LIGHTHOUSE KEEPER'S COTTAGES

CAPE CANAVERAL AFS, FLORIDA

DATE:

01 JULY 2015

PREPARED FOR:

CAPE CANAVERAL LIGHTHOUSE FOUNDATION

SITE DATA:

1. APPLICANT:

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LOCATION:
SECTION: 29
TOWNSHIP: 23 SOUTH
RANGE: 37 EAST

2. SITE CHARACTERISTICS:

PROJECT BOUNDARY TOTAL ACREAGE: 4.19 ACRES

CALCULATED LOT COVERAGES	SF	ACRE	PERCENT
TOTAL PROPOSED IMPERVIOUS AREA:	26,094	0.60	14%
PROPOSED PERVIOUS:	156,381	3.59	86%
TOTAL GROSS AREA:	182,475	4.19	100%

3. FIRE PROTECTION:

FIRE PROTECTION: AN EXISTING FIRE HYDRANT IS LOCATED 285.8' SOUTH OF THE LIGHTHOUSE. SEE DRAWING C–1.

4. PARKING:

TEN STANDARD VEHICLE & TWO BUS STABILIZED PARKING SPACES ARE PROVIDED EAST OF THE LIGHTHOUSE IN THE VICINITY OF THEIR EXISING PARKING. TWO HANDCAP PARKING SPACES ARE STRIPED & SIGNED TO THE SOUTHWEST OF THE LIGHTHOUSE ALONG WITH OVERFLOW PARKING IF NECESSARY

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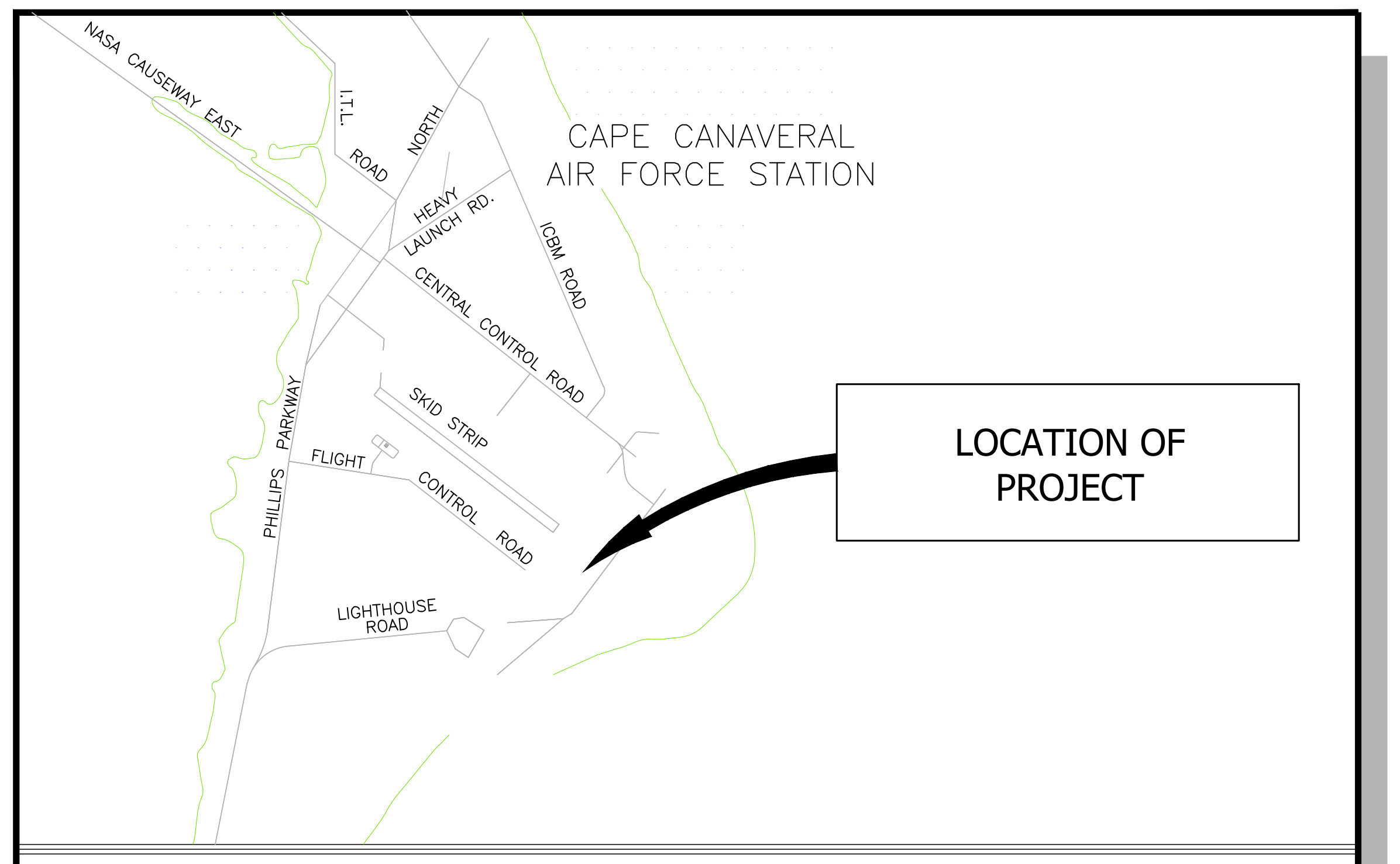
INDEX OF DRAWINGS:



LOCATION MAP
NTS

LEGEND:

DESCRIPTION	NEW
BUILDING OR STRUCTURE	▭
SHELL SIDEWALK	▨
STABILIZED PARKING/DRIVE	▨
PAVERS	▨
DEMOLITION	▨
PROJECT BOUNDARY	— — — —
SWALE FLOWLINE	—— · —— · ——
WHITE PICKET FENCE WITH PEDESTRIAN GATE	—x—x—/ —x—x—x—

SILT FENCE	—○———○—
SANITARY SEWER WITH CLEANOUT	—●— SS —
WATERLINE WITH VALVE	—⋈— W —
STORM DRAIN WITH INLET	—■— SD —
SPOT ELEVATION	9.00
SWALE OR FLOW DIRECTION	→
PRESERVED TREE	5" TREE
REMOVED/RELOCATED TREE	5" TREE
EXISTING MONITORING WELL	Ⓦ

ENGINEER OF RECORD

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REVISIONS AND UPDATES

07/01/15		100% CONSTRUCTION DOCUMENTS

CAPE CANAVERAL LIGHTHOUSE FOUNDATION
LIGHTHOUSE KEEPER'S COTTAGES
LIGHTHOUSE RD CAPE CANAVERAL AFS, FL

COVER SHEET

drawn DHF
checked JTW
approved DMT

job no. 130232
G-1
SCALE: NTS

AA-C001568

ARCHITECTS RZK, INC.
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EROSION AND SEDIMENTATION CONTROL REQUIREMENTS

1. THE LAND–DISTURBING ACTIVITY SHALL CONFORM TO EXISTING TOPOGRAPHY AND SOIL TYPE SO AS TO CREATE THE LOWEST PRACTICAL EROSION POTENTIAL.
2. LAND–DISTURBING ACTIVITIES SHALL BE CONDUCTED IN A MANNER MINIMIZING EROSION.
3. THE DISTURBED AREA AND THE DURATION OF EXPOSURE TO EROSIVE ELEMENTS SHALL BE KEPT TO A PRACTICABLE MINIMUM.
4. EROSION CONTROL MUST BE STRICTLY MAINTAINED DURING CUT AND FILL OPERATIONS.
5. DISTURBED SOIL SHALL BE STABILIZED AS QUICKLY AS PRACTICABLE.
6. WHENEVER FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED AND SUPPLEMENTED.
7. TEMPORARY VEGETATION OR MULCHING SHALL BE EMPLOYED TO PROTECT EXPOSED CRITICAL AREAS DURING DEVELOPMENT.
8. PERMANENT VEGETATION AND STRUCTURAL EROSION CONTROL MEASURES SHALL BE INSTALLED AS SOON AS PRACTICABLE.
9. ADEQUATE PROVISIONS MUST BE PROVIDED TO MINIMIZE DAMAGE FROM SURFACE WATER TO THE CUT FACE OF EXCAVATIONS OR THE SLOPING SURFACE OF FILLS.
10. TO THE EXTENT NECESSARY, SEDIMENT IN RUNOFF WATER MUST BE TRAPPED BY THE USE OF DEBRIS BASINS, SEDIMENT BASINS, SILT TRAPS OR SIMILAR MEASURES UNTIL THE DISTURBED AREA IS STABILIZED.
11. CUTS AND FILLS MUST BE CONSTRUCTED IN SUCH A MANNER THAT EROSION AND RUNOFF FROM THE SITE DOES NOT ENDANGER ADJOINING PROPERTY.
12. FILLS MAY NOT ENCROACH UPON NATURAL WATERCOURSES OR CONSTRUCTED CHANNELS IN A MANNER SO AS TO ADVERSELY AFFECT OTHER PROPERTY OWNERS WITHOUT ADEQUATE PROVISIONS FOR AN EQUIVALENT ALTERNATE SYSTEM WITH A POSITIVE OUTFALL.
13. ALL R.O.W.'S, WATERWAYS, STREETS AND SIDEWALKS SHALL BE BUFFERED BY A TWENTY (20) FOOT WIDE STRIP OF GRASS OR OTHER SUITABLE MEANS.
14. GRADING EQUIPMENT MUST CROSS FLOWING STREAMS BY MEANS OF BRIDGES OR CULVERTS EXCEPT WHEN SUCH METHODS ARE NOT FEASIBLE AND PROVIDED IN ANY CASE, THAT SUCH CROSSINGS ARE KEPT TO A MINIMUM AND SEDIMENTATION CONTROL DEVICES ARE PROVIDED.

CONTRACTOR RESPONSIBILITIES FOR NPDES (SWPPP)

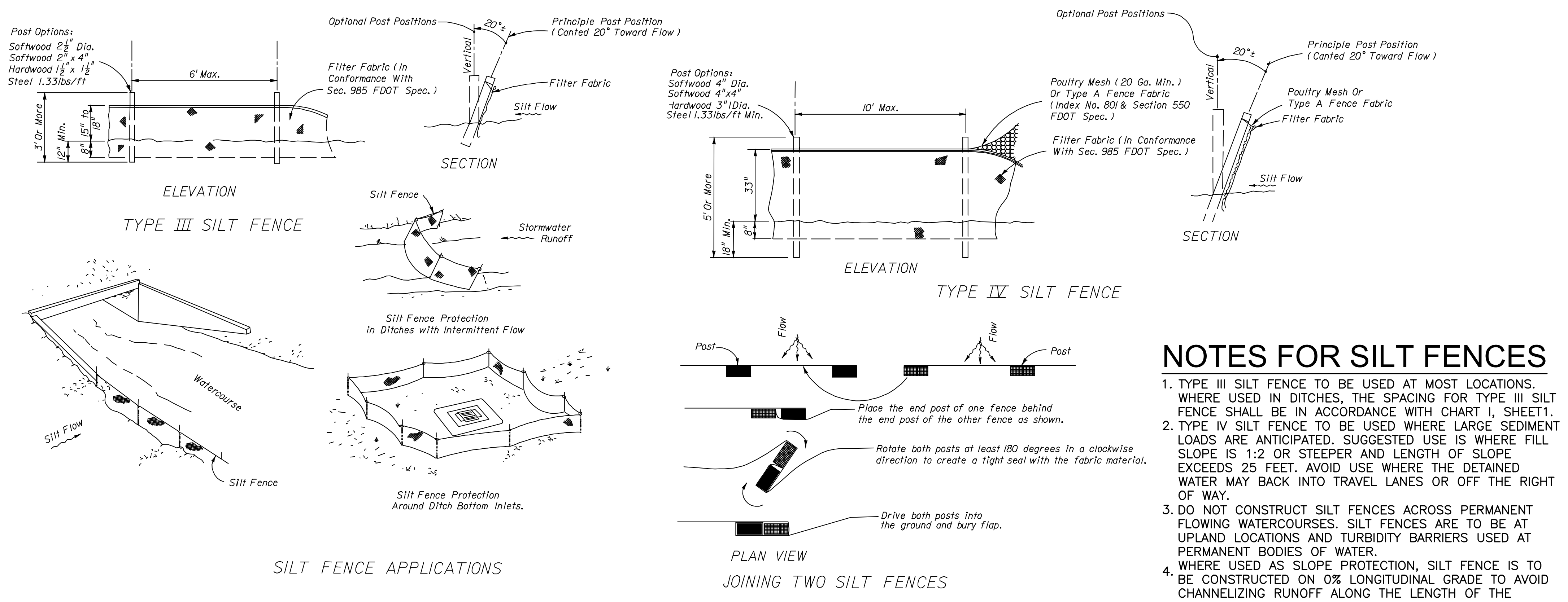
1. GENERAL NOTES
   - A. CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS HEREIN AND ALL WATER MANAGEMENT DISTRICT, FDEP, EPA, CORPS OF ENGINEERS, AND MUNICIPALITY/COUNTY WITH JURISDICTION REQUIREMENTS.
   - B. CONTRACTOR SHALL MAINTAIN A RECORD OF CONSTRUCTION WORK AND PROVIDE INSPECTION REPORTS WITH THE FOLLOWING DATA:
     - 1) DATES WHEN SITE WORK BEGINS, EROSION CONTROL MEASURES ARE INSTALLED, GRADING WORK BEGINS, STORMWATER FACILITIES ARE CONSTRUCTED, AND FINAL STABILIZATION IS COMPLETE.
     - 2) REPORT INSPECTOR'S NAME, QUALIFICATIONS, DAILY RAINFALL, ANY CHANGES NECESSARY TO SWPPP, AND DATES OF INSPECTIONS.
     - 3) PICTURES OF ANY PROBLEM AREAS THAT OCCUR INCLUDING DATE AND TIME, AND PICTURES OF SAME AREA REPAIRED INCLUDING DATE AND TIME.
   - C. PRIOR TO FINAL PAYMENT, CONTRACTOR SHALL PROVIDE A COPY OF THE REPORT TO THE OWNER AND CIVIL ENGINEER CERTIFYING THE PROJECT. CONTRACTOR SHALL EXECUTE NPDES CERTIFICATION FORM AND PROVIDE COPIES TO OWNER AND ENGINEER.
2. SITE DESCRIPTION
   - A. DESCRIPTION OF THE INTENDED SEQUENCE OF MAJOR ACTIVITIES WHICH DISTURB SOILS FOR MAJOR PORTIONS OF THE SITE.
     FIRST, GRADE THE SITE INCLUDING THE STORMWATER TREATMENT SYSTEM. ALL EROSION CONTROL MEASURES INSTALLED AT THIS TIME (SOD ALL AREAS FINAL GRADED IMMEDIATELY). FINAL GRADING, PAVING, AND PLANTINGS ACROSS THE SITE WILL FINISH OUT THE PROJECT.
   - B. ESTIMATE OF THE TOTAL AREA OF THE SITE AND THE TOTAL AREA EXPECTED TO BE DISTURBED BY EXCAVATION, GRADING, OR OTHER ACTIVITIES.
     THE ENTIRE 4.19 ACRES ARE EXPECTED TO BE DISTURBED BY GRADING, WITH THE EXCEPTION OF TREE PRESERVATION AREAS AS IDENTIFIED ON THE EXISTING SITE PLAN.
   - C. AN ESTIMATE OF RUNOFF COEFFICIENT OF THE SITE BEFORE, DURING, AND AFTER CONSTRUCTION USING "C" FROM THE RATIONAL METHOD.
     "C" CAN BE APPROXIMATED AS 0.25 (BEFORE) AND 0.45(AFTER), FROM TABLE 2.1 "TYPICAL "C" VALUES" OF THE EPA "STORM WATER MANAGEMENT FOR CONSTRUCTION ACTIVITIES."
   - D. THE EXISTING DATA DESCRIBING EXISTING CONDITIONS OF SOIL OR THE QUALITY OF ANY DISCHARGE FROM THE SITE.
     POMELLO SAND, IMMOKALEE SAND AS CLASSIFIED BY THE SOIL CONSERVATION SERVICE HANDBOOK.
   - E. OFF–SITE OVERFLOW RECEIVING BODY.
     ATLANTIC OCEAN.
3. CONTROLS
   THIS SECTION PROVIDES A DESCRIPTION OF APPROPRIATE CONTROLS AND MEASURES THAT WILL BE IMPLEMENTED AT THE CONSTRUCTION SITE.
   - A. EROSION AND SEDIMENT CONTROLS.
     - 1) STABILIZATION PRACTICES: EXCAVATED MATERIALS WILL BE STOCKPILED FOR USE AS A BACKFILL AND STABILIZING MATERIAL. UNSUITABLE MATERIALS WILL BE PROMPTLY REMOVED FROM THE SITE AND LEGALLY DISPOSED OF.
     - 2) STRUCTURAL PRACTICES: THE CONTRACTOR SHALL INSTALL AND MAINTAIN WATER QUALITY CONTROL DEVICES AT ALL NEARBY STORMWATER MANAGEMENT PONDS, DITCHES, AND SWALES. INCLUDED IN THE PLANS ARE SILTATION FENCES AND TURBIDITY BARRIERS.
       CONTRACTOR SHALL INSTALL ADDITIONAL WATER QUALITY CONTROL MEASURES AS APPROPRIATE TO ASSURE ADEQUATE PROTECTION OF RECEIVING WATER BODIES.
   - B. STORMWATER MANAGEMENT: THE ENTIRE PROJECT IS DESIGNED TO IMPROVE STORMWATER MANAGEMENT. THE CONTRACTOR SHALL CONTROL TURBID RUNOFF FROM THE PROJECT SITE BY USING TEMPORARY GRADING AND INSTALLING EROSION CONTROL MEASURES.
   - C. OTHER CONTROLS: ALL GUIDELINES AND REGULATIONS SET FORTH IN THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT AND FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION.
4. MAINTENANCE
   - – THE CONTRACTOR SHALL PROVIDE ROUTINE MAINTENANCE OF VEGETATION, PERMANENT AND TEMPORARY EROSION AND SEDIMENT CONTROL FEATURES FOR THE DURATION OF THE PROJECT.
   - – THE CONTRACTOR SHALL GRADE THE SITE TO THE ELEVATIONS INDICATED ON THE CONSTRUCTION PLANS AND SHALL RE–GRADE WASHOUTS WHERE THEY OCCUR AFTER EVERY RAINFALL UNTIL NEW LANDSCAPING IS ESTABLISHED.
   - – ALL DRAINAGE STRUCTURES SHALL BE DE–SILTED AS REQUIRED DURING CONSTRUCTION AND AT THE END OF CONSTRUCTION TO PROVIDE POSITIVE DRAINAGE FLOWS AND MINIMIZE TRANSPORT OF SILT TO THE MASTER DRAINAGE SYSTEM AND RECEIVING WATER BODY.
   - – ALL ACCUMULATIONS OF SILT GREATER THAN SIX INCHES SHALL BE REMOVED BY THE CONTRACTOR AND PROPERLY DISPOSED.
   - – ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES WILL BE INSPECTED BY THE CONTRACTOR ON A WEEKLY BASIS (MINIMUM). IN AREAS OF ONGOING CONSTRUCTION ACTIVITY, TURBIDITY AND EROSION CONTROL MEASURES WILL BE INSPECTED ON A DAILY BASIS. ADDITIONAL INSPECTIONS WILL BE CONDUCTED AFTER ALL SEVERE WEATHER. IF ANY DEFICIENCIES IN EROSION CONTROL ARE DISCOVERED, CORRECTIVE ACTIONS SHALL BE TAKEN IMMEDIATELY BY THE CONTRACTOR.
5. INSPECTIONS
   INSPECTIONS WILL BE PERFORMED BY THE CONTRACTOR ON A WEEKLY BASIS (MINIMUM) AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS 0.25 INCHES OR GREATER.
   - A. INSPECTIONS SHALL INCLUDE, BUT ARE NOT LIMITED TO:
     ALL DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT RECEIVED FINAL STABILIZATION.
     AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
     EXAMINATION OF THE SITE FOR EVIDENCE OF, OR THE POTENTIAL FOR POLLUTANTS ENTERING THE RECEIVING WATERS.
     STORMWATER MANAGEMENT SYSTEM AND EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN TO PROVIDE REASONABLE ASSURANCE THAT THEY ARE OPERATING AS DESIGNED.
     LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE FOR EVIDENCE OF OFF–SITE SEDIMENT TRACKING.
     ALL POINTS OF DISCHARGE INTO THE MASTER STORMWATER MANAGEMENT SYSTEM TO DETERMINE WHETHER EROSION CONTROL AND STORMWATER MANAGEMENT MEASURES ARE EFFECTIVELY PREVENTING WATER QUALITY DEGRADATION IN THE RECEIVING WATER BODY.
   - B.WHEN REMEDIAL ACTION IS REQUIRED FOR COMPLIANCE, THE PLAN WILL BE REVISED AS NECESSARY AND ADDITIONAL STRUCTURAL MEASURES INSTALLED IMMEDIATELY AS WARRANTED.
     - 1) PRODUCT SPECIFIC PRACTICES.
       - A) CONCRETE TRUCKS: CONCRETE TRUCKS WILL NOT BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ON THE SITE.
       - B) FERTILIZERS: FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
       - C) PETROLEUM PRODUCTS: ALL ON–SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS, WHICH ARE CLEARLY LABELED.
     - 2) SPILL CONTROL PRACTICES.
       THESE ADDITIONAL PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION CLEANUP:
       - – MANUFACTURERS' RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES;
       - – MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT ON–SITE;
       - – ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY AND REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY IF NECESSARY; AND
       - – THE SPILL PREVENTION PLAN WILL BE MODIFIED TO INCLUDE MEASURES TO PREVENT A REOCCURRENCE, HOW TO CLEAN UP IF ANOTHER OCCURS, AND A DESCRIPTION OF WHAT SPILLED, WHAT CAUSED IT, AND WHAT THE CLEANUP MEASURES ARE.
6. NON–STORMWATER DISCHARGES
   NO NON–STORMWATER DISCHARGES ARE ANTICIPATED WITH THE POSSIBLE EXCEPTION OF DEWATERING. THE CONTRACTOR SHALL OBTAIN A DEWATERING PERMIT IF NECESSARY AND FOLLOW ALL STATE REQUIREMENTS AS ENFORCED BY THE WATER MANAGEMENT DISTRICT WITH AUTHORITY.
7. INVENTORY FOR POLLUTION PREVENTION PLAN
   THE MATERIALS OR SUBSTANCES LISTED BELOW ARE EXPECTED TO BE PRESENT ON–SITE DURING CONSTRUCTION:
   - – CONCRETE;
   - – FERTILIZERS; AND
   - – PETROLEUM BASED PRODUCTS.
8. SPILL PREVENTION
   - A. MATERIAL MANAGEMENT PRACTICES.
     THE MATERIAL MANAGEMENT PRACTICES WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORMWATER RUNOFF.
     - 1) GOOD HOUSEKEEPING.
       THE FOLLOWING PRACTICES WILL BE FOLLOWED ON–SITE DURING THE CONSTRUCTION PROJECT.
       - – AN EFFORT WILL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB;
       - – ALL MATERIALS STORED ON–SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND, IF POSSIBLE, UNDER A ROOF;
       - – PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURES' LABEL;
       - – SUBSTANCES WILL NOT BE MIXED UNLESS RECOMMENDED BY THE MANUFACTURER;
       - – MANUFACTURERS' RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED;
       - – WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
     - 2) HAZARDOUS PRODUCTS.
       THESE PRACTICES ARE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS.
       - – PRODUCTS WILL BE KEPT IN ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
       - – ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED; THEY CONTAIN IMPORTANT PRODUCT INFORMATION;
       - – IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURERS' OR LOCAL AND STATE RECOMMENDED METHODS FOR PROPER DISPOSAL WILL BE FOLLOWED.

DEWATERING NOTES:

1. NO DEWATERING IS ANTICIPATED FOR THE ON–SITE UTILITIES. SEE DEWATERING SPECIFICATIONS BELOW IF REQUIRED.
2. ALL OF THIS WORK SHALL BE COMPLETED PER SJRWMD.
3. INSPECT AND REPAIR ANY HAY BALES, SILT FENCES, AND TURBIDITY BARRIERS AFTER EACH RAIN EVENT DURING CONSTRUCTION.
4. IF DEWATER IS REQUIRED CONTRACTOR SHALL COORDINATE DEWATERING ACTIVITIES THROUGH 45 CES/CEIE–ESC.

DEWATERING SPECIFICATIONS:

1. MAINTAIN ADEQUATE SUPERVISION AND CONTROL TO ENSURE THAT STABILITY OF EXCAVATED AND CONSTRUCTED SLOPES ARE NOT ADVERSELY AFFECTED BY WATER, EROSION IS CONTROLLED, AND FLOODING OF EXCAVATION OR DAMAGE TO STRUCTURES DOES NOT OCCUR.
2. THE DEWATERING PLAN SHALL COMPLY WITH THE REQUIREMENTS OF THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT FOR CONSUMPTIVE USE OF GROUNDWATER. PERMITTING, IF REQUIRED, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. PROVIDE AN ADEQUATE SYSTEM TO LOWER AND CONTROL GROUNDWATER IN ORDER TO PERMIT EXCAVATION, CONSTRUCTION OF STRUCTURES, AND PLACEMENT OF FILL MATERIALS UNDER DRY CONDITIONS. INSTALL SUFFICIENT DEWATERING EQUIPMENT TO DRAIN WATER–BEARING STRATA ABOVE AND BELOW BOTTOM OF STRUCTURE FOUNDATIONS, DRAINS, SEWERS, AND OTHER EXCAVATIONS.
4. REDUCE HYDROSTATIC HEAD IN WATER–BEARING STRATA BELOW STRUCTURE FOUNDATIONS, DRAINS, SEWERS AND OTHER EXCAVATIONS TO EXTENT THAT WATER LEVEL AND PIEZOMETRIC WATER LEVELS IN CONSTRUCTION AREAS ARE BELOW PREVAILING EXCAVATION SURFACE.
5. PRIOR TO EXCAVATION BELOW GROUNDWATER LEVEL, PLACE SYSTEM INTO OPERATION TO LOWER WATER LEVELS AS REQUIRED AND THEN OPERATE IT CONTINUOUSLY 24 HOURS A DAY, 7 DAYS A WEEK UNTIL DRAINS, SEWERS AND STRUCTURES HAVE BEEN CONSTRUCTED, INCLUDING PLACEMENT OF FILL MATERIALS, AND UNTIL DEWATERING IS NO LONGER REQUIRED.
6. DISPOSE OF WATER REMOVED FROM EXCAVATIONS IN A MANNER TO AVOID ENDANGERING PUBLIC HEALTH, PROPERTY, AND PORTIONS OF WORK UNDER CONSTRUCTION OR COMPLETED. DISPOSE OF WATER IN A MANNER TO AVOID INCONVENIENCE TO OTHERS. PROVIDE SUMPS, SEDIMENTATION TANKS, AND OTHER FLOW CONTROL DEVICES AS REQUIRED BY GOVERNING AUTHORITIES.
7. PROVIDE STANDBY EQUIPMENT ON SITE, INSTALLED AND AVAILABLE, FOR IMMEDIATE OPERATION IF REQUIRED TO MAINTAIN DEWATERING ON A CONTINUOUS BASIS IN EVENT ANY PART OF SYSTEM BECOMES INADEQUATE OR FAILS. IF DEWATERING REQUIREMENTS ARE NOT SATISFIED DUE TO INADEQUACY OR FAILURE OF DEWATERING SYSTEM, PERFORM SUCH WORK AS MAY BE REQUIRED TO RESTORE DAMAGED STRUCTURES AND FOUNDATION SOILS AT NO ADDITIONAL EXPENSE.



TYPICAL FDOT SILT FENCE DETAIL

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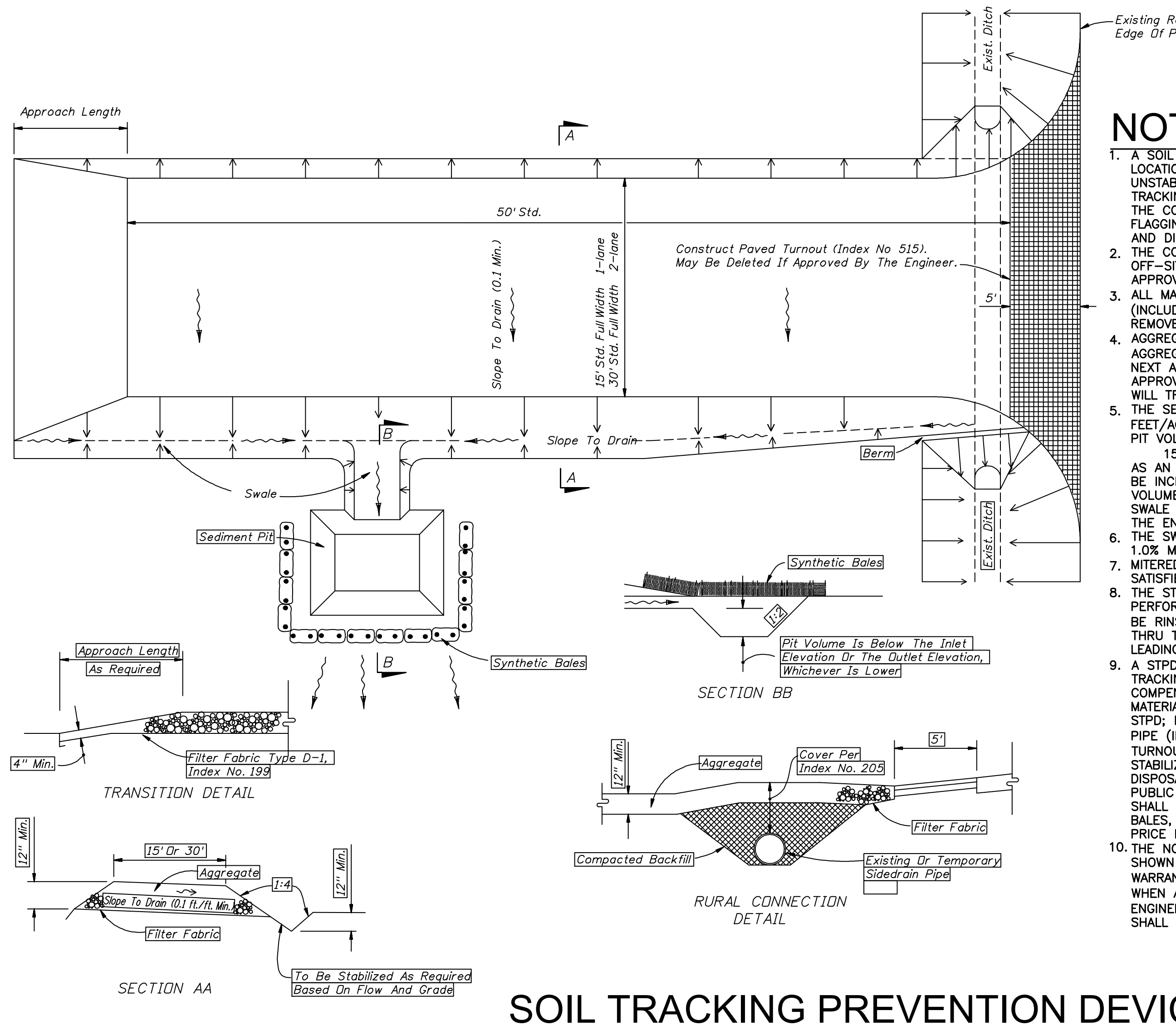
NOTES FOR SILT FENCES

1. TYPE III SILT FENCE TO BE USED AT MOST LOCATIONS. WHERE USED IN DITCHES, THE SPACING FOR TYPE III SILT FENCE SHALL BE IN ACCORDANCE WITH CHART I, SHEET1.
2. TYPE IV SILT FENCE TO BE USED WHERE LARGE SEDIMENT LOADS ARE ANTICIPATED. SUGGESTED USE IS WHERE FILL SLOPE IS 1:2 OR STEEPER AND LENGTH OF SLOPE EXCEEDS 25 FEET. AVOID USE WHERE THE DETAINED WATER MAY BACK INTO TRAVEL LANES OR OFF THE RIGHT OF WAY.
3. DO NOT CONSTRUCT SILT FENCES ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE AT UPLAND LOCATIONS AND TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.
4. WHERE USED AS SLOPE PROTECTION, SILT FENCE IS TO BE CONSTRUCTED ON 0% LONGITUDINAL GRADE TO AVOID CHANNELIZING RUNOFF ALONG THE LENGTH OF THE FENCE.
5. SILT FENCE TO BE PAID FOR UNDER THE CONTRCT UNIT PRICE FOR STAKED SILT FENCE, (LF).

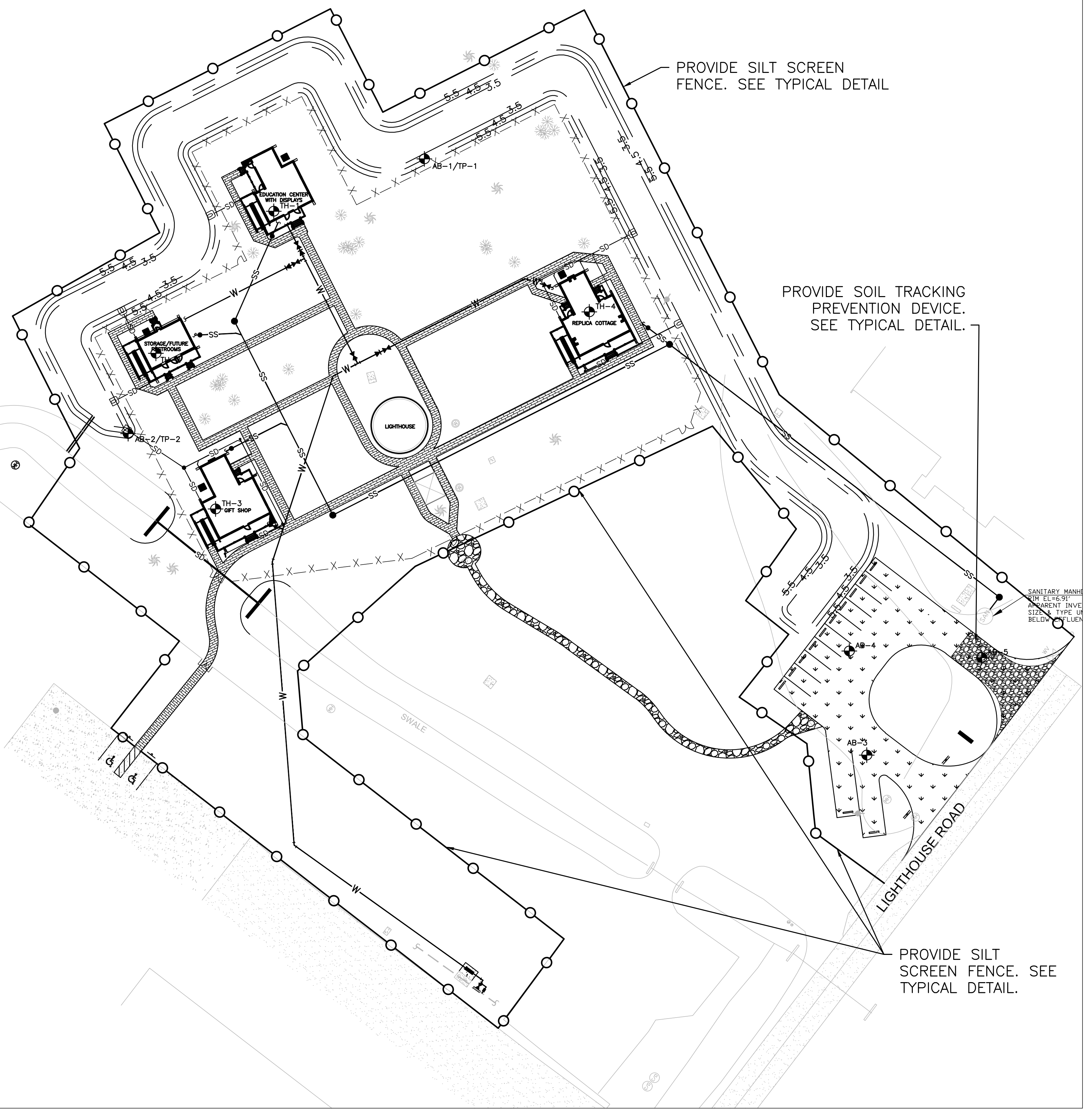


NOTES:

1. A SOIL TRACKING PREVENTION DEVICE (STPD) SHALL BE CONSTRUCTED AT LOCATIONS DESIGNATED BY THE ENGINEER FOR POINTS OF EGRESS FROM UNSTABILIZED AREAS OF TE PROJECT TO PUBLIC ROADS WHERE OFF–SITE TRACKING OF MUD COULD OCCUR. TRAFFIC FROM UNSTABILIZED AREAS OF THE CONSTRUCTION PROJECT SHALL BE DIRECTED THRU A STPD. BARRIERS, FLAGGING, OR OTHER POSITIVE MEANS SHALL BE USED AS REQUIRED TO LIMIT AND DIRECT VEHICULAR EGRESS ACROSS THE STPD.
2. THE CONTRACTOR MAY PROPOSE AN ALTERNATIVE TECHNIQUE TO MINIMIZE OFF–SITE TRACKING OF SEDIMENT. THE ALTERNATIVE MUST BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO ITS USE.
3. ALL MATERIALS SPILLED, DROPPED, OR TRACKED ONTO THE PUBLIC ROADS (INCLUDING THE STPD AGGREGATE AND CONSTRUCTION MUD) SHALL BE REMOVED DAILY, OR MORE FREQUENTLY IF SO DIRECTED BY THE ENGINEER.
4. AGGREGATES SHALL BE AS DESCRIBED IN SECTION 901 EXCLUDING 901–2.3. AGGREGATES SHALL BE FDOT SIZE #1. IF THIS SIZE IS NOT AVAILABLE, THE NEXT AVAILABLE SMALLER SIZE AGGREGATE MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER. SIZES CONTAINING EXCESSIVE SMALL AGGREGATE WILL TRACK OFF THE PROJECT AND ARE UNSUITABLE.
5. THE SEDIMENT PIT SHOULD PROVIDE A RETENTION VOLUME OF 3600 CUBIC FEET/ACRE OF SURFACE AREA DRAINING TO THE PIT.
   PIT VOLUMES WILL SATISFY THIS REQUIREMENT:
   15'x50'=100 FT 30'x50'=200 FT
   AS AN OPTION TO THE SEDIMENT PIT, THE WIDTH OF THE SWALE BOTTOM CAN BE INCREASED TO OBTAIN THE VOLUME. WHEN THE SEDIMENT PIT OR SWALE VOLUME HAS BEEN REDUCED TO ONE HALF, IT SHALL BE CLEANED. WHEN A SWALE IS USED, SYNTHETIC BALES OR SILT FENCE SHALL BE PLACED ALONG THE ENTIRE LENGTH.
6. THE SWALE DITCH DRAINING THE STPD SHALL HAVE A 0.02% MINIMUM AND A 1.0% MAXIMUM GRADE ALONG THE STPD AND TO THE SEDIMENT PIT.
7. MITERED END SECTIONS ARE NOT REQUIRED WHEN THE SIDE DRAIN PIPE SATISFIES THE CLEAR ZONE REQUIREMENTS.
8. THE STPD SHALL BE MAINTAINED IN A CONDITION THAT WILL ALLOW IT TO PERFORM ITS FUNCTION. TO PREVENT OFF–SITE TRACKING, THE STPD SHALL BE RINSED (DAILY WHEN IN USE) TO MOVE ACCUMULATED MUD DOWNWARD THRU THE STONE. ADDITIONAL STABILIZATION OF THE VEHICULAR ROUTE LEADING TO THE STPD MAY BE REQUIRED TO LIMIT THE MUD TRACKED.
9. A STPD SHALL BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR SOIL TRACKING PREVENTION DEVICE, EA. THE UNIT PRICE SHALL CONSTITUTE FULL COMPENSATION FOR CONSTRUCTION, MAINTENANCE, REPLACEMENT OF MATERIALS, REMOVAL, AND RESTORATION OF THE AREA UTILIZED FOR THE STPD; INCLUDING BUT NOT LIMITED TO EXCAVATION, GRADING, TEMPORARY PIPE (INCLUDING MES WHEN REQUIRED), FILTER FABRIC, AGGREGATE, PAVED TURNOUT (INCLUDING ASPHALT AND BASE CONSTRUCTION), DITCH STABILIZATION, APPROACH ROUTE STABILIZATION, SEDIMENT REMOVAL AND DISPOSAL, WATER RINSING AND CLEANING OF THE STPD AND CLEANING OF PUBLIC ROADS, GRASSING AND SOD. SYNTHETIC BALE OR BALE TYPE BARRIER SHALL BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR SYNTHETIC BALES, LF. SILT FENCE SHALL BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR STAKED SILT FENCE, FL.
10. THE NORMAL SIZE OF A STANDARD STPD IS 15'x50' UNLESS OTHERWISE SHOWN IN THE PLANS. IF THE VOLUME OF ENTERING AND EXISTING VEHICLES WARRANT, A 30' WIDTH STPD MAY BE USED IF APPROVED BY THE ENGINEER. WHEN A DOUBLE WIDTH (30') STPD MAY BE USED IF APPROVED BY THE ENGINEER. WHEN A DOUBLE WIDTH (30') STPD IS USED, THE PAY QUANTITY SHALL BE 2 FOR EACH LOCATION.

SOIL TRACKING PREVENTION DEVICE

NTS



EROSION CONTROL PLAN

1"=60'

60' 0' 60' 120'

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ENGINEER OF RECORD

REVISIONS AND UPDATES

07/01/15		100% CONSTRUCTION DOCUMENTS

CAPE CANAVERAL LIGHTHOUSE FOUNDATION
LIGHTHOUSE KEEPER'S COTTAGES
LIGHTHOUSE RD CAPE CANAVERAL AFS, FL

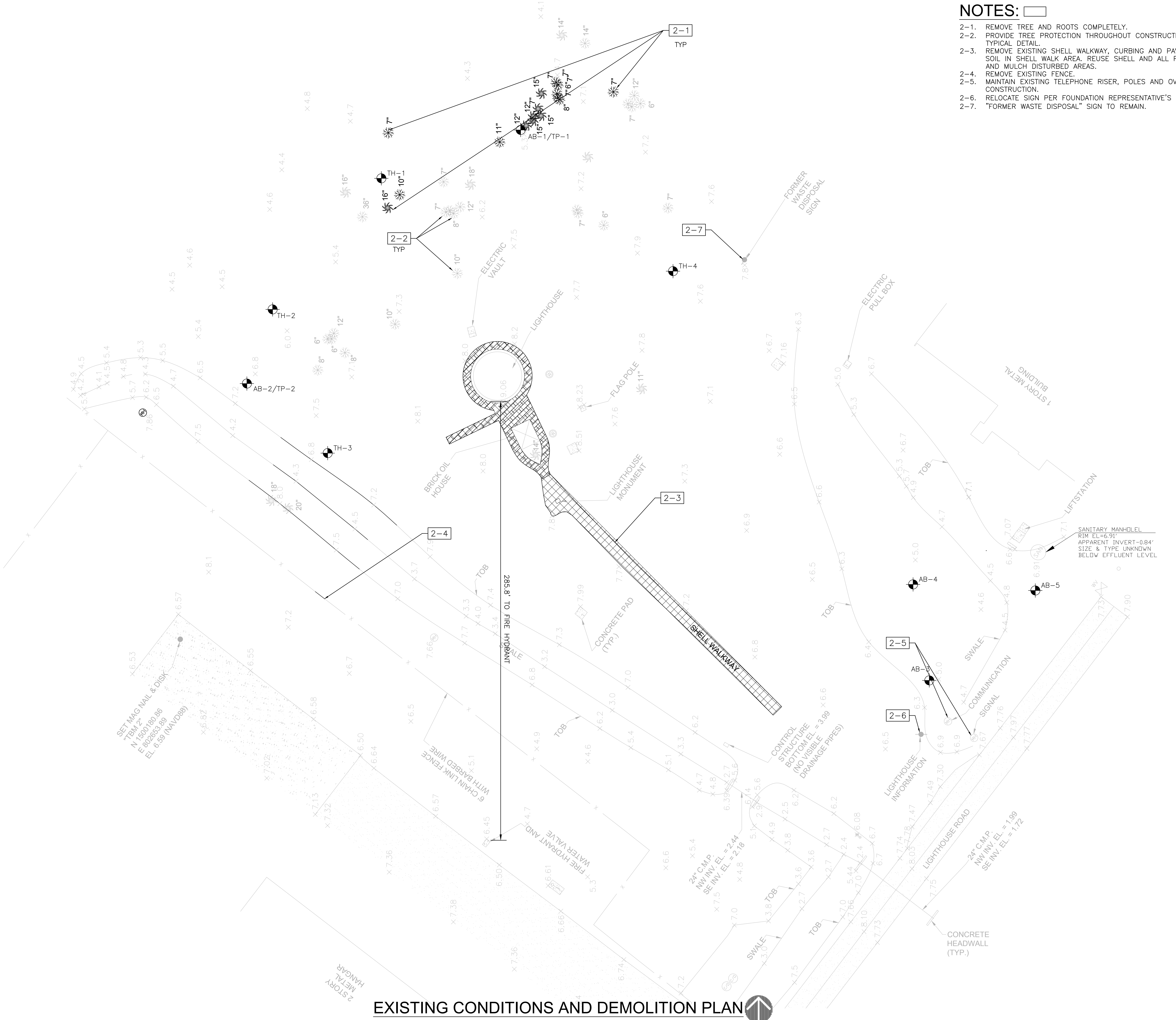
STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

drawn DHF | checked JTW | approved DMT

AA-C001568

job no. 130232
G-2
SCALE: 1"=60'

ARCHITECTS RZK, INC.
600 FLORIDA AVENUE SUITE 202 COCOA, FLORIDA 32922 TELEPHONE (321) 631–8039

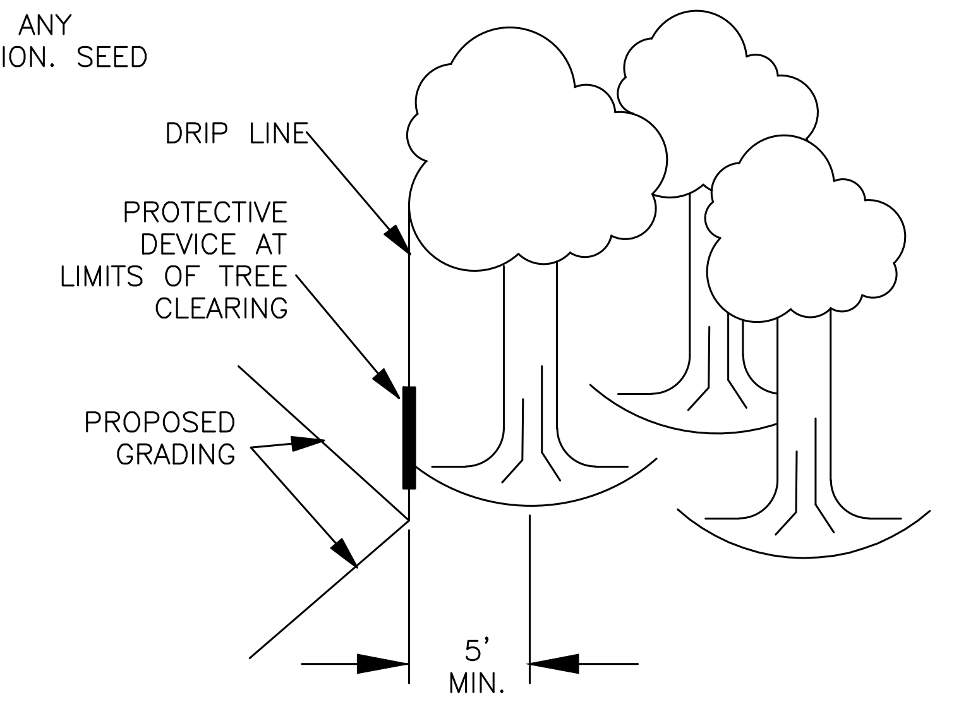


EXISTING CONDITIONS AND DEMOLITION PLAN

1"=30'

NOTES:

2-1. REMOVE TREE AND ROOTS COMPLETELY.
2-2. PROVIDE TREE PROTECTION THROUGHOUT CONSTRUCTION WITHIN PROJECT/LEASE AREA. SEE TYPICAL DETAIL.
2-3. REMOVE EXISTING SHELL WALKWAY, CURBING AND PAVERS SIDEWALK. DO NOT DISTURB ANY SOIL IN SHELL WALK AREA. REUSE SHELL AND ALL PAVERS FOR NEW WALKWAY LOCATION. SEED AND MULCH DISTURBED AREAS.
2-4. REMOVE EXISTING FENCE.
2-5. MAINTAIN EXISTING TELEPHONE RISER, POLES AND OVERHEAD WIRES THROUGHOUT CONSTRUCTION.
2-6. RELOCATE SIGN PER FOUNDATION REPRESENTATIVE'S DIRECTION.
2-7. "FORMER WASTE DISPOSAL" SIGN TO REMAIN.



NOTE:
PROVIDE PROTECTIVE DEVICES WHICH WILL EFFECTIVELY PROTECT THE ROOTS, TRUNK, AND TOPS OF TREES RETAINED ON-SITE. THIS DEVICE SHALL BE FIELD FENCE, BOARD FENCE, CORD FENCE OR EQUAL AND SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

TYPICAL TREE PROTECTION

NTS

SURVEYOR'S LEGEND

G.P.S.	= GLOBAL POSITIONING SYSTEM
INC.	= INCORPORATED
LB	= LICENSED BUSINESS
NO.	= NUMBER
#	= NUMBER
P.S.M.	= PROFESSIONAL SURVEYOR & MAPPER
R.T.K.	= REAL TIME KINEMATIC
TYP.	= TYPICAL
WV ⋈	= WATER VALVE
(SAN)	= SANITARY MANHOLE
(MH)	= MANHOLE
(C/O)	= CLEAN OUT
(W)	= MONITORING WELL
○⊸	= BACKFLOW PREVENTER
—X—	= CHAIN LINK FENCE
▭	= CONCRETE
▭	= ASPHALT
▦	= BRICK PAVERS
✳	= PALM TREE
✳	= OAK TREE

30' 0' 30' 60'

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job no. 130232
C-1
SCALE: 1"=30'

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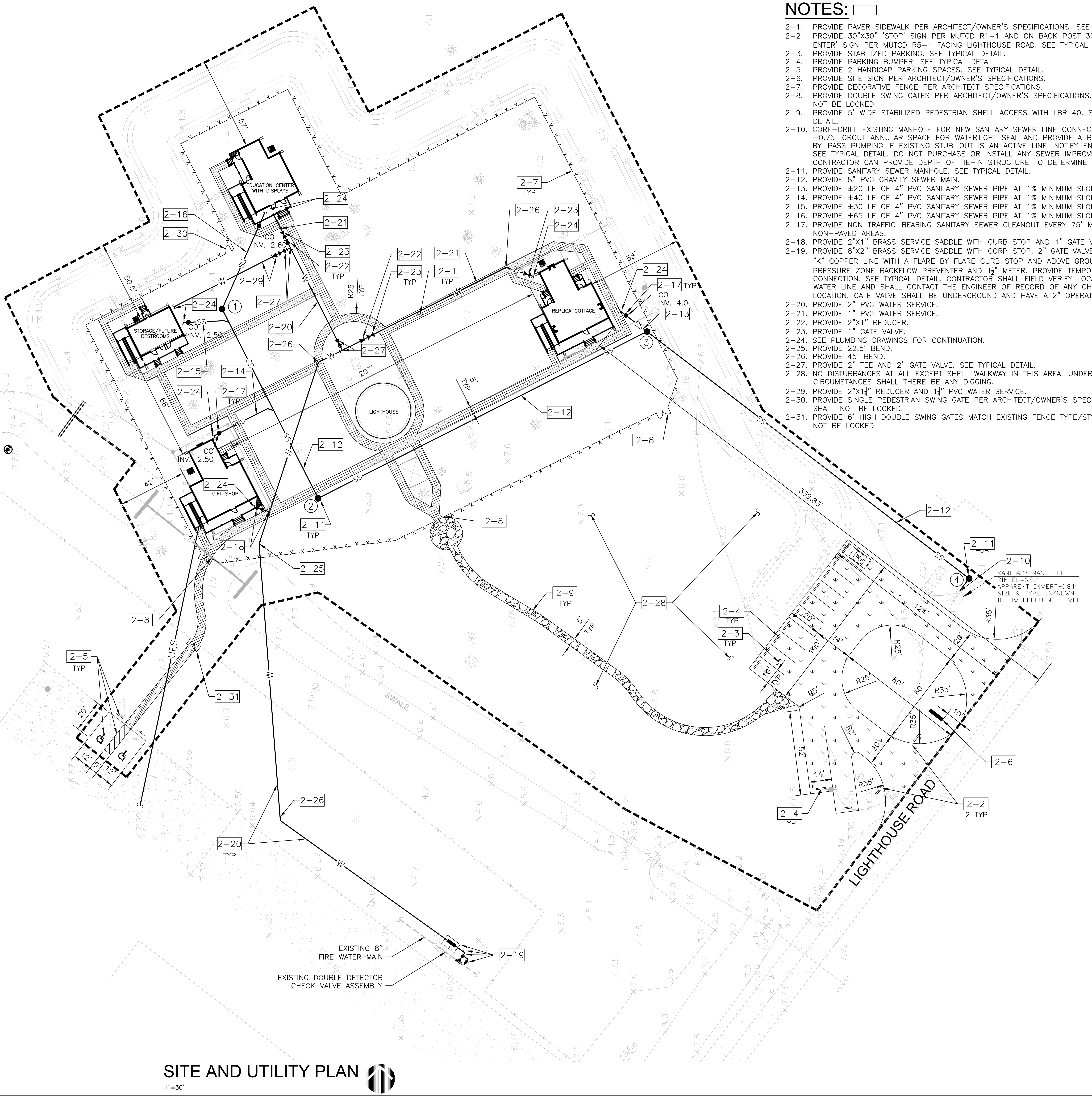

SITE AND UTILITY PLAN

1"=30'

NOTES:

2-1. PROVIDE PAVER SIDEWALK PER ARCHITECT/OWNER'S SPECIFICATIONS. SEE TYPICAL DETAIL.
2-2. PROVIDE 30"X30" 'STOP' SIGN PER MUTCD R1-1 AND ON BACK POST 30"X30" 'DO NOT ENTER' SIGN PER MUTCD R5-1 FACING LIGHTHOUSE ROAD. SEE TYPICAL DETAIL.
2-3. PROVIDE STABILIZED PARKING. SEE TYPICAL DETAIL.
2-4. PROVIDE PARKING BUMPER. SEE TYPICAL DETAIL.
2-5. PROVIDE 2 HANDICAP PARKING SPACES. SEE TYPICAL DETAIL.
2-6. PROVIDE SITE SIGN PER ARCHITECT/OWNER'S SPECIFICATIONS.
2-7. PROVIDE DECORATIVE FENCE PER ARCHITECT SPECIFICATIONS.
2-8. PROVIDE DOUBLE SWING GATES PER ARCHITECT/OWNER'S SPECIFICATIONS. GATES SHALL NOT BE LOCKED.
2-9. PROVIDE 5' WIDE STABILIZED PEDESTRIAN SHELL ACCESS WITH LBR 40. SEE TYPICAL DETAIL.
2-10. CORE-DRILL EXISTING MANHOLE FOR NEW SANITARY SEWER LINE CONNECTION AT INVERT -0.75. GROUT ANNULAR SPACE FOR WATERTIGHT SEAL AND PROVIDE A BOOT. PROVIDE BY-PASS PUMPING IF EXISTING STUB-OUT IS AN ACTIVE LINE. NOTIFY ENGINEER IF ACTIVE. SEE TYPICAL DETAIL. DO NOT PURCHASE OR INSTALL ANY SEWER IMPROVEMENTS UNTIL CONTRACTOR CAN PROVIDE DEPTH OF TIE-IN STRUCTURE TO DETERMINE IF IT'S FEASIBLE.
2-11. PROVIDE SANITARY SEWER MANHOLE. SEE TYPICAL DETAIL.
2-12. PROVIDE 8" PVC GRAVITY SEWER MAIN.
2-13. PROVIDE ±20 LF OF 4" PVC SANITARY SEWER PIPE AT 1% MINIMUM SLOPE.
2-14. PROVIDE ±40 LF OF 4" PVC SANITARY SEWER PIPE AT 1% MINIMUM SLOPE.
2-15. PROVIDE ±30 LF OF 4" PVC SANITARY SEWER PIPE AT 1% MINIMUM SLOPE.
2-16. PROVIDE ±65 LF OF 4" PVC SANITARY SEWER PIPE AT 1% MINIMUM SLOPE.
2-17. PROVIDE NON TRAFFIC-BEARING SANITARY SEWER CLEANOUT EVERY 75' MAXIMUM IN NON-PAVED AREAS.
2-18. PROVIDE 2"X1" BRASS SERVICE SADDLE WITH CURB STOP AND 1" GATE VALVE.
2-19. PROVIDE 8"X2" BRASS SERVICE SADDLE WITH CORP STOP, 2" GATE VALVE, 90° BEND, TYPE "K" COPPER LINE WITH A FLARE BY FLARE CURB STOP AND ABOVE GROUND 1½" REDUCED PRESSURE ZONE BACKFLOW PREVENTER AND 1½" METER. PROVIDE TEMPORARY JUMPER CONNECTION. SEE TYPICAL DETAIL. CONTRACTOR SHALL FIELD VERIFY LOCATION OF EXISTING WATER LINE AND SHALL CONTACT THE ENGINEER OF RECORD OF ANY CHANGES OF LOCATION. GATE VALVE SHALL BE UNDERGROUND AND HAVE A 2" OPERATING NUT.
2-20. PROVIDE 2" PVC WATER SERVICE.
2-21. PROVIDE 1" PVC WATER SERVICE.
2-22. PROVIDE 2"X1" REDUCER.
2-23. PROVIDE 1" GATE VALVE.
2-24. SEE PLUMBING DRAWINGS FOR CONTINUATION.
2-25. PROVIDE 22.5° BEND.
2-26. PROVIDE 45° BEND.
2-27. PROVIDE 2" TEE AND 2" GATE VALVE. SEE TYPICAL DETAIL.
2-28. NO DISTURBANCES AT ALL EXCEPT SHELL WALKWAY IN THIS AREA. UNDER NO CIRCUMSTANCES SHALL THERE BE ANY DIGGING.
2-29. PROVIDE 2"X1¼" REDUCER AND 1¼" PVC WATER SERVICE.
2-30. PROVIDE SINGLE PEDESTRIAN SWING GATE PER ARCHITECT/OWNER'S SPECIFICATIONS. GATES SHALL NOT BE LOCKED.
2-31. PROVIDE 6' HIGH DOUBLE SWING GATES MATCH EXISTING FENCE TYPE/STYLE. GATES SHALL NOT BE LOCKED.

GENERAL NOTES: (ALL DRAWINGS)

1. SEE TYPICAL DETAILS ON FOLLOWING SHEETS FOR ADDITIONAL CONSTRUCTION DETAIL INFORMATION.
2. CONTRACTOR SHALL BECOME FAMILIAR AND COMPLY WITH ALL PERMITS AND PERMIT CONDITIONS. CONTRACTOR SHALL OBTAIN PERMISSION FROM CEG OR ALL PERMIT AGENCIES IDENTIFIED IN SPECIFICATIONS PRIOR TO COMMENCING SITE WORK.
3. ALL AREAS DISTURBED OFF-SITE SHALL BE RESTORED TO EQUAL OR BETTER CONDITION THAN PRE-CONSTRUCTION WITH SAME TYPE OF SOD AS EXISTING.
4. CONTRACTOR SHALL COMPLY WITH ALL RECOMMENDATIONS OF ARDAMAN & ASSOC. ENGINEERING SUBSURFACE EXPLORATION REPORT FOR THIS SITE. CONTRACTOR SHALL OBTAIN FROM CEG OR THE GEOTECHNICAL COMPANY.
5. SLOPE ALL SIDEWALKS TO FLOW AWAY FROM BUILDING WITH MAXIMUM 2% CROSS SLOPE.
6. PROVIDE CONSTANT SLOPE BETWEEN ALL SPOT ELEVATIONS.
7. UTILITY LENGTHS ARE APPROXIMATE BASED ON FIELD OBSERVATIONS AND AS-BUILT DRAWINGS. CONTRACTOR SHALL VERIFY EXACT LOCATION, SIZE, DEPTH, AND MATERIAL OF EXISTING UTILITIES. PROVIDE ADDITIONAL PIPING AND FITTINGS AS NECESSARY. NOTIFY ENGINEER OF SIGNIFICANT INCREASES.
8. NOTIFY ENGINEER MINIMUM 72 HOURS (WEEKDAYS) PRIOR TO MAKING UTILITY CONNECTIONS OR BACK FILLING UTILITY TRENCHES FOR INSPECTION. IF NOT NOTIFIED, CONTRACTOR SHALL EXPOSE LINES PER ENGINEER'S REQUEST FOR INSPECTIONS. ALL CONNECTIONS TO CCAFS UTILITY INFRASTRUCTURE WILL BE MADE BY INFRASTRUCTURE OPERATIONS AND MAINTENANCE SERVICES (IOMS).
9. ALL TRAFFIC SIGNS SHALL BE INSTALLED PER STANDARD FDOT INDEX NOS. 11865 AND 17302.
10. CONTRACTOR SHALL CLEAR AND GRUB ALL VEGETATION ON-SITE EXCEPT TREES SHOWN TO REMAIN ON DWG C-1 OR LANDSCAPE PLANS.
11. PROVIDE SILT FENCE PER FDOT INDEX NO. 102 ALONG ENTIRE PERIMETER OF PROJECT AREA EXCLUDING ENTRANCE DRIVEWAYS OR AS SHOWN ON DRAWING G-2.
12. ALL WASTE SHALL BE DISPOSED OF PER SPECIFICATION 01 11 00.0055.
13. FOR DEMOLITION OF ALL ASPHALT AND CONCRETE MATERIALS, SAWCUT EDGES FOR SMOOTH STRAIGHT EDGE. ALSO SAWCUT ALL EXISTING PAVEMENT EDGES FOR SMOOTH STRAIGHT EDGE AT ALL TIE-IN POINTS WITH NEW PAVEMENT OR CONCRETE.
14. CONTRACTOR SHALL VERIFY ON-SITE PRIOR TO BIDDING WORK THE FULL EXTENT OF DEMOLITION REQUIRED BASED ON SITE PLAN CONSTRUCTION DRAWINGS. ALL ITEMS SHALL BE INCLUDED IN BASE BID.
15. REMOVE ALL ABOVE GROUND IMPROVEMENTS IN AREAS SHOWN FOR DEMOLITION UNLESS SPECIFICALLY IDENTIFIED OTHERWISE.
16. SEE ARCHITECTURAL DRAWINGS FOR BUILDING LAYOUTS AND MECHANICAL/PLUMBING DWGS FOR EXACT UTILITY CONNECTION LOCATIONS.
17. ALL SLOPES 4H:1V OR STEEPER SHALL BE SODDED. ALL SLOPES STEEPER THEN 3H:1V SHALL BE SODDED AND STAKED. SOD ALL DISTURBED AREAS.
18. CONTRACTOR SHALL PROVIDE ALL FITTINGS REQUIRED TO INSTALL UTILITIES PER PLAN.
19. CONTACT UNDERGROUND UTILITIES LOCATE BEFORE COMMENCING ANY DIGGING A MINIMUM OF 48 HOURS IN ADVANCE AT 811.
20. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ROADWAYS, EASEMENTS, CURBS, SIDEWALKS, DRAINAGE SYSTEM, BENCHMARKS, OR UTILITIES AS A DIRECT RESULT OF CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING ALL BOUNDARY CORNERS AND BENCHMARKS DISTURBED OR DESTROYED DURING CONSTRUCTION REPLACED BY A FLORIDA LICENSED LAND SURVEYOR.
21. ALL EXCAVATIONS OF GREATER DEPTH THAN 5' SHALL COMPLY WITH THE CURRENT OSHA TRENCH SAFETY STANDARDS 29 C.F.R. s. 1926.650 SUBPART P. ANY EXCAVATION WITHIN THE CLEARZONE SHALL ALSO COMPLY WITH ALL WARNING AND/OR BARRIER REQUIREMENTS OF FDOT INDEX NO. 600.
22. CONSTRUCTION ENGINEERING GROUP DOES NOT WARRANT THE ACCURACY OF THE RECORD SURVEY.
23. DURING CONSTRUCTION ALL COATING, SOLVENTS, SEALANTS, ETC. ARE MANAGED PER MANAGEMENT PLAN 19-14.
24. ASBESTOS CONTAINING MATERIALS AND LEAD PAINTS ARE NOT USED IN CONSTRUCTION. REASONABLE PRECAUTION SHOULD BE TAKEN TO MINIMIZE EMISSION OF UNCONFINED PARTICULATE MATTER (DUST) DURING CONSTRUCTION.
25. ALL FEATURES THAT ARE NOT REQUIRED TO COMPLY WITH STATE OF FLORIDA HISTORICAL PRESERVATION OFFICE, MUST COMPLY WITH 45 SW FACILITIES EXCELLENCE PLAN IN FUNCTION AND ARCHITECTURAL FINISH. APPLIES PRIMARILY TO COLOR AND SIGNAGE.
26. DURING CONSTRUCTION ALL COATINGS, SOLVENTS, SEALANTS, ETC. ARE MANAGED PER MANAGEMENT PLAN 19-24.
27. ALL DEWATERING ACTIVITIES WILL NEED TO BE COORDINATED THROUGH 45 CES/CEIE -ESC.

SANITARY SEWER MANHOLE TABLE: ○

NO.	RIM	INVERT ELEVATION	TO	PIPE LENGTH	SLOPE
1	6.40	2.05 SE	2	131'	0.42%
2	7.50	1.50 NE, 1.40 NE	3	227'	0.40%
3	7.00	0.50 SW, 0.40 SE	4	250'	0.40%
4	7.00	-0.60 NW, -0.70 SW	–	10'	0.50%

30' 0' 30' 60'

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C-2

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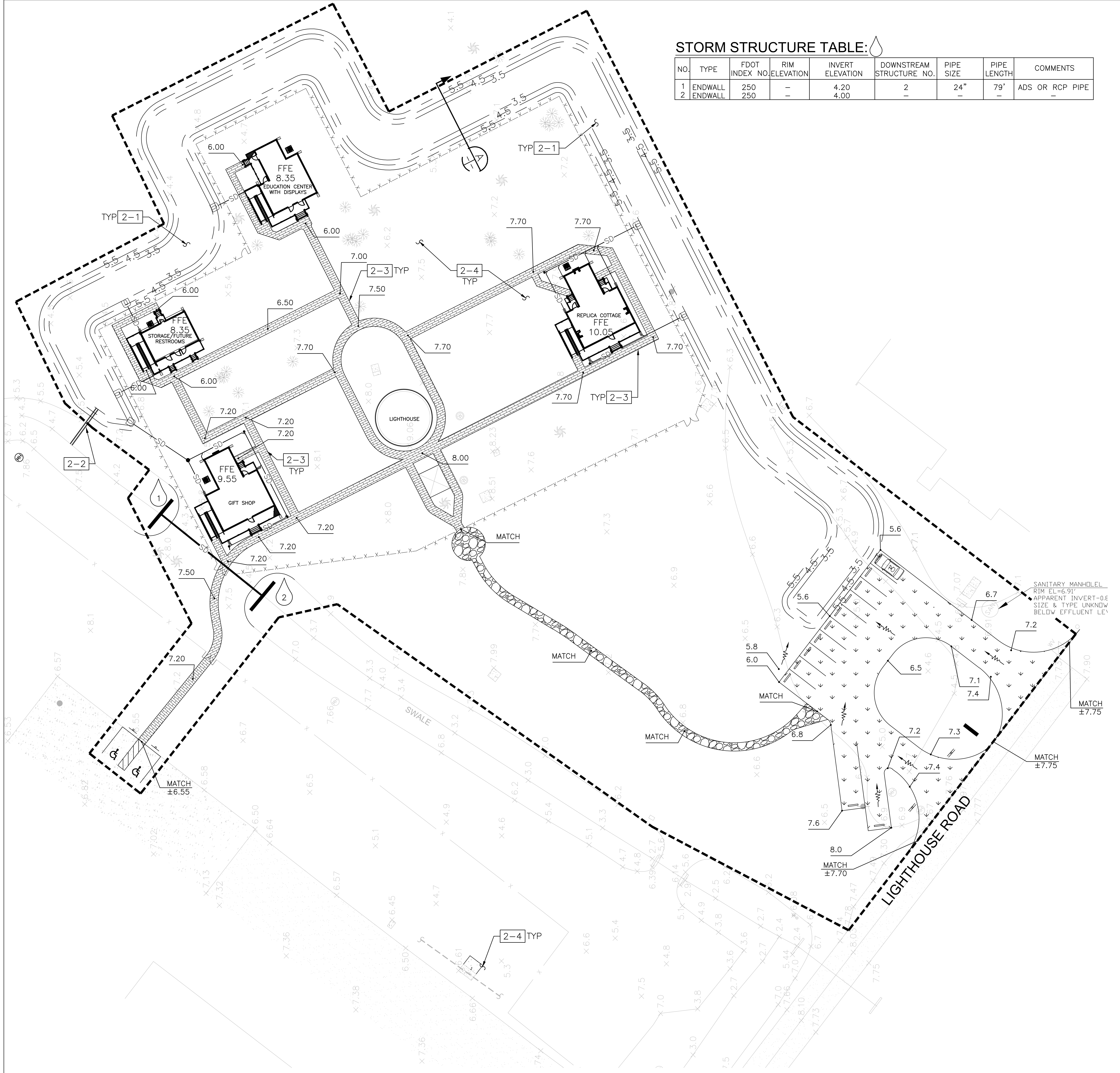


STORM STRUCTURE TABLE:

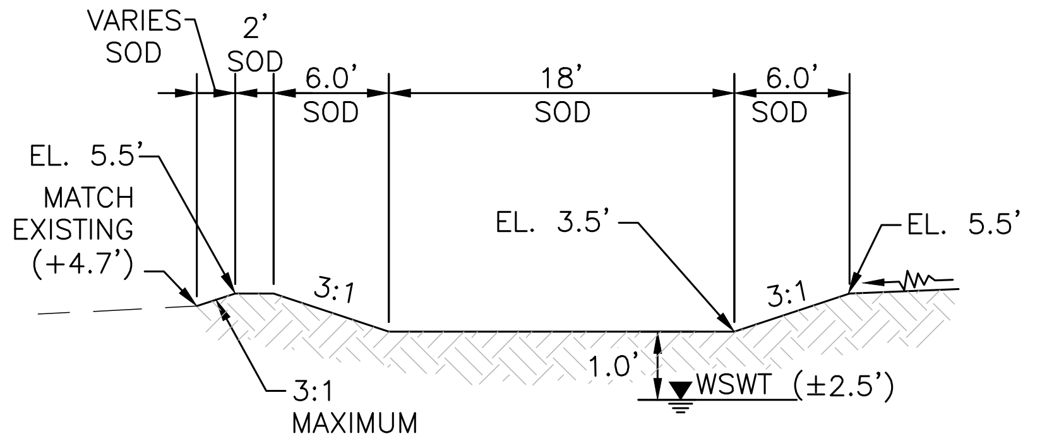
NO.	TYPE	FDOT INDEX NO.	RIM ELEVATION	INVERT ELEVATION	DOWNSTREAM STRUCTURE NO.	PIPE SIZE	PIPE LENGTH	COMMENTS
1	ENDWALL	250	–	4.20	2	24"	79'	ADS OR RCP PIPE
2	ENDWALL	250	–	4.00	–	–	–	–

GRADING AND DRAINAGE PLAN

1"=30'

NOTES:

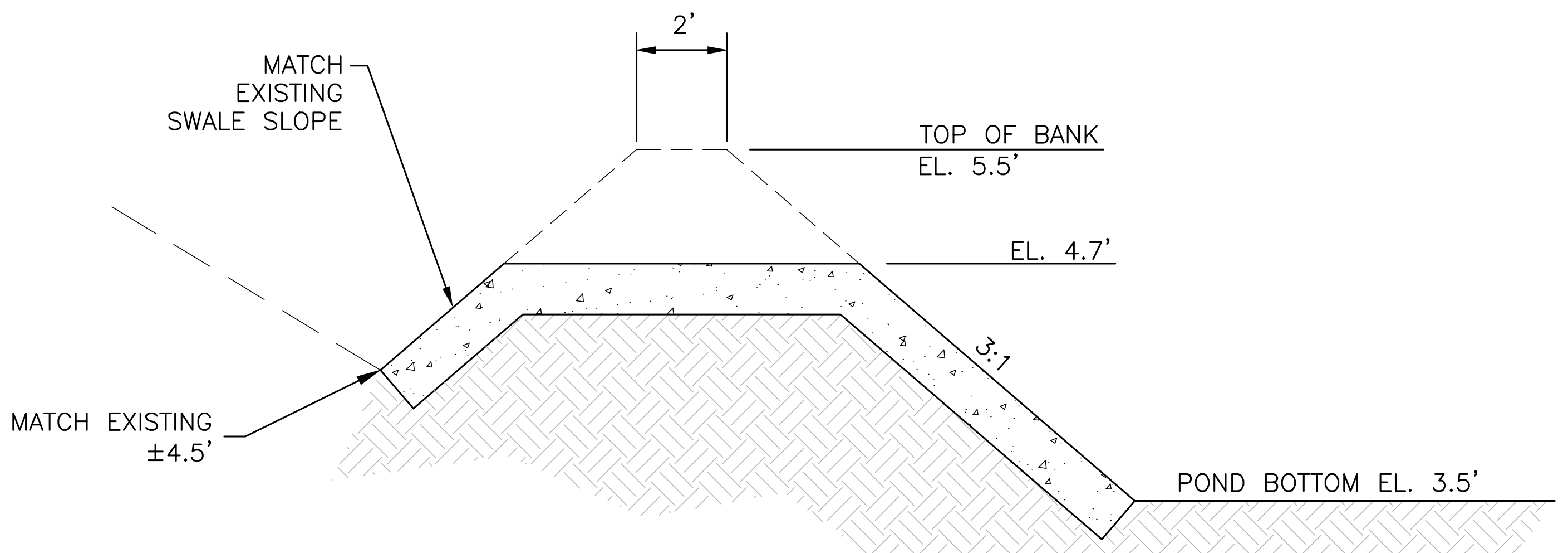
2–1. PROVIDE GRASSED SWALE, SEE TYPICAL SECTION.
2–2. PROVIDE CONCRETE OVERFLOW WEIR. SEE TYPICAL DETAIL THIS DRAWING.
2–3. BRICK PAVER WALKWAYS SHALL BE SLOPED AWAY FROM BUILDING
2–4. SOD ALL DISTURBED AREAS OUTSIDE OF SWALE WITH BAHAIA SOD.



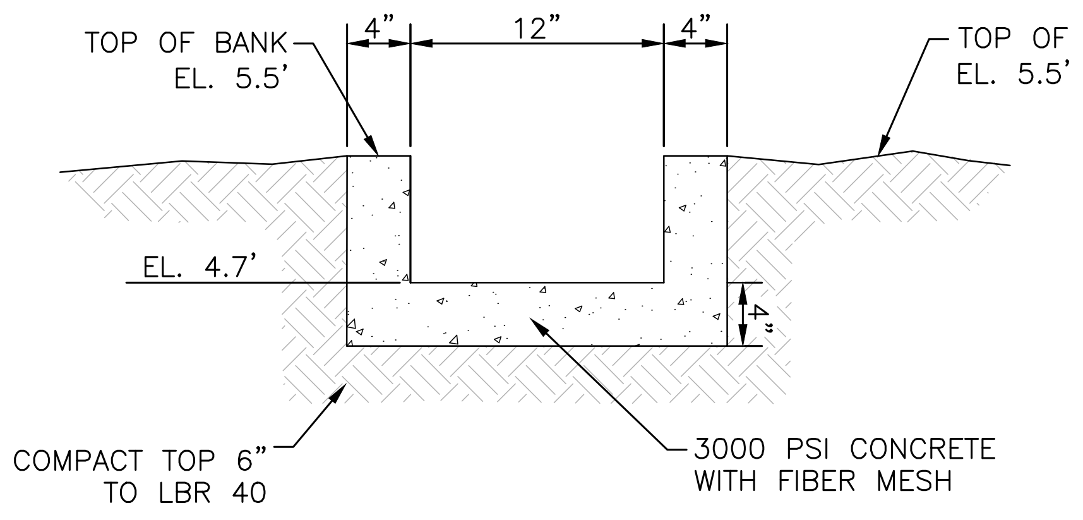
NOTE: ALL SOD ON BOTTOM OF SWALE SHALL BE SAND GROWN BAHIA AND SHALL BE PINNED WHEN ON A 3:1 SLOPE.

SECTION A

NTS



SECTION



END VIEW

TYPICAL CONCRETE WEIR DETAIL

NTS

30' 0' 30' 60'

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job no. 130232
C-3
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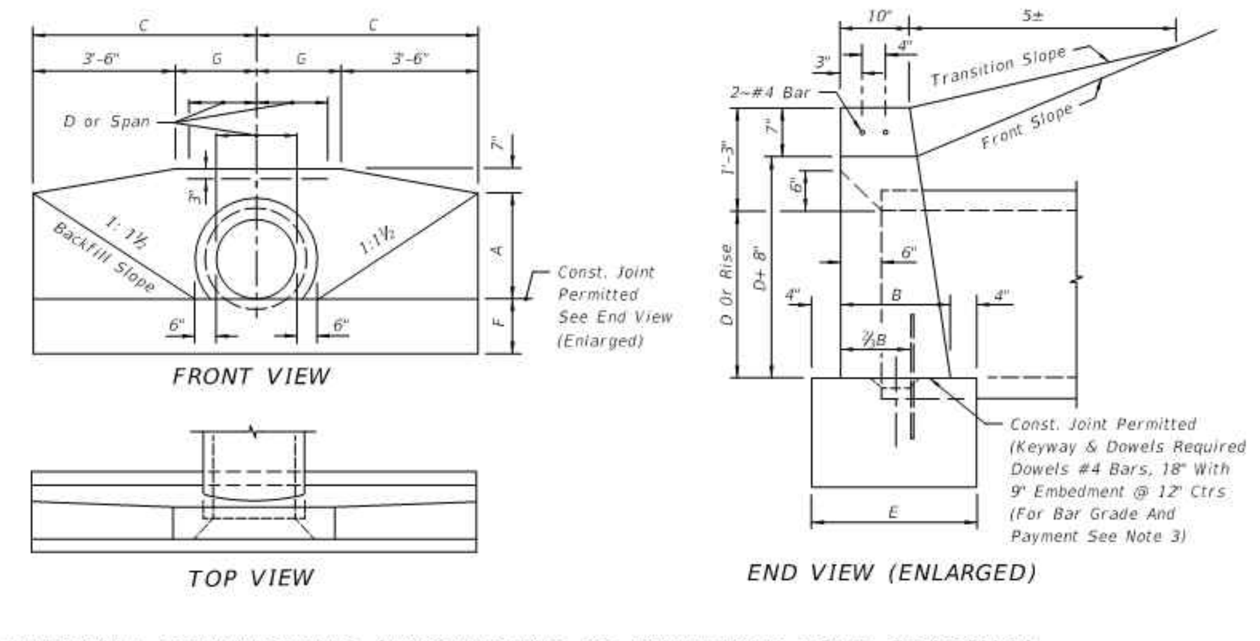
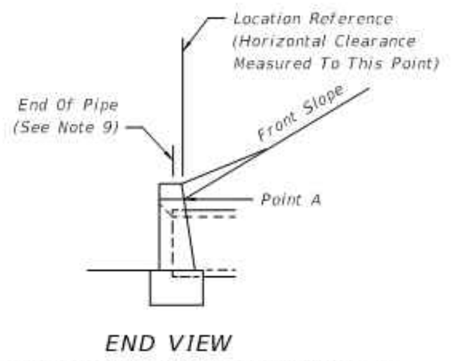
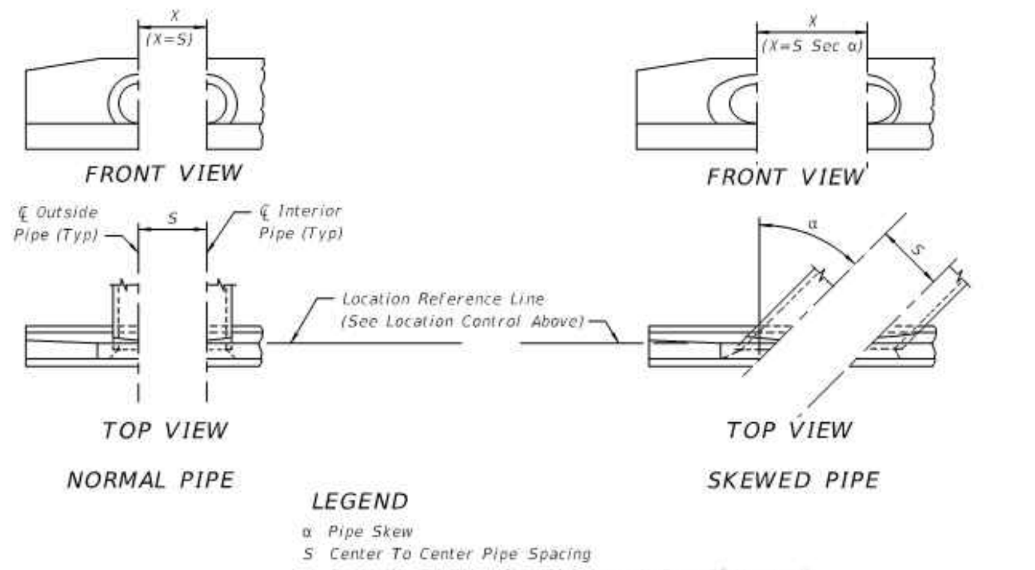


ENDWALL DIMENSIONS (EXCLUSIVE OF MULTIPLE PIPE SPACING)



1. Position is set by the intersection of the front slope and Point A where this intersection falls outside the clear zone.
2. Where the front slope and Point A intersects inside the clear zone, the endwall is positioned so the location reference point is at the clear zone limit. The front slope is transitioned to the endwall as shown in Index No. 280.

STANDARD
LOCATION CONTROL



LEGEND
α Pipe Skew
S Center To Center Pipe Spacing
X Centerline To Centerline Dimension At Face Of Headwall

PIPE AND SPACING FOR MULTIPLE PIPE
ENDWALL POSITIONS FOR SINGLE AND MULTIPLE

GENERAL NOTES

1. Endwall dimensions, locations and positions are for round and elliptical concrete pipe and for round and pipe-arch corrugated metal pipe. Round concrete pipe shown.
2. Front slope and ditch transitions shall be in accordance with Index No. 280.
3. Endwalls may be cast in place or precast concrete. Reinforcing steel shall be Grades 40 or 60. Additional reinforcement necessary for handling precast units shall be determined by the Contractor or the supplier. Cost of reinforcement shall be included in the contract unit price for Concrete, (Endwalls).
4. All exposed corners and edges of concrete are to be chamfered ¾".
5. Concrete shall be Class I, except ASTM C478 (4000 psi) concrete may be substituted for precast items manufactured in plants meeting the requirements of Section 449 of the Specifications.
6. On outfall ditches with side slopes flatter than 1:1½ provide 20' transitions from the endwall to the flatter side slopes, right of way permitting.
7. For sodding around endwalls see Index No. 281.
8. Payment for concrete quantities for endwalls skewed to the pipe shall be made on the following basis:

Endwall Skew to Pipe	Use Tabulated Value
0° to 5°	0°
6°	15°
16°	30°
31° or over	45°

9. Pipe length plan quantities shall be based on the pipe end locations shown in the standard location control end view, or lengths based on special endwall locations called for in the plans.
10. Payment for pipe in pipe culverts shall be based on plan quantities, adjusted for endwall locations subsequently established by the Engineer.
11. Endwalls to be paid for under the contract unit price for Class I Concrete (Endwalls), CY.

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LAST REVISION	REVISION	DESCRIPTION:	FDOT 2014 DESIGN STANDARDS	STRAIGHT CONCRETE ENDWALLS SINGLE AND MULTIPLE PIPE	INDEX NO.	SHEET NO.
07/01/09					250	1 of 2

DATA AND ESTIMATED QUANTITIES FOR ONE ENDWALL

ROUND CONCRETE AND CORRUGATED METAL PIPE

D	Opening Area (SF)				Dimensions											Class I Concrete (CY)																											D
	Number Of Pipes				A	B	C	E	F	G	S	X				Number And Type Of Pipe And Skew Angle Of Pipe																											
																Single		Double								Triple								Quadruple								
																Conc	Metal	Concrete				Metal				Concrete				Metal				Concrete				Metal				
	1	2	3	4								0°	15°	30°	45°	0°	0°	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°	
15"	1.23	2.46	3.69	4.92	1'-11"	1'-2"	4'-0"	1'-10"	1'-2"	0'-6"	2'-7"	2'-7"	2'-8"	3'-0"	3'-8"	1.23	1.24	1.59	1.60	1.65	1.74	1.62	1.63	1.68	1.78	1.94	1.96	2.05	2.23	1.99	2.02	2.11	2.30	2.30	2.34	2.47	2.74	2.37	2.41	2.75	2.84	15"
18"	1.77	3.54	5.31	7.08	2'-2"	1'-3"	4'-6"	1'-11"	1'-3"	1'-0"	2'-10"	2'-10"	2'-11"	3'-3"	4'-0"	1.56	1.59	1.99	2.01	2.06	2.17	2.04	2.06	2.11	2.23	2.43	2.46	2.56	2.79	2.51	2.54	2.65	2.89	2.86	2.91	3.06	3.40	2.96	3.01	3.17	3.53	18"
21"	2.41	4.82	7.23	9.64	2'-5"	1'-4"	5'-0"	2'-0"	1'-4"	1'-6"	3'-2"	3'-2"	3'-3"	3'-8"	4'-6"	1.97																										21"
24"	3.14	6.28	9.42	12.56	2'-8"	1'-4"	5'-6"	2'-0"	1'-4"	2'-0"	3'-5"	3'-5"	3'-6"	3'-11"	4'-10"	2.24	2.29	2.82	2.84	2.91	3.06	2.91	2.93	3.01	3.17	3.39	3.43	3.57	3.87	3.52	3.56	3.71	4.03	3.97	4.03	4.24	4.69	4.14	4.20	4.43	4.91	24"
27"	3.98	7.96	11.94	15.92	2'-11"	1'-5"	6'-0"	2'-1"	1'-5"	2'-6"	3'-10"	3'-10"	4'-0"	4'-5"	5'-5"	2.73																										27"
30"	4.91	9.82	14.73	19.64	3'-2"	1'-6"	6'-6"	2'-2"	1'-6"	3'-0"	4'-3"	4'-3"	4'-5"	4'-11"	6'-0"	3.26	3.34	4.13	4.16	4.26	4.49	4.28	4.31	4.43	4.67	4.98	5.04	5.25	5.69	5.20	5.27	5.49	5.97	5.84	5.93	6.24	6.91	6.13	6.23	6.56	7.29	30"
36"	7.07	14.14	21.21	28.28	3'-8"	1'-8"	7'-6"	2'-4"	1'-8"	4'-0"	5'-1"	5'-1"	5'-3"	5'-10"	7'-2"	4.53	4.64	5.73	5.77	5.92	6.23	5.95	6.00	6.15	6.49	6.92	7.00	7.29	7.91	7.25	7.34	7.65	8.33	8.13	8.26	8.69	9.62	8.57	8.71	9.18	10.20	36"
42"	9.62	19.24	28.86	38.48	4'-2"	1'-10"	8'-6"	2'-6"	2'-0"	5'-0"	6'-0"	6'-0"	6'-3"	6'-11"	8'-6"	6.33	6.49	8.11	8.17	8.39	8.85	8.43	8.50	8.73	9.23	9.90	10.02	10.45	11.38	10.38	10.52	10.98	11.99	11.68	11.87	12.51	13.89	12.32	12.52	13.22	14.73	42"
48"	12.57	25.14	37.71	50.28	4'-8"	2'-1"	9'-6"	2'-9"	2'-0"	6'-0"	6'-9"	6'-9"	7'-0"	7'-10"	9'-7"	8.15	8.38	10.40	10.48	10.75	11.33	10.85	10.94	11.23	11.87	12.64	12.80	13.34	14.50	13.34	13.51	14.11	15.39	14.89	15.13	15.93	17.68	15.82	16.08	16.97	18.90	48"
54"	15.90	31.80	47.70	63.60	5'-2"	2'-6"	10'-6"	3'-2"	2'-3"	7'-0"	7'-8"	7'-8"	7'-11"	8'-10"	10'-10"	11.71	11.77	15.23	15.35	15.78	16.69	15.35	15.48	15.90	16.83	18.77	19.02	19.86	21.69	18.93	19.18	20.04	21.89	22.29	22.66	23.93	26.67	22.51	22.89	24.17	26.96	54"

CORRUGATED METAL PIPE ARCH

Span	Rise	Opening Area (SF)				Dimensions											Class I Concrete (CY)													Span	Rise	Approx. Equiv. Round Pipe
		Number Of Pipes				A	B	C	E	F	G	S	X				Number Of Pipe And Skew Angle Of Pipe															
																	Single	Double				Triple				Quadruple						
		1	2	3	4								0°	15°	30°	45°	0°	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°			
17"	13"	1.1	2.2	3.3	4.4	1'-9"	1'-2"	3'-10"	1'-10"	1'-2"	0'-4"	2'-6"	2'-6"	2'-7"	2'-11"	3'-6"	1.16	1.47	1.48	1.52	1.60	1.78	1.80	1.88	2.04	2.09	2.12	2.23	2.48	17"	13"	15"
21"	15"	1.6	3.2	4.8	6.4	1'-11"	1'-2"	4'-3"	1'-10"	1'-2"	0'-9"	2'-10"	2'-10"	2'-11"	3'-3"	4'-0"	1.33	1.69	1.70	1.75	1.84	2.04	2.06	2.15	2.33	2.40	2.44	2.57	2.84	21"	15"	18"
28"	20"	2.8	5.6	8.4	11.2	2'-4"	1'-3"	5'-2"	1'-11"	1'-3"	1'-8"	3'-5"	3'-5"	3'-6"	3'-11"	4'-10"	1.78	2.31	2.33	2.39	2.53	2.83	2.87	2.99	3.26	3.36	3.42	3.60	4.01	28"	20"	24"
35"	24"	4.3	8.6	12.9	17.2	2'-8"	1'-4"	5'-11½"	2'-0"	1'-4"	2'-5½"	4'-0"	4'-0"	4'-2"	4'-7"	5'-8"	2.34	3.03	3.05	3.14	3.32	3.72	3.77	3.93	4.29	4.40	4.47	4.72	5.25	35"	24"	30"
42"	29"	5.9	11.8	17.7	23.6	3'-1"	1'-5"	6'-10½"	2'-1"	1'-5"	3'-4½"	4'-9"	4'-9"	4'-11"	5'-6"	6'-9"	3.13	4.06	4.09	4.20	4.45	4.99	5.06	5.28	5.76	5.93	6.03	6.36	7.09	42"	29"	36"
49"	33"	8.4	16.8	25.2	33.6	3'-5"	1'-6"	7'-8"	2'-2"	1'-6"	4'-2"	5'-6"	5'-6"	5'-8"	6'-4"	7'-9"	3.83	5.00	5.04	5.18	5.48	6.16	6.24	6.52	7.12	7.32	7.44	7.86	8.76	49"	33"	42"
57"	38"	10.6	21.2	31.8	42.4	3'-10"	1'-7"	8'-7½"	2'-3"	1'-7"	5'-1½"	6'-4"	6'-4"	6'-7"	7'-4"	8'-11"	4.87	6.31	6.36	6.53	6.91	7.74	7.84	8.18	8.93	9.18	9.33	9.85	10.96	57"	38"	48"
64"	43"	13.2	26.4	39.6	52.8	4'-3"	1'-8"	9'-6½"	2'-4"	1'-8"	6'-0½"	7'-1"	7'-1"	7'-4"	8'-2"	10'-0"	5.88	7.64	7.70	7.91	8.37	9.40	9.52	9.94	10.86	11.15	11.33	11.97	13.33	64"	43"	54"
71"	47"	16.9	33.8	50.7	67.6	4'-7"	1'-10"	10'-4"	2'-6"	2'-0"	6'-10"	7'-10"	7'-10"	8'-1"	9'-1"	11'-1"	7.80	10.15	10.23	10.51	11.12	12.49	12.65	13.22	14.43	14.85	15.10	15.94	17.77	71"	47"	60"

Note: Use the guidelines of General Note No. 8 for selecting tabular quantities.

CONCRETE ELLIPTICAL PIPE

Rise	Span	Opening Area (SF)				Dimensions											Class I Concrete (CY)													Rise	Span	Approx. Equiv. Round Pipe
		Number Of Pipes				A	B	C	E	F	G	S	X				Number Of Pipe And Skew Angle Of Pipe															
																	Single	Double				Triple				Quadruple						
		1	2	3	4								0°	15°	30°	45°	0°	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°			
12"	18"	1.3	2.6	3.9	5.2	1'-8"	1'-2"	3'-9"	1'-10"	1'-2"	0'-3"	2'-10"	2'-10"	2'-11"	3'-3"	4'-0"	1.09	1.45	1.46	1.51	1.60	1.80	1.82	1.91	2.09	2.16	2.20	2.33	2.60	12"	18"	15"
14"	23"	1.8	3.6	5.4	7.2	1'-10"	1'-3"	4'-2½"	1'-11"	1'-3"	8½"	3'-5"	3'-5"	3'-6"	3'-11"	4'-10"	1.36	1.82	1.84	1.89	2.01	2.29	2.32	2.43	2.68	2.75	2.80	2.97	3.33	14"	23"	18"
19"	30"	3.3	6.6	9.9	13.2	2'-3"	1'-4"	5'-1½"	2'-0"	1'-4"	1'-7½"	4'-2"	4'-2"	4'-4"	4'-10"	5'-11"	1.89	2.55	2.57	2.65	2.82	3.22	3.27	3.43	3.77	3.88	3.95	4.19	4.70	19"	30"	24"
24"	38"	5.1	10.2	15.3	20.4	2'-8"	1'-5"	6'-3"	2'-1"	1'-5"	2'-9"	5'-2"	5'-2"	5'-4"	6'-0"	7'-4"	2.64	3.55	3.58	3.69	3.93	4.48	4.54	4.77	5.24	5.39	5.49	5.82	6.53	24"	38"	30"
29"	45"	7.4	14.8	22.2	29.6	3'-1"	1'-6"	7'-0"	2'-2"	1'-6"	3'-6"	6'-0"	6'-0"	6'-3"	6'-11"	8'-6"	3.32	4.48	4.52	4.66	4.96	5.64	5.72	6.00	6.60	6.80	6.92	7.34	8.24	29"	45"	36"
34"	53"	10.2	20.4	30.6	40.8	3'-6"	1'-7"	7'-11½"	2'-3"	1'-7"	4'-5½"	7'-1"	7'-1"	7'-4"	8'-2"	10'-0"	4.24	5.76	5.81	6.00	6.39	7.29	7.40	7.76	8.55	8.81	8.97	9.52	10.70	34"	53"	42"
38"	60"	12.9	25.8	38.7	51.6	3'-10"	1'-8"	8'-9"	2'-4"	1'-8"	5'-3"	7'-11"	7'-11"	8'-2"	9'-2"	11'-2"	5.22	7.16	7.23	7.46	7.96	9.10	9.24	9.70	10.71	11.05	11.25	11.95	13.46	38"	60"	48"
43"	68"	16.6	33.2	49.8	66.4	4'-3"	1'-10"	9'-8½"	2'-6"	1'-10"	6'-2½"	8'-10"	8'-10"	9'-2"	10'-2"	12'-6"	6.63	9.01	9.09	9.38	10.00	11.39	11.56	12.13	13.36	13.77	14.02	14.88	16.73	43"	68"	54"
48"	76"	20.5	41.0	61.5	82.0	4'-8"	2'-1"	10'-8"	2'-9"	2'-0"	7'-2"	9'-9"	9'-9"	10'-1"	11'-3"	13'-9"	8.66	11.74	11.85	12.22	13.02	14.82	15.04	15.77	17.37	17.91	18.23	19.34	21.74	48"	76"	60"
53"	83"	24.8	49.6	74.4	99.2	5'-1"	2'-6"	11'-7"	3'-2"	2'-6"	8'-1"	10'-7"	10'-7"	10'-11"	12'-3"	15'-0"	12.50	16.98	16.98	17.67	18.83	21.47	21.78	22.86	25.18	25.97	26.44	28.06	31.55	53"	83"	66"
58"	91"	29.5	59.0	88.5	118.0	5'-6"	2'-10"	12'-6½"	3'-6"	2'-10"	9'-0½"	11'-4"	11'-4"	11'-9"	13'-1"	16'-0"	16.46	22.26	22.46	23.16	24.66	28.05	28.46	29.85	32.85	33.85	34.46	36.55	41.05	58"	91"	72"

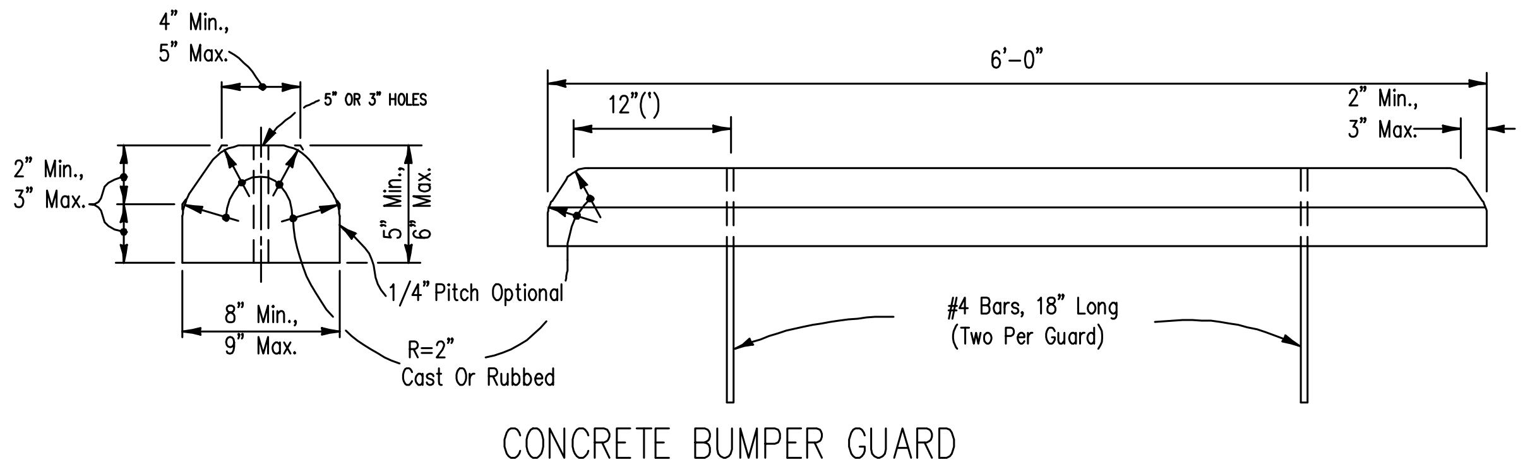
C:\d\projects\standards\roadway\00200-s\00250-02.dgn sm97ore 4:48:30 PM 6/24/2013

LAST REVISION	REVISION	DESCRIPTION:	FDOT 2014 DESIGN STANDARDS	STRAIGHT CONCRETE ENDWALLS SINGLE AND MULTIPLE PIPE	INDEX NO.	SHEET NO.
07/01/01					250	2 of 2

FDOT ENDWALL DETAIL

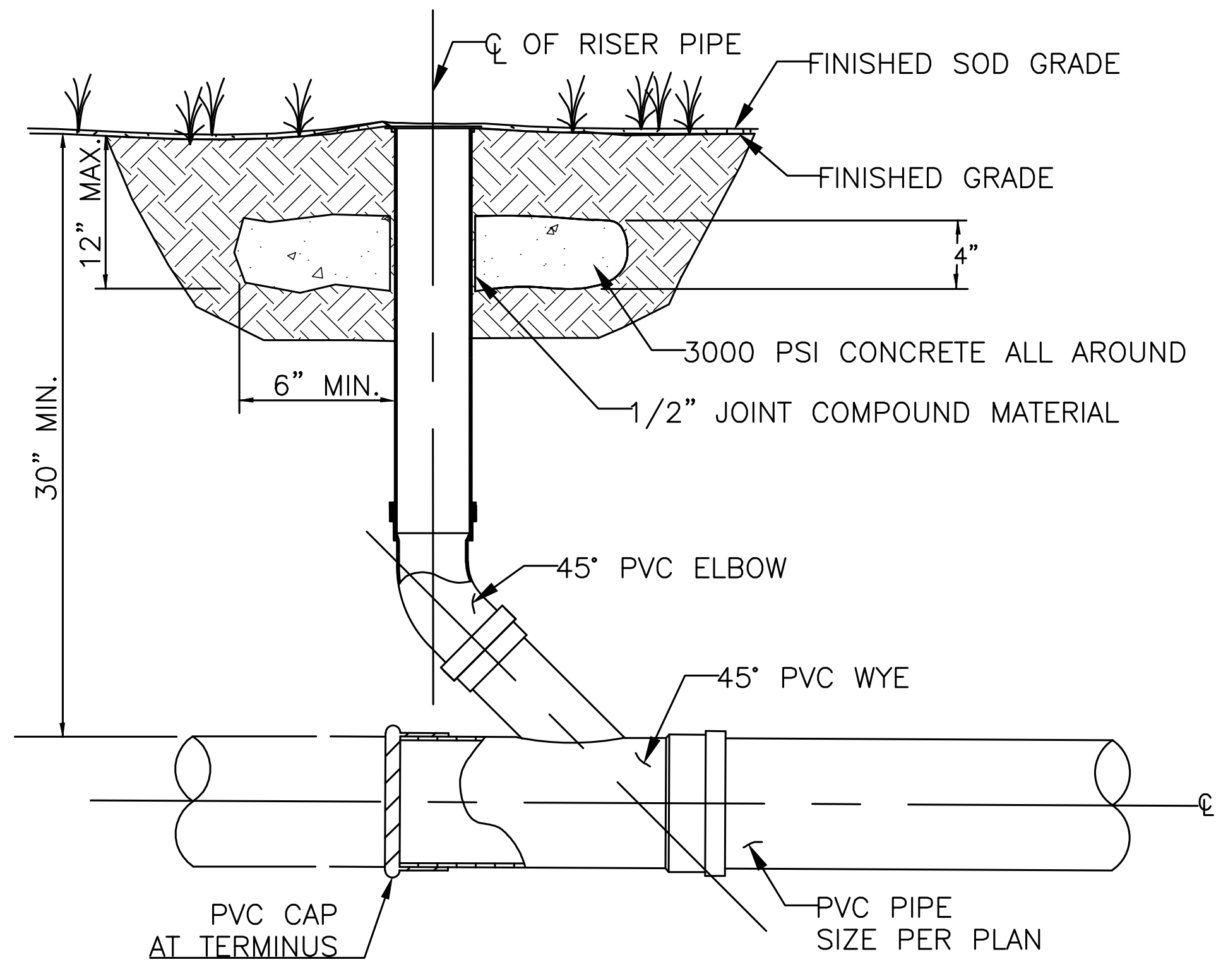
NTS

ALL FDOT DETAILS ARE FOR REFERENCE ONLY AND CONTRACTOR SHALL REFER TO THE LATEST FDOT DESIGN STANDARDS BOOK FOR LATEST DETAILS.



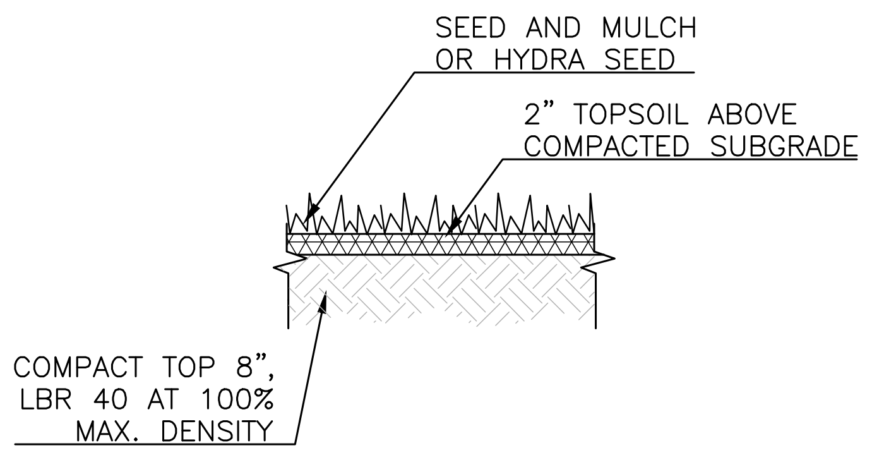
TYPICAL FDOT CONCRETE PARK BUMP DETAIL

NTS



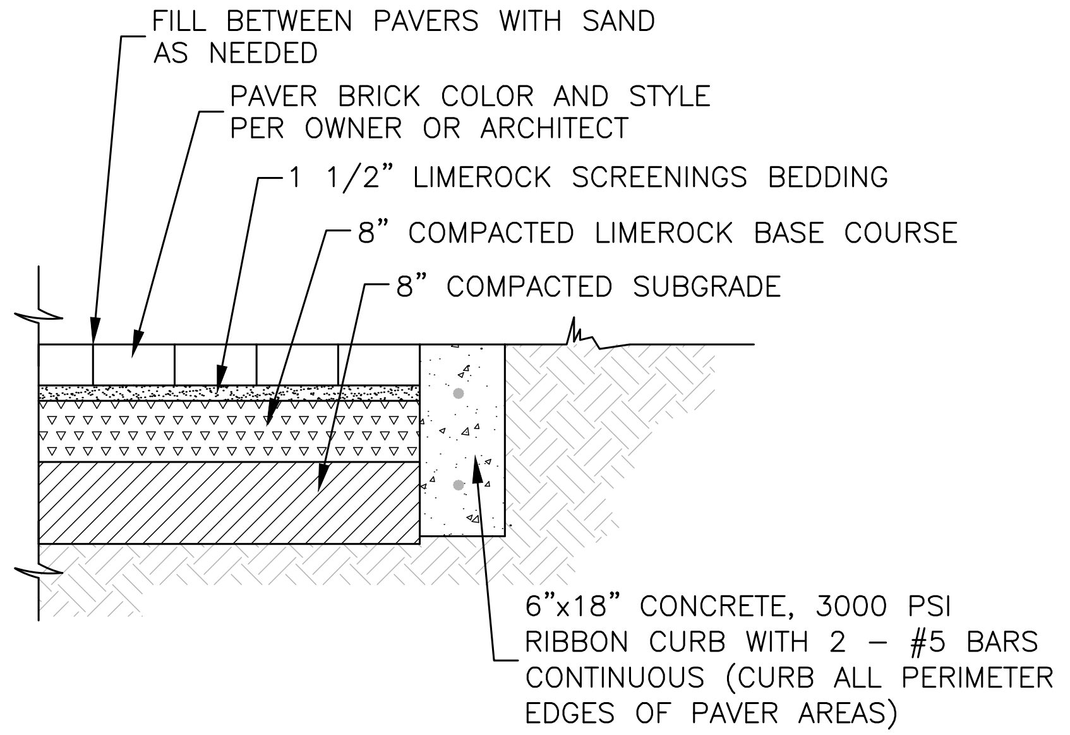
TYPICAL CLEAN-OUT (NON-TRAFFIC) DETAIL

NTS



STABILIZED DRIVE DETAIL

NTS

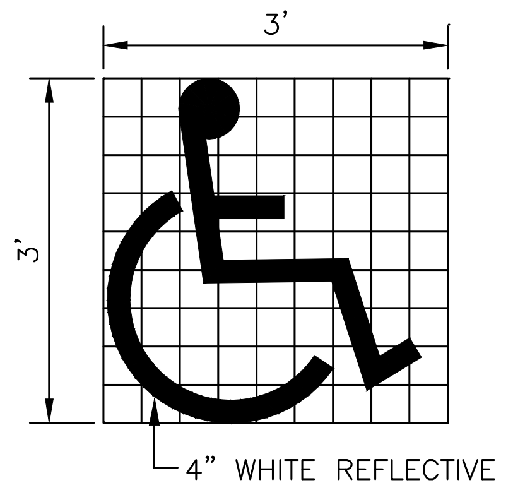


NOTES:
1. BASE COURSE AVERAGE LBR SHALL NOT BE LESS THAN 100. COMPACT TO 98% MAX DENSITY PER AASHTO T-180, MODIFIED PROCTOR.
2. SUBGRADE SHALL BE STABILIZED TO LBR 40 PER FDOT STANDARD SPECIFICATIONS 160-2. COMPACTION SHALL BE PROVIDED PER FDOT STANDARD SPECIFICATIONS SECTION 160-8.
3. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. CONTACT MANUFACTURER BEFORE BEGINNING BASE, PAVER, OR RIBBON CURB INSTALLATION FOR RECOMMENDATIONS. NOTIFY ENGINEER OF ANY PROPOSED CHANGES.

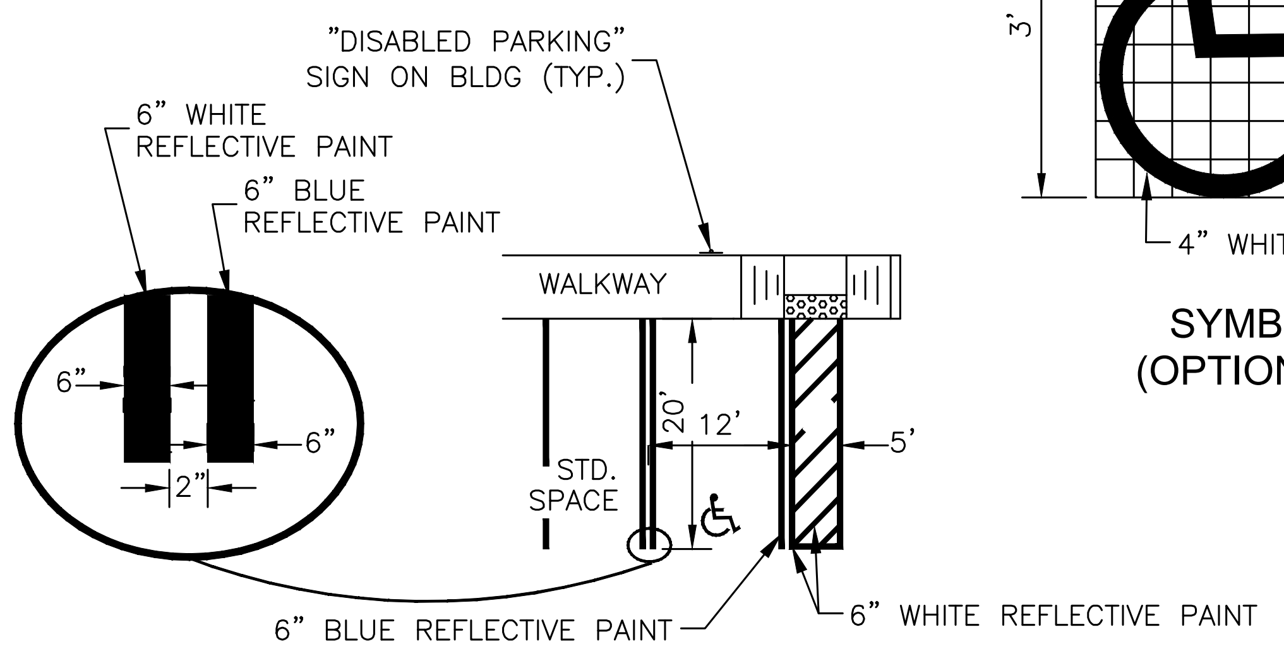
TYPICAL PAVER WALKWAY DETAIL

NTS

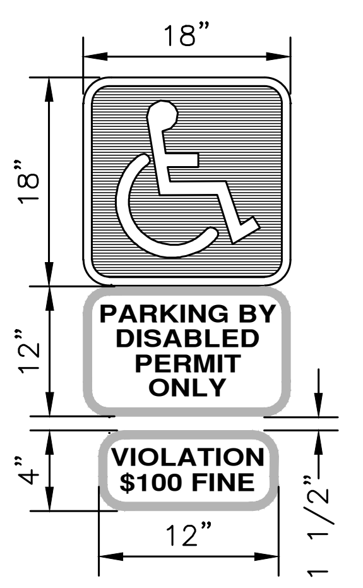
NOTE :
THIS DETAIL IS FOR REFERENCE PURPOSES. SEE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS INDEX NOS. 17346 & 17355 AND FLORIDA ACCESSIBILITY CODE FOR BUILDING CONSTRUCTION, LATEST VERSION FOR FURTHER DETAILS.



SYMBOL
(OPTIONAL)

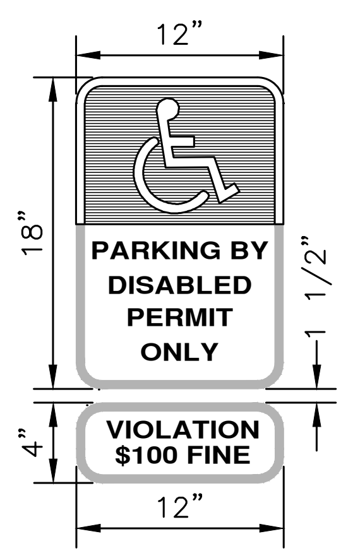


"UNIVERSAL" ACCESSIBLE LAYOUT
W/CURB CUT SHOWN



FDOT SIGN # FTP-21-04

NOTES :
1. TOP PORTION OF FTP 25 & 26 SHALL HAVE A REFLECTIVE BLUE BACKGROUND WITH WHITE REFLECTIVE SYMBOL AND BORDER.
2. BOTTOM PORTION SHALL HAVE A REFLECTIVE WHITE BACKGROUND WITH BLACK OPAQUE LEGEND AND BORDER.
3. FTP 25 & 26 MAY BE FABRICATED ON ONE PANEL OR TWO.
4. FTP 25 MAY BE SUBSTITUTED FOR THE FTP 26 IN AREAS WHERE SPACE IS LIMITED.
5. SIGNS ARE TO BE MOUNTED AT STANDARD HEIGHT (7 FEET FROM PAVEMENT TO BOTTOM OF SIGN).



FDOT SIGN # FTP-20-04

TYPICAL HANDICAP PARKING AND SIGNAGE DETAIL

NTS

ENGINEER OF RECORD

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REVISIONS AND UPDATES

07/01/15	100% CONSTRUCTION DOCUMENTS

CAPE CANAVERAL LIGHTHOUSE FOUNDATION
LIGHTHOUSE KEEPER'S COTTAGES
LIGHTHOUSE RD CAPE CANAVERAL AFS, FL

DETAILS

drawn DHF | checked JTW | approved DMT

job no. 130232
C-4
SCALE: NTS

RZK
AA-C001568

ARCHITECTS RZK, INC.
600 FLORIDA AVENUE SUITE 202 COCOA, FLORIDA 32922 TELEPHONE (321) 631-8039

GENERAL SPECIFICATION NOTES:

1. PROJECT REPRESENTATIVE REFERRED TO IN THE FOLLOWING SPECIFICATIONS INCLUDE OWNER OR DESIGNATED REPRESENTATIVE, ENGINEER OR MUNICIPALITY OF JURISDICTION FOR SPECIFIED WORK.
2. CONTRACTOR SHALL BECOME FAMILIAR WITH AND ADHERE TO ALL PROJECT SITE PERMITS AND THEIR CONDITIONS AND POST ON–SITE DURING ENTIRE CONSTRUCTION PROJECT UNTIL FINAL CLEARANCE. PERMIT AGENCIES WITH JURISDICTION FOR THIS PROJECT INCLUDE:
   –SJRWMD
   –FDEP
   –CCAFS

SITE CLEARING

1. PROTECTION OF EXISTING TREES AND VEGETATION: PROTECT EXISTING TREES AND OTHER VEGETATION INDICATED TO REMAIN IN PLACE AGAINST UNNECESSARY CUTTING, BREAKING OR SKINNING OF ROOTS, SKINNING OR BRUISING OF BARK, SMOTHERING OF TREES BY STOCKPILING CONSTRUCTION MATERIALS OR EXCAVATED MATERIALS WITHIN DRIP LINE, EXCESS FOOT OR VEHICULAR TRAFFIC, OR PARKING OF VEHICLES WITHIN DRIP LINE. PROVIDE TEMPORARY GUARDS AT THE DRIP LINE TO PROTECT TREES AND VEGETATION TO BE LEFT STANDING.
2. REMOVE ALL TREES, SHRUBS, GRASS, AND OTHER VEGETATION, IMPROVEMENTS, OR OBSTRUCTIONS, AS REQUIRED, TO PERMIT INSTALLATION OF NEW CONSTRUCTION. REMOVE SIMILAR ITEMS ELSEWHERE ON SITE OR PREMISES AS SPECIFICALLY INDICATED.
3. CUT MINOR ROOTS AND BRANCHES OF TREES INDICATED TO REMAIN IN A CLEAN AND CAREFUL MANNER WHERE SUCH ROOTS AND BRANCHES DO NOT OBSTRUCT INSTALLATION OF NEW CONSTRUCTION.
4. TOPSOIL IS DEFINED AS FRIABLE CLAY LOAM SURFACE SOIL. SATISFACTORY TOPSOIL IS REASONABLY FREE OF SUBSOIL, CLAY LUMPS, STONES, AND OTHER OBJECTS OVER 2 INCHES IN DIAMETER, AND WEEDS, ROOTS, AND OTHER OBJECTIONABLE MATERIAL.
5. STRIP TOPSOIL TO WHATEVER DEPTHS ENCOUNTERED IN A MANNER TO PREVENT INTERMINGLING WITH UNDERLYING SUBSOIL OR OTHER OBJECTIONABLE MATERIAL. REMOVE HEAVY GROWTHS OF VEGETATION AND ROOTS FROM AREAS BEFORE STRIPPING.
6. STOCKPILE TOPSOIL IN STORAGE PILES IN AREAS INDICATED OR DIRECTED. CONSTRUCT STORAGE PILES TO PROVIDE FREE DRAINAGE OF SURFACE WATER. COVER STORAGE PILES, IF REQUIRED, TO PREVENT WIND EROSION. TRANSPORT WASTE MATERIALS AND UNSUITABLE TOPSOIL MATERIALS OFF OWNER'S PROPERTY AND DISPOSE OF LEGALLY.
7. TRAFFIC: CONDUCT SITE CLEARING OPERATIONS TO ENSURE MINIMUM INTERFERENCE WITH ROADS AND OTHER ADJACENT FACILITIES. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS OR OTHER OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM AUTHORITIES HAVING JURISDICTION.
8. PROTECTION OF EXISTING IMPROVEMENTS: PROVIDE PROTECTION NECESSARY TO PREVENT DAMAGE TO EXISTING IMPROVEMENTS INDICATED TO REMAIN IN PLACE. PROTECT IMPROVEMENTS ON ADJOINING PROPERTIES. RESTORE DAMAGED IMPROVEMENTS TO THEIR ORIGINAL CONDITION, AS ACCEPTABLE TO PARTIES HAVING JURISDICTION.
9. AS AN INITIAL EFFORT ON THE CONSTRUCTION SITE THE CONTRACTOR SHALL LOCATE AND FLAG ALL TREES INDICATED TO REMAIN. CONTACT ENGINEER PRIOR TO CLEARING. THE PROJECT SHALL ANTICIPATE THE REMOVAL OF UP TO 10% MORE TREES THAN INDICATED ON THE PLANS PER DIRECTION. AS PART OF THIS INSPECTION, TREES REQUIRING SPECIAL PRUNING SHALL BE IDENTIFIED.
10. WATER TREES AND OTHER VEGETATION TO REMAIN WITHIN LIMITS OF CONTRACT WORK AS REQUIRED TO MAINTAIN THEIR HEALTH DURING COURSE OF CONSTRUCTION OPERATIONS.
11. PROVIDE PROTECTION FOR ROOTS OVER 1" DIAMETER CUT DURING CONSTRUCTION OPERATIONS. TEMPORARILY COVER EXPOSED ROOTS WITH WET BURLAP TO PREVENT ROOTS FROM DRYING OUT; COVER WITH EARTH AS SOON AS POSSIBLE.
12. REPLACE TREES WHICH CANNOT BE REPAIRED AND RESTORED TO FULL–GROWTH STATUS, IN A MANNER ACCEPTABLE TO THE PROJECT REPRESENTATIVE.
13. COMPLETELY REMOVE STUMPS, ROOTS, AND OTHER DEBRIS UNLESS SPECIFICALLY IDENTIFIED TO REMAIN.
14. USE ONLY HAND METHODS FOR GRUBBING INSIDE DRIP LINE OF TREES INDICATED TO BE LEFT STANDING.
15. PLACE FILL MATERIAL IN HORIZONTAL LAYERS NOT EXCEEDING 6" LOOSE DEPTH, AND THOROUGHLY COMPACT TO A DENSITY EQUAL TO ADJACENT ORIGINAL GROUND.

EARTHWORK

1. SUBGRADE EXCAVATION, BACKFILL, AND PREPARATION SHALL BE DONE IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEERING REPORT FOR THIS SITE AS IDENTIFIED ON DWG. C–1, UNLESS NOTED OTHERWISE IN THE CONTRACT DRAWINGS.
2. PROVIDE APPROVED BORROW SOIL MATERIALS FROM OFF–SITE WHEN SUFFICIENT APPROVED SOIL MATERIALS ARE NOT AVAILABLE FROM ON–SITE EXCAVATIONS.
   a. SATISFACTORY SOIL MATERIALS: ASTM D 2487 SOIL CLASSIFICATION GROUPS GW, GP, GM, SW, SP, AND SM; FREE OF ROCK OR GRAVEL LARGER THAN 2 INCHES IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS, VEGETATION AND OTHER DELETERIOUS MATTER.
   b. UNSATISFACTORY SOIL MATERIALS: ASTM D 2487 SOIL CLASSIFICATION GROUPS GC, SC, ML, MH, CL, CH, OL, OH, AND PT.
3. BACKFILL AND FILL MATERIALS: SATISFACTORY SOIL MATERIALS AS IDENTIFIED ABOVE.
4. SUBBASE AND BASE MATERIAL: NATURALLY OR ARTIFICIALLY GRADED MIXTURE OF NATURAL OR CRUSHED GRAVEL, CRUSHED STONE, AND NATURAL OR CRUSHED SAND, ASTM D 2940, MEETING THE REQUIREMENTS OF SECTION 911 OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
5. DRAINAGE FILL MATERIAL: WASHED EVENLY GRADED MIXTURE OF UNCRUSHED OR CRUSHED GRAVEL OR CRUSHED STONE, ASTM D 448, COARSE AGGREGATE GRADING SIZE 57, WITH 100 PERCENT PASSING A 1–1/2 INCH SIEVE AND 0 TO 5 PERCENT PASSING A NO. 50 SIEVE.
6. ENGINEERED FILL: BASE MATERIALS AS IDENTIFIED ABOVE.
7. BEDDING MATERIAL: SUBBASE OR BASE MATERIALS AS IDENTIFIED ABOVE.
8. FILTER FABRIC: MANUFACTURER'S STANDARD NONWOVEN PERVIOUS GEOTEXTILE FABRIC OF POLYPROPELENE, NYLON OR POLYESTER FIBERS, OR A COMBINATION IN ACCORDANCE WITH ASTM D 4759.
   a. GRAB TENSILE STRENGTH (ASTM D 4652): 100 LB
   b. APPARENT OPENING SIZE (ASTM D 4751): #100 U.S. STANDARD SIEVE.
   c. PERMEABILITY (ASTM D 4491): 150 GALLONS PER MINUTE PER SQ. FT.
9. COMPLY WITH LOCAL CODES, ORDINANCES, AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION TO MAINTAIN STABLE EXCAVATIONS. CONTRACTOR SHALL COMPLY WITH THE TRENCH SAFETY ACT.
10. EXCAVATION FOR STRUCTURES: EXCAVATE TO INDICATED ELEVATIONS AND DIMENSIONS WITHIN A TOLERANCE OF PLUS OR MINUS 0.10 FOOT. EXTEND EXCAVATIONS A SUFFICIENT DISTANCE FROM STRUCTURES FOR PLACING AND REMOVING CONCRETE FORMWORK, INSTALLING SERVICES AND OTHER CONSTRUCTION, AND FOR INSPECTIONS.
11. EXCAVATIONS FOR FOOTINGS AND FOUNDATIONS: DO NOT DISTURB BOTTOM OF EXCAVATION. EXCAVATE BY HAND TO FINAL GRADE JUST BEFORE PLACING CONCRETE REINFORCEMENT. TRIM BOTTOMS TO REQUIRED LINES AND GRADES TO LEAVE SOLID BASE TO RECEIVE OTHER WORK.
12. EXCAVATION FOR UNDERGROUND STRUCTURES AND MECHANICAL OR ELECTRICAL APPURTENANCES: EXCAVATE TO ELEVATIONS AND DIMENSIONS INDICATED WITHIN A TOLERANCE OF PLUS OR MINUS 0.10 FOOT. DO NOT DISTURB BOTTOM OF EXCAVATIONS INTENDED FOR BEARING SURFACE.
13. EXCAVATE TRENCHES TO UNIFORM WIDTHS TO PROVIDE A WORKING CLEARANCE ON EACH SIDE OF PIPE OR CONDUIT. EXCAVATE TRENCH WALLS VERTICALLY FROM TRENCH BOTTOM TO 12 INCHES HIGHER THAN TOP OF PIPE OR CONDUIT, UNLESS OTHERWISE INDICATED.
14. TRENCH BOTTOMS: EXCAVATE AND SHAPE TRENCH BOTTOMS TO PROVIDE UNIFORM BEARING AND SUPPORT OF PIPES AND CONDUIT. SHAPE SUBGRADE TO PROVIDE CONTINUOUS SUPPORT FOR BELLS, JOINTS, AND BARRELS OF PIPES AND FOR JOINTS, FITTINGS, AND BODIES OF CONDUITS. REMOVE STONES AND SHARP OBJECTS TO AVOID POINT LOADING.
   a. FOR PIPES OR CONDUIT LESS THAN 6 INCHES IN NOMINAL DIAMETER AND FLAT–BOTTOMED, MULTIPLE–DUCT CONDUIT UNITS, HAND–EXCAVATE TRENCH BOTTOMS AND SUPPORT PIPE AND CONDUIT ON AN UNDISTURBED SUBGRADE.
   b. FOR PIPES AND CONDUIT 6 INCHES OR LARGER IN NOMINAL DIAMETER, SHAPE BOTTOM OF TRENCH TO SUPPORT BOTTOM 90 DEGREES OF PIPE CIRCUMFERENCE. FILL DEPRESSIONS WITH TAMPED SAND BACKFILL.
   c. WHERE ENCOUNTERING ROCK OR ANOTHER UNYIELDING BEARING SURFACE, CARRY TRENCH EXCAVATION 6 INCHES BELOW INVERT ELEVATION TO RECEIVE BEDDING COURSE.
15. RECONSTRUCT SUBGRADES DAMAGED BY RAIN, ACCUMULATED WATER, OR CONSTRUCTION ACTIVITIES.
16. STOCKPILE EXCAVATED MATERIALS ACCEPTABLE FOR BACKFILL AND FILL SOIL MATERIALS, INCLUDING ACCEPTABLE BORROW MATERIALS. STOCKPILE SOIL MATERIALS WITHOUT INTERMIXING. PLACE, GRADE, AND SHAPE STOCKPILES TO DRAIN SURFACE WATER. COVER TO PREVENT WIND–BLOWN DUST IF DIRECTED BY PROJECT REPRESENTATIVE.
17. CONTRACTOR SHALL PROVIDE DETECTABLE WARNING TAPE MADE FROM ACID AND ALKALI RESISTANT POLYETHYLENE FILM TO MARK AND IDENTIFY UNDERGROUND UTILITIES. TAPE SHALL BE 6 INCHES WIDE AND 4 MILS THICK, CONTINUOUSLY INSCRIBED WITH A DESCRIPTION OF THE UTILITY, WITH A METALLIC CORE ENCASED IN A PROTECTIVE JACKET FOR CORROSION PROTECTION, DETECTABLE BY METAL DETECTOR WHEN TAPE IS BURIED UP TO 2'–6" DEEP OVER NON FERROUS PIPE. PROVIDE TAPE COLORS TO MATCH UTILITIES AS FOLLOWS:
   RED: ———— ELECTRIC
   YELLOW: ———— GAS, OIL, STEAM AND DANGEROUS MATERIALS
   ORANGE: ———— TELEPHONE AND OTHER COMMUNICATIONS
   BLUE: ———— WATER SYSTEMS
   GREEN: ———— SEWER SYSTEMS
18. UTILITY TRENCH BACKFILL: PLACE AND COMPACT INITIAL BACKFILL OF SATISFACTORY SOIL MATERIAL OR SUBBASE MATERIAL, FREE OF PARTICLES LARGER THAN 1 INCH, TO A HEIGHT OF 12 INCHES OVER THE UTILITY PIPE OR CONDUIT.
19. CAREFULLY COMPACT MATERIAL UNDER PIPE HAUNCHES AND BRING BACKFILL EVENLY UP ON BOTH SIDES AND ALONG THE FULL LENGTH OF UTILITY PIPING OR CONDUIT TO AVOID DAMAGE OR DISPLACEMENT OF UTILITY SYSTEM.
20. PLACE AND COMPACT FINAL BACKFILL OF SATISFACTORY SOIL MATERIAL TO FINAL SUBGRADE.
21. REMOVE VEGETATION, TOPSOIL, DEBRIS, WET, AND UNSATISFACTORY SOIL MATERIALS, OBSTRUCTIONS, AND DELETERIOUS MATERIALS FROM GROUND SURFACE PRIOR TO PLACING FILLS.
22. WHEN SUBGRADE OR EXISTING GROUND SURFACE TO RECEIVE FILL HAS A DENSITY LESS THAN THAT REQUIRED FOR FILL, BREAK UP GROUND SURFACE TO DEPTH REQUIRED, PULVERIZE, MOISTURE–CONDITION OR AERATE SOIL AND RECOMPACT TO REQUIRED DENSITY.
23. PLACE FILL MATERIAL IN LAYERS TO REQUIRED ELEVATIONS FOR EACH LOCATION LISTED BELOW.
   a. UNDER GRASS, USE SATISFACTORY EXCAVATED OR BORROW SOIL MATERIAL.
   b. UNDER WALKS AND PAVEMENTS, USE SUBBASE OR BASE MATERIAL, OR SATISFACTORY EXCAVATED OR BORROW SOIL MATERIAL.
   c. UNDER BUILDING SLABS, USE SATISFACTORY FILL MATERIAL.
   d. UNDER FOOTINGS AND FOUNDATIONS, USE ENGINEERED FILL.
24. UNIFORMLY MOISTEN OR AERATE SUBGRADE AND EACH SUBSEQUENT FILL OR BACKFILL LAYER BEFORE COMPACTION TO WITHIN 2 PERCENT OF OPTIMUM MOISTURE CONTENT.
   a. DO NOT PLACE BACKFILL OR FILL MATERIAL ON SURFACES THAT ARE MUDDY OR CONTAIN ICE.
   b. REMOVE AND REPLACE, OR SCARIFY AND AIR–DRY SATISFACTORY SOIL MATERIAL THAT IS TOO WET TO COMPACT TO SPECIFIED DENSITY.
   c. STOCKPILE OR SPREAD AND DRY REMOVED WET SATISFACTORY SOIL MATERIAL.
25. PLACE BACKFILL AND FILL MATERIALS IN LAYERS NOT MORE THAN 8 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, AND NOT MORE THAN 4 INCHES IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND–OPERATED TAMPERS.
26. PERCENTAGE OF MAXIMUM DRY DENSITY REQUIREMENTS: COMPACT SOIL TO NOT LESS THAN THE FOLLOWING PERCENTAGES OF MAXIMUM DRY DENSITY ACCORDING TO ASTM D 1557 UNLESS PLAN SPECIFICALLY NOTE OTHERWISE:
   a. UNDER BUILDING SLABS AND PAVEMENTS, COMPACT THE TOP 12 INCHES BELOW SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL AT 95 PERCENT MAXIMUM DRY DENSITY.
   b. UNDER WALKWAYS, COMPACT THE TOP 6 INCHES BELOW SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL AT 95 PERCENT MAXIMUM DRY DENSITY.
   c. UNDER LAWN OR UNPAVED AREAS, COMPACT THE TOP 6 INCHES BELOW SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL AT 90 PERCENT MAXIMUM DRY DENSITY.
27. SITE GRADING: SLOPE GRADES TO DIRECT WATER AWAY FROM BUILDING AND TO PREVENT PONDING. FINISH SUBGRADES TO REQUIRED ELEVATIONS WITHIN THE FOLLOWING TOLERANCES:
   a. LAWN OR UNPAVED AREAS: PLUS OR MINUS 0.10 FOOT. WALKS: PLUS OR MINUS 0.10 FOOT. PAVEMENTS: PLUS OR MINUS 1/2 INCH.
28. UNDER PAVEMENTS AND WALKS, CONSTRUCT SUBBASE COURSE AND BASE COURSE MATERIAL IN ACCORDANCE WITH SECTIONS 160 AND 200 OF THE FDOT STANDARD SPECIFICATIONS.
29. COMPACT SUBBASE AND BASE COURSES AT OPTIMUM MOISTURE CONTENT TO REQUIRED GRADES, LINES, CROSS SECTIONS AND THICKNESS TO NOT LESS THAN 95 PERCENT OF ASTM D 4254 RELATIVE DENSITY. SHAPE SUBBASE AND BASE TO REQUIRED CROWN ELEVATIONS AND CROSS–SLOPE GRADES.
   a. WHEN THICKNESS OF COMPACTED SUBBASE OR BASE COURSE IS 6 INCHES OR LESS, PLACE MATERIALS IN A SINGLE LAYER.
30. PAVEMENT SHOULDERS: PLACE SHOULDERS ALONG EDGES OF SUBBASE AND BASE COURSE TO PREVENT LATERAL MOVEMENT. CONSTRUCT SHOULDERS OF ACCEPTABLE MATERIALS AND COMPACT SIMULTANEOUSLY WITH EACH SUBBASE AND BASE LAYER.
31. UNDER SLABS–ON–GRADE, PLACE ENGINEERED FILL ON PREPARED SUBGRADE.
32. TESTING AGENCY SERVICES: ALLOW TESTING AGENCY TO INSPECT AND TEST EACH SUBGRADE AND EACH FILL OR BACKFILL LAYER. DO NOT PROCEED UNTIL TEST RESULTS FOR PREVIOUSLY COMPLETED WORK VERIFY COMPLIANCE WITH REQUIREMENTS.
33. PERFORM FIELD IN–PLACE DENSITY TESTS ACCORDING TO ASTM D 1556 (SAND CONE METHOD). FIELD IN–PLACE DENSITY TESTS MAY ALSO BE PERFORMED BY THE NUCLEAR METHOD ACCORDING TO ASTM D 2922, PROVIDED THAT CALIBRATION CURVES ARE PERIODICALLY CHECKED AND ADJUSTED TO CORRELATE TO TESTS PERFORMED USING ASTM D 1556. WITH EACH DENSITY CALIBRATION CHECK, CHECK THE CALIBRATION CURVES FURNISHED WITH THE MOISTURE GAGES ACCORDING TO ASTM D 3017. WHEN FIELD IN–PLACE DENSITY TESTS ARE PERFORMED USING NUCLEAR METHODS, MAKE CALIBRATION CHECKS OF BOTH DENSITY AND MOISTURE GAGES AT BEGINNING OF WORK, ON EACH DIFFERENT TYPE OF MATERIAL ENCOUNTERED, AND AT INTERVALS AS DIRECTED BY THE PROJECT REPRESENTATIVE.
34. FOOTING SUBGRADE: AT FOOTING SUBGRADES, PERFORM AT LEAST ONE TEST OF EACH SOIL STRATUM TO VERIFY DESIGN BEARING CAPACITIES. SUBSEQUENT VERIFICATION AND APPROVAL OF OTHER FOOTING SUBGRADES MAY BE BASED ON A VISUAL COMPARISON OF EACH SUBGRADE WITH RELATED TESTED STRATA WHEN ACCEPTABLE TO THE PROJECT REPRESENTATIVE.
35. PAVED AND BUILDING SLAB AREAS: AT SUBGRADE AND AT EACH COMPACTED FILL AND BACKFILL LAYER, PERFORM AT LEAST ONE FIELD IN–PLACE DENSITY TEST FOR EVERY 2,000 SQ. FT. OR LESS OF PAVED AREA OR BUILDING SLAB, BUT IN NO CASE FEWER THAN TWO TESTS.
36. TRENCH BACKFILL: IN EACH COMPACTED INITIAL AND FINAL BACKFILL LAYER, PERFORM AT LEAST ONE FIELD IN–PLACE DENSITY TEST FOR EACH 300 FEET OR LESS OF UTILITY TRENCH, BUT NO FEWER THAN TWO TESTS.
37. WHEN TESTING AGENCY REPORTS THAT SUBGRADES, FILLS, OR BACKFILLS ARE BELOW SPECIFIED DENSITY, SCARIFY AND MOISTEN OR AERATE, OR REMOVE AND REPLACE SOIL TO THE DEPTH REQUIRED, RECOMPACT AND RETEST UNTIL REQUIRED DENSITY IS OBTAINED.
38. EXISTING UTILITIES: DO NOT INTERRUPT UTILITIES SERVING FACILITIES OCCUPIED BY OWNER OR OTHERS UNLESS PERMITTED IN WRITING BY PROJECT REPRESENTATIVE AND THEN ONLY AFTER ARRANGING TO PROVIDE TEMPORARY UTILITY SERVICES ACCORDING TO REQUIREMENTS INDICATED:
   a. NOTIFY ENGINEER NOT LESS THAN TWO DAYS IN ADVANCE OF PROPOSED UTILITY INTERRUPTIONS.
   b. DO NOT PROCEED WITH UTILITY INTERRUPTIONS WITHOUT ENGINEER WRITTEN PERMISSION.
   c. CONTACT UTILTY–LOCATOR SERVICE FOR AREA WHERE PROJECT IS LOCATED BEFORE EXCAVATING.
39. DEMOLISH AND COMPLETELY REMOVE FROM SITE EXISTING UNDERGROUND UTILITIES INDICATED TO BE REMOVED. COORDINATE WITH UTILITY COMPANIES TO SHUT OFF SERVICES IF LINES ARE ACTIVE.
40. EXPLOSIVES: DO NOT USE EXPLOSIVES.
41. AREA OF BUILDINGS PLUS A MARGIN OF 10' ON ALL SIDES SHALL BE CLEARED AND GRUBBED TO REMOVE AND DISPOSE OF ANY SURFACE VEGETATION, ROOTS, AND DEBRIS UNLESS PLANS SPECIFICALLY NOTE OTHERWISE.
42. RECONSTRUCT SUBGRADES DAMAGED BY FREEZING TEMPERATURES, FROST, RAIN, ACCUMULATED WATER, OR CONSTRUCTION ACTIVITIES, AS DIRECTED BY ARCHITECT.

STORM SEWER SYSTEM

1. EXCEPT AS OTHERWISE PROVIDED, ALL STORM SEWER MATERIALS SHALL COMPLY WITH THE APPLICABLE SECTIONS OF THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" CURRENT EDITION WHICH ARE HEREBY INCORPORATED INTO THESE SPECIFICATIONS BY REFERENCE. FURTHER, ALL CONSTRUCTION DETAILS INCLUDED IN THE CURRENT EDITION OF FDOT'S "ROADWAY AND TRAFFIC DESIGN STANDARDS" ARE INCORPORATED INTO THESE SPECIFICATIONS BY REFERENCE.
2. FOR PIPES SMALLER THAN 12": SELECTION OF MATERIALS SPECIFIED BELOW IS AT THE INSTALLER'S OPTION.
   a. POLYVINYL CHLORIDE (PVC), ASTM D–3034, SDR 35 PIPE AND FITTINGS. FITTINGS SHALL BE WITH RUBBER GASKETED JOINTS.
   b. CORRUGATED POLYETHYLENE PIPE (CPEP) IN ACCORDANCE WITH AASHTO M294 AND ASTM D–3350. CPEP SHALL HAVE A SMOOTH INTERIOR.
3. FOR PIPES 12" AND LARGER: REINFORCED CONCRETE PIPE(RCP): FDOT SECTION 941, ROUND OR ELLIPTICAL PER DWG. PLANS, STANDARD CLASS III CONCRETE CULVERT PIPE UNLESS CLASS IV PIPE IS CALLED FOR.
4. FDOT SECTION 425. USE STEEL GRATES ON ALL INLETS, TRAFFIC BEARING.
5. ADHERE TO MANUFACTURER'S RECOMMENDATIONS ON THE INSTALLATION OF PVC, CPEP, AND RCP STORM SEWERS.
12. PRIOR TO FINAL ACCEPTANCE, THE SEWER COLLECTION SYSTEM SHALL BE THOROUGHLY CLEANED AND VISUALLY INSPECTED IN THE PRESENCE OF THE ENGINEER AND LOCAL AUTHORITIES HAVING JURISDICTION.
13. FOLLOWING VISUAL INSPECTION, THE SEWER SYSTEM INCLUDING SERVICE LINES SHALL BE TESTED IN THE PRESENCE OF THE ENGINEER AND LOCAL AUTHORITIES HAVING JURISDICTION.
14. ACCEPTABLE METHODS OF TESTING SHALL BE LOW PRESSURE AIR EXFILTRATION OR WATER EXFILTRATION IN ACCORDANCE WITH THE LOCAL AUTHORITY REQUIREMENTS.
15. THE CONTRACTOR SHALL FURNISH ALL NECESSARY TOOLS, SUPPLIES, LABOR AND EQUIPMENT FOR TESTING.
16. LOW PRESSURE AIR EXFILTRATION TESTING SHALL BE IN ACCORDANCE WITH UNI–BELL, UNI–B–6.
17. WATER EXFILTRATION TESTING SHALL BE IN ACCORDANCE WITH UNI–BELL, UNI–B–5.
18. VISUAL INSPECTION AND TESTING SHALL BE PERFORMED ON THE SAME DAY. NOTIFY ENGINEER AND PERMIT AGENCY OF JURISDICTION MINIMUM 72 HOURS OF WEEKDAYS NOTICE.

WATER DISTRIBUTION AND SERVICE PIPING

1. ALL VERTICAL AND HORIZONTAL SPACING BETWEEN WATER DISTRIBUTION SYSTEMS AND SEWAGE COLLECTION SYSTEMS AND/OR STORM SEWER SYSTEMS ARE TO COMPLY WITH THE LATEST FDEP STANDARDS.
2. CODE COMPLIANCE: COMPLY WITH APPLICABLE PORTIONS OF NATIONAL STANDARD PLUMBING CODE, LOCAL PLUMBING CODES LOCAL MUNICIPALITY WITH JURISDICTION CONSTRUCTION STANDARDS AND DETAILS, THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, AND NFPA 24.
3. POLYVINYL CHLORIDE(PVC) PRESSURE PIPE UNDER 4" SHALL BE MINIMUM PRESSURE CLASS OF 200 PSI SCHEDULE 80 CONFORMING TO ASTM D–1785 OR SDR 21 CONFORMING TO ASTM D–2241 WITH CEMENT–SOLVENT WELDED JOINTS OR PUSH ON ELASTOMERIC JOINTS. MARK PIPE WITH "NSF–PW" ACCORDING TO NSF14.
4. CONTROL VALVES: PROVIDE VALVES AND FLOW CONTROL DEVICES AS INDICATED.
   a. MINIMUM WORKING PRESSURE, 200 PSI UNLESS OTHERWISE INDICATED.
   b. VALVE BOXES: SHALL BE OF CAST IRON WITH ADJUSTABLE TOP. THE SIZE SHALL BE LARGE ENOUGH FOR OPERATION OF THE VALVE ON WHICH IT IS USED WITH A MINIMUM SHAFT DIAMETER OF 5–1/4". THE COVER SHALL HAVE THE WORD "WATER" CAST ON IT.
   c. GATE VALVES (SMALLER THAN 4"): FOR ABOVE GROUND INSTALLATION, VALVES SHALL BE NON–RISING STEM, HANDWHEEL OPERATED, WEDGE DISCS, ALL BRONZE WITH FLANGED ENDS, CONFORMING TO FED. SPEC. WW–V–54, CLASS B, TYPE 1. FOR BELOW GROUND INSTALLATION, VALVES SHALL BE FURNISHED WITH MECHANICAL JOINT ENDS OR IRON PIPE THREAD AND 2" SQUARE OPERATING NUT.
5. WATER SERVICE PIPING: EXTEND WATER SERVICE PIPING OF SIZE AND IN LOCATIONS INDICATED TO WATER SERVICE ENTRANCE AT BUILDINGS. PROVIDE SLEEVE IN FOUNDATION WALL FOR WATER SERVICE ENTRY; MAKE ENTRY WATERTIGHT.
6. POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS: INSTALL IN ACCORDANCE WITH UNI–BELL HANDBOOK OF PVC PIPE.
7. CONTROL VALVES: INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
8. INTERIOR INSPECTION: INSPECT CONDUIT TO DETERMINE WHETHER LINE PLACEMENT OR OTHER DAMAGE HAS OCCURRED.
9. IF THE INSPECTION INDICATES POOR ALIGNMENT, DEBRIS, DISPLACED PIPE, INFILTRATION OR OTHER DEFECTS, CORRECT SUCH DEFECTS TO SATISFACTION OF ENGINEER AND PERMITTING AGENCIES HAVING JURISDICTION.
10. CLEANING CONDUIT: CLEAR INTERIOR OF CONDUIT OF DIRT AND OTHER SUPERFLUOUS MATERIAL AS WORK PROGRESSES. MAINTAIN SWAB OR DRAG IN LINE AND PULL PAST EACH JOINT AS IT IS COMPLETED.
11. PLACE PLUGS IN END OF UNCOMPLETED PIPE AT END OF DAY OR WHENEVER WORK STOPS.
12. DISINFECTION: AT COMPLETION OF WATER SERVICE LINE INSTALLATION, FLUSH AND DISINFECT IN CONFORMANCE WITH AWWA C–651, TO THE SATISFACTION OF LOCAL AUTHORITIES HAVING JURISDICTION.
13. HYDROSTATIC AND LEAKAGE TEST: ALL SITE WATER DISTRIBUTION PIPING SHALL BE TESTED AFTER INSTALLATION. DUCTILE IRON PIPE SHALL BE TESTED IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF AWWA STANDARD C–600, AND PVC PIPE SHALL BE TESTED IN ACCORDANCE WITH THE APPLICABLE PORTIONS OF AWWA STANDARD C–603. ACCEPTABLE LEAKAGE MUST BE LESS THAN THE NUMBER OF GALLONS PER HOUR AS DETERMINED BY THE FORMULAS IN AWWA C–600 AND C–605.
14. THE POTABLE WATER LINES SHALL BE TESTED TO 150 PSI TEST PRESSURE AND THE FIRE LINE SHALL BE TESTED TO 200 PSI TEST PRESSURE, BOTH FOR TWO (2) HOURS DURATION. ALL GAUGES AND APPURTENANCES NECESSARY SHALL BE FURNISHED BY THE CONTRACTOR. ALL LEAKS SHALL BE REPAIRED BY REMOVING AND REPLACING DEFECTIVE PIPE AND JOINTS WITH PIPE AND JOINTS FREE OF DEFECTS, AFTER WHICH THE LINES SHALL BE RETESTED. SUCH REPAIR AND RETESTING SHALL BE DONE UNTIL THE LINES PASS THE SPECIFIED TEST.
15. ALL VALVES SHALL BE HYDROSTATICALLY TESTED WITH THE LINE IN WHICH THEY ARE INSTALLED.
16. PERFORM OPERATION TESTING OF HYDRANTS AND VALVES BY OPENING AND CLOSING UNDER WATER PRESSURE TO ENSURE PROPER OPERATION.

FDEP SEPARATION NOTES:

1. HORIZONTAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, RECLAIMED WATER PIPELINES, AND ON–SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS.
   a. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C.
   b. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED VACUUM–TYPE SANITARY SEWER.
   c. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY– OR PRESSURE–TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C. THE MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY–TYPE SANITARY SEWERS SHALL BE REDUCED TO THREE FEET WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER.
   d. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST TEN FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND ALL PARTS OF ANY EXISTING OR PROPOSED "ON–SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM" AS DEFINED IN SECTION 381.0065(2), F.S., AND RULE 64E–6.002, F.A.C.(2)
2. VERTICAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, AND RECLAIMED WATER PIPELINES.
   a. NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED GRAVITY– OR VACUUM–TYPE SANITARY SEWER OR STORM SEWER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX INCHES, AND PREFERABLY 12 INCHES, ABOVE OR AT LEAST 12 INCHES BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.
   b. NEW OR RELOCATED, UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED PRESSURE–TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.
   c. AT THE UTILITY CROSSINGS DESCRIBED IN PARAGRAPHS (A) AND (B) ABOVE, ONE FULL LENGTH OF WATER MAIN PIPE SHALL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM–TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C., AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY– OR PRESSURE–TYPE SANITARY SEWERS, WASTEWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C.(3)
3. SEPARATION BETWEEN WATER MAINS AND SANITARY OR STORM SEWER MANHOLES
   a. NO WATER MAIN SHALL PASS THROUGH, OR COME INTO CONTACT WITH, ANY PART OF A SANITARY SEWER MANHOLE.
   b. EFFECTIVE AUGUST 28, 2003, WATER MAINS SHALL NOT BE CONSTRUCTED OR ALTERED TO PASS THROUGH, OR COME INTO CONTACT WITH, ANY PART OF A STORM SEWER MANHOLE OR INLET STRUCTURE. WHERE IT IS NOT TECHNICALLY FEASIBLE OR ECONOMICALLY SENSIBLE TO COMPLY WITH THIS REQUIREMENT (I.E., WHERE THERE IS A CONFLICT IN THE ROUTING OF A WATER MAIN AND A STORM SEWER AND WHERE ALTERNATIVE ROUTING OF THE WATER MAIN OR THE STORM SEWER IS NOT TECHNICALLY FEASIBLE OR IS NOT ECONOMICALLY SENSIBLE), THE DEPARTMENT SHALL ALLOW EXCEPTIONS TO THIS REQUIREMENT (I.E., THE DEPARTMENT SHALL ALLOW CONSTRUCTION OF CONFLICT MANHOLES), BUT SUPPLIERS OF WATER OR PERSONS PROPOSING TO CONSTRUCT CONFLICT MANHOLES MUST FIRST OBTAIN A SPECIFIC PERMIT FROM THE DEPARTMENT IN ACCORDANCE WITH PART V OF THIS CHAPTER AND MUST PROVIDE IN THE PRELIMINARY DESIGN REPORT OR DRAWINGS, SPECIFICATIONS, AND DESIGN DATA ACCOMPANYING THEIR PERMIT APPLICATION THE FOLLOWING INFORMATION:
      1. TECHNICAL OR ECONOMIC JUSTIFICATION FOR EACH CONFLICT MANHOLE.
      2. A STATEMENT IDENTIFYING THE PARTY RESPONSIBLE FOR MAINTAINING EACH CONFLICT MANHOLE.
      3. ASSURANCE OF COMPLIANCE WITH THE DESIGN AND CONSTRUCTION REQUIREMENTS IN SUB–SUBPARAGRAPHS a. THROUGH d. BELOW.
         a. EACH WATER MAIN PASSING THROUGH A CONFLICT MANHOLE SHALL HAVE A FLEXIBLE, WATERTIGHT JOINT ON EACH SIDE OF THE MANHOLE TO ACCOMMODATE DIFFERENTIAL SETTLING BETWEEN THE MAIN AND THE MANHOLE.
         b. WITHIN EACH CONFLICT MANHOLE, THE WATER MAIN PASSING THROUGH THE MANHOLE SHALL BE INSTALLED IN A WATERTIGHT CASING PIPE HAVING HIGH IMPACT STRENGTH (I.E., HAVING AN IMPACT STRENGTH AT LEAST EQUAL TO THAT OF 0.25–INCH–THICK DUCTILE IRON PIPE).
         c. EACH CONFLICT MANHOLE SHALL HAVE AN ACCESS OPENING, AND SHALL BE SIZED, TO ALLOW FOR EASY CLEANING OF THE MANHOLE.
         d. GRATINGS SHALL BE INSTALLED AT ALL STORM SEWER INLETS UPSTREAM OF EACH CONFLICT MANHOLE TO PREVENT LARGE OBJECTS FROM ENTERING THE MANHOLE.
4. SEPARATION BETWEEN FIRE HYDRANT DRAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, RECLAIMED WATER PIPELINES, AND ON–SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS. NEW OR RELOCATED FIRE HYDRANTS WITH UNDERGROUND DRAINS SHALL BE LOCATED SO THAT THE DRAINS ARE AT LEAST THREE FEET FROM ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C.; AT LEAST THREE FEET, AND PREFERABLY TEN FEET, FROM ANY EXISTING OR PROPOSED VACUUM–TYPE SANITARY SEWER; AT LEAST SIX FEET, AND PREFERABLY TEN FEET, FROM ANY EXISTING OR PROPOSED GRAVITY– OR PRESSURE–TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C.; AND AT LEAST TEN FEET FROM ANY EXISTING OR PROPOSED "ON–SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM" AS DEFINED IN SECTION 381.0065(2), F.S., AND RULE 64E–6.002, F.A.C. HORIZONTAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, RECLAIMED WATER PIPELINES, AND ON–SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS.
   a. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C.
   b. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED VACUUM–TYPE SANITARY SEWER.
   c. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY– OR PRESSURE–TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C. THE MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY–TYPE SANITARY SEWERS SHALL BE REDUCED TO THREE FEET WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER.
   d. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST TEN FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND ALL PARTS OF ANY EXISTING OR PROPOSED "ON–SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM" AS DEFINED IN SECTION 381.0065(2), F.S., AND RULE 64E–6.002, F.A.C.(2)
5. THE CONTRACTOR IS TO CONTACT THE ENGINEER TO RESOLVE ALL SEPARATION PROBLEMS ENCOUNTERED IN THE FIELD. NOTE: MOST STRINGENT LOCAL, STATE AND FEDERAL RULES TO APPLY.

SEWAGE COLLECTION SYSTEM

1. ALL VERTICAL AND HORIZONTAL SPACING BETWEEN SEWAGE COLLECTION SYSTEMS AND WATER DISTRIBUTION SYSTEMS AND/OR STORM SEWER SYSTEMS ARE TO COMPLY WITH THE LATEST FDEP STANDARDS.
2. ADHERE TO MANUFACTURER'S RECOMMENDATIONS ON THE INSTALLATION OF PVC, CPEP, AND RCP STORM SEWERS.
3. GENERAL: ALL PVC SEWER SHALL BE INSTALLED IN ACCORDANCE WITH UNI–BELL, UNI–B–5.
4. PIPE PREPARATION AND HANDLING: INSPECT ALL PIPE AND FITTINGS PRIOR TO LOWERING INTO TRENCH TO ENSURE NOT CRACKED, BROKEN, OR OTHERWISE DEFECTIVE MATERIALS ARE BEING USED. CLEAN ENDS OF PIPE THOROUGHLY. REMOVE FOREIGN MATTER AND DIRT FROM INSIDE OF PIPE AND KEEP CLEAN DURING AND AFTER LAYING. REMOVE ALL DAMAGED PIPE FROM THE JOB SITE.
5. GRAVITY SEWER PIPE: ALL SEWER LINES BETWEEN MANHOLES SHALL BE ABSOLUTELY STRAIGHT AND TRUE. NO CURVATURE SHALL BE TOLERATED. DO NOT DEVIATE FROM LINE OR GRADE, AS ESTABLISHED BY THE ENGINEER, MORE THAN 1/2" FOR LINE AND 1/4" FOR GRADE, PROVIDED THAT SUCH VARIATION DOES NOT RESULT IN A LEVEL OR REVERSE SLOPING INVERT.
6. LAYING AND JOINTING PIPE: PIPE LAYING SHALL PROCEED UPGRADE WITH SPIGOT ENDS POINTING IN DIRECTION OF FLOW. AFTER A SECTION OF PIPE HAS BEEN LOWERED INTO THE PREPARED TRENCH, CLEAN THE END OF THE PIPE TO BE JOINED, THE INSIDE OF THE JOINT, AND THE RUBBER RING IMMEDIATELY BEFORE JOINING THE PIPE. MAKE ASSEMBLY OF THE JOINT IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE TYPE OF JOINT USED. PROVIDE ALL SPECIAL TOOLS AND APPLIANCES REQUIRED FOR THE JOINTING ASSEMBLY.
7. TAKE THE NECESSARY PRECAUTIONS REQUIRED TO PREVENT EXCAVATED OR OTHER FOREIGN MATERIAL FROM GETTING INTO THE PIPE DURING THE LAYING OPERATION. AT ALL TIMES, WHEN LAYING OPERATIONS ARE NOT IN PROGRESS, AT THE CLOSE OF THE DAY'S WORK, OR WHENEVER THE WORKERS ARE ABSENT FROM THE JOB, CLOSE AND BLOCK THE OPEN END OF THE LAST LAID SECTION OF PIPE TO PREVENT ENTRY OF FOREIGN MATERIAL OR CREEP OF THE GASKETED JOINTS.
8. PLUG OR CLOSE OFF PIPES WHICH ARE STUBBED OFF FOR MANHOLE CONSTRUCTION OR FOR CONSTRUCTION BY OTHERS, WITH TEMPORARY PLUGS.
9. WHERE NONREINFORCED PIPE IS CONNECTED TO MANHOLES OR CONCRETE STRUCTURES, MAKE CONNECTION SO THAT THE STANDARD PIPE JOINT IS LOCATED NOT MORE THAN 3' FROM THE OUTSIDE EDGE OF THE STRUCTURE.
10. WHEN CUTTING AND/OR MACHINING THE PIPE IS NECESSARY, USE ONLY TOOLS AND METHODS RECOMMENDED BY THE PIPE MANUFACTURER.
11. UNDERGROUND STRUCTURES:
   a. ROCK BASE: PRIOR TO SETTING PRECAST CONCRETE BASE SECTION, REMOVE WATER FROM THE EXCAVATION. PLACE A MINIMUM OF 6" OF ROCK BASE AND THOROUGHLY COMPACT WITH A MECHANICAL VIBRATING OR POWER TAMPER.
   b. MANHOLE JOINT SEALS: CAREFULLY INSPECT PRECAST MANHOLE SECTIONS TO BE JOINED. SECTIONS WITH CHIPS OR CRACKS IN THE TONGUE SHALL NOT BE USED. JOINT SEALS SHALL BE INSTALLED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ONLY PIPE PRIMER FURNISHED BY THE JOINT SEAL MANUFACTURER WILL BE APPROVED.
   c. PRECAST CONCRETE MANHOLES: PLACE PRECAST CONCRETE SECTIONS AS SHOWN ON THE DRAWINGS. WHERE MANHOLES OCCUR IN PAVEMENTS, SET TIPS OF FRAMES AND COVERS FLUSH WITH FINISH SURFACE. ELSEWHERE, SET TOPS 3" ABOVE FINISH SURFACE, UNLESS OTHERWISE INDICATED.
   d. MANHOLE INVERT: CONSTRUCT MANHOLE INVERTS IN CONFORMANCE WITH DETAILS SHOWN ON THE DRAWINGS, AND WITH SMOOTH TRANSITIONS TO ENSURE AN UNOBSTRUCTED FLOW THROUGH MANHOLE. REMOVE ALL SHARP EDGES OR ROUGH SECTIONS WHICH TEND TO OBSTRUCT FLOW. WHERE A FULL SECTIONS OF PIPE IS LAID THROUGH A MANHOLE, BREAK OUT THE TOP SECTION AS INDICATED AND COVER EXPOSED EDGE OF PIPE COMPLETELY WITH MORTAR. TROWEL ALL MORTAR SURFACES SMOOTH.
   e. PROVIDE RUBBER JOINT GASKET COMPLYING WITH ASTM C–443.
   f. APPLY BITUMINOUS MASTIC COATING AT JOINTS OF SECTIONS.

MASONRY UNIT PAVERS

PART 1 – GENERAL

DESCRIPTION OF WORK:
THE WORK INCLUDES FURNISHING AND INSTALLING BRICK PAVERS WHERE NOTED ON THE PLANS.

SUBMITTALS:
IN ACCORDANCE WITH SECTION 01 33 00, SUBMITTALS, PROVIDE PRODUCT DATA AND INSTALLATION INSTRUCTIONS AND DETAILS.

PART 2 – PRODUCTS

MANUFACTURER:
PRODUCTS IDENTIFIED HEREIN ARE BASED ON THOSE AS MANUFACTURED BY TREMRON/MIAMI, MIAMI, FLORIDA (800) 567–1480. SIMILAR PRODUCTS BY OTHER MANUFACTURERS WHICH MEET OR EXCEED THE SPECIFICATIONS OR THOSE QUALITIES IMPLIED BY REFERENCE TO THE PARTICULAR MANUFACTURER, MAY BE CONSIDERED UP TO SEVEN (7) DAYS PRIOR TO THE BID DATE.

MATERIALS:

UNIT PAVER: STANDARD CONCRETE UNIT PAVERS AS MANUFACTURED BY TREMRON/MIAMI.

PAVER SIZE NOMINAL 4" X 8" X 2 3/8"

PAVER STYLE/PATTERN: OLD BARCELONA ROSE SEE DETAIL DRAWING.

BASE: NORMAL WEIGHT CONCRETE SAND FOR BEDDING COURSE ON THE CONCRETE SUB–BASE.

SUB–BASE: STABILIZED EARTH

PART 3 – EXECUTION

INSTALLATION – GENERAL:
EXCAVATE UNSUITABLE, UNSTABLE OR UNCONSOLIDATED SUBGRADE MATERIAL AND COMPACT THE AREA WHICH HAS BEEN CLEARED. THEN BACKFILL AND LEVEL WITH DENSE GRADED MATERIAL (FOR LIGHT VEHICULAR AND PEDESTRIAN TRAFFIC) OR AS OTHERWISE DIRECTED BY SITE ENGINEER/ARCHITECT/ LANDSCAPE ARCHITECT. FORM CONCRETE CURB SIDES OF CONCRETE SIDEWALK BASE IN A STRAIGHT AND REGULAR MANNER. LOCATE EXPANSION JOINTS IN A MANNER SIMILAR TO CONVENTIONAL SIDEWALKS.

INSTALL PAVER UNITS WITH JOINTS AS RECOMMENDED FOR THE PATTERN. WHERE REQUIRED, CUT PAVERS WITH AN APPROVED CUTTER TO FIT ACCURATELY, NEATLY AND WITHOUT DAMAGED EDGES.

FILL VOIDS IN JOINTS BY SWEEPING IN DRY MASONRY SAND.

DECORATIVE FENCING SYSTEM & GATES

PART 1 – GENERAL

WORK INCLUDED:
THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND APPURTENANCES NECESSARY FOR INSTALLATION OF THE ORNAMENTAL METAL FENCING SYSTEM AND GATES DEFINED HEREIN AND SHOWN ON THE DRAWING.

PROVIDE FENCING TO CLOSE OFF WALKWAY ON WEST SIDE OF BUILDING.

SUBMITTALS:
IN ACCORDANCE WITH SPECIFICATION SECTION 01 33 00, SUBMITTALS, PROVIDE PRODUCT DATA, SHOP DRAWINGS AND INSTALLATION GUIDE FOR THE PRODUCTS SPECIFIED.

PART 2 – PRODUCTS

MANUFACTURER:

THIS SPECIFICATION IS BASED ON PRODUCTS MANUFACTURED BY AMERISTAR, TULSA, OKLAHOMA, WWW.AMERISTARFENCE.COM . SIMILAR PRODUCTS OF EQUAL OR GREATER QUALITY WILL BE CONSIDERED.

MODEL:
TYPE: AMERISTAR – AEGIS II (HEAVY INDUSTRIAL STEEL ORNAMENTAL SYSTEM)

STYLE: 3–RAIL, WITH SPEAR SHAPED PICKET EXTENDING ABOVE THE TOP RAIL

SIZE: HEIGHT 9'0" AND 6'0"

PICKET SPACING: NOT GREATER THAN 4" CLEAR

MATERIAL:
THE MATERIAL FOR FENCE FRAMEWORK (I.E., PICKETS, RAILS AND POSTS) SHALL BE MANUFACTURED FROM COIL STEEL HAVING A MINIMUM YIELD STRENGTH OF 45,000 PSI. THE STEEL SHALL BE GALVANIZED TO MEET THE REQUIREMENTS OF ASTM A653 WITH A MINIMUM ZINC COATING WEIGHT OF .90 OUNCES PER SQUARE FOOT (HOT–DIP PROCESS).

GALVANIZED FRAMEWORK SHALL BE SUBJECT TO SIX STAGE PRETREATMENT/WASH (WITH ZINC PHOSPHATE) FOLLOWED BY AN ELECTROSTATIC SPRAY APPLICATION OF A TWO COAT POWDER SYSTEM. THE BASE COAT IS A THERMOSETTING EPOXY POWDER COATING (GRAY IN COLOR) WITH A MINIMUM THICKNESS OF 2–4 MILS. THE TOP COAT IS A "NO–MAR" TGIC POLYESTER POWDER COAT FINISH WITH A MINIMUM THICKNESS OF 2–4 MILS. COATED GALVANIZED FRAMEWORK SHALL HAVE A SALT SPRAY RESISTANCE OF 3,500 HOURS USING ASTM B117 TEST METHOD WITHOUT LOSS OF ADHESION.

COLORS:
COLOR SHALL BE THAT SELECTED BY THE ARCHITECT TO MATCH THE BLUE BCC COLOR.

PICKET:
MATERIAL FOR FENCE PICKETS SHALL BE 1" SQUARE X 14 GA. TUBING. THE CROSS–SECTIONAL SHAPE OF THE RAILS SHALL CONFORM TO THE MANUFACTURER'S DOUBLE WALL DESIGN, WITH OUTSIDE CROSS–SECTION DIMENSIONS OF 1.75" SQUARE AND A MINIMUM THICKNESS OF 14 GA. PICKET HOLES IN THE RAIL SHALL BE SPACED 4.98" O.C. PICKET RETAINING RODS SHALL BE 0.125" DIAMETER GALVANIZED STEEL.

POST:
POSTS SHALL BE A MINIMUM OF 3" SQUARE X 12 GA. STEEL TUBING WITH SIZE PER MANUFACTURER'S CHART BASED ON THE HEIGHT. HIGH QUALITY PVC GROMMETS SHALL BE SUPPLIED TO SEAL ALL PICKET–TO–RAIL INTERSECTIONS.

SWING GATES SHALL BE FABRICATED USING 1.75" X 14 GA. FORERUNNER DOUBLE CHANNEL RAIL, 1.75" SQ. X 14 GA. GATE ENDS, AND 1" SQ. X 14 GA. PICKETS. GATES THAT EXCEED 6' IN WIDTH WILL HAVE A 1.75" SQ. X 14 GA. INTERMEDIATE UPRIGHT.

FABRICATION:
PICKETS, RAILS AND POSTS SHALL BE PRE–CUT TO SPECIFIED LENGTHS. RAILS SHALL BE PRE–PUNCHED TO ACCEPT PICKETS. GROMMETS SHALL BE INSERTED INTO THE PRE–PUNCHED HOLES IN THE RAILS AND PICKETS SHALL BE INSERTED THROUGH GROMMETS SO THAT PRE–DRILLED PICKET HOLES ALIGN WITH THE INTERNAL UPPER RACEWAY OF THE RAILS.

COMPLETED SECTIONS SHALL BE CAPABLE OF SUPPORTING A 600 LB. LOAD APPLIED AT MIDSPAN WITHOUT PERMANENT DEFORMATION.

GATES SHALL BE FABRICATED USING PANEL MATERIAL AND GATE ENDS HAVING THE SAME OUTSIDE CROSS–SECTION DIMENSIONS AS THE RAIL. EACH UPRIGHT AND RAIL INTERSECTION SHALL BE JOINED BY WELDING. EACH PICKET AND RAIL INTERSECTION SHALL ALSO BE JOINED BY WELDING.

PART 3 – EXECUTION

PREPARATION:
ALL NEW INSTALLATION SHALL BE LAID OUT BY CONTRACTOR IN ACCORDANCE WITH THE CONSTRUCTION PLANS.

INSTALLATION:
FENCE POST SHALL BE SPACED ACCORDING TO MANUFACTURER'S TABLE 3, PLUS OR MINUS 1/2". FENCE PANELS SHALL BE ATTACHED TO POSTS WITH BRACKETS SUPPLIED BY THE MANUFACTURER. POSTS SHALL BE SET IN CONCRETE FOOTERS HAVING A MINIMUM DEPTH OF 36".

GATE POSTS SHALL BE SPACED ACCORDING TO THE MANUFACTURER'S GATE DRAWINGS, DEPENDENT ON STANDARD OUT–TO–OUT GATE LEAF DIMENSIONS AND GATE HARDWARE SELECTED. TYPE AND QUANTITY OF GATE HINGES SHALL BE BASED ON THE APPLICATION; WEIGHT, HEIGHT, AND NUMBER OF GATE CYCLES. THE MANUFACTURER'S GATE DRAWINGS SHALL IDENTIFY THE NECESSARY GATE HARDWARE REQUIRED FOR THE APPLICATION. GATE HARDWARE SHALL BE PROVIDED BY THE MANUFACTURER OF THE GATE AND SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

WHEN CUTTING/DRILLING RAILS OR POSTS ADHERE TO THE FOLLOWING STEPS TO SEAL THE EXPOSED STEEL SURFACES:
1) REMOVE ALL METAL SHAVINGS FROM CUT AREA. 2) APPLY ZINC–RICH PRIMER TO THOROUGHLY COVER CUT EDGE AND/OR DRILLED HOLE; LET DRY. 3) APPLY 2 COATS OF CUSTOM FINISH PAINT MATCHING FENCE COLOR. FAILURE TO SEAL EXPOSED SURFACES PER STEPS 1–3 ABOVE WILL NEGATE WARRANTY. AMERISTAR SPRAY CANS OR PAINT PENS SHALL BE USED TO PRIME AND FINISH EXPOSED SURFACES; IT IS RECOMMENDED THAT PAINT PENS BE USED TO PREVENT OVERSPRAY. USE OF NON–AMERISTAR PARTS OR COMPONENTS WILL NEGATE THE MANUFACTURER'S WARRANTY.

CLEANING:
THE CONTRACTOR SHALL CLEAN THE JOB SITE OF EXCESS MATERIALS. POST HOLE EXCAVATIONS SHALL BE SCATTERED UNIFORMLY AWAY FROM POSTS.

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ENGINEER OF RECORD

REVISIONS AND UPDATES

07/01/15		100% CONSTRUCTION DOCUMENTS

CAPE CANAVERAL LIGHTHOUSE FOUNDATION
LIGHTHOUSE KEEPER'S COTTAGES
LIGHTHOUSE RD CAPE CANAVERAL AFS, FL

SPECIFICATIONS

drawn DHF
checked JTW
approved DMT

AA-C001568

job no. 130232
C-5
SCALE: NTS

ARCHITECTS RZK, INC.
600 FLORIDA AVENUE SUITE 202 COCOA, FLORIDA 32922 TELEPHONE (321) 631–8039

CONCRETE

1. ALL CONCRETE STRENGTHS SHALL BE AS FOLLOWS WITH BROOM FINISH UNLESS IDENTIFIED OTHERWISE:
   FOUNDATIONS & SLABS ON GRADE ___ 3000 PSI
   MASONRY GROUT AND UNREINFORCED CONCRETE ___ 3000 PSI
2. ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615 GRADE 60 (FY=60 KSI).
3. ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 AND SHALL BE LAPPED ONE FULL MESH PANEL PLUS 2 IN. AT SIDES AND ENDS AND BE WIRED TOGETHER. FIBER MESH MAY BE SUBSTITUTED PER DIRECTION OF ENGINEER AT REQUEST OF CONTRACTOR.
4. CALCIUM CHLORIDE SHALL NOT BE USED IN ANY FORM.
5. ADDITION OF WATER TO CONCRETE AT THE JOB SITE SHALL BE PROHIBITED.
6. ALL CONCRETE WORK SHALL COMPLY WITH PROVISIONS OF ACI 318, 315, AND 301, LATEST EDITIONS, UNLESS OTHERWISE NOTED.
7. REINFORCING FOR CONTINUOUS FOUNDATIONS AND BEAMS SHALL BE CONTINUOUS AT CORNERS AND INTERSECTIONS. PROVIDE SPLICE BARS AND/OR HOOK ENDS FOR CONTINUOUS REINFORCING.
8. MINIMUM CONCRETE PROTECTION FOR REINFORCING BARS:

STRUCTURAL ELEMENT	MIN CLEAR COVER
FOOTINGS, (CAST AGAINST & PERMANENTLY EXPOSED TO EARTH)	3 INCHES
SLABS (IN CONTACT WITH EARTH)	2 INCHES

FDEP WATER SPECIFICATIONS

1. ALL PIPE, PIPE FITTINGS, PIPE JOINT PACKING AND JOINTING MATERIALS, VALVES, FIRE HYDRANTS, AND METERS INSTALLED UNDER THIS PROJECT WILL CONFORM TO APPLICABLE AMERICAN WATER WORKS ASSOCIATION (AWWA) STANDARDS. [FAC 62–555.320(21)(B), RSWW 8.0, AND AWWA STANDARDS AS INCORPORATED INTO FAC 62–555.330; EXCEPTIONS ALLOWED UNDER FAC 62–555.320(21)(C)]
2. ALL PUBLIC WATER SYSTEM COMPONENTS, EXCLUDING FIRE HYDRANTS, THAT WILL BE INSTALLED UNDER THIS PROJECT AND THAT WILL COME INTO CONTACT WITH DRINKING WATER WILL CONFORM TO NSF INTERNATIONAL STANDARD 61 AS ADOPTED IN RULE 62–555.335, F.A.C., OR OTHER APPLICABLE STANDARDS, REGULATIONS, OR REQUIREMENTS REFERENCED IN PARAGRAPH 62–555.320(3)(B), F.A.C. [FAC 62–555.320(3)(B); EXCEPTIONS ALLOWED UNDER FAC 62–555.320(3)(D)]
3. ALL PIPE AND PIPE FITTINGS INSTALLED UNDER THIS PROJECT WILL CONTAIN NO MORE THAN 8.0% LEAD, AND ANY SOLDER OR FLUX USED IN THIS PROJECT WILL CONTAIN NO MORE THAN 0.2% LEAD. [FAC 62–555.322]
4. ALL PIPE AND PIPE FITTINGS INSTALLED UNDER THIS PROJECT WILL BE COLOR CODED OR MARKED IN ACCORDANCE WITH SUBPARAGRAPH 62–555.320(21)(B)3, F.A.C., USING BLUE AS A PREDOMINANT COLOR. (UNDERGROUND PLASTIC PIPE WILL BE SOLID–WALL BLUE PIPE, WILL HAVE A CO–EXTRUDED BLUE EXTERNAL SKIN, OR WILL BE WHITE OR BLACK PIPE WITH BLUE STRIPES INCORPORATED INTO, OR APPLIED TO, THE PIPE WALL; AND UNDERGROUND METAL OR CONCRETE PIPE WILL HAVE BLUE STRIPES APPLIED TO THE PIPE WALL. PIPE STRIPED DURING MANUFACTURING OF THE PIPE WILL HAVE CONTINUOUS STRIPES THAT RUN PARALLEL TO THE AXIS OF THE PIPE, THAT ARE LOCATED AT NO GREATER THAN 90–DEGREE INTERVALS AROUND THE PIPE, AND THAT WILL REMAIN INTACT DURING AND AFTER INSTALLATION OF THE PIPE. IF TAPE OR PAINT IS USED TO STRIPE PIPE DURING INSTALLATION OF THE PIPE, THE TAPE OR PAINT WILL BE APPLIED IN A CONTINUOUS LINE THAT RUNS PARALLEL TO THE AXIS OF THE PIPE AND THAT IS LOCATED ALONG THE TOP OF THE PIPE; FOR PIPE WITH AN INTERNAL DIAMETER OF 24 INCHES OR GREATER, TAPE OR PAINT WILL BE APPLIED IN CONTINUOUS LINES ALONG EACH SIDE OF THE PIPE AS WELL AS ALONG THE TOP OF THE PIPE. ABOVEGROUND PIPE WILL BE PAINTED BLUE OR WILL BE COLOR CODED OR MARKED LIKE UNDERGROUND PIPE.) [FAC 62–555.320(21)(B)3]
5. ALL FIRE HYDRANTS THAT WILL BE INSTALLED UNDER THIS PROJECT AND THAT WILL HAVE UNPLUGGED, UNDERGROUND DRAINS WILL BE LOCATED AT LEAST THREE FEET FROM ANY EXISTING OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, PIPELINE CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C., OR VACUUM–TYPE SANITARY SEWER; AT LEAST SIX FEET FROM ANY EXISTING OR PROPOSED GRAVITY– OR PRESSURE–TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62–10, F.A.C.; AND AT LEAST TEN FEET FROM ANY EXISTING OR PROPOSED "ON–SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM." [FAC 62–555.314(4)]
6. NEW OR ALTERED CHAMBERS, PITS, OR MANHOLES THAT CONTAIN VALVES, BLOW–OFFS, METERS, OR OTHER SUCH WATER DISTRIBUTION SYSTEM APPURTENANCES AND THAT ARE INCLUDED IN THIS PROJECT WILL NOT BE CONNECTED DIRECTLY TO ANY SANITARY OR STORM SEWER, AND BLOW–OFFS OR AIR RELIEF VALVES INSTALLED UNDER THIS PROJECT WILL NOT BE CONNECTED DIRECTLY TO ANY SANITARY OR STORM SEWER. [FAC 62–555.320(21)(B) AND RSWW 8.4.3]
7. NEW OR ALTERED WATER MAINS INCLUDED IN THIS PROJECT WILL BE INSTALLED IN ACCORDANCE WITH APPLICABLE AWWA STANDARDS OR IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDED PROCEDURES. [FAC 62–555.320(21)(B), RSWW 8.5.1, AND AWWA STANDARDS AS INCORPORATED INTO FAC 62–555.330]
8. A CONTINUOUS AND UNIFORM BEDDING WILL BE PROVIDED IN TRENCHES FOR UNDERGROUND PIPE INSTALLED UNDER THIS PROJECT; BACKFILL MATERIAL WILL BE TAMPED IN LAYERS AROUND UNDERGROUND PIPE INSTALLED UNDER THIS PROJECT AND TO A SUFFICIENT HEIGHT ABOVE THE PIPE TO ADEQUATELY SUPPORT AND PROTECT THE PIPE; AND UNSUITABLY SIZED STONES (AS DESCRIBED IN APPLICABLE AWWA STANDARDS OR MANUFACTURERS' RECOMMENDED INSTALLATION PROCEDURES) FOUND IN TRENCHES WILL BE REMOVED FOR A DEPTH OF AT LEAST SIX INCHES BELOW THE BOTTOM OF UNDERGROUND PIPE INSTALLED UNDER THIS PROJECT. [FAC 62–555.320(21)(B), RSWW 8.5.2]
9. NEW OR ALTERED WATER MAINS THAT ARE INCLUDED IN THIS PROJECT AND THAT WILL BE CONSTRUCTED OF ASBESTOS–CEMENT OR POLYVINYL CHLORIDE PIPE WILL BE PRESSURE AND LEAKAGE TESTED IN ACCORDANCE WITH AWWA STANDARD C603 OR C605, RESPECTIVELY, AS INCORPORATED INTO RULE 62–555.330, F.A.C., AND ALL OTHER NEW OR ALTERED WATER MAINS INCLUDED IN THIS PROJECT WILL BE PRESSURE AND LEAKAGE TESTED IN ACCORDANCE WITH AWWA STANDARD C600 AS INCORPORATED INTO RULE 62–555.330. [FAC 62–555.320(21)(B)1 AND AWWA STANDARDS AS INCORPORATED INTO FAC 62–555.330]
10. NEW OR ALTERED WATER MAINS, INCLUDING FIRE HYDRANT LEADS AND INCLUDING SERVICE LINES THAT WILL BE UNDER THE CONTROL OF A PUBLIC WATER SYSTEM AND THAT HAVE AN INSIDE DIAMETER OF THREE INCHES OR GREATER, WILL BE DISINFECTED AND BACTERIOLOGICALLY EVALUATED IN ACCORDANCE WITH RULE 62–555.340, F.A.C. [FAC 62–555.320(21)(B)2 AND FAC 62–555.340]
11. NEW OR ALTERED WATER MAINS THAT ARE INCLUDED IN THIS PROJECT AND THAT WILL BE INSTALLED IN AREAS WHERE THERE ARE KNOWN AGGRESSIVE SOIL CONDITIONS WILL BE PROTECTED THROUGH USE OF CORROSION–RESISTANT WATER MAIN MATERIALS, THROUGH ENCASEMENT OF THE WATER MAINS IN POLYETHYLENE, OR THROUGH PROVISION OF CATHODIC PROTECTION. [FAC 62–555.320(21)(B) AND RSWW 8.5.7.D]
12. NEW OR RELOCATED, UNDERGROUND WATER MAINS INCLUDED IN THIS PROJECT WILL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED VACUUM–TYPE SANITARY SEWER, STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C.; A HORIZONTAL DISTANCE OF AT LEAST SIX FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY–TYPE SANITARY SEWER (OR A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY–TYPE SANITARY SEWER IF THE BOTTOM OF THE WATER MAIN WILL BE LAID AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER); A HORIZONTAL DISTANCE OF AT LEAST SIX FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED PRESSURE–TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C.; AND A HORIZONTAL DISTANCE OF AT LEAST TEN FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND ALL PARTS OF ANY EXISTING OR PROPOSED "ON–SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM." [FAC 62–555.314(1); EXCEPTIONS ALLOWED UNDER FAC 62–555.314(5)]
13. NEW OR RELOCATED, UNDERGROUND WATER MAINS THAT ARE INCLUDED IN THIS PROJECT AND THAT WILL CROSS ANY EXISTING OR PROPOSED GRAVITY– OR VACUUM–TYPE SANITARY SEWER OR STORM SEWER WILL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX INCHES ABOVE THE OTHER PIPELINE OR AT LEAST 12 INCHES BELOW THE OTHER PIPELINE; AND NEW OR RELOCATED, UNDERGROUND WATER MAINS THAT ARE INCLUDED IN THIS PROJECT AND THAT WILL CROSS ANY EXISTING OR PROPOSED PRESSURE–TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER WILL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OTHER PIPELINE. [FAC 62–555.314(2); EXCEPTIONS ALLOWED UNDER FAC 62–555.314(5)]
14. AT THE UTILITY CROSSINGS DESCRIBED IN PART II.C.1.W ABOVE, ONE FULL LENGTH OF WATER MAIN PIPE WILL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE OR THE PIPES WILL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM–TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C., AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY– OR PRESSURE–TYPE SANITARY SEWERS, WASTEWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62–610, F.A.C. [FAC 62–555.314(2); EXCEPTIONS ALLOWED UNDER FAC 62–555.314(5)]
15. NEW OR ALTERED WATER MAINS THAT ARE INCLUDED IN THIS PROJECT AND THAT WILL CROSS UNDER SURFACE WATER COURSES GREATER THAN 15 FEET IN WIDTH WILL HAVE FLEXIBLE OR RESTRAINED, WATERTIGHT PIPE JOINTS AND WILL INCLUDE VALVES AT BOTH ENDS OF THE WATER CROSSING SO THE UNDERWATER MAIN CAN BE ISOLATED FOR TESTING AND REPAIR; THE AFOREMENTIONED ISOLATION VALVES WILL BE EASILY ACCESSIBLE AND WILL NOT BE SUBJECT TO FLOODING; THE ISOLATION VALVE CLOSEST TO THE WATER SUPPLY SOURCE WILL BE IN A MANHOLE; AND PERMANENT TAPS WILL BE PROVIDED ON EACH SIDE OF THE ISOLATION VALVE WITHIN THE MANHOLE TO ALLOW FOR INSERTION OF A SMALL METER TO DETERMINE LEAKAGE FROM THE UNDERWATER MAIN AND TO ALLOW FOR SAMPLING OF WATER FROM THE UNDERWATER MAIN. [FAC 62–555.320(21)(B) AND RSWW 8.7.2]
16. THIS PROJECT IS BEING DESIGNED TO INCLUDE PROPER BACKFLOW PROTECTION AT THOSE NEW OR ALTERED SERVICE CONNECTIONS WHERE BACKFLOW PROTECTION IS REQUIRED OR RECOMMENDED UNDER RULE 62–555.360, F.A.C., OR IN RECOMMENDED PRACTICE FOR BACKFLOW PREVENTION AND CROSS–CONNECTION CONTROL, AWWA MANUAL M14, AS INCORPORATED INTO RULE 62–555.330, F.A.C.; OR THE PUBLIC WATER SYSTEM THAT WILL OWN THIS PROJECT AFTER IT IS PLACED INTO OPERATION HAS A CROSS–CONNECTION CONTROL PROGRAM REQUIRING WATER CUSTOMERS TO INSTALL PROPER BACKFLOW PROTECTION AT THOSE SERVICE CONNECTIONS WHERE BACKFLOW PROTECTION IS REQUIRED OR RECOMMENDED UNDER RULE 62–555.360, F.A.C., OR IN AWWA MANUAL M14. [FAC 62–555.360 AND AWWA MANUAL M14 AS INCORPORATED INTO FAC 62–555.330]
17. NEITHER STEAM CONDENSATE, COOLING WATER FROM ENGINE JACKETS, NOR WATER USED IN CONJUNCTION WITH HEAT EXCHANGERS WILL BE RETURNED TO THE NEW OR ALTERED WATER MAINS INCLUDED IN THIS PROJECT. [FAC 62–555.320(21)(B) AND RSWW 8.8.2]

FDEP WASTEWATER SPECIFICATIONS

1. APPROPRIATE DEFLECTION TESTS ARE SPECIFIED FOR ALL FLEXIBLE PIPE. TESTING IS REQUIRED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS TO PERMIT STABILIZATION OF THE SOIL–PIPE SYSTEM. TESTING REQUIREMENTS SPECIFY: 1) NO PIPE SHALL EXCEED A DEFLECTION OF 5%; 2) USING A RIGID BALL OR MANDREL FOR THE DEFLECTION TEST WITH A DIAMETER NOT LESS THAN 95% OF THE BASE INSIDE DIAMETER OR AVERAGE INSIDE DIAMETER OF THE PIPE, DEPENDING ON WHICH IS SPECIFIED IN THE ASTM SPECIFICATION, INCLUDING THE APPENDIX, TO WHICH THE PIPE IS MANUFACTURED; AND 3) PERFORMING THE TEST WITHOUT MECHANICAL PULLING DEVICES. [RSWF 33.85]
2. LEAKAGE TESTS ARE SPECIFIED REQUIRING THAT: 1) THE LEAKAGE EXFILTRATION OR INFILTRATION DOES NOT EXCEED 200 GALLONS PER INCH OF PIPE DIAMETER PER MILE PER DAY FOR ANY SECTION OF THE SYSTEM; 2) EXFILTRATION OR INFILTRATION TESTS BE PERFORMED WITH A MINIMUM POSITIVE HEAD OF 2 FEET; AND 3) AIR TESTS, AS A MINIMUM, CONFORM TO THE TEST PROCEDURE DESCRIBED IN ASTM C–828 FOR CLAY PIPE, ASTM C 924 FOR CONCRETE PIPE, ASTM F–1417 FOR PLASTIC PIPE, AND FOR OTHER MATERIALS APPROPRIATE TEST PROCEDURES. [RSWF 33.93, 33.94, AND 33.95]
3. DESIGN REQUIRES DROP PIPES TO BE PROVIDED FOR SEWERS ENTERING MANHOLES AT ELEVATIONS OF 24 INCHES OR MORE ABOVE THE MANHOLE INVERT. WHERE THE DIFFERENCE IN ELEVATION BETWEEN THE INCOMING SEWER AND THE MANHOLE INVERT IS LESS THAN 24 INCHES, THE INVERT IS DESIGNED WITH A FILLET TO PREVENT SOLIDS DEPOSITION. INSIDE DROP CONNECTIONS (WHEN NECESSARY) ARE DESIGNED TO BE SECURED TO THE INTERIOR WALL OF THE MANHOLE AND PROVIDE ACCESS FOR CLEANING. DESIGN REQUIRES THE ENTIRE OUTSIDE DROP CONNECTION BE ENCASED IN CONCRETE. [RSWF 34.2]
4. DESIGN REQUIRES THAT A BENCH BE PROVIDED ON EACH SIDE OF ANY MANHOLE CHANNEL WHEN THE PIPE DIAMETER(S) ARE LESS THAN THE MANHOLE DIAMETER AND THAT NO LATERAL SEWER, SERVICE CONNECTION, OR DROP MANHOLE PIPE DISCHARGES ONTO THE SURFACE OF THE BENCH. [RSWF 34.5]
5. DESIGN REQUIRES: 1) MANHOLE LIFT HOLES AND GRADE ADJUSTMENT RINGS BE SEALED WITH NON–SHRINKING MORTAR OR OTHER APPROPRIATE MATERIAL; 2) INLET AND OUTLET PIPES BE JOINED TO THE MANHOLE WITH A GASKETED FLEXIBLE WATERTIGHT CONNECTION OR ANOTHER WATERTIGHT CONNECTION ARRANGEMENT THAT ALLOWS DIFFERENTIAL SETTLEMENT OF THE PIPE AND MANHOLE WALL; AND 3) WATERTIGHT MANHOLE COVERS BE USED WHEREVER THE MANHOLE TOPS MAY BE FLOODED BY STREET RUNOFF OR HIGH WATER. [RSWF 34.6]
6. MANHOLE INSPECTION AND TESTING FOR WATERTIGHTNESS OR DAMAGE PRIOR TO PLACING INTO SERVICE ARE SPECIFIED. AIR TESTING, IF SPECIFIED FOR CONCRETE SEWER MANHOLES, CONFORMS TO THE TEST PROCEDURES DESCRIBED IN ASTM C–1244. [RSWF 34.7]
7. THE DESIGN REQUIRES 1) ELECTRICAL SYSTEMS AND COMPONENTS (E.G., MOTORS, LIGHTS, CABLES, CONDUITS, SWITCH BOXES, CONTROL CIRCUITS, ETC.) IN RAW WASTEWATER WET WELLS, OR IN ENCLOSED OR PARTIALLY ENCLOSED SPACES WHERE HAZARDOUS CONCENTRATIONS OF FLAMMABLE GASES OR VAPORS MAY BE PRESENT, COMPLY WITH THE NATIONAL ELECTRICAL CODE REQUIREMENTS FOR CLASS I GROUP D, DIVISION 1 LOCATIONS; 2) ELECTRICAL EQUIPMENT LOCATED IN WET WELLS BE SUITABLE FOR USE UNDER CORROSIVE CONDITIONS; 3) EACH FLEXIBLE CABLE BE PROVIDED WITH A WATERTIGHT SEAL AND SEPARATE STRAIN RELIEF; 4) A FUSED DISCONNECT SWITCH LOCATED ABOVE GROUND BE PROVIDED FOR THE MAIN POWER FEED FOR ALL PUMP STATIONS; 5) ELECTRICAL EQUIPMENT EXPOSED TO WEATHER TO MEET THE REQUIREMENTS OF WEATHERPROOF EQUIPMENT NEMA 3R OR 4; 6) A 110 VOLT POWER RECEPTACLE TO FACILITATE MAINTENANCE BE PROVIDED INSIDE THE CONTROL PANEL FOR PUMP STATIONS THAT HAVE CONTROL PANELS OUTDOORS; AND 7) GROUND FAULT INTERRUPTION PROTECTION BE PROVIDED FOR ALL OUTDOOR OUTLETS. [RSWF 42.35]
8. THE DESIGN REQUIRES WET WELL FLOORS HAVE A MINIMUM SLOPE OF 1 TO 1 TO THE HOPPER BOTTOM AND THE HORIZONTAL AREA OF HOPPER BOTTOMS BE NO GREATER THAN NECESSARY FOR PROPER INSTALLATION AND FUNCTION OF THE INLET. [RSWF 42.63]
9. THE DESIGN REQUIRES PUMP STATIONS BE ENCLOSED WITH A FENCE OR OTHERWISE DESIGNED WITH APPROPRIATE FEATURES TO DISCOURAGE THE ENTRY OF ANIMALS AND UNAUTHORIZED PERSONS. POSTING OF AN UNOBSTRUCTED SIGN MADE OF DURABLE WEATHER RESISTANT MATERIAL AT A LOCATION VISIBLE TO THE PUBLIC WITH A TELEPHONE NUMBER FOR A POINT OF CONTACT IN CASE OF EMERGENCY IS SPECIFIED. [62–604.400(2)(D), F.A.C.]
10. IN SUBMERSIBLE PUMP STATIONS, THE DESIGN REQUIRES: 1) PUMP MOTOR POWER CORDS BE FLEXIBLE AND SERVICEABLE UNDER CONDITIONS OF EXTRA HARD USAGE AND TO MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE STANDARDS FOR FLEXIBLE CORDS IN WASTEWATER PUMP STATIONS; 2) GROUND FAULT INTERRUPTION PROTECTION BE USED TO DE ENERGIZE THE CIRCUIT IN THE EVENT OF ANY FAILURE IN THE ELECTRICAL INTEGRITY OF THE CABLE; AND 3) POWER CORD TERMINAL FITTINGS BE CORROSION–RESISTANT AND CONSTRUCTED IN A MANNER TO PREVENT THE ENTRY OF MOISTURE INTO THE CABLE, PROVIDED WITH STRAIN RELIEF APPURTENANCES, AND DESIGNED TO FACILITATE FIELD CONNECTING. [RSWF 44.33]
11. THE DESIGN REQUIRES: 1) EMERGENCY STANDBY SYSTEMS TO HAVE SUFFICIENT CAPACITY TO START UP AND MAINTAIN THE TOTAL RATED RUNNING CAPACITY OF THE STATION, INCLUDING LIGHTING, VENTILATION, AND OTHER AUXILIARY EQUIPMENT NECESSARY FOR SAFETY AND PROPER OPERATION; 2) SPECIAL SEQUENCING CONTROLS BE PROVIDED TO START PUMP MOTORS UNLESS THE GENERATING EQUIPMENT HAS CAPACITY TO START ALL PUMPS SIMULTANEOUSLY WITH AUXILIARY EQUIPMENT OPERATING; 3) A RISER FROM THE FORCE MAIN WITH RAPID CONNECTION CAPABILITIES AND APPROPRIATE VALVING BE PROVIDED FOR ALL PUMP STATIONS TO HOOK UP PORTABLE PUMPS; AND 4) ALL PUMP STATION RELIABILITY DESIGN FEATURES BE COMPATIBLE WITH THE AVAILABLE TEMPORARY SERVICE POWER GENERATING AND PUMPING EQUIPMENT OF THE AUTHORITY RESPONSIBLE FOR OPERATION AND MAINTENANCE OF THE COLLECTION/TRANSMISSION SYSTEM. [62–604.400(2)(A)3., F.A.C., AND RSWF 46.431]
12. THE DESIGN PROVIDES FOR EMERGENCY EQUIPMENT TO BE PROTECTED FROM OPERATION CONDITIONS THAT WOULD RESULT IN DAMAGE TO THE EQUIPMENT AND FROM DAMAGE AT THE RESTORATION OF REGULAR ELECTRICAL POWER. [RSWF 46.411, 46.417, AND 46.432]
13. FOR PERMANENTLY–INSTALLED OR PORTABLE ENGINE–DRIVEN PUMPS ARE USED, THE DESIGN INCLUDES PROVISIONS FOR MANUAL START–UP. [RSWF 46.422]
14. WHERE INDEPENDENT SUBSTATIONS ARE USED FOR EMERGENCY POWER, EACH SEPARATE SUBSTATION AND ITS ASSOCIATED TRANSMISSION LINES IS DESIGNED TO BE CAPABLE OF STARTING AND OPERATING THE PUMP STATION AT ITS RATED CAPACITY. [RSWF 46.44]

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ENGINEER OF RECORD

REVISIONS AND UPDATES

07/01/15		100% CONSTRUCTION DOCUMENTS

CAPE CANAVERAL LIGHTHOUSE FOUNDATION
LIGHTHOUSE KEEPER'S COTTAGES
LIGHTHOUSE RD
CAPE CANAVERAL AFS, FL

SPECIFICATIONS

drawn DHF
checked JTW
approved DMT

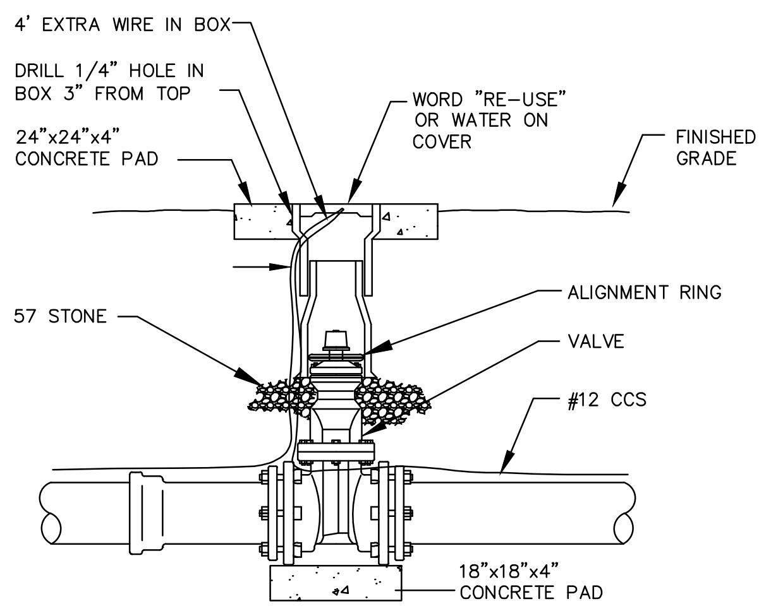
AA-C001568

job no. 130232
C-6
SCALE: NTS

ARCHITECTS RZK, INC.
600 FLORIDA AVENUE SUITE 202 COCOA, FLORIDA 32922 TELEPHONE (321) 631–8039

GATE VALVE AND VALVE BOX DETAIL

NTS

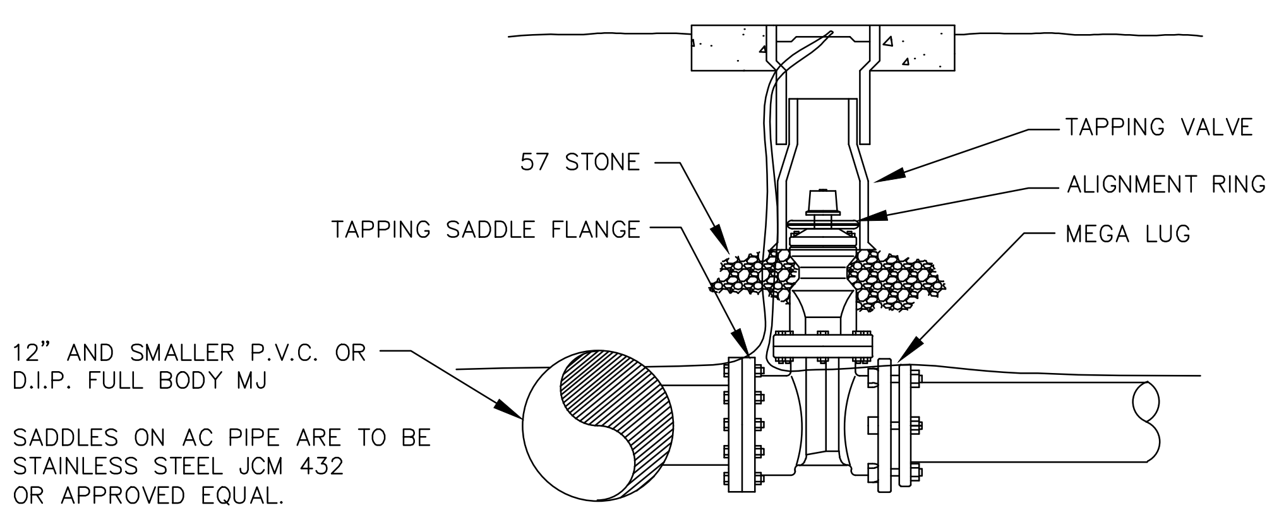


NOTES:

1. PVC PIPE OR DUCTILE IRON PIPE EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION.
2. IF THE DEPTH OF THE VALVE NUT IS GREATER THAN 48" BELOW GRADE, OR 30" BELOW GRADE AND UNDER THE WATER TABLE, A VALVE EXTENTION WILL BE REQUIRED. SEE VALVE EXTENSION STEM DETAIL.
3. PROVIDE A PLASTIC DEBRIS SHIELD/ALIGNMENT RING WHICH INSTALLS BELOW THE VALVE ACTUATING NUT. THIS SHIELD SHALL CENTER THE RISER PIPE BOX OVER THE ACTUATING NUT AND MINIMIZE INFILTRATION.
4. LOCATING WIRE SHALL BE CONTINUOUS WITH NO SPLICES AND SHALL EXTEND 24" ABOVE TOP OF COLLAR. WIRE SHALL BE COLOR CODED TO MATCH THE UTILITY INSTALLED.
5. FOR NEW CONSTRUCTION, THE VALVE BOX SHALL BE ADJUSTED TO MIDRANGE TO ALLOW FOR FUTURE BOX ADJUSTMENTS.

THIS DETAIL APPLIES TO ALL BURIED VALVES.

CITY OF COCOA Brevard County, Florida UTILITIES DEPARTMENT ENGINEERING DIVISION	**GATE VALVE AND VALVE BOX DETAIL**	DRAWN BY: J. WILLIAMS	SCALE: NOT TO SCALE
		CHECKED BY: T. TURNER	DATE: SEPTEMBER, 2013
		DESIGN BY:	SHEET: 1 OF 1
		ACAD NAME: GATE VALVE & VALVE BOX DETAIL	



12" AND SMALLER P.V.C. OR D.I.P. FULL BODY MJ

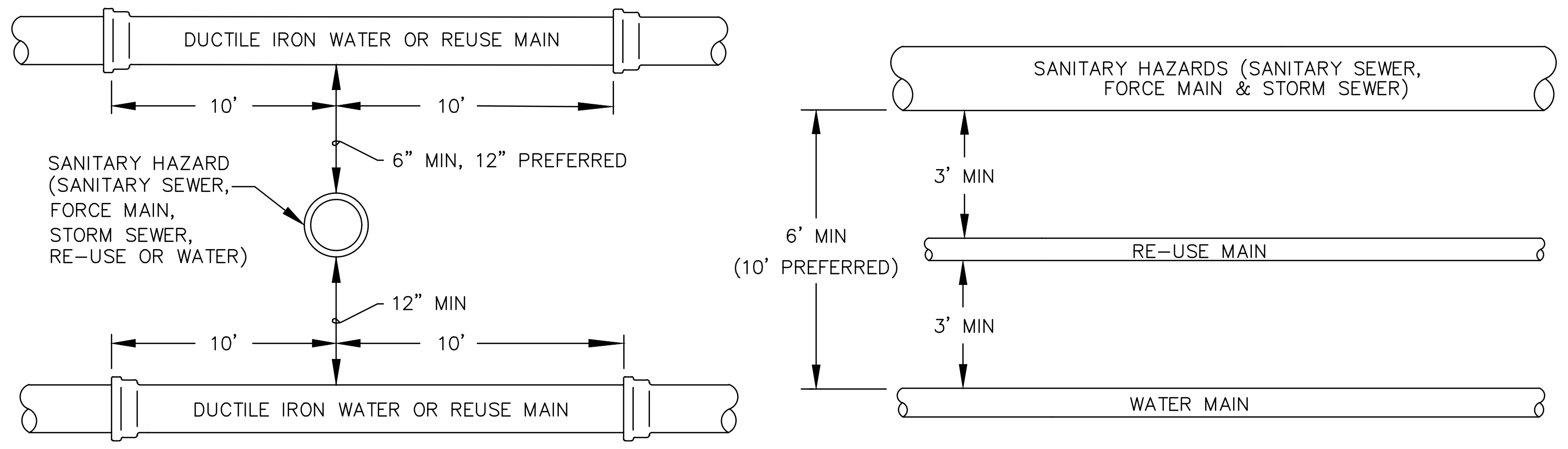
SADDLES ON AC PIPE ARE TO BE STAINLESS STEEL JCM 432 OR APPROVED EQUAL.

TAPPING SADDLE AND VALVE

NTS

CITY OF COCOA Brevard County, Florida UTILITIES DEPARTMENT ENGINEERING DIVISION	**TAPPING SADDLE AND VALVE**	DRAWN BY: J. WILLIAMS	SCALE: NOT TO SCALE
		CHECKED BY: T. TURNER	DATE: SEPTEMBER, 2013
		DESIGN BY:	SHEET: 1 OF 1
		ACAD NAME: TAPPING SADDLE AND VALVE	

30" or > PIPE MAY BE PVC PER CITY SPECIFICATIONS
30" TO 24" PIPE TO BE DIP PER CITY SPECIFICATIONS



VERTICAL CLEARANCE

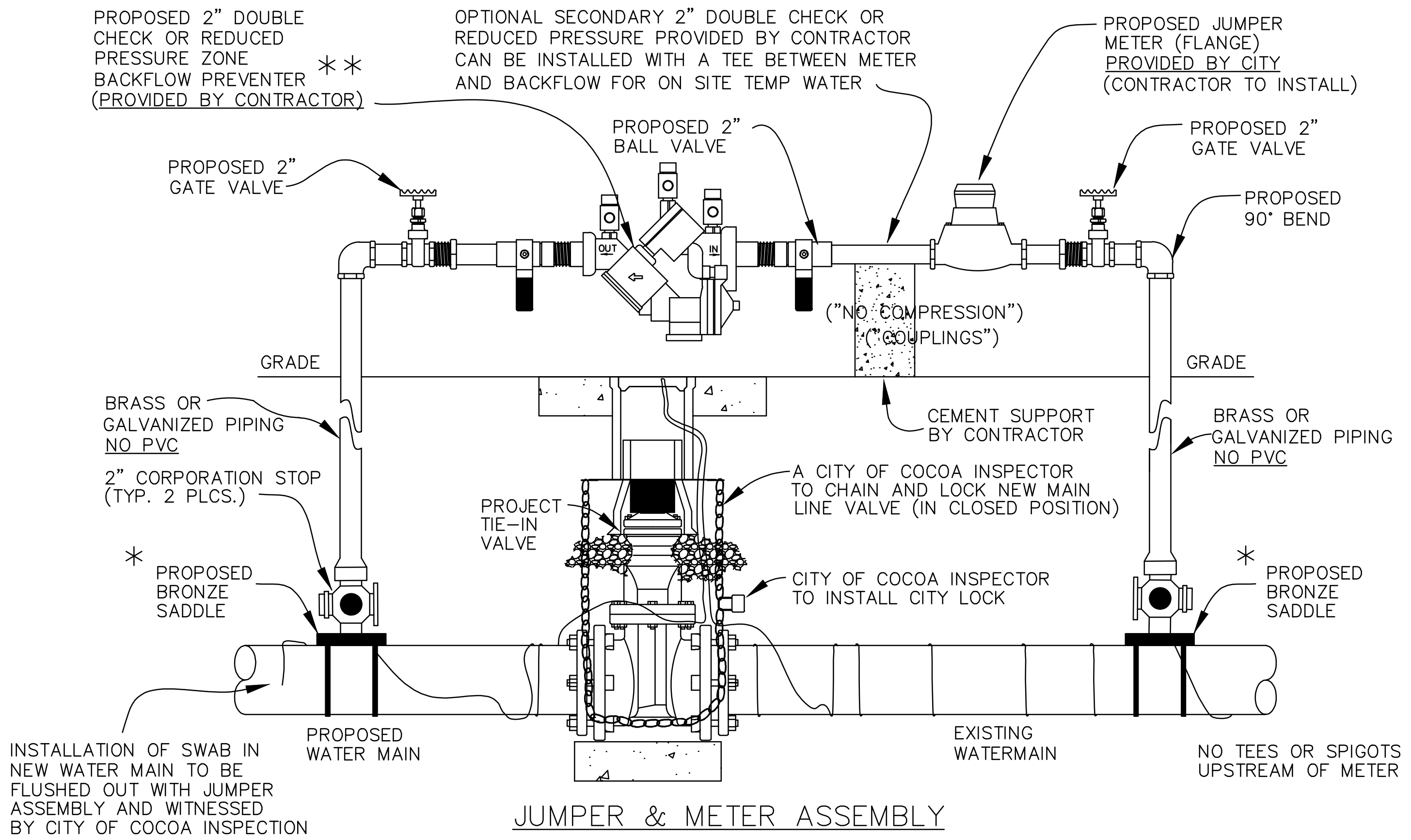
HORIZONTAL CLEARANCE

TYPICAL REQUIRED SEPARATION

NTS

PER FDEP 62-555.314

CITY OF COCOA Brevard County, Florida UTILITIES DEPARTMENT ENGINEERING DIVISION	**TYPICAL REQUIRED SEPARATION**	DRAWN BY: J. WILLIAMS	SCALE: NOT TO SCALE
		CHECKED BY: T. TURNER	DATE: SEPTEMBER, 2013
		DESIGN BY:	SHEET: 1 OF 1
		ACAD NAME: TYPICAL REQUIRED SEPARATION	



JUMPER & METER ASSEMBLY

NTS

** BACKFLOW PREVENTER TO BE TESTED AFTER INSTALLATION. CONTRACTOR TO PROVIDE TEST RESULTS TO INSPECTORS.

* INLET: AWWA TAPER ("CC") THREAD OUTLET: F.I.P. THREAD

NOTES:

1. REQUIRED AT ALL CONNECTIONS BETWEEN EXISTING ACTIVE WATER MAINS AND PROPOSED WATER MAIN IMPROVEMENTS.
2. ONLY EXCEPTION TO JUMPER AND METER ASSEMBLY IS INSTALLATION OF FIRE HYDRANT WHERE AN ANCHORING NIPPLE IS USED.

CITY OF COCOA Brevard County, Florida UTILITIES DEPARTMENT ENGINEERING DIVISION	**JUMPER & METER ASSEMBLY**	DRAWN BY: J. WILLIAMS	SCALE: NOT TO SCALE
		CHECKED BY: T. TURNER	DATE: SEPTEMBER, 2013
		DESIGN BY:	SHEET: 1 OF 1
		ACAD NAME: JUMPER & METER ASSEMBLY	

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CAPE CANAVERAL LIGHTHOUSE FOUNDATION
LIGHTHOUSE KEEPER'S COTTAGES

LIGHTHOUSE RD
CAPE CANAVERAL AFS, FL

CITY OF COCOA DETAILS - WATER

drawn DHF
checked JTW
approved DMT

job no. 130232

C-7

SCALE: NTS

AA-C001568

ARCHITECTS RZK, INC.
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1.1 SCOPE OF WORK

1.1.1 GENERAL

ALL POTABLE WATER AND RECLAIMED WATER MAINS AND APPURTENANCES MUST BE INSTALLED IN ACCORDANCE WITH THE CITY OF COCOA UTILITIES DEPARTMENT'S TECHNICAL PROVISIONS AND STANDARD DETAILS, THE CITY OF COCOA UTILITIES DEPARTMENT UTILITIES HANDBOOK AND THE APPROVED PLANS, FOR THE CONSTRUCTION OF THE WATER DISTRIBUTION SYSTEM AND THE WATER RECLAMATION SYSTEM. CONTRACTOR REQUIREMENTS INCLUDE:

- 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 PRE-CONSTRUCTION MEETING. IT IS REQUIRED THAT THE PRE-CONSTRUCTION MEETING BE HELD PRIOR TO ORDERING MATERIALS.
- SCHEDULING MATERIALS INSPECTION (24 HOURS 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.

ANY DEVIATION FROM THESE REQUIREMENTS MUST BE APPROVED IN WRITING BY THE UTILITIES DIRECTOR OR HIS DESIGNEE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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 DISPATCH TELEPHONE NUMBER IS (321) 433-8718; FACSIMILE NUMBER IS (321) 433-8708.

1.1.2 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. SOME CONTRACTORS ARE ONLY ALLOWED TO PERFORM .75" — 2.00" TAPS FOR THEMSELVES ON THEIR ON PROJECTS, THEY MAY NOT PERFORM TAPS FOR ANYBODY ELSE.

BACKFLOW PREVENTER ASSEMBLY — A BACKFLOW ASSEMBLY IS AN APPROVED, TESTABLE ASSEMBLY 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.

BONAFIDE TAPPING CONTRACTOR — MEANS THE CONTRACTOR IS IN THE BUSINESS OF DOING TAPS OR LINE STOPS.

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.

DISTRIBUTION MAIN — ANY WATER TWELVE INCHES (12") AND SMALLER.

DOMESTIC — MEANS MADE OR MANUFACTURED IN THE USA.

DRAINAGE DITCH OR IRRIGATION DITCH — A MAN-MADE TRENCH WHICH IS DUG FOR THE PURPOSE OF DRAINING 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 MAN-MADE TRENCH WHICH:
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 SO AS 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 DIVISIONS: ENGINEERING, INSPECTIONS, WFO, WASTEWATER. THE COMMITTEE EVALUATES AND PROPOSES REVISIONS FOR THE DESIGN STANDARDS, SPECIFICATIONS, DRAWINGS, PRODUCTS AND PROCEDURES FOR THE TPSD.
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).

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 DEPARTMENT, ENGINEERING DIVISION, "INSPECTIONS" MEANS CITY OF COCOA ENGINEERING INSPECTIONS DIVISION.

1.1.3 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
DIMENSION RATIO — DR
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 — FL
FACTORY MUTUAL — FM
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
POLYVINYLCHLORIDE — PVC
PORTABLE CHANGEABLE MESSAGE SIGNS — PCMS
PRECAUTIONARY BOIL WATER NOTICE — PBWN
PROJECT MANAGER — PM
POUNDS PER SQUARE INCH — PSI
RAISED PAVEMENT MARKER — RPM
REDUCED PRESSURE ZONE ASSEMBLY — RPZ
REINFORCED CONCRETE PIPE — RCP
STAINLESS STEEL — SS
TECHNICAL PROVISION AND STANDARD DETAILS — TPSD
TRAFFIC CONTROL PLAN — TCP
UNDERWRITERS LABORATORIES — UL
UNIFIED NUMBERING SYSTEM — UNS
UTILITIES DEPARTMENT — UD
VARIABLE FREQUENCY DRIVE — VFD

1.2 MATERIAL SPECIFICATIONS

1.1.1 PIPE

1.2.1.1 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.

1.2.1.2 FUSIBLE POLYVINYL CHLORIDE PIPE, 4" THRU 12"

POLYVINYL CHLORIDE PRESSURE PIPE (SIZE 4" THROUGH 12") WILL BE CAST IRON PIPE EQUIVALENT OUTSIDE DIAMETER AND A PRESSURE RATING OF 235 P.S.I. (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.

1.2.1.3 DUCTILE IRON PIPE

DUCTILE IRON PIPE WILL BE CEMENT-LINED PRESSURE CLASS 350 FOR 12-INCH DIAMETER AND SMALLER AND CLASS 250 FOR 14-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 THE UTILITIES 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.

1.2.1.4 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.

1.2.1.5 RECLAIMED WATER

PVC PIPE INSTALLED IN RECLAIMED 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 14" 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.

1.2.2 VALVES, VALVE BOXES AND VALVE EXTENSIONS

1.2.2.1 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.

1.2.2.2 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 FUSION BONDED 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 3 AND 4 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 HANDWHEEL. THE VALVE WILL OPEN WHEN THE OPERATOR NUT IS TURNED COUNTERCLOCKWISE. BUTTERFLY VALVES WILL NOT BE USED FOR BURIED SERVICE.

1.2.2.2 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.

1.2.2.3 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.

1.2.2.4 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.

1.2.2.5 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 ONE-PIECE DEVICE WILL BE ACCEPTED. THE DEVICE SHALL BE BOX LOK, AMERICAN OR APPROVED EQUAL.

1.2.2.2 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.

1.2.3 BACKFLOW PREVENTERS

1.2.3.1 FIRELINE CHECK VALVES

CHECK VALVES FOR FIRE LINE SYSTEMS WILL BE THE DOUBLE CHECK DETECTOR ASSEMBLIES (DCDA) MANUFACTURED BY FEBCO, WATTS, AMES, APOLLO OR WILKINS, IN ACCORDANCE WITH AWWA SPECIFICATION C510, ASSE 1048, UL 1469. CHECK VALVES MUST HAVE BRONZE SEATS. DCDA MUST BE SUPPLIED WITH A ¾-INCH BY-PASS ASSEMBLY. DCDA WILL BE ACCEPTED AS A COMPLETE APPROVED ASSEMBLY IN ACCORDANCE WITH THE SECTION ON "CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION" IN THE UTILITIES HANDBOOK. THE UTILITIES DEPARTMENT WILL INSPECT THE INTERIOR OF THE DCDA PRIOR TO INSTALLATION. DCDA MUST BE 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 BE ACCEPTED ON A CASE-BY-CASE BASIS. FIRE LINES REQUIRING AN RPZ WILL BE HANDLED ON A CASE BY CASE BASE. THE UTILITIES DEPARTMENT SHALL PAINT THE DCDA, TO BE PAID FOR BY THE DEVELOPER/CONTRACTOR.

1.2.3.2 METER STATION BACKFLOW PREVENTER

BACKFLOW PREVENTERS FOR THE LARGE METER STATIONS ARE A REDUCED PRESSURE ZONE ASSEMBLY AND MANUFACTURED IN ACCORDANCE WITH AWWA C-511. THE ASSEMBLY WILL BE INSTALLED SO AS THE RELIEF VALVE OPENING WILL BE A MINIMUM OF 12" ABOVE CONCRETE SLAB. IF THE METER STATION IS IN A PLANTER, THE TOP OF THE PLANTER IS CONSIDERED THE FLOOD RIM AND THE RELIEF VALVE OPENING SHALL BE 12" ABOVE THE FLOOD PLAIN RIM. THE UTILITIES DEPARTMENT SHALL PAINT THE METER STATION ASSEMBLY, TO BE PAID FOR BY THE DEVELOPER/CONTRACTOR.

1.2.3.3 BACKFLOW PREVENTER CERTIFICATION TEST

THE CONTRACTOR WILL PROVIDE TEST CERTIFICATIONS ON THE JUMPER BACKFLOW PREVENTER BEFORE JUMPER IS PLACED INTO SERVICE. BACKFLOW PREVENTERS ON FIRE-LINE AND METER STATIONS WILL HAVE TEST CERTIFICATIONS SUBMITTED AND APPROVED PRIOR TO FINAL INSPECTION.

1.2.4 FITTINGS

ALL FITTINGS MUST BE OF THE MECHANICAL JOINT TYPE WITH AN APPROVED JOINT RESTRAINT, OR PUSH-ON JOINT WITH A GASKET JOINT FIELD RESTRAINT SYSTEM, SUCH AS "FIELD LOK" AS MANUFACTURED BY U.S. PIPE OR AN APPROVED EQUAL. ALL FITTINGS MUST BE MANUFACTURED IN THE U.S.A.

1.2.4.1 CAST IRON

CAST IRON FITTINGS WILL BE AWWA SPECIFICATION C110; CLASS 250, CEMENT LINED WITH INSIDE SEAL COATING. THE FITTINGS WILL BE BITUMINOUS COATED ON THE OUTSIDE AND BE WRAPPED WITH 6 MIL POLYETHYLENE (SEALED WITH TAPE).

1.2.4.2 DUCTILE IRON, 4"-16"

DUCTILE IRON COMPACT FITTINGS (SIZES 4" THROUGH 16") MUST CONFORM TO AWWA SPECIFICATION C153. DUCTILE IRON COMPACT FITTINGS WILL BE MECHANICAL JOINT WITH AN INTERIOR CEMENT LINING WITH SEAL COATING AND AN EXTERIOR BITUMINOUS COATING. ALL FITTINGS WILL BE WRAPPED WITH 6 MILS POLYETHYLENE (SEALED WITH TAPE).

1.2.4.1 BOLTS

ALL BURIED MECHANICAL JOINT BOLTS AND NUTS MUST BE CORTEN STEEL. ALL ABOVE GROUND BOLTS AND NUTS FOR FLANGED FITTINGS MUST BE 18-8 TYPE 304 STAINLESS STEEL. NEVER-SEIZE/ANTI-SEIZE SHALL BE APPLIED TO ALL SS BOLTS AND NUTS.

1.2.4.2 TAPPING SLEEVE

TAPPING SLEEVES ON MAINS 4" TO 12" IN DIAMETER WILL BE DUCTILE IRON BODY MECHANICAL JOINT TYPE OR ALL STAINLESS STEEL SLEEVE.

THE ALL STAINLESS STEEL SLEEVE SHALL BE FABRICATED FROM 304 STAINLESS STEEL. THEY SHALL HAVE A PASS THROUGH BOLT DESIGN AND FULL CIRCUMFERENTIAL GASKET TO PROVIDE 360° SEAL AROUND THE PIPE. THE TAPPING SLEEVE IS TO BE FULLY PASSIVATED TO RETURN THE STAINLESS STEEL TO ITS HIGHEST CORROSION RESISTANCE STAGE.

SLEEVES ON MAINS 16" TO 24" IN DIAMETER WILL BE FABRICATED STEEL WITH O-RING SEAL, FUSION BONDED, EPOXY COATED WITH 304 STAINLESS STEEL NUTS AND BOLTS OR M.J. DUCTILE IRON BODY. SLEEVES ON MAINS 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. THE SLEEVES WILL HAVE A FUSION BONDED EPOXY COATING ON THE ENTIRE BODY AND THROAT ASSEMBLY. THE STRAPS AND BOLTS SHALL BE 18-8 TYPE 304 STAINLESS STEEL.

THE TAPPING VALVE MUST HAVE CENTERING RING AND CONFORM TO SECTION 2.2.1 -RESILIENT SEAT GATE VALVES IN THESE TECHNICAL PROVISIONS.

TAPPING SADDLES TO BE PLACED ON ASBESTOS CONCRETE (AC) PIPE SHALL BE A JCM 432 ALL STAINLESS STEEL SLEEVE OR EQUAL.

1.2.4.3 LINE STOP SLEEVE SPECIFICATIONS
SIZES 4" THROUGH 12"

SLEEVE/BODY

THE ENTIRE LINE STOP SLEEVE SHALL BE FABRICATED FROM 304 STAINLESS STEEL. THEY SHALL HAVE A PASS THROUGH BOLT DESIGN AND PROVIDE 360° SEAL AROUND THE PIPE. THE LINE STOP SLEEVE IS TO BE FULLY PASSIVATED TO RETURN THE STAINLESS STEEL TO ITS HIGHEST CORROSION RESISTANCE STAGE. OUTLET ON SLEEVE WILL BE FULL PORT, IE. ON 8" SLEEVE, OUTLET WILL BE 8", ON 6" SLEEVE, OUTLET WILL BE 6".

BOLTS, NUTS & WASHERS
18-8 TYPE 304 STAINLESS STEEL, THE BOLTS SHALL BE TRACK HEAD TYPE AND FURNISHED WITH PERMANENTLY LUBRICATED HEAVY-HEX NUTS AND STAINLESS WASHERS.

GASKET
THE FULL CIRCUMFERENTIAL GASKET SHALL BE MOLDED OF SYNTHETIC RUBBER COMPOUNDED FOR USE WITH WATER SALT SOLUTIONS, MILD ACIDS, BASES AND SEWAGE. THE GASKET SHALL HAVE A GRIDDED SURFACE, BE A FULL 1/4" THICK WITH 304 STAINLESS STEEL BRIDGE PLATES MOLDED FLUSH INTO THE GASKET AND HAVE A 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 A FULL CIRCUMFERENTIAL BREAK.

LINE STOP SLEEVES SHALL BE JCM 440 LINE STOP SLEEVE OR APPROVED EQUAL.

1.2.5 FIRE HYDRANTS

FIRE HYDRANTS MUST BE MANUFACTURED IN ACCORDANCE WITH AWWA SPECIFICATION C502. HYDRANTS MUST HAVE BRONZE-TO-BRONZE MAIN SEAT THREADING SURFACES. THEY WILL BE TRAFFIC TYPE WITH DRAIN HOLES PLUGGED AT THE FACTORY. FIRE HYDRANTS WILL HAVE 18-8 TYPE 304 STAINLESS STEEL BOLTS AND NUTS (BONNET, TRAFFIC FLANGE AND SHOE).

HYDRANTS WILL HAVE A MINIMUM 5-1/4" MAIN VALVE OPENING, WITH ONE 4-1/2" PUMPER NOZZLE, AND TWO 2-1/2" HOSE NOZZLES. NOZZLES TO HAVE NST THREADS. STEM COUPLINGS ARE TO BE CAST IRON OR STAINLESS STEEL. THE UPPER VALVE PLATE MUST BE BRONZE. THE HYDRANT SHOE WILL BE COATED INSIDE WITH FUSION BONDED EPOXY, 6 MIL MINIMUM. ALL HYDRANTS WILL BE PAINTED AT THE FACTORY WITH RUSTOLEUM HIGH-PERFORMANCE EPOXY 9100 SYSTEM, NON-LEAD, DRY FILM THICKNESS 5 TO 8 MILS, COLOR #9143 YELLOW. CITY CREWS WILL APPLY FINISH PAINT TO EACH NEW FIRE HYDRANT AFTER THE CONTRACTOR HAS PAID THE APPROPRIATE FEES.

FINISH GRADE IS TO BE ESTABLISHED AND THE PROPER LENGTH HYDRANT INSTALLED BE INSTALLED BY THE CONTRACTOR PRIOR TO ACCEPTANCE BY THE CITY. ALL NOZZLES WILL BE A MINIMUM OF 18" AND A MAXIMUM OF 24" ABOVE FINISHED GRADE. A 6" MECHANICAL JOINT HYDRANT CONNECTION WILL BE PROVIDED USING A HYDRANT VALVE-ANCHORING TEE WITH INTEGRALLY CAST STANDARD MECHANICAL JOINT GLAND ON 6" PLAIN END BRANCH. THE CONTRACTOR WILL NOT BE ALLOWED TO INSTALL RISERS ON HYDRANTS. AT FINAL INSPECTION, IF IT IS DETERMINED THAT A FIRE HYDRANT IS NOT AT GRADE, THE CONTRACTOR SHALL PURCHASE A PROPER LENGTH HYDRANT AND INSTALL IT UNDER THE DIRECTION OF UTILITIES INSPECTION DEPARTMENT.

1.2.6 SERVICE CONNECTIONS, 3/4"-2"

ALL SERVICE CONNECTIONS WILL BE SINGLE CONNECTIONS. SERVICES THAT ARE 3/4" AND 1" ARE TO BE TYPE K ANNEALED TEMPER SOFT COPPER. ALL CONNECTIONS ARE TO BE OF THE FLARE TYPE. 1-1/2" AND 2" SERVICES ARE TO BE OF TYPE K DRAWN TEMPER IN STRAIGHT LENGTHS OR ANNEALED TEMPER IF FURNISHED IN COILS. ABSOLUTELY NO LEAD-BASED SOLDER JOINTS WILL BE ACCEPTED. ANY REPAIRS OF SERVICE LINES WILL BE BY FLARE-TO-FLARE COUPLING. NO COMPRESSION FITTINGS WILL BE ACCEPTED. TAPS IN THE PIPE WILL BE THE SAME NOMINAL DIAMETER AS THE SERVICE LINE. SERVICE TAPS IN PVC PIPE WILL BE DRILLED WITH A SHELLCUTTER DESIGNED TO CUT PVC PIPE, THE PVC PLUG WILL BE REMOVED.

ON JANUARY 4, 2014 THE FOLLOWING SPECIFICATIONS WILL BE IN EFFECT FOR ALL BRASS FITTINGS IN CONTACT WITH POTABLE WATER.

BRASS GOODS FURNISHED UNDER THIS SPECIFICATION SHALL BE NEW AND UNUSED. ALL FITTINGS SHALL CONFORM TO ANSI/AWWA STANDARD C800, LATEST REVISION.

ALL BRASS COMPONENTS IN CONTACT WITH POTABLE WATER MUST BE MADE FROM EITHER CDA/UNS BRASS ALLOYS C89520 OR C89833 WITH A MAXIMUM LEAD CONTENT OF .25% BY WEIGHT. BRASS ALLOYS NOT LISTED IN ANSI/AWWA C800 PARAGRAPH 4.1.2 ARE NOT APPROVED. ALL SERVICE FITTINGS SHALL BE CERTIFIED AS SUITABLE FOR CONTACT WITH DRINKING WATER BY AN ANSI ACCREDITED ORGANIZATION IN ACCORDANCE WITH ANSI/NSF STANDARD 61. ALL FITTINGS SHALL BE STAMPED OR EMBOSSED WITH A MARK OR NAME INDICATING THAT THE PRODUCT IS MANUFACTURED FROM THE LOW-LEAD ALLOY AS SPECIFIED ABOVE.

BRASS SADDLES SHALL BE MADE FROM CDA/UNS C83600 AND ARE EXEMPT FROM THE "NO LEAD" REQUIREMENT.

1.2.6.1 SADDLES

SADDLES MUST BE USED FOR ALL CONNECTIONS TO PVC, AC AND D.I. PIPE. SADDLES MUST BE ALL BRASS WITH "CC" THREADS AS MANUFACTURED BY MUELLER COMPANY, FORD METER BOX COMPANY, OR SMITH-BLAIR COMPANY. THE PIPE SIZES FOR THESE MANUFACTURERS ARE NOTED BELOW:

MUELLER: FOR PIPE SIZES 4" TO 12", FOR 3/4" AND 1" SERVICES, THE SINGLE STRAP DESIGN MUST BE USED. FOR 1-1/2" AND 2" SERVICES, THE DOUBLE STRAP DESIGN MUST BE USED.
FORD: FOR PIPE SIZES 4" TO 12", FOR 3/4" AND 1" SERVICES, THE STYLE 101B SINGLE STRAP DESIGN MUST BE USED. FOR 1-1/2" AND 2" SERVICES, THE STYLE 202B DOUBLE STRAP DESIGN MUST BE USED. FOR PIPE SIZES 16" AND LARGER, FOR 3/4", 1", 1-1/2," AND 2" SERVICES, THE STYLE 202B DOUBLE STRAP DESIGN MUST BE USED.
SMITH-BLAIR: FOR PIPE SIZES 4" TO 12", FOR 3/4" AND 1" SERVICES, THE 321 SERIES SINGLE STRAP DESIGN MUST BE USED. FOR PIPE SIZES 4" AND LARGER, FOR 1-1/2" AND 2" SERVICES, THE 323 SERIES DOUBLE STRAP DESIGN MUST BE USED.

AN APPROVED EQUAL MAY BE USED IN LIEU OF ANY OF THE ABOVE-LISTED DESIGNS/MODELS.

1.2.6.1 CURB STOPS, 3/4" - 2"

CURB STOPS 3/4" AND 1" IN SIZE WILL BE FLARE-BY-METER COUPLING. CURB STOPS MUST HAVE LOCKING WINGS AND A SWIVEL METER NUT. CURB STOPS THAT ARE 1-1/2" OR 2" WILL BE FLARE-BY-FLANGE WITH LOCKING WING OR AN APPROVED EQUAL. ALL CURB STOPS SHALL BE CENTERED IN THE METER BOX AND INSTALLED IN A HORIZONTAL POSITION.

1.2.6.2 CORPORATION STOPS, 3/4" - 2"

ALL CORPORATION STOPS FOR WATER SERVICE ¾" 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.

1.2.6.3 METER BOXES

METER BOXES ARE TO BE PLASTIC WITH AN IRON FLIPPER LID WITH A FULL PIN HINGE, 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 PER SECTION 2.6.4 ABOVE. THEY ARE ALSO REQUIRED TO HAVE A 3" X 5" PERMANENT PLASTIC TAG, SECURED TO THE CURB STOP WITH A NYLON TIE WRAP, WILL BE SUPPLIED. TAGS WILL BE INSCRIBED, "RECLAIMED WATER DO NOT DRINK". BRASS FITTINGS USED FOR RECLAIMED WATER ARE EXEMPT FROM THE "NO LEAD" REQUIREMENT.

1.3 PROTECTION OF PROPERTY AND OBSTRUCTIONS

1.3.1 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.

1.3.2 OBSTRUCTIONS

ALL UTILITY OWNERS MUST BE NOTIFIED PRIOR TO BEGINNING CONSTRUCTION. ANY KNOWN OBSTRUCTIONS WILL BE SHOWN ON THE PLANS. 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 CONTRACTORS EXPENSE.

IF THE CONTRACTOR ENCOUNTERS ANY UNFORESEEN OBSTRUCTIONS DURING CONSTRUCTION, HE SHALL IMMEDIATELY CEASE WORK IN THAT AREA AND NOTIFY THE PROJECT ENGINEER. THE PROJECT ENGINEER 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.

1.3.3 EXISTING ASBESTOS CEMENT WATERMAINS

IN AREAS WHERE EXISTING 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 POLY VINYL CHLORIDE PIPE OR DUCTILE IRON PIPE. 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 UTILITIES DEPARTMENT 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.

1.4 TRENCH PREPARATION

1.4.1 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 SO AS 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 UNCOVERED AT THE BOTTOM OF THE TRENCH AT SUB-GRADE, IT 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.

1.4.2 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. CONTRACTOR IS REQUIRED TO HAVE A COMPETENT PERSON DESIGNATED AND IN CHARGE AT ALL TIMES WHILE WORKERS ARE IN THE TRENCH.

1.4.3 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.

1.5 PIPE LINE CONSTRUCTION

1.5.1 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.

1.5.2 MATERIAL HANDLING

1.5.2.1 PRECAUTIONS
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 END OF PIPE. PIPE LIFTED BY PLACING FORKS INTO PIPE SHALL BE REMOVED FROM JOB SITE.

1.5.2.2 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.

1.5.2.3 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.

1.5.3 INSPECTION OF MATERIALS
MATERIALS DELIVERED TO THE JOB SITE WILL BE SUBJECT TO INSPECTION BY THE UTILITIES INSPECTION DEPARTMENT 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 UTILITIES DEPARTMENT PRIOR TO INSTALLATION WILL BE UNCOVERED BY THE CONTRACTOR AT HIS/HER EXPENSE TO VERIFY COMPLIANCE WITH THESE SPECIFICATIONS. THE CONTRACTOR WILL FURNISH COPIES OF THE PACKING LIST(S) FOR MATERIALS UPON DEMAND.

1.5.4 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 UTILITIES DEPARTMENT. 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.

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 WATER-TIGHT 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.

PIPE INSTALLED UNDER SWALE 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.

1.5.5 LOCATING WIRE
A #12 COPPER CLAD STEEL (CCS) 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 4 FEET OF EXCESS LENGTH. WIRE IS TO BE CONNECTED TOGETHER USING AN UNDERGROUND WIRE NUT WITH A SILICONE-BASED SEALANT.

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REVISIONS AND UPDATES

07/01/15	100% CONSTRUCTION DOCUMENTS

CAPE CANAVERAL LIGHTHOUSE FOUNDATION
LIGHTHOUSE KEEPER'S COTTAGES
LIGHTHOUSE RD CAPE CANAVERAL AFS, FL
CITY OF COCOA TECHNICAL PROVISIONS - WATER

drawn DHF
checked JTW
approved DMT

job no. 130232
C-8
SCALE: NTS

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1.5.5 LOCATING WIRE (CONTINUED)

THE CCS WIRE SHALL MEET THE FOLLOWING REQUIREMENTS. HDPE INSULATION OF 30 MILS, #12 AWG CONDUCTOR, MAXIMUM OHMS RESISTANCE OF 7.565 OHMS PER 1000 FT., BREAKING LOAD 256 LBS.

WHEN DIRECTIONAL DRILLING IS USED, ONE CONTINUOUS #12 CCS EXTRA HIGH STRENGTH LOCATOR WIRE SHALL BE INSTALLED. THE CCS WIRE SHALL MEET THE FOLLOWING REQUIREMENTS. HDPE INSULATION OF 45 MILS, #12 AWG CONDUCTOR, MAXIMUM OHMS RESISTANCE OF 7.565 OHMS PER 1000 FT., BREAKING LOAD 1150 LBS.

1.5.6 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.

1.5.7 BACKFILLED MATERIAL AND INSPECTION

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 UTILITIES DEPARTMENT HAS BEEN COMPLETED.

1.5.8 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 DETAIL.

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.

1.5.9 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 SO AS 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.

1.5.10 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.

1.5.11 THRUST BLOCKS AND COLLARS

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. RESTRAINED JOINT SYSTEMS ARE THE PREFERRED METHOD. 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.

1.5.12 JACK AND BORE, PIPE INSTALLED IN CASINGS

PIPE TO BE INSTALLED UNDER PAVEMENT 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 LATEST FDOT DESIGN STANDARD. IN THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 2013, SECTION 556 APPLIES. J&B INSTALLED UNDER FECRR SHALL CONFORM TO FECRR REQUIREMENTS.

1.5.13 HORIZONTAL DIRECTIONAL DRILLING

ONLY DIP AND FUSIBLE PVC MAY BE HORIZONTAL DIRECTIONAL DRILLED (HDD) UNDER PAVEMENT OR SURFACE WATER WAY 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 LATEST FDOT DESIGN STANDARD. IN THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 2013, SECTION 555 APPLIES.

ENGINEERING PROCEDURE HORIZONTAL DIRECTIONAL DRILLS

PRECONSTRUCTION CONFERENCE:

1. 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
    - ENGINEERING TECHNICIAN
    - INSPECTION SUPERVISOR
    - ENGINEERING INSPECTOR FOR THE PROJECT

HDD CONTRACTOR:

1. APPROVAL REQUIRED PRIOR TO THE HDD, THE HDD CONTRACTOR SHALL SUBMIT A BORE PLAN (SEE SAMPLE DRAWING IN APPENDIX "B") TO THE ENGINEERING SUPERVISOR 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
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"
3. THE HDD CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING LOCATES FOR ALL UTILITIES IN ACCORDANCE WITH CHAPTER 556 OF THE FLORIDA STATUTES.
4. 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 PERMIT.

ENGINEERING INSPECTOR:

1. AN APPROVED COPY OF THE BORE PLAN WILL BE GIVEN TO ENGINEERING INSPECTION DIVISION.
2. THE INSPECTOR FOR THE PROJECT WILL HAVE A COPY OF THE BORE PLAN AT THE PROJECT SITE.

1. 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.

1. THE ENGINEERING INSPECTOR SHALL VERIFY THE FOLLOWING PRIOR TO THE COMMENCEMENT OF THE HDD:

A. VERIFY THAT THE HDD CONTRACTOR HAS OBTAINED HIS/HER UTILITY LOCATES.
B. VERIFY THAT ALL UTILITIES HAVE BEEN VISUALLY SPOTTED BY THE HDD CONTRACTOR.
C. VERIFY THAT THE PERMITTING AGENCY HAS BEEN NOTIFIED OF THE HDD.
D. WITNESS THE CALIBRATION OF THE SONDE.

2. THE INSPECTOR SHALL REMAIN AT THE PROJECT SITE UNTIL COMPLETION OF THE HDD. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO ONE OR ALL OF THE FOLLOWING:
    - ENGINEERING SUPERVISOR
    - ENGINEERING TECHNICIAN
    - INSPECTION SUPERVISOR

   ONCE THE ABOVE PERSONS HAVE BEEN NOTIFIED BY THE INSPECTOR, THE PROPER AUTHORITY WILL BE NOTIFIED FOR CORRECTIVE ACTION.

COMPLETION OF THE BORE:

1. A BORE LOG SHALL BE SUBMITTED TO THE ENGINEERING DIVISION AFTER COMPLETION OF THE BORE.

1.5.14 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 2.6

1.6 TIE–INS TO EXISTING SYSTEMS

1.6.1 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 UTILITIES DEPARTMENT. ALL CONTRACTORS MUST FOLLOW THE PROCEDURES LISTED BELOW FOR CONNECTING NEW MAINS TO EXISTING WATER SYSTEMS.

1.6.1.1 MAINS 8" AND SMALLER

TIE–IN VALVES WILL BE OPERATED AND PRESSURE TESTED TO VERIFY WATER TIGHTNESS PRIOR TO THE TIE–IN. VALVES THAT ARE NOT WATER TIGHT, SHALL HAVE A NEW VALVE INSTALLED IMMEDIATELY ADJACENT (WITHIN 2') TO THE EXISTING VALVE. THE CONTRACTOR WILL PROVIDE A 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 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 CITY INSPECTOR. ALL OTHER EXISTING VALVES CLOSED AS PART OF THE JOB WILL BE OPENED BY THE CONTRACTOR UNDER THE SUPERVISION OF UTILITIES DEPARTMENT INSPECTOR.

1.6.1.2 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 FDEP 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 CITY INSPECTOR. ALL OTHER EXISTING VALVES LOSED AS PART OF THE JOB WILL BE OPENED BY THE CONTRACTOR UNDER THE SUPERVISION OF UTILITIES DEPARTMENT INSPECTOR.

1.7 TESTING

1.7.1 GENERAL

ALL NEWLY INSTALLED PIPE AND SERVICES THAT HAVE BEEN BACKFILLED MUST BE TESTED IN ACCORDANCE WITH AWWA SPECIFICATION C651.

1.7.2 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 UTILITIES DEPARTMENT INSPECTOR. 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 UTILITIES DEPARTMENT.

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 TO BE USED FOR FILLING ANY WATER MAIN OF ANY SIZE 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. 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 PROTECTION (FDEP) AND OTHER PERTINENT AGENCIES HAS BEEN RECEIVED. THE JUMPER CONNECTION SHALL ALSO BE USED TO MAINTAIN A MINIMUM PRESSURE OF 20 PSI 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 CONNECTING THE NEW PIPE TO THE EXISTING PIPE SHALL BE DISINFECTED PRIOR TO INSTALLATION IN ACCORDANCE WITH AWWA C651. THIS TAPPING SLEEVE AND THE EXTERIOR OF THE MAIN TO BE TAPPED SHALL BE DISINFECTED BY SPRAYING OR SWABBING PER SECTION II OF AWWA C561.
3. FLUSHING OF 10" DIAMETER AND LARGER WATER MAINS MAY BE DONE THROUGH THE TIE–IN VALVE, IN THE PRESENCE OF THE UTILITY DEPARTMENT. THE UTILITY DEPARTMENT WILL BE NOTIFIED IN WRITING 48 HOURS PRIOR TO THE FLUSHING OF SAID MAINS.

THE FOLLOWING PROCEDURES SHALL BE FOLLOWED:

A. THE TIE–IN VALVES SHALL BE OPERATED AND PRESSURE TESTED IN THE PRESENCE OF THE ENGINEERING INSPECTION DIVISION OR ENGINEER TO VERIFY WATER TIGHTNESS PRIOR TO THE TIE–IN. VALVES WHICH ARE NOT WATERTIGHT SHALL BE REPLACED OR A NEW VALVE INSTALLED IMMEDIATELY ADJACENT TO THE LEAKING VALVE.

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 BACTERIOLOGICAL SAMPLING OF THE NEW MAIN AS REQUIRED BY THE FDEP PERMIT.

- FLUSHING SHALL NOT BE ATTEMPTED DURING PEAK DEMAND HOURS OF THE EXISTING WATER MAIN.
- ALL DOWNSTREAM VALVES IN THE NEW SYSTEM MUST BE OPEN PRIOR TO OPENING THE TIE–IN VALVE.
- PROVIDE FOR AND MONITOR THE PRESSURE AT THE TIE–IN POINT, THE PRESSURE IN THE EXISTING MAIN MUST NOT DROP BELOW 35 PSI.
- TIE–IN VALVE SHALL BE OPENED A FEW TURNS ONLY, ENSURING A PRESSURE DROP ACROSS THE VALVE IS ALWAYS GREATER THAN 10 PSI.

1. 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.
2. 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 CLEARED FOR USE BY FDEP AND ALL OTHER PERTINENT AGENCIES.
3. 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.
4. ALL INSTALLATION AND MAINTENANCE OF THE TEMPORARY JUMPER CONNECTION AND ASSOCIATED BACKFLOW PREVENTION DEVICE FITTINGS, VALVE, ETC., SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

1.7.3 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 INSPECTION 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 40 PSI. WATER USED DURING FLUSHING WILL BE BILLED TO THE CONTRACTOR.

THE CITY OF COCOA UTILITIES DEPARTMENT 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 2LB. PER CU/FT DENSITY OPEN CELL POLYURETHANE FOAM BODY (SWAB) COMPLETE WITH REAR POLYURETHANE DRIVE SEAL.

PIG LAUNCHING STATION MAY BE A "WYE", "TEE" OR SIMPLE 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 UTILITIES DEPARTMENT.

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 UTILITIES DEPARTMENT. 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 UTILITY PERSONNEL 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.

1.7.4 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 WITNESSED BY ENGINEERING INSPECTION DIVISION PERSONNEL. SUFFICIENT HUMAN RESOURCES ARE TO BE EMPLOYED TO INSURE 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.

1.7.5 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:

SIZE	ALLOWABLE LEAKAGE
2"	0.20 GALLONS/HOUR
4"	0.33 GALLONS/HOUR
6"	0.50 GALLONS/HOUR
8"	0.67 GALLONS/HOUR
10"	0.83 GALLONS/HOUR
12"	1.06 GALLONS/HOUR
14"	1.16 GALLONS/HOUR
16"	1.32 GALLONS/HOUR

$$L = \frac{SD\sqrt{P}}{148000}$$

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.

1.8 DISINFECTION & BACTERIOLOGICAL TESTING

1.8.1 GENERAL

THE CONTRACTOR MUST FLUSH MAINS AND ARRANGE FOR COMPLETE DISINFECTION BY CHLORINATION IN COORDINATION WITH THE ENGINEERING INSPECTION DIVISION. WORK WILL CONFORM TO APPLICABLE PROVISIONS OF AWWA SPECIFICATION C651, "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 A UTILITIES DEPARTMENT 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 IS REQUIRED.

DISINFECTION OF RECLAIMED WATER MAINS IS PERFORMED IN THE SAME MANNER AS POTABLE WATER MAINS. BACTERIOLOGICAL TESTING OF THE REPAIRED RECLAIM WATER MAIN WILL BE PERFORMED IN COMPLIANCE WITH REGULATORY AGENCIES SUCH AS THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, AND REQUIRES ONE DAY OF SATISFACTORY BACTERIOLOGICAL RESULTS. SAMPLE POINTS FOR RECLAIMED WATER MAINS ARE DETERMINED BY THE ENGINEER OF RECORD. SAMPLES ARE COLLECTED MONDAY THROUGH THURSDAY BY CITY OF COCOA DESIGNATED PERSONNEL. TO SCHEDULE A SAMPLE PICKUP, PLEASE CONTACT THE LAB MANAGER AT 321–433–8707. IF SAMPLES TAKEN DO NOT DEMONSTRATE SATISFACTORY BACTERIOLOGICAL RESULTS, RE–CHLORINATION AND RE–SAMPLING IS REQUIRED. A FEE WILL BE CHARGED BY THE CITY FOR ADDITIONAL SAMPLE COLLECTION AND ANALYSIS.

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 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.

1.9 CONNECTION TO EXISTING SYSTEM

1.9.1 GENERAL

CONNECTIONS TO EXISTING CITY TRANSMISSION MAINS (16" AND LARGER) WILL BE MADE BY APPROVED TAPPING CONTRACTOR UNDER THE DIRECTION OF THE ENGINEERING INSPECTION DIVISION. ON TRANSMISSION MAINS, THE APPROVED TAPPING CONTRACTOR WILL INSTALL THE TAPPING SLEEVE AND VALVE. FOR ALL CONNECTIONS FROM 4" – 12" THE CONTRACTOR MAY INSTALL TAPPING SADDLES UNDER THE SUPERVISION OF THE ENGINEERING INSPECTION DIVISION. FOR ALL WATER MAIN CONNECTIONS, THE CONTRACTOR MUST OBTAIN ALL REQUIRED PERMITS; PROVIDE A DRY PIT AREA, ALL PIT PREPARATION INCLUDING SHORING AND BRACING, MAINTENANCE OF TRAFFIC, ALL RIGHT–OF–WAY RESTORATION; AND NOTIFY ALL UTILITIES PRIOR TO CONSTRUCTION. TAPS ON RCP, PVC, AC, OR DIP MAINS MUST BE MADE BY A TAPPING CONTRACTOR WHO HAS BEEN APPROVED BY THE UTILITIES DEPARTMENT.

TAPPING SADDLES AND VALVES SUPPLIED BY THE CONTRACTOR WILL BE INSPECTED BY THE ENGINEERING INSPECTION 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 INSURE A WATERTIGHT INSTALLATION. SADDLES INSTALLED ON RCP MAINS WILL BE TESTED 10% OVER LINE PRESSURE. THE PRESSURE TEST WILL BE PERFORMED BY THE CONTRACTOR AND WITNESSED BY THE ENGINEERING INSPECTOR. AFTER THE PRESSURE TEST OF THE SADDLE HAS BEEN COMPLETED AN APPROVED TAPPING CONTRACTOR CAN TAP THE MAIN.

1.9.2 TAPPING AND LINESTOP PROCEDURES

- ALL 0.75" – 12" TAPS OR LINESTOPS ON CITY OF COCOA POTABLE, RECLAIMED AND WASTEWATER MAINS WILL BE PERFORMED BY AN APPROVED TAPPING CONTRACTOR (SEE APPROVED LIST).*
- ALL 16" AND LARGER TAPS OR LINESTOPS ON CITY OF COCOA TRANSMISSION MAINS WILL BE PERFORMED BY BONAFIDE TAPPING CONTRACTORS ONLY. CONTRACTORS WILL BE APPROVED ON A CASE–BY–CASE BASIS. BONAFIDE MEANS THE CONTRACTOR IS IN THE BUSINESS OF DOING TAPS OR LINE STOPS.*
- ABSOLUTELY NO TAPS OR LINESTOPS WILL BE PERFORMED ON FRIDAY OR ANY DAY PRECEDING A HOLIDAY.
- APPROVED CONTRACTORS TO DISINFECT TAPPING MACHINE WITH AWWA APPROVED DISINFECTANT. THIS WILL BE WITNESSED BY A CITY OF COCOA INSPECTOR.
- THE CONTRACTORS TAPPING OR LINESTOP MACHINES WILL BE IN GOOD WORKING ORDER WITH APPROPRIATE BITS AND SHELL CUTTERS FOR THE TYPE OF PIPE BEING WORKED ON (IE. SHELL CUTTER 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 MAYBE HELD AT THE JOB SITE.
- TAPS AND LINESTOPS ON THE UTILITIES REINFORCED CONCRETE MAINS WILL BE A TWO (2) DAY PROCESS. DAY ONE THE SADDLE IS INSTALLED AND GROUTED, DAY TWO TIGHTEN STRAPS, CUT PRESTRESSING WIRES, INSTALL THROAT AND VALVE. PRESSURE TEST ON SADDLE IS 10–15% OVER LINE PRESSURE FOR 30 MINUTES. AFTER SUCCESSFULLY COMPLETING PRESSURE TEST, TAP CAN BE MADE.
- 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 & ADAPTOR

1.10 FINAL CLEAN–UP AND ACCEPTANCE

1.10.1 GENERAL

UPON COMPLETION OF THE WORK AND BEFORE ACCEPTANCE BY THE UTILITIES DEPARTMENT, 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 HIS/HER 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 INSPECTION DIVISION.

PRESSURE TEST

- BACTERIOLOGICAL TESTING
- RESTORATION
- PAYMENT OF FEES
- APPROVED AS–BUILTS
- EASEMENTS
- BILL OF SALE
- FINAL INSPECTION

1.11 FIRE SERVICE

1.11.1 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 APPROPRIATE BACKFLOW PREVENTION DEVICE WILL BE INSTALLED IN ACCORDANCE WITH THE "CROSS–CONNECTION CONTROL AND BACKFLOW PREVENTION" SECTION OF THE UTILITIES HANDBOOK.

FIRE LINE DCDA SHALL BE INSTALLED IN NON–TRAFFIC AREAS. FOUR TO SIX BOLLARDS MAYBE REQUIRED.

1.12 CONNECTION OF BUILDINGS OVER FOUR FLOORS

1.12.1 GENERAL

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 REQUIREMENTS:

- 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 THE ENGINEERING DIVISION.
- 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.

1.13 BACKFLOW PREVENTERS

1.13.1 GENERAL

BACKFLOW PREVENTERS MUST BE INSTALLED AT LOCATIONS WHERE CROSS–CONNECTIONS MAY OCCUR. THE NEED FOR BACKFLOW PREVENTERS WILL BE DETERMINED BY THE UTILITIES DEPARTMENT. BACKFLOW PREVENTERS WILL BE THE REDUCED PRESSURE TYPE ASSEMBLIES. 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. BACKFLOW PREVENTERS ARE TO BE APPROVED IN ACCORDANCE WITH THE "CROSS–CONNECTION CONTROL AND BACKFLOW PREVENTION" SECTION OF THE UTILITIES HANDBOOK.

1.14 RECORD DRAWINGS

THE BORE LOG SHALL BE SIGNED BY THE RESPONSIBLE PERSON IN CHARGE OF THE BORE.

1.14.1 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, POWER POLES, 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. BENCH MARK 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.
- 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 DRAWING 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 (XREF). AUTOCAD 2010 OR HIGHER, OR DXF FORMAT SHALL BE PROVIDED TO THE CITY.

CAD DRAWING STANDARDS FOR RECORD DRAWINGS WILL BE AVAILABLE FROM THE ENGINEERING DIVISION UPON REQUEST. THESE STANDARDS WILL PROVIDE FOR ISOLATED LAYER INFORMATION, TEXT HEIGHT, FONT, LINE TYPE AND WEIGHT, SPECIFIC STANDARD SYMBOLS (BLOCKS), ETC. WHICH WILL ALLOW TRANSFER OF RECORD DRAWING DATA TO CITY AS–BUILT MAPS IN A STANDARDIZED FORMAT.

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ENGINEER OF RECORD

REVISIONS AND UPDATES

07/01/15		100% CONSTRUCTION DOCUMENTS

CAPE CANAVERAL LIGHTHOUSE FOUNDATION
LIGHTHOUSE KEEPER'S COTTAGES
LIGHTHOUSE RD
CAPE CANAVERAL AFS, FL

CITY OF COCOA TECHNICAL PROVISIONS - WATER

drawn DHF
checked JTW
approved DMT

job no. 130232
C-9
SCALE: NTS

AA-C001568

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