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 Reinforcing Steel (Not Top Bar):
   #4 Bar=12"
   #5 Bar=17"
   #8 Bar=41"
   Lap Lengths for Epoxy Coated Steel (Top Bar):
   #4 Bar=17"
   #5 Bar=27"
   #8 Bar=69"

Joint Treatment:

Grout:
1. Horizontal Application - 5 Star Grout or Equal
2. Vertical Application - Quikrete Mortar or Equal

Application:
1. Down to 40°. Anything below 40° will neccesitate cold weather curing (i.e. external heat source, blankets, etc.)

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 interferance in the field is to be adjusted as needed in the field

Legend:

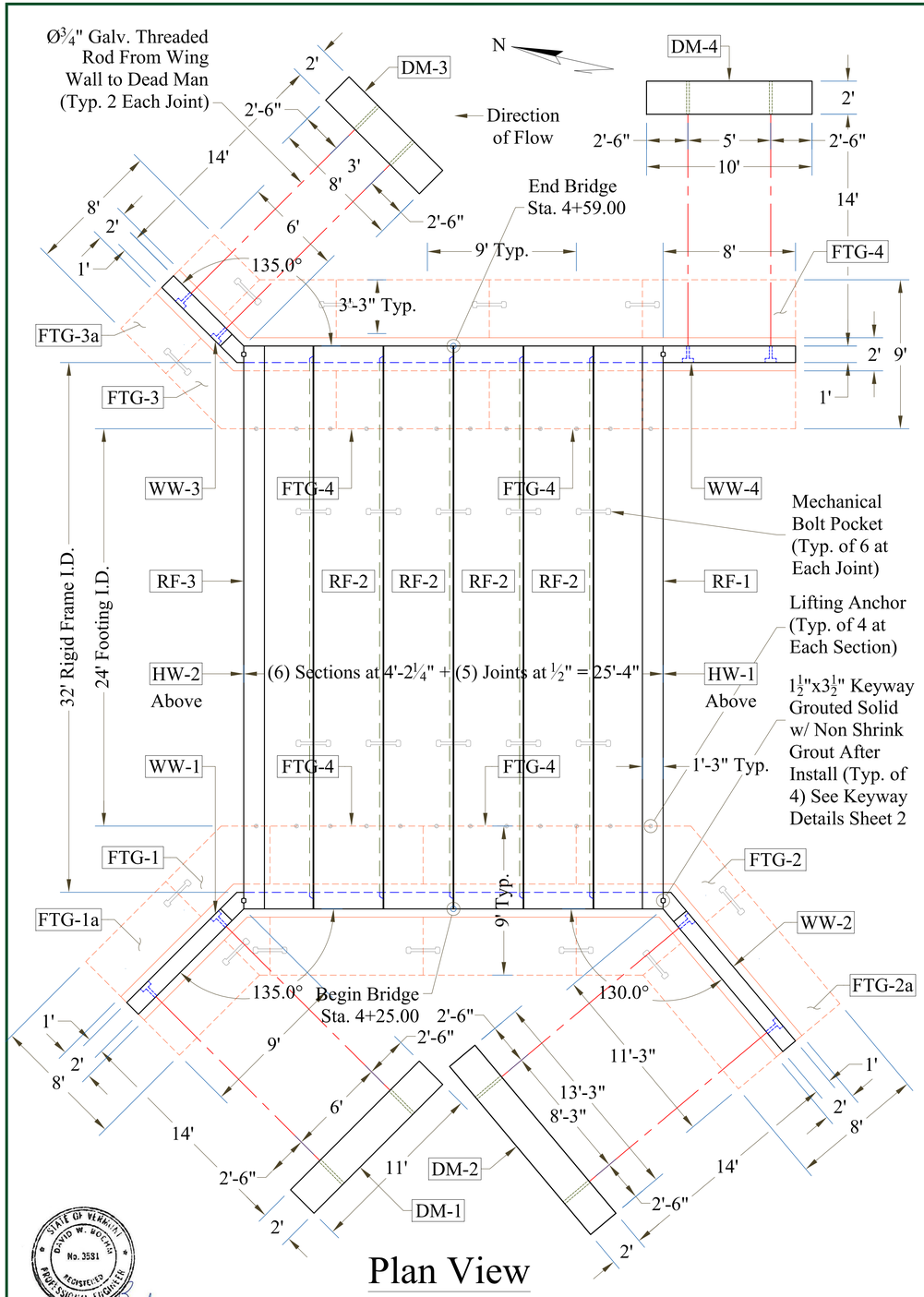
- (A) Starcon 20T-19¾" Lift Anchor
- (B) Mechanical Bolt Pocket (A.L. Patterson w/ 1"Ø Galv. Rod)
- (C) Oxford A750-7 Lifting Device
- (D) 1½"x3½" Continuous Keyway
- (E) ⅝" Zinc Insert (P.A. Insert Corp.)
- (F) Solid Lines Indicate Chamfered Edge (Isometrics)
- (G) 1¼" Galvanized Threaded Insert (Meadow Burke CX-51) 7½" Long
- (H) 8"x8"x3" Pocket w/ 2" Ø PVC Sleeve
- (I) 1½"x5½" Continuous Keyway

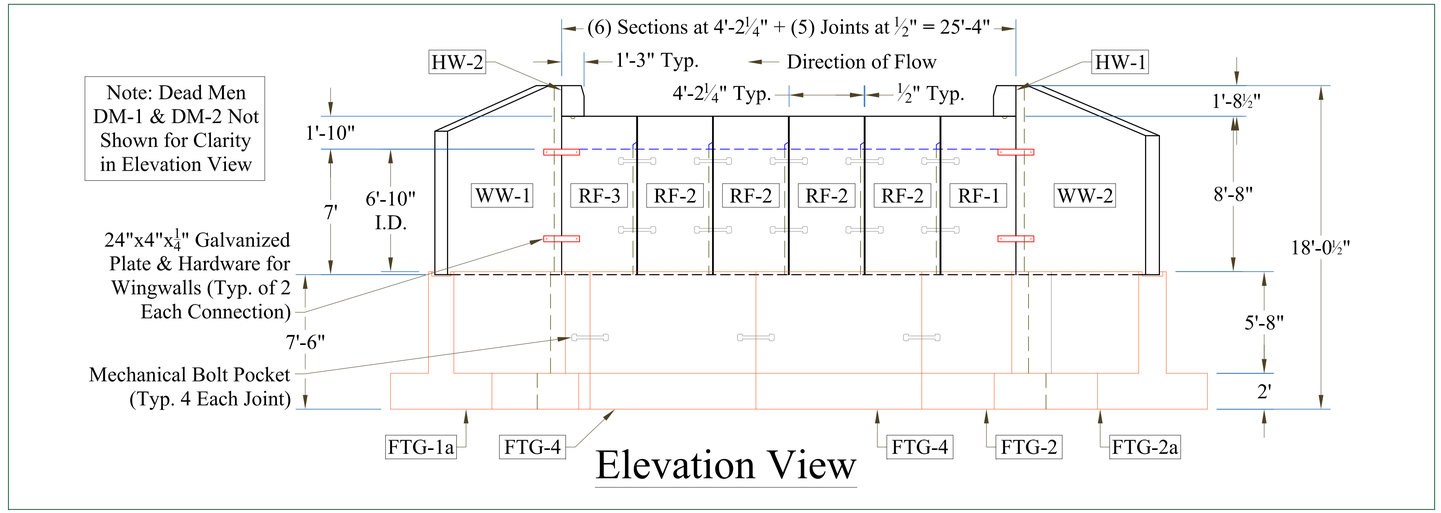
CONTRACTORS VTSPE:

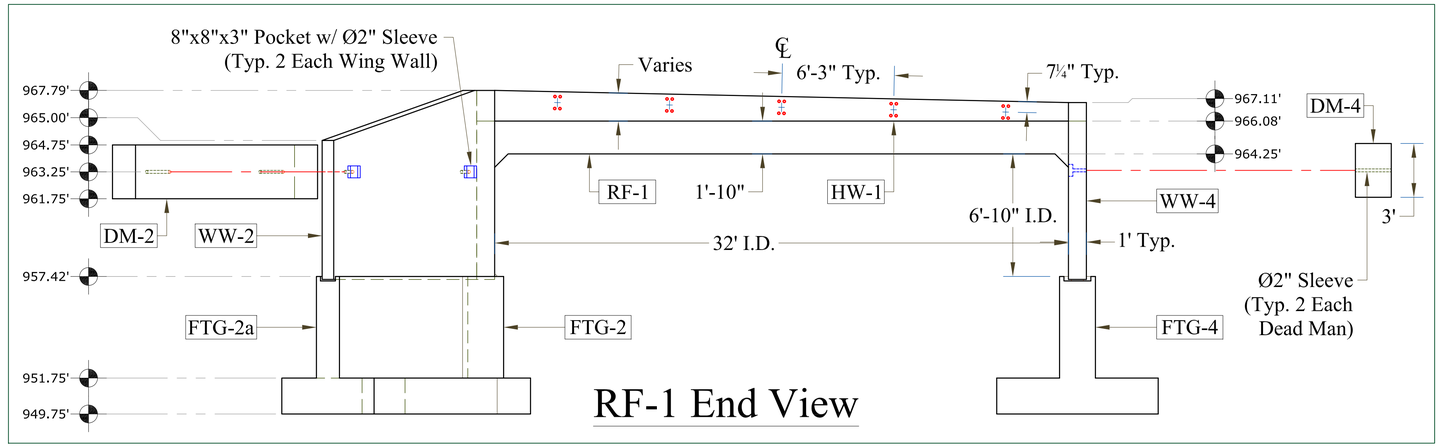
STATE OF VERMONT DAVID W. BOEHM No. 3581 REGISTERED PROFESSIONAL ENGINEER
5/31/13

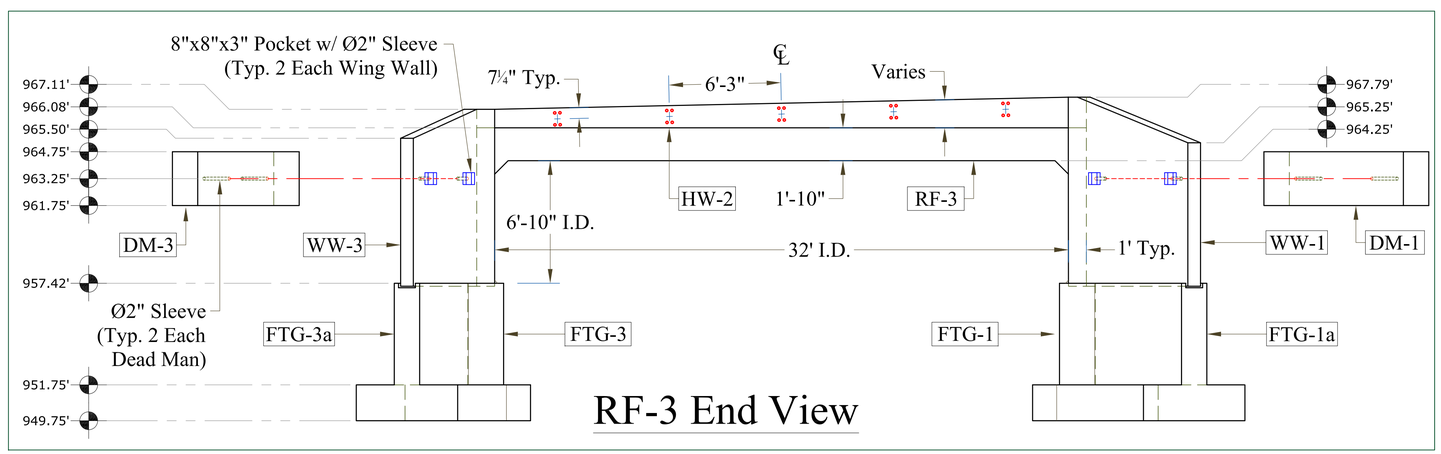
PRECAST CONCRETE RIGID FRAME SHOP DRAWINGS (SDI JOB# 13429)		CONTRACTOR: B.U.R. CONSTRUCTION CLAREMONT, NH 03743 Ph: (603) 542-2801	FABRICATOR: 193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0201
SUPERVISOR: M. WHEELER	PROJECT NAME: WOODSTOCK		
DETAILER: C. DUPLANTIS	PROJECT #: BRO 1444 (55)	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

SD Ireland Precast Division









STATE OF VERMONT DAVID W. BOLTON No. 3581 REGISTERED PROFESSIONAL ENGINEER
5/31/13

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

CONTRACTORS VTSPE:

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"	14.02	56,085	FTG-2a	1	8'-11⅝"	8.95	35,806	WW-3	1	6'-0"	2.10	8,420
RF-2	4	4'-2¼"	11.93	47,705	FTG-3	1	10'-3½"	8.57	34,280	WW-4	1	8'-0"	2.74	10,960
RF-3*	1	4'-2¼"	14.02	56,085	FTG-3a	1	3'-10⅛"	3.84	15,350	DM-1	1	11'-0"	2.44	9,780
FTG-1	1	6'-3½"	4.28	17,120	FTG-4	5	9'-3"	9.92	39,685	DM-2	1	12'-0"	2.94	11,780
FTG-1a	1	6'-10⅛"	6.83	27,330	WW-1	1	9'-0"	3.19	12,760	DM-3	1	8'-0"	1.78	7,110
FTG-2	1	10'-2"	8.39	33,580	WW-2	1	11'-3"	3.91	15,650	DM-4	1	10'-0"	2.22	8,890

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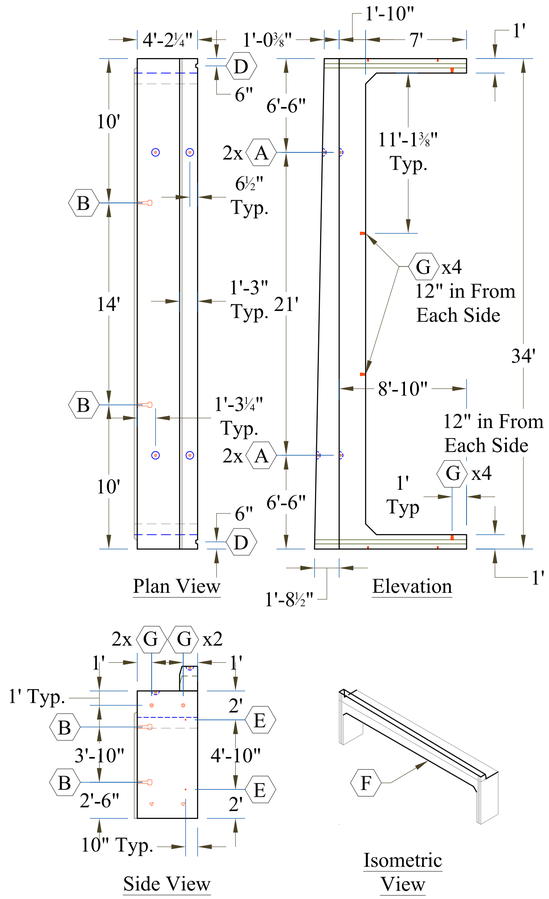
05/30/13 | PRECAST RIGID FRAME LAYOUT & ELEVATIONS | 2 of 6



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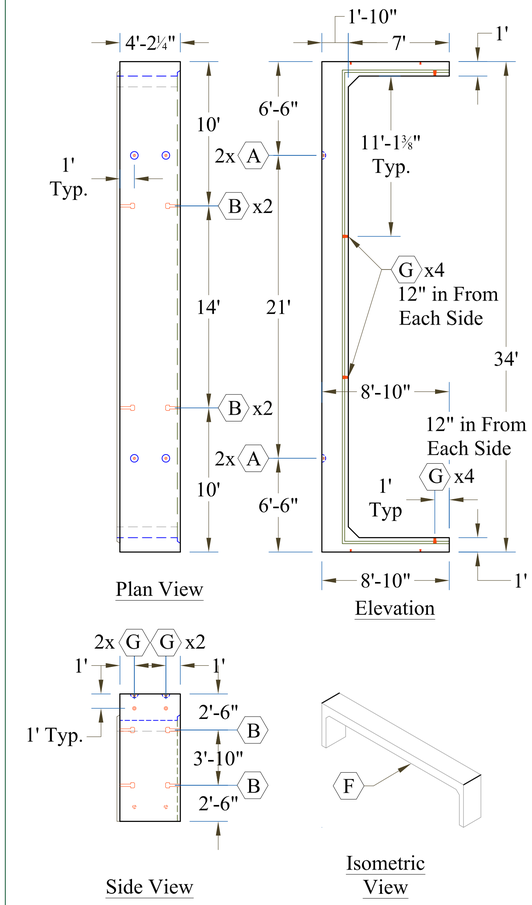

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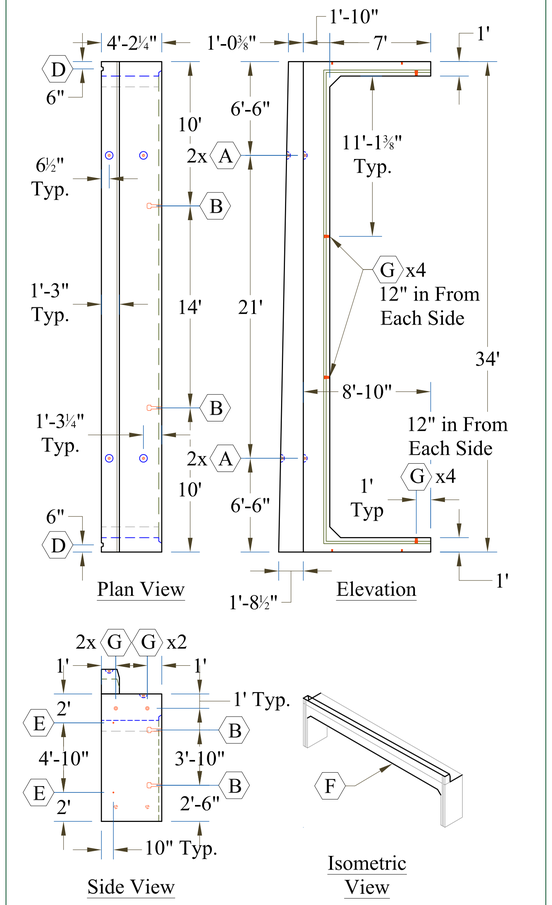

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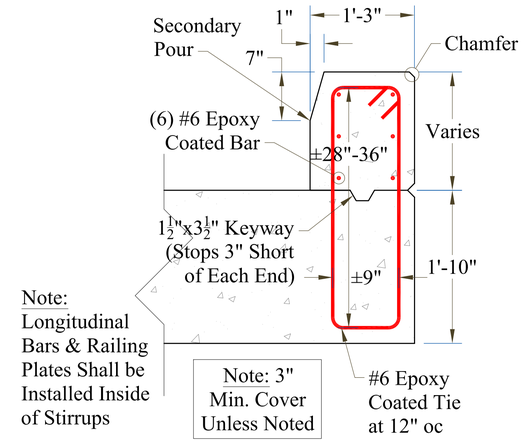
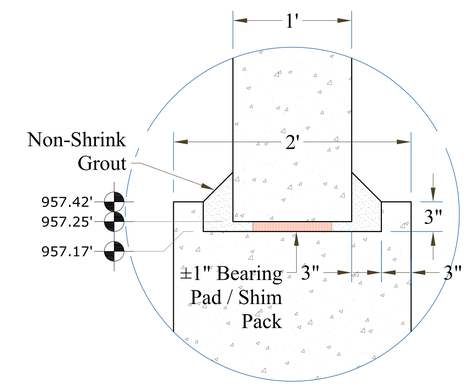
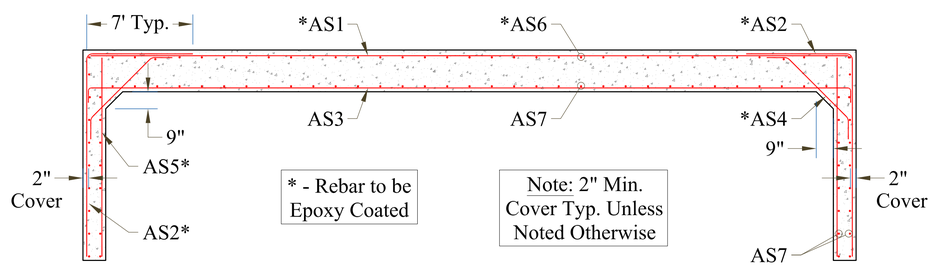


Head Wall Details



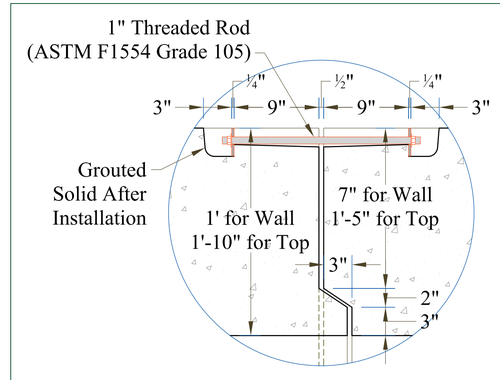
Rigid Frame to Wing Wall Joint

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



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"	35'-8"	Hook End	404"	12"
*As4	#5	10"	6'-2"	Hook End	50"	12"
*As5	#4	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:

STATE OF VERMONT DAVID W. BUCKLEY No. 3581 REGISTERED PROFESSIONAL ENGINEER 5/31/13

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
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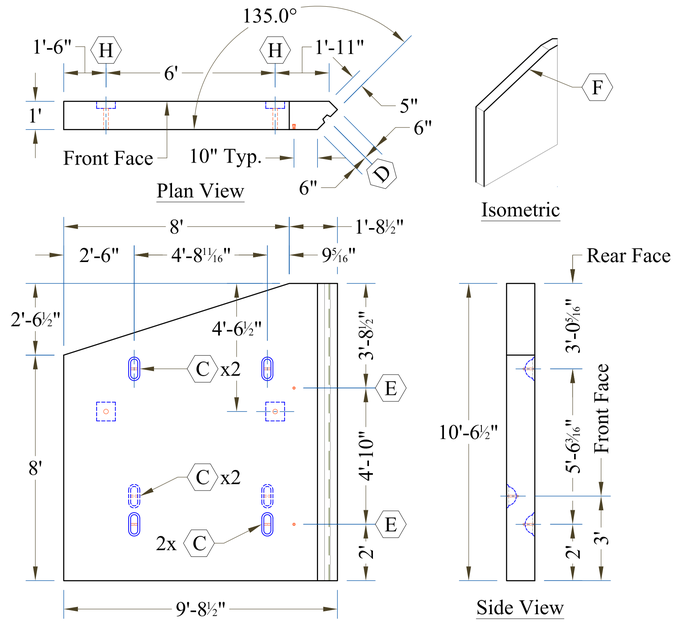
SD Ireland Precast Division

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



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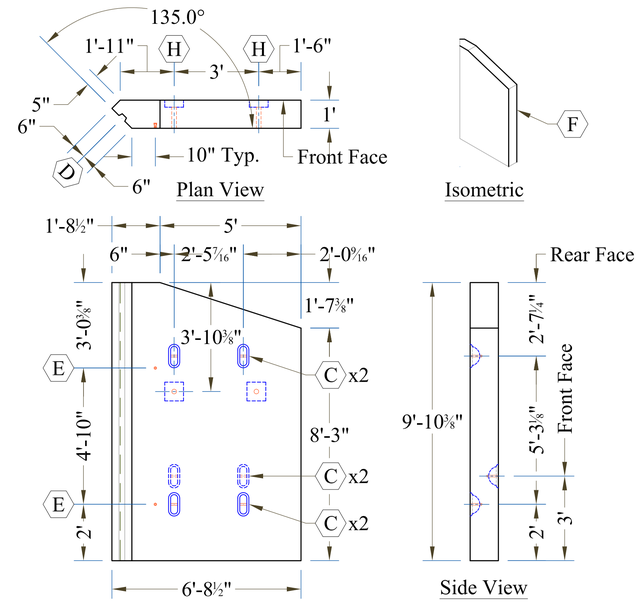

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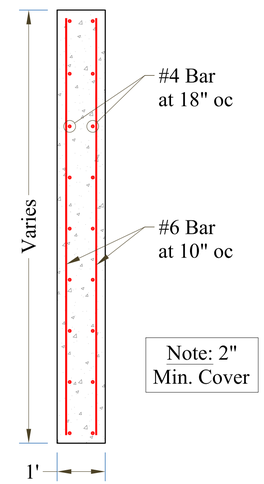
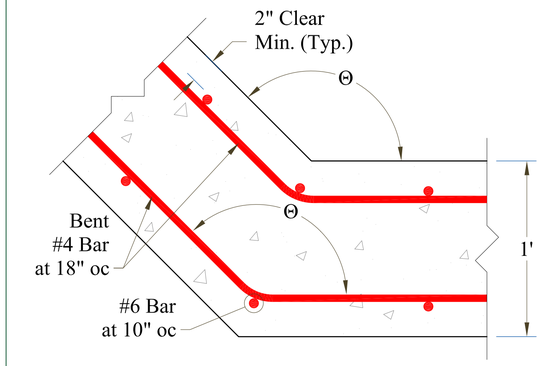
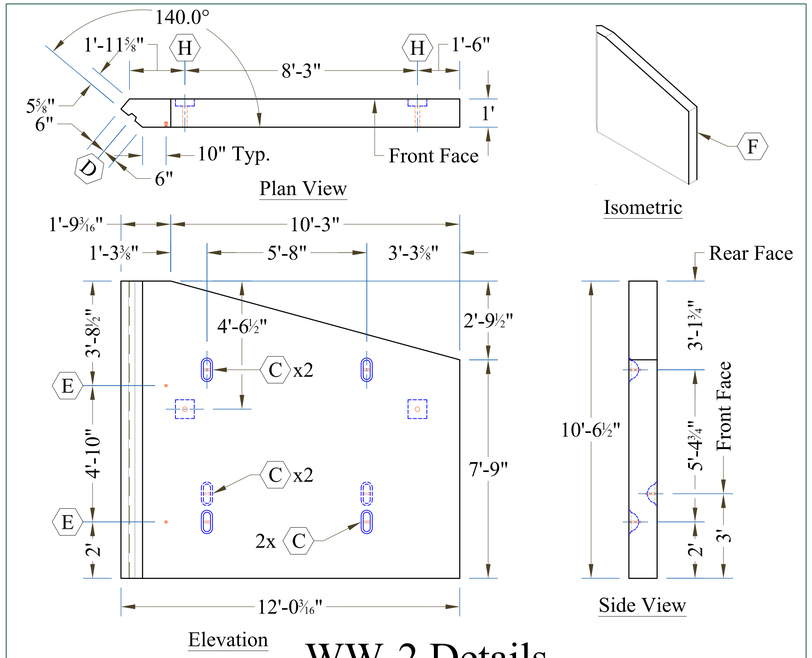


Rebar Reinforcing



Corner Rebar Detail



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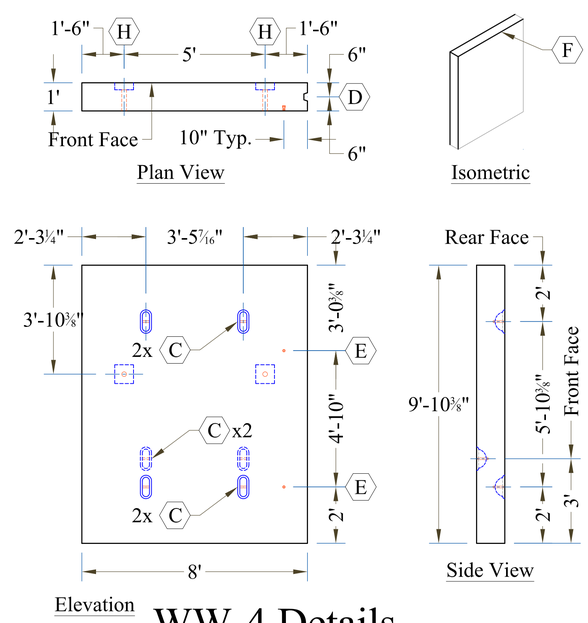

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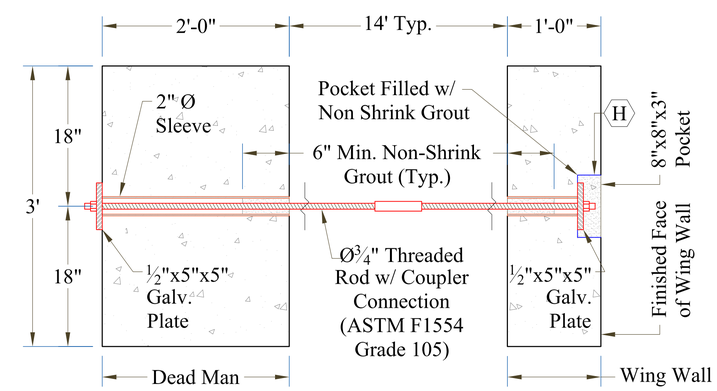

Dead Man/Wing Wall Connection

CONTRACTORS VTSPE:

STATE OF VERMONT
DAVID W. BOLTON
No. 3531
REGISTERED
PROFESSIONAL ENGINEER
5/31/13

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

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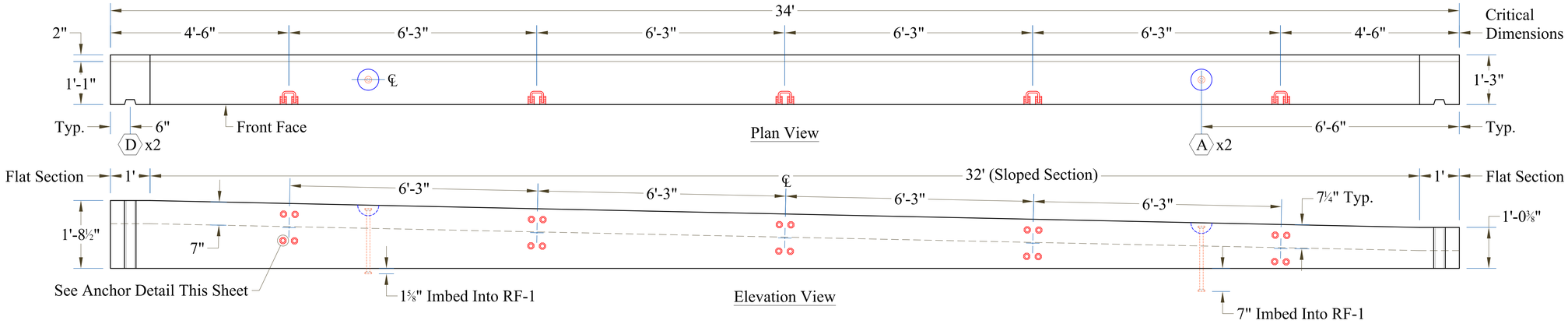
SD Ireland Precast Division

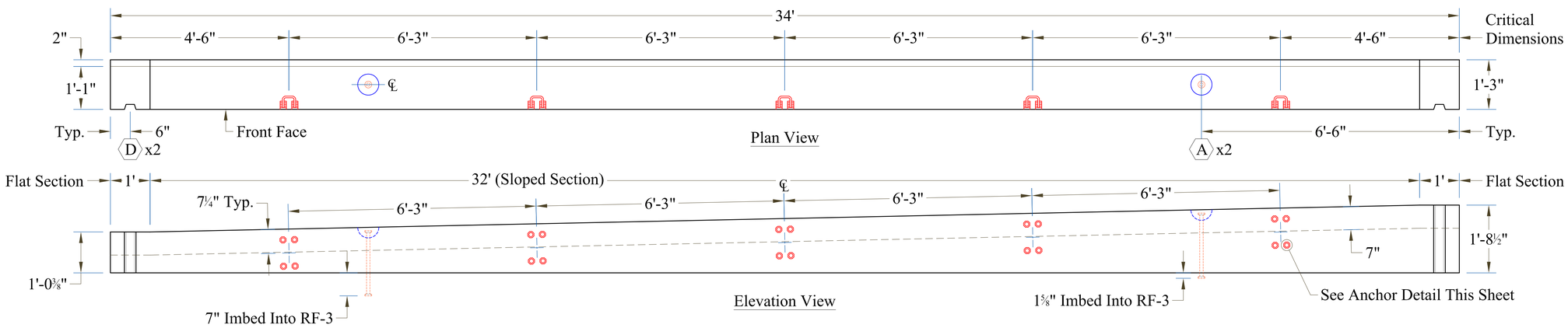
05/30/13 | WING WALL DETAILS, REINFORCING & SECTIONS | 4 of 6

Note": See Sheet 3 for Section and Reinforcing



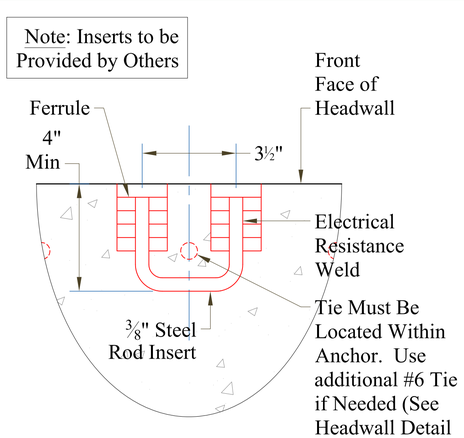
HW-1 Details

Note": See Sheet 3 for Section and Reinforcing

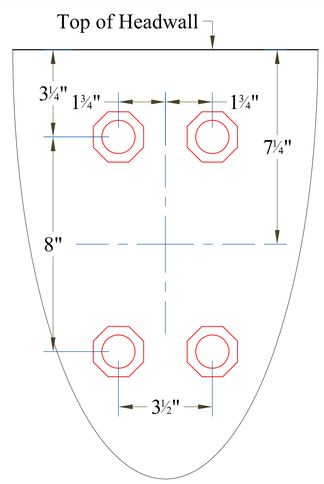


HW-2 Details

Note: Inserts to be Provided by Others

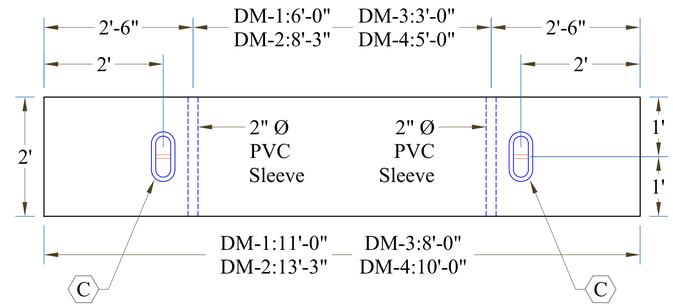


Section View

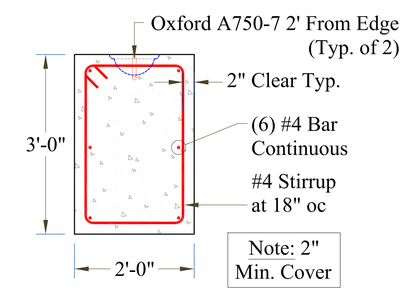


Elevation View

Head Wall Rail Anchors



Dead Man Plan View



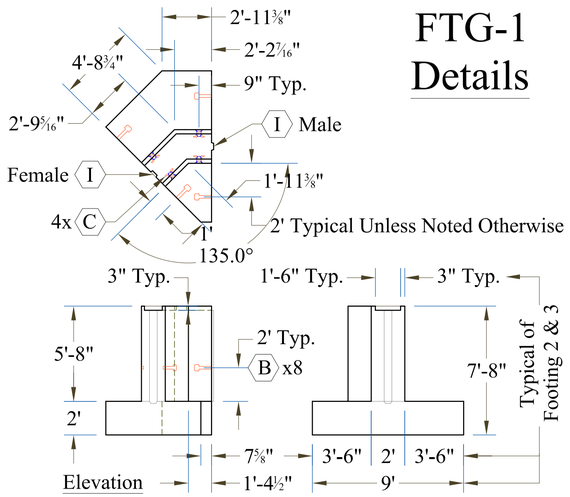
Dead Man Rebar

STATE OF VERMONT
DAVID W. BOLTON
No. 3581
RECISTERED PROFESSIONAL ENGINEER
5/31/13

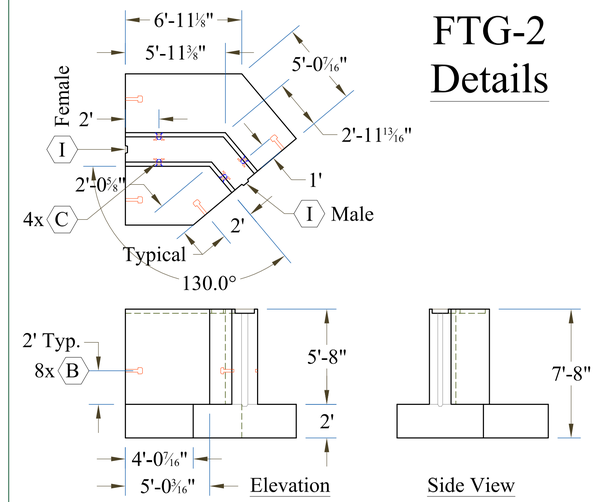
CONTRACTORS VTSPE:

PRECAST CONCRETE RIGID FRAME SHOP DRAWINGS (SDI JOB# 13429)		CONTRACTOR:	FABRICATOR:
SUPERVISOR: M. WHEELER	PROJECT NAME: WOODSTOCK	B.U.R. CONSTRUCTION	193 INDUSTRIAL AVE.
DETAILER: C. DUPLANTIS	PROJECT #: BRO 1444 (55)	CLAREMONT, NH 03743	WILLISTON, VT 05495
CHECKER: M. WHEELER	LOCATION: WOODSTOCK, VT	Ph: (603) 542-2801	Ph: (802) 658-0201
ENGINEER: ENGINEERING VENTURES	BRIDGE: #23 ON TOWN HWY 6	05/30/13	HEAD WALL DETAILS, REINFORCING & SECTIONS

SD Ireland Precast Division



FTG-1 Details



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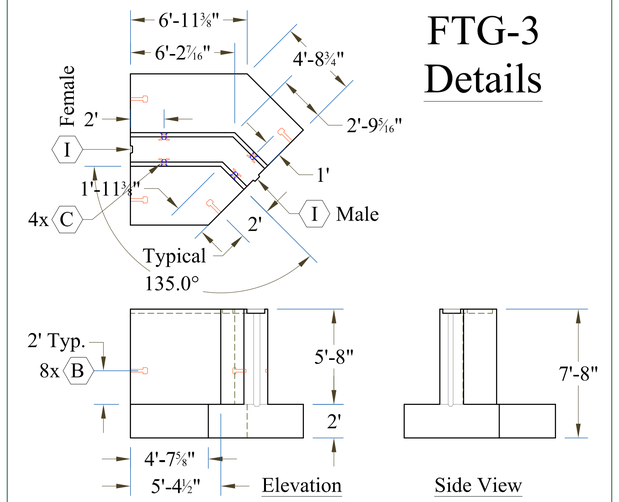

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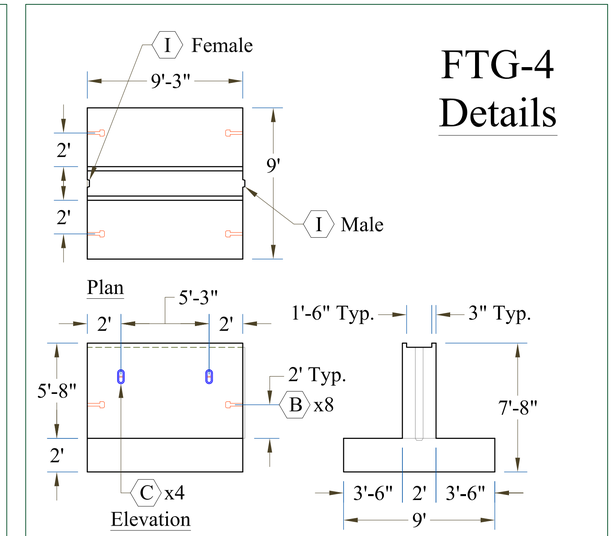

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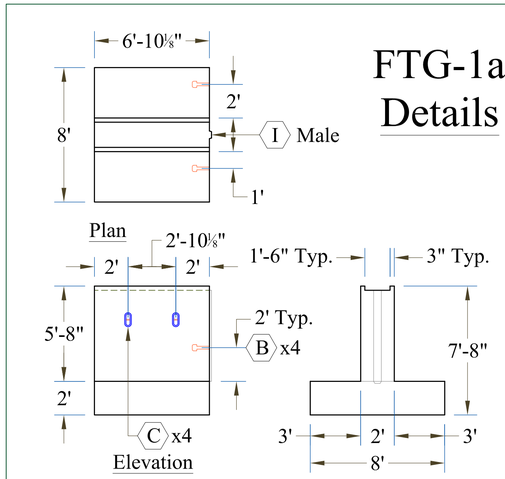

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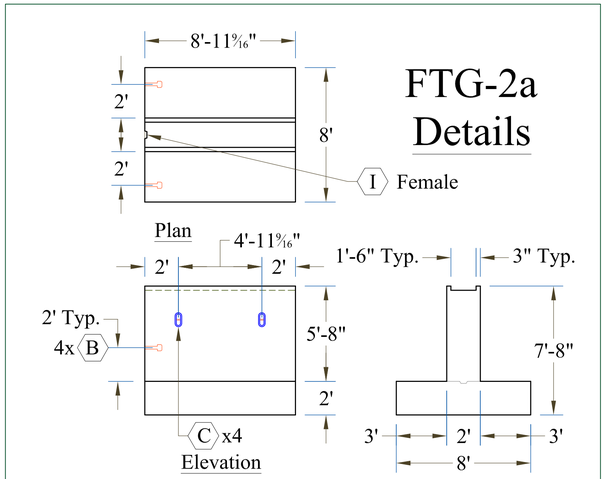

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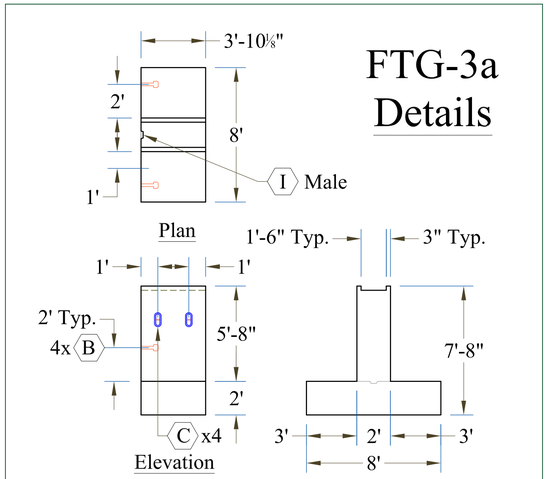

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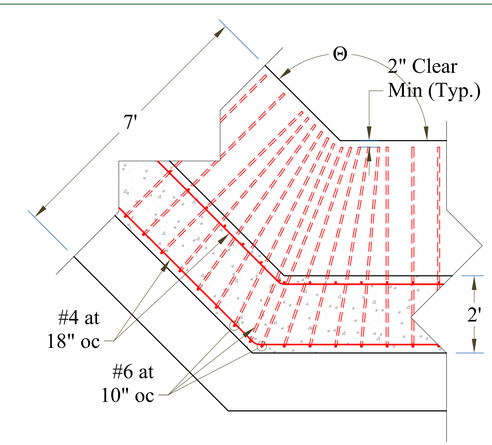
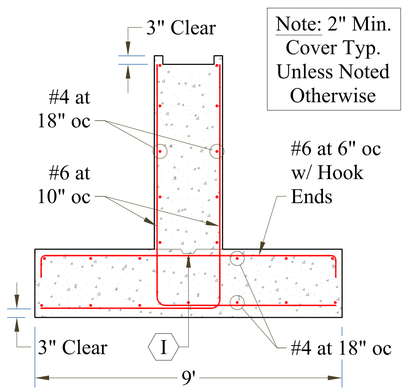


Corner Rebar Detail

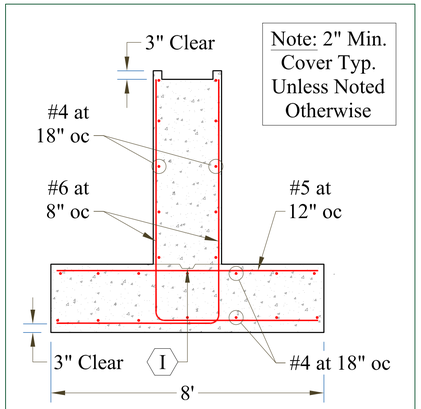
Note: All Footing Lifting Devices Located in the Vertical Wall 2' Down From the Top of Footing (3'-8" Up From Top of Toe/Heel)

CONTRACTORS VTSPE:



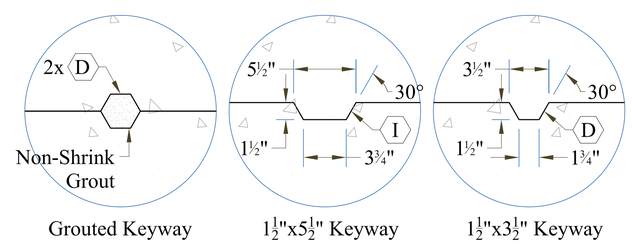
FTG Rebar

At Rigid Frame



FTG Rebar

At Rigid Frame



Keyway Detials

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
SUPERVISOR: M. WHEELER	PROJECT NAME: WOODSTOCK		SD Ireland Precast Division
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	FOOTING & DEAD MAN DETAILS & SECTIONS — 6 of 6