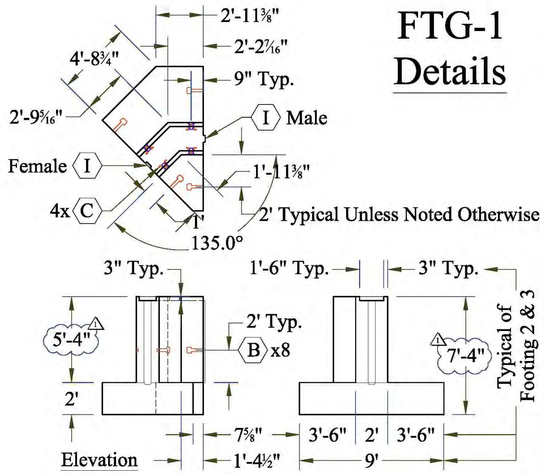
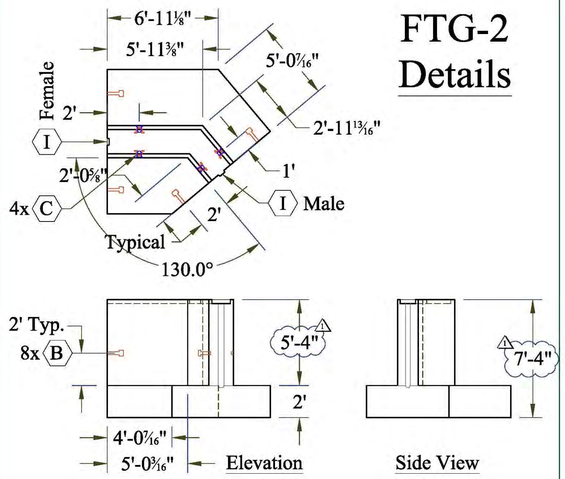
SD Ireland Precast Division

05/30/13 | HEAD WALL DETAILS, REINFORCING & SECTIONS | 5 of 6

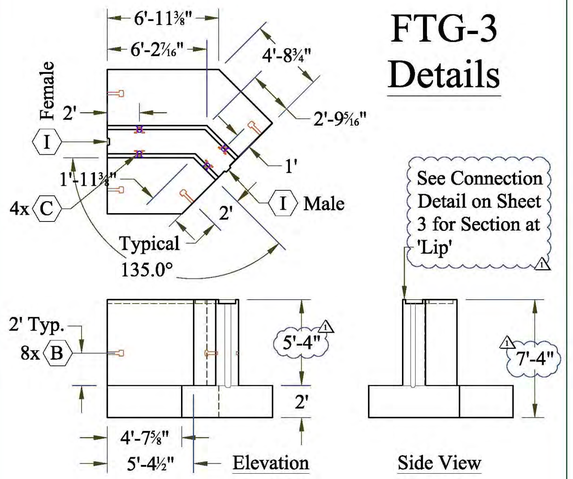
FTG-1 Details



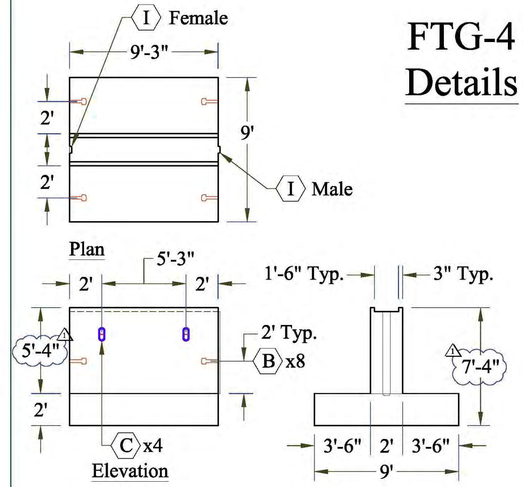
FTG-2 Details



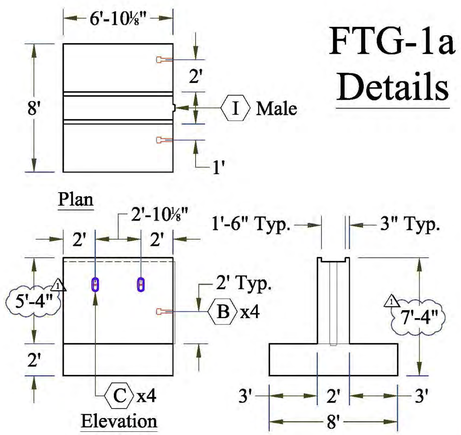
FTG-3 Details



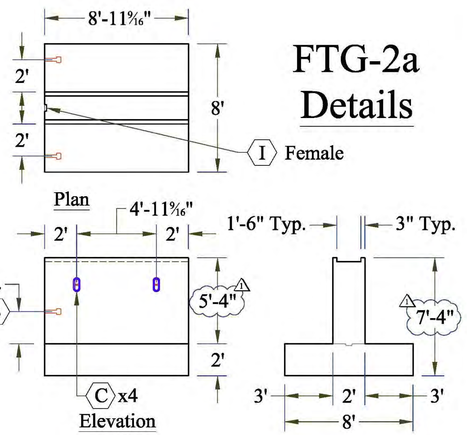
FTG-4 Details



FTG-1a Details



FTG-2a Details



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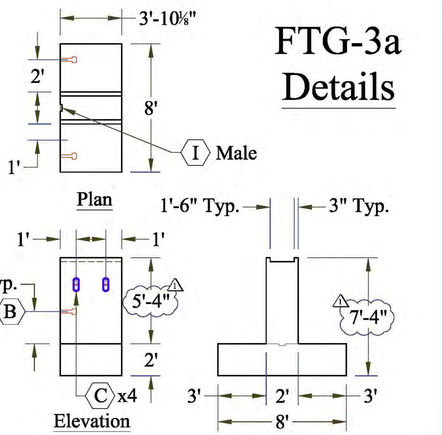
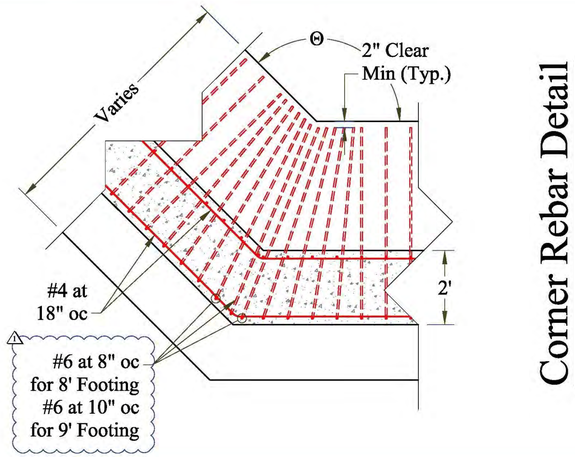


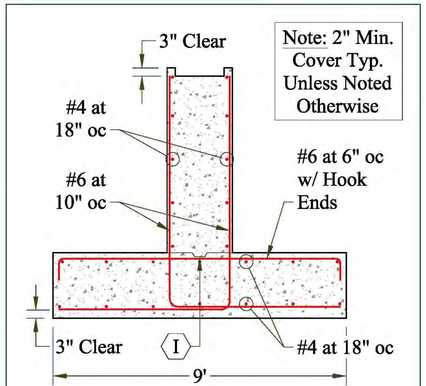
Corner Rebar Detail



Note: All Footing Lifting Devices Located in the Vertical Wall 2' Down From the Top of Footing (3'-8" Up From Top of Toe/Heel)

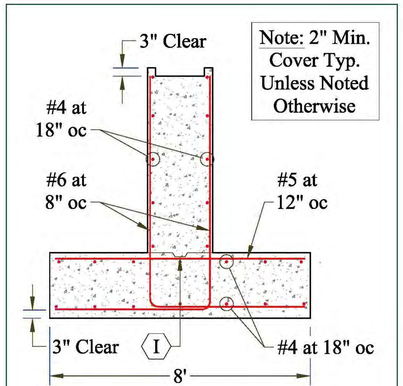
FTG Rebar

At Rigid Frame

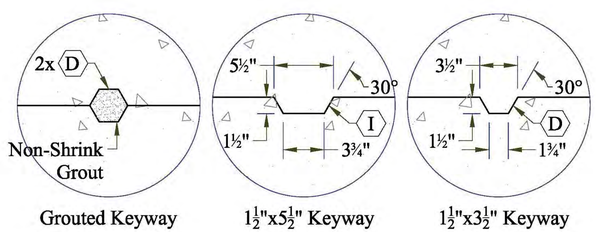


FTG Rebar

At Rigid Frame



Keyway Detials



Vermont Agency of Transportation
RECEIVED
CK'D BY RK OK'D BY JS
July 31, 2013
RESUBMIT NO Approved
BY KH DATE 7-31-2013

1 06/24/13 - Modified Per State Review

CONTRACTORS VTSPE:

STATE OF VERMONT DAVID W. BOEHM No. 3531 REGISTERED PROFESSIONAL ENGINEER

PRECAST CONCRETE RIGID FRAME SHOP DRAWINGS (SDI JOB# 13429)	
SUPERVISOR: M. WHEELER	PROJECT NAME: WOODSTOCK
DETAILER: C. DUPLANTIS	PROJECT #: BRO 1444 (55)
CHECKER: M. WHEELER	LOCATION: WOODSTOCK, VT
ENGINEER: ENGINEERING VENTURES	BRIDGE: #23 ON TOWN HWY 6

CONTRACTOR:
B.U.R. CONSTRUCTION
CLAREMONT, NH 03743
Ph: (603) 542-2801

FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 658-0201

SD Ireland Precast Division

05/30/13 | FOOTING & DEAD MAN DETAILS & SECTIONS | 6 of 6