



PINELLAS COUNTY
LOCATION MAP

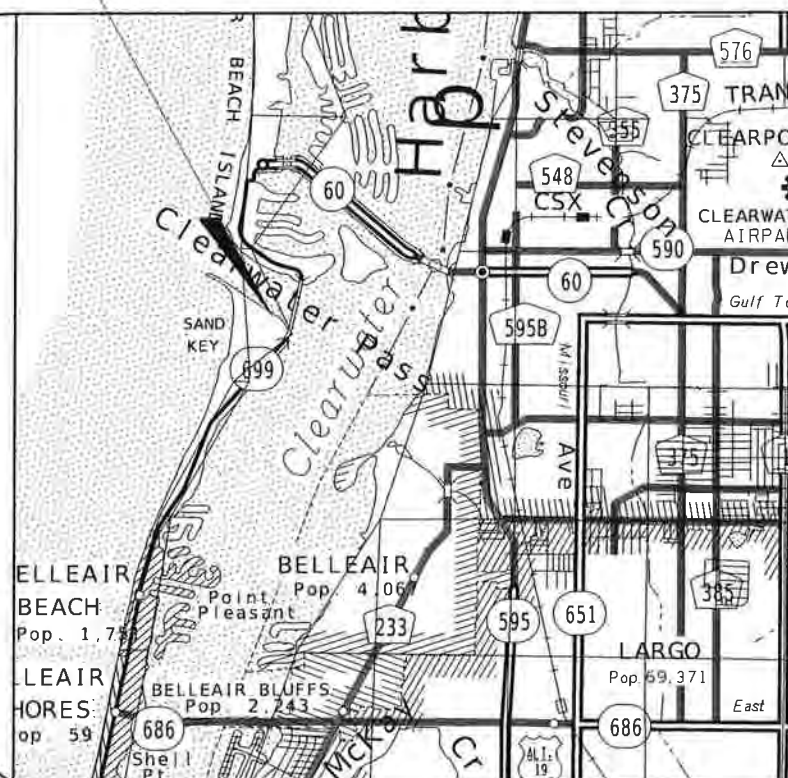


DEPARTMENT OF ENVIRONMENT AND INFRASTRUCTURE

PLANS OF PROPOSED SAND KEY FENDER SYSTEM

PID 002582A

PROJECT LOCATION



SECTION 33, TOWNSHIP 29 SOUTH, RANGE 15 EAST

KEY MAP
NOT TO SCALE



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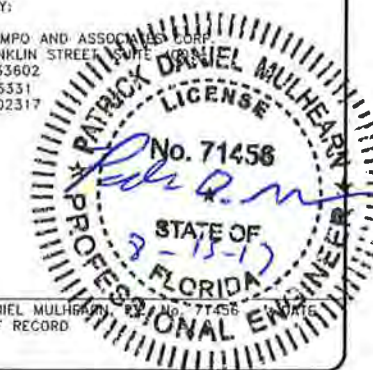
PINELLAS COUNTY
UTILITIES ENGINEERING
14 SOUTH FORT HARRISON AVENUE
CLEARWATER, FLORIDA 33756
PHONE: (727)464-3588

PROJECT MANAGER: TOM MENKE, P.E.

PREPARED BY:

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C.O.A. NO. 02317


PATRICK DANIEL MULHEARN
ENGINEER OF RECORD



CONSTRUCTION COST ESTIMATE
FOR
FOR SAND KEY BARGE FENDER

Item Number	Item Description	Estimated	Unit
		Quantity	
SAND KEY BARGE FENDER			
101-1	MOBILIZATION	1	LS
102-1	MAINTENANCE OF TRAFFIC	1	LS
104-10-3	SEDIMENT BARRIER	65	LF
104-11	FLOATING TURBIDITY BARRIER	760	LF
110-1-1	CLEARING & GRUBBING	0.11	AC
285-709	OPTIONAL BASE GROUP 09	534	SY
334-1-11	TYPE SP STRUCTURAL COURSE, TRAFFIC A	58.7	TN
471-1-1	FENDER SYS, PLASTIC MARINE LUMBER, REINF	1	LS
471-1-2	FENDER SYS, PLASTIC MARINE LUMBER, NON-REINF	1	LS
471-2	FENDER SYS, POLYMERIC PILES	76	EA
519-78	BOLLARDS	4	EA
530-3-4	RIPRAP, RUBBLE, F & I, DITCH LINING	2.4	TN



				DESIGNED <u>PDM</u>	 OFFICE OF ENGINEERING AND TECHNICAL SUPPORT 14 S. FT. HARRISON AVE., CLEARWATER, FL 33756	PROJECT: SAND KEY FENDER SYSTEM	DESCRIPTION: SUMMARY OF PAY ITEMS	APPROVED BY: PATRICK DANIEL MULHEARN, P.E. FLA. LIC. NO 71456	DATE	DATE: 06/2017
				DRAWN <u>TSC</u>						PROJECT NO. 002582A
				CHECKED <u>DBT</u>						SHEET: B-2
REV. NO.	DATE	DESCRIPTION	REV. BY							

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DESIGN SPECIFICATIONS:

- 1. FDOT STRUCTURES MANUAL DATED JANUARY 2017.
- 2. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) LOAD AND RESISTANCE FACTOR (LRFD) BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION AND ALL SUBSEQUENT INTERIMS.
- 3. FDOT PLANS PREPARATION MANUAL DATED JANUARY 2017.
- 4. PINELLAS COUNTY STANDARD TECHNICAL SPECIFICATIONS FOR UTILITIES AND RELATED CONSTRUCTION DATED AUGUST 2015.

DESIGN METHODOLOGY:

LOAD AND RESISTANCE FACTOR DESIGN (LRFD) METHOD USING STRENGTH, SERVICE (EXTREME EVENT), AND FATIGUE LIMIT STATES.

DRAWINGS AND DIMENSIONS:

- 1. ALL DIMENSIONS SHOWN WERE TAKEN FROM FIELD MEASUREMENT. EXISTING PLANS ARE NOT AVAILABLE. ALL DIMENSIONS ARE APPROXIMATE.
- 2. ALL DIMENSIONS ARE IN FEET AND INCHES.
- 3. VERIFY ALL FIELD CONDITIONS AND DIMENSIONS PRIOR TO COMMENCING REPAIRS OR ORDERING ANY MATERIAL. NOTIFY THE ENGINEER OF ANY DISCREPANCIES FOUND.

ENVIRONMENT:

SUPERSTRUCTURE: EXTREMELY AGGRESSIVE - COASTAL ENVIRONMENT
SUBSTRUCTURE: EXTREMELY AGGRESSIVE - COASTAL ENVIRONMENT

DATUM:

ALL ELEVATIONS REFER TO NGVD 1988 UNLESS OTHERWISE NOTED.

REINFORCING STEEL:

- 1. ALL REINFORCING STEEL SHALL BE GRADE 60.
- 2. ALL DIMENSIONS PERTAINING TO LOCATION OF REINFORCEMENT ARE TO CENTERLINE OF BARS EXCEPT WHERE THE CLEAR DIMENSION IS SHOWN TO FACE OF CONCRETE OR OTHER.
- 3. REINFORCEMENT DETAIL DIMENSIONS ARE OUT-TO-OUT OF BARS.

PAY ITEM NOTES:

- 1. PAYMENT FOR INCIDENTAL ITEMS NOT SPECIFICALLY COVERED IN THE INDIVIDUAL BID ITEMS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR THE BID ITEMS CONTAINED IN THIS CONTRACT.

SITE CONDITIONS:

- 1. BE AWARE OF RUBBLE RIP RAP AND DEBRIS IN THE AREA OF THE FENDER SYSTEM.
- 2. ALL COST ASSOCIATED WITH ANY NECESSARY RIPRAP OR DEBRIS REMOVAL SHALL BE INCLUDED IN THE COST OF THE FENDER SYSTEM.
- 3. BE AWARE OF STRONG CURRENTS IN THE AREA AND THE EFFECTS ON TURBIDITY BARRIER PLACEMENT.

PROPOSED BOLLARDS:

PROVIDE SINGLE BITT STYLE BOLLARDS WHICH HAVE A 10 TON WORKING LOAD CAPACITY. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

EXISTING FENCING:

- 1. CONTRACTOR SHALL REMOVE AND STORE CHAIN LINK FENCE ADJACENT TO WATER. THE EXISTING POSTS ARE TO REMAIN. CONTRACTOR SHALL RE-INSTALL CHAIN LINK AT END OF PROJECT.
- 2. THE EXISTING FENCE AROUND THE PERIMETER OF THE REEF LOT SHALL REMAIN.
- 3. ANY DAMAGE TO EXISTING FENCES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

CONSTRUCTION CONDITIONS:

- 1. ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN ALTERED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.
- 2. THE CONTRACTOR SHALL FIELD VERIFY ANY AND ALL EXISTING CONDITIONS PRIOR TO COMMENCING CONSTRUCTION, AND SHALL NOTIFY THE ENGINEER PROMPTLY OF ANY DISCREPANCIES.
- 3. LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE AT THE TIME THESE DRAWINGS WERE PREPARED, BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THE INDICATED LOCATION OF UNDERGROUND UTILITIES, STRUCTURES, AND FACILITIES IS APPROXIMATE, AND REFLECTS THE BEST INFORMATION AVAILABLE FROM SURVEYS AND RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT SIZE, LOCATION DEPTH, HEIGHT, ELEVATION, DIMENSIONS AND EXTENT OF ALL UNDERGROUND AND OVERHEAD FACILITIES AND OTHER FEATURES AFFECTING HIS WORK PRIOR TO PROCEEDING WITH ANY CONSTRUCTION ACTIVITY THAT MAY AFFECT SUCH FACILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED BY FAILURE TO COMPLY WITH THESE INSTRUCTIONS.
- 4. THE CONTRACTOR MUST COORDINATE THE RELOCATION FOR ALL REQUIRED UTILITIES WITH THE OWNER.
- 5. THE LOCATION AND ELEVATION OF THE PROPOSED AMENITIES, AS SHOWN ON THE PLANS, IS FOR GRAPHICAL ORIENTATION PURPOSES ONLY. ACTUAL LOCATION OF THE PROPOSED AMENITIES IS TO BE DETERMINED IN THE FIELD UTILIZING THE MINIMUM STANDARDS DEPICTED ON THE PLANS AND THE EXISTING TOPOGRAPHY AND PHYSICAL FEATURES FOUND IN THE FIELD. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE PINELLAS COUNTY INSPECTOR/ENGINEER OF THE ACTUAL LAYOUT PROPOSED PRIOR TO ORDERING OF MATERIALS AND/OR COMMENCEMENT OF WORK.
- 6. THE CONTRACTOR SHALL HAVE A FOREMAN, OR RESPONSIBLE PARTY, ON SITE AT ALL TIMES WHEN WORK IS BEING PERFORMED. ALL WORKERS ON THE JOB SITE WILL BE COURTEOUS TO THE PUBLIC AT ALL TIMES, AND SHALL REFER ANY QUESTIONS OR CONCERNS TO THE CONTRACTOR'S FOREMAN OR THE COUNTY INSPECTOR. THE FOREMAN SHALL SPEAK AND UNDERSTAND ENGLISH AND SHALL BE AVAILABLE AT ALL TIMES FOR TIMELY RESOLUTION OF PROJECT RELATED ISSUES. THE CONTRACTOR MUST PROVIDE A 24 HOUR EMERGENCY PHONE NUMBER TO THE COUNTY INSPECTOR.
- 7. THE CONTRACTOR IS RESPONSIBLE TO PRACTICE AND ENFORCE ALL LOCAL AND STATE JOB AND CONSTRUCTION SAFETY LAWS AND REGULATIONS, ESPECIALLY OSHA, WITH REGARDS TO CONSTRUCTION PRACTICES AND PROCEDURES. ANY VIOLATION OF THESE LAWS WILL BE REPORTED TO THE AUTHORITIES.
- 8. ANY FEATURES LOCATED ON PROPERTY OUTSIDE THE DESIGNATED AREA OF CONSTRUCTION DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE REPAIRED IN A TIMELY MANNER, AT THE EXPENSE OF THE CONTRACTOR.

PAVING:

- 1. ALL PROPOSED ASPHALT SHALL BE FEATHERED SMOOTHLY INTO THE EXISTING PAVEMENT, AND MAY REQUIRE THE NEED FOR A MILLED BUTT-JOINT AS DIRECTED BY THE ENGINEER.
- 2. EXISTING PAVEMENT SHALL BE SAW-CUT IN PROPOSED PATCH AREAS TO A DEPTH REQUIRED FOR THE PROPOSED PAVEMENT AS SHOWN ON THE PLANS. THE COST SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CLEARING AND GRUBBING.
- 3. UNLESS OTHERWISE STATED IN THE SPECIFICATIONS OR COVERED UNDER A SEPARATE ITEM, ALL EXCESS MILLINGS SHALL REMAIN THE PROPERTY OF CONTRACTOR AND SHALL BE DISPOSED OF AT AN APPROVED SITE PROVIDED BY CONTRACTOR.


PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION.

- 1. WHEN WORKING NEAR A WETLAND, THE CONTRACTOR SHALL COMPLY WITH THE SWFWMD ERP BASES OF REVIEW, PART B, CHAPTER 3, SECTION 3.2.4.1
- 2. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE GUIDELINES IN ACCORDANCE WITH THE FLORIDA STORMWATER EROSION AND SEDIMENTATION CONTROL INSPECTOR'S MANUAL, 2008, AND THE STATE OF FLORIDA EROSION AND SEDIMENT CONTROL DESIGNER AND REVIEW MANUAL, LATEST EDITION.
- 3. THE CONTRACTOR SHALL HAVE A QUALIFIED STORMWATER MANAGEMENT INSPECTOR THAT HAS BEEN CERTIFIED THROUGH THE FDEP ON SITE DURING ALL CONSTRUCTION ACTIVITIES.

UTILITIES:

- 1. CONTACT SUNSHINE ONE CALL OF FLORIDA, INC., AS REQUIRED BY CHAPTER 556 OF THE FLORIDA STATUTES.
- 2. ABOVE GROUND AND/OR UNDERGROUND UTILITIES MAY BE IN THE AREA OF THIS PROJECT - PROCEED WITH CAUTION - THE CONTRACTOR SHALL CALL "SUNSHINE STATE ONE CALL" AND THE UTILITY OWNERS IN ADVANCE OF BEGINNING WORK, IN ACCORDANCE WITH CHAPTER 556, FLORIDA STATUES, UNDERGROUND FACILITY DAMAGE PREVENTION & SAFETY. ALL UTILITY OWNERS MAY NOT BE A MEMBER, REQUIRING DIRECT CONTACT. THE CONTRACTOR SHALL FURTHER COORDINATE WITH UTILITY OWNERS TO RESOLVE CONFLICTS THAT MAY ARISE IN THE FIELD DURING CONSTRUCTION. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY UTILITIES DAMAGED AS A RESULT OF THE CONTRACTOR'S FAILURE TO CALL "SUNSHINE STATE ONE CALL" AND THE UTILITY OWNERS.
- 3. THE CONTRACTOR IS REQUIRED TO COORDINATE AND/OR PROVIDE FOR THE BRACING/SUPPORT OF EXISTING UTILITY POLES WITH THE UTILITY OWNERS, PRIOR TO THE COMMENCEMENT OF EXCAVATION/CONSTRUCTION ACTIVITIES.
- 4. COORDINATE WITH PINELLAS COUNTY UTILITY DEPARTMENT TO DISABLE POWER TO EXISTING BURIED ELECTRIC LINE BEFORE CONSTRUCTION BEGINS.



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				DRAWN <u>TSC</u>					PROJECT NO. 002582A
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SPECIAL MANATEE PROTECTION CONDITIONS:

MANATEES MAY BE PRESENT IN THE AREA. THE CONTRACTOR SHALL COMPLY WITH THE FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION'S STANDARD MANATEE PROTECTION CONSTRUCTION CONDITIONS FOR IN-WATER WORK:

- A. ALL PERSONNEL ASSOCIATED WITH THE PROJECT SHALL BE INSTRUCTED ABOUT THE PRESENCE OF MANATEES AND MANATEE SPEED ZONES, AND THE NEED TO AVOID COLLISIONS WITH AND INJURY TO MANATEES. THE CONTRACTOR SHALL ADVISE ALL CONSTRUCTION PERSONNEL THAT THERE ARE CIVIL AND CRIMINAL PENALTIES FOR HARMING, HARASSING, OR KILLING MANATEES WHICH ARE PROTECTED UNDER THE MARINE MAMMAL PROTECTION ACT, THE ENDANGERED SPECIES ACT, AND THE FLORIDA MANATEE SANCTUARY ACT.
- B. ALL VESSELS ASSOCIATED WITH THE CONSTRUCTION PROJECT SHALL OPERATE AT "IDLE SPEED/NO WAKE" AT ALL TIMES WHILE IN THE IMMEDIATE AREA AND WHILE IN WATER WHERE THE DRAFT OF THE VESSEL PROVIDES LESS THAN A FOUR-FOOT CLEARANCE FROM THE BOTTOM. ALL VESSELS WILL FOLLOW ROUTES OF DEEP WATER WHENEVER POSSIBLE.
- C. SILTATION OR TURBIDITY BARRIERS SHALL BE MADE OF MATERIAL IN WHICH MANATEES CANNOT BECOME ENTANGLED, SHALL BE PROPERLY SECURED, AND SHALL BE REGULARLY MONITORED TO AVOID MANATEE ENTANGLEMENT OR ENTRAPMENT. BARRIERS MUST NOT IMPEDE MANATEE MOVEMENT.
- D. ALL ON-SITE PROJECT PERSONNEL ARE RESPONSIBLE FOR OBSERVING WATER-RELATED ACTIVITIES FOR THE PRESENCE OF MANATEE(S). ALL IN-WATER OPERATIONS, INCLUDING VESSELS, MUST BE SHUTDOWN IF A MANATEE(S) COMES WITHIN 50 FEET OF THE OPERATION. ACTIVITIES WILL NOT RESUME UNTIL THE MANATEE(S) HAS MOVED BEYOND THE 50-FOOT RADIUS OF THE PROJECT OPERATION, OR UNTIL 30 MINUTES ELAPSES IF THE MANATEE(S) HAS NOT REAPPEARED WITHIN 50 FEET OF THE OPERATION. ANIMALS MUST NOT BE HERDED AWAY OR HARASSED INTO LEAVING.
- E. ANY COLLISION WITH OR INJURY TO A MANATEE SHALL BE REPORTED IMMEDIATELY TO THE FWC HOTLINE AT 1-888-404-3922. COLLISION AND/ OR INJURY SHOULD ALSO BE REPORTED TO THE U.S. FISH AND WILDLIFE SERVICE IN JACKSONVILLE (1-904-731-3336) FOR NORTH FLORIDA OR VERO BEACH (1-772-562-3909) FOR SOUTH FLORIDA.
- F. TEMPORARY SIGNS CONCERNING MANATEES SHALL BE POSTED PRIOR TO AND DURING ALL IN-WATER PROJECT ACTIVITIES. ALL SIGNS ARE TO BE REMOVED BY THE CONTRACTOR UPON COMPLETION OF THE PROJECT. TEMPORARY SIGNS THAT HAVE ALREADY BEEN APPROVED FOR THIS USE BY THE FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION (FWC) MUST BE USED. ONE SIGN MEASURING AT LEAST 3 FT. BY 4 FT. WHICH READS CAUTION: BOATERS MUST BE POSTED. A SECOND SIGN MEASURING AT LEAST 8" BY 11" EXPLAINING THE REQUIREMENTS FOR "IDLE SPEED/NO WAKE" AND THE SHUT DOWN OF IN-WATER OPERATIONS MUST BE POSTED IN A LOCATION PROMINENTLY VISIBLE TO ALL PERSONNEL ENGAGED IN WATER-RELATED ACTIVITIES.

CAUTION: MANATEE HABITAT

All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work
all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:
Wildlife Alert:
1-888-404-FWCC(3922)
cell *FWC or #FWC

ALL SIGNS ARE TO BE REMOVED BY THE CONTRACTOR UPON COMPLETION OF THE PROJECT.

COAST GUARD

THE UNITED STATES COAST GUARD SHALL BE CONTACTED 60 DAYS IN ADVANCE OF ANY CONSTRUCTION ACTIVITIES FOR APPROVAL BEFORE CONSTRUCTION COMMENCES.

SPECIAL SEA TURTLE AND SMALLTOOTH SAWFISH CONDITIONS:


SEA TURTLES AND SMALLTOOTH SAWFISH MAY BE PRESENT IN THE AREA. THE CONTRACTOR SHALL COMPLY WITH THE NATIONAL MARINE FISHERIES SERVICE'S STANDARD SEA TURTLE AND SMALLTOOTH SAWFISH PROTECTION CONSTRUCTION CONDITIONS FOR IN-WATER WORK:

- A. ALL PERSONNEL ASSOCIATED WITH THE PROJECT SHALL BE INSTRUCTED OF THE POTENTIAL PRESENCE OF THESE SPECIES AND THE NEED TO AVOID COLLISIONS WITH SEA TURTLES AND SMALLTOOTH SAWFISH. ALL CONSTRUCTION PERSONNEL ARE RESPONSIBLE FOR OBSERVING WATER-RELATED ACTIVITIES FOR THE PRESENCE OF THESE SPECIES.
- B. ADVISE ALL CONSTRUCTION PERSONNEL THAT THERE ARE CIVIL AND CRIMINAL PENALTIES FOR HARMING, HARASSING, OR KILLING SEA TURTLES OR SMALLTOOTH SAWFISH, WHICH ARE PROTECTED UNDER THE ENDANGERED SPECIES ACT OF 1973.
- C. SILTATION BARRIERS SHALL BE MADE OF MATERIAL IN WHICH A SEA TURTLE OR SMALLTOOTH SAWFISH CANNOT BECOME ENTANGLED, BE PROPERLY SECURED, AND BE REGULARLY MONITORED TO AVOID PROTECTED SPECIES ENTRAPMENT. BARRIERS MAY NOT BLOCK SEA TURTLE OR SMALLTOOTH SAWFISH 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. ALL VESSELS ASSOCIATED WITH THE CONSTRUCTION PROJECT SHALL OPERATE AT "NO WAKE/IDLE" SPEEDS AT ALL TIMES WHILE IN THE CONSTRUCTION AREA AND WHILE IN WATER DEPTHS WHERE DRAFT OF VESSEL PROVIDES LESS THAN A FOUR FOOT CLEARANCE FROM THE BOTTOM. ALL VESSELS WILL PREFERENTIALLY FOLLOW DEEP-WATER ROUTES (E.G., MARKED CHANNELS) WHENEVER POSSIBLE.
- E. IF A SEA TURTLE OR SMALLTOOTH SAWFISH IS SEEN WITHIN 100 YARDS 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 FEET OF A SEA TURTLE OR SMALLTOOTH SAWFISH.OPERATION OF ANY MECHANICAL CONSTRUCTION EQUIPMENT SHALL CEASEIMMEDIATELY IF A SEA TURTLE OR SMALLTOOTH SAWFISH IS SEEN WITHIN A 50FOOT RADIUS OF THE EQUIPMENT. ACTIVITIES MAY NOT RESUME UNTIL THE PROTECTED SPECIES HAS DEPARTED THE PROJECT AREA OF ITS OWN VOLITION.
- F. ANY COLLISION WITH AND/OR INJURY TO A SEA TURTLE OR SMALLTOOTH SAWFISH SHALL BE REPORTED IMMEDIATELY TO THE NATIONAL MARINE FISHERIES SERVICE'S PROTECTED RESOURCES DIVISION (727-824-5312) AND THE LOCAL AUTHORIZED SEATURTLE STRANDING/RESCUE ORGANIZATION.
- G. ANY SPECIAL CONSTRUCTION CONDITIONS, REQUIRED OF THE PROJECT, OUTSIDE THESE GENERAL CONDITIONS WILL BE ADDRESSED IN THE PRIMARY CONSULTATION.

WATER QUALITY MONITORING:

- A. THIS PROJECT DISCHARGES TO A DESIGNATED OUTSTANDING FLORIDA WATER (OFW). MONITOR ACTIVITIES FOR VIOLATION OF WATER QUALITY STANDARDS AS THEY RELATE TO TURBIDITY, NO GREATER THAN 0 NTU'S ABOVE BACKGROUND FOR DIRECT DISCHARGES TO OFW'S.
- B. IF WATER QUALITY STANDARDS ARE VIOLATED, CONSTRUCTION SHALL BE STOPPED IMMEDIATELY. RE-EVALUATE EROSION CONTROL DEVICES AND CONTINUE ACTIVITIES ONLY AFTER TURBIDITY READINGS FALL BELOW AN ACCEPTABLE LEVEL (0 NTU'S ABOVE BACKGROUND FOR DIRECT DISCHARGES TO OFW'S).




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				DRAWN	TSC						PROJECT NO. 002582A
				CHECKED	DBT						SHEET: B-4
REV. NO.	DATE	DESCRIPTION			REV. BY						

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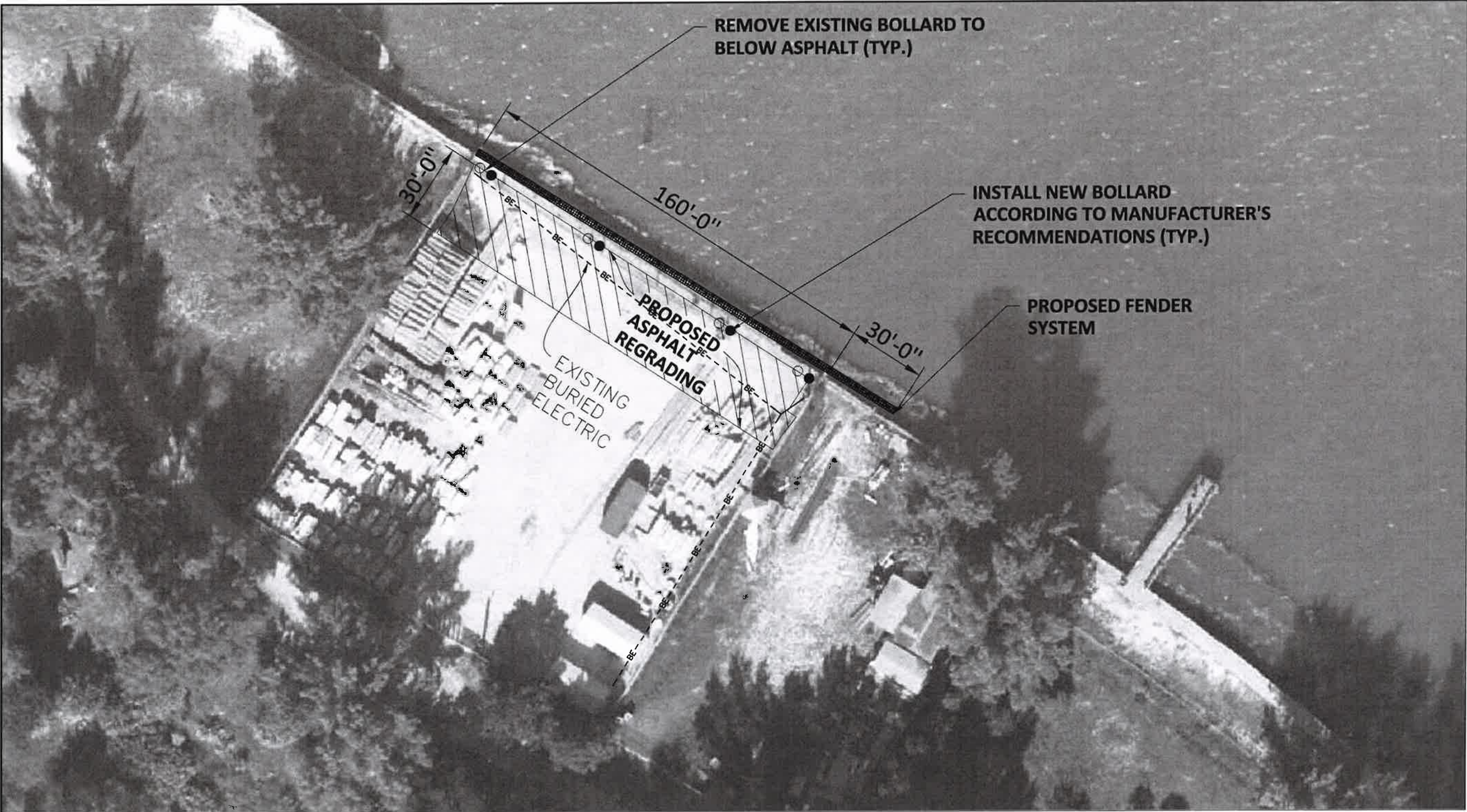
FENDER NOTES

- 1. PROVIDE FENDER SYSTEMS IN ACCORDANCE WITH SUPPLEMENTAL PROVISIONS SECTION 35.60.01 AND 35.60.02.
- 2. U.S. COAST GUARD NOTIFICATION: NOTIFY THE LOCAL OFFICE OF THE U.S. COAST GUARD AT LEAST 60 DAYS PRIOR TO BEGINNING OF CONSTRUCTION OF THE FENDER SYSTEM. MONITOR UHF RADIO CHANNEL 16.
- 3. PILES: PROVIDE REINFORCED THERMOPLASTIC STRUCTURAL SHAPES FOR PILES IN ACCORDANCE WITH SPECIFICATIONS SECTION 973. INSTALL ALL PILES PLUMB AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. PILE SPLICES ARE NOT ALLOWED. PILE JETTING IS PROHIBITED.
- 4. WALES: PROVIDE REINFORCED THERMOPLASTIC STRUCTURAL SHAPES FOR WALES IN ACCORDANCE WITH SPECIFICATIONS SECTION 973. PROVIDE CONTINUOUS WALES WITH SPLICES ONLY AT LOCATIONS SHOWN ON THE PLANS.
- 5. WALE SPLICE PLATES: PROVIDE FRP OR STAINLESS STEEL WALE SPLICE PLATES. STAINLESS STEEL WALE SPLICE PLATES SHALL BE IN ACCORDANCE WITH ASTM A240 TYPE 316. FRP WALE SPLICE PLATES SHALL BE IN ACCORDANCE WITH SPECIFICATIONS SECTION 973.
- 6. PROVIDE PLASTIC LUMBER DECKING IN ACCORDANCE WITH SPECIFICATION 973. INSTALL PLASTIC LUMBER DECKING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, USING STAINLESS STEEL #10X3" (MINIMUM) DECK SCREWS.
- 7. BOLTS, THREADED BARS, NUTS, SCREWS AND WASHERS: FURNISH STAINLESS STEEL BOLTS IN ACCORDANCE WITH ASTM F593 TYPE 316. FURNISH STAINLESS STEEL THREADED BARS IN ACCORDANCE WITH ASTM F594 TYPE 316. FURNISH STAINLESS STEEL SCREWS IN ACCORDANCE WITH F593 TYPE 305. FURNISH STAINLESS STEEL NUTS IN ACCORDANCE WITH F594 TYPE 316. FURNISH STAINLESS STEEL WASHERS COMPATIBLE WITH BOLTS, THREADED BARS AND NUTS UNDER HEADS AND NUTS. TORQUE NUTS ON 1" DIAMETER BOLTS AND THREADED BARS TO 15LB-FT. KEEP THE THREADS ON BOLTS, THREADED BARS AND NUTS FREE FROM DIRT, COARSE GRIME AND SAND TO PREVENT GALLING AND SEIZING DURING TIGHTENING. RECESS HARDWARE A MINIMUM OF 1/2".



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				DRAWN	TSC						PROJECT NO. 002582A
				CHECKED	DBT						SHEET: B-5
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SITE PLAN

LEGEND:



TO BE MILLED AND
RESURFACED



REV. NO.	DATE	DESCRIPTION	REV. BY



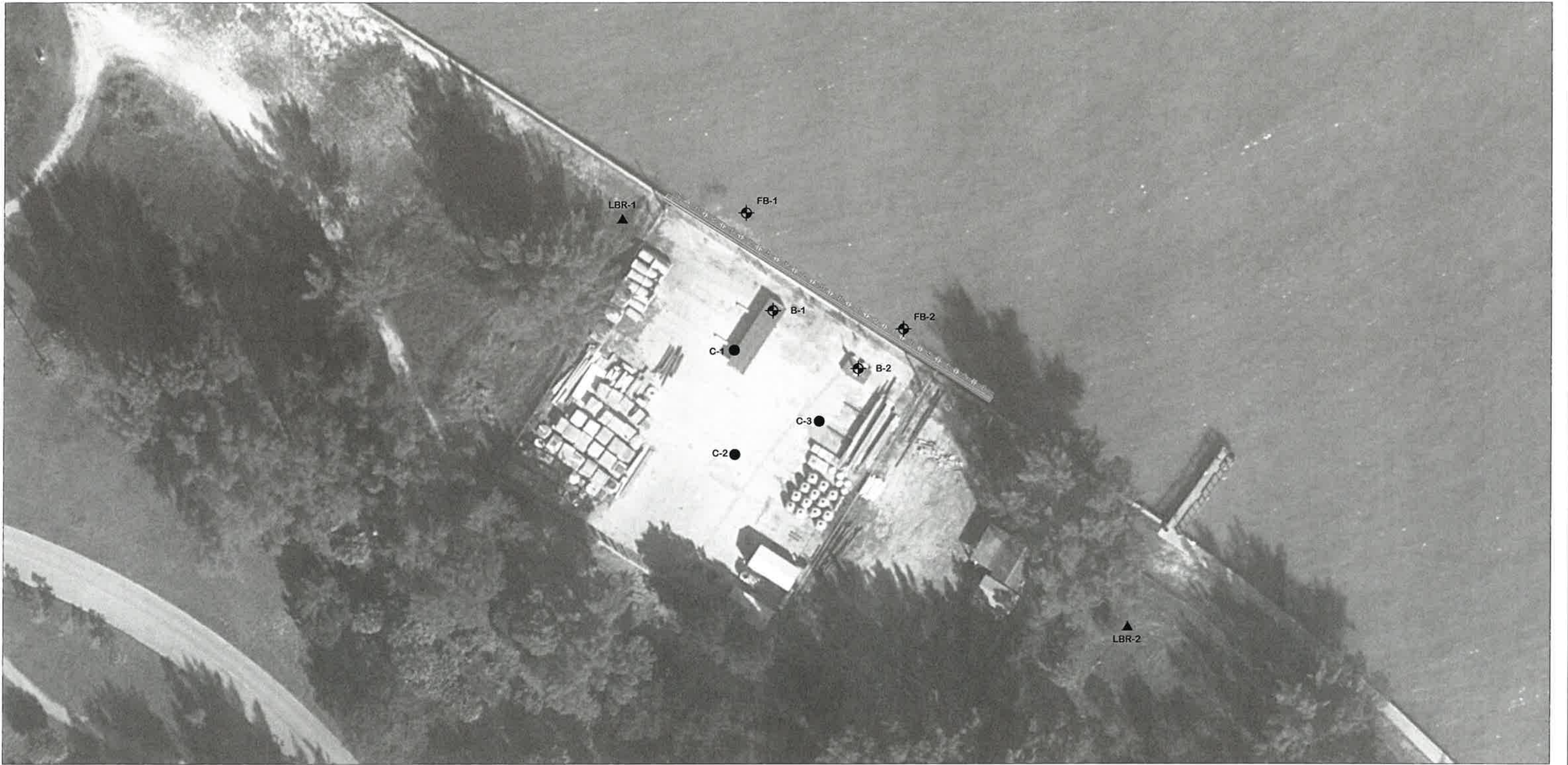
**OFFICE OF ENGINEERING
AND TECHNICAL SUPPORT**
14 S. FT. HARRISON AVE., CLEARWATER, FL 33756

PROJECT:
**SAND KEY FENDER
SYSTEM**

DESCRIPTION:
PROJECT PLAN

APPROVED BY:
PATRICK DANIEL MULHEARN, P.E.
FLA. LIC. NO. 71456

DATE: 06/2017
PROJECT NO.: 002582A
SHEET: B-6



- NOTES:
1. BASE MAP PROVIDED BY KISINGER CAMPO & ASSOCIATES.
 2. THE BORINGS WERE LOCATED IN THE FIELD BY A REPRESENTATIVE OF TIERRA USING A GARMIN ETREX HANDHELD GPS UNIT WITH A REPORTED ACCURACY OF 10 FEET. THE BORING LOCATIONS SHOULD BE CONSIDERED APPROXIMATE.

BORING LOCATION PLAN



LEGEND

- APPROXIMATE LOCATION OF SPT BORING
- APPROXIMATE LOCATION OF PAVEMENT CORE AND HAND AUGER BORING
- ▲ APPROXIMATE LOCATION OF BULK SAMPLE FOR LBR TESTING

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				DRAWN	SW
				CHECKED	DRR
REV. NO.	DATE	DESCRIPTION		REV. BY	



PROJECT:
SAND KEY FENDER
SYSTEM

DESCRIPTION:
BORING LOCATION PLAN

APPROVED
ERICK M. FREDENCK
FLA. LIC. NO. 63920

STATE OF
FLORIDA

PROFESSIONAL ENGINEER

DATE: JUNE 2016
PROJECT NO. 6511-16-081
SHEET: B-7

SOIL PROFILES

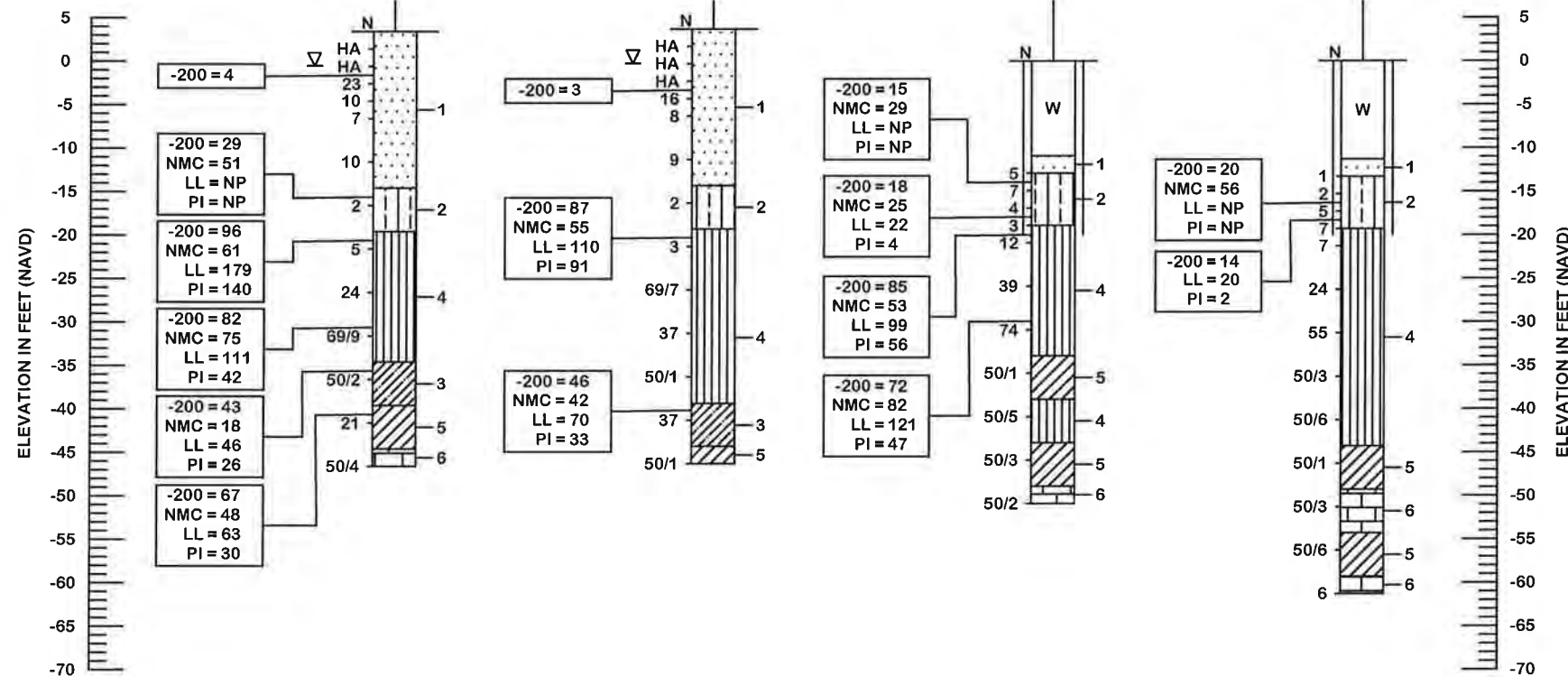
LEGEND

BOR # B-1
EASTING 389660
NORTHING 1319475
ELEV. 3.4
DATE 5/16/2016
DRILLER A. JACKSON
HAMMER AUTOMATIC
RIG D-25

BOR # B-2
EASTING 389703
NORTHING 1319446
ELEV. 3.7
DATE 5/16/2016
DRILLER A. JACKSON
HAMMER AUTOMATIC
RIG D-25

BOR # FB-1
STA. 389647
REF. 1319524
ELEV. 0.0
DATE 5/26/2016
DRILLER J. ERICKSON
HAMMER SAFETY
RIG D-25 BARGE

BOR # FB-2
STA. 389726
REF. 1319466
ELEV. 0.0
DATE 5/26/2016
DRILLER J. ERICKSON
HAMMER SAFETY
RIG D-25 BARGE



- PALE BROWN TO GRAY SAND TO SAND WITH SILT, OCCASIONALLY WITH SHELL (SP/SP-SM)
- BROWN TO GRAY SILTY SAND TO SILTY CLAYEY SAND (SM/SM-SC)
- GRAY CLAYEY SAND (SC)
- GRAY SILT TO CLAY (MH/CH)
- CALCREOUS CLAY WITH WEATHERED LIMESTONE (CH)
- WEATHERED LIMESTONE
- DARK GRAY TO BLACK SILTY SAND WITH TRACE ORGANICS (SM/PT)
- ASPHALT PAVEMENT AND BASE MATERIAL

- W WATER
- GROUNDWATER LEVEL ENCOUNTERED DURING INVESTIGATION
- N SPT N-VALUE IN BLOWS/FOOT FOR 12 INCHES OF PENETRATION (UNLESS OTHERWISE NOTED)
- SP UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2488) GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW
- 50/4 NUMBER OF BLOWS FOR 4 INCHES OF PENETRATION
- HA HAND AUGERED TO VERIFY UTILITY CLEARANCES
- CASING
- 200 PERCENT PASSING #200 SIEVE
- NMC NATURAL MOISTURE CONTENT (%)
- OC ORGANIC CONTENT (%)
- LL LIQUID LIMIT (%)
- PI PLASTICITY INDEX (%)
- NP NON PLASTIC
- CAVE-IN BOREHOLE TERMINATED DUE TO CAVE-IN FROM SHALLOW GROUNDWATER INTRUSION
- NGVD NATIONAL GEODETIC VERTICAL DATUM OF 1929
- NAVD NORTH AMERICAN VERTICAL DATUM OF 1988

EASTING EASTING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83 DETERMINED USING HAND-HELD GARMIN ETREX EQUIPMENT WITH A REPORTED ACCURACY OF 10 FEET

NORTHING NORTHING COORDINATE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE, N.A.D. 83 DETERMINED USING HAND-HELD GARMIN ETREX EQUIPMENT WITH A REPORTED ACCURACY OF 10 FEET

NOTES:

- BASED ON REVIEW OF THE "POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER, WEST-CENTRAL FLORIDA" MAPS PUBLISHED BY THE USGS, THE POTENTIOMETRIC SURFACE ELEVATION OF THE UPPER FLORIDAN AQUIFER AT THE PROPOSED FENDER WALL AND SHEET PILE WALL LOCATION IS ON THE ORDER OF APPROXIMATELY +5 FEET, NGVD. THE CONTRACTOR'S TOOLS AND CONSTRUCTION METHODS SHOULD ADDRESS AND HANDLE A POTENTIOMETRIC LEVEL UP TO +5 FEET, NGVD, AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL ANTICIPATE THAT DIFFICULT INSTALLATION OF SHEET PILES AND PILES FOR FENDER SYSTEM MAY BE ENCOUNTERED DUE TO THE PRESENCE OF COMPACTED/DENSE SOILS AND LIMESTONE AT THE PROJECT SITE. VARIATIONS IN THE DEPTH AND CONSISTENCY OF SUCH MATERIALS SHALL BE ANTICIPATED. SPECIALIZED EQUIPMENT AND/OR INSTALLATION METHODS, INCLUDING THE USE OF PREFORMED PILE HOLES, PUNCHING, AND/OR OTHER METHODS MAY BE REQUIRED TO INSTALL THE SHEET PILES AND FENDER SUPPORT PILES TO THE REQUIRED MINIMUM TIP ELEVATION. JETTING IS NOT ALLOWED.
- THE ELEVATIONS PROVIDED WERE ESTIMATED USING SITE SURVEY INFORMATION AND AS A RESULT, THE ELEVATIONS SHOULD BE CONSIDERED APPROXIMATE.

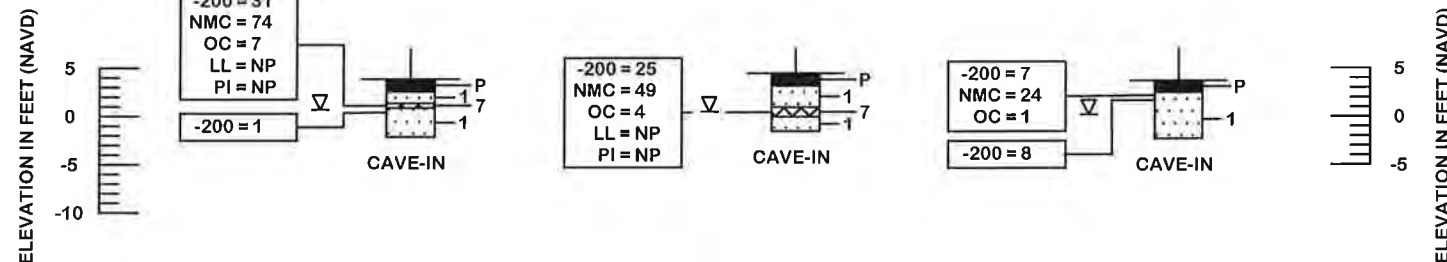
RECOMMENDED ENVIRONMENTAL CLASSIFICATION:
SUBSTRUCTURE CONCRETE: EXTREMELY AGGRESSIVE
SUBSTRUCTURE STEEL: EXTREMELY AGGRESSIVE

	SAFETY HAMMER	AUTOMATIC HAMMER
GRANULAR MATERIALS- RELATIVE DENSITY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY LOOSE	LESS THAN 4	LESS THAN 3
LOOSE	4 TO 10	3 TO 8
MEDIUM DENSE	10 TO 30	8 TO 24
DENSE	30 TO 50	24 TO 40
VERY DENSE	GREATER THAN 50	GREATER THAN 40
SILTS AND CLAYS CONSISTENCY	SPT N-VALUE (BLOWS/FT.)	SPT N-VALUE (BLOWS/FT.)
VERY SOFT	LESS THAN 2	LESS THAN 1
SOFT	2 TO 4	1 TO 3
FIRM	4 TO 10	3 TO 6
STIFF	10 TO 15	6 TO 12
VERY STIFF	15 TO 30	12 TO 24
HARD	GREATER THAN 30	GREATER THAN 24

BOR # C-1
EASTING 389641
NORTHING 1319455
ELEV. 3.9
DATE 5/16/2016

BOR # C-2
EASTING 389641
NORTHING 1319403
ELEV. 4.5
DATE 5/16/2016

BOR # C-3
EASTING 389683
NORTHING 1319420
ELEV. 3.7
DATE 5/16/2016



REV. NO.	DATE	DESCRIPTION	REV. BY
DESIGNED	SW		
DRAWN	SW		
CHECKED	DRR		



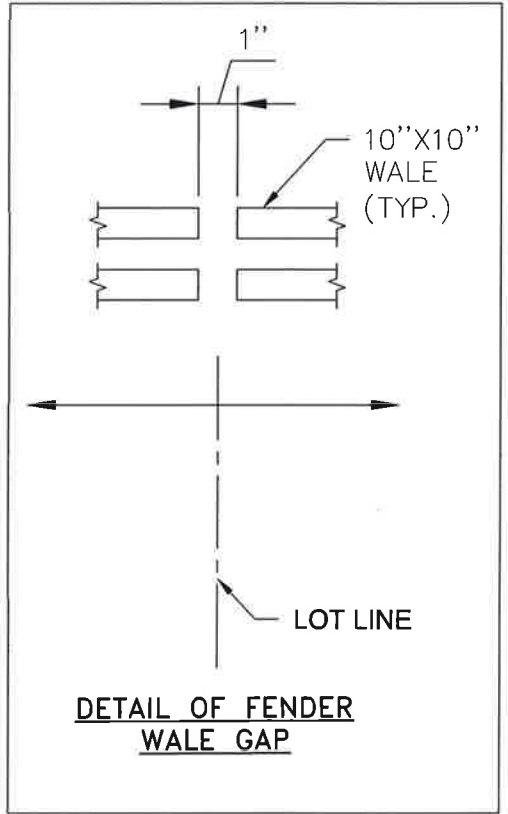
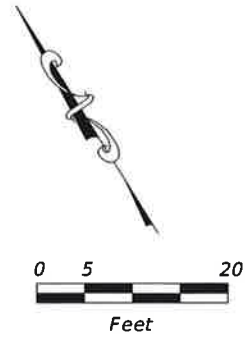
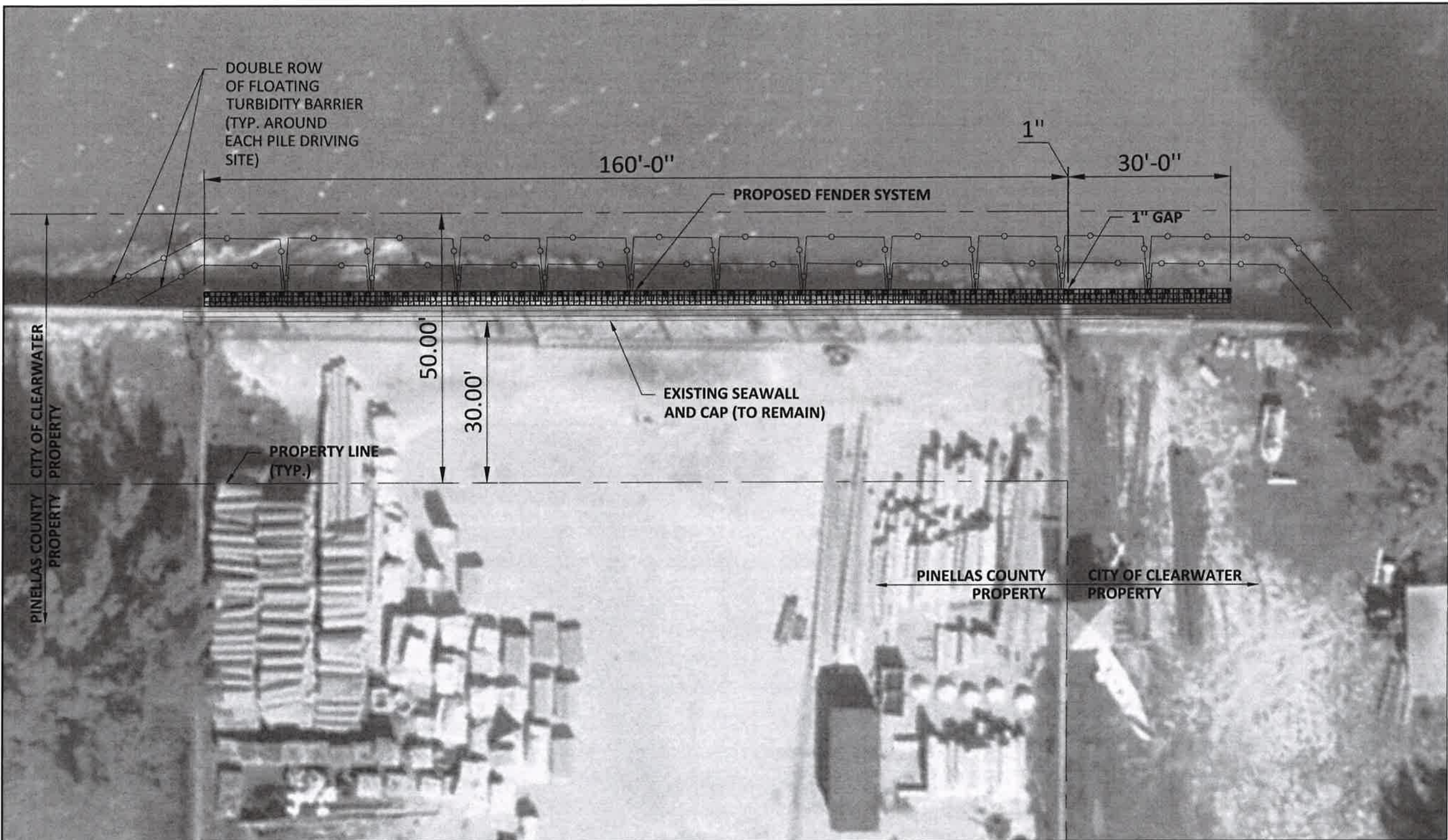
PROJECT: SAND KEY FENDER SYSTEM

DESCRIPTION: SOIL PROFILES

APPROVED BY: ERICK M. ERICKSON
FLA. LIC. NO. 13820
STATE OF FLORIDA
PROFESSIONAL ENGINEER

DATE: JUNE 2016
PROJECT NO.: 5511-16-081
SHEET: B-8

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FENDER PLAN

REV. NO.	DATE	DESCRIPTION	REV. BY



**OFFICE OF ENGINEERING
AND TECHNICAL SUPPORT**
14 S. FT. HARRISON AVE., CLEARWATER, FL 33756

PROJECT:
**SAND KEY FENDER
SYSTEM**

DESCRIPTION:
FENDER PLAN VIEW

APPROVED BY:

PATRICK DANIEL MULHEARN, P.E.
FLA. LIC. NO 71456

DATE:
06/2017

PROJECT NO.
002582A

SHEET:
B-9

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PLASTIC LUMBER 2" X 12" DECKING
MARK C (TYP.) PLACE WITH 1/4" TO 1/2"
" GAP BETWEEN BOARDS

SPLICE PLATE TOP AND BOTTOM OF
WALE (TYP. EACH WALE SPLICE
LOCATION EXCEPT ALONG TOP WALE

COMPOSITE LUMBER 10" X 10"
WALES MARK A1 OR A2 (TYP.)

3/8" Ø X 12" STAINLESS
STEEL LAG SCREWS
(RECESS HEAD FLUSH
WITH SPACER BLOCKS)

PLASTIC LUMBER 8" X 8"
SPACER BLOCKS
MARK B (TYP.)

SEE DETAIL A

1" Ø STAINLESS STEEL
THREADED BARS, LOCKING
NUTS AND WASHERS (TYP.)

16"Ø
POLYMERIC PILE
(TYP.)

**SECTION THRU
FENDER**

PLASTIC LUMBER 2" X 12" DECKING
MARK C (TYP.)
PLACE WITH 1/4" TO 1/2" GAP
BETWEEN BOARDS

VIEW A-A

EXISTING
SEAWALL CAP

PLASTIC LUMBER 8" X 8"
SPACER BLOCKS
MARK B (TYP.)

3/8" Ø X 12" STAINLESS
STEEL LAG SCREWS
(RECESS HEAD FLUSH
WITH SPACER BLOCKS) (TYP.)

5'-4" PINELLAS PILE SPACING
5'-0" CLEARWATER PILE SPACING

SPLICE
PLATE
(TYP.)

SEE DETAIL A

COMPOSITE LUMBER 10" X 10"
WALES MARK A1 OR A2 (TYP.)

16"Ø
POLYMERIC PILE
(TYP.)

6" (TYP.)

1" Ø STAINLESS STEEL
THREADED BARS, LOCKING
NUTS AND WASHERS (TYP.)

EXISTING BULKHEAD
CAP

PLASTIC LUMBER
10" X 10"
SPACER BLOCKS MARK D
(TYP.)

RECESS THREADED
BAR 1/2" FROM
FRONT FACE OF
WALE AS SHOWN

PROVIDE OVERSIZED
HOLE TO ACCEPT
NUT & WASHER

PARTIAL PLAN
(TIMBER DECKING NOT
SHOWN FOR CLARITY)

DETAIL "A"

NOTES:

1. TOP OF DECKING ELEVATION SHALL NOT BE HIGHER THAN TOP OF EXISTING SEAWALL CAP ELEVATION.
2. PILE CUT-OFF ELEVATION SHALL BE 2" BELOW TOP OF EXISTING SEAWALL CAP ELEVATION AT PILE LOCATION.



REV. NO.	DATE	DESCRIPTION	REV. BY

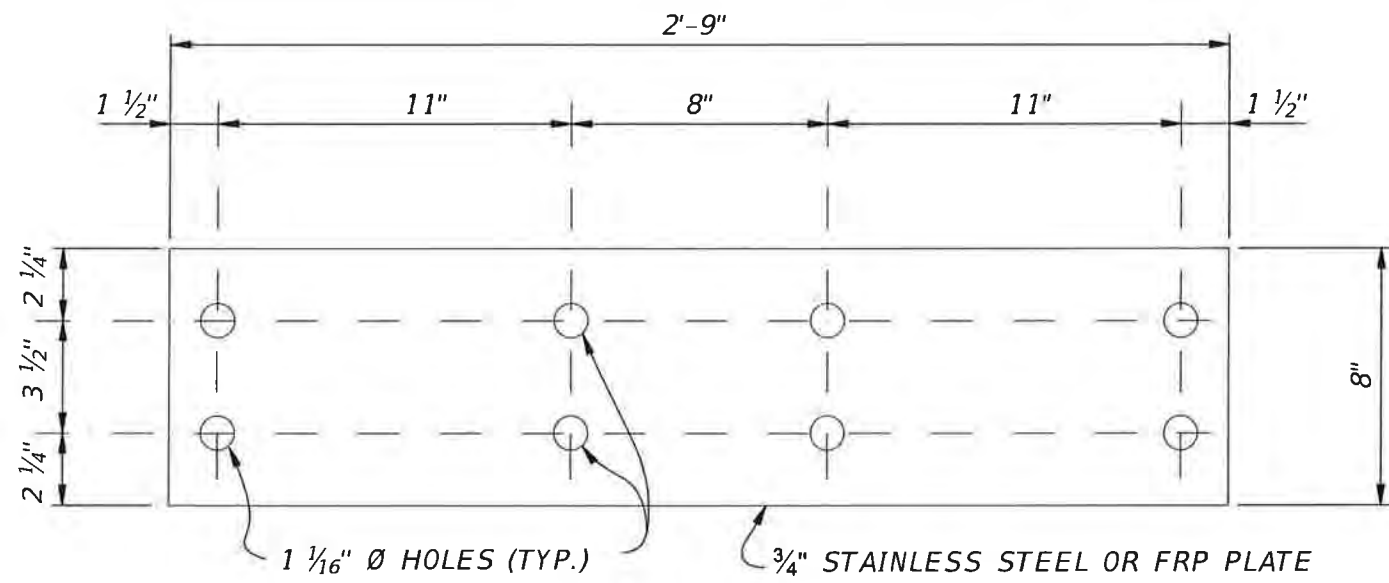
	DESIGNED PDM
	DRAWN TSC
	CHECKED DBT
	OFFICE OF ENGINEERING AND TECHNICAL SUPPORT 14 S. FT. HARRISON AVE., CLEARWATER, FL 33756

PROJECT:
SAND KEY FENDER SYSTEM

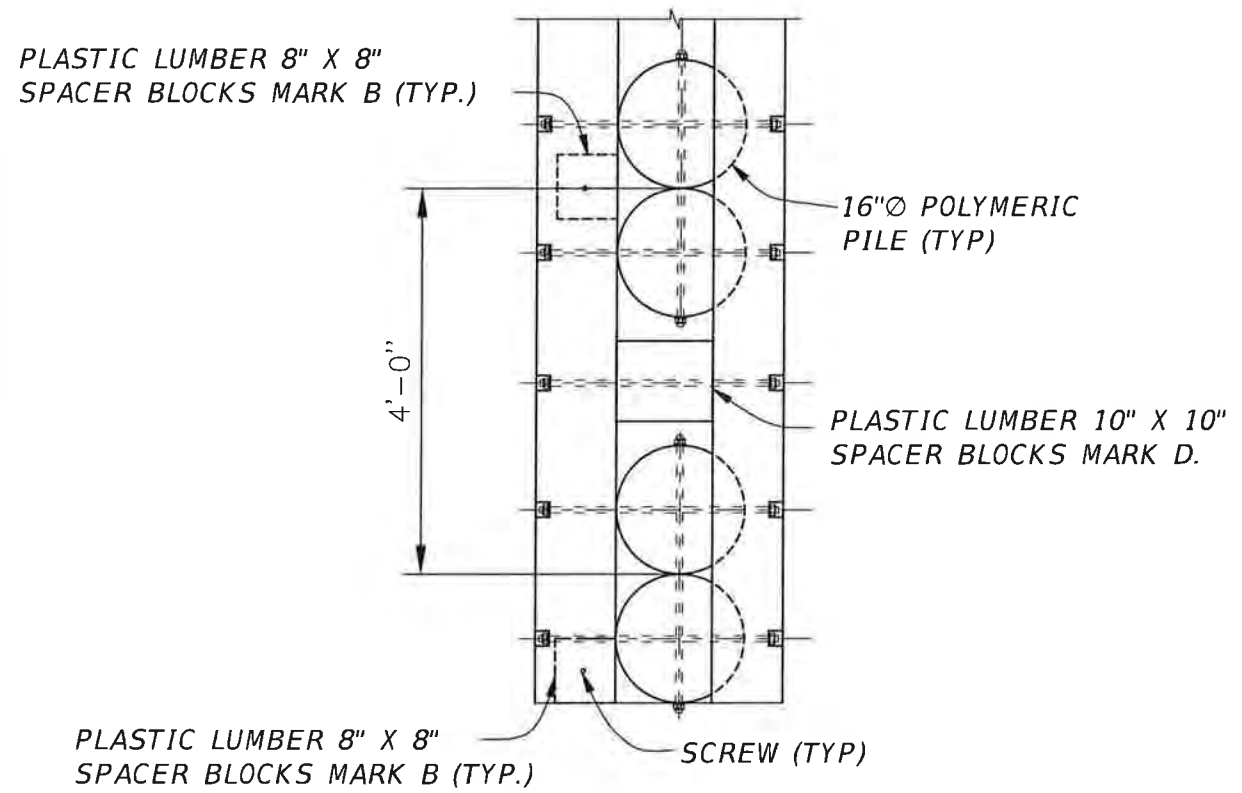
DESCRIPTION:
FENDER DETAILS (1 OF 2)
PATRICK DANIEL MULHEARN, P.E. FLA. LIC. NO 71456
DATE

DATE:
06/2017
PROJECT NO.
002582A
SHEET:
B-10

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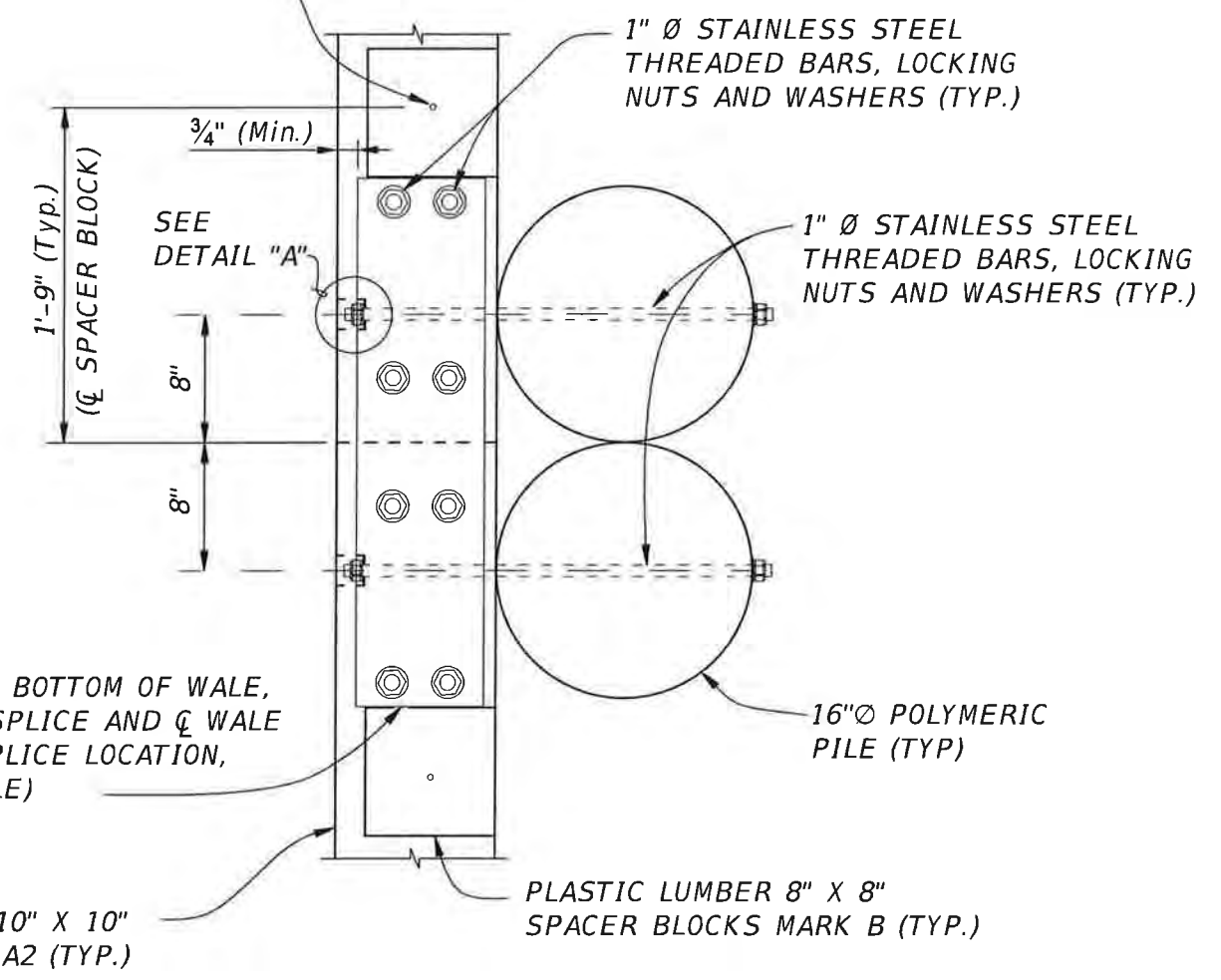


SPLICE PLATE DETAIL



PARTIAL END PLAN
(TIMBER DECKING NOT SHOWN FOR CLARITY)



3/8" Ø X 12" STAINLESS STEEL LAG SCREW (RECESS HEAD FLUSH WITH TOP OF SPACER BLOCK)



SPLICE PLATE DETAIL

- NOTES:
1. PROVIDE 1" CONSTRUCTION JOINT IN ALL HORIZONTAL FENDER MEMBERS AT COUNTY/CITY PROPERTY LINE.



				DESIGNED	PDM	 OFFICE OF ENGINEERING AND TECHNICAL SUPPORT 14 S. FT. HARRISON AVE., CLEARWATER, FL 33756	PROJECT: SAND KEY FENDER SYSTEM	DESCRIPTION: FENDER DETAILS (2 of 2)	APPROVED BY:  PATRICK DANIEL MULHEARN, P.E. FLA. LIC. NO 71456	DATE:	06/2017
				DRAWN	TSC					PROJECT NO.	002582A
REV. NO.	DATE	DESCRIPTION	REV. BY	CHECKED	DBT					SHEET:	B-11

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* STRUCTURAL COMPOSITE LUMBER BILL OF MATERIALS			
MARK	SIZE (NOMINAL)	DIMENSIONS	NO. REQUIRED
A1	10''X10''	16'-0'' STRAIGHT	60
A2	10''X10''	10'-0'' STRAIGHT	18



* PLASTIC COMPOSITE LUMBER BILL OF MATERIALS			
MARK	SIZE (NOMINAL)	DIMENSIONS	NO. REQUIRED
B	8''X8''	0'-8'' STRAIGHT	196
C	2''X12''	2'-8'' STRAIGHT	190
D	10''X10''	1'-0'' STRAIGHT	36

* ALL PLASTIC LUMBER AND COMPOSITE LUMBER DIMENSIONS AND QUANTITIES ARE BASED ON NOMINAL DIMENSIONS AND MAY VARY DEPENDING ON ACTUAL LUMBER DIMENSIONS.

FENDER PILE BILL OF MATERIALS		
SIZE	DIMENSION	NO. REQUIRED
16''ø	40'-0''	76



				DESIGNED <u>PDM</u>	 OFFICE OF ENGINEERING AND TECHNICAL SUPPORT 14 S. FT. HARRISON AVE., CLEARWATER, FL 33756	PROJECT: SAND KEY FENDER SYSTEM	DESCRIPTION: FENDER BILL OF MATERIALS	APPROVED BY:  PATRICK DANIEL MULHEARN, P.E. FLA. LIC. NO 71456	DATE: 06/2017
				DRAWN <u>TSC</u>					PROJECT NO. 002582A
				CHECKED <u>DBT</u>					SHEET: B-12
REV. NO.	DATE	DESCRIPTION			REV. BY				

				DESIGNED <u>PDM</u>	 OFFICE OF ENGINEERING AND TECHNICAL SUPPORT 14 S. FT. HARRISON AVE., CLEARWATER, FL 33756	PROJECT: SAND KEY FENDER SYSTEM	DESCRIPTION: ASPHALT PARKING LOT RECONSTRUCTION	APPROVED - BY: <u>STATE OF</u>	DATE: 06/2017	
				DRAWN <u>TSC</u>				 JOHN W. BURTON, P.E. FLA. LIC. NO. 57405	8-15-17 DATE	PROJECT NO. 002582A
REV. NO.	DATE	DESCRIPTION	REV. BY	CHECKED <u>DBT</u>				SHEET: B-13		