

CONSTRUCTION REQUIREMENTS FOR PLACEMENT OF TENSAR GEOGRIDS AND BACKFILL SOILS FOR TENSAR WELDED WIRE FORM REINFORCED RETAINING WALLS

- 1.0 MATERIAL
- 1.1 BACKFILL SOILS
- 1.1.1 REINFORCED BACKFILL MATERIAL SPECIFIED BELOW SHALL BE SELECT FREE DRAINING BACKFILL. REINFORCED BACKFILL MATERIALS SHALL BE APPROVED BY OWNER OR OWNER'S REPRESENTATIVE AND SHALL MEET THE STRENGTH REQUIREMENTS AS DEFINED IN SECTION 7.0. THE REINFORCED BACKFILL MATERIAL SHALL MEET THE FOLLOWING GRADATION:
- | SIEVE SIZE | PERCENT PASSING |
|------------|-----------------|
| 4" | 100 |
| No. 40 | 0 - 60 |
| No. 200 | 0 - 15 |
- THE PORTION OF THE REINFORCED BACKFILL MATERIAL PASSING THE No. 40 SIEVE SHALL HAVE A LIQUID LIMIT LESS THAN 40 AND A PLASTICITY INDEX LESS THAN 6. REINFORCED BACKFILL MATERIAL SHALL BE CLASSIFIED PER THE UNIFIED SOIL CLASSIFICATION SYSTEM AS LOW PLASTICITY OR NON-PLASTIC SOILS.
- 1.1.2 REINFORCED FILL FROM BOTTOM OF WIRE WALL UP TO EL. 12.0 SHALL BE No. 57 STONE OR OTHER SUITABLE FREE-DRAINING MATERIAL. SUFFICIENT ADDITIONAL STONE SHALL BE INSTALLED SUCH THAT THE FINAL TOP ELEVATION OF STONE IS AT LEAST EL. 12.0 AFTER SETTLEMENT HAS OCCURRED.
- 1.1.3 REINFORCED BACKFILL AND RETAINED SOIL/FILL MATERIALS SHALL BE FREE OF EXCESS MOISTURE, ROOTS, MUCK, SOD, SNOW, FROZEN LUMPS, ORGANIC MATTER OR OTHER DELETERIOUS MATERIALS. ALL ROCK PARTICLES AND HARD EARTH CLODS SHALL BE LESS THAN FOUR INCHES IN THE LONGEST DIMENSION. REINFORCED BACKFILL MATERIALS WHICH DO NOT MEET THIS CRITERIA SHALL BE CONSIDERED UNSUITABLE AND SHALL BE REMOVED.
- 1.2 GEOGRID REINFORCEMENT SHALL BE TENSAR UNIAXIAL AND BIAXIAL GEOGRIDS MANUFACTURED BY THE TENSAR CORPORATION, MORROW, GEORGIA.
- 1.3 BODKIN BARS SHALL BE HDPE BARS MANUFACTURED BY THE TENSAR CORPORATION, MORROW, GEORGIA.
- 1.4 DRAINAGE MATERIALS
- 1.5 GEOTEXTILE FABRIC SHALL BE AASHTO M288 CLASS 1 GEOTEXTILE.
- 1.6 DRAINAGE PIPES SHALL BE 4-INCH DIAMETER (MIN.) SOLID AND PERFORATED A2000 PIPE OR APPROVED EQUIVALENT.
- 1.7 THE WALL FACING SHALL BE GALVANIZED AND BLACK STEEL 4"x4" W4.0xW4.0 WELDED WIRE FORMS. WIRE FORM GEOMETRY SHALL BE AS DETAILED IN THE CONSTRUCTION DRAWINGS.
- 2.0 TECHNICAL REQUIREMENTS
- 2.1 THE OWNER OR OWNER'S REPRESENTATIVE SHALL VERIFY THAT REINFORCED BACKFILL MATERIAL MEETS THE GRADATION AND OTHER REQUIREMENTS OF SECTION 1.1 PRIOR TO PROCEEDING WITH CONSTRUCTION.
- 2.2 PRIOR TO CONSTRUCTION OF THE TENSAR REINFORCED WALL, THE CONTRACTOR SHALL CLEAR AND GRUB THE REINFORCED BACKFILL ZONE AREA, REMOVING TOPSOIL, BRUSH, SOD OR OTHER ORGANIC OR DELETERIOUS MATERIAL. ANY UNSUITABLE SOILS SHALL BE OVER-EXCAVATED, REPLACED AND COMPACTED WITH BACKFILL MATERIAL TO PROJECT SPECIFICATIONS OR AS OTHERWISE DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE AND CONTRACTOR.
- 2.3 FOUNDATION SHALL BE PROOF ROLL INSPECTED USING A LOADED TRUCK WITH 18 KIP AXLE LOADS OR PER PROJECT SPECIFICATIONS. THE OWNER OR OWNER'S REPRESENTATIVE SHALL CONFIRM THAT THE SITE HAS BEEN PROPERLY PREPARED AND THE DESIGN PARAMETERS IN SECTION 7.0 ARE APPROPRIATE PRIOR TO FILL PLACEMENT.
- 2.4 FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 10 INCHES IN UNCOMPACTED THICKNESS FOR HEAVY COMPACTION EQUIPMENT. FOR ZONES WHERE COMPACTION IS ACCOMPLISHED WITH HAND-OPERATED EQUIPMENT, FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 10 INCHES IN UNCOMPACTED THICKNESS. ONLY HAND-OPERATED EQUIPMENT SHALL BE ALLOWED WITHIN THREE FEET OF THE BACK FACE OF WALL.
- 2.5 FILL MATERIALS SHALL BE PLACED FROM THE BACK OF THE WELDED WIRE FORMS TOWARDS THE ENDS OF THE GEOGRID TO ENSURE FURTHER TENSIONING.
- 2.6 FILL SHALL BE COMPACTED AS SPECIFIED BY PROJECT SPECIFICATIONS OR TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH AASHTO T-99 (STANDARD PROCTOR), AT A MOISTURE CONTENT NO GREATER THAN 2 PERCENTAGE POINTS WET AND NO LESS THAN 1 PERCENTAGE POINT DRY OF OPTIMUM.
- 2.7 TESTING METHODS AND FREQUENCY, AND VERIFICATION OF MATERIAL SPECIFICATIONS SHALL BE THE RESPONSIBILITY OF THE OWNER OR OWNER'S REPRESENTATIVE.

- 2.8 WELDED WIRE FACING SHALL BE ERECTED AND MAINTAINED DURING CONSTRUCTION TO THE BATTER AS SHOWN ON THE DRAWINGS. INDIVIDUAL WIRE FORM DEFORMATIONS SHALL BE LIMITED TO 2 INCHES AT THE TOP AND A BULGE OF 2 INCHES, MEASURED FROM THE BASE OF THE WIRE FORM. THE CONTRACTOR SHALL PROVIDE ALIGNMENT CONTROL FOR EACH COURSE OF WELDED WIRE FORMS AND MAKE ALIGNMENT CORRECTIONS AS NECESSARY.
- 2.9 IF EXCESSIVE DEFORMATION OCCURS AS DEFINED BY SECTION 2.8 COMPACTION PROCEDURES SHOULD BE MODIFIED TO PROVIDE MAXIMUM ALLOWABLE COMPACTION AT THE WALL FACE. ALSO, ADDITIONAL STRUTS MAY BE REQUIRED TO STIFFEN THE WIRE FACE.
- 2.10 WELDED WIRE FORMS SHALL BE INSTALLED USING THE CORRECT ANGLE SHOWN ON THE DRAWINGS. THE ENDS OF THE WIRE FORMS SHALL BE OVERLAPPED 4 INCHES AND THE WIRE FORM JOINTS SHALL BE STAGGERED VERTICALLY. ANY PROTRUDING WIRES SHALL BE BENT OR CUT OFF.
- 2.11 A COMPLETE SET OF APPROVED CONSTRUCTION DRAWINGS AND CONTRACT SPECIFICATIONS SHALL BE ON-SITE AT ALL TIMES DURING CONSTRUCTION OF THE TENSAR REINFORCED RETAINING WALL.
- 3.0 TENSAR GEOGRID PLACEMENT
- 3.1 TENSAR GEOGRID SHALL BE PLACED AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE DRAWINGS.
- 3.2 TENSAR GEOGRID LENGTHS SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS. TENSAR GEOGRID LENGTHS ARE MEASURED FROM THE FRONT FACE OF THE WALL, EXTENDING TO TAIL OF THE GEOGRIDS. REINFORCED FILL ZONE LENGTH IS MEASURED FROM THE FRONT FACE OF THE WALL, EXTENDING 3'-3" MINIMUM OVER THE TAIL OF THE GEOGRIDS.
- 3.2.1 TENSAR GEOGRID REINFORCEMENT SHALL BE CONTINUOUS THROUGHOUT THEIR EMBEDMENT LENGTH(S). THE BODKIN CONNECTION SHALL NOT BE UTILIZED UNLESS PRE-APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
- 3.2.2 IF PRE-APPROVED, TENSAR UNIAXIAL GEOGRIDS MAY BE SPLICED UTILIZING THE BODKIN CONNECTION DETAIL. NO MORE THAN ONE SPlice SHALL BE ALLOWED IN ANY ONE LENGTH OF REINFORCEMENT AND NO SPLICES SHALL BE ALLOWED FOR GEOGRIDS LESS THAN 6 FEET IN LENGTH (EACH). THE BODKIN CONNECTION SHALL NOT BE PLACED LESS THAN 6 FEET BELOW PLANNED FINISHED GRADE. THE BODKIN CONNECTION SHALL NOT BE PLACED HORIZONTALLY OR VERTICALLY ADJACENT TO ANOTHER BODKIN CONNECTION.
- 3.3 TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOGRID. A MINIMUM BACKFILL THICKNESS OF 6 INCHES IS REQUIRED FOR OPERATION OF TRACKED VEHICLES OVER THE GEOGRID. TURNING OF TRACKED VEHICLES SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS FROM DISPLACING THE FILL AND/OR THE GEOGRID.
- 3.4 RUBBER-TIRED VEHICLES MAY PASS OVER THE GEOGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED.
- 3.5 TENSAR UNIAXIAL GEOGRIDS SHALL BE CUT NEXT TO THE CROSS-MACHINE DIRECTION BAR. THE MACHINE DIRECTION BAR SHALL BE PLACED NEXT TO THE WELDED WIRE FORM FACE. TENSAR UNIAXIAL GEOGRID SHALL BE ROLLED OUT WITH THE LONG AXIS OF THE APERTURES (MACHINE DIRECTION) PERPENDICULAR TO THE WALL FACE. TENSAR BIAXIAL GEOGRID SHALL BE ROLLED OUT WITH THE MACHINE DIRECTION BAR PARALLEL TO THE WALL FACE.
- 3.6 A MINIMUM OF 3 INCHES OF FILL MATERIAL SHALL BE REQUIRED BETWEEN LAYERS OF BIAXIAL AND UNIAXIAL GEOGRIDS, UNLESS OTHERWISE SHOWN.
- 4.0 CHANGES TO GEOGRID LAYOUT OR PLACEMENT
- 4.1 NO CHANGES TO THE TENSAR GEOGRID LAYOUT, INCLUDING, BUT NOT LIMITED TO, LENGTH, GEOGRID TYPE, OR ELEVATION, SHALL BE MADE WITHOUT THE EXPRESS, WRITTEN CONSENT OF TENSAR EARTH TECHNOLOGIES, INC.
- 5.0 DRAINAGE
- 5.1 AT THE END OF EACH WORKDAY, BACKFILL SURFACE SHALL BE GRADED AWAY FROM THE WALL FACE A MINIMUM OF 2 PERCENT SLOPE AND A TEMPORARY SOIL BERM SHALL BE CONSTRUCTED NEAR THE WALL CREST TO PREVENT SURFACE WATER RUNOFF FROM OVERTOPPING THE WALL.
- 5.2 AT THE END OF EACH WORKDAY, BACKFILL SURFACE SHALL BE COMPACTED WITH A SMOOTH WHEEL ROLLER TO MINIMIZE PONDING OF WATER AND SATURATION OF THE BACKFILL.
- 5.3 THE ENGINEERING, DESIGN, ANALYSIS, DETAILING, AND MITIGATION OF BOTH SURFACE DRAINAGE AND SEEPAGE OF GROUNDWATER FOR THE COMPLETED

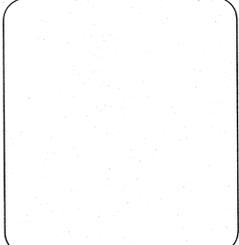
- WALL SHALL BE THE RESPONSIBILITY OF THE OWNER OR OWNER'S REPRESENTATIVE.
- 5.4 PERMANENT SURFACE WATER DIVERSION SHALL BE REQUIRED AND PROVIDED BY THE OWNER OR OWNER'S REPRESENTATIVE.
- 5.5 THE TENSAR REINFORCED WALL HAS BEEN DESIGNED ON THE ASSUMPTION THAT THE REINFORCED BACKFILL MATERIAL SHALL BE FREE OF SUBSURFACE DRAINAGE OF WATER (SEEPAGE) WITH THE EXCEPTION OF FLOOD EVENT TO ELEV. 12.0. PERMANENT SUBSURFACE WATER (SEEPAGE) COLLECTION AND DIVERSION SHALL BE THE RESPONSIBILITY OF THE OWNER OR OWNER'S REPRESENTATIVE.
- 5.6 CARE SHALL BE TAKEN NOT TO CONTAMINATE THE GEOTEXTILE FABRIC AND/OR DRAINAGE STONE WITH FINE-GRAINED SOILS OR OTHER DELETERIOUS MATERIALS.
- 6.0 METHOD OF PAYMENT
SEE CONTRACT DOCUMENTS
- 7.0 DESIGN PARAMETERS
- 7.1 DESIGN OF THE REINFORCED SOIL STRUCTURE IS BASED ON THE FOLLOWING PARAMETERS:
- | | EFFECTIVE FRICTION ANGLE | EFFECTIVE COHESION | MOIST UNIT WEIGHT |
|--------------------------------------|--------------------------|--------------------|-------------------|
| REINFORCED BACKFILL | 36° | 0 psf | 127 pcf |
| RETAINED SOIL | 32° | 0 psf | 125 pcf |
| FOUNDATION SOIL | 32° | 0 psf | 125 pcf |
| SOIL-GEOGRID INTERACTION COEFFICIENT | | | = 0.8 |
| PERCENT COVERAGE OF GEOGRID | | | = 81 % 68% |
| DESIGN LIFE | | | = 100 years |
- NOTE: PROPERTIES OF RETAINED AND FOUNDATION SOIL DO NOT AFFECT INTERNAL STABILITY DESIGN OF MSE WALLS. PROPERTIES OF RETAINED AND FOUNDATION SOIL ARE ASSUMED FOR THE PURPOSE OF DEVELOPING THIS DESIGN AND MUST BE VERIFIED BY OTHERS PRIOR TO CONSTRUCTION.
- 7.2 FACTORS OF SAFETY:
- 7.2.1 INTERNAL STABILITY
- | | STATIC | SEISMIC |
|---|--------|---------|
| MINIMUM FACTOR OF SAFETY FOR GEOGRID STRENGTH | = 1.5 | = 1.1 |
| MINIMUM FACTOR OF SAFETY FOR GEOGRID PULLOUT | = 1.5 | = 1.1 |
| MINIMUM FACTOR OF SAFETY FOR SLIDING AT GEOGRID | = 1.5 | = 1.1 |
| MINIMUM FACTOR OF SAFETY FOR PANEL CONNECTION | = 2.0 | = 2.0 |
- 7.2.2 EXTERNAL STABILITY
- | | | |
|--|-------|-------|
| MINIMUM FACTOR OF SAFETY FOR SLIDING AT BASE | = 1.5 | = 1.1 |
| MAXIMUM ECCENTRICITY | = 1.5 | = 1.1 |
- PER CONTRACT PLANS STABILITY REQUIREMENTS FOR GLOBAL STABILITY AND FOUNDATION BEARING CAPACITY HAVE BEEN SATISFIED BY USING GEOGRID LENGTH THAT IS EQUAL OR LARGER THAN THE MINIMUM OF 0.8H (H = WALL HEIGHT FOR LONG-TERM CONDITION) OR 8 FEET.
- 7.2.3 GLOBAL STABILITY:
- GLOBAL STABILITY AND FOUNDATION BEARING CAPACITY ARE THE RESPONSIBILITY OF THE OWNER OR OWNER'S REPRESENTATIVE. TENSAR EARTH TECHNOLOGIES, INC. ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR GLOBAL STABILITY OR FOUNDATION BEARING CAPACITY.
- 7.3 LOADINGS:
- | | |
|---|--------------|
| TRAFFIC SURCHARGE | = 250 psf |
| STAIRS LOADING (WALL 5) | = 100 psf |
| DESIGN WIND LOAD (PANEL CONNECTION) | = 20 psf |
| SOIL SURCHARGE (WALLS 1, 2, 6, 7, AND WALLS AT ABUTMENTS) | = 8.5' (max) |
| SEISMIC ACCELERATION COEFFICIENT | = 0.05 g |
- 7.4 HYDROSTATIC DESIGN:
GROUNDWATER/PNEUMATIC SURFACES ARE CONSIDERED IN INTERNAL STABILITY WALL DESIGN. MAXIMUM HIGH WATER ELEVATION IS ASSUMED AT EL. 12.0.
- 7.5 MAXIMUM APPLIED BEARING PRESSURE
FOR TEMPORARY CONDITION (INCLUDING SURCHARGE) = 9080 PSF*
FOR LONG-TERM CONDITION = 7020 PSF*
*NOTE: APPLIED BEARING PRESSURE IS GREATER THAN THE ALLOWABLE BEARING PRESSURE (6 KSF) LISTED ON PAGE 108 OF THE PROJECT SPECIFICATIONS, CONTRACT NO. 23-073-03. WALL BEARING CAPACITY SHALL BE COORDINATED BETWEEN THE CONTRACTOR AND THE OWNER OR OWNER'S REPRESENTATIVE.
- 8.0 SPECIAL PROVISIONS

- 8.1 THE DESIGN PRESENTED HEREIN IS BASED ON SOIL PARAMETERS, FOUNDATION CONDITIONS, GROUNDWATER CONDITIONS, AND LOADINGS STATED IN SECTION 7.0.
- 8.2 WALL ELEVATION VIEWS AND LOCATIONS, AND GEOMETRY OF EXISTING STRUCTURES MUST BE VERIFIED BY THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
- 8.3 TENSAR EARTH TECHNOLOGIES, INC. ASSUMES NO LIABILITY FOR INTERPRETATION OR VERIFICATION OF SUBSURFACE CONDITIONS, FOR SUITABILITY OF SOIL DESIGN PARAMETERS OR FOR INTERPRETATION OF SUBSURFACE GROUNDWATER CONDITIONS.
- 8.4 THE OWNER OR OWNER'S REPRESENTATIVE IS RESPONSIBLE FOR REVIEWING AND VERIFYING THAT THE ACTUAL SITE CONDITIONS AND PARAMETERS ARE AS DESCRIBED HEREIN PRIOR TO AND DURING CONSTRUCTION. THE OWNER OR OWNER'S REPRESENTATIVE SHALL BE ON-SITE TO ASSURE CONSTRUCTION IS IN ACCORDANCE WITH THESE NOTES AND DRAWINGS AND THE CONTRACT PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL FOLLOW THE INSTRUCTIONS PROVIDED IN THE WELDED WIRE FORM ERECTION GUIDE PROVIDED BY TENSAR EARTH TECHNOLOGIES, INC.
- 8.5 THE SOIL DESIGN PARAMETERS STATED IN SECTION 7.0 SHALL BE VERIFIED BY THE OWNER OR OWNER'S REPRESENTATIVE. IF ACTUAL CONDITIONS ARE FOUND TO BE OTHER THAN AS SET FORTH IN THESE PARAMETERS, THEN CONSTRUCTION SHALL NOT PROCEED AND THE RELEVANT DATA SHALL BE PROVIDED TO TENSAR EARTH TECHNOLOGIES, INC. FOR PURPOSES OF MODIFYING THE DESIGN.
- 8.6 PROCEEDING WITH CONSTRUCTION WITHOUT FIRST VERIFYING CONDITIONS AND PARAMETERS DISCUSSED IN SECTIONS 1.1 AND 7.0 SHALL ABSOLVE TENSAR EARTH TECHNOLOGIES, INC. FROM ALL LIABILITY FOR THE DESIGN AND CONSTRUCTION OF THIS STRUCTURE AND THE CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS TENSAR EARTH TECHNOLOGIES, INC. FROM ALL RESULTING CLAIMS, DAMAGES, LOSSES AND EXPENSES.
- 8.7 IF ANY ROCK FORMATIONS AND/OR GROUNDWATER ARE ENCOUNTERED DURING CONSTRUCTION, IMMEDIATELY CONTACT TENSAR EARTH TECHNOLOGIES, INC. AT 404-250-1290 AND THE OWNER'S REPRESENTATIVE.
- 8.8 ANY REVISIONS TO DESIGN PARAMETERS STATED IN SECTION 7.0 OR STRUCTURE GEOMETRY SHALL REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.
- 8.9 THIS DESIGN IS ONLY VALID FOR THE PROPOSED TENSAR RETAINING WALL(S) AS SHOWN HEREIN.
- 8.10 EXTERNAL AND GLOBAL STABILITY OF MSE WALLS, STABILITY OF UNREINFORCED SLOPES, TOTAL SETTLEMENT AND DIFFERENTIAL SETTLEMENT IN EXCESS OF 1/100 SHALL BE THE RESPONSIBILITY OF THE OWNER OR OWNER'S REPRESENTATIVE. TENSAR EARTH TECHNOLOGIES ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR THE EVALUATION OF SETTLEMENTS.
- 8.11 ON-SITE SITE ASSISTANCE WILL BE PROVIDED BY TENSAR EARTH TECHNOLOGIES, INC. AT THE REQUEST OF THE CONTRACTOR OR AS PROVIDED IN THE CONTRACT SPECIFICATIONS. TENSAR EARTH TECHNOLOGIES IS NOT RESPONSIBLE FOR HAVING PERSONNEL ON-SITE UNLESS SPECIFICALLY PROVIDED FOR IN A WRITTEN CONTRACT SIGNED BY TENSAR EARTH TECHNOLOGIES, INC. THE TENSAR REPRESENTATIVE WILL NOT HAVE THE AUTHORITY TO STOP OR START CONSTRUCTION OF THE RETAINING WALL.
- 9.0 REFERENCE DOCUMENTS:
THE DESIGN CALCULATIONS AND CONSTRUCTION DRAWINGS PREPARED BY TENSAR ARE BASED ON THE FOLLOWING DOCUMENTS:
- 9.1 FINAL GEOTECHNICAL ROADWAY REPORT, REPLACEMENT OF 3-156, SR 1 OVER THE INDIAN RIVER INLET, DELDOT PROJECT NO. 1204, BY MACTEC, INC., DATED DECEMBER 24, 2003.
- 9.2 FINAL BRIDGE SUBSTRUCTURE REPORT, REPLACEMENT OF 3-156, SR 1 OVER THE INDIAN RIVER INLET, DELDOT PROJECT NO. 1204, BY MACTEC, INC., DATED DECEMBER 24, 2003.
- 9.3 CONTRACT PLANS "BR 156 ON SR 1 OVER INDIAN RIVER INLET, SUSSEX COUNTY, DE", CONTRACT 23-073-03, SHEETS S-1 THROUGH S-14 (SHEETS 702 THROUGH 715 OF 919) DATED 7/12/04, AND SHEETS 118 THROUGH 124 OF 919, PROVIDED BY RUMMEL, KLEPPER & KAHL, LLP, ON 9/3/04.
- 9.4 CONTRACT PLANS "BR 156 ON SR 1 OVER INDIAN RIVER INLET, SUSSEX COUNTY, DE", CONTRACT 23-073-03, SHEETS 168 THROUGH 182 OF 397 AND SHEET 186 OF 397 DATED 2/15/05, PROVIDED BY RUMMEL, KLEPPER & KAHL, LLP, ON 2/4/05.
- 9.5 PROJECT SPECIFICATIONS FOR MSE WALLS, SECTION 602, CONTRACT NO. 23-073-03, PP. 107-114, RECEIVED ON 2/6/05.
- 9.6 COMMUNICATIONS AND TECHNICAL MEMORANDUMS BETWEEN TET AND RUMMEL, KLEPPER & KAHL, LLP, SEPTEMBER 2004 - FEBRUARY 2005.

[Signature]
2/6/05

THIS DESIGN IS BASED UPON SPECIFIC PROPERTIES OF TENSAR PRODUCTS (GEOGRIDS, DRAINAGE COMPOSITES AND EROSION MEDIA), WHICH ARE PROPRIETARY TO THE TENSAR CORPORATION 1210 CITIZENS PARKWAY, MORROW GA. 30260. ANY SUBSTITUTION OF THE SPECIFIED PRODUCTS WILL INVALIDATE THIS DESIGN. THIS DRAWING IS BEING FURNISHED FOR USE ON THIS SPECIFIC PROJECT ONLY. ANY PARTY ACCEPTING THIS DOCUMENT DOES SO IN CONFIDENCE AND AGREES THAT IT SHALL NOT BE DUPLICATED WHOLE OR IN PART, NOR DISCLOSED TO OTHERS, WITHOUT THE CONSENT OF TENSAR EARTH TECHNOLOGIES, INC.

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Tensar
Tensar Earth Technologies, Inc.
5883 Glenridge Drive, Suite 200
Atlanta, Georgia 30328
(404) 250-1290

REVISIONS \ ISSUE		
1	12/15/04	NO CHANGE
2	1/26/05	REVISION OF HIGH WATER ELEVATION AND WALL GEOMETRY
3	2/10/05	ADDENDUM No. 1
4	8/12/05	ISSUED FOR REVIEW - FINAL DESIGN
5	9/9/05	NO CHANGE
6	10/31/05	REVISIONS AS REQUIRED BY RK&K
△	2/8/06	ISSUED FOR CONSTRUCTION

Project Number N04513
File Name N0451302.DWG
Date Drawn 9/28/04
Scale
As Shown
Designed by CV/WL
Drawn by JMR
Checked by

INDIAN RIVER INLET	
MSE WALLS	
SUSSEX COUNTY.	DELAWARE
CONSTRUCTION REQUIREMENTS	
Sheet Number 2 of 28	