HILFIKER MSE SQUARE PANEL WALL SYSTEM

GENERAL NOTES

DESIGN CRITERIA

1. THE ATTACHED DETAILS ARE BASED ON THE ASSUMPTIONS THAT THE MATERIAL WITHIN THE REINFORCED VOLUME, METHODS OF CONSTRUCTION AND QUALITY OF PREFABRICATED COMPONENTS MEET THE GOVERNING AGENCIES SPECIFICATION FOR RETAINING WALL SYSTEMS.

2. MINIMUM DESIGN 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 UNITIZED AT THE SITE. THE VALUE OF THE INTERNAL FRICTION ANGEL, PHI, THE COHESION. C, AND THE UNIT WEIGHT, GAMMA, SHALL BE PROVIDED IN THE SHOP DRAWINGS.

   EXTERNAL STABILITY

OVERTURNING	≥ 2.0
SLIDING	≥ 1.5
BEARING PRESSURE	≥ 2.5
OVERALL STABILITY	≥ 1.5
INTERNAL STABILITY	
PULLOUT	≥ 1.5
STEEL YIELD STRESS	= 0.48 F_y
LIVE LOAD SURCHARGE	= 250 PSF

3. THE MAXIMUM APPLIED BEARING PRESSURE AT THE INTERFACE OF THE FOUNDATION AND SELECT BACKFILL MATERIAL IS SHOWN ON THE PLANS. THE BEARING PRESSURE SHOWN IS THE MAXIMUM FOR THE GIVEN BASE MAT LENGTH. IT IS THE RESPONSIBILITY OF OTHERS TO DETERMINE THAT THE BEARING PRESSURE IS ALLOWABLE FOR THAT LOCATION.

4. ANY UNSUITABLE FOUNDATION MATERIAL BELOW THE REINFORCED VOLUME AS DETERMINED BY THE ENGINEER SHALL BE EXCAVATED AND REPLACED WITH SUITABLE MATERIAL AS DIRECTED BY THE ENGINEER.

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

WALL CONSTRUCTION

1. WALLS FOUNDED ON CURVES SHALL HAVE THEIR PANELS DIMENSIONED AS A SERIES OF CHORDS (AS DIMENSIONED IN SHOP DRAWINGS) IN ORDER TO MATCH THE REQUIRED WALL RADIUS.

2. FOR LOCATION AND ALIGNMENT OF THE MSE STRUCTURES REFERENCE THE RETAINING WALL CONTROL PLANS.

3. IF MANHOLE AND DROP INLETS ARE REQUIRED, THEY SHALL BE LOCATED AS SHOWN ON THE RETAINING WALL ELEVATION DRAWINGS.

4. IF PILES ARE LOCATED WITHIN THE REINFORCED VOLUME THEY SHALL BE DRIVEN PRIOR TO CONSTRUCTION OF THE WALL UNLESS AN ALTERNATE METHOD IS USED TO ISOLATE THE COLUMNS FROM THE REINFORCED VOLUME AS APPROVED BY THE ENGINEER.

5. BACKFILL MATERIAL SHALL BE COMPACTED IN ACCORDANCE WE WITH SECTION 548 TO A LEVEL 2" (PLUS OR MINUS) ABOVE THE ELEVATION OF THE SOIL REINFORCING ELEMENT. NO SOIL REINFORCEMENT SHALL BE ATTACHED TO ANY PANEL BEFORE THE BACKFILL IS PLACED AT THE REQUIRED ELEVATION AND IS COMPACTED.

6. STRUCTURES GREATER THAN 20 FEET SHALL HAVE THE FINISHED GRADE PLACED AND COMPACTED AT THE FRONT FACE OF THE STRUCTURE BEFORE THE STRUCTURE HEIGHT EXCEEDS 20 FEET. FINISH GRADE SHALL BE COMPACTED TO 95 % OF AASHTO T-180 UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ANY GUARDRAIL POSTS PRIOR TO PLACING THE TOP ROW OF SOIL REINFORCEMENT. THE POST SPACING SHALL BE ADJUSTED TO AVOID CONFLICTS WITH THE LONGITUDINAL SOIL REINFORCING WIRE. CUTTING OF THE LONGITUDINAL WIRE SHALL BE ALLOWED ONLY AS DIRECTED BY THE ENGINEER.

8. IF EXISTING OR FUTURE STRUCTURES ARE TO BE PLACED IN THE REINFORCED VOLUME THAT INTERFERE WITH THE PROPER PLACEMENT OF THE SOIL REINFORCEMENT THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY FOR A COURSE OF ACTION.

9. TOP COPING PANELS BENEATH CAST-IN-PLACE COPING SHALL HAVE 1/2" DOWELS PROTRUDING FROM THEIR TOP EDGE.

10. FOR OTHER INFORMATION PERTAINING TO THE CONSTRUCTION OF THE HILFIKER RETAINING WALL PLEASE REFER TO HILFIKER RETAINING WALLS ERECTION MANUAL.

11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DEFLECT THE TOP ROW OF SOIL REINFORCEMENT DOWNWARD SO AS TO NOT CONFLICT WITH ROADWAY MIXING OPERATIONS AND/OR ROADWAY CONSTRUCTION OPERATIONS. ANY SOIL REINFORCING MATERIAL THAT IS DAMAGED SHALL BE REPLACED AT THE CONTRACTORS EXPENSE.

MISCELLANEOUS NOTES

1. NOMINAL SOIL REINFORCING GRID LENGTH

   THE WELDED WIRE MESH IS MANUFACTURED IN LENGTHS CORRESPONDING TO THE DIMENSION "B" AS GIVEN IN THE RETAINING WALL ELEVATIONS. THE ACTUAL LENGTH FROM THE FRONT FACE OF THE PANEL TO THE TAIL OF THE SOIL REINFORCING GRID IS PLUS 12" THIS ACCOUNTS FOR THE THICKNESS OF THE PANEL AND THE LOCATION OF THE CONNECTION OF THE SOIL REINFORCING MAT WITH THE PANEL ANCHOR. THE FOUNDATION SHALL BE EXCAVATED TO AN EXTENT OF "B" PLUS 12".

2. SELECT BACKFILL QUANTITY

   THE REQUIRED VOLUME OF IN-PLACE SELECT BACKFILL IS CALCULATED BY MULTIPLYING THE RETAINING WALL FACE AREA BY THE SOIL REINFORCING LENGTH. THIS IS PERFORMED AT EACH INDIVIDUAL SEGMENT OF WALL FOR EACH CORRESPONDING "B". THE BACKFILL QUANTITY IF GIVEN BY HILFIKER RETAINING WALLS IS AN ESTIMATE ONLY. THE CONTRACTOR IS ULTIMATELY TO DETERMINE THE QUANTITY OF SELECT BACKFILL MATERIAL THAT IS REQUIRED.

3. PANEL FINISH

   THE CONCRETE PANELS SHALL HAVE A PLAIN STEEL FORM FINISH UNLESS OTHERWISE SPECIFIED ON THE RETAINING WALL CONTROL PLANS.

4. THE FOLLOWING MATERIALS ARE SUPPLIED BY HILFIKER RETAINING WALLS

   - PRECAST CONCRETE FACING PANEL
   - SOIL REINFORCING GRIDS
   - CONNECTION PINS
   - 1/2" DIAMETER ALIGNMENT PINS
   - 60 DURO $\frac{3}{4}$" X 3" X 8" BEARING PADS
   - SYNTHETIC INDUSTRIES GEOTEX 401 NONWOVEN GEOTEXTILE FILTER FABRIC

   ANY OTHER MATERIAL REQUIRED TO BUILD THE MSE STRUCTURES ACCORDING TO THE GOVERNING SPECIFICATION SHALL BE SUPPLIED BY THE CONTRACTOR.

5. HILFIKER RETAINING WALLS SUPPLIES MECHANICALLY STABILIZED EARTH STRUCTURAL COMPONENTS FOR USE WITH THE HILFIKER RETAINING WALL SYSTEMS FOR THE STRUCTURES DETAILED HEREIN. THE ERECTION MANUAL PROVIDED BY HILFIKER RETAINING WALLS IS A GENERAL GUIDELINE FOR ERECTING THE HILFIKER RETAINING WALL SYSTEM. ALL QUALITY CONTROL PROCEDURES, STAGING PROCEDURES, MATERIAL HANDLING, AND SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE OBLIGATION TO CONSTRUCT THE RETAINING WALL ACCORDING TO THE PROJECT PLANS AND SPECIFICATIONS AND ALL LAWS OF THE GOVERNING STATE.

DATE: 07-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN ENGLISH UNITS.

HILFIKER RETAINING WALLS
3900 BROADWAY
EUREKA. CA 95503
800-762-8962

THIS SYSTEM FOR USE IN MODERATELY OR SLIGHTLY AGGRESSIVE ENVIRONMENTS ONLY

THIS DRAWING IS FURNISHED SOLELY FOR THE USE OF OR IN CONNECTION WITH PROJECT BIDDING AND THE PROPRIETARY INFORMATION SHOWN HEREON IS NOT TO BE USED BY ANY OTHER ORGANIZATION FOR ANY OTHER PURPOSE WITHOUT SPECIFIC WRITTEN AUTHORIZATION BY HILFIKER RETAINING WALLS OF EUREKA, CALIFORNIA. HILFIKER RETAINING WALLS ARE PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS: 3,631,682, 4,117,686, 4,260,296, 4,329,089, 4,324,508, 4,343,572, 4,391,557, 4,505,621, 4,616,959, 4,643,618, 4,661,023, 4,856,939, 5,733,072 AND OTHERS PENDING.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEM
HILFIKER SQUARE PANEL

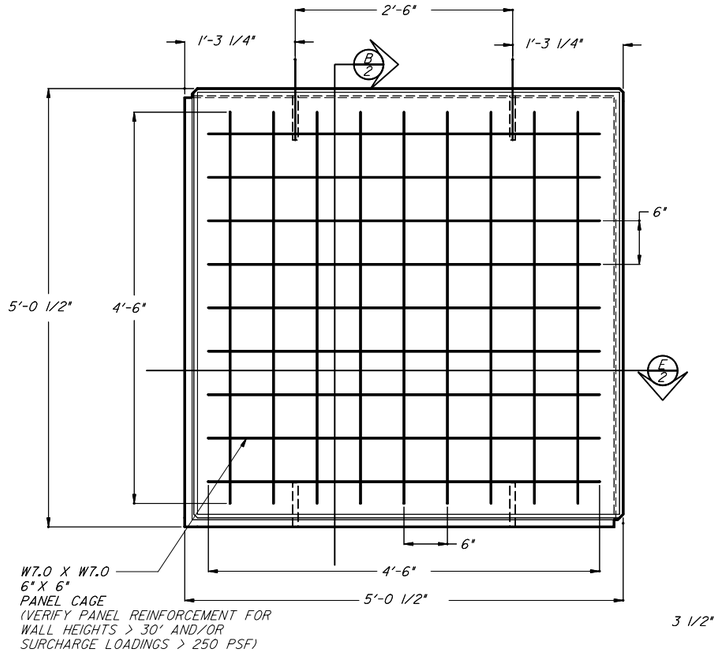
INTERIM STANDARD

INDEX NO. 5040 (SHEETS 1 - 13 OF 13) IS A SUPPLEMENT TO THE ENGLISH DESIGN STANDARDS BOOKLET, DATED JANUARY 2004.

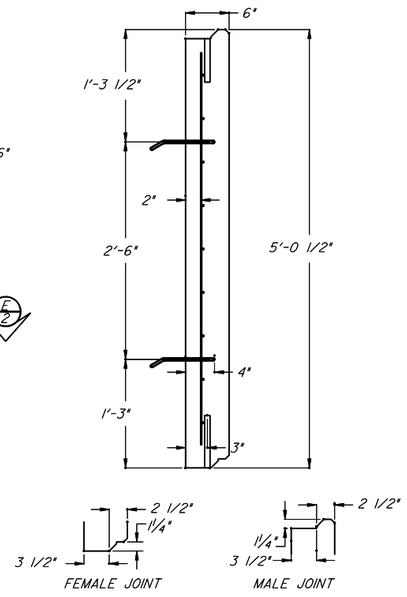
APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
04	1 of 13	5040

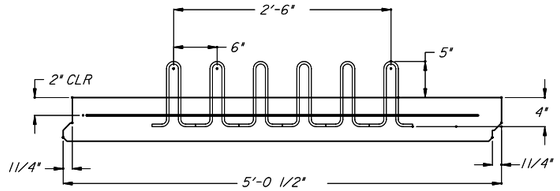
$$$$$$$DGNSPECIFICATION$$$$$$$
$$$$$$$SYTIME$$$$$$$



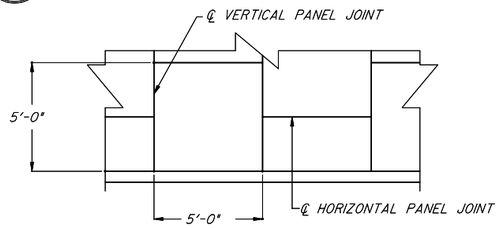
A/2 STANDARD SQUARE PANEL
TYPE G - FRONT FACE



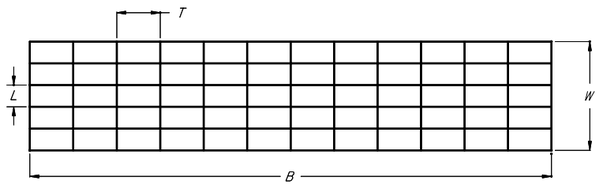
B/2 STANDARD SQUARE PANEL
TYPE G SECTION



E/2 STANDARD SQUARE PANEL
TYPE B/G

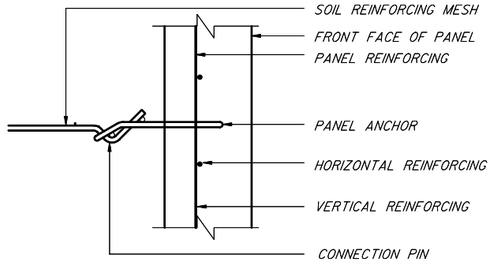


F/2 TYPICAL PANEL LAYOUT
PARTIAL ELEVATION - FRONT FACE



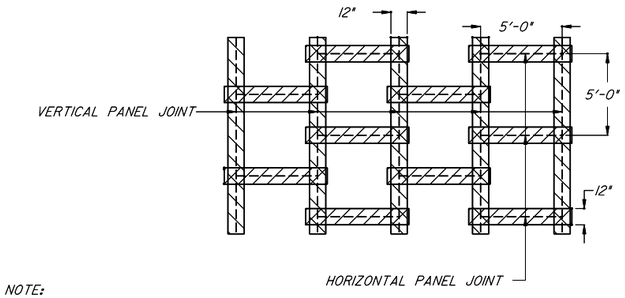
B = LENGTH OF SOIL REINFORCEMENT
W = WIDTH OF SOIL REINFORCING ELEMENT
L = LONGITUDINAL WIRE SPACING (6" MAXIMUM)
T = TRANSVERSE WIRE SPACING (2'-0" MAXIMUM)

G/2 SOIL REINFORCING ELEMENT
MINIMUM WIRE SIZE IS W10



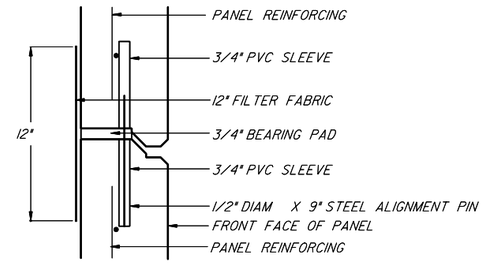
NOTE: ANCHOR SIZE SHALL BE MINIMUM SIZE OF ATTACHED SOIL REINFORCING

H/2 CONNECTION DETAIL - TYP

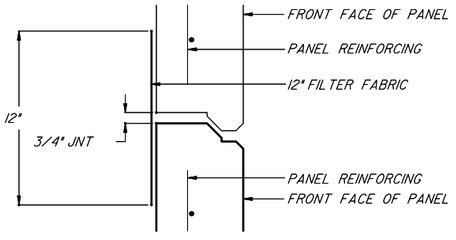


NOTE:
1. FILTER FABRIC SHALL BE PLACED OVER ALL VERTICAL AND HORIZONTAL JOINTS
2. FABRIC SHALL BE ADHERED TO BACK FACE OF PANEL WITH THE USE OF AN APPROVED CONSTRUCTION ADHESIVE
3. MINIMUM OVER LAP OF 12" REQUIRED BETWEEN ROLLS.

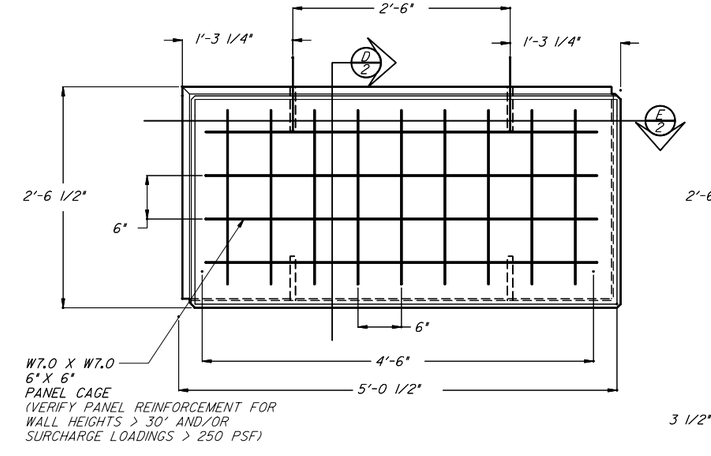
J/2 FILTER CLOTH - JOINT DETAIL
PARTIAL ELEVATION - BACK FACE



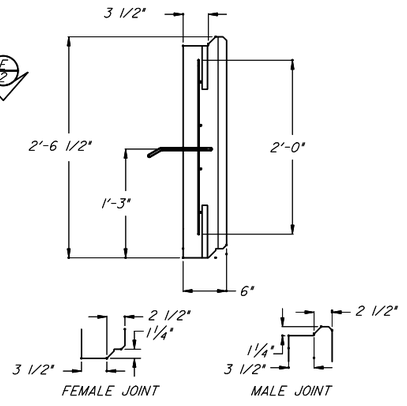
K/2 HORIZONTAL JOINT DETAIL
PARTIAL SECTION



L/2 VERTICAL JOINT DETAIL
PARTIAL SECTION



C/2 STANDARD HALF PANEL
TYPE B - FRONT FACE



D/2 STANDARD HALF PANEL
TYPE B SECTION

HILFIKER RETAINING WALLS
3900 BROADWAY
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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

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HILFIKER SQUARE PANEL

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State Structures Design Engineer

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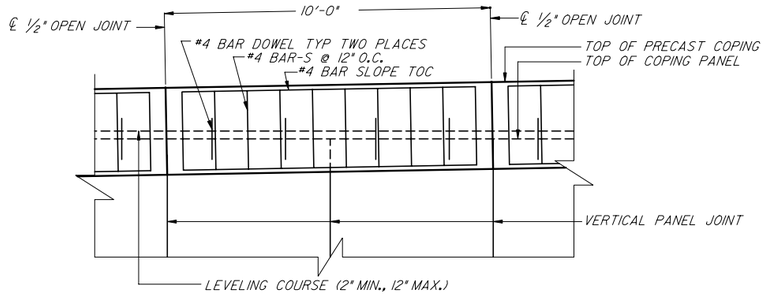
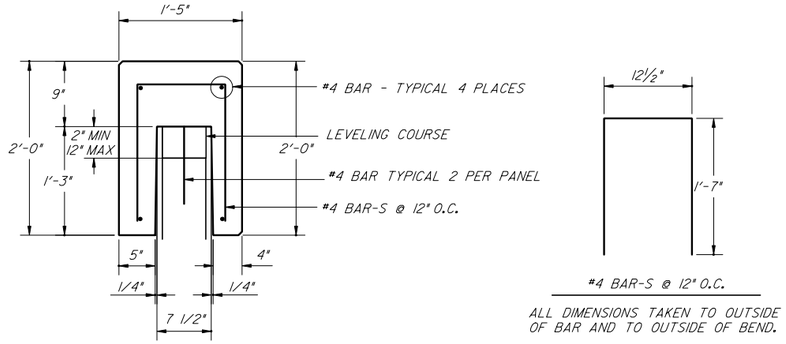


NOTE:
PLACE PRE-CAST COPING SO JOINTS LINE UP WITH COPING PANEL BELOW. USE GROUT TO BRING TOP COPING PANEL TO GRADE.

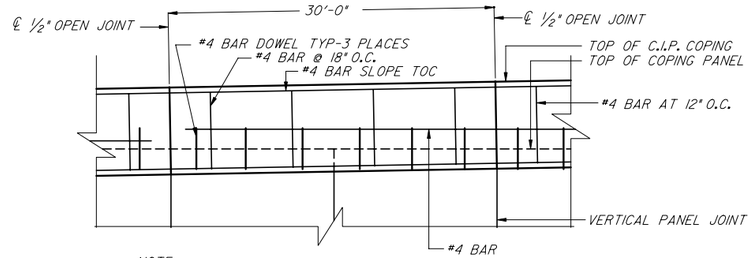
A 3 PRECAST COPING PARTIAL ELEVATION



#4 BAR-S @ 12" O.C.

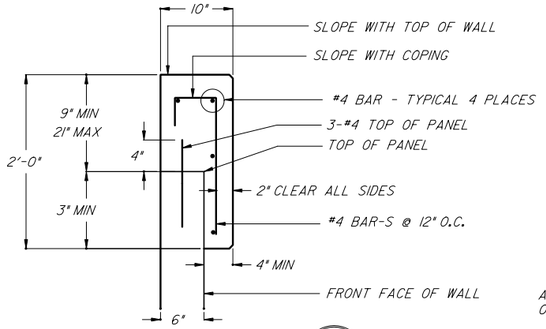
ALL DIMENSIONS TAKEN TO OUTSIDE OF BAR AND TO OUTSIDE OF BEND.

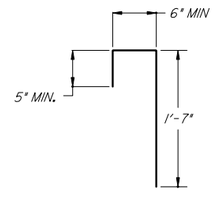
B 3 PRECAST COPING



NOTE:
PLACE C.I.P. COPING SO JOINTS LINE UP WITH COPING PANEL BELOW.

C 3 C.I.P. COPING PARTIAL ELEVATION

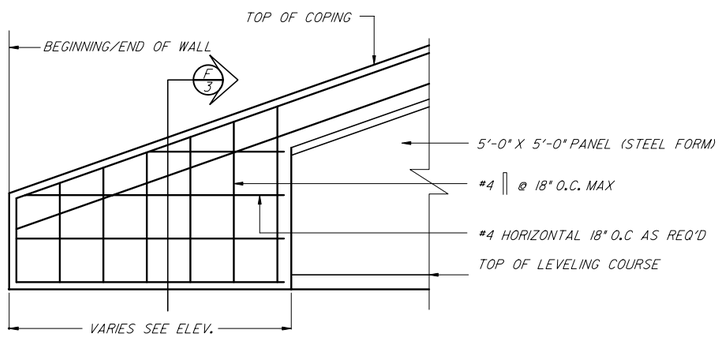




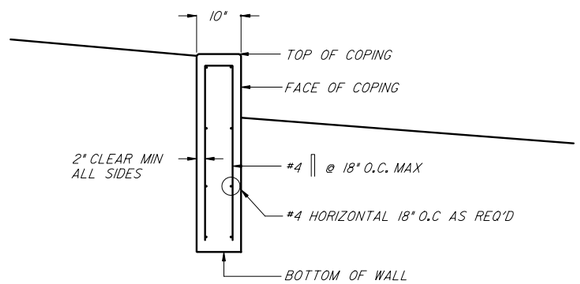
#4 BAR-S @ 12" O.C.

ALL DIMENSIONS TAKEN TO OUTSIDE OF BAR AND TO OUTSIDE OF BEND.

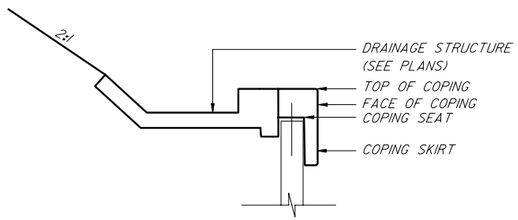
D 3 C.I.P. COPING



E 3 COPING ENCLOSURE ELEVATION



F 3 COPING ENCLOSURE SECTION



G 3 COPING-DRAINAGE SECTION DETAIL

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HILFIKER RETAINING WALLS
3900 BROADWAY
EUREKA, CA 95503
800-762-8962

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State Structures Design Engineer

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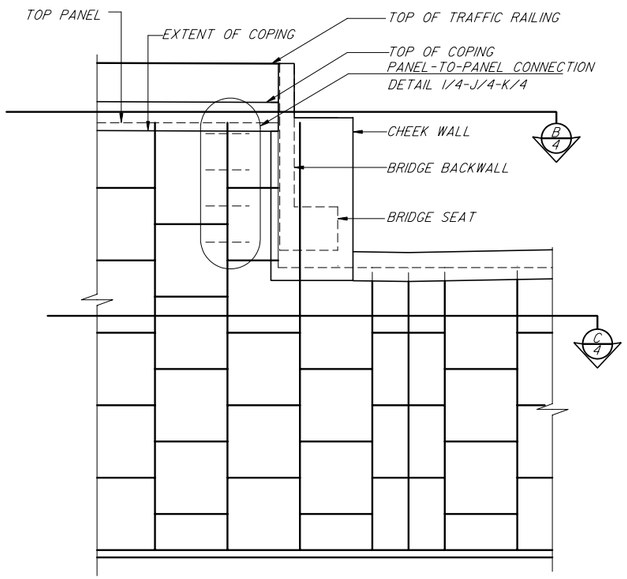
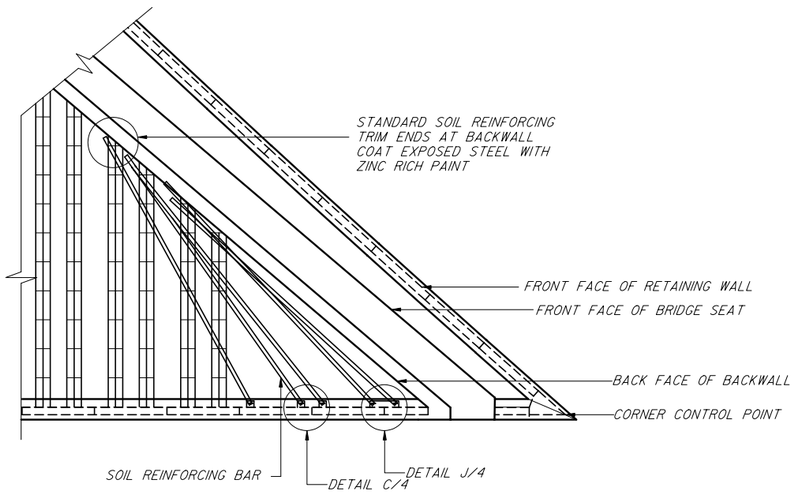
$$$$$$SYTIME$$$$$$

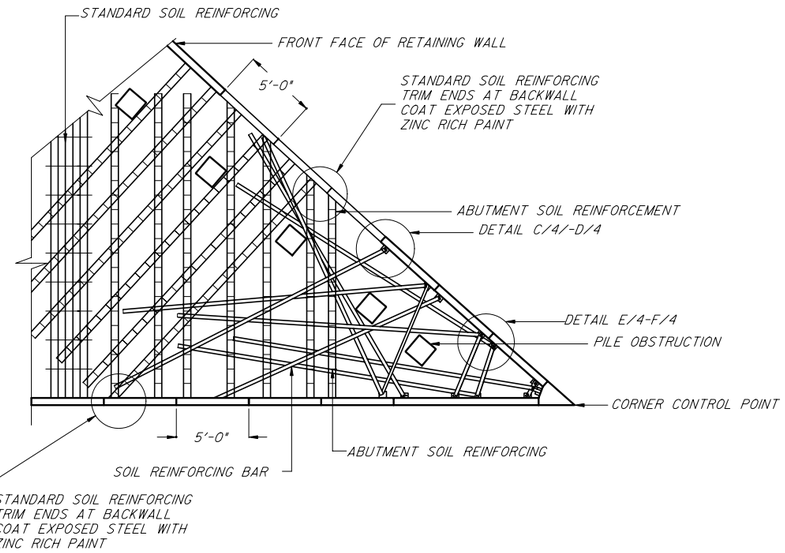


A/4 ELEVATION ACUTE CORNER



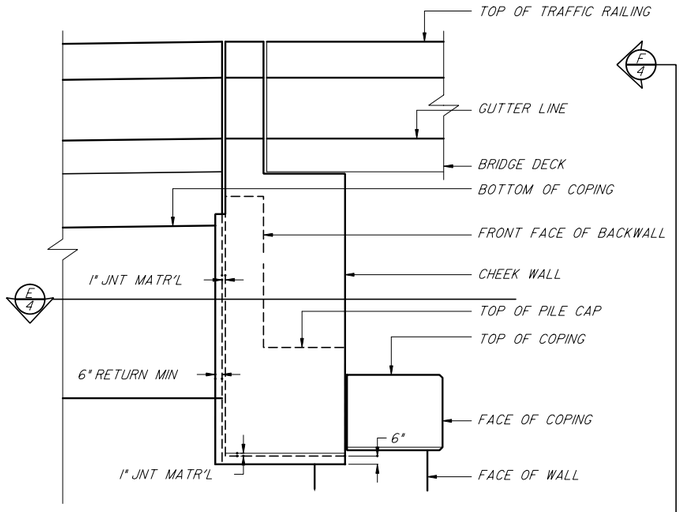
ABUTMENT RETAINING WALL SOIL REINFORCEMENT NOT SHOWN FOR CLARITY
END BENT BACK WALL REINFORCING NOT SHOWN FOR CLARITY

B/4 ACUTE CORNER PLAN SECTION

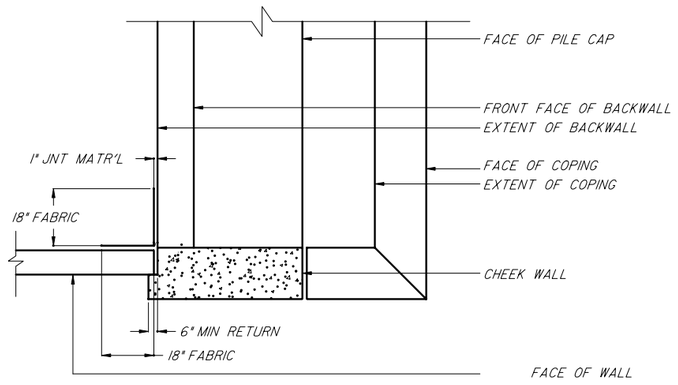


NOTE: REFERENCE DETAIL G/5 FOR ABUTMENT SOIL REINFORCEMENT SHOWN

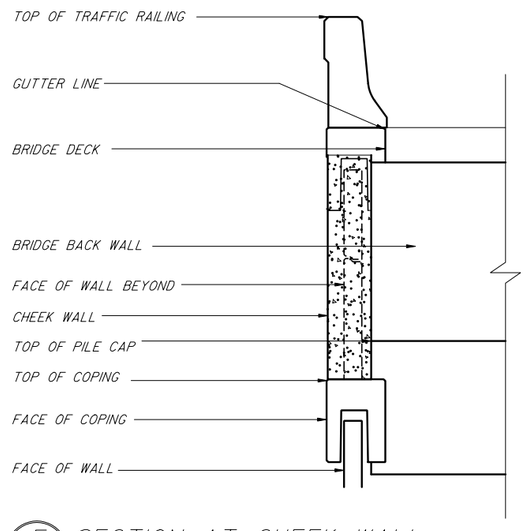
C/4 ACUTE CORNER PLAN SECTION



D/4 ELEVATION AT CHEEK WALL



E/4 PLAN SECTION AT CHEEK WALL



F/4 SECTION AT CHEEK WALL

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HILFIKER RETAINING WALLS
3900 BROADWAY
EUREKA, CA 95503
800-762-8962

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DATE: 07-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN ENGLISH UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEM
HILFIKER SQUARE PANEL

INTERIM STANDARD

INDEX NO. 5040 (SHEETS 1 - 13 OF 13) IS A SUPPLEMENT TO THE ENGLISH DESIGN STANDARDS BOOKLET, DATED JANUARY 2004.

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
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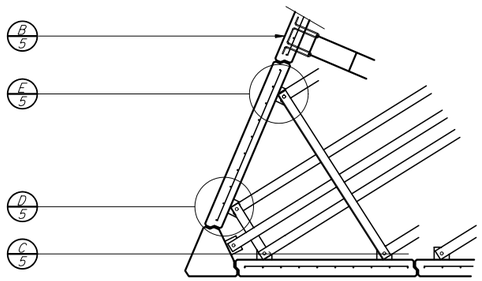
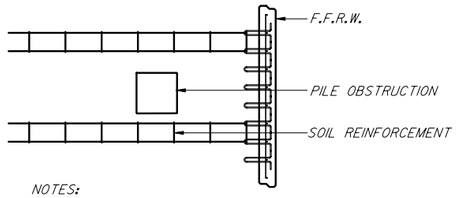
$$$$$$$DGNSPECIFICATION$$$$$$$
$$$$$$SYTIME$$$$$$



A/5 ACUTE CORNER DETAIL

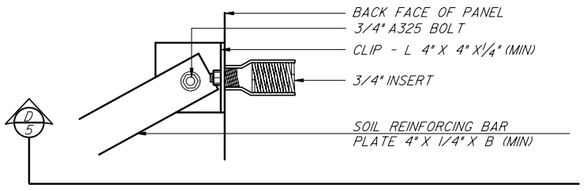
ALL STEEL TO BE HOT DIP GALVANIZED U.N.O.



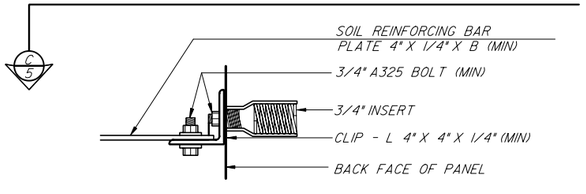
NOTES:
1. SPACE SOIL REINFORCEMENT SO AS TO MISS OBSTRUCTION

B/5 CONTINUOUS ANCHOR PLAN

ALL STEEL TO BE HOT DIP GALVANIZED U.N.O.

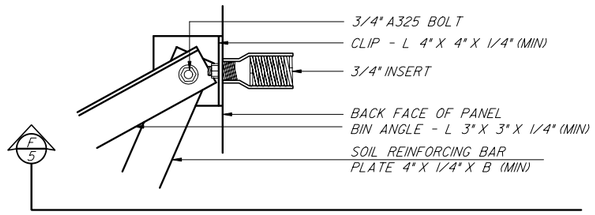


C/5 SOIL REINFORCING BAR PLAN



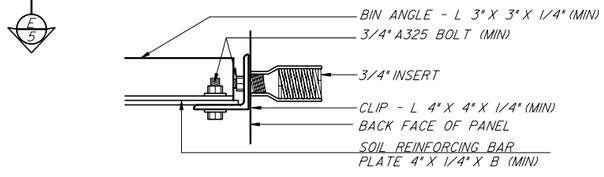
D/5 SOIL REINFORCING BAR DETAIL

ALL STEEL TO BE HOT DIP GALVANIZED U.N.O.



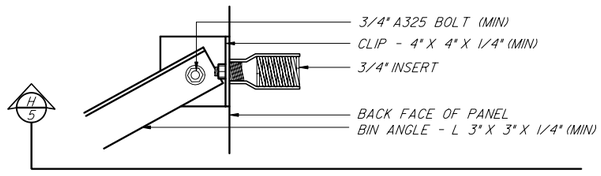
E/5 COMBINATION ANGLE/BAR PLAN

ALL STEEL TO BE HOT DIP GALVANIZED U.N.O.



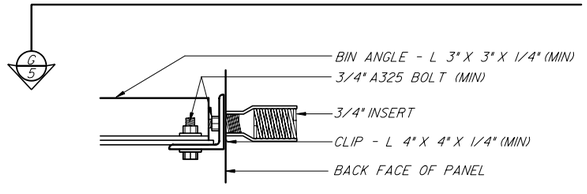
F/5 COMBINATION STRAP/BAR DETAIL

ALL STEEL TO BE HOT DIP GALVANIZED U.N.O.



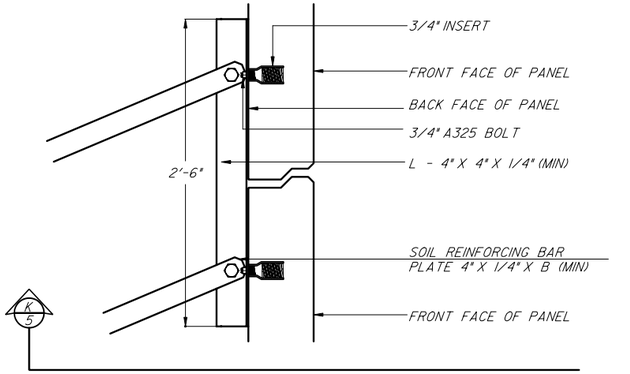
G/5 BIN CLIP PLAN DETAIL

ALL STEEL TO BE HOT DIP GALVANIZED U.N.O.



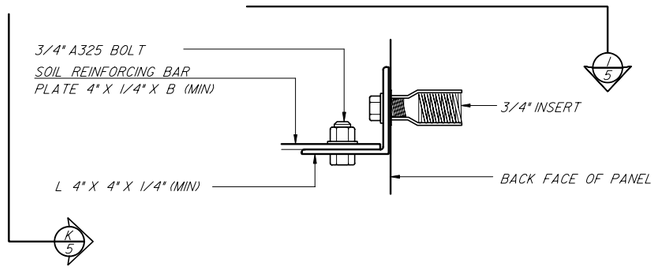
H/5 BIN CLIP SECTION DETAIL

ALL STEEL TO BE HOT DIP GALVANIZED U.N.O.



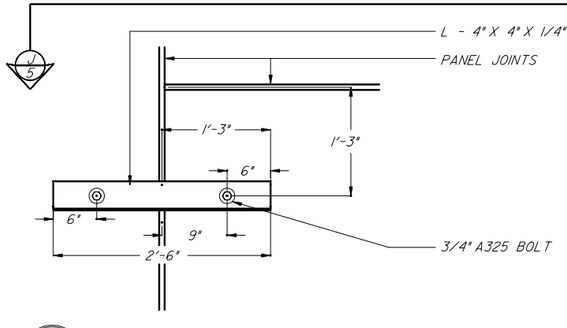
I/5 PANEL-TO-PANEL CONNECTION PLAN

ALL STEEL TO BE HOT DIP GALVANIZED U.N.O.



J/5 PANEL-TO-PANEL CONNECTION SECTION

ALL STEEL TO BE HOT DIP GALVANIZED U.N.O.



K/5 PANEL-TO-PANEL CONNECTION ELEVATION

ALL STEEL TO BE HOT DIP GALVANIZED U.N.O.

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HILFIKER SQUARE PANEL

INTERIM STANDARD

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State Structures Design Engineer

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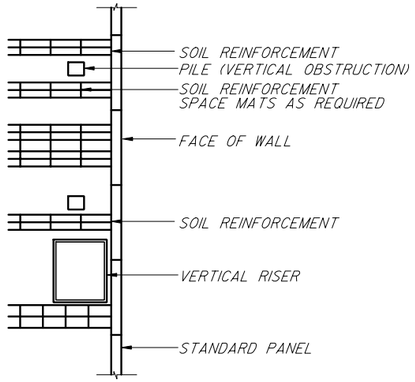
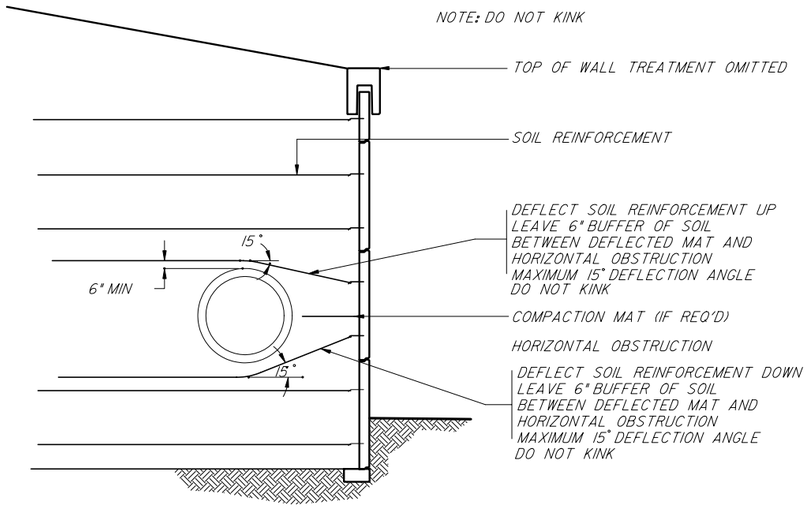


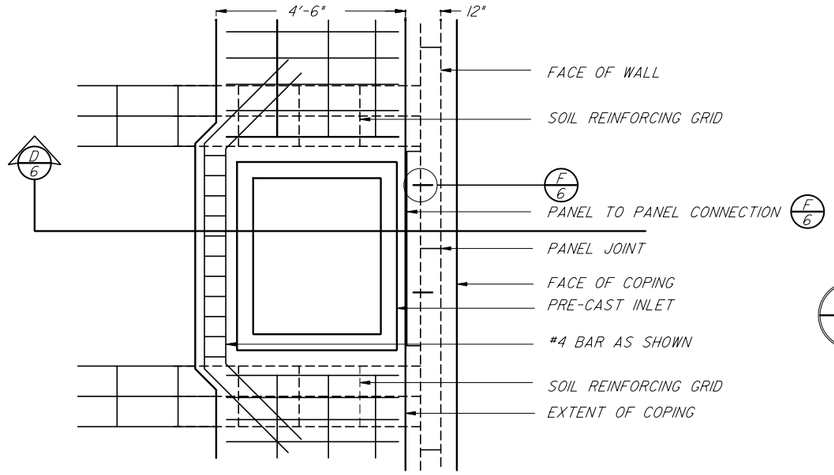
NOTE:
1. VERTICAL OBSTRUCTIONS REQUIRE SPECIAL DESIGN CONSIDERATIONS
2. THE DETAIL AS SHOWN IS FOR CONCEPT ONLY AND MAY VARY ON FINAL DESIGN
3. REFERENCE SPECIAL DESIGN CALCULATIONS FOR DETAILS AND COMPONENT TYPE AND SIZE
4. OBSTRUCTION SHALL BE INSTALLED BEFORE WALL

A/6 VERTICAL OBSTRUCTION

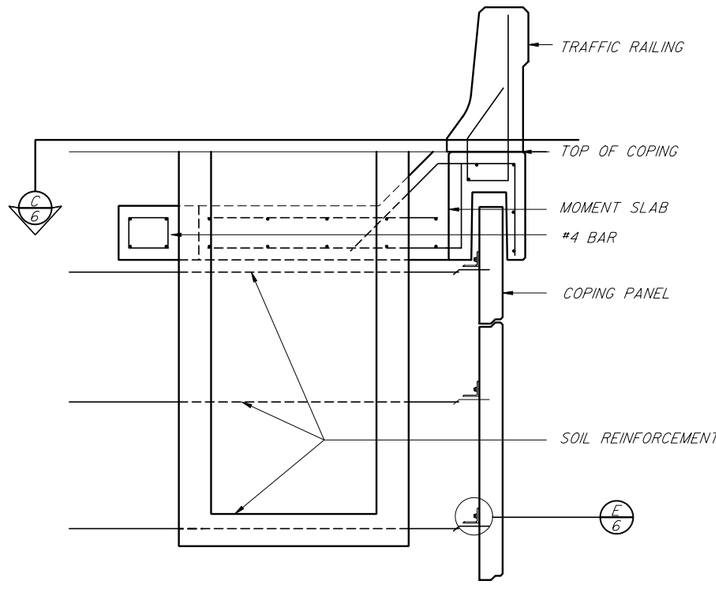


NOTE:
1. HORIZONTAL OBSTRUCTIONS REQUIRE SPECIAL DESIGN CONSIDERATIONS
2. THE DETAIL AS SHOWN IS FOR CONCEPT ONLY AND MAY VARY ON FINAL DESIGN
3. REFERENCE SPECIAL DESIGN CALCULATIONS FOR DETAILS AND COMPONENT TYPE AND SIZE

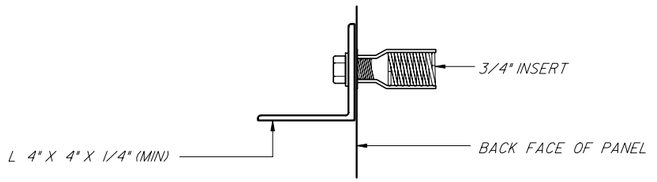
B/6 HORIZONTAL OBSTRUCTION



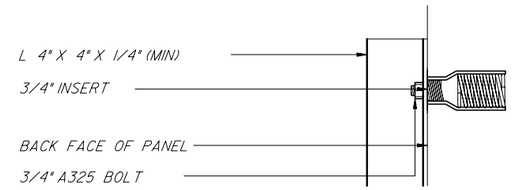
C/6 VERTICAL OBSTRUCTION



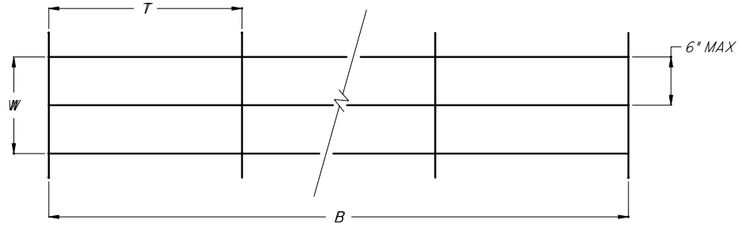
D/6 PANEL-TO-PANEL CONNECTION DETAIL



E/6 PANEL-TO-PANEL CONNECTION DETAIL
SECTION



F/6 PANEL-TO-PANEL CONNECTION DETAIL
PLAN



B = SOIL REINFORCING LENGTH
T = TRANSVERSE WIRE SPACING (2'-0" MAX)
W = WIDTH OF SOIL REINFORCING ELEMENT

NOTE: THE MAT SHOWN IS USED TO PASS OBSTRUCTIONS AND TYPICALLY IS A WELDED WIRE MESH WITH LARGE DIAMETER WIRES. THE LONGITUDINAL WIRE SHALL BE EQUAL TO OR SMALLER THAN THE PANEL ANCHOR. A MINIMUM OF THREE LONGITUDINAL WIRES IS REQUIRED. THE MINIMUM WIRE SIZE SHALL BE W10.

G/6 OBSTRUCTION SOIL REINFORCING PLAN
PLAN

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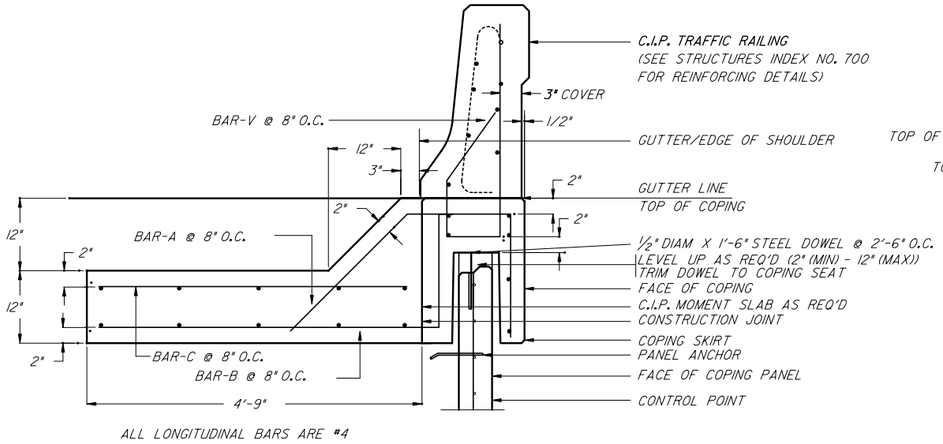
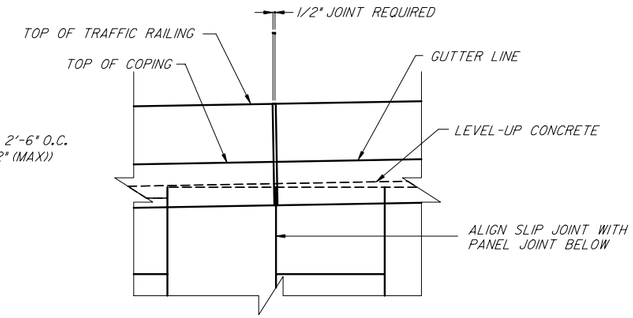
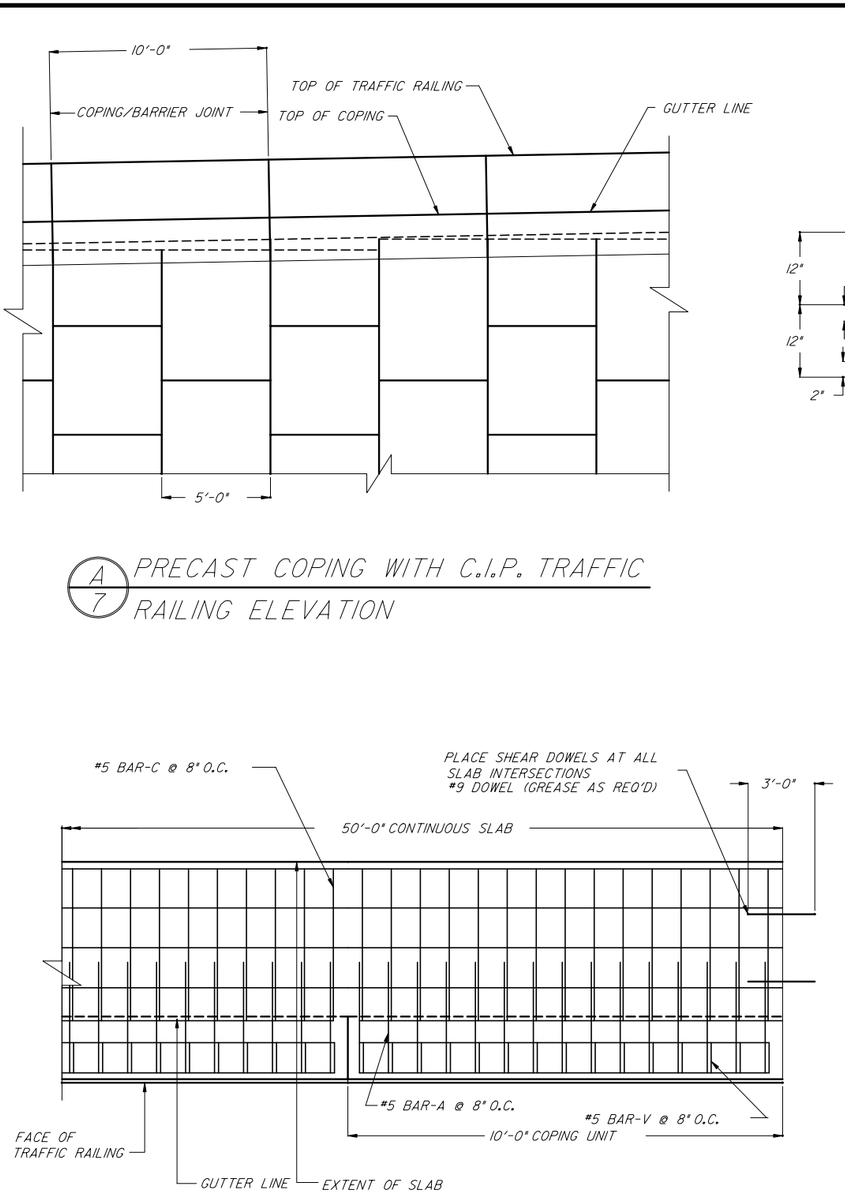
A/7 PRECAST COPING WITH C.I.P. TRAFFIC RAILING ELEVATION



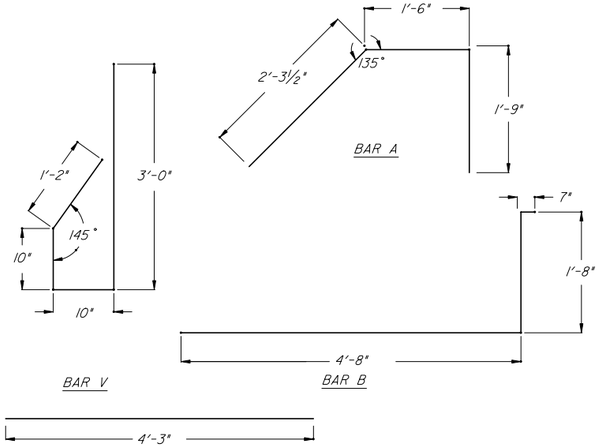
C/7 PRECAST COPING WITH C.I.P. TRAFFIC RAILING AND C.I.P. JUNCTION SLAB



E/7 TRAFFIC RAILING SLIP JOINT



B/7 PRECAST COPING WITH C.I.P. TRAFFIC RAILING PLAN

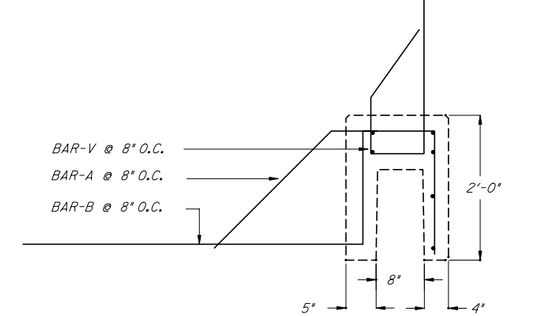


REBAR SCHEDULE

MARK	SIZE	QTY	LENGTH	BENDING
A	#5	11	AS DETAILED	AS DETAILED
B	#5	11	AS DETAILED	AS DETAILED
C	#5	11	AS DETAILED	AS DETAILED
V	#5	11	AS DETAILED	AS DETAILED

QUANTITIES SHOWN ARE FOR A 10'-0" COPING SECTION

D/7 PRECAST COPING REINFORCING



REFERENCE STRUCTURES INDEX NO. 700 FOR BARRIER DIMENSIONS NOT SHOWN

F/7 PRECAST COPING REBAR LAYOUT

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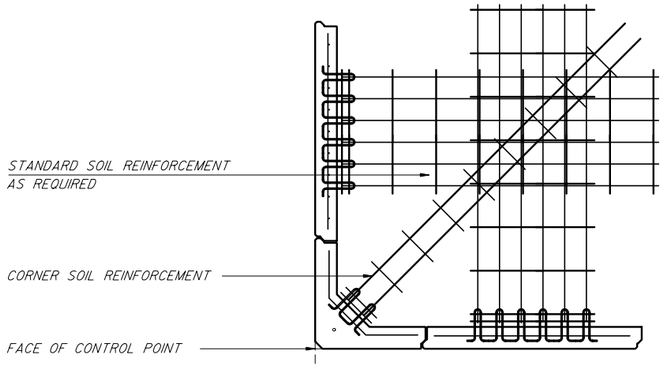
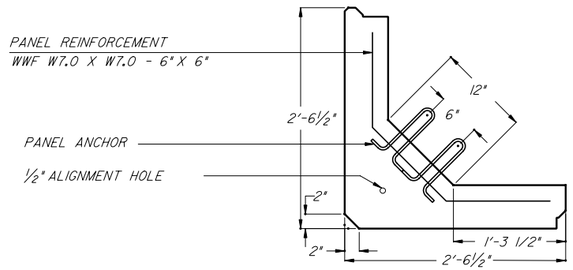
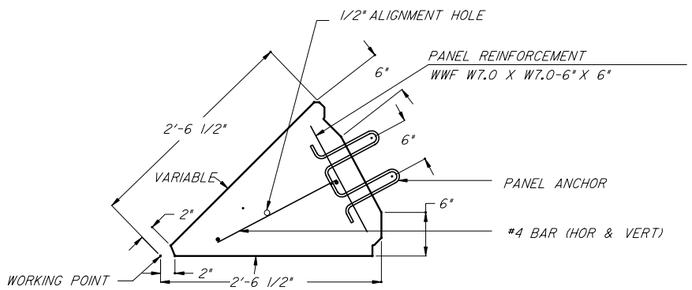


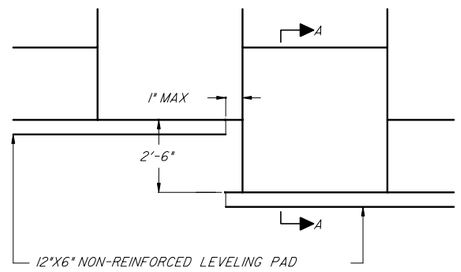
A/8 90° CORNER PLAN

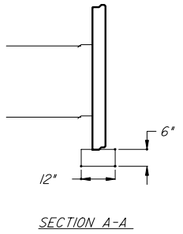


B/8 ABTUSE CORNER PANEL
PANEL ANGLE VARIES FROM 90° TO 180°



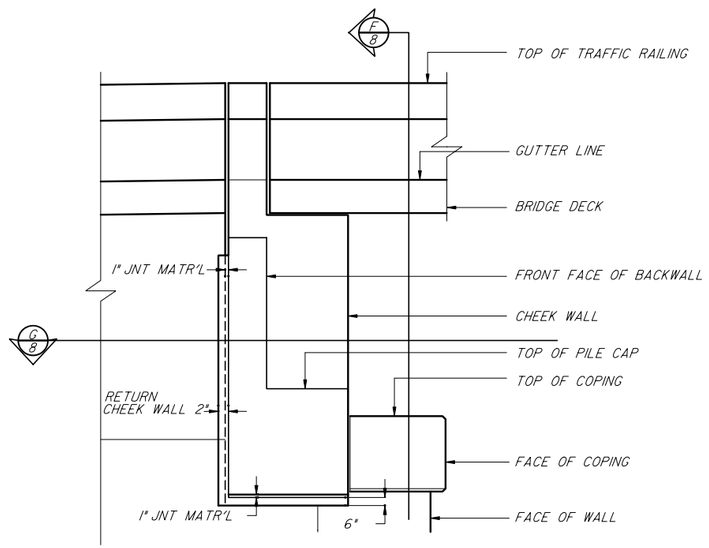
C/8 ADJUSTABLE CORNER PANEL



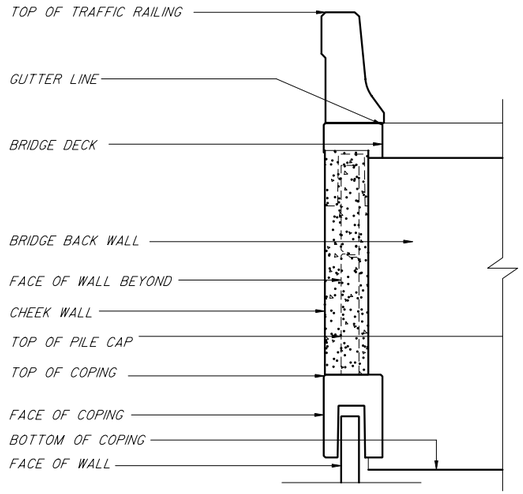


NOTE: LEVELING COURSE SHALL BE PLACED TO THE ELEVATIONS AS SHOWN ON THE PLANS. TOLERANCE FOR ELEVATIONS SHALL BE PLUS-MINUS ⅛"

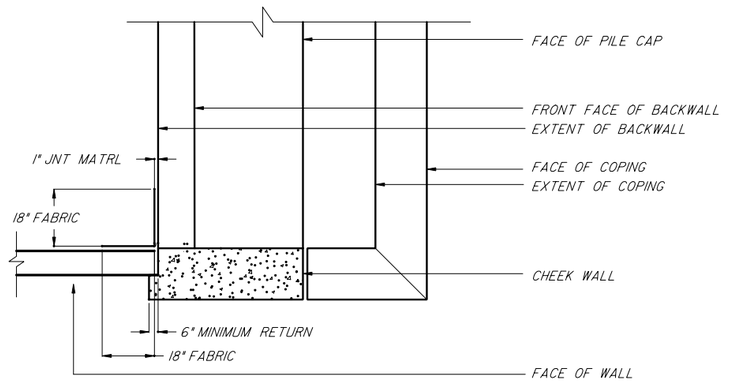
D/8 LEVELING COURSE STEP ELEVATION



E/8 ELEVATION AT CHEEK WALL



F/8 SECTION AT CHEEK WALL



G/8 PLAN SECTION AT CHEEK WALL

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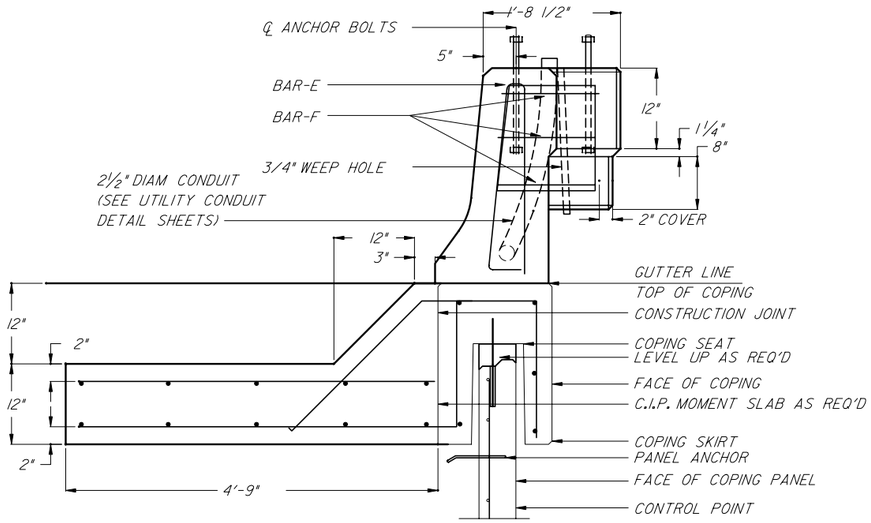
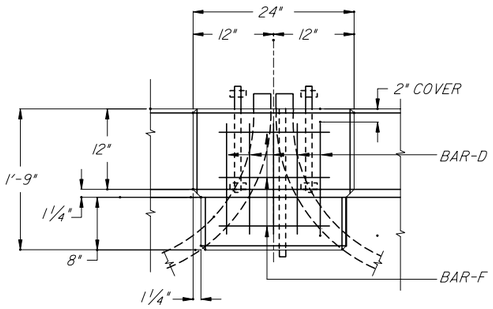
$$$$$$$$DGNSPECIFICATION$$$$$$$$
$$$$$$$SYTIME$$$$$$$

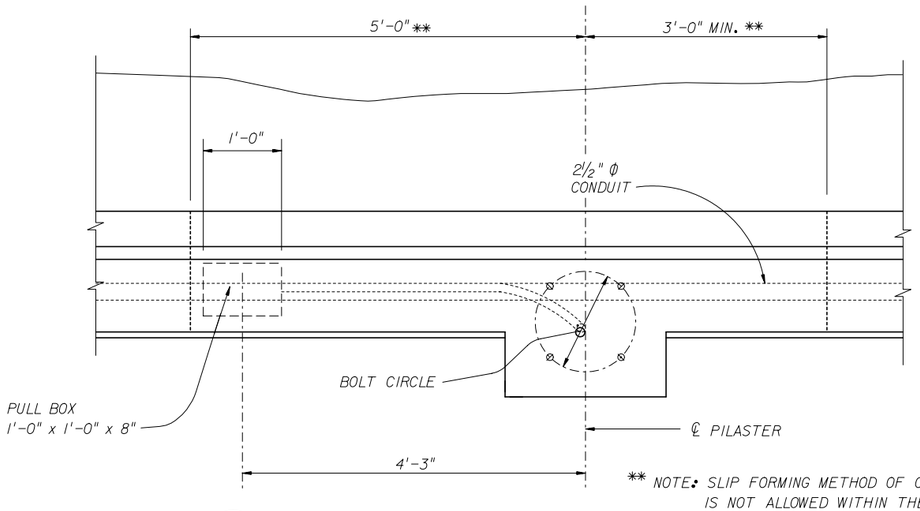


FOR JUNCTION SLAB DIMENSIONS AND REINFORCING REFERENCE SHEET NO. 7.

A 9 PRECAST COPING WITH PILASTER SECTION

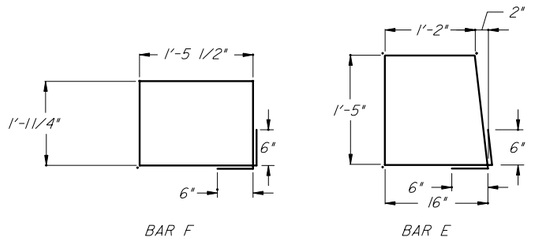


C 9 PILASTER ELEVATION



** NOTE: SLIP FORMING METHOD OF CONSTRUCTION IS NOT ALLOWED WITHIN THE SHOWN LIMITS.

B 9 PILASTER PLAN VIEW



REBAR SCHEDULE

MARK	SIZE	QTY	LENGTH	BENDING
D	#5	5	AS DETAILED	AS DETAILED
F	#5	3	AS DETAILED	AS DETAILED

D 9 PILASTER REINFORCING SCHEDULE

NOTES

1. TOP OF PILASTER SHALL BE FINISHED TO A TRULY LEVEL AREA.
2. LIGHT POLE PILASTER AND ADJACENT TRAFFIC RAILING AND MOMENT SLAB AREA SHOWN ON THIS SHEET, ARE DESIGNED TO RESIST WORKING LOADS (IN ANY DIRECTION) FROM THE LIGHT POLE APPLIED AT THE TOP OF THE PILASTER AS FOLLOWS:

LONGITUDINAL MOMENT	=	30 KIP - FT
TRANSVERSE MOMENT	=	6 KIP - FT
LONGITUDINAL SHEAR	=	1 KIP
TRANSVERSE SHEAR	=	0.2 KIP
TORSION	=	3 KIP - FT
AXIAL	=	0.4 KIP

IF THE LIGHT POLE PROVIDED APPLIES LOADS IN EXCESS OF THOSE SHOWN ABOVE, THE CONTRACTOR SHALL REDESIGN THE PILASTER AND SUBMIT HIS DESIGN TO THE DEPARTMENT FOR REVIEW. THE CONTRACTOR'S REDESIGN SHALL BE PREPARED, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA, AND QUALIFIED TO PERFORM THE WORK.

3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ANCHOR BOLTS THAT EFFECTIVELY TRANSMIT THE LIGHT POLE LOADS TO THE PILASTER AND FIT THE REINFORCING CAGE. CALCULATIONS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA SHALL BE SUBMITTED BY THE CONTRACTOR TO THE DEPARTMENT FOR REVIEW AND APPROVAL SHOWING THAT THESE REQUIREMENTS HAVE BEEN MET PRIOR TO CONSTRUCTION.
4. A WATERTIGHT PULL BOX IS REQUIRED AT EACH LIGHT POLE. ADDITIONAL PULL BOXES MAY BE REQUIRED IF THE SPACING BETWEEN LIGHT POLES ARE GREATER THAN 300 FT.

THIS DRAWING IS FURNISHED SOLELY FOR THE USE OF OR IN CONNECTION WITH PROJECT BIDDING AND THE PROPRIETARY INFORMATION SHOWN HEREON IS NOT TO BE USED BY ANY OTHER ORGANIZATION FOR ANY OTHER PURPOSE WITHOUT SPECIFIC WRITTEN AUTHORIZATION BY HILFIKER RETAINING WALLS OF EUREKA, CALIFORNIA. HILFIKER RETAINING WALLS ARE PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS: 3,631,682, 4,117,686, 4,268,296, 4,329,089, 4,324,508, 4,343,572, 4,391,557, 4,505,621, 4,616,959, 4,643,618, 4,661,023, 4,856,939, 5,733,072 AND OTHERS PENDING.

HILFIKER RETAINING WALLS
3900 BROADWAY
EUREKA, CA 95503
800-762-8962

THIS SYSTEM FOR USE IN MODERATELY OR SLIGHTLY AGGRESSIVE ENVIRONMENTS ONLY

DATE: 07-01-05

INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN ENGLISH UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEM HILFIKER SQUARE PANEL

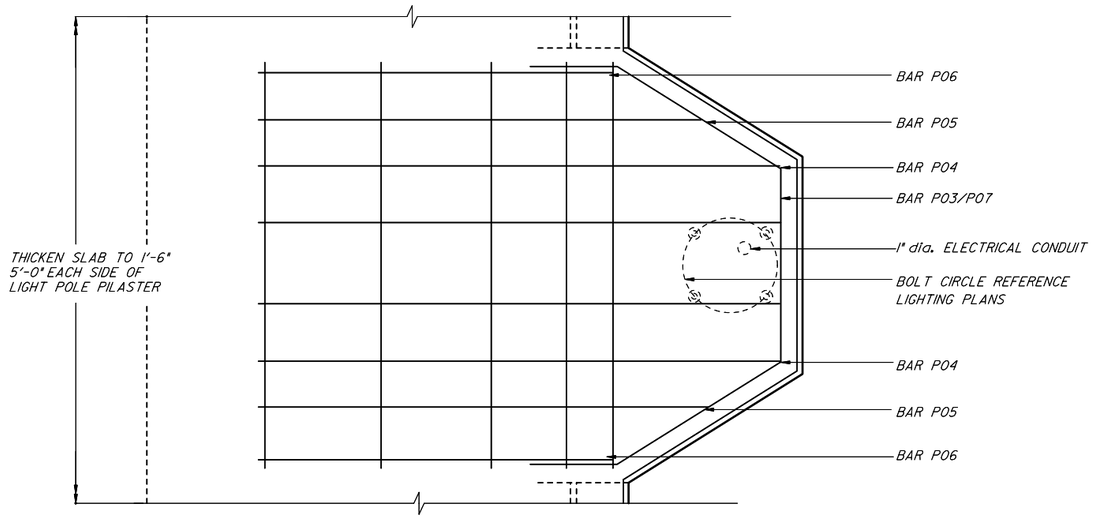
INTERIM STANDARD

INDEX NO. 5040 (SHEETS 1 - 13 OF 13) IS A SUPPLEMENT TO THE ENGLISH DESIGN STANDARDS BOOKLET, DATED JANUARY 2004.

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

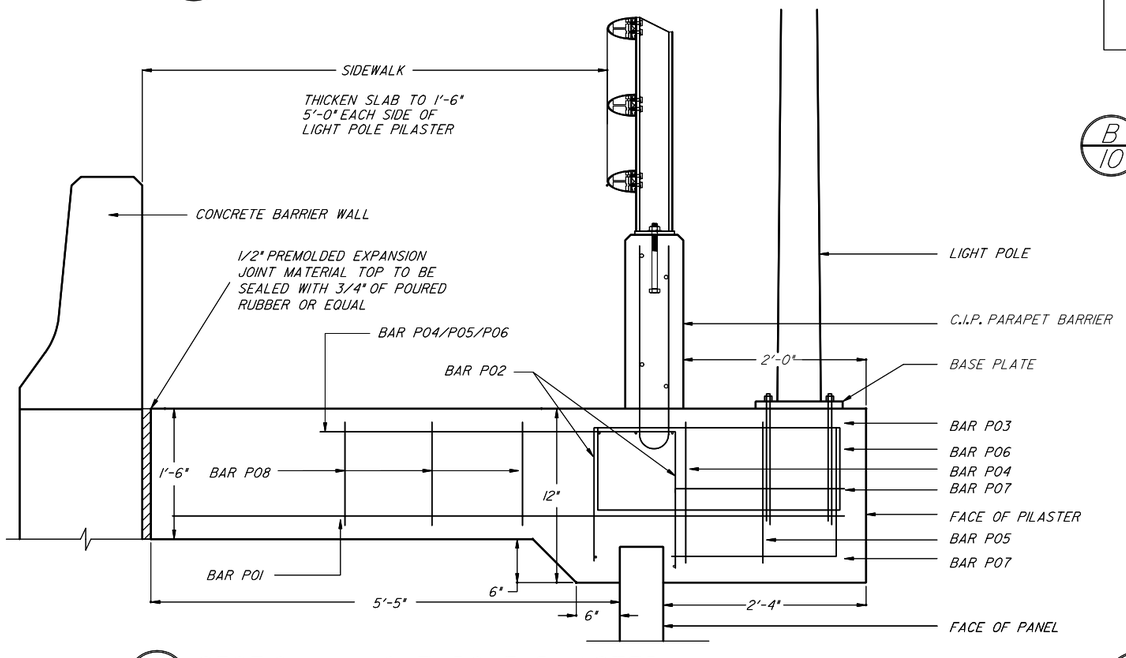
REVISION NO.	SHEET NO.	INDEX NO.
04	9 of 13	5040

$$$$$$$DGNSPECIFICATION$$$$$$$
$$$$$$SYTIME$$$$$$

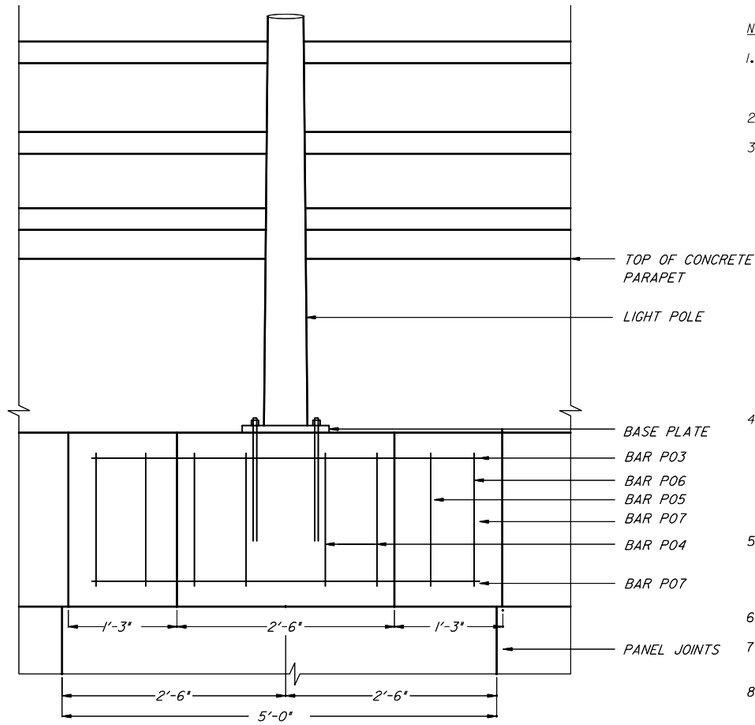


A/10 PLAN @ LIGHT POLE PILASTER

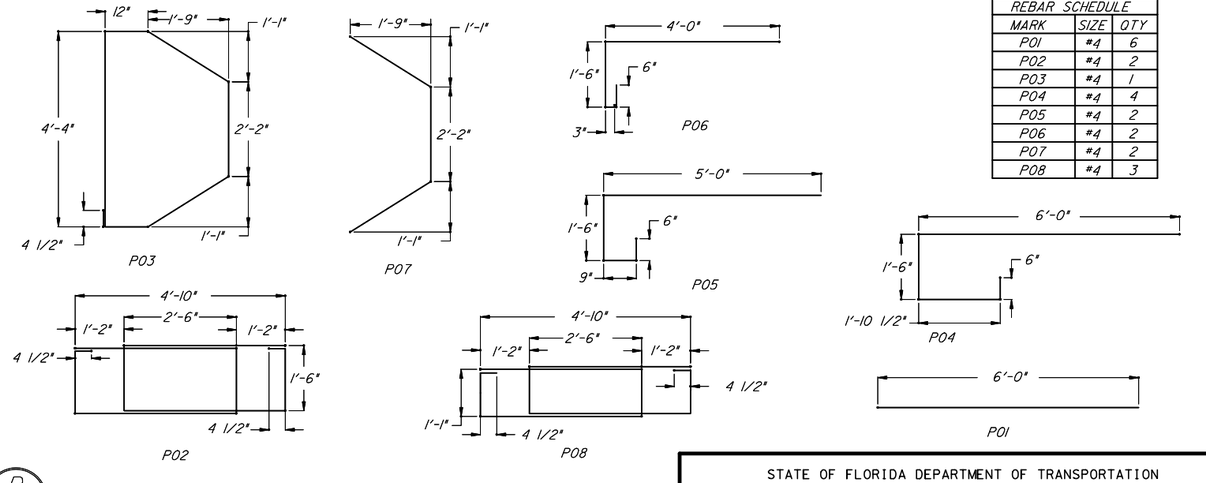
HORIZONTAL REINFORCING NOT SHOWN FOR CLARITY



C/10 SECTION @ LIGHT POLE PILASTER



B/10 ELEVATION @ LIGHT POLE PILASTER



LIGHT POLE PILASTER REBAR SCHEDULE		
MARK	SIZE	QTY
P01	#4	6
P02	#4	2
P03	#4	1
P04	#4	4
P05	#4	2
P06	#4	2
P07	#4	2
P08	#4	3

D/10

NOTES:

1. ADDITIONAL CONCRETE AND REINFORCING STEEL REQUIRED FOR THE CONSTRUCTION OF THE PILASTER SHALL MEET THE SAME REQUIREMENTS AS THAT OF THE PARAPET WALL.
2. TOP OF PILASTER SHALL BE FINISHED TO A TRUE LEVEL AREA.
3. LIGHT POLE PILASTER IS DESIGNED TO RESIST WORKING LOADS (IN ANY DIRECTION) FROM THE LIGHT POLE APPLIED AT THE TOP OF THE PILASTER AS FOLLOWS:

   LONGITUDINAL MOMENT = 30,000 FT. POUNDS
   TRANSVERSE MOMENT = 6,000 FT. POUNDS
   LONGITUDINAL SHEAR = 1,000 POUNDS
   TRANSVERSE SHEAR = 200 POUNDS
   TORSION = 3,000 FT. POUNDS
   AXIAL = 400 POUNDS

   IF THE LIGHT POLE PROVIDED APPLIES LOADS THAT ARE IN EXCESS OF THOSE SHOWN ABOVE. THE CONTRACTOR SHALL REDESIGN THE PILASTER AND SUBMIT HIS DESIGN TO THE DEPARTMENT FOR REVIEW. THE CONTRACTOR'S REDESIGN SHALL BE PREPARED, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA. AND QUALIFIED TO PERFORM THE WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ANCHOR BOLTS THAT EFFECTIVELY TRANSMIT THE LIGHT POLE LOADS TO THE PILASTER AND THAT FIT THE REINFORCING CAGE. CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF FLORIDA SHALL BE SUBMITTED BY THE CONTRACTOR TO THE DEPARTMENT FOR REVIEW AND APPROVAL SHOWING THAT THESE REQUIREMENTS HAVE BEEN MET PRIOR TO CONSTRUCTION.
5. STEEL FOR JUNCTION BOXES SHALL CONFORM WITH ASTM-A36. THE BOXES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION. IN LIEU OF STEEL BOXES THE CONTRACTOR MAY SUBMIT FOR APPROVAL MOLDED P.V.C. BOXES (SCHEDULE 80). SEE SHEET NO. 11 FOR JUNCTION BOX DETAILS.
6. ALL CONDUITS SHALL BE RIGID GALVANIZED STEEL OR SCHEDULE 80 P.V.C.
7. THE COST OF ANCHOR BOLTS SHALL BE INCLUDED IN THE BID PRICE FOR LIGHT POLES.
8. PAYMENT: THE COST OF ALL LABOR, CONCRETE AND REINFORCING STEEL REQUIRED FOR THE CONSTRUCTION OF THE PILASTERS AND ALL CONDUITS. EXPANSION COUPLINGS, JUNCTION BOXES AND MISCELLANEOUS HARDWARE REQUIRED FOR COMPLETION OF THE ELECTRICAL INSTALLATION WITHIN THE LIMITS SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE FOR THE MSE WALLS.

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HILFIKER RETAINING WALLS
3900 BROADWAY
EUREKA, CA 95503
800-762-8962

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INTERIM STANDARD IN ENGLISH UNITS APPLICABLE TO DESIGN STANDARDS BOOKLET PUBLISHED IN ENGLISH UNITS.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEM
HILFIKER SQUARE PANEL

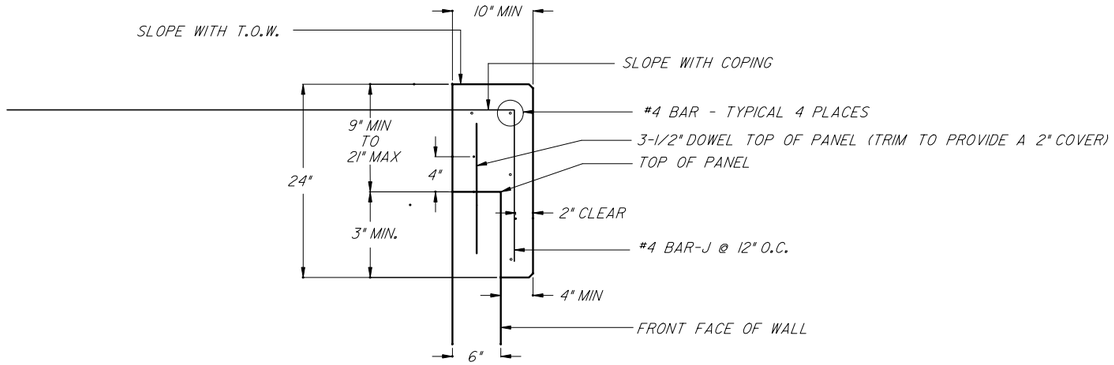
INTERIM STANDARD

INDEX NO. 5040 (SHEETS 1 - 13 OF 13) IS A SUPPLEMENT TO THE ENGLISH DESIGN STANDARDS BOOKLET, DATED JANUARY 2004.

APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

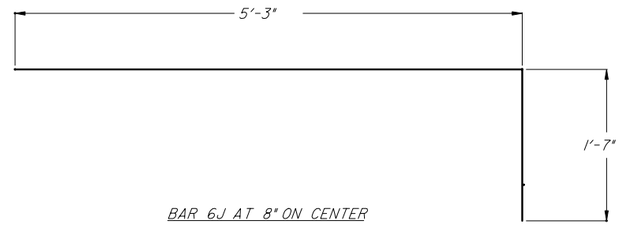
REVISION NO.	SHEET NO.	INDEX NO.
04	10 of 13	5040

$$$$$$$DGNSPECIFICATION$$$$$$$
$$$$$$$SYTIME$$$$$$$

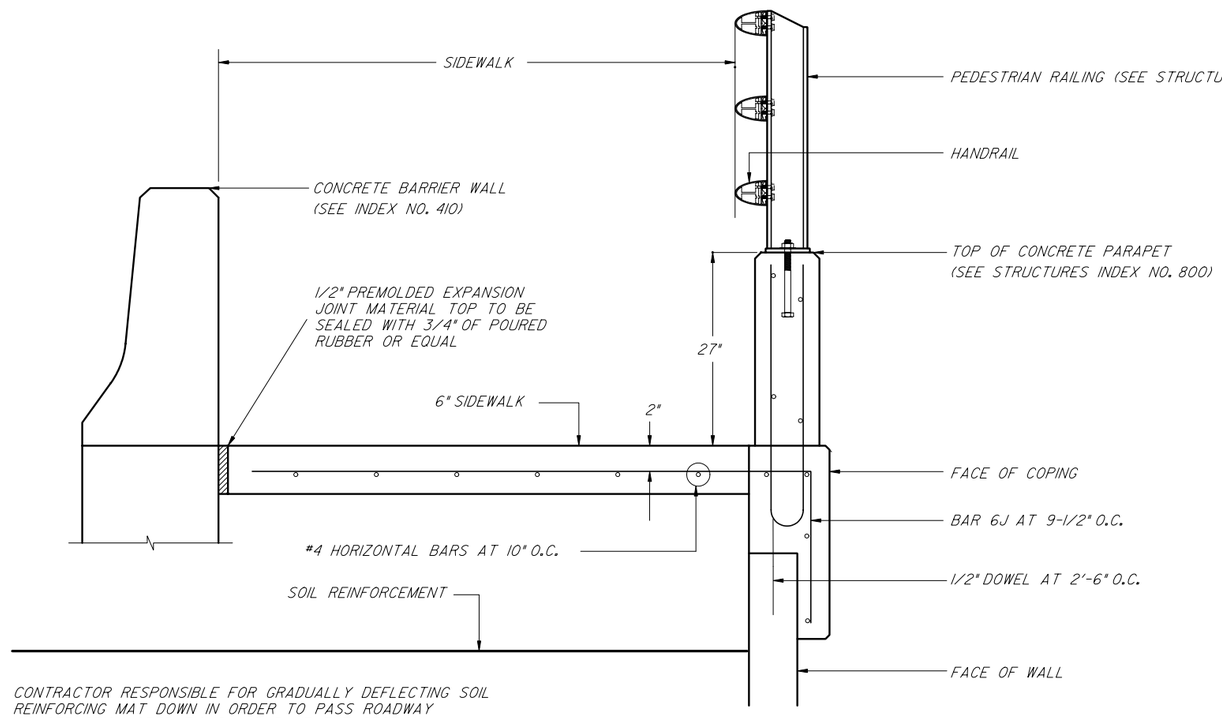


A // SECTION C.I.P. PARAPET COPING

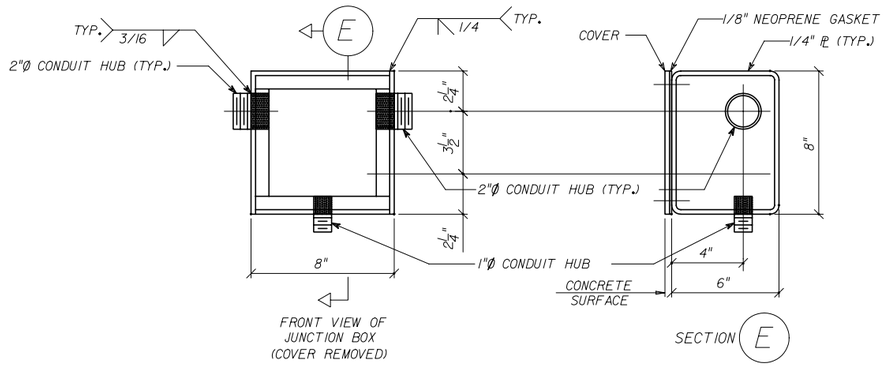
HORIZONTAL REINFORCING NOT SHOWN FOR CLARITY



B // C.I.P. PARAPET COPING REINFORCING DETAILS



C // SECTION C.I.P. PARAPET COPING WITH PEDESTRIAN RAILING



D // JUNCTION BOX DETAILS FOR LIGHT PILASTER

SEE SHEET NO. 10 FOR LIGHT PILASTER DETAILS

THIS DRAWING IS FURNISHED SOLELY FOR THE USE OF OR IN CONNECTION WITH PROJECT BIDDING AND THE PROPRIETARY INFORMATION SHOWN HEREON IS NOT TO BE USED BY ANY OTHER ORGANIZATION FOR ANY OTHER PURPOSE WITHOUT SPECIFIC WRITTEN AUTHORIZATION BY HILFIKER RETAINING WALLS OF EUREKA, CALIFORNIA. HILFIKER RETAINING WALLS ARE PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS: 3,631,682, 4,117,686, 4,260,296, 4,329,089, 4,324,508, 4,343,572, 4,391,557, 4,505,621, 4,616,959, 4,643,618, 4,661,023, 4,856,939, 5,733,072 AND OTHERS PENDING.

HILFIKER RETAINING WALLS
3900 BROADWAY
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RETAINING WALL SYSTEM HILFIKER SQUARE PANEL

INTERIM STANDARD

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William N. Nickas, P.E.
State Structures Design Engineer

REVISION NO.	SHEET NO.	INDEX NO.
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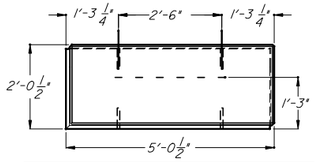
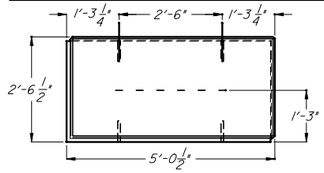
$$$$$$$$DGNSPECIFICATION$$$$$$$$
$$$$$$$SYTIME$$$$$$$



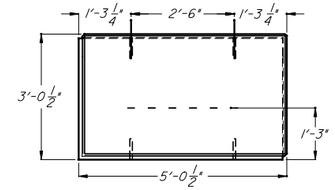
PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	1 OF 6
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

TYPE A - 2'-0" PANEL



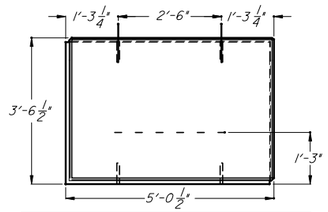
PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	1 OF 6
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

TYPE B - 2'-6" PANEL



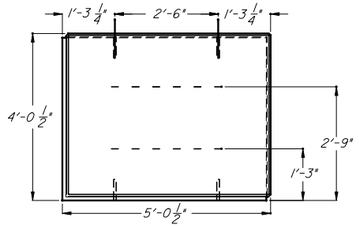
PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	1 OF 6
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

TYPE C - 3'-0" PANEL



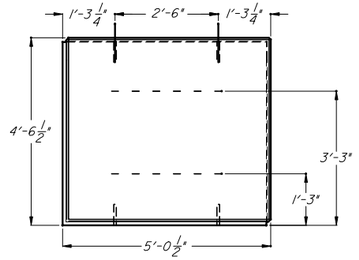
PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	1 OF 6
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

TYPE D - 3'-6" PANEL



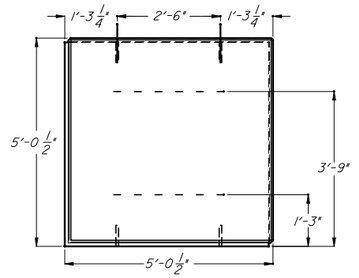
PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	2 OF 6
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

TYPE E - 4'-0" PANEL



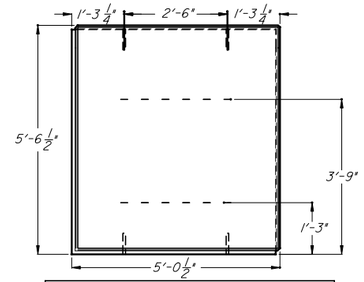
PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	2 OF 6
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

TYPE F - 4'-6" PANEL



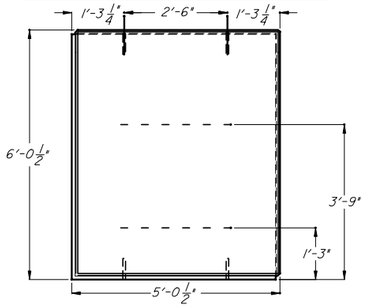
PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	2 OF 6
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

TYPE G - 5'-0" PANEL



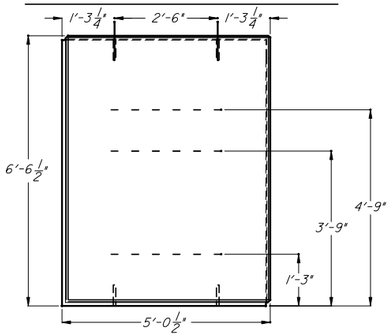
PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	2 OF 6
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

TYPE H - 5'-6" PANEL



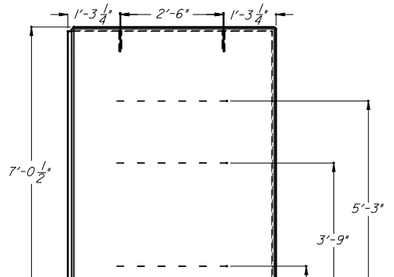
PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	2 OF 6
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

TYPE J - 6'-0" PANEL



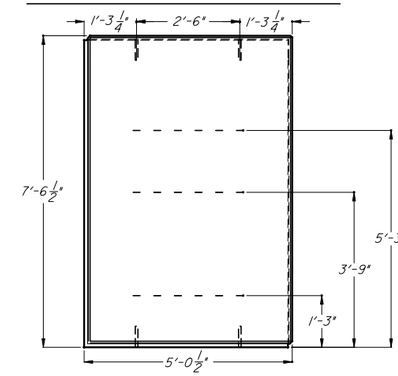
PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	3 OF 6
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

TYPE K - 6'-6" PANEL



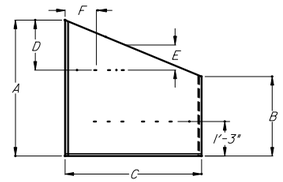
PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	3 OF 6
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

TYPE L - 7'-0" PANEL



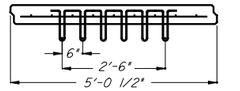
PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	1 OF 6
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

TYPE M - 7'-6" PANEL

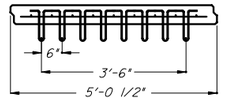


PANEL MATERIAL LIST		
DESG.	SIZE AND TYPE	QTY.
ANCHOR	WI2	VARIES
CAGE	W7.0 - 6" X 6"	1
PVC	3/4" DIAM	4
HOOK	PRE-BENT	4

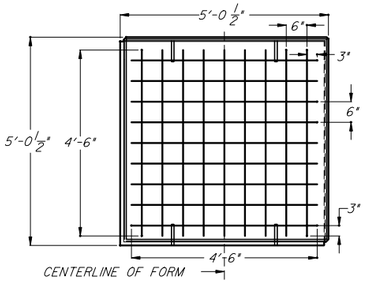
SPECIAL SLOPED PANEL



STANDARD ANCHOR LAYOUT



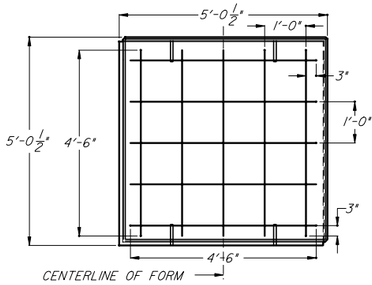
CONTINUOUS ANCHOR LAYOUT



NOTE:
1. MINIMUM 3" COVER AT ALL EDGES
2. CENTER MESH IN FORM
3. WIRE MESH TO BE PLACED ON TOP OF PVC ALIGNMENT SLEEVES.
4. TRIM AS REQUIRED
5. MINIMUM W7.0 X W7.0 WWF

PANEL REINFORCING LAYOUT

WELDED WIRE MESH



NOTE:
1. MINIMUM 3" COVER AT ALL EDGES
2. CENTER REBAR IN FORM
3. REBAR TO BE PLACED ON TOP OF PVC ALIGNMENT SLEEVES.
4. TRIM AS REQUIRED
5. MINIMUM #4 BAR BOTH WAYS
6. TIE REBAR TOGETHER AT INTERSECTION POINTS

PANEL REINFORCING LAYOUT

OPTIONAL REBAR

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3900 BROADWAY
EUREKA, CA 95503
800-762-8962

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

RETAINING WALL SYSTEM
HILFIKER SQUARE PANEL

INTERIM STANDARD

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APPROVED BY
William N. Nickas, P.E.
State Structures Design Engineer

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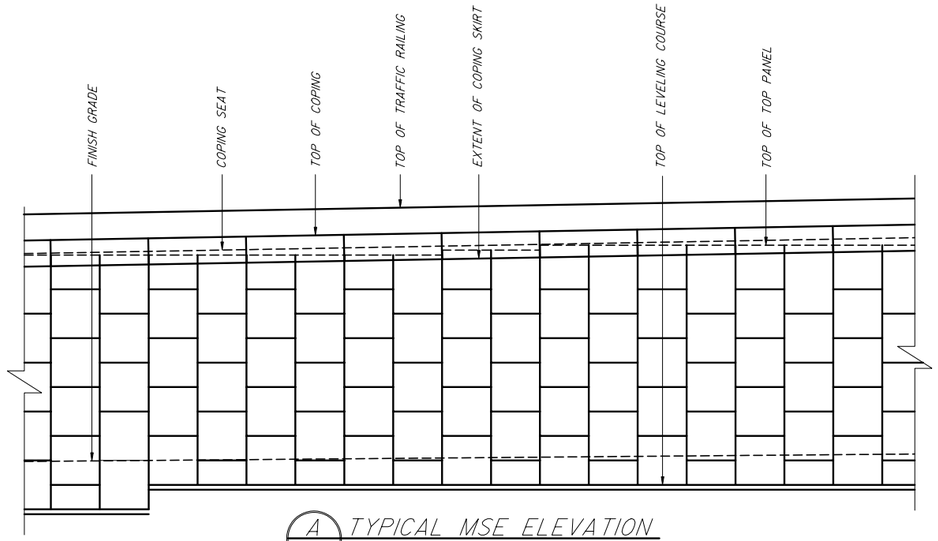
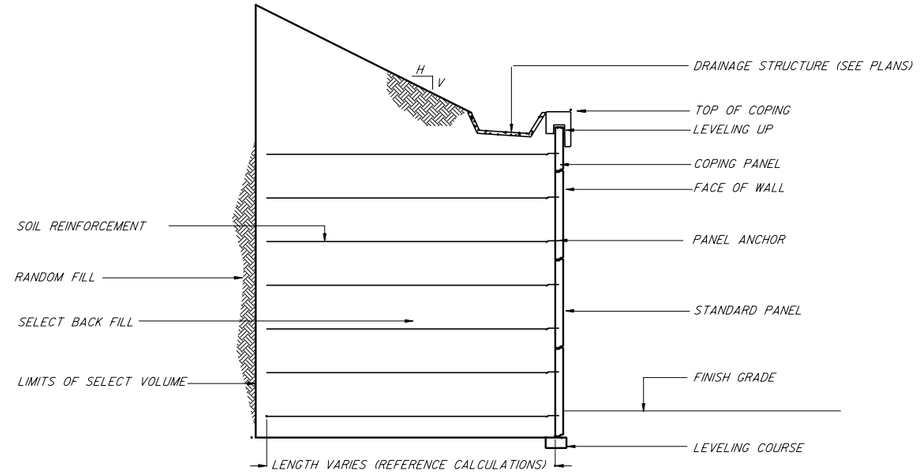
04	12 of 13	5040

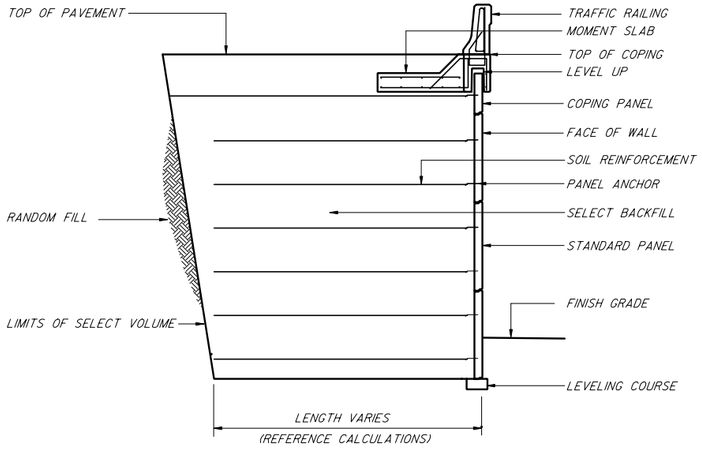
$$$$$$$DGNSPECIFICATION$$$$$$$
$$$$$$$SYTIME$$$$$$$



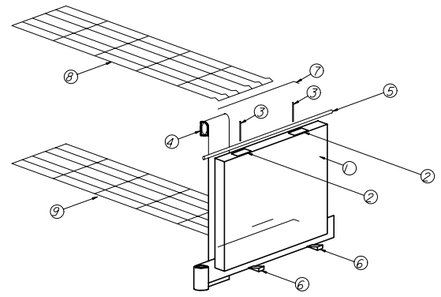
A 13 TYPICAL MSE ELEVATION



B 13 TYPICAL MSE SECTION WITH SLOPE

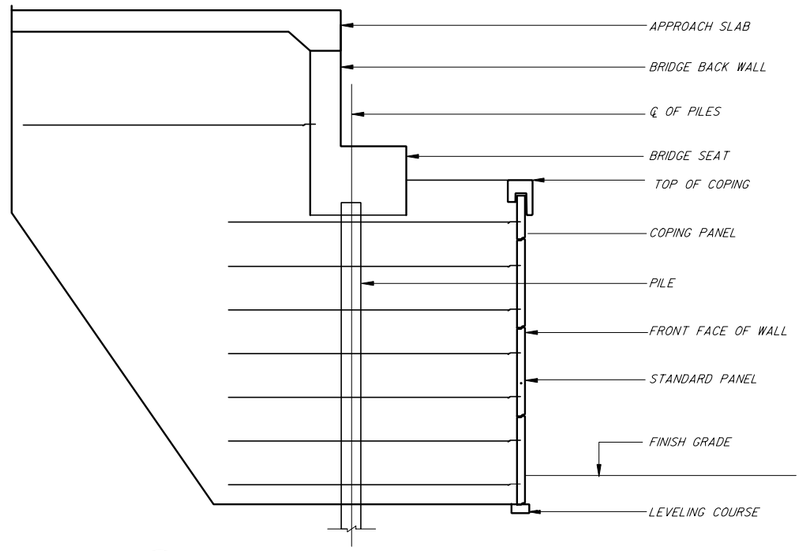


C 13 TYPICAL MSE SECTION WITH TRAFFIC RAILING



1. TYPICAL PRE-CAST PANEL WITH CAST IN PLACE ANCHORS
2. 3"X 8"X 3/4" NEOPRENE PAD 2 PER PANEL
3. 1/2"X 8" GALVANIZED STEEL ALIGNMENT PIN
4. 12" FILTER FABRIC
5. 3/4" BACKER ROD (OPTIONAL BY OTHERS)
6. HARD WOOD SHIMS (USE IF NECESSARY)
7. CONNECTION PIN - IPER SOIL REINFORCING MAT
8. WELDED WIRE GRID SOIL REINFORCING MAT (AS REQUIRED)
9. WELDED WIRE GRID SOIL REINFORCING MAT (AS REQUIRED)

D 13 TYPICAL MATERIAL ISOMETRIC



E 13 TYPICAL MSE SECTION AT ABUTMENT

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HILFIKER SQUARE PANEL

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