

STANDARD DETAILS

T-WALL® RETAINING WALL SYSTEM

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DESIGN SPECIFICATIONS

T-WALL® DESIGN SPECIFICATIONS

1.0 General

The Neel Company takes full responsibility for engineering theory and calculation correctness and ensuring that all design assumptions are validated in the contract documents either by needed details or construction specifications.

The Neel Company is to prepare design calculations and contract drawings for the T-WALL® Retaining Wall System in accordance with the guidelines specified herein. The T-WALL® design parameters and other limitations are as per manufacturer's design specifications prepared by The Neel Company for the T-WALL® Retaining Wall System (8328-D Traford Lane, Springfield, VA), and Pennsylvania Department of Transportation Design Manual Part 4.

Secure District Bridge Engineer and Geotechnical Engineer's approval before incorporating the T-WALL® Retaining Walls System in any project.

2.0 Technical Considerations

T-WALL® is a precast modular wall system whose dimensions are bounded by the front face panels and a back plane formed by the end of the concrete stems. Soil/structure interaction is mobilized at every level by friction between the stems and the granular material compacted between them to ensure local stability.

T-WALL® may be used where conventional retaining walls, nongravity cantilevered walls, anchored walls, mechanically stabilized earth (MSE) walls, and prefabricated modular walls are considered. T-WALL® is particularly well suited in side-hill cut applications, along stream channels and where limited space is available between the wall line and the right-of-way limits. Typically, the length of the bottom stem is approximately 60 percent of vertical wall height and 50 percent of battered wall height.

When constructed on fills, the embankment between the original ground and the footings shall be composed of a granular material in conformance with Publication 408, Section 206.2.1(b) or rock.

3.0 Design

- Submit hard copies or an electronic copy of construction drawings and design calculations for the T-WALL® Retaining Wall to Engineer for review and approval.
- On the first sheet of the construction drawings and calculations, show a Professional Engineer's Seal (licensed in Pennsylvania), a valid Signature in ink, a business name and address and the date.

The construction drawings or manual also must include erection methods and detailed erection plans.

- On the first sheet of the drawings, placed above the P.E. seal, include the following statement:
"All design assumptions are validated through either notes to the Contractor or details on these drawings."

- In the event that certain design Parameters, Stresses or Specifications are in conflict, the following order of precedence governs:

- Design requirements listed in "Special Drawings and Special Design Requirements" of the special provisions.
- Pennsylvania Department of Transportation current Design Manual Part 4
- Pennsylvania Department of Transportation standard drawings.
- AASHTO LRFD Bridge Design Specifications, fifth edition with 2010 interim revisions

DESIGN SPECIFICATIONS (CONTINUED)

- In the event that a clear order of precedence cannot be established, or a difference in interpretation of the design cannot be resolved, the Chief Bridge Engineer will be the arbiter and his decision is final.

4.0 Structure Dimensions

T-WALL® is dimensioned to ensure AASHTO Section 11.10 is satisfied. In addition, a saturated soil condition must be considered in determining the internal and external stability of the walls.

The minimum embedment depth at the wall face shall be based on bearing resistance, settlement and stability requirements. Unless constructed on rock foundations, the embedment shall not be less than:

- 3-ft from adjoining finished ground to top of leveling pad.
- A depth based on the prevailing depth of frost penetration (if the soil below the wall is frost susceptible) and the external stability requirement. As an alternative to locating the wall base below the depth of frost penetration where frost susceptible soils are present, the soil within the depth and lateral extent of frost penetration below the wall can be removed and replaced with non-frost susceptible granular material.
- For walls constructed along rivers or streams, embedment depths shall be established at a minimum of 2-ft below potential scour depth or 6-ft below adjacent streambed (ground) elevation, whichever is greater.
- A minimum horizontal bench width of 4-ft shall be provided in front of the walls founded on slopes. The bench may be formed or the slope can be continued above that level to the wall face.

5.0 External Stability Computations

Stability computations shall be made at every module level by assuming that the T-WALL® system acts as a rigid body. At these levels the required overturning resistance shall be provided. The coefficient of active earth pressure, K_a , used to compute the horizontal force resulting from the random backfill and other loads shall be computed on the basis of the friction angle of the random backfill using a Rankine state of stress. In the absence of specific data, a maximum friction angle of 30 degrees shall be used. This limitation also applies when determining the coefficient of sliding friction at the wall base. Passive pressures shall be neglected in stability computations.

The active earth pressure coefficients for random backfill and external stability equations for walls with horizontal backslope and inclined backslope shall be calculated in accordance with AASHTO Section 11. For calculations of mass stability, the continuous traffic surcharge loads shall be deemed to act at the end of the T-WALL® stems. Walls must be proportioned to meet the criteria outlined in Section 4.0 on this page.

Note to Designer

For T-WALL® structures, global stability analyses shall be performed using PennDOT accepted methods (GSTABL Per DM4) and yielding a minimum safety factor of 1.5. The global stability analyses for the "as-designed" T-WALL® design shall be included in the PennDOT approved TS&L foundation report.

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
COVER SHEET AND
SPECIFICATIONS I

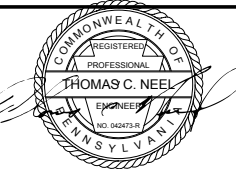
SHEET 1 OF 67

87-402 PE

PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
RECOMMENDED
Thomas P. Macioco
CHIEF BRIDGE ENGINEER

5/9/2013

I CERTIFY THAT ALL ASSUMPTIONS MADE
IN DESIGNING THIS WALL HAVE BEEN
VALIDATED THROUGH CONSTRUCTION
DETAILS, SPECIAL NOTES AND/OR
INSTRUCTIONS TO THE FABRICATOR,
ERECTOR AND CONTRACTOR



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DATE: 04-08-13
SCALE: NO SCALE
DESIGNED: CAA
DRAWN: CAA/CJW
CHECKED: CCG/KD
TNC JOB #: TW3634
TNC SHT #: 1 OF 67

CONSTRUCTION SPECIFICATIONS (CONTINUED)

d. Joint Materials:

2.5x5.0 and 5.0x5.0 Module units:

No filler is required in the vertical joints. Provide fiber expansion joint material conforming to AASHTO M213 for the horizontal joints as indicated. Cover all vertical joints on the backside of the front face of the wall with geotextile fabric meeting the requirements of Section 735, Class 2, Type A. Provide asphalt joint material conforming to AASHTO M33 or Neoprene rubber blocks for the horizontal joints at or below high flood level.

2.5x7.5, 3.75x7.5 and 5.0x7.5 Module units:

No filler is required in the vertical joints. Cover all vertical and horizontal joints on the backside of the front face of the wall with geotextile fabric meeting the requirements of Section 735, Class 2, Type A. Provide neoprene rubber blocks for the horizontal joints.

Provide minimum width and lap of the fabric as follows:

Vertical Joint = 12"; Lap = 4".

e. Non-conformance:

T-WALL® units shall be deemed non-conforming for failure to meet the requirements previously outlined in these specifications. Units may also be deemed non-conforming for the following reasons:

- Spalls, cracks or other surface defects as described in Penn DOT Pub. 145(5-05)
- Exposed reinforcing steel

Non-conforming units shall be classified as:

- Acceptable with restriction
- Acceptable with repair
- Rejected for Penn DOT use.

Classification shall be determined by a designated Penn DOT representative in consultation with The Neel Company designer.

Units may be accepted with restrictions when the defects are non-structural in nature and do not effect the wall stability.

Acceptance of repairs shall be based on criteria and procedure outlined in Penn DOT Pub, 145 (5-05).

T-WALL® units that cannot be repaired shall be rejected, labeled "Rejected for Dept. Use" on the rear face or stem and stored away from all other units.

f. Granular Fill Material. Granular Fill Material between the T-WALL® Units:

Provide one or more of the following materials:

- Crushed or natural sand
- Crushed or uncrushed gravel
- Crushed limestone
- Crushed sandstone
- Coarse aggregate (Type C- Section 703. Table B)
- Recycled concrete
- Slag

Backfill materials gradation and properties:

- Gradation as determined by AASHTO T-27:

Sieve Size	Percent Passing
3 inch	100
3/4 inch	20-100
No. 40	0-60
No. 200	0-10

- Backfill materials up to 25% passing thru No. 200 sieve can be used if positive drainage behind the wall is provided. Both the material and the drainage must be approved by Penn DOT and The Neel Company on a project specific basis.
- The material shall contain no more than 2% deleterious shale, clay lumps, friable particles, coal and coke.
- Internal Friction Angle: Furnish material exhibiting an angle of internal friction consistent with that used in the design but not less than 34 degrees as determined by AASHTO T-236, on the portion finer than the No. 10 sieve when compacted to 95% of AASHTO T-99, methods C or D (with oversize correction as outlined) at optimum moisture content, except for coarse aggregates meeting the requirements of Section 703.2. No testing is required for backfills where 80% of the material sizes are greater than 3/4".
- Density: Compacted Density = 120 pcf or as specified on the contract plans. If the compacted density of the locally available material that meets the above gradation and internal friction angle properties, is different, the wall design must be evaluated based on the actual properties of the available backfill material.
- The contractor shall test and certify the unit weight of the select fill. Testing and certification of embankment backfill materials is required if parameters used in design differ from the contract specified values.

CONSTRUCTION SPECIFICATIONS (CONTINUED)

g. **Certification.** Provide certification as specified in Section 106.03 (b) 3. Furnish a copy of all test results performed which are necessary to assure compliance with the specifications.

h. **Shear Key Wrap.** Shear Key Wrap shall be AVI Astro-Foam AF-250 or equivalent.

3.0 CONSTRUCTION

a. **Submittals:** Fabrication of standard units cannot begin without approved shop drawings. Erection of wall cannot begin without approved plans.

b. **Excavation and Foundations:** The foundation for the T-WALL® structure shall be excavated and graded level in accordance with Section 203, Section 204 and Standard Drawing RC-11M to the limits and construction stages as indicated for a width equal to or exceeding the length of the bottom T-WALL® stem. Use the top of the leveling pad as the grade elevation or the appropriate slope for a battered wall.

The foundation subgrade shall be inspected and approved by PennDOT prior to the construction of the wall.

If the Contractor over excavates, the area must be reconstructed as directed by the Engineer. Foundation material found to be unsuitable shall be removed and replaced with compacted granular material, as directed by the Engineer. At each unit foundation level, provide a cast-in-place concrete leveling pad as indicated. Leveling pads shall be level to within 1/4" per pad or per 10', whichever length is smaller. Repair or replace leveling pads which do not meet this requirement as directed by the Engineer at no additional cost.

Shims may be used as necessary to level the T-WALL® units. Use no more than 3/8" combined thickness of shims. The shims should be non-biodegradable. If more leveling is required, replace the leveling pad or the units as directed by the Engineer.

Leveling pads shall be placed to the lines, grades and elevations shown on the approved T-WALL shop drawings or as directed by the Engineer. Finish the top of leveling pad with a steel trowel finish in accordance with Section 1001.3.

Precast leveling pads can be used at locations where cast-in-place leveling pads are not feasible, with prior written approval of The Neel Company and PennDOT.

c. **Drainage:** Install the drainage system behind the wall as shown or otherwise indicated on the approved shop drawings.

d. **Wall Erection:** Install the wall units as shown on the approved shop drawings and as described in the T-WALL® Construction Manual. Erection of the units typically should begin at the lowest elevation and proceed laterally along the wall length. Where a wall meets a fixed structure or a critical location such as a bend point, erection should begin at that point, provided the site configuration is suitable.

In the case of vertical walls, T-WALL® units should be set such that the front face is vertical. In the case of battered walls, T-WALL® units should be set at the batter rate of the structure.

Units should be set such that the front faces are in line with the plan layout of the structure. The vertical joint width should be gauged with a round steel bar whose diameter is equal to the desired joint width. For curved structures the joint opening is measured at the front face of the wall.

Tolerance and alignment shall be as follows:

2.5x5.0 and 5.0x5.0 Module units:

1. Horizontal joint openings between panels shall be 1/2" (± 3/8").
2. Vertical joint openings between panels shall be 3/8" (± 3/8").
3. Horizontal alignment tolerance as the wall is constructed shall not exceed 3/4" when measured with a 10' straight edge.
4. The overall vertical tolerance of the wall (plumbness from top to bottom) shall not exceed 1/2" per 10' of wall height (for vertical walls).

2.5x7.5, 3.75x7.5 and 5.0x7.5 Module units:

1. Horizontal joint openings between panels shall be 1/2" (± 3/8").
2. Vertical joint openings between panels shall be 1/2" (± 3/8").
3. Horizontal alignment tolerance as the wall is constructed shall not exceed 3/4" when measured with a 15' straight edge.
4. The overall vertical tolerance of the wall (plumbness from top to bottom) shall not exceed 1/2" per 10' of wall height (for vertical walls).

CONSTRUCTION SPECIFICATIONS (CONTINUED)

Make repairs to panels already installed at job site by experienced personnel utilizing methods and materials recommended by the manufacturer and approved by the Engineer. Perform patching only when conditions exist which assure that the repaired area conforms to the remainder of the work with respect to appearance, strength and durability.

e. Joint Material:

2.5x5.0 and 5.0x5.0 Module units:

Place the horizontal joint material on the top of the front face of the T-WALL® unit prior to stacking a unit above it. The horizontal joint material should be placed lining up with the rear edge of the front face panel but not overhanging it.

Place the vertical joint material so that it is centered over the joint. Take the necessary action to assure that the material is not displaced during the backfill operation.

2.5x7.5, 3.75x7.5 and 5.0x7.5 Module units:

Place the neoprene rubber blocks on the top of the front face and rear stem of the T-WALL® unit prior to stacking a unit above it. Place the horizontal joint material so that it is centered over the joint. Take the necessary action to assure that the material is not displaced during the backfill operation.

Place the vertical joint material so that it is centered over the joint. Take the necessary action to assure that the material is not displaced during the backfill operation.

f. **Backfilling:** Fill the interior between the stem area of each successive course of the T-WALL® units with the select granular fill material specified. Fill units in no more than 12" uniform layers and thoroughly consolidate with a vibratory tamping device, after each layer is placed.

Select backfill placement shall closely follow the erection of each lift of T-WALL® units. Select backfill shall be placed in approximate equal amounts on each side of the stems to avoid displacement of the units. Backfill may be carefully discharged directly on top of the stems to facilitate this requirement. Generally, the backfill should be sloped so that surface drainage is away from the face of the unit. Lift thickness shall be decreased as needed to obtain the specified density. Backfill shall be compacted to at least 95% of maximum laboratory dry density, AASHTO T-99 (ASTM D-698). Whenever a compaction test fails, no additional backfill shall be placed over the area until the lift is re-compacted and a passing compaction test is achieved.

Embankment backfill (unclassified fill) placement beyond the stems shall closely follow the erection of each course of T-WALL® units. The backfill lifts shall be uniform in thickness and placed in accordance with PennDOT specifications.

Where the T-WALL® units are open faced and tiered in construction and plant growth is planned, top soil may be placed at the outer front edge of each tier to a depth of 6 inches maximum.

Place and compact the fill in front of the wall per project requirements as soon as possible but before the wall exceeds 10-ft high.

See Standard Drawing RC-12M for pay limits of Backfill at Structures.

g. **Dewatering:** Maintain workable conditions on a wet site during wall construction. Dewatering systems may be required depending upon the specific site conditions.

h. **Technical Assistance:** Where T-WALL® Retaining Wall Systems are constructed, arrange for a company representative to be present at the fabrication and project sites to assist the fabricator, Contractor, and Engineer until they are familiar and confident in casting, installation, and construction procedures. The Neel Company will provide a technical representative to assist in the event unusual problems or special circumstances arise.

PA DOT DWG #87-402 PE (REVISION III)


COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
SPECIFICATIONS II

SHEET 2 OF 67

87-402 PE

DESIGNER	DATE:
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	DESIGNED: CAA
	DRAWN: CAA/CJW
	CHECKED: CCG/KD
	TNC JOB #: TW3634
TNC SHT #: 2 OF 67	

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5/9/2013

DESIGN SPECIFICATIONS (CONTINUED)

6.0 Bearing Resistance and Foundation Stability

Allowable bearing resistance for T-WALL® shall be computed using resistance factors per AASHTO Section 10.5 applied to the calculated nominal bearing resistance. The equivalent width of the footing for nominal bearing resistance calculations shall be the length of the lowest stem (L). The location of the resultant center of pressure shall be within the middle half of the base (L/2) for walls founded on soils and middle 3L/4 for walls founded on rock. Bearing pressure shall be computed using the Meyerhof distribution, which considers a uniform base distribution over an effective width of footing $B' = L - 2e$.

7.0 Internal Stability

The stem length at each level shall be sized to resist the horizontal pressure at that level by the weight of the concrete units and by the frictional resistance on the stem. The horizontal pressure shall be computed by multiplying the vertical pressure (γH) by an active coefficient of earth pressure, K_a .

Computation of the horizontal force within the T-WALL® mass shall be based on a friction angle of 34 degrees or as specified in the contract plans. A higher friction angle can be used if specific information for the backfill being used is provided and approved. At each level the pullout resistance is computed in accordance with Section 8.0, the factored pullout resistance, neglecting live load surcharge, shall be greater than the factored horizontal pullout forces.

8.0 Pullout Design

The following forces resist the horizontal pressure calculated in section 7.0:

$$R = [Wc(fc) + \gamma K_o H_{ave} fs A_{eff} (\%contact) + \gamma K_o H_{ave} \tan \phi A_{eff} (\%contact)] * RF$$

where:

- R = pullout resistance per unit
- Wc = weight of the concrete units
- fc = coefficient of friction on the concrete
- γ = unit weight of soil
- K_o = earth pressure at rest
- H_{ave} = height to midpoint of level under consideration
- fs = friction soil to concrete
- $\tan \phi$ = friction soil to soil
- A_{eff} = stem area behind Rankine active zone
- %contact = % area with soil to soil contact, or soil to concrete contact
- RF = resistance factor

Plus resistance from shear keys

RESISTANCE FACTORS

	STRENGTH LIMIT STATES	SERVICE & EXTREME LIMIT STATES
FRICION BETWEEN SOIL & SOIL	1	1
FRICION BETWEEN SOIL & CONCRETE	0.9	1
FRICION BETWEEN JOINT MATERIAL & CONCRETE	0.9	1
SHEAR THROUGH SHEAR KEY	0.85	1

9.0 Structural Design

The units shall be designed to resist the horizontal forces calculated according to Section 7.0 on drawing sheet no. 1 of 15.

The minimum design thickness shall be 6", and the minimum design concrete cover shall be 2".

Reinforcement in T-WALL® units shall be in accordance with Design Manual Part 4 and AASHTO Section 5 (CONCRETE STRUCTURES).

Resistance Factors: Flexure 0.9, Tension 0.9, Shear 0.9

9.1 Drainage Requirements

T-WALL® system shall be designed with a 6-inch perforated pipe under drain and/or #57 drainage blankets based upon field conditions.

T-WALL® has a full height 3/8-inch space with filter cloth backing at every vertical joint along the face of the wall. This space acts as a weep hole and provides sufficient drainage area for water to get out of the wall mass. Therefore no additional weep holes at wall face are necessary for the T-WALL® Retaining Wall System.

If a crash wall is installed in front of T-WALL®, provide 4-inch diameter weep holes at 10-ft maximum spacing. The weep holes must extend through the C.I.P. crash wall.

10.0 Special Loading Conditions

Concentrated line loads shall be incorporated into the internal design by using a simplified uniform vertical distribution of 2 vertical to 1 horizontal to determine the vertical component of stress with depth within the T-WALL® mass.

Traffic loads shall be considered in accordance with AASHTO criteria.

For structures along rivers and canals, a differential hydrostatic pressure equal to 3' of water shall be considered for design. This load shall be applied at the high-water level. Buoyant unit weights shall be used in the calculations for internal and external stability beginning at levels just below the application of the differential hydrostatic pressure.

DESIGN SPECIFICATIONS (CONTINUED)

11.0 Traffic Barriers:

When constructed over or in line with the front face of the units, barriers shall be designed to meet the ultimate strength of the Department's standard parapet/barrier by their own mass and ability to resist overturning moments. Base slabs shall not have any transverse joints except construction joints. The horizontal load shall be deemed to be transferred by horizontal shear stress to the T-WALL® mass.

Barrier and moment slab details and reinforcement shall be per sheets 12 and 13. These details are copied from BC-799M.

Flexible post and beam systems, when used, shall be placed a minimum distance of 3' from the wall face, driven 5' below grade, and spaced to miss the stems. The upper two units shall be designed for an additional horizontal load of 300 plf of wall.

12.0 Design Methodology:

Use LRFD design methodology.

13.0 Design Build projects:

The Neel Company will either provide the TS&L design drawings, calculations and foundations report directly to the contractor or furnish the necessary design details and calculations to the design build team consultant for inclusion in the TS&L submittal for approval.

14.0 Maximum Wall Height:

- 50-ft for level backfill with traffic founded on either rock or soil.
- 40-ft with 3H : 1V infinite backslope founded on rock only.
- 40-ft with 3H : 1V broken backslope and traffic founded on rock only.

CONSTRUCTION SPECIFICATIONS

T-WALL® CONSTRUCTION AND MANUFACTURING SPECIFICATIONS

1.0 DESCRIPTION:

This specification is for manufacturing and construction of the T-WALL® Retaining Wall System. This system, which is proprietary, consists of precast concrete units erected to form a modular retaining wall.

2.0 MATERIALS:

- a. **Precast T-WALL® Units and shear keys:** Fabricate precast concrete units at an approved plant in accordance with Section 714.
 - 2.5x5.0 and 5.0x5.0 module units and small shear keys
 - Provide concrete with a 28-day minimum compressive strength of 4000 psi for stems up to 24-ft and 5000 psi for stems greater than 24-ft, as determined in accordance with PTM No. 604.
 - Provide 6" minimum thickness of precast T-WALL® units
- 2.5x7.5, 3.75x7.5 and 5.0x7.5 module units and large shear keys
 - Provide concrete with a 28-day minimum compressive strength of 5000 psi, as determined in accordance with PTM No. 604.
 - Provide 8" minimum face thickness, 7" minimum stem thickness of precast T-WALL® units

A higher strength concrete may be substituted for a lower strength at no additional cost to the department.

Use cast-in-place or pre-approved, precast parapets, barriers, copings.

- (1) **Testing and Inspection.** Acceptability of the precast T-WALL® units will be determined on the basis of testing for compressive strength, slump, spread of flow (for SCC mixes) and entrained air in the concrete mixture, in addition to visual inspection. Furnish facilities for the Department to perform all necessary sampling and testing in an expeditious and satisfactory manner. Acceptance will be as herein specified.

Acceptance of the T-WALL® units with respect to compressive strength will be on the basis of production lot results. A production lot is defined as the T-WALL® units cast and represented by a single compression test result from one day's production. A minimum of four cylinders per lot will be molded to verify minimum curing and 28-day strengths. Cylinders will be cured with the product and tested in accordance with PTM No. 604 AASHTO F22). Acceptance will be based on compliance with the requirements of Section 714.4 (b) and 714.7 (a), except compression test results will be based on the average of 2 cylinders and no individual cylinder compressive strength result may be below 3600 psi.
- (2) **Forms.** Construct forms of steel in a manner that will assure the production of uniform units within specified manufacturing tolerances.

CONSTRUCTION SPECIFICATIONS (CONTINUED)

- (3) **Mixing and Placing Concrete.** Mix and deliver the concrete as specified in Section 704. For transporting, placing and consolidating concrete use methods that will prevent segregation of the concrete materials and the displacement of the steel reinforcement from its proper position in the form. Carefully place and vibrate the concrete in the forms sufficiently to produce a surface free from imperfections such as honeycomb, segregation, or cracking. Use clear form oil from the same manufacturer throughout the casting operation.

Do not place concrete when ambient temperatures are below 40° F or above 100° F. Do not use admixtures containing chlorides.

- (4) **Finish.** Provide a conventional steel form finish unless otherwise indicated. When special or decorative surface finishes are required, display for approval, a typical sample of the T-WALL® unit indicating the color, texture, and finish intended to be used.
- (5) **Tolerances.** Provide units manufactured to the following tolerances:

Face of T-WALL® unit (2.5x5.0 and 5.0x5.0 Module units) :

- Length or height = plus or minus 3/16".
- Deviation from square measured on the diagonal of the front face = 1/2".
- Thickness = minus 1/4", plus 1/2".
- Planarity and Plumbness = 1/4" deviation from a 5' straight edge.

Face of T-WALL® unit (5.0x7.5, 3.75x7.5, and 2.5x7.5 Module units) :

- Length or height = plus or minus 3/16".
- Deviation from square measured on the diagonal of the front face = 1/2".
- Thickness = minus 1/4", plus 1/2".
- Planarity and Plumbness = 1/4" deviation from a 5' straight edge.

Stem of T-WALL® unit (2.5x5.0 and 5.0x5.0 Module units) :

- Straightness = 3/4" per 10'
- Length = plus 1/4", minus 1/4"
- Thickness - plus 1/2", minus 1/4"

Stem of T-WALL® unit (5.0x7.5, 3.75x7.5, and 2.5x7.5 Module units) :

- Straightness = 3/4" per 10'
- Length = plus 1/4", minus 1/4"
- Thickness - plus 1/2", minus 1/4"

Finish of T-WALL® unit (All units) :

- Unformed top surface shall be a smooth troweled surface to eliminate open aggregate pockets and distortions in excess of 3/16".

Reinforcing steel -

- Cover = minus 1/2" to plus 1/2".
- All other dimensions plus or minus 1/2".
- Other tolerances in accordance with ACI 117.

- (6) **Marking.** Clearly scribe or paint with waterproof paint on the rear stem surface of each T-WALL® unit, the date of manufacture, the lot production number and the piece mark.
- (7) **Handling, Storing and Shipping.** Handle, store and ship all units in such a manner as to eliminate the danger of chipping, cracks, fractures and excessive handling stress.

Before shipment, examine all surfaces of precast T-WALL® units; patch all surface voids and other defects in wall surfaces in accordance with the approved quality control plan and as directed by the Engineer.

- b. **Reinforcing Steel:** Use ASTM - A 615M grade 60 deformed billet-steel bars, except for #3 stirrups which may be grade 40, in accordance with Section 709.1 (a); or steel welded wire fabric in accordance with Section 709.3. Provide epoxy coated bars for the reinforcing steel of the T-WALL® units (where indicated), parapets, copings, or barriers, in accordance with Section 709.1 (d) or 709.3 (a). Bars to be tied in a jig with wire and not welded. Epoxy coated steel bars will require coated wire ties.
- c. **Cast-in-Place Concrete:** Provide Class A concrete for leveling pads and Class AA concrete for curbs, parapets and backwalls above bridge seats conforming to the requirements of Section 704.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
SPECIFICATIONS III

SHEET 3 OF 67

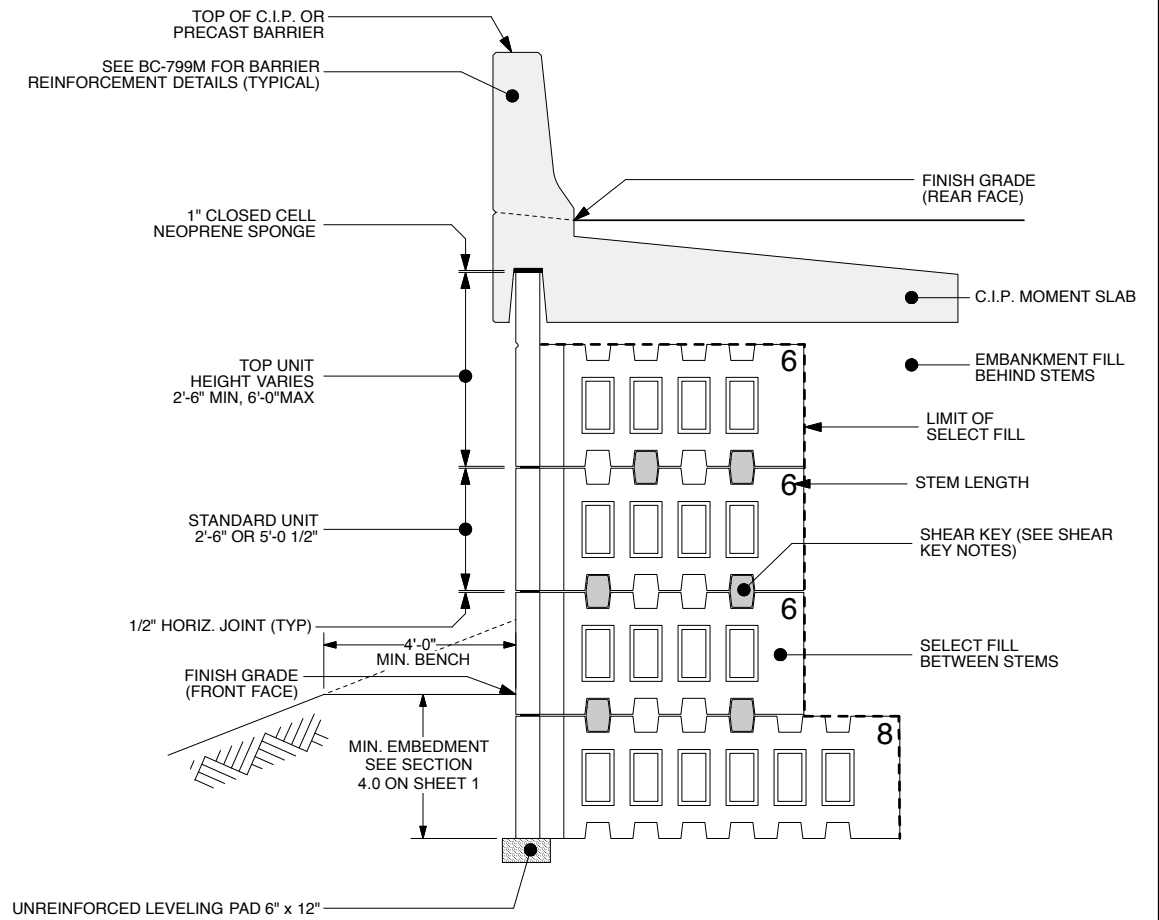
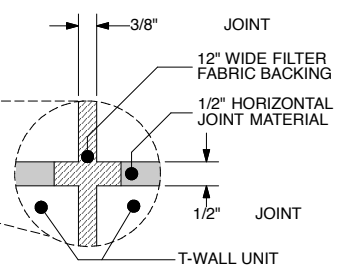
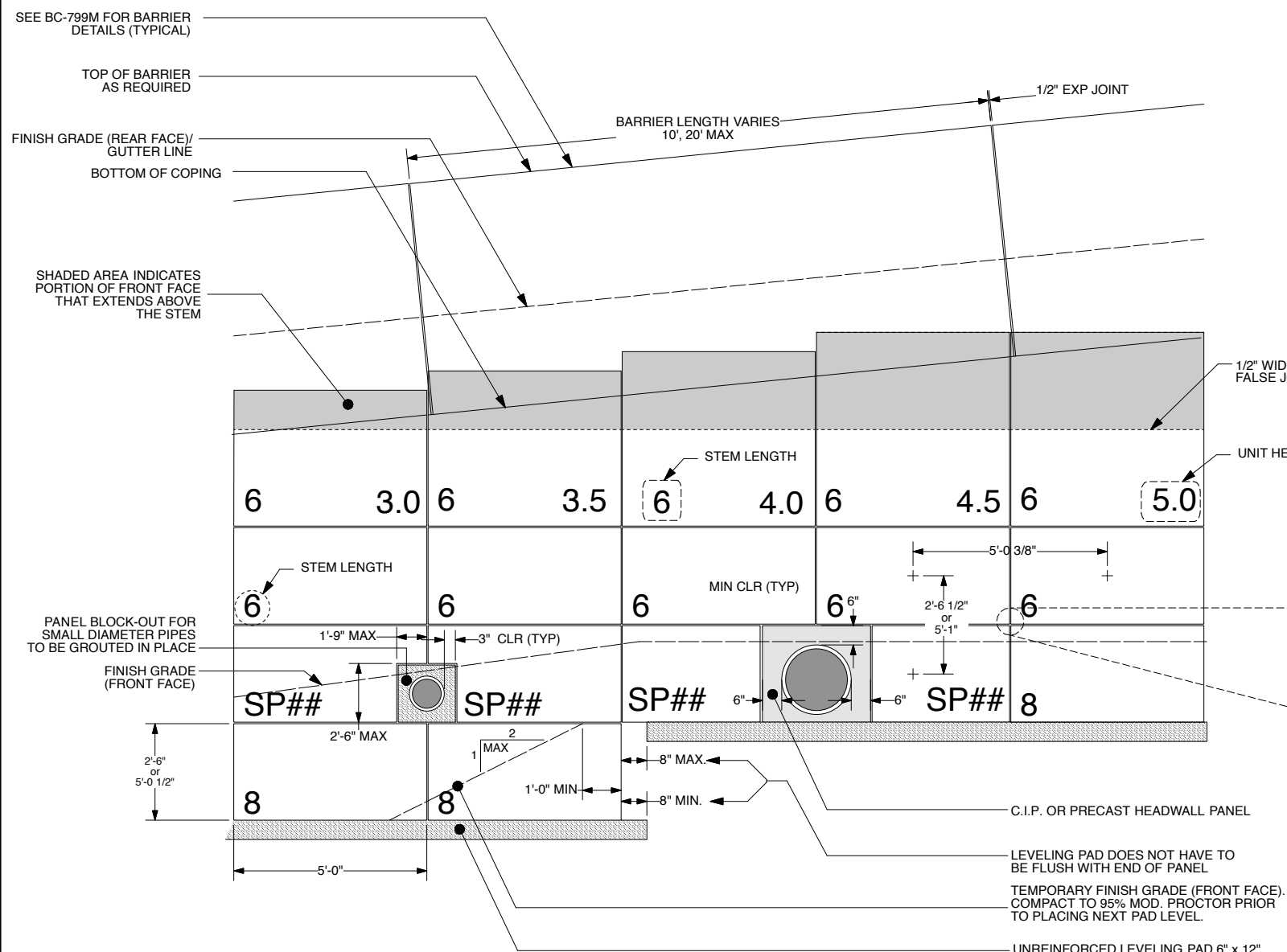
87-402 PE

5/9/2013

DESIGNER	
	THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com
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DATE:	04-08-13
SCALE:	NO SCALE
DESIGNED:	CAA
DRAWN:	CAA/CJW
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	3 OF 67

CAD FILE NAME: 004_S604_Typical Details I R2.vwx
 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:05:06 AM
 TNC JOB #: TW3634
 DATE: 04-08-13



SHEAR KEY NOTES:

1. TYPICAL DESIGN CONDITIONS
 TYPICAL LOADS AND CONFIGURATIONS REQUIRE THE FOLLOWING SHEAR KEY QUANTITIES:

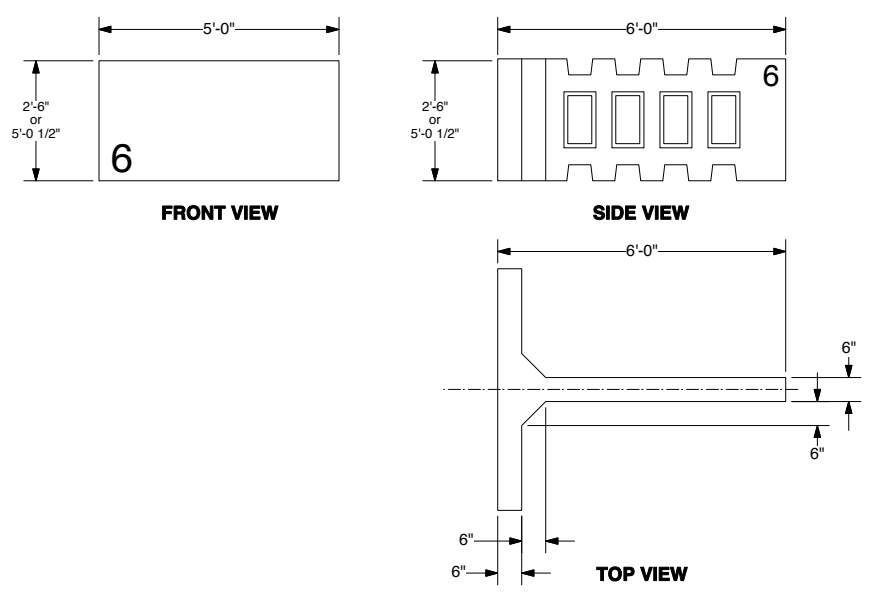
EXTENDED FACE TOP UNITS	-	2 SHEAR KEYS
6' THRU 30' STEM STANDARD UNIT	-	2 SHEAR KEYS (MIN)

2. SPECIAL DESIGN CONDITIONS
 OTHER LOADS AND CONFIGURATIONS MAY REQUIRE MORE OR LESS SHEAR KEYS. IN THESE CASES, SHEAR KEY REQUIREMENTS WILL BE EXPLICITLY DEFINED ON A PROJECT SPECIFIC BASIS.

3. LOCATION
 THE LOCATION OF A SHEAR KEY ALONG THE STEM OF A T-WALL® UNIT IS NOT CRITICAL, AND DOES NOT HAVE TO BE PLACED EXACTLY AS SHOWN ON THE PROJECT DRAWINGS.

FOR EXAMPLE, IF THE DRAWINGS SHOW SHEAR KEYS IN THE FIRST AND THIRD SHEAR KEY NOTCHES, THE SHEAR KEYS CAN BE PLACED IN THE SECOND AND FOURTH NOTCHES AND STILL PERFORM THEIR INTENDED DESIGN FUNCTION.

PARTIAL ELEVATION SHOWING TYPICAL DETAILS (NO SCALE)



NOTES:

- TYPICAL PIPE PENETRATION SHOWN. LARGER PIPES WILL BE ENGINEERED ON A PROJECT SPECIFIC BASIS.
- OUTLET PIPE JOINTS SHALL BE WATERTIGHT. OUTLET PIPES SHALL MEET 100 YEAR SERVICE LIFE CRITERIA.

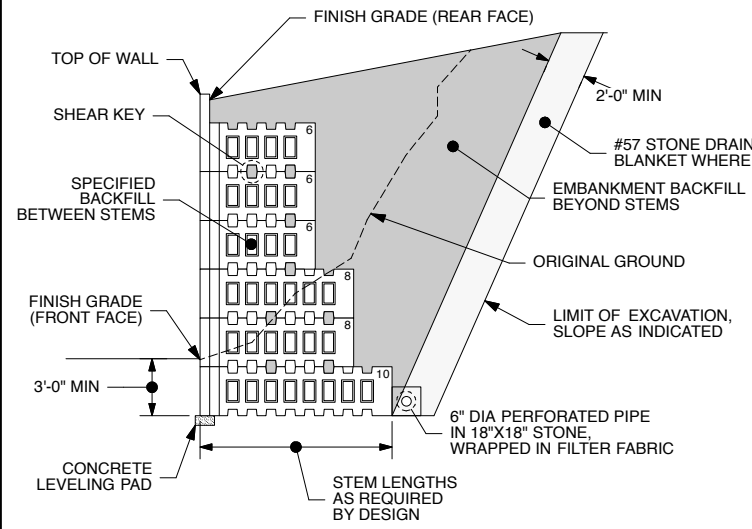
SECTION SHOWING TYPICAL DETAILS (NOT ALL DETAILS APPLY TO EACH WALL SEE " TYPICAL SECTION AT MAXIMUM HEIGHT" FOR APPLICABLE DETAILS)

PA DOT DWG #87-402 PE (REVISION III) COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY	
T-WALL® STANDARDS PREFABRICATED T-WALL® RETAINING WALL SYSTEM	
SHOP DRAWINGS TYPICAL DETAILS	
	SHEET 4 OF 67 (REVISION III) 87-402 PE

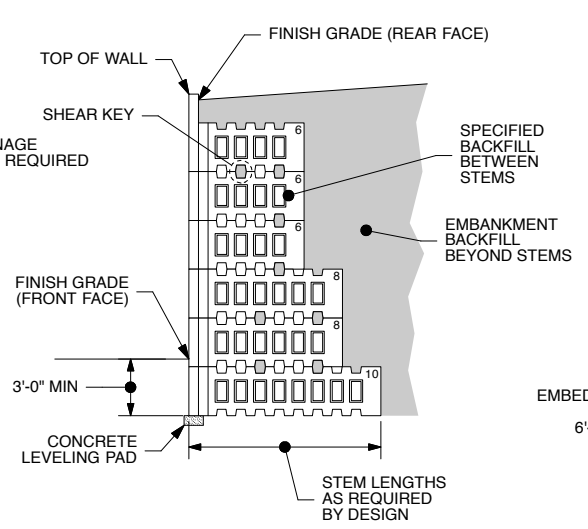
DESIGNER THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	DATE: 04-08-13 SCALE: NO SCALE DESIGNED: CAA DRAWN: CAA/ACS CHECKED: CCG/KD TNC JOB #: TW3634 TNC SHT #: 4 OF 67
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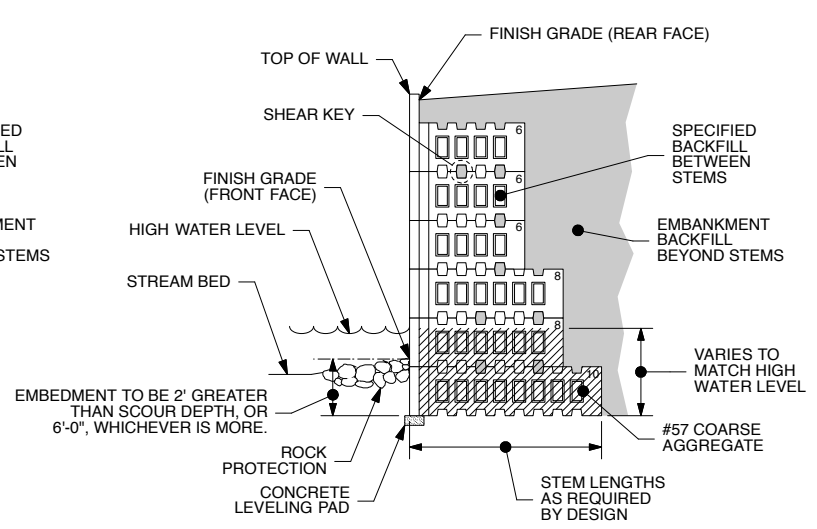
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 DATE: 04-08-13 TNC JOB #: TW3634



TYPICAL CUT SECTION

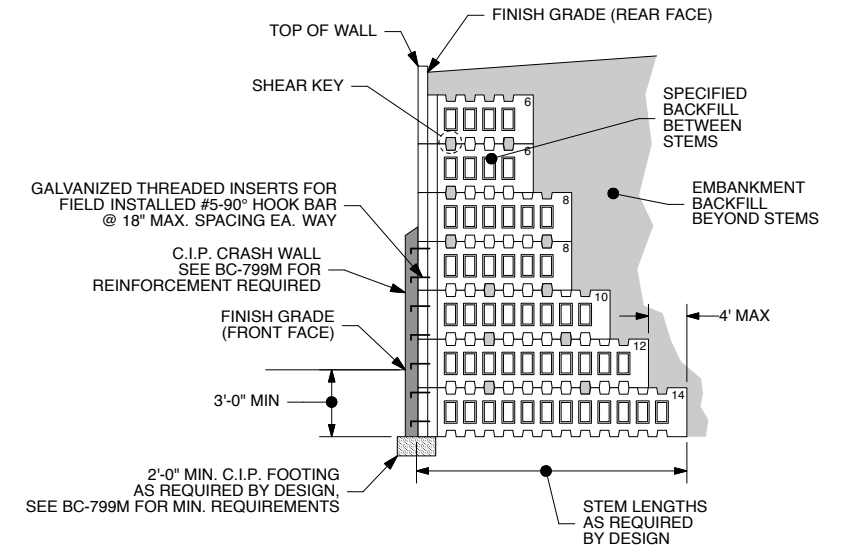


TYPICAL FILL SECTION



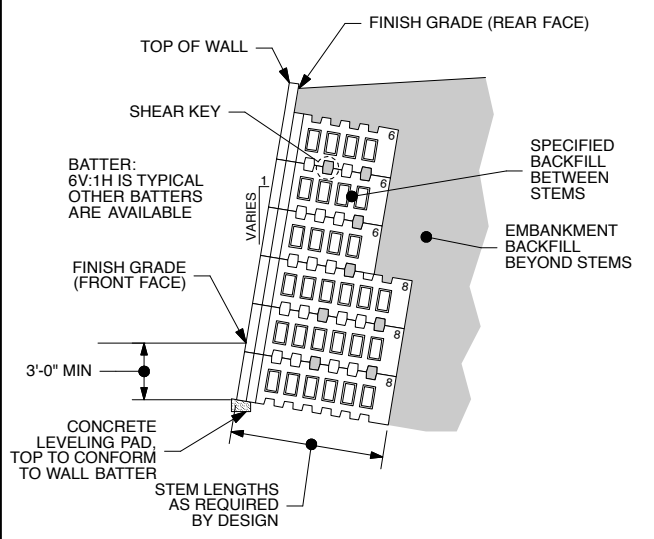
TYPICAL SECTION AT STREAM

NOTE:
 THE NEEL COMPANY WILL PROVIDE CALCULATIONS BASED ON THE SPECIFIC SITE CONDITIONS, THE DESIGN FLOOD LEVEL AND 3' OF DIFFERENTIAL WATER LEVEL.

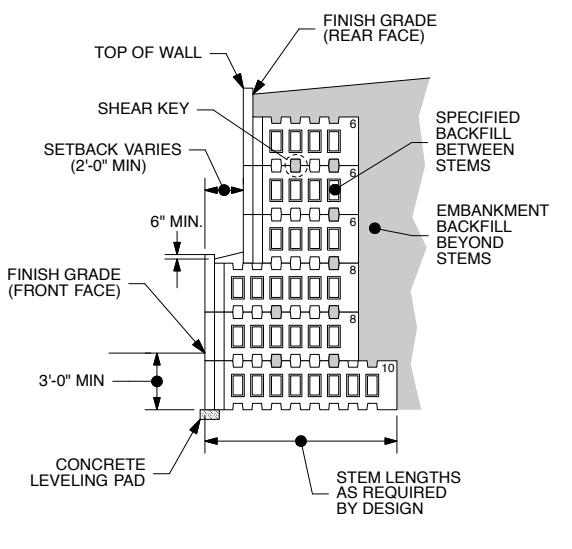


TYPICAL SECTION AT CRASH WALL

NOTES:
 1. PROVIDE 4" DIA. WEEP HOLES THROUGH C.I.P. CRASH WALL AT 10' MAX. SPACING.
 2. SEE BC-799M SHEET 3 FOR CRASH WALL REQUIREMENTS NOTES.

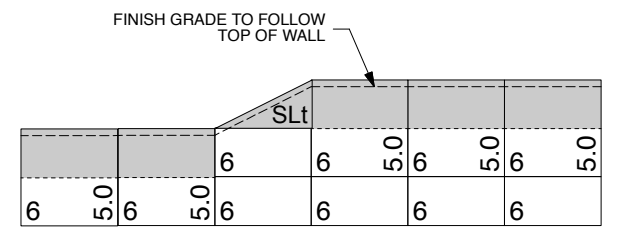


TYPICAL BATTERED SECTION

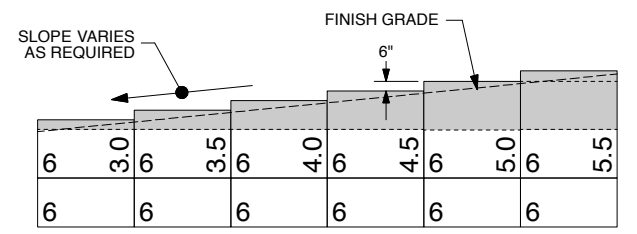


TYPICAL TIERED SECTION

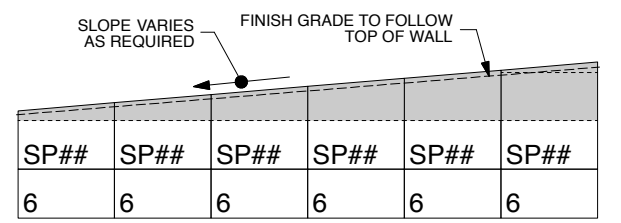
NOTE:
 THE NEEL COMPANY SHALL PROVIDE DESIGN CALCULATIONS BASED ON SPECIFIC SITE CONDITIONS OF EACH PROJECT.



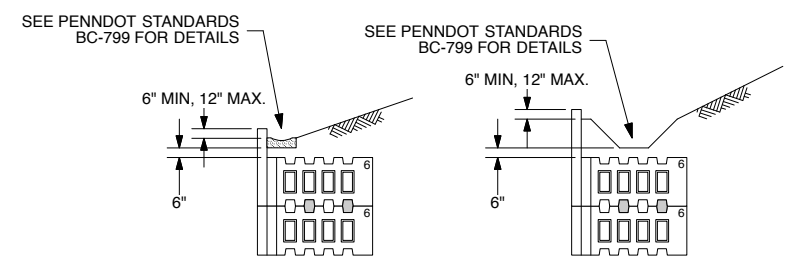
TOP OF WALL USING TRIANGULAR TOP UNITS



TOP OF WALL USING STANDARD TOP UNITS

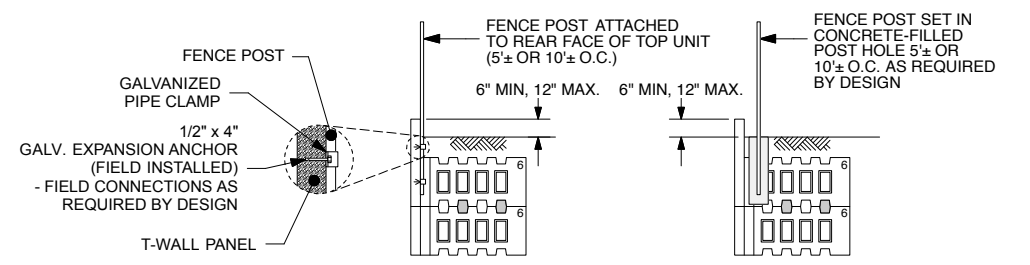


TOP OF WALL USING SLOPE TOP UNITS
 THIS OPTION MAY NOT BE AVAILABLE FOR ALL PROJECTS



PAVED DITCH DETAIL

DRAINAGE DITCH



FENCE DETAIL B

FENCE DETAIL A

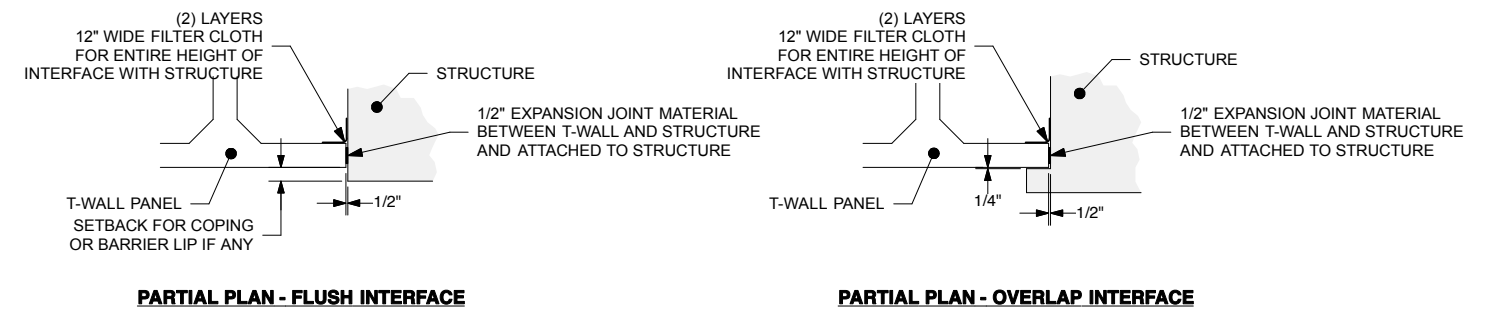
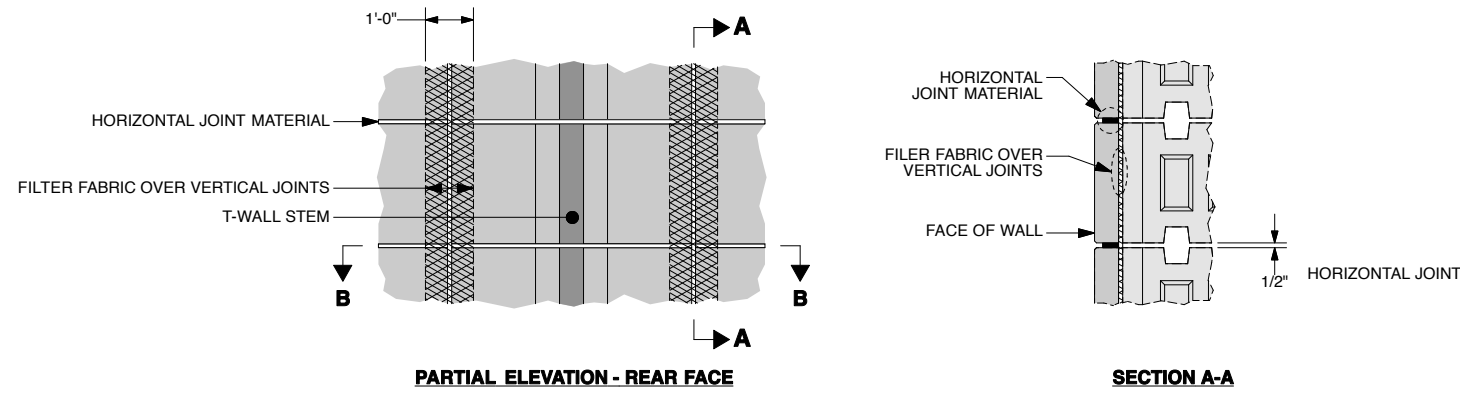
PA DOT DWG #87-402 PE (REVISION III)
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY
T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM
SHOP DRAWINGS
TYPICAL DETAILS
SECTIONS AND TOP OF WALL OPTIONS

DESIGNER THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com <small>This drawing contains information proprietary to The Neel Company. The Neel Company is the exclusive licensee of the T-WALL® patent. © 2013, The Neel Company.</small>	DATE: 04-08-13 SCALE: NO SCALE DESIGNED: CAA DRAWN: CAA/ACS CHECKED: CCG/KD TNC JOB #: TW3634 TNC SHT #: 5 OF 67
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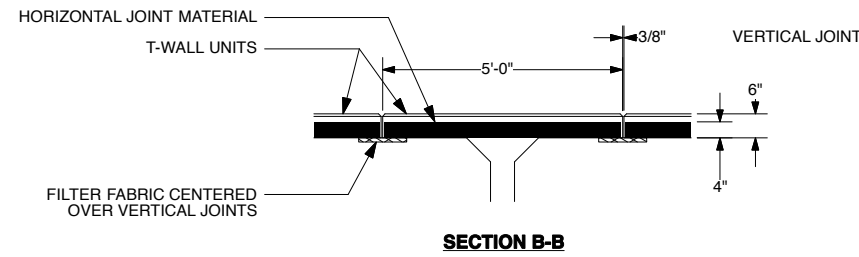
SHEET 5 OF 67

87-402 PE

5/9/2013

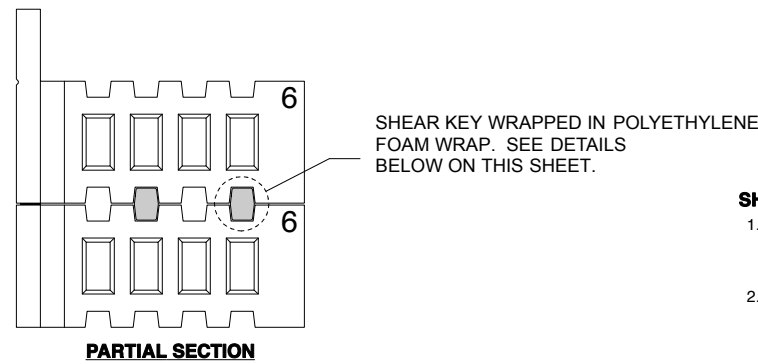


INTERFACE WITH STRUCTURE

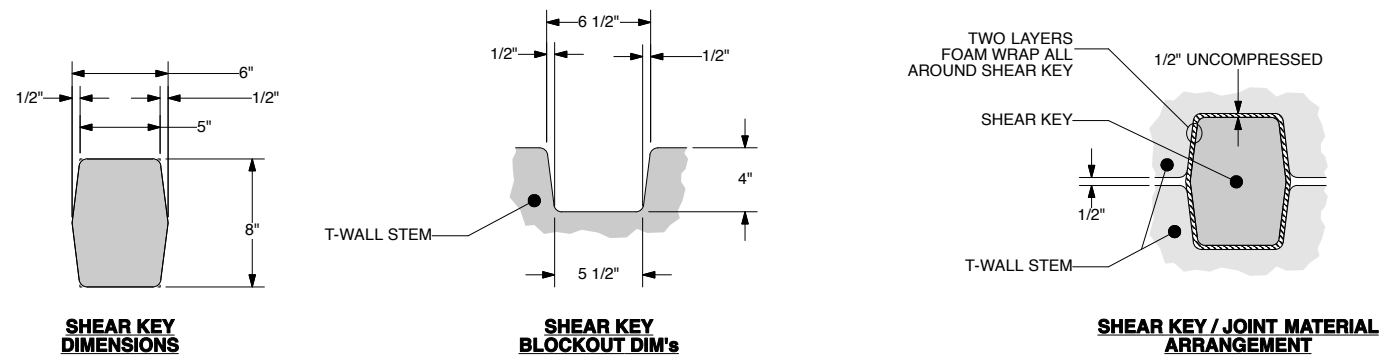


- JOINT NOTES:**
- HORIZONTAL JOINT:**
 - 1/2" x 4" x 5'-0" HORIZONTAL JOINT MATERIAL
 - VERTICAL JOINT:**
 - 3/8" SPACE
 - 12" FILTER FABRIC CENTERED AT JOINT CENTERLINE.

HORIZONTAL AND VERTICAL JOINTS




- SHEAR KEY NOTES:**
- FOAM WRAP MAY BE ADDED OR REMOVED TO AID IN SHIMMING AND ALIGNING, HOWEVER SHEAR KEY MUST FIT SNUG IN THE SHEAR KEY BLOCKOUT WHEN UNIT IS IN ITS FINAL POSITION.
 - FOR MINIMUM NUMBER OF SHEAR KEYS REQUIRED PER UNIT, SEE NOTES ON SHEET 4 OF 23.



SHEAR KEY DETAILS

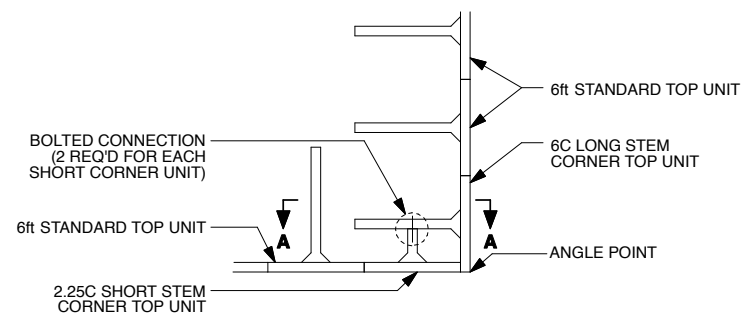
5/9/2013

DESIGNER		DATE: 04-08-13	PA DOT DWG #87-402 PE (REVISION III) COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY T-WALL® STANDARDS PREFABRICATED T-WALL® RETAINING WALL SYSTEM SHOP DRAWINGS TYPICAL DETAILS SHEAR KEY, JOINT & STRUCTURE INTERFACE DETAILS	SHEET 6 OF 67
 THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com		SCALE: NO SCALE		
		DESIGNED: CAA		
		DRAWN: CAA/ACS		
		CHECKED: CCG/KD		
		TNC JOB #: TW3634		
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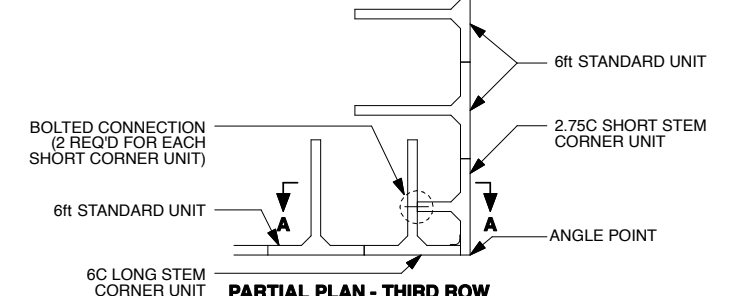
NOTE:
STANDARD UNITS WITH A "C" DESIGNATION INDICATE CORNER UNITS WHERE SIDE PAN AND SHEAR KEY BLOCKOUTS HAVE BEEN OMITTED TO PERMIT BOLTING OF SHORT STEM UNITS (2.25C AND 2.75C)

	ANGLE POINT											
FOURTH ROW	6	4.0	6	4.0	2.25C	4.0	6C	4.0	6	4.0	6	4.0
THIRD ROW	6	6	6	6	6C	6	6	6	6	6	6	6
SECOND ROW	8	8	8	8	2.25C	8	7.5C	7.5C	8	8	8	8
FIRST ROW	10	10	10	10	10C	10	2.75C	2.75C	10	10	10	10

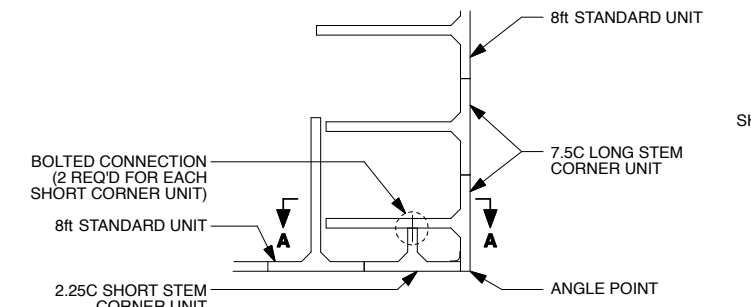
PARTIAL ELEVATION



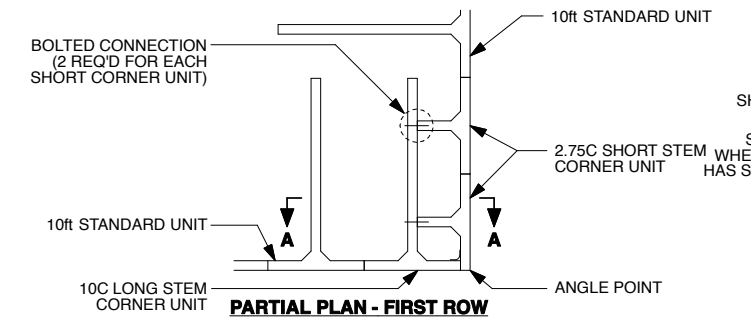
PARTIAL PLAN - FOURTH ROW



PARTIAL PLAN - THIRD ROW



PARTIAL PLAN - SECOND ROW



PARTIAL PLAN - FIRST ROW

STEM LENGTHS VARY - SEE SPECIFIC ELEVATIONS FOR PROPER UNITS

TYPICAL CORNER UNIT ARRANGEMENT

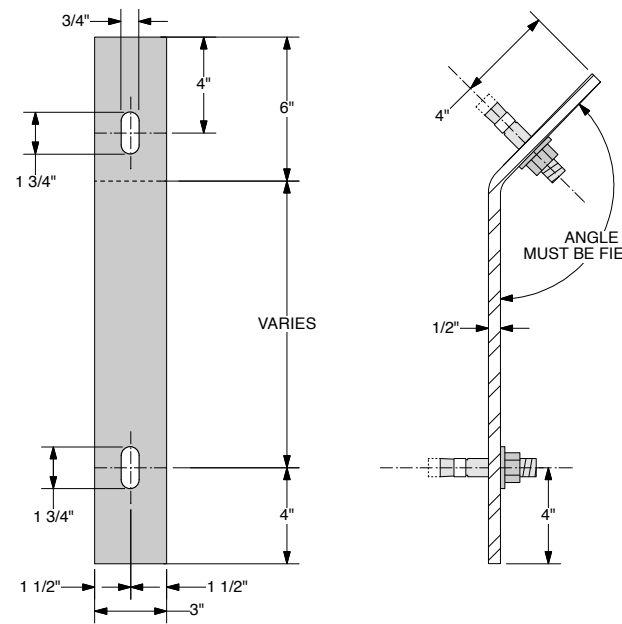
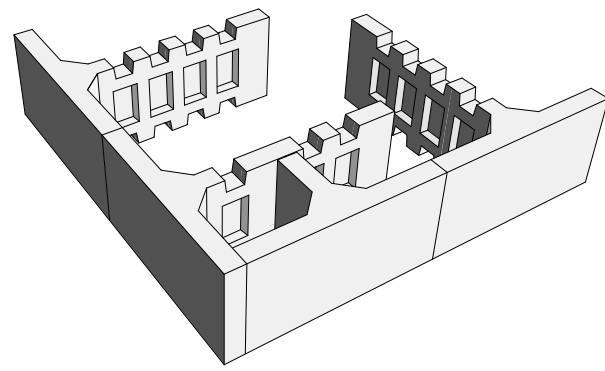
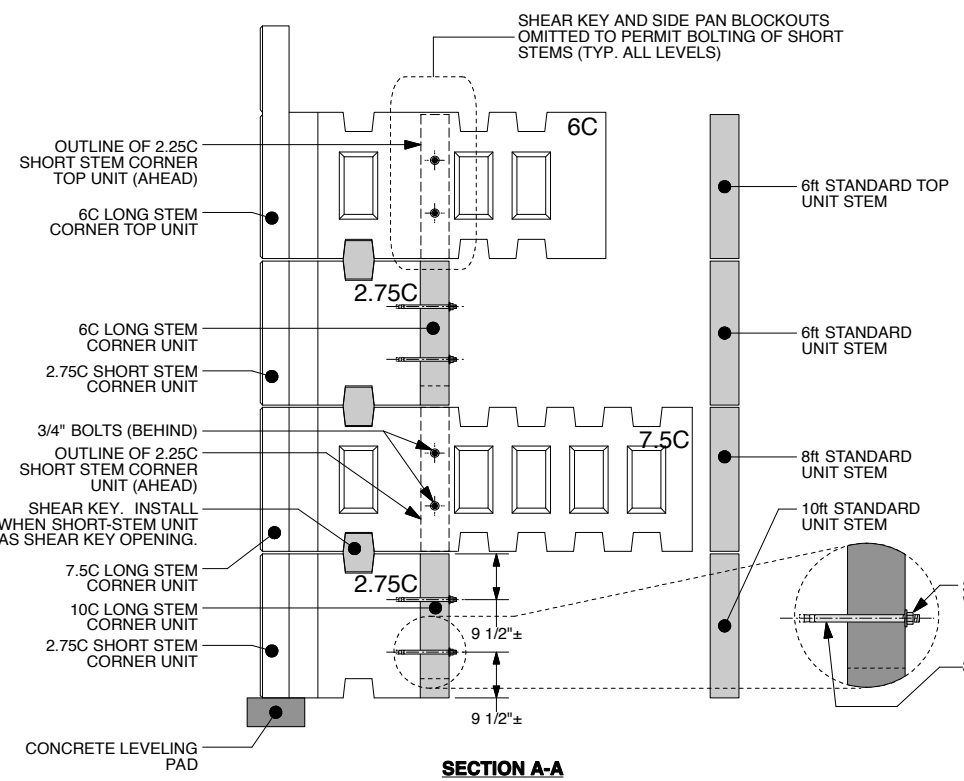
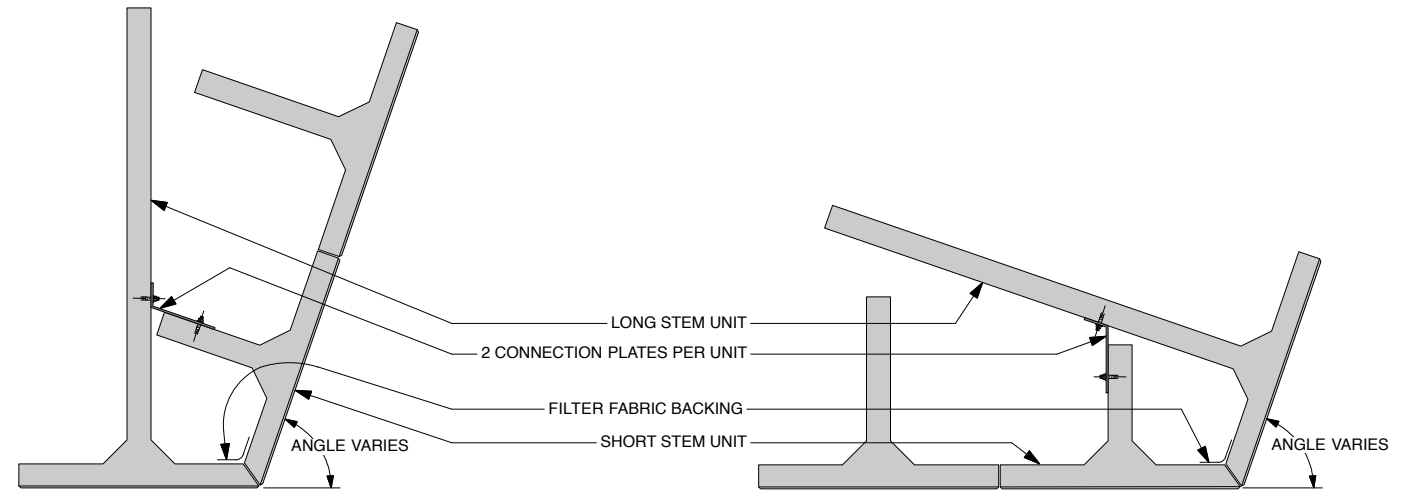


PLATE DETAILS CROSS SECTION



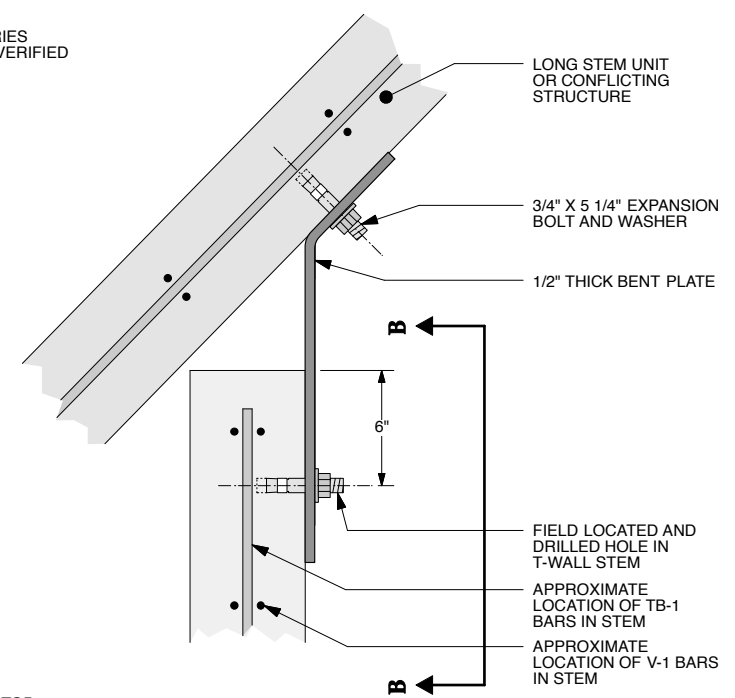
TYPICAL 90° CORNER UNIT ARRANGEMENT



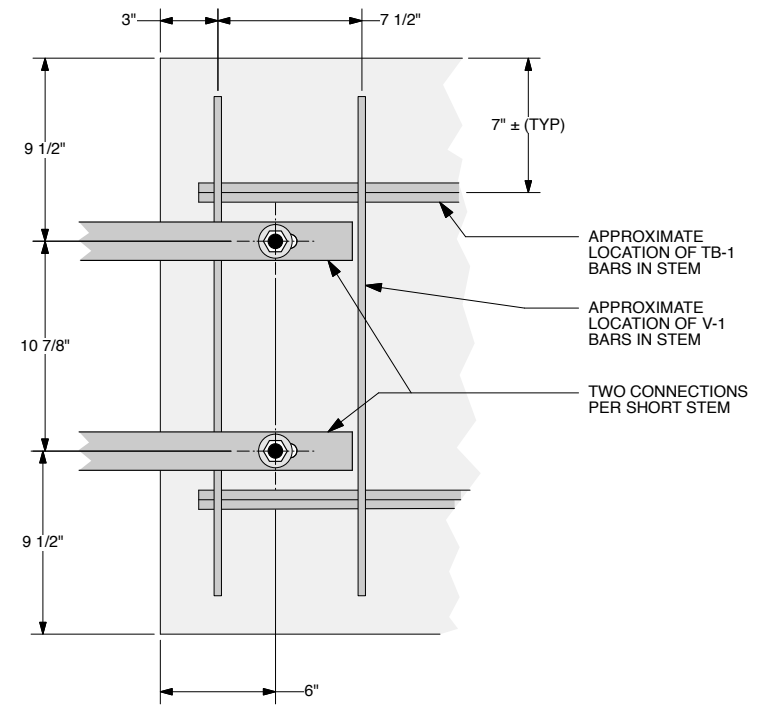
PART PLAN - FIRST ROW

NOTE:
ALL SHORT STEM UNITS MUST BE BOLTED TO THE LONG STEM UNIT BASED ON THE WALL HEIGHT

PART PLAN - SECOND ROW



TYPICAL BOLTED CONNECTION FOR CULVERT



VIEW B-B

TYPICAL ANGLE POINT DETAIL

- NOTES:**
1. ALL HARDWARE TO BE PROVIDED BY THE PRECASTER.
 2. ALL HARDWARE TO BE STAINLESS STEEL OR GALVANIZED PER ASTM A153.
 3. STAINLESS STEEL, ANCHOR BODY, ANCHOR ELEMENT, NUT AND WASHER CONFORM TO AISI 304 OR AISI 316.
 4. GALVANIZED STEEL CONFORMS TO ASTM A36.
 5. GALVANIZED BOLT CONFORMS TO ASTM A325 TYPE 1; GALVANIZED NUT CONFORMS TO ASTM A563; GALVANIZED WASHER CONFORMS TO ASTM F436.

REV	DESCRIPTION	BY	CHK'D	REC'D	DATE

PA DOT DWG #87-402 PE (REVISION III)

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

**SHOP DRAWINGS
TYPICAL DETAILS
CORNER DETAIL (I)**

DESIGNER
THE NEEL COMPANY
8328-D TRAFORD LANE
SPRINGFIELD, VA 22152
PH: (703) 913-7858
FX: (703) 913-7859
Web: www.neelco.com

DATE: 04-08-13
SCALE: NO SCALE
DESIGNED: CAA
DRAWN: CAA
CHECKED: CCG/KD
TNC JOB #: TW3634
TNC SHT #: 7 OF 67

5/9/2013

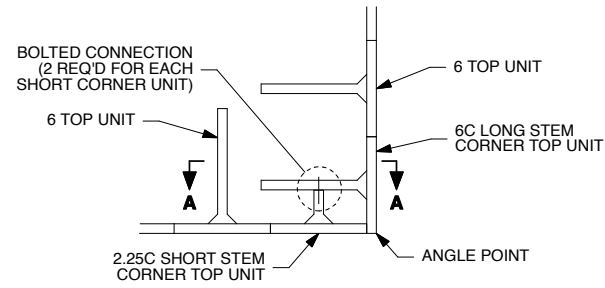
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CAD FILE NAME: 008 S508 Typ Dis - Corner II R2.vwx

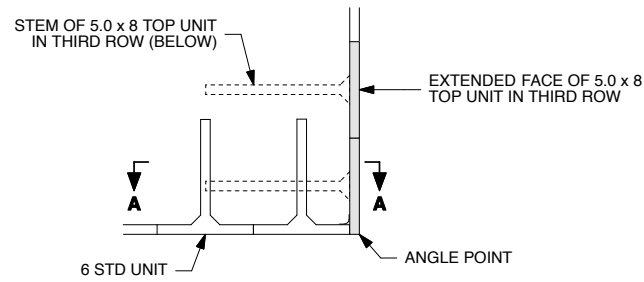
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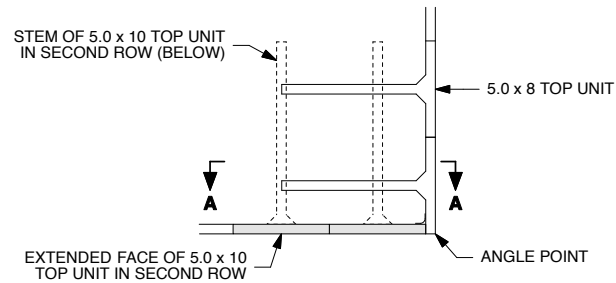
DATE: 04-08-13



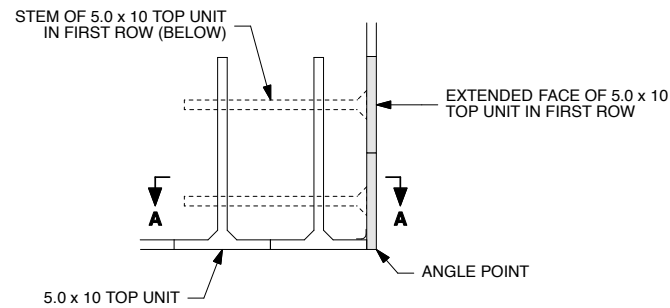
PARTIAL PLAN - FIFTH ROW



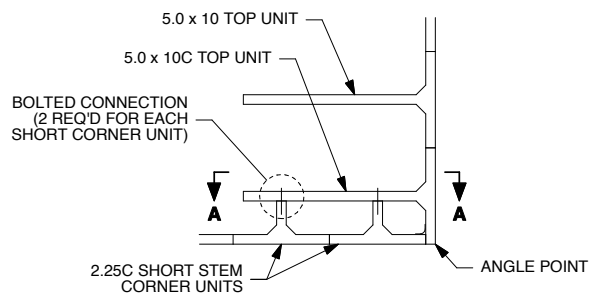
PARTIAL PLAN - FOURTH ROW



PARTIAL PLAN - THIRD ROW



PARTIAL PLAN - SECOND ROW



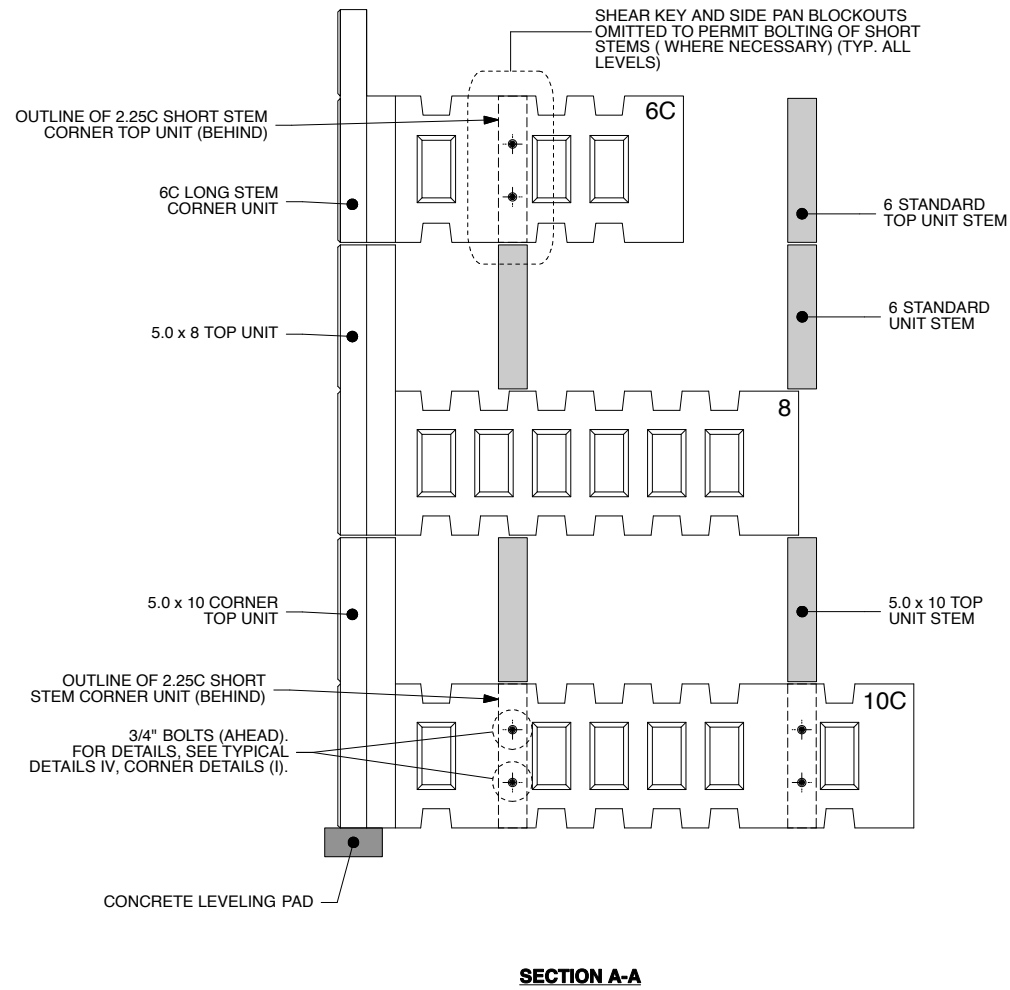
PARTIAL PLAN - FIRST ROW

TYPICAL CORNER UNIT ARRANGEMENT
STEM LENGTHS VARY - SEE SPECIFIC ELEVATIONS FOR PROPER UNITS

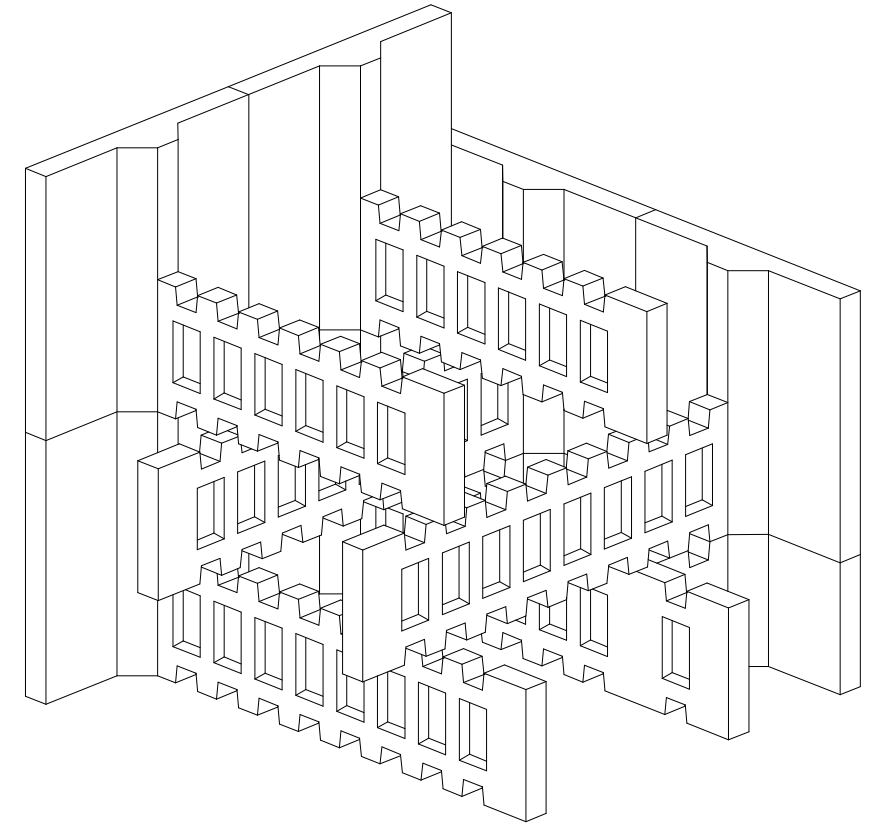
ANGLE POINT

FIFTH ROW	6	4.0	6	4.0	2.25C	4.0	6C	4.0	6	4.0	6	4.0
FOURTH ROW	6	6	6						6			
THIRD ROW	8						8	5.0	8	5.0	8	
SECOND ROW	10	10	5.0	10	5.0						10	
FIRST ROW	10	2.25C	2.25C				10C	5.0	10	5.0	10	

PARTIAL ELEVATION



SECTION A-A



NOTES:

1. THE NEEL COMPANY WILL PROVIDE CALCULATIONS AND DESIGN FOR THIS DETAIL ON A PROJECT BY PROJECT BASIS.
2. ALL HARDWARE TO BE PROVIDED BY THE PRECASTER.
3. ALL HARDWARE TO BE STAINLESS STEEL OR GALVANIZED PER ASTM A153.
4. FOR BOLTED CONNECTION DETAILS, SEE SHEET 7 OF 23.

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
TYPICAL DETAILS
CORNER DETAIL (II)

DESIGNER

THE NEEL COMPANY
8328-D TRAFORD LANE
SPRINGFIELD, VA 22152
PH: (703) 913-7858
FK: (703) 913-7859
Web: www.neelco.com

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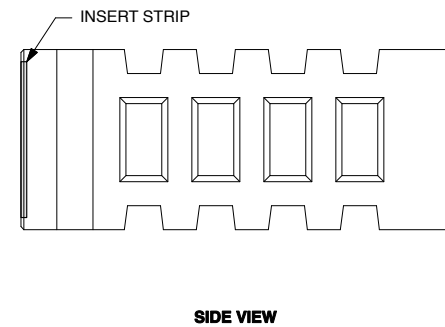
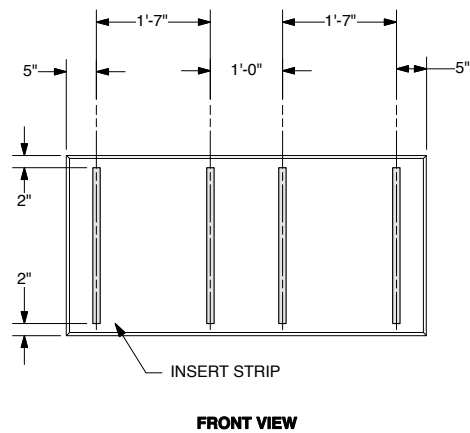
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SCALE:	NO SCALE
DESIGNED:	CAA
DRAWN:	CAA
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	8 OF 67

SHEET 8 OF 67

87-402 PE

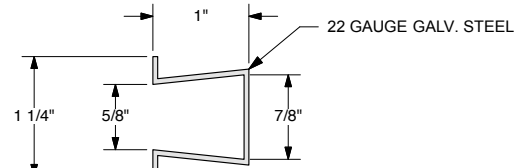
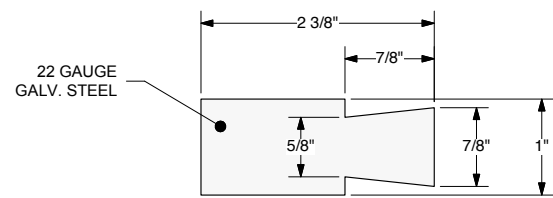
5/9/2013

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 DATE: 04-08-13



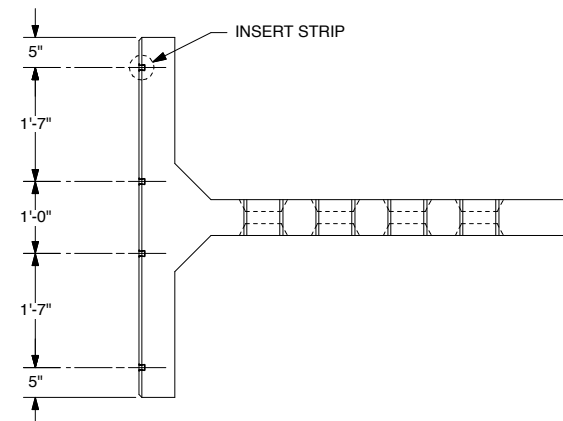
FRONT VIEW

SIDE VIEW

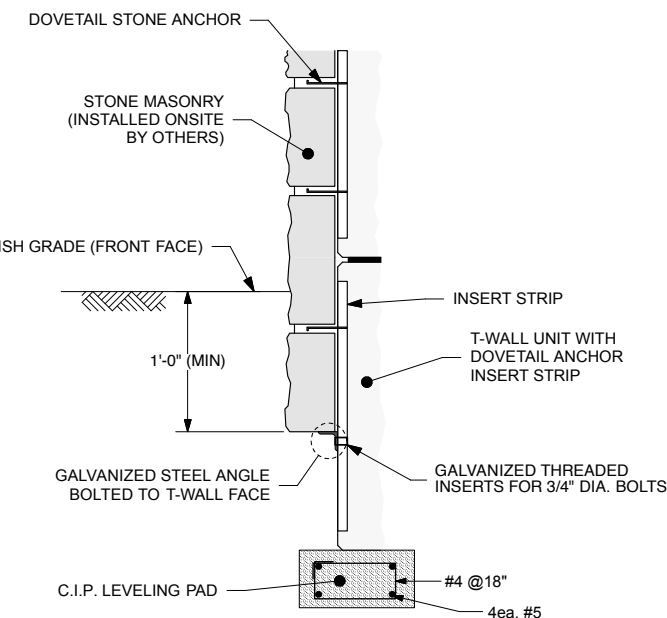
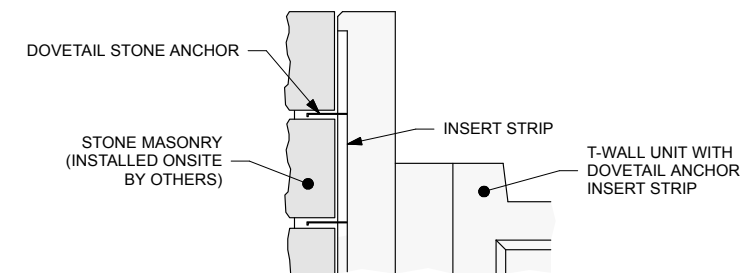


DOVETAIL STONE ANCHOR
SCALE: 1:1

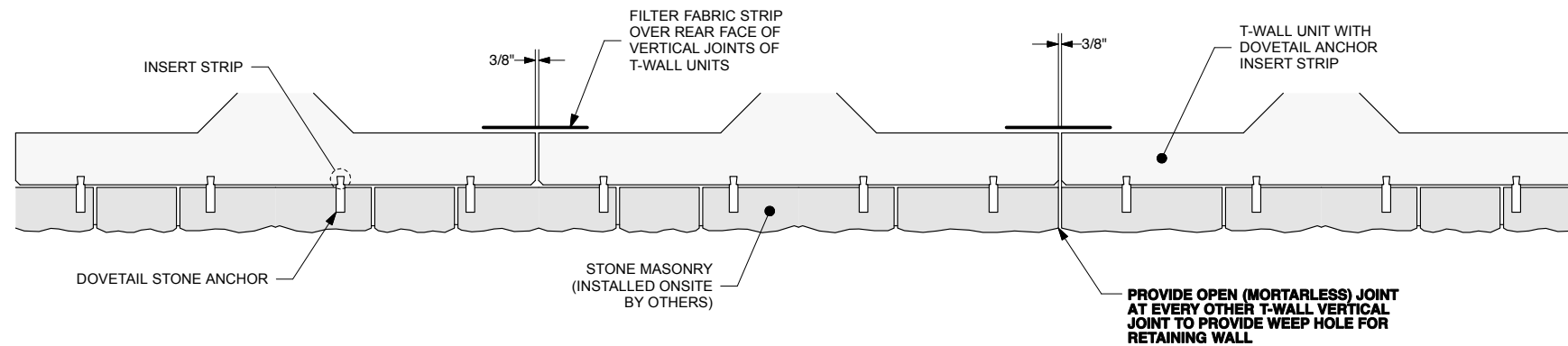
INSERT STRIP
SCALE: 1:1



TOP VIEW



PARTIAL WALL SECTION
SCALE: 1:10



PARTIAL HORIZONTAL SECTION
SCALE: 1:10

NOTE:
PROVIDE 4" DIA. PVC WEEP HOLES AT
10' MAX. SPACING, ALTERNATING WITH
OPEN MORTARLESS JOINTS.

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
TYPICAL DETAILS
STONE MASONRY VENEER FACING

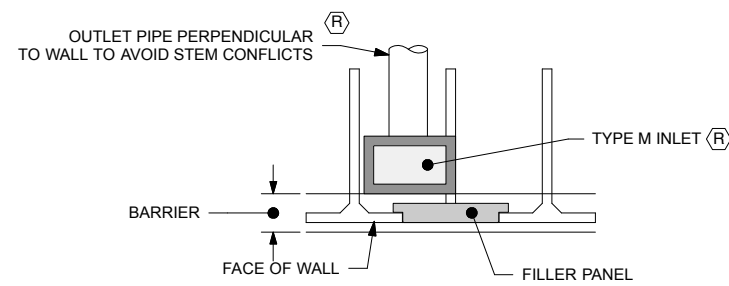
	DESIGNER THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	DATE: 04-08-13 SCALE: NO SCALE DESIGNED: CAA DRAWN: CAA/ACS CHECKED: CCG/KD TNC JOB #: TW3634 TNC SHT #: 9 OF 67
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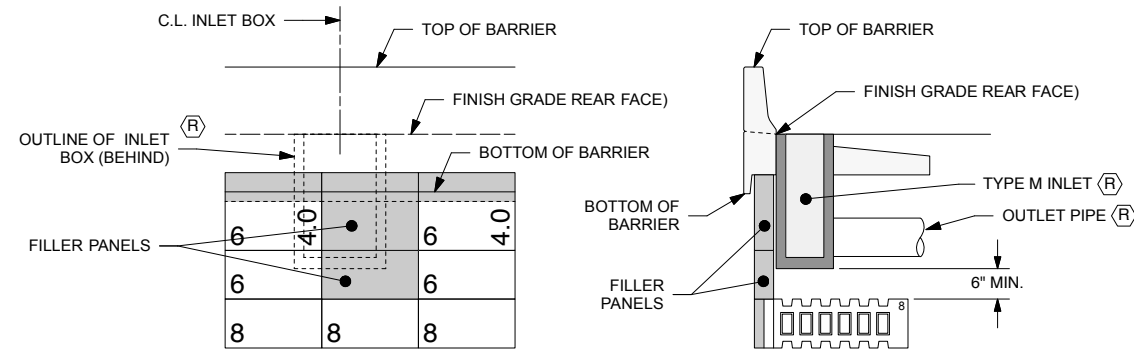
SHEET 9 OF 67

87-402 PE

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 DATE: 04-08-13



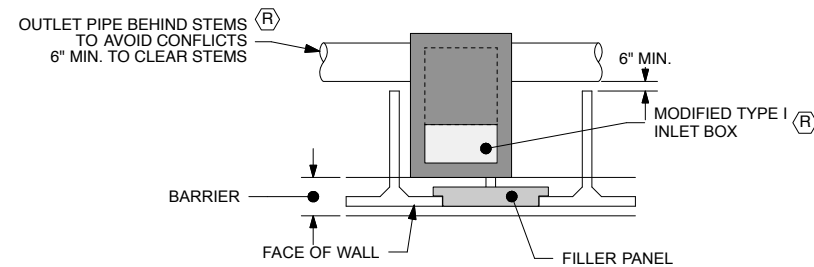
PART PLAN



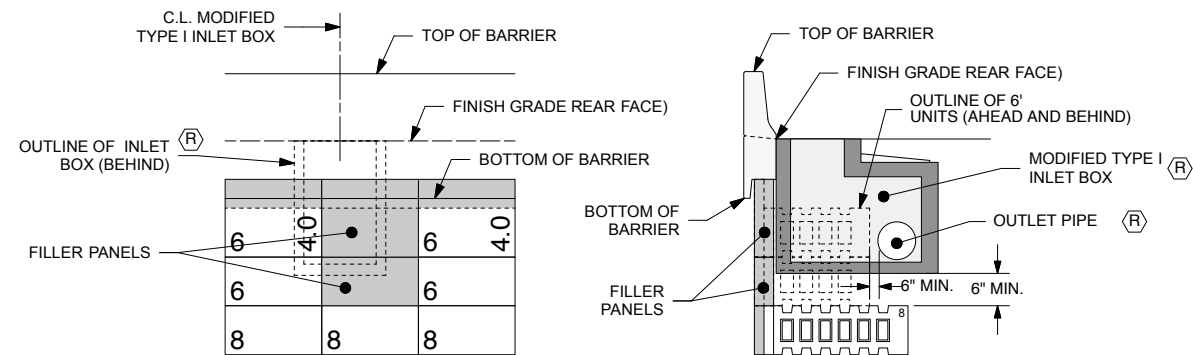
PART ELEVATION (FRONT FACE)

PART SECTION

DRAINAGE PIPE PERPENDICULAR TO WALL FACE



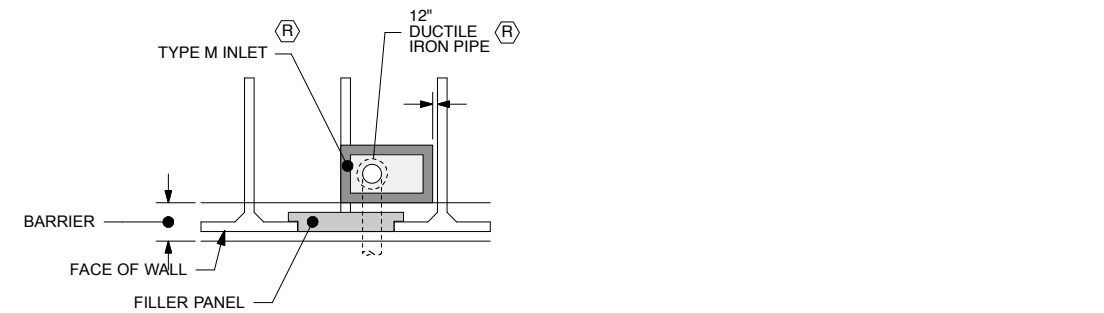
PART PLAN



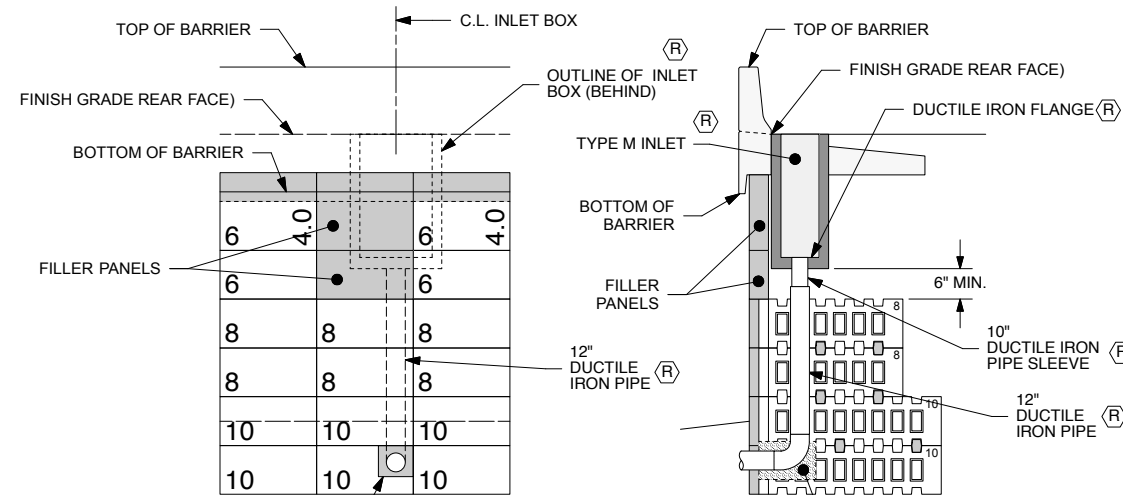
PART ELEVATION (FRONT FACE)

PART SECTION

DRAINAGE PIPE PARALLEL TO WALL FACE



PART PLAN



PART ELEVATION (FRONT FACE)

PART SECTION

DRAINAGE PIPE THRU WALL FACE

NOTE:
 OUTLET PIPE JOINTS SHALL BE WATERTIGHT. OUTLET PIPE SHALL MEET 100 YEAR SERVICE LIFE CRITERIA.

LEGEND

(R) ROADWAY ITEM

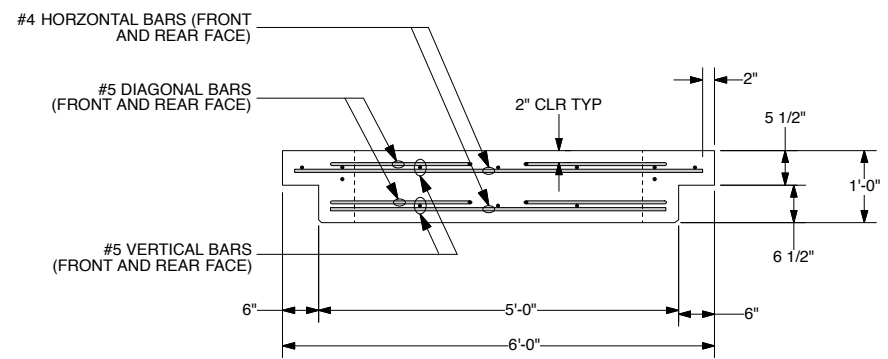
5/9/2013

DESIGNER	
 THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	
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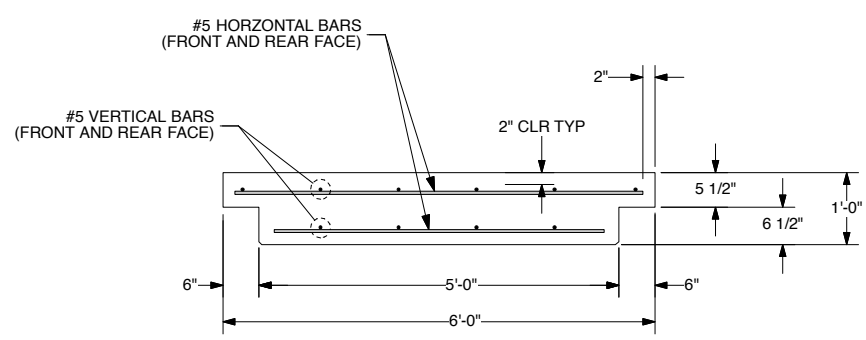
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DESIGNED: CAA
DRAWN: CAA/ACS
CHECKED: CCG/KD
TNC JOB #: TW3634
TNC SHT #10 OF 67

PA DOT DWG #87-402 PE (REVISION III) COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY	
T-WALL® STANDARDS PREFABRICATED T-WALL® RETAINING WALL SYSTEM	
SHOP DRAWINGS TYPICAL DETAILS DRAINAGE STRUCTURES (I)	
	SHEET 10 OF 67
	87-402 PE

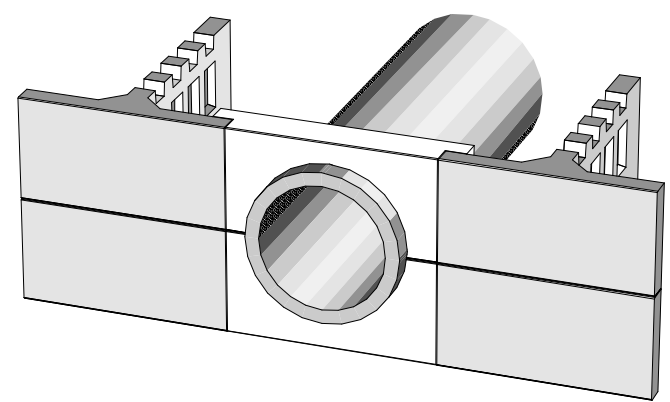
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 DATE: 04-08-13



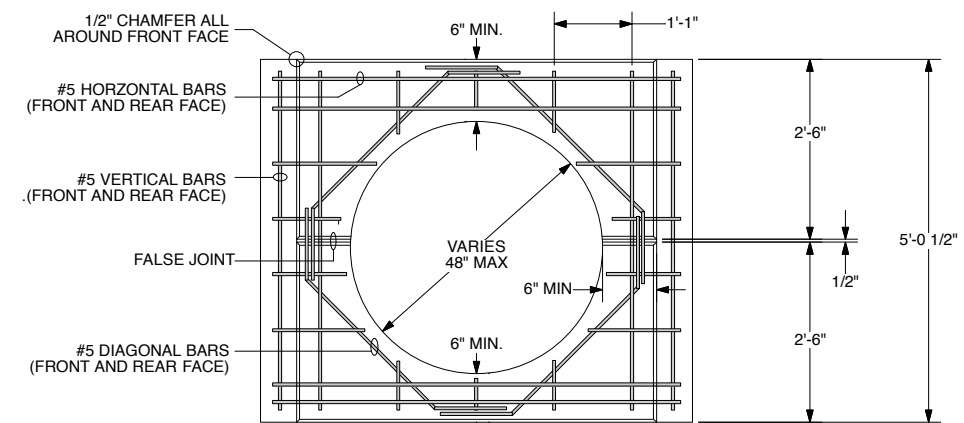
TYPICAL HORIZONTAL SECTION



TYPICAL HORIZONTAL SECTION

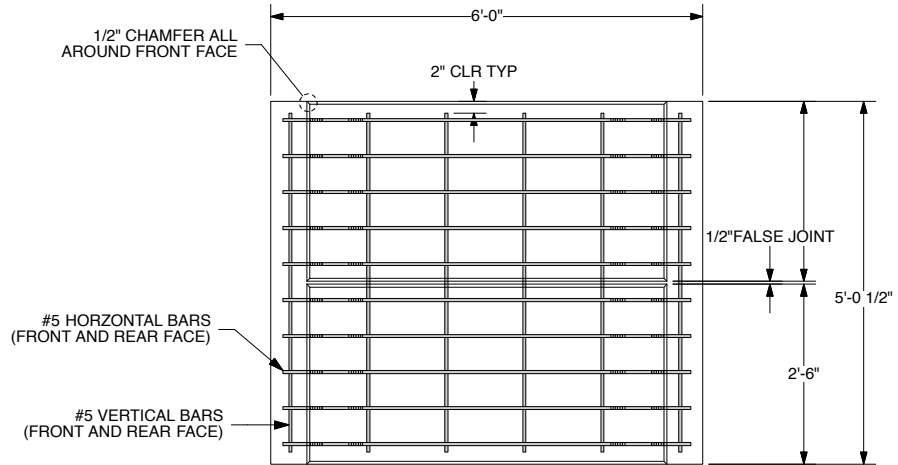


PIPE PENETRATION
(SEE SHEET 4 OF 16 FOR MORE DETAILS)



ELEVATION (FRONT FACE)

TYPICAL 5'-0" x 5'-0" PRECAST OR C.I.P. HEADWALL



ELEVATION (FRONT FACE)

TYPICAL PRECAST OR C.I.P. FILLER PANEL

- NOTES:
- DESIGN SHOWN IS FOR CONCEPT ONLY. ACTUAL PANEL DIMENSIONS AND REINFORCING SHALL BE DESIGNED FOR PROJECT SPECIFIC CASES.
 - FOR JOINT BETWEEN FILLER PANEL AND T-WALL REAR FACE, USE FIBER EXPANSION JOINT MATERIAL SPECIFIED IN T-WALL CONSTRUCTION AND MANUFACTURING SPECIFICATIONS 2.0d (SHEET 2).
 - SEE BC-736M FOR MIN. LAP SPLICE LENGTH OF #5 DIAGONAL BARS.

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
TYPICAL DETAILS
DRAINAGE STRUCTURES (II)

DESIGNER	
 THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	
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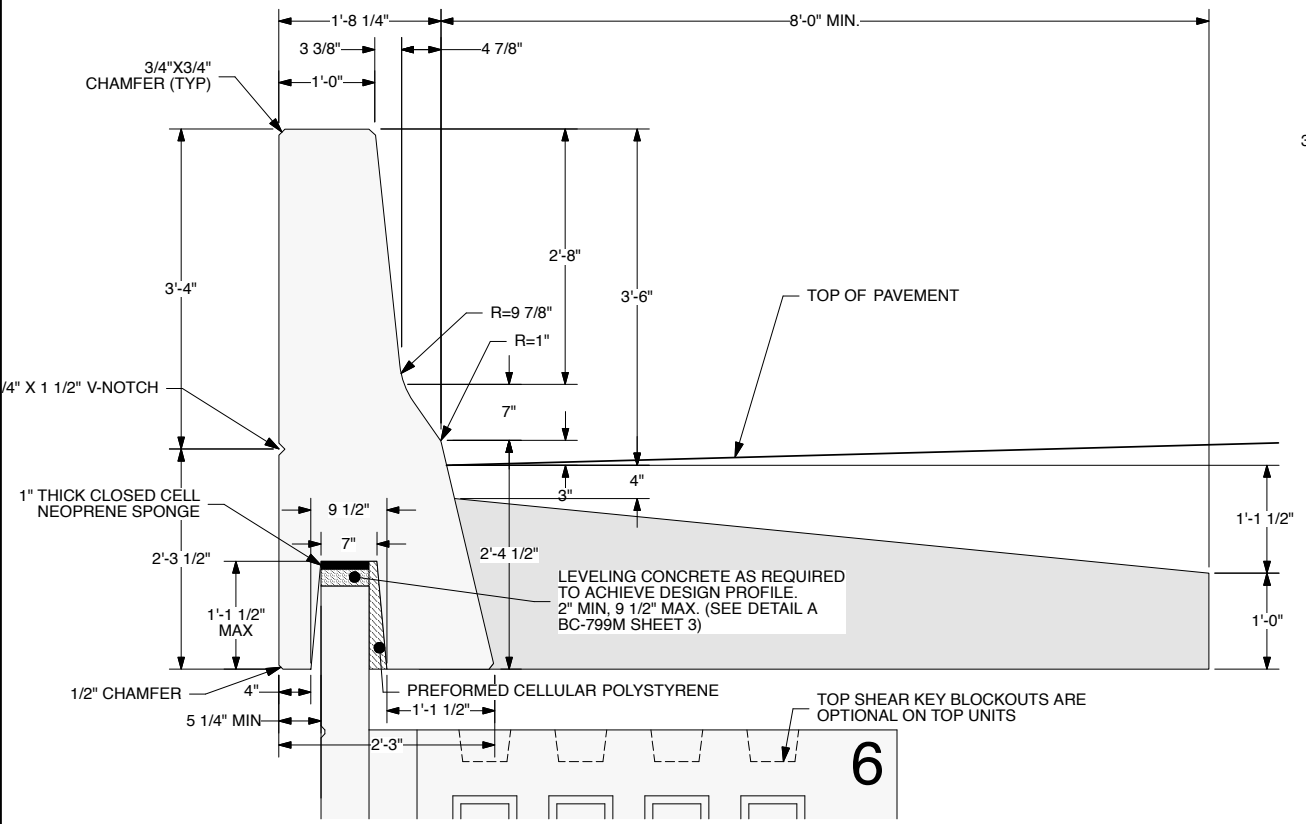
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CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	#11 OF 67

5/9/2013

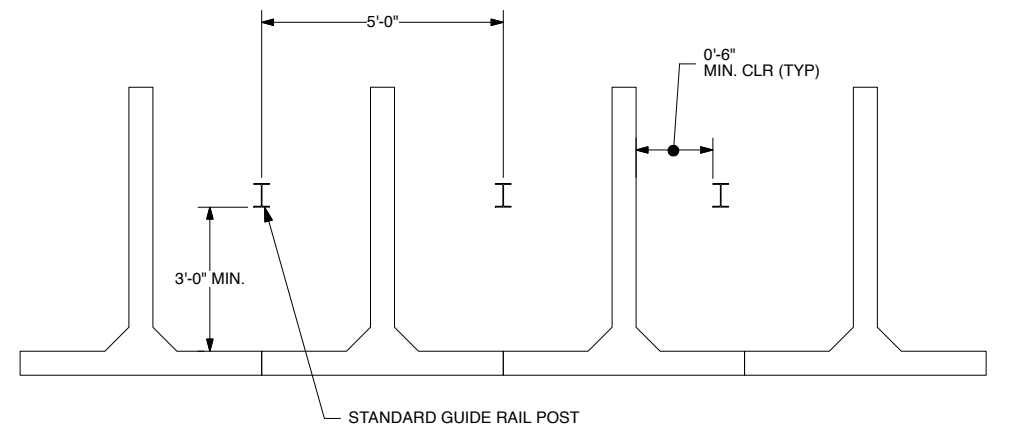
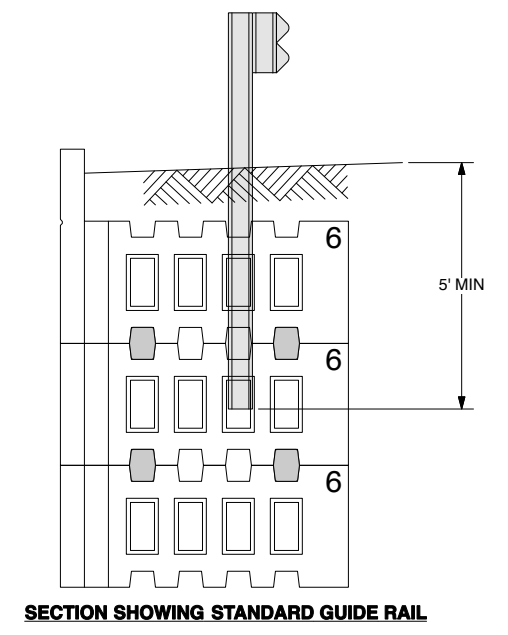
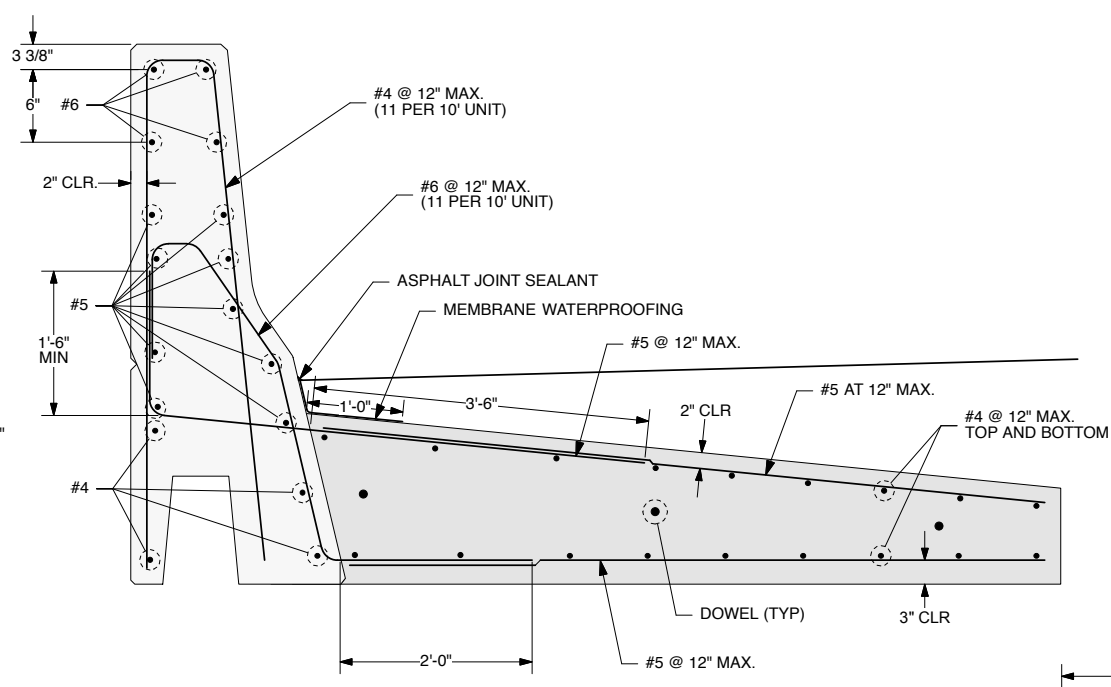
SHEET 11 OF 67

87-402 PE

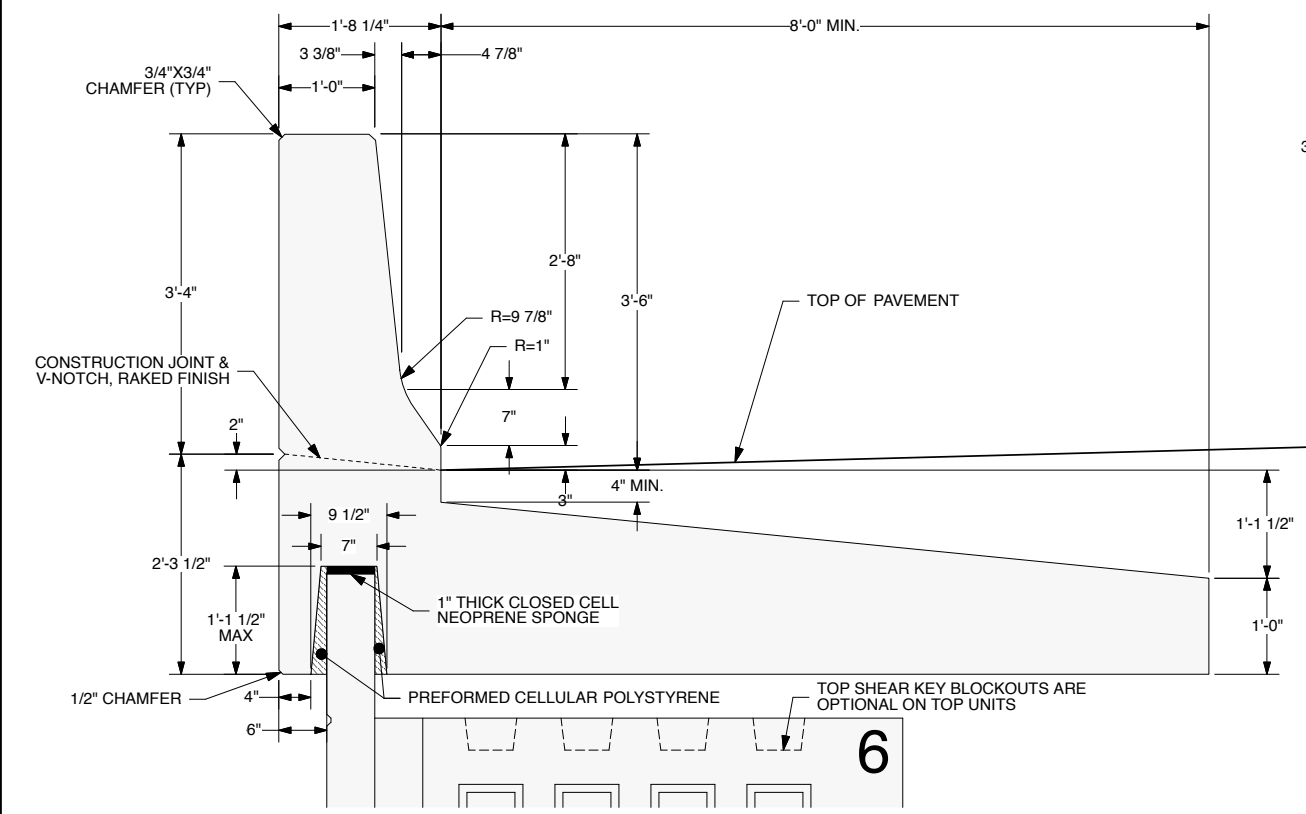
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 DATE: 04-08-13



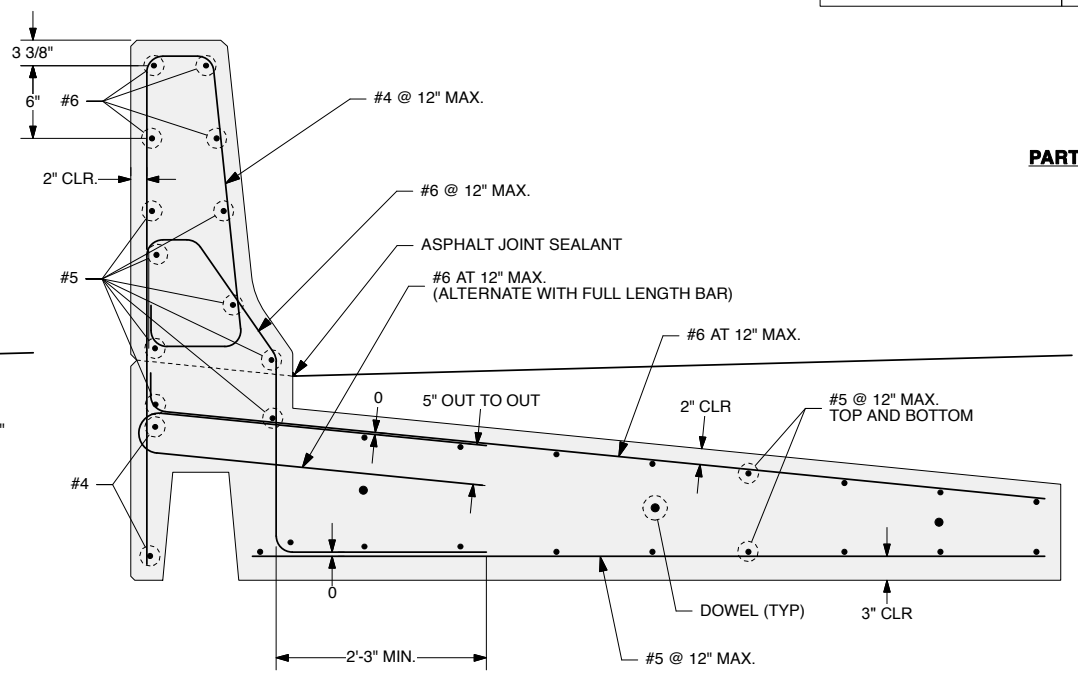
PRECAST BARRIER AND C.I.P. MOMENT SLAB MOUNTED ON T-WALL® RETAINING WALL SYSTEM



PART PLAN SHOWING STANDARD GUIDE RAIL POST SPACING

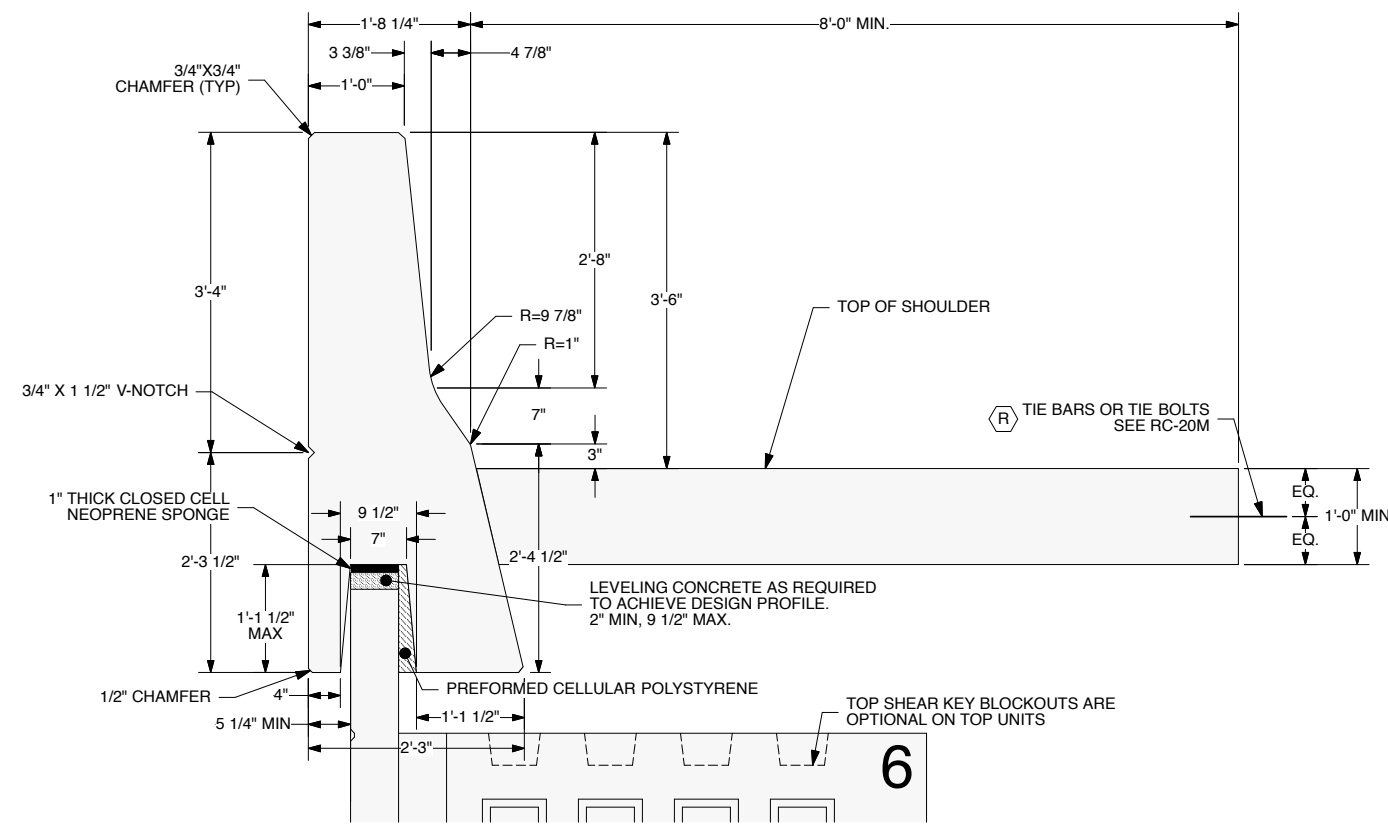


C.I.P. BARRIER AND MOMENT SLAB MOUNTED ON T-WALL® RETAINING WALL SYSTEM

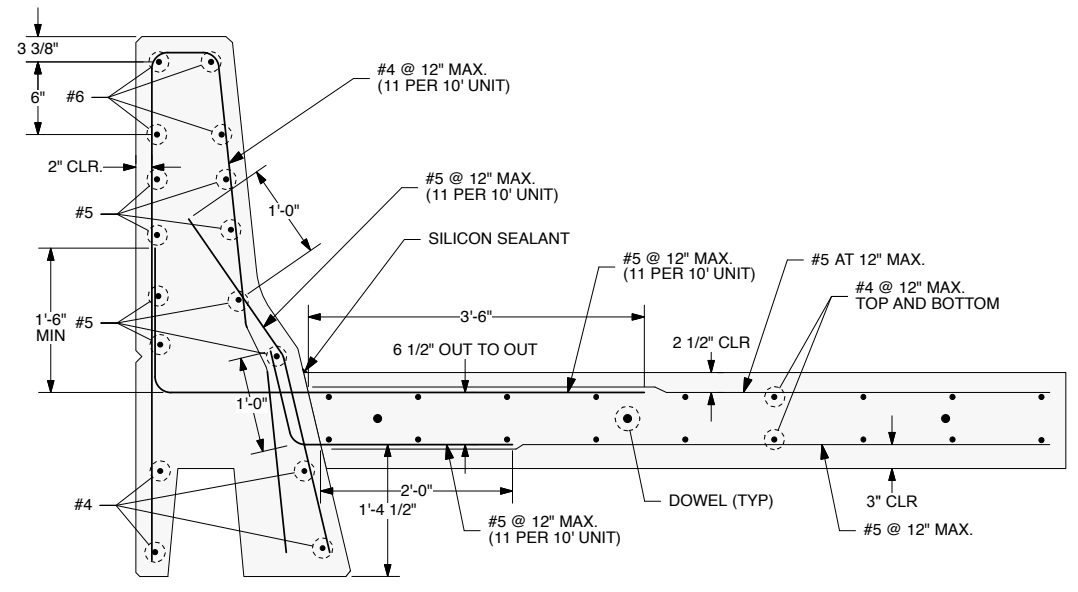


PA DOT DWG #87-402 PE (REVISION III) 5/9/2013	
COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY	
T-WALL® STANDARDS PREFABRICATED T-WALL® RETAINING WALL SYSTEM	
SHOP DRAWINGS TYPICAL DETAILS TRAFFIC BARRIER WITH BITUMINOUS CONCRETE SHOULDER	
	SHEET 12 OF 67
87-402 PE	

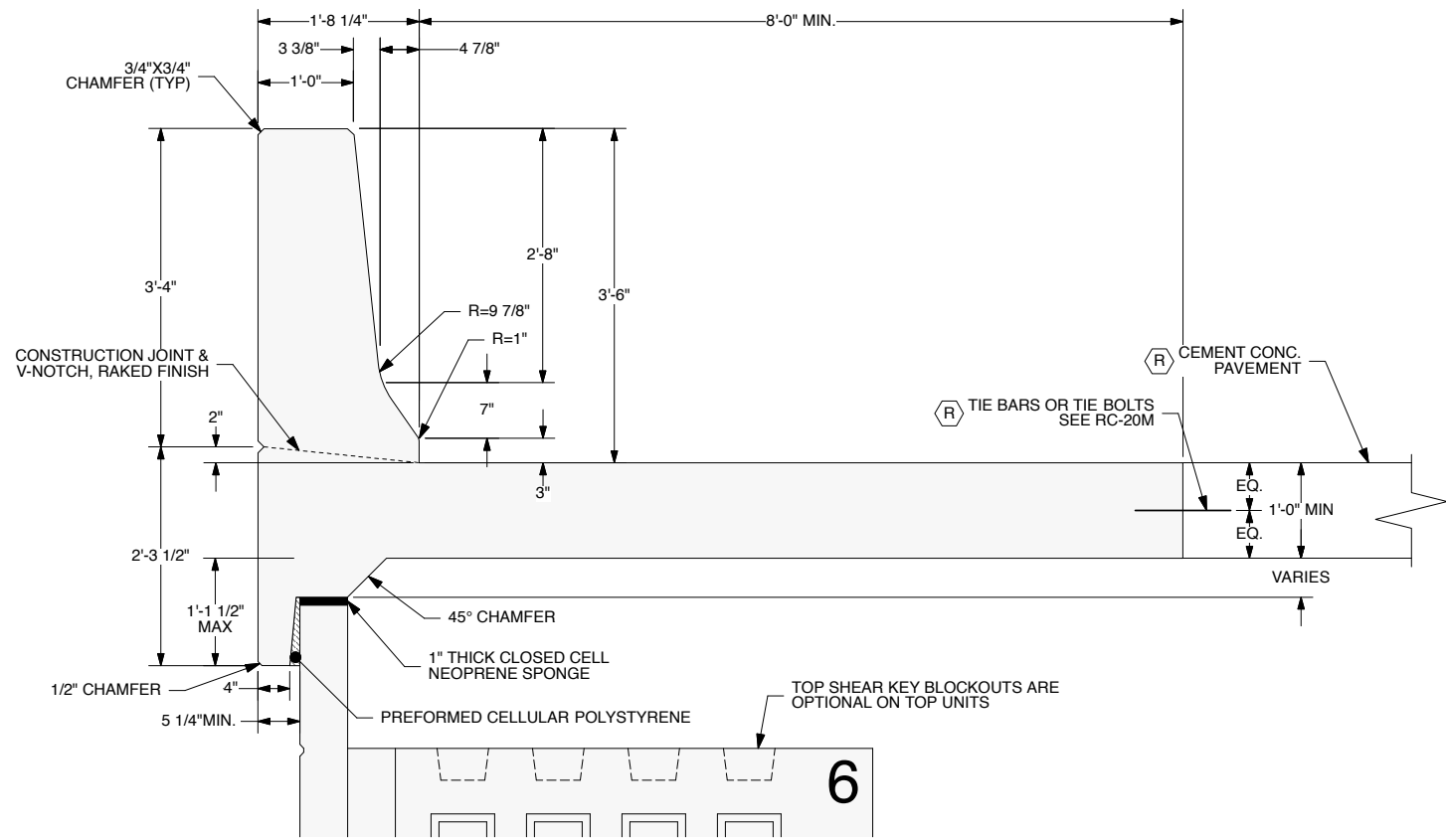
DESIGNER	DATE: 04-08-13
THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	SCALE: NO SCALE
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	DRAWN: CAA/ACS
	CHECKED: CCG/KD
	TNC JOB #: TW3634
	TNC SHT #12 OF 67



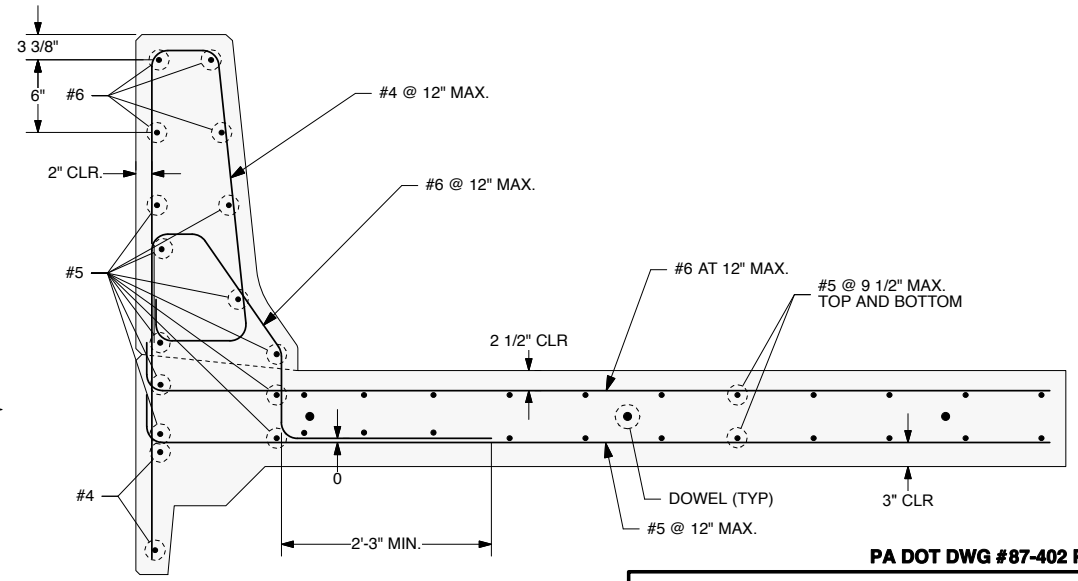
PRECAST BARRIER AND C.I.P. MOMENT SLAB MOUNTED ON T-WALL® RETAINING WALL SYSTEM



LEGEND
 (R) ROADWAY ITEM



C.I.P. BARRIER AND MOMENT SLAB MOUNTED ON T-WALL® RETAINING WALL SYSTEM



PA DOT DWG #87-402 PE (REVISION III)

**COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
 PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

**SHOP DRAWINGS
 TYPICAL DETAILS
 TRAFFIC BARRIER WITH CEMENT CONCRETE SHOULDER**

DESIGNER	DATE: 04-08-13
THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	SCALE: NO SCALE
<small>This drawing contains information proprietary to The Neel Company. The Neel Company is the exclusive licensee of the T-WALL® patent. © 2013, The Neel Company.</small>	DESIGNED: CAA
	DRAWN: ACS
	CHECKED: CCG/KD
	TNC JOB #: TW3634
	TNC SHT #13 OF 67

SHEET 13 OF 67
87-402 PE

5/9/2013

DATE: 04-08-13 TNC JOB #: TW3634 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:06:02 AM CAD FILE NAME: 012 S512 Typ Dis - Barrier & Guard Rail R2.wvx

DATE: 04-08-13 TNC JOB #: TW3634 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:13:13 AM CAD FILE NAME: 015 S515 Rebar - Top Units R2.wvx

REBAR SCHEDULE - 3.0 x 5.0 x 4.0 STANDARD TOP UNIT						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 3'0"	H-1	4 ea	#4	4'8"		
W = 5'0"	V-1	6 ea	#3	2'2"		
S = 4'0"	V-2	6 ea	#5	2'8"		
SH = 2'6"	S-1	4 ea	#3	3'3"		
	TB-1	4 ea	#4	5'8"	3'6 1/2"	

REBAR SCHEDULE - 3.0 x 5.0 x 6.0 STANDARD TOP UNIT						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 3'0"	H-1	4 ea	#4	4'8"		
W = 5'0"	V-1	10 ea	#3	2'2"		
S = 6'0"	V-2	6 ea	#5	2'8"		
SH = 2'6"	S-1	4 ea	#3	3'3"		
	TB-1	4 ea	#4	7'8"	5'6 1/2"	

REBAR SCHEDULE - 3.0 x 5.0 x 8.0 STANDARD TOP UNIT						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 3'0"	H-1	4 ea	#4	4'8"		
W = 5'0"	V-1	14 ea	#3	2'2"		
S = 8'0"	V-2	6 ea	#5	2'8"		
SH = 2'6"	S-1	4 ea	#3	3'3"		
	TB-1	4 ea	#4	9'8"	7'6 1/2"	

REBAR SCHEDULE - 3.0 x 5.0 x 10.0 STANDARD TOP UNIT						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 3'0"	H-1	4 ea	#4	4'8"		
W = 5'0"	V-1	18 ea	#3	2'2"		
S = 10'0"	V-2	6 ea	#5	2'8"		
SH = 2'6"	S-1	4 ea	#3	3'3"		
	TB-1	4 ea	#4	11'8"	9'6 1/2"	

REBAR SCHEDULE - 3.5 x 5.0 x 4.0 STANDARD TOP UNIT						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 3'6"	H-1	4 ea	#4	4'8"		
W = 5'0"	V-1	6 ea	#3	2'2"		
S = 4'0"	V-2	6 ea	#5	3'2"		
SH = 2'6"	S-1	4 ea	#3	3'3"		
	TB-1	4 ea	#4	5'8"	3'6 1/2"	

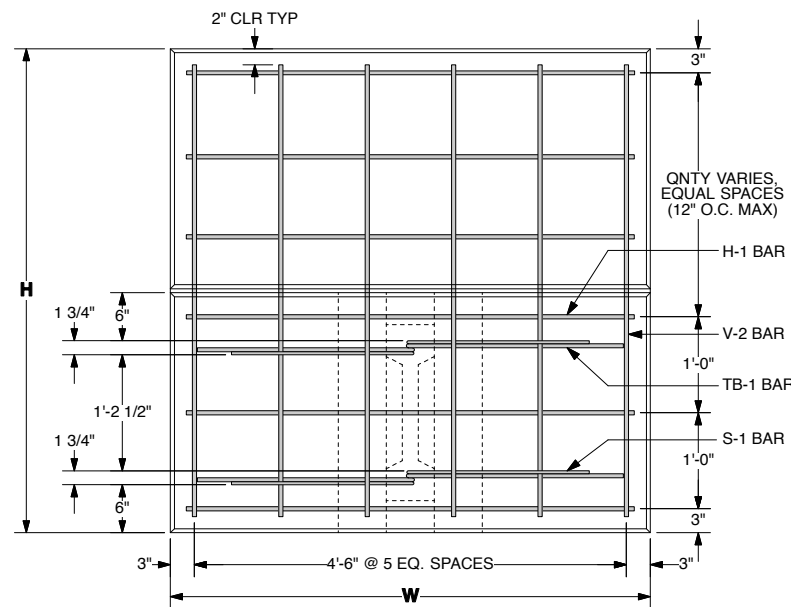
REBAR SCHEDULE - 3.5 x 5.0 x 6.0 STANDARD TOP UNIT						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 3'6"	H-1	4 ea	#4	4'8"		
W = 5'0"	V-1	10 ea	#3	2'2"		
S = 6'0"	V-2	6 ea	#5	3'2"		
SH = 2'6"	S-1	4 ea	#3	3'3"		
	TB-1	4 ea	#4	7'8"	5'6 1/2"	

REBAR SCHEDULE - 3.5 x 5.0 x 8.0 STANDARD TOP UNIT						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 3'6"	H-1	4 ea	#4	4'8"		
W = 5'0"	V-1	14 ea	#3	2'2"		
S = 8'0"	V-2	6 ea	#5	3'2"		
SH = 2'6"	S-1	4 ea	#3	3'3"		
	TB-1	4 ea	#4	9'8"	7'6 1/2"	

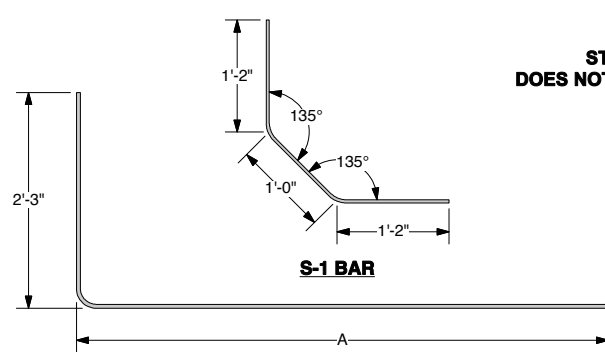
REBAR SCHEDULE - 3.5 x 5.0 x 10.0 STANDARD TOP UNIT						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 3'6"	H-1	4 ea	#4	4'8"		
W = 5'0"	V-1	18 ea	#3	2'2"		
S = 10'0"	V-2	6 ea	#5	3'2"		
SH = 2'6"	S-1	4 ea	#3	3'3"		
	TB-1	4 ea	#4	11'8"	9'6 1/2"	

UNIT TYPE	HEIGHT (H)	WIDTH (W)	STEM LENGTH (S)	(SH)	VOL	WEIGHT
3.0 x 5.0 x 4.0 TOP	3'0"	5'0"	4'0"	2'6"	0.44 cy	1,762 lbs
3.0 x 5.0 x 6.0 TOP	3'0"	5'0"	6'0"	2'6"	0.50 cy	2,024 lbs
3.0 x 5.0 x 8.0 TOP	3'0"	5'0"	8'0"	2'6"	0.56 cy	2,285 lbs
3.0 x 5.0 x 10.0 TOP	3'0"	5'0"	10'0"	2'6"	0.63 cy	2,547 lbs
3.5 x 5.0 x 4.0 TOP	3'6"	5'0"	4'0"	2'6"	0.48 cy	1,949 lbs
3.5 x 5.0 x 6.0 TOP	3'6"	5'0"	6'0"	2'6"	0.55 cy	2,211 lbs
3.5 x 5.0 x 8.0 TOP	3'6"	5'0"	8'0"	2'6"	0.61 cy	2,473 lbs
3.5 x 5.0 x 10.0 TOP	3'6"	5'0"	10'0"	2'6"	0.68 cy	2,735 lbs
4.0 x 5.0 x 4.0 TOP	4'0"	5'0"	4'0"	2'6"	0.53 cy	2,137 lbs
4.0 x 5.0 x 6.0 TOP	4'0"	5'0"	6'0"	2'6"	0.59 cy	2,399 lbs
4.0 x 5.0 x 8.0 TOP	4'0"	5'0"	8'0"	2'6"	0.66 cy	2,660 lbs
4.0 x 5.0 x 10.0 TOP	4'0"	5'0"	10'0"	2'6"	0.72 cy	2,922 lbs
4.5 x 5.0 x 6.0 TOP	4'6"	5'0"	6'0"	2'6"	0.64 cy	2,586 lbs
4.5 x 5.0 x 8.0 TOP	4'6"	5'0"	8'0"	2'6"	0.70 cy	2,848 lbs
4.5 x 5.0 x 10.0 TOP	4'6"	5'0"	10'0"	2'6"	0.77 cy	3,110 lbs
5.0 x 5.0 x 6.0 TOP	5'0 1/2"	5'0"	6'0"	2'6"	0.69 cy	2,789 lbs
5.0 x 5.0 x 8.0 TOP	5'0 1/2"	5'0"	8'0"	2'6"	0.75 cy	3,051 lbs
5.0 x 5.0 x 10.0 TOP	5'0 1/2"	5'0"	10'0"	2'6"	0.82 cy	3,313 lbs
5.5 x 5.0 x 6.0 TOP	5'6"	5'0"	6'0"	2'6"	0.73 cy	2,961 lbs
5.5 x 5.0 x 8.0 TOP	5'6"	5'0"	8'0"	2'6"	0.80 cy	3,223 lbs
5.5 x 5.0 x 10.0 TOP	5'6"	5'0"	10'0"	2'6"	0.86 cy	3,485 lbs
6.0 x 5.0 x 6.0 TOP	6'0"	5'0"	6'0"	2'6"	0.78 cy	3,149 lbs
6.0 x 5.0 x 8.0 TOP	6'0"	5'0"	8'0"	2'6"	0.84 cy	3,410 lbs
6.0 x 5.0 x 10.0 TOP	6'0"	5'0"	10'0"	2'6"	0.91 cy	3,672 lbs

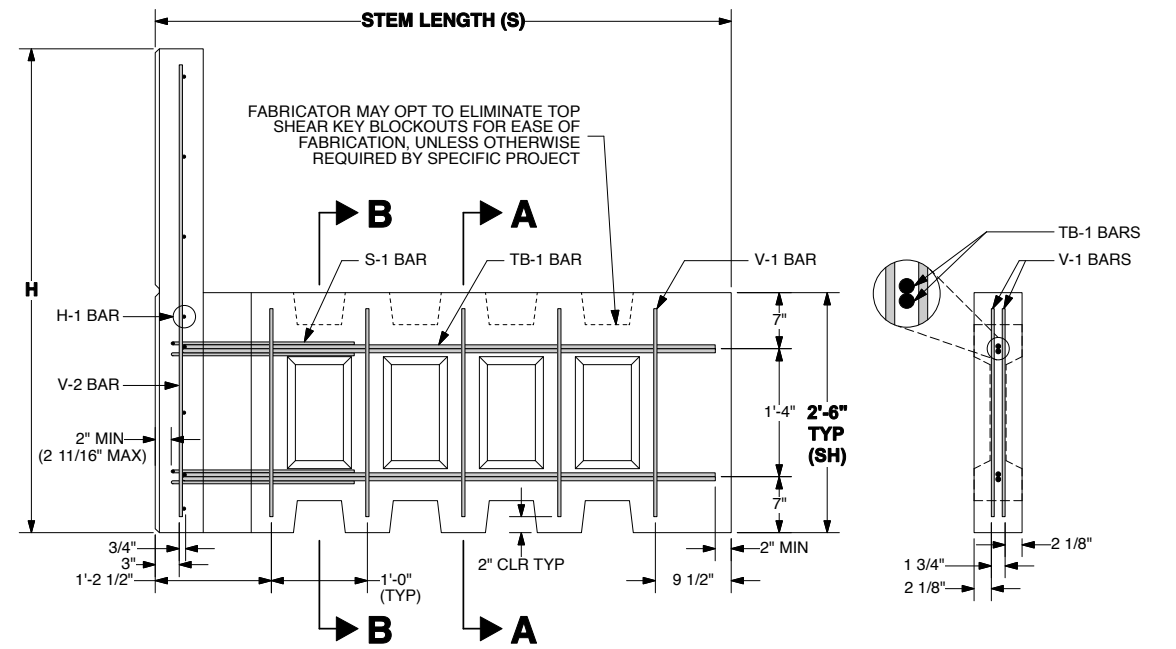
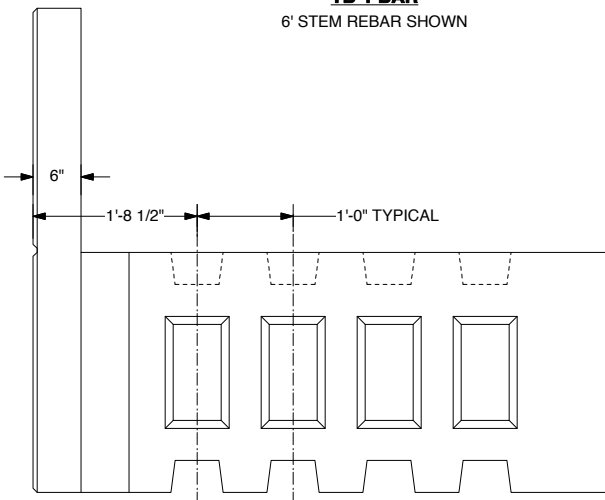
*UNIT VOLUME AND WEIGHT BASED ON 6" THICK FRONT FACE. ARCHITECTURAL FINISHES WILL INCREASE FACE THICKNESS, VOLUME AND WEIGHT.



FRONT VIEW
(V-1 BARS IN STEM OMITTED FOR CLARITY)



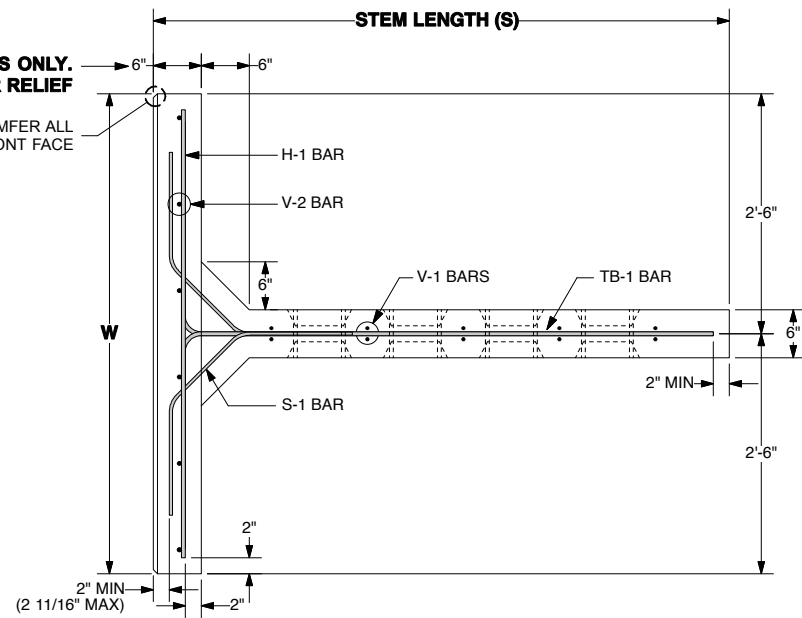
TB-1 BAR
6" STEM REBAR SHOWN



SIDE VIEW
6" STEM SHOWN

STRUCTURAL THICKNESS ONLY.
DOES NOT INCLUDE FORMLINER RELIEF

1/2" CHAMFER ALL AROUND FRONT FACE



TOP VIEW
6" STEM SHOWN

- SPECIAL NOTES:**
- FRONT FACE OF T-WALL UNITS FINISH TREATMENT: PER CONTRACT DRAWINGS AND SPECS.
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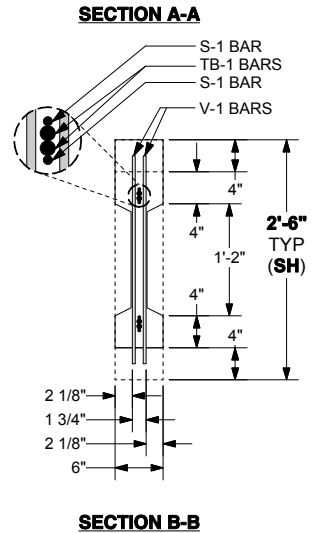
- GENERAL NOTES:**
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 - REBAR: SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
 - CONCRETE: F'c = 4000 psi @ 28 DAYS

DESIGNER

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DATE: 04-08-13
SCALE: NO SCALE
DESIGNED: CAA
DRAWN: CAA/ACS
CHECKED: CCG/KD
TNC JOB #: TW3634
TNC SHT #15 OF 67



SECTION A-A



SECTION B-B

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
STANDARD TOP UNITS (I)

SHEET 15 OF 67

87-402 PE

5/9/2013

REBAR SCHEDULE - 5.0 x 5.0 x 4.0 STANDARD DOUBLE UNIT STEEL WT= 69.98 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#4	4'8"		
W = 5'0"	V-1	6 ea	#3	4'8 1/2"		
S = 4'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#3	3'3"		
	TB-1	6 ea	#4	5'8"	3'6 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 6.0 STANDARD DOUBLE UNIT STEEL WT= 85.08 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#4	4'8"		
W = 5'0"	V-1	10 ea	#3	4'8 1/2"		
S = 6'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#3	3'3"		
	TB-1	6 ea	#4	7'8"	5'6 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 8.0 STANDARD DOUBLE UNIT STEEL WT= 100.17 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#4	4'8"		
W = 5'0"	V-1	14 ea	#3	4'8 1/2"		
S = 8'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#3	3'3"		
	TB-1	6 ea	#4	9'8"	7'6 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 10.0 STANDARD DOUBLE UNIT STEEL WT= 115.27 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#4	4'8"		
W = 5'0"	V-1	18 ea	#3	4'8 1/2"		
S = 10'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#3	3'3"		
	TB-1	6 ea	#4	11'8"	9'6 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 12.0 STANDARD DOUBLE UNIT STEEL WT= 130.36 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#4	4'8"		
W = 5'0"	V-1	22 ea	#3	4'8 1/2"		
S = 12'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#3	3'3"		
	TB-1	6 ea	#4	13'8"	11'6 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 14.0 STANDARD DOUBLE UNIT STEEL WT= 186.40 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#5	4'8"		
W = 5'0"	V-1	26 ea	#3	4'8 1/2"		
S = 14'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#4	3'3"		
	TB-1	6 ea	#5	15'8"	13'6 1/2"	

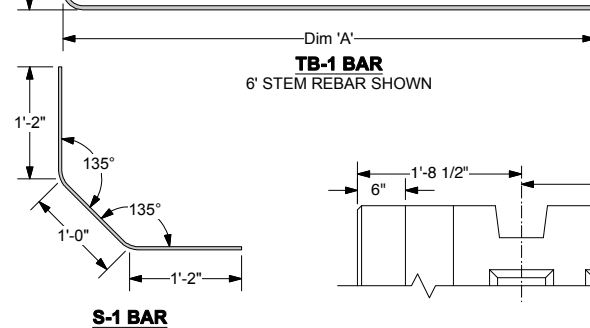
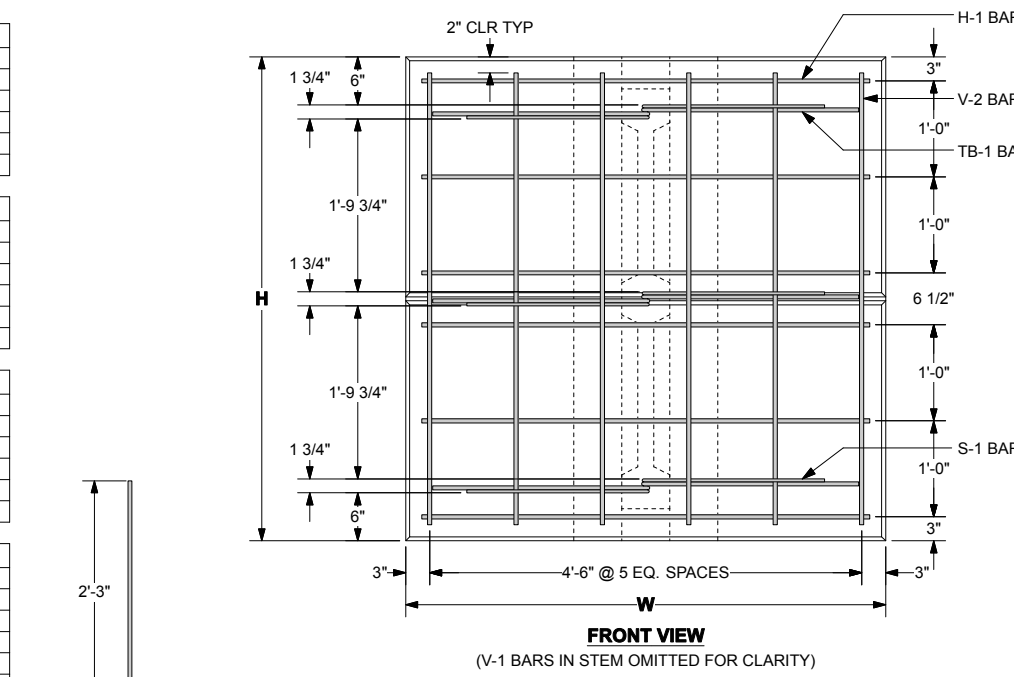
REBAR SCHEDULE - 5.0 x 5.0 x 16.0 STANDARD DOUBLE UNIT STEEL WT= 206.00 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#5	4'8"		
W = 5'0"	V-1	30 ea	#3	4'8 1/2"		
S = 16'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#4	3'3"		
	TB-1	6 ea	#5	17'8"	15'6 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 18.0 STANDARD DOUBLE UNIT STEEL WT= 225.59 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#5	4'8"		
W = 5'0"	V-1	34 ea	#3	4'8 1/2"		
S = 18'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#4	3'3"		
	TB-1	6 ea	#5	19'8"	17'6 1/2"	

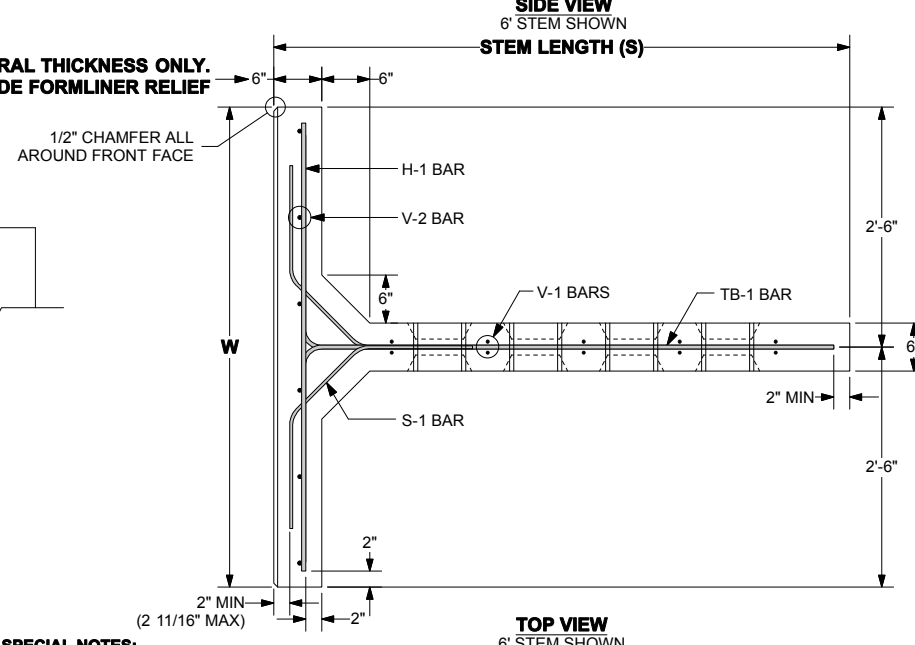
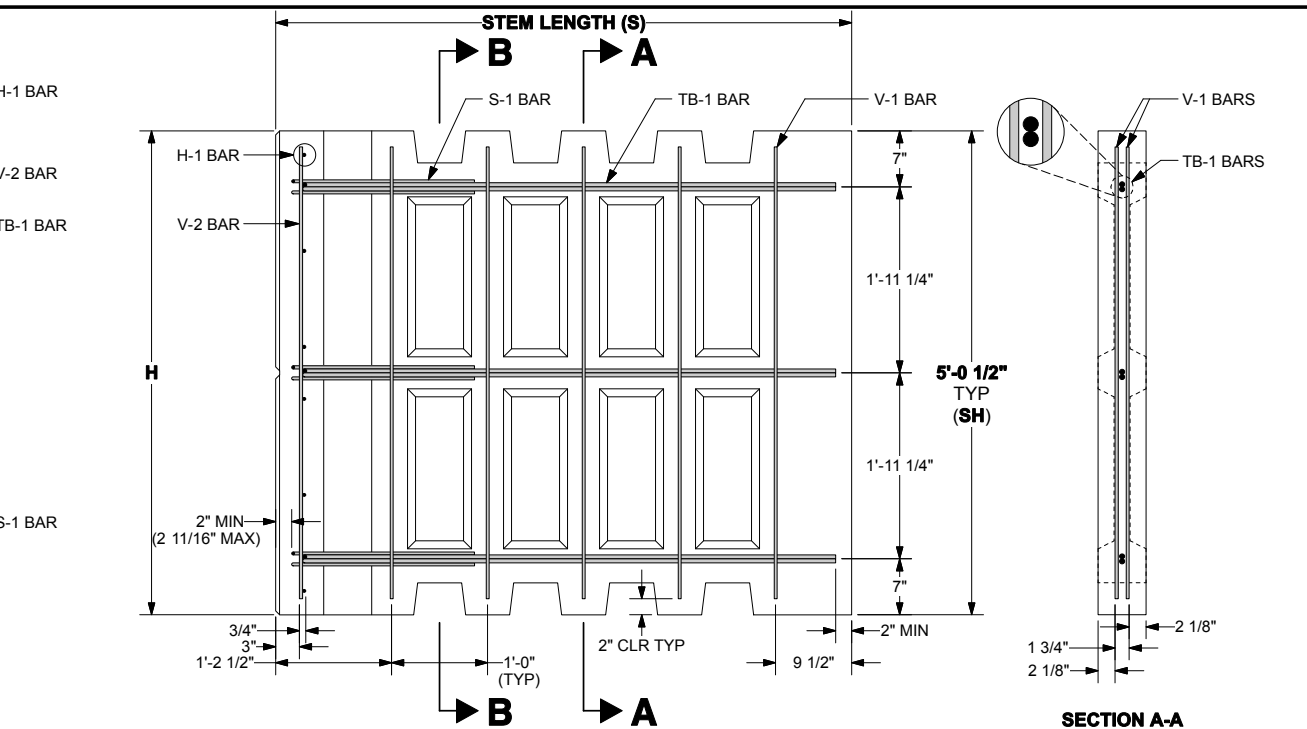
REBAR SCHEDULE - 5.0 x 5.0 x 20.0 STANDARD DOUBLE UNIT STEEL WT= 245.19 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#5	4'8"		
W = 5'0"	V-1	38 ea	#3	4'8 1/2"		
S = 20'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#4	3'3"		
	TB-1	6 ea	#5	21'8"	19'6 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 22.0 STANDARD DOUBLE UNIT STEEL WT= 264.78 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#5	4'8"		
W = 5'0"	V-1	42 ea	#3	4'8 1/2"		
S = 22'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#4	3'3"		
	TB-1	6 ea	#5	23'8"	21'6 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 24.0 STANDARD DOUBLE UNIT STEEL WT= 284.38 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#5	4'8"		
W = 5'0"	V-1	46 ea	#3	4'8 1/2"		
S = 24'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#4	3'3"		
	TB-1	6 ea	#5	25'8"	23'6 1/2"	



STRUCTURAL THICKNESS ONLY.
DOES NOT INCLUDE FORMLINER RELIEF



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 - PER CONTRACT DRAWINGS AND SPECS.
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 - REBAR:
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 - CONCRETE:
 - STEM LENGTHS LESS THAN 24', USE F'c = 4000 psi @ 28 DAYS
 - STEM LENGTHS MORE THAN 24', USE F'c = 5000 psi @ 28 DAYS

UNIT TYPE	HEIGHT (H)	WIDTH (W)	STEM LENGTH (S)	SH	VOL	WEIGHT
5.0 x 5.0 x 4.0 DBL	5'0 1/2"	5'0"	4'0"	5'0 1/2"	0.78 cy	3,171 lbs
5.0 x 5.0 x 6.0 DBL	5'0 1/2"	5'0"	6'0"	5'0 1/2"	0.91 cy	3,692 lbs
5.0 x 5.0 x 8.0 DBL	5'0 1/2"	5'0"	8'0"	5'0 1/2"	1.04 cy	4,214 lbs
5.0 x 5.0 x 10.0 DBL	5'0 1/2"	5'0"	10'0"	5'0 1/2"	1.17 cy	4,736 lbs
5.0 x 5.0 x 12.0 DBL	5'0 1/2"	5'0"	12'0"	5'0 1/2"	1.30 cy	5,259 lbs
5.0 x 5.0 x 14.0 DBL	5'0 1/2"	5'0"	14'0"	5'0 1/2"	1.43 cy	5,781 lbs
5.0 x 5.0 x 16.0 DBL	5'0 1/2"	5'0"	16'0"	5'0 1/2"	1.56 cy	6,303 lbs
5.0 x 5.0 x 18.0 DBL	5'0 1/2"	5'0"	18'0"	5'0 1/2"	1.69 cy	6,825 lbs
5.0 x 5.0 x 20.0 DBL	5'0 1/2"	5'0"	20'0"	5'0 1/2"	1.81 cy	7,347 lbs
5.0 x 5.0 x 22.0 DBL	5'0 1/2"	5'0"	22'0"	5'0 1/2"	1.94 cy	7,870 lbs
5.0 x 5.0 x 24.0 DBL	5'0 1/2"	5'0"	24'0"	5'0 1/2"	2.07 cy	8,392 lbs

*UNIT VOLUME AND WEIGHT BASED ON 6" THICK FRONT FACE. ARCHITECTURAL FINISHES WILL INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

	DESIGNER	DATE: 04-08-13
	THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	SCALE: NO SCALE
		DESIGNED: A/A/ACS
		DRAWN: CAA
		CHECKED: CCG/KD
		TNC JOB #: TW3634
		TNC SHT #17 OF 67

PA DOT DWG #87-402 PE (REVISION III) 5/9/2013

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
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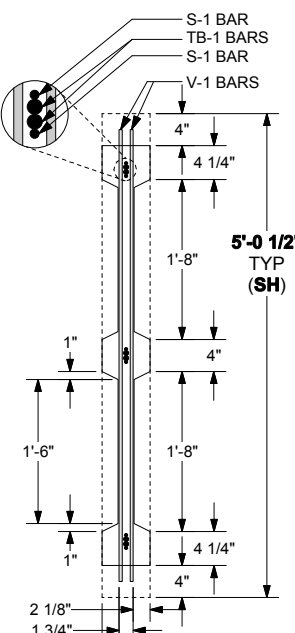
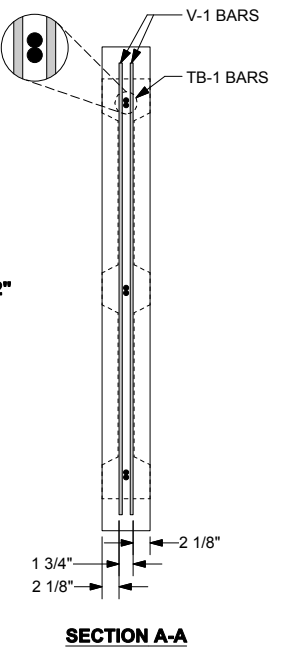
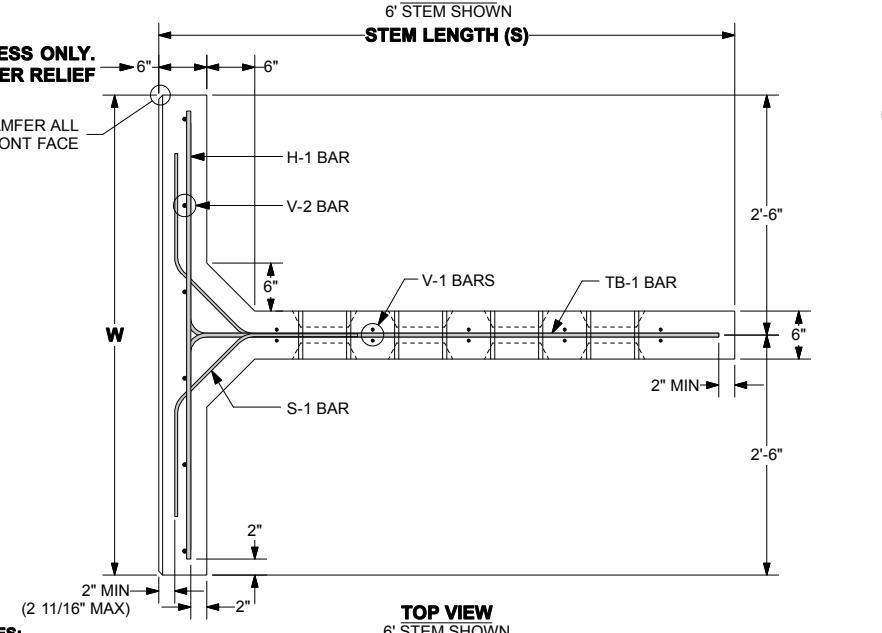
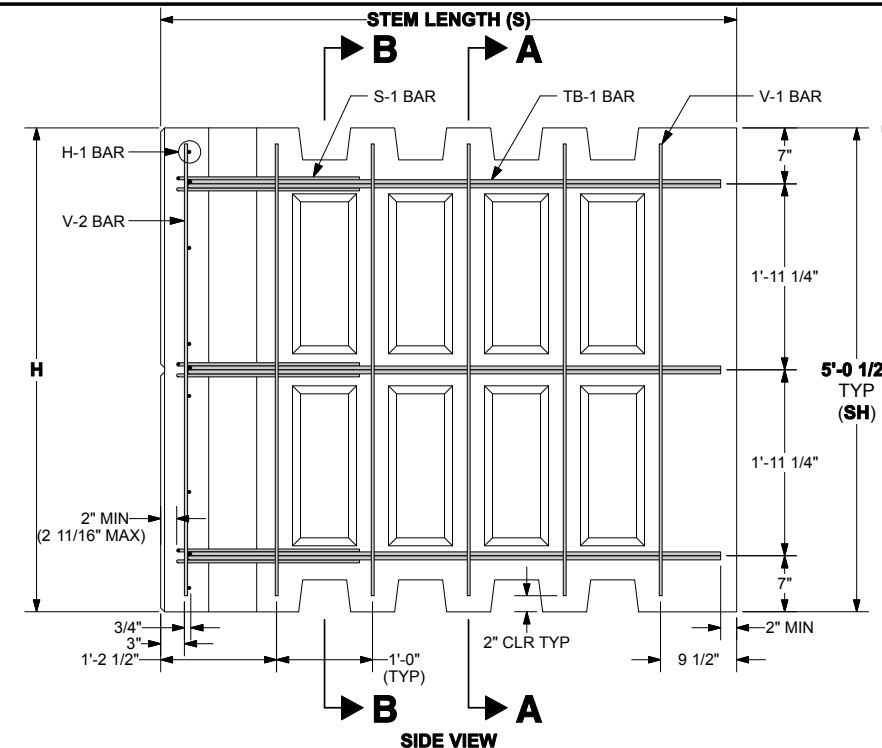
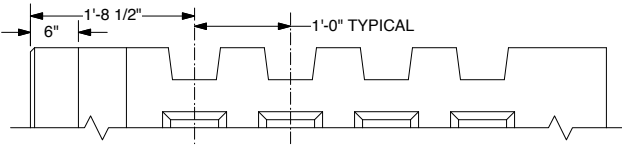
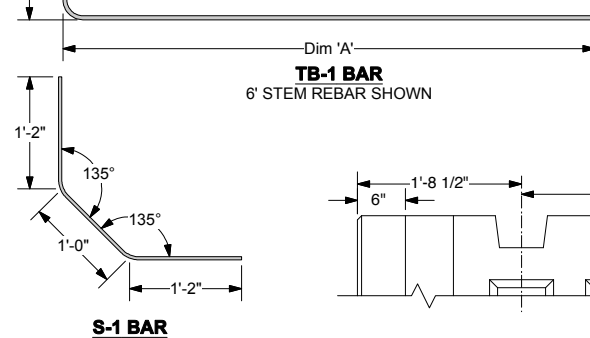
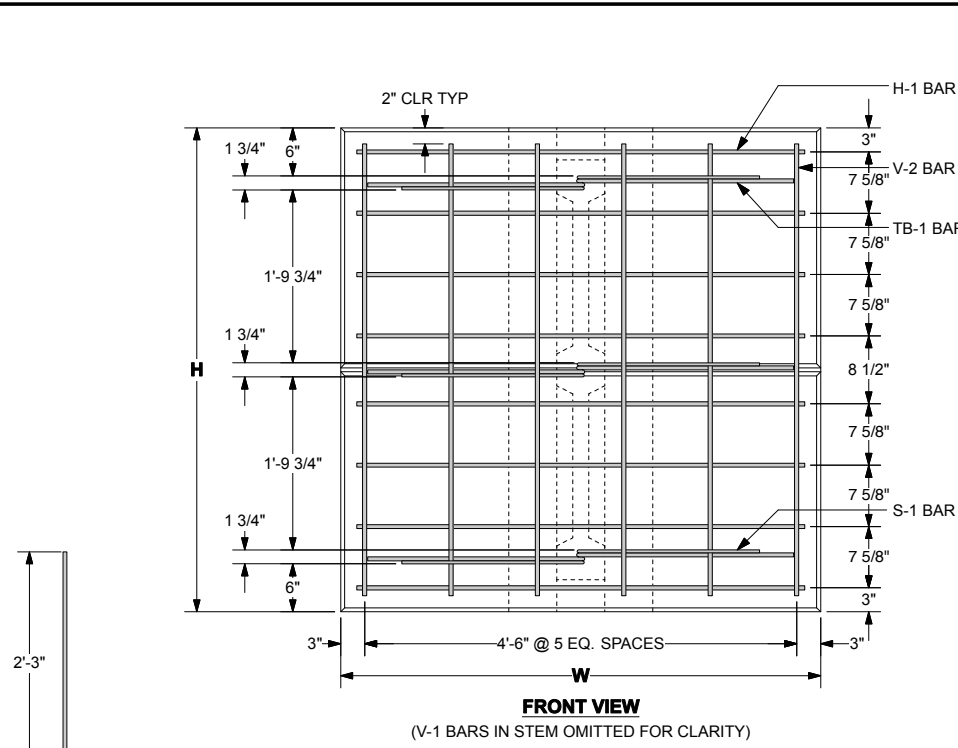
T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
STANDARD DOUBLE UNITS (I)

SHEET 17 OF 67

87-402 PE

DATE: 04-08-13 TNC JOB #: TW3634 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:13:06 AM CAD FILE NAME: 017 S517 Rebar - Dbl Std Units R2.vwx



UNIT TYPE	HEIGHT (H)	WIDTH (W)	STEM LENGTH (S)	SH	VOL	WEIGHT
5.0 x 5.0 x 26.0 DBL	5'0 1/2"	5'0"	26'0"	5'0 1/2"	2.20 cy	8,914 lbs
5.0 x 5.0 x 28.0 DBL	5'0 1/2"	5'0"	28'0"	5'0 1/2"	2.33 cy	9,436 lbs
5.0 x 5.0 x 30.0 DBL	5'0 1/2"	5'0"	30'0"	5'0 1/2"	2.46 cy	9,958 lbs
5.0 x 5.0 x 32.0 DBL	5'0 1/2"	5'0"	32'0"	5'0 1/2"	2.59 cy	10,480 lbs

*UNIT VOLUME AND WEIGHT BASED ON 6" THICK FRONT FACE. ARCHITECTURAL FINISHES WILL INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

REBAR SCHEDULE - 5.0 x 5.0 x 26.0 STANDARD DOUBLE UNIT STEEL WT= 324.21 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	8 ea	#5	4'8"		
W = 5'0"	V-1	50 ea	#3	4'8 1/2"		
S = 26'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#4	3'3"		
	TB-1	6 ea	#5	27'8"	25'6 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 28.0 STANDARD DOUBLE UNIT STEEL WT= 343.80 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	8 ea	#5	4'8"		
W = 5'0"	V-1	54 ea	#3	4'8 1/2"		
S = 28'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#4	3'3"		
	TB-1	6 ea	#5	29'8"	27'6 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 30.0 STANDARD DOUBLE UNIT STEEL WT= 363.40 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	8 ea	#5	4'8"		
W = 5'0"	V-1	58 ea	#3	4'8 1/2"		
S = 30'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#4	3'3"		
	TB-1	6 ea	#5	31'8"	29'6 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 32.0 STANDARD DOUBLE UNIT STEEL WT= 382.99 lbs						
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	8 ea	#5	4'8"		
W = 5'0"	V-1	62 ea	#3	4'8 1/2"		
S = 32'0"	V-2	6 ea	#3	4'8 1/2"		
SH = 5'0 1/2"	S-1	6 ea	#4	3'3"		
	TB-1	6 ea	#5	33'8"	31'6 1/2"	

SPECIAL NOTES:

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GENERAL NOTES:

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 - STEM LENGTHS MORE THAN 24', USE F'c = 5000 psi @ 28 DAYS

DESIGNER

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DATE:	04-08-13
SCALE:	NO SCALE
DESIGNED:	CAA/ACS
DRAWN:	CAA
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	18 OF 67

PA DOT DWG #87-402 PE (REVISION III)

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

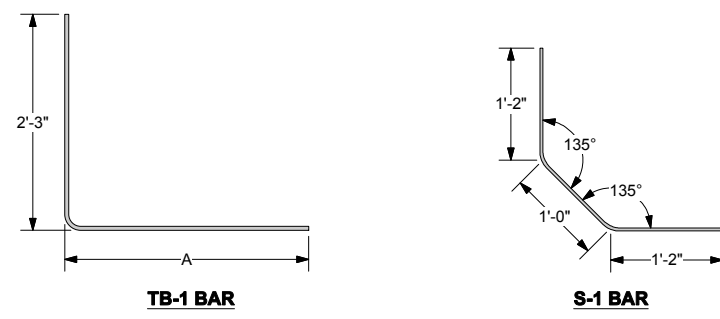
**SHOP DRAWINGS
REBAR
STANDARD DOUBLE UNITS (II)**

SHEET 18 OF 67

87-402 PE

5/9/2013

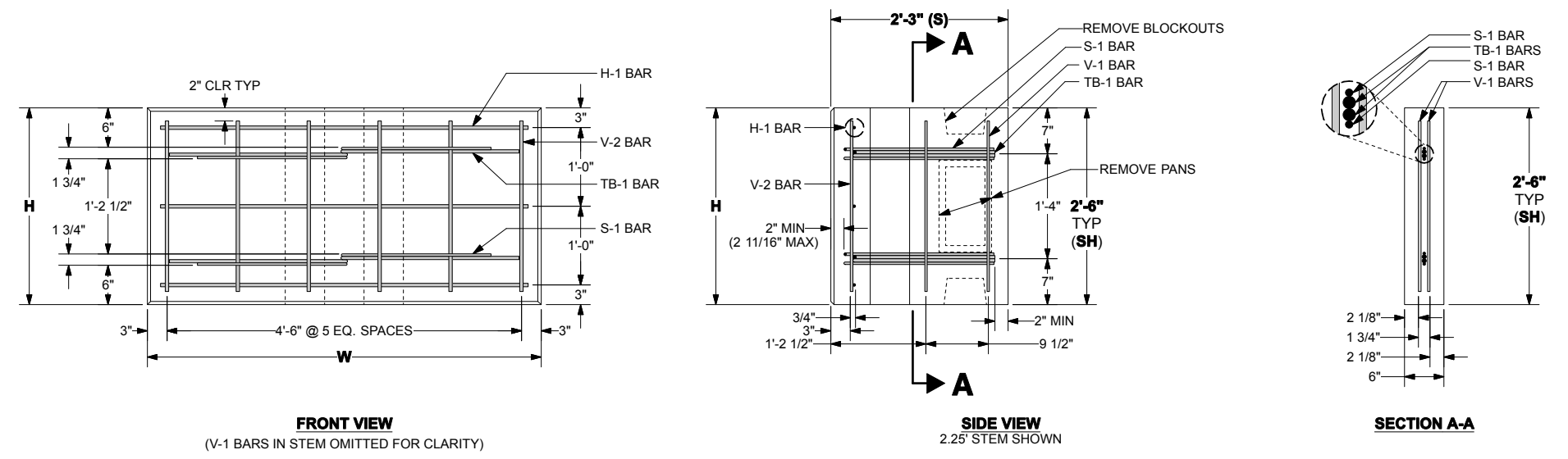
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 TNC JOB #: TW3634
 DATE: 04-08-13



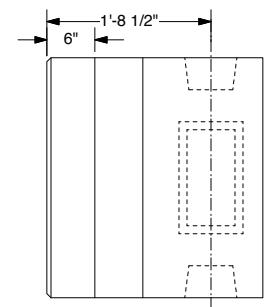
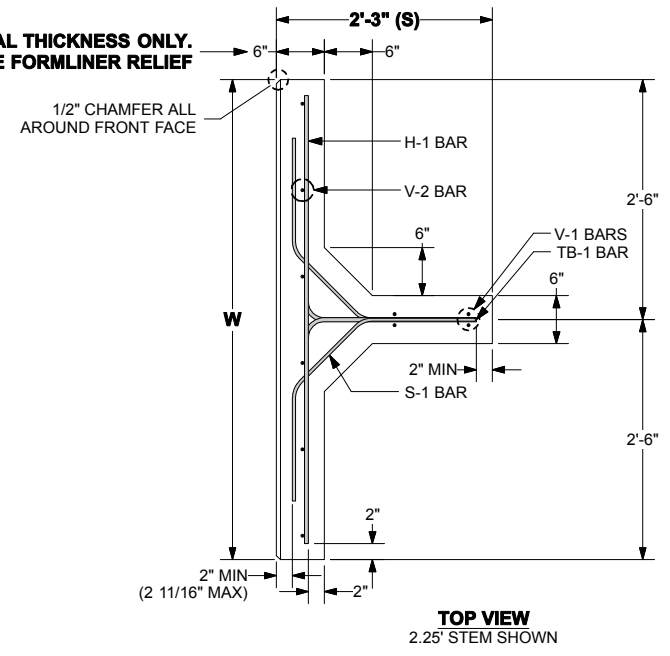
UNIT TYPE	HEIGHT (H)	WIDTH (W)	STEM LENGTH (S)	SH	VOL*	WEIGHT*
2.5 x 5.0 x 2.25 STD CNR	2'6"	5'0"	2'3"	2'6"	0.33 cy	1,345 lbs

*UNIT VOLUME AND WEIGHT BASED ON 6" THICK FRONT FACE. ARCHITECTURAL FINISHES WILL INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

REBAR SCHEDULE - 2.5 x 5.0 x 2.25 STANDARD CORNER UNIT							STEEL WT=
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks	42.52 lbs
H = 2'6"	H-1	3 ea	#4	4'8"			
W = 5'0"	V-1	4 ea	#3	2'2"			
S = 2'3"	V-2	6 ea	#3	2'2"			
SH = 2'6"	S-1	4 ea	#4	3'3"			
	TB-1	4 ea	#5	3'11"	1'9 1/2"		



- SPECIAL NOTES:**
- FRONT FACE OF T-WALL UNITS FINISH TREATMENT:
 - PER CONTRACT DRAWINGS AND SPECS.
- GENERAL NOTES:**
- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 3rd EDITION, 2006 WITH INTERIM REVISIONS
 - MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0 ON SHEET 2 OF 15.
 - ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
 - REBAR:
 - SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
 - CONCRETE:
 - F'c = 4000 psi @ 28 DAYS



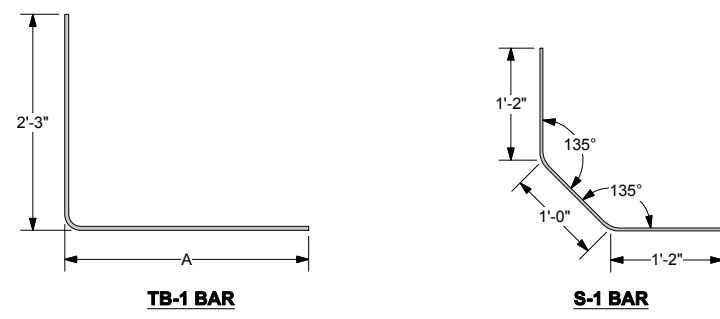
5/9/2013

DESIGNER	
	THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com
DATE:	04-08-13
SCALE:	NO SCALE
DESIGNED:	CAA
DRAWN:	ACS
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	#19 OF 67

PA DOT DWG #87-402 PE (REVISION III)
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY
T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM
SHOP DRAWINGS
REBAR
2.25' STEM STANDARD CORNER UNITS

	SHEET 19 OF 67
87-402 PE	

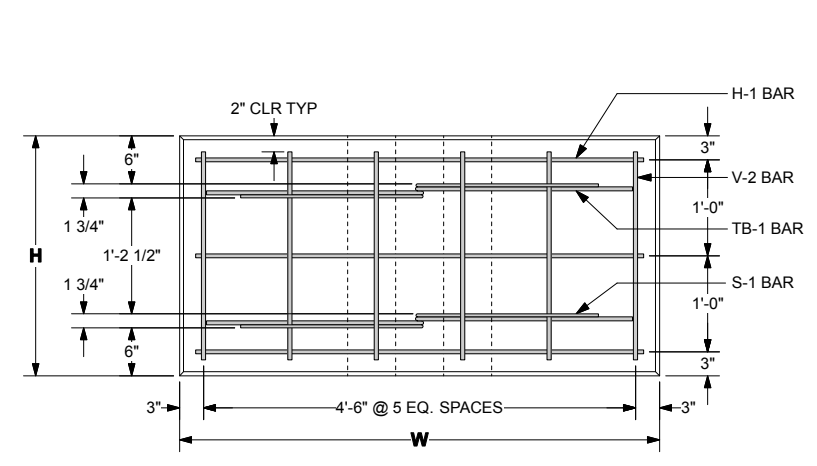
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 TNC JOB #: TW3634
 DATE: 04-08-13



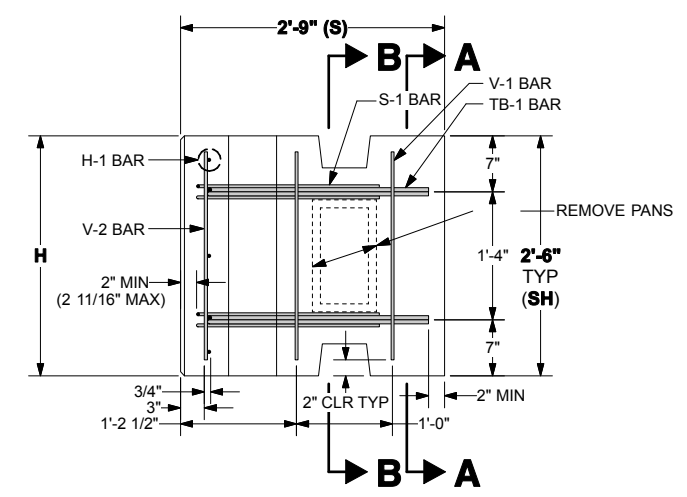
UNIT TYPE	HEIGHT (H)	WIDTH (W)	STEM LENGTH (S)	SH	VOL*	WEIGHT*
2.5 x 5.0 x 2.75 STD CNR	2'6"	5'0"	2'9"	2'6"	0.35 cy	1,411 lbs

*UNIT VOLUME AND WEIGHT BASED ON 6" THICK FRONT FACE. ARCHITECTURAL FINISHES WILL INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

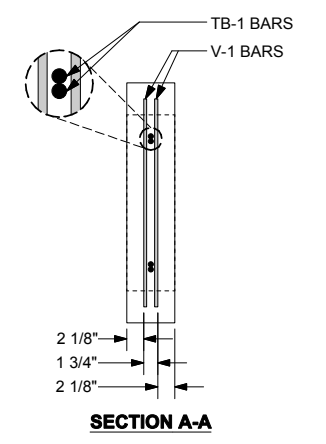
REBAR SCHEDULE - 2.5 x 5.0 x 2.75 STANDARD CORNER UNIT							STEEL WT= 44.61 lbs
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks	
H = 2'6"	H-1	3 ea	#4	4'8"			
W = 5'0"	V-1	4 ea	#3	2'2"			
S = 2'9"	V-2	6 ea	#3	2'2"			
SH = 2'6"	S-1	4 ea	#4	3'3"			
	TB-1	4 ea	#5	4'5"	2'3 1/2"		



FRONT VIEW
(V-1 BARS IN STEM OMITTED FOR CLARITY)

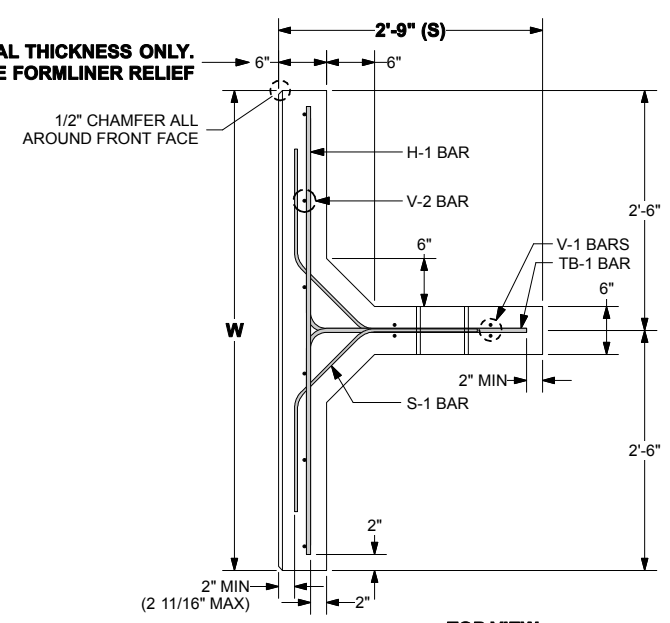


SIDE VIEW
2.75' STEM SHOWN

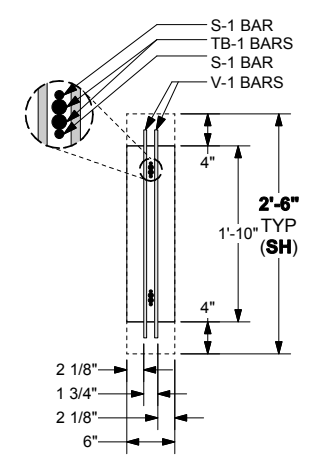


SECTION A-A

STRUCTURAL THICKNESS ONLY.
DOES NOT INCLUDE FORMLINER RELIEF



TOP VIEW
2.75' STEM SHOWN



SECTION B-B

- SPECIAL NOTES:**
- FRONT FACE OF T-WALL UNITS FINISH TREATMENT: PER CONTRACT DRAWINGS AND SPECS.
- GENERAL NOTES:**
- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 3rd EDITION, 2006 WITH INTERIM REVISIONS
 - MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0 ON SHEET 2 OF 15.
 - ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
 - REBAR: SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
 - CONCRETE: F'c = 4000 psi @ 28 DAYS

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
2.75' STEM STANDARD CORNER UNITS

DESIGNER

THE NEEL COMPANY
8328-D TRAFORD LANE
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PH: (703) 913-7858
FX: (703) 913-7859
Web: www.neelco.com

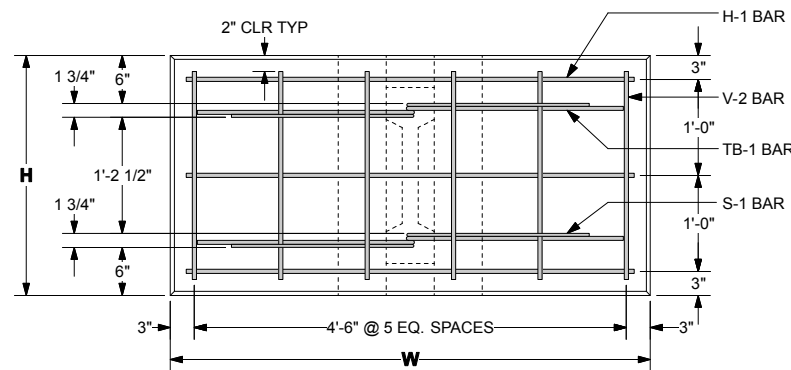
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DATE:	04-08-13
SCALE:	NO SCALE
DESIGNED:	CAA
DRAWN:	ACS
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	#20 OF 67

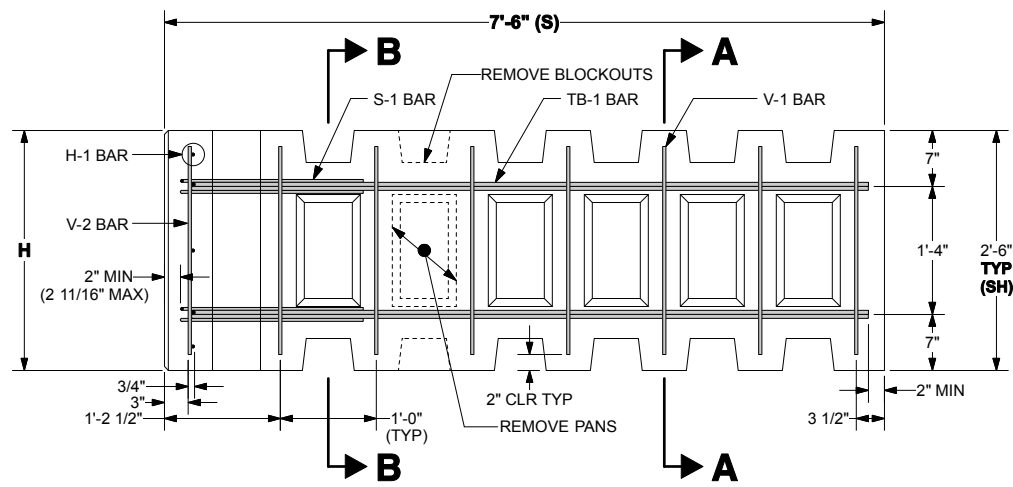
SHEET 20 OF 67

87-402 PE

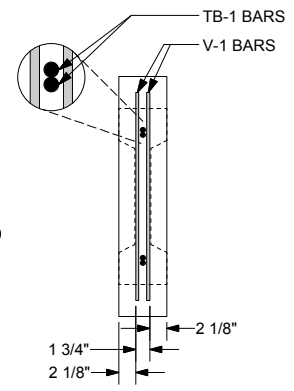
5/9/2013



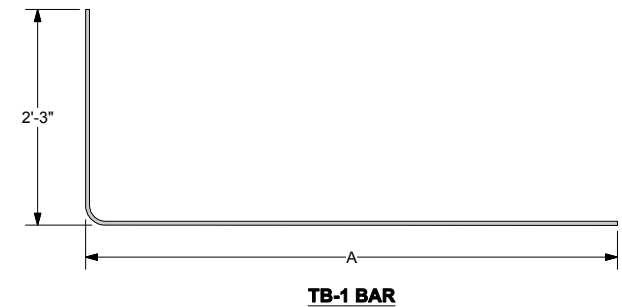
FRONT VIEW
(V-1 BARS IN STEM OMITTED FOR CLARITY)



SIDE VIEW

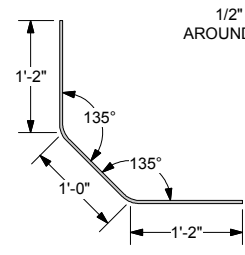


SECTION A-A

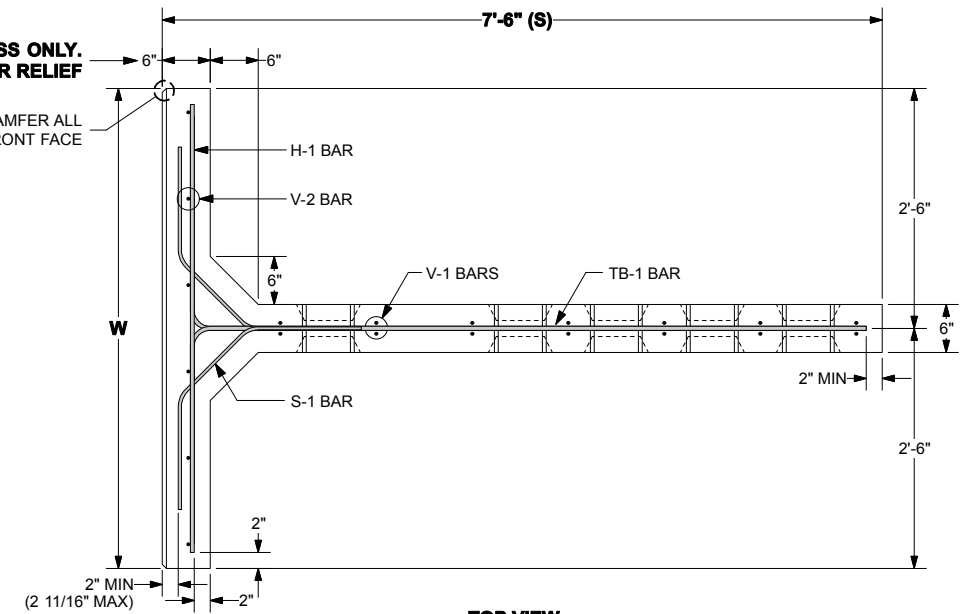


TB-1 BAR

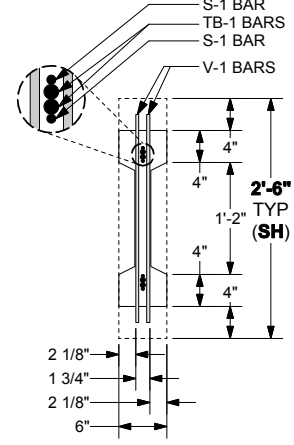
**STRUCTURAL THICKNESS ONLY.
DOES NOT INCLUDE FORMLINER RELIEF**



S-1 BAR



TOP VIEW



SECTION B-B

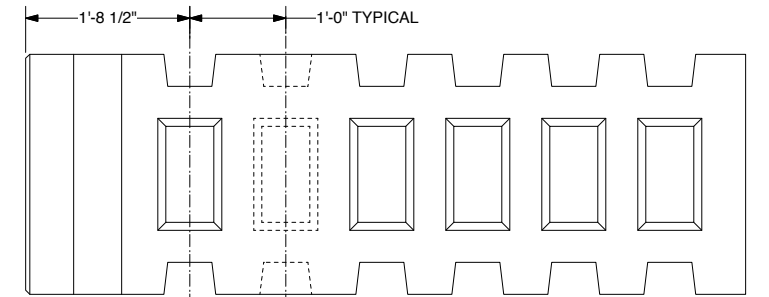
UNIT TYPE	HEIGHT (H)	WIDTH (W)	STEM LENGTH (S)	SH	VOL*	WEIGHT*
2.5 x 5.0 x 7.5 STD CNR	2'6"	5'0"	7'6"	2'6"	0.50 cy	2,033 lbs

*UNIT VOLUME AND WEIGHT BASED ON 6" THICK FRONT FACE. ARCHITECTURAL FINISHES WILL INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

REBAR SCHEDULE - 2.5 x 5.0 x 7.5 STANDARD CORNER UNIT							STEEL WT= 72.57 lbs
Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks	
H = 2'6"	H-1	3 ea	#4	4'8"			
W = 5'0"	V-1	14 ea	#3	2'2"			
S = 7'6"	V-2	6 ea	#3	2'2"			
SH = 2'6"	S-1	4 ea	#4	3'3"			
	TB-1	4 ea	#5	9'2"	7'0 1/2"		

- SPECIAL NOTES:**
- FRONT FACE OF T-WALL UNITS FINISH TREATMENT:
 - PER CONTRACT DRAWINGS AND SPECS.
 - TOP & BOTTOM SHEAR KEY BLOCKOUTS MAY BE LEFT OUT IN AN ALTERNATING PATTERN WHEN STEM LENGTHS BECOME LONGER THAN 10 FT (SPACED AT 2'0"). ALL BLOCKOUTS ARE REQUIRED IN THE STEM FOR THE FIRST 10FT OF LENGTH. REGARDLESS OF OVERALL LENGTH.

- GENERAL NOTES:**
- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 3rd EDITION, 2006 WITH INTERIM REVISIONS
 - MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0 ON SHEET 2 OF 15.
 - ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
 - REBAR:
 - SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
 - CONCRETE:
 - F'c = 4000 psi @ 28 DAYS



PA DOT DWG #87-402 PE (REVISION III)

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

**SHOP DRAWINGS
REBAR
7.5' STEM STANDARD CORNER UNITS**

DESIGNER

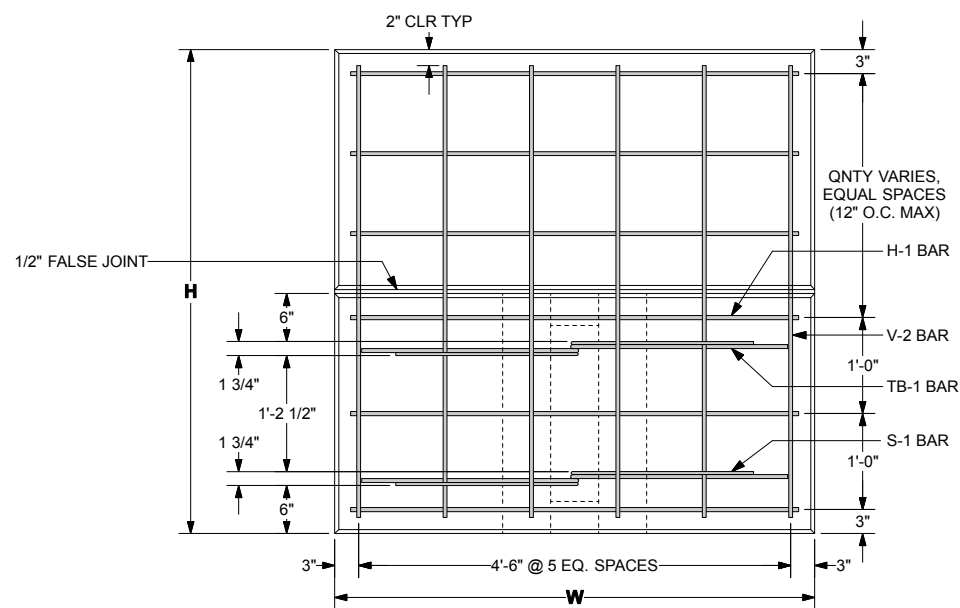
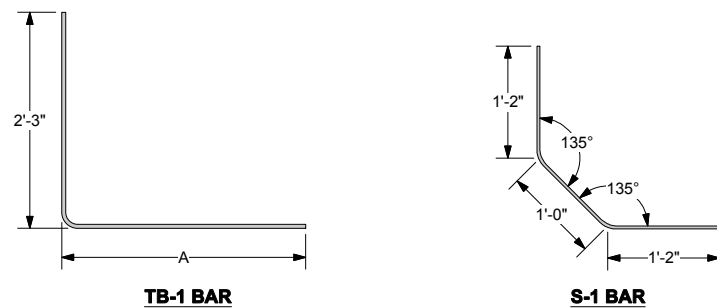
THE NEEL COMPANY
8328-D TRAFORD LANE
SPRINGFIELD, VA 22152
PH: (703) 913-7858
FK: (703) 913-7859
Web: www.neelco.com

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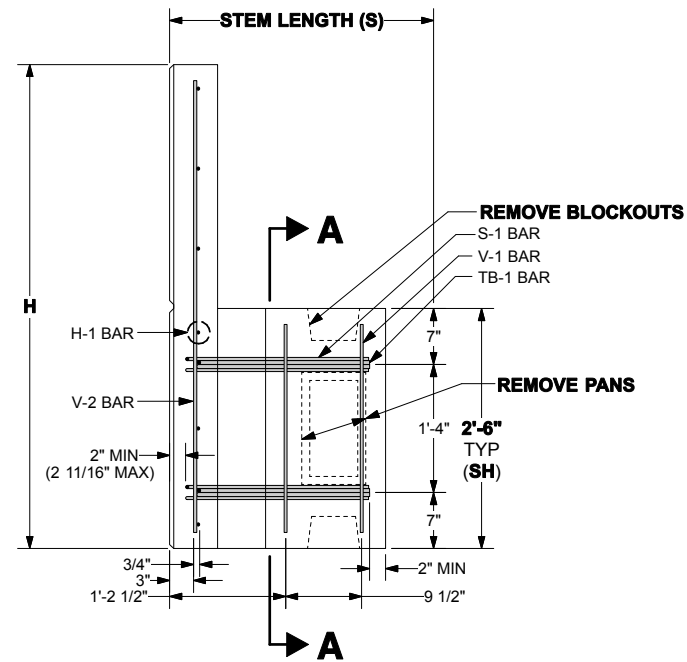
DATE:	04-08-13
SCALE:	NO SCALE
DESIGNED:	CAA
DRAWN:	ACS
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	#21 OF 67

DATE: 04-08-13 TNC JOB #: TW3634 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:12:38 AM CAD FILE NAME: 021_S521 Rebar - 7.5C Units R2.vwx

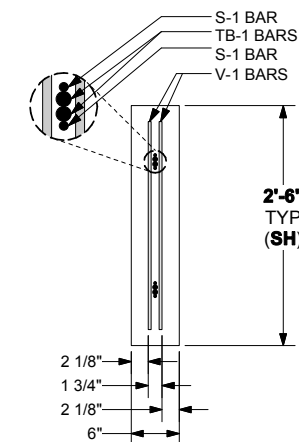
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 DATE: 04-08-13



FRONT VIEW
(V-1 BARS IN STEM OMITTED FOR CLARITY)

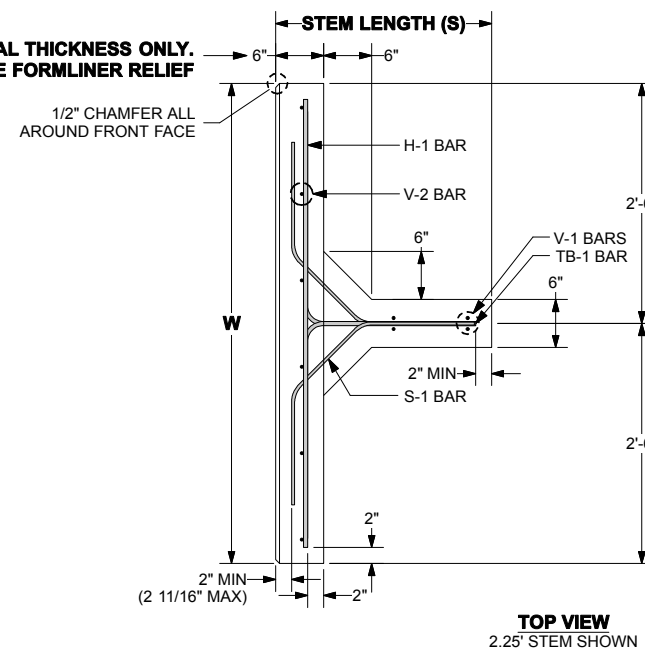


SIDE VIEW
2.25' STEM SHOWN



SECTION A-A

STRUCTURAL THICKNESS ONLY.
DOES NOT INCLUDE FORMLINER RELIEF



TOP VIEW
2.25' STEM SHOWN

SPECIAL NOTES:

- FRONT FACE OF T-WALL UNITS FINISH TREATMENT:
 - PER CONTRACT DRAWINGS AND SPECS.

GENERAL NOTES:

- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 3rd EDITION, 2006 WITH INTERIM REVISIONS
- MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0 ON SHEET 2 OF 15.
- ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
- REBAR:
 - SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
- CONCRETE:
 - F_c = 4000 psi @ 28 DAYS

UNIT TYPE	H	W	S	SH	VOL	WEIGHT
3.0 x 5.0 x 2.25 STD	3'0 1/2"	5'0"	2'3"	2'6"	0.38 cy	1,542 lbs
3.5 x 5.0 x 2.25 STD	3'6 1/2"	5'0"	2'3"	2'6"	0.42 cy	1,711 lbs
4.0 x 5.0 x 2.25 STD	4'0 1/2"	5'0"	2'3"	2'6"	0.46 cy	1,880 lbs
4.5 x 5.0 x 2.25 STD	4'6 1/2"	5'0"	2'3"	2'6"	0.51 cy	2,048 lbs
5.0 x 5.0 x 2.25 STD	5'0 1/2"	5'0"	2'3"	2'6"	0.55 cy	2,217 lbs

*UNIT VOLUME AND WEIGHT BASED ON 6" THICK FRONT FACE. ARCHITECTURAL FINISHES WILL INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

REBAR SCHEDULE - 3.0 x 5.0 x 2.25 STANDARD TOP CORNER UNIT

Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 3'0 1/2"	H-1	4 ea	#4	4'8"		
W = 5'0"	V-1	2 ea	#4	2'2"		
S = 2'3"	V-2	6 ea	#5	2'8 1/2"		
SH = 2'6"	S-1	4 ea	#4	3'4"		
	TB-1	4 ea	#4	4'0 1/2"	1'9 1/2"	

REBAR SCHEDULE - 3.5 x 5.0 x 2.25 STANDARD TOP CORNER UNIT

Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 3'6 1/2"	H-1	5 ea	#4	4'8"		
W = 5'0"	V-1	2 ea	#4	2'2"		
S = 2'3"	V-2	6 ea	#5	3'2 1/2"		
SH = 2'6"	S-1	4 ea	#4	3'4"		
	TB-1	4 ea	#4	4'0 1/2"	1'9 1/2"	

REBAR SCHEDULE - 4.0 x 5.0 x 2.25 STANDARD TOP CORNER UNIT

Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 4'0 1/2"	H-1	5 ea	#4	4'8"		
W = 5'0"	V-1	2 ea	#4	2'2"		
S = 2'3"	V-2	6 ea	#5	3'8 1/2"		
SH = 2'6"	S-1	4 ea	#4	3'4"		
	TB-1	4 ea	#4	4'0 1/2"	1'9 1/2"	

REBAR SCHEDULE - 4.5 x 5.0 x 2.25 STANDARD TOP CORNER UNIT

Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 4'6 1/2"	H-1	6 ea	#4	4'8"		
W = 5'0"	V-1	2 ea	#4	2'2"		
S = 2'3"	V-2	6 ea	#5	4'2 1/2"		
SH = 2'6"	S-1	4 ea	#4	3'4"		
	TB-1	4 ea	#4	4'0 1/2"	1'9 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 2.25 STANDARD TOP CORNER UNIT

Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#4	4'8"		
W = 5'0"	V-1	2 ea	#4	2'2"		
S = 2'3"	V-2	6 ea	#5	4'8 1/2"		
SH = 2'6"	S-1	4 ea	#4	3'4"		
	TB-1	4 ea	#4	4'0 1/2"	1'9 1/2"	

5/9/2013

DESIGNER

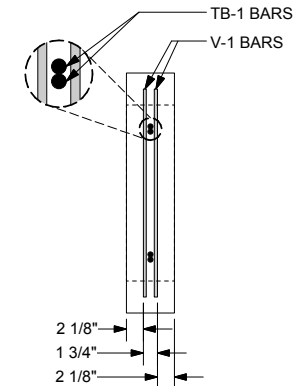
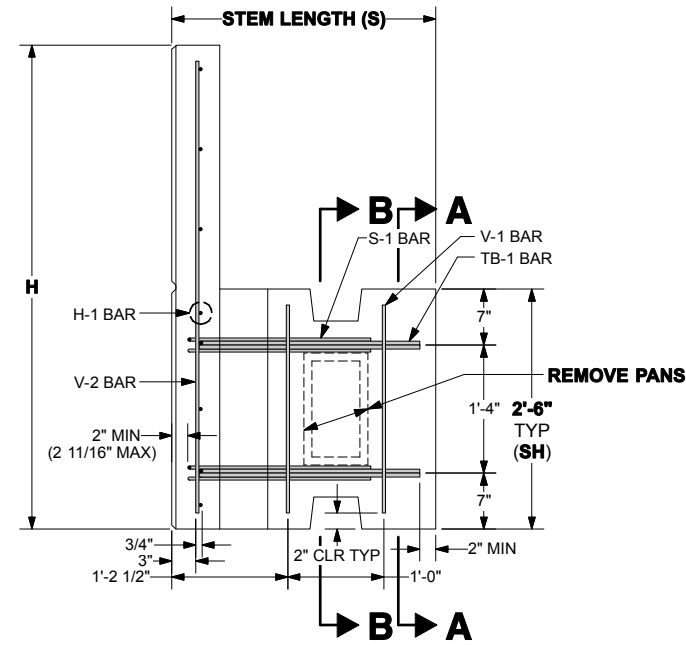
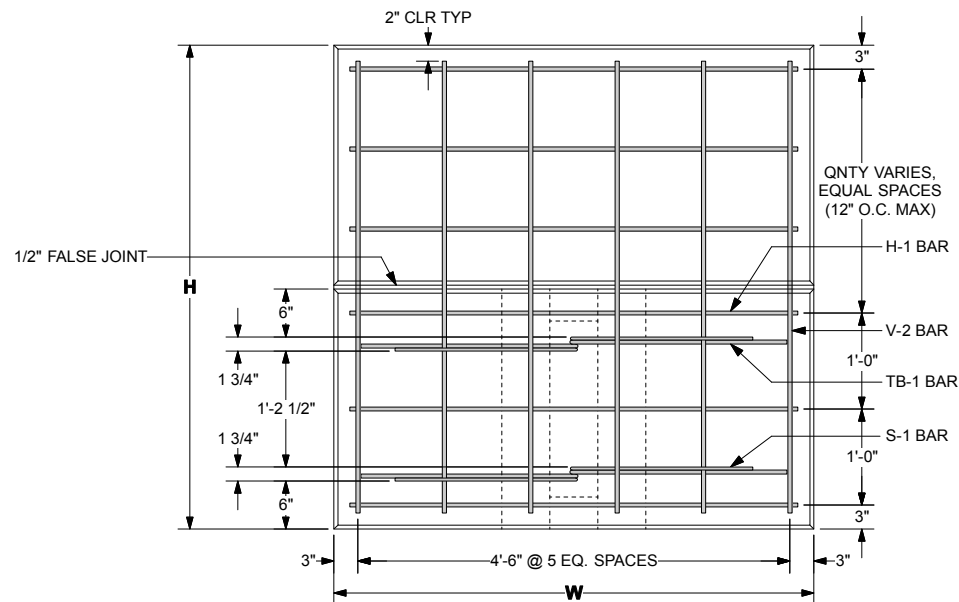
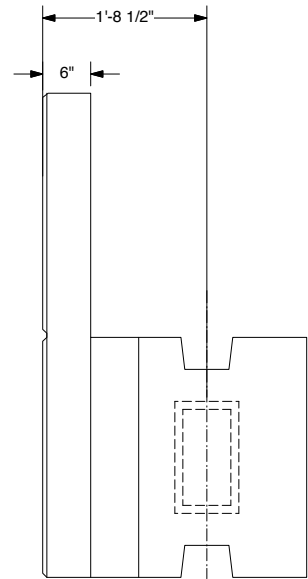
THE NEEL COMPANY
 8328-D TRAFORD LANE
 SPRINGFIELD, VA 22152
 PH: (703) 913-7858
 FX: (703) 913-7859
 Web: www.neelco.com

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DATE:	04-08-13
SCALE:	NO SCALE
DESIGNED:	CAA
DRAWN:	ACS
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	22 OF 67

PA DOT DWG #87-402 PE (REVISION III)
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY
T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM
SHOP DRAWINGS
REBAR
2.25' STEM STANDARD TOP CORNER UNITS

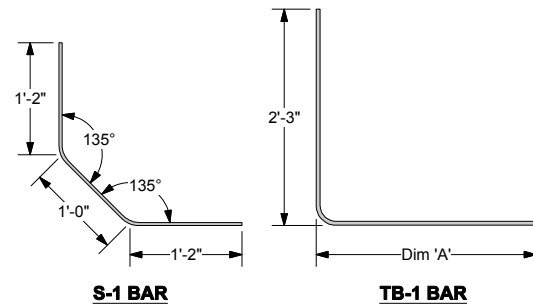
	SHEET 22 OF 67
	87-402 PE



FRONT VIEW
(V-1 BARS IN STEM OMITTED FOR CLARITY)

SIDE VIEW
2.75' STEM SHOWN

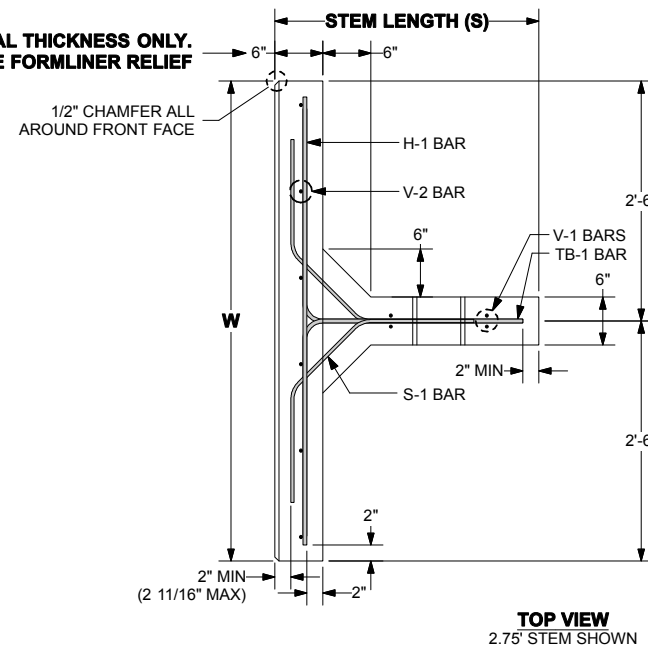
SECTION A-A



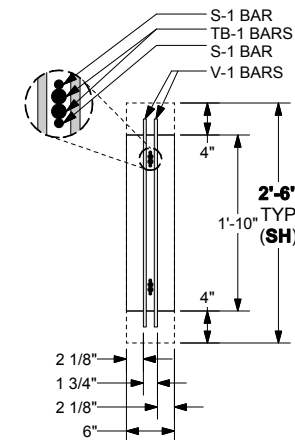
S-1 BAR

TB-1 BAR

STRUCTURAL THICKNESS ONLY.
DOES NOT INCLUDE FORMLINER RELIEF



TOP VIEW
2.75' STEM SHOWN



SECTION B-B

SPECIAL NOTES:

- FRONT FACE OF T-WALL UNITS FINISH TREATMENT:
• PER CONTRACT DRAWINGS AND SPECS.

GENERAL NOTES:

- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 3rd EDITION, 2006 WITH INTERIM REVISIONS
- MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0 ON SHEET 2 OF 15.
- ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
- REBAR:
• SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
- CONCRETE:
• $f'_c = 4000$ psi @ 28 DAYS

UNIT TYPE	H	W	S	SH	VOL	WEIGHT
3.0 x 5.0 x 2.75 STD	3'0 1/2"	5'0"	2'9"	2'6"	0.40 cy	1,611 lbs
3.5 x 5.0 x 2.75 STD	3'6 1/2"	5'0"	2'9"	2'6"	0.44 cy	1,780 lbs
4.0 x 5.0 x 2.75 STD	4'0 1/2"	5'0"	2'9"	2'6"	0.48 cy	1,948 lbs
4.5 x 5.0 x 2.75 STD	4'6 1/2"	5'0"	2'9"	2'6"	0.52 cy	2,117 lbs
5.0 x 5.0 x 2.75 STD	5'0 1/2"	5'0"	2'9"	2'6"	0.56 cy	2,286 lbs

*UNIT VOLUME AND WEIGHT BASED ON 6" THICK FRONT FACE. ARCHITECTURAL FINISHES WILL INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

REBAR SCHEDULE - 3.0 x 5.0 x 2.75 STANDARD TOP CORNER UNIT

Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 3'0 1/2"	H-1	4 ea	#4	4'8"		
W = 5'0"	V-1	4 ea	#4	2'2"		
S = 2'9"	V-2	6 ea	#5	2'8 1/2"		
SH = 2'6"	S-1	4 ea	#4	3'4"		
	TB-1	4 ea	#4	4'6 1/2"	2'3 1/2"	

REBAR SCHEDULE - 3.5 x 5.0 x 2.75 STANDARD TOP CORNER UNIT

Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 3'6 1/2"	H-1	5 ea	#4	4'8"		
W = 5'0"	V-1	4 ea	#4	2'2"		
S = 2'9"	V-2	6 ea	#5	3'2 1/2"		
SH = 2'6"	S-1	4 ea	#4	3'4"		
	TB-1	4 ea	#4	4'6 1/2"	2'3 1/2"	

REBAR SCHEDULE - 4.0 x 5.0 x 2.75 STANDARD TOP CORNER UNIT

Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 4'0 1/2"	H-1	5 ea	#4	4'8"		
W = 5'0"	V-1	4 ea	#4	2'2"		
S = 2'9"	V-2	6 ea	#5	3'8 1/2"		
SH = 2'6"	S-1	4 ea	#4	3'4"		
	TB-1	4 ea	#4	4'6 1/2"	2'3 1/2"	

REBAR SCHEDULE - 4.5 x 5.0 x 2.75 STANDARD TOP CORNER UNIT

Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 4'6 1/2"	H-1	6 ea	#4	4'8"		
W = 5'0"	V-1	4 ea	#4	2'2"		
S = 2'9"	V-2	6 ea	#5	4'2 1/2"		
SH = 2'6"	S-1	4 ea	#4	3'4"		
	TB-1	4 ea	#4	4'6 1/2"	2'3 1/2"	

REBAR SCHEDULE - 5.0 x 5.0 x 2.75 STANDARD TOP CORNER UNIT

Unit Dim's	Bar Mark	Qty	Size	Length	Dim 'A'	Remarks
H = 5'0 1/2"	H-1	6 ea	#4	4'8"		
W = 5'0"	V-1	4 ea	#4	2'2"		
S = 2'9"	V-2	6 ea	#5	4'8 1/2"		
SH = 2'6"	S-1	4 ea	#4	3'4"		
	TB-1	4 ea	#4	4'6 1/2"	2'3 1/2"	

5/9/2013

DESIGNER

THE NEEL COMPANY
 8328-D TRAFORD LANE
 SPRINGFIELD, VA 22152
 PH: (703) 913-7858
 FX: (703) 913-7859
 Web: www.neelco.com
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DATE:	04-08-13
SCALE:	NO SCALE
DESIGNED:	CAA
DRAWN:	ACS
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	#23 OF 67

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

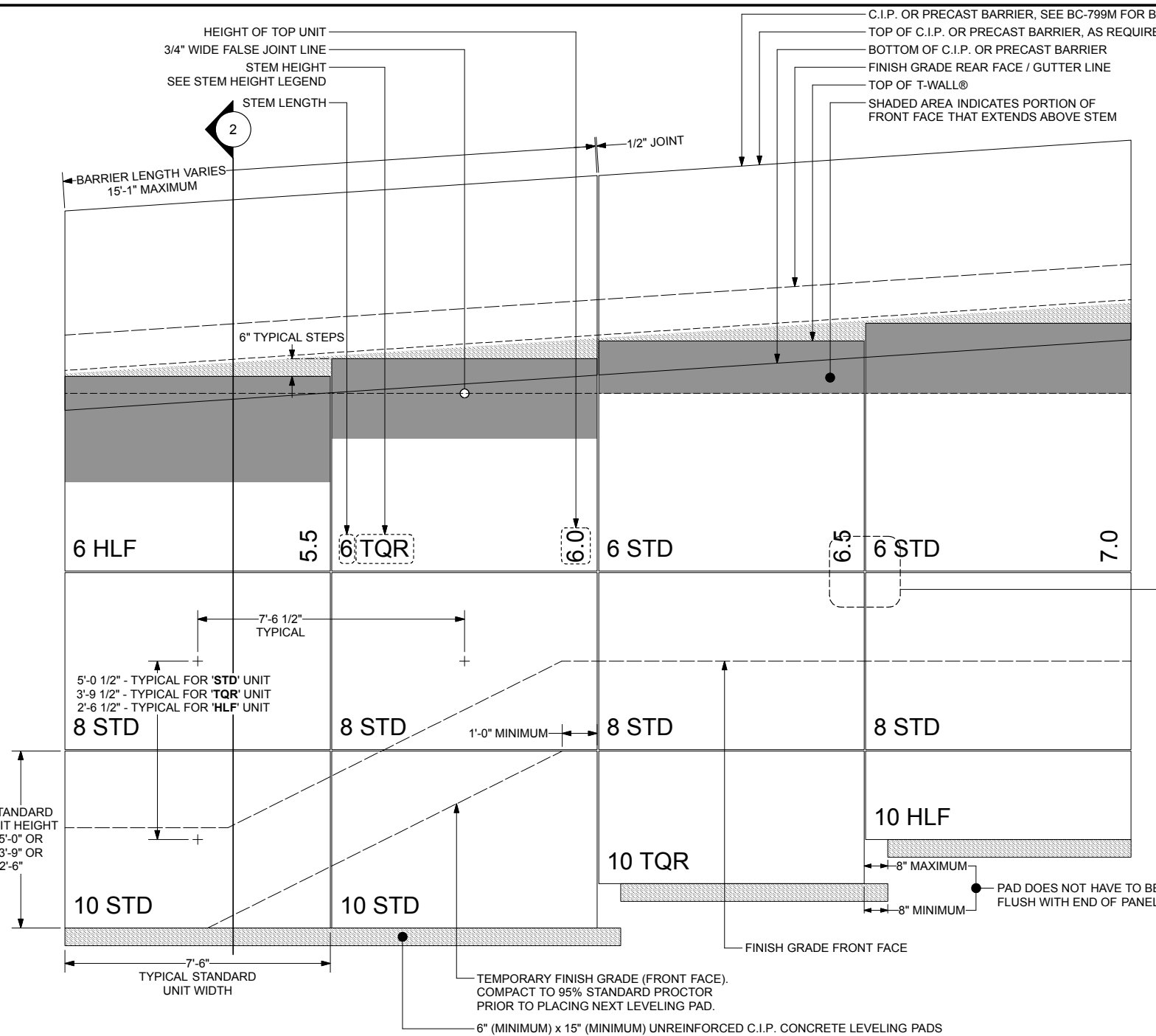
T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
2.75' STEM STANDARD TOP CORNER UNITS

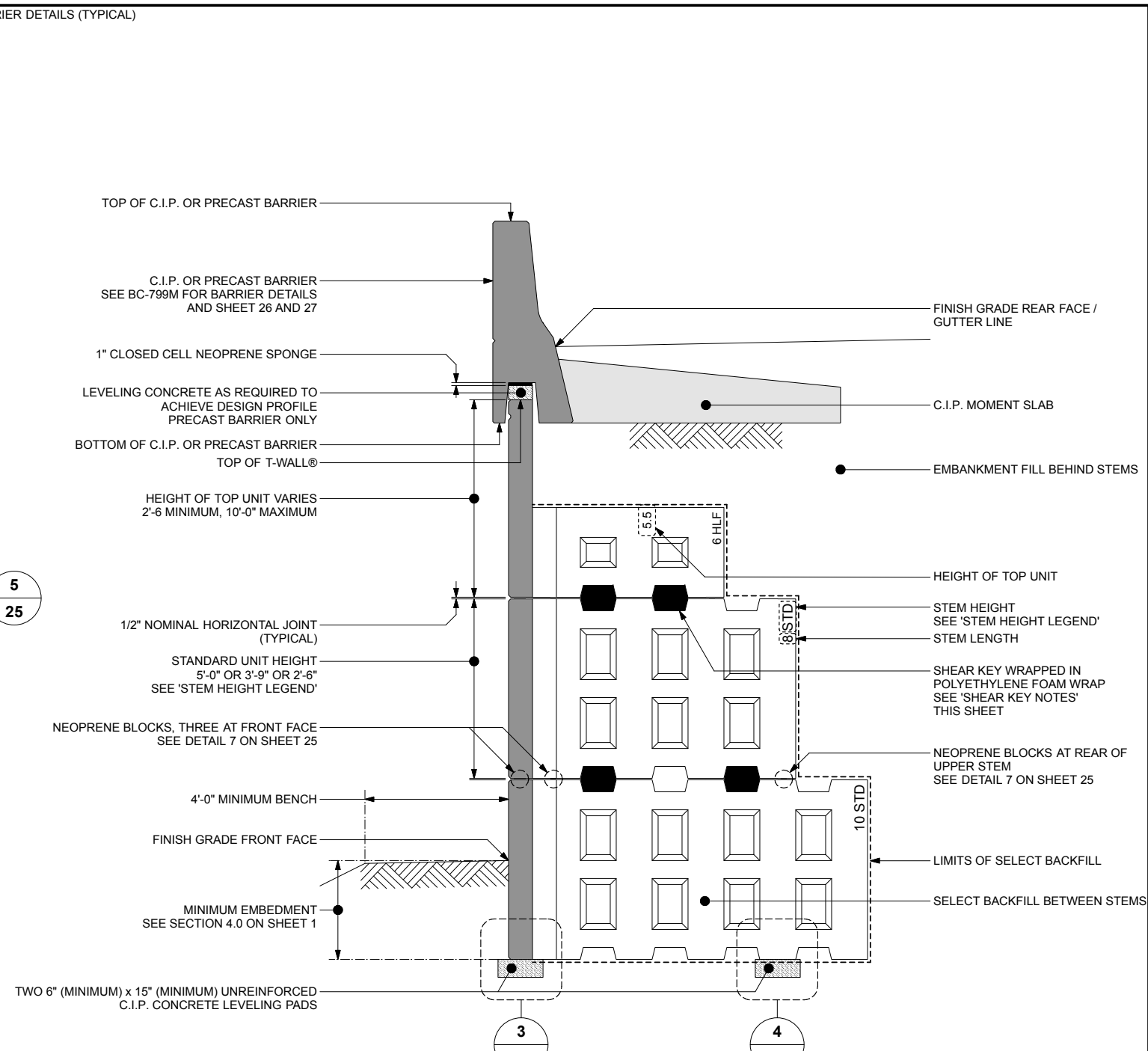
SHEET 23 OF 67

87-402 PE

CAD FILE NAME: 024 S524 RWY Typical Details 1.r0.vwx
 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:16:25 AM
 TNC JOB #: TW3634
 DATE: 04-08-13



1 PARTIAL ELEVATION SHOWN - TYPICAL DETAILS
 Scale: 1/2" = 1'-0"
 NOT ALL DETAILS APPLY TO EACH WALL SEE "DEVELOPED ELEVATION (FRONT FACE)" FOR APPLICABLE DETAILS



2 TYPICAL SECTION SHOWN
 Scale: 1/2" = 1'-0"
 NOT ALL DETAILS APPLY TO EACH WALL SEE "TYPICAL SECTION AT MAXIMUM HEIGHT" FOR APPLICABLE DETAILS

PIPE PENETRATION NOTES:

1. TYPICAL PIPE PENETRATION ARE SHOWN ON SHEET 4. LARGER PIPES WILL BE ENGINEERED ON A PROJECT SPECIFIC BASIS.
2. OUTLET PIPE JOINTS SHALL BE WATERTIGHT. OUTLET PIPES SHALL MEET 100 YEAR SERVICE LIFE CRITERIA.

STEM HEIGHT LEGEND

- STANDARD UNITS:
- STD = 5'-0" STEM HEIGHT
- TQR = 3'-9" STEM HEIGHT
- HLF = 2'-6" STEM HEIGHT

SHEAR KEY NOTES (FOR 7.5 WIDE UNITS) :

1. TYPICAL DESIGN CONDITIONS

TYPICAL LOADS AND CONFIGURATIONS REQUIRE THE FOLLOWING SHEAR KEY QUANTITIES:

- EXTENDED FACE TOP UNITS - 2 SHEAR KEYS
- 6' THRU 32' STEM STANDARD UNIT - 2 SHEAR KEYS (MINIMUM)

2. SPECIAL DESIGN CONDITION

OTHER LOADS AND CONFIGURATIONS MAY REQUIRE MORE OR LESS SHEAR KEYS. IN THESE CASES, SHEAR KEY REQUIREMENTS WILL BE EXPLICITLY DEFINED ON A PROJECT SPECIFIC BASIS.

3. LOCATION

THE LOCATION OF A SHEAR KEY ALONG THE STEM OF A T-WALL® UNIT IS NOT CRITICAL, AND DOES NOT HAVE TO BE PLACED EXACTLY AS SHOWN ON THE PROJECT DRAWINGS.

RECOMMEND PLACEMENT IS ONE SHEAR KEY AT THE FRONT (1st POCKET), ONE KEY AT THE BACK OF UNIT ABOVE AND ANY REMAINING KEYS EQUALLY SPACED BETWEEN.

DESIGNER

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DATE:	04-08-13
SCALE:	AS NOTED
DESIGNED:	JMC
DRAWN:	CJW
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	#24 OF 67

PA DOT DWG #87-402 PE (REVISION III) 5/9/2013

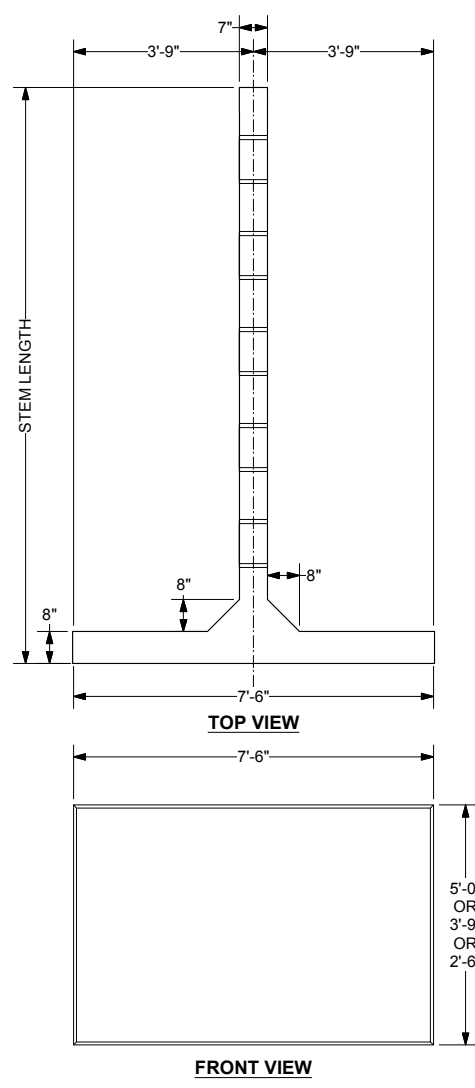
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 BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

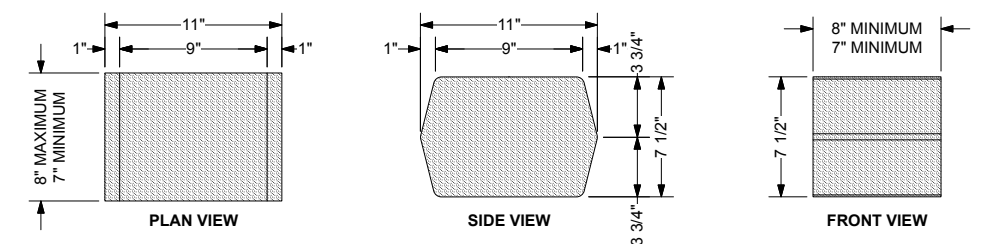
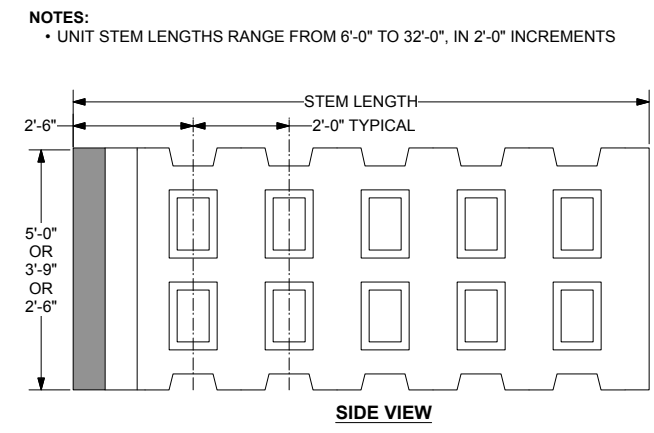
SHOP DRAWINGS
MISCELLANEOUS DETAILS (I)
5.0 x 7.5 STANDARD UNITS

	SHEET 24 OF 67
87-402 PE	

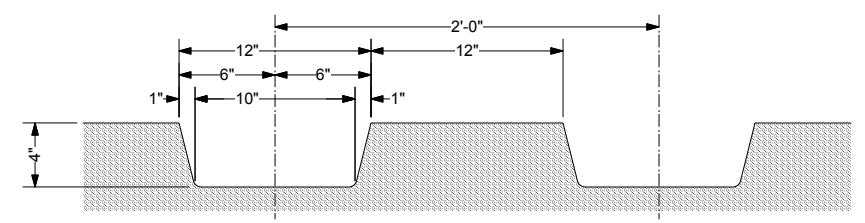
DATE: 04-08-13 TNC JOB #: TW3634 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:16:25 AM CAD FILE NAME: 024_S524_RWY_Typical_Details.rvt.vwx



10 TYPICAL STANDARD T-WALL® UNIT (12'-0" STEM SHOWN)
Scale: 1/2" = 1'-0"

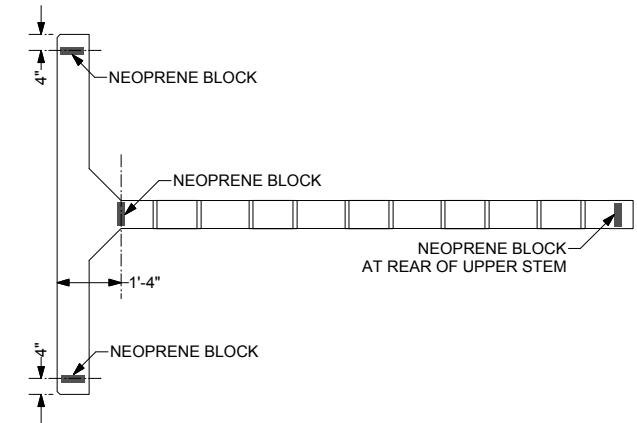


9 SHEAR KEY DIMENSION
Scale: 2" = 1'-0"



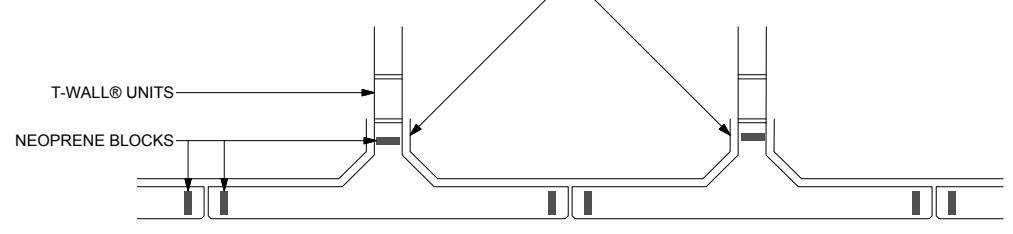
8 SHEAR KEY BLOCK OUT DIMENSION
Scale: 2" = 1'-0"

RUBBER BLOCKS NOTES:
1. FOUR NEOPRENE BLOCKS ARE TO BE PLACED AS SHOWN BELOW:

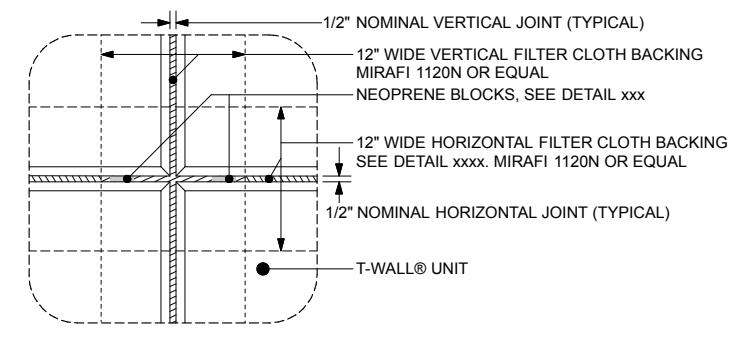


7 NEOPRENE BLOCKS PLACEMENT (AT FRONT FACE)
Scale: 1/2" = 1'-0"

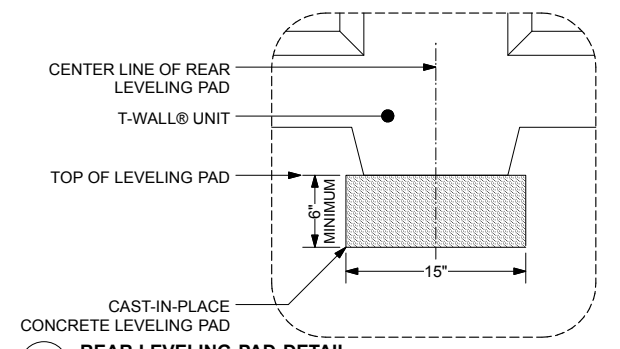
12 INCH WIDE x 8'-6" LONG FILTER CLOTH BACKING ATTACHED WITH SPOT ADHESIVE TO THE BACK OF T-WALL® UNITS



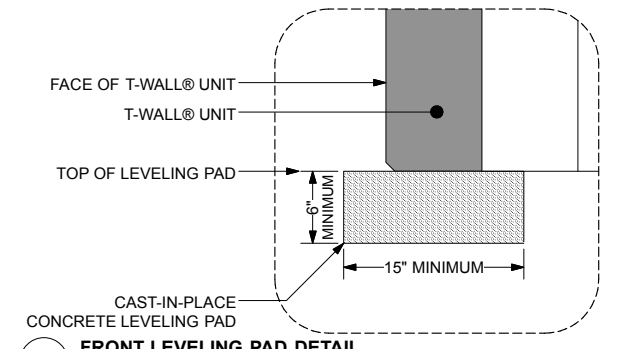
6 HORIZONTAL FILTER CLOTH LAYOUT
Scale: 1/2" = 1'-0"



5 HORIZONTAL AND VERTICAL JOINT
Scale: 1 1/2" = 1'-0"



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



3 FRONT LEVELING PAD DETAIL
Scale: 1 1/2" = 1'-0"

DESIGNER THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	DATE: 04-08-13
	SCALE: AS NOTED
	DESIGNED: JMC
	DRAWN: CJW
	CHECKED: CCG/KD
	TNC JOB #: TW3634
	TNC SHT #25 OF 67

5/9/2013

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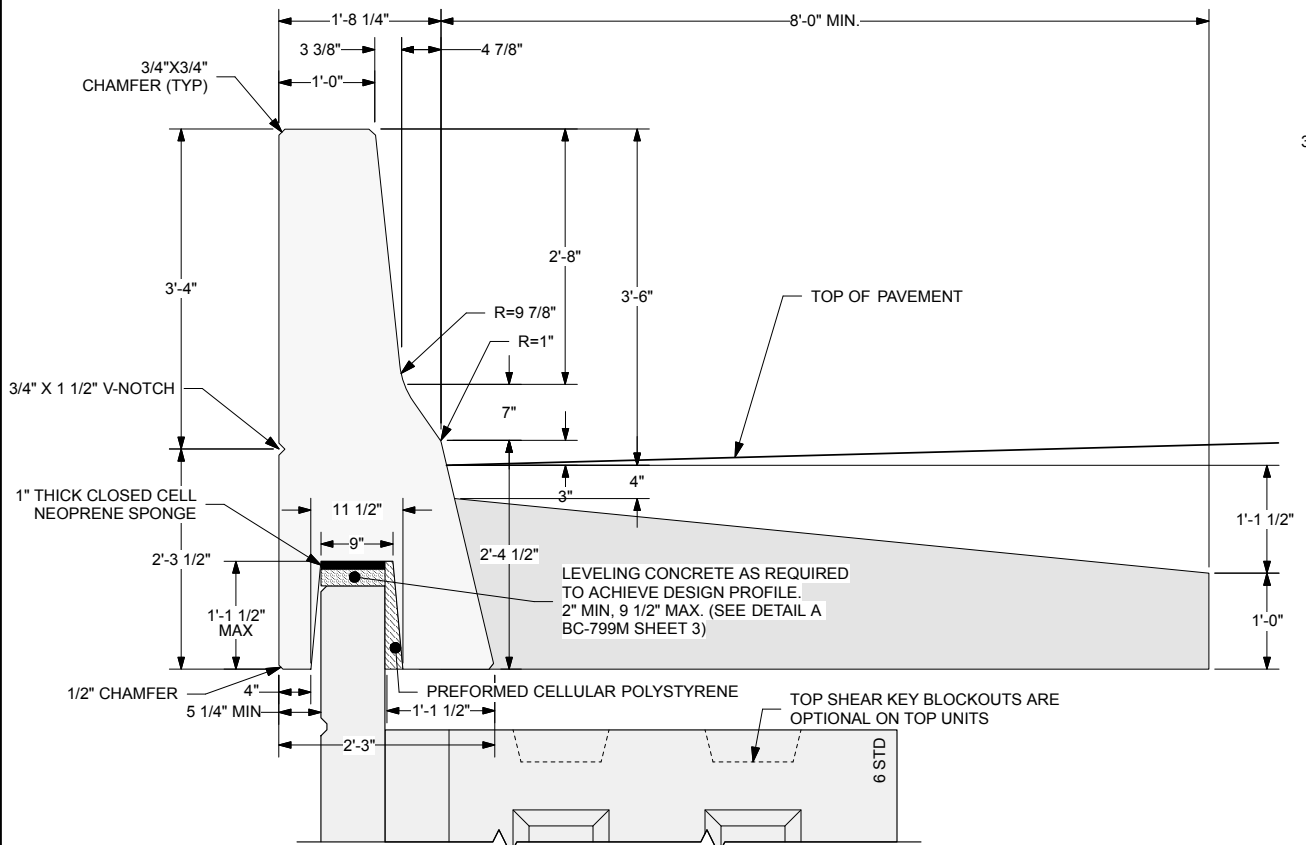
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DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

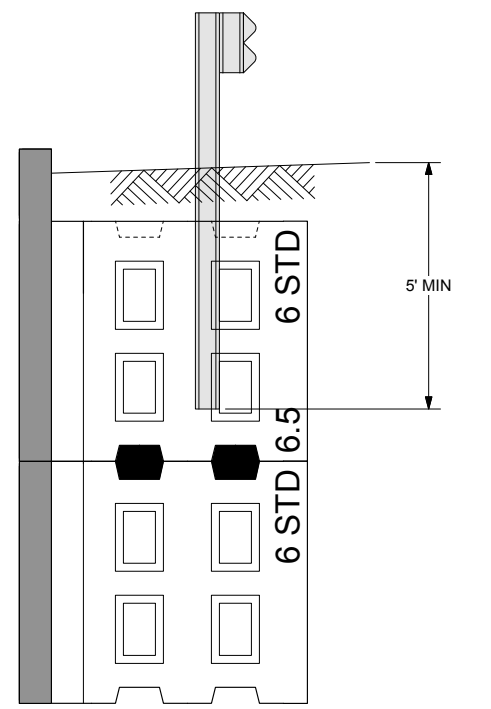
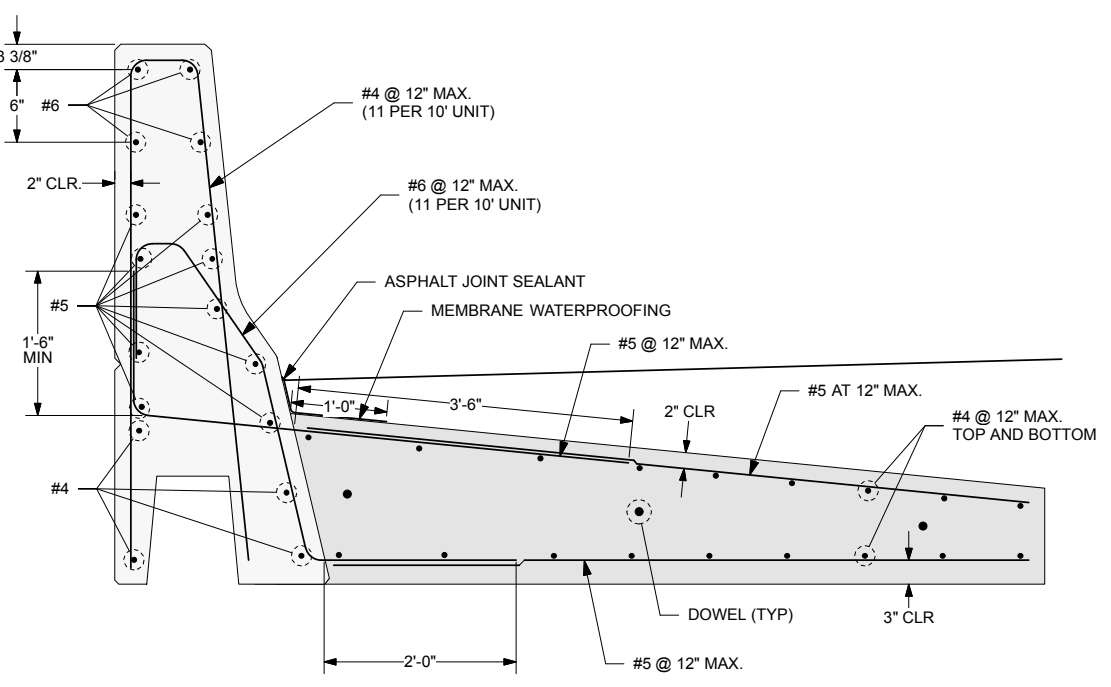
**SHOP DRAWINGS
MISCELLANEOUS DETAILS (II)
5.0 x 7.5 STANDARD UNITS**

	SHEET 25 OF 67
87-402 PE	

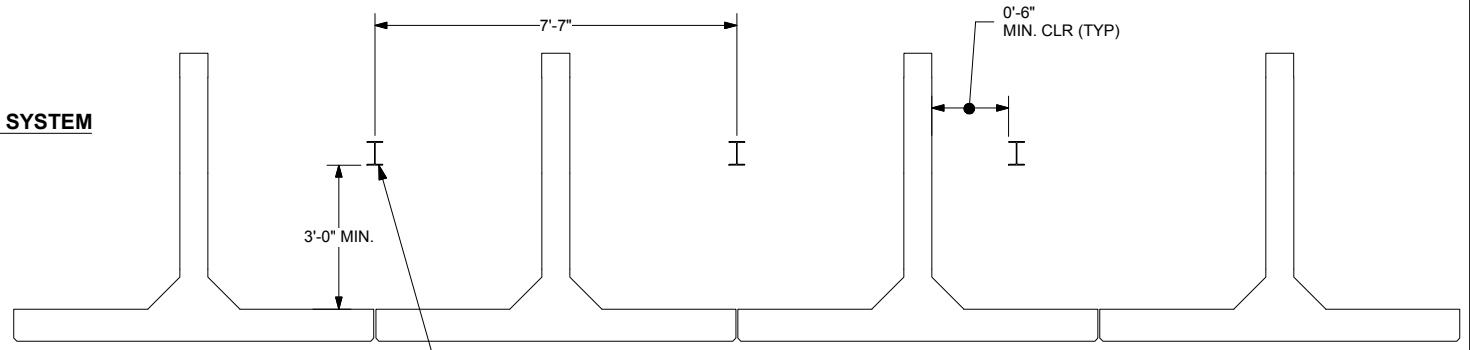
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 TNC JOB #: TW3634
 DATE: 04-08-13



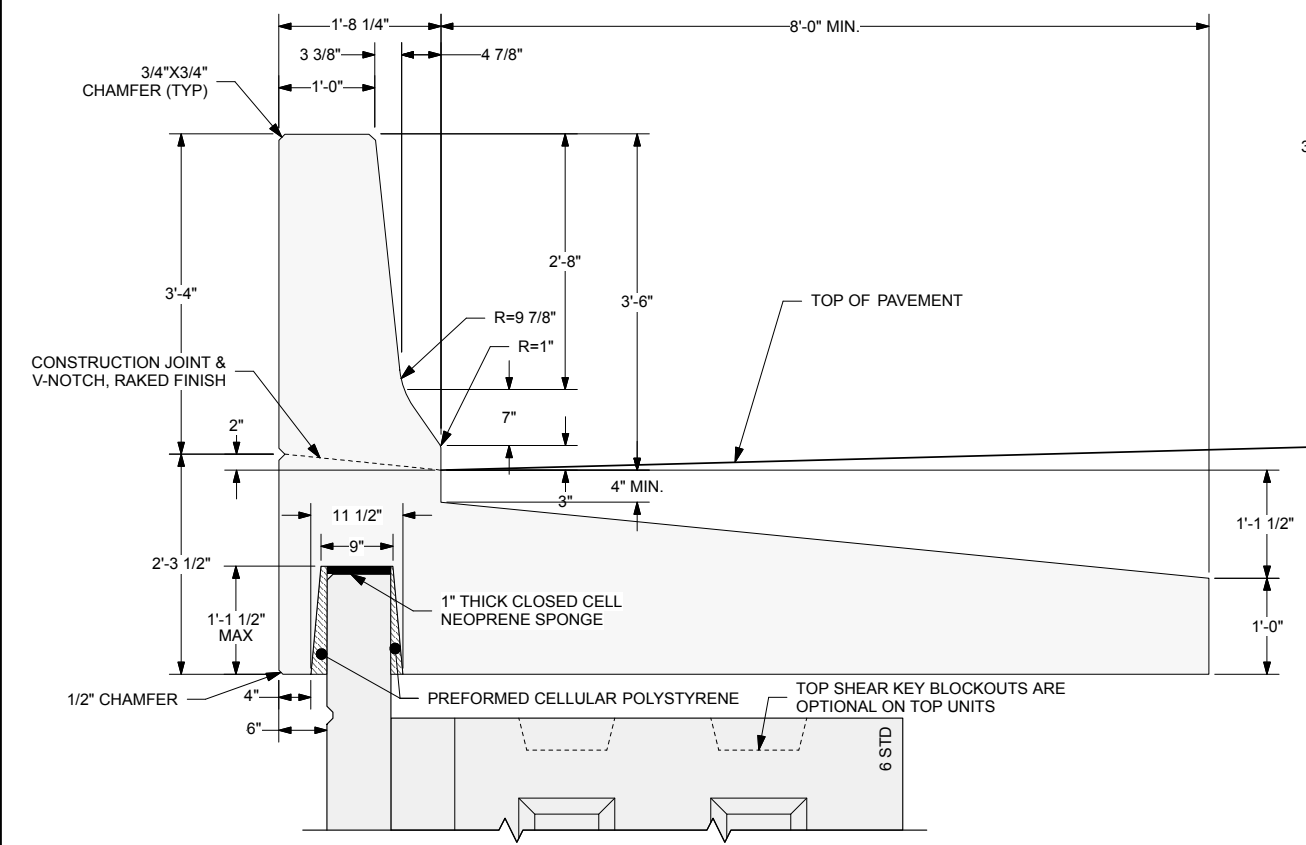
PRECAST BARRIER AND C.I.P. MOMENT SLAB MOUNTED ON T-WALL® RETAINING WALL SYSTEM



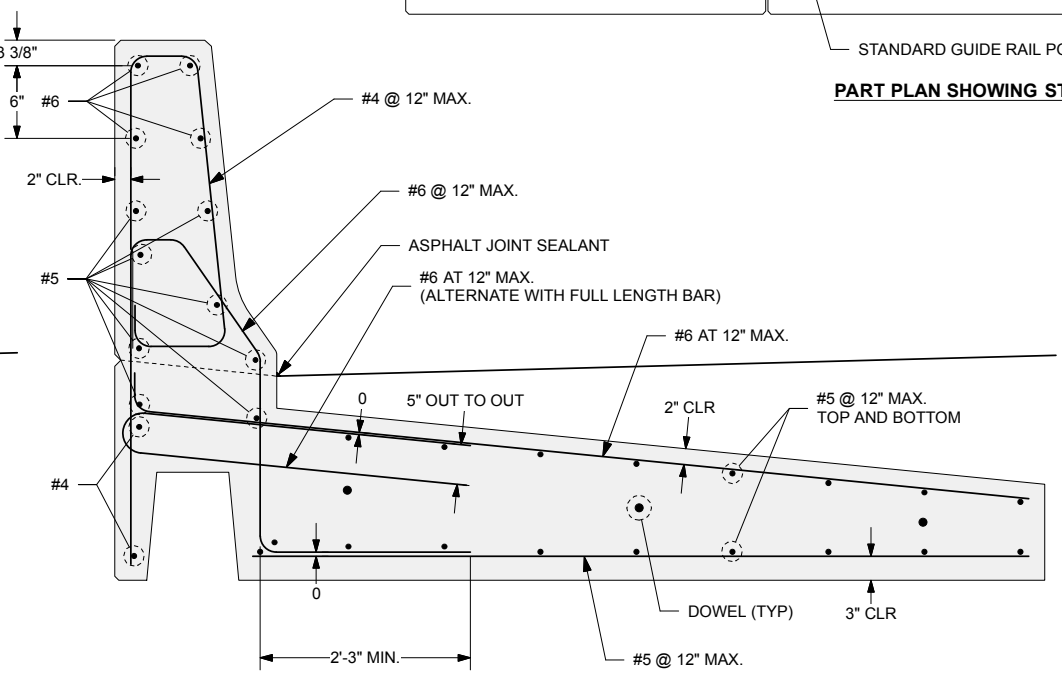
SECTION SHOWING STANDARD GUIDE RAIL



PART PLAN SHOWING STANDARD GUIDE RAIL POST SPACING



C.I.P. BARRIER AND MOMENT SLAB MOUNTED ON T-WALL® RETAINING WALL SYSTEM



PA DOT DWG #87-402 PE (REVISION III) 5/9/2013

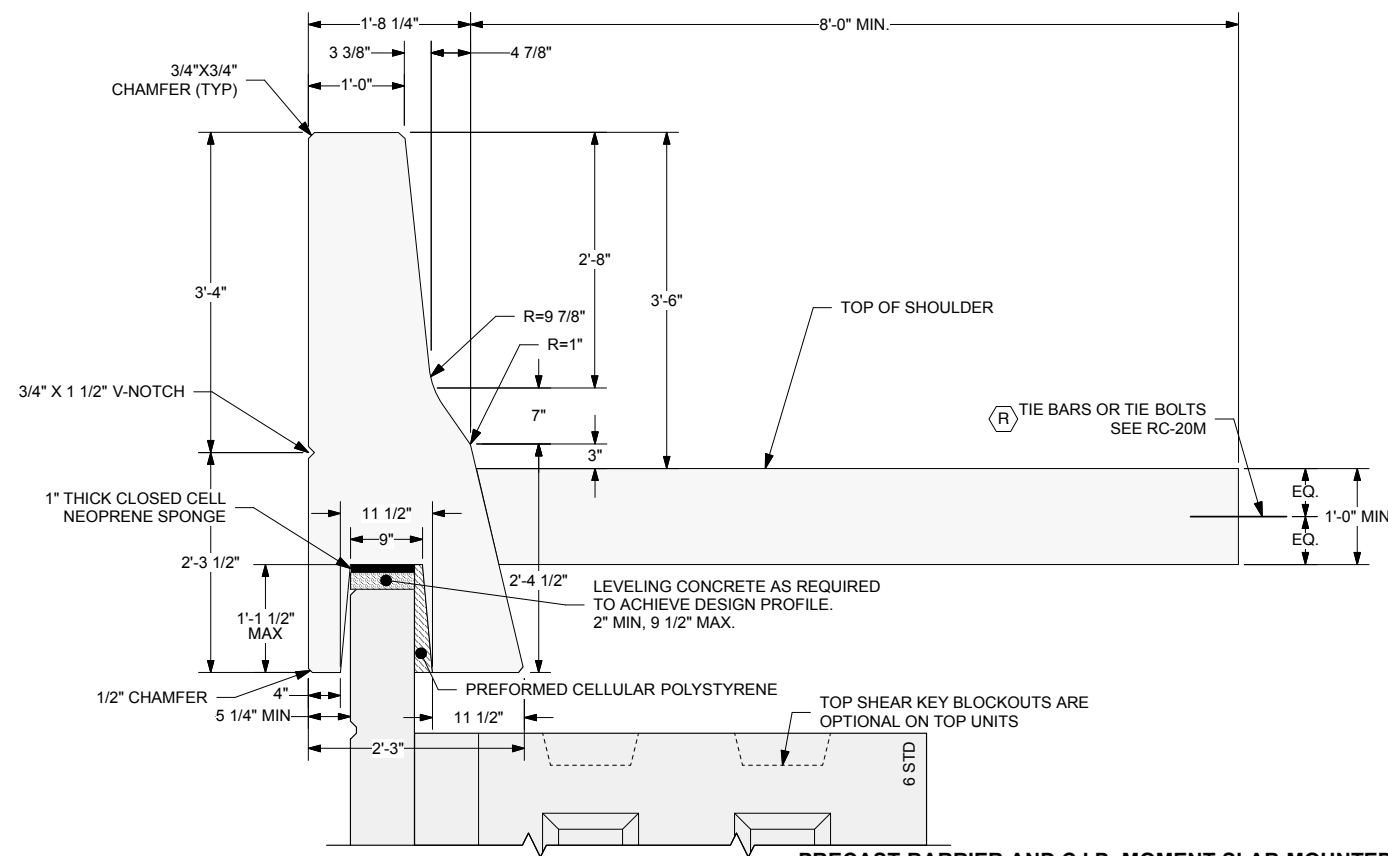
**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

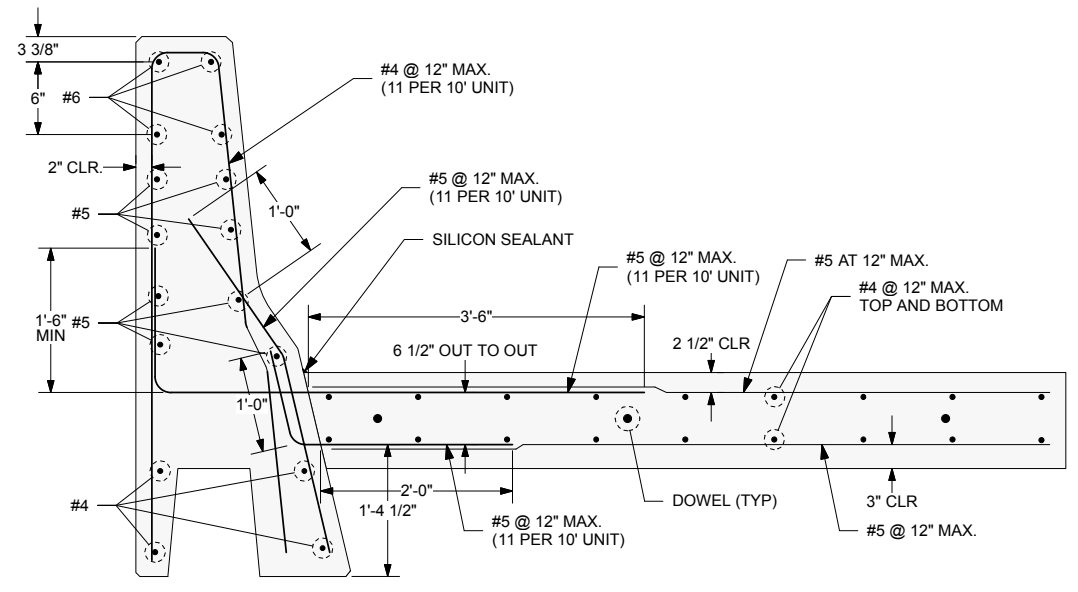
**SHOP DRAWINGS
TYPICAL DETAILS - 7.50 WIDE UNITS
TRAFFIC BARRIER WITH BITUMINOUS CONCRETE SHOULDER**

DESIGNER	DATE: 04-08-13
<p>THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com</p> <p><small>This drawing contains information proprietary to The Neel Company. The Neel Company is the exclusive licensee of the T-WALL® patent. © 2013, The Neel Company</small></p>	SCALE: NO SCALE
	DESIGNED: JMC
	DRAWN: CJW
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	TNC JOB #: TW3634
TNC SHT #26 OF 67	SHEET 26 OF 67
87-402 PE	

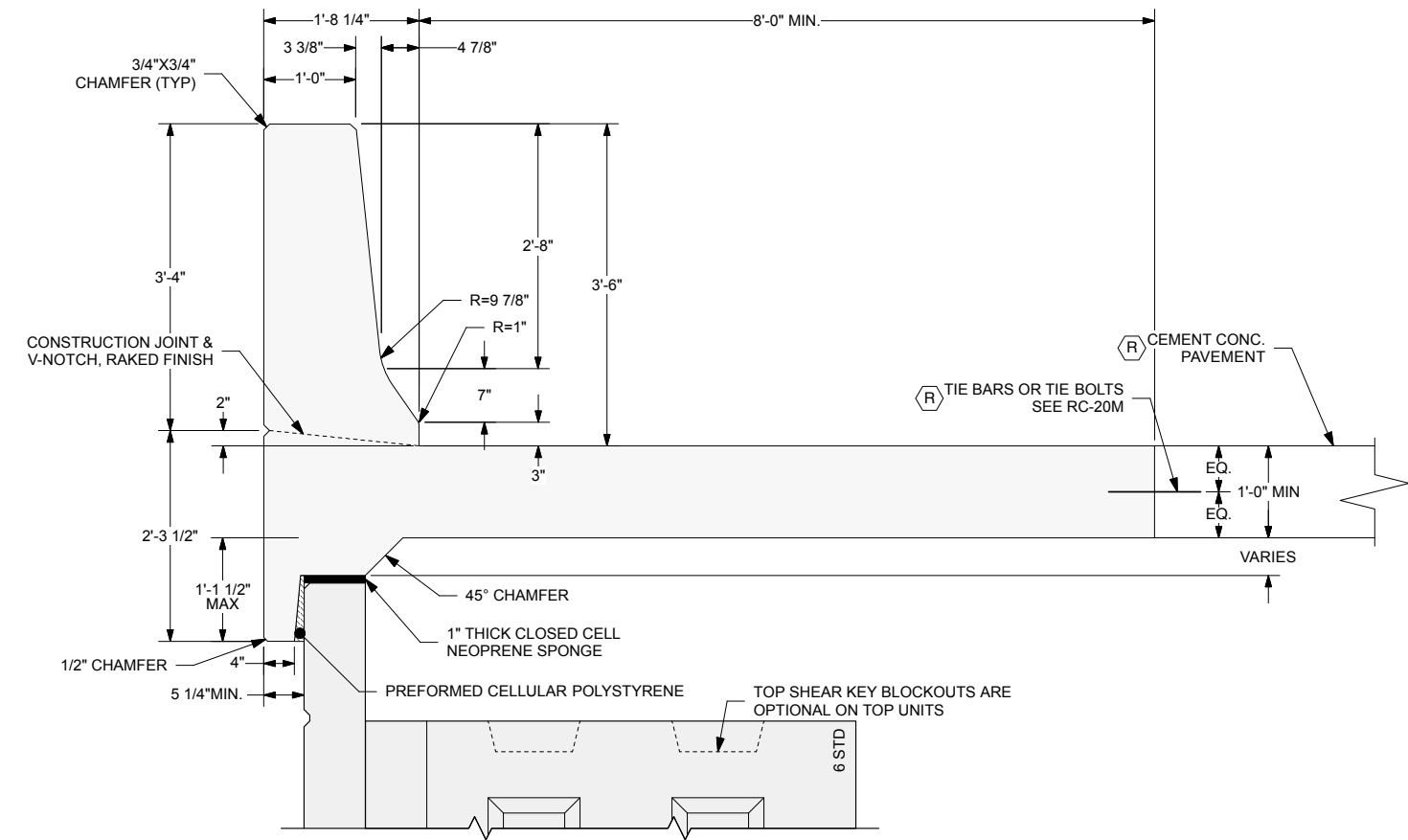
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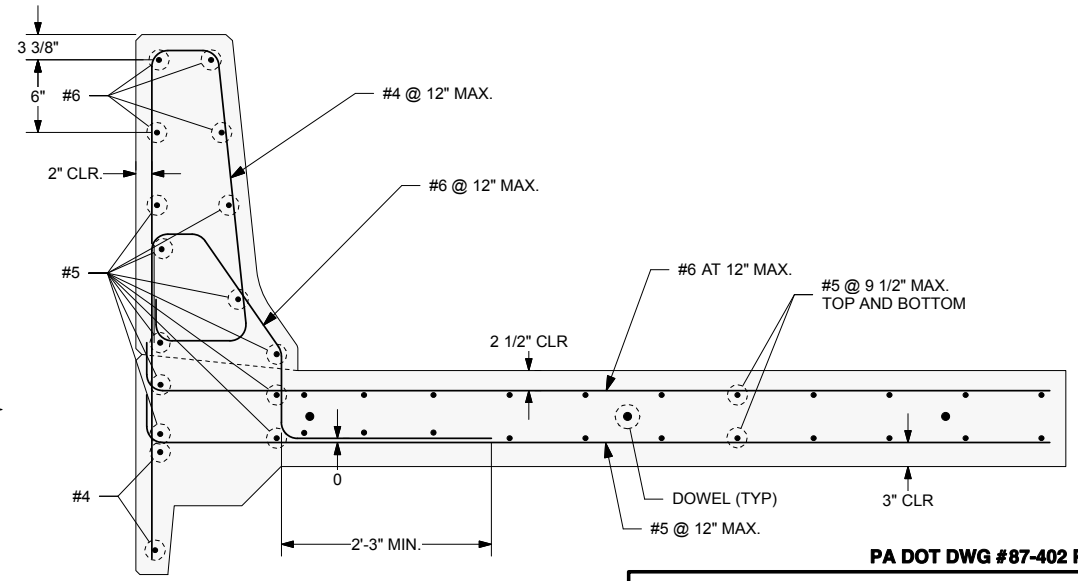
PRECAST BARRIER AND C.I.P. MOMENT SLAB MOUNTED ON T-WALL® RETAINING WALL SYSTEM



LEGEND
 (R) ROADWAY ITEM



C.I.P. BARRIER AND MOMENT SLAB MOUNTED ON T-WALL® RETAINING WALL SYSTEM



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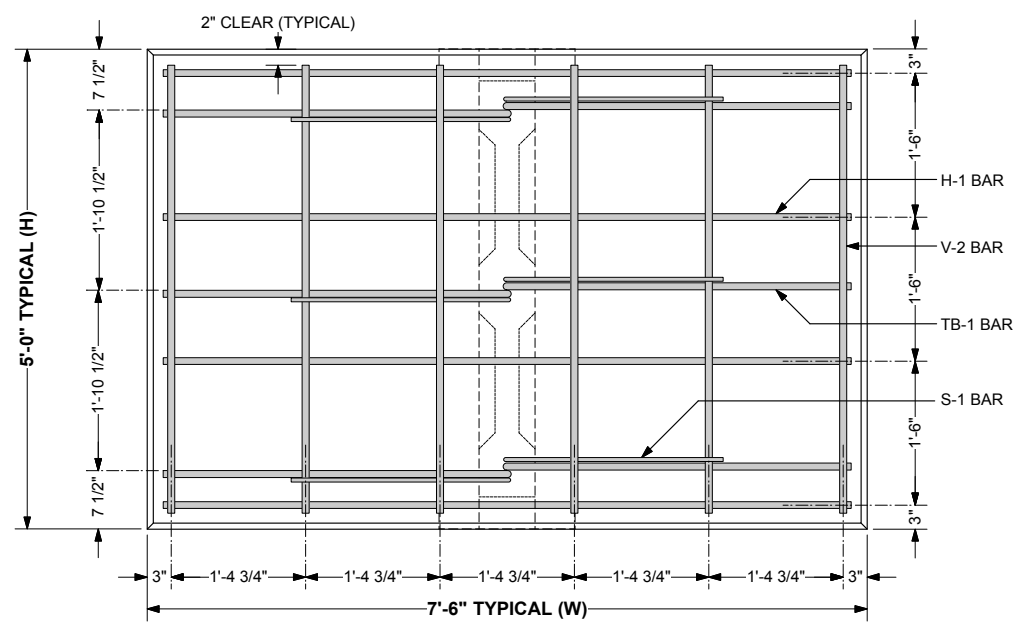
COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY	
T-WALL® STANDARDS PREFABRICATED T-WALL® RETAINING WALL SYSTEM	
SHOP DRAWINGS TYPICAL DETAILS - 7.50 WIDE UNITS TRAFFIC BARRIER WITH CEMENT CONCRETE SHOULDER	
	SHEET 27 OF 67
87-402 PE	

DESIGNER THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	DATE: 04-08-13
	SCALE: NO SCALE
	DESIGNED: JMC
	DRAWN: CJW
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	TNC JOB #: TW3634
	TNC SHT #27 OF 67

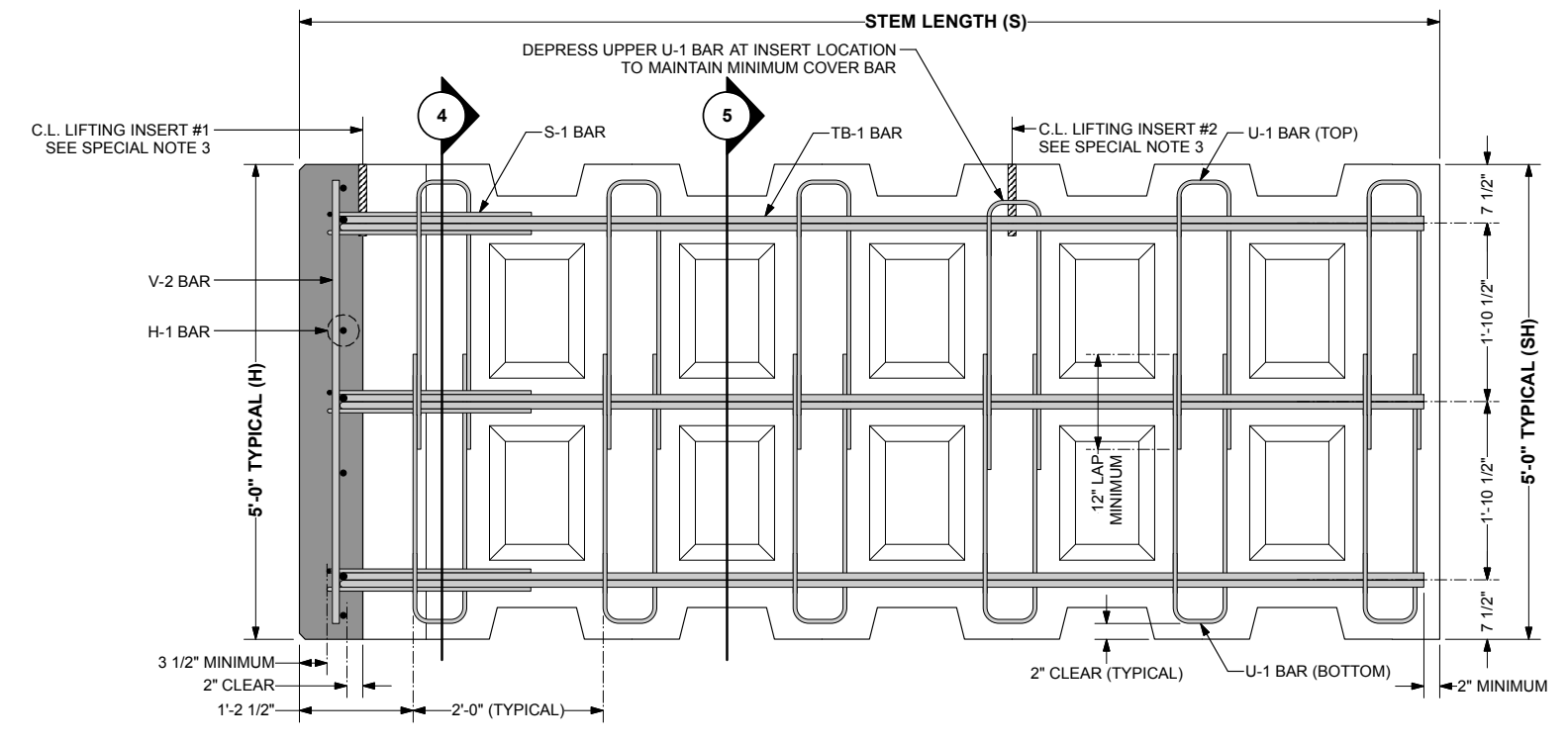
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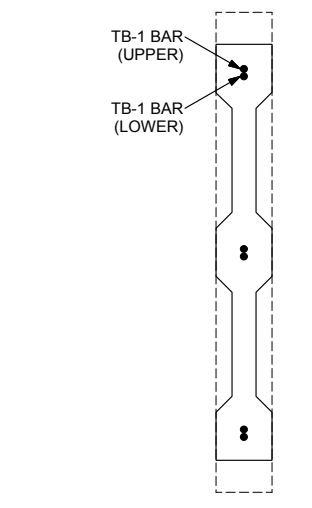
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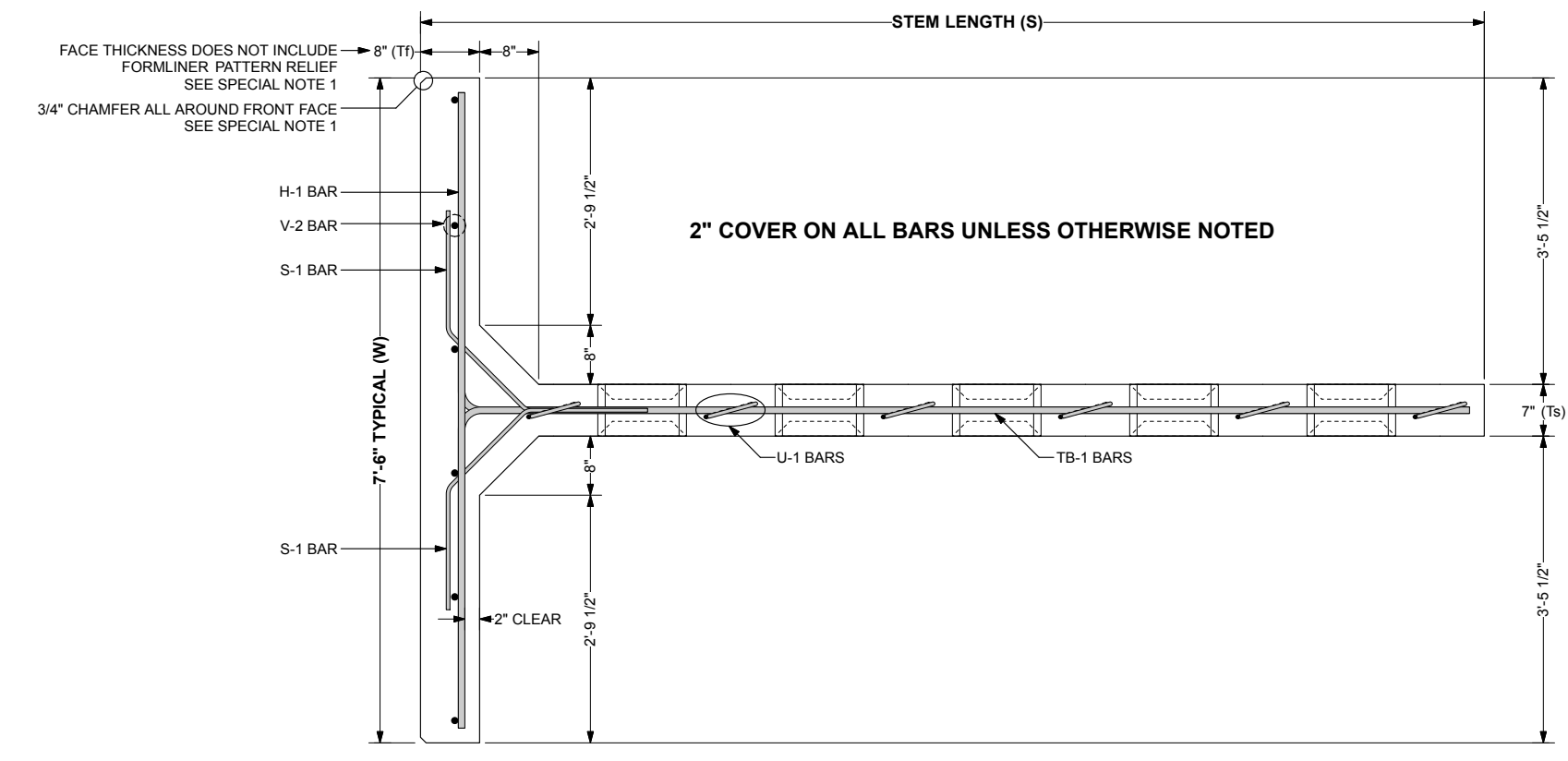
3 FRONT VIEW - 5.0 x 7.5 STANDARD UNIT
 Scale: 1" = 1'-0"
(U-1 BARS IN STEM OMITTED FOR CLARITY)



2 SIDE VIEW - 5.0 x 7.5 STANDARD UNIT (12'-0" STEM SHOWN)
 Scale: 1" = 1'-0"



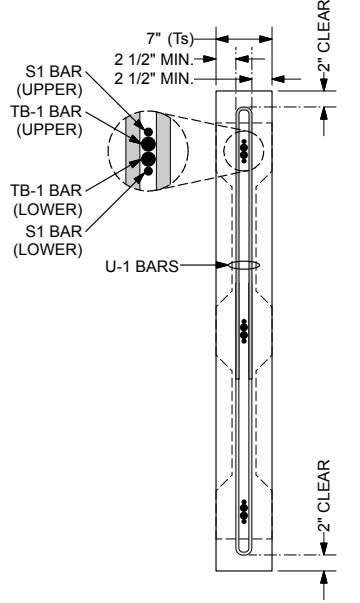
5 SECTION THROUGH STEM
 Scale: 1" = 1'-0"



1 PLAN VIEW - 5.0 x 7.5 STANDARD UNIT (12'-0" STEM SHOWN)
 Scale: 1" = 1'-0"

- SPECIAL NOTES:**
- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
 - PER CONTRACT DRAWINGS AND SPECS.
 - MINIMUM FRONT FACE THICKNESS SHALL BE 8"
 - TOP & BOTTOM SHEAR KEY BLOCKOUTS MAY BE LEFT OUT IN AN ALTERNATING PATTERN WHEN STEM LENGTHS BECOME LONGER THAN 12 FT (SPACED AT 2'-0"). ALL BLOCKOUTS ARE REQUIRED IN THE STEM FOR THE FIRST 12 FT OF LENGTH. REGARDLESS OF OVERALL LENGTH.
 - LIFTING INSERTS:
 - MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.
 - 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
 - REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
 - LIFTING INSERTS TO BE GALVANIZED.

- GENERAL NOTES:**
- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 5th EDITION, 2010 WITH INTERIM REVISIONS
 - MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0.
 - ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
 - REBAR:
 - SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
 - CONCRETE:
 - F_c = 5000 psi @ 28 DAYS



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

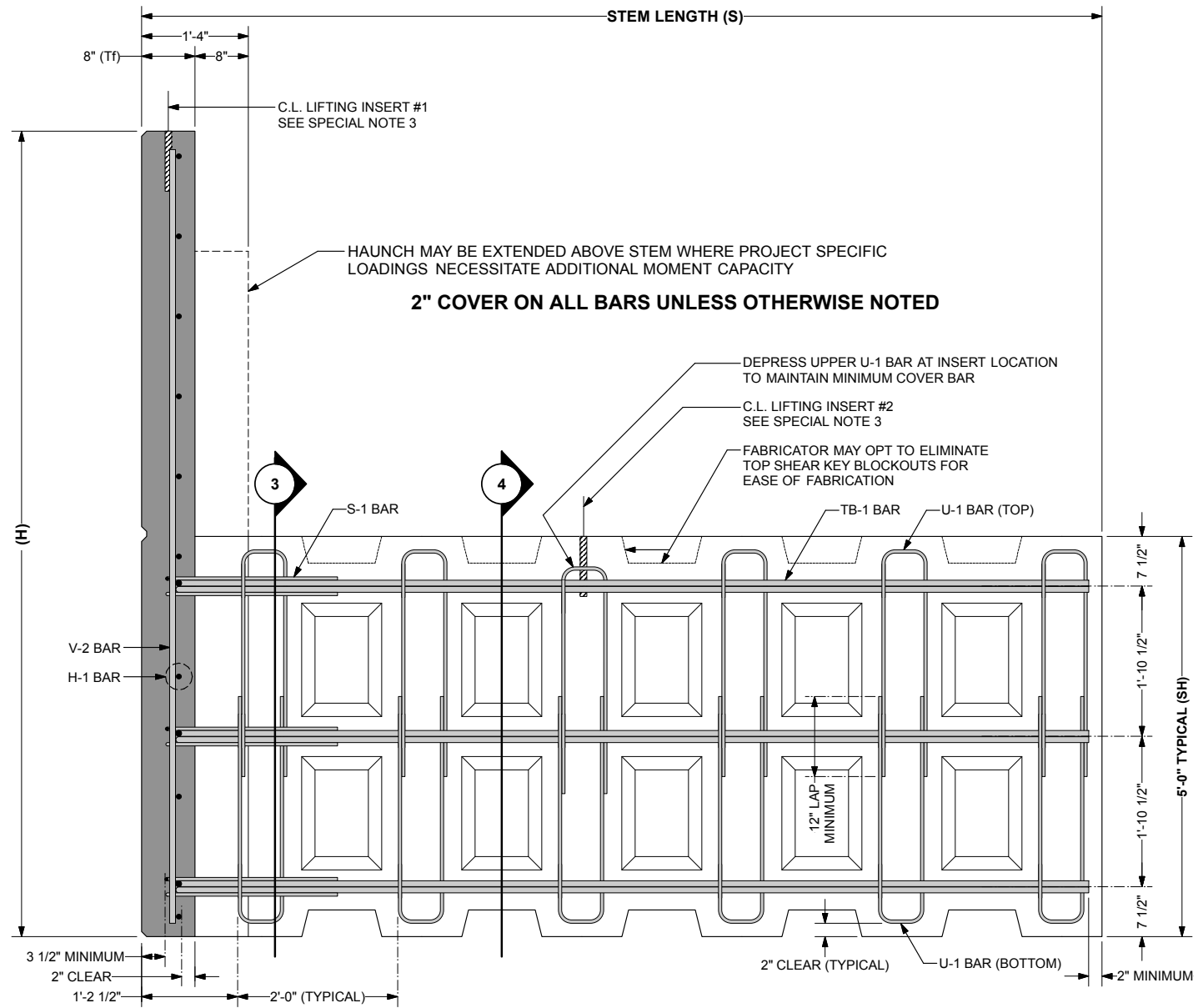
PA DOT DWG #87-402 PE (REVISION III)
COMMONWEALTH OF PENNSYLVANIA
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T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM
SHOP DRAWINGS
REBAR
5.0x7.5 STANDARD UNIT (I)

DESIGNER THE NEEL COMPANY <small>8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com</small>	DATE: 04-08-13 SCALE: AS NOTED DESIGNED: JMC DRAWN: CJW CHECKED: CCG/KD TNC JOB #: TW3634 TNC SHT #28 OF 67	SHEET 28 OF 67 87-402 PE
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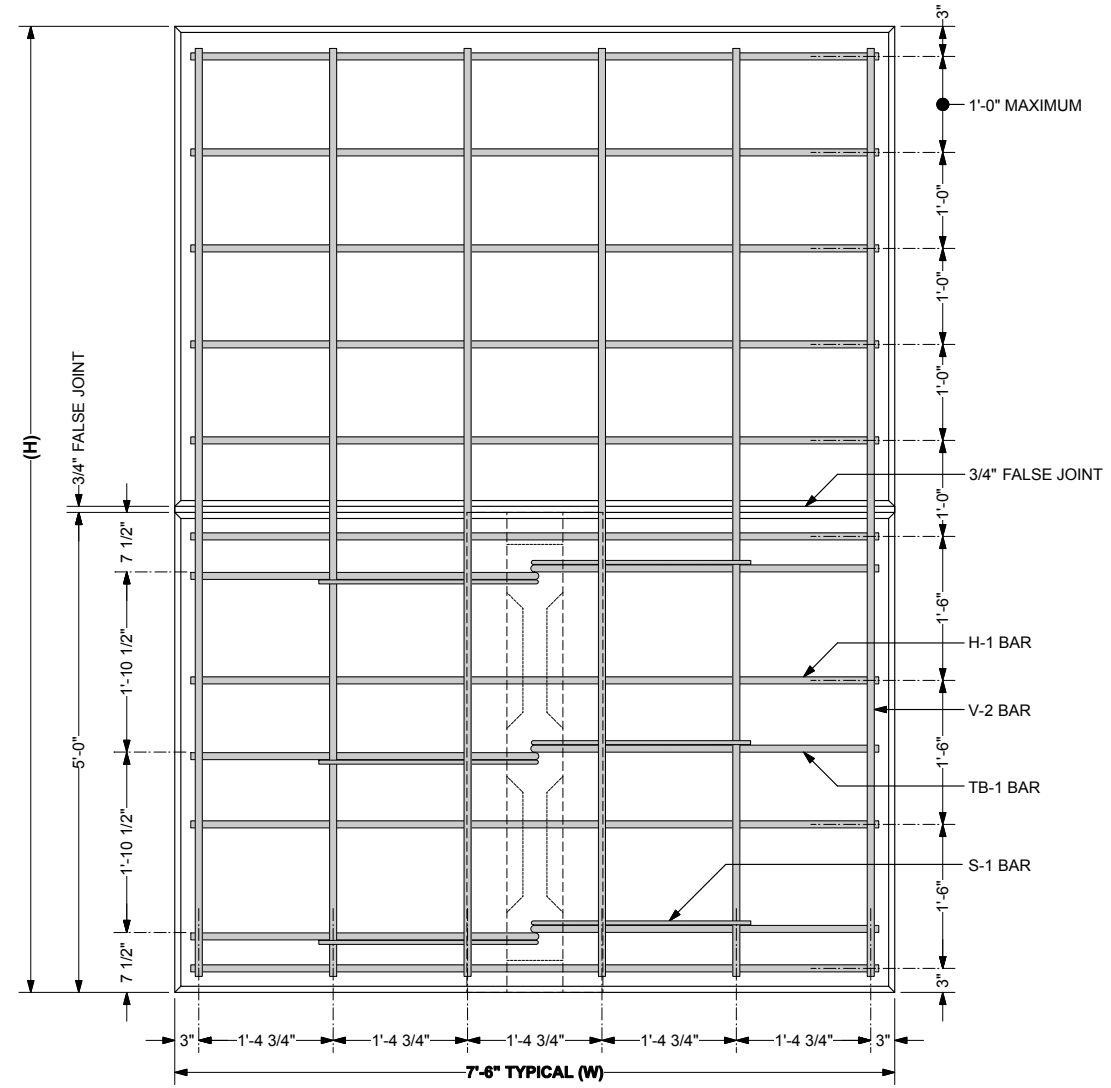
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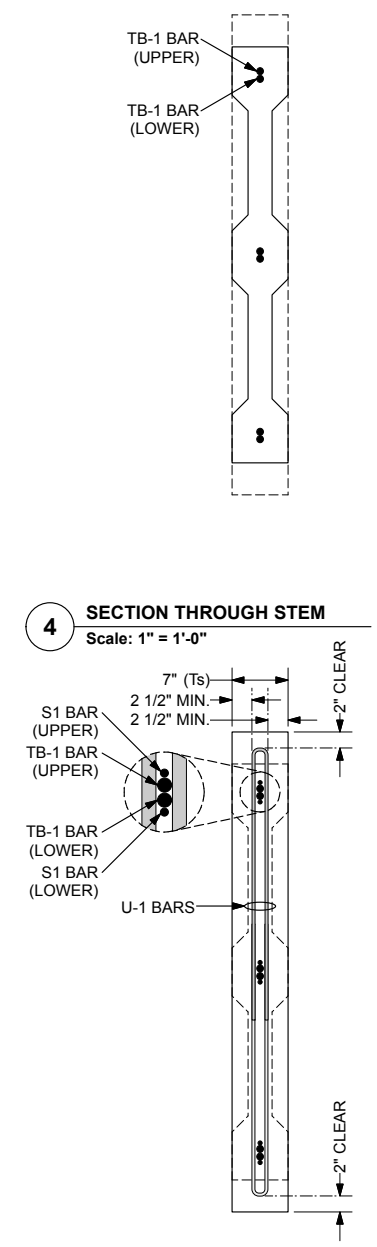
PLOT DATE AND TIME: Tuesday, April 9, 2013 11:27:44 AM
 CAD FILE NAME: 030 S530 Rebar - RWY Std Top r0.vwx
 TNC JOB #: TW3634
 DATE: 04-08-13



1 SIDE VIEW - STANDARD TOP UNITS (10.0 x 7.5 x 12 Std Top SHOWN)
Scale: 1" = 1'-0"



2 FRONT VIEW - STANDARD TOP UNITS (10.0 x 7.5 x 12 Std Top SHOWN)
Scale: 1" = 1'-0"
(U-1 BARS IN STEM OMITTED FOR CLARITY)

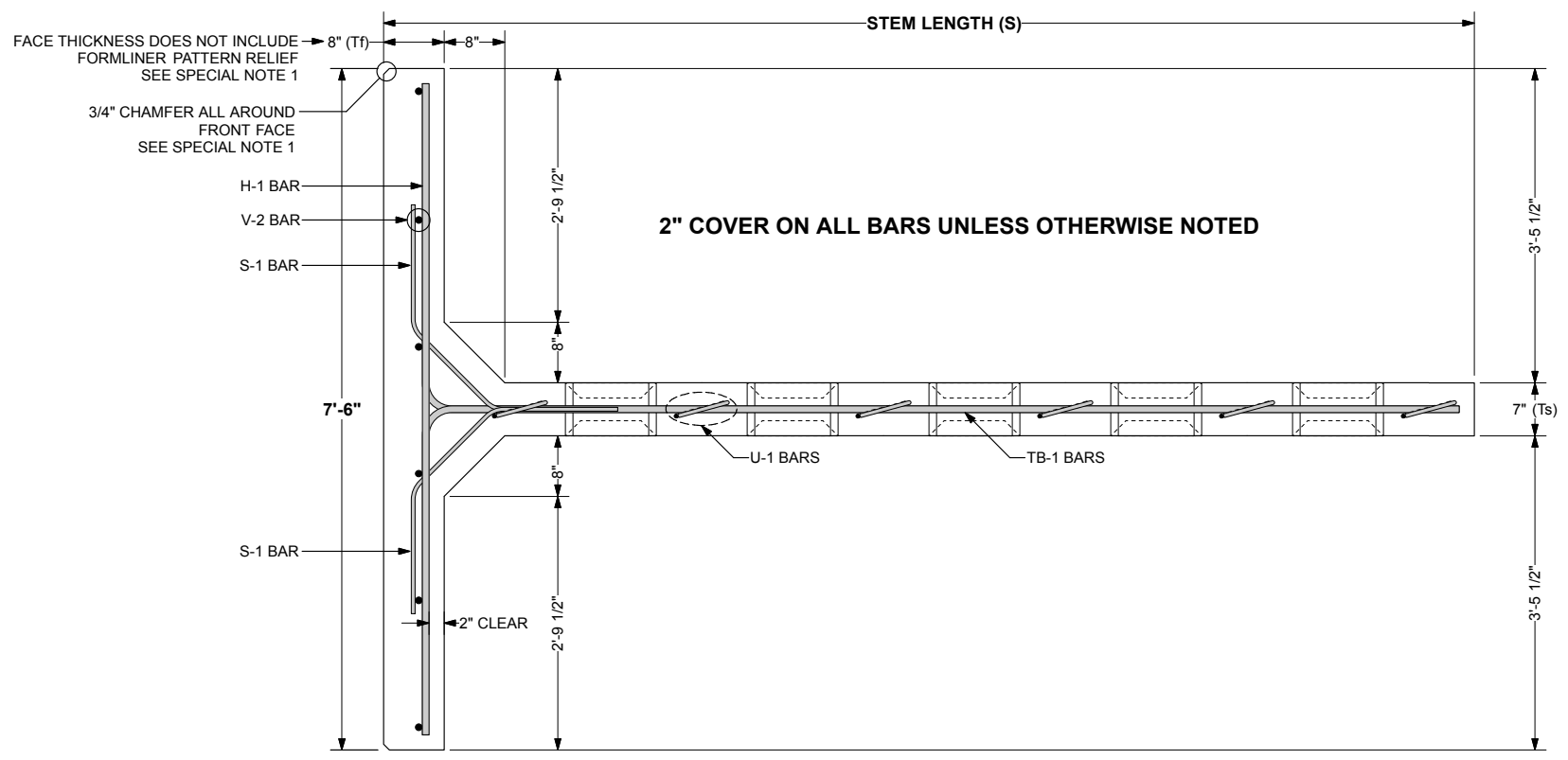


3 SECTION THROUGH STEM
Scale: 1" = 1'-0"

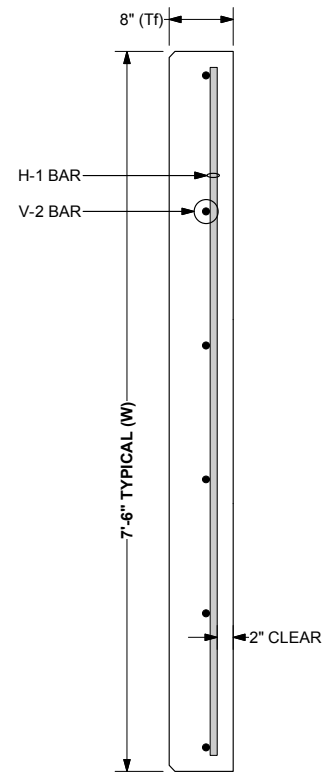
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T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM
SHOP DRAWINGS
REBAR
7.50' WIDE STANDARD TOP UNIT (I)

DESIGNER THE NEEL COMPANY <small>8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com</small>	DATE: 04-08-13 SCALE: AS NOTED DESIGNED: JMC DRAWN: CJW CHECKED: CCG/KD TNC JOB #: TW3634 TNC SHT #30 OF 67
5/9/2013 <small>This drawing contains information proprietary to The Neel Company. The Neel Company is the exclusive licensee of the T-WALL® patent. ©2013, The Neel Company</small>	SHEET 30 OF 67 87-402 PE

DATE: 04-08-13 TNC JOB #: TW3634 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:27:44 AM CAD FILE NAME: 030 S530 Rebar - RWY Std Top r0.vwx



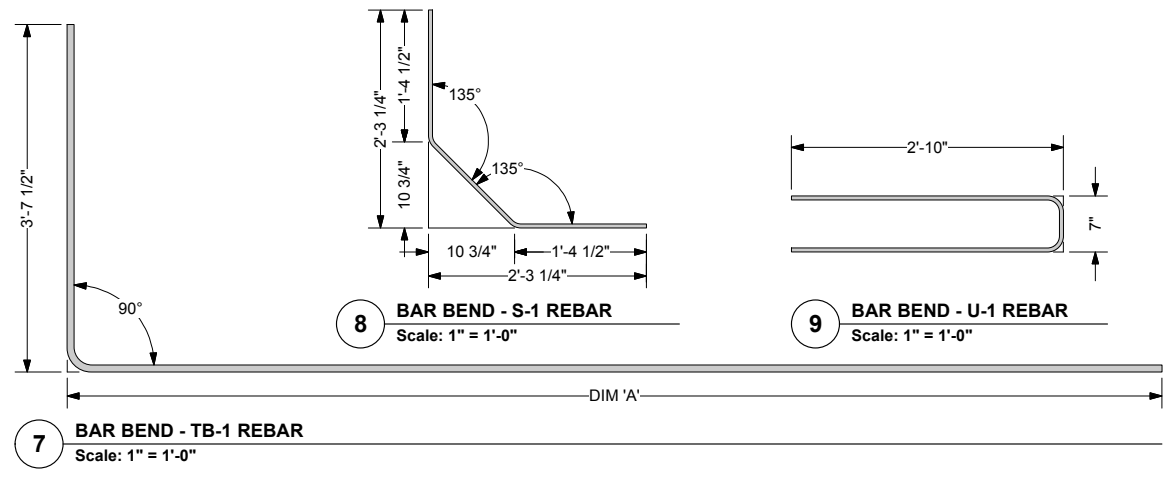
5 PLAN VIEW AT STEM - STANDARD TOP UNIT (12'-0" STEM SHOWN)
Scale: 1" = 1'-0"



6 PLAN VIEW - EXTENDED FACE PANEL
Scale: 1" = 1'-0"

- SPECIAL NOTES:**
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 - PER CONTRACT DRAWINGS AND SPECS.
 - MINIMUM FRONT FACE THICKNESS SHALL BE 8"
 - TOP & BOTTOM SHEAR KEY BLOCKOUTS MAY BE LEFT OUT IN AN ALTERNATING PATTERN WHEN STEM LENGTHS BECOME LONGER THAN 12 FT (SPACED AT 2'-0"). ALL BLOCKOUTS ARE REQUIRED IN THE STEM FOR THE FIRST 12 FT OF LENGTH. REGARDLESS OF OVERALL LENGTH.
 - LIFTING INSERTS:
 - MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.
 - 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
 - REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
 - LIFTING INSERTS TO BE GALVANIZED.

- GENERAL NOTES:**
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 - ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
 - REBAR:
 - SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
 - CONCRETE:
 - F'c = 5000 psi @ 28 DAYS




8 BAR BEND - S-1 REBAR
Scale: 1" = 1'-0"

9 BAR BEND - U-1 REBAR
Scale: 1" = 1'-0"

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

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DESIGNER  THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	DATE: 04-08-13
	SCALE: AS NOTED
	DESIGNED: JMC
	DRAWN: CJW
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TNC SHT #31 OF 67	

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T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM
SHOP DRAWINGS
REBAR
7.50' WIDE STANDARD TOP UNIT (II)

	SHEET 31 OF 67
87-402 PE	

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REBAR SCHEDULES

5.5x7.5x06 Std Top HIGHWAY REBAR

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=5'6"	H-1	5 ea	#4	7'2"		23.94 lbs		
W=7'6"	U-1	6 ea	#3	6'3"		14.10 lbs		
S=6'0"	V-2	6 ea	#5	5'2"		32.33 lbs		
SH=5'0"	S-1	6 ea	#4	4'0 1/4"		16.12 lbs		
	TB-1	6 ea	#4	9'0 1/4"	5'4 3/4"	36.16 lbs		
122.64 lbs								

6.0x7.5x06 Std Top HIGHWAY REBAR

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=6'0"	H-1	5 ea	#4	7'2"		23.94 lbs		
W=7'6"	U-1	6 ea	#3	6'3"		14.10 lbs		
S=6'0"	V-2	6 ea	#5	5'8"		35.46 lbs		
SH=5'0"	S-1	6 ea	#4	4'0 1/4"		16.12 lbs		
	TB-1	6 ea	#4	9'0 1/4"	5'4 3/4"	36.16 lbs		
125.77 lbs								

6.5x7.5x06 Std Top HIGHWAY REBAR

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=6'6"	H-1	6 ea	#4	7'2"		28.72 lbs		
W=7'6"	U-1	6 ea	#3	6'3"		14.10 lbs		
S=6'0"	V-2	6 ea	#5	6'2"		38.59 lbs		
SH=5'0"	S-1	6 ea	#4	4'0 1/4"		16.12 lbs		
	TB-1	6 ea	#4	9'0 1/4"	5'4 3/4"	36.16 lbs		
133.69 lbs								

7.0x7.5x06 Std Top HIGHWAY REBAR

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=7'0"	H-1	6 ea	#4	7'2"		28.72 lbs		
W=7'6"	U-1	6 ea	#3	6'3"		14.10 lbs		
S=6'0"	V-2	6 ea	#5	6'8"		41.72 lbs		
SH=5'0"	S-1	6 ea	#4	4'0 1/4"		16.12 lbs		
	TB-1	6 ea	#4	9'0 1/4"	5'4 3/4"	36.16 lbs		
136.82 lbs								

7.5x7.5x06 Std Top HIGHWAY REBAR

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=7'6"	H-1	7 ea	#4	7'2"		33.51 lbs		
W=7'6"	U-1	6 ea	#3	6'3"		14.10 lbs		
S=6'0"	V-2	6 ea	#5	7'2"		44.85 lbs		
SH=5'0"	S-1	6 ea	#4	4'0 1/4"		16.12 lbs		
	TB-1	6 ea	#4	9'0 1/4"	5'4 3/4"	36.16 lbs		
144.73 lbs								

8.0x7.5x06 Std Top ** HIGHWAY REBAR

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=8'0"	H-1	7 ea	#4	7'2"		33.51 lbs		
W=7'6"	U-1	6 ea	#3	6'3"		14.10 lbs		
S=6'0"	V-2	6 ea	#5	7'8"		47.98 lbs		
SH=5'0"	S-1	6 ea	#4	4'0 1/4"		16.12 lbs		
	TB-1	6 ea	#4	9'0 1/4"	5'4 3/4"	36.16 lbs		
147.86 lbs								

8.5x7.5x06 Std Top ** HIGHWAY REBAR

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=8'6"	H-1	8 ea	#4	7'2"		38.30 lbs		
W=7'6"	U-1	6 ea	#3	6'3"		14.10 lbs		
S=6'0"	V-2	6 ea	#5	8'2"		51.11 lbs		
SH=5'0"	S-1	6 ea	#4	4'0 1/4"		16.12 lbs		
	TB-1	6 ea	#5	9'0 1/4"	5'4 3/4"	56.45 lbs		
176.07 lbs								

9.0x7.5x06 Std Top ** HIGHWAY REBAR

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=9'0"	H-1	8 ea	#4	7'2"		38.30 lbs		
W=7'6"	U-1	6 ea	#3	6'3"		14.10 lbs		
S=6'0"	V-2	6 ea	#6	8'8"		78.10 lbs		
SH=5'0"	S-1	6 ea	#4	4'0 1/4"		16.12 lbs		
	TB-1	6 ea	#6	9'0 1/4"	5'4 3/4"	81.30 lbs		
227.91 lbs								

9.5x7.5x06 Std Top ** HIGHWAY REBAR

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=9'6"	H-1	9 ea	#4	7'2"		43.09 lbs		
W=7'6"	U-1	6 ea	#3	6'3"		14.10 lbs		
S=6'0"	V-2	6 ea	#6	9'2"		82.61 lbs		
SH=5'0"	S-1	6 ea	#4	4'0 1/4"		16.12 lbs		
	TB-1	6 ea	#6	9'0 1/4"	5'4 3/4"	81.30 lbs		
237.21 lbs								

10.0x7.5x06 Std Top ** HIGHWAY REBAR

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=10'0 3/4"	H-1	9 ea	#4	7'2"		43.09 lbs		
W=7'6"	U-1	6 ea	#3	6'3"		14.10 lbs		
S=6'0"	V-2	6 ea	#7	9'8 3/4"		119.32 lbs		
SH=5'0"	S-1	6 ea	#4	4'0 1/4"		16.12 lbs		
	TB-1	6 ea	#6	9'0 1/4"	5'4 3/4"	81.30 lbs		
273.92 lbs								

T-WALL UNIT PROPERTIES

UNIT TYPE	H	W	S	Tf*	SH	VOLUME*	WEIGHT*
5.5x7.5x06 Std Top	5'6"	7'6"	6'0"	8"	5'0"	1.61 cy	6,525 lbs
6.0x7.5x06 Std Top	6'0"	7'6"	6'0"	8"	5'0"	1.70 cy	6,900 lbs
6.5x7.5x06 Std Top	6'6"	7'6"	6'0"	8"	5'0"	1.80 cy	7,275 lbs
7.0x7.5x06 Std Top	7'0"	7'6"	6'0"	8"	5'0"	1.89 cy	7,650 lbs
7.5x7.5x06 Std Top	7'6"	7'6"	6'0"	8"	5'0"	1.98 cy	8,025 lbs
8.0x7.5x06 Std Top **	8'0"	7'6"	6'0"	8"	5'0"	2.07 cy	8,400 lbs
8.5x7.5x06 Std Top **	8'6"	7'6"	6'0"	8"	5'0"	2.17 cy	8,775 lbs
9.0x7.5x06 Std Top **	9'0"	7'6"	6'0"	8"	5'0"	2.26 cy	9,150 lbs
9.5x7.5x06 Std Top **	9'6"	7'6"	6'0"	8"	5'0"	2.35 cy	9,525 lbs
10.0x7.5x06 Std Top **	10'0 3/4"	7'6"	6'0"	8"	5'0"	2.46 cy	9,947 lbs

* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 8" FACE THICKNESS (Tf)
FORMLINER FINISHES MAY INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

** THESE TOP UNITS ARE ALLOWED FOR SLOPING CONDITIONS ON TOP OF WALL ONLY

LIFTING INSERT DATA

UNIT TYPE	DISTANCE TO CENTROID FROM FRONT FACE	DISTANCE TO INSERT #1 FROM FRONT FACE	DISTANCE TO INSERT #2 FROM FRONT FACE
5.5x7.5x06 Std Top	1'3 1/4"	4"	3'6"
6.0x7.5x06 Std Top	1'2 5/8"	4"	1'6"
6.5x7.5x06 Std Top	1'2"	4"	1'6"
7.0x7.5x06 Std Top	1'1 1/2"	4"	1'6"
7.5x7.5x06 Std Top	1'1 1/8"	4"	1'6"
8.0x7.5x06 Std Top **	1'0 5/8"	4"	1'6"
8.5x7.5x06 Std Top **	1'0 1/4"	4"	1'6"
9.0x7.5x06 Std Top **	1'0"	4"	1'6"
9.5x7.5x06 Std Top **	11 5/8"	4"	1'6"
10.0x7.5x06 Std Top **	11 3/8"	4"	1'6"

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
7.50' WIDE STANDARD TOP UNIT (III)

SHEET 32 OF 67

87-402 PE

DESIGNER



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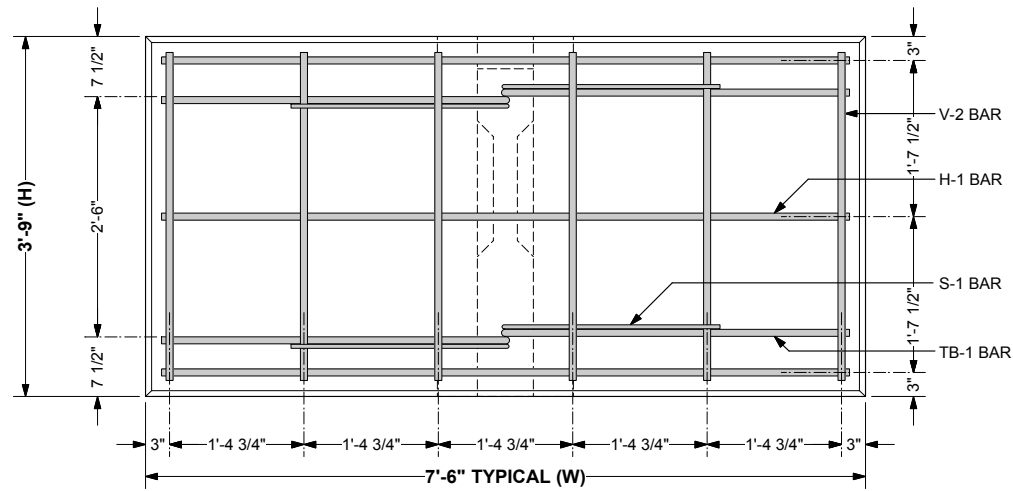
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DATE: 04-08-13
SCALE: NO SCALE
DESIGNED: JMC
DRAWN: CJW
CHECKED: CCG/KD
TNC JOB #: TW3634
TNC SHT #32 OF 67

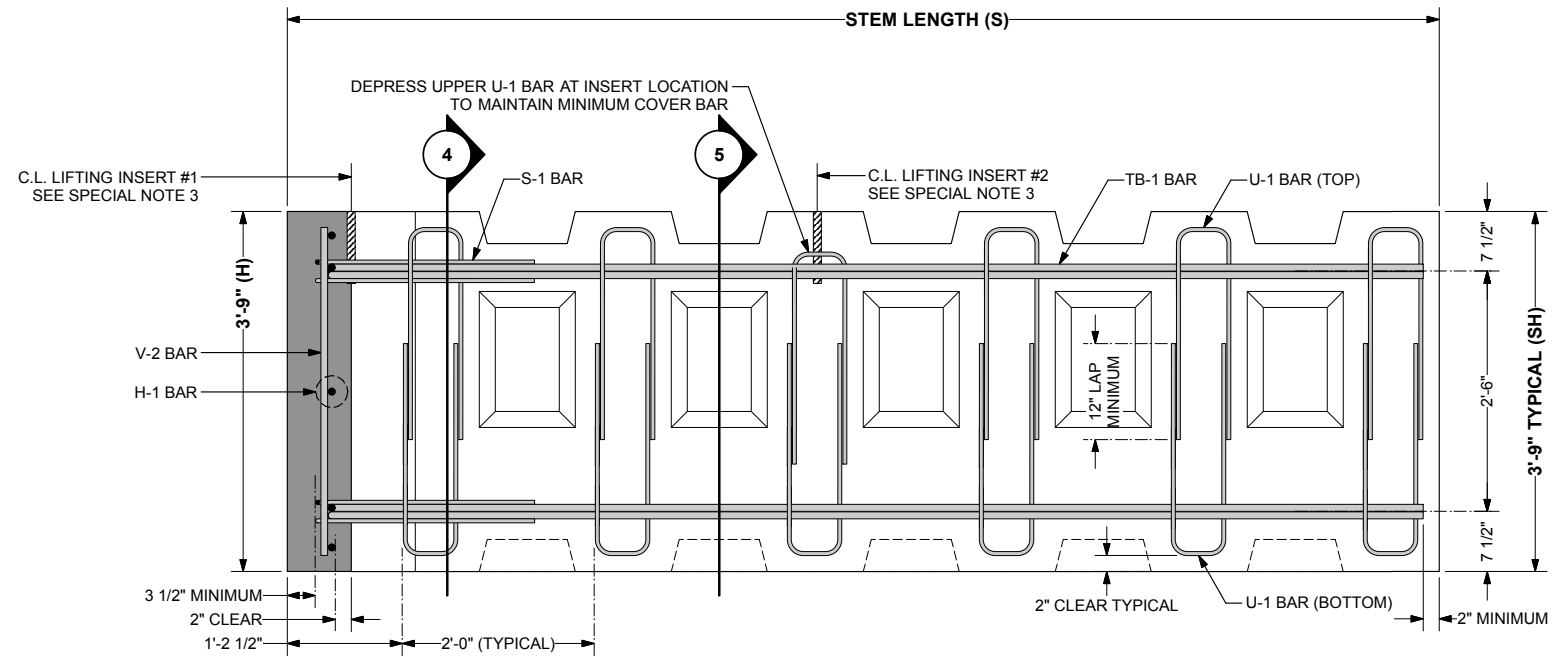
5/9/2013

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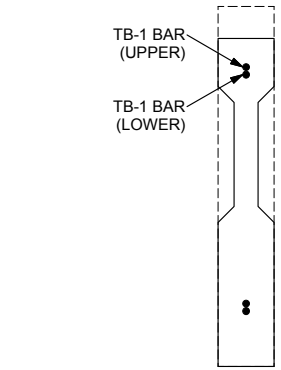
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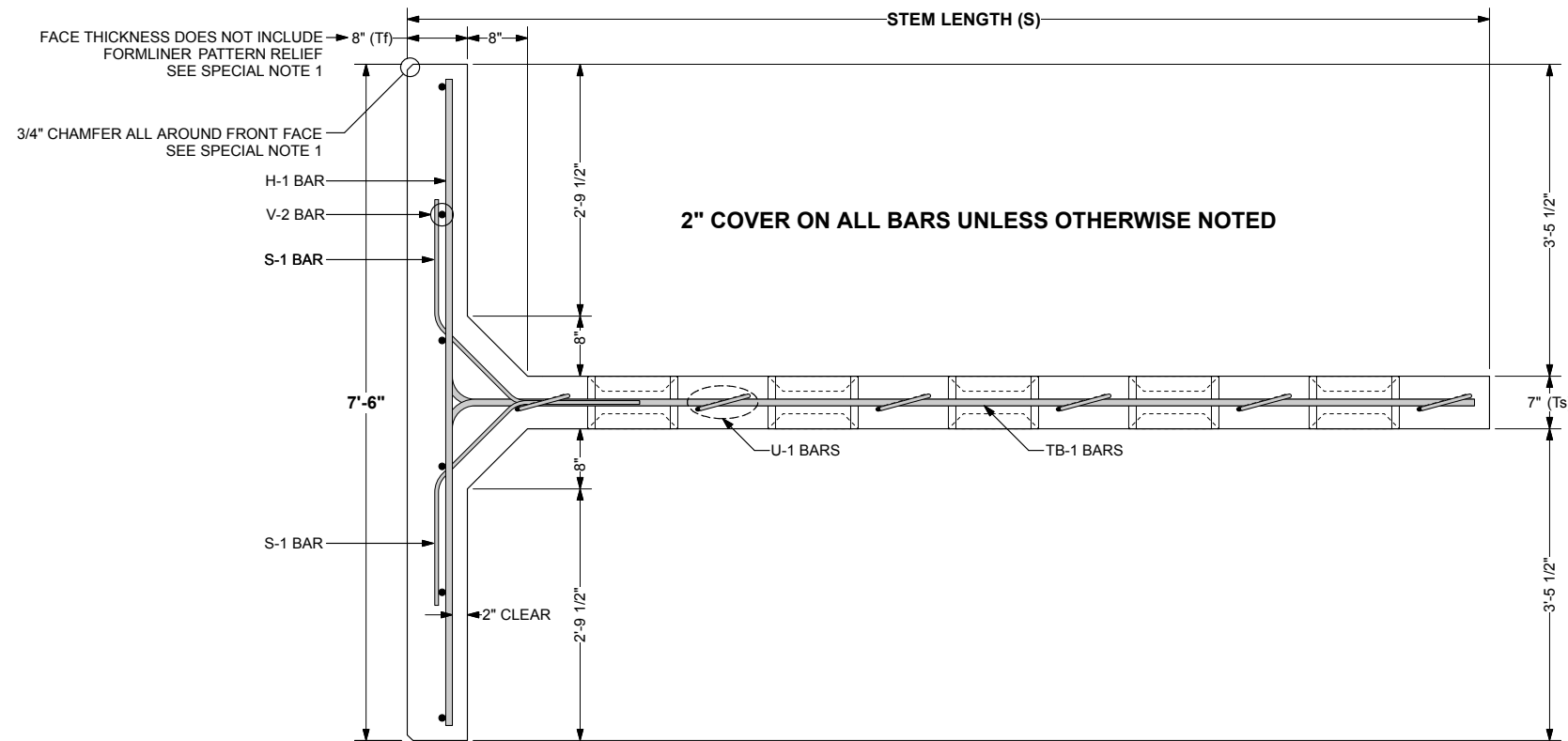
3 FRONT VIEW - 3.75 x 7.50 THREE QUARTER UNIT
 Scale: 1" = 1'-0" (U-1 BARS IN STEM OMITTED FOR CLARITY)



2 SIDE VIEW - 3.75 x 7.50 THREE QUARTER UNIT (12'-0" STEM SHOWN)
 Scale: 1" = 1'-0"



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



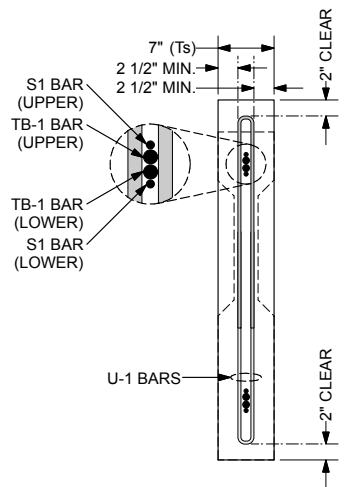
1 PLAN VIEW - 3.75 x 7.50 THREE QUARTER UNIT (12'-0" STEM SHOWN)
 Scale: 1" = 1'-0"

SPECIAL NOTES:

- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
 - PER CONTRACT DRAWINGS AND SPECS.
 - MINIMUM FRONT FACE THICKNESS SHALL BE 8"
- TOP & BOTTOM SHEAR KEY BLOCKOUTS MAY BE LEFT OUT IN AN ALTERNATING PATTERN WHEN STEM LENGTHS BECOME LONGER THAN 12 FT (SPACED AT 2'-0"). ALL BLOCKOUTS ARE REQUIRED IN THE STEM FOR THE FIRST 12 FT OF LENGTH. REGARDLESS OF OVERALL LENGTH.
- LIFTING INSERTS:
 - MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.
 - 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
 - REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
 - LIFTING INSERTS TO BE GALVANIZED.

GENERAL NOTES:

- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 5th EDITION, 2010 WITH INTERIM REVISIONS
- MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0.
- ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
- REBAR:
 - SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
- CONCRETE:
 - F_c = 5000 psi @ 28 DAYS



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

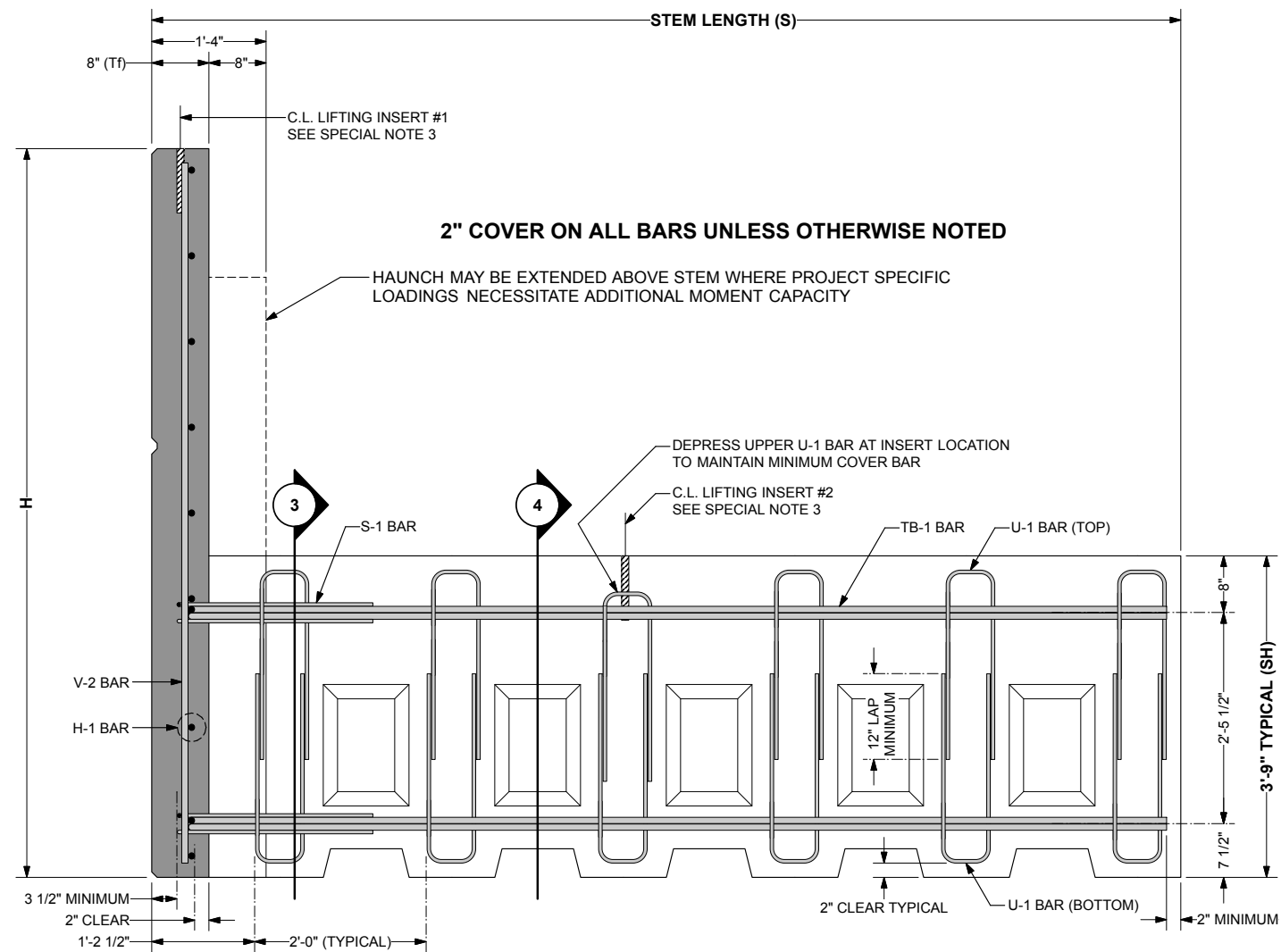
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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY
T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM
SHOP DRAWINGS
REBAR
THREE QUARTER UNIT (I)

DESIGNER THE NEEL COMPANY <small>8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com</small>	DATE: 04-08-13 SCALE: AS NOTED DESIGNED: JMC DRAWN: CJW CHECKED: CCG/KD TNC JOB #: TW3634 TNC SHT #35 OF 67
SHEET 35 OF 67	87-402 PE

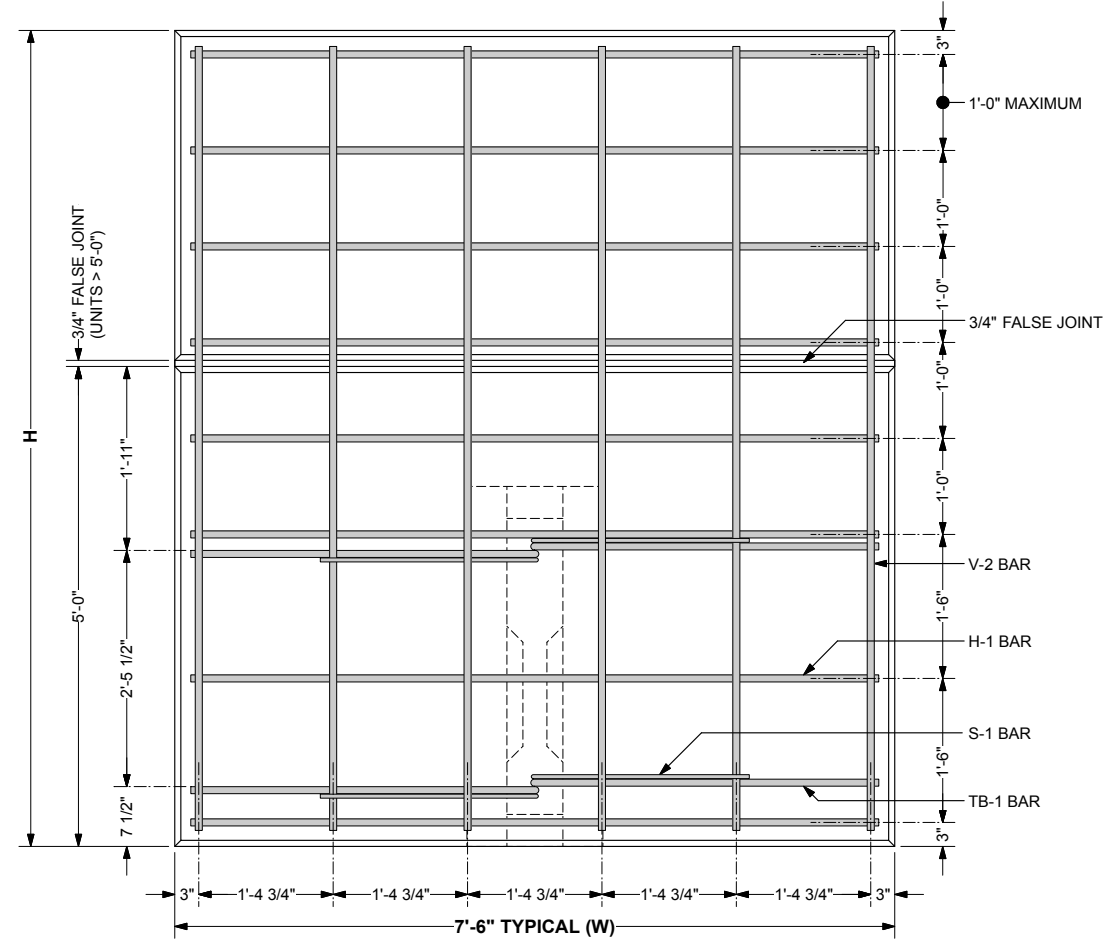
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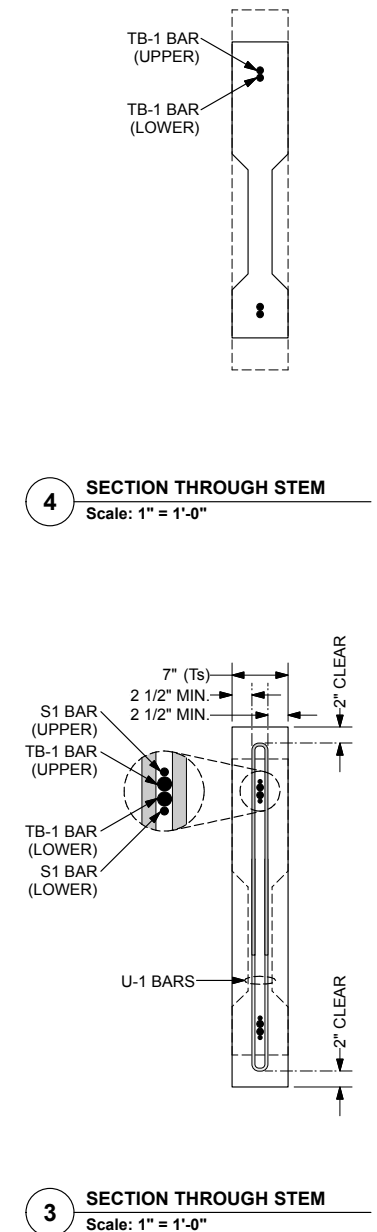
PLOT DATE AND TIME: Tuesday, April 9, 2013 11:26:22 AM
 CAD FILE NAME: 037 S537 Rebar - RWY Tqr Top r0.vwx
 DATE: 04-08-13 TNC JOB #: TW3634



1 SIDE VIEW - THREE QUARTER TOP UNITS (8.5 x 7.5 x 12 Tqr Top SHOWN)
Scale: 1" = 1'-0"



2 FRONT VIEW - THREE QUARTER TOP UNITS (8.5 x 7.5 x 12 Tqr Top SHOWN)
Scale: 1" = 1'-0" (U-1 BARS IN STEM OMITTED FOR CLARITY)



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

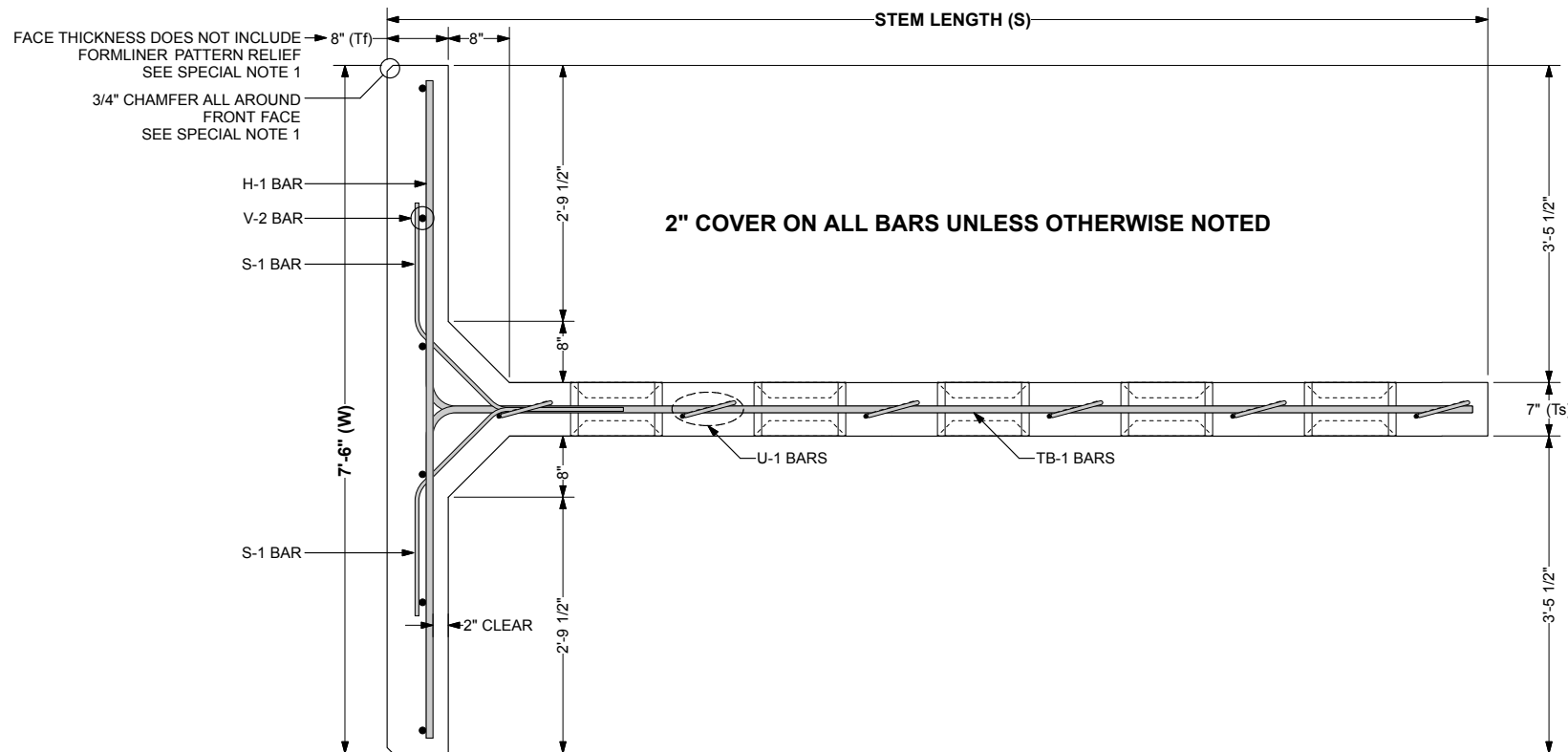
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COMMONWEALTH OF PENNSYLVANIA
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 BUREAU OF PROJECT DELIVERY
T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM
SHOP DRAWINGS
REBAR
THREE QUARTER TOP UNIT (I)

DESIGNER THE NEEL COMPANY <small>8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com</small>	DATE: 04-08-13 SCALE: AS NOTED DESIGNED: JMC DRAWN: CJW CHECKED: CCG/KD TNC JOB #: TW3634 TNC SHT #37 OF 67
SHEET 37 OF 67	87-402 PE

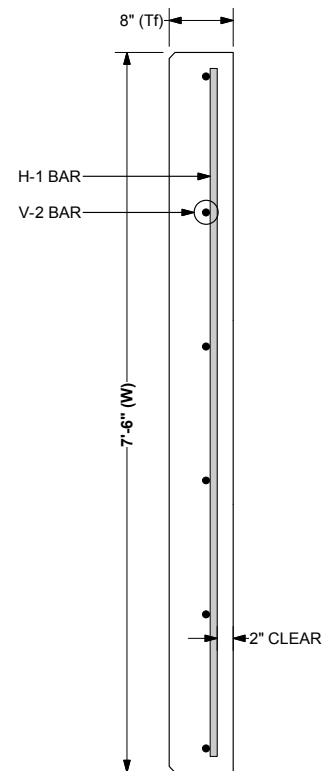
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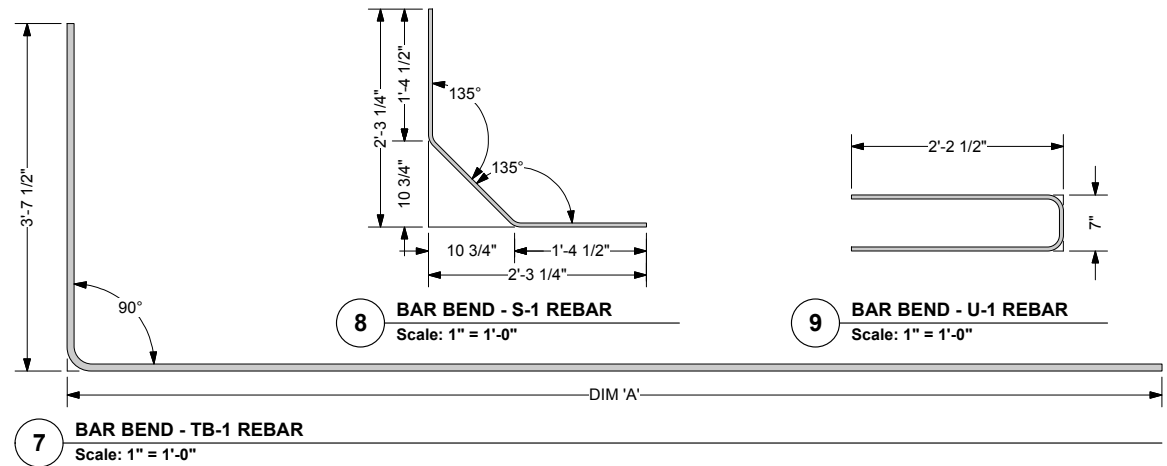
DATE: 04-08-13 TNC JOB # TW3634 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:26:22 AM CAD FILE NAME: 037 S537 Rebar - RWY Tqr Top r0.vwx



5 PLAN VIEW AT STEM - THREE QUARTER TOP UNITS (12'-0" STEM SHOWN)
Scale: 1" = 1'-0"



6 PLAN VIEW - EXTENDED FACE PANEL
Scale: 1" = 1'-0"



8 BAR BEND - S-1 REBAR
Scale: 1" = 1'-0"

9 BAR BEND - U-1 REBAR
Scale: 1" = 1'-0"

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

- SPECIAL NOTES:**
- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
 - PER CONTRACT DRAWINGS AND SPECS.
 - MINIMUM FRONT FACE THICKNESS SHALL BE 8"
 - TOP & BOTTOM SHEAR KEY BLOCKOUTS MAY BE LEFT OUT IN AN ALTERNATING PATTERN WHEN STEM LENGTHS BECOME LONGER THAN 12 FT (SPACED AT 2'-0"). ALL BLOCKOUTS ARE REQUIRED IN THE STEM FOR THE FIRST 12 FT OF LENGTH. REGARDLESS OF OVERALL LENGTH.
 - LIFTING INSERTS:
 - MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.
 - 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
 - REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
 - LIFTING INSERTS TO BE GALVANIZED.

- GENERAL NOTES:**
- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 5th EDITION, 2010 WITH INTERIM REVISIONS
 - MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0.
 - ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
 - REBAR:
 - SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
 - CONCRETE:
 - F'c = 5000 psi @ 28 DAYS

PA DOT DWG #87-402 PE (REVISION III)

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

**SHOP DRAWINGS
REBAR
THREE QUARTER TOP UNIT (II)**

DESIGNER	DATE: 04-08-13
THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	SCALE: AS NOTED
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	DRAWN: CJW
	CHECKED: CCG/KD
	TNC JOB #: TW3634
	TNC SHT #38 OF 67

SHEET 38 OF 67

87-402 PE

5/9/2013

REBAR SCHEDULES

4.0x7.5x08 Tqr Top HIGHWAY REBAR
Table with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Includes rows for H=4'0", W=7'6", S=8'0", SH=3'9" with various bar marks and quantities.

4.5x7.5x08 Tqr Top HIGHWAY REBAR
Table with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Includes rows for H=4'6", W=7'6", S=8'0", SH=3'9" with various bar marks and quantities.

5.0x7.5x08 Tqr Top HIGHWAY REBAR
Table with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Includes rows for H=5'0", W=7'6", S=8'0", SH=3'9" with various bar marks and quantities.

5.5x7.5x08 Tqr Top HIGHWAY REBAR
Table with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Includes rows for H=5'6", W=7'6", S=8'0", SH=3'9" with various bar marks and quantities.

6.0x7.5x08 Tqr Top HIGHWAY REBAR
Table with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Includes rows for H=6'0", W=7'6", S=8'0", SH=3'9" with various bar marks and quantities.

6.5x7.5x08 Tqr Top HIGHWAY REBAR
Table with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Includes rows for H=6'6", W=7'6", S=8'0", SH=3'9" with various bar marks and quantities.

7.0x7.5x08 Tqr Top HIGHWAY REBAR
Table with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Includes rows for H=7'0", W=7'6", S=8'0", SH=3'9" with various bar marks and quantities.

7.5x7.5x08 Tqr Top HIGHWAY REBAR
Table with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Includes rows for H=7'6", W=7'6", S=8'0", SH=3'9" with various bar marks and quantities.

8.0x7.5x08 Tqr Top HIGHWAY REBAR
Table with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Includes rows for H=8'0", W=7'6", S=8'0", SH=3'9" with various bar marks and quantities.

8.5x7.5x08 Tqr Top HIGHWAY REBAR
Table with columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Includes rows for H=8'6", W=7'6", S=8'0", SH=3'9" with various bar marks and quantities.

T-WALL UNIT PROPERTIES

Table with columns: UNIT TYPE, H, W, S, Tf, SH, VOLUME*, WEIGHT*. Lists properties for various unit types from 4.0x7.5x08 to 8.5x7.5x08.

* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 8" FACE THICKNESS (Tf)
FORMLINER FINISHES MAY INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

LIFTING INSERT DATA

Table with columns: UNIT TYPE, DISTANCE TO CENTROID FROM FRONT FACE, DISTANCE TO INSERT #1 FROM FRONT FACE, DISTANCE TO INSERT #2 FROM FRONT FACE. Lists lifting data for various unit types.

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
THREE QUARTER TOP UNIT (IV)

SHEET 40 OF 67

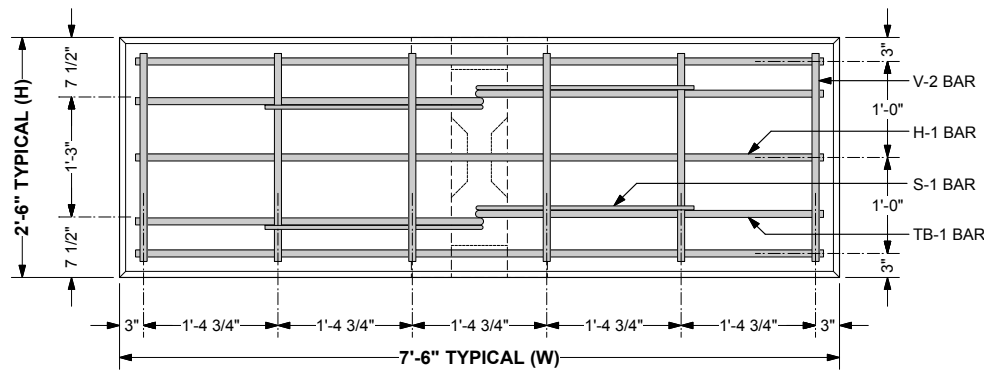
87-402 PE

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Web: www.neelco.com
DATE: 04-08-13
SCALE: NO SCALE
DESIGNED: JMC
DRAWN: CJW
CHECKED: CCG/KD
TNC JOB #: TW3634
TNC SHT #40 OF 67

5/9/2013

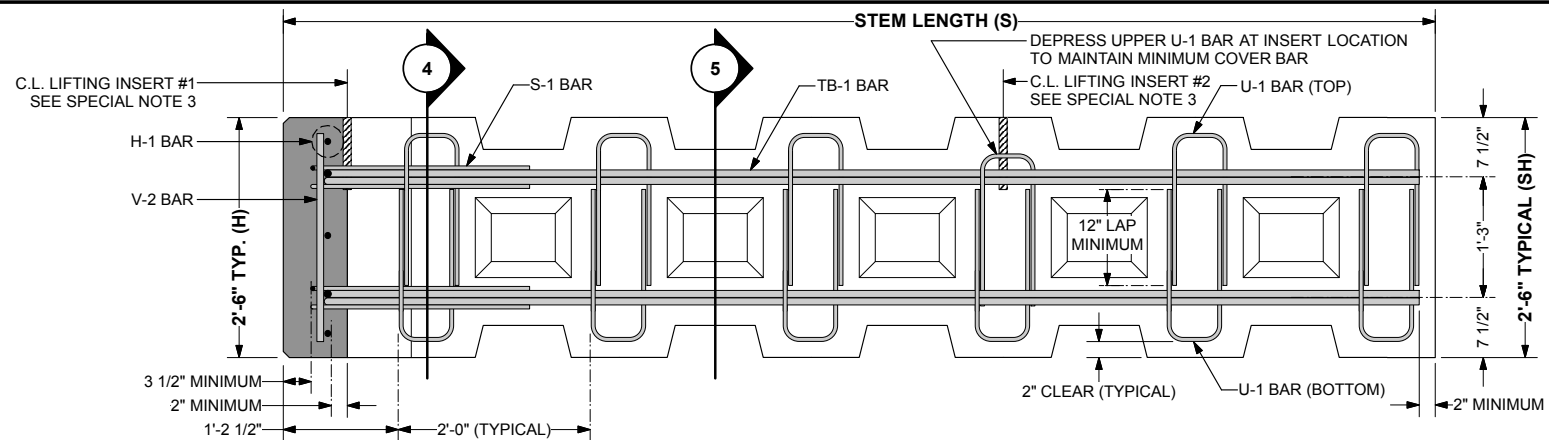
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CAD FILE NAME: 037 S537 Rebar - RWY Top r0.vvw
PLOT DATE AND TIME: Tuesday, April 9, 2013 11:26:22 AM
DATE: 04-08-13 TNC JOB #: TW3634



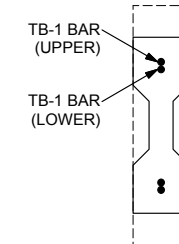
3 FRONT VIEW - 2.5 x 7.5 HALF UNIT
Scale: 1" = 1'-0"

(U-1 BARS IN STEM OMITTED FOR CLARITY)



2 SIDE VIEW - 2.5 x 7.5 HALF UNIT (12'-0" STEM SHOWN)
Scale: 1" = 1'-0"

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

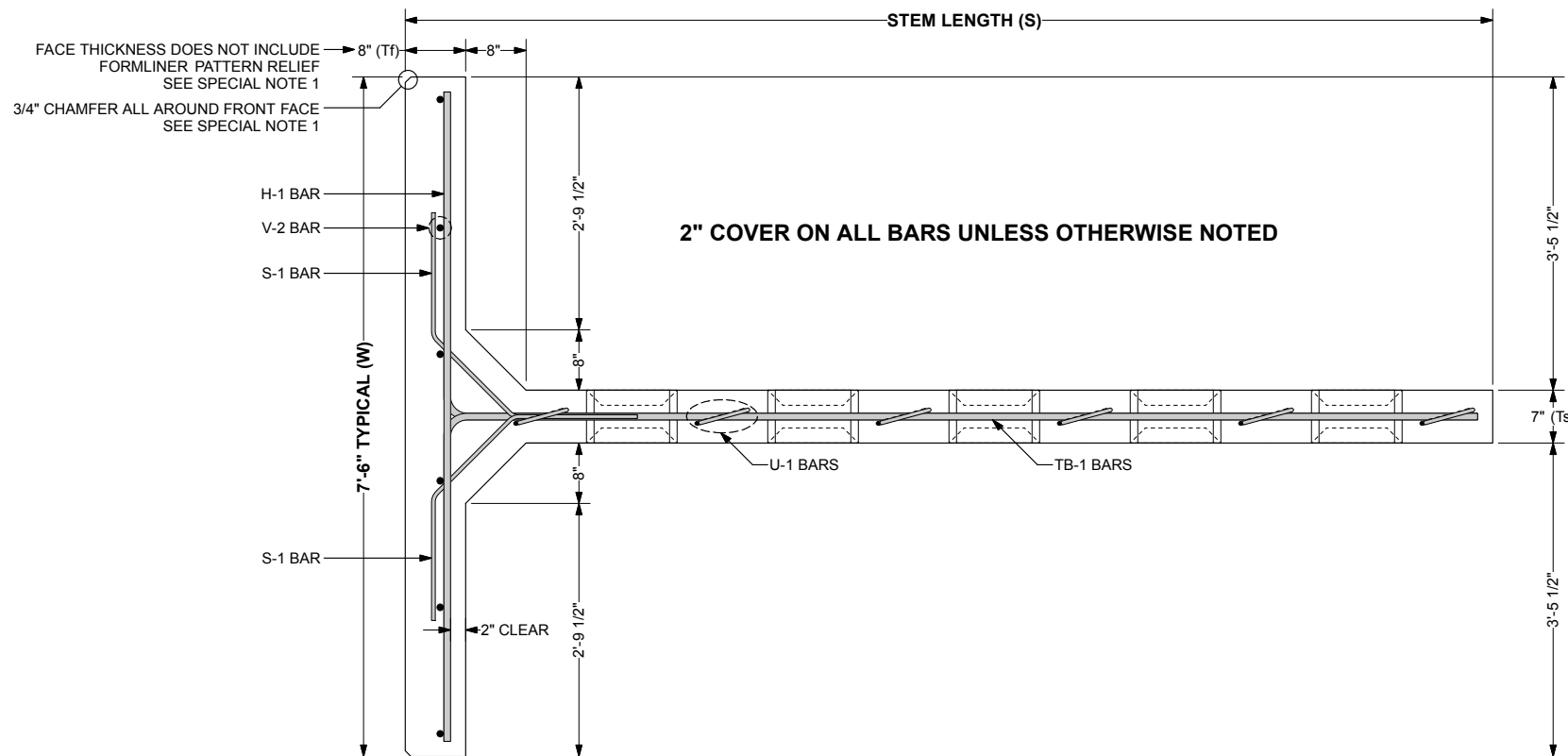


SPECIAL NOTES:

- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
 - PER CONTRACT DRAWINGS AND SPECS.
 - MINIMUM FRONT FACE THICKNESS SHALL BE 8"
- TOP & BOTTOM SHEAR KEY BLOCKOUTS MAY BE LEFT OUT IN AN ALTERNATING PATTERN WHEN STEM LENGTHS BECOME LONGER THAN 12 FT (SPACED AT 2'-0"). ALL BLOCKOUTS ARE REQUIRED IN THE STEM FOR THE FIRST 12 FT OF LENGTH. REGARDLESS OF OVERALL LENGTH.
- LIFTING INSERTS:
 - MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.
 - 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
 - REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
 - LIFTING INSERTS TO BE GALVANIZED.

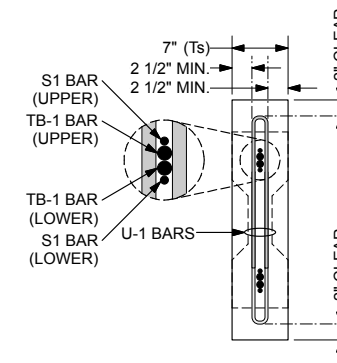
GENERAL NOTES:

- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 5th EDITION, 2010 WITH INTERIM REVISIONS
- MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0.
- ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
- REBAR:
 - SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
- CONCRETE:
 - F'c = 5000 psi @ 28 DAYS



1 PLAN VIEW - 2.5 x 7.5 HALF UNIT (12'-0" STEM SHOWN)
Scale: 1" = 1'-0"

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



PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
HALF UNIT (I)

DESIGNER

THE NEEL COMPANY
 8328-D TRAFORD LANE
 SPRINGFIELD, VA 22152
 PH: (703) 913-7858
 FX: (703) 913-7859
 Web: www.neelco.com

DATE: 04-08-13
 SCALE: AS NOTED
 DESIGNED: JMC
 DRAWN: CJW
 CHECKED: CCG/KD
 TNC JOB #: TW3634
 TNC SHT #42 OF 67

5/9/2013

SHEET 42 OF 67

87-402 PE

PLOT DATE AND TIME: Tuesday, April 9, 2013 11:25:43 AM CAD FILE NAME: 042 S542 Rebar - RWY HFR D.vwx

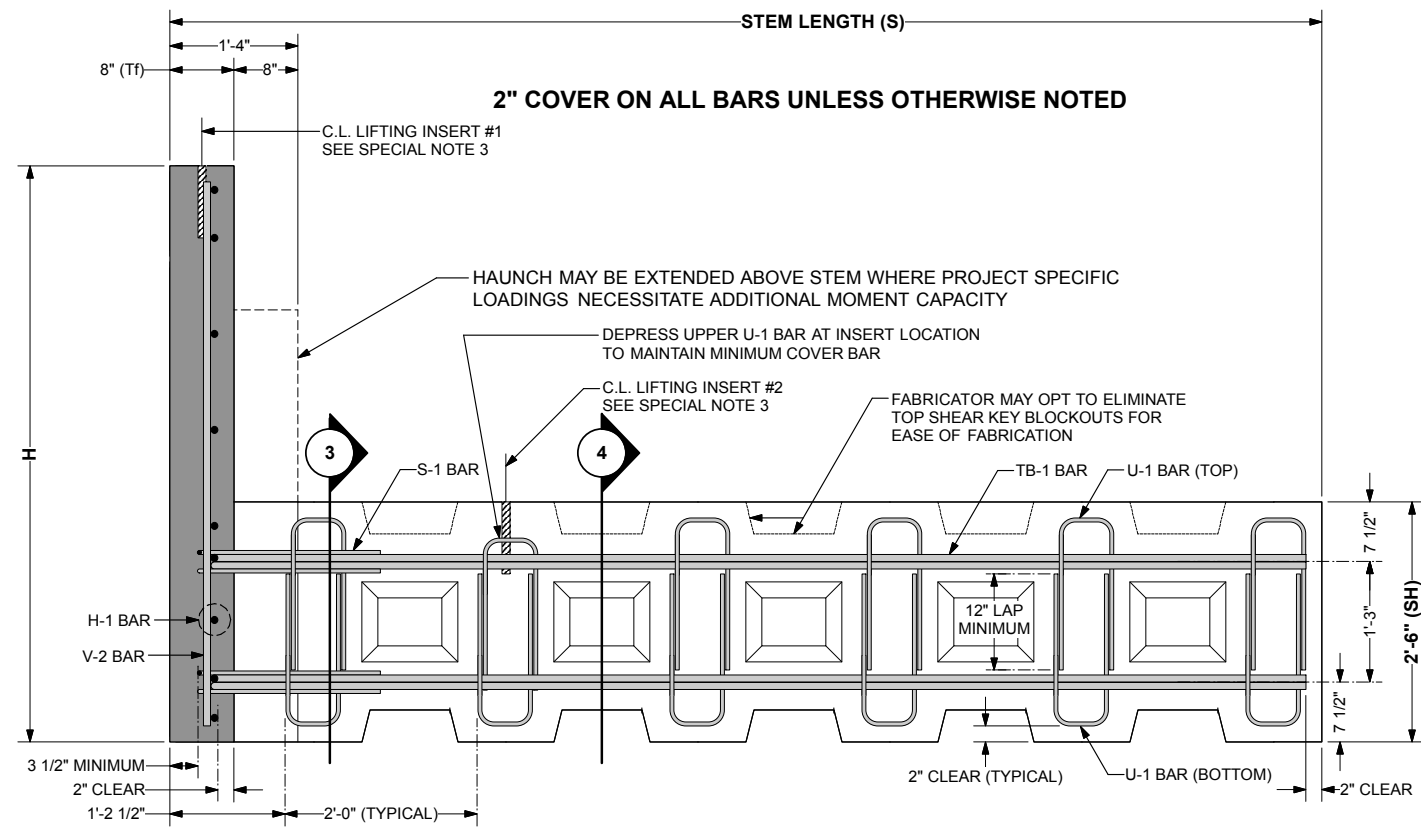
DATE: 04-08-13 TNC JOB #: TW3634

CAD FILE NAME: 044 S644 Rebar - RWY HLF Top 10.vwx

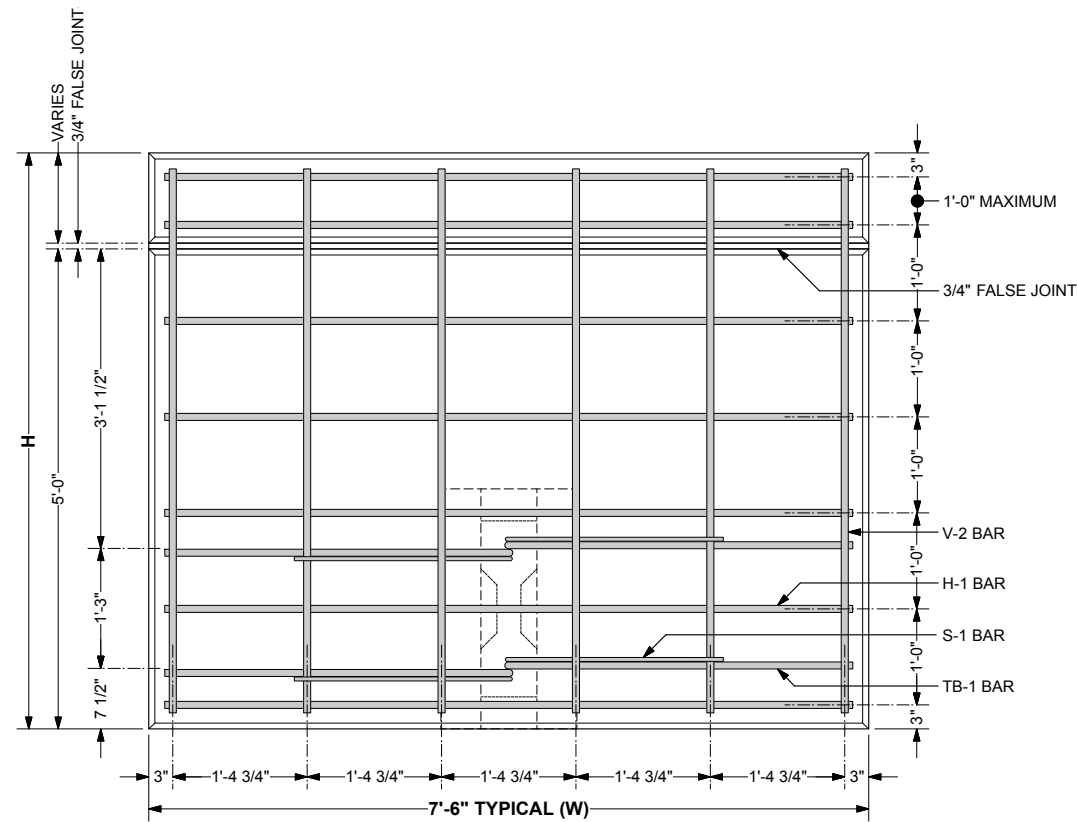
PLOT DATE AND TIME: Tuesday, April 9, 2013 11:24:59 AM

TNC JOB #: TW3634

DATE: 04-08-13

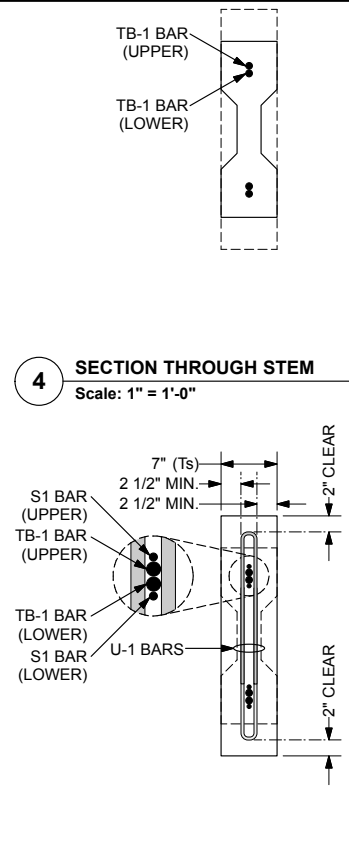


1 SIDE VIEW - HALF TOP UNITS (6.0 x 7.5 x 12 Hif Top SHOWN)
Scale: 1" = 1'-0"

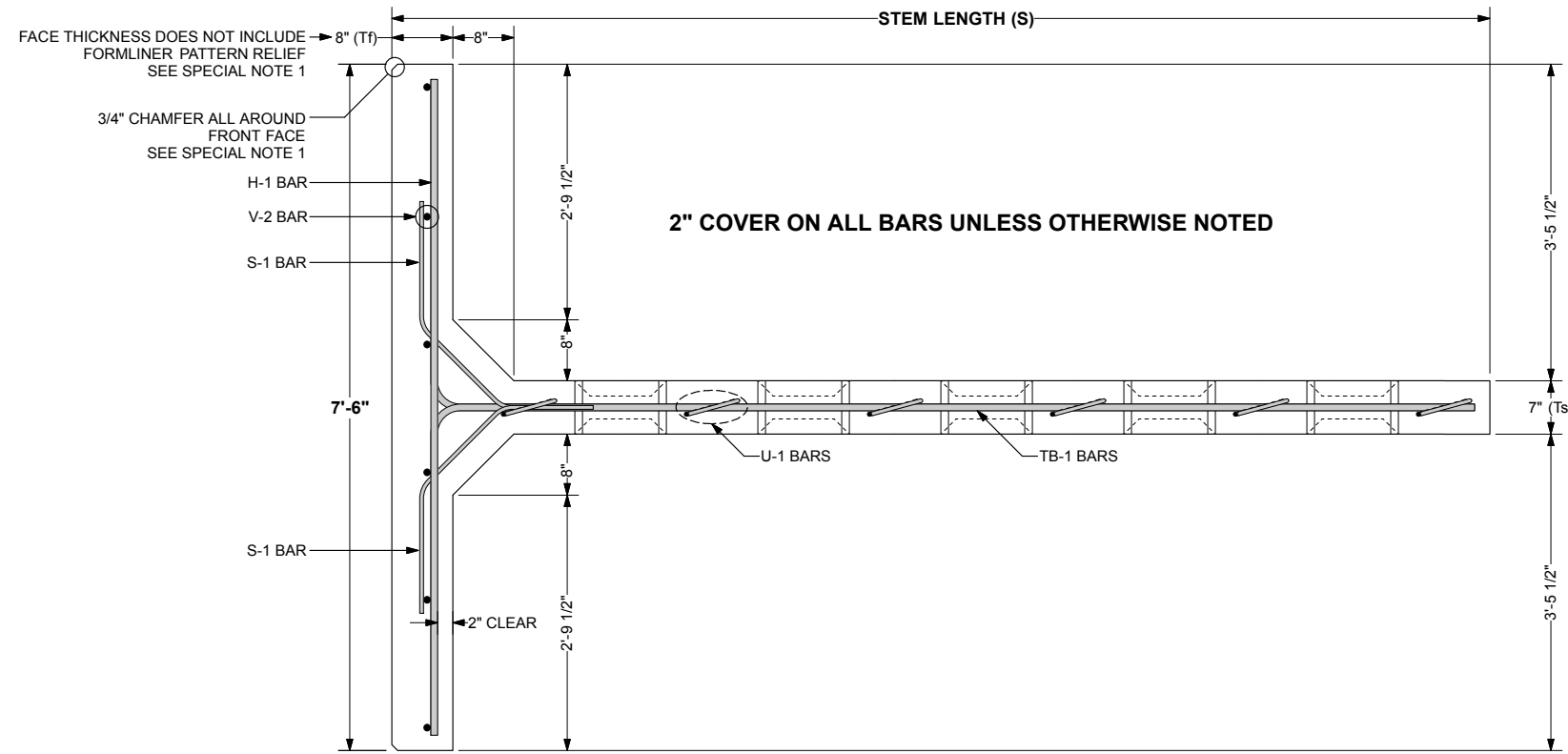


2 FRONT VIEW - HALF TOP UNITS (6.0 x 7.5 x 12 Hif Top SHOWN)
Scale: 1" = 1'-0"

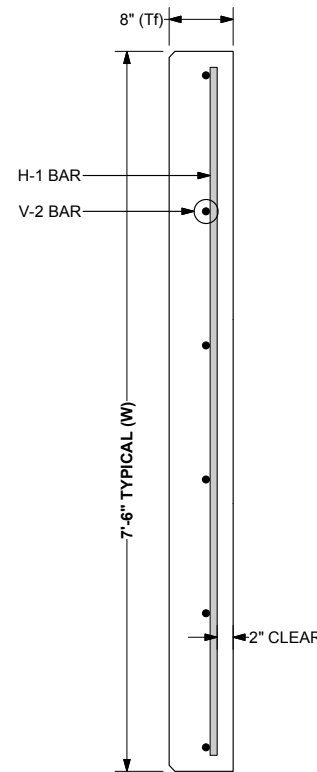
(U-1 BARS IN STEM OMITTED FOR CLARITY)



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



5 PLAN VIEW AT STEM - HALF TOP UNIT (12'-0" STEM SHOWN)
Scale: 1" = 1'-0"



6 PLAN VIEW - EXTENDED FACE PANEL
Scale: 1" = 1'-0"

DESIGNER

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FK: (703) 913-7859
Web: www.neelco.com

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DATE:	04-08-13
SCALE:	AS NOTED
DESIGNED:	JMC
DRAWN:	CJW
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	44 OF 67

5/9/2013

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
HALF TOP UNIT (I)

SHEET 44 OF 67

87-402 PE

T-WALL UNIT PROPERTIES

UNIT TYPE	H	W	S	Tf*	SH	VOLUME*	WEIGHT*
3.0x7.5x10 Hlf Top	3'0"	7'6"	10'0"	8"	2'6"	0.97 cy	3,924 lbs
3.5x7.5x10 Hlf Top	3'6"	7'6"	10'0"	8"	2'6"	1.06 cy	4,299 lbs
4.0x7.5x10 Hlf Top	4'0"	7'6"	10'0"	8"	2'6"	1.15 cy	4,674 lbs
4.5x7.5x10 Hlf Top	4'6"	7'6"	10'0"	8"	2'6"	1.25 cy	5,049 lbs
5.0x7.5x10 Hlf Top	5'0"	7'6"	10'0"	8"	2'6"	1.34 cy	5,424 lbs
5.5x7.5x10 Hlf Top	5'6"	7'6"	10'0"	8"	2'6"	1.43 cy	5,799 lbs
6.0x7.5x10 Hlf Top	6'0"	7'6"	10'0"	8"	2'6"	1.52 cy	6,174 lbs
6.5x7.5x10 Hlf Top	6'6"	7'6"	10'0"	8"	2'6"	1.62 cy	6,549 lbs
7.0x7.5x10 Hlf Top	7'0"	7'6"	10'0"	8"	2'6"	1.71 cy	6,924 lbs
7.5x7.5x10 Hlf Top	7'6"	7'6"	10'0"	8"	2'6"	1.80 cy	7,299 lbs

* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 8" FACE THICKNESS (Tf)
 FORMLINER FINISHES MAY INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

LIFTING INSERT DATA

UNIT TYPE	DISTANCE TO CENTROID FROM FRONT FACE	DISTANCE TO INSERT #1 FROM FRONT FACE	DISTANCE TO INSERT #2 FROM FRONT FACE
3.0x7.5x10 Hlf Top	2'4 1/2"	4"	5'6"
3.5x7.5x10 Hlf Top	2'2 1/4"	4"	3'6"
4.0x7.5x10 Hlf Top	2'0 1/2"	4"	3'6"
4.5x7.5x10 Hlf Top	1'10 7/8"	4"	3'6"
5.0x7.5x10 Hlf Top	1'9 5/8"	4"	3'6"
5.5x7.5x10 Hlf Top	1'8 1/2"	4"	3'6"
6.0x7.5x10 Hlf Top	1'7 1/2"	4"	3'6"
6.5x7.5x10 Hlf Top	1'6 5/8"	4"	3'6"
7.0x7.5x10 Hlf Top	1'5 3/4"	4"	3'6"
7.5x7.5x10 Hlf Top	1'5 1/8"	4"	3'6"

REBAR SCHEDULES

3.0x7.5x10 Hlf Top REBAR SCHEDULES

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks
H=3'0"	H-1	4 ea	#4	7'2"		19.15 lbs	
W=7'6"	U-1	10 ea	#3	3'9"		14.10 lbs	
S=10'0"	V-2	6 ea	#5	2'8"		16.69 lbs	
SH=2'6"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs	
	TB-1	4 ea	#4	13'0 1/4"	9'4 3/4"	34.79 lbs	

95.47 lbs

3.5x7.5x10 Hlf Top REBAR SCHEDULES

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks
H=3'6"	H-1	4 ea	#4	7'2"		19.15 lbs	
W=7'6"	U-1	10 ea	#3	3'9"		14.10 lbs	
S=10'0"	V-2	6 ea	#5	3'2"		19.82 lbs	
SH=2'6"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs	
	TB-1	4 ea	#4	13'0 1/4"	9'4 3/4"	34.79 lbs	

98.60 lbs

4.0x7.5x10 Hlf Top REBAR SCHEDULES

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks
H=4'0"	H-1	5 ea	#4	7'2"		23.94 lbs	
W=7'6"	U-1	10 ea	#3	3'9"		14.10 lbs	
S=10'0"	V-2	6 ea	#5	3'8"		22.95 lbs	
SH=2'6"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs	
	TB-1	4 ea	#4	13'0 1/4"	9'4 3/4"	34.79 lbs	

106.52 lbs

4.5x7.5x10 Hlf Top REBAR SCHEDULES

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks
H=4'6"	H-1	5 ea	#4	7'2"		23.94 lbs	
W=7'6"	U-1	10 ea	#3	3'9"		14.10 lbs	
S=10'0"	V-2	6 ea	#5	4'2"		26.07 lbs	
SH=2'6"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs	
	TB-1	4 ea	#4	13'0 1/4"	9'4 3/4"	34.79 lbs	

109.65 lbs

5.0x7.5x10 Hlf Top REBAR SCHEDULES

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks
H=5'0"	H-1	6 ea	#4	7'2"		28.72 lbs	
W=7'6"	U-1	10 ea	#3	3'9"		14.10 lbs	
S=10'0"	V-2	6 ea	#5	4'8"		29.20 lbs	
SH=2'6"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs	
	TB-1	4 ea	#4	13'0 1/4"	9'4 3/4"	34.79 lbs	

117.56 lbs

REBAR SCHEDULES

5.5x7.5x10 Hlf Top REBAR SCHEDULES

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks
H=5'6"	H-1	6 ea	#4	7'2"		28.72 lbs	
W=7'6"	U-1	10 ea	#3	3'9"		14.10 lbs	
S=10'0"	V-2	6 ea	#5	5'2"		32.33 lbs	
SH=2'6"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs	
	TB-1	4 ea	#5	13'0 1/4"	9'4 3/4"	54.32 lbs	

140.22 lbs

6.0x7.5x10 Hlf Top REBAR SCHEDULES

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks
H=6'0"	H-1	7 ea	#4	7'2"		33.51 lbs	
W=7'6"	U-1	10 ea	#3	3'9"		14.10 lbs	
S=10'0"	V-2	6 ea	#5	5'8"		35.46 lbs	
SH=2'6"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs	
	TB-1	4 ea	#5	13'0 1/4"	9'4 3/4"	54.32 lbs	

148.14 lbs

6.5x7.5x10 Hlf Top REBAR SCHEDULES

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks
H=6'6"	H-1	7 ea	#4	7'2"		33.51 lbs	
W=7'6"	U-1	10 ea	#3	3'9"		14.10 lbs	
S=10'0"	V-2	6 ea	#6	6'2"		55.57 lbs	
SH=2'6"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs	
	TB-1	4 ea	#6	13'0 1/4"	9'4 3/4"	78.23 lbs	

192.16 lbs

7.0x7.5x10 Hlf Top REBAR SCHEDULES

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks
H=7'0"	H-1	8 ea	#4	7'2"		38.30 lbs	
W=7'6"	U-1	10 ea	#3	3'9"		14.10 lbs	
S=10'0"	V-2	6 ea	#6	6'8"		60.08 lbs	
SH=2'6"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs	
	TB-1	4 ea	#6	13'0 1/4"	9'4 3/4"	78.23 lbs	

201.45 lbs

7.5x7.5x10 Hlf Top REBAR SCHEDULES

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks
H=7'6"	H-1	8 ea	#4	7'2"		38.30 lbs	
W=7'6"	U-1	10 ea	#3	3'9"		14.10 lbs	
S=10'0"	V-2	6 ea	#7	7'2"		87.89 lbs	
SH=2'6"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs	
	TB-1	4 ea	#7	13'0 1/4"	9'4 3/4"	106.46 lbs	

257.49 lbs

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
HALF TOP UNIT (IV)

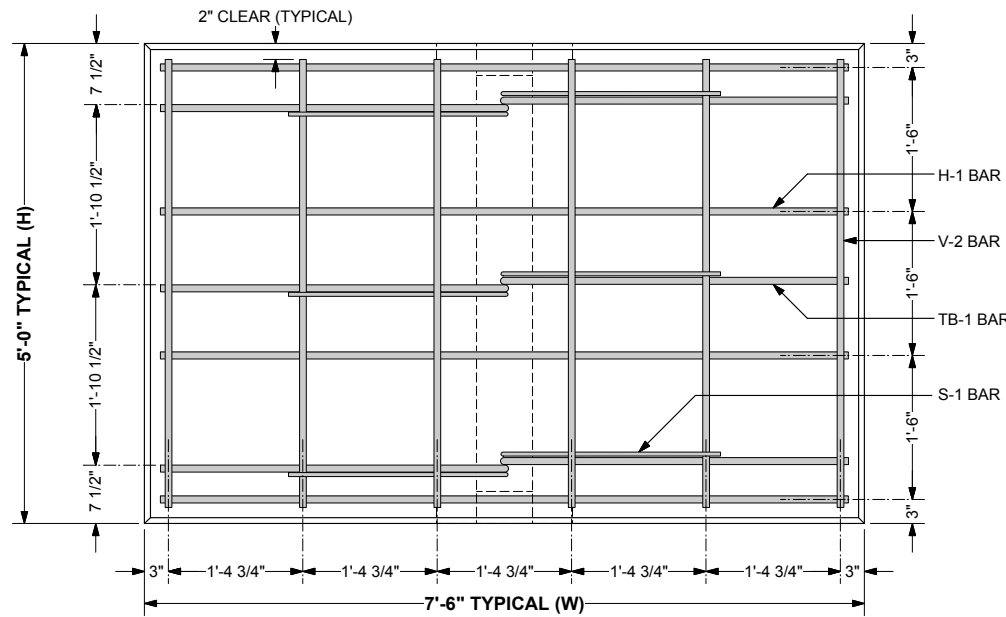
SHEET 47 OF 67

87-402 PE

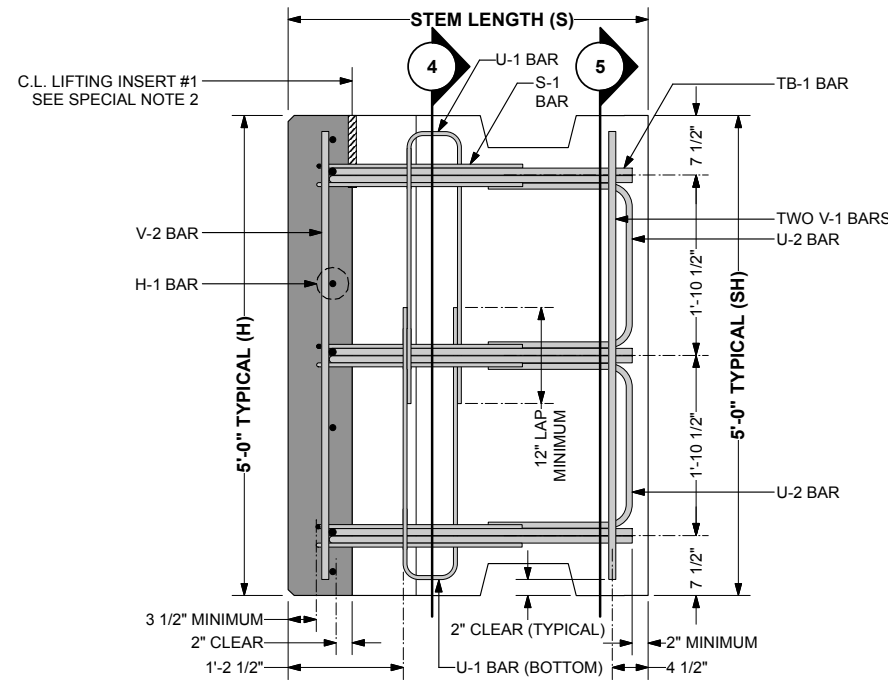
DESIGNER	
 THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	DATE: 04-08-13
	SCALE: NO SCALE
	DESIGNED: JMC
	DRAWN: CJW
	CHECKED: CCG/KD
TNC JOB #: TW3634	
TNC SHT #47 OF 67	

5/9/2013

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3 FRONT VIEW - 5.0 x 7.5 x 3.75 Std Cnr SHOWN
Scale: 1" = 1'-0" (U-1 BARS IN STEM OMITTED FOR CLARITY)



2 SIDE VIEW - 5.0 x 7.5 x 3.75 Std Cnr SHOWN
Scale: 1" = 1'-0"

T-WALL UNIT PROPERTIES

UNIT TYPE	H	W	S	Tf*	SH	VOLUME*	WEIGHT*
5.0x7.5x3.75 Std Cnr	5'0"	7'6"	3'9"	8"	5'0"	1.33 cy	5,386 lbs

* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 8" FACE THICKNESS (Tf)
FORMLINER FINISHES MAY INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

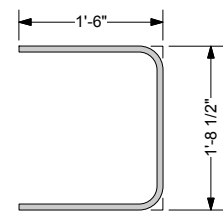
LIFTING INSERT DATA

UNIT TYPE	DISTANCE TO CENTROID FROM FRONT FACE	DISTANCE TO INSERT #1 FROM FRONT FACE	DISTANCE TO INSERT #2 FROM FRONT FACE
5.0x7.5x3.75 Std Cnr	9 3/4"	9 3/4"	N/A

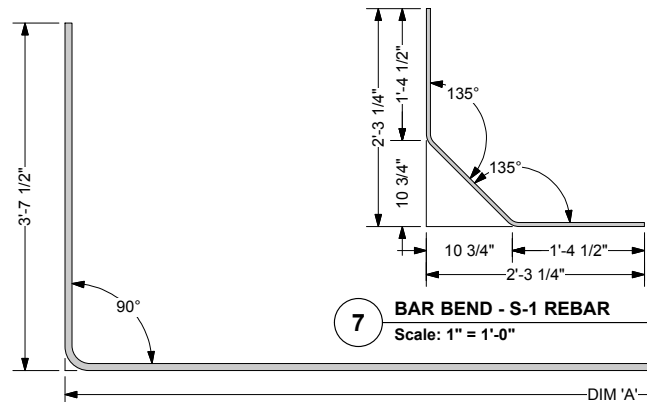
REBAR SCHEDULES

Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=5'0"	H-1	4 ea	#5	7'2"		29.90 lbs		
W=7'6"	U-1	2 ea	#3	6'3"		4.70 lbs		
S=3'9"	V-2	6 ea	#4	4'8"		18.70 lbs		
SH=5'0"	S-1	6 ea	#4	4'0 1/4"		16.12 lbs		
	TB-1	6 ea	#5	6'9 1/4"	3'1 3/4"	42.37 lbs		
	U-2	2 ea	#6	4'8 1/2"		14.14 lbs		
	V-1	2 ea	#4	4'8"		6.23 lbs		
							132.17 lbs	

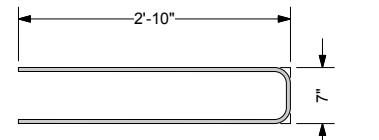
2" COVER ON ALL BARS UNLESS OTHERWISE NOTED



9 BAR BEND - U-2 REBAR
Scale: 1" = 1'-0"

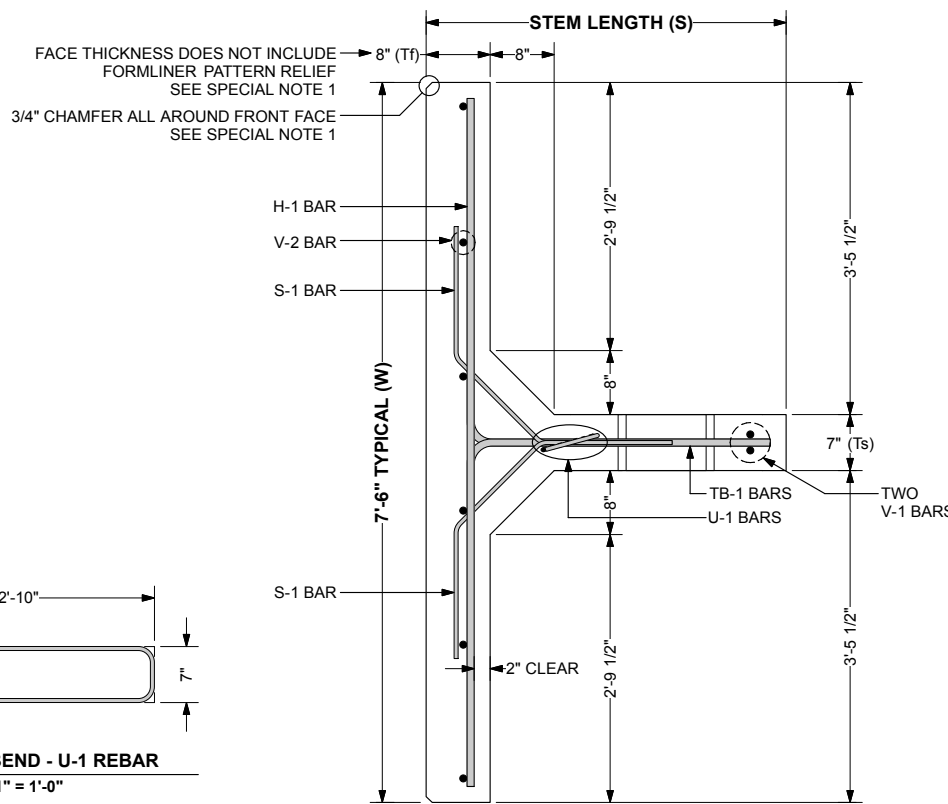


7 BAR BEND - S-1 REBAR
Scale: 1" = 1'-0"



8 BAR BEND - U-1 REBAR
Scale: 1" = 1'-0"

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



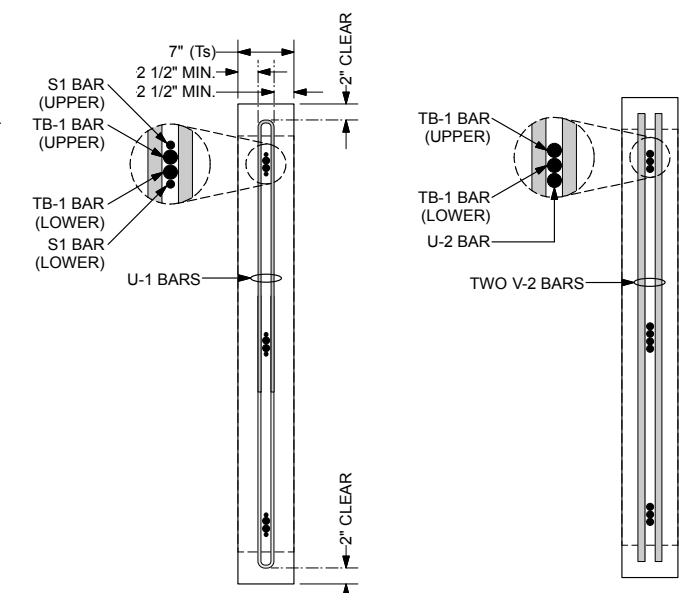
1 PLAN VIEW - 5.0 x 7.5 x 3.75 Std Cnr SHOWN
Scale: 1" = 1'-0"

SPECIAL NOTES:

- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
• PER CONTRACT DRAWINGS AND SPECS.
• MINIMUM FRONT FACE THICKNESS SHALL BE 8"
- LIFTING INSERTS:
• MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.
• 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
• REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
• LIFTING INSERTS TO BE GALVANIZED

GENERAL NOTES:

- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 5th EDITION, 2010 WITH INTERIM REVISIONS
- MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0.
- ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
- REBAR:
• SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
- CONCRETE:
• Fc = 5000 psi @ 28 DAYS



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

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

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

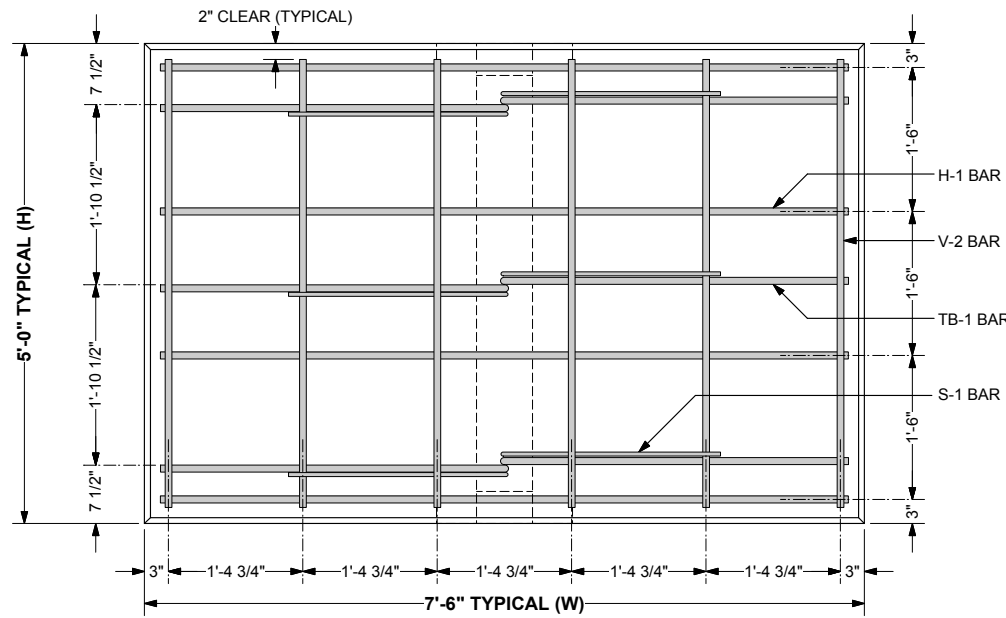
SHOP DRAWINGS
REBAR
STANDARD CORNER UNITS - 3'-9" STEM

DESIGNER THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FK: (703) 913-7859 Web: www.neelco.com	DATE: 04-08-13 SCALE: AS NOTED DESIGNED: JMC DRAWN: CJW CHECKED: CCG/KD TNC JOB #: TW3634 TNC SHT #48 OF 67
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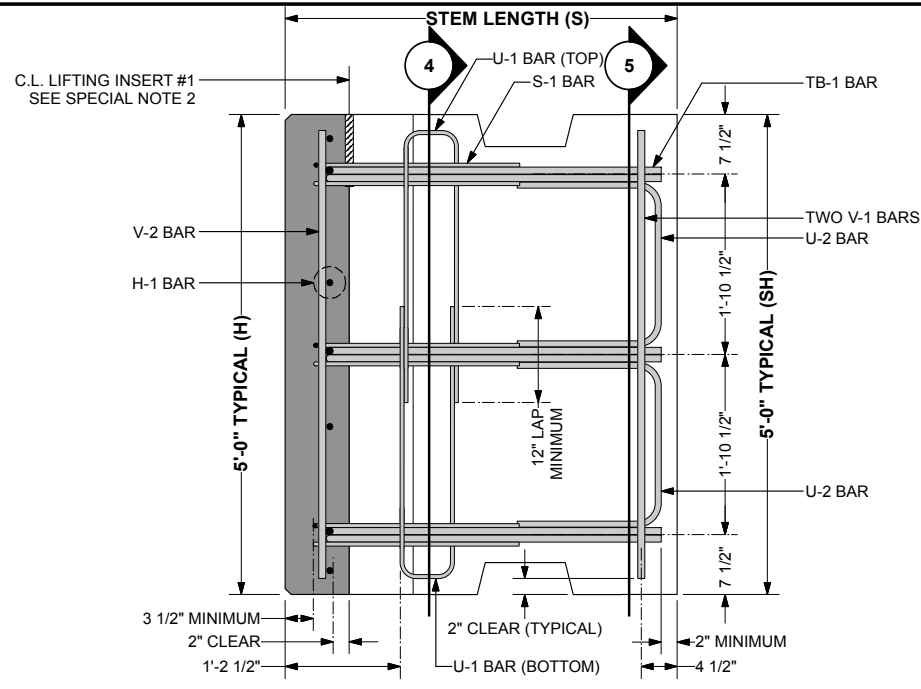
SHEET 48 OF 67
87-402 PE

DESIGNER
THE NEEL COMPANY
8328-D TRAFORD LANE
SPRINGFIELD, VA 22152
PH: (703) 913-7858
FK: (703) 913-7859
Web: www.neelco.com

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3 FRONT VIEW - 5.0 x 7.5 x 4.08 Std Cnr SHOWN
Scale: 1" = 1'-0" (U-1 BARS IN STEM OMITTED FOR CLARITY)



2 SIDE VIEW - 5.0 x 7.5 x 4.08 Std Cnr SHOWN
Scale: 1" = 1'-0"

T-WALL UNIT PROPERTIES

UNIT TYPE	H	W	S	Tf*	SH	VOLUME*	WEIGHT*
5.0x7.5x4.08 Std Cnr	5'0"	7'6"	4'1"	8"	5'0"	1.36 cy	5,521 lbs

* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 8" FACE THICKNESS (Tf)
FORMLINER FINISHES MAY INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

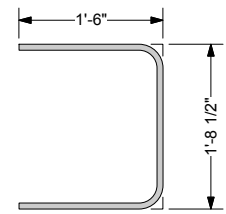
LIFTING INSERT DATA

UNIT TYPE	DISTANCE TO CENTROID FROM FRONT FACE	DISTANCE TO INSERT #1 FROM FRONT FACE	DISTANCE TO INSERT #2 FROM FRONT FACE
5.0x7.5x4.08 Std Cnr	10 5/8"	10 5/8"	N/A

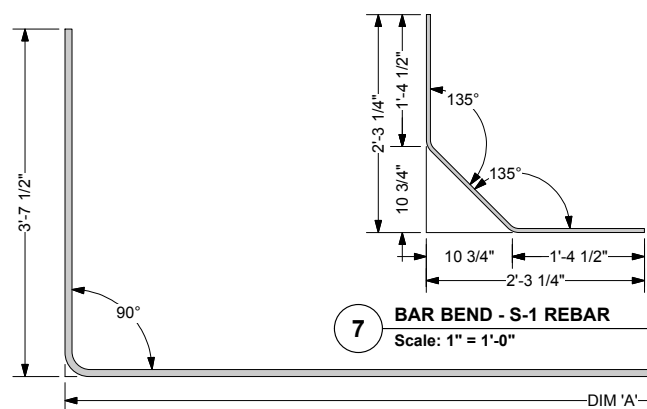
REBAR SCHEDULES

5.0x7.5x4.08 Std Cnr							HIGHWAY REBAR
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks
H=5'0"	H-1	4 ea	#4	7'2"		19.15 lbs	
W=7'6"	U-1	2 ea	#3	6'3"		4.70 lbs	
S=4'1"	V-2	6 ea	#4	4'8"		18.70 lbs	
SH=5'0"	S-1	6 ea	#4	4'0 1/4"		16.12 lbs	
	TB-1	6 ea	#4	7'1 1/4"	3'5 3/4"	28.46 lbs	
	U-2	2 ea	#6	4'8 1/2"		14.14 lbs	
	V-1	2 ea	#4	4'8"		6.23 lbs	
						107.51 lbs	

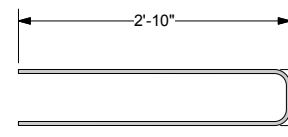
2" COVER ON ALL BARS UNLESS OTHERWISE NOTED



9 BAR BEND - U-2 REBAR
Scale: 1" = 1'-0"



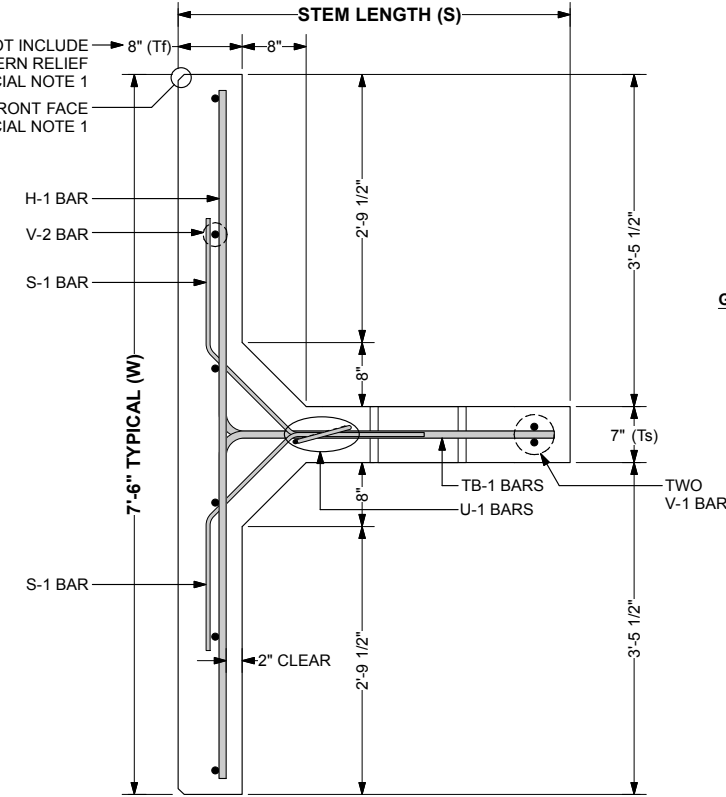
7 BAR BEND - S-1 REBAR
Scale: 1" = 1'-0"



8 BAR BEND - U-1 REBAR
Scale: 1" = 1'-0"

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

FACE THICKNESS DOES NOT INCLUDE FORMLINER PATTERN RELIEF SEE SPECIAL NOTE 1
3/4" CHAMFER ALL AROUND FRONT FACE SEE SPECIAL NOTE 1



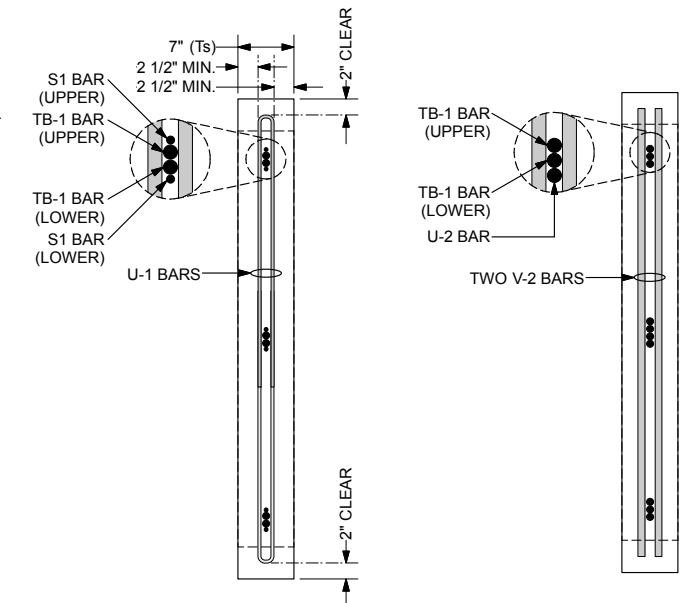
1 PLAN VIEW - 5.0 x 7.5 x 4.08 Std Cnr SHOWN
Scale: 1" = 1'-0"

SPECIAL NOTES:

- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
• PER CONTRACT DRAWINGS AND SPECS.
• MINIMUM FRONT FACE THICKNESS SHALL BE 8"
- LIFTING INSERTS:
• MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.
• 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
• REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
• LIFTING INSERTS TO BE GALVANIZED

GENERAL NOTES:

- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 5th EDITION, 2010 WITH INTERIM REVISIONS
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- ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
- REBAR:
• SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
- CONCRETE:
• F'c = 5000 psi @ 28 DAYS



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

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

PA DOT DWG #87-402 PE (REVISION III)

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

**SHOP DRAWINGS
REBAR
STANDARD CORNER UNITS - 4'-1" STEM**

SHEET 49 OF 67

87-402 PE

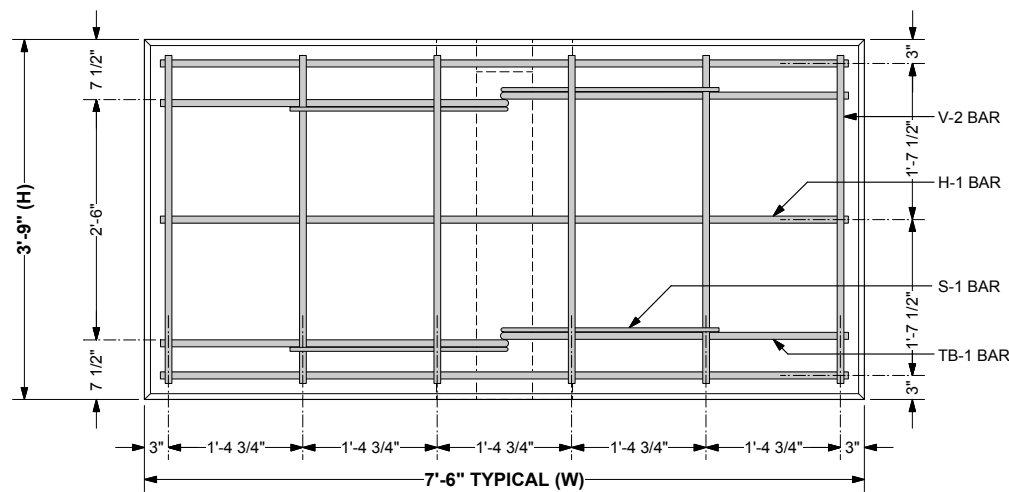
DESIGNER

THE NEEL COMPANY
8328-D TRAFORD LANE
SPRINGFIELD, VA 22152
PH: (703) 913-7858
FX: (703) 913-7859
Web: www.neelco.com

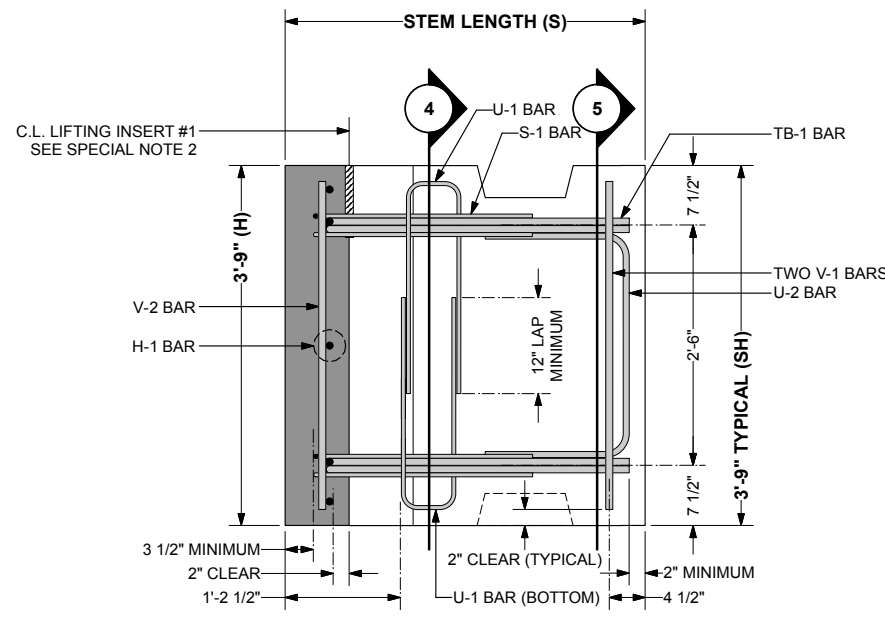
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DATE:	04-08-13
SCALE:	AS NOTED
DESIGNED:	JMC
DRAWN:	CJW
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	49 OF 67

5/9/2013

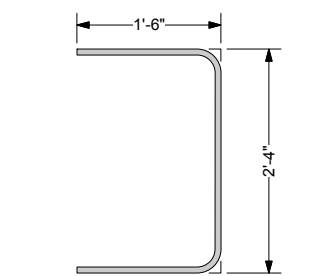


3 FRONT VIEW - 3.75 x 7.5 x 3.75 Tqr Cnr SHOWN
Scale: 1" = 1'-0" (U-1 BARS IN STEM OMITTED FOR CLARITY)

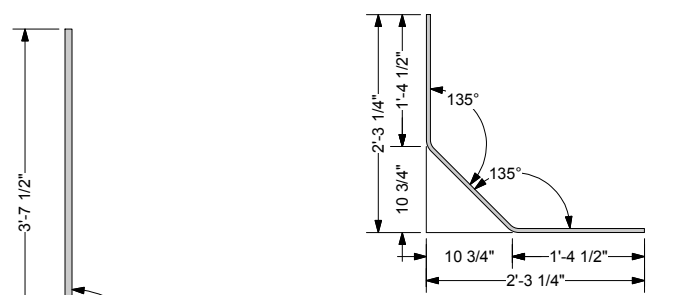


2 SIDE VIEW - 3.75 x 7.5 x 3.75 Tqr Cnr SHOWN
Scale: 1" = 1'-0"

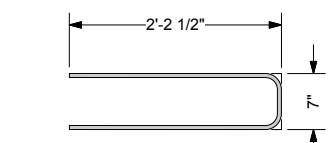
2" COVER ON ALL BARS UNLESS OTHERWISE NOTED



9 BAR BEND - U-2 REBAR
Scale: 1" = 1'-0"



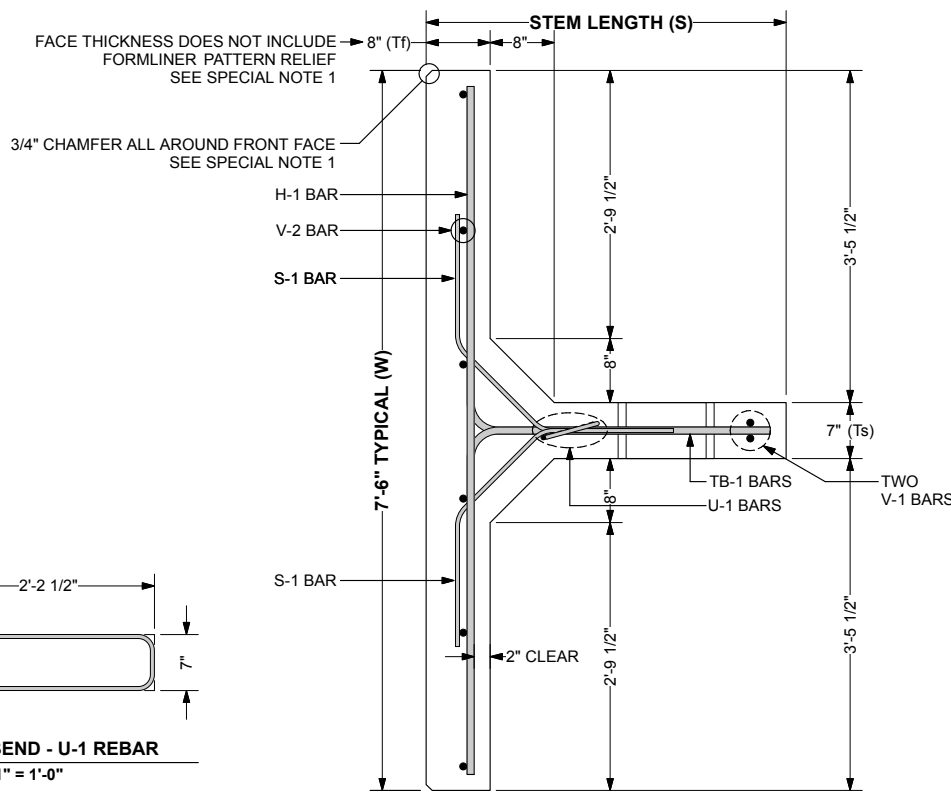
7 BAR BEND - S-1 REBAR
Scale: 1" = 1'-0"



8 BAR BEND - U-1 REBAR
Scale: 1" = 1'-0"



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



1 PLAN VIEW - 3.75 x 7.5 x 3.75 Tqr Cnr SHOWN
Scale: 1" = 1'-0"

T-WALL UNIT PROPERTIES

UNIT TYPE	H	W	S	Tf*	SH	VOLUME*	WEIGHT*
3.75x7.5x3.75 Tqr Cnr	3'9"	7'6"	3'9"	8"	3'9"	1.00 cy	4,051 lbs

* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 8" FACE THICKNESS (Tf)

FORMLINER FINISHES MAY INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

LIFTING INSERT DATA

UNIT TYPE	DISTANCE TO CENTROID FROM FRONT FACE	DISTANCE TO INSERT #1 FROM FRONT FACE	DISTANCE TO INSERT #2 FROM FRONT FACE
3.75x7.5x3.75 Tqr Cnr	9 5/8"	9 5/8"	N/A

REBAR SCHEDULES

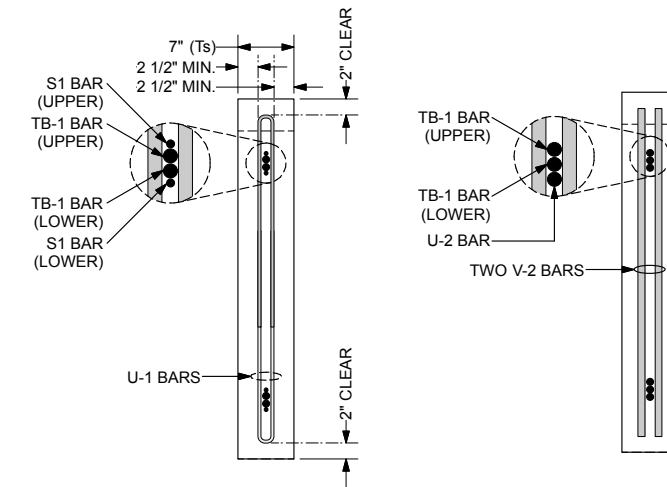
3.75x7.5x3.75 Tqr Cnr							HIGHWAY REBAR		
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks		
H=3'9"	H-1	3 ea	#5	7'2"		22.42 lbs			
W=7'6"	U-1	2 ea	#3	5'0"		3.76 lbs			
S=3'9"	V-2	6 ea	#4	3'5"		13.69 lbs			
SH=3'9"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs			
	TB-1	4 ea	#5	6'9 1/4"	3'1 3/4"	28.25 lbs			
	U-2	1 ea	#6	5'4"		8.01 lbs			
	V-1	2 ea	#4	3'5"		4.56 lbs			
							91.45 lbs		

SPECIAL NOTES:

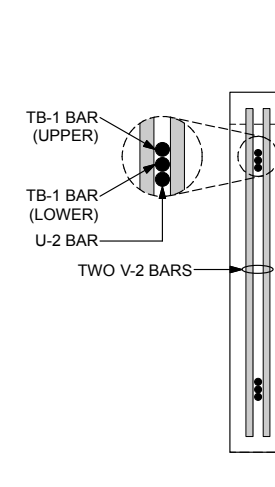
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- LIFTING INSERTS:
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• 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
• REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
• LIFTING INSERTS TO BE GALVANIZED

GENERAL NOTES:

- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 5th EDITION, 2010 WITH INTERIM REVISIONS
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- ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
- REBAR:
• SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
- CONCRETE:
• F_c = 5000 psi @ 28 DAYS



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



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

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
THREE QUARTER CORNER UNITS - 3'-9" STEM

DESIGNER
THE NEEL COMPANY
8328-D TRAFORD LANE
SPRINGFIELD, VA 22152
PH: (703) 913-7858
FK: (703) 913-7859
Web: www.neelco.com

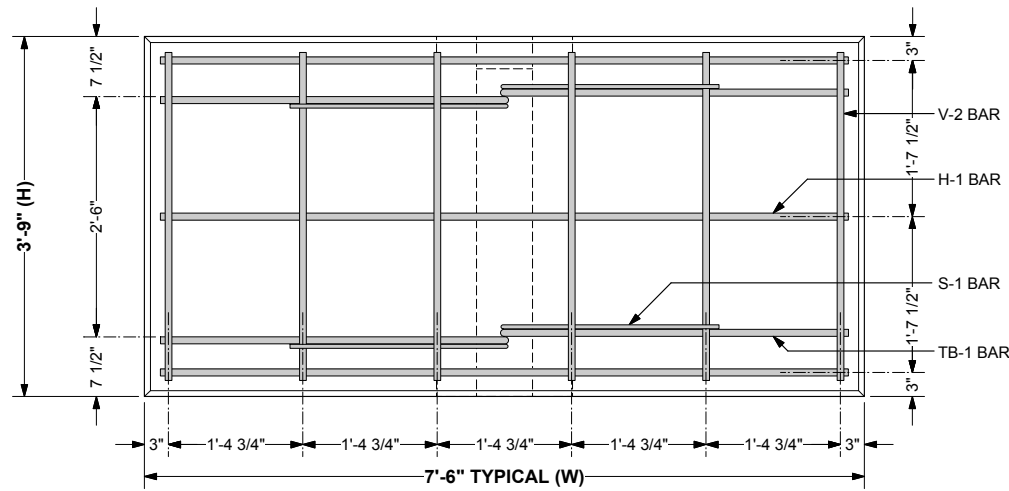
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DATE:	04-08-13
SCALE:	AS NOTED
DESIGNED:	JMC
DRAWN:	CJW
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #	#50 OF 67

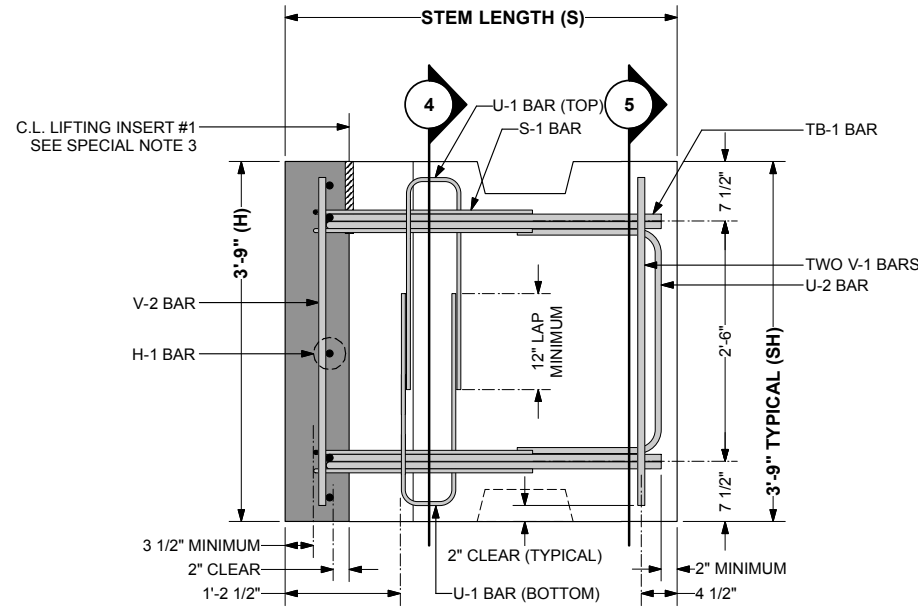
5/9/2013

SHEET 50 OF 67

87-402 PE



3 FRONT VIEW - 3.75 x 7.5 x 4.08 Tqr Cnr SHOWN
Scale: 1" = 1'-0" (U-1 BARS IN STEM OMITTED FOR CLARITY)



2 SIDE VIEW - 3.75 x 7.5 x 4.08 Tqr Cnr SHOWN
Scale: 1" = 1'-0"

T-WALL UNIT PROPERTIES

UNIT TYPE	H	W	S	Tf*	SH	VOLUME*	WEIGHT*
3.75x7.5x4.08 Tqr Cnr	3'9"	7'6"	4'1"	8"	3'9"	1.03 cy	4,155 lbs

* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 8" FACE THICKNESS (Tf)
FORMLINER FINISHES MAY INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

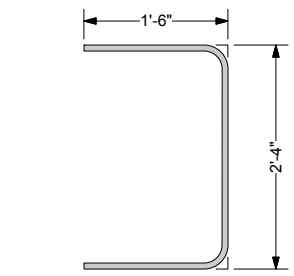
LIFTING INSERT DATA

UNIT TYPE	DISTANCE TO CENTROID FROM FRONT FACE	DISTANCE TO INSERT #1 FROM FRONT FACE	DISTANCE TO INSERT #2 FROM FRONT FACE
3.75x7.5x4.08 Tqr Cnr	10 1/2"	10 1/2"	N/A

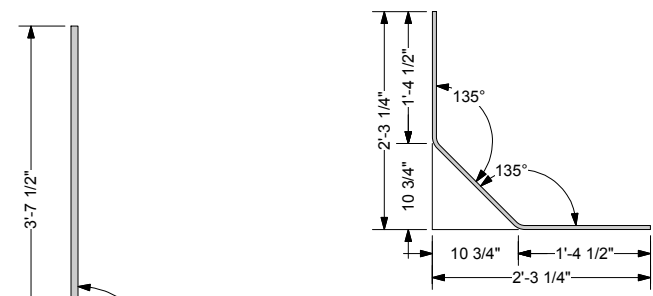
REBAR SCHEDULES

3.75x7.5x4.08 Tqr Cnr							HIGHWAY REBAR	
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=3'9"	H-1	3 ea	#4	7'2"		14.36 lbs		
W=7'6"	U-1	2 ea	#3	5'0"		3.76 lbs		
S=4'1"	V-2	6 ea	#4	3'5"		13.69 lbs		
SH=3'9"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs		
	TB-1	4 ea	#4	7'1 1/4"	3'5 3/4"	18.97 lbs		
	U-2	1 ea	#6	5'4"		8.01 lbs		
	V-1	2 ea	#4	3'5"		4.56 lbs		
						74.11 lbs		

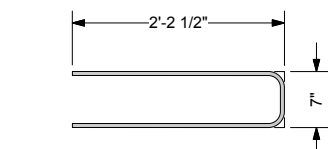
2" COVER ON ALL BARS UNLESS OTHERWISE NOTED



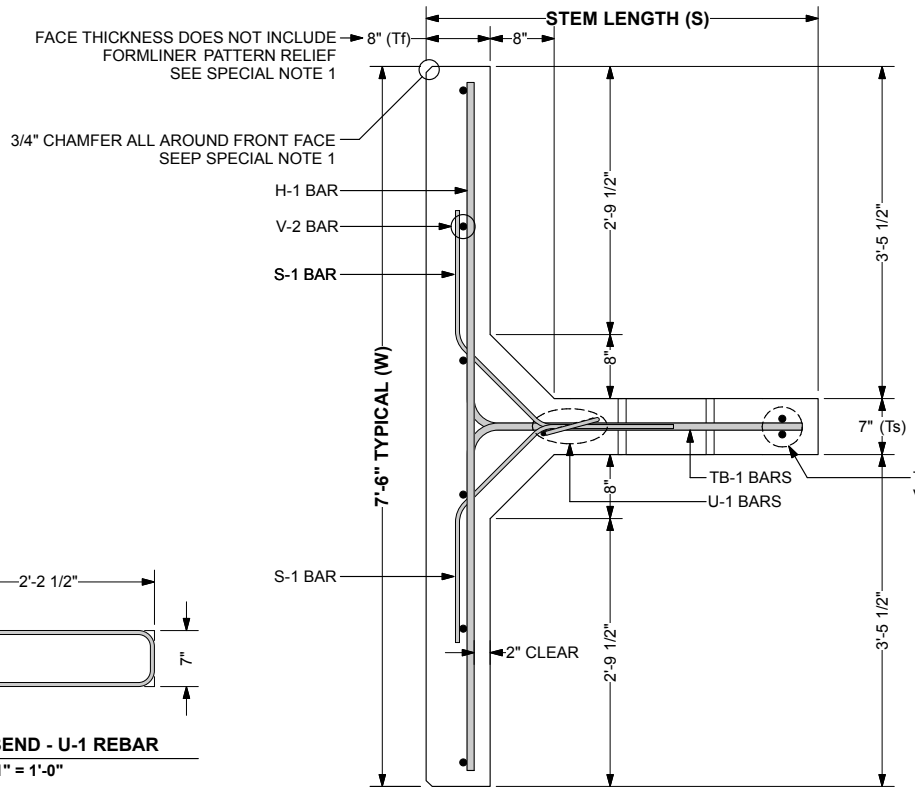
9 BAR BEND - U-2 REBAR
Scale: 1" = 1'-0"



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



8 BAR BEND - U-1 REBAR
Scale: 1" = 1'-0"



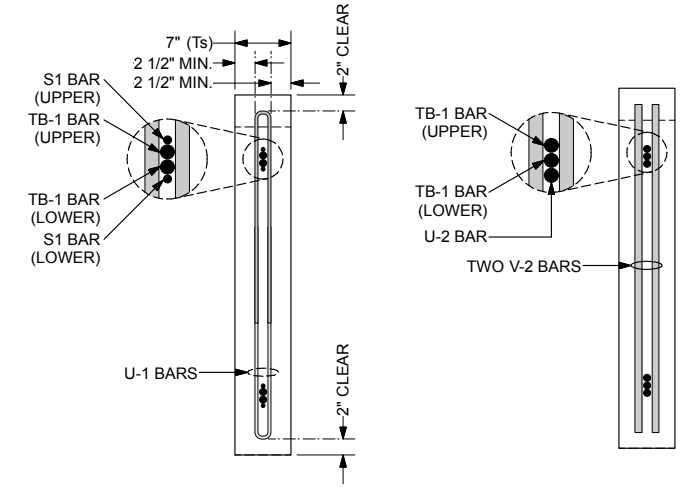
1 PLAN VIEW - 3.75 x 7.5 x 4.08 Tqr Cnr SHOWN
Scale: 1" = 1'-0"

SPECIAL NOTES:

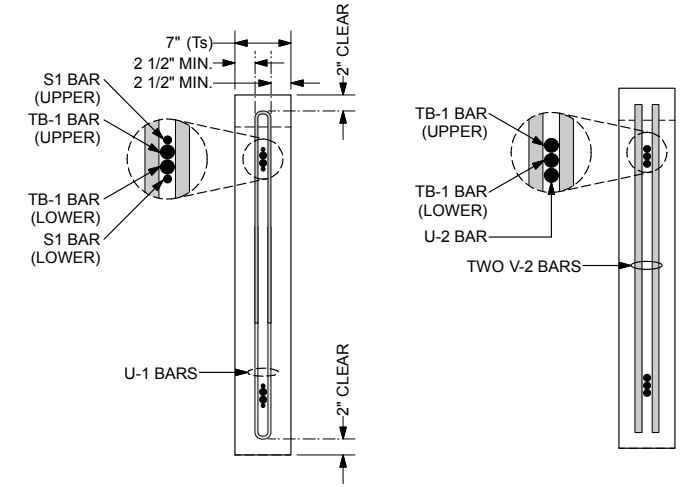
- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
• PER CONTRACT DRAWINGS AND SPECS.
• MINIMUM FRONT FACE THICKNESS SHALL BE 8"
- LIFTING INSERTS:
• MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.
• 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
• REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
• LIFTING INSERTS TO BE GALVANIZED

GENERAL NOTES:

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- REBAR:
• SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
- CONCRETE:
• Fc = 5000 psi @ 28 DAYS



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



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

PA DOT DWG #87-402 PE (REVISION III)

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

**SHOP DRAWINGS
REBAR
THREE QUARTER CORNER UNITS - 4'-1" STEM**

<p>DESIGNER</p> <p>THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FK: (703) 913-7859 Web: www.neelco.com</p>	<p>DATE: 04-08-13 SCALE: AS NOTED DESIGNED: JMC DRAWN: CJW CHECKED: CCG/KD TNC JOB #: TW3634 TNC SHT #51 OF 67</p>
<p>5/9/2013</p> <p><small>This drawing contains information proprietary to The Neel Company. The Neel Company is the exclusive licensee of the T-WALL® patent. © 2013, The Neel Company</small></p>	<p>SHEET 51 OF 67</p> <p>87-402 PE</p>

T-WALL UNIT PROPERTIES

UNIT TYPE	H	W	S	Tf	SH	VOLUME*	WEIGHT*
2.5x7.5x3.75 Hlf Cnr	2'6"	7'6"	3'9"	8"	2'6"	0.66 cy	2,670 lbs

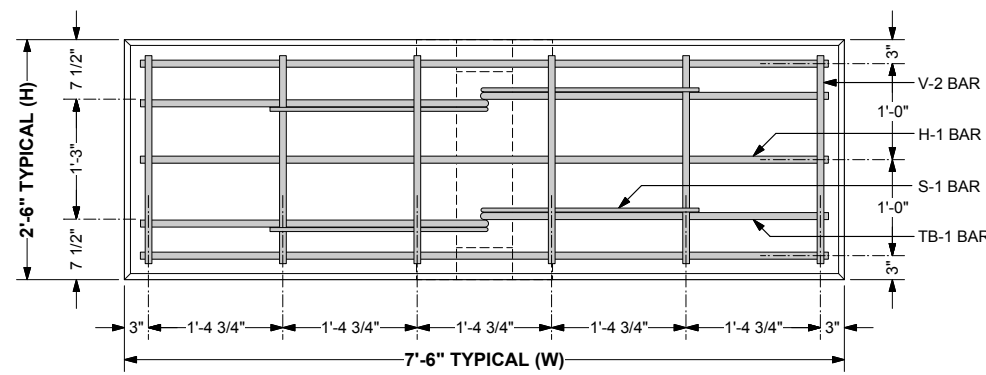
* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 8" FACE THICKNESS (Tf)
FORMLINER FINISHES MAY INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

LIFTING INSERT DATA

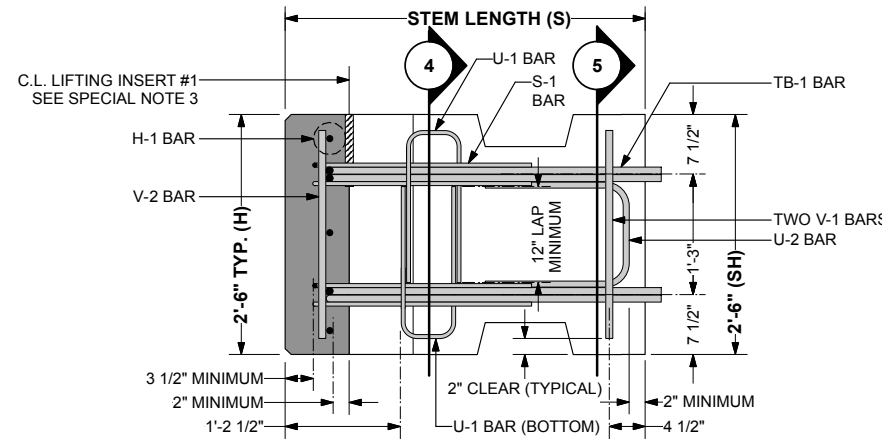
UNIT TYPE	DISTANCE TO CENTROID FROM FRONT FACE	DISTANCE TO INSERT #1 FROM FRONT FACE	DISTANCE TO INSERT #2 FROM FRONT FACE
2.5x7.5x3.75 Hlf Cnr	9 1/2"	9 1/2"	N/A

REBAR SCHEDULES

2.5x7.5x3.75 Hlf Cnr							HIGHWAY REBAR	
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=2'6"	H-1	3 ea	#4	7'2"		14.36 lbs		
W=7'6"	U-1	2 ea	#3	3'9"		2.82 lbs		
S=3'9"	V-2	6 ea	#4	2'2"		8.68 lbs		
SH=2'6"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs		
	TB-1	4 ea	#4	6'9 1/4"	3'1 3/4"	18.09 lbs		
	U-2	1 ea	#6	4'1"		6.13 lbs		
	V-1	2 ea	#4	2'2"		2.89 lbs		
						63.73 lbs		

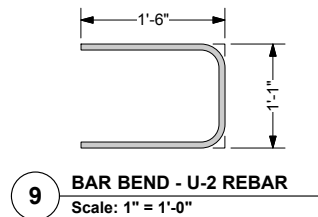


3 FRONT VIEW - 2.5 x 7.5 x 3.75 Hlf Cnr SHOWN
Scale: 1" = 1'-0" (U-1 BARS IN STEM OMITTED FOR CLARITY)

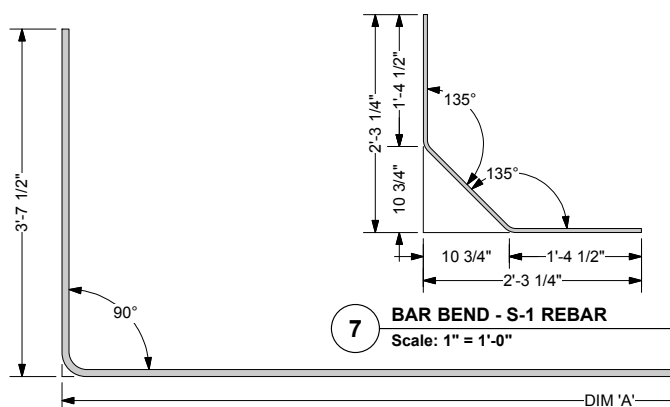


2 SIDE VIEW - 2.5 x 7.5 x 3.75 Hlf Cnr SHOWN
Scale: 1" = 1'-0"

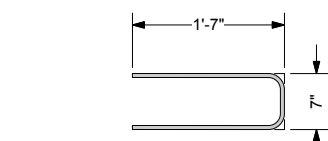
2" COVER ON ALL BARS UNLESS OTHERWISE NOTED



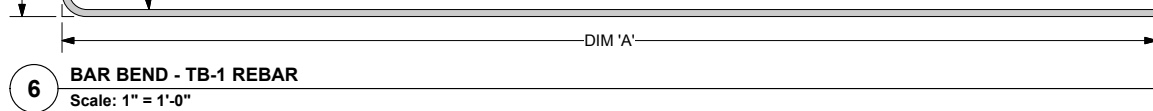
9 BAR BEND - U-2 REBAR
Scale: 1" = 1'-0"



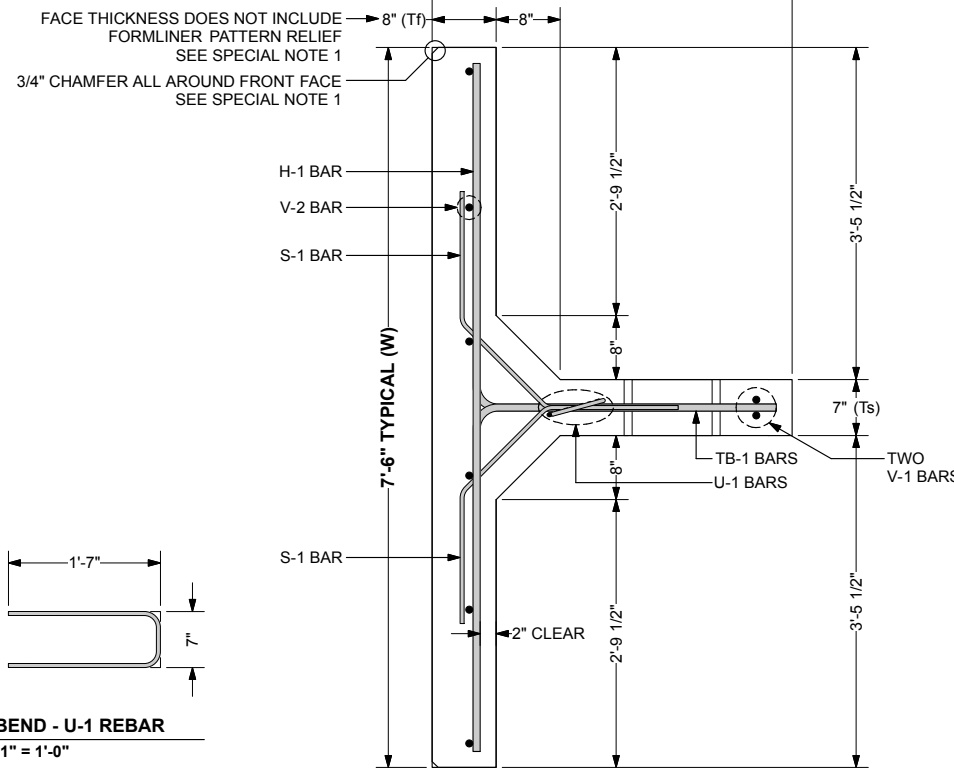
7 BAR BEND - S-1 REBAR
Scale: 1" = 1'-0"



8 BAR BEND - U-1 REBAR
Scale: 1" = 1'-0"



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



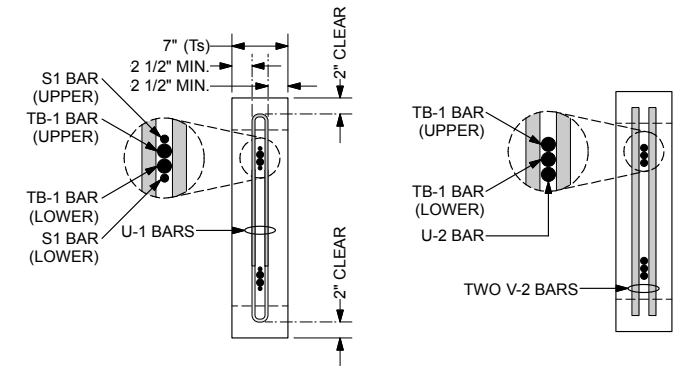
1 PLAN VIEW - 2.5 x 7.5 x 3.75 Hlf Cnr SHOWN
Scale: 1" = 1'-0"

SPECIAL NOTES:

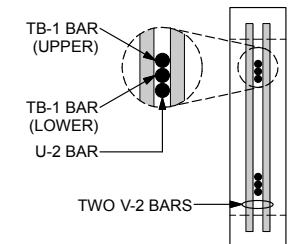
- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
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- LIFTING INSERTS:
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GENERAL NOTES:

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



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

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
HALF CORNER UNITS - 3'-9" STEM

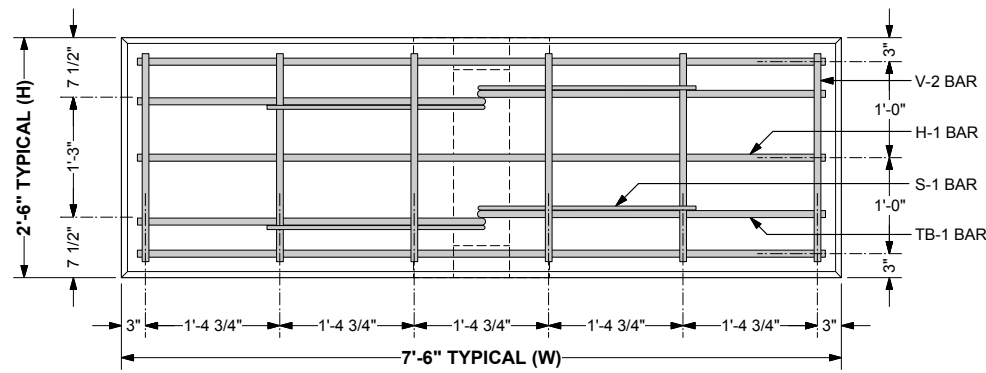
DESIGNER
THE NEEL COMPANY
8328-D TRAFORD LANE
SPRINGFIELD, VA 22152
PH: (703) 913-7858
FX: (703) 913-7859
Web: www.neelco.com

DATE:	04-08-13
SCALE:	AS NOTED
DESIGNED:	JMC
DRAWN:	CJW
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	52 OF 67

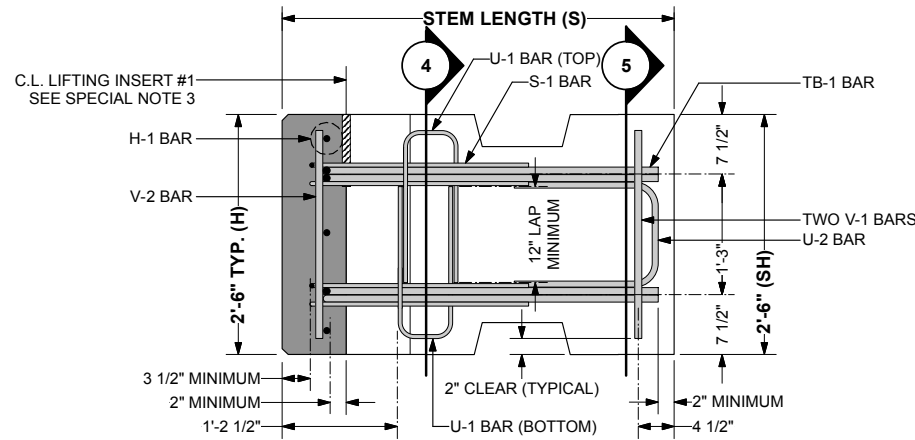
5/9/2013

SHEET 52 OF 67

87-402 PE



3 FRONT VIEW - 2.5 x 7.5 x 4.08 Hlf Cnr SHOWN
Scale: 1" = 1'-0" (U-1 BARS IN STEM OMITTED FOR CLARITY)



2 SIDE VIEW - 2.5 x 7.5 x 4.08 Hlf Cnr SHOWN
Scale: 1" = 1'-0"

T-WALL UNIT PROPERTIES

UNIT TYPE	H	W	S	Tf*	SH	VOLUME*	WEIGHT*
2.5x7.5x4.08 Hlf Cnr	2'6"	7'6"	4'1"	8"	2'6"	0.67 cy	2,733 lbs

* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 8" FACE THICKNESS (TF)
FORMLINER FINISHES MAY INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

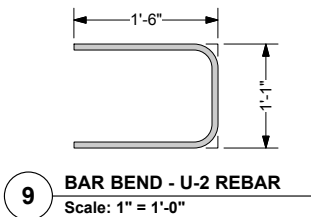
LIFTING INSERT DATA

UNIT TYPE	DISTANCE TO CENTROID FROM FRONT FACE	DISTANCE TO INSERT #1 FROM FRONT FACE	DISTANCE TO INSERT #2 FROM FRONT FACE
2.5x7.5x4.08 Hlf Cnr	10 3/8"	10 3/8"	N/A

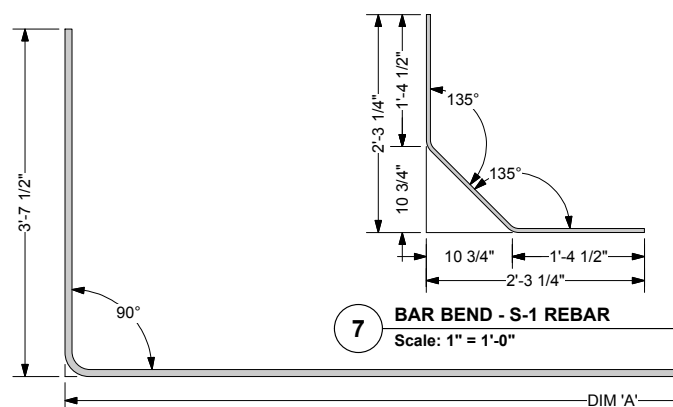
REBAR SCHEDULES

2.5x7.5x4.08 Hlf Cnr							HIGHWAY REBAR	
Unit Dims	Bar Mark	Qty	Size	Length	Dim "A"	Bar Weight	Remarks	
H=2'6"	H-1	3 ea	#4	7'2"		14.36 lbs		
W=7'6"	U-1	2 ea	#3	3'9"		2.82 lbs		
S=4'1"	V-2	6 ea	#4	2'2"		8.68 lbs		
SH=2'6"	S-1	4 ea	#4	4'0 1/4"		10.74 lbs		
	TB-1	4 ea	#4	7'1 1/4"	3'5 3/4"	18.97 lbs		
	U-2	1 ea	#6	4'1"		6.13 lbs		
	V-1	2 ea	#4	2'2"		2.89 lbs		
						64.61 lbs		

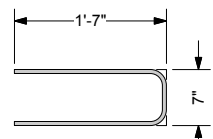
2" COVER ON ALL BARS UNLESS OTHERWISE NOTED



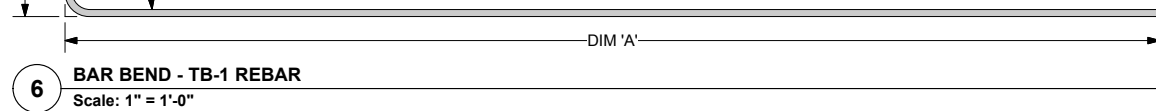
9 BAR BEND - U-2 REBAR
Scale: 1" = 1'-0"



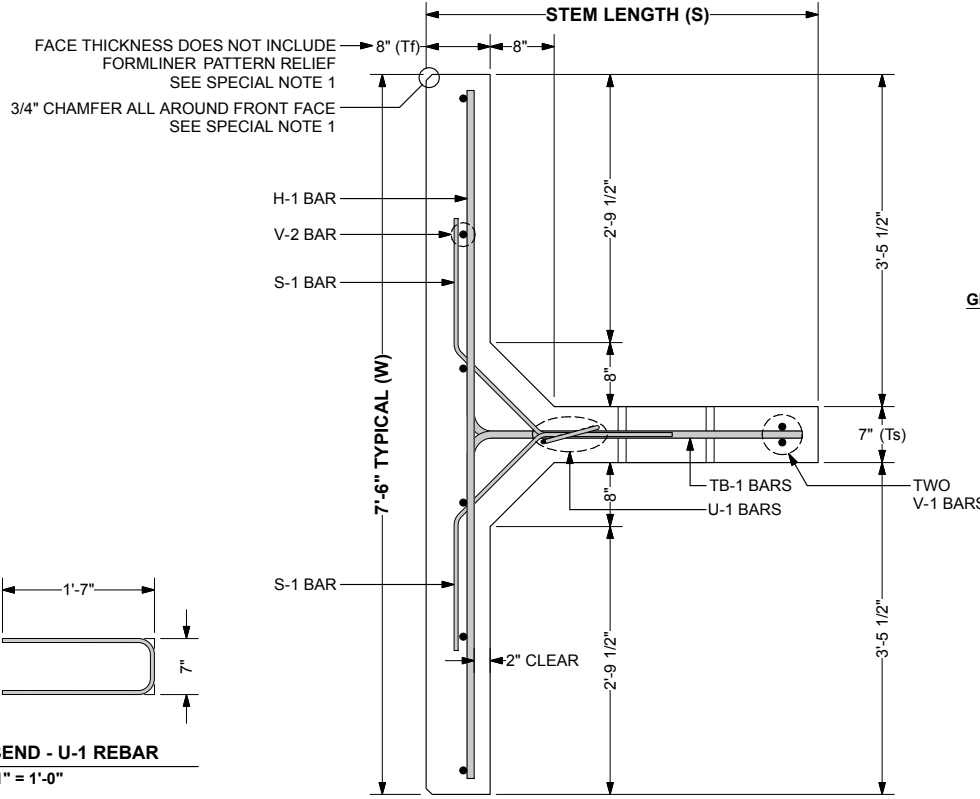
7 BAR BEND - S-1 REBAR
Scale: 1" = 1'-0"



8 BAR BEND - U-1 REBAR
Scale: 1" = 1'-0"



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



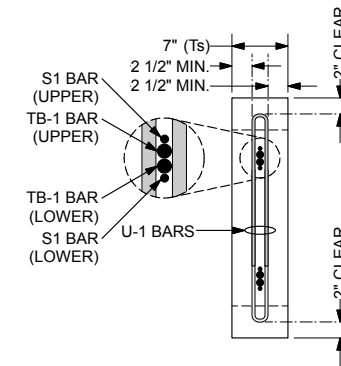
1 PLAN VIEW - 2.5 x 7.5 x 4.08 Hlf Cnr SHOWN
Scale: 1" = 1'-0"

SPECIAL NOTES:

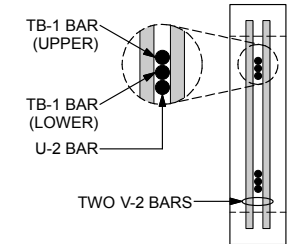
- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
 - PER CONTRACT DRAWINGS AND SPECS.
 - MINIMUM FRONT FACE THICKNESS SHALL BE 8"
- LIFTING INSERTS:
 - MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.
 - 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
 - REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
 - LIFTING INSERTS TO BE GALVANIZED

GENERAL NOTES:

- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 5th EDITION, 2010 WITH INTERIM REVISIONS
- MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0.
- ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
- REBAR:
 - SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
- CONCRETE:
 - F_c = 5000 psi @ 28 DAYS



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



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

PA DOT DWG #87-402 PE (REVISION III)

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

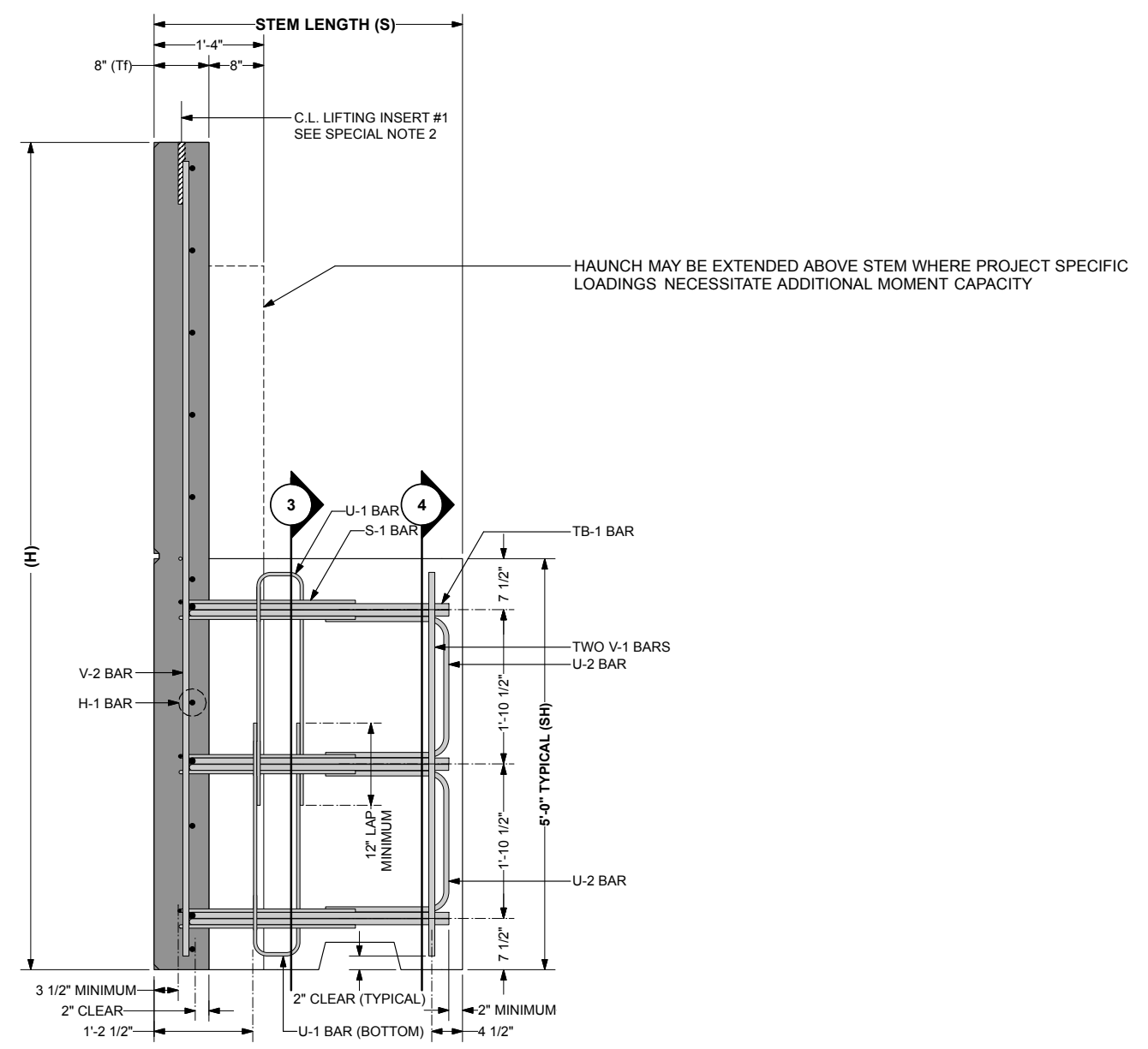
**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

**SHOP DRAWINGS
REBAR
HALF CORNER UNITS - 4'-1" STEM**

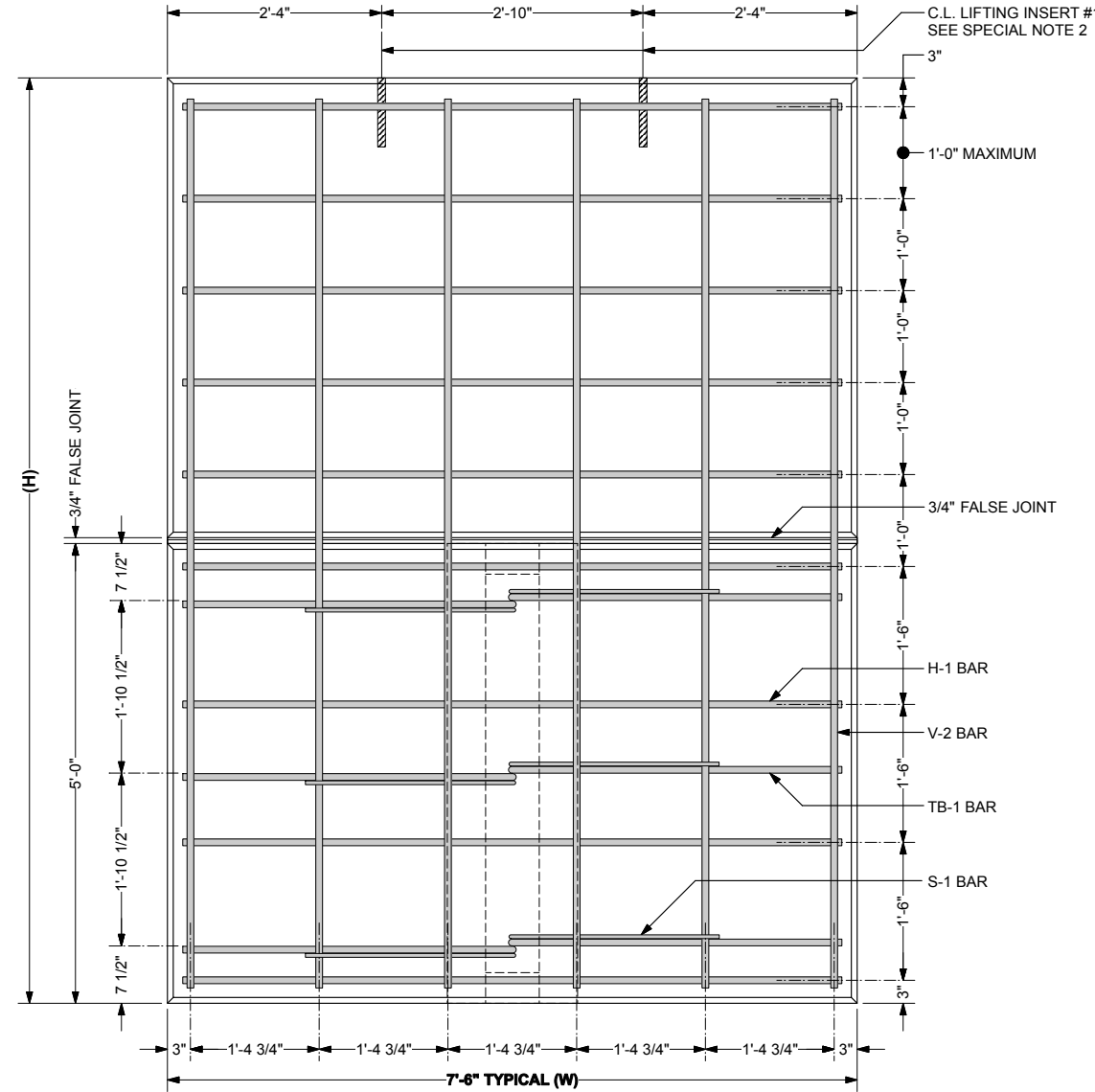
<p>DESIGNER</p> <p>THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com</p>	<p>DATE: 04-08-13</p> <p>SCALE: NO SCALE</p> <p>DESIGNED: JMC</p> <p>DRAWN: CJW</p> <p>CHECKED: CCG/KD</p> <p>TNC JOB #: TW3634</p> <p>TNC SHT #53 OF 67</p>
<p>5/9/2013</p> <p><small>This drawing contains information proprietary to The Neel Company. The Neel Company is the exclusive licensee of the T-WALL® patent. © 2013, The Neel Company</small></p>	<p>SHEET 53 OF 67</p> <p>87-402 PE</p>

DATE: 04-08-13 TNC JOB #: TW3634 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:34:44 AM CAD FILE NAME: 064 S554 Rebar - R/W Std Top Cnr 3.75 (I).vwx

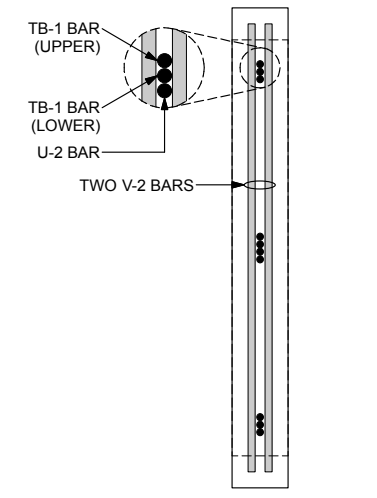
2" COVER ON ALL BARS UNLESS OTHERWISE NOTED



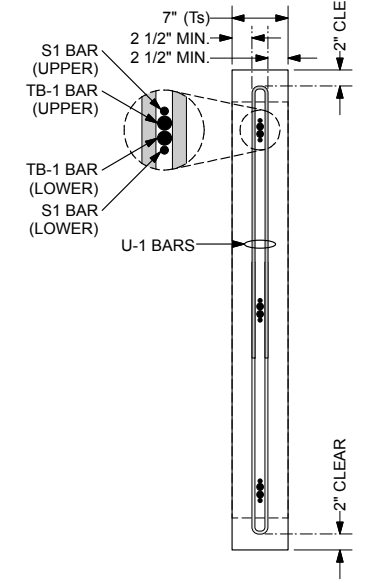
1 SIDE VIEW - STANDARD TOP UNIT (10.0 x 7.5 x 3.75 Std Top Cnr SHOWN)
Scale: 1" = 1'-0"



2 FRONT VIEW - STANDARD TOP UNIT (10.0 x 7.5 x 3.75 Std Top Cnr SHOWN)
Scale: 1" = 1'-0" (U-1 BARS IN STEM OMITTED FOR CLARITY)



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



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

PA DOT DWG #87-402 PE (REVISION III)

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

**SHOP DRAWINGS
REBAR
7.50' WIDE STANDARD TOP CORNER UNITS - 3'-9" STEM (I)**

DESIGNER	DATE: 04-08-13
THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	SCALE: AS NOTED
<small>This drawing contains information proprietary to The Neel Company. The Neel Company is the exclusive licensee of the T-WALL® patent. © 2013, The Neel Company</small>	DESIGNED: JMC
	DRAWN: CJW
	CHECKED: CCG/KD
	TNC JOB #: TW3634
5/9/2013	TNC SHT #54 OF 67

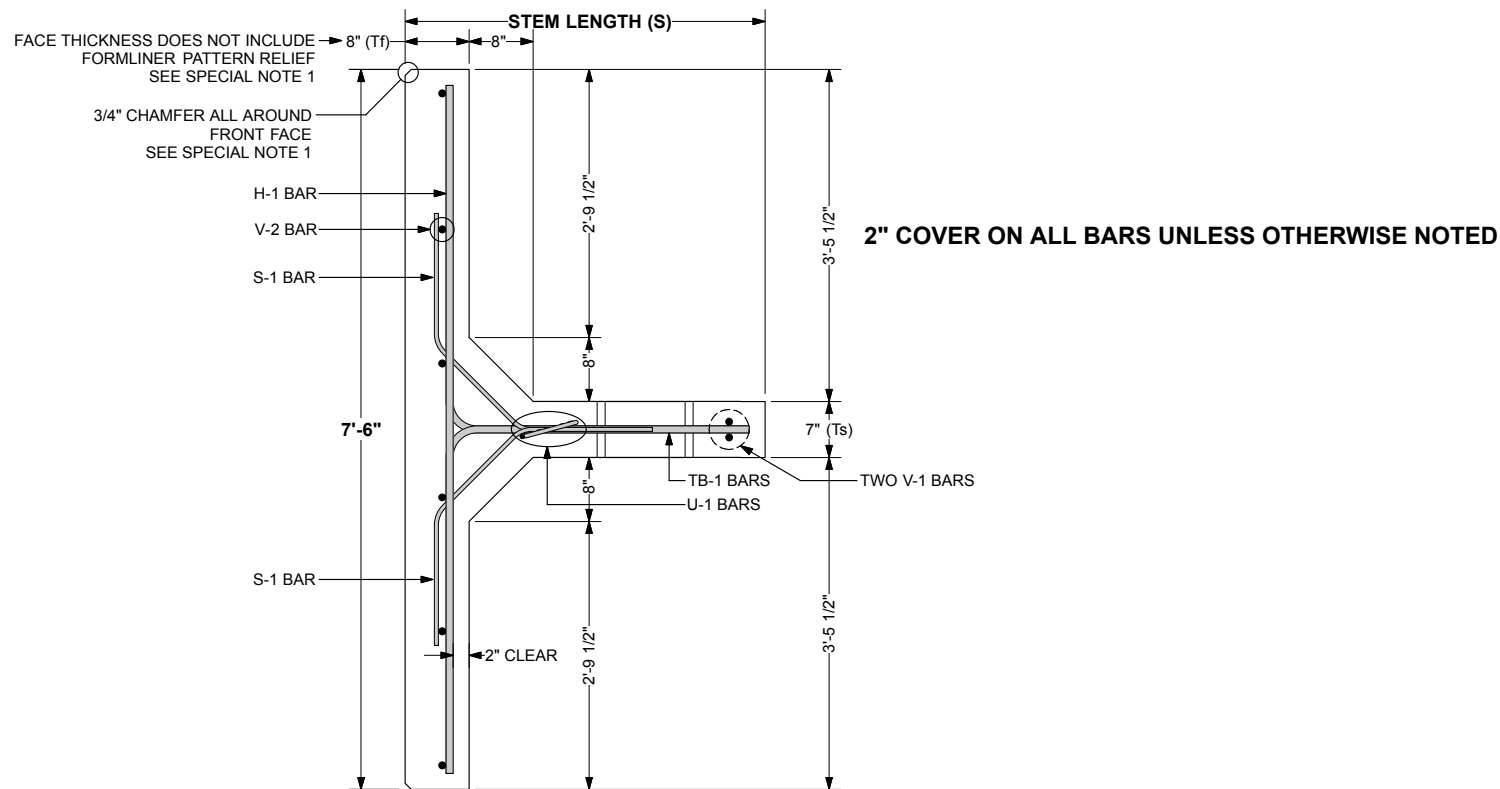
SHEET 54 OF 67
87-402 PE

SPECIAL NOTES:

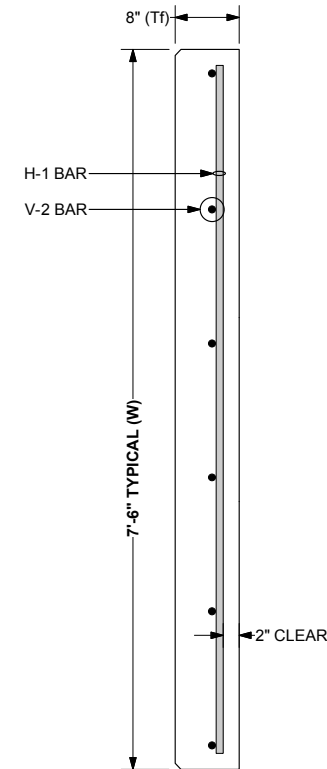
- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
 - PER CONTRACT DRAWINGS AND SPECS.
 - MINIMUM FRONT FACE THICKNESS SHALL BE 8"
- LIFTING INSERTS:
 - MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.
 - 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
 - REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
 - LIFTING INSERTS TO BE GALVANIZED.

GENERAL NOTES:

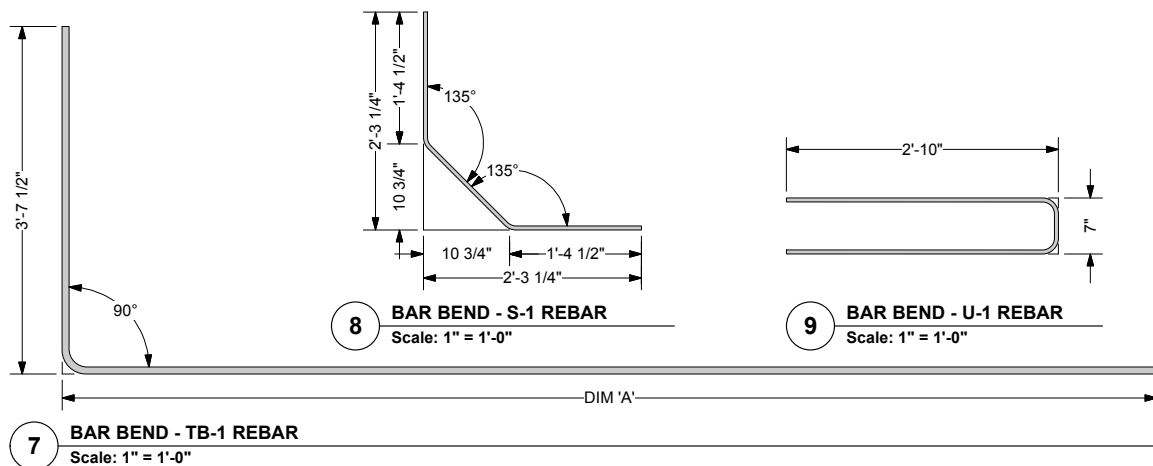
- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 5th EDITION, 2010 WITH INTERIM REVISIONS
- MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0.
- ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
- REBAR:
 - SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
- CONCRETE:
 - F'c = 5000 psi @ 28 DAYS



5 PLAN VIEW AT STEM - STANDARD TOP UNIT (3'-9" STEM SHOWN)
Scale: 1" = 1'-0"



6 PLAN VIEW - EXTENDED FACE PANEL
Scale: 1" = 1'-0"



8 BAR BEND - S-1 REBAR
Scale: 1" = 1'-0"

9 BAR BEND - U-1 REBAR
Scale: 1" = 1'-0"

10 BAR BEND - U-2 REBAR
Scale: 1" = 1'-0"

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

PA DOT DWG #87-402 PE (REVISION III)

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

**SHOP DRAWINGS
REBAR
7.50' WIDE STANDARD TOP CORNER UNITS - 3'-9" STEM (II)**

DESIGNER	DATE: 04-08-13
	SCALE: AS NOTED
THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	DESIGNED: JMC
This drawing contains information proprietary to The Neel Company. The Neel Company is the exclusive licensee of the T-WALL® patent. © 2013, The Neel Company.	DRAWN: CJW
	CHECKED: CCG/KD
	TNC JOB #: TW3634
	TNC SHT #55 OF 67

SHEET 55 OF 67

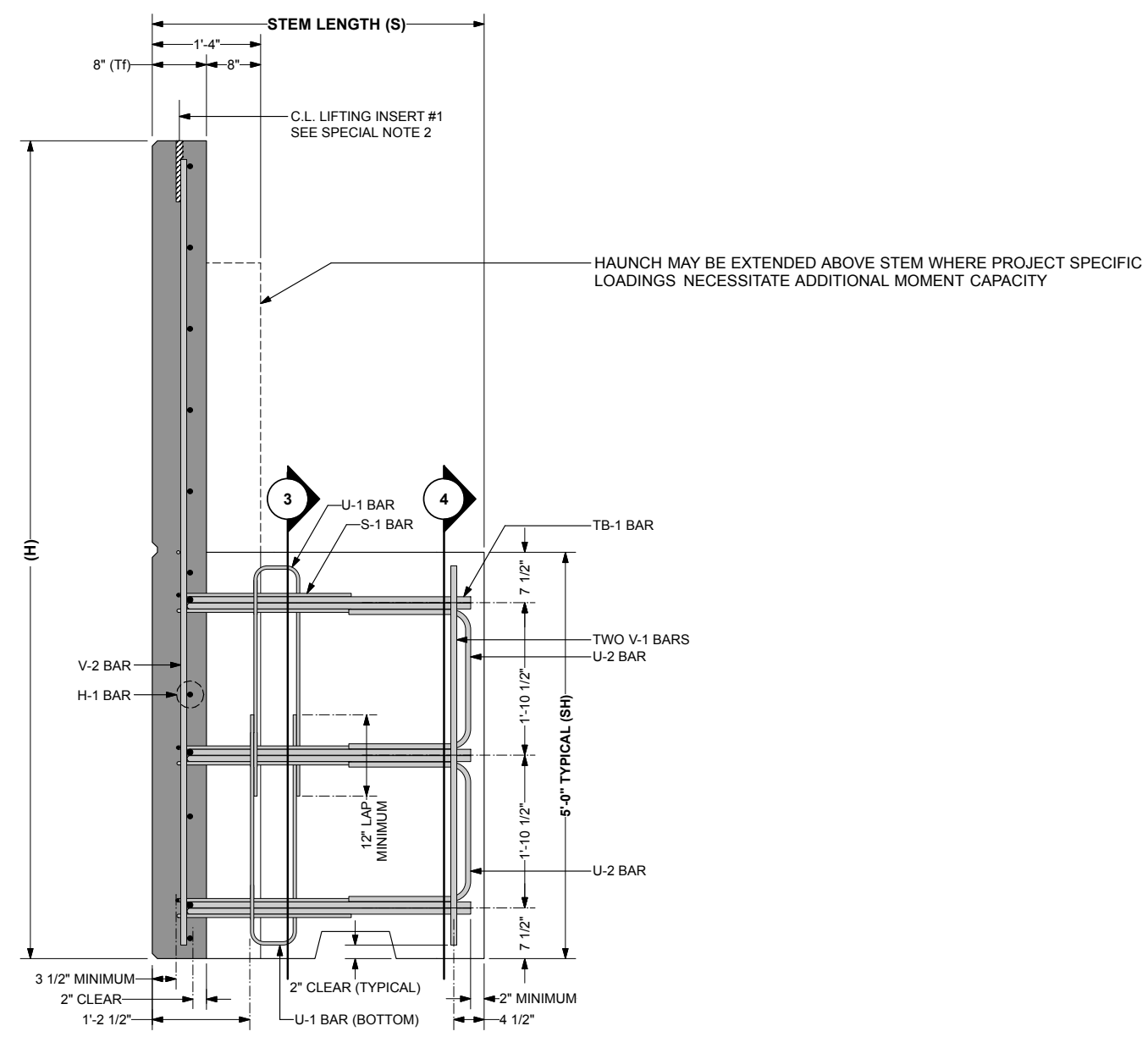
87-402 PE

5/9/2013

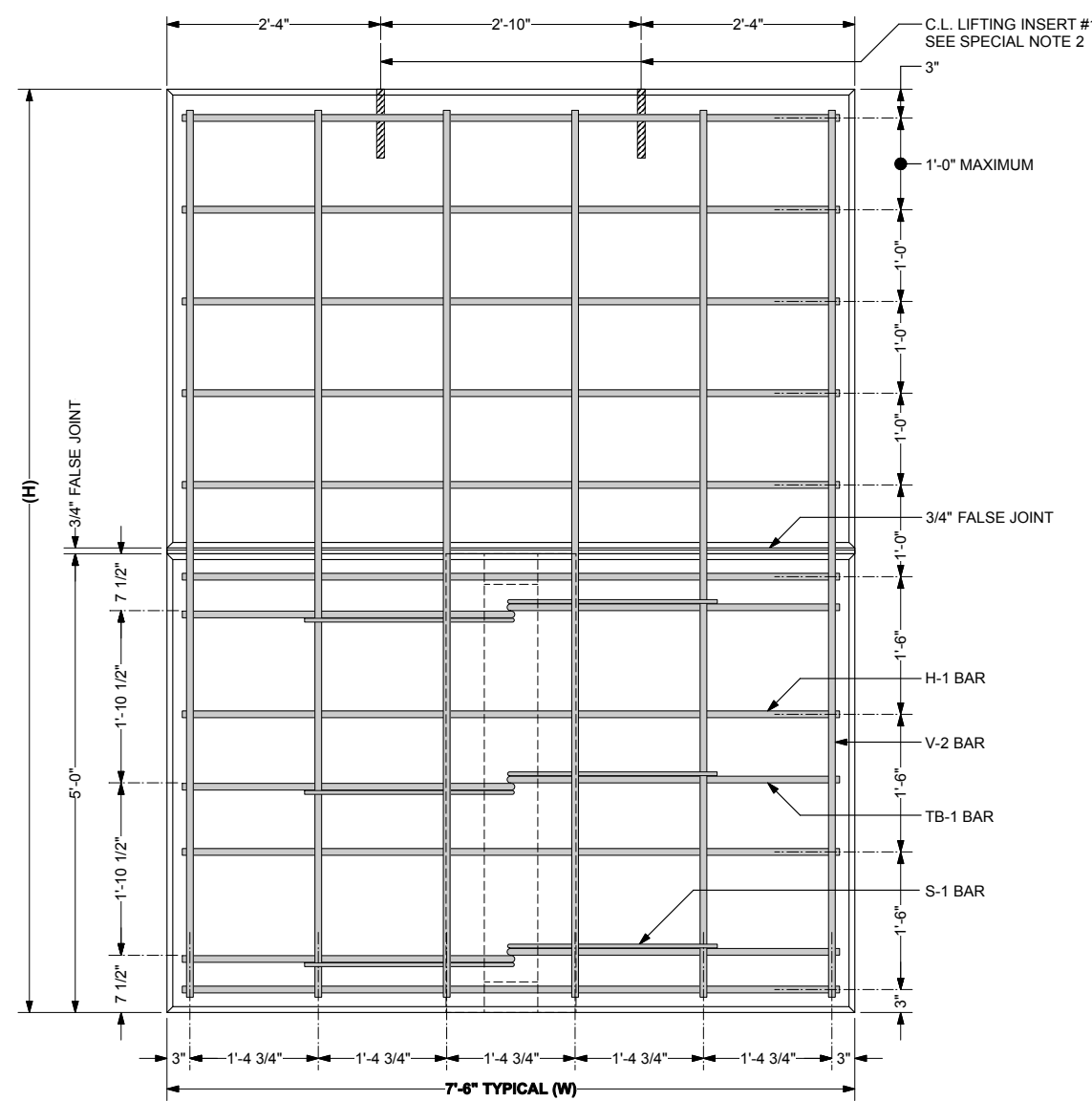
CAD FILE NAME: 064_S554_Rebar - RWY Std Top Cor 3.75' (0).vwx
 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:34:44 AM
 TNC JOB #: TW3634
 DATE: 04-08-13

DATE: 04-08-13 TNC JOB #: TW3634 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:34:06 AM CAD FILE NAME: 057 S557 Rebar - RWY Std Top Cnr 4.08 r0.vwx

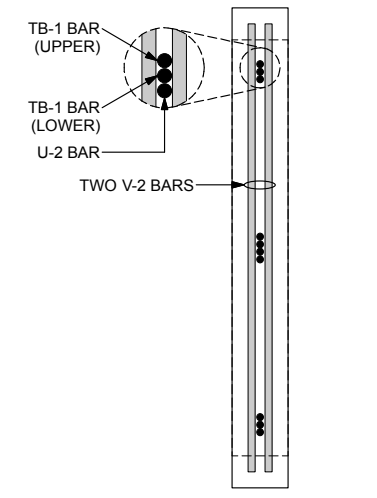
2" COVER ON ALL BARS UNLESS OTHERWISE NOTED



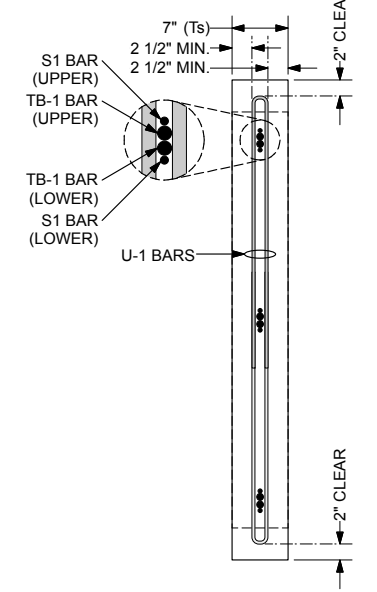
1 SIDE VIEW - STANDARD TOP UNIT (10.0 x 7.5 x 4.08 Std Top Cnr SHOWN)
Scale: 1" = 1'-0"



2 FRONT VIEW - STANDARD TOP UNIT (10.0 x 7.5 x 4.08 Std Top Cnr SHOWN)
Scale: 1" = 1'-0" (U-1 BARS IN STEM OMITTED FOR CLARITY)



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



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

PA DOT DWG #87-402 PE (REVISION III)

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

**SHOP DRAWINGS
REBAR
7.50' WIDE STANDARD TOP CORNER UNITS - 4'-1" STEM (I)**

DESIGNER	DATE: 04-08-13
THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	SCALE: AS NOTED
<small>This drawing contains information proprietary to The Neel Company. The Neel Company is the exclusive licensee of the T-WALL® patent. © 2013, The Neel Company.</small>	DESIGNED: JMC
	DRAWN: CJW
	CHECKED: CCG/KD
	TNC JOB #: TW3634
	TNC SHT #57 OF 67

SHEET 57 OF 67

87-402 PE

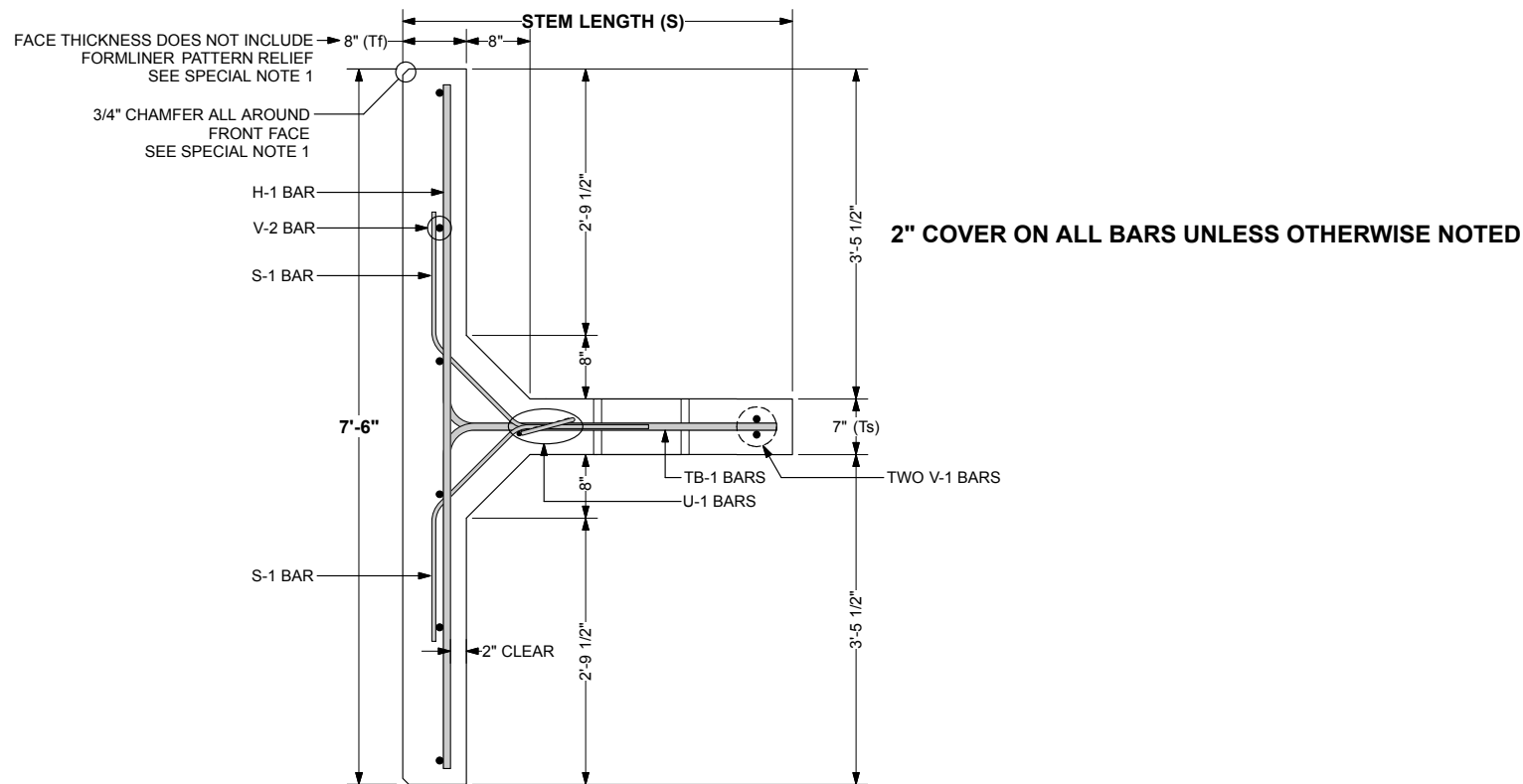
5/9/2013

SPECIAL NOTES:

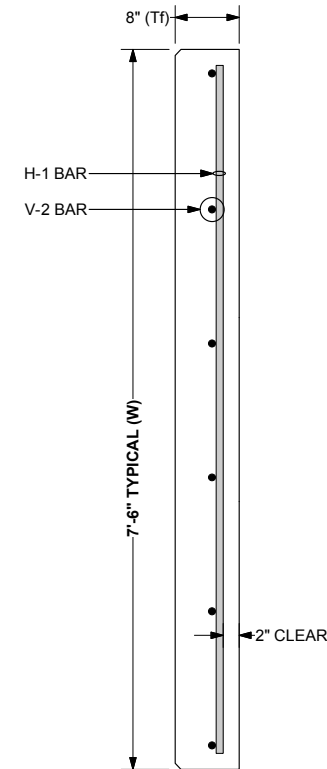
- FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
 - PER CONTRACT DRAWINGS AND SPECS.
 - MINIMUM FRONT FACE THICKNESS SHALL BE 8"
- LIFTING INSERTS:
 - MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.
 - 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
 - REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
 - LIFTING INSERTS TO BE GALVANIZED.

GENERAL NOTES:

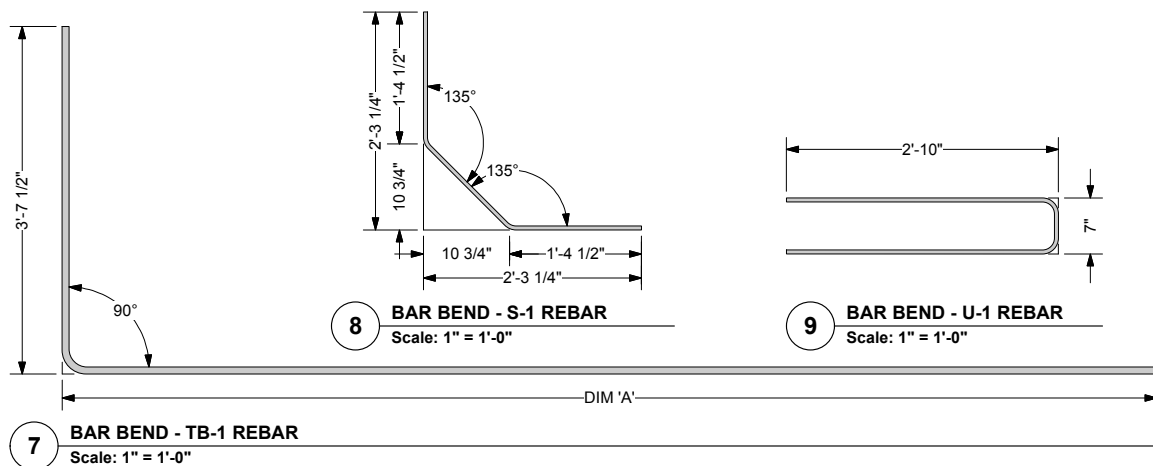
- PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 5th EDITION, 2010 WITH INTERIM REVISIONS
- MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0.
- ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
- REBAR:
 - SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
- CONCRETE:
 - F'c = 5000 psi @ 28 DAYS



5 PLAN VIEW AT STEM - STANDARD TOP UNIT (4'-1" STEM SHOWN)
Scale: 1" = 1'-0"



6 PLAN VIEW - EXTENDED FACE PANEL
Scale: 1" = 1'-0"



8 BAR BEND - S-1 REBAR
Scale: 1" = 1'-0"

9 BAR BEND - U-1 REBAR
Scale: 1" = 1'-0"

10 BAR BEND - U-2 REBAR
Scale: 1" = 1'-0"

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

PA DOT DWG #87-402 PE (REVISION III)

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY**

**T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM**

**SHOP DRAWINGS
REBAR
7.50' WIDE STANDARD TOP CORNER UNITS - 4'-1" STEM (II)**

DESIGNER	DATE: 04-08-13
THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FK: (703) 913-7859 Web: www.neelco.com	SCALE: AS NOTED
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	DRAWN: CJW
	CHECKED: CCG/KD
	TNC JOB #: TW3634
	TNC SHT #58 OF 67

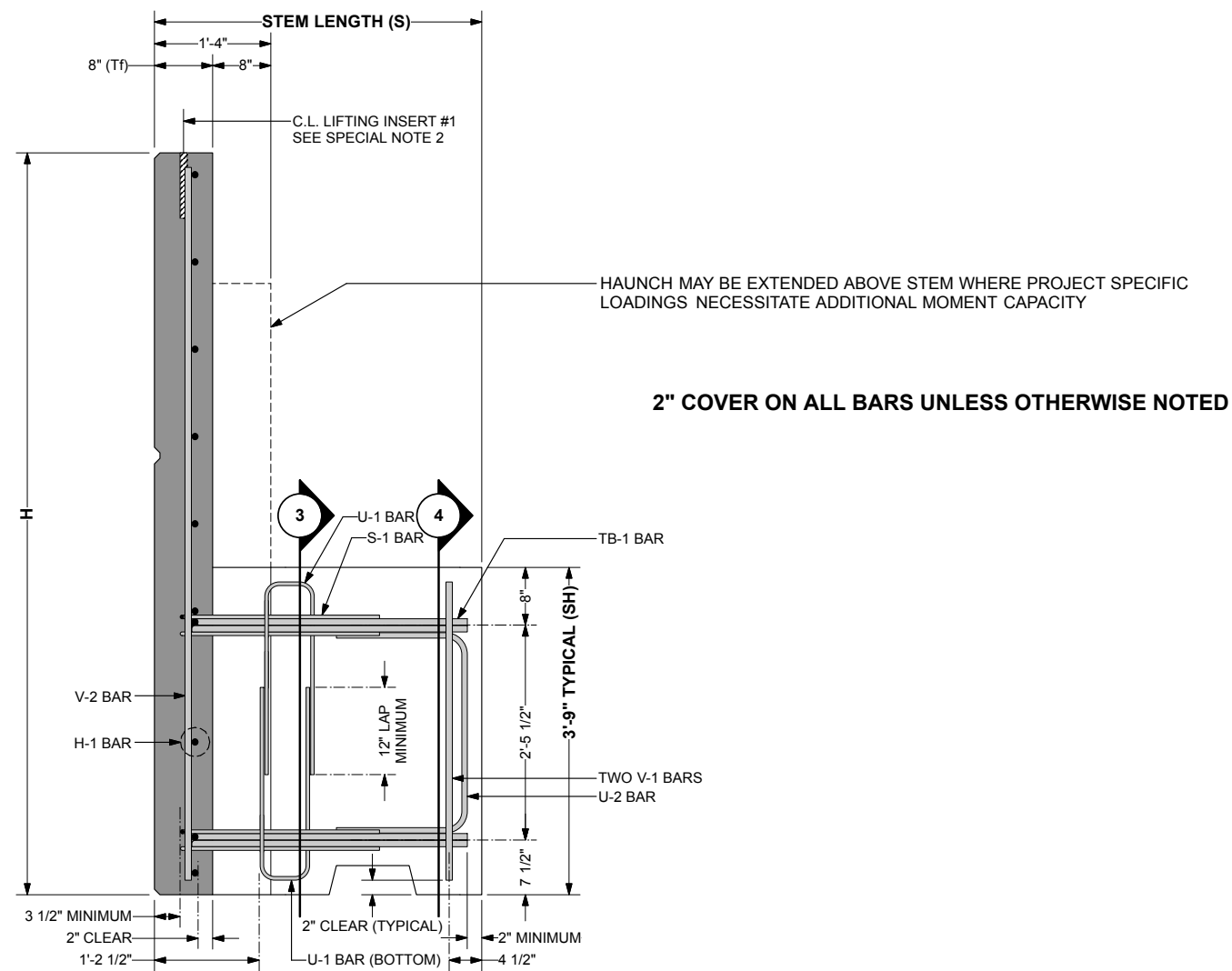
SHEET 58 OF 67

87-402 PE

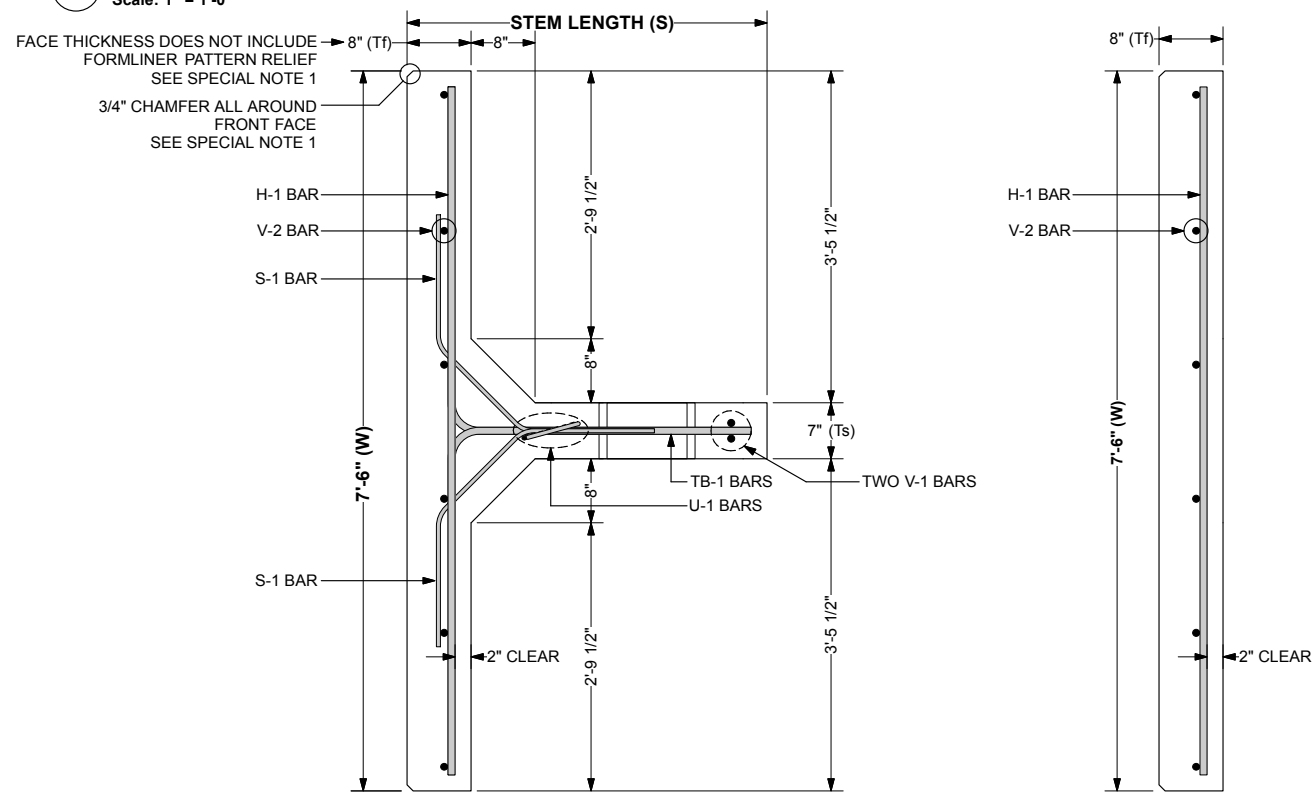
5/9/2013

DATE: 04-08-13 TNC JOB #: TW3634 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:34:06 AM CAD FILE NAME: 057 S557 Rebar - RWY Std Top Cor 4.08 r0.vwx

CAD FILE NAME: 060 S560 Rebar - RWY Tqr Top Cnr 3.75 r0.wvx
 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:33:29 AM
 DATE: 04-08-13 TNC JOB #: TW3634

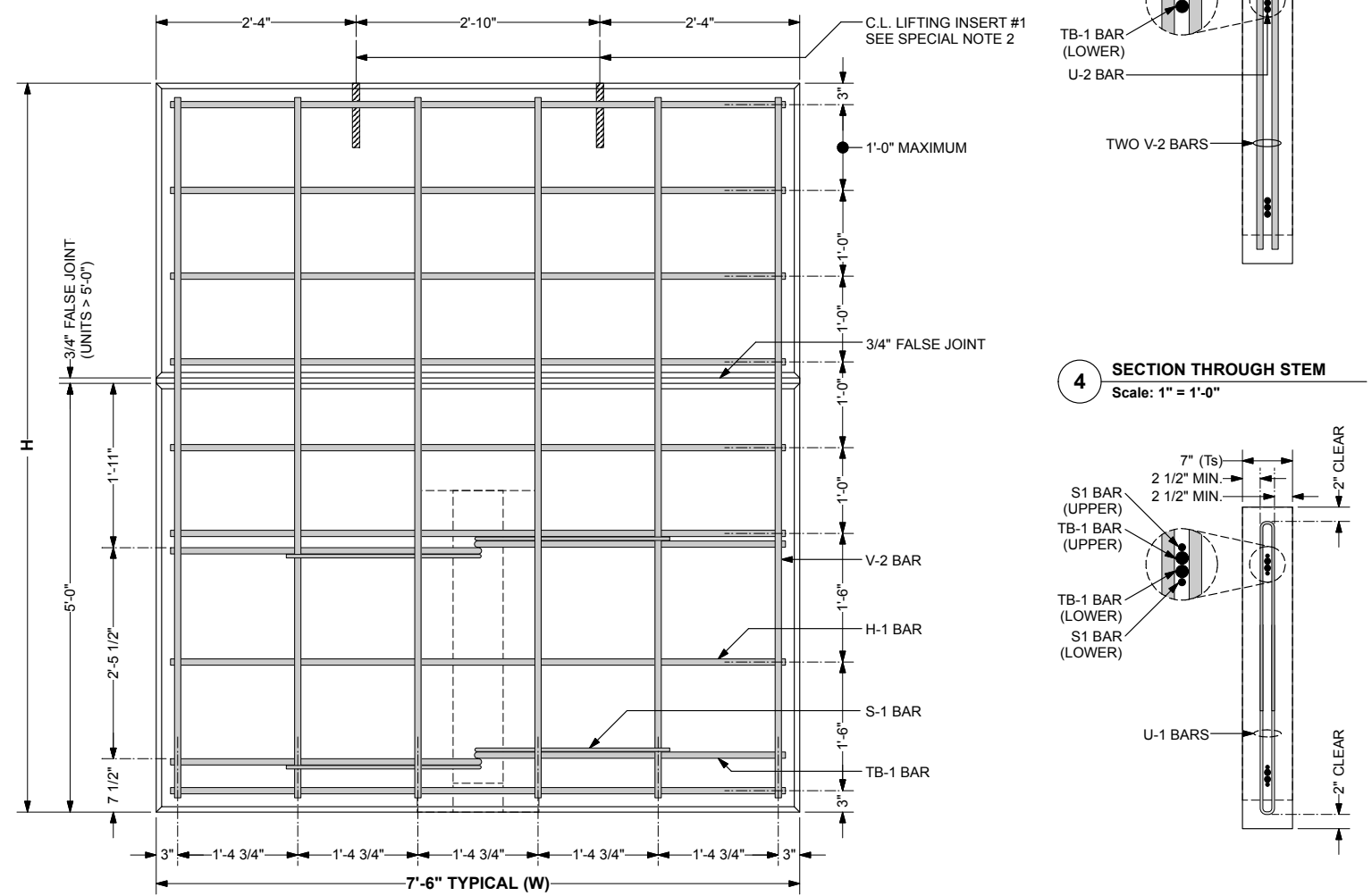


1 SIDE VIEW - THREE QUARTER TOP UNIT (8.5 x 7.5 x 3.75 Tqr Top Cnr SHOWN)
Scale: 1" = 1'-0"



5 PLAN VIEW AT STEM - THREE QUARTER TOP UNIT (3'-9" STEM SHOWN)
Scale: 1" = 1'-0"

6 PLAN VIEW - EXTENDED FACE PANEL
Scale: 1" = 1'-0"



2 FRONT VIEW - THREE QUARTER TOP UNIT (8.5 x 7.5 x 3.75 Tqr Top Cnr SHOWN)
Scale: 1" = 1'-0"
(U-1 BARS IN STEM OMITTED FOR CLARITY)

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

PA DOT DWG #87-402 PE (REVISION III)
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
THREE QUARTER TOP CORNER UNITS - 3'-9" STEM (I)

DESIGNER	DATE: 04-08-13	
THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	SCALE: AS NOTED	
	DESIGNED: JMC	
	DRAWN: CJW	
	CHECKED: CCG/KD	
	TNC JOB #: TW3634	
	TNC SHT #60 OF 67	

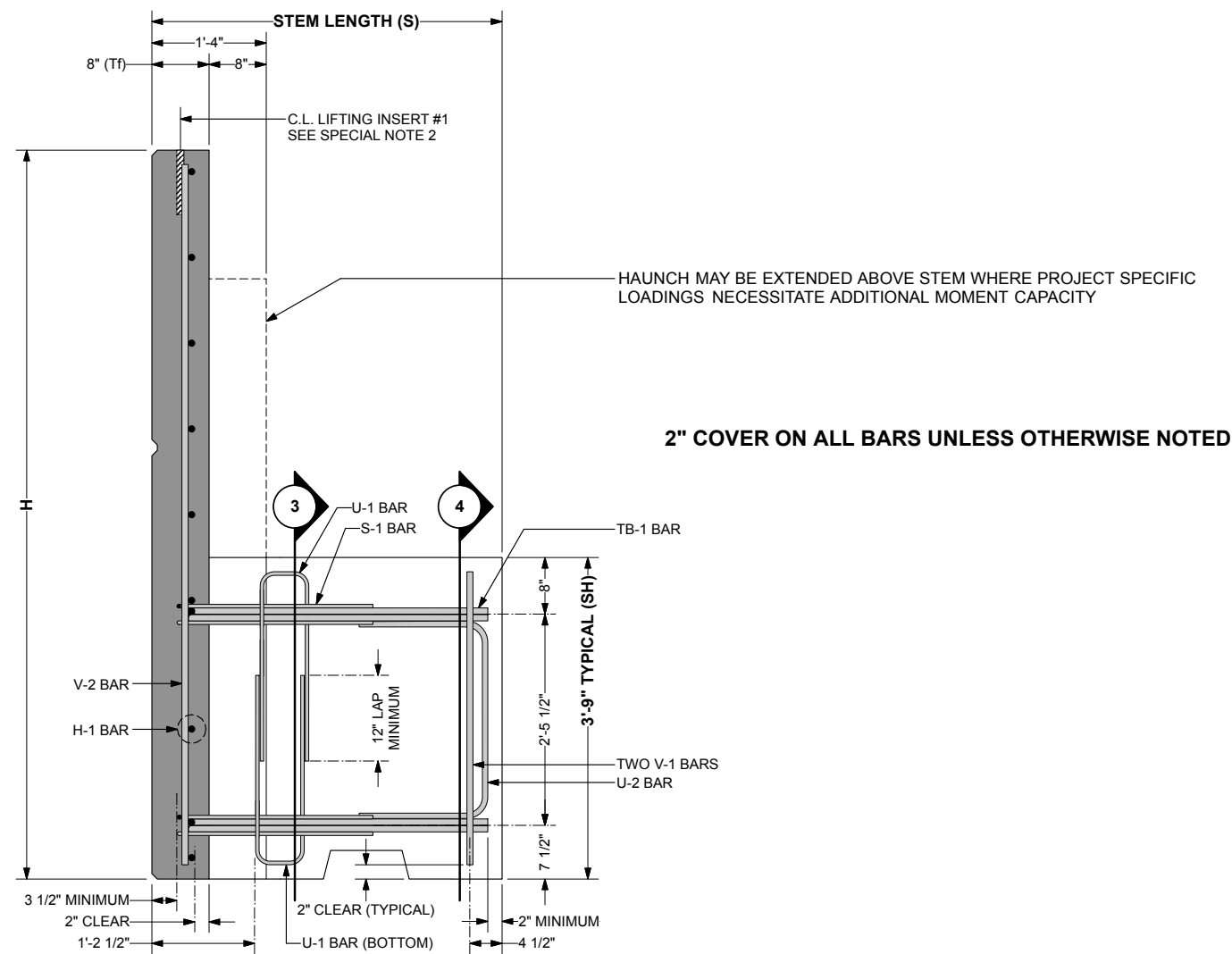
SHEET 60 OF 67

87-402 PE

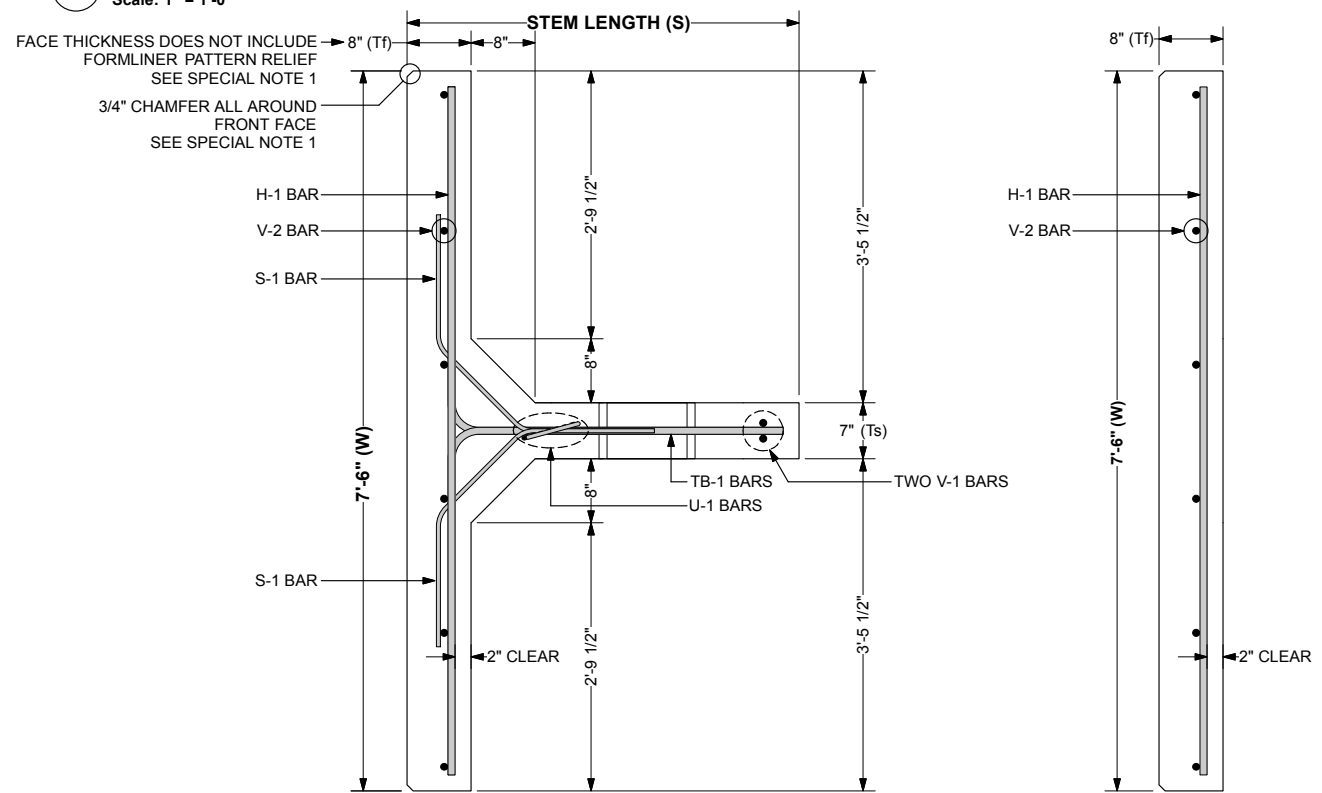
5/9/2013

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CAD FILE NAME: 062 S562 Rebar - RWY Tqr Top Cnr 4.08 r0.wvx
 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:32:52 AM
 DATE: 04-08-13 TNC JOB #: TW3634

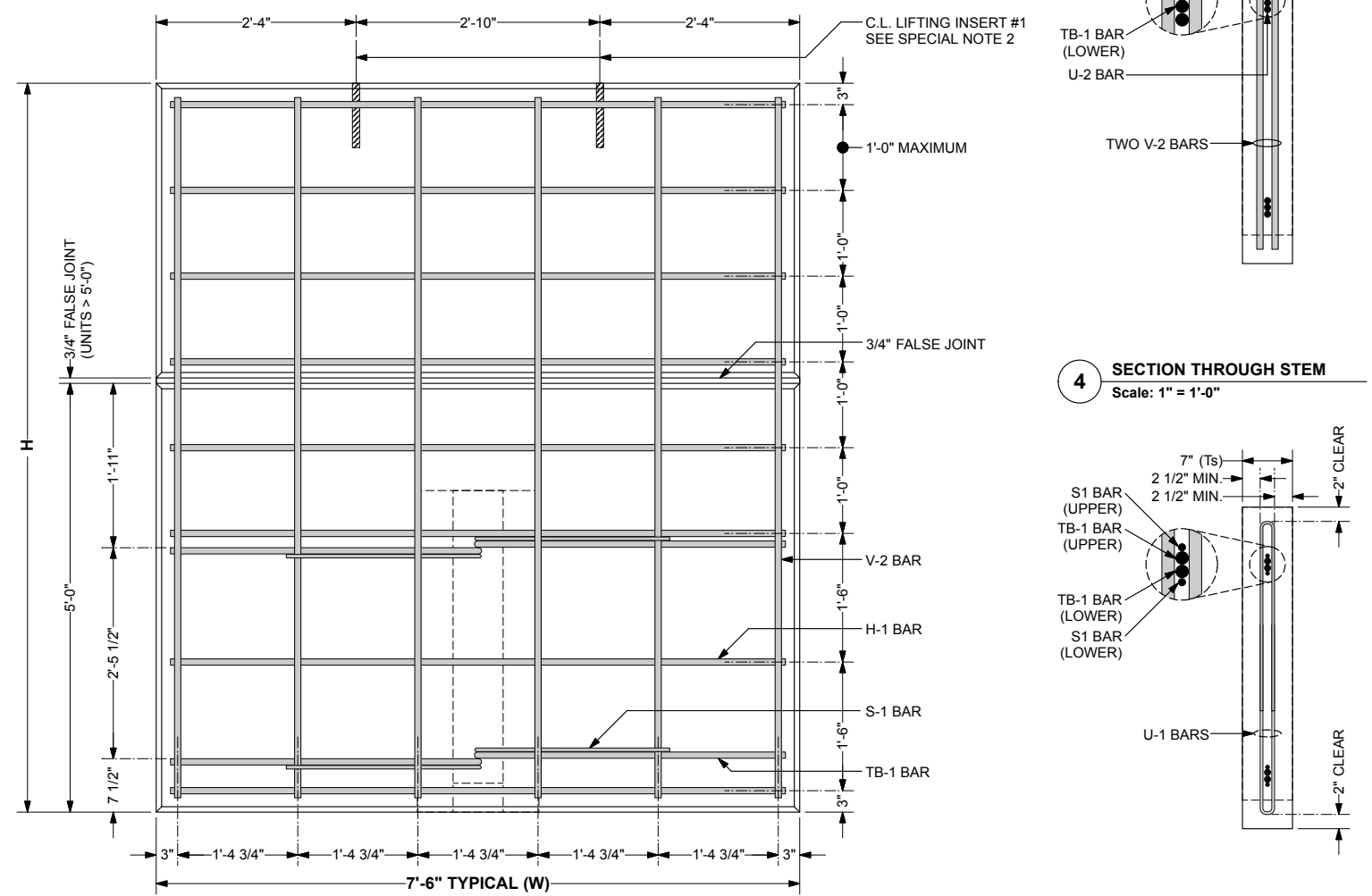


1 SIDE VIEW - THREE QUARTER TOP UNIT (8.5 x 7.5 x 4.08 Tqr Top Cnr SHOWN)
Scale: 1" = 1'-0"



5 PLAN VIEW AT STEM - THREE QUARTER TOP UNIT (4'-1" STEM SHOWN)
Scale: 1" = 1'-0"

6 PLAN VIEW - EXTENDED FACE PANEL
Scale: 1" = 1'-0"



2 FRONT VIEW - THREE QUARTER TOP UNIT (8.5 x 7.5 x 4.08 Tqr Top Cnr SHOWN)
Scale: 1" = 1'-0"
(U-1 BARS IN STEM OMITTED FOR CLARITY)

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

DESIGNER

THE NEEL COMPANY
8328-D TRAFORD LANE
SPRINGFIELD, VA 22152
PH: (703) 913-7858
FX: (703) 913-7859
Web: www.neelco.com

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DATE:	04-08-13
SCALE:	AS NOTED
DESIGNED:	JMC
DRAWN:	CJW
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	62 OF 67

PA DOT DWG #87-402 PE (REVISION III)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

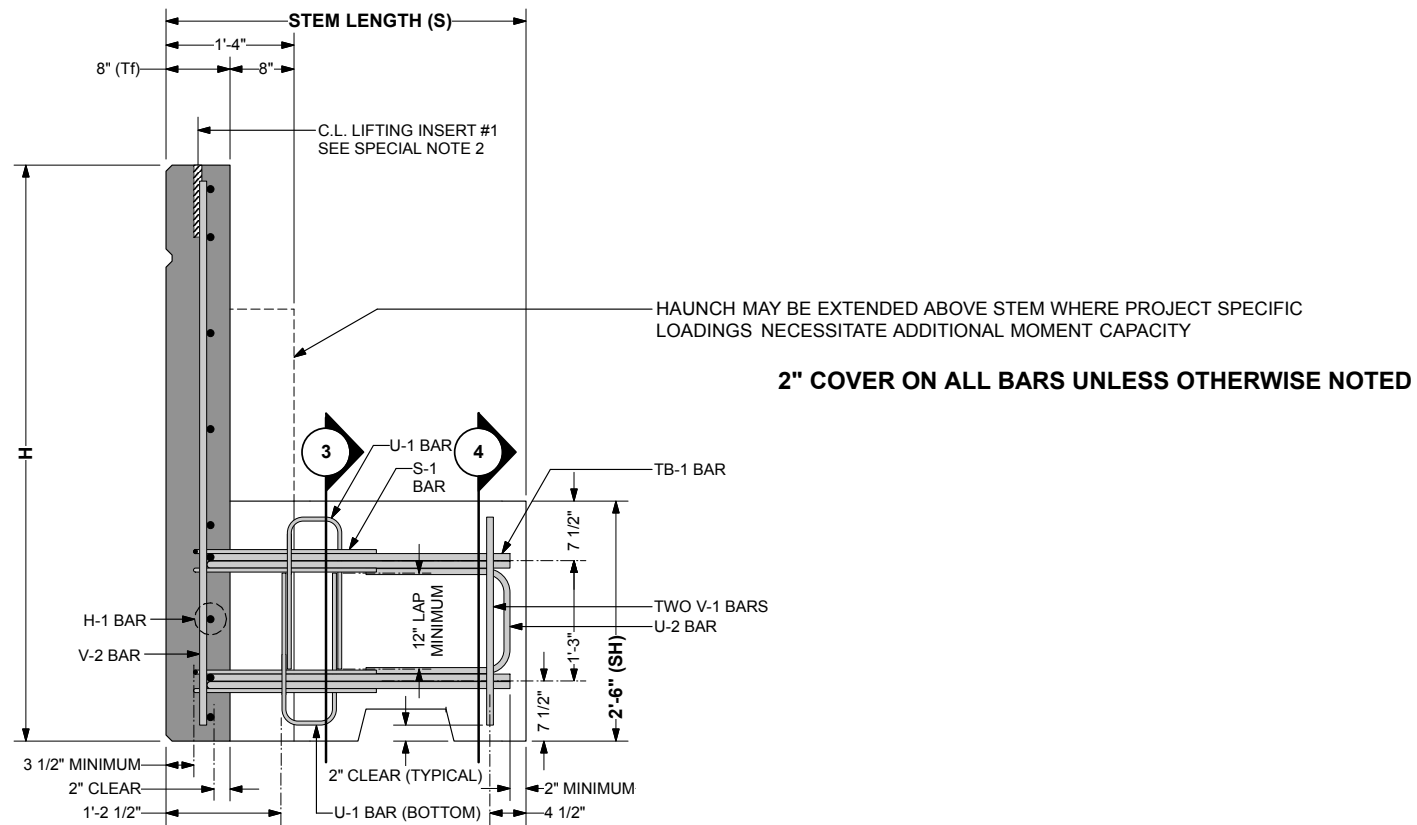
SHOP DRAWINGS
REBAR
THREE QUARTER TOP CORNER UNITS - 4'-1" STEM (I)

SHEET 62 OF 67

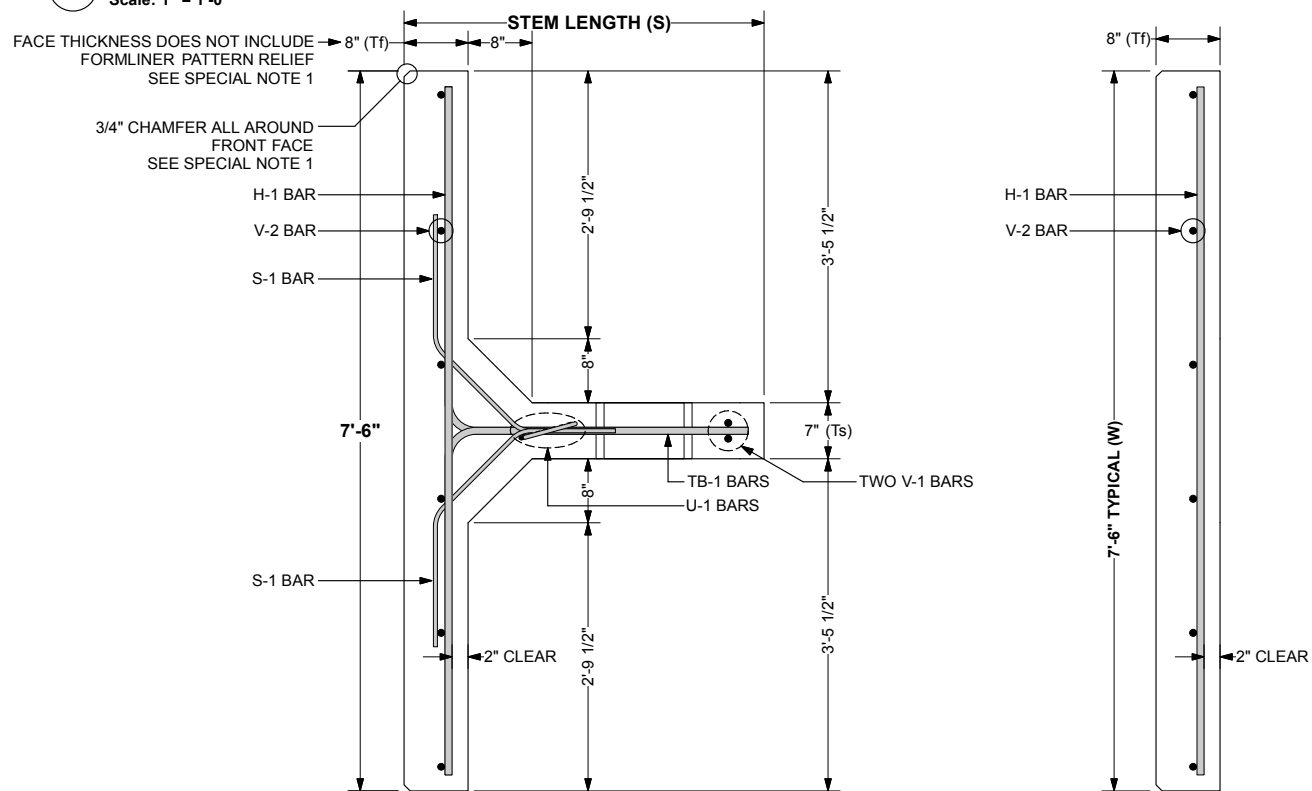
87-402 PE

5/9/2013

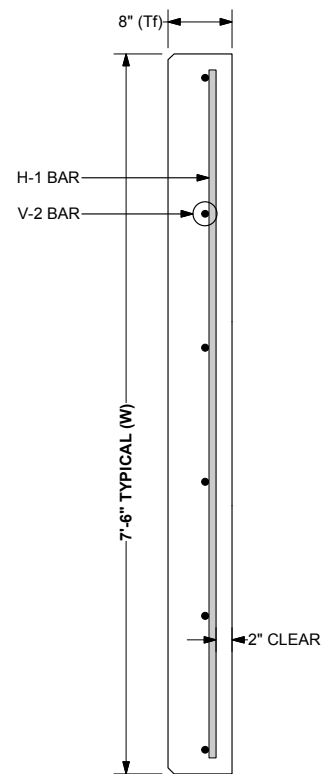
CAD FILE NAME: 064 S664 Rebar - RWY Hlf Top Cnr 3.75 r0.vwx
 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:32:16 AM
 DATE: 04-08-13
 TNC JOB #: TW3634



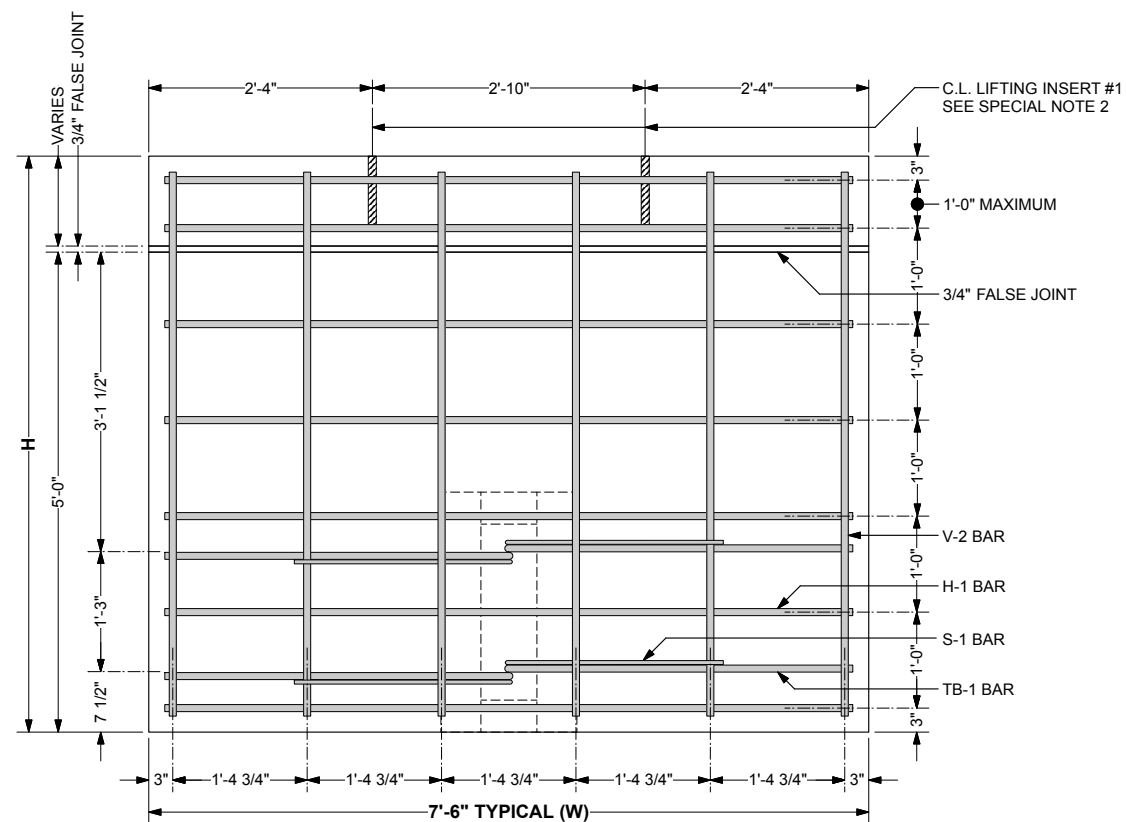
1 SIDE VIEW - HALF TOP UNIT (6.0 x 7.5 x 3.75 Hlf Top Cnr SHOWN)
Scale: 1" = 1'-0"



5 PLAN VIEW AT STEM - HALF TOP UNIT (3'-9" STEM SHOWN)
Scale: 1" = 1'-0"

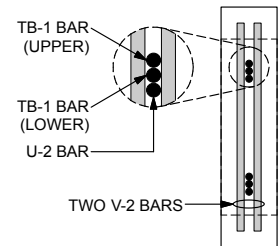


6 PLAN VIEW - EXTENDED FACE PANEL
Scale: 1" = 1'-0"

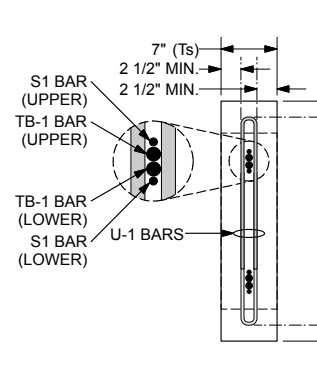


2 FRONT VIEW - HALF TOP UNIT (6.0 x 7.5 x 3.75 Hlf Top Cnr SHOWN)
Scale: 1" = 1'-0"

(U-1 BARS IN STEM OMITTED FOR CLARITY)



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



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

PA DOT DWG #87-402 PE (REVISION III)
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
HALF TOP CORNER UNITS - 3'-9" STEM (I)

DESIGNER	
 THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com	
DATE: 04-08-13	SCALE: AS NOTED
DESIGNED: JMC	DRAWN: CJW
CHECKED: CCG/KD	TNC JOB #: TW3634
TNC SHT #64 OF 67	TNC SHT #64 OF 67

5/9/2013

SHEET 64 OF 67

87-402 PE

T-WALL UNIT PROPERTIES

Table with 9 columns: UNIT TYPE, H, W, S, Tt, SH, VOLUME*, WEIGHT*. Lists properties for various Hif Top Cnr units.

* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 8" FACE THICKNESS (Tf)
FORMLINER FINISHES MAY INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

LIFTING INSERT DATA

Table with 4 columns: UNIT TYPE, DISTANCE TO CENTROID FROM FRONT FACE, DISTANCE TO INSERT #1 FROM FRONT FACE, DISTANCE TO INSERT #2 FROM FRONT FACE.

SPECIAL NOTES:

- 1. FRONT FACE OF T-WALL® UNITS FINISH TREATMENT: PER CONTRACT DRAWINGS AND SPECS. MINIMUM FRONT FACE THICKNESS SHALL BE 8"
2. LIFTING INSERTS: MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.

GENERAL NOTES:

- 1. PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 5th EDITION, 2010 WITH INTERIM REVISIONS
2. MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0.
3. ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.

REBAR SCHEDULES

3.0x7.5x3.75 Hif Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Lists rebar details for 3.0x7.5x3.75 Hif Top Cnr.

REBAR SCHEDULES

3.5x7.5x3.75 Hif Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Lists rebar details for 3.5x7.5x3.75 Hif Top Cnr.

REBAR SCHEDULES

4.0x7.5x3.75 Hif Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Lists rebar details for 4.0x7.5x3.75 Hif Top Cnr.

REBAR SCHEDULES

4.5x7.5x3.75 Hif Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Lists rebar details for 4.5x7.5x3.75 Hif Top Cnr.

REBAR SCHEDULES

5.0x7.5x3.75 Hif Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Lists rebar details for 5.0x7.5x3.75 Hif Top Cnr.

REBAR SCHEDULES

REBAR SCHEDULES

5.5x7.5x3.75 Hif Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Lists rebar details for 5.5x7.5x3.75 Hif Top Cnr.

REBAR SCHEDULES

6.0x7.5x3.75 Hif Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Lists rebar details for 6.0x7.5x3.75 Hif Top Cnr.

REBAR SCHEDULES

6.5x7.5x3.75 Hif Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Lists rebar details for 6.5x7.5x3.75 Hif Top Cnr.

REBAR SCHEDULES

7.0x7.5x3.75 Hif Top Cnr

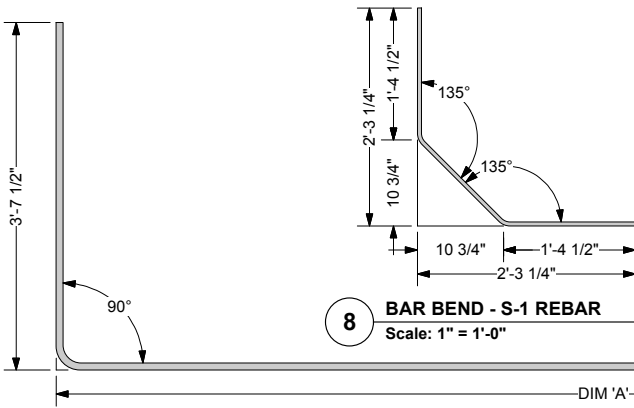
Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Lists rebar details for 7.0x7.5x3.75 Hif Top Cnr.

REBAR SCHEDULES

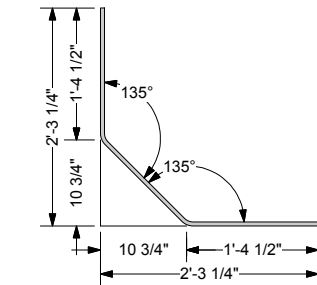
7.5x7.5x3.75 Hif Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Lists rebar details for 7.5x7.5x3.75 Hif Top Cnr.

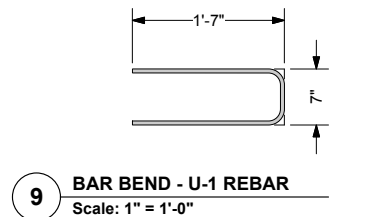
REBAR SCHEDULES



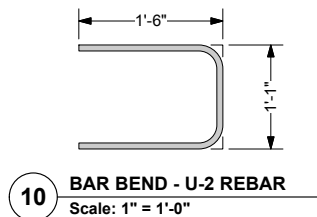
7 BAR BEND - TB-1 REBAR Scale: 1" = 1'-0"



8 BAR BEND - S-1 REBAR Scale: 1" = 1'-0"



9 BAR BEND - U-1 REBAR Scale: 1" = 1'-0"



10 BAR BEND - U-2 REBAR Scale: 1" = 1'-0"

5/9/2013

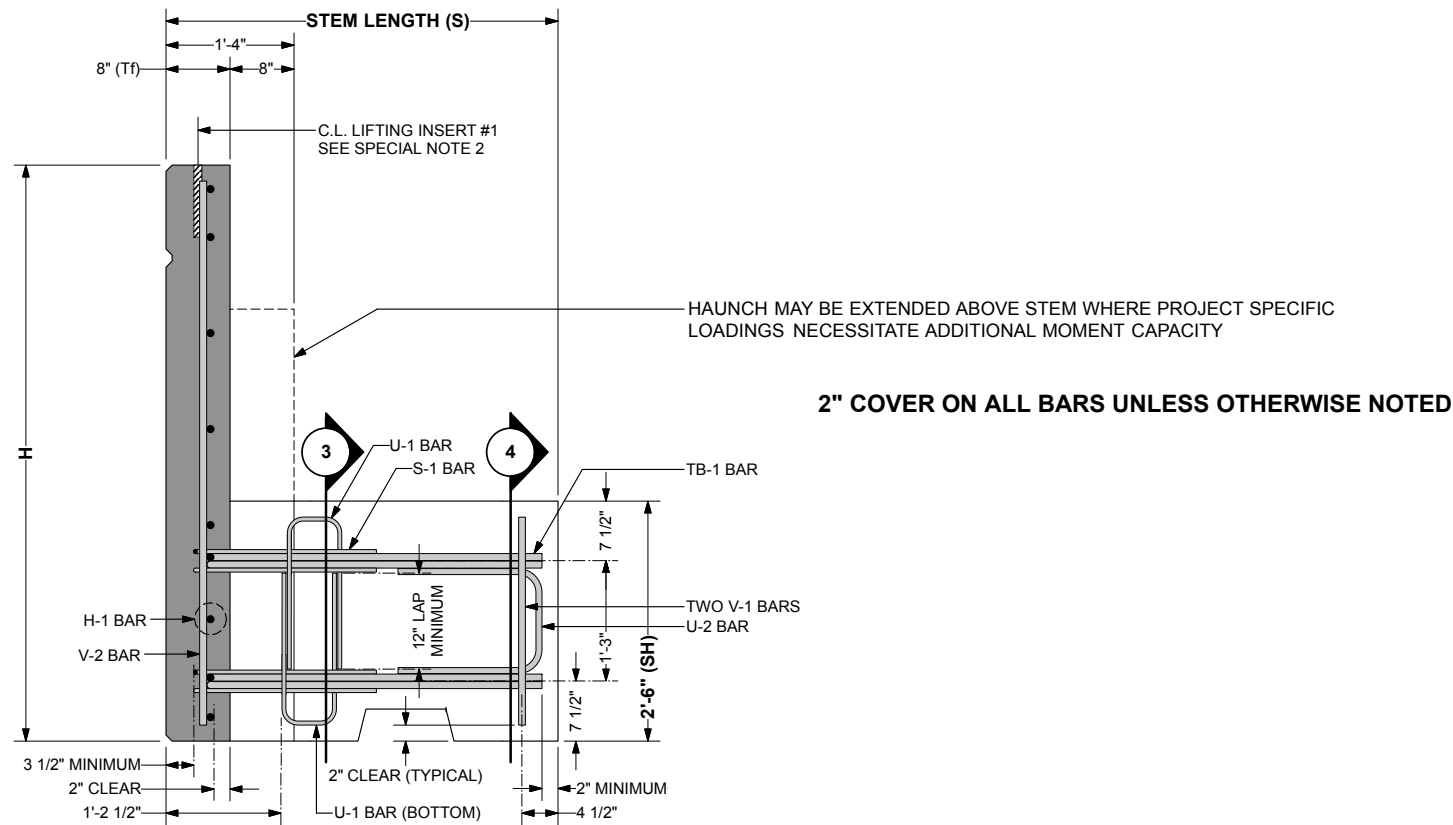
DESIGNER THE NEEL COMPANY 8328-D TRAFORD LANE SPRINGFIELD, VA 22152 PH: (703) 913-7858 FX: (703) 913-7859 Web: www.neelco.com

Table with 2 columns: Field, Value. DATE: 04-08-13, SCALE: AS NOTED, DESIGNED: JMC, DRAWN: CJW, CHECKED: CCG/KD, TNC JOB #: TW3634, TNC SHT #65 OF 67

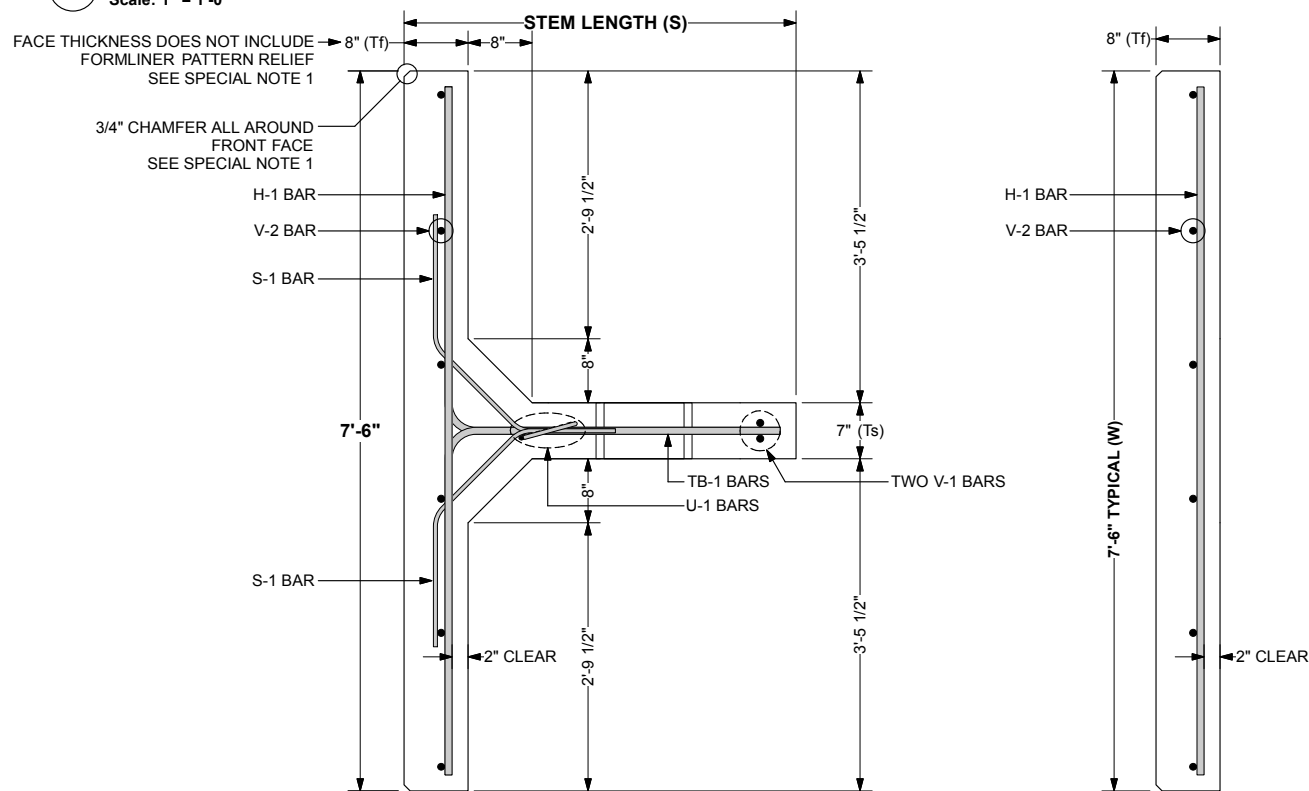
PA DOT DWG #87-402 PE (REVISION III) COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY T-WALL® STANDARDS PREFABRICATED T-WALL® RETAINING WALL SYSTEM SHOP DRAWINGS REBAR HALF TOP CORNER UNITS - 3'-9" STEM (II) SHEET 65 OF 67 87-402 PE

CAD FILE NAME: 064_S664_Rebar - RWY Hif Top Cnr 3.75 10.vwx PLOT DATE AND TIME: Tuesday, April 9, 2013 11:32:16 AM DATE: 04-08-13 TNC JOB #: TW3634

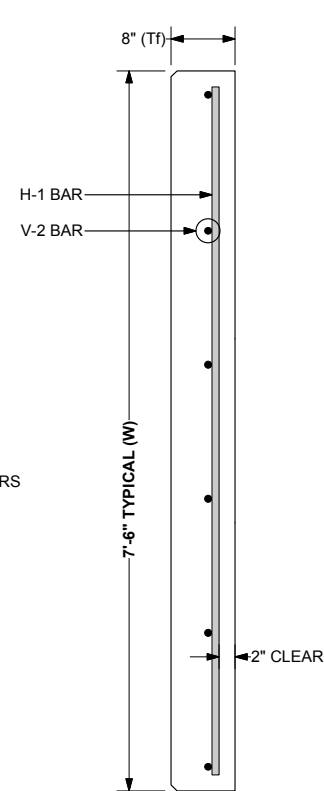
CAD FILE NAME: 066 S666 Rebar - RWY Hlf Top Cnr 4.08 r0.vwx
 PLOT DATE AND TIME: Tuesday, April 9, 2013 11:31:34 AM
 DATE: 04-08-13
 TNC JOB #: TW3634



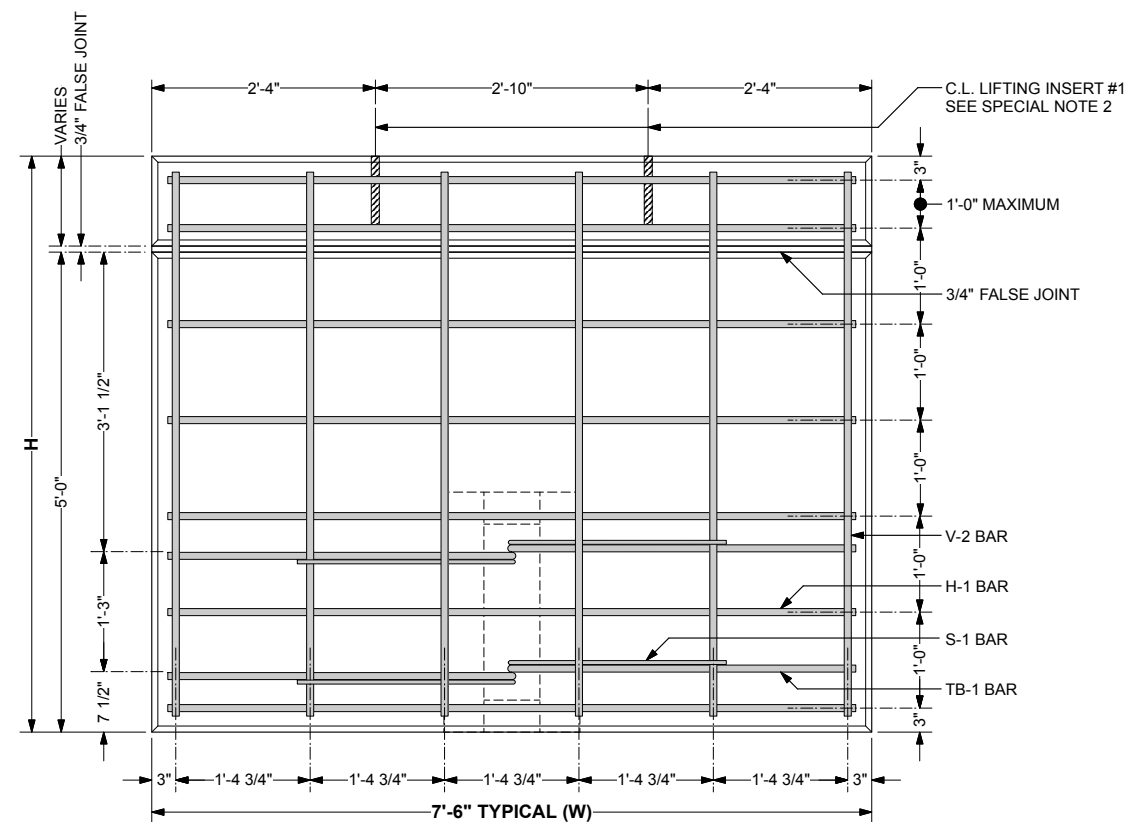
1 SIDE VIEW - HALF TOP UNIT (6.0 x 7.5 x 4.08 Hlf Top Cnr SHOWN)
Scale: 1" = 1'-0"



5 PLAN VIEW AT STEM - HALF TOP UNIT (4'-1" STEM SHOWN)
Scale: 1" = 1'-0"

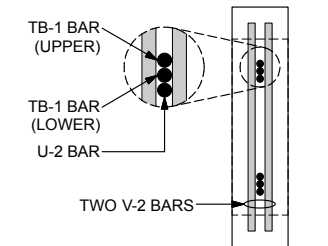


6 PLAN VIEW - EXTENDED FACE PANEL
Scale: 1" = 1'-0"

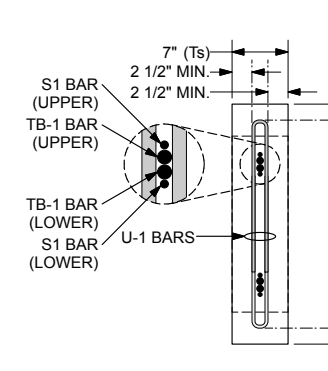


2 FRONT VIEW - HALF TOP UNIT (6.0 x 7.5 x 4.08 Hlf Top Cnr SHOWN)
Scale: 1" = 1'-0"

(U-1 BARS IN STEM OMITTED FOR CLARITY)



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



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

PA DOT DWG #87-402 PE (REVISION III)
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
 BUREAU OF PROJECT DELIVERY

T-WALL® STANDARDS
PREFABRICATED T-WALL® RETAINING WALL SYSTEM

SHOP DRAWINGS
REBAR
HALF TOP CORNER UNITS - 4'-1" STEM (I)

DESIGNER

THE NEEL COMPANY
 8328-D TRAFORD LANE
 SPRINGFIELD, VA 22152
 PH: (703) 913-7858
 FX: (703) 913-7859
 Web: www.neelco.com

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DATE:	04-08-13
SCALE:	AS NOTED
DESIGNED:	JMC
DRAWN:	CJW
CHECKED:	CCG/KD
TNC JOB #:	TW3634
TNC SHT #:	66 OF 67

SHEET 66 OF 67

87-402 PE

5/9/2013

T-WALL UNIT PROPERTIES

Table with 8 columns: UNIT TYPE, H, W, S, TF, SH, VOLUME, WEIGHT. Lists various T-Wall unit sizes and their dimensions and weights.

* VOLUMES AND WEIGHTS ON THIS TABLE ARE BASED ON 8" FACE THICKNESS (TF) FORMLINER FINISHES MAY INCREASE FACE THICKNESS, VOLUME AND WEIGHT.

LIFTING INSERT DATA

Table with 4 columns: UNIT TYPE, DISTANCE TO CENTROID FROM FRONT FACE, DISTANCE TO INSERT #1 FROM FRONT FACE, DISTANCE TO INSERT #2 FROM FRONT FACE. Provides lift insert data for various unit types.

SPECIAL NOTES:

- 1. FRONT FACE OF T-WALL® UNITS FINISH TREATMENT:
• PER CONTRACT DRAWINGS AND SPECS.
• MINIMUM FRONT FACE THICKNESS SHALL BE 8"
2. LIFTING INSERTS:
• MEADOW BURKE RAPID LIFT RL-22 LIFTING INSERT WITH RL-32 REBAR OR DAYTON SUPERIOR P-53 5-TON SWIFT LIFT EYE WITH P-60 TENSION BAR.
• 8000 LBS (4 TONS) MINIMUM RATED WORKING LOAD CAPACITY.
• REFER TO LIFTING INSERT DATA TABLE FOR INSERT LOCATIONS.
• LIFTING INSERTS TO BE GALVANIZED.

GENERAL NOTES:

- 1. PRIMARY REFERENCE: AASHTO LRFD BRIDGE SPECIFICATIONS, 5th EDITION, 2010 WITH INTERIM REVISIONS
2. MINIMUM CONCRETE COVER IS DESIGNED FOR 2" ON ALL BARS. TOLERANCES PER CONSTRUCTION SPECIFICATIONS SECTION 2.0.
3. ALL MATERIAL AND TOLERANCES IN ACCORDS TO T-WALL® CONSTRUCTION SPECIFICATIONS, SECTION 2.0 MATERIALS.
4. REBAR:
• SEE CONSTRUCTION SPECIFICATION, SECTION 2.0 MATERIALS OR PER CONTRACT DRAWINGS AND SPECS.
5. CONCRETE:
• F'c = 5000 psi @ 28 DAYS

REBAR SCHEDULES

3.0x7.5x4.08 Hlf Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Rebar schedule for 3.0x7.5x4.08 Hlf Top Cnr.

REBAR SCHEDULES

3.5x7.5x4.08 Hlf Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Rebar schedule for 3.5x7.5x4.08 Hlf Top Cnr.

REBAR SCHEDULES

4.0x7.5x4.08 Hlf Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Rebar schedule for 4.0x7.5x4.08 Hlf Top Cnr.

REBAR SCHEDULES

4.5x7.5x4.08 Hlf Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Rebar schedule for 4.5x7.5x4.08 Hlf Top Cnr.

REBAR SCHEDULES

5.0x7.5x4.08 Hlf Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Rebar schedule for 5.0x7.5x4.08 Hlf Top Cnr.

REBAR SCHEDULES

REBAR SCHEDULES

5.5x7.5x4.08 Hlf Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Rebar schedule for 5.5x7.5x4.08 Hlf Top Cnr.

REBAR SCHEDULES

6.0x7.5x4.08 Hlf Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Rebar schedule for 6.0x7.5x4.08 Hlf Top Cnr.

REBAR SCHEDULES

6.5x7.5x4.08 Hlf Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Rebar schedule for 6.5x7.5x4.08 Hlf Top Cnr.

REBAR SCHEDULES

7.0x7.5x4.08 Hlf Top Cnr

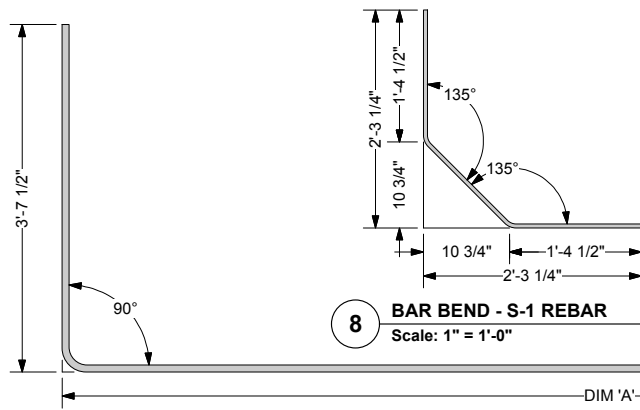
Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Rebar schedule for 7.0x7.5x4.08 Hlf Top Cnr.

REBAR SCHEDULES

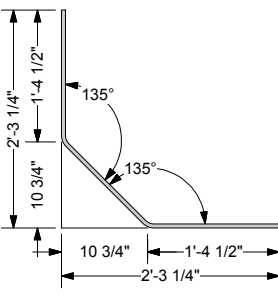
7.5x7.5x4.08 Hlf Top Cnr

Table with 7 columns: Unit Dims, Bar Mark, Qty, Size, Length, Dim "A", Bar Weight, Remarks. Rebar schedule for 7.5x7.5x4.08 Hlf Top Cnr.

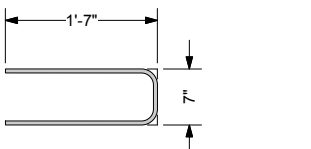
REBAR SCHEDULES



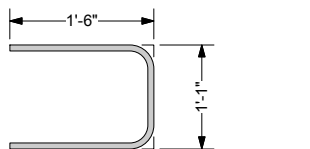
7 BAR BEND - TB-1 REBAR Scale: 1" = 1'-0"



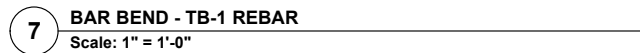
8 BAR BEND - S-1 REBAR Scale: 1" = 1'-0"



9 BAR BEND - U-1 REBAR Scale: 1" = 1'-0"



10 BAR BEND - U-2 REBAR Scale: 1" = 1'-0"



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

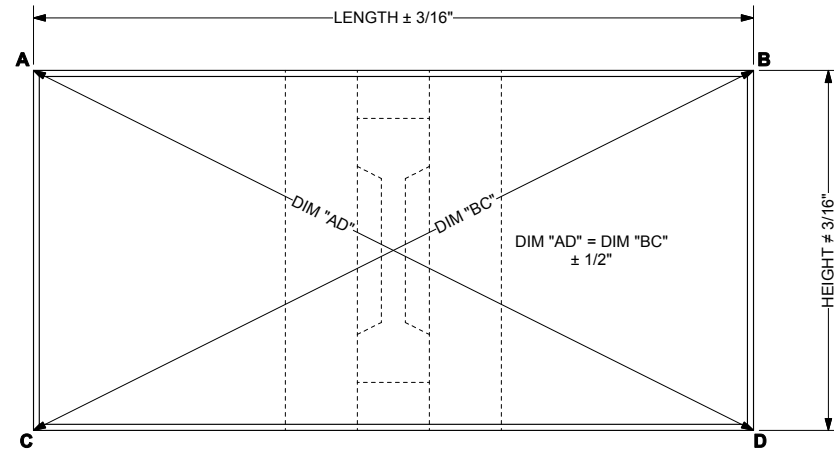
DESIGNER: THE NEEL COMPANY, 8328-D TRAFORD LANE, SPRINGFIELD, VA 22152. Includes contact info and a disclaimer: 'This drawing contains information proprietary to The Neel Company. The Neel Company is the exclusive licensee of the T-WALL® patent. © 2013, The Neel Company'

Table with 2 columns: Field, Value. DATE: 04-08-13, SCALE: AS NOTED, DESIGNED: JMC, DRAWN: CJW, CHECKED: CCG/KD, TNC JOB #: TW3634, TNC SHT #67 OF 67

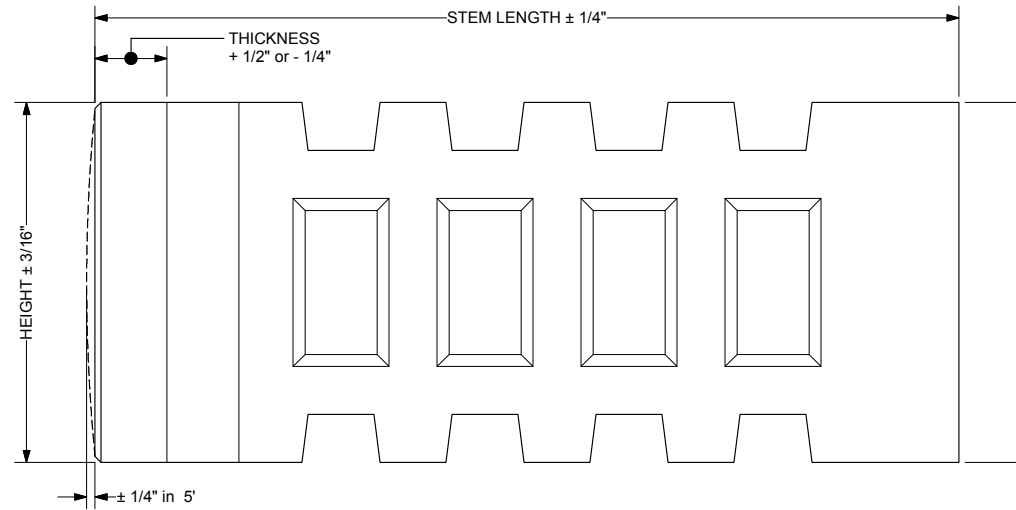
PA DOT DWG #87-402 PE (REVISION III) COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION BUREAU OF PROJECT DELIVERY T-WALL® STANDARDS PREFABRICATED T-WALL® RETAINING WALL SYSTEM SHOP DRAWINGS REBAR HALF TOP CORNER UNITS - 4'-1" STEM (II) SHEET 67 OF 67 87-402 PE

5/9/2013

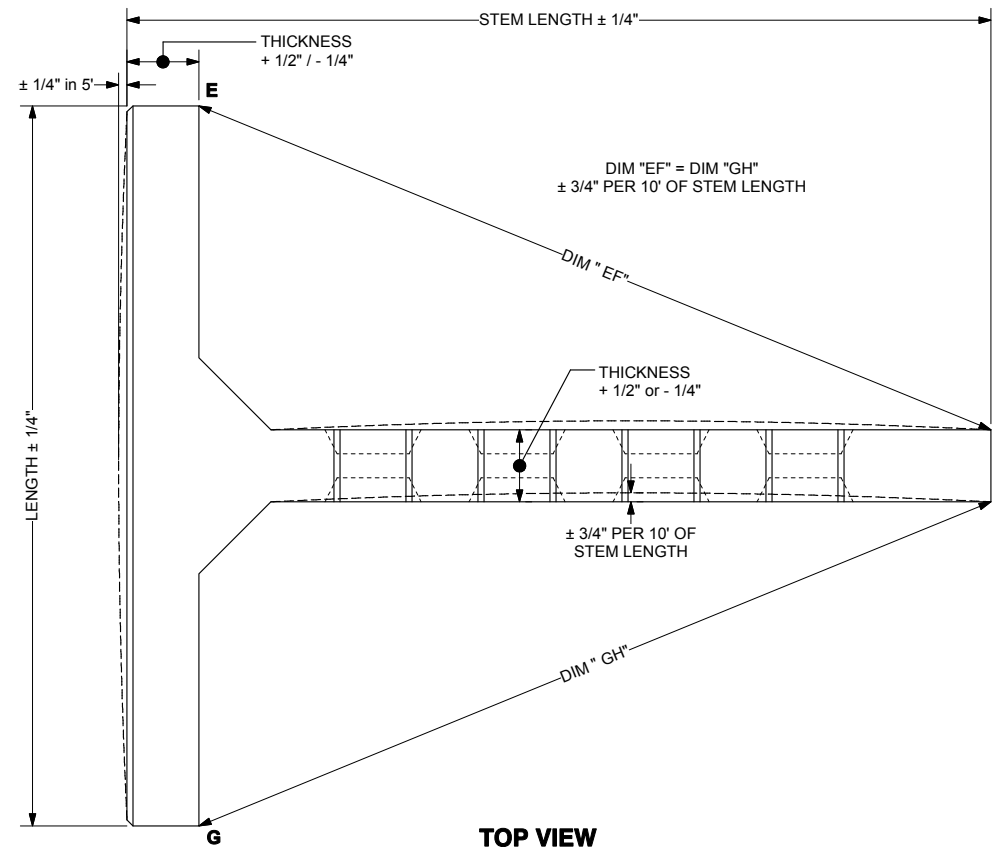
CAD FILE NAME: 066 S566 Rebar - RWY Hlf Top Cnr 4.08 10-wx PLOT DATE AND TIME: Tuesday, April 9, 2013 11:31:34 AM DATE: 04-08-13 TNC JOB #: TW3634



FRONT VIEW
SCALE: 1 1/2" = 1'-0"



SIDE VIEW
SCALE: 1 1/2" = 1'-0"



TOP VIEW
SCALE: 1 1/2" = 1'-0"

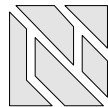
5/9/2013

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. © 2006 The Neel Company

PRECASTER: PROJECT #:
CONTRACTOR: PROJECT #:

DESIGNER



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PH: (703) 913-7858
FX: (703) 913-7859
WEB: WWW.NEELCO.COM
PROJECT #: STD DWG

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

REVISIONS

Inspection Dimensional Tolerances

SCALE:	NOT TO SCALE
DATE:	10/31/06
DESIGNED BY:	CCG
DRAWN BY:	CCG
CHECKED BY:	TCN
SHEET:	1 OF 1