LEE COUNTY
FACILITIES CONSTRUCTION & MANAGEMENT

CONTRACT PLANS

MATLACHA FISHING PIER REPLACEMENT

STRUCTURE PLANS

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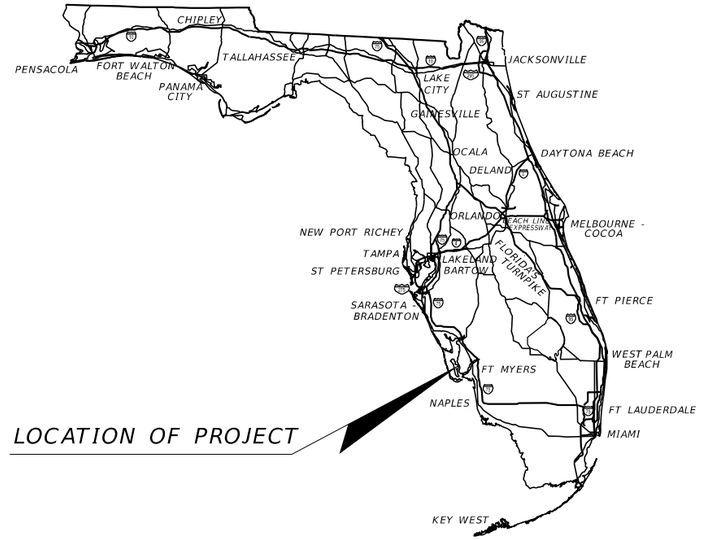

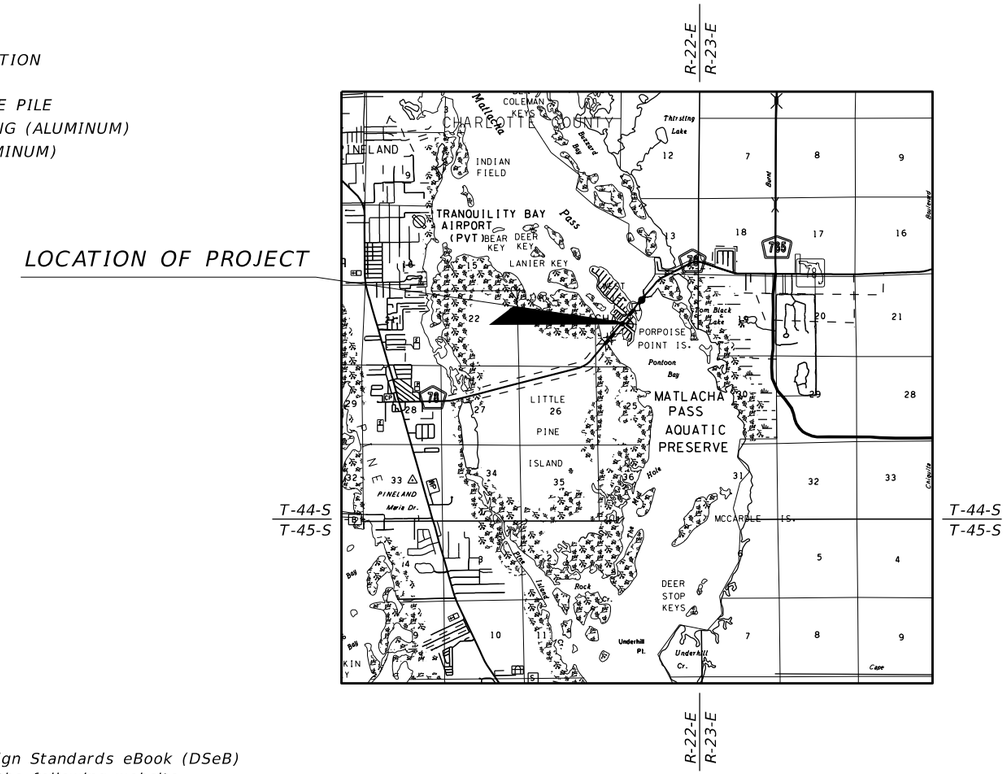

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

VINCENT ZALIAUSKAS LICENSE No 60524 STATE OF FLORIDA PROFESSIONAL ENGINEER

Vincent A Zaliauskas

Digitally signed by Vincent A Zaliauskas
Date: 2020.07.29 14:06:56 -04'00'

ON THE DATE ADJACENT TO THE SEAL

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STRUCTURE PLANS ENGINEER OF RECORD:

VINCENT ZALIAUSKAS, P.E.
P.E. LICENSE NUMBER 60524
HIGHSPANS ENGINEERING, INC.
2121 MCGREGOR BLVD.
SUITE 200
FORT MYERS, FL 33901
REGISTRY NO. 27559

LEE COUNTY PROJECT MANAGER:

ELAINE CAPPS, P.E.

GOVERNING DESIGN STANDARDS:

Florida Department of Transportation, FY 2018-19 Design Standards eBook (DSeB) and applicable Design Standards Revisions (DSRs) at the following website: http://www.dot.state.fl.us/rddesign/DesignStandards/Standards.shtm

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, January 2019 Standard Specifications for Road and Bridge Construction at the following website: http://www.dot.state.fl.us/programmanagement/Implemented/SpecBooks

REVISIONS:

1 SHEET 2 (REVISED 2/25/2020)

2 SHEET 2, 5, 6, 7, 8, 10 & 13 (REVISED 7/27/2020)

3 SHEET 5 & 6 (REVISED 7/29/2020)

KEY SHEET REVISIONS	
DATE	DESCRIPTION
7/27/2020	ADDED SHEET NO. 14A TO INDEX

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
	20	1

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

GENERAL NOTES

A. DESIGN SPECIFICATIONS
1. FLORIDA BUILDING CODE, CURRENT EDITION
2. FDOT STRUCTURES MANUAL DATED JANUARY 2019 AND SUBSEQUENT STRUCTURES DESIGN BULLETINS.
3. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) LOAD AND RESISTANCE FACTOR (LRFD) BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION AND ALL SUBSEQUENT INTERIMS.
4. FDOT DESIGN MANUAL DATED JANUARY, 2019 AND SUBSEQUENT ROADWAY DESIGN BULLETINS.
5. AMERICAN WOOD COUNCIL NATIONAL DESIGN SPECIFICATIONS FOR WOOD CONSTRUCTION, 2012.

B. GOVERNING STANDARDS AND CONSTRUCTION SPECIFICATIONS
FLORIDA DEPARTMENT OF TRANSPORTATION, 2019-20 STANDARD PLANS AND REVISED INDEX DRAWINGS AS APPENDED HEREIN, AND JANUARY 2019 STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AS AMENDED BY CONTRACT DOCUMENTS.

C. VERTICAL DATUM
VERTICAL DATUM USED IS NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29), UNLESS OTHERWISE NOTED.

D. ENVIRONMENT
ALL COMPONENTS DESIGNED FOR EXTREMELY AGGRESSIVE ENVIRONMENT.

E. DESIGN METHODOLOGY
LOAD AND RESISTANCE FACTOR DESIGN (LRFD) METHOD USING STRENGTH AND SERVICE.

F. DESIGN LOADINGS
1. LIVE LOADS:
PEDESTRIAN LIVE LOAD: 100 PSF
FBC PEDESTRIAN LOAD FOR RAILING: 200 LB + 50 PLF
WAVE LOAD: 1.088 KIPS APPLIED AT STILL WATER LEVEL
2. DEAD LOADS:
REINFORCED CONCRETE: 150 PCF
PRESSURE TREATED WOOD: 41 PCF
3. UTILITIES: NO ALLOWANCE FOR UTILITY LOADS HAS BEEN INCLUDED IN THE DESIGN.

G. MATERIALS
1. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615 GRADE 60
2. CONCRETE CLASS:

CONCRETE CLASS	MIN. 28-DAY COMPRESSIVE STRENGTH (PSI)	LOCATION OF CONCRETE IN STRUCTURE
IV (W/ SILICA FUME & CALCIUM NITRITE)	5500	SUBSTRUCTURE
V (SPECIAL) (W/ SILICA FUME & CALCIUM NITRITE)	6000	PRESTRESSED CONCRETE PILES

3. CONCRETE COVER:

CAST-IN-PLACE SUBSTRUCTURE	4"
PRESTRESSED PILING	3"

CONCRETE COVER DIMENSIONS SHOWN IN THE PLANS DO NOT INCLUDE PLACEMENT AND FABRICATION TOLERANCES UNLESS SHOWN AS "MINIMUM COVER". SEE SPECIFICATIONS SECTION 415 FOR ALLOWABLE TOLERANCES. ALL DIMENSIONS PERTAINING TO THE LOCATION OF REINFORCING STEEL ARE TO CENTERLINE OF BAR EXCEPT WHERE CLEAR DIMENSION IS NOTED TO FACE OF CONCRETE.

4. CONCRETE PILES
a. MAIN PIER PILE LENGTHS: 20 FT
b. T-HEAD PILE LENGTHS: 25 FT
c. PILES DRIVEN TO CUTOFF ELEVATION WILL MEET THE MINIMUM 2:1 EMBEDMENT REQUIRED FOR LATERAL LOAD STABILITY.
1 d. NOMINAL BEARING RESISTANCE IS 12 TONS. THE ENGINEER WILL EVALUATE THE PROPOSED PILE DRIVING EQUIPMENT TO DETERMINE THE REQUIRED BLOW COUNTS FOR THE FINAL 2-FT OF DRIVING.
e. PREDRILLING OR PREPUNCHING, IF REQUIRED, IS INCLUDED IN THE BID PRICE FOR THE PILING.
5. WOOD DECKING AND HANDRAILS
a. TANDECK ULTIMATE MARINE DOCK BOARD, OR APPROVED EQUAL.
b. PROVIDE ½" MAX. GAP BETWEEN DECK BOARDS.
6. WOOD STRINGERS AND BLOCKING
a. PRESSURE TREATED SOUTHERN YELLOW PINE #2 S4S 0.40 ACQ
b. FIELD TREAT CUTS, BEVELS, NOTCHES, REFACING AND ABRASIONS MADE IN THE FIELD IN TREATED PILES OR TIMBERS IN ACCORDANCE WITH AWPA; TRIM CUTS AND ABRASIONS BEFORE FIELD TREATMENT; PAINT DEPRESSIONS OR OPENINGS AROUND BOLT HOLES, JOINTS, OR GAPS INCLUDING RECESSES FORMED BY COUNTER BORING WITH PRESERVATIVE TREATMENT USED FOR PILES OR TIMBER.
c. VARIATION IN DEPTH BETWEEN STRINGERS SHALL NOT EXCEED ⅜" TO PROVIDE A FLAT SURFACE ACROSS THE WIDTH OF THE PIER TO ENSURE DECKING HAS A FIRM CONTACT WITH ALL STRINGERS.
7. STEEL FASTENERS AND HARDWARE
a. ALL HARDWARE IS STAINLESS STEEL 316, UNLESS NOTED OTHERWISE.
8. GIBSON STAINLESS & SPECIALTY INC. 2" STAINLESS STEEL CONDUIT HANGERS, OR APPROVED EQUAL.
9. GIBSON STAINLESS & SPECIALTY INC. 2" STAINLESS STEEL CONDUIT TWO HOLE STRAP, OR APPROVED EQUAL.
10. BOAT OUTFITTERS 4'-0"x2'-6"x¾" THICK CUSTOM CLEANING STATION TABLE, OR APPROVED EQUAL.
11. HIGHLAND PRODUCTS GROUP, LLC 6' LONG, SURFACE MOUNTED TRAILSIDE RECYCLED PLASTIC BENCH, OR APPROVED EQUAL.
12. FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION MONOFILAMENT RECOVERY AND RECYCLE BIN.
2 13. DELVALLE ALUMINUM FIRE EXTINGUISHER ENCLOSURE IP66, OR APPROVED EQUAL.
14. CLASS ABC - 20LB FIRE EXTINGUISHER, SUBMIT FOR APPROVAL.

H. CONCRETE FINISH COATING
CLASS 1 OR CLASS 2, BARE CONCRETE WITH BUG HOLES FILLED AND RUBBED.

I. PLAN DIMENSIONS
ALL DIMENSIONS IN THESE PLANS ARE MEASURED IN FEET EITHER HORIZONTALLY OR VERTICALLY UNLESS OTHERWISE NOTED.

J. UTILITIES
1. LOCATIONS OF EXISTING UTILITIES SHOWN IN THE PLANS ARE APPROXIMATE.
2. CONTRACTOR IS TO FIELD LOCATE EXISTING UTILITIES.
3. ALL ELECTRICAL WORK IS TO BE PERFORMED BY A LICENSED ELECTRICIAN.

K. JOINTS IN CONCRETE
CONSTRUCTION JOINTS WILL BE PERMITTED ONLY AT THE LOCATIONS INDICATED IN THE PLANS. ADDITIONAL CONSTRUCTION JOINTS OR ALTERATIONS TO THOSE SHOWN SHALL REQUIRE APPROVAL OF THE ENGINEER.

L. LIGHTING
1. POLE: 12'-0" ALUMINUM POLE, PART#: H12A4RS125 MADE BY ENERGY LIGHT INC., OR APPROVED EQUAL.
2. LUMINAIRE: LIGHT FIXTURE PT40 PART#: 610012 MADE BY LIGHT INC., OR APPROVED EQUAL.
3. BULB: AMBER LED LIGHT BULB PART#: PAR38 MADE BY SYNERGY LIGHTING INC., OR APPROVED EQUAL.

GENERAL CONSTRUCTION NOTES

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM A PRE- AND POST-CONSTRUCTION SURVEY UNDER THE DIRECTION OF A FLORIDA PROFESSIONAL SURVEYOR AND MAPPER (PSM). THE SURVEY IS TO INCLUDE PROFILE AND CROSS SECTIONS TO ENSURE THAT THE CHANNEL WIDTH/DEPTH HAS NOT BEEN DECREASED.

2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION AND OWNERSHIP OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES WITH FACILITIES IN THE AREA OF THE PROJECT PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES. DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY INFORMATION AND DATA IN THE PLANS BEFORE BEGINNING CONSTRUCTION AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

4. THE CONTRACTOR IS RESPONSIBLE FOR RESOLVING ANY UTILITY CONFLICTS BEFORE CONSTRUCTION BEGINS. ALL CONFLICTING UTILITIES MUST BE ADJUSTED AT THE CONTRACTORS EXPENSE.

5. NO STAGING OR OTHER ACTIVITIES FOR THIS PROJECT WILL BE ALLOWED WITHIN OR ADJACENT TO THE WATERWAY OR OTHER ENVIRONMENTALLY SENSITIVE AREAS. THE CONTRACTOR SHALL REVIEW ENVIRONMENTAL REQUIREMENTS OF ANY PROPOSED STAGING AREAS WITH THE PROJECT ENGINEER AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO USE. CONTRACTOR CAN UTILIZE PARKING SPACES AND GREEN SPACE FOR STAGING AREA.

6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING NAVIGABLE WATERWAYS. THE CONTRACTOR SHALL MOVE EQUIPMENT IN A TIMELY MANNER TO ALLOW BOATS AND OTHER VESSELS TO REASONABLY NAVIGATE THROUGH. ANY SHORT TERM IMPACTS TO NAVIGATION SHALL BE COORDINATED WITH THE UNITED STATES COAST GUARD (USCG), MR. EDDIE LAWRENCE. EMAIL ADDRESS: eddie.h.lawrence@uscg.mil, TELEPHONE NUMBER (305) 415-6946. IN ADVANCE OF ANY CONSTRUCTION ACTIVITY RESTRICTING HORIZONTAL AND/OR VERTICAL CLEARANCES THE CONTRACTOR SHALL SUBMIT TO THE COUNTY A CONSTRUCTION PLAN APPROVED BY THE USCG.

7. TIDAL ELEVATIONS WERE OBTAINED FROM DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) PERMIT NO. 36-0213088-001, ISSUED OCTOBER 3, 2003: MHW=+1.14 FT, HIGH WATER = +1.43', LOW WATER = 0.0' FT USING NGVD29.

8. PERMITS OBTAINED FOR THIS PROJECT INCLUDE THE FOLLOWING:
U.S. ARMY CORPS OF ENGINEERS (USACE) PERMIT NO. SAJ-1990-40367

9. THE CONTRACTOR SHALL ACQUIRE AND MAINTAIN ALL FEDERAL, STATE, AND LOCAL PERMITS REQUIRED FOR CONSTRUCTION.

10. THIS PROJECT IS LOCATED IN THE MATLACHA PASS AQUATIC PRESERVE. NO DEGRADATION OF WATER QUALITY, AND/OR THE DISCHARGE OF ANY FOREIGN MATERIAL INTO THE WATER SHOULD BE PERMITTED.

11. THE CONTRACTOR SHALL PROVIDE AN EROSION, SEDIMENTATION, AND POLLUTION PREVENTION PLAN, AND PROVIDE CONTROL DEVICES INCLUDING MONITORING, REPORTING AND MAINTENANCE.

12. ANY MATERIAL TO BE STOCKPILED FOR PERIODS GREATER THAN 24 HOURS SHALL BE PROTECTED BY APPROPRIATE EROSION CONTROL DEVICES.

13. THE CONTRACTOR SHALL MAINTAIN CURRENT WATER QUALITY CONDITIONS AND PROVIDE TURBIDITY BARRIERS DURING CONSTRUCTION TO AVOID TURBID RUNOFF.

14. THE FOLLOWING FEDERALLY AND STATE LISTED ANIMAL SPECIES COULD INHABIT OR MIGRATE THROUGH THE CONSTRUCTION AREA: WEST INDIAN MANATEE, SMALLTOOTH SAWFISH, MARINE TURTLES, AND AMERICAN CROCODILE. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL AND STATE REQUIREMENTS REGARDING ENDANGERED AND THREATENED SPECIES AND STATE LISTED SPECIES OF SPECIAL CONCERN. SHOULD THESE SPECIES BE ENCOUNTERED, THE CONTRACTOR SHALL CONTACT THE PROJECT ENGINEER WITHIN 24 HOURS OF EACH ENCOUNTER.

15. SEAGRASS BEDS AND OTHER BENTHIC COMMUNITIES EXIST IN THE PROJECT AREA. THE CONTRACTOR SHALL PREVENT CONTACT WITH THE SEABED IN THESE AREAS AND ANY DISTURBANCE OF BOTTOM SEDIMENT (E.G. FROM MOVING OR ANCHORING BARGES AND OTHER STRUCTURES). THE CONTRACTOR SHALL NOT SHADE ANY BENTHIC COMMUNITY FROM DIRECT SUNLIGHT FOR MORE THAN TWO WEEKS. ANCHORING LOCATIONS SHALL BE APPROVED BY THE PROJECT ENGINEER.

16. ANY PUBLIC OR PRIVATE PROPERTY DAMAGED BY THE CONTRACTOR OR ANY SUB-CONTRACTOR SHALL BE RESTORED TO ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.

17. CONSTRUCTION WORK HOURS SHALL BE FROM 8:00AM TO 7:00PM SEVEN DAYS A WEEK.

18. CONTRACTOR SHALL ADHERE TO ALL PERMIT REQUIREMENTS AND FEDERAL, STATE AND LOCAL REGULATIONS.

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REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
2/25/2020	SDS	1 ADDED NOTES	7/27/2020	SDS	2 ADDED NOTE

VINCENT ZALIAUSKAS, P.E.
P.E. LICENSE NUMBER 60524
HIGHSPANS ENGINEERING, INC.
2121 MCGREGOR BOULEVARD
SUITE 200
FORT MYERS, FL 33901
REGISTRY NO. 27559

DRAWN BY: SDS 6/19
CHECKED BY: CLH 6/19
DESIGNED BY: RMW 6/19
CHECKED BY: VAZ 6/19

LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

ROAD NO.	COUNTY	PROJECT NO.
	LEE	

SHEET TITLE: GENERAL NOTES (1 OF 2)
REF. DWG. NO.
PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT
SHEET NO. 2

NOISE BEST MANAGEMENT PRACTICES (BMPS) FOR PILING INSTALLATION

THE FOLLOWING BEST MANAGEMENT PRACTICES ARE DESIGNED TO REDUCE THE EXPOSURE TO SEA TURTLES, SMALLTOOTH SAWFISH, AND STURGEON TO POTENTIAL HARMFUL DAILY NOISE EXPOSURE LEVELS ASSOCIATED WITH PILE DRIVING DURING DOCK AND SEAWALL CONSTRUCTION ACTIVITIES.

NOISE BMP PLAN A (FOR ALL PROJECTS): SEA TURTLE, SMALLTOOTH SAWFISH, AND STURGEON CONSTRUCTION CONDITIONS.

THE PERMITTEE SHALL COMPLY WITH THE FOLLOWING PROTECTED SPECIES CONSTRUCTION CONDITIONS:

A. ALL CONSTRUCTION PERSONNEL ARE RESPONSIBLE FOR OBSERVING WATER-RELATED ACTIVITIES TO DETECT THE PRESENCE OF THESE SPECIES.
B. THE PERMITTEE SHALL ADVISE ALL CONSTRUCTION PERSONNEL THAT THERE ARE CIVIL AND CRIMINAL PENALTIES FOR HARMING, HARASSING, OR KILLING SPECIES PROTECTED UNDER THE ENDANGERED SPECIES ACT OF 1973.
C. SILTATION BARRIERS SHALL BE MADE OF MATERIAL IN WHICH PROTECTED SPECIES CANNOT BECOME ENTANGLED, BE PROPERLY SECURED, AND BE REGULARLY MONITORED TO AVOID PROTECTED SPECIES' ENTRAPMENT. BARRIERS MAY NOT BLOCK PROTECTED SPECIES ENTRY TO OR EXIT FROM DESIGNATED CRITICAL HABITAT WITHOUT PRIOR AGREEMENT FROM THE NATIONAL MARINE FISHERIES SERVICE'S PROTECTED RESOURCES DIVISION, ST. PETERSBURG, FLORIDA.
D. IF A PROTECTED SPECIES IS SEEN WITHIN 100 yd OF THE ACTIVE DAILY CONSTRUCTION/DREDGING OPERATION OR VESSEL MOVEMENT, ALL APPROPRIATE PRECAUTIONS SHALL BE IMPLEMENTED TO ENSURE ITS PROTECTION. THESE PRECAUTIONS SHALL INCLUDE CESSATION OF OPERATION OF ANY MOVING EQUIPMENT CLOSER THAN 50 ft OF A PROTECTED SPECIES. OPERATION OF ANY MECHANICAL CONSTRUCTION EQUIPMENT SHALL CEASE IMMEDIATELY IF A PROTECTED SPECIES IS SEEN WITHIN A 50-ft RADIUS OF THE EQUIPMENT. ACTIVITIES MAY NOT RESUME UNTIL THE PROTECTED SPECIES HAS DEPARTED THE PROJECT AREA OF ITS OWN VOLITION.
E. ANY INJURY TO A PROTECTED SPECIES SHALL BE REPORTED IMMEDIATELY TO THE NATIONAL MARINE FISHERIES SERVICE'S PROTECTED RESOURCES DIVISION (727-824-5312) AND THE LOCAL AUTHORIZED SEA TURTLE STRANDING/RESCUE ORGANIZATION.
F. ALL WORK MUST OCCUR DURING DAYLIGHT HOURS.

NOISE BMP PLAN B (FOR IMPACT PILE-DRIVING INSTALLATION OF 6 OR MORE CONCRETE PILES PER DAY)

THE PERMITTEE SHALL FOLLOW ALL CONDITIONS DEFINED IN THE NOISE BMP PLAN A ABOVE PLUS THE CONDITIONS PROVIDED BELOW:

1. IT MUST BE DETERMINED IF THE PROJECT OCCURS IN OPEN WATER OR A CONFINED SPACE. THIS DIFFERENTIATION IS IMPORTANT BECAUSE IF A PROJECT OCCURS IN A CONFINED SPACE, AN ANIMAL MAY NOT MOVE THROUGH OR PAST A NOISE SOURCE TO ESCAPE IT. A CONFINED SPACE IS DEFINED AS ANY AREA THAT HAS A SOLID OBJECT (E.G., SHORELINE, SEAWALL, JETTY) OR STRUCTURE WITHIN 150 FEET (ft) OF THE PILE INSTALLATION SITE THAT WOULD EFFECTIVELY SERVE AS A BARRIER OR OTHERWISE PREVENT ANIMALS FROM MOVING PAST IT TO EXIT THE AREA. THIS DOES NOT INCLUDE OBJECTS SUCH AS DOCKS OR OTHER PILE-SUPPORTED STRUCTURES THAT WOULD NOT STOP ANIMAL MOVEMENT OR SIGNIFICANTLY REFLECT NOISE.
2. IF THE PROJECT IS LOCATED IN OPEN WATER, UP TO 10 CONCRETE PILES MEASURING UP TO 24-in DIAMETER MAY BE INSTALLED PER DAY.
3. IF THE PROJECT IS LOCATED IN A CONFINED SPACE, UP TO 5 CONCRETE PILES MEASURING UP TO 24-in DIAMETER MAY BE INSTALLED PER DAY.
4. IF MORE THAN 5 PILES WILL BE INSTALLED PER DAY IN A CONFINED SPACE, NOISE ABATEMENT MEASURES (BELOW) ARE REQUIRED FOR ALL OF THE CONCRETE PILES INSTALLED THAT DAY WITH A MAXIMUM OF 10 PILES INSTALLED PER DAY.

NOISE ABATEMENT MEASURES: APPROVED NOISE ABATEMENT MEASURES INCLUDE NOISE ATTENUATION PILES (TNAP) AND/OR BUBBLE CURTAINS.

TNAP DESIGN MUST BE CONSTRUCTED OF A DOUBLE-WALLED TUBULAR CASING (A CASING WITHIN A LARGER CASING), WITH AT LEAST A 5-in WIDE HOLLOW SPACE COMPLETELY FILLED WITH CLOSED-CELL FOAM OR OTHER NOISE DAMPENING MATERIAL BETWEEN THE WALLS. THE TNAP MUST BE LONG ENOUGH TO BE SEATED FIRMLY ON THE SEA BOTTOM, FIT OVER THE PILE BEING DRIVEN, AND EXTEND AT LEAST 3 ft ABOVE THE SURFACE OF THE WATER.

BUBBLE CURTAIN DESIGN MUST ADHERE TO THE GUIDELINES FOR UNCONFINED AND CONFINED BUBBLE CURTAINS DEFINED BELOW, AND BE FOLLOWED AS DETAILED IN THE USACE PERMIT APPLICATION. THE USE OF ANY OTHER ALTERNATIVE NOISE CONTROL METHOD MUST RECEIVE PRIOR APPROVAL BY NMFS AND THE USACE.

IF THE REQUIRED NOISE ABATEMENT MEASURE DISCUSSED ABOVE CANNOT BE USED, THEN THE PILE MUST BE INSTALLED BY A DIFFERENT METHOD USING THE APPROPRIATE NOISE BMPS DEFINED IN THIS DOCUMENT. (E.G., CONCRETE PILES MAY BE INSTALLED BY VIBRATORY HAMMER INSTEAD, FOLLOWING BMP PLAN A).

BUBBLE CURTAIN SPECIFICATIONS FOR PILE DRIVING
WHEN USING AN IMPACT HAMMER TO DRIVE OR PROOF CONCRETE PILES, USE ONE OF THE FOLLOWING SOUND ATTENUATION METHODS:

1. IF WATER VELOCITY IS EQUAL TO OR LESS THAN 1.6 ft PER SECOND (1.1 MILES PER HOUR) FOR THE ENTIRE INSTALLATION PERIOD, SURROUND THE PILE BEING DRIVEN BY A CONFINED OR UNCONFINED BUBBLE CURTAIN THAT WILL DISTRIBUTE SMALL AIR BUBBLES AROUND 100% OF THE PILE PERIMETER FOR THE FULL DEPTH OF THE WATER COLUMN.
   A. GENERAL - AN UNCONFINED BUBBLE CURTAIN IS COMPOSED OF AN AIR COMPRESSOR(S), SUPPLY LINES TO DELIVER THE AIR, DISTRIBUTION MANIFOLDS OR HEADERS, PERFORATED AERATION PIPE, AND A FRAME. THE FRAME FACILITATES TRANSPORT AND PLACEMENT OF THE SYSTEM, KEEPS THE AERATION PIPES STABLE, AND PROVIDES BALLAST TO COUNTERACT THE BUOYANCY OF THE AERATION PIPES IN OPERATION.
   B. THE AERATION PIPE SYSTEM SHALL CONSIST OF MULTIPLE LAYERS OF PERFORATED PIPE RINGS, STACKED VERTICALLY IN ACCORDANCE WITH THE FOLLOWING:

WATER DEPTH (m)	NO. OF LAYERS
0 TO LESS THAN 5	2
5 TO LESS THAN 10	4
10 TO LESS THAN 15	7
15 TO LESS THAN 20	10
20 TO LESS THAN 25	13

   C. THE PIPES IN ALL LAYERS SHALL BE ARRANGED IN A GEOMETRIC PATTERN WHICH SHALL ALLOW FOR THE PILE BEING DRIVEN TO BE COMPLETELY ENCLOSED BY BUBBLES FOR THE FULL DEPTH OF THE WATER COLUMN AND WITH A RADIAL DIMENSION SUCH THAT THE RINGS ARE NO MORE THAN 0.5 m FROM THE OUTSIDE SURFACE OF THE PILE.
      I. THE LOWEST LAYER OF PERFORATED AERATION PIPE SHALL BE DESIGNED TO ENSURE CONTACT WITH THE SUBSTRATE WITHOUT BURIAL AND SHALL ACCOMMODATE SLOPED CONDITIONS.
      II. AIR HOLES SHALL BE 1.6 MILLIMETER (mm) (1/16-in) IN DIAMETER AND SHALL BE SPACED APPROXIMATELY 20 mm (3/4 in) APART. AIR HOLES WITH THIS SIZE AND SPACING SHALL BE PLACED IN 4 ADJACENT ROWS ALONG THE PIPE TO PROVIDE UNIFORM BUBBLE FLUX.
      III. THE SYSTEM SHALL PROVIDE A BUBBLE FLUX 3.0 m^3 PER MINUTE PER LINEAR METER OF PIPE IN EACH LAYER (32.91 ft^3 PER MINUTE PER LIN FT OF PIPE IN EACH LAYER). THE TOTAL VOLUME OF AIR PER LAYER IS THE PRODUCT OF THE BUBBLE FLUX AND THE CIRCUMFERENCE OF THE RING:
         $Vt = 3.0\ m^3/min/m * CIRCUMFERENCE\ OF\ THE\ AERATION\ RING\ IN\ m$
         OR
         $Vt = 32.91\ ft^3/min/ft * CIRCUMFERENCE\ OF\ THE\ AERATION\ RING\ IN\ ft$
      IV. METERS SHALL BE PROVIDED AS FOLLOWS:
         - PRESSURE METERS SHALL BE INSTALLED AT ALL INLETS TO AERATION PIPELINES AND AT POINTS OF LOWEST PRESSURE IN EACH BRANCH OF THE AERATION PIPELINE.
         - FLOW METERS SHALL BE INSTALLED IN THE MAIN LINE AT EACH COMPRESSOR AND AT EACH BRANCH OF THE AERATION PIPELINES AT EACH INLET. IN APPLICATIONS WHERE THE FEED LINE FROM THE COMPRESSOR IS CONTINUOUS FROM THE COMPRESSOR TO THE AERATION PIPE INLET, THE FLOW METER AT THE COMPRESSOR CAN BE ELIMINATED.
         - FLOW METERS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION BASED ON EITHER LAMINAR FLOW OR NON-LAMINAR FLOW.

2. IF WATER VELOCITY IS GREATER THAN 1.6 ft PER SECOND (1.1 MILES PER HOUR) AT ANY POINT DURING INSTALLATION OR IF CONSTRUCTING A SEAWALL, SURROUND THE PILE OR AREA BEING DRIVEN BY A CONFINED BUBBLE CURTAIN (E.G., A BUBBLE RING SURROUNDED BY A FABRIC OR NON-METALLIC SLEEVE). THE CONFINED BUBBLE CURTAIN WILL DISTRIBUTE AIR BUBBLES AROUND 100% OF THE PILE PERIMETER FOR THE FULL DEPTH OF THE WATER COLUMN, ACCORDING TO SPECIFICATIONS BELOW.
   A. GENERAL - A CONFINED BUBBLE CURTAIN IS COMPOSED OF AN AIR COMPRESSOR(S), SUPPLY LINES TO DELIVER THE AIR, DISTRIBUTION MANIFOLDS OR HEADERS, PERFORATED AERATION PIPE(S), AND A MEANS OF CONFINING THE BUBBLES.
   B. THE CONFINEMENT SHALL EXTEND FROM THE SUBSTRATE TO A SUFFICIENT ELEVATION ABOVE THE MAXIMUM WATER LEVEL EXPECTED DURING PILE INSTALLATION SUCH THAT WHEN THE AIR DELIVERY SYSTEM IS ADJUSTED PROPERLY, THE BUBBLE CURTAIN DOES NOT ACT AS A WATER PUMP (I.E., LITTLE OR NO WATER SHOULD BE PUMPED OUT OF THE TOP OF THE CONFINEMENT SYSTEM).
   C. THE CONFINEMENT SHALL CONTAIN RESILIENT PILE GUIDES THAT PREVENT THE PILE AND THE CONFINEMENT FROM COMING INTO CONTACT WITH EACH OTHER AND DO NOT TRANSMIT VIBRATIONS TO THE CONFINEMENT SLEEVE AND INTO THE WATER COLUMN (E.G., RUBBER SPACERS, AIR-FILLED CUSHIONS).
   D. IN-WATER LESS THAN 15 m DEEP, THE SYSTEM SHALL HAVE A SINGLE AERATION RING AT THE SUBSTRATE LEVEL. IN-WATERS GREATER THAN 15 m DEEP, THE SYSTEM SHALL HAVE AT LEAST 2 RINGS: 1 AT THE SUBSTRATE LEVEL AND THE OTHER AT MID-DEPTH.
   E. THE LOWEST LAYER OF PERFORATED AERATION PIPE SHALL BE DESIGNED TO ENSURE CONTACT WITH THE SUBSTRATE WITHOUT SINKING INTO THE SUBSTRATE AND SHALL ACCOMMODATE FOR SLOPED CONDITIONS.
   F. AIR HOLES SHALL BE 1.6 mm (1/16-in) IN DIAMETER AND SHALL BE SPACED APPROXIMATELY 20 mm (3/4 in) APART. AIR HOLES WITH THIS SIZE AND SPACING SHALL BE PLACED IN 4 ADJACENT ROWS ALONG THE PIPE TO PROVIDE UNIFORM BUBBLE FLUX.
   G. THE SYSTEM SHALL PROVIDE A BUBBLE FLUX OF 2.0 m^3 PER MINUTE PER LINEAR METER OF PIPE IN EACH LAYER (21.53 ft^3 PER MINUTE PER LIN FT OF PIPE IN EACH LAYER). THE TOTAL VOLUME OF AIR PER LAYER IS THE PRODUCT OF THE BUBBLE FLUX AND THE CIRCUMFERENCE OF THE RING:
      $Vt = 2.0\ m^3/min/m * CIRCUMFERENCE\ OF\ THE\ AERATION\ RING\ IN\ m$
      OR
      $Vt = 21.53\ ft^3/min/ft * CIRCUMFERENCE\ OF\ THE\ AERATION\ RING\ IN\ ft$
   H. FLOW METERS SHALL BE PROVIDED AS FOLLOWS:
      PRESSURE METERS SHALL BE INSTALLED AT ALL INLETS TO AERATION PIPELINES AND AT POINTS OF LOWEST PRESSURE IN EACH BRANCH OF THE AERATION PIPELINE.
      II. FLOW METERS SHALL BE INSTALLED IN THE MAIN LINE AT EACH COMPRESSOR AND AT EACH BRANCH OF THE AERATION PIPELINES AT EACH INLET. IN APPLICATIONS WHERE THE FEED LINE FROM THE COMPRESSOR IS CONTINUOUS FROM THE COMPRESSOR TO THE AERATION PIPE INLET, THE FLOW METER AT THE COMPRESSOR CAN BE ELIMINATED.
      III. FLOW METERS SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION BASED ON EITHER LAMINAR FLOW OR NON-LAMINAR FLOW.

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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P.E. LICENSE NUMBER 60524

HIGHSPANS ENGINEERING, INC.
2121 MCGREGOR BOULEVARD
SUITE 200
FORT MYERS, FL 33901
REGISTRY NO. 27559

DRAWN BY: SDS 6/19
CHECKED BY: CLH 6/19
DESIGNED BY: RMW 6/19
CHECKED BY: VAZ 6/19

LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

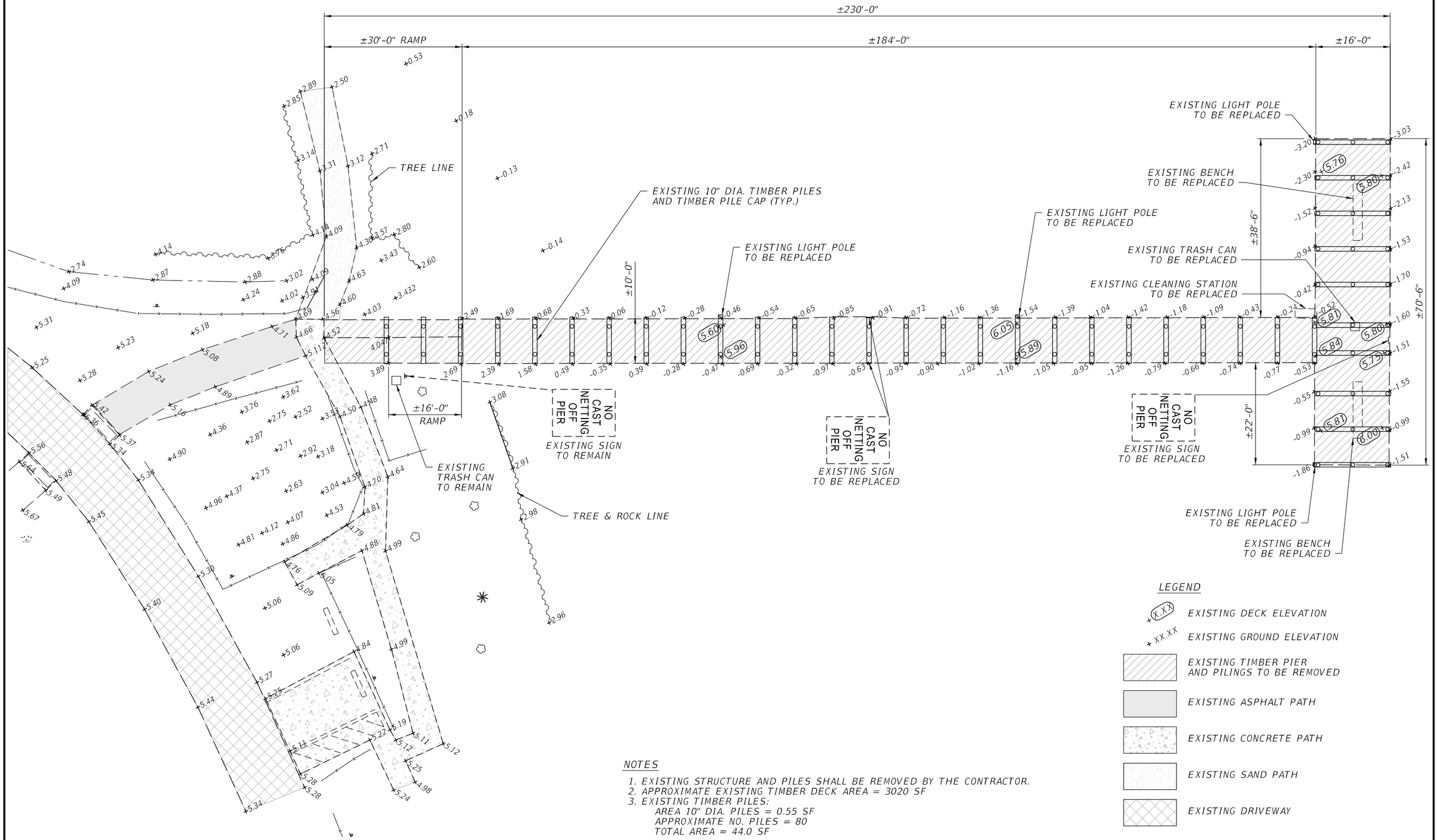
ROAD NO.	COUNTY	PROJECT NO.
	LEE	

SHEET TITLE: GENERAL NOTES (2 OF 2)

REF. DWG. NO.:

PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

SHEET NO.: 3



NOTES

1. EXISTING STRUCTURE AND PILES SHALL BE REMOVED BY THE CONTRACTOR.
2. APPROXIMATE EXISTING TIMBER DECK AREA = 3020 SF
3. EXISTING TIMBER PILES:
   AREA 10" DIA. PILES = 0.55 SF
   APPROXIMATE NO. PILES = 80
   TOTAL AREA = 44.0 SF

LEGEND

- +X.XX — EXISTING DECK ELEVATION
- +XX.XX — EXISTING GROUND ELEVATION
- EXISTING TIMBER PIER AND PILINGS TO BE REMOVED
- EXISTING ASPHALT PATH
- EXISTING CONCRETE PATH
- EXISTING SAND PATH
- EXISTING DRIVEWAY

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

ROAD NO.	COUNTY	PROJECT NO.
	LEE	

SHEET TITLE: EXISTING CONDITIONS AND LIMITS OF REMOVAL (ENTIRE PIER)

REF. DWG. NO.:

PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

SHEET NO.: 4

Sabrina 7/29/2020 1:45:31 PM H:_Project18\1812_MatlachaPier\struct\ExistingConditions.DGN

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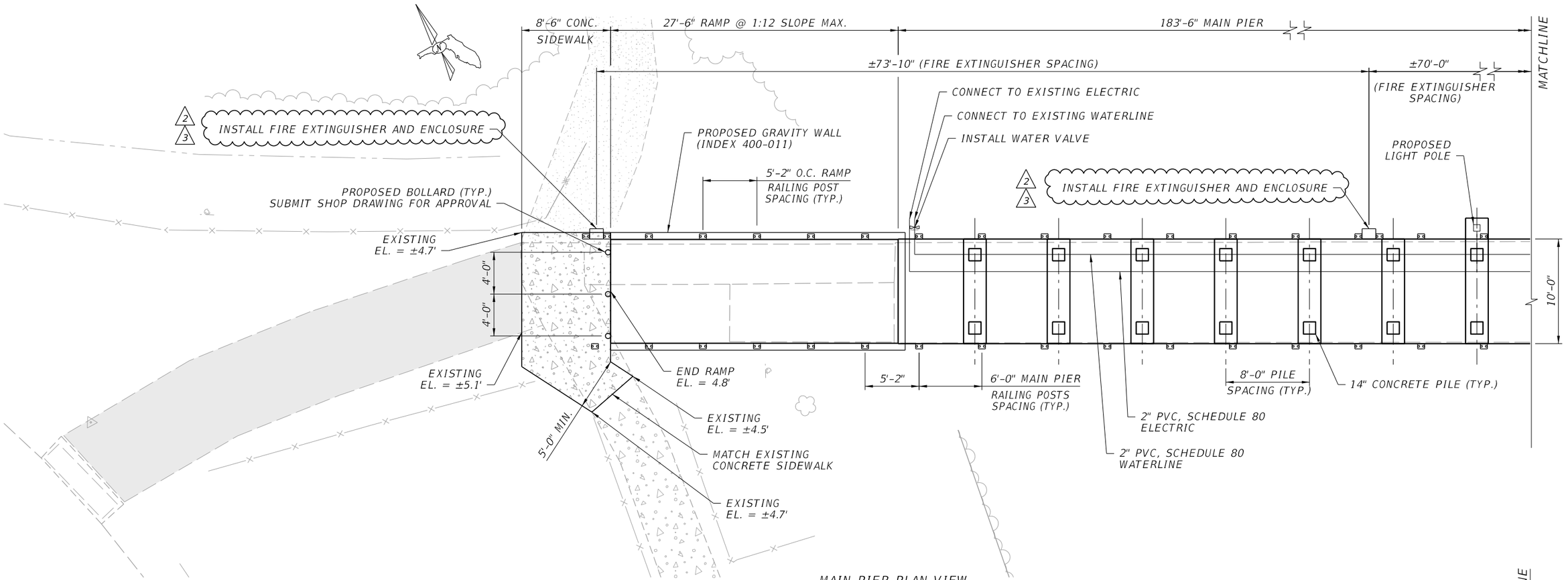
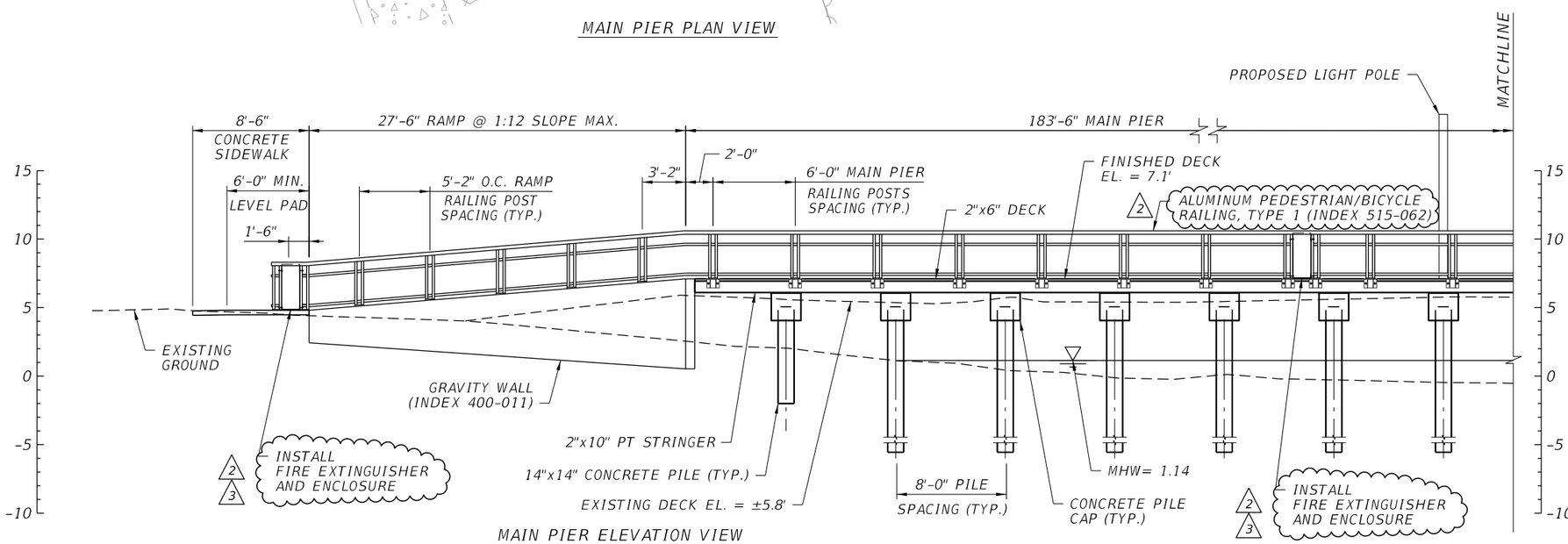


MAIN PIER PLAN VIEW

3 NOTE:
1. FIRE EXTINGUISHERS SHOULD NOT BE PLACED MORE THAN 75 FEET OF TRAVEL DISTANCE FROM THE HAZARD.

LEGEND

- PROPOSED CONCRETE PATH
- EXISTING CONCRETE PATH
- EXISTING ASPHALT PATH
- EXISTING SAND PATH



MAIN PIER ELEVATION VIEW

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REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
7/27/2020	SDS	2 ADDED FIRE EXTINGUISHER, REVISED RAILING TYPE	7/29/2020	SDS	3 REVISED FIRE EXTINGUISHER LOCATION, ADDED NOTE

VINCENT ZALIAUSKAS, P.E.
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SUITE 200
FORT MYERS, FL 33901
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LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

ROAD NO.	COUNTY	PROJECT NO.
	LEE	

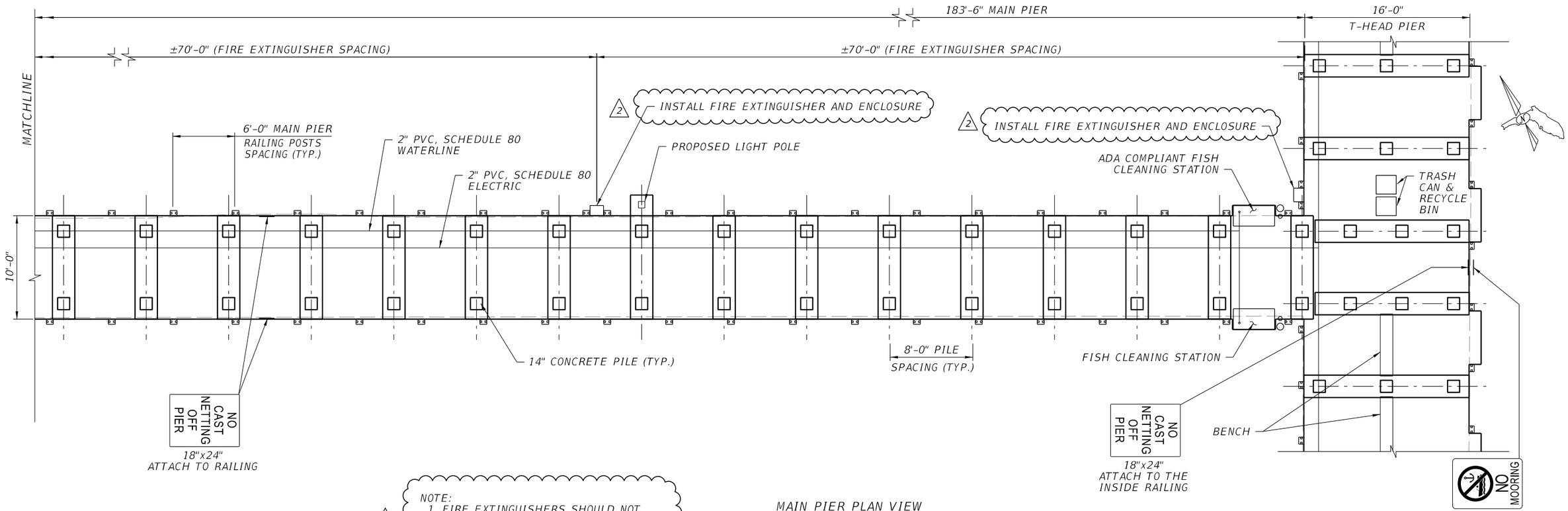
SHEET TITLE: PLAN AND ELEVATION (1 OF 3)

REF. DWG. NO.:

PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

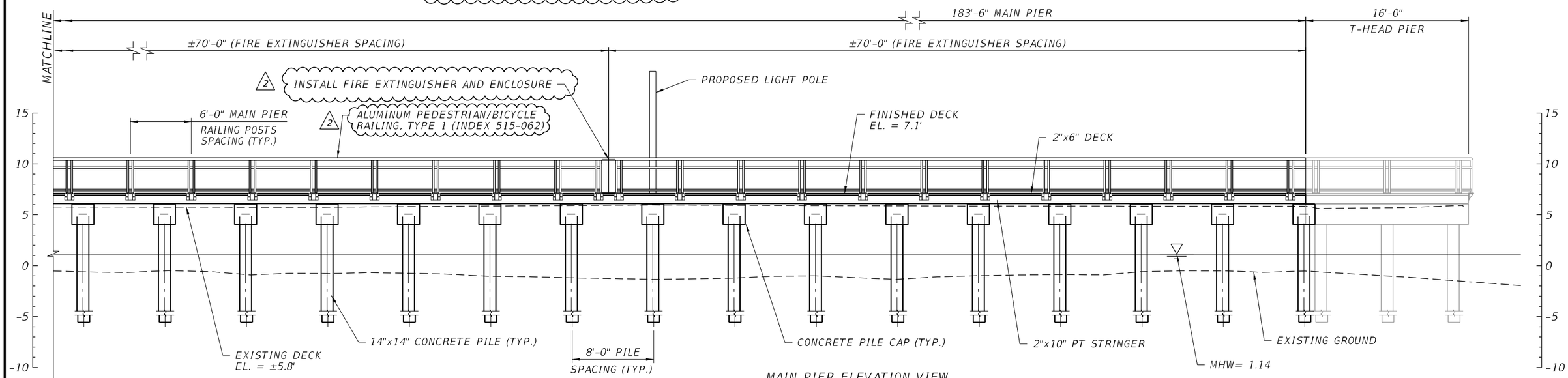
SHEET NO.: 5

Sabrina 7/29/2020 1:49:45 PM H:_Project18\1812_MatlachaPier\struct\B1PlanElev01.DGN



3 NOTE:
1. FIRE EXTINGUISHERS SHOULD NOT BE PLACED MORE THAN 75 FEET OF TRAVEL DISTANCE FROM THE HAZARD.

MAIN PIER PLAN VIEW



MAIN PIER ELEVATION VIEW

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REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
7/27/2020	SDS	2 ADDED FIRE EXTINGUISHER, REVISED RAILING TYPE	7/29/2020	SDS	3 REVISED FIRE EXTINGUISHER LOCATION, ADDED NOTE

VINCENT ZALIAUSKAS, P.E.
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LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

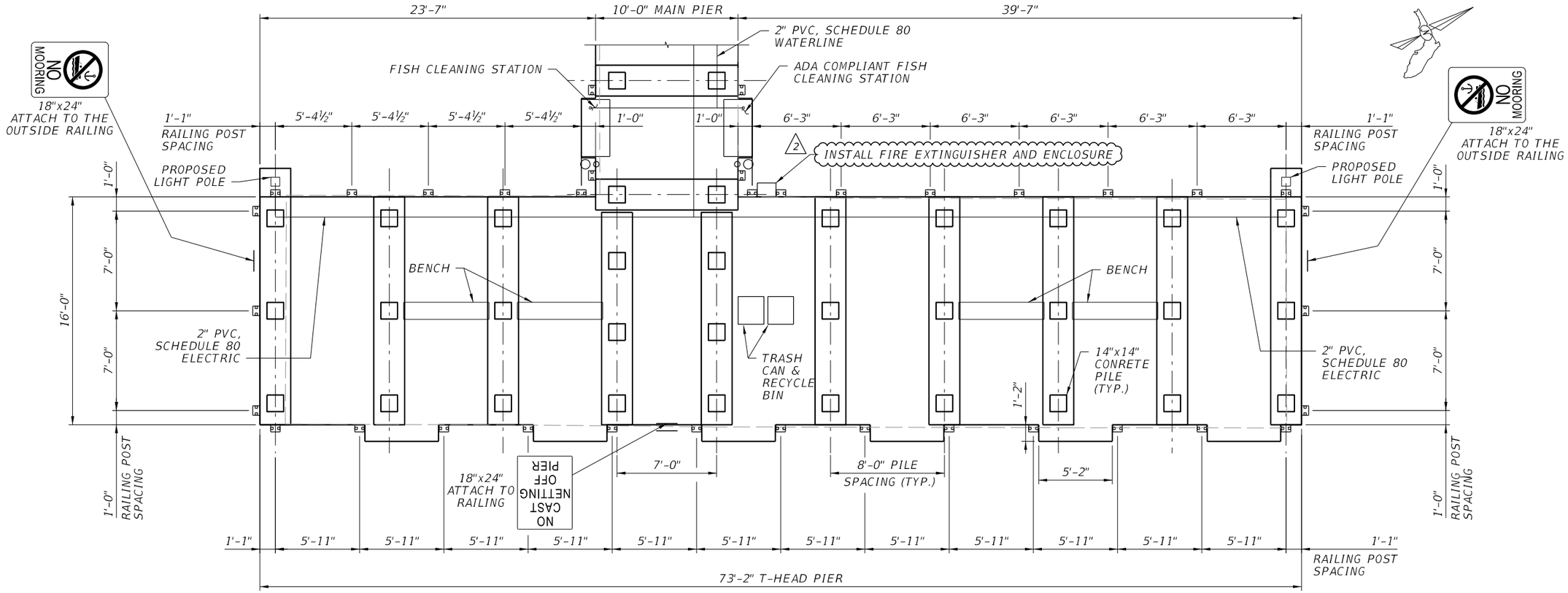
ROAD NO.	COUNTY	PROJECT NO.
	LEE	

SHEET TITLE: PLAN AND ELEVATION (2 OF 3)

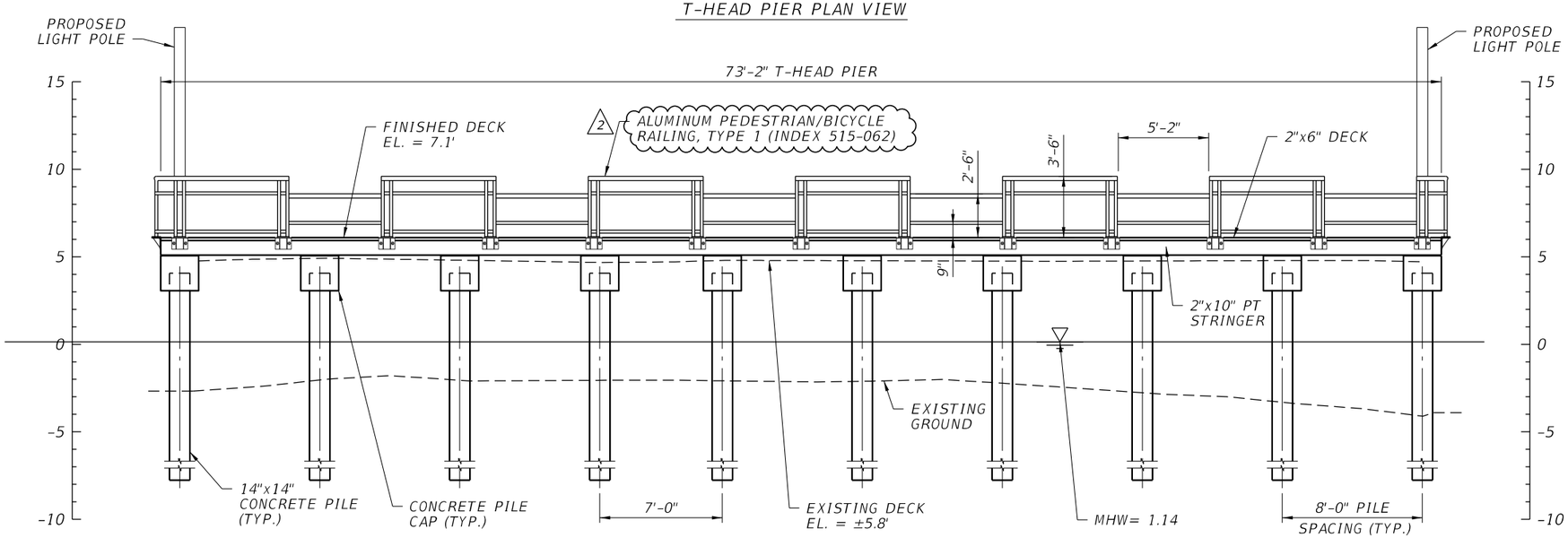
REF. DWG. NO.:

PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

SHEET NO.: 6



T-HEAD PIER PLAN VIEW



T-HEAD PIER ELEVATION VIEW

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
7/27/2020	SDS	2 ADDED FIRE EXTINGUISHER, REVISED RAILING TYPE			

VINCENT ZALIAUSKAS, P.E.
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LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

ROAD NO.	COUNTY	PROJECT NO.
	LEE	

SHEET TITLE: PLAN AND ELEVATION (3 OF 3)

REF. DWG. NO.:

PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

SHEET NO.: 7

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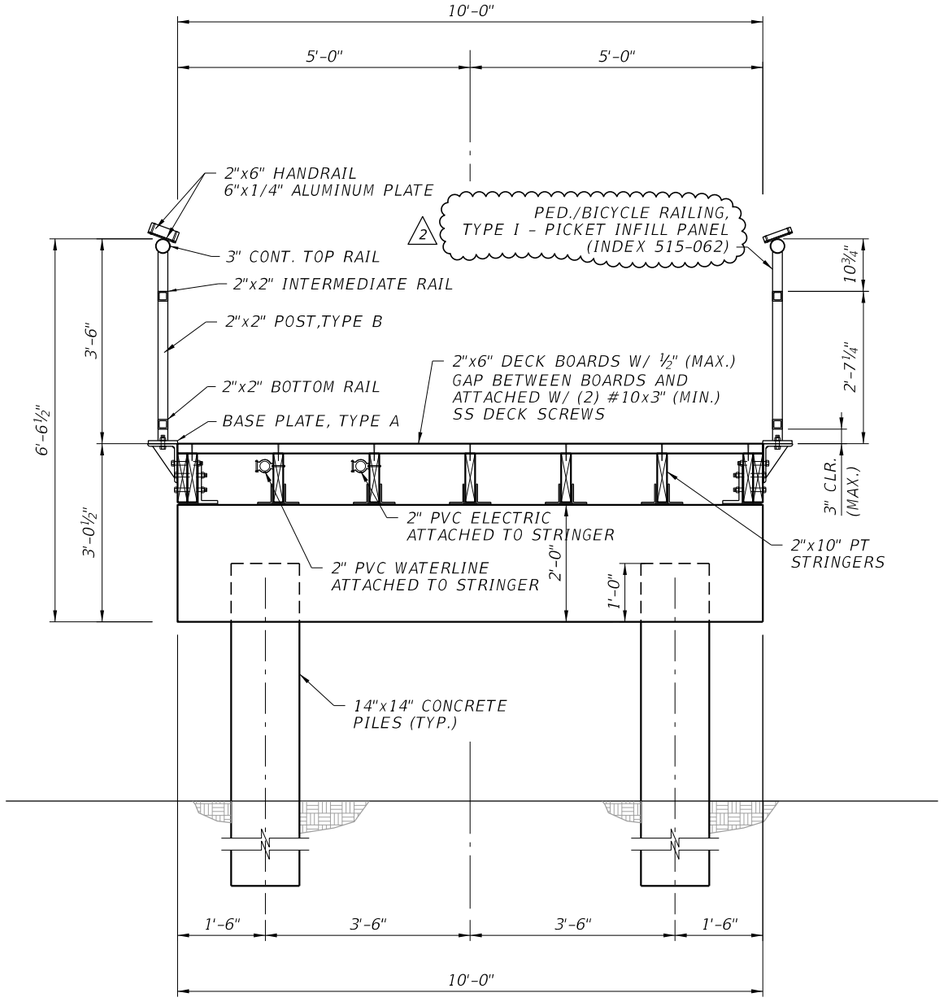
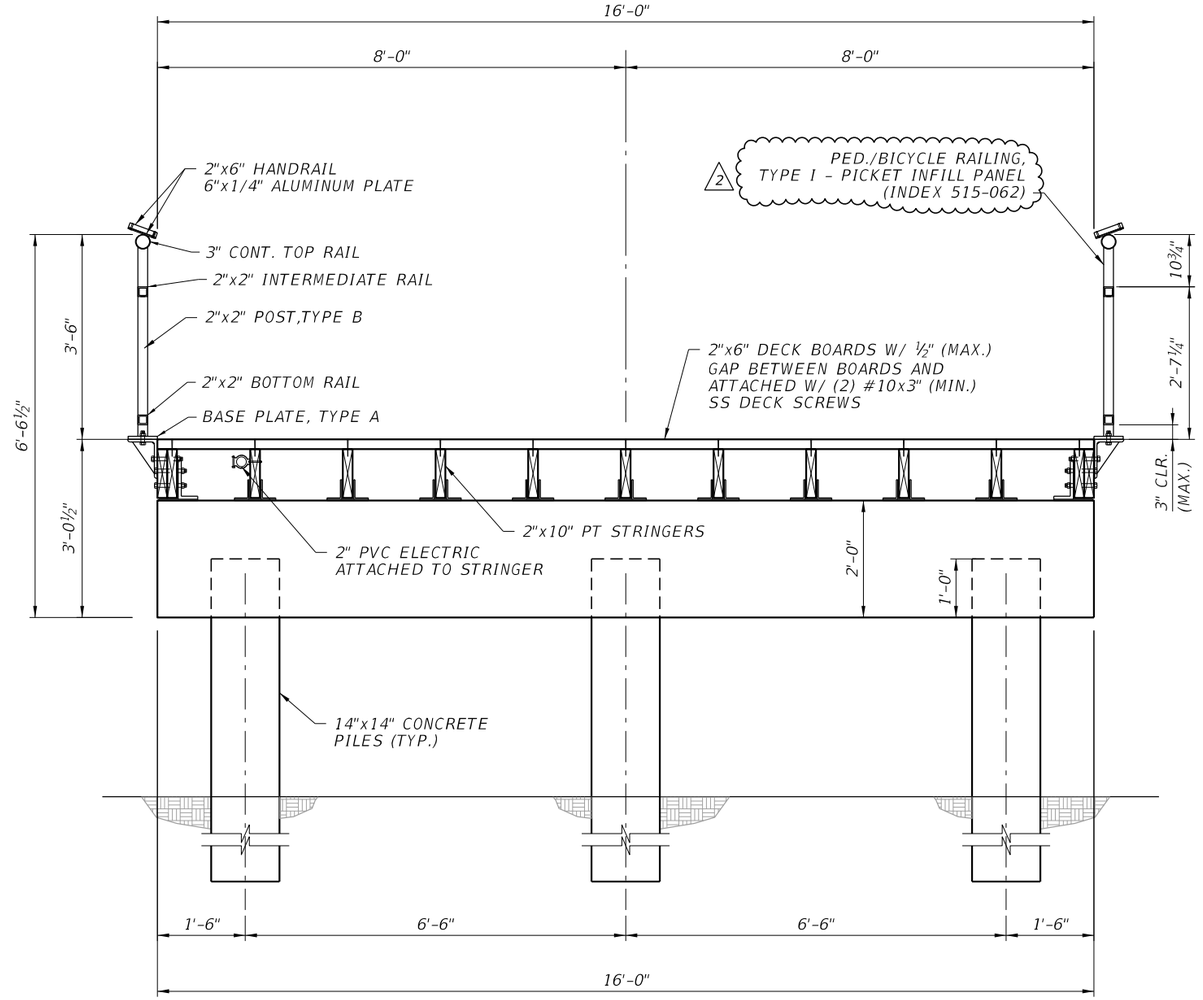


MAIN PIER TYPICAL SECTION



T-HEAD TYPICAL SECTION

ALUMINUM PEDESTRIAN/BICYCLE RAILING DATA TABLES

PROJECT REQUIREMENTS					
LOCATION	HEIGHT (IN.)	STYLE TYPE	REQUIRED: (YES/NO)		
			BOTTLE GUARD	COLORED COATINGS	INFILL PANEL TO REJECT PASSAGE OF 4" SPHERE (SPECIAL CONDITIONS ONLY)
MAIN PIER / T-HEAD PIER	42	1	YES	NO	YES
T-HEAD PIER ADA COMPLIANT	34	1	YES	NO	YES

NOTES:
1. WORK THIS DATA TABLE WITH INDEX 515-062.

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REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
7/27/2020	SDS	2 REVISED RAILING TYPE, ADDED DATA TABLE			

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LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

ROAD NO.	COUNTY	PROJECT NO.
	LEE	

SHEET TITLE: TYPICAL SECTIONS (1 OF 3)

REF. DWG. NO.

PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

SHEET NO. 8

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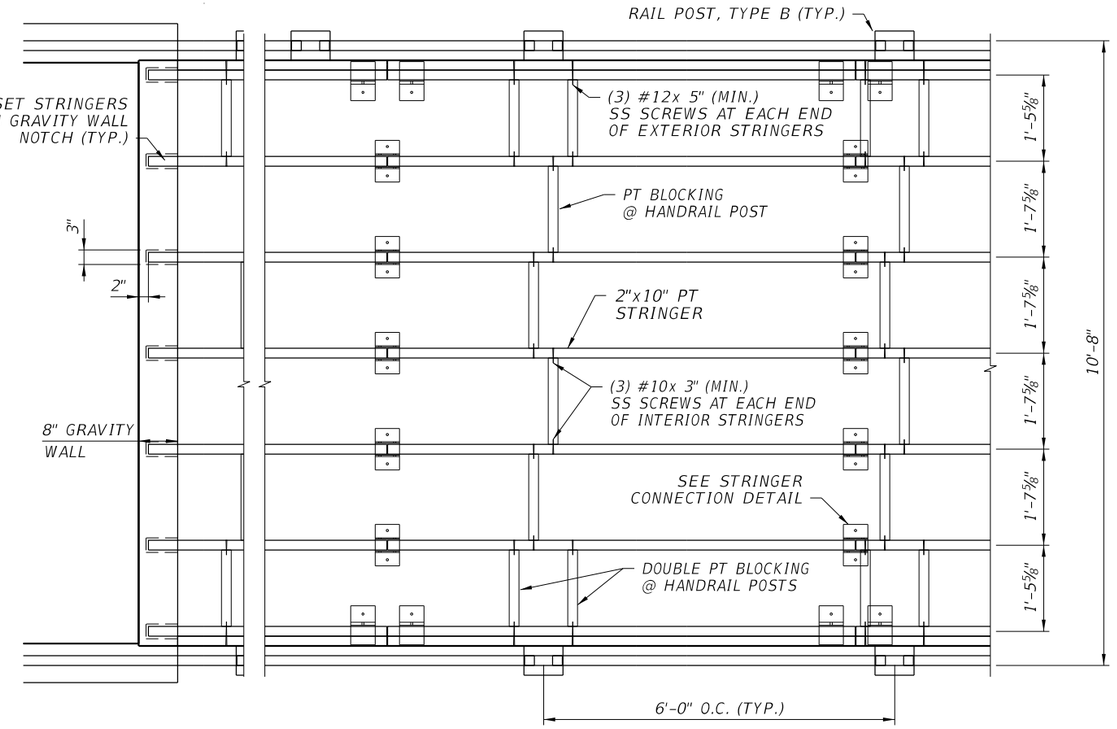
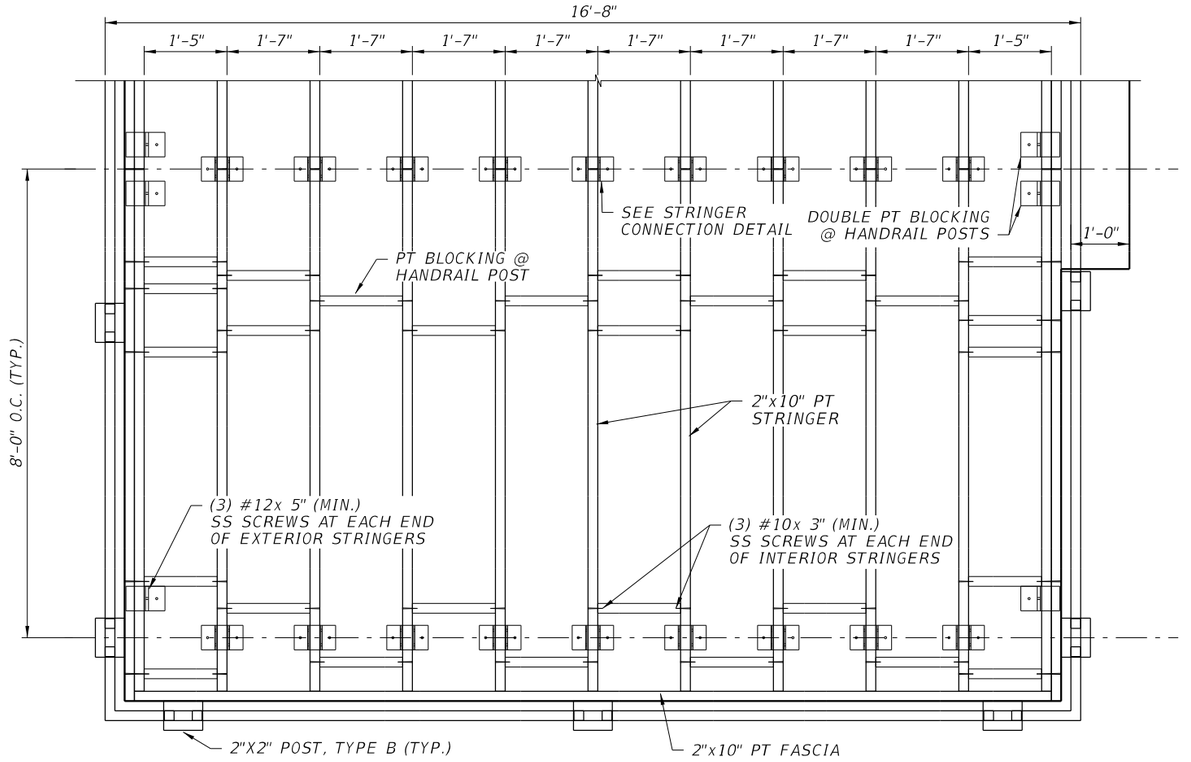
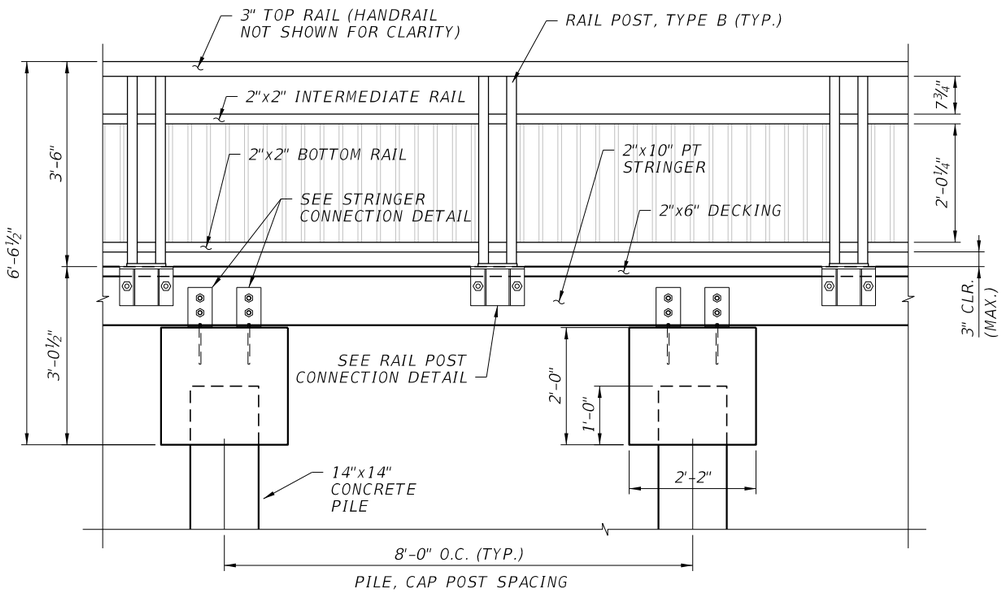


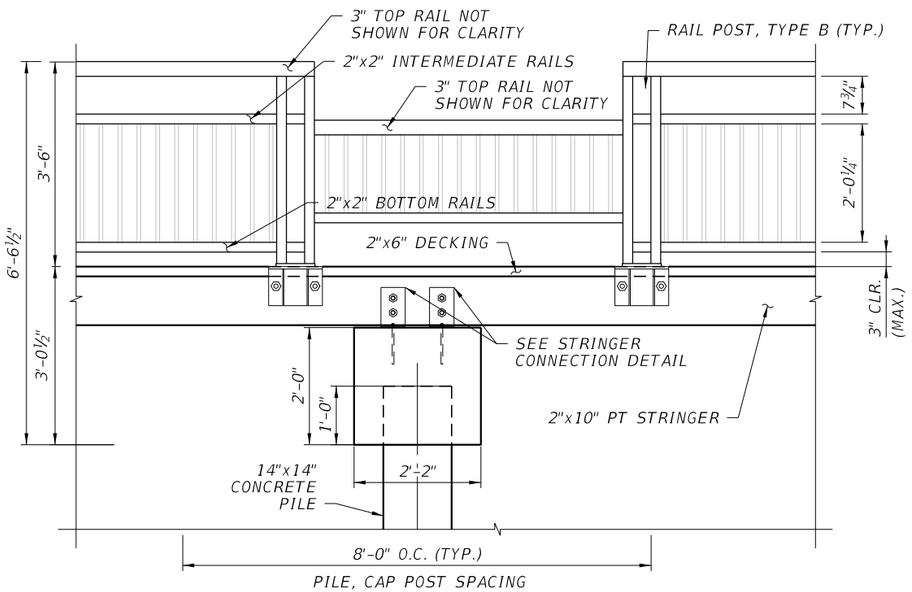
MAIN PIER PLAN VIEW TYPICAL SECTION DETAIL



T-HEAD PIER PLAN VIEW TYPICAL SECTION DETAIL



TYPICAL SECTION ELEVATION VIEW DETAIL



ADA COMPLIANT TYPICAL SECTION ELEVATION VIEW DETAIL

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LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

ROAD NO.	COUNTY	PROJECT NO.
	LEE	

SHEET TITLE: TYPICAL SECTIONS (2 OF 3)

REF. DWG. NO.:

PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

SHEET NO.: 9

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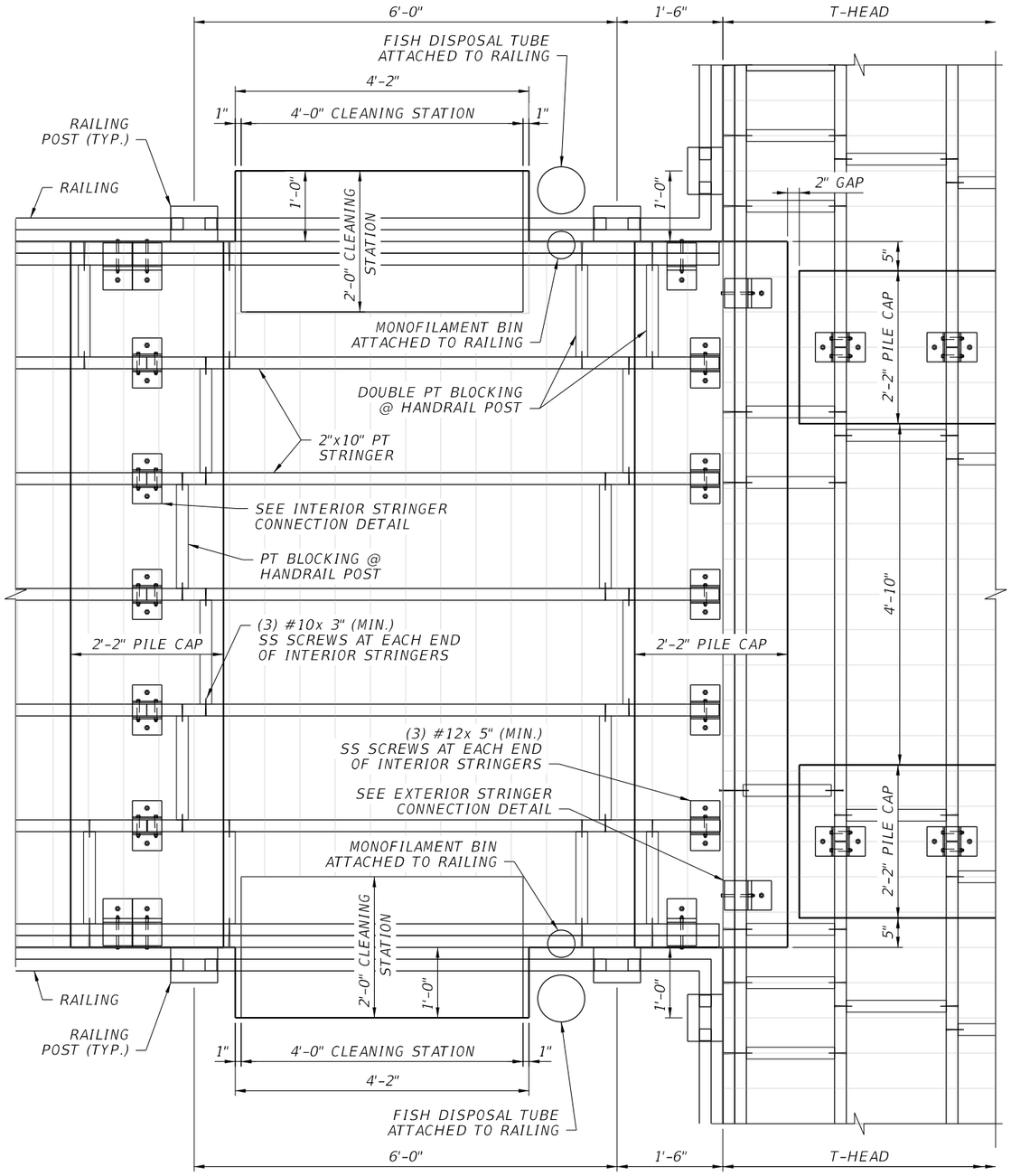
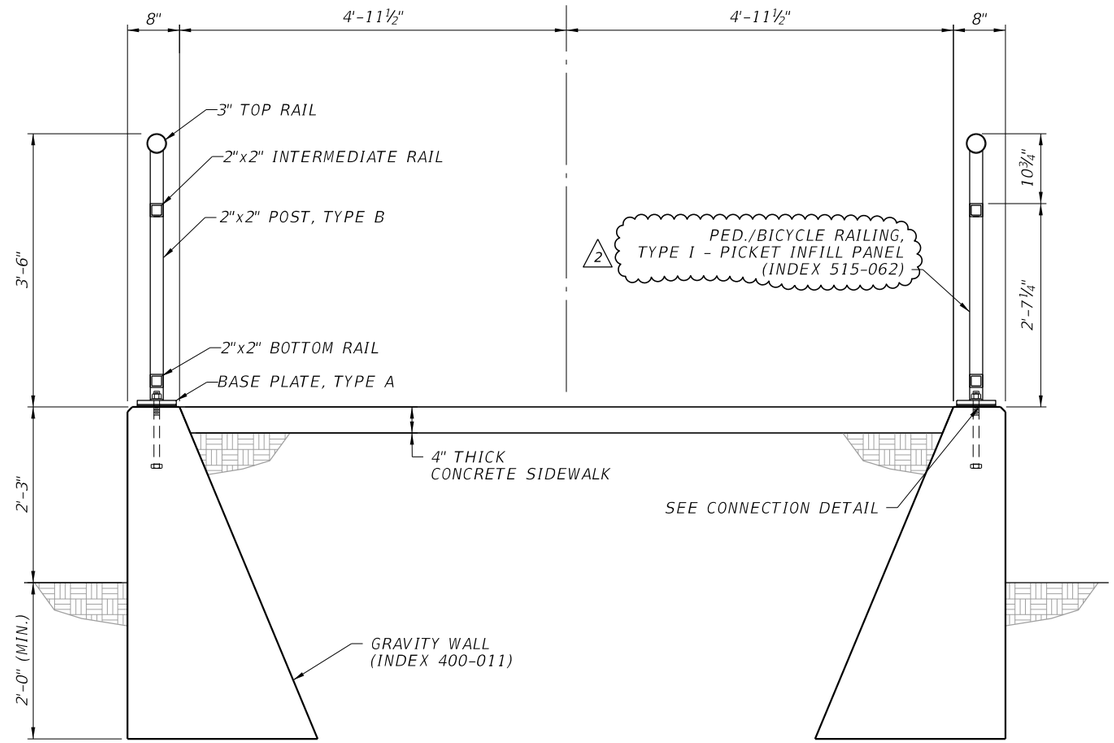


MAIN PIER AND T-HEAD CONNECTION DETAIL



RAMP TYPICAL SECTION

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REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
7/27/2020	SDS	2 REVISED RAILING TYPE			

VINCENT ZALIAUSKAS, P.E.
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LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

ROAD NO.	COUNTY	PROJECT NO.
	LEE	

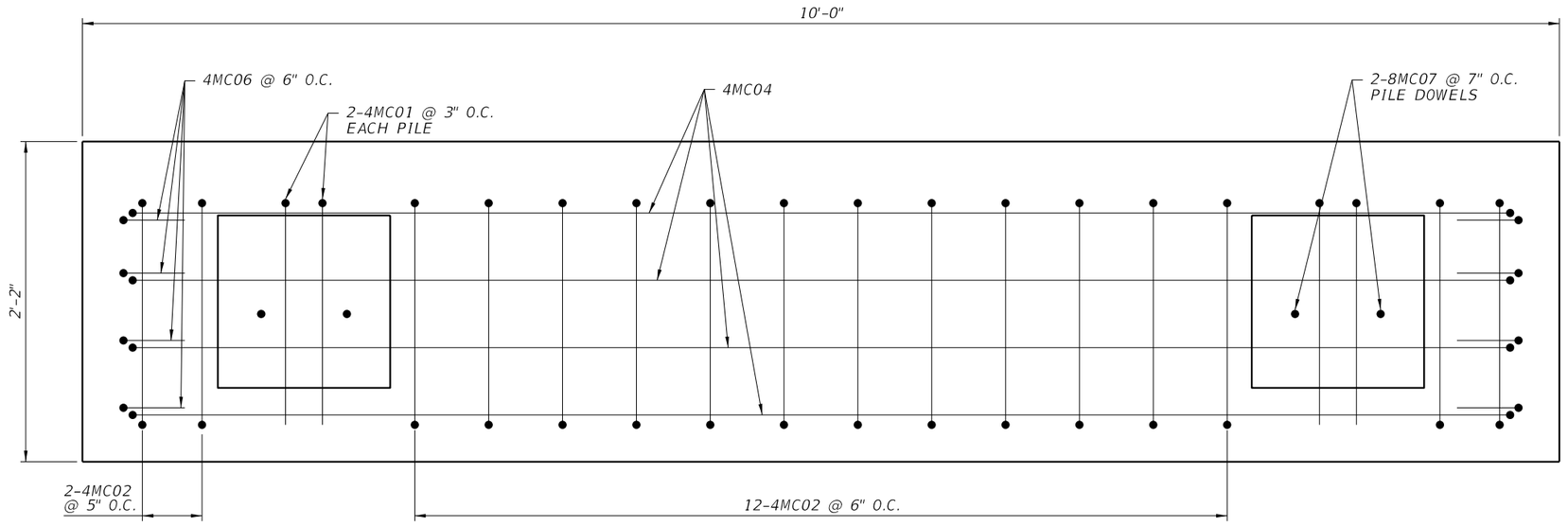
SHEET TITLE: TYPICAL SECTIONS (3 OF 3)

REF. DWG. NO.:

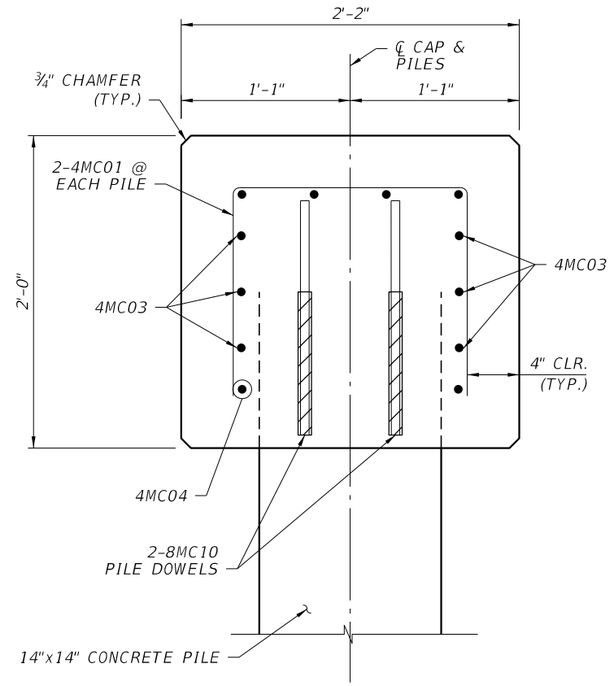
PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

SHEET NO.: 10

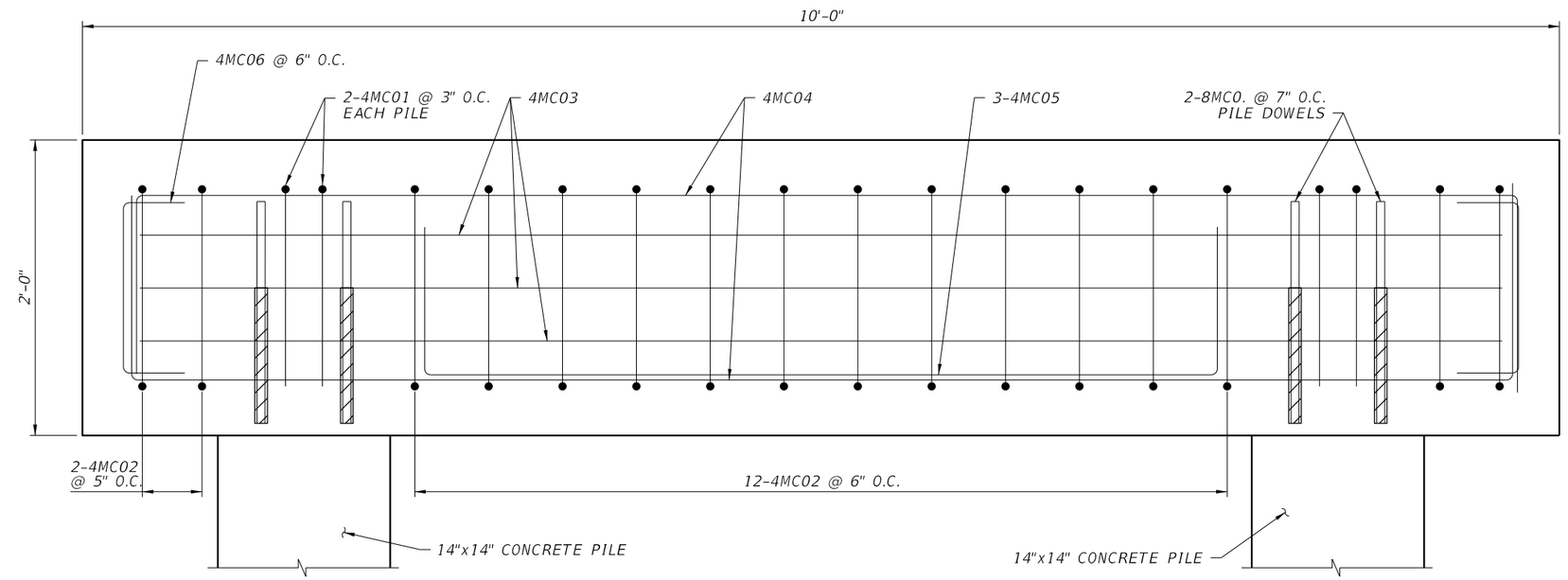
Sabrina 7/29/2020 1:45:37 PM H:_Project18\1812_MatlachaPier\struct\B1TypicalSection03.DGN



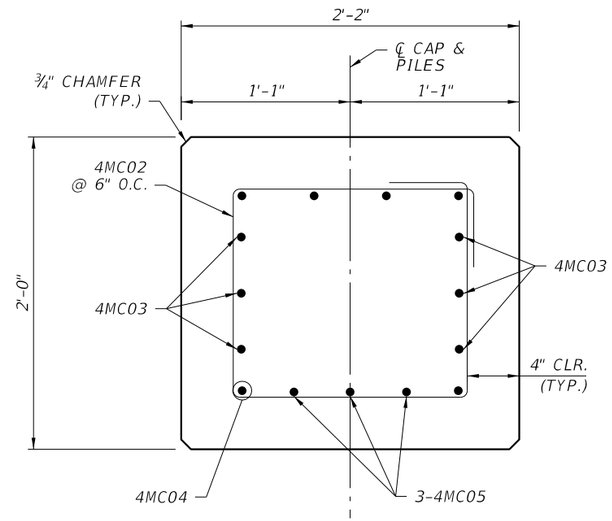
MAIN PIER PILE CAP PLAN VIEW



CAP DETAIL AT PILES



MAIN PIER PILE CAP ELEVATION VIEW



CAP DETAIL BETWEEN PILES

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LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

ROAD NO.	COUNTY	PROJECT NO.
	LEE	

SHEET TITLE: PILE CAP DETAILS (1 OF 2)

REF. DWG. NO.:

PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

SHEET NO. 11

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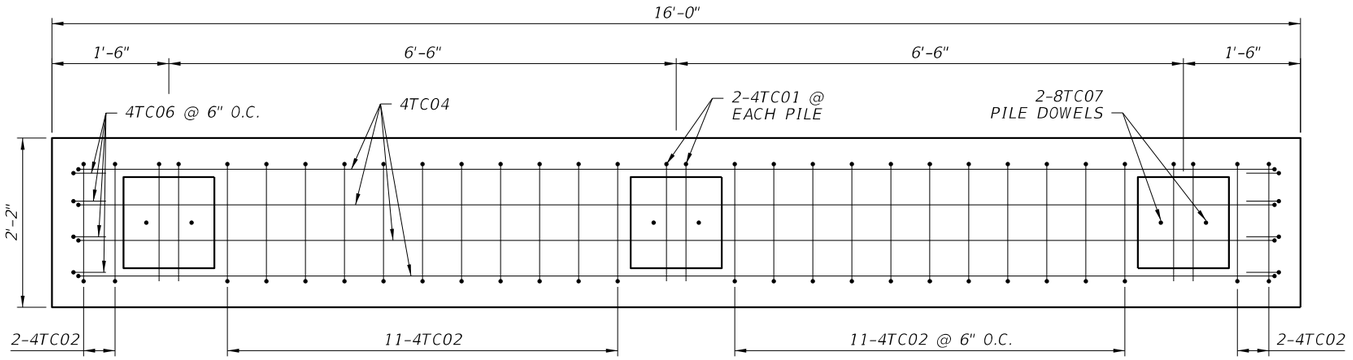
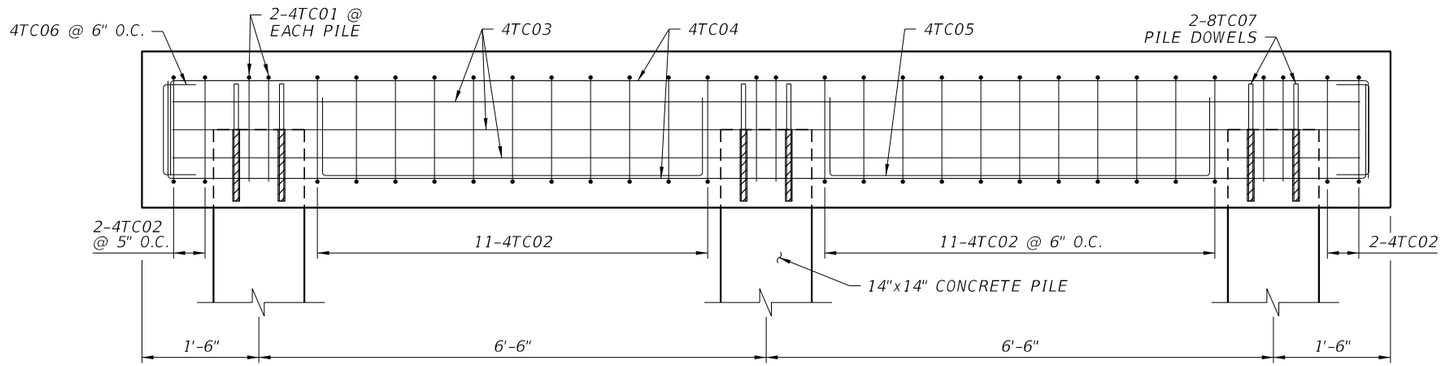
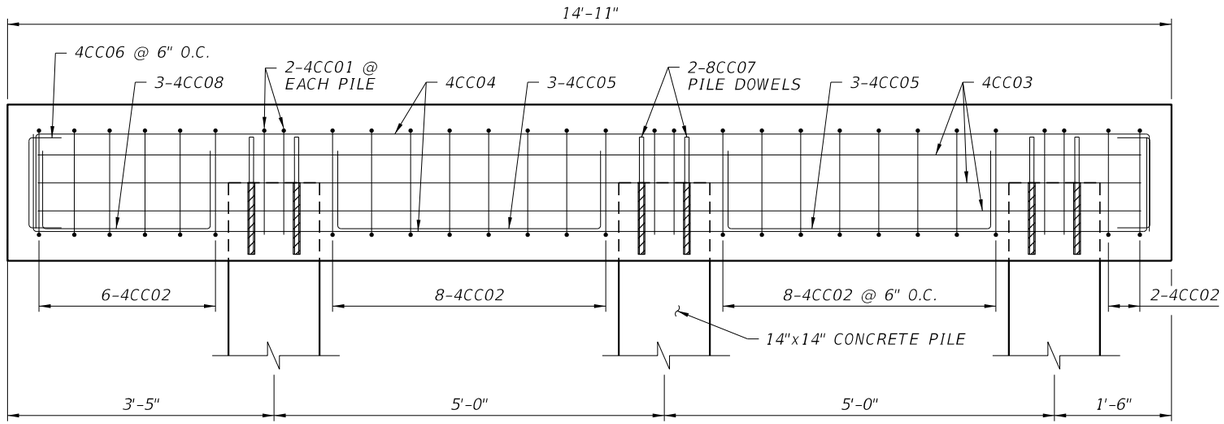


T-HEAD PILE CAP PLAN VIEW

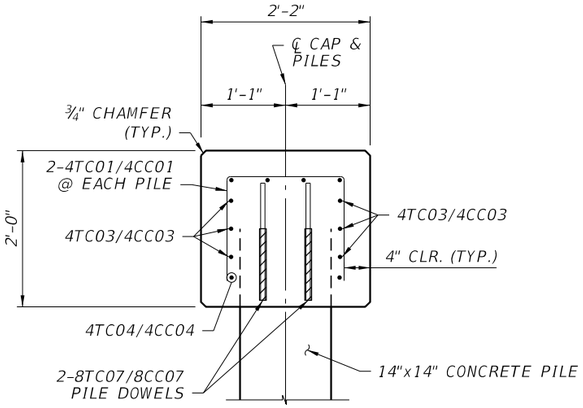
T-HEAD PILE CAP @ MAIN PIER CONNECTION SIMILAR



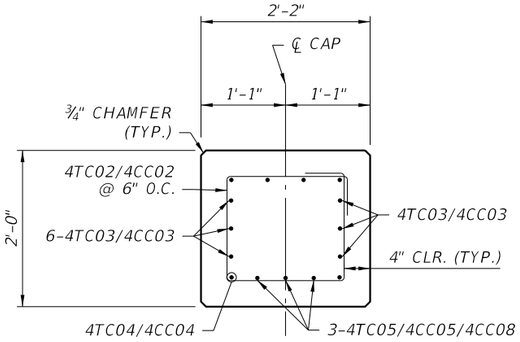
T-HEAD PILE CAP ELEVATION VIEW



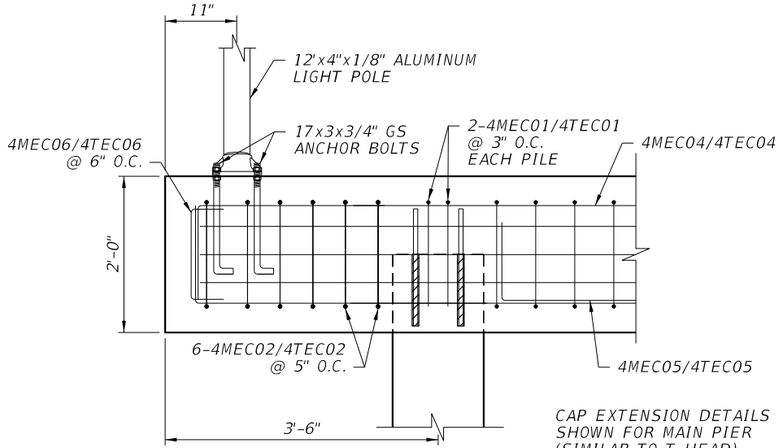
T-HEAD PILE CAP @ MAIN PIER CONNECTION ELEVATION VIEW



CAP DETAIL AT PILES



CAP DETAIL BETWEEN PILES



LIGHT POLE DETAIL

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DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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FORT MYERS, FL 33901
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LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

ROAD NO.	COUNTY	PROJECT NO.
	LEE	

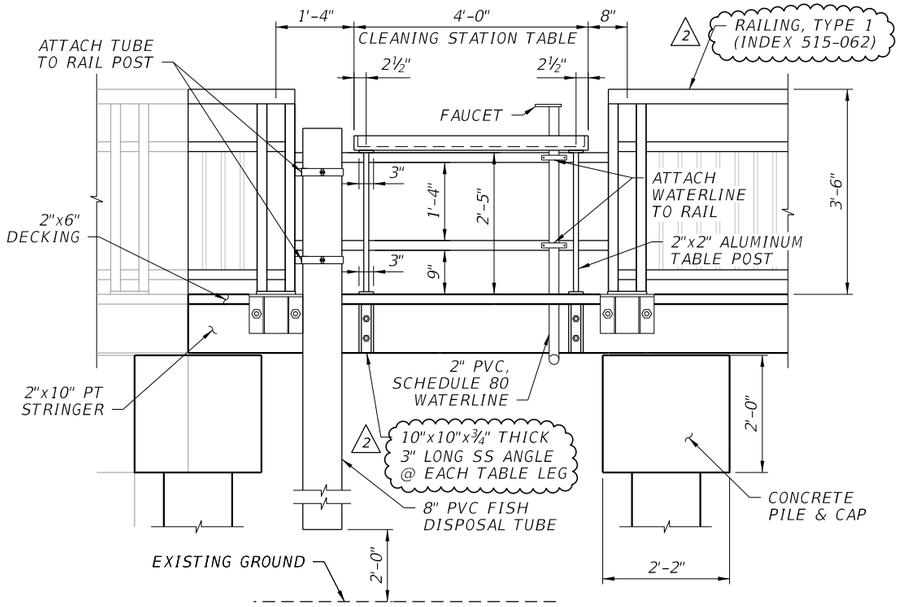
SHEET TITLE: PILE CAP DETAILS (2 OF 2)

REF. DWG. NO.:

PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

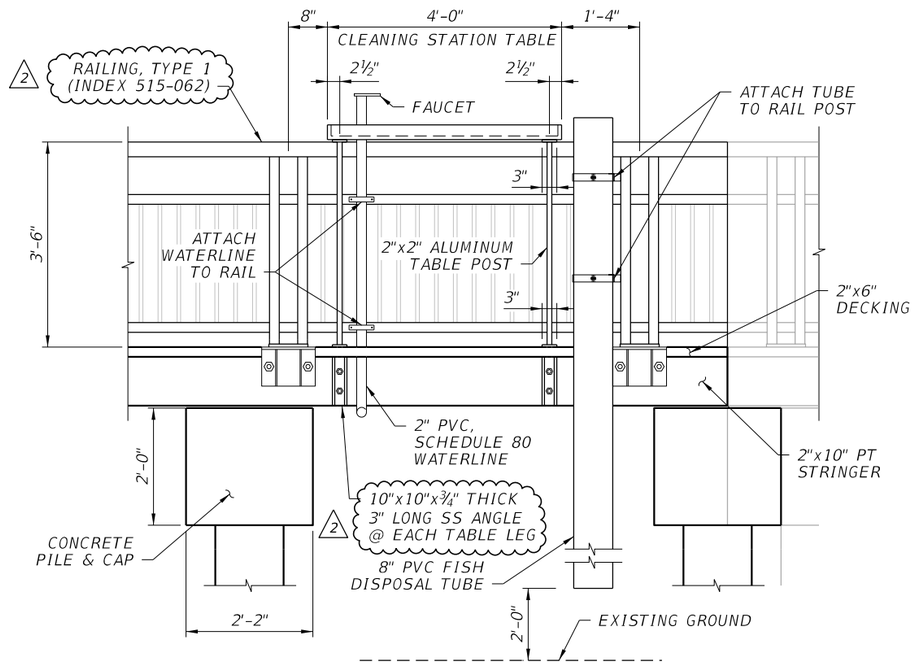
SHEET NO.: 12

Sabrina 7/29/2020 1:45:39 PM H:_Project18\1812_MatlachaPier\struct\B1TypicalSection05.DGN



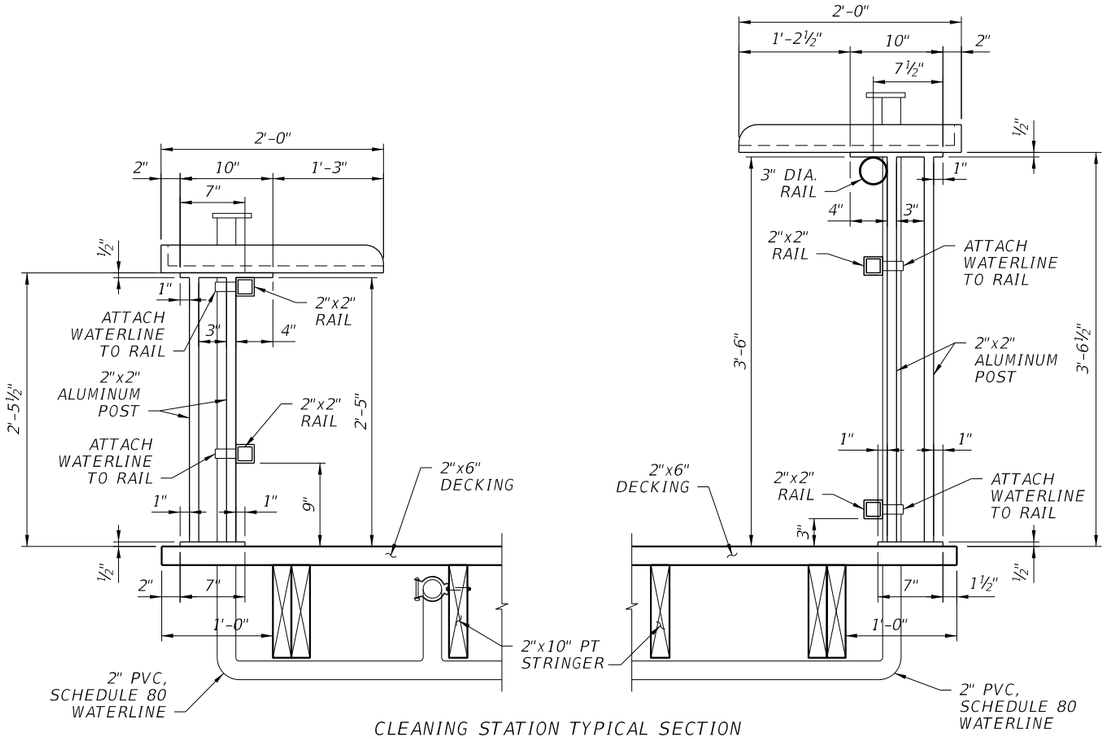
ADA COMPLIANT CLEANING STATION ELEVATION VIEW

MAIN PIER LOOKING SOUTH



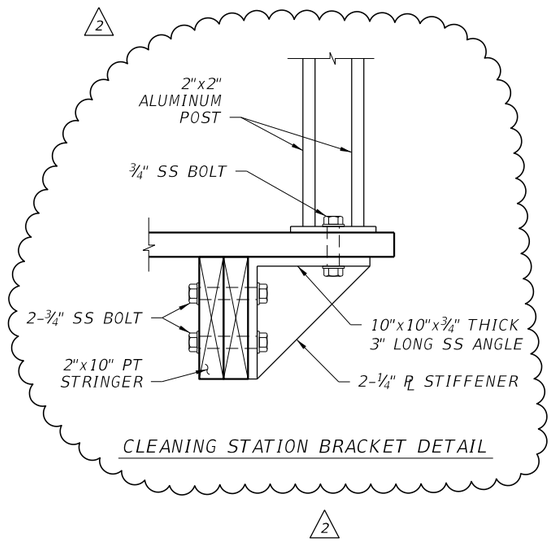
CLEANING STATION ELEVATION VIEW

MAIN PIER LOOKING NORTH

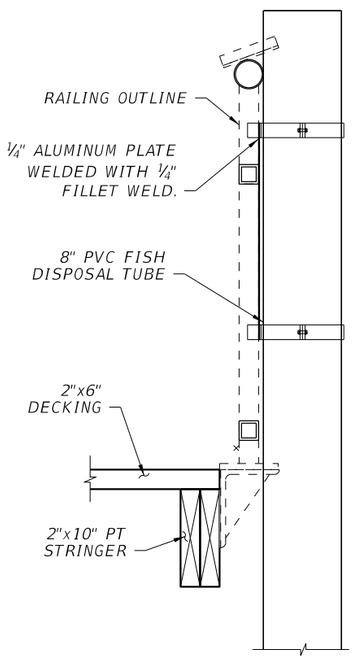


CLEANING STATION TYPICAL SECTION

MAIN PIER LOOKING EAST



CLEANING STATION BRACKET DETAIL



FISH DISPOSAL TUBE DETAIL

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REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
7/27/2020	SDS	2 REVISED RAILING TYPE, ADDED CLEANING STATION BRACKET			

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2121 MCGREGOR BOULEVARD
SUITE 200
FORT MYERS, FL 33901
REGISTRY NO. 27559

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CHECKED BY: CLH 6/19
DESIGNED BY: RMW 6/19
CHECKED BY: VAZ 6/19

LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

ROAD NO.	COUNTY	PROJECT NO.
	LEE	

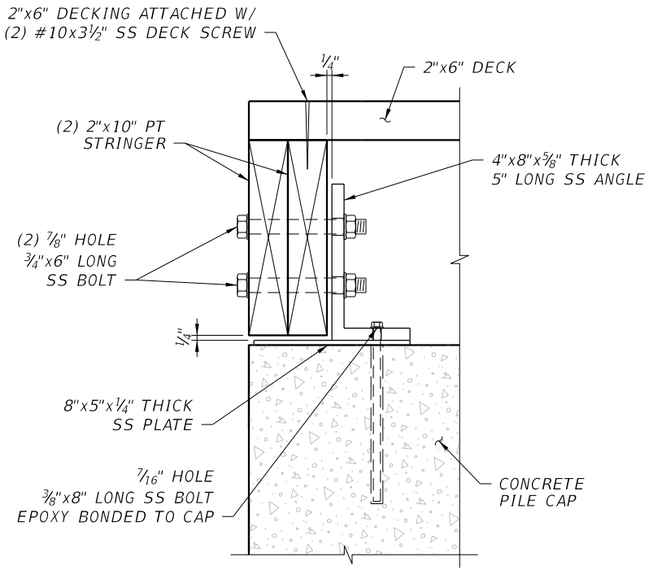
SHEET TITLE: CLEANING STATION DETAILS

REF. DWG. NO.

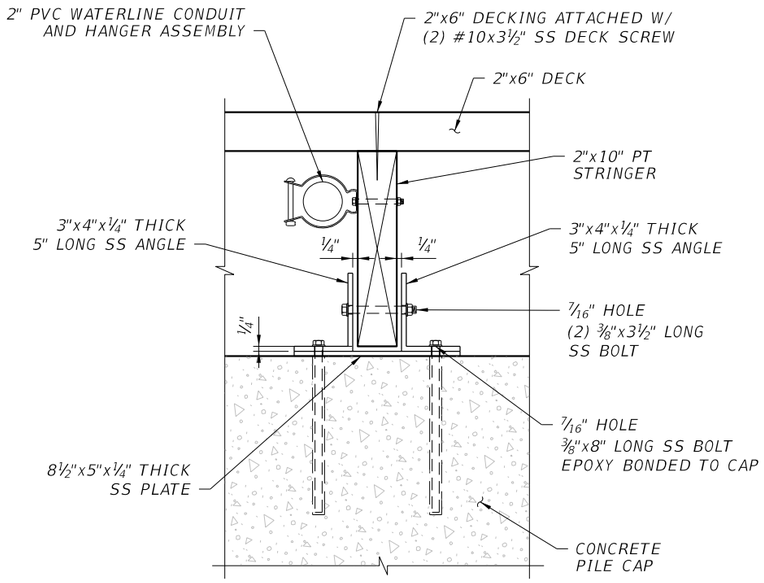
PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

SHEET NO. 13

Sabrina 7/29/2020 1:45:40 PM H:_Project18\1812_MatlachaPier\struct\B1TypicalSection06.DGN



EXTERIOR STRINGER CONNECTION DETAIL



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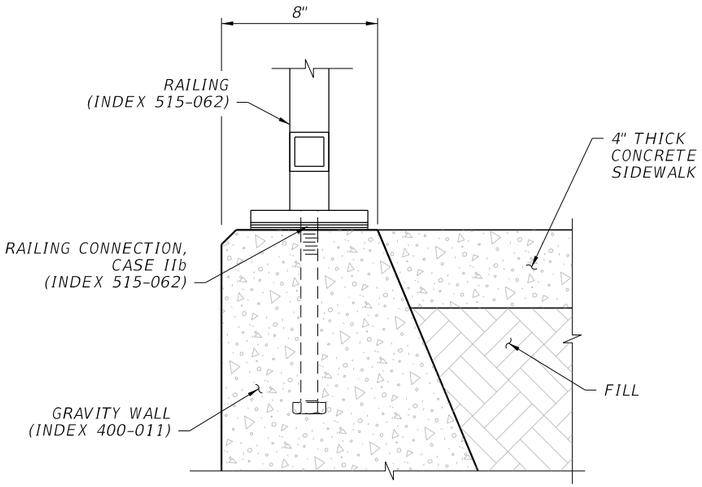
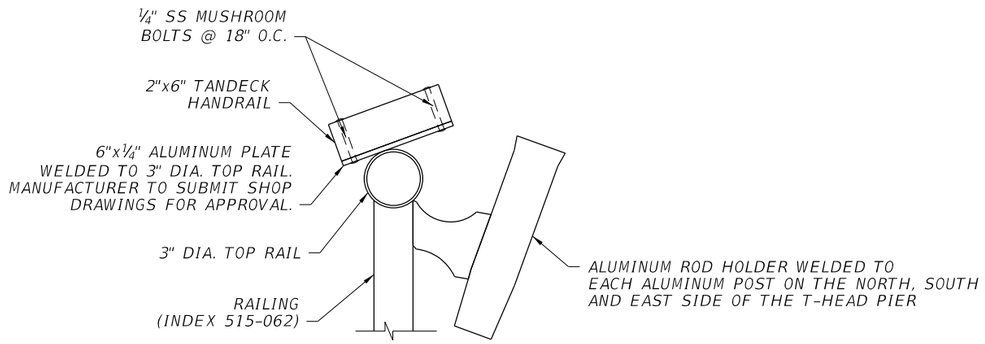
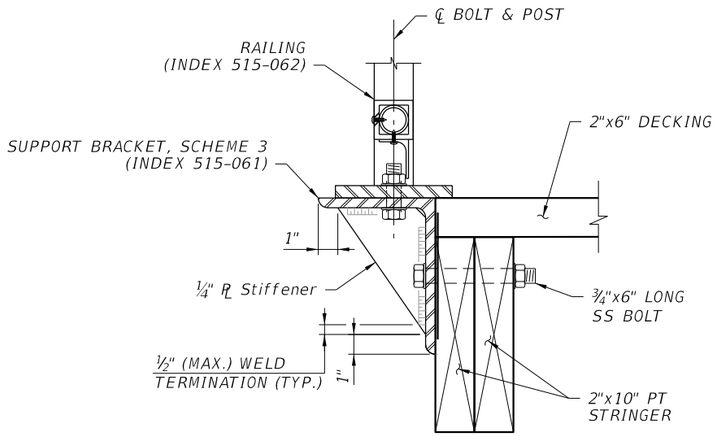


POST CONNECTION TO GRAVITY WALL DETAIL



HANDRAIL AND ROD HOLDER CONNECTION DETAIL



POST CONNECTION TO STRINGER DETAIL

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2121 MCGREGOR BOULEVARD
SUITE 200
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SHEET TITLE: PIER DETAILS

REF. DWG. NO.:

PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

SHEET NO.: 14

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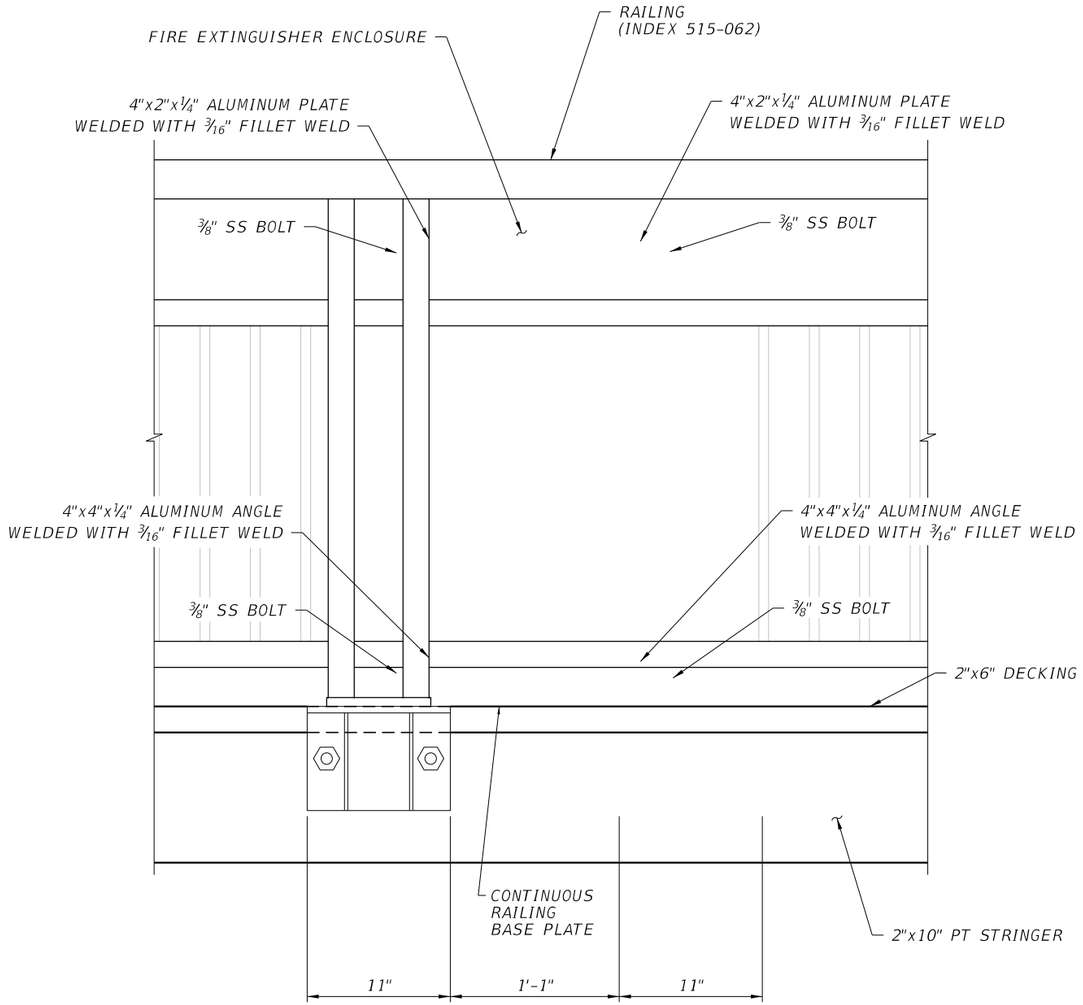
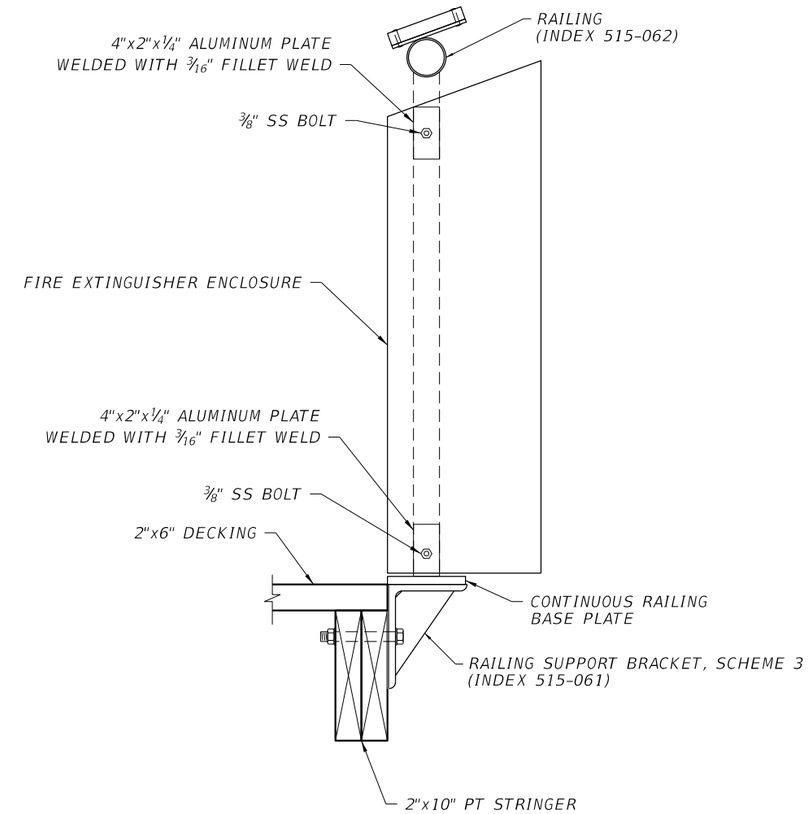


ELEVATION VIEW



SECTION VIEW

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REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
7/27/2020	SDS	2 ADDED SHEET			

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2121 MCGREGOR BOULEVARD
SUITE 200
FORT MYERS, FL 33901
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LEE COUNTY FACILITIES
CONSTRUCTION & MANAGEMENT

ROAD NO.	COUNTY	PROJECT NO.
	LEE	

SHEET TITLE: FIRE EXTINGUSHER ENCLOSURE DETAILS

REF. DWG. NO.:

PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

SHEET NO.: 14A

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Mark		Length		No	TYP	STY		B		C		D		E		F		H		J		K		N	ϕ
Size	Des	Ft	In	Bars	BAR	A	G	Ft	In	Ft	In	Ft	In	Ft	In	Ft	In	Ft	In	Ft	In	Ft	In	NO	ANG
Location: Matlacha Pier Substructure – Main Pier Extended Pile Cap																								No. Required =	2
4	ME01	4'–2"		4	11			1'–6"		1'–4"		1'–4"													
4	ME02	6'–5"		20	4	4	4	1'–6"		1'–4"															
4	ME03	11'–4"		6	1			11'–4"																	
4	ME04	14'–0"		6	11			11'–4"		1'–4"		1'–4"													
4	ME05	7'–4"		3	11			5'–4"		1'–0"		1'–0"													
4	ME06	2'–2"		8	11			1'–4"		5"		5"													
8	ME07	1'–6"		4	1			1'–6"																	
Location: Matlacha Pier Substructure – T–Head Extended Pier Pi																								No. Required =	2
4	TE01	4'–2"		6	11			1'–6"		1'–4"		1'–4"													
4	TE02	6'–5"		30	4	4	4	1'–6"		1'–4"															
4	TE03	17'–4"		6	1			17'–4"																	
4	TE04	20'–0"		6	11			17'–4"		1'–4"		1'–4"													
4	TE05	6'–10"		6	11			4'–10"		1'–0"		1'–0"													
4	TE06	2'–2"		8	11			1'–4"		5"		5"													
8	TE07	1'–6"		6	1			1'–6"																	
Location: Matlacha Pier Substructure – Main Pier Pile Cap																								No. Required =	21
4	MC01	4'–2"		4	11			1'–6"		1'–4"		1'–4"													
4	MC02	6'–5"		16	4	4	4	1'–6"		1'–4"															
4	MC03	9'–4"		6	1			9'–4"																	
4	MC04	12'–0"		6	11			9'–4"		1'–4"		1'–4"													
4	MC05	7'–4"		3	11			5'–4"		1'–0"		1'–0"													
4	MC06	2'–2"		8	11			1'–4"		5"		5"													
8	MC07	1'–6"		4	1			1'–6"																	
Location: Matlacha Pier Substructure – T–Head Pier Pile Cap																								No. Required =	6
4	TC01	4'–2"		6	11			1'–6"		1'–4"		1'–4"													
4	TC02	6'–5"		26	4	4	4	1'–6"		1'–4"															
4	TC03	15'–4"		6	1			15'–4"																	
4	TC04	18'–0"		6	11			15'–4"		1'–4"		1'–4"													
4	TC05	6'–10"		6	11			4'–10"		1'–0"		1'–0"													
4	TC06	2'–2"		8	11			1'–4"		5"		5"													
8	TC07	1'–6"		6	1			1'–6"																	
Location: Matlacha Pier Substructure – T–Head Pier @ Main Pier Connection Pile Cap																								No. Required =	2
4	CC01	4'–2"		6	11			1'–6"		1'–4"		1'–4"													
4	CC02	6'–5"		24	4	4	4	1'–6"		1'–4"															
4	CC03	14'–2"		6	1			14'–2"																	
4	CC04	16'–10"		6	11			14'–2"		1'–4"		1'–4"													
4	CC05	5'–4"		6	11			3'–4"		1'–0"		1'–0"													
4	CC06	2'–2"		8	11			1'–4"		5"		5"													
8	CC07	1'–6"		6	1			1'–6"																	
4	CC08	4'–2"		3	11			2'–2"		1'–0"		1'–0"													

Note:

REVISIONS

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2121 MCGREGOR BOULEVARD
SUITE 200
FORT MYERS, FL 33901
REGISTRY NO. 27559

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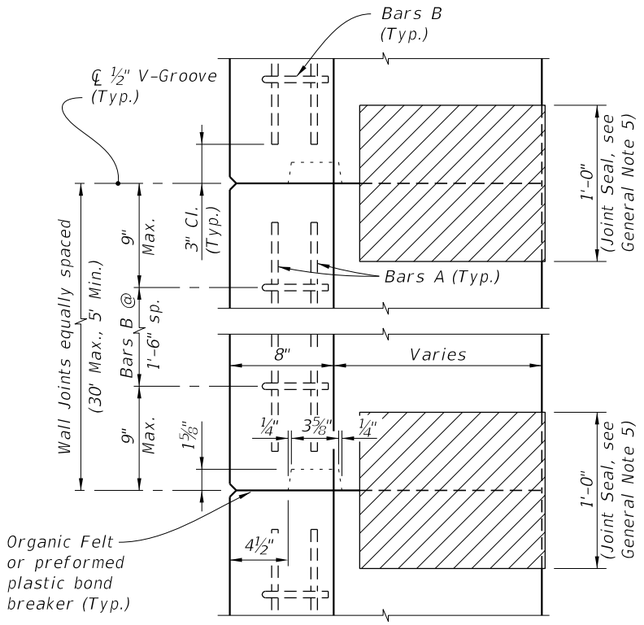
SHEET TITLE: REINFORCING BAR LIST

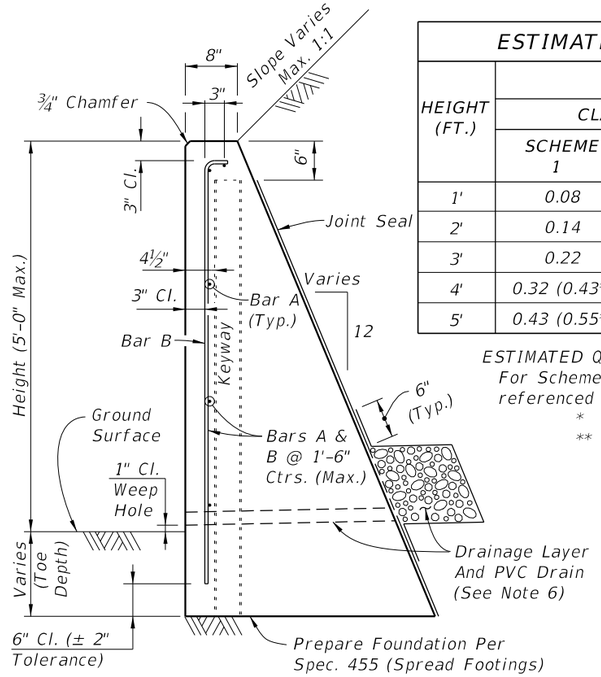
REF. DWG. NO.:

PROJECT NAME: MATLACHA FISHING PIER REPLACEMENT

SHEET NO.: 15



KEYWAY & WALL JOINT DETAIL
(TOP VIEW)



TYPICAL SECTION
C-I-P CONCRETE GRAVITY WALL

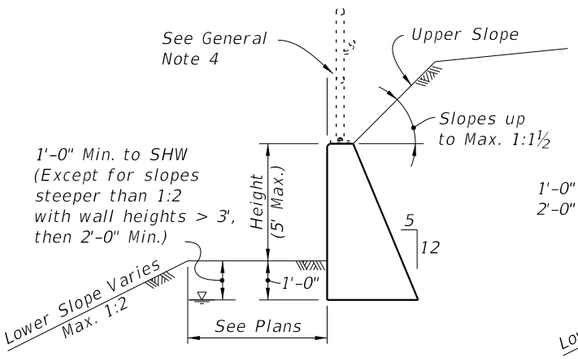
ESTIMATED QUANTITIES FOR C-I-P WALL

HEIGHT (FT.)	PER LINEAR FOOT OF WALL				WEEP HOLES & DRAIN REQD.
	CLASS NS CONCRETE (CY)			REINF. STEEL (LB.)	
	SCHEME 1	SCHEME 2	SCHEME 3**		
1'	0.08	0.11 (0.20*)	0.03	3 (4*)	No
2'	0.14	0.20 (0.32*)	0.09	4 (5*)	No
3'	0.22	0.32 (0.47*)	0.29	5 (6*)	Yes
4'	0.32 (0.43*)	0.47 (0.65*)	0.43	6 (7*)	Yes
5'	0.43 (0.55*)	0.65 (0.85*)	0.60	7 (8*)	Yes

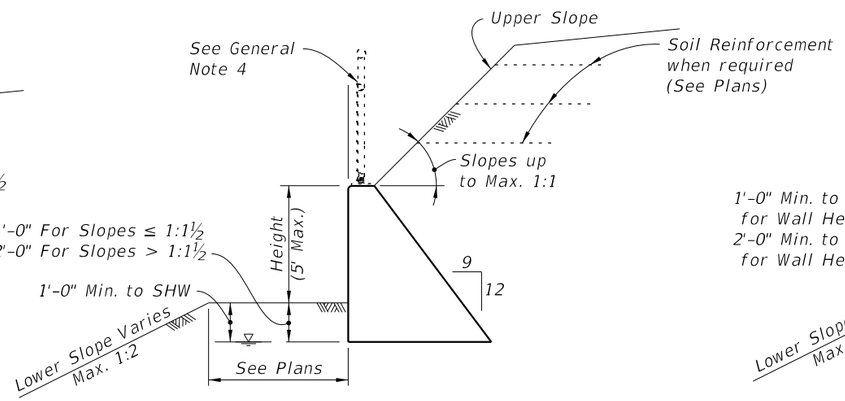
ESTIMATED QUANTITIES NOTES:
For Scheme 3 Junction Slab and Traffic Railing see the referenced Index for estimated quantities.
* Quantity for 2'-0" Toe Depth.
** Quantity for Scheme 3 assumes 1'-3" thick coping above Gravity Wall.

GENERAL NOTES

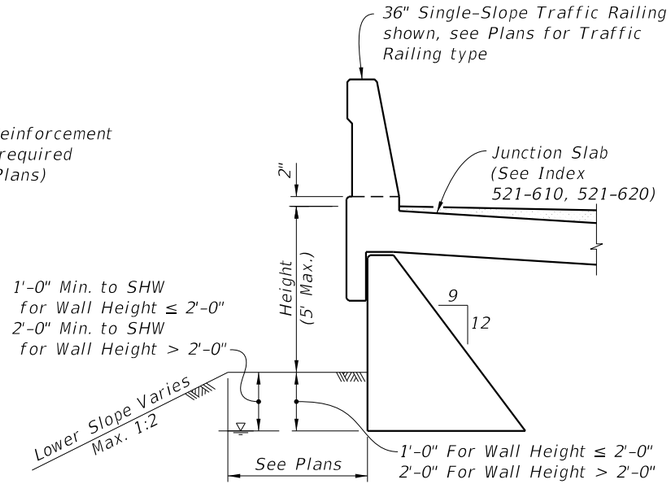
1. C-I-P Gravity Walls constructed as extensions of reinforced concrete retaining walls, except walls of proprietary designs, shall have the same face texture and finish as the reinforced concrete retaining wall.
2. Concrete for Gravity Wall shall be Class NS per Section 347. Concrete for Scheme 3 Junction Slab and Traffic Railing shall be Class II per Section 346, unless otherwise specified in the plans.
3. Reinforcing steel shall meet the requirements of Specification Section 931 (Grade 40 or 60). Smooth or Deformed Welded Wire Reinforcement (WWR) may be substituted on an equal area basis. Do not increase bar/wire spacing for Grade 60 reinforcing steel or WWR.
4. When required, for adjunct guiderail, see Index 515-070 or 515-080 as appropriate. For adjunct Type B fence see Index 550-002.
5. Joint Seal: Organic Felt bond breaker in accordance with Specification Section 400 or Type D-5 geotextile fabric in accordance with Specification Section 985. Mop all contact surfaces of concrete and Organic Felt or geotextile fabric with cut-back asphalt. Stop Organic Felt or geotextile fabric 6" below top of wall.
6. Provide a continuous 1'x1' clean gravel or crushed rock drain for wall heights 3 ft. and higher. Wrap drainage layer as shown, with Type D-3 geotextile fabric in accordance with Specification Section 985. Provide 8"x8" galvanized mesh with ¼" openings, at the inside end of the PVC Drain Pipe. Provide 2" Ø PVC Drain Pipe (Sch. 40) at 10 ft. max. spacing (when Drainage Layer is required). Locate outermost edge of Drain Pipe a minimum of 2'-0" from wall joints.
7. Cost of reinforcing steel, face texture, finish, joint seal, drain pipes, drainage layer, galvanized mesh and geotextile fabric to be included in the Contract Unit Price for Concrete Class NS, Gravity Wall. Cost of concrete for Junction Slab in Scheme 3, to be included in Contract Unit Price for Concrete Traffic Railing Barrier With Junction Slab. Adjunct railings or fences to be paid for separately.



SCHEME 1
(No Traffic Loading Effects & Upper Slopes ≤ 1:1½)



SCHEME 2
(With Traffic Loading or Upper Slopes > 1:1½)

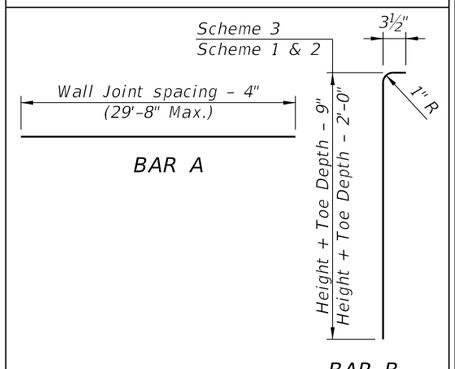


SCHEME 3
(With Traffic Railing)

BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH
A	4	As Reqd.
B	4	As Reqd.

BAR BENDING DIAGRAM



NOTES:
1. All bar dimensions are out to out.
2. Lap splices for Bars A must be a minimum of 1'-10".

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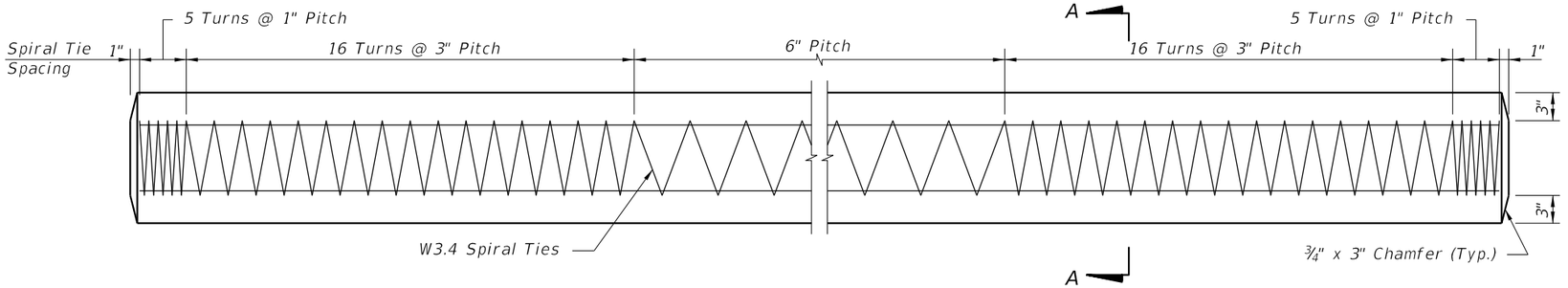
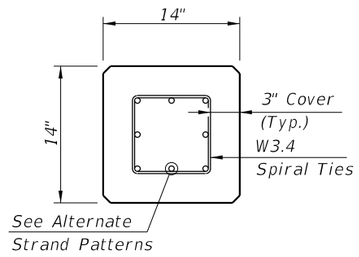
LAST REVISION	REVISION	DESCRIPTION:			
11/01/17			FDOT FY 2018-19 STANDARD PLANS	GRAVITY WALL	INDEX 400-011 / SHEET 1 of 1



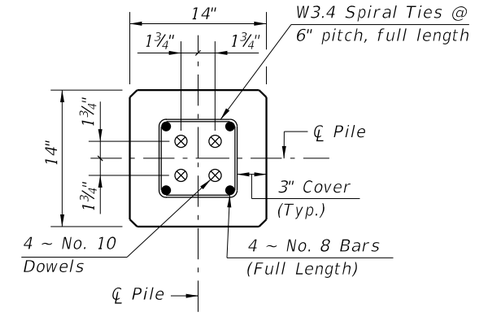
ELEVATION



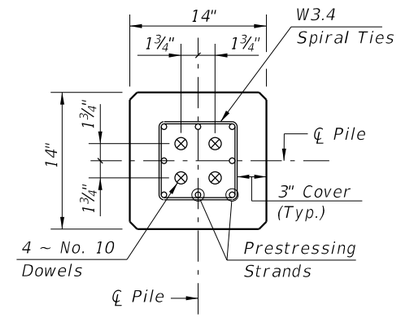
SECTION A-A

ALTERNATE STRAND PATTERNS

8 ~ 0.6" Ø, Grade 270 LRS, at 33 kips
8 ~ ½" Ø (Special), Grade 270 LRS, at 31 kips
8 ~ ½" Ø, Grade 270 LRS, at 31 kips
12 ~ 7/16" Ø, Grade 270 LRS, at 21 kips
16 ~ ⅜" Ø, Grade 270 LRS, at 16 kips



SECTION D-D
(See Nondrivable Unforeseen Reinforced Precast Splice Detail)



SECTION E-E
(See Drivable Unforeseen Prestressed Precast Splice Detail)

PILE SPLICE REINFORCEMENT DETAILS

NOTES:
1. Work this Index with Index 455-001 – Typical Details and Notes for Square Prestressed Concrete Piles and Index 455-002 – Square Prestressed Concrete Pile Splices.
2. Any of the given Alternate Strand Patterns may be utilized.
   The strands shall be located as follows:
   Place one strand at each corner and place the remaining strands equally spaced between the corner strands.
   The total strand pattern shall be concentric with the nominal concrete section of the pile.

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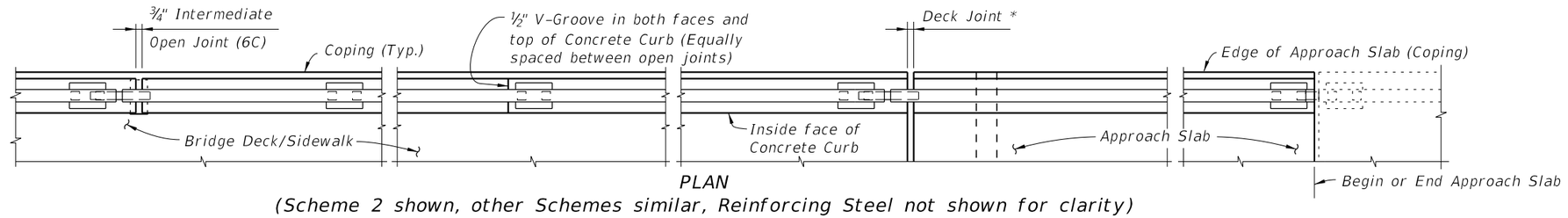
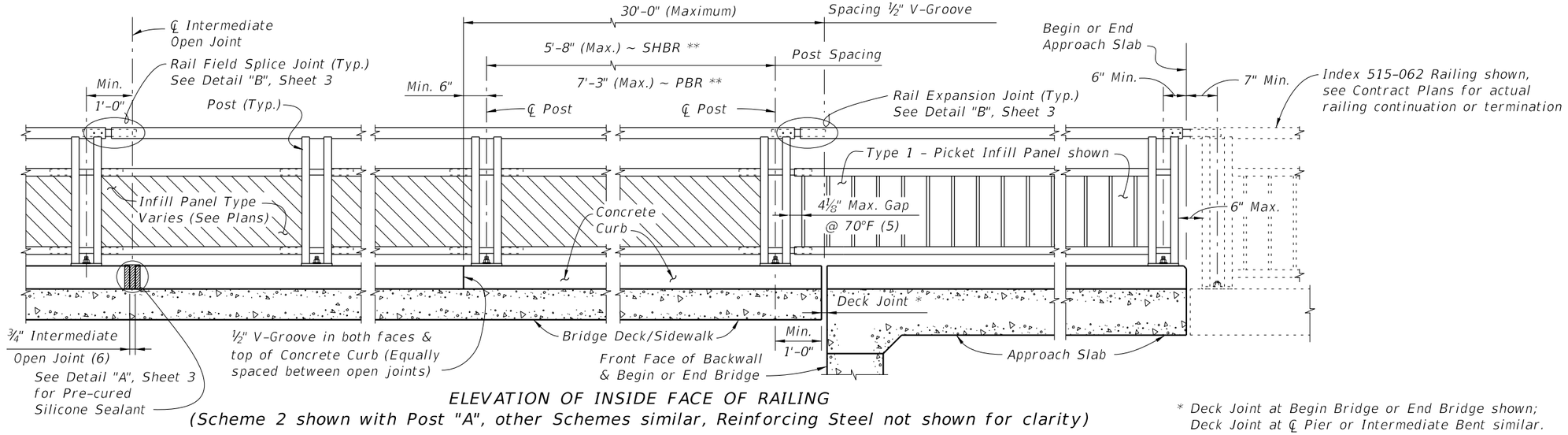
LAST REVISION	REVISION	DESCRIPTION:				
01/01/12			FDOT FY 2018-19 STANDARD PLANS	14" SQUARE PRESTRESSED CONCRETE PILE	INDEX 455-014	SHEET 1 of 1



PLAN

(Scheme 2 shown, other Schemes similar, Reinforcing Steel not shown for clarity)



ELEVATION OF INSIDE FACE OF RAILING

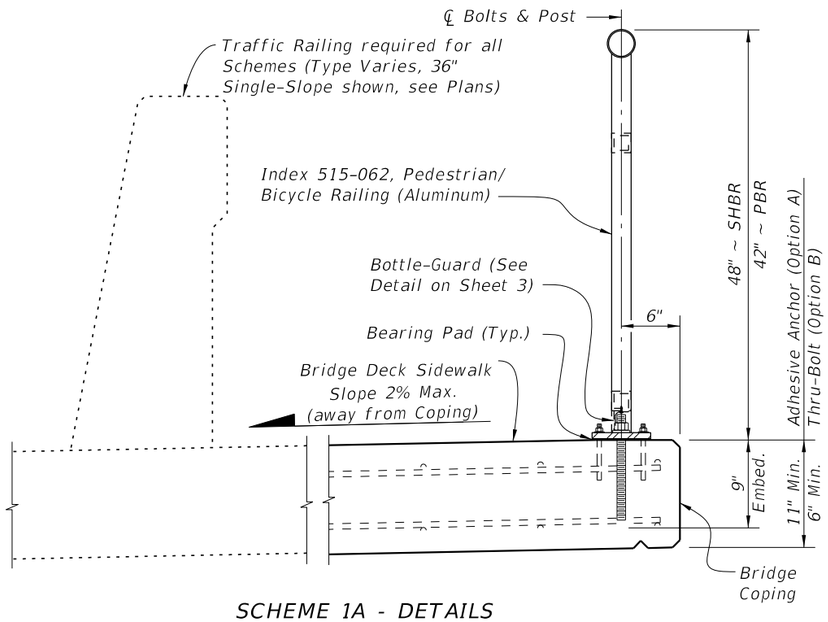
(Scheme 2 shown with Post "A", other Schemes similar, Reinforcing Steel not shown for clarity)

* Deck Joint at Begin Bridge or End Bridge shown;
Deck Joint at ℄ Pier or Intermediate Bent similar.

** SHBR ~ Special Height Bicycle Railing
PBR ~ Pedestrian/Bicycle Railing

NOTES:

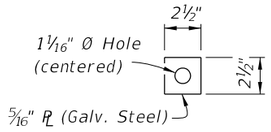
1. Shop Drawings are required.
2. Work this Index with Index 515-062 Aluminum Bicycle/Pedestrian Railing Details and Specification Section 515. Refer to the IDS for Design Criteria and Limits of Use.
3. Materials:
   - A. Galvanized Steel Fasteners: Hex Head Bolt ASTM A307, Hex Nuts ASTM A563, Washers ASTM F436
   - B. Aluminum:
     - a. Support Bracket (Scheme 3) L-shape and Stiffener Plate: ASTM B209, Alloy 6061-T6
     - b. Bottle-guard (Schemes 1 & 3) L-shape: ASTM B209, Alloy 6061-T6 or 6063-T5
   - C. Concrete: Same as bridge deck
   - D. Pre-cured Silicone Sealant: Specification Section 932
   - E. Bearing Pads: Provide ⅛" thick Plain, Fabric Reinforced or Fabric Laminated pads meeting the requirements of Specification Section 932 for Ancillary Structures.
4. See Structures Plans, Superstructure Sheets for bridge information including concrete type, deck expansion joint locations and orientations, and thermal movement.
5. Railings:
   - A. For thermal movement greater than 4" (up to a maximum of 5"), clear opening between adjacent pickets, or panels at Rail Expansion Joints above Deck Joints must be reduced to 3½".
   - B. For treatment of railings on skewed bridges see Index 521-427.
6. Curbs:
   - A. Match open curb joints at Deck Expansion Joint locations to the deck joint dimension.
   - B. Construct Concrete Curb (Scheme 2) vertical with the top surface finished level transversely. See Concrete Curb Details Sheet 3.
   - C. Provide ¾" Intermediate open joints in curbs coinciding with the ¾" joints in the traffic railing.
7. Payment: Support bracket (Scheme 3) is incidental to the cost of railing. Curb concrete and reinforcing steel (Scheme 2) are included in the bridge deck quantities.



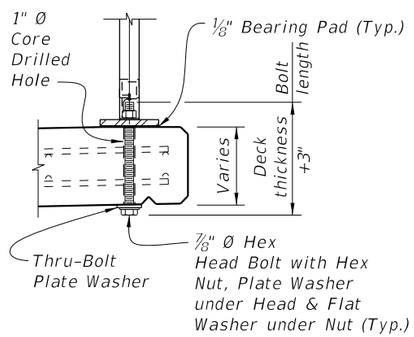
SCHEME 1A - DETAILS
(Adhesive Anchor Option)

CROSS REFERENCE:

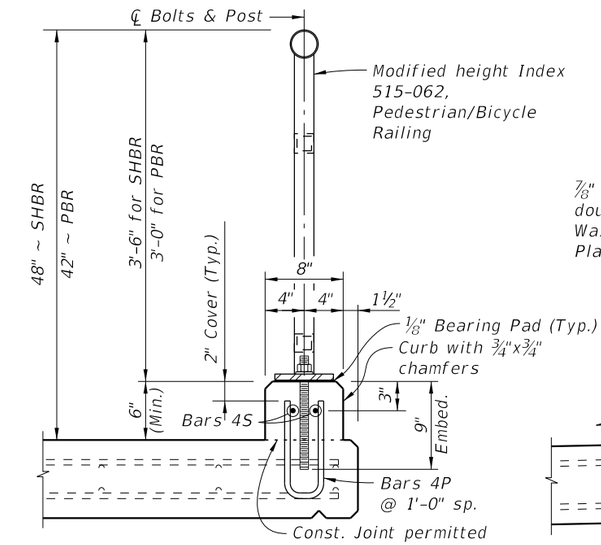
See Sheet 1 for Bridge Railing Notes.



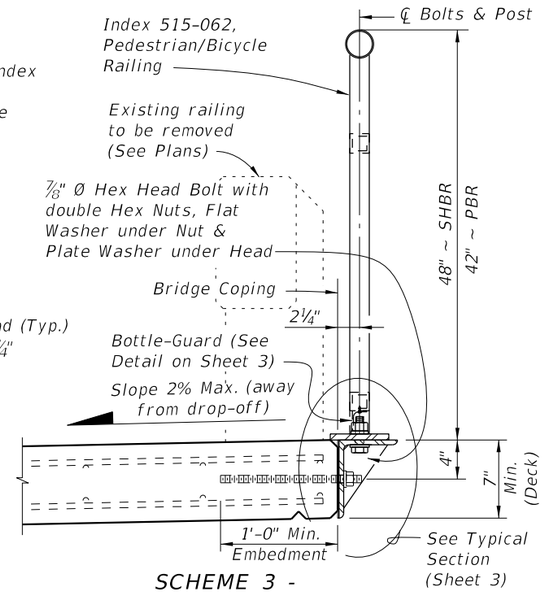
THRU-BOLT PLATE
WASHER DETAIL



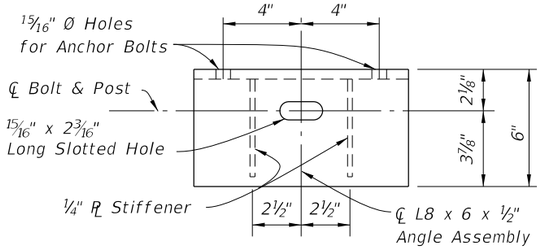
SCHEME 1B - DETAILS
(Thru-Bolt Option)



SCHEME 2 -
TYPICAL SECTION THROUGH
CURB MOUNTED RAILING



SCHEME 3 -
TYPICAL SECTION THROUGH
SIDE MOUNTED RAILING (RETROFIT)



PLAN VIEW

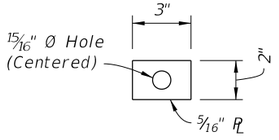
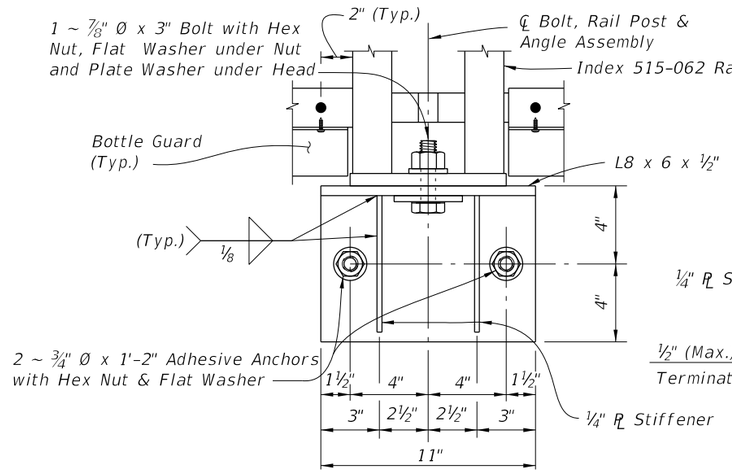
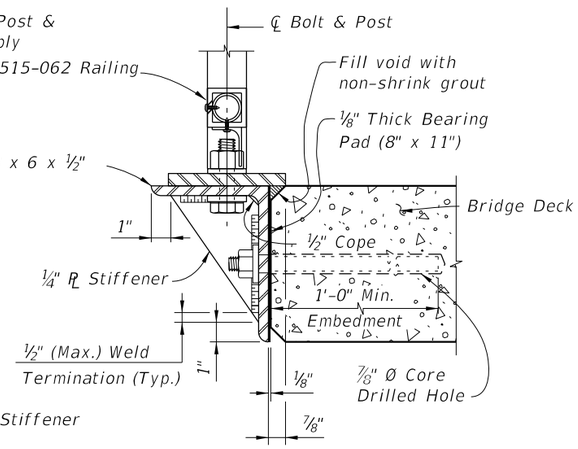


PLATE WASHER DETAIL



ELEVATION VIEW



TYPICAL SECTION

SCHEME 1 - TYPICAL SECTION THROUGH DECK MOUNTED RAILING

SCHEME 3 - SIDE-MOUNTED SUPPORT BRACKET DETAILS

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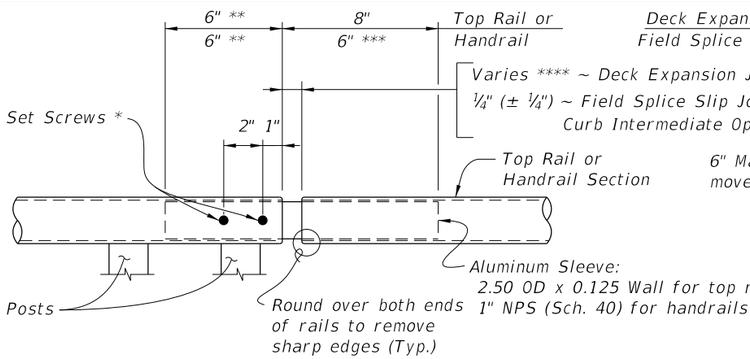
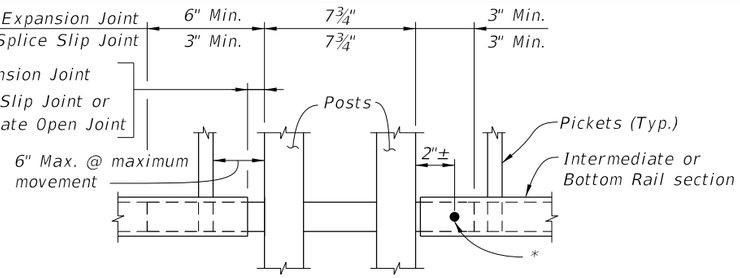


ROUND RAILS - TOP RAIL OR HANDRAIL



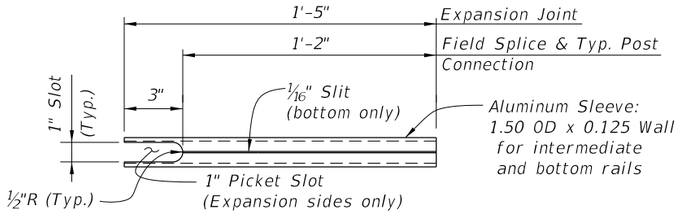
SQUARE RAILS - INTERMEDIATE OR BOTTOM RAIL

* ¼" Ø x ¾" Pan Head Aluminum (Alloy 7075-T73) or Stainless Steel (Type 316 or 18-8 Alloy) Set Screws along outside face of railing. Set screws must be set flush against the rail surface. A ¾" Ø plug weld may be substituted for the two set screws at expansion joints.

** Embedded length may be 4" for plug welded connection.

*** Increase handrail sleeve embedment to 8" for Expansion Joint openings greater than 2".

**** Expansion Joint opening shall match the clear opening in the deck joint but not greater than 3".

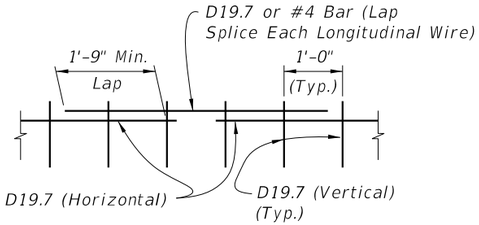


INTERMEDIATE OR BOTTOM RAIL - ALUMINUM SLEEVE DETAIL (Bottom Side Shown)

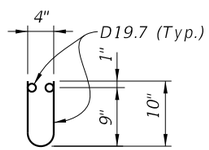
DETAIL "B" EXPANSION JOINT (FIELD SPLICE SIMILAR)

ALTERNATE REINFORCING (WWR) DETAILS

NOTE: Place wire panels to minimize the end overhang. End Overhangs greater than 4¾" are not permitted.



SPLICE DETAIL (Between WWR Sections)

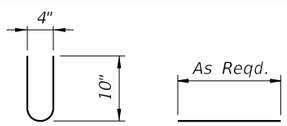


WWR SECTION DETAIL

CONVENTIONAL REINFORCING STEEL BENDING DIAGRAMS

BILL OF REINFORCING STEEL

MARK	SIZE	LENGTH
P	4	2'-0"
S	4	As Reqd.

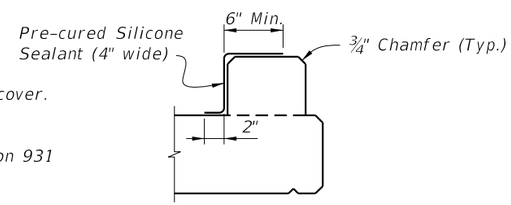


BAR 4P

BAR 4S

CURB REINFORCING STEEL NOTES:

1. All bar dimensions in the bending diagrams are out to out.
2. The reinforcement for the curb on a retaining wall shall be the same as detailed for an 8" deck.
3. All reinforcing steel at the open joints shall have a 2" minimum cover.
4. Bars 4S may be continuous or spliced at the construction joints. Bar splices for Bars 4S shall be a minimum of 1'-8".
5. Deformed WWR meeting the requirements of Specifications Section 931 may be used in lieu of all Bars 4P and 4S.



DETAIL "A" - SECTION AT INTERMEDIATE OPEN JOINT

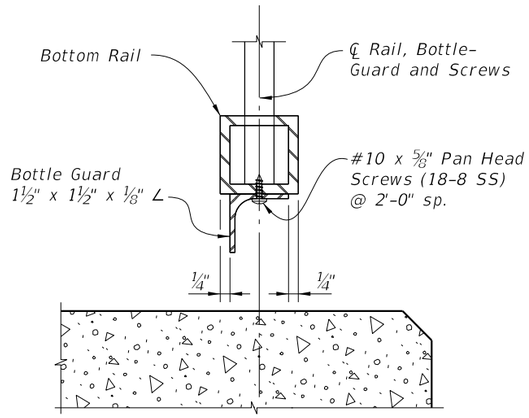
INTERMEDIATE JOINT SEAL NOTE:

At Intermediate Open Joints, seal the lower 6" portion of the open joint with Pre-cured Silicone Sealant. Apply sealant prior to any Class V finish coating and remove all curing compound and loose material from the surface prior to application of bonding agent.

ESTIMATED CONCRETE CURB QUANTITIES (SCHEME 2)

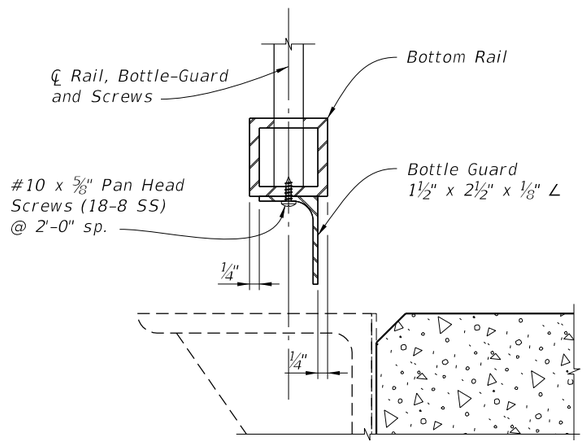
ITEM	UNIT	QUANTITY
Concrete	CY/LF	0.0124
Reinforcing Steel	LB/LF	4.01

SCHEME 2 - CONCRETE CURB DETAILS



TYPICAL SECTION THROUGH BOTTOM RAIL (Post Not Shown for Clarity)

SCHEME 1 - BOTTLE GUARD DETAIL



TYPICAL SECTION THROUGH BOTTOM RAIL (Post Not Shown for Clarity)

SCHEME 3 - BOTTLE GUARD DETAIL

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3D VIEW OF RAILING WITH TYPE 1 - PICKET INFILL PANEL
(42" Height shown, 48" Height Similar)

TABLE 1 - RAILING MEMBERS

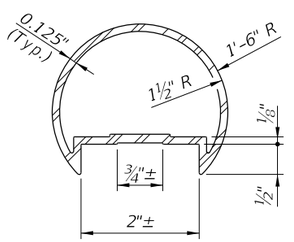
MEMBER	ALLOY(1)	DESIGNATION	OUTSIDE DIMENSION	WALL THICKNESS
Posts (Type "A" & "B")	6061-T6	RT 2x2x0.250	2.00" x 2.00"	0.250"
Posts (Type "C")	6061-T6	Extrusion 1½x2½x0.125	1.50" x 2.50"	0.125"
Top Plate (Type "C")	6061-T6	Extrusion (See Details)	2¾" x 7"	Varies
Top Rail	6061-T6	2½" NPS (Sch. 10) 3" Round Top Cap Rail	2.875" 3.000"	0.120" 0.125"
End Hoops	6063-T5	2½" NPS (Sch. 10) 3.00 OD x 0.125 Wall	2.875" 3.000"	0.120" 0.125"
Top Rail Joint/Splice Sleeves	6063-T5	2.50 OD x 0.125 Wall Top Cap Rail Inner Sleeve	2.500" 2.800"	0.125" 0.090"
Intermediate & Bottom Rail	6061-T6	RT 2x2x0.250	2.00" x 2.00"	0.250"(2)
Int. & Bottom Rail Post Connection Sleeve	6063-T5	1.50 OD x 0.125 Wall(3)	1.500"	0.125"
Handrail Joint/Splice Sleeves	6063-T5 6063-T5	1" NPS (Sch. 40) 1.50 OD x 0.125 Wall	1.315" 1.500"	0.133" 0.125"
Handrails	6061-T6	1½" NPS (Sch. 40)	1.900"	0.145"
Handrail Support Bar	6061-T6	¾" Ø Round Bar	0.750"	N/A
Pickets (Type 1 Infill Panel)	6061-T6	¾" Ø Round Bar	0.750"	N/A
Infill Panel Members (Types 2 – 5)	6063-T5	Varies (See Details)	Varies	Varies

TABLE 1 NOTES:
(1) Alloy 6061-T6 or 6063-T52 & T6 may be substituted for Alloy 6063-T5.
(2) 0.188" wall thickness permitted for rails with post spacings less than 5'-9".
(3) 1" NPS (Sch. 40) non-slit rail sleeves may be substituted when welded connection Detail "K" is utilized.

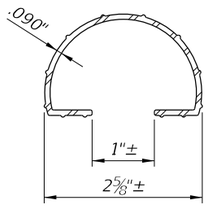
NOTES

1. Shop Drawings are required, see Specification Section 515.
2. For bridge mounted railings, work this Index with Index 515-061 Bridge Bicycle/Pedestrian Railing (Aluminum)
3. Materials:
   - A. Structural Extrusions, Tube, Pipe and Bars: Table 1 and ASTM B221 or ASTM B429
     - a. Top, bottom and intermediate rail corner bends with maximum 4'-0" post spacing may be Alloy 6063-T6
   - B. Base Plates and Rail Caps: ASTM B209 Alloy 6061-T6
   - C. Perforated panels (Type 5) Alloy 3003-H14
   - D. Stainless steel (SS) screws: Type 316 or 18-8 Alloy
   - E. Aluminum screws: Alloy 2024-T4 or 7075-T73
   - F. Galvanized Steel Fasteners: coated in accordance with Specification Section 962.
     - a. Hex Head Bolts: ASTM A 307
       1. ⅞" diameter single bolt option, Grade 36
       2. 7/16" diameter four bolt option, Grade 55
     - b. Adhesive Anchors: ASTM F1554 fully threaded rods, Grade 55
     - c. Hex Nuts: ASTM A563
     - d. Flat Washers: ASTM F436
     - e. Plate Washers: ASTM A36 or ASTM A706 Grade 36.
   - G. Shims: ASTM B209 Alloy 6061 or 6063
   - H. Bearing Pads: Provide ⅛" thick Plain, Fabric Reinforced or Fabric Laminated Bearing Pads meeting the requirements of Specification Section 962 for Ancillary Structures.
4. Fabricate pickets and vertical panel elements parallel to the posts; except Type 2, 3 and 5 panel infills may be fabricated parallel to the longitudinal grade. Maintain a maximum clear opening of 5⅞" for standard installations and 3⅞" when a 4" sphere requirement is indicated in the Data Tables.
5. Locate railing expansion Joints between the posts on either side of the deck expansion joint. Maximum spacing between expansion joints is 35'-0".
6. Field splices are similar to the Expansion Joint Detail and may be approved by the Engineer to facilitate handling; but the top rail must be continuous across a minimum of two posts.
7. For intermediate and bottom horizontal rails, the screwed joints shown may be substituted with alternate joints shown in detail "K" for Post Type "A" & "B".
8. Make corners and changes in tangential longitudinal alignment with a 9" bend radius or terminate adjoining sections with mitered end sections when handrails are not required.
9. For changes in tangential longitudinal alignment greater than 45°, position posts a maximum of 2'-0" each side of the corner but not at the corner apex.
10. For curved longitudinal alignments, shop bend the top and bottom rails and handrails to match the alignment radius.
11. Handrails are required and must be continuous at landings for:
    - A. Grades Steeper than 5%,
    - B. Three or more steps
12. Installation: Cutting of reinforcing steel is permitted for post installed anchors.

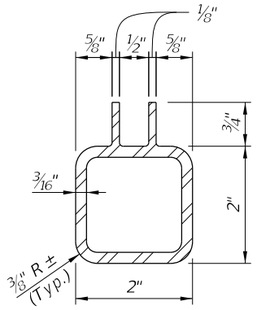
CROSS REFERENCES:
Detail "A", Sheet 4
Detail "B", Sheet 4
Detail "K", Sheet 3



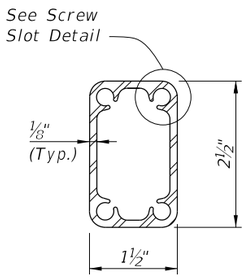
3" ROUND TOP CAP RAIL



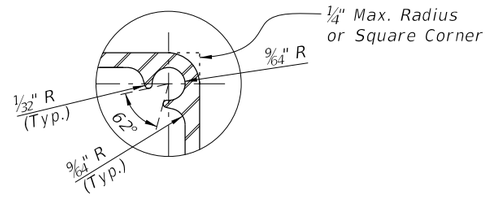
TOP CAP RAIL INNER SPLICE SLEEVE



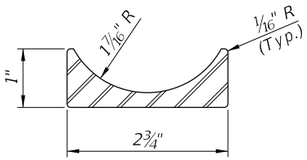
ALTERNATIVE BOTTOM & INTERMEDIATE RAIL SECTION FOR TYPE 3, 4 & 5 RAILINGS



POST TYPE "C" SCREW SLOT SECTION



SCREW SLOT DETAIL



OPTIONAL TOP PLATE EXTRUSION SECTION (POST TYPE "C")

ALTERNATE TOP RAIL SECTION

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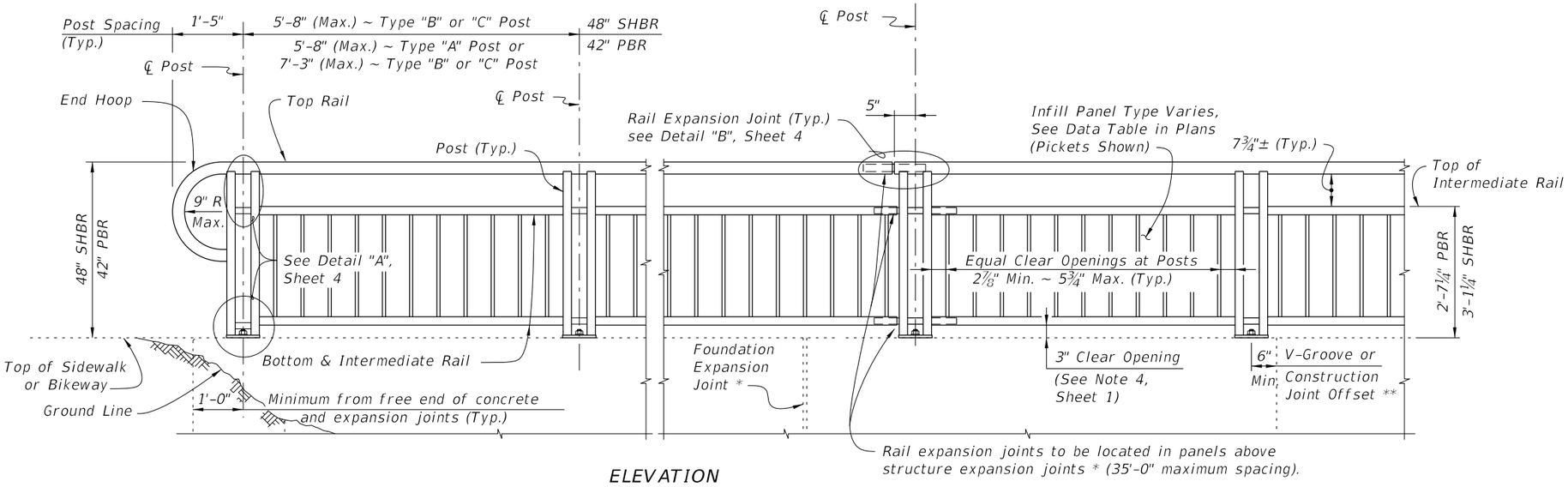
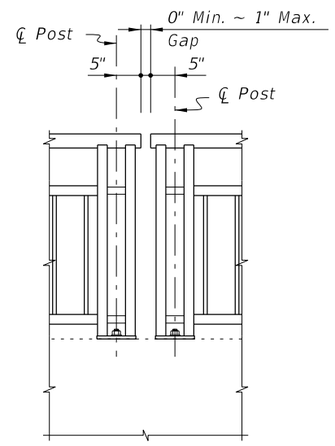


ELEVATION
(Showing Outside Face of Railing with Type "A" Posts)

TYPICAL RAILING DETAILS & RAILINGS ON GRADES 0% TO 5%

(Type 1 - Picket Railing Shown, Other Types Similar)

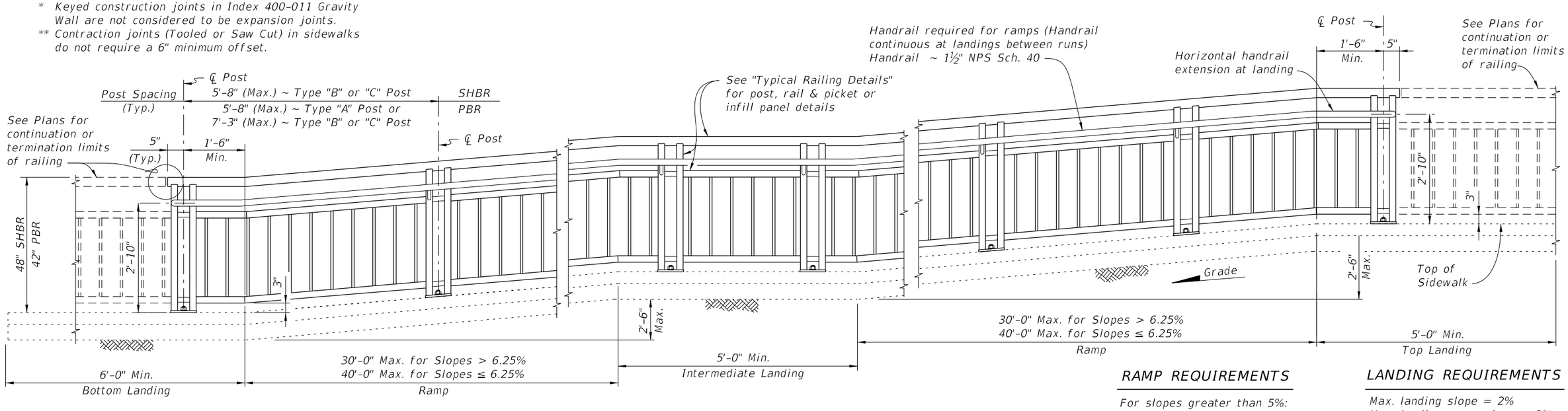


Note: Non-continuous corners are permitted when handrails are not required.

EXPANDED ELEVATION AT CORNERS

DETAIL FOR NON-CONTINUOUS RAILING AT CORNERS

NOTES:
* Keyed construction joints in Index 400-011 Gravity Wall are not considered to be expansion joints.
** Contraction joints (Tooled or Saw Cut) in sidewalks do not require a 6" minimum offset.



ELEVATION
(Showing Inside Face of Railing with Type "A" Posts)

RAMP REQUIREMENTS

For slopes greater than 5%:
Max. ramp slope = 8.33%
Max. ramp cross-slope = 2.0%

LANDING REQUIREMENTS

Max. landing slope = 2%
Max. landing cross-slope = 2%

RAILINGS ON GRADES STEEPER THAN 5%

(Type 1 - Picket Railing Shown, Other Types Similar)

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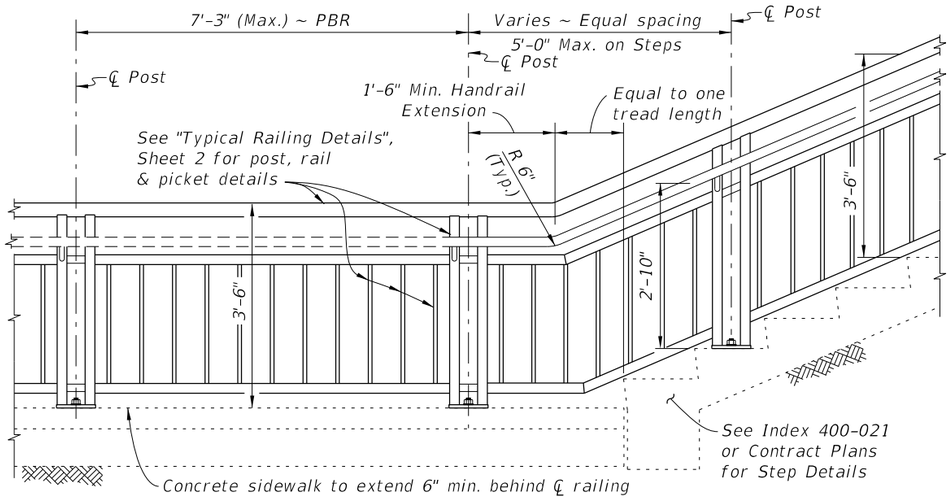
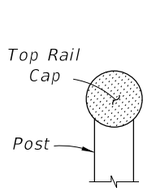
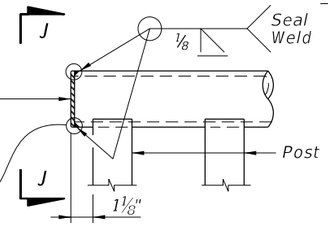


RAILING CONTINUATION BEYOND STEPS OR STAIRS
(Bottom shown, Top similar)

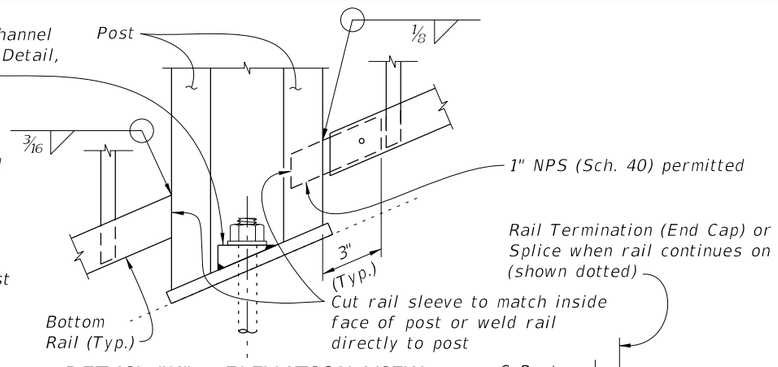
DETAIL "L" - PLAN VIEW
HANDRAIL TERMINATION



VIEW J-J

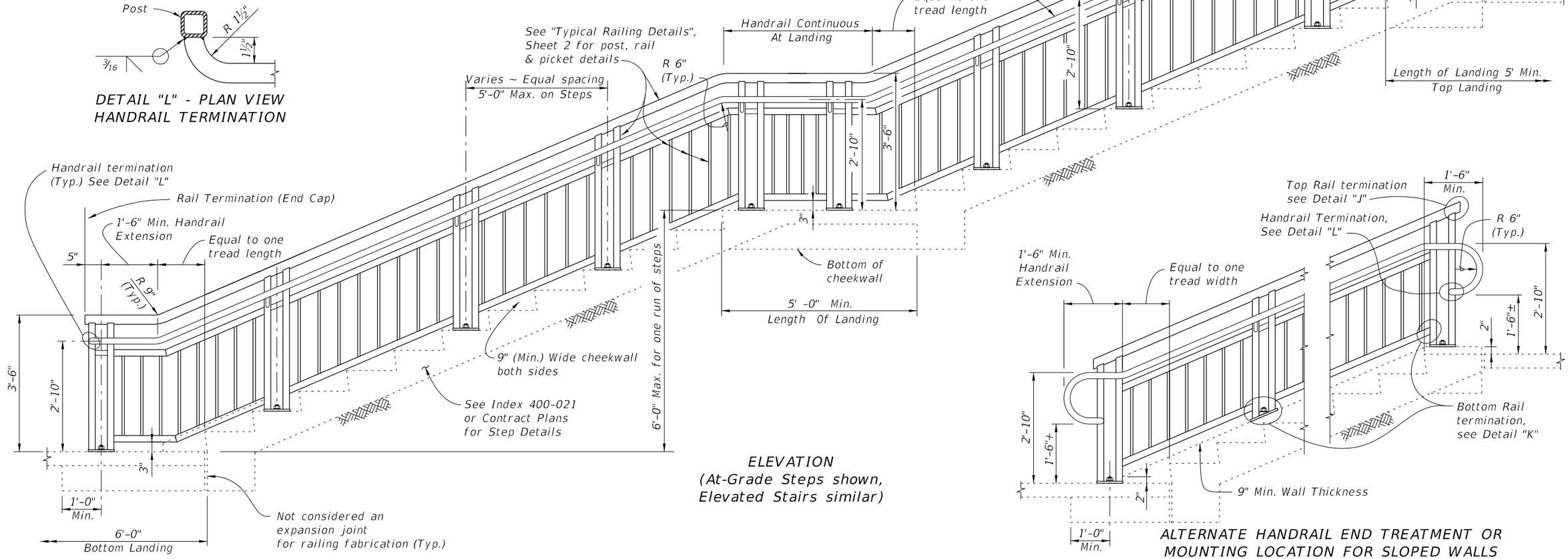


DETAIL "J" - ELEVATION VIEW
TOP RAIL TERMINATION



DETAIL "K" - ELEVATION VIEW
BOTTOM RAIL CONNECTION
(Intermediate Rail Similar)

RAIL TERMINATION DETAILS



ELEVATION
(At-Grade Steps shown,
Elevated Stairs similar)

ALTERNATE HANDRAIL END TREATMENT OR
MOUNTING LOCATION FOR SLOPED WALLS

RAILINGS ON STEPS & STAIRS

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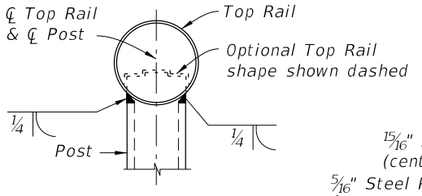
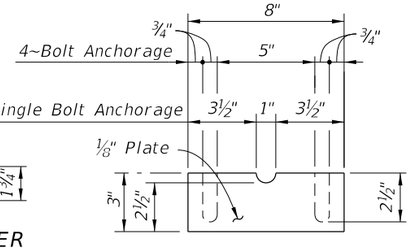
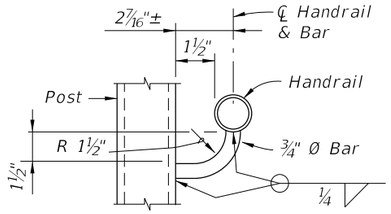


SECTION A-A
(Top Rail Connection)

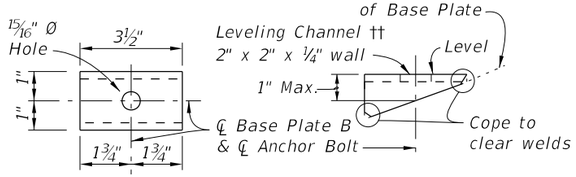
PLATE WASHER DETAIL



SHIM PLATE DETAIL

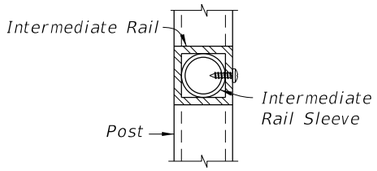


SECTION B-B
(Handrail Connection)

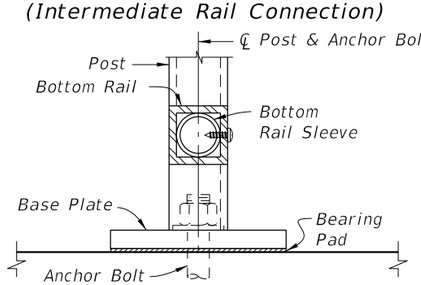


TOP VIEW SIDE VIEW

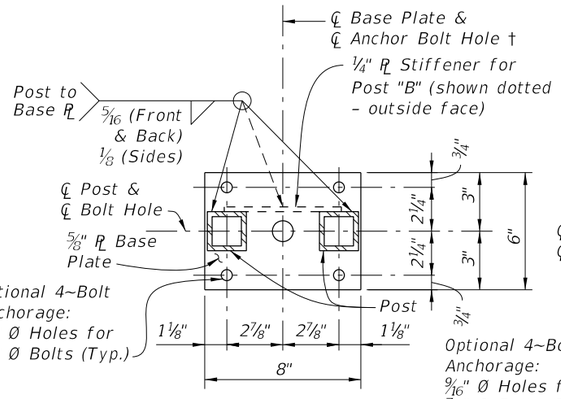
LEVELING CHANNEL DETAIL



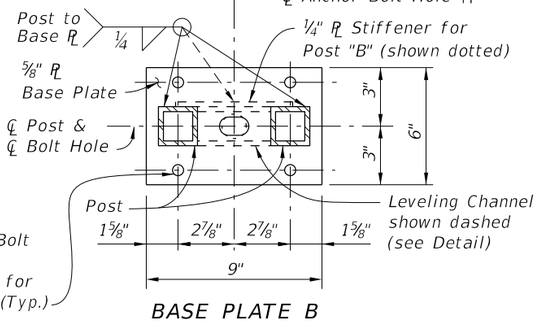
SECTION C-C
(Intermediate Rail Connection)



SECTION D-D
(Bottom Rail Connection -
Single Anchor Bolt Shown)

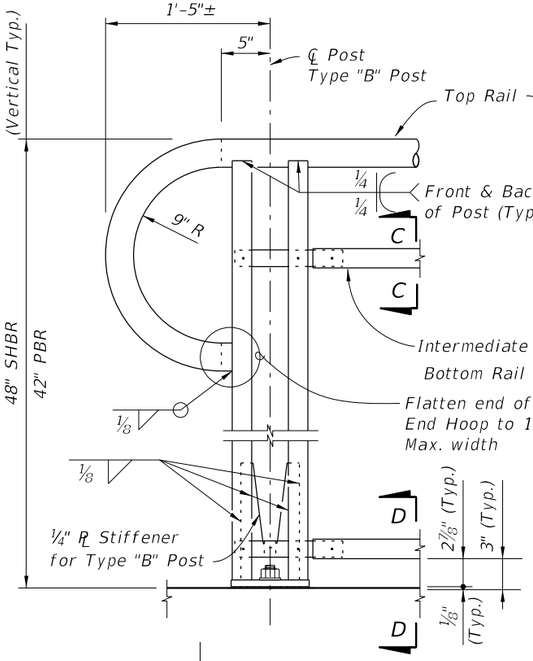


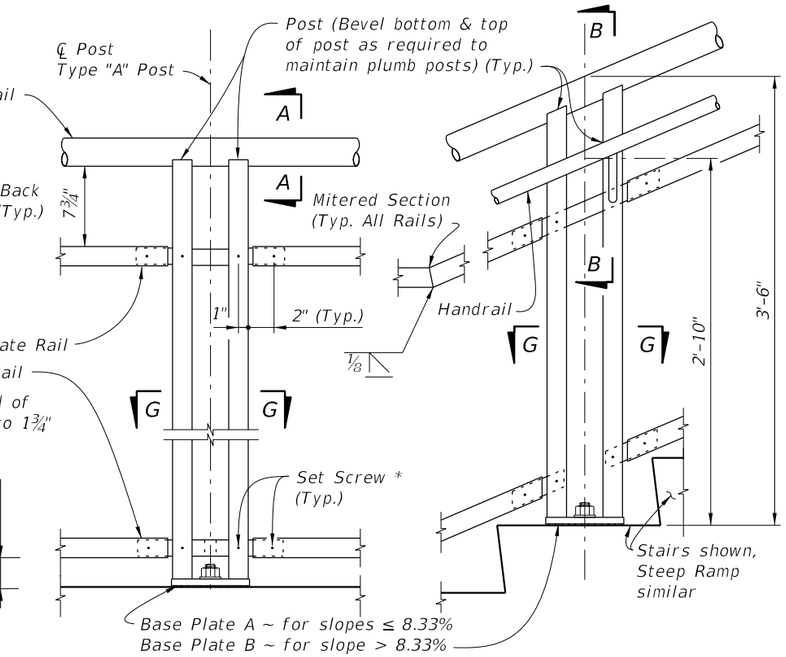
BASE PLATE A



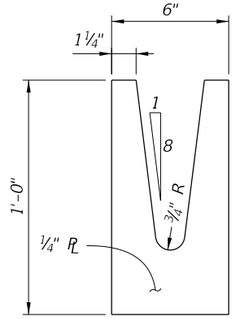
BASE PLATE B

SECTION G-G - BASE PLATE DETAILS





DETAIL "A" - RAIL CONNECTIONS
(Showing Inside Face of Railing)
(Pickets/Panels and 4~Bolt Anchorage Not Shown for Clarity)



POST "B" STIFFENER DETAIL

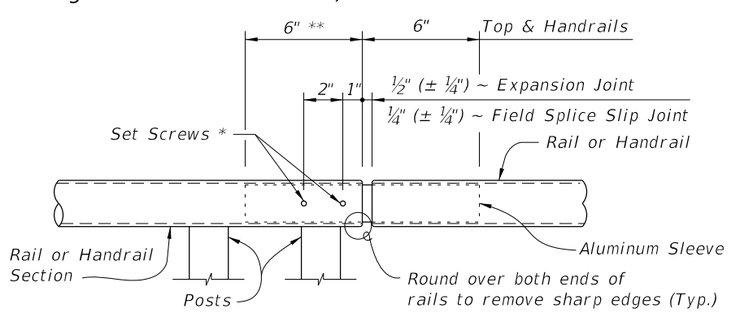
NOTES:

† Base Plate A (Ramps – Bolts normal) use 1 1⁄16" Ø Holes for Single Anchor Bolts with Flat Washers for slopes ≤ 8.33%.

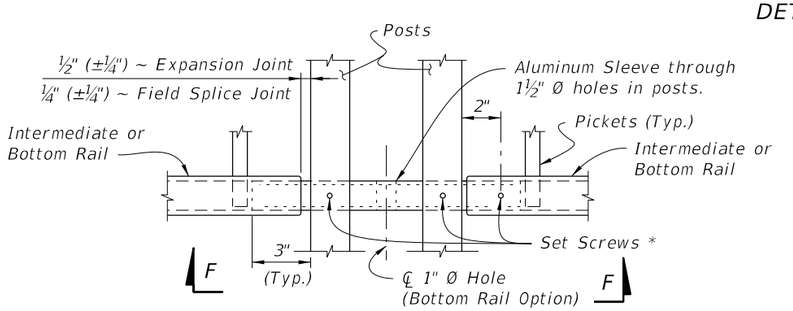
†† Base Plate B (Stairs – Bolts plumb) use 1¼" Ø Holes for Single Anchor Bolts with Beveled Plate and Washers for slopes > 8.33% to ≤ 15%; use 15⁄16" x 1½" Slotted Holes with Leveling Channel for slopes > 15%.

* ¼" Ø x ¾" Pan Head Aluminum or Stainless Steel Set Screws. Screws must be set flush against the outside face of rails & posts and underside of handrails. A single tack weld (½" max. length) at top of the sleeve for each post may be substituted for the Set Screws. Do not provide Set Screws for Rails at free end of Expansion Joints.

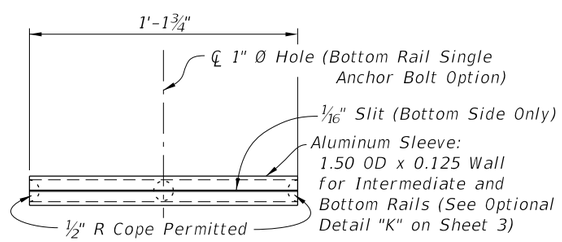
** Embedded length may be 4" for plug welded connection.



ROUND RAILS - TOP RAIL OR HANDRAIL
(Top Rail at Expansion Joint Shown)



SQUARE RAILS - INTERMEDIATE OR BOTTOM RAIL
(Bottom Rail Shown at Expansion Joint Shown)



VIEW F-F
INTERMEDIATE OR BOTTOM RAIL -
ALUMINUM SLEEVE DETAIL (Bottom Side Shown)

DETAIL "B" - EXPANSION JOINT (FIELD SPLICE SLIP JOINT SIMILAR)

CROSS REFERENCE:
For location of Details "B", See Sheet 2.

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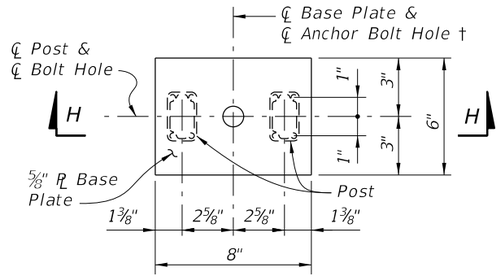
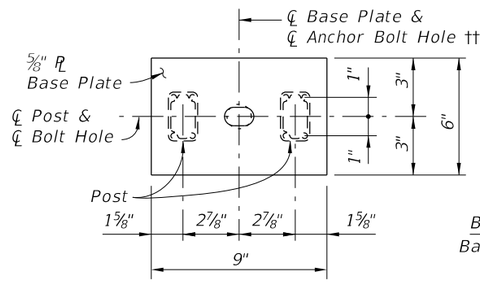
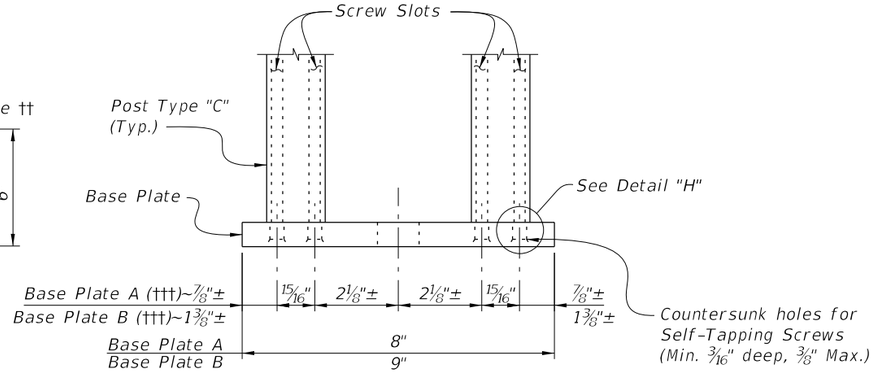
LAST REVISION	REVISION	DESCRIPTION:				
11/01/16			FDOT FY 2018-19 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	INDEX 515-062	SHEET 4 of 9



BASE PLATE A

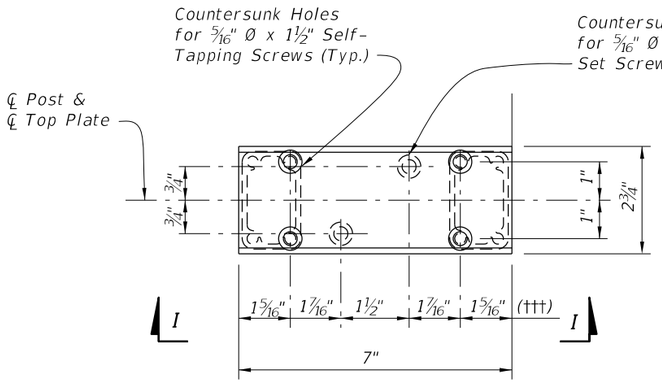


BASE PLATE B

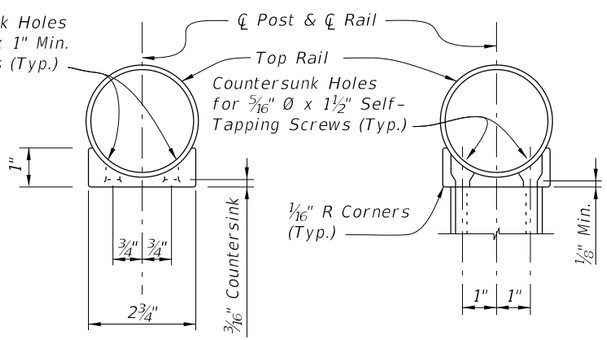


SECTION H-H
(Screws Not Shown for Clarity)

BASE PLATE DETAILS FOR TYPE "C" POST

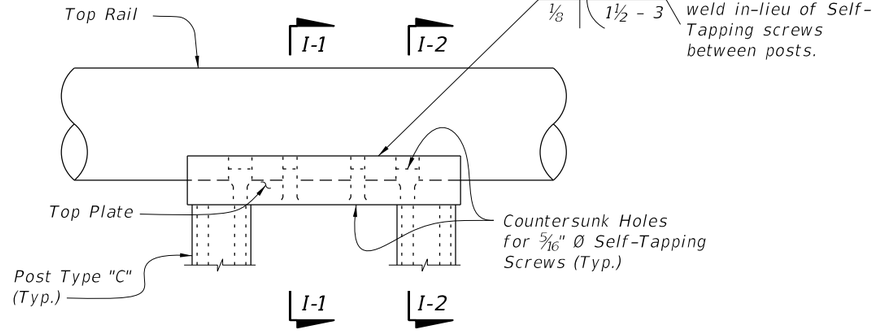


PLAN



SECTION "I-1"

SECTION "I-2"



VIEW "I"

TOP PLATE DETAILS FOR TYPE "C" POST
(Screws Not Shown For Clarity)

Notes:
† See Sheet 4 for Notes.
†† See Sheet 4 for Notes.
††† Length varies for beveled posts on grades. Holes must be drilled plumb to align with screw slot.

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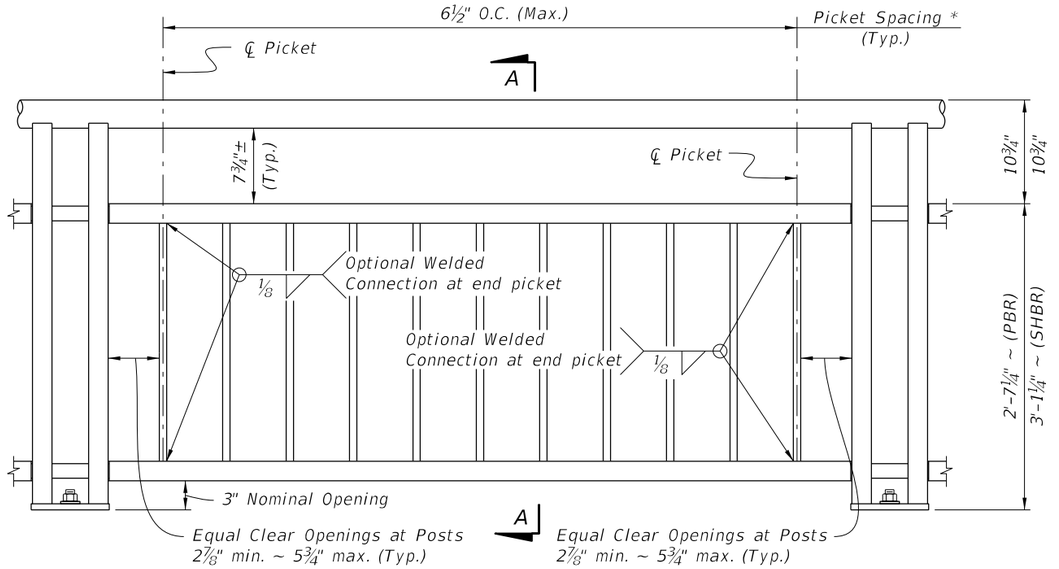
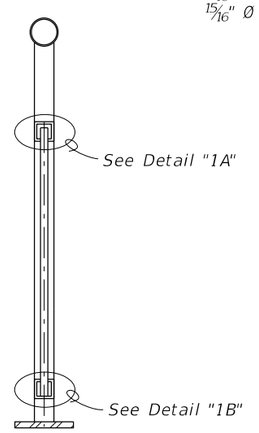
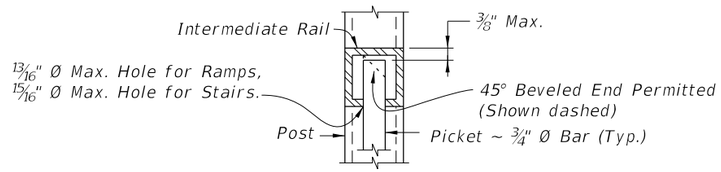
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/16			FY 2018-19 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	515-062	5 of 9



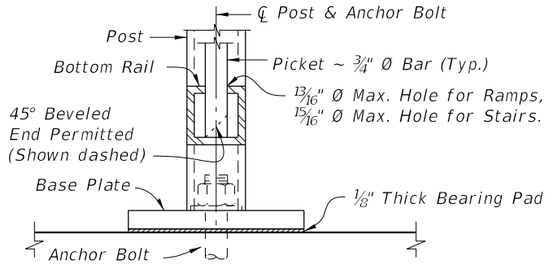
TYPE 1 - PICKET INFILL PANEL



SECTION A-A

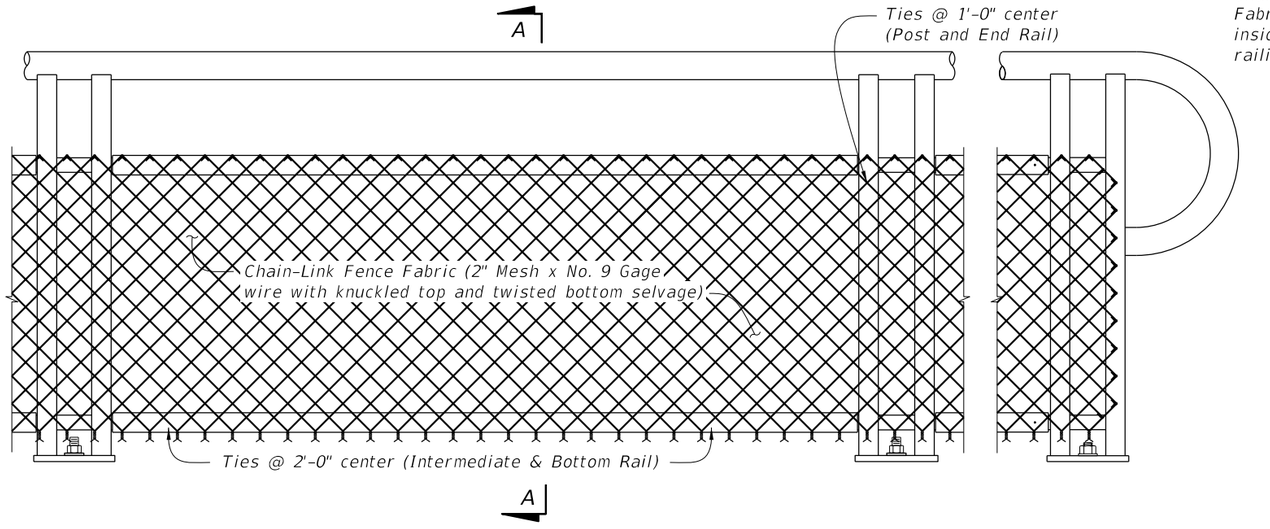


DETAIL "1A"
(Top of Picket Connection)

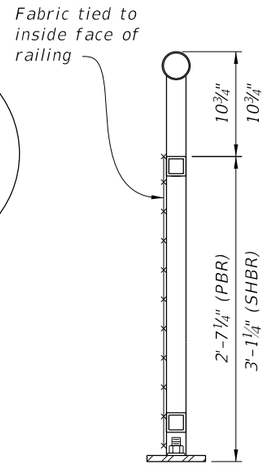


DETAIL "1B"
(Bottom of Picket Connection)

PICKET NOTES:
* Picket Spacing of 6½" centers is based on a ¾" Ø Bar for standard applications.
When shown in the Contract Plans a 4½" picket spacing may be required. See Note 4 (Sheet 1).



TYPE 2 - CHAIN-LINK (Continuous Infill Panel)



SECTION A-A

TABLE 2 - CHAIN-LINK PANEL COMPONENT MATERIALS		
COMPONENT	ASTM	COMPONENT INFORMATION
Chain-Link Fence Fabric (2" mesh with twisted bottom and knuckled top selvage)	A392	Zinc-Coated Steel – No. 9 gage (coated wire diameter), Class 2 Coating
	A491	Aluminum-Coated Steel – No. 9 gage (coated wire diameter)
	F668	Polyvinyl Chloride (PVC) Coated Steel – No. 9 gage Zinc-Coated Wire (metallic-coated core wire diameter) ~ See Plans for specified color of PVC.
Tie Wires	F626	Zinc-Coated Steel Wire – No. 9 gage with coating to match Chain-Link Fence Fabric.
Tension Bars	F626	3⁄16" (min. thickness) x ¾" (min. width) x 2'-3" (min. height) Steel Bars
Miscellaneous Fence Components	F626	Zinc-Coated Steel

NOTES:
1. See Plans for Infill Panel option required.

CHAIN-LINK PANEL NOTE:
Chain-Link Fence Fabric shall be continuous along limits of railing. Splicing of Chain-Link panels using Tension Bars at 20'-0" minimum increments is permitted.

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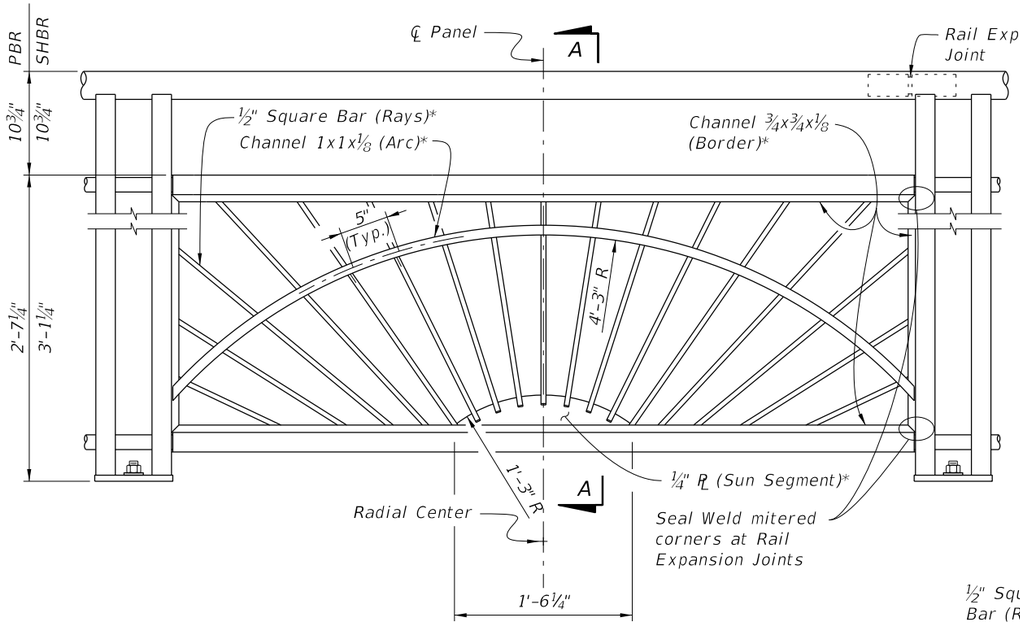
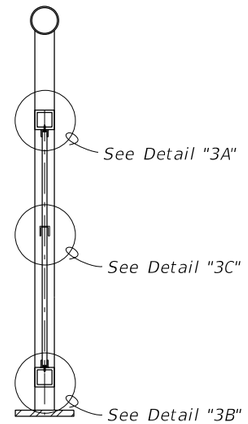
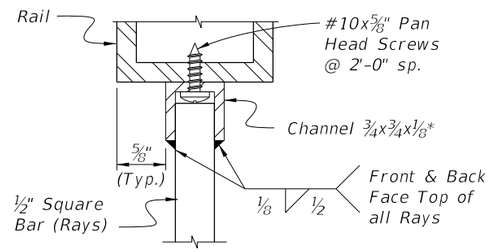


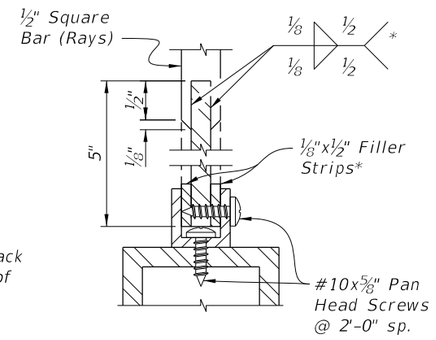
TYPE 3 - SUNSHINE INFILL PANEL



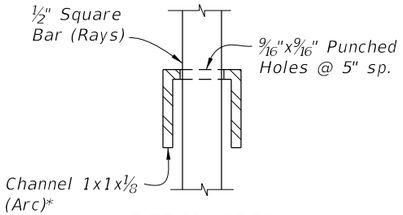
SECTION A-A



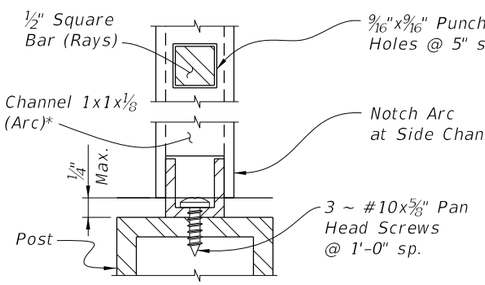
DETAIL "3A"
INTERMEDIATE RAIL/RAY CONNECTION



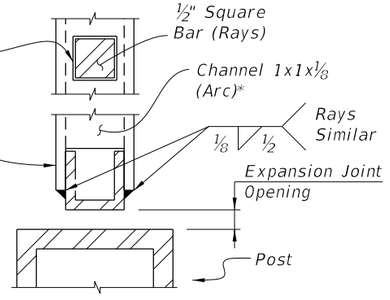
DETAIL "3B"
BOTTOM RAIL/RAY CONNECTION



DETAIL "3C"
RAY/ARC CONNECTION

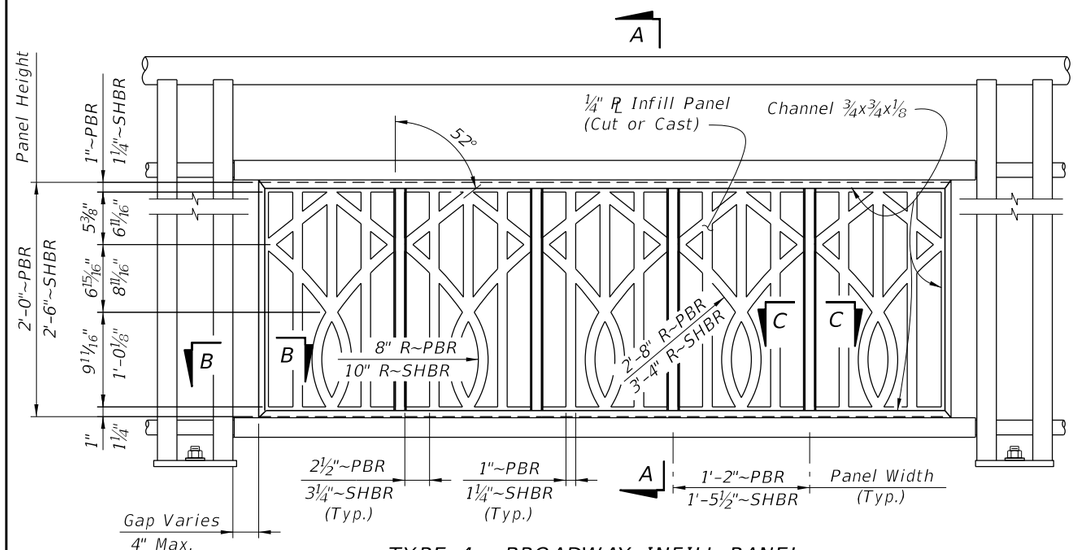


DETAIL "3D"
ARC/POST CONNECTION
(Continuous Top Rail)

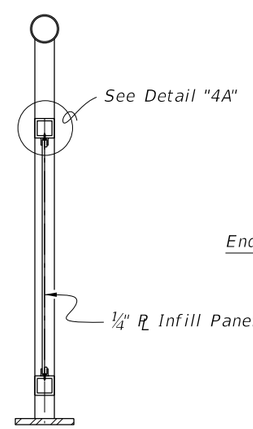


DETAIL "3E"
PANEL END CONNECTION
AT POST WITH EXPANSION JOINT

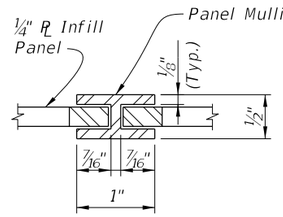
* Arc, Rays and Sun Segment may be formed in a single panel from ½" plate (ASTM B209 Alloy 6061-T6 or T651) pattern cut with laser or plasma CNC, welded to a 1x1x⅛ Angle Border or the ¾x¾x⅛ Channel Border shown.



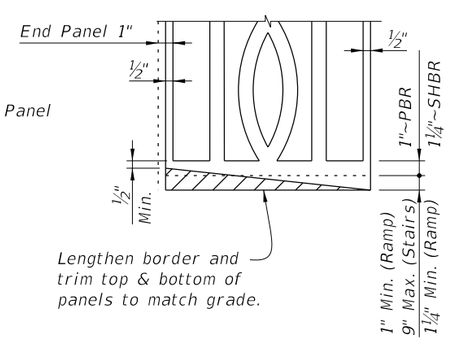
TYPE 4 - BROADWAY INFILL PANEL



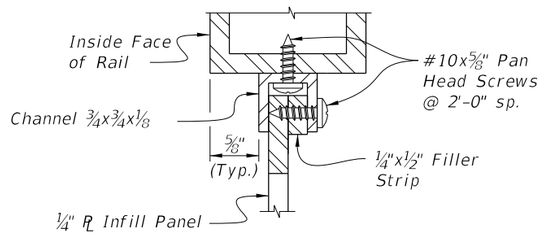
SECTION A-A



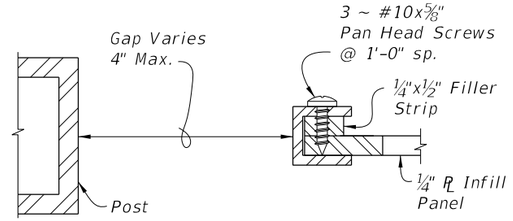
SECTION C-C
PANEL/SPLICE CONNECTION



PANEL ADJUSTMENT FOR RAILINGS
ON GRADES



DETAIL "4A"
PANEL/RAIL CONNECTION
(Top Shown, Bottom Similar)



SECTION B-B
PANEL END CAP

NOTES:

1. See Plans for Infill Panel Option required.

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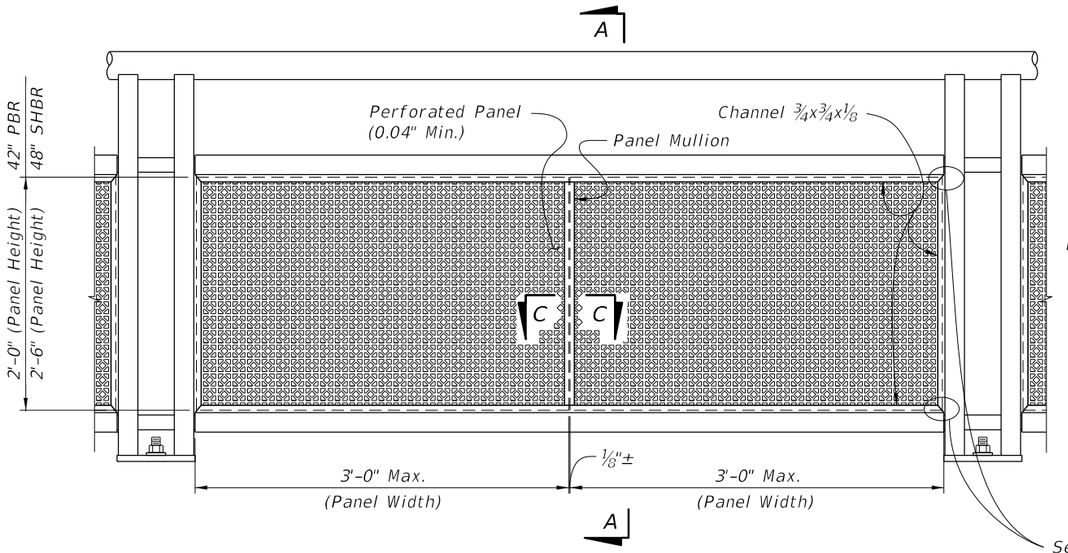
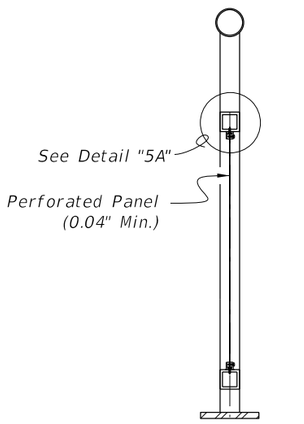
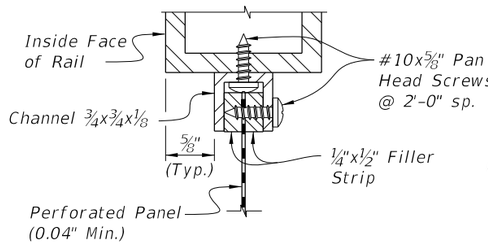
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/16			FDOT FY 2018-19 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	515-062	7 of 9



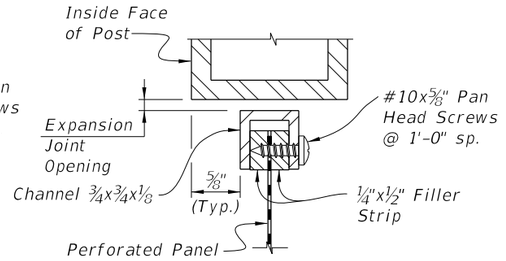
TYPE 5 - PERFORATED INFILL PANEL



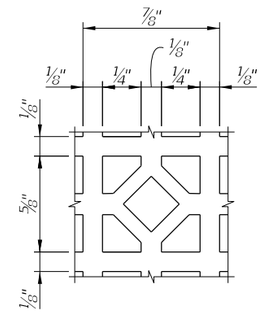
SECTION A-A



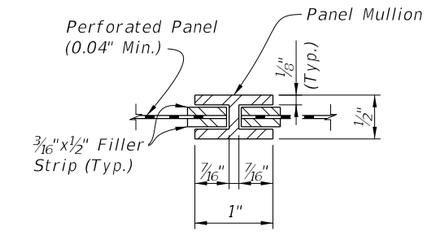
DETAIL "5A"
PANEL/RAIL CONNECTION
(Top Shown, Bottom Similar)



DETAIL "5B"
PANEL END CONNECTION
(Expansion Joint Shown, Sides Similar)



REPEATING PATTERN DETAIL
FOR PEFORATED PANEL



SECTION C-C
PANEL/SPLICE CONNECTION

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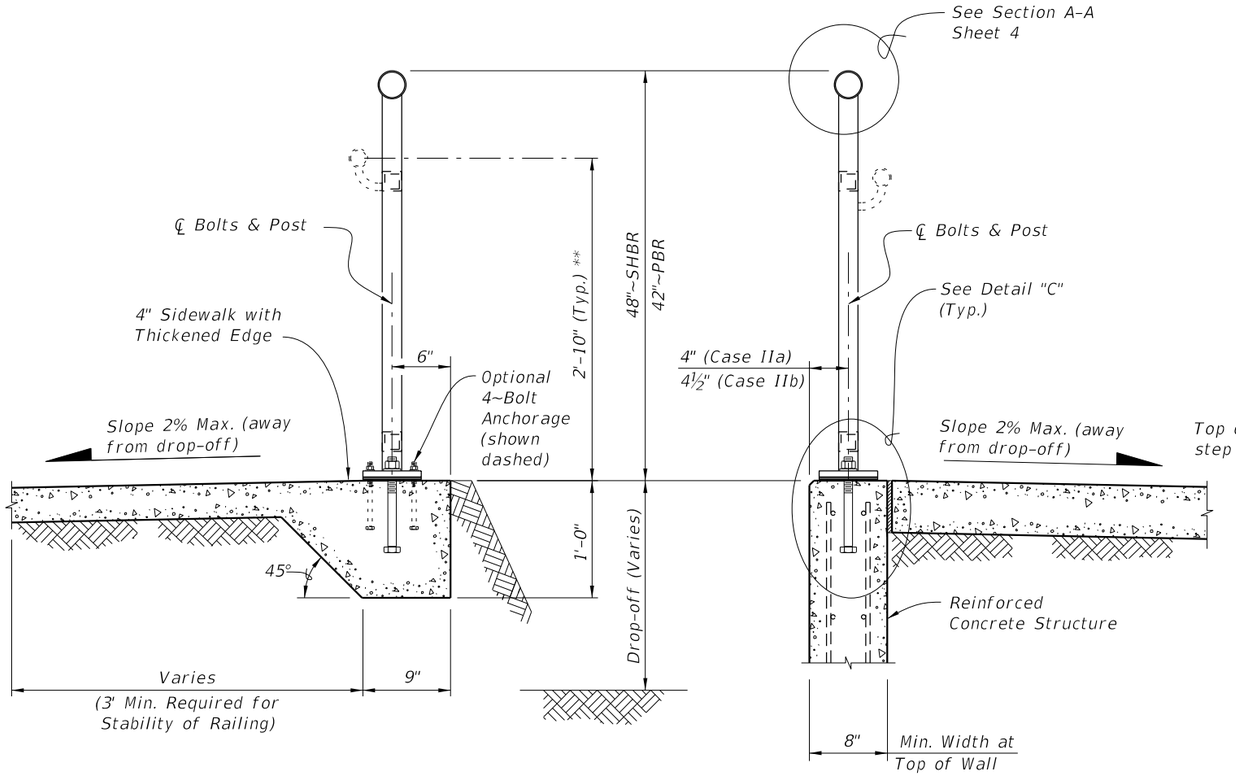
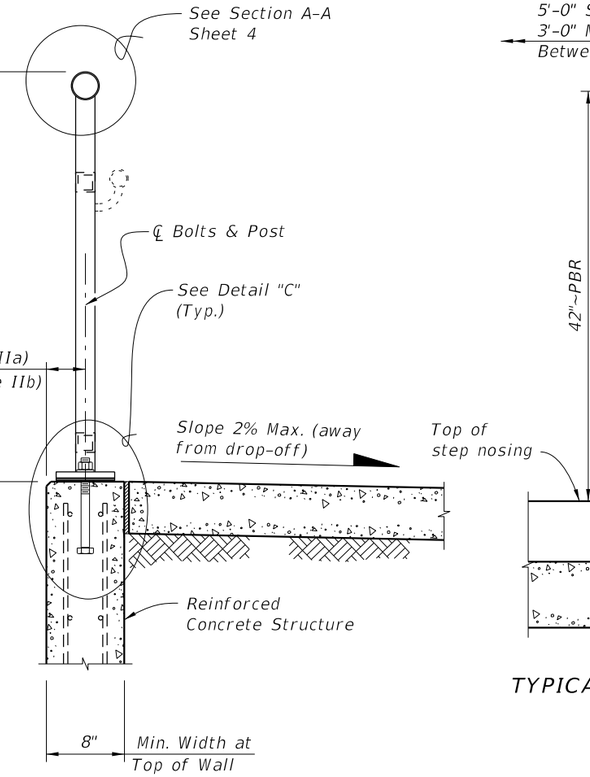
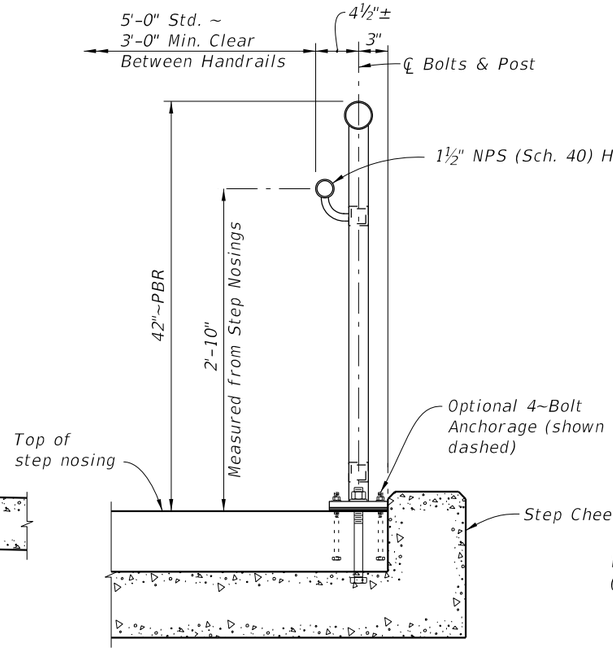
LAST REVISION	REVISION	DESCRIPTION:			INDEX	SHEET
11/01/16			FDOT FY 2018-19 STANDARD PLANS	PEDESTRIAN/BICYCLE RAILING (ALUMINUM)	515-062	8 of 9



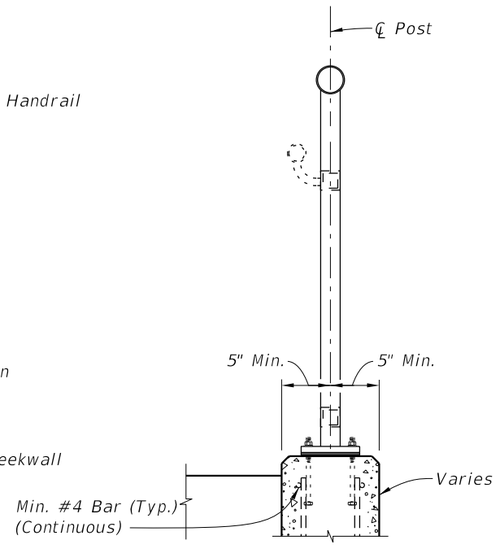
TYPICAL SECTION ON CONCRETE SIDEWALK
(Case I)



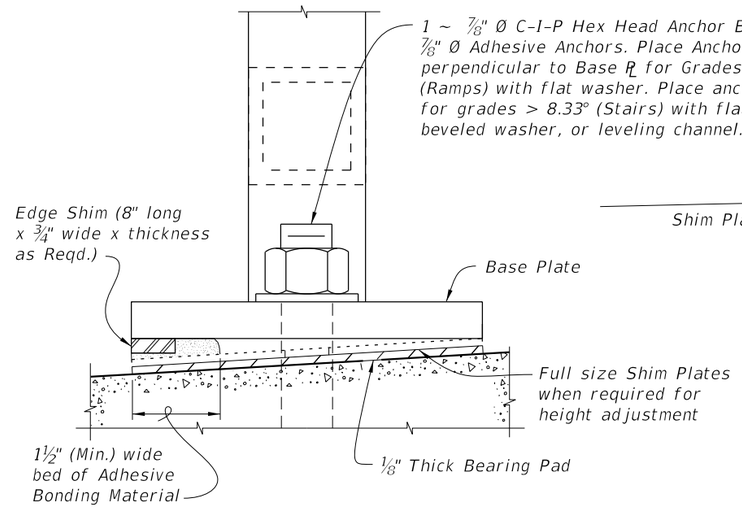
TYPICAL SECTION ON RETAINING WALL
(Case II)



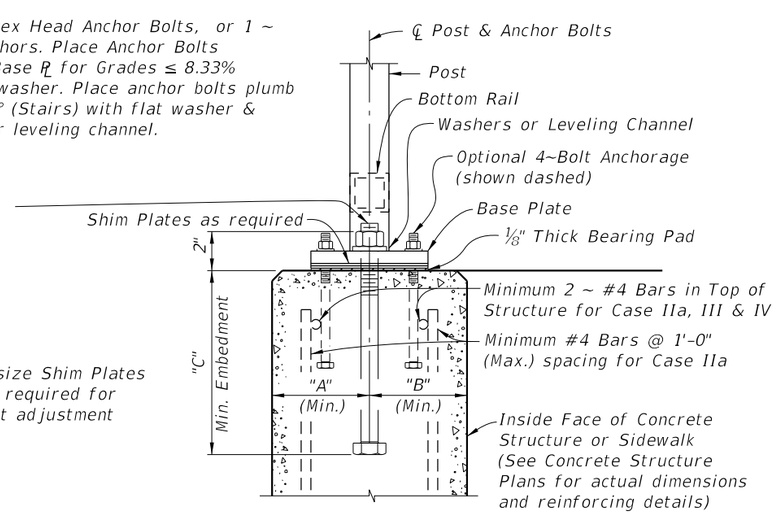
TYPICAL SECTION ON STEPS & STAIRS
(Case III)



TYPICAL SECTION FOR 4~BOLT ANCHORAGE
(Case IV)



DETAIL "D" (OPTIONAL SHIMMING DETAIL
FOR CROSS SLOPE CORRECTION)
(Used in lieu of Beveled Shim Plates)



DETAIL "C"
(Cast-In-Place Anchor Bolts shown,
Adhesive Anchors similar)

ANCHOR BOLT TABLE							
CASE	STRUCTURE TYPE	DIMENSIONS			ANCHOR LENGTH		ANCHOR SIZE
		"A" Edge Dist.	"B" Edge Dist.	"C" Embedment	C.I.P Hex Head Bolt	Adhesive Anchor	
I	Unreinforced Concrete	6"	1'-2"	9"	10½"	11"	⅞" Ø
IIa	Reinforced Concrete	4"	4"	9"	10½"	11"	⅞" Ø
IIb	Gravity Wall Index 400-011	4½"	3½" @ top	1'-0" *	1'-1½"	1'-2"	⅞" Ø
III	Step Cheekwall	4½"	4½"	9"	10½"	11"	⅞" Ø
IV	Varies	5"	5"	5"	6½"	7"	7/16" Ø

* Embedment length "C" may be reduced to 9" for the 42" height railings for Case IIb, when the post spacing does not exceed 5'-0".

** When required; measured from top of sidewalk (Typ.)

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