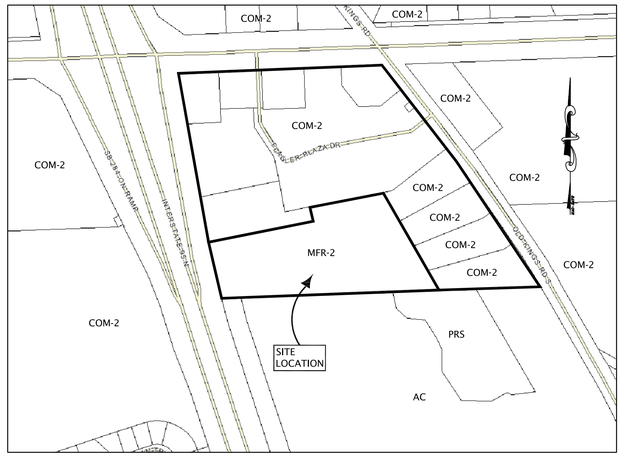
APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
CERTIFICATE No. EB5479
880 AIRPORT RD. SUITE 113
ORMOND BEACH, FL 32174
TEL: (386) 673-7640
FAX: (386) 673-3927

FLAGLER POINTE
MULTI-FAMILY RESIDENTIAL DEVELOPMENT

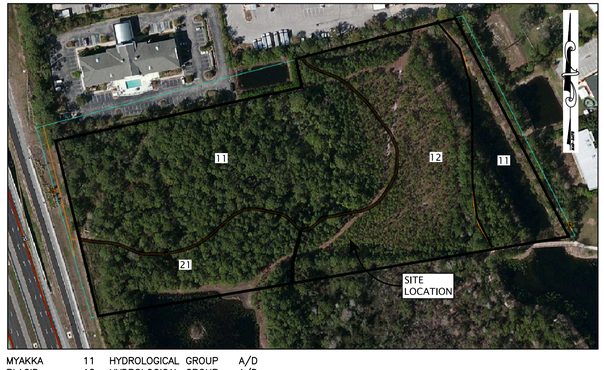
250 FLAGLER PLAZA DRIVE
PALM COAST, FL

LOCATION MAP



TAX PARCEL ID NUMBER: 09-12-31-0000-01010-0000

SOILS MAP



MYAKKA	11	HYDROLOGICAL GROUP	A/D
PLACID	12	HYDROLOGICAL GROUP	A/D
SMYRNA	21	HYDROLOGICAL GROUP	A/D

LEGAL DESCRIPTION

SCHEDULE A

A PARCEL OF LAND BEING A PORTION OF PARCEL 440.02 RECORDED AT PAGE 1777, OF OFFICIAL RECORDS BOOK 553, PAGES 1539 THROUGH 1840, SAID PARCEL LYING EAST OF INTERSTATE-95 WITHIN GOVERNMENT SECTION 9, TOWNSHIP 12 SOUTH, RANGE 31 EAST, FLAGLER COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF THE SUBDIVISION MAP FLAGLER REGIONAL PLAZA, PHASE II, RECORDED IN MAP BOOK 29, PAGES 19 AND 20, OF THE PUBLIC RECORDS OF FLAGLER COUNTY, FLORIDA, THENCE ALONG THE SOUTH LINE OF SAID PLAT FLAGLER REGIONAL PLAZA PHASE II, THE FOLLOWING COURSES NORTH 78°38'00" EAST A DISTANCE OF 559.41 FEET, THENCE NORTH 11° 22' 00" WEST A DISTANCE OF 78.30 FEET, THENCE DEPARTING FLAGLER REGIONAL PLAZA PHASE II, NORTH 78°38'00" EAST ALONG THE SOUTHERLY LINE OF THE PLAT FLAGLER REGIONAL PLAZA, RECORDED IN MAP BOOK 28, PAGES 21 AND 22, OF THE PUBLIC RECORDS OF FLAGLER COUNTY, FLORIDA, A DISTANCE OF 396.21 FEET, THENCE DEPARTING SAID PLAT FLAGLER REGIONAL PLAZA SOUTH 29°23'11" EAST A DISTANCE OF 595.95 FEET, THENCE SOUTH 87°48'45" WEST ALONG THE SOUTH LINE OF LANDS RECORDED AT PAGE 1777 OF OFFICIAL RECORDS BOOK 553, PAGES 1539 THROUGH 1840, A DISTANCE OF 1147.30 FEET TO A POINT ON THE EASTERLY RIGHT OF WAY OF INTERSTATE-95, THENCE NORTH 13°44'38" WEST A DISTANCE OF 106.64 FEET TO A POINT OF CURVATURE , THENCE ALONG THE EAST RIGHT OF WAY LINE OF LNTERSTATE-95 A DISTANCE OF 198.90 FEET ALONG THE ARC OF A CURVE TO THE RIGHT (CONCAVE EASTERLY) HAVING A CENTRAL ANGLE OF 03°03'31", A RADIUS OF 3725.72 FEET, A CHORD BEARING OF NORTH 12° 12' 52" WEST AND A CHORD DISTANCE OF 198.87 FEET TO THE POINT OF BEGINNING.

TOGETHER WITH A NON-EXCLUSIVE EASEMENT AND/OR RIGHT-OF-WAY, IN PERPETUITY, FOR THE PURPOSE OF INGRESS AND EGRESS, PASSAGE AND DELIVERY BY VEHICLE OR PEDESTRIANS AS MORE FULLY SET FORTH IN THAT CERTAIN CROSS EASEMENT AGREEMENT RECORDED IN O. R. BOOK 585, PAGE 1874 OF THE PUBLIC RECORDS OF FLAGLER COUNTY, FLORIDA.

TOGETHER WITH AN EXCLUSIVE EASEMENT RESERVED FOR ALL NATURALLY OCCURRING DRAINAGE AND FLOWAGE INTO AND WITHIN THE LAND CONVEYED AS SET FORTH IN THAT CERTAIN QUIT CLAIM DEED RECORDED IN O. R. BOOK 785, PAGE 1373 OF THE PUBLIC RECORDS OF FLAGLER COUNTY, FLORIDA.

OWNER:
SUN GLOW CONSTRUCTION, INC.
1293 N. U.S. HWY 1, SUITE 1
ORMOND BEACH, FL 32174
PH. (386) 676-7550
LEE@SUNGLOWCONSTRUCTION.COM

DEVELOPER:
ARYANA DEVELOPMENT, INC.
FL LIC. # CGC056829
1293 N. U.S. HWY 1, SUITE 1
ORMOND BEACH, FL 32174
PH. (386) 676-7550
EMAIL: LEE@ARYANADEVELOPMENT.COM

ENGINEER:
THE ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
880 AIRPORT RD. STE. 113
ORMOND BEACH, FL 32174
PH. (386) 673-7640 FAX: (386) 673-3927
EMAIL: KAB@AE-GROUP.COM

SURVEYOR:
CULLUM LAND SURVEYING, INC.
5889 S. WILLIAMSON BLVD. SUITE 205
PORT ORANGE, FL 32128
PH. (386) 761-7666

ENVIRONMENTALIST:
ENVIRONMENTAL SERVICES, INC.
124 N. NOVA ROAD, PMB 129
ORMOND BEACH, FL 32174
PH. (904) 566-2733
EMAIL: SJULIEN@ESINC.CC

LANDSCAPE ARCHITECT:
RICHARD L. POORE, LA
300 GATEWOOD CT
ORMOND BEACH, FL 32174
PH. (904) 677-7510

SITE DATA:

FLOOD ZONE: "X" - 12035C0231D REV. 7-17-2006
EXISTING ZONING: MFR-2 (MULTI-FAMILY RESIDENTIAL)

FUTURE LAND USE: MIXED USE

BUILDING FOOTPRINT: 11,884 SF
UNITS PER BUILDING: 16

FLOOR AREA RATIO (FAR): 71,304 SF/444,340 SF = 0.16

BUILDING HEIGHT: 32'-0"

LOT SIZE: 10.20 ACRES

MAX IMPERVIOUS SURFACE RATIO (ISR): 70%
PROPOSED IMPERVIOUS SURFACE RATIO: 196,432 SF (4.51 AC.) = 44.2%
PROPOSED PERVIOUS SURFACE RATIO: 444,340 SF (5.69 AC.) = 55.8%

BUILDING SETBACKS REQUIRED:
FRONT-25'; REAR-20'; INT. SIDE-10'; STREET SIDE-20'

BUILDING SETBACKS PROVIDED:
FRONT-53.64'; REAR-20'; INT. SIDE-149.59; STREE SIDE-45.03'

LANDSCAPE BUFFER REQUIRED:
FRONT-10'; REAR-10'; SIDE-10'; I-95-35'

LANDSCAPE BUFFER PROVIDED:
FRONT-10'; REAR-10'; SIDE-10'; I-95-35'

VEHICULAR USE AREA (VUA) CALCULATION:
93,190 SF (2.14 AC.) PAVED DRIVE/PARKING AREA

REQUIRED: 1-250SF ISLAND / 4,000SF OF PAVED PARKING AREA
93,190SF / 4,000 SF = 24 REQUIRED ISLANDS
PROVIDED: 26 PARKING ISLANDS

REQUIRED: 10% INTERNAL GREENSPACE OF PAVED PARKING AREA (9,319SF)
PROVIDED: 10,185 SF INTERNAL GREENSPACE

PARKING REQUIRED:
2 SPACES / 2 BEDROOM + 1 SPACE / 4 UNITS

EACH STAGE REQUIRES::

2 SPACES X 32 UNITS	=	64	SPACES
32 UNITS / 4 UNITS	=	8	SPACES
EACH STAGE REQUIRES	=	72	SPACES

TOTAL PARKING REQ'D @FULL BUILDOUT = 216 SPACES

PARKING PROVIDED:

STAGE I:
REGULAR: 75 SPACES
GARAGES: 12 SPACES
HANDICAP: 4 SPACES
91 SPACES

STAGE II:
REGULAR: 45 SPACES
GARAGES: 10 SPACES
HANDICAP: 4 SPACES
60 SPACES (STAGE I+II = 151 PROVIDED/144 REQ'D)

STAGE II:
REGULAR: 62 SPACES
GARAGES: 10 SPACES
HANDICAP: 3 SPACES
76 SPACES (ALL STAGES = 227 PROVIDED/216 REQ'D)

UTILITY NOTES

1. FIELD VERIFY LOCATION AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. ANY SIGNIFICANT DEVIATIONS SHALL BE BROUGHT TO THE CONSTRUCTION MANAGER'S ATTENTION.
2. PROTECT ALL UTILITY SYSTEMS AT ALL TIMES DURING CONSTRUCTION. SHOULD A SYSTEM BECOMED DAMAGED, ALTERED OR EXTENDED AFTER THE INITIAL TESTING, THE AFFECTED PORTION OF THE SYSTEM SHALL BE RESTORED AS NECESSARY AND RETESTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
3. MAINTAIN A MINIMUM 3 FEET COVER OVER ALL NEW UTILITY MAINS, UNLESS OTHERWISE SPECIFIED.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. AND FOR NOTIFYING THE VARIOUS UTILITY COMPANIES TO MAKE NECESSARY ARRANGEMENTS FOR ANY RELOCATION TEMPORARY DISRUPTION OF SERVICE, OR CLARIFICATION OF ACTIVITY REGARDING SAID FACILITY. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN CROSSING AN UNDERGROUND UTILITY. WHETHER SHOWN ON THESE DRAWINGS OR FIELD LOCATED. ALL UTILITIES WHICH INTERFERE WITH THE PROPOSED CONSTRUCTION SHALL BE RELOCATED BY THE RESPECTIVE UTILITY COMPANIES, AND THE CONTRACTOR SHALL COOPERATE WITH THEM DURING RELOCATION OPERATIONS. ANY DELAY OR INCONVENIENCE OF THE VARIOUS UTILITIES SHALL BE INCIDENTAL TO THE CONTRACT AND NO EXTRA COMPENSATION WILL BE ALLOWED. CONTRACTOR SHALL CALL "FLORIDA ONE CALL" AT 1-800-SUNSHINE (432-4770) BEFORE BEGINNING WORK.
5. CONTRACTOR SHALL FOLLOW ALL APPLICABLE FDEP RULES, ALONG WITH ANY APPLICABLE UTILITY PROVIDERS RULES AND REGULATIONS.
6. LOCATION OF UTILITIES ARE APPROXIMATE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY.
7. 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 BOTTOM 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. NEW OR RELOCATED UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED GRAVITY- OR VACUUM-TYPE SANITARY SEWER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX INCHES, AND PREFERABLY TWELVE INCHES, ABOVE OR AT LEAST TWELVE BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.

   AT THE UTILITY CROSSINGS DESCRIBED 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. ALTERNATELY, 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, 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.
8. SANITARY SEWER PIPE SPECIFICATION: PVC ASTM D-3034, SDR-35, SANITARY SEWER JOINT SPECIFICATION: ASTM D-3212.
9. POTABLE WATER SPECIFICATION: DUCTILE IRON PIPE: ANSI A21.51 MINIMUM CLASS 51;
   LINING: WATER PIPE: THIN CEMENT ANSI A21.4;
   WASTEWATER PIPE: COAL TAR EPOXY 40 MILS.
   JOINTS FOR CI FITTINGS SHALL BE PUSH-ON TYPE PER ANSI STD. A21.11-1980.
   ALL BURIED GATE VALVES SHALL CONFORM TO AWWA C-500 SPECIFICATIONS.
10. WATER PIPE LESS THAN 2" DIAMETER SHALL BE GALVANIZED STEEL PIPE: ASTM A120, A-338 AND A-153.
11. WATER MAIN PRESSURE TESTING: 150 PSI.
12. ALL WATER MAINS SHALL MAINTAIN 3 FEET OF COVER. WHERE SHALLOW UTILITIES CONFLICT, INSTALL WATER MAIN BELOW CONFLICTING UTILITY.
13. HYDROSTATIC TESTS CONSISTING OF PRESSURE TEST AND LEAKAGE TEST SHALL BE CONDUCTED ON ALL NEWLY INSTALLED WATER DISTRIBUTION SYSTEM.PRESSURE PIPES AND APPURTENANCES. THE TESTS SHALL BE IN ACCORDANCE WITH AWWA C-600 OR M-23 AS APPLICABLE.
14. DISINFECTION OF THE WATER DISTRIBUTION SYSTEM SHALL BE PERFORMED IN ACCORDANCE WITH AWWA C-651, DISINFECTING WATER MAINS.
15. UNLESS OTHERWISE NOTED, FOLLOW FDOT STANDARD SPECIFICATIONS, VERION 2015
16. FIRE HYDRANTS SHALL BE OF THE TRAFFIC TYPE, MUELLER A-423 OR APPROVED EQUAL, PAINTED WITH TWO COATS OF PAINT ACCEPTABLE TO THE CITY OF PALM COAST. THEY SHALL BE IN ACCORDANCE WITH AWWA C-502 SPECIFICATIONS.
17. COORDINATE INSTALLATION OF UTILITIES WITH THE CITY OF PALM COAST

SHEET #	TITLE
C1	DEMOLITION & EROSION CONTROL PLAN
C2	STAGING PLAN
C3	DIMENSION PLAN
C4	PAVING, DRAINAGE & UTILITY PLAN
C5	UTILITY PLAN
C6.1 - C6.4	PLAN & PROFILE SHEETS
C7-13	FDOT CONSTRUCTION DETAILS
C14-C18	CITY OF PALM COAST DETAILS

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF PALM COAST'S LAND DEVELOPMENT CODE REQUIREMENTS, AND THE STANDARD CONSTRUCTION DETAILS AND CONSTRUCTION SPECIFICATIONS (SCDCS).
2. NO LAND SHALL BE CLEARED, EXCAVATED OR FILLED AND NO STRUCTURE SHALL BE ERECTED, REPAIRED OR DEMOLISHED WITHOUT PROPER PERMIT(S) AS REQUIRED BY THE CITY OF PALM COAST.
3. NOTIFY THE CITY OF PALM COAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
4. ANY CONSTRUCTION CHANGES TO APPROVED PLANS SHALL BE SUBMITTED TO THE CITY OF PALM COAST FOR APPROVAL PRIOR TO PERFORMING THE WORK.
7. UNSTABLE/UNSUITABLE MATERIALS SHALL BE REMOVED FROM CONSTRUCTION AREAS AND BACKFILLED WITH SUITABLE MATERIAL.
8. ROAD CONSTRUCTION AND PIPE INSTALLATION COMPACTION AND DENSITY TESTING SHALL CONFORM TO THE CITY OF PALM COAST'S MINIMUM REQUIREMENTS. CERTIFIED COPIES OF TEST REPORTS SHALL BE SUBMITTED TO THE PALM COAST INSPECTOR AND THE PALM COAST ENGINEERING DIVISION.
9. A PRE-PAVING UTILITY INSPECTION MUST BE REQUESTED AND COMPLETED PRIOR TO THE PAVING OF ALL ROADS, STREETS, AND PARKING AREAS.
10. A FINAL INSPECTION, TO BE CONDUCTED BY THE CITY OF PALM COAST, SHALL BE PERFORMED ON ALL CONSTRUCTION. THE DESIGN ENGINEER SHALL NOTIFY THE CITY OF PALM COAST WHEN REQUESTING A FINAL INSPECTION.
11. AS-BUILT DRAWINGS SHALL BE SUBMITTED IN ACCORDANCE TO THE CITY OF PALM COAST RULES & REGULATIONS.
12. UTILITIES ARE SHOWN BASED ON AS-BUILTS AND BEST AVAILABLE INFORMATION. CONTRACTOR SHALL LOCATE & FIELD VERIFY ALL UTILITIES PRIOR TO START OF CONSTRUCTION.
13. ALL UTILITIES SHALL BE LOCATED UNDERGROUND.
14. CONTRACTOR SHALL ATTEND A MANDATORY PRE-CONSTRUCTION MEETING W/CITY STAFF PRIOR TO ANY DISTURBANCE OF PROPERTY.
15. THIS PROPERTY IS LOCATED IN FLOOD INSURANCE RATE MAP (F.I.R.M.) ZONE "X". THIS LOCATION IS DETERMINED BY SCALING FROM F.I.R.M. MAP NO. 12035C0231 D. MAP EFFECTIVE DATE: JULY 17, 2006. APPROXIMATE SCALE: 1"=500'.

EXISTING USES:

VACANT

DENSITIES:

MAX DENSITY ALLOWED: 12 UNITS/ACRE
SITE AREA: 10.20 ACRES
10.20 AC X 12 UNITS/ACRE = 123 UNITS ALLOWED
96 UNITS PROPOSED

BUILDING DATA:

BUILDING FOOTPRINT: 11,884 SF
UNITS PER BUILDING: 16

PROPOSED USES:

MULTI-FAMILY RESIDENTIAL FACILITY

STATEMENT OF INTENT

TO CONSTRUCT A MULTI-FAMILY RESIDENTIAL COMMUNITY W/A CENTRAL ACCESS DRIVE, ENTRANCES AND INFRASTRUCTURE TO SERVE SITE INCLUDING UTILITIES AND COMMON STORMWATER FACILITIES.

FLAGLER POINTE
PALM COAST, FL
COVER SHEET

NO.	DATE	REVISION	BY
4	6/15/15	ADD 4" FIRE LINE	MRZ
3	12/22/14	PER SJRWMD & COPC COMMENTS	MRZ
2	12/12/14	PER COPC COMMENTS	MRZ
1	10/29/14	PER COPC/SJRWMD COMMENTS	MRZ

DESIGNER	MRZ	DRAWN BY	MRZ
FILE	1410-1	PROJECT	1410.1
DATE	5/15/14	SCALE	1"=40'

NOT VALID UNLESS SIGNED & SEALED

SHEET
OF

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
CERTIFICATE No. EB5479
880 AIRPORT ROAD, SUITE. 113
ORMOND BEACH, FL 32174
TEL: (386) 673-7640
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FLAGLER POINTE
PALM COAST, FL
EROSION & SEDIMENTATION CONTROL PLAN

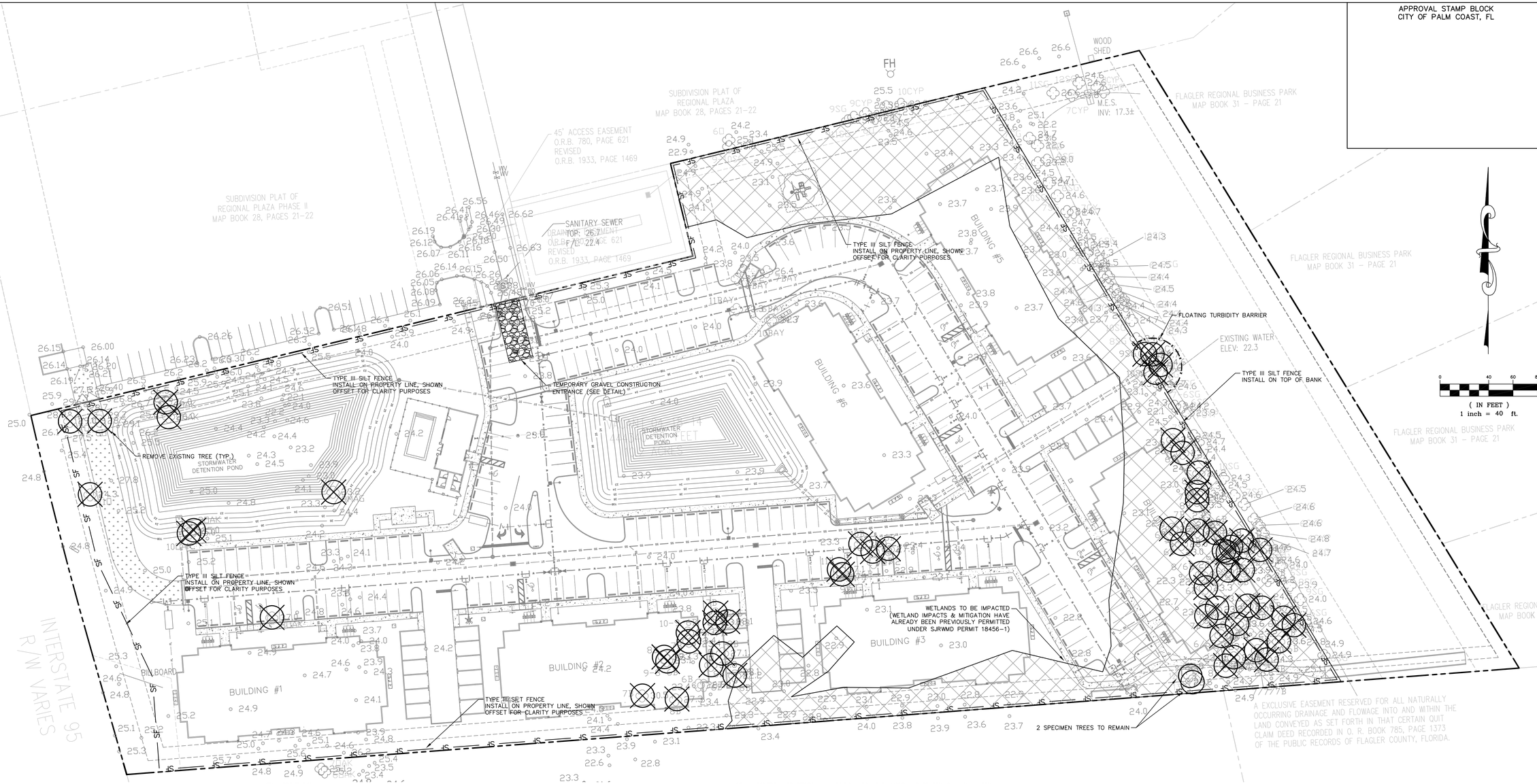
(IN FEET)
1 inch = 40 ft.

NO.	DATE	REVISION	BY
4	6/15/15	ADD 4" FIRE LINE	MRZ
3	12/22/14	PER SJRWMD & COPC COMMENTS	MRZ
2	12/12/14	PER COPC COMMENTS	MRZ
1	10/29/14	PER COPC/SJRWMD COMMENTS	MRZ

DESIGNER MRZ | DRAWN BY MRZ | FILE 1410-1 | PROJECT 1410.1 | SCALE 1"=40' | DATE 5/15/14

NOT VALID UNLESS SIGNED & SEALED

SHEET
C1 OF 18



SITE DESCRIPTION
10.20 ACRES OF UNDEVELOPED PROPERTY.

PROJECT NAME AND LOCATION:
FLAGLER POINTE
STATE ROAD 100, PALM COAST, FL

OWNER NAME AND ADDRESS:
SUNGLOW CONSTRUCTION, INC.
1414 W. GRANADA BLVD.
ORMOND BEACH, FL 32174

DESCRIPTION:
MULTI-FAMILY RESIDENTIAL COMMUNITY
SOIL DISTURBING ACTIVITIES WILL INCLUDE:
- CLEARING AND GRUBBING;
- EARTHWORK, AND GRADING;
- STORM SEWER, WATER MAIN, SANITARY SEWER AND PREPARATION FOR FINAL PLANTING AND SEEDING.

WASTE DISPOSAL WASTE MATERIALS:
ALL WASTE MATERIALS EXCEPT LAND CLEANING DEBRIS SHALL BE COLLECTED AND SORTED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS. THE DUMPSTER WILL BE EMPTIED AS NEEDED AND THE TRASH WILL BE HAULED TO A STATE APPROVED LANDFILL. ALL PERSONNEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL. NOTICES STATING THESE PRACTICES WILL BE POSTED AT THE CONSTRUCTION SITE BY THE CONSTRUCTION SUPERINTENDENT. THE INDIVIDUAL WHO MANAGES THE DAY-TO-DAY SITE OPERATIONS, WILL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED>

HAZARDOUS WASTE:
ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES AND THE SITE SUPERINTENDENT. THE INDIVIDUAL WHO MANAGES DAY-TO-DAY SITE OPERATIONS,, WILL BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES ARE FOLLOWED.

SANITARY WASTE:
ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS AS NEEDED TO PREVENT POSSIBLE SPILLAGE. THE WASTES WILL BE COLLECTED AND DEPOSED OF IN ACCORDANCE WITH STATE AND LOCAL WASTE DISPOSAL REGULATIONS FOR SANITARY SEWER OR SEPTIC SYSTEMS

OFF-SITE VEHICLE TRACKING:
A STANDARD CONSTRUCTION ENTRANCE WILL BE PROVIDED TO HELP REDUCE VEHICLE TRACKING OR SEDIMENTS. THE PAVED STREET ADJACENT TO THE SITE ENTRANCE WILL BE SWEPT DAILY TO REMOVE ANY EXCESS MUD, DIRT OR ROCK TRACKED FROM THE SITE. DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE WILL BE COVERED WITH A TARPAULIN.

RUNOFF CURVE NUMBERS:
1. PRE-CONSTRUCTION – 79
2. DURING CONSTRUCTION – 94
3. POST-CONSTRUCTION – 93

SOILS:
#11 MYAKKA
#12 PLACID
#21 SMYRNA

SITE MAPS:
SEE ATTACHED GRADING PLAN FOR PRE- & POST-DEVELOPMENT GRADES, AREAS OF SOILS DISTURBANCE, LOCATION OF PROTECTED AREAS, MAJOR STRUCTURAL AND NON-STRUCTURAL CONTROLS AND STORM WATER DISCHARGE POINTS. SEE STORMWATER POLLUTION PREVENTION PLAN AND ACCOMPANYING DETAILS PERTAINING TO LOCATION OF TEMPORARY STABILIZATION PRACTICES AND TURBIDITY BARRIERS. SEE GENERAL NOTES FOR REQUIREMENTS FOR TEMPORARY AND PERMANENT STABILIZATION.

SPILL PREVENTION:
MATERIAL MANAGEMENT PRACTICES THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF. GOOD HOUSEKEEPING THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ONSITE DURING THE CONSTRUCTION PROJECT. AN EFFORT WILL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB. ALL MATERIALS STORED ONSITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER. WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE MATERIALS ONSITE RECEIVE PROPER USE AND DISPOSAL.

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 RE-SEALABLE. ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED; THEY CONTAIN IMPORTANT PRODUCT INFORMATION. IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURER'S OR LOCAL AND SITE RECOMMENDED METHODS FOR PROPER DISPOSAL WILL BE FOLLOWED.

PRODUCT SPECIFIC PRACTICES THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ONSITE:

(√) CONCRETE [ ] FERTILIZERS [ ] WOOD
(√) ASPHALT [ ] PETROLEUM BASED PRODUCTS [ ] MASONRY BLOCKS (√) DETERGENTS [ ] PLANTS
(√) CLEANING SOLVENTS [ ] ROOFING MATERIALS

SITE AREA:
1. TOTAL AREA OF SITE – 10.20 ACRES
2. TOTAL AREA TO BE DISTURBED – 8.48 ACRES (INCLUDES 1.57 AC± WETLAND FILL)
3. NAME OF RECEIVING WATERS: BULOW CREEK

CONTROLS
THIS PLAN UTILIZES BEST MANAGEMENT PRACTICES TO CONTROL EROSION AND TURBIDITY CAUSED BY STORM WATER RUN OFF. AN EROSION AND TURBIDITY PLAN HAS BEEN PREPARED TO INSTRUCT THE CONTRACTOR ON PLACEMENT OF THESE CONTROLS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL AND MAINTAIN THE CONTROLS PER PLAN AS WELL AS ENSURING THE PLAN IS PROVIDING THE PROPER PROTECTIONS AS REQUIRED BY FEDERAL, STATE AND LOCAL LAWS. REFER TO "CONTRACTOR'S RESPONSIBILITY" FOR A VERBAL DESCRIPTION OF THE CONTROLS THAT MAY BE IMPLEMENTED.

CERTIFICATION OF COMPLIANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS:
IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS RELATED TO STORM WATER MANAGEMENT AND EROSION AND TURBIDITY CONTROLS, THE FOLLOWING PERMITS HAVE BEEN OBTAINED.
- S.J.R.W.M.D. ENVIRONMENTAL RESOURCE PERMIT NO.

SEQUENCE OF MAJOR ACTIVITIES: THE ORDER OF ACTIVITIES SHALL BE AS FOLLOWS:
1. INSTALL STABILIZED CONSTRUCTION ENTRANCES OFF SR100.
2. INSTALL SILT FENCES AND STAKED TURBIDITY BARRIERS AS SPECIFIED IN DETAILS.
3. CLEAR AND GRUB. STOCK PILE TOP SOIL ON SITE.
4. PERFORM PRELIMINARY GRADING ON SITE AS NECESSARY.
5. STABILIZE DENUDED AREAS AS SOON AS GRADING IS COMPLETE.
6. INSTALL SANITARY SEWER AND STORM DRAIN SYSTEMS AND OTHER UTILITIES.
7. COMPLETE GRADING.
8. PLACE SILT SACKS WITHIN STORM DRAIN INLETS UNTIL COMMENCEMENT FINAL STABILIZATION.
9. CHECK SILT FENCES AND TURBIDITY BARRIERS FOR ACCUMULATION OF DEBRIS. REMOVE DEBRIS AS NECESSARY. INSPECT SILT FENCE FOR ACCUMULATION OF SILT AFTER EVERY RAINSTORM AND AT A MINIMUM OF ONCE PER WEEK. REPLACE TORN OR FALLEN FENCE AS NECESSARY.
10. REMOVE ACCUMULATED SEDIMENT FROM SEDIMENT BASINS.
11. AFTER ESTABLISHMENT OF PERMANENT GROUND COVER, REMOVE TURBIDITY BARRIERS FROM LEHIGH CANAL.

CONTROLS:
IT IS THE CONTRACTOR'S RESPONSIBILITY TO IMPLEMENT THE EROSION AND TURBIDITY CONTROLS AS SHOWN ON THE STORMWATER POLLUTION PREVENTION PLAN. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THESE CONTROLS ARE PROPERLY INSTALLED, MAINTAINED AND FUNCTIONING PROPERLY TO PREVENT TURBID OR POLLUTED WATER FROM LEAVING THE PROJECT SITE. THE CONTRACTOR WILL ADJUST THE EROSION AND TURBIDITY CONTROLS SHOWN ON THE STORMWATER POLLUTION PREVENTION PLAN AND ADD ADDITIONAL CONTROL MEASURES, AS REQUIRED, TO ENSURE THE SITE MEETS ALL FEDERAL, STATE AND LOCAL EROSION AND TURBIDITY CONTROL REQUIREMENTS. THE FOLLOWING BEST MANAGEMENT PRACTICES WILL BE IMPLEMENTED BY THE CONTRACTOR AS REQUIRED TO MEET THE EROSION AND TURBIDITY REQUIREMENTS IMPOSED ON THE PROJECT SITE BY THE REGULATORY AGENCIES.

PETROLEUM PRODUCTS ALL ONSITE 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. ANY ASPHALT SUBSTANCES USED ONSITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

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 STORM WATER. STORAGE WILL BE IN A COVERED AREA. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.

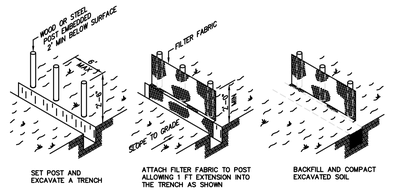
PAINTS ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.

CONCRETE TRUCKS CONCRETE TRUCKS WILL NOT BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ON THE SITE.

SPILL CONTROL PRACTICES IN ADDITION TO THE GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTIONS OF THE PLAN, THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP: MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED ON SITE 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 IN THE MATERIAL STORAGE AREA ONSITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, LIQUID ABSORBENT (I.E. KITTY LITTER OR EQUAL) SAND, SAWDUST, AND PLASTIC AND METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.

ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.
THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE. SPILL OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE OF THE SPILL. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM RECURRING AND HOW TO CLEAN UP THE SPILL IF THERE IS ANOTHER ONE. A DESCRIPTION OF THE SPILL, WHAT CAUSED IT, AND THE CLEANUP MEASURES WILL ALSO BE INCLUDED. THE SITE SUPERINTENDENT RESPONSIBLE FOR THE DAY-TO-DAY SITE OPERATIONS WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. HE/SHE WILL DESIGNATE AT LEAST ONE OTHER SITE PERSONNEL WHO WILL RECEIVE SPILL PREVENTION AND CLEANUP TRAINING. THESE INDIVIDUALS WILL EACH BECOME RESPONSIBLE FOR A PARTICULAR PHASE OF PREVENTION AND CLEANUP. THE NAMES OF RESPONSIBLE SPILL PERSONNEL WILL BE POSED IN THE MATERIAL STORAGE AREA AND IF APPLICABLE, IN THE OFFICE TRAILER ONSITE.

MAINTENANCE/INSPECTION PROCEDURES EROSION AND SEDIMENT CONTROL, INSPECTION AND MAINTENANCE PRACTICES THE FOLLOWING ARE INSPECTION AND MAINTENANCE PRACTICES THAT WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS. ALL CONTROL MEASURES WILL BE INSPECTED BY THE SUPERINTENDENT, THE PERSON RESPONSIBLE FOR THE DAY-TO-DAY SITE OPERATION OR SOMEONE APPOINTED BY THE SUPERINTENDENT, AT LEAST ONCE A WEEK AND FOLLOWING ANY STORM EVENT OF 0.25 INCHES OR GREATER. ALL TURBIDITY CONTROL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY, IT WILL BE INITIATED WITHIN 24 HOURS OF REPORT. BUILT UP SEDIMENT WILL BE REMOVED FROM SILT FENCE WHEN IT HAS REACHED ONE-THIRD OF THE HEIGHT OF THE FENCE. SILT FENCE WILL BE INSPECTED FOR DEPTH OF SEDIMENT, TEARS, TO SEE IF THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS AND TO SEE THAT THE FENCE POSTS ARE FIRMLY IN THE GROUND. THE SEDIMENT BASINS WILL BE INSPECTED FOR DEPTH OF SEDIMENT AND BUILT UP SEDIMENT WILL BE REMOVED WHEN IT REACHES 10 PERCENT OF THE DESIGN CAPACITY OR AT THE END OF THE JOB, WHICHEVER COMES FIRST. DIVERSION DIKES/SWALES WILL BE INSPECTED AND ANY BREACHES PROMPTLY REPAIRED. TEMPORARY AND PERMANENT SEEDING WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION. A COPY OF SITE INSPECTION AND MAINTENANCE REPORTS WILL BE MADE AVAILABLE UPON REQUEST TO THE OWNER, ENGINEER OR ANY FEDERAL, STATE OR LOCAL AGENCY APPROVING SEDIMENT AND EROSION PLANS, OR STORM WATER MANAGEMENT PLANS, OR ANY STATE OR LOCAL AGENCY REQUESTING THE REPORTS. THE REPORTS SHALL BE MADE AND RETAINED AS PART OF THE STORM WATER POLLUTION PREVENTION PLAN FOR AT LEAST THREE YEARS FROM THE DATE THAT THE SITE IS FINALLY STABILIZED AND THE NOTICE OF TERMINATION IS SUBMITTED. THE REPORTS SHALL IDENTIFY ANY INCIDENTS OF NON-COMPLIANCE. THE SITE SUPERINTENDENT WILL SELECT UP TO THREE INDIVIDUALS WHO WILL BE RESPONSIBLE FOR INSPECTIONS, MAINTENANCE AND REPAIR ACTIVITIES, AND FILLING OUT THE INSPECTION AND MAINTENANCE REPORT. PERSONNEL SELECTED FOR INSPECTION AND MAINTENANCE RESPONSIBILITIES WILL RECEIVE TRAINING FROM THE SITE SUPERINTENDENT. THEY WILL BE TRAINED IN ALL THE INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT CONTROLS USED ONSITE IN GOOD WORKING ORDER. NON-STORM WATER DISCHARGES IT IS EXPECTED THAT THE FOLLOWING NON-STORM WATER DISCHARGES WILL OCCUR FROM THE SITE DURING THE CONSTRUCTION PERIOD: WATER FROM WATER LINE FLUSHING PAVEMENT WASH WATERS (WHERE NO SPILLS OR LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE OCCURRED). UNCONTAMINATED GROUNDWATER (FROM DEWATERING EXCAVATION). ALL NON-STORM WATER DISCHARGES WILL BE DIRECTED TO THE SEDIMENT BASIN PRIOR TO DISCHARGE.



NOTES:
1. MATERIALS, CONSTRUCTION METHODS AND MAINTENANCE SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND DESIGN STANDARDS CURRENT EDITION.
2. CONTRACTOR SHALL PROVIDE SILT FENCES, SYNTHETIC JUTE BALES, WATTLES, &/OR HAVE BEST MANAGEMENT PRACTICES (BMP'S) AS REQUIRED AT ALL STORMWATER DISCHARGE POINTS FOR EROSION CONTROL AND SEDIMENT CONTROL DURING CONSTRUCTION.
3. CONTRACTOR SHALL ROUGH GRADE STORM- WATER SWALES AND RETENTION AREAS PRIOR TO CONSTRUCTION OF SITE IMPROVEMENTS.
4. CONTRACTOR SHALL MEET ALL PERMIT CONDITIONS AS ESTABLISHED BY THE CITY OF PALM COAST AND ALL OTHER APPLICABLE AGENCIES, INCLUDING BUT NOT LIMITED TO COUNTY, FDOT, AND THE SJRWMD.

STANDARD CONSTRUCTION DETAIL
SILT FENCE TURBIDITY BARRIER

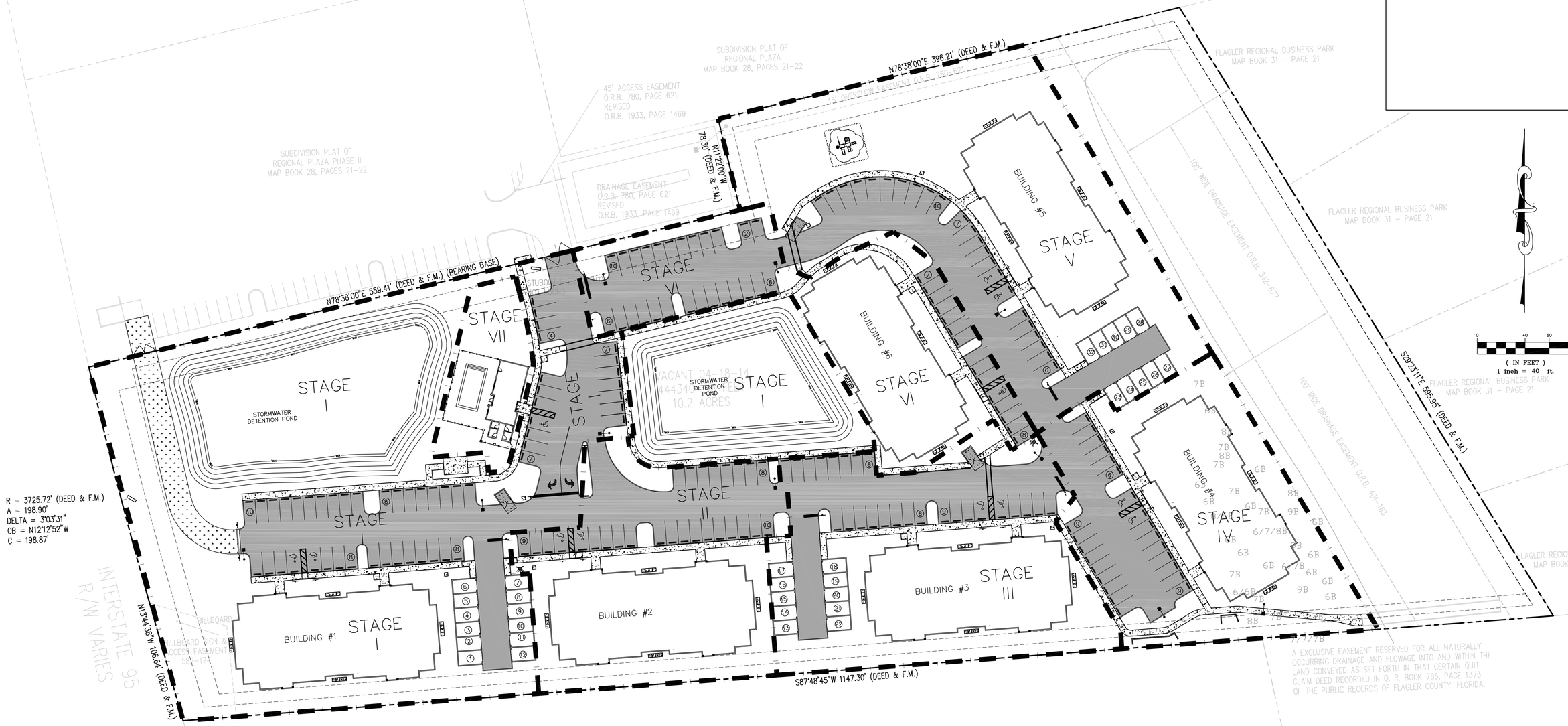
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OR-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. ALL MATERIALS SPILLED, DROPPED, OR TRACKED ONTO PUBLIC ROADS (INCLUDING T.G.C.E. AGGREGATE AND CONSTRUCTION MUD) SHALL BE REMOVED DAILY, OR MORE FREQUENTLY IF SO DIRECTED.

STANDARD CONSTRUCTION DETAIL
TEMPORARY GRAVEL
CONSTRUCTION ENTRANCE

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
CERTIFICATE No. EB5479
880 AIRPORT ROAD, SUITE. 113
ORMOND BEACH, FL 32174
TEL: (386) 673-7640
FAX: (386) 673-3927

FLAGLER POINTE
PALM COAST, FL
STAGING PLAN



STAGE 1

- ALL CLEARING AND FILL
- ALL STORM WATER RETENTION PONDS, STORM PIPES, AND INLETS
- ALL SEWER MAINS
- ALL POTABLE WATER MAINS
- BUILDING #1
- 2 SETS OF 6 STALL GARAGE BUILDINGS
- MAILBOX KIOSK
- DUMPSTER ENCLOSURE SHOWN FOR STAGE 1
- SIDEWALKS IN FRONT OF BUILDING #1
- MAIN ACCESS DRIVEWAY AND PARKING LOT PAVING & STRIPING AS SHOWN FOR STAGE 1
- EMERGENCY ACCESS DRIVEWAY
- ASSOCIATED LIGHTING AS SHOWN FOR STAGE 1
- LANDSCAPING AND IRRIGATION FOR STAGE 1

STAGE 2

- BUILDING #2
- PARKING LOT PAVING & STRIPING AS SHOWN FOR STAGE 2
- SIDEWALKS IN FRONT OF BUILDING #2
- ASSOCIATED LIGHTING AS SHOWN FOR STAGE 2
- LANDSCAPING AND IRRIGATION FOR STAGE 2

STAGE 3

- BUILDING #3
- 2 SETS OF 5 STALL GARAGE BUILDINGS
- PARKING LOT PAVING & STRIPING AS SHOWN FOR STAGE 3
- SIDEWALKS IN FRONT OF BUILDING #3
- ASSOCIATED LIGHTING AS SHOWN FOR STAGE 3
- DUMPSTER ENCLOSURE SHOWN FOR STAGE 3
- LANDSCAPING & IRRIGATION FOR STAGE 3

STAGE 4

- BUILDING #4
- PARKING LOT PAVING & STRIPING AS SHOWN FOR STAGE 4
- SIDEWALKS SHOWN FOR STAGE 4
- ASSOCIATED LIGHTING AS SHOWN FOR STAGE 4
- LANDSCAPING & IRRIGATION FOR STAGE 4

STAGE 5

- BUILDING #5
- DUMPSTER ENCLOSURE SHOWN FOR STAGE 5
- 2 SETS OF 5 STALL GARAGE BUILDINGS
- PARKING LOT PAVING & STRIPING AS SHOWN FOR STAGE 5
- SIDEWALKS IN FRONT OF BUILDING #5
- ASSOCIATED LIGHTING AS SHOWN FOR STAGE 5
- LANDSCAPING & IRRIGATION FOR STAGE 5
- CHILDREN'S' PLAYSET

STAGE 6

- BUILDING #6
- PARKING LOT PAVING & STRIPING AS SHOWN FOR STAGE 6
- SIDEWALKS SHOWN FOR STAGE 6
- ASSOCIATED LIGHTING AS SHOWN FOR STAGE 6
- LANDSCAPING & IRRIGATION FOR STAGE 6

STAGE 7

- CLUBHOUSE
- POOL & ASSOCIATED PATIO AREA
- LANDSCAPING & IRRIGATION FOR CLUBHOUSE

NO.	DATE	REVISION	BY
4	6/15/15	ADD 4" FIRE LINE	MRZ
3	12/22/14	PER SJRWMD & COPC COMMENTS	MRZ
2	12/12/14	PER COPC COMMENTS	MRZ
1	10/29/14	PER COPC/SJRWMD COMMENTS	MRZ

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

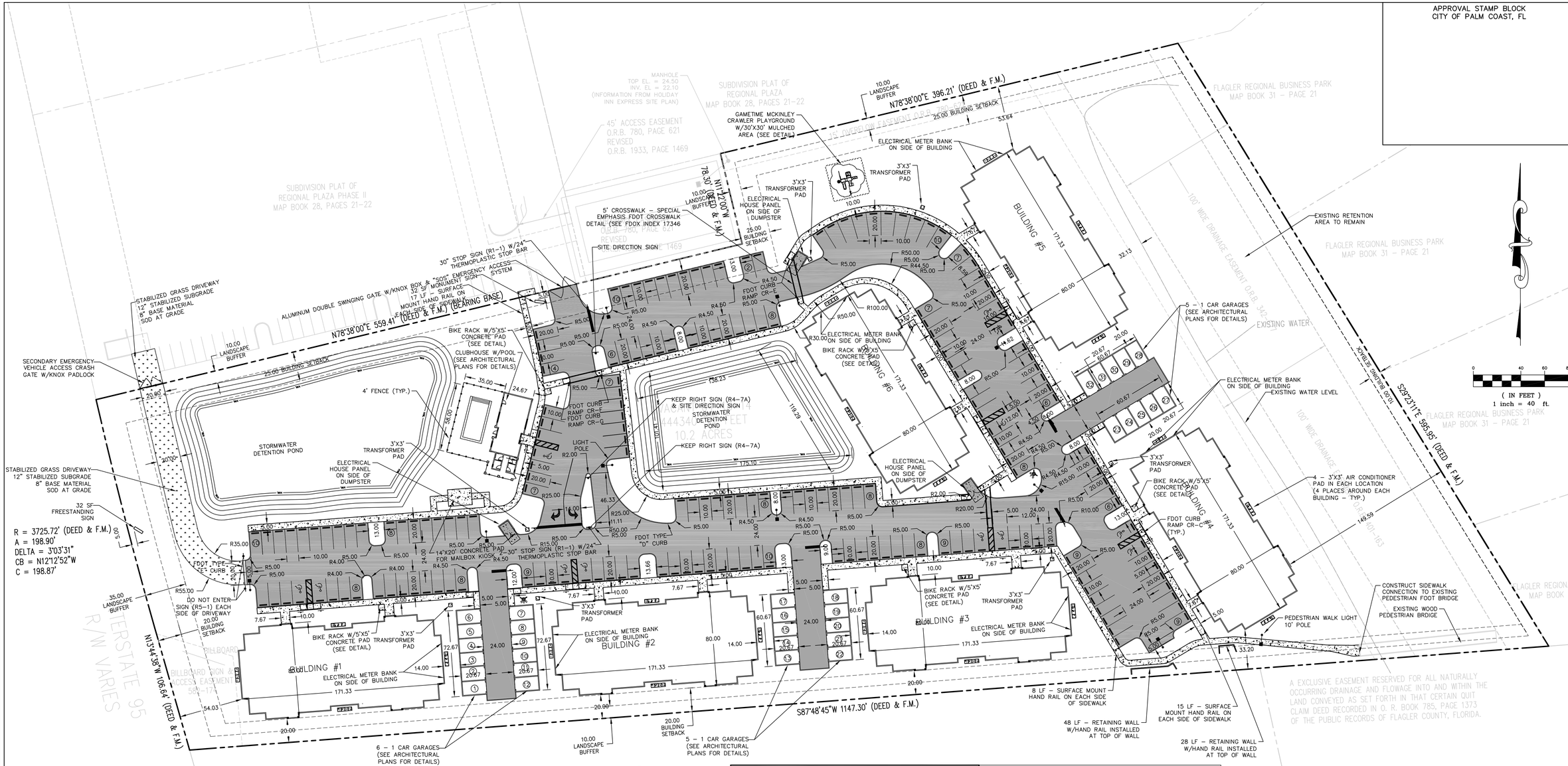
NOT VALID UNLESS SIGNED & SEALED

SHEET
C2 OF 18

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
CERTIFICATE No. EB5479
880 AIRPORT ROAD, SUITE. 113
ORMOND BEACH, FL 32174
TEL: (386) 673-7640
FAX: (386) 673-3927

FLAGLER POINTE
PALM COAST, FL
DIMENSION PLAN



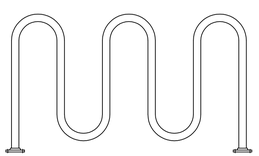
		MRZ	BY
5	ADD 4" FIRE LINE	MRZ	REVISION
4	6/15/15	MRZ	NO.
3	12/22/14	PER SJRWMD & COPC COMMENTS	DATE
2	12/12/14	PER COPC COMMENTS	
1	10/29/14	PER COPC/SJRWMD COMMENTS	

DESIGNER	MRZ	DRAWN BY	MRZ
FILE	1410-1	PROJECT	1410.1
DATE	5/15/14	SCALE	1"=40'

THIS DRAWING CANNOT BE ALTERED IN ANY WAY. IF CHANGES ARE REQUIRED PLEASE CONTACT YOUR GAMETIME REPRESENTATIVE @ 1-800-235-2440.

BUILDING DATA TABLE:

PROPOSED BUILDING FOOTPRINT:	11,884 SF
PROPOSED UNITS/BUILDING:	16
TOTAL PROPOSED BUILDING FOOTPRINT AREA:	71,304 SF



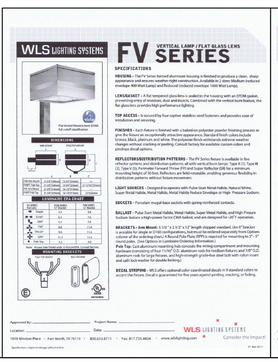
BICYCLE RACK (5 SPACES)
N.T.S.

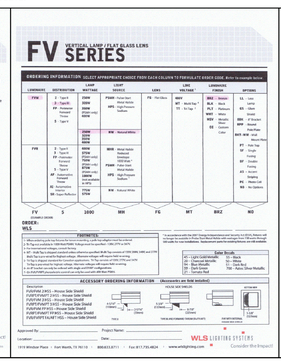
INSTALL SURFACE MOUNTED BICYCLE RACKS

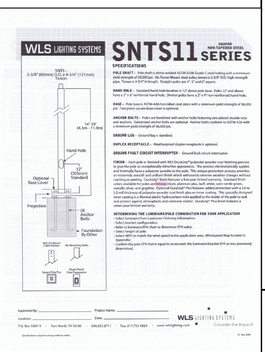
PARK IT BICYCLE RACK (OR EQUIVALENT)
MODEL 7-27704 BK
WITH SURFACE MOUNT COVERS
COLOR: BLACK

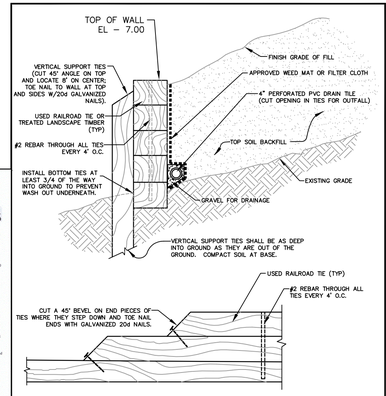
PARKING LIGHT FIXTURES:
WLS–FVM–3–250–NW – 8 EA

LIGHT POLES:
20'–SQUARE–4" STEEL POLES COMPLETE WITH ANCHOR BOLTS.

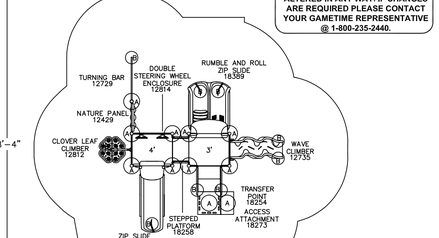








RETAINING WALL DETAIL
NTS



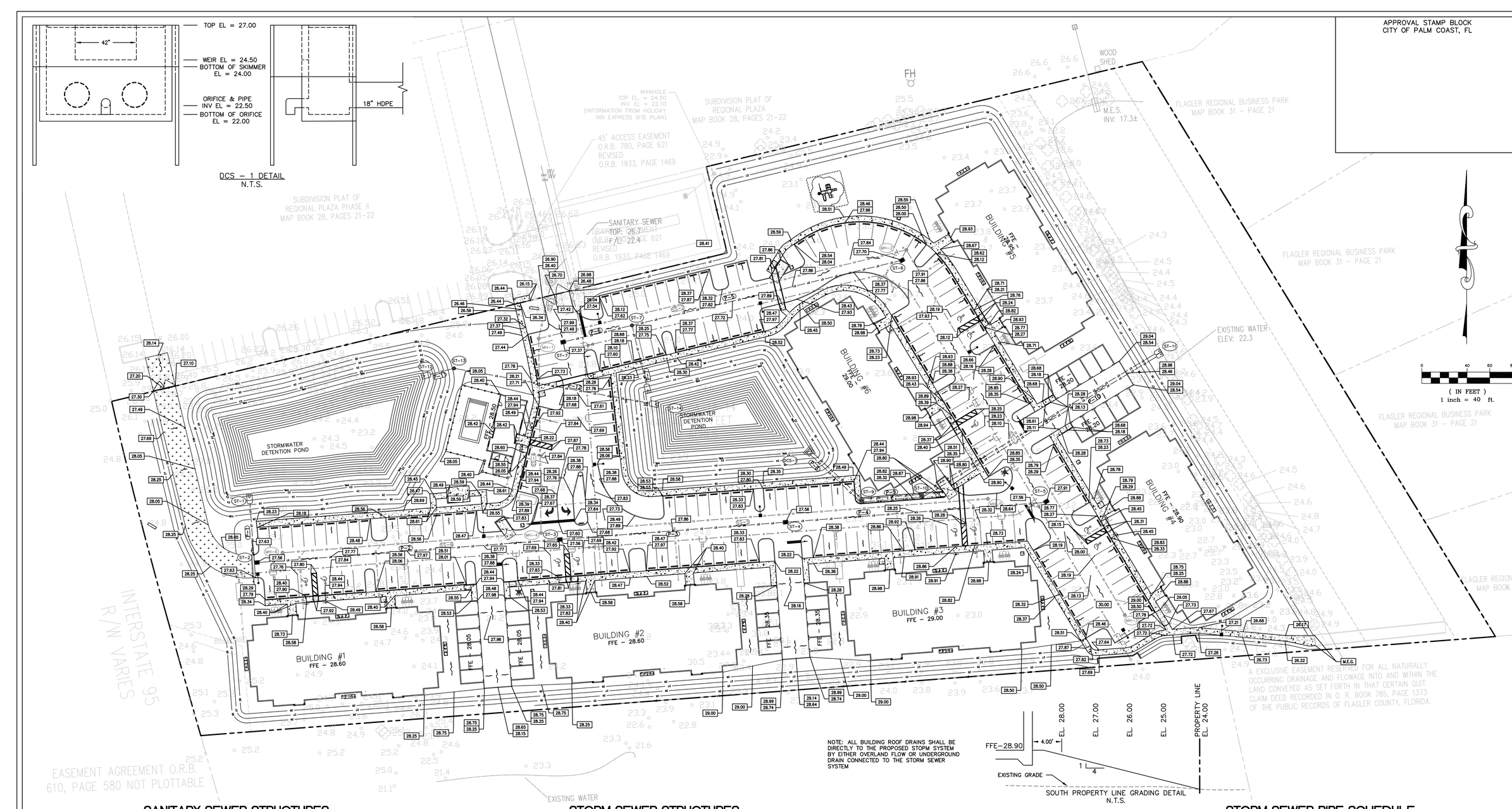
FOOTINGS TABLE			
TYPE	DIAMETER/SIDE	DEPTH*	QTY.
A	1'–8" [45.72cm]	2'–6" [76.20cm]	11
B	1'–2" [35.56cm]	2'–6" [76.20cm]	9
*DEPTH IS MEASURED FROM FINISHED GRADE			

NOTE:
ON NON–LETTERED HOLES, TO ENSURE CONCRETE REQUIREMENTS PLEASE REFER TO EACH COMPONENTS INSTALLATION SHEETS.

NOT VALID UNLESS SIGNED & SEALED

SHEET
C3 OF 18

DCS – 1 DETAIL
N.T.S.



NOTE: ALL BUILDING ROOF DRAINS SHALL BE DIRECTLY TO THE PROPOSED STOPM SYSTEM BY EITHER OVERLAND FLOW OR UNDERGROUND DRAIN CONNECTED TO THE STORM SEWER SYSTEM

SOUTH PROPERTY LINE GRADING DETAIL
N.T.S.

SANITARY SEWER STRUCTURES

(MH-1) MANHOLE (PALM COAST DETAILS SS-8 & SS-9)
TOP EL = 27.59
INV IN (E & S)= 22.69
INV OUT (N) = 22.59

(MH-2) MANHOLE (PALM COAST DETAILS SS-8 & SS-9)
TOP EL = 27.90
INV IN (S) = 24.13
INV OUT (W) = 24.03

(MH-3) MANHOLE (PALM COAST DETAILS SS-8 & SS-9)
TOP EL = 29.33
INV OUT (N) = 25.63

(MH-4) MANHOLE (PALM COAST DETAILS SS-8 & SS-9)
TOP EL = 27.63
INV IN (E&W) = 23.48
INV OUT (N) = 23.38

(MH-5) MANHOLE (PALM COAST DETAILS SS-8 & SS-9)
TOP EL = 28.76
INV OUT (W) = 25.06

(MH-6) MANHOLE (PALM COAST DETAILS SS-8 & SS-9)
TOP EL = 28.10
INV OUT (W) = 24.40

SANITARY SEWER PIPE SCHEDULE

PIPE	LENGTH	SIZE	MATERIAL	SLOPE
SS-1	48 LF	8"	PVC	0.40%
SS-2	335 LF	8"	PVC	0.40%
SS-3	376 LF	8"	PVC	0.40%
SS-4	172 LF	8"	PVC	0.40%
SS-5	396 LF	8"	PVC	0.40%
SS-6	229 LF	8"	PVC	0.40%

STORM SEWER STRUCTURES

(ST-1) MITERED END SECTION (FDOT INDEX 273)
INV EL = 20.69

(ST-2) FDOT TYPE "C" INLET (FDOT INDEX 232)
TOP EL = 27.56
INV EL (N & E) = 20.83

(ST-3) FDOT TYPE "C" INLET (FDOT INDEX 232)
TOP EL = 27.56
INV EL (N & W) = 21.50
INV EL (E) = 22.95

(ST-4) FDOT TYPE "C" INLET (FDOT INDEX 232)
TOP EL = 27.56
INV EL (E & W) = 23.44

(ST-5) FDOT TYPE "C" INLET (FDOT INDEX 232)
TOP EL = 27.91
INV EL (W) = 24.00

(ST-6) FDOT TYPE "C" INLET (FDOT INDEX 232)
TOP EL = 27.56
INV EL (W & S) = 24.00

(ST-7) FDOT TYPE "C" INLET (FDOT INDEX 232)
TOP EL = 27.56
INV EL (E) = 23.24
INV EL (S & SE) = 21.07

(ST-8) MITERED END SECTION (FDOT INDEX 273)
INV EL = 20.86

(ST-9) FDOT MANHOLE (FDOT INDEX 201) W/ TYPE J-6 BOTTOM
TOP EL = 28.50
INV EL (N & E) = 22.41

(ST-10) FDOT MANHOLE (FDOT INDEX 201) W/ TYPE J-6 BOTTOM
TOP EL = 28.83
INV OUT (W) = 22.34

(ST-11) MITERED END SECTION (FDOT INDEX 273)
INV EL = 21.80

(ST-12) MITERED END SECTION (FDOT INDEX 273)
INV EL = 19.50

(ST-13) FDOT MANHOLE (FDOT INDEX 201)
TOP EL = 27.00
INV OUT (W) = 19.50

(ST-14) MITERED END SECTION (FDOT INDEX 273)
INV EL = 19.50

(DCS-1) FDOT TYPE "H" INLET (FDOT INDEX 232)
TOP EL = 27.00 WEIR EL = 24.50
ORIFICE EL = 22.50 SKIMMER TOP = 27.00
ORIFICE SIZE = 2.50 SKIMMER BOTTOM = 24.00
INV EL OUT = 22.50

STORM SEWER PIPE SCHEDULE

PIPE	LENGTH	SIZE	MATERIAL	SLOPE
P-1	59 LF	18"	HDPE	0.25%
P-2	267 LF	18"	HDPE	0.25%
P-3	196 LF	18"	HDPE	0.25%
P-4	225 LF	18"	HDPE	0.25%
P-5	242 LF	18"	HDPE	0.25%
P-6	59 LF	18"	HDPE	0.25%
P-7	52 LF	18"	HDPE	0.25%
P-8	67 LF	2-24"	HDPE	0.20%
P-9	51 LF	2-24"	HDPE	0.20%
P-10	246 LF	2-24"	HDPE	0.20%
P-11	28 LF	24"	HDPE	0.00%
P-12	182 LF	24"	HDPE	0.00%

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
CERTIFICATE No. EB5479
880 AIRPORT ROAD, SUITE. 113
ORMOND BEACH, FL 32174
TEL: (386) 673-7640
FAX: (386) 673-3927

(IN FEET)
1 inch = 40 ft.

FLAGLER POINTE
PALM COAST, FL
PAVING, GRADING & DRAINAGE PLAN

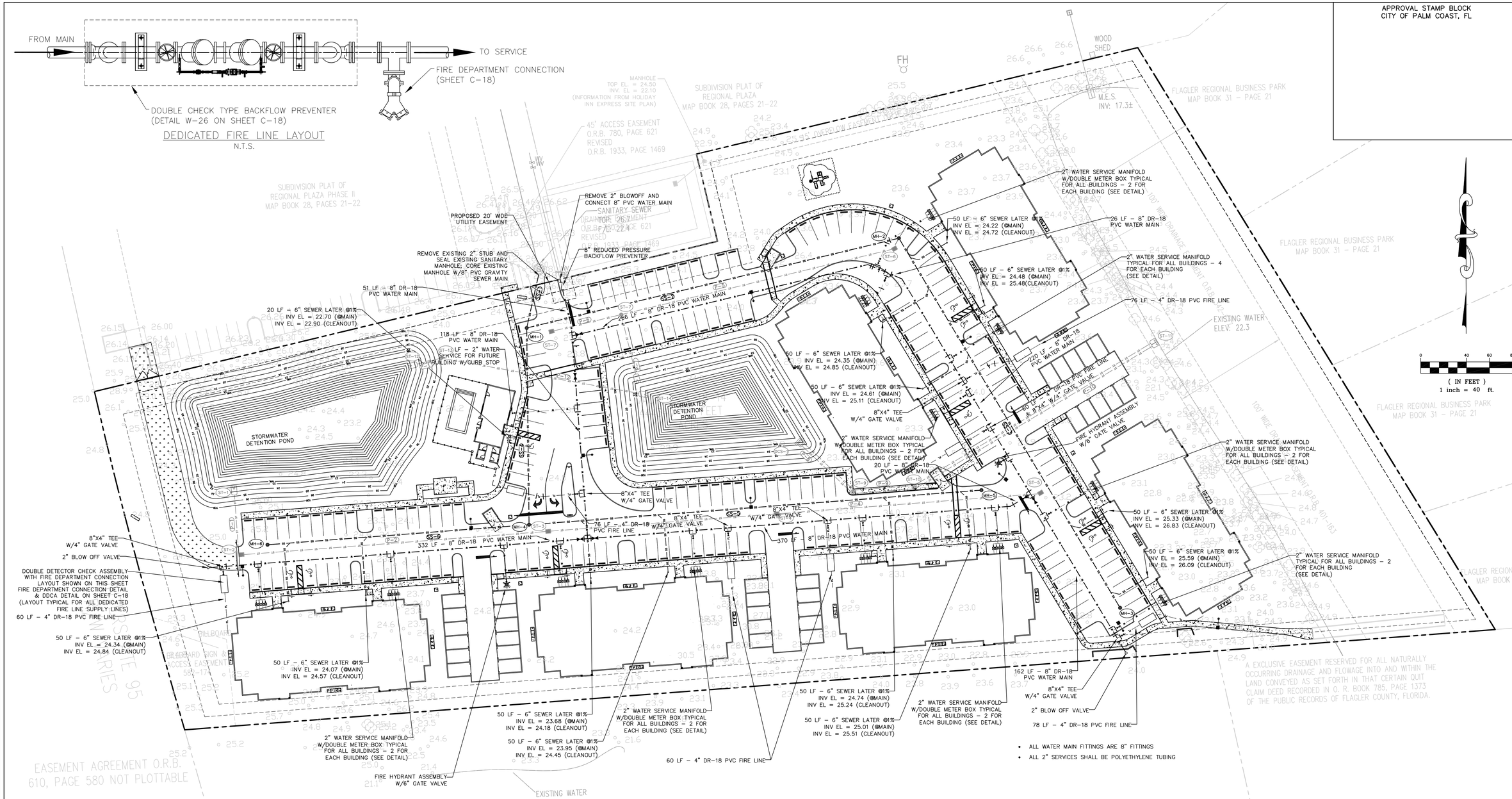
NO.	DATE	REVISION	BY
4	6/15/15	ADD 4" FIRE LINE	MRZ
3	12/22/14	PER SJRWMD & COPC COMMENTS	MRZ
2	12/12/14	PER COPC COMMENTS	MRZ
1	10/29/14	PER COPC/SJRWMD COMMENTS	MRZ

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

NOT VALID UNLESS SIGNED & SEALED

SHEET
C4 OF 18

DEDICATED FIRE LINE LAYOUT
N.T.S.



- ALL WATER MAIN FITTINGS ARE 8" FITTINGS
- ALL 2" SERVICES SHALL BE POLYETHYLENE TUBING

SANITARY SEWER STRUCTURES

(MH-1) MANHOLE (PALM COAST DETAILS SS-8 & SS-9)
TOP EL = 27.59
INV IN (E & S)= 22.69
INV OUT (N) = 22.59

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INV OUT (W) = 25.06

(MH-6) MANHOLE (PALM COAST DETAILS SS-8 & SS-9)
TOP EL = 28.10
INV OUT (W) = 24.40

SANITARY SEWER PIPE SCHEDULE

PIPE	LENGTH	SIZE	MATERIAL	SLOPE
SS-1	48 LF	8"	PVC	0.40%
SS-2	335 LF	8"	PVC	0.40%
SS-3	376 LF	8"	PVC	0.40%
SS-4	172 LF	8"	PVC	0.40%
SS-5	396 LF	8"	PVC	0.40%
SS-6	229 LF	8"	PVC	0.40%

STORM SEWER STRUCTURES

(ST-1) MITERED END SECTION (FDOT INDEX 273)
INV EL = 20.69

(ST-2) FDOT TYPE "C" INLET (FDOT INDEX 232)
TOP EL = 27.56
INV EL (N & E) = 20.83

(ST-3) FDOT TYPE "C" INLET (FDOT INDEX 232)
TOP EL = 27.56
INV EL (N & W) = 21.50
INV EL (E) = 22.95

(ST-4) FDOT TYPE "C" INLET (FDOT INDEX 232)
TOP EL = 27.56
INV EL (E & W) = 23.44

(ST-5) FDOT TYPE "C" INLET (FDOT INDEX 232)
TOP EL = 27.91
INV EL (W) = 24.00

(ST-6) FDOT TYPE "C" INLET (FDOT INDEX 232)
TOP EL = 27.56
INV EL (W & S) = 24.00

(ST-7) FDOT TYPE "C" INLET (FDOT INDEX 232)
TOP EL = 27.56
INV EL (E) = 23.24
INV EL (S & SE) = 21.07

(ST-8) MITERED END SECTION (FDOT INDEX 273)
INV EL = 20.86

(ST-9) FDOT MANHOLE (FDOT INDEX 201) W/ TYPE J-6 BOTTOM
TOP EL = 28.50
INV EL (N & E) = 22.41

(ST-10) FDOT MANHOLE (FDOT INDEX 201) W/ TYPE J-6 BOTTOM
TOP EL = 28.83
INV OUT (W) = 22.34

(ST-11) MITERED END SECTION (FDOT INDEX 273)
INV EL = 21.80

(ST-12) MITERED END SECTION (FDOT INDEX 273)
INV EL = 19.50

(ST-13) FDOT MANHOLE (FDOT INDEX 201)
TOP EL = 27.00
INV OUT (W) = 19.50

(ST-14) MITERED END SECTION (FDOT INDEX 273)
INV EL = 19.50

(DCS-1) FDOT TYPE "H" INLET (FDOT INDEX 232)
TOP EL = 27.00
ORIFICE EL = 22.50
ORIFICE SIZE = 2.50
INV EL OUT = 22.50
WEIR EL = 24.50
SKIMMER TOP = 27.00
SKIMMER BOTTOM = 24.00

STORM SEWER PIPE SCHEDULE

PIPE	LENGTH	SIZE	MATERIAL	SLOPE
P-1	59 LF	18"	HDPE	0.25%
P-2	267 LF	18"	HDPE	0.25%
P-3	196 LF	18"	HDPE	0.25%
P-4	225 LF	18"	HDPE	0.25%
P-5	242 LF	18"	HDPE	0.25%
P-6	59 LF	18"	HDPE	0.25%
P-7	52 LF	18"	HDPE	0.25%
P-8	67 LF	2-24"	HDPE	0.20%
P-9	51 LF	2-24"	HDPE	0.20%
P-10	246 LF	2-24"	HDPE	0.20%
P-11	28 LF	24"	HDPE	0.00%
P-12	182 LF	24"	HDPE	0.00%

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
CERTIFICATE No. EB5479
880 AIRPORT ROAD, SUITE. 113
ORMOND BEACH, FL 32174
TEL: (386) 673-7640
FAX: (386) 673-3927

(IN FEET)
1 inch = 40 ft.
0 40 60 80

FLAGLER POINTE
PALM COAST, FL
UTILITY PLAN

NO.	DATE	REVISION	BY
4	6/15/15	ADD 4" FIRE LINE	MRZ
3	12/22/14	PER SJRWMD & COPC COMMENTS	MRZ
2	12/12/14	PER COPC COMMENTS	MRZ
1	10/29/14	PER COPC/SJRWMD COMMENTS	MRZ

DESIGNER MRZ | DRAWN BY MRZ | DATE 5/15/14 | SCALE 1"=40' | FILE 1410-1 | PROJECT 1410.1

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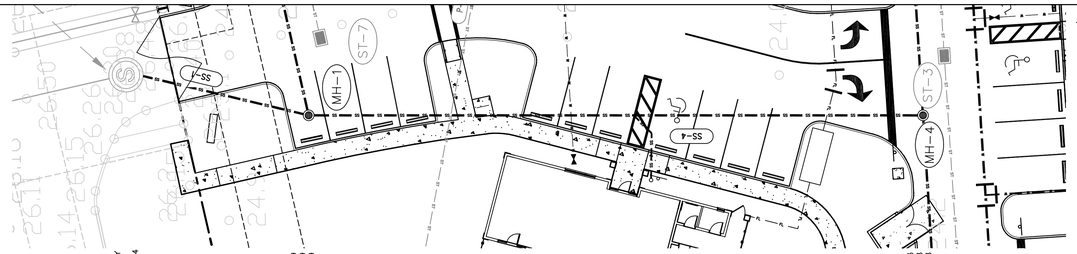
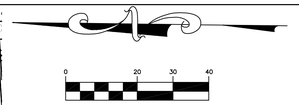
SHEET
C5 OF 18





(IN FEET)
1 inch = 20 ft.

APPROVAL STAMP BLOCK
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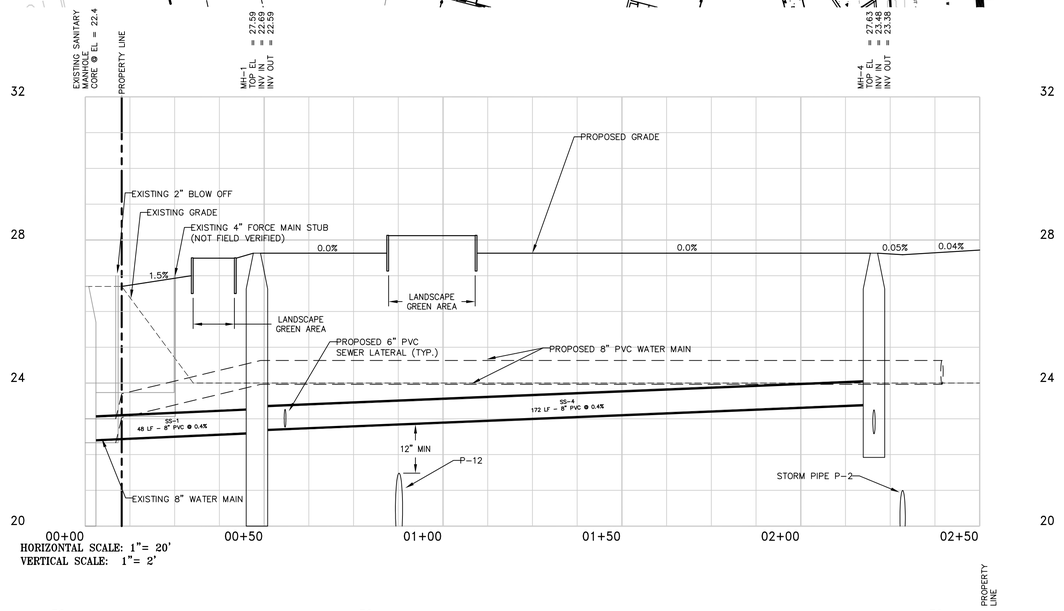
FLAGLER POINTE
PALM COAST, FL
PLAN & PROFILE SHEETS



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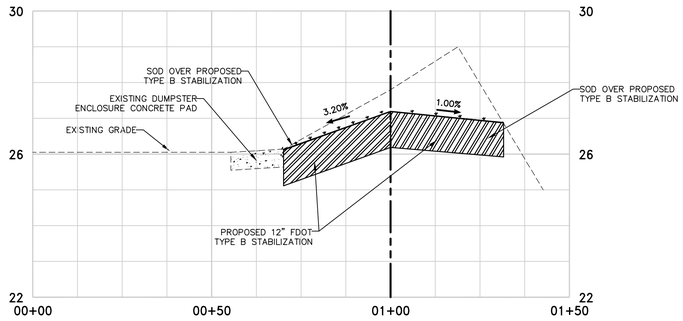
VERTICAL SCALE: 1"= 2'



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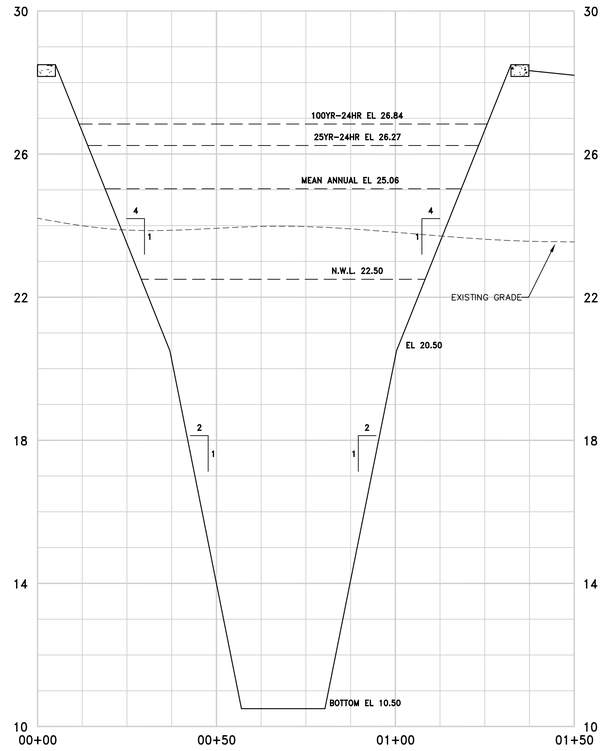
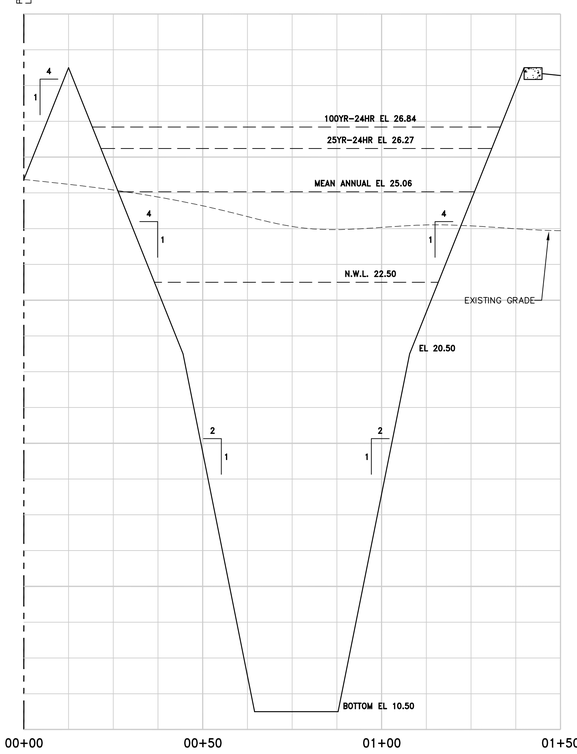
VERTICAL SCALE: 1"= 2'

EMERGENCY VEHICLE ACCESS



HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 2'

EAST POND



HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 2'

WEST POND

NO.	DATE	REVISION	BY
4	6/15/15	ADD 4" FIRE LINE	MRZ
3	12/22/14	PER SJRWMD & COPC COMMENTS	MRZ
2	12/12/14	PER COPC COMMENTS	MRZ
1	10/29/14	PER COPC/SJRWMD COMMENTS	MRZ

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

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C6.1 OF 18

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

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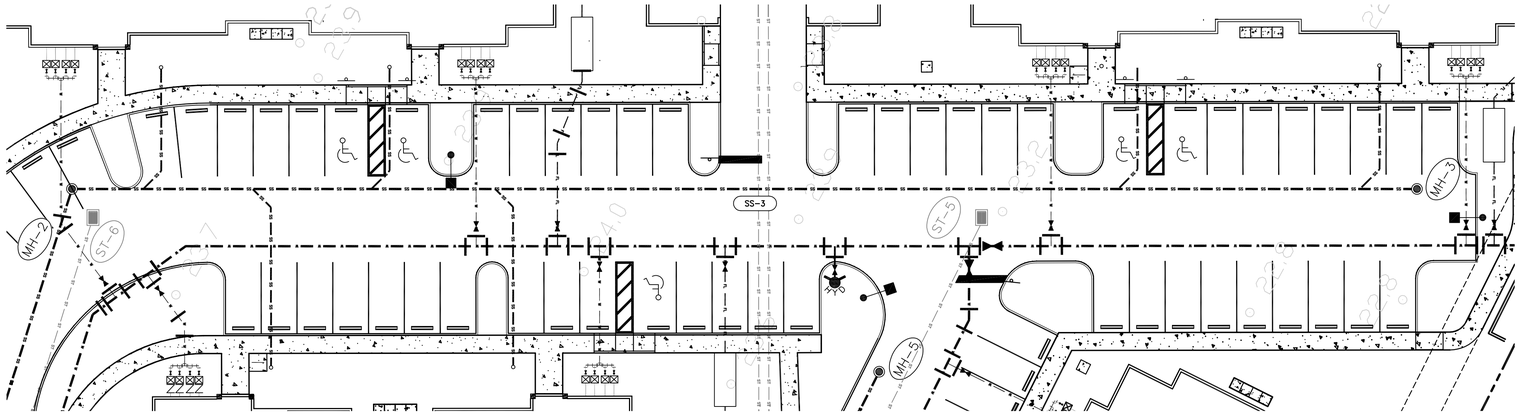

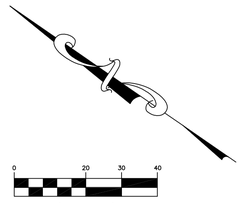

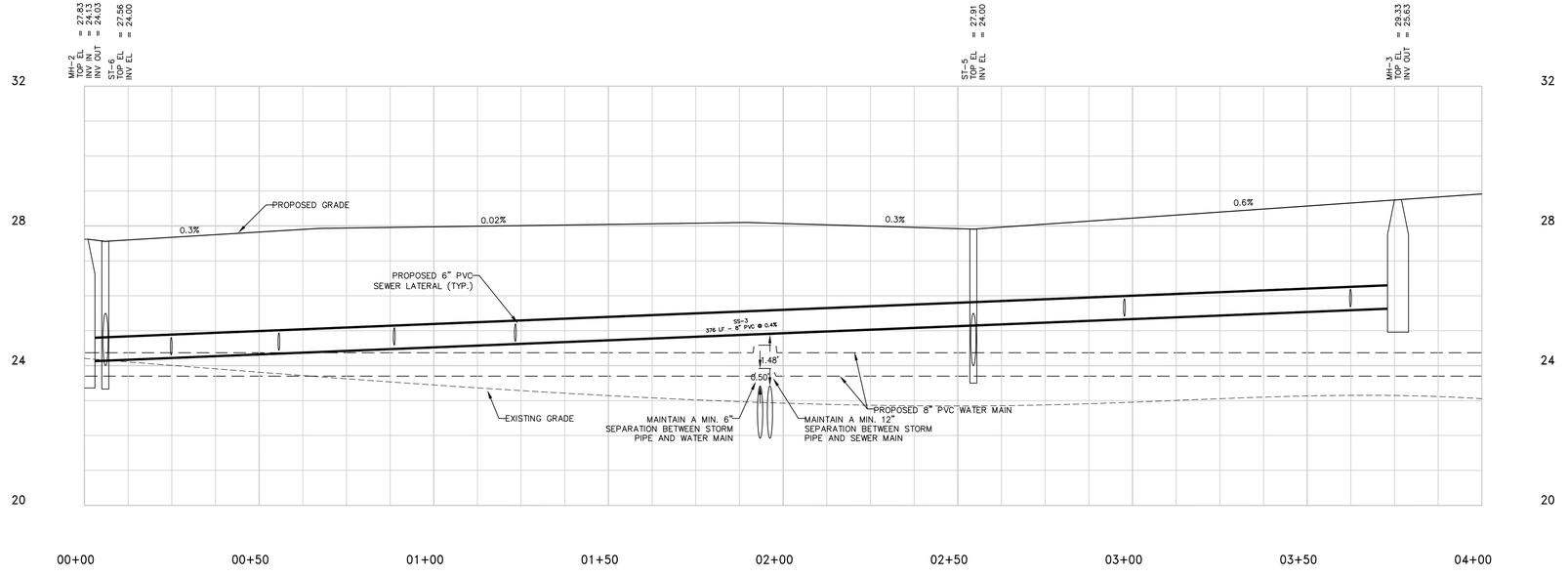

HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 2'

FLAGLER POINTE
PALM COAST, FL
PLAN & PROFILE SHEETS

NO.	DATE	REVISION	BY
4	6/15/15	ADD 4" FIRE LINE	MRZ
3	12/22/14	PER SJRWMD & COPC COMMENTS	MRZ
2	12/12/14	PER COPC COMMENTS	MRZ
1	10/29/14	PER COPC/SJRWMD COMMENTS	MRZ

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

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SHEET
C6.2 OF 18

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

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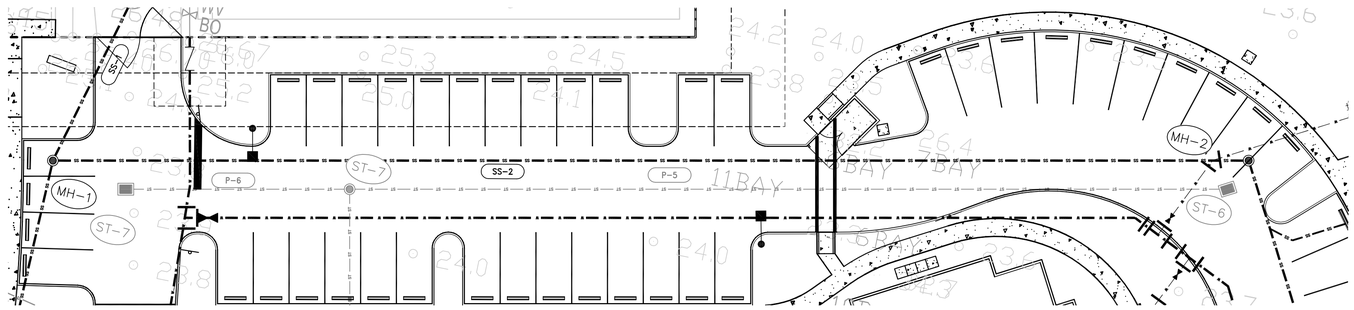
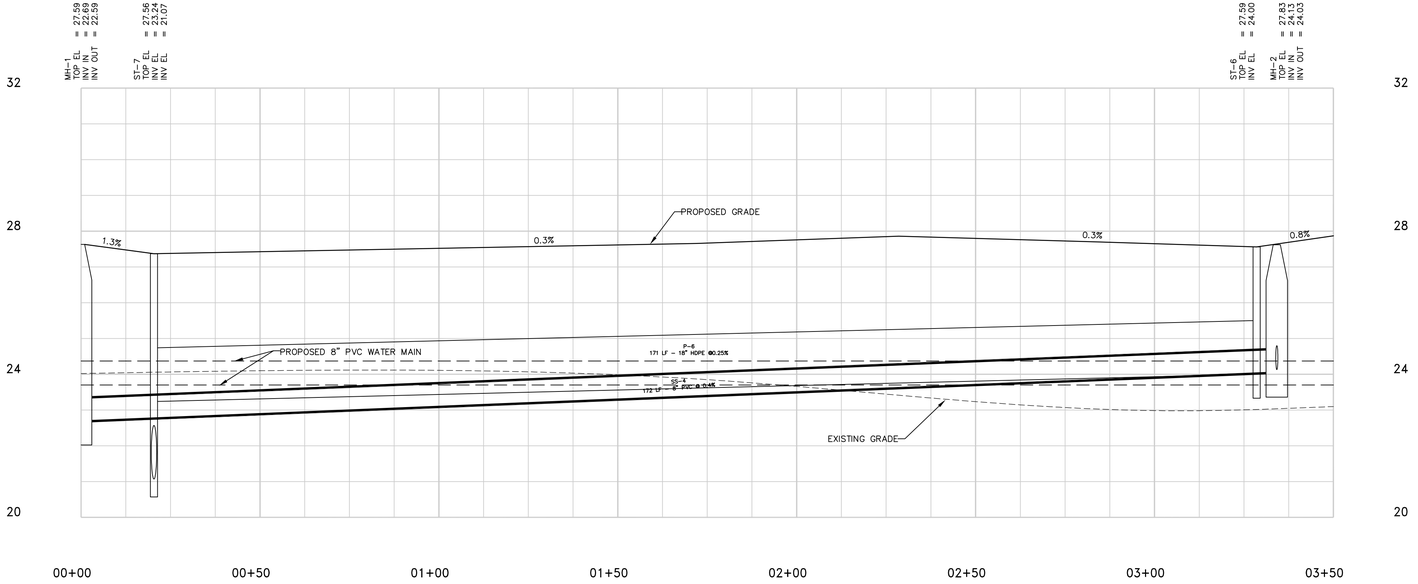
FLAGLER POINTE
PALM COAST, FL
PLAN & PROFILE SHEETS





HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 2'

NO.	DATE	REVISION	BY
4	6/15/15	ADD 4" FIRE LINE	MRZ
3	12/22/14	PER SJRWMD & COPC COMMENTS	MRZ
2	12/12/14	PER COPC COMMENTS	MRZ
1	10/29/14	PER COPC/SJRWMD COMMENTS	MRZ

DESIGNER MRZ	FILE 1410-1	DATE 5/15/14	
DRAWN BY MRZ	PROJECT 1410.1	SCALE 1"=40'	

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SHEET
C6.3 OF 18

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
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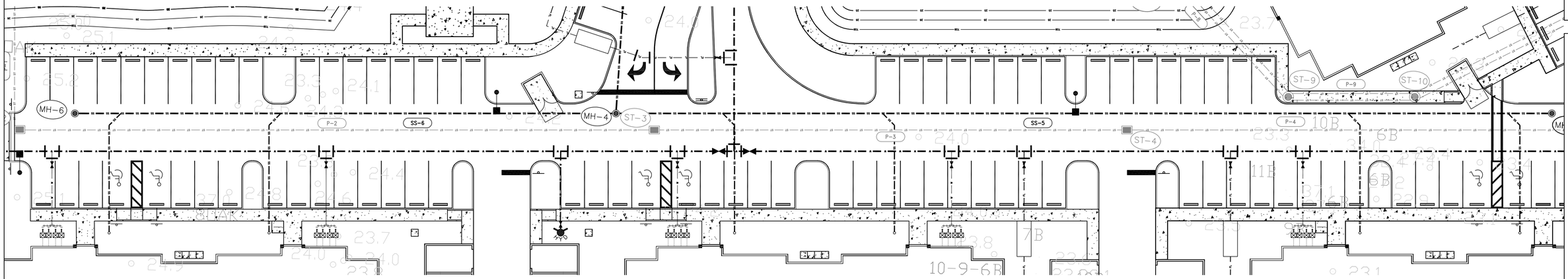
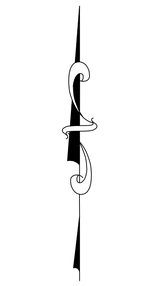
FLAGLER POINTE
PALM COAST, FL
PLAN & PROFILE SHEETS





HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 2'

NO.	DATE	REVISION	BY
4	6/15/15	ADD 4" FIRE LINE	MRZ
3	12/22/14	PER SJRWMD & COPC COMMENTS	MRZ
2	12/12/14	PER COPC COMMENTS	MRZ
1	10/29/14	PER COPC/SJRWMD COMMENTS	MRZ

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

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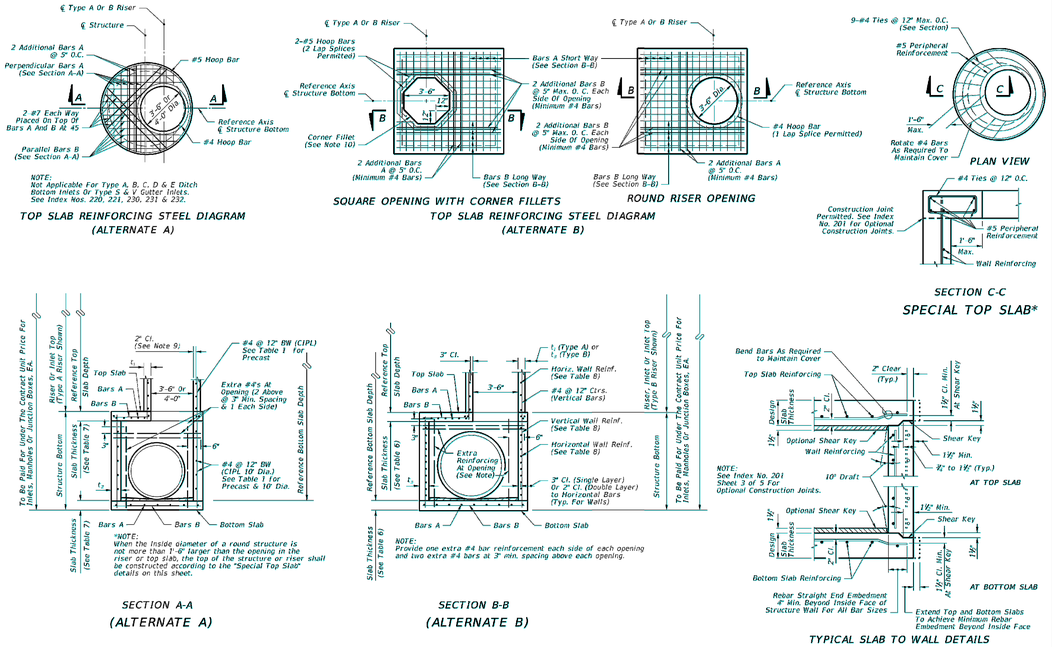
SHEET
C6.4 OF 18



LAST REVISION	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	STRUCTURE BOTTOMS TYPE J AND P	INDEX NO.	SHEET NO.
07/01/14				200	1 of 5

ROUND STRUCTURE BOTTOMS (ALTERNATE A) & ROUND RISERS- TABLE 1
Wall Thickness (t_1 & t_2) and Vertical & Horizontal Areas of Reinforcement (A_s)

Type	Structure/Riser Diameter (ft)	Cast-In-Place Items Class II Concrete t_1 Riser (in.)	Cast-In-Place Items Class II Concrete t_2 Bottom (in.)	Cast-In-Place Items Class II Concrete A_s (in^2/ft.)	Precast Items Class II Concrete t_1 Riser (in.)	Precast Items Class II Concrete t_2 Bottom (in.)	Precast Items Class II Concrete A_s (in^2/ft.)	Precast Items ASTM C478 t_1 or t_2 (in.)	Precast Items ASTM C478 A_s ***(in^2/ft.)
P	3'-6"	6	8	0.20	6	8	0.20	4**	0.105
P	4'-0"	6	8	0.20	6	8	0.20	5**	0.120
J	5'-0"	-	8	0.20	-	8	0.20	6**	0.150
J	6'-0"	-	8	0.20	-	8	0.20	6	0.180
J	7'-0"	-	8	0.20	-	8	0.20	7	0.210
J	8'-0"	-	8	0.20	-	8	0.20	8	0.240
J	10'-0"	-	10	0.40##	-	10	0.40##	10	0.300
J	12'-0"	-	10	0.40##	-	12	0.40##	12	0.360

TABLE 1 NOTES:
##Provide 0.20 eq. in^2/ft. at each face, 12" max. bar spacing.
**Modified minimum wall thickness.
***Min. total circumferential reinforcement for continuous steel hoops:
A_s = 0.50 sq. in. for riser section height equal or less than 2'-0" (2 hoop min.)
A_s = 0.75 sq. in. for riser section height more than 2'-0" up to 4'-0" (3 hoop min.)
Areas of reinforcing for precast items are based on Grade 60 reinforcing;
No reduction in the area of reinforcement is allowed for welded wire fabric in Table 1;
Area of vertical reinforcing may be reduced in accordance with ASTM C478.

SQUARE & RECTANGULAR STRUCTURES (ALTERNATE B) - TABLE 2

Type	Wall Length (ft)	Max. Depth (ft)	Wall Thickness (t_2) CIP (in.)	Wall Thickness (t_2) Precast (in.)
P	≤ 3'-6"	40	6 Riser 8 Bottom	6
J	4'-0"	40	8	6
J	5'-0"	22	-	6
J	6'-0"	15	-	6
J	5'-0" to 9'-0"	40	8	8
J	10'-0"	26	8	8
J	10'-0" to 12'-0"	40	10	9
J	16'-0"	35	-	9
J	16'-0"	40	10	10
J	20'-0"	25	-	9
J	20'-0"	30	10	10

TABLE 2 NOTES:
See Table 8 for Reinforcing Schedule.

GENERAL NOTES

1. Standard structure bottoms 4'-0" diameter and smaller (Alt. A) and 3'-6" square (Alt. B) are designated Type P. Larger standard structure bottoms are designated Type J. Risers are permitted for all structures. Round risers are designated Type A, square risers are designated Type B.
2. Walls of circular structures (Alt. A) constructed in place may be of brick or reinforced concrete. Precast and rectangular structures (Alt. B) shall be constructed of reinforced concrete only.
3. Wall thickness and reinforcement are for either reinforced cast-in-place or precast concrete units except that precast circular units may be furnished with walls in accordance with ASTM C478 (see modified wall thicknesses in Table 1).
4. Top and bottom slab thickness and reinforcement are for precast and cast-in-place construction. All concrete shall be of Class II concrete, except use Class IV concrete when shown in the Plans, for special applications of structures located in extremely aggressive environments. Concrete as specified in ASTM C478 (4000 psi) may be used in lieu of Class II concrete for precast items manufactured in accordance with Specifications Section 449.
5. All reinforcement shown is Grade 60 steel, deformed bar. Equivalent area Grade 40 steel or equivalent area smooth or deformed welded wire reinforcement in accordance with Specification Section 931 may be substituted according to Index No. 201, unless otherwise noted.
6. Alt. A or Alt. B structure bottoms may be used in conjunction with curb inlet tops Types 1, 2, 3, 4, 5, 6, 9, and 10, and any manhole or junction box unless otherwise shown in the plans or other standard drawings. Alt. B structure bottoms may be used in conjunction with curb inlet Types 7 & 8, or any ditch bottom inlet unless otherwise shown in the plans or other standard drawings.
7. Rectangular structures may be rotated as directed by the Engineer in order to facilitate connections between the structure walls and storm sewer pipes.
8. Except when ACI hooks are specifically required, reinforcement in top and bottom slab shall be straight embedment.
9. All reinforcement must have 2" minimum cover except for 3'-0" diameter precast circular units manufactured under ASTM C478, keyed construction otherwise shown. Additional bars used to restrain hole formers for precast structures with grouted pipe connections may be left flush with the hole surface. Cut or bend reinforcement at pipe openings to maintain cover. Exposed ends of reinforcing at precast pipe openings and grouted joints must be removed to 1" below the concrete surface and sealed with a Type F epoxy in accordance with Specification Section 926. Horizontal steel in rectangular structures shall be lapped a minimum of 30 bar diameters or by standard hooks at corners.
10. The corner fillets shown are necessary for rectangular structures used with circular risers and inlet throats and when used on skew with rectangular risers, inlets and inlet throats. Fillets will be required in the top slab of the Alt. A structure bottoms when used with the Alt. B risers. Each fillet shall be reinforced with two #5 bars.
11. Inlet walls, throats, risers or manhole tops shall be secured to structures as shown on Index No. 201 (Sheet 3 of 5) Optional Construction Joints.
12. Structures with depths over 14' below the mean high water table are to be checked for flotation by the designer of the drainage project.
13. Units larger than specified standards may be substituted at the contractor's option when these units will not cause or increase the severity of utility conflicts. Such larger units shall be furnished at no additional cost to the Department. Larger Alt. A units cannot replace Alt. B units without approval of the Engineer. This note applies to this Index only.
14. For manhole and junction box tops, for frames and covers, and, for supplementary details and notes see Index No. 201.
15. Type J structure bottoms must have a minimum 6'-0" wall height when possible, for maintenance access.

LAST REVISION	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	STRUCTURE BOTTOMS TYPE J AND P	INDEX NO.	SHEET NO.
07/01/13				200	2 of 5

TABLE 3-MINIMUM STRUCTURE SIZES FOR SINGLE PIPE CONNECTION PER SIDE

PIPE SIZE	RECTANGULAR Side Dimension (L) Single Pipe Per Side	RECTANGULAR Note Number	ROUND Diameter (D) Single Pipe or θ=90°	ROUND Diameter (D) 2 to 4 Pipes θ=90°
18"	3'-6"		3'-6"	4'-0"
24"	3'-6"		3'-6"	5'-0"
30"	3'-6"/4'-0"	2	4'-0"	6'-0"
36"	4'-0"/5'-0"	3	5'-0"	7'-0"
42"	5'-0"		6'-0"	7'-0"
48"	6'-0"		6'-0"	8'-0"
54"	6'-0"		7'-0"	10'-0"
60"	7'-0"		7'-0"	10'-0"
66"	7'-0"/8'-0"	4	8'-0"	12'-0"
72"	8'-0"		8'-0"	12'-0"
78"	9'-0"		10'-0"	12'-0"
84"	9'-0"		12'-0"	N/A

TABLE 3 NOTES:
1. For Round Structures sizes with variable angles between pipes and variable pipe sizes, refer to the FDOT Storm Drain Handbook.
2. For 3'-6" Precast Square Structure Bottoms, 30" Pipes with similar invert elevations are not permitted in adjacent walls. Use 4'-0" Side Dimensions when 30" pipe openings are required on adjacent walls and the difference in flow lines is less than 3'-0".
3. For 4'-0" Precast Square Structure Bottoms, 36" Pipes with similar invert elevations are not permitted in adjacent walls. Use 5'-0" Side Dimensions when 36" pipe openings are required on adjacent walls and the difference in flow lines is less than 3'-0".
4. For 7'-0" Precast Square Structure Bottoms, 66" Pipes with similar invert elevations are not permitted in adjacent walls. Use 8'-0" Side Dimensions when 66" pipe openings are required on adjacent walls and the difference in flow lines is less than 4'-0".

TABLE 4-MINIMUM SIZES FOR MULTIPLE PARALLEL PIPE CONNECTIONS FOR RECTANGULAR STRUCTURE BOTTOMS

PIPE SIZE	PIPE SPACING (S)	MINIMUM WALL LENGTH (L) FOR NUMBER OF PARALLEL PIPES 2	3	4
18"	2'-10"	6'-0"	8'-6"	11'-0"
24"	3'-0"	6'-6"	10'-0"	13'-6"
30"	4'-3"	8'-0"	12'-6"	16'-6"
36"	5'-1"	9'-6"	14'-6"	19'-6"
42"	6'-0"	11'-0"	17'-0"	-
48"	6'-9"	12'-6"	19'-0"	-
54"	7'-8"	14'-0"	-	-
60"	8'-6"	15'-0"	-	-
66"	9'-4"	16'-6"	-	-
72"	10'-0"	18'-0"	-	-
78"	10'-9"	19'-0"	-	-
84"	11'-8"	20'-6"	-	-

TABLE 4 NOTES:
1. Minimum wall lengths based on precast structures, using concrete pipe with maximum skew angles per Table 5.
2. Wall lengths exceeding 20'-0" require special designs.

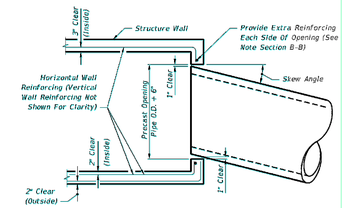
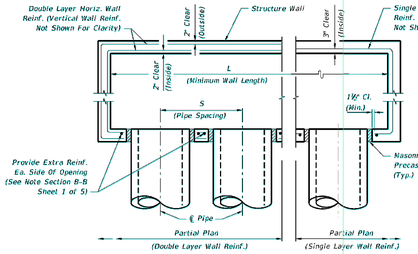
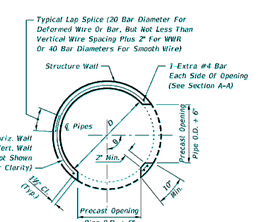


TABLE 5 - MAXIMUM PIPE SKEW FOR PRECAST ROUND OPENINGS

	WALL THICKNESS	PIPE SIZE 18"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"
MAXIMUM SKEW ANGLE	8"	19°	17°	16°	16°	15°	14°	14°	13°	13°	13°	12°	12°
	21"	29°	28°	26°	24°	23°	22°	21°	20°	19°	18°	17°	17°

TABLE 5 NOTES:
These values are based on 2" clearance for precast structures. Larger skews are possible for Cast-in-Place Structures or elliptical pipe openings when approved by the Engineer.





STRUCTURE SIZES FOR PIPE CONNECTIONS

LAST REVISION	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	STRUCTURE BOTTOMS TYPE J AND P	INDEX NO.	SHEET NO.
07/01/07				200	3 of 5

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
CERTIFICATE No. EB5479
880 AIRPORT ROAD, SUITE 113
ORMOND BEACH, FL 32174
TEL: (386) 673-7640
FAX: (386) 673-3927

FLAGLER POINTE
PALM COAST, FL
CONSTRUCTION DETAILS

NO.	DATE	REVISION	BY

DESIGNER	DRAWN BY	CHECKED BY
MRZ	MRZ	

DATE	SCALE
5/15/14	1"=40'

FILE	PROJECT
1410-1	1410.1

MICHAEL R. ZAFFUTO, P.E. #74069
NOT VALID UNLESS SIGNED & SEALED

SHEET
C7 OF 18

P:\1410-1 Flagler Pointe\Design\Base\1410-1 Base_Details.dwg, 10/28/2014 2:40:33 PM, Bluebeam PDF

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

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FLAGLER POINTE
PALM COAST, FL
CONSTRUCTION DETAILS

SLAB DESIGNS - SQUARE AND RECTANGULAR STRUCTURES (TABLE 6)
(ALL SLABS 8" THICK EXCEPT AS NOTED - REINFORCING PARALLEL TO SHORT WAY AND LONG WAY)

SHORT-WAY		LONG-WAY	
SLAB DEPTH	SCHEDULE (Bars A)	SLAB DEPTH	SCHEDULE (Bars B)
SIZE: 3'-6" x UNLIMITED			
≥0.5' < 8'	B10	≥0.5' < 24'	B10
8' < 13'	B5.5	24'-40'	B5.5
13' < 31'	C6.5		
31'-40'	D7		
SIZE: 4' x UNLIMITED			
≥0.5' < 7'	B5.5	≥0.5' < 13'	B10
7' < 19'	C6.5	13' < 29'	B5.5
19' < 31'	D7	29'-40'	C6.5
31'-40'	E5		
SIZE: 5' x 5'			
≥0.5' < 3'	C6.5	≥0.5' < 3'	C6.5
3' < 7'	B5.5	3' < 13'	C6.5
7' < 22'	C6.5	13' < 22'	D7
22' < 29'	D7	22' < 29'	D4.5
29'-40'	E5	29'-40'	E5
SIZE: 5' x 6'			
≥0.5' < 12'	C6.5	≥0.5' < 3'	C6.5
12' < 26'	D7	3' < 9'	B5.5
26'-40'	E5	9' < 23'	C3.5
		23' < 35'	D4.5
		35'-40'	E5
SIZE: 5' x 7'			
≥0.5' < 10'	C6.5	≥0.5' < 10'	B5.5
10' < 20'	D7	10' < 31'	C3.5
20' < 34'	E5	31'-40'	D4.5
34'-40'	F5		
SIZE: 5' x 8'			
≥0.5' < 7'	C6.5	≥0.5' < 8'	B10
7' < 13'	D7	8' < 17'	B5.5
13' < 24'	E5	17' < 25'	C6.5
24'-40'	F5	25'-40'	C3.5
SIZE: 5' x 9'			
≥0.5' < 8'	C6.5	≥0.5' < 14'	B10
8' < 14'	D7	14' < 24'	B5.5
14' < 25'	E5	24' < 34'	C6.5
25'-40'	F5	34'-40'	C3.5
SIZE: 5' x UNLIMITED			
≥0.5' < 8'	C6.5	≥0.5' < 14'	B10
8' < 14'	D7	14' < 24'	B5.5
14' < 25'	E5	24' < 34'	C6.5
25'-40'	F5	34'-40'	C3.5

SHORT-WAY		LONG-WAY	
SLAB DEPTH	SCHEDULE (Bars A)	SLAB DEPTH	SCHEDULE (Bars B)
SIZE: 6' x 6'			
≥0.5' < 13'	C6.5	≥0.5' < 10'	C3.5
13' < 23'	D7	10' < 18'	D4.5
23'-40'	E5	18' < 27'	E5
		27' < 33'	E3
		33'-40'	F5
SIZE: 6' x 7'			
≥0.5' < 8'	C6.5	≥0.5' < 8'	C6.5
8' < 16'	D7	8' < 12'	C3.5
16' < 28'	E5	12' < 21'	D4.5
28'-40'	F5	21' < 28'	E5
		28' < 35'	E3
		35'-40'	F5
SIZE: 6' x 8'			
≥0.5' < 6'	C6.5	≥0.5' < 6'	B5.5
6' < 13'	D7	6' < 11'	C6.5
13' < 22'	E5	11' < 17'	C3.5
22' < 35'	F5	17' < 22'	D4.5
35'-40'	G5	22' < 32'	E5
		32'-40'	E3
SIZE: 6' x 9'			
≥0.5' < 8'	D7	≥0.5' < 8'	B5.5
8' < 14'	E5	8' < 14'	C6.5
14' < 24'	F5	14' < 21'	C3.5
24'-34'	G5	21' < 29'	D4.5
		29'-34'	E5
SIZE: 6' x UNLIMITED			
≥0.5' < 8'	D7	≥0.5' < 8'	B5.5
8' < 14'	E5	8' < 14'	C6.5
14' < 24'	F5	14' < 21'	C3.5
24'-34'	G5	21' < 29'	D4.5
		29'-34'	E5
SIZE: 7' x 7'			
≥0.5' < 8'	C6.5	≥0.5' < 4'	C6.5
8' < 15'	D7	4' < 7'	C3.5
15' < 26'	E5	7' < 11'	D4.5
26'-40'	F5	11' < 22'	E3
		22' < 32'	F3.5
		32'-40'	G3.5
SIZE: 7' x 8'			
≥0.5' < 5'	C6.5	≥0.5' < 5'	C6.5
5' < 11'	D7	5' < 8'	C3.5
11' < 19'	E5	8' < 13'	D4.5
19' < 30'	F5	13' < 22'	E3
30'-40'	G5	22' < 30'	F3.5
		30'-40'	G3.5
SIZE: 7' x 9'			
>0.5' < 9'	D7	>0.5' < 7'	C6.5
9' < 15'	E5	7' < 10'	C3.5
15' < 25'	F5	10' < 14'	D4.5
25' - 34'	G5	14' < 21'	E5
		21' < 29'	F5
		29'-34'	F3.5

SHORT-WAY		LONG-WAY	
SLAB DEPTH	SCHEDULE (Bars A)	SLAB DEPTH	SCHEDULE (Bars B)
SIZE: 8' x 8'			
≥0.5' < 10'	D7	≥0.5' < 9'	D4.5
10' < 19'	E5	9' < 13'	E5
19'-30'	F5	13' < 18'	F5
		18' < 22'	F3.5
		22'-30'	G3.5
SIZE: 8' x 9'			
>0.5' < 8'	D7	≥0.5' < 7'	D7
8' < 14'	E5	7' < 9'	D4.5
14' < 22'	F5	9' < 15'	E3
22'-31'	G3.5	15' < 20'	F5
		20' < 23'	F3.5
		23'-31'	G3.5
SIZE: 9' x 9'			
≥0.5' < 8'	D7	≥0.5' < 7'	D4
8' < 14'	E5	7' < 10'	E5
14' < 22'	F5	10' < 17'	F3.5
		17' < 22'	G3.5
SIZE: 9'x9'x10" SLAB THICKNESS			
22' < 30'	F5	22' < 31'	F3.5
30'-40'	G5	31'-40'	G3.5
SIZE: 10'x10'x10" SLAB THICKNESS			
≥0.5' < 7'	C6.5	0.5' < 6'	C6.5
7' < 10'	D7	6' < 9'	D4.5
10' < 18'	E5	9' < 15'	E5
18' < 27'	F5	15' < 22'	F5
27'-32'	G5	22'-32'	G3.5
SIZE: 12'x12'x12" SLAB THICKNESS			
≥0.5' < 10'	D7	≥0.5' < 8'	D7
10' < 16'	E5	8' < 14'	E5
16' < 29'	F5	14' < 22'	F5
29'-35'	G5	22' < 30'	G5
		30'-35'	H4

SLAB DESIGNS - ROUND STRUCTURES (TABLE 7)

SLAB DEPTH	SLAB THICKNESS	REINF. (2-WAY) SCHEDULE
SIZE: 3'-6" DIAMETER		
2'-15'	6" Precast	C6.5
0.5' < 30'	8"	A6
30'-40'	8"	B5.5
SIZE: 4'-0" DIAMETER		
≥0.5' < 19'	8"	A6
19' < 30'	8"	B5.5
30'-40'	8"	C6.5
SIZE: 5'-0" DIAMETER		
≥0.5' < 15'	8"	B5.5
15' < 26'	8"	C6.5
26' < 29'	8"	D7
29'-40'	8"	D4.5
SIZE: 6'-0" DIAMETER		
≥0.5' < 9'	8"	B5.5
9' < 19'	8"	C6.5
19' < 22'	8"	C3.5
22' < 30'	8"	D4.5
30'-40'	8"	E5
SIZE: 7'-0" DIAMETER		
>0.5' < 8'	8"	C3.5
8' < 16'	8"	D4.5
16' < 23'	8"	E5
23' < 27'	8"	E3
27'-40'	8"	F3.5
SIZE: 8'-0" DIAMETER		
>0.5' < 10'	8"	D4.5
10' < 16'	8"	E5
16' < 19'	8"	E3
19' < 29'	8"	F3.5
29'-40'	10"	F5
SIZE: 10'-0" DIAMETER		
≥0.5' < 12'	10"	D4.5
12' < 20'	10"	E5
20' < 28'	10"	F5
28'-40'	10"	G3.5
SIZE: 12'-0" DIAMETER		
>0.5' < 8'	10"	D4.5
8' < 13'	10"	E5
13' < 18'	10"	F5
18' < 26'	10"	G3.5
26'-40'	12"	G3.5

SLAB AND WALL DESIGN TABLE NOTES

1. Size is the inside dimension(s) of a structure.
2. Slab reinforcement is appropriate for top, intermediate, and bottom slabs.
3. Bottom Slabs for precast 3'-6" x 3'-6" rectangular structures at 15' depth or less, may be 6" thick.
4. Slab depth is measured from finished grade to top of slab.
5. Wall depth is measured to the top of the bottom slab for boxes and to the top of the intermediate slab for risers.
6. Wall height is the distance between top of lower slab to bottom of upper slab. Maximum wall height is 12' for wall lengths exceeding 5', or 10' for wall lengths exceeding 12.
7. Wall lengths exceeding 6'-0" require two layers of reinforcing (See Table B1 with 2" of cover from the horizontal bars to the inside and outside faces for each layer.
8. Wall lengths exceeding the dimensions or depths shown in Table 8, or 12'-0" diameter require a special design.
9. Wall thickness and reinforcing for rectangular structures is the same for both long and short sides.
10. Reinforcing schedules with larger areas of steel may be substituted for schedules with smaller bar or wire spacing, except that Schedule B10 may not be substituted for Schedule A6. See Index 201, Sheet 4 for allowable bar spacing adjustments when larger areas of reinforcing are substituted.

LAST REVISION	DESCRIPTION:				
07/01/09		2015 DESIGN STANDARDS	STRUCTURE BOTTOMS TYPE J AND P	INDEX NO. 200	SHEET NO. 4 of 5

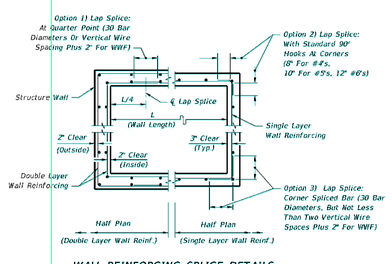
WALL DESIGNS - RECTANGULAR STRUCTURES (TABLE 8)

VERTICAL REINFORCING		HORIZONTAL REINFORCING		WALL THICKNESS
WALL DEPTH	SCHEDULE	WALL DEPTH	SCHEDULE	
SIZE: 3'-6" & RISERS				
≥1.17' - 40'	A12	≥1.17' < 10'	B10	6"/8"
		10' < 18'	B5.5	6"/8"
		18' < 29'	C6.5	6"/8"
		29' - 40'	C3.5	6"/8"
SIZE: 4'-0"				
≥1.17' - 40'	A12	≥1.17' < 6'	B10	6"/8"
		6' < 10'	B5.5	6"/8"
		10' < 20'	C6.5	6"/8"
		20' < 28'	C3.5	6"/8"
		28' - 40'	D4.5	6"/8"
SIZE: 5'-0"				
≥1.17' - 40'	A12	≥1.17' < 5'	B5.5	6"/8"
		5' < 9'	C6.5	6"/8"
		9' < 15'	C3.5	6"/8"
		15' < 22'	D4.5	6"/8"
		22' - 40'	E3	8"
SIZE: 6'-0"				
≥1.17' < 26'	A12	≥1.17' < 9'	C3.5	6"/8"
		9' < 15'	D4.5	6"/8"
		15' < 26'	E3	8"
	Inside/Outside		Inside/Outside	
26' - 40'	A12 / A12	26' - 40'	D7 / D7	8"
SIZE: 7'-0"				
	Inside/Outside		Inside/Outside	
≥1.17' < 25'	A12 / A12	≥1.17' < 7'	B10 / B10	8"
26' - 40'	B10 / B10	7' < 10'	B5.5 / B5.5	8"
		10' < 20'	C6.5 / C6.5	8"
		20' < 30'	D7 / D7	8"
		30' - 40'	E5 / E5	8"
SIZE: 8'-0"				
	Inside/Outside		Inside/Outside	
≥1.17' < 20'	A12 / A12	≥1.17' < 6'	B5.5 / B5.5	8"
20' - 40'	C6.5 / C6.5	6' < 13'	C6.5 / C6.5	8"
		13' < 22'	D7 / D7	8"
		22' < 31'	E5 / E5	8"
		31' - 40'	F5 / F5	8"
SIZE: 9'-0"				
	Inside/Outside		Inside/Outside	
≥1.17' < 12'	A12 / A12	≥1.17' < 8'	C6.5 / C6.5	8"
12' < 28'	C6.5 / C6.5	8' < 15'	D7 / D7	8"
28' - 40'	D7 / D7	15' < 23'	E5 / E5	8"
		23' - 40'	F5 / F5	8"
SIZE: 10'-0"				
	Inside/Outside		Inside/Outside	
≥1.17' < 10'	B10 / B10	≥1.17' < 10'	D7 / D7	8"
10' < 21'	C6.5 / C6.5	10' < 17'	E5 / E5	8"
21' < 26'	D7 / D7	17' < 26'	F5 / F5	8"
26' - 40'	C6.5 / C6.5	26' - 40'	F5 / F5	10"

VERTICAL REINFORCING		HORIZONTAL REINFORCING		WALL THICKNESS
WALL DEPTH	SCHEDULE	WALL DEPTH	SCHEDULE	
SIZE: 10'-0" (Precast Only)				
	Inside/Outside		Inside/Outside	
26' - 40'	D7 / D7	26' - 40'	F5 / F5	9"
SIZE: 12'-0"				
	Inside/Outside		Inside/Outside	
≥1.17' < 14'	B10 / B10	≥1.17' < 10'	C6.5 / C6.5	10"
14' < 25'	C6.5 / C6.5	10' < 17'	D7 / D7	10"
25' - 40'	D7 / D7	17' < 24'	E5 / E5	10"
		24' - 40'	F5 / F5	10"
SIZE: 12'-0" (Precast Only)				
	Inside/Outside		Inside/Outside	
≥1.17' < 12'	B10 / B10	≥1.17' < 10'	D7 / D7	9"
12' < 24'	C6.5 / C6.5	10' < 17'	D4.5 / D4.5	9"
24' - 40'	D7 / D7	17' < 23'	E5 / E5	9"
		23' < 32'	F5 / F5	9"
		32' - 40'	G5 / G5	9"
SIZE: 16'-0"				
	Inside/Outside		Inside/Outside	
≥1.17' < 11'	C6.5 / C6.5	≥1.17' < 13'	D7 / D7	10"
11' < 20'	D7 / D7	13' < 20'	E5 / E5	10"
20' < 28'	E5 / E5	20' < 28'	F5 / F5	10"
28' - 40'	F5 / F5	28' - 40'	G5 / G5	10"
SIZE: 16'-0" (Precast Only)				
	Inside/Outside		Inside/Outside	
≥1.17' < 10'	C6.5 / C6.5	≥1.17' < 9'	D7 / D7	9"
10' < 18'	D7 / D7	9' < 13'	D4.5 / D4.5	9"
18' < 25'	E5 / E5	13' < 19'	E5 / E5	9"
25' - 35'	F5 / F5	19' < 27'	F5 / F5	9"
		27' - 35'	G5 / G5	9"
SIZE: 20'-0"				
	Inside/Outside		Inside/Outside	
≥1.17' < 10'	C6.5 / C6.5	≥1.17' < 8'	D7 / D7	10"
10' < 17'	D7 / D7	8' < 12'	E5 / E5	10"
17' - 30'	E5 / E5	12' < 20'	F5 / F5	10"
		20' - 30'	G5 / G5	10"
SIZE: 20'-0" (Precast Only)				
	Inside/Outside		Inside/Outside	
≥1.17' < 8'	C6.5 / C6.5	≥1.17' < 8'	D4.5 / D4.5	9"
8' < 13'	D7 / D7	8' < 12'	E5 / E5	9"
13' - 25'	E5 / E5	12' < 19'	F5 / F5	9"
		19' - 25'	G5 / G5	9"

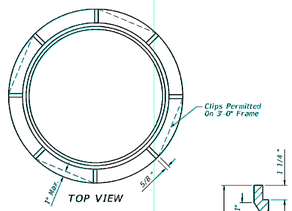
REINFORCING SCHEDULE				
SCHEDULE	GRADE 60 BARS OR 65 KSI & 70 KSI WELDED WIRE REINFORCING			
	GRADE 60 AREA (in.²/ft.)	MAXIMUM SPACING		
		GR 60 BARS (in.)	WWR EQUIV. AREA*	
			65 KSI (in.)	70 KSI (in.)
A12	0.20	12	8	8
A6	0.24	6	5	4½
B10	0.24	10	8	7½
B5.5	0.24	5½	5	4
C6.5	0.37	6½	6	5
C3.5	0.37	3½	3	2½
D7	0.53	7	6	5
D4.5	0.53	4½	4	3½
E5	0.73	5	4	4
E3	0.73	3	3	3
F5	1.06	5	4	4
F3.5	1.06	3½	3	3
G5	1.45	5	4	4
G3.5	1.45	3½	3	3
H4	1.75	4	3	3

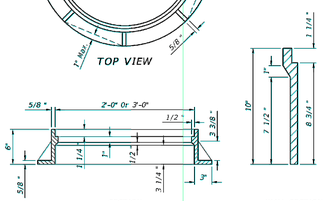
*Equivalent Area Welded Wire Reinforcing may be substituted in accordance with Index No. 201, Sheet 4.

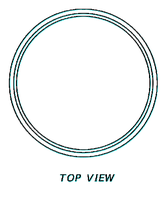


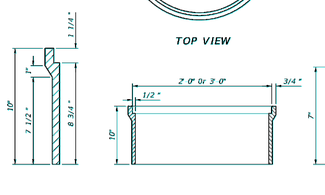
WALL REINFORCING SPLICE DETAILS (ALTERNATE B)

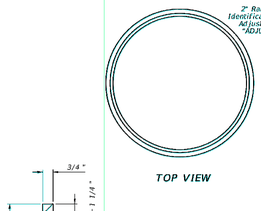
LAST REVISION	DESCRIPTION:				
01/01/12		2015 DESIGN STANDARDS	STRUCTURE BOTTOMS TYPE J AND P	INDEX NO. 200	SHEET NO. 5 of 5

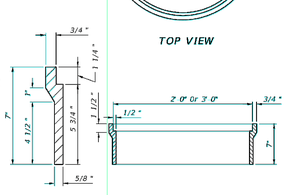


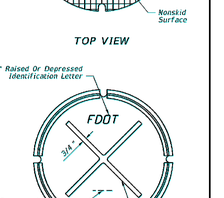


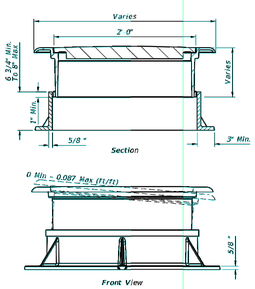












WEIGHT OF CASTINGS (lb)

Frame Type	2' OPENING		3' OPENING		
	Frame	Cover (Std.)	Frame	2-Piece Cover	
				Inside	Outside	Total
I *	155	190	220	190	220	410
II	145	190	255	190	220	410
III	90	190	180	190	220	410

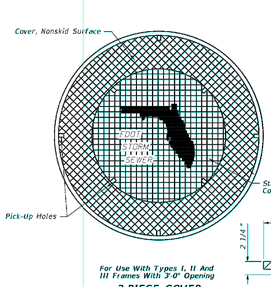
* Includes Type 1 Adjustable

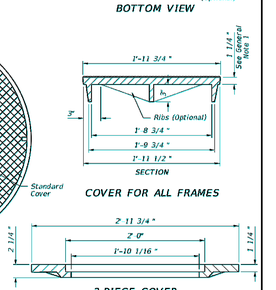
NOTES (FRAMES, AND COVER)

1. The standard cover is to be used for all frames Types I, II, III and the 2-piece cover, and is the replacement cover for all previous Frames with 1½" deep seats (traffic type). The 185 lb. cover (nontraffic type), 1984 Roadway and Traffic Design Standards Index No. 201, is the replacement cover for existing Frames with ½" deep seats. Installation of frame with ½" deep seats is not permitted.
2. Use the 2'-0" cover, unless the 2-piece cover is called for in the plans, except at inlets and manholes with sump bottoms use the 2-piece cover when the sump depth exceeds 2', unless otherwise noted.

DESIGNER NOTE:

Consider using the 2-piece cover where depths exceed 5' and manual entry may be required for cleaning. Clearly note the requirement for a 2-piece cover, on the Drainage Structure sheets in the plans.





LAST REVISION	DESCRIPTION:				
01/01/12		2015 DESIGN STANDARDS	SUPPLEMENTARY DETAILS FOR MANHOLES & INLETS	INDEX NO. 201	SHEET NO. 1 of 5

NO.	DATE	REVISION	BY

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

MICHAEL R. ZAFFUTO, P.E. #74069
NOT VALID UNLESS SIGNED & SEALED

SHEET
C8 OF 18

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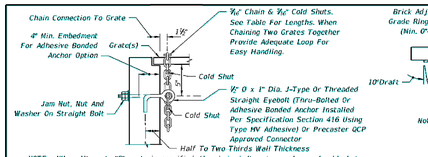


⅜" Chain & ⅜" Cold Shuts. See Table For Lengths. When Chaining Two Grates Together Provide Adequate Loop For Easy Handling.

½" Ø x 1" Dia. I-Type Or Threaded Straight Eyebolt (Thru-Bolted Or Adhesive Bonded Anchor Installed Per Specification Section 416 Using Type HV Adhesive) Or Precaster QCP Approved Connector

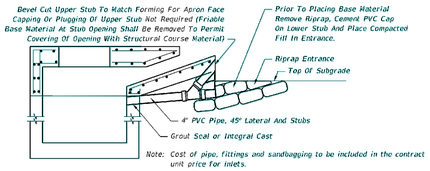
NOTE: When Alternate "C" grate is specified, the chain, bolt, nuts, washer and cold shuts shall be galvanized in accordance with Section 425 of the Standard Specifications.

Cost of eyebolt and chain to be included in the contract unit price for inlets.

EYEBOLT AND CHAIN REQUIREMENTS

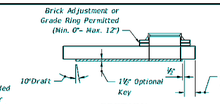
Index Number	Inlet Type	Eye-Bolts	Length Of Chain	Handling & Remarks
217	(MB) 1	1	4'-0"	Slide & Spin
	(MB) 2	1	4'-0"	Slide & Spin
	(MB) 3	2	2 @ 4'-0"	Slide & Spin
	(MB) 4	2	2 @ 4'-0"	Slide & Spin
	(MB) 5	2	2 @ 4'-0"	Slide & Spin
218	(BW)	1	3'-8"	Slide Or Slide & Spin
219	(BW, RGD)	1	4'-0"	Slide & Spin
220	S	1	4'-0"	Slide & Spin
221	V	1	4'-0"	Slide & Spin
230	A	1	3'-0"	Slide
231	B	1	5'-0"	Slide & Spin
	C	1	2'-6"	Slide & Spin
	D	1	2'-6"	Slide & Spin
232	E	2	2 @ 2'-6"	Slide & Spin
	H	2	2 @ 2'-6"	Flip Ctr. Grate and Slide & Spin Single Free Grate
			1 or 2 @ 1'-6"	Ctr. Grate(s) Chained To One End Grate
233	F	1	3'-6"	Flip Or Slide & Spin
	G	1	6'-0"	Slide
			2'-0"	Lifting Loop
234	J	1	4'-0"	Slide & Spin

EYEBOLT AND CHAIN FOR LOCKING GRATES TO INLETS



Note: Cost of pipe, fittings and sandbagging to be included in the contract unit price for inlets.

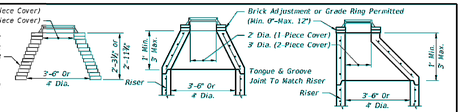
TEMPORARY DRAINS FOR SUBGRADE AND BASE



SECTION

Note: See Slab Designs Index No. 200.

TYPE 7



BRICK OR CONCRETE PRECAST CONCENTRIC CONE TYPE 8 | **PRECAST ECCENTRIC CONE**

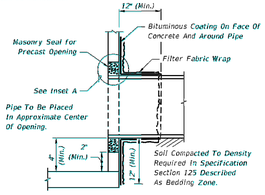
MANHOLE TOPS

NOTES (TOPS)

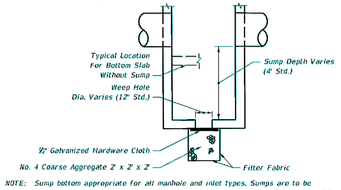
1. Manhole top Type 7 slabs shall be of Class II concrete. Concrete as specified in ASTM C478 may be used for precast units; see General Note No. 3.
2. Manhole top Type 7 slabs may be of cast-in-place or precast construction. The optional key is for precast tops and in lieu of dowels. Frame and slab openings are to be omitted when top is used over a junction box.
3. Manhole top Type 8 may be of cast-in-place or precast concrete construction or brick construction. For concrete construction, the concrete and steel reinforcement shall be the same as the supporting wall unit. An eccentric cone may be used.
4. Manhole tops shall be secured to structures by optional construction joints as shown on Sheet 3.
5. Frames can be adjusted a maximum 12" height with brick or precast ASTM C478 grade rings.
6. Substitution of manhole top Type 8 for manhole top Type 7 is allowed provided that minimum dimensions shown above are not reduced.
7. Substitution of Manhole top Type 7 for Type 8 is allowed if the minimum thickness (h) above pipe opening cannot be maintained with manhole top Type 8.

DESIGN NOTES

1. Manhole top Type 8 should be specified in the plans when depths shown above can be maintained.

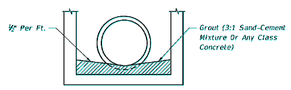


FILTER FABRIC WRAP ON GROUTED PIPE TO STRUCTURE JOINT



NOTE: Sump bottom appropriate for all manhole and inlet types. Sumps are to be constructed in inlet and manholes connected to French Drains unless excluded in the plans. At other locations, sump is to be constructed only where called for in the plans. Weep holes to be constructed in sump bottom only where called for in the plans. Cost of sump bottom and weep hole to be included in the contract unit price for inlet or manhole.

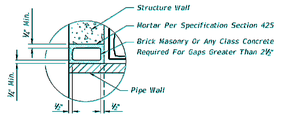
SUMP BOTTOM



FOR ALL STRUCTURES UNLESS EXCLUDED BY SPECIAL DETAIL

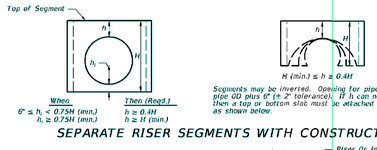
ALL PIPE TYPES

DRAINAGE STRUCTURE INVERT



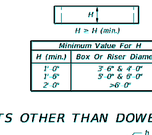
INSET A

LAST REVISION	DESCRIPTION:				
07/01/12		2015 DESIGN STANDARDS	SUPPLEMENTARY DETAILS FOR MANHOLES & INLETS	INDEX NO. 201	SHEET NO. 2 of 5



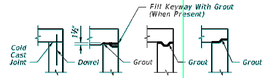
6" ≤ h ≤ 0.75H (min.)

Segments may be inverted. Doweling for pipe shall be the pipe OD plus 6" (± 2" tolerance). If h can not be attained, then a top or bottom slab must be attached to the segment as shown below.

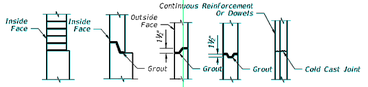


Minimum Value For H	
H (min.)	Box Or Riser Diameter
1'-0"	3'-6" & 4'-0"
1'-6"	3'-0" & 3'-6"
2'-0"	>6'-0"

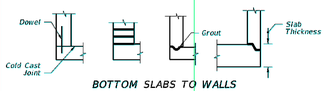
SEPARATE RISER SEGMENTS WITH CONSTRUCTION JOINTS OTHER THAN DOWEL OPTION



TOP SLABS TO WALLS



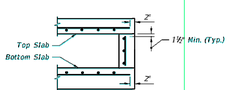
WALL JOINTS



BOTTOM SLABS TO WALLS

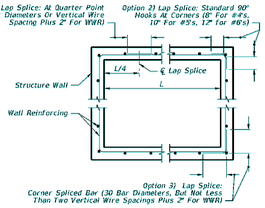
1. One or more types of joints may be used in a single structure, except brick wall structure. Brick wall construction is permitted on circular units only.
2. All grouted joints are to have a maximum thickness of 1".
3. Keyways are to be a minimum of 1½" deep.
4. Joint dowels are to be #4 bars, 12" long with a minimum of 6 bars per joint approximately evenly spaced for circular structures or at maximum 12" spacing for rectangular structures. Bars may be either Adhesive Bonded Dowels in accordance with Specification Section 416, or placed approximately 6" into fresh concrete leaving the remainder to extend into the secondary cast. Welded wire fabric may be substituted for the dowel bar in accordance with the equivalent steel area table on Sheet 4.
5. Minimum cover on dowel reinforcing bars is 2" to outside face of structure.
6. Joints between wall segments and between wall segments and top or bottom slabs may be sealed either by preformed plastic gasket material using the procedures given in Section 430 of the Specifications or by non-shrink grout, in accordance with Section 934 of the Specifications.
7. Insert products approved by the Engineer may be used in lieu of dowel embedment.

OPTIONAL CONSTRUCTION JOINTS



(NOTE: NOT APPLICABLE AROUND MANHOLE AND RISER OPENINGS)

REBAR STRAIGHT END EMBEDMENT FOR TOP AND BOTTOM SLABS



WALL REINFORCING SPLICE DETAILS

LAST REVISION	DESCRIPTION:				
07/01/14		2015 DESIGN STANDARDS	SUPPLEMENTARY DETAILS FOR MANHOLES & INLETS	INDEX NO. 201	SHEET NO. 3 of 5

EXAMPLE TABLE OF EQUIVALENT STEEL AREA

SCHEDULE	GRADE 60 REINFORCING BAR		EQUIVALENT GRADE 40 REINFORCING BAR		EQUIVALENT 65 KSI SMOOTH WELDED WIRE REINFORCEMENT		EQUIVALENT 70 KSI DEFORMED WELDED WIRE REINFORCEMENT	
	Bar Size & Spacing	Steel Area (in²/ft)	Bar Size & Spacing	Min. Steel Area (in²/ft)	Style Designation	Min. Steel Area (in²/ft)	Style Designation	Min. Steel Area (in²/ft)
A	#3 @ 6½" Ctrs. #4 @ 12" Ctrs.	0.20	#3 @ 4½" Ctrs. #4 @ 8" Ctrs. #5 @ 12" Ctrs.	0.30	3"x3"-W4.6xW4.6 4"x4"-W6.2xW6.2 6"x6"-W9.2xW9.2	0.1846	3"x3"-D4.3xD4.3 4"x4"-D5.7xD5.7 6"x6"-D8.6xD8.6	0.1714
B	#3 @ 5½" Ctrs. #4 @ 10" Ctrs.	0.24	#3 @ 3½" Ctrs. #4 @ 6½" Ctrs. #5 @ 10" Ctrs.	0.36	3"x3"-W5.5xW5.5 4"x4"-W7.4xW7.4 6"x6"-W11.1xW11.1	0.2215	3"x3"-D5.1xD5.1 4"x4"-D6.9xD6.9 6"x6"-D10.3xD10.3	0.2057
Special 1	#3 @ 5" Ctrs. #4 @ 9" Ctrs.	0.267	#3 @ 3" Ctrs. #4 @ 6" Ctrs. #5 @ 9" Ctrs.	0.40	3"x3"-W6.2xW6.2 4"x4"-W8.2xW8.2 6"x6"-W12.3xW12.3	0.2465	3"x3"-D5.7xD5.7 4"x4"-D7.6xD7.6 6"x6"-D11.4xD11.4	0.2289
C	#3 @ 3½" Ctrs. #4 @ 6½" Ctrs. #5 @ 10" Ctrs.	0.37	#4 @ 4" Ctrs. #5 @ 6½" Ctrs. #6 @ 9½" Ctrs.	0.555	3"x3"-W8.5xW8.5 4"x4"-W11.4xW11.4 6"x6"-W17.1xW17.1	0.3415	3"x3"-D7.9xD7.9 4"x4"-D10.6xD10.6 6"x6"-D15.9xD15.9	0.3171
D	#4 @ 4½" Ctrs. #5 @ 7" Ctrs. #6 @ 10" Ctrs.	0.53	#4 @ 3" Ctrs. #5 @ 4½" Ctrs. #6 @ 6½" Ctrs.	0.795	3"x3"-W12.2xW12.2 4"x4"-W16.3xW16.3 6"x6"-W24.5xW24.5	0.4892	3"x3"-D11.4xD11.4 4"x4"-D15.1xD15.1 6"x6"-D22.7xD22.7	0.4543
E	#4 @ 3" Ctrs. #5 @ 5" Ctrs. #6 @ 7" Ctrs.	0.73	#5 @ 3½" Ctrs. #6 @ 4½" Ctrs. #7 @ 6½" Ctrs.	1.095	3"x3"-W16.8xW16.8 4"x4"-W22.5xW22.5 6"x6"-W33.7xW33.7	0.6738	3"x3"-D15.6xD15.6 4"x4"-D20.9xD20.9 6"x6"-D31.3xD31.3	0.6257
F	#5 @ 3½" Ctrs. #6 @ 5" Ctrs. #7 @ 7" Ctrs.	1.06	#6 @ 3" Ctrs. #7 @ 4½" Ctrs. #8 @ 6" Ctrs.	1.59	3"x3"-W24.5xW24.5 4"x4"-W32.6xW32.6 6"x6"-W48.9xW48.9	0.9785	3"x3"-D22.7xD22.7 4"x4"-D30.3xD30.3 6"x6"-D45.4xD45.4	0.9086
Special 2	#5 @ 3" Ctrs. #6 @ 4" Ctrs. #7 @ 5½" Ctrs.	1.24	#7 @ 4" Ctrs. #8 @ 5" Ctrs.	1.86	3"x3"-W28.6xW28.6 4"x4"-W38.2xW38.2 6"x6"-W57.2xW57.2	1.1446	3"x3"-D26.6xD26.6 4"x4"-D35.4xD35.4 6"x6"-D53.1xD53.1	1.0629
G	#6 @ 3½" Ctrs. #7 @ 5" Ctrs.	1.46	#7 @ 3" Ctrs. #8 @ 4" Ctrs.	2.19	3"x3"-W33.7xW33.7 4"x4"-W44.9xW44.9	1.3477	3"x3"-D31.3xD31.3 4"x4"-D41.7xD41.7	1.2514

NOTES FOR PRECAST OPTIONS & EQUIVALENT REINFORCEMENT SUBSTITUTION

1. Details for optional precast inlet construction up to depths of 15' are shown on the inlet indexes.
2. When precast units are used in conjunction with Alt. "B" Structure Bottoms, Index No. 200, the interior dimensions of an Alt. "B" Bottom can be adjusted to reflect these inlet interior dimensions.
3. Concrete which meets the requirements of ASTM C478 or Class IV must be used for precast structures constructed with 6" wall or slab thickness.
4. Reinforcement can be either deformed bar reinforcement or welded wire reinforcement. Bar reinforcement other than 60 ksi may be used, however only two grades are recognized; Grade 40 and Grade 60. Smooth welded wire reinforcement, will be recognized as having a design strength of 65 ksi and deformed welded wire reinforcement will be recognized as having a design strength of 70 ksi. The area of reinforcement required may be adjusted in accordance with the Equivalent Steel Area Table provided. For bars and spacings not given, the steel area required can be determined by the following equations:

Grade 40 Steel Area = $A_s40 = \frac{60}{40} \times A_s60$

Smooth Welded Wire Reinforcement Steel Area = $A_s65 = \frac{60}{65} \times A_s60$

Deformed Welded Wire Reinforcement Steel Area = $A_s70 = \frac{60}{70} \times A_s60$

continued...

When a reduced area of reinforcement is provided, any maximum bar spacing shown must also be reduced as determined by the following equations, unless otherwise shown:

Max. Grade 40 Bar Spacing = Grade 60 Bar Spacing

Max. Smooth Welded Wire Spacing = Grade 60 Bar Spacing x 0.86

Max. Deformed Welded Wire Spacing = Grade 60 Bar Spacing x 0.74

When an increased area of reinforcing is provided, then the maximum bar spacing may be increased by the squared ratio of increased steel area, but not to exceed 12":

$$\text{Max. Bar Spacing Provided} \leq \text{Max. Bar Spacing Required} \times \left(\frac{\text{Steel Area Provided}}{\text{Min. Steel Area Required}}\right)^2$$

In no case will reinforcement with wires smaller than W3.1 or D3.1, or spacings greater than 8" be permitted. Bar reinforcement shall show the minimum yield designation grade mark or either the number 60 or one (1) grade mark line to be acceptable at the higher value. Maximum bar spacing shall not be greater than two (2) times the slab thickness with a maximum spacing of 12" or three (3) times the wall thickness, with a maximum spacing of 18" for vertical bars and 12" for horizontal bars. Wires smaller than W3.1 or D3.1 are permitted in the walls of ASTM C 478 round structure bottoms and round risers.

GENERAL NOTES

1. For square or rectangular precast drainage structures, either deformed or smooth welded wire reinforcement in accordance with Specification Section 931:
   a) Width and length of the unit is four times the spacing of the cross wires.
   b) Wire reinforcement shall be continuous around the box, and lapped in accordance with Option 1 or 3 as shown in the Wall Reinforcing Splice Details.
2. Horizontal steel in the walls of rectangular structures shall be lap spliced in accordance with Option 1, 2 or 3 as shown in the Wall Reinforcing Splice Details.
3. Welding of splices and laps is permitted. The requirements and restrictions placed on welding in AASHTO M259 shall apply.
4. Rebar straight end embedment of peripheral reinforcement may be used in lieu of ACI standard hooks for top and bottom slabs except when hooks are specifically called for in the plans or standard drawings.
5. Concrete as specified in ASTM C478, (4000 psi) may be used in lieu of Class II concrete in precast items manufactured in plants which meet the requirements of Section 449 of the Specifications.
6. Precast opening for pipe shall be the pipe OD plus 6" (± 2" tolerance). Mortar used to seal the pipe into the opening will be of such a mix that shrinkage will not cause leakage into or out of the structure. Dry-pack mortar may be used in lieu of brick and mortar construction to seal openings less than 2½" wide.
7. For pay item purposes, the height used to determine if a drainage structure is greater than 10 feet shall be computed using:
   a) the elevation of the top of the manhole lid,
   b) the grade elevation or the theoretical gutter grade elevation of an inlet, or
   c) the outside top elevation of a junction box less the flow line elevation of the lowest pipe or to top of sump floor.

LAST REVISION	DESCRIPTION:				
07/01/13		2015 DESIGN STANDARDS	SUPPLEMENTARY DETAILS FOR MANHOLES & INLETS	INDEX NO. 201	SHEET NO. 4 of 5

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
CERTIFICATE No. EB5479
880 AIRPORT ROAD, SUITE. 113
ORMOND BEACH, FL 32174
TEL: (386) 673-7640
FAX: (386) 673-3927

FLAGLER POINTE
PALM COAST, FL
CONSTRUCTION DETAILS

NO.	DATE	REVISION	BY

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

MICHAEL R. ZAFFUTO, P.E. #74069
NOT VALID UNLESS SIGNED & SEALED

SHEET
C9 OF 18

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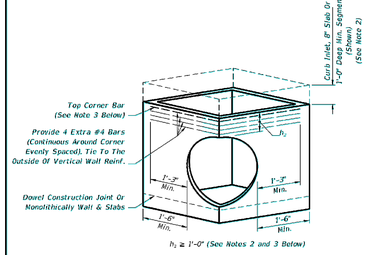
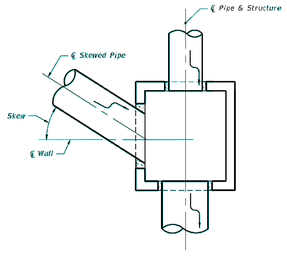


PICTORIAL VIEW

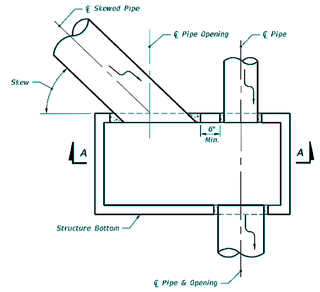
DESIGNER NOTE: Use only when round structures are not practical, engineer of record approval required.

NOTE:
1. Submit Shop Drawings of corner openings for approval by the Engineer of Record.
2. h_2 may be less than 1'-0" when a minimum 1'-0" deep segment, 8" slab or curb inlet is provided above the corner opening.
3. For inlet segments at finish grade elevation substitute a #8 Bar for the top corner bar when 1'-0" ≤ h_2 < 2'-0".

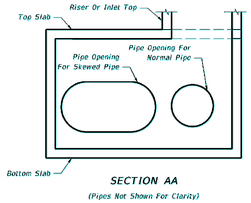
RECTANGULAR SEGMENT WITH PIPE OPENING AT CORNER



PLAN VIEW FOR SKEWS ≤ 45°
(Not Centered)



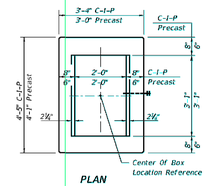
PLAN VIEW FOR SKEWS > 45°
(Not Centered)



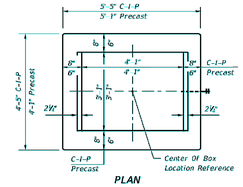
SECTION AA
(Pipes Not Shown For Clarity)

DETAILS FOR SKEWED PIPES IN RECTANGULAR STRUCTURES

LAST REVISION	DESCRIPTION:				
07/01/12		2015 DESIGN STANDARDS	SUPPLEMENTARY DETAILS FOR MANHOLES & INLETS	INDEX NO. 201	SHEET NO. 5 of 5



PLAN



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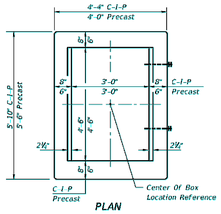

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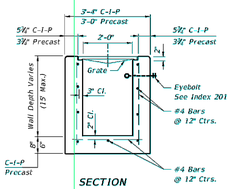
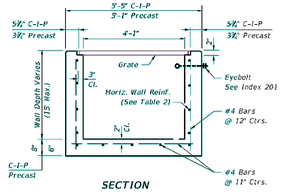
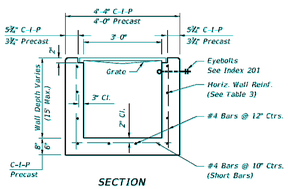


SECTION



SECTION



SECTION

HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 1)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING BARS	MAX. SPACING WWF
0'-15'	A12	0.20	12"	8"

TYPE C

Recommended Maximum Pipe Size:

2'-0" Wall - 18" Pipe
3'-1" Wall - 24" Pipe (18" where an 18" pipe enters a 2'-0" wall)

HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 2)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING BARS	MAX. SPACING WWF
0'-6'	A12	0.20	12"	8"
6'-10'	A6	0.20	6"	5"
10'-13'	A4	0.20	4"	3"
10'-15'	B5.5	0.24	5½"	5"

TYPE D

Recommended Maximum Pipe Size:

3'-1" Wall - 24" Pipe
4'-1" Wall - 36" Pipe

HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 3)

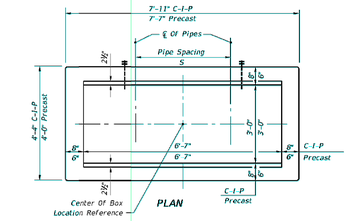
WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING BARS	MAX. SPACING WWF
0'-5'	A12	0.20	12"	8"
0'-7.5'	A6	0.20	6"	5"
7.5'-10'	B5.5	0.24	5½"	5"
10'-15'	C6.5	0.37	6½"	6"

TYPE E

Recommended Maximum Pipe Size:

3'-0" Wall - 24" Pipe
4'-6" Wall - 36" Pipe

LAST REVISION	DESCRIPTION:				
07/01/05		2015 DESIGN STANDARDS	DITCH BOTTOM INLET TYPES C, D, E AND H	INDEX NO. 232	SHEET NO. 1 of 7



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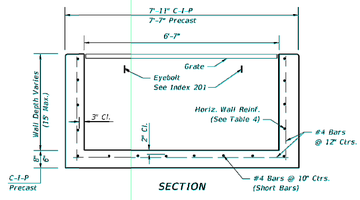


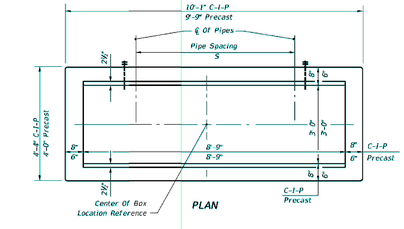
SECTION

HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 4)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING BARS	MAX. SPACING WWF
0'-5'	B5.5	0.24	5½"	5"
5'-7'	C6.5	0.37	6½"	6"
7'-15'	D4.5	0.53	4½"	4"

TYPE H (2 & 3-GRATE INLET)

Recommended Maximum Pipe Size:
3'-0" Wall - 24" Pipe
6'-7" Wall - 1-60" Pipe
Or 2-24" Pipe (S=3'-5")



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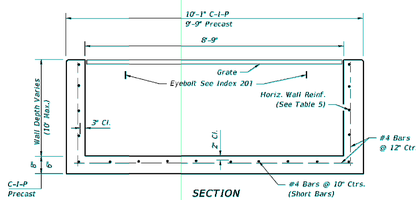

SECTION

HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 5)

WALL DEPTH	SCHEDULE	AREA (in.²/ft.)	MAX. SPACING BARS	MAX. SPACING WWF
0'-5'	C3.5	0.37	3½"	3"
5'-10'	D4.5	0.53	4½"	4"

TYPE H (4-GRATE INLET)

Recommended Maximum Pipe Size:
3'-0" Wall - 24" Pipe
8'-9" Wall - 1-72" Pipe
Or 2-30" Pipe (S=4'-3")

GENERAL NOTES
See Sheet 3 of 7.

LAST REVISION	DESCRIPTION:				
07/01/05		2015 DESIGN STANDARDS	DITCH BOTTOM INLET TYPES C, D, E AND H	INDEX NO. 232	SHEET NO. 2 of 7

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
CERTIFICATE No. EB5479
880 AIRPORT ROAD, SUITE. 113
ORMOND BEACH, FL 32174
TEL: (386) 673-7640
FAX: (386) 673-3927

FLAGLER POINTE
PALM COAST, FL
CONSTRUCTION DETAILS

NO.	DATE	REVISION	BY

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

MICHAEL R. ZAFFUTO, P.E. #74069
NOT VALID UNLESS SIGNED & SEALED

SHEET
C10 OF 18

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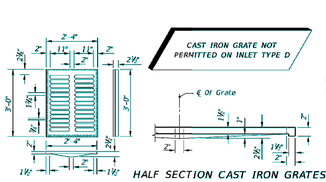
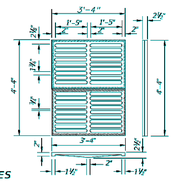
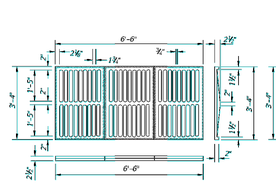


HALF SECTION CAST IRON GRATES

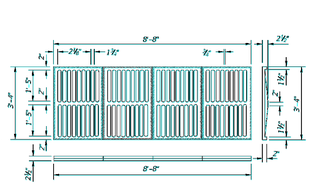
TYPE C
Approx. Weight 235 Lbs.



TYPE E
Approx. Weight 465 Lbs.

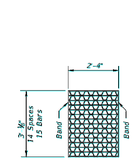


TYPE H (3-GRATE INLET)
Approx. Weight 725 Lbs.

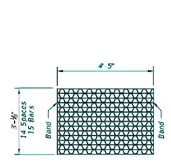


TYPE H (4-GRATE INLET)
Approx. Weight 967 Lbs.

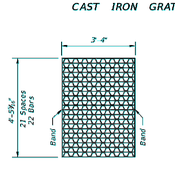
CAST IRON GRATES



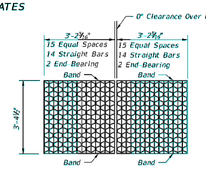
TYPE C
Straight Bars 2"x ½"
Reticuline Bars 1½" x 3/16"
Bands 2" x ½"
Approx. Weight 104 Lbs.



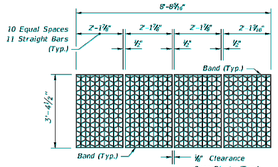
TYPE D
Straight Bars 2" x ½"
Reticuline Bars 1½" x 3/16"
Bands 2" x ½"
Approx. Weight 190 Lbs.



TYPE E
Straight Bars 2" x ½"
Reticuline Bars 1½" x 3/16"
Bands 2" x ½"
Approx. Weight 215 Lbs.



TYPE H (2-GRATE INLET)
Straight End-Bearing Bars 2" x ½"
Straight Bearing Bars 2" x ½"
Reticuline Bars 1½" x 3/16"
Banding Bars 2" x ½"
Approx. Total Weight 310 Lbs.



TYPE H (4-GRATE INLET)
Straight End-Bearing Bars 2" x ½"
Reticuline Bars 1½" x 3/16"
Banding Bars 2" x 3/16"
Approx. Total Weight 388 Lbs.

STEEL GRATES

NOTE: Steel Grates Are Required On Inlets With Traversable Slots And On Inlets where Bicycle Traffic Is Anticipated.

GENERAL NOTES

1. These inlets are suitable for bicycle traffic and are to be used in ditches, medians and other areas subject to infrequent traffic loadings but are not to be placed in areas subject to any heavy wheel loads. These inlets may be placed in areas subject to occasional pedestrian traffic such as landscaped areas and pavement areas where pedestrians can walk around the inlet.
2. Inlets subject to minimal debris should be constructed without slots. Where debris is a problem inlets should be constructed with slots. Slotted inlets located within roadway clear zones and areas subject to pedestrians shall have traversable slots. The traversable slot modification is not adaptable to inlet Type H. Slots may be constructed at either or both ends as shown on plans. Traversable slots shall not be used in areas subject to occasional bicycle traffic.
3. Steel grates are to be used on all inlets where bicycle traffic is anticipated. Steel grates are to be used on all inlets with traversable slots. Either cast iron or steel grates may be used on inlets without slots where bicycle traffic is not anticipated. Either cast iron or steel grates may be used on all inlets with non-traversable slots. Subject to the selection described above, when Alternate G grate is specified in the plans, either the steel grate, hot dip galvanized after fabrication, or the cast iron grate may be used, unless the plans stipulate the particular type.
4. Recommended maximum pipe sizes shown are for concrete pipe. Size for other types of pipe must be checked for fit.
5. All exposed edges and corners shall be ⅜" chamfer or tooled to ½" radius.
6. Concrete inlet pavement to be used on inlets without slots and inlets with non-traversable slots only when called for in the plans; but required on all traversable slot inlets. Cost to be included in contract unit price for inlets. Quantities shown are for information only.
7. Traversable slots constructed in existing inlets shall be paid for as inlets partial. For conversion work and method of payment see "TRAVERSABLE SLOT INLETS (PARTIAL) FOR EXISTING INLETS".
8. Sodding to be used on all inlets not located in paved areas and paid for under contract unit price for Performance Turf, SY.
9. For supplementary details see Index No. 201.
10. All reinforcing is Grade 60 bars with 2" min. cover unless otherwise noted. Bars to be cut or bent for 1½" clearance around pipe opening. Provide one additional #4 bar above and at each side of pipe opening.

LAST REVISION 07/01/10	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	DITCH BOTTOM INLET TYPES C, D, E AND H	INDEX NO. 232	SHEET NO. 3 of 7

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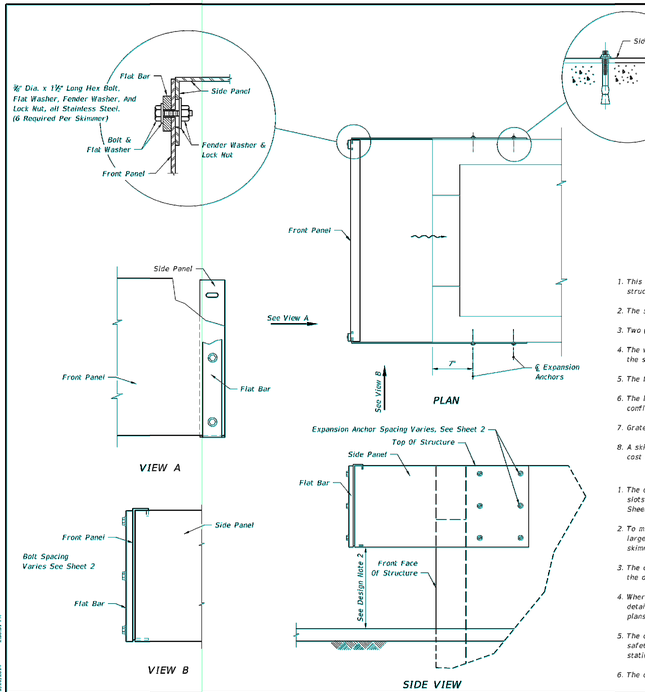

GENERAL NOTES

1. This skimmer is intended for use on Type C, D, or E Ditch Bottom Inlets that are used as outlet control structures of stormwater management facilities.
2. The side panels are dimensionally symmetric, therefore they may be used on either side of the structure.
3. Two (2) skimmers may be constructed on one structure provided they are on opposite ends.
4. The width of the front panel (dimension W) shall be the same as the outside dimension across the front of the structure.
5. The front panel, side panels, and flat bars are to be hot dip galvanized after fabrication.
6. The location of the reinforcing steel in these structures must conform to the applicable standards to avoid conflict with the expansion anchors used to attach the skimmer.
7. Grates to be used on the inlets unless otherwise specified in the plans.
8. A skimmer consists of two (2) side panels, one front panel, two (2) flat bars, and accessory hardware. The cost of skimmers is to be included in the cost of the inlet.

DESIGN NOTES

1. The designer must specify, in the plans, the skimmer height (dimension H) and the sides where the weir slots and skimmers are located. The skimmer height must be one of the dimensions shown in the table on Sheet 2. The skimmer should not be used on structure sides with outside dimensions greater than 6'-4".
2. To minimize hydraulic losses across the skimmer, the flow area under the skimmer should be three times larger than the flow area of the weir slot. The distance between the pond bottom at the structure and the skimmer shall be not less than 1 foot.
3. The configuration of skimmers may be subject to regulatory requirements. The designer should coordinate the outlet control structure details with the permitting agencies.
4. Where this skimmer is used, the designer should reference this index with the outlet control structure details. Where a different skimmer design is needed, the designer should provide skimmer details in the plans.
5. The designer shall evaluate if a grate is needed for safety reasons. Where a grate is not needed for safety reasons and is not desirable for hydraulic or other reasons, the designer may omit the grate by stating so in the outlet control structure details.
6. The designer must show the configuration of the weir slots in the outlet control structure detail.

LAST REVISION 07/01/13	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	SKIMMER FOR OUTLET CONTROL STRUCTURES	INDEX NO. 240	SHEET NO. 1 of 2

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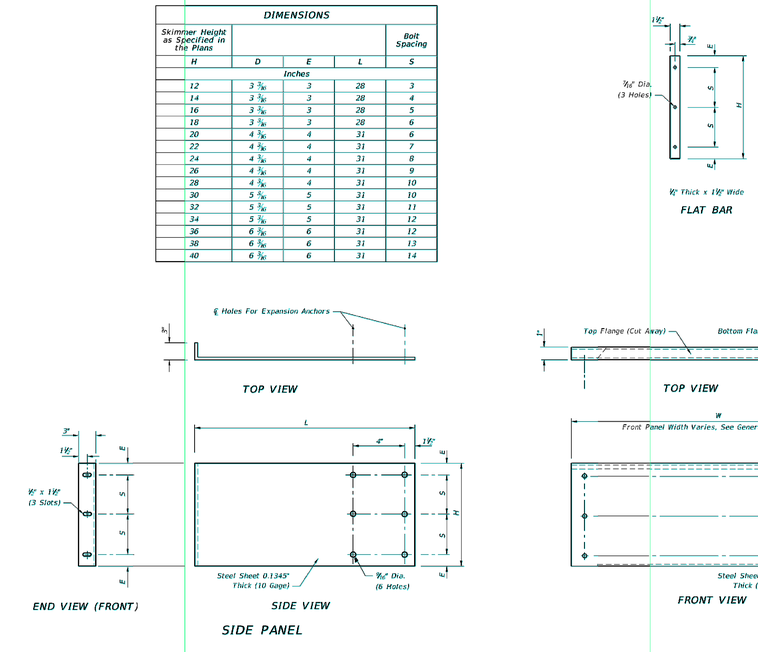
DIMENSIONS				
Skimmer Height as Specified in the Plans				Bolt Spacing
H	D	E	L	S
Inches				
12	3 3/16	3	28	3
14	3 3/16	3	28	4
16	3 3/16	3	28	5
18	3 3/16	3	28	6
20	4 3/16	4	31	6
22	4 3/16	4	31	7
24	4 3/16	4	31	8
26	4 3/16	4	31	9
28	4 3/16	4	31	10
30	5 5/16	5	31	10
32	5 3/16	5	31	11
34	5 3/16	5	31	12
36	6 3/16	6	31	12
38	6 3/16	6	31	13
40	6 3/16	6	31	14



13/16" Dia. (3 Holes)

½" Thick x 1½" Wide

FLAT BAR

LAST REVISION 01/01/12	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	SKIMMER FOR OUTLET CONTROL STRUCTURES	INDEX NO. 240	SHEET NO. 2 of 2

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

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TEL: (386) 673-7640
FAX: (386) 673-3927

FLAGLER POINTE
PALM COAST, FL
CONSTRUCTION DETAILS

NO.	DATE	REVISION	BY

DATE 5/15/14		SCALE 1"=40'	
FILE 1410-1		PROJECT 1410.1	
DESIGNER MRZ		DRAWN BY MRZ	

MICHAEL R. ZAFFUTO, P.E. #74069
NOT VALID UNLESS SIGNED & SEALED

SHEET
C11 OF 18

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APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

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FLAGLER POINTE
PALM COAST, FL
CONSTRUCTION DETAILS

DIMENSIONS AND QUANTITIES

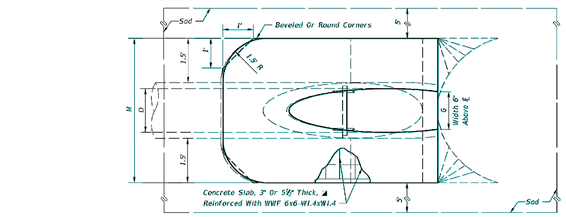
	D	X	A	B	C	E	F	G	H ■	M Single Pipe	M Double Pipe	M Triple Pipe	M Quad. Pipe	N	5½" CONCRETE SLAB (CY) ◪ Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	SODDING (SY) Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe
1:2 Slope	15"	2'-7"	1.92'	2.18'	4.10'	2.00'	5'	1.22'	2.9'	4.63'	7.21'	9.79'	12.37'	1.19'	0.38	0.58	0.77	0.96	21	24	27	30
	18"	2'-10"	1.99'	2.74'	4.71'	2.50'	6'	1.41'	3.4'	4.92'	7.79'	10.58'	13.42'	1.21'	0.44	0.65	0.87	1.09	22	25	28	31
	24"	3'-5"	2.06'	3.85'	5.91'	3.56'	7'	1.73'	3.4'	5.50'	8.92'	12.33'	15.75'	1.25'	0.54	0.83	1.12	1.42	24	28	32	35
	30"	4'-3"	2.19'	4.95'	7.10'	4.58'	8'	2.00'	3.4'	6.08'	10.13'	14.58'	18.83'	1.29'	0.66	1.09	1.50	1.91	26	31	35	40
	36"	5'-1"	2.25'	6.08'	8.33'	5.56'	9'	2.24'	3.4'	6.67'	11.75'	16.83'	21.92'	1.33'	0.81	1.38	1.95	2.51	28	34	39	45
	42"	6'-0"	2.34'	7.21'	9.55'	6.56'	10'	2.45'	3.4'	7.25'	13.25'	19.25'	25.25'	1.38'	0.97	1.70	2.45	3.19	30	37	43	50
	48"	6'-9"	2.42'	8.33'	10.75'	7.56'	11'	2.65'	3.4'	7.83'	14.58'	21.33'	28.08'	1.42'	1.13	2.04	2.93	3.84	32	39	47	54
	54"	7'-8"	2.52'	9.44'	11.96'	8.56'	12'	2.83'	3.4'	8.42'	16.08'	23.75'	31.42'	1.46'	1.31	2.44	3.58	4.72	34	42	51	59
	60"	8'-6"	2.62'	10.58'	13.18'	9.56'	14'	3.00'	4.4'	9.00'	17.50'	26.00'	34.50'	1.50'	1.51	2.89	4.28	5.68	36	45	55	64
	66"	9'-2"	2.71'	11.68'	14.39'	10.56'	15'	3.18'	4.4'	9.58'	18.75'	27.92'	37.08'	1.54'	1.68	3.25	4.84	6.43	38	48	58	68
	72"	10'-0"	2.80'	12.80'	15.60'	11.56'	16'	3.30'	4.4'	10.16'	20.16'	30.16'	40.16'	1.58'	1.89	3.74	5.59	7.45	40	51	62	73
1:4 Slope	15"	2'-7"	2.27'	4.09'	6.36'	4.03'	8'	1.22'	4.0'	4.63'	7.21'	9.79'	12.37'	1.19'	0.57	0.87	1.15	1.44	23	26	29	32
	18"	2'-10"	2.38'	5.12'	7.48'	5.03'	9'	1.41'	4.0'	4.92'	7.75'	10.58'	13.42'	1.21'	0.66	0.99	1.31	1.65	25	28	31	35
	24"	3'-5"	2.53'	7.18' △	9.71'	7.03' △	11'	1.73'	4.0'	5.50'	8.92'	12.33'	15.75'	1.25'	0.85	1.30	1.75	2.20	28	32	36	40
	30"	4'-3"	2.70'	9.25'	11.95'	9.03'	13'	2.00'	4.0'	6.08'	10.13'	14.58'	18.83'	1.29'	1.10	1.74	2.39	3.05	31	36	41	46
	36"	5'-1"	2.87'	11.31' ◇	14.18'	11.02' ◇	15'	2.24'	4.0'	6.67'	11.75'	16.83'	21.92'	1.33'	1.32	2.21	3.08	3.96	34	40	46	52
	42"	6'-0"	3.09'	13.37'	16.42'	13.03'	17'	2.45'	4.0'	7.25'	13.25'	19.25'	25.25'	1.38'	1.58	2.76	3.91	5.09	38	44	51	58
	48"	6'-9"	3.22'	15.42'	18.65'	15.03'	19'	2.65'	4.0'	7.83'	14.58'	21.33'	28.08'	1.42'	1.85	3.30	4.73	6.17	41	48	56	63
	54"	7'-8"	3.39'	17.49'	20.88'	17.03'	21'	2.83'	4.0'	8.42'	16.08'	23.75'	31.42'	1.46'	2.14	3.95	5.77	7.58	44	52	61	69
	60"	8'-6"	3.58'	19.55'	23.11'	19.03'	23'	3.00'	4.0'	9.00'	17.50'	26.00'	34.50'	1.50'	2.45	4.66	6.87	9.07	47	56	66	75
	66"	9'-2"	3.73'	21.62'	25.35'	21.03'	25'	3.18'	4.0'	9.58'	18.75'	27.92'	37.08'	1.54'	2.88	5.54	8.18	10.84	49	59	69	80
	72"	10'-0"	3.91'	23.68'	27.59'	23.03'	27'	3.30'	4.0'	10.16'	20.16'	30.16'	40.16'	1.58'	3.54	6.61	9.87	13.13	52	63	74	85

◪ See General Note No. 5. See Sheet 5 For 3" Slab Quantities

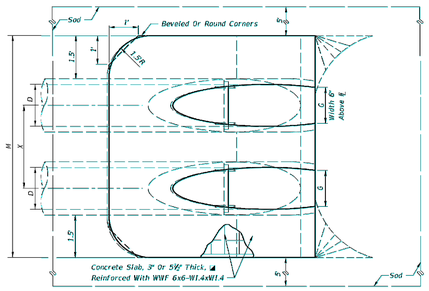
■ Values shown for estimating pipe quantities and are for information only.

B	E	
△ 6.42'	△ 6.25'	Dimensions permitted to allow use of 8' standard pipe lengths.
◇ 10.40'	◇ 10.10'	Dimensions permitted to allow use of 12' standard pipe lengths.

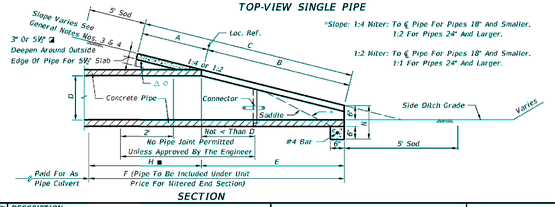
△ ◇ Concrete slab shall be deepened to form bridge across crown of pipe. See section below.



TOP-VIEW SINGLE PIPE



TOP-VIEW MULTIPLE PIPE



SECTION

*Slope: 1:4 Miter: To ℄ Pipe For Pipes 18" And Smaller. 1:2 For Pipes 24" And Larger.

1:2 Miter: To ℄ Pipe For Pipes 18" And Smaller. 1:1 For Pipes 24" And Larger.

NOTE: See sheet 6 for details and notes.

SINGLE AND MULTIPLE ROUND CONCRETE PIPE

LAST REVISION	DESCRIPTION:		INDEX NO.	SHEET NO.
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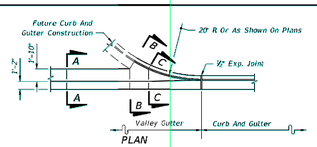
CROSS DRAIN MITERED END SECTION



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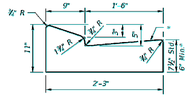
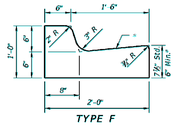
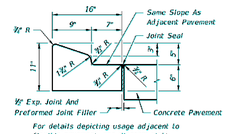


TYPE E

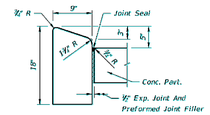


TYPE F

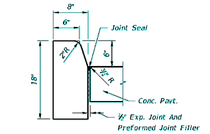


For details depicting usage adjacent to flexible pavement, see diagram right.

TYPE A



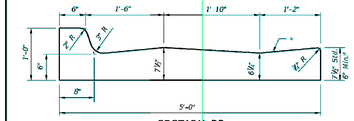
TYPE B



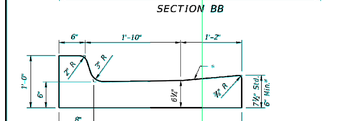
TYPE D

Note: For use adjacent to concrete or flexible pavement, concrete shown. Expansion joint, preformed joint filler and joint seal are required between curbs and concrete pavement only, see Sheet 2.

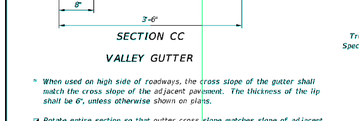
CONCRETE CURB



SECTION AA

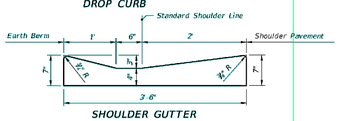


SECTION BB



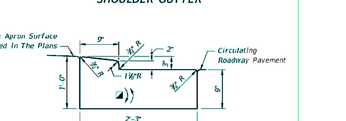
SECTION CC

VALLEY GUTTER

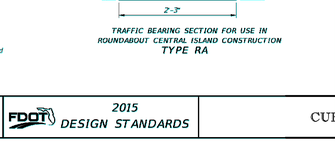


Note: To be paid for as parent curb.

DROP CURB



SHOULDER GUTTER



TRAFFIC BEARING SECTION FOR USE IN ROUNDABOUT CENTRAL ISLAND CONSTRUCTION
TYPE RA

* When used on high side of roadways, the cross slope of the gutter shall match the cross slope of the adjacent pavement. The thickness of the lip shall be 6", unless otherwise shown on plans.

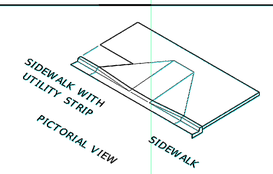
◪ Rotate entire section so that gutter cross slope matches slope of adjacent circulating roadway pavement.

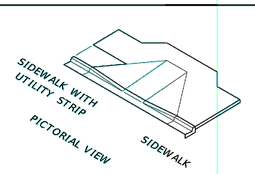
For use adjacent to concrete or flexible pavement. For details depicting usage adjacent to flexible pavement, see Sheet 2. Expansion joint, preformed joint filler and joint seal are required between curb & gutter and concrete pavement only, see Sheet 2.

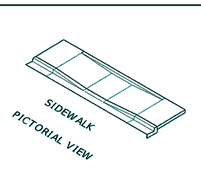
CONCRETE CURB AND GUTTER

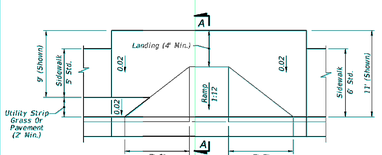
LAST REVISION	DESCRIPTION:		INDEX NO.	SHEET NO.
07/01/00		2015 DESIGN STANDARDS	300	1 of 2

CURB & CURB AND GUTTER





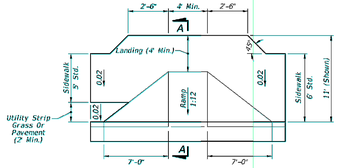




SIDEWALK WITH UTILITY STRIP — SIDEWALK

PLAN VIEW

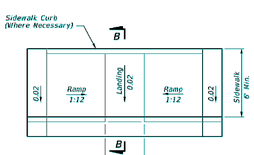
CR-A



SIDEWALK WITH UTILITY STRIP — SIDEWALK

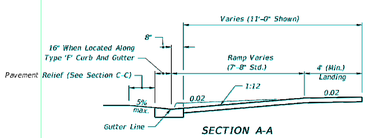
PLAN VIEW

CR-B



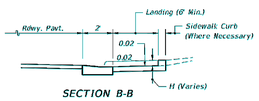
PLAN VIEW

CR-C



SECTION A-A

SECTION THROUGH RAMP AND LANDING (UNRESTRICTED CONDITIONS)



SECTION B-B

Note: For Additional Information On Sidewalk Curb Construction, See SIDEWALK CURB and SIDEWALK CURB OPTIONS details.

SECTION THROUGH LANDING (UNRESTRICTED CONDITIONS)

SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTHS ARE NOT RESTRICTED

LAST REVISION	DESCRIPTION:		INDEX NO.	SHEET NO.
07/01/13		2015 DESIGN STANDARDS	304	2 of 7

DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS

NO.	DATE	REVISION	BY

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

MICHAEL R. ZAFFUTO, P.E. #74069
NOT VALID UNLESS SIGNED & SEALED

SHEET
C12 OF 18

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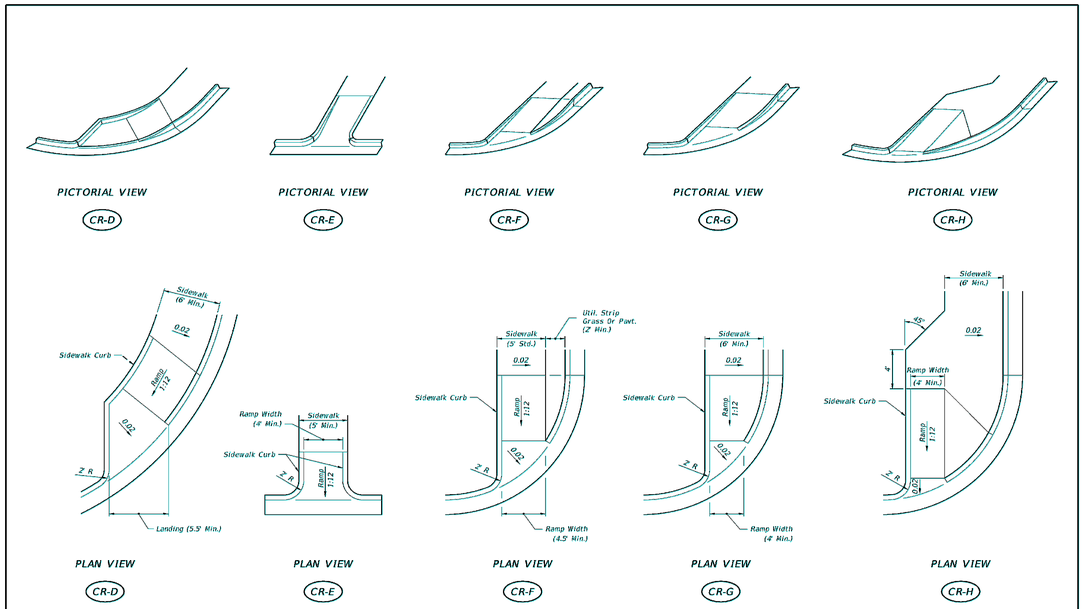

DIMENSIONAL FEATURES OF SIDEWALK CURB RAMPS FOR LINEAR PEDESTRIAN TRAFFIC

LAST REVISION 07/01/13	REVISION DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX NO. 304	SHEET NO. 3 of 7

5/29/2014 3:09:55 PM

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
CERTIFICATE No. EB5479
880 AIRPORT ROAD, SUITE. 113
ORMOND BEACH, FL 32174
TEL: (386) 673-7640
FAX: (386) 673-3927

FLAGLER POINTE
PALM COAST, FL
CONSTRUCTION DETAILS

NO.	DATE	REVISION	BY

DESIGNER MRZ	DRAWN BY MRZ	
FILE 1410-1	PROJECT 1410.1	
DATE 5/15/14	SCALE 1"=40'	

MICHAEL R. ZAFFUTO, P.E. #74069
NOT VALID UNLESS SIGNED & SEALED

SHEET
C13 OF 18

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POTABLE AND RAW WATER MAINS GENERAL NOTES

SHEET 1 OF 2

1. ALL PIPELINE MATERIAL AND INSTALLATION SHALL CONFORM TO THE CITY OF PALM COAST STANDARDS (JULY, 2011), CONTRACT DOCUMENTS, TECHNICAL SPECIFICATIONS AND ALL APPLICABLE LOCAL AND STATE REQUIREMENTS.

2. THE CONTRACTOR SHALL ENSURE THAT ALL REQUIRED PERMITS ARE IN HAND BEFORE COMMENCEMENT OF CONSTRUCTION.

3. ALL UTILITY OWNERS AND SUNSHINE STATE ONE CALL (800) 432-4770 MUST BE NOTIFIED SEVENTY-TWO (72) HOURS PRIOR TO STARTING CONSTRUCTION.

4. THE CONTRACTOR SHALL NOTIFY FIBEROPTICS COMPANIES SEVEN (7) WORKING DAYS PRIOR TO ANY CONSTRUCTION ACTIVITY IN THEIR AREA. EXTREME CAUTION SHALL BE USED IN AREAS WHERE FIBEROPTIC CABLE IS LOCATED ADJACENT TO CONSTRUCTION ACTIVITY.

5. ALL PIPING AND/OR APPURTENANCES CONNECTING TO ADJACENT CONSTRUCTION SHALL BE PLUGGED IF ADJACENT WORK HAS NOT BEEN COMPLETED.

6. CONTRACTOR SHALL PROVIDE TEMPORARY THRUST RESTRAINTS, BRACING, TEST PLUGS AND/OR OTHER DEVICES NECESSARY TO SUCCESSFULLY COMPLETE PRESSURE TESTING OF ALL PRESSURE PIPING SYSTEMS.

7. ALL FITTINGS FOR BURIED PIPING 4-INCH AND LARGER, SHALL BE DUCTILE IRON MECHANICAL JOINT (D.I.M.J) BITUMEN COATED EXTERIOR, APPLIED PER ANSI/AWWA A21.15/C151 UNLESS NOTED OTHERWISE. THESE FITTINGS SHALL INCORPORATE RESTRAINING RINGS, MEGA-LUGS OR OTHER APPROVED EQUIVALENT MECHANICAL DEVICES.

8. ALL BURIED PIPING SPECIFIED FOR PRESSURE SERVICE SHALL BE PROVIDED WITH RESTRAINING DEVICES AT ALL DIRECTIONAL CHANGES, UNLESS NOTED OTHERWISE.

9. ALL PROPOSED DUCTILE IRON PIPE, FITTINGS AND RESTRAINTS WITHIN FIFTY (50) FEET OF AN EXISTING GAS MAIN SHALL BE POLYETHYLENE ENCASED.

10. ALL FASTENERS SHALL BE MANUFACTURED OF NON-CORROSIVE MATERIALS.

11. THE LOCATIONS OF EXISTING UTILITIES SHOWN ON THESE DRAWINGS HAVE BEEN DERIVED FROM EXISTING UTILITY RECORDS AND ACCURACY OF THIS INFORMATION IS NOT GUARANTEED. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT LOCATION, DEPTH AND CHARACTER OF ALL UTILITIES PRIOR TO EXCAVATION IN ORDER TO PROTECT THEM DURING CONSTRUCTION.

12. WHERE MINIMUM SEPARATION BETWEEN UTILITIES IS REQUIRED, THE DISTANCE SHALL BE MEASURED FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.

13. CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS AT ALL INTERSECTIONS OF PROPOSED WORK AND EXISTING UTILITIES. THE EXPLORATORY EXCAVATIONS SHALL BE MADE FORTY-EIGHT (48) HOURS IN ADVANCE OF THE PROPOSED WORK. IF THERE IS A CONFLICT THE CONTRACTOR SHALL NOTIFY THE CITY OF PALM COAST IMMEDIATELY. INFORMATION ON THE OBSTRUCTION SHALL BE FURNISHED BY THE CONTRACTOR AND SHALL INCLUDE: LOCATION, ELEVATION, UTILITY TYPE, MATERIAL AND SIZE.

14. LOCATIONS AND DIMENSIONS OF EXISTING RIGHTS-OF-WAY AND EASEMENTS ARE BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY ALL THE LIMITS OF RIGHTS-OF-WAY AND EASEMENTS IN ORDER TO AVOID ENCROACHMENTS.

15. THE CONTRACTOR SHALL REPLACE SOD 3 FEET FROM ALL DISTURBED AREAS: STRUCTURES, SIDEWALKS, ROADS, AND POND IMPROVEMENT AREAS. ALL OTHER DISTURBED AREAS SHALL BE SODDED OR SEEDED AND MULCHED AS SHOWN ON THE DRAWINGS.

16. THE CONTRACTOR SHALL REPLACE, BUT NOT BE LIMITED TO, PAVING, STABILIZED EARTH, DRIVEWAYS OR ANY ITEMS DISTURBED OR DAMAGED BY THE CONSTRUCTION OR IT'S RELATED ACTIVITIES. THE CONTRACTOR SHALL REPLACE WITH EQUAL MATERIAL OR AS DIRECTED BY THE CITY OF PALM COAST.

17. THE DISPOSAL OF ANY EXCESS EARTHWORK MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

18. ALL PRACTICAL AND NECESSARY EFFORT SHALL BE TAKEN DURING CONSTRUCTION TO PREVENT UNNECESSARY TREE REMOVAL.

19. ALL ELEVATIONS SHOWN ON THESE DRAWINGS REFER TO NATIONAL GEODETIC VERTICAL DATUM (NGVD).

20. IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE HIS WORK WITH THE WORK SCHEDULE OF ADJACENT CONTRACTORS AS WELL AS THE OPERATIONS STAFF OF THE CITY OF PALM COAST.

21. THE CONTRACTOR SHALL NOTIFY THE CITY OF PALM COAST UTILITY DEPARTMENT 72 HOURS BEFORE COMMENCING WITH CONSTRUCTION.

22. PIPE MEASUREMENTS SHALL BE CENTER TO CENTER OF FITTINGS OR VALVES.

23. PVC PIPE LESS THAN 2-INCHES SHALL CONFORM TO ASTM D1785. THREADED PIPE AND FITTINGS SHALL BE SCH. 80 AND CONFORM TO ASTM D2464. UNTHREADED PIPE AND FITTINGS SHALL BE SCH. 40 WITH SOLVENT CEMENTED JOINTS. CEMENTED JOINTS AND FITTINGS SHALL COMPLY WITH ASTM D2466 AND D2855.

24. 2", 2 1/2" AND 3" PVC PIPE SHALL CONFORM TO ASTM D2241. PIPE SHALL BE FURNISHED IN 20-FOOT LENGTHS, SHALL HAVE DIMENSION RATIO (DR21) AND A WATER PRESSURE RATING OF 200 PSI.

25. PVC PIPE 4-INCHES THROUGH 12-INCHES SHALL CONFORM TO AWWA STANDARD C900 (DR18); PVC PIPE 14-INCHES THROUGH 48-INCHES SHALL CONFORM TO AWWA STANDARD C905 (DR18) UNLESS NOTED OTHERWISE.

26. DUCTILE IRON PIPE SHALL CONFORM TO AWWA STANDARD C151, PRESSURE CLASS 350 FOR 4-INCH THROUGH 12-INCH DIAMETER PIPE; PRESSURE CLASS 250 FOR PIPE LARGER THAN 12-INCHES IN DIAMETER UNLESS NOTED OTHERWISE.

27. VALVES FOR POTABLE WATER MAINS SHALL BE DUCTILE IRON (D.I.) EPOXY COATED GATE VALVES OR BUTTERFLY VALVES. VALVES FOR RAW WATER MAINS SHALL BE DUCTILE IRON (D.I.) EPOXY COATED GATE VALVES ONLY. SEE SPECIFICATIONS FOR DETAILS.

28. ALL POLYETHYLENE PRESSURE PIPE AND FITTINGS 4-INCH AND LARGER SHALL CONFORM TO AWWA STANDARD C906-99 (DR11) PRESSURE CLASS 160 AND ASTM STANDARD D3350, D2837 PE 3408.

CITY OF PALM COAST, FLORIDA — PALM COAST — INCORPORATED 1999

POTABLE AND RAW WATER MAIN GENERAL NOTES

SCALE: NONE | FIG. W-1 | REVISED 7/11

POTABLE AND RAW WATER MAINS GENERAL NOTES

SHEET 2 OF 2

29. ALL POLYETHYLENE PIPE FOR SERVICE TUBING SHALL CONFORM TO AWWA STANDARD C901 (DR9) PRESSURE CLASS 200 AND STANDARD D2737 PE 3408.

30. ALL PIPE AND POLYETHYLENE SERVICE TUBING SHALL BEAR THE NATIONAL SANITATION FOUNDATION (NSF) SEAL OF APPROVAL FOR POTABLE WATER SERVICE.

31. FITTINGS FOR BOTH PVC AND DUCTILE IRON PIPE SHALL BE DUCTILE IRON COMPACT FITTINGS CONFORMING TO THE REQUIREMENTS OF ANSI/AWWA C153/A21.53.

32. DUCTILE IRON PIPE AND FITTINGS SHALL HAVE A CEMENT MORTAR INTERIOR LINING CONFORMING TO THE REQUIREMENTS OF ANSI/AWWA A21.4/C104. DUCTILE IRON PIPE AND FITTINGS FOR RAW WATER SHALL INCORPORATE A DOUBLE LINING OF THE CEMENT MORTAR ON THE INTERIOR SURFACE.

33. PROPER BACKFLOW PREVENTION ASSEMBLIES SHALL BE PROVIDED IN ACCORDANCE WITH RULE 62-555.360, F.A.C. AND AWWA MANUAL M14, "BACKFLOW PREVENTION AND CROSS CONNECTION CONTROL" AND THE CITY OF PALM COAST "CROSS CONNECTION CONTROL MANUAL" (LATEST EDITION).

34. ALL WATER MAINS SHALL BE HYDROSTATICALLY TESTED AND DISINFECTED IN ACCORDANCE WITH AWWA STANDARDS, LATEST REVISIONS. HYDROSTATIC TESTING FOR PVC MAINS SHALL BE 150 PSI FOR MINIMUM OF 2 HOURS AND MEET AWWA STANDARD C605. DUCTILE IRON MAINS SHALL BE TESTED AT 150 PSI FOR 2 HOURS PER AWWA C600. ALL NEW MAINS SHALL BE DISINFECTED PER AWWA STANDARD C651. BACTERIOLOGICAL TESTS FOR 2 CONSECUTIVE DAYS SHALL BE APPROVED PRIOR TO PLACING SYSTEM INTO SERVICE.

35. PVC POTABLE WATER MAINS SHALL BE SOLID BLUE IN COLOR. DUCTILE IRON WATER MAINS SHALL INCORPORATE 3 BLUE STRIPES, PAINTED AT THE TOP AND SIDES OF THE PIPE, ALONG IT'S ENTIRE LENGTH.

36. PVC RAW WATER MAINS SHALL BE SOLID WHITE IN COLOR. DUCTILE IRON RAW WATER MAINS SHALL INCORPORATE 3 WHITE STRIPES, PAINTED AT THE TOP AND SIDES OF THE PIPE, ALONG IT'S ENTIRE LENGTH.

37. ALL POTABLE AND RAW WATER MAINS SHALL BE INSTALLED WITH THE MINIMUM VERTICAL/HORIZONTAL SEPARATION FROM ALL EXISTING AND/OR PROPOSED SANITARY, STORM AND REUSE WATER PIPING AS REQUIRED BY FDEP RULES. CONFLICTS BETWEEN REUSE WATER MAINS, STORM AND SANITARY SEWER SYSTEMS, FORCE MAINS AND PROPOSED POTABLE OR RAW WATER MAINS SHALL BE RESOLVED BY ADJUSTING THE PROPOSED POTABLE/RAW WATER MAIN. SEE "UTILITY SEPARATION DETAIL" AND ACCOMPANYING NOTES AS SHOWN ON STANDARD DETAIL (SD) SHEETS OF THIS PLAN SET.

38. ALL WATER MAINS SHALL HAVE AN "EARLY WARNING" PROTECTION TAPE INSTALLED CONTINUOUSLY ALONG THE ENTIRE LENGTH. THE PROTECTION TAPE SHALL BE INSTALLED DURING THE BACKFILLING 12 INCHES ABOVE AND DIRECTLY OVER THE PIPE AND BE CONTINUOUSLY MARKED WITH "CAUTION - WATER MAIN BURIED BELOW". THE TAPE SHALL BE PLASTIC, NON-METALLIC AND BE BLUE IN COLOR FOR POTABLE WATER OR WHITE FOR RAW WATER.

39. ALL WATER MAINS SHALL BE CONTINUOUSLY UNDERLAIN WITH 10 GAGE SOLID STRAND, THNN MARKING WIRE. THE WIRE SHALL HAVE BLUE INSULATION FOR POTABLE WATER OR WHITE INSULATION FOR RAW WATER AND INSTALLATION SHALL CONFORM TO THE DETAIL DRAWINGS.

40. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND ACCOUNTING FOR AS WELL AS RECONNECTING ALL SERVICE CONNECTIONS AFFECTED BY THE PROPOSED WATER MAIN INSTALLATION.

41. RE-USE EXISTING VALVES AND FITTINGS WHERE CONDITIONS ALLOW AND WHICH HAVE BEEN DETERMINED TO BE IN GOOD CONDITION AND IN WORKING ORDER. THE CITY OF PALM COAST WILL MAKE THE DECISION REGARDING THE INCORPORATION OF USED MATERIAL INTO THE WORK.

42. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS FOR APPROVAL TO THE CITY OF PALM COAST PRIOR TO PROCUREMENT.

43. ALL NEW WATER MAINS SHALL BE INSTALLED WITH A MINIMUM OF 3'-0" OF COVER, UNLESS NOTED OTHERWISE.

44. THE CONTRACTOR SHALL VIDEO THE ENTIRE WORK AREA PRIOR TO COMMENCEMENT OF CONSTRUCTION. ONE COPY OF THE PRE-CONSTRUCTION VIDEO SHALL BE SUBMITTED TO THE CITY OF PALM COAST.

45. IT IS THE INTENT OF THIS CONTRACT FOR THE CONTRACTOR TO MAINTAIN CONTINUOUS RESTORATION BEHIND THE UTILITY WORK ON A DAILY BASIS. NO MORE THAN FIFTY (50) LINEAR FEET OF UNRESTORED LINE WORK SHALL REMAIN AT THE END OF EACH WORK DAY.

46. THE CONTRACTOR SHALL SUBMIT TO THE CITY OF PALM COAST, A CONSTRUCTION SCHEDULE ADDRESSING THE INTERRUPTION OF SERVICE IN THE POTABLE WATER DISTRIBUTION SYSTEM. IT IS THE INTENT OF THE CONTRACT FOR THE CONTRACTOR TO FIELD INVESTIGATE ALL POSSIBLE METHODS TO ELIMINATE OR MINIMIZE INTERRUPTION OF SERVICE TO EXISTING CUSTOMERS. UNDER NO CIRCUMSTANCES SHALL THE CONSTRUCTION ACTIVITIES RESULT IN A SYSTEM PRESSURE OF LESS THAN 20 P.S.I.

47. ALL CONNECTIONS TO WATER MAINS SHALL BE MADE BY THE CONTRACTOR ONLY AFTER THE CONNECTION PROCEDURE AND HIS WORK SCHEDULE REGARDING THIS ACTIVITY ARE REVIEWED AND APPROVED BY THE CITY OF PALM COAST. THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST TO THE OWNER A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO COMMENCEMENT OF CONNECTION ACTIVITIES. IN THE REQUEST, THE CONTRACTOR SHALL OUTLINE THE FOLLOWING:

A. POINTS OF CONNECTION, FITTINGS TO BE USED AND METHOD OF FLUSHING AND DISINFECTION.

B. ESTIMATED CONSTRUCTION TIME FOR SAID ACTIVITY.

C. POSSIBLE SYSTEM PRESSURE LOSS.

THE CITY OF PALM COAST SHALL REVIEW THE SUBMITTAL AND INFORM THE CONTRACTOR REGARDING APPROVAL OR DENIAL OF THEIR REQUEST. IF THEIR REQUEST IS REJECTED BY THE CITY OF PALM COAST, THE CONTRACTOR MAY RESUBMIT THEIR REQUEST MODIFYING IT TO THE SATISFACTION OF THE OWNER. ALL CONNECTIONS SHALL ONLY BE MADE ON THE AGREED UPON TIME AND DATE OR RESCHEDULE. THE CONTRACTOR SHALL NOT OPERATE ANY VALVES IN THE SYSTEM.

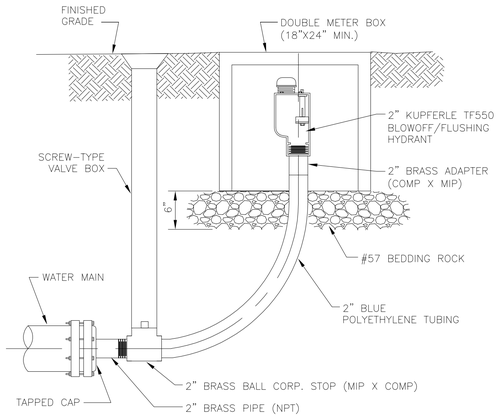
48. THREE (3") INCH AND LARGER BURIED UTILITY MAINS TO BE ABANDONED IN PLACE, SHALL BE CUT, PLUGGED AND FILLED WITH GROUT.

49. TWO-INCH (2") AND SMALLER METER/BACKFLOW DEVICES WILL BE SUPPLIED BY THE CITY AND INSTALLED BY THE DEVELOPER. DEVICES LARGER THEN TWO INCH SHALL BE SUPPLIED AND INSTALLED BY THE DEVELOPER.

CITY OF PALM COAST, FLORIDA — PALM COAST — INCORPORATED 1999

POTABLE AND RAW WATER MAIN GENERAL NOTES

SCALE: NONE | FIG. W-2 | REVISED 1/10



NOTES:

1. TAPPED CAP SHALL BE RESTRAINED AS PER THE RESTRAINED JOINT DETAIL (DEAD END).

2. POLYTUBING SHALL BE ENDOT "ENDOPURE" OR APPROVED EQUAL.

CITY OF PALM COAST, FLORIDA — PALM COAST — INCORPORATED 1999

BLOWOFF/FLUSHING HYDRANT DETAIL

SCALE: NONE | FIG. W-5 | REVISED 1/07

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
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ORMOND BEACH, FL 32174
TEL: (386) 673-7640
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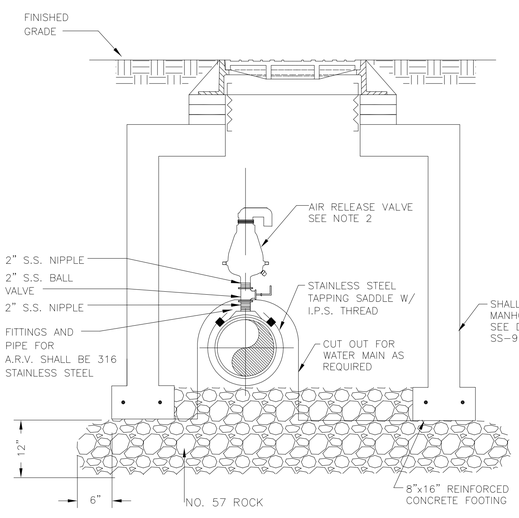
FLAGLER POINTE
PALM COAST, FL
CONSTRUCTION DETAILS



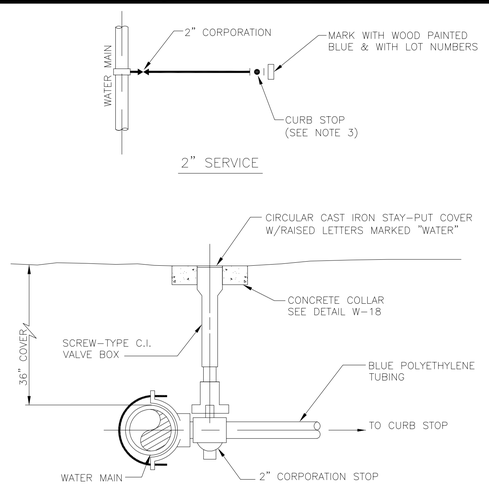
NOTES:

1. ABOVE DETAIL IS BASED ON 2" AIR RELEASE VALVE. CHANGE PIPE AND FITTINGS ACCORDINGLY FOR OTHER VALVE SIZES. VALVE SIZES SHALL BE DETERMINED BY THE ENGINEER AND APPROVED BY THE CITY OF PALM COAST PRIOR TO INSTALLATION.
2. FOR POTABLE WATER MAINS, VALVE SHALL BE A.R.I. (2") D-040 W/ ONE WAY VALVE OR APPROVED EQUIVALENT. FOR RAW WATER MAINS, VALVE SHALL BE A.R.I. (2") D-021 W/ ONE WAY VALVE OR APPROVED EQUIVALENT. FOR REUSE WATER MAINS, VALVE SHALL BE A.R.I. (2") S-021 VALVE OR APPROVED EQUIVALENT.

CITY OF PALM COAST, FLORIDA — PALM COAST — INCORPORATED 1999

AIR RELEASE VALVE DETAIL

SCALE: NONE | FIG. W-6 | REVISED 7/11



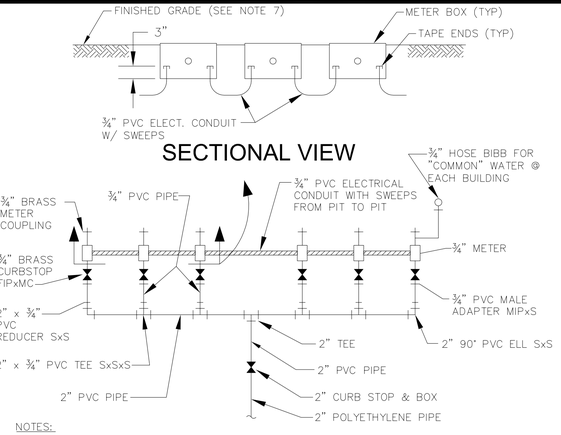
NOTES:

1. ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
2. NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
3. EACH SERVICE SHALL TERMINATE WITH A CURB STOP AND 45° BEND. THE SERVICES SHALL BE CLEARLY MARKED WITH A PRESSURE TREATED 4" x 4", 6-FEET LONG, 3-FOOT ABOVE GRADE WITH THE TOP PAINTED BLUE AND MARKED WITH THE LOT NUMBERS. THE CURB STOP AND POLY TUBING SHALL BE BURIED ONE FOOT DEEP AT THE EDGE OF THE POST.
4. FOR THOSE AREAS WITH CURBED STREETS, EACH SERVICE SHALL BE MARKED BY ETCHING OR CUTTING A THREE (3) INCH MINIMUM "W" IN THE CURB. THE CURB STOP AND POLY TUBING SHALL BE BURIED ONE FOOT DEEP.
5. METERS 1 INCH AND SMALLER SHALL BE INSTALLED BY CITY OF PALM COAST PERSONNEL UNLESS OTHERWISE DIRECTED BY CONSTRUCTION NOTES.
6. SERVICE TUBING SHALL BE BLUE POLYETHYLENE ENDOT "ENDOPURE" OR APPROVED EQUAL.
7. WHERE SERVICE MAIN CROSSES THE STREET, A 3" SCH 40 PVC CASING PIPE SHALL BE INSTALLED. THE CASING SHALL TERMINATE 3-FEET BEYOND EDGE OF PAVEMENT.

CITY OF PALM COAST, FLORIDA — PALM COAST — INCORPORATED 1999

2" POTABLE WATER SERVICE CONNECTION DETAIL

SCALE: NONE | FIG. W-12 | REVISED 7/11



NOTES:

1) ¾" PVC ELECTRICAL CONDUIT MUST BE INSTALLED BETWEEN METER PITS WITH SWEEPS THAT EXTEND 3" ABOVE INSIDE GRADE OF METER BOX AND TAPE OFF ENDS TO KEEP OUT DIRT.

2) SINGLE METER IN PIT MUST BE CENTERED IN METER PIT WITH EQUAL DISTANCE BETWEEN METER BODY AND INSIDE WALLS OF METER PIT.

3) TWO METERS IN METER PIT MUST BE IN A DUAL METER PIT BOX (NO EXCEPTIONS) WITH EQUAL DISTANCE BETWEEN.

4) METER BODIES AND INSIDE WALLS OF METER PIT CURB STOPS MUST BE READILY ACCESSIBLE AND NOT JAMMED AGAINST METER PIT WALL.

5) ¾" OR 1" METER COUPLING (BRASS)

6) ¾" OR 1" BRASS CURBSTOP FIP (FEMALE IRON PIPE)/ MC (METER CONNECTION) FORD PART # B13-232 W FOR 3/4" OR FORD PART #B13 344W FOR 1".

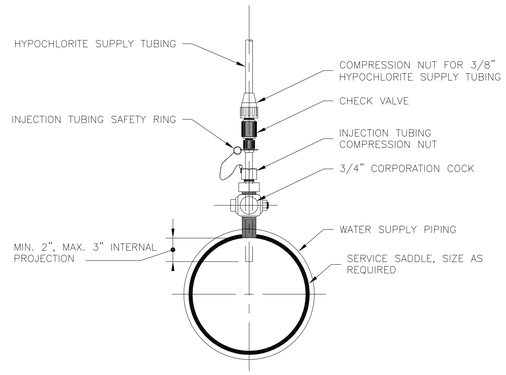
7) METER BOX SHALL BE SET 1" ABOVE FINISHED GRADE IN GRASSED AREA AND SHALL BE SET FLUSH WITHIN PAVEMENT.

8) IF EACH METER SLOT IN THE METER PIT DOES NOT HAVE A METER THEN THE UTILITY DEPARTMENT WILL SUPPLY A TEMPORARY METER TO BE USED FOR CONSTRUCTION AND TESTING. THE METERS WILL BE REMOVED AFTER THE FINAL INSPECTION.

CITY OF PALM COAST, FLORIDA — PALM COAST — INCORPORATED 1999

WATER SERVICE MANIFOLD DETAIL (BURIED)

SCALE: NONE | FIG. W-15 | REVISED 7/10



CITY OF PALM COAST, FLORIDA — PALM COAST — INCORPORATED 1999

HYPOCHLORITE INJECTION DETAIL

SCALE: NONE | FIG. W-17 | REVISED 1/07

NO.	DATE	REVISION	BY

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

MICHAEL R. ZAFFUTO, P.E. #74069
NOT VALID UNLESS SIGNED & SEALED

SHEET
C14 OF 18

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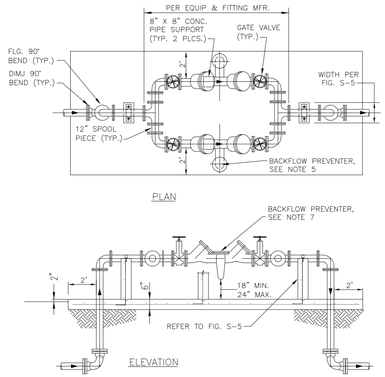


NOTES:

1. ALL ABOVE GRADE GATE VALVES SHALL BE RESILIENT WEDGE TYPE WITH HAND WHEEL OPERATOR, OUTSIDE STEM & YOKE.

2. ALL ABOVE GRADE PIPING SHALL BE DUCTILE IRON WITH FLANGED ENDS, CLASS 53. ALL BELOW GRADE PIPING SHALL HAVE DIMJ FITTINGS, PRESSURE CLASS 350. ALL BELOW GRADE FITTINGS SHALL BE RESTRAINED JOINT TYPE, MEGA-LUG OR APPROVED EQUAL.

3. BYPASS PIPING SHALL BE THE SAME SIZE AS MAIN LINE PIPING.

4. BACKFLOW ASSEMBLIES MAY REQUIRE FENCE ENCLOSURE, SEE FIG. M-1, M-2, M-3, M-4 FOR DETAILS.

5. BACKFLOW PREVENTER SHALL BE DOUBLE CHECK REDUCED PRESSURE ZONE (RPZ) TYPE EXCEPT FOR A CONSECUTIVE SYSTEM.

6. CONCRETE SLAB SHALL BE 6" (MIN.) THICK AND REINFORCED WITH #5 @ 12" E.W.

7. ALL HARDWARE SHALL BE 316 STAINLESS STEEL.

8. ALL ABOVE GRADE PIPING SHALL BE PAINTED AS FOLLOWS:

-SURFACE PREPARATION: POWER TOOL CLEANING (SSPC-SP3) OR BRUSH-OFF BLAST CLEANING (SSPC-SP7)

-PRIME: ACRYLIC ENAMEL, MINIMUM 3.0 MILS DFT. IF SHOP COAT IS DAMAGED, REPRIME BARE AREAS IN FIELD. IF SHOP COAT IS BITUMINOUS COATING, PRIME WITH 2 COATS OF STAIN BARRIER, 1 MIL DRY FILM THICKNESS PER COAT.

-FINISH: TWO COATS, APPLIED BY SPRAY, OF ACRYLIC ENAMEL, BLP MOBILE PAINTS, MINIMUM 4.0 MILS DFT. MOBILE H2O RUS-KIL PRECAUTION BLUE #310-37, OR APPROVED EQUIVALENT.

BACKFLOW PREVENTER DETAIL FOR MULTI-METERED FACILITIES: 3" AND LARGER

SCALE: NONE
FIG. W-24
REVISED 7/08

DOUBLE CHECK VALVE ASSEMBLIES (FOR DEDICATED FIRE MAINS)

- FLOWMATIC:
  3/4"-2": MODEL DCVE
  2 1/2"-10": MODEL DCV
- WATTS:
  3/4"-2": MODEL 719QTDCVE
- WILKINS:
  3/4"-2": MODEL 350 & MODEL 950XLT
  2 1/2"-10": MODEL 350, 350DA, 950, 950DA

REDUCED PRESSURE ASSEMBLIES

- FLOWMATIC:
  3/4"-2": MODEL RPZE
  2 1/2"-10": MODEL RPZ
- CONBRACO:
  3/4"-2": MODEL 40-200T2 (200 SERIES-TOP LOAD ONLY)
  2 1/2"-10": MODEL 40-200
- WILKINS:
  3/4"-2": MODEL 975XL
  2 1/2"-10": MODEL 375, 375DA, 975, 975DA

FOR RESIDENTIAL APPLICATIONS, USE THE FOLLOWING BFP'S WHEN REQUIRED TO BE INSTALLED WITHIN THE METER PIT:

- FLOWMATIC:
  3/4"-2": MODEL DCVE
- WILKINS:
  3/4"-2": MODEL 350, 950 XLT

NOTES:
1. ALL HARDWARE, INCLUDING HANDLES, NUTS, BOLTS, WASHERS ETC. SHALL BE 316 STAINLESS STEEL OR BRASS.

2. ALL BACKFLOW PREVENTERS SHALL INCORPORATE PARTS THAT ARE CHLORAMINE RESISTANT.

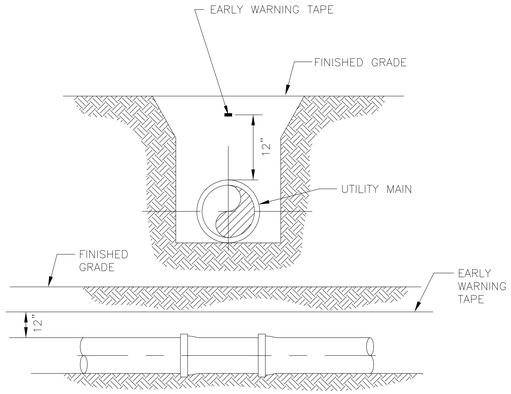
3. ALL BACKFLOW PREVENTION DEVICES THAT REQUIRE A DETECTOR METER SHALL HAVE A SENSUS TRPL REGISTER METER.

4. ALL BACKFLOW ASSEMBLIES SHALL BE FLANGED; VICTAULIC COUPLING ASSEMBLIES ARE NOT ACCEPTABLE.

5. ALL BACKFLOW ASSEMBLIES SHALL BE TOP LOADING, FOR DOUBLE CHECK DEVICES ONLY.

APPROVED BACKFLOW ASSEMBLIES

SCALE: NONE
FIG. W-23
REVISED 1/10



NOTES:

1. ALL MAINS INSTALLED BY OPEN CUT SHALL HAVE AN "EARLY WARNING" PROTECTION TAPE AND WIRE INSTALLED CONTINUOUSLY ALONG THE ALIGNMENT. TAPE SHALL BE INSTALLED DURING BACKFILLING 12" ABOVE THE PIPE AND SHALL BE CONTINUOUSLY MARKED FOR THE TYPE OF PIPE (EXAMPLE: "CAUTION, CAUTION, WATER MAIN BURIED BELOW"). THE TAPE SHALL BE PLASTIC, NON-METALLIC AND COLOR CODED AS FOLLOWS:

WHITE – RAW WATER
BLUE – POTABLE WATER
GREEN – SANITARY FORCE MAIN
PURPLE – EFFLUENT REUSE

2. ALL PVC MAINS SHALL BE A SOLID COLOR AS DESCRIBED ABOVE.

3. ALL DUCTILE IRON MAINS SHALL INCORPORATE 3 STRIPES, COLOR CODED AS SHOWN ABOVE, PAINTED AT THE TOP AND SIDES OF THE PIPE, ALONG IT'S ENTIRE LENGTH.

4. ALL PVC PIPE FOR POTABLE AND RAW WATER USE SHALL BEAR THE NATIONAL SANITATION FOUNDATION (NSF) SEAL OF APPROVAL.

5. REFER TO SHEET FIG NOS. W-30, W-30A AND W-30B FOR LOCATE WIRE INSTALLATION DETAILS.

6. REFER TO SPECIFICATION SECTION 21.9 FOR DETAILS OF THE LOCATE TAPE.

LOCATE TAPE INSTALLATION DETAIL FOR WATER MAINS, REUSE MAINS & FORCE MAINS

SCALE: NONE
FIG. W-29
REVISED 1/08

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
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880 AIRPORT ROAD, SUITE 113
ORMOND BEACH, FL 32174
TEL: (386) 673-7640
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FLAGLER POINTE
PALM COAST, FL
CONSTRUCTION DETAILS

LOCATE WIRE NOTES:

1. ALL PIPE INSTALLED WITHIN THE CITY OF PALM COAST'S WATER, SANITARY SEWER, REUSE WATER OR RAW WATER SYSTEMS SHALL INCLUDE A 10 GAGE, SINGLE STRAND THHN SOLID COPPER TRACING WIRE WITH 45 MIL HDPE JACKET. TRACING WIRE SHALL BE COLOR CODED AS FOLLOWS:
   a. WHITE: RAW WATER
   b. BLUE: POTABLE WATER
   c. LAVENDER: REUSE WATER
   d. GREEN: SANITARY SEWER FORCE MAIN AND LOW PRESSURE SEWER.

2. THE TRACING WIRE MUST BE INSTALLED DIRECTLY BELOW THE PIPE AND BROUGHT TO THE SURFACE AT EACH VALVE BOX LOCATION. WIRE SHALL EXTEND A MINIMUM OF 12" ABOVE GRADE AT EACH INTERVAL AND BE COILED AND PLACED IN A VALVE BOX.

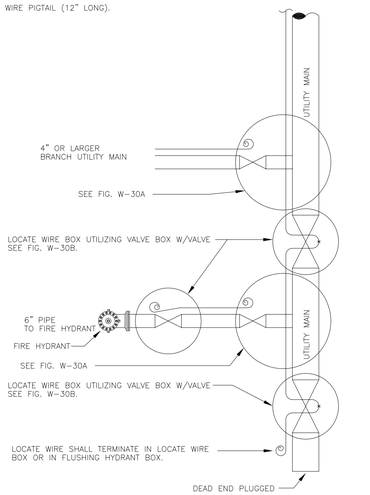
3. WIRE SHALL NOT BE FASTENED OR COILED TO VALVE OPERATING NUT OR ANY FITTING.

4. THE ENTIRE LOCATING SYSTEM SHALL BE TESTED TO DETERMINE ITS RELIABILITY. TEST SHALL BE CONDUCTED BY THE CONTRACTOR AND APPROVED BY THE CITY OF PALM COAST BEFORE ACCEPTANCE OF THE SYSTEM. WHERE INSTALLED UNDER PAVEMENT AREAS, TESTING SHALL BE DONE PRIOR TO PLACEMENT OF PAVEMENT, UNLESS APPROVED OTHERWISE BY THE CITY OF PALM COAST.

5. LOCATING WIRE SHALL TERMINATE WITHIN AN ACTIVE VALVE BOX (WITH A VALVE) SEE DETAIL SHT. W-30B.

6. "+" INDICATES THAT THE WIRES ARE CONNECTED TOGETHER.

7. "⊙" INDICATES A WIRE PIGTAIL (12" LONG).



LOCATE WIRE INSTALLATION DETAIL FOR WATER MAINS, REUSE MAINS & FORCE MAINS INSTALLED BY OPEN CUT

SCALE: NONE
FIG. W-30
REVISED 7/11

GRAVITY SANITARY SEWER GENERAL NOTES

SHEET 1 OF 2

1. ALL PIPELINE MATERIAL AND INSTALLATION SHALL CONFORM TO THE CITY OF PALM COAST STANDARDS (JULY, 2011), CONTRACT DOCUMENTS, TECHNICAL SPECIFICATIONS AND ALL APPLICABLE LOCAL AND STATE REQUIREMENTS.

2. THE CONTRACTOR SHALL ENSURE THAT ALL REQUIRED PERMITS ARE IN HAND BEFORE COMMENCEMENT OF CONSTRUCTION.

3. ALL UTILITY OWNERS AND SUNSHINE STATE ONE CALL (800) 432-4770 MUST BE NOTIFIED SEVENTY-TWO (72) HOURS PRIOR TO STARTING CONSTRUCTION.

4. THE CONTRACTOR SHALL NOTIFY FIBEROPTICS COMPANIES SEVEN (7) WORKING DAYS PRIOR TO ANY CONSTRUCTION ACTIVITY IN THEIR AREA. EXTREME CAUTION SHALL BE USED IN AREAS WHERE FIBEROPTIC CABLE IS LOCATED ADJACENT TO CONSTRUCTION ACTIVITY.

5. ALL PIPING AND/OR APPURTENANCES CONNECTING TO ADJACENT CONSTRUCTION SHALL BE PLUGGED IF ADJACENT WORK HAS NOT BEEN COMPLETED.

6. ALL PROPOSED DUCTILE IRON PIPE AND FITTINGS WITHIN FIFTY (50) FEET OF AN EXISTING GAS MAIN SHALL BE POLYETHYLENE ENCASED.

7. THE LOCATIONS OF EXISTING UTILITIES SHOWN ON THESE DRAWINGS HAVE BEEN DERIVED FROM EXISTING UTILITY RECORDS. ACCURACY OF THIS INFORMATION IS NOT GUARANTEED. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EXACT LOCATION, DEPTH AND CHARACTER OF ALL UTILITIES PRIOR TO EXCAVATION IN ORDER TO PROTECT THESE UTILITIES DURING CONSTRUCTION.

8. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS AT ALL INTERSECTIONS OF PROPOSED WORK AND EXISTING UTILITIES. THE EXPLORATORY EXCAVATIONS SHALL BE MADE FORTY-EIGHT (48) HOURS IN ADVANCE OF THE PROPOSED WORK. IF THERE IS A CONFLICT THE CONTRACTOR SHALL NOTIFY THE CITY OF PALM COAST IMMEDIATELY. INFORMATION ON THE OBSTRUCTION SHALL BE FURNISHED BY THE CONTRACTOR AND SHALL INCLUDE: LOCATION, ELEVATION, UTILITY TYPE, MATERIAL AND SIZE.

9. LOCATIONS AND DIMENSIONS OF EXISTING RIGHTS-OF-WAY AND EASEMENTS ARE BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY ALL THE LIMITS OF RIGHTS-OF-WAY AND EASEMENTS IN ORDER TO AVOID ENCROACHMENTS.

10. THE CONTRACTOR SHALL REPLACE SOD 3 FEET FROM ALL DISTURBED AREAS: STRUCTURES, SIDEWALKS, ROADS, AND POND IMPROVEMENT AREAS. ALL OTHER DISTURBED AREAS SHALL BE SODDED OR SEEDED AND MULCHED AS SHOWN ON THE DRAWINGS.

11. THE CONTRACTOR SHALL REPLACE, BUT NOT BE LIMITED, TO PAVING, STABILIZED EARTH, DRIVEWAYS OR ANY ITEMS DISTURBED OR DAMAGED BY THE CONSTRUCTION OR ITS RELATED ACTIVITIES. THE CONTRACTOR SHALL REPLACE WITH EQUAL MATERIAL OR AS DIRECTED BY THE CITY OF PALM COAST.

12. THE DISPOSAL OF ANY EXCESS EARTHWORK MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

13. IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE HIS WORK WITH THE WORK SCHEDULE OF ADJACENT CONTRACTORS AS WELL AS THE STAFF OF THE CITY OF PALM COAST.

14. THE CONTRACTOR SHALL NOTIFY THE CITY OF PALM COAST UTILITY DEPARTMENT 72 HOURS BEFORE COMMENCING WITH CONSTRUCTION.

15. WHERE MINIMUM SEPARATION BETWEEN UTILITIES IS REQUIRED, THE DISTANCE SHALL BE MEASURED FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.

16. PVC PIPE AND FITTINGS 4-INCHES THROUGH 15-INCHES SHALL CONFORM TO ASTM D3034, SDR35 OR 26.

GRAVITY SANITARY SEWER GENERAL NOTES

SCALE: NONE
FIG. SS-3
REVISED 7/10

GRAVITY SANITARY SEWER GENERAL NOTES

SHEET 2 OF 2

17. PVC PIPE AND FITTINGS FITTINGS 18-INCHES THROUGH 27-INCHES SHALL CONFORM TO ASTM F679-T1, SDR 35.

18. PVC PIPE AND FITTINGS SHALL BE SOLID GREEN IN COLOR.

19. DUCTILE IRON PIPE FOR GRAVITY OR NON-PRESSURE SERVICE SHALL BE DESIGNED IN ACCORDANCE WITH AND CONFORMING TO THE REQUIREMENTS OF ASTM A746 FOR INSTALLATION WITH TRENCH TYPE II, OR IN ACCORDANCE WITH ANSI/AWWA C150/A21.50 AND ANSI/AWWA C151/A21.51.

20. DUCTILE IRON FITTINGS FOR USE IN GRAVITY OR NON-PRESSURE SERVICE SHALL CONFORM TO THE REQUIREMENTS OF ANSI/AWWA C153/A21.53, COMPACT DUCTILE IRON FITTINGS.

21. DUCTILE IRON PIPE AND FITTINGS FOR GRAVITY OR NON-PRESSURE SERVICE SHALL HAVE AN INTERIOR LINING CONSISTING OF A MINIMUM 40 MILS OF A CERAMIC EPOXY COATING. REFER TO SPECIFICATIONS FOR DETAILS.

22. ALL NEW SANITARY SEWER MAINS SHALL BE INSTALLED WITH A MIN. OF 3'-0" OF COVER, UNLESS OTHERWISE NOTED.

23. MATERIAL FOR GRAVITY SEWER PIPE AND FITTINGS SHALL BE AS SHOWN FOR THE FOLLOWING DEPTHS OF EXCAVATION:
   A. 3' TO 4': EPOXY LINED DUCTILE IRON
   B. 4' TO 12': PVC, ASTM 3034/ASTM F679, SDR 35
   C. GREATER THAN 12': PVC, ASTM 3034, SDR 26 OR EPOXY-LINED DUCTILE IRON.

24. IN AREAS WHERE CONSTRUCTION ACTIVITIES RESTRICT NORMAL ACCESS TO PROPERTIES, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALTERNATE ACCESS ROUTES WHICH ARE SUBJECT TO APPROVAL BY THE CITY OF PALM COAST.

25. ALL PRACTICAL AND NECESSARY EFFORT SHALL BE TAKEN DURING CONSTRUCTION TO PREVENT UNNECESSARY TREE REMOVAL.

26. ALL ELEVATIONS SHOWN ON THESE DRAWINGS REFER TO NATIONAL GEODETIC VERTICAL DATUM (NGVD.)

27. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON ALL EQUIPMENT AND MATERIALS FOR APPROVAL BY THE CITY OF PALM COAST PRIOR TO PROCUREMENT.

28. THE CONTRACTOR SHALL VIDEO THE ENTIRE WORK AREA PRIOR TO COMMENCEMENT OF CONSTRUCTION. ONE COPY OF THE PRE-CONSTRUCTION VIDEO SHALL BE SUBMITTED TO THE CITY OF PALM COAST.

29. PIPE MEASUREMENTS ON THE MAIN "TRUNK" SEWER SHALL BE FROM CENTER TO CENTER OF MANHOLES OR CLEANOUTS, UNLESS OTHERWISE NOTED.

30. PIPE MEASUREMENTS FOR SERVICE LATERALS SHALL BE FROM THE MAIN "TRUNK" SEWER TO THE PROPERTY LINE. THE DEPTH OF THE LATERAL AT THE PROPERTY LINE SHALL BE MEASURED AND RECORDED ON THE RECORD DRAWINGS.

31. TESTING OF GRAVITY SEWER SYSTEMS AND MANHOLES SHALL FOLLOW THE REQUIREMENTS FOUND WITHIN THE SPECIFICATIONS.

32. CONFLICT BETWEEN WATER MAINS, STORM AND REUSE SYSTEMS AND PROPOSED SANITARY SEWER MAINS SHALL BE RESOLVED BY ADJUSTING THE PRESSURE MAINS AS NECESSARY. SEE "UTILITY SEPARATION DETAIL" AND ACCOMPANYING NOTES AS SHOWN ON THE CIVIL DETAIL (CD) SHEETS OF THE PLAN SET.

33. ALL EXCAVATIONS SHALL BE BACKFILLED AT THE END OF EACH WORK DAY.

34. FOR A SCHEDULED INTERRUPTION OF SANITARY SEWER MAIN FLOW, THE CONTRACTOR SHALL PROVIDE TO THE CITY OF PALM COAST FOR REVIEW A WRITTEN SCHEDULE AS TO THE METHOD AND DURATION OF FLOW INTERRUPTION.

35. THE CITY OF PALM COAST SHALL REVIEW THE SUBMITTAL AND SHALL INFORM THE CONTRACTOR REGARDING APPROVAL OR DENIAL OF THEIR REQUEST. IF THEIR REQUEST IS REJECTED BY THE CITY OF PALM COAST, THE CONTRACTOR MAY RESUBMIT THEIR REQUEST MODIFYING IT TO THE SATISFACTION OF THE OWNER. ALL CONNECTIONS SHALL BE MADE ONLY ON THE AGREED UPON TIME AND DATE ESTABLISHED IN THE SUBMITTAL.

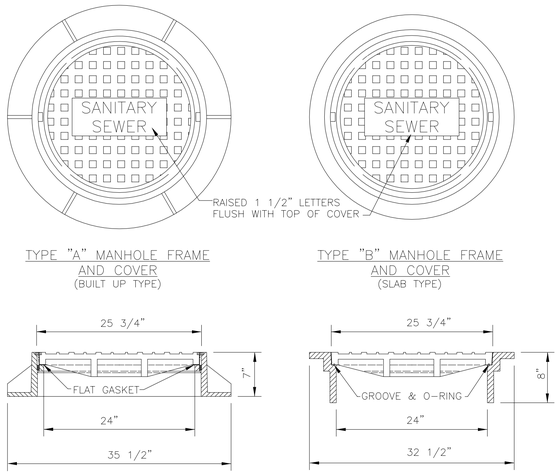
36. DURING NORMAL SANITARY SEWER MAIN FLOW INTERRUPTION, THE CONTRACTOR SHALL PROVIDE UNINTERRUPTED BY-PASS FLOW AND SHALL PROVIDE ALL EQUIPMENT NECESSARY TO ACCOMPLISH THE SAME IN THE FORM OF, BUT NOT LIMITED TO, THE FOLLOWING: POWER, PUMPS, PIPING, APPURTENANT VALVES AND FITTINGS AND/OR SEPTIC TANKER TRUCK PUMPING, HAULING AND DISPOSAL SERVICES.

37. ALL BURIED UTILITY PIPES TO BE ABANDONED IN PLACE SHALL BE CUT, PLUGGED AND FILLED WITH GROUT.

38. IT IS THE INTENT OF THIS CONTRACT FOR THE CONTRACTOR TO MAINTAIN CONTINUOUS RESTORATION BEHIND THE UTILITY WORK ON A DAILY BASIS. NO MORE THAN FIFTY (50) LINEAR FEET OF UNRESTORED LINE WORK SHALL REMAIN AT THE END OF EACH WORK DAY.

GRAVITY SANITARY SEWER GENERAL NOTES

SCALE: NONE
FIG. SS-4
REVISED 1/07



NOTES:

1. TYPE "A" & "B" NON-BOLTED WATERTIGHT RING & COVER. US FOUNDRY NO. 227-AS-ORS (TYPE "A") & U.S. FOUNDRY NO. 1295-AS-ORS (TYPE "B") OR APPROVED EQUAL.

2. MANHOLE COVERS SHALL BE LABELED AS SHOWN ABOVE.

MANHOLE FRAME & COVER DETAIL

SCALE: NONE
FIG. SS-15
REVISED 1/07

NO.	DATE	REVISION	BY

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

MICHAEL R. ZAFFUTO, P.E. #74069
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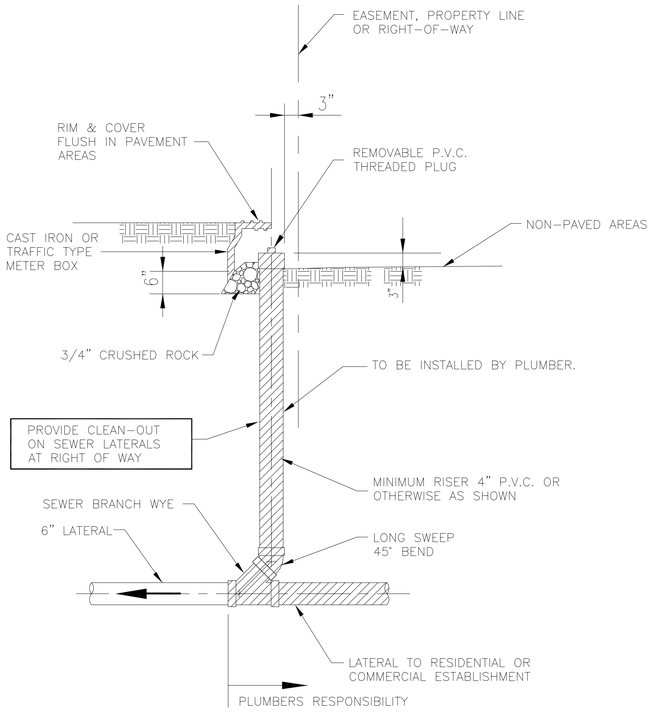
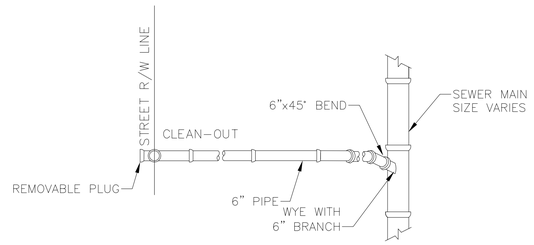
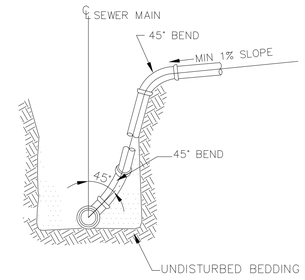
SHEET
C15 OF 18



NOTES:

1. DEPTH OF SERVICE AT PROPERTY LINE SHALL BE 3'-0" MIN. & 4'-0" MAX.





NOTES:

1. RISERS SHALL BE INSTALLED ON ALL WYES (BOTH PRESENT & FUTURE SERVICES) TO PROVIDE DEPTH AT SERVICE NOT OVER 4.0' EXCEPT WHERE OTHERWISE REQUIRED.
2. MINIMUM CUT UNDER ROADWAYS 4.0'; MINIMUM CUT AT PROPERTY LINE 3.0' OR AS REQUIRED FOR SERVICE.
3. RISERS SHALL PREFERABLY FOLLOW SLOPE OF BANK TO REQUIRED DEPTH.

APPROVAL STAMP BLOCK
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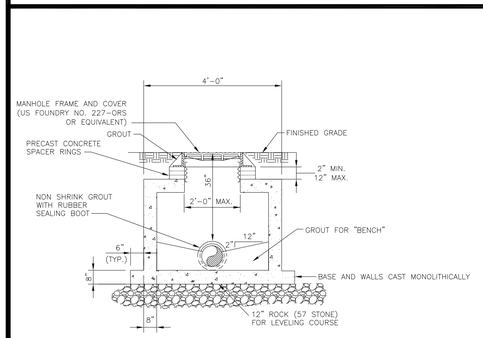
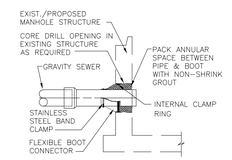
FLAGLER POINTE
PALM COAST, FL
CONSTRUCTION DETAILS



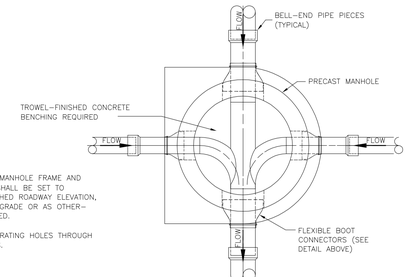
SECTION VIEW

NOTES:

1. THE INTERIOR AND EXTERIOR OF MANHOLE SHALL BE GIVEN THREE COATS/TWO COATS (EACH COAT 4 MILS) RESPECTIVELY, OF A WATER-BASED CONCRETE COATING EQUIV. TO CONSEAL CS-55 AS MF'D BY CONCRETE SEALANTS, INC. DO NOT COAT JOINT OR PIPE OPENING SURFACES.
2. PRECAST MANHOLE SECTION TO BE MFR'D. IN ACCORDANCE WITH LATEST EDITIONS OF ASTM C478 WITH 4000 PSI CONCRETE, TYPE II CEMENT.



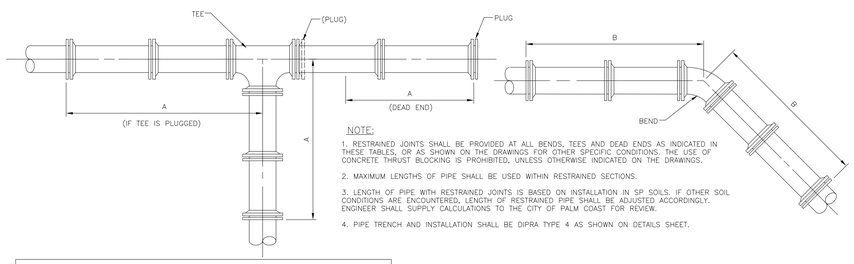
MANHOLE CONNECTION DETAIL



NOTES:

1. TOPS OF MANHOLE FRAME AND COVERS SHALL BE SET TO THE FINISHED ROADWAY ELEVATION, FINISHED GRADE OR AS OTHERWISE NOTED.
2. NO PENETRATING HOLES THROUGH MANHOLES.

TYPICAL MANHOLE PLAN



NOTE:

1. RESTRAINED JOINTS SHALL BE PROVIDED AT ALL BENDS, TEES AND DEAD ENDS AS INDICATED IN THESE TABLES, OR AS SHOWN ON THE DRAWINGS FOR OTHER SPECIFIC CONDITIONS. THE USE OF CONCRETE THRUST BLOCKING IS PROHIBITED, UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. MAXIMUM LENGTHS OF PIPE SHALL BE USED WITHIN RESTRAINED SECTIONS.
3. LENGTH OF PIPE WITH RESTRAINED JOINTS IS BASED ON INSTALLATION IN SP SOILS. IF OTHER SOIL CONDITIONS ARE ENCOUNTERED, LENGTH OF RESTRAINED PIPE SHALL BE ADJUSTED ACCORDINGLY. ENGINEER SHALL SUPPLY CALCULATIONS TO THE CITY OF PALM COAST FOR REVIEW.
4. PIPE TRENCH AND INSTALLATION SHALL BE DIPRA TYPE 4 AS SHOWN ON DETAILS SHEET.

LENGTH IN FEET REQUIRED FOR DIP RESTRAINED JOINTS

SIZE	A DEAD END	A TEE & PLUG	B 90° BEND	B 45° BEND	B 22 ½° BEND	B 11 ¼° BEND
4"	37' (55')	37' (55')	21' (26')	18' (18')	18' (18')	18' (18')
6"	52' (78')	52' (78')	30" (36")	18' (18')	18' (18')	18' (18')
8"	67' (100')	67' (100')	36' (45')	18' (18')	18' (18')	18' (18')
10"	81' (122')	81' (122')	44' (54')	18' (22')	18' (18')	18' (18')
12"	94' (141')	94' (141')	50' (63')	21' (26')	18' (18')	18' (18')
14"	107' (160')	107' (160')	60' (72')	23' (30')	18' (18')	18' (18')
16"	120' (180')	120' (180')	64' (80')	27' (33')	18' (18')	18' (18')
20"	144' (216')	144' (216')	80' (94')	32' (39')	18' (18')	18' (18')
24"	167' (250')	167' (250')	88' (108')	37' (45')	18' (18')	18' (18')

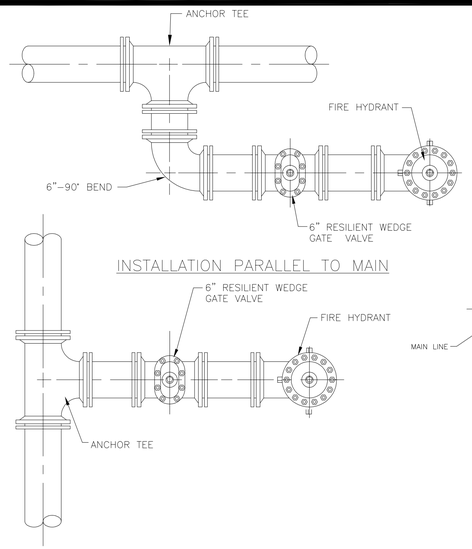
TABLE APPLIES TO DUCTILE IRON FOR FOLLOWING CONDITIONS:
1. TEST PRESSURE: 150 PSIG
2. SOIL TYPE: SP
3. DEPTH OF COVER: 30"
4. SAFETY FACTOR: 1.5
5. COMPACTION: AS SHOWN ON DETAIL DRAWINGS

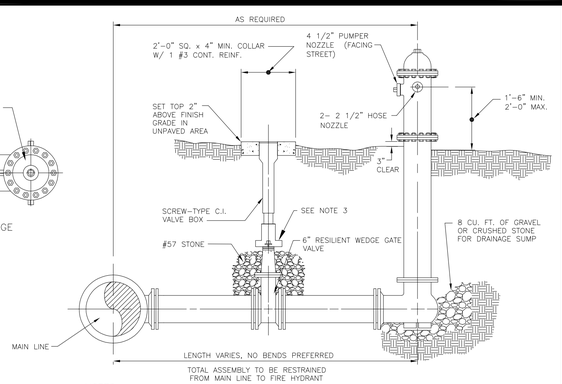
VALUES IN PARENTHESIS ARE FOR PIPE ENCASED IN POLYETHYLENE

LENGTH IN FEET REQUIRED FOR PVC RESTRAINED JOINTS

SIZE	A DEAD END	A TEE & PLUG	B 90° BEND	B 45° BEND	B 22 ½° BEND	B 11 ¼° BEND
4"	45'	45'	20'	18'	18'	18'
6"	63'	63'	28'	18'	18'	18'
8"	82'	82'	36'	18'	18'	18'
10"	98'	98'	44'	18'	18'	18'
12"	116'	116'	51'	20'	18'	18'
16"	148'	148'	63'	26'	18'	18'
20"	179'	179'	75'	31'	18'	18'
24"	208'	208'	87'	36'	18'	18'

TABLE APPLIES TO PVC PIPE FOR FOLLOWING CONDITIONS:
1. TEST PRESSURE: 150 PSIG
2. SOIL TYPE: SP
3. DEPTH OF COVER: 30"
4. SAFETY FACTOR: 1.5
5. COMPACTION: AS SHOWN ON DETAIL DRAWINGS





NOTES:

1. A TAPPING SLEEVE WITH VALVE AND BOX SHALL BE INSTALLED WHEN CONNECTING A PROPOSED FIRE HYDRANT TO AN EXISTING MAIN, OR RELOCATING AN EXISTING FIRE HYDRANT.
2. HYDRANTS SHALL HAVE BREAKAWAY SECTION OR REMOVABLE BARREL.
3. SELF-CENTERING ALIGNMENT RING EQUIVALENT TO AMERICAN FLOW CONTROL.
4. ALL ABOVE GRADE PIPING SHALL BE PAINTED AS FOLLOWS:

-SURFACE PREPARATION: POWER TOOL CLEANING (SSPC-SP3) OR BRUSH-OFF BLAST CLEANING (SSPC-SP7).

-PRIME: ACRYLIC ENAMEL, MINIMUM 3.0 MILS DFT. IF SHOP COAT IS DAMAGED, REPRIME BARE AREAS IN FIELD. IF SHOP COAT IS BITUMINOUS COATING, PRIME WITH 2 COATS OF STAIN BARRIER, 1 MIL DRY FILM THICKNESS PER COAT.

-FINISH: TWO COATS, APPLIED BY SPRAY, OF ACRYLIC ENAMEL, BLP MOBILE PAINTS, MINIMUM 4.0 MILS DFT. MOBILE H20 RUS-KIL PRECAUTION BLUE #310-37 OR APPROVED EQUIVALENT.

NO.	DATE	REVISION	BY

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

MICHAEL R. ZAFFUTO, P.E. #74069
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SHEET
C16 OF 18

SEWER CLEAN OUT INSTALLATION DETAIL	SCALE: NONE	FIG. SS-18
		REVISED 1/07

TYPICAL SERVICE LATERAL DETAIL DEEP CONNECTIONS	SCALE: NONE	FIG. SS-17
		REVISED 3/09

SHALLOW MANHOLE DETAIL	SCALE: NONE	FIG. SS-9
		REVISED 7/07

RESTRAINED JOINT DETAIL	SCALE: NONE	FIG. W-9
		REVISED 1/07

FIRE HYDRANT ASSEMBLY DETAIL	SCALE: NONE	FIG. W-20
		REVISED 7/08

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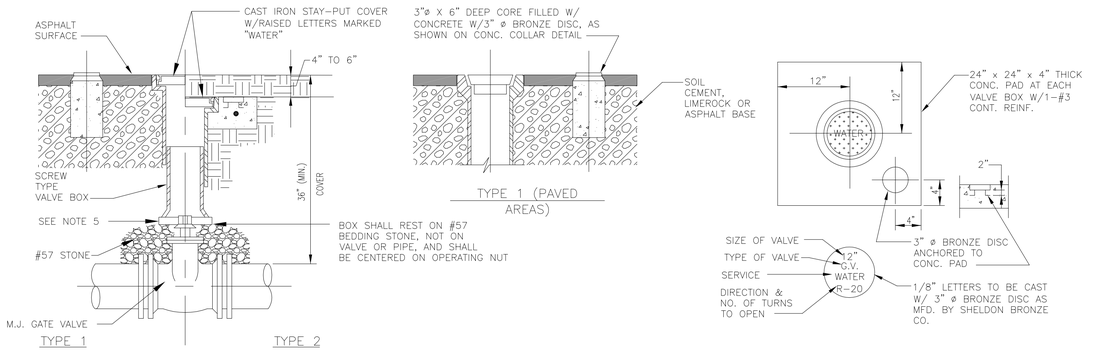
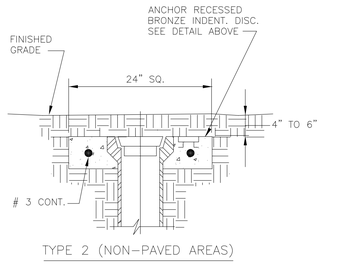


NOTES:

1. GATE VALVES SHALL BE DUCTILE IRON RESILIENT WEDGE TYPE, RATED AT 200 P.S.I. AND SHALL COMPLY WITH ANSI/AWWA C509.
2. WHERE AN EXTENSION IS REQUIRED, A 6" SDR 35 PVC EXTENSION SHALL BE USED ON VALVE BOX INSTALLATION.
3. VALVE COVER SHALL BE PAINTED BLUE FOR POTABLE WATER MAINS, WHITE FOR RAW WATER MAINS.
4. CONCRETE COLLAR SHALL BE CAST-IN-PLACE; PRECAST CONCRETE IS NOT ACCEPTABLE.
5. SELF CENTERING ALIGNMENT RING EQUIVALENT TO AMERICAN FLOW CONTROL.
6. VALVES 16" AND LARGER SHALL BE INSTALLED HORIZONTALLY.
7. VALVES 18" AND LARGER SHALL INCLUDE A NRS BYPASS VALVE.



TYPE 2 (NON-PAVED AREAS)

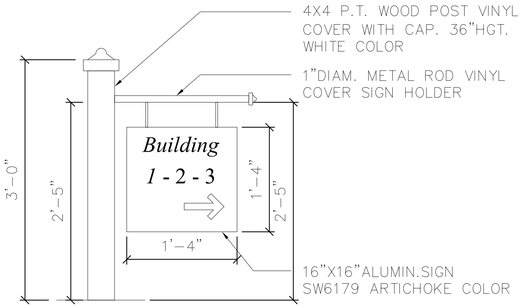
CITY OF PALM COAST, FLORIDA — INCORPORATED 1999

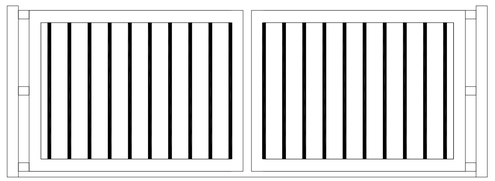
GATE VALVE & BOX DETAIL - POTABLE AND RAW WATER

SCALE: NONE

FIG. W-18

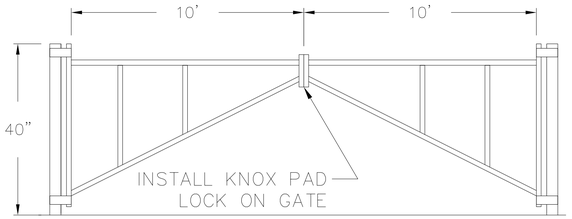
REVISED 7/11





DOUBLE SWINGING GATE DETAIL
N.T.S.

NOTE: MAIN ENTRANCE GATE SHALL HAVE A KNOX LOCK BOX & S.O.S. EMERGENCY ACCESS SYSTEM INSTALLED. THE KNOX LOCK BOX SHALL BE INSTALLED SO THAT IT IS ACCESSIBLE BY EMERGENCY PERSONNEL UPON ARRIVING AT THE GATE.



EMERGENCY ACCESS GATE DETAIL
N.T.S.

APPROVAL STAMP BLOCK
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FLAGLER POINTE
PALM COAST, FL
CONSTRUCTION DETAILS

SANITARY GRAVITY, FORCE MAIN, REUSE MAIN, STORM SEWER, & POTABLE WATER MAIN SEPARATION NOTES & SOLUTIONS

1. HORIZONTAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCEMAINS, RECLAIMED WATER PIPELINES, AND ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS.
   A. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE INSTALLED 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 INSTALLED 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 INSTALLED 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 INSTALLED AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER.
   D. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE INSTALLED 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. VERTICAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCEMAINS, 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 INSTALLED 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 INSTALL 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 INSTALLED 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 INSTALL 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.

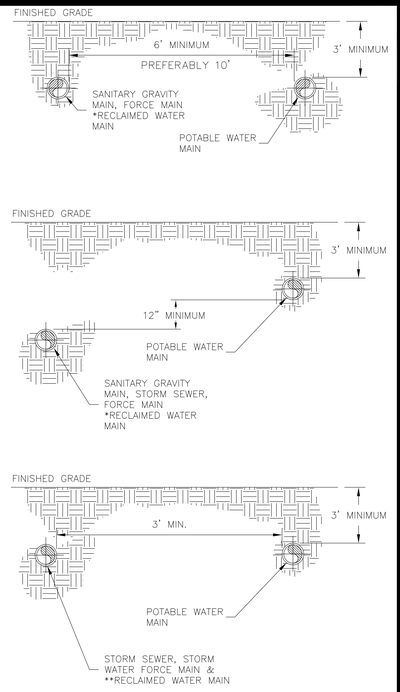
3. NEW OR RELOCATED FIRE HYDRANTS SHALL BE LOCATED SUCH THAT THE UNDERGROUND DRAIN (WEEP HOLE) IS AT LEAST:
   A. THREE FEET FROM ANY EXISTING OR PROPOSED STORM SEWER, STORM WATER FORCE MAIN, RECLAIMED WATER MAIN OR VACUUM TYPE SANITARY SEWER.
   B. SIX FEET AWAY FROM ANY EXISTING OR PROPOSED GRAVITY SANITARY SEWER AND WASTEWATER FORCE MAIN
   C. TEN FEET FROM ANY ON SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM SUCH AS SEPTIC TANKS, DRAINFIELDS, AND GREASE TRAPS. ONSITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS DO NOT INCLUDE PACKAGE SEWAGE TREATMENT FACILIITIES AND PUBLIC WASTEWATER TREATMENT FACILITIES.

4. NO WATER MAIN SHALL PASS THROUGH, OR COME INTO CONTACT WITH, ANY PART OF A SANITARY SEWER MANHOLE.

5. 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.

*RECLAIMED WATER MAIN NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.

** RECLAIMED WATER MAIN REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C



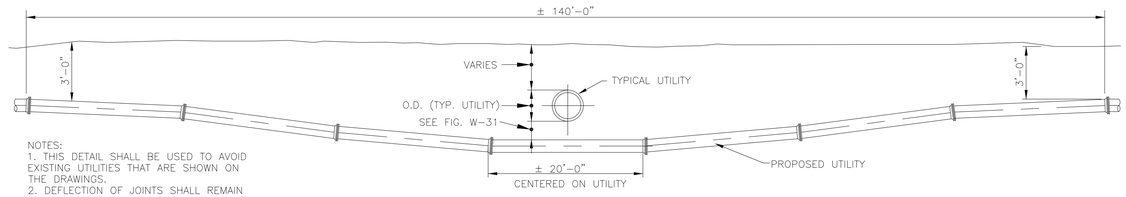
CITY OF PALM COAST, FLORIDA — INCORPORATED 1999

UTILITY SEPARATION DETAIL

SCALE: NONE

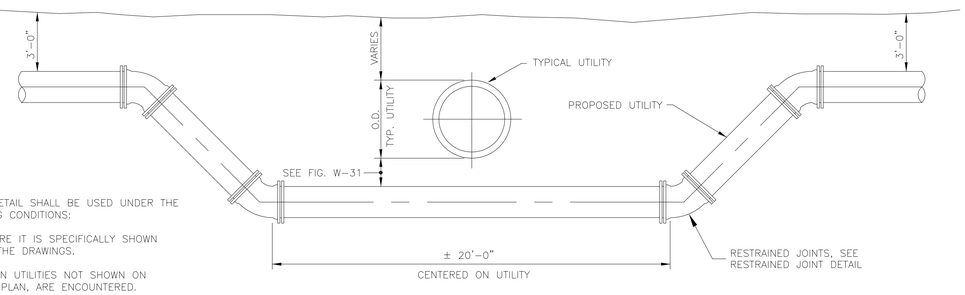
FIG. W-31

REVISED 1/07



NOTES:
1. THIS DETAIL SHALL BE USED TO AVOID EXISTING UTILITIES THAT ARE SHOWN ON THE DRAWINGS.
2. DEFLECTION OF JOINTS SHALL REMAIN WITHIN MANUFACTURER'S RECOMMENDATIONS.

TYPICAL CONFLICT RESOLUTION BY DEFLECTION
SEE NOTES



NOTES:
1. THIS DETAIL SHALL BE USED UNDER THE FOLLOWING CONDITIONS:
   A. WHERE IT IS SPECIFICALLY SHOWN ON THE DRAWINGS.
   B. WHEN UTILITIES NOT SHOWN ON THE PLAN, ARE ENCOUNTERED.

TYPICAL CONFLICT RESOLUTION BY FITTINGS
SEE NOTES

CITY OF PALM COAST, FLORIDA — INCORPORATED 1999

TYPICAL CONFLICT RESOLUTION DETAIL BY DEFLECTION OR FITTINGS

SCALE: NONE

FIG. W-32

REVISED 1/07

NO.	DATE	REVISION	BY
3	12/22/14	PER COPC/SJRWMD COMMENTS	MRZ
2	12/12/14	PER COPC COMMENTS	MRZ
1	10/29/14	PER COPC/SJRWMD COMMENTS	MRZ

DESIGNER MRZ	DRAWN BY MRZ	FILE 1410-1	PROJECT 1410.1
DATE 5/15/14		SCALE 1"=40'	

MICHAEL R. ZAFFUTO, P.E. #74069
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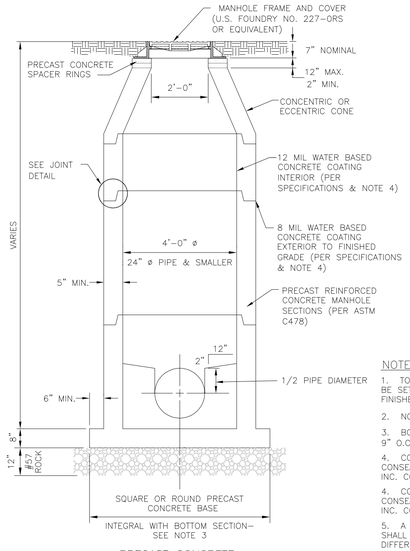
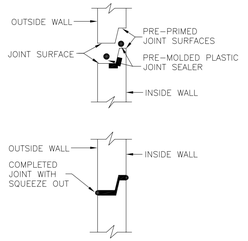
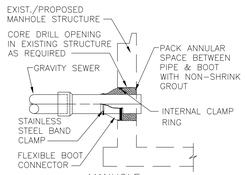
C17 OF 18



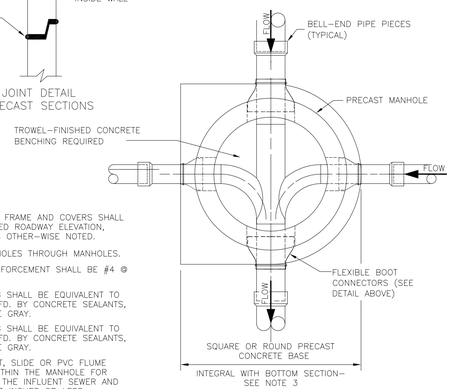
PRECAST CONCRETE MANHOLE (CONCENTRIC)



JOINT DETAIL
PRECAST SECTIONS



MANHOLE CONNECTION DETAIL



TYPICAL MANHOLE PLAN

NOTES:

1. TOPS OF MANHOLE FRAME AND COVERS SHALL BE SET TO THE FINISHED ROADWAY ELEVATION, FINISHED GRADE OR AS OTHER-WISE NOTED.
2. NO PENETRATING HOLES THROUGH MANHOLES.
3. BOTTOM SLAB REINFORCEMENT SHALL BE #4 @ 9" O.C.E.W.
4. CONCRETE COATING SHALL BE EQUIVALENT TO CONSEAL CS-55 AS MFD. BY CONCRETE SEALANTS, INC. COATING SHALL BE GRAY.
4. CONCRETE COATING SHALL BE EQUIVALENT TO CONSEAL CS-55 AS MFD. BY CONCRETE SEALANTS, INC. COATING SHALL BE GRAY.
5. A CONCRETE FILLET, SLIDE OR PVC FLUME SHALL BE PROVIDED WITHIN THE MANHOLE FOR DIFFERENCES BETWEEN THE INFLUENT SEWER AND MANHOLE INVERT OF 23 INCHES OR LESS.

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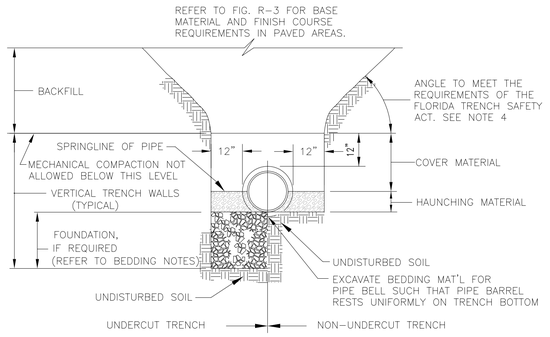
STANDARD MANHOLE DETAIL

SCALE: NONE
FIG. SS-8
REVISED 1/08



TYPICAL DETAIL-OPEN CUT

1. BEDDING NOTES:
   A. NORMALLY APPROVED CLEAN BACKFILL MATERIAL WILL BE USED AS A 4-INCH TYPICAL BEDDING UNDER THE PIPE. HOWEVER, WHERE UNSTABLE OR UNSITABLE MATERIAL EXISTS FOR BEDDING, AS DETERMINED BY THE UTILITY INSPECTOR AND / OR DESIGN ENGINEER, A SUFFICIENT DEPTH OF THE UNSTABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH NOT LESS THAN 6-INCHES NOR MORE THAN 24-INCHES OF ONE OF THE FOLLOWING MATERIALS:
      (1) APPROVED CLEAN BACKFILL (FROM ADJACENT AREA)
      (2) FDOT SIZE 6 AGGREGATE (3/8-INCH TO 3/4-INCH)
      (3) CRUSHED SHELL AS REQUIRED TO IMPLEMENT A STABLE BEDDING FOR THE PIPE.
   B. BEDDING COMPACTION OF 95 PERCENT IS REQUIRED WHERE CLEAN BACKFILL MATERIAL IS USED. WHEN USING CRUSHED SHELL OR GRAVEL AS BACKFILL, HAND TAMPING IS REQUIRED.
   C. IF SOLID HARDPAN IS ENCOUNTERED AT THE TRENCH BOTTOM, AND NO UNDERCUT (EXCLUDING TEETH DEPTH) HAS BEEN MADE IN THE HARDPAN, NO COMPACTION IS REQUIRED ON THE MATERIAL USED TO BRING THE EXCAVATION TO THE TRENCH BOTTOM.
   D. ALL ASPECTS OF THIS BEDDING WORK WILL BE DETERMINED BY THE UTILITY INSPECTOR.
2. PERCENT COMPACTION:

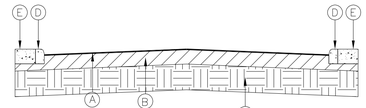
   COMPACTION REQUIREMENTS LISTED BELOW ARE IN PERCENTAGES OF MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR AASHTO T-180 (ASTM D-1557) UNLESS OTHERWISE SPECIFICALLY APPROVED.
   A. 95 PERCENT FOR PIPE BEDDING, EXCEPT FOR THE VARIOUS EXCEPTIONS LISTED IN THE BEDDING NOTES IN WHICH NO FORMAL COMPACTION TEST IS REQUIRED.
   B. BAR TAMP HAUNCHING MATERIAL.
   C. 95 PERCENT FOR COVER MATERIAL. (6-INCH LIFTS)
   D. 95 PERCENT FOR BACKFILL IN NON-ROADWAY AREAS. (12-INCH LIFTS)
   E. 98 PERCENT FOR BACKFILL IN ROADWAY AREAS. (12-INCH LIFTS)
3. TESTING FREQUENCY:

   LOCATION OF TESTING STATIONS WILL BE RANDOMLY SELECTED AND WITHIN THE FOLLOWING MINIMUM FREQUENCIES:
   BACKFILL: ONE (1) TEST PER 300 LINEAR FEET OR PORTION THEROF.
   TYPICAL ELEVATIONS OF TEST POINTS WILL BE EVERY TWO (2) FEET, STARTING ONE FOOT ABOVE TOP OF PIPE. THE PERCENT (%) OF MAXIMUM DENSITY LISTED ABOVE ARE MINIMUMS AND MAY BE INCREASED AT THE DIRECTION OF THE UTILITY INSPECTOR AND / OR DESIGN ENGINEER.
4. IF ANGLE CANNOT BE MET DUE TO TIGHT WORKING CONDITIONS, TRENCH SHALL BE SHEETED OR A TRENCH BOX UTILIZED.

CITY OF PALM COAST, FLORIDA — PALM COAST — INCORPORATED 1999

PIPE TRENCHING, BEDDING, BACKFILLING & COMPACTION DETAIL

SCALE: NONE
FIG. R-4
REVISED 7/11



(A) ASPHALT PAVEMENT:
1-1/2" ASPHALT BITUMINOUS CONCRETE TYPE S-III; MINIMUM MARSHALL FIELD STABILITY 1500, COMPACTED TO 98% DENSITY PER FM 1-T238 (METHOD B). NUCLEAR DENSITY TEST, "BACK SCATTER METHOD".

(B) BASE:
6" SOIL CEMENT BASE MINIMUM BEARING STRUCTURE OF 350 P.S.I. SHALL BE OBTAINED WITHIN 7 DAYS AND COMPACTED TO 98% DENSITY PER AASHTO T-99 STANDARD PROCTOR TEST; CONSTRUCTION METHODS SHALL CONFORM TO SECTION 270 OF STANDARD F.D.O.T. SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.

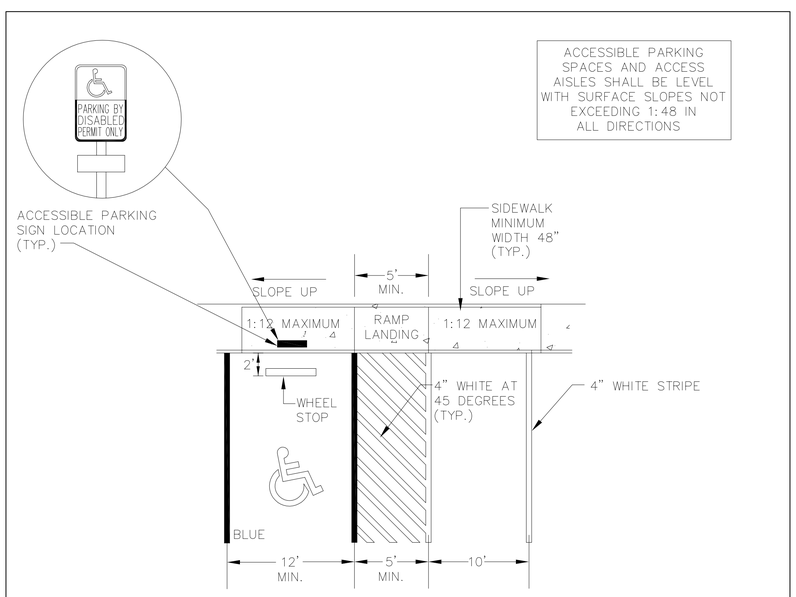
ALTERNATE:
6" LIMEROCK BASE (LBR 100) OR RECYCLED/CRUSHED CONCRETE BASE (LBR 130) COMPACTED TO 98% DENSITY BASED ON AASHTO T-180 MODIFIED PROCTOR TEST.

(C) SUB-BASE:
12" SUB-BASE COMPACTED TO 98% DENSITY BASED ON AASHTO T-180

(D) CURB:
STANDARD FDOT TYPE "D" CURB

(E) SIDEWALK:
4" THICK; 3000 PSI; 28 DAY CONCRETE

PRIVATE PARKING LOT



HANDICAP ACCESSIBLE & STANDARD PARKING SPACE DETAIL

NOTE:

1. WHEN HEADER CURB IS USED IN LIEU OF WHEEL STOPS, SIDEWALK ABUTTING CURB MUST BE WIDENED SO THAT THE MINIMUM SIDEWALK WIDTH IS 68" TO ALLOW FOR A 44" MINIMUM CLEAR ACCESSIBLE ROUTE.
2. FOR COMPLETE DETAIL OF PARKING SIGN, REFER TO DETAIL M-12.
3. WHERE PARKING SPACES ARE MARKED WITH LINES, WIDTH MEASUREMENTS OF PARKING SPACES AND ACCESSIBLE AISLES SHALL BE MADE FROM THE CENTERLINE OF THE MARKINGS.
4. WHERE PARKING SPACES OR ACCESS AISLES ARE NOT ADJACENT TO ANOTHER PARKING SPACE OR ACCESS AISLE, MEASUREMENTS SHALL BE PERMITTED TO INCLUDE THE FULL WIDTH OF THE LINE DEFINING THE PARKING SPACE OR ACCESS AISLE.

ACCESSIBLE PARKING SPACES

APPROVAL STAMP BLOCK
CITY OF PALM COAST, FL

ALANN ENGINEERING GROUP, INC.
CONSULTING ENGINEERS
CERTIFICATE No. EB5479
880 AIRPORT ROAD, SUITE. 113
ORMOND BEACH, FL 32174
TEL: (386) 673-7640
FAX: (386) 673-3927

FLAGLER POINTE
PALM COAST, FL
CONSTRUCTION DETAILS

NO.	DATE	REVISION	BY

DATE 5/15/14	SCALE 1"=40'
FILE 1410-1	PROJECT 1410.1
DESIGNER MRZ	DRAWN BY MRZ

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