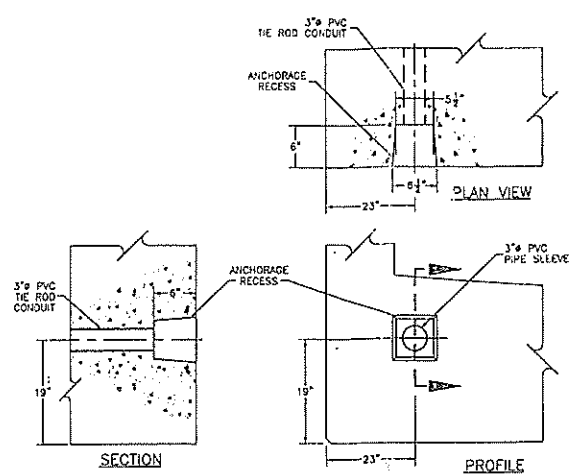
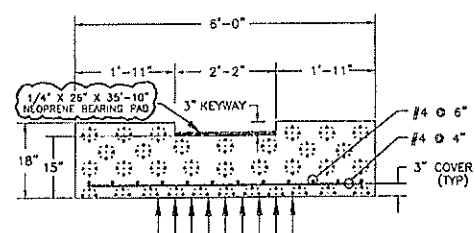


NOTES:  
 1. ALL STEEL COMPONENTS TO BE GALVANIZED AS PER ASTM A-123 OR A-153.  
 2. HEX NUTS TO BE TORQUED TO 200 FT./LBS. = 5000 PSI TENSION ON TIE ROD.  
 3. RECESSED POCKET TO BE FILLED WITH NON-SHRINK, NON-METALLIC GROUT.

SECTION T-T - TIE ROD DETAILS  
 NO SCALE



DETAIL-AR  
 ANCHORAGE RECESS & CONDUIT  
 NO SCALE

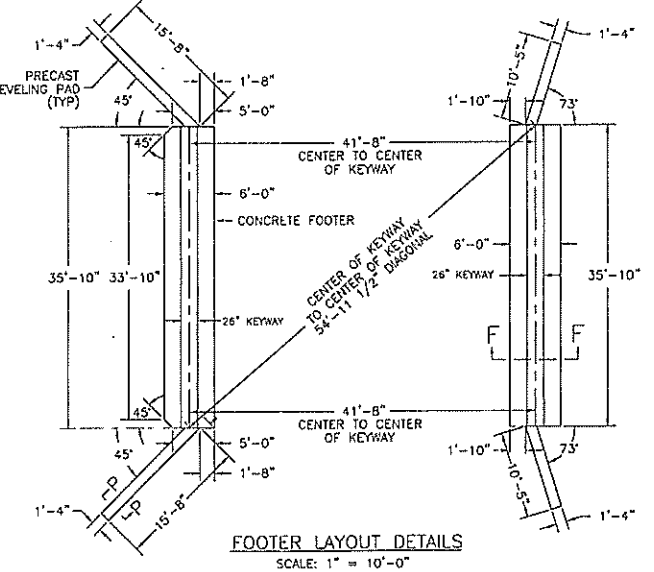


NOTE: A MINIMUM ALLOWABLE BEARING PRESSURE OF 3500 PSF WAS ASSUMED FOR FOOTER DESIGN.

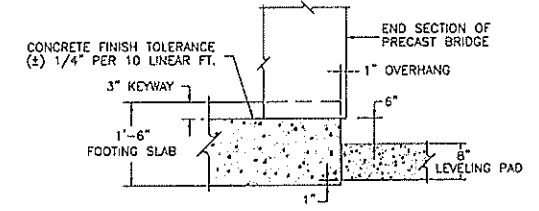
SECTION F-F

- NOTES:
- FOOTER SHALL BEAR ON COMPETENT ROCK OR FIRM, UNDISTURBED SOIL HAVING A MINIMUM ALLOWABLE BEARING PRESSURE OF 3500 PSF.
  - ANY WET, ORGANIC, OR OTHERWISE DELETERIOUS MATERIAL ENCOUNTERED SHALL BE REMOVED AND REPLACED WITH COMPACTED CRUSHED STONE.
  - FOOTER SHALL BE KEYPED INTO ROCK MIN. 12" WHERE POSSIBLE OR DOWELED TO ROCK USING #10 REBAR DOWELS, EMBEDDED MIN. 24", SET WITH NON-METALLIC, NON-SHRINK GROUT (MIN. 5000 PSI COMPRESSIVE STRENGTH). TWO ROWS OF DOWELS REQUIRED. DOWEL SPACING SHALL BE 24" C.C.
  - ALL CONCRETE SHALL BE 3000 PSI AT 28 DAYS.
  - ALL REIN. STEEL SHALL CONFORM TO ASTM A615, GRADE 60, DEFORMED BARS.
  - MIN. CLEAR CONCRETE COVER OVER ALL STEEL SHALL BE 3".

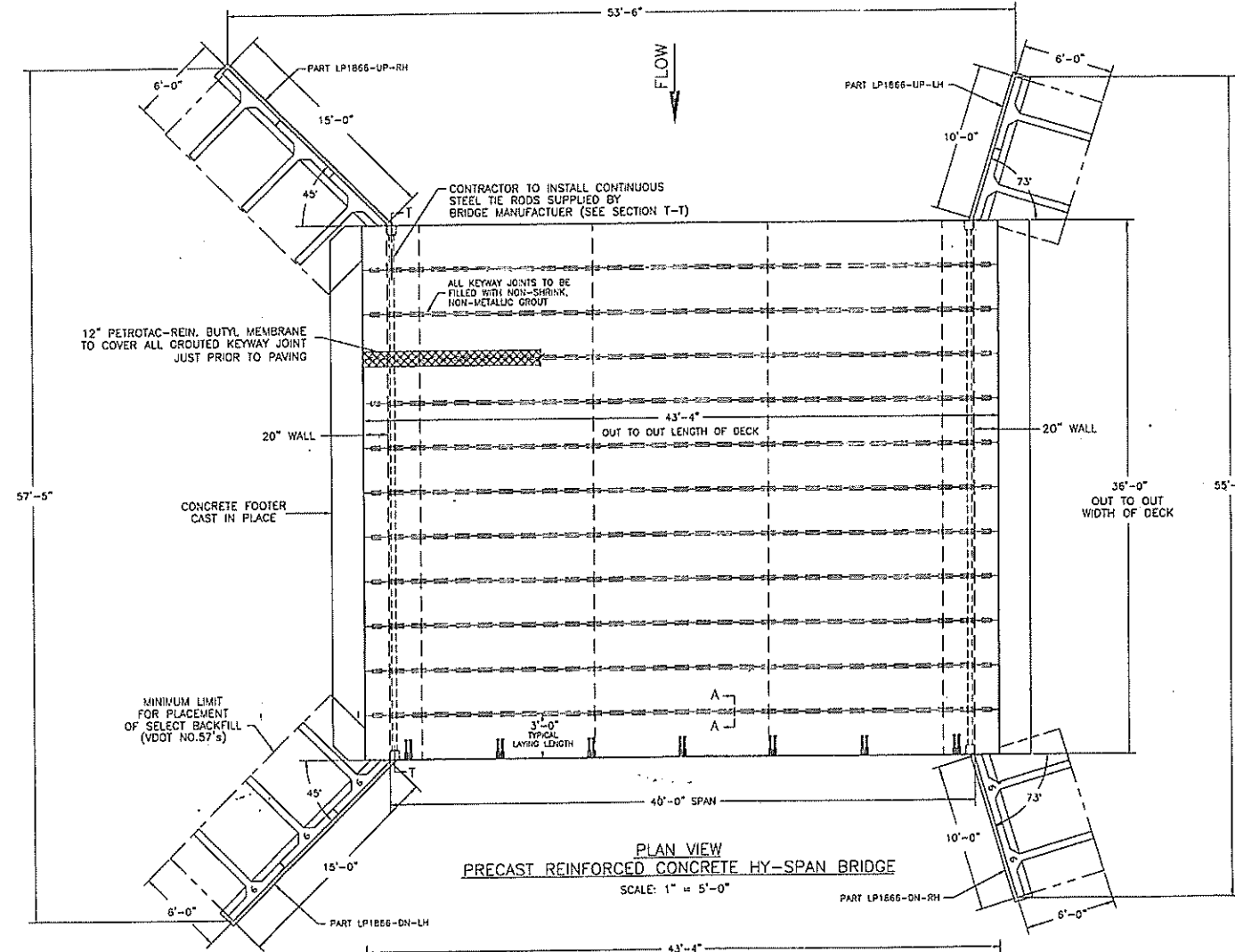
3000 PSI CONCRETE - APPROX. 24 C.Y. ROD.  
 REINFORCING STEEL - APPROX. 2000 LBS. ROD.



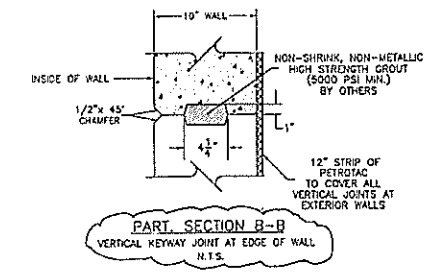
FOOTER LAYOUT DETAILS  
 SCALE: 1" = 10'-0"



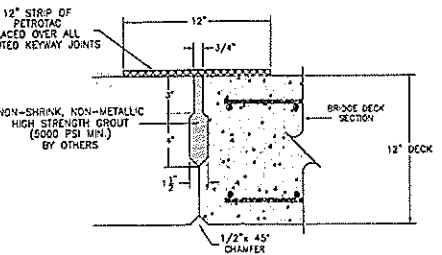
PARTIAL SECTION O-O  
 N.T.S.



PLAN VIEW  
 PRECAST REINFORCED CONCRETE HY-SPAN BRIDGE  
 SCALE: 1" = 5'-0"

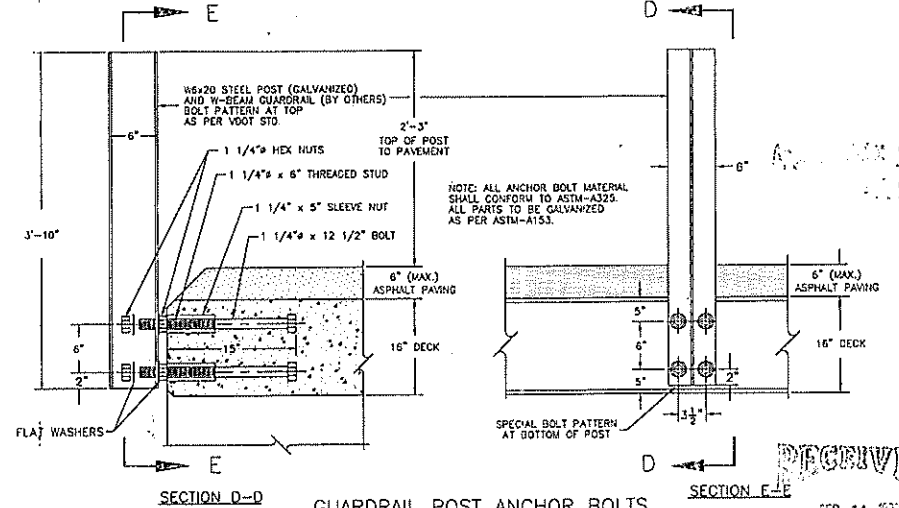


PART SECTION B-B  
 VERTICAL KEYWAY JOINT AT EDGE OF WALL  
 N.T.S.

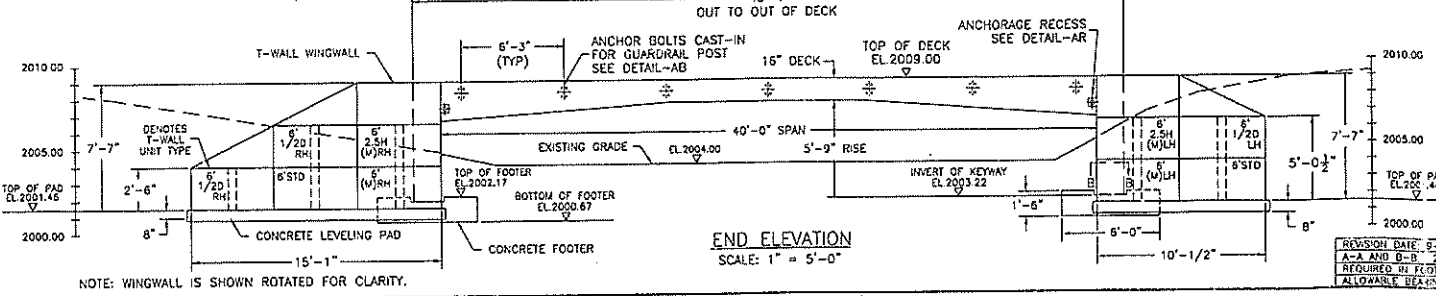


PART SECTION A-A  
 HORIZONTAL KEYWAY ALONG EDGE OF DECK  
 N.T.S.

GRAUTED KEYWAY  
 JOINT DETAILS



SECTION D-D  
 GUARDRAIL POST ANCHOR BOLTS  
 DETAIL-AB  
 NO SCALE



END ELEVATION  
 SCALE: 1" = 5'-0"

NOTE: WINGWALL IS SHOWN ROTATED FOR CLARITY.

REVISIONS ARE SHOWN ENCLOSED  
 REVISION DATE: 9-14-98  
 1. CORRECTED TITLE NOTATION FOR SHEETINGS  
 A-A AND B-B 7. ADDED NOTE PERTAINING TO SLOPE BEARING PAD  
 REQUIRED BY FLOOR KEYWAY 1.3. CORRECTED NOTE PERTAINING TO U.V.  
 ALLOWABLE BEARING PRESSURE FOR T-WALL STRUCTURES AT SECTION F-F

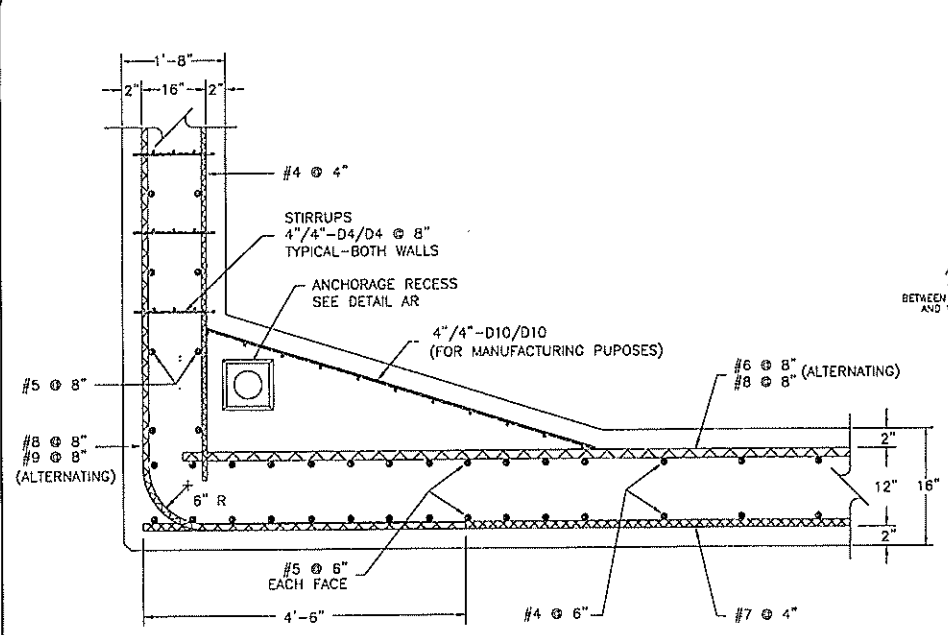


**PERMATILE**  
 CONCRETE PRODUCTS COMPANY  
 P.O. Box 2049, 100 Beacon Road, Bristol, VA/TN 24203  
 Phone: 800-662-5332 Fax: 540-669-2120

PROJECT: COLONIAL SQUARE - ABINGDON, VA. PROPOSED HY-SPAN® BRIDGE

DATE: 8-26-98	DESIGN BY: DES/ROW	DWG NO: HY406.75rev DWG
PRODUCT: HY-SPAN/T-WALL	DRAWN BY: ROW	SCALE: AS NOTED
CONTRACTOR: W-L CONST.	CHECKED BY: RAS	SHEET 1 OF 2
PERMATILE ORDER NO. 1866	CUSTOMER NO. 82	

**NOTICE**  
 This design, drawings, and information are provided as a service to the project owner, engineer, and contractor by Permatile Concrete Products Company. They are intended for use in the design and construction of the project in conjunction with Permatile Concrete Products Company's information and are not to be used for any other purpose without the express written consent of Permatile Concrete Products Company. Any unauthorized use or reproduction of this information is strictly prohibited.  
 If discrepancies between the supplied information and actual field conditions are encountered as site work progresses, these discrepancies must be reported to Permatile Concrete Products Company immediately for re-evaluation of the design. Permatile Concrete Products Company accepts no liability for designs based on inaccurate information supplied by others.  
 The T-WALL® Retaining Wall System is protected by U.S. Patent No. 4584294.  
 The HY-SPAN® Reclinable Culvert and Bridge System is protected by U.S. Patent No. B1 4564313.

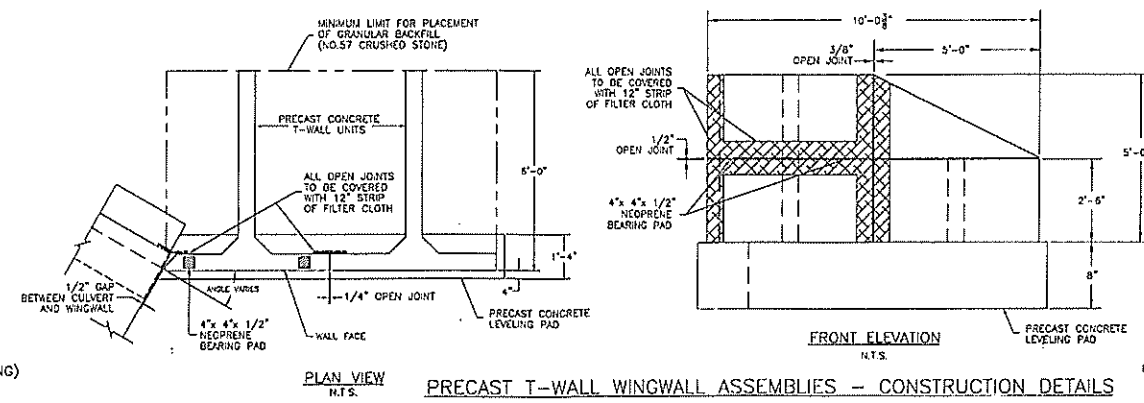


REINFORCING STEEL PLACEMENT DETAIL  
NOT TO SCALE

STEEL REINFORCEMENT SUMMARY				
LOCATION	STEEL AREA REQUIRED	COMPONENT	CROSS-SECTIONAL AREA (IN <sup>2</sup> /L.F.)	TOTAL STEEL AREA (IN <sup>2</sup> /L.F.)
As1 DECK-OUTSIDE FACE-(CIRC.)	1.80	#7 @ 4" = 1.80		1.80
As2 DECK-BOTH FACES-(LONG.) ABOVE HAUNCHES	.60	#5 @ 6" = .61		.61
As3 DECK-BOTH FACES-(LONG.) BETWEEN TIPS OF HAUNCHES	.35	#4 @ 6" = .40		.40
As4 DECK-INSIDE FACE-(CIRC.)	1.85	#6 @ 8" = .66 ALTERNATING #8 @ 8" = 1.18		1.84
As5 WALL-OUTSIDE FACE-(CIRC.)	2.63	#8 @ 8" = 1.18 ALTERNATING #9 @ 8" = 1.50		2.68
As6 WALL-BOTH FACES-(LONG.)	.43	#5 @ 8" = .46		.46
As7 WALL-INSIDE FACE-(CIRC.)	.48	#4 @ 4" = .60		.60

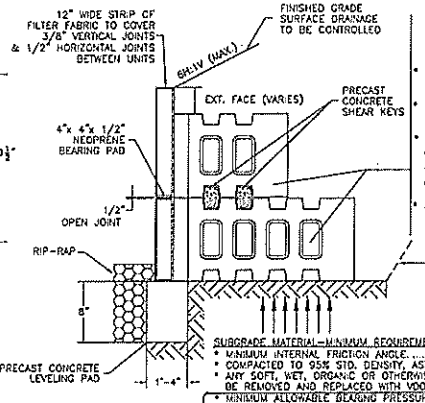
NOTE: STEEL REINFORCEMENT DESIGN PROVIDES 1080 LBS. STEEL/LINEAR FOOT.  
 DESIGN LOADING: AASHTO HS20 & ALTERNATE MILITARY LIVE LOAD (+) 3" ASPHALT PAVING (ALSO INCLUDES 70 PSF FUTURE WEARING SURFACE)

NOTES:  
 1. THE STEEL REINFORCEMENT DESIGN PROVIDES 240 LBS. STEEL/LINEAR FOOT.  
 2. ALL REINFORCEMENT BARS SHALL CONFORM TO ASTM A-615, GRADE 60, DEFORMED BILLET BARS.  
 3. ALL REINFORCING STEEL SHALL BE EPOXY COATED.  
 4. CLEAR CONCRETE COVER OVER ALL STEEL SHALL BE 2" MIN.  
 5. ALL LAPS AND SPLICES OF REINFORCING STEEL SHALL BE 40 BAR DIA. MIN.  
 6. CONCRETE COMPRESSIVE STRENGTH SHALL BE MIN. 5000 PSI AT 28 DAYS.



PRECAST T-WALL WINGWALL ASSEMBLIES - CONSTRUCTION DETAILS

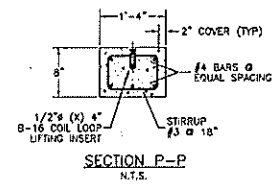
NOTE: THE DRAWINGS ABOVE ARE FOR INFORMATION ONLY AND DO NOT REPRESENT THE ACTUAL SIZE OR CONFIGURATION OF THE T-WALLS FOR THIS PROJECT. SEE SHEET 1 OF 2 (END ELEVATION VIEW) FOR ACTUAL LAYOUT OF WALLS SPECIFICALLY FOR THIS CULVERT.



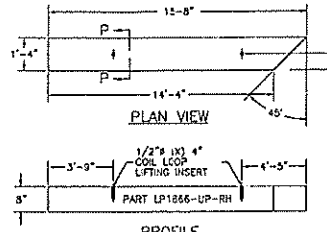
TYPICAL SECTION  
N.T.S.

SELECT GRANULAR BACKFILL - MINIMUM REQUIREMENTS  
 SELECT BACKFILL MATERIAL SHALL CONFORM TO VDOT SPECIAL PROVISIONS FOR T-WALL RETAINING WALL SYSTEM SECTION 2.3 DATED JUNE 27, 1994 AS FOLLOWS:  
 • BACKFILL MATERIAL SHALL BE REASONABLY FREE OF ORGANIC MATERIAL, SHALE OR OTHER POOR DURABILITY PARTICLES AND OTHERWISE DELETERIOUS MATERIALS.  
 • THE BACKFILL MATERIAL SHALL CONFORM TO THE FOLLOWING GRADING AS DETERMINED BY AASHTO T-27:  
 3" SIEVE-100% PASSING, #200 SIEVE-0% TO 15% PASSING  
 THE MATERIAL SHALL EXHIBIT A MINIMUM INTERNAL FRICTION ANGLE OF 34 DEGREES AS DETERMINED BY THE STANDARD DIRECT SHEAR TEST, AASHTO T236, ON THE PORTION FINER THAN THE NO.10 SIEVE, UTILIZING A SAMPLE OF MATERIAL COMPACTED TO 95% OF AASHTO T99, METHODS C OR D AT OPTIMUM MOISTURE CONTENT.  
 • NO TESTING IS REQUIRED FOR BACKFILLS WHERE 80% OF SIZES ARE GREATER THAN 3/4" (VDOT NO.5'S ARE RECOMMENDED)

SUBGRADE MATERIAL - MINIMUM REQUIREMENTS  
 • MINIMUM INTERNAL FRICTION ANGLE: 32 DEG.  
 • COMPACTED TO 95% STD. DENSITY, ASTM D-638  
 • ANY SOFT, WET, ORGANIC OR OTHERWISE DELETERIOUS MATERIAL TO BE REMOVED AND REPLACED WITH VDOT NO.21 CRUSHED STONE  
 • MINIMUM ALLOWABLE BEARING PRESSURE OF LEAD, PSF ASSUMED FOR FOUNDATION SOILS, TO BE FIELD VERIFIED UPON EXCAVATION.

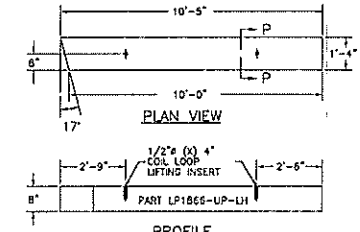


GENERAL NOTES FOR FOOTINGS AND LEVELING PADS:  
 1. ALL CONCRETE SHALL HAVE 5000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.  
 2. ALL STEEL SHALL CONFORM TO ASTM A-615 GRADE 60, DEFORMED BILLET BARS.  
 3. CLEAR CONCRETE COVER OVER ALL REIN. STEEL SHALL BE 2" MIN.  
 4. CONCRETE FINISHED TOLERANCE SHALL BE (±) 1/4" / 10 FT.



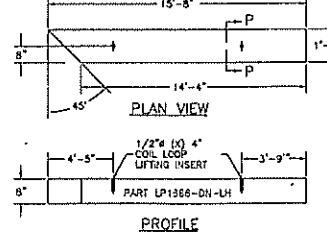
PART NO. #LP1866-UP-RH (UPSTREAM-RIGHT HAND)  
 1 PCS. REQUIRED  
 TYPICAL UNIT WEIGHT = 2100 LBS.  
 CONCRETE VOLUME = 0.52 C.Y.  
 REINFORCING STEEL = 12.5 LBS. #3, 21 LBS. #5  
 2 PCS. - 1/2" X 4" COIL LOOP INSERTS

PRECAST LEVELING PAD DETAILS  
N.T.S.



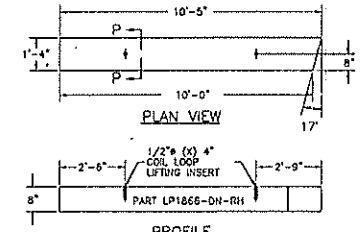
PART NO. #LP1866-UP-LH (UPSTREAM-LEFT HAND)  
 1 PCS. REQUIRED  
 TYPICAL UNIT WEIGHT = 1400 LBS.  
 CONCRETE VOLUME = 0.35 C.Y.  
 REINFORCING STEEL = 10 LBS. #3, 14 LBS. #5  
 2 PCS. - 1/2" X 4" COIL LOOP INSERTS

PRECAST LEVELING PAD DETAILS  
N.T.S.



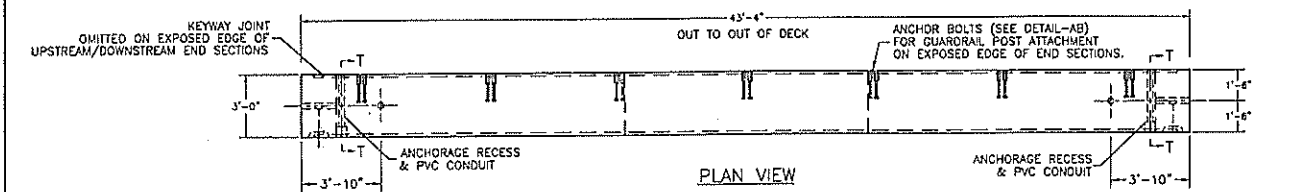
PART NO. #LP1866-DN-LH (DOWNSTREAM-LEFT HAND)  
 1 PCS. REQUIRED  
 TYPICAL UNIT WEIGHT = 2100 LBS.  
 CONCRETE VOLUME = 0.52 C.Y.  
 REINFORCING STEEL = 12.5 LBS. #3, 21 LBS. #5  
 2 PCS. - 1/2" X 4" COIL LOOP INSERTS

PRECAST LEVELING PAD DETAILS  
N.T.S.

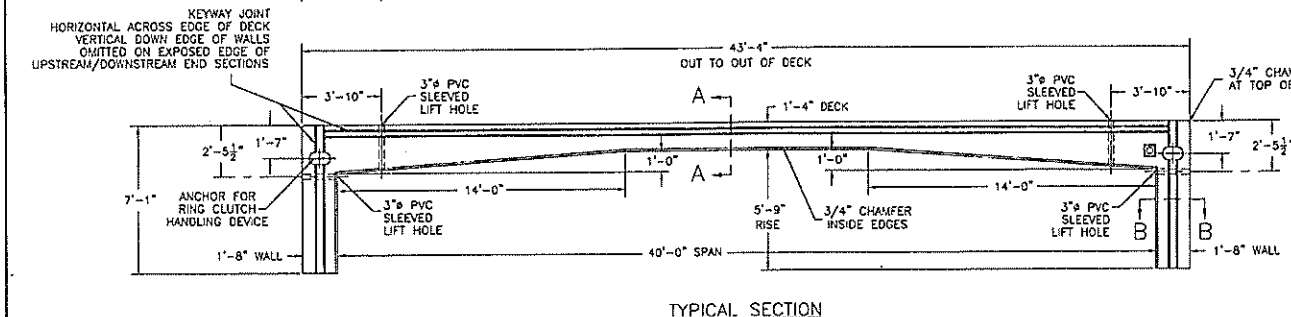


PART NO. #LP1866-DN-RH (DOWNSTREAM-RIGHT HAND)  
 1 PCS. REQUIRED  
 TYPICAL UNIT WEIGHT = 1400 LBS.  
 CONCRETE VOLUME = 0.35 C.Y.  
 REINFORCING STEEL = 10 LBS. #3, 14 LBS. #5  
 2 PCS. - 1/2" X 4" COIL LOOP INSERTS

PRECAST LEVELING PAD DETAILS  
N.T.S.



PART NO. #HY1866-4C6-CENTER (CENTER UNITS)  
 10 PCS. REQUIRED  
 TYPICAL UNIT WEIGHT = 44,000 LBS.  
 CONCRETE VOLUME = 10.10 C.Y.  
 REINFORCING STEEL = 186 LBS. #4, 528 LBS. #5  
 246 LBS. #6, 900 LBS. #7, 900 LBS. #8, 480 LBS. #9  
 2 PCS. - 17 TON BURKE-LIFT CAST INTO WALL  
 2 PCS. - 3" x 3'-0" PVC (TIE ROD CONDUIT)



40' SPAN x 5.75' RISE x 3' LAYING LENGTH  
 PRECAST REINFORCED CONCRETE HY-SPAN® BRIDGE SECTION  
 NO SCALE

PART NO. #HY1866-4C6-END (END UNITS)  
 2 PCS. REQUIRED  
 TYPICAL UNIT WEIGHT = 44,000 LBS.  
 CONCRETE VOLUME = 10.10 C.Y.  
 REINFORCING STEEL = 186 LBS. #4, 528 LBS. #5  
 246 LBS. #6, 900 LBS. #7, 900 LBS. #8, 480 LBS. #9  
 2 PCS. - 17 TON BURKE-LIFT CAST INTO WALL  
 28 ANCHOR BOLT ASSEMBLIES CAST INTO EDGE OF DECK  
 2 PCS. - 3" x 3'-0" PVC (TIE ROD CONDUIT)  
 KEYWAY OMITTED ON EXPOSED EDGE

NOTICE

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The T-WALL® Retaining Wall System is protected by U.S. Patent No. 4,684,234.  
 The HY-SPAN® Rectilinear Culvert and Bridge System is protected by U.S. Patent No. 5,145,643.



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COLONIAL SQUARE - ABINGDON, VA.  
 PROPOSED HY-SPAN® BRIDGE

DATE: 8-26-98	DESIGN BY: DES/ROW	DWG NO: HY405.7REV.DWG
PRODUCT: HY-SPAN/T-WALL	DRAWN BY: RDW	SCALE: AS NOTED
CONTRACTOR: W-L CONST.	CHECKED BY: RAS	SHEET 2 OF 2
PERMATITE ORDER NO. 1866	CUSTOMER NO. 82	