



S.D. Ireland Companies *Precast Division*



193 Industrial Ave. Williston, VT 05495
P.O. Box 2286 South Burlington, VT 05407
p: 802-863-6222 f: 802-860-1528
www.sdireland.com



Attention: Sam Anderson
Company: Peckham Road Corp.
Address: 375 Bay Rd. Suite 100
City, St, Zip: Queensbury, NY 12804
Ph: / Fax: 518-792-3157

Date: 2/13/2015
Job Name: Bridport STP CULV (29)
Job Number: #15428
Regarding: BR#5 Box Culvert Submittal

- WE ARE SENDING:
- | | | |
|--|---|---|
| <input type="checkbox"/> Quote | <input checked="" type="checkbox"/> Details | <input type="checkbox"/> Other: _____ |
| <input checked="" type="checkbox"/> Submittals | <input type="checkbox"/> Prints | <input type="checkbox"/> Specifications |
| <input type="checkbox"/> Copy Of Letter | <input type="checkbox"/> Change Order | <input type="checkbox"/> Revised Submittals |
| <input type="checkbox"/> Samples | | |

Copies	Date	Pages	Description
1	2/13/2015	1	Cover Page
1	2/12/2015	7	S.D.Ireland Stamped Drawings
1		1	Precast Mix Design
1		11	Misc component details

- These Are Submitted as Checked Below:
- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> For Approval | <input type="checkbox"/> Approved as Submitted | <input type="checkbox"/> Resubmit __ Copies for Approval |
| <input type="checkbox"/> For Your Use | <input type="checkbox"/> Approved as Noted | <input type="checkbox"/> Submit __ Copies for Distribution |
| <input type="checkbox"/> As Requested | <input type="checkbox"/> Returned for Corrections | <input type="checkbox"/> Return __ Corrected Prints |
| <input type="checkbox"/> For Review and Comment | | <input type="checkbox"/> Prints Returned After Loan to Us |
| <input type="checkbox"/> For Bids Due: _____ | | <input type="checkbox"/> Other: _____ |

Notes/Remarks:

Sam,

Please pass on for approvals.

Thank you.

Eric Barendse x265

APPROVED: Approval of drawings and/or procedures indicates concurrence with the information presented and does not relieve the Contractor or Fabricator of compliance with all specifications and code requirements		
APPROVED AS NOTED		
REVISE AND RESUBMIT	X	
NOT REVIEWED		
Date: 3/09/2015		
By: Michael J. Chenette		
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Copy To: _____

Signed: *Eric Barendse*

If enclosures are not as noted, kindly notify us at once.

Proposed Bridge Improvement Project

Bridport STP CULV(29)

Bridge #5

Concrete:

Mix Designation: P60TER

1. Specified Mix Design - 5000 PSI
2. Proposed Mix Design - 6000 PSI
3. Striping 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 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 C1577, PCI MNL135, VAOT540 & AASHTO 2012 LRFD bridge design specs fifth edition
2. Any conflict between tolerances listed above shall result in the usage of the stricter tolerance
3. Design live load = HL-93
4. Materials and manufacturing shall conform to ASTM C1433
5. Earth Cover: ±1'-9" Soil Cover

Installation:

1. Sub Base for Box Culvert / Cut Off Walls to be Compacted and Level
2. Precast Cut Off Walls + Wing Walls to be installed
3. All Elevations are to be Checked and Verified they Match Those of Plan Set
4. Begin Sequence of Installing All Box Culvert Sections
5. Clean Granular Backfill for structures used for Backfill of Footers & of Box Culvert so water can reach weep holes if applicable
6. Fill all Lifting Holes, Bolt Pockets and Box Culvert grooves and seams w/ non-shrink grout. Applied by Site Contractor.
7. ASTM C1675-11 Box culvert installation guidelines shall be followed.

Reinforcing:

General Notes:

1. Reinforcing Steel -
 - a. Precast box sections, headwalls, wing walls, & cut off walls shall be level I uncoated bar ASTM A615
2. Materials and manufacturing shall conform to ASTM C1433

Tolerances:

1. Spacing ±1"
2. Clearance ±1/4"

Lap Lengths:

1. Per AASHTO 5.11.2.1.1 & 5.11.5.3.1

Joint Treatment:

Vertical Seams:

Per VTrans approved product list 780.02
Overhead & vertical concrete repair mortar
Applied by site contractor

Horizontal Seams / Grout:

Per VTrans approved product list 707.03
Mortar, type IV
Applied by site contractor

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Waterproofing:

1. Silane sealer applied in precast yard on all exposed surfaces (headwalls and top of wingwalls.)

Miscellaneous:

1. All bolt pocket hardware & wingwall hardware to be uncoated, black steel & shall remain in place.
2. All exposed edges of concrete shall be chamfered.
3. Concrete leveling pad for the cutoff walls is to be poured on site by the site contractor.

Legend:

- (A) 3"Ø PVC Sleeve
- (B) 4"Ø PVC Sleeve
- (C) Mechanical Bolt Pocket (A.L. Patterson w/ 1"Ø Coil Rod)
- (D) Oxford A750-7 Lifting Device
- (E) 1"Ø x 12" CX-9 Coil Loop Insert
- (F) 1 1/2" x 3 1/2" Continuous Keyway
- (G) Solid Lines Indicate 3/4" Chamfer
- (H) 5/8" FI 42 Ferrule Insert

2/12/15
Gary K. Munkelt


STRUCTURAL DESIGN ONLY

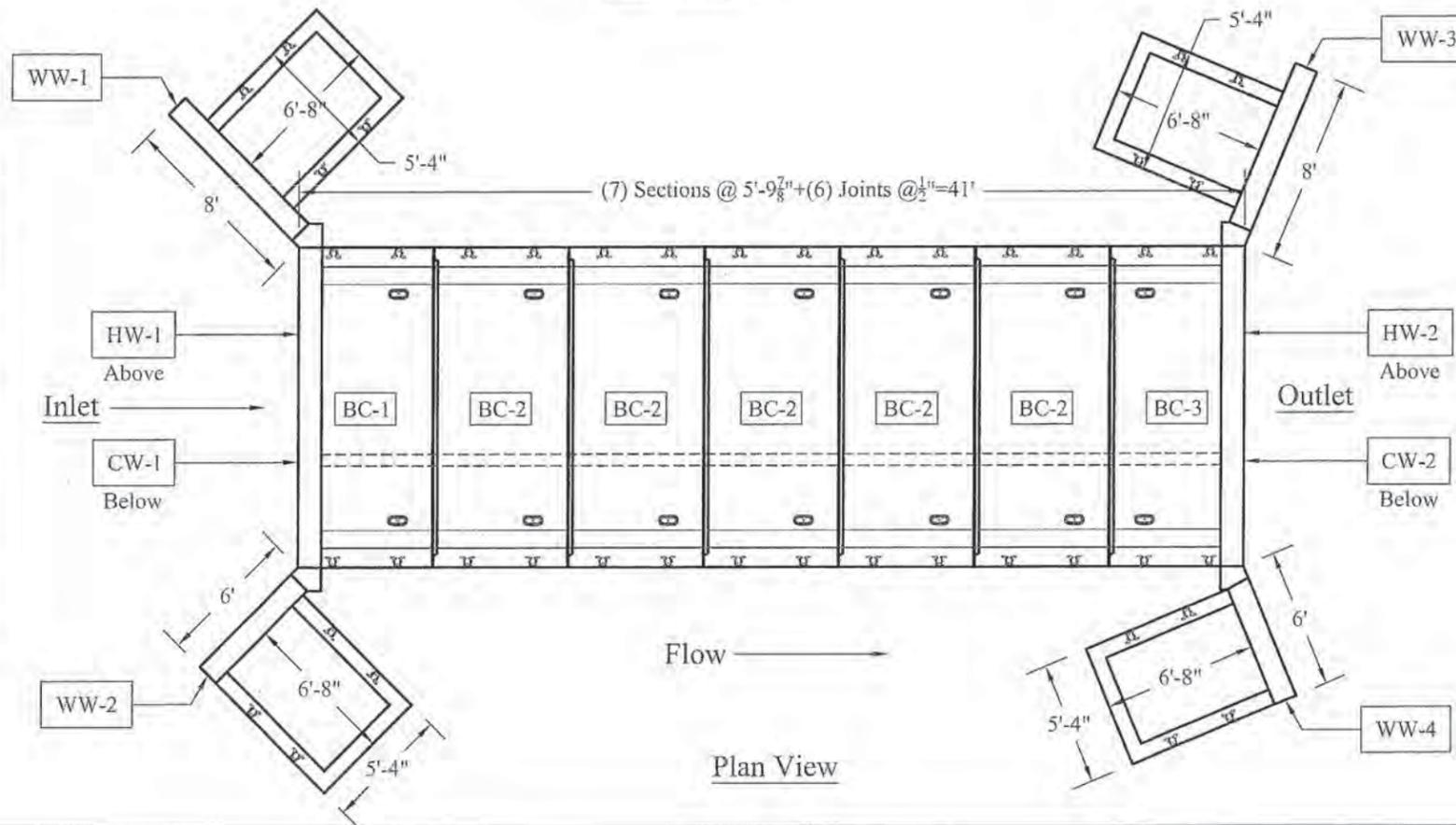
Gary K. Munkelt & Associates
Structural Consulting Engineers
1100 Welsh Rd, Suite 190
North Wales, PA 19454
Ph: 215-955-9713 F: 215-955-8714

CONTRACTORS VISPE:		PRECAST CONCRETE BOX CULVERT SHOP DRAWINGS (SDI JOB #15428)	Peckham Road Corp. 1557 St. Rt. 9, #3 Lake George, NY 12845 Ph: (518) 747-3353	FABRICATOR: 193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0201
		SUPERVISOR: E. Barendse DETAILER: I. ADAMS CHECKER: E. Barendse ENGINEER: G. K. Munkelt	PROJECT NAME: Bridport PROJECT # CULV(29) Br.#5 LOCATION: Bridport, VT	
			02/12/15	COVER_PAGE
				1_OF_7

Plan View

Table of Units				
Name	Qty	Length	Vol.(CY)	Wt.(lbs.)*
BC-1*	1	5'-9 ⁷ / ₈ "	9.13	36,525
BC-2	5	5'-9 ⁷ / ₈ "	8.81	35,215
BC-3*	1	5'-9 ⁷ / ₈ "	9.29	37,145
WW-1	1	8'-0"	6.69	26,760
WW-2	1	6'-0"	5.57	22,280
WW-3	1	8'-0"	6.82	27,280
WW-4	1	6'-0"	5.51	22,040
CW-1	1	13'-8"	1.69	6,750
CW-2	1	13'-8"	1.69	6,750

* Headwall Included in BC-1 and BC-3



Culvert Specifications	
Inside Dimensions	12'-0" W x 9'-0" H
Waterway Area	76 Sq. Ft.
Top Slab Thickness	10"
Side Wall Thickness	10"
Bottom Slab Thickness	10"

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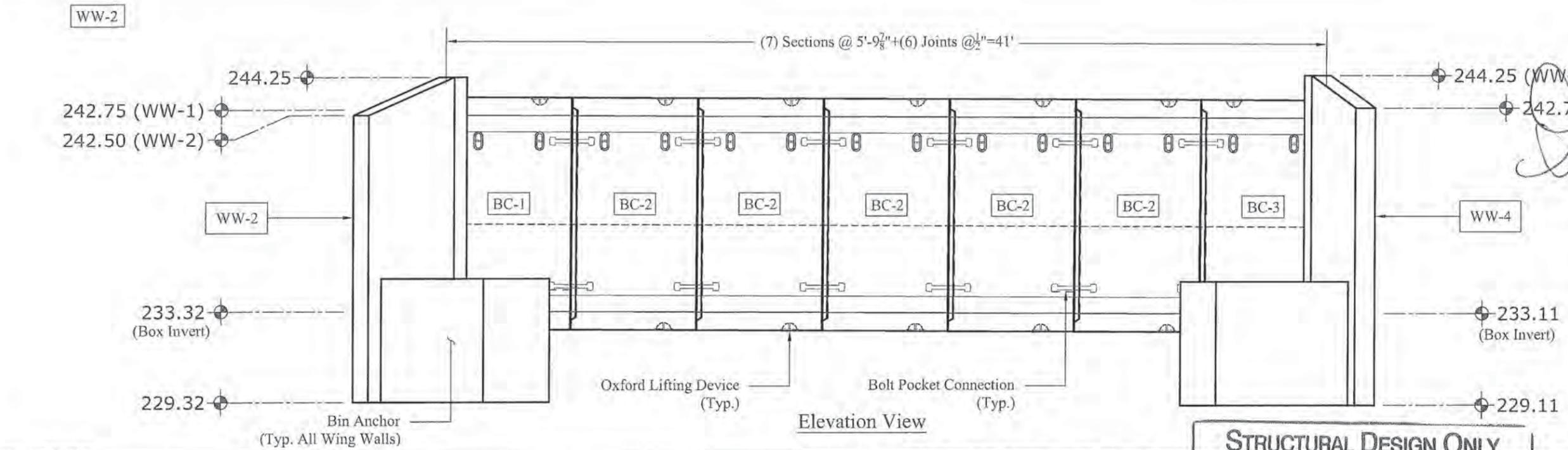
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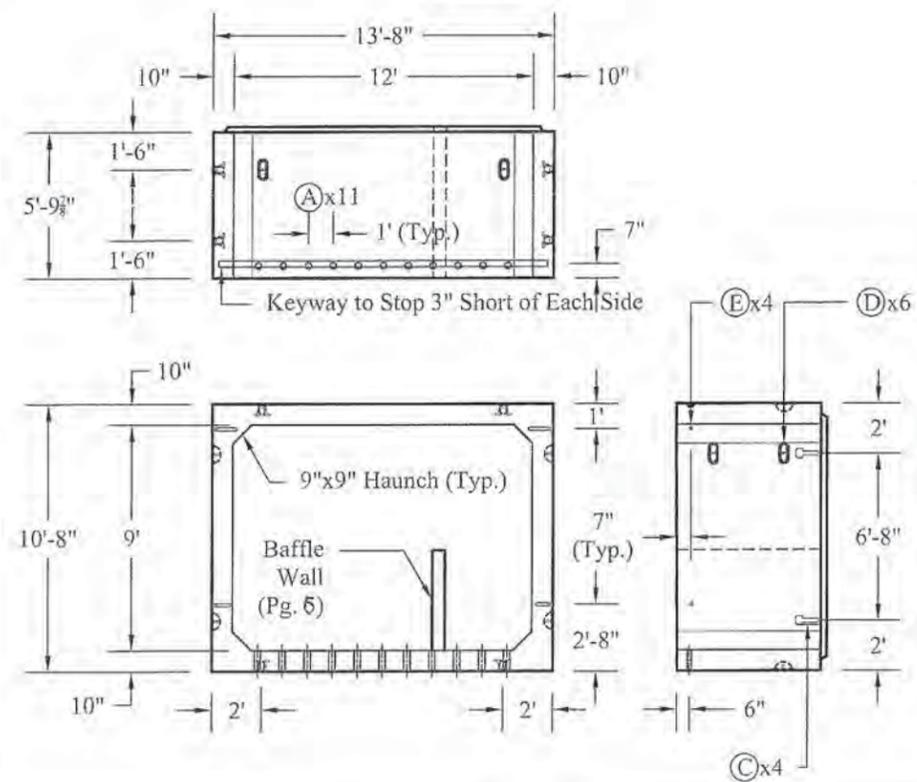


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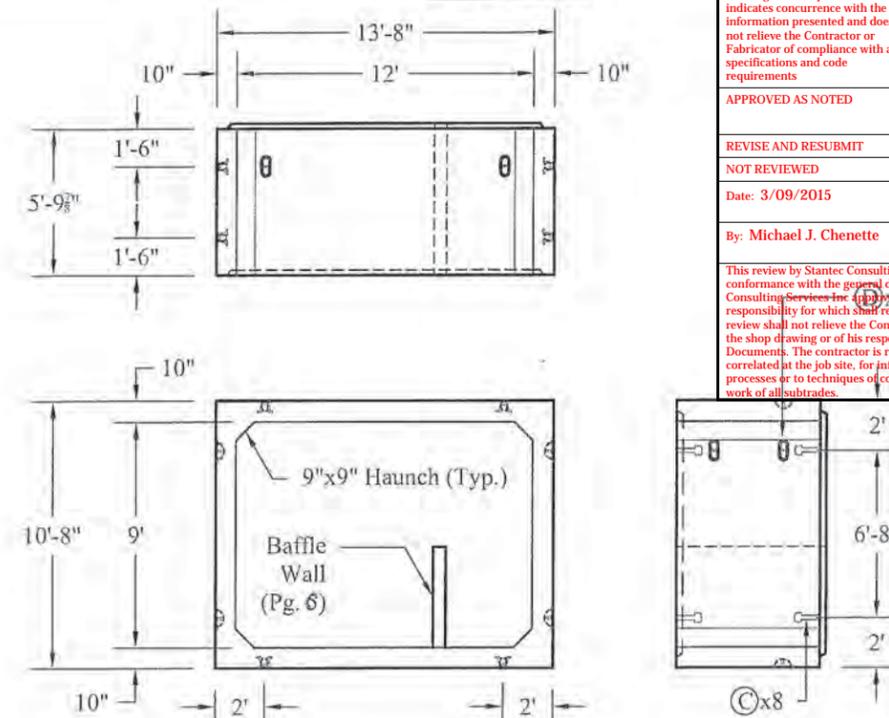
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	SUPERVISOR: E. Barendse DETAILER: I. ADAMS CHECKER: E. Barendse ENGINEER: G. K. Munkelt	PROJECT NAME: Bridport PROJECT #: CULV(29) Br.#5 LOCATION: Bridport, VT	02/12/15	

BC-1 Detail



BC-2 Detail



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REVISE AND RESUBMIT X

NOT REVIEWED

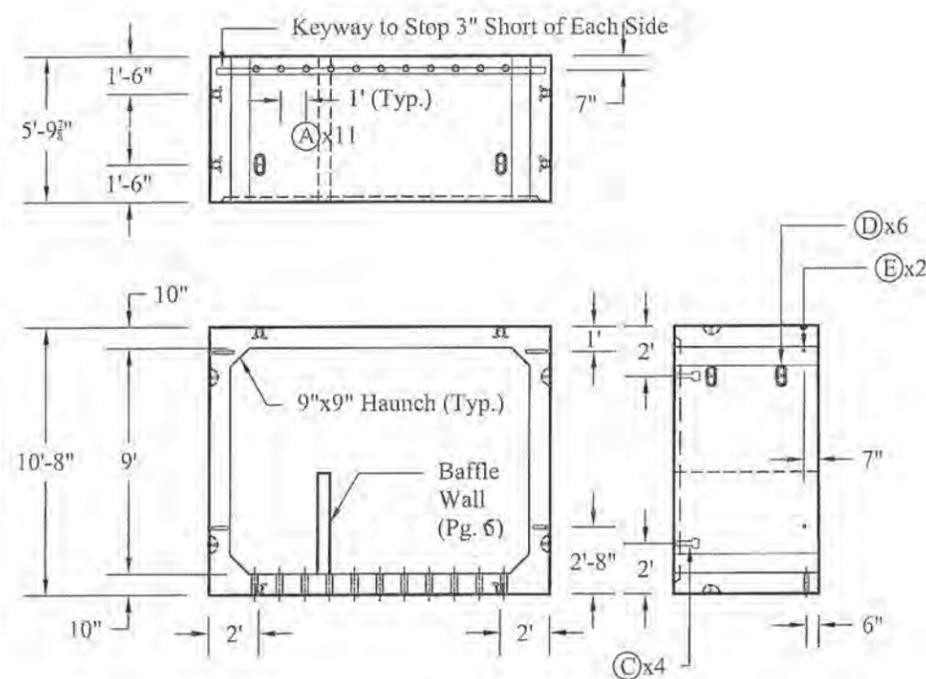
Date: 3/09/2015

By: Michael J. Chenette

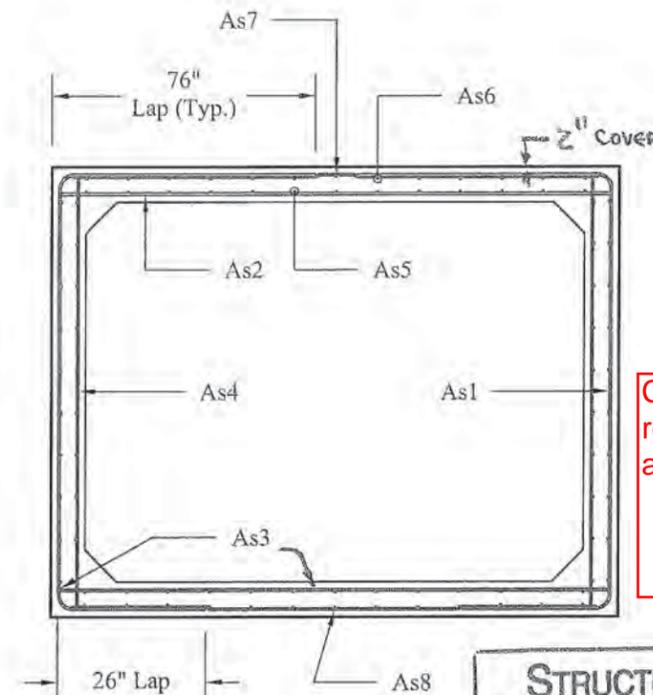
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BC-3 Detail



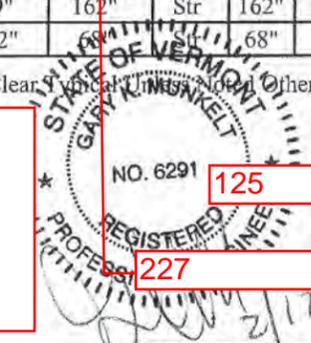
Box Section Reinforcement Detail



Rebar Schedule						
Mark	Size	Max Spacing	Length	Type	A	B
As1	#5	6"	228"	Bent	26"	126" 76"
As2	#5	6"	162"	Str	162"	126"
As3	#5	7"	162"	Str	162"	
As4	#4	9"	126"	Str	126"	
As5	#5	12"	68"	Str	68"	
As6	#4	9"	68"	Str	68"	
As7	#4	9"	162"	Str	162"	
As8	#4	9"	162"	Str	162"	
As9	#4	12"	68"	Str	68"	

Notes: 1" Clear Cover unless otherwise noted

Call out transverse reinforcing in sides and bottom



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 - C Mechanical Bolt Pocket (A.L. Patterson w/ 1"Ø Coil Rod)
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 - E 1"Øx12" CX-9 Coil Loop Insert
 - F 1 1/2" x 3 1/2" Continuous Keyway
 - G Solid Lines Indicate 3/4" Chamfer
 - H 3" F1 42 Female Insert

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SUPERVISOR: E. Barendse
DETAILER: I. ADAMS
CHECKER: E. Barendse
ENGINEER: G. K. Munkelt

PROJECT NAME: Bridport
PROJECT #: CULV(29) Br.#5
LOCATION: Bridport, VT

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Lake George, NY 12845
Ph: (518) 747-3353

FABRICATOR:
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WILLISTON, VT 05495
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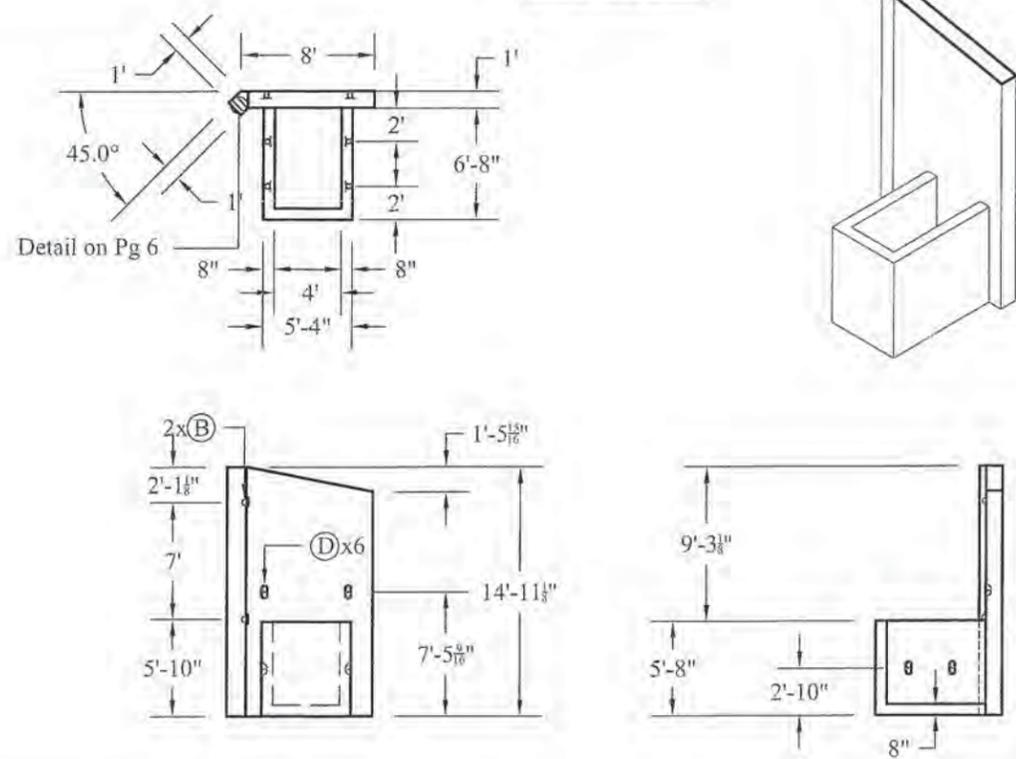


02/12/15

BOX_SECTIONS_1

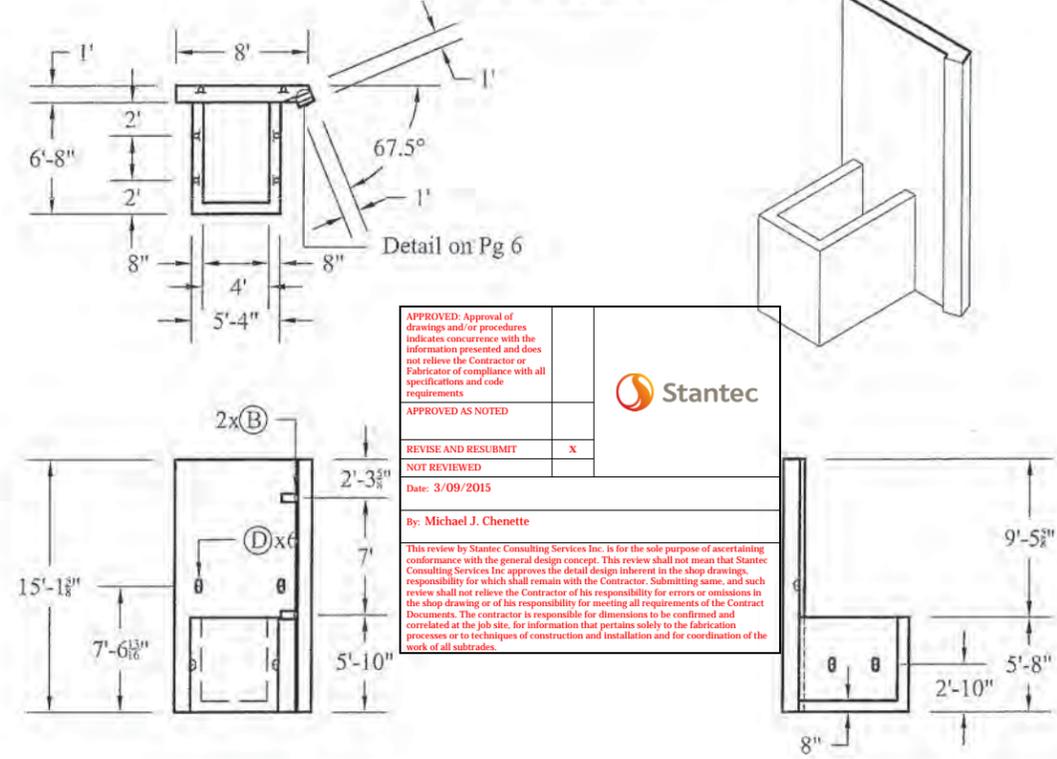
3_OF_7

WW-1 Detail



In some places (here) the box is said to have a 6'-8" dimension and others (stability calcs) it is said to have a 8'-8" dimension.

WW-3 Detail



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APPROVED AS NOTED

REVISE AND RESUBMIT: x

NOT REVIEWED

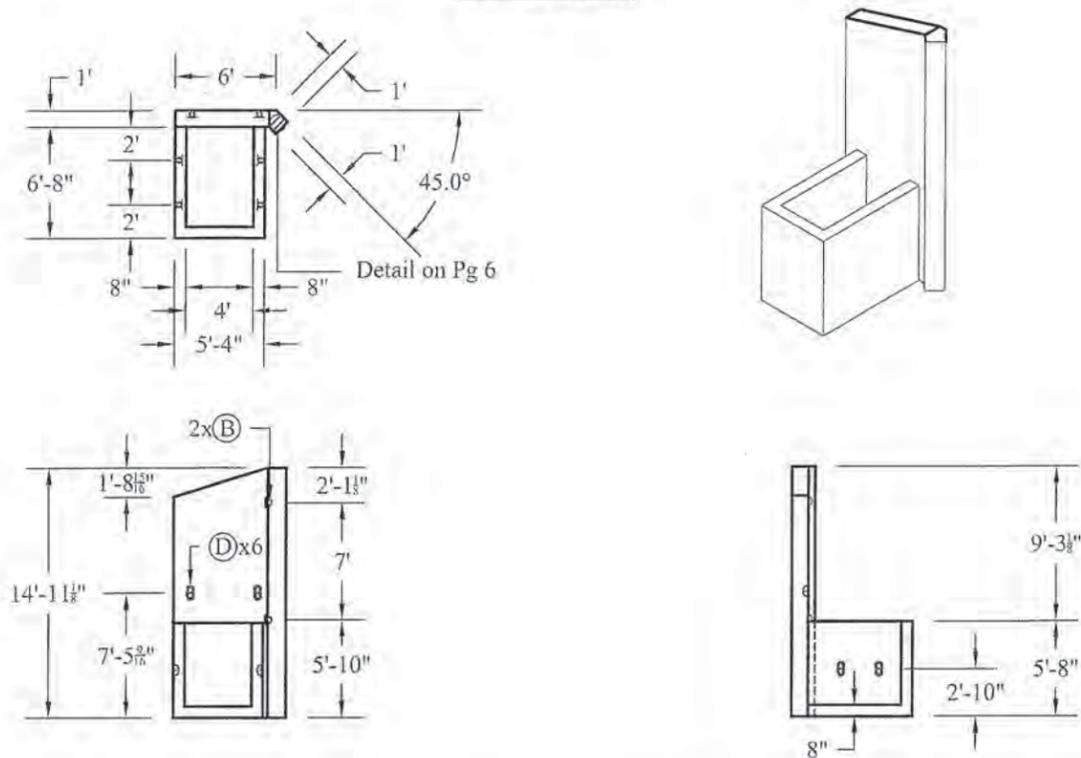
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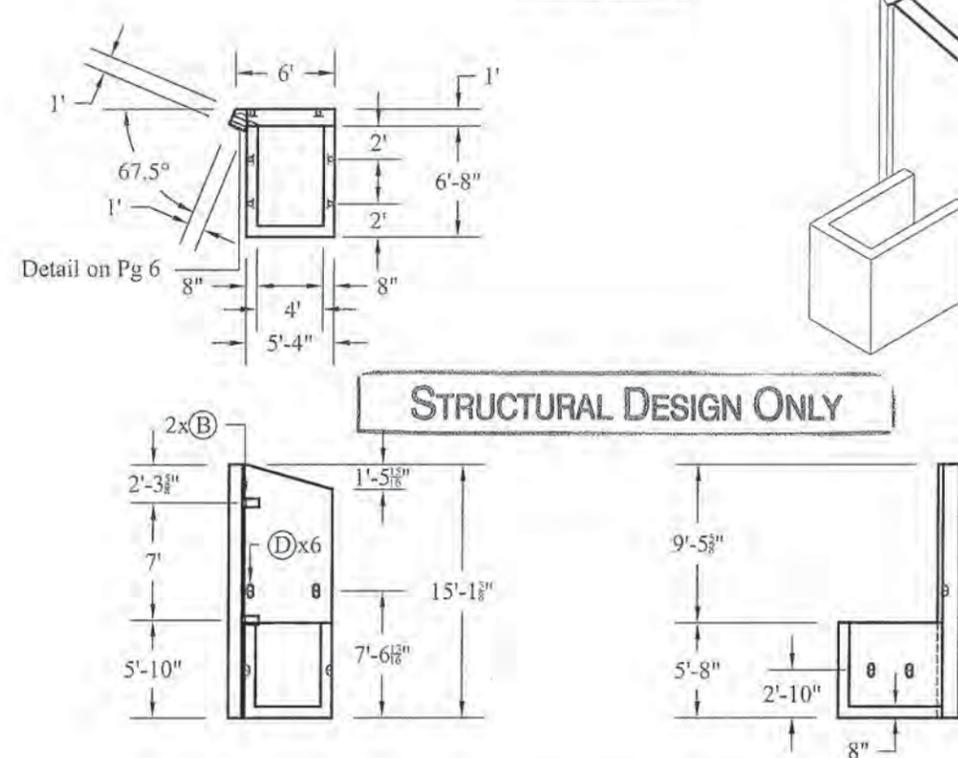
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Stantec

WW-2 Detail



WW-4 Detail



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 - (H) 3/8" F1 42 Ferrule Insert

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 DETAILER: I. ADAMS
 CHECKER: E. Barendse
 ENGINEER: G. K. Munkelt

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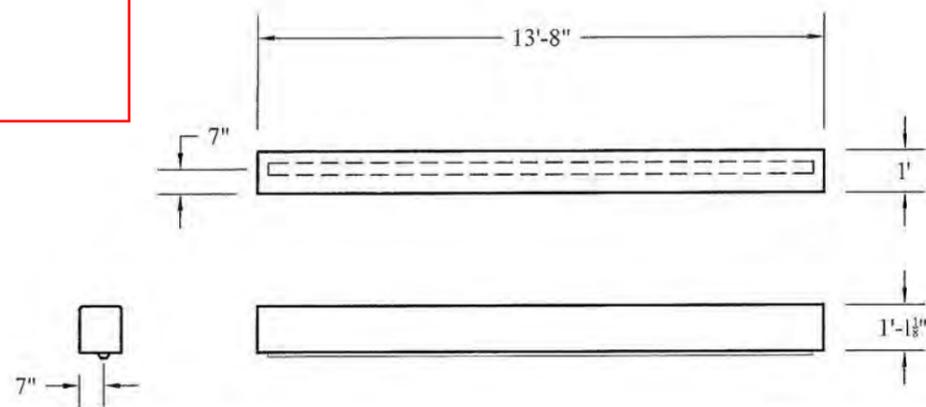
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WING_WALLS_1

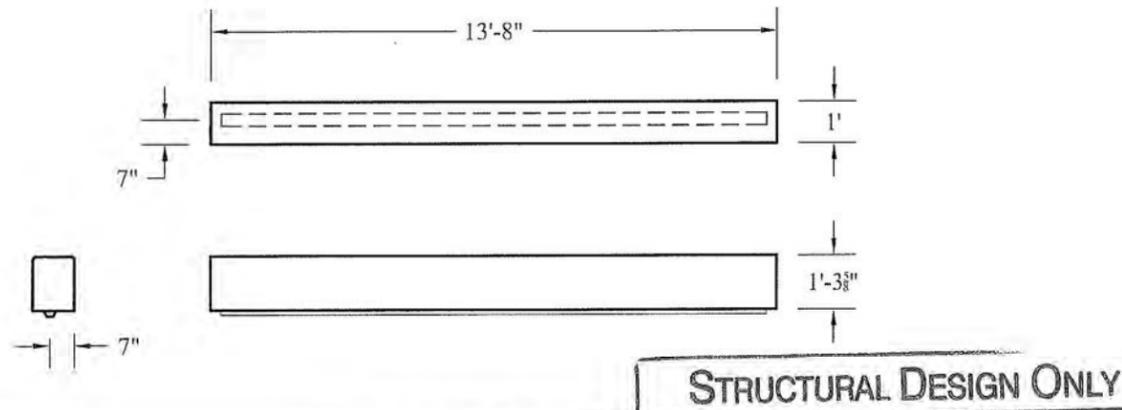
4_OF_7

Call out headwall reinforcing

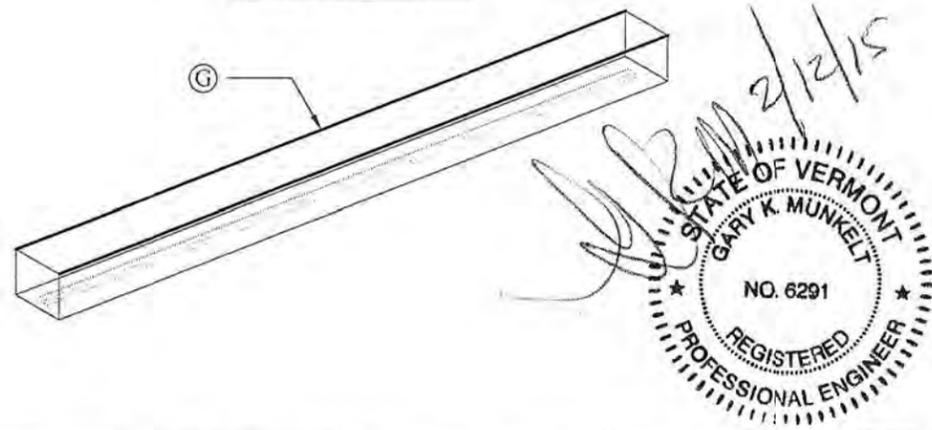
Headwall 1 Detail



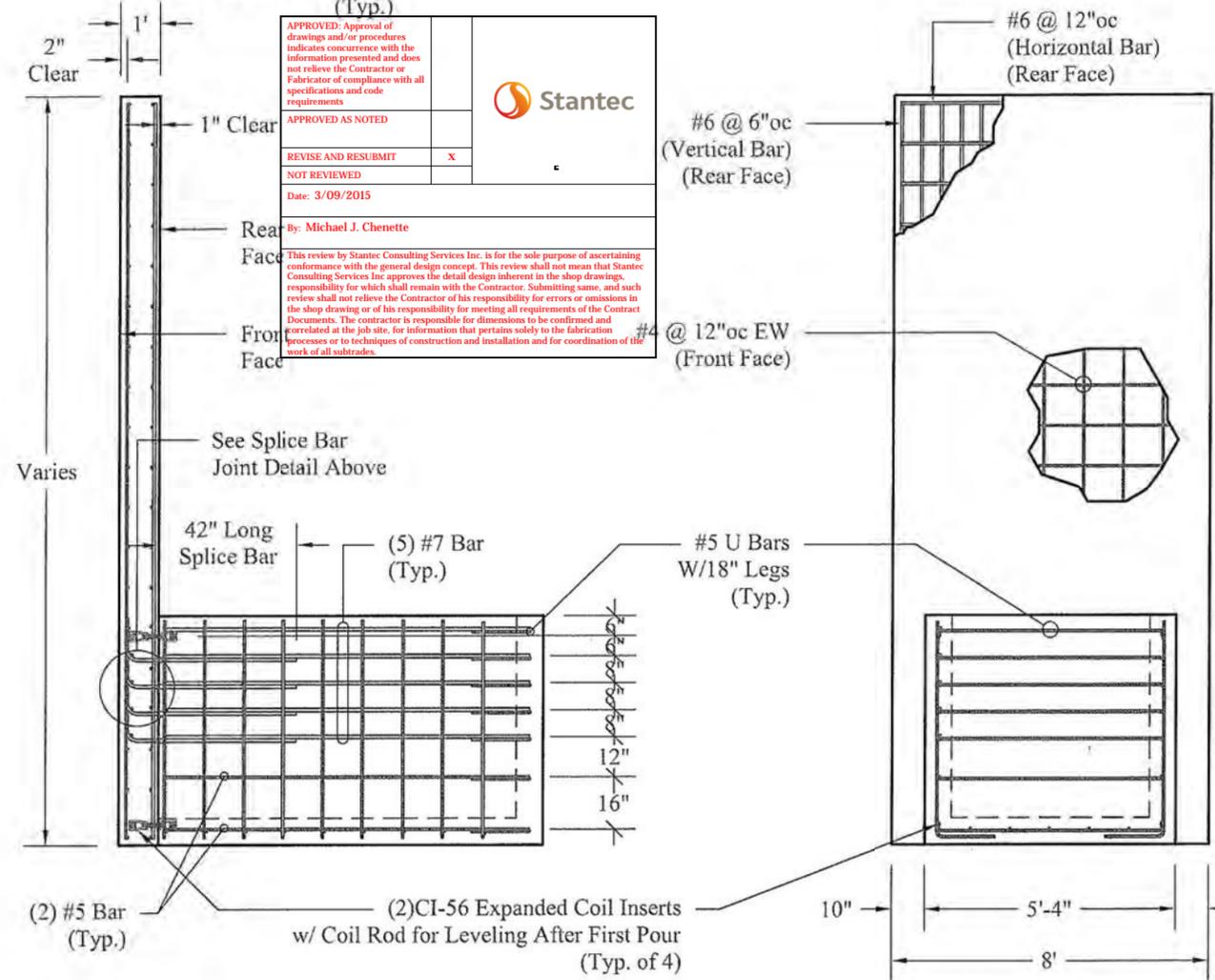
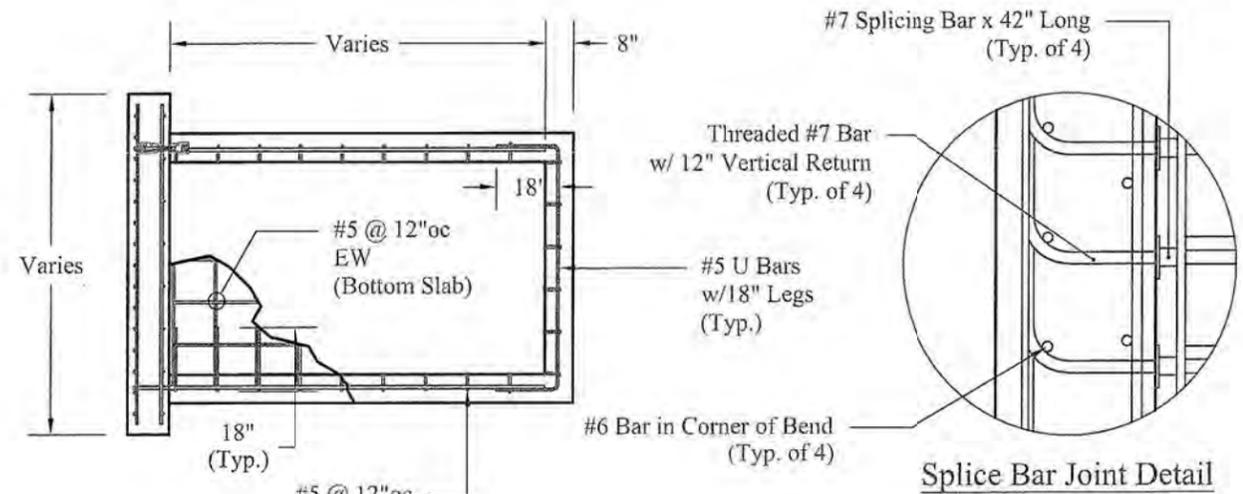
Headwall 2 Detail



Headwall 2 Detail



WW-Reinforcing Detail



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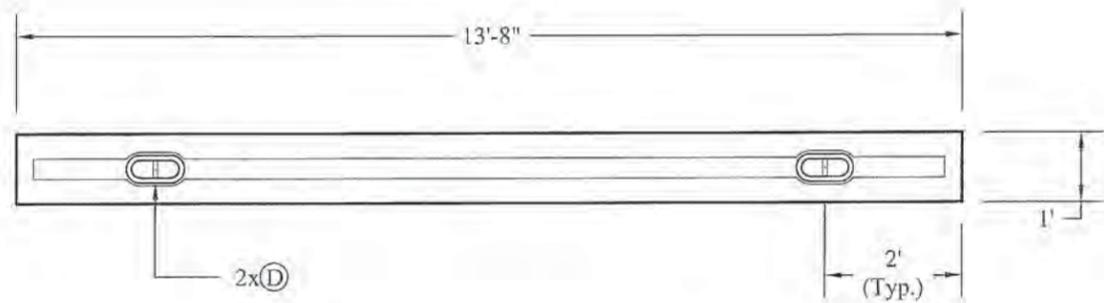
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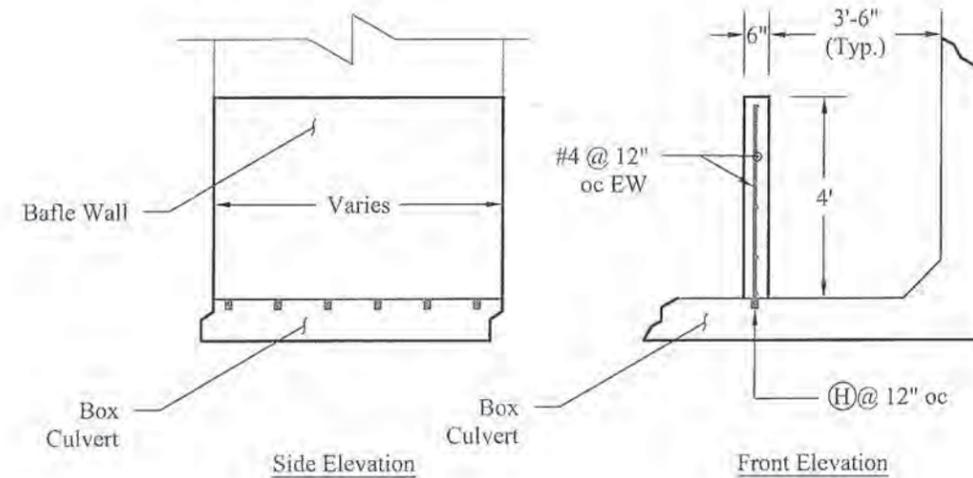
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PRECAST

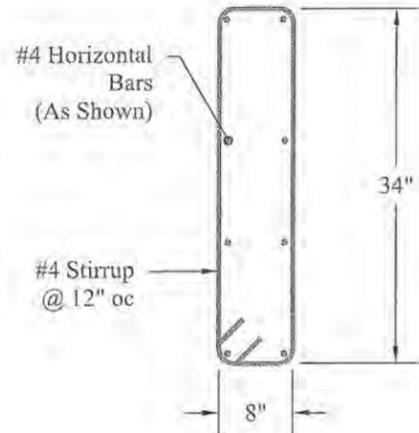
CW-1/2 Detail



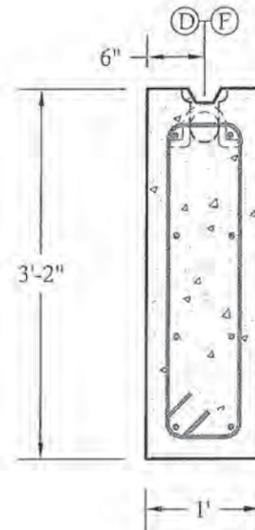
Baffle Wall Detail



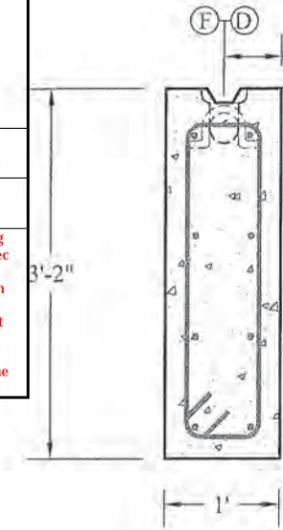
Cutoff Wall Reinforcement Detail



CW-1 Detail



CW-2 Detail



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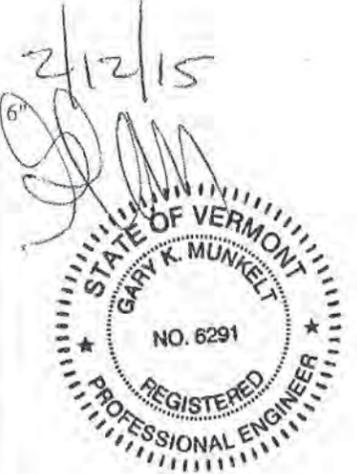
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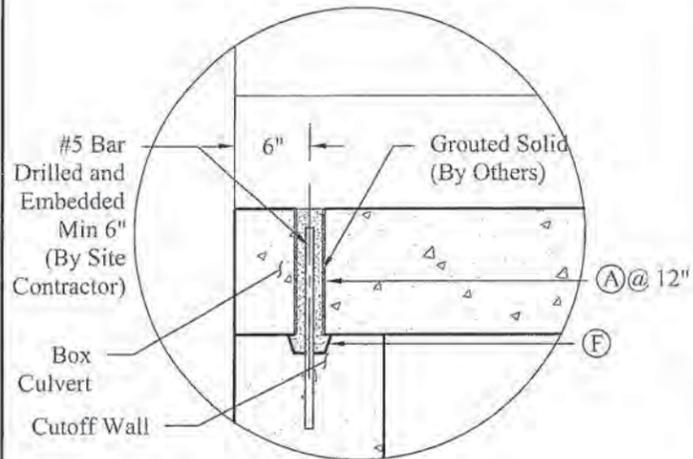


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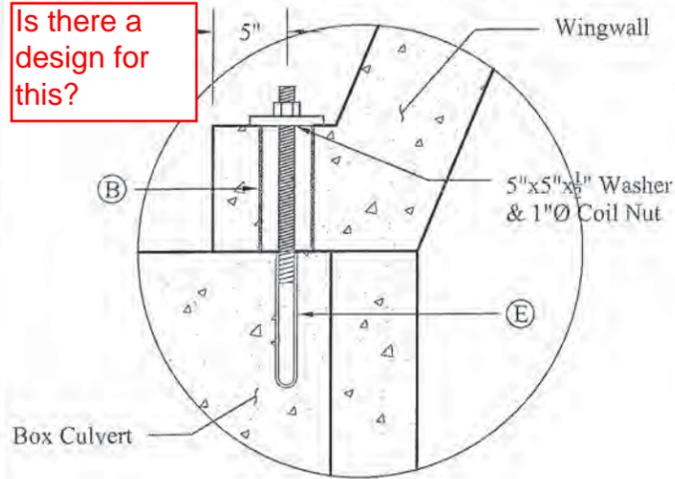
HW_CW_DETAILS

6_OF_7

CW to BC Connection Detail

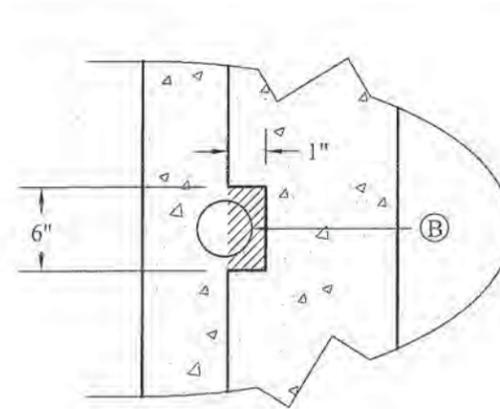


WW to BC Connection Detail

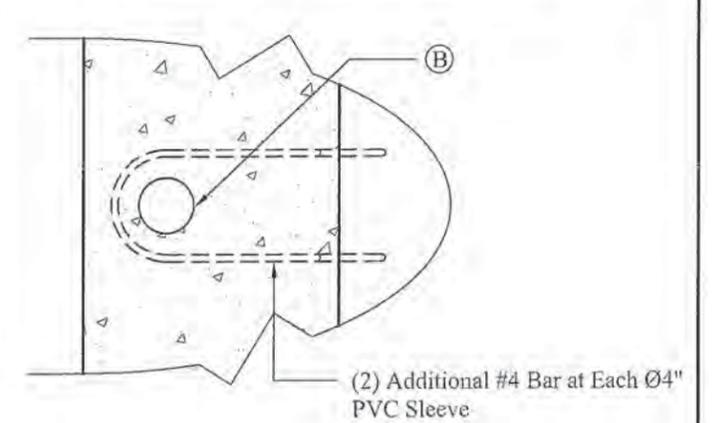


Is there a design for this?

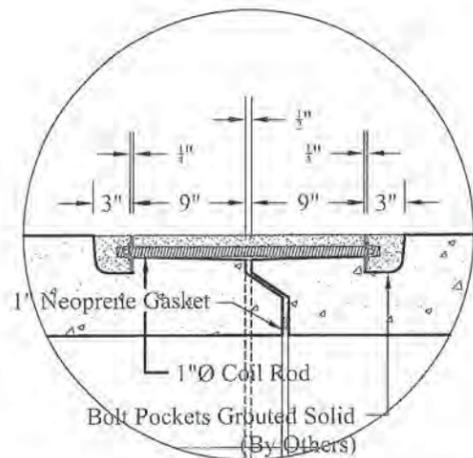
WW Sleeve Blockout Elevation Detail



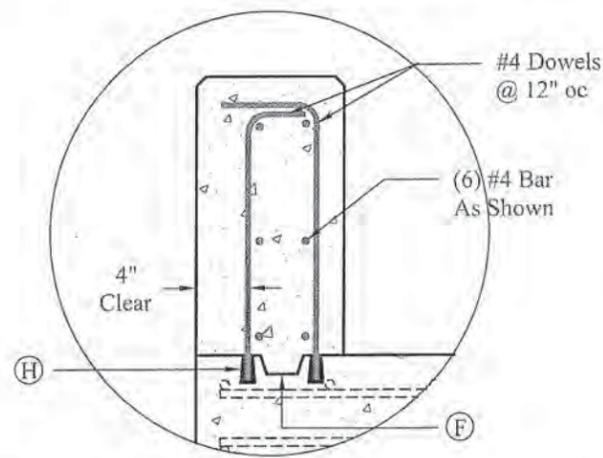
WW Sleeve Reinforcement Detail



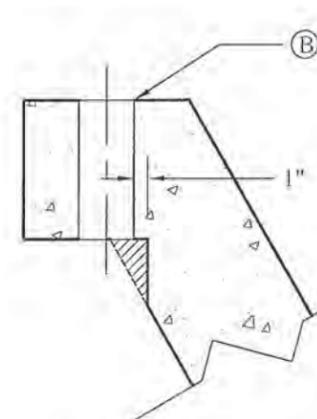
Bolt Pocket Connection Detail



HW to BC Connection Detail



WW Sleeve Blockout Plan View



APPROVED: Approval of drawings and/or procedures indicates concurrence with the information presented and does not relieve the Contractor or fabricator of compliance with all specifications and code requirements

APPROVED AS NOTED

REVISE AND RESUBMIT X

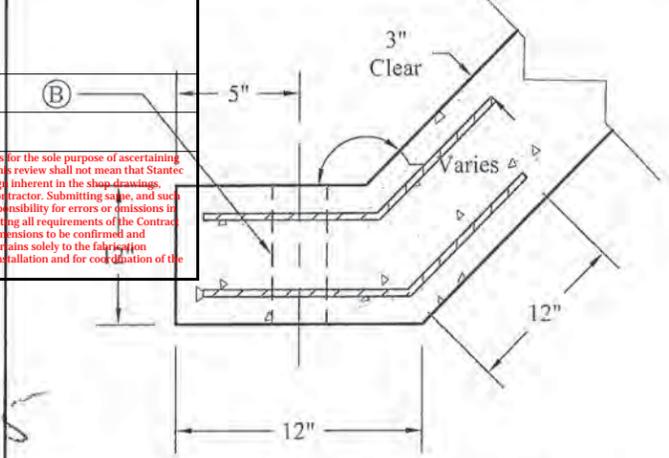
NOT REVIEWED

Date: 3/09/2015

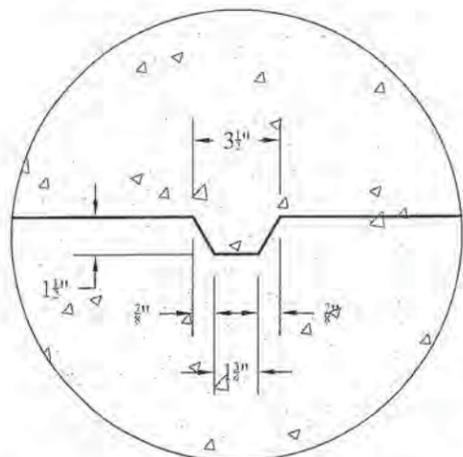
By: Michael J. Chenette

This review by Stantec Consulting Services Inc. is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that Stantec Consulting Services Inc. approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor. Submitting same, and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawing or of his responsibility for meeting all requirements of the Contract Documents. The contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to the fabrication processes or to techniques of construction and installation and for coordination of the work of all subtrades.

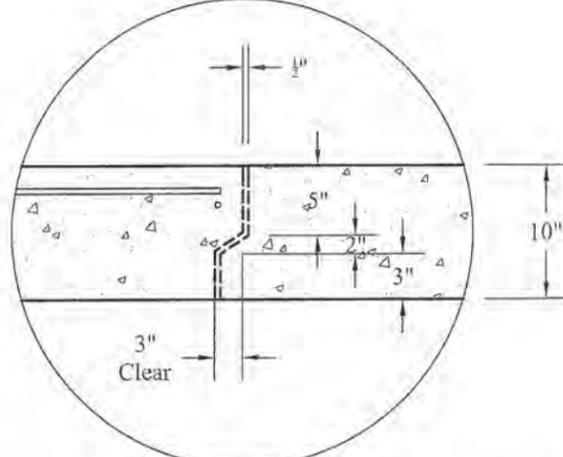
WW Angle Reinforcing Detail



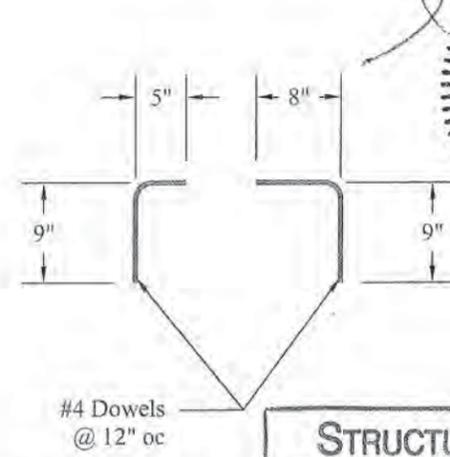
Keyway Connection Detail



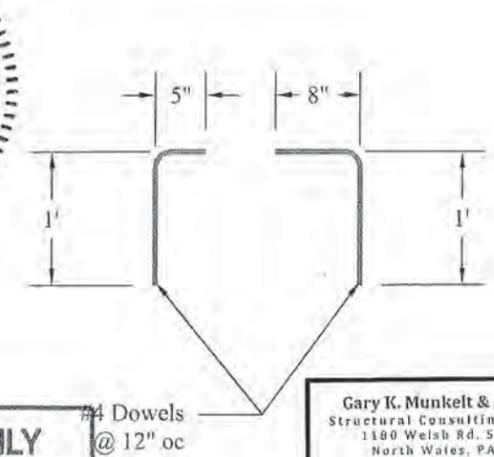
BC Vertical Shear Key Detail



HW-1 Reinforcement Detail



HW-2 Reinforcement Detail



2/12/15

STATE OF VERMONT
GARY K. MUNKELT
NO. 6291
REGISTERED
PROFESSIONAL ENGINEER

STRUCTURAL DESIGN ONLY

Gary K. Munkelt & Associates
Structural Consulting Engineers
1180 Welsh Rd. Suite 100
North Wales, PA 19454
Ph: 215-855-8713 F: 215-855-8714

<p>CONTRACTORS VTSPE:</p> <p>A 3"Ø PVC Sleeve B 4"Ø PVC Sleeve C Mechanical Bolt Pocket (A.L. Patterson w/ 1"Ø Coil Rod) D Oxford A750-7 Lifting Device E 1"Øx12" CX-9 Coil Loop Inset F 1 1/2" x 3 1/2" Continuous Keyway G Solid Lines Indicate 3/4" Chamfer H 3/4" F1 42 Ferrule Inset</p>	<p>PRECAST CONCRETE BOX CULVERT SHOP DRAWINGS (SDI JOB #15428)</p> <p>SUPERVISOR: E. Barendse DETAILER: I. ADAMS CHECKER: E. Barendse ENGINEER: G. K. Munkelt</p>		<p>PROJECT NAME: Bridport PROJECT #: CULV(29) Br.#5 LOCATION: Bridport, VT</p>		<p>Peckham Road Corp. 1557 St. Rt. 9, #3 Lake George, NY 12845 Ph: (518) 747-3353</p>		<p>FABRICATOR: 193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0201</p>		
	<p>02/12/15</p>		<p>CONNECTION_DETAILS</p>		<p>7_OF_7</p>				

CONCRETE MIX DESIGN**6000 psi****SCC**

SDI MIX CODE: P60TER

DATE: March 28, 2014 **PLANT:** Burlington/Williston, VT**PROJECT:** General DOT Precast - 2014**FINE AGGREGATE:**
ASTM C 33Source: Hinesburg Sand & Gravel
Specific Gravity: 2.67 (Abs.: 1.3%)
Fineness Modulus: ≥ 2.6 **COARSE AGGREGATE:**
ASTM C 33Source: S.D. Ireland, Brownell Quarry
Specific Gravity: 2.80 (Abs.: 0.30%)
Description: 3/4" 100% Crushed Stone (Size #67)**CEMENT:**Ternary Blend Cement; Lafarge North America Lakes and Seaway Re
St. Constant, Quebec (Sp. Gvty. 3.02)**ADMIXTURES:**Water Reducer (HRWR): Glenium 7500; BASF
Air Entraining Agent: Darex II AEA; Grace Concrete Chemicals**CONSTITUENTS (LBS. /YD³)**

		<u>Abs. Vol.</u>
Coarse Aggregate (SSD)	1750	10.02
Fine Aggregate (SSD)	1017	6.10
Cement	800	4.25
Water	304.6	4.88
Air Content (Entrained)	6.5%	1.75
Total	3872	27.00ft ³

MIX PROPERTIESWater Cement Ratios: 0.38
Entrained Air Content: 5.0 % - 9.0%
Dry Unit Weight: 144.2 \pm pcf
Spread: 20" to 28"
VSI ≤ 1 **ADMIXTURE(S) DOSEAGE (OZ. /YD³)**

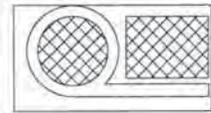
Glenium 7500 (HRWR)	56 - 64
Darex II AEA	2.8

BREAK HISTORY \pm

24-HR.	3400 PSI
7-DAYS	6000 PSI
28-DAYS	6700 PSI

*Approved by James Walsh, VDOT Composite
Materials Engineer 7/17/14*

*Admixture dosage rates are subject to change.



Pennsylvania Insert Corp

PO Box 199
Spring City PA 19475
tel: 610-948-9688
fax: 610-948-4975

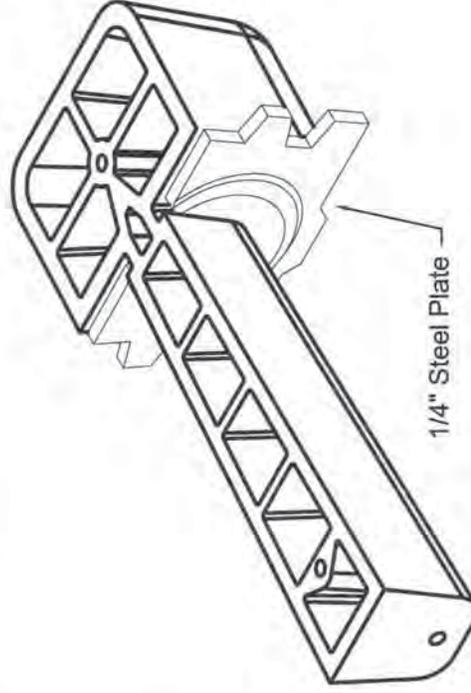
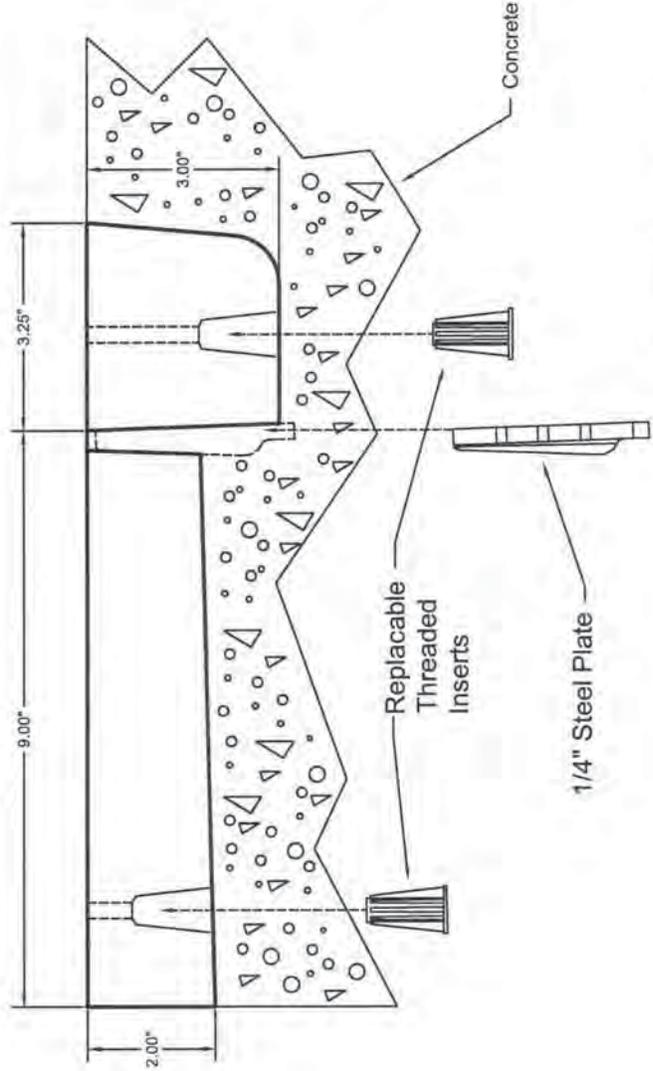
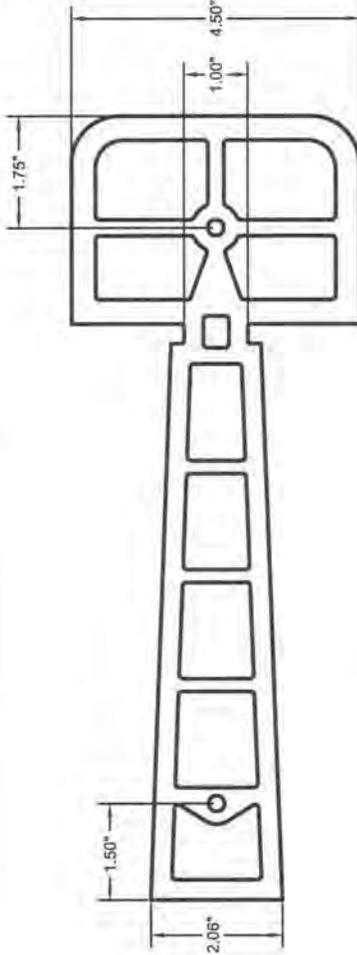
email: sales@pennsylvaniainsert.com
web: www.pennsylvaniainsert.com

Approved/Notes

Fax to:	Customer	Page ___ of ___
Fax#	Project	
From	Job#	Ship Date
Date	PA Insert Quote/Order#	

BOLT POCKET FORMER (for up to 1" bolt)

- Made from durable Urethane for reusability
- Ribbed construction increases strength
- *Replacable 1/4" Threaded Inserts
- **1/4" Galvanized Steel Plate Standard
- Available with magnets to attach to form



*Threaded Inserts sold separately (Part Number 1200)

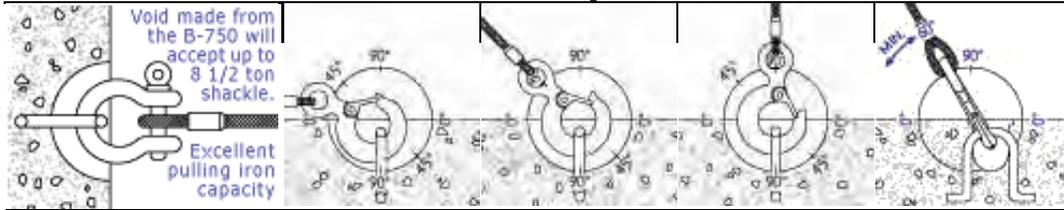
**Steel Plate stays in concrete, sold separately (Part Number 4024)

06/03/04



PO Box 736 ■ Stevenson, CT 06491
 www.oxfordtechusa.com
 Phone: (203) 268-6030
 Fax: (203) 445-1240
 info@oxfordtechusa.com

Oxford Lift System®



Anchor Product Code	Slab Min. Inches	Safe Working Load @ 90 degree Shear-0 degree Pull	Safe Working Load @ 90 degree Shear-45 degree Pull	Safe Working Load @ 90 degree Tension-90 degree Pull	Safe Working Load @ 90 degree Shear-60 degree Pull
A 500-3	4.00"	4,500	4,000	3,500	4,000
A 500-4	5.00"	8,000	5,500	4,000	5,000
A 500-5	6.00"	10,500	6,500	5,000	5,500
A 750-5	6.00"	12,500	8,000	7,000	7,000
→ A 750-7	8.00"	15,000	12,500	10,000	10,000

Note: Safe Working Load provides a factor of safety of approximately 4:1

Test Results are based on a minimum concrete compressive strength of 4,000 psi.

[< back](#) [next >](#)

Home	B-500 & B-750	S-150	S-300	Lift Anchor & Order Form	Concrete Products
Pull Iron Capacity	Anchors & Accessories	Toggle-Lok	Insert/Lift Anchor	Grid-Lok/Rebar Chair	Helpful Calculations COMING SOON!

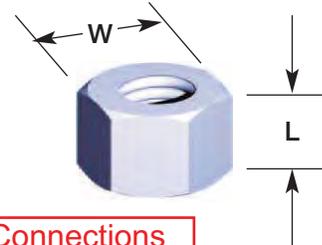
Precast Products Manual

Coil Lifting Insert Accessories

(2060) CN-5 COIL NUT

The CN-5 Standard Coil Nut is manufactured from hex stock and is available in 1/2" through 1-1/2" diameters. Dimensions are displayed in the table.

The Standard Coil Nut safe working loads are based on an approximate 5:1 safety factor for lifting applications.



Coil Nut for WingWall Connections

NOTE: Coil Nut – Heavy page 86

CN-5 STANDARD COIL NUT DATA									
Bolt Size		Safe Work Load (Tension)				Nut Length L		Width Across Flats W	
		One CN-5		Two CN-5 or One CN-25					
in.	mm	lbs.	kN	lbs.	kN	in.	mm	in.	mm
1/2	13	1800	8	3600	16	1/2	13	7/8	22
3/4	19	3600	16	7200	32	5/8	15	1 1/8	28
1	25	7200	32	15,000	67	1	25	1 5/8	41
1 1/4	32	10,800	48	22,500	100	1 1/4	32	2	50
1 1/2	38	16,200	72	27,000	120	1 1/2	38	2 3/8	60

Table is based on a 5:1 safety factor for lifting applications.

1) Note that in order to achieve the published safe working loads of Coil Bolts, Coil Rods, etc., two (2) Standard Coil Nuts tightly locked together are required when using the Standard Coil Nut.

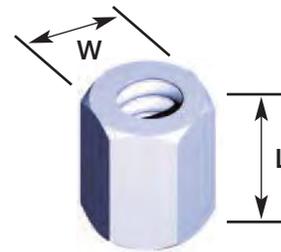
88

To Order, Specify: quantity, name and bolt diameter.

(2062) CN-25 COIL NUT – HEAVY

The CN-25 Heavy Coil Nut is manufactured from hex stock like the Standard Coil Nut, but is of sufficient length to develop the safe working load required for heavy form tying systems and precast lifting applications.

The Heavy Coil Nut safe working loads are based on an approximate 5:1 safety factor for lifting applications.



CN-25 HEAVY COIL NUT DATA							
Bolt Size		Safe Work Load (Tension)		Nut Length L		Width Across Flats W	
		Two CN-5 or One CN-25					
in.	mm	lbs.	kN	in.	mm	in.	mm
1/2"	13	3600	16	1	25	7/8	28
3/4"	19	7200	32	1 1/2	38	1 1/8	28
1"	25	15,000	67	2	50	1 5/8	41
1 1/4"	32	22,500	100	2 1/2	64	2	50

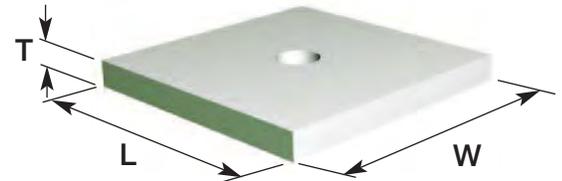
Table is based on a 5:1 safety factor for lifting applications.

To Order, Specify: quantity, name and bolt diameter.

Coil Lifting Insert Accessories

(2080) CW-4 FLAT WASHER

The CW-4 Flat Washers are manufactured from high carbon flat steel plate and are designed to provide the required bearing against the form members. Flat Washers are available in many sizes in both standard and heavy versions. Refer to the table for dimensions and safe working loads.



Flat Washer Safe working loads are based on an approximate 5:1 safety factor for lifting applications.

CW-4 FLAT WASHER DATA									
Bolt Size		Type	T		L		W		
in.	mm		in.	mm	in.	mm	in.	mm	
1/2	13	Standard	1/4	6	4	100	3	75	
3/4	19	Standard	1/4	6	4	100	5	125	
1	25	Standard	1/2	13	5	125	5	125	
1 1/4	32	Standard	1/2	13	5	125	5	125	
1 1/2	38	Standard	3/4	19	5	125	5	125	
1/2	13	Heavy	1/4	6	4	100	5	125	
3/4	19	Heavy	1/2	13	5	125	5	125	
1	25	Heavy	3/4	19	7	175	7	175	
1 1/4	32	Heavy	3/4	19	7	175	7	175	
1 1/2	38	Heavy	3/4	19	7	175	7	175	

To Order, Specify: quantity, name and bolt diameter.

Coil Rod and Plate Washer for WingWall Connections

(2102) CR-4 COIL ROD

CR-4 Continuous Coil Rod is manufactured and stocked in 12'-0" lengths. Special lengths are available up to 20'-0".

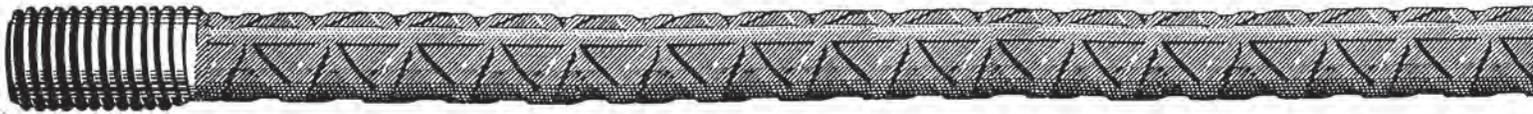
Requires minimum two (2) Standard CN-5 Coil Nuts or one (1) Heavy CN-25 Coil Nut to develop full safe work load. Minimum coil thread penetration is same as shown for coil bolts. See Table on page 88 to assure minimum coil penetration. May be cut with carborundum blades without thread damage. Do not use cutting torch to cut coil rod.



CR-4 HI-STRENGTH CONTINUOUS COIL ROD SELECTION TABLE					
Bolt Diameter		Safe Work Load			
		Tension		Shear	
In.	mm.	lbs.	kN.	lbs.	kN.
1/2	13	3600	16	2400	11
3/4	19	7200	32	4800	21
1	25	15000	67	10000	44
1-1/4	32	24000	107	16000	71
1-1/2	38	28000	124	18000	83

Table is based on a 5:1 safety factor for lifting applications.

To Order, Specify: quantity, name, bolt diameter and length.



Male Dowel Bars for Headwalls

Table 3, "Basic Development Length of Standard Hooks for Grade 60 Rebar" identifies basic development lengths of hooked rebar embedded in various specified compressive strength normal weight concrete.

Table 4, "Recommended DB-SAE-3 Headed Splicer and Dowel-in Sizes", displays information pertaining to splices utilizing the DB-SAE-3 Headed Splicer shown in the detail below.

Table 5, "Reinforcing Steel Data", shows the ASTM Standards for reinforcing bars.

Rebar Size	NORMAL WEIGHT CONCRETE (psi)		
	3,000	4,000	5,000
#3	8.2	7.1	6.4
#4	11.0	9.5	8.5
#5	13.7	11.9	10.6
#6	16.4	14.2	12.7
#7	19.2	16.6	14.8
#8	21.9	19.0	17.0
#9	24.7	21.4	19.1
#10	27.8	24.1	21.6
#11	30.9	26.8	23.9
#14	37.1	32.1	28.7
#18	49.4	42.8	38.3

Table 3: Basic Development Length of Standard Hooks for Grade 60 Rebar

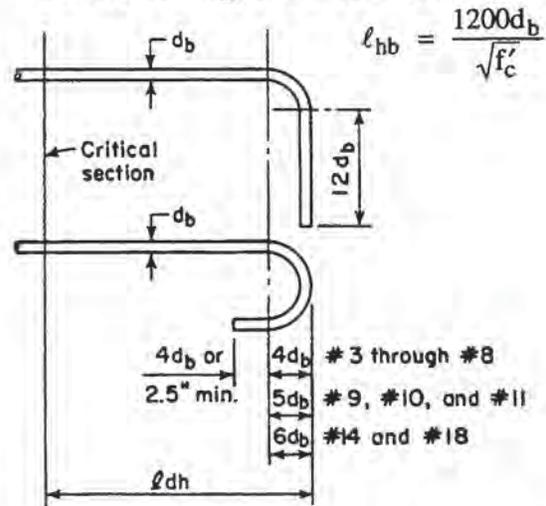
System Thread Size	DB-SAE-3 Headed Splicer	Embed Length (12D)	Load Capacity	
			1.25 P _y	1.6 P _y
5/8"-11unc	#4	6"	15,000	19,200
3/4"-10unc	#5	7-1/2"	23,250	29,760
7/8"-9unc	#6	9"	33,000	42,400
1"-8unc	#7	10-1/2"	45,000	57,600
1-1/8"-8un	#8	12"	59,250	75,840

Table 4: Recommended DB-SAE-3 Headed Splicer Sizes - Grade 60 Rebar

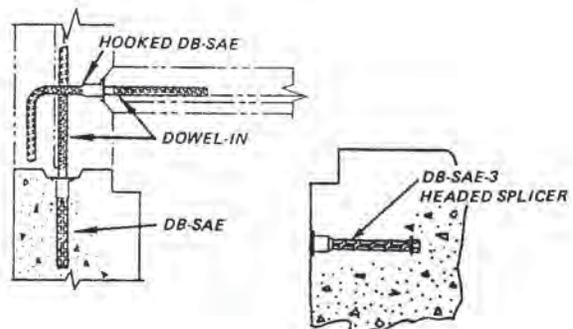
Bar Size Designation	Weight (lbs. per ft.)	Nominal Diameter	
		Diameter (in)	Cross-Section Area (sq. in.)
#4	0.668	0.500	0.20
#5	1.043	0.625	0.31
#6	1.502	0.750	0.44
#7	2.044	0.875	0.60
#8	2.670	1.000	0.79
#9	3.400	1.128	1.00
#10	4.303	1.270	1.27
#11	5.313	1.410	1.56

Table 5: ASTM Standard Rebar Data

Development l_{dh} of Standard Hooks



The details displayed show a few of the many, many applications where the versatile Dayton Richmond Dowel Bar Splicer System can be used.



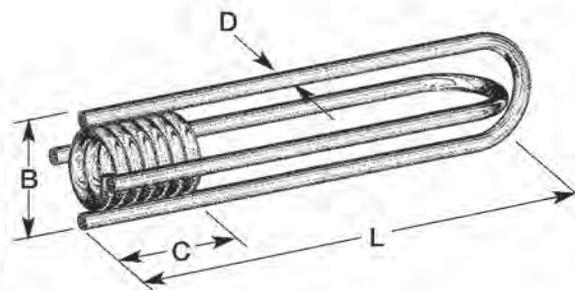
Inserts for Wingwall Connections

Coil Lifting Inserts

CRISS-CROSS COIL INSERT - STRAIGHT (2178)

The Criss-Cross Coil Insert - Straight (2178) is a high strength four strut insert ideally suited for precast concrete edge lift applications. The four strut design and high safe working loads make this insert a good, safe choice for preventing panel failures. The Criss-Cross Coil Insert - Straight is available in plain or hot dip galvanize finish.

To Order, Specify: quantity, name, bolt diameter, length (L dimension) and finish.



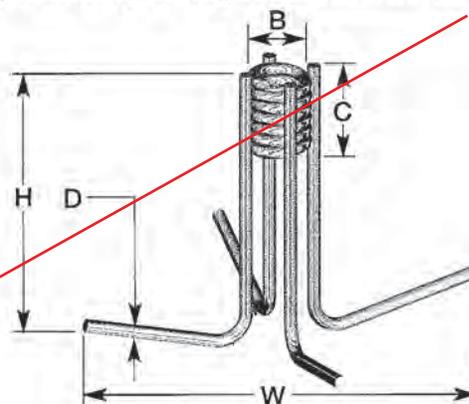
Bolt Diameter		Insert Length L		Minimum Slab Thickness		Safe Work Load for Edge Lift				Minimum Corner Distance		B		Coil Length C		Wire Diameter D	
in.	mm	in.	mm	in.	mm	lbs.	kN	lbs.	kN	in.	mm	in.	mm	in.	mm	in.	mm
3/4"	19	9"	229	4"	100	3700	16.4	1500	6.7	24"	600	1 11/16"	43	1 5/8"	41	.306"	7.8
3/4"	19	12"	305	4"	100	4600	20.4	1500	6.7	24"	600	1 11/16"	43	1 5/8"	41	.306"	7.8
1"	25	9"	229	5 1/2"	140	4500	20.0	2000	8.9	24"	600	2 1/8"	54	2 1/16"	52	.306"	7.8
1"	25	12"	305	5 1/2"	140	6500	28.9	2500	11.1	24"	600	2 1/8"	54	2 1/16"	52	.306"	7.8
1"	25	9"	229	5 1/2"	140	4500	20.0	2000	8.9	24"	600	2 1/8"	54	2 1/16"	52	.375"	9.5
1"	25	12"	305	5 1/2"	140	6500	28.9	2500	11.1	24"	600	2 1/8"	54	2 1/16"	52	.375"	9.5
1 1/4"	32	9"	229	6"	150	4700	20.9	3500	15.6	24"	600	2 1/2"	63	2 1/16"	52	.440"	11.2
1 1/4"	32	12"	305	6"	150	7500	33.3	3500	15.6	24"	600	2 1/2"	63	2 1/16"	52	.440"	11.2

Table is based on minimum concrete strength of 3,000 psi and a 4:1 safety factor. Inserts must have a 1/2" setback from the surface of the concrete and sufficient coil penetration by the lifting bolt. See minimum bolt penetration information on page 87.

THIN SLAB COIL INSERT (2185)

The Thin Slab Coil Insert (2185) is a four strut insert fabricated with a wire coil and four deformed (ribbed) wire legs. This insert is applicable for face lift handling of precast panels, slabs and other similar types of precast elements. The Thin Slab Coil Insert is available in plain or hot dip galvanize finish.

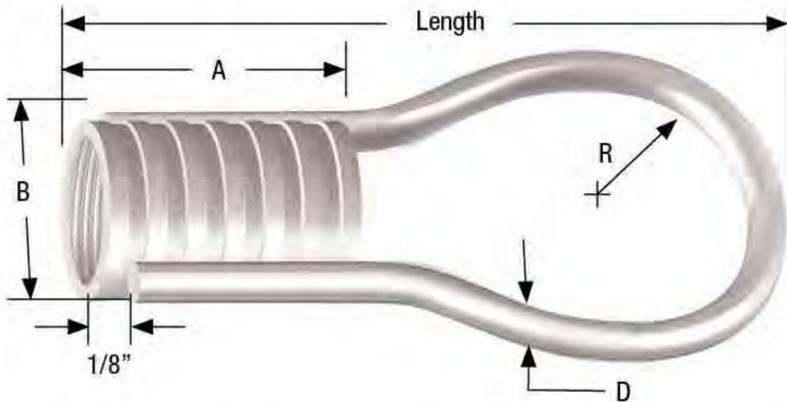
To Order, Specify: quantity, name, bolt diameter and finish.



Bolt Diameter		Insert Height H		Safe Work Load (Tension)		B		Coil Length C		Wire Diameter D		W		Minimum Edge Distance	
in.	mm	in.	mm	lbs.	kN	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
3/4"	19	3"	76	2500	11.1	1 5/8"	41	1 3/4"	44	.306"	7.8	7 1/8"	181	9"	230
1"	25	4"	100	3500	15.6	1 7/8"	47	2 1/16"	52	.306"	7.8	9 1/2"	241	12"	305
1 1/4"	31	4"	100	4000	17.8	2 1/4"	57	2 1/16"	52	.375"	9.5	9 3/4"	248	12"	305
1 1/2"	38	4"	100	4000	17.8	2 1/2"	63	2 1/16"	52	.375"	9.5	10"	254	12"	305

Table is based on minimum concrete strength of 3,000 psi and a 4:1 safety factor. Inserts must have a 1/2" setback from the surface of the concrete and sufficient coil penetration by the lifting bolt. See minimum bolt penetration information on page 87.

FI-42: FLARED LOOP FERRULE INSERT



Fabricated by welding a looped strut to a closed-end ferrule, this versatile insert is commonly used to make structural connections and to suspend pipes and other mechanical equipment. Available in 3/8", 1/2", 5/8", 3/4", 7/8" and 1" sizes. Insert available in plated finish.

*Standard inserts not designed for use with hot dip galvanized bolts.

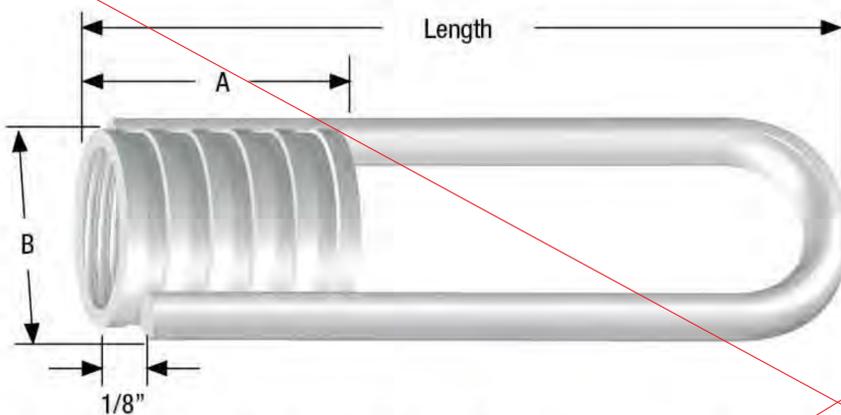
FLARED LOOP FERRULE INSERT DIMENSIONS AND LOAD CHART

In-Concrete Capacity, 3:1 SWL

Part Number	Bolt Diameter (N.C. Thread)	Threads per Inch (N.C.)	Length	A	B	R	Wire Diameter D	Insert Ultimate Mechanical Capacity (lbs)	Min. Edge Distance	Tension (lbs)
FI4238P	3/8"	16	2-3/4"	1-1/4"	1"	9/16"	0.243"	6,000	5"	2,000
12P	1/2"	13	2-3/4"	1-3/8"	1-1/8"	9/16"	0.243"	6,000	5"	2,000
FI4258P	5/8"	11	3-1/2"	1-5/8"	1-3/8"	13/16"	0.262"	6,900	5"	2,300
FI4234P	3/4"	10	3-1/2"	1-5/8"	1-5/8"	13/16"	0.262"	7,500	5"	2,500
FI4278P	7/8"	9	6"	1-5/8"	2-1/16"	1-3/8"	0.375"	15,900	8"	5,300
FI421P	1"	8	6"	1-5/8"	2-1/16"	1-3/8"	0.375"	15,900	8"	5,300

- Safe Working Load is based on 3,000 psi concrete and insert setback 1/2" from the concrete surface.
- Minimum spacing of inserts is 2 x (edge distance).

FI-64: STRAIGHT LOOP FERRULE INSERT



The Straight Loop Ferrule Insert is typically used to attach a precast wall panel to a building frame, as well as to provide attachment of other structural elements that may be required. Available in 1/2", 5/8", 3/4" and 1" sizes. Insert available in plated finish.

*Standard inserts not designed for use with hot dip galvanized bolts.

STRAIGHT LOOP FERRULE INSERT DIMENSIONS AND LOAD CHART

In-Concrete Capacity, 3:1 SWL

Part Number	Bolt Diameter	Threads per Inch (N.C.)	Length	A	B	Wire Diameter D	Insert Ultimate Mechanical Capacity (lbs)	Min. Edge Distance	Tension (lbs)
FI64124P	1/2"	13	4-1/8"	1-3/8"	1-1/8"	0.225"	9,000	5"	3,000
FI64126P	1/2"	13	6-1/8"	1-3/8"	1-1/4"	0.306"	15,000	8"	5,000
FI64584P	5/8"	11	4-1/8"	1-5/8"	1-1/4"	0.225"	9,000	5"	3,000
FI64586P	5/8"	11	6-1/8"	1-5/8"	1-5/8"	0.375"	15,000	8"	5,000
FI64344P	3/4"	10	4-1/8"	1-5/8"	1-3/8"	0.225"	9,000	5"	3,000
FI64346P	3/4"	10	6-1/8"	1-5/8"	1-3/4"	0.375"	15,000	9"	5,000
FI6416P	1"	8	6-1/8"	1-5/8"	2-1/8"	0.375"	15,000	9"	5,000

- Safe Working Load is based on 3,000 psi concrete and insert setback 1/2" from the concrete surface.
- Minimum spacing of inserts is 2 x (edge distance).

MasterProtect® H 440 HZ

Breathable, solvent-based, silane penetrating water-repellent sealer

FORMERLY HYDROZO® SILANE 40 VOC

PACKAGING

- 5 gallon (18.9 L) pails
- 53 gallon (201 L) drums

COLOR

Clear

YIELD

Poured in place and precast concrete:
125–225 ft²/gal (3.1–5.5 m²/L)

Coverage may vary greatly with porosity of the substrate; extremely porous substrates may require 2 coats. Perform test panels to ensure desired results and coverage rates.

STORAGE

Store in unopened containers in a clean, dry area between 35 and 110° F (2 and 43° C).

SHELF LIFE

18 months when properly stored

VOC CONTENT

Less than 600 g/L less water and exempt solvents

DESCRIPTION

MasterProtect H 440 HZ is a breathable, solvent-based, water repellent sealer containing 40% alkylalkoxysilane.

PRODUCT HIGHLIGHTS

- 40% silane
- Excellent depth of penetration
- Water repellent which helps to protect from damage caused by chloride intrusion, extends life of structures
- Solvent based, excellent for cold-weather applications
- Breathability allows interior moisture to escape without damaging sealer
- Does not alter surface appearance
- Surface sealer helps reduce efflorescence, atmospheric staining, and mildew

APPLICATIONS

- Horizontal
- Exterior
- Above grade
- Parking decks
- Bridges
- Stadiums

SUBSTRATES

- Concrete
 - precast
 - prestressed
 - poured in place

HOW TO APPLY

SURFACE PREPARATION

1. Verify substrate has properly cured. Concrete should obtain 80% of design strength, typically achieved within 14–28 days.
2. Clean all surfaces of all sand, surface dust and dirt, oil, grease, chemical films and coatings, and other contaminants prior to application. Power wash, sandblast, or shotblast as necessary to achieve the desired surface condition.
3. Air, material, and surface temperatures should be 40° F (4° C) or higher during application. Do not apply sealer when temperatures are expected to fall below 20° F (-7° C) within 12 hours or when rain is expected within 4 hours following the application. MasterProtect H 440 HZ may be applied to slightly damp surfaces.
4. Caulking and sealant work may be done before or after the application of the sealer. Allow sealant to cure fully cured before application of Master Protect H 440 HZ. Following the application, remove excess product that might pond on a concave sealant joint.

APPLICATION

1. Test a small area of the surface (generally a 5 by 5 ft [1.5 by 1.5 m] section) before starting general application of any clear penetrating sealer to ensure desired performance results, aesthetics and coverage rates. Allow 5–7 days for the product to fully react before evaluating. Contact Technical Service for details.

Technical Data

Composition

MasterProtect H 440 HZ is an alcohol-based alkylalkoxysilane product.

Typical Properties

PROPERTY	VALUE
Active alkylalkoxysilane content, % by weight	> 40
Penetration, in (mm), average depth, depending upon substrate	0.20 (5)
Surface appearance after application	Unchanged

Test Data

PROPERTY	RESULTS	TEST METHOD
Flash point, ° F (° C)	53 (12)	SETA, IPA
Waterproofing after abrasion, % at 225 ft²/gal (5.6 m²/L)	88.4	Alberta Transportation and Utilities Type 1B
Resistance to chloride, lb/yd³ Criteria of 1.5 at ½" Criteria of 0.75 at 1"	< 0.2 < 0.00	
Water weight gain, % reduction, at 200 ft²/gal (5 m²/L)	86 – exceeds criteria	NCHRP 244 Series II-cube test
Absorbed chloride, % reduction, at 200 ft²/gal (5 m²/L)	92 – exceeds criteria	NCHRP 244 Series II-cube test
Absorbed chloride, % reduction, at 200 ft²/gal (5 m²/L)	99 – exceeds criteria	NCHRP 244 Series IV - Southern climate
Moisture-vapor transmission rate, %	102	OHD-L-35

Test results are averages obtained under laboratory conditions. Reasonable variations can be expected.

2. Stir material thoroughly before and during application.
3. Apply to saturation using low-pressure non-atomizing spray or pouring, followed by a squeegee or a broom for even distribution.

DRYING TIME

Typical drying time for MasterProtect H 440 HZ is 4 hours at 70° F (21° C) and 50% relative humidity. Cooler temperatures or higher relative humidity can extend the drying time.

CLEAN UP

Clean equipment with xylene or MasterSeal 990.

FOR BEST PERFORMANCE

- Do not apply during inclement weather or when inclement weather is anticipated within 12 hours.
- Protect asphalt-based products, such as roofing materials, plastic products, shrubbery, and plant life from overspray.
- Take caution with specially coated glass. Test small areas before application to ensure the product does not discolor the coating.
- To prevent damage to nearby shrubbery and landscaping, cover or protect with drop cloth.
- Paint line striping after the application of the sealer.
- Plastic windows will turn opaque when sprayed with this product.
- Variations in the texture and porosity of the substrate will affect the coverage and performance of the product.
- MasterProtect H 440 HZ will not inhibit water penetration through unsound or cracked surfaces, or surfaces with defective flashing, caulking, or structural waterproofing.
- Make certain the most current versions of product data sheet and SDS are being used; visit master-builders-solutions.basf.us to verify the most current version.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and are not for supervising or providing quality control on the jobsite.

HEALTH, SAFETY AND ENVIRONMENTAL

Read, understand and follow all Safety Data Sheets and product label information for this product prior to use. The SDS can be obtained by visiting www.master-builders-solutions.basf.us, e-mailing your request to basfbscst@basf.com or calling 1(800)433-9517. Use only as directed.

For medical emergencies only, call ChemTrec® 1(800)424-9300.

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BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is the replacement of product or refund of the purchase price, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

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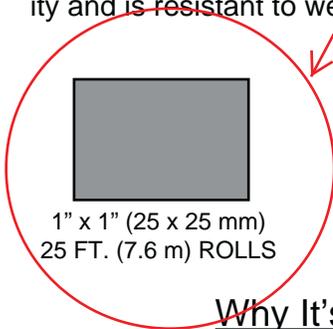
CELLULAR JOINT FILLER

CLOSED-CELL GASKET MATERIAL

sealer provided at all seams

What It Is

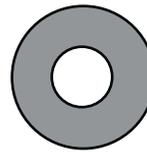
CLOSED CELL JOINT FILLER is a flexible, compressible material that easily fills difficult joints in concrete pipes and structures. Whether glued onto the joint or placed between the structures, it quickly conforms to the joint profile. **CLOSED CELL JOINT FILLER** can be supplied as cut and spliced gaskets or as bulk material for field fabrication of gaskets. It has excellent compressibility and is resistant to weather, ozone, acids, and alkalis.



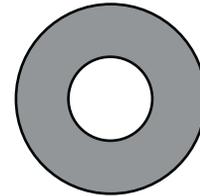
1" x 1" (25 x 25 mm)
25 FT. (7.6 m) ROLLS



1" x 2" (25 x 50 mm)
25 FT. (7.6 m) ROLLS



ROUND 3/8" (10 mm) WALL
250 FT. (76.2 m) ROLLS



ROUND 1/2" (13 mm) WALL
250 FT. (76.2 m) ROLLS

Why It's Better

- Works with Round, Elliptical, and Arch Pipe.
- Works with Box Culverts and Manholes.
- Available in 25' (7.6 m) or 250' (76.2 m) rolls, or by the foot.
- Also available as cut and spliced gaskets.
- Manufactured of high-quality synthetic rubber.
- Easily compresses to fill irregular joints.
- Clean and easy to use.
- May be used in place of trowelable sealants.
- Easily cut and spliced in the field or in your yard.
- May be glued directly to the joint.

How It Performs

CLOSED CELL JOINT FILLER MATERIAL meets or exceeds all requirements of:

ASTM D-1056 - Flexible Cellular Materials - Sponge or Expanded Rubber

RECTANGULAR CROSS-SECTIONS are made from a Neoprene/EPDM Blend.

CIRCULAR TUBING CROSS-SECTIONS are made from a Nitrile/PVC blend.

Typical Physical Properties

Color	Black	Density (pcf) average	5.5 - 7.5
Compression Deflection (psi)	5 - 9	Water Absorption by Weight (Max.)	10%
Tensile Strength (psi Min.)	30	Temperature Range (F)	
Elongation (%Min.)	125	Low (Flex without cracking)	-70
Resilience - Bashore (% rebound Average) (1/2" thickness @ 72°F)	25 - 40	High (Continuous)	150
Shore 00 Durometer	45 - 60	High (Intermittent)	200
		Heat Aging (7 days @ 158°F)	
		Lineal Shrinkage (Max.)	10%

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