

# RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT

## FAIRFIELD, VT

### T-WALL® RETAINING WALL SYSTEM

#### DESIGNER



#### THE NEEL COMPANY

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SPRINGFIELD, VIRGINIA 22152  
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WEB: WWW.NEELCO.COM

#### PRECASTER

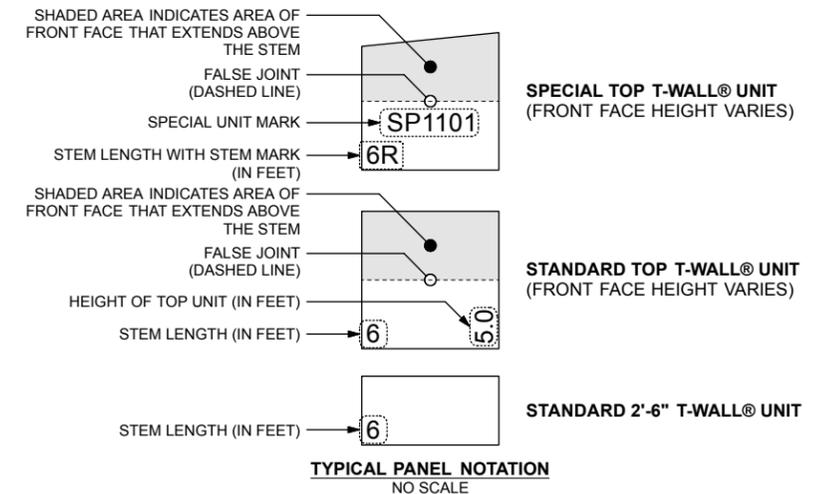


Concrete Systems Inc.  
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Fax 603-889-2417  
Web www.csigroup.biz

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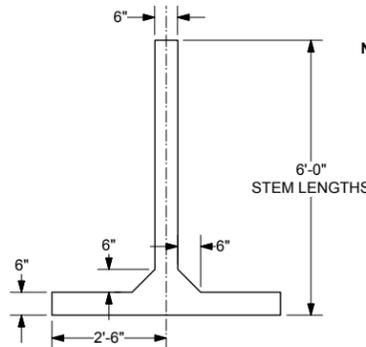
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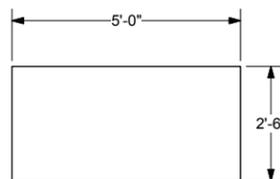
NOTES:  
• UNIT STEM LENGTHS RANGE FROM 4'-0" TO 20'-0", IN 2'-0" INCREMENTS

#### T-WALL® UNIT WEIGHTS

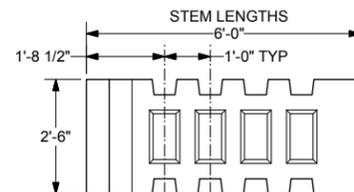
PANEL TYPES	WEIGHTS
2.5x5.0x08 Std	2088 lbs
2.5x5.0x10 Std	2349 lbs
2.5x5.0x12 Std	2610 lbs
SLOPED-TOP (MIN)	2198 lbs
SLOPED-TOP (MAX)	3164 lbs



TOP VIEW

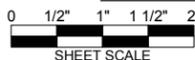


FRONT VIEW



SIDE VIEW

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



SHEET SCALE

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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

PROJECT #: T21882

CONTRACTOR: A.L. ST. ONGE CONTRACTORS

PROJECT #:

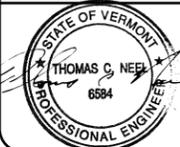
#### DESIGNER



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PROJECT #: TW4301

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



#### REVISIONS

NO.	DESCRIPTION	DATE

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

FAIRFIELD, VT

SHOP DRAWINGS  
COVER SHEET

T-WALL® RETAINING WALL SYSTEM

SCALE: NO SCALE

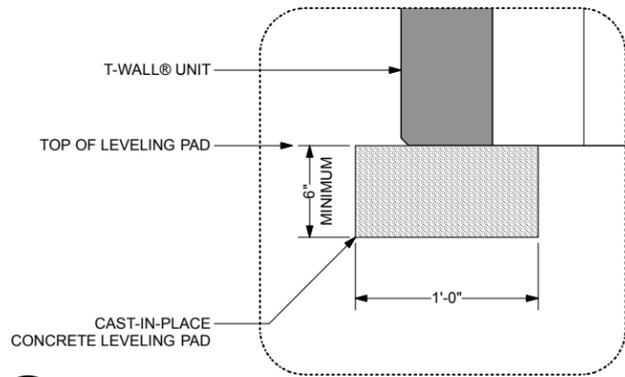
DATE: 4/21/14

DESIGNED BY: KD

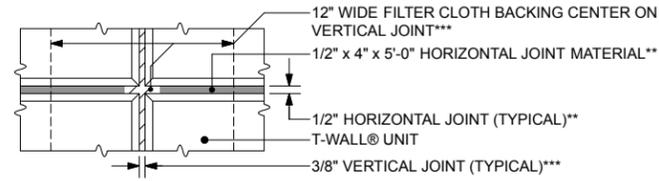
DRAWN BY: ABC

CHECKED BY: CCG

SHEET: 1



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



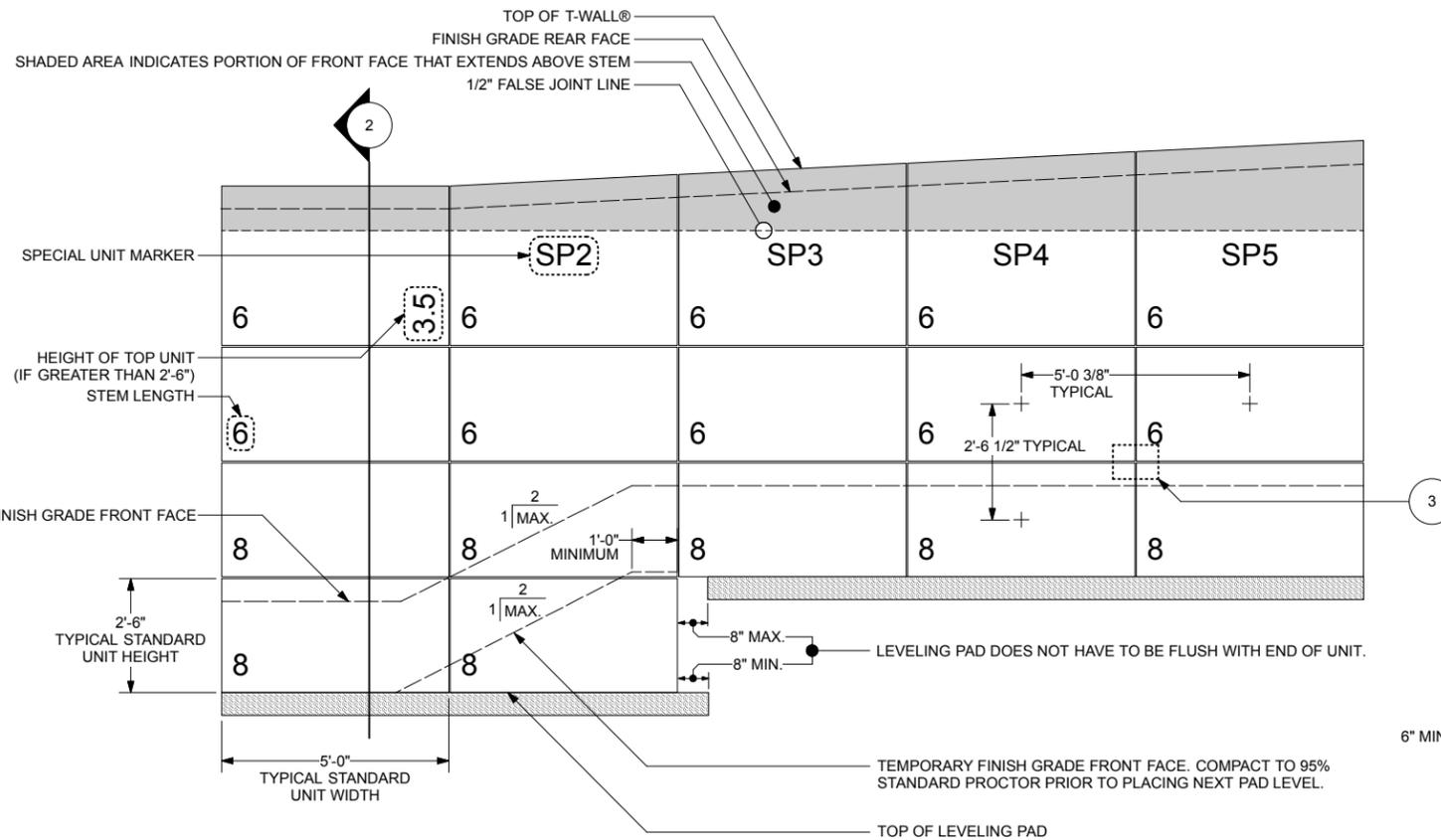
**3 HORIZONTAL AND VERTICAL JOINT DETAIL**  
Scale: 2" = 1'-0"  
\*\* SEE GENERAL NOTE 4 ON SHEET 3 FOR ADDITIONAL DETAILS  
\*\*\* SEE GENERAL NOTE 5 ON SHEET 3 FOR ADDITIONAL DETAILS

**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.

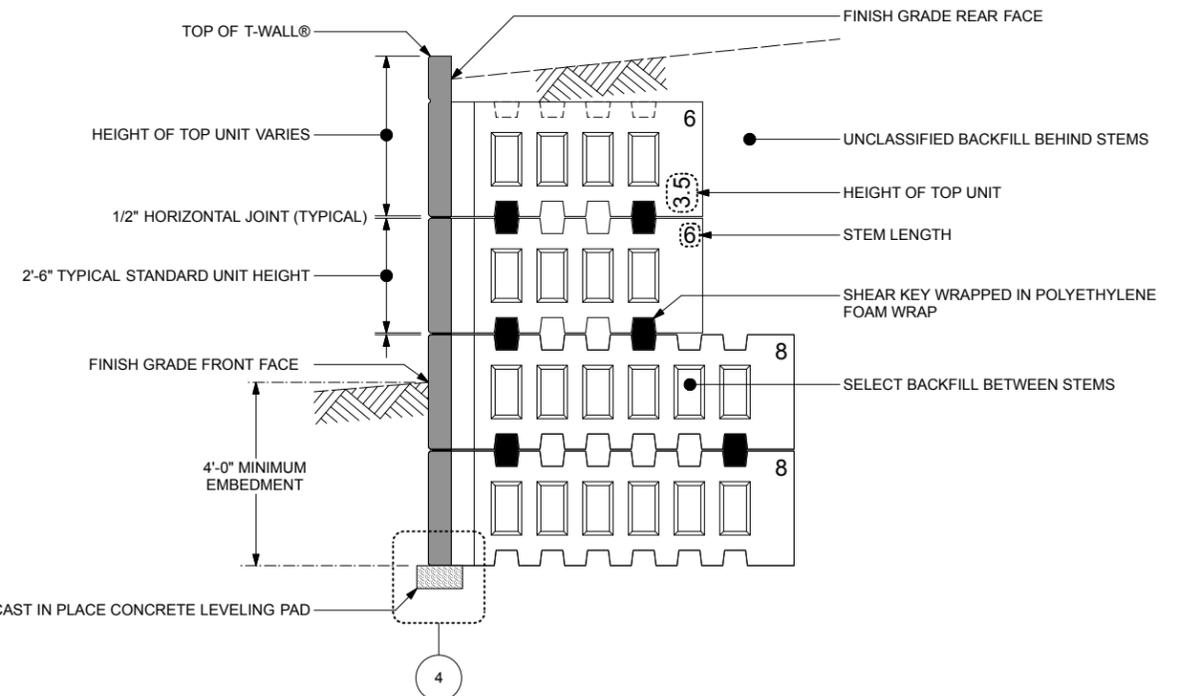
**SHEAR KEY NOTES:**

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.



**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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**PROJECT #:**

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**PROJECT #:** TW4301



REVISIONS	

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

FAIRFIELD, VT

SHOP DRAWINGS  
TYPICAL T-WALL® NOMENCLATURE

T-WALL® RETAINING WALL SYSTEM

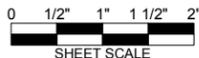
SCALE:	AS NOTED
DATE:	4/21/14
DESIGNED BY:	KD
DRAWN BY:	ABC
CHECKED BY:	CCG
SHEET:	2

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

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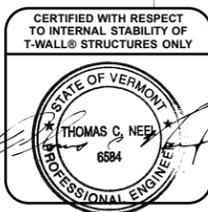
**CONTRACTOR:** A.L. ST. ONGE CONTRACTORS  
**PROJECT #:**

**DESIGNER**



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**PROJECT #:** TW4301



REVISIONS	

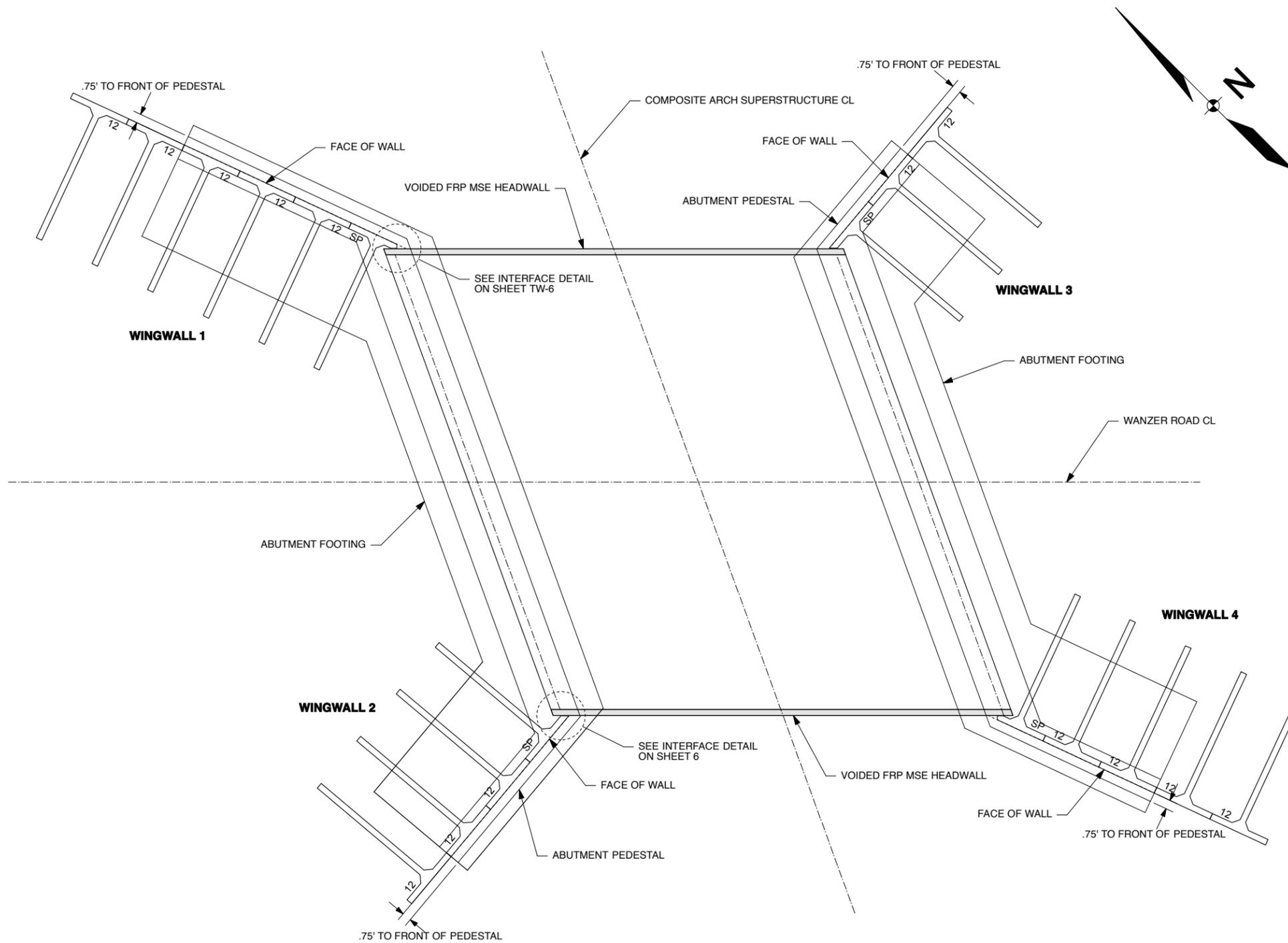
**RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT**

**FAIRFIELD, VT**

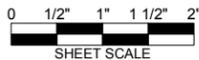
SHOP DRAWINGS  
 NOTES

T-WALL® RETAINING WALL SYSTEM

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



1 PLAN  
1" = 5 ft



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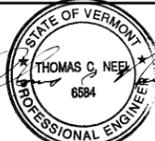
**DESIGNER**



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REVISIONS	

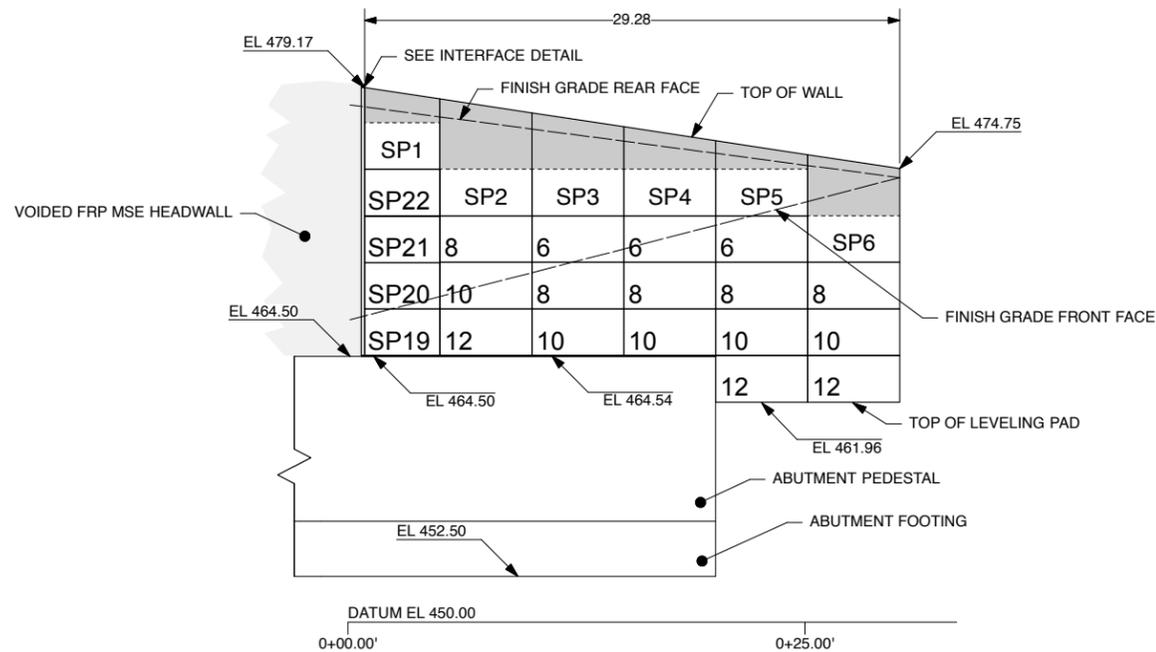
**RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT**

FAIRFIELD, VT

SHOP DRAWINGS  
 WALL DRAWINGS  
 PLAN VIEW

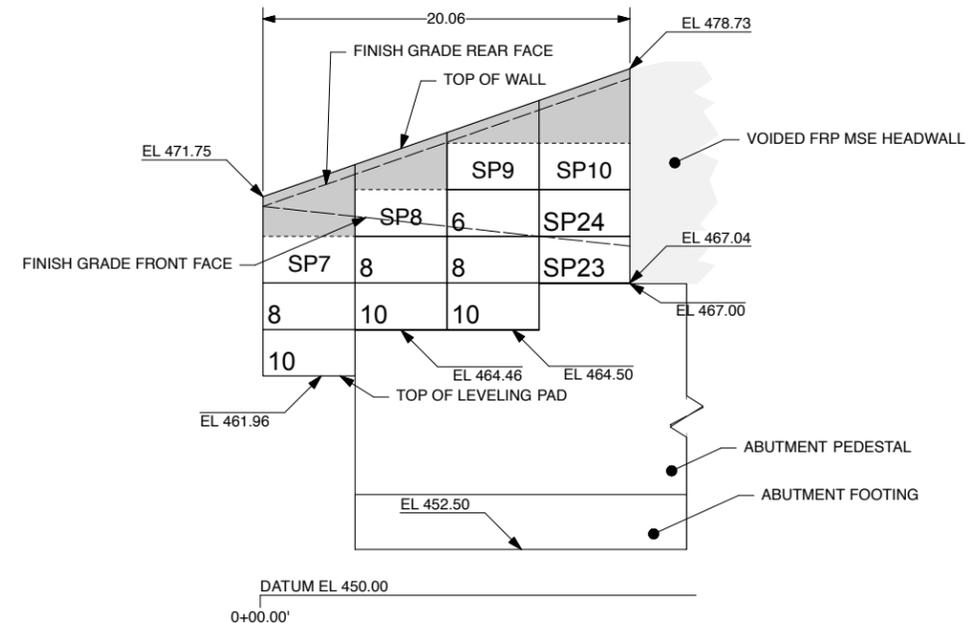
T-WALL® RETAINING WALL SYSTEM

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



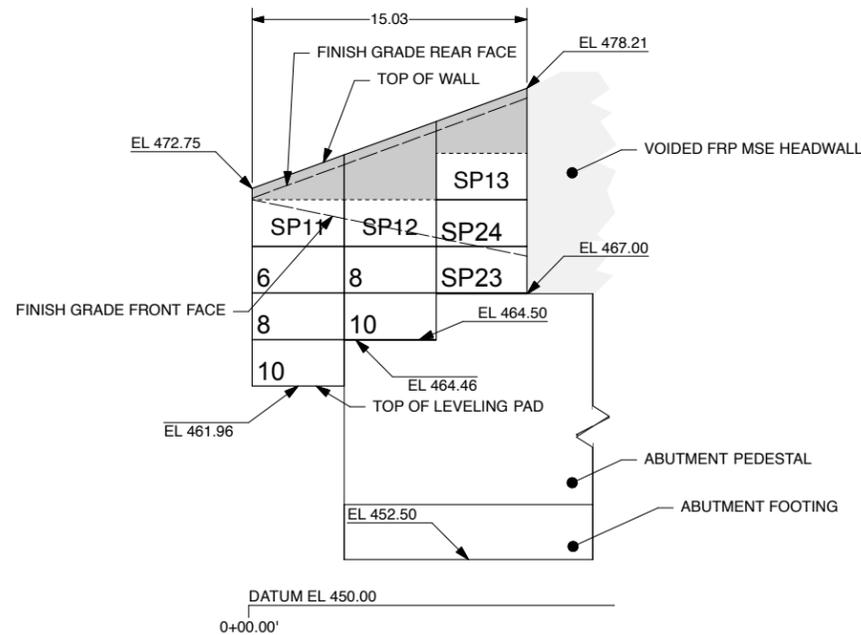
1 WINGWALL 1 DEVELOPED ELEVATION (FRONT FACE)  
1" = 5 ft

NOTE: SEE ELEVATION DETAIL ON NEXT SHEET



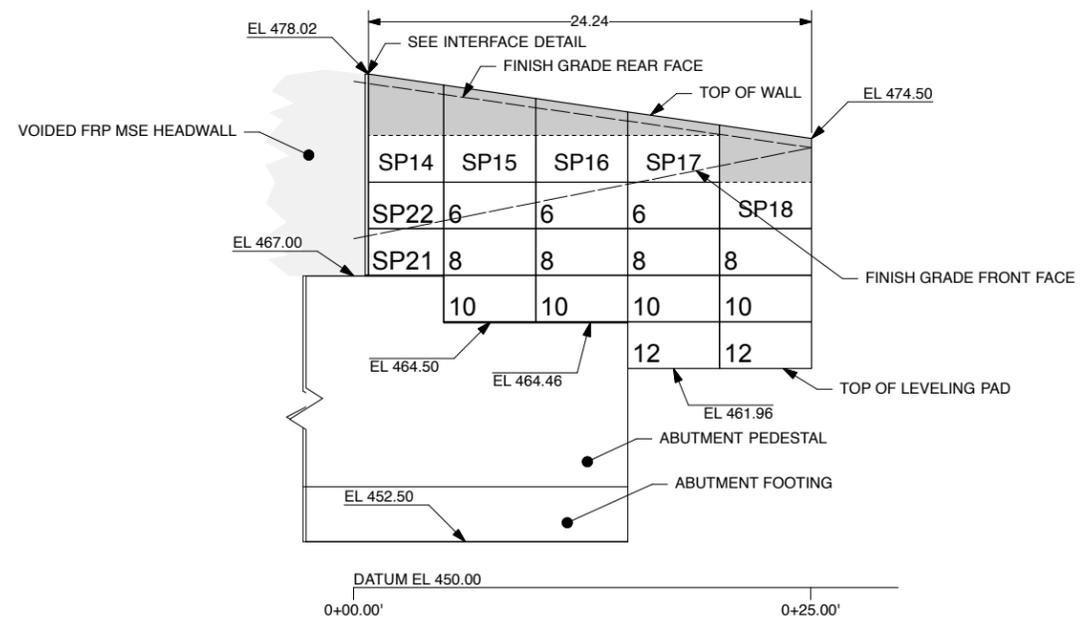
2 WINGWALL 2 DEVELOPED ELEVATION (FRONT FACE)  
1" = 5 ft

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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PRECASTER: CONCRETE SYSTEMS, INC. CSI

PROJECT #: T21882

CONTRACTOR: A.L. ST. ONGE CONTRACTORS

PROJECT #:

DESIGNER



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REVISIONS

NO.	DESCRIPTION	DATE

RIGIDIFIED TUBE FRP ARCH (RTFA) PROJECT

FAIRFIELD, VT

SHOP DRAWINGS  
WALL DRAWINGS  
DEVELOPED ELEVATIONS

T-WALL® RETAINING WALL SYSTEM

SCALE: AS NOTED

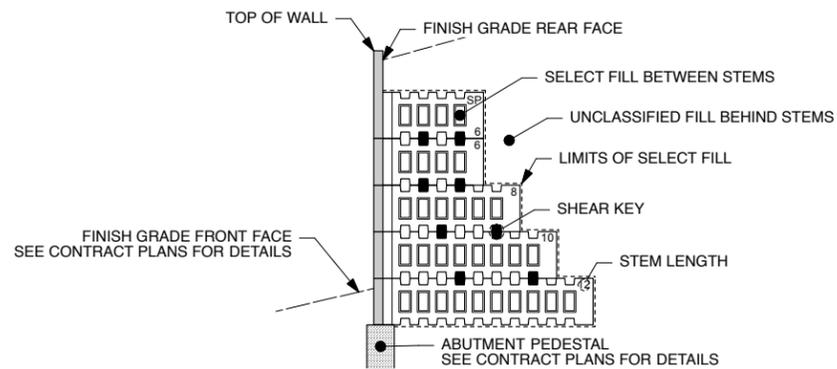
DATE: 4/21/14

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** 4/21/14 1:59:16 PM

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	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	10	183.86	25
<b>TOTALS:</b>	<b>26 ea</b>	<b>383.86 sf</b>	<b>83 cy</b>

NOTE: Select backfill quantities are between stems only.

**T-WALL Unit Count for Wingwall 2** 4/16/14 10:33:47 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	6	124.99	15
<b>TOTALS:</b>	<b>13 ea</b>	<b>212.49 sf</b>	<b>39 cy</b>

NOTE: Select backfill quantities are between stems only.

**T-WALL Unit Count for Wingwall 3** 4/16/14 10:34:08 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	2	25.00	6
2.5 x 5.0 x 10 Std	2	25.00	8
Special Units	5	100.20	12
<b>TOTALS:</b>	<b>10 ea</b>	<b>162.70 sf</b>	<b>29 cy</b>

NOTE: Select backfill quantities are between stems only.

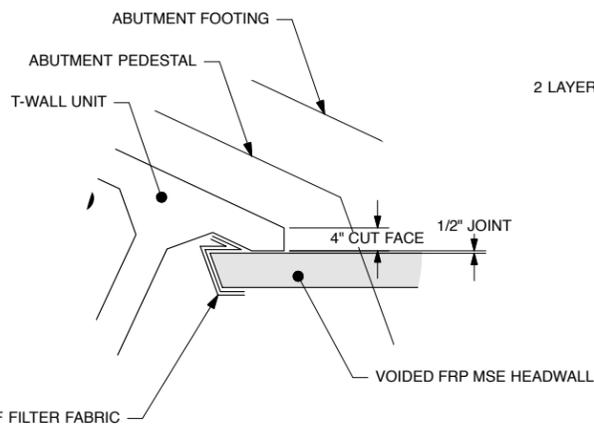
**T-WALL Unit Count for Wingwall 4** 4/18/14 10:36:30 AM

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	7	137.82	17
<b>TOTALS:</b>	<b>20 ea</b>	<b>300.32 sf</b>	<b>63 cy</b>

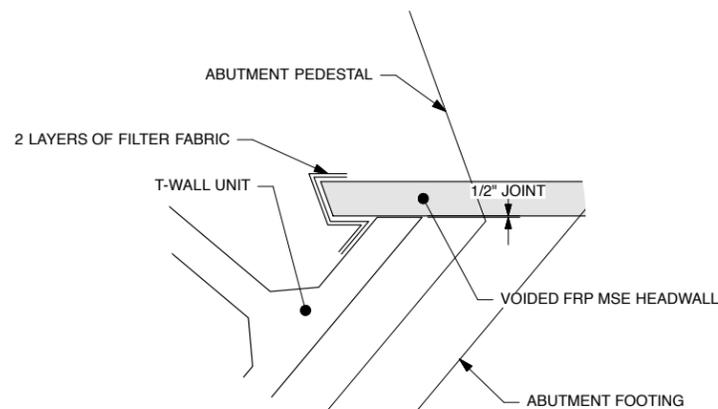
NOTE: Select backfill quantities are between stems only.

**SHIP LOOSE LIST FOR WINGWALL 4**

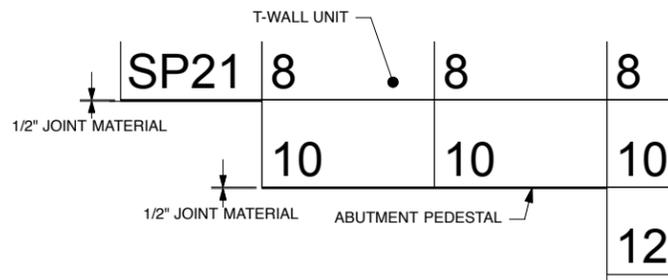
ITEM	QNTY
T-Wall Lifting Device	1 ea
Shear Keys	102 ea
Mirafi 160N Filter Fabric (12" wide)	287 lf
1/2" x 4" x 5' Horizontal Joint Material	255 lf



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.



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NO.	DESCRIPTION	DATE

**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

**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)

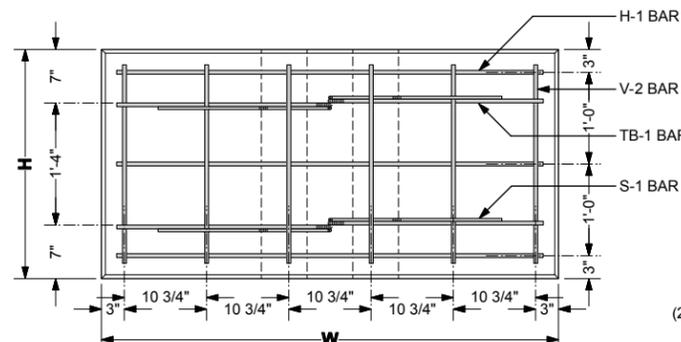
**REBAR SCHEDULES**

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			

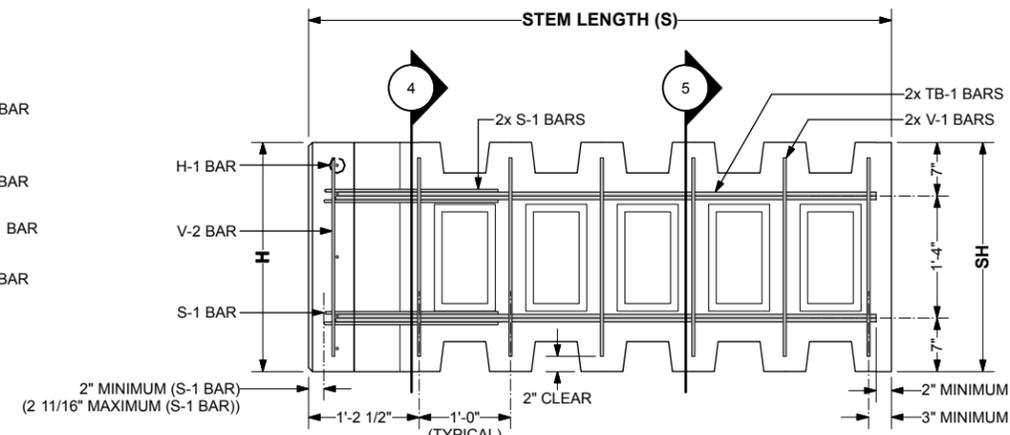
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks	
H=2'6"	H-1	3 ea	#4	4'8"		9.35 lbs			
W=5'0"	V-1	16 ea	#4	2'2"		23.16 lbs			
S=8'4 1/2"	V-2	6 ea	#4	2'2"		8.68 lbs			
SH=2'6"	S-1	4 ea	#4	3'4 1/2"		9.02 lbs	D= 3"		
	TB-1	4 ea	#4	10'2"	7'11"	27.16 lbs	D= 3"		
						77.37 lbs			

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			

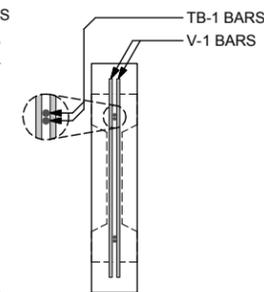
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks	
H=2'6"	H-1	3 ea	#4	4'8"		9.35 lbs			
W=5'0"	V-1	20 ea	#4	2'2"		16.29 lbs			
S=12'4 1/2"	V-2	6 ea	#4	2'2"		4.89 lbs			
SH=2'6"	S-1	4 ea	#4	3'4 1/2"		5.08 lbs	D= 2 1/4"		
	TB-1	4 ea	#4	12'2"	9'11"	32.50 lbs	D= 3"		
						68.11 lbs			



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"



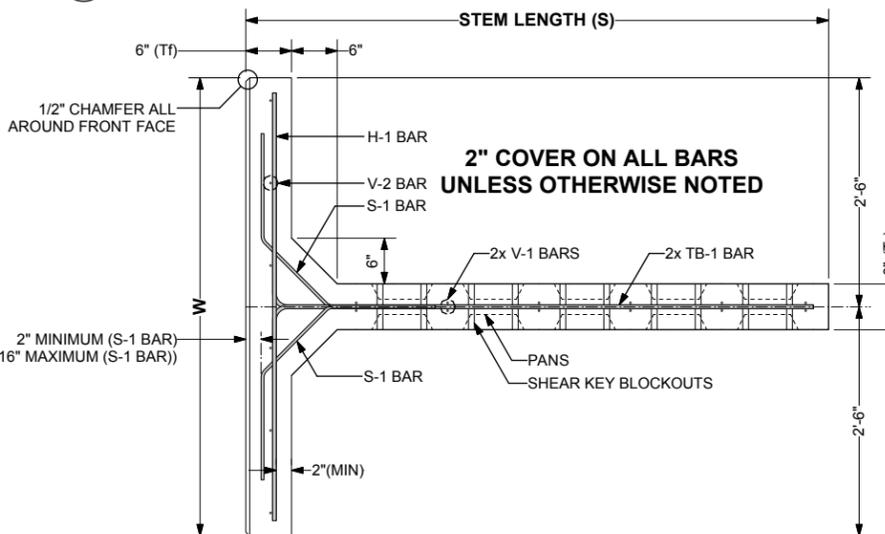
5 SECTION THROUGH STEM  
Scale: 1" = 1'-0"

**SPECIAL NOTES:**

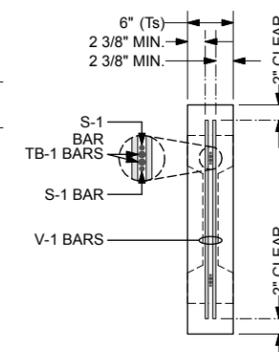
- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
  - PLAIN STEEL FORM FINISH

**GENERAL NOTES:**

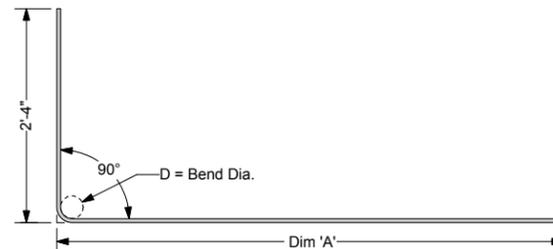
- PRIMARY REFERENCE:
  - AASHTO, LRFD BRIDGE DESIGN SPECIFICATION, 5TH EDITION 2010 (WITH INTERIMS)
- T-WALL® CONCRETE:
  - F<sub>c</sub> = 5000 psi (MINIMUM) @ 28 DAYS
  - MINIMUM STRIPPING STRENGTH: 2500 psi
- T-WALL® REINFORCING STEEL:
  - BLACK
  - F<sub>y</sub> = 60 ksi (GRADE 60)
  - WELDING IS 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 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.



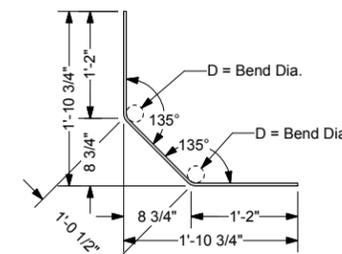
1 PLAN VIEW - 2.5 x 5.0 x 06 Std SHOWN  
Scale: 1" = 1'-0"



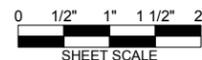
4 SECTION THROUGH STEM  
Scale: 1" = 1'-0"



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



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



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

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



**REVISIONS**

NO.	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

**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 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.

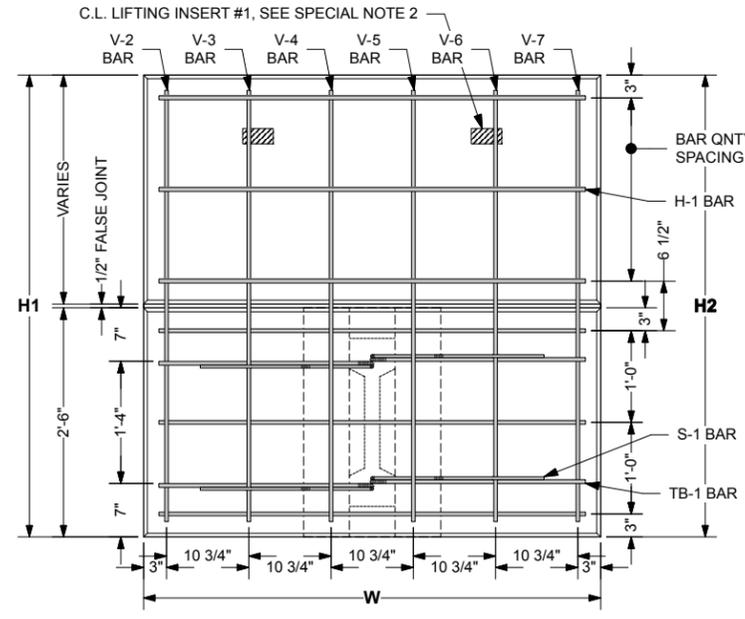
**REBAR SCHEDULES**

**6' STEM SPECIAL UNITS**

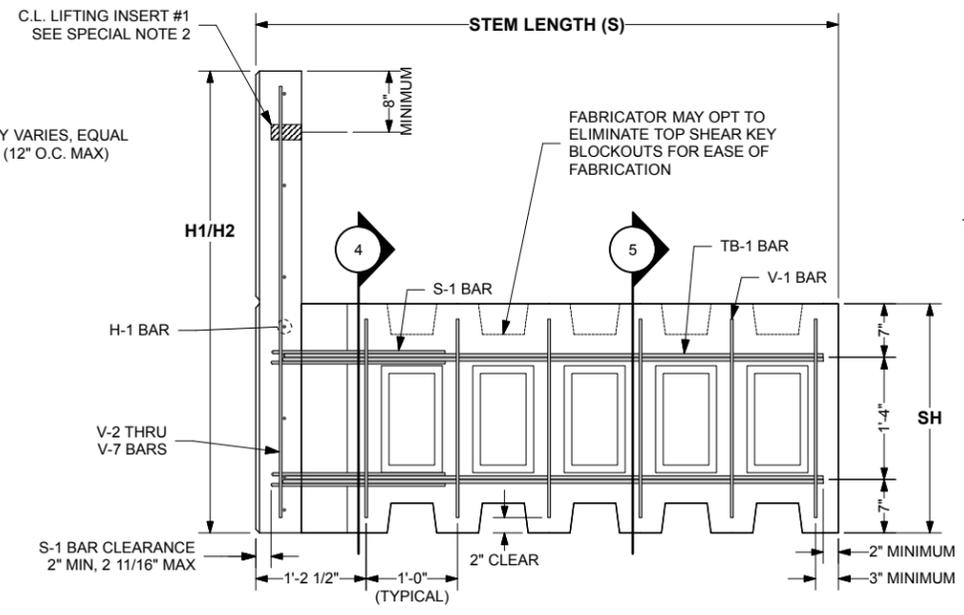
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks
H=VARIES	H-1	VARIES	#4	4'8"				SEE SLOPED TOP UNIT SCHEDULE
W=5'0"	V-1	12 ea	#4	2'2"		17.37 lbs		
S=6'4 1/2"	V-2 THRU V-7	1 ea	#5	VARIES				SEE SLOPED TOP UNIT SCHEDULE
SH=2'6"	S-1	4 ea	#4	3'4 1/2"		9.02 lbs	D=3"	
	TB-1	4 ea	#4	8'3"	5'11"	22.04 lbs	D=3"	

**SLOPED TOP UNIT SCHEDULE:**

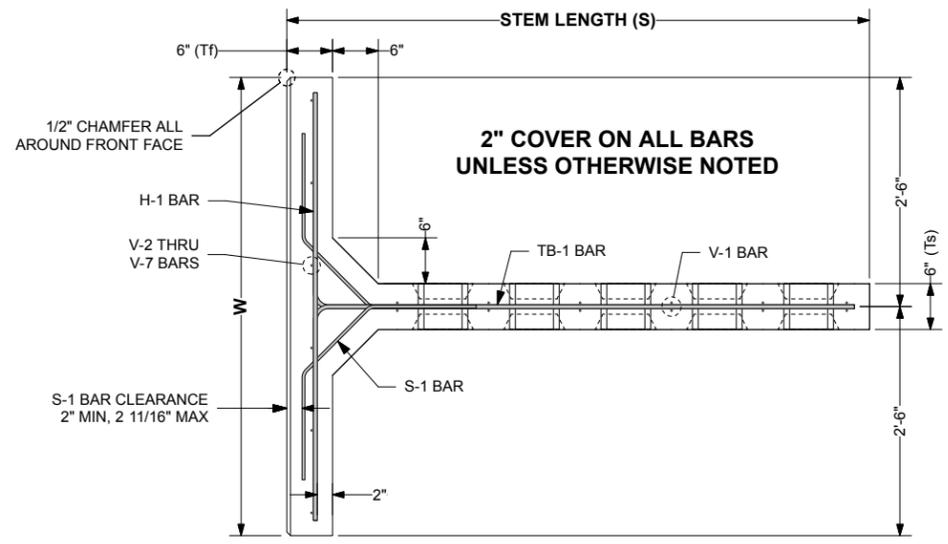
MARK No.	QNTY	STEM	WIDTH	H1	H2	H-1 BAR	V-2 BAR	V-3 BAR	V-4 BAR	V-5 BAR	V-6 BAR	V-7 BAR	VOL	WEIGHT	AREA
SP2	1 ea	6'0"	5'0"	6'4 1/2"	5'7 3/8"	7 ea	6'0"	5'10 1/4"	5'8 3/8"	5'7 1/2"	5'5 5/8"	5'3 7/8"	0.78 cy	3,147 lbs	29.97 sf
SP3	1 ea	6'0"	5'0"	5'7 3/8"	4'10 1/4"	7 ea	5'2 7/8"	5'1 1/8"	4'11 1/4"	4'10 3/8"	4'8 1/2"	4'6 3/4"	0.71 cy	2,862 lbs	26.17 sf
SP4	1 ea	6'0"	5'0"	4'10 1/4"	4'1 1/8"	6 ea	4'5 3/4"	4'4"	4'2 1/8"	4'1 1/4"	3'11 3/8"	3'9 5/8"	0.64 cy	2,576 lbs	22.37 sf
SP5	1 ea	6'0"	5'0"	4'1 1/8"	3'4"	5 ea	3'8 5/8"	3'6 7/8"	3'5"	3'4 1/8"	3'2 1/4"	3'0 1/2"	0.57 cy	2,291 lbs	18.57 sf
SP6	1 ea	6'0"	5'0"	5'10 1/2"	5'1 3/8"	7 ea	5'6"	5'4 1/4"	5'2 3/8"	5'1 1/2"	4'11 5/8"	4'9 7/8"	0.73 cy	2,959 lbs	27.47 sf
SP7	1 ea	6'0"	5'0"	4'8 1/2"	6'5 1/2"	7 ea	4'5 5/8"	4'9 7/8"	5'2"	5'4 1/8"	5'8 1/4"	6'0 3/8"	0.74 cy	2,993 lbs	27.93 sf
SP8	1 ea	6'0"	5'0"	3'11"	5'8"	7 ea	3'8 1/8"	4'0 3/8"	4'4 1/2"	4'6 5/8"	4'10 3/4"	5'2 7/8"	0.67 cy	2,697 lbs	23.98 sf
SP9	1 ea	6'0"	5'0"	3'1 1/2"	4'10 1/2"	6 ea	2'10 3/4"	3'2 7/8"	3'7"	3'9 1/8"	4'1 1/4"	4'5 3/8"	0.59 cy	2,401 lbs	20.02 sf
SP11	1 ea	6'0"	5'0"	3'1 7/8"	4'11 7/8"	6 ea	2'11 1/8"	3'3 1/2"	3'7 3/4"	3'10"	4'2 3/8"	4'6 3/4"	0.60 cy	2,427 lbs	20.38 sf
SP12	1 ea	6'0"	5'0"	4'11 7/8"	6'9 7/8"	8 ea	4'9 1/8"	5'5 3/4"	5'8"	6'0 1/4"	6'4 5/8"	6'4 5/8"	0.77 cy	3,113 lbs	29.52 sf
SP15	1 ea	6'0"	5'0"	5'3 1/2"	4'6 3/4"	6 ea	4'11"	4'9 1/4"	4'7 1/2"	4'6 5/8"	4'4 7/8"	4'3 1/4"	0.68 cy	2,746 lbs	24.62 sf
SP16	1 ea	6'0"	5'0"	4'6 3/4"	3'10"	6 ea	4'2 1/4"	4'0 1/2"	3'10 3/4"	3'9 7/8"	3'8 1/8"	3'6 1/2"	0.61 cy	2,472 lbs	20.97 sf
SP17	1 ea	6'0"	5'0"	3'10"	3'1 1/4"	5 ea	3'5 1/2"	3'3 3/4"	3'2"	3'1 1/8"	2'11 3/8"	2'9 5/8"	0.54 cy	2,198 lbs	17.32 sf
SP18	1 ea	6'0"	5'0"	5'7 3/4"	4'11"	7 ea	5'3 3/8"	5'1 5/8"	4'11 7/8"	4'11"	4'9 1/4"	4'7 1/2"	0.71 cy	2,881 lbs	26.43 sf



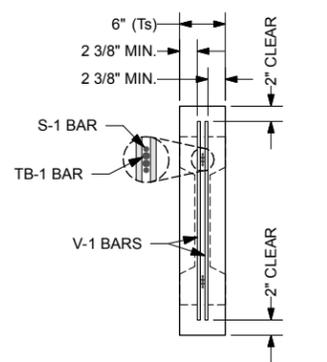
**3 FRONT VIEW - 6' STEM UNIT SHOWN**  
Scale: 1" = 1'-0" (V-1 BARS IN STEM OMITTED FOR CLARITY)



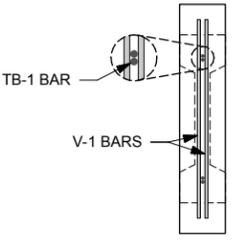
**2 SIDE VIEW - 6' STEM UNIT SHOWN**  
Scale: 1" = 1'-0"



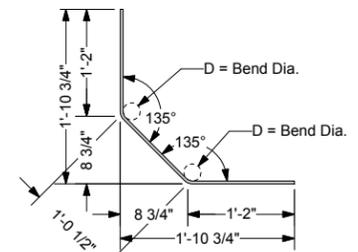
**1 PLAN VIEW - 6' STEM UNIT SHOWN**  
Scale: 1" = 1'-0"



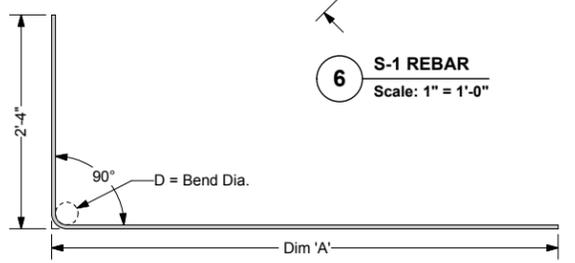
**4 SECTION AT STEM**  
Scale: 1" = 1'-0"



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



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



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



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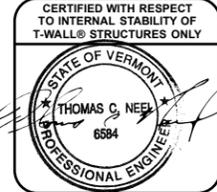
This drawing contains information proprietary to The Neel Company. T-WALL® is a registered trademark owned by The Neel Company. ©2014 The Neel Company

**PRECASTER:** CONCRETE SYSTEMS, INC. CSI  
**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



NO.	DATE	DESCRIPTION

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

FAIRFIELD, VT

SHOP DRAWINGS  
SLOPED TOP UNITS  
REBAR AND DIMENSIONS

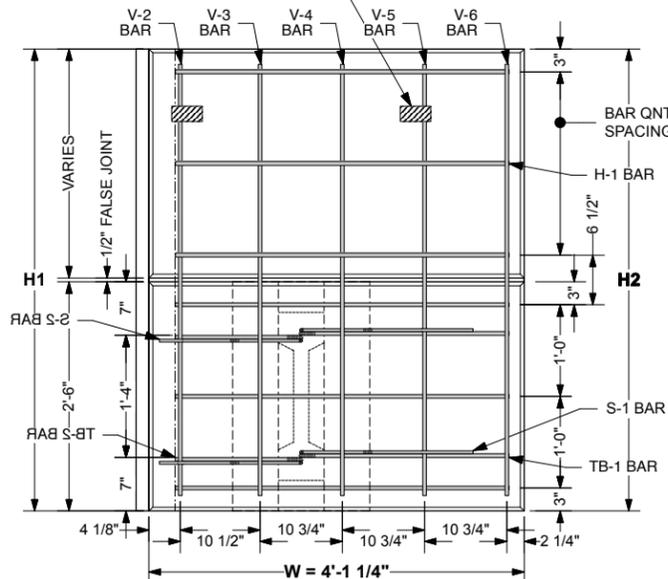
T-WALL® RETAINING WALL SYSTEM

SCALE: AS NOTED  
DATE: 4/21/14  
DESIGNED BY: KD  
DRAWN BY: ABC  
CHECKED BY: CCG  
SHEET: 8

**GENERAL NOTES:**

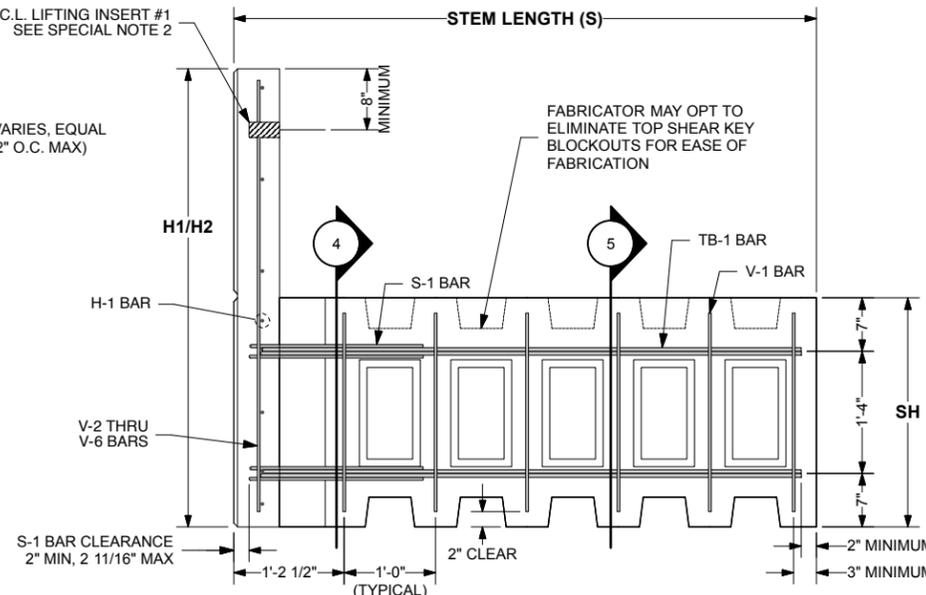
- PRIMARY REFERENCE:
  - AASHTO, LRFD BRIDGE DESIGN SPECIFICATION, 5TH EDITION 2010 (WITH INTERIMS)
- T-WALL@ CONCRETE:
  - F<sub>c</sub> = 5000 psi (MINIMUM) @ 28 DAYS
  - MINIMUM STRIPPING STRENGTH: 2500 psi
- T-WALL@ REINFORCING STEEL:
  - BLACK
  - F<sub>y</sub> = 60 ksi (GRADE 60)
  - WELDING IS 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 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.

C.L. LIFTING INSERT #1, SEE SPECIAL NOTE 2

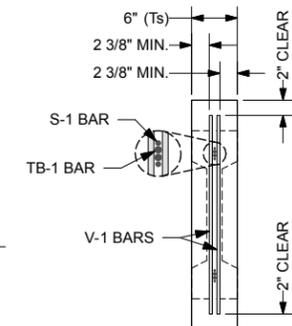


**3 FRONT VIEW - 6' STEM UNIT SHOWN**  
Scale: 1" = 1'-0" (V-1 BARS IN STEM OMITTED FOR CLARITY)

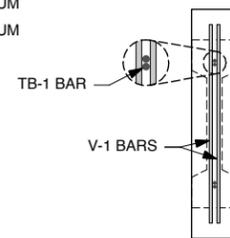
C.L. LIFTING INSERT #1 SEE SPECIAL NOTE 2



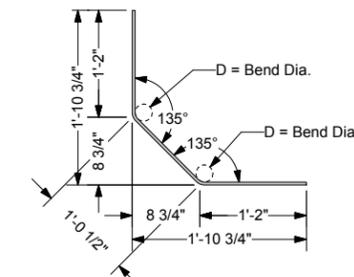
**2 SIDE VIEW - 6' STEM UNIT SHOWN**  
Scale: 1" = 1'-0"



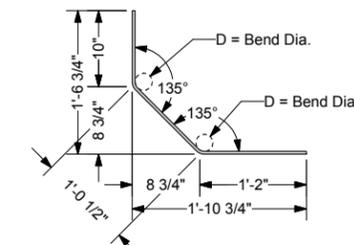
**4 SECTION AT STEM**  
Scale: 1" = 1'-0"



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



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



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

**SPECIAL NOTES:**

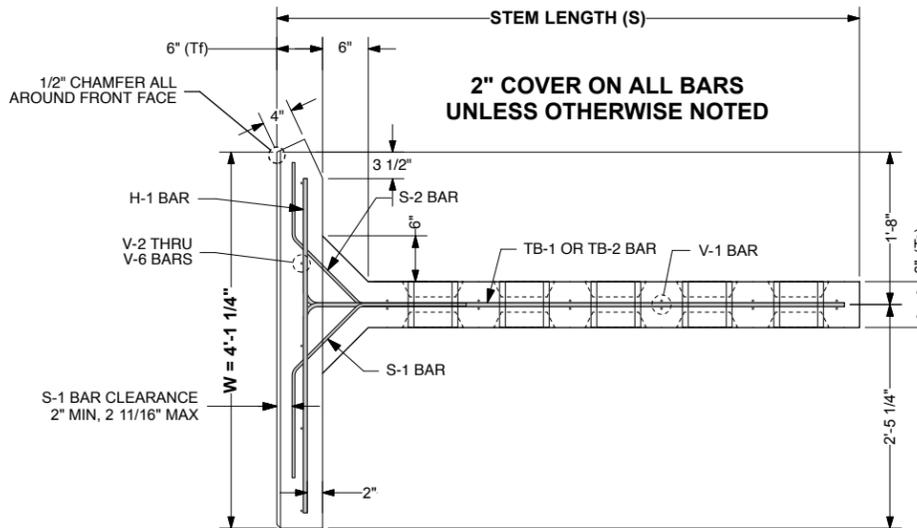
- FRONT FACE OF T-WALL@ UNITS FINISH TREATMENT:
  - PLAIN STEEL FORM FINISH
- LIFTING INSERTS CAPACITY:
  - TWO QUICKLIFT 'QL050G' LIFTING INSERTS OR EQUAL, SPACED AT LEAST 30" APART.
  - 2000 LBS (1 TON) MINIMUM RATED WORKING LOAD CAPACITY.
  - MINIMUM CONCRETE STRENGTH SHALL BE 3,500 psi PRIOR TO STRIPPING 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**

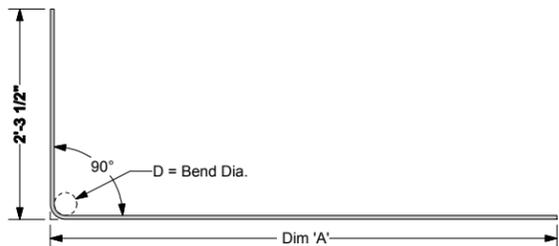
6' STEM SPECIAL UNITS								HIGHWAY REBAR		Remarks
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia			
H=VARIES	H-1	VARIES	#4	4'1 1/4"						SEE SLOPED TOP UNIT SCHEDULE
W=4'1 1/4"	V-1	12 ea	#4	2'2"		17.37 lbs				
S=6'4 1/2"	V-2 THRU V-6	1 ea	#4	VARIES						SEE SLOPED TOP UNIT SCHEDULE
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:**

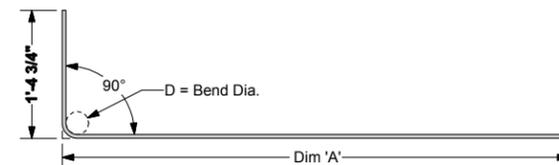
MARK No.	QNTY	STEM	WIDTH	H1	H2	H-1 BAR	V-2 BAR	V-3 BAR	V-4 BAR	V-5 BAR	V-6 BAR	VOL	WEIGHT	AREA
SP1	1 ea	6'0"	4'10 1/2"	4'7 1/2"	3'10 1/2"	6 ea	4'2 3/4"	4'1 7/8"	3'11 5/8"	3'10"	3'8 3/8"	0.61 cy	2,454 lbs	20.74 sf
SP14	1 ea	6'0"	4'10 1/2"	6'0 1/8"	5'3 1/2"	7 ea	5'7 3/8"	5'6 1/2"	5'4 3/8"	5'2 3/4"	5'1 1/4"	0.73 cy	2,967 lbs	27.57 sf



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



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



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



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.

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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

**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<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 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:**

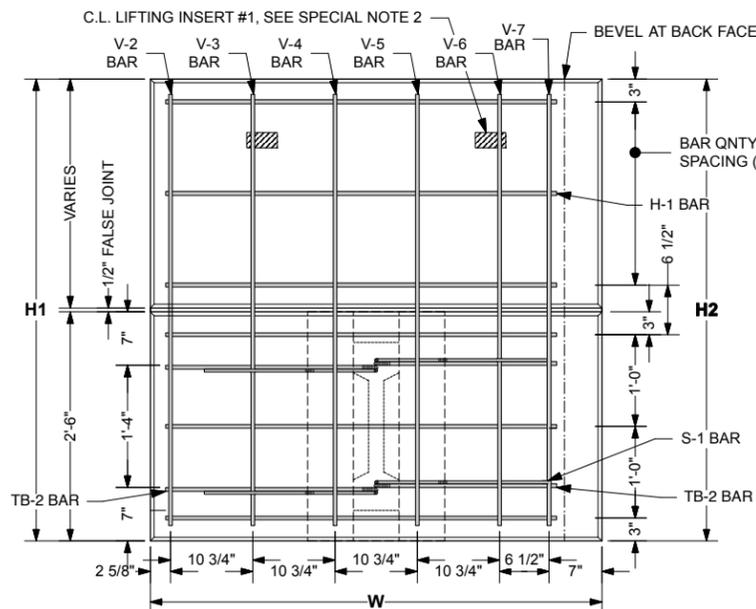
- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
  - PLAIN STEEL FORM FINISH
- LIFTING INSERTS CAPACITY:
  - TWO QUICKLIFT "QL050G" LIFTING INSERTS OR EQUAL, SPACED AT LEAST 30" APART.
  - 2000 LBS (1 TON) MINIMUM RATED WORKING LOAD CAPACITY.
  - MINIMUM CONCRETE STRENGTH SHALL BE 3,500 psi PRIOR TO STRIPPING 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

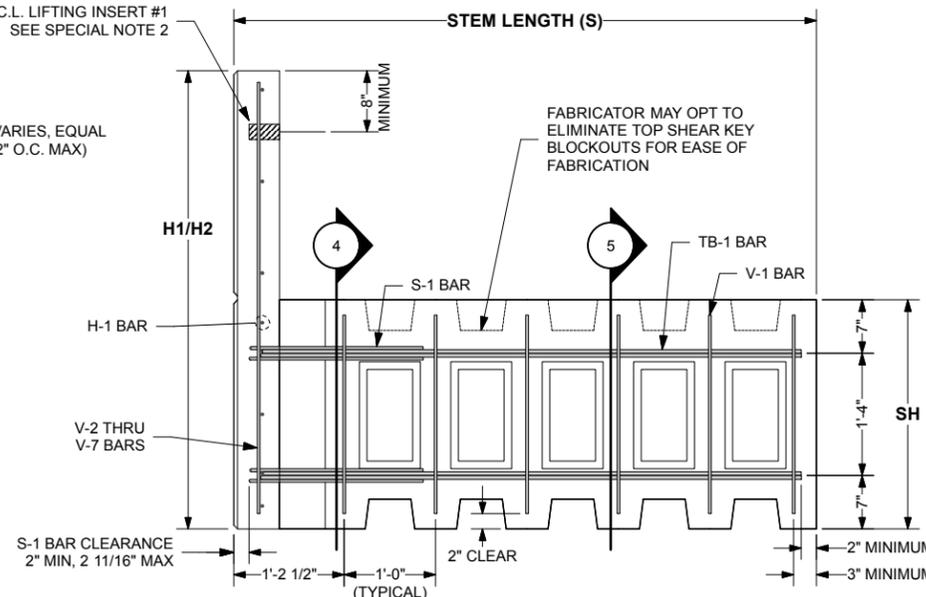
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks
H=VARIES	H-1	VARIES	#4	4'3 3/8"				SEE SLOPED TOP UNIT SCHEDULE
W=4'11 1/4"	V-1	12 ea	#4	2'2"		17.37 lbs		
S=6'4 1/2"	V-2 THRU V-7	1 ea	#5	VARIES				SEE SLOPED TOP UNIT SCHEDULE
SH=2'6"	S-1	4 ea	#4	3'4 1/2"		9.02 lbs	D= 3"	
	TB-1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

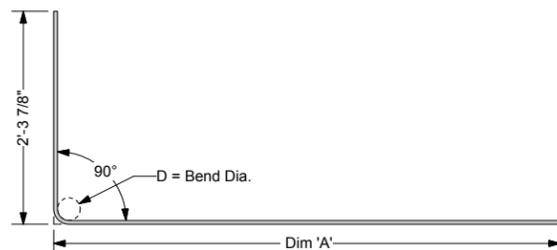
MARK No.	QNTY	STEM	WIDTH	H1	H2	H-1 BAR	V-2 BAR	V-3 BAR	V-4 BAR	V-5 BAR	V-6 BAR	V-7 BAR	VOL	WEIGHT	AREA
SP10	1 ea	6'4 1/2"	4'11 1/4"	4'9"	4'3"	6 ea	4'4 5/8"	4'3 3/8"	4'2 1/4"	4'1 5/8"	4'0 3/8"	3'11 5/8"	0.65 cy	2,634 lbs	22.20 sf
SP13	1 ea	6'4 1/2"	4'11 1/4"	4'3 3/8"	6'1"	7 ea	4'0 1/2"	4'4 7/8"	4'9 1/4"	4'11 3/8"	5'3 3/4"	5'6 3/8"	0.71 cy	2,887 lbs	25.58 sf



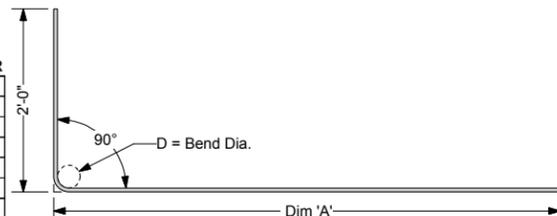
**3 FRONT VIEW - 6' STEM UNIT SHOWN**  
Scale: 1" = 1'-0" (V-1 BARS IN STEM OMITTED FOR CLARITY)



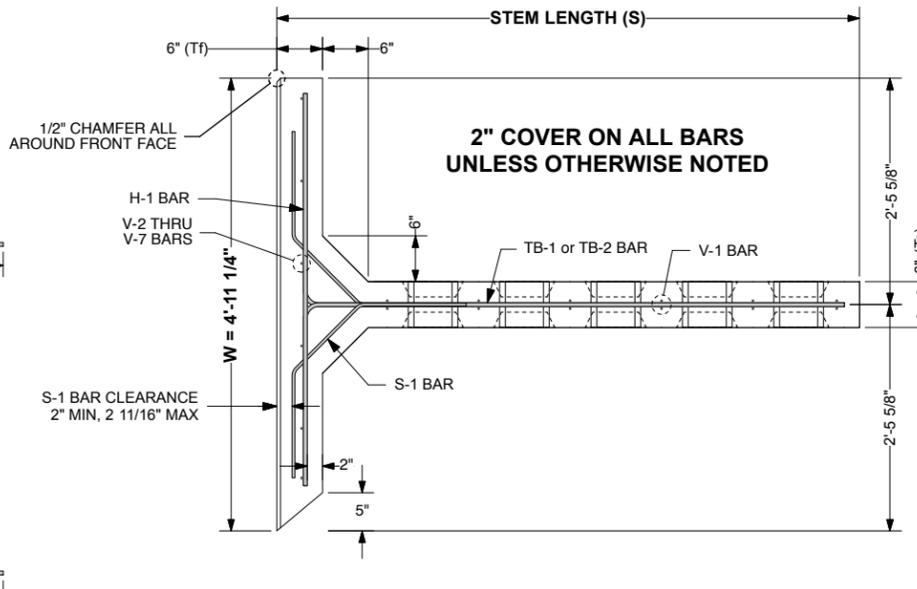
**2 SIDE VIEW - 6' STEM UNIT SHOWN**  
Scale: 1" = 1'-0"



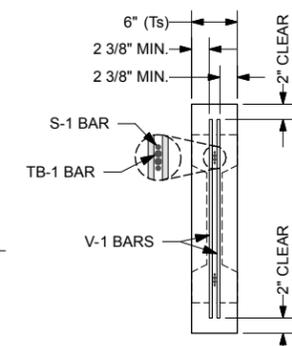
**7 TB-1 REBAR**  
Scale: 1" = 1'-0"



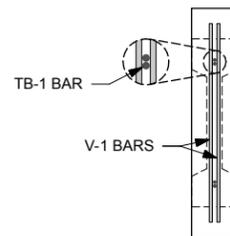
**7 TB-1 REBAR**  
Scale: 1" = 1'-0"



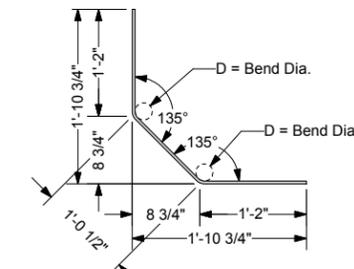
**1 PLAN VIEW - 6' STEM UNIT SHOWN**  
Scale: 1" = 1'-0"



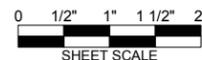
**4 SECTION AT STEM**  
Scale: 1" = 1'-0"



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



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



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**PRECASTER:** CONCRETE SYSTEMS, INC. CSI

**PROJECT #:** T21882

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

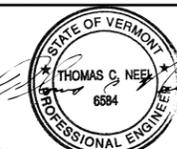
**PROJECT #:**

**DESIGNER**

**THE NEEL COMPANY**  
8328-D TRAFORD LANE  
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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

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

FAIRFIELD, VT

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

REBAR SCHEDULES

SP22								HIGHWAY REBAR	
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks	
H=2'6"	H-1	3 ea	#4	3'7 3/4"		7.31 lbs			
W=4'1 1/4"	V-1	12 ea	#4	2'2"		17.37 lbs			
S=6'4 1/2"	V-2	4 ea	#4	2'2"		5.79 lbs			
SH=2'6"	S-1	2 ea	#4	3'4 1/2"		4.51 lbs	D= 3"		
	TB-1	2 ea	#4	8'2 1/2"	5'11"	10.97 lbs	D= 3"		
	S-2	2 ea	#4	3'4 1/2"		4.51 lbs	D= 3"		
	TB-2	2 ea	#4	7'3 3/4"	5'11"	9.77 lbs	D= 3"		
						35.54 lbs			

SP21								HIGHWAY REBAR	
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks	
H=2'6"	H-1	3 ea	#4	3'7 3/4"		7.31 lbs			
W=4'1 1/4"	V-1	16 ea	#4	2'2"		23.16 lbs			
S=8'4 1/2"	V-2	4 ea	#4	2'2"		5.79 lbs			
SH=2'6"	S-1	2 ea	#4	3'4 1/2"		4.51 lbs	D= 3"		
	TB-1	2 ea	#4	10'2 1/2"	7'11"	13.64 lbs	D= 3"		
	S-2	2 ea	#4	3'4 1/2"		4.51 lbs	D= 3"		
	TB-2	2 ea	#4	9'3 3/4"	7'11"	12.44 lbs	D= 3"		
						40.89 lbs			

SP20								HIGHWAY REBAR	
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks	
H=2'6"	H-1	3 ea	#4	3'7 3/4"		9.35 lbs			
W=4'1 1/4"	V-1	20 ea	#4	2'2"		16.29 lbs			
S=10'4 1/2"	V-2	4 ea	#4	2'2"		4.89 lbs			
SH=2'6"	S-1	2 ea	#4	3'4 1/2"		5.08 lbs	D= 2 1/4"		
	TB-1	2 ea	#4	12'2 1/2"	9'11"	32.50 lbs	D= 3"		
	S-2	2 ea	#4	3'4 1/2"		5.08 lbs	D= 2 1/4"		
	TB-2	2 ea	#4	11'3 3/4"	9'11"	32.50 lbs	D= 3"		
						68.11 lbs			

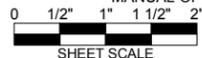
SP19								HIGHWAY REBAR	
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Bend Dia	Remarks	
H=2'6"	H-1	3 ea	#4	7'3 3/4"		9.35 lbs			
W=4'1 1/4"	V-1	20 ea	#4	2'2"		16.29 lbs			
S=12'4 1/2"	V-2	4 ea	#4	2'2"		4.89 lbs			
SH=2'6"	S-1	2 ea	#4	3'4 1/2"		5.08 lbs	D= 2 1/4"		
	TB-1	2 ea	#4	14'2 1/2"	11'11"	32.50 lbs	D= 3"		
	S-2	2 ea	#4	3'4 1/2"		5.08 lbs	D= 2 1/4"		
	TB-2	2 ea	#4	13'3 3/4"	11'11"	32.50 lbs	D= 3"		
						68.11 lbs			

SPECIAL NOTES:

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

GENERAL NOTES:

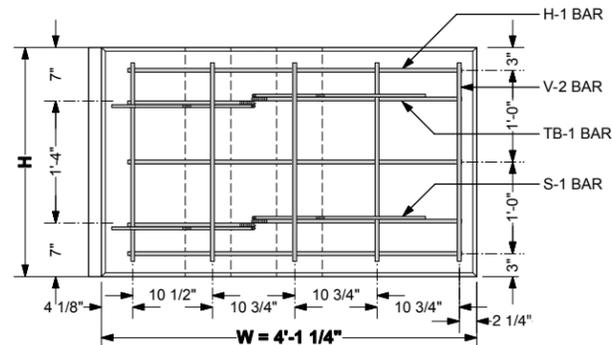
- PRIMARY REFERENCE:
  - AASHTO, LRFD BRIDGE DESIGN SPECIFICATION, 5TH EDITION 2010 (WITH INTERIMS)
- T-WALL® CONCRETE:
  - F'c = 5000 psi (MINIMUM) @ 28 DAYS
  - MINIMUM STRIPPING STRENGTH: 2500 psi
- T-WALL® REINFORCING STEEL:
  - BLACK
  - Fy = 60 ksi (GRADE 60)
  - WELDING IS NOT PERMITTED
- MARKING 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.



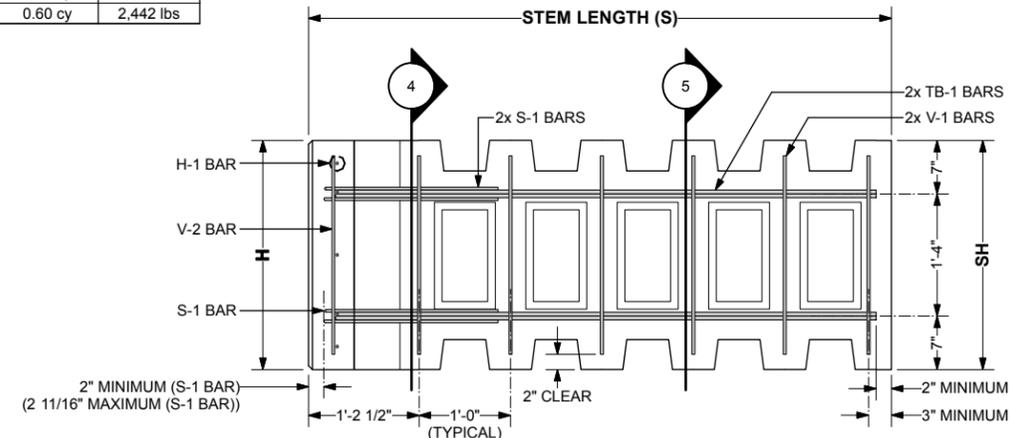
T-WALL UNIT PROPERTIES

UNIT TYPE	H	W	S	Tf*	Ts	SH	VOLUME*	WEIGHT*
SP22	2'6"	4'1 1/4"	6'4 1/2"	6"	6"	2'6"	0.41 cy	1,659 lbs
SP21	2'6"	4'1 1/4"	8'4 1/2"	6"	6"	2'6"	0.47 cy	1,920 lbs
SP20	2'6"	4'1 1/4"	10'4 1/2"	6"	6"	2'6"	0.54 cy	2,181 lbs
SP19	2'6"	4'1 1/4"	12'4 1/2"	6"	6"	2'6"	0.60 cy	2,442 lbs

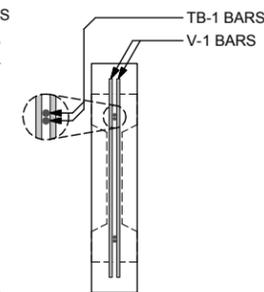
\* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 6" FACE THICKNESS (Tf)



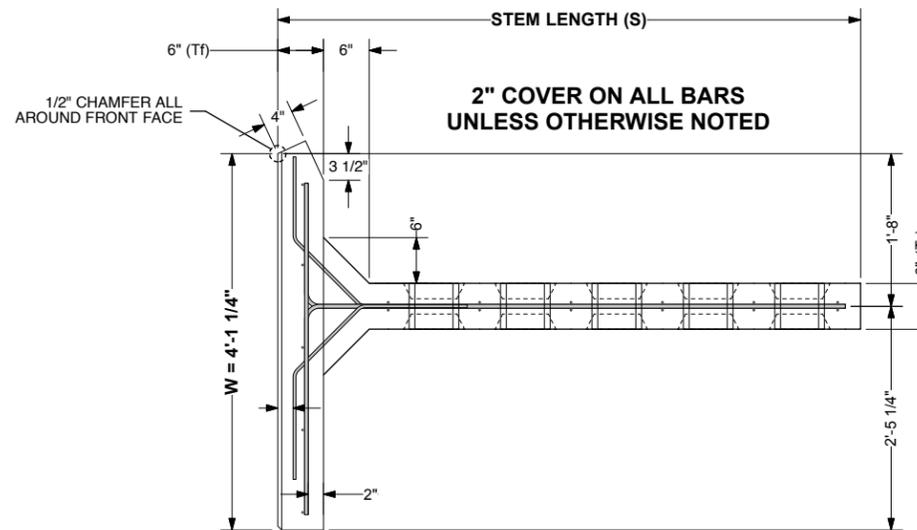
3 FRONT VIEW - 2.5 x 5.0 x 06 Std SHOWN  
Scale: 1" = 1'-0" (V-1 BARS IN STEM OMITTED FOR CLARITY)



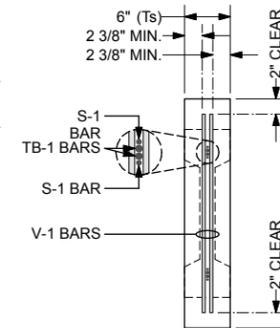
2 SIDE VIEW - 2.5 x 5.0 x 06 Std SHOWN  
Scale: 1" = 1'-0"



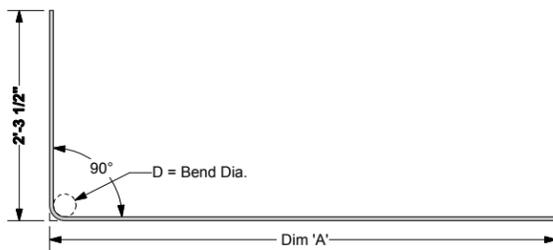
5 SECTION THROUGH STEM  
Scale: 1" = 1'-0"



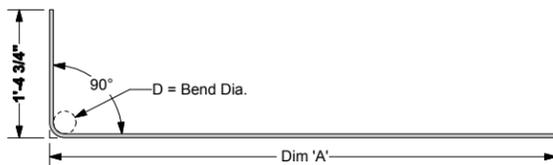
1 PLAN VIEW - 2.5 x 5.0 x 06 Std SHOWN  
Scale: 1" = 1'-0"



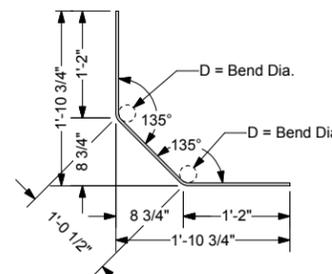
4 SECTION THROUGH STEM  
Scale: 1" = 1'-0"



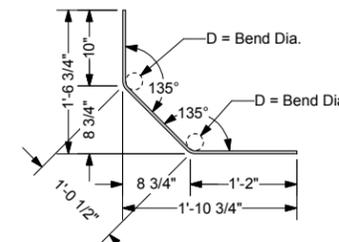
7 TB-1 REBAR  
Scale: 1" = 1'-0"



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



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



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

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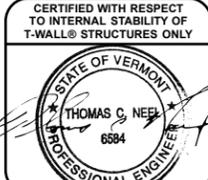
This drawing contains information proprietary to The Neel Company. T-WALL® is a registered trademark owned by The Neel Company. ©2014 The Neel Company

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

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

DESIGNER  
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PH: (703) 913-7858  
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WEB: WWW.NEELCO.COM

PROJECT #: TW4301



REVISIONS

**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

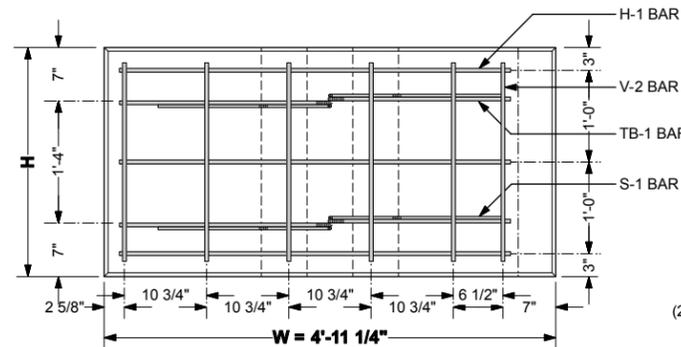
UNIT TYPE	H	W	S	Tf*	Ts	SH	VOLUME*	WEIGHT*
SP24	2'6"	4'11 1/4"	6'4 1/2"	6"	6"	2'6"	0.45 cy	1,815 lbs
SP23	2'6"	4'11 1/4"	8'4 1/2"	6"	6"	2'6"	0.51 cy	2,076 lbs

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

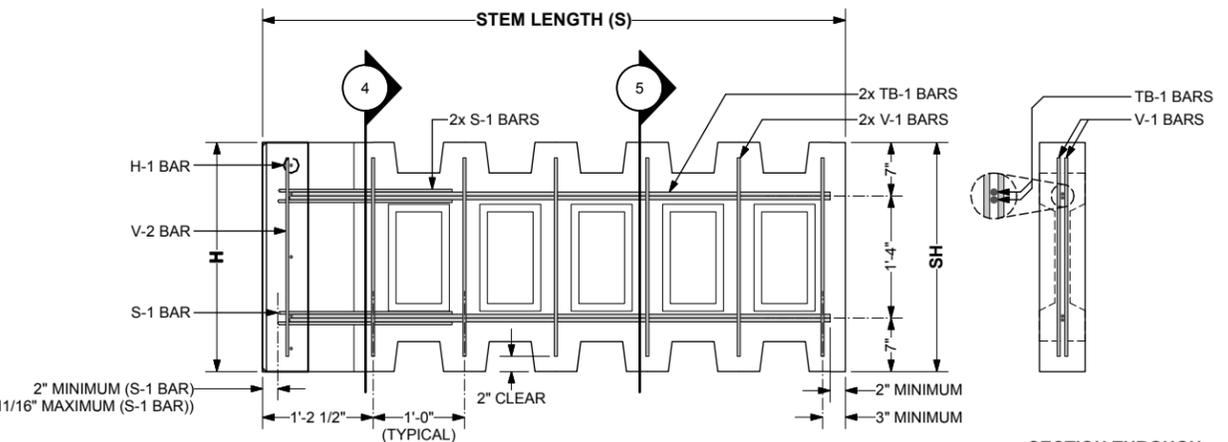
REBAR SCHEDULES

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"

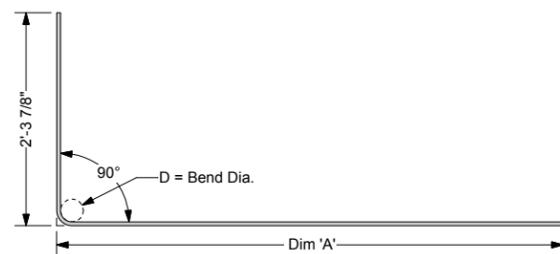
5 SECTION THROUGH STEM  
Scale: 1" = 1'-0"

SPECIAL NOTES:

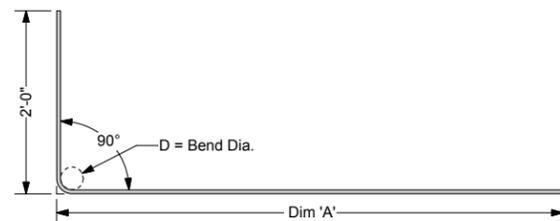
- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
  - PLAIN STEEL FORM FINISH

GENERAL NOTES:

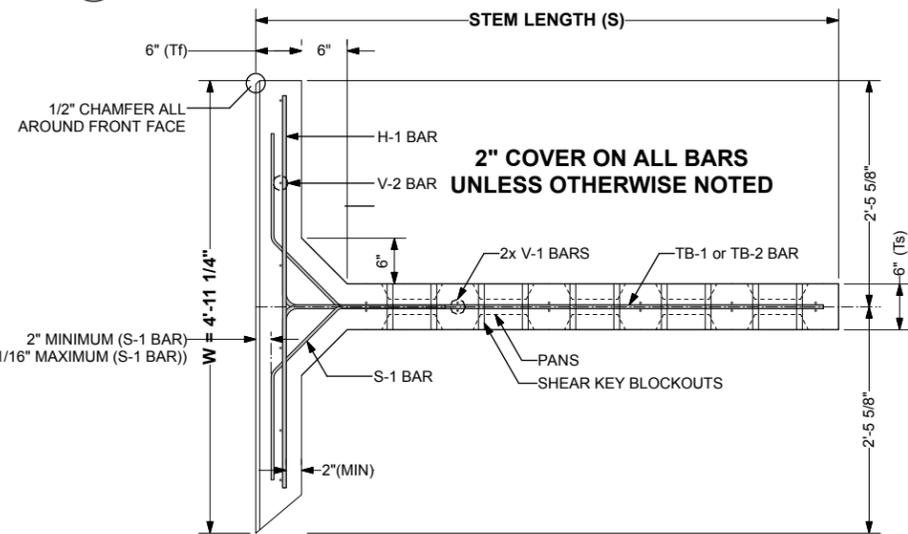
- PRIMARY REFERENCE:
  - AASHTO, LRFD BRIDGE DESIGN SPECIFICATION, 5TH EDITION 2010 (WITH INTERIMS)
- T-WALL® CONCRETE:
  - F<sub>c</sub> = 5000 psi (MINIMUM) @ 28 DAYS
  - MINIMUM STRIPPING STRENGTH: 2500 psi
- T-WALL® REINFORCING STEEL:
  - BLACK
  - F<sub>y</sub> = 60 ksi (GRADE 60)
  - WELDING IS 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 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.



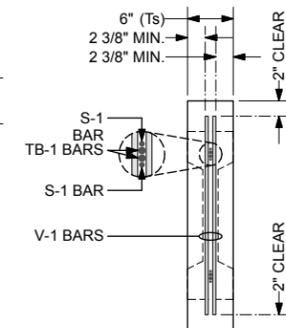
7 TB-1 REBAR  
Scale: 1" = 1'-0"



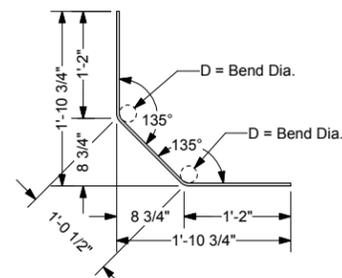
8 TB-2 REBAR  
Scale: 1" = 1'-0"



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



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



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



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.

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PRECASTER: CONCRETE SYSTEMS, INC. CSI

PROJECT #: T21882

CONTRACTOR: A.L. ST. ONGE CONTRACTORS

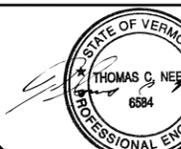
PROJECT #:

DESIGNER

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PH: (703) 913-7858  
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WEB: WWW.NEELCO.COM

PROJECT #: TW4301

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



REVISIONS

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