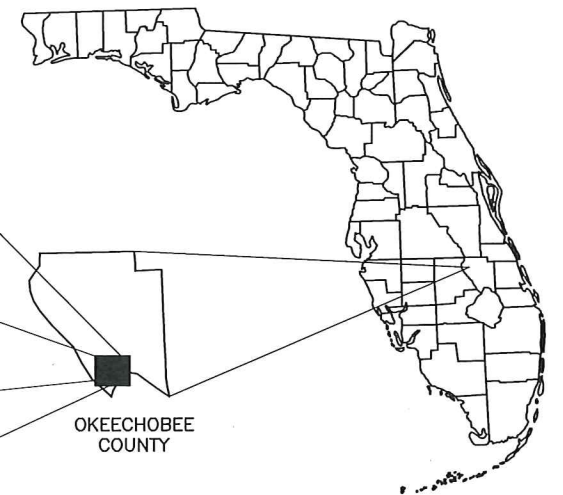
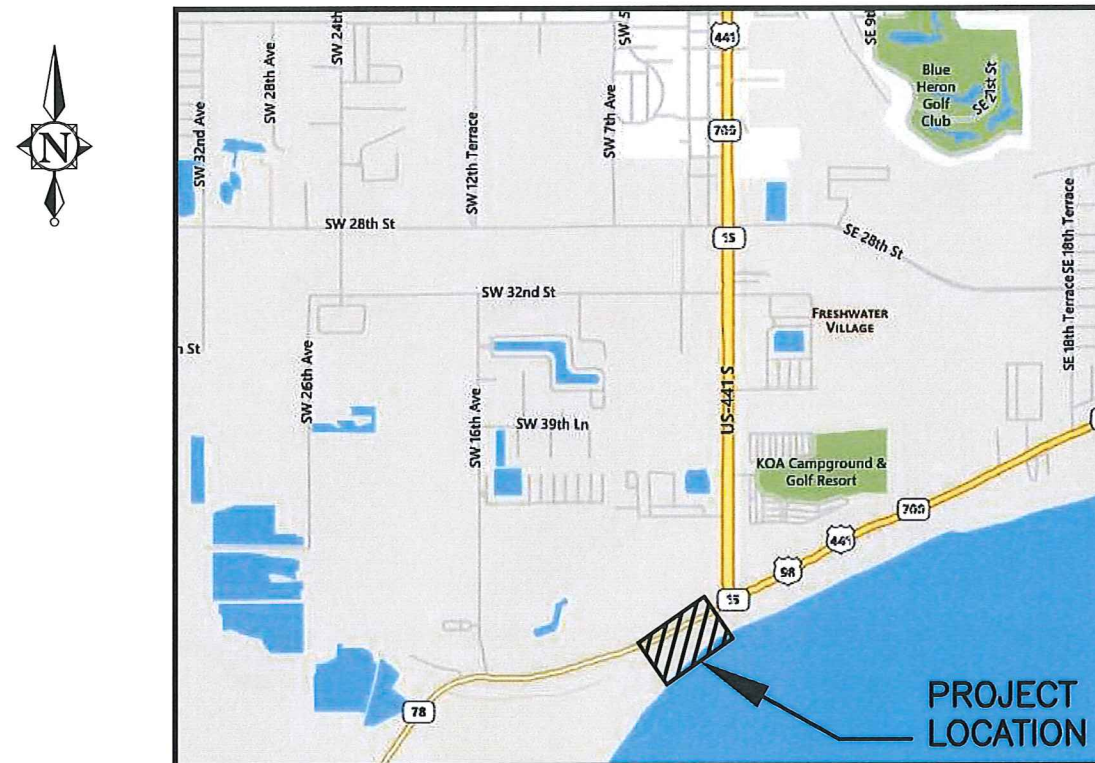


LOCK SEVEN BYPASS CULVERT SYSTEM

A COMPONENT OF THE EAST-WEST CONVEYANCE SYSTEM

LOCATION MAP



VICINITY MAP
SCALE: N.T.S.

BOARD OF COUNTY COMMISSIONERS	
CHAIRMAN—DISTRICT 3	FRANK IRBY
FIRST VICE CHAIR—DISTRICT 2	BRYANT H. CULPEPPER
SECOND VICE CHAIR—DISTRICT 4	TERRY BURROUGHS
COMMISSIONER—DISTRICT 5	MARGARET G. HELTON
COMMISSIONER—DISTRICT 1	VACANT
COUNTY ADMINISTRATOR	ROBBIE CHARTIER

PREPARED FOR:
**OKEECHOBEE
COUNTY**

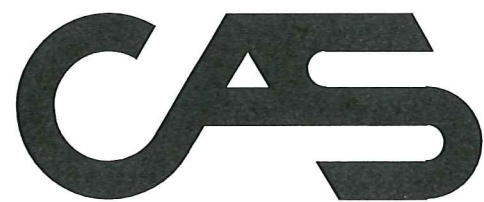


Know what's below.
Call before you dig.

FILE NAME: 00-0903-G-00-COV.dwg

CAS PROJECT No. 15-0903-145

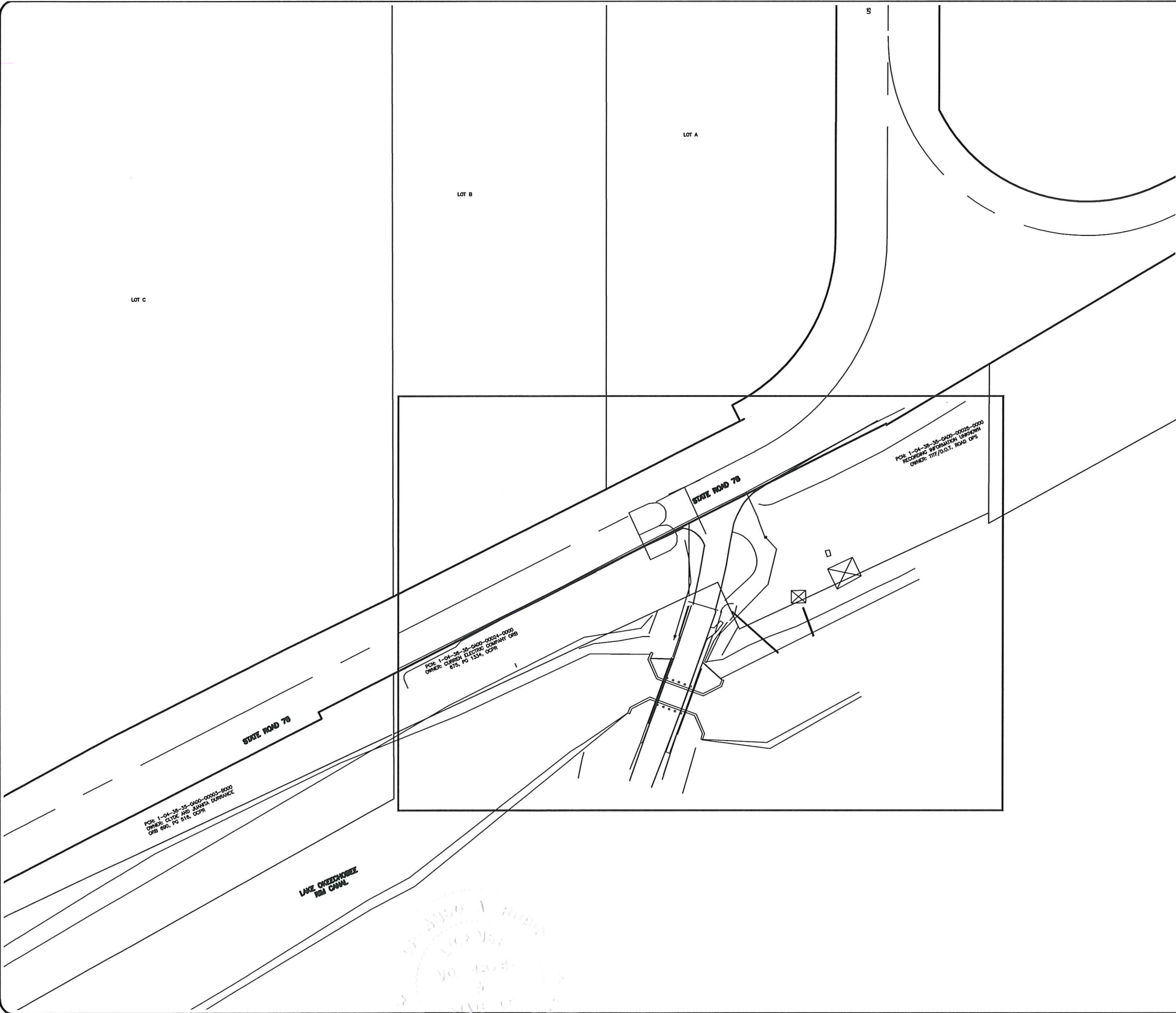
FOR CONSTRUCTION



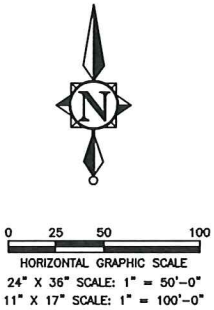
CRAIG A. SMITH & ASSOCIATES
CONSULTING ENGINEERS—PLANNERS—SURVEYORS
7777 GLADES ROAD, SUITE 410 — BOCA RATON, FLORIDA 33434
(561) 314-4445 WWW.CRAIGASMITH.COM
CERTIFICATE OF AUTHORIZATION NUMBER: LB0003110



ORLANDO A. RUBIO, P.E.
DATE 4.29.16
FLORIDA PROFESSIONAL ENGINEER NO. 48265 (CML)



SHEET INDEX		
NUMBER / SHEET		DESCRIPTION
00	G-00	COVER SHEET
01	G-01	KEY SHEET & INDEX
02	G-02	GENERAL NOTES & SPECIFICATIONS
03 - 04	V-01 - V-02	ABBREVIATIONS & LEGEND SHEET
05	V-03	MAP OF EXISTING CONDITIONS
06	C-01	PLAN VIEW
07	C-02	PROFILE VIEWS
08 - 12	C-03 - C-07	STANDARD DETAILS



FOR CONSTRUCTION

NO.	DATE	REVISION	BY

Date: 09/21/15
Designed: OAR
Drawn: KJL
Checked: GRS

APPROVED BY: ORLANDO A. RUBIO, P.E.
DATE: 4.20.16
FLORIDA PROFESSIONAL ENGINEER NO. 48265

CRAIG A. SMITH & ASSOCIATES
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7777 GLADES ROAD, SUITE 410
BOCA RATON, FLORIDA 33434
(561) 314-4445
CERTIFICATE NO. LB0003110

PREPARED FOR:
OKEECHOBEE COUNTY

LOCK SEVEN BYPASS
CULVERT SYSTEM
KEY SHEET
& SHEET INDEX

FILE NAME: 00-0903-G-01-KEY.dwg
LAST SAVED: 10/28/15 - 7:06am
CAS PROJECT NUMBER
15-0903-145

SHEET
G-01

GENERAL NOTES

1. THE LOCATION OF ALL EXISTING UTILITIES ON THE PLAN IS APPROXIMATE. THE CONTRACTOR SHALL LOCATE AND EXPOSE ALL EXISTING UTILITIES TO BE CONNECTED SUFFICIENTLY AHEAD OF CONSTRUCTION TO ALLOW REDESIGN BY THE ENGINEER IF SUCH UTILITIES ARE FOUND TO BE DIFFERENT THAN SHOWN ON THESE PLANS.
2. THE CONTRACTOR SHALL PROTECT ALL UTILITIES AND OTHER IMPROVEMENTS SHOWN ON THESE PLANS AND ALL OTHER UTILITIES AND OTHER IMPROVEMENTS NOT SHOWN. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR REPAIRS OF UTILITIES AND OTHER IMPROVEMENTS DAMAGED DURING CONSTRUCTION AND SHALL MAINTAIN SUFFICIENT PROTECTION TO ALL UTILITIES REQUIRED TO PROTECT THEM FROM DAMAGE AND TO PROTECT THE PUBLIC DURING CONSTRUCTION.
3. CONTRACTOR SHALL NOTIFY CRAIG A. SMITH & ASSOCIATES AT (561) 314-4445 AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
4. THE CONTRACTOR SHALL NOTIFY FLORIDA POWER & LIGHT COMPANY, SPRINT TELEPHONE CO., AND ANY OTHER UTILITY COMPANY WHICH MAY HAVE THEIR UTILITIES WITHIN THE CONSTRUCTION AREAS BEFORE BEGINNING CONSTRUCTION.
5. A PRE-CONSTRUCTION MEETING IS TO BE HELD BETWEEN THE OKEECHOBEE COUNTY, ENGINEER OF RECORD AND CONTRACTOR PRIOR TO COMMENCEMENT OF CONSTRUCTION.
6. PLANS AND SPECIFICATIONS REQUIRE THAT COMPACTED BACKFILL BE PLACED ALONG SIDE OF AND OVER ALL UTILITIES. THE ENGINEER MAY REQUIRE THAT COMPACTION TESTS BE TAKEN TO VERIFY BACKFILL COMPACTION. THE COSTS OF SUCH COMPACTION TESTS WILL BE BORNE BY THE CONTRACTOR.
7. ELEVATIONS SHOWN HEREIN ARE NGVD, 1929 DATUM.
8. THE SEQUENCE OF CONSTRUCTION SHALL BE SUCH THAT ALL UNDERGROUND INSTALLATIONS OF EVERY KIND (INCLUDING SPRINKLERS) SHALL BE PLACED BENEATH THE PAVEMENT AREA AND ITS EDGE PRIOR TO THE CONSTRUCTION OF PAVEMENT. THE PAVEMENT SHALL NOT BE CUT WITHOUT PRIOR APPROVAL OF THE ENGINEER.
9. CONSTRUCTION INSPECTION WILL BE PROVIDED BY THE ENGINEER AND IS REQUIRED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS BEFORE BEGINNING CONSTRUCTION, AND AT LEAST 48 HOURS BEFORE REQUIRING INSPECTION ON EACH AND EVERY PHASE OF WORK.
10. CONSTRUCTION SURVEYING WILL BE PERFORMED BY THE SURVEYORS DESIGNATED BY THE CONTRACTOR. THE CONTRACTOR SHALL CONTACT THE SURVEYOR NOT LESS THAN 48 HOURS BEFORE THE SURVEYORS ARE NEEDED ON-SITE TO STAKEOUT ANY PHASE OF WORK. THE CONTRACTOR SHALL ASSUME THE RESPONSIBILITY OF PROTECTING ALL SURVEY STAKES AND MONUMENTS. REPLACEMENT COSTS OF ALL STAKES SHALL BE BORNE BY THE CONTRACTOR.
11. A MINIMUM THREE (3) SETS OF SHOP DRAWINGS OF ALL MATERIALS BEING USED SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
12. ALL PAVING BASE INSTALLED WITHIN PLANTING AREAS SHALL BE REMOVED IN ITS ENTIRETY PRIOR TO PLACING PLANTER FILL AND/OR TOPSOIL.
13. THE EXISTING ELEVATIONS SHOWN ON THE GRADING PLAN INDICATES THE ELEVATION AT THE POINT DEPICTED ONLY, AND SHOULD NOT BE INTERPRETED AS INDICATING THE ELEVATIONS OF ANY OTHER POINT. THESE EXISTING ELEVATIONS ARE IN NO WAY AN INDICATOR OF SURFACE OR SUBSURFACE SOIL CONDITIONS.

EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL MAKE EVERY EFFORT DURING CONSTRUCTION TO CONTROL WIND AND WATER EROSION OF THE SOIL ON THE SITE.
2. THE CONTRACTOR SHALL CONTROL EXCESSIVE RUNOFF FROM THE PROJECT DURING THE CLEARING AND GRUBBING OPERATION OF THE PROJECT.
3. TYPE I HAY BALES, SILT FENCE & FLOATING TURBIDITY BARRIERS SHALL BE INSTALLED ON THE SITE TO PREVENT EROSION FROM STORM WATER WATER DISCHARGE AND TO PREVENT STORM WATER FROM ENTERING ONTO ADJACENT PROPERTIES. HAY BALES, SILT FENCE AND FLOATING TURBIDITY BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH FOOT INDEX 102 & 103. SILT FENCE SHALL BE PLACED AROUND THE PROJECT AS REQUIRED AND/OR SHOWN ON THE PLANS AND SHALL BE MAINTAINED THROUGHOUT THE ENTIRETY OF THE PROJECT.
4. SHOULD THE SITE BECOME EXCESSIVELY DRY, AND WIND AND SOIL EROSION BECOMES PREVALENT AND A NUISANCE TO THE COMMUNITY, THE CONTRACTOR SHALL WATER AND/OR SEED AND MULCH THE AREA, AND/OR PROVIDE FENCING AS NECESSARY AT NO ADDITIONAL COST TO THE OWNER.

SIGNING AND PAVEMENT MARKING NOTES

1. ALL PAVEMENT MARKINGS WITHIN PUBLIC RIGHT-OF-WAY SHALL BE HIGH INTENSITY REFLECTORIZED THERMOPLASTIC.
2. ALL PAVEMENT MARKINGS ON-SITE SHALL BE PAINT IN ACCORDANCE WITH OKEECHOBEE COUNTY MINIMUM STANDARDS.
3. ALL PAVEMENT MARKINGS FOR PARKING STALLS SHALL BE FOUR INCH WHITE PAINT SPACED 9' FOOT CENTER TO CENTER AS IN ACCORDANCE WITH OKEECHOBEE COUNTY MINIMUM STANDARDS.
4. ALL R1-1 SIGNS SHALL HAVE HIGH INTENSITY SHEETING.

GENERAL NOTES FOR WATER AND SEWER

1. ALL APPLICABLE PERMITS MUST BE OBTAINED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. ALL APPLICABLE FEES AND CHARGES MUST BE PAID PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. THE LOCATION OF EXISTING UTILITIES AS SHOWN ON THE APPROVED PLANS HAVE NOT BEEN FIELD VERIFIED. ANY DISCREPANCY IN OR VARIATION FROM THE APPROVED PLANS IS TO BE BROUGHT TO THE ATTENTION OF THE AUTHORITY BY THE CONTRACTOR.
4. THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES THROUGHOUT THE DURATION OF CONSTRUCTION FOR THE PROTECTION OF EXISTING AND NEWLY INSTALLED UTILITIES AND IMPROVEMENTS FROM DAMAGE, DISRUPTION OF SERVICE, OR DESTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING SUCH MEASURES AS NECESSARY TO PROTECT THE HEALTH, SAFETY AND WELFARE OF THOSE PERSONS HAVING ACCESS TO THE WORK SITE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS OF ALL UTILITIES AND NOTIFICATION OF UTILITY COMPANIES 48 HOURS IN ADVANCE OF CONSTRUCTION.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SCHEDULING AND/OR PAYMENT FOR SUCH TESTS AS MAY BE DEEMED NECESSARY BY THE ENGINEER OF RECORD OR THE AUTHORITY ENGINEER, AND AS CALLED FOR IN THE PLANS AND SPECIFICATIONS.
7. ALL LABOR, MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE PLANS AND CONSTRUCTION SPECIFICATIONS. WHERE CONFLICTS OR OMISSIONS EXIST, THE OKEECHOBEE COUNTY CONSTRUCTION STANDARDS AND SPECIFICATIONS SHALL DICTATE. SUBSTITUTIONS AND DEVIATIONS FROM PLANS AND SPECIFICATIONS SHALL BE PERMITTED ONLY WHEN WRITTEN APPROVAL HAS BEEN ISSUED BY THE ENGINEER.
8. THE CONTRACTOR SHALL MAINTAIN A CURRENT APPROVED SET OF CONSTRUCTION PLANS ON-SITE. THE PLANS ARE TO BE MADE AVAILABLE TO THE AUTHORITY ENGINEER OR HIS DESIGNEE UPON REQUEST.
9. THE ENGINEER OF RECORD SHALL MAKE SUFFICIENT INSPECTIONS OF THE WORK TO ENABLE HIM TO CERTIFY THE INSTALLATION AS BEING IN CONFORMANCE WITH THE APPLICABLE STANDARDS AND SPECIFICATIONS.
10. IN ADDITION TO THE ENGINEER OF RECORD, THE OKEECHOBEE UTILITY AUTHORITY (OUA) WILL CARRY OUT INSPECTIONS OF THE WORK. WILL INFORM THE CONTRACTOR WHEN TO BACKFILL THE WORK AND WILL WITNESS PRESSURE, BACTERIOLOGICAL AND INFILTRATION/EXFILTRATION TESTS.
11. PRIOR TO ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL PROVIDE THOSE ITEMS AS SPECIFIED IN THE OUA MANUAL OF MINIMUM STANDARDS.
12. NO DEVIATION FROM APPROVED PLANS SHALL BE PERMITTED WITHOUT THE WRITTEN CONSENT OF OUA.
13. SHOP DRAWINGS FOR ALL MATERIAL/COMPONENTS INSTALLED SHALL BE SUBMITTED BY THE CONTRACTOR THROUGH THE ENGINEER OF RECORD TO THE COUNTY FOR REVIEW. THE CONTRACTOR AND ENGINEER SHALL REVIEW EACH SUBMITTAL PRIOR TO PASSING ON TO THE NEXT LEVEL. SHOP DRAWINGS SUBMITTALS SHALL BE GROUPED INTO CATEGORIES SUCH AS WATER, WASTEWATER, PUMP STATION, ETC.
14. 4" MARKER BALLS (3M TYPE) SHALL BE USED AT ALL WATER MAIN & FORCE MAINS AT FITTINGS, CHANGE OF HORIZONTAL DIRECTION AND VALVES.
15. OUA WORKING HOURS FOR INSPECTIONS:
MONDAY – THURSDAY; 7:00AM – 5:30PM

GRADING AND DRAINAGE SPECIFICATIONS

1. ALL ORGANIC OR DELETERIOUS MATERIAL SHALL BE REMOVED FROM WITHIN 10 FEET OF ANY EDGE OF PAVEMENT OR BUILDING. ANY SUCH MATERIAL SHALL BE REPLACED BY APPROVED GRANULAR FILL WHICH SHALL BE COMPACTED TO 98% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.
2. SUBGRADE TO BE COMPACTED TO 98% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180 (UNLESS OTHERWISE NOTED).
3. SHELLROCK BASE COURSE SHALL CONFORM TO THE REQUIREMENTS OF SECTION 911 OF FLORIDA D.O.T. STANDARD SPECIFICATIONS EXCEPT THAT THE MINIMUM PERCENTAGE OF CARBONATES OF CALCIUM AND MAGNESIUM SHALL BE 60%. SHELLROCK BASE MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF INTERIM FDOT SPECIFICATION 913-A.
4. ASPHALTIC CONCRETE COURSE TYPE S-1 SHALL CONFORM TO THE REQUIREMENTS OF SECTIONS 334-1 THROUGH 334-5, INCLUSIVE, OF FLORIDA D.O.T. STANDARD SPECIFICATIONS. ACSC TYPE S-1 SHALL CONFORM TO THE REQUIREMENTS OF SECTIONS 333-1 THROUGH 333-5, INCLUSIVE.
5. PRIME COAT AND TACK COAT FOR BASE COURSES SHALL CONFORM TO THE REQUIREMENTS OF SECTIONS 300-1 THROUGH 300-7 OF FLORIDA D.O.T. STANDARD SPECIFICATIONS. PRIME COAT SHALL BE APPLIED AT A RATE OF 0.25 GALLONS PER SQUARE YARD AND TACK COAT AT A RATE OF 0.08 GALLONS PER SQUARE YARD UNLESS A VARIATION RATE IS APPROVED BY THE ENGINEER.
6. EMBANKMENT AND SUBGRADE SHALL BE TESTED EVERY 500 FEET IN ROADWAYS AND EVERY 2500 SQUARE FEET IN PARKING AREAS PER 12 INCH LIFT.
7. BASE COURSE SHALL BE TESTED EVERY 500 FEET OR LESS PER LIFT IN ROADWAYS AND EVERY 2500 SQUARE FEET IN PARKING AREAS. A MINIMUM OF THREE DENSITY TESTS SHALL BE MADE ON EACH DAY'S FINAL COMPACTION OPERATION ON EACH COURSE.
8. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
9. PRECAST CONCRETE MANHOLES AND CATCH BASINS SHALL MEET THE REQUIREMENTS OF A.S.T.M. SPECIFICATIONS, C-478 AND 647.
10. CONCRETE FOR PRECAST MANHOLES AND CATCH BASINS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS.
11. REINFORCING STEEL FOR MANHOLES AND CATCH BASINS SHALL CONFORM TO A.S.T.M. SPECIFICATIONS A-615 AND A-305, LATEST REVISION.
12. ALL RE-BAR SPLICES IN CONCRETE STRUCTURES SHALL HAVE A MINIMUM LAP OF 24 BAR DIAMETER.
13. ALL JOINTS AND PENETRATIONS IN CONCRETE STRUCTURES SHALL BE FINISHED WATERTIGHT.
14. ALL SPACES AROUND PIPING ENTERING OR LEAVING MANHOLES AND CATCH BASINS SHALL BE COMPLETELY GROUTED USING 2:1 CEMENT MORTAR.
15. ALL HIGH DENSITY POLYETHYLENE PIPE (HDPE) SHALL CONFORM TO THE REQUIREMENT OF A.S.T.M. SPECIFICATIONS F667-95 AND AASHTO SPECIFICATIONS M294-981, CLASS C UNLESS OTHERWISE APPROVED BY THE ENGINEER.
16. PIPE SECTIONS SHALL BE JOINED BY INTEGRAL GASKET BELL AND SPIGOT PIPE OR CLEATED COUPLING (ADS PRO LINK "S" OR APPROVED EQUAL)
17. ALL LABOR, MATERIALS, AND METHODS OF CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE MINIMUM ENGINEERING AND CONSTRUCTION STANDARDS ADOPTED BY CONSTRUCTION SPECIFICATIONS. WHERE CONFLICTS OR OMISSIONS EXIST, THE OKEECHOBEE COUNTY STANDARDS SHALL DICTATE. SUBSTITUTIONS AND DEVIATIONS FROM PLANS AND SPECIFICATIONS SHALL BE PERMITTED ONLY WHEN WRITTEN APPROVAL HAS BEEN ISSUED BY THE ENGINEER.
18. WHERE CONNECTIONS TO AN EXISTING DRAINAGE SYSTEM ARE PROPOSED, SAID EXISTING DRAINAGE STRUCTURES AND LINES SHALL BE CLEARED OF ALL SILT AND OTHER DEBRIS PRIOR TO CONNECTIONS BEING MADE, AND WHERE THE EXISTING DRAINAGE SYSTEM INCLUDES DITCHES, SAID DITCHES SHALL BE CLEARED AND REWORKED, AS NECESSARY, TO RESTORE THEM TO AN APPROVED DESIGN SECTION. SYSTEMS ARE TO BE CLEARED AND/OR GRADED TO THE POINT OF LEGAL POSITIVE OUTFALL.
19. ALL EMBANKMENT/SPREAD & FILL AREAS SHALL BE COMPACTED TO MIN. 95% OF AASHTO T-180, UNLESS NOTED OTHERWISE.

GENERAL WATER SYSTEM NOTES

1. FITTINGS 4" AND LARGER SHALL BE CAST IRON OR DUCTILE IRON, MECHANICAL JOINT, MEETING ANSI/AWWA C110/A21.10-87 SPECIFICATIONS. FITTINGS MUST BE EPOXY (24 MILS) LINED AND SEAL COATED PER ANSI/AWWA C-104/A21.4-5.
2. GATE VALVES 4" AND LARGER SHALL BE RESILIENT SEAT, NON- RISING STEM AND SHALL MEET ANSI/AWWA C-509-87 (LATEST REVISION) SPECIFICATION.
3. FIRE HYDRANTS SHALL BE INSTALLED WITH THE CENTER OF THE HOSE NOZZLE 18" ABOVE FINISHED GRADE.
4. PAVEMENT RESTORATION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
5. ALL TRENCHING, PIPE-LAYING, BACKFILL, PRESSURE TESTING AND DISINFECTING MUST COMPLY WITH OKEECHOBEE COUNTY TECHNICAL SPECIFICATIONS.
6. ALL CONNECTIONS TO EXISTING MAINS SHALL BE MADE UNDER THE DIRECTION OF THE UTILITIES DEPARTMENT.
7. ALL PIPE, ETC. SHALL BE TESTED UNDER A CONSTANT PRESSURE OF 150 PSI FOR A MINIMUM TEST OF 2 HOURS AND SHALL NOT EXCEED THE LEAKAGE REQUIREMENTS AS PER ANSI/AWWA SPECIFICATIONS OF C600-87 LEAKAGE FORMULA:
$$Q = 133,200 \sqrt{P}$$

Q = ALLOWABLE LEAKAGE IN GALLONS PER HOUR
S = TOTAL LENGTH OF PIPE TESTED IN FEET
D = DIAMETER OF THE PIPE TESTED IN INCHES
P = AVERAGE TEST PRESSURE IN POUNDS PER SQUARE INCH.
8. THE MINIMUM DEPTH OF COVER OVER WATERMAIN SHALL BE 30", EXCEPT IN THE CASE OF PVC PIPE WHICH REQUIRES A MINIMUM DEPTH OF COVER OF 36".
9. DISINFECTION OF MAINS SHALL COMPLY WITH AWWA C651-92 STANDARD BACTERIOLOGICAL SAMPLING POINTS SHALL BE DESIGNATED ON THE ENGINEERING PLANS.
10. MARKER TAPE: MARKING TAPE (BLUE) SHALL BE INSTALLED WITH ALL NEW WATERMAINS CONTINUOUSLY FOR THE ENTIRE LENGTH OF THE LINE. THE TAPE SHALL BE METALLIZED AND SHALL BE IMPRINTED WITH THE CONTINUOUS MESSAGE "CAUTION - WATERMAIN BURIED BELOW". THE TAPE MUST CONFORM TO ALLEN SYSTEMS, INC. DETECTATAPE OR AN APPROVED EQUAL. MINIMUM WIDTH SHALL BE 4" AND MAXIMUM DEPTH OF BURIAL SHALL BE 18".
11. WATER MAINS 6" AND LARGER SHALL BE PVC SLIP AND GASKETED C900 DR18, AND SHALL BE DESIGNED FOR 160 PSI WORKING PRESSURE.
12. ALL SHOP DRAWINGS SHALL BE APPROVED BY OKEECHOBEE COUNTY THROUGH ENGINEER OF RECORD PRIOR TO CONSTRUCTION.
13. ALL FIRE HYDRANTS SHALL BE TRAFFIC BREAKAWAY CLOW AMERICAN DARLING OR MUELLER CENTURION TRAFFIC TYPE.

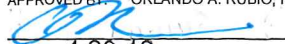
STANDARD SEPARATION STATEMENT
FOR WATER & SEWER CONFLICTS

1. SANITARY SEWERS, FORCEMAINS, SEWER LATERALS AND STORM SEWERS SHOULD ALWAYS CROSS UNDER WATER MAINS OR WATER SERVICES WHENEVER POSSIBLE. SANITARY SEWERS, FORCE MAINS, SEWER LATERALS AND STORM SEWERS CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE WHENEVER POSSIBLE. WHERE SANITARY SEWERS, FORCEMAINS, SEWER LATERALS AND STORM SEWERS MUST CROSS A WATERMAIN WITH LESS THAN 18 INCHES VERTICAL DISTANCE, BOTH THE SEWER AND THE WATER MAIN SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE (DIP) AT THE CROSSING. (DIP IS NOT REQUIRED FOR STORM SEWERS). SUFFICIENT LENGTHS OF DIP MUST BE USED TO PROVIDE A MINIMUM SEPARATION OF 10 FEET BETWEEN ANY TWO JOINTS. ALL JOINTS ON THE WATER MAIN WITHIN 20 FEET OF THE CROSSING MUST BE MECHANICALLY RESTRAINED. A MINIMUM VERTICAL CLEARANCE OF 6 INCHES MUST BE MAINTAINED AT THE CROSSING. ALL CROSSINGS SHALL BE ARRANGED SO THAT THE SEWER PIPE JOINTS AND THE WATERMAIN PIPE JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING (PIPES CENTERED ON THE CROSSING). WHERE A NEW PIPE CONFLICTS WITH AN EXISTING PIPE WITH LESS THAN 18" VERTICAL CLEARANCE, THE NEW PIPE SHALL BE CONSTRUCTED OF DIP (EXCEPT STORM SEWERS) AND THE NEW PIPE SHALL BE ARRANGED TO MEET THE CROSSING REQUIREMENTS ABOVE.
2. A MINIMUM 10-FOOT HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN ANY TYPE OF SEWER AND WATER MAIN IN PARALLEL INSTALLATIONS WHENEVER POSSIBLE. IN CASES WHERE IT IS NOT POSSIBLE TO MAINTAIN A 10-FOOT HORIZONTAL SEPARATION, THE WATER MAIN MUST BE LAID IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER OR FORCE MAIN AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER. WHERE IT IS NOT POSSIBLE TO MAINTAIN A VERTICAL DISTANCE OF 18 INCHES IN PARALLEL INSTALLATIONS, THE WATER MAIN SHALL BE CONSTRUCTED OF DIP AND THE SEWER OR THE FORCE MAIN SHALL BE CONSTRUCTED OF DIP (EXCEPT STORM SEWERS) WITH A MINIMUM VERTICAL DISTANCE OF 6 INCHES. THE WATER MAIN SHOULD ALWAYS BE ABOVE THE SEWER. JOINTS ON THE WATER MAIN SHALL BE LOCATED AS FAR APART AS POSSIBLE FROM JOINTS ON THE SEWER OR FORCE MAIN (STAGGERED JOINTS).
3. ALL DIP SHALL BE CLASS 50 OR HIGHER, DUCTILE IRON FITTINGS SHALL BE CLASS 350. ADEQUATE PROTECTIVE MEASURES AGAINST CORROSION SHALL BE USED.
4. MAXIMUM OBTAINABLE SEPARATION OF RECLAIMED WATER LINES AND DOMESTIC WATER LINES SHALL BE PRACTICED. A MINIMUM HORIZONTAL SEPARATION OF FIVE FEET (CENTER TO CENTER) OR THREE FEET (OUTSIDE TO OUTSIDE), SHALL BE MAINTAINED BETWEEN RECLAIMED WATER LINES AND POTABLE WATER MAINS AND BETWEEN SEWAGE RECLAIMED WATER LINES AND COLLECTION LINES. A MINIMUM VERTICAL CLEARANCE OF 18 INCHES MUST BE MAINTAINED BETWEEN RECLAIMED WATER LINES AND POTABLE WATER MAINS OR SEWAGE COLLECTION LINES AND SEWER LATERALS. AT CROSSINGS PROVISIONS OF F.A.C. RULE 17-604 AND 10 STATE STANDARDS APPLY.

FOR CONSTRUCTION

NO.	DATE	REVISION	BY

Date: 09/21/15
Designed: OAR
Drawn: KJL
Checked: GRS

APPROVED BY: ORLANDO A. RUBIO, P.E.

4.20.16
DATE
FLORIDA PROFESSIONAL ENGINEER NO. 48265

CRAIG A. SMITH & ASSOCIATES
CONSULTING ENGINEERS-PLANNERS-SURVEYORS

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CERTIFICATE NO. LB0003110


PREPARED FOR:
OKEECHOBEE COUNTY

LOCK SEVEN BYPASS
CULVERT SYSTEM
GENERAL NOTES
& SPECIFICATIONS

FILE NAME: 00-0903-G-02-GEN.dwg
LAST SAVED: 10/05/15 - 1:29pm
CAS PROJECT NUMBER
15-0903-145

SHEET
G-02

GENERAL ABBREVIATIONS

ABRV	DESCRIPTION	ABRV	DESCRIPTION
A/C	AIR CONDITION PAD	NTS	NOT TO SCALE
ACP	ASBESTOS CEMENT PIPE	ORB	OFFICIAL RECORDS BOOK
ALUM	ALUMINUM	O / S	OFF SET
APPROX	APPROXIMATELY	(P)	PLAT
B.C.R.	BROWARD COUNTY RECORDS	P.B.	PLAT BOOK
B/L	BASELINE	P.B.C.R.	PALM BEACH COUNTY RECORDS
BOTT	BOTTOM	PC	POINT OF CURVE
(C)	CALCULATED	PCP	PERMANENT CONTROL POINT
CIP	CAST IRON PIPE	PGS	PAGES
CL	CENTER LINE	PHDPE	PERFORATED HIGH DENSITY POLYETHYLENE
CONC	CONCRETE	PI	POINT OF INTERSECTION
D	DEED/DESCRIPTION	PK&D	PK NAIL AND DISK
D.E.	DRAINAGE EASEMENT	PRC	POINT OF REVERSE CURVE
DIA	DIAMETER	PROP	PROPOSED
DIP	DUCTILE IRON PIPE	PRM	PERMANENT REFERENCE MARKER
ELEV	ELEVATION	PSM	PROFESSIONAL SURVEYOR AND MAPPER
EOW	EDGE OF WATER	PT	POINT OF TANGENCY
EP	EDGE OF PAVEMENT	PVC	POLY VINYL CHLORIDE
EXIST	EXISTING	R	RADIUS
FF	FINISHED FLOOR	RCP	REINFORCED CONCRETE PIPE
FND	FOUND	R.E.	RIM ELEVATION
FPL	FLORIDA POWER & LIGHT	RGE	RANGE
GFF	GARAGE FINISHED FLOOR	R/W	RIGHT-OF-WAY LINE
HDPE	HIGH DENSITY POLYETHYLENE	SEC	SECTION
I.E.	INVERT ELEVATION	TOB	TOP OF BANK
IR	IRON ROD	TOE	TOE OF SLOPE
IR&C	IRON ROD AND CAP	TOP	TOP OF PIPE
IP	IRON PIPE	TWP	TOWNSHIP
L	ARC LENGTH	TYP	TYPICAL
LB	LICENSED BUSINESS	U.E.	UTILITY EASEMENT
LF	LINEAR FEET	VCP	VITRIFIED CLAY PIPE
(M)	MEASURED	Δ	DELTA

STANDARD LINETYPES

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	BASELINE		BURIED TRAFFIC CONTROL
	PARCEL LINE		COMMUNICATIONS DUCTBANK CL
	BOUNDARY LINE		FIBER OPTIC DUCTBANK CL
	EASEMENT LINE		OVERHEAD WIRE
	LOT LINE		BURIED ELECTRIC
	RIGHT OF WAY LINE		BURIED STREET LIGHTING
	CENTER LINE		ELECTRICAL DUCTBANK CENTER LINE
	SECTION LINE		FORCE MAIN
	LANDSCAPE LINE		SANITARY SEWER
	EDGE OF WATER		SANITARY SERVICE
	RR TRACKS		VACUUM SEWER
	PLAT LINE		STORM DRAIN
	CURB & GUTTER		FIRE LINE
	FENCE LINE		RAW WATER LINE
	GUARD RAIL		WATER LINE MAIN
	UNKNOWN UTILITY		WATER LINE CHILLED
	ABANDONED UTILITY		WATER SERVICE
	NON FIELD VERIFIED UTILITY		IRRIGATION LINE
	BURIED CABLE TV		GAS LINE ABOVE GROUND
	BURIED COMMUNICATIONS LINE		BURIED GAS LINE
	FIBER OPTIC CABLE		BURIED GAS SERVICE LINE
	BURIED TELEPHONE		FUEL LINE

GENERAL SYMBOL LEGEND

SYM.	DESCRIPTION	SYM.	DESCRIPTION
	AERIAL TARGET		GAS METER
	BENCH MARK		GAS MANHOLE
	CONCRETE MONUMENT		GAS VALVE
	IRON PIPE		MONITORING WELL
	IRON ROD		VAPOR EXTRACTION POINT
	NAIL & DISC		FUEL PUMP DISPENSER
	TRAVERSE POINT		GAS MARKER
	IRON ROD AND CAP		VENT PIPE
	X CUT		GAS VALVE BOX
	DRILL HOLE		FUEL FILL CAP
	11.25' PIPE BEND		TELEPHONE JUNCTION BOX
	22.5' PIPE BEND		TELEPHONE RISER
	45' PIPE BEND		TELEPHONE MANHOLE
	90' PIPE BEND		FIBER OPTIC CABLE MARKER
	CROSS PIPE FITTING		CATV RISER
	TEE PIPE FITTING		BACKFLOW PREVENTOR
	WYE PIPE FITTING		BLOW OFF
	REDUCER PIPE FITTING		AIR RELEASE VALVE
	ELECTRIC MANHOLE		SAMPLE POINT
	ELECTRIC MOTOR		FIRE HYDRANT
	ELECTRICAL OUTLET		SIAMESE CONNECTION
	GROUND LIGHT		WATER METER
	ELECTRIC JUNCTION BOX		WATER VALVE
	ELECTRIC METER		WATER SPIGOT
	LIGHT POLE BOX		IRRIGATION CONTROL VALVE
	TRAFFIC CONTROL BOX		IRRIGATION METER
	ELECTRICAL RISER		SPRINKLER
	TRANSFORMER		CITRUS TREE
	GUY WIRE		CYPRESS TREE
	GUY POLE		GENERIC TREE
	LIGHT POLE		OAK TREE
	CONCRETE UTILITY POLE		PINE TREE
	METAL UTILITY POLE		PALM TREE
	WOOD UTILITY POLE		MANGROVE
	MAST ARM POLE		GROUND PENETRATING RADAR
	CLEAN OUT		BORING HOLE
	SANITARY MANHOLE		METER (UNKNOWN)
	STUB OUT		BOLLARD
	STAND PIPE		COLUMN
	SEWER VALVE		MAIL BOX
	CATCH BASIN		FLAG POLE
	STORM DRAIN MANHOLE		HANDICAP MARKER
	YARD DRAIN		MANHOLE (UNKNOWN)
	CURB INLET		SATELLITE DISH
	CURB INLET W/ MANHOLE		SIGN
	CURB INLET W/ GRATE		PARKING METER
	CI W/ MANHOLE & GRATE		POST
			UTILITY BOX
			UTILITY RISER
			CEMETERY HEAD STONE

STANDARD HATCH PATTERNS

SYM	DESCRIPTION	SYM	DESCRIPTION
	CONCRETE		STONE
	BRICK		ASPHALT

SURVEYOR'S NOTES:

- REPRODUCTION OF THIS MAP ARE NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.
- ELEVATIONS SHOWN HEREON ARE RELATIVE TO NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 1929) AS CONVERTED FROM NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 1988) AND BASED ON THE PUBLISHED NATIONAL GEODETIC SURVEY (N.G.S.) CONTROL STATIONS UTILIZED FOR THIS SURVEY (SEE NOTE 6).
- COORDINATES SHOWN HEREON ARE RELATIVE TO THE FLORIDA STATE PLANE COORDINATE GRID SYSTEM (EAST ZONE) AS RELATED TO NORTH AMERICAN DATUM OF 1983 (NAD '83/2011 ADJ) AND ARE BASED ON THE NATIONAL GEODETIC SURVEY (N.G.S.) CONTROL STATIONS UTILIZED FOR THIS SURVEY (SEE NOTE 6).
- BEARINGS SHOWN HEREON ARE RELATIVE TO GRID NORTH AS ESTABLISHED ALONG THE NORTH LINE OF THE NW 1/4 OF SECTION 4, TOWNSHIP 38 S, RANGE 35 E (N 89° 55' 30" E).
- UNDERGROUND IMPROVEMENTS, I.E. FOOTINGS, UTILITIES, DRAINAGE, ETC. NOT VISIBLE TO THE SURVEYOR ARE NOT SHOWN ON THIS SURVEY.
- N.G.S. CONTROL STATIONS USED FOR THIS SURVEY INCLUDE:

DESIGNATION	NORTHING	EASTING	ELEVATION NGVD 1929
TIDAL 2	1045765.625	721455.250	20.17
H357	1062985.344	738085.699	46.63
T528	1060066.085	723101.135	29.27
W191	1093206.475	713876.525	35.33
V191 RESET	1087957.141	713450.016	32.00
W502	1105640.833	715320.091	51.79
- SURVEY DATA ALONG THE NORTH LINE OF THE NW 1/4 OF SECTION 4, TOWNSHIP 38 S, RANGE 35 E, WAS TAKEN FROM A PREVIOUS SURVEY PERFORMED IN 2007 AND IS SHOWN HEREON FOR INFORMATIONAL PURPOSES. THIS AREA HAS NOT BEEN UPDATED BY THIS FIRM.
- THERE MAY BE EASEMENTS, RIGHT-OF-WAYS AND/OR RESTRICTIONS OF RECORD NOT SHOWN HEREON. NO SEARCH OF THE PUBLIC RECORDS WAS PERFORMED BY THIS FIRM OTHER THAN TO PROVIDE THE OWNER'S INFORMATION ADJACENT TO THE SURVEYED AREAS FOR INFORMATIONAL PURPOSES.

NO.	DATE	FB/PG	DWN	SPECIFIC PURPOSE SURVEY	RDK
1	10/06/16	1886/51	SEE		
				REVISION	CKD

PREPARED FOR
OKEECHOBEE COUNTY
4.20.16

CRAIG A. SMITH & ASSOCIATES
CONSULTING ENGINEERS-PLANNERS-SURVEYORS
7777 GLADES ROAD, SUITE 410
BOCA RATON, FLORIDA 33434
(561) 314-4445
CERTIFICATE NO. LB0003110

ABBREVIATIONS & LEGEND

LOCK SEVEN BYPASS
CULVERT SYSTEM
SURVEY LEGEND, SYMBOLS
& ABBREVIATIONS

FILE NAME: 10-0903-V-01-LGND.dwg
LAST SAVED: 02/09/16 - 2:44pm
CAS PROJECT NUMBER
15-0903-145

SHEET
V-01
OF
02

PIPE FITTINGS

FITTING DESCRIPTION	SYMBOL			
	FLANGED	MECH	P.V.C.	SINGLE LINE
PROPOSED 11.25' BEND				
PROPOSED 22.5' BEND				
PROPOSED 45' BEND				
PROP. 45' BEND (TURN DOWN)				
PROP. 45' BEND (TURN UP)				
PROPOSED 90' BEND				
PROP. 90' BEND (TURN DOWN)				
PROP. 90' BEND (TURN UP)				
PROPOSED CROSS				
PROPOSED TEE				
PROP. TEE (TURN UP)				
PROP. TEE (TURN DOWN)				
PROPOSED WYE OR LATERAL				
FLANGE FITTING FRONT VIEW				
FLANGE (UNION) SIDE / TOP VIEW				
PROPOSED CHECK VALVE				
PROPOSED GATE VALVE SIDE VIEW				
PROPOSED GATE VALVE TOP VIEW				
PROPOSED BALL VALVE				
PROPOSED PLUG VALVE				
PROPOSED REDUCER				
PROP. CAP W/ RESTRAINED JOINT				
PROP. PLUG W/ RESTRAINED JOINT				

SYMBOL DESCRIPTION	SYM.	SYMBOL DESCRIPTION	SYM.
SANITARY AIR RELEASE VALVE		PRESSURE GAUGE	
CORP STOP		VENT AND FILTER	
COUPLING SIDE / TOP VIEW		MAG METER	
GRUVLOK FITTING		WATER LINE AIR RELEASE VALVE	
KAMLOK FITTING		WALL PIPE	

SYMBOL DESCRIPTION	SYM.
PROP. FIRE HYDRANT ASSEMBLY	
PROP. DOUBLE GATE VALVE	
PROPOSED GLOBE VALVE	
PROPOSED CAP AND BLOWOFF	
PROP. BACK FLOW PREVENTER	

GENERAL SYMBOL LEGEND

SYMBOL DESCRIPTION	SYM.	SYMBOL DESCRIPTION	SYM.
BACTERIOLOGICAL SAMPLING POINT		MANHOLE	
PROPOSED GRADE		PIPE BREAK	
BOLLARD		GRADING FLOW	
EXISTING TREE		PIPE FLOW	
EXISTING SIGN		CLEAN OUT	
EXISTING GUARD RAIL		SANITARY MANHOLE	
EXISTING CULVERT		FIRE HYDRANT	
UTILITY POLES		SEWER VALVE	
CATCH BASIN		WATER VALVE	
STORM MANHOLE		WATER METER	

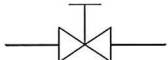
LINE WEIGHTS

EXISTING
SHADED SOLID LINES & TEXT DENOTE EXISTING EQUIPMENT, STRUCTURES AND WORK.

FUTURE
NON-SHADED DASHED LINES & TEXT DENOTE FUTURE EQUIPMENT, STRUCTURES AND WORK.

PROPOSED
NON-SHADED, BOLD, SOLID LINES & TEXT DENOTE PROPOSED EQUIPMENT, STRUCTURES AND WORK.

NOTE:
FOR GRAPHICAL CLARIFICATION ON PLANS CONTAINING BACKGROUND AERIAL PHOTOS EXISTING ITEMS ARE SHOWN HOLLOW WHERE AS PROPOSED ARE SHOWN SOLID.



EXISTING



PROPOSED

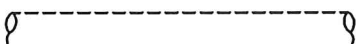
PIPE SYMBOLS



EXISTING PIPE BELOW GROUND



EXISTING PIPE ABOVE GROUND

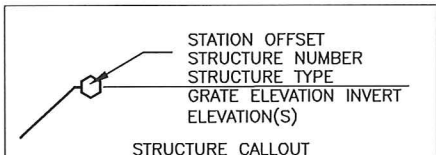


PROPOSED PIPE BELOW GROUND

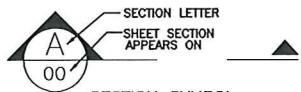


PROPOSED PIPE ABOVE GROUND

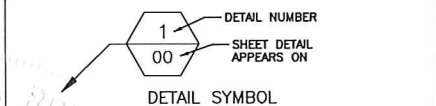
TAGS



STRUCTURE CALLOUT



SECTION SYMBOL



DETAIL SYMBOL

NOTE: THE LEGEND SHOWN HEREON IS REPRESENTATIVE OF ALL CAS DRAFTING STANDARDS AND IS NOT PROJECT SPECIFIC.

PATTERNS

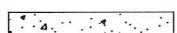
SYMBOL DESCRIPTION



PROPOSED ASPHALT



PROPOSED PAVEMENT RESTORATION



PROPOSED CONCRETE



PROPOSED WORK



DEMOLITION

FOR CONSTRUCTION

NO.	DATE	REVISION	BY

Date: 09/21/15
Designed: OAR
Drawn: KJL
Checked: GRS

APPROVED BY: ORLANDO A. RUBIO, P.E.
4.20.16
DATE
FLORIDA PROFESSIONAL ENGINEER NO. 48265

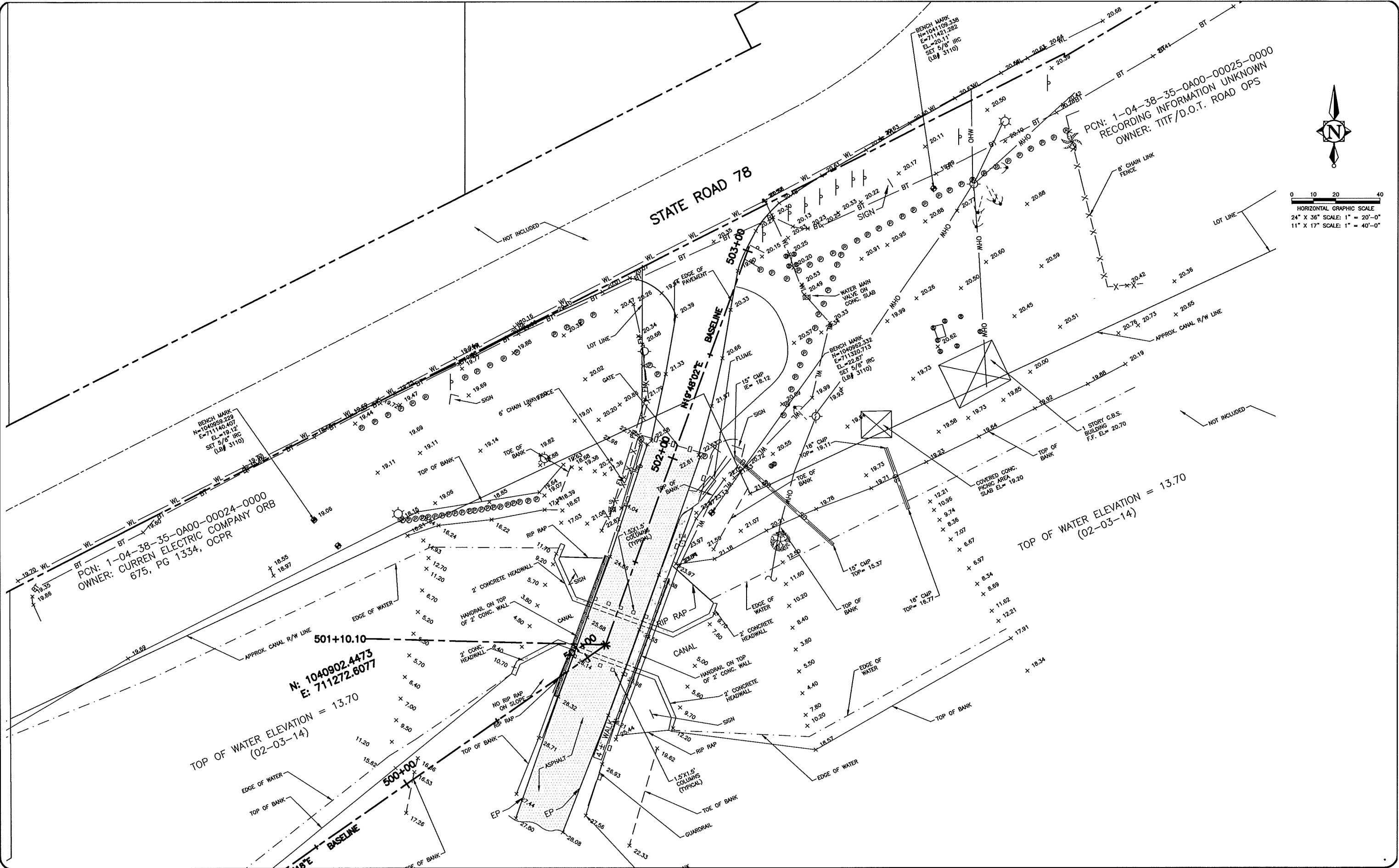
CRAIG A. SMITH & ASSOCIATES
CONSULTING ENGINEERS-PLANNERS-SURVEYORS
7777 GLADES ROAD, SUITE 410
BOCA RATON, FLORIDA 33434
(561) 314-4445
CERTIFICATE NO. LB0003110

PREPARED FOR:
OKEECHOBEE COUNTY

LOCK SEVEN BYPASS
CULVERT SYSTEM
CIVIL ABBREVIATIONS
& LEGEND SHEET

FILE NAME: 10-0903-V-02-LGND.dwg
LAST SAVED: 09/21/15 - 1:56pm
CAS PROJECT NUMBER
15-0903-145

SHEET
V-02



NO.	DATE	FB/PG	DWN	SPECIFIC PURPOSE SURVEY	RDK
1	10/06/16	1886/51	SEE	SPECIFIC PURPOSE SURVEY	RDK
REVISION					CKD

PREPARED FOR

OKEECHOBEE COUNTY

4.20.16

CRAIG A. SMITH & ASSOCIATES

CONSULTING ENGINEERS-PLANNERS-SURVEYORS

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BOCA RATON, FLORIDA 33434

(561) 314-4445

CERTIFICATE. NO. LB0003110

MAP OF

EXISTING CONDITIONS

LOCK SEVEN BYPASS

CULVERT SYSTEM

MAP OF EXISTING CONDITIONS

FILE NAME: 10-0903-V-03-SRVY.dwg

LAST SAVED: 02/09/16 - 2:43pm

CAS PROJECT NUMBER

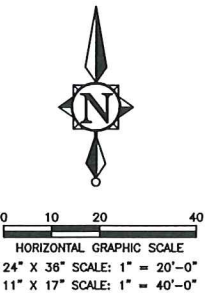
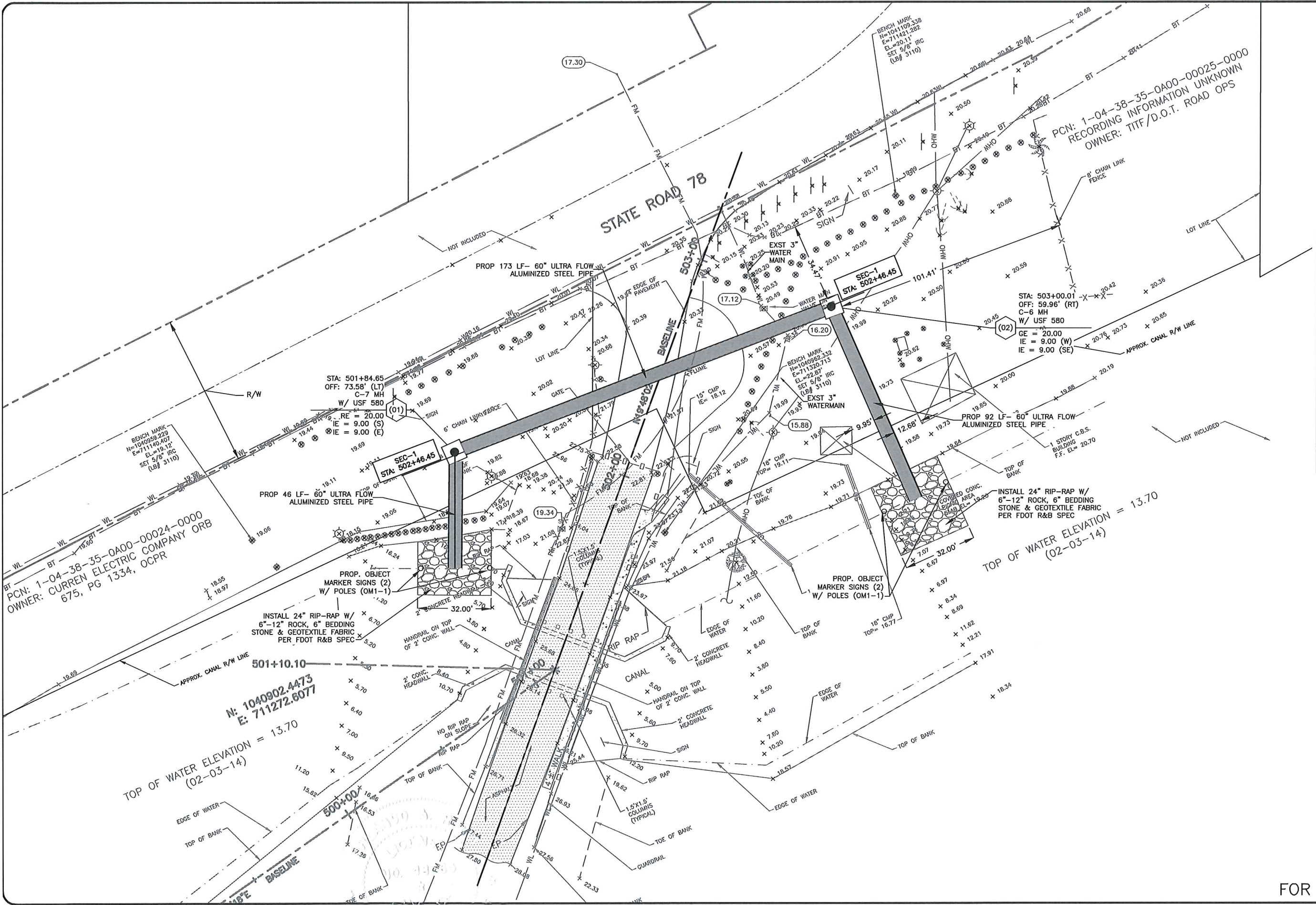
15-0903-145

SHEET

V-03

OF

02



- NOTES:
1. THE EXISTENCE AND LOCATION OF ANY UTILITIES SHOWN ON THESE PLANS MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
 2. CONTRACTOR WILL OBTAIN A WATER USE PERMIT FOR ANY CONSTRUCTION DEWATERING AS NECESSARY FROM ANY WATER MANAGEMENT DISTRICT.
 3. CONTRACTOR WILL OBTAIN A N.P.D.E.S. N.O.I. PERMIT FROM F.D.E.P. PRIOR TO COMMENCEMENT OF CONSTRUCTION AND COMPLY WITH THE WATER MANAGEMENT DISTRICT PERMIT.
 4. ALL DRAINAGE STRUCTURES TO HAVE 18" SUMPS FROM LOWEST INVERT.
 5. WATERMAIN & FORCEMAIN ELEVATIONS BY OTHERS.

NO.				DATE				N.R.T.S.				REVISION				BY			

Date: 09/21/15	Designed: OAR	Drawn: KJL	Checked: GRS
----------------	---------------	------------	--------------

APPROVED BY: ORLANDO A. RUBIO, P.E.	DATE: 4.20.16	FLORIDA PROFESSIONAL ENGINEER NO. 48265
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CRAIG A. SMITH & ASSOCIATES	
CONSULTING ENGINEERS-PLANNERS-SURVEYORS	
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BOCA RATON, FLORIDA 33434	
(561) 314-4445	
CERTIFICATE NO. LB0003110	

PREPARED FOR:	OKEECHOBEE COUNTY
---------------	-------------------

LOCK SEVEN BYPASS
CULVERT SYSTEM
PLAN VIEW

FILE NAME: 20-0903-C-01-PLAN.dwg	LAST SAVED: 04/12/16 - 9:09am
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CAS PROJECT NUMBER	15-0903-145
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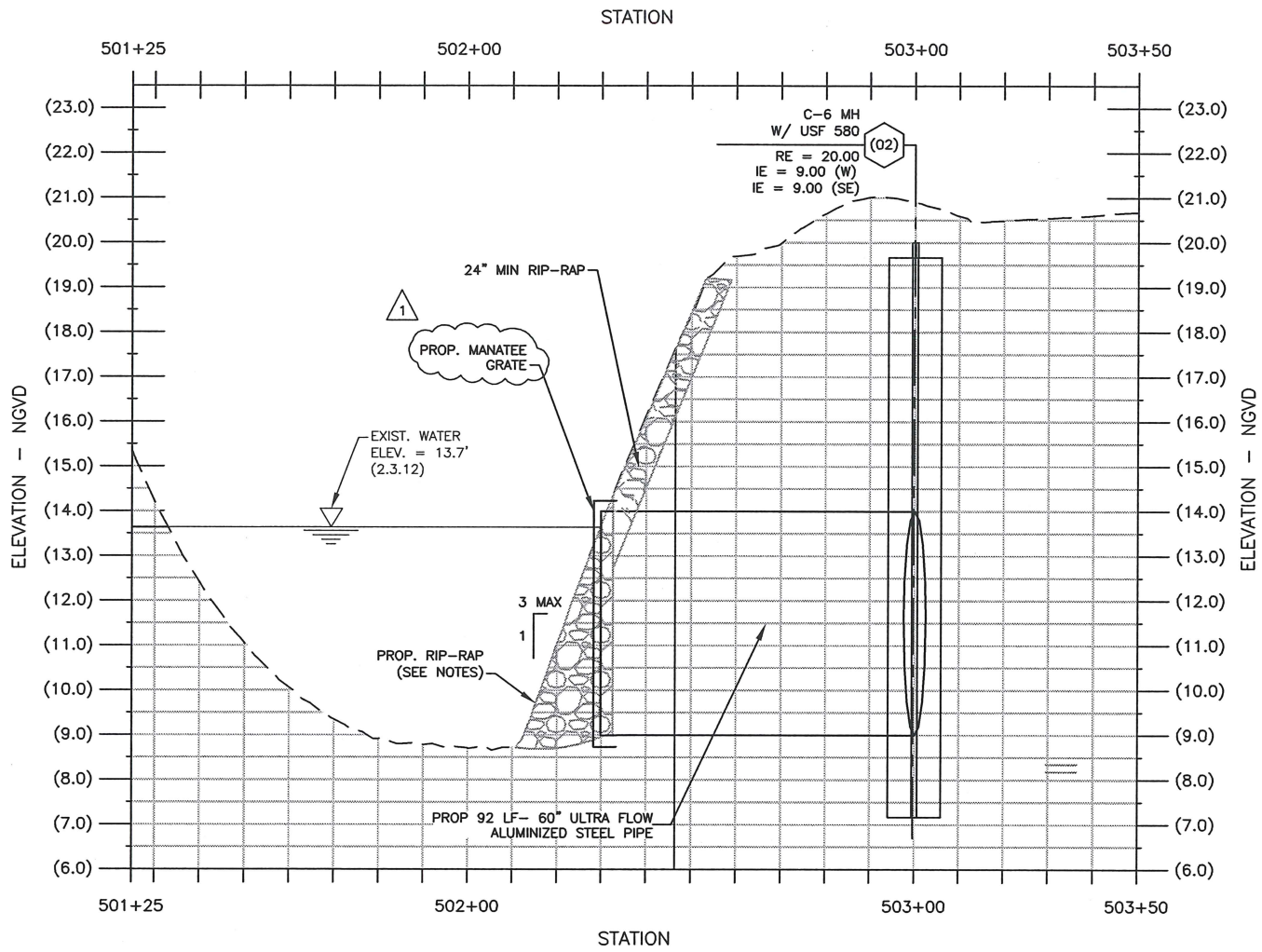
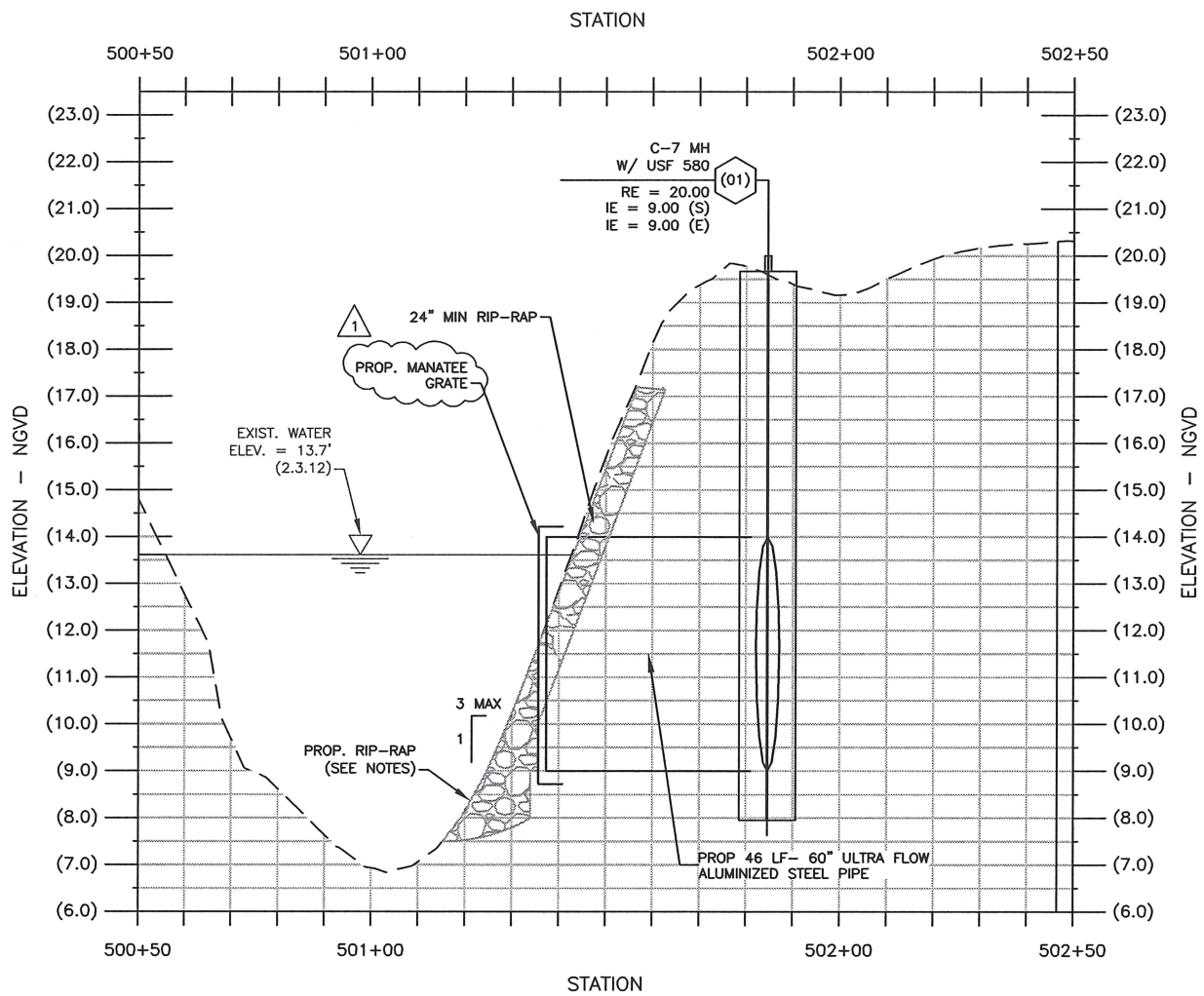
SHEET	C-01
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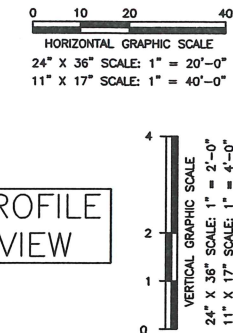
- NOTES:**
1. THE EXISTENCE AND LOCATION OF ANY UTILITIES SHOWN ON THESE PLANS MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
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 4. ALL DRAINAGE STRUCTURES TO HAVE 18" SUMPS FROM LOWEST INVERT.
 5. WATERMAIN & FORCEMAIN ELEVATIONS BY OTHERS.

FOR CONSTRUCTION

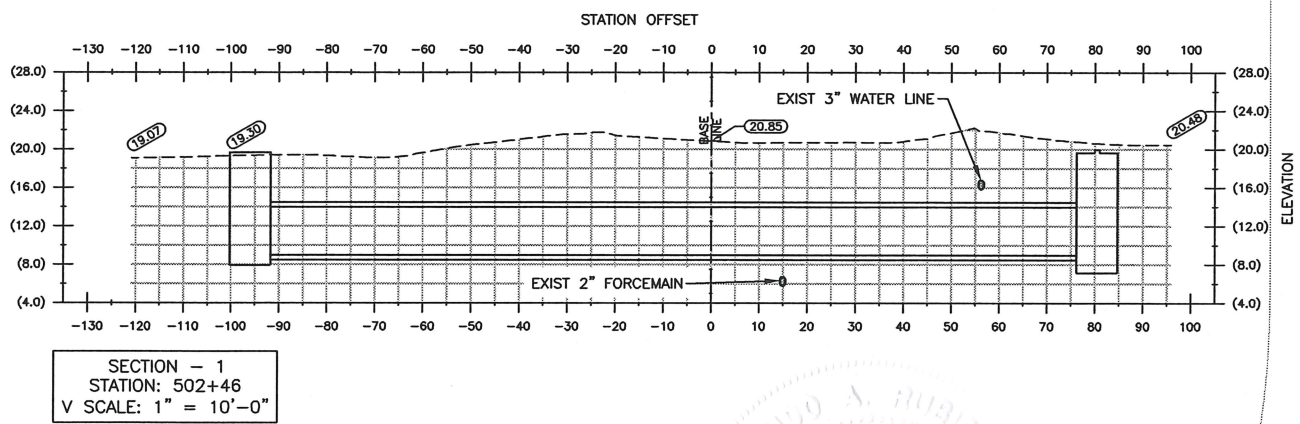
SHEET
C-01



PROFILE
VIEW



- NOTES:
1. THE EXISTENCE AND LOCATION OF ANY UTILITIES SHOWN ON THESE PLANS MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
 2. CONTRACTOR WILL OBTAIN A WATER USE PERMIT FOR ANY CONSTRUCTION DEWATERING AS NECESSARY FROM ANY WATER MANAGEMENT DISTRICT.
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 4. ALL DRAINAGE STRUCTURES TO HAVE 18" SUMPS FROM LOWEST INVERT.



RIP-RAP NOTES:

1. INSTALLATION SHALL BE IN ACCORDANCE WITH SECTION 530 OF THE FDOT SPECIFICATIONS LATEST REVISION. THE AREAS TO RECEIVE RIP-RAP SHALL BE LINED WITH FILTER FABRIC AND 6" INCHES OF BEDDING STONE. ROCK RUBBLE SHALL BE PLACED IN 2 LAYERS FOR A TOTAL DEPTH OF 18" TO PRODUCE A REASONABLY WELL GRADED MASS OF STONE WITH THE MINIMUM PRACTICAL PERCENTAGE OF VOIDS.
2. THE ROCK RUBBLE SHALL BE BROKEN STONE CONFORMING TO SECTION 530 (BANK & SHORE PROTECTION) OF THE FDOT 2016 SPECIFICATIONS. BROKEN CONCRETE SHALL NOT BE ALLOWED.
3. THE BEDDING STONE SHALL CONFORM TO SECTION 901 OF THE FDOT SPECIFICATIONS FOR NUMBER 4 COURSE AGGREGATE.
4. THE FILTER FABRIC MATERIALS SHALL CONFORM TO SECTION 985 OF THE FDOT SPECIFICATIONS FOR A TYPE D-2 FABRIC; US-670 WOVEN MONOFILAMENT OR APPROVED EQUAL. INSTALLATIONS SHALL CONFORM TO SECTION 514, FDOT SPECIFICATIONS.

FOR CONSTRUCTION

NO.	DATE	REVISION	BY
1	04/29/16	REVISIONS PER SFWMD	MD

Date: 09/21/15
Designed: OAR
Drawn: KJL
Checked: GRS

APPROVED BY: ORLANDO A. RUBIO, P.E.
DATE: 4.29.16
FLORIDA PROFESSIONAL ENGINEER NO. 48265

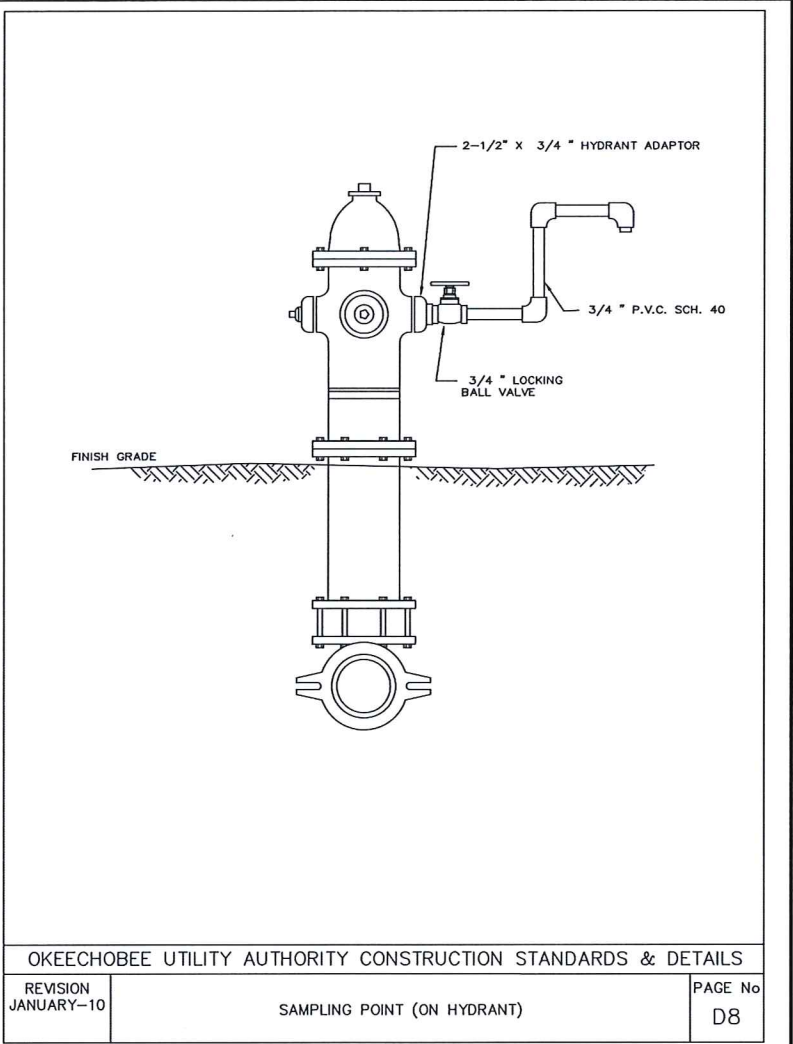
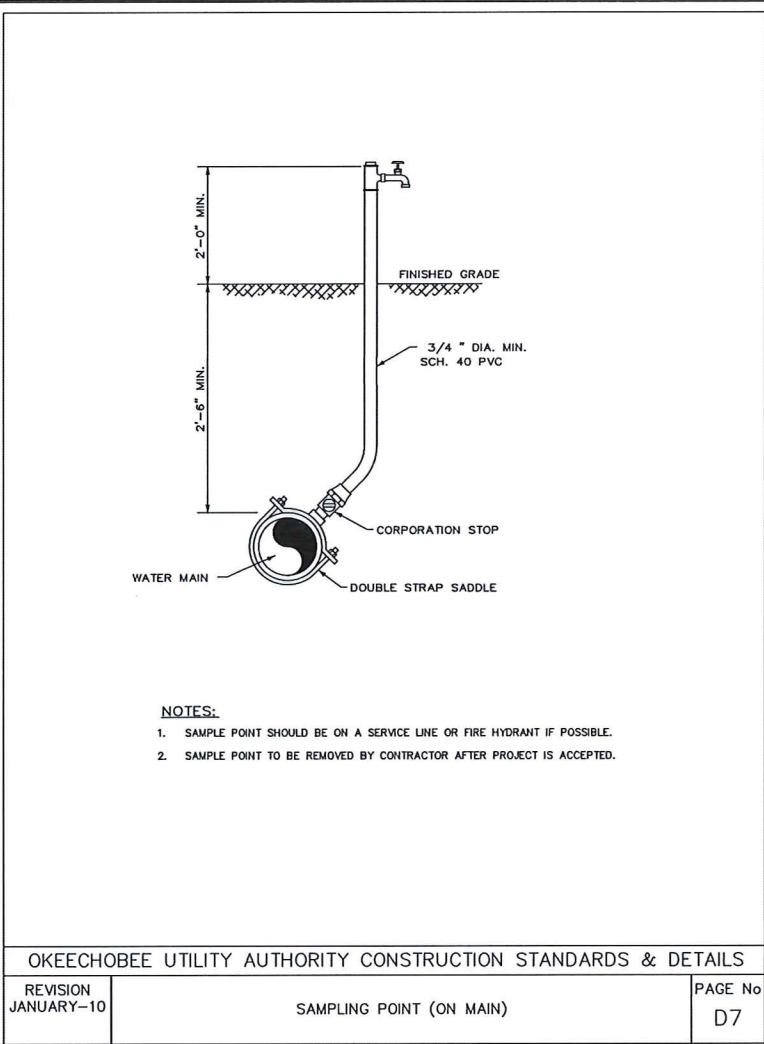
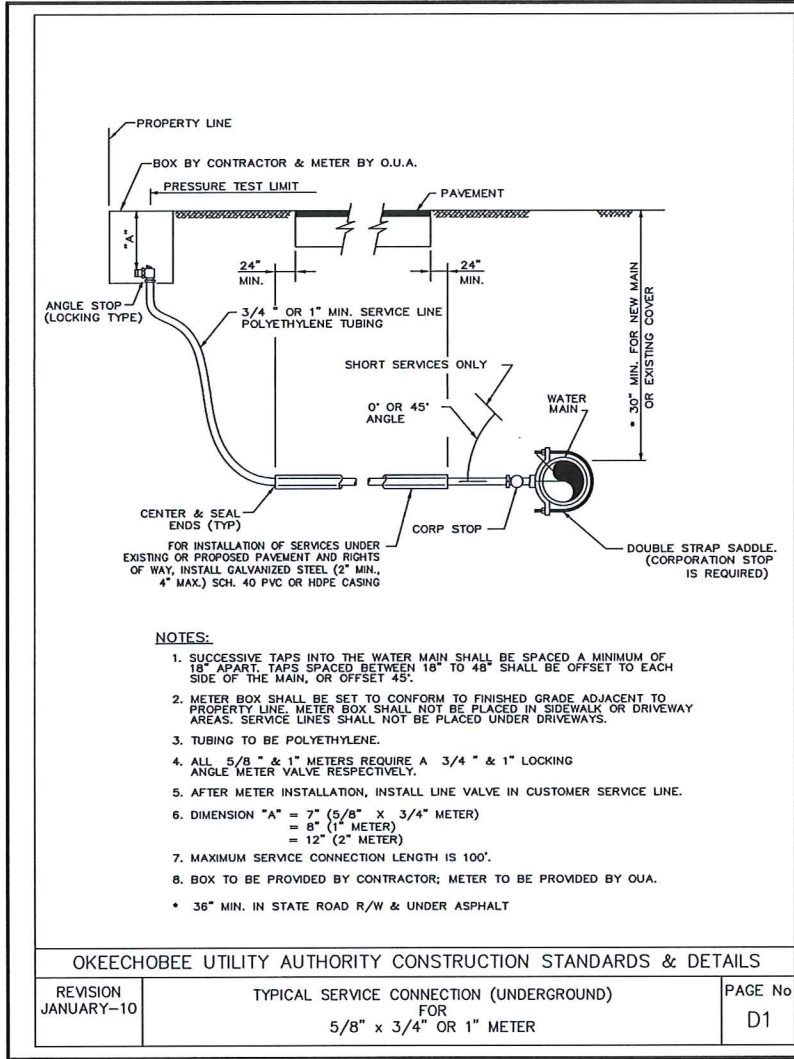
CRAIG A. SMITH & ASSOCIATES
CONSULTING ENGINEERS-PLANNERS-SURVEYORS
7777 GLADES ROAD, SUITE 410
BOCA RATON, FLORIDA 33434
(561) 314-4445
CERTIFICATE NO. LB0003110

PREPARED FOR:
OKEECHOBEE COUNTY

LOCK SEVEN BYPASS
CULVERT SYSTEM
PROFILE AND SECTION VIEWS

FILE NAME: 20-0903-C-02-PROF.dwg
LAST SAVED: 04/12/16 - 11:07am
CAS PROJECT NUMBER
15-0903-145

SHEET
C-02



FOR CONSTRUCTION

NO.	DATE	REVISION	BY

Date: 09/21/15
Designed: OAR
Drawn: KJL
Checked: GRS

APPROVED BY: ORLANDO A. RUBIO, P.E.
4.20.16
DATE
FLORIDA PROFESSIONAL ENGINEER NO. 48265

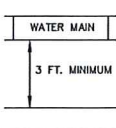
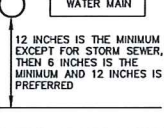
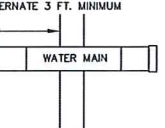
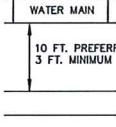
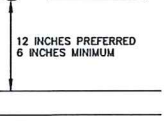
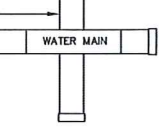
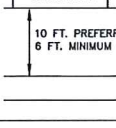
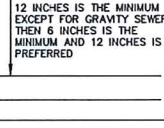
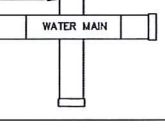
CRAIG A. SMITH & ASSOCIATES
CONSULTING ENGINEERS-PLANNERS-SURVEYORS
7777 GLADES ROAD, SUITE 410
BOCA RATON, FLORIDA 33434
(561) 314-4445
CERTIFICATE NO. LB0003110

PREPARED FOR:
OKEECHOBEE COUNTY

LOCK SEVEN BYPASS
CULVERT SYSTEM
STANDARD
DETAILS

FILE NAME: 50-0903-C-04-DTLS.dwg
LAST SAVED: 10/02/15 - 12:49pm
CAS PROJECT NUMBER
15-0903-145

SHEET
C-04

LOCATION OF PUBLIC WATER SYSTEM MAINS IN ACCORDANCE WITH F.A.C. RULE 62-555.314			
OTHER PIPES	HORIZONTAL SEPERATION	CROSSING (1)	JOINT SPACING @ CROSSINGS (FULL JOINT CENTERED)
STORM SEWER, STORMWATER FORCE MAIN, RECLAIM WATER (2)			
VACUUM SANITARY SEWER			
GRAVITY OR PRESSURE SANITARY SEWER, SANITARY SEWER FORCEMAIN, RECLAIM WATER (4)			
ON-SITE SEWAGE TREATMENT & DISPOSAL	10 FT. MINIMUM	---	---

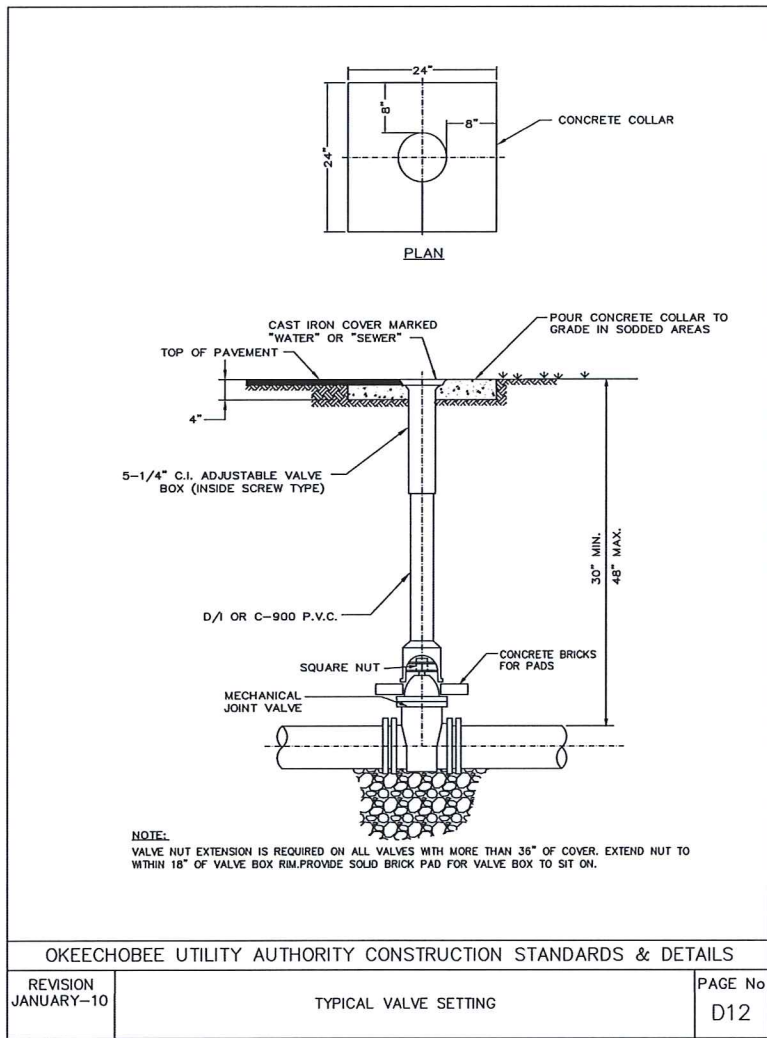
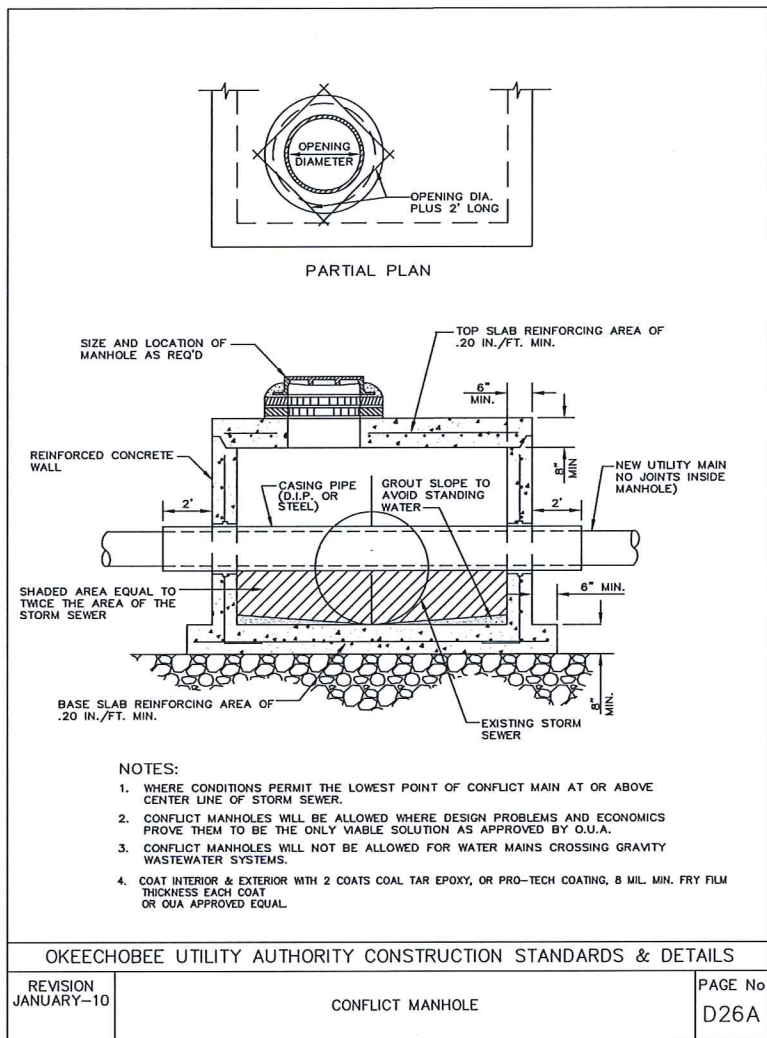
FAC RULE 62-555.314 NOTES:

1. WATERMAIN TO CROSS OVER CONFLICT PIPES WHEREVER POSSIBLE, MAINTAINING 30 INCHES COVER AND 6 INCHES SEPARATION AS MINIMUMS. WHEN WATER MAIN MUST BE BELOW OTHER PIPE, THE MIN. SEPARATION IS 12 INCHES.
2. RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.
3. 3 FT FOR GRAVITY SANITARY SEWER WHERE THE BOTTOM OF THE WATER IS LAID AT LEAST 6 INCHES ABOVE THE TOP OF THE GRAVITY SANITARY SEWER.
4. RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.

NOTES:

- A. THESE METHODS ARE TO BE USED WHEN INSUFFICIENT COVER EXISTS TO ALLOW PRESSURE PIPE TO CROSS ABOVE CONFLICT PIPE WITH 6 INCHES VERTICAL SEPARATION AND MAINTAIN 30 INCHES COVER TO FINISHED GRADE.
- B. FITTINGS SHALL BE RESTRAINED WITH MECHANICAL RESTRAINTS (MEGALUG), IN ACCORDANCE WITH OUA STANDARD DETAILS.
- C. THE DEFLECTION TYPE CROSSING IS PREFERRED.
- D. DO NOT EXCEED 75% OF MANUFACTURERS RECOMMENDED MAXIMUM JOINT DEFLECTION.
- E. MECHANICALLY RESTRAIN ALL FITTINGS, AS PER MANUFACTURERS RECOMMENDATION AND OUA STANDARD DETAILS.

OKEECHOBEE UTILITY AUTHORITY CONSTRUCTION STANDARDS & DETAILS		
REVISION JANUARY-10	WATER MAIN - SANITARY SEWER CONFLICT	PAGE No D16



FOR CONSTRUCTION

NO.	DATE	REVISION	BY

Date: 09/21/15
Designed: OAR
Drawn: KJL
Checked: GRS

APPROVED BY: ORLANDO A. RUBIO, P.E.
4.20.16
DATE
FLORIDA PROFESSIONAL ENGINEER NO. 48265

CRAIG A. SMITH & ASSOCIATES
CONSULTING ENGINEERS-PLANNERS-SURVEYORS
7777 GLADES ROAD, SUITE 410
BOCA RATON, FLORIDA 33434
(561) 314-4445
CERTIFICATE NO. LB0003110

PREPARED FOR:
OKEECHOBEE COUNTY

LOCK SEVEN BYPASS
CULVERT SYSTEM
STANDARD
DETAILS

FILE NAME: 50-0903-C-05-DTLS.dwg
LAST SAVED: 10/02/15 - 12:51pm
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15-0903-145

SHEET
C-05

BLOCKING DETAIL FOR VERTICAL SAG
N.T.S.

NOTES:
1. ANY VOID BETWEEN MAIN AND GRAVITY BLOCK TO BE FILLED WITH GROUT BY CONTRACTOR
2. FITTINGS SHALL BE WRAPPED WITH SUITABLE COVERING TO PREVENT ADHERENCE TO GRAVITY BLOCK.
3. USE MEGALUGS ON ALL FITTINGS.

NOTE: THRUST BLOCKS ONLY ON EXISTING LINES AND WHEN PRE-APPROVED BY THE EXECUTIVE DIRECTOR

OKEECHOBEE UTILITY AUTHORITY CONSTRUCTION STANDARDS & DETAILS

REVISION JANUARY-10	GRAVITY BLOCKS FOR PRESSURE PIPING	PAGE No D14
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BLOCKING DETAIL FOR VERTICAL CREST
N.T.S.

NOTES:
1. GUSSETS REQ'D FOR 16" AND LARGER MAINS.
2. STRAPS WITH GUSSET TO BE GALVANIZED AFTER WELDING.

OKEECHOBEE UTILITY AUTHORITY CONSTRUCTION STANDARDS & DETAILS

REVISION JANUARY-10	GRAVITY BLOCKS FOR PRESSURE PIPING	PAGE No D14A
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PIPE DIA. "D"	VERTICAL CREST											
	DEGREE OF BEND											
	11 1/4'			22 1/2'			45'			90'		
	"W"	"L"	"H"	"W"	"L"	"H"	"W"	"L"	"H"	"W"	"L"	"H"
6"	36"	16"	18"	36"	24"	24"	48"	28"	30"	54"	36"	36"
8"	48"	20"	20"	48"	30"	24"	54"	36"	36"	60"	46"	48"
12"	54"	24"	30"	54"	36"	40"	66"	48"	48"	72"	60"	60"
24"	72"	48"	48"	76"	60"	66"	96"	72"	84"	-	-	-

PIPE DIA. "D"	VERTICAL SAG											
	DEGREE OF BEND											
	11 1/4'			22 1/2'			45'			90'		
	"W"	"L"	-	"W"	"L"	-	"W"	"L"	-	"W"	"L"	-
6"	6"	36"	-	6"	36"	-	18"	36"	-	24"	36"	-
8"	8"	36"	-	12"	36"	-	24"	36"	-	36"	36"	-
12"	18"	36"	-	30"	36"	-	42"	42"	-	54"	48"	-
16"	36"	36"	-	48"	48"	-	60"	60"	-	72"	72"	-
24"	48"	42"	-	60"	54"	-	78"	78"	-	96"	96"	-
36"	60"	54"	-	84"	78"	-	96"	96"	-	120"	120"	-

STRAP DETAIL

NOTES:
1. GUSSETS REQ'D FOR 16" AND LARGER MAINS.
2. STRAPS WITH GUSSET TO BE GALVANIZED AFTER WELDING.

OKEECHOBEE UTILITY AUTHORITY CONSTRUCTION STANDARDS & DETAILS

REVISION JANUARY-10	GRAVITY BLOCKS FOR PRESSURE PIPING	PAGE No D14A
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SINGLE SERVICE

DOUBLE SERVICE

QUADRUPLE SERVICE

NOTES:
1. AUTHORIZED SERVICE LINE MATERIAL SHALL BE POLYETHYLENE TUBING.
2. MULTIPLE SERVICE/METER INSTALLATIONS OF MORE THAN 4 METERS PER SERVICE AND SERVICE LINES LARGER THAN 2" IN DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS.
3. NO FITTINGS BETWEEN CORP. STOP & ANGLE VALVE OR CORP. STOP & "Y" BRANCH FOR MULTIMETER INSTALLATIONS.

OKEECHOBEE UTILITY AUTHORITY CONSTRUCTION STANDARDS & DETAILS

REVISION JANUARY-10	TYPICAL SERVICE FOR MULTIPLE SERVICES (TWO OR MORE)	PAGE No D2
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FOR CONSTRUCTION

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LOCK SEVEN BYPASS
CULVERT SYSTEM
STANDARD
DETAILS

FILE NAME: 50-0903-C-06-DTSL.dwg
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MECHANICAL THRUST RESTRAINT CHART 1									
PIPE SIZE, in	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		DEADEND/VALVE
	PVC	DIP	PVC	DIP	PVC	DIP	PVC	DIP	PVC DIP
4	21	16	9	7	5	4	2	2	45 29
6	28	23	12	10	6	5	3	3	63 40
8	37	29	16	12	8	6	4	3	83 53
10	44	35	18	15	9	7	5	4	99 63
12	51	41	21	17	11	8	5	4	116 74
14	57	46	24	19	12	10	6	5	132 83
16	64	51	27	21	13	11	7	5	149 94
18	70	56	29	24	14	12	7	6	164 104
20	76	61	32	26	16	13	8	6	179 113
24	87	70	36	29	18	14	9	7	208 131

THRUST RESTRAINT CHART BASED UPON THE FOLLOWING:
PVC/DIP PIPE MATERIAL, AS NOTED
SP SOIL TYPE (designer to confirm)
1.5 SAFETY FACTOR (minimum)
3 TRENCH TYPE (designer to confirm)
2.5 DEPTH OF BURY, ft (designer to confirm)
150 TEST PRESSURE, psi (minimum)

THE MINIMUM LENGTH OF PIPE OUT OF ANY VALVE OR FITTING SHOULD BE 20 LF.
FITTINGS NOT SHOWN TO BE CALCULATED UTILIZING THE CRITERIA LISTED ABOVE AND SUBMITTED IN A SHOP DRAWING
VALUES SHOWN IN CHART INDICATE LENGTH (LF) OF PIPE TO BE RESTRAINED ON EITHER SIDE OF ITEM LISTED

NOTE 1: ANY CONDITION OTHER THAN THOSE LISTED ABOVE (including poly-wrapped DIP) SHALL REQUIRE REVISION OF THE
TABLE IN ACCORDANCE WITH EBAA IRON, INC., RESTRAINT LENGTH CALCULATOR (V. 5.4).
(<http://www.ebaa.com/engineering.htm> or <http://rcp.ebaa.com>)
NOTE 2: THE REVISED CHARTS SHALL BE SUBMITTED TO OUA AS A SHOP DRAWING SUBMITTAL.

OKEECHOBEE UTILITY AUTHORITY CONSTRUCTION STANDARDS & DETAILS		
REVISION JANUARY-10	WATER THRUST RESTRAINT	PAGE No D50

MECHANICAL THRUST RESTRAINT CHART 2							
MAIN RUN, in	BRANCH, in	TEE		LARGE SIZE	SMALL LARGE	REDUCER	
		PVC	DIP			PVC	DIP
4	4	1	1	6	4	33	21
6	4	1	1	8	4	60	38
6	6	1	1	8	6	35	22
8	4	1	1	10	4	81	51
8	6	1	1	10	6	61	39
8	8	7	5	10	8	33	21
10	6	1	1	12	4	101	64
10	8	1	1	12	6	85	54
10	10	21	14	12	8	62	39
12	6	1	1	16	4	138	87
12	8	1	1	16	6	126	79
12	12	36	24	16	8	109	68
16	6	1	1	16	12	63	40
16	8	1	1	18	4	154	97
16	16	65	43	18	6	144	91
18	6	1	1	18	8	129	81
18	8	1	1	20	4	171	107
18	18	79	52	20	6	161	101
20	6	1	1	20	8	148	93
20	8	1	1	20	12	113	71
20	20	92	61	24	4	201	127
24	6	1	1	24	6	194	122
24	8	1	1	24	8	183	115
24	24	118	78	24	12	154	97

THRUST RESTRAINT CHART BASED UPON THE FOLLOWING:
PVC/DIP PIPE MATERIAL, AS NOTED
SP SOIL TYPE (designer to confirm)
1.5 SAFETY FACTOR (minimum)
3 TRENCH TYPE (designer to confirm)
2.5 DEPTH OF BURY, ft (designer to confirm)
150 TEST PRESSURE, psi (minimum)

THE MINIMUM LENGTH OF PIPE OUT OF ANY VALVE OR FITTING SHOULD BE 20 LF.
FITTINGS NOT SHOWN TO BE CALCULATED UTILIZING THE CRITERIA LISTED ABOVE AND SUBMITTED IN A SHOP DRAWING
VALUES SHOWN IN CHART INDICATE LENGTH (LF) OF PIPE TO BE RESTRAINED ON EITHER SIDE OF ITEM LISTED

NOTE 1: ANY CONDITION OTHER THAN THOSE LISTED ABOVE (including poly-wrapped DIP) SHALL REQUIRE REVISION OF THE
TABLE IN ACCORDANCE WITH EBAA IRON, INC., RESTRAINT LENGTH CALCULATOR (V. 5.4).
(<http://www.ebaa.com/engineering.htm> or <http://rcp.ebaa.com>)
NOTE 2: THE REVISED CHARTS SHALL BE SUBMITTED TO OUA AS A SHOP DRAWING SUBMITTAL.

OKEECHOBEE UTILITY AUTHORITY CONSTRUCTION STANDARDS & DETAILS		
REVISION JANUARY-10	WATER THRUST RESTRAINT	PAGE No D51



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FOR CONSTRUCTION