# FINAL PUD / PRELIMINARY SUBDIVISION / LARGE-SCALE SITE PLAN SECTION 18, TOWNSHIP 24 SOUTH, RANGE 36 EAST CITY OF COCOA, BREVARD COUNTY, FLORIDA

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1 OF 1	11545_100_009	TREE SURVEY	

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SYMBOLS SHOWN ARE GRAPHIC IN NATURE; DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SE

# LANDSCAPE SYMBOL LEGEND

### CABBAGE PALM TREE CYPRUS TREE $\overline{\mathbf{A}}$

- $\checkmark$ HOLLY TREE  $\overline{\odot}$ MAPLE TREE PALM TREE  $\diamond$  → PINE TREE 🐴 🛛 OAK TREE
- CCC TREE LINE SHURB 1
- SHRUB 2

# IRRIGATION SYMBOL LEGEND

- ✤ SPRINKLER
- RAINBIRD 1/4 RAINBIRD 1/2
- RAINBIRD 3/4
- RAINBIRD FULL

# LINE TYPES

— — — BEL — — —	BEL -	EXISTING BURIED ELECTRIC
— — — BTL — — —	- — BTL —	EXISTING BURIED TELEPHONE
- — — — CATV — — — -	— CATV —	EXISTING CABLE TV
<u> </u>	X	FENCE (TYPE, HEIGHT AS NOTED)
— — — FM— — —	- — FM—	EXISTING FORCE MAIN (SIZE, TYPE AS NOTED)
— — — F0— — —	— FO—	EXISTING FIBER OPTIC
— — — GAS— — —	GAS-	EXISTING GAS LINE
— — — — IRR — — —	— IRR —	EXISTING IRRIGATION (SIZE, TYPE AS NOTED)
— — — — OHE— — —	- OHE-	EXISTING OVERHEAD ELECTRIC
— — — они— — —		EXISTING OVERHEAD UTILITY
— — — RM— — —		EXISTING REUSE MAIN (SIZE, TYPE AS NOTED)
— — — — SF— — —	— SF—	SILT FENCE
— — — — ss— — —	— _ ss—	EXISTING SANITARY SEWER (SIZE, TYPE AS NOTED)
— — — — WM— — —		EXISTING WATER MAIN (SIZE, TYPE AS NOTED)
		CENTERLINE
		BASIN BOUNDARY
		COLUMN / WALL
<u> </u>	0	GUARD RAIL
·uuuu	U.	TREE LINE

DRAINAGE PIPE (SIZE, TYPE AS NOTED)

EXISTING SANITARY MANHOLE	
EXISTING MANHOLE (TYPE NOTED)	
PROPOSED MANHOLE	
TYPE 2 INLET	
TYPE 3 INLET	
TYPE 4 INLET	
TYPE 5 INLET	
CATCH BASIN	
YARD DRAIN	
FLARED END SECTION	
PROPOSED GATE VALVE	
	ΙТЦ
GATE VALVE	7
EXISTING FIRE DEPT. CONNECTION	
PROPOSED FIRE DEPT. CONNECTION	1
EXISTING WATER METER	
PROPOSED WATER METER	
EXISTING WATER SERVICE	
PROPOSED WATER SERVICE	
EXISTING REUSE SERVICE	
PROPOSED REUSE SERVICE	
SANITARY SERVICE	
STUB OUT	
EXISTING AIR RELEASE VALVE	
AIR RELEASE VALVE	
EXISTING CLEAN OUT	
CROSS TEE	
BACK FLOW PREVENTION DEVICE	

				BEE
				B.S.E. CONSULTANTS, INC. CONSULTING - ENGINEERING - LAND SURVEYING
				312 SOUTH HARBOR CITY BOULEVARD, SUITE 4 MELBOURNE, FLORIDA 32901 PHONE: (321) 725-3674 FAX: (321) 723-1159 CERTIFICATE OF PROFESSIONAL ENGINEERS
	ABBREVIATIONS	15	ABBREVIATIONS	BUSINESS AUTHORIZATION: 4903 CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905
"	SECONDS/INCHES	LS	LIGHTER WOOD POST	SCOTT M. GLAUBITZ, P.E. & P.L.S.
。 (C)	DEGREES CALCULATED DIMENSION	MAX MES	MAXIMUM MITERED END SECTION	STATE OF FLORIDA, NO. 33659 NO. 4151
(D)	DEED DIMENSION	MH	MANHOLE	
(F) (M)	FIELD MEASURED DIMENSION METER(S)	MHW MI	MEAN HIGH WATER MILE(S)	
(NR)		MIN		
(P) A/C	AIR CONDITIONER	N&D	NAIL AND DISK	
AC ADS	ACRES ADVANCED DRAINAGE SYSTEMS (CPP)	NAVD88 NGVD29	NORTH AMERICAN VERTICAL DATUM 1988 NATIONAL GEODETIC VERTICAL DATUM 1929	
AL	ARC LENGTH	NG	NATURAL GROUND	
ARV AVE	AIR RELEASE VALVE AVENUE	NIC NTS	NOT IN CONTRACT NOT TO SCALE	
BLVD		NWL		HASSAN A. KAMAL, P.E. STATE OF FLORIDA, No. 41951
BVC	BEGIN VERTICAL CURVE	OR/ORB	OFFICIAL RECORDS BOOK	
BVP C/L	BEGIN VERTICAL PROFILE CENTERLINE	P/L PAVT	PROPERTY LINE PAVEMENT	
C/O	CLEAN OUT	PB	PLAT BOOK	
CA CATV	CENTRAL ANGLE CABLE TELEVISION	PC PCC	POINT OF CURVATURE POINT OF COMPOUND CURVATURE	
СВ		PCP		
CBS	CONCRETE BLOCK STRUCTURE CHORD LENGTH	PD&UE	PUBLIC DRAINAGE EASEMENT	
CM CMP	CONCRETE MONUMENT	PG(S) PGI	PAGE(S) PROPOSED GRADE LINE	
CONC	CONCRETE	PK	PARKER-KALEN	
COR CPP	CORNER CORRUGATED PLASTIC PIPE	POB POC	POINT OF BEGINNING POINT OF COMMENCEMENT	
DE		POL		
DEL DI	DELTA/CENTRAL ANGLE DITCH INLET/ CATCH BASIN	PP PR	POWER/UTILITY POLE PRIVATE	
DIP	DUCTILE IRON PIPE	PRC	POINT OF REVERSE CURVATURE	
E	EAST	PVC	POLYVINYL CHLORIDE PIPE	
EG ELEC	EXISTING GROUND ELECTRIC	PVI R	POINT OF VERTICAL INTERSECTION RADIUS/RIGHT	
EL/ELEV	ELEVATION	R/W	RIGHT-OF-WAY	
EOP EOW	EDGE OF PAVEMENT EDGE OF WATER	RAD RB	RADIAL RADIAL BEARING	
ERCP	ELLIPTICAL REINFORCED CONCRETE PIPE	RCP	REINFORCED CONCRETE PIPE	
ESMT	END VERTICAL CURVE	RGE	RANGE	
EVP FX	END VERTICAL PROFILE	RM RND	REUSE MAIN ROUND	
FD	FOUND	RPB	ROAD PLAT BOOK	
FDC FDOT	FIRE DEPARTMENT CONNECTION FLORIDA DEPARTMENT OF TRANSPORTATION	RR S	SOUTH	
FES	FLARED END SECTION	SEC	SECTION	
FH	FIRE HYDRANT	SMH	SEWER MANHOLE	
FL FM	FLOW LINE FORCE MAIN	SPK SS	SPIKE SANITARY SEWER	
FPL	FLORIDA POWER AND LIGHT	ST	STREET	
F I GLO	FEET GENERAL LAND OFFICE	SVC	SERVICE	
GR	GROUND GATE VALVE(S)	SW	SIDEWALK	
H/C	HANDICAP	ТОВ	TOP OF BANK	
HP HWY	HIGH POINT HIGHWAY	TOE TWP	TOE OF SLOPE TOWNSHIP	
ID#		TYP		
IP	IRON PIPE	UG	UNDERGROUND	Image: Addition of the second secon
IPC IR	IRON PIPE AND CAP	UTIL W	UTILITY WEST	DESIGN/DRAWN: ALS/DRB
IRC	IRON ROD AND CAP	WM	WATER MAIN	PROJECT TITLE
JCT LF	JUNCTION LINEAR FEET			
L				CIRRUS
LP	LOW POINT			
				SHEET TITI E
				0
				SYMBOLS AND
				ABBREVIATIONS
				PROJECT NO.
				11545
				DRAWING NO.
				11545_400_002

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SHEET

SYMBOLS SHOWN ARE GRAPHIC IN NATURE; DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SET.



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# GENERAL MAINTENANCE PLAN

INTENDED TO PROVIDE A GUIDELINE FOR THE CONTRACTOR. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COMPLETE THE PROJECT IN CONFORMANCE WITH THE NPDES STANDARDS AND APPROVED PLANS AND

OPERATION FOLLOWING EVERY 1/2" RAINFALL EVENT, BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ALL NEEDED REPAIRS WILL BE RECORDED AND

2. SEDIMENT BUILDUP WILL BE CLOSELY MONITORED AND REMOVED FROM INLET PROTECTION DEVICES TO ENSURE PROPER MANAGEMENT AND STORAGE CAPACITIES. SEDIMENT CONTROL DEVICES SHALL BE CLEANED OR REPLACED WHEN THE SEDIMENT CONTROL NO LONGER WORKS

THE SEDIMENT CONTROLLING SILT FENCE SHALL BE MAINTAINED AND/OR REPLACED AS NECESSARY TO MAINTAIN A BARRIER. ALL SEEDED AREAS SHALL BE RESEEDED AS NECESSARY, AND MULCHED

ACCORDING TO SPECIFICATIONS IN THE VEGETATIVE PLAN TO MAINTAIN A VEGETATIVE COVER, ADEQUATE TO PREVENT EROSION TO OFFSITE AREAS. AS NEEDED, NEW OR ADDITIONAL WORKERS WILL BE INFORMED OF THE

6

PLAN DETAILS IN THE OPERATION AND MAINTENANCE OF PLAN FEATURES.

ALL VEGETATED AREAS WILL BE MAINTAINED IN ADEQUATE CONDITION TO PROVIDE PROPER GROUND COVER, THEREBY REDUCING EROSION

### AREAS WHERE VEGETATION IS LOST WILL BE RESTABILIZED AND MAINTAINED AS NECESSARY TO RESTORE PROPER GROUND COVER.

STRUCTURAL MEASURES WILL BE EXAMINED AT LEAST ANNUALLY AND MAINTENANCE PERFORMED AS NEEDED.

# GENERAL CONSTRUCTION SEQUENCING PLAN

THE FOLLOWING CONSTRUCTION SEQUENCING IS GENERAL IN NATURE AND IS INTENDED TO PROVIDE A GUIDELINE FOR THE CONTRACTOR. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO COMPLETE THE PROJECT IN CONFORMANCE WITH THE NPDES STANDARDS AND APPROVED PLANS AND PERMITS

- 1. OBTAIN PLAN APPROVAL AND OTHER APPLICABLE PERMITS.
- ALL EROSION CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND 2. FLAG THE WORK LIMITS OF CONSTRUCTION AND IDENTIFY AREAS NOT TO BE DISTURBED.
  - HOLD PRE CONSTRUCTION CONFERENCE AT LEAST ONE WEEK PRIOR TO STARTING CONSTRUCTION. WEEKLY REVIEWS OF EROSION, SEDIMENT, AND STORM WATER CONTROLS WILL BE CONDUCTED. REVIEWS WILL ALSO BE CONDUCTED WITHIN 24 HOURS FOLLOWING ALL RAIN EVENTS EXCEEDING 1/2" INTENSITY.
  - INSTALL SEDIMENT CONTROLS AS THE FIRST CONSTRUCTION ACTIVITY. INSTALL STORM DRAIN WITH STABILIZED INLET PROTECTION AT THE
  - CONSTRUCTION ENTRANCE/EXIT.
  - INSTALL TEMPORARY STABILIZED CONSTRUCTION ENTRANCE/EXIT. COMPLETE SITE CLEARING EXCEPT FOR AREAS DESIGNATED NOT TO BE DISTURBED
  - ROUGH GRADE SITE, STOCKPILE TOPSOIL, CONSTRUCT WATERWAYS, INSTALL CULVERTS AND OUTLET PROTECTION (INSTALL SEDIMENT CONTROLS AND SILT FENCING AS NEEDED BARE AREAS OF EXPOSED LAND SHALL BE MULCHED AND SEEDED ONCE GRADING HAS BEEN COMPLETED.
  - 9. FINISH THE SLOPES AROUND BUILDING DIRT PADS AS SOON AS ROUGH GRADING IS COMPLETE
  - 10. COMPLETE FINAL GRADING FOR ROADS AND STABILIZE WITH APPROVED MATERIAL.
  - 11. COMPLETE FINAL GRADING OF GROUNDS, TOPSOIL CRITICAL AREAS, AND PERMANENTLY VEGETATE, LANDSCAPE, AND MULCH.
  - 12. ALL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE INSPECTED WEEKLY AND FOLLOWING 1/2" RAINFALL EVENTS. NEEDED REPAIRS WILL B RECORDED WITHIN 24 HOURS, AND CORRECTED IMMEDIATELY.
  - 13. AFTER SITE IS STABILIZED, REMOVE ALL TEMPORARY MEASURES AND INSTALL PERMANENT VEGETATION ON THE DISTURBED AREAS.

THE CERTIFICATIONS BELOW ARE INCLUDED FOR INFORMATIONAL PURPOSES ONLY OFFICIAL EXECUTED CERTIFICATIONS ARE KEPT IN THE PROJECT FILE. ENGINEERS CERTIFICATION "I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED BASED ON MY INQUIRY OF THE PERSON OF PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION. INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

.. Scott M. Glaubitz, P.E./Hassan Kamal, P.E. President/Vice President .... B.S.E. Consultants, Inc .. 312 S. Harbor City Blvd., Suite 4 Melbourne, Florida 32901 COMPANY PHONE #:.....(321) 725-3674

SPECIAL NOTICE:

CORPORATE OFFICERS CERTIFICATION "I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE

PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED BASED ON MY INQUIRY OF THE PERSON OF PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS." NAME:..

COMPANY NAME. COMPANY ADDRESS COMPANY PHONE #:.. PROJECT SITE DESCRIPTION

SIGNATURE:

DATE OF CERTIFICATION:

NOTE: SILT FENCE LOCATION IS SCHEMATIC REPRESENTATION. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING SILT FENCE AT THE LOCATION NEEDED TO PREVENT THE TRANSPORT OF SEDIMENT OFFSITE AND NOT INTERFERE WITH THE REQUIRED ONSITE CONSTRUCTION. CONTRACTOR MAY NEED TO RELOCATE/REPLACE/ADJUST SILT FENCE LOCATIONS TO ACCOMMODATE CONSTRUCTION SEQUENCING.

McDONALD'S

CITY COMMENTS 10/30/20 DATE: 08/31/20 **DESIGN/DRAWN:** ALS/DRE PROJECT TITLE CIRRUS SHEET TITLE **STORM WATER** POLLUTION

B.S.E. CONSULTANTS, INC

**CONSULTING - ENGINEERING -**

LAND SURVEYING

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CERTIFICATE OF PROFESSIONAL ENGINEERS

BUSINESS AUTHORIZATION: 4905 CERTIFICATE OF LAND SURVEYING

BUSINESS AUTHORIZATION: LB0004905

SCOTT M. GLAUBITZ, P.E. & P.L.S.

STATE OF FLORIDA, No. 33659 No. 4151

HASSAN A. KAMAL, P.E.

STATE OF FLORIDA, No. 41951

# PREVENTION PLAN (SWPPP)

PROJECT NO.

11545

DRAWING NO.

11545 400 004

SHEET

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RE DEPARTMENT ANY MANNER,	ZONING       = MIXED USE PUD         EXISTING ZONING       = MIXED USE PUD         FUTURE LAND USE       = COMMERCIAL         UTILITIES       ALL PROPOSED UTILITIES SHALL BE UNDERGROUND INSTALLATION.	
SHALL BE MAINTAINED NTS EXCEPT AS	SANITARY SEWER EASEMENTS SHALL BE CENTERED OVER THEIR FINAL AS-BUILT LOCATION.	
HAN 60 IN. (1524 MM) NT CONNECTION 4 MM).	$\begin{array}{rcl} LOT 1A & = \pm 13.49 \text{ AC} \\ \underline{LOT 1B} & = \pm 2.25 \text{ AC} \\ \hline TOTAL & = \pm 15.74 \text{ AC} \end{array}$	B.S.E. CONSULTANTS, INC. CONSULTING - ENGINEERING - LAND SURVEYING 312 SOUTH HARBOR CITY BOULEVARD, SUITE 4
7	BUILDINGS BUILDING HEIGHTS: BUILDING TYPES ONE AND TWO TOP RIDGE OF BUILDING ROOF NOT TO EXCEED 57 FEET	PHONE: (321) 725-3674 FAX: (321) 723-1159 CERTIFICATE OF PROFESSIONAL ENGINEERS BUSINESS AUTHORIZATION: 4905 CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905
	PROPOSED # OF MULTI-FAMILY UNITS = 280 TOTAL	SCOTT M. GLAUBITZ, P.E. & P.L.S. STATE OF FLORIDA, No. 33659 No. 4151
	$\begin{array}{rcl} \text{BUILDING TYPE 1 (WEST)} & 4 \text{ STORIES} \\ 1\text{ST FLOOR} & = & 44,408 \text{ SQ FT} \\ 2\text{ND FLOOR} & = & 44,439 \text{ SQ FT} \\ 3\text{RD FLOOR} & = & 44,667 \text{ SQ FT} \\ \hline 4\text{TH FLOOR} & = & 44,853 \text{ SQ FT} \\ \hline \hline \text{TOTAL} & = & 178,367 \text{ SQ FT} \\ \end{array}$	
	FLOOR AREA RATIO = (178,367 / 685,685) = 26.0%	
	BUILDING TYPE 2 (EAST)       4 STORIES         1ST FLOOR       = 43,728 SQ FT         2ND FLOOR       = 44,444 SQ FT         3RD FLOOR       = 44,696 SQ FT         4TH FLOOR       = 44,959 SQ FT         TOTAL       = 177,827 SQ FT	HASSAN A. KAMAL, P.E. STATE OF FLORIDA, No. 41951
ft ft ft	FLOOR AREA RATIO = (177,827 / 685,685) = 25.9%	
ft ft s ft	GARAGE TYPE ONE= $0,383$ SQ FTGARAGE TYPE TWO= $4,860$ SQ FTGARAGE TYPE THREE= $2,560$ SQ FTGARAGE TYPE FOUR= $2,125$ SQ FTGARAGE TYPE FIVE= $2,015$ SQ FTGARAGE TYPE SIX= $1,625$ SQ FTGARAGE TYPE SEVEN= $1,396$ SQ FTTOTAL= $21,166$ SQ FT	
	PUMP ROOM= $202 \text{ SQ FT}$ TRASH COMPACTOR=1,154 SQ FTPOOL PAVILION=2,801 SQ FTTOTAL=4,157 SQ FT	
	LOT 1A PERVIOUS AREA GREEN SPACE= 165,841 SQ FT $3.82$ ACRES $28.31\%$ EXISTING POND= 53,069 SQ FT $1.21$ ACRES $8.97\%$ EXISTING WETLAND= 51,595 SQ FT $1.18$ ACRES $8.74\%$ TOTAL= 270,505 SQ FT $6.21$ ACRES $46.02\%$	
F FM-	LOT 18 IMPERVIOUS AREA	
	CURB/CONCRETE         =         975 SQ FT         0.02 ACRES         0.89%           PAVEMENT         =         84,827 SQ FT         1.95 ACRES         86.67%           TOTAL         =         85,802 SQ FT         1.97 ACRES         87.56%	
0	LOT 1B PERVIOUS AREA GREEN SPACE12,106 SQ FT0.28 ACRES12.44%	60 0 30 60
	LOT 1B TOTAL AREA = 97,908 SQ FT 2.25 ACRES 100.00%	(IN FEET)
OTE A	TYPICAL STANDARD PARKING STALL PROVIDED SHALL HAVE A RECTANGULAR AREA A MINIMUM OF 9.5 FEET IN WIDTH AND 18 FEET IN LENGTH. COMPACT PARKING SPACES ARE PROVIDED AND SHALL HAVE A RECTANGULAR	
	AREA A MINIMUM OF 8.5 FEET IN WIDTH AND 16 FEET IN LENGTH. THE WIDTH OF PARKING SPACES FOR DISABLED PERSONS SHALL BE IN ACCORDANCE WITH STATE AND FEDERAL REQUIREMENTS.	
	REQUIRED PARKING <u>TYPE</u> # OF UNITS         EFFICIENCY       20       1       SPACE/UNIT       = 20       SPACES	
SHOPPES OF COCOA NORTH SIGN	1 BEDROOM1331.5 SPACE/UNIT= 200 SPACES2 OR MORE BEDROOM1272 SPACE/UNIT= 254 SPACESTOTAL280= 474 SPACES	DATE:     08/31/20       DESIGN/DRAWN:     ALS/DRB
	$\frac{PROVIDED PARKING}{10'x18' EXISTING PARKING} = 20$ 9.5'x18' STANDARD PARKING = 231 12'x18' HANDICAP PARKING = 10 8.5'x16' COMPACT PARKING = 112 (24.7%) GARAGE UNITS = 79 TOTAL PARKING PROVIDED = 452 SPACES 1.61 SPACES PER UNIT	PROJECT TITLE
	MINIMUM REQUIRED NUMBER OF HANDICAP STALLS = 9 STALLS 10 PROVIDED HANDICAP STALLS	SHEET TITLE
w <sup>th1</sup>	ATE ROAD NO. 528 & 524 OFF RAMP (275' R/W)	OVERALL SITE PLAN
	ES CONTRACTOR	PROJECT NO.
\$		DRAWING NO. 11545 400 007
7	A \$8	SHEET
_		/ OT 19

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	<u>CIT</u> 1.	<u>Y OF COCOA GENERAL NOTES:</u> ALL WATER MAIN CONSTRUCTION SHALL BE PER CITY OF COCOA CRITERIA.	
	2.	VALVE AND TEE LOCATIONS ARE SHOWN FOR GRAPHIC CLARITY ONLY. PER CITY OF COCOA CRITERIA, ALL VALVES SHALL BE LOCATED ADJACENT TO TEES (WITHIN 2') WHEREVER POSSIBLE, UNLESS SPECIFICALLY LOCATED OTHERWISE.	
05	3.	WHERE APPLICABLE ALL BLOWOFFS TO BE PLACED AT PROPERTY LINE. IF OTHER FACILITIES CONFLICT (I.E. STORM DRAINAGE) BLOWOFFS TO BE SET WITHIN 3' OF PROPERTY LINE. ALL BLOWOFFS SHALL BE BRASS PER THE CITY OF COCOA CRITERIA.	B.S.E. CONSULTANTS, INC.
GE	4.	THE FIRE HYDRANT ASSEMBLIES SHALL CONSIST OF A HYDRANT TEE, GATE VALVE, AND FIRE HYDRANT. THE GATE VALVE IS TO BE PLACED AT THE HYDRANT TEE. THIS NOTE ALSO APPLIES TO THOSE LOCATIONS WHERE THE HYDRANT IS LOCATED ACROSS THE STREET FROM THE MAIN LINE.	LAND SURVEYING 312 SOUTH HARBOR CITY BOULEVARD, SUITE 4 MELBOURNE, FLORIDA 32901 PHONE: (321) 725-3674 FAX: (321) 723-1159
E FLOW	5.	ANY SERVICE LINE LONGER THAN 60 FEET IN LENGTH WILL NEED TO BE 1". ALL OTHER SERVICE LINES SHALL BE 3/4"	CERTIFICATE OF PROFESSIONAL ENGINEERS BUSINESS AUTHORIZATION: 4905 CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905
	6.	SERVICE LINE SHALL CONSIST OF A BRONZE SERVICE SADDLE, CORPORATION STOP,	SCOTT M. GLAUBITZ, P.E. & P.L.S. STATE OF FLORIDA, No. 33659 No. 4151
	7.	UNLESS OTHERWISE NOTED ALL POTABLE WATER SERVICES TO BE 1" COPPER.	
	8.	WATER FOR FIRE FIGHTING SHALL BE AVAILABLE FOR USE PRIOR TO COMBUSTIBLE	
	9.	ALL WATER MAINS SHALL BE SWABBED PER CITY OF COCOA CRITERIA.	
GE	10.	TEMPORARY BLOWOFF TO CONSIST OF GATE VALVE, 20 LF OF MJ DIP, AND 2" (PIPE SIZE 2"-10") OR 4" (PIPE SIZE 12" AND LARGER) BLOWOFF. SEE CITY OF COCOA DETAIL.	
	11.	SITE CONTRACTOR SHALL BE RESPONSIBLE FOR EXTENDING THE POTABLE WATER SERVICE TO THE LOCATIONS SHOWN, WHICH REPRESENT FUTURE WATER METER LOCATIONS. BUILDING CONTRACTOR TO EXTEND SERVICE FROM METER LOCATION TO THE BUILDING(S).	HASSAN A. KAMAL, P.E.
E FLOW	10.	FIRE HYDRANTS SHALL BE AMERICAN FLOW CONTROL MODEL #B-84-B; 6", AMERICAN DARLING 5 1/4", MUELLER SUPER CENTURION 250 5 1/4" OR CLOW MEDALLION 5 1/4".	STATE OF FLORIDA, No. 41951
	11.	A TAPPING CONTRACTOR ACCEPTABLE TO THE CITY OF COCOA IS REQUIRED FOR TAPS.	
	12.	A UTILITY CONTRACTOR IS REQUIRED FOR WATER MAIN INSTALLATION.	
	14.	ALL 2" BLOWOFFS SHALL BE CONSTRUCTED OF BRASS PER CITY OF COCOA CRITERIA.	
	<b>BRE</b> 1.	EVARD COUNTY FIRE PREVENTION STANDARD NOTES: WATER FOR FIRE FIGHTING SHALL BE AVAILABLE FOR USE PRIOR TO COMBUSTIBLE MATERIALS BEING BROUGHT ON SITE.	
	2.	FIRE HYDRANTS SHALL BE INDICATED WITH A BLUE ROADWAY REFLECTOR, PLACED 1 FOOT OFF THE CENTERLINE OF THE ROAD FACING THE HYDRANT. THIS INCLUDES NEW AND EXISTING SOURCES.	
	3.	LANDSCAPING SHALL NOT BE LOCATED WITHIN 7.5 FEET SIDE & FRONT AND 4.5' TO THE REAR OF ANY FIRE HYDRANT OR FIRE DEPARTMENT CONNECTION. LANDSCAPING SHALL NOT VISIBLY OR PHYSICALLY OBSTRUCT FIRE HYDRANT LOCATIONS.	
	4.	ACCESS SHALL BE PROVIDED BY AN UNOBSTRUCTED ALL WEATHER DRIVING SURFACE CAPABLE OF SUPPORTING THE LOADS IMPOSED BY RESPONDING APPARATUS (32 TONS) AND BE NOT LESS THAN 20 FEET IN WIDTH, AND SHALL BE MAINTAINED DURING CONSTRUCTION.	
	5.	ALL HYDRANTS SHALL BE READILY ACCESSIBLE WITHOUT THE NEED TO TRAVERSE SWALES, DITCHES, ETC.	
M	6.	NEW FIRE HYDRANTS SHALL BE POSITIONED NOT MORE THAN 8', NOR LESS THAN 6' OFF THE EDGE OF PAVEMENT. THE CENTERLINE OF THE STEAMER CONNECTION (4 1/2") SHALL BE POSITIONED BETWEEN 18" - 24" ABOVE THE FINISHED GRADE.	
2	7.	ALL CONTROL VALVES FOR ANY FIRE SPRINKLER SYSTEM SHALL BE ELECTRONICALLY MONITORED.	
	<u>GEN</u> 1.	VERAL NOTES: EXISTING UNDERGROUND UTILITIES SHALL BE RELOCATED AS REQUIRED.	
	<u>gen</u> 1.	NERAL FIRE NOTES NFPA 1 18.2.4.1.1 "THE REQUIRED WIDTH OF A FIRE DEPARTMENT ACCESS ROAD SHALL NOT BE OBSTRUCTED IN ANY MANNER, INCLUDING BY THE BARKING OF VEHICLES."	(IN FEET) VERTICAL DATUM: NAVD88
	2.	NFPA 1 18.5.7.1 A 36 IN. (914 MM) CLEAR SPACE SHALL BE MAINTAINED AROUND THE	<u> </u>
	0	CIRCUMFERENCE OF FIRE HYDRANTS EXCEPT AS OTHERWISE REQUIRED OR APPROVED.	
OHE	5.	IN FRONT OF EACH HYDRANT CONNECTION HAVING A DIAMETER GREATER THAN 2-1/2 IN. (64 MM).	\$\beta\$       \$\frac{1}{2}\$
SHOPP	ES OF	PIPE DEFLECTION NOTES ALL PIPE DEFLECTIONS SHALL BE PER THE MANUFACTURER'S	▲           ▲         CITY COMMENTS           10/30/20
<sup>—</sup> COCOA	NORT	RECOMMENDATIONS AND AWWA REQUIREMENTS FOR MAXIMUM DEFLECTION. CONTRACTOR SHALL INCORPORATE THE APPROPRIATE FITTINGS ON PIPE DEFLECTIONS (IN ACCORDANCE WITH PIPE MANUFACTURER'S	DATE: 08/31/20 DESIGN/DRAWN: ALS/DRB
		RECOMMENDATIONS) TO COMPLETE THE INSTALLATION OF ALL WATER MAIN PIPES CONSISTENT WITH THE LOCATIONS DEPICTED UPON THESE PLANS.	PROJECT TITLE
		_	CIRRUS
		, 528 & 52 <sup>,</sup> 5 <sup>,</sup> R/W)	
		AMP (2'	
			UTILITY PLAN
			PROJECT NO.
			11545

DRAWING NO.

11545\_400\_009

SHEET 9 of 19

SYMBOLS SHOWN ARE GRAPHIC IN NATURE; DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SET.

\_\_\_\_\_ **\$**₽

![](_page_9_Figure_0.jpeg)

		DRAINAGE ST	RUCTURE T	ABLE		
NAME	DESCRIPTION	TOP ELEVATION	INVERTS	SIZE	PIPE LENGTH (FEET)	то
DS3	TYPE F	31.00	S =27.05 N =27.30	18" RCP 15" RCP	44	DS4
DS3A	YARD DRAIN	31.85	S =27.50	15" RCP	41	DS3
DS4	TYPE F	31.00	N =26.85 S =26.85 E =26.85	18" RCP 18" RCP 18" RCP	137	DS6
DS4A	TYPE 4	31.37	N =27.00	18" RCP	33	DS4
DS5	TYPE F	31.00	N =26.40 S =26.40	15" RCP 18" RCP	44	DS6
DS5A	TYPE F	31.50	S =26.75	15" RCP	44	DS5
DS6	TYPE F	31.00	W =26.15 E =26.15 N =26.15 S =26.15	18" RCP 18" RCP 18" RCP 18" RCP	151	DS7A
DS6A	TYPE 4	31.37	N =26.50	18" RCP	33	DS6
DS7A	TYPE F	31.00	W =25.40 N =25.40 S =26.95	18" RCP 18" RCP 18" RCP	20	DS7B
DS7B	TYPE G	31.30	S =25.30 N =23.80 E =26.60	18" RCP 36" RCP 24" RCP	156	DS8
DS8	TYPE G	31.00	S =23.00 N =23.00 W =24.75 NE =24.75	36" RCP 36" RCP 15" RCP 15" RCP	183	DS9
DS8A	YARD DRAIN	31.50	E =25.00	15" RCP	40	DS8
DS8B	YARD DRAIN	31.50	SW =25.00	15" RCP	46	DS8
DS9	TYPE G	31.00	S =20.00 N =19.50 E =21.00	36" RCP 42" RCP 24" RCP	69	DS10
DS10	TYPE G	31.00	S =19.15 N =19.15	42" RCP 42" RCP	84	DS10A
DS10A	MES		S =18.75	42" RCP		
DS11	TYPE F	31.00	N =27.25 S =27.50	18" RCP 15" RCP	41	DS11B
DS11A	YARD DRAIN	31.75	N =27.80	15" RCP	57	DS11
DS11B	MES		S =23.00	18" RCP		
DS12	TYPE F	31.00	N =25.00 W =25.75 E =25.75	18" RCP 15" RCP 15" RCP	99	DS13
DS12A	YARD DRAIN	31.55	E =26.00	15" RCP	39	DS12
DS12B	YARD DRAIN	31.80	W =26.00	15" RCP	39	DS12
DS13	TYPE F	31.30	S =24.00 W =23.50	18" RCP 24" RCP	168	DS9
DS14	TYPE F	31.00	E =28.80 W =28.80	18" RCP 15" RCP	59	
DS14A	YARD DRAIN	31.50	E =29.00	15" RCP	39	DS14
DS15	TYPE F	31.75	W =28.25 S =28.25	18" RCP 18" RCP	178	DS16
DS16	TYPE F	32.00	E =27.35 S =27.35 N =27.35	18" RCP 18" RCP 18" RCP	2	

![](_page_9_Picture_3.jpeg)

HP STORM PIPE (HIGH-PERFORMANCE POLYPROPYLENE PIPE) MAY BE USED IN LIEU OF OF REINFORCED CONCRETE PIPE (RCP). REFER TO SHEET 12 FOR SECTION DETAILS (A-A, B-B, C-C, D-D, E-E)

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ATE ROAD I OFF RAMP

J. \$€B

DRAWING NO.

11545\_400\_010

SHEET 10 of 19

SYMBOLS SHOWN ARE GRAPHIC IN NATURE; DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SET

![](_page_10_Figure_0.jpeg)

2rojects Folder\11545\Drawings\11545\_400\11545\_400\_011-012.dwg November 5, 2020 10:02:3

![](_page_11_Figure_0.jpeg)

SYMBOLS SHOWN ARE GRAPHIC IN NATURE; DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SET.

![](_page_12_Figure_0.jpeg)

SYMBOLS SHOWN ARE GRAPHIC IN NATURE; DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SET

![](_page_13_Figure_0.jpeg)

![](_page_13_Figure_2.jpeg)

![](_page_13_Figure_3.jpeg)

![](_page_13_Figure_4.jpeg)

![](_page_14_Figure_0.jpeg)

![](_page_14_Figure_1.jpeg)

![](_page_14_Figure_2.jpeg)

OPTIONAL SECONDARY 2" DOUBLE CHECK OR REDUCED PRESSURE PROVIDED BY CONTRACTOR CAN BE INSTALLED WITH A TEE BETWEEN METER

AND BACKFLOW FOR ON SITE TEMP WATER

€Hb

ROPOSED JUMPER ETER (FLANGE)

PROPOSED 2" GATE VALVE

PROVIDED BY CITY CONTRACTOR TO INSTALL)

GRAD

BRASS OR GALVANIZED PIPING <u>NO PVC</u>

2" CORPORATION STOR (TYP. 2 PLCS.)

₩ proposed bronze saddle

NO TEES OR SPIGOTS JPSTREAM OF METER

WATER MAI

("NO COMPRESSION")

("COUPLINGS")

PROPOSED 2" DOUBLE CHECH OR REDUCED PRESSURE ZON BACKFLOW PREVENTER

\_\_\_MAY USE POL' AT THIS POINT

90° BEND

GRADE

BRASS OR

GALVANIZED PIPING

H PROPOSED BRONZE SADDLE

INSTALLATION OF SWAB IN NEW WATER MAIN TO BE FLUSHED OUT WITH JUMPER ASSEMBLY AND WITNESSED BY CITY OF COCOA INSPECT

PROVIDED BY CONTRAC

GATE VALVES

PROPOSED WATER MAIN

TEST TREE~

![](_page_14_Figure_3.jpeg)

![](_page_14_Figure_4.jpeg)

-POLYETHYLENE TUBE-

POLYETHYLENE WRAP

STEP-2

STEP-1

~ 12" MIN

- 12" MIN

CITY OF COCOA Brevard County, Florida UTILITIES DEPARTMENT ENCINFERING, DIVISION

THRUST BLOCK NOTES

COA

-PLASTIC TAPE-

FIELD INSTALLATION-POLYETHYLENE WRAP

STEP-2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH THREE CIRCUMFERENTIAL TURNS OF TWO-INCH WIDE PLASTIC TAPE TO HOLD PLASTIC TUBE AROUND SPIGOT END.

STEP-3 ADJACENT TUBE OVERLAPS FIRST TUBE AND IS SECURED WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE WILL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED INTO AN OVERLAP ON TOP OF THE PIPE AND HELD IN PLACE BY MEANS OF PIECES OF THE PLASTIC TAPE AT APPROXIMATELY THREE TO FIVE FOOT INTERVALS.

 DRAWN BY: J. WILLIAMS
 SCALE:
 NOT TO SCALE

 CHECKED BY: P. DAVIS
 DATE:
 MARCH 2020

 DESIGN BY:
 SHEET:
 1 OF 1

B

BEND

NTS

**\*\*** 

TEE & PLUG

NTS

TEE

NTS

DRAWN BY: J. WILLIAMS SCALE: NOT TO SCALE CHECKED BY: P. DAVIS DATE: MARCH 2020 DESIGN BY: SHEET: 1 OF 1

SANITARY HAZARDS (SANITARY SEWER, FORCE MAIN & STORM SEWER)

RE-USE MAIN

WATER MAIN

HORIZONTAL CLEARANCE

 DRAWN BY: J. WILLIAMS
 SCALE:
 NOT TO SCALE

 CHECKED BY: P. DAVIS
 DATE:
 MARCH 2020

 DESIGN BY:
 SHEET:
 1 OF 1

 ACAD NAME:
 TYPICAL REQUIRED SEPARATION

STEP-3

STEP-1 PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

REDUCER

NTS

90° ELBOW

NTS

(B) 🚝 B)

CROSS & PLUG

NTS

**THRUST BLOCK** 

**NOTES & DETAILS** 

6' MIN

(10' PREFERRED)

TYPICAL REQUIRED

SEPARATION

![](_page_14_Figure_6.jpeg)

![](_page_14_Figure_7.jpeg)

![](_page_14_Figure_8.jpeg)

![](_page_14_Figure_9.jpeg)

![](_page_14_Figure_10.jpeg)

![](_page_14_Figure_11.jpeg)

![](_page_14_Figure_12.jpeg)

![](_page_14_Figure_13.jpeg)

![](_page_14_Figure_14.jpeg)

![](_page_14_Figure_15.jpeg)

![](_page_14_Figure_16.jpeg)

![](_page_14_Figure_17.jpeg)

15 of 19

SYMBOLS SHOWN ARE GRAPHIC IN NATURE; DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SET

### 1.1 GENERAL

These Technical Provisions and Standard Details identifies design, installation, inspection, and acceptance specifications to be used for water, wastewater, and reclaimed water systems that will be maintained and operated by the City of Cocoa. All potable water, wastewater, and reclaimed water mains and appurtenances must be installed in accordance with this Manual, the City of Cocoa Cross Connection Control Program Manual, the City of Cocoa Utilities Handbook, and the approved plans.

Contractor requirements include:

his designee prior to commencement of construction.

Furnishing all labor, materials, tools and equipment necessary or incidental to the construction

Obtaining and paying for all permits, inspections, and other official fees in connection with the work.

Arranging a pre-construction conference with the Engineering Inspection Division. All fees must be paid prior to the pre-construction meeting. It is required that the pre-construction meeting be held prior to ordering materials.

Scheduling materials inspection (24-hour notice), open ditch inspection, pressure/leakage test, and final inspection.

Provide all documents per the project requirement letter, including but not limited to As Built Drawings, Bills of Sale, Easements, etc.

Make certain that no public water/wastewater lines are placed on private property. Any deviation from these requirements must be approved in writing by the Utilities Director or

Fees charged by the City are set by City Council by resolution and are listed on the appendix

"Water Service Rates and Charges" made a part of the Utilities Handbook. Fees are subject to change without notice. The most current fees will be charged.

The Utilities Department and Engineering Division are located at 351 Shearer Blvd., Cocoa, Florida, 32922. The telephone number is (321) 433-8701; facsimile number is (321) 433-8708.

1.2 DEFINITIONS

The term "approved equal" is used to mean a part or item that has been approved in writing by the Technical Provision and Standard Details Advisory Committee or the Utilities Director. A written request must be made in order to have an item accepted as an approved equal. Written specifications on the part or item must be furnished with the request.

Approved Tapping/Linestop Contractor - A Contractor who has been approved by the Engineering Division to perform taps or linestops within the Cocoa Water System. A current list is maintained and available through the Engineering Division.

Backflow Preventer Assembly - A backflow preventer assembly, also called a cross connection control (CCC) device, is a mechanical or non-mechanical device used to prevent the flow of water from a non-potable source to the potable water distribution system. Approved backflow preventers are testable assemblies composed of two independently acting, approved check valves, including tightly closing resilient seated shutoff valves attached at each end of the assembly, and fitted with properly located resilient seated test cocks.

**Canal** - A trench, the bottom of which is normally covered by water, with the upper edges of its two sides normally above water

**City** - Means the City of Cocoa.

**Collection Mains -** Wastewater gravity mains.

**Competent Person** - A person who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Drainage Ditch or Irrigation Ditch - A man-made trench which is dug for the purpose of draining

Distribution Main - Any water main twelve inches (12") and smaller.

**Domestic** - Means made or manufactured in the USA.

water from the land or for transporting water for use on the land and which is not built for navigational purposes.

Force Main - Wastewater main under pressure.

Manual - City of Cocoa Utilities Technical Specification and Standard Details Manual

Normal Working Day - Monday through Friday, excluding CITY holidays.

Normal Working Hours - Hours are between the hours of 8:00 a.m. to 5:00 p.m. of a NORMAL WORKING DAY

**Passivated** - Treated or coated metal to reduce the chemical reactivity of its surface.

Stainless Steel - A steel alloy with a minimum of 10.5% to 11% chromium.

**Substantial Completion** - The point when the construction project has been finished to the point that the City of Cocoa can use the project for the purpose it was intended.

Swale - A manmade trench which:

Division.

- A. Has a top width-to-depth ratio of the cross-section equal to or greater than 6:1, or side slopes equal to or greater than three feet horizontal to one foot vertical; B. Contains contiguous areas of standing or flowing water only following a rainfall event; C.
- Is planted with or has stabilized vegetation suitable for soil stabilization, stormwater treatment, and nutrient uptake:
- D. Is designed to take into account the soil erodibility, soil percolation, slope, slope length, and drainage area to prevent erosion and reduce pollutant concentration of any discharge.

Technical Provision and Standard Details Committee - Committee whose members shall consist of the manager, or their designee, of the following UTILITIES staff: Engineering, Inspections, Water Field Operations, and Sewer Field Operations. The committee evaluates and proposes revisions for the design standards, specifications, drawings, products and procedures for the Manual

**Transmission Main** - Any water main sixteen inch (16") and larger. Fourteen-inch (14") pipelines are not acceptable

Utilities - Utilities Department of the City of Cocoa, Cocoa, Florida, and/or its designated representative(s)

**Utilities Handbook** - The City of Cocoa Utilities Handbook produced by the Customer Service Division of the Finance Department.

Whenever a specification from a specific source is cited, the most current revision of that specification will be used. The word "shall" is mandatory, and the word "may" is permissive.

Unless otherwise specified, "City" means City of Cocoa; "Utilities Department" means City of Cocoa Utilities Department; "Engineering Division" means City of Cocoa Utilities Engineering Division, "Inspections or Inspector" means City of Cocoa Utilities Engineering Inspections

### **1.3 ABBREVIATIONS**

American Association of State Highway and Transportation Officials - AASHTO Asbestos Cement - AC Association of PVC Pipe Manufacturers - Uni-Bell American National Standards Institute - ANSI American Society of Civil Engineers -ASCE American Society of Mechanical Engineers - ASME American Society for Testing and Materials - ASTM American Water Works Association - AWWA American Water Works Association Tapered Thread - CC American Society of Sanitary Engineers - ASSE Automatic Transfer Switch - ATS City of Cocoa - CoC Copper Clad Steel - CCS Copper Development Association - CDA Cross Connection Control - CCC Dimension Ratio - DR Double Check Backflow Assembly - DC Double Check Detector Assemblies - DCDA Dry Film Thickness - DFT Ductile Iron Pipe Research Association - DIPRA Ductile Iron Pipe DIP Engineer of Record - EOR Florida Administrative Code - FAC Florida Department of Environmental Protection - FDEP Florida Department of Transportation - FDOT Florida East Coast Rail Road - FECRR Foundation for Cross-Connection Control and Hydraulic Research - FCCCHR Flange Factory Mutual - FM High-Density Polyethylene - HDPE Horizontal Directional Drilling - HDD Jack and Bore - J&B Maintenance of Traffic - MOT Manual on Uniform Traffic Control Devices - MUTCD National Association of Corrosion Engineers - NACE National Fire Protection Association - NFPA National Sanitation Foundation - NSF National Standard Thread - NST Non-rising stem - NRS Original Equipment Manufacturer - OEM Outside Screw and Yoke - OS&Y National Pollution Discharge Elimination System - NPDES Plain End - PE Polyvinylchloride - PVC Precautionary Boil Water Notice - PBWN Portable Changeable Message Signs - PCMS Pre-stressed Concrete Cylinder Pressure Pipe - PCCP Project Manager - PM Pounds per Square Inch - PSI Raised Pavement Marker -RPM Reduced Pressure Backflow Assembly - RP Reduced Pressure

Detector Assembly- RPDA Reinforced Concrete Pressure Pipe -RCP Stainless Steel - SS Technical Provision and Standard Details - TPSD Traffic Control

Plan - TCP Underwriters Laboratories - UL Unified Numbering

System - UNS Variable Frequency Drive - VFD

### 2.1 WATER MAIN CROSSINGS

### 2.1.1 GENERAL

In all cases where sanitary gravity or force mains cross water mains the crossing shall meet the vertical and horizontal separation requirements of FAC Rule 62-555.314. When separation requirements cannot be met, the Engineer of Record must propose an alternative solution that meets the requirements of FAC 62-555.314 for approval by the Engineering Division. The water main should cross above the sanitary main, when the water main must cross below the sanitary main, the minimum separation shall be 12 inches.

### **2.2 MATERIALS SPECIFICATIONS**

2.2.1 PIPE

2.2.1.1 Polyvinyl Chloride Pressure Pipe, 4" - 12"

Polyvinyl chloride pressure pipe (sizes 4" through 12") will be cast iron pipe equivalent outside diameter Class 235 (DR 18) conforming to the American Water Works Association's (AWWA) specification C900 and will be blue or white in color. Pipe will be in standard 20-foot lengths. All joints will be of the elastomeric-gasket type with thickened, integral solid-wall bell or coupling with the same DR as the barrel. All PVC pipe and couplings will bear the UL label and NSF approval for potable water.

### 2.2.1.2 Fusible Polyvinyl Chloride Pipe, 4" - 12"

Polyvinyl chloride pressure pipe (size 4" through 12") will be cast iron pipe equivalent outside diameter and a pressure rating of 235 PSI (DR 18) conforming to AWWA specification C900 and will be blue or white in color. Fusible PVC pipe shall be supplied by Underground Solutions, Inc. It shall be installed in accordance with the suppliers' specifications. All PVC pipe will bear the UL label and NSF approval for potable water.

### 2.2.1.3 Ductile Iron Pipe

Ductile iron pipe will be cement-lined pressure Class 350 for 12-inch diameter and smaller and Class 250 for 16-inch and larger conforming to AWWA specification C151. Water main and storm drain crossing conflicts will be properly designed by the project engineer and approved by theUtilities Department prior to installation. Water mains that are less than 10 feet apart from building foundations or other permanent objects will be ductile iron pipe. In no case will water mains be located less than 5 feet from foundations. The above distances will be doubled for water mains larger than 8" in diameter. Polyethylene sleeve conforming to AWWA specification C105 will be provided for all installations. The polyethylene sleeve will be sealed with tape and shall be blue for water mains.

### 2.2.1.4 High Density Polyethylene (HDPE) Pipe

HDPE pipe is generally not accepted in the City of Cocoa water system, except as a carrier pipe for a pressurized utility main.

### 2.2.1.5 Reclaimed Water

PVC pipe installed in reclaimd water systems will be Class 235 (DR 18) conforming to AWWA specification C900 and will be purple in color. Ductile iron pipe installed in the reclaimed water system will be pressure Class 350 for 12" and smaller and pressure Class 250 for 16" and larger, provided 3 feet of cover can be maintained. Where cover is less than 3 feet, pressure Class 350 is required. Polyethylene sleeve conforming to AWWA specification C105 will be provided for all installations. The polyethylene sleeve will be sealed with tape and shall be purple for reclaimed water mains.

2.2.2 VALVES, VALVE BOXES, AND VALVE EXTENSIONS

2.2.2.1 Resilient Seat Gate Valves, 4" - 36"

Resilient seat gate valves will have mechanical joint ends as manufactured by American Flow Control; AVK; M&H; U.S. Pipe; Clow; Mueller or an approved equal. The resilient seat gate valves must conform to AWWA specification C509 or C515 and be manufactured in the U.S.A. Resilient seats will be of natural or synthetic rubber and be fully encapsulated to gate. Valves will have 18-8 Type 304 Stainless Steel bolts and nuts. The interior and exterior of the valve body will be fusion-bonded epoxy coated in accordance with AWWA specification C550 in order to provide a corrosion-resistant seat. The coating must be applied in a manner to withstand the action of line fluids and operation of the sealing gate under long-term service. Valve seats must seal by compression only. Wedging or sliding of the resilient seat is not acceptable. Valves will be supplied with 2"-square operating nuts and be designed to provide a bubble tight seal regardless of direction of flow. Opening the valve will be in the counterclockwise direction. Valves 16" and larger will have Bevel Gear Operators. For gate valves 16" and larger to be stood up straight, the 2" operating nut must have 12" of cover. Engineer of Record or Contractor must demonstrate the 12" of cover over the 2" operating nut can be achieved by showing all pertinent dimensions. Tapping valves shall have a centering ring.

### 2.2.2.2 Butterfly Valves, 16" and Larger

Butterfly valves shall be used for above ground service. Butterfly valves shall have flanged ends, be rubber seated, 900 tight closing type, short body. The interior and exterior will be fusionbonded epoxy coated in accordance with AWWA specification C550. The valve shaft will be of 316 Stainless Steel. Body dimensions and minimum shaft diameter will be in accordance with Tables 1 and 3 of AWWA specification C504. The valve seat will be of molded natural or synthetic rubber, will be mechanically secured to the disc or to the valve body, and will mate against a stainless-steel seat surface. The gear ratio will be such as to require not more than 50-foot pounds of input torque to operate the valve against the worst case of a water flow velocity of 10 feet per second at a pressure of 100 psi differential. A torque-limiting device will be supplied if the allowable operator input is less than 450-foot pounds. Butterfly valves will have a factory installed hand wheel. The valve will open when the operator nut is turned counterclockwise. Butterfly valves will not be used for buried service.

### 2.2.2.3 Valves, 2"

Two-inch valves for use with the 2" blow-off gate valve will be rated at 125 SWP or 200 WOG. All 2" gate valves must meet all EPA and DEP requirements regarding lead and zinc contents. Brass fittings and 2" brass wheel valves are shall be used on blow-offs. All valves must be manufactured in the U.S.A.

### 2.2.2.4 Valve Boxes

Valve boxes and lids must be manufactured in the U.S.A. Boxes and lids must be structurally equal to those produced by East Jordan Iron Works or Tyler and must have 5-1/4" minimum inside diameter. Cast iron valve boxes will consist of a circular cast iron top and bottom section. The depth must be determined, and the appropriate valve box must be installed. No PVC or Ductile is permitted in the valve box. Boxes must be set flush with finished ground surface in such a manner as to permit easy use of a valve wrench and to prevent surface loads from being transmitted to the valve or pipe. Box sections must be telescopic and adjustable. Valve box lids should have the word "WATER" or "SEWER" or "REUSE", as appropriate, cast on the top. A concrete pad (24" L x 24" W x 4" D) will be poured around all boxes at finished grade level unless the valve is located in a paved roadway or parking lot. A Valve identification plate engraved to indicate the type, size, and number of turns will be securely anchored to the concrete pad. Valve identification plates for valves 12" and larger will also indicate the torque necessary for actuation.

### 2.2.2.5 Valve Extensions

If the depth of the valve nut is greater than 48" below grade, or 30" below grade and under the water table, a valve extension stem will be required. The extension will have a centering collar and will be mechanically attached to the valve operating nut, such as extensions manufactured by the General Engineering Company, Model #4840-0001-3, or an approved equal to be determined by the Engineering Supervisor or his/her designee.

### 2.2.2.6 Valve Box Debris Shield

All buried valves 4-inch through 12-inch requiring a valve box shall be furnished with a valve box shield (alignment device). The device shall minimize debris infiltration and center the valve box over the operating nut. The device shall be of HDPE or plastic and colored white or black. It shall be furnished in two pieces that will lock together under the operating nut without requiring the removal of the operating nut. The device shall not affect the operation of the valve. No onepiece device will be accepted. The device shall be **Box Lok**, **American** or approved equal.

### 2.2.2.7 Insert Valve Specification

The Insert Valve shall conform to the following:

The Ductile Iron 250 p.s.i.g. Insert Valve shall be a Resilient Wedge Gate Valve designed for use in potable water, raw water, reclaimed water, wastewater and backflow control systems. The host pipe shall not be a permanent component of the Insert Valve. The ductile iron body, bonnet, and wedge provide strength and a pressure rating that meets or exceeds the requirements of AWWA C515. Insert Valve shall be ductile iron construction meeting ASTM A536 Grade 65-45-12.Sizes 12" and smaller must be capable of working on Cast/Grey Iron or Ductile Iron Class A, B, C and D, IPS PVC, C900 and C909 PVC, Steel, AC pipe diameters without changing either top or bottom portion of split valve body. The Insert Valve shall have a 250 psig maximum working pressure. The pressure rating markings must be cast into the body of the insert valve. The construction of the Resilient Wedge shall comply with AWWA C509 requirements. The ductile iron wedge shall be fully encapsulated with EPDM rubber by a high pressure and high temperature compression or injection mold process. The resilient wedge shall seat on the valve body and not the pipe to obtain the optimum seating and flow control results. The resilient wedge shall be totally independent of the carrier pipe. The resilient wedge shall not come into contact with the carrier pipe or depend on the carrier pipe to create a seal. The Resilient wedge must ride inside the body channels to maintain wedge alignment throughout its travel. The insert valve is fully epoxy coated on the interior and the exterior. Valve shall be coated with a minimum of 10 mils epoxy in compliance with AWWA C550 and certified to ANSI/NSF-61. The stuffing box, operating stem and resilient wedge (complete bonnet and all moving parts) shall be removable, repairable and or replaceable under pressure.

See "Appendix A" Approved Materials for approved Insert Gate Valves.

2.2.3 BACKFLOW PREVENTERS

2.2.3.1 General

All connections to the City of Cocoa potable water system shall contain a backflow preventer assembly as required in the "City of Cocoa Cross Connection Control Program Manual". Backflow preventer assemblies shall be in accordance with AWWA specification C510, ASSE 1048, UL 1469, and as listed in "Appendix A" of this document. All backflow preventers shall be installed per Standard Details in "Appendix B". Backflow preventers on fire line and commercial services shall have test certifications submitted and approved prior to final inspection.

Backflow preventers will have interior fusion bonded epoxy coating 5 to 12 mils and will be installed above grade in accordance with manufacturer's recommendations on a concrete slab adjacent to the meter. Check valves must have bronze seats.

Commercial Services: Cross connection control device required for commercial service including multi-family residences, shall be a reduced pressure (RP) backflow preventer unle otherwise approved by the Engineering Division.

Residential Services: Cross connection control device required for residential service shall be dual check backflow preventer.

Construction Sites: Cross connection control device required for temporary constructi jumpers shall be a double check backflow preventer. The Contractor shall provide to certifications on the jumper backflow preventer before the jumper is placed into service.

### 2.2.3.2 Fire Services

Cross connection control devices for fire line systems shall be double check detector assemble (DCDA) or reduced pressure detector assemblies (RPDA). DCDA and RPDA shall meet requirements of the Florida Building Code and must be supplied with a ¾-inch or larger bypa assembly. DCDA will be accepted as a complete approved assembly in accordance with section on "Backflow Prevention and Cross-Connection Control" in the Utilities Handbook. Engineering Division will inspect the interior of the DCDA prior to installation. DCDA must installed horizontally above ground in a grassed or non-traffic area. The DCDA will be installed with 24" minimum and 30" maximum clearance from finished grade. "N" shaped DCDA will b accepted on a case-by-case basis. Fire lines requiring an RPZ will be handled on a case-by-case base. The Engineering Division shall paint the DCDA, to be paid for by the Developer/Contracto

### 2.2.3.3 Meter Station Backflow Preventer

Backflow Preventers for the large meter stations (3-inch and larger) are a Reduced Pressu Zone Assembly and manufactured in accordance with AWWA C511. The assembly will installed so as the relief valve opening will be a minimum of 12" above concrete slab. If t meter station is in a planter, the top of the planter is considered the flood rim and the reli valve opening shall be 12" above the concrete slab. The Engineering Division shall paint t meter station assembly, to be paid for by the Developer/Contractor.

2-inch meter stations may be allowed on a case-by-case basis as approved by the Engineerin

### 2.2.3.4 Backflow Preventer Certification Test

The Contractor will provide test certifications on the jumper backflow preventer before jump is placed into service. Backflow preventers on fire-line and meter stations will have to certifications submitted and approved prior to final inspection.

### 2.2.4 FITTINGS

All fittings must be of the mechanical joint type with an approved joint restraint, or pushjoint with a gasket joint field restraint system. All fittings must be manufactured in the U.S.A.

### 2.2.4.1 Cast Iron

Cast iron fittings will be AWWA specification C110; Class 250, cement lined with inside so coating. The fittings will be bituminous coated on the outside and be wrapped with 6 r polyethylene (sealed with tape). Cast iron fittings are only to be used in larger application where ductile iron fittings are not available.

### 2.2.4.2 Ductile Iron, 4" - 16"

Ductile iron compact fittings (sizes 4" through 16") must conform to AWWA specification C15 Ductile iron compact fittings will be mechanical joint with an interior cement lining with s coating and an exterior bituminous coating. All fittings will be wrapped with 6 mil polyethyle (sealed with tape).

### 2.2.4.3 Bolts

All buried mechanical joint bolts and nuts must be CORTEN Steel. All above ground bolts a nuts for flanged fittings must be 18-8 Type 304 stainless steel. Never-seize/Anti-seize shall b applied to all SS bolts and nuts.

### 2.2.4.4 Tapping Sleeve

Tapping sleeves on mains 4" to 12" in diameter will be all Stainless Steel Sleeves.

The All Stainless Steel Sleeve shall be fabricated from 304 Stainless Steel. They shall have a pa through bolt design and full circumferential gasket to provide 360° seal around the pipe. tapping sleeve is to be fully passivated to return the stainless steel to its highest corrosic resistance stage.

Sleeves on mains 16" to 24" in diameter will be fabricated steel with O-ring seal, fusion bonde epoxy coated with 304 stainless steel nuts and bolts or M.J. ductile iron body. Sleeves on main larger than 24" will be handled on a case-by-case basis.

Tapping Sleeves for reinforced concrete mains will be handled on a case-by-case basis. sleeves will have a fusion-bonded epoxy coating on the entire body and throat assembly. straps and bolts shall be 18-8 Type 304 stainless steel.

The tapping valve must have centering ring and conform to Section 2.2.2.1 "Resilient Seat Ga Valves" in these Technical Provisions.

Tapping saddles to be placed on asbestos concrete (AC) pipe shall be an JCM A432 Stainless-Steel Sleeve or equal.

### 2.2.4.5 Line Stop Sleeve Specifications

Sizes 4" through 12"

Bolts, Nuts & Washers

### Sleeve/Bodv

The entire Line Stop sleeve shall be fabricated from 304 Stainless Steel. They shall have pass-through bolt design and provide 360° seal around the pipe. The line stop sleeve is to b fully passivated to return the stainless steel to its highest corrosion resistance stage. Outlet of sleeve will be full port, i.e. on 8" sleeve, outlet will be 8", on 6" sleeve, outlet will be 6".

18-8 Type 304 Stainless Steel, the bolts shall be track head type and furnished with permanent lubricated heavy-hex nuts and stainless washers

### Gasket

The full circumferential gasket shall be molded of synthetic rubber compounded for use wi water salt solutions, mild acids, bases and sewage. The gasket shall have a gridded surface, be full 1/4" thick with 304 stainless steel bridge plates molded flush into the gasket and have raised hydromechanical outlet seal to seal against line surges and water hammer.

### Pressure Rating

The sleeves shall be rated at 150 PSI hydrostatic with a test pressure of 200 PSI on pipe with full circumferential break.

Line Stop Sleeves shall be a JCM A440 Line Stop Sleeve or approved equal.

ice, ess	2.2.5 FIRE HYDRANIS Fire hydrants must be manufactured in accordance with AWWA specific must have bronze-to-bronze main seat threading surfaces. They will be t	ation C502. Hydrants raffic type with drain	B.S.E. CONSULTANTS, INC.
e a	holes plugged at the factory. Fire hydrants will have 18-8 Type 304 Stainles (bonnet, traffic flange and shoe).	s Steel bolts and nuts	CONSULTING - ENGINEERING - LAND SURVEYING
ion est	Hydrants will have a minimum 5-1/4" main valve opening, with one 4-1/2 two 2-1/2" hose nozzles. Nozzles to have NST threads. Stem couplings a stainless steel. The upper valve plate must be bronze. The hydrant shoe with fusion-bonded epoxy, 6 mil minimum. All hydrants will be painter Rustoleum high-performance epoxy 9100 system, non-lead, dry film thickr #9143 Yellow. City crews will apply finish paint to each new fire hydrant aft paid the appropriate fees.	" pumper nozzle, and are to be cast iron or will be coated inside d at the factory with ness 5 to 8 mils, color ter the Contractor has	312 SOUTH HARBOR CITY BOULEVARD, SUITE 4 MELBOURNE, FLORIDA 32901 PHONE: (321) 725-3674 FAX: (321) 723-1159 CERTIFICATE OF PROFESSIONAL ENGINEERS BUSINESS AUTHORIZATION: 4905 CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905
lies the ass the be led be ase or	Finish grade is to be established and the proper length hydrant is to Contractor prior to acceptance by the City. All nozzles will be a minimum o of 24" above finished grade. A 6" mechanical joint hydrant connection wil hydrant valve-anchoring tee with integrally cast standard mechanical joint branch. The Contractor will not be allowed to install risers on hydrants. A is determined that a fire hydrant is not at grade, the Contractor shall purc hydrant and install it under the direction of the Engineering Division.	be installed by the f 18" and a maximum Il be provided using a gland on 6" plain end t final inspection, if it chase a proper length	SCOTT M. GLAUBITZ, P.E. & P.L.S. STATE OF FLORIDA, No. 33659 No. 4151
ure be the lief the	All service connections will be single connections. Services that are 3/4" ar annealed temper soft copper. All connections are to be of the flare type. 1 are to be of type K drawn temper in straight lengths or annealed tempe Absolutely no lead-based solder joints will be accepted. Any repairs of se flare-to-flare coupling. No compression fittings will be accepted. Taps in same nominal diameter as the service line. Service taps in PVC pipe shellcutter designed to cut PVC pipe, and the PVC plug will be removed.	nd 1" are to be type K L-1/2" and 2" services r if furnished in coils. ervice lines will be by n the pipe will be the will be drilled with a	
ing	Brass goods furnished under this specification shall be new and unused. All to ANSI/AWWA Standard C800, latest revision.	fittings shall conform	HASSAN A. KAMAL, P.E. STATE OF FLORIDA, No. 41951
per est	All brass components in contact with potable water must be made from e Alloys C89520 or C89833 with a maximum lead content of .25% by weight. in ANSI/AWWA C800 Paragraph 4.1.2 are not approved. All service fitting suitable for contact with drinking water by an ANSI accredited organizatic ANSI/NSF Standard 61. All fittings shall be stamped or embossed with a ma that the product is manufactured from the low-lead alloy as specified abov	either CDA/UNS Brass Brass alloys not listed is shall be certified as on in accordance with irk or name indicating e.	
<b>2</b> 7	Brass saddles shall be made from CDA/UNS C83600 and are exempt requirement.	from the "no lead"	
-011	2.2.6.1 Saddles		
seal mil	Saddles must be used for all connections to PVC, AC and D.I. pipe. Saddles i "CC" threads as manufactured by <b>Mueller Company</b> , or <b>Ford Meter Box</b> sizes for these manufacturers are noted below (approved materials are als A"):	must be all brass with <b>Company</b> . The pipe so listed in "Appendix	
	<b>MUELLER</b> : For ductile iron pipe sizes 4" to 12", for 3/4" and 1" services, the must be used. For 1-1/2" and 2" services, the BR 2 B double strap design methods.	he single strap design ust be used.	
53. seal ene	FORD: For pipe sizes 4" to 12", for 3/4" and 1" services, the style 10: must be used. For 1-1/2" and 2" services, the style 202B double strap desig pipe sizes 16" and larger, for 3/4", 1", 1-1/2," and 2" services, the style 202 must be used.	1B single strap design gn must be used. For B double strap design	
	An approved equal may be used in lieu of any of the above-listed designs/n	nodels.	
and be	<b>2.2.6.2 Curb Stops, 3/4" - 2"</b> Curb stops 3/4" and 1" in size will be flare-by-meter coupling. <b>Curb stop</b> <b>wings and a swivel meter nut.</b> Curb stops that are 1-1/2" or 2" will be with locking wing or an approved equal. All curb stops shall be centered installed in a horizontal position.	<b>os must have locking</b> flare-by-meter flange in the meter box and	
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SHEET

SYMBOLS SHOWN ARE GRAPHIC IN NATURE; DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SET.

### 2.2.6.3 Corporation Stops, 3/4" - 2"

All corporation stops for water service ¼" thru 2" will be brass and have "CC" inlet threads and copper flare outlet. 2" Corporation stops for "jumpers" will be "CC"-by- F.I.P.

### 2.2.6.4 Meter Boxes

Meter boxes for traditional meters are to be plastic with an iron flipper lid with a full pin hinge. Meter boxes for radio-read meters must have a lid compatible with City's AMR meter antennae (4-1/2'' round). Service locations will be permanently cut and painted on concrete curb or the street with a blue "W" for potable water or a purple "R" for reclaimed. Reclaimed services will be located at the opposite lot corner from water services where practical or with five feet minimum separation.

For larger 1-1/2 and 2-inch meters, 17" x 30" meter boxes shall be used. For areas that are anticipated for high traffic areas, a traffic rate H-20-meter box shall be used. Reclaimed Water services will be set in purple meter boxes of materials per above. They are also required to have a 3" x 5" permanent plastic tag, secured to the curb stop with a nylon tie wrap, which will be supplied. Tags will be inscribed, "RECLAIMED WATER DO NOT

### 2.3 PROTECTION OF PROPERTY AND OBSTRUCTIONS

### 2.3.1 PROTECTION

Temporary supports and/or adequate protection and maintenance must be provided on all underground and surface structures encountered in the progress of the work. Structures that have been disturbed will be restored to a condition equal to their original state upon completion of the work.

### 2.3.2 OBSTRUCTIONS

All utility owners must be notified prior to beginning construction. Any known obstructions will be shown on the plans; however, Contractor is solely responsible for field verifying existing conditions. The utmost caution will be taken in all operations to avoid damage to existing obstructions whether or not shown on the plans. Damage to other utilities will be at the Contractor's expense.

If the Contractor encounters any unforeseen obstructions during construction, the Contractor shall immediately cease work in that area and notify the Engineer of Record (EOR). The EOR shall design and provide detailed drawings to correct the situation. The drawings shall be submitted to the Engineering Division for approval. After approval by the Engineering Division, a set of approved drawings will be given to the contractor and they may resume work.

### 2.3.3 EXISTING ASBESTOS CEMENT WATERMAINS

In areas where asbestos cement water mains are existing, water main relocations or replacements may be necessary. If new construction of facilities is over, under, or near asbestos cement water mains, it shall require that the asbestos cement water main be changed out to polyvinyl chloride pipe or ductile iron pipe. All asbestos cement pipe that is replaced shall be removed and disposed of by the contractor unless specifically directed in writing by the City to abandon in place. New pipe material shall depend upon the type and location of the facilities being constructed. The Developers Engineer shall design the replacement and submit it for the Engineering Division approval. The Developer is responsible for all design, materials, labor, equipment, testing, and costs for the replacement. Contractor shall remove and dispose of AC pipe in accordance with FAC Codes 62-204.800 and 62-257.

### 2.3.4 ABANDONMENT OF ASBESTOS CEMENT PIPE

Where asbestos cement water mains have been directed by the City to be abandoned in place they shall be filled with a sand/cement grout by the contractor. Grout shall be injected within the pipe sections to be abandoned where the ends of the sections shall be capped and or plugged. The grouting program shall consist of pumping sand-cement grout with suitable chemical additives at pressures necessary to fill the pipe sections to prevent the potential for future collapse. The rate of pumping shall not exceed six (6) cubic feet per minute. The pumping pressures shall be in the range of 100 to 150 psi.

The Contractor shall provide standpipes and/or additional means of visual inspections as required by the City to determine if adequate grout material has filled the entire pipe section(s).

### 2.4 TRENCH PREPARATION

### 2.4.1 EXCAVATION

A trench will be opened so that the pipe can be installed to the alignment and depth required. It will be excavated only so far in advance of pipe placement as necessary. The trench will be excavated to the depth required to provide a uniform and continuous bearing support for the pipe or undisturbed ground. Bell holes will be provided at each joint to permit jointing to be made and inspected properly.

During excavation, if ashes, cinders, muck or other organic material considered unsuitable is discovered at the bottom of the trench at sub-grade, unsuitable material will be removed and backfilled with approved material. This material will be compacted in layers to provide a uniform and continuous bearing characteristic of that area's soil condition. Where the bottom of the trench at sub-grade consists of unstable material to such a degree that it cannot be removed and replaced with an approved material to support the pipe properly, a suitable foundation must be constructed. Excavated material will be piled in such a manner that it will not endanger work or obstruct natural watercourses, sidewalks or driveways. Fire hydrants under pressure, valve boxes, or other utility controls will be left unobstructed and accessible at all times. Gutters will be kept clear or other satisfactory provisions will be made for street drainage.

### 2.4.2 SHORING AND BRACING

Open cut trenches must be sloped, shored or braced as required by all governing State law, municipal ordinances, OSHA Standards, and as may be necessary to protect life, property, or the work. Trench bracing may be removed after backfilling has been completed or has been brought up to such an elevation as to permit its safe removal. The use of a trenching box may be used in place of sheeting and bracing where appropriate. The Contractor is required to have a Competent Person designated and in charge at all times while workers are in the trench.

### 2.4.3 DE-WATERING

Excess water must not be allowed in the trench at any time. An adequate supply of well points, headers or pumps, all in first-class operating condition, may be used to remove the water. The use of gravel and pumps will also be an acceptable means of removing the water. The trench will be excavated no more than the available pumping facilities are capable of de-watering. Discharge from pumps will be accommodated in accordance with the St. Johns River Water Management District's requirements. The Contractor is responsible for obtaining all de-watering permits such as NPDES permit.

### 2.5 PIPE LINE CONSTRUCTION

### 2.5.1 GENERAL

All water mains, service lines, and appurtenances must be installed as specified on the approved plans and in accordance with the Standard Detail Sheet. Installation will conform to AWWA specification C600 except as modified herein.

Domestic water service can only come from a Distribution main. When water service is requested and the only water main available is a Transmission main, a large tap and section of pipe shall be installed on the Transmission Main for the water service.

The minimum size tap on a Transmission Main shall be a six (6) inch.

### 2.5.2 MATERIAL HANDLING

2.5.2.1 Precautions

Every precaution will be taken to prevent damage to pipe and piping materials during transportation and delivery to the work site. Under no condition will pipe be dropped, bumped, dragged or picked up by inserting forks into end of pipe. Pipe lifted by placing forks into pipe shall be removed from job site.

# 2.5.2.2 Damaged Materials

be rejected and removed from the site.

### 2.5.2.3 Storage

Pipe fittings and specials will be stored in a manner which will assure the protection of the material from damage and which will keep it clean.

### 2.5.3 INSPECTION OF MATERIALS

Materials delivered to the job site will be subject to inspection by the Engineering Division prior to installation. Contractor shall notify Inspections 24 hours in advance. All materials found to be defective or not meeting specifications during inspection or during the progress of the work will be rejected and removed from the job site without delay. All materials delivered to the job site will be in accordance with the materials specifications. Materials not inspected by the Engineering Division prior to installation will be uncovered by the Contractor at their expense to verify compliance with these specifications. The Contractor will furnish copies of the packing list(s) for materials upon demand.

### 2.5.4 PIPE PLACEMENT

The bottom of the trench will not be excavated below the specified grade. If undercutting occurs, the bottom of the trench will be brought up to the original grade with approved material and thoroughly compacted, as directed by the Engineering Division. Before placing pipe into the trench, the outside of the spigot and the inside of the bell will be wiped clean, dry, and free from oil and grease. Every precaution will be taken to prevent foreign material from entering the pipe. During placement operation, no debris, tools, clothing or other material will be placed in the pipe.

All mechanical joints will be made up in strict accordance with the manufacturer's specifications. Beveled ends will be removed from PVC pipe entering a mechanical joint. The bell will be carefully cleaned before the gasket is inserted. Gaskets must be evenly seated, the gland placed in position with the bolts, and evenly tightened. All slip joints will be made up in strict accordance with the manufacturer's specifications.

After placing a length of pipe in the trench, the spigot end will be centered in the bell, the pipe forced home, brought to correct alignment, and covered with an approved backfill material. Ductile iron pipe will be backfilled to the centerline of the pipe and compacted to ninety-five percent (95%) of standard Proctor T-99.

PVC pipe will be backfilled in accordance with the manufacture's recommendations for the laying conditions.

Pipe will be installed with 30" minimum cover. Maximum cover of 42" will be accepted. Cover depth will be determined from proposed finish grade as indicated on the plans. At times when pipe placement is not in progress, the open ends of pipe must be closed by a watertight plug or other approved means. This provision will apply during the lunch hour as well as overnight. If water is in the trench, the seal will remain in place until the trench is pumped completely dry.

All underground water main shall meet the horizontal and vertical separation requirements in FAC 62-555.314 as related to sanitary force main and gravity main, reclaim mains, and storm water gravity and force mains.

Pipe installed under swales shall be D.I. and have 3 feet minimum cover. D.I. pipe to be centered on swale. If more than one joint of pipe is necessary, restrained joint pipe is required. See "Swale Crossing" detail and definitions.

Pipe installed under canal or drainage ditch shall conform to all FDEP requirements. Pipe shall be restrained joint D.I. pipe with gate valves on both sides of canal/ditch. D.I. pipe shall have 5 feet minimum cover with a concrete cap. See "Canal or Drainage Ditch Crossing" detail and definitions.

### 2.5.5 LOCATING WIRE

A UF 14 Copper Wire that allows for the location of the pipe using an induced current line locator will be installed on all potable water, reclaimed water, and wastewater mains. The wire must be placed on the top of the pipe and taped approximately every ten feet. A run of wire must run from the main to each hydrant. Each fire hydrant must have one wrap of the wire around the barrel located at final grade.

Wire color shall be blue for water, green for wastewater, and purple for reclaimed.

A run of wire will also be brought up in each valve box. The wire will have 18 inches of excess length. Wire is to be connected together using an underground wire nut with a silicone-based

The CCS wire shall meet the following requirements. HDPE Insulation of 30 mils, #14 AWG conductor, maximum Ohms resistance of 8.28 ohms per 1000 ft., breaking load 256 lbs.

When directional drilling is used, one continuous #10 CCS extra high strength locator wire shall be installed. The CCS wire shall meet the following requirements. HDPE Insulation of 45 mils, #10 AWG conductor, maximum Ohms resistance of 0.999 ohms per 1000 ft., breaking load 1150 lbs.

### 2.5.6 SERVICE LINE LOCATION

Service lines will be located at alternating lot lines outside the sidewalk within two feet of the right-of-way line as shown on approved plans or in a grassed area behind the curb if located in other than a subdivision.

Reclaimed service line is to be located adjacent to sewer cleanouts.

2.5.7 BACKFILLED MATERIAL AND INSPECTION

If in the process of transportation, unloading or handling, any pipe or fitting is damaged, it will

All backfilling material will be free from cinders, ashes, refuse, vegetable or organic material, boulders, rocks, stones, or other material which is considered unsuitable. When backfill material is not specified on the plans, backfilling with the excavated material may be acceptable provided that such material is suitable for backfilling. Pipe should be backfilled as soon as possible to minimize the length of open trench. Pipe joints, valves, fittings, and thrust blocks will be left uncovered until inspection by the Engineering Division has been completed.

### 2.5.8 VALVES AND FITTINGS

All valves and fittings will be set and joined to the pipe in the proper location as shown on the plans. Valves should be installed outside of the pavement where practical. A roadway valve box will be provided for every valve. This valve box must not transmit shock or stress to the valve. Valve will have alignment ring installed and valve box centered and plumb over the wrench nut of the valve. The box cover is to be flush with the surface of the finished pavement or grade level as specified in the plans. A 24"-square concrete pad 4" in thickness will be poured around the valve box when it is located outside of pavement. A bronze or stainless-steel disc will be cast into the pad for all valves 12" or larger. Valve nomenclature to be stamped into the disc will include the valve size, type, manufacturer's initials, number of turns, and direction to open the valve. (Example: 12" G.V. U.S.P. 20 c.c.w.)

All valves will be located within two feet of the tee, see detail "Gate Valve and Fitting."

When solid sleeves or couplings are used to join/tie-in pipelines, a Spacer Piece shall be installed if there is a gap in the pipeline.

### 2.5.9 FIRE HYDRANTS

All fire hydrants (hydrants) will be located as shown on the plans and marked on the pavement with a blue reflector. On unpaved streets, a blue reflector will be affixed to a post and placed as close to the edge of the road as feasible to be easily visible. The hydrants will be located in such a manner as to provide complete accessibility and in a manner so that the possibility of damage from vehicles or injury to pedestrians will be minimized. All hydrants must stand plumb and the bury line of the hydrant at the finished grade. Hydrants installed in State highway rights-of-way will be placed in accordance with any F.D.O.T. requirements. Contractors shall not turn or add risers to hydrants. All hydrants will be connected to the main in the manner shown on the Standard Detail Sheet. If the installation of the hydrant requires the hydrant to be greater than 40 ft. away from the fire hydrant valve, an additional valve shall be installed. If the fire hydrant valve ends up in asphalt of a major road (not subdivision) an additional hydrant valve regardless of distance shall be installed.

2.5.10 RESTRAINED PIPE JOINTS

The Engineer of Record shall provide a restrained joint detail on drawings submitted to the City for approval. Restraining is to apply to all new fittings installed as part of the job, including tapping saddles.

2.5.11 THRUST BLOCKS AND COLLARS

Restrained joint systems are the preferred method. Thrust blocks may only be used with the City's prior approval at bends, fire hydrants, and as specified on the plans, in accordance with the Standard Detail Sheet. Metal harnesses, tie rods, or clamps of adequate strength to prevent movement may be installed at locations where thrust blocks are not practical. Rods and clamps will be stainless steel. A 20-foot length of ductile iron pipe will be installed at all main endings and a concrete thrust collar will be poured around the pipe at a distance of 10 feet from the end of the joint. In lieu of concrete thrust collar, restrained pipe upstream of the proposed concrete thrust collar may be used.

2.5.12 JACK AND BORE, PIPE INSTALLED IN CASINGS

Pipe to be installed under payement where open trenching is not permitted will be installed through a steel casing that has been jacked and bored. The casing pipe will be six to eight inches larger than the outside diameter of the bells on the Ductile Iron pipe. The Engineer of Record will design the casing and bore to meet FDOT or FECRR requirements.

Ductile Iron pipe of the appropriate Class will be installed in the casing. Water mains must be pushed or pulled through the casing on stainless steel casing spacers with polyethylene skids attached to the pipe with stainless steel straps. The stainless-steel casing spacers with polyethylene skids will be placed in accordance with manufacturer's recommendations. Casing spacers must be manufactured by Cascade or an approved equal. Restrained joints are required on mains installed inside casings.

### JACK AND BORE

J&B installed under FDOT roadways shall conform to the latest FDOT Road and Bridge Construction design standards. J&B installed under FECRR shall conform to FECRR requirements.

Only DIP and Fusible PVC may be horizontal directional drilled (HDD) under payement or surface waterway crossings. The HDD pipe shall only extend to 10 feet on each side of the crossing. Then the piping will change to the standard piping material.

HDD installed under FDOT roadways shall conform to the latest FDOT Road and Bridge Construction design standards.

ENGINEERING PROCEDURE HORIZONTAL DIRECTIONAL DRILLS

### PRECONSTRUCTION CONFERENCE

2.5.13 HORIZONTAL DIRECTIONAL DRILLING

A preconstruction conference will be required. The preferred attendees for the preconstruction shall be but not limited to:
The directional bore contractor (preferably the Field Superintendent) The
permitting agency
Engineer of Record
City Engineering Division Representative
Inspector for the project

HDD CONTRACTOR

- Approval required prior to the HDD, the HDD contractor shall submit a bore plan (see sample drawing in "Appendix B") to the Engineering Division for approval. The bore plan shall be a scaled drawing or computer generated drawing showing the following information but not limited to: (see drawing "Typical Bore Plan")
- The entrance and exit location
- Profile of the bored pipe
- All utilities including their depths and clearances from reamer Width of the right of way

Pavement width

Length of the bore

The bore plan shall be signed by the responsible person in charge of the bore.

2. The HDD contractor shall follow the minimum clearances as shown below from the bottom of the water main to the top of the reamer:

Water mains 12" and greater minimum clearance is 18" Water

mains 10" and less minimum clearance is 12"

- The HDD contractor will be responsible for obtaining locates for all utilities in accordance with Chapter 556 of the Florida Statutes.
- The HDD contractor shall notify the City of Cocoa Inspection Division 48 hours in advance of the bore and notify the appropriate permitting agency per the conditions of the

### ENGINEERING INSPECTOR

- An approved copy of the bore plan will be given to Engineering Inspection Division.
- The Inspector for the project will have a copy of the bore plan at the project site. 3. Prior to the HDD the Inspector shall verify that the materials at the project site for the directional bore are in accordance with the City of Cocoa's latest technical provisions and
- standard details. 4. The Inspector shall verify the following prior to the commencement of the HDD:
- Verify that the HDD contractor has obtained his/her utility locates; Verify that all utilities have been visually spotted by the HDD contractor;
- Verify that the permitting agency has been notified of the HDD; and d. Witness the calibration of the sonde.
- 5. The Inspector shall remain at the project site until completion of the HDD. Any discrepancies shall be immediately reported to the Engineering Division. Once the corrective action is determined, the proper authority will be notified.

COMPLETION OF THE BORE

A bore log shall be submitted to the Engineering Division after completion of the bore.

### 2.5.14 BLOWOFFS

Flushing blow-offs are to be installed and constructed as shown on the Standard Detail Sheet. Blow-off materials include 2" brass for nipples, brass threaded fittings, 2" brass angle wheel valve, and plastic meter box (purple for reclaimed). The plastic meter box is to be installed at grade over the wheel valve. The angle wheel valve will be within six inches of finished grade and will be plugged with a brass plug. 4" blow-offs will be required on both potable water and reclaimed water mains 12" and larger and must be constructed as shown on the Standard Detail Sheet. A reclaimed tag will be installed on reclaimed main blow-offs in a reclaimed meter box.

Brass used in potable water shall meet the low lead requirements as set forth in Section 2.1.6, "Service Connections".

2.6 TIE-INS TO EXISTING SYSTEMS

2.6.1 GENERAL

The Contractor is not to operate any valve or remove any thrust block from City-owned mains except under direct supervision of an Inspector of the Engineering Division. The Contractor may need a post restraining the existing piping for the tie-in as required by the Engineering Division. All Contractors must follow the procedures listed below for connecting new mains to existing water systems.

### 2.6.1.1 Mains 8" and smaller

Existing tie-in valves will be operated and pressure tested to verify water tightness prior to the proposed tie-in. Existing system valves that are not water tight, shall have a new valve nstalled immediately adjacent (within 2') to the existing valve. The Contractor will provide 2" tap on the new main and a 2" tap on the existing main at the tie-in valve. A 2" jumper equipped with a City supplied meter and contractor supplied backflow preventer (double check) will be installed. The jumper will be utilized for filling the main, flushing the main, providing water for bacteriological sampling, and maintaining pressure in the main after a successful bacteriological test. The proposed tie-in valve is not to be operated and the jumper is not to be removed until clearance has been obtained from FDEP and the City. The Engineer of Record will be required to provide an executed FDEP certificate of completion prior to clearance. After clearance, the tie- in valve will be opened, the jumper removed, and the main thoroughly flushed under the supervision of the Inspector. All other existing valves closed as part of the job will be opened by the contractor under the supervision of Engineering Division.

### 2.6.1.2 Mains 10" and Larger

The same procedure as noted for mains 8" and smaller will be used for mains 10" and larger except that the jumper will be utilized only for filling the main, providing water for bacteriological sampling, and maintaining pressure in the main after a successful bacteriological test. The tie-in valve can be opened for flushing and during chlorination only under the supervision of the Engineering Inspection Division. The tie-in valve is not to be operated and the jumper is not to be removed until clearance has been obtained from FDEF and the City. After clearance, the tie- in valve will be opened, the jumper removed, and the main thoroughly flushed under the supervision of the Inspector. All other existing valves closed as part of the job will be opened by the contractor under the supervision of the Inspector.

### 2.7 TESTING

2.7.1 GENERAL

All newly installed pipe and services that have been backfilled must be tested in accordance with AWWA specification C651

2.7.2 JUMPER METER ASSEMBLY

All filling, and flushing, must be accomplished through a jumper meter assembly. The jumper meter assembly shall consist of a meter (provided by the City, paid for by the Developer/Contractor), and a double check backflow preventer and galvanized piping (provided by the Contractor). The jumper meter assembly shall be installed by the Contractor under the direct supervision of the Engineering Division. After installation, the Contractor shall have the backflow preventer certified by a backflow technician, and a copy of the test report shall be provided to the Engineering Division.

- 1. A temporary jumper connection is required at ALL connections between existing active water mains and proposed new water main improvements, per the City of Cocoa Utilities Handbook. The only exception is the installation of a new fire hydrant involving a tap and using an anchoring/swivel nipple. In this case, all fittings and fire hydrant SHALL be swabbed with a 100 ppm chlorine solution prior to installation.
- 2. The details for filling any water main from existing active water mains and for flushing of new mains up to 8" diameter (2.5 FPS minimum velocity) and for pulling bacteriological samples from any new water main of any size can be found in Section 2.7.3-Flushing and Swabbing. The jumper connection shall be maintained until after filling, flushing, testing, and disinfection of the new main has been successfully completed and clearance for use from the Florida Department of Environmental

		BEE
Protection (FDEP) and other pertinent agencies has been received. The jumper connection shall also be used to maintain pressure in the new mains all the time after disinfection and until the FDEP clearance letter is obtained. Adequate thrust blocking and/or restraints shall be provided temporarily, as required. Pipe and fittings used for		B.S.E. CONSULTANTS, INC. CONSULTING - ENGINEERING -
<ul> <li>connecting the new pipe to the existing pipe shall be disinfected prior to installation in accordance with AWWA C651. The tapping sleeve and the exterior of the main to be tapped shall be disinfected by spraying or swabbing per Section II of AWWA C561.</li> <li>Elushing of 10" diameter and larger water mains may be done through the tie-in value.</li> </ul>		312 SOUTH HARBOR CITY BOULEVARD, SUITE 4 MELBOURNE, FLORIDA 32901 PHONE: (321) 725-3674 FAX: (321) 723-1159
under the direct supervision of the Engineering Division. The Engineering Division will be notified in writing 48 hours prior to the flushing of said mains.	e	CERTIFICATE OF PROFESSIONAL ENGINEERS BUSINESS AUTHORIZATION: 4905 CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905
<ul> <li>A. The existing tie-in valves shall be operated and pressure tested in the presence of the Engineering Division or Engineer to verify water tightness prior to the proposed tie-in. Valves which are not watertight shall be replaced or a new valve installed</li> </ul>	ł	SCOTT M. GLAUBITZ, P.E. & P.L.S. STATE OF FLORIDA, No. 33659 No. 4151
<ul><li>immediately adjacent to the leaking valve.</li><li>B. The temporary jumper connection shall be constructed as detailed. The jumper connection shall be used to fill the new water main and for providing water for be the index of the set of the new mater main and but the EDED normal.</li></ul>		
<ul> <li>Flushing shall not be attempted during peak demand hours of the existing water main.</li> <li>All downstream values in the new system must be onen prior to opening the tip in value.</li> </ul>		
<ul> <li>Provide for and monitor the pressure at the tie-in point, the pressure in the existing ma must not drop below 35 psi.</li> </ul>	in	
- Tie-in valve shall be opened a few turns only, ensuring a pressure drop across the valve always greater than 10 psi.	is	
4. The contractor shall provide documentation demonstrating that the double check backflow prevention device has been tested and is in good working order at the time of installation. The test shall be performed by a qualified backflow prevention technician.		HASSAN A. KAMAL, P.E. STATE OF FLORIDA, No. 41951
<ol> <li>Except as required to flush lines of greater than 8" in diameter, the tie-in valve shall remain closed. The tie-in valve shall remain closed until the new system has been cleare for use by FDEP and all other pertinent agencies.</li> </ol>	ed	
<ol> <li>Upon receipt of clearance for use from FDEP and all other pertinent agencies, the contractor shall remove the jumper connection. The corporation stops are to be closed and plugged with 2" brass plugs.</li> </ol>		
7. All installation and maintenance of the temporary jumper connection and associated backflow prevention device fittings, valve, etc., shall be the responsibility of the contractor.		
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### 2.7.3 FLUSHING AND SWABBING

The City will provide an adequate volume of water for the filling, flushing, and testing of mains. The Contractor will notify the Engineering Division prior to flushing or filling mains. The pressure in the City's system will be monitored during the flushing; at no time should the pressure in the City's system be allowed to drop below 35 psi. Water used during flushing will be billed to the Contractor.

The City of Cocoa Engineering Division requires all new mains regardless of size or material to be pigged/swabbed. In an effort to make sure all footages of a pipeline are pigged, the following procedures are to be used as a guide and in no way to be construed as means and methods.

The following terminology may be used in the discussion or operation of the

pigging procedure. Pigs shall be manufactured of a 2 pounds per cubic foot

density open cell polyurethane foam

body (swab) complete with rear polyurethane drive seal

Pig launching station may be a "wye", "tee", or simply inserting the pig at the very beginning of the pipeline. The beginning of the pipeline is defined at the jumper assembly location.

Pig retrieval point or cannon is a "wye", "tee" or open end of pipe at which point the pig will exit the pipeline.

The pipeline will be filled through the jumper assembly the day before of the pigging operation.

The pig will be advanced through the pipeline at a rate of 2 feet per second, 80 gpm for 4"; 180 gpm for 6"; 320 gpm for 8". Flow rates and jumper assemblies for mains 10" and larger will be determined by the Engineer of Record and approved by the City of Cocoa Engineering Division.

The pig retrieval point or cannon will project at least one foot above the surrounding grade. The water from the pig retrieval station discharge and its location to discharge shall be approved by the Engineering Division. The contractor will be responsible for following the National Pollutant Discharge Elimination System (NPDES) requirements to remove chlorine from discharge as well as protect retrieval area from erosion. Retrieval cannons will not be left in place. After pigging and flushing are complete, the cannon will be removed and capped below ground in accordance with Engineer of Record details or City of Cocoa Standard Details.

The contractor may insert the pig into the first section of pipe between the isolation valve and the downstream point of jumper assembly. By inserting the pig between the isolation valve and the downstream jumper assembly point it will allow the pipeline to be filled without moving the pig down the pipeline. If the pig is moved during filling operation another pig will be inserted into the pipeline. The isolation valve may be cracked open for a few seconds under the direction of the Engineering Division to move the pig past the jumper assembly downstream point so the jumper assembly can advance the pig through the pipeline.

When the pig exits the pipeline, the flushing will continue until the water is clear. A simple way to determine if water is running clear is to capture some water in a WHITE cup. If water is clear and no particles in cup then flushing is complete; if not, flushing will continue until water is clear.

### 2.7.4 HYDROSTATIC TEST

A blow-off or fire hydrant will be installed at the end of the pipeline under test. The line being tested will be slowly filled with water to the specified test pressure. Before applying the specified test pressure, all air will be expelled from the test section including service connections. If fire hydrants or blow-offs are not available at high elevations, taps at points of highest elevation will be made to facilitate air removal and testing. When testing is complete, the service lines installed for air removal must be removed.

The line must hold the 150-psi test pressure for a two-hour test period and must be performed under the direct supervision of the Engineering Division. Sufficient human resources are to be employed to ensure inspection. If the line fails to meet the test, it will be repaired and re-tested until the test requirements are satisfied. Line pressure will be maintained to within 5 psi of the test pressure at all times.

### 2.7.5 LEAKAGE TEST

A leakage test at 150 psi will be performed on all newly installed sections of pipe in accordance with AWWA C600 or C605 after installation of all service connections. Any leakage observed must be less than the following per thousand feet of pipe:

![](_page_17_Figure_19.jpeg)

L = testing allowance (makeup water), in gallons per hour

S = length of pipe in feet

D = nominal diameter of pipe, in inches P = average test pressure during the hydrostatic test, in pounds per square inch (gauge). P has the square root taken.

On small main extensions where the allowable leakage loss cannot be reasonable measured (.25 gallons or less), NO LOSS OF PRESSURE shall be allowed.

### 2.8 DISINFECTION AND BACTERIOLOGICAL TESTING

### 2.8.1 GENERAL

The Contractor must flush potable mains and arrange for complete disinfection by chlorination in coordination with the Engineering Division. Work will conform to applicable provisions of AWWA specification C651-14, "Disinfecting Water Mains". Water with a chlorine concentration of 50 ppm will be evenly distributed throughout the pipe system and allowed to remain in the pipe for twenty-four hours. Transmission mains may be chlorinated using the "slug method". If the slug method is used, a detailed written procedure shall be submitted for approval. The main shall be dechlorinated to zero ppm chlorine before any flushing is performed. The method for dechlorination shall be approved by the Engineer of Record. After flushing, the water shall remain in the pipe for 24 hours before sampling. Service connections and tie-ins made before testing must be disinfected in accordance with AWWA specification C651. Samples will be taken by an Engineering Division approved laboratory. Two consecutive day samples are required for potable water mains. Water mains shall not be flushed between samples. The Contractor will be responsible for ALL bacteriological testing fees. Sample points are determined by the Engineer of Record and approved by FDEP. If samples taken do not demonstrate satisfactory results, re- chlorination and retesting of all sample locations is required at the Contractors expense.

CONTRACTORS WORKING ON EXISTING MAINS

When existing water mains are taken out of service by contractors, and water service to existing customers is interrupted causing a precautionary boil water notice (PBWN), the water main will be taken out of service on Monday or Tuesday. If for some reason the water main cannot be taken out of service on Monday or Tuesday, then the contractor at their expense shall have the laboratory perform bacteriological testing after normal working hours. This procedure is to lessen the time water customers are under a PBWN.

### 2.9.1 GENERAL

Tap Being PerformedParties Allowed to Perform the TapTaps 2" and smaller Approved tapping and line stop contractor

Contractor approved to tap mains solely for their own project • Contractor must perform 5 successful taps under the supervision of the inspection team and demonstrate possession of proper tapping equipmentTaps 2"-16"

Approved tapping and line stop contractorTaps 16" and greater Approved

# 2.9 WET TAP CONNECTIONS TO EXISTING SYSTEM

tapping and line stop contractor

 Each tap requires independent review and approval • The tap must be performed under direct supervision of the

engineering divisionTaps on concrete transmission mains Contractor approved for taps on City of Cocoa transmission mains

• Tapping plan must be submitted by the contractor prior to the tap On transmission mains, the approved tapping and line stop contractor will install the tapping saddle and valve. For all connections from 4"-12" the contractor may install tapping saddles under direct supervision of the Engineering Division. For all water main connections, the Contractor must obtain all required permits, provide a dry pit area, provide pit preparation including shoring and bracing, provide maintenance of traffic, provide all right-of- way restoration, and notify all utilities prior to construction. Connections must be completed under direct supervision of the Engineering Division. The list of approved contractors may be found on pg. 158.

Tapping saddles and valves supplied by the Contractor will be inspected by the Engineering Division prior to installation. The installed tapping saddle and valve must be tested with water at 100 psi for 15 minutes prior to tapping to ensure a watertight installation. Saddles installed on concrete pressure pipe will be tested 10% over line pressure. The pressure test will be performed by the Contractor and supervised by the Engineering Division. After the pressure test of the saddle has been completed, an Approved Tapping Contractor can tap the main.

### 2.9.2 TAPPING AND LINESTOP PROCEDURES

ALL TAPS or LINESTOPS on City of Cocoa potable, reclaimed, and wastewater mains will be performed by an Approved Tapping Contractor.\*

Absolutely NO taps or linestops will be performed on Friday or any day preceding a holiday.

Approved Contractors must disinfect tapping machine with AWWA approved disinfectant. This will be witnessed by the Inspector.

The Contractor's tapping or linestop machines will be in good working order with appropriate bits and shell cutters for the type of pipe being worked on (i.e. shellcutter for PVC).\*\*

When taps or linestops are installed on Transmission Mains (> 12"), a preconstruction meeting will be held with the tapping contractor prior to ANY work being performed. The meeting may be held at the job site.

Taps and linestops on the Utilities concrete pressure mains will be a two (2) day process and will require a pre-construction meeting. Day one the saddle is installed and grouted, Day two tighten straps, cut pre-stressing wires, install throat and valve. Pressure test on saddle is 10% over line pressure for 30 minutes. After successfully completing pressure test, tap can be made.

Toggle bolts will be required for PCCP taps to assure the entire coupon remains intact. The coupon must be provided to the City.

ALL excavations must conform to current OSHA Trench Safety Act.

The City of Cocoa reserves the right to remove any contractor from the approved list for any work considered substandard.

\* Tap or linestop to include: Material, installation, labor, drilling, and testing \*\* Bit, boring bar, and adaptor

# 2.10 FINAL CLEAN-UP AND ACCEPTANCE

2.10.1 GENERAL

Upon completion of the work and before acceptance by the Engineering Division, the Contractor will meet all permit conditions, remove all debris, and complete sodding, sprigging, or seeding if required by the plans. The Contractor will leave all areas affected by operations in a neat and presentable condition.

### Acceptance of completed work by the City will be contingent on the following work items completed to the satisfaction of the Engineering Division.

Pressure Test

Bacteriological Testing

Restoration

Payment of fees

Approved As-Builts

Easements Bill of Sale

Fire line DCDA certification, as needed

Final Inspection

# 2.11 FIRE SERVICE

2.11.1 GENERAL

All Fire Lines shall be installed by a licensed Fire Line Contractor in accordance with Florida Statute Chapter 633 and Rule Chapter: 69A-46. Where wet pipe sprinkler service is used, an RPDA or DCDA will be installed in accordance with the "Backflow Prevention and Cross- Connection Control" Section of the Utilities Handbook and as described in the "City of Cocoa Cross Connection Control Program Manual".

Fire line backflow preventer assemblies shall be installed in non-traffic areas. Four to six bollards may be required.

# 2.12 CONNECTION OF BUILDINGS OVER FOUR FLOORS

### **2.12.1 GENERAL**

requirements:

the Engineering Division.

Connection of domestic water supply systems serving buildings over four floors in height to the City's water distribution system will be subject to the following

A fixture unit analysis will be performed by the Owner's engineer to determine peak domestic flow requirements. This analysis is to be provided to

A water meter and a reduced pressure backflow preventer, sized in accordance with the domestic flow requirements, will be installed above ground at the developer's expense.

Upon written request, the City will provide the site engineer with the minimum expected system pressure. The site engineer will be responsible for providing this information to the architect and building owner. Means for providing an adequate supply of domestic water and fire protection to all parts of the building during periods of minimum pressure will be the responsibility of the building Architect or Engineer of Record.

Repair costs for damage to the water meter caused by flows exceeding its rated capacity will be charged to the customer.

### 2.13 BACKFLOW PREVENTERS

### **2.13.1 GENERAL**

All connections to the City of Cocoa potable water system shall contain a backflow preventer assembly per the Standard Details in "Appendix B." Backflow preventer requirements for each service type are described in the "City of Cocoa Cross Connection Control Program Manual" and are summarized in Paragraph 2.1.3, "Backflow Preventers" and "Appendix A" of this document.

# 2.14 RECORD DRAWINGS

### 2.14.1 GENERAL

- Record drawings are required for all systems to be accepted by the Engineering Division. Record drawings will be prepared by a surveyor or an engineer registered in the State of Florida and will contain the following information:
- Location of all valves, service lines, fittings, and fire hydrants using at least two ties to permanent points (manholes, curbs, or storm water inlets). An acceptable station and offset system may be used for service lines and fittings only.
- Location of mains from property easement lines or edge of pavement at intervals of 300 feet.
- Elevations to the top of the water line at intervals of 300 feet and at all drainage and sewer main crossings. Benchmark to be shown on record drawings.
- Separation between reclaimed water or force mains and water mains, if they are installed within 10 feet of water mains.
- Water main material and distance of mains from buildings or structures within 20 feet of the water main.
- Distance from hydrant to hydrant valve.
- Pertinent easement information.
- A minimum of two (2) northings and eastings geographic coordinates.
- Certification by the surveyor or Engineer of Record accepting responsibility for accuracy of information supplied on the record drawings and a statement certifying that all mains are within easements and/or public right-of-way. The name "City of Cocoa" must appear on all record drawings survey information.
- Record drawings will be drawn at an engineering scale that is legible and readable as determined by City staff. Areas requiring additional detail may be enlarged as necessary. Right-of-way, easements, and lot lines will be accurately shown. After the surveyor or engineer has certified the locations, the engineer will certify on DEP Form 62-555.900(9) that the system depicted on the record drawing was constructed in substantial conformance with approved plans and will function as intended. Lot, block numbers, and street names will be included. Provide two (2) sets of signed and sealed record drawings and one (1) digital file including all reference files in .DWG format (AutoCAD 2013 or higher).

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# **B.S.E. CONSULTANTS, INC CONSULTING - ENGINEERING** LAND SURVEYING 312 SOUTH HARBOR CITY BOULEVARD, SUITE 4 MELBOURNE, FLORIDA 32901 PHONE: (321) 725-3674 FAX: (321) 723-1159 CERTIFICATE OF PROFESSIONAL ENGINEERS BUSINESS AUTHORIZATION: 4905 CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905 SCOTT M. GLAUBITZ, P.E. & P.L.S. STATE OF FLORIDA, No. 33659 No. 4151 HASSAN A. KAMAL, P.E. STATE OF FLORIDA, No. 41951 VERTICAL DATUM: NAVD88 CITY COMMENTS 10/30/20 DATE: 08/31/20 **DESIGN/DRAWN:** ALS/DRB PROJECT TITLE CIRRUS SHEET TITLE **CITY OF COCOA** TECHNICAL PROVISIONS PROJECT NO. 11545 DRAWING NO. 11545 400 018 SHEET

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### 3.1.1 GENERAL

The Contractor will furnish all new materials of the size and kind shown on the drawings which will meet the following specifications or requirement If the type of material is not specified on the drawings, the Contractor may use any of the types listed in this specification. The use of concrete for repairs on gravity sewer piping and lateral tie-ins is not permitted.

### **3.1.2 CONCRETE STRUCTURES** 3.1.2.1 Precast Manholes

Precast manholes must be constructed in accordance with American Society of Testing and Manufacturing (ASTM) specification C478. Concrete will have a minimum 28-day compressive strength of 4.000 PSI. Cement will be Type II sulfide resistant. Steel will be minimum Grade 40 and placed as shown on the drawings. Shop drawings of manholes and lift station wet wells will be submitted to the Engineering Division for approval prior to casting. Chairs for supporting reinforcing steel will be non-corrosive plastic or Grade 316 stainless steel. Standard manholes will be 4 feet in diameter with a wall thickness of 5" for manholes of 6 feet in depth or less and wall thickness of 8" for manholes deeper than 6 feet.

Resilient connectors (boots) shall be used where PVC pipe penetrates manhole walls. Boots shall be NPC Kor-N-Seal or approved equal, watertight and shall be manufactured of materials resistant to decay caused by the sanitary sewer environment or by ambient soil conditions. All hardware shall be stainless steel. Boots shall be installed in accordance with manufacturer's recommendations

### 3.1.2.2 Flotation Uplift of Fiberglass Manhole

When a fiberglass manhole is specified, the EOR shall provide the design analysis showing where flotation uplift is counteractive.

### 3.1.3 PIPE 3.1.3.1 PVC Pipe and Fittings, DR 35

PVC pipe and fittings (DR 35) will be manufactured in accordance with ASTM specification C3034. DR 35 pipe is acceptable on gravity installations with a depth of 12.0 feet or less. Pipe will be of the elastomeric gasket joint type supplied in lengths of 12.5 feet. Solid wall ribbed PVC pipe with a stiffness

of 60 psi or greater will be considered on a case-by-case basis at the discretion of the Engineering Division. Critical installations, as determined by the Engineering Division, will require use of poly-lined ductile iron pipe, coated with Protecto 401 ceramic Epoxy.

# 3.1.3.2 PVC Pipe, DR 18

PVC pipe (DR-18) will be manufactured in accordance with AWWA specification C900. DR-18 pipe is required for pressure force main installation. Pipe will be of the elastomeric gasket joint type. Color-coded identification tape will be installed on all force mains.

### 3.1.3.3 Ductile Iron

Ductile iron pipe will be coated with Protecto 401 ceramic Epoxy for force main, gravity, and valve pit installation. Exposed piping in valve pits will be pressure Class 350 with coal tar epoxy exterior coating. Buried ductile iron pipe will be wrapped in a color-coded polyethylene encasement in accordance with ANSI/AWWA T1/C105.

### 3.1.4 MANHOLE ACCESS COVERS

3.1.4.1 Cast Iron

Cast iron manhole covers and rings must be traffic load bearing and have an O-Ring seal similar to USF No. 225-AS ORS. Bearing surfaces will be machined to produce a tight, even seating surface without rocking. Minimum clear opening will be 24". The words "CITY OF COCOA" and "SANITARY SEWER" will be cast into manhole covers. Manholes installed in high water areas will be sealed by a method approved by the Engineering Division.

### 3.1.4.2 Aluminum

Aluminum access covers will be designed for 300 PSF live load and will be equipped with stainless steel hinges, automatic lock mechanism in the open position, closed position lock hasp, and retractable grip for opening.

### See Detail Sheets:

- Manhole Ring and Cover - Check Valve Vault - Lift Station

### 3.1.5 COATINGS

3.1.5.1 Water Based Acrylic

The interior and exterior surfaces of manholes shall be coated with a three-coat water based acrylic coating. The interior and exterior coats shall be factory applied to the coating manufacturer's recommendation with a minimum total DFT of 12 mils. Each of the coats will be 4 mils thick of contrasting colors. The interior shall be coated red, black, and a final gray coat. The exterior shall be coated red, gray, and a final black coat.

### 3.1.5.2 HDPE Sheet Lining

Where an HDPE liner is specified, the entire wall surface of the manhole will be protected with a high-density polyethylene liner cast into the concrete This liner must be AGRU Sure Grip as manufactured by Alois Gruber or approved equal. All joints will be heat fusion welded to create a watertight lining. The liner shall be installed and tested per the manufacturer's guidelines. Such lining must be warranted against defects in materials and workmanship for a period of five years from date of installation.

### 3.1.5.3 Exposed Piping

Exposed piping, pumps, and equipment exposed to raw sewage in manholes, valve pits, and wet wells will be coated with a two-coat coal tar epoxy exterior coating system with a minimum DFT of 12-15 mils. Coal tar epoxy will be Rustoleum 9578 or approved equal. Equipment and pump nformation tags will not be painted. Pump discharge piping in lift station wet wells will be Grade 316 10S stainless steel, refer to Section 3.8.3.2, "Exposed Piping".

### 3.1.6 MISCELLANEOUS MATERIALS

3.1.6.1 Manhole Steps

# Manhole steps are not permitted.

3.1.6.2 Hardware

### All nuts, bolts, washers, anchors, and, brackets inside the wet well or manhole must be manufactured from Grade 316 stainless steel. Bolts for fastening flanged fittings inside the valve pit may be steel, coated with the specified piping coating system. Never-seize/Anti-seize shall be applied to all SS bolts and nuts.

### **3.2 CONSTRUCTION**

3.2.1 LOCATION AND GRADE OF SEWERS

The line and the grade of the sewer, as well as the location of manholes, services, and all other appurtenances, will be as shown on the drawings. The grade line as given on the drawings indicates the grade of the invert of the sewer pipe.

# Gravity sewer shall be designed and constructed with the following maximum and minimum slopes:

Minimum and Maximum Slopes for Gravity Sewers

Size (in)Maximum (%)Minimum (%)41.141.0460.660.6080.360.33100.280.25120.220.20 The Engineer of Record shall certify that the slopes of the gravity sewer meet the above maximum and minimum slopes. Sewer lines with slopes not meeting the above maximum and minimum slopes will be rejected.

### "As-built" drawings shall show the gravity line slopes.

Sewers shall be laid with uniform slope and straight alignment between manholes. Gravity sewer pipe shall be installed with the bell end upstream. The pipe shall be installed from downstream to upstream unless specific permission is obtained from the Engineering Division. Manholes shall

be designed with a minimum difference of 0.04 feet between the invert elevations of the incoming and outgoing sewers.

### 3.2.2 MATERIAL HANDLING

3.2.2.1 Precautions

### All supplies shall be stored and maintained by the contractor per manufacturer's recommendations. Every precaution will be taken to prevent injury to pipe and piping materials during transportation and delivery to the work site. Under no condition will pipe be dropped, bumped, dragged, or picked up by inserting forks into the end of pipe. Pipe lifted by placing forks into pipe shall be removed from job site.

3.2.2.2 Damaged Materials

### If in the process of transportation, unloading, or handling, any pipe or fitting is damaged, it will be rejected and removed from the site.

3.2.2.3 Storage

### Pipe fittings and specials will be stored in a manner which will assure the protection of the material from damage and which will keep it clean. Sun damaged materials exposed to adverse conditions will be rejected.

### 3.2.3 TRENCH EXCAVATION, SHORING, AND SHEETING 3.2.3.1 Trenches

Sewer trenches will not be opened in advance of the placing of the sewer pipe for a distance greater than that required to install the sewer pipe. In no case will the open trench ahead of the sewer pipe exceed 25 feet. Backfill in the pipe zone will be accomplished immediately after jointing the pipe to prevent movement.

### 3.2.3.2 Shoring, Sheeting, and Bracing of Excavations

The excavation must be sheeted and braced when necessary to prevent cave-in during excavation in unstable material or to protect adjacent structure, property, workers, and the public. The sheeting will be maintained in place until the pipe or structure has been placed and backfilled. Shoring and sheeting will be removed, as the backfilling is done, in a manner that will not damage the pipe or structure or permit voids in the backfill. All sheeting, shoring, and bracing of excavations will conform to the Trench Safety Act and requirements of the Federal, State, or local public agency having jurisdiction. The most stringent of these requirements will apply. The Contractor shall have a Competent Person (trench safety) on the job site at ALL

### 3.2.4 CONTROL OF WATER 3.2.4.1 Equipment

# 3.2.4.2 Ground Water

The control of ground water must be such that softening of the bottom of excavations or formation of "quick" conditions or "boils" will be prevented. De-watering systems will be designed and operated to prevent the removal of the natural soils. Discharge from pumps will be accommodated in accordance with the St. Johns River Water Management District's requirements. The Contractor is responsible for obtaining all de-watering permits such as NPDES permit.

### 3.2.4.3 Static Water

### 3.2.5 PIPE PLACEMENT AND JOINTING

# shaped as required to fit the pipe or upon a layer of properly placed bedding material.

3.2.6 MATERIAL FOR BEDDING AND BACKFILLING 3.2.6.1 Unsuitable Material

# be backfilled using suitable backfill or bedding material as specified.

### 3.2.6.2 Suitable Material

Suitable material for bedding and backfilling will be dry, clean natural sand or gravel. The material will be placed in 6" layers and compacted, using mechanical compacting equipment, to a dry density equal to 98 percent (98%) of the maximum dry density as determined by the standard Proctor compaction test ASTM specification D698, each layer being compacted to the required density prior to placing the next layer. The Engineering Division shall require the density to be checked by a licensed laboratory at each manhole and at two points between manholes as selected by the Engineer of Record or Inspector, at no cost to the City.

### **3.2.7 MANHOLE INSTALLATION** 3.2.7.1 Base Unit

placed before the sewer pipe is

aggregate per FDOT specifications).

# 3.2.7.2 Manhole Channel

Invert channels will be constructed, smooth and semicircular in shape, conforming to the inside of the adjacent sewer section. Changes in direction of flow will be made in a smooth curve of as large a radius as possible. Changes in size and grade of channels will be made gradually and evenly. Invert channels will be formed by one of the following methods; formed directly into a poured concrete manhole base, built up with brick and mortar, half tile set in concrete, or full section of sewer pipe installed through the manhole with the top half cut out. The manhole floor outside of channels will be made smooth and will be sloped toward channels. Free drop connections inside manholes are not allowed. All drop connections will be constructed outside the manhole.

### 3.2.7.3 Joints

# 3.2.7.4 Non-Shrink Grout

### 3.2.7.5 Coating

### 3.3 WATER MAIN CROSSINGS 3.3.1 GENERAL

# 3.4 SERVICE CONNECTIONS

3.4.1 GENERAL

# materials and must be approved by the Engineering Division.

### 3.4.1.1 Connecting to Manholes

Service connections made directly to a manhole shall be core drilled and fitted with a flexible coupling to provide a seal around pipe. Pipe will be a minimum of 6" in diameter and shall include a wye and clean-out in a green meter box located on the Customer side of the right-of-way or easement (see "Typical Lot Service Line Location" detail). Connections requiring a drop will be piped to the bottom of the manhole on the outside (see "Manhole

with Outside Drop" detail).

# **3.5 FIELD TESTING OF SEWER SYSTEMS**

3.5.1 GENERAL

3.5.1.1 Visible Leaks

All visible leaks in structures will be eliminated regardless of the amount of flow.

# 3.5.1.2 Televised Inspection

laterals, and a description of any defect or abnormality must be included.

# 3.5.1.3 Pressure Testing

Maximum Allowable Leakage per 1,000 Feet of Pipe

3.5.1.4 Vacuum Testing of Manholes

finished grade prior to testing

Manhole Depth (Ft)

Vacuum Testing for Given Manhole Size

The contractor will furnish, install, and, operate all necessary machinery, appliances, and equipment to keep the excavations reasonably free from water during construction. The Contractor will de-water and dispose of the water so as not to cause damage to public or private property or to cause a nuisance or a menace to the public. The Contractor will at all times have on hand sufficient pumping equipment and machinery in good working condition for all ordinary emergencies and will have available at all times competent human resources for the operation of the pumping equipment The de-watering system will not be shut down between shifts, on holidays or on weekends, or during work stoppages. All equipment shall conform to The City of Cocoa's noise ordinance Chapter 13.5, Article II, Section 13.5-21 through Section 13.5-26.

The static water level will be drawn down below the bottom of the excavation to maintain the undisturbed state of the natural soils and allow the placement of backfill to the required density. The de-watering system will be installed and operated so that the ground water level outside the excavation is not reduced to the extent that would damage or endanger adjacent structures or property.

Pipe placement will progress upgrade with the spigot ends of the pipe pointing in the direction of flow. Each pipe will be placed true to line and grade with a laser beam system. All pipes will be joined in a professional manner and in accordance with the manufacturer's instructions Pipe ends will be carefully cleaned prior to jointing. Pipe will be placed either on a prepared bed of undisturbed earth in the bottom of the trench

Wherever excavations of the trench expose unsuitable materials such as peat, soft clay, quicksand, rock, boulders, stones, or unstable material in the bottom of the trench which, in the opinion of the Engineer of Record or Inspector, is unsuitable foundation upon which to lay or support the pipe, backfill, and expected superimposed loads, such unsuitable materials will be removed to a depth necessary to reach material having adequate bearing capacity and at a width of trench at least equal to the minimum trench width as specified. The space created by removal of this unsuitable material will

The base unit for manholes and wet wells will be reinforced concrete with a monolithically poured base and bottom riser section. The base unit will be

placed to or away from the manhole. The base unit will be placed in a dry hole on a bedding of 6" to 8" of 3" to 1" rock (57 stone or recycled concrete

Precast manhole joints must be watertight and sealed with plastic pre-formed joint filler similar to Ram-Nek. All joint areas will be factory primed Manhole-to-pipe connections will be by factory-supplied flexible boots

The annular space between the sewer pipe and the opening in the manhole will be grouted with non-shrink grout to ensure a watertight joint.

The interior and exterior surfaces of manholes shall be coated in accordance with Section 3.1.5, "Coatings

In all cases where sanitary gravity or force mains cross water mains the crossing shall meet the vertical and horizontal separation requirements of FAC Rule 62-555.314. When separation requirements cannot be met, the Engineer of Record must propose an alternative solution that

meets the requirements of FAC 62-555.314 for approval by the Engineering Division. The water main should cross above the sanitary main, when the water main must cross below the sanitary main, the minimum separation shall be 12 inches.

The contractor must install commercially manufactured wye branches compatible with the material used in the sewer main. Where the service line piping is of a different material than the sewer main, the fittings and transition pieces will be specially designed for the connection of the different

Force mains coming from private lift stations into a gravity manhole requiring a drop will be piped to the bottom on the outside of the manhole and fitted with 45-degree bends directed toward the invert of the gravity main (see detail "Force Main Connection to Manhole").

All sewer lines will be subject to a leakage test at the discretion of the Engineering Division. The test shall be either an infiltration, exfiltration, or air pressure test as determined by the Engineering Division. The test will be conducted by and at the expense of the Contractor in the presence of the

Naximum allowable leakage is 100 gallons per day, per inch diameter of pipe, per mile of pipe. If the amount of maximum leakage is exceeded, the Contractor will make the necessary repairs and schedule a re-test. Acceptable methods of repairing leaks are by excavation.

relevision inspection must be provided by the contractor and will be performed after final compaction of the job site or roadway. A Digital Video Disc (DVD) record of the inspection with an audible description of the run, including its direction and location, the location and description of any service

Force mains will be hydrostatically tested at a pressure of 100 psi for one hour. The contractor will install air reliefs as necessary for relieving air prior to testing. The maximum allowable leakage of water per thousand feet of pipe is as indicated in the following table:

Size (in)Allowable Leakage (gal/hour)40.2760.4180.54100.68120.81161.08201.35

All sewer manholes shall be required to meet the requirements of the vacuum test as per the current ASTM C 1244 "Standard Test Method for Concrete Sewer Manholes by the negative Air Pressure (Vacuum) Test" prior to acceptance. Manholes and connected piping must be backfilled to

A vacuum of 10 inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time for the vacuum to drop to 9 inches of mercury shall not be less than that shown in the following table:

Time Elapsed\* (Sec)48 in60 in72 in0-82026331025334112303949143546571640526718455973205065812255728924597897266485105286991113307498121\* Times shown are minimum elapsed times, in seconds, for a drop in vacuum of 1 inch of mercury.

SYMBOLS SHOWN ARE GRAPHIC IN NATURE; DUE TO SCALE, ALL DESIGN ELEMENTS ARE NOT NECESSARILY SHOWN ON PLAN VIEWS. THE CONTRACTOR SHALL ALSO REFER TO SPECIFICATION AND DETAIL SHEETS AS WELL AS THE COMPLETE PLAN SET

3.6 RECORD DRAWINGS A NEMA 4X, 316 stainless steel junction box with back plate, a terminal strip, a power distribution block for each pump, and a ground bar will be installed near the main control panel with a 1 ¼ inch diameter conduit for float wiring and a 2-inch diameter conduit for the pumps. The J-Box will be 3.6.1 GENERAL the minimum specified on the plans and will be located next to and same height as the control panel. The box will be connected to the control panel with a 1 ¼-inch diameter conduit for float wiring and a 2-inch diameter conduit for each pump. The conduits will be equipped with seal-offs between Record drawings are required for all systems to be accepted by the Engineering Division. Record drawings will be prepared by a surveyor or an the control panel and the pump J-box to protect electrical equipment from corrosive atmosphere in the wet well. The terminal strip will be mounted on DIN rail and terminals will be Phoenix Contacts with sufficient room to add thirty-five (35) Phoenix Contact terminal blocks. The motor conductors engineer registered in the State of Florida and will contain the following information: will be one size larger than required by the current National Electric Code. Motor seal failure and over-temperature wiring will be a minimum #14 AWG copper conductors consisting of Black, Red, White, and Green. One set of these four colors will be for each motor. These conductors are to be in the same 2-inch conduit for the motor conductors. Four #12 AWG copper conductors will also be installed in the same 2-inch conduit for future use. These • Location of all gate valves, valve pits, force main check valves, fittings, air release valves, tapping saddles, manholes, lift stations, wet wells, and will be Black. Red. White, and Green.

- cleanouts using at least two ties to permanent points (manholes, curbs, or storm water inlets). An acceptable station and offset system shall be used for lateral lines. • The as-builts must include the location of the wve branch, the end of the sewer service referenced to the next downstream manhole of each run.
- the offset of the end of the service referenced from the centerline of the main sewage pipe, and the depth at the end of the service. Location of sewer mains from property easement lines or edge of payement at intervals of 300 feet.
- Separation between reclaimed water or force mains and water mains if they are installed within 10 feet of water mains.
- Sewer main material, diameter, length of run, and distance of mains from buildings or structures within 20 feet of the sewer main.
- Elevations of the top (rim) and pipe inverts at each manhole and the length and slope of each run of pipe are required on the as-builts (all elevations must be tied to NAVD 88).
- Pertinent easement information.
- A minimum of two (2) northings and eastings geographic coordinates.

• Certification by the surveyor or Engineer of Record accepting responsibility for accuracy of information supplied on the record drawings and a statement certifying that all mains are within easements and/or public right-of-way. The name "City of Cocoa" must appear on all record drawings survey information Record drawings will be drawn at an engineering scale that is legible and readable as determined by city staff. Areas requiring additional detail may be

enlarged as necessary. Right-of-way, easements, and lot lines must be accurately shown. After the surveyor or engineer has certified the locations, the engineer will certify on DEP Form 62-604.300(8)(b) that the system depicted on the record drawing was constructed in substantial conformance with approved plans and will function as intended. Lot, block numbers, and street names will be included. Provide two (2) sets of signed and sealed record drawings and one (1) digital file including all reference files in DWG format (AutoCAD 2013 or higher).

**3.7 FORCE MAIN VALVES** 

### 3.7.1 GENERA

Valves for use in force mains must be epoxy coated resilient seat gate valves. The resilient seating surface will be bonded to the gate and will seal under compression without wedging or sliding.

Requirements stated in Potable & Reclaimed Water Section 2.2.2, "Valves, Valve Boxes, and Valve Extensions" and Section 2.5.8, "Valves and Fittings" shall also be met for force main valves.

Air release valves will be of the Combination Air Release and Vacuum (CARV) type. CARV valves shall have a working pressure range of 3-150psi, testing pressure of 250psi, maximum operating temperature of 140°F, 2" threaded inlet and 1.5" outlet, reinforced nylon body, 316 SS internal parts. See "Appendix A", Approved Materials.

CARV valves will be installed in a concrete pit at high points in the main. See Detail "Air Release Valve".

3.8 FORCE MAIN PIPE

3.8.1 RESTRAINED PIPE JOINTS

The Engineer of Record shall provide a restrained joint detail on drawings submitted to the City for approval. Restraining is to apply to all new fittings installed as part of the job, including tapping saddles

3.9 LIFT STATIONS

3.9.1 PRECAST WET WELLS

Precast wet wells must be constructed in accordance with ASTM specification C478. Concrete will have a minimum 28-day compressive strength of 4,000 PSI. Cement will be Type II sulfide resistant. Reinforcement steel will be minimum Grade 40 and placed as shown on the drawings ("Lift Station" Sheets 1 and 2 of 4). Shop drawings of manholes and lift station wet wells will be submitted to the Engineering Division Supervisor for approval prior to casting. Chairs for supporting reinforcing steel will be non-corrosive plastic or Grade 316 stainless steel. Linings for wet wells shall conform to Section 3.9.3, "Coatings". EOR shall approve precast wet well design.

### 3.9.2 WET WELL ACCESS COVERS

Aluminum access covers will be designed for 300 PSF live load with a safety factor of three (3). There shall be two 24" x 48" swing covers equipped with Grade 316 stainless steel hinges and Grade 316 stainless steel tamper-proof fasteners, closed position lock hasp, and retractable grip for opening The cover will open to 90 degrees and lock automatically in the open position with a stainless steel positive locking arm. The release will be made by a stainless steel release handle. The cover will be flush with the top of the frame and rest on a %-inch wide lip around the inside of the frame. The hatch will be a Bilco or Halliday product. Hatch size of the cover will be determined by the wet well size and pump size to provide at least 12" of clearance on all sides of the pump with a minimum hatch dimension of 48" x 48". The wet well access cover needs to be flush with the top of the concrete.

### 3.9.3 COATINGS

3.9.3.1 HDPE Sheet Lining

The entire interior wall and top surface of the wet well will be protected with an HDPE liner designed to protect concrete from corrosion in a collection system pump wet well. The liner shall be a minimum thickness of 0.079 inches. Anchoring studs shall be the same material, and shall be integrally extruded with the sheet and shall have a minimum height of 0.39 inches and a length of 0.55 inches. The HDPE sheeting will be cast into the concrete. This liner will be AGRU Sure Grip as manufactured by AGRU America, Inc. or approved equal. Elat liner used for overlapping joints shall have a minimum thickness of 0.018 inches. All joints will be heat fusion welded to create a watertight lining. Such lining shall be warranted against defects in materials and workmanship for a period of five years from date of installatio

3.9.3.2 Exposed Piping

Pump discharge riser pipes and fittings inside the wet well will be Grade 316 10S stainless steel with flanged fittings. Piping exposed to raw sewage in valve pits will be coated with a two-coat coal tar epoxy exterior coating system with a minimum DFT of 12-15 mils. Coal tar epoxy will be Rustoleum 9578 or approved equal. Equipment and pump information tags will not be painted.

3.9.4 SUBMERSIBLE PUMPS

Lift station submersible pumps will be Hydromatic, ABS, or Flyght with three-phase power and 3" minimum solids handling capacity. Pump volute, seal ousing, and motor housing will be cast iron. Pump impeller will be two vane, one-piece cast iron construction. Pump shaft will be one-

piece 316 stainless steel, equipped with tandem seals with separate chambers for each seal. Seals will have tungsten carbide faces with 316 stainless steel hardware. Seal chambers will be equipped with probes to detect water intrusion. Motors will be oil-filled with automatic reset over-temperature sensors embedded in the motor windings. Pumps will be equipped with a stainless steel slide rail system, dual rail type. The pump discharge coupling will be flanged cement-lined ductile iron, 4" minimum diameter, bolted to the wet well floor by 316 stainless steel fasteners. Flanges will be machine threaded. (Compression-type flanges will not be allowed) Flange bolts, washers, and nuts will be 316 stainless steel. All pipes entering or exiting the wet well shall be sealed in a manner that will prevent water leaks around pipes.

3.9.5 VALVE PIT

valve for emergency pump-out. The valve pit shall be configured to allow a minimum of 8 inches between the bottom of pipe flanges and the floor or wall. The emergency pump outlet will include a brass 4" male quick-disconnect complete with brass cover. The cross will be tapped to accommodate a brass gate valve with a threaded on 0-100 PSI glycerin filled pressure gauge. The valve pit is to be made of precast or cast-in-place concrete with a cast concrete cover equipped with an aluminum access hatch cast in the concrete. Aluminum access covers will be designed for 300 PSF live load with a safety factor of three (3). There shall be two 24" x 48" swing covers equipped with Grade 316 stainless steel hinges and Grade 316 stainless steel tamper-proof fasteners, closed position lock hasp, and retractable grip for opening. The cover will open to 90 degrees and lock automatically in the open position with a stainless steel positive locking arm. The release will be made by a stainless steel release handle. The cover will be flush with the top of the frame and rest on a <sup>3</sup>/<sub>4</sub>-inch wide lip around the inside of the frame. The dual swing access hatch will be a **Bilco** or **Halliday** product. Hatch size will be determined by the installation with a minimum dimension of 48 x 48 inches. The valve pit access cover needs to be flush with the top of the

3.9.6 CHECK VALVES

Check valves will be flanged, with fusion bonded epoxy coating with an outside weight and lever, cast iron housing, 316 stainless steel seat ring, clapper with neoprene sealing surface, O-ring- sealed stuffing box (minimum size 4"). Bolts, washers, and nuts will be Grade 316 stainless steel. Check valves shall meet AWWA specification C508. Flanged end dimensions will be drilled to ANSI standard B16.1 class 125.

3.9.7 GATE VALVES

Gate valves will be resilient seated, 4" minimum diameter, with flanged ends, hand wheel operated, non-rising stem, epoxy coated, equipped with double O-ring-sealed stuffing box and Grade 316 stainless steel fasteners. Gate valves will meet AWWA specification C509 and C515. Flanged end dimensions will be drilled to ANSI standard B16.1 class 125.

3.9.8 CONTROL PANEL

The control panel will be isolated with a 200-amp fusible breaker disconnect housed in a NEMA 4X, stainless steel lockable cabinet.

The control panel enclosure will be Grade 316 stainless steel, NEMA 4X rated with a heat- reflecting hood. The minimum inside dimensions will be 36" wide x 48" high x 12" deep. Control voltage will be 120 VAC. Control voltage transformer will be sized to support a 20 Amp circuit. Control wiring will be 14 AWG stranded. The enclosure will be equipped with an aluminum dead front inner panel with cutouts for all circuit breakers; elapsed time meter (non-reset, hour and one-tenth hour, five digits); one duplex 120 VAC convenience outlet (GFI protected); a top mounted LED work light minimum 24 inches in length; hand-off-automatic (HOA) switch for each pump; seal failure light for each pump (amber); run light for each pump (red); one trip light for each pump (amber), SCADA bypass switch, inside and outside light on-off switch.

Floats will be used to provide level control. There will be one float for pump shut-off, one for lead pump turn-on, one for lag pump turn-on, and one for high-level alarm. Floats will be Roto- Float type-S as manufactured by Anchor Scientific with all weights and switches encapsulated. Floats will operate on normal 24 VAC supplied from a step-down 120 VAC to 24 VAC transformer located in the control panel. Float wiring from control panel to pump J-box will be a minimum of

#14 AWG copper wire. City will provide signal cable that will run from the control panel to the pump J-box in the same conduit as the float wiring.

Motor starters will be NEMA-rated with three-leg protection, circuit breakers (molded case), and all pilot devices (switches, relays, lights) will be manufactured by Square-D.

The control panel will be equipped with a Russel Stoll model JRS 1044FR 100-amp emergency generator receptacle and emergency main circuit breaker with lockout from the normal main breaker. Panel will be equipped with ground and neutral terminal bars. A power distribution block will be installed after the main breaker. Two 10 feet by 3/4 inches copper-clad ground rod will be driven into the ground adjacent to the control panel and must test less than 25 ohms resistance. Grounding wire will be Cad welded to the ground rod. The door will be equipped with a three-point latching system with hasp and staple for locking. The wiring system will be configured to allow the pumps to operate on floats if the SCADA system is by-passed. A separate by-pass switch will be installed. A Time Mark or Diversified Electronics phase sequence and loss relay with fault light will be installed for each pump. Line voltage will be monitored with a Time Mark 257B or A257B. The control panel will be mounted on aluminum channel or stainless steel unistrut and hardware supported by a minimum of three 4-inch square concrete posts. The post will be a minimum of 10 foot in length and located adjacent to the wet well. When the panel door is open, a minimum of 4-foot separation between the wet well edge and the panel.

Exposed electrical conduit will be Rigid Metal Conduit (galvanized rigidRMC) with protective coating where it penetrates concrete. Buried conduit will be Schedule 80 PVC. Conduits will be sized in accordance with NEC or larger with a minimum diameter of 2 inches. PVC conduits for pump and float wiring will be installed through the side of the wet well, below the lid, and above the high-water level. Each pump power cable will be installed through a separate conduit from the wet well to the control panel junction box. All conduits from wet well to J-Box will be 2-inch Schedule 80 PVC

not be permitted

A separate valve pit shall be constructed adjacent to the wet well to house a check valve for each pump, a gate valve for each pump, and one gate

concrete. The valve pit depth is a maximum of 36" deep.

A laminated as-built electrical wiring diagram (minimum 8.5" x 11") will be securely attached to the inside of the control panel door. A separate copy of the as-built wiring diagram will be provided to City of Cocoa Engineering Division. An information plate will also be located inside panel door and will include Cocoa's station number, pump information, and station voltage. An information plate with the address of the lift station will be located on the exterior of the meter can. If a high leg is present, identify the leg with orange color.

A site meeting will be held for each project to determine the exact placement of the panel components.

3.9.8.1 Disconnect Panel

A lightning suppressor shall be installed on the exterior side of the disconnect panel. It will not be permitted on the inside of the control panel. The disconnect panel will be a 200-amp fusible or breaker disconnect housed in a NEMA 4X, 316 stainless steel, 3 poles lockable cabinet rated for 600 volts AC. The disconnect panel is to be located next to the meter housing.

### 3.9.8.2 SCADA

SCADA equipment will be housed in a separate Eurobex, model number 5412 ESSPCH, lockable, NEMA 4X cabinet with an inner panel for equipment nounting and a separate inner panel on the door for mounting radio. Lift station operation and monitoring will be accomplished via SCADA, utilizing Motorola Moscad-L Remote Terminal Unit (RTU) consisting of one 15X15 chassis-part# FHN6028, frame-part# FHN5890, 3 I/O motherboard-part # FRN5809, a 117 vac transformer- part# FPN5554, power supply module-part# FPN5555, Central Processing Unit (CPU)-part# F6836, external radio interface board-part # FRN5907, three mixed I/O modules-part# FRN5819, battery bracket-part # FHN6058, battery-part# FLN9059, UHF radio 438-470 MHz-part# FUE1067, radio install kit-part# FLN3268, one antenna cable-part# FKN4473, TCP/IP interface to port 1- part# V527, and all associated cables. For more information, refer to the RTU detail sheets in "Appendix B".

The antenna shall be a gold anodized fully welded UHF directional Yagis, model Y4503, as manufactured by Antenex. The antenna shall be mounted on a minimum 20-foot-tall galvanized mast. The mast shall be rigid pipe, two and one half inches in diameter at the base. The upper 5 feet of mast will be rigid pipe, one and one guarter inches in diameter. The bottom of the mast will be set 3 foot below ground level and encased in a column of concrete a ninimum of 12 inches in diameter and 3 foot deep. The mast will be located in close proximity to the SCADA/RTU panel. Antenna cable shall be Times Microwave Systems 3/8 inch diameter flexible low loss coaxial cable, part# LMR-400-DB and shall be fed into a 1-inch rigid metal conduit, mounted next to the antenna mast and shall be supported a minimum of three times along the length of the mast. The cable is to be fed into the underside of the SCADA/RTU panel. The mast shall be grounded to separate ground rod. A 20-foot copper-clad ground rod will be driven into the ground adjacent to the mast and must test less than 25 ohms resistance. Grounding wire will be Cad welded to the ground rod. Coordination of SCADA programming will be provided by the City's EOR.

The interface between the control cabinet and the separate SCADA cabinet will be through Phoenix Contact terminals and component plugs and relay bases (catalog # 700-HN121), or approved equals. An isolated 20 Amp circuit will be provided to power SCADA equipment. Pumps will be controlled by

SCADA will be our new system and will be provided by the City. Existing antenna will be used. Coaxial cable may need to be replaced at the sole responsibility of the Contractor

### 3.9.8.3 Surge Protection

A surge protection unit as manufactured by Ditek, model KX-(applied voltage) shall be installed in a separate cabinet.

### 3.9.8.4 Emergency Generato

tand-alone emergency electrical generators may be required for some pumping stations will be determined by the Engineering Division at the time of plan review. Generator location to be determined by the City. Provide a concrete slab with a minimum thickness of 6 inches. Generator will be mounted on approved rubber pads for vibration dampening. Installation must meet NFPA and NEC requirements. Generators shall be manufactured by Kohler or an approved equal and equipped with a John Deere, Cummins, or Caterpillar diesel engine with a minimum 60 kW output. Generator will be equipped with a fuel tank sized to provide a minimum of 32 hours operations under full load conditions with a minimum capacity of 250 gallons. Automatic Transfer Switch (ATS) will be installed in a separate NEMA 4X enclosure. ATS to be sized to the incoming electric service voltage and amp

### 3.9.9 Site Lighting

Total number of lights will be determined by total area of the lift station site and equipment location. At least one light and pole will be located near the wet well and valve pit. Exact location to be determined by the City. Light pole must be aluminum, square, and bronze in color. Pole must be wind rated for the location. Total pole height, including in-ground base, will not exceed 16 feet above finished grade. Light must be RAB Lighting #ALED3T150 or an approved equal.

### 3.10 CONDUIT

and consist of double 45-degree bends. Seal failure and over-temperature wiring for the pump will be installed in the same conduit. One (1) conduit will be provided to accommodate float wiring. Conduits for power and float wiring will be installed in close proximity and located to provide the straightest possible run to the junction box. Wiring from the wet well will be terminated in the junction box. Continuous wiring through the box will

A separate 2-inch diameter PVC conduit will be installed through the side of the wet well with the ends capped for future use. This conduit will be located at 90, 180, or 270 degrees from the others. The Engineering Division will determine the exact location during plan review.

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VERTICAL DATUM: NAVD88
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DESIGN/DRAWN: ALS/DRB PROJECT TITLE
CIRRUS
SHEET TITLE
CITY OF COCOA TECHNICAL
PROVISIONS (WASTEWATER)
PROJECT NO.
11545 DRAWING NO.
11545_400_019

19 of 19

![](_page_19_Figure_0.jpeg)

# CIRRUS

PLAT NOTES:

1.BEARING REFERENCE: ASSUMED BEARING OF N00°30'56"E ON THE WEST IN PLAT BOOK 57, PAGE 87, PUBLIC RECORDS OF BREVARD COUNTY, FLOF

- 2.SURVEY MONUMENTATION WITHIN THE SUBDIVISION SHALL BE SET IN ACC 177.091(9).
- 3.ALL PLATTED PUBLIC UTILITY EASEMENTS SHALL ALSO BE EASEMENTS F MAINTENANCE, AND OPERATION OF CABLE TELEVISION SERVICES; PROV INSTALLATION, MAINTENANCE, AND OPERATION OF CABLE TELEVISION S AND SERVICES OF AN ELECTRIC, TELEPHONE, GAS, OR OTHER PUBLIC L DAMAGES THE FACILITIES OF A PUBLIC UTILITY, IT SHALL BE SOLELY RES NOT APPLY TO THOSE PRIVATE EASEMENTS GRANTED TO OR OBTAINED OTHER PUBLIC UTILITY. SUCH CONSTRUCTION, INSTALLATION, MAINTENA NATIONAL ELECTRICAL SAFETY CODE AS ADOPTED BY THE FLORIDA PUB
- 4.THE LANDS PLATTED HEREON ARE SUBJECT TO THE TERMS AND CONDIT FLORIDA GAS TRANSMISSION COMPANY AS REFERENCED IN FINAL JUDGM PAGE 315.
- 5. THE LANDS PLATTED HEREON ARE SUBJECT TO THE TERMS, COVENANTS OTHER PROVISIONS SET FORTH IN DECLARATION OF RESTRICTIONS AND ASSOCIATES, INC., A DELAWARE CORPORATION, RECORDED IN OFFICIAL
- 6.THE 36' SHARED ACCESS EASEMENT SHOWN ON LOT 1B IS HEREBY DEDIC AND PEDESTRIAN ACCESS.
- 7. THE LANDS PLATTED HEREON ARE SUBJECT TO THE TERMS AND CONDIT REUSE MAIN AND INGRESS/EGRESS EASEMENT IN FAVOR OF THE CITY OF LINE & INGRESS/EGRESS EASEMENT RECORDED IN OFFICIAL RECORDS E WIDE WATER LINE AND INGRESS/EGRESS EASEMENT WHICH WAS ALSO ( RESOLUTION NO. 2005-65 RECORDED IN OFFICIAL RECORDS BOOK 5510, F
- 8. THE LANDS PLATTED HEREON ARE SUBJECT TO THE TERMS AND CONDITI EASEMENT FOR SANITARY SEWER FORCE MAIN AND A TWENTY (20) FOOT FAVOR OF THE CITY OF COCOA SET FORTH IN FORCE MAIN AND SEWER LI RECORDS BOOK 3372, PAGE 4486. NOTE: A PORTION OF SAID EASEMENT(S 100 RECORDED IN OFFICIAL RECORDS BOOK 5557, PAGE 4594.
- 9. THE LANDS PLATTED HEREON ARE SUBJECT TO THE TERMS AND CONDITI FROM INTERCHANGE ASSOCIATES, INC. IN FAVOR OF SOUTHERN BELL TE OFFICIAL RECORDS BOOK 3387, PAGE 3308.
- 10. COVENANT SET FORTH IN SHORT FORM LEASE BY AND BETWEEN INTERC CORPORATION, TENANT, RECORDED IN OFFICIAL RECORDS BOOK 3511, PA AND/OR AMENDED BY THE DOCUMENTS LISTED ON EXHIBIT A OF THAT CE COCOA FL, L.L.C., SUCCESSOR IN INTEREST TO ECKERD CORPORATION, INTEREST TO INTERCHANGE ASSOCIATES, INC., LANDLORD, ET AL, RECOR

# **LEGAL DESCRIPTION**

LOT 1 OF HOME DEPOT COCOA, ACCORDING TO THE PLAT THEREO BOOK 57, PAGES 87 THROUGH 93, OF THE PUBLIC RECORDS OF BRI

![](_page_19_Picture_18.jpeg)

	PLAT BOOK, PAGE
STRY RC	SECTION 18, TOWNSHIP 24 SOUTH, RANGE 36 EAST
BEELINE EL	<b>DEDICATION</b> KNOW ALL MEN BY THESE PRESENTS, COCOA RETAIL, LLC, a North Carolina Limited Liability Company, being the owner in fee simple of the lands described in <b>CIRRUS</b>
CEPRESSINAY RAMP PROJECT SITE BEELINE EXPRESSWAY BEELINE EXPRESSWAY RAMP	Hereby dedicates said lands and plat for the uses and purposes therein expressed and dedicates all public drainage and utility easements as further described in the notes or as shown hereon. The owner hereby dedicates to the public and the City of Cocoa, Florida, all easements shown hereon as public easements and a perpetual public easement over and across Lot 1A and Lot 1B for ingress and egress for law enforcement and emergency vehicles, emergency access and emergency maintenance.
	By: Printed Name:
B STATE ROAD 501	SEAL
N NIS	Attest: Printed Name:
LINE OF LOT 1, HOME DEPOT COCOA AS RECORDED	Attest: Printed Name:
RIDA. CORDANCE WITH FLORIDA STATUTES, CHAPTER	COCOA RETAIL, LLC 1111 METROPOLITAN AVENUE
OR THE CONSTRUCTION, INSTALLATION, IDED, HOWEVER, NO SUCH CONSTRUCTION, ERVICES SHALL INTERFERE WITH THE FACILITIES	SUITE 700 CHARLOTTE, NORTH CAROLINA 28236
TILITY. IN THE EVENT A CABLE TELEVISION COMPANY PONSIBLE FOR THE DAMAGES. THIS SECTION SHALL BY A PARTICULAR ELECTRIC, TELEPHONE, GAS, OR NCE, AND OPERATION SHALL COMPLY WITH THE LIC SERVICE COMMISSION.	STATE OF COUNTY OF The foregoing instrument was acknowledged before me by means of physical presence or online notarization, this by the above named Limited Liability Company under the laws of the State of
IONS OF THAT CERTAIN EASEMENT IN FAVOR OF MENT RECORDED IN OFFICIAL RECORDS BOOK 599,	on behalf of the company, who is personally known to me or has produced as identification.
S, CONDITIONS, EASEMENTS, RESTRICTIONS AND GRANT OF EASEMENTS BY INTERCHANGE RECORDS BOOK 3299, PAGE 3156	IN WITNESS WHEREOF, I have hereunto set my hand and seal on the above date.
CATED TO THE OWNERS OF LOT 1A FOR VEHICULAR	NOTARY PUBLIC     SEAL       My Comm. Expires     SEAL
FOOL WIDE F COCOA SET FORTH IN REUSE MAIN AND WATER SOOK 3372, PAGE 4481. NOTE: THE TWENTY (20) FOOT GRANTED IN SAID INSTRUMENT WAS VACATED BY	CERTIFICATE OF SURVEYOR
TIONS OF THAT CERTAIN TWENTY (20) FOOT WIDE TWIDE EASEMENT FOR SANITARY SEWER LINE IN INE & INGRESS/EASEMENT RECORDED IN OFFICIAL S) WAS/WERE VACATED BY RESOLUTION NO. 2005-	KNOW ALL MEN BY THESE PRESENTS, That the undersigned, being a licensed professional surveyor and mapper, does hereby certify that on 11/11/2019 he completed a boundary survey of the lands shown on the foregoing plat; and that said plat was prepared under his direction and supervision and that said plat complies with all of the survey requirements of Chapter 177, part 1,
IONS OF THAT CERTAIN RIGHT OF WAY EASEMENT ELEPHONE AND TELEGRAPH COMPANY RECORDED IN	County, Florida.
CHANGE ASSOCIATES, INC., LANDLORD, AND ECKERD PAGE 710, AS ASSIGNED, MODIFIED, SUPPLEMENTED ERTAIN INSTRUMENT BY AND BETWEEN CVS EGL 524 TENANT, RDI DEVELOPERS, LLC, SUCCESSOR IN RDED IN OFFICIAL RECORDS BOOK 5583, PAGE 8287.	Registration Number <u>5611</u> LESLIE E. HOWARD B.S.E. Consultants, Inc. 312 South Harbor City Boulevard, Suite #4 Melbourne, Fla. 32901 Certificate of Authorization Number: LB-0004905
	CERTIFICATE OF REVIEWING SURVEYOR
	I HEREBY CERTIFY, That I have reviewed the foregoing plat and find that it is in conformity with Chapter 177, part 1, Florida Statutes.
	J. Barry. Cabannis Reg. Florida Surveyor & Mapper #4524 Reviewing Surveyor for the City of Cocoa
OF RECORDED IN PLAT REVARD COUNTY, FLORIDA.	CERTIFICATE OF APPROVAL OF MUNICIPALITY
	THIS IS TO CERTIFY, That on, the foregoing plat was approved by the City Council of the City of Cocoa, Florida.
	Jake Williams, Jr., MAYOR
	ATTEST: Carie Shealy, CITY CLERK
	CERTIFICATE OF CLERK I HEREBY CERTIFY, That I have examined the foregoing plat and find that it complies in form with all the requirements of Chapter 177, Part 1, Florida Statutes, and was filed for record onat File No
- INIS PLAT PREPARED BY - B.S.E. CONSULTANTS, INC. DNSULTING - ENGINEERING - LAND SURVEYING SOUTH HARBOR CITY BOULEVARD, SUITE 4 MELBOURNE, FL 32901 PHONE: (321) 725-3674 FAX: (321) 723-1159 CERTIFICATE OF BUSINESS AUTHORIZATION: LB0004905 FICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905	ATTEST: Clerk of the Circuit Court in and for Brevard County, Fla.

![](_page_20_Figure_0.jpeg)

PLAT BOOK , PAGE SHEET 2 OF 4 SECTION 18, TOWNSHIP 24 SOUTH, RANGE 36 EAST

### SURVEY SYMBOL LEGEND PERMANENT REFERENCE MONUMENT (PRM); FD 4X4

- INCH CONCRETE MONUMENT WITH DISK STAMPED PRM LB4905, UNLESS OTHERWISE NOTED
- SET 5/8" IRON ROD & CAP STAMPED "PRM LB4905 UNLESS OTHERWISE NOTED
- SET MAG NAIL & DISK STAMPED "PRM LB4905" UNLESS OTHERWISE NOTED

	ABBREVIATIONS
'	MINUTES/FEET
"	SECONDS/INCHES
٥	DEGREES
(NR)	NOT RADIAL
AC	ACRES
AL	ARC LENGTH
BOC	BEGINNING OF CURVE
CB	CHORD BEARING
CDD	CENTRAL DRAINAGE DISTRICT
СН	CHORD LENGTH
CM	CONCRETE MONUMENT
DEL	CENTRAL/DELTA ANGLE
DE	PRIVATE DRAINAGE EASEMENT
Е	EAST
EOC	END OF CURVE
ESMT	EASEMENT
FD	FOUND
FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION
FT	FOOT/FEET
LB	LICENSED BUSINESS
Ν	NORTH
NTI	NON-TANGENT INTERSECTION
NTS	NOT TO SCALE
OR/ORB	OFFICIAL RECORDS BOOK
PB	PLAT BOOK
PCC	POINT OF COMPOUND CURVATURE
PCP	PERMANENT CONTROL POINT
PKD	PARKER-KALEN NAIL AND DISK
POB	POINT OF BEGINNING
POC	POINT OF COMMENCEMENT
PRC	POINT OF REVERSE CURVATURE
PG(S)	PAGE(S)
R	RADIUS
R/W	RIGHT-OF-WAY
SEC	SECTION
S	SUITH

- S SOUTH
- W WEST

![](_page_20_Picture_12.jpeg)

![](_page_20_Picture_13.jpeg)

- THIS PLAT PREPARED BY **B.S.E. CONSULTANTS, INC.** CONSULTING - ENGINEERING - LAND SURVEYING

![](_page_20_Picture_15.jpeg)

![](_page_21_Figure_0.jpeg)

, PAGE PLAT BOOK SHEET 3 OF 4 SECTION 18, TOWNSHIP 24 SOUTH, RANGE 36 EAST

### SURVEY SYMBOL LEGEND PERMANENT REFERENCE MONUMENT (PRM); FD 4X4

- INCH CONCRETE MONUMENT WITH DISK STAMPED PRM LB4905, UNLESS OTHERWISE NOTED
- SET 5/8" IRON ROD & CAP STAMPED "PRM LB4905 UNLESS OTHERWISE NOTED
- SET MAG NAIL & DISK STAMPED "PRM LB4905" UNLESS OTHERWISE NOTED

	ABBREVIATIONS
'	MINUTES/FEET
"	SECONDS/INCHES
0	DEGREES
(NR)	NOT RADIAL
AC	ACRES
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BOC	BEGINNING OF CURVE
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CDD	CENTRAL DRAINAGE DISTRICT
СН	CHORD LENGTH
CM	CONCRETE MONUMENT
DEL	CENTRAL/DELTA ANGLE
DE	PRIVATE DRAINAGE EASEMENT
Е	EAST
EOC	END OF CURVE
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FT	FOOT/FEET
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NTI	NON-TANGENT INTERSECTION
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OR/ORB	OFFICIAL RECORDS BOOK
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PCC	POINT OF COMPOUND CURVATURE
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PKD	PARKER-KALEN NAIL AND DISK
POB	POINT OF BEGINNING
POC	POINT OF COMMENCEMENT
PRC	POINT OF REVERSE CURVATURE
PG(S)	PAGE(S)
R	RADIUS
R/W	RIGHT-OF-WAY
SEC	SECTION
c	SUITU

- S SOUTH
- W WEST

![](_page_21_Picture_13.jpeg)

BKE

- THIS PLAT PREPARED BY **B.S.E. CONSULTANTS, INC.** CONSULTING - ENGINEERING - LAND SURVEYING

312 SOUTH HARBOR CITY BOULEVARD, SUITE 4 MELBOURNE, FL 32901 PHONE: (321) 725-3674 FAX: (321) 723-1159 CERTIFICATE OF BUSINESS AUTHORIZATION: 4905 CERTIFICATE OF LIAND SURVEYING BUSINESS AUTHORIZATION: LB0004905

DATE: 08/31/20 DESIGN/DRAWN: ALS/AH DRAWING# 11545 300 003 PROJECT# 11545

![](_page_22_Figure_0.jpeg)

PLAT BOOK , PAGE SHEET 4 OF 4 SECTION 18, TOWNSHIP 24 SOUTH, RANGE 36 EAST

### SURVEY SYMBOL LEGEND PERMANENT REFERENCE MONUMENT (PRM); FD 4X4

- INCH CONCRETE MONUMENT WITH DISK STAMPED PRM LB4905, UNLESS OTHERWISE NOTED
- SET 5/8" IRON ROD & CAP STAMPED "PRM LB4905"
- UNLESS OTHERWISE NOTED SET MAG NAIL & DISK STAMPED "PRM LB4905"
- UNLESS OTHERWISE NOTED

	ABBREVIATIONS
,	MINUTES/FEET
"	SECONDS/INCHES
٥	DEGREES
(NR)	NOT RADIAL
AC	ACRES
AL	ARC LENGTH
BOC	BEGINNING OF CURVE
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CDD	CENTRAL DRAINAGE DISTRICT
CH	CHORD LENGTH
CM	CONCRETE MONUMENT
DEL	CENTRAL/DELTA ANGLE
DE	PRIVATE DRAINAGE EASEMENT
E	EAST
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ESMT	EASEMENT
FD	FOUND
FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION
FT	FOOT/FEET
LB	LICENSED BUSINESS
Ν	NORTH
NTI	NON-TANGENT INTERSECTION
NTS	NOT TO SCALE
OR/ORB	OFFICIAL RECORDS BOOK
PB	PLAT BOOK
PCC	POINT OF COMPOUND CURVATURE
PCP	PERMANENT CONTROL POINT
PKD	PARKER-KALEN NAIL AND DISK
POB	POINT OF BEGINNING
POC	POINT OF COMMENCEMENT
PRC	POINT OF REVERSE CURVATURE
PG(S)	PAGE(S)
R	RADIUS
R/W	RIGHT-OF-WAY
SEC	SECTION
S	SOUTH

- S SOUTH
- W WEST

![](_page_22_Picture_13.jpeg)

BKE

- THIS PLAT PREPARED BY **B.S.E. CONSULTANTS, INC.** CONSULTING - ENGINEERING - LAND SURVEYING 312 SOUTH HARBOR CITY BOLLEVARD, SUITE 4 MELBOURNE, FL 32901 PHONE: (321) 725-3674 FAX: (321) 723-31159 CERTIFICATE OF BUSINESS AUTHORIZATION: 4905 CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905

DATE: 08/31/20 DESIGN/DRAWN: ALS/AH DRAWING# 11545\_300\_004 PROJECT# 11545

### SURVEY NOTES:

SURVEY OF A PARCEL OF LAND IN SECTION 18, TOWNSHIP 24 SOUTH, RANGE 36 EAST, BREVARD COUNTY, FLORIDA.

SURVEY FOR BOUNDARY AND LOCATIONS OF PERTINENT VISIBLE ABOVEGROUND IMPROVEMENTS.

UNDERGROUND IMPROVEMENTS AND/OR UTILITIES SHOWN AND NOTED HEREON WERE TAKEN FROM A PREVIOUS SURVEY OF THIS AREA PERFORMED BY THIS COMPANY.

BEARING REFERENCE: ASSUMED BEARING OF S85°25'26"E ON THE SOUTHERLY RIGHT-OF-WAY LINE OF STATE ROAD NO. 528 (BEELINE EXPRESSWAY) CLEARLAKE ROAD EAST BOUND EXIT RAMP, ACCORDING TO THE PLAT OF HOME DEPOT COCOA, AS RECORDED IN PLAT BOOK 57, PAGE 87, PUBLIC RECORDS OF BREVARD COUNTY, FLORIDA.

THE SURVEYOR RELIED SOLELY ON INFORMATION CONTAINED WITHIN THAT CERTAIN FIRST AMERICAN TITLE INSURANCE COMPANY ALTA COMMITMENT FOR TITLE INSURANCE FILE NO .: 2061-4486840, ISSUING OFFICE FILE NUMBER: 2320-TBD, COMMITMENT DATE: OCTOBER 1, 2019 AT 8:00 A.M FOR INFORMATION REGAGRDING EASEMENTS AFFECTING AND/OR ENCUMBERING THE LANDS SURVEYED HEREON

THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED PROFESSIONAL SURVEYOR AND MAPPER UNLESS ELECTRONICALLY SIGNED AND SEALED IN ACCORDANCE WITH FLORIDA STATUTES CHAPTER 472.025.

THIS SURVEY MEETS THE STANDARDS OF PRACTICE FOR SURVEYS AS REQUIRED BY FLORIDA STATUTES CHAPTER 472 AND THE MINIMUM TECHNICAL STANDARDS FOR SURVEYS AS REQUIRED BY CHAPTER 5J-17, FLORIDA ADMINISTRATIVE CODE.

ALL BUILDING SET BACK REQUIREMENTS ARE GRAPHICALLY DEPICTED HEREON.

THIS PROPERTY HAS DIRECT ACCESS TO A DEDICATED PUBLIC STREET VIA DRIVEWAY CONNECTIONS ON STATE ROAD 528 RE-ROUTE (STATE ROAD 524).

ELEVATIONS SHOWN ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM, 1988 (NAVD88)

DATUM CONVERSION: NAVD88 + 1.35 = NGVD29

THIS SURVEY IS SUBJECT TO ANY ADDITIONAL EASEMENTS, RESTRICTIONS, RESERVATIONS AND RIGHTS-OF-WAY OF RECORD, (EITHER PUBLIC OR PRIVATE), WHICH MAY EXIST AND WERE NOT FURNISHED TO THE SURVEYOR.

BUILDING HEIGHT RESTRICTED TO 66 FEET AS PER CITY OF COCOA, FLORIDA CODES

PROPERTY ADDRESS: 2320 HIGHWAY 524 UNIT HOMEDE, COCOA, FLORIDA 32926

DATE OF LAST FIELD WORK: 11/11/19

### DESCRIPTION OF "THE PROPERTY" BY SURVEYOR:

PART OF LOT 1, HOME DEPOT COCOA, ACCORDING TO THE MAP OR PLAT THEREOF AS RECORDED IN PLAT BOOK 57, P AGES 87 THROUGH 93, INCLUSIVE, OF THE PUBLIC RECORDS OF BREVARD COUNTY, FLORIDA, LYING IN SECTION 18, TOWNSHIP 24 SOUTH, RANGE 36 EAST, BREVARD COUNTY, FLORIDA BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

LOT 1 OF SAID HOME DEPOT COCOA, LESS AND EXCEPT THE FOLLOWING DESCRIBED PARCEL OF LAND:

COMMENCE AT THE SOUTHWEST CORNER OF SAID LOT 1 AND RUN ALONG THE BOUNDARY OF SAID LOT 1, N88°34'39"E A DISTANCE OF 113.35 FEET TO THE SOUTHWEST CORNER OF LOT 2 OF SAID HOME DEPOT COCOA: THENCE N01°25'21"W. ALONG THE WEST LINE OF SAID LOT 2. A DISTANCE OF 245.00 FEET TO THE NORTHWEST CORNER OF SAID LOT 2; THENCE N88°34'39"E A DISTANCE OF 221.00 FEET TO THE NORTHEAST CORNER OF SAID LOT 2 AND THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED; THENCE CONTINUE N88°34'39"E, ALONG THE EASTERLY EXTENSION OF THE NORTH LINE OF SAID LOT 2, A DISTANCE OF 466.23 FEET TO THE EASTERLY LINE OF SAID LOT 1; THENCE S01°25′21″E, ALONG SAID EASTERLY LINE, A DISTANCE OF 210.00 FEET TO THE SOUTHEAST CORNER OF SAID LOT 1, (SAID POINT ALSO BEING A POINT ON THE NORTH RIGHT-OF-WAY LINE OF STATE ROAD NO. 524); THENCE S88°34'39"W, ALONG SAID NORTH RIGHT-OF-WAY LINE, A DISTANCE OF 466.24 FEET TO THE SOUTHEAST CORNER OF SAID LOT 2; THENCE N01°25'21"W, ALONG THE EAST LINE OF SAID LOT 2, A DISTANCE OF 210.00 FEET TO THE POINT OF BEGINNING. CONTAINING 2.25 ACRES, MORE OR LESS.

### DESCRIPTION FROM EXHIBIT "A" IN THAT CERTAIN FIRST AMERICAN TITLE INSURANCE COMPANY ALTA COMMITMENT FOR TITLE INSURANCE FILE NO .: 2061-4486840, ISSUING OFFICE FILE NUMBER: 2320-TBD, COMMITMENT DATE: OCTOBER 1, 2019 AT 8:00 A.M:

PARCEL 1 (FEE PARCEL): LOT 1 OF HOME DEPOT COCOA, ACCORDING TO THE PLAT THEREOF RECORDED IN PLAT BOOK 57, PAGES 87 THROUGH 93, OF THE PUBLIC RECORDS OF BREVARD COUNTY, FLORIDA.

PARCEL 2 (EASEMENT PARCEL): TOGETHER WITH THOSE CERTAIN EASEMENTS FOR ACCESS, UTILITIES AND SIGNAGE FOR THE BENEFIT OF PARCEL 1 ABOVE AS MORE FULLY DESCRIBED AND SET FORTH IN THAT CERTAIN RESTRICTIVE COVENANTS AND EASEMENT AGREEMENT BY AND BETWEEN RDI DEVELOPERS, LLC, A NEW YORK LIMITED LIABILITY COMPANY AND HOME DEPOT U.S.A., INC. RECORDED IN OFFICIAL RECORDS BOOK 5859, PAGE 8905, AS AMENDED AND MODIFIED BY FIRST AMENDMENT TO RESTRICTIVE COVENANTS AND EASEMENT AGREEMENT BY AND BETWEEN RDI DEVELOPERS, LLC, A NEW YORK LIMITED LIABILITY COMPANY AND HOME DEPOT U.S.A., INC. RECORDED IN OFFICIAL RECORDS BOOK 5868, PAGE 8944, OF THE PUBLIC RECORDS OF BREVARD COUNTY, FLORIDA.

![](_page_23_Figure_23.jpeg)

![](_page_23_Picture_24.jpeg)

ITEM NUMBERS BELOW ARE IN DIRECT RELATIONSHIP TO THOSE NUMBERS IN SCHEDULE B-I EXCEPTIONS IN CERTAIN FIRST AMERICAN TITLE INSURANCE COMPANY ALTA COMMITMENT FOR TITLE INSURANCE FILE NO.: 2061-4486840, ISSUING OFFICE FILE NUMBER: 2320-TBD, COMMITMENT DATE: OCTOBER 1, 2019 AT 8:00 A.M:

- 1. SURVEYOR HAS NO KNOWLEDGE OF ANY DEFECTS, LIENS, ENCUMBRANCES, ADVERSE CLAIMS OR OTHER MATTERS, IF ANY, CREATED, FIRST APPEARING IN THE PUBLIC RECORDS OR ATTACHING SUBSEQUENT TO THE EFFECTIVE DATE BUT PRIOR TO THE DATE THE PROPOSED INSURED ACQUIRES FOR VALUE OF RECORD THE ESTATE OR INTEREST OR MORTGAGE THEREON COVERED BY THIS COMMITMENT
- 2. SURVEYOR HAS NO KNOWLEDGE OF ANY RIGHTS, INTERESTS, OR CLAIMS OF PARTIES IN POSSESSION OF THE LAND NOT SHOWN BY THE PUBLIC RECORDS.
- 3. SURVEYOR HAS NO KNOWLEDGE OF ANY ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATION OR ADVERSE CIRCUMSTANCE AFFECTING THE TITLE OTHER THAN AS MAY BE NOTED AND/OR SHOWN HEREON.
- 4. SURVEYOR HAS NO KNOWLEDGE OF ANY LIEN, FOR SERVICES, LABOR, OR MATERIALS IN CONNECTION WITH IMPROVEMENTS, REPAIRS OR RENOVATIONS PROVIDED BEFORE, ON, OR AFTER DATE OF POLICY, NOT SHOWN BY THE PUBLIC RECORDS.
- 5. SURVEYOR HAS NO KNOWLEDGE OF ANY DISPUTE AS TO THE BOUNDARIES CAUSED BY A CHANGE IN THE LOCATION OF ANY WATER BODY WITHIN OR ADJACENT TO THE LAND PRIOR TO DATE OF POLICY, AND ANY ADVERSE CLAIM TO ALL OR PART OF THE LAND THAT IS, AT DATE OF POLICY, OR WAS PREVIOUSLY UNDER WATER.
- 6. TAXES OR SPECIAL ASSESSMENTS NOT SHOWN AS LIENS IN THE PUBLIC RECORDS OR IN THE RECORDS OF THE LOCAL TAX COLLECTING AUTHORITY, AT DATE OF POLICY. NOT A SURVEY MATTER
- 7. SURVEYOR HAS NO KNOWLEDGE OF ANY MINERALS OR MINERAL RIGHTS LEASED, GRANTED OR RETAINED BY CURRENT OR PRIOR OWNERS
- 8. TAXES AND ASSESSMENTS FOR THE YEAR 2019 AND SUBSEQUENT YEARS, WHICH ARE NOT YET DUE AND PAYABLE. NOT A SURVEY MATTER

NOTES FOR STANDARD EXCEPTIONS: STANDARD EXCEPTIONS FOR PARTIES IN POSSESSION, FOR MECHANICS LIENS, AND FOR TAXES OR SPECIAL ASSESSMENTS NOT SHOWN AS LIENS IN THE PUBLIC RECORDS SHALL BE DELETED UPON RECEIPT OF AN ACCEPTABLE NON-LIEN AND POSSESSION AFFIDAVIT ESTABLISHING WHO IS IN POSSESSION OF THE LANDS, THAT THERE ARE NO LIENS OR ENCUMBRANCES UPON THE LANDS OTHER THAN AS SET FORTH IN THE COMMITMENT, THAT NO IMPROVEMENTS TO THE LANDS HAVE BEEN MADE WITHIN THE PAST 90 DAYS OR ARE CONTEMPLATED TO BE MADE BEFORE CLOSING THAT WILL NOT BE PAID IN FULL, AND THAT THERE ARE NO UNRECORDED TAXES OR ASSESSMENTS THAT ARE NOT SHOWN AS EXISTING LIENS IN THE PUBLIC RECORDS. ANY POLICIES ISSUED HEREUNDER MAY BE SUBJECT TO A SPECIAL EXCEPTION FOR MATTERS DISCLOSED BY SAID AFFIDAVIT.

### DESCRIPTION OF "RETAINED BY SELLER" AREA BY SURVEYOR:

PART OF LOT 1, HOME DEPOT COCOA, ACCORDING TO THE MAP OR PLAT THEREOF AS RECORDED IN PLAT BOOK 57, P AGES 87 THROUGH 93, INCLUSIVE, OF THE PUBLIC RECORDS OF BREVARD COUNTY, FLORIDA, LYING IN SECTION 18, TOWNSHIP 24 SOUTH, RANGE 36 EAST, BREVARD COUNTY, FLORIDA BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE SOUTHWEST CORNER OF SAID LOT 1 AND RUN ALONG THE BOUNDARY OF SAID LOT 1, N88°34'39"E A DISTANCE OF 113.35 FEET TO THE SOUTHWEST CORNER OF LOT 2 OF SAID HOME DEPOT COCOA; THENCE N01°25'21"W, ALONG THE WEST LINE OF SAID LOT 2, A DISTANCE OF 245.00 FEET TO THE NORTHWEST CORNER OF SAID LOT 2; THENCE N88°34'39"E A DISTANCE OF 221.00 FEET TO THE NORTHEAST CORNER OF SAID LOT 2 AND THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED; THENCE CONTINUE N88°34'39"E. ALONG THE EASTERLY EXTENSION OF THE NORTH LINE OF SAID LOT 2, A DISTANCE OF 466.23 FEET TO THE EASTERLY LINE OF SAID LOT 1; THENCE S01°25'21"E, ALONG SAID EASTERLY LINE, A DISTANCE OF 210.00 FEET TO THE SOUTHEAST CORNER OF SAID LOT 1, (SAID POINT ALSO BEING A POINT ON THE NORTH RIGHT-OF-WAY LINE OF STATE ROAD NO. 524); THENCE S88°34'39"W, ALONG SAID NORTH RIGHT-OF-WAY LINE, A DISTANCE OF 466.24 FEET TO THE SOUTHEAST CORNER OF SAID LOT 2; THENCE N01°25'21"W, ALONG THE EAST LINE OF SAID LOT 2, A DISTANCE OF 210.00 FEET TO THE POINT OF BEGINNING. CONTAINING 2.25 ACRES, MORE OR LESS.

### CONTAINING 13.49 NET ACRES, MORE OR LESS.

### ZONING INFORMATION PER CITY

OF COCOA, FLORIDA CODES: ZONING CLASSIFICATION: GENERAL COMMERCIAL (C-G)

SETBACKS: FRONT: 40 FEET

> SIDE: 30 FEET WHEN CONTIGUOUS TO **RESIDENTIAL AND 15 FEET WHEN** CONTIGUOUS TO ANY OTHER ZONING

> 30 FEET WHEN CONTIGUOUS TO REAR: **RESIDENTIAL AND 20 FEET WHEN** CONTIGUOUS TO ANY OTHER ZONING

### NATIONAL FLOOD INSURANCE PROGRAM

1. MAP No. 12009C0320G

### 2. COMMUNITY No. 120020

3. PANEL No. 0320

4. SUFFIX: G

5. MAP REVISED: MARCH 17, 2014

### 6. THIS PROPERTY IS LOCATED IN FLOOD ZONE "X UNSHADED" - AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN

SHEET INDEX		
	GENERAL NOTES, SITE DATA, DESCRIPITIONS AND CERTIFICATIONS	
2	OVERALL BOUNDARY	
3	IMPROVEMENTS, ENCHROACHEMENTS AND EASEMENTS	

(4)TOPOGRAPHY, CONTOURS AND SPOT ELEVATIONS

# ABBREVIATIONS

- AIR CONDITIONER A/C
- ARC LENGTH AL
- AVE AVENUE
- BLVD BOULEVARD
- BM BENCH MARK
- BOC BEGINNING OF CURVE
- C/L CENTERLINE
- CA CENTRAL ANGLE
- CB CHORD BEARING
- CBS CONCRETE BLOCK STRUCTURE CH CHORD LENGTH
- CONCRETE MONUMENT CM
- CMD

### DESCRIPTION OF "SHARED ACCESS EASEMENT" AREA BY SURVEYOR:

PART OF LOT 1, HOME DEPOT COCOA, ACCORDING TO THE MAP OR PLAT THEREOF AS RECORDED IN PLAT BOOK 57, P AGES 87 THROUGH 93, INCLUSIVE, OF THE PUBLIC RECORDS OF BREVARD COUNTY, FLORIDA, LYING IN SECTION 18, TOWNSHIP 24 SOUTH, RANGE 36 EAST, BREVARD COUNTY, FLORIDA BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE SOUTHWEST CORNER OF SAID LOT 1 AND RUN ALONG THE BOUNDARY OF SAID LOT 1, N88°34'39"E A DISTANCE OF 113.35 FEET TO THE SOUTHWEST CORNER OF LOT 2 OF SAID HOME DEPOT COCOA; THENCE N01°25'21"W, ALONG THE WEST LINE OF SAID LOT 2, A DISTANCE OF 245.00 FEET TO THE NORTHWEST CORNER OF SAID LOT 2; THENCE N88°34'39"E A DISTANCE OF 221.00 FEET TO THE NORTHEAST CORNER OF SAID LOT 2; THENCE CONTINUE N88°34'39"E, ALONG THE EASTERLY EXTENSION OF THE NORTH LINE OF SAID LOT 2, A DISTANCE OF 133.23 FEET TO THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED; THENCE CONTINUE N88°34'39"E, ALONG SAID EASTERLY EXTENSION OF THE NORTH LINE OF SAID LOT 2, A DISTANCE OF 36.00 FEET; THENCE S01°25'21"E A DISTANCE OF 210.00 FEET A POINT ON THE NORTH RIGHT-OF-WAY LINE OF STATE ROAD NO. 524; THENCE S88°34'39"W, ALONG SAID NORTH RIGHT-OF-WAY LINE, A DISTANCE OF 36.00 FEET; THENCE N01°25'21"W A DISTANCE OF 210.00 FEET TO THE POINT OF BEGINNING. CONTAINING 7560 SQUARE FEET, MORE OR LESS.

### TOPOGRAPHIC LEGEND

- EXISTING STORM DRAINAGE PIPE
- — WM — EXISTING WATER MAIN
- - SS - EXISTING SANITARY SEWER
- FM EXISTING FORCE MAIN
- S SANITARY MANHOLE (SMH)
- SANITARY SEWER CLEANOUT (CO) C)
- GATE VALVE (GV)  $\bowtie$
- Ŗ FIRE HYDRANT (FH)
- BLOWOFF (BO) O)
- TYPE 4 DRAINAGE STRUCTURE (DS)

STANDARD EXCEPTION(S) FOR QUESTIONS OF SURVEY MAY BE DELETED UPON RECEIPT AND REVIEW OF A PROPERLY CERTIFIED SURVEY MEETING THE FLORIDA MINIMUM TECHNICAL STANDARDS FOR ALL LAND SURVEYS DATED NO MORE THAN 90 DAYS PRIOR TO CLOSING OR SUCH OTHER PROOF AS MAY BE ACCEPTABLE TO THE COMPANY. ANY POLICIES ISSUED HEREUNDER MAY BE SUBJECT TO A SPECIAL EXCEPTION FOR MATTERS DISCLOSED BY SAID SURVEY OR PROOF.

- 9. EASEMENT IN FAVOR OF FLORIDA GAS TRANSMISSION COMPANY AS REFERENCED IN FINAL JUDGMENT RECORDED IN OFFICIAL RECORDS BOOK 599, PAGE 315. AFFECTS PROPERTY, SHOWN AND NOTED HEREON
- 10. TERMS, COVENANTS, CONDITIONS, EASEMENTS, RESTRICTIONS AND OTHER PROVISIONS SET FORTH IN DECLARATION OF RESTRICTIONS AND GRANT OF EASEMENTS BY INTERCHANGE ASSOCIATES, INC., A DELAWARE CORPORATION, RECORDED IN OFFICIAL RECORDS BOOK 3299, PAGE 3156. AFFECTS PROPERTY, EASEMENTS ARE BLANKET TYPE AND ARE NOT PLOTTED OR SHOWN HEREON
- 11. SHORT FORM LEASE BY AND BETWEEN INTERCHANGE ASSOCIATES, INC., A DELAWARE CORPORATION, LANDLORD, AND WINN-DIXIE STORES, INC., TENANT, RECORDED IN OFFICIAL RECORDS BOOK 3299, PAGE 3164 AND THE TERMS, COVENANTS, CONDITIONS, EASEMENTS, RESTRICTIONS AND OTHER PROVISIONS CONTAINED THEREIN. LEASE TERMINATED PER TERMS IN DOCUMENT
- 12. A TWENTY (20) FOOT WIDE REUSE MAIN AND INGRESS/EGRESS EASEMENT IN FAVOR OF THE CITY OF COCOA SET FORTH IN REUSE MAIN AND WATER LINE & INGRESS/EGRESS EASEMENT RECORDED IN OFFICIAL RECORDS BOOK 3372, PAGE 4481. NOTE: THE TWENTY (20) FOOT WIDE WATER LINE AND INGRESS/EGRESS EASEMENT WHICH WAS ALSO GRANTED IN SAID INSTRUMENT WAS VACATED BY RESOLUTION NO. 2005-65 RECORDED IN OFFICIAL RECORDS BOOK 5510, PAGE 2725. EASEMENT TERMINATED AND NO LONGER IN EFFECT PER REFERENCED RESOLUTION
- 13. TWENTY (20) FOOT WIDE EASEMENT FOR SANITARY SEWER FORCE MAIN AND A TWENTY (20) FOOT WIDE EASEMENT FOR SANITARY SEWER LINE IN FAVOR OF THE CITY OF COCOA SET FORTH IN FORCE MAIN AND SEWER LINE & INGRESS/EASEMENT RECORDED IN OFFICIAL RECORDS BOOK 3372, PAGE 4486. NOTE: A PORTION OF SAID EASEMENT(S) WAS/WERE VACATED BY RESOLUTION NO. 2005-100 RECORDED IN OFFICIAL RECORDS BOOK 5557, PAGE 4594. AFFECTS PROPERTY, NOTED AND SHOWN HEREON
- 14. BILL OF SALE (SEWER LINES, WATER MAINS AND APPURTENANCES) FROM INTERCHANGE ASSOCIATES, INC. TO THE CITY OF COCOA RECORDED IN OFFICIAL RECORDS BOOK 3372, PAGE 4491. NOT A SURVEY MATTER
- 15. BILL OF SALE (WATER LINES, WATER MAINS AND APPURTENANCES) FROM INTERCHANGE ASSOCIATES, INC. TO THE CITY OF COCOA RECORDED IN OFFICIAL RECORDS BOOK 3372, PAGE 4495. NOT A SURVEY MATTER
- 16. RIGHT OF WAY EASEMENT FROM INTERCHANGE ASSOCIATES, INC. IN FAVOR OF SOUTHERN BELL TELEPHONE AND TELEGRAPH COMPANY RECORDED IN OFFICIAL RECORDS BOOK 3387, PAGE 3308. AFFECTS PROPERTY, SHOWN AND NOTED HEREON
- 17. COVENANT SET FORTH IN SHORT FORM LEASE BY AND BETWEEN INTERCHANGE ASSOCIATES, INC., LANDLORD, AND ECKERD CORPORATION, TENANT, RECORDED IN OFFICIAL RECORDS BOOK 3511, PAGE 710, AS ASSIGNED, MODIFIED, SUPPLEMENTED AND/OR AMENDED BY THE DOCUMENTS LISTED ON EXHIBIT A OF THAT CERTAIN INSTRUMENT BY AND BETWEEN CVS EGL 524 COCOA FL, L.L.C., SUCCESSOR IN INTEREST TO ECKERD CORPORATION, TENANT, RDI DEVELOPERS, LLC, SUCCESSOR IN INTEREST TO INTERCHANGE ASSOCIATES, INC., LANDLORD, ET AL, RECORDED IN OFFICIAL RECORDS BOOK 5583, PAGE 8287. NOT A SURVEY MATTER
- 18. SHOPPING CENTER EASEMENT AGREEMENT BY AND BETWEEN INTERCHANGE ASSOCIATES, INC. AND MCDONALD'S CORPORATION RECORDED IN OFFICIAL RECORDS BOOK 3516, PAGE 4332, AS AFFECTED BY ASSIGNMENT OF MAINTENANCE CONTRIBUTION BY AND BETWEEN RDI DEVELOPERS, LLC, A NEW YORK LIMITED LIABILITY COMPANY (SUCCESSOR TO INTERCHANGE ASSOCIATES, INC.), ASSIGNOR, AND HOME DEPOT U.S.A., INC., A DELAWARE CORPORATION, ASSIGNEE, RECORDED IN OFFICIAL RECORDS BOOK 5859, PAGE 8901. AFFECTS PROPERTY, EASEMENTS ARE BLANKET TYPE AND ARE NOT PLOTTED OR SHOWN HEREON
- 19. WATER LINE & INGRESS/EGRESS EASEMENT AGREEMENT BY AND BETWEEN INTERCHANGE ASSOCIATES, INC. AND THE CITY OF COCOA RECORDED IN OFFICIAL RECORDS BOOK 5510, PAGE 1779. AFFECTS PROPERTY, NOTED AND SHOWN HEREON
- 20. EASEMENT GRANTED BY RDI DEVELOPERS TO FAVOR OF FLORIDA POWER & LIGHT COMPANY RECORDED IN OFFICIAL RECORDS BOOK 5830, PAGE 9265. (NOTE: THERE IS NO EXHIBIT A, AS REFERRED TO IN SAID INSTRUMENT, RECORDED AS PART OF SAID INSTRUMENT.) EASEMENT DOES NOT ENCUMBER PROPERTY. EASEMENT IS LOCATED OUTSIDE OF PROPERTY BOUNDARY AND IS NOTED AND SHOWN HEREON
- 21. RESTRICTIONS, DEDICATIONS, CONDITIONS, RESERVATIONS, EASEMENTS AND OTHER MATTERS CONTAINED ON THE PLAT OF HOME DEPOT COCOA. AS RECORDED IN PLAT BOOK 57, PAGES 87 THROUGH 93, BUT OMITTING ANY COVENANTS OR RESTRICTIONS, IF ANY, BASED UPON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, FAMILIAL STATUS, MARITAL STATUS, DISABILITY, HANDICAP, NATIONAL ORIGIN, ANCESTRY, OR SOURCE OF INCOME, AS SET FORTH IN APPLICABLE STATE OR FEDERAL LAWS, EXCEPT TO THE EXTENT THAT SAID COVENANT OR RESTRICTION IS PERMITTED BY APPLICABLE LAW, AS AFFECTED BY SCRIVENER'S ERROR AFFIDAVITS RECORDED IN OFFICIAL RECORDS BOOK 5870. PAGE 4433 AND OFFICIAL RECORDS BOOK 5873 PAGE 5734 AND AS FURTHER AFFECTED BY RELEASE FROM RDI DEVELOPERS LLC. A NEW YORK LIMITED LIABILITY COMPANY OF THE RESERVATION SET FORTH IN ITEM 3 OF THE 'PLAT NOTES' SET FORTH UPON THE PLAT OF HOME DEPOT COCOA RECORDED IN OFFICIAL RECORDS BOOK , PAGE . AFFECTS PROPERTY, PLOTTABLE EASEMENTS REFERENCED ON THE ABOVE NAMED PLAT ARE SHOWN AND NOTED HEREON
- 22. BILL OF SALE FROM RDI DEVELOPERS, LLC, A NEW YORK LIMITED LIABILITY COMPANY, TO HOME DEPOT U.S.A., INC., A DELAWARE CORPORATION, RECORDED IN OFFICIAL RECORDS BOOK 5859, PAGE 8898. NOT A SURVEY MATTER
- 23. TERMS, CONDITIONS, RESTRICTIONS, EASEMENTS AND OTHER PROVISIONS CONTAINED IN THAT CERTAIN RESTRICTIVE COVENANTS AND EASEMENT AGREEMENT BY AND BETWEEN RDI DEVELOPERS, LLC, A NEW YORK LIMITED LIABILITY COMPANY AND HOME DEPOT U.S.A., INC. RECORDED IN OFFICIAL RECORDS BOOK 5859, PAGE 8905, AS AMENDED AND MODIFIED BY FIRST AMENDMENT TO RESTRICTIVE COVENANTS AND EASEMENT AGREEMENT BY AND BETWEEN RDI DEVELOPERS, LLC, A NEW YORK LIMITED LIABILITY COMPANY AND HOME DEPOT U.S.A., INC. RECORDED IN OFFICIAL RECORDS BOOK 5868, PAGE 8944. AFFECTS PROPERTY, EASEMENTS ARE BLANKET TYPE AND ARE NOT PLOTTED OR SHOWN HEREON
- 24. RESTRICTIVE COVENANT SET FORTH IN SPECIAL WARRANTY DEED FROM HOME DEPOT U.S.A., INC., A DELAWARE CORPORATION TO COCOA RETAIL LLC A NORTH CAROLINA LIMITED LIABILITY COMPANY RECORDED IN OFFICIAL RECORDS

awings\11545_	FIELD BOOK: COCOA BK 2           PAGE(S): 34	B.S.E. CONSULTANTS, INC.	LOT 1, HOME DEPOT COCOA	SCOTT M. GLAUBITZ PROFESSIONAL LAND SURVEYOR FLORIDA LICENSE NUMBER 4151	<b>ркојест NO</b> . 11545
er\11545\Dra	6       5       4	LAND SURVEYING 312 SOUTH HARBOR CITY BOULEVARD, SUITE 4 MELBOURNE, FLORIDA 32901			DRAWING NO. 11545 100 001
H:\Projects Folde	▲	PHONE: (321) 725-3674 FAX: (321) 723-1159 CERTIFICATE OF PROFESSIONAL ENGINEERS BUSINESS AUTHORIZATION: 4905 CERTIFICATE OF LAND SURVEYING BUSINESS AUTHORIZATION: LB0004905	ALTA/NSPS LAND TITLE SURVEY	LESLIE E. HOWARD PROFESSIONAL SURVEYOR & MAPPER FLORIDA LICENSE NUMBER 5611	<b>SHEET</b> 1 of 4

![](_page_24_Figure_0.jpeg)

SCHEDULE B-II, FROM THAT CERTAIN FIRST AMERICAN TITLE INSURANCE COMPANY ALTA COMMITMENT FOR TITLE INSURANCE FILE NO .: 2061-4486840, ISSUING OFFICE FILE NUMBER: 2320-TBD, COMMITMENT DATE: OCTOBER 1, 2019 AT 8:00 A.M.

ITEM NUMBER	RECORDING INFORMATION	LIST TYPE	GRANTEE	STATUS
9	ORB 599, PAGE 315	GAS EASEMENT	FLORIDA GAS TRANSMISSION COMPANY	SHOWN & NOTED ON SURVEY
Û	ORB 3299, PAGE 3156	BLANKET EASEMENT	VARIOUS	AFFECTS ENTIRE SITE, NOT PLOTTED
13	ORB 3372, PAGE 4486 AND ORB 5557, PAGE 4594	SEWER/FORCE MAIN LINE EASEMENT	CITY OF COCOA, FLA.	SHOWN & NOTED ON SURVEY
14	ORB 3372, PAGE 4491	BILL OF SALE	CITY OF COCOA, FLA.	AFFECTS ALL EXISTING ON SITE SEWER LINES AND WATER MAINS, EXISTING SEWER LINES AND WATER MAINS SHOWN AND NOTED ON HEREON
15	ORB 3372, PAGE 4495	BILL OF SALE	CITY OF COCOA, FLA.	AFFECTS ALL EXISTING ON SITE WATER LINES, WATER MAINS AND APPURTENANCES, EXISTING WATER LINES, WATER MAINS AND APPURTENANCES SHOWN AND NOTED ON HEREON
16	ORB 3387, PAGE 3308	TELEPHONE LINE EASEMENT	SOUTHERN BELL TELEPHONE AND TELEGRAPH COMPANY	SHOWN & NOTED ON SURVEY
18	ORB 3516, PAGE 4332 AND ORB 5859, PAGE 8901	BLANKET EASEMENT	McDONALD'S CORPORATION	AFFECTS ENTIRE SITE, NOT PLOTTABLE
19	ORB 5510, PAGE 1779	WATER/REUSE LINE EASEMENT	CITY OF COCOA, FLA.	SHOWN & NOTED ON SURVEY
Ŷ	ORB 5830, PAGE 9265	FP&L EASEMENT	FLORIDA POWER & LIGHT COMPANY	SHOWN & NOTED ON SURVEY. OUTSIDE BOUNDARIES OF SURVEYED PARCEL
	PLAT BOOK 57, PAGE 87	INGRESS/EGRESS, WATER LINE, SEWER LINE, RE-USE WATER MAIN	CITY OF COCOA, FLA.	SHOWN AND NOTED ON SURVEY
2	ORB 5859, PAGE 8905 AND ORB 5868, PAGE 8944	BLANKET EASEMENT	RDI DEVELOPERS, LLC	AFFECTS ENTIRE SITE, NOT PLOTTED

![](_page_25_Figure_2.jpeg)

SURVEY LEGEND

BENCHMARK FOUND

(MARKED AS NOTED) CONTROL POINT SET

(MARKED AS NOTED)

CONTROL POINT FOUND (MARKED AS NOTED)

1/2" IRON ROD & CAP SET (STAMPED "L.B. 4905")

STAMPED "PCP-L.B. 4905")

(MARKED AS NOTED)

PERMANENT CONTROL POINT SET (METAL MARKER WITH A METAL DISK

PERMANENT CONTROL POINT FOUND

IRON ROD & CAP FOUND (MARKED AS NOTED)

0

Δ

 $\bigcirc$ 

 $\bigcirc$ 

30

(IN FEET)

60

PERMANENT REFERENCE MONUMENT (PRM); FD 4X4 INCH CONCRETE MONUMENT WITH DISK STAMPED

PRM LB4905, UNLESS OTHERWISE NOTED

	EXISTING STORM DRAINAGE PIPE
— — онw — —	EXISTING OVERHEAD WIRE
— — WM — —	EXISTING WATER MAIN
—— ss ——	EXISTING SANITARY SEWER
— — RWLM— —	EXISTING REUSE WATER MAIN
— FM — —	EXISTING FORCE MAIN
S	SANITARY MANHOLE (SMH)
CO	SANITARY SEWER CLEANOUT (CO)
$\bowtie$	GATE VALVE (GV)
ЭС,	FIRE HYDRANT (FH)
0)	BLOWOFF (BO)
	TYPE 4 DRAINAGE STRUCTURE (DS)
	DRAINAGE STRUCTURE (DS)
ß	JUNCTION BOX (JB)
	MITERED END SECTION (MES)
	FLARED END SECTION (FES)
С)	UTILITY POLE
C	GUY ANCHOR
⊡□ ¢	LIGHT POLE
T	TELEPHONE MANHOLE
Τ□	TELEPHONE RISER
	SIGN
8	PARKING SPACE NUMBERS

![](_page_26_Figure_0.jpeg)

A/C	AIR CONDITIONER	
AL	ARC LENGTH	
AVE	AVENUE	
BLVD	BOULEVARD	<u>TOPOGRA</u>
BM		
BOC		EXIST
C/L	CENTERLINE	— — OHW — — EXIST
CA		— — WM — — EXIST
CBS		——————————————————————————————————————
СН	CHORD LENGTH	
CM		RWLM $$ EXIST
CMP	CORRUGATED METAL PIPE	— — FM — — EXIST
CONC	CONCRETE	S SANI
COR	CORNER	CO SANI <sup>-</sup>
DEL	DELTA / CENTRAL ANGLE	
DRI	DEVELOPMENT OF REGIONAL IMPACT	
ELEC	ELECTRIC	Ç, FIRE
EL/ELEV	ELEVATION	o) BLOW
EOC	END OF CURVE	A TYPE
EOP	EDGE OF PAVEMENT	
EOW	EDGE OF WATER	
ERCP	ELLIPTICAL REINFORCED CONCRETE PIPE	UB JUNC
ESMT	EASEMENT	
FD		
FFE		تا ا <b>ال</b> ا
ED 21		
FPAL	FLORIDA POWER AND LIGHT	GUY
HWY	HIGHWAY	
ID#		T TELEF
INV	INVERT	
IR	IRON ROD	
IRC	IRON ROD AND CAP	
LB	LICENSED BUSINESS	(8) PARK
LWP	LIGHTER WOOD POST	
N#	NEIGHBORHOOD IDENTIFICATION	₩ HOLL
N&D	NAIL AND DISK	
NAVD88	NORTH AMERICAN VERTICAL DATUM 1988	
NGVD29	NATIONAL GEODETIC VERTICAL DATUM 1929	CAK UAK
NTI		-X- PINE
NIL		PALM
		⊠ TRAF
UR/URB		
PCC		C⊢ PEDE
PCP	PERMANENT CONTROL POINT	TRAF
PG(S)	PAGE(S)	CONC
PK	PARKER-KALEN	
POB	POINT OF BEGINNING	
POC	POINT OF COMMENCEMENT	
PP	POWER/UTILITY POLE	
PRC	POINT OF REVERSE CURVATURE	
PUD	PLANNED UNIT DEVELOPMENT	
PVC	POLYVINYL CHLORIDE PIPE	SURVEY IF
R	RADIUS	
R/W	RIGHT-OF-WAY	
RCP	REINFORCED CONCRETE PIPE	PRM LB4905. UNL
RR	RAILROAD	
ST	STREET	(MARKED AS NOTE
ΙYP	IYPICAL	

## TOPOGRAPHIC LEGEND

![](_page_27_Figure_1.jpeg)

ABBREVIATIONS		
A/C	AIR CONDITIONER	
AL	ARC LENGTH	
AVE	AVENUE	
BLVD	BOULEVARD	
BM	BENCH MARK	
BOC	BEGINNING OF CURVE	
C/L	CENTERLINE	
CA	CENTRAL ANGLE	
CB	CHORD BEARING	
CBS	CONCRETE BLOCK STRUCTURE	
СН	CHORD LENGTH	
CM	CONCRETE MONUMENT	
CMP	CORRUGATED METAL PIPE	
CONC	CONCRETE	
COR	CORNER	
DEL	DELTA / CENTRAL ANGLE	
DRI	DEVELOPMENT OF REGIONAL IMPACT	
ELEC	ELECTRIC	
EL/ELEV	ELEVATION	
EOC	END OF CURVE	
EOP	EDGE OF PAVEMENT	
EOW	EDGE OF WATER	
ERCP	ELLIPTICAL REINFORCED CONCRETE PIPE	
ESMT	EASEMENT	
FD	FOUND	
FFE	FINISHED FLOOR ELEVATION	
FH	FIRE HYDRANT	
FP&L	FLORIDA POWER AND LIGHT	
FT	FEET	
HWY	HIGHWAY	
ID#	IDENTIFICATION NUMBER	
INV	INVERT	
IR	IRON ROD	
IRC	IRON ROD AND CAP	
LB	LICENSED BUSINESS	
LWP	LIGHTER WOOD POST	
N#	NEIGHBORHOOD IDENTIFICATION	
N&D	NAIL AND DISK	
NAVD88	NORTH AMERICAN VERTICAL DATUM 1988	
NGVD29	NATIONAL GEODETIC VERTICAL DATUM 192	
NTI	NON-TANGENT INTERSECTION	
NTL	NON-TANGENT LINE	
NIS	NOT TO SCALE	
OHE	OVERHEAD ELECTRIC/ UTILITY	
OR/ORB	OFFICIAL RECORDS BOOK	
PB	PLAT BOOK	
PCC	POINT OF COMPOUND CURVATURE	
PCP		
PG(S)		
PK	PARKER-KALEN	
POB		
POC		
PP		
PRC		
PUD		
PVC		
К		
R/W	RIGHT-OF-WAY	
RCP	REINFORCED CONCRETE PIPE	