CONSTRUCTION NOTES FOR PLACEMENT OF TENSAR GEOGRIDS AND BACKFILL SOILS FOR TENSAR PRECAST CONCRETE REINFORCED WALLS TENSAR MSE RETAINING WALL SYSTEM

1.0 MATERIALS

- I.I GEOGRID REINFORCING SHALL BE TENSAR BIAXIAL AND UNIAXIAL GEOGRIDS MANUFACTURED BY THE TENSAR CORPORATION, MORROW, GEORGIA.
- 1.2 BODKIN BARS SHALL BE $1^{1}\!\!/_{2}$ " $\times ^{1}\!\!/_{4}$ " HDPE BARS MANUFACTURED BY THE TENSAR CORPORATION, MORROW, GEORGIA.
- 1.3 DRAINAGE MATERIALS
- I.3.I GEOTEXTILE TG600 FABRIC SHALL BE MANUFACTURED BY EVERGREEN TECHNOLOGIES, INC., EVERGREEN, ALABAMA, OR EQUIVALENT AS APPROVED BY THE ENGINEER.
- 2.0 TECHNICAL REQUIREMENTS
- 2.1 FILL MATERIALS SHALL BE PLACED FROM THE BACK FACE OF THE WALL TOWARDS THE TAILS OF THE GEOGRID TO ENSURE FURTHER TENSIONING.
- 2.2 FILL SHALL BE COMPACTED AS SPECIFIED IN SECTION 548 OF THE PROJECT SPECIFICATIONS.
- 2.3 AN APPROVED SET OF CONSTRUCTION DRAWINGS AND CONTRACT SPECIFICATIONS SHALL BE ON-SITE AT ALL TIMES, DURING CONSTRUCTION OF THE TENSAR RETAINING WALL.
- 3.0 TENSAR GEOGRID PLACEMENT
- 3. TENSAR GEOGRID SHALL BE PLACED AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE SHOP DRAWINGS.
- 3.2 TENSAR GEOGRID LENGTH SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS. REINFORCED FILL ZONE LENGTH IS MEASURED FROM THE BACK FACE OF THE CONCRETE PANEL, EXTENDING TO 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 ENGINEER 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 IFNGTH OF REINFORCING.
- 3.3 PRIOR TO PLACING FILL, THE GEOGRID MATERIALS SHALL BE CONNECTED TO THE PANELS PER PANEL CONNECTION DETAIL (SEE TYPICAL DETAILS) AND PULLED TAUT AND ANCHORED TO REMOVE ANY SLACK IN THE GEOGRIDS.

3.4 TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOGRID. A MINIMUM FILL THICKNESS OF SIX 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.

- 3.5 RUBBER-TIRED VEHICLES MAY PASS OVER THE GEOGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED.
- 3.6 TENSAR UNIAXIAL GEOGRID SHALL BE ROLLED OUT WITH THE LONG AXIS OF THE APERTURES (MACHINE DIRECTION) PERPENDICULAR TO THE WALL FACE. TENSAR BIAXIAL GEOGRIDS SHALL BE ROLLED OUT WITH THE MACHINE DIRECTION BAR PARALLEL TO THE WALL FACE.
- 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 EXPLICIT WRITTEN CONSENT OF TENSAR EARTH TECHNOLOGIES, INC.
- 5.0 DRAINAGE
- 5.1 AT THE END OF EACH WORK DAY, 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 WORK DAY, BACKFILL SURFACE SHALL BE COMPACTED WITH A SMOOTH WHEEL ROLLER TO MINIMIZE PONDING OF WATER AND SATURATION OF THE BACKFILL.
- 5.3 THE TENSAR WALL HAS BEEN DESIGNED ON THE ASSUMPTION THAT THE REINFORCED FILL MATERIAL SHALL BE FREE OF SUBSURFACE DRAINAGE OF WATER (SEEPAGE).
- 5.4 THE CONTRACTOR SHALL BE RESPONSIBLE FOR WATER RETENTION AS NEEDED DURING CONSTRUCTION.
- 6.0 DESIGN PARAMETERS
- 6. SOIL PARAMETERS

SEE WALL CONTROL DRAWINGS FOR SOIL CHARACTERISTICS OF FOUNDATION MATERIAL TO BE USED IN THE DESIGN OF THE WALL SYSTEM. THE CONTRACTOR SHALL PROVIDE SOIL DESIGN PARAMETERS FOR BACKFILL MATERIAL BASED ON THE ACTUAL SOIL CHARACTERISTICS UTILIZED AT THE SITE. THE VALUES OF FRICTION ANGLE, APPARENT COHESION AND UNIT WEIGHT SHALL BE PROVIDED IN THE SHOP DRAWINGS.

6.1.1 DESIGN.

THE DESIGN CONTAINED ON THESE DRAWINGS IS BASED ON INFORMATION PROVIDED BY OTHERS. ON THE BASIS OF THIS INFORMATION, THE TENSAR CORPORATION IS RESPONSIBLE FOR INTERNAL STABILITY OF THE STRUCTURE ONLY. EXTERNAL STABILITY DESIGN INCLUDING FOUNDATION AND SLOPE STABILITY IS THE RESPONSIBILITY OF OTHERS.

- 6.2 FACTORS OF SAFETY:
- 6.2.I INTERNAL STABILITY:

 MAXIMUM GEOGRID DESIGN STRENGTH

 MINIMUM FACTOR OF SAFETY FOR GEOGRID PULLOUT

 MINIMUM FACTOR OF SAFETY FOR SLIDING AT

 LOWEST GEOGRID

 SOIL-GEOGRID INTERACTION COEFFICIENT

 PERCENT COVERAGE OF GEOGRID:

 (ONE ROLL WIDTHS)

 (ONE-HALF ROLL WIDTH)

 = 441.
- 6.2.2 EXTERNAL STABILITY.

MINIMUM FACTOR OF SAFETY FOR SLIDING AT BASE = 1.
MINIMUM FACTOR OF SAFETY FOR OVERTURNING = 2.0
MINIMUM FACTOR OF SAFETY FOR BEARING = 2.5

(EXTERNAL STABILITY, INCLUDING SLIDING, OVERTURNING, AND BEARING CAPACITY, IS THE RESPONSIBILITY OF OTHERS. TENSAR EARTH TECHNOLOGIES, INC. ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR EXTERNAL STABILITY. (SEE NOTES 7.6 & 7.7)

6.2.3 GLOBAL STABILITY:

MINIMUM FACTOR OF SAFETY FOR GLOBAL STABILITY = 1.5

GLOBAL STABILITY IS THE RESPONSIBILITY OF OTHERS. TENSAR EARTH TECHNOLOGIES, INC. ACCEPTS NO LIABILITY OR RESPONSIBILITY FOR GLOBAL STABILITY. (SEE NOTES 7.6 & 7.7)

6.3 SURCHARGE LOADING = 250 psf

6.4 HYDROSTATIC DESIGN = NONE

6.5 SEISMIC DESIGN = NONE

- 6.6 GEOGRID LONG TERM ALLOWABLE DESIGN STRENGTH (LTADS):
 GEOGRID LTADS SHALL BE 19 PERCENT OF ULTIMATE
 GEOGRID STRENGTH AS DETERMINED IN ACCORDANCE WITH
 GEOSYNTHETIC RESEARCH INSTITUTE, (GRI), TEST METHOD
 GGI-87, SINGLE RIB TEST.
- 7.0 SPECIAL PROVISIONS
- 7. WALL ELEVATION VIEWS AND LOCATIONS AND GEOMETRY OF EXISTING STRUCTURES MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
- 7.2 TENSAR EARTH TECHNOLOGIES, INC. ASSUMES NO LIABILITY FOR INTERPRETATION OR VERIFICATION OF SUBSURFACE CONDITIONS, SUITABILITY OF SOIL DESIGN PARAMETERS AND INTERPRETATION OF SUBSURFACE GROUNDWATER CONDITIONS.
- 7.3 THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND VERIFYING THAT THE ACTUAL SITE CONDITIONS ARE AS DESCRIBED IN SECTION 6.0 PRIOR TO AND DURING CONSTRUCTION. THE ENGINEER SHALL BE ON-SITE TO ASSURE THE PROVISIONS IN THE CONSTRUCTION NOTES ARE FOLLOWED.

7.4 THE SOIL DESIGN PARAMETERS STATED IN SECTION 6.0
SHALL BE VERIFIED BY THE CONSTRACTOR. WRITTEN VERIFICATION
OF DESIGN PARAMETERS SHALL BE SUBMITTED TO TENSAR EARTH
TECHNOLOGIES, INC. PRIOR TO COMMENCING WITH CONSTRUCTION.

7.5 ANY REVISIONS TO DESIGN PARAMETERS STATED IN SECTION 6.0 OR STRUCTURE GEOMETRY SHALL REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION

7.6 PER THE MSE RETAINING WALL GENERAL NOTES, TENSAR EARTH TECHNOLOGIES, INC HAS CONSIDER INTERNAL STABILITY OF THE RETAINING WALLS ONLY. EXTERNAL AND GLOBAL STABILITY OF THE WALL IS THE RESPONSIBILITY OF OTHERS

7.7 DIFFERENTIAL SETTLEMENT AND ITS EFFECTS ON THE TENSAR RETAINING WALL SYSTEM SHALL BE THE RESPONSIBILITY OF OTHERS.

THIS SYSTEM MAY BE USED IN ALL ENVIRONMENTS AS NOTED IN THESE PLANS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEM TENSAR EARTH TECHNOLOGIES MSE RETAINING WALL

	Names	Dates	Approved By			
Designed By			State Structures Design Engineer			
Drawn By	JMS	8/14/98	Revision	Sheet No.	Index No.	
Checked By			00	1 of 17	5025	

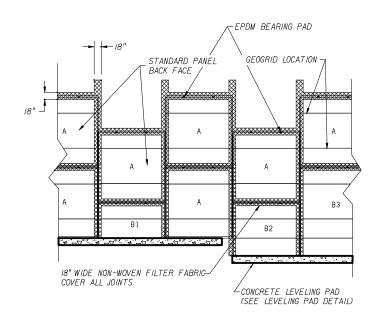
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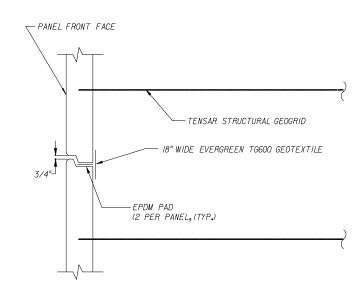
TYPICAL FILTER FABRIC COVERAGE DETAIL

NOT TO SCALE

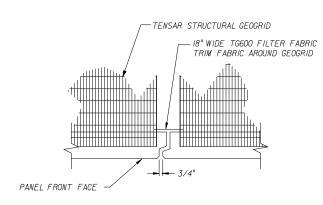
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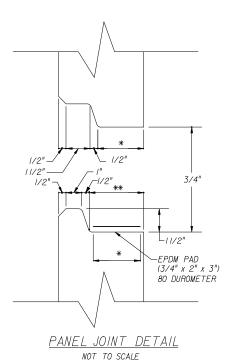
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HORIZONTAL JOINT DETAIL
NOT TO SCALE



VERTICAL JOINT DETAIL



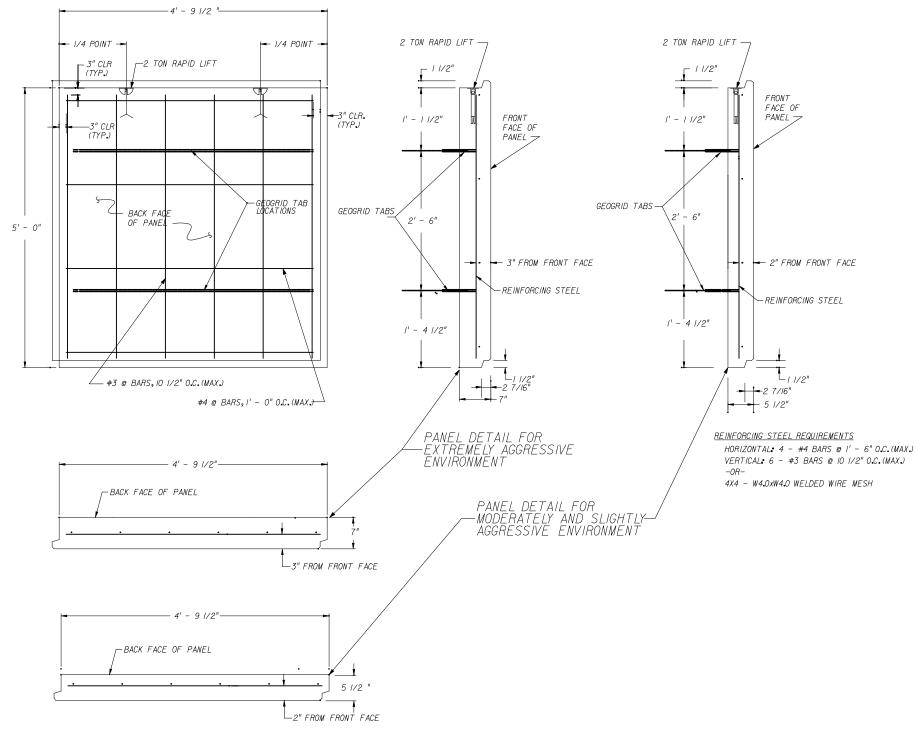
- * 3" FOR MODERATELY & SLIGHTLY
- AGGRESSIVE ENVIRONMENT
 4 1/2" FOR EXTREMELY AGGRESSIVE ENVIRONMENT
- ** 3 1/2" FOR MODERATELY & SLIGHTLY
 AGGRESSIVE ENVIRONMENT
- 4 3/4" FOR EXTREMELY AGGRESSIVE ENVIRONMENT

THIS SYSTEM MAY BE USED IN ALL ENVIRONMENTS.

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RETAINING WALL SYSTEM
TENSAR EARTH TECHNOLOGIES
MSE RETAINING WALL

TENSAR
EARTH TECHNOLOGIES INC.
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Lakeside Center Suite 450
Atlanta, GA 30328
(404) 250-1290



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TYPICAL PANEL DETAILS - STANDARD A PANEL

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MSE RETAINING WALL

Designed By

Drawn By

JMS 8/14/98

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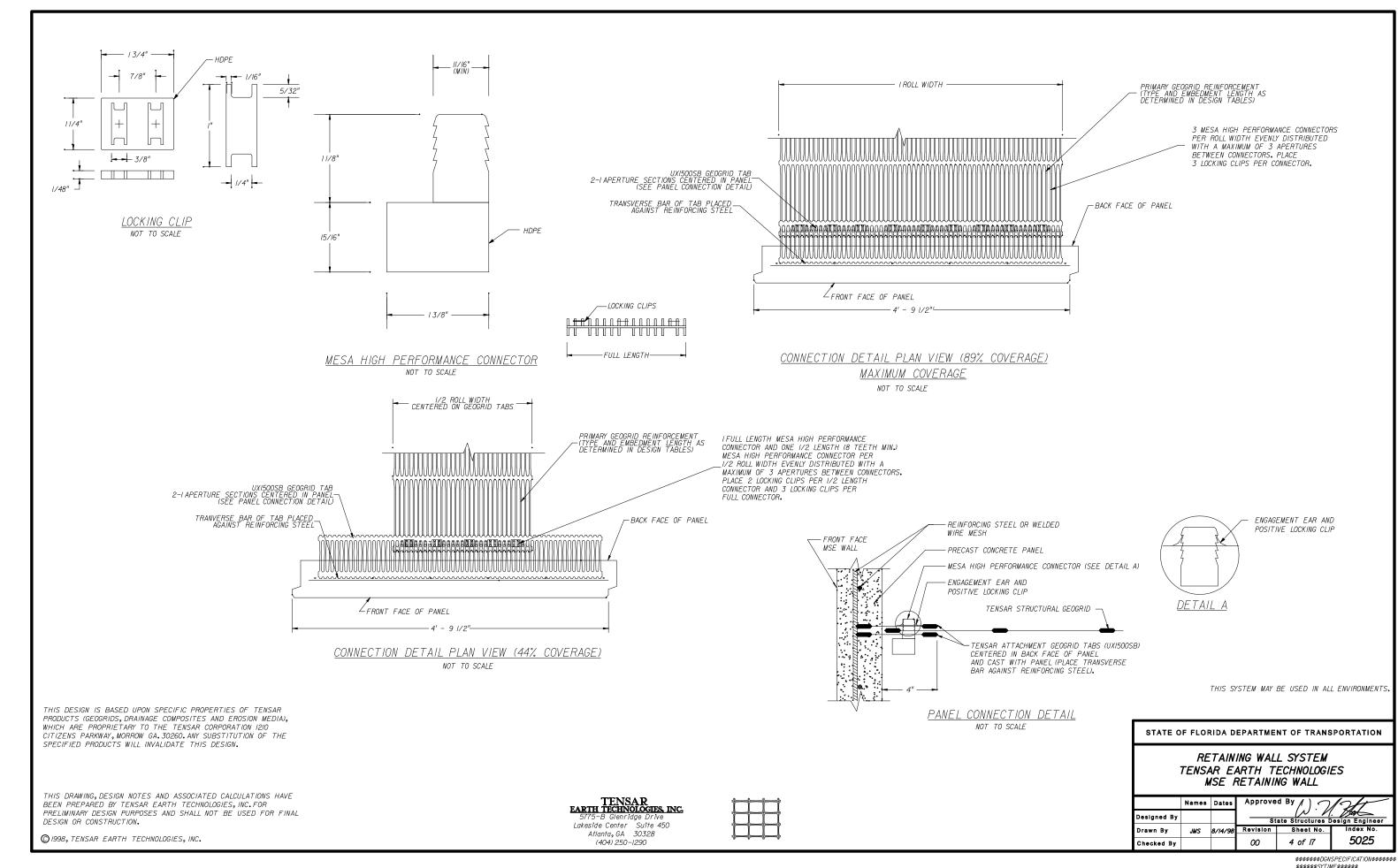
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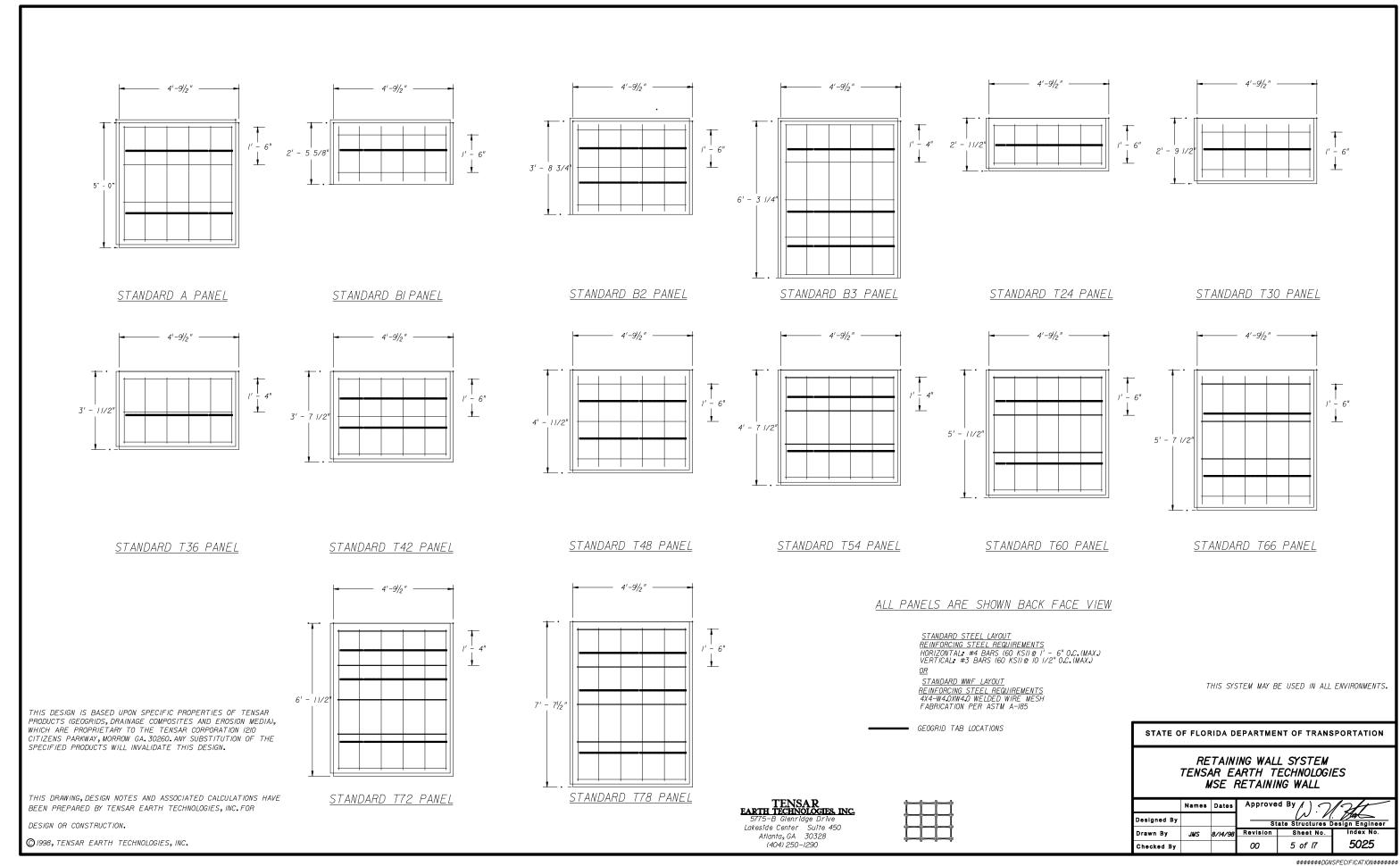
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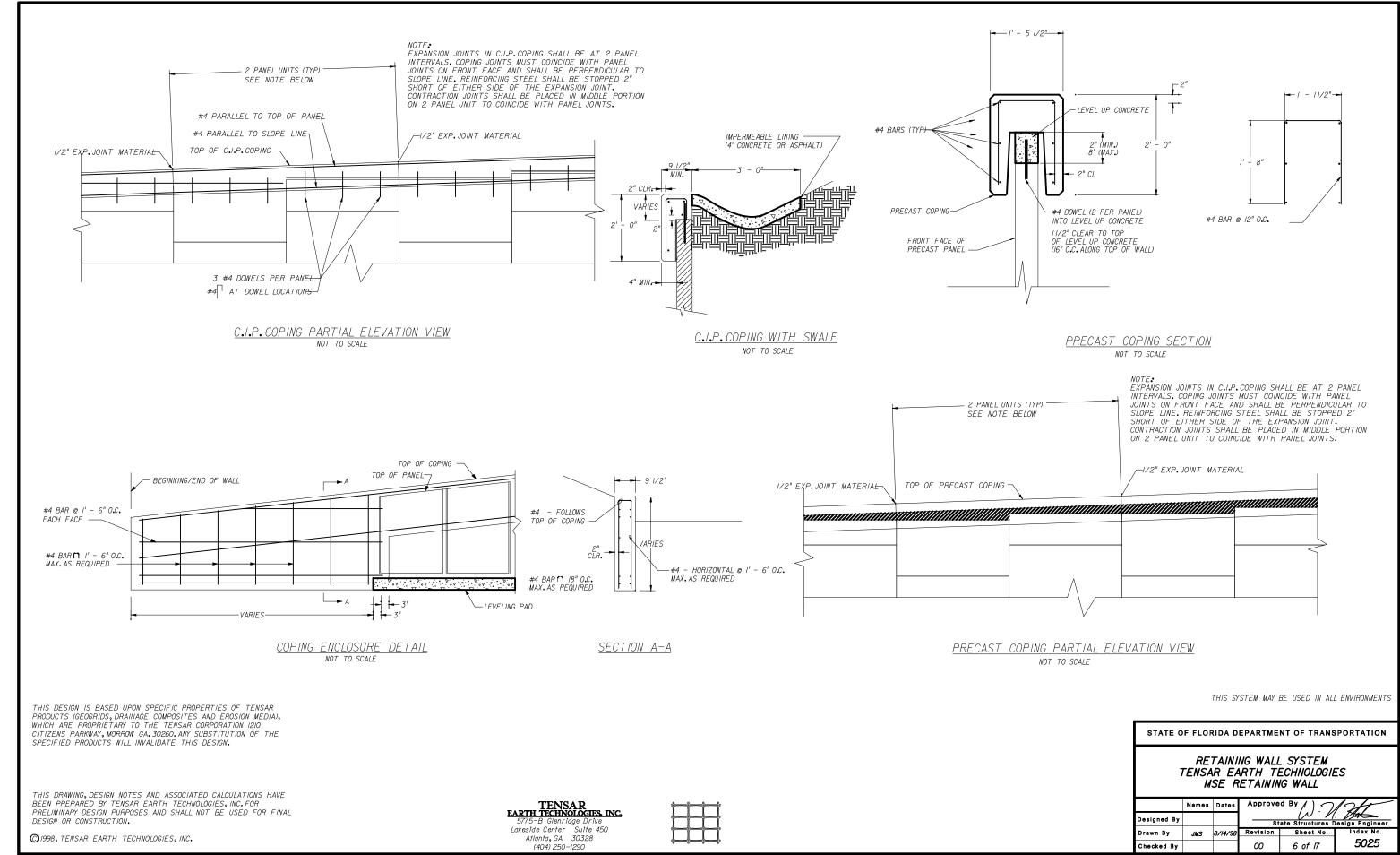
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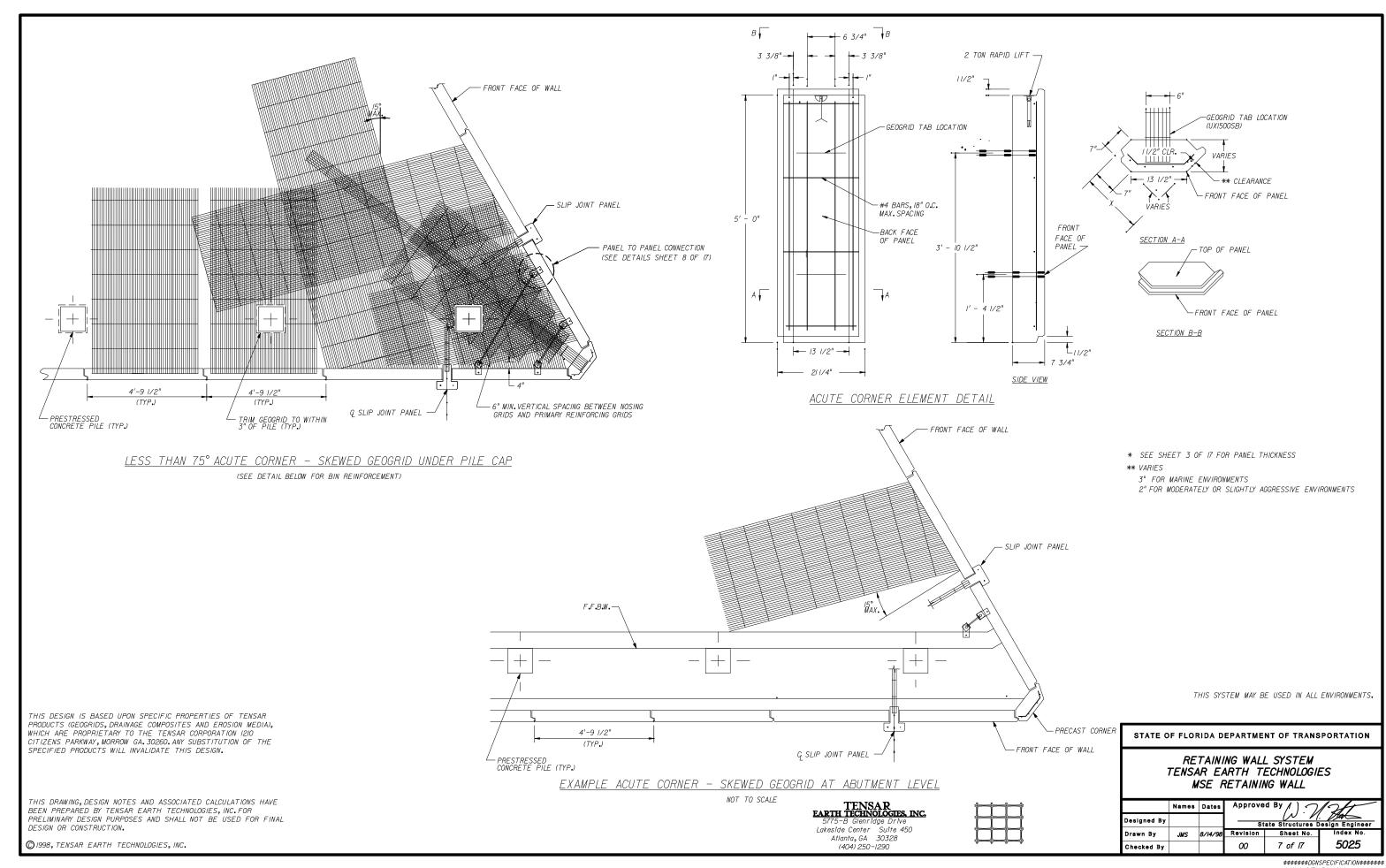
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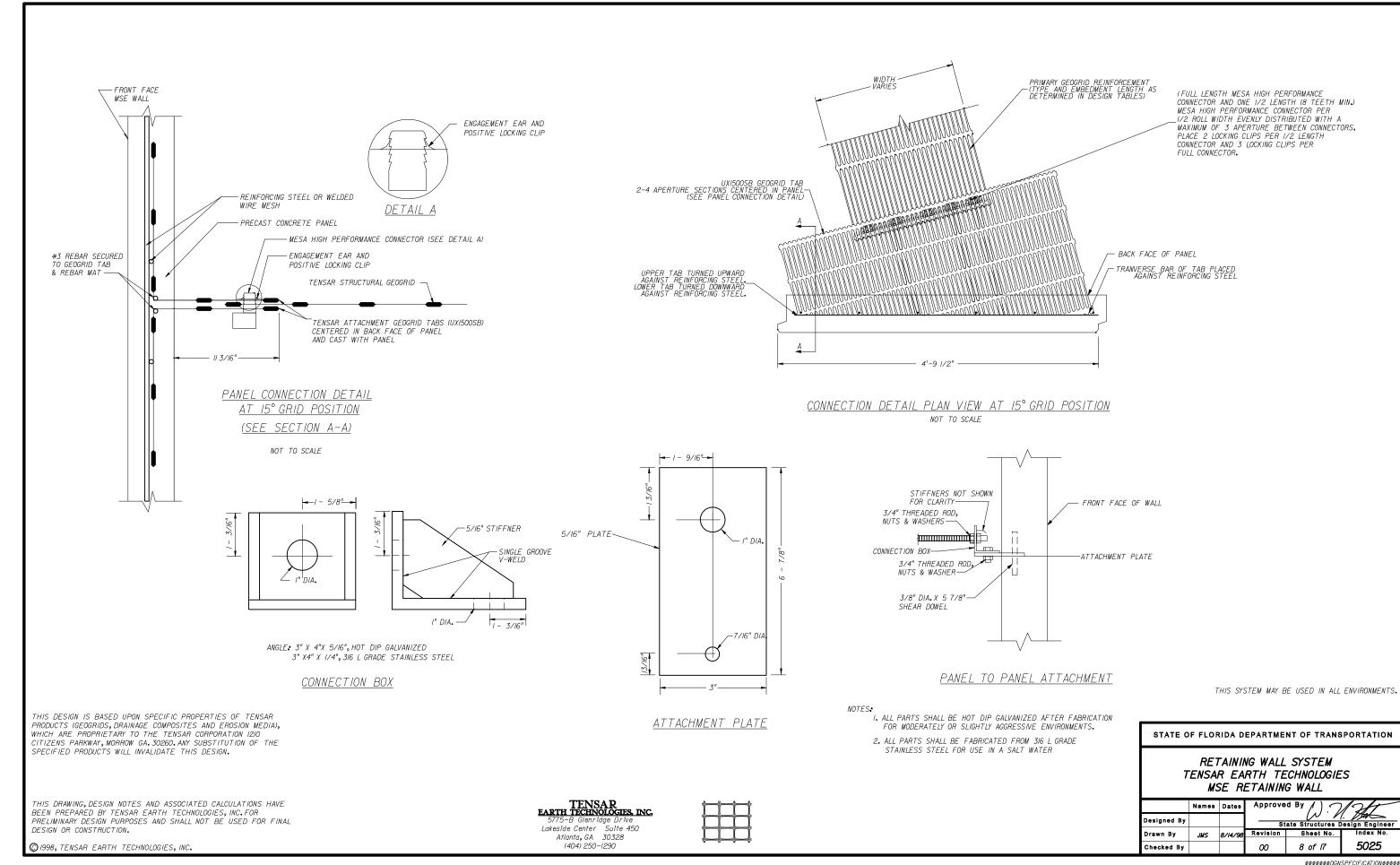
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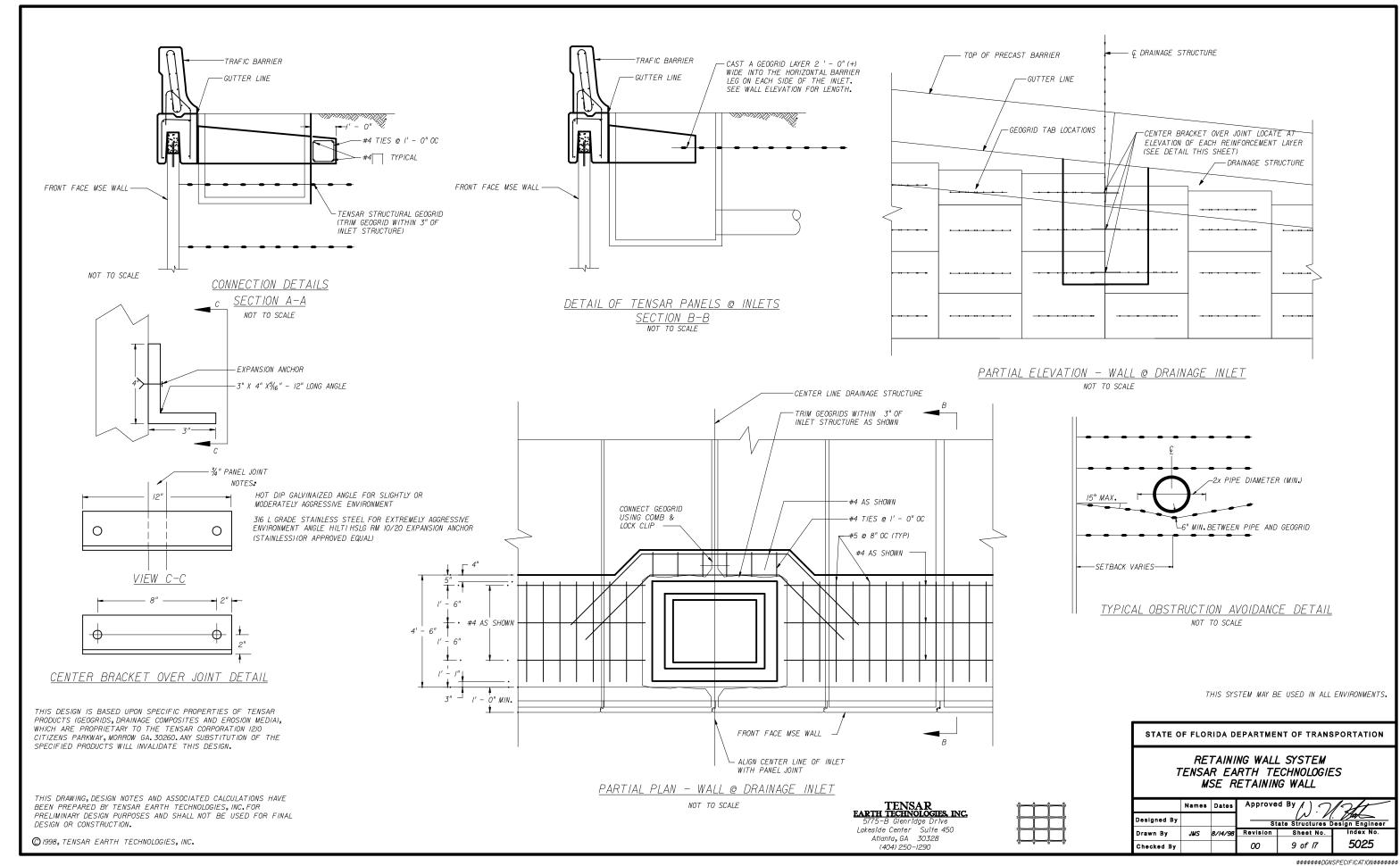


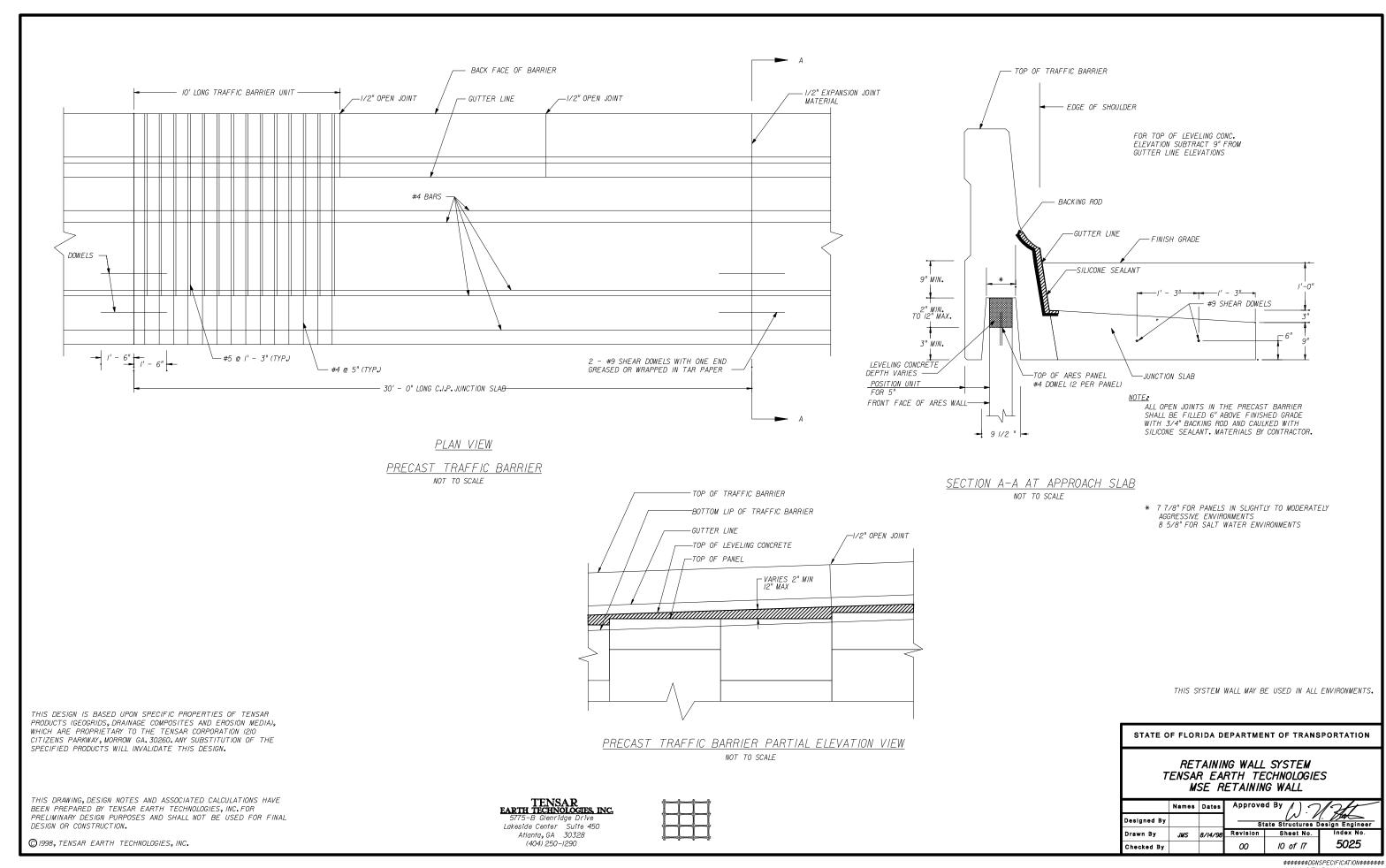


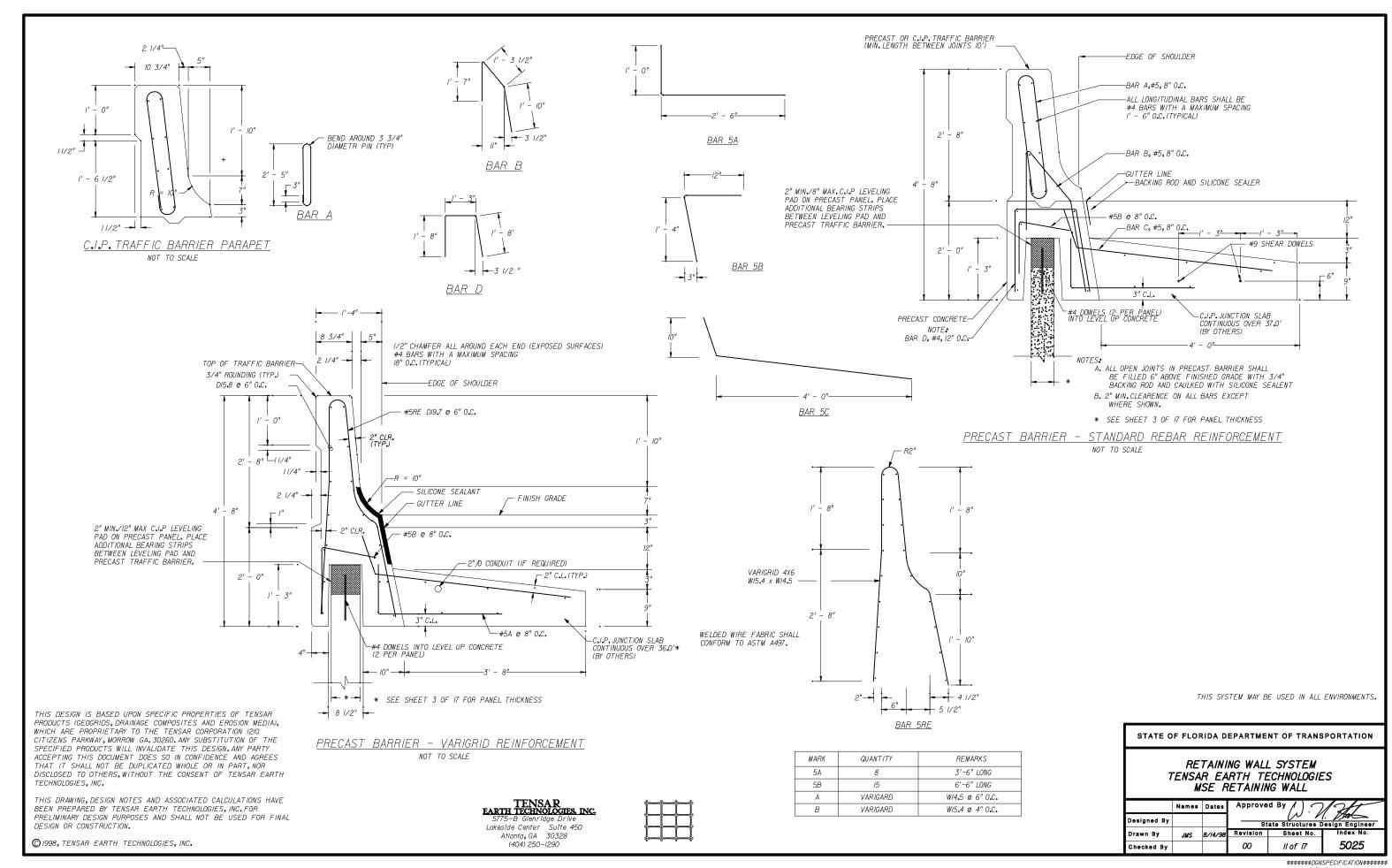


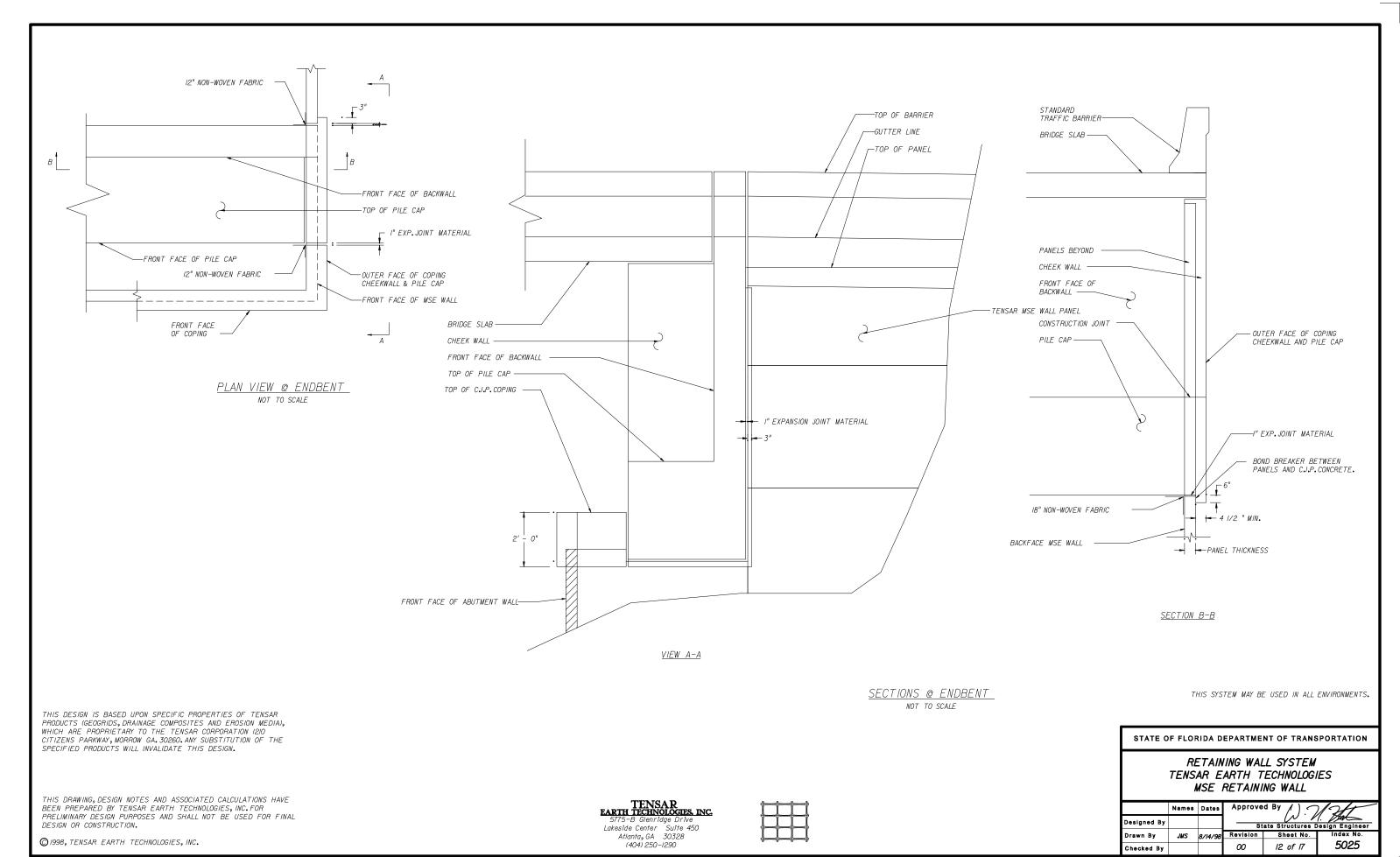


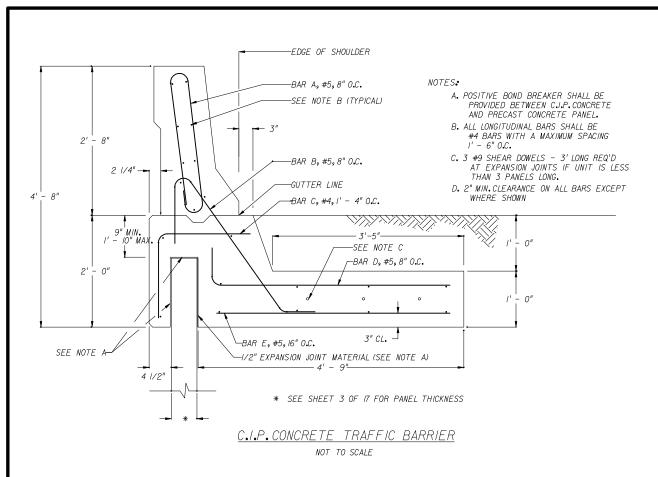


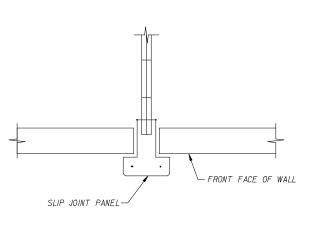












TENSAR GEOGRIE

TENSAR GEOGRIE

EMBEDMENT SAM
AS WALL SECTION

4"

3"

1' - 0"

#4 BARS

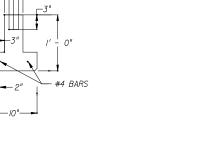
SLIP JOINT DETAIL

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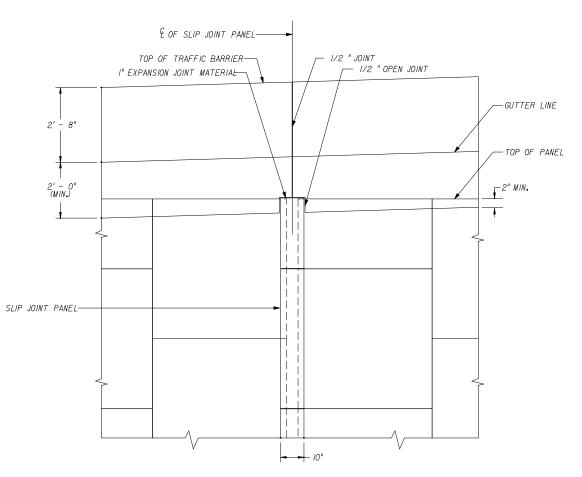
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18" WIDE NON-WOVEN FABRIC -COVER ALL JOINTS

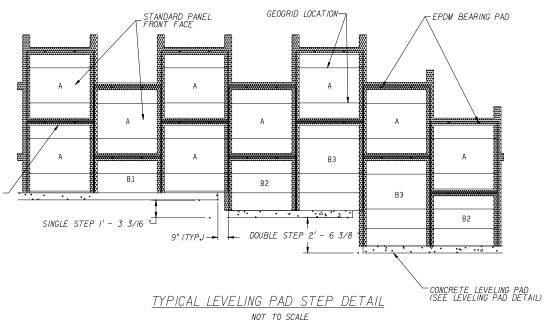
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C.I.P. TRAFFIC BARRIER

OVER SLIP JOINT PANEL



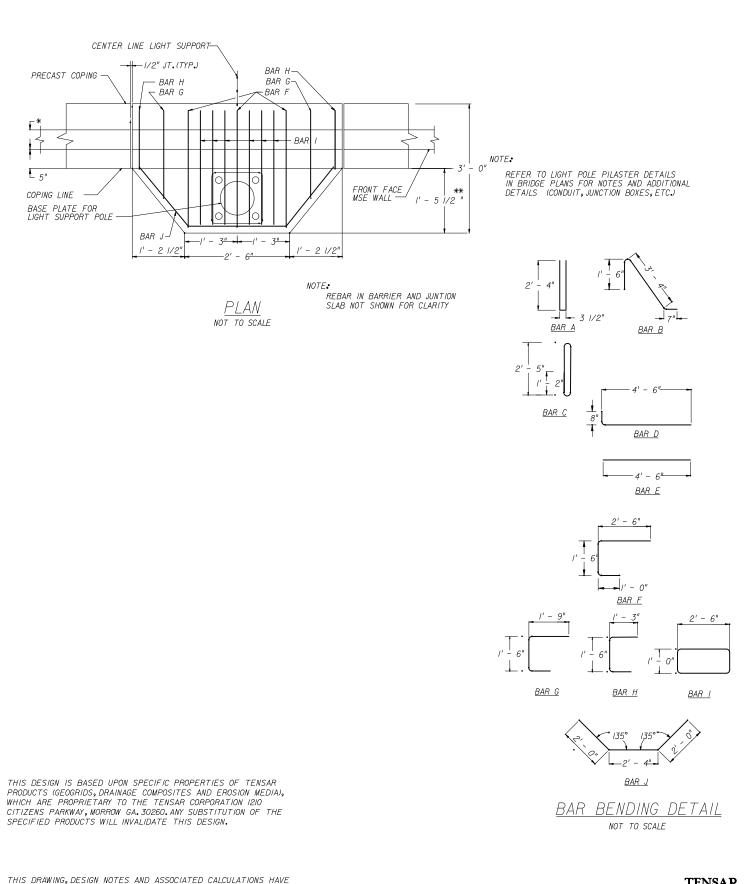
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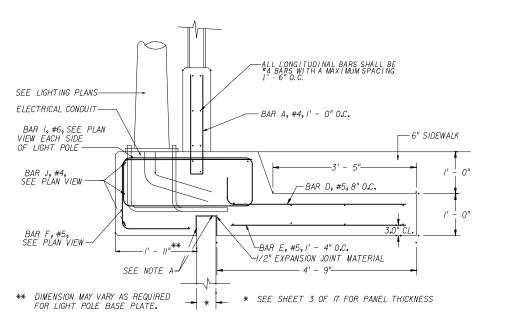
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RETAINING WALL SYSTEM
TENSAR EARTH TECHNOLOGIES
MSE RETAINING WALL

	Names	Dates	Approved By			
Designed By			State Structures Design Engineer			
Drawn By	JMS	8/14/98	Revision	Sheet No.	Index No.	
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\$\$\$\$\$\$DGNSPECIFICATION\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$





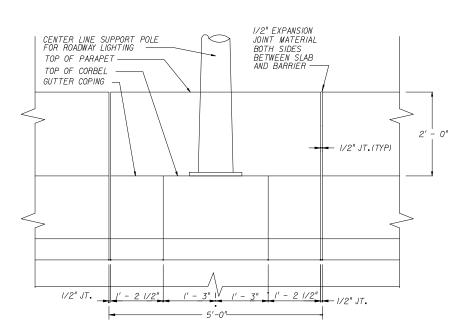
NTES:

A. POSITIVE BOND BREAKER (6 MIL. POLYETHYLENE OR APPROVED EQUAL) SHALL BE PROVIDED BETWEEN CAST IN PLACE CONC. AND PRECAST CONC. PANEL.

B. MAINTAIN A 2" MIN. CLEARENCE ON ALL BARS. EXCEPT WHERE NOTED OTHERWISE.

PARAPET DETAIL AT LIGHT POLE

NOT TO SCALE



PARTIAL ELEVATION

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RETAINING WALL SYSTEM TENSAR EARTH TECHNOLOGIES MSE RETAINING WALL

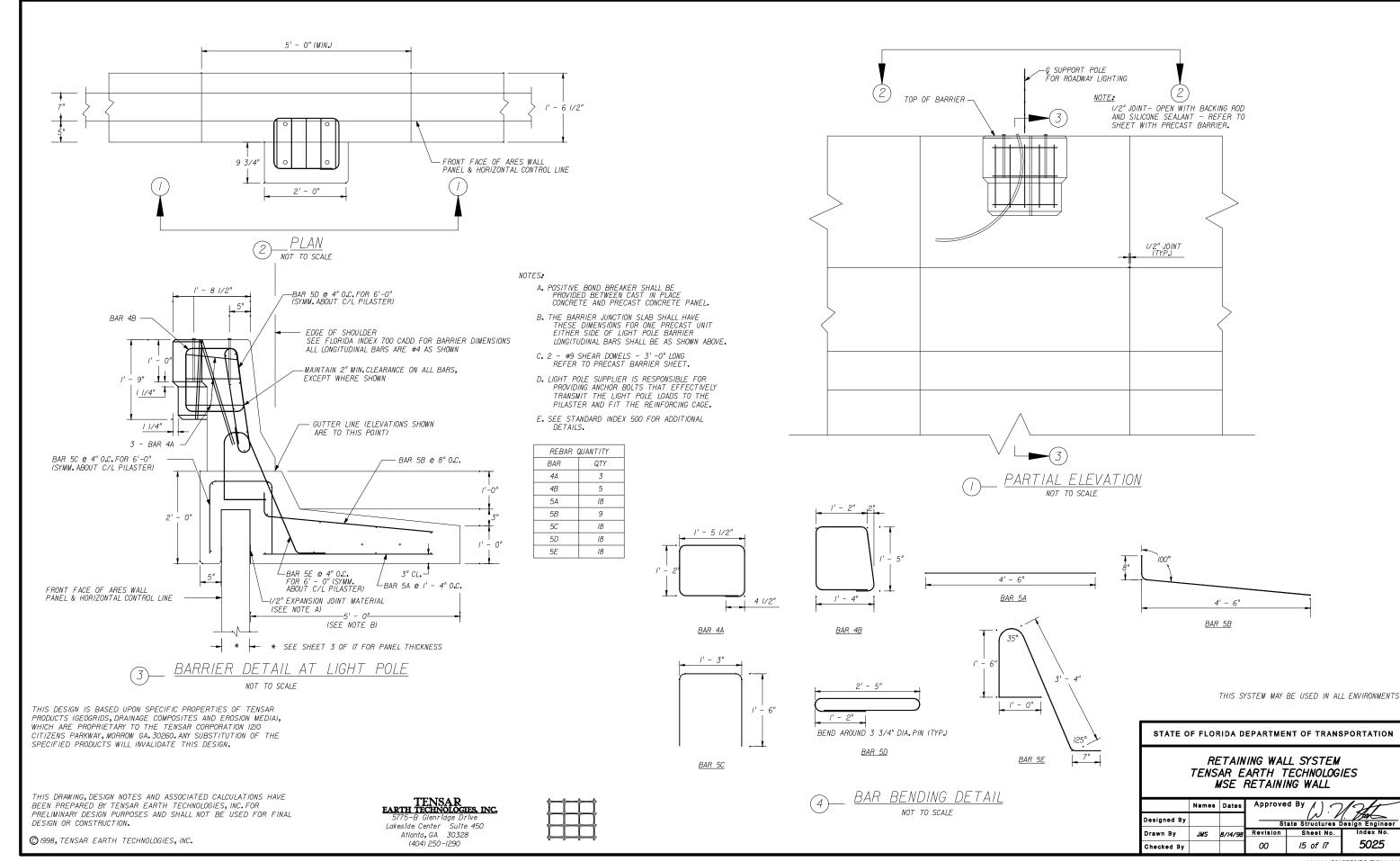
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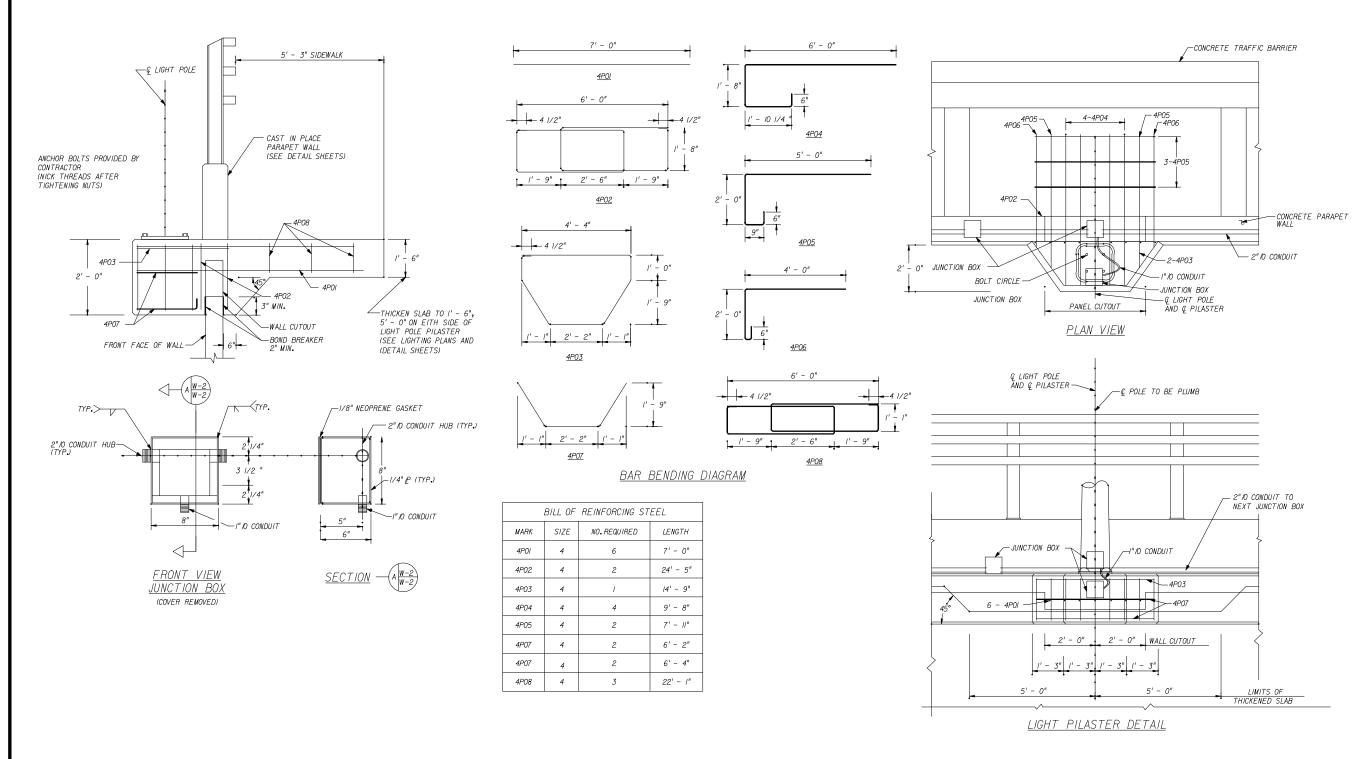
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MSE RETAINING WALL

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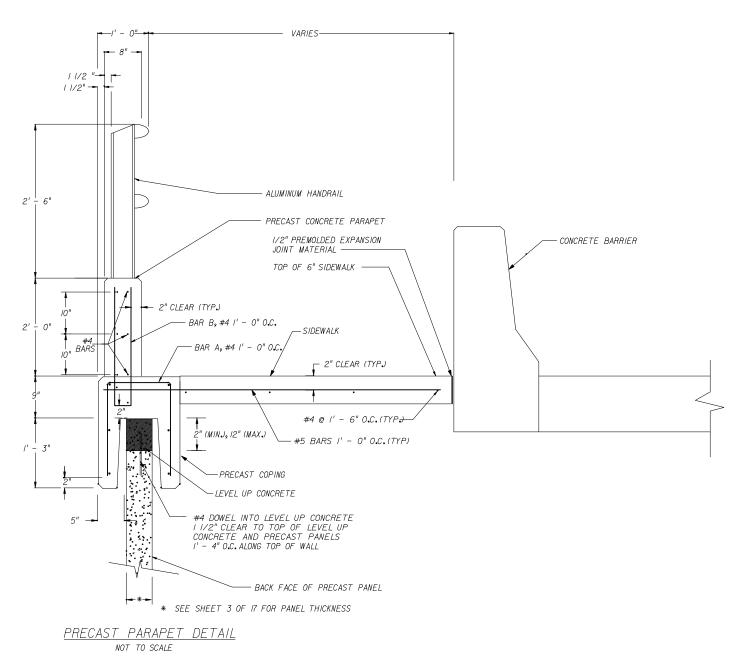
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1 1/2" -1 1/2" --- ALUMINUM HANDRAIL - CAST IN PLACE PARAPET 1/2" PREMOLDED EXPANSION JOINT MATERIAL - CONCRETE BARRIER TOP OF 6" SIDEWALK 2" CLEAR (TYP) -#4 @ 1' - 0" O.C. #4 #4 @ 1' - 0" O.C. #5 @ I' O.C. [2" CLEAR (TYP.) 3" MIN #4 @ I' - 6" O.C. (TYP) -- #4 DOWEL (2 PER PANEL) -PROVIDE A POSITIVE BOND BREAKER BETWEEN C.I.P. CONCRETE AND PRECAST PANELS -BACK FACE OF PRECAST PANEL * SEE SHEET 3 OF 17 FOR PANEL THICKNESS

C.I.P. PARAPET DETAIL

NOT TO SCALE

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEM TENSAR EARTH TECHNOLOGIES MSE RETAINING WALL

Designed By

Drawn By

Checked By

Dates

Approved By

State Structures Design Engineer

Revision Sheet No. Index No.

00 17 of 17 5025

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