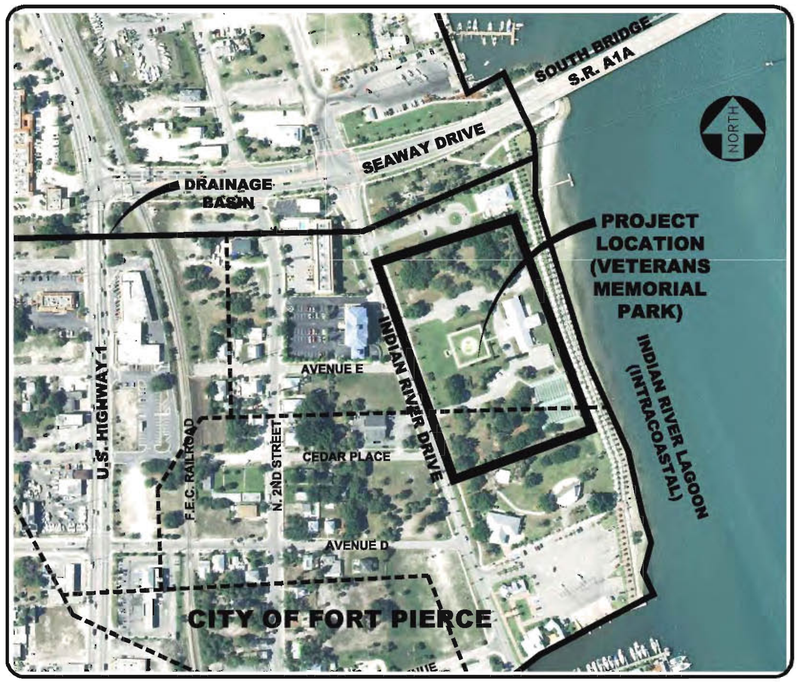
LOCATION MAP

CONSTRUCTION PLANS AND SPECIFICATIONS OF VETERANS MEMORIAL PARK SURFACE WATER MANAGEMENT / SITE IMPROVEMENTS LYING IN SECTIONS 3 & 10, TOWNSHIP 35 SOUTH, RANGE 40 EAST CITY OF FORT PIERCE, FLORIDA TMDL / 319 GRANT PLANS

VETERANS MEMORIAL PARK PROJECT NO. 1456.2

CITY OF FORT PIERCE OFFICIALS

MAYOR	LINDA HUDSON
COMMISSIONER	REGINALD B. SESSIONS
COMMISSIONER	EDWARD BECHT
COMMISSIONER	RUFUS J. ALEXANDER III
COMMISSIONER	THOMAS K. PERONA
CITY MANAGER	ROBERT J. BRADSHAW



VICINITY MAP

SHEET INDEX

SHEET NUMBER	SHEET TITLE/DESCRIPTION
C-1	COVER SHEET
C-2 TO C-6	CIVIL PLANS
LS-1 TO LS-3	LANDSCAPE PLANS
HA-1 TO HA-7	HARDSCAPE PLANS
IR-1 TO IR-3	IRRIGATION PLANS
S-1 TO S-4	STRUCTURAL SITE DETAIL
SE-0 TO SE-4	ELECTRICAL PLANS
1 - 8	SURVEY
CDBG-AB-1 TO CDBG-AB-2	CDBG AS-BUILTS

TMDL / 319
BID SET
7/2/15

CAPTEC Engineering, Inc.
Civil Engineering Professionals
Engineering Business No. EB-0007657

ENGINEER

MR. JOSEPH W. CAPRA, P.E.
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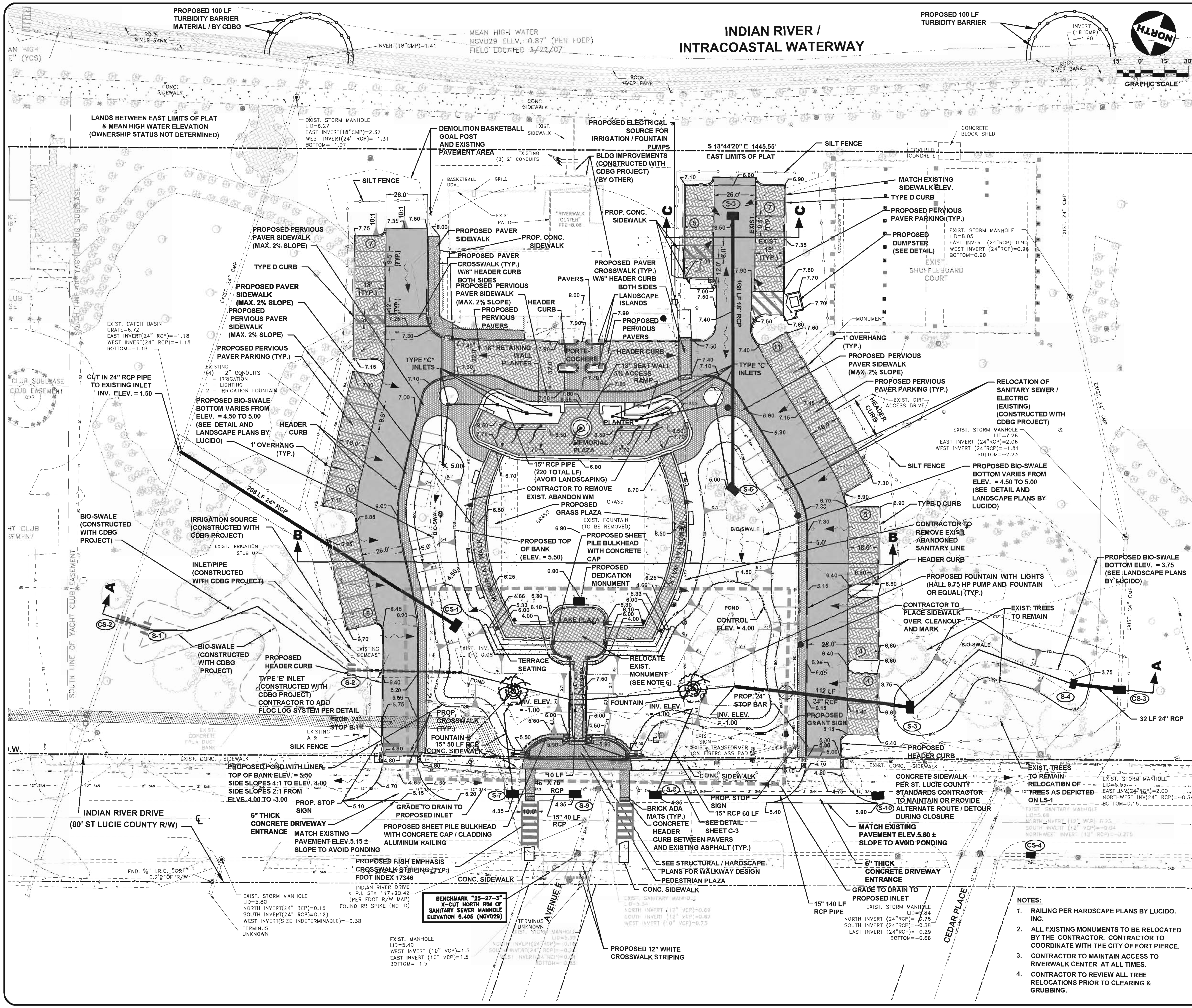

NOTES:

1. RAILING PER HARDSCAPE PLANS BY LUCIDO, INC.
2. ALL EXISTING MONUMENTS TO BE RELOCATED BY THE CONTRACTOR. CONTRACTOR TO COORDINATE WITH THE CITY OF FORT PIERCE.
3. CONTRACTOR TO MAINTAIN ACCESS TO RIVERWALK CENTER AT ALL TIMES.
4. CONTRACTOR TO REVIEW ALL TREE RELOCATIONS PRIOR TO CLEARING & GRUBBING.

LEGEND

- ASPHALT PAVEMENT TOTAL RECONSTRUCTION
- PERVIOUS BRICK PAVER SIDEWALK
- PERVIOUS PARKING BRICK PAVER AREA
- BRICK PAVER AREA (12 x 12)
- BRICK PAVER AREA (4 x 8)
- CONCRETE SIDEWALK
- PROPOSED INLET / CONTROL STRUCTURE
- PROPOSED PIPE
- PROPOSED TURBIDITY BARRIER
- PROPOSED TOE OF SLOPE
- PROPOSED TOB OF BANK
- 4.50 PROPOSED ELEVATION
- PROPOSED SILT FENCE

PARKING

EXISTING PARKING 54 SPACES INCLUDING (3) HANDICAP SPACES

PROPOSED PARKING 58 SPACES INCLUDING (3) HANDICAP SPACES

CS-1
PROPOSED TYPE 'E' CONTROL STRUCTURE
(REF FDOT INDEX 232)
(SEE DETAIL)
GRATE ELEV.=5.50
WEIR ELEV. = 4.00
INV. ELEV. = 2.00
BOTTOM ELEV. = 0.50

CS-2
EXIST. CONTROL STRUCTURE
(CONSTRUCTED WITH CDBG PROJECT)
GRATE ELEV. = 6.00
WEIR ELEV. = 4.25
S. INV. ELEV. = 1.50
E./W. INV. ELEV. = EXIST.

CS-3
PROPOSED CONTROL STRUCTURE TYPE 'G' INLET
(REF FDOT INDEX 233) (SEE DETAIL)
GRATE= 6.00
WEIR ELEV. = 4.25
N. INV. ELEV. = 1.50
E./W. INV. ELEV. = MATCH EXISTING
BOTTOM ELEV. = -1.00

CS-4
PROPOSED CONTROL STRUCTURE TYPE 'G' INLET
(REF. FDOT INDEX 233)
(SEE DETAIL)
GRATE ELEV. = 5.60
WEIR ELEV. = 4.25
INV. ELEV. -0.50
BOTTOM ELEV. = -2.00

S-1
TYPE 'C' INLET
(CONSTRUCTED WITH CDBG PROJECT)
GRATE ELEV. = 3.75
N. INV. ELEV. = 0.00

S-2
TYPE 'C'
(CONSTRUCTED WITH CDBG PROJECT)
EXIST. TYPE 'C' INLET
(REF. FDOT INDEX 232)
GRATE = 3.75
S. INV. ELEV. = - 0.50
WITH FLOC LOG SYSTEM ATTACHED TO SOUTH WALL OF INLET WITH INITIAL ELEV. = 1.50
CONTRACTOR TO ADD FLOC LOG SYSTEM PER DETAIL

S-3
PROPOSED TYPE 'C' INLET
(REF FDOT INDEX 232)
GRATE = 3.75
INV. ELEV. = - 0.50
BOTTOM ELEV. = - 1.00
WITH FLOC LOG SYSTEM ATTACHED TO SOUTH WALL OF INLET WITH INITIAL ELEV. = 1.50
CONTRACTOR TO ADD FLOC LOG SYSTEM PER DETAIL

S-4
PROPOSED TYPE 'C' INLET
(REF FDOT INDEX 232)
GRATE = 3.75
S. INV. ELEV. = 0.00
BOTTOM ELEV. = - 1.00

S-5
PROPOSED TYPE 'C' INLET
(REF FDOT INDEX 232)
GRATE ELEV. = 6.50
INV. ELEV. = 2.20
BOTTOM ELEV. = 0.50

S-6
PROPOSED TYPE 'C' INLET
(REF FDOT INDEX 232)
GRATE ELEV. = 5.00
INV. ELEV. = 2.00
BOTTOM ELEV. = 0.50
(TIE YARD DRAIN PIPE INTO INLET)

S-7
PROPOSED TYPE 'C' INLET
(REF FDOT INDEX 232)
GRATE ELEV. = 4.35
INV. ELEV. = 1.25
BOTTOM ELEV. = 1.00

S-8
PROPOSED TYPE 'C' INLET
(REF FDOT INDEX 232)
GRATE ELEV. = 4.35
INV. ELEV. = 1.25
BOTTOM ELEV. = 1.00

S-9
PROPOSED TYPE 'C' INLET
(REF FDOT INDEX 232)
GRATE ELEV. = 4.35
INV. ELEV. = 1.50
BOTTOM ELEV. = 1.00

S-10
PROPOSED TYPE 'C' INLET
(REF FDOT INDEX 232)
GRATE ELEV. = 4.35
INV. ELEV. = 1.50
BOTTOM ELEV. = 1.00

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DATE:	2/14/14
DRAWN BY:	HLT
DESIGNED BY:	HLT
CHECKED BY:	JWC
PROJECT No.:	1456.2
HORZ. SCALE:	1"=30'
VERT. SCALE:	N/A
CADD FILE:	1456 $BaseTMDL

REVISIONS

NO.	DATE	BY	
1	7/2/15	HLT	BID SET

SCALE VERIFICATION
0 — 1
SOLID BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING, ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

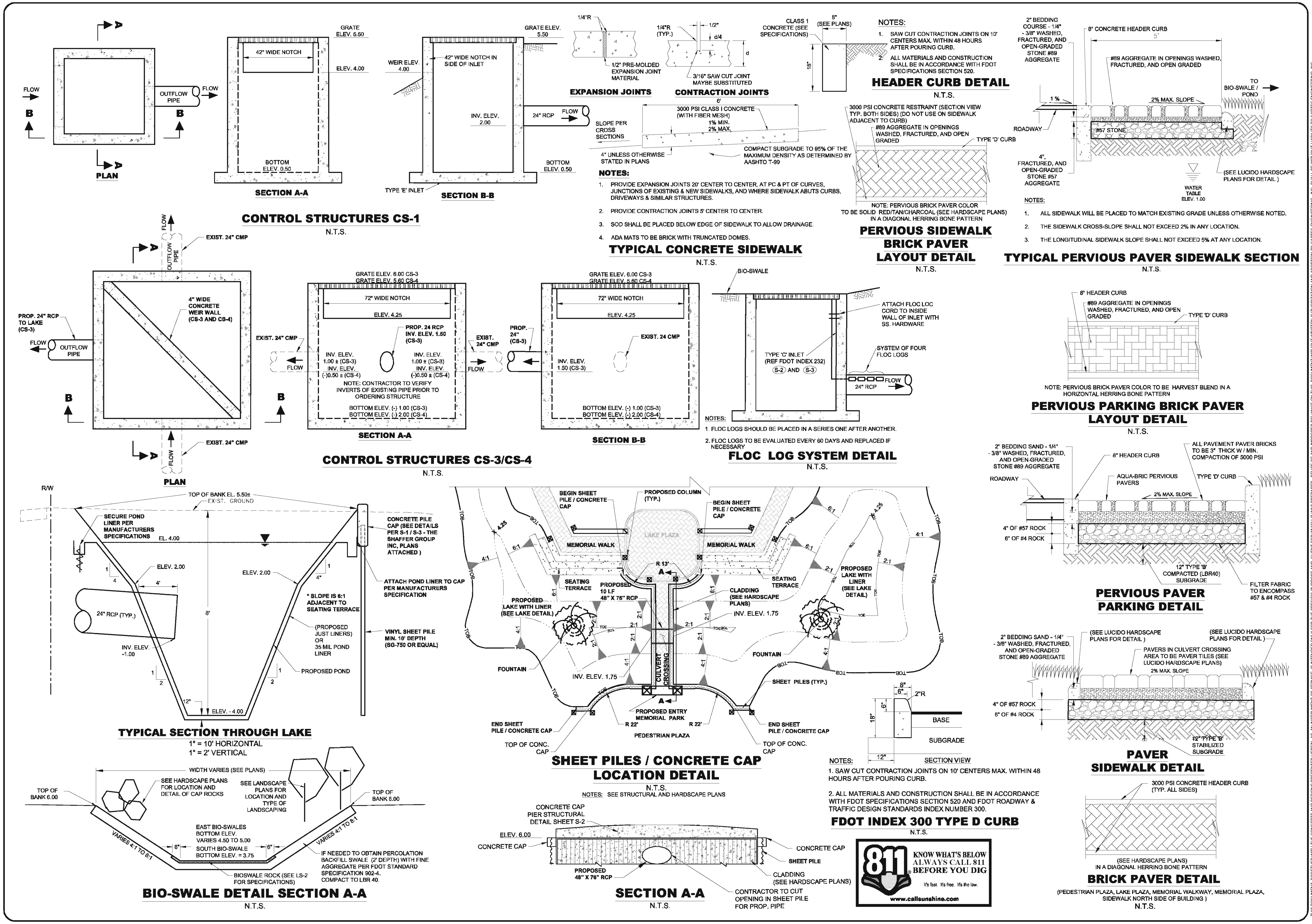
VETERAN'S MEMORIAL PARK STORMWATER IMPROVEMENTS
FORT PIERCE, FLORIDA

CIVIL PLAN

Joseph W. Capra
301 N.W. Flagler Ave., Ste. 201
Stuart, Florida 34994
P.E. No. 37638

Printed Date:

JOB No.: 1456.2
SHEET C-2 OF 6



CONTROL STRUCTURES CS-1
N.T.S.
PLAN
SECTION A-A
SECTION B-B
FLOW
OUTFLOW PIPE
GRATE ELEV. 5.50
42" WIDE NOTCH
ELEV. 4.00
BOTTOM ELEV. 0.50
42" WIDE NOTCH IN SIDE OF INLET
WEIR ELEV. 4.00
INV. ELEV. 2.00
24" RCP
TYPE 'E' INLET
EXPANSION JOINTS
1/2" PRE-MOLDED EXPANSION JOINT MATERIAL
CONTRACTION JOINTS
3/16" SAW CUT JOINT MAYBE SUBSTITUTED
3000 PSI CLASS I CONCRETE (WITH FIBER MESH)
1% MIN. 2% MAX.
SLOPE PER CROSS SECTIONS
4" UNLESS OTHERWISE STATED IN PLANS
COMPACT SUBGRADE TO 95% OF THE MAXIMUM DENSITY AS DETERMINED BY AASHTO T-99
NOTES:
1. PROVIDE EXPANSION JOINTS 20' CENTER TO CENTER, AT PC & PT OF CURVES, JUNCTIONS OF EXISTING & NEW SIDEWALKS, AND WHERE SIDEWALK ABUTS CURBS, DRIVEWAYS & SIMILAR STRUCTURES.
2. PROVIDE CONTRACTION JOINTS 5' CENTER TO CENTER.
3. SOD SHALL BE PLACED BELOW EDGE OF SIDEWALK TO ALLOW DRAINAGE.
4. ADA MATS TO BE BRICK WITH TRUNCATED DOMES.
TYPICAL CONCRETE SIDEWALK
N.T.S.
CLASS 1 CONCRETE (SEE SPECIFICATIONS)
6" (SEE PLANS)
NOTES:
1. SAW CUT CONTRACTION JOINTS ON 10' CENTERS MAX. WITHIN 48 HOURS AFTER POURING CURB.
2. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH FDOT SPECIFICATIONS SECTION 520.
HEADER CURB DETAIL
N.T.S.
3000 PSI CONCRETE RESTRAINT (SECTION VIEW TYP. BOTH SIDES) (DO NOT USE ON SIDEWALK ADJACENT TO CURB)
#89 AGGREGATE IN OPENINGS WASHED, FRACTURED, AND OPEN GRADED
TYPE 'D' CURB
NOTE: PERVIOUS BRICK PAVER COLOR TO BE SOLID RED/TAN/CHARCOAL (SEE HARDSCAPE PLANS) IN A DIAGONAL HERRING BONE PATTERN
PERVIOUS SIDEWALK BRICK PAVER LAYOUT DETAIL
N.T.S.
2" BEDDING COURSE - 1/4" - 3/8" WASHED, FRACTURED, AND OPEN-GRADED STONE #89 AGGREGATE
8" CONCRETE HEADER CURB
#89 AGGREGATE IN OPENINGS WASHED, FRACTURED, AND OPEN GRADED
TO BIO-SWALE / POND
2% MAX. SLOPE
ROADWAY
#57 STONE
4", FRACTURED, AND OPEN-GRADED STONE #57 AGGREGATE
WATER TABLE ELEV. 1.00
(SEE LUCIDO HARDSCAPE PLANS FOR DETAIL)
NOTES:
1. ALL SIDEWALK WILL BE PLACED TO MATCH EXISTING GRADE UNLESS OTHERWISE NOTED.
2. THE SIDEWALK CROSS-SLOPE SHALL NOT EXCEED 2% IN ANY LOCATION.
3. THE LONGITUDINAL SIDEWALK SLOPE SHALL NOT EXCEED 5% AT ANY LOCATION.
TYPICAL PERVIOUS PAVER SIDEWALK SECTION
N.T.S.
EXIST. 24" CMP
4" WIDE CONCRETE WEIR WALL (CS-3 AND CS-4)
PROP. 24" RCP TO LAKE (CS-3)
GRATE ELEV. 6.00 CS-3
GRATE ELEV. 5.60 CS-4
72" WIDE NOTCH
ELEV. 4.25
PROP. 24 RCP INV. ELEV. 1.50 (CS-3)
INV. ELEV. 1.00 ± (CS-3)
INV. ELEV. (-)0.50 ± (CS-4)
NOTE: CONTRACTOR TO VERIFY INVERTS OF EXISTING PIPE PRIOR TO ORDERING STRUCTURE
BOTTOM ELEV. (-) 1.00 (CS-3)
BOTTOM ELEV. (-) 2.00 (CS-4)
INV. ELEV. 1.50 (CS-3)
CONTROL STRUCTURES CS-3/CS-4
N.T.S.
BIO-SWALE
ATTACH FLOC LOC CORD TO INSIDE WALL OF INLET WITH SS. HARDWARE
TYPE 'C' INLET (REF FDOT INDEX 232) S-2 AND S-3
SYSTEM OF FOUR FLOC LOGS
NOTES:
1. FLOC LOGS SHOULD BE PLACED IN A SERIES ONE AFTER ANOTHER.
2. FLOC LOGS TO BE EVALUATED EVERY 60 DAYS AND REPLACED IF NECESSARY
FLOC LOG SYSTEM DETAIL
N.T.S.
8" HEADER CURB
NOTE: PERVIOUS BRICK PAVER COLOR TO BE HARVEST BLEND IN A HORIZONTAL HERRING BONE PATTERN
PERVIOUS PARKING BRICK PAVER LAYOUT DETAIL
N.T.S.
ALL PAVEMENT PAVER BRICKS TO BE 3" THICK W/ MIN. COMPACTION OF 5000 PSI
AQUA-BRIC PERVIOUS PAVERS
4" OF #57 ROCK
6" OF #4 ROCK
12" TYPE 'B' COMPACTED (LBR40) SUBGRADE
FILTER FABRIC TO ENCOMPASS #57 & #4 ROCK
PERVIOUS PAVER PARKING DETAIL
TOP OF BANK EL. 5.50±
EXIST. GROUND
SECURE POND LINER PER MANUFACTURERS SPECIFICATIONS
EL. 4.00
CONCRETE PILE CAP (SEE DETAILS PER S-1 / S-3 - THE SHAFFER GROUP INC, PLANS ATTACHED)
ATTACH POND LINER TO CAP PER MANUFACTURERS SPECIFICATION
* SLOPE IS 6:1 ADJACENT TO SEATING TERRACE
(PROPOSED JUST LINERS) OR 35 MIL POND LINER
VINYL SHEET PILE MIN. 10' DEPTH (SG-750 OR EQUAL)
PROPOSED POND
ELEV. 2.00
24" RCP (TYP.)
INV. ELEV. -1.00
ELEV. - 4.00
TYPICAL SECTION THROUGH LAKE
1" = 10' HORIZONTAL
1" = 2' VERTICAL
BEGIN SHEET PILE / CONCRETE CAP
PROPOSED COLUMN (TYP.)
MEMORIAL WALK
LAKE PLAZA
SEATING TERRACE
PROPOSED 10 LF 48" X 76" RCP
CLADDING (SEE HARDSCAPE PLANS)
INV. ELEV. 1.75
PROPOSED LAKE WITH LINER (SEE LAKE DETAIL)
FOUNTAIN
CULVERT CROSSING
SHEET PILES (TYP.)
END SHEET PILE / CONCRETE CAP
PROPOSED ENTRY MEMORIAL PARK
PEDESTRIAN PLAZA
TOP OF CONC. CAP
SHEET PILES / CONCRETE CAP LOCATION DETAIL
N.T.S.
NOTES: SEE STRUCTURAL AND HARDSCAPE PLANS
NOTES:
1. SAW CUT CONTRACTION JOINTS ON 10' CENTERS MAX. WITHIN 48 HOURS AFTER POURING CURB.
2. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH FDOT SPECIFICATIONS SECTION 520 AND FDOT ROADWAY & TRAFFIC DESIGN STANDARDS INDEX NUMBER 300.
BASE
SUBGRADE
SECTION VIEW
FDOT INDEX 300 TYPE D CURB
N.T.S.
2" BEDDING SAND - 1/4" - 3/8" WASHED, FRACTURED, AND OPEN-GRADED STONE #89 AGGREGATE
PAVERS IN CULVERT CROSSING AREA TO BE PAVER TILES (SEE LUCIDO HARDSCAPE PLANS)
12" TYPE 'B' STABILIZED SUBGRADE
PAVER SIDEWALK DETAIL
WIDTH VARIES (SEE PLANS)
TOP OF BANK 6.00
SEE HARDSCAPE PLANS FOR LOCATION AND DETAIL OF CAP ROCKS
SEE LANDSCAPE PLANS FOR LOCATION AND TYPE OF LANDSCAPING
EAST BIO-SWALES BOTTOM ELEV. VARIES 4.50 TO 5.00
SOUTH BIO-SWALE BOTTOM ELEV. = 3.75
VARIES 4:1 TO 6:1
IF NEEDED TO OBTAIN PERCOLATION BACKFILL SWALE (2' DEPTH) WITH FINE AGGREGATE PER FDOT STANDARD SPECIFICATION 902-4. COMPACT TO LBR 40.
BIOSWALE ROCK (SEE LS-2 FOR SPECIFICATIONS)
BIO-SWALE DETAIL SECTION A-A
N.T.S.
CONCRETE CAP PIER STRUCTURAL DETAIL SHEET S-2
ELEV. 6.00
CONCRETE CAP
SHEET PILE
PROPOSED 48" X 76" RCP
CLADDING (SEE HARDSCAPE PLANS)
CONTRACTOR TO CUT OPENING IN SHEET PILE FOR PROP. PIPE
SECTION A-A
N.T.S.
811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.
www.callsunshine.com
3000 PSI CONCRETE HEADER CURB (TYP. ALL SIDES)
(SEE HARDSCAPE PLANS) IN A DIAGONAL HERRING BONE PATTERN
BRICK PAVER DETAIL
(PEDESTRIAN PLAZA, LAKE PLAZA, MEMORIAL WALKWAY, MEMORIAL PLAZA, SIDEWALK NORTH SIDE OF BUILDING)
N.T.S.

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CHECKED BY:	JWC
PROJECT No.:	1456
HORZ. SCALE:	1"=30'
VERT. SCALE:	N/A
CADD FILE:	1456 SBase

REVISIONS

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SCALE VERIFICATION
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VETERAN'S MEMORIAL PARK ADA AND STORMWATER IMPROVEMENTS
FORT PIERCE, FLORIDA

DETAILS

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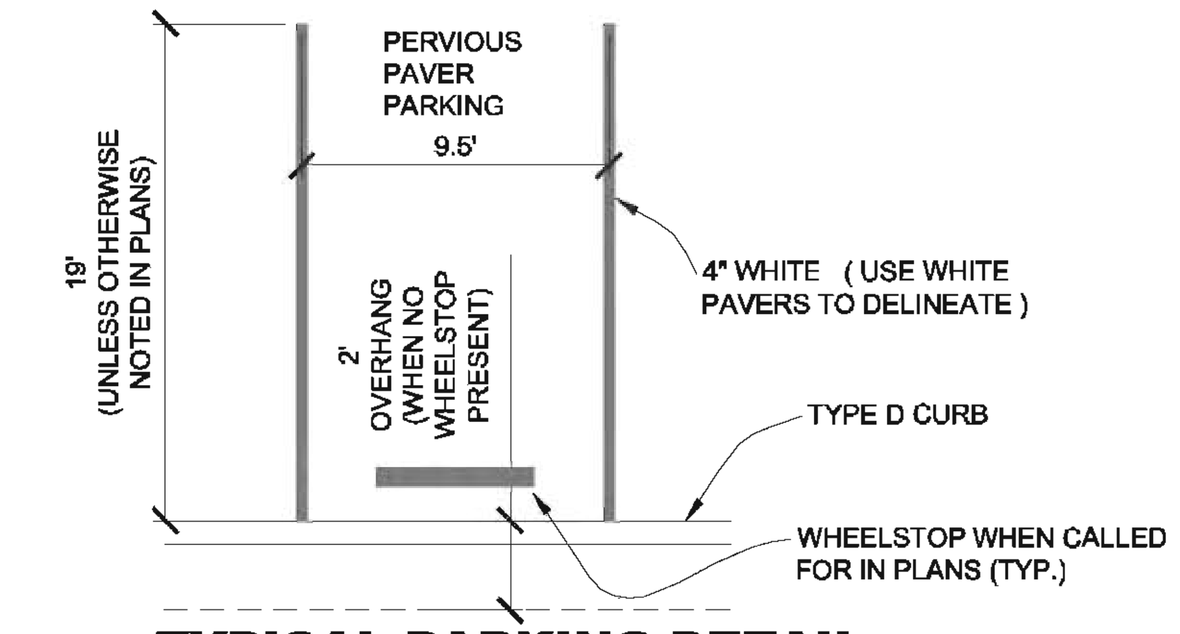
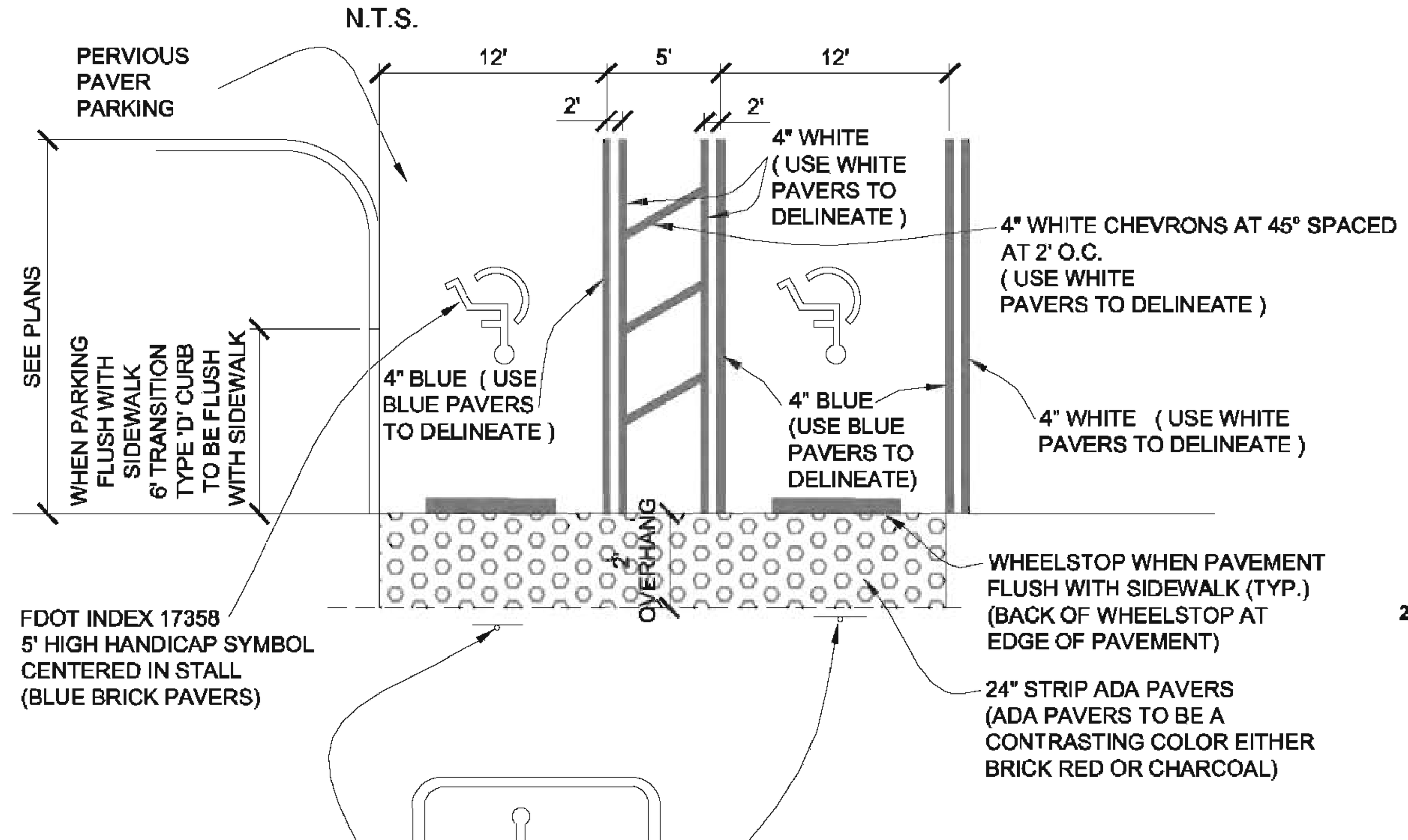
Printed Date:

JOB No.: 1456.2
SHEET C-3 OF 6



TYPICAL PARKING DETAIL

N.T.S.



HANDICAP SIGN FDOT INDEX 17335 FTP-20-06

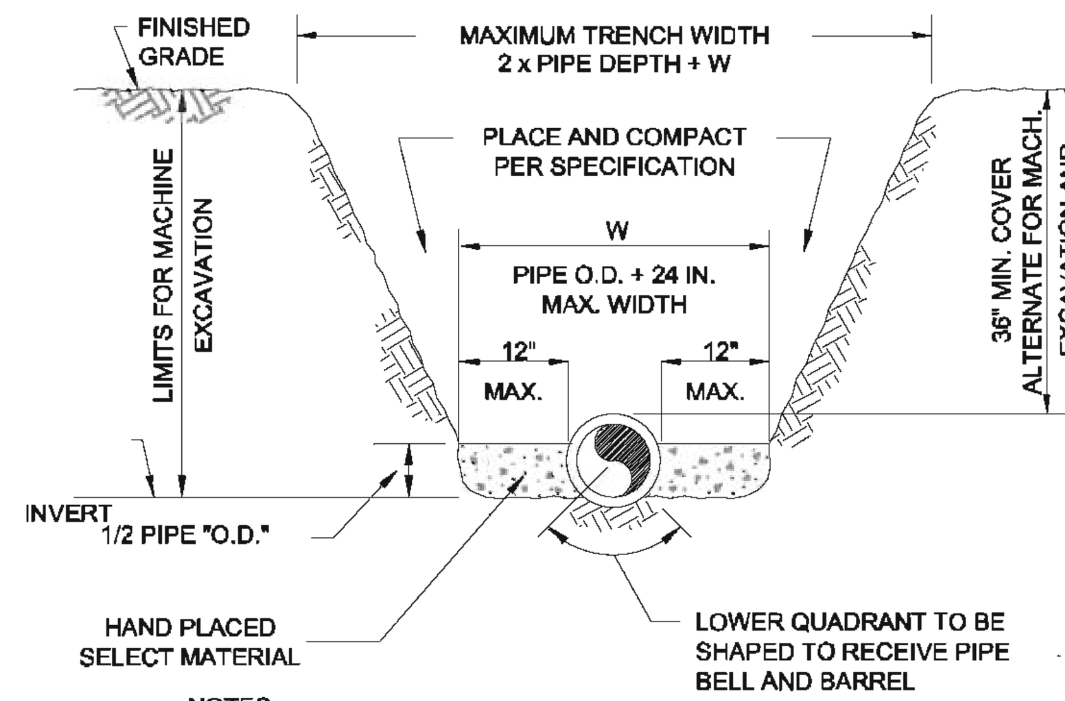
FTP-22-06

NOTES:

1. SIGN TO BE LOCATED BEHIND THE 2' OVERHANG.
2. TOP PORTION OF FTP-20-06 SHALL HAVE A REFLECTIVE BLUE BACKGROUND WITH WHITE REFLECTIVE SYMBOL AND BORDER. BOTTOM PORTION SHALL HAVE A REFLECTIVE WHITE BACKGROUND WITH BLACK OPAQUE LEGEND AND BORDER.
3. HEIGHT SHALL BE 7 FEET MEASURED FROM THE GROUND OR SIDEWALK TO THE BOTTOM OF "PERMIT ONLY" SIGN OF 6 FEET TO THE BOTTOM OF "$250 FINE" SIGN.

TYPICAL HANDICAP PARKING DETAIL

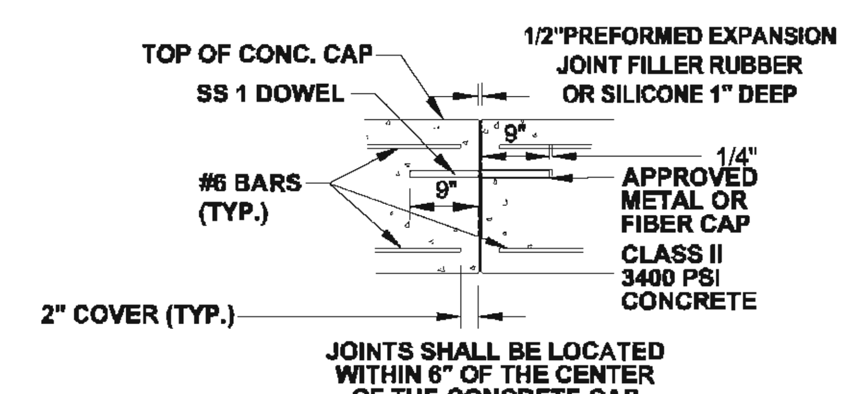
N.T.S.



NOTES:

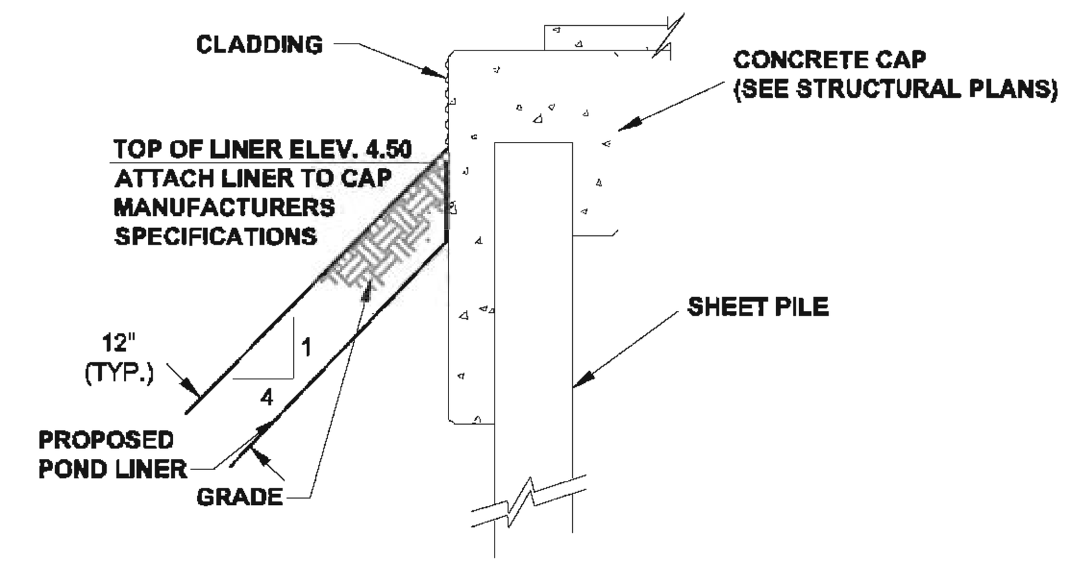
1. THE CONTRACTOR SHALL COMPLY WITH REQUIREMENTS OF THE FLORIDA TRENCH SAFETY ACT.
2. INITIAL BACKFILL SHALL BE HAND PLACED TO 12" ABOVE THE PIPE. BACKFILL SHALL BE MECHANICALLY TAMPED TO A MINIMUM OF 98% OF MAX. DENSITY AS DETERMINED BY AASHTO METHOD T-180.

TYPICAL TRENCH DETAIL



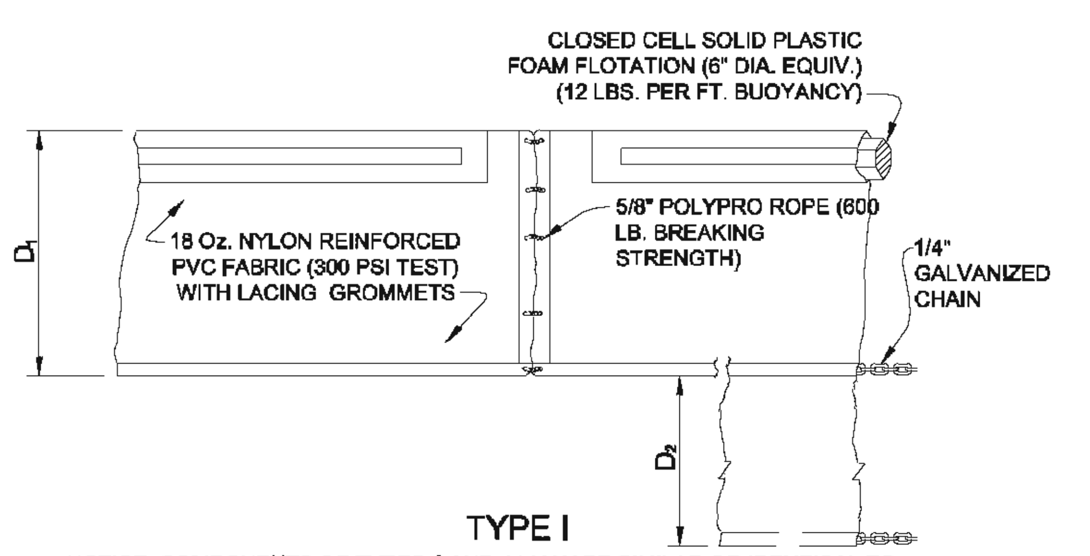
CONCRETE CAP EXPANSION JOINT

N.T.S.

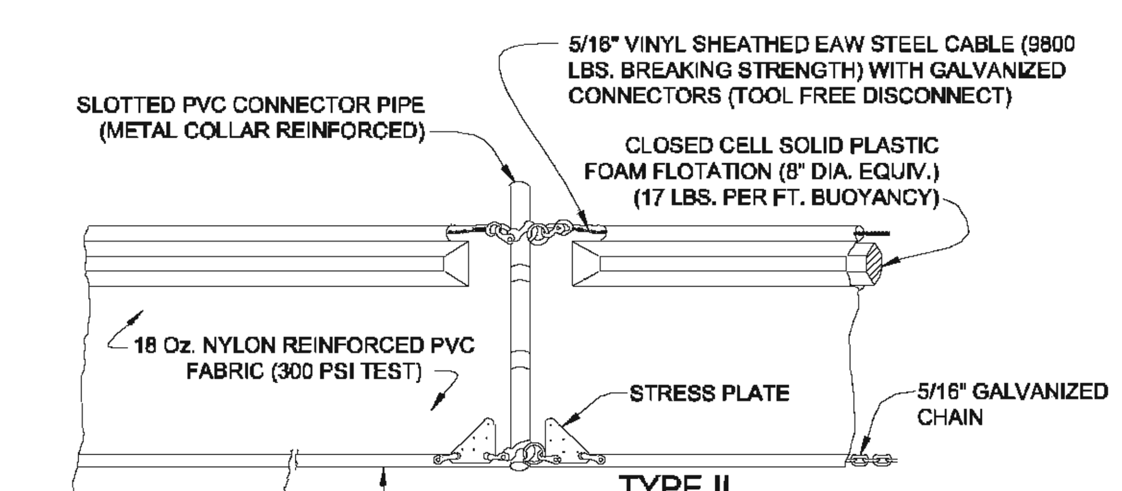


SHEET PILE CONCRETE CAP / POND LINER

N.T.S.



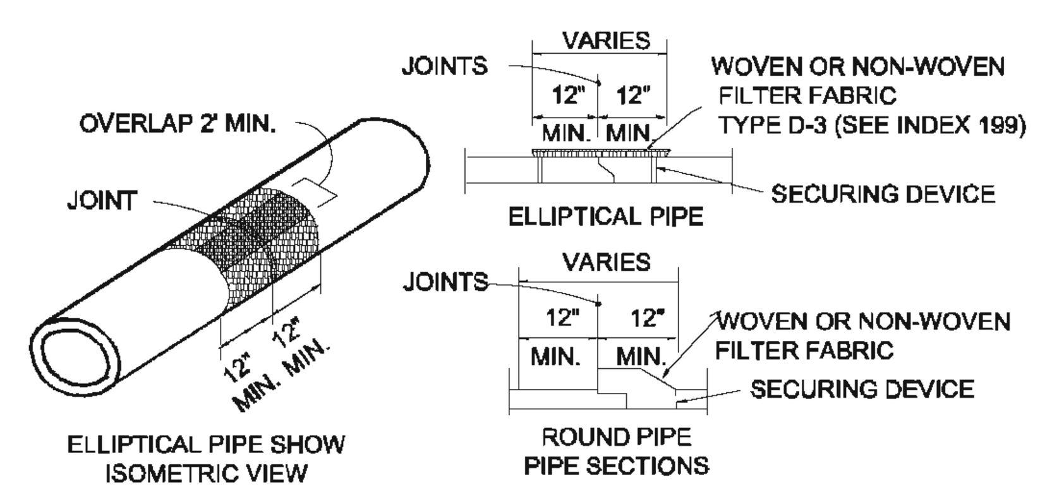
NOTICE: COMPONENTS OF TYPES I AND II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND II SHALL BE AS APPROVED BY THE ENGINEER.



D_1 = 5' STD. (SINGLE PANEL FOR DEPTHS 5' OR LESS)
D_2 = 5' STD. (ADDITIONAL PANEL FOR DEPTHS > 5') CURTAIN TO REACH BOTTOM UP TO DEPTHS OF 10 FEET. TWO (2) PANELS TO BE USED FOR DEPTHS GREATER THAN 10 FEET UNLESS SPECIAL DEPTH CURTAINS SPECIFICALLY CALLED FOR IN THE PLANS OR AS DETERMINED BY THE ENGINEER.

FLOATING TURBIDITY BARRIERS

N.T.S.



COST OF FILTER FABRIC JACKET TO BE INCLUDED IN COST OF PIPE CULVERTS

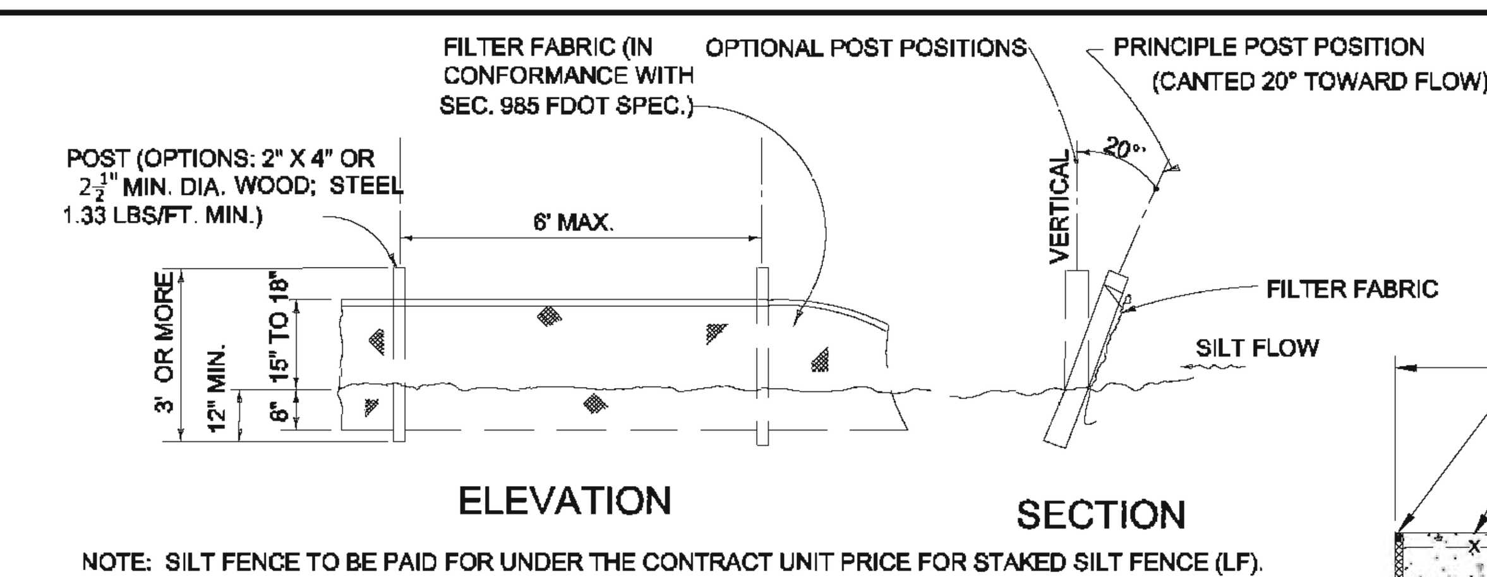
FOR ALL PIPE TYPES - CONCRETE PIPE SHOWN

ALL STORM PIPE JOINTS SHALL BE WRAPPED

STORM PIPE JOINTS SHALL BE WRAPPED ACCORDING TO THIS DETAIL. COMPLETELY WRAP THE OUTSIDE OF EACH JOINT WITH EITHER A WOVEN OR NON-WOVEN FILTER FABRIC WHICH PROVIDES AN AOS OF A NO. 70 TO NO. 100 SIEVE (150 TO 212 um), A MINIMUM OF 24 INCHES (600 mm) IN WIDTH AND A LENGTH TO PROVIDE A MINIMUM OVERLAP OF 24 INCHES (600 mm). SECURE FILTER FABRIC AGAINST THE OUTSIDE OF THE PIPE BY STEEL OR PLASTIC STRAPPING OR BY OTHER METHODS APPROVED BY THE ENGINEER. (REF. F.D.O.T. INDEX 280 FOR DETAILS OF CONSTRUCTION).

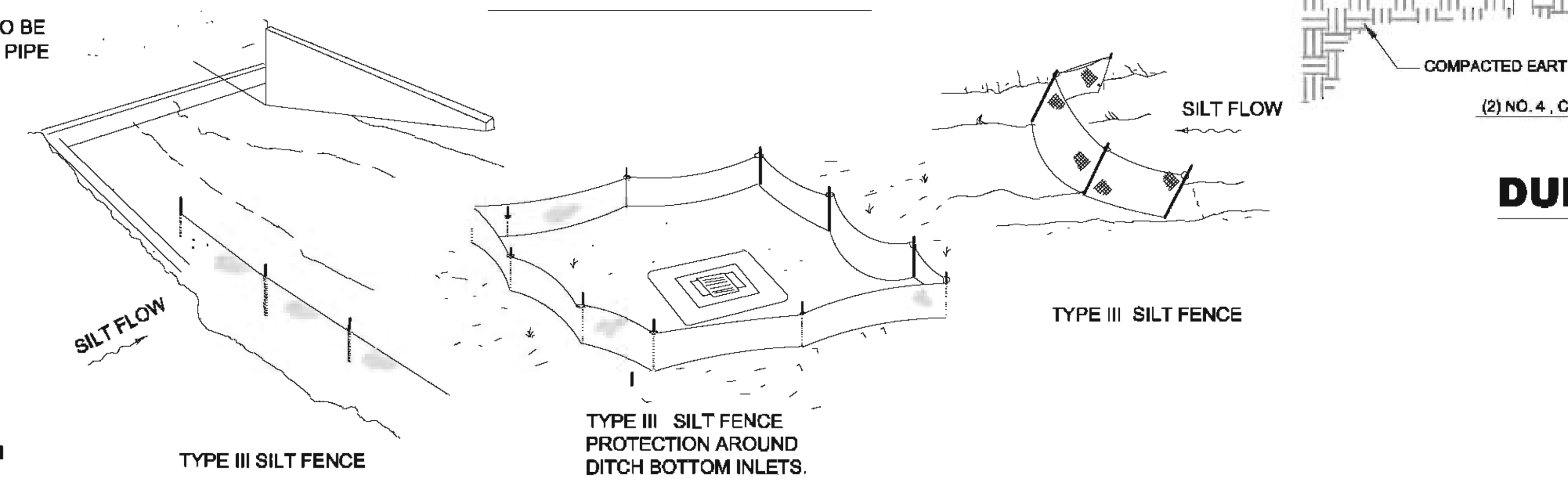
FILTER FABRIC JACKET DETAIL

N.T.S.



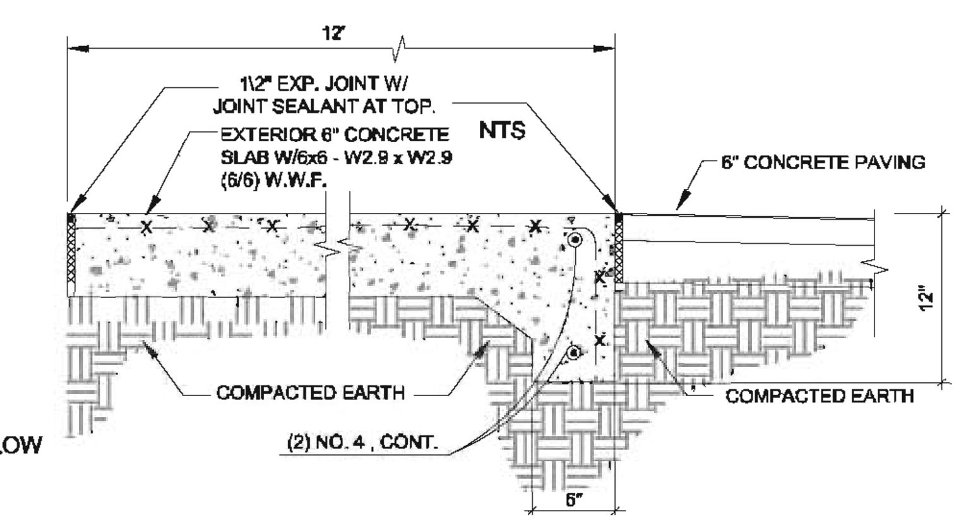
NOTE: SILT FENCE TO BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR STAKED SILT FENCE (LF).

TYPE III SILT FENCE



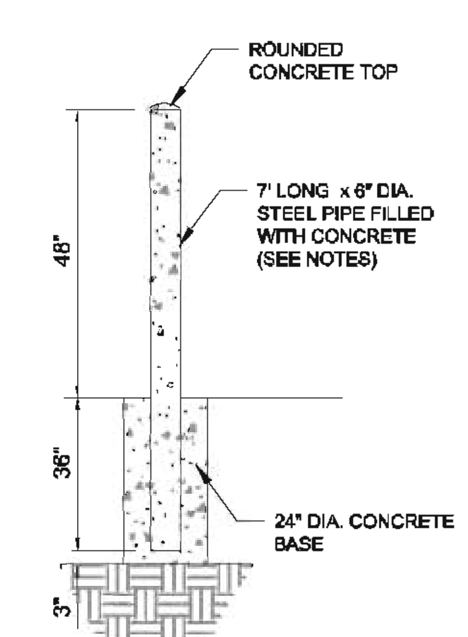
DO NOT DEPLOY IN A MANNER THAT SILT FENCES WILL ACT AS A DAM ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE USED AT UPLAND LOCATIONS AND TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.

SILT FENCE APPLICATIONS



DUMPSTER PAD

NTS

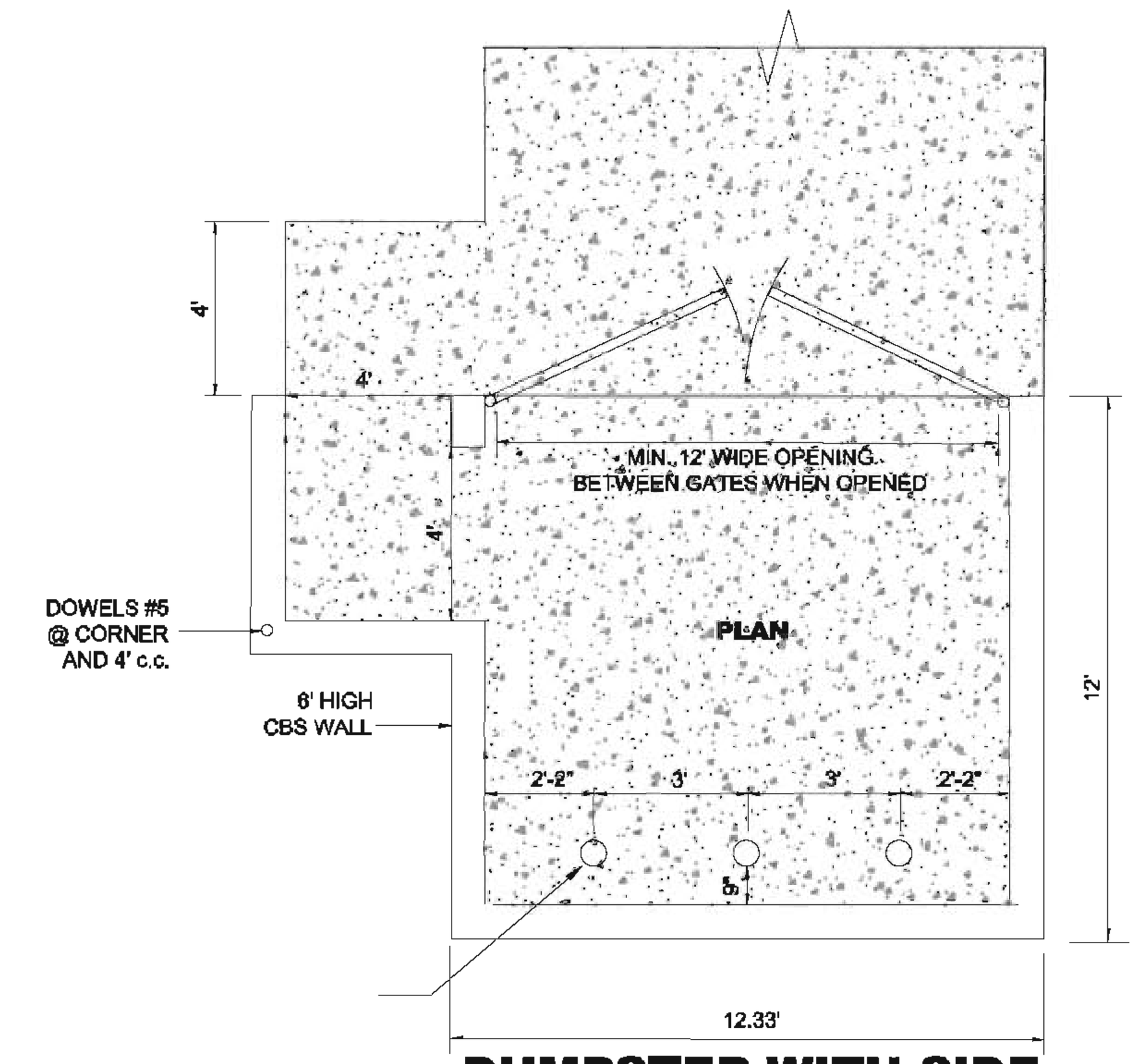


PROFILE

NTS

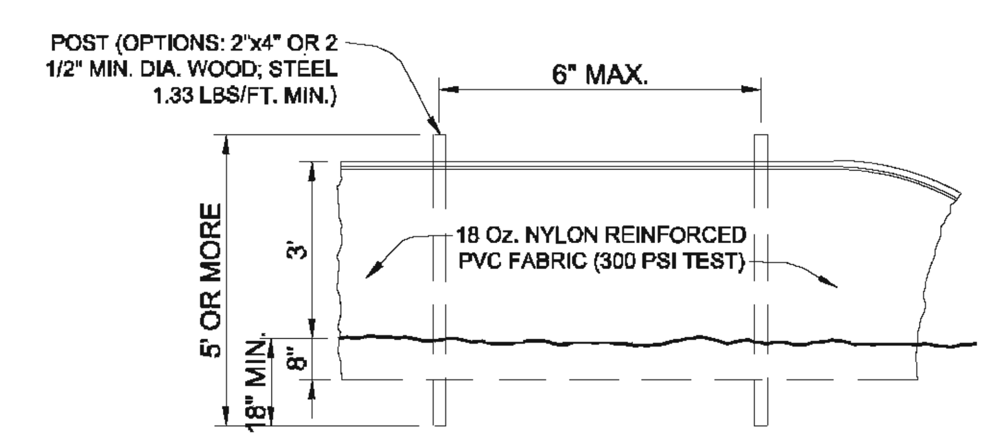
NOTES:

1. THE MINIMUM WALL THICKNESS OF THE PIPE SHALL BE 0.188".
2. ALL POST SHALL HAVE 2 COATS OF PRIMER AND 2 COATS OF YELL... TOP COAT, UNLESS OTHERWISE NOTED.
3. THE PRIMER COAT SHALL MEET THE REQUIREMENTS OF FDOT 971...
4. ALL CONCRETE SHALL BE FDOT CLASS 1.



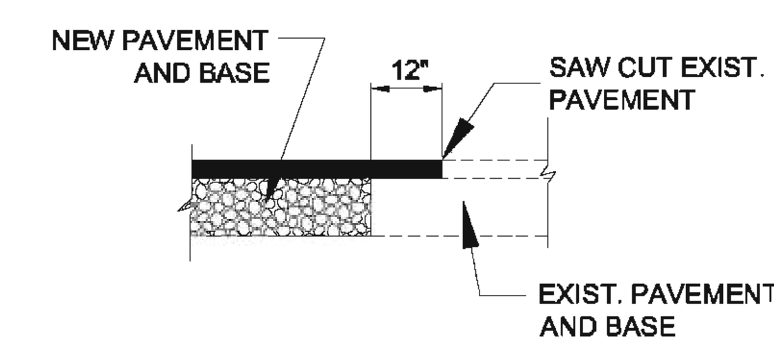
DUMPSTER WITH SIDE OPENING DETAIL

NTS



STAKED TURBIDITY BARRIER

N.T.S.



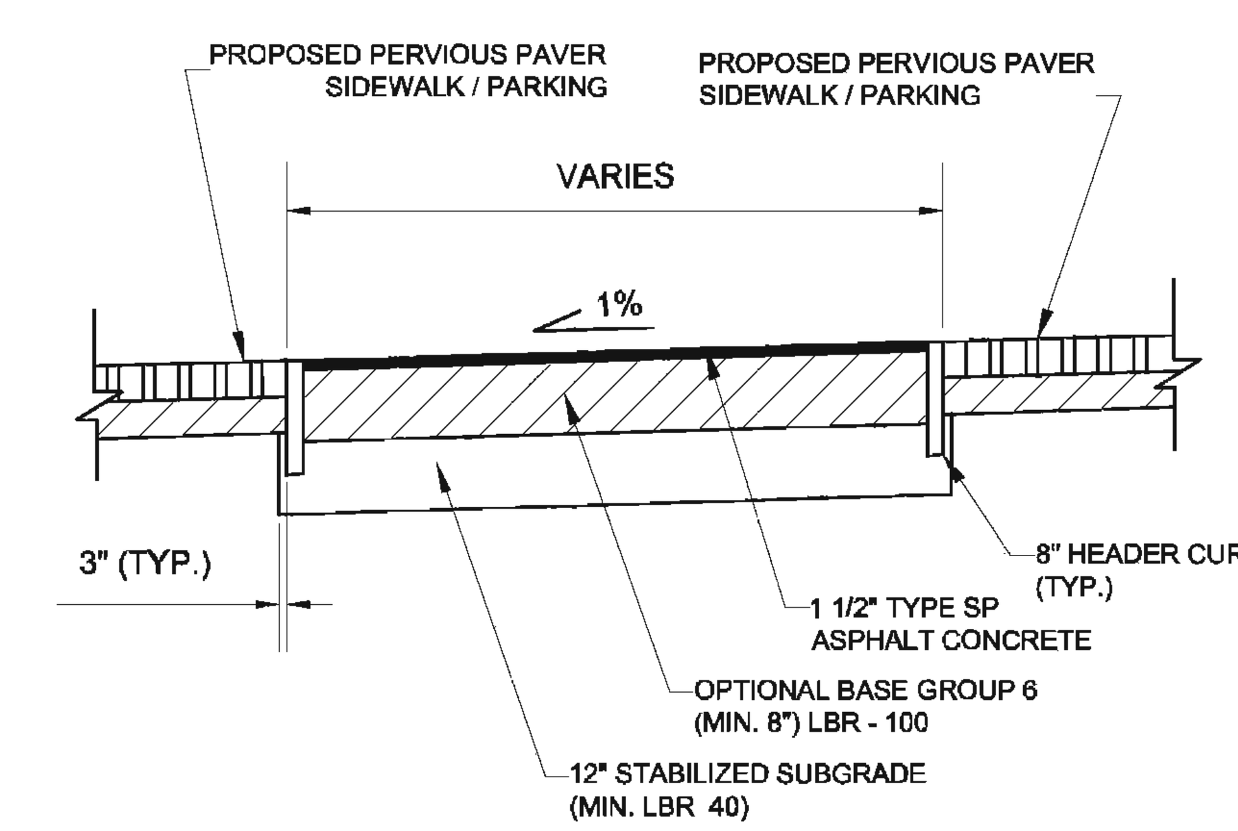
SAW-CUT DETAIL

NTS

SPACING OF REQUIRED ROADWAY TESTS						
	DENSITY		L.B.R.		THICKNESS	
	MAX. SPACING		MAX. SPACING		MAX. SPACING	
	LINEAR FEET	SQUARE FEET	LINEAR FEET	SQUARE FEET	LINEAR FEET	SQUARE FEET
COMPACTED OR STABILIZED GRADE	200	5,000	200	5,000	300	10,000
ROCK BASE	300	10,000	300	10,000	300	10,000
SHELL ROCK	300	10,000	----	----	300	10,000
ASPHALT	----	----	----	----	PER INSP.	PER INSP.

ALL TESTING SHALL BE TAKEN IN A STAGGERED SAMPLING PATTERN FROM A POINT 12" INSIDE THE LEFT EDGE OF THE ITEM TESTED, TO THE CENTER, TO A POINT INSIDE OF THE RIGHT EDGE

ROADWAY TEST SPECIFICATION



TYPICAL ROADWAY SECTION

NTS

CAPTEC Engineering, Inc.
Civil Engineering Professionals
• 301 NW Flagler Ave
Stuart, Florida 34994
Phone: (772) 692-4344
Fax: (772) 692-4341
Engineering Business No. EB-0007657

DATE:	2/14/14
DRAWN BY:	HLT
DESIGNED BY:	HLT
CHECKED BY:	JWC
PROJECT No.:	1456
HORZ. SCALE:	1"=30'
VERT. SCALE:	N/A
CADD FILE:	1456 $Base

NO.	DATE	BY	REVISIONS
1	7/2/15	HLT	BID SET

SCALE VERIFICATION

0 1

SOLID BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING, ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

VETERAN'S MEMORIAL PARK STORMWATER IMPROVEMENTS

FORT PIERCE, FLORIDA

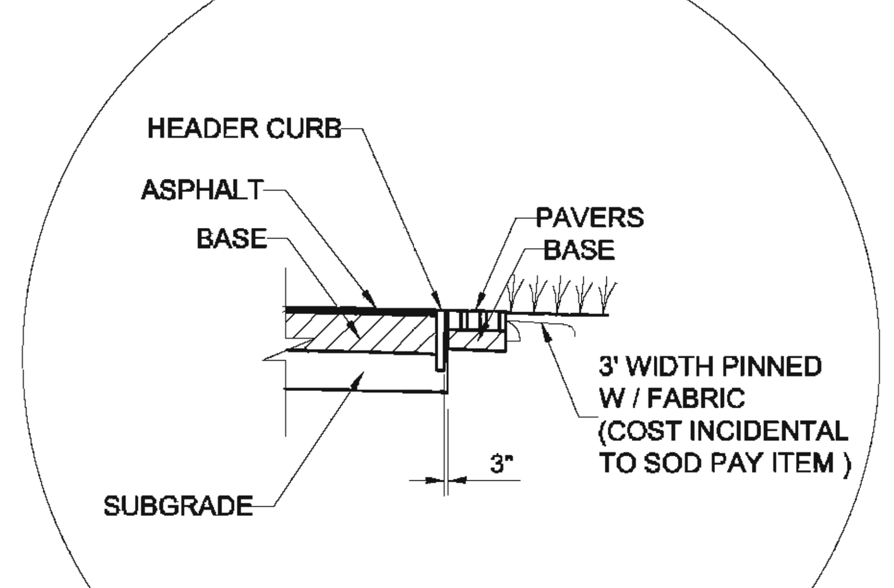
DETAILS

Joseph W. Capra
301 N.W. Flagler Ave., Ste. 201
Stuart, Florida 34994
P.E. No. 37638

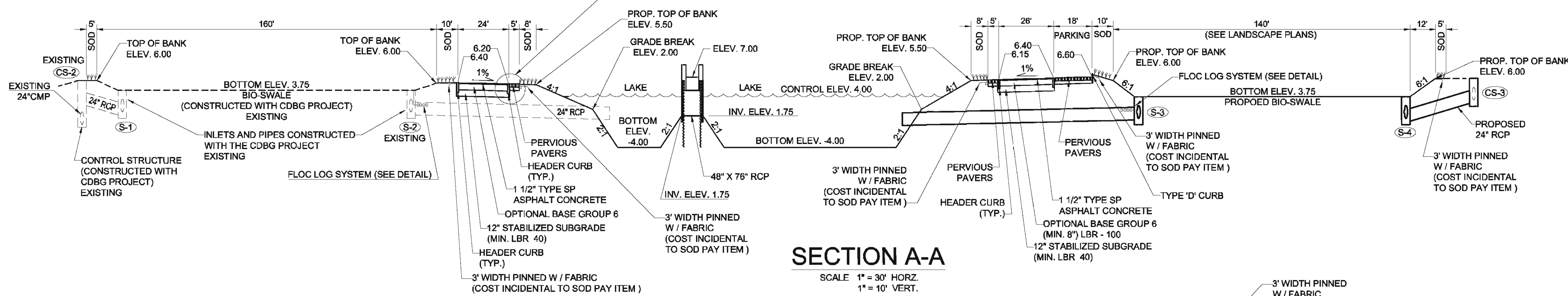
Printed Date:

JOB No.: 1456.2

SHEET C-4 OF 6

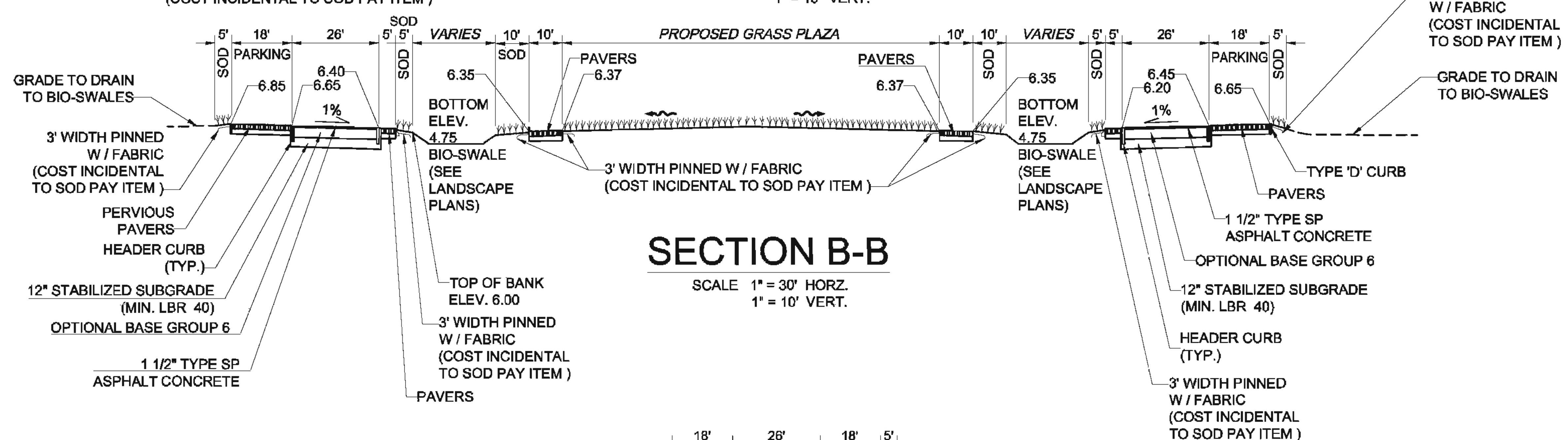


TYPICAL AT PAVEMENT / PAVER CONNECTION



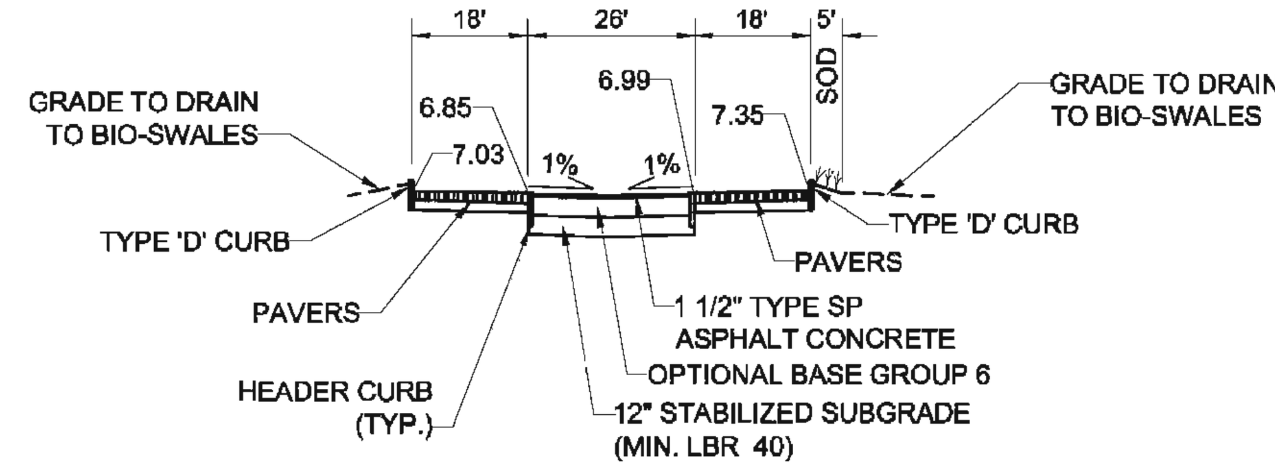
SECTION A-A

SCALE 1" = 30' HORZ.
1" = 10' VERT.



SECTION B-B

SCALE 1" = 30' HORZ.
1" = 10' VERT.



SECTION C-C

SCALE 1" = 30' HORZ.
1" = 10' VERT.

CAPTEC Engineering, Inc.
Civil Engineering Professionals
301 NW Flagler Ave
Stuart, Florida 34994
Phone: (772) 692-4344
Fax: (772) 692-4341
Engineering Business No. EB-0007657

DATE:	2/14/14
DRAWN BY:	HLT
DESIGNED BY:	HLT
CHECKED BY:	JWC
PROJECT No.:	1456.2
HORZ. SCALE:	1"=30'
VERT. SCALE:	N/A
CADD FILE:	1456.2Base

NO.	DATE	BY	REVISIONS
1	7/2/15	HLT	BID SET

SCALE VERIFICATION
0 1
SOLID BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING. ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

VETERAN'S MEMORIAL PARK STORMWATER IMPROVEMENTS
FORT PIERCE, FLORIDA

SECTIONS

Joseph W. Capra
301 N.W. Flagler Ave., Ste. 201
Stuart, Florida 34994
P.E. No. 37638

Printed Date:

JOB No.: 1456.2
SHEET
C-5 OF 6

GENERAL NOTES

1. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGE OR DEVIATIONS FROM THE DESIGN ARE TO BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.

2. THE CONTRACTOR SHALL CONTACT ALL CONCERNED UTILITIES AT LEAST FORTY-EIGHT (48) HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS.

3. THE LOCATION AND SIZE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND ARE BASED ON THE BEST AVAILABLE INFORMATION. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITIES BY ELECTRONIC METHODS AND BY HAND EXCAVATION IN COORDINATION WITH ALL UTILITY COMPANIES, PRIOR TO BEGINNING ANY CONSTRUCTION OPERATIONS. ANY AND ALL CONFLICTS OF EXISTING UTILITIES WITH PROPOSED IMPROVEMENTS SHALL BE RESOLVED BY THE ENGINEER AND THE OWNER PRIOR TO BEGINNING ANY CONSTRUCTION OPERATIONS. THIS WORK BY THE CONTRACTOR SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.

4. THE CONTRACTOR SHALL PROVIDE A QUALIFIED SUPERINTENDENT TO REMAIN ON THE JOB SITE AT ALL TIMES WHEN WORK IS BEING PERFORMED. THE SUPERINTENDENT SHALL BE PRESENT AT THE PRE- CONSTRUCTION MEETING. THE CONTRACTOR SHALL NOTIFY THE LOCAL UTILITY COMPANY BY LETTER PRIOR TO THE PRE-CONSTRUCTION MEETING APPOINTING THE SUPERINTENDENT FOR THIS PROJECT INCLUDING A FORMAL RESUME SHOWING QUALIFICATIONS.

5. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE HIS COMPLETE FAMILIARITY WITH THE PROJECT SITE AND COMPONENTS TO INCLUDE SUBSURFACE CONDITIONS OF SOIL AND GROUNDWATER TABLE. BY SUBMITTAL OF A BID FOR THIS PROJECT, THE CONTRACTOR ACKNOWLEDGES HIS COMPLETE UNDERSTANDING AND RESPONSIBILITIES WITH RESPECT TO THE CONSTRUCTION ACTIVITIES REQUIRED UNDER THE SCOPE OF THIS PROJECT.

6. THE **"TRENCH SAFETY ACT"** SHALL BE INCORPORATED INTO THIS CONTRACT AS STATED BY THE LEGISLATURE OF THE STATE OF FLORIDA TO BE IN EFFECT AS OF OCTOBER 1, 1990.

7. THE CONTRACTOR SHALL PROVIDE ONE (1) REPRODUCIBLE MYLAR COPY, FIFTEEN (15) BLACK LINE COPIES AND ONE (1) DIGITAL FORMAT OF A CERTIFIED AS-BUILT SURVEY. DRAWINGS SHALL BEAR THE ORIGINAL SIGNATURE AND EMBOSSED SEAL OF THE SURVEYOR AND SHALL BE SUBMITTED AFTER THE COMPLETION OF CONSTRUCTION, BUT PRIOR TO FINAL APPROVAL. THE AS-BUILT SURVEY SHALL BE PREPARED IN PLAN AND PROFILE FORMAT BY A LICENSED PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF FLORIDA AND SHALL COMPLY WITH APPLICABLE PROVISIONS OF THE FLORIDA ADMINISTRATIVE CODE AND CHAPTER 472 OF THE FLORIDA STATUES. THE DRAWINGS SHALL BE AT A SCALE COMPARABLE TO THE DESIGN DRAWINGS PREPARED BY THE ENGINEER AND SHALL REFERENCE THE BASE LINE OF SURVEY APPEARING ON THE ENGINEERING DRAWINGS. THE HORIZONTAL AND VERTICAL LOCATION OF THE ROADWAYS, DRAINAGE FACILITIES AND ALL APPURTENANCES SHALL BE ACCURATELY DEPICTED TO SCALE AND SHALL BE IDENTIFIED RELATIVE TO THE BASE LINE AND TO READILY IDENTIFIABLE PERMANENT OR SEMI-PERMANENT REFERENCE POINTS EXISTING AFTER THE COMPLETION OF CONSTRUCTION. LOCATIONS SHALL BE DETERMINED FOR ALL DRAINAGE FACILITIES AT CHANGES IN HORIZONTAL AND VERTICAL DIRECTION, AND AT A MINIMUM INTERVAL NOT EXCEEDING ONE HUNDRED FEET (100'). THE PROFILE SHALL ACCURATELY REFLECT THE VERTICAL PIPE LOCATION AND THE FINISHED GRADE OVER THE PIPE.

8. THE CONTRACTOR SHALL PREPARE A PLAN SHOWING THE SCHEDULE OF WORK, INCLUDING A HIGHLIGHTED PLAN SHOWING THE ORDER OF CONSTRUCTION WHICH WILL FACILITATE MAINTAINING EXISTING SERVICES DURING CONSTRUCTION. THIS PLAN SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION MAINTENANCE OF TRAFFIC AND STAGING PLAN.

9. ALL CONSTRUCTION IS TO BE IN ACCORDANCE WITH FLORIDA DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS LATEST ADDITION

10. ALL BELL SOUTH, FPL, LOCAL CABLE, AND ALL LOCAL UTILITY COMPANY LOCATIONS SHOWN ARE TAKEN FROM INFORMATION PROVIDED BY THAT UTILITY COMPANY. THESE LOCATIONS HAVE NOT BEEN VERIFIED IN THE FIELD. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR TO EXPOSE ALL CROSSINGS WITH BELL SOUTH, CABLES/CATV AND FPL CONDUITS PRIOR TO BEGINNING CONSTRUCTION AND DELIVERY OF PIPE. THE CONTRACTOR IS TO USE EXTREME CAUTION WITHIN THE VICINITY OF PRIVATE UTILITY FACILITIES. THE CONTRACTOR WILL REQUEST A PRIVATE UTILITY REPRESENTATIVES PRESENCE DURING CONSTRUCTION IN THE VICINITY OF THEIR FACILITIES. A PROFILE OF THE PRIVATE UTILITY FACILITIES ARE NOT PROVIDED IN THESE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE PRIVATE UTILITIES AND OBTAINING THE APPROXIMATE LOCATION OF THESE FACILITIES.

11. ANY NGVD 29 MONUMENT WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF IN DANGER OF DAMAGE, THE CONTRACTOR SHOULD NOTIFY,
GEODETIC INFORMATION CENTER
ATTN: CHARLIE NOVICE, M/CG - 162
8001 EXECUTIVE BOULEVARD
ROCKVILLE, MARYLAND 20852
TELEPHONE: (301) 443-8319

12. BENCH MARK REFERENCED NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).

13. CONTRACTOR TO UTILIZE "APPROVED FOR CONSTRUCTION" PLANS ONLY.

PAVING, GRADING AND DRAINAGE

1. ALL UNSUITABLE MATERIALS, SUCH AS MUCK, ORGANIC MATERIAL AND OTHER DELETERIOUS MATERIAL AS CLASSIFIED BY AASHTO M 145, FOUND SHALL BE REMOVED DOWN TO ROCK OR SUITABLE MATERIAL, AND REPLACED WITH THE SPECIFIED FILL MATERIAL IN MAXIMUM 12 INCH LIFTS COMPACTED TO NOT LESS THAN 100% MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE IN ACCORDANCE WITH AASHTO T-99. THICKNESS OF LAYERS MAY BE INCREASED, PROVIDED THAT THE EQUIPMENT AND METHODS USED ARE PROVEN BY FIELD DENSITY TESTING AND CAPABLE OF COMPACTING THICK LAYERS TO SPECIFIED DENSITIES.

2. ALL AREAS SHALL BE CLEARED AND GRUBBED PRIOR TO CONSTRUCTION. THIS SHALL CONSIST OF THE COMPLETE REMOVAL AND DISPOSAL OF ALL TREES, BRUSH, STUMPS, GRASS, WEEDS, RUBBISH AND ALL OTHER OBSTRUCTIONS RESTING ON, OR PROTRUDING THROUGH THE SURFACE OF THE EXISTING GROUND TO A DEPTH OF ONE (1) FOOT. ITEMS DESIGNATED TO REMAIN, TO BE RELOCATED, OR TO BE ADJUSTED SHALL BE SO DESIGNATED ON THE DRAWINGS. THE EXISTING ASPHALT IS 3" TO 4.5" THICK, SEE AACE GEOTECHNICAL REPORT.

3. FILL MATERIAL SHALL BE CLASSIFIED AS A-1, A-3, OR A-2-4 IN ACCORDANCE WITH AASHTO M-145 AND SHALL BE FREE FROM VEGETATION AND ORGANIC MATERIAL. NOT MORE THAN 12% BY WEIGHT OF FILL MATERIAL SHALL PASS THE NO. 200 SIEVE.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING CERTIFIED MATERIAL TEST RESULTS TO THE ENGINEER OF RECORD PRIOR TO THE RELEASE OF FINAL CERTIFICATION BY THE ENGINEER. TEST RESULTS MUST INCLUDE, BUT MAY NOT BE LIMITED TO, DENSITIES FOR SUBGRADE AND BASE DENSITIES AT UTILITY CROSSINGS, MANHOLES, INLETS, STRUCTURES. TEST SHALL INCLUDE ASPHALT GRADATION REPORTS, CONCRETE CYLINDERS, ETC. DENSITY TESTS SHALL BE PERFORMED AT THREE (3) LOCATIONS AROUND ANY STRUCTURE. BEGIN TESTING IN THE FIRST FOOT ABOVE THE BOTTOM OF THE STRUCTURE AND THEN EVERY TWO FEET TO WITHIN TWO FEET OF THE FINISH GRADE

5. ALL INLETS AND PIPE SHALL BE PROTECTED DURING CONSTRUCTION TO PREVENT SILTATION IN THE DRAINAGE SYSTEMS BY WAY OF TEMPORARY PLUGS AND PLYWOOD OR PLASTIC COVERS OVER THE INLETS. THE ENTIRE DRAINAGE SYSTEMS SHALL BE CLEANED OF ALL DEBRIS PRIOR TO FINAL ACCEPTANCE. ALL CONCRETE SHALL BE A MINIMUM 3,000 PSI.

6. ALL PROPOSED ELEVATIONS REFER TO FINISHED GRADES.

7. THE CONTRACTOR MUST OBTAIN A WATER USE PERMIT PRIOR TO CONSTRUCTION DEWATERING UNLESS THE WORK QUALIFIES FOR A GENERAL PERMIT PURSUANT TO SUBSECTION 40E-20.302(4), F.A.C.

8. CONTRACTOR TO POTHOLE ALL CONFLICTS 10 DAYS PRIOR TO PERFORMING CONSTRUCTION IN THE CONFLICT AREA TO AVOID DELAYS IN RESOLVING THE UTILITY CONFLICT.

SOIL RECOMMENDATION AND REQUIREMENTS FILL REPLACEMENT

WHERE FILLS TO BE PLACED ON NATURAL GROUND, THE FILL SHOULD BE A UNIFORM FREE DRAINING GRANULAR SOIL (CLEAN SAND) AND BE PLACED IN LAYERS NOT TO EXCEED 12 INCHES LOOSE MEASURE AND COMPACTED AS OUTLINED ABOVE. SUFFICIENT EFFORT SHOULD BE APPLIED TO OBTAIN A MINIMUM OF 98% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY AASHTO T-180 (ASTM D-1557).

EXCAVATION AND BACKFILLING

WHERE EXCAVATION AND BACKFILLING ARE REQUIRED, THE SOILS SHOULD BE REMOVED TO THE SPECIFIED DEPTH. SUFFICIENT EFFORT MUST BE APPLIED TO THE EXCAVATED SURFACE TO OBTAIN A MINIMUM OF 98% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY AASHTO T-180 (ASTM D-1557).

BACKFILL SHALL BE UNIFORM FREE DRAINING GRANULAR SOIL (CLEAN SAND) AND BE PLACED IN LAYERS NOT TO EXCEED 15 INCHES LOOSE MEASURE. SUFFICIENT EFFORT SHOULD BE APPLIED TO EACH LAYER TO OBTAIN A MINIMUM OF 98% OF THE MAXIMUM DRY DENSITY FOR THE ENTIRE DEPTH OF THE FILL AS DETERMINED BY AASHTO T-180 (ASTM D-1557). THE EXCAVATED SURFACE AND EACH LAYER OF BACKFILL SHOULD BE COMPACTED WITH A SELF-PROPELLED STEEL DRUM VIBRATORY ROLLER HAVING A MINIMUM TOTAL APPLIED FORCE OF 10 TONS.

COMPACTION

WHERE THERE IS EXISTING STRUCTURES ADJACENT TO THE SITE THAT MAY BE AFFECTED BY THE SELF-PROPELLED STEEL DRUM VIBRATORY EQUIPMENT, DENSIFICATION MUST BE PERFORMED USING EQUIPMENT THAT WILL SATISFY THE REQUIRED DENSIFICATION WITHOUT THE RISK OF DAMAGING THE EXISTING STRUCTURES

HEAVY PLATE COMPACTORS ARE TWO TYPES OF EQUIPMENT THAT HAVE BEEN USED SUCCESSFULLY. DENSIFICATION PROCEDURES MUST COMPLY WITH THE CAPABILITY OF THE EQUIPMENT EMPLOYED. WHEN SELF-PROPELLED STEEL DRUM VIBRATORY EQUIPMENT CANNOT BE USED AS SPECIFIED, VIBRATORY PLATE COMPACTORS MAY BE USED. WHEN THIS CONDITION OCCURS, THE OVERALL DENSIFICATION PROCEDURE MUST BE REVISED TO COMPLY WITH THE CAPABILITY OF THE EQUIPMENT EMPLOYED. IN GENERAL, SMALL PLATE COMPACTORS WILL BE EFFECTIVE TO A MAXIMUM DEPTH OF 6 TO 8 INCHES.

SITE PREPARATION AND GRADING

PREPARATION OF THE SITE FOR CONSTRUCTION WILL REQUIRE GRUBBING AND STRIPPING OF VEGETATION AND ROOT SYSTEMS THROUGHOUT AREAS TO BE COVERED BY NEW CONSTRUCTION. TRUNKS AND ROOT BALLS FOR TREES SHOULD BE REMOVED. SITE PREPARATION AT FORMER LOCATIONS OF LARGER SHRUBS AND TREES MAY REQUIRE EXCAVATION TO GREATER DEPTHS.

FILL MATERIAL MAY BE REQUIRED. FILL SHOULD BE FREE FROM DEBRIS OR OTHER DELETERIOUS MATTER, AND SHOULD CONSIST OF CLEAN GRANULAR MATERIAL THAT HAS A MAXIMUM PARTICLE SIZE NOT GREATER THAN SIX INCHES. IT SHOULD CONTAIN NOT MORE THAN 10 PERCENT PASSING THE U.S. STANDARD NUMBER 200 SIEVE, AND HAVE AN ORGANIC CONTENT LESS THAN ONE PERCENT.

FILL SHOULD BE PLACED IN ESSENTIALLY HORIZONTAL LIFTS LESS THAN 12 INCHES IN UNCOMPACTED THICKNESS, HAVE A MAXIMUM PARTICLE SIZE NOT GREATER THAN 6 INCHES, BE MOISTURE CONDITIONED AS NECESSARY, AND UNIFORMLY COMPACTED TO AT LEAST 98 PERCENT RELATIVE COMPACTION AS DETERMINED BY THE MODIFIED PROCTOR PROCEDURE (ASTM D1557).

AFTER COMPLETION OF THE GENERAL SITE PLAN PREPARATION. WHEN EXCAVATIONS FOR THE CONSTRUCTION OF FOUNDATIONS ARE MADE THROUGH THE COMPACTED NATURAL GROUND, FILL OR BACKFILL, THE BOTTOMS OF THE EXCAVATIONS ARE TO BE TAMPED SO AS TO DENSIFY SOILS LOOSENED DURING OR AFTER THE EXCAVATION PROCESS, OR WASHED OR SLOUGHED INTO THE EXCAVATION PRIOR TO THE PLACEMENT OF FORMS. A PLATE TAMPER CAN BE USED FOR THIS FINAL DENSIFICATION IMMEDIATELY PRIOR TO THE PLACEMENT OF REINFORCING STEEL, WITH PREVIOUSLY DESCRIBED DENSITY REQUIREMENTS TO BE MAINTAINED BELOW THE FOUNDATION LEVEL.

SOIL EROSION PLAN

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A SPECIFIC SOIL EROSION PLAN. IN GENERAL, THE SOIL EROSION PLAN SHALL REQUIRE THAT ALL ON-SITE SOILS BE REMAIN ON-SITE AND WILL NOT ERODE INTO THE ADJACENT ROADSIDE SWALES, ADJACENT PROPERTIES, OR RETENTION DITCHES. ALL EXISTING SWALES SHALL REMAIN SODDED DURING CONSTRUCTION. THE CONTRACTOR SHALL SCARIFY ONLY AS NECESSARY TO CONSTRUCT THE PROJECT. THE CONTRACTOR SHALL SCARIFY AREAS TO PLACE VARIOUS PIPE WORK. AFTER PLACEMENT OF THE PIPE, THESE TRENCHES SHALL BE BACKFILLED AND COMPACTED TO A 98% DENSITY. PRIOR TO DISCHARGE FROM THE SITE, SILTATION BARRIERS AND HAY BALES SHALL BE UTILIZED AS PER FLORIDA DEPARTMENT OF TRANSPORTATION INDEX 102. THE DRAINAGE WHICH OUTFALLS TO THE RETENTION AREAS SHALL BE STABILIZED AND SODDED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.

ANY DEWATERING OR PUMPING OF WATER INTO THE ROADSIDE SWALES, OR RETENTION SWALES SHALL BE STAKED WITH BALED HAY AND SILTATION FENCES AS PER FLORIDA DEPARTMENT OF TRANSPORTATION INDEX 102 TO AVOID FILLING THESE AREAS. UPON COMPLETION OF THE SITE WORK, ALL AREAS SHALL BE SODDED TO AVOID EROSION. CONTRACTOR IS REQUIRED TO COMPLY WITH ALL STATE WATER QUALITY CRITERIA. SPECIFICALLY, NO OFF-SITE DISCHARGES WILL BE ALLOWED WHICH EXCEED THE STATE TURBIDITY CRITERIA. CARE MUST BE EXERCISED PRIOR TO, DURING AND AFTER CONSTRUCTION TO PREVENT EROSION EFFECTS OR UNDERMINING OF FOUNDATIONS. THE INTEGRITY OF THE RAISED BUILDING "PAD" MUST HENCE BE MAINTAINED FOR A DISTANCE OF AT LEAST FIVE FEET BEYOND THE FOUNDATION LEVELS, WITH GUTTERS DISPOSING OF RAINFALL RUNOFF BEYOND THE PAD LIMITS.

WATER QUALITY

1. PRIOR TO AND DURING CONSTRUCTION, THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES (BEST MANAGEMENT PRACTICES) REQUIRED TO RETAIN SEDIMENT ON-SITE AND TO PREVENT VIOLATIONS OF STATE WATER QUALITY STANDARDS. ALL PRACTICES MUST BE IN ACCORDANCE WITH THE GUIDELINES AND SPECIFICATIONS IN CHAPTER 6 OF THE FLORIDA LAND DEVELOPMENT MANUAL "A GUIDE TO SOUND LAND AND WATER MANAGEMENT (FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATIONS 1988)", WHICH ARE HEREBY INCORPORATED BY REFERENCE, UNLESS A PROJECT SPECIFIC EROSION AND SEDIMENT CONTROL PLAN IS APPROVED AS PART OF THE SFWMD PERMIT, IN WHICH CASE THE PRACTICES MUST BE IN ACCORDANCE WITH THE PLAN. IF SITE SPECIFIC CONDITIONS REQUIRE ADDITIONAL MEASURES DURING ANY PHASE OF CONSTRUCTION OR OPERATION TO PREVENT EROS ON OR CONTROL SEDIMENT, BEYOND THOSE SPECIFIED IN THE EROSION AND SEDIMENT CONTROL PLAN, THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL BEST MANAGEMENT PRACTICES AS NECESSARY, IN ACCORDANCE WITH THE SPECIFICATIONS IN CHAPTER 6 OF THE FLORIDA LAND DEVELOPMENT MANUAL "A GUIDE TO SOUND LAND AND WATER MANAGEMENT (FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION 1988)". THE CONTRACTOR SHALL CORRECT ANY EROSION OR SHOALING THAT CAUSES ADVERSE IMPACTS TO THE WATER RESOURCES.

2. STABILIZATION MEASURES SHALL BE INITIATED FOR EROSION AND SEDIMENT CONTROL ON DISTURBED AREAS AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN SEVEN (7) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.

FILTER FABRIC

THE CONTRACTOR SHALL WRAP ALL STORM PIPE JOINTS. CONSTRUCTION SHALL BE PER FDOT INDEX NO. 280 WITH WOVEN GEOTEXTILE TYPE D-3 (FDOT INDEX NO. 199), SECURED WITH STRAPPING.

STORM SEWER

1. ALL DISTURBED OUTFALL DRAINAGE AREAS SHALL BE SODDED UPON COMPLETION OF GRADING AFTER AS-BUILT GRADE ELEVATIONS ARE APPROVED BY THE ENGINEER.

2. PRIOR TO FINAL PAYMENT OF RETENTION, DETENTION, AND DRAINAGE DITCH QUANTITIES, ALL SLOPES AND SWALES SHALL BE SODDED TO AVOID EROSION.

3. THE CONTRACTOR SHALL CONSTRUCT THE STORMWATER MANAGEMENT SYSTEM IN A MANNER SO AS TO MINIMIZE ANY ADVERSE IMPACTS OF THE WORKS ON FISH, WILDLIFE, NATURAL ENVIRONMENTAL VALUES AND WATER QUALITY ON OR OFF-SITE. THE CONTRACTOR SHALL INSTITUTE NECESSARY MEASURES DURING THE CONSTRUCTION PERIOD, INCLUDING FULL COMPACTION OF ANY FILL MATERIAL PLACED AROUND NEWLY INSTALLED STRUCTURES TO REDUCE EROSION, TURBIDITY, NUTRIENT LOADING AND SEDIMENTATION IN THE RECEIVING WATERS.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CORRECTION OF ANY EROSION OR SHOALING OF THE WATER QUALITY MANAGEMENT SYSTEM.

5. INLETS (425/430): INCLUDES THE LIST OF MATERIALS, INSTALLATION, DEWATERING STALIZATION, AS-BUILT AND TESTING. ALL STRUCTURES WILL REQUIRE THREE (3) COMPACTION TESTS AT DIFFERENT LOCATION AROUND UNDER STRUCTURES.

6. PIPE CULVERTS AND STORM SEWERS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SECTION 430 FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.

GEOTECHNICAL NOTES
(EXCERPTS FROM AACE GEOTECHNICAL REPORT DATED 12/11/13)

6.1 Clearing

The building areas within lines five feet outside building perimeters, and the areas to be paved, should be cleared, grubbed and stripped of all surface vegetation, trash, debris and topsoil. Stumps, remnants of former foundations, underground utilities, etc. should be removed entirely and their excavations backfilled with granular fill placed in 12-inch level lifts.

6.3 Pond Excavation, Bridge and Bulkhead

The frontage pond will be excavated within loose to moderately dense sandy soil conditions (SP) and will be equipped with a liner (to be designed by others). It is not recommended to utilize slopes steeper than 3H:1V within this sandy soil formation.

It is our understanding that the proposed bridge will consist of two parallel FDOT Index 250 type concrete endwalls, backfilled internally to provide an east-west pond crossing. As such, the bridge feature will divide the proposed pond and will be crossed by an elliptical RCP culvert. We recommend that the end wall foundation areas and the culvert backfill be compacted with a heavy vibratory plate tamper so as to produce dry densities not less than 95 percent of the modified Proctor (ASTM D-1557) maximum dry density of the compacted material to depths of 1 foot below the compacted surface (foundations) and in level lifts of no more than 12 inches (culvert backfill).

The proposed sheet pile bulkhead is expected to have a maximum unsupported height of 5-8 feet and to consist of either vinyl or fibre-reinforced polymer (FRP) sheets with a concrete cap. It is our opinion that the encountered soils (i.e. loose to moderately dense sandy conditions) will not require heavy-duty installation equipment. The means and methods of installation should be selected by the Contractor, however, we preliminarily anticipate that an excavator mounted vibrator will suffice for the encountered soil conditions. Consideration can also be given to allowing jetting of the sheet piles followed by their installation by simply pushing them to the desired level with an excavator bucket, possibly with the assistance of a light plate tamper attached to the excavator.

The soil parameters summarized in Table 3 are provided for others to use in the sheet pile design.

Table 3 - Soil Parameters

Depth below existing grade (feet)	Average SPT 'N' Value	Unit Weight, $\gamma^{(A)}$ (pcf)		Angle of Internal Friction, φ	Cohesion (tsf)	Wall Friction Angle, $\delta^{(B)}$
		Moist	Sat.			
0-15	10	105	111	30	–	20

Notes: (A) $\gamma_{buoyant} = \gamma_{sat} - \gamma_{water}$
(B) Assumes vertical backface of wall, and wall directly against granular backfill.

The Rankine coefficients of lateral pressures can be obtained from the following equations:

Active pressure: $K_a = \tan^2(45 - \varphi/2)$
Passive pressure: $K_p = \tan^2(45 + \varphi/2)$
where φ is the angle of internal friction of the soil.

We recommend that appropriate safety factors be used in the design. The safety factors selected should be based on design and construction considerations which are beyond the scope of this report.

All backfill materials should be placed in uniform layers not exceeding 6 inches in loose thickness, with each layer compacted to a dry density not less than 95 percent of its modified Proctor (ASTM D1557) maximum value. Note that soils within a distance equal to the unsupported height of the bulkhead should be compacted with hand guided, small impact or vibratory compactors.

6.4 Drainage and Utility Backfill

Trenches and excavations for the proposed drainage pipes and structure (and any utility installations) should be backfilled with granular soils placed in level lifts of 12 inches, with each lift compacted to a dry density of 98 percent of the modified Proctor (ASTM D1557) maximum dry density.

6.5 Pavement Improvements

We understand that some existing pavement areas will be restored, and that new pervious pavement areas and sidewalks will be constructed.

For any proposed asphalt (flexible) pavement areas we recommend a pavement section consisting of an asphaltic concrete wearing surface on a calcareous base course supported on stabilized subbase over well-compacted subgrade.

- The natural soils and new embankment materials should be compacted to a dry density of 98 percent of the modified Proctor (ASTM D-1557 or AASHTO T-180) maximum dry density of the compacted soil to a depth of one foot below the surface.

- The subbase material to a depth of twelve inches should have a minimum Limerock Bearing Ratio (LBR) value (FDOT FM 5-515) of 40 and it should be compacted to at least 98 percent of its modified Proctor (ASTM D-1557 or AASHTO T-180) maximum dry density. The existing surficial fine sands on this site do not appear to have the required LBR value and will likely require mixing.

- The base course may consist of crushed limerock or coquina and should have a minimum Limerock Bearing Ratio (LBR) value (FDOT FM 5-515) of 100. We recommend a base course at least eight inches thick which may be placed and compacted in a single layer. All base course material should be compacted to at least 98 percent of its modified Proctor maximum dry density.

- We recommend an FDOT Type SP-9.5 or SP-12.5 asphaltic wearing surface 1.5 inches thick. Care must be exercised to place the asphalt over dry, well primed base material.

Pervious concrete sections should be designed in accordance with the "*Recommended Specifications for Portland Cement Pervious Pavement*" prepared by the Florida Concrete and Products Association, Inc. In brief, these recommendations include (among other things) placing pervious concrete atop granular or gravely soils with only a moderate amount of silt and clay. (In our opinion, soils with fines contents greater than 4 percent are not suitable for use as pervious concrete subgrade; the existing fine sands should satisfy this criteria). Further, the pervious concrete subgrade should be compacted to a dry density between 92 and 95 percent of the modified Proctor (ASTM D1557/AASHTO T-180) maximum dry density of the compacted soil. Finally, following placement and compaction efforts, the pervious concrete subgrade soils should be tested for rate of permeability to ensure that they reasonably compare to the design permeability.

Any proposed paver brick base course should consist of crushed limerock or coquina and should have a minimum Limerock Bearing Ratio (LBR) value (FDOT FM 5-515) of 100. We recommend a base course at least 6 inches thick which should be placed and compacted in two layers (assuming hand-guided compaction equipment is used). All base course material should be compacted to at least 98 percent of its modified Proctor maximum dry density.

A leveling layer consisting of clean, free-draining sands conforming to the manufacture's specifications should be used as a bedding course for the proposed paver bricks. Preliminarily, paver bricks should have a minimum thickness of 3 inches and exhibit an unconfined compressive strength in excess of 5,000 psi. The paver bricks should be restrained from lateral movement in all directions.

10 DAYS PRIOR TO CROSSING EXISTING UNDERGROUND CONFLICTS, THE CONTRACTOR WILL POT HOLE THE LOCATION OF THE EXISTING UTILITIES TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION.

SURVEY BY NORTHSTAR

GEOTECH DATA BY ANDEREN ANDRE CONSULTING ENGINEERING, INC.

IRRIGATION BY MASUEN CONSULTING LLC

LANDSCAPE / HARDSCAPE BY LUCIDO & ASSOCIATES

ELECTRICAL BY WOJCIESZAK & ASSOCIATES, INC. CONSULTING ENGINEERING

PERMITS

SFWMD- / DEWATERING PERMITS MUST BE OBTAINED BY CONTRACTOR

CITY OF FORT PIERCE - CONTRACTOR RESPONSIBLE TO OBTAIN ALL CITY OF FORT PIERCE BUILDING DEPARTMENT PERMITS FOR ELECTRICAL WORK PLANS / DATA.

FDEP - NPDES PERMIT - CONTRACTOR TO OBTAIN -
ST LUCIE COUNTY - INDIAN RIVER DRIVE IS A ST LUCIE COUNTY FACILITY
ALL WORK IN ROW WILL REQUIRE PERMIT BY CONTRACTOR
CAPTEC WILL PROVIDE NECESSARY DRAWINGS FOR THIS PERMIT.

CONTRACTOR TO NOTE THAT THE VETERANS PARK AND THE RIVERWALK CENTER BUILDING ARE ACTIVE PARKS. THE BUILDING MUST HAVE ACCESS AT ALL TIMES.
A SEQUENCE OF CONSTRUCTION/MAINTENANCE OF TRAFFIC PLAN MUST BE PROVIDED BY THE CONTRACTOR PRIOR TO ANY CLOSURE OF DRIVEWAY OR PARKING AREA.

CAPTEC Engineering, Inc.
Civil Engineering Professionals
• 301 NW Flagler Ave
Stuart, Florida 34994
Phone: (772) 692-4344
Fax: (772) 692-4341
Engineering Business No. EB-0007657

NO.	DATE	BY	REVISIONS
1	7/2/15	HLT	BID SET

DATE 2/14/14
DRAWN BY HLT
DESIGNED BY HLT
CHECKED BY JMC
PROJECT No 1456.2
HORZ. SCALE 1"=30'
VERT. SCALE N/A
CADD FILE 1456 BSet

SCALE VERIFICATION
0 1
SOLID BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING. ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

VETERAN'S MEMORIAL PARK
STORMWATER IMPROVEMENTS
FORT PIERCE, FLORIDA

GENERAL NOTES / DETAILS

Joseph W. Capra
301 N.W. Flagler Ave., Ste. 201
Stuart, Florida 34994
P.E. No. 37638

Printed Date

JOB No.: 1456.2
SHEET C-6 OF 6

P:\1456\01456 2 - ELC Indian River Videos

S BETWEEN EAST LIMITS OF PLAT
IEAN HIGH WATER ELEVATION
RSHIP STATUS NOT DETERMINED)

S 18°44'20" E 1445.55'
EAST LIMITS OF PLAT

LIMITS OF FLORATAM SOD

EXISTING CARISSA TO REMAIN TYP.

FLORATAM SOD

BASKETBALL GOAL

EXIST. PATIO

EXISTING SOD TO REMAIN TYP.

EXISTING TREES TO REMAIN TYP.

EXIST. SHUFFLEBOARD COURT

SOD

LOCATION OF EXISTING TREE TO BE TRANSPLANTED TYP. (TMDL CONTRACT)

BIOSWALE, SEE DETAIL A/3

LAKE

CAP ROCK BOULDERS TYP.

BIOSWALE PREVIOUSLY PLANTED UNDER CDBG CONTRACT

LIMITS OF IRRIGATED AREA TYP.

EXISTING PALMS TO REMAIN TYP.

ROW

12" SAN

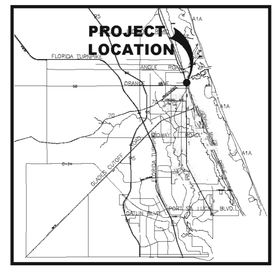
INDIAN RIVER DRIVE

VER DRIVE
COUNTY R/W)

lucido & associates

701 E Ocean Blvd., Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220
100 Avenue A Suite 2A, Fort Pierce, Florida 34950 (772) 467-1301, Fax (772) 467-1303
827 North Thornton Avenue, Orlando, Florida 32803 (407) 898-9521, Fax (407) 898-9768

Key / Location:



Project Team:

Client/Property Owner: City of Fort Pierce
City Hall
100 N. US1
Fort Pierce, FL 34950

Landscape Architect: Lucido & Associates
Land Planners & Landscape Architects
701 East Ocean Boulevard
Stuart, Florida 34994

Civil Engineer: CAPTEC Engineering, Inc.
301 NW Flagler Avenue
Stuart, FL 34994

Veterans Memorial Park

City of Fort Pierce

TMDL Landscape Plan

Date	By	Description
3.4.14	PG	Bid Set - For Bidding Purposes Only
3.1.15	BN/BW	Bid Set - For Bidding Purposes Only

NORTH

SCALE: 1" = 1'=20'

0 10' 20' 40'

REG. # 1018
Thomas P. Lucido

Designer	
Manager	BN
Project Number	12-565
Municipal Number	---
Computer File	12-565_FortPierceVeteransMemorialPark LANDSC.

Sheet **LS-1**

PLANT SCHEDULE PARK

TREES	QTY	BOTANICAL NAME	COMMON NAME	SPECS
CS	1	Conocarpus erectus sericeus	Silver Buttonwood	45G, 12`X8`, STD, SP
QV1	7	Quercus virginiana	Southern Live Oak	RPG, 20` HTx12` SPR,7" C, CH, SP
QVT	3	Quercus virginiana	Transplanted Live Oak	Transplanted from Site

PALM TREES	QTY	BOTANICAL NAME	COMMON NAME	SPECS
PD	4	Phoenix dactylifera `Medjool`	Medjool Date Palm	FG, 18` CT, CLASSIC CUT, MATCHING, SP
PR	3	Phoenix roebelenii	Triple Pygmy Date Palm	FG, 5` HT, TP, F, SP
RO	10	Roystonea regia	Florida/Cuban Royal Palm	FG, 12` GW, SP, No Scars, Straight
SP	40	Sabal palmetto	Sabal Palm	FG, 10` - 18` CT HT, HV CAL, SP, HC

, Cert.

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SPECS
AD	50	Acrostichum daneifolium	Leather Fern	3G, 30" OA, FULL
AVV	7	Alpinia zerumbet `Variegata`	Variegated Shell Ginger	7G, 3` OA, FTB
CAR	35	Carissa macrocarpa	Natal Plum	3G, 24" X18", F
CHR	105	Chrysobalanus icaco `Redtip`	Red Tip Cocoplum	3G, 24" OA, FULL
CLU	95	Clusia guttifera	Small-Leaf Clusia	7G, 4`X4`, F
CC	11	Conocarpus erectus sericeus	Silver Button Wood	25G, 8` OA, FTB
COS	28	Conocarpus erectus sericeus	Silver Button Wood	7G, 36" OA, FULL
COR	6	Cordyline terminalis `Black Magic`	Black Magic Ti Plant	7G, 48" OA, FTB, SP
CRI	19	Crinum	Green Crinum Lily	15G, 3`X3`, SP
DIT	30	Dianella tasmanica	Flax Lily	1G, 18"X12", F
GAL	15	Galphimia gracilis	Thryalis	3G, 24" X18", F
HAP	32	Hamelia patens `Compacta`	Dwarf Fire Bush	7G, 36"x30" , FTB
JAT	14	Jatropha integerrima	Jatropha Bush	7G, 4`OA, Multi, F, SP
MC	6	Myrica cerifera	Wax Myrtle	25G, 6` HT x 5` SPR, FTB
PSW	136	Pennisetum setaceum `White`	White Foutain Grass	3G, 24" X18", F
POM	29	Podocarpus macrophyllus	Podocarpus	CG, 8`X3`, FTB, FF, 3` OC
SCH	67	Schefflera arboricola	Green Schefflera	3G, 24"X18", F,
SER	26	Serenoa repens `Cinerea`	Silver Saw Palmetto	15G, 3`X3`, SP

SHRUB AREAS	QTY	BOTANICAL NAME	COMMON NAME	SPECS	SPACING
NEM	180	Nephrolepis biserrata `Macho Fern`	Macho Fern	3G, 24" OA, F	36" o.c.
PLI	55	Plumbago auriculata `Imperial Blue`	Plumbago	3G, 18" OA, FTB,	24" o.c.

GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SPECS	SPACING
SPA	968	Spartina patens	Salt Meadow Cord Grass	1G, 18" HT x 12" SPR,	24" o.c.

GROUND COVERS	QTY	BOTANICAL NAME	COMMON NAME	SPECS	SPACING
ABE	56	ANNUALS	OWNER/LA TO SELECT	1G, Full Pot	12" o.c.
FIG	271	Ficus microcarpa `Green Island`	Green Island Ficus	3G, 12" HT x 15" SPR, F,	24" o.c.
JUP	17	Juniperus chinensis `Parsonii`	Parson`s Juniper	3G, 10" HT x 18" SPR, F	24" o.c.
LAM	84	Lantana montevidensis `Purple`	Purple Trailing Lantana	1G, 6" HT x 10" SPR, F	18" o.c.

*SOD +/-25,000 SF Cynodon dactylon 'Celebration' Celebration Bermuda Grass Certified, Disease, weed, & Insect Free

*FL SOD +/-15,000 SF Stenotaphrum secundatum `Floratam` Floratam St. Augustine Sod Certified, Disease, weed, & Insect Free

*Final quantity TBD by Landscape Contractor at time of construction.

**See Engineer's Plans for all landscape surface treatments outside the limits of sod/landscape areas shown on these plans.

Cap Rock Boulder QTY: 35 Large (4'x5' - 6'x12"-16"), 55 Medium (3'x4'-5'x12") from Larry's Cap Rock or approved equal
Bioswale Rock QTY: 160 CY 6"-8" White Limestone Rip Rap, 80 CY 3/8" Drainfield Rock from Yardco or Approved equal.

GENERAL NOTES

1.All Landscape Materials shall be Florida #1 or better.

2.See Engineer's Plans for all proposed & existing utilities.

3.All new landscaping within utility easements and within ten (10) feet of underground utility infrastructure shall comply with technical specifications, policies, and codes.

4.No landscaping other than sod grasses may be planted within a 5' radius maintenance area of any utility appurtenances such as water meters, back flow devices, fire hydrants, sanitary sewer cleanouts, and manholes, air release valves, etc. Trees shall not be planted within ten (10) feet of any underground infrastructure.

5.No landscaping shall be planted in such a manner as to adversely affect utility installation, operation and maintenance.

lucido & associates

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Key / Location:

Project Team:

Client/Property Owner: City of Fort Pierce, City Hall, 100 N. US1, Fort Pierce, FL 34950

Landscape Architect: Lucido & Associates, Land Planners & Landscape Architects, 701 East Ocean Boulevard, Stuart, Florida 34994

Civil Engineer: CAPTEC Engineering, Inc., 301 NW Flagler Avenue, Stuart, FL 34994

Veterans Memorial Park

City of Fort Pierce

TMDL
Plant List

Date	By	Description
3.4.14	PG	Bid Set - For Bidding Purposes Only
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NORTH

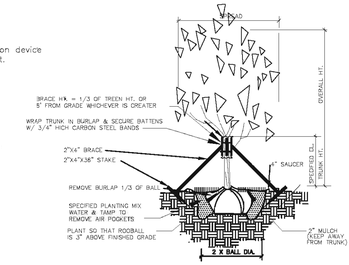
SCALE: 1" = 1'=20'

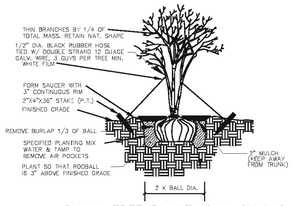
0 10' 20' 40'

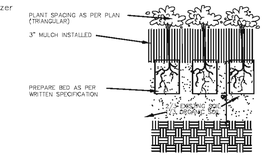
REG. # 1018
Thomas P. Lucido

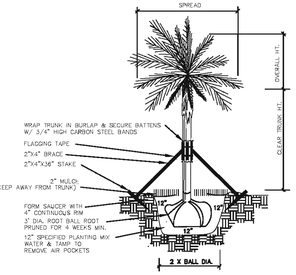
Designer	
Manager	BN
Project Number	12-565
Municipal Number	---
Computer File	12-565_FortPierceVeteransMemorialPark LANDSC.

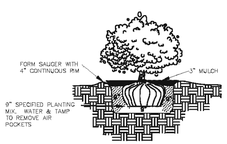
Sheet **LS-2**

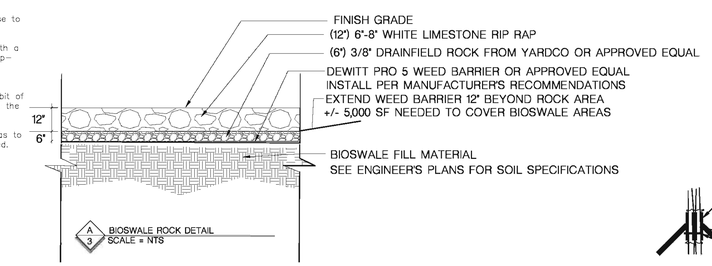


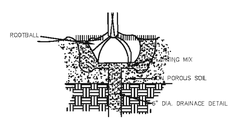


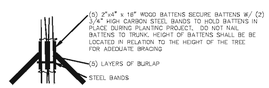


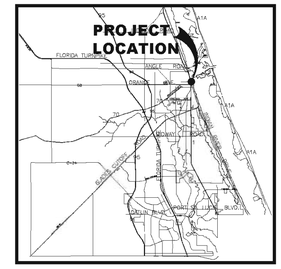












LANDSCAPE SPECIFICATIONS

PART 1: GENERAL CONDITIONS

1.01 SCOPE:

A. The landscape contract includes the supplying and planting of all trees, shrubs, vines, and ground cover together with all necessary labor, equipment, tools and materials needed for the successful completion, execution and maintenance of the landscape plans.

1.02 AGENCY STANDARDS:

A. Grades and standards of plant materials to be used shall be true to name, size, condition and graded Florida #1 or better as stated in: Grades and Standards of Florida Plant Materials published by the State of Florida Department of Agriculture, Tallahassee, Florida.

1.03 SITE EXAMINATION:

A. The Landscape Contractor shall personally examine the site and fully acquaint him/herself with all of the existing conditions in order that no mis-understanding may afterwards arise as to the character or extent of the work to be performed, and additionally, in order to acquaint him/herself with all precautions to be taken in order to avoid injury to property or persons. No additional compensation will be granted because of any unusual difficulties which may be encountered in the execution or maintenance of any portion of the work.

1.04 ERRORS AND OMISSIONS:

A. The plant list is a part of the drawings and is furnished as a convenience. The plant list indicates the name, size and quantities of specific plant materials as called for and is located on the drawings. The Landscape Contractor is responsible for his/her own quantity count, and any discrepancy between drawings and plant list shall be considered as correct on the drawings.

B. The Landscape Contractor shall not take advantage of errors or omissions in the specifications or contract drawings. Full instruction will be given if such errors are discovered. Upon the discovery of any discrepancies in, or omissions from the drawings or documents, or should the Landscape Contractor be in doubt as to their meaning, the Landscape Architect shall be notified and will determine the actions necessary to each query.

C. If plans and specifications are found to disagree after the contract is awarded, the Landscape Architect shall be the judge as to which was intended.

1.05 EXECUTION OF THE WORK:

A. The Landscape Contractor shall have his labor crews controlled and directed by a Foreman well versed in plant materials, planting methods, reading blueprints, and coordination between job and nursery in order to execute installation correctly and in a timely manner.

B. The Landscape Contractor shall provide a competent English-speaking Foreman on the project at all times, who shall be fully authorized as the Contractor's agent on the work. The Superintendent shall be capable of reading and thoroughly understanding the Plans, Specifications and other Contract Documents. If the Superintendent is deemed incompetent by the Landscape Architect, he (the superintendent) shall be immediately replaced.

C. The Landscape Contractor shall be available for any meetings with the Owner and/or Landscape Architect during implementation of the job. Any additional work or changes required as a result of failure to communicate with the Owner or Landscape Architect during implementation will be the responsibility of the Landscape Contractor.

1.06 PROTECTION OF PUBLIC AND PROPERTY:

A. The Landscape Contractor shall protect all materials and work against injury from any cause and shall provide and maintain all necessary safeguards for the protection of the public. He shall be held responsible for any damage or injury to persons or property which may occur as a result of his fault or negligence in the execution of the work, i.e. damage to underground pipes or cables.

1.07 CHANGES AND EXTRAS:

A. The Contractor shall not start work on any changes or "extras" in the project until a written agreement setting forth the adjusted prices has been executed by the Owner and the Contractor. Any work performed on changes or "extras" prior to execution of a written agreement may or may not be compensated for by the Owner at his discretion.

1.08 GUARANTEE:

A. The Landscape Contractor shall furnish a written guarantee warranting all materials, workmanship and plant materials, except sod, for a period of ONE (1) YEAR from the time of completion and acceptance by the Landscape Architect and Owner. Sod shall be guaranteed to 90 calendar days after acceptance by the Landscape Architect and Owner. All plant material shall be alive and in satisfactory condition and growth for each specific kind of plant at the end of the guarantee period. The guranteeing of plant material shall be construed to mean complete and immediate replacement with plant material of the same variety, type, size, quality and grade as that of the originally specified material. During the guarantee period it shall be the Landscape Contractor's responsibility to immediately replace any dead or unhealthy material as determined by the Landscape Architect. The guarantee will be null and void if plant material is damaged by lightning, hurricane force winds, or any other acts of God, as well as vandalism or lack of proper maintenance.

B. At the end of the specified guarantee period, any plant required under this contract that is dead or not in satisfactory condition, as determined by the Landscape Architect, shall be replaced. The Landscape Contractor shall be responsible for the full replacement cost of plant materials for the first replacement and share subsequent replacement (s) costs equally with the Owner, should the replacement plant fail to survive.

1.09 CARE AND MAINTENANCE:

A. The Landscape Contractor shall be responsible for the care and maintenance of all plant materials and irrigation when applicable until final acceptance by the Owner or Landscape Architect.

B. The Owner agrees to execute the instructions for such care and maintenance.

1.10 SAFETY:

A. It shall be the responsibility of the Landscape Contractor to protect all persons from injury and to avoid property damage. Adequate warning devices shall be placed and maintained during the progress of the work.

B. It shall be the contractor's responsibility to conform to all local, state, and federal safety laws and codes including the Federal Occupational Safety And Health Act (O.S.H.A.) .

1.11 CONTRACTOR QUALIFICATION:

A. The Owner may require the apparent contractor (s) to qualify him/herself to be a responsible entity by furnishing any or all of the following documentary data:

1. A financial statement showing assets and liabilities of the company current to date.
2. A listing of not less than (3) completed projects of similar scope and nature.
3. Permanent name and address of place of business.
4. The number of regular employees of the organization and length of time the organization has been in business under the present name.

1.12 INSURANCE AND BONDING:

A. The contractor (s) shall submit proof of insurance for this job for the time period that the work is done. The minimum amount of insurance shall be $300,000.00 per person and $300,000.00 per aggregate or as required by owner and agreed to in the contract. The successful bidder shall be required to have this coverage in effect before beginning work on the site.

B. The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

1.13 PERMITS AND CERTIFICATES:

A. All contractors shall secure and pay for all permits and certificates required for his/her class of work.

PART 2: MATERIALS

2.01 PLANT MATERIALS:

A. A complete list of plants is shown on the drawings, including a schedule of quantities, sizes, and such other requirements deemed necessary. In the event discrepancies occur, the specifications on the drawings shall govern.

B. Substitutions: Substitutions of plant materials or changes in size or spacing of materials will be permitted ONLY upon written authorization by the Owner or the Landscape Architect. If plant material is not of sufficient size to meet applicable codes, a letter of variance from the appropriate agency must be obtained by the Contractor prior to issuance of any change order. If material of smaller size is to be accepted, the quantity of material shall be increased, at no additional cost to the Owner, to meet the intent of the drawings.

C. All plant materials shall have a habit of growth that is normal for the species and shall be healthy, vigorous and equal to or exceed the measurements specified in the plant list, which are the minimum acceptable sizes. Plants shall be measured before pruning with branches in normal position. Any necessary pruning shall be done at the time of planting.

D. All plant materials shall be nursery grown, unless otherwise noted, Florida #1 or better and shall comply with all required inspections, grading standards and plant regulations as set forth by the Florida Department of Agriculture's Grades and Standards for Nursery Plants, most current addition and Grades and Standards for Nursery Plants, most current addition.

E. Plants that do not have the normal balance of height and spread typical for the respective plant shall not be acceptable.

F. The Landscape Contractor shall install each plant to display its best side. Adjustments may be required if plants are not installed properly and/or approved by the Landscape Architect at no additional cost to owner.

2.02 INSPECTION

A. The Landscape Architect and Owner may inspect trees and shrubs at place of growth or at site before planting, for compliance with requirements for genus, species, variety, size and quality. The Landscape Architect and Owner retain the right to further inspect trees and shrubs for size and condition of balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Rejected plant materials shall be immediately removed from project site.

2.03 PROTECTION OF PLANT MATERIALS:

A. Balled and burlapped plants (B & B) shall be dug with firm natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Balls shall be firmly wrapped with burlap similar materials and bound with cord, rope, or wire mesh. All collected plants shall be balled and burlapped.

B. Plants with broken, damaged or insufficient rootballs will be rejected.

C. All plant material shall be protected from possible bark injury or breakage of branches. All plants transported by open trucks shall be adequately covered to prevent windburn, drying or damage to plants.

D. Plants which cannot be planted immediately on delivery to the site shall be covered with moist soil, mulch or other protection from the drying of wind and sun. All plants shall be watered as necessary by the Landscape Contractor until planted.

2.04 STORAGE:

A. All plant materials shall be stored on the site in designated areas, specified by the Landscape Architect or Owner's agent.

B. No plant material shall be stored longer than seventy-two (72) hours unless approved by by Landscape Architect and/or owner.

C. The Landscape Architect reserves the right to reject any plant materials not in conformance with these specifications.

D. All rejected material shall be immediately removed from the site and replaced with acceptable material at no cost to the Owner.

2.05 PROTECTION DURING PLANTING:

A. Trees moved by winch or crane shall be thoroughly protected from chain marks, girdling or bark slippage by means of burlap, wood battens or other approved methods. Battens shall NOT be attached to the tree with nails,

2.06 PLANTING SOIL:

A. Planting soil for all plantings shall consist of existing native soil and shall be free of debris, roots, clay, stones, plants or other foreign materials which might be a hindrance to planting operations or be detrimental to good growth.

2.07 FERTILIZER:

A. The application of commercial fertilizer shall comply with all applicable state and local laws and ordinances. Nitrogen shall not be less than 40% from organic source. Inorganic chemica nitrogen shall not be derived from the sodium form of nitrate. Fertilizers shall be delivered to the site in unopened original containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer that becomes caked or otherwise damaged shall be rejected.

B. Thoroughly mixed 3 lbs. of commercial fertilizer to each cubic yard of planting soil.

C. Tabletized fertilizer shall be Agrifarm planting tablets 20-10-5 formula, 21 gram or equal. All trees and shrubs shall be fertilized with tabletized fertilizer as follows. While backfilling plant holes, fertilizer tablets shall be equally spaced and placed adjacent to the ball mid-way in depth in accordance with the following rates:

1 gallon container	1 tablet
3 gallon container	2 tablets
5 gallon container	3 tablets
7 gallon	5 tablets

Large tubs, wire baskets, grow bags, and balled and burlapped material shall have 1 tablet for each 1/2 inch of trunk diameter (measured 3 feet from ground) or for each foot of height or spread of larger shrub material.
The Landscape Architect reserves the right to inspect and review the application of fertilizer.

2.08 MULCH:

A. Mulch material shall be clean, dry, free of weeds, seeds and pests, moistened at the time of application to prevent wind displacement. Cypress &/or Red mulch is prohibited.

B. All trees and shrub beds shall receive 3" mulch immediately after planting and thoroughly watered. Apply 2" max on tree & palm rootballs, keep away from tree & palm trunks or as required by local jusidiction.

PART 3: EXECUTION

3.01 DIGGING:

A. The Landscape Contractor shall exercise care in digging and other work so as not to damage existing work, including overhead wires, underground pipes and cables and the pipes and hydrants of watering systems. Should such overhead or underground obstructions be encountered which interfere with planting, the Owner shall be consulted and contractor will adjust the location of plants to clear such obstruction. The Contractor shall be responsible for the immediate repair of any damage caused by his work.

3.02 GRADING:

A. Grading for drainage, swales, etc. to within 4 inches of the finished grade to be provided by others.

B. It shall be the responsibility of the Landscape Contractor to provide the final grading during the course of landscape installation so as to bring sod and planting areas to their proper elevations in relation to walks, paving, drain structures, and other site conditions. The site grading plan must be checked prior to installation of sod to insure that drainage and other conditions will NOT be modified.

3.03 PLANTING:

A. Planting shall take place during favorable weather conditions.

B. The Contractor shall call for utility locates and ascertain the location of all utilities and easements so proper precautions can be taken not to damage or encroach on them.

C. Tree Planting shall be located where it is shown on the plan. No planting holes shall be dug until the proposed locations have been staked on the ground by the Contractor.

D. Excavation of holes shall extend to the required subgrades as specified on the planting diagrams located in the planting plans. Plant pits shall be circular in outline and shall have a profile which conforms to the aforementioned "Tree and Shrub Planting Diagrams".

E. A representative number of planting pits (a minimum of one in every 25 feet throughout the entire site) shall be tested for proper drainage. See Landscape Plan for complete testing methods and requirements.

F. Planting pits shall be excavated to the following dimensions and refilled with a mixture of (1/2) planting soil (1/2) existing native soil];
1 Gallon materia (1 gal.): 12" x 12" x 12" min.
3 Gallon materia (3 gal.): 20" x 20" x 18" min.
Leria material (7 gal.): 30" x 30" x 24" min.
Field grown material and trees: 1-1/2 times width of ball and depth of ball plus 12" min.

G. No planting or laying of sod shall be initiated until the area has been cleaned of existing sod or other plant materials, rough grass, weeds, debris, stones etc. and the ground has been brought to an even grade, with positive drainage away from buildings and towards drain inlets and swales and approved by Landscape Architect or owner's rep.

H. Each plant shall be planted in an individual hole as specified for trees, shrubs, and vines.

I. All plants shall be set to ultimate finished grade. No filling will be permitted around trunks or stems. All ropes, wire, stakes, etc., shall be removed from sides and top of the ball and removed from hole before filling in.

J. All flagging ribbon shall be removed from trees and shrubs before planting.

K. Excess excavation (fill) from all holes shall be removed from the site, at no additional expense to Owner.

L. All palms shall be backfilled with sand, thoroughly washed in during planting operations and with a shallow saucer depression left at the soil line for future waterings. Saucer areas shall be top-dressed two (2") inches deep with topsoil raked and left in a neat, clean manner.

3.04 PRUNING:

A. Remove dead and broken branches from all plant material. Prune to retain typical growth habit of individual plants with as much height and spread as possible in a manner which will preserve the plant's natural character.

B. Make all cuts with sharp instruments flush with trunk or adjacent branch, in such a manner as to insure elimination of stubs. Cuts made at right angles to line of growth will not be permitted.

C. Trees shall not be poled or topped.

D. Remove all trimmings from site.

3.05 GUYING:

A. All trees over six (6') feet in height shall, immediately after setting to proper grade, be guyed with three sets of two strands, No. 12 gauge malleable galvanized iron, in tripod fashion. See Detail.

B. Wires shall not come in direct contact with the tree but shall be covered with an approved protection device at all contact points. Wires shall be fastened in such a manner as to avoid pulling crotches apart.

D. Stake & Brace all treess larger than 12' oa. See detail.
Stakes shall be 2" x 2" lumber of sufficient length to satisfactorily support each tree.

E. Turnbuckles for guying trees shall be galvanized or cadmium plated and shall be of adequate size and strength to properly maintain tight guy wires.

3.06 WATER:

A. Each plant or tree shall be thoroughly watered in after planting. Watering of all newly installed plant materials shall be the responsibility of the Landscape Contractor until final acceptance by the Landscape Architect.

B. See General Notes of Landscape Plan for water source.

3.07 SOD:

A. The Landscape Contractor shall sod all areas indicated on the drawings.

B. It shall be the responsibility of the Landscape Contractor to fine grade all landscape areas, eliminating all bumps, depressions, sticks, stones, and other debris.

C. The sod shall be firm, tough texture, having a compacted growth of grass with good root development. It shall contain no noxious weeds, or any other objectionable vegetation, fungus, insects, or disease. The soil embedded in the sod shall be good clean earth, free from stones and debris.

D. Before being cut and lifted, the sod shall have been mowed at least three times with a lawn mower, with the final mowing not more than seven days before the sod is cut. The sod shall be carefully cut into uniform dimensions.

E. 6-6-6 fertilizer with all trace elements is to be applied at the rate of 40 lbs. per 1,000 sq. ft. prior to laying sod. The application of commercial fertilizer shall be in accordance with all applicable state and local laws and ordinances.

F. Solid sod shall be laid with closely abutting, staggered joints with a tamped or rolled, even surface.

G. The finished level of all sod areas after settlement shall be one (1") inch below the top of abutting curbs,
walks, paving and wood borders to allow for building turf.

H. If in the opinion of the Landscape Architect, top dressing is necessary after rolling, clean yellow sand will be evenly applied over the entire surface and thoroughly washed in.

3.08 SEEDING:

A. The Landscape Contractor shall remove all vegetation and rocks larger than (1") in diameter from areas to be seeded, scarify the area, then apply fertilizer at a rate of 500 lbs. per acre.

B. Application: Argentine Bahia Grass seed - 200 Pounds per acre mixed with common hulled Bermuda seed - 30 lbs. per acre. All other seed mixtures shall be applied per the manufacturer's instructions,

C. Roll immediately after seeding with a minimum 500 pound roller, then apply straw mulch at the rate of 2,500 pounds per acre.

D. Apply fertilizer at the rate of 150 lbs. per acre 45-60 days after seeding. The application of commercial fertilizer shall be in accordance with all applicable state and local laws and ordinances.

3.09 CLEANING UP:

A. The contractor shall at all times keep the premises free from accumulations of waste materials or rubbish caused by his employees or work. He shall leave all paved areas "broom clean" when completed with his work.

3.10 MAINTENANCE:

A. Maintenance shall begin immediately after each plant is installed and shall continue until all planting has been accepted by the Owner or Landscape Architect. Maintenance shall include watering, weeding, removal of dead materials, resetting plants to proper grades or upright positions, spraying, restoration of planting saucer and/or any other necessary operations.

B. Proper protection to lawn areas shall be provided and any damage resulting from planting operations shall be repaired promptly.

C. Replacement of plants during the maintenance period shall be the responsibility of the Contractor, excluding vandalism or damage on the part of others, lighting, or hurricane force winds, until final acceptance.

D. In the event that weeds or other undesirable vegetation become prevalent, it shall be the Contractor's responsibility to remove them.

E. Trees or other plant material which fall or are blown over during the maintenance period will be reset by the Contractor at no additional expense to the Owner, the only exception being hurricane force winds.

3.11 COMPLETION, INSPECTION AND ACCEPTANCE:

A. Completion of the work shall mean the full and exact compliance and conformity with the provisions expressed or implied in the Drawings and in the Specifications, including the complete removal of all trash, debris, soil or other waste created by the Landscape Contractor.

B. Inspection of work to determine completion of contract, exclusive of the possible replacement of plants, will be made by the Owner and/or Landscape Architect at the conclusion of all planting and at the request of the Landscape Contractor.

C. All plant material shall be alive and in good growing condition for each specified kind of plant at the time of acceptance. The rating of each plant according to Florida Grades and Standards shall be equal to or better than that called for on the plans and in these Specifications at the time of final inspection and acceptance.

D. After inspection, the Landscape Contractor will be notified by the Owner of the acceptance of all plant material and workmanship, exclusive of the possible replacement of plants subject to guarantee.

DRAINAGE TESTING/DRAINAGE CHANNEL REQUIREMENTS

PRIOR TO PLANTING ALL PLANTING PITS SELECTED FOR TESTING SHALL BE TESTED IN THE FOLLOWING MANNER

A. DIG EACH PLANTING PIT TO THE MINIMUM SPECIFIED SIZE.

B. FILL PLANTING PIT WITH TWELVE INCHES (12") OF WATER. IF THE WATER LEVEL DROPS FOUR (4") OR MORE WITHIN FOUR (4) HOURS, THE DRAINAGE IS SUFFICIENT AND A DRAINAGE CHANNEL IS NOT REQUIRED IF THE WATER LEVEL DROPS LESS THAN FOUR INCHES (4") WITHIN THE FOUR (4) HOUR PERIOD, A DRAINAGE CHANNEL IS REQUIRED.

C. WHERE REQUIRED, THE DRAINAGE CHANNEL MUST EXTEND DOWN THROUGH THE NON POROUS SOIL AND INTO POROUS SOIL. (SEE DETAIL)

D. ALL MATERIAL REMOVED FROM THE DRAINAGE CHANNEL SHALL BE DISCARDED.

E. WHEN BACKFILLING PLANTING PITS WITH PLANTING MIXTURE, CARE MUST BE TAKEN TO KEEP THE CONSISTENCY OF THE SOIL MIX THE SAME THROUGHOUT THE PLANTING PIT AND DRAINAGE CHANNEL.

BIOSWALE ROCK DETAIL
SCALE = NTS

LARGE TREE PLANTING & STAKING
SCALE: NOT TO SCALE

SMALL TREE PLANTING & GUYING
SCALE: NOT TO SCALE

GROUNDCOVER PLANTING DETAIL
SCALE: NOT TO SCALE

PALM PLANTING - ANGLE STAKE
SCALE: NOT TO SCALE

SHRUB PLANTING
SCALE: NOT TO SCALE

DRAINAGE TESTING DETAIL
SCALE: NOT TO SCALE

BRACING DETAIL
SCALE: NOT TO SCALE

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Key / Location:

Project Team:

Client/Property Owner:	City of Fort Pierce City Hall 100 N. US1 Fort Pierce, FL 34950
Landscape Architect:	Lucido & Associates Land Planners & Landscape Architects 701 East Ocean Boulevard Stuart, Florida 34994
Civil Engineer:	CAPTEC Engineering, Inc. 301 NW Flagler Avenue Stuart, FL 34994

Veterans Memorial Park

City of Fort Pierce

TMDL
Landscape Specifications
And Details

Date	By	Description
3.4.14	PG	Bid Set - For Bidding Purposes Only
3.1.15	PG	Bid Set - For Bidding Purposes Only

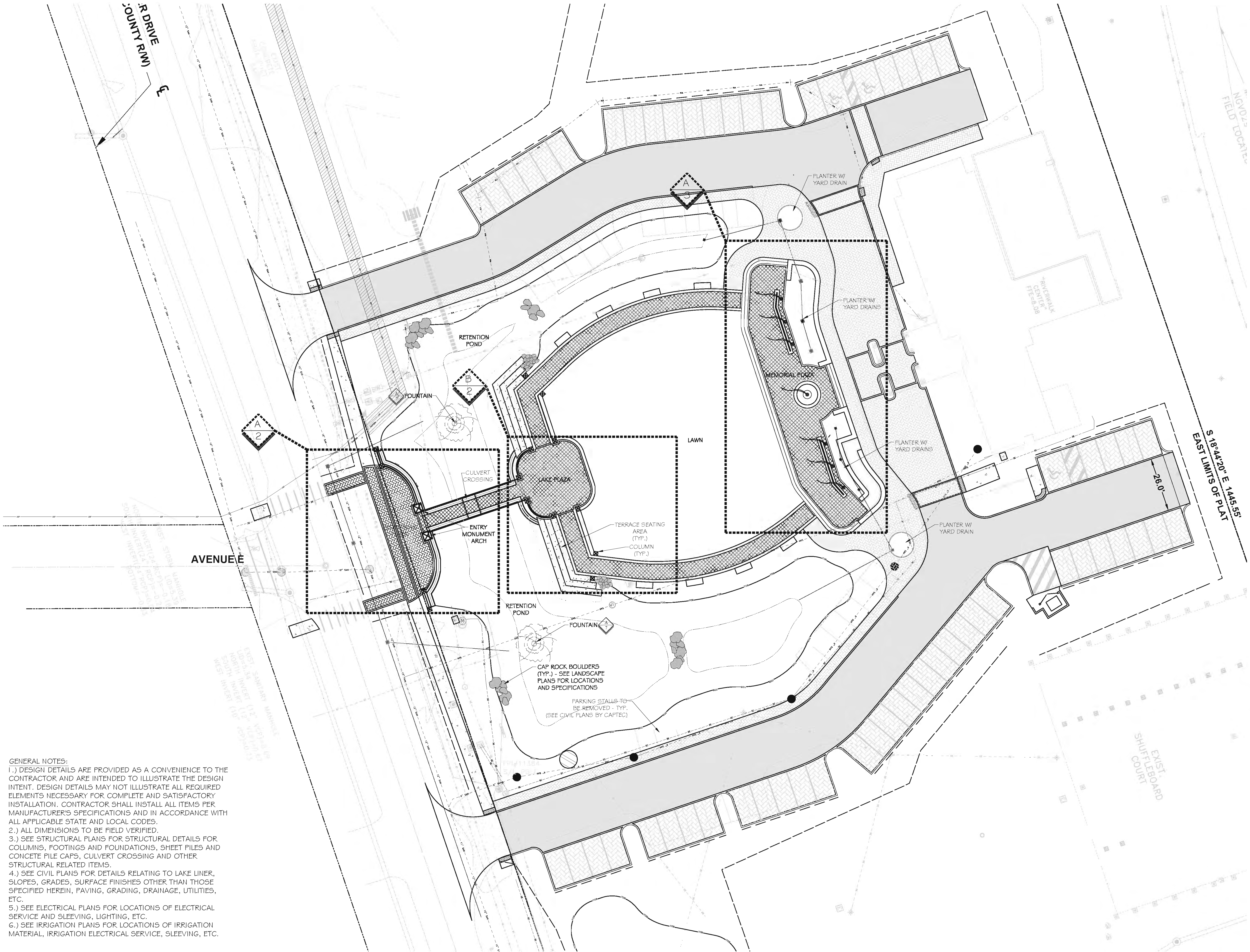
NORTH

SCALE: 1" = 0'
0 0' 0' 0'

REG. # 1018
Thomas P. Lucido

Designer	
Manager	BN
Project Number	12-565
Municipal Number	---
Computer File	12-565_FortPierceVeteransMemorialPark LANDSC

Sheet
LS-3



GENERAL NOTES:

1.) DESIGN DETAILS ARE PROVIDED AS A CONVENIENCE TO THE CONTRACTOR AND ARE INTENDED TO ILLUSTRATE THE DESIGN INTENT. DESIGN DETAILS MAY NOT ILLUSTRATE ALL REQUIRED ELEMENTS NECESSARY FOR COMPLETE AND SATISFACTORY INSTALLATION. CONTRACTOR SHALL INSTALL ALL ITEMS PER MANUFACTURER'S SPECIFICATIONS AND IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL CODES.
2.) ALL DIMENSIONS TO BE FIELD VERIFIED.
3.) SEE STRUCTURAL PLANS FOR STRUCTURAL DETAILS FOR COLUMNS, FOOTINGS AND FOUNDATIONS, SHEET PILES AND CONCETE PILE CAPS, CULVERT CROSSING AND OTHER STRUCTURAL RELATED ITEMS.
4.) SEE CIVIL PLANS FOR DETAILS RELATING TO LAKE LINER, SLOPES, GRADES, SURFACE FINISHES OTHER THAN THOSE SPECIFIED HEREIN, PAVING, GRADING, DRAINAGE, UTILITIES, ETC.
5.) SEE ELECTRICAL PLANS FOR LOCATIONS OF ELECTRICAL SERVICE AND SLEEVING, LIGHTING, ETC.
6.) SEE IRRIGATION PLANS FOR LOCATIONS OF IRRIGATION MATERIAL, IRRIGATION ELECTRICAL SERVICE, SLEEVING, ETC.

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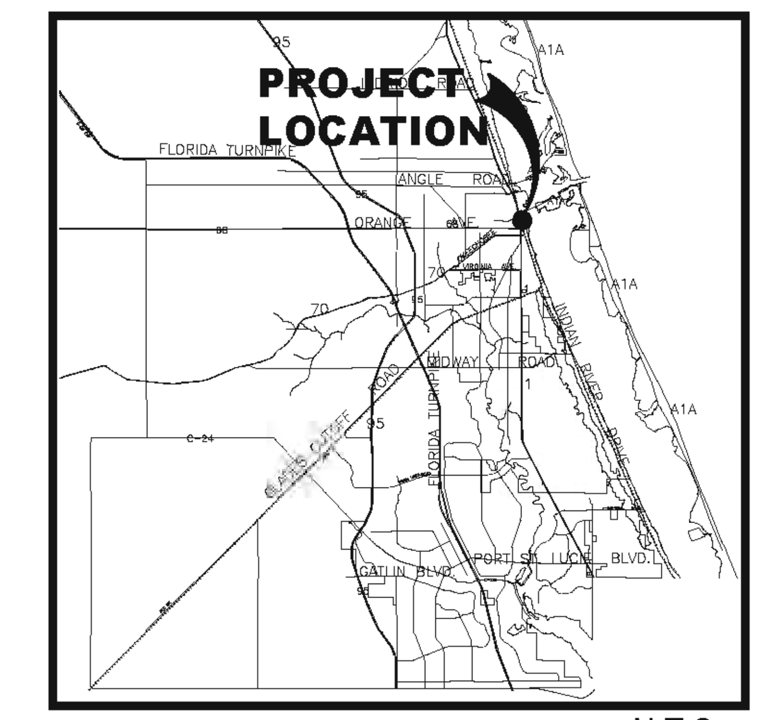


N.T.S.

Project Team:

Client/Property Owner:	City of Fort Pierce City Hall 100 N. US1 Fort Pierce, FL 34950
Landscape Architect:	Lucido & Associates Land Planners & Landscape Architects 701 East Ocean Boulevard Stuart, Florida 34994
Civil Engineer:	CAPTEC Engineering, Inc. 301 NW Flagler Avenue Stuart, FL 34994

Veterans Memorial Park

City of Fort Pierce

TMDL
Hardscape Layout Plan

Date	By	Description
3.4.14	BN	Bid Set - For Bidding Purposes Only
5.12.14	BN	Bid Set - For Bidding Purposes Only
3.1.15	BN	Bid Set - For Bidding Purposes Only

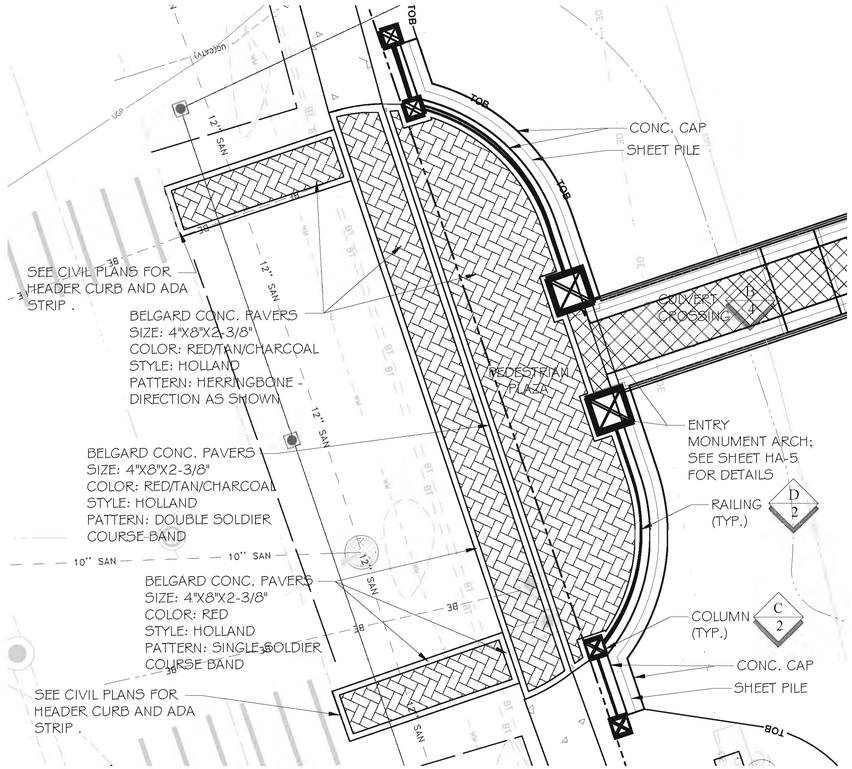
NORTH

SCALE: 1" = 1"=20'

0 10' 20' 40'

REG. # 1018
Thomas P. Lucido

Designer	BN	Sheet
Manager	SG/BN	**HA-1**
Project Number	12-565	
Municipal Number	---	
Computer File	Hardscape_CurrentJL_TMDL_3.3.15.dwg	



A 2 PEDESTRIAN PLAZA DETAIL
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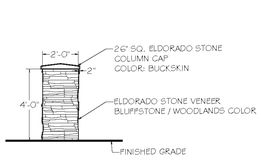

C 2 TYPICAL COLUMN DETAIL
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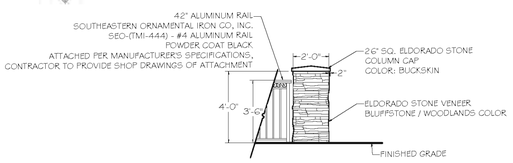

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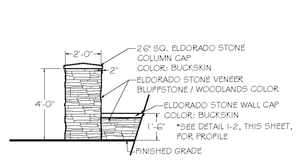

E 2 TYPICAL COLUMN AND SEAT WALL DETAIL
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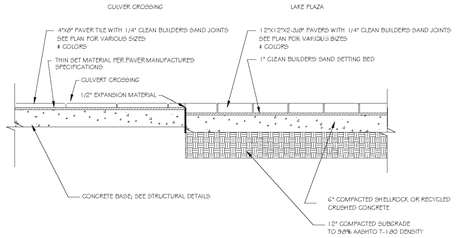

F 2 CULVERT CROSSING AND LAKE PLAZA PAVER SECTION
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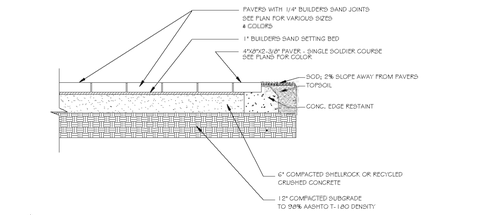

G 2 TYPICAL PAVER EDGE RESTRAINT SECTION
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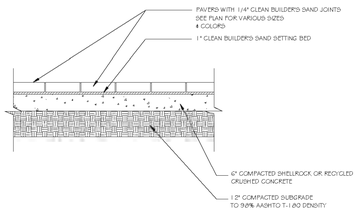

H 2 TYPICAL CONCRETE PAVER SECTION
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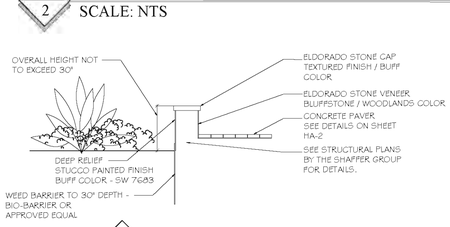

I 2 SEAT WALL PROFILE
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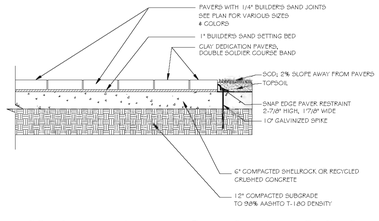

J 2 CONCRETE PAVER EDGE RESTRAINT SECTION - MEMORIAL WALK
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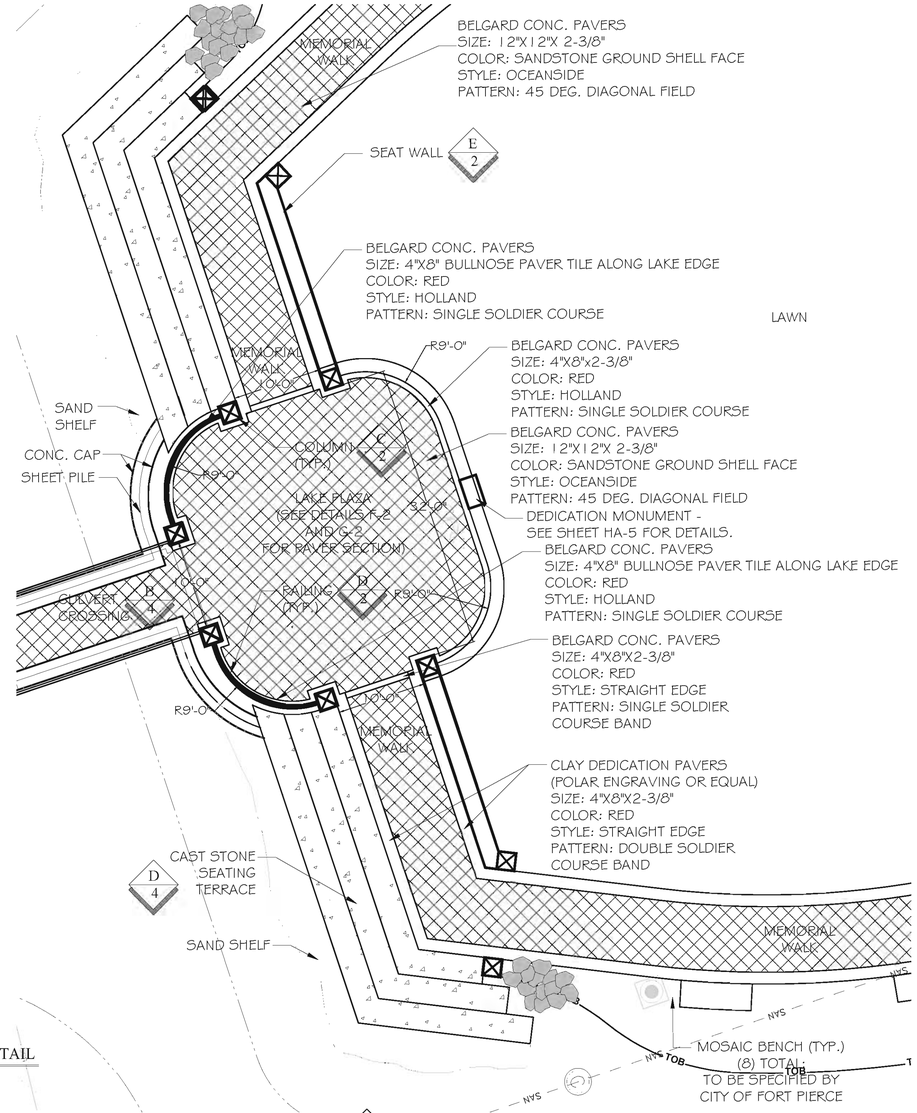

D 4 CAST STONE SEATING TERRACE
SAND SHELF

B 2 LAKE PLAZA DETAIL
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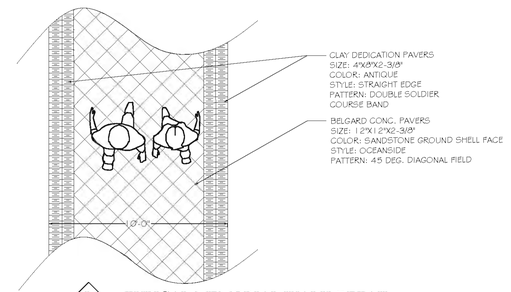

J 2 TYPICAL MEMORIAL WALK DETAIL
SCALE: NTS

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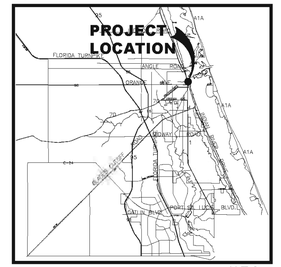
Key / Location:



Project Team:

Client/Property Owner: City of Fort Pierce, City Hall, 100 N. US1, Fort Pierce, FL 34950
Landscape Architect: Lucido & Associates, Land Planners & Landscape Architects, 701 East Ocean Boulevard, Stuart, Florida 34994
Civil Engineer: CAPTEC Engineering, Inc., 301 NW Flagler Avenue, Stuart, FL 34994

Veterans Memorial Park

City of Fort Pierce

TMDL Hardscape Design Details

Date	By	Description
3.4.14	BN	Bid Set - For Bidding Purposes Only
5.12.14	BN	Bid Set - For Bidding Purposes Only
3.1.15	BN	Bid Set - For Bidding Purposes Only

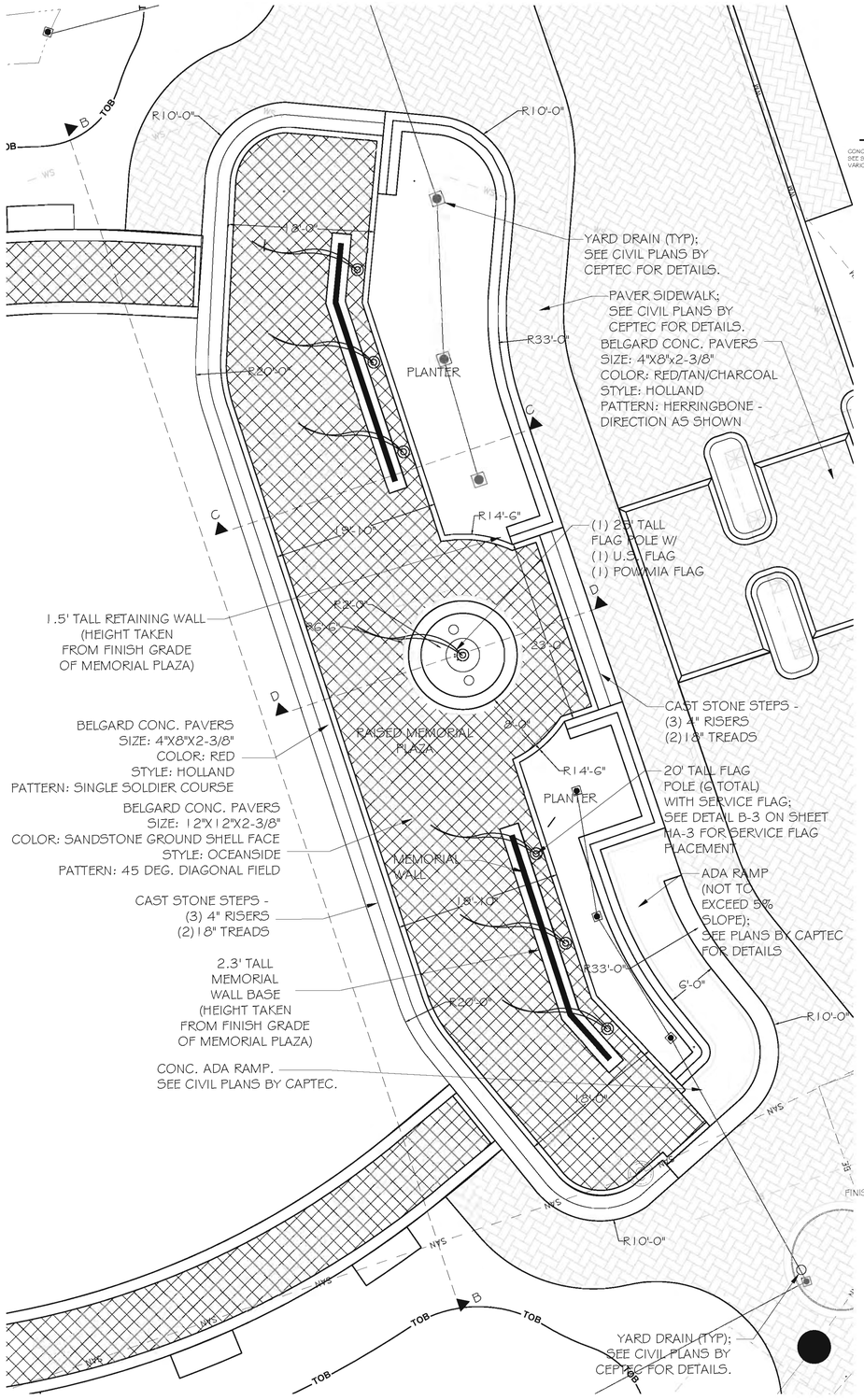
NORTH

SCALE: 1" = As Noted

0 0' 0' 0'

REG. # 1018
Thomas P. Lucido

Designer	BN	Sheet
Manager	SG/BN	HA-2
Project Number	12-565	
Municipal Number	---	
Computer File	Hardscape_CurrentJL_TMDL_3.3.15.dwg	



A 3 MEMORIAL PLAZA DETAIL
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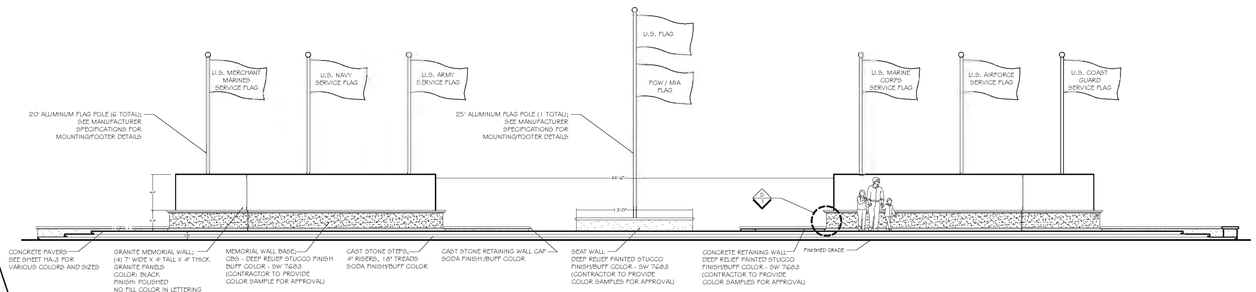

B 3 MONUMENT PLAZA ELEVATION
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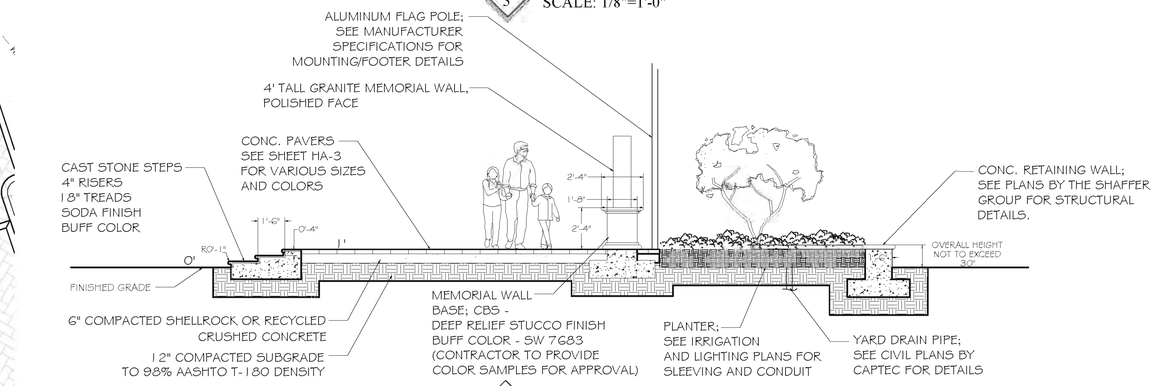

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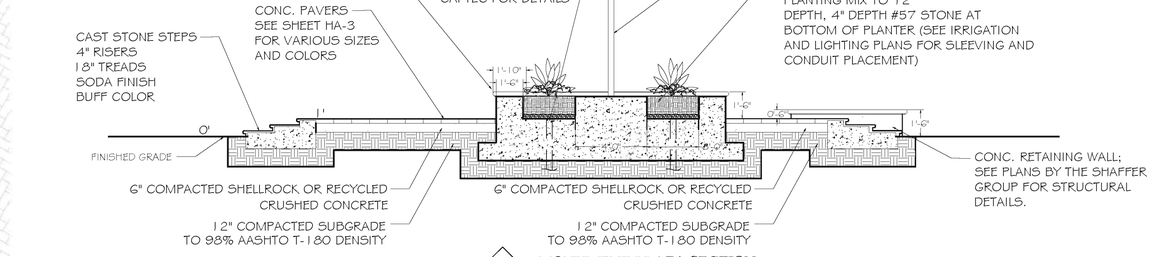

D 3 MONUMENT PLAZA SECTION
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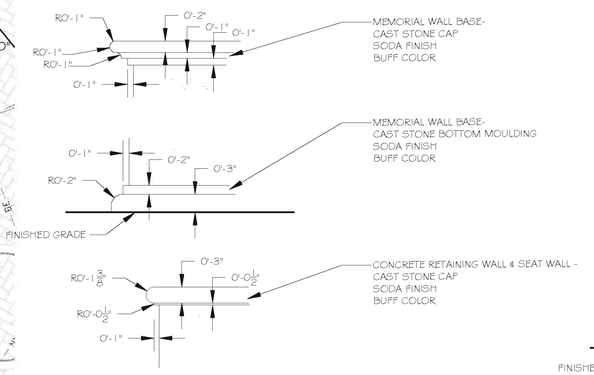
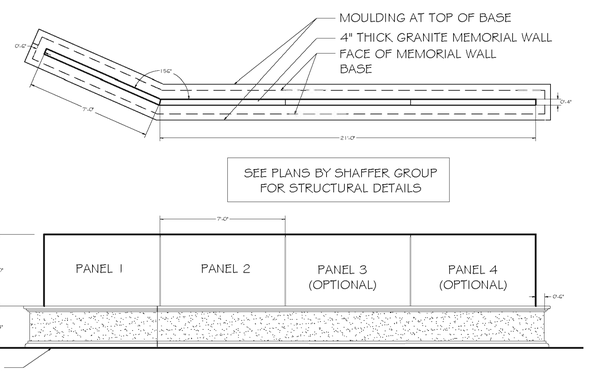


E 3 MONUMENT PLAZA - WALL CAP AND MOLDING DETAILS
SCALE: 1"=1'-0"



F 3 MEMORIAL WALL - PLAN AND ELEVATION DETAILS
SCALE: 1/4"=1'-0"

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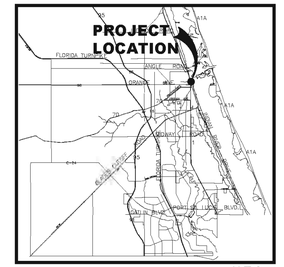

Project Team:

Client/Property Owner: City of Fort Pierce, City Hall, 100 N. US1, Fort Pierce, FL 34950

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Civil Engineer: CAPTEC Engineering, Inc., 301 NW Flagler Avenue, Stuart, FL 34994

Veterans Memorial Park

City of Fort Pierce

TMDL Hardscape Design Details

Date	By	Description
3.4.14	BN	Bid Set - For Bidding Purposes Only
5.12.14	BN	Bid Set - For Bidding Purposes Only
3.1.15	BN	Bid Set - For Bidding Purposes Only

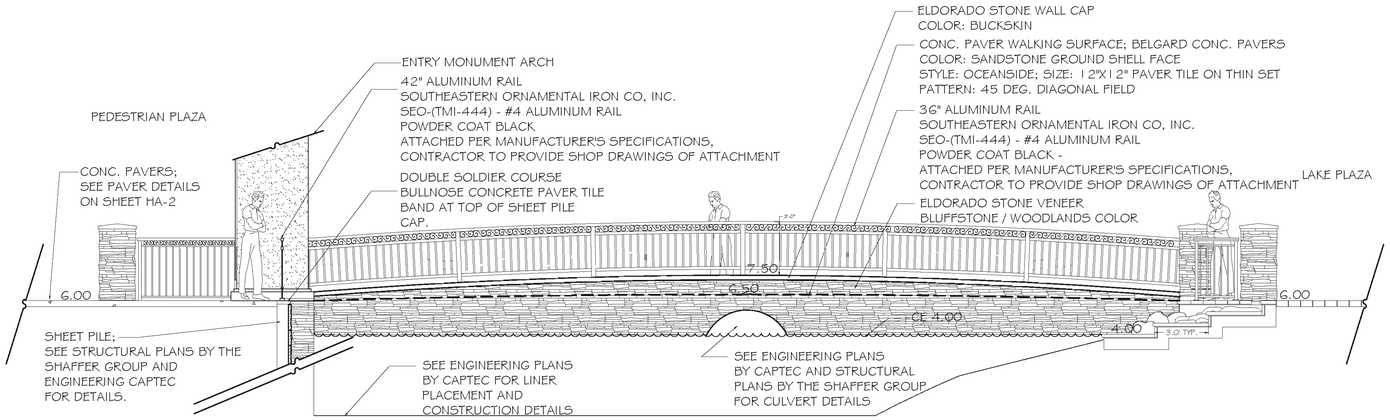
NORTH

SCALE: 1" = As Noted

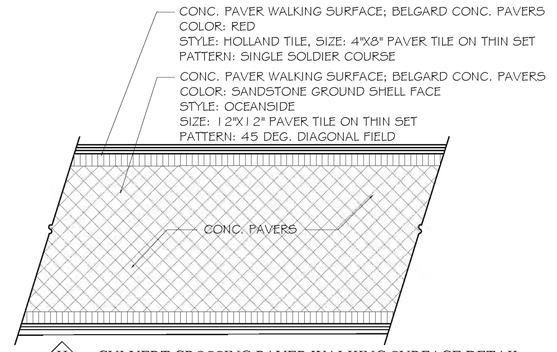
0 0' 0' 0'

REG. # 1018
Thomas P. Lucido

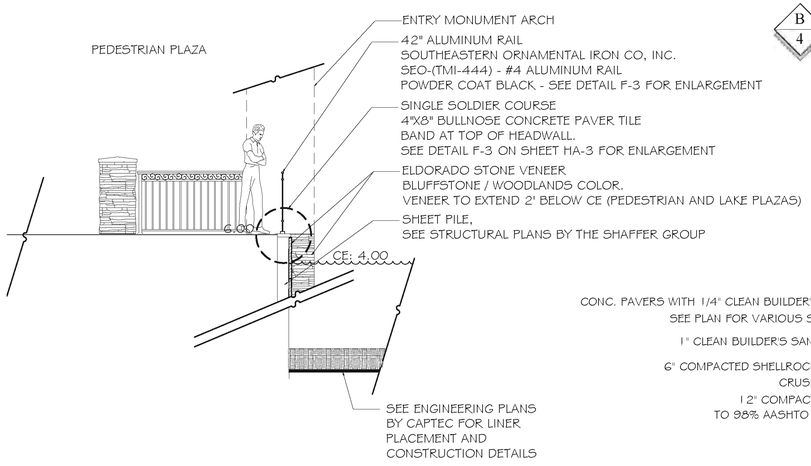
Designer	BN	Sheet
Manager	SG/BN	HA-3
Project Number	12-565	
Municipal Number		
Computer File	Hardscape_CurrentJL_TMDL_3.3.15.dwg	



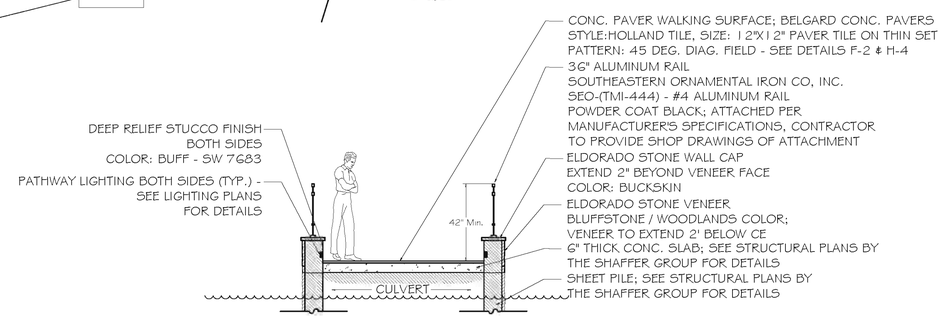
B/4 CULVERT CROSSING DETAIL
SCALE: 1/4"=1'-0"



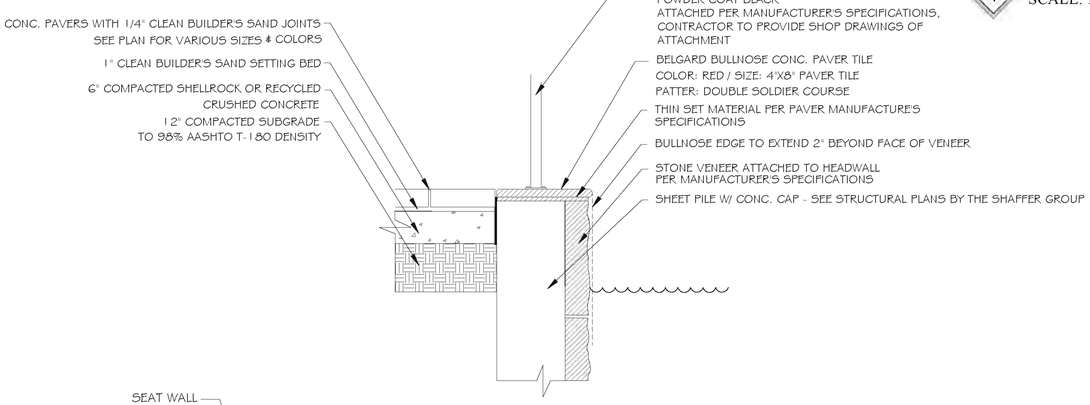
H/4 CULVERT CROSSING PAVER WALKING SURFACE DETAIL
SCALE: 1/4"=1'-0"



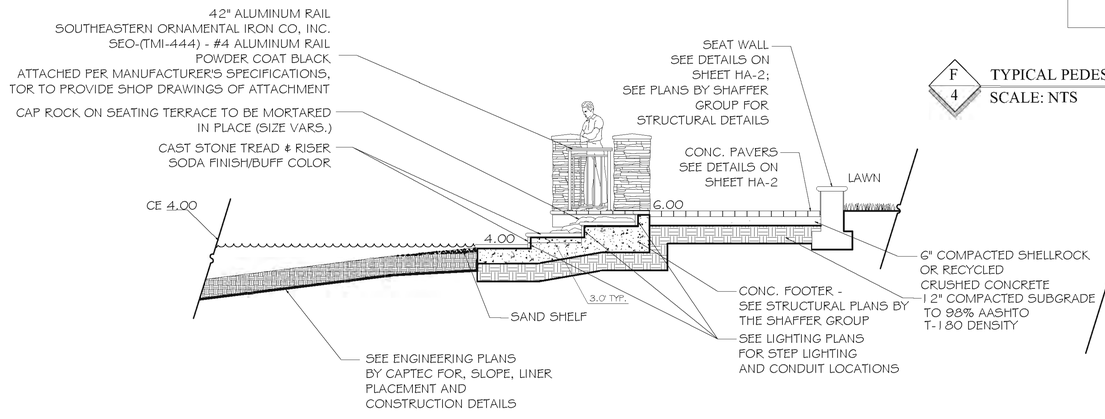
C/4 PEDESTRIAN PLAZA LAKE EDGE DETAIL
SCALE: 1/4"=1'-0"



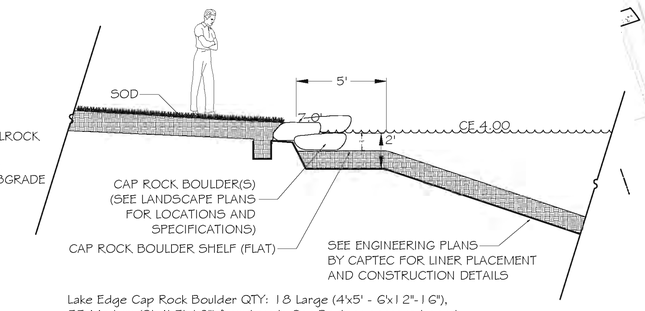
G/4 CULVERT CROSSING SECTION
SCALE: 1/4"=1'-0"



F/4 TYPICAL PEDESTRIAN PLAZA AND LAKE PLAZA - LAKE EDGE DETAIL
SCALE: NTS

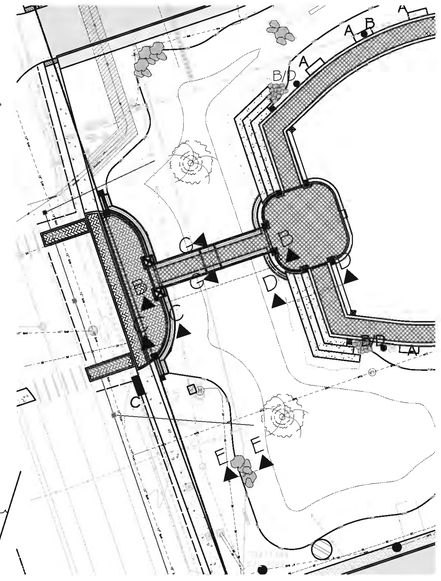


D/4 TERRACE SEATING SECTION
SCALE: 1/4"=1'-0"



Lake Edge Cap Rock Boulder QTY: 18 Large (4'x5' - 6'x12"-16"),
55 Medium (3'x4'-5'x12") from Larry's Cap Rock or approved equal

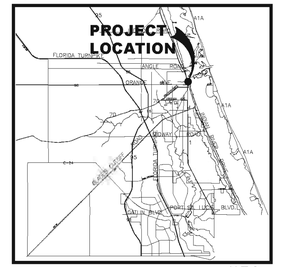
E/4 LAKE EDGE CAP ROCK BOULDER DETAIL
SCALE: 1/4"=1'-0"



A/4 SECTION LOCATION PLAN
SCALE: 1"=30' - 0"

lucido & associates
701 E Ocean Blvd., Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220
100 Avenue A Suite 2A, Fort Pierce, Florida 34950 (772) 467-1301, Fax (772) 467-1303
827 North Thornton Avenue, Orlando, Florida 32803 (407) 898-9521, Fax (407) 898-9768

Key / Location:



N.T.S.

Project Team:

Client/Property Owner: City of Fort Pierce
City Hall
100 N. US1
Fort Pierce, FL 34950

Landscape Architect: Lucido & Associates
Land Planners & Landscape Architects
701 East Ocean Boulevard
Stuart, Florida 34994

Civil Engineer: CAPTEC Engineering, Inc.
301 NW Flagler Avenue
Stuart, FL 34994

Veterans Memorial Park

City of Fort Pierce

TMDL Lake Edge Design Details

Date	By	Description
3.4.14	BN	Bid Set - For Bidding Purposes Only
5.12.14	BN	Bid Set - For Bidding Purposes Only
3.1.15	BN	Bid Set - For Bidding Purposes Only

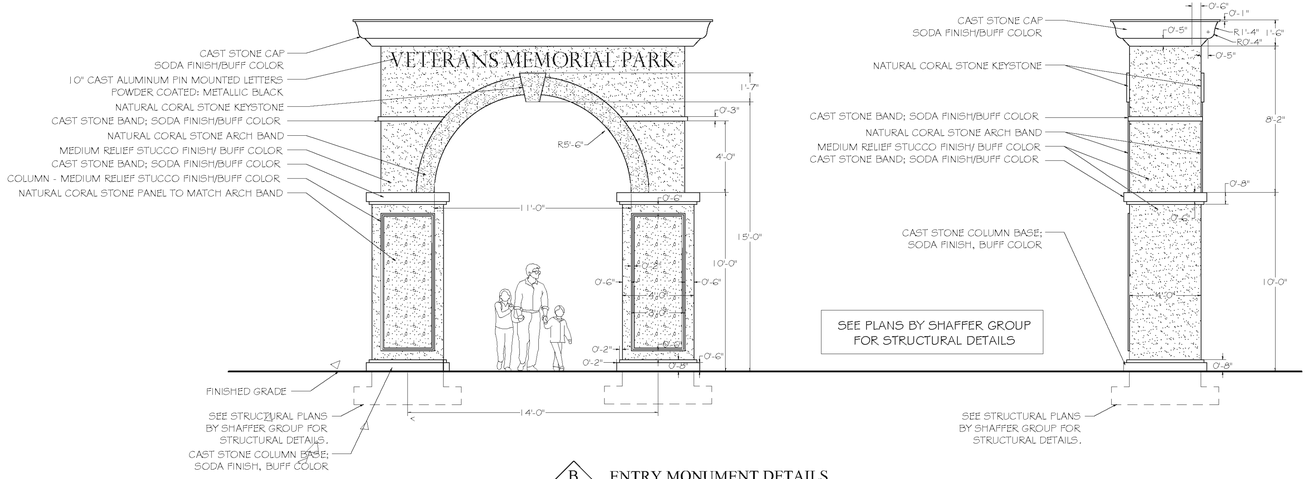
NORTH

SCALE: 1" = As Noted

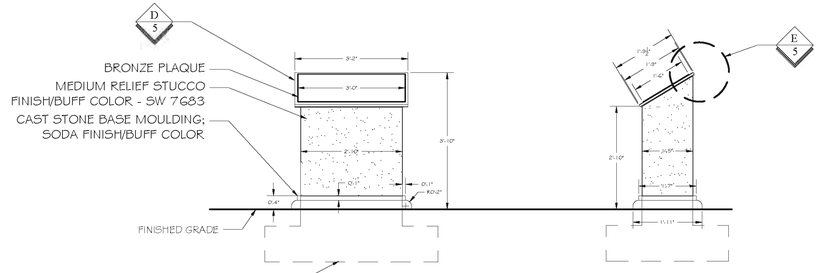
0 0' 0' 0'

REG. # 1018
Thomas P. Lucido

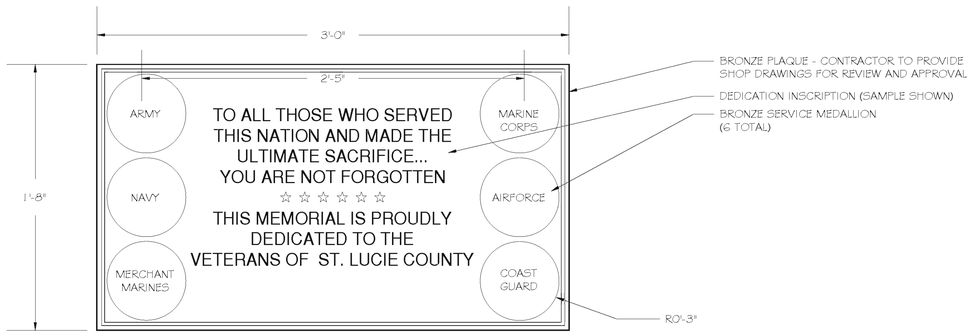
Designer	BN	Sheet
Manager	SG/BN	**HA-4**
Project Number	12-565	
Municipal Number	---	
Computer File	Hardscape_CurrentJL_TMDL_3.3.15.dwg	



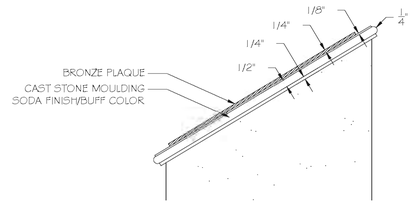
B/5 ENTRY MONUMENT DETAILS
SCALE: 1/4"=1'-0"



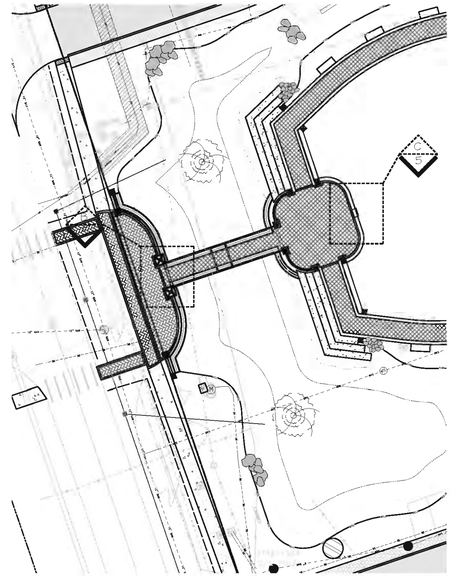
C/5 DEDICATION MONUMENT DETAILS
SCALE: 1/2"=1'-0"



D/5 DEDICATION MONUMENT - BRONZE PLAQUE DETAIL
SCALE: NTS



E/5 ENTRY MONUMENT DETAILS
SCALE: NTS



A/5 ENTRY MONUMENT LOCATION PLAN
SCALE: 1"=30' - 0"

lucido & associates

701 E Ocean Blvd., Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220
100 Avenue A Suite 2A, Fort Pierce, Florida 34950 (772) 467-1301, Fax (772) 467-1303
827 North Thornton Avenue, Orlando, Florida 32803 (407) 898-9521, Fax (407) 898-9768

Key / Location:

N.T.S.

Project Team:

Client/Property Owner: City of Fort Pierce, City Hall, 100 N. US1, Fort Pierce, FL 34950

Landscape Architect: Lucido & Associates, Land Planners & Landscape Architects, 701 East Ocean Boulevard, Stuart, Florida 34994

Civil Engineer: CAPTEC Engineering, Inc., 301 NW Flagler Avenue, Stuart, FL 34994

Veterans Memorial Park

City of Fort Pierce

TMDL Entry Monument Arch Design Details

Date	By	Description
3.4.14	BN	Bid Set - For Bidding Purposes Only
5.12.14	BN	Bid Set - For Bidding Purposes Only
3.1.15	BN	Bid Set - For Bidding Purposes Only

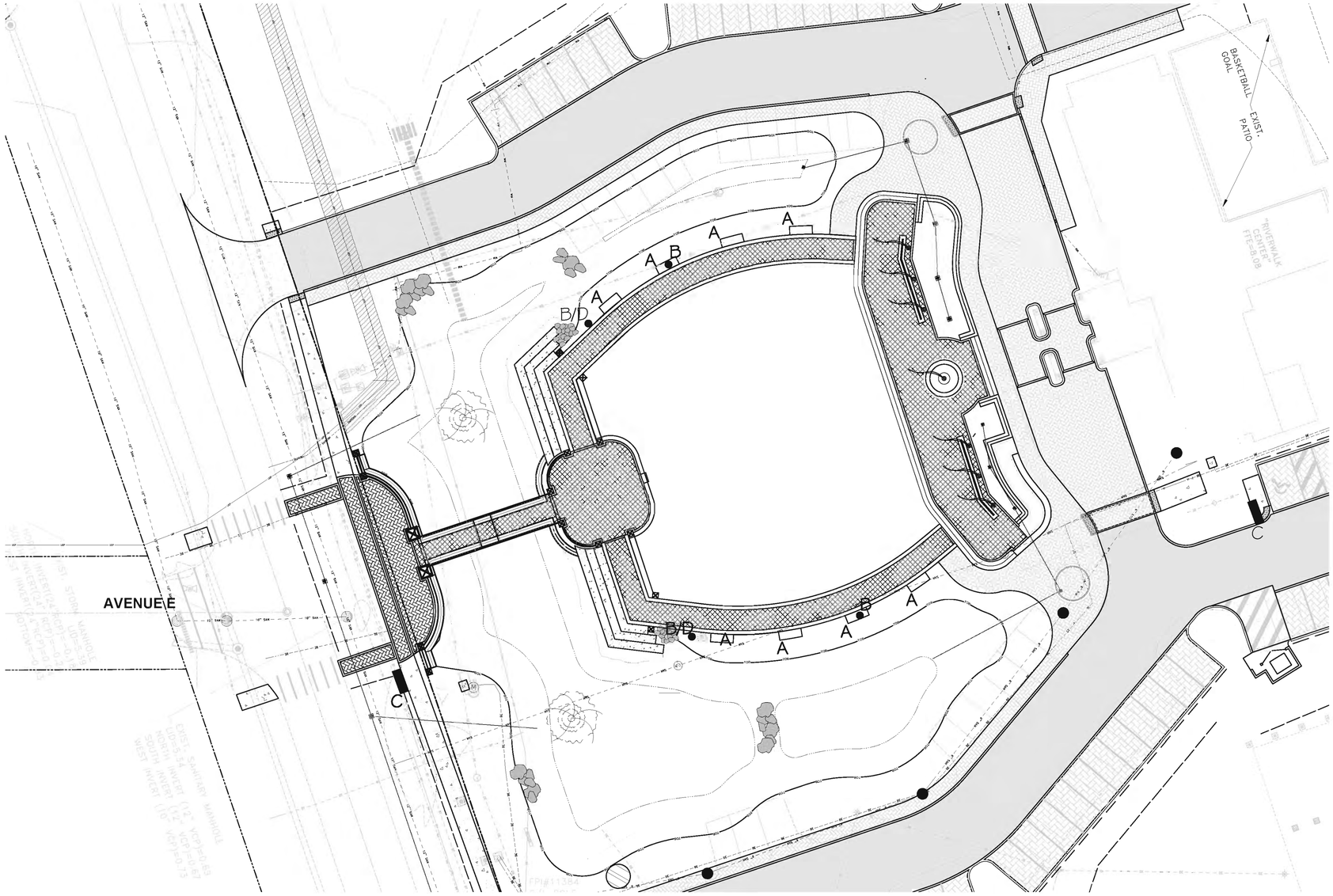
NORTH

SCALE: 1" = As Noted

0 0' 0' 0'

REG. # 1018
Thomas P. Lucido

Designer	BN	Sheet
Manager	SG/BN	HA-5
Project Number	12-565	
Municipal Number	---	
Computer File	Hardscape_CurrentJL_TMDL_3.3.15.dwg	



SITE FURNISHINGS SCHEDULE

A. CONCRETE MOSAIC BENCH - QTY. 8
CITY OF FORT PIERCE TO COMMISSION ANITA PRENTICE TO MANUFACTURE ALL BENCHES

B. TRASH RECEPTACLE - QTY. 4
VICTOR STANLEY, INC. PH: 800-368-2573
S-42 IRONSITES SERIES
(OR APPROVED EQUAL)
BLACK POWDER COAT FINISH

C. BIKE RACK - QTY. 2
VICTOR STANLEY, INC. PH: 800-368-2573
CFB-12, 8' CITY SERIES
(OR APPROVED EQUAL)
BLACK POWDER COAT FINISH

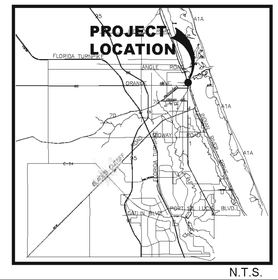
D. SMOKERS ASH URN - QTY. 1
VICTOR STANLEY, INC. PH: 800-368-2573
S-20, IRONSITES SERIES
(OR APPROVED EQUAL)
BLACK POWDER COAT FINISH

NOTE: THE ABOVE ITEMS SHALL BE MOUNTED TO A MIN. 4" THICK CONCRETE PAD. ATTACHMENTS SHALL BE PER MANUFACTURER'S SPECIFICATIONS AND IN ACCORDANCE WITH ALL STATE AND LOCAL CODES.

lucido & associates

701 E Ocean Blvd., Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220
100 Avenue A Suite 2A, Fort Pierce, Florida 34950 (772) 467-1301, Fax (772) 467-1303
827 North Thornton Avenue, Orlando, Florida 32803 (407) 898-9521, Fax (407) 898-9768

Key / Location:



Project Team:

Client/Property Owner: City of Fort Pierce, City Hall, 100 N. US1, Fort Pierce, FL 34950

Landscape Architect: Lucido & Associates, Land Planners & Landscape Architects, 701 East Ocean Boulevard, Stuart, Florida 34994

Civil Engineer: CAPTEC Engineering, Inc., 301 NW Flagler Avenue, Stuart, FL 34994

Veterans Memorial Park

City of Fort Pierce

TMDL
Site Furnishings

Date	By	Description
3.4.14	BN	Bid Set - For Bidding Purposes Only
5.12.14	BN	Bid Set - For Bidding Purposes Only
3.1.15	BN	Bid Set - For Bidding Purposes Only

NORTH

SCALE: 1" = 1'=20'

0 10' 20' 40'

REG. # 1018
Thomas P. Lucido

Designer	BN	Sheet
Manager	SG/BN	HA-6
Project Number	12-565	
Municipal Number	---	
Computer File	Hardscape_CurrentJL_TMDL_3.3.15.dwg	

Electrical Notes

THIS DRAWING IS SUBJECT TO THE PROJECT'S ARCHITECT AND/OR THE PROJECT ENGINEER'S APPROVAL.

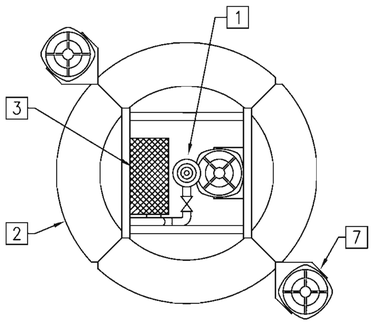
INSTALLATION OF ALL ELECTRICAL EQUIPMENT IS TO BE BY BUYER'S ELECTRICIAN. FLOATING UNIT CAN BE INSTALLED BY BUYER OR BY "HALL" IF INSTALLATION CHARGE IS INCLUDED IN FOUNTAIN CONTRACT.

ALL ELECTRICAL WORK MUST BE DONE BY A QUALIFIED ELECTRICIAN IN STRICT ACCORDANCE OF THE "NATIONAL ELECTRICAL CODE.

NOTE: LOCAL BUILDING CODES VARY FROM MUNICIPALITY TO MUNICIPALITY AND OVERRIDE NATIONAL CODES. COMPLIANCE WITH LOCAL CODES MUST BE INDEPENDENTLY VERIFIED BY OWNER'S ARCHITECT AND/OR ENGINEER. ANY DEVIATION FROM LOCAL CODES MUST BE BROUGHT TO THE ATTENTION OF HALL FOUNTAINS, INC. IMMEDIATELY.

CONFIRM ALL MOTOR VOLTAGES AND PHASE FOR COMPATIBILITY BEFORE INSTALLATION.

RUN ALL FOUNTAIN POWER CABLE RACEWAYS USING PVC ELECTRICAL CONDUIT AND SWEEPS IN THE SIZE INDICATED BELOW. ONE RACEWAY FOR EACH CABLE IS REQUIRED. RACEWAY MUST ENTER LAKE APPROXIMATELY 12 INCHES BELOW NORMAL LOW WATER LEVEL AND EXTEND INTO THE LAKE APPROX. 3 FEET. CABLE LENGTH ON UNIT IS MEASURED FROM CONTROLLER TO THE UNIT. MOUNTING THE CONTROLLER A LONG DISTANCE FROM THE LAKES EDGE WILL LIMIT THE MAXIMUM DISTANCE THE UNIT CAN BE PLACED FROM THE EDGE OF THE LAKE.



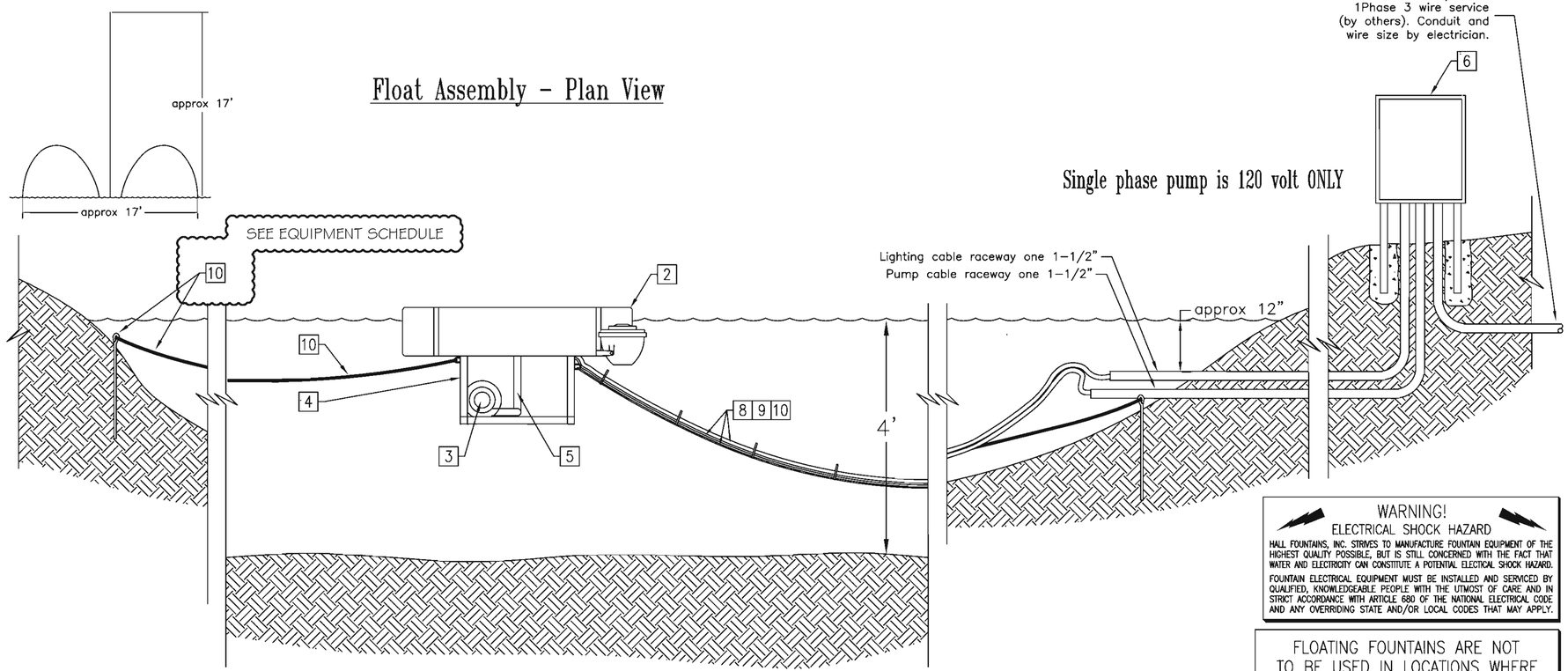
Float Assembly - Plan View

Equipment by Hall

ITEM	QTY	DESCRIPTION
1	1	J23 MACHINED BRASS & PLEXIGLAS THREE TIERED CASTLE JET – features 1-1/4" FPT inlet, one center jet, 12 secondary jets and 24 outer jets.
2	1	FF4 FLOAT ASSEMBLY – includes four roto-cast molded polyethylene sections each with threaded brass inserts, stainless steel hardware and ballast fill plugs. Assembly is 10" high, 48" outside dia. and 32" inside dia.
3	1	SFU71 3/4 HP CAST BRONZE SUBMERSIBLE PUMP – features integral thermal overload protection, removable perforated stainless steel suction screen and 10' of 16/3 type ST power cord. Motor is UL listed and is rated for 115 volt single phase power. Supplied with hose and stainless steel hose clamps for discharge hookup.
4	1	STAINLESS STEEL EQUIPMENT MOUNTING FRAME – to support pump, manifold, and water features. Fabricated from 1-1/2" x 1-1/2" type 304 stainless steel angle with stainless steel fasteners for securing to float assembly.
5	1	PUMPING SYSTEM DISCHARGE MANIFOLD – custom fabricated from schedule 40 PVC pipe, fittings, and balancing valves to regulate and provide a maximum flow to all water features.
6	1	FOUNTAIN CONTROLLER – an all-weather (Nema 3R) 100 amp service enclosure with 2 independent time clocks, an 8 space breaker panel, an equipment grounding bar, and standard or GFI breakers as needed.
7	3	SL500GT UL LISTED CAST BRONZE SUBMERSIBLE LIGHT – thermally protected, 500 watt, 120 volt (500PAR56MFL), with 10' type 16/3 cord and clear lens. Features machined gasket surface and lens clearance to assure even gasket compression. Cord entry is encapsulated in epoxy to prevent the entrance of moisture. Features 8-3/8" tempered lens, neoprene gaskets, phosphor bronze cord seal, porcelain socket, and stainless steel fasteners.

ITEM	QTY	DESCRIPTION
8	1	100' LENGTH OF 10/3 TYPE ST/SO-WA SUBMERSIBLE POWER CABLE – for the fountain lighting power supply. Cable features 600 volt insulation and soft annealed copper. Sized according to the National Electric Code section 70-258. Cable is spliced to lights with a Y-type 3M Scotchcast splice kit.
9	1	100' LENGTH OF 10/3 TYPE ST/SO-WA SUBMERSIBLE POWER CABLE for the submersible pump power supply. Cable features 600 volt insulation and soft annealed copper, and is sized according to National Electric Code section 70-258. Cable is spliced to pump motor leads with a 3M Scotchcast splice kit.
10	3	AN4 FOUNTAIN UNIT ANCHOR & STAY ROPE – to secure the fountain unit in the desired location in the lake and provide a convenient means of pulling the unit to the shore for cleaning and servicing. Anchor is made of steel rod with welded eye. Stay rope is 1/4" polypropylene (length to match cables listed above).

NOTE: CONTRACTOR TO CONTACT HALL FOUNTAINS WITH REGARD TO SUPPLYING ALTERNATIVE METHOD OF ANCHORING IN PLACE OF STAKE, SUCH THAT NO PENETRATION OF POND LINER WILL BE REQUIRED.



Section through Lake at Fountain & Shoreline

WARNING!
ELECTRICAL SHOCK HAZARD

HALL FOUNTAINS, INC. STRIVES TO MANUFACTURE FOUNTAIN EQUIPMENT OF THE HIGHEST QUALITY POSSIBLE, BUT IS STILL CONCERNED WITH THE FACT THAT WATER AND ELECTRICITY CAN CONSTITUTE A POTENTIAL ELECTICAL SHOCK HAZARD.

FOUNTAIN ELECTRICAL EQUIPMENT MUST BE INSTALLED AND SERVICED BY QUALIFIED, KNOWLEDGEABLE PEOPLE WITH THE UTMOST OF CARE AND IN STRICT ACCORDANCE WITH ARTICLE 680 OF THE NATIONAL ELECTRICAL CODE AND ANY OVERRIDING STATE AND/OR LOCAL CODES THAT MAY APPLY.

FLOATING FOUNTAINS ARE NOT TO BE USED IN LOCATIONS WHERE SWIMMING OR OTHER WATER SPORTS ARE PERMITTED.

A/7 FOUNTAIN DETAIL
SCALE: NTS

HALL FOUNTAINS, INC.

5500 N.W. 22nd Avenue
Ft. Lauderdale, Florida 33309
1-800-777-4255 * 954-484-8530

Equipment to be ordered and any installation to be made from this drawing must be independently verified by the buyer's architect or engineer to determine that the same meets all governmental requirements and is acceptable for its intended application. The only liability assumed by HALL FOUNTAINS, INC. is for the quality of the equipment supplied as set forth in the materials warranty.

Only the items listed under the heading "Equipment by HALL" are to be supplied by HALL FOUNTAINS, INC.

☐ This symbol with a number inside indicates an item that is to be supplied by HALL. Refer to the corresponding item number under the heading "Equipment by HALL".

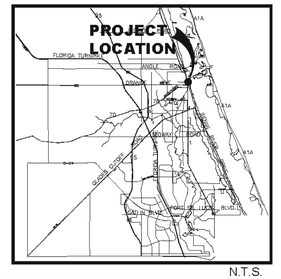
Model:
M0007-1-3-100

Description:
.75 HP MONTEREY with 1000 watts of lighting

Date Drawn:
8/4/99

lucido & associates
701 E Ocean Blvd, Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220
100 Avenue A Suite 2A, Fort Pierce, Florida 34950 (772) 467-1301, Fax (772) 467-1303
927 North Thornton Avenue, Orlando, Florida 32803 (407) 898-9521, Fax (407) 898-9768

Key / Location:



N.T.S.

Project Team:

Client/Property Owner: City of Fort Pierce, City Hall, 100 N. US1, Fort Pierce, FL 34950

Landscape Architect: Lucido & Associates, Land Planners & Landscape Architects, 701 East Ocean Boulevard, Stuart, Florida 34994

Civil Engineer: CAPTEC Engineering, Inc, 301 NW Flagler Avenue, Stuart, FL 34994

Veterans Memorial Park

City of Fort Pierce

TMDL

Fountain Design Details

Date	By	Description
3.4.14	BN	Bid Set - For Bidding Purposes Only
5.12.14	BN	Bid Set - For Bidding Purposes Only
3.1.15	BN	Bid Set - For Bidding Purposes Only

NORTH

SCALE: 1" = As Noted

0 0' 0' 0'

REG. # 1018
Thomas P. Lucido

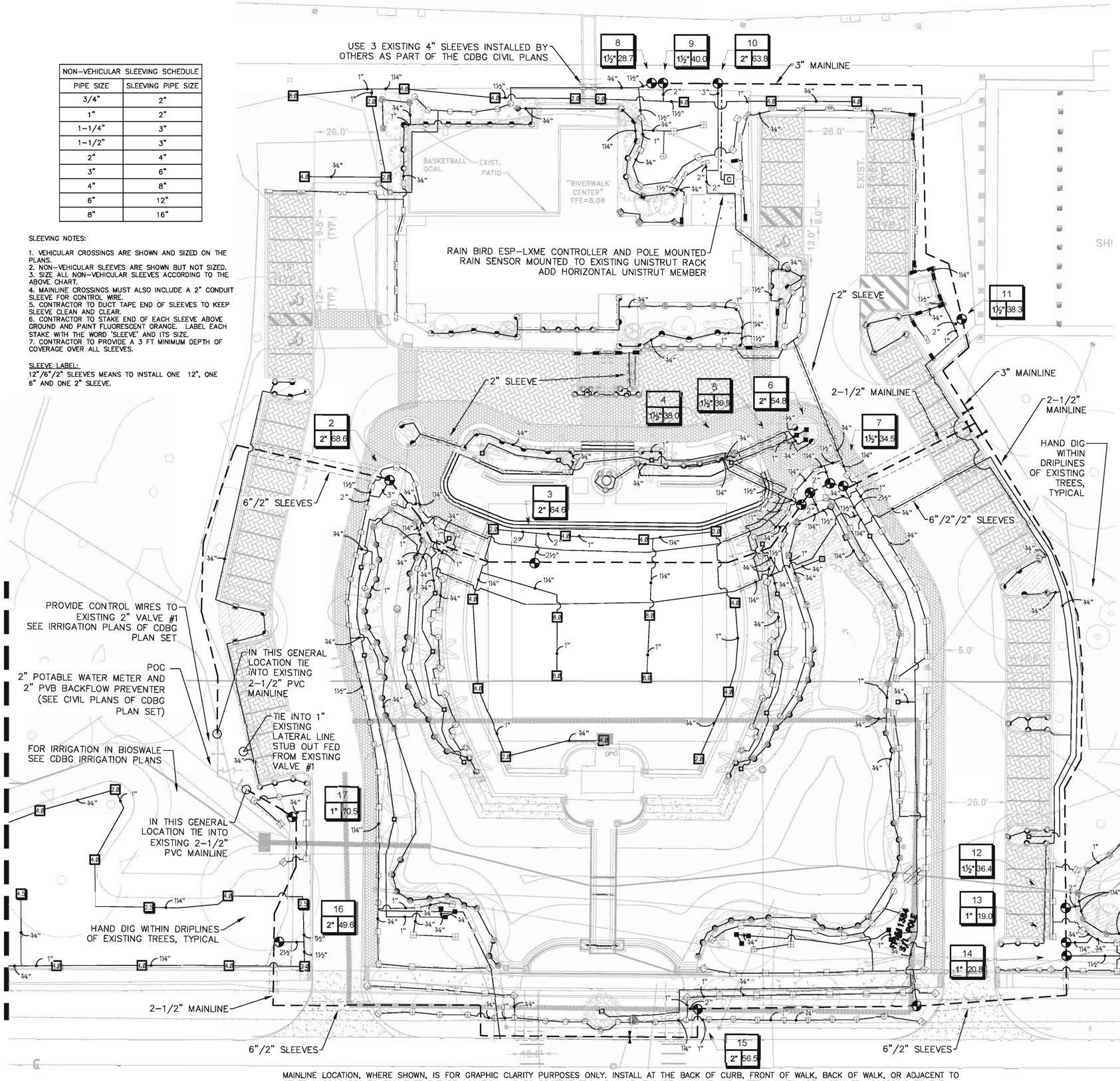
Designer	BN	Sheet
Manager	SG/BN	HA-7
Project Number	12-565	
Municipal Number		
Computer File	Hardscape_CurrentJL_TMDL_3.3.15.dwg	

NON–VEHICULAR SLEEVING SCHEDULE	
PIPE SIZE	SLEEVING PIPE SIZE
3/4"	2"
1"	2"
1–1/4"	3"
1–1/2"	3"
2"	4"
3"	6"
4"	8"
6"	12"
8"	16"

SLEEVING NOTES:

1. VEHICULAR CROSSINGS ARE SHOWN AND SIZED ON THE PLANS.
2. NON–VEHICULAR SLEEVES ARE SHOWN BUT NOT SIZED.
3. SIZE ALL NON–VEHICULAR SLEEVES ACCORDING TO THE ABOVE CHART.
4. MAINLINE CROSSINGS MUST ALSO INCLUDE A 2" CONDUIT SLEEVE FOR CONTROL WIRE.
5. CONTRACTOR TO DUCT TAPE END OF SLEEVES TO KEEP SLEEVE CLEAN AND CLEAR.
6. CONTRACTOR TO STAKE END OF EACH SLEEVE ABOVE GROUND AND PAINT FLUORESCENT ORANGE. LABEL EACH STAKE WITH THE WORD 'SLEEVE' AND ITS SIZE.
7. CONTRACTOR TO PROVIDE A 3 FT MINIMUM DEPTH OF COVERAGE OVER ALL SLEEVES.

SLEEVE LABEL:
12"/6"/2" SLEEVES MEANS TO INSTALL ONE 12", ONE 6" AND ONE 2" SLEEVE.

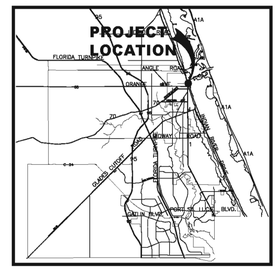


MAINLINE LOCATION, WHERE SHOWN, IS FOR GRAPHIC CLARITY PURPOSES ONLY. INSTALL AT THE BACK OF CURB, FRONT OF WALK, BACK OF WALK, OR ADJACENT TO OTHER HARDSCAPES TO FACILITATE FUTURE LOCATION AND TO PROTECT FROM DAMAGE. ENSURE MAINLINE AND LATERAL LINES ARE INSTALLED ACCORDING TO THE IRRIGATION SPECIFICATIONS AND DETAILS. CONTRACTOR SHALL NOT INSTALL MAINLINE OR LATERAL LINES WITHIN THE DRIP LINE OF EXISTING TREES IF AT ALL POSSIBLE. IF CONTRACTOR MUST TRENCH WITHIN ANY EXISTING TREE DRIPLINE, THEY SHALL DO SO BY HAND BEING CAREFUL NOT TO DAMAGE TREE ROOT SYSTEM

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast, it's free, it's the law.
Call 811 two business days before digging

lucido & associates
701 E Ocean Blvd., Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220
100 Avenue A Suite 2A, Fort Pierce, Florida 34950 (772) 467-1301, Fax (772) 467-1303
827 North Thornton Avenue, Orlando, Florida 32803 (407) 898-9521, Fax (407) 898-9768

Key / Location:



Project Team:

Client	St. Lucie County 2300 Virginia Avenue Fort Pierce, FL 34982
Property Owner	City of Fort Pierce City Hall 100 N. US1 Fort Pierce, FL 34950
Landscape Architect	Lucido & Associates Land Planners & Landscape Architects 701 East Ocean Boulevard Stuart, Florida 34994
Civil Engineer	CAPTEC Engineering, Inc. 301 NW Flagler Avenue Stuart, FL 34994

Masuen Consulting LLC
Water Resource Consultants
5079 North Dixie Highway, #323
Oakland Park, FL 33334
Telephone (866) 928–1533
Fax (800) 928–1534

Veterans Memorial Park

St. Lucie County

TMDL Irrigation Plan

Date	By	Description
2.28.14	MAW	
3.13.14	TM	Bid Set
3.02.15	JJ	Bid Set

NORTH

SCALE: 1" = 1'=20'

0 10' 20' 40'

REG. # 1018
Thomas P. Lucido

Designer	JJ	Sheet
Manager	MW	IR-1
Project Number	12-565	
Municipal Number	---	
Computer File	FP VetMemPark IR TMDL.dwg	

Drawing Name: C:\MASUEN DESIGN FILES\CAPTEC\2014_0221\ Mar 05, 2015 - 2:07pm FP VetMemPark IR TMDL.dwg

IRRIGATION LEGEND

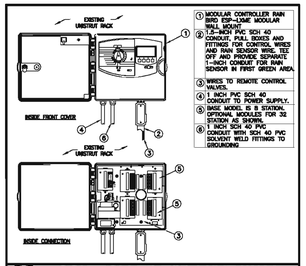
QTY	SYM	DESCRIPTION	DET.
	01 / 1.0 6.5	01 – STATION NUMBER 1.0 – GALLONS PER MINUTE–CATALOG FLOW 6.5 – VALVE SIZE	
1	M	EXISTING 2" BACKFLOW AND 2" POTABLE WATER METER – SEE CDGB IRRIGATION DESIGN PLANS FOR FURTHER INFORMATION.	
17		RAIN BIRD PEB SERIES RCV (SIZED PER PLAN) AND A NIBCO T–113 GATE VALVE IN A CARSON 1220 JUMBO VALVE BOX WITH BOLT DOWN LID.	B1
1	C	RAINBIRD ESP–LXME 20 STATION WALL MOUNTED CONTROLLER AND POLE MOUNTED HUNTER MINI–CLIK 'C' RAIN SENSOR WITH GROUNDING GRID	C
6		NIBCO T–113 BRASS MAINLINE ISOLATION GATE VALVE (LINE SIZE) IN A CARSON 1419 VALVE BOX. (FOUR PROPOSED AND TWO EXISTING)	D
		SCHEDULE 40 PVC LATERAL LINE W/ SCH 40 SOLVENT WELD PVC FITTINGS (SIZED PER PLANS)	L
		SCHEDULE 40 SOLVENT–WELD PVC MAINLINE W/SCH 40 SOLVENT–WELD PVC FITTINGS (SIZED PER PLANS)	L
		2" SCH 40 GRAY PVC CONDUIT FROM MAINLINE TO CONTROLLER LOCATION	–
		SCH 40 PVC SLEEVES W/SCH 40 SOLVENT–WELD PVC FITTINGS (SIZE PER PLAN)	O

QUANTITIES GIVEN ARE FOR CONTRACTOR CONVENIENCE ONLY. THE ACCURACY IS NOT GUARANTEED. ALL QUANTITIES SHALL BE VERIFIED.

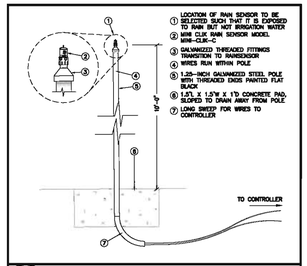
*DET (ON THE LEGEND) – THE LETTER IN THIS COLUMN DENOTES THE CORRESPONDING DETAIL SHOWN ON THE DETAIL SHEET.

IRRIGATION HEAD LEGEND

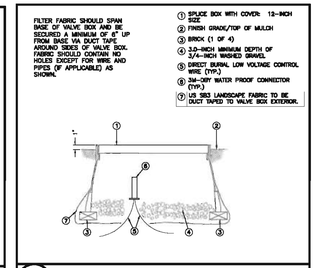
SYMBOL QUANTITY	SYMBOL	DESCRIPTION	DETAIL	DESIGN (P.S.I.)	DESIGN (G.P.M)
21		EACH SYMBOL DENOTES TWO RAIN BIRD 1804–SAM–1401 FLOOD BUBBLERS	Q	30	0.50
12		EACH SYMBOL DENOTES TWO RAIN BIRD 1804–SAM–1404 FLOOD BUBBLERS	Q	30	2.00
9		RAIN BIRD 1806–SAM–PRS–8Q	R	30	0.26
1		RAIN BIRD 1806–SAM–PRS–8T	R	30	0.35
8		RAIN BIRD 1806–SAM–PRS–8H	R	30	0.52
19		RAIN BIRD 1812–SAM–PRS–8Q	S	30	0.26
6		RAIN BIRD 1812–SAM–PRS–8T	S	30	0.35
24		RAIN BIRD 1812–SAM–PRS–8H	S	30	0.52
9		RAIN BIRD 1812–SAM–PRS–8Q ON SCH 40 RISER	T	30	0.26
49		RAIN BIRD 1812–SAM–PRS–8H ON SCH 40 RISER	T	30	0.52
6		RAIN BIRD 1806–SAM–PRS–10Q	R	30	0.39
34		RAIN BIRD 1806–SAM–PRS–10H	R	30	0.79
8		RAIN BIRD 1806–SAM–PRS–10F	R	30	1.58
3		RAIN BIRD 1812–SAM–PRS–10Q	S	30	0.39
13		RAIN BIRD 1812–SAM–PRS–10H	S	30	0.79
1		RAIN BIRD 1812–SAM–PRS–10Q ON SCH 40 RISER	T	30	0.39
4		RAIN BIRD 1812–SAM–PRS–10H ON SCH 40 RISER	T	30	0.79
8		RAIN BIRD 1806–SAM–PRS–12Q	R	30	0.65
18		RAIN BIRD 1806–SAM–PRS–12H	R	30	1.30
3		RAIN BIRD 1806–SAM–PRS–12TT	R	30	1.74
10		RAIN BIRD 1806–SAM–PRS–12F	R	30	2.60
12		RAIN BIRD 1812–SAM–PRS–12Q	S	30	0.65
5		RAIN BIRD 1812–SAM–PRS–12T	S	30	0.87
11		RAIN BIRD 1812–SAM–PRS–12H	S	30	1.30
2		RAIN BIRD 1812–SAM–PRS–12TT	S	30	1.74
1		RAIN BIRD 1812–SAM–PRS–12TQ	S	30	1.95
1		RAIN BIRD 1812–SAM–PRS–12Q ON SCH 40 RISER	T	30	0.65
47		RAIN BIRD 1812–SAM–PRS–12H ON SCH 40 RISER	T	30	1.30
19		RAIN BIRD 1806–SAM–PRS–15Q	R	30	0.92
2		RAIN BIRD 1806–SAM–PRS–15T	R	30	1.23
73		RAIN BIRD 1806–SAM–PRS–15H	R	30	1.85
5		RAIN BIRD 1806–SAM–PRS–15TT	R	30	2.48
1		RAIN BIRD 1806–SAM–PRS–15TQ	R	30	2.78
5		RAIN BIRD 1806–SAM–PRS–15F	R	30	3.70
4		RAIN BIRD 1812–SAM–PRS–15Q	S	30	0.92
3		RAIN BIRD 1812–SAM–PRS–15T	S	30	1.23
2		RAIN BIRD 1812–SAM–PRS–15H	S	30	1.85
1		RAIN BIRD 1812–SAM–PRS–15TQ	S	30	2.78
3		RAIN BIRD 1812–SAM–PRS–15Q ON SCH 40 RISER	T	30	0.92
4		RAIN BIRD 1812–SAM–PRS–15H ON SCH 40 RISER	T	30	1.85
1		RAIN BIRD 1812–SAM–PRS–15F ON SCH 40 RISER	T	30	3.70
8		RAIN BIRD 1806–SAM–PRS–15EST	R	30	0.61
22		RAIN BIRD 1806–SAM–PRS–15SST	R	30	1.21
7		RAIN BIRD 1812–SAM–PRS–15EST	S	30	0.61
14		RAIN BIRD 1812–SAM–PRS–15EST ON SCH 40 RISER	T	30	0.61
8	2.0	HUNTER I–20–6P–ADS–2.0 STANDARD NOZZLE (QTR CIRCLE)	V	50	2.00
18	4.0	HUNTER I–20–6P–ADS–4.0 STANDARD NOZZLE (HALF CIRCLE)	V	50	4.20
1	8.0	HUNTER I–20–6P–36S–8.0 STANDARD NOZZLE (FULL CIRCLE)	V	50	6.8
2	2.5	HUNTER I–20–6P–ADS–3.5 LOW ANGLE NOZZLE (QTR CIRCLE)	V	50	2.80
1	4.5	HUNTER I–20–6P–36S–4.5 LOW ANGLE NOZZLE (HALF CIRCLE)	V	50	4.4



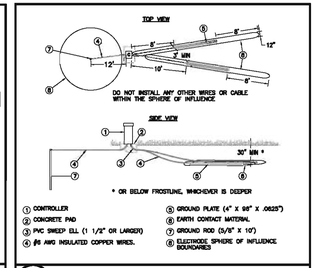
C **CONTROLLER ESP–LXME WALL MOUNT**



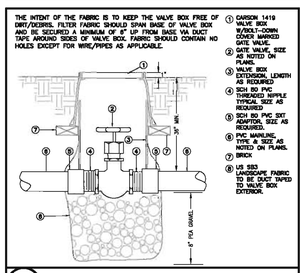
C **POLE MOUNTED RAIN SENSOR**



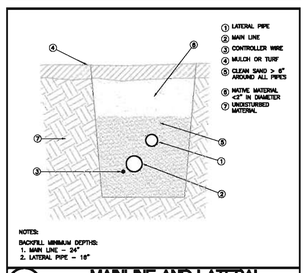
C **WIRE SPLICE**



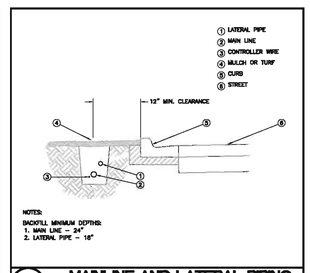
C **GROUNDING DETAIL**



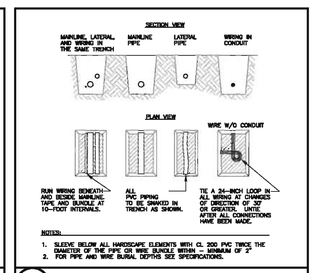
D **T–113 GATE VALVE**



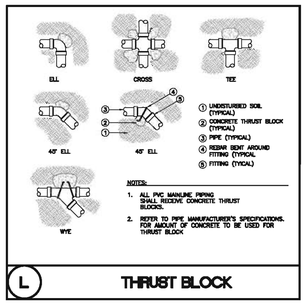
L **MAINLINE AND LATERAL BACKFILL DETAIL**



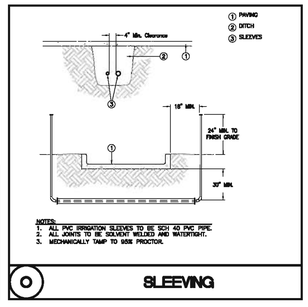
L **MAINLINE AND LATERAL PIPING DETAIL**



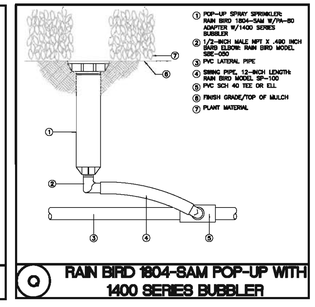
L **PIPE AND WIRE TRENCHING**



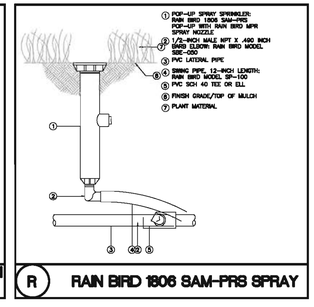
L **THRUST BLOCK**



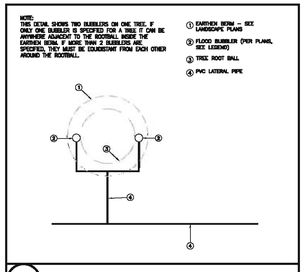
O **SLEEVING**



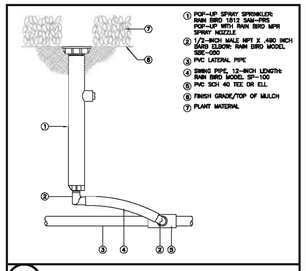
Q **RAIN BIRD 1804–SAM POP–UP WITH 1400 SERIES BUBBLER**



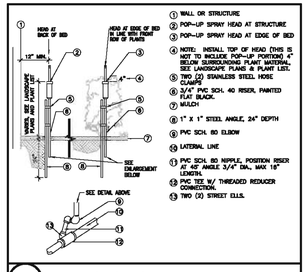
R **RAIN BIRD 1806 SAM–PRS SPRAY**



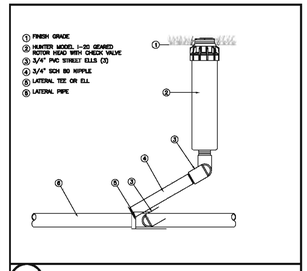
Q **BUBBLER PLACEMENT**



8 **RAIN BIRD 1812 SAM–PRS SPRAY**



T **POP–UP HEAD ON RISER**

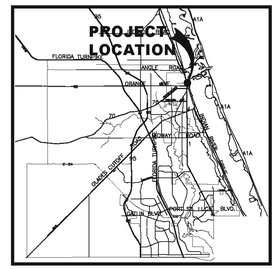


V **HUNTER I–20 GEARED ROTOR**

lucido & associates

701 E Ocean Blvd., Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220
100 Avenue A Suite 2A, Fort Pierce, Florida 34950 (772) 467-1301, Fax (772) 467-1302
827 North Thornton Avenue, Orlando, Florida 32803 (407) 876-9521, Fax (407) 876-9768

Key / Location:



Project Team:

Client	St. Lucie County 2300 Virginia Avenue Fort Pierce, FL 34982
Property Owner	City of Fort Pierce City Hall 100 N. US1 Fort Pierce, FL 34950
Landscape Architect	Lucido & Associates Land Planners & Landscape Architects 701 East Ocean Boulevard Stuart, Florida 34994
Civil Engineer	CAPTEC Engineering, Inc. 301 NW Flagler Avenue Stuart, FL 34994

Masuen Consulting LLC
Water Resource Consultants
5079 North Dixie Highway, #323
Oakland Park, FL 33334
Telephone (866) 928–1533
Fax (800) 928–1534

Veterans Memorial Park

St. Lucie County

TMDL Irrigation Details

Date	By	Description
2.28.14	MAW	
3.13.14	TM	Bid Set
3.02.15	JJ	Bid Set

NORTH

SCALE: 1" = NTS

0 NTS NTS NTS

REG. # 1018
Thomas P. Lucido

Designer	TM
Manager	MW
Project Number	12-565
Municipal Number	--
Computer File	FP VetMemPark IR TMDL.dwg

Sheet **IR-2**

Drawing Name: C:\MASUEN DESIGN FILES\CAPTEC\2014_0221\ Mar 05, 2015 - 2:07pm FP VetMemPark IR TMDL.dwg

IRRIGATION NOTES & SPECIFICATIONS

Irrigation design based on the Thomas Lucido and Associates Landscape Plan dated 01/15/14 with the latest revision dated 3/2/15. Contractor shall refer to these plans to coordinate sprinkler and pipe locations.

The system has been designed to conform with the requirements of all applicable codes, laws, ordinances, rules, regulations and conventions. Should any conflict exist, the requirements of the codes shall prevail. It is the responsibility of the owner/installation contractor to ensure the entire system is installed as designed. Irrigation contractor responsible for obtaining all required permits according to federal, state and local laws.

The scope of work is shown on the plans, notes and details. The Irrigation Contractor shall be certified as a CERTIFIED IRRIGATION CONTRACTOR by the Irrigation Association. The certification shall be current and in good standing.

THE WORK

The work specified in this section consists of furnishing all components necessary for the installation, testing, and delivery of a complete, fully functional automatic landscape irrigation system that complies with the irrigation plans, specifications, notes, and details. This work shall include, but not be limited to, the providing of all required material if applicable (pump(s), backflows, pipes, valves, fittings, controllers, wire, primer, glue, etc.), layout, protection to the public, excavation, assembly, installation, back filling, compacting, repair of road surfaces, controller and low voltage feeds to valves, cleanup, maintenance, guarantee and as-built plans.

All irrigated areas shall provide 100% head-to-head coverage from a fully automatic irrigation system with a rain (and freeze as appropriate) shut off device. If the rain shut off device is a rain sensor, it shall be installed to prevent activation by adjacent heads. Zones are prioritized first by public safety and then by hydraulic concerns. This sequencing will be a mandatory punch list item.

These plans have been designed to satisfy/exceed the Florida Building Code (FBC) Appendix F and the Florida Irrigation Society Standards and Specifications for Turf and Landscape Irrigation Systems, fourth edition. All products should be installed per manufacturer's recommendation. Contractor shall verify all underground utilities 72 hours prior to commencement of work.

It is the responsibility of the irrigation contractor to familiarize themselves with all grade differences, location of walls, retaining walls, structures and utilities. Do not willfully install the sprinkler system as shown on the drawings when it is obvious in the field that unknown obstruction, grade differences or differences in the area dimensions exist that might not have been considered in the engineering. Such obstructions, or differences, should be brought to the attention of the owner's authorized representative. In the event this notification is not performed, the irrigation contractor shall assume full responsibility for any revisions necessary.

Irrigation contractor shall repair or replace all items damaged by their work. Irrigation contractor shall coordinate their work with other contractors for the location and installation of pipe sleeves and laterals through walls, under roadways and paving, etc.

The contractor shall take immediate steps to repair, replace, or restore all services to any utilities which are disrupted due to their operations. All costs involved in disruption of service and repairs due to negligence on the part of the contractor shall be their responsibility.

POINT OF CONNECTION (P.O.C.)

The P.O.C. is an existing 2-1/2" Sch 40 PVC mainline (connecting to it in 2 places) as shown in the Veterans Park CDBG plans provided water from a new 2" potable meter and a new 2" pressure vacuum breaker (all by others). The P.O.C. must be capable of delivering a minimum of 75 GPM at 55 PSI at the connections to the existing irrigation mainline.

Contractor to verify these minimum conditions can be met prior to ordering of materials and the beginning of installation. If the conditions can not be met, the contractor must notify the designer prior to proceeding with the work. If the contractor does not do so, the contractor proceeds at their own risk and becomes responsible for any future work required to make the system perform as required.

THE PIPE

Pipe locations shown on the plan are schematic and shall be adjusted in the field. When laying out mainlines place a maximum of 18" away from either the back of curb, front of walk, back of walk, or other hardscape to allow for ease in locating and protection from physical damage. Install all lateral pipe near edges of pavement or against buildings whenever possible to allow space for plant root balls. Always install piping inside project property's boundary.

All pipes are to be placed in planting beds. If it is necessary to have piping under hardscapes, such as roads, walks, and patios, the pipes must be sleeved using Class 200 PVC with the sleeve diameter being twice the size of the pipe it is carrying with a minimum sleeve size of 2".

Pipe sizes shall conform to those shown on the drawings. No substitutions of smaller pipe sizes shall be permitted, but substitutions of larger sizes may be approved. All damaged and rejected pipe shall be removed from the site at the time of said rejection.

Mainline shall be Sch 40 solvent-weld PVC with Sch 40 PVC solvent-weld fittings (sized per plans).

Contractor to ensure all mainline piping is properly restrained using mechanical joint fittings, restraining collars, threaded rods, thrust blocks, etc.., as and where required. Contractor shall refer to pipe manufacturers recommended installation practices for further direction.

PVC pipe joint compound and primer: The PVC cement shall be Weld-On 711 (grey, slow-drying, heavy duty) and the primer shall be Weld-On P70 (purple tinted, compatible with cement), or approved equals.

ELECTRICAL POWER SUPPLY

Electrical supply for irrigation pumps, controllers, sensors, relays, cluster control units (CCU) to be provided by irrigation contractor. Contractor to coordinate with local utilities for the installation of, and connection to, site available power supplies for required electrical components as set forth in the irrigation plans.

All electrical work is to comply with the National Electrical Code and any, and all, other applicable electrical codes, laws and regulations. A licensed electrician shall perform all electrical hook-ups. Power for each controller/CCU shall be a dedicated 120 volt, 20 amp circuit unless otherwise specified in the plans. Power for each pump to be according to pump specifications indicated in these plans.

WIRING

Irrigation control wire shall be thermoplastic solid copper, single conductor, low voltage irrigation controller wire; suitable for direct burial and continuous operation at rated voltages.

Tape and bundle control wires every 10' and run alongside the mainline. At all turns in direction make a 2' coil of wire. At all valve boxes coil wire around a 3/4" piece of PVC pipe to make a coil using 30 linear inches of wire. Make electrical connections with 3MDBY/R connectors.

Number all wires, using an electrical book of numbers, according to the plans. Number wires in all valve boxes, junction boxes and at the controller.

Wire sized, numbered and colored as follows:
- #14 white for common
- #14 spare black common
- #14 individual color coded hot wire
- #14 spare yellow hot wire

Spare wires
Leaving the controller, run six spare wires, three in each direction after reaching the mainline loop. Install as 2 common spares and 4 hot wires. Loop these wires into each RCV along their path and terminate in the last valve box controlled by the wires respective controller. The loop into each valve box shall extend up into the valve box a minimum of 8" and be readily accessible by opening the valve box lid. These wires must be all numbered and color coded as required in these plans.

Controller and Pump station Control Panel grounding – Contractor to utilize 4"X8'X5/8" copper grounding plates, 5/8"X10' copper clad grounding rods, 'One Strike' CAD wells at all connection points, #6 insulated copper wire, and earth contact material. Install these and other required components as outlined in the detail. Contractor to verify that the earth to ground resistance does not exceed 10 ohms. Contractor shall provide a written certification, on a licensed electrical contractors letter head, showing the date of the test, controller/pump location, and test results. Each controller/pump shall be so grounded and tested. Each component must have its own separate grounding grid, unless they are sitting side by side, in which case up to two controllers can share a common grounding grid.

LAYOUT

Lay out irrigation system mainlines and lateral lines. Make the necessary adjustments as required to take into account all site obstructions and limitations prior to excavating trenches.

Stake all sprinkler head locations. Adjust location and make the necessary modifications to nozzle types, etc. required to ensure 100% head to head coverage. Refer to the Edge of Pavement Detail on the Irrigation Detail Sheet.

Spray heads shall be installed 4" from sidewalks or curbed roadways and 12" from uncurbed roadways and building foundations. Rotors shall be installed 4" from sidewalks or curbed roadways, 12" from building foundations, and 36" from uncurbed roadways.

Shrub heads shall be installed on 3/4" Sch 40 PVC risers. The risers shall be set at a minimum of 18" off sidewalks, roadway curbing, building foundations, and/or any other hardscaped areas. Shrub heads shall be installed to a standard height of 4" below maintained height of plants and shall be installed a minimum of 6" within planted masses to be less visible and offer protection. Paint all shrub risers with flat black or forest green paint, unless irrigation system will utilize reuse water; in this case the risers shall be purple PVC and shall not be painted.

Locate valves prior to excavation. Ensure that their location provides for easy access and that there is no interference with physical structures, plants, trees, poles, etc. Valve boxes must be placed a minimum of 12" and a maximum of 15" from the edge of pavement, curbs, etc. and the top of the box must be 2" above finish grade. No valve boxes shall be installed in turf areas without approval by the irrigation designer – only in shrub beds. Never install in sport field areas.

VALVES

Sequence all valves so that the farthest valve from the P.O.C. operates first and the closest to the P.O.C. operates last. The closest valve to the P.O.C. should be the last valve in the programmed sequence.

Adjust the flow control on each RCV to ensure shut off in 10 seconds after deactivation by the irrigation controller.

Using an electric branding iron, brand the valve I.D. letter/number on the lid of each valve box. This brand must be 2"-3" tall and easily legible.

EQUIPMENT

All pop-up heads and shrub risers shall be pressure compensating. All pop-up heads shall be mounted on flex-type swing joints. All rotors shall be installed with PVC triple swing joints unless otherwise detailed.

All sprinkler equipment, not otherwise detailed or specified on these plans, shall be installed as per manufacturer's recommendations and specifications, and according to local and state laws.

TRENCHING

Excavate straight and vertical trenches with smooth, flat or sloping bottoms. Trench width and depth should be sufficient to allow for the proper vertical and horizontal separation between piping as shown in the pipe installation detail on the detail sheet.

Protect existing landscaped areas. Remove and replant any damaged plant material upon job completion. The replacement material shall be of the same genus and species, and of the same size as the material it is replacing. The final determination as to what needs to be replaced and the acceptability of the replacement material shall be solely up to the owner or owner's representative.

INSTALLATION

Solvent Weld Pipe: Cut all pipe square and deburr. Clean pipe and fittings of foreign material; then apply a small amount of primer while ensuring that any excess is wiped off immediately. Primer should not puddle or drip from pipe or fittings. Next apply a thin coat of PVC cement; first apply a thin layer to the pipe, next a thin layer inside the fitting, and finally another very thin layer on the pipe. Insert the pipe into the fitting. Insure that the pipe is inserted to the bottom of the fitting, then turn the pipe a 1/4 turn and hold for 10 seconds. Make sure that the pipe doesn't recede from the fitting. If the pipe isn't at the bottom of the fitting upon completion, the glue joint is unacceptable and must be discarded.

Pipes must cure a minimum of 30 minutes prior to handling and placing into trenches. A longer curing time may be required; refer to the manufacturer's specifications. The pipe must cure a minimum of 24 hours prior to filling with water.

BACK FILL

The Back fill 6" below, 6" above, and around all piping shall be of clean sand and anything beyond that in the trench can be of native material but nothing larger than 2" in diameter.

Main line pipe depth measured to the top of pipe shall be:
24" minimum for 3/4"-2 1/2" PVC with a 30" minimum at vehicular crossings;
30" minimum for 3" & 4" PVC with a 36" minimum at vehicular crossings.
36" minimum for 6" PVC with a 36" minimum at vehicular crossings;

Lateral line depths measured to top of pipe shall be:
18" minimum for 3/4"-3" PVC with a 30" minimum at vehicular crossings;
24" minimum for 4" PVC and above with a 30" minimum at vehicular crossings.

Contractor shall backfill all piping, both mainline and laterals, prior to performing any pressure tests. The pipe shall be backfilled with the exception of 2' on each side of every joint (bell fittings, 90's, tees, 45's, etc.). These joints shall not be backfilled until all piping has satisfactorily passed its appropriate pressure test as outlined below.

FLUSHING

Prior to the placement of valves, flush all mainlines for a minimum of 10 minutes or until lines are completely clean of debris, whichever is longer.

Prior to the placement of heads, flush all lateral lines for a minimum of 10 minutes or until lines are completely clean of debris, whichever is longer.

Use screens in heads and adjust heads for proper coverage avoiding excess water on walls, walks and paving.

TESTING

Soil: At a minimum of 2 locations on the site, soil tests for infiltration and texture shall be performed according to the USDA Soil Quality Test Kit Guide. The tests shall be documented in a USDA Soil Worksheet. (All of the above is available at http://soils.usda.gov/sqi/assessment/ test_kit.html) The completed worksheet shall be submitted to the owners representative for review/approval. Do not proceed without written direction from the owner/owner's representative.

Schedule testing with Owner's Representative a minimum of three (3) days in advance of testing.

Mainline: Remove all remote control valves and cap using a threaded cap on SCH 80 nipple. Hose bibs and gate valves shall not be tested against during a pressure test unless authorized by written permission from the owner. Fill mainline with water and pressurize the system to 125 PSI. Monitor the system pressure at two gauge locations; the gauge locations must be at opposite ends of the mainline. With the same respective pressures, monitor the gauges for two hours. There can be no loss in pressure at either gauge for solvent-welded pipe.
If these parameters are exceeded, locate the problem; repair it; wait 24 hours and retry the test. This procedure must be followed until the mainline passes the test.

Lateral Lines: The lateral lines must be fully filled to operational pressure and visually checked for leaks. Any leaks detected must be repaired.

Operational Testing –Once the mainline and lateral lines have passed their respective tests, and the system is completely operational, a coverage test and demonstration of the system is required. The irrigation contractor must demonstrate to the owner, or his/her representative, that proper coverage is obtained and the system works automatically from the controller. This demonstration requires each zone to be turned on, in the proper sequence as shown on the plans, from the controller. Each zone will be inspected for proper coverage and function. The determination of proper coverage and function is at the sole discretion of the owner or owner's representative.

Upon completion of the operational test, run each zone until water begins to puddle or run off. This will allow you to determine the number of irrigation start times necessary to meet the weekly evapotranspiration requirements of the planting material in each zone. In fine sandy soils, it is possible no puddling will occur. If this is experienced, then theoretical calculations for run times will be required for controller programming.

SUBMITTALS

Pre-Construction: Deliver five (5) copies of submittals to Owner's Representative within ten (10) working days from date of Notice to Proceed. Furnish information in 3-ring binder with table of contents and index sheet. Index sections for different components and label with specification section number and name of component. Furnish submittals for components on material list. Indicate which items are being supplied on catalog cut sheets when multiple items are shown on one sheet. Incomplete submittals will be returned without review.

After project completion:
As a condition of final acceptance, the irrigation contractor shall provide the owner with:

1. Irrigations As-builts – shall be provided utilizing a sub-foot Global Navigation Satellite System (GNSS) to accurately locate all mainlines, sleeves, remote control valves, gate valves, independent wire runs, wire splice boxes, controllers, high voltage supply sources/conduit path, control mechanisms, sensors, wells and water source connections in Florida East State Plane, NAD 83, and CORS 96 format. The data collected shall be in POINT format and include an ID for each data point with Manufacturer, Type, Size, and Depth. All mainline and independent runs of wire shall be located every 30' for straight runs and at every change of direction. Sleeves will be located at end points and every 20' of length. All underground items shall include depth in inch format. These POINTS once collected shall be imported into an AutoCAD DWG geo-referenced base file to be labeled accordingly. The completed AS-Built shall be a Geo-Referenced DWF file and delivered to the owner on a compact disk (CD).
2. Controller charts – Upon completion of "as-built" prepore controller chorts; one per controller. Indicate on each chart the area controlled by a remote control valve (using a different color for each zone). This chart shall be reduced to a size that will fit inside of the controller door. The reduction shall be hermetically sealed inside two 2ml pieces of clear plastic.
3. Grounding Certification – Provide ground certification results for each controller and pump panel grounding grid installed. This must be on a licensed electrician letter head indicating location tested (using IR plan symbols), date, time, test method, and testing results.

INSPECTIONS AND COORDINATION MEETINGS REQUIRED – Contractor is required to schedule, perform, and attend the following, and demonstrate to the owner and/or owners representative to their satisfaction, as follows:

1. Pre-construction meeting – Designer and contractor to review entire install process and schedule with owner/general contractor.
2. Mainline installation inspection(s) – all mainline must be inspected for proper pipe, fittings, depth of coverage, backfill. and installation method
3. Mainline pressure test – All mainline shall be pressure tested according to this design's requirements
4. Flow Meter calibration – All flow meters must be calibrated, provide certified calibration report for all flow meters.
5. USDA Soil Quality Tests for infiltration/texture
6. Coverage and operational test
7. Final inspection
8. Punch list inspection

FINAL ACCEPTANCE

Final acceptance of the irrigation system will be given after the following documents and conditions have been completed and approved. Final payment will not be released until these conditions are satisfied.

1. All above inspections are completed, documented, and opproved by owner.
2. Completion and acceptance of 'as-built' drawings.
3. Acceptance of required controller charts and placement inside of controllers.
4. All other submittals have be made to the satisfaction of the owner.

GUARANTEE: The irrigation system shall be guaranteed for a minimum of one calendar year from the time of final acceptance.

MINIMUM RECOMMENDED
IRRIGATION MAINTENANCE PROCEDURES

1. Every irrigation zone should be checked monthly and written reports generated describing the date(s) each zone was inspected, problems identified, date problems repaired, and a list of materials used in the repair. At minimum, these inspections should include the following tasks:

A. Turn on each zone from the controller to verify automatic operation.

B. Check schedules to ensure they are appropriate for the season, plant and soil type, and irrigation method. Consult an I.A. certified auditor for methods used in determining proper irrigation scheduling requirements.

C. Check remote control valve to ensure proper operation.

D. Check setting on pressure regulator to verify proper setting, if present.

E. Check flow control and adjust as needed; ensure valve closure within 10-15 seconds after deactivation by controller.

F. Check for leaks – mainline, lateral lines, valves, heads, etc.

G. Check all heads as follows:

1. Proper set height (top of sprinkler is 1" below mow height)
2. Verify head pop-up height – 6" in turf, 12" in ground cover, and pop-up on riser in shrub beds.
3. Check wiper seal for leaks – if leaking, clean head and re-inspect.
4. If still leaking, replace head with the appropriate head with pressure regulator and built-in check valve.
5. All nozzles checked for proper pattern, clogging, leaks, correct make & model, etc. – replace as needed
6. Check for proper alignment – perfectly vertical; coverage area is correct; minimize over spray onto hardscapes.
7. Riser height raised/lowered to accommodate plant growth patterns and ensure proper coverage.
8. Verify the pop-up riser retracts after operation. If not, repair/replace as needed.

H. Check controller/C.C.U. grounds for resistance (10 ohms or less) once per year. Submit written reports.

I. Check rain shut-off device monthly to ensure it functions properly.

J. Inspect all filters monthly and clean/repair/replace as needed.

K. Inspect backflow devices by utilizing a properly licensed backflow inspector. This should be done annually, at minimum.

L. Inspect all valve boxes to ensure they are in good condition, lids are in place and locked.

M. Check pump stations for proper operation, pressures, filtration, settings, etc. – refer to pump station operations manual.

N. Check and clean intake screens on all suction lines quarterly, at minimum. Clean and/or repair, as needed.

O. Winterize, if applicable, as weather in your area dictates. Follow manufacturer recommendations and blow out all lines and equipment using compressed air. Perform seasonal startup of system as per manufacturer recommendations.

P. Conduct additional inspections, maintenance tasks, etc. that are particular for your site.

Soil Moisture Sensor

1. Place all soil moisture sensor wiring in 1" SCH 40 PVC conduit
2. Soil moisture sensor should be placed in the middle of a spray or drip area as per manufacturer's recommendations.
3. Controller setting directions: Controller shall be set to highest ET setting when SMS is being used. If SMS is not being used, controller shall be set to the Florido Automated Weather Network's urban scheduler settings.

lucido & associates
701 E Ocean Blvd., Stuart, Florida 34994 (772) 220-2100, Fax (772) 223-0220
100 Avenue A Suite 2A, Fort Pierce, Florida 34950 (772) 467-1301, Fax (772) 467-1303
827 North Thornton Avenue, Orlando, Florida 32803 (407) 896-0521, Fax (407) 898-9768

Key / Location:

Project Team:

Client	St. Lucie County 2300 Virginia Avenue Fort Pierce, FL 34982
Property Owner	City of Fort Pierce City Hall 100 N. US1 Fort Pierce, FL 34950
Landscape Architect	Lucido & Associates Land Planners & Landscape Architects 701 East Ocean Boulevard Stuart, Florida 34994
Civil Engineer	CAPTEC Engineering, Inc. 301 NW Flagler Avenue Stuart, FL 34994

Masuen Consulting LLC
Water Resource Consultants
5079 North Dixie Highway, #323
Oakland Park, FL. 33334
Telephone (866) 928-1533
Fax (800) 928-1534

Veterans Memorial Park

St. Lucie County

TMDL Irrigation Notes

Date	By	Description
2.28.14	MAW	
3.13.14	TM	Bid Set
3.02.15	JJ	Bid Set

NORTH

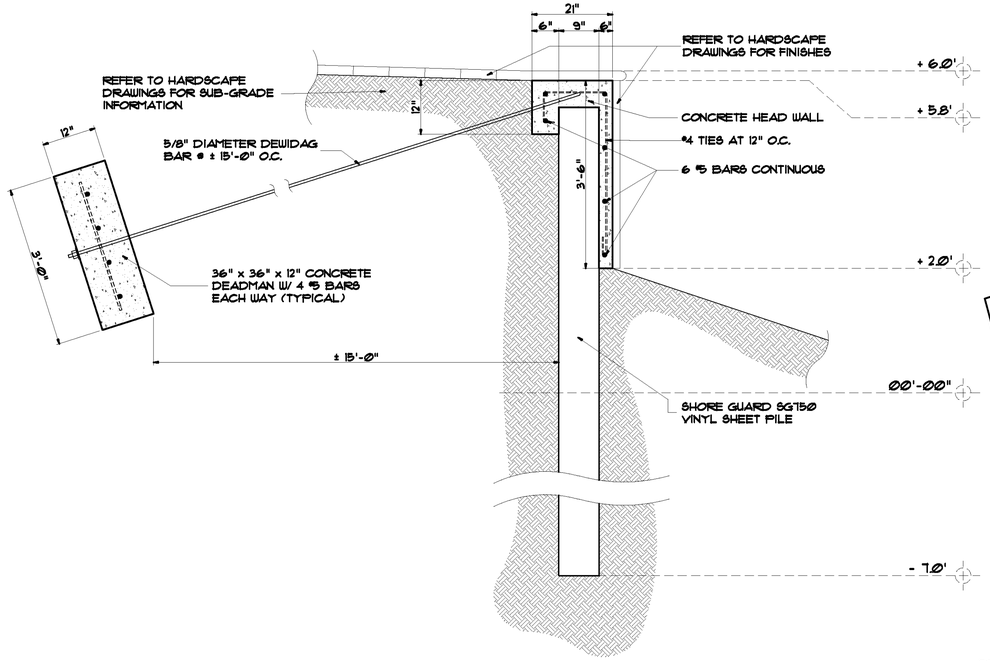
SCALE: 1" = 1'=20'

0 10' 20' 40'

REG. # 1018
Thomas P. Lucido

Designer	TM	Sheet
Manager	MW	IR-3
Project Number	12-565	
Municipal Number	---	
Computer File	FP VetMemPark IR TMDL.dwg	

Drawing Name: C:\MASUEN DESIGN FILES\CAPTEC\2014_0221\ Mar 05, 2015 - 2:07pm FP VetMemPark IR TMDL.dwg



2 S-1 SECTION / DETAIL

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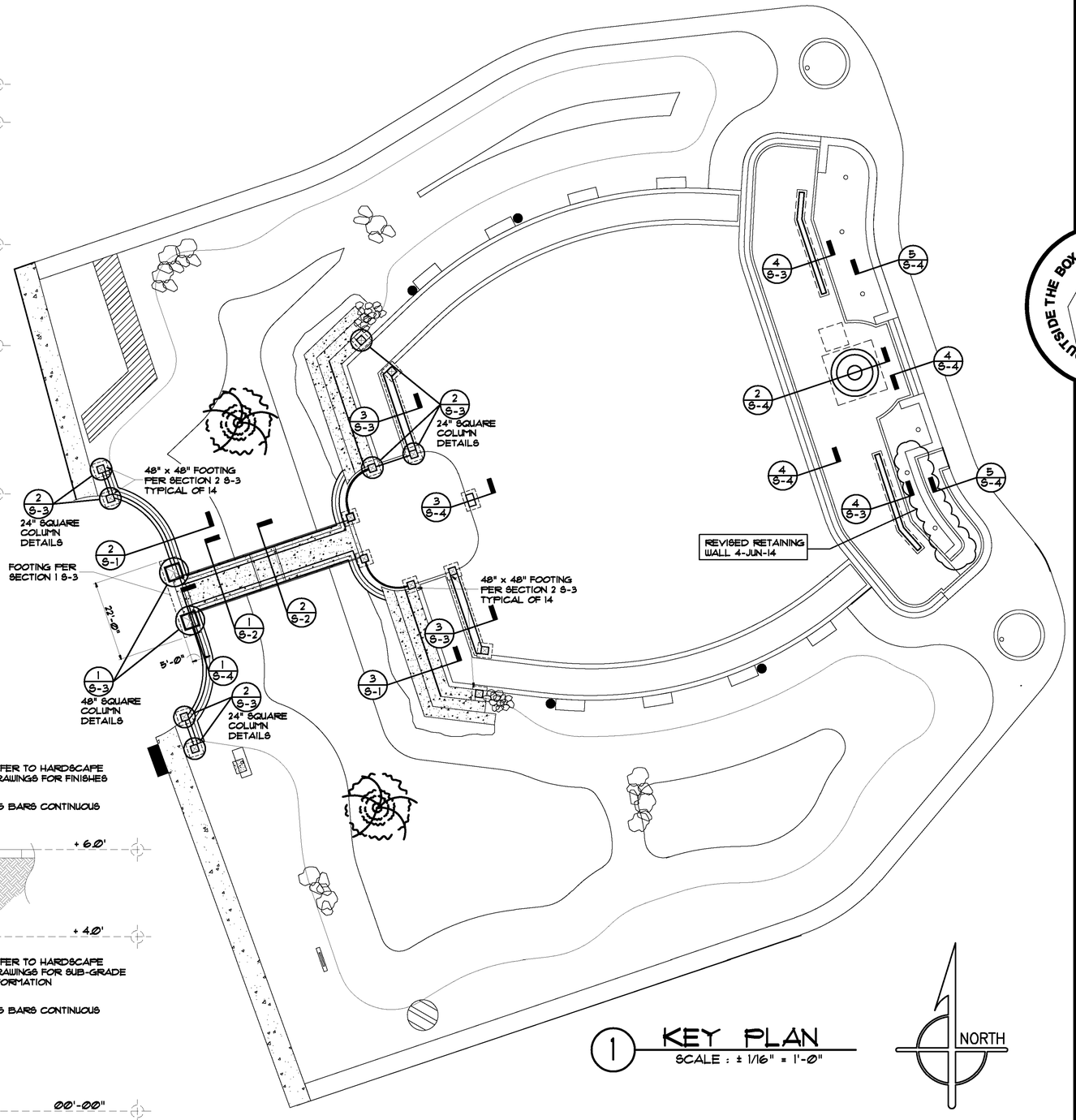
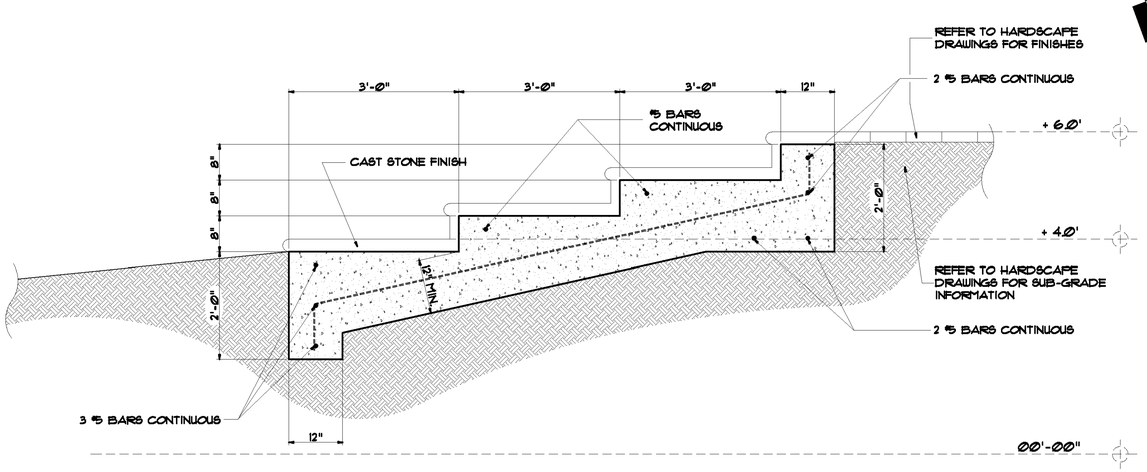


1 KEY PLAN

SCALE : ± 1/16" = 1'-0"



3 S-1 SECTION / DETAIL

SCALE : 3/4" = 1'-0"

TMDL

BID SET 05/12/14

NOTES

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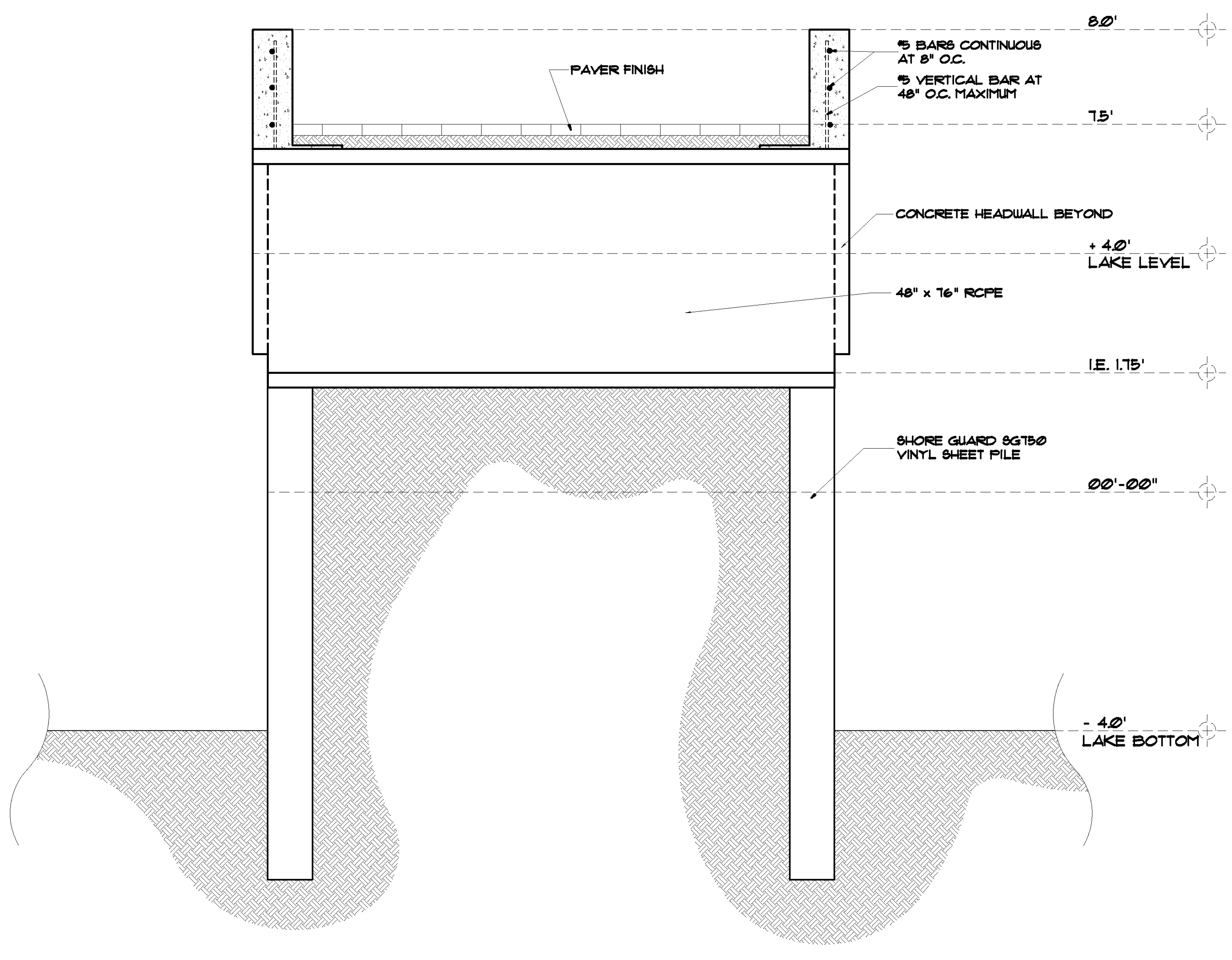
Phone: (772) 220-4990
E-Mail mail@theshaffergroup.com
FL. CERTIFICATE OF AUTHORIZATION # 9316

PROJECT: VETERANS MEMORIAL PARK
LOCATION: CITY OF FORT PIERCE, FLORIDA
CONTRACTOR OR CUSTOMER: TMDL
DWG TITLE:

FREDRICK D. SHAFFER, PE
FL. P.E. # 26894

NO.	REVISIONS	BY	DATE
1	REVISED RETAINING WALL	DBA	6/4/14
2	REVISED CE	DBA	6/4/14

JOB NO.:	13089
DATE:	03/04/14
SCALE:	AS NOTED
DRAWN BY:	DBA
CHECKED BY:	F. Shaffer
REV. NO.	
SHEET NO.	S-1



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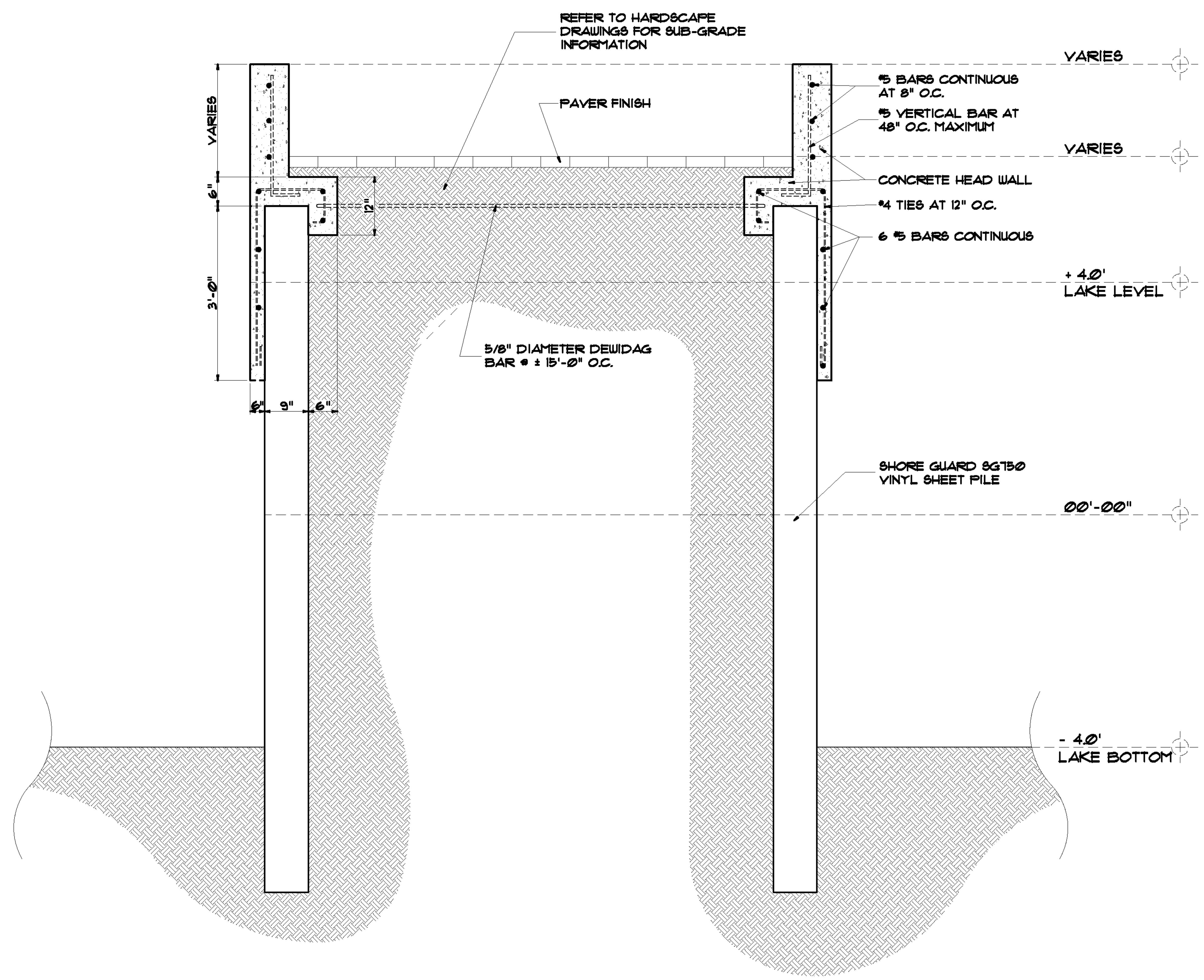

1 / S-2 **SECTION / DETAIL**
SCALE : 3/4" = 1'-0"

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PROJECT: VETERANS MEMORIAL PARK
LOCATION: CITY OF FORT PIERCE, FLORIDA
CONTRACTOR OR CUSTOMER:
DWG TITLE: TMDL

FREDRICK D. SHAFFER, PE
FL. P.E. # 26694

NO.	REVISIONS	BY	CHK'D	DATE
1	REVISED CE	DSA		6/4/14

JOB NO.:	13056
DATE:	03/04/14
SCALE:	AS NOTED
DRAWN BY:	DSA
CHECKED BY:	F. Shaffer
REV. NO.	
SHEET NO.	S-2

TMDL

BID SET 05/12/14

NOTES

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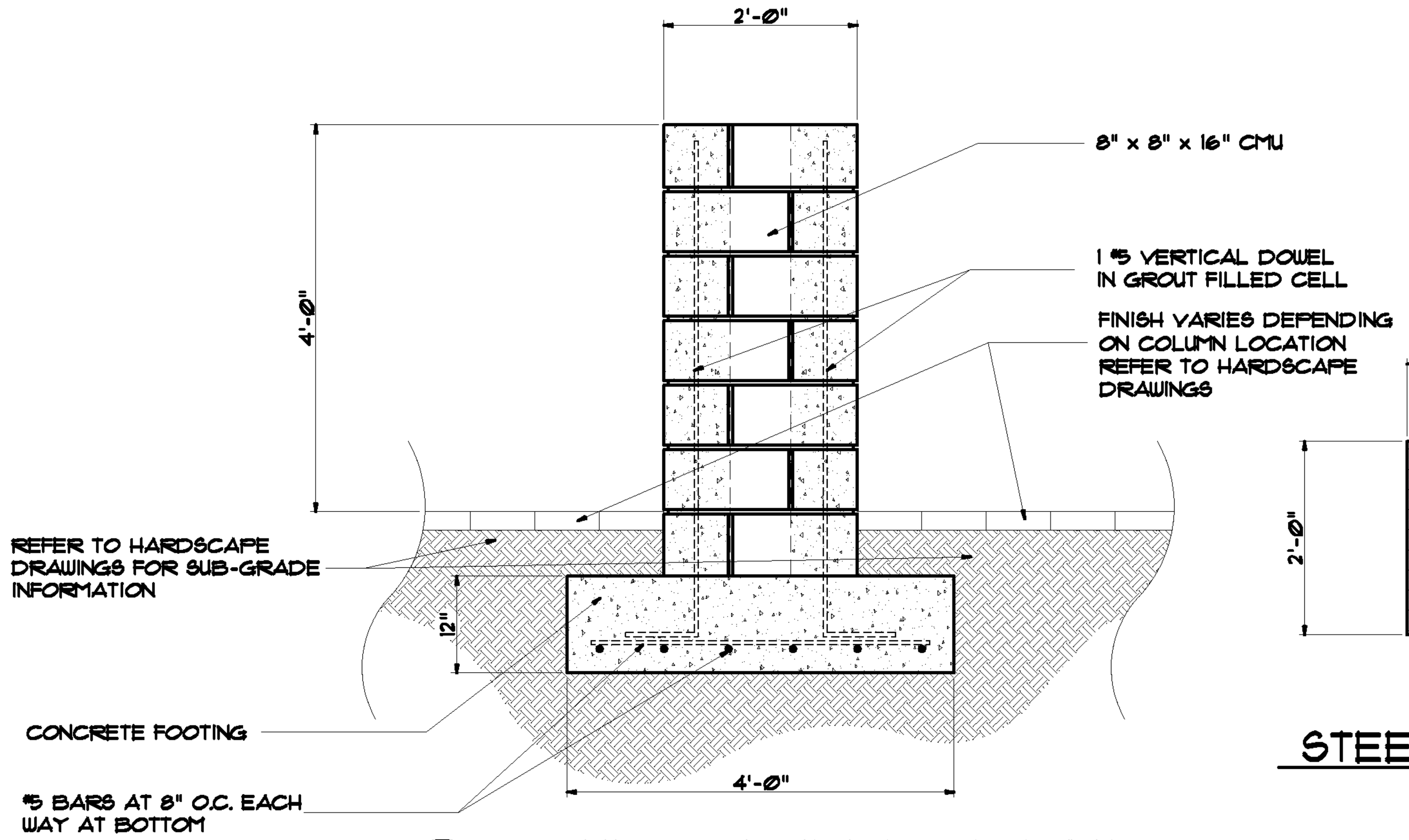
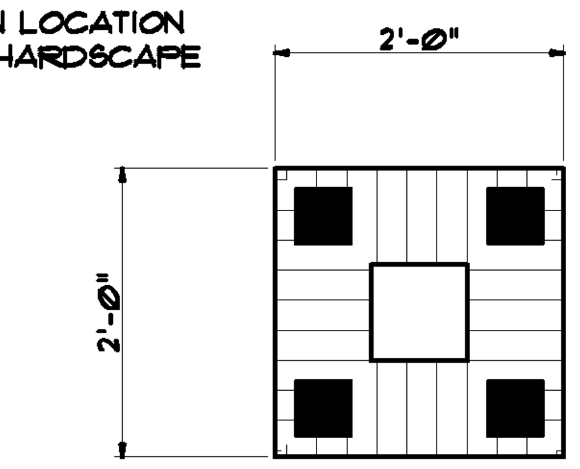
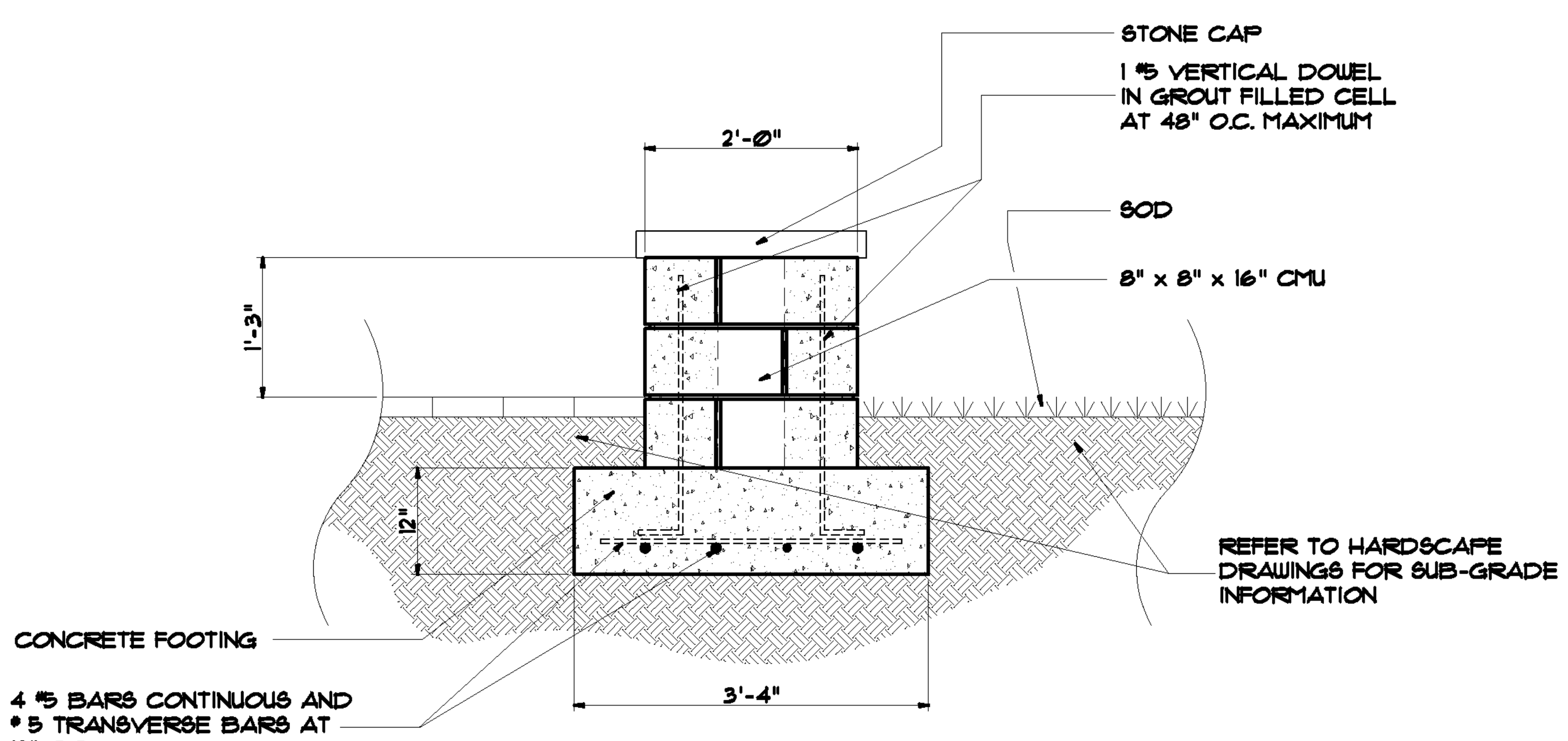


2 / S-3 24" COLUMN DETAIL

SCALE : 3/4" = 1'-0"

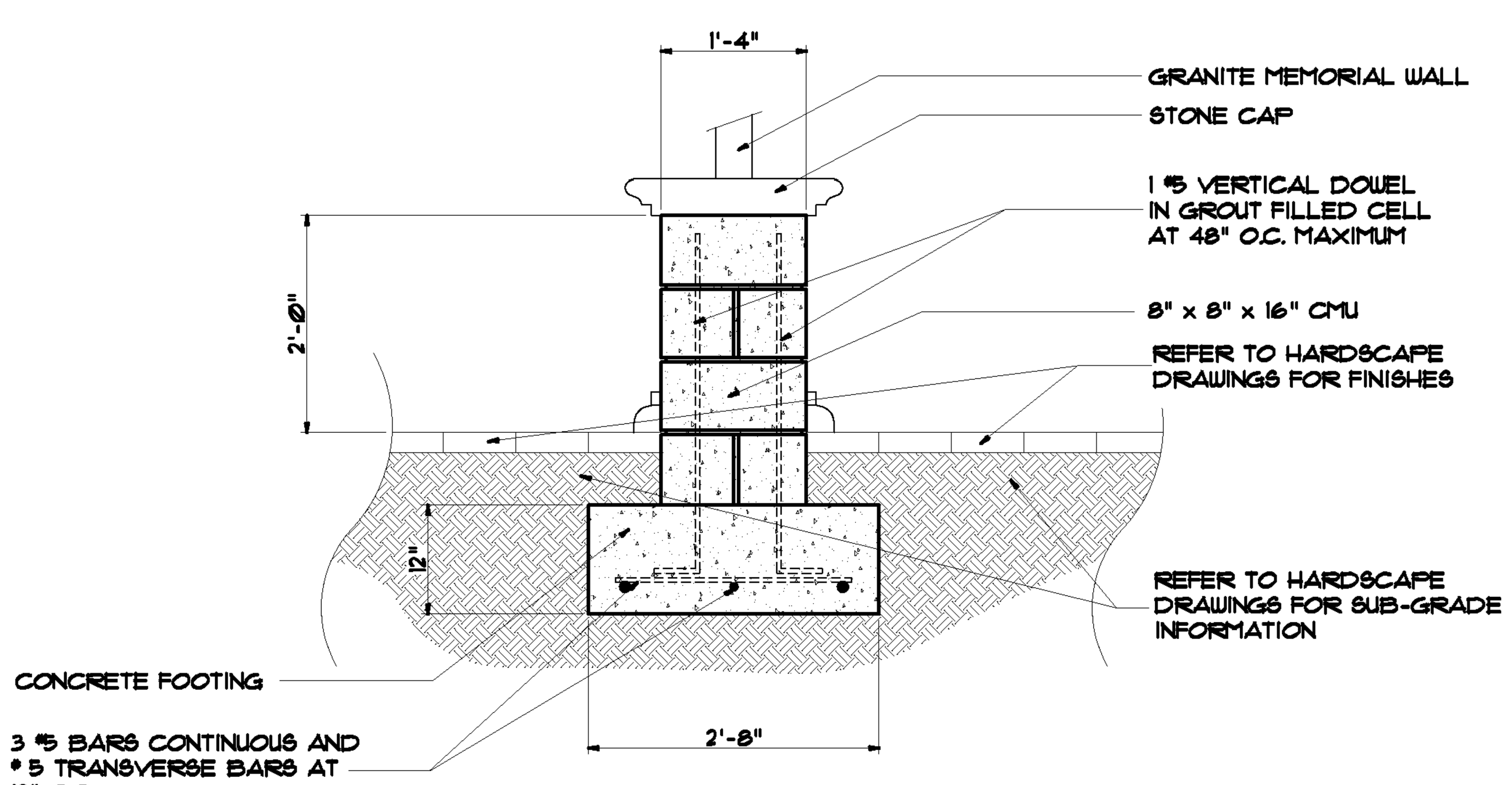


STEEL PLACEMENT



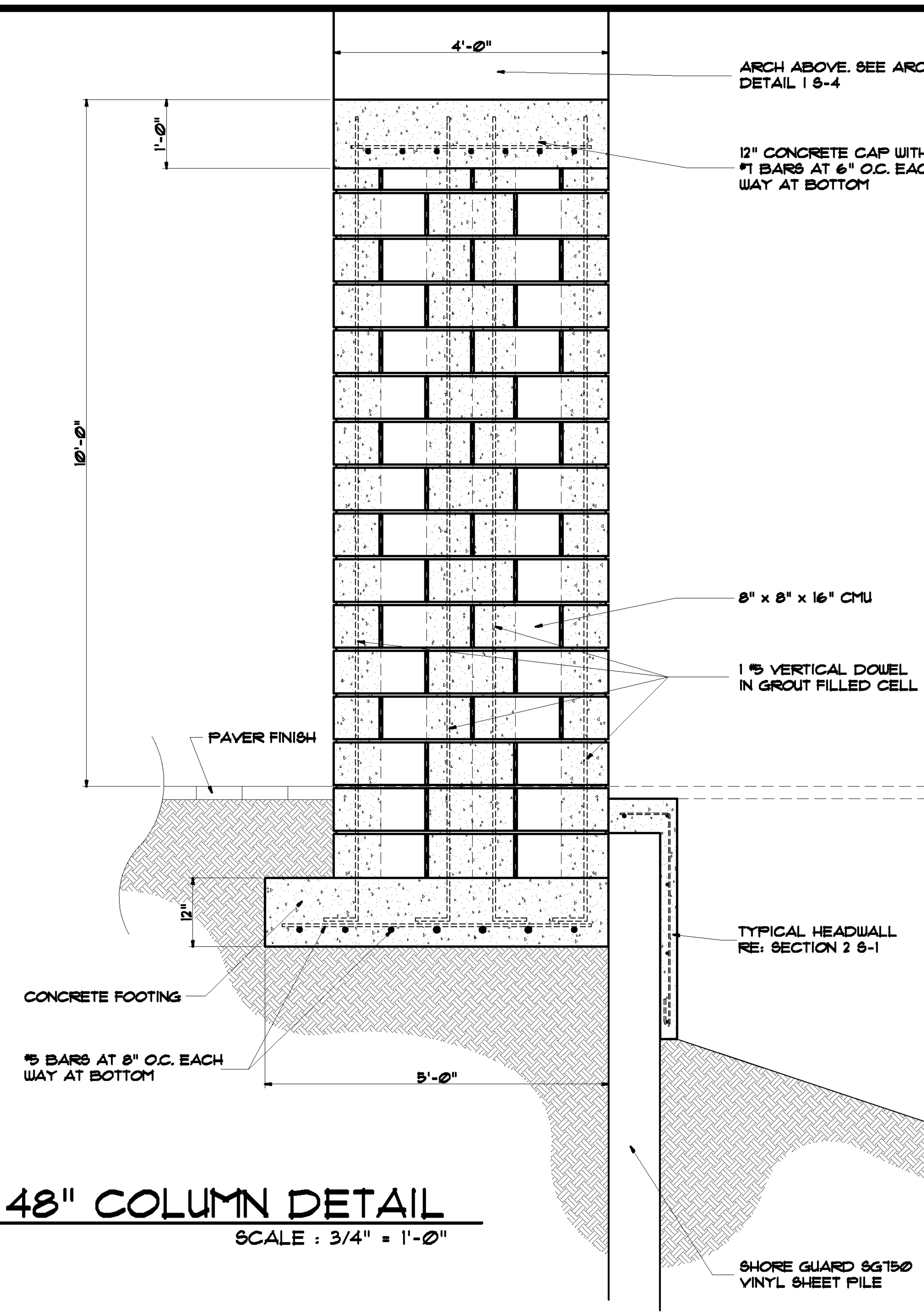
3 / S-3 SEAT WALL DETAIL

SCALE : 3/4" = 1'-0"



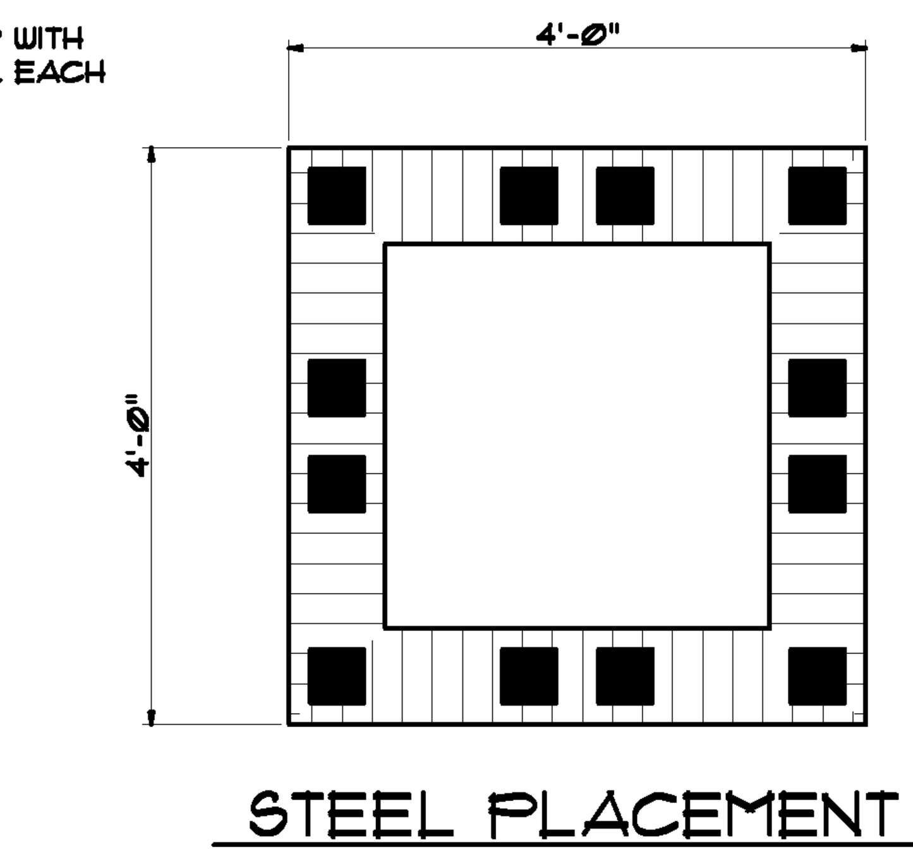
4 / S-3 MEMORIAL WALL DETAIL

MEMORIAL WALL BASE SCALE : 3/4" = 1'-0"



1 / S-3 48" COLUMN DETAIL

SCALE : 3/4" = 1'-0"



STEEL PLACEMENT

STRUCTURAL NOTES

CONTRACTOR NOTE:

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE SHAFFER GROUP, INC. IS NOT RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION OR FOR RELATED SAFETY PRECAUTIONS AND PROGRAMS.

CODES AND STANDARDS

CODE: 2010 FLORIDA BUILDING CODE AND ST LUCIE COUNTY'S CURRENT APPLICABLE CODES

CONCRETE

1. EXCEPT WHERE OTHERWISE NOTED, CAST IN PLACE CONCRETE SHALL HAVE THE FOLLOWING PROPERTIES.

LOCATION	MINIMUM COMPRESSIVE STRENGTH	MAXIMUM W/C RATIO
FOOTINGS:	3000PSI	0.48
SLAB ON GRADE:	3000PSI	0.48

FOR ALL CONCRETE, THE PROPORTIONS OF CEMENT, AGGREGATE, AND WATER TO ATTAIN REQUIRED PLASTICITY AND COMPRESSIVE STRENGTH SHALL BE IN ACCORDANCE WITH ACI 318 CODE. CONCRETE SHALL CONTAIN SIX PERCENT, PLUS OR MINUS ONE, (6%+1) ENTRAINED AIR THROUGH THE USE OF AIR ENTRAINED CONCRETE OR AN AIR ENTRAINING ADMIXTURE CONFORMING TO ASTM C20. SLUMPS FOR VARIOUS KINDS OF CONSTRUCTION SHALL BE AS FOLLOWS:

LOCATION	MAXIMUM	MINIMUM
FOOTINGS	3"	2"
COLUMNS, BEAMS, & DECKS	4"	3"

2 . CONCRETE EXPOSED TO AIRBORNE SALTS

CONCRETE EXPOSED TO AIRBORNE SALTS SHALL HAVE MAXIMUM WATER/CEMENT RATIO OF 0.40.

* AS AN ALTERNATE TO THE .40 W/C RATIO, THE CONCRETE EXPOSED TO AIR OR WATER BORNE SALTS IS TO BE TREATED WITH A NON-ORGANIC FORMULATION OF CHEMICALLY REACTIVE SILICATES. THIS FORMULATION IS TO BE PHYSICALLY INJECTED INTO THE SLAB USING PRESSURE TO PROVIDE CORROSION INHIBITION, BUFFER PH, REDUCE POROSITY AND IMPROVE MECHANICAL PROPERTIES. AT ENGINEER'S OPTION, FORMULATION MAY INCLUDE SURFACTANTS TO ALLOW TOPICAL APPLICATION AND MIGRATION.

HIGH RANGE WATER REDUCING (HRWR) ADMIXTURE SUCH AS "ADVA" BY W.R. GRACE & CO. SHALL BE USED FOR WORKABILITY. SLUMP RANGE AFTER ADDITION OF HRWR SHALL BE 5-8 INCHES. NO WATER MAY BE ADDED ON SITE.

3. SHOP DRAWING ARE REQUIRED FOR THE FOLLOWING ITEMS: CONCRETE MIX; REINFORCING BARS WITH BENDING SCHEDULE; INSERTS AND ATTACHMENTS; FORMWORK, SHORING AND RESHORING (SIGNED AND SEALED BY THE SPECIALTY ENGINEER RESPONSIBLE FOR DESIGN) AND SHEET PILES.

4. EXCEPT AS SPECIFIED OTHERWISE, CONCRETE SHALL BE READY MIXED AND DELIVERED TO THE PROJECT IN ACCORDANCE WITH ASTM C94. SAMPLES FOR STRENGTH TESTS OF EACH CLASS OF CONCRETE PLACED EACH DAY SHALL BE TAKEN NOT LESS THAN ONCE A DAY, NOR LESS THAN ONCE FOR EACH 150YD OF CONCRETE, NOR LESS THAN ONCE FOR EACH 5000FT OF SURFACE AREA FOR SLABS OR WALLS. ON A GIVEN PROJECT, IF TOTAL VOLUME OF CONCRETE IS SUCH THAT FREQUENCY OF TESTING REQUIRED AS NOTED ABOVE WOULD PROVIDE LESS THAN FIVE STRENGTH TEST FOR A GIVEN CLASS OF CONCRETE, TESTS SHALL BE MADE FROM AT LEAST FIVE RANDOMLY SELECTED BATCHES OR FROM EACH BATCH IF FEWER THAN FIVE BATCHES ARE USED.

5. BEFORE PLACING CONCRETE, ALL DEBRIS, WATER AND OTHER DELETERIOUS MATERIAL SHALL BE REMOVED FROM THE PLACES TO BE OCCUPIED BY THE CONCRETE. THE PLACING OF ALL CONCRETE SHALL BE IN ACCORDANCE WITH ACI 318 AND ASTM C94 REQUIREMENTS. PUMPING OF CONCRETE WILL BE PERMITTED ONLY WITH THE ENGINEER OF RECORD'S APPROVAL OF PROPOSED CONCRETE MIX AND METHOD OF PUMPING. CONCRETE SHALL BE RAPIDLY HANDLED FROM MIXER TO FORMS AND DEPOSITED AS NEARLY AS POSSIBLE TO ITS FINAL POSITION TO AVOID SEGREGATION DUE TO REHANDLING. CONCRETE TO BE SPADED AND WORKED BY HAND AND VIBRATED TO ASSURE CLOSE CONTACT WITH ALL SURFACES OF FORMS AND REINFORCING STEEL AND LEVELED OFF AT PROPER GRADE TO RECEIVE FINISH. ALL CONCRETE SHALL BE PLACED UPON CLEAN, DAMP SURFACES. VIBRATION SHALL BE APPLIED DIRECTLY TO THE CONCRETE AND SHALL BE SUFFICIENT TO CAUSE FLOW OF SETTLEMENT BUT NOT LONG ENOUGH TO CAUSE SEGREGATION OF THE MIX. OPERATION OF THE VIBRATOR SHALL BE SOLE RESPONSIBILITY OF ONE MAN DURING THE PLACING OF CONCRETE. CONCRETE MORE THAN 90 MINUTES OLD SHALL NOT BE USED UNLESS PRE-APPROVED RETARDERS HAVE BEEN USED IN DESIGN MIX.

6. CONSTRUCTION JOINTS SHALL BE LOCATED IN ACCORDANCE WITH ACI 301. ALL REINFORCING STEEL SHALL BE CONTINUOUS ACROSS JOINTS. IN SLABS ON GRADE, SAW CONTRACTION JOINTS NOT OVER TWENTY FEET CENTER TO CENTER EACH WAY. JOINTS SHALL BE SAWN A MIN. DEPTH OF 1/8" AND A MAX. DEPTH OF 1/3 OF THE SLAB THICKNESS. SAWING OF THE JOINTS SHALL COMMENCE AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY TO PERMIT SAWING WITHOUT EXCESSIVE RAVELING. FILL SAW CUTS WITH APPROVED JOINT FILLER AFTER CONCRETE HAS CURED.

7. CONCRETE, WHEN DEPOSITED, SHALL HAVE A TEMPERATURE NOT BELOW 50 DEGREE F AND NOT ABOVE 90 DEGREE F. THE METHODS AND RECOMMENDED PRACTICES AS DESCRIBED IN ACI 306 SHALL BE FOLLOWED FOR COLD WEATHER CONCRETING AND ACI 305 FOR HOT WEATHER CONCRETING.

8. FRESHLY PLACED CONCRETE SHALL BE PROTECTED FROM PREMATURE DRYING BY ONE OF THE FOLLOWING METHODS:
(1) PONDING OR CONTINUOUS SPRINKLING.
(2) ABSORPTIVE MAT OR FABRIC KEPT CONTINUOUSLY WET.
(3) WATERPROOF PAPER CONFORMING TO ASTM C171.
(4) APPLICATION OF AN APPROVED CHEMICAL CURING COMPOUND.
THE CURING SHALL CONTINUE UNTIL THE CUMULATIVE NUMBER OF DAYS WHEN THE AMBIENT TEMPERATURE ABOVE 50 DEGREE F HAS TOTALED SEVEN. DURING CURING, THE CONCRETE SHALL BE PROTECTED FROM ANY MECHANICAL INJURY, LOAD STRESSES, SHOCK, VIBRATION OF DAMAGE TO FINISHED SURFACES.

9. REINFORCING STEEL BARS SHALL BE DEFORMED IN ACCORDANCE WITH ASTM A305 OR A408 AND FORMED OF ASTM A615-78 GRADE 60 STEEL. WELDED WIRE FABRIC REINFORCING TO BE ASTM A185 STEEL WIRE. ACCESSORIES SHALL CONFORM TO THE CRSI "MANUAL OF STANDARD PRACTICE". THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED OVER REINFORCING BARS:

EXPOSED TO EARTH;	3"
EXPOSED TO WEATHER;	1 1/2"

TMDL

BID SET 05/12/14

NOTES

THE SHAFFER GROUP INC.
2440 SE Federal Hwy, Stuart, Florida 34994
Phone: (772) 220-4990
E-Mail mail@theshaffergroup.com
FL. CERTIFICATE OF AUTHORIZATION # 9316

ENGINEERING OUTSIDE THE BOX

PROJECT: VETERANS MEMORIAL PARK

LOCATION: CITY OF FORT PIERCE, FLORIDA

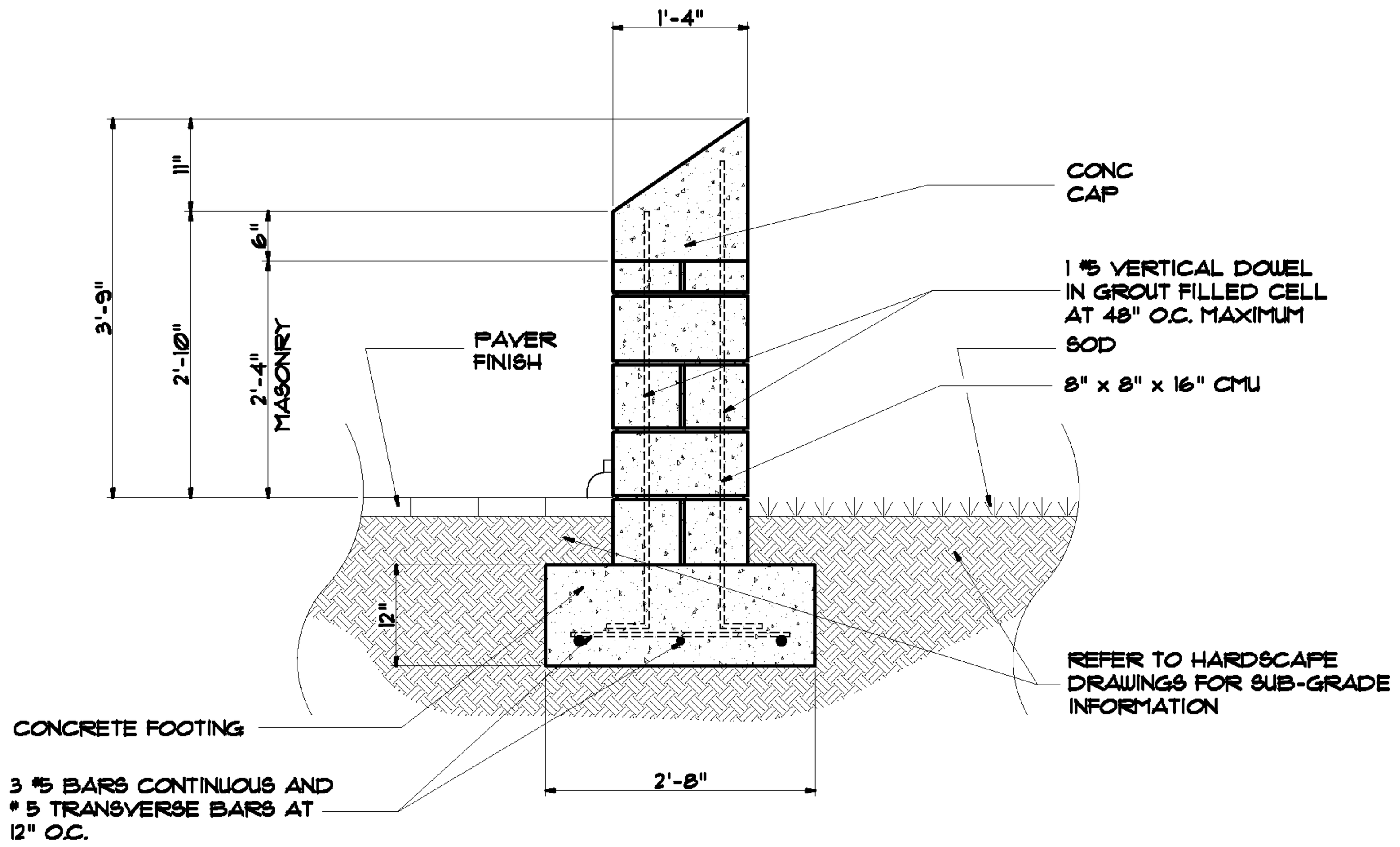
CONTRACTOR OR CUSTOMER:

DWG TITLE: TMDL

FREDRICK D. SHAFFER, PE
FL. P.E. # 26694

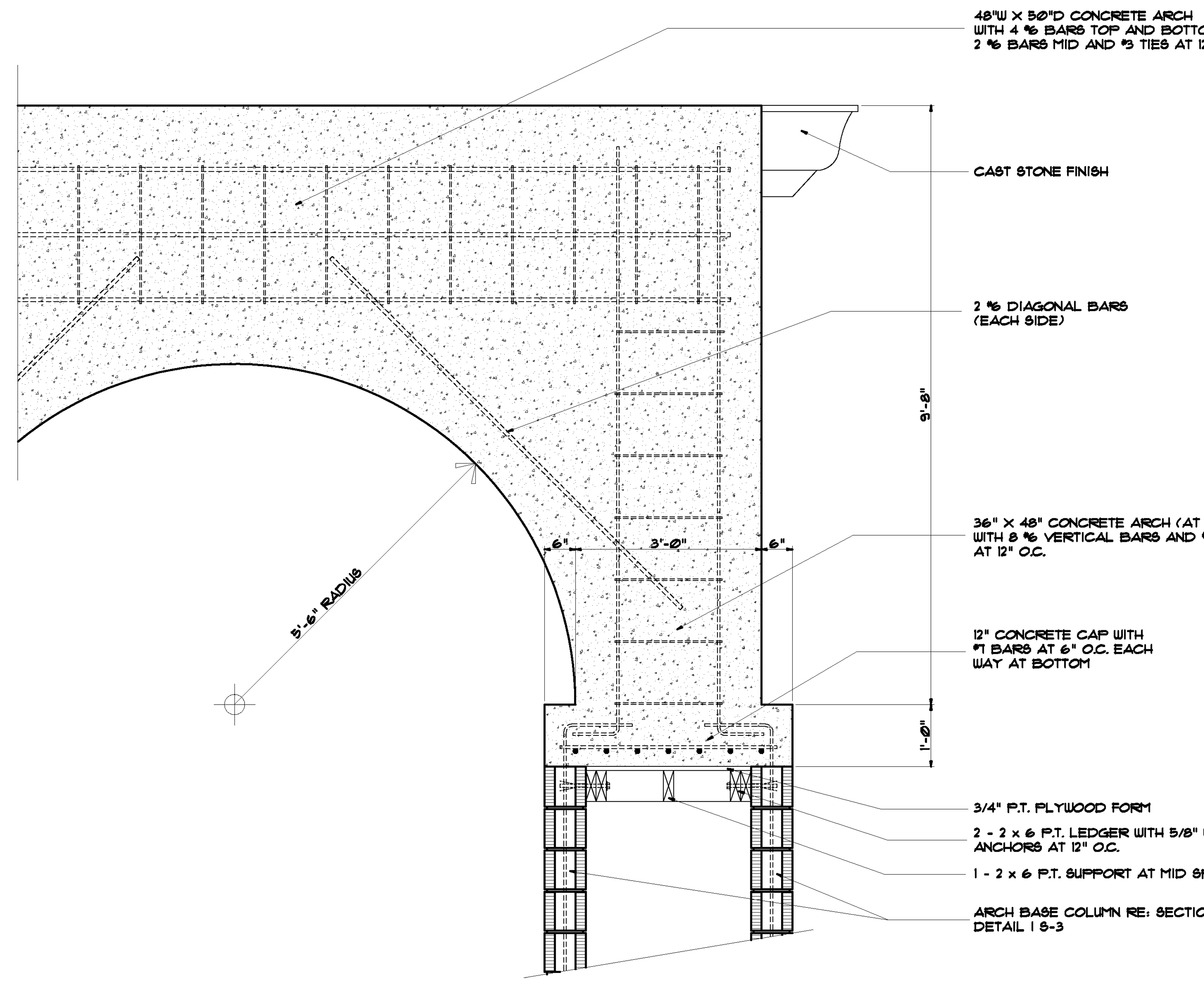
NO.	REVISIONS	BY	CHK'D	DATE
1	REVISED CE	DSA		6/4/14

JOB NO.:	13059
DATE:	03/04/14
SCALE:	AS NOTED
DRAWN BY:	DSA
CHECKED BY:	F. Shaffer
REV. NO.	
SHEET NO.	S-3



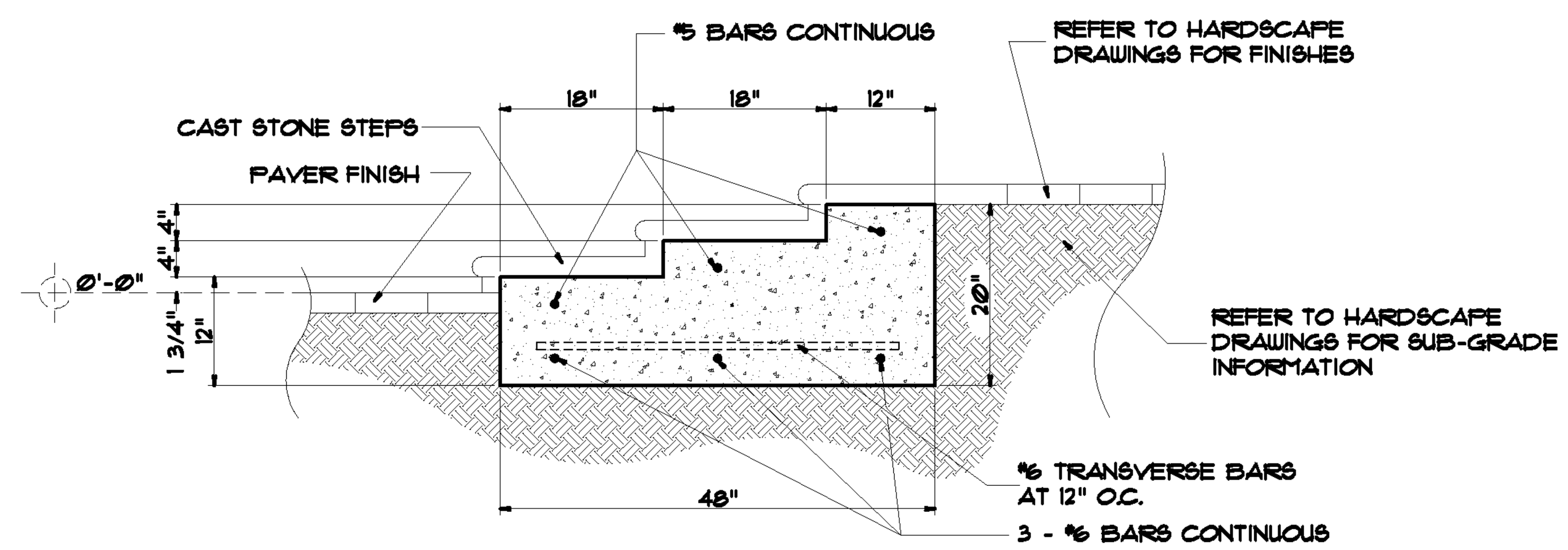
3 / S-4 **DEDICATION MONUMENT DETAIL**

SCALE : 3/4" = 1'-0"



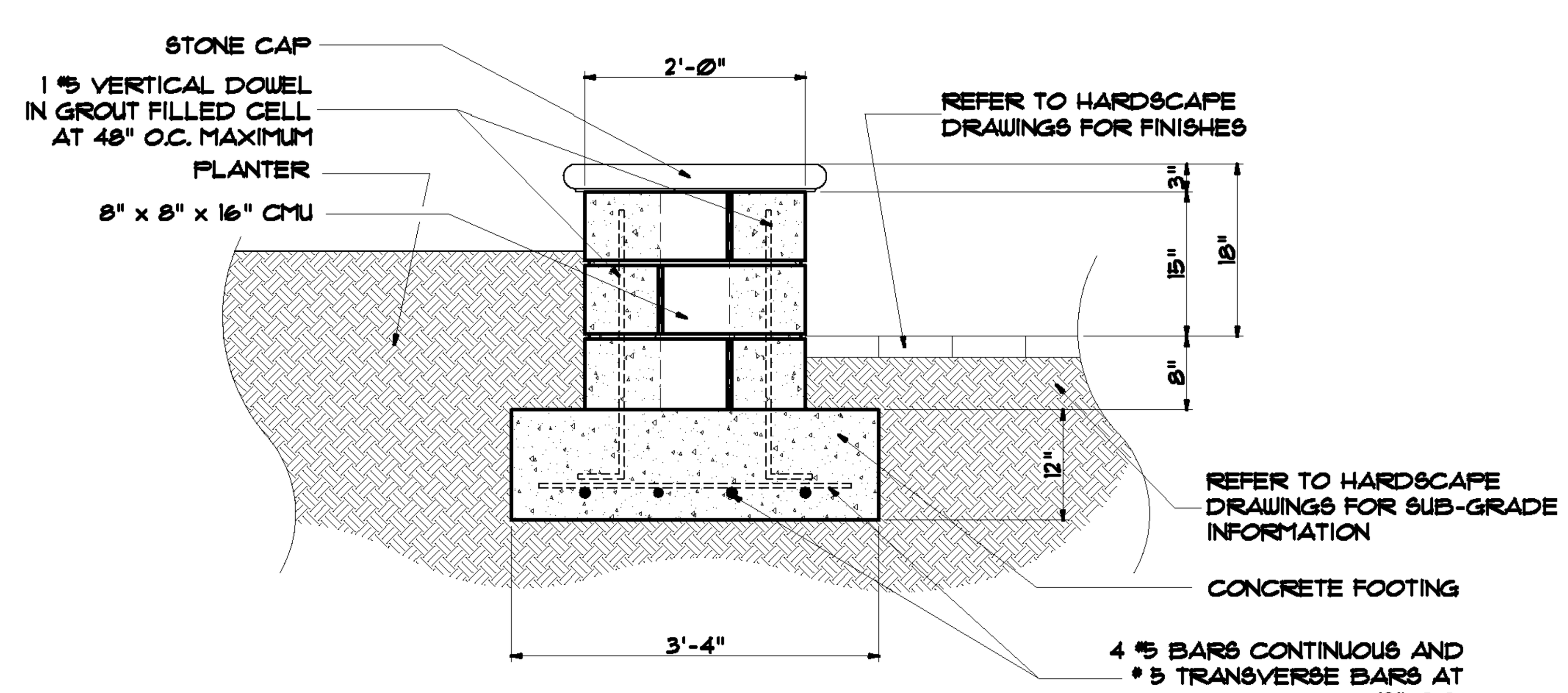
1 / S-4 **ARCH DETAIL**

SCALE : 3/4" = 1'-0"



4 / S-4 **STAIR DETAIL AT FLAG POLE**

SCALE : 3/4" = 1'-0"



5 / S-4 **RETAINING WALL DETAIL**

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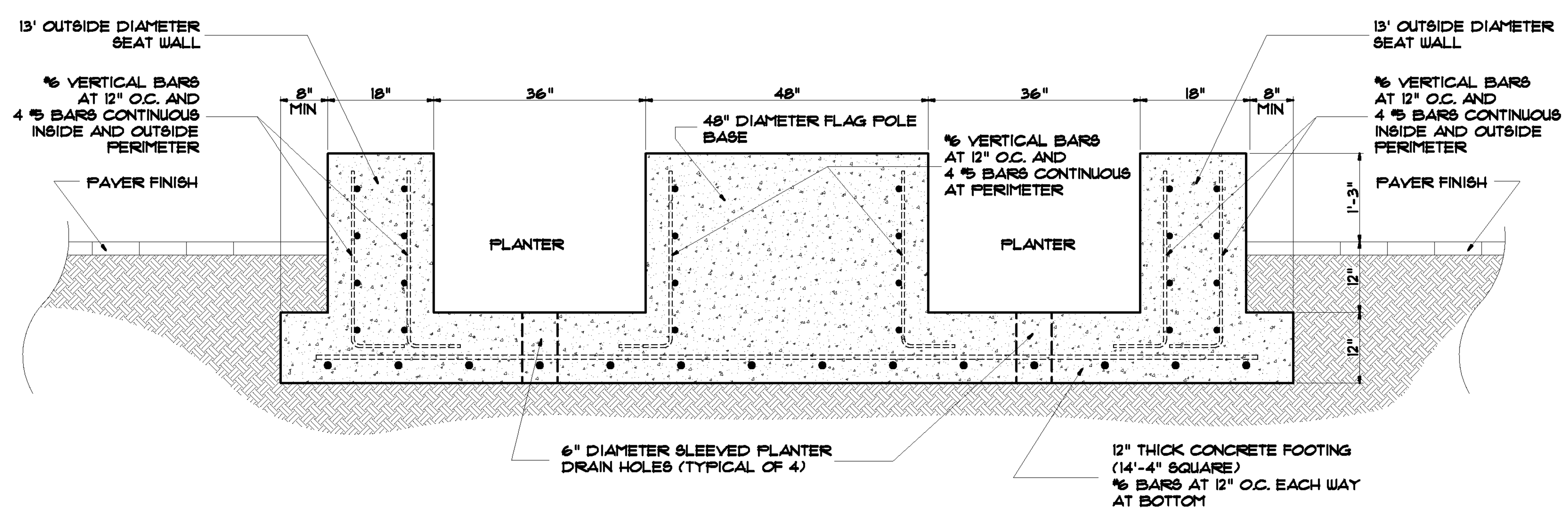

2 / S-4 **FLAG POLE PLANTER DETAIL**

SCALE : 3/4" = 1'-0"

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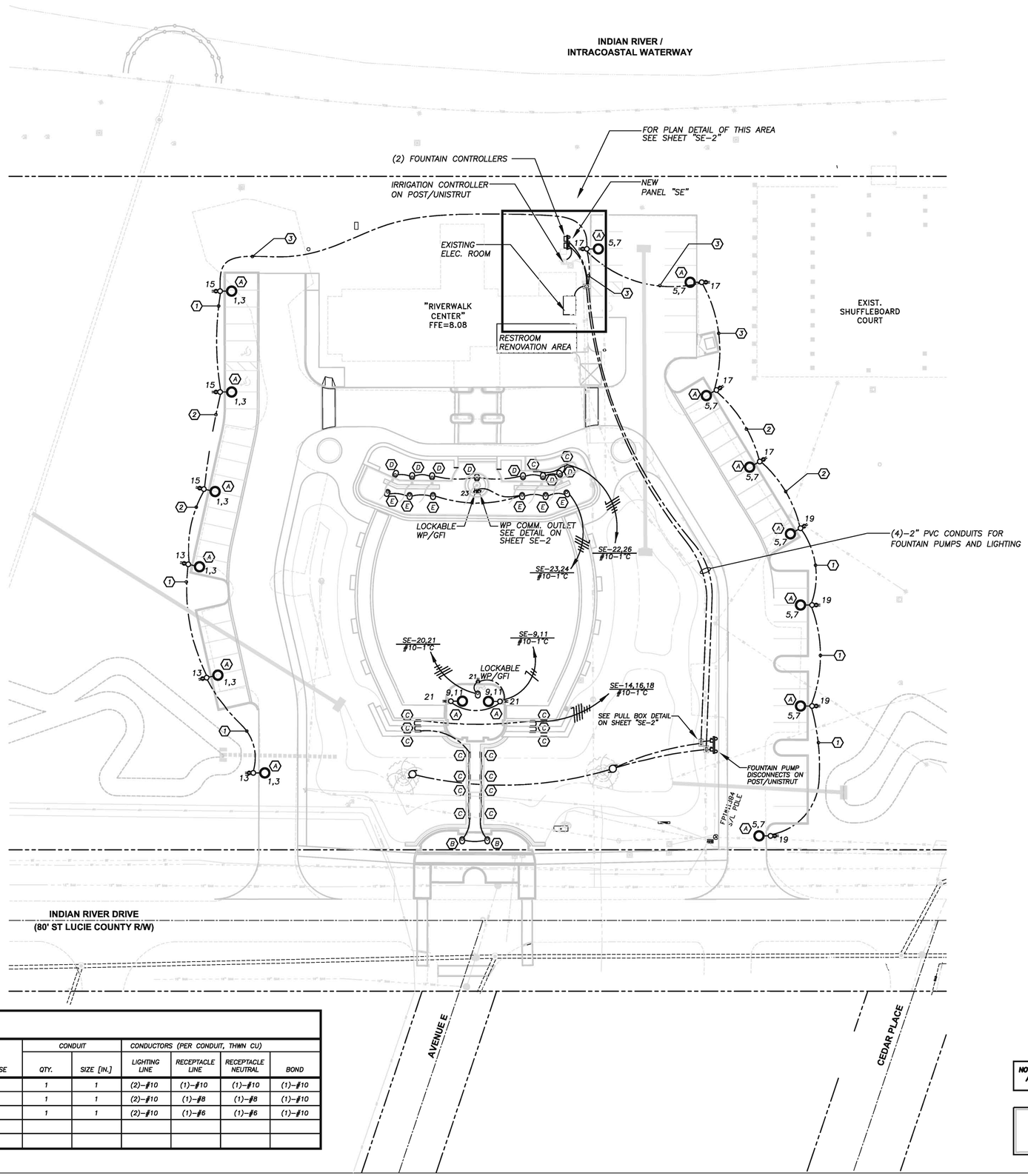
CONTRACTOR OR CUSTOMER:
DWG TITLE: TMDL

FREDRICK D. SHAFFER, PE
FL. P.E. # 26694

NO.	REVISED DE	BY	CHK'D	DATE
1	REVISIONS	DBA		5/9/14

JOB NO.:	13050
DATE:	03/04/14
SCALE:	AS NOTED
DRAWN BY:	DBA
CHECKED BY:	F. Shaffer
REV. NO.	
SHEET NO.	S-4



WIRE SCHEDULE

WIRE DESIGNATION	AMPS	PHASE	CONDUIT		CONDUCTORS (PER CONDUIT, THWN CU)			
			QTY.	SIZE [IN.]	LIGHTING LINE	RECEPTACLE LINE	RECEPTACLE NEUTRAL	BOND
(1)	20	1	1	1	(2)-#10	(1)-#10	(1)-#10	(1)-#10
(2)	20	1	1	1	(2)-#10	(1)-#8	(1)-#8	(1)-#10
(3)	20	1	1	1	(2)-#10	(1)-#6	(1)-#6	(1)-#10

NOTE:
ALL SITE LIGHTING TO BE BID AS ALTERNATE.

03/02/2015
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CONSULTING ENGINEERS
833 EAST 5TH STREET
STUART, FLORIDA 34994
(772) 286-8696
CERTIFICATE OF AUTHORIZATION NO. 30436

PROJECT:

VETERANS MEMORIAL PARK IMPROVEMENTS TMDL GRANT

FT. PIERCE, FL

JOB NUMBER
2013.011

KEY PLAN:

ISSUES:

NO.	DATE	DESCRIPTION

SEAL:
DAVID A. WOJCIESZAK, P.E.

03/04/2015
DATE SIGNED

LICENSE NO. 32091

SHEET TITLE:

SITE ELECTRICAL PLAN

SCALE: 1"=30'

SHEET NUMBER:

SE-0

PANELBOARD "SE"

RATED VOLTAGE	120/240V–1ø/3W/SN	LOCATION	SE SITE
RATED AMPS	100	CONDUCTORS	
MAIN	BREAKER	PHASE	(2)–#3 THWN CU
BRANCH DEVICES	PLUG–ON	NEUTRAL	(1)–#3 THWN CU
MOUNTING	POST/UNISTRUT	GROUND	(1)–#8 THWN CU
INTERUPTING RATING	22,000 NEMA–3R	CONDUIT	2"

BUS AMPS A	BUS AMPS B	DESCRIPTION	BREAKER TRIP	BREAKER POLE	CIR NUM.		BREAKER POLE	BREAKER TRIP	DESCRIPTION	BUS AMPS A	BUS AMPS B
6		Parking Lighting	20	2	1	2	2	40	Future Fountain Controller	15	
	6				3	4					15
5		Parking Lighting	20	2	5	6	2	40	Future Fountain Controller	15	
	5				7	8					15
2		Terrace Lighting	20	2	9	10	1	20	Irrigation Controller	5	
	2				11	12	1	20	Spare		–
10		Pole Receptacles	20	1	13	14	1	20	Archway Lighting	2	
	10	Pole Receptacles	20	1	15	16	1	20	Crossover Lighting		2
9		Pole Receptacles	20	1	17	18	1	20	Step Lighting	2	
	9	Pole Receptacles	20	1	19	20	1	20	Terrace Flag Lighting		2
5		Terrace Receptacles	20	1	21	22	1	20	Memorial Flag Lighting	5	
	2	Memorial Receptacle	20	1	23	24	1	20	Memorial Mon. Lighting		4
–		Spare	20	1	25	26	1	20	Memorial Ramp Lighting	2	
	–	Spare	20	1	27	28	1	20	Spare		–
–		Spare	20	1	29	30	1	20	Spare	–	
					31	32					
					33	34					
					35	36					
					37	38					
					39	40					
					41	42					

DEMAND LOADS		
LIGHTING	9,960	W
DIVERSITY 25%	2,490	W
EQUIPMENT	8,640	W
TOTAL DEMAND	21,090	W

OPTIONS
COPPER BUS
GROUND BAR
KEYED DOOR LATCH

88 A

EXISTING MAIN PANEL "CDP"

RATED VOLTAGE	120/240V–3ø/4W/SN	LOCATION	ELEC. ROOM
RATED AMPS	600	CONDUCTORS	
MAIN	LUGS	PHASE	2 SETS (3)–350 KCM THWN CU
BRANCH DEVICES	BOLT–ON	NEUTRAL	2 SETS (1)–350 KCM THWN CU
MOUNTING	SURFACE	GROUND	2 SETS (1)–#1 THWN CU
		CONDUIT	(2)–3"

BUS AMPS A	BUS AMPS B	BUS AMPS C	DESCRIPTION	BREAKER TRIP	BREAKER POLE	CIR NUM.		BREAKER POLE	BREAKER TRIP	DESCRIPTION	BUS AMPS A	BUS AMPS B	BUS AMPS C
80						1	2				80		
	80		20 Ton A/C	200	3	3	4	3	225	A/C		80	
		80				5	6						80
119			Panel "A"	200	2	7	8	2	200	Panel "B"	104		
	119					9	10					104	
		98	Panel "C"	200	2	11	12						
98						13	14						
						15	16						
						17	18						
						19	20						

SERVICE LOAD CALCULATION

COMMERCIAL NEC 220–III 2008 EDITION

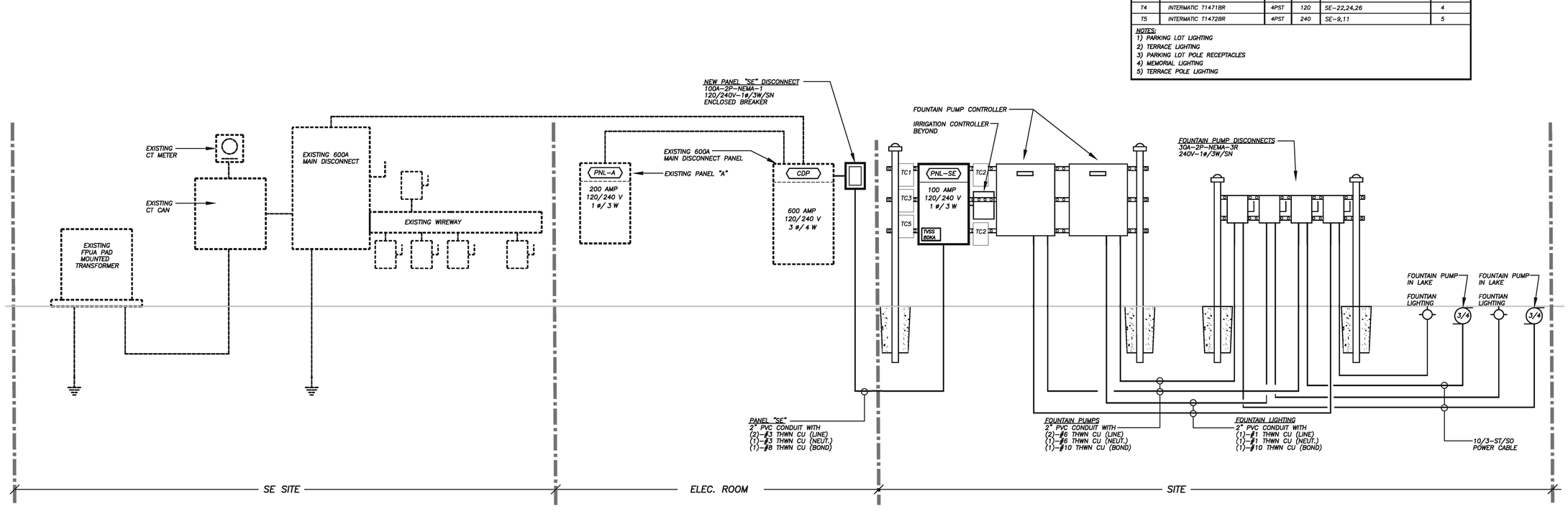
SYSTEM VOLTAGE: 120V/240V–3ø/4W/SN–DELTA

CODE RULE	LOAD DESCRIPTION							
GENERAL LIGHTING 220.14(F)	NAME	QTY.	MULTIPLIER				LINE	NEUT.
	GENERAL LIGHTING	6,052	3W/SQ. FT.				18,156	18,156
220.14(F)	SITE LIGHTING	–	–				9,960	6,840
220.43(A)(B)	TOTAL LIGHTING	–	–				28,116	24,996
RECEPTACLE LOAD 220.14(I)	NAME	QTY	MULTIPLIER				LINE	NEUT.
	RECEPTACLE	34	180W/EA				6,052	6,052
	SUB–TOTAL						6,052	6,052
T220.44	DIVERSITY (FIRST 10,000 VA @ 100%)						6,052	6,052
	DIVERSITY (REMAINDER AT 50%)						–	–
MOTOR AND EQUIPMENT LOADS 220.14(C)	NAME	QTY.	HP	VOLTS	ø	AMPS	LINE	NEUT.
	Existing A/C	2	–	240	3	160	133,021	–
	Fountain Pump	2	3/4	240	1	8	3,840	–
	Fountain Lighting	6	–	120	1	4	3,000	3,000
	EWC	1	–	120	1	10	1,200	1,200
	Water Heater	1	–	240	1	19	4,500	–
	Vending	2	–	120	1	10	2,400	2,400
	Hand Dryers	6	–	120	1	6	4,320	4,320
220.18(A)	DIVERSITY (25% LARGEST MOTOR)						960	–
	SUB–TOTAL EQUIPMENT						153,241	–
TOTAL DEMAND 220.40							LINE	NEUT.
	TOTAL SERVICE/FEEDER DEMAND FOR "CDP"						187,409	–
	TOTAL DEMAND (AMPS)						451	–
220.40 SELECTION OF EQUIPMENT	NAME					AMPS	QTY.	WIRE
	OVERCURRENT PROTECTIVE DEVICE					600	1	
	CONDUCTOR (LINE)						2 SETS	350
	CONDUCTOR (NEUTRAL)						2 SETS	350

TIMECLOCK SCHEDULE

NO.	DESCRIPTION TYPE	SWITCH	VOLTAGE	PANEL CIRCUITS	NOTES
T1	INTERMATIC T1472BR	4PST	240	SE–1,3,5,7	1
T2	INTERMATIC T1471BR	4PST	120	SE–14,16,18,20	2
T3	INTERMATIC T1471BR	4PST	120	SE–13,15,17,19	3
T4	INTERMATIC T1471BR	4PST	120	SE–22,24,26	4
T5	INTERMATIC T1472BR	4PST	240	SE–9,11	5

NOTES:
1) PARKING LOT LIGHTING
2) TERRACE LIGHTING
3) PARKING LOT POLE RECEPTACLES
4) MEMORIAL LIGHTING
5) TERRACE POLE LIGHTING



ELECTRICAL RISER

120/240V–3ø/3W/SN–DELTA

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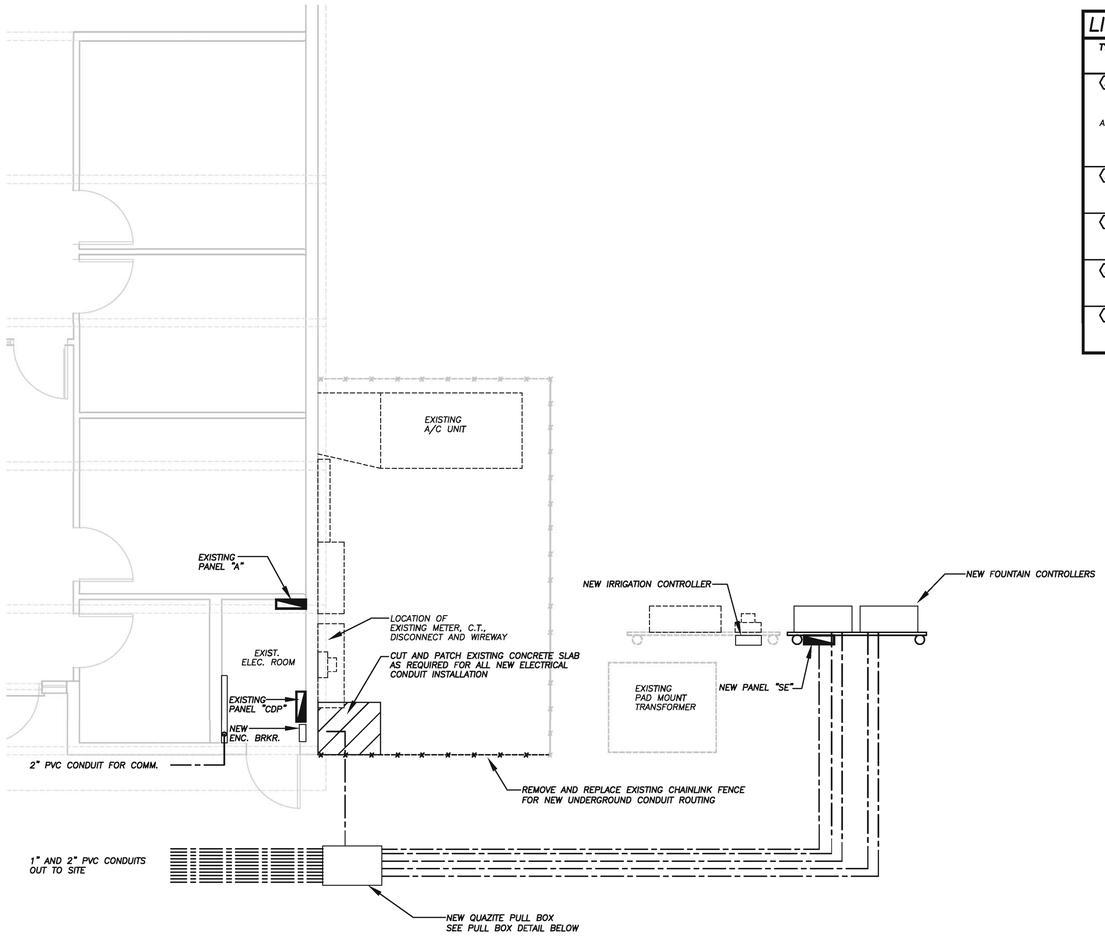
ELECTRICAL RISER

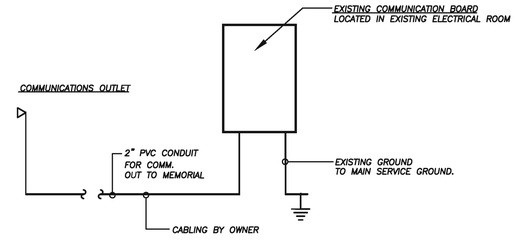
SHEET NUMBER:

SE-1

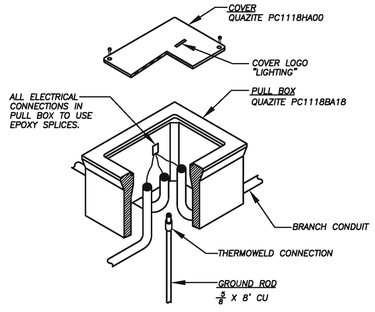
LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	LAMP NO.	LAMP TYPE	LAMP NOM. WATTS	LAMP INPUT WATTS	FINISH	MOUNTING	REMARKS
(A)	STERNBERG 1-1527TLED/CFG/240PM/3320P6.250/CL/BCC/ 8ARCT4/GFI-IVC/SS-AB/VG		LED	96	96	VERDE GREEN	POLE	PARKING LIGHTING
ALT.	LUMEC DMS55-90W80LED4K-R-LE4F-240-DMG-CRFT-1A-RS61N 20.5-DEC--GFII-(LGV-017)-3/4x27-12 1/2-DEC-SCTBD							
(B)	B-K LIGHTING TY2-T670-WF-82-SAP-H70E-MT-GM-R-ICEE-TC WE-EF LIGHTING ETC SERIES LED 120V		LED	70	70	NATURAL ST. STL.	IN-GROUND	ARCH UP-LIGHTING
(C)	HADCO RSC2-H-K5-D5-E		LED	6	6	BRONZE	RECESS	STEP LIGHT
(D)	B-K LIGHTING TY2-T670-SP-82-SAP-H70E-MT-GM-R-ICEE-TC WE-EF LIGHTING ETC SERIES LED		LED	70	70	NATURAL ST. STL.	IN-GROUND	FLAG UP-LIGHTING
(E)	B-K LIGHTING TY2-T670-WF-82-SAP-H70E-MT-GM-R-ICEE-TC WE-EF LIGHTING ETC SERIES LED		LED	70	70	NATURAL ST. STL.	IN-GROUND	MONUMENT UP-LIGHTING

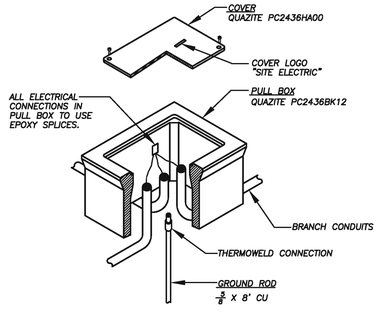




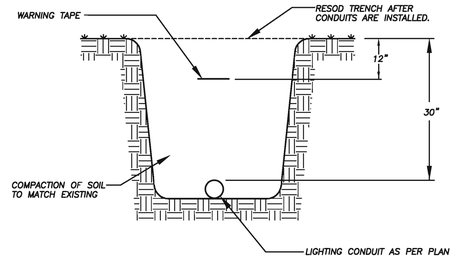
COMMUNICATIONS RISER



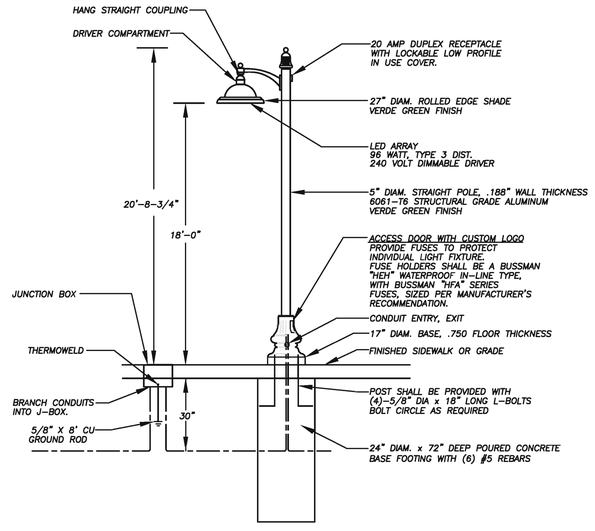
JUNCTION BOX DETAIL



PULL BOX DETAIL



TRENCHING DETAIL



POLE LIGHTING DETAIL

NOTE: USE EPOXY SPLICES FOR SPLICING CONDUCTORS IN PULL BOX.

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LICENSE NO. 32091

SHEET TITLE:

ELECTRICAL DETAILS

SHEET NUMBER:

SE-2

ELECTRICAL LEGEND — POWER AND WIRING

ELECTRICAL SYMBOL	DESCRIPTION	VOLTS/AMPS	MOUNTING HEIGHTS *	NOTES
	SIMPLEX RECEPTACLE – VERTICAL MOUNTING	120V/20A	18"	
	DUPLEX RECEPTACLE – VERTICAL MOUNTING	120V/15A	18"	
WP GFI	EXTERIOR RECEPTACLE	120V/15A		
WP GFI	EXTERIOR POST – MOUNTED RECEPTACLE	120V/15A		
J	JUNCTION BOX			
J WP	JUNCTION BOX – WATERPROOF			
T	TRANSFORMER FOR LOW VOLTAGE LIGHTING			
	QUAZITE PULL BOX			
PC	PHOTO CELL			
TC	TIME CLOCK			
C1	CONTACTOR			
	MOTOR			
	MOTOR STARTER			
	DISCONNECT			
100/70 3	DISCONNECT DESIGNATIONS			100/70 3 — FRAME SIZE, POLES, FUSE SIZE
	PANEL			
	CIRCUIT WIRING FOR 120V – HOT/NEUTRAL/GROUND			
	CIRCUIT WIRING FOR – 240V/1ø – HOT/HOT/GROUND			
	CONCEALED CONDUIT			
	UNDERGROUND CONDUIT – POWER			
	EXPOSED CONDUIT			
P1–1 #12–1/2"C	CIRCUIT DESIGNATION			P1–1 — PANEL/CIRCUIT; #12–1/2"C — WIRE/CONDUIT SIZE

ABBREVIATIONS:
WP – WATERPROOF
GFI – GROUND FAULT PROTECTION
NF – NON–FUSED

ELECTRICAL LEGEND — LIGHTING AND SWITCHING

ELECTRICAL SYMBOL	DESCRIPTION	VOLTS/AMPS	MOUNTING HEIGHT *	NOTES
	POLE LIGHT	240V		
	STEP LIGHT	120V		
	FLUSH, IN–GROUND LIGHT	120V		

ABBREVIATIONS:
WP – WATERPROOF

ELECTRICAL LEGEND — DATA/COMMUNICATION/FIRE ALARM

ELECTRICAL SYMBOL	DESCRIPTION	MOUNTING HEIGHT *	NOTES
	COMPUTER – VERTICAL MOUNTED		
—T—	UNDERGROUND TELEPHONE CONDUIT		
—TV—	UNDERGROUND TELEVISION CONDUIT		
	EQUIPMENT GROUND		

ABBREVIATIONS:
WP – WATERPROOF

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ELECTRICAL LEGENDS

SHEET NUMBER:
SE-3

DIVISION 16 – GENERAL ELECTRICAL SPECIFICATIONS

PART ONE – GENERAL

16.01 DESCRIPTION

A. ALL ELECTRICAL WORK AND SPECIFIED ASSOCIATED WORK IS GENERALLY COVERED BY THIS SECTION. THE WORK COVERED IN THIS SECTION CONSISTS OF FURNISHING AND INSTALLING ALL MATERIALS REQUIRED FOR COMPLETE AND OPERATING ELECTRICAL SYSTEM AS CONTAINED IN THE CONTRACT DOCUMENTS. THE CONTRACT DOCUMENTS SHALL INCLUDE, BUT ARE NOT LIMITED TO, DRAWINGS, WRITTEN SPECIFICATIONS AND ADDENDUM. WHERE DISCREPANCIES OCCUR, THE MOST STRINGENT SHALL BE ENFORCED.

B. THE PROJECT GENERAL CONDITIONS, SUPPLEMENTAL CONDITIONS AND DIVISION ONE SPECIFICATIONS APPLY TO THIS SECTION OF WORK AND ARE BINDING.

C. EXCEPT WHERE PORTIONS OF THESE SPECIFICATIONS ARE MORE EXACTING, WORK OF THIS DIVISION SHALL COMPLY WITH ALL APPLICABLE PROVISIONS OF THE GENERAL SCOPE OF WORK.

D. THIS SECTION DOES NOT APPLY TO OWNER FURNISHED COMMUNICATIONS EQUIPMENT, APPLIANCES, CONTROLS, OR SECURITY SYSTEMS EXCEPT WHERE SPECIFICALLY SHOWN ON THE ELECTRICAL DRAWINGS.

16.02 CODES, ORDINANCES AND REGULATIONS

A. THE WORK SHALL COMPLY WITH THE LATEST CODES AND STANDARDS, BUT ARE NOT LIMITED TO:

1. FLORIDA CODES – 2010 EDITIONS:
FLORIDA BUILDING CODE, FBC.
FLORIDA RESIDENTIAL CODE, FBC-R.
FLORIDA BUILDING CODE, MECHANICAL, FBC-M.
FLORIDA BUILDING CODE, PLUMBING, FBC-P.
FLORIDA BUILDING CODE, ACCESSIBILITY, FBC-A, WITH 2012 AMENDMENTS.
FLORIDA BUILDING CODE, EXISTING CONSTRUCTION, FBC-EC.
FLORIDA FIRE PREVENTION CODE, 69A-3.012, 2011.
FLORIDA BUILDINLG CODE, ENERGY CONSERVATION, FBC-EC.
FLORIDA BUILDING CODE, FUEL GAS, FBC-FG.

2. NATIONAL FIRE PREVENTION CODES, NFPA:
NFPA-70, NATIONAL ELECTRICAL CODE, 2008.
NFPA-72, NATIONAL FIRE ALARM CODE, 2007.
NFPA-101, LIFE SAFETY CODE, 2009.
NFPA-241, STANDARDS FOR SAFEGUARDING CONSTRUCTION ALTERATIONS
AND DEMOLITION OPERATIONS, 2004.
NFPA-110, EMERGENCY AND STANDBY POWER SYSTEMS, 2005.

3. MISCELLANEOUS:
NATIONAL ELECTRICAL SAFETY CODE, 2007.
ASHRAE 62, INDOOR AIR QUALITY, 2004.
SMACNA-2003 AND SMACNA/ANSI-2005.
OSHA – OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.

B. WHERE ANY OF THE ABOVE ARE AT VARIANCE WITH THE DRAWINGS AND SPECIFICATIONS, THE CODE REQUIREMENTS SHALL TAKE PRECEDENCE AND ANY COST NECESSARY TO MEET THESE SHALL BE INCLUDED IN THE CONTRACT. DRAWINGS ARE SCHEMATIC AND DO NOT NECESSARILY INDICATE INDIVIDUAL CODE COMPLIANCE. CONTRACTOR SHALL PROVIDE ALL NECESSARY ITEMS TO COMPLY WITH THE ABOVE CODES WITHIN THE SCOPE OF THE CONTRACT.

C. THIS CONTRACTOR IS ASSUMED TO BE SKILLED IN THE TRADE AND IS SOLELY RESPONSIBLE FOR COMPLIANCE WITH OSHA REGULATIONS, PERFORMING THE WORK IN A SAFE AND COMPETENT MANNER, AND IN INSTALLATION PROCEDURES REQUIRED FOR THIS WORK. ALL SUPERVISION ASSIGNED TO THIS PROJECT SHALL BE EXPERIENCED IN THIS TYPE OF WORK. THIS CONTRACTOR'S SUPERINTENDENT SHALL BE DESIGNATED AS SAFETY INSPECTOR, UNLESS THE CONTRACTOR DESIGNATES ANOTHER PERSON AND NOTIFIES THE ENGINEER OF THIS CHANGE.

16.03 FEES AND PERMITTING

A. THE CONTRACTOR IS TO OBTAIN AND PAY FOR ALL PERMITS, LICENSES, INSPECTIONS AND CONNECTION FEES REQUIRED BY GOVERNING BODIES IN CONNECTION WITH THEIR WORK. THIS INCLUDES, BUT IS NOT LIMITED TO, ALL POWER COMPANY AND TELEPHONE COMPANY FEES AS REQUIRED TO COMPLETE SERVICES TO THE PROJECT. DELIVER TO THE OWNER COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES.

16.04 INSPECTION

A. BEFORE SUBMITTING HIS PROPOSAL, EACH BIDDER SHALL VISIT THE SITE AND EXAMINE THE PREMISES SO AS TO FULLY UNDERSTAND ALL OF THE EXISTING CONDITIONS RELATING TO HIS WORK. NO ALLOWANCES OR CONSIDERATIONS WILL BE MADE FOR THE LACK OF KNOWLEDGE OF MATERIALS TO BE FURNISHED, WORK TO BE DONE, EXISTING CONDITIONS, CODE REQUIREMENTS, OR CONDITIONS WITH WHICH TO BE COMPLIED.

B. EXAMINE SURFACES TO WHICH WORK UNDER THIS DIVISION WILL BE CONTIGUOUS. NOTIFY ENGINEER, IN WRITING, OF VISIBLE OR LATENT DEFECTS WHICH WOULD PREVENT PROPER INSTALLATION OF WORK UNDER THIS DIVISION. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS ACCEPTANCE OF SUCH SURFACES.

16.05 QUALITY CRITERIA

A. ALL MATERIALS USED IN THIS WORK SHALL BE NEW AND LISTED AND LABELED BY UNDERWRITERS LABORATORIES, AS CONFORMING TO ITS STANDARDS, WHERE SUCH A STANDARD HAS BEEN ESTABLISHED FOR THE PARTICULAR TYPE OF MATERIAL IN QUESTION. MATERIALS THAT ARE NOT LISTED BY UL, AS A CATEGORY, SHALL BE PROVIDED WITH TEST DATA AS REQUIRED.

B. ALL WORK SHALL BE EXCUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT A NEAT AND APPEARANCE WHEN COMPLETED.

16.06 DRAWINGS

A. SUBCONTRACTOR SHOULD EXAMINE STRUCTURAL, ELECTRICAL AND MECHANICAL DRAWINGS PRIOR TO SUBMITTING BID. SUBCONTRACTOR WILL BE REQUIRED TO FURNISH, INSTALL AND CONNECT, WITH APPROPRIATE ELECTRICAL SERVICES, INDICATED ITEMS ON OTHER DRAWINGS WITHOUT ADDITIONAL EXPENSE TO THE OWNER. THE DRAWINGS ARE BASED ON DESIGN CRITERIA FROM ONE MANUFACTURER. ENGINEER SHALL BE NOTIFIED OF DISCREPANCIES, OMISSIONS, CONFLICTS OR INTERFERENCES WHICH OCCUR BETWEEN DRAWINGS AND SPECIFICATIONS. IF SUCH NOTIFICATION IS RECEIVED IN ADEQUATE TIME, ADDITIONAL DATA OR CHANGES WILL BE ISSUED BY ADDENDUM TO ALL BIDDERS. IF NOTIFICATION IS NOT RECEIVED, IT IS IMPLIED THAT ADDITIONAL COSTS WILL NO BE INCURRED.

B. STRUCTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER ELECTRICAL DRAWINGS WITH REFERENCE TO CONSTRUCTION. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION AND WORK BY OTHER TRADES WILL PERMIT. NECESSARY CHANGES IN SPACINGS AND LOCATION OF LIGHTING FIXTURES, PANELBOARDS, CABINETS, WIRING DEVICES, RACEWAYS AND OTHER PIECES OF EQUIPMENT MAY BE MADE, PROVIDED, THE OVERALL PATTERNS AND LAYOUTS ARE NOT ALTERED AND REMAIN UNIFORM. LOCATION OF DEVICES, FIXTURES, ETC. WILL BE COORDINATED WITH ARCHITECTURAL ELEVATIONS AND REFLECTED CEILING PLANS. NECESSARY COORDINATION CHANGES SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER.

C. UNDOCUMENTED CHANGES NOT IN COMPLIANCE WITH CONTRACT DOCUMENTS WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

D. THE CONTRACTOR IS TO MAINTAIN (1) SET OF DRAWINGS AT THE SITE. THESE DRAWINGS SHALL INDICATE ANY DEVIATIONS TO THE CONSTRUCTION DOCUMENTS AND PROVIDE DIMENSIONS OF CRITICAL EQUIPMENT LOCATION. CHANGES SHALL BE MADE WITH NON-ERASIBLE MEDIA. RECORD DRAWNGS SHALL BE DELIVERED TO THE OWNER PRIOR TO FINAL INSPECTION. FINAL RECORD DRAWINGS WILL BE PROVIDED ON ELECTRONIC MEDIA, AUTOCAD VERSION 2005.

E. CATALOG NUMBERS INDICATED WITH EQUIPMENT AND DEVICES ARE FOR CONVENIENCE ONLY. ERRORS OR OBSOLESCENCE SHALL NOT RELIEVE THE FURNISHING OF ITEMS WHICH MEET THE TECHNICAL DESCRIPTION GIVEN IN THE SPECIFICATIONS, NOTED OR REQUIRED BY FUNCTION DESIGNATED.

16.07 CLAIMS FOR EXTRA WORK

A. CLAIMS FOR "EXTRA" OR ADDITIONS TO CONTRACT SHALL BE MADE IN WRITING BY EACH SUBCONTRACTOR AND SUBMITTED TO ENGINEER FOR APPROVAL. NO CLAIMS FOR "EXTRA WORK" WILL BE ALLOWED UNLESS AUTHORIZATION HAS BEEN OBTAINED IN WRITING FROM ENGINEER.

B. SHOULD CONTRACTOR OR HIS SUBCONTRACTORS START WORK WITHOUT RECEIVING APPROVAL IN WRITING FROM ARCHITECT, IT WILL BE CONSTRUED AS ACCEPTANCE BY THEM THAT SUCH WORK IS REQUIRED UNDER THEIR CONTRACT, AND NOT FURTHER CLAIM FOR AND "EXTRA" WILL BE CONSIDERED OR ALLOWED BY ENGINEER. COMPENSATION FOR "EXTRA" WORK WILL BE INDICATED IN THE GENERAL CONDITIONS. CLAIM SUBMITTAL MUST INCLUDE MATERIAL INVOICE COPIES AND MANHOURS/RATES FOR SPECIFIC EXTRA CLAIMED. NO PAYMENT WILL BE MADE WITHOUT SUBSTANTIATION.

16.08 MAINTENANCE DATA AND OPERATIONAL MANUALS

A. PROVIDE THREE COMPLETE BOUND SETS OF ALL MAINTENANCE DATA AND OPERATIONAL MANUALS. IN ADDITION TO THE BINDERS, ALL THE INFORMATION SHALL BE PROVIDED IN DIGITAL "PDF" FORMAT. THESE ARE TO BE TRANSMITTED TO THE OWNER UPON COMPLETION OF THE PROJECT. SERVICE MANUALS SHOULD CONTAIN BUT NOT BE LIMITED TO THE FOLLOWING:

1. TITLE SHEET WITH JOB NAME, AND THE NAMES, ADDRESSES AND PHONE NUMBERS OF THE CONTRACTOR, SUBCONTRACTOR, CONTROL SUBCONTRACTOR, RELATED CONTRACTOR AND MATERIAL AND EQUIPMENT SUPPLIER.
2. INDEX OF CONTENTS.
3. A COPY OF ACKNOWLEDGEMENT OF INSTRUCTION TO THE OWNER'S OPERATING PERSONNEL IN THE OPERATION OF ALL ELECTRICAL EQUIPMENT AND SYSTEMS, SIGNED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE.
4. TYPEWRITTEN OPERATING INSTRUCTIONS FOR THE OWNER'S OPERATING PERSONNEL DESCRIBING HOW TO STOP AND START EACH PIECE OF EQUIPMENT; HOW TO SET THE CONTROL SYSTEM FOR NORMAL OPERATION AND NORMAL RESTARTING PROCEDURES, AND CAUTION AND WARNING NOTICES.
5. APPROVED SHOP DRAWINGS, PRODUCT DATA AND PARTS AND MAINTENANCE BOOKLET FOR EACH ITEM OF MATERIAL AND EQUIPMENT FURNISHED UNDER SECTIONS 16010 THROUGH 16999.
6. RECORD ELECTRICAL AND CONTROL DRAWINGS.
7. GUARANTEES, INCLUDING EXTENDED GUARANTEES.

16.09 GUARANTEE AND SERVICE

A. IN ADDITION TO GUARANTEE OF EQUIPMENT BY THE MANUFACTURER OF EACH PIECE OF EQUIPMENT SPECIFIED HEREIN, EACH SUBCONTRACTOR SHALL ALSO GUARANTEE SUCH EQUIPMENT AND MAKE GOOD ANY DEFECT OF MATERIAL OR WORKMANSHIP OCCURRING DURING A PERIOD OF (1) YEAR FROM FINAL ACCEPTANCE TEST, WITHOUT EXPENSE TO OWNER.

16.10 SHOP DRAWINGS AND MATERIAL CUTS

A. MATERIALS AND EQUIPMENT ARE SPECIFIED HEREIN BY A SINGLE OR BY MULTIPLE MANUFACTURERS, TO INDICATE QUALITY, MATERIAL, AND TYPE OF CONSTRUCTION DESIRED. ONE MANUFACTURER'S PRODUCT IS INDICATED AND HAS BEEN USED AS BASIS FOR DESIGN; IT SHALL BE EACH SUBCONTRACTOR'S RESPONSIBILITY TO ASCERTAIN THAT LISTED ALTERNATE MANUFACTURER'S PRODUCTS CONFORM TO DETAILED SPECIFICATION, AND THAT SIZE AND ARRANGEMENT OF EQUIPMENT IS SUITABLE FOR INSTALLATION. PRODUCTS OF OTHER LISTED MANUFACTURER'S WILL BE CONSIDERED FOR USE IF IN THE ENGINEER'S OPINION, ITEM REQUESTED FOR SUBSTITUTION IS EQUAL TO THAT SPECIFIED. SHOULD A SUBCONTRACTOR DESIRE TO MAKE A SUBSTITUTION, HE SHOULD APPLY IN WRITING (10) WORKING DAYS PRIOR TO THE BID DATE. THE REQUEST SHOULD INCLUDE THE AMOUNT OF CREDIT OR EXTRA INVOLVED, AND COMPLETE ENGINEERING DATA. ONE SET OF SUBMITTALS WILL BE REVIEWED WITHIN THE ENGINEER'S SCOPE OF WORK. IF ADDITIONAL SUBMITTALS ARE REVIEWED, THE CONTRACTOR WILL BE BILLED AT A RATE OF $125.00 PER HOUR.

B. IT SHALL BE THE RESPONSIBILITY OF EACH SUBCONTRACTOR MAKING A SUBSTITUTION TO INCLUDE CHANGES REQUIRED BY OTHER TRADES FOR PROPER OPERATION OF EQUIPMENT PROPOSED TO BE SUBSTITUTED. SUBSTITUTIONS SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER.

C. BEFORE PURCHASE OF EQUIPMENT, SUBMIT ONE COMPLETE DIGITAL COPY OF ALL ELECTRICAL EQUIPMENT FOR REVIEW. SUBMIT AS COMPLETE AS POSSIBLE. IDENTIFY EACH ITEM SUBMITTED. INFORMATION ON SHOP DRAWINGS SHALL CONTAIN ALL THAT IS NECESSARY TO SHOW THAT EQUIPMENT COMPLIES WITH SPECIFICATIONS AND DRAWINGS. SHOW REQUIRED MODIFICATIONS. ONE COMPLETE SET OF APPROVED SHOP DRAWINGS SHALL BE KEPT AT THE JOB SITE.

D. ALL SUBMITTALS OF ELECTRICAL MATERIALS OR EQUIPMENT SHALL BE MADE AT THE SAME TIME CONTAINED WITHIN ONE THREE-RINGED BINDER AND ONE LETTER OF TRANSMITTAL.

E. CORRECTIONS OR COMMENTS MADE ON SHOP DRAWINGS DURING REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF DRAWINGS AND SPECIFICATIONS. THIS CHECK IS ONLY FOR REVIEW OF GENERAL CONFORMANCE WITH DESIGN CONCEPT OF PROJECT, AND GENERAL COMPLIANCE WITH INFORMATION GIVEN IN CONTRACT DOCUMENTS.

PART TWO – PRODUCTS

16.11 ELECTRICAL RACEWAYS

A. THE WORK COVERED IN THIS SECTION CONSISTS OF PROVIDING RACEWAYS AND CONDUITS COMPLETE WITH ALL REQUIRED ACCESSORIES, HANGERS, SUPPORTS, CONNECTIONS, AND FITTINGS NECESSARY TO MAKE THE RACEWAY SYSTEM COMPLETE. ALL RECEWAYS ARE LISTED FOR INFORMATION PURPOSES ONLY. THE ALLOWABLE USE OF THE RACEWAYS SHALL CONFORM TO PART 3 – EXECUTION & NFPA-70.

1. RIGID METAL CONDUIT (RMC): HOT DIPPED GALVANIZED COATING WITH SMOOTH INTERIOR AND REAMED ENDS. THREADS SHALL BE HOT-DIPPED GALVANIZED AFTER CUTTING. INSULATED THROAT, STEEL BUSHINGS, WITH SEPERATE LOCKNUTS, SHALL BE USED ON ALL CONDUITS TERMINATING IN A PANEL, CONTROL CABINETS, JUNCTION BOX, ETC.
2. INTERMEDIATE METALLIC CONDUIT (IMC): HOT DIPPED GALVANIZED COATING OR SHERADIZED WITH SMOOTH INTERIOR AND REAMED ENDS. USE STEEL INSULATED TYPE BUSHINGS WITH SEPERATE LOCKNUTS ON ALL CONDUITS ENTERING PANEL CABINETS, OUTLET BOXES, ETC.
3. ELECTRICAL METALLIC TUBING (EMT): HOT GALVANIZED STEEL OUTSIDE WITH A CORROSION RESISTANT INTERIOR. ALL CONNECTORS AND COUPLINGS SHALL BE STEEL, SET SCREW TYPE.
4. LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC): PROVIDE LIQUID-TIGHT FLEXIBLE METAL CONDUIT CONSISTING OF NON-METALLIC, SUNLIGHT RESISTANT JACKET OVER A METAL CORE. PROVIDE BONDING JUMPER.
5. FLEXIBLE METAL CONDUIT (FMC): PROVIDE FLEXIBLE STEEL METAL CONDUIT, WITH APPROPRIATE FITTINGS. PROVIDE BONDING JUMPER.
6. RIGID POLYVINYL CHLORIDE CONDUIT (PVC): RIGID NON-METALLIC CONDUIT AND FITTINGS SHALL BE POLYVINYL CHLORIDE (PVC) SCHEDULE 40 OR 80 AS REQUIRED, AND SHALL BE APPROVED FOR THE PURPOSE USED. FITTINGS SHALL BE OF THE SAME MATERIAL AS THE CONDUIT, AND IN NO CASE SHALL HAVE THINNER WALLS THAN THAT OF THE CONDUIT FURNISHED. PROVIDE GROUND CONDUCTOR SIZED IN ACCORDANCE WITH THE N.E.C. EXPANSION FITTINGS SHALL BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATION.
7. ELECTRICAL NONMETALLIC TUBING (ENT): ENT SHALL MEET THE REQUIREMENTS OF NEMA TC-13 AND SHALL BE LISTED BY UNDERWRITERS LABORATORIES, INC. AS SUITABLE FOR IT'S INTENDED PURPOSE. FITTINGS AND OUTLET BOXES SHALL BE APPROVED FOR USE WITH ENT AND LISTED BY UNDERWRITER'S LABORATORIES, INC. NON-METALLIC BOXES ARE NOT TO BE USED. METAL BOXES AND ACCESSORIES ARE FOR COMMUNICATIONS, AND RED FOR FIRE ALARM AND EMERGENCY SYSTEMS.
8. LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT (LFNC): LFNC SHALL HAVE A SMOOTH INNER SURFACE WITH INTEGRAL REINFORCEMENT WITHIN THE CONDUIT WALL AND BE DESIGNED AS TYPE LFNC-B. ONLY FITTING LISTED FOR LFNC SHALL BE USED.

D. APPLICATION

OUTDOORS

1. RMC OR IMC SHALL BE USED FOR ALL EXPOSED WORK WHERE SUBJECT TO DAMAGE, GENERALLY SEVEN FEET ABOVE FINISHED GRADE.
2. SCHEDULE 80 PVC CAN BE USED FOR EXPOSED WORK WHERE NOT SUBJECT TO PHYSICAL DAMAGE.
3. RMC, IMC OR PVC CAN BE USED FOR UNDERGROUND WORK. PROVIDE PROPERLY SIZED BOND WIRE AS REQUIRED FOR RNC.
4. LFMC OR LFNC SHALL BE USED TO CONNECT MOTORS, SENSORS OR VIBRATING EQUIPMENT.
5. WIREWAYS AND ENCLOSURES SHALL BE LISTED FOR WET LOCATIONS.

INDOORS

1. EMT OR PVC SHALL BE USED FOR EXPOSED LOCATIONS.
2. EMT, PVC OR ENT SHALL BE USED FOR CONCEALED LOCATIONS.
3. RMC OR IMC SHALL BE USED FOR DAMP OR WET LOCATIONS WHERE SUBJECT TO PHYSICAL DAMAGE.
4. PVC SHALL BE USED FOR DAMP OR WET LOCATIONS WHERE NOT SUBJECT TO PHYSICAL DAMAGE.
5. LFMC OR LFNC SHALL BE USED TO CONNECT MOTORS, SENSORS OR VIBRATING EQUIPMENT IN WET LOCATIONS. FMC SHALL BE USED FOR DRY LOCATIONS
6. WIREWAYS AND ENCLOSURES SHALL BE LISTED AS NEMA-3R FOR WET LOCATIONS

16.12 WIRE AND CABLE

A. ALL CONDUCTORS SHALL BE ENCASED IN A RACEWAY AS LISTED IN PART 3, EXECUTION.

1. CONDUCTION MATERIAL SHALL BE COPPER WITH A 98.5% CONDUCTIVITY.
2. CONDUCTION INSULATION SHALL BE DUAL RATED THHN/TWHN.
3. CONDUCTIONS NO.12 AND SMALLER MAY BE SOLID OR STANDARD. CONDUCTIONS LARGER THAN NO.12 SHALL BE STANDARD.
4. GROUNDING ELECTRODE CONDUCTIONS NO.9 & NO.6 SHALL BE SOLID.

B. COLOR CODES SHALL BE: BLACK, RED, WHITE, GREEN FOR 120/240-1ø/3W SYSTEMS; BLACK, RED, BLUE, WHITE, GREEN FOR 120/208V-3ø/4W SYSTEMS; YELLOW, VIOLET, BROWN, GRAY, GREEN FOR 277/480V-3ø/4W; BLACK, ORANGE, BLUE WHITE, GREEN. FOR 120/240V-3ø/4W, DELTA.

C. SPLICES & CONNECTIONS:

1. #10 AND BELOW: SCOTCHLOK OR EQUAL.
2. #8 AND LARGER: HI PRESS OR MECHANICAL CONNECTOR.

16.13 BOXES

A. EXTERIOR BOXES SHALL BE PLASTIC, SIMILAR TO "CARLON" WEATHERPROOF BOXES. PROVIDE WITH APPROPRIATE WEATHERPROOF COVERS.

16.14 WIRING DEVICES

A. EXTERIOR GFI RECEPTACLES: SHALL BE INTERMEDIATE GRADE, DUPLEX 3-WIRE GROUNDING TYPE. DEVICES SHALL BE RATED AT 15A/125V AND HAVE SCREW TERMINALS. RECEPTACLE TO BE RECESSED WITH COVER BY ARLINGTON INDUSTRIES, INC. DBVM1.

B. SPECIAL OUTLETS SHALL BE AS LISTED ON THE PLANS.

C. ALL WIRING DEVICES TO HAVE SCREWLESS PLATE COVERS.

16.26 PANELBOARD

A. PANELBOARD SHALL BE AS NOTED ON THE PLANS. PANELBOARD SHALL BE THE PRODUCT OF SQUARE D, SIEMENS OR CUTLER-HAMMER.

B. PANELBOARD SHALL HAVE COPPER BUSS, COPPER NEUTRAL BAR, AND COPPER GROUND BAR.

C. PANELBOARD SHALL BE PROVIDED WITH SURGE PROTECTION AS INDICATED ON THE PLANS AND SHALL BE STAINLESS STEEL.

16.16 DISCONNECT SWITCHES

A. FUSIBLE DISCONNECT SWITCHES: SHALL BE FURNISHED WITH ENCLOSURE AS REQUIRED BY EXPOSURES EITHER NEMA 1 OR 3R AND SHALL BE HORSEPOWER RATED, HEAVY DUTY WITH FUSES AS NOTED.

B. NON-FUSIBLE DISCONNECT SWITCHES: SWITCHES SHALL BE PROVIDED FOR ALL MOTORS LOCATED OUT OF SIGHT OF MOTOR CONTROLLER AND WHERE INDICATED ON THE DRAWING. DISCONNECT SWITCHES SHALL DISCONNECT ALL UNDERGROUND CONDUCTORS.

C. FUSES: SHALL BE FURNISHED FOR FUSIBLE EQUIPMENT. MOTOR FUSES SHALL BE BUS FUSETRONS RATED BETWEEN 125 AND 150% OR MOTOR PLATE NAME RATING. FURNISH EXTRA SET OF SPARE FUSES FOR EACH FUSED DISCONNECT INSTALLED. SPARE FUSES TO BE PLACED WITHIN A FUSE CABINET LOCATED IN THE ELECTRICAL ROOM.

D. ALL DISCONNECT SWITCHES LOCATED OUTDOORS SHALL BE STAINLESS STEEL.

16.17 LIGHTING FIXTURES

A. PROVIDE LIGHTING FIXTURES AS INDICATED ON THE SCHEDULE.

16.18 CONTROLS

A. SINGLE POLE 120V TIME CLOCKS SHALL BE INTERMATIC T101 FOR INDOORS, T101R FOR OUTDOOR.

B. TWO POLE, 208/240V TIME CLOCKS SHALL INTERMATIC T104 FOR INDOOR, T104R FOR OUTDOOR.

C. LIGHTING CONTACTORS SHALL BE ELECTRICALLY HELD 20AMP WITH NUMBER OF POLES AS INDICATED. PROVIDE ENCLOSURE TO MATCH MOUNTING ENVIRONMENT.

D. MAGNETIC STARTERS SHALL BE NEMA RATED FOR THE VOLTAGE AND HORSEPOWER LISTED. PROVIDE WITH H-O-A SWITCH ON THE COVER WITH A "RUN" PILOT LIGHT. ENCLOSURE SHALL MATCH THE ENVIRONMENT WHERE THE STARTER IS INSTALLED. PROVIDE OVERLOADS' TO MATCH THE MOTOR CHARACTERISTICS.

E. CONTACTORS AND RELAYS SHALL BE RATED FOR 20AMPS WITH COIL VOLTAGE AS REQUIRED. PROVIDE ENCLOSURES TO MATCH MOUNTING CONDITIONS.

16.19 IDENTIFICATION

A. TAG ALL CONDUCTORS AND IDENTIFY MAJOR CONDUITS IN OR AT WIREWAYS, PANELS, PULLBOXES, SWITCHBOARDS, MOTOR CONTROLLERS, CABINETS AND SIMILAR ITEMS TO ASSIST IN FUTURE CURCUIT TRACING. CONDUCTOR TAGS SHALL BE NONCONDUCTIVE.

B. IDENTIFY ALL CIRCUITS AND EQUIPMENT TO CORRESPOND WITH THE PLANS AND SPECIFICATIONS.

C. ALL SWITCHGEAR WILL BE LABELED WITH ENGRAVED PHENOLIC NAMEPLATES.

D. ALL JUNCTION BOXES SHALL HAVE TYPE OF SYSTEM AND VOLTAGE OF CONTAINED CONDUCTORS STENCILED ON INSIDE OF BOX COVER.

PART THREE – EXECUTION

16.20 GENERAL

A. THE ELECTRICAL CONTRACTOR SHALL VERIFY, IN THE FIELD, ALL ELECTRICAL EQUIPMENT AND SPACE LIMITATIONS PRIOR TO FABRICATION AND NOTIFY THE ENGINEER IMMEDIATELY IF CONFLICTS OCCUR. THE CONTRACTOR SHALL COORDINATE WITH ALL TRADES PRIOR TO INSTALLATION.

B. FIXTURE, EQUIPMENT AND DEVICE LOCATIONS ARE DIAGRAMMATIC. FINAL LOCATIONS WILL BE DETERMINED BY FIELD LOCATIONS, IN ACCORDANCE WITH THE CODE, AND/OR AS DIRECTED BY THE ENGINEER.

C. THE ELECTRICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES. PAY SPECIAL ATTENTION TO EQUIPMENT, WHICH SHALL TAKE PRECEDENCE OVER ALL OTHER TRADES.

D. ALL MATERIALS SHALL BE INSTALLED AND COMPLETED IN A FIRST CLASS AND WORKMANLIKE MANNER. ANY MATERIALS INSTALLED, WHICH SHALL NOT PRESENT AND ORDERLY AND REASONABLY NEAT OR WORKMANLIKE APPEARANCE, SHALL BE REMOVED AND REPLACED WHEN DIRECTED BY THE ENGINEER.

E. ALL EQUIPMENT AND DEVICES REQUIRING POWER SHALL BE CONNECTED BY THIS CONTRACTOR WHETHER OR NOT THEY ARE INDICATED ON THE ELECTRICAL DRAWINGS, BUT INCLUDED IN OTHER CONTRACT DRAWINGS.

F. PROVIDE ACCESS TO ALL JUNCTION BOXES. MINIMUM SIZE OF JUNCTION BOXES IS TO BE 4" SQUARE BY 2-1/8" DEEP.

G. NO STRUCTURAL MEMBERS SHALL BE CUT OR NOTCHED WITHOUT WRITTEN APPROVAL OF THE ENGINEER.

H. ALL MATERIAL SHALL BE PROPERLY AND EFFECTIVELY PROTECTED BY THE CONTRACTOR DURING THE EXECUTION OF THE WORK.

I. ANY ITEM INSTALLED WHICH CREATE OBJECTIONABLE NOISE AS INDICATED BY THE OWNER SHALL BE REPLACED AT THE CONTRACTORS EXPENSE.

J. INCREASE OUTLET & JUNCTION BOX SIZES TO ACCOMODATE THE NUMBER OF CONDUCTIONS AS REQUIRED BY THE NEC TABLE 314.16(4).

K. SEE ELECTRICAL LEGEND FOR MOUNTING HEIGHTS OF OUTLET BOXES.

L. ALL PANELBOARDS SHALL HAVE ACCURATE, TYPEWRITTEN DIRECTORIES.

M. ALL SWITCH GEAR SHALL BE PROVIDED WITH ENGRAVED, PHENOLIC LABELS.

N. ALL BRANCH CIRCUIT AND FEEDER CONDUCTORS SHALL BE ENCASED IN A RACEWAY AS LISTED IN 16.11(D) APPLICATION

PART FOUR – EXISTING CONSTRUCTION

15.21 GENERAL

A. IN THE PROCESS OF INSTALLING ANY PART OF THE NEW WORK, THE BUILDING SHALL BE LEFT IN A SAFE STRUCTURAL CONDITION AT ALL TIMES.

B. WHENEVER THE ELECTRICAL CONTRACTOR IS TO SHUT DOWN ANY EXISTING SYSTEMS, HE SHALL NOTIFY THE OWNER'S REPRESENTATIVE HAVING JURISDICTION OVER THE PROJECT, IN WRITING, A MINIMUM OF TWO (2) DAYS PRIOR TO THE SHUTDOWN.

C. ALL EXISTING CONDUIT, EQUIPMENT, MATERIALS, ETC., NOT REQUIRED FOR RE-USE OR RE-INSTALLATION SHALL BE REMOVED. EXISTING MATERIALS AND EQUIPMENT WHICH ARE INDICATED TO REMAIN WITH THE PROPERTY, OR ARE DESIRED BY THE OWNER, SHALL BE DELIVERED AS DIRECTED BY THE OWNER AND/OR THE OWNER'S REPRESENTATIVE. ALL OTHER MATERIALS AND EQUIPMENT REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED BY HIM FROM THE PREMISES.

D. THE LOCATION OF ALL EXISTING CONDUIT, AND ELECTRICAL EQUIPMENT ON THESE PLANS IS FOR THE CONVENIENCE OF THE CONTRACTOR, GENERAL INFORMATION AND ESTIMATING PURPOSES. THIS INFORMATION IS NOT WARRANTED OR GUARANTEED TO BE COMPLETE OR CORRECT. THE CONTRACTOR MUST FIELD VERIFY ALL SUCH INFORMATION TO HIS OWN SATISFACTION BEFORE SUBMITTING BIDS, ORDERING MATERIALS OR PROCEEDING WITH ANY WORK ON THE PROJECT.

E. THE AMOUNT OF DUST RESULTING FROM DEMOLITION SHALL BE CONTROLLED TO PREVENT THE SPREAD TO OTHER PORTIONS OF THE BUILDING AND TO AVOID CREATING A NUISANCE IN THE SURROUNDING AREAS.

F. ALL EXISTING ELECTRICAL SYSTEMS SHALL BE KEPT IN OPERATION DURING THE PROGRESS OF THE WORK. TEMPORARY CONNECTIONS SHALL BE PROVIDED WHERE NECESSARY TO MAINTAIN CONTINUOUS OPERATION UNTIL THE NEW SYSTEMS ARE READY FOR OPERATION.

G. WHEN THE WORK SPECIFIED HEREIN CONNECTS TO EXISTING EQUIPMENT OR SYSTEMS, THE CONTRACTOR SHALL PERFORM ALL NECESSARY ALTERATIONS, OF THE EXISTING EQUIPMENT OR SYSTEMS AS NECESSARY OR REQUIRED TO MAKE SATISFACTORY CONNECTIONS BETWEEEN NEW AND EXISTING WORK. ANY DAMAGE DONE TO THE EXISTING WORK ALREADY IN PLACE BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

H. THE CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL THE AREAS IN WHICH HE PERFORMED DEMOLITION OR NEW CONSTRUCTION, SO THESE AREAS ARE READY, USABLE AND SERVICEABLE FOR EACH NORMAL WORK DAY DURING THIS CONTRACT.

I. THE DEMOLITION PLANS REPRESENT THE EXISTING ELECTRICAL LAYOUTS BASED ON THE AVAILABLE EXISTING DRAWINGS AND INFORMATION. THE CONTRACTOR MUST FIELD VERIFY EXISTING CONDITIONS BEFORE BIDDING TO OBTAIN ANY ADDITIONAL INFORMATION. NO ADDITIONAL COST IS ALLOWED AFTER BIDDING FOR THE DEMOLITION WORK.

J. WHENEVER THE CONTRACTOR HAS TO PERFORM WORK IN AN AREA WHICH IS BEING UTILIZED BY THE OWNER, HE SHALL FIRST CHECK WITH THE OWNER'S CONSTRUCTION COORDINATOR TO ENSURE SUCH WORK IS PERMITTED DURING NORMAL WORKING HOURS. IF DEEMED NECESSARY, CONTRACTOR MUST BE PREPARED TO PERFORM SUCH WORK DURING THE HOURS PRESCRIBED BY THE OWNER'S CONSTRUCTION COORDINATOR AT THE CONTRACTOR'S EXPENSE.

03/02/2015
ISSUED FOR BID

WOJCIESZAK & ASSOCIATES, INC.
CONSULTING ENGINEERS
833 EAST 5TH STREET
STUART, FLORIDA 34994
(772) 286-8696
CERTIFICATE OF AUTHORIZATION NO. 30436

PROJECT:

VETERANS
MEMORIAL PARK
IMPROVEMENTS
TMDL GRANT
FT. PIERCE, FL

JOB NUMBER
2013.011

KEY PLAN:

ISSUES:

NO.	DATE	DESCRIPTION
–	–	–

SEAL:
DAVID A. WOJCIESZAK, P.E.

DATE SIGNED

LICENSE NO. 32091

SHEET TITLE:

ELECTRICAL
LEGENDS

SHEET NUMBER:

SE-4

COVER SHEET
BOUNDARY AND TOPOGRAPHIC SURVEY
INDIAN RIVER VETERANS MEMORIAL PARK

SURVEYOR'S NOTES

1. HORIZONTAL RELATIONSHIPS & BEARINGS AS SHOWN HEREON ARE BASED ON THE FLORIDA STATE PLANE COORDINATE GRID, EAST ZONE, USING THE NORTH AMERICAN DATUM OF 1983 WITH THE 1999 ADJUSTMENT (NAD 83-99) AND WERE ESTABLISHED USING U.S. COAST & GEODETIC SURVEY BENCHMARK DISK "H 231" (PID #AF3246) HAVING PUBLISHED NAD 83 VALUES OF NORTHING = 1,133,851.61', EASTING = 875,503.12', AND THE EAST RIGHT-OF-WAY LINE OF INDIAN RIVER DRIVE BEING NORTH 18°44'20"WEST.

2. UNDERGROUND IMPROVEMENTS, WERE NOT LOCATED EXCEPT AS SHOWN.

3. THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR.

4. THIS PROPERTY LIES IN FLOOD ZONE(S) "X", "AE ELEVATION 5" AND "VE ELEVATION 8", ACCORDING TO FLOOD INSURANCE RATE MAP (FIRM) PANEL 12111C0179 G, MAP REVISED NOVEMBER 4, 1992.

5. THIS SURVEY WAS MADE WITHOUT THE BENEFIT OF A TITLE COMMITMENT. THERE MAY BE ADDITIONAL RESTRICTIONS, ENCUMBRANCES OR OTHER MATTERS THAT MAY AFFECT THIS PROPERTY THAT MAY OR MAY NOT BE RECORDED IN THE PUBLIC RECORDS THAT ARE NOT SHOWN ON THIS SURVEY.

6. VERTICAL DATUM SHOWN HEREON IS BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 ("NGVD29") AS REFERENCED BY U.S. COAST & GEODETIC SURVEY BENCHMARK DISK "H 231", SAID BENCHMARK HAVING A PUBLISHED NGVD29 ELEVATION OF 8.35 FEET.

7. BEARINGS SHOWN ON THE EASEMENTS, LEASES AND SUBLEASES HAVE BEEN ROTATED TO STATE PLANE COORDINATES.

8. NO LEGAL DESCRIPTION WAS FOUND OR PROVIDED TO THIS FIRM THAT DESCRIBES THE PARCEL COMMONLY REFERRED TO AS "INDIAN RIVER VETERANS MEMORIAL PARK". THE LEGAL DESCRIPTION SHOWN HEREON WAS COMPILED BY THIS FIRM AND IS BASED UPON THE LEGAL DESCRIPTION FOUND IN OFFICIAL RECORDS BOOK 261, PAGE 614. THE DOCUMENT RECORDED IN SAID OFFICIAL RECORDS BOOK AND PAGE IS A FIFTY (50) YEAR LEASE OF THE PROPERTY FROM ST. LUCIE COUNTY TO THE CITY OF FT. PIERCE AND INCLUDES THE PORTION OF THE TRACT DESCRIBED AS "PROPOSED CITY PARK" LYING NORTH OF STATE ROAD A1A (CURRENTLY A PUBLIC BOAT RAMP). THE LEGAL DESCRIPTION APPEARING ON THIS SURVEY WAS WRITTEN TO EXCLUDE THE BOAT RAMP PARCEL LYING NORTH OF STATE ROAD A1A.

9. THE OWNERSHIP STATUS OF THE LANDS LYING BETWEEN THE PLATTED EAST LINE OF THE "PROPOSED CITY PARK" TRACT IN PLAT BOOK 10, PAGE 36 AND THE CURRENT MEAN HIGH WATER ELEVATION OF THE INDIAN RIVER IS NOT KNOWN. A DEED TO THE CITY FOR THESE LANDS WAS NOT PROVIDED TO THIS FIRM. A TITLE SEARCH AND/OR COMMITMENT IS RECOMMENDED (SEE NOTE 5) TO DETERMINE THE OWNERSHIP AND/OR TITLE TO THESE LANDS.

10. FOUND EVIDENCE (O.R. 261, PAGE 614; THE ST. LUCIE COUNTY PROPERTY APPRAISER'S GIS WEBSITE, ETC.) SUGGESTS A 60'x80' PARCEL WITHIN THE PLATTED "PROPOSED CITY PARK" TRACT FOR "PUMP STATION NUMBER ONE" BE EXCLUDED FROM THE PROPERTY, ALTHOUGH A PROPER LEGAL DESCRIPTION OF THAT PARCEL WAS NOT FOUND. THE PARCEL HAS A UNIQUE PARCEL ID NUMBER, AND IS EXCLUDED FROM THE LEGAL DESCRIPTION OF THE FIFTY (50) YEAR LEASE OF THE PARK RECORDED IN O.R. 261, PAGE 614 AND REFERRED TO IN NOTE #8 ABOVE. THE POSITION OF THE PARCEL SHOWN ON THIS SURVEY IS BASED UPON THE BEST EVIDENCE FOUND DUE TO THE LACK OF INFO, BUT IS STILL SUBJECT TO THE LOCATION DESCRIBED BY THE LEGAL DESCRIPTION.

11. THE OWNERSHIP STATUS OF THE LANDS (BOTH ABOVE & BELOW WATER) SOUTH OF THE SEAWALL ON THE NORTH BANK OF MOORES CREEK AND NORTH OF THE SOUTH LINE OF THE PLATTED PARK TRACT IS UNCLEAR. IMPROVEMENTS (i.e. WOOD BOAT DOCKS) EXIST THAT CROSS THE SOUTH LINE OF THE PLATTED PARK TRACT. THESE IMPROVEMENTS APPEAR RELATED TO THE YACHT CLUB TO THE SOUTH (ALSO CITY MAINTAINED). A TITLE SEARCH AND/OR COMMITMENT IS RECOMMENDED (SEE NOTE 5) TO DETERMINE THE OWNERSHIP AND/OR TITLE TO THESE LANDS DUE TO UNKNOWNS AT THE PRESENT TIME SUCH AS RECORDED OR UNRECORDED AGREEMENTS BETWEEN LOCAL, COUNTY, OR STATE GOVERNMENTAL DEPARTMENTS.

12. THE ORTHORECTIFIED AERIAL IMAGERY SHOWN HEREIN WAS PROVIDED BY ST LUCIE COUNTY AND WAS FLOWN IN THE SPRING OF 2006.

LEASE & EASEMENT LEGEND

UAE = "FORT PIERCE UTILITIES AUTHORITY ELECTRIC EASEMENT"
AN RECORDED UTILITY EASEMENT (O.R. BOOK 940, PAGE 1064, COUNTY PUBLIC RECORDS) BETWEEN THE CITY AND THE FORT PIERCE UTILITIES AUTHORITY AND APPROVED BY THE COUNTY (DATED 12/5/1995). A PORTION OF THE LANDS DESCRIBED IN THIS LEGAL DESCRIPTION LIE EAST OF THE PLATTED EAST BOUNDARY OF THE "PROPOSED CITY PARK" TRACT.

YCE = "YACHT CLUB EASEMENT"
AN UNRECORDED INGRESS AND EGRESS EASEMENT ACCOMPANYING THE "YACHT CLUB LEASE" ABOVE.

YCS = "YACHT CLUB SUBLEASE"
AN UNRECORDED SUBLEASE BETWEEN ST. LUCIE COUNTY ("COUNTY") AND THE FORT PIERCE YACHT CLUB AND APPROVED BY THE CITY OF FT. PIERCE ("CITY") (DATED 9/8/1984) DESCRIBING A LEASE PARCEL WITHIN THE INDIAN RIVER VETERANS MEMORIAL PARK ("PARK"). THIS DOCUMENT WAS PROVIDED BY THE CITY. A PORTION OF THE LANDS DESCRIBED IN THIS LEGAL DESCRIPTION LIE EAST OF THE PLATTED EAST BOUNDARY OF THE "PROPOSED CITY PARK" TRACT.

AMP = "AMPHITHEATER ADDENDUM"
AN UNRECORDED SUBLEASE BETWEEN THE CITY AND THE COUNTY DESCRIBING A PARCEL WITHIN THE PARK (DATED 5/1/2003) – THE SUBLEASE'S LEGAL DESCRIPTION DESCRIBED THE PARCEL AS "ALL THAT PART OF THE AMPHITHEATER AS NOW LAID OUT AND IN USE". THOSE IMPROVEMENTS ARE SHOWN.

MCA = "MANATEE CENTER ADDENDUM"
A RECORDED SUBLEASE (O.R. BOOK 958, PAGE 2261) DESCRIBING A PARCEL WITHIN THE PARK (DATED 5/15/1995).

SSE – "SANITARY SEWER EASEMENT"
AN UNRECORDED 15' SANITARY SEWER EASEMENT BETWEEN THE CITY AND THE FORT PIERCE UTILITIES AUTHORITY AND APPROVED BY THE COUNTY (DATED 7/11/1986). THIS DOCUMENT WAS PROVIDED BY THE CITY. THIS EASEMENT WAS MOST LIKELY ABANDONED BECAUSE OF THE UTILITY EASEMENT BELOW ("UAU"), AND THEREFORE IS NOT DEPICTED ON THE SURVEY.

UAU = "FORT PIERCE UTILITIES AUTHORITY UTILITY EASEMENT"
AN UNRECORDED "BLANKET" UTILITY EASEMENT BETWEEN THE CITY AND THE FORT PIERCE UTILITIES AUTHORITY AND APPROVED BY THE COUNTY (DATED 3/9/1994). THIS DOCUMENT WAS PROVIDED BY THE CITY. THIS EASEMENT MOST LIKELY CAUSED THE ABANDONMENT OF THE SANITARY SEWER EASEMENT ("SSE") ABOVE. A PORTION OF THE LANDS DESCRIBED IN THIS LEGAL DESCRIPTION LIE EAST OF THE PLATTED EAST BOUNDARY OF THE "PROPOSED CITY PARK" TRACT.

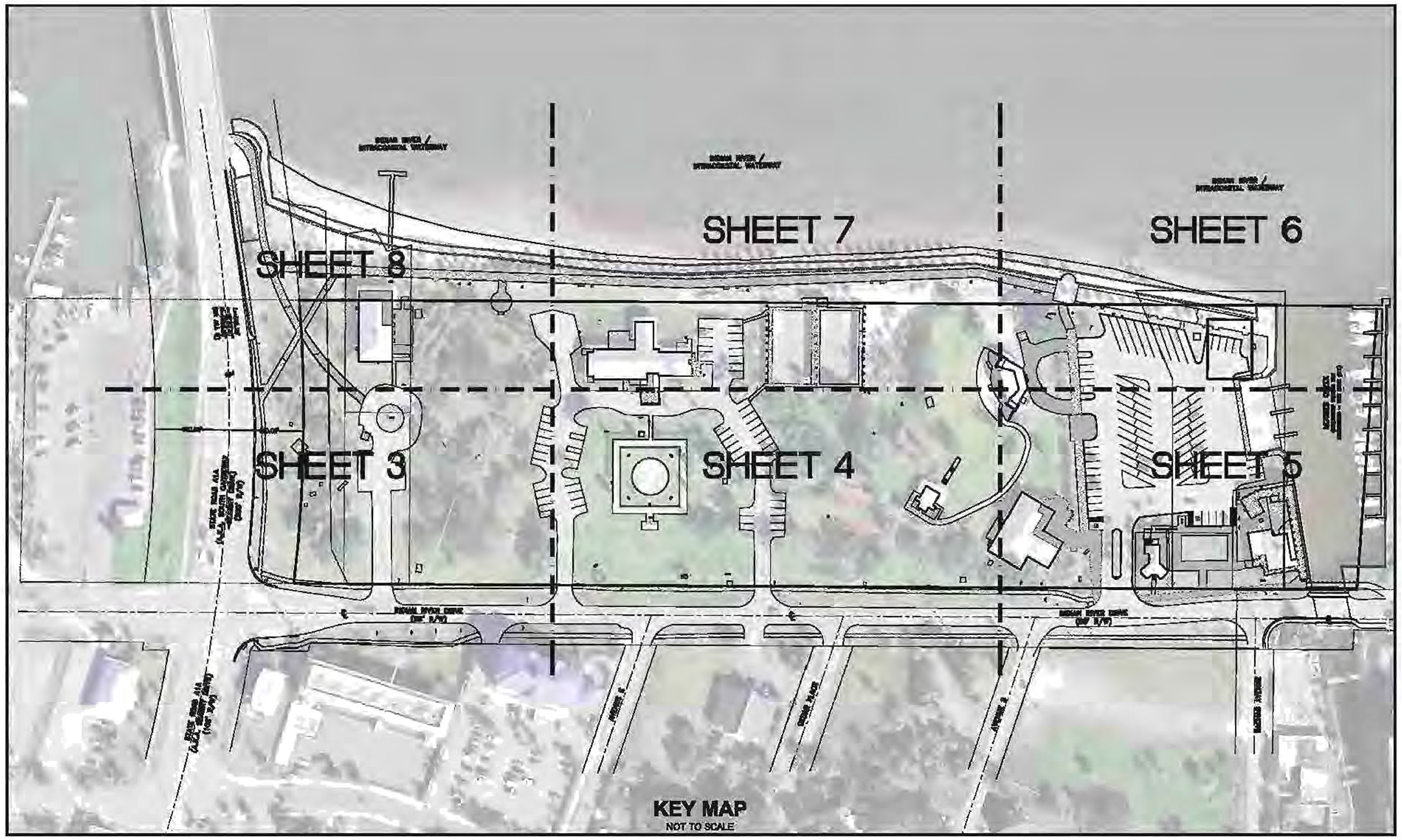
VCA = "VISITOR'S CENTER ADDENDUM"
AN UNRECORDED SUBLEASE BETWEEN THE CITY AND THE COUNTY DESCRIBING A PARCEL WITHIN THE PARK (DATED 10/6/1998).

LEGAL DESCRIPTION

THAT PROPERTY SPECIFICALLY DESCRIBED AS "PROPOSED CITY PARK" AND DEDICATED IN ACCORDANCE WITH A PLAT RECORDED IN PLAT BOOK 10 AT PAGE 36 OF THE PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA; EXCEPTING FROM THIS DESCRIPTION THAT PORTION OF THE "PROPOSED CITY PARK" WHICH CONSTITUTES THE RIGHT-OF-WAY FOR STATE ROAD A-1-A, AND EXCLUDING THE PROPERTY USED FOR PUMP STATION NUMBER ONE, LOCATED AT THE SOUTHEAST CORNER OF SAID "PROPOSED CITY PARK".

ALSO EXCLUDING THE PORTION OF THAT PROPERTY SPECIFICALLY DESCRIBED AS "PROPOSED CITY PARK" LYING NORTH OF SAID STATE ROAD A-1-A.

DESCRIBED AREA ABOVE CONTAINING 12.39 ACRES, MORE OR LESS (INCLUDING APPROXIMATELY 0.90 ACRES LYING UNDER MOORES CREEK).



NOTE:
ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NGVD29 DATUM

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE "BOUNDARY AND TOPOGRAPHIC SURVEY" AS SHOWN HEREON IS A TRUE AND CORRECT REPRESENTATION OF A FIELD SURVEY MADE UNDER MY DIRECTION AND CHARGE ON JUNE 28, 2007 AND SAID "BOUNDARY AND TOPOGRAPHIC SURVEY" IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF. IT IS FURTHER CERTIFIED THAT THIS "BOUNDARY AND TOPOGRAPHIC SURVEY" COMPLIES WITH THE MINIMUM TECHNICAL STANDARDS FOR "BOUNDARY AND TOPOGRAPHIC SURVEY" SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS IN CHAPTER 61G17-6, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.

NORTHSTAR GEOMATICS, INC.

GREGORY S. FLEMING, P.S.M.
FLORIDA REGISTRATION NO. 4350

JULY 2, 2007
DATE

NORTHSTAR GEOMATICS
900 EAST OCEAN BOULEVARD SUITE 140
PO BOX 2371 STUART, FLORIDA 34995
(772) 781-6400 (772) 781-6462 FAX
LICENSED BUSINESS NO. 7217

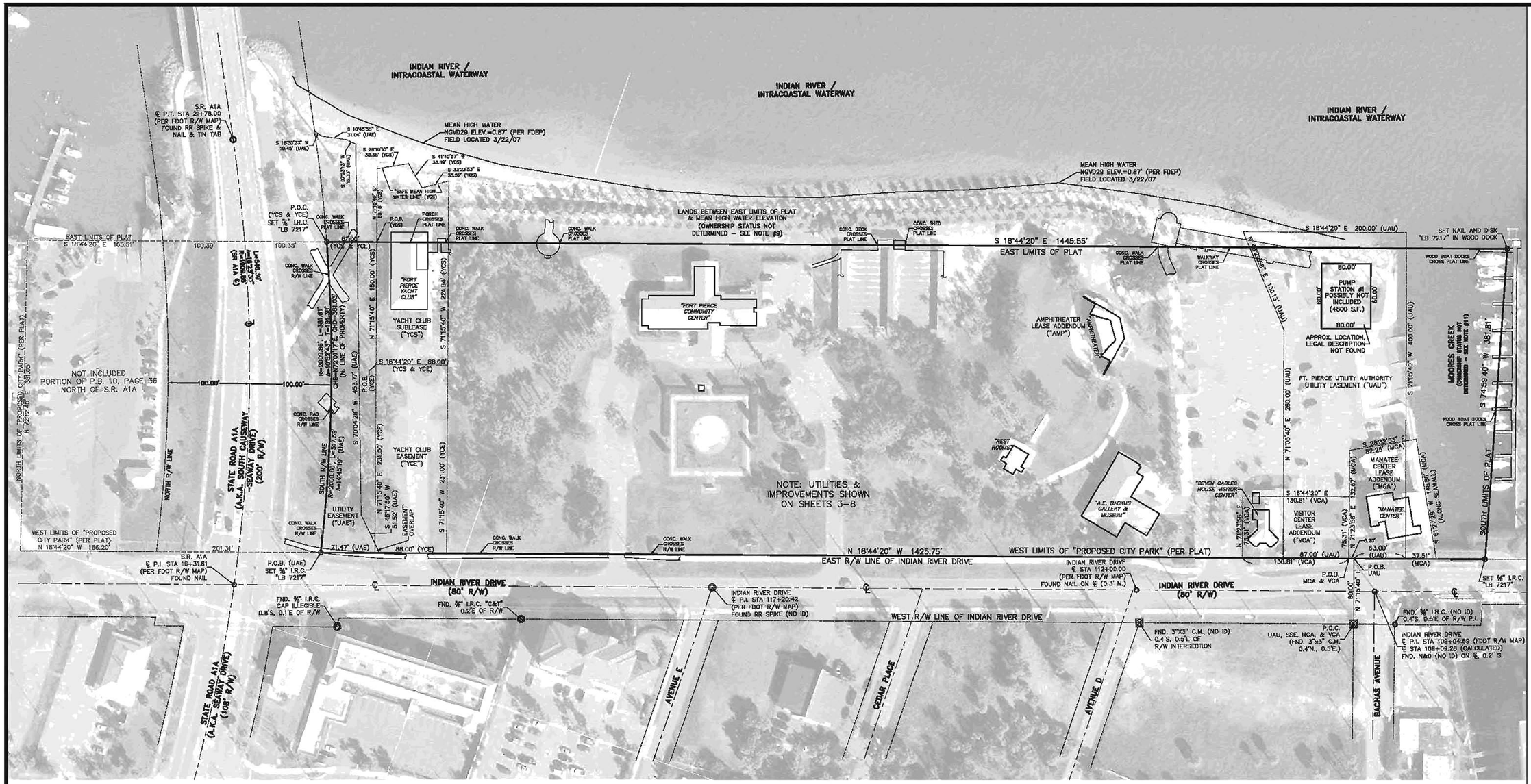
DATE	REVISIONS

DATE 07/01/2007
SCALE NOT TO SCALE
FIELD BK. 16,27,32,33,35,37
DWNG. BY REH/CPM
CHECKED BY GSF

BOUNDARY AND TOPOGRAPHIC SURVEY
OF
INDIAN RIVER VETERANS MEMORIAL PARK

A PORTION OF THE PLAT OF "INDIAN RIVER MEMORIAL PARK"
PLAT BOOK 10, PAGE 36
CITY OF FORT PIERCE
ST. LUCIE COUNTY, FLORIDA

SHEET NO. 1
OF 8 SHEETS
PROJECT NO.
07-009BT



MAP LEGEND

FOUND IRON ROD AS INDICATED	SPRINKLER BOX	FIRE HYDRANT	ELEV.	ELEVATION
BENCHMARK	ELECTRIC SERVICE	SANITARY SEWER MANHOLE	S.F.	SQUARE FEET
SET CORNER AS INDICATED	AIR CONDITIONER UNIT	BUILDING COLUMN 8" DIAMETER	APPROX.	APPROXIMATE
CABBAGE PALM TREE WITH SIZE INDICATED	HANDICAPPED PARKING	SANITARY SEWER VALVE	RCP	REINFORCED CONCRETE PIPE
OTHER PALM TREE WITH SIZE INDICATED	POST FOR FENCE	WATER METER	UGT	UNDERGROUND TELEPHONE
COCONUT PALM TREE WITH SIZE INDICATED	℄ CENTERLINE	WATERLINE TEE	OHU	OVERHEAD UTILITIES
OAK TREE WITH SIZE INDICATED	P.I. POINT OF INTERSECTION	SANITARY SEWER CLEANOUT	ELEC	UNDERGROUND ELECTRIC
UNDETERMINED TREE TYPE WITH SIZE INDICATED	STA. STATION	UTILITY POLE	VCP	VITRIFIED CLAY PIPE
BANYAN TREE WITH SIZE INDICATED	FDOT FLORIDA DEPARTMENT OF TRANSPORTATION	SINGLE POST SIGN	FFE	FINISHED FLOOR ELEVATION
ROYAL PALM TREE WITH SIZE INDICATED	R/W RIGHT OF WAY	DOUBLE POST SIGN	PVC	POLY-VINYL CHLORIDE PIPE
CATCH BASIN TYPE "C"	FND. FOUND	TRAFFIC SIGNAL	CMP	CORRUGATED METAL PIPE
CATCH BASIN TYPE "A"	N&D NAIL & DISK	TRAFFIC SIGNAL POLE		
SPRINKLER CONTROL BOX	P.O.C. POINT OF COMMENCEMENT	TELEPHONE BOX		
ELECTRIC PULLBOX	P.O.B. POINT OF BEGINNING	ELECTRIC TRANSFORMER PAD		
LIGHT POLE	C.M. CONCRETE MONUMENT	FLAG POLE		
ELECTRIC TRANSFORMER PAD	I.R.C. IRON ROD & CAP	MAIL BOX		
WATER VALVE	LB LICENSED BUSINESS	UTILITY MANHOLE (SEALED CLOSED)		
WATER BACKFLOW PREVENTER	RR RAILROAD	R RADIUS OF ARC		
STORM SEWER MANHOLE/JUNCTION BOX	S.R. STATE ROAD	T TANGENT		
FOUND CONCRETE MONUMENT AS INDICATED	P.B. PLAT BOOK	CHB CHORD BEARING		
ELECTRIC MANHOLE	O.R. OFFICIAL RECORDS BOOK	CHD CHORD DISTANCE		
BUILDING COLUMN	L ARC LENGTH/DISTANCE	CONC. CONCRETE		
x6.2 "SPOT" ELEVATION AT THE 'X'	Δ DELTA/INTERIOR ANGLE OF ARC	FDEP FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION		

- STORMWATER LINE
- S — GRAVITY SANITARY SEWER LINE
- OHU — OVERHEAD UTILITY LINE
- TEL — TELEPHONE LINE
- UGT — UNDERGROUND TELEPHONE LINE
- GAS — UNDERGROUND GAS LINE
- ELEC — UNDERGROUND ELECTRIC LINE
- WATER — UNDERGROUND WATER LINE
- CATV — GRAVITY SANITARY SEWER
- REUSE — UNDERGROUND REUSE/RECLAIMED WATER LINE
- FORCE — UNDERGROUND SANITARY FORCE MAIN

GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

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SCALE 1"=60'
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DWNG. BY RBK/CPM
CHECKED BY CSF

BOUNDARY SURVEY OF INDIAN RIVER VETERANS MEMORIAL PARK

A PORTION OF THE PLAT OF "INDIAN RIVER MEMORIAL PARK"
PLAT BOOK 10, PAGE 36
CITY OF FORT PIERCE
ST. LUCIE COUNTY, FLORIDA

SHEET NO. 2
OF 8 SHEETS

PROJECT NO.
07-009BT

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

NORTH RIGHT OF WAY LINE

STATE ROAD A1A
(A.K.A. SOUTH CAUSEWAY – SEAWAY DRIVE)
(200' R/W)

SOUTH RIGHT OF WAY LINE

SEE SHEET 8

SEE SHEET 4

YACHT CLUB PARKING AREA

WEST LINE OF YCE
EAST LINE OF YCE

NORTH LINE OF YCE

SOUTH LINE OF YCE

JUNCTION BOX
LID=6.89
NORTH INVERT(15" RCP)=2.28
BOTTOM=2.34

APPROX. DIRECTION

TERMINUS UNKNOWN

BENCHMARK "25-17-1"
NAIL & DISK IN CROSSWALK
"NORTHSTAR TRAV/TBM"
ELEVATION 5.680 (NGVD29)

CATCH BASIN
GRATE=6.72
EAST INVERT(24" RCP)=-1.18
WEST INVERT(24" RCP)=-1.18
BOTTOM=-1.18

CATCH BASIN
GRATE=3.84
EAST INVERT(24" RCP)=-0.69
WEST INVERT(24"RCP)=-0.56
BOTTOM=-0.76

INDIAN RIVER DRIVE
(80' R/W)

STATE ROAD A1A
(A.K.A. SEAWAY DRIVE)
(108' R/W)

APPROX. PIPE DIRECTION AND SIZE

TERMINUS UNKNOWN

CATCH BASIN
GRATE=3.85
EAST INVERT(24" RCP)=-0.36
WEST INVERT(24"RCP)=-0.36
SOUTH INVERT(24"RCP)=0.48
BOTTOM=-0.45

APPROX. DIRECTION

TERMINUS UNKNOWN

JUNCTION BOX
LID=5.80
NORTH INVERT(24" RCP)=0.15
SOUTH INVERT(24" RCP)=0.12)
WEST INVERT(SIZE INDETERMINABLE)=-0.38

APPROX. DIRECTION AND SIZE

TERMINUS UNKNOWN

ELEVATIONS SHOWN HEREON ARE
REFERENCED TO THE NGVD29 DATUM

MAP LEGEND

FOUND IRON ROD AS INDICATED		SPRINKLER BOX		FIRE HYDRANT		ELECTRIC PULLBOX	P.O.B.	POINT OF BEGINNING		ELECTRIC TRANSFORMER PAD	CMP	CORRUGATED METAL PIPE
BENCHMARK		ELECTRIC SERVICE		SANITARY SEWER MANHOLE		LIGHT POLE	C.M.	CONCRETE MONUMENT		FLAG POLE	ELEC	UNDERGROUND ELECTRIC
SET CORNER AS INDICATED		AIR CONDITIONER UNIT		BUILDING COLUMN 8" DIAMETER		ELECTRIC TRANSFORMER PAD	I.R.C.	IRON ROD & CAP		MAIL BOX		
CABBAGE PALM TREE WITH SIZE INDICATED		HANDICAPPED PARKING		SANITARY SEWER VALVE		WATER VALVE	LB	LICENSED BUSINESS		UTILITY MANHOLE (SEALED CLOSED)		
OTHER PALM TREE WITH SIZE INDICATED		POST FOR FENCE		WATER METER		WATER BACKFLOW PREVENTER	RR	RAILROAD	R	RADIUS OF ARC		
COCONUT PALM TREE WITH SIZE INDICATED	℄	CENTERLINE		WATERLINE TEE		STORM SEWER MANHOLE/JUNCTION BOX	S.R.	STATE ROAD	T	TANGENT		
OAK TREE WITH SIZE INDICATED	P.I.	POINT OF INTERSECTION		SANITARY SEWER CLEANOUT		FOUND CONCRETE MONUMENT AS INDICATED	P.B.	PLAT BOOK	CHB	CHORD BEARING		
UNDETERMINED TREE TYPE WITH SIZE INDICATED	STA.	STATION		UTILITY POLE		ELECTRIC MANHOLE	O.R.	OFFICIAL RECORDS BOOK	CHD	CHORD DISTANCE		
BANYAN TREE WITH SIZE INDICATED	FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION		SINGLE POST SIGN		BUILDING COLUMN	L	ARC LENGTH/DISTANCE	CONC.	CONCRETE		
ROYAL PALM TREE WITH SIZE INDICATED	R/W	RIGHT OF WAY		DOUBLE POST SIGN	X6.2	'SPOT' ELEVATION AT THE 'X'	Δ	DELTA/INTERIOR ANGLE OF ARC	FDEP	FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION		
CATCH BASIN TYPE 'C'	FND.	FOUND		TRAFFIC SIGNAL	VCP	VITRIFIED CLAY PIPE	RCP	REINFORCED CONCRETE PIPE	ELEV.	ELEVATION		
CATCH BASIN TYPE 'A'	N&D	NAIL & DISK		TRAFFIC SIGNAL POLE	FFE	FINISHED FLOOR ELEVATION	UGT	UNDERGROUND TELEPHONE	S.F.	SQUARE FEET		
SPRINKLER CONTROL BOX	P.O.C.	POINT OF COMMENCEMENT		TELEPHONE BOX	PVC	POLY-VINYL CHLORIDE PIPE	OHU	OVERHEAD UTILITIES	APPROX.	APPROXIMATE		

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TOPOGRAPHIC SURVEY
OF
INDIAN RIVER VETERANS MEMORIAL PARK

A PORTION OF THE PLAT OF "INDIAN RIVER MEMORIAL PARK"
PLAT BOOK 10, PAGE 36
CITY OF FORT PIERCE
ST. LUCIE COUNTY, FLORIDA

SHEET NO. 3
OF 8 SHEETS
PROJECT NO.
07-009BT

SEE SHEET 7

SEE SHEET 3

SEE SHEET 5

GRASS

FOUNTAIN

GRASS

MONUMENT

AMPHITHEATER GRASS SEATING

STAIRS

"REST ROOMS"
FFE=7.74

JUNCTION BOX
LID=7.26
EAST INVERT (24"RCP)=2.06
WEST INVERT (24"RCP)=-1.81
BOTTOM=-2.23

UNKNOWN

UNKNOWN

UNKNOWN

UNKNOWN

JUNCTION BOX
LID=5.55
SOUTHEAST INVERT(24"RCP)=2.00
WEST INVERT(24" RCP)=-0.54
BOTTOM=0.15

MANHOLE
LID=5.34
NORTH INVERT (12" VCP)=0.69
SOUTH INVERT (12" VCP)=0.67
WEST INVERT (10" VCP)=0.73

TRANSFORMER ON FIBERGLASS PAD

SIGN

MANHOLE
LID=5.68
NORTH INVERT (12" VCP)=0.25
SOUTH INVERT (12" VCP)=-0.04
NORTHWEST INVERT (12" RCP)=-0.275

INDIAN RIVER DRIVE
(80' R/W)

BENCHMARK "25-27-3"
X-CUT NORTH RIM OF
SANITARY SEWER MANHOLE
ELEVATION 5.405 (NGVD29)

JUNCTION BOX
LID=5.39
NORTH INVERT(24"RCP)=-0.18
SOUTH INVERT(24" RCP)=-0.24
WEST INVERT(24"RCP)=0.04
BOTTOM=-0.83

MANHOLE
LID=5.40
WEST INVERT (10" VCP)=1.5
EAST INVERT (10" VCP)=1.5
BOTTOM=-1.5

APPROX. DIRECTION TERMINUS UNKNOWN

JUNCTION BOX
LID=5.84
NORTH INVERT (24"RCP)=-0.78
SOUTH INVERT (24"RCP)=-0.38
EAST INVERT (24"RCP)=-0.29
BOTTOM=-0.66

AVENUE E

CEDAR PLACE

ELEVATIONS SHOWN HEREON ARE
REFERENCED TO THE NGVD29 DATUM

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

GRID

MAP LEGEND

	FOUND IRON ROD AS INDICATED		SPRINKLER BOX		FIRE HYDRANT		ELECTRIC PULLBOX	P.O.B.	POINT OF BEGINNING		ELECTRIC TRANSFORMER PAD	OMP	CORRUGATED METAL PIPE
	BENCHMARK		ELECTRIC SERVICE		SANITARY SEWER MANHOLE		LIGHT POLE	C.M.	CONCRETE MONUMENT		FLAG POLE	ELEC	UNDERGROUND ELECTRIC
	SET CORNER AS INDICATED		AIR CONDITIONER UNIT		BUILDING COLUMN 8" DIAMETER		ELECTRIC TRANSFORMER PAD	I.R.C.	IRON ROD & CAP		MAIL BOX		
	CABBAGE PALM TREE WITH SIZE INDICATED		HANDICAPPED PARKING		SANITARY SEWER VALVE		WATER VALVE	LB	LICENSED BUSINESS		UTILITY MANHOLE (SEALED CLOSED)		
	OTHER PALM TREE WITH SIZE INDICATED		POST FOR FENCE		WATER METER		WATER BACKFLOW PREVENTER	RR	RAILROAD	R	RADIUS OF ARC		
	COCONUT PALM TREE WITH SIZE INDICATED		CENTERLINE		WATERLINE TEE		STORM SEWER MANHOLE/JUNCTION BOX	S.R.	STATE ROAD	T	TANGENT		
	OAK TREE WITH SIZE INDICATED	P.I.	POINT OF INTERSECTION		SANITARY SEWER CLEANOUT		FOUND CONCRETE MONUMENT AS INDICATED	P.B.	PLAT BOOK	CHB	CHORD BEARING		
	UNDETERMINED TREE TYPE WITH SIZE INDICATED	STA.	STATION		UTILITY POLE		ELECTRIC MANHOLE	O.R.	OFFICIAL RECORDS BOOK	CHD	CHORD DISTANCE		
	BANYAN TREE WITH SIZE INDICATED	FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION		SINGLE POST SIGN		BUILDING COLUMN	L	ARC LENGTH/DISTANCE	CONC.	CONCRETE		
	ROYAL PALM TREE WITH SIZE INDICATED	R/W	RIGHT OF WAY		DOUBLE POST SIGN	X6.2	"SPOT" ELEVATION AT THE "X"	Δ	DELTA/INTERIOR ANGLE OF ARC	FDEP	FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION		
	CATCH BASIN TYPE 'C'	FND.	FOUND		TRAFFIC SIGNAL	VCP	VITRIFIED CLAY PIPE	RCP	REINFORCED CONCRETE PIPE	ELEV.	ELEVATION		
	CATCH BASIN TYPE 'A'	N&D	NAIL & DISK		TRAFFIC SIGNAL POLE	FFE	FINISHED FLOOR ELEVATION	UGT	UNDERGROUND TELEPHONE	S.F.	SQUARE FEET		
	SPRINKLER CONTROL BOX	P.O.C.	POINT OF COMMENCEMENT		TELEPHONE BOX	PVC	POLY-VINYL CHLORIDE PIPE	OHU	OVERHEAD UTILITIES	APPROX.	APPROXIMATE		

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TOPOGRAPHIC SURVEY
OF
INDIAN RIVER VETERANS MEMORIAL PARK

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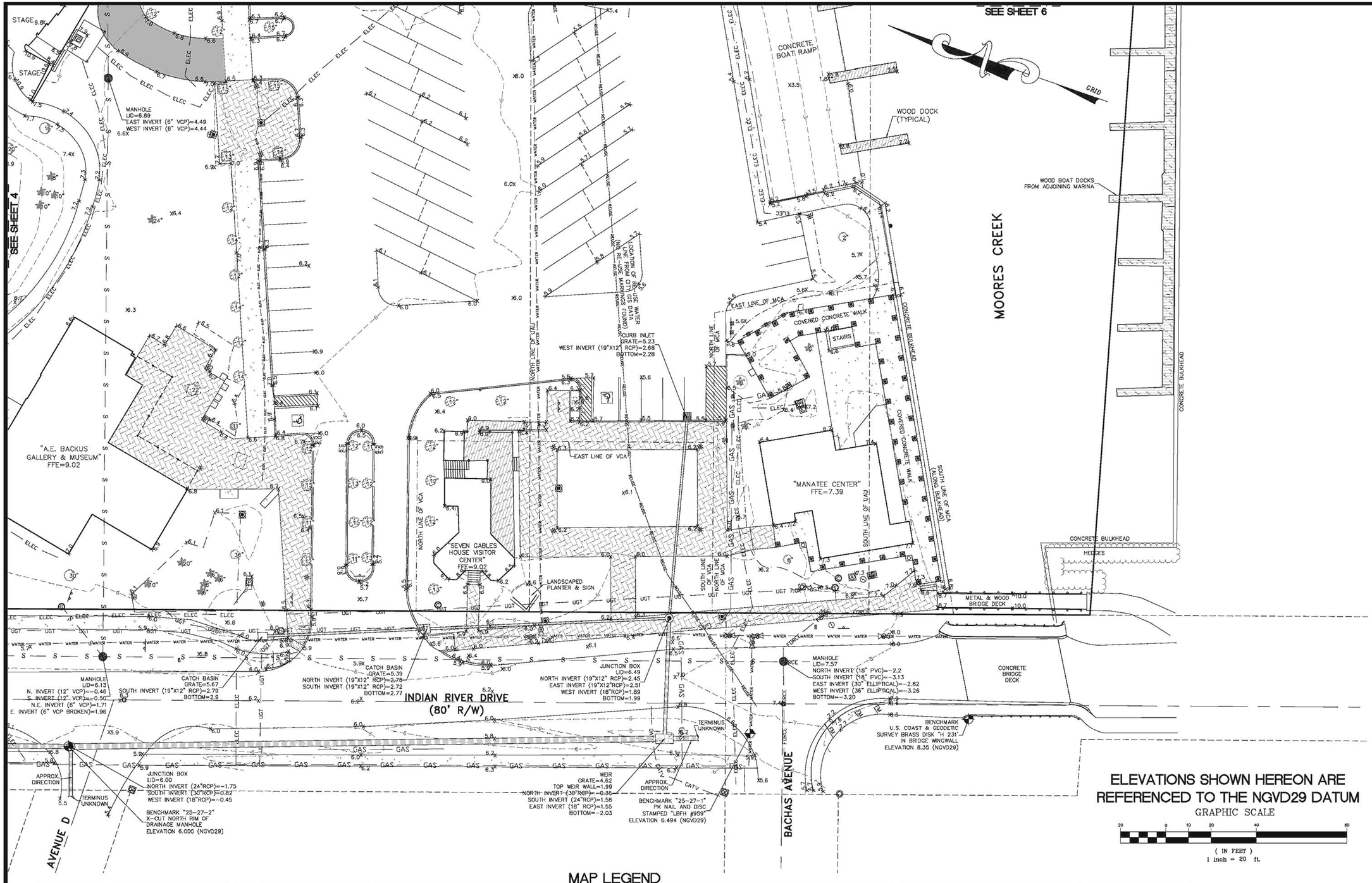
CITY OF FORT PIERCE
ST. LUCIE COUNTY, FLORIDA

SHEET NO. 4
OF 8 SHEETS

PROJECT NO.
07-009BT



ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NGVD29 DATUM

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

MAP LEGEND

◎	FOUND IRON ROD AS INDICATED	⊞	SPRINKLER BOX		FIRE HYDRANT	⊡	ELECTRIC PULLBOX	P.O.B.	POINT OF BEGINNING	⊡	ELECTRIC TRANSFORMER PAD	CMP	CORRUGATED METAL PIPE
◔	BENCHMARK	⊘	ELECTRIC SERVICE		SANITARY SEWER MANHOLE	☼	LIGHT POLE	C.M.	CONCRETE MONUMENT	⚐	FLAG POLE	ELEC	UNDERGROUND ELECTRIC
○	SET CORNER AS INDICATED	⊠	AIR CONDITIONER UNIT	◉	BUILDING COLUMN 8" DIAMETER	⊡	ELECTRIC TRANSFORMER PAD	I.R.C.	IRON ROD & CAP	▭	MAIL BOX		
❀	CABBAGE PALM TREE WITH SIZE INDICATED	♿	HANDICAPPED PARKING	⋈	SANITARY SEWER VALVE	⋈	WATER VALVE	LB	LICENSED BUSINESS	Ⓤ	UTILITY MANHOLE (SEALED CLOSED)		
✱	OTHER PALM TREE WITH SIZE INDICATED	⊗	POST FOR FENCE	⊠	WATER METER	⋈	WATER BACKFLOW PREVENTER	RR	RAILROAD	R	RADIUS OF ARC		
❁	COCONUT PALM TREE WITH SIZE INDICATED	℄	CENTERLINE	⊷	WATERLINE TEE	◉	STORM SEWER MANHOLE/JUNCTION BOX	S.R.	STATE ROAD	T	TANGENT		
◯	OAK TREE WITH SIZE INDICATED	P.I.	POINT OF INTERSECTION	◎	SANITARY SEWER CLEANOUT	⊠	FOUND CONCRETE MONUMENT AS INDICATED	P.B.	PLAT BOOK	CHB	CHORD BEARING		
❁	UNDETERMINED TREE TYPE WITH SIZE INDICATED	STA.	STATION	⊘	UTILITY POLE	Ⓟ	ELECTRIC MANHOLE	O.R.	OFFICIAL RECORDS BOOK	CHD	CHORD DISTANCE		
❁	BANYAN TREE WITH SIZE INDICATED	FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION	⊸	SINGLE POST SIGN	⊠	BUILDING COLUMN	L	ARC LENGTH/DISTANCE	CONC.	CONCRETE		
★	ROYAL PALM TREE WITH SIZE INDICATED	R/W	RIGHT OF WAY	⊸⊸	DOUBLE POST SIGN	x6.2	'SPOT' ELEVATION AT THE 'X'	Δ	DELTA/INTERIOR ANGLE OF ARC	FDEP	FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION		
▥	CATCH BASIN TYPE 'C'	FND.	FOUND	⊠	TRAFFIC SIGNAL	VCP	VITRIFIED CLAY PIPE	RCP	REINFORCED CONCRETE PIPE	ELEV.	ELEVATION		
■	CATCH BASIN TYPE 'A'	N&D	NAIL & DISK	⊠	TRAFFIC SIGNAL POLE	FFE	FINISHED FLOOR ELEVATION	UGT	UNDERGROUND TELEPHONE	S.F.	SQUARE FEET		
⊞	SPRINKLER CONTROL BOX	P.O.C.	POINT OF COMMENCEMENT	Ⓣ	TELEPHONE BOX	PVC	POLY-VINYL CHLORIDE PIPE	OHU	OVERHEAD UTILITIES	APPROX.	APPROXIMATE		

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SHEET NO. 5
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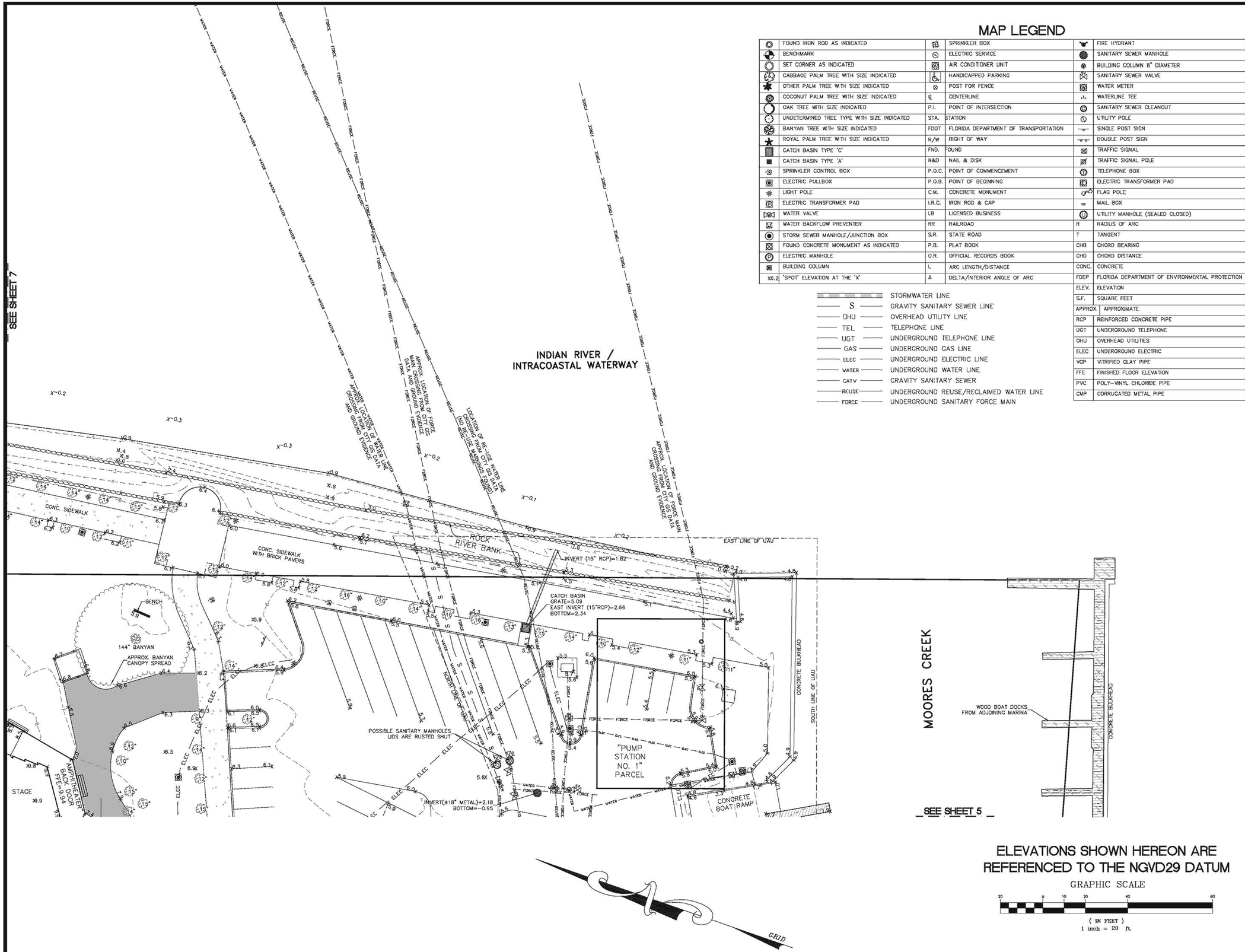


MAP LEGEND

	FOUND IRON ROD AS INDICATED		SPRINKLER BOX		FIRE HYDRANT
	BENCHMARK		ELECTRIC SERVICE		SANITARY SEWER MANHOLE
	SET CORNER AS INDICATED		AIR CONDITIONER UNIT		BUILDING COLUMN 8" DIAMETER
	CABBAGE PALM TREE WITH SIZE INDICATED		HANDICAPPED PARKING		SANITARY SEWER VALVE
	OTHER PALM TREE WITH SIZE INDICATED		POST FOR FENCE		WATER METER
	COCONUT PALM TREE WITH SIZE INDICATED	℄	CENTERLINE		WATERLINE TEE
	OAK TREE WITH SIZE INDICATED	P.I.	POINT OF INTERSECTION		SANITARY SEWER CLEANOUT
	UNDETERMINED TREE TYPE WITH SIZE INDICATED	STA.	STATION		UTILITY POLE
	BANYAN TREE WITH SIZE INDICATED	FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION		SINGLE POST SIGN
	ROYAL PALM TREE WITH SIZE INDICATED	R/W	RIGHT OF WAY		DOUBLE POST SIGN
	CATCH BASIN TYPE 'C'	FND.	FOUND		TRAFFIC SIGNAL
	CATCH BASIN TYPE 'A'	N&D	NAIL & DISK		TRAFFIC SIGNAL POLE
	SPRINKLER CONTROL BOX	P.O.C.	POINT OF COMMENCEMENT		TELEPHONE BOX
	ELECTRIC PULLBOX	P.O.B.	POINT OF BEGINNING		ELECTRIC TRANSFORMER PAD
	LIGHT POLE	C.M.	CONCRETE MONUMENT		FLAG POLE
	ELECTRIC TRANSFORMER PAD	I.R.C.	IRON ROD & CAP		MAIL BOX
	WATER VALVE	LB	LICENSED BUSINESS		UTILITY MANHOLE (SEALED CLOSED)
	WATER BACKFLOW PREVENTER	RR	RAILROAD	R	RADIUS OF ARC
	STORM SEWER MANHOLE/JUNCTION BOX	S.R.	STATE ROAD	T	TANGENT
	FOUND CONCRETE MONUMENT AS INDICATED	P.B.	PLAT BOOK	CHB	CHORD BEARING
	ELECTRIC MANHOLE	O.R.	OFFICIAL RECORDS BOOK	CHD	CHORD DISTANCE
	BUILDING COLUMN	L	ARC LENGTH/DISTANCE	CONC.	CONCRETE
X6.2	'SPOT' ELEVATION AT THE 'X'	Δ	DELTA/INTERIOR ANGLE OF ARC	FDEP	FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
				ELEV.	ELEVATION
				S.F.	SQUARE FEET
				APPROX.	APPROXIMATE
				RCP	REINFORCED CONCRETE PIPE
				UGT	UNDERGROUND TELEPHONE
				OHU	OVERHEAD UTILITIES
				ELEC	UNDERGROUND ELECTRIC
				VCP	VITRIFIED CLAY PIPE
				FFE	FINISHED FLOOR ELEVATION
				PVC	POLY-VINYL CHLORIDE PIPE
				CMP	CORRUGATED METAL PIPE

STORMWATER LINE	
S	GRAVITY SANITARY SEWER LINE
OHU	OVERHEAD UTILITY LINE
TEL	TELEPHONE LINE
UGT	UNDERGROUND TELEPHONE LINE
GAS	UNDERGROUND GAS LINE
ELEC	UNDERGROUND ELECTRIC LINE
WATER	UNDERGROUND WATER LINE
CATV	GRAVITY SANITARY SEWER
REUSE	UNDERGROUND REUSE/RECLAIMED WATER LINE
FORCE	UNDERGROUND SANITARY FORCE MAIN

ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NGVD29 DATUM

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NORTHSTAR GEOMATICS
900 EAST OCEAN BOULEVARD SUITE 140
PO BOX 2371 STUART, FLORIDA 34995
(772) 781-6400 (772) 781-6462 FAX
LICENSED BUSINESS NO. 7217

DATE	REVISIONS

DATE 07/01/2007
SCALE 1"=20'
FIELD BK. 16,17,32,33,35,37
DWNG. BY REH/CPM
CHECKED BY GSF

TOPOGRAPHIC SURVEY
OF
INDIAN RIVER VETERANS MEMORIAL PARK

A PORTION OF THE PLAT OF "INDIAN RIVER MEMORIAL PARK"
PLAT BOOK 10, PAGE 36
CITY OF FORT PIERCE
ST. LUCIE COUNTY, FLORIDA

SHEET NO. 6
OF 8 SHEETS
PROJECT NO. 07-009BT

MAP LEGEND

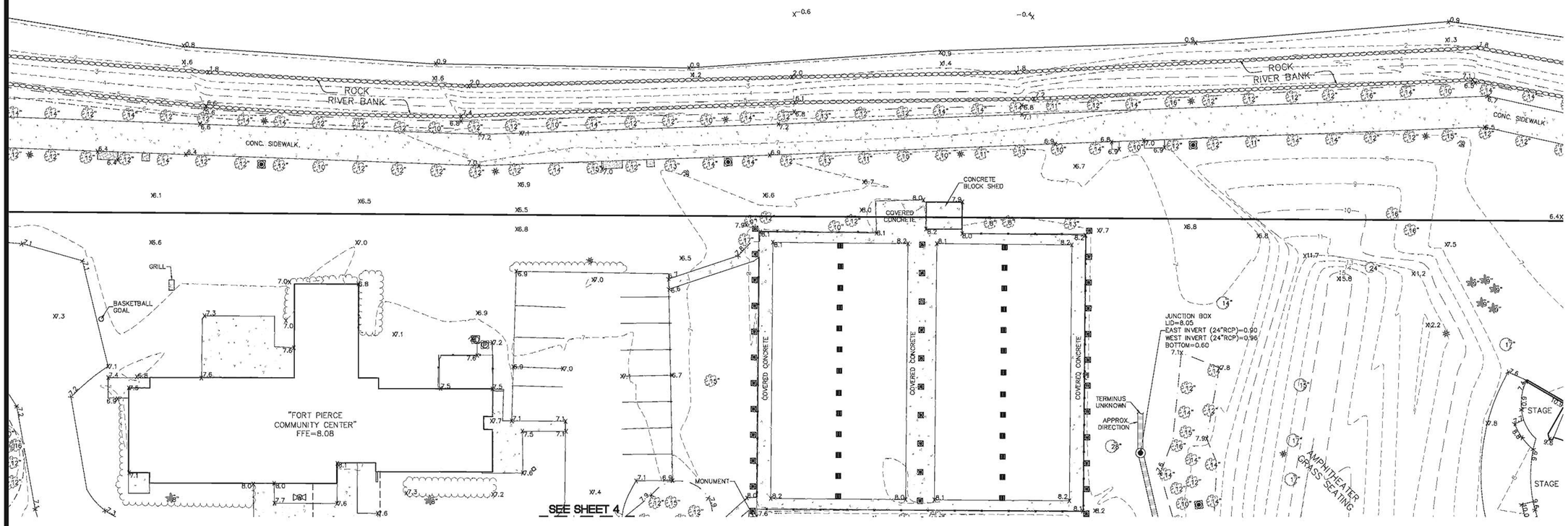
	FOUND IRON ROD AS INDICATED		SPRINKLER BOX		FIRE HYDRANT
	BENCHMARK		ELECTRIC SERVICE		SANITARY SEWER MANHOLE
	SET CORNER AS INDICATED		AIR CONDITIONER UNIT		BUILDING COLUMN 8" DIAMETER
	CABBAGE PALM TREE WITH SIZE INDICATED		HANDICAPPED PARKING		SANITARY SEWER VALVE
	OTHER PALM TREE WITH SIZE INDICATED		POST FOR FENCE		WATER METER
	COCONUT PALM TREE WITH SIZE INDICATED	℄	CENTERLINE		WATERLINE TEE
	OAK TREE WITH SIZE INDICATED	P.I.	POINT OF INTERSECTION		SANITARY SEWER CLEANOUT
	UNDETERMINED TREE TYPE WITH SIZE INDICATED	STA.	STATION		UTILITY POLE
	BANYAN TREE WITH SIZE INDICATED	FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION		SINGLE POST SIGN
	ROYAL PALM TREE WITH SIZE INDICATED	R/W	RIGHT OF WAY		DOUBLE POST SIGN
	CATCH BASIN TYPE 'C'	FND.	FOUND		TRAFFIC SIGNAL
	CATCH BASIN TYPE 'A'	N&D	NAIL & DISK		TRAFFIC SIGNAL POLE
	SPRINKLER CONTROL BOX	P.O.C.	POINT OF COMMENCEMENT		TELEPHONE BOX
	ELECTRIC PULLBOX	P.O.B.	POINT OF BEGINNING		ELECTRIC TRANSFORMER PAD
	LIGHT POLE	C.M.	CONCRETE MONUMENT		FLAG POLE
	ELECTRIC TRANSFORMER PAD	I.R.C.	IRON ROD & CAP		MAIL BOX
	WATER VALVE	LB	LICENSED BUSINESS		UTILITY MANHOLE (SEALED CLOSED)
	WATER BACKFLOW PREVENTER	RR	RAILROAD	R	RADIUS OF ARC
	STORM SEWER MANHOLE/JUNCTION BOX	S.R.	STATE ROAD	T	TANGENT
	FOUND CONCRETE MONUMENT AS INDICATED	P.B.	PLAT BOOK	CHB	CHORD BEARING
	ELECTRIC MANHOLE	O.R.	OFFICIAL RECORDS BOOK	CHD	CHORD DISTANCE
	BUILDING COLUMN	L	ARC LENGTH/DISTANCE	CONC.	CONCRETE
X6.2	"SPOT" ELEVATION AT THE "X"	Δ	DELTA/INTERIOR ANGLE OF ARC	FDEP	FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
				ELEV.	ELEVATION
				S.F.	SQUARE FEET
				APPROX.	APPROXIMATE
				RCP	REINFORCED CONCRETE PIPE
				UGT	UNDERGROUND TELEPHONE
				OHU	OVERHEAD UTILITIES
				ELEC	UNDERGROUND ELECTRIC
				VCP	VITRIFIED CLAY PIPE
				FFE	FINISHED FLOOR ELEVATION
				PVC	POLY-VINYL CHLORIDE PIPE
				CMP	CORRUGATED METAL PIPE

STORMWATER LINE	
S	GRAVITY SANITARY SEWER LINE
OHU	OVERHEAD UTILITY LINE
TEL	TELEPHONE LINE
UGT	UNDERGROUND TELEPHONE LINE
GAS	UNDERGROUND GAS LINE
ELEC	UNDERGROUND ELECTRIC LINE
WATER	UNDERGROUND WATER LINE
CATV	GRAVITY SANITARY SEWER
REUSE	UNDERGROUND REUSE/RECLAIMED WATER LINE
FORCE	UNDERGROUND SANITARY FORCE MAIN

SEE SHEET 8

INDIAN RIVER /
INTRACOASTAL WATERWAY

SEE SHEET 6



SEE SHEET 4

GRID

ELEVATIONS SHOWN HEREON ARE
REFERENCED TO THE NGVD29 DATUM

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

NORTHSTAR GEOMATICS
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LICENSED BUSINESS NO. 7217

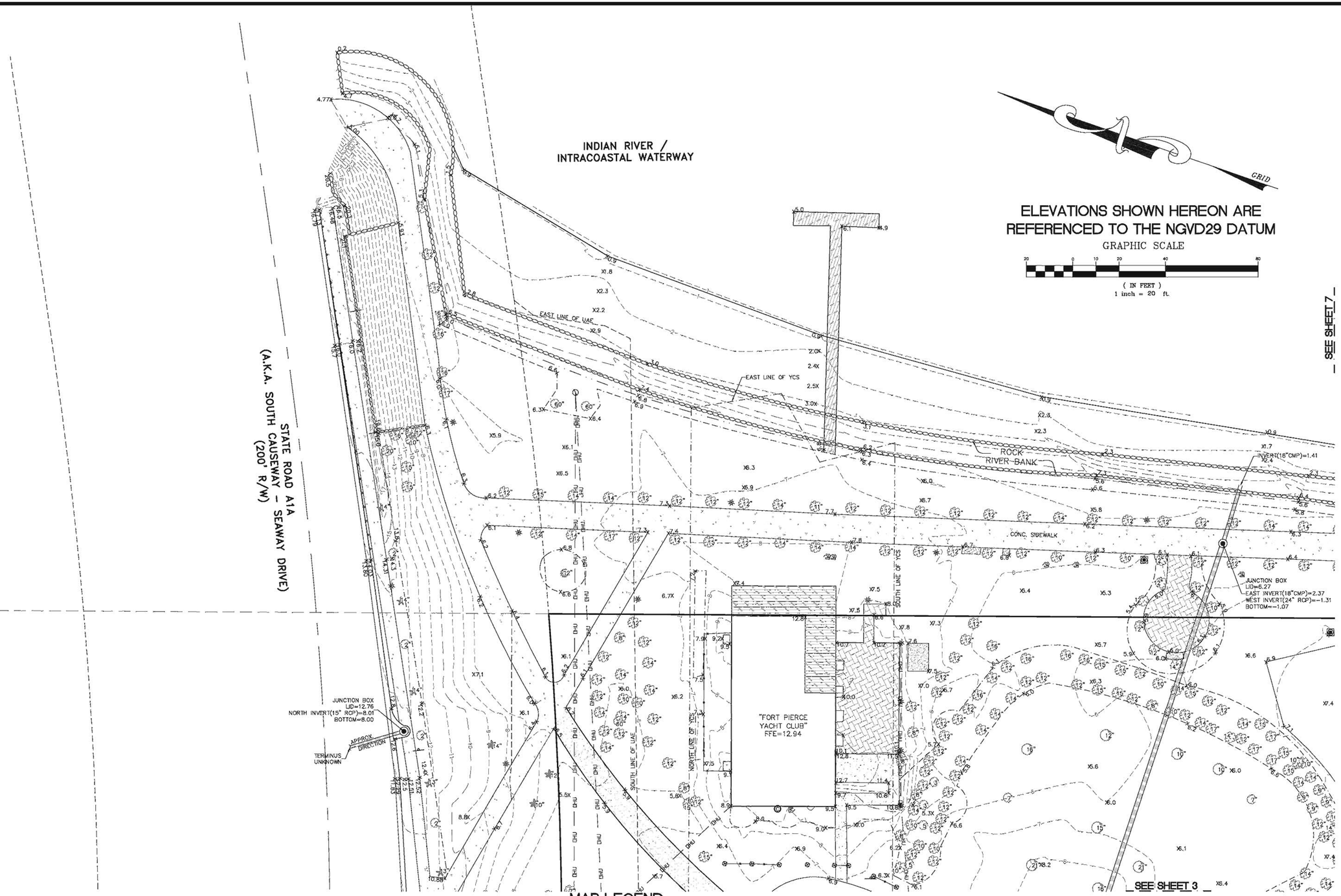
DATE	REVISIONS

DATE 07/01/2007
SCALE 1"=20'
FIELD BK. 16,27,32,33,35,37 RCH/CPM
DWNG. BY
CHECKED BY GSF

TOPOGRAPHIC SURVEY
OF
INDIAN RIVER VETERANS MEMORIAL PARK

A PORTION OF THE PLAT OF "INDIAN RIVER MEMORIAL PARK"
PLAT BOOK 10, PAGE 36
CITY OF FORT PIERCE
ST. LUCIE COUNTY, FLORIDA

SHEET NO. 7
OF 8 SHEETS
PROJECT NO.
07-009BT



MAP LEGEND

FOUND IRON ROD AS INDICATED	SPRINKLER BOX	FIRE HYDRANT	ELECTRIC PULLBOX	P.O.B.	POINT OF BEGINNING	ELECTRIC TRANSFORMER PAD	CMP	CORRUGATED METAL PIPE
BENCHMARK	ELECTRIC SERVICE	SANITARY SEWER MANHOLE	LIGHT POLE	C.M.	CONCRETE MONUMENT	FLAG POLE	ELEC	UNDERGROUND ELECTRIC
SET CORNER AS INDICATED	AIR CONDITIONER UNIT	BUILDING COLUMN 8" DIAMETER	ELECTRIC TRANSFORMER PAD	I.R.C.	IRON ROD & CAP	MAIL BOX		
CABBAGE PALM TREE WITH SIZE INDICATED	HANDICAPPED PARKING	SANITARY SEWER VALVE	WATER VALVE	LB	LICENSED BUSINESS	UTILITY MANHOLE (SEALED CLOSED)		STORMWATER LINE
OTHER PALM TREE WITH SIZE INDICATED	POST FOR FENCE	WATER METER	WATER BACKFLOW PREVENTER	RR	RAILROAD	R	RADIUS OF ARC	S GRAVITY SANITARY SEWER LINE
COCONUT PALM TREE WITH SIZE INDICATED	CENTERLINE	WATERLINE TEE	STORM SEWER MANHOLE/JUNCTION BOX	S.R.	STATE ROAD	T	TANGENT	OHU OVERHEAD UTILITY LINE
OAK TREE WITH SIZE INDICATED	P.I. POINT OF INTERSECTION	SANITARY SEWER CLEANOUT	FOUND CONCRETE MONUMENT AS INDICATED	P.B.	PLAT BOOK	CHB	CHORD BEARING	TEL TELEPHONE LINE
UNDETERMINED TREE TYPE WITH SIZE INDICATED	STA. STATION	UTILITY POLE	ELECTRIC MANHOLE	O.R.	OFFICIAL RECORDS BOOK	CHD	CHORD DISTANCE	UGT UNDERGROUND TELEPHONE LINE
BANYAN TREE WITH SIZE INDICATED	FDOT FLORIDA DEPARTMENT OF TRANSPORTATION	SINGLE POST SIGN	BUILDING COLUMN	L	ARC LENGTH/DISTANCE	CONC. CONCRETE		GAS UNDERGROUND GAS LINE
ROYAL PALM TREE WITH SIZE INDICATED	R/W RIGHT OF WAY	DOUBLE POST SIGN	X6.2 'SPOT' ELEVATION AT THE 'X'	Δ	DELTA/INTERIOR ANGLE OF ARC	FDEP FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION		ELEC UNDERGROUND ELECTRIC LINE
CATCH BASIN TYPE 'C'	FND. FOUND	TRAFFIC SIGNAL	VCP VITRIFIED CLAY PIPE	RCP	REINFORCED CONCRETE PIPE	ELEV. ELEVATION		WATER UNDERGROUND WATER LINE
CATCH BASIN TYPE 'A'	N&D NAIL & DISK	TRAFFIC SIGNAL POLE	FFE FINISHED FLOOR ELEVATION	UGT	UNDERGROUND TELEPHONE	S.F. SQUARE FEET		CATV GRAVITY SANITARY SEWER
SPRINKLER CONTROL BOX	P.O.C. POINT OF COMMENCEMENT	TELEPHONE BOX	PVC POLY-VINYL CHLORIDE PIPE	OHU	OVERHEAD UTILITIES	APPROX. APPROXIMATE		REUSE UNDERGROUND REUSE/RECLAIMED WATER LINE
								FORCE UNDERGROUND SANITARY FORCE MAIN

NORTHSTAR GEOMATICS
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TOPOGRAPHIC SURVEY
OF
INDIAN RIVER VETERANS MEMORIAL PARK

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ST. LUCIE COUNTY, FLORIDA

SHEET NO. 8
OF 8 SHEETS
PROJECT NO.
07-009BT

PAVING,DRAINAGE, POND, & CONDUIT ASBUILT

FIELD / DRAWN : SB,AB / SB

REPRODUCTION OF THIS MAP AND ALL SHEETS ATTACHED ARE NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER

AB SURVEY ENTERPRISES INC LB 6301
342 CARTER AVE, PSL, FL 34983
PHONE / FAX 772-224-2963
CELL 772-579-3849

I hereby certify that this land surveying document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Land Surveyor under the laws of the State Florida.

SIGNATURE__________ DATE 01/07/2015

CHRIS COONEY L.S. 6077
LICENSE RENEWAL DATE: 02/28/2015
PAGES OR SHEETS COVERED BY THIS SEAL 1

CDBG-AB-1

THIS DOCUMENT, TOGETHER WITH THE CONCEPTS AND DESIGNS PRESENTED HEREIN, AS AN INSTRUMENT OF SERVICE, IS INTENDED ONLY FOR THE SPECIFIC PURPOSE AND CLIENT FOR WHICH IT WAS PREPARED. REUSE OF AND IMPROPER RELIANCE ON THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADOPTION BY CAPTEC ENGINEERING, INC. SHALL BE WITHOUT LIABILITY TO CAPTEC ENGINEERING, INC.

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Civil Engineering Professionals
• 301 NW Flagler Ave
Stuart, Florida 34994
Phone: (772) 692-4344
Fax: (772) 692-4341
Engineering Business No. EB-0007657

DATE:	
DRAWN BY:	HLT
DESIGNED BY:	HLT
CHECKED BY:	JWC
PROJECT No.:	1456
HORZ. SCALE:	1"=30'
VERT. SCALE:	N/A
CADD FILE:	1456 $Base

NO.	DATE	BY	REVISIONS
5	6/2/14	HLT	REVISED INV. / GRATE ELEV. / BIOSWALE BOTTOM
4	5/21/14	HLT	CORRECTED CS-2 INFORMATION
3	5/12/14	HLT	APPROVED FOR CONSTRUCTION
2	3/4/14	HTL	ADDENDUM BID SET
1	1/15/14	HLT	BID SET

SCALE VERIFICATION
0 1
SOLID BAR IS EQUAL TO ONE INCH ON ORIGINAL DRAWING, ADJUST ALL SCALED DIMENSIONS ACCORDINGLY

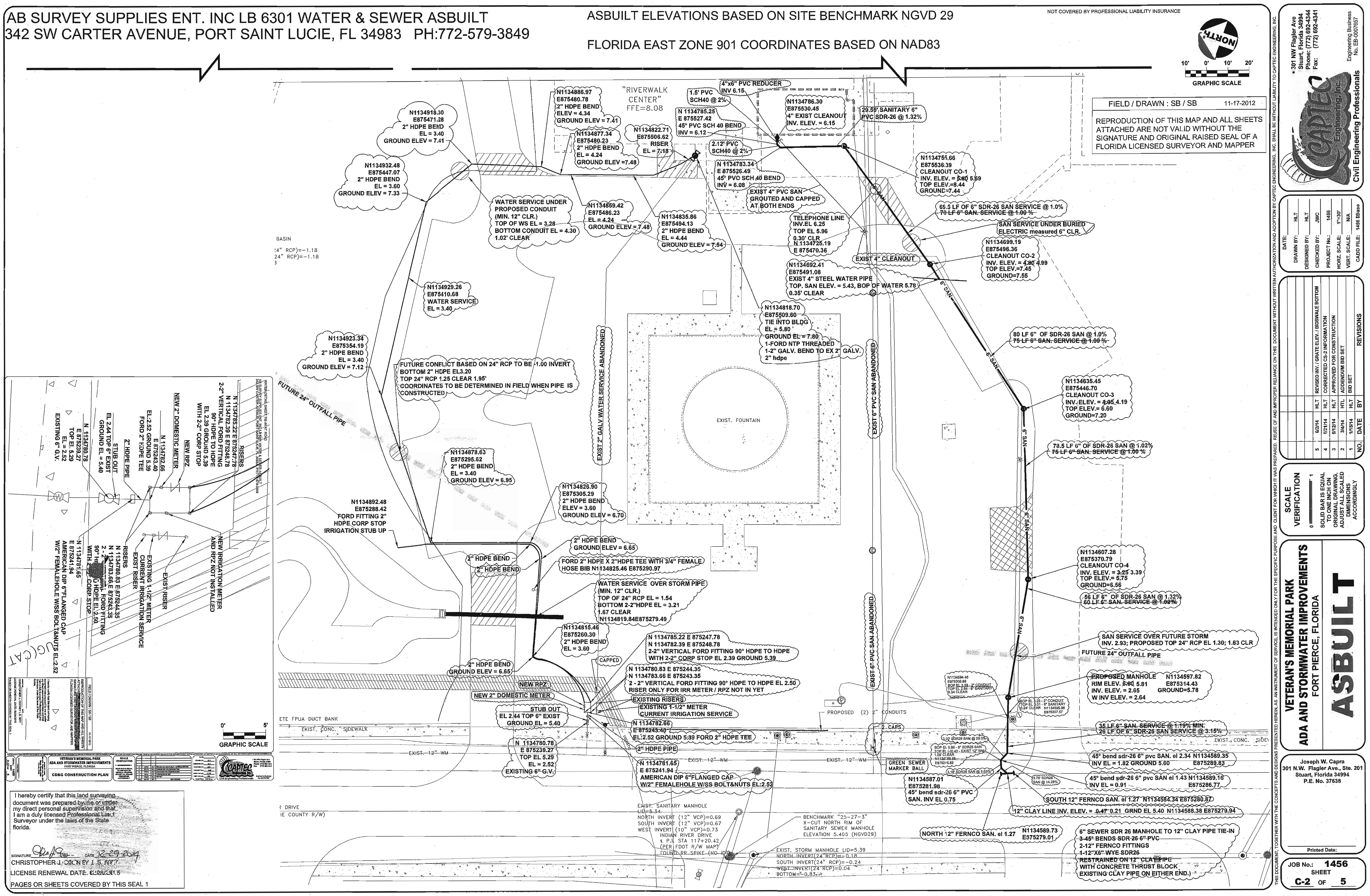
VETERAN'S MEMORIAL PARK
ADA AND STORMWATER IMPROVEMENTS
FORT PIERCE, FLORIDA

CDBG CONSTRUCTION PLAN

Joseph W. Capra
301 N.W. Flagler Ave., Ste. 201
Stuart, Florida 34994
P.E. No. 37638

Printed Date:

JOB No.: 1456
SHEET
C-2 OF 5


AB SURVEY SUPPLIES ENT. INC LB 6301 WATER & SEWER ASBUILT
342 SW CARTER AVENUE, PORT SAINT LUCIE, FL 34983 PH:772-579-3849
ASBUILT ELEVATIONS BASED ON SITE BENCHMARK NGVD 29
FLORIDA EAST ZONE 901 COORDINATES BASED ON NAD83
NOT COVERED BY PROFESSIONAL LIABILITY INSURANCE
NORTH
GRAPHIC SCALE
FIELD / DRAWN : SB / SB 11-17-2012
REPRODUCTION OF THIS MAP AND ALL SHEETS ATTACHED ARE NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER
"RIVERWALK CENTER" FFE=8.08
EXIST. FOUNTAIN
FUTURE 24" OUTFALL PIPE
EXIST 2" GALV WATER SERVICE ABANDONED
EXIST 6" PVC SAN ABANDONED
N1134751.66 E875536.39 CLEANOUT CO-1 TOP ELEV.=8.44 GROUND=7.44
N1134699.19 E875496.36 CLEANOUT CO-2 TOP ELEV.=7.45 GROUND=7.55
N1134635.45 E875446.70 CLEANOUT CO-3 TOP ELEV.= 6.60 GROUND=7.20
N1134607.28 E875370.79 CLEANOUT CO-4 TOP ELEV.= 5.75 GROUND=5.56
PROPOSED MANHOLE N1134597.82 E875314.43 GROUND=5.78
SAN SERVICE OVER FUTURE STORM INV. 2.93; PROPOSED TOP 24" RCP EL 1.30; 1.63 CLR
WATER SERVICE UNDER PROPOSED CONDUIT (MIN. 12" CLR.) TOP OF WS EL = 3.28 BOTTOM CONDUIT EL = 4.30 1.02' CLEAR
FUTURE CONFLICT BASED ON 24" RCP TO BE -1.00 INVERT BOTTOM 2" HDPE EL3.20 TOP 24" RCP 1.25 CLEAR 1.95' COORDINATES TO BE DETERMINED IN FIELD WHEN PIPE IS CONSTRUCTED
WATER SERVICE OVER STORM PIPE (MIN. 12" CLR.) TOP OF 24" RCP EL = 1.54 BOTTOM 2-2"HDPE EL = 3.21 1.67 CLEAR N1134819.84E875279.49
N1134892.48 E875288.42 FORD FITTING 2" HDPE CORP STOP IRRIGATION STUB UP
NEW RPZ
NEW 2" DOMESTIC METER
EXISTING RISERS
EXISTING 1-1/2" METER CURRENT IRRIGATION SERVICE
BENCHMARK "25-27-3" X-CUT NORTH RIM OF SANITARY SEWER MANHOLE ELEVATION 5.405 (NGVD29)
12" CLAY LINE INV. ELEV.
I hereby certify that this land surveying document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Land Surveyor under the laws of the State florida.
CHRISTOPHER J. COONEY L.S. 6777
PAGES OR SHEETS COVERED BY THIS SEAL 1
CAPTEC Engineering, Inc. Civil Engineering Professionals
301 NW Flagler Ave Stuart, Florida 34994 Phone: (772) 692-4344 Fax: (772) 692-4341
Engineering Business No. EB-0007057
REVISIONS
SCALE VERIFICATION
VETERAN'S MEMORIAL PARK ADA AND STORMWATER IMPROVEMENTS FORT PIERCE, FLORIDA
ASBUILT
Joseph W. Capra 301 N.W. Flagler Ave., Ste. 201 Stuart, Florida 34994 P.E. No. 37638
JOB No.: 1456
SHEET C-2 OF 5

CDBG-AB-2