

X **Approved** \_\_\_\_\_ **Approved As Noted**  
 \_\_\_\_\_ **Rejected**

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Date 8/8/2014

By T. Traver

# RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT

## FAIRFIELD, VT

### T-WALL® RETAINING WALL SYSTEM

#### DESIGNER



#### THE NEEL COMPANY

8328-D TRAFORD LANE  
 SPRINGFIELD, VIRGINIA 22152  
 PH: (703) 913-7858  
 FX: (703) 913-7859  
 WEB: WWW.NEELCO.COM

#### PRECASTER

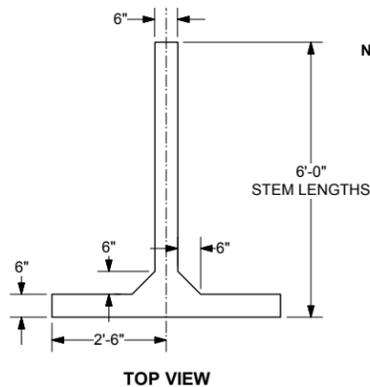
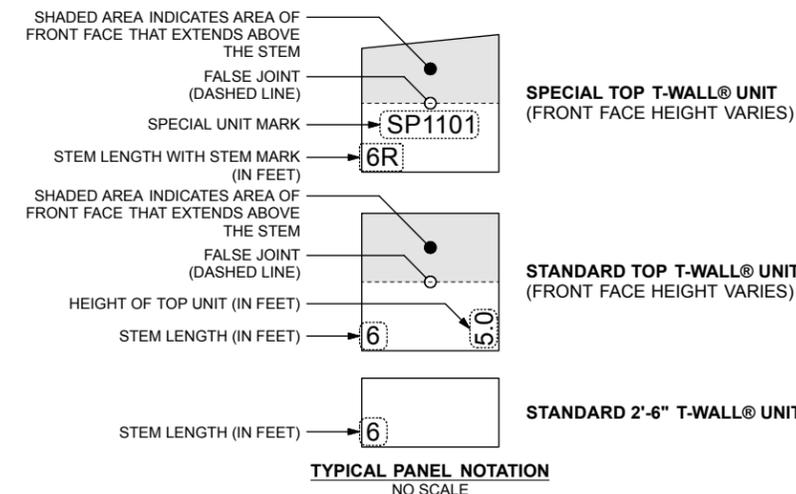


Concrete Systems Inc.  
 9 Commercial St., Hudson, NH, 03051  
 Phone 603-889-4163  
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#### INDEX OF DRAWINGS

SHEET	TITLE	REV #	DATE
1	COVER SHEET	1	8/6/14
2	TYPICAL T-WALL® NOMENCLATURE	0	4/21/14
3	NOTES	0	4/21/14
4	PLAN VIEW	0	4/21/14
5	ELEVATIONS	1	8/6/14
6	SECTION, DETAILS & QUANTITIES	1	8/6/14
7	REBAR - STANDARD UNITS	0	4/21/14
8	REBAR - SLOPED TOP UNITS	1	8/6/14
9	REBAR - NARROW SLOPED TOP LEFT BEVELED UNITS	1	8/6/14
10	REBAR - NARROW SLOPED TOP RIGHT BEVELED UNITS	1	8/6/14
11	REBAR - NARROW LEFT BEVELED UNITS	1	8/6/14
12	REBAR - NARROW RIGHT BEVELED UNITS	0	4/21/14

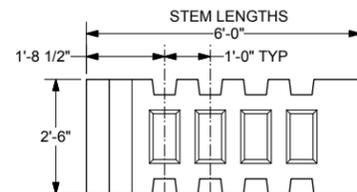
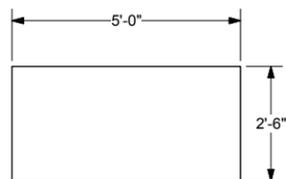
#### LEGEND



NOTES:  
 • UNIT STEM LENGTHS RANGE FROM 4'-0" TO 20'-0", IN 2'-0" INCREMENTS

#### T-WALL® UNIT WEIGHTS

PANEL TYPES	WEIGHTS
2.5x5.0x08 Std	2088 lbs
2.5x5.0x10 Std	2349 lbs
2.5x5.0x12 Std	2610 lbs
SLOPED-TOP (MIN)	2198 lbs
SLOPED-TOP (MAX)	3164 lbs

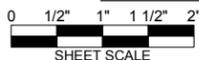


TOP VIEW

FRONT VIEW

SIDE VIEW

#### TYPICAL 2'-6" x 5'-0" x 6'-0" STEM T-WALL® UNIT



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PRECASTER: CONCRETE SYSTEMS, INC. CSI  
 PROJECT #: T21882

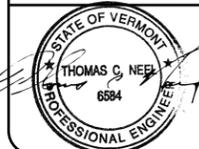
CONTRACTOR: A.L. ST. ONGE CONTRACTORS  
 PROJECT #:

#### DESIGNER

**THE NEEL COMPANY**  
 8328-D TRAFORD LANE  
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 WEB: WWW.NEELCO.COM

PROJECT #: TW4301

CERTIFIED WITH RESPECT TO INTERNAL STABILITY OF T-WALL® STRUCTURES ONLY



#### REVISIONS

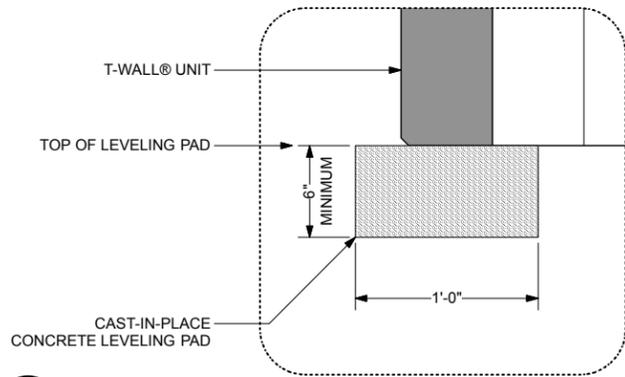
NO.	DESCRIPTION	BY	DATE
1	REVIEWER COMMENTS	ABC	8-6-14

#### RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT

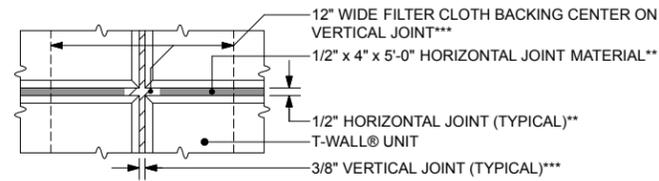
FAIRFIELD, VT  
 SHOP DRAWINGS  
 COVER SHEET

T-WALL® RETAINING WALL SYSTEM

SCALE:	NO SCALE
DATE:	4/21/14
DESIGNED BY:	KD
DRAWN BY:	ABC
CHECKED BY:	CCG
SHEET:	1



**4 LEVELING PAD DETAIL**  
Scale: 2" = 1'-0"



**3 HORIZONTAL AND VERTICAL JOINT DETAIL**  
Scale: 2" = 1'-0"  
\*\* SEE GENERAL NOTE 4 ON SHEET 3 FOR ADDITIONAL DETAILS  
\*\*\* SEE GENERAL NOTE 5 ON SHEET 3 FOR ADDITIONAL DETAILS

**NOMENCLATURE NOTE:**

THIS SHEET IS PROVIDED FOR GENERAL INFORMATION PURPOSES ONLY, REFERENCING STANDARD DETAILS APPLICABLE TO ANY T-WALL® STRUCTURE. THIS SHEET IS NOT INTENDED TO PROVIDE DETAILS SPECIFIC TO THE WALL STRUCTURES CONTAINED IN THIS DRAWING PACKAGE. FOR INFORMATION SPECIFIC TO THESE WALLS, SEE THE APPLICABLE DRAWING SHEETS.

**SHEAR KEY NOTES:**

1. WALL IS DESIGNED FOR SPECIFIC NUMBER OF SHEAR KEYS AS SHOWN IN "TYPICAL SECTION AT MAXIMUM HEIGHT" ON SHEET 4. LOCATION OF SHEAR KEYS CAN BE ADJUSTED IF NECESSARY AT A SPECIFIC LEVEL.

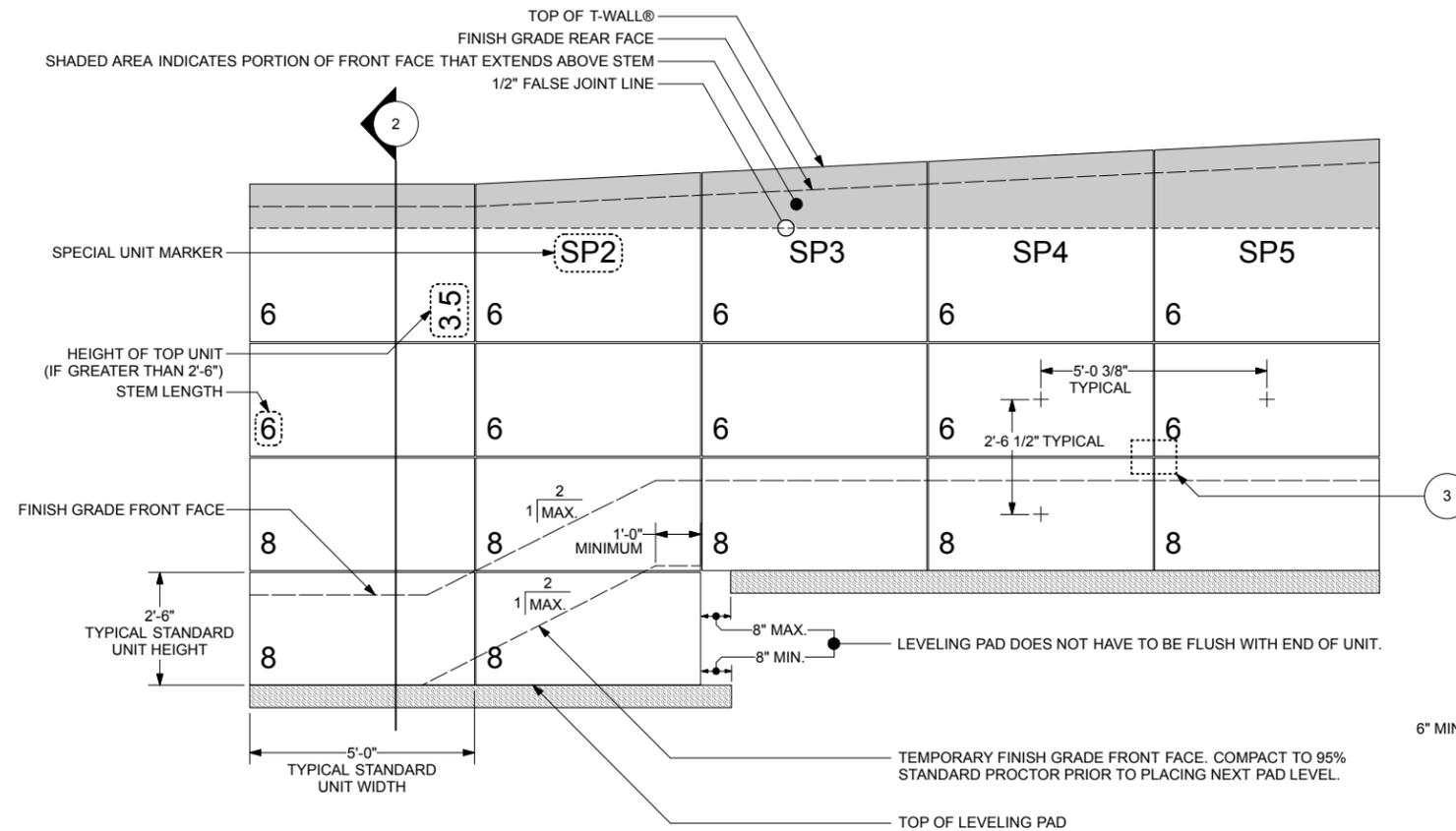
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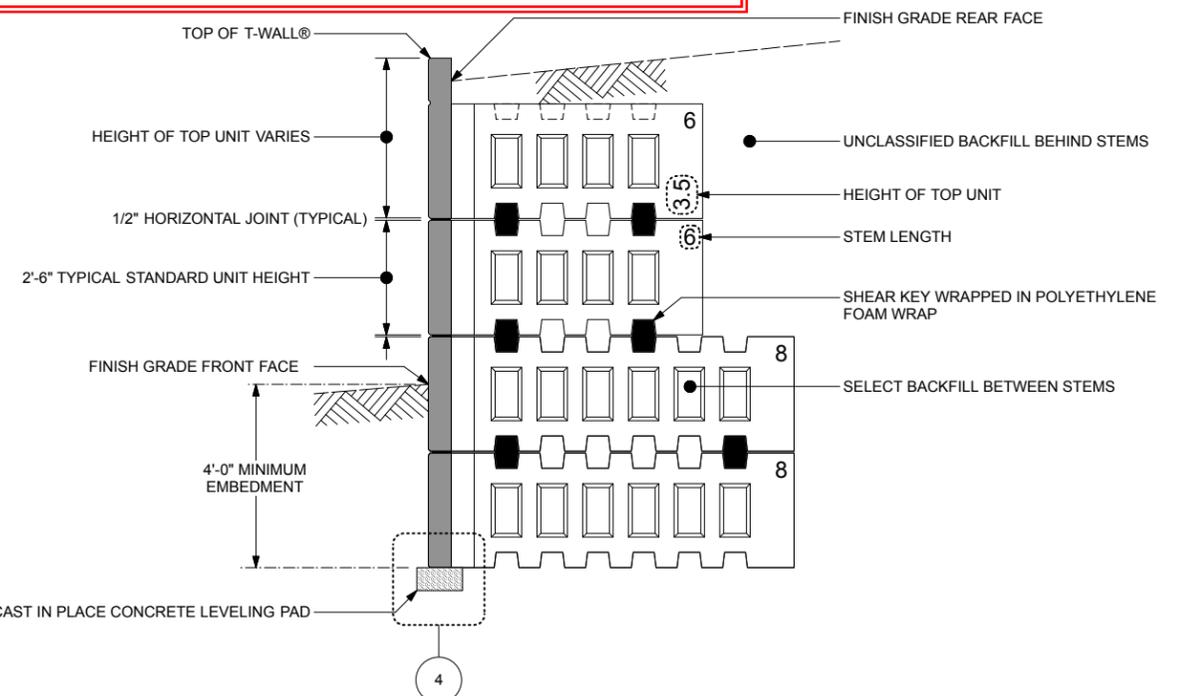
Date 8/8/2014

By T. Traver



**1 PARTIAL ELEVATION SHOWN - TYPICAL DETAILS**  
Scale: 1/2" = 1'-0"

NOT ALL DETAILS APPLY. SEE SPECIFIC WALL ELEVATIONS



**2 PARTIAL ELEVATION SHOWN - TYPICAL DETAILS**  
Scale: 1/2" = 1'-0"

NOT ALL DETAILS APPLY. SEE SPECIFIC WALL ELEVATIONS



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PRECASTER: CONCRETE SYSTEMS, INC. CSI

PROJECT #: T21882

CONTRACTOR: A.L. ST. ONGE CONTRACTORS

PROJECT #:

DESIGNER



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PROJECT #: TW4301

CERTIFIED WITH RESPECT TO INTERNAL STABILITY OF T-WALL® STRUCTURES ONLY



REVISIONS

NO.	DATE	DESCRIPTION

**RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT**

FAIRFIELD, VT

SHOP DRAWINGS  
TYPICAL T-WALL® NOMENCLATURE

T-WALL® RETAINING WALL SYSTEM

SCALE: AS NOTED

DATE: 4/21/14

DESIGNED BY: KD

DRAWN BY: ABC

CHECKED BY: CCG

SHEET: 2

X **Approved** \_\_\_\_\_ **Approved As Noted**  
 \_\_\_\_\_ **Rejected**

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Date 8/8/2014  
 By T. Traver

**SPECIAL NOTES:**

1. THESE DRAWINGS WERE PREPARED BASED ON INFORMATION GIVEN IN THE FOLLOWING:
  - **CONTRACT DRAWINGS:**
    - STATE OF VERMONT AGENCY OF TRANSPORTATION CONTRACT PLANS DATED 10/30/2013. PREPARED BY MCFARLAND JOHNSON.
2. REPORT DISCREPANCIES BETWEEN CONTRACT INFORMATION AND ACTUAL CONDITIONS AS SITE WORK PROGRESSES TO THE NEEL COMPANY FOR REDESIGN. NO LIABILITY IS ACCEPTED FOR INACCURATE INFORMATION SUPPLIED BY OTHERS.
3. THE FOLLOWING ASSUMPTIONS WERE MADE:
  - FOUNDATION IS ABLE TO SUPPORT BEARING PRESSURE SHOWN IN SPECIAL NOTES 4 WITH AN ACCEPTABLE FACTOR OF SAFETY.
4. APPLIED BEARING PRESSURE AT MAXIMUM HEIGHT:
  - WINGWALL MAXIMUM PRESSURE: 4,475 psf STR I MAX
  - DESIGN IS BASED ON AASHTO LRFD METHOD.
5. **THE DESIGN CONTAINED ON THESE DRAWINGS IS BASED UPON INFORMATION PROVIDED BY THE OWNER. ON THE BASIS OF THIS INFORMATION, THE NEEL COMPANY HAS DESIGNED, AND IS RESPONSIBLE FOR, THE INTERNAL STABILITY OF THE STRUCTURE ONLY. EXTERNAL STABILITY, INCLUDING FOUNDATION AND SLOPE STABILITY, IS THE RESPONSIBILITY OF THE OWNER.**
6. **THE NEEL COMPANY HAS NOT PERFORMED GLOBAL STABILITY SETTLEMENT AND BEARING CAPACITY ANALYSIS FOR THE WALL FOUNDATION. THESE ANALYSES WILL BE THE RESPONSIBILITY OF OTHERS.**
7. **DRAINAGE:**
  - **THE NEEL COMPANY HAS NOT PERFORMED A DRAINAGE ANALYSIS FOR THIS WALL SITE. IT IS THE OWNER'S RESPONSIBILITY TO ASSURE THAT SURFACE RUN-OFF IS DIVERTED AWAY FROM THE WALL.**
8. **SELECT BACKFILL GRADATION AND COMPACTION:**
  - **BACKFILL GRADATION AND COMPACTION BETWEEN STEMS AND AROUND PIPES ARE IMPORTANT TO THE WALL STABILITY. THE OWNER'S GEOTECHNICAL ENGINEER SHOULD PROVIDE SUFFICIENT TESTING TO INSURE COMPLIANCE WITH THE SELECT BACKFILL GRADATION AND COMPACTION SPECIFICATIONS NOTED ON THIS SHEET. PLACEMENT OF LOOSE LIFT OF BACKFILL SHALL NOT EXCEED 12 INCHES.**
9. T-WALL® FACE FORM FINISH:
  - PLAIN STEEL FORM FINISH

**GENERAL NOTES:**

1. PRIMARY REFERENCE:
  - AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 5TH EDITION 2010 AND INTERIMS.
2. SELECT BACKFILL BETWEEN STEMS:
  - ANGLE OF INTERNAL FRICTION - 34°
  - DENSITY - 120 pcf
  - 10% MAXIMUM PASSING #200 SIEVE
  - 100% PASSING 3" SIEVE
  - 95% STANDARD COMPACTION (ASTM D-698)
3. UNCLASSIFIED BACKFILL BEHIND STEMS:
  - ANGLE OF INTERNAL FRICTION - 30°
  - DENSITY - 120 pcf
  - 95% STANDARD COMPACTION (ASTM D-698)
4. HORIZONTAL JOINT:
  - 1/2 INCH ASPHALT JOINT MATERIAL PER ASTM D-994 AS SHOWN ON DEVELOPED ELEVATIONS.
5. VERTICAL JOINT:
  - 3/8 INCH SPACE
  - 12 INCHES WIDE FILTER CLOTH BACKING CENTERED AT JOINT, UNLESS OTHERWISE NOTED.
  - FILTER CLOTH BACKING: MIRAFI 160N OR EQUAL
6. OVERALL DIMENSIONAL TOLERANCES FOR FINISHED WALL:
  - VERTICAL ALIGNMENT (PLUMPNESS) - 3/4 INCH IN 10 FEET
  - HORIZONTAL ALIGNMENT (LINE) - 3/4 INCH IN 10 FEET
7. FOUNDATION:
  - PROOF-ROLL THE FOUNDATION SUBGRADE ALONG THE ENTIRE WALL LENGTH PRIOR TO CONSTRUCTION OF THE T-WALL®. A GEOTECHNICAL ENGINEER MUST INSPECT THE EXCAVATED FOUNDATION SUBGRADE AND PROOF-ROLLING ACTIVITIES. ANY SOFT OR UNSUITABLE MATERIALS IDENTIFIED BY INSPECTION SHALL BE REMOVED AND REPLACED WITH COMPACTED STRUCTURAL BACKFILL AS DIRECTED BY THE ENGINEER. CONTRACTOR TO PROVIDE SUFFICIENT DEWATERING SO THAT THE EXCAVATIONS ARE DRY ENOUGH FOR INSPECTION, TESTING AND CONSTRUCTION.
8. CAST-IN-PLACE CONCRETE LEVELING PAD:
  - 6 INCHES MINIMUM x 12 INCHES
  - CONCRETE STRENGTH: 2500 psi (MINIMUM) @ 28 DAYS
  - NO REBAR
  - GRADE TOLERANCE - 1/4 INCH IN 10 FEET
9. T-WALL® UNIT REBAR:
  - ASTM A615/ASTM A185
  - Fy = 60 ksi (GRADE 60)
  - BLACK
  - **WELDING IS NOT PERMITTED**
10. T-WALL® UNIT CONCRETE :
  - 5000 psi (MINIMUM) @ 28 DAYS
11. SHEAR KEYS:
  - NO REBAR
  - CONCRETE STRENGTH: 4000 psi (MINIMUM) @ 28 DAYS
  - WALL IS DESIGNED FOR SPECIFIC NUMBER OF SHEAR KEYS AS SHOWN IN TYPICAL SECTION ON SHEET 4. LOCATION OF SHEAR KEYS CAN BE ADJUSTED IF NECESSARY AT A SPECIFIC LEVEL.
  - SHEAR KEY WRAP:
    - 1/4 INCH POLYETHYLENE FOAM WRAP TWO TIMES AROUND THE SHEAR KEY.
    - SHEAR KEY WRAP: AF250 POLYETHYLENE FOAM
12. CONSTRUCTION:
  - TO BE IN ACCORDANCE WITH T-WALL® CONSTRUCTION MANUAL (v07.04) AND TYPICAL T-WALL® NOMENCLATURE ON SHEET 2.
  - T-WALL® CONSTRUCTION MANUAL (v07.04) CAN BE DOWNLOADED FROM OUR WEB SITE AT [www.neelco.com](http://www.neelco.com), UNDER "Downloads".
  - CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF ALL EXCAVATED SLOPES. DESIGN AND CONSTRUCTION OF ANY REQUIRED TEMPORARY SUPPORT OF EXCAVATION SHALL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR.
  - ALL SURFACE RUNOFF IS TO BE DIVERTED AWAY FROM EXCAVATIONS TO AVOID THE DETERIORATION OF THE SUBGRADE SOILS DUE TO EXPOSURE TO MOISTURE.



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**PROJECT #:** T21882

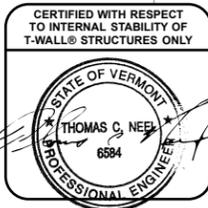
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**CONTRACTOR:** A.L. ST. ONGE CONTRACTORS  
**PROJECT #:**

**DESIGNER**

**THE NEEL COMPANY**  
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**PROJECT #:** TW4301



REVISIONS	

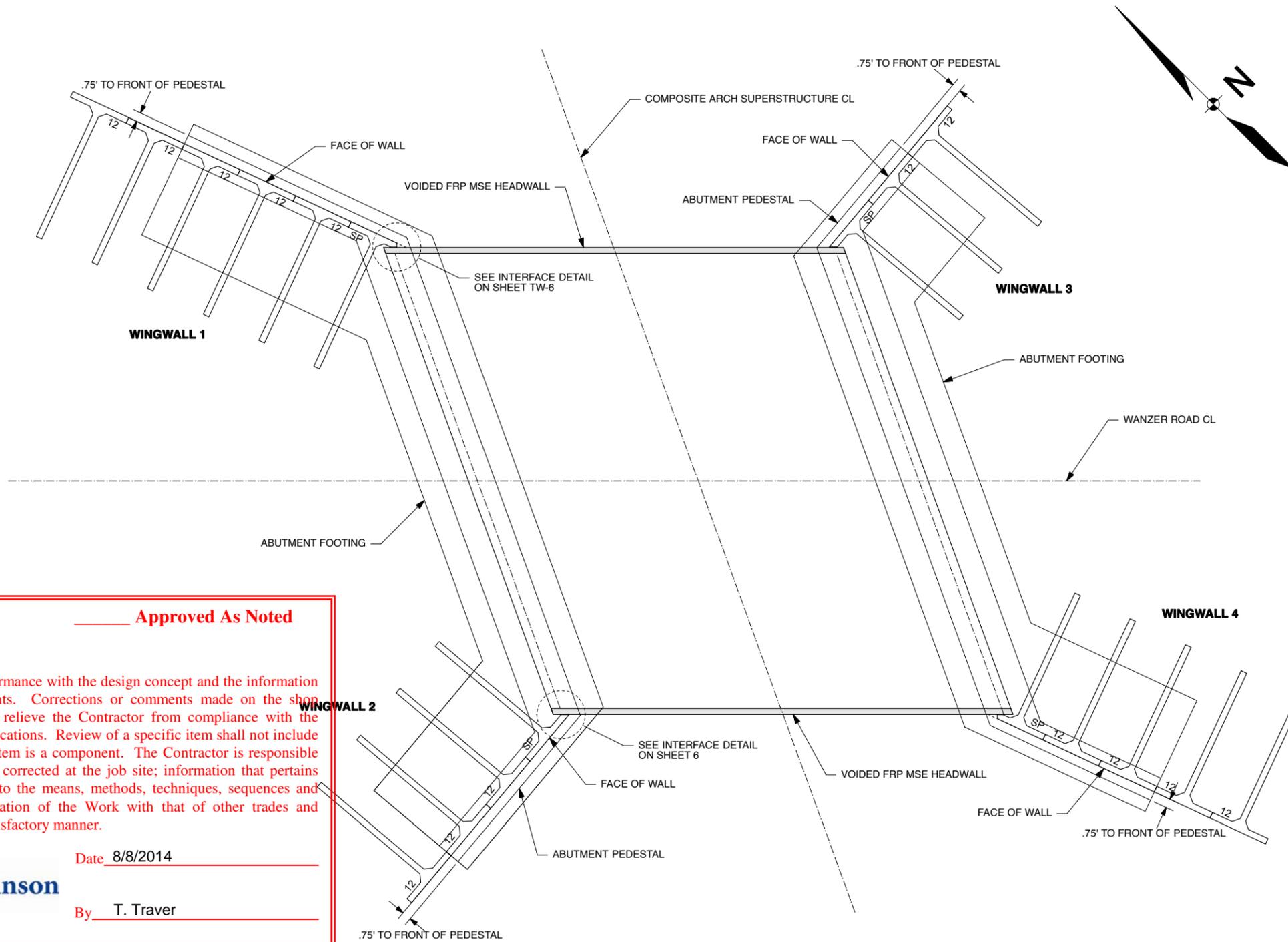
**RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT**

**FAIRFIELD, VT**

SHOP DRAWINGS  
 NOTES

T-WALL® RETAINING WALL SYSTEM

SCALE:	NO SCALE
DATE:	4/21/14
DESIGNED BY:	KD
DRAWN BY:	ABC
CHECKED BY:	CCG
SHEET:	3



**X Approved**  
**Rejected**

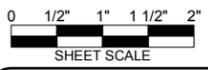
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Date 8/8/2014

By T. Traver

1 PLAN  
1" = 5 ft



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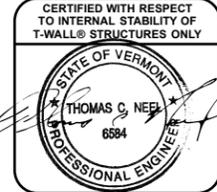
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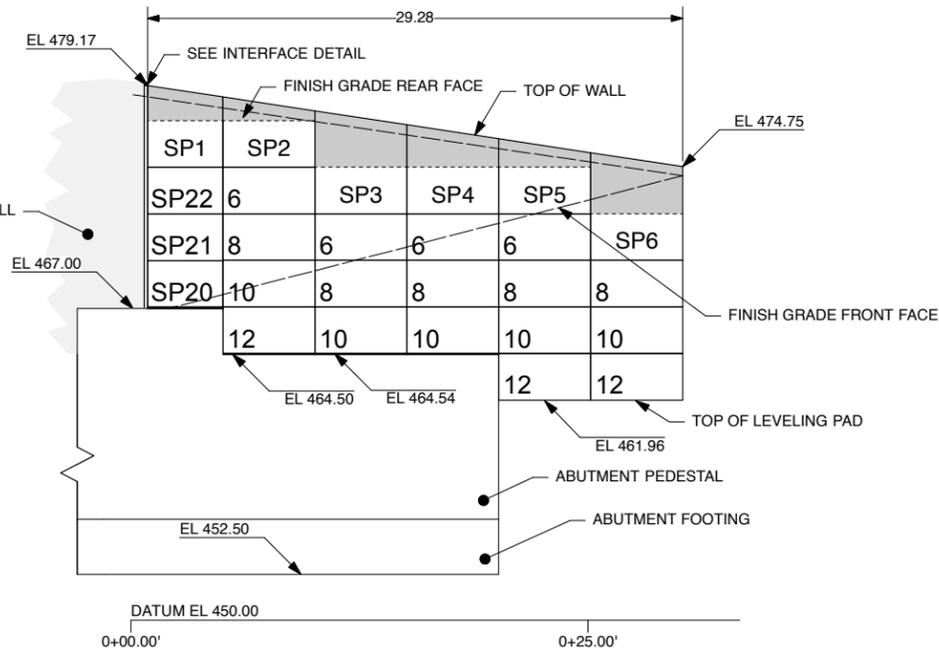
**RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT**

FAIRFIELD, VT

SHOP DRAWINGS  
WALL DRAWINGS  
PLAN VIEW

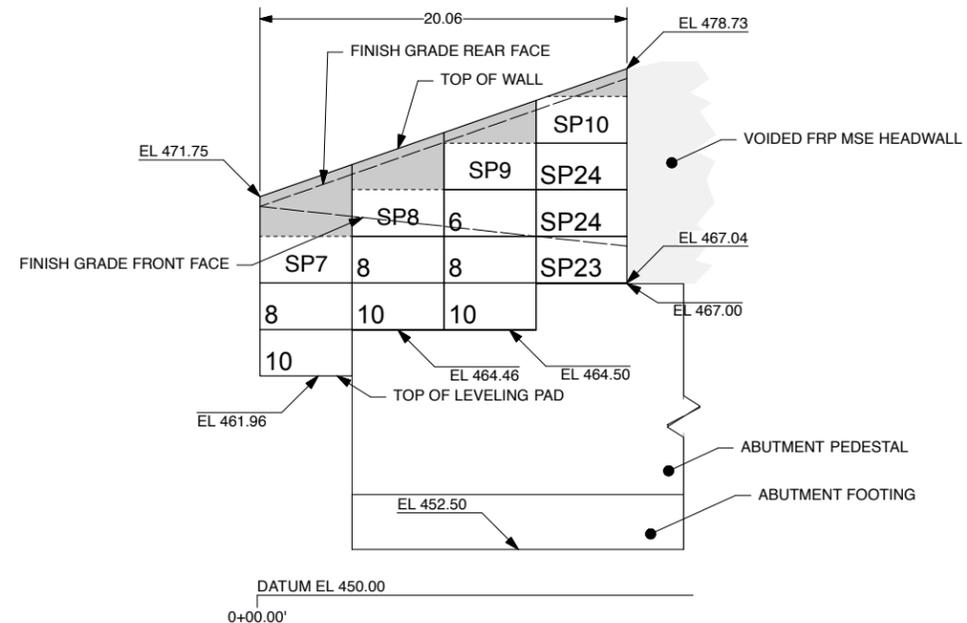
T-WALL® RETAINING WALL SYSTEM

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SHEET:	4



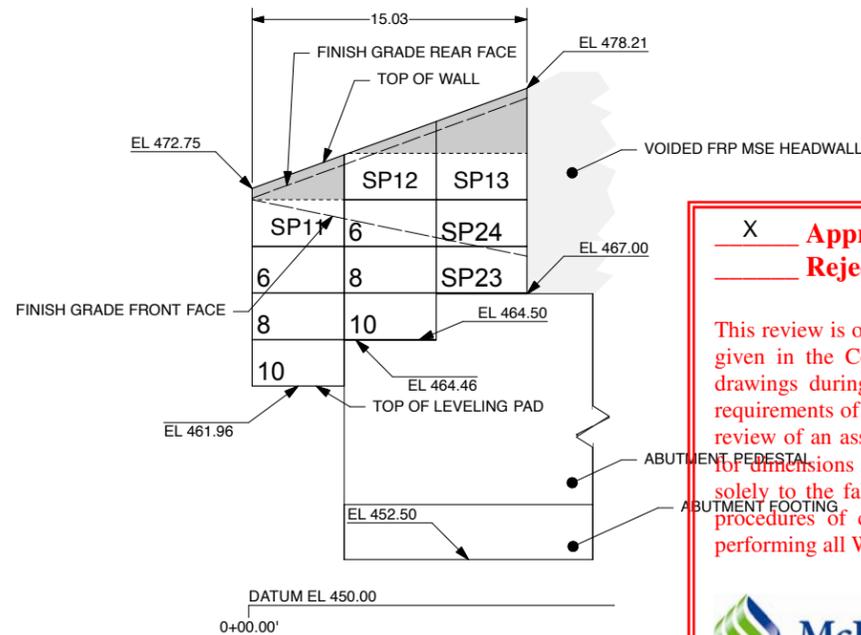
1 WINGWALL 1 DEVELOPED ELEVATION (FRONT FACE)  
1" = 5 ft

NOTE: SEE ELEVATION DETAIL ON NEXT SHEET



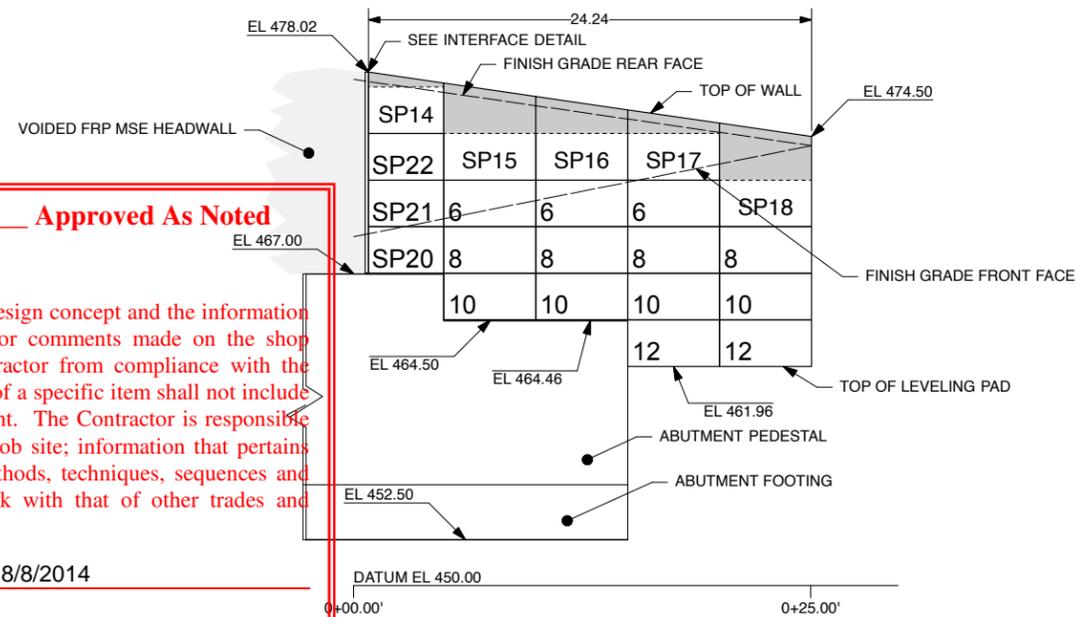
2 WINGWALL 2 DEVELOPED ELEVATION (FRONT FACE)  
1" = 5 ft

NOTE: SEE ELEVATION DETAIL ON NEXT SHEET



3 WINGWALL 3 DEVELOPED ELEVATION (FRONT FACE)  
1" = 5 ft

NOTE: SEE ELEVATION DETAIL ON NEXT SHEET



4 WINGWALL 4 DEVELOPED ELEVATION (FRONT FACE)  
1" = 5 ft

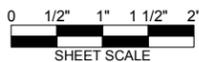
NOTE: SEE ELEVATION DETAIL ON NEXT SHEET

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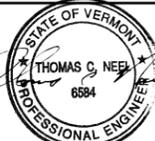
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<b>CONTRACTOR:</b> A.L. ST. ONGE CONTRACTORS <b>PROJECT #:</b>

**DESIGNER**


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**PROJECT #:** TW4301

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 TO INTERNAL STABILITY OF  
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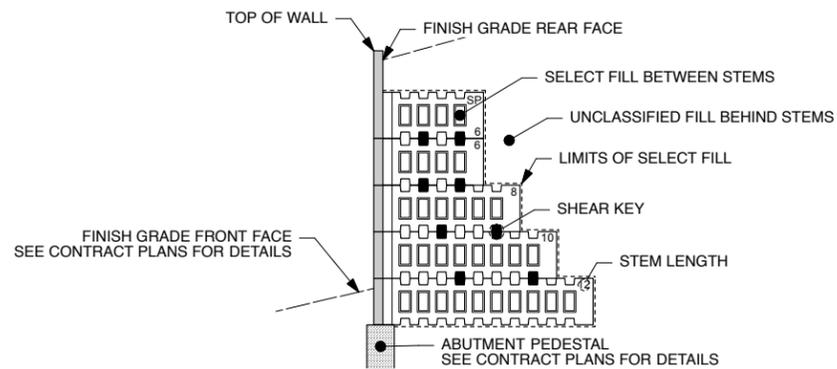


REVISIONS		
1 REVIEWER COMMENTS	ABC	8-6-14

**RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT**

FAIRFIELD, VT  
 SHOP DRAWINGS  
 WALL DRAWINGS  
 DEVELOPED ELEVATIONS  
 T-WALL® RETAINING WALL SYSTEM

SCALE:	AS NOTED
DATE:	4/21/14
DESIGNED BY:	KD
DRAWN BY:	ABC
CHECKED BY:	CCG
SHEET:	5



1 TYPICAL SECTION AT MAXIMUM HEIGHT  
1" = 5 ft

**T-WALL Unit Count for Wingwall 1** 8/6/14 10:55:48 AM

PANEL TYPE	QNTY (ea)	AREA (sf)	SELECT FILL (cy)
2.5 x 5.0 x 06 Std	4	50.00	9
2.5 x 5.0 x 08 Std	5	62.50	16
2.5 x 5.0 x 10 Std	5	62.50	20
2.5 x 5.0 x 12 Std	3	37.50	15
Special Units	9	160.70	21
<b>TOTALS:</b>	<b>26 ea</b>	<b>373.20 sf</b>	<b>82 cy</b>

NOTE: Select backfill quantities are between stems only.

**T-WALL Unit Count for Wingwall 2** 8/6/14 10:56:14 AM

PANEL TYPE	QNTY (ea)	AREA (sf)	SELECT FILL (cy)
2.5 x 5.0 x 06 Std	1	12.50	2
2.5 x 5.0 x 08 Std	3	37.50	10
2.5 x 5.0 x 10 Std	3	37.50	12
Special Units	7	124.78	17
<b>TOTALS:</b>	<b>14 ea</b>	<b>212.28 sf</b>	<b>41 cy</b>

NOTE: Select backfill quantities are between stems only.

**T-WALL Unit Count for Wingwall 3** 8/6/14 10:56:26 AM

PANEL TYPE	QNTY (ea)	AREA (sf)	SELECT FILL (cy)
2.5 x 5.0 x 06 Std	2	25.00	5
2.5 x 5.0 x 08 Std	2	25.00	6
2.5 x 5.0 x 10 Std	2	25.00	8
Special Units	5	87.49	12
<b>TOTALS:</b>	<b>11 ea</b>	<b>162.49 sf</b>	<b>31 cy</b>

NOTE: Select backfill quantities are between stems only.

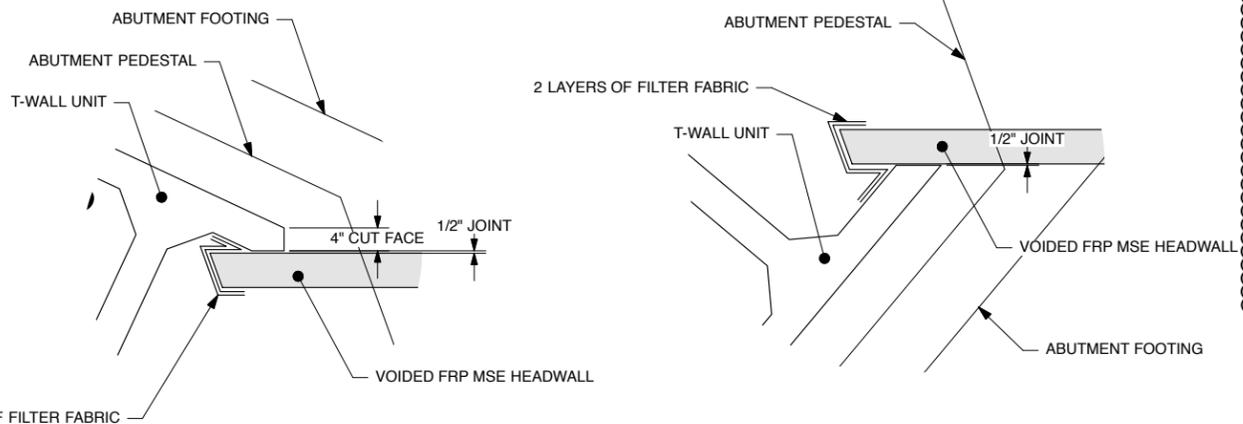
**T-WALL Unit Count for Wingwall 4** 8/6/14 11:17:17 AM

PANEL TYPE	QNTY (ea)	AREA (sf)	SELECT FILL (cy)
2.5 x 5.0 x 06 Std	3	37.50	7
2.5 x 5.0 x 08 Std	4	50.00	13
2.5 x 5.0 x 10 Std	4	50.00	16
2.5 x 5.0 x 12 Std	2	25.00	10
Special Units	8	133.45	19
<b>TOTALS:</b>	<b>21 ea</b>	<b>295.95 sf</b>	<b>65 cy</b>

NOTE: Select backfill quantities are between stems only.

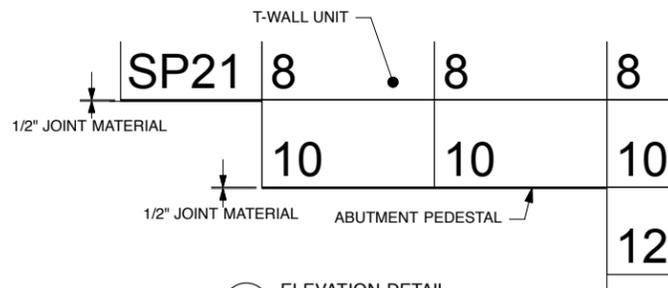
**SHIP LOOSE LIST FOR WINGWALLS**

ITEM	QNTY
T-Wall Lifting Device	1 ea
Shear Keys	108 ea
Mirafi 160N Filter Fabric (12" wide)	287 lf
1/2" x 4" x 5' Horizontal Joint Material	295 lf



2 WINGWALLS 1 & 4 INTERFACE DETAIL  
Scale: 3/4" = 1'-0"

3 WINGWALLS 2 & 3 INTERFACE DETAIL  
Scale: 3/4" = 1'-0"



4 ELEVATION DETAIL  
Scale: 3/8" = 1'-0"

NOTE: CONTRACTOR TO CONFIRM REVISED PEDESTAL ELEVATIONS FOR 2'6" 1/2" SPACING.



The design contained on these drawings is based upon information provided by the owner. On the basis of this information, The Neel Company has designed, and is responsible for, the internal stability of the structure only. External stability, including foundation and slope stability, is the responsibility of the owner.

This drawing contains information proprietary to The Neel Company. T-WALL® is a registered trademark owned by The Neel Company. ©2014 The Neel Company

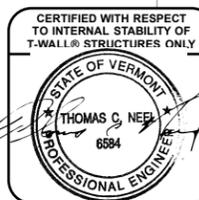
**PRECASTER:** CONCRETE SYSTEMS, INC. CSI  
**PROJECT #:** T21882

**CONTRACTOR:** A.L. ST. ONGE CONTRACTORS  
**PROJECT #:**

**DESIGNER**

**THE NEEL COMPANY**  
8328-D TRAFORD LANE  
SPRINGFIELD, VIRGINIA 22152  
PH: (703) 913-7858  
FX: (703) 913-7859  
WEB: WWW.NEELCO.COM

**PROJECT #:** TW4301



**REVISIONS**

NO.	REVIEWER COMMENTS	DATE
1	ABC	8-6-14

**RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT**

FAIRFIELD, VT

SHOP DRAWINGS  
WALL DRAWINGS  
SECTION, DETAILS & QUANTITIES  
T-WALL® RETAINING WALL SYSTEM

SCALE:	AS NOTED
DATE:	4/21/14
DESIGNED BY:	KD
DRAWN BY:	ABC
CHECKED BY:	CCG
SHEET:	6

**Approved**       **Approved As Noted**  
 **Rejected**

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during the review do not relieve the Contractor from compliance with the requirements of the Plans and Specifications. Review of a specific item shall not include review of an assembly of which an item is a component. The Contractor is responsible for dimensions to be confirmed and corrected at the job site; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of other trades and performing all Work in a safe and satisfactory manner.

Date 8/8/2014

By T. Traver

**Mcfarland Johnson**

T-WALL UNIT PROPERTIES

UNIT TYPE	H	W	S	Tf*	Ts	SH	VOLUME*	WEIGHT*
2.5x5.0x06 Std	2'6"	5'0"	6'4 1/2"	6"	6"	2'6"	0.45 cy	1,827 lbs
2.5x5.0x08 Std	2'6"	5'0"	8'4 1/2"	6"	6"	2'6"	0.52 cy	2,088 lbs
2.5x5.0x10 Std	2'6"	5'0"	10'4 1/2"	6"	6"	2'6"	0.58 cy	2,349 lbs
2.5x5.0x12 Std	2'6"	5'0"	12'4 1/2"	6"	6"	2'6"	0.64 cy	2,610 lbs

\* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 6" FACE THICKNESS (Tf)

REBAR SCHEDULES

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks	
H=2'6"	H-1	3 ea	#4	4'8"		9.35 lbs			
W=5'0"	V-1	12 ea	#4	2'2"		17.37 lbs			
S=6'4 1/2"	V-2	6 ea	#4	2'2"		8.68 lbs			
SH=2'6"	S-1	4 ea	#4	3'4 1/2"		9.02 lbs	D= 3"		
	TB-1	4 ea	#4	8'2"	5'11"	21.81 lbs	D= 3"		
						66.23 lbs			

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks	
H=2'6"	H-1	3 ea	#4	4'8"		9.35 lbs			
W=5'0"	V-1	16 ea	#4	2'2"		23.16 lbs			
S=8'4 1/2"	V-2	6 ea	#4	2'2"		8.68 lbs			
SH=2'6"	S-1	4 ea	#4	3'4 1/2"		9.02 lbs	D= 3"		
	TB-1	4 ea	#4	10'2"	7'11"	27.16 lbs	D= 3"		
						77.37 lbs			

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks	
H=2'6"	H-1	3 ea	#4	4'8"		9.35 lbs			
W=5'0"	V-1	20 ea	#4	2'2"		16.29 lbs			
S=10'4 1/2"	V-2	6 ea	#4	2'2"		4.89 lbs			
SH=2'6"	S-1	4 ea	#4	3'4 1/2"		5.08 lbs	D= 2 1/4"		
	TB-1	4 ea	#4	12'2"	9'11"	32.50 lbs	D= 3"		
						68.11 lbs			

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks	
H=2'6"	H-1	3 ea	#4	4'8"		9.35 lbs			
W=5'0"	V-1	20 ea	#4	2'2"		16.29 lbs			
S=12'4 1/2"	V-2	6 ea	#4	2'2"		4.89 lbs			
SH=2'6"	S-1	4 ea	#4	3'4 1/2"		5.08 lbs	D= 2 1/4"		
	TB-1	4 ea	#4	12'2"	9'11"	32.50 lbs	D= 3"		
						68.11 lbs			

X Approved  
 \_\_\_\_\_ Rejected

\_\_\_\_\_ Approved As Noted

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during the review do not relieve the Contractor from compliance with the requirements of the Plans and Specifications. Review of a specific item shall not include review of an assembly of which an item is a component. The Contractor is responsible for dimensions to be confirmed and corrected at the job site; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of other trades and subcontractors; and ensuring all Work in a safe and satisfactory manner.

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This drawing contains information proprietary to The Neel Company. T-WALL® is a registered trademark owned by The Neel Company. ©2014 The Neel Company

PRECASTER: CONCRETE SYSTEMS, INC. CSI  
 Date: 8/8/2014  
 PROJECT #: T21882

TRAVEL CONTRACTORS  
 PROJECT #:

DESIGNER  
**THE NEEL COMPANY**  
 8328-D TRAFORD LANE  
 SPRINGFIELD, VIRGINIA 22152  
 PH: (703) 913-7858  
 FX: (703) 913-7859  
 WEB: WWW.NEELCO.COM

PROJECT #: TW4301

CERTIFIED WITH RESPECT TO INTERNAL STABILITY OF T-WALL® STRUCTURES ONLY

NO.	DATE	DESCRIPTION

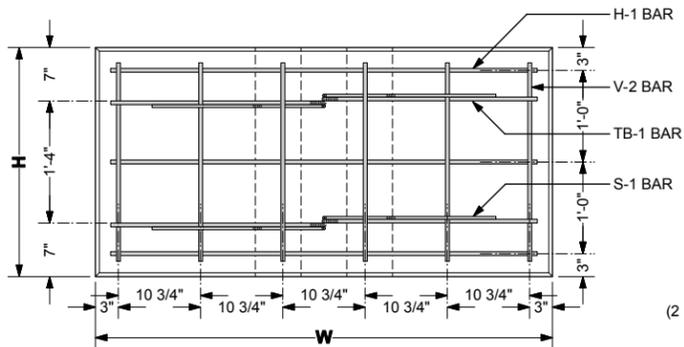
**RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT**

FAIRFIELD, VT

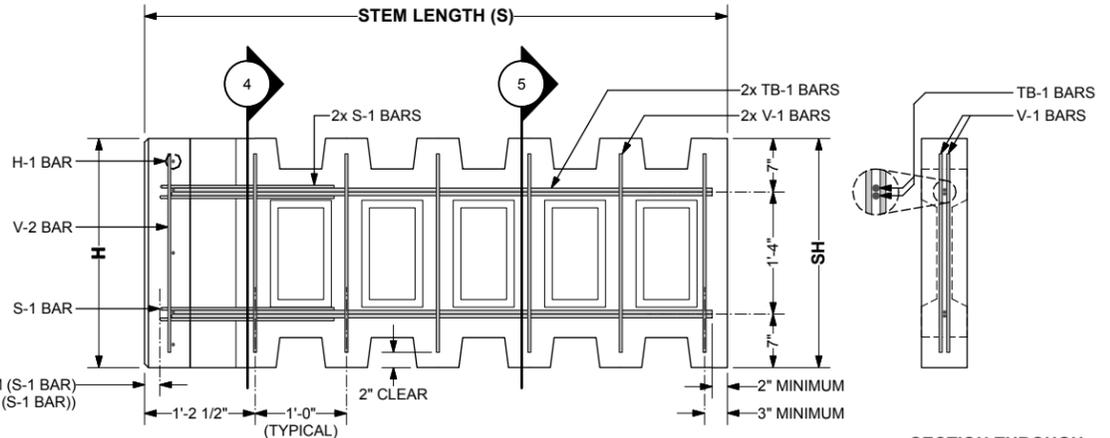
SHOP DRAWINGS  
 STANDARD UNITS  
 REBAR AND DIMENSIONS

T-WALL® RETAINING WALL SYSTEM

SCALE:	AS NOTED
DATE:	4/21/14
DESIGNED BY:	KD
DRAWN BY:	ABC
CHECKED BY:	CCG
SHEET:	7



3 FRONT VIEW - 2.5 x 5.0 x 06 Std SHOWN  
 Scale: 1" = 1'-0" (V-1 BARS IN STEM OMITTED FOR CLARITY)



2 SIDE VIEW - 2.5 x 5.0 x 06 Std SHOWN  
 Scale: 1" = 1'-0"

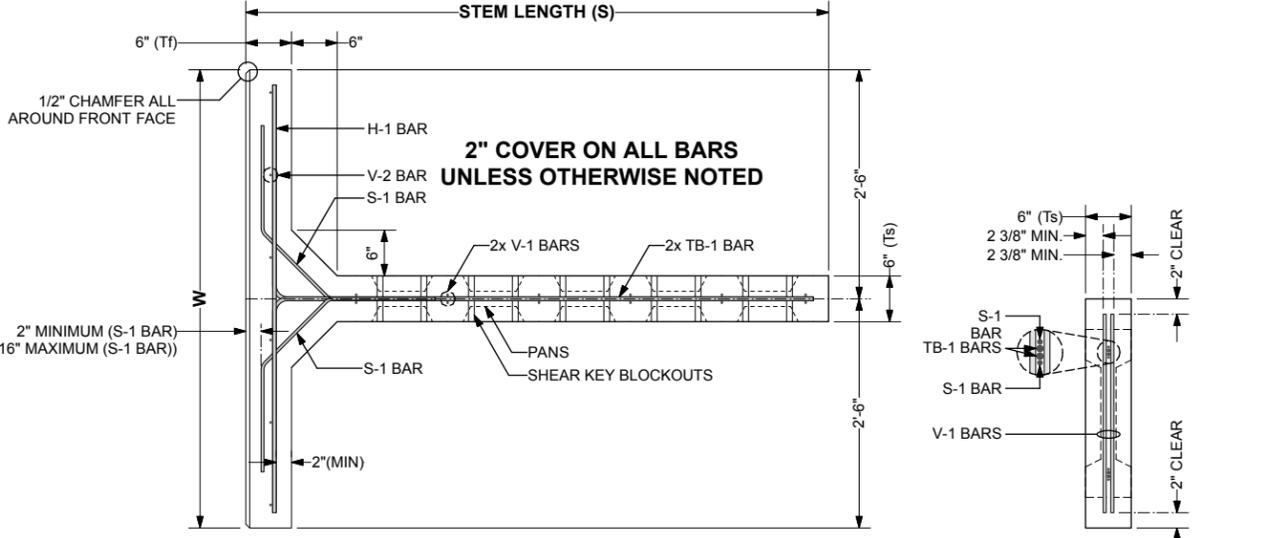
5 SECTION THROUGH STEM  
 Scale: 1" = 1'-0"

SPECIAL NOTES:

- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
  - PLAIN STEEL FORM FINISH

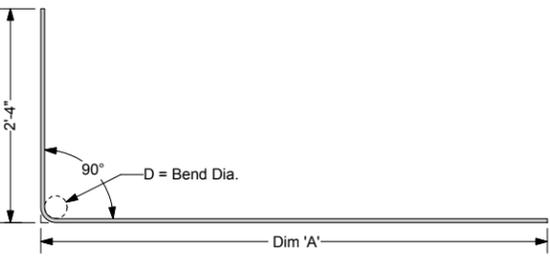
GENERAL NOTES:

- PRIMARY REFERENCE:
  - AASHTO, LRFD BRIDGE DESIGN SPECIFICATION, 5TH EDITION 2010 (WITH INTERIMS)
- T-WALL® CONCRETE:
  - Fc = 5000 psi (MINIMUM) @ 28 DAYS
  - MINIMUM STRIPPING STRENGTH: 2500 psi
- T-WALL® REINFORCING STEEL:
  - BLACK
  - Fy = 60 ksi (GRADE 60)
  - WELDING IS NOT PERMITTED
- MARKING OF PRECAST UNITS:
  - CLEARLY MARK EACH PRECAST UNIT ON THE BUTT END OF THE STEM WITH THE UNIT TYPE (i.e. 2.5x5.0x06 STD), THE DATE OF MANUFACTURE, THE LOT NUMBER (IF APPLICABLE), AND THE TRADEMARK "T-WALL®".
- REINFORCING FABRICATION AND PLACEMENT TOLERANCES:
  - THE STRUCTURAL DESIGN OF PRECAST UNITS ASSUMES 2 INCHES OF CONCRETE COVER OVER ALL REINFORCING BARS.
  - UNLESS OTHERWISE NOTED IN CONTRACT DOCUMENTS OR REFERENCED SPECIFICATIONS, TOLERANCES ON CONCRETE COVER SHALL BE ± 3/8 INCHES.
  - UNLESS OTHERWISE NOTED IN CONTRACT DOCUMENTS OR REFERENCED SPECIFICATIONS, TOLERANCES ON BAR PLACEMENT SHALL BE:
    - VERTICAL LOCATION OF TB-1 BARS: ± 3/8 INCHES
    - LOCATION / SPACING OF H-1, V-1 & V-2 BARS: ± 1 INCH
  - REGARDLESS OF THE SPECIFIED PLACEMENT TOLERANCES, CONCRETE COVER SHALL BE MAINTAINED WITHIN ± 3/8 INCHES AS PREVIOUSLY NOTED.
  - ALL REINFORCING BARS SHALL BE CUT AND BENT FOLLOWING REQUIREMENTS OF THE CRSI MANUAL OF STANDARD PRACTICE.
  - UNLESS NOTED OTHERWISE, TOLERANCES FOR BAR FABRICATION SHALL MEET REQUIREMENTS OF STANDARD ACI 318 AND THE CRSI MANUAL OF STANDARD PRACTICE.

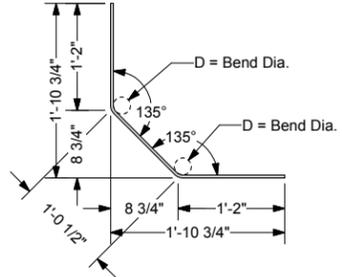


1 PLAN VIEW - 2.5 x 5.0 x 06 Std SHOWN  
 Scale: 1" = 1'-0"

4 SECTION THROUGH STEM  
 Scale: 1" = 1'-0"



6 TB-1 REBAR  
 Scale: 1" = 1'-0"



7 S-1 REBAR  
 Scale: 1" = 1'-0"

GENERAL NOTES:

- 1. PRIMARY REFERENCE: AASHTO, LRFD BRIDGE DESIGN SPECIFICATION, 5TH EDITION 2010 (WITH INTERIMS)
2. T-WALL@ CONCRETE: F'c = 5000 psi (MINIMUM) @ 28 DAYS
3. T-WALL@ REINFORCING STEEL: BLACK, Fy = 60 ksi (GRADE 60), WELDING IS NOT PERMITTED
4. MARKING OF PRECAST UNITS: CLEARLY MARK EACH PRECAST UNIT ON THE BUTT END OF THE STEM WITH THE UNIT TYPE (i.e. 2.5x5.0x06 STD), THE DATE OF MANUFACTURE, THE LOT NUMBER (IF APPLICABLE), AND THE TRADEMARK "T-WALL@".
5. REINFORCING FABRICATION AND PLACEMENT TOLERANCES: THE STRUCTURAL DESIGN OF PRECAST UNITS ASSUMES 2 INCHES OF CONCRETE COVER OVER ALL REINFORCING BARS.

SPECIAL NOTES:

- 1. FRONT FACE OF T-WALL@ UNITS FINISH TREATMENT: PLAIN STEEL FORM FINISH
2. LIFTING INSERTS CAPACITY: TWO QUICKLIFT 'QL050G' LIFTING INSERTS OR EQUAL, SPACED AT LEAST 30" APART.
3. 1/2" FALSE JOINT LOCATION: IF H-1 IS GREATER THEN 2'-6", THEN FIRST FALSE JOINT WILL BE 2'-6" FROM THE BOTTOM OF THE UNIT.

REBAR SCHEDULES

Table with 10 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Bend Dia, Remarks. Includes rows for H-VARIES, W=5'0", S=6'4 1/2", SH=2'6".

SLOPED TOP UNIT SCHEDULE:

Table with 13 columns: MARK No., QNTY, STEM, WIDTH, H1, H2, H-1 BAR, V-2 BAR, V-3 BAR, V-4 BAR, V-5 BAR, V-6 BAR, V-7 BAR, VOL, WEIGHT, AREA. Lists units SP2 through SP18.



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PRECASTER: CONCRETE SYSTEMS, INC. CSI

PROJECT #: T21882

CONTRACTOR: A.L. ST. ONGE CONTRACTORS

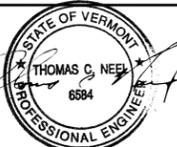
PROJECT #:

DESIGNER

THE NEEL COMPANY
8328-D TRAFORD LANE
SPRINGFIELD, VIRGINIA 22152
PH: (703) 913-7858
FX: (703) 913-7859
WEB: WWW.NEELCO.COM

PROJECT #: TW4301

CERTIFIED WITH RESPECT TO INTERNAL STABILITY OF T-WALL@ STRUCTURES ONLY



REVISIONS

Table with 3 columns: No., Description, Date. Row 1: REVIEWER COMMENTS, ABC, 8-6-14

RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT

FAIRFIELD, VT

SHOP DRAWINGS
SLOPED TOP UNITS
REBAR AND DIMENSIONS

T-WALL@ RETAINING WALL SYSTEM

SCALE: AS NOTED

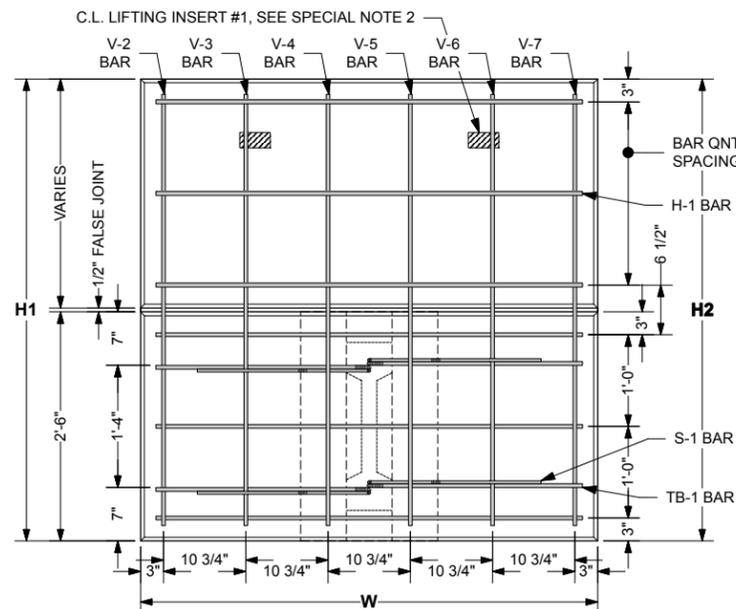
DATE: 4/21/14

DESIGNED BY: KD

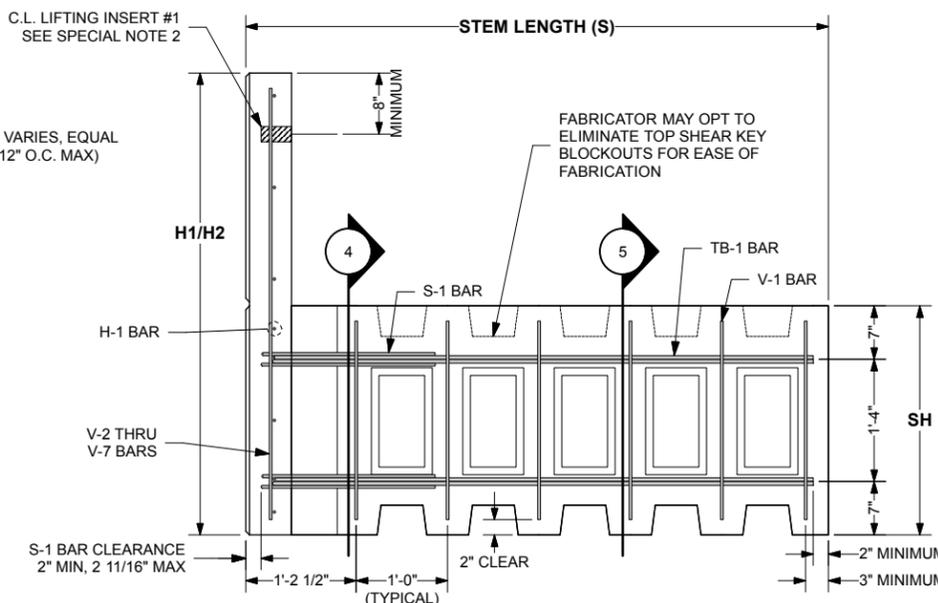
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CHECKED BY: CCG

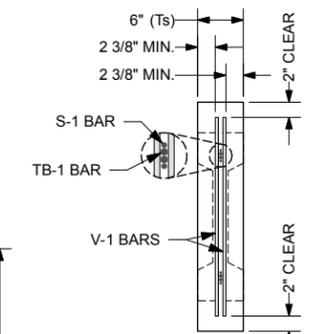
SHEET: 8



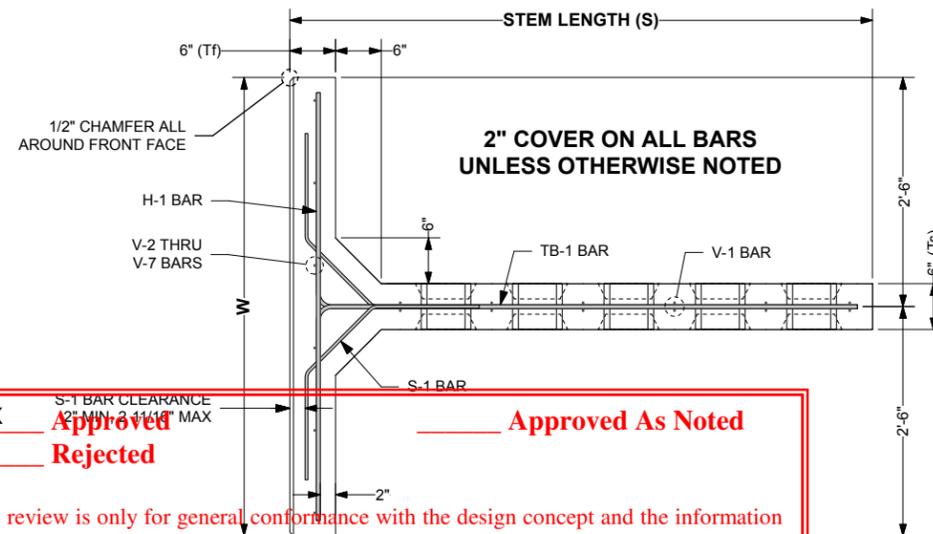
3 FRONT VIEW - 6' STEM UNIT SHOWN
Scale: 1" = 1'-0" (V-1 BARS IN STEM OMITTED FOR CLARITY)



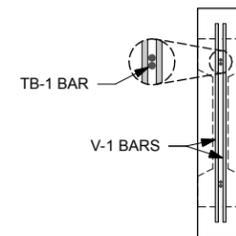
2 SIDE VIEW - 6' STEM UNIT SHOWN
Scale: 1" = 1'-0"



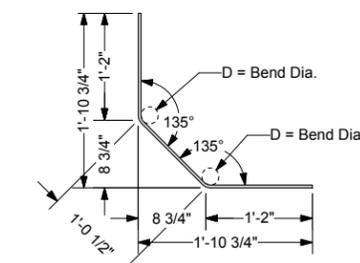
4 SECTION AT STEM
Scale: 1" = 1'-0"



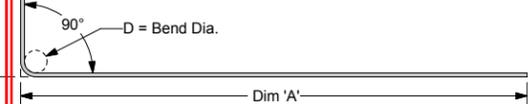
1 PLAN VIEW - 6' STEM UNIT SHOWN
Scale: 1" = 1'-0"



5 SECTION AT STEM
Scale: 1" = 1'-0"



6 S-1 REBAR
Scale: 1" = 1'-0"



7 TB-1 REBAR
Scale: 1" = 1'-0"

Approval stamp area with 'Approved As Noted' text, signature of T. Traver, date 8/8/2014, and McFarland Johnson logo.

GENERAL NOTES:

- PRIMARY REFERENCE:
  - AASHTO, LRFD BRIDGE DESIGN SPECIFICATION, 5TH EDITION 2010 (WITH INTERIMS)
- T-WALL@ CONCRETE:
  - F<sub>c</sub> = 5000 psi (MINIMUM) @ 28 DAYS
  - MINIMUM STRIPPING STRENGTH: 2500 psi
- T-WALL@ REINFORCING STEEL:
  - BLACK
  - F<sub>y</sub> = 60 ksi (GRADE 60)
  - WELDING IS NOT PERMITTED
- MARKING OF PRECAST UNITS:
  - CLEARLY MARK EACH PRECAST UNIT ON THE BUTT END OF THE STEM WITH THE UNIT TYPE (i.e. 2.5x5.0x06 STD), THE DATE OF MANUFACTURE, THE LOT NUMBER (IF APPLICABLE), AND THE TRADEMARK "T-WALL@".
- REINFORCING FABRICATION AND PLACEMENT TOLERANCES:
  - THE STRUCTURAL DESIGN OF PRECAST UNITS ASSUMES 2 INCHES OF CONCRETE COVER OVER ALL REINFORCING BARS.
  - UNLESS OTHERWISE NOTED IN CONTRACT DOCUMENTS OR REFERENCED SPECIFICATIONS, TOLERANCES ON CONCRETE COVER SHALL BE ± 3/8 INCHES.
  - UNLESS OTHERWISE NOTED IN CONTRACT DOCUMENTS OR REFERENCED SPECIFICATIONS, TOLERANCES ON BAR PLACEMENT SHALL BE:
    - VERTICAL LOCATION OF TB-1 BARS: ± 3/8 INCHES
    - LOCATION / SPACING OF H-1, V-1 & V-2 BARS: ± 1 INCH
  - REGARDLESS OF THE SPECIFIED TOLERANCES, CONCRETE COVER SHALL BE MAINTAINED WITHIN ± 3/8 INCHES AS PREVIOUSLY NOTED.
  - ALL REINFORCING BARS SHALL BE CUT AND BENT FOLLOWING REQUIREMENTS OF THE CRSI MANUAL OF STANDARD PRACTICE.
  - UNLESS NOTED OTHERWISE, TOLERANCES FOR BAR FABRICATION SHALL MEET REQUIREMENTS OF STANDARD ACI 318 AND THE CRSI MANUAL OF STANDARD PRACTICE.

SPECIAL NOTES:

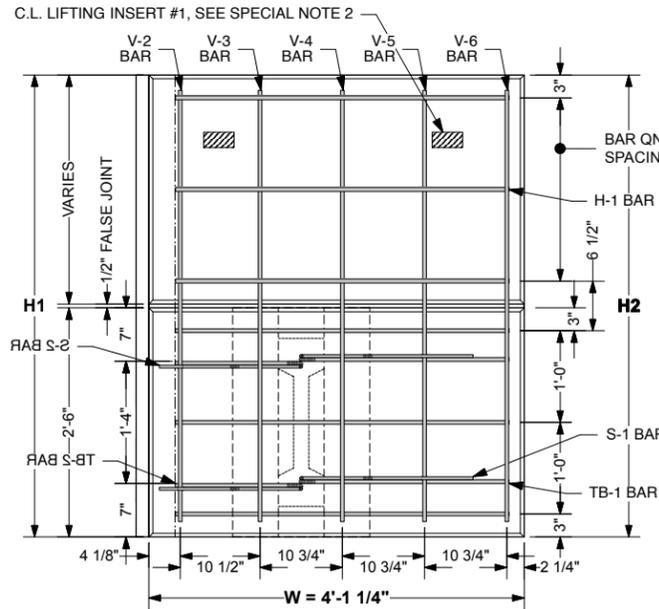
- FRONT FACE OF T-WALL@ UNITS FINISH TREATMENT:
  - PLAIN STEEL FORM FINISH
- LIFTING INSERTS CAPACITY:
  - TWO QUICKLIFT "QL050G" LIFTING INSERTS OR EQUAL, SPACED AT LEAST 30" APART.
  - 2000 LBS (1 TON) MINIMUM RATED WORKING LOAD CAPACITY.
  - MINIMUM CONCRETE STRENGTH SHALL BE 3,500 psi PRIOR TO STRIPPING AND LIFTING OPERATIONS.
- 1/2" FALSE JOINT LOCATION:
  - IF H-1 IS GREATER THEN 2'-6", THEN FIRST FALSE JOINT WILL BE 2'-6" FROM THE BOTTOM OF THE UNIT.
  - IF H-1 IS GREATER THEN 5'-0", THEN SECOND FALSE JOINT WILL BE 2'-6" ABOVE THE FIRST FALSE JOINT.
  - THE FALSE JOINT WILL 1/2" HIGH AND 1/2" DEEP.

REBAR SCHEDULES

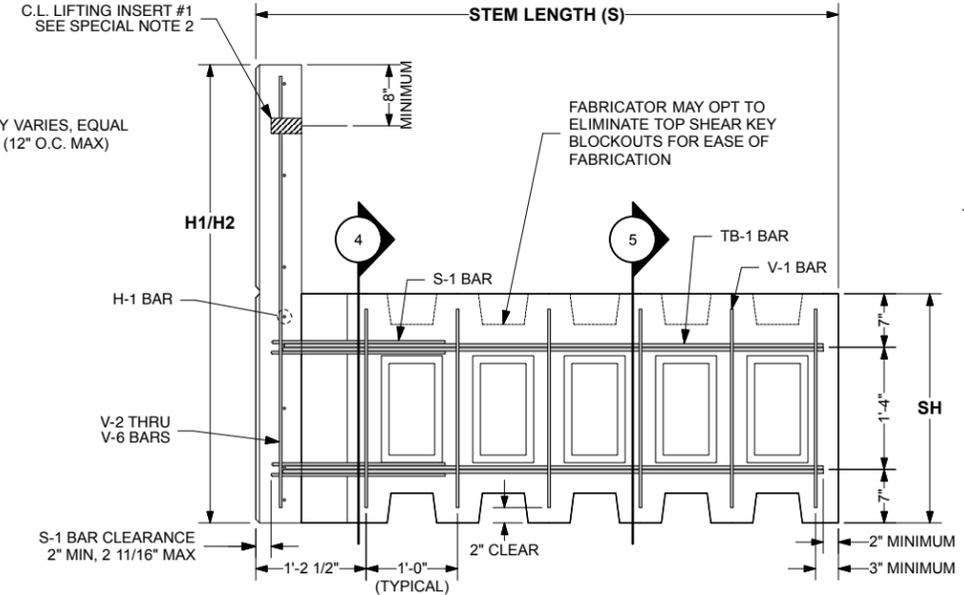
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks
H=VARIES	H-1	VARIES	#4	4'1 1/4"				SEE SLOPED TOP UNIT SCHEDULE
W=4'1 1/4"	V-1	12 ea	#4	2'2"		17.37 lbs		
S=6'4 1/2"	V-2 THRU V-6	1 ea	#4	VARIES				SEE SLOPED TOP UNIT SCHEDULE
SH=2'6"	S-1	2 ea	#4	3'4 1/2"		4.51 lbs	D= 3"	
	S-2	2 ea	#4	3'0 1/2"		4.06 lbs	D= 3"	
	TB-1	2 ea	#4	4'4"	2'0 1/2"	5.79 lbs	D= 3"	
	TB-2	2 ea	#4	3'5 1/4"	2'0 1/2"	4.59 lbs	D= 3"	

SLOPED TOP UNIT SCHEDULE:

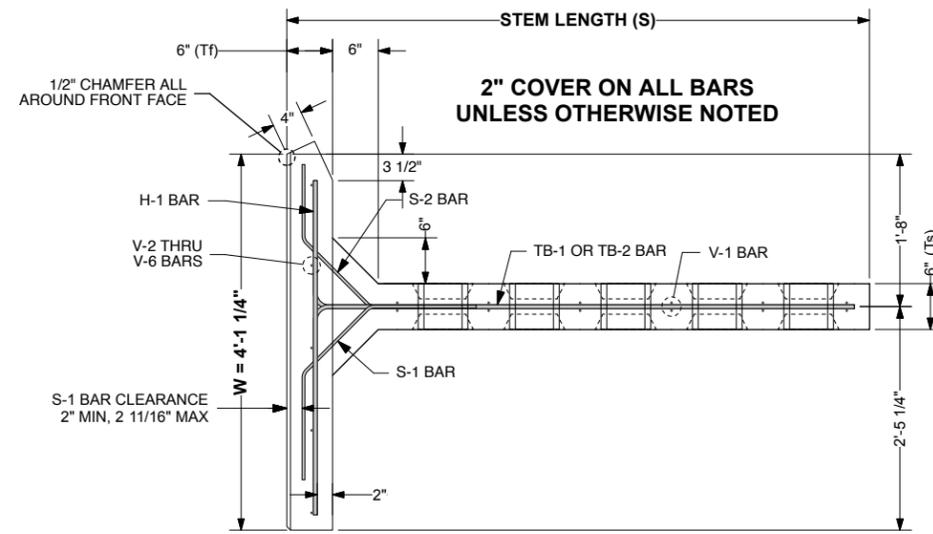
MARK No.	QNTY	STEM	WIDTH	H1	H2	H-1 BAR	V-2 BAR	V-3 BAR	V-4 BAR	V-5 BAR	V-6 BAR	VOL	WEIGHT	AREA
SP1	1 ea	6'4 1/2"	4'1 1/4"	4'5 1/2"	3'10 1/8"	5 ea	4'0 7/8"	4'0"	3'9 3/4"	3'8 1/8"	3'6 3/8"	0.55 cy	2,247 lbs	17.04 sf
SP14	1 ea	6'4 1/2"	4'1 1/4"	3'4 1/4"	2'9"	4 ea	2'11 5/8"	2'10 5/8"	2'8 1/2"	2'6 7/8"	2'5 3/8"	0.47 cy	1,908 lbs	12.52 sf



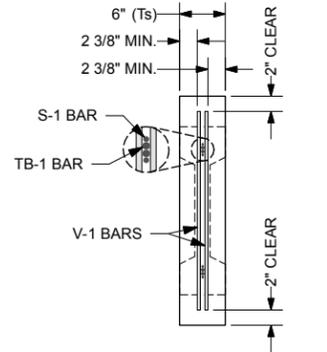
3 FRONT VIEW - 6' STEM UNIT SHOWN  
Scale: 1" = 1'-0" (V-1 BARS IN STEM OMITTED FOR CLARITY)



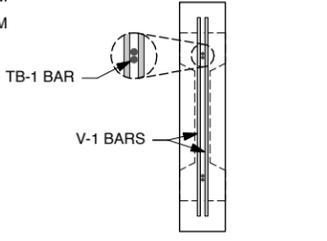
2 SIDE VIEW - 6' STEM UNIT SHOWN  
Scale: 1" = 1'-0"



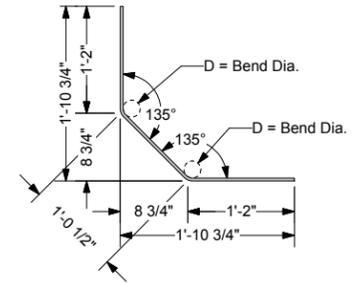
1 PLAN VIEW - 6' STEM UNIT SHOWN  
Scale: 1" = 1'-0"



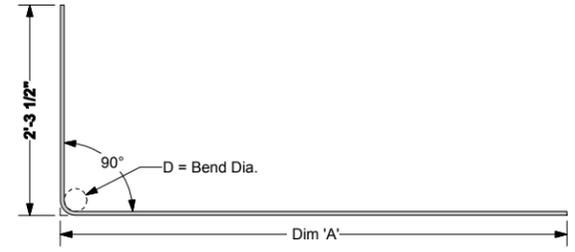
4 SECTION AT STEM  
Scale: 1" = 1'-0"



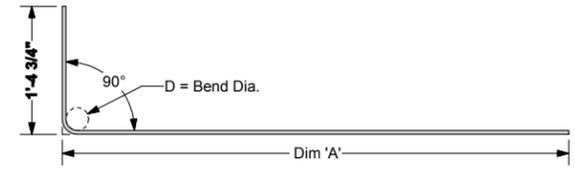
5 SECTION AT STEM  
Scale: 1" = 1'-0"



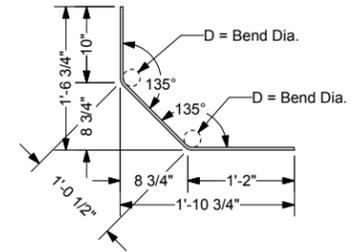
6 S-1 REBAR  
Scale: 1" = 1'-0"



7 TB-1 REBAR  
Scale: 1" = 1'-0"



8 TB-2 REBAR  
Scale: 1" = 1'-0"



9 S-2 REBAR  
Scale: 1" = 1'-0"

**X Approved** **Approved As Noted**  
**Rejected**

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The design contained on these drawings is based upon information provided by the owner. The Company has designed the structure only. Its stability, its response to loads, and its performance under conditions of use, is the responsibility of the owner.

**McFarland Johnson**

This drawing contains information proprietary to The Neel Company. T-WALL@ is a registered trademark owned by The Neel Company. ©2014 The Neel Company

PRECASTER: CONCRETE SYSTEMS, INC. CSI  
Date: 8/8/2014  
#: T21882

CONTRACTOR: **By: J. Traver**  
AL ST. CONCE CONTRACTORS

PROJECT #:

DESIGNER  
**THE NEEL COMPANY**  
8328-D TRAFORD LANE  
SPRINGFIELD, VIRGINIA 22152  
PH: (703) 913-7858  
FX: (703) 913-7859  
WEB: WWW.NEELCO.COM

PROJECT #: TW4301

CERTIFIED WITH RESPECT TO INTERNAL STABILITY OF T-WALL@ STRUCTURES ONLY

STATE OF VERMONT  
**THOMAS C. NEEL**  
PROFESSIONAL ENGINEER  
6584

REVISIONS		
1	REVIEWER COMMENTS	ABC 8-6-14

**RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT**

FAIRFIELD, VT

SHOP DRAWINGS  
NARROW SLOPED TOP LEFT BEVELED UNITS  
REBAR AND DIMENSIONS  
T-WALL@ RETAINING WALL SYSTEM

SCALE:	AS NOTED
DATE:	4/21/14
DESIGNED BY:	KD
DRAWN BY:	ABC
CHECKED BY:	CCG
SHEET:	9

GENERAL NOTES:

- PRIMARY REFERENCE:
  - AASHTO, LRFD BRIDGE DESIGN SPECIFICATION, 5TH EDITION 2010 (WITH INTERIMS)
- T-WALL® CONCRETE:
  - F'c = 5000 psi (MINIMUM) @ 28 DAYS
  - MINIMUM STRIPPING STRENGTH: 2500 psi
- T-WALL® REINFORCING STEEL:
  - BLACK
  - Fy = 60 ksi (GRADE 60)
  - WELDING IS NOT PERMITTED
- MARKING OF PRECAST UNITS:
  - CLEARLY MARK EACH PRECAST UNIT ON THE BUTT END OF THE STEM WITH THE UNIT TYPE (i.e. 2.5x5.0x06 STD), THE DATE OF MANUFACTURE, THE LOT NUMBER (IF APPLICABLE), AND THE TRADEMARK "T-WALL®".
- REINFORCING FABRICATION AND PLACEMENT TOLERANCES:
  - THE STRUCTURAL DESIGN OF PRECAST UNITS ASSUMES 2 INCHES OF CONCRETE COVER OVER ALL REINFORCING BARS.
  - UNLESS OTHERWISE NOTED IN CONTRACT DOCUMENTS OR REFERENCED SPECIFICATIONS, TOLERANCES ON CONCRETE COVER SHALL BE ± 3/8 INCHES.
  - UNLESS OTHERWISE NOTED IN CONTRACT DOCUMENTS OR REFERENCED SPECIFICATIONS, TOLERANCES ON BAR PLACEMENT SHALL BE:
    - VERTICAL LOCATION OF TB-1 BARS: ± 3/8 INCHES
    - LOCATION / SPACING OF H-1, V-1 & V-2 BARS: ± 1 INCH
  - REGARDLESS OF THE SPECIFIED PLACEMENT TOLERANCES, CONCRETE COVER SHALL BE MAINTAINED WITHIN ± 3/8 INCHES AS PREVIOUSLY NOTED.
  - ALL REINFORCING BARS SHALL BE CUT AND BENT FOLLOWING REQUIREMENTS OF THE CRSI MANUAL OF STANDARD PRACTICE.
  - UNLESS NOTED OTHERWISE, TOLERANCES FOR BAR FABRICATION SHALL MEET REQUIREMENTS OF STANDARD ACI 318 AND THE CRSI MANUAL OF STANDARD PRACTICE.

SPECIAL NOTES:

- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
  - PLAIN STEEL FORM FINISH
- LIFTING INSERTS CAPACITY:
  - TWO QUICKLIFT "QL050G" LIFTING INSERTS OR EQUAL, SPACED AT LEAST 30" APART.
  - 2000 LBS (1 TON) MINIMUM RATED WORKING LOAD CAPACITY.
  - MINIMUM CONCRETE STRENGTH SHALL BE 3,500 psi PRIOR TO STRIPPING AND LIFTING OPERATIONS.
- 1/2" FALSE JOINT LOCATION:
  - IF H-1 IS GREATER THEN 2'-6", THEN FIRST FALSE JOINT WILL BE 2'-6" FROM THE BOTTOM OF THE UNIT.
  - IF H-1 IS GREATER THEN 5'-0", THEN SECOND FALSE JOINT WILL BE 2'-6" ABOVE THE FIRST FALSE JOINT.
  - THE FALSE JOINT WILL 1/2" HIGH AND 1/2" DEEP.

REBAR SCHEDULES

6' STEM SPECIAL UNITS								HIGHWAY REBAR			
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks			
H=VARIES	H-1	VARIES	#4	4'3 3/8"				SEE SLOPED TOP UNIT SCHEDULE			
W=4'11 1/4"	V-1	12 ea	#4	2'2"		17.37 lbs					
S=6'4 1/2"	V-2 THRU V-7	1 ea	#5	VARIES				SEE SLOPED TOP UNIT SCHEDULE			
SH=2'6"	S-1	4 ea	#4	3'4 1/2"		9.02 lbs	D=3"				
	TB-1	2 ea	#4	8'2 7/8"	5'11"	11.01 lbs	D=3"				
	TB-2	2 ea	#4	7'11"	5'11"	10.58 lbs	D=3"				

SLOPED TOP UNIT SCHEDULE:

MARK No.	QNTY	STEM	WIDTH	H1	H2	H-1 BAR	V-2 BAR	V-3 BAR	V-4 BAR	V-5 BAR	V-6 BAR	V-7 BAR	VOL	WEIGHT	AREA
SP10	1 ea	6'4 1/2"	4'11 1/4"	2'4"	4'0 3/4"	5 ea	2'1 1/4"	2'5 3/8"	2'9 1/2"	2'11 5/8"	3'3 3/4"	3'6 3/8"	0.53 cy	2,155 lbs	15.81 sf
SP13	1 ea	6'4 1/2"	4'11 1/4"	4'3 3/8"	6'1"	7 ea	4'0 1/2"	4'4 7/8"	4'9 1/4"	4'11 3/8"	5'3 3/4"	5'6 3/8"	0.71 cy	2,887 lbs	25.58 sf



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PRECASTER: CONCRETE SYSTEMS, INC. CSI

PROJECT #: T21882

CONTRACTOR: A.L. ST. ONGE CONTRACTORS

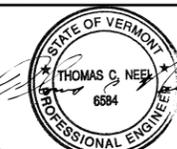
PROJECT #:

DESIGNER

THE NEEL COMPANY  
8328-D TRAFORD LANE  
SPRINGFIELD, VIRGINIA 22152  
PH: (703) 913-7858  
FX: (703) 913-7859  
WEB: WWW.NEELCO.COM

PROJECT #: TW4301

CERTIFIED WITH RESPECT TO INTERNAL STABILITY OF T-WALL® STRUCTURES ONLY



REVISIONS

NO.	DESCRIPTION	DATE
1	REVIEWED COMMENTS	8/6/14



RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT

FAIRFIELD, VT  
Date: 8/8/2014  
By: T. Traver  
SHOP DRAWINGS  
NARROW SLOPED TOP RIGHT BEVELED UNITS  
REBAR AND DIMENSIONS  
T-WALL® RETAINING WALL SYSTEM

SCALE: AS NOTED

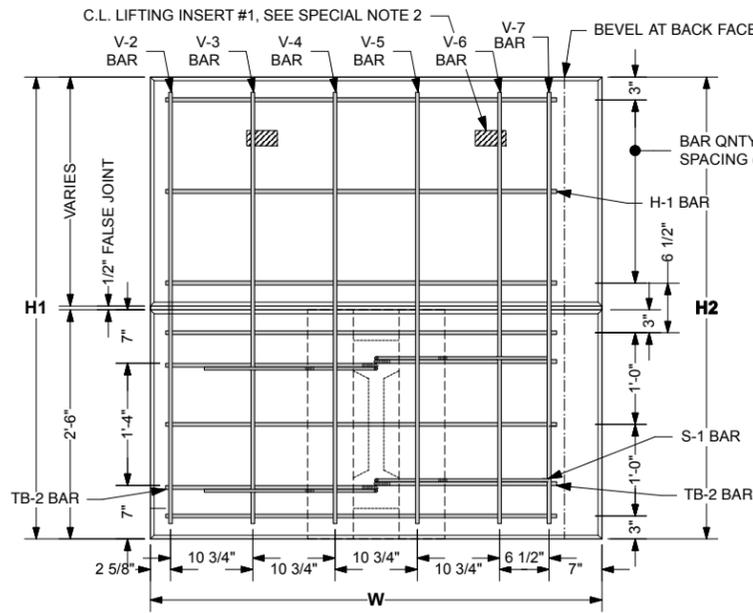
DATE: 4/21/14

DESIGNED BY: KD

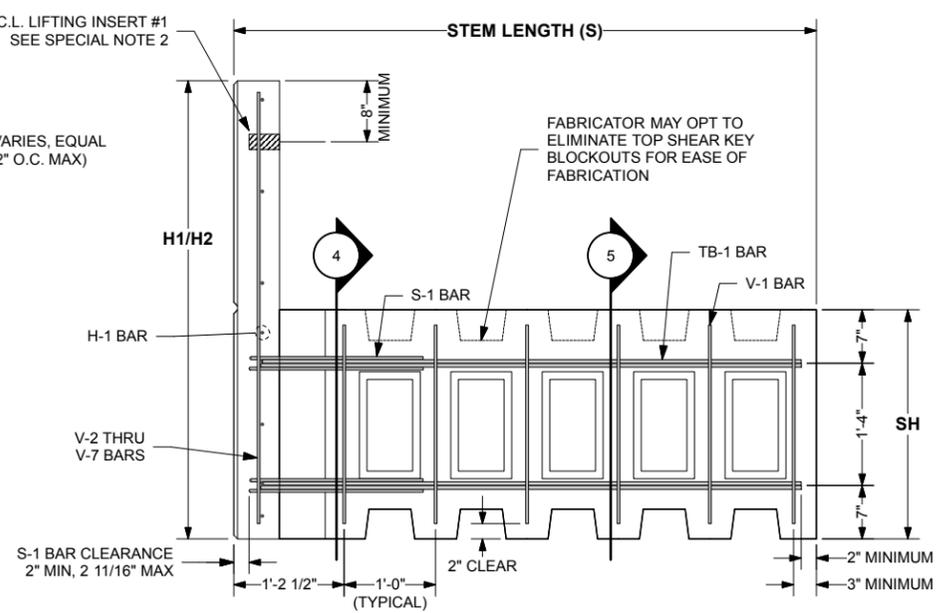
DRAWN BY: ABC

CHECKED BY: CCG

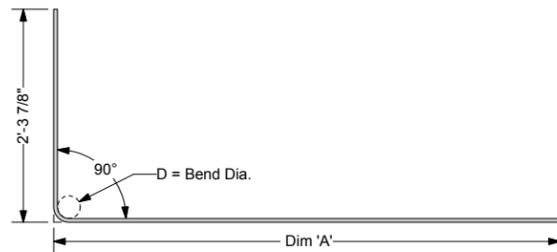
SHEET: 10



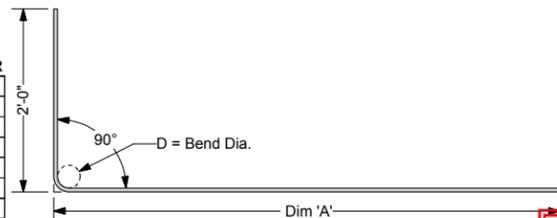
3 FRONT VIEW - 6' STEM UNIT SHOWN  
Scale: 1" = 1'-0" (V-1 BARS IN STEM OMITTED FOR CLARITY)



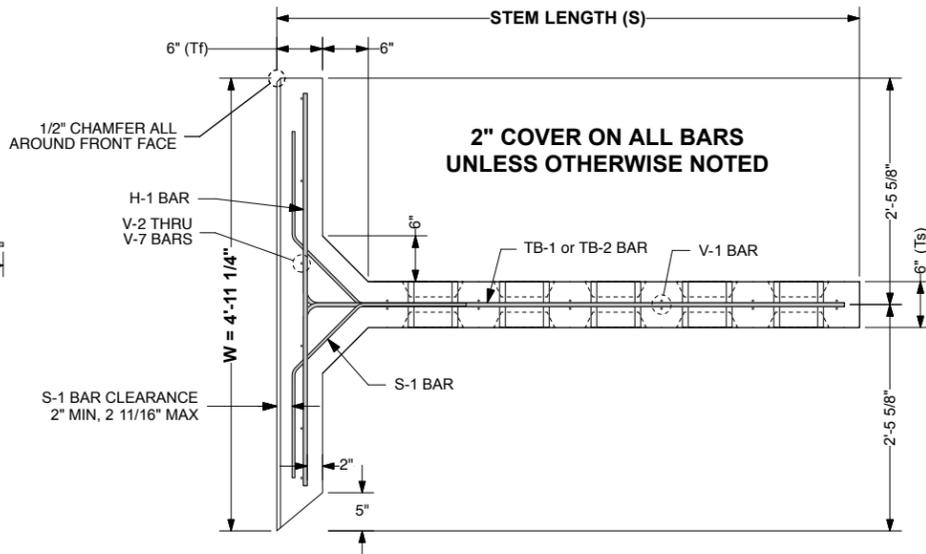
2 SIDE VIEW - 6' STEM UNIT SHOWN  
Scale: 1" = 1'-0"



7 TB-1 REBAR  
Scale: 1" = 1'-0"

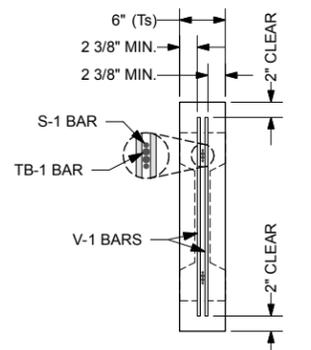


7 TB-1 REBAR  
Scale: 1" = 1'-0"

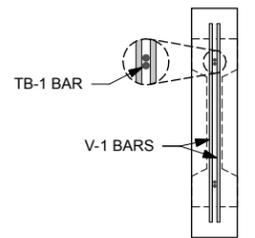


1 PLAN VIEW - 6' STEM UNIT SHOWN  
Scale: 1" = 1'-0" Approved As Noted

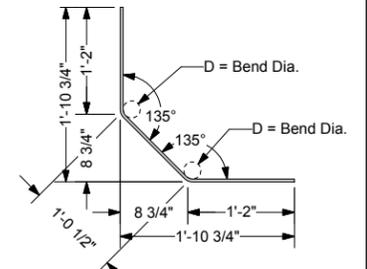
X Approved  
Rejected  
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4 SECTION AT STEM  
Scale: 1" = 1'-0"



5 SECTION AT STEM  
Scale: 1" = 1'-0"



6 S-1 REBAR  
Scale: 1" = 1'-0"

REBAR SCHEDULES

Table for SP22 Highway Rebar with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Bend Dia, Remarks. Total weight: 35.54 lbs.

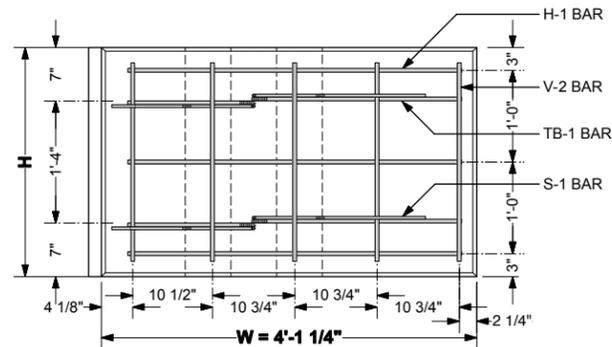
Table for SP21 Highway Rebar with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Bend Dia, Remarks. Total weight: 40.89 lbs.

Table for SP20 Highway Rebar with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Bend Dia, Remarks. Total weight: 68.11 lbs.

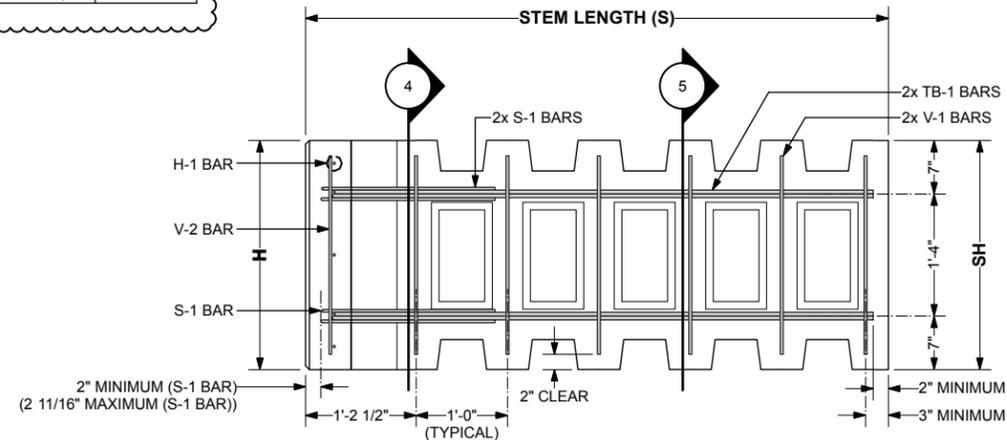
T-WALL UNIT PROPERTIES

Table of unit properties for SP22, SP21, and SP20 including H, W, S, Tf, Ts, SH, Volume, and Weight.

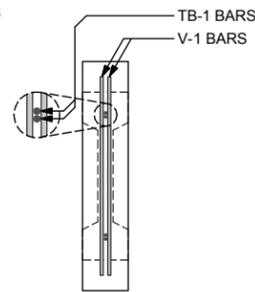
\* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 6" FACE THICKNESS (Tf)



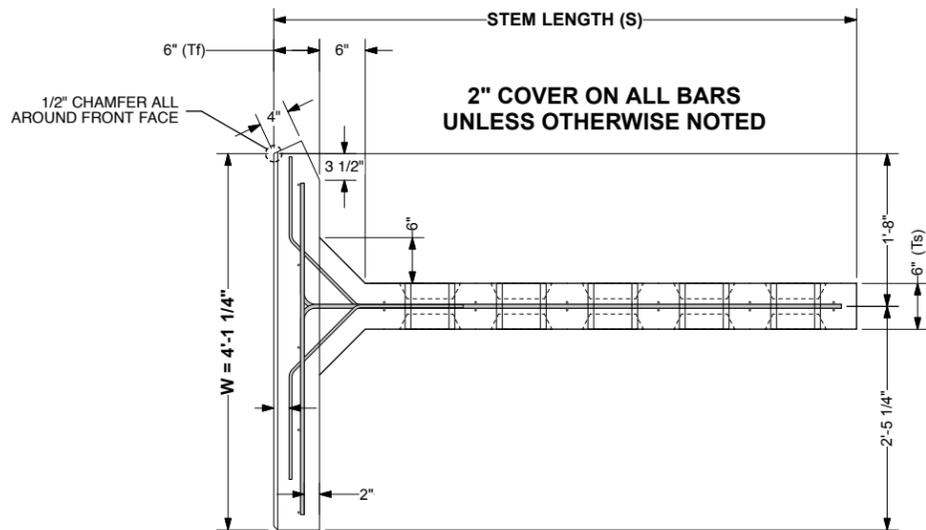
3 FRONT VIEW - 2.5 x 5.0 x 06 Std SHOWN Scale: 1" = 1'-0" (V-1 BARS IN STEM OMITTED FOR CLARITY)



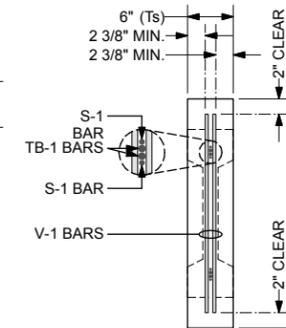
2 SIDE VIEW - 2.5 x 5.0 x 06 Std SHOWN Scale: 1" = 1'-0"



5 SECTION THROUGH STEM Scale: 1" = 1'-0"

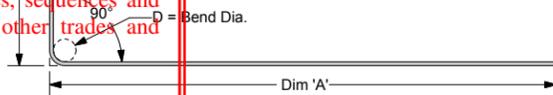


1 PLAN VIEW - 2.5 x 5.0 x 06 Std SHOWN Scale: 1" = 1'-0"

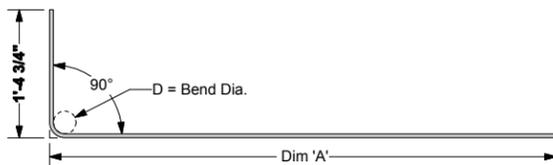


4 SECTION THROUGH STEM Scale: 1" = 1'-0"

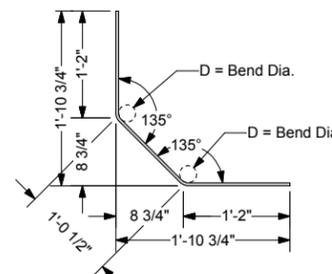
Approval box with 'Approved' and 'Approved As Noted' options, a red 'Rejected' stamp, and a signature block for T. Traver dated 8/8/2014.



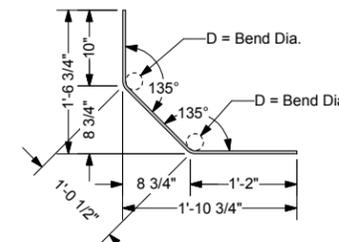
7 TB-1 REBAR Scale: 1" = 1'-0"



8 TB-2 REBAR Scale: 1" = 1'-0"



6 S-1 REBAR Scale: 1" = 1'-0"



9 S-2 REBAR Scale: 1" = 1'-0"

SPECIAL NOTES:

- 1. FRONT FACE OF T-WALL@ UNITS FINISH TREATMENT: PLAIN STEEL FORM FINISH

GENERAL NOTES:

- 1. PRIMARY REFERENCE: AASHTO, LRFD BRIDGE DESIGN SPECIFICATION, 6TH EDITION 2010 (WITH INTERIMS)
2. T-WALL@ CONCRETE: F'c = 5000 psi (MINIMUM) @ 28 DAYS; MINIMUM STRIPPING STRENGTH
3. T-WALL@ REINFORCING STEEL: BLACK; Fy = 60 ksi (GRADE 60); WELDING IS NOT PERMITTED
4. MARKING OF PRECAST UNITS: CLEARLY MARK EACH PRECAST UNIT ON THE BUTT END OF THE STEM WITH THE UNIT TYPE, DATE OF MANUFACTURE, LOT NUMBER, AND TRADEMARK
5. REINFORCING FABRICATION AND PLACEMENT TOLERANCES: THE STRUCTURAL DESIGN OF PRECAST UNITS ASSUMES 2 INCHES OF CONCRETE COVER OVER ALL REINFORCING BARS.



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PROJECT #: T21882

CONTRACTOR: A.L. ST. ONGE CONTRACTORS

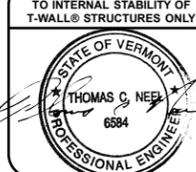
PROJECT #:

DESIGNER



PROJECT #: TW4301

CERTIFIED WITH RESPECT TO INTERNAL STABILITY OF T-WALL@ STRUCTURES ONLY



REVISIONS

Table with columns: No., Description, Date. Row 1: REVIEWER COMMENTS, ABC, 8-6-14

RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT

FAIRFIELD, VT

SHOP DRAWINGS
NARROW LEFT BEVELED UNITS
REBAR AND DIMENSIONS
T-WALL@ RETAINING WALL SYSTEM

SCALE: AS NOTED

DATE: 4/21/14

DESIGNED BY: KD

DRAWN BY: ABC

CHECKED BY: CCG

SHEET: 11

T-WALL UNIT PROPERTIES

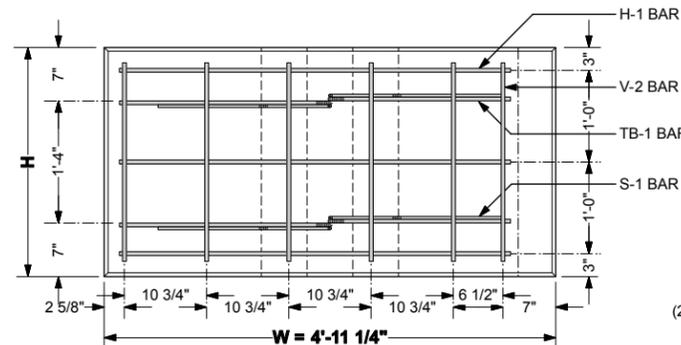
UNIT TYPE	H	W	S	Tf*	Ts	SH	VOLUME*	WEIGHT*
SP24	2'6"	4'11 1/4"	6'4 1/2"	6"	6"	2'6"	0.45 cy	1,815 lbs
SP23	2'6"	4'11 1/4"	8'4 1/2"	6"	6"	2'6"	0.51 cy	2,076 lbs

\* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 6" FACE THICKNESS (Tf)

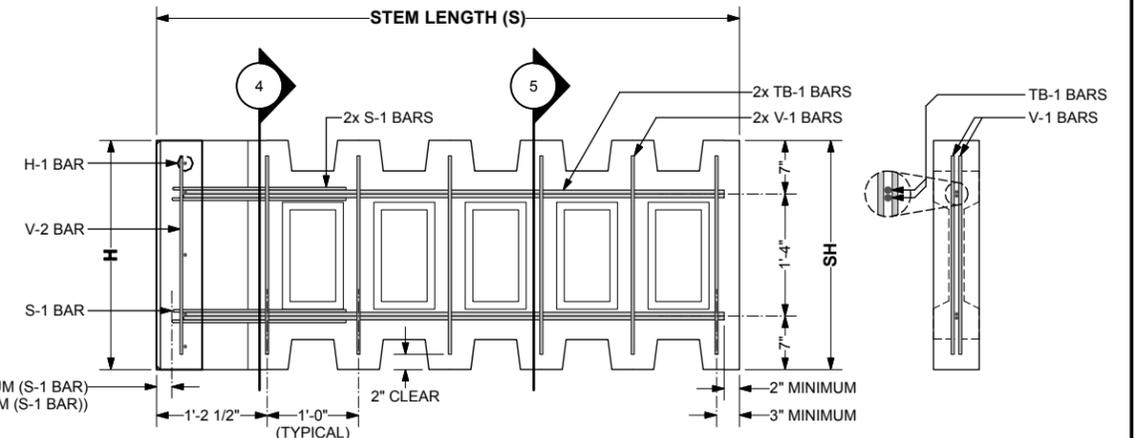
REBAR SCHEDULES

SP24								HIGHWAY REBAR	
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks	
H=2'6"	H-1	3 ea	#4	4'3 3/8"		8.57 lbs			
W=4'11 1/4"	V-1	12 ea	#4	2'2"		17.37 lbs			
S=6'4 1/2"	V-2	3 ea	#4	2'2"		4.34 lbs			
SH=2'6"	S-1	4 ea	#4	3'4 1/2"		9.02 lbs	D= 3"		
	TB-1	2 ea	#4	8'2 7/8"	5'11"	11.01 lbs	D= 3"		
	TB-2	2 ea	#4	7'11"	5'11"	10.58 lbs	D= 3"		
52.31 lbs									

SP23								HIGHWAY REBAR	
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks	
H=2'6"	H-1	3 ea	#4	4'3 3/8"		8.57 lbs			
W=4'11 1/4"	V-1	16 ea	#4	2'2"		23.16 lbs			
S=8'4 1/2"	V-2	3 ea	#4	2'2"		4.34 lbs			
SH=2'6"	S-1	4 ea	#4	3'4 1/2"		9.02 lbs	D= 3"		
	TB-1	2 ea	#4	10'2 7/8"	7'11"	13.68 lbs	D= 3"		
	TB-2	2 ea	#4	9'11"	7'11"	13.25 lbs	D= 3"		
63.45 lbs									



3 FRONT VIEW - 2.5 x 5.0 x 06 Std SHOWN  
Scale: 1" = 1'-0" (V-1 BARS IN STEM OMITTED FOR CLARITY)



2 SIDE VIEW - 2.5 x 5.0 x 06 Std SHOWN  
Scale: 1" = 1'-0"

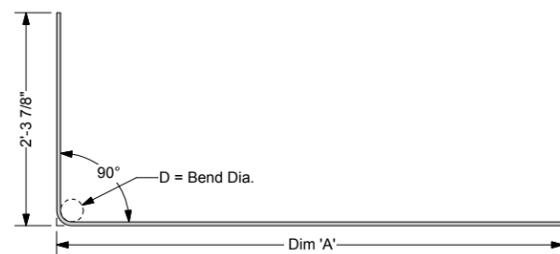
5 SECTION THROUGH STEM  
Scale: 1" = 1'-0"

SPECIAL NOTES:

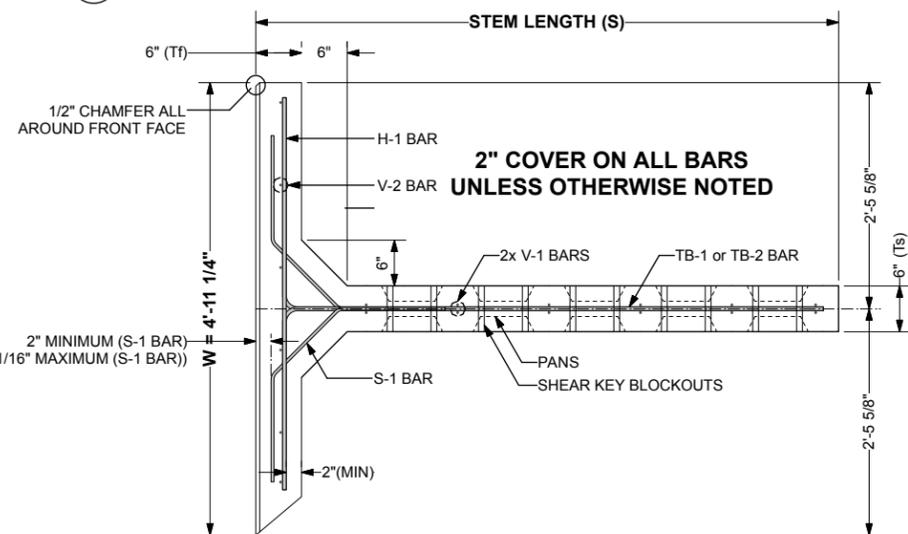
- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
  - PLAIN STEEL FORM FINISH

GENERAL NOTES:

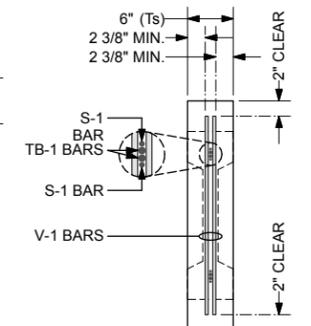
- PRIMARY REFERENCE:
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  - MINIMUM STRIPPING STRENGTH: 2500 psi
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  - UNLESS NOTED OTHERWISE, TOLERANCES FOR BAR FABRICATION SHALL MEET REQUIREMENTS OF STANDARD ACI 318 AND THE CRSI MANUAL OF STANDARD PRACTICE.



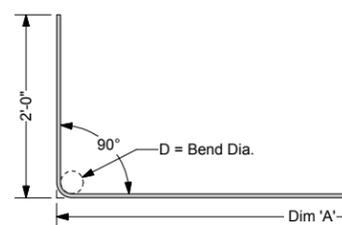
7 TB-1 REBAR  
Scale: 1" = 1'-0"



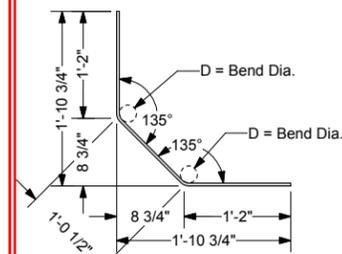
1 PLAN VIEW - 2.5 x 5.0 x 06 Std SHOWN  
Scale: 1" = 1'-0"



4 SECTION THROUGH STEM  
Scale: 1" = 1'-0"



8 TB-2 REBAR  
Scale: 1" = 1'-0"



6 S-1 REBAR  
Scale: 1" = 1'-0"

X **Approved**      — **Approved As Noted**  
— **Rejected**

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Date 8/8/2014

By T. Traver



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**PROJECT #:** T21882

**CONTRACTOR:** A.L. ST. ONGE CONTRACTORS  
**PROJECT #:**

**DESIGNER**

**THE NEEL COMPANY**  
8328-D TRAFORD LANE  
SPRINGFIELD, VIRGINIA 22152  
PH: (703) 913-7858  
FX: (703) 913-7859  
WEB: WWW.NEELCO.COM

**PROJECT #:** TW4301

CERTIFIED WITH R TO INTERNAL STA T-WALL® STRUCTU

**McFarland Johnson**

PROFESSIONAL ENGINEER  
6584

**RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT**

FAIRFIELD, VT

SHOP DRAWINGS  
NARROW RIGHT BEVELED UNITS  
REBAR AND DIMENSIONS  
T-WALL® RETAINING WALL SYSTEM

SCALE: AS NOTED

DATE: 4/21/14

DESIGNED BY: KD

DRAWN BY: ABC

CHECKED BY: CCG

SHEET: 12