# 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: | Brian Richardson | Date: | 12/8/2014 |
| Company: | C.C.S. Constructors | Job Name: | Stowe BRF 0235(11) |
| Address: | 138 Munson Ave | Job Number: | #15163 |
| City, St, Zip: | Morrisville, VT 05661 | Regarding: | Abutment, Wing Wall, and Retaining Wall Submittal #1 |
| Ph: / Fax: | 802-888-7701 | | |

WE ARE SENDING:
- [ ] Quote
- [x] Details
- [ ] Other: _____
- [x] Submittals
- [ ] Prints
- [ ] Plans
- [ ] Specifications
- [ ] Copy Of Letter
- [ ] Change Order
- [ ] Samples
- [ ] Revised Submittals

| Copies | Date | Pages | Description |
|---|---|---|---|
| 1 | 12/8/2014 | 1 | Transmittal Cover Page |
| 1 | 12/3/2014 | 11 | S.D.I. Abutment, Wing Wall, and Approach Slab Drawings |
| 1 | 12/3/2014 | 5 | Dimension Fabricators Reinforcement Drawings |
| 1 | 5/23/2014 | 1 | State Concrete Mix Design |
| 1 | | 2 | Pile Sleeve and Tension Sleeve details |
| 1 | | 3 | Post Tensioning Material details |
| 1 | | 5 | Splice Sleeve Details |
| 1 | | 1 | Bearing Shim Details |
| 1 | 12/8/2014 | 12 | Lifting Analysis Calculations and details |

These Are Submitted as Checked Below:
- [x] For Approval
- [ ] Approved as Submitted
- [ ] Resubmit __ Copies for Approval
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- [ ] Other:

**Notes/Remarks:**

Brian,

Please pass on to the state for approvals. Page 6, page 10, and page 11 all have clouded areas indicating bar interference that the state will have to provide direction for us.

Let me know if you have any questions.

Thank you.

Eric Barendse x265

Copy To: _____

Signed: Eric Barendse

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

# Precast Bridge Abutments

## Stowe BRF 0235(II)

**Concrete:**

Mix Designation: P50TER

| | |
|---|---|
| 1. Specified Mix Design | 5000 PSI |
| 2. Proposed Mix Design | 5000 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 | 3" Min. (Unless Noted Otherwise) |
| 5. Rebar Spacing | ±1" |
| 6. Rebar Clearance | ±1/4" |
| 7. Insert Placement | ±1/4" |

**Reinforcing:**

General Notes:

1. Reinforcing Steel - ASTM A615, Grade 60, Level II, Dual Coated
2. Materials and Manufacturing shall conform to ASTM C1433
3. Bar tied at every intersection.

Tolerances:

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

Lap Lengths:

1. Per AASHTO 5.11.2.1.1 & 5.11.5.3.1
   Lap Length for Level II (Dual Coated):
   #4 Bar=17"
   #5 Bar=26"
   #6 Bar=39"
   #7 Bar=53"
   #8 Bar=69"

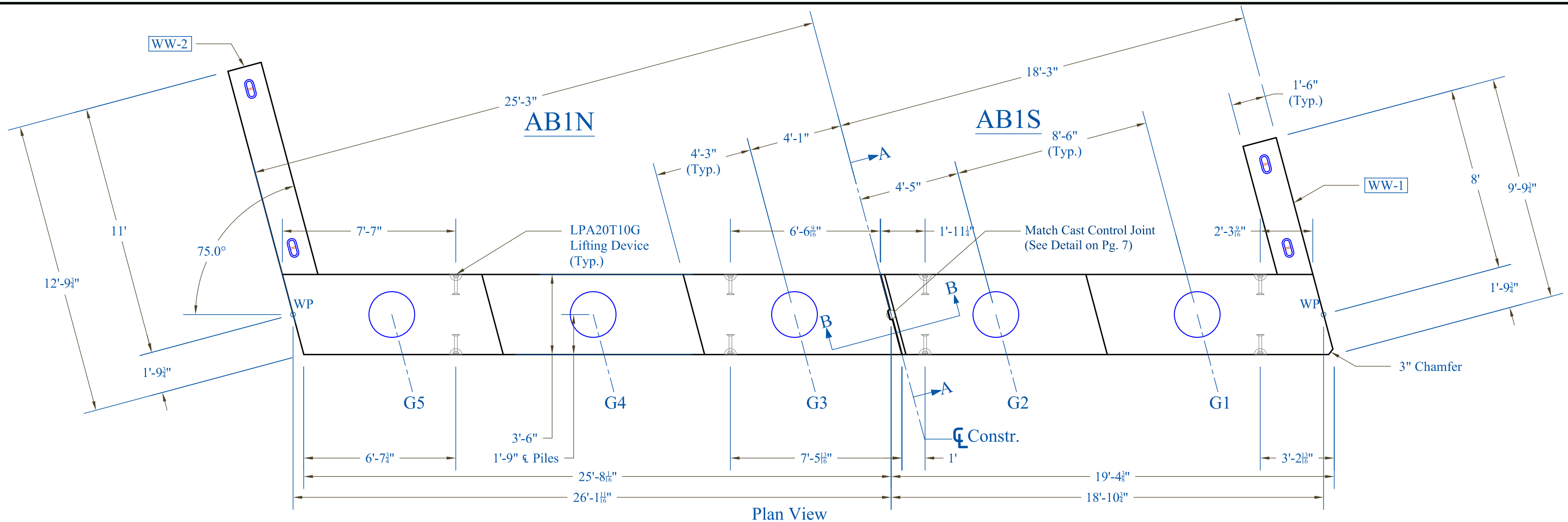
**General Notes:**

1. All precast pieces will be dry fit prior to shipping.
2. All lifting anchor points to be grouted after use.

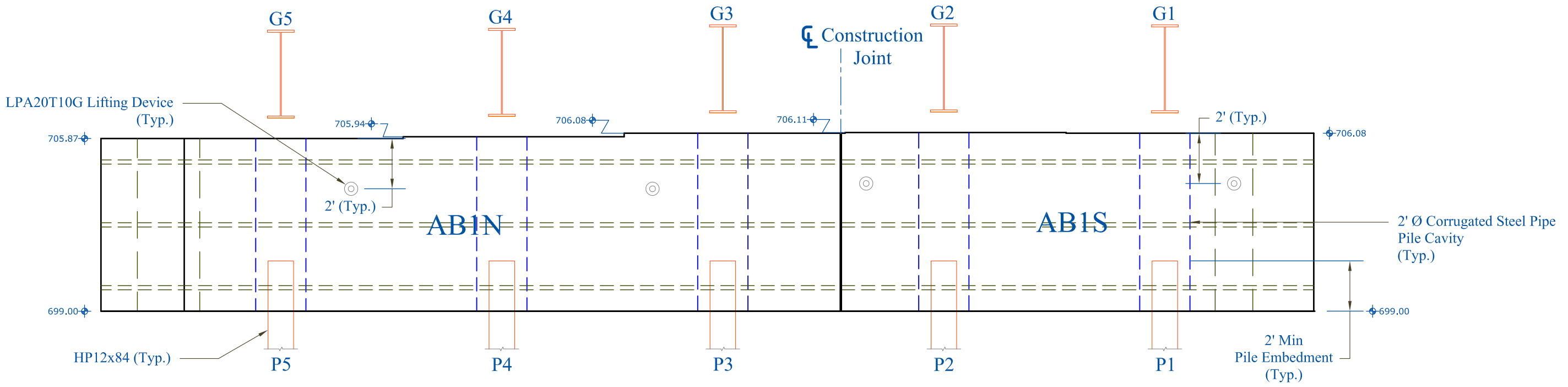
**Post Tensioning**

1. All anchoring assemblies will be galvanized plated.
2. Two tensioning strands per duct.
3. Tension ducts will be 3" SCH 40 PVC conduit.
4. Post tension strands will be .5"Ø, 270 ksi, low relaxation, 7-wire strands.
5. Strands will be tensioned to 32 kips prior to the H-pile sleeves being filled with HPC.
6. Tensioning block outs to be filled with grout after tensioning is complete

| | | | | | |
|---|---|---|---|---|---|
| CONTRACTORS VTSPE: | | PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #15163) | | INSTALLER: CCS Construction 138 Munson Ave Morrisville, VT 05661 PH: 802-888-7701 | FABRICATOR: 193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0201 SD Ireland Precast Division |
| | | SUPERVISOR: M. WHEELER<br>DETAILER: I. ADAMS<br>CHECKER: E. Barendse<br>ENGINEER: | PROJECT NAME: Stowe BRF 0235 (II)<br>PROJECT #: 0235 (II)<br>LOCATION: Stowe, VT | 12/03/14 | Abutment Text — 1 of 11 |




Plan View




Elevation View

AB1N: 84,300 lbs.
AB1S: 63,000 lbs

CONTRACTORS VTSPE:

PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #15163)

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CHECKER: E. Barendse
ENGINEER:

PROJECT NAME: Stowe BRF 0235 (II)
PROJECT #: 0235 (II)
LOCATION: Stowe, VT

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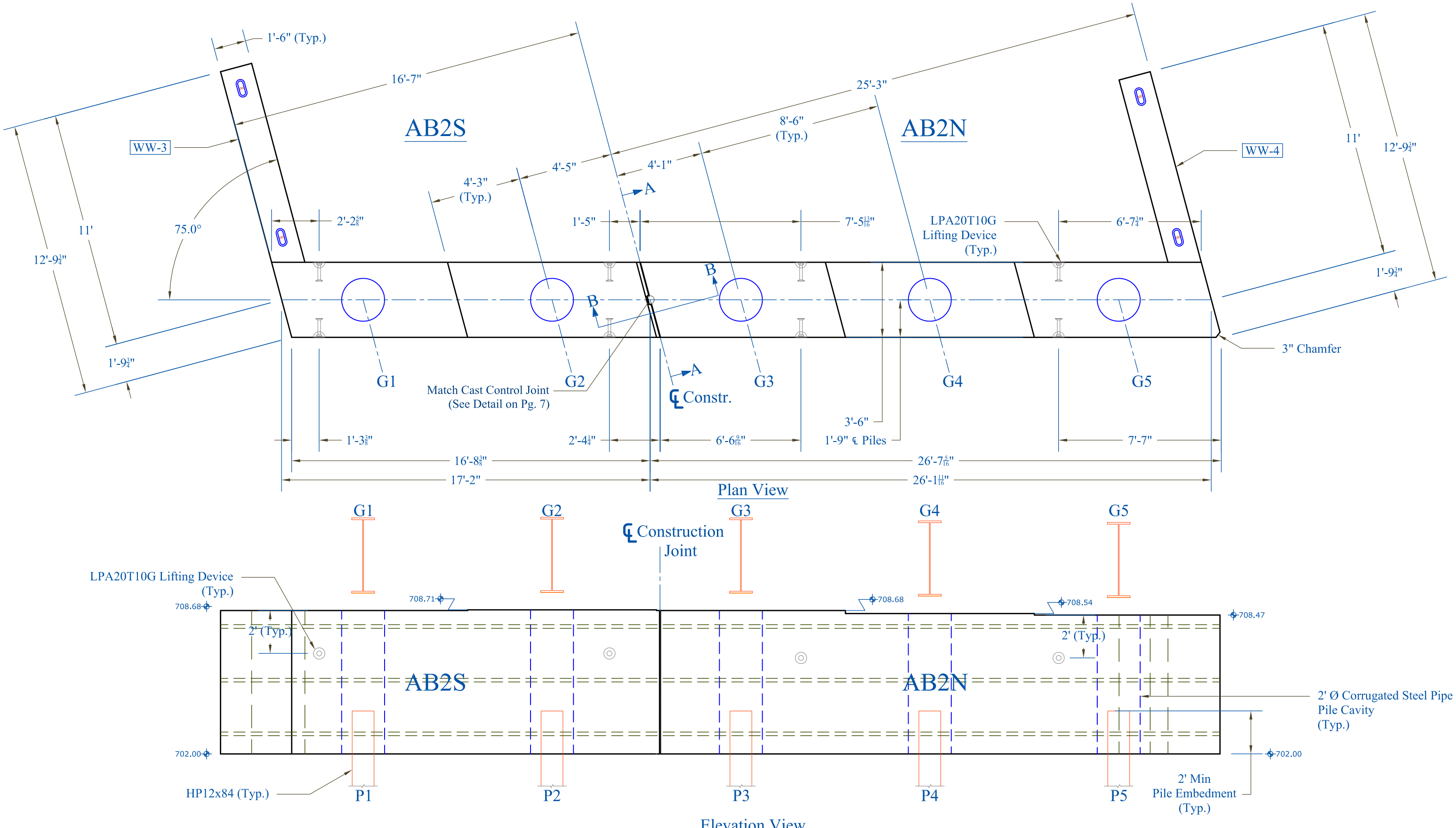
FABRICATOR:
193 INDUSTRIAL AVE.
WILLISTON, VT 05495
Ph: (802) 658-0201

SD Ireland Precast Division

12/03/14 | Abutment 1 | 2 of 11




AB2S: 54,400 lbs.
AB2N: 79,500 lbs

| | | | | | |
|---|---|---|---|---|---|
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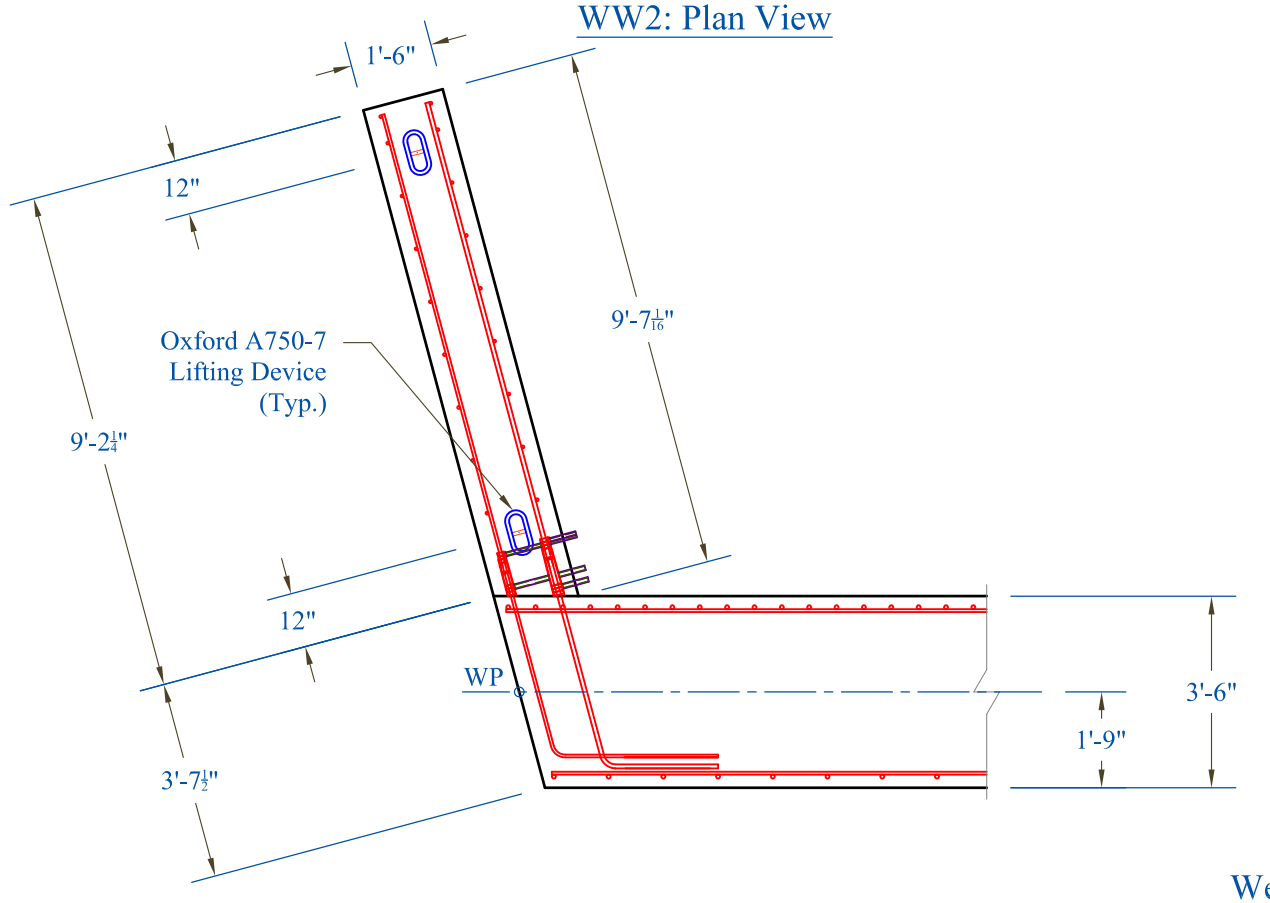
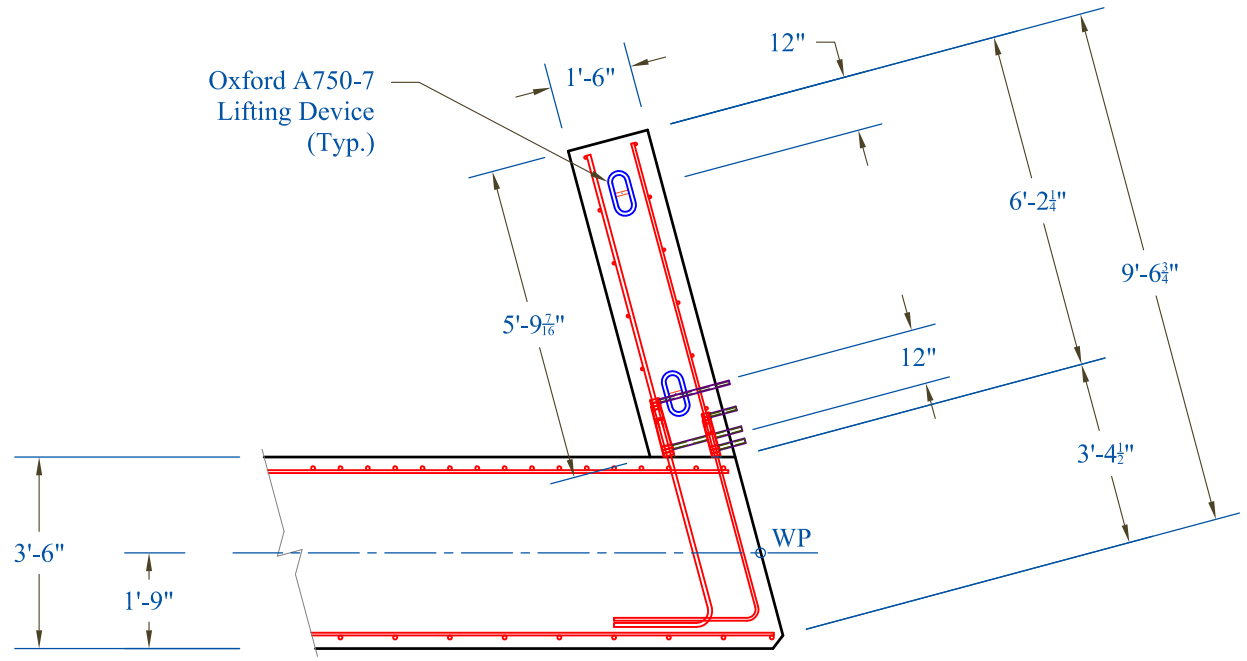
## WW2: Plan View



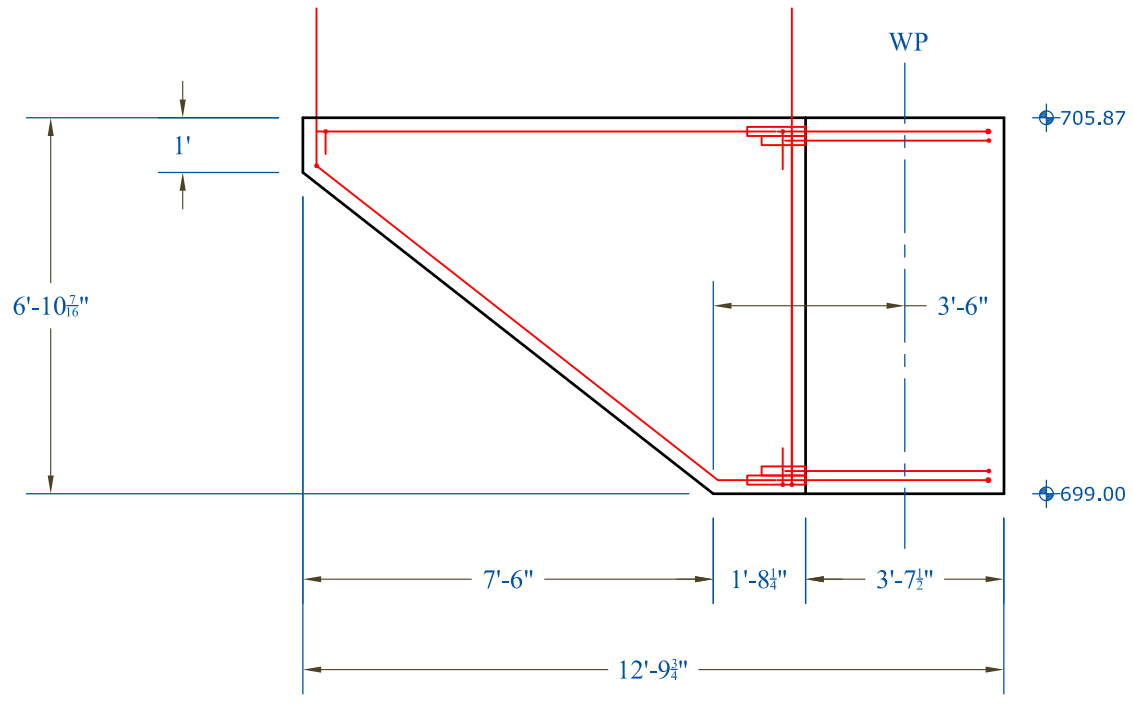

Weight: 9,450 lbs.

## WW1: Plan View

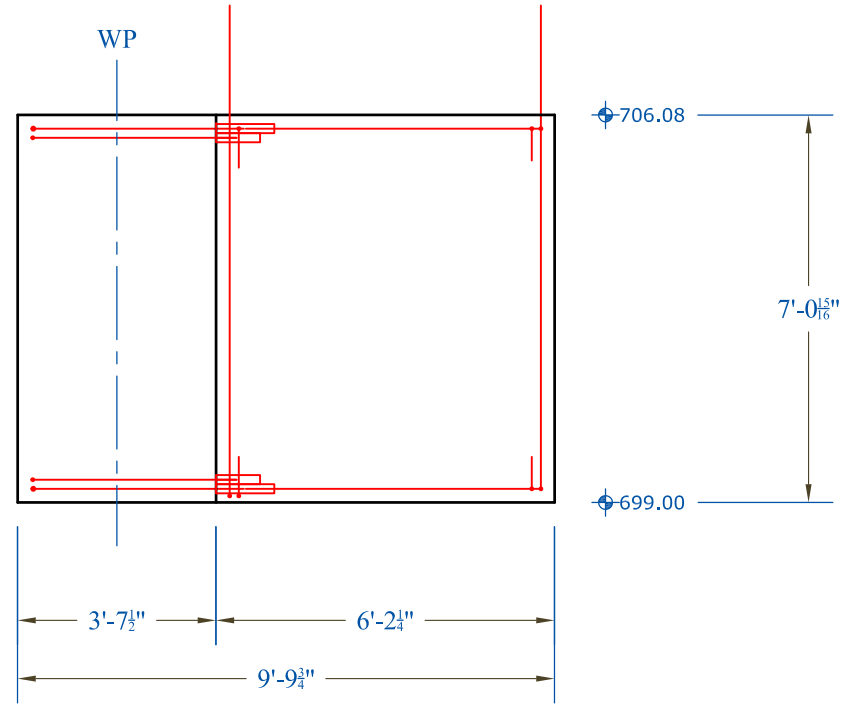



Weight: 9,400 lbs.

## WW2: Elevation View




## WW1: Elevation View

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WILLISTON, VT 05495
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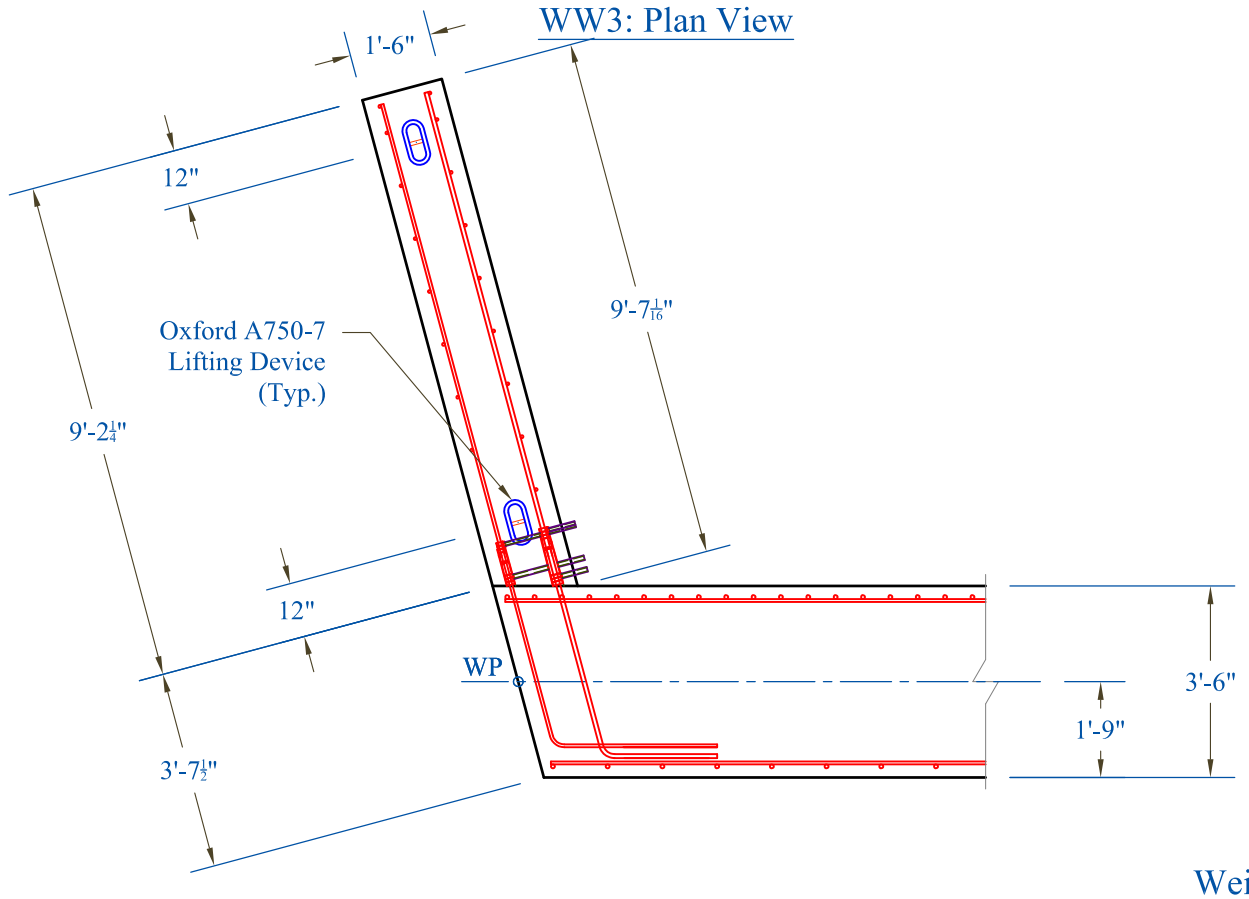
SD Ireland Precast Division

12/03/14

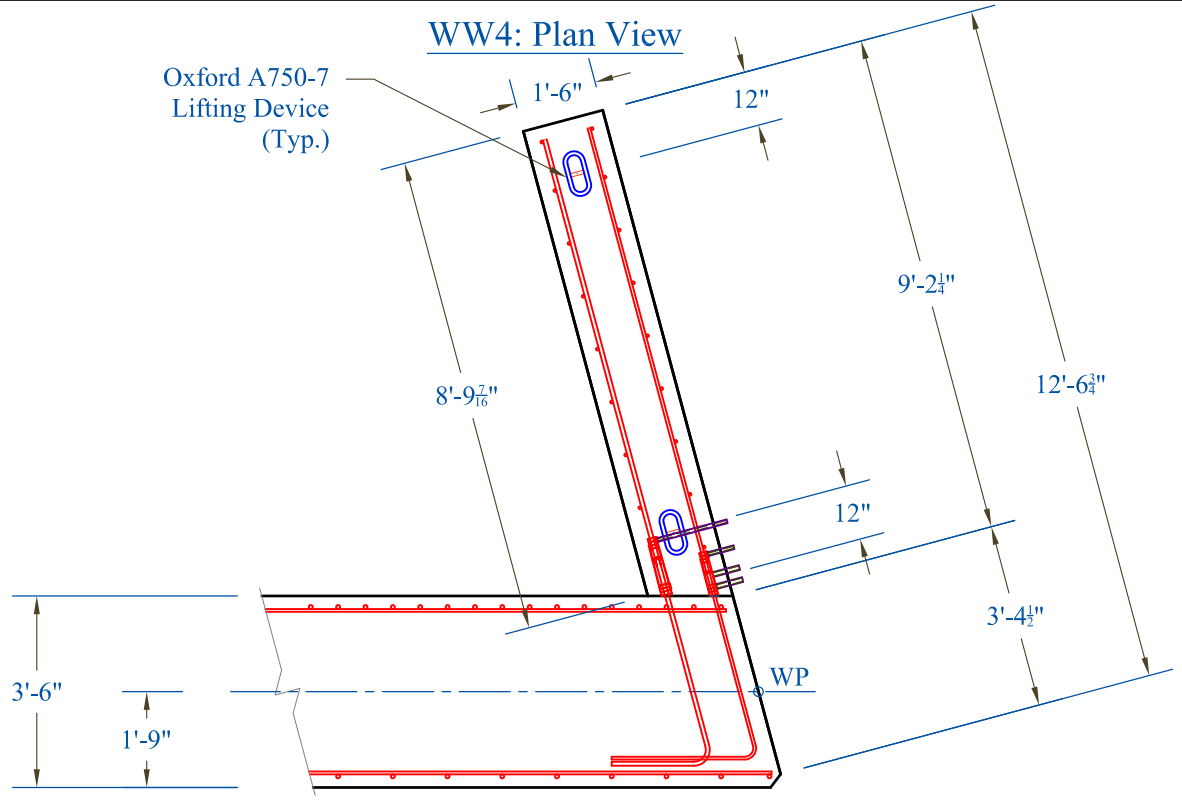
Wingwalls 1 & 2

## WW3: Plan View



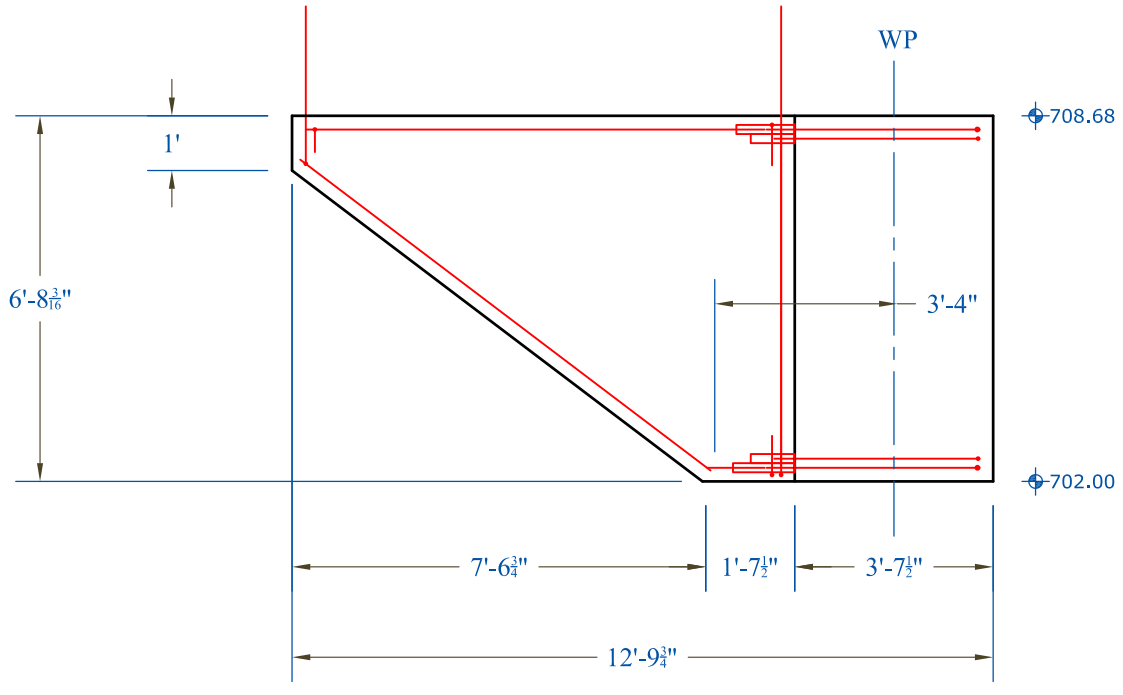

Weight: 7,400 lbs.

## WW4: Plan View

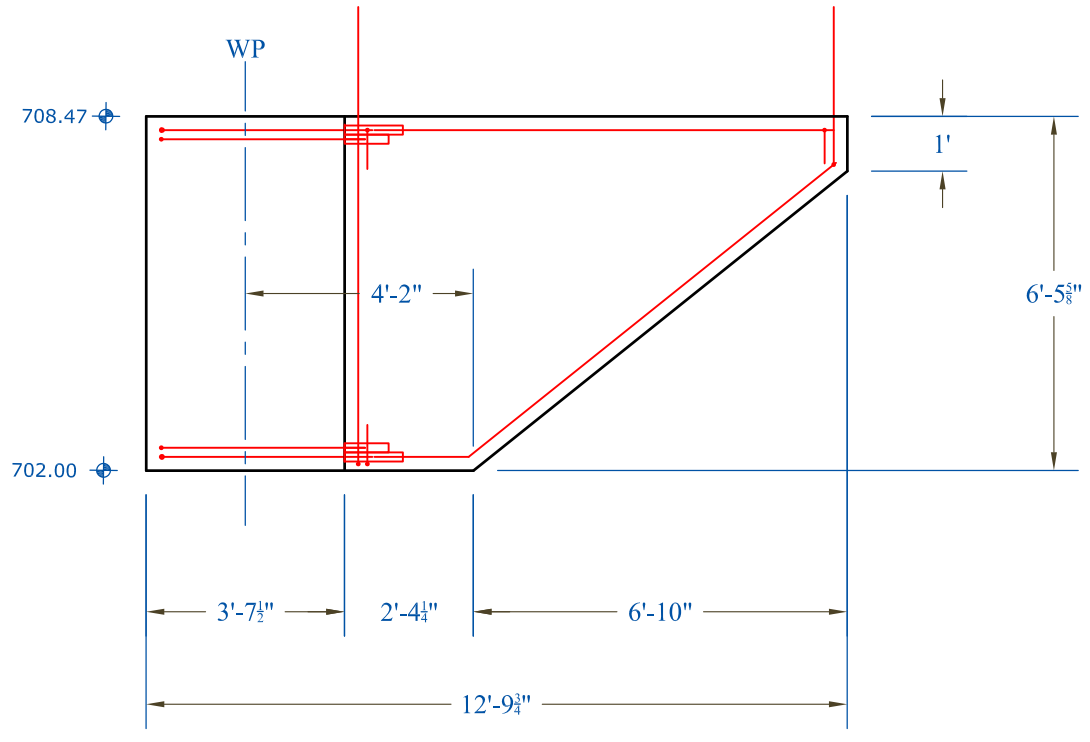



Weight: 8,800 lbs.

## WW3: Elevation View




## WW4: Elevation View




| | | | | | |
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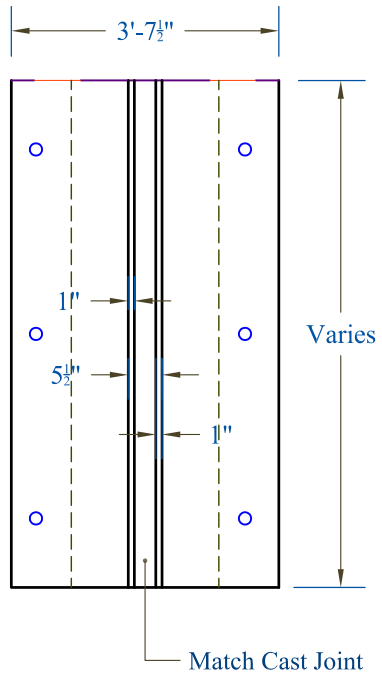
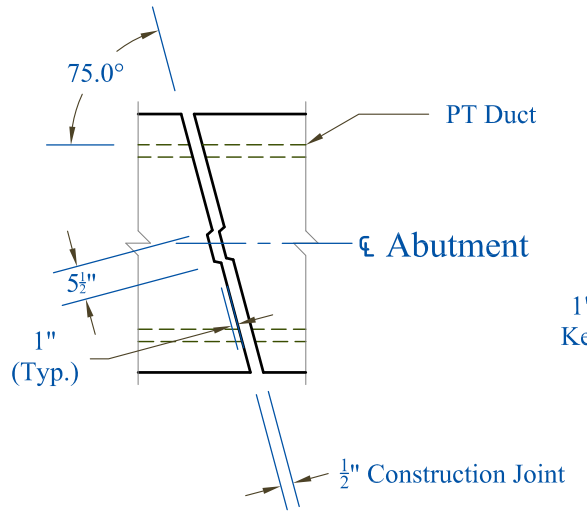
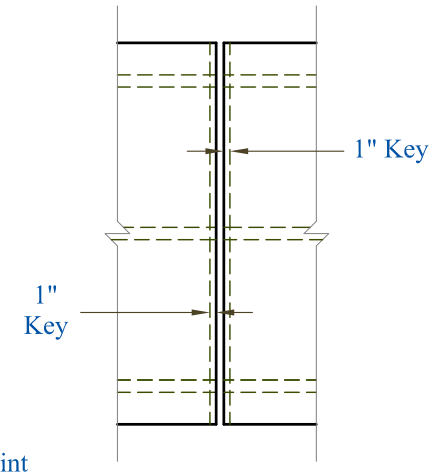
## Match Cast Joint Detail




Abutment Face: A-A

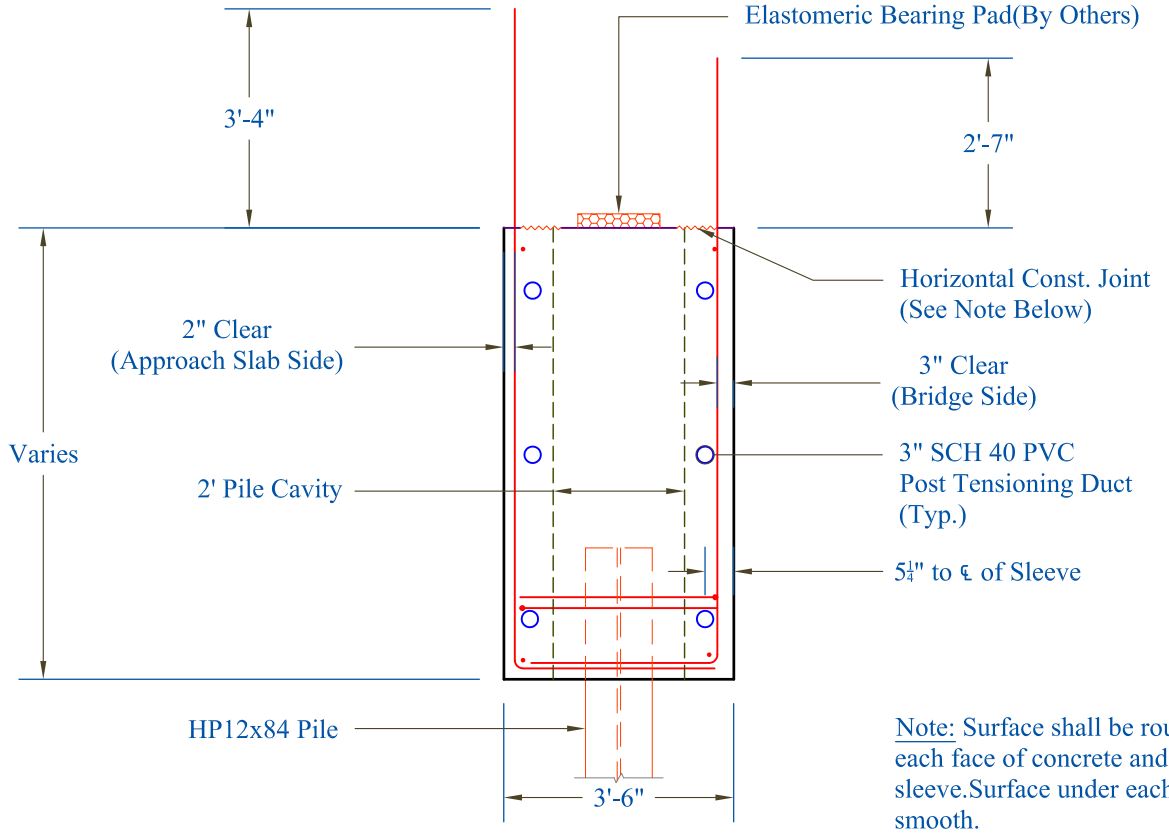



Plan View



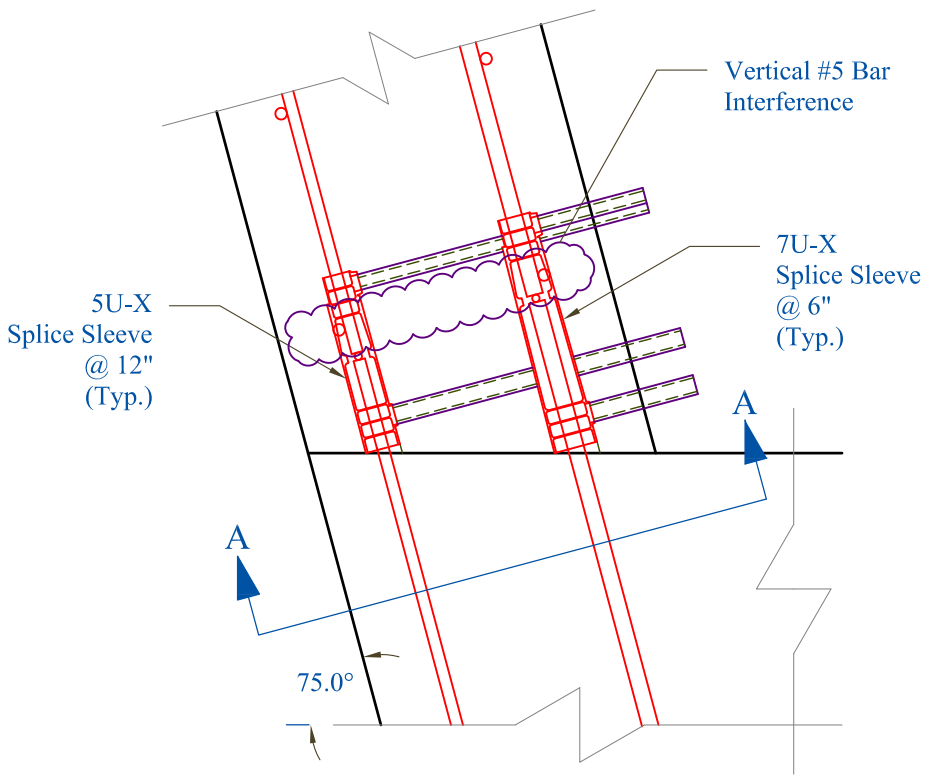

Section View: B-B

## Abutment 1 & 2: Typical Section

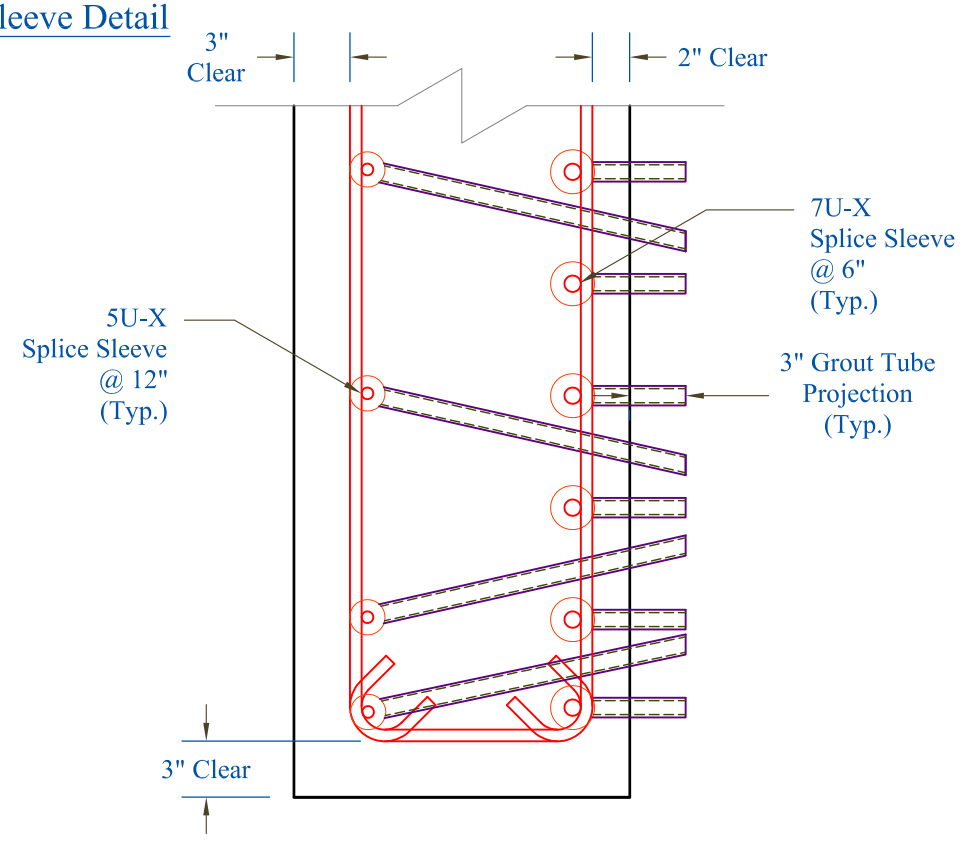



Note: Surface shall be roughened to within 3" of each face of concrete and 3" from H-pile sleeve.Surface under each bearing pad shall be smooth.

## Wingwall Grout Sleeve Detail

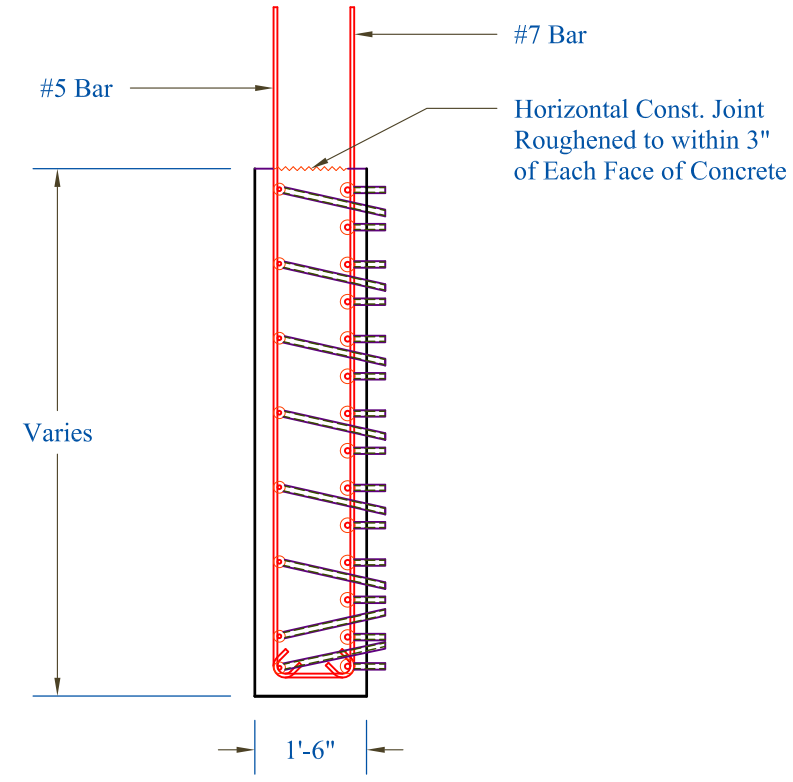



Plan View




End Section View: A-A

## Wingwall 1 - 4: Typical Section




| | | | | | |
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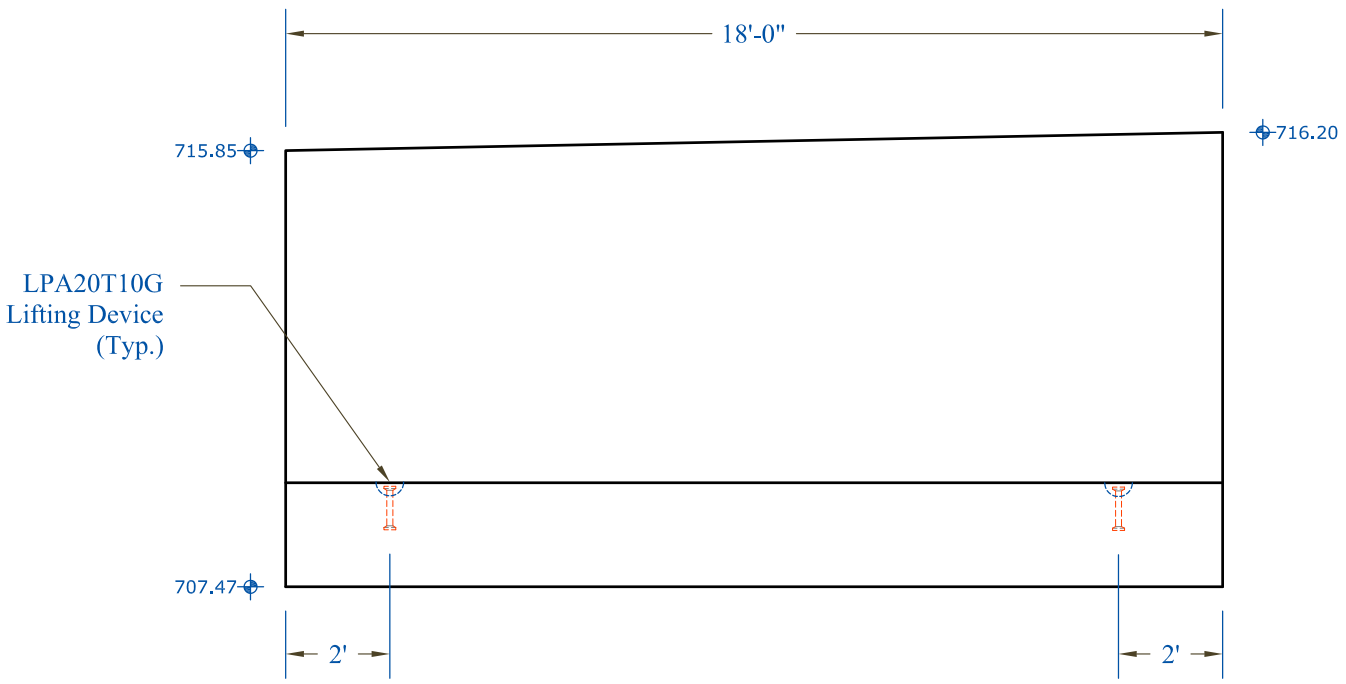
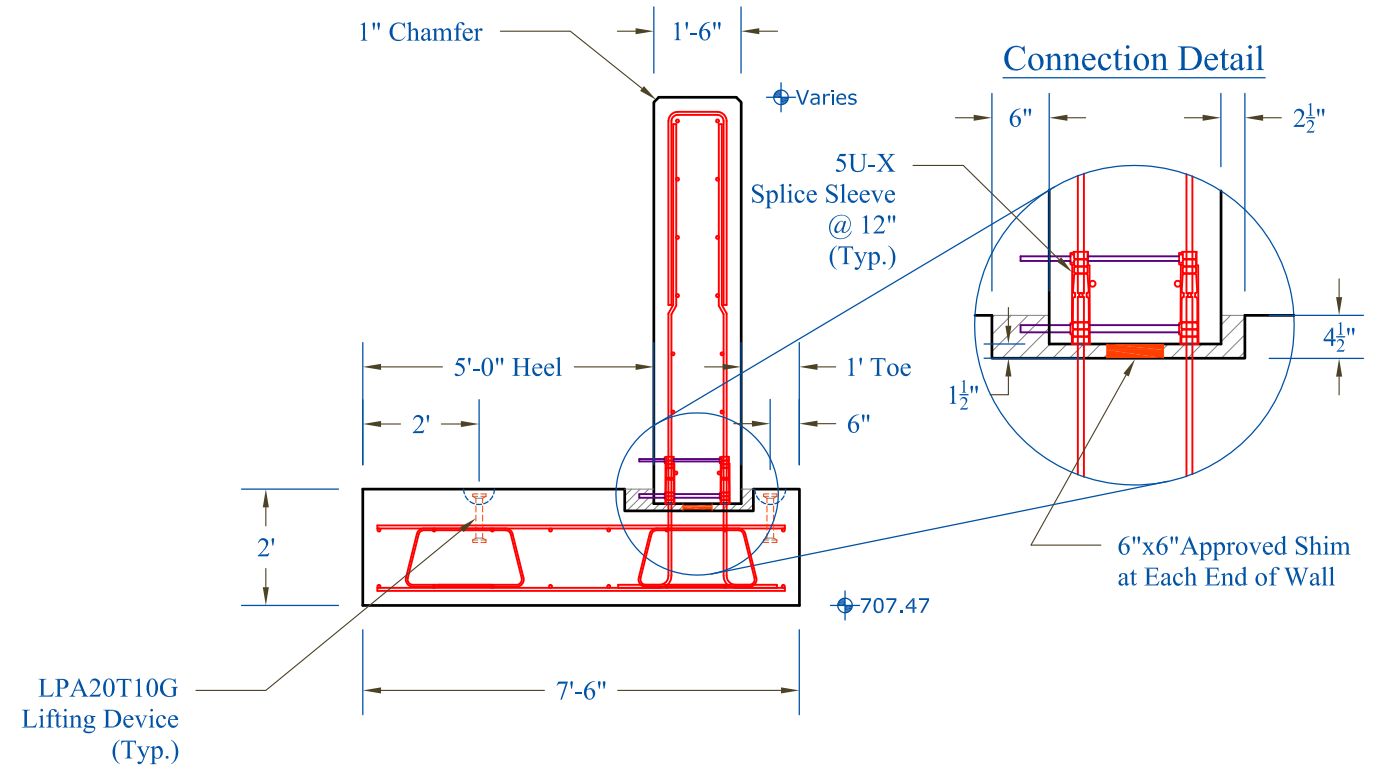
| | | SUPERVISOR: M. WHEELER<br>DETAILER: I. ADAMS<br>CHECKER: E. Barendse<br>ENGINEER: | PROJECT NAME: Stowe BRF 0235 (II)<br>PROJECT #: 0235 (II)<br>LOCATION: Stowe, VT | 12/03/14 | Wing Wall & Abutment Details — 6 of 11 |

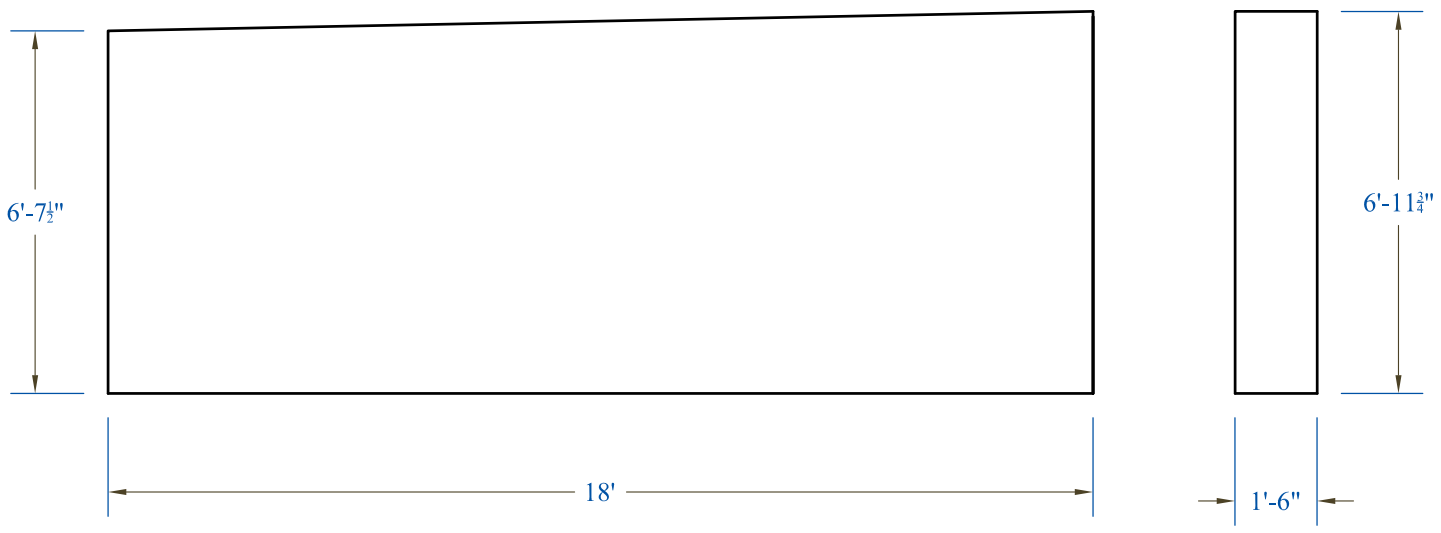
## Retaining Wall Elevation



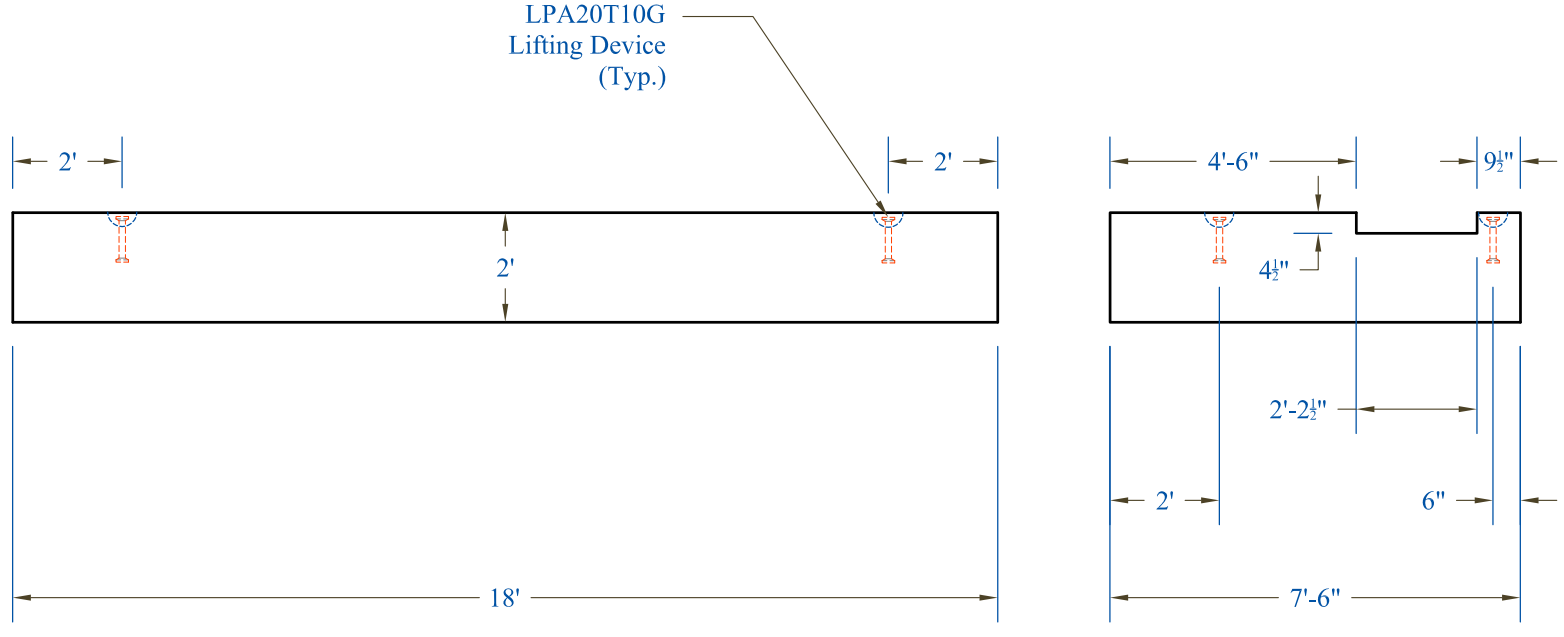

## Retaining Wall Typical Section




## Retaining Wall Stem




## Retaining Wall Footing

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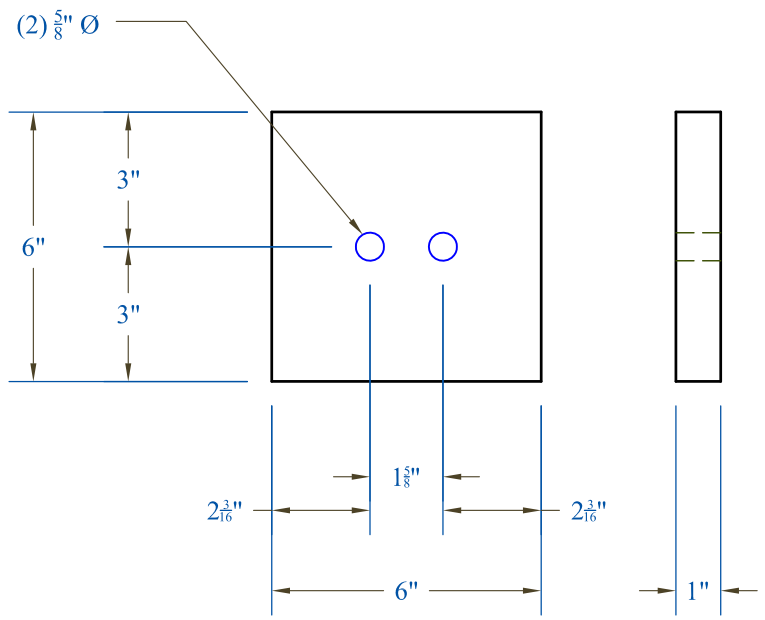
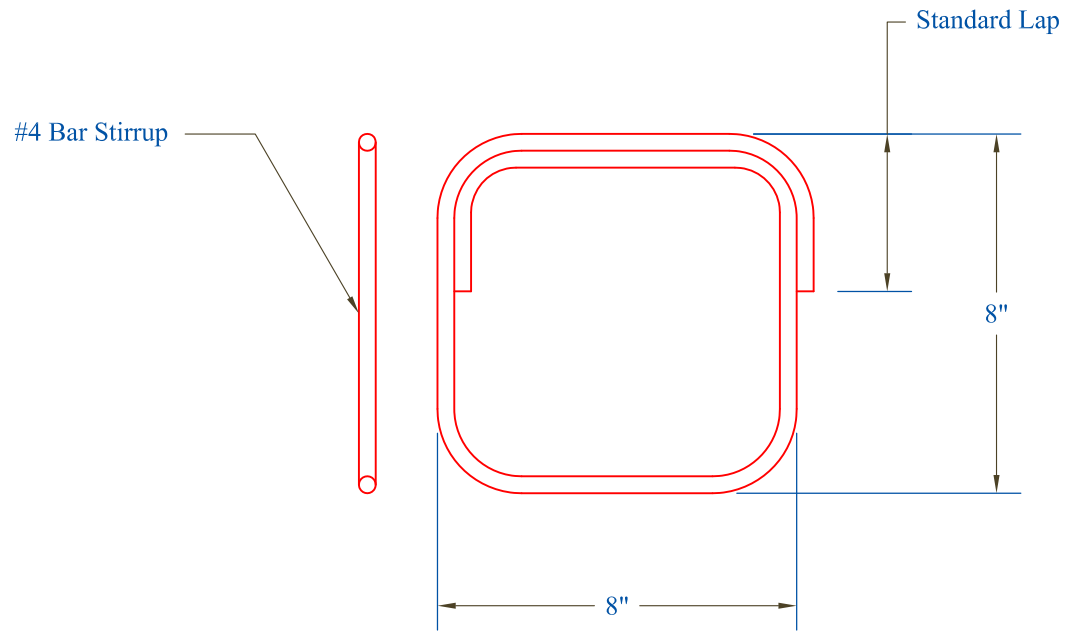
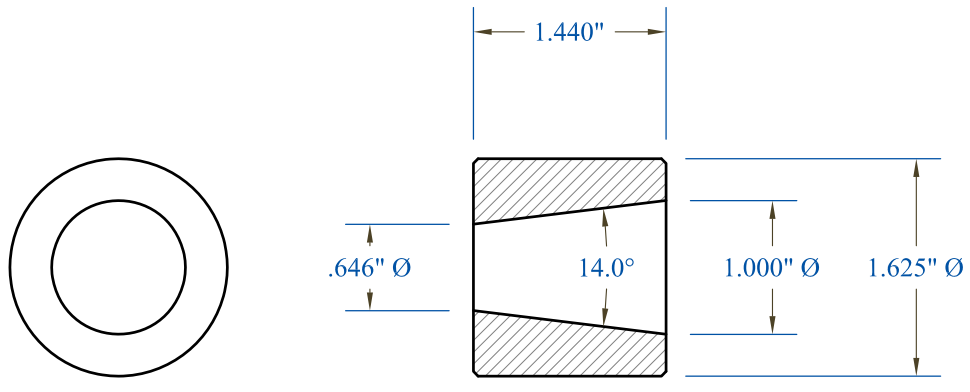
## Tension Duct Bearing Plate



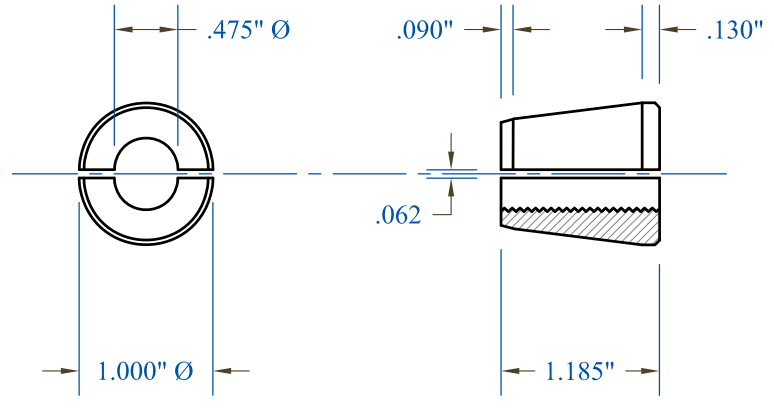

## Reinforcement Detail at Tensioning Blockouts




## 0.5" Barrel Chuck




## 0.5" 2-Part Wedge

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ENGINEER:

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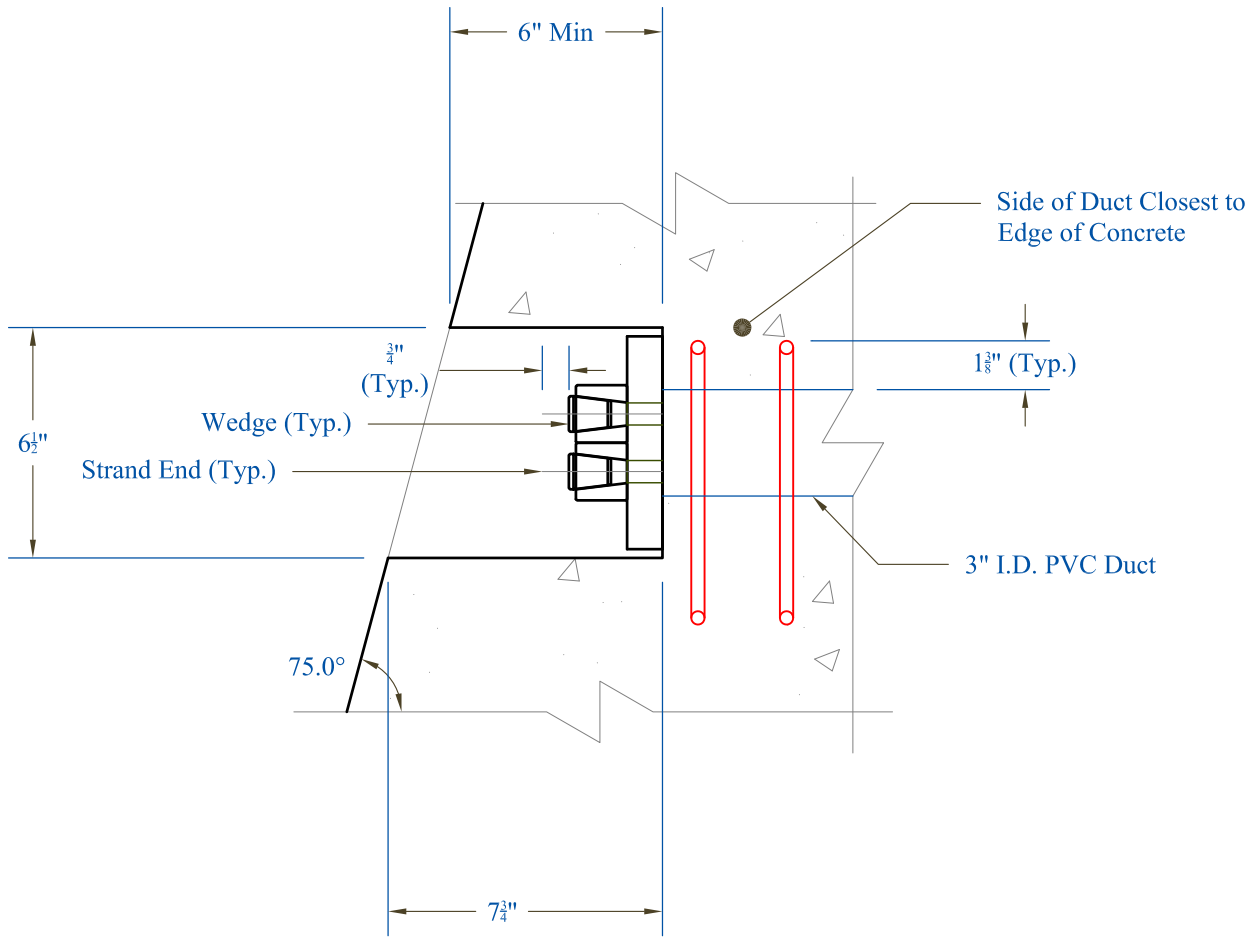
SD Ireland Precast Division

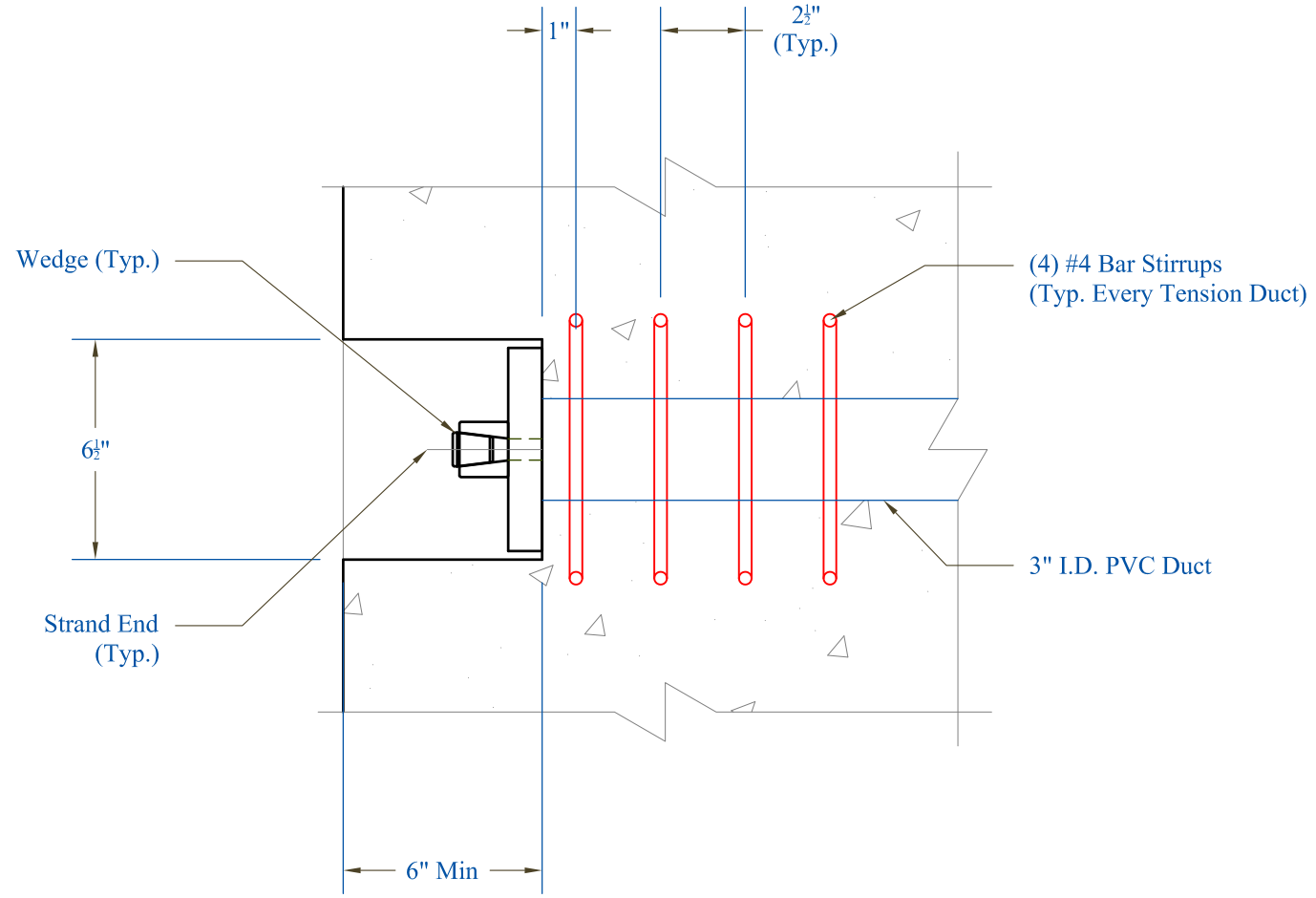
12/03/14

Post Tensioning

## Tensioning Blockout Plan




## Tensioning Blockout Section




| | | | | | |
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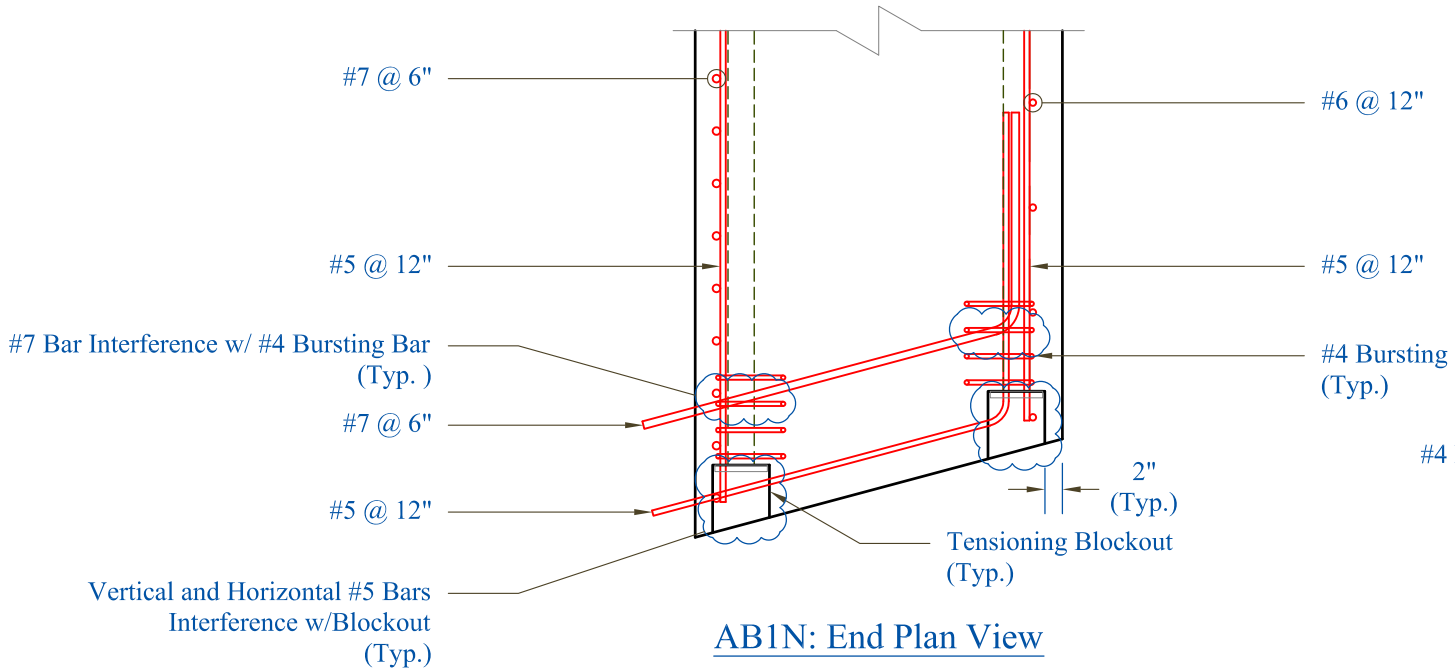
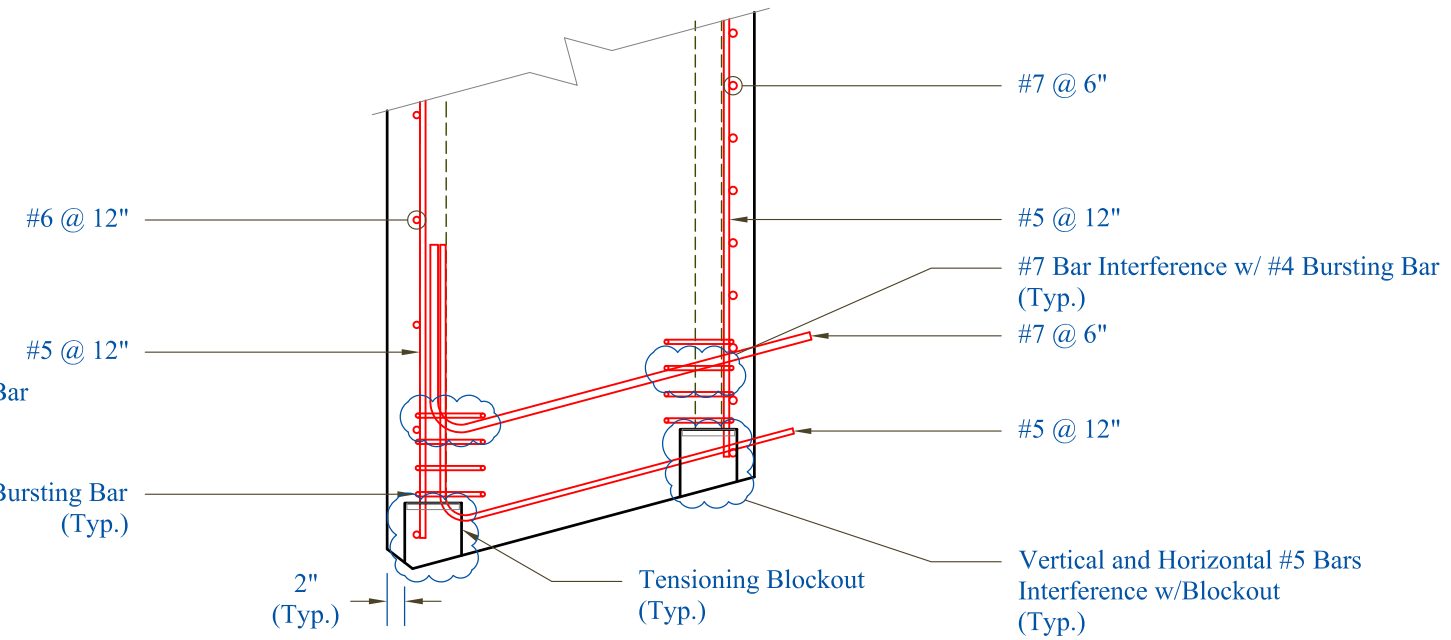
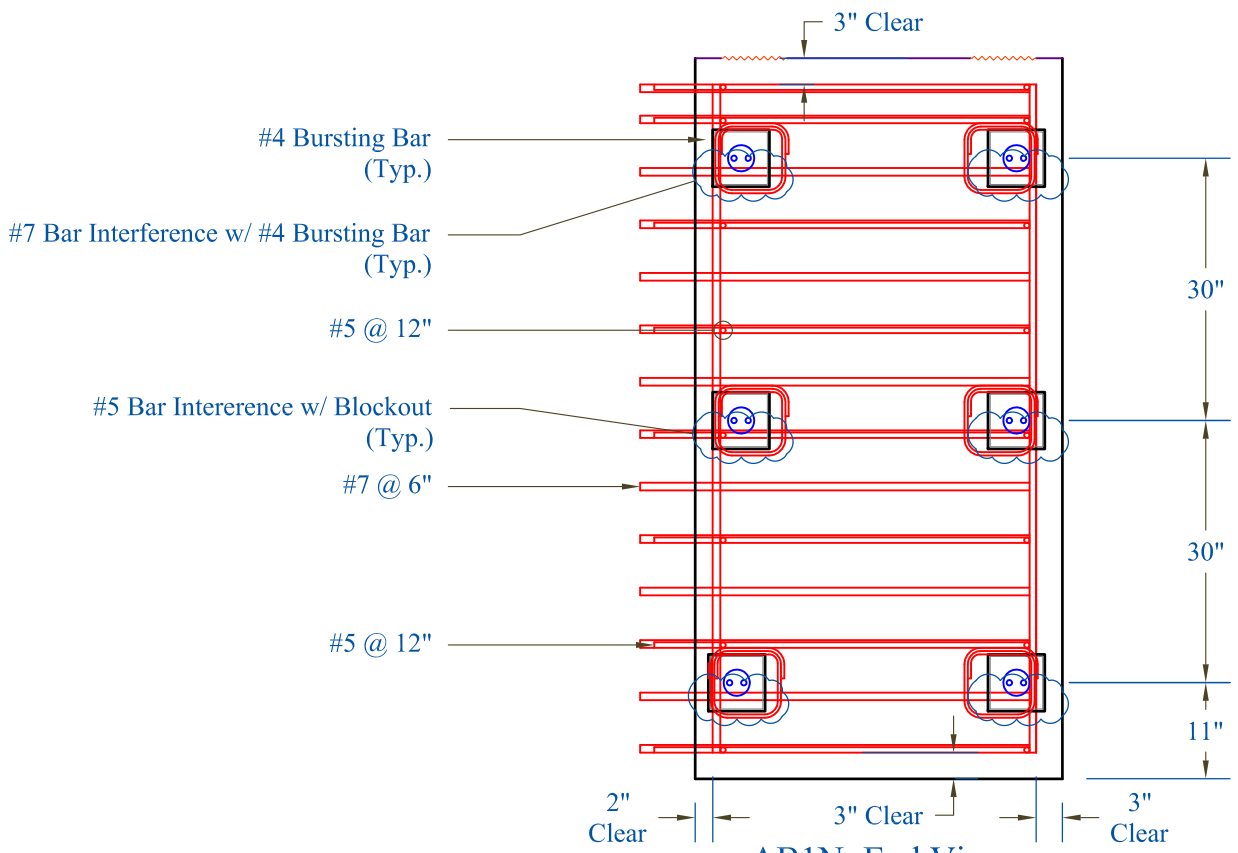
# End Bar Detail: Abutment 1



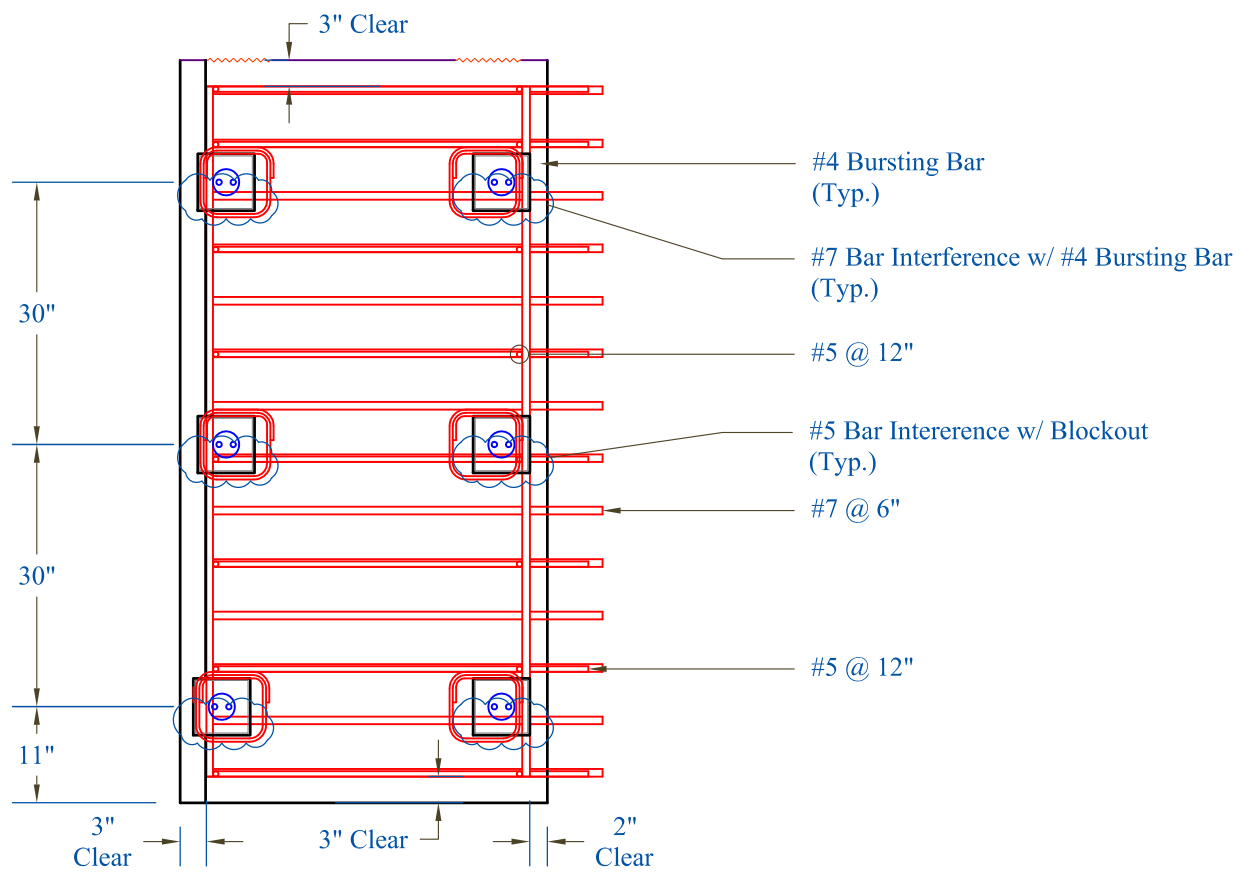

AB1N: End Plan View




AB1S: End Plan View




AB1N: End View




AB1S: End View

| | | | | | |
|---|---|---|---|---|---|
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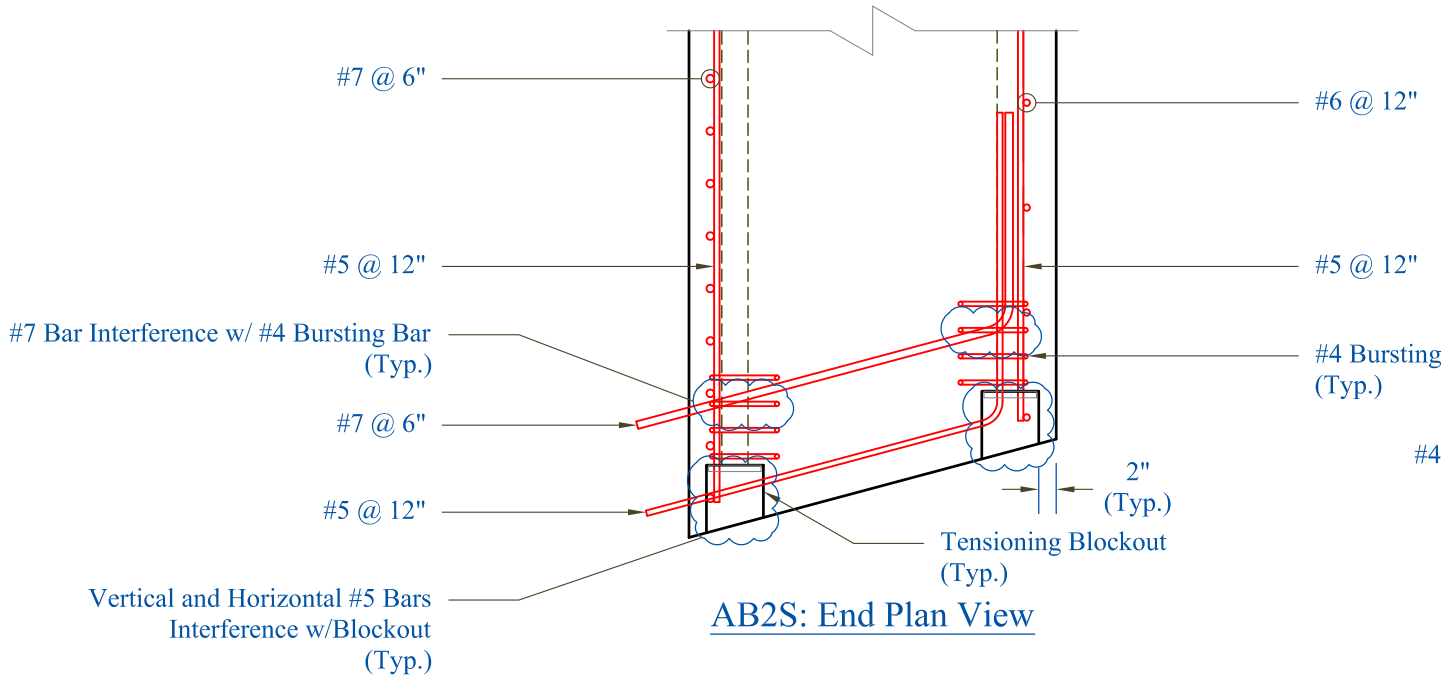
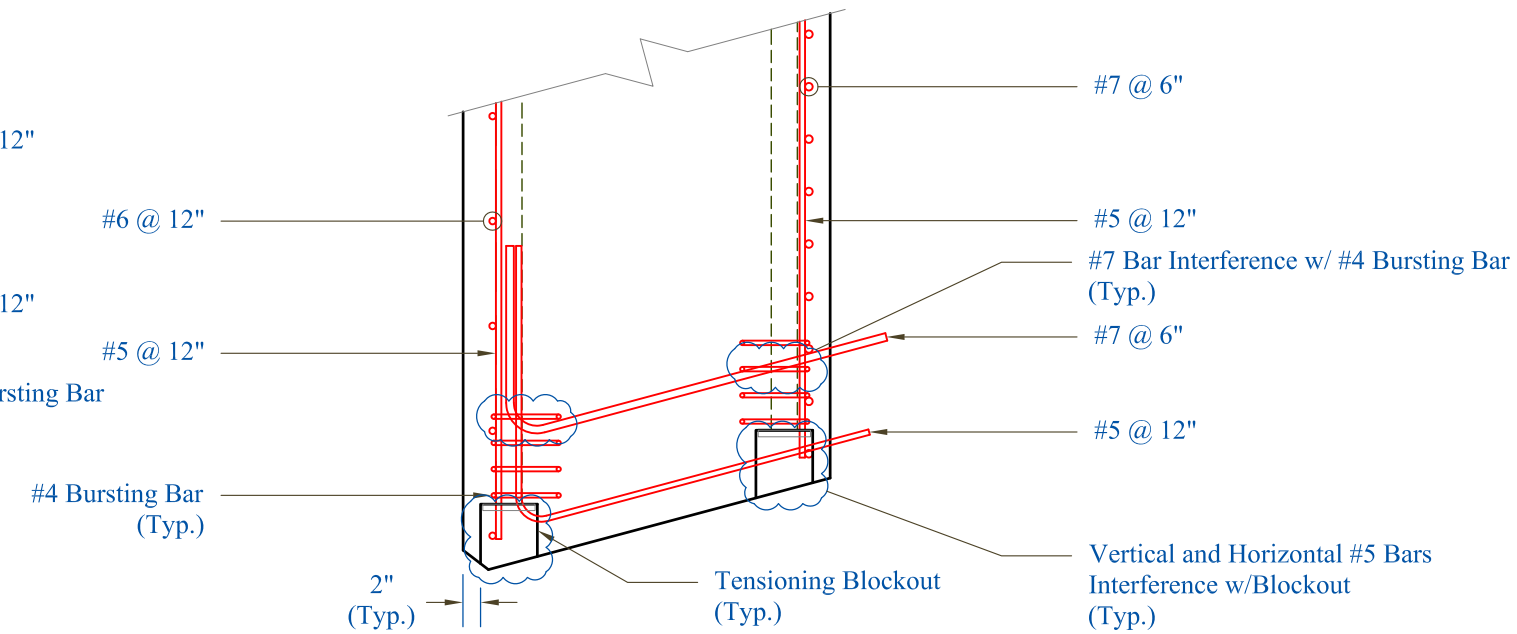
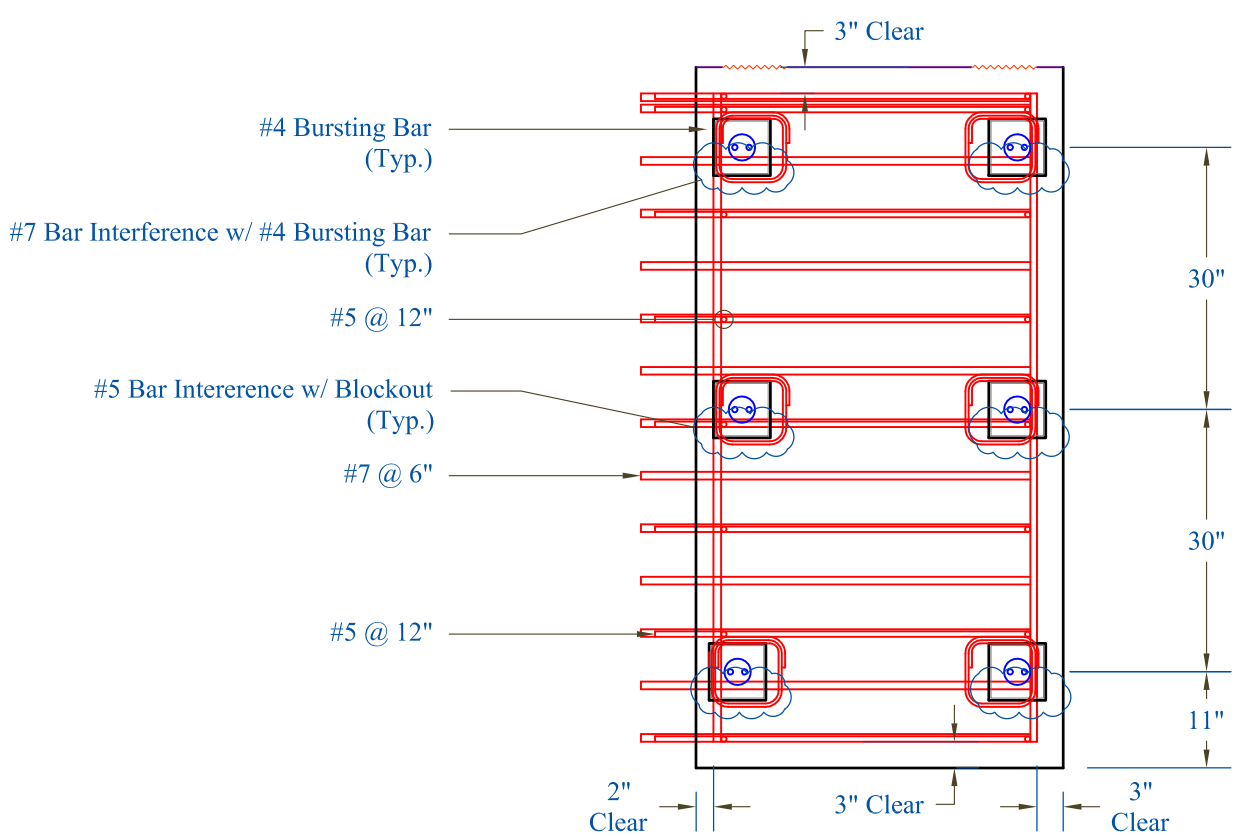
# End Bar Detail: Abutment 2



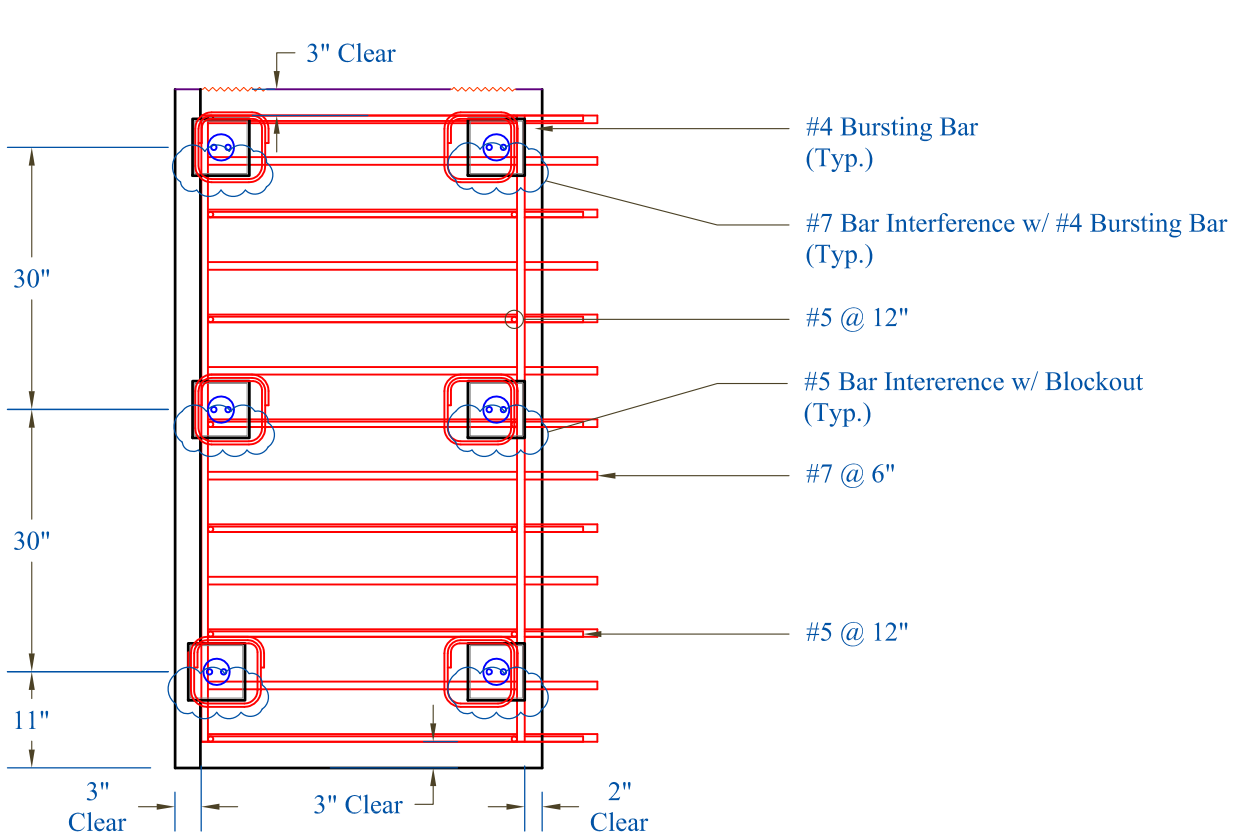

AB2S: End Plan View




AB2N: End Plan View

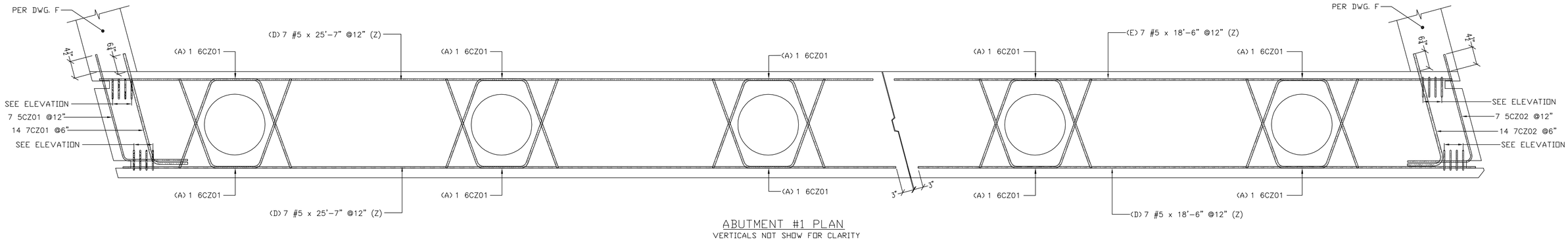



AB2S: End View

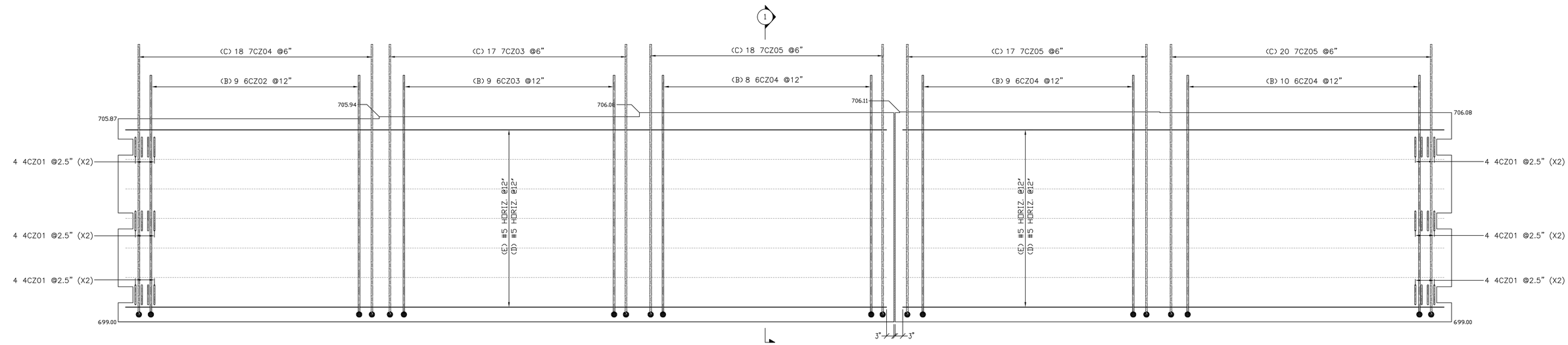



AB2N: End View

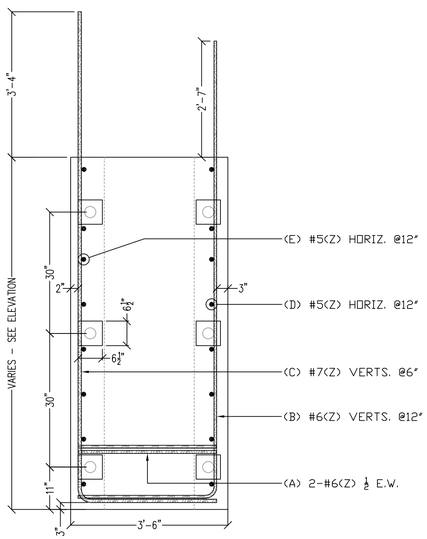
| | | | | | |
|---|---|---|---|---|---|
| CONTRACTORS VTSPE: | | PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #15163) | | INSTALLER: CCS Construction 138 Munson Ave Morrisville, VT 05661 PH: 802-888-7701 | FABRICATOR: 193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0201 SD Ireland Precast Division |
| | | SUPERVISOR: M. WHEELER<br>DETAILER: I. ADAMS<br>CHECKER: E. Barendse<br>ENGINEER: | PROJECT NAME: Stowe BRF 0235 (II)<br>PROJECT #: 0235 (II)<br>LOCATION: Stowe, VT | 12/03/14 | End Bar Detail Abmt.2 — 11 of 11 |




ABUTMENT #1 PLAN
VERTICALS NOT SHOW FOR CLARITY

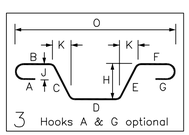



ABUTMENT #1 ELEVATION
PILES, PILE CAVITIES AND POST TENSIONING DUCKS NOT SHOWN FOR CLARITY

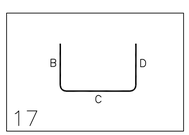



SECT. 1
REF. 40 OF 64

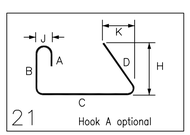
| Release Number: 003 | BAR LIST | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bar Mark | Qty | Size | Total Length | Type | 'A' | 'B' | 'C' | 'D' | 'E' | 'F' | 'G' | 'H' | 'J' | 'K' | 'O' | 'R' |
| | 14 | #5 | 25'-7" | | | 25'-7" | | | | | | | | | | |
| | 14 | #5 | 18'-6" | | | 18'-6" | | | | | | | | | | |
| 4CZ01 | 48 | #4 | 4'-8" | L9 | 0'-4 ½" | 0'-8" | 0'-8" | 0'-8" | 0'-8" | 0'-8" | 0'-4 ½" | | | | | |
| 5CZ01 | 7 | #5 | 5'-8 ¾" | 3 | | 3'-7 ½" | 2'-1 ¼" | | | | | 2'-0 ¼" | | 0'-6 ½" | 4'-2" | |
| 5CZ02 | 7 | #5 | 5'-9 ¼" | 21 | | | 3'-7 ½" | 2'-1 ¾" | | | | 2'-1 ¼" | | 0'-6" | | |
| 6CZ01 | 10 | #6 | 7'-9 ½" | 3 | | | 3'-1 ¼" | 1'-7" | 3'-1 ¼" | | | 2'-11" | | 1'-0 ¾" | 3'-9 ¾" | |
| 6CZ02 | 9 | #6 | 12'-3" | 17 | | 3'-1" | 9'-2" | | | | | | | | | |
| 6CZ03 | 9 | #6 | 12'-4" | 17 | | 3'-1" | 9'-3" | | | | | | | | | |
| 6CZ04 | 27 | #6 | 12'-6" | 17 | | 3'-1" | 9'-5" | | | | | | | | | |
| 7CZ01 | 14 | #7 | 4'-11 ¼" | 3 | | 3'-9 ¼" | 1'-2" | | | | | 1'-1 ½" | | 0'-3 ½" | 4'-0 ¾" | |
| 7CZ02 | 14 | #7 | 4'-11 ¾" | 21 | | | 3'-9" | 1'-2 ¾" | | | | 1'-2 ½" | | 0'-2 ¾" | | |
| 7CZ03 | 17 | #7 | 13'-1" | 17 | | 3'-1" | 10'-0" | | | | | | | | | |
| 7CZ04 | 18 | #7 | 12'-11" | 17 | | 3'-1" | 9'-10" | | | | | | | | | |
| 7CZ05 | 55 | #7 | 13'-3" | 17 | | 3'-1" | 10'-2" | | | | | | | | | |



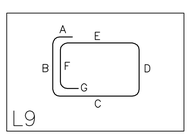

3 Hooks A & G optional




17




21 Hook A optional




L9

**FOR APPROVAL**

ALL DUAL COATED REINF. DENOTED (Z)

ELEVATIONS & DIMENSIONS SHOWN ON THIS DWG. ARE FOR REINF. DETAILING PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION.

REINF. BARS ASTM A615 GRADE 60 DUAL COATED

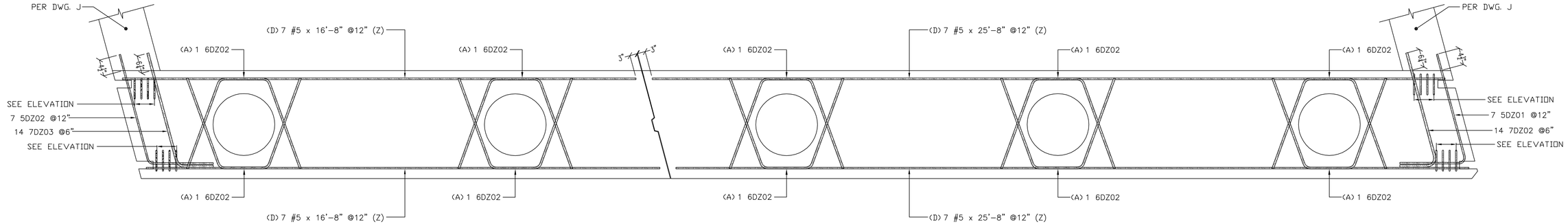
VERIFICATION OF UNCLEAR INFORMATION MAY BE REQUESTED ON THIS DRAWING. SHOULD VERIFICATION BE LEFT UN-ADDRESSED IT WILL REMAIN AS SHOWN AND ASSUME TO BE CORRECT.

LEGEND:
CONT.-CONTINUOUS
TRANS.-TRANSVERSE
DWLS.-DOWELS
VERTS.-VERTICAL
HORIZ.-HORIZONTAL
T&B -TOP & BOTTOM
I.F.-INNER FACE
O.F.-OUTER FACE
E.E.-EACH END
E.F.-EACH FACE
F.F.-FRONT FACE
R.F.-REAR FACE
E.W.-EACH WAY
O.C.-ON CENTER
L.W.-LONG WAY
S.W.-SHORT WAY

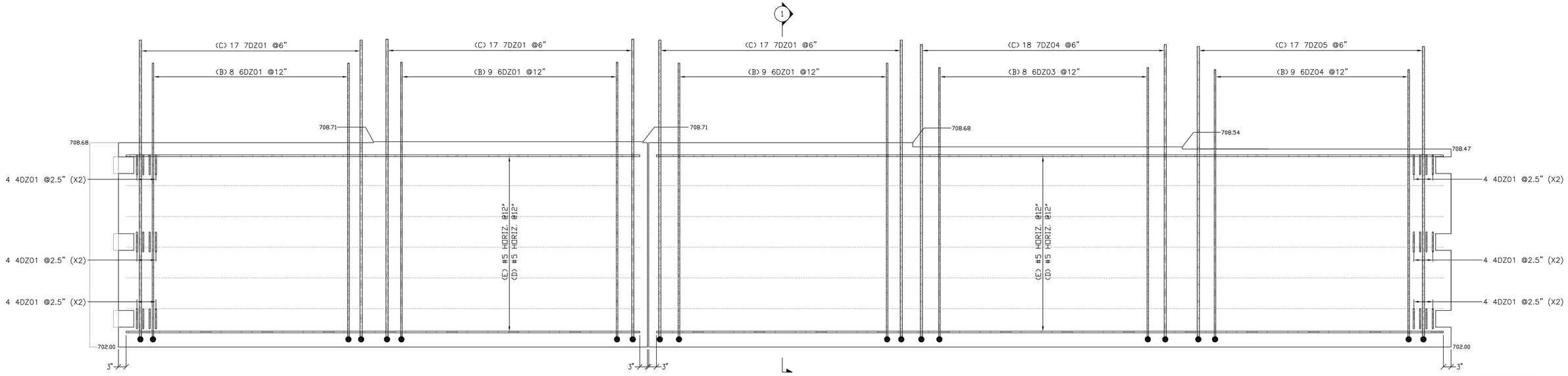
| | | | |
|---|---|---|---|
| 6 | | | |
| 5 | | | |
| 4 | | | |
| 3 | | | |
| 2 | 12-05-14 | | REVISE/SDI COM/FOR APPROVAL |
| 1 | 12-03-14 | | FOR APPROVAL |
| | DATE | REV.# | SENT FOR |


DIMENSION
DIMENSION FABRICATORS INC.
2000 7TH STREET
SCOTIA, N.Y. 12302
PH: (518) 374-1936
FAX (518) 374-4830
www.dimensionfabricators.com

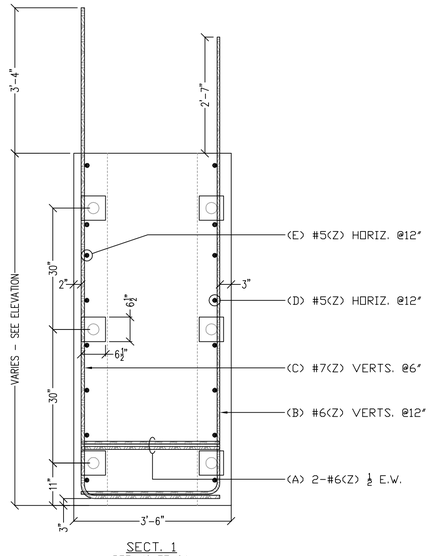

| | |
|---|---|
| STRUCTURE | VTAOT STOWE BRF 0235(11) |
| LOCATION | WILLINSTON, VT |
| ARCHITECT | |
| ENGINEER | |
| CUSTOMER | SD IRELAND CONCRETE CONST. CORP. |
| DRAWN BY | ED |
| DATE | 12/3/14 |
| DFI # | 9117 |
| DRAWING COVERS | ABUTMENT #1 DUAL COATED REINFORCING |
| DRAWING # | C |




## ABUTMENT #2 PLAN
VERTICALS NOT SHOW FOR CLARITY




## ABUTMENT #2 ELEVATION
PILES, PILE CAVITIES AND POST TENSIONING
DUCKS NOT SHOWN FOR CLARITY

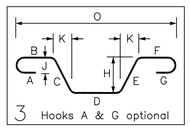



SECT. 1
REF. 40 OF 64

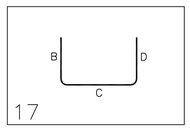
Release Number: 004

BAR LIST

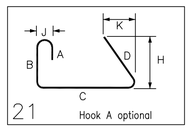
| Bar Mark | Qty | Size | Total Length | Type | 'A' | 'B' | 'C' | 'D' | 'E' | 'F' | 'G' | 'H' | 'J' | 'K' | 'O' | 'R' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 14 | #5 | 16'-8" | | | 16'-8" | | | | | | | | | | |
| | 14 | #5 | 25'-8" | | | 25'-8" | | | | | | | | | | |
| 4DZ01 | 48 | #4 | 4'-8" | L9 | 0'-4 ½" | 0'-8" | 0'-8" | 0'-8" | 0'-8" | 0'-8" | 0'-4 ½" | | | | | |
| 5DZ01 | 7 | #5 | 5'-9 ¼" | 21 | | | 3'-7 ½" | 2'-1 ¼" | | | | 2'-1 ¼" | | 0'-6" | | |
| 5DZ02 | 7 | #5 | 5'-8 ¾" | 3 | | 3'-7 ½" | 2'-1 ¼" | | | | | 2'-0 ¼" | | 0'-6 ½" | 4'-2" | |
| 6DZ01 | 26 | #6 | 12'-1" | 17 | | 3'-1" | 9'-0" | | | | | | | | | |
| 6DZ02 | 10 | #6 | 7'-9 ½" | 3 | | | 3'-1 ¼" | 1'-7" | 3'-1 ¼" | | | 2'-11" | | 1'-0 ¾" | 3'-9 ¾" | |
| 6DZ03 | 8 | #6 | 11'-11" | 17 | | 3'-1" | 8'-10" | | | | | | | | | |
| 6DZ04 | 9 | #6 | 11'-10" | 17 | | 3'-1" | 8'-9" | | | | | | | | | |
| 7DZ01 | 51 | #7 | 12'-10" | 17 | | 3'-1" | 9'-9" | | | | | | | | | |
| 7DZ02 | 14 | #7 | 4'-11 ¾" | 21 | | | 3'-9" | 1'-2 ¾" | | | | 1'-2 ½" | | 0'-2 ¾" | | |
| 7DZ03 | 14 | #7 | 4'-11 ¼" | 3 | | 3'-9 ¼" | 1'-2" | | | | | 1'-1 ½" | | 0'-3 ½" | 4'-0 ¾" | |
| 7DZ04 | 18 | #7 | 12'-8" | 17 | | 3'-1" | 9'-7" | | | | | | | | | |
| 7DZ05 | 17 | #7 | 12'-7" | 17 | | 3'-1" | 9'-6" | | | | | | | | | |



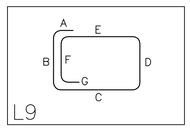
3 Hooks A & G optional



17



21 Hook A optional



L9

**FOR APPROVAL**

ALL DUAL COATED REINF. DENOTED (Z)

ELEVATIONS & DIMENSIONS SHOWN ON THIS DWG. ARE FOR REINF. DETAILING PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION.

REINF. BARS ASTM A615 GRADE 60 DUAL COATED

VERIFICATION OF UNCLEAR INFORMATION MAY BE REQUESTED ON THIS DRAWING. SHOULD VERIFICATION BE LEFT UN-ADDRESSED IT WILL REMAIN AS SHOWN AND ASSUME TO BE CORRECT.

LEGEND:
CONT.-CONTINUOUS
TRANS.-TRANSVERSE
DWLS.-DOWELS
VERTS.-VERTICAL
HORIZ.-HORIZONTAL
T&B -TOP & BOTTOM
I.F.-INNER FACE
O.F.-OUTER FACE
E.E.-EACH END
E.F.-EACH FACE
F.F.-FRONT FACE
R.F.-REAR FACE
E.W.-EACH WAY
O.C.-ON CENTER
L.W.-LONG WAY
S.W.-SHORT WAY

| | | | |
|---|---|---|---|
| 6 | | | |
| 5 | | | |
| 4 | | | |
| 3 | | | |
| 2 | | | |
| 1 | 12-04-14 | | FOR APPROVAL |
| | DATE | REV.# | SENT FOR |


DIMENSION
DIMENSION FABRICATORS INC.
2000 7TH STREET
SCOTIA, N.Y. 12302
PH: (518) 374-1936
FAX (518) 374-6830
www.dimensionfabricators.com

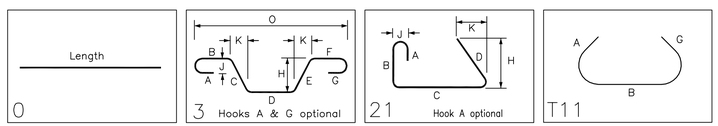

| | |
|---|---|
| STRUCTURE | VTAOT STOWE BRF 0235(11) |
| LOCATION | |
| ARCHITECT | |
| ENGINEER | |
| CUSTOMER | SD IRELAND CONCRETE CONST. CORP. |
| DRAWN BY | ED |
| DATE | 12/4/14 |
| DFI # | 9117 |
| DRAWING COVERS | ABUTMENT #2 DUAL COATED REINFORCING |
| DRAWING # | D |

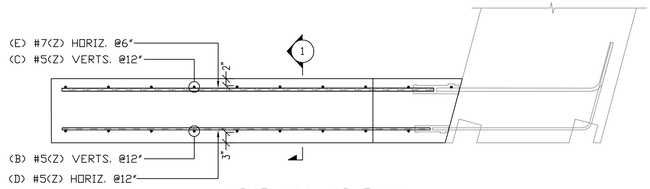
Release Number: BAR LIST

| Bar Mark | Qty | Size | Total Length | Type | 'A' | 'B' | 'C' | 'D' | 'E' | 'F' | 'G' | 'H' | 'J' | 'K' | 'O' | 'R' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 7 | #5 | 5'-5" | | | 5'-5" | | | | | | | | | | |
| | 14 | #7 | 5'-0" | | | 5'-0" | | | | | | | | | | |
| | 2 | #7 | 8'-8" | | | 8'-8" | | | | | | | | | | |
| | 1 | #5 | 8'-7" | | | 8'-7" | | | | | | | | | | |
| 5FZ01 | 12 | #5 | 2'-0" | T11 | 0'-5 ½" | 1'-1" | | | | | 0'-5 ½" | | | | | |
| 5FZ01 | 19 | #5 | 2'-0" | T11 | 0'-5 ½" | 1'-1" | | | | | 0'-5 ½" | | | | | |
| 5FZ02 | 12 | #5 | 9'-5 ½" | 21 | | | 9'-0" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ03a | 1 | #5 | 2'-8" | | | 2'-8" | | | | | | | | | | |
| 5FZ03b | 1 | #5 | 3'-11" | | | 3'-11" | | | | | | | | | | |
| 5FZ03c | 1 | #5 | 5'-3" | | | 5'-3" | | | | | | | | | | |
| 5FZ03d | 1 | #5 | 6'-6" | | | 6'-6" | | | | | | | | | | |
| 5FZ03e | 1 | #5 | 7'-10" | | | 7'-10" | | | | | | | | | | |
| 5FZ04a | 1 | #5 | 3'-6 ½" | 21 | | | 3'-1" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ04b | 1 | #5 | 4'-3 ¾" | 21 | | | 3'-10 ¼" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ04c | 1 | #5 | 5'-1 ¼" | 21 | | | 4'-7 ¾" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ04d | 1 | #5 | 5'-10 ¾" | 21 | | | 5'-5 ¼" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ04e | 1 | #5 | 6'-8" | 21 | | | 6'-2 ½" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ04f | 1 | #5 | 7'-5 ½" | 21 | | | 7'-0" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ04g | 1 | #5 | 8'-3" | 21 | | | 7'-9 ½" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ04h | 1 | #5 | 9'-0 ½" | 21 | | | 8'-7" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ05 | 4 | #5 | 9'-3 ½" | 21 | | | 8'-10" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ06 | 1 | #5 | 10'-7" | 3 | | 9'-2" | 1'-5" | | | | | 0'-10 ½" | | 1'-1 ¼" | 10'-3 ¼" | |
| 5FZ07a | 1 | #5 | 3'-9 ½" | 21 | | | 3'-4" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ07b | 1 | #5 | 4'-6 ¾" | 21 | | | 4'-1 ¼" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ07c | 1 | #5 | 5'-4" | 21 | | | 4'-10 ½" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ07d | 1 | #5 | 6'-1 ½" | 21 | | | 5'-8" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ07e | 1 | #5 | 6'-10 ¾" | 21 | | | 6'-5 ¼" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ07f | 1 | #5 | 7'-8" | 21 | | | 7'-2 ½" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5FZ07g | 1 | #5 | 8'-5 ½" | 21 | | | 8'-0" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 7FZ01a | 1 | #7 | 2'-0" | | | 2'-0" | | | | | | | | | | |
| 7FZ01b | 1 | #7 | 2'-7" | | | 2'-7" | | | | | | | | | | |
| 7FZ01c | 1 | #7 | 3'-3" | | | 3'-3" | | | | | | | | | | |
| 7FZ01d | 1 | #7 | 3'-10" | | | 3'-10" | | | | | | | | | | |
| 7FZ01e | 1 | #7 | 4'-6" | | | 4'-6" | | | | | | | | | | |
| 7FZ01f | 1 | #7 | 5'-2" | | | 5'-2" | | | | | | | | | | |
| 7FZ01g | 1 | #7 | 5'-9" | | | 5'-9" | | | | | | | | | | |

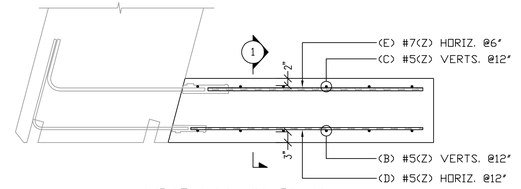
Release Number: BAR LIST

| Bar Mark | Qty | Size | Total Length | Type | 'A' | 'B' | 'C' | 'D' | 'E' | 'F' | 'G' | 'H' | 'J' | 'K' | 'O' | 'R' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7FZ01h | 1 | #7 | 6'-5" | | | 6'-5" | | | | | | | | | | |
| 7FZ01i | 1 | #7 | 7'-0" | | | 7'-0" | | | | | | | | | | |
| 7FZ01j | 1 | #7 | 7'-8" | | | 7'-8" | | | | | | | | | | |
| 7FZ01k | 1 | #7 | 8'-4" | | | 8'-4" | | | | | | | | | | |
| 7FZ02 | 1 | #7 | 10'-8" | 3 | | 9'-5" | 1'-3" | | | | | 0'-9 ¼" | | 0'-11 ¾" | 10'-4 ¾" | |

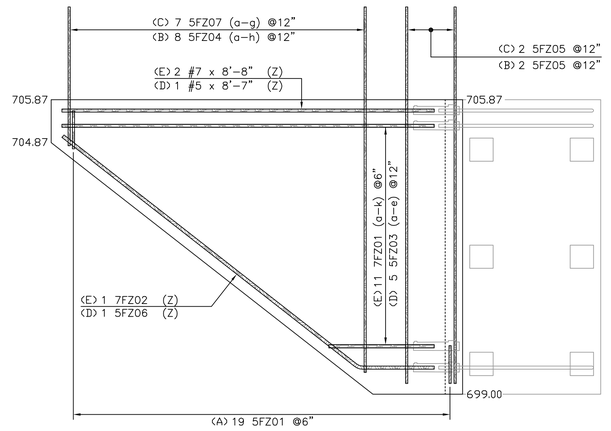


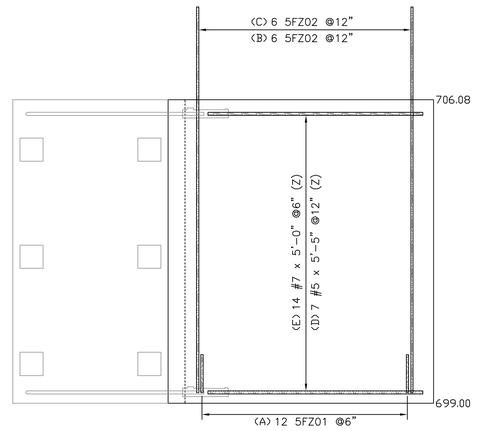

WINGWALL #2 PLAN



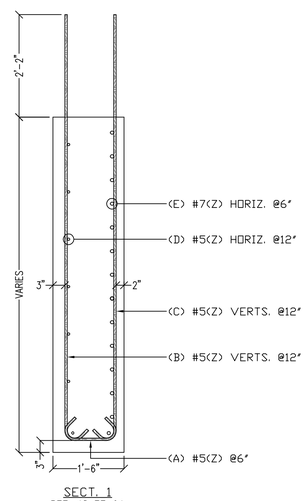

WINGWALL #1 PLAN




WINGWALL #2 ELEVATION




WINGWALL #1 ELEVATION




SECT. 1
REF. 42 OF 64

ALL DUAL COATED REINF. DENOTED (Z)

ELEVATIONS & DIMENSIONS SHOWN ON THIS DWG. ARE FOR REINF. DETAILING PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION.

REINF. BARS ASTM A615 GRADE 60 DUAL COATED

VERIFICATION OF UNCLEAR INFORMATION MAY BE REQUESTED ON THIS DRAWING. SHOULD VERIFICATION BE LEFT UN-ADDRESSED IT WILL REMAIN AS SHOWN AND ASSUME TO BE CORRECT.

**FOR APPROVAL**

LEGEND:
CONT.-CONTINUOUS
TRANS.-TRANSVERSE
DWLS.-DOWELS
VERTS.-VERTICAL
HORIZ.-HORIZONTAL
T&B -TOP & BOTTOM
I.F.-INNER FACE
O.F.-OUTER FACE
E.E.-EACH END
E.F.-EACH FACE
F.F.-FRONT FACE
R.F.-REAR FACE
E.W.-EACH WAY
O.C.-ON CENTER
L.W.-LONG WAY
S.W.-SHORT WAY

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| 1 | 12-05-14 | | FOR APPROVAL |
| | DATE | REV.# | SENT FOR |


DIMENSION
DIMENSION FABRICATORS INC.
2000 7TH STREET
SCOTIA, N.Y. 12302
PH: (518) 374-1936
FAX (518) 374-4830
www.dimensionfabricators.com


| | |
|---|---|
| STRUCTURE | VTAOT STOWE BRF 0235(11) |
| LOCATION | |
| ARCHITECT | |
| ENGINEER | |
| CUSTOMER | SD IRELAND CONCRETE CONST. CORP. |
| DRAWN BY: ED | DATE: 12/5/14 |
| DFI #: 9117 | |
| DRAWING COVERS: WINGWALLS 1 & 2 DUAL COATED REINFORCING | DRAWING #: F |

Drawing Sheet : J — BAR LIST

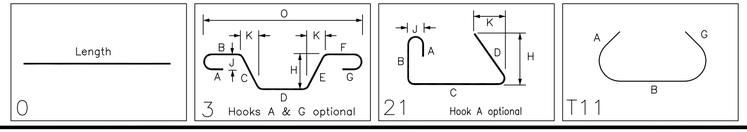
| Bar Mark | Qty | Size | Total Length | Type | 'A' | 'B' | 'C' | 'D' | 'E' | 'F' | 'G' | 'H' | 'J' | 'K' | 'O' | 'R' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | #7 | 8'-8" | | | 8'-8" | | | | | | | | | | |
| | 2 | #7 | 8'-8" | | | 8'-8" | | | | | | | | | | |
| | 1 | #5 | 8'-7" | | | 8'-7" | | | | | | | | | | |
| | 1 | #5 | 8'-7" | | | 8'-7" | | | | | | | | | | |
| 5JZ01 | 19 | #5 | 2'-0" | T11 | 0'-5 ½" | 1'-1" | | | | | 0'-5 ½" | | | | | |
| 5JZ01 | 19 | #5 | 2'-0" | T11 | 0'-5 ½" | 1'-1" | | | | | 0'-5 ½" | | | | | |
| 5JZ02 | 1 | #5 | 10'-5" | 3 | | 9'-1" | 1'-4" | | | | | 0'-9 ¾" | | 1'-0 ¼" | 10'-1 ½" | |
| 5JZ03 | 2 | #5 | 9'-0 ½" | 21 | | | 8'-7" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ04 | 2 | #5 | 9'-0 ½" | 21 | | | 8'-7" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ05a | 1 | #5 | 3'-11 ½" | 21 | | | 3'-6" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ05b | 1 | #5 | 4'-8 ½" | 21 | | | 4'-3" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ05c | 1 | #5 | 5'-5 ½" | 21 | | | 5'-0" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ05d | 1 | #5 | 6'-2 ½" | 21 | | | 5'-9" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ05e | 1 | #5 | 6'-11 ½" | 21 | | | 6'-6" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ05f | 1 | #5 | 7'-8 ½" | 21 | | | 7'-3" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ05g | 1 | #5 | 8'-5 ½" | 21 | | | 8'-0" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ06a | 1 | #5 | 2'-8" | | | 2'-8" | | | | | | | | | | |
| 5JZ06b | 1 | #5 | 4'-0" | | | 4'-0" | | | | | | | | | | |
| 5JZ06c | 1 | #5 | 5'-4" | | | 5'-4" | | | | | | | | | | |
| 5JZ06d | 1 | #5 | 6'-8" | | | 6'-8" | | | | | | | | | | |
| 5JZ06e | 1 | #5 | 8'-0" | | | 8'-0" | | | | | | | | | | |
| 5JZ10a | 1 | #5 | 3'-6 ½" | 21 | | | 3'-1" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ10b | 1 | #5 | 4'-3 ½" | 21 | | | 3'-10" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ10c | 1 | #5 | 5'-0 ½" | 21 | | | 4'-7" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ10d | 1 | #5 | 5'-9 ½" | 21 | | | 5'-4" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ10e | 1 | #5 | 6'-6 ½" | 21 | | | 6'-1" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ10f | 1 | #5 | 7'-3 ½" | 21 | | | 6'-10" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ10g | 1 | #5 | 8'-0 ½" | 21 | | | 7'-7" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ10h | 1 | #5 | 8'-9 ½" | 21 | | | 8'-4" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ11a | 1 | #5 | 3'-2" | | | 3'-2" | | | | | | | | | | |
| 5JZ11b | 1 | #5 | 4'-5" | | | 4'-5" | | | | | | | | | | |
| 5JZ11c | 1 | #5 | 5'-8" | | | 5'-8" | | | | | | | | | | |
| 5JZ11d | 1 | #5 | 6'-11" | | | 6'-11" | | | | | | | | | | |
| 5JZ11e | 1 | #5 | 8'-2" | | | 8'-2" | | | | | | | | | | |
| 5JZ12 | 1 | #5 | 10'-6" | 3 | | 8'-7" | 1'-11" | | | | | 1'-2 ½" | | 1'-5 ¾" | 10'-0 ¾" | |
| 5JZ13 | 3 | #5 | 8'-10 ½" | 21 | | | 8'-5" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |

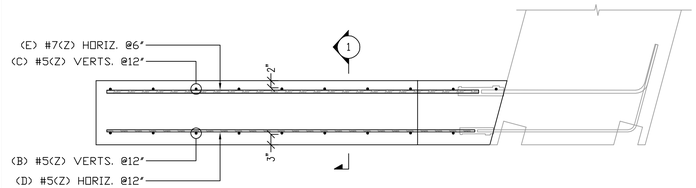
Drawing Sheet : J — BAR LIST

| Bar Mark | Qty | Size | Total Length | Type | 'A' | 'B' | 'C' | 'D' | 'E' | 'F' | 'G' | 'H' | 'J' | 'K' | 'O' | 'R' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5JZ14 | 2 | #5 | 8'-10 ½" | 21 | | | 8'-5" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ15a | 1 | #5 | 3'-6 ½" | 21 | | | 3'-1" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ15b | 1 | #5 | 4'-4" | 21 | | | 3'-10 ½" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ15c | 1 | #5 | 5'-1 ¾" | 21 | | | 4'-8 ¼" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ15d | 1 | #5 | 5'-11 ½" | 21 | | | 5'-6" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ15e | 1 | #5 | 6'-9" | 21 | | | 6'-3 ½" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ15f | 1 | #5 | 7'-6 ¾" | 21 | | | 7'-1 ¼" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ15g | 1 | #5 | 8'-4 ½" | 21 | | | 7'-11" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ16a | 1 | #5 | 3'-11 ½" | 21 | | | 3'-6" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ16b | 1 | #5 | 4'-9" | 21 | | | 4'-3 ½" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ16c | 1 | #5 | 5'-6 ¾" | 21 | | | 5'-1 ¼" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ16d | 1 | #5 | 6'-4 ½" | 21 | | | 5'-11" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ16e | 1 | #5 | 7'-2" | 21 | | | 6'-8 ½" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ16f | 1 | #5 | 7'-11 ¾" | 21 | | | 7'-6 ¼" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 5JZ16g | 1 | #5 | 8'-9 ¼" | 21 | | | 8'-4" | 0'-5 ½" | | | | 0'-4" | | 0'-3 ¾" | | |
| 7JZ01 | 1 | #7 | 10'-6" | 3 | | 9'-1" | 1'-5" | | | | | 0'-10 ½" | | 1'-1 ¼" | 10'-2 ¼" | |
| 7JZ02a | 1 | #7 | 2'-1" | | | 2'-1" | | | | | | | | | | |
| 7JZ02b | 1 | #7 | 2'-9" | | | 2'-9" | | | | | | | | | | |
| 7JZ02c | 1 | #7 | 3'-5" | | | 3'-5" | | | | | | | | | | |
| 7JZ02d | 1 | #7 | 4'-1" | | | 4'-1" | | | | | | | | | | |
| 7JZ02e | 1 | #7 | 4'-9" | | | 4'-9" | | | | | | | | | | |
| 7JZ02f | 1 | #7 | 5'-5" | | | 5'-5" | | | | | | | | | | |
| 7JZ02g | 1 | #7 | 6'-1" | | | 6'-1" | | | | | | | | | | |
| 7JZ02h | 1 | #7 | 6'-9" | | | 6'-9" | | | | | | | | | | |
| 7JZ02i | 1 | #7 | 7'-5" | | | 7'-5" | | | | | | | | | | |
| 7JZ02j | 1 | #7 | 8'-1" | | | 8'-1" | | | | | | | | | | |
| 7JZ03a | 1 | #7 | 2'-7" | | | 2'-7" | | | | | | | | | | |
| 7JZ03b | 1 | #7 | 3'-2" | | | 3'-2" | | | | | | | | | | |
| 7JZ03c | 1 | #7 | 3'-10" | | | 3'-10" | | | | | | | | | | |
| 7JZ03d | 1 | #7 | 4'-5" | | | 4'-5" | | | | | | | | | | |
| 7JZ03e | 1 | #7 | 5'-1" | | | 5'-1" | | | | | | | | | | |
| 7JZ03f | 1 | #7 | 5'-8" | | | 5'-8" | | | | | | | | | | |
| 7JZ03g | 1 | #7 | 6'-4" | | | 6'-4" | | | | | | | | | | |
| 7JZ03h | 1 | #7 | 6'-11" | | | 6'-11" | | | | | | | | | | |
| 7JZ03i | 1 | #7 | 7'-7" | | | 7'-7" | | | | | | | | | | |
| 7JZ03j | 1 | #7 | 8'-3" | | | 8'-3" | | | | | | | | | | |

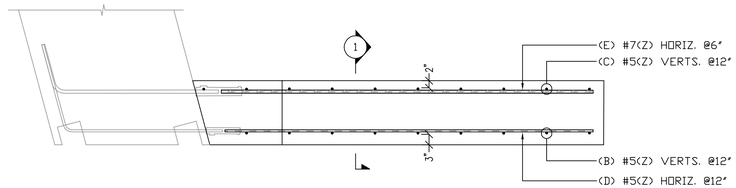
Drawing Sheet : J — BAR LIST

| Bar Mark | Qty | Size | Total Length | Type | 'A' | 'B' | 'C' | 'D' | 'E' | 'F' | 'G' | 'H' | 'J' | 'K' | 'O' | 'R' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7JZ04 | 1 | #7 | 10'-7" | 3 | | 8'-7" | 2'-0" | | | | | 1'-3" | | 1'-6 ¼" | 10'-1 ½" | |

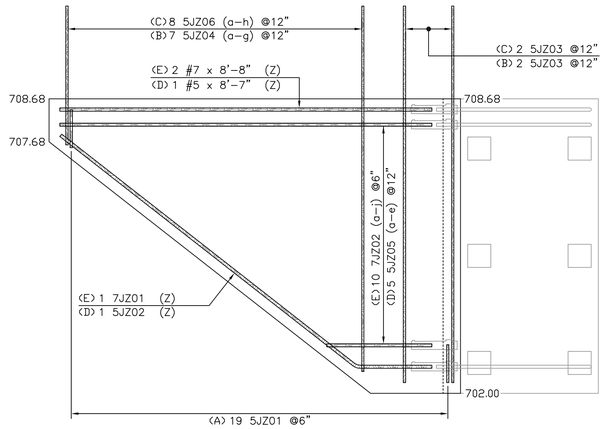


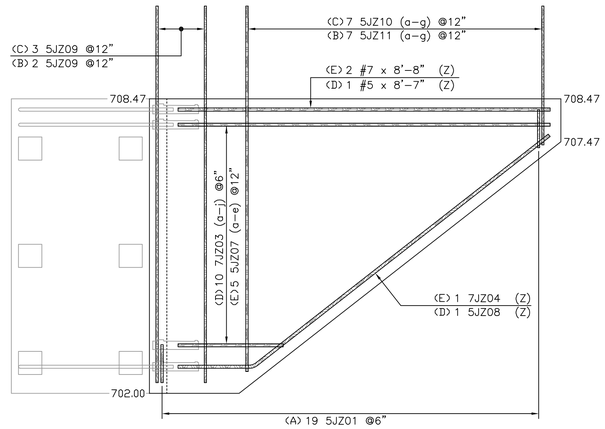

WINGWALL #3 PLAN



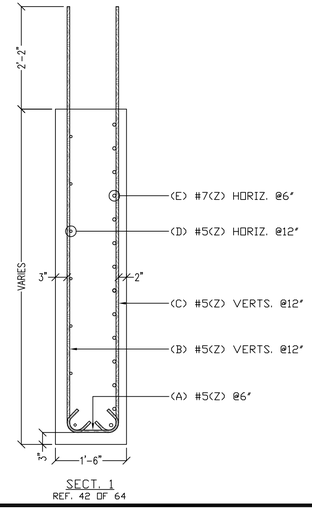

WINGWALL #4 PLAN




WINGWALL #3 ELEVATION




WINGWALL #4 ELEVATION




SECT. 1
REF. 42 OF 64

ALL DUAL COATED REINF. DENOTED (Z)

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REINF. BARS ASTM A615 GRADE 60 DUAL COATED

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**FOR APPROVAL**

LEGEND:
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| 1 | 12-05-14 | | FOR APPROVAL |


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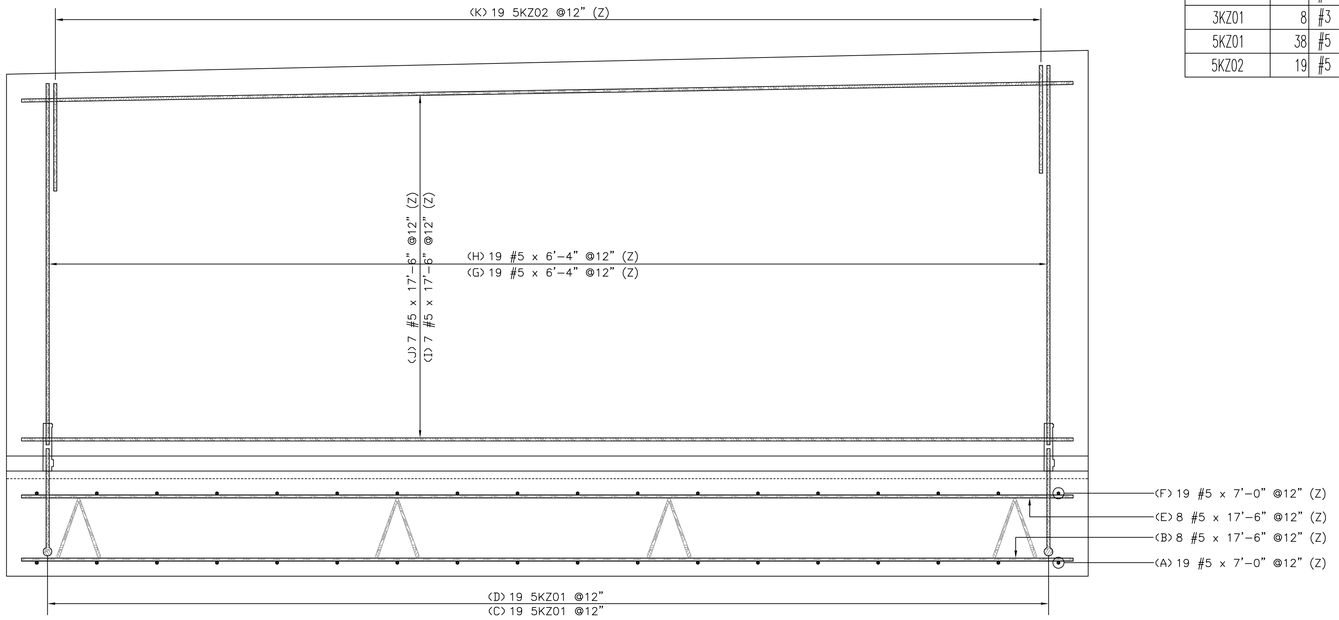
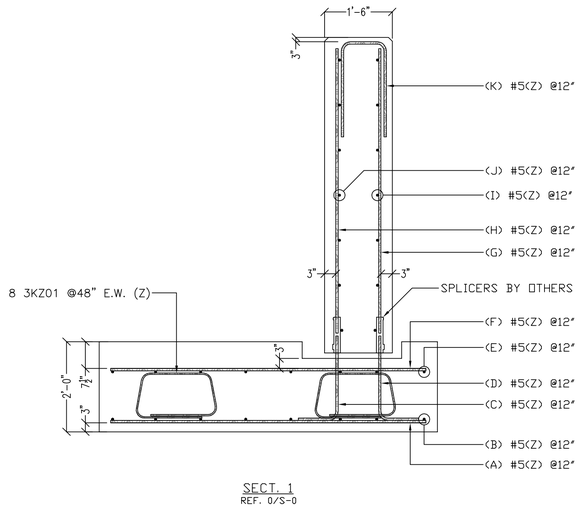
| | |
|---|---|
| STRUCTURE | VTAOT STOWE BRF 0235(11) |
| LOCATION | |
| ARCHITECT | |
| ENGINEER | |
| CUSTOMER | SD IRELAND CONCRETE CONST. CORP. |
| DRAWN BY | ED |
| DATE | 12/5/14 |
| DFI # | 9117 |
| DRAWING COVERS | WINGWALLS 3 & 4 DUAL COATED REINFORCING |
| DRAWING # | J |




RETAINING WALL ELEVATION

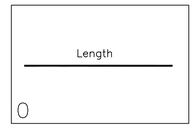


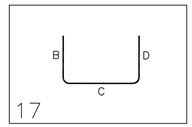

SECT. 1
REF. 0/S-0

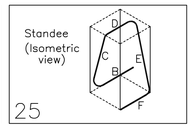
Drawing Sheet : K

BAR LIST

| Bar Mark | Qty | Size | Total Length | Type | 'A' | 'B' | 'C' | 'D' | 'E' | 'F' | 'G' | 'H' | 'J' | 'K' | 'O' | 'R' |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 30 | #5 | 17'-6" | | | 17'-6" | | | | | | | | | | |
| | 38 | #5 | 7'-0" | | | 7'-0" | | | | | | | | | | |
| | 38 | #5 | 6'-4" | | | 6'-4" | | | | | | | | | | |
| 3KZ01 | 8 | #3 | 6'-6 ½" | 25 | | 1'-6" | 1'-0 ¼" | 1'-6" | 1'-0 ¼" | 1'-6" | | 1'-0" | | 0'-6" | | |
| 5KZ01 | 38 | #5 | 2'-10" | 17 | | 0'-10" | 2'-0" | | | | | | | | | |
| 5KZ02 | 19 | #5 | 5'-4" | 17 | | 2'-2" | 1'-0" | 2'-2" | | | | | | | | |




ALL DUAL COATED REINF. DENOTED (Z)

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REINF. BARS ASTM A615 GRADE 60 DUAL COATED

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| 2 | 12-8-14 | | REVISED/SDI COM/FOR APPROVAL |
| 1 | 12-8-14 | | FOR APPROVAL |


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DIMENSION FABRICATORS INC.
2000 7TH STREET
SCOTIA, N.Y. 12302
PH: (518) 374-1936
FAX (518) 374-4830
www.dimensionfabricators.com


| | |
|---|---|
| STRUCTURE | VTAOT STOWE BRF 0235(11) |
| LOCATION | WILLISTON, VT |
| ARCHITECT | |
| ENGINEER | |
| CUSTOMER | SD IRELAND CONCRETE CONST. CORP. |
| DRAWN BY | ED |
| DATE | 12/8/14 |
| DFI # | 9117 |
| DRAWING COVERS | RETAINING WALL DUAL COATED REINFORCING |
| DRAWING # | K |

S.D. Ireland
Concrete Construction Corporation
802-863-6222 • Fax: 802-860-1528
www.sdireland.com

# CONCRETE MIX DESIGN

## 5000 psi

**SCC**

**SDI MIX CODE: P50TER**

**DATE:** May 22, 2014 **PLANT:** Burlington, VT

**PROJECT:** General DOT Precast - 2014

| | | |
|---|---|---|
| **FINE AGGREGATE:** ASTM C 33 | Source: | Hinesburg Sand & Gravel |
| | Specific Gravity: | 2.67 (Abs.: 1.30%) |
| | Fineness Modulus: | 2.9 |
| **COARSE AGGREGATE:** ASTM C 33 | Source: | S.D. Ireland, Brownell Quarry |
| | Specific Gravity: | 2.80 (Abs.: 0.30%) |
| | Description | 3/4" 100% Crushed Stone (Size #67) |
| **CEMENT:** | Ternary Blend Cement; Lefarge North America Lakes and Seaway Re St. Constant, Quebec (22% Slag, 5% Silica Fume, 73% Type II Cement) (Sp.Gvty: 3.02) | |
| **ADMIXTURES:** | Water Reducer (HRWR): Glenium 7500; BASF Admixtures<br>Air Entraining Agent: Darex II AEA; Grace Concrete Chemicals | |

---

**CONSTITUENTS (LBS. /YD³)**

| | | Abs.Vol. |
|---|---|---|
| Coarse Aggregate (SSD) | 1675 | 9.59 |
| Fine Aggregate (SSD) | 1162 | 6.97 |
| Cement | 705 | 3.74 |
| Water | 300 | 4.81 |
| Air Content (Entrained) | 7.0% | 1.89 |
| Total | 3842 | 27.00ft³ |

**MIX PROPERTIES/ REQUIREMENTS**

Water Cement Ratios: 0.426 (0.44)
Entrained Air Content: 5.0 % – 9.0%
Dry Unit Weight: 142.0 ± pcf
Spread: 21" to 27"
Concrete Temperatures: 50 – 85°F
VSI=/<1

***ADMIXTURE(S) DOSEAGE (OZ. /YD³)**

| | |
|---|---|
| Glenium 7500 (HRWR) | 46 - 53 |
| Darex II AEA | 2.3 |

Approved Jarrod Field
VAOT Concrete
Materials Engineer
5/23/14

**TYPICAL STRENGTH GAIN**

| | |
|---|---|
| 18-HOURS | 1980 psi |
| 3-DAYS | 3760 psi |
| 7-DAYS | 4790 psi |
| 28-DAYS | 6020 psi |

*Admixture dosage rates are subject to change.

24" corrugated steel pipe for the Pile Sleeves

SPECIFICATION FOR CORRUGATED STEEL PIPE – GALVANIZED STEEL:

SCOPE:
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE GALVANIZED CORRUGATED STEEL PIPE(CSP) DETAILED IN THE PROJECT PLANS.

MATERIALS:
THE GALVANIZED STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M 218 OR ASTM A 929.

PIPE:
THE CSP SHALL BE MANUFACTURED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M–36 OR ASTM A 760. THE PIPE SIZES, GAUGES AND CORRUGATIONS SHALL BE AS SHOWN ON THE PROJECT PLANS.

ALL FABRICATION OF THE PRODUCT SHALL OCCUR WITHIN THE UNITED STATES.

HANDLING & ASSEMBLY:
SHALL BE IN ACCORDANCE WITH NCSPA'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) RECOMMENDATIONS.

INSTALLATION:
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II OR ASTM A 798 AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS, THE CONTRACTOR MUST BRING THEM TO THE ATTENTION OF THE PROJECT ENGINEER.

IT IS ALWAYS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

CONSTRUCTION LOADS:
CONSTRUCTION LOADS MAY BE HIGHER THAT FINAL LOADS. FOLLOW THE MANUFACTURERS OR NCSPA'S GUIDELINES.

H:\ACAD Data\ES Standard Details\Specs\CMP\CSP GALV SPEC (1011248).dwg 3/3/2005 3:58:32 PM EST

CONTECH ID# 0000

CONTECH®
CONSTRUCTION PRODUCTS INC.
1001 GROVE STREET, MIDDLETOWN, OH 45044
PH: 1.800.338.1122 FAX: 513.425.5993


# SPECIFICATION

GALVANIZED
CORRUGATED STEEL PIPE
CONTECH DWG #1011248A

| | |
|---|---|
| SCALE: | 1" = 1'-0" |
| DRAWN BY: | JPP |
| DATE: | 8/16/2000 |
| REV. BY: | JSM |
| DATE: | 3/2/05 |
| SHEET: | 1 of 1 |

Southern Pipe, Inc.
P. O. Box 606, 135 Random Drive, New London, NC 28127
Phone: 704-463-5202 Fax: 704-463-5203 www.southern-pipe.com

**SCHEDULE 40 CONDUIT**
**HEAVY WALL RIGID PVC NONMETALLIC CONDUIT**
**FOR USE IN ABOVE GROUND AND UNDERGROUND APPLICATIONS**

| SIZE | PART NUMBER | DESCRIPTION | MIN WALL | O.D. | WEIGHT PER 100' | PALLET QTY |
|---|---|---|---|---|---|---|
| 1/2" | 41505<br>42505 | 10 FT BE<br>20 FT BE | .109 | .840 | 16 | 6000<br>12000 |
| 3/4" | 41508<br>42508 | 10 FT BE<br>20 FT BE | .113 | 1.050 | 22 | 4400<br>8800 |
| 1" | 41510<br>42510 | 10 FT BE<br>20 FT BE | .133 | 1.315 | 32 | 3600<br>7200 |
| 1 1/4" | 41512<br>42512 | 10 FT BE<br>20 FT BE | .140 | 1.660 | 43 | 3300<br>6600 |
| 1 1/2" | 41515<br>42515 | 10 FT BE<br>20 FT BE | .145 | 1.900 | 52 | 2250<br>4500 |
| 2" | 41520<br>42520 | 10 FT BE<br>20 FT BE | .154 | 2.375 | 70 | 1400<br>2800 |
| 2 1/2" | 41525<br>42525 | 10 FT BE<br>20 FT BE | .203 | 2.875 | 125 | 930<br>1860 |
| 3" | 41530<br>42530 | 10 FT BE<br>20 FT BE | .216 | 3.500 | 156 | 880<br>1760 |
| 3 1/2" | 41535<br>42535 | 10 FT BE<br>20 FT BE | .226 | 4.000 | 188 | 630<br>1260 |
| 4" | 41540<br>42540 | 10 FT BE<br>20 FT BE | .237 | 4.500 | 223 | 570<br>1140 |
| | | | .258 | 5.563 | 310 | 380<br>760 |
| 6" | 41560<br>42560 | 10 FT BE<br>20 FT BE | .280 | 6.625 | 395 | 260<br>520 |
| *8" | 41580 | 10 FT BE | .322 | 8.625 | 547 | 140 |

3" Conduit for the tensioning sleeves

Southern Pipe Schedule 40 Conduit is produced to the following Standards:

| | |
|---|---|
| Underwriters Laboratory, Inc.® (UL) | UL 651 |
| National Electrical Manufacturers Association (NEMA) | TC-2 |
| National Electrical Manufacturers Association (NEMA) | TC-18 |
| Federal Specification | WC-1094-A |

* 8" Sch 40 is a non (UL) LISTED product

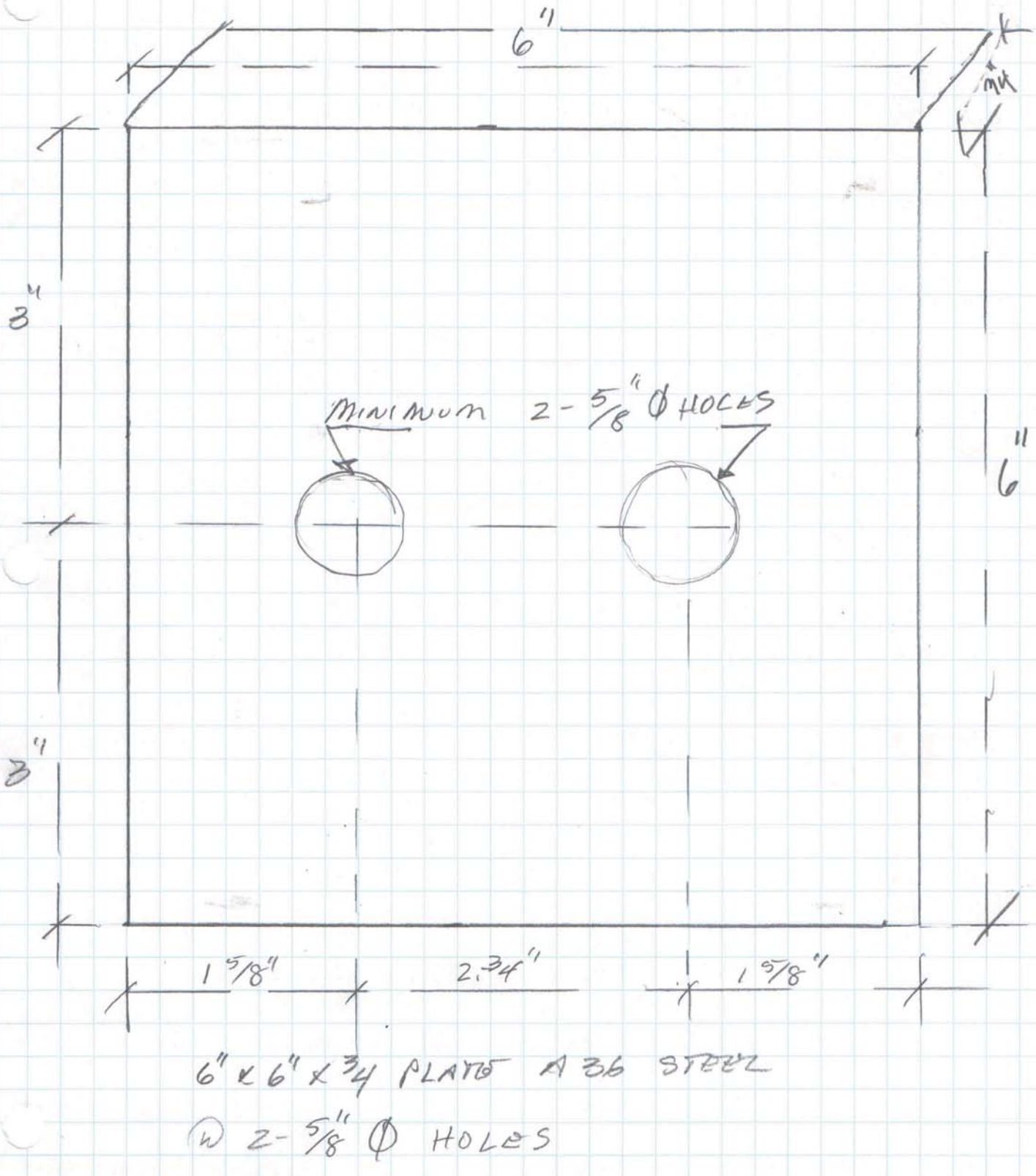
Rated for 90° C

UL LISTED

RUS listed
Sunlight Resistant

STOWE VT

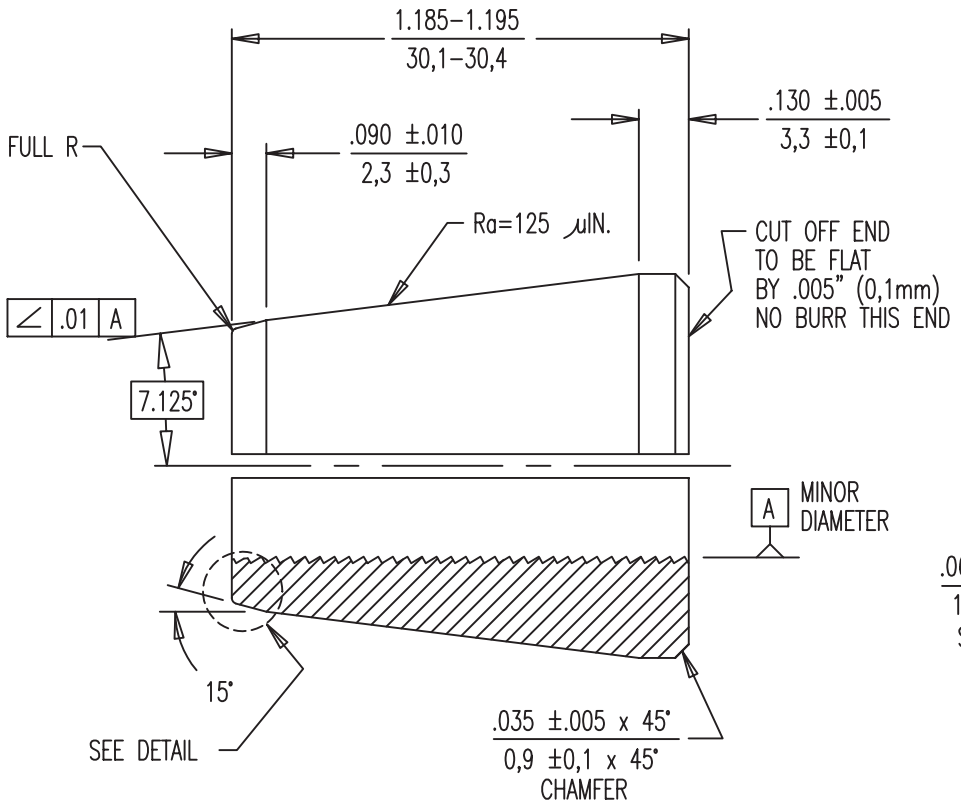
11/18/14
WFO

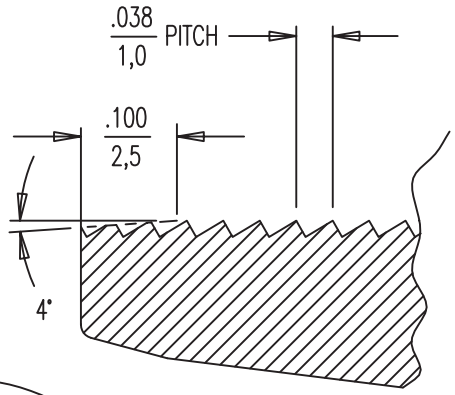



6" x 6" x 3/4 PLATE A 36 STEEL

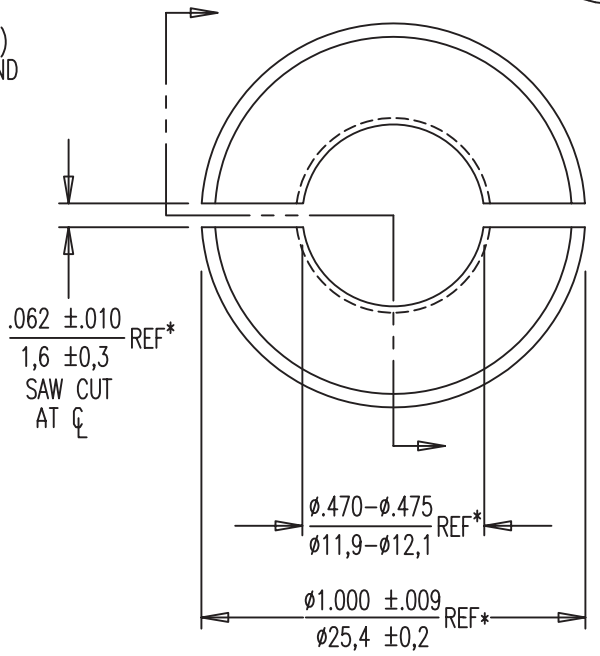
W 2 - 5/8" Ø HOLES

Bearing plate for tension ducts.




DETAIL
SCALE 5:1




* ON UNCUT WEDGE.

NOTES:
1. INTERPRET THIS DRAWING PER ASME Y 14.5M–1994.
2. MAKE SURE THAT THE BUTRESS THREAD IS ORIENTED IN THE DIRECTION SHOWN ON THIS DRAWING.

5

| PART NO. | DESCRIPTION |
|---|---|
| 303525 | UNCOATED |
| 303526 | ZINC PLATED |

DYWIDAG POST–TENSIONING SYSTEMS

0.5" 2–PART WEDGE, 1.2" LONG

DATE: 10–21–94 | DWG: G. MALECKI | CHK: C.S. | APP: K.S.



DIMENSIONS: INCH/mm
mm FOR REFERENCE ONLY

Q.A.

TOLERANCES:
±.020
UNLESS NOTED

WEIGHT
.134
LBS.

MATERIAL:
1" ROUND
12L14

SCALE
2:1
5:1

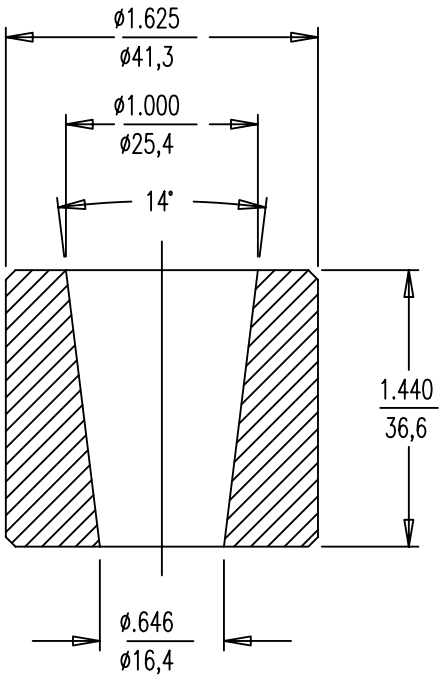
QUALITY PLAN NUMBER:
QS00000500S

| REV. | DATE | NAME | |
|---|---|---|---|
| 1 | 06–03–96 | C.S. | |
| 2 | 06–28–96 | C.S. | |
| 3 | 09–29–97 | A.W. | PB–105 |
| 4 | 01–05–98 | A.W. | ECRN–0049 |
| 5 | 09–17–04 | C.S. | ECRN–0104 |

PART NUMBER
303525
303526

DRAWING NUMBER
303525

DYWIDAG–SYSTEMS INTERNATIONAL, USA, INC.




NOTE:
RECOMMENDED WEDGES:
–2–PART WEDGE 303525
FOR BARE STRAND
–3–PART WEDGE 303527
FOR GALVANIZED STRAND.

| PART NO. | DESCRIPTION |
|---|---|
| 303535 | UNCOATED |
| 303539 | ZINC PLATED |

DYWIDAG POST–TENSIONING SYSTEMS

0.5" BARREL CHUCK

DATE: 10–20–94 | DWG: G. MALECKI | CHK: C.S. | APP: K.S.



DIMENSIONS: INCH/mm
mm FOR REFERENCE ONLY

TOLERANCES:
±.020
UNLESS NOTED

MATERIAL: (6)
ASTM A108,
1045 OR 1144

Q.A.

WEIGHT
.63
LBS.

SCALE
1:1

QUALITY PLAN NUMBER:
QS00028200S

| REV. | DATE | NAME | |
|---|---|---|---|
| 1 | 02–06–96 | C.S. | |
| 2 | 01–27–97 | C.S. | ECRN–026 |
| 3 | 03–11–97 | C.S. | |
| 4 | 05–23–97 | C.S. | |
| 5 | 09–29–97 | A.W. | PB–105 |
| 6 | 03–12–04 | C.S. | ECRN–101 |

PART NUMBER
303535
303539

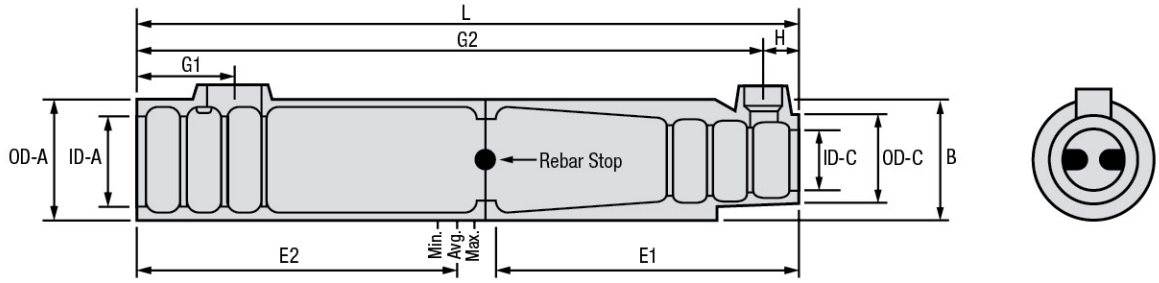
DRAWING NUMBER
303535

DYWIDAG–SYSTEMS INTERNATIONAL, USA, INC.

# NMB SPLICE SLEEVE - U-X SERIES

The NMB SPLICE-SLEEVE is a mechanical coupler for splicing reinforcing bars which uses a cylindrical shaped steel sleeve filled with a Portland cement based non-shrink high early strength grout. Reinforcing bars to be spliced are inserted into the sleeve to meet approximately at the center of the sleeve. The interior of the sleeve is then filled with SS MORTAR grout.

- *System develops the tensile and compressive strengths in excess of the specified minimum for ASTM A615 and A706, Grade 60 bars conforming to the latest ACI 318 Building Code Requirements.*
- *Exceeds requirements of:*
  *- Type 1 connection - 125% of grade 60 rebar*
  *- Type 2 connection - 150% of grade 60 rebar*
- *Sleeve iron castings conform to proprietary specification based on ASTM A536-84*
- *SS Mortar meets the requirements for use in the sleeves under ICC-ESR 3433 and is required for use in NMB Splice Sleeve System*
- *Standard finish is plain. Zinc or epoxy coated available.*




**DIMENSIONS**

| ALP Part # | Grade 60 Rebar Size | Sleeve Length L | Narrow End Diameter ID-C | Narrow End Diameter OD-C | Max Diameter B | Wide End Diameter ID-A | Wide End Diameter OD-A | Grout Port Locations G1 | Grout Port Locations G2 | Grout Port Locations H | Weight per sleeve (lbs) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SS 5U-X | #5 | 9-5/8" | 7/8" | 1-1/2" | 1-7/8" | 1-1/4" | 1-7/8" | 1-7/8" | 8-3/4" | 7/8" | 3.09 |
| SS 6U-X | #6 | 11-1/4" | 1" | 1-5/8" | 2" | 1-3/8" | 2" | 1-7/8" | 10-3/8" | 7/8" | 3.70 |
| SS 7U-X | #7 | 12-3/4" | 1-1/8" | 1-3/4" | 2-3/8" | 1-3/4" | 2-3/8" | 1-7/8" | 11-7/8" | 7/8" | 5.10 |
| SS 8U-X | #8 | 14-5/8" | 1-1/4" | 1-7/8" | 2-1/2" | 1-7/8" | 2-1/2" | 1-7/8" | 13-5/8" | 7/8" | 5.86 |
| SS 9U-X | #9 | 16-3/8" | 1-3/8" | 2" | 2-5/8" | 2" | 2-5/8" | 1-7/8" | 15-1/2" | 7/8" | 7.21 |
| SS 10U-X | #10 | 17-7/8" | 1-5/8" | 2-1/4" | 2-7/8" | 2-1/8" | 2-7/8" | 1-7/8" | 17" | 7/8" | 9.47 |
| SS 11U-X | #11 | 19-1/2" | 1-3/4" | 2-3/8" | 3" | 2-3/8" | 3" | 1-7/8" | 18-5/8" | 7/8" | 10.80 |
| SS 14U-X | #14 | 24-3/8" | 2" | 2-3/4" | 3-1/2" | 2-5/8" | 3-1/2" | 1-7/8" | 23-3/4" | 7/8" | 19.70 |
| SS 18U | #18 | 36-1/4" | 2-5/8" | 3-5/8" | 4-1/2" | 3-1/4" | 4-1/4" | 2-5/8" | 35-1/2" | 5/8" | 52.50 |

Each Splice Sleeve Set includes the following: sleeve, washer (GRW), hole seals (HS) and plug (RP).

**SPECIFICATIONS**

| ALP Part # | Grade 60 Rebar size | Recommended Rebar Embedment Length: Factory Dowel - E1 Min. | Factory Dowel - E1 Max | Field Dowel - E2 Min. | Field Dowel - E2 Average | Field Dowel - E2 Max | Total Tolerences |
|---|---|---|---|---|---|---|---|
| SS 5U-X | #5 | 4-1/8" | 4-3/8" | 4-1/8" | 4-1/2" | 4-7/8" | 5/8" |
| SS 6U-X | #6 | 4-7/8" | 5-1/8" | 4-7/8" | 5-3/8" | 5-3/4" | 5/8" |
| SS 7U-X | #7 | 5-3/4" | 5-7/8" | 5-3/4" | 6-1/8" | 6-1/2" | 7/8" |
| SS 8U-X | #8 | 6-1/2" | 6-3/4" | 6-1/2" | 7" | 7-1/2" | 7/8" |
| SS 9U-X | #9 | 7-3/8" | 7-1/2" | 7-3/8" | 7-7/8" | 8-3/8" | 7/8" |
| SS 10U-X | #10 | 8-1/4" | 8-3/8" | 8-1/4" | 8-5/8" | 9-1/8" | 7/8" |
| SS 11U-X | #9* | 9" | 9-1/8" | 9" | 9-1/2" | 9-7/8" | 1-7/16"* |
| | #11 | 9" | 9-1/8" | 9" | 9-1/2" | 9-7/8" | 7/8" |
| SS 14U-X | #11* | 11-3/8" | 11-5/8" | 11-3/8" | 11-7/8" | 12-3/8" | 1-7/16"* |
| | #14 | 11-3/8" | 11-5/8" | 11-3/8" | 11-7/8" | 12-3/8" | 7/8" |
| SS 18U | #18 | 17" | 18-1/8" | 17" | 17-1/2" | 18-1/8" | 1" |

Each sleeve is included with a washer (GRW), hole seals (HS) and plug (RP).
* Tolerances listed are based upon up-sizing of the sleeve in relation to the rebar to increase the total tolerances.

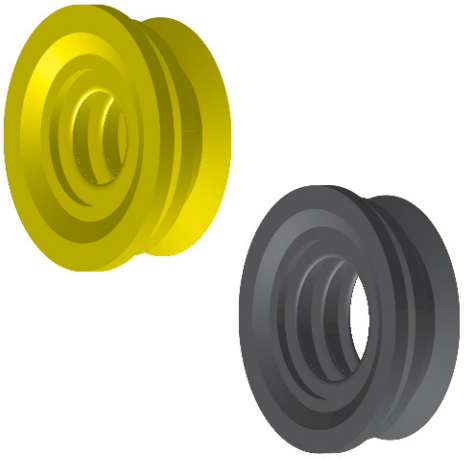
# NMB SPLICE SLEEVE - SNX11 & A11W

## ELASTOMER PLUGS

Elastomer Plugs (EP) are designed to prevent the intrusion of concrete into the Splice Sleeve during the casting of the concrete elements.

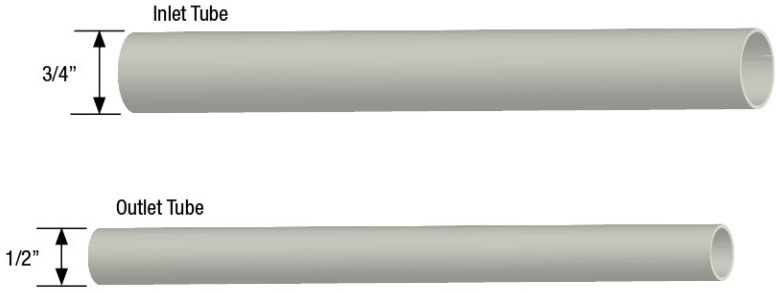
| ALP Part # | Fits ALP Part # | Grade 60 Rebar Size | Material | Color |
|---|---|---|---|---|
| SS E0911 | SS SNX11 | #9 | Elastomer | Yellow |
| | SS A11W | #9 | Elastomer | Yellow |
| SS E11 | SS SNX11 | #11 | Elastomer | Black |
| | SS A11W | #11 | Elastomer | Black |

* (1) Elastomer Plug included with each Splice Sleeve



## INLET AND OUTLET TUBES

Inlet / Outlet Tubes are designed to attach to the Splice Sleeve to create path for the grout to be pumped from the concrete surface in to the Splice Sleeve. Tubes are installed into the splice sleeve and capped with a hole seal before casting of the concrete panels.

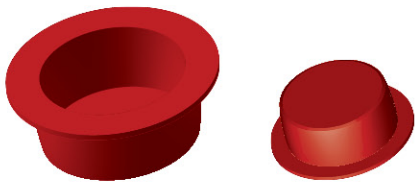



| Grade 60 Rebar Size | Fits ALP Part # | Inlet PVC Tube | Outlet PVC Tube |
|---|---|---|---|
| #11 | SS SNX11 | 3/4” Schedule 40 PVC Pipe* | 1/2” Schedule 40 PVC Pipe* |
| | SS A11W | | |

* Not supplied by Splice Sleeve North America. Can be picked up at a local supplier.

## HOLE SEALS

Hole Seals (HS) are plastic plugs designed to temporarily prevent intrusion of the concrete into PVC tube during casting of concrete elements.



3/4” Inlet

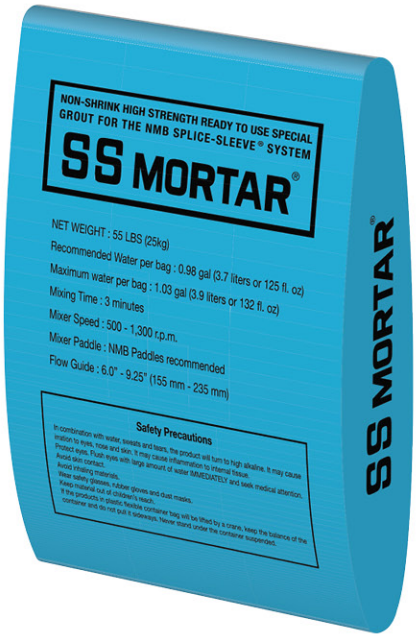
1/2” Outlet

| ALP Part # | PVC Pipe | Fits ALP Part # | Grade 60 Rebar Size |
|---|---|---|---|
| SS HSL | 3/4” | SS SNX11 | #11 |
| | | SS A11W | |
| | 1/2” | SS SNX11 | #11 |
| | | SS A11W | |

*(1) Set of Hole Seals included with each Splice Sleeve
* Sold in sets of (1) 1/2” and (1) 3/4” Hole Seal

# NMB SPLICE SLEEVE - SS MORTAR

- Packaged in 55 lb. bags
- Non Metallic, grout, **will not stain or rust**
- High Early Strength grout - achieves 4,000 PSI in less than 24 hours at 68˚ F
- High flow consistency
- High Ultimate Strength - exceeds 13,860 PSI in 28 days
- 35˚ F to 140˚ F ambient temperature application
- Fast 2-1/2 minute mixing time (depending on mixing speed)
- 6"-9-1/4" flowable acceptable range
- *See Splice Sleeve Engineering Sheet for proper mixing instructions

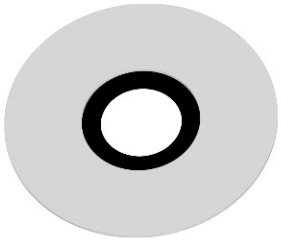


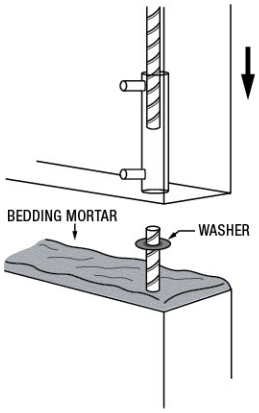

| ALP Part # | Grade 60 Rebar Size | SS Mortar per Sleeve (lbs.) | Sleeves per Bag |
|---|---|---|---|
| SS 5U-X | #5 | 0.94 | 58.8 |
| SS 6U-X | #6 | 1.31 | 42.0 |
| SS 7U-X | #7 | 2.06 | 26.7 |
| SS 8U-X | #8 | 2.7 | 20.4 |
| SS 9U-X | #9 | 3.2 | 17.2 |
| SS 10U-X | #10 | 4.01 | 13.7 |
| SS 11U-X | #11 | 5.01 | 11.0 |
| SS SNX11 | #11 | 4.91 | 11.2 |
| SS A11W | #11 | 6.07 | 9.1 |
| SS 14U-X | #14 | 7.67 | 7.2 |
| SS 18U | #18 | 22.62 | 2.4 |

- Factor in additional 0.25 lbs per sleeve for 5" long inlet and outlet tubes.
- Factor in additional 15% for waste and field loss.

## GROUT WASHER

Grout Washers are custom metal washers with a rubber seal designed to prevent the intrusion of bedding mortar into the sleeve for post grout applications or to prevent leakage of SS Mortar out of the sleeve in pre-Grout applications.

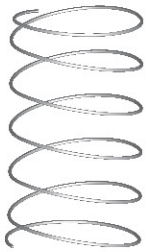





| ALP Part # | Sleeve Size | Fits ALP Part # |
|---|---|---|
| SS G56 | #5, #6 | SS 5U-X, SS 6U-X |
| SS G789 | #7, #8, #9 | SS 7U-X, SS 8U-X, SS 9U-X |
| SS G10 | #10 | SS 10U-X |
| SS G11 | #11 | SS 11U-X, SS SNX11 |
| SS GA11W | #11 | SS A11W |
| SS GRW14 | #14 | SS 14U-X |
| SS GRW18 | #18 | SS 18-X |

*(1) Grout Washer included with each Splice Sleeve

## COIL SPRING



Coil Springs are designed to support the grout washer tight against the Splice Sleeve during the grouting process.

| ALP Part # | Sleeve Size |
|---|---|
| SS CS | #5-#18 |

## LARGE TAPER SPRING

Large taper springs are a heavy duty spring designed to support the grout washer tight against the Splice Sleeve in Pre-Grout applications.

| ALP Part # | Sleeve Size |
|---|---|
| SS CSLT | #5-#18 |

## 1. SS MORTAR® (GROUT) ENGINEERING DATA SHEET: SSM-J© 2012

SS Mortar® (Grout) manufactured by Splice Sleeve Japan, Ltd. is a special cementicious non-metallic filler grout developed for the NMB Splice-Sleeve® System. The use of any other grout will void all warranties, expressed or otherwise implied.


SS Mortar® (Grout) is packaged in 55-lbs (25-kg) moisture resistant bags. The required quantity of SS Mortar® shall be calculated from the Table shown below. **High Early Strength**: The grout in a flowable consistency will attain above 4,000 psi in less than 24 hr. at a temperature of 68°F (20°C). Rapid strength gain allows erection to continue.

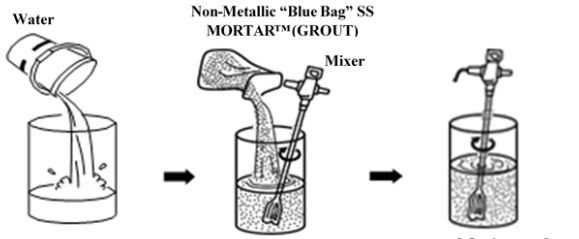
**High Ultimate Strength**: The grout attains 14,000 psi compressive strength in 28 days at 68°F (20°C).

SS Mortar® is a ready-to-use formulation requiring only the proper amount of water, which is suggested at 0.98 gal. = 125 fl. oz. = 3.7 liters per bag. The maximum water is 1.03 gal. = 132 fl. oz. = 3.9 liters. Do not use admixtures.

Mixing time is a minimum of 2½ minutes with ≥ 7 amp electric mixer, providing 500 to 1,300 rpm and a proper paddle.

**Table I-3: Grout Requirement for Sleeves**

| REBAR Size | | Splice-Sleeve | SS Mortar | |
|---|---|---|---|---|
| U.S. | Metric | Model | lb./sleeve | Sleeves/Bag |
| #5 | 16 MM | 5 U-X | 0.94 | **58.8** |
| #6 | 20 MM | 6 U-X | 1.31 | **42.0** |
| #7 | 22 MM | 7 U-X | 2.06 | **26.7** |
| #8 | 25 MM | 8 U-X | 2.7 | **20.4** |
| #9 | 28 MM | 9 U-X | 3.2 | **17.2** |
| #10 | 32 MM | 10 U-X | 4.01 | **13.7** |
| #11 | 35 MM | 11 U-X | 5.01 | **11.0** |
| #11 | 35 MM | SNX 11 | 4.91 | **11.2** |
| #11 | 35 MM | A11W | 6.07 | **9.1** |
| #14 | 40 MM | 14 U-X | 7.67 | **7.2** |
| #18 | 57 MM | 18 U | 22.62 | **2.4** |
| Inlet + Outlet PVC tubes x 5" | | | 0.25 | ≈ **225** |




Note: Always mix full bags: no partial bags

| Year | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | | |
| Month | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | A | B | C | D | E | F | G | H | I | J | K | L |
| Day | As a number from 1 to 31 | | | | | | | | | | | |

Grout quantities shown in the table above are in dry powder weight of the grout to fill the space inside the sleeve after both rebars have been inserted into the sleeve. If pumping grout tubes add a little more-see example on chart. When "upsizing" add 20% for each rebar size.

An additional overage of 15% is recommended to provide for typical waste and field loss while continuously pumping large numbers of sleeves. The above overage does not cover losses from "left over" waste in the bucket, pump, hose and elsewhere. It is recommended that you allow an additional bag per grouting session. Better to have a bit too much than a bit too little and delay the job.

SS Mortar® should be stored in moderate/cool and dry conditions. It has a "freshness" bag life of one (1) year. Bags have a date stamp on the top using letters for the year (10 year period) followed by month and the last numbers mentions the day as shown in Table and Figure.


**CF 25: 13 - 06 - 25 = June 25, 2013**

## 2. SS MORTAR® (GROUT) PERFORMANCE DATA

**Table I-4: SS Mortar® (Grout) - Fresh mortar Test Results**

| Water volume | Mix Temp | Curing Temp | Set Time Hr-Min | | Flow Guide | Bleeding % |
|---|---|---|---|---|---|---|
| | | | Initial | Final | | |
| **0.98 gal** (3.7 liters) | **68**°F (20°C) | **41**°F (5°C) | 9 hr. 31 min. | 13 hr. 35 min. | 6 1/4" (160 mm) | 0.00% |
| | | **68**°F (20°C) | 4 hr. 18 min. | 5 hr. 55 min. | 6 5/8" (170 mm) | 0.00% |
| | | **86**°F (30°C) | 2 hr. 23 min. | 3 hr. 20 min. | 6 1/2" (165 mm) | 0.00% |

Non-metallic, SS Mortar® must be used when the surrounding concrete and sleeve temperature is between 35°F to 140°F (2°C to 60°C). Freezing grout, before it achieves 1,500 psi will deplete strength. The grout should be mixed and pumped between 50°F and 95°F (10°C to 35°C). In extreme temperatures warm or iced water can be added to adjust mortar temperature. As per the Table shown below, strength gain of SS Mortar® is directly related to temperature and thus freezing/very cold conditions may require a heating plan until connection strength is reached allowing continued erection and structural specifications. (See Splice Sleeve User's Manual and/or call Splice Sleeve directly).

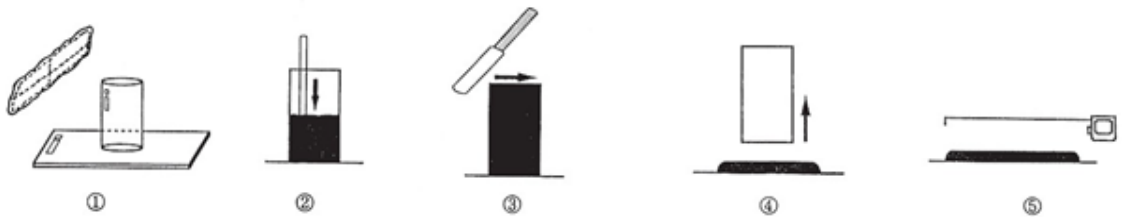
**Table I-5: SS Mortar® (Grout) - Compressive Strength Time vs. Temperature**

| Curing Temperature | Compressive Strength, psi (MPa) | | | | | |
|---|---|---|---|---|---|---|
| | 12 hrs. | 18 hrs. | 1 day | 3 days | 7 days | 28 days |
| **41**°F (5°C) | ---- | **834** (6) | **1,869** (13) | **5,823** (40) | **8,871** (61) | **13,860** (96) |
| **50**°F (10°C) | **410** (3) | **1,869** (13) | **2,905** (20) | **6,858** (47) | **9,907** (68) | **14,895** (103) |
| **68**°F (20°C) | **1,869** (13) | **3,328** (23) | **4,364** (30) | **8,317** (57) | **11,366** (78) | **16,354** (113) |
| **86**°F (30°C) | **2,905** (20) | **4,364** (30) | **5,399** (37) | **9,352** (64) | **12,401** (86) | **17,389** (120) |
| **104**°F (40°C) | **3,708** (26) | **5,167** (36) | **6,202** (43) | **10,155** (70) | **13,204** (91) | **18,192** (125) |

**Calculated strength — calculated from the formula (24.758 Ln x Cumulative Temperature) -54.183**

Consistency Flow tests are run using a "Flow Guide". The diameter of the "puddle" should be between 155 mm (6") minimum to 235 mm (9 ¼") maximum. The Flow Guide consists of a 2 in. (50 mm) diameter x 4 in. (100 mm) cylinder placed in the center of a level, smooth, non-absorbent surface. After filling and lifting the cylinder, the diameter of the resulting "puddle" of grout is measured. Figure below shows the step by step procedure for the flow test.

Details of the procedure are described in **GROUTPRO-N1**: "Recommended Procedure for Field Sampling and Testing SS Mortar®".



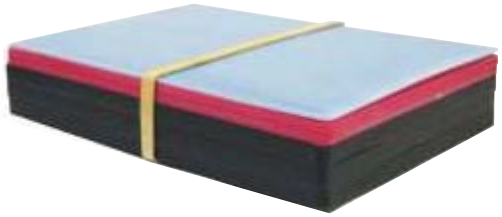

**Related Documents:**

- Material Safety Data Sheet: SS Mortar®
- Users' Manual for NMB Splice-Sleeve® System
- GROUTPRO-N1: Recommended Procedure for Field Sampling & Testing SS Mortar®
- Splice Sleeve "Grout Operation" slideshow.

# Deslauriers

## VERS-A-SHIM® MULTI-PACKS

- Pre-assembled packages of shims designed for precise placing of large load bearing precast units.
- Each shim has no-slip serrations.
- Eliminates correction of elastomeric drift.
- Can be compressed sufficiently at post tensioning to allow load transfer to the grout.
- Vers-A-Shim® Multi-Packs are unaffected by liquids, ground chemicals, alkalis and micro-organisms.
- Performance characteristics are stable and predictable.



**CAT# SP44MB**: 4” Width, 4” Length, 1-1/16” Height.
**CAT# SP46MB**: 4” Width, 6” Length, 1-1/16” Height.

**Vers-A-Shim Multi-Packs are 1-1/16” high and each pack consists of:**

- One (1) 1/16” shims.
- Two (2) 1/8” shims.
- Three (3) 1/4" shims.

Shims for under retaining wall stem.

Shims are rubber-banded together for easy height adjustment and color coded by thickness. Each shim has no-slip serrations.

---

### Engineering Specifications

- Compressive strength of 10.000 psi
- Coefficient of linear expansion is 3 to 5 x 10-5 inches/inch/°C.

Telephone 215-855-8713 FAX 215-855-8714

# GARY K. MUNKELT & ASSOCIATES

Consulting Engineers
Precast Concrete, Structural, Civil

1180 Welsh Rd. Suite 190 North Wales, PA 19454

**PROJECT:** **CHECK CAPACITY OF LIFT SYSTEM COMPONENTS TO LIFT PRECAST CONCRETE ABUTMENT, WINGWALL, RETAINING WALL**

**CLIENT:** **S.D. IRELAND WILLISTON, VT**

**LOCATION:** **STOWE BRF 0235 STOWE, VT**

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

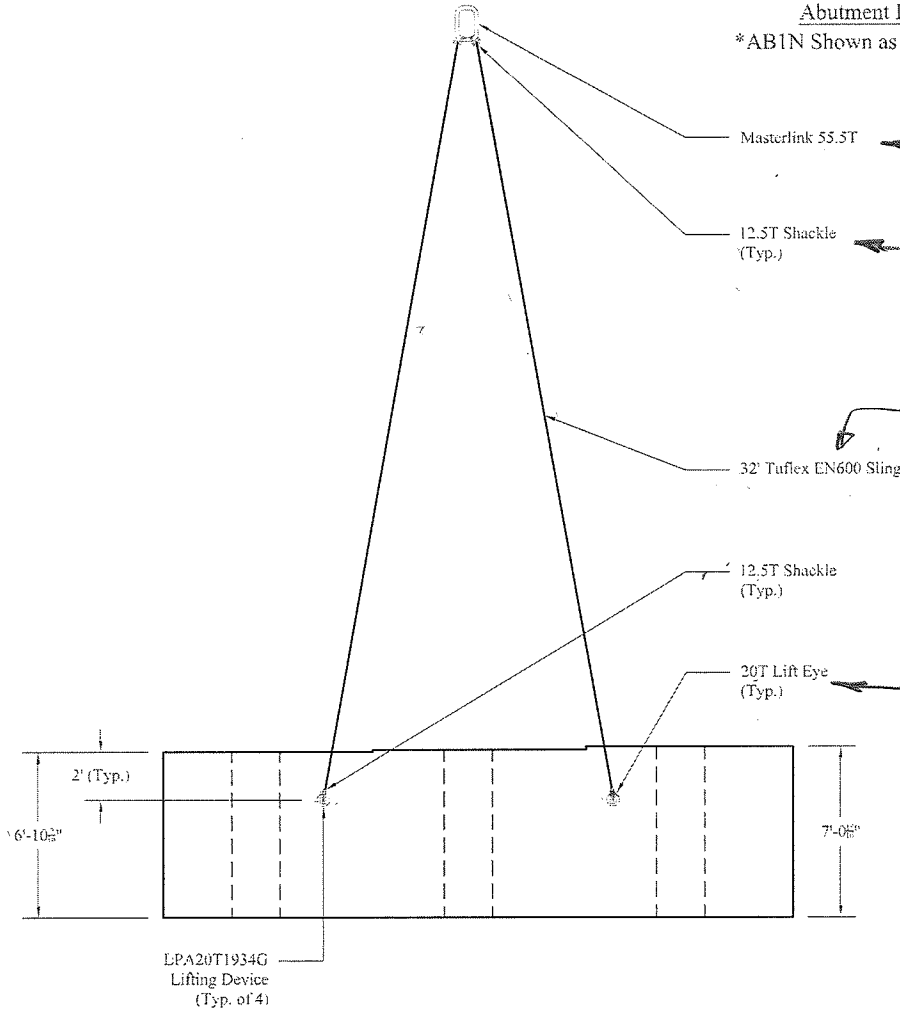
## TABLE OF CONTENTS



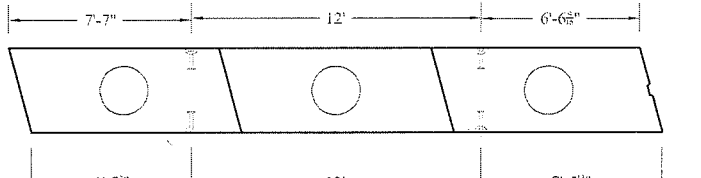
**Job No. 141228** **Dated: 12/8/2014**

## Abutment Lifting Detail

*AB1N Shown as it is the heaviest one.




Side Elevation View




Plan View

APPENDIX A1
FOR MASTERLINK -
WLL = 84300 lb < 111000 lb

APPENDIX 4
FOR SHACKLE
WLL = 23000 lb < 25000 lb

FOR SLING APPENDIX A2
WLL = 23000 lb < 53000 lb

APPENDIX B2 WLL = 23000 lb < 24000 lb

LOAD PER CABLE

$$\frac{84300\ \text{lb} \times 1.1\ (\text{IMPACT})}{4} = 23000\ \text{lb}\ (\text{WORKING LOAD})$$

APPENDIX A5
WLL = 23000 lb < $\frac{200000}{5}$ = 40000 lb

SHEET 2

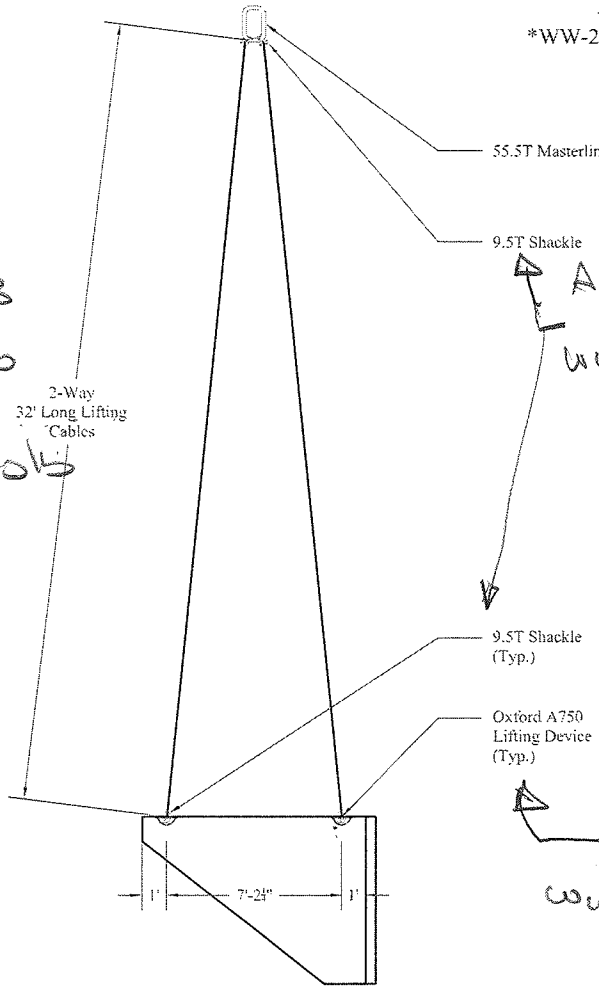
Weight: 84,300 lbs

| | | | | | |
|---|---|---|---|---|---|
| CONTRACTORS VISPE: | PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #15163) | | INSTALLER: CCS Construction 138 Munson Ave Morrisville, VT 05661 PH: 802-888-7701 | FABRICATOR: 193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0201 SD Ireland Precast Division | |
| | SUPERVISOR: M. WHEELER<br>DETAILER: I. ADAMS<br>CHECKER: E. Barendse<br>ENGINEER: | PROJECT NAME: Stowe BRF 0235 (II)<br>PROJECT #: 0235 (II)<br>LOCATION: Stowe, VT | 12/03/14 | Lifting | 1 of 3 |

## Wing Wall Lifting Detail

*WW-2 Shown as this is the heaviest one.

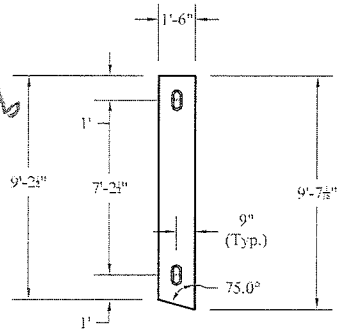
From Appendix A1
WL = 9450 lb < 111000 lb




Side Elevation View

Appendix A3
WL = 9450 lb
< 196000 lb

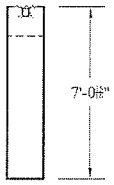
Appendix A4
WL = 5200 lb < 190000 lb




Plan View

Load Per Cable
$\frac{9450 \times 1.1}{2} = 5200$ lb

Appendix B1
WL = 5200 lb < 100000 lb




Section View

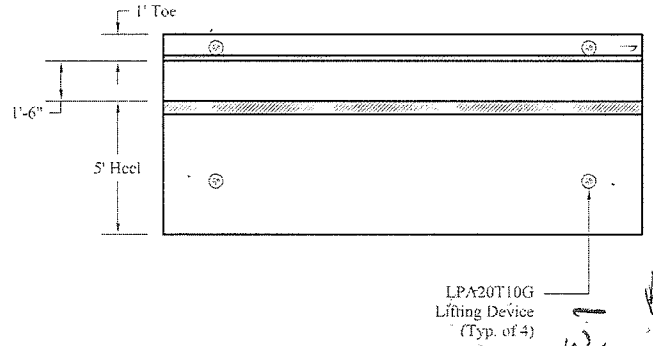
Weight: 9,450 lbs

| | | | | | |
|---|---|---|---|---|---|
| CONTRACTORS VISPE: | PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #15163) | | INSTALLER: CCS Construction 138 Munson Ave Morrisville, VT 05661 Ph: 802-888-7701 | FABRICATOR: 193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0201 SD Ireland Precast Division | |
| | SUPERVISOR: M. WHEELER | PROJECT NAME: Stowe BRF 0235 (II) | | | |
| | DETAILER: I. ADAMS | PROJECT #: 0235 (II) | | | |
| | CHECKER: E. Barendse | LOCATION: Stowe, VT | | | |
| | ENGINEER: | | 12/03/14 | Lifting | 2 of 3 |

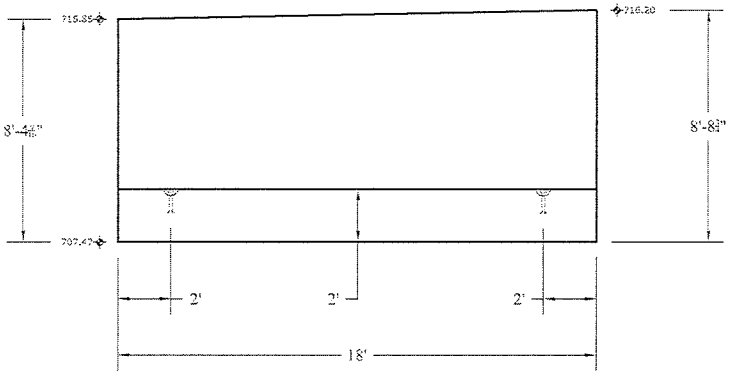
# Retaining Wall Lifting Detail

LOADER CASE

$\frac{65700\ lb \times 1.1}{4} = 18100\ lb$



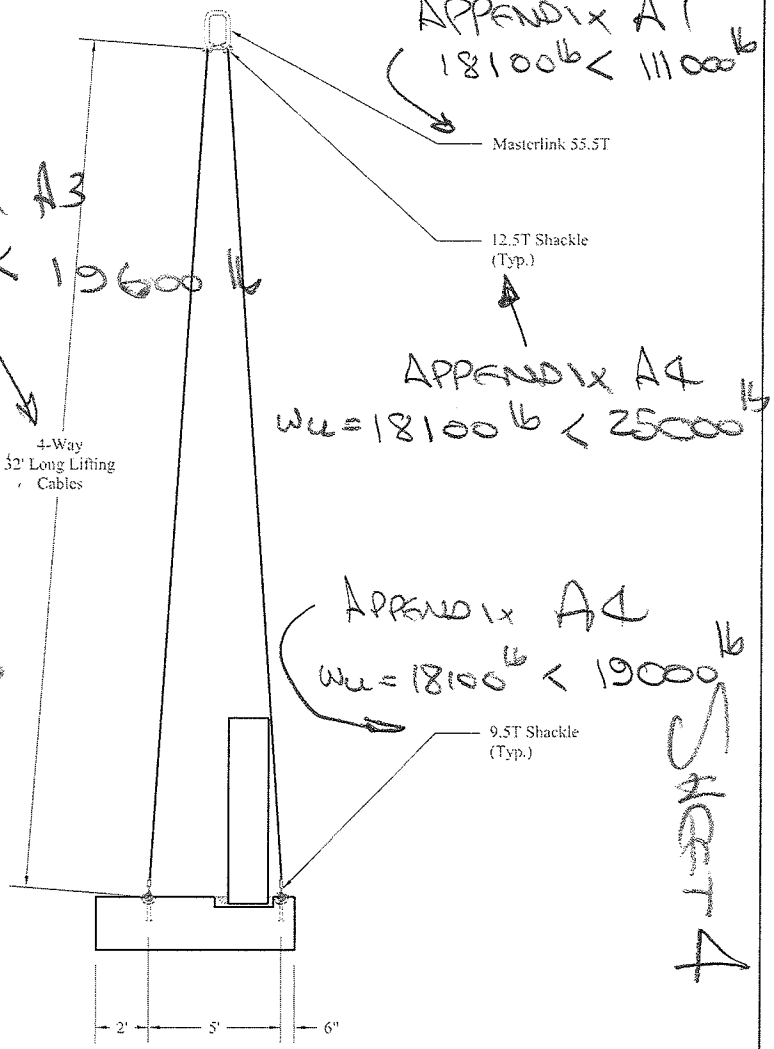

Plan View




Side Elevation View

APPENDIX B2
$W_{LL} = 18100\ lb < 18270\ lb$

APPENDIX A5
$W_{LL} = 18100\ lb < 200000\ lb$



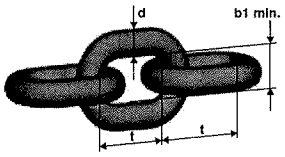

Section View

Weight: 65,700 lbs

| | | | | |
|---|---|---|---|---|
| CONTRACTORS VISPE: | PRECAST CONCRETE ABUTMENT SHOP DRAWINGS (SDI JOB #15163) | | INSTALLER: CCS Construction 138 Munson Ave Morrisville, VT 05661 Ph: 802-888-7701 | FABRICATOR: 193 INDUSTRIAL AVE. WILLISTON, VT 05495 Ph: (802) 658-0201 SD Ireland Precast Division |
| | SUPERVISOR: M. WHEELER<br>DETAILER: I. ADAMS<br>CHECKER: E. Barendse<br>ENGINEER: | PROJECT NAME: Stowe BRF 0235 (II)<br>PROJECT #: 0235 (II)<br>LOCATION: Stowe, VT | 12/03/14 | Lifting — 3 of 3 |

# NI | Round Steel Chain

Round steel chains for use in lifting. Maximum working temperature: 400°F. Standard surface: blasted, clear painted.

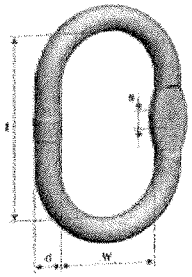



| Code | Size | Nominal diameter d | Standard delivery length [feet] | Pitch t | Inside width b1 min. | Outside width b2 max. | WLL [lb] | Breaking force [lb] | Weight [lb/ft] |
|---|---|---|---|---|---|---|---|---|---|
| NI5.50 | 7/32″ | 0.217 | 400 | 0.67 | 0.31 | 0.83 | 2,700 | 10,800 | 0.470 |
| NI70 | 9/32″ | 0.276 | 800 | 0.83 | 0.39 | 0.98 | 4,300 | 17,200 | 0.738 |
| NI80 | 5/16″ | 0.315 | 500 | 0.94 | 0.43 | 1.14 | 5,700 | 22,800 | 0.939 |
| NI100 | 3/8″ | 0.394 | 400 | 1.18 | 0.55 | 1.42 | 8,800 | 35,200 | 1.475 |
| NI130 | 1/2″ | 0.512 | 200 | 1.54 | 0.71 | 1.85 | 15,000 | 60,000 | 2.548 |
| NI160 | 5/8″ | 0.630 | 150 | 1.89 | 0.87 | 2.28 | 22,600 | 90,400 | 3.830 |
| NI200 | 3/4″ | 0.787 | 100 | 2.44 | 1.02 | 2.80 | 35,300 | 141,200 | 5.780 |
| NI220 | 7/8″ | 0.866 | 100 | 2.60 | 1.18 | 3.11 | 42,700 | 170,800 | 7.324 |
| NI260 | 1″ | 1.024 | 100 | 3.07 | 1.38 | 3.70 | 59,700 | 238,800 | 10.214 |
| NI320 | 1-1/4″ | 1.260 | 50 | 3.78 | 1.69 | 4.53 | 90,400 | 361,600 | 15.455 |

NEW

# A | Master Link

Master link for 1 or 2 leg chain sling.




| Code | WLL 0-45° [lb] | d [inch] | t [inch] | w [inch] | s [inch] | Weight [lb/pc.] | Master link for chain | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1-leg | 2-leg |
| A100 | 3,800 | 0.39 | 3.15 | 1.97 | 0.39 | 0.31 | 7/32″ | - |
| A130 | 5,800 | 0.51 | 4.33 | 2.36 | 0.39 | 0.75 | 9/32″ | 7/32″ |
| A160 | 7,500 | 0.63 | 4.33 | 2.36 | 0.55 | 1.17 | 5/16″ | 9/32″ |
| A180 | 10,000 | 0.75 | 5.31 | 2.95 | 0.55 | 2.03 | 3/8″ | 5/16″ |
| A220 | 16,700 | 0.91 | 6.30 | 3.54 | 0.67 | 3.53 | 1/2″ | 3/8″ |
| A260 | 26,000 | 1.06 | 7.09 | 3.94 | 0.79 | 5.42 | 5/8″ | 1/2″ |
| A320 | 39,100 | 1.30 | 7.87 | 4.33 | 1.02 | 9.13 | 3/4″ | 5/8″ |
| A360 | 61,100 | 1.42 | 10.24 | 5.51 | - | 13.72 | 7/8″ | 3/4″ |
| A450 | 83,100 | 1.77 | 13.39 | 7.09 | - | 28.27 | 1″ | 7/8″ |
| A500 | 111,000 | 1.97 | 13.78 | 7.48 | - | 36.49 | 1-1/4″ | 1″ |
| A560 | 156,600 | 2.36 | 15.75 | 7.87 | - | 59.56 | - | 1-1/4″ |
| A720 | 234,900 | 2.76 | 18.11 | 9.84 | - | 99.23 | - | - |

# *TUFLEX* ENDLESS ROUNDSLINGS

*Tuflex* Endless (EN)
The Most Versatile *Tuflex* Roundsling

Features, Advantages and Benefits

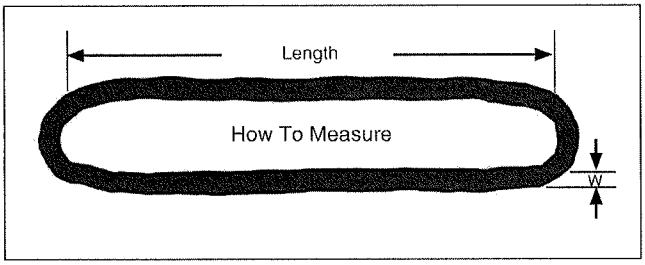
Maintains all the basic *Tuflex* features plus...

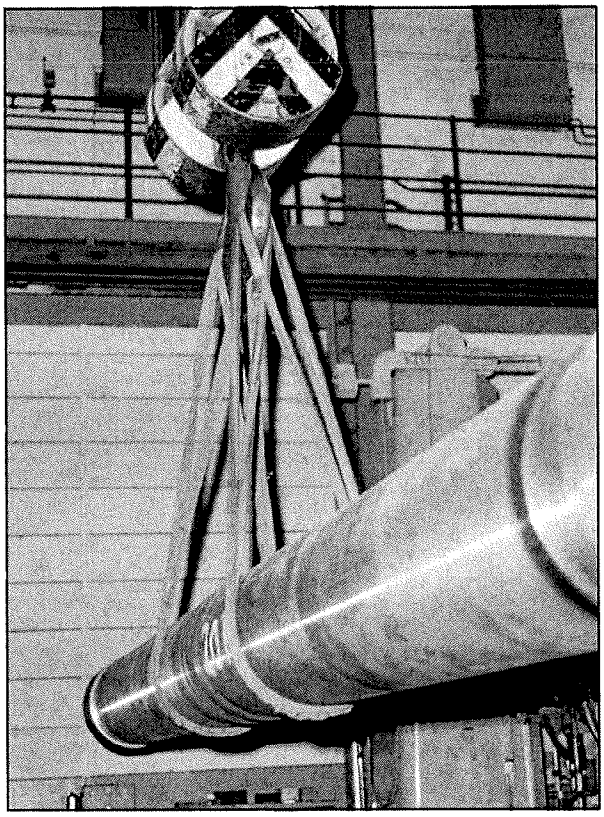
Promotes Safety

- Load stability and balance can be achieved by spreading sling legs.

Saves Money

- Wear points can be shifted to extend sling life
- The most flexible style of sling





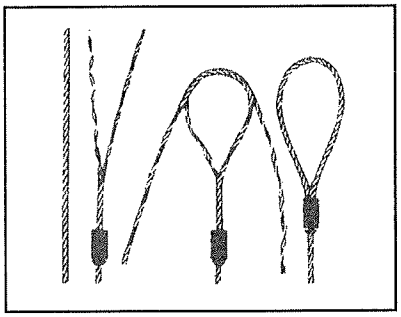
| Part No. | Color | Rated Capacity (lbs.)* Vertical | Choker | Basket @ 90° | Basket @ 45° | Minimum Length (ft.) | Approximate Measurements Weight (lbs. / ft.) | Body Dia. Relaxed (in.) | (W) Width at Load (in.) | Minimum Hardware Dia. ** (in.) |
|---|---|---|---|---|---|---|---|---|---|---|
| **EN30** | Purple | 2,600 | 2,100 | 5,200 | 3,600 | 1 1/2 | .2 | 5/8 | 1 | 7/16 |
| **EN60** | Green | 5,300 | 4,200 | 10,600 | 7,400 | 1 1/2 | .3 | 7/8 | 1 3/8 | 5/8 |
| **EN90** | Yellow | 8,400 | 6,700 | 16,800 | 11,800 | 3 | .5 | 1 1/8 | 1 3/4 | 3/4 |
| **EN120** | Tan | 10,600 | 8,500 | 21,200 | 14,000 | 3 | .6 | 1 1/8 | 1 7/8 | 7/8 |
| **EN150** | Red | 13,200 | 10,600 | 26,400 | 18,000 | 3 | .8 | 1 3/8 | 2 | 1 |
| **EN180** | White | 16,800 | 13,400 | 33,600 | 23,000 | 3 | .9 | 1 3/8 | 2 1/8 | 1 1/8 |
| **EN240** | Blue | 21,200 | 17,000 | 42,400 | 29,000 | 3 | 1.3 | 1 3/4 | 2 5/8 | 1 3/16 |
| **EN360** | Grey | 31,000 | 24,800 | 62,000 | 43,000 | 3 | 1.7 | 2 1/4 | 3 1/4 | 1 1/2 |
| → **EN600** | Brown | 53,000 | 42,400 | 106,000 | 74,000 | 8 | 2.8 | 2 3/4 | 4 | 2 |
| **EN800** | Olive | 66,000 | 52,800 | 132,000 | 93,000 | 8 | 3.4 | 3 1/8 | 4 5/8 | 2 1/8 |
| **EN1000** | Black | 90,000 | 72,000 | 180,000 | 127,000 | 8 | 4.3 | 3 5/8 | 5 1/4 | 2 1/2 |

Used when lifting the abutment pieces.

* **⚠ WARNING** Do not exceed rated capacities. Sling capacity decreases as the angle from horizontal decreases.
Slings should not be used at angles of less than 30°.
Refer to Effect of Angle chart page 12.
** This is the smallest recommended connection hardware diameter to be used for a vertical hitch.

# *PERMALOC* WIRE ROPE SLINGS

*Lift-All Permaloc* Slings are made using the flemish splice technique to form the eyes. Unlike the simple return loop method that places 100% of its strength on the swaged sleeve, *Permaloc* slings have reserve strength should the sleeve become damaged in use.



### Features, Advantages and Benefits

Maintains all the basic *Lift-All* wire rope sling features plus ...

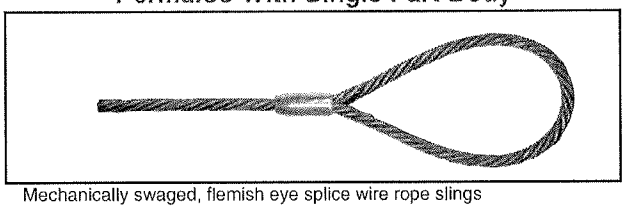
Promotes Safety

- Reserve strength - integrity of eyes not solely dependent upon steel sleeves
- IWRC resists crushing better than FC ropes

Saves Money

- When specified, thimble eyes protect wire rope from wear for increased life
- Good abrasion resistance for longer life

*Permaloc* With Single Part Body



Mechanically swaged, flemish eye splice wire rope slings



### IWRC (Independent Wire Rope Core) **Fiber core available at reduced capacities**

| Wire Rope Class | Rope Dia. (in.) | EIP, IWRC [1] Rated Capacity (tons)* Vertical | Choker | V. Basket | [2] Min. Sling Length | Standard Eye Size (in.) W x L | Thimbled Eye Size (in.) W x L | Eye Hook Cap. (tons) | Crescent Thimble Eye Size (in.) W x L | Slip Thru Thimble Eye Size (in.) W x L | Sliding Choker Hook (in.) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 x 19 EIP, IWRC | 1/4 | .65 | .48 | 1.3 | 1' 6" | 2 x 4 | 7/8 x 1 5/8 | 1 | 2 x 4 | 2 1/8 x 4 1/8 | 3/8 |
| | 5/16 | 1.0 | .74 | 2.0 | 1' 9" | 2 1/2 x 5 | 1 1/16 x 1 7/8 | 1 | 2 x 4 | 2 1/2 x 4 1/8 | 3/8 |
| | 3/8 | 1.4 | 1.1 | 2.9 | 2' 0" | 3 x 6 | 1 1/8 x 2 1/8 | 1 1/2 | 2 x 4 | 2 1/2 x 4 1/8 | 3/8 |
| | 7/16 | 1.9 | 1.4 | 3.9 | 2' 3" | 3 1/2 x 7 | 1 1/4 x 2 1/4 | 2 | 2 x 5 | 2 3/8 x 4 3/8 | 1/2 |
| | 1/2 | 2.5 | 1.9 | 5.1 | 2' 6" | 4 x 8 | 1 1/2 x 2 3/4 | 3 | 2 1/4 x 6 | 2 3/8 x 4 3/8 | 1/2 ** |
| | 9/16 | 3.2 | 2.4 | 6.4 | 2' 9" | 4 1/2 x 9 | 1 1/2 x 2 3/4 | 4 1/2 | 2 1/4 x 7 | 2 3/8 x 4 3/8 | 5/8 |
| | 5/8 | 3.9 | 2.9 | 7.8 | 3' 0" | 5 x 10 | 1 3/4 x 3 1/4 | 4 1/2 | 2 3/4 x 7 | 3 3/8 x 6 5/8 | 5/8 ** |
| | 3/4 | 5.6 | 4.1 | 11 | 3' 6" | 6 x 12 | 2 x 3 3/4 | 7 | 3 1/4 x 8 1/2 | 3 3/8 x 6 5/8 | 3/4 ** |
| | 7/8 | 7.6 | 5.6 | 15 | 4' 0" | 7 x 14 | 2 1/4 x 4 1/4 | 11 | 4 1/2 x 10 | 3 3/4 x 7 1/8 | 7/8 |
| | 1 | 9.8 | 7.2 | 20 | 4' 6" | 8 x 16 | 2 1/2 x 4 1/2 | 11 | 4 1/2 x 11 1/2 | 3 3/4 x 7 1/8 | 1 |
| | 1 1/8 | 12 | 9.1 | 24 | 5' 0" | 9 x 18 | 2 7/8 x 5 1/8 | 15 | 4 7/8 x 13 | 4 3/8 x 8 3/8 | 1 1/8 |
| | 1 1/4 | 15 | 11 | 30 | 5' 6" | 10 x 20 | 3 1/2 x 6 1/2 | 15 | 5 1/2 x 14 1/2 | 4 3/8 x 8 3/8 | 1 1/4 |
| 6 x 37 EIP, IWRC | 1 3/8 | 18 | 13 | 36 | 6' 0" | 11 x 22 | 3 1/2 x 6 1/4 | 22 | 6 x 16 | 5 x 9 1/2 | 1 3/8 |
| | 1 1/2 | 21 | 16 | 42 | 7' 0" | 12 x 24 | 3 1/2 x 6 1/4 | 22 | 6 x 17 1/2 | 5 x 9 1/2 | 1 1/2** |
| | 1 3/4 | 28 | 21 | 57 | 8' 0" | 14 x 28 | 4 1/2 x 9 | 30 | 7 x 20 | 6 3/4 x 11 3/4 | - |
| | 2 | 37 | 28 | 73 | 9' 0" | 16 x 32 | 6 x 12 | 37 | 7 x 23 1/2 | 8 x 14 1/2 | - |
| | 2 1/4 | 44 | 35 | 89 | 10' 0" | 18 x 36 | 7 x 14 | 45 | 8 1/2 x 26 | 8 x 15 1/2 | - |
| | 2 1/2 | 54 | 42 | 109 | 11' 0" | 20 x 40 | - | - | 8 1/2 x 29 1/2 | - | - |

(4) 32' long wire rope

Used when lifting the wing walls and the retaining wall.

Note: Larger diameter slings available. Basket ratings are based on a minimum D/d of 25. See page 74.

1. 1 Ton = 2,000 lbs.
2. Minimum sling length when using standard eyes.

Note: **Length Tolerances** - Single Part Wire Rope Slings - Standard length tolerance is plus or minus two rope diameters, or plus or minus 0.5% of the sling length, whichever is greater.

** See page 91 for reduced choker capacity when using these hook sizes.

**⚠ WARNING** Do not exceed rated capacities. Sling capacity decreases as the angle from horizontal decreases. Slings should not be used at angles of less than 30°. Refer to Effect of Angle chart page 12.

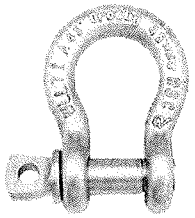
APPENDIX A4

# Crosby® Alloy Screw Pin Shackles

Load Rated® QT QUENCHED & TEMPERED QUIC-CHECK®

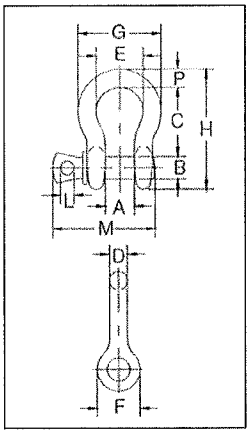
**APPLICATION INSTRUCTIONS**
SEE PAGE 89 OF THE GENERAL CATALOG

## G-209A



G-209A Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271F Type IVA, Grade B, Class 2, except for those provisions required of the contractor. For additional information, see page 444.

- Capacities 2 thru 21 metric tons. Meets performance requirements of Grade 8 shackles.
- Forged Alloy Steel – Quenched and Tempered, with alloy pins.
- Working Load Limit permanently shown on every shackle.
- Hot Dip Galvanized.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certification. Charges for proof testing and certification available when requested at the time of order.
- Approved for use at -40 degree C (-40 degree F) to 204 degree C (400 degree F).
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these shackles meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.




## G-209A Crosby® Alloy Screw Pin Shackles

| Nominal Size (in.) | Working Load Limit (t)* | G-209A Stock No. | Weight Each (lbs.) | Dimensions (in.) | | | | | | | | | | | Tolerance +/- | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | D | E | F | G | H | L | M | P | C | A |
| 3/8 | 2 | 1017450 | .31 | .66 | .44 | 1.44 | .38 | 1.03 | .91 | 1.78 | 2.49 | .25 | 2.03 | .38 | .13 | .06 |
| 7/16 | 2-2/3 | 1017472 | .38 | .75 | .50 | 1.69 | .44 | 1.16 | 1.06 | 2.03 | 2.91 | .31 | 2.38 | .44 | .13 | .06 |
| 1/2 | 3-1/3 | 1017494 | .63 | .81 | .63 | 1.88 | .50 | 1.31 | 1.19 | 2.31 | 3.28 | .38 | 2.69 | .50 | .13 | .06 |
| 5/8 | 5 | 1017516 | 1.38 | 1.06 | .75 | 2.38 | .63 | 1.69 | 1.50 | 2.94 | 4.19 | .44 | 3.34 | .69 | .13 | .06 |
| 3/4 | 7 | 1017538 | 2.35 | 1.25 | .88 | 2.81 | .75 | 2.00 | 1.81 | 3.50 | 4.97 | .50 | 3.97 | .81 | .25 | .06 |
| 7/8 | 9-1/2 | 1017560 | 3.61 | 1.44 | 1.00 | 3.31 | .88 | 2.28 | 2.09 | 4.03 | 5.83 | .50 | 4.50 | .97 | .25 | .06 |
| 1 | 12-1/2 | 1017582 | 5.32 | 1.69 | 1.13 | 3.75 | 1.00 | 2.69 | 2.38 | 4.69 | 6.56 | .56 | 5.07 | 1.06 | .25 | .06 |
| 1-1/8 | 15 | 1017604 | 7.25 | 1.81 | 1.25 | 4.25 | 1.16 | 2.91 | 2.69 | 5.16 | 7.47 | .63 | 5.59 | 1.25 | .25 | .06 |
| 1-1/4 | 18 | 1017626 | 9.88 | 2.03 | 1.38 | 4.69 | 1.29 | 3.25 | 3.00 | 5.75 | 8.25 | .69 | 6.16 | 1.38 | .25 | .06 |
| 1-3/8 | 21 | 1017648 | 13.25 | 2.25 | 1.50 | 5.25 | 1.42 | 3.63 | 3.31 | 6.38 | 9.16 | .75 | 6.84 | 1.50 | .25 | .13 |

* Maximum Proof Load is 2 times the Working Load Limit (metric tons) and 2.2 times the Working Load Limit (short tons). Minimum Ultimate Strength is 4.5 times the Working Load Limit for metric tonnes, and 5 times the Working Load Limit for short tons. For Working Load Limit reduction due to side loading applications, see page 91.

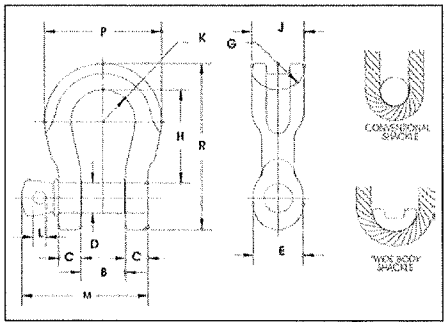
Load Rated® QT QUENCHED & TEMPERED

**APPLICATION INSTRUCTIONS**
SEE PAGE 89 OF THE GENERAL CATALOG

## G-2169

## S-2169

- Capacities of 7, 12.5 and 18 metric tons.
- Quenched and Tempered for maximum strength.
- Forged Alloy Steel.
- Available in galvanized and self colored finished.
- Individually proof tested and magnetic particle inspected. Crosby certification available at time of order.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these shackles meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- Look for the Red Pin® . . . the mark of genuine Crosby quality.



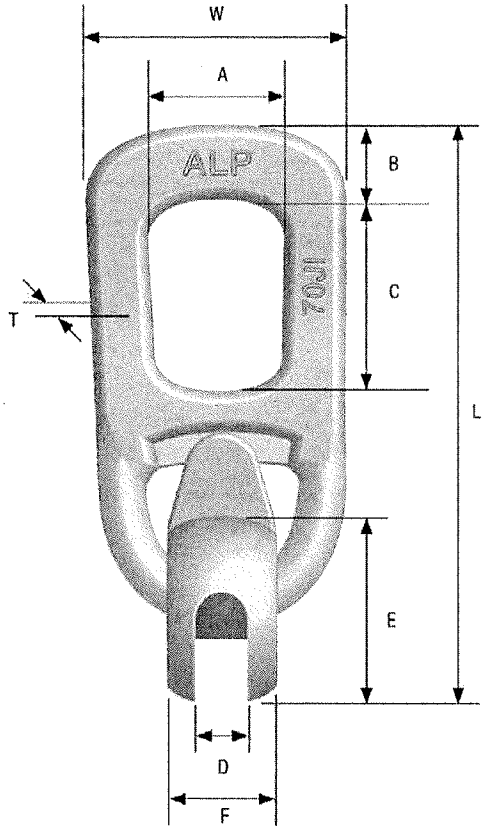

## G-2169 / S-2169 Screw Pin "Wide Body" Shackles

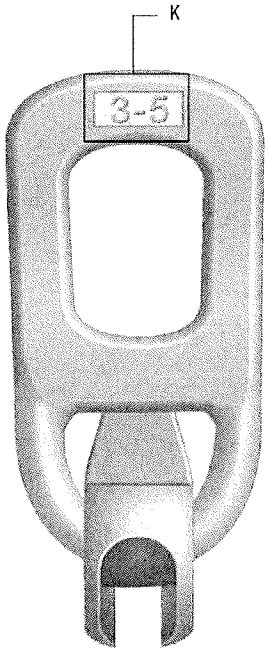
| Working Load Limit (t)* | G-2169 Stock No. | S-2169 Stock No. | Weight Each (lbs.) | Dimensions (in.) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | B +/- .25 | C | D +/- .02 | E | G | H | J | K | L | M | P | R | |
| 7 | 1021655 | 1021664 | 3.5 | 1.25 | .69 | .88 | 1.82 | 1.25 | 3.56 | 1.60 | 1.25 | .50 | 3.97 | 4.10 | 5.87 | |
| 12.5 | 1021673 | 1021682 | 8.8 | 1.69 | .92 | 1.13 | 2.38 | 1.37 | 4.63 | 2.13 | 1.63 | .56 | 5.13 | 5.51 | 7.63 | |
| 18 | 1021691 | 1021699 | 13 | 2.03 | 1.16 | 1.38 | 2.69 | 1.50 | 5.81 | 2.50 | 2.00 | .69 | 6.25 | 6.76 | 9.38 | |

* Ultimate Load is 5 times the Working Load Limit. Forged Alloy Steel. Proof Load is 2 times the Working Load Limit.

## ALP LIFTING EYE - STANDARD

Designed as an attachment link for lifting and transport of precast concrete units in combination with the ALP Lifting Pin Anchor System. The Lifting Eye consists of a round body with a protruding lever arm and a high strength bail. The body has a "T" slot that engages the head of a Lifting Pin Anchor. The rotation capabilities allow the lifting eye to stay oriented in the direction of loading without binding up.




| Part Number | Description / Capacity | Weight Each (lbs) | L | W | T | A | B | C | D | E | F | K Load Range (Tons) | Ultimate Capacity in Tension (lbs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LPLE1T | Lifting Eye for 1T, 1.3T Anchors | 2.20 | 7-11/32" | 3" | 1/2" | 1-3/4" | 7/8" | 2-3/4" | 15/32" | 2-1/8" | 1-5/16" | 1-1.3 | 13,000 |
| LPLE2T | Lifting Eye for 1.5T, 2T, 2.5T Anchors | 3.60 | 9" | 3-1/2" | 5/8" | 2-1/8" | 1" | 3-3/8" | 11/16" | 2-9/16" | 1-5/8" | 1.5-2.5 | 25,000 |
| LPLE4T | Lifting Eye for 3T, 4T, 5T Anchors | 7.65 | 11" | 4-11/16" | 11/16" | 2-5/8" | 1-15/32" | 3-7/16" | 29/32" | 3-3/8" | 2-1/4" | 3-5 | 50,000 |
| LPLE8T | Lifting Eye for 6T, 8T, 10T Anchors | 21.70 | 15-1/2" | 6-1/4" | 1-1/16" | 3-1/8" | 2" | 4-3/8" | 1-1/4" | 4-1/2" | 2-15/16" | 6-10 | 100,000 |
| LPLE20T | Lifting Eye for 12T, 16T, 20T Anchors | 39.00 | 20" | 7-11/16" | 1-3/8" | 4-3/8" | 2-13/16" | 5-15/16" | 1-11/16" | 5-5/8" | 4-3/8" | 12-20 | 200,000 |

Rated load has a 5:1 safety factor.

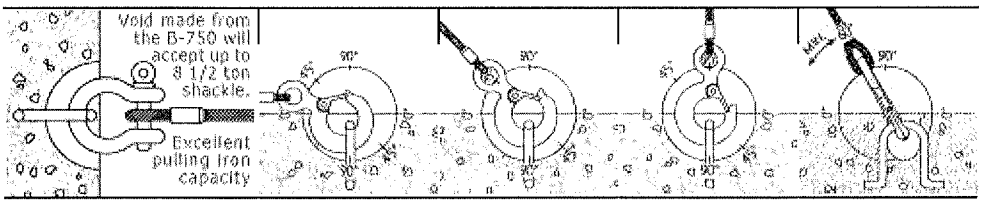
Used with abutments and retaining wall footing.

APPENDIX B1

OXFORD Industrial Technologies, LLC

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 |

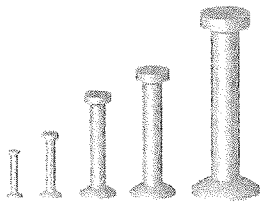
Note: Safe Working Load provides a factor of safety of approximately 4:1
Test Results are based on a minimum concrete compressive strength of 4,000 psi.

Used for the wing walls.

<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

# ALP LIFTING PIN ANCHORS



All ALP Lifting Pins are manufactured using high strength steel with hot forged ends. The head design provides uniform engagement with the Lifting Eye, and the large forged anchor "foot" is embedded in the concrete to create the lifting capacity. Safe Working Loads (SWL) displayed in the below chart apply to loading in any direction. These Lifting Pin Anchors are designed to meet the OSHA requirements of a 4 to 1 Safety Factor.

**Standard Finish is Hot-Dipped Galvanized**

| | | | | In Concrete Capacities 4:1 SWL | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Part Number | Ton | Length (in.) | Weight Per Piece (lbs) | Min. Slab Thickness (in.) | 1500 PSI (lbs) | 2000 PSI (lbs) | 2500 PSI (lbs) | 3000 PSI (lbs) | 3500 PSI (lbs) | 4000 PSI (lbs) | 4500 PSI (lbs) | 5000 PSI (lbs) | Min. Edge Distances (in.) |
| LPA1T258G | 1T | 2-5/8" | 0.14 | 3-1/2" | 1,415 | 1,630 | 1,825 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 6" |
| LPA1T338G | 1T | 3-3/8" | 0.16 | 5" | 1,820 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 7" |
| LPA1T434G | 1T | 4-3/4" | 0.21 | 6" | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 8" |
| LPA2T234G | 2T | 2-3/4" | 0.32 | 4" | 1,375 | 1,585 | 1,775 | 1,940 | 2,100 | 2,245 | 2,380 | 2,510 | 6" |
| LPA2T338G | 2T | 3-3/8" | 0.35 | 5" | 2,710 | 3,130 | 3,500 | 3,830 | 4,000 | 4,000 | 4,000 | 4,000 | 7" |
| LPA2T434G | 2T | 4-3/4" | 0.45 | 6" | 3,500 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 10" |
| LPA2T512G | 2T | 5-1/2" | 0.48 | 7" | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 12" |
| LPA2T634G | 2T | 6-3/4" | 0.58 | 8" | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 12" |
| LPA2T11G | 2T | 11" | 0.85 | 12-1/2" | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 | 18" |
| LPA4T3G | 4T | 3" | 0.73 | 4" | 1,950 | 2,250 | 2,515 | 2,755 | 2,975 | 3,180 | 3,375 | 3,555 | 6" |
| LPA4T312G | 4T | 3 1/2" | 0.82 | 5" | 2,815 | 3,255 | 3,640 | 3,985 | 4,305 | 4,600 | 4,880 | 5,145 | 10" |
| LPA4T334G | 4T | 3-3/4" | 0.85 | 5" | 3,250 | 3,755 | 4,200 | 4,600 | 4,965 | 5,310 | 5,635 | 5,940 | 10" |
| | | | | 8" | 4,225 | 4,880 | 5,460 | 5,980 | 6,460 | 6,905 | 7,325 | 7,720 | 12"* |
| LPA4T414G | 4T | 4-1/4" | 0.91 | 6" | 3,845 | 4,445 | 4,965 | 5,440 | 5,880 | 6,285 | 6,665 | 7,025 | 10" |
| LPA4T434G | 4T | 4-3/4" | 0.98 | 6" | 4,445 | 5,130 | 5,740 | 6,285 | 6,790 | 7,260 | 7,700 | 8,000 | 10" |
| | | | | 10" | 5,420 | 6,260 | 7,000 | 7,665 | 8,000 | 8,000 | 8,000 | 8,000 | 14"* |
| LPA4T512G | 4T | 5-1/2" | 1.08 | 7" | 4,840 | 5,590 | 6,250 | 6,850 | 7,400 | 7,910 | 8,000 | 8,000 | 12" |
| LPA4T718G | 4T | 7-1/8" | 1.32 | 9" | 6,710 | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 | 13" |
| LPA4T912G | 4T | 9-1/2" | 1.60 | 11" | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 | 16" |
| LPA8T434G | 8T | 4-3/4" | 2.15 | 6-1/2" | 4,185 | 4,835 | 5,405 | 5,925 | 6,400 | 6,840 | 7,255 | 7,645 | 10" |
| LPA8T634G | 8T | 6-3/4" | 2.50 | 8" | 7,025 | 8,110 | 9,070 | 9,935 | 10,730 | 11,475 | 12,170 | 12,825 | 14" |
| | | | | 14" | 9,715 | 11,215 | 12,540 | 13,740 | 14,840 | 15,865 | 16,000 | 16,000 | 21"* |
| LPA8T | | | | | | | | | 16,000 | 16,000 | 16,000 | 16,000 | 18" |
| LPA8T1338G | 8T | 13-3/8 | 4.25 | 15 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 22" |
| LPA8T2634G | 8T | 26-3/4" | 7.90 | 29" | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 | 36" |
| LPA20T10G | 20T | 10" | 8.25 | 11-1/2" | 11,960 | 13,810 | 15,440 | 16,915 | 18,270 | 19,530 | 20,715 | 21,835 | 20" |
| | | | | 20" | 16,970 | 19,595 | 21,910 | 24,000 | 25,920 | 27,710 | 29,295 | 30,985 | 24"* |
| LPA20T1934G | 20T | 19-3/4" | 13.50 | 22" | 28,000 | 32,328 | 36,145 | 39,595 | 40,000 | 40,000 | 40,000 | 40,000 | 36" |

Used for the abutments and the retaining wall footing.

- Shaded area indicates the capacity in concrete is limited by the mechanical capacity of the anchor

- The Safety Factor for the listed loads is approximately 4 to 1 in normal weight concrete (145-150PCF)
- Loads are based on normal anchor recess dimensions: 1T: 5/16"; 2T: 7/16"; 8T, 10T, 16T and 20T: 9/16"
- Loads are listed at varying concrete strengths (PSI) to accommodate varying conditions at time of loading
- *Concrete thickness exceeding the listed minimums may increase the listed capacity. Example: the 20Tx10" has two capacities listed, one for the 11-1/2" minimum slab and one for the 20" normal slab. These capacity gains are only obtained with the 4T x 3-3/4", 4T x 4-3/4", 8/10T x 6-3/4" and the 20Tx10" anchors. Contact ALP customer service for further assistance.
- Proper rigging and all lifting angle load magnifications are to be used to determine actual applied loads
- Minimal reinforcement required to achieve above load values

APPENDIX B3

## Eric Barendse

**From:** Skip Francies <SkipFrancies@alpatterson.com>
**Sent:** Monday, December 01, 2014 3:09 PM
**To:** Eric Barendse
**Cc:** John Ems
**Subject:** Go!

I have established the minimum capacity with the anchor 6" in and 24" from the end.
The capacity is 17,300# verse your 16,750# at 4500psi. You have 5000psi.
Be sure the anchors are placed inside of the perimeter reinforcement.

Yes, we have nmb Splice Sleeves.
Best Regards,

*Skip Francies, FPCI*
**A.L. Patterson Inc.**
President Precast Supply Division
T: 215-310-2128
C: 813-230-8266
F: 215-310-2129
E: skipf@alpatterson.com

Your Single Source Supplier!

Verification that the 20T lift can be placed at 6" from the toe edge of the retaining wall.