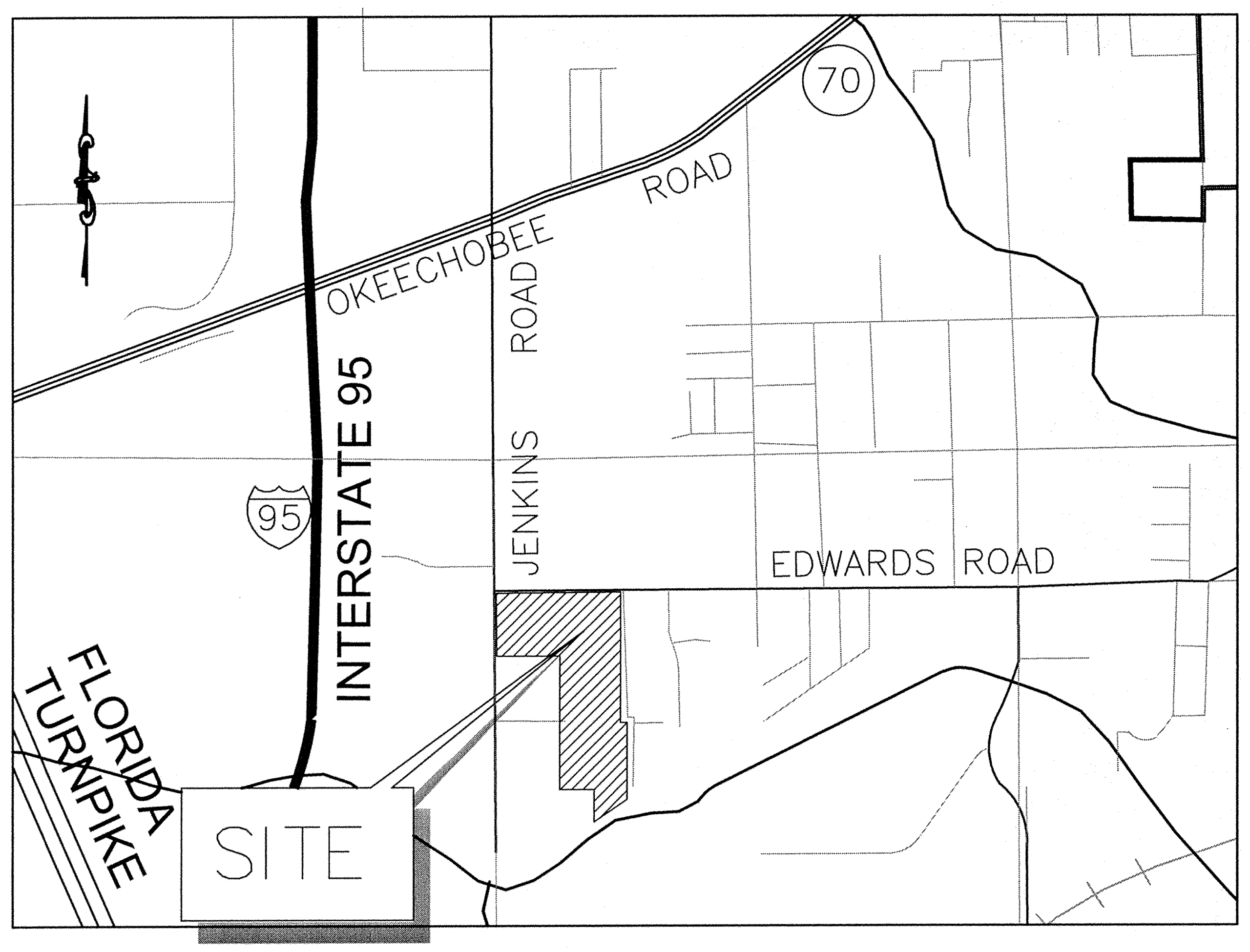
MARINER COVE

A 216 UNIT MULTI-FAMILY DEVELOPMENT

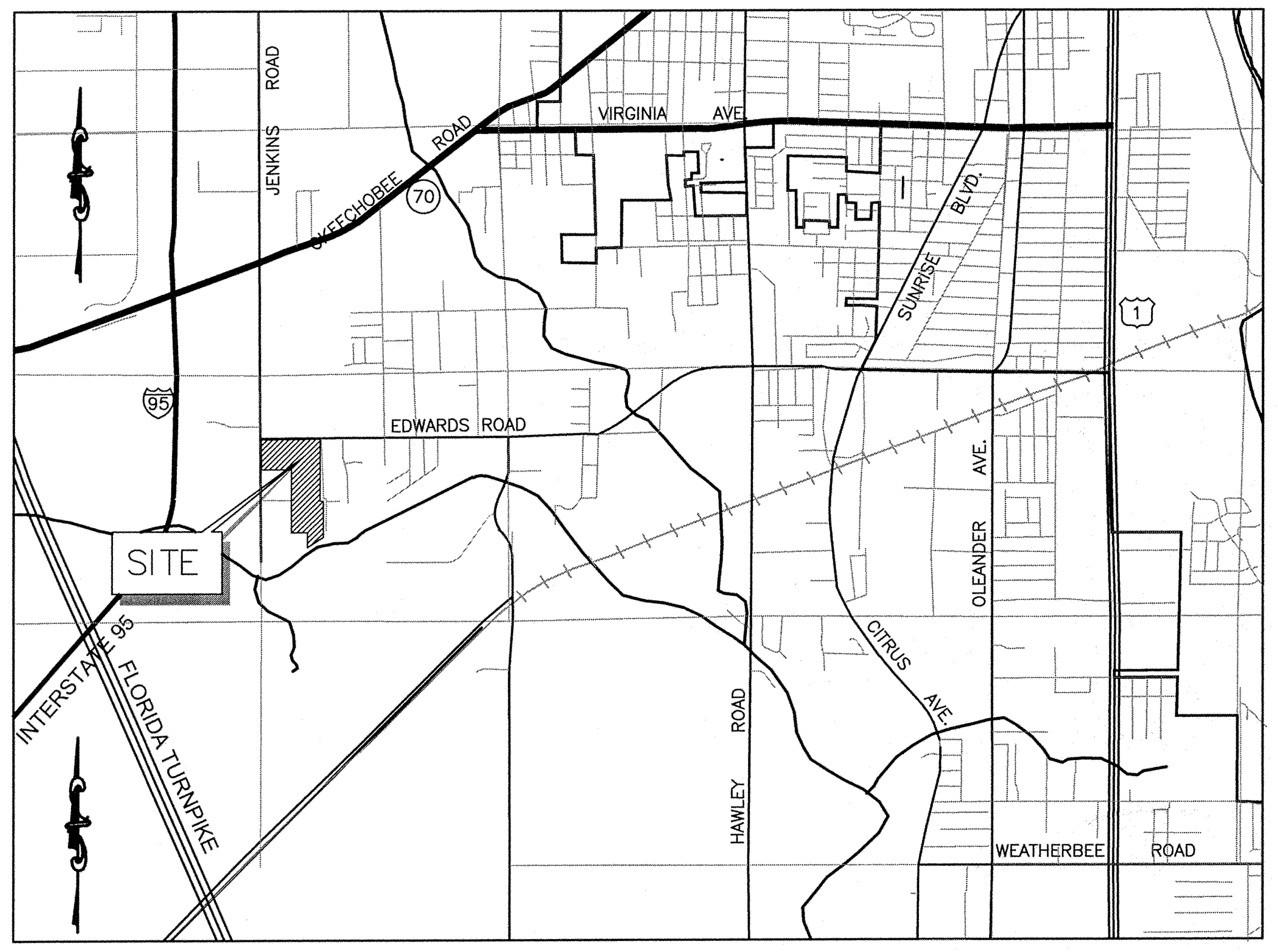
CITY OF FORT PIERCE, FLORIDA

SECTION 30, TOWNSHIP 35S, RANGE 40E

JUNE 2015



VICINITY MAP
N.T.S.



LOCATION MAP
N.T.S.

ENGINEER

W.F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221

1171 19th STREET
VERO BEACH, FL 32960
PHONE (772)-770-1093
FAX (772)-770-1508

SURVEYOR

ALEXANDER J. PIAZZA PSM, INC
619 SW BILTMORE STREET
PORT SAINT LUCIE, FLORIDA 34983
(561)-644-3085

OWNER

MARINER COVE BUILDERS, LLC
CONTACT: MR. STANLEY MARKOFSKY
1400 EAST OAKLAND BOULEVARD, SUITE 103
FORT LAUDERDALE, FL. 33334
PHONE: (954) 567-5161

SITE DATA

ENGINEER
W. F. MCCAIN & ASSOC., INC.
1171 19th STREET
VERO BEACH, FLORIDA 32960
PHONE (772)-770-1093
FAX (772)-770-1508

APPLICANT
MARINER COVE BUILDERS, LLC
C/O STANLEY MARKOFSKY
1400 EAST OAKLAND BOULEVARD
SUITE 103
FORT LAUDERDALE, FL 33334

SURVEYOR
ALEXANDER J. PIAZZA PSM, INC.
619 SW BILTMORE STREET
PORT ST. LUCIE, FLORIDA 34983

SITE ADDRESS
SOUTH EAST CORNER OF
EDWARDS AND JENKINS ROAD

ZONING
R-4

FUTURE LAND USE
RM

SITE DATA
SITE AREA = 1,703,058 SF = 39.1 AC
OFFSITE CONTRIBUTING AREA = 49,223 SF 1.13 AC
AREA OF DEVELOPMENT = 1,186,319 SF = 27.23 AC = 100%
TOTAL LAKES @ NWL = 114,933 SF = 2.64 AC
PAVEMENT/CURBING = 248,733 SF = 5.71 AC
BUILDING AREA = 177,104 SF = 4.07 AC
DRIVEWAYS = 5,522 SF = 0.13 AC
SIDEWALKS = 38,820 SF = 0.89 AC
CLUBHOUSE/POOL = 7,918 SF = 0.18 AC
TOTAL OPEN SPACE = 570,538 SF = 13.10 AC
TOTAL IMPERVIOUS
  INCLUDING LAKES = 607,718 SF = 13.95 AC = 51.23%
  EXCLUDING LAKES = 492,785 SF = 11.31 AC
TOTAL PERVIOUS = 578,602 SF = 13.28 AC = 48.77%

SETBACKS

FRONT	25'
SIDE	10', SIDE CORNER 15'
REAR	25'

CONSTRUCTION SCHEDULE
COMMENCE DATE: 11/15
COMPLETION:11/16

PROPOSED FINISHED FLOOR ELEVATION
F.F.EL. = 17.00 FOR ALL BUILDINGS

GENERAL DESCRIPTION
A PROPOSED 216 UNIT 30 BUILDING RESIDENTIAL RENTAL APARTMENT WITH A CLUBHOUSE AND POOL ON 39.1 AC. WITH DRIVEWAY CONNECTIONS ON EDWARDS AND JENKINS ROADS

PROPOSED BUILDING HEIGHT
32' PROPOSED 34' - 2" MAX ALLOWABLE

FLOOD ZONE
THE SUBJECT PROPERTY IS LOCATED IN FLOOD ZONE "X" AND "AE" PER FEDERAL EMERGENCY MANAGEMENT AGENCY, FLOOD INSURANCE RATE MAP NO. 12111C0167 J & 12111C0169 J, EFFECTIVE DATE 2-16-12

DENSITY
PROPOSED DENSITY: 216 UNITS/38.90 ACRES = 5.55 UNITS PER ACRE
ALLOWED DENSITY: 6 UNITS PER ACRE

TRAFFIC DATA
216 UNITS X 5.9 TRIPS = 1275 ADT

STORMWATER
CONSTRUCT 3 ON-SITE DETENTION PONDS

WASTEWATER DATA
CONNECT TO AN EXISTING FORT PIERCE UTILITIES FORCE MAIN ON EDWARDS ROAD

WATER SOURCE
WATER WILL BE PROVIDED VIA WATER MAIN CONNECTIONS TO EXISTING WATER MAINS ALONG EDWARDS ROAD AND JENKINS ROAD.

TAX PARCEL I.D. NO.
2430-231-0001-000-4
2430-234-0001-000-3

PERMITS REQUIRED
- ST. LUCIE COUNTY FIRE DEPARTMENT REVIEW
- ST. LUCIE COUNTY R.O.W. UTILITY
- ST. LUCIE COUNTY R.O.W. TURN LANES
- CITY OF FT. PIERCE BUILDING PERMIT
- CITY OF FT. PIERCE PLAN REVIEW PERMIT
- CITY OF FT. PIERCE LAND CLEARING PERMIT
- CITY OF FT. PIERCE TREE REMOVAL PERMIT
- CITY OF FT. PIERCE LANDSCAPE PERMIT
- S.F.W.M.D. ENVIRONMENTAL RESOURCE PERMIT
- S.F.W.M.D. WATER USE PERMIT
- S.F.W.M.D. DEWATERING PERMIT
- F.D.E.P. WASTEWATER COLLECTION PERMIT
- F.D.E.P. WATER MAIN EXTENSION PERMIT
- F.D.E.P. NOTICE OF INTENT TO USE GENERIC PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES(BY CONTRACTOR)
- N.S.L.R.W.M.D. DRAINAGE PERMIT (APPROVAL)
- S.L.C. DRAINAGE PERMIT

ENGINEER'S PROJECT NO. 14-173

INDEX OF DRAWINGS

Sheet Number	Sheet Title
GENERAL	
G1	COVER
CIVIL	
C1	EXISTING CONDITIONS
C2	MASTER SITE PLAN
C3	MASTER PAVING, GRADING , DRAINAGE AND UTILITIES PLAN
C4	PAVING, GRADING & DRAINAGE PLAN - ELARGEMENT SOUTH
C4A	UTILITIES PLAN - ENLARGEMENT SOUTH
C5	PAVING, GRADING & DRAINAGE PLAN - ENLARGEMENT NORTHEAST
C5A	UTILITIES PLAN - ENLARGEMENT NORTHEAST
C6	PAVING, GRADING & DRAINAGE PLAN - ENLARGEMENT NORTHWEST
C6A	UTILITIES PLAN - ENLARGEMENT NORTHWEST
C7	TREE PRESERVATION & MITIGATION PLAN
C8	CROSS SECTIONS
C9	PAVING, GRADING & DRAINAGE DETAILS
C10	PAVING, GRADING & DRAINAGE DETAILS
C11	LIFT STATION DETAILS
C12	LIFT STATION DETAILS
C13	LIFT STATION SPECIFICATIONS

NOT VALID WITHOUT THE ORIGINAL SIGNATURE AND EMBOSSED SEAL OF THE ENGINEER

No. 50046

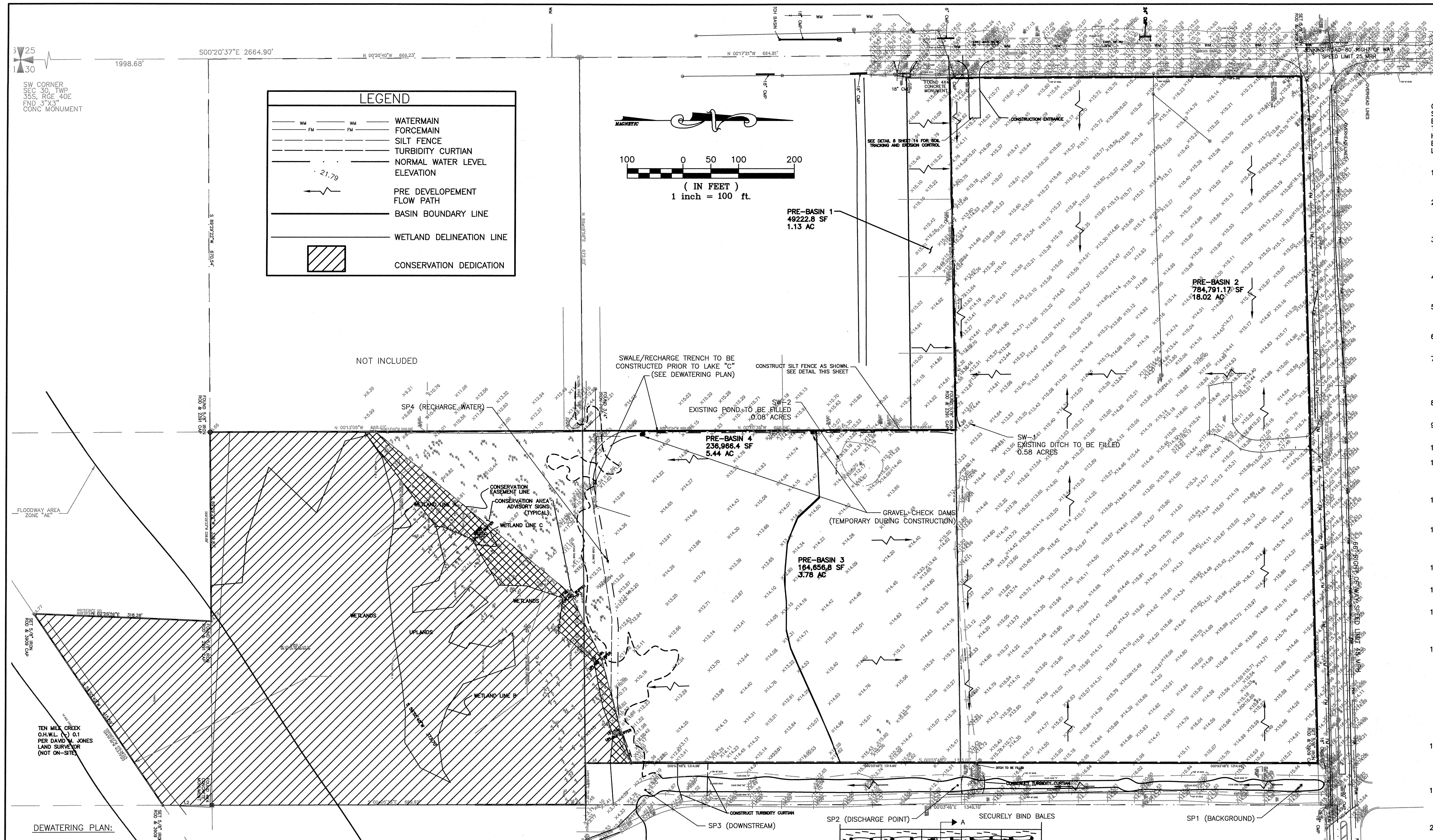
WILLIAM F. McCAIN, FL PE# 50046
DATE: JUL [illegible] 2015

W. F. McCAIN & ASSOCIATES, INC.

△	REVISIONS	DATE	BY
1	SITE PLAN APPROVAL SUBMITTAL TO CITY OF FT. PIERCE	6-3-2015	BJK
2	REVISED BUILDING FOOTPRINTS TO MATCH ARCH. DWGS	7-24-2015	BJK
3	PLANNING AND ZONING SUBMITTAL TO CITY OF FT. PIERCE	7-27-2015	BJK
4			
5			
6			
7			
8			

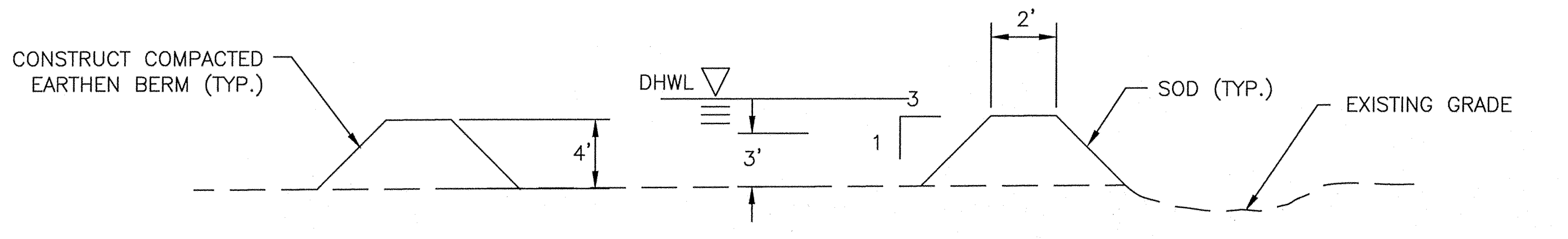
MARINER COVE

DESIGNED	WFM/BJK
DRAWN	BJK
CHECKED	WFM
DATE	JULY 2015
PROJECT #	14-173


LEGEND
WATERMAIN
FORCEMAIN
SILT FENCE
TURBIDITY CURTIAN
NORMAL WATER LEVEL
21.79 ELEVATION
PRE DEVELOPEMENT FLOW PATH
BASIN BOUNDARY LINE
WETLAND DELINEATION LINE
CONSERVATION DEDICATION
MAGNETIC
100 0 50 100 200
(IN FEET)
1 inch = 100 ft.
SW CORNER SEC 30, TWP 35S, RGE 40E FND 3"X3" CONC MONUMENT
S00°20'37"E 2664.90'
1998.68'
NOT INCLUDED
FLOODWAY AREA ZONE "AE"
TEN MILE CREEK O.H.W.L. (+/-) 0.1 PER DAVID M. JONES LAND SURVEYOR (NOT ON-SITE)
WETLANDS
UPLANDS
WETLAND LINE C
WETLAND LINE B
CONSERVATION EASEMENT LINE
CONSERVATION AREA ADVISORY SIGNS (TYPICAL)
SP4 (RECHARGE WATER)
SWALE/RECHARGE TRENCH TO BE CONSTRUCTED PRIOR TO LAKE "C" (SEE DEWATERING PLAN)
CONSTRUCT SILT FENCE AS SHOWN. SEE DETAIL THIS SHEET
SW-2 EXISTING POND TO BE FILLED 0.08 ACRES
PRE-BASIN 4 236,966.4 SF 5.44 AC
PRE-BASIN 3 164,656.8 SF 3.78 AC
PRE-BASIN 1 49222.8 SF 1.13 AC
PRE-BASIN 2 784,791.17 SF 18.02 AC
SW-1 EXISTING DITCH TO BE FILLED 0.58 ACRES
GRAVEL CHECK DAMS (TEMPORARY DURING CONSTRUCTION)
SEE DETAIL 8 SHEET 14 FOR SOIL TRACKING AND EROSION CONTROL
CONSTRUCTION ENTRANCE
CONSTRUCT TURBIDITY CURTAIN
SP3 (DOWNSTREAM)
SP1 (BACKGROUND)
SPEED LIMIT 25 MPH
N 00°17'21"W 1329.63'

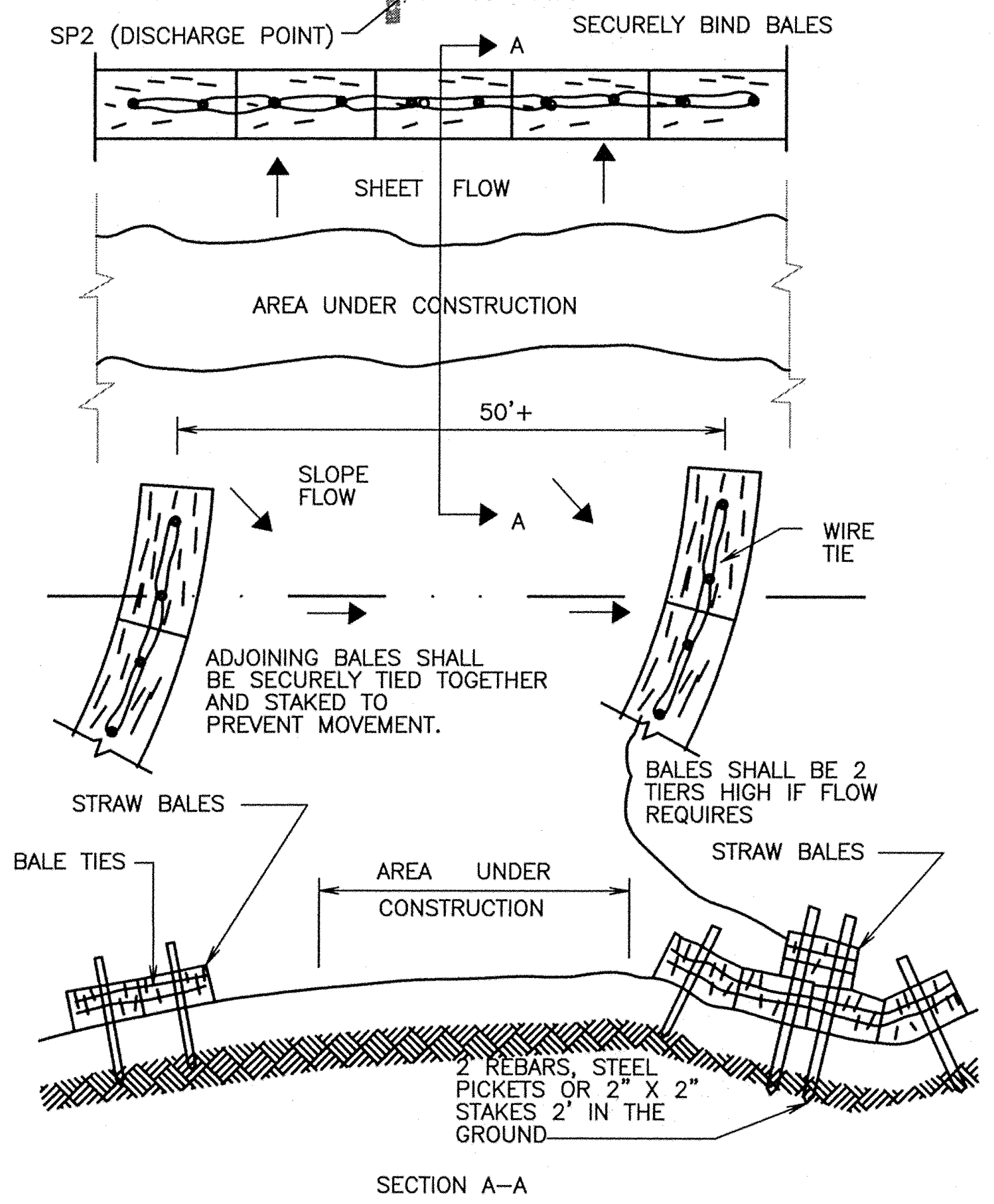
DEWATERING PLAN:

1. THE CONTRACTOR SHALL CLEAR AND GRUB THE STORMWATER POND AND ROADWAY AREAS, AND DISPOSE OF THE VEGETATIVE DEBRIS PRIOR TO STARTING EXCAVATION.
2. THE CONTRACTOR SHALL EMPLOY EROSION AND SEDIMENTATION CONTROL MEASURES (AS APPLICABLE) PRIOR TO STARTING EXCAVATION.
3. THE CONTRACTOR SHALL COORDINATE THE PLACEMENT AND/OR STORAGE OF EXCAVATED FILL WITH THE ENGINEER AND COUNTY INSPECTOR.
4. STORMWATER MANAGEMENT (TRACT C) SHALL BE EXCAVATED USING A TEMPORARY SEDIMENTATION BASIN FOR DEWATERING DISCHARGE.
5. DEWATERING DISCHARGE SHALL BE KEPT ON-SITE AS POSSIBLE. CONTRACTOR SHALL ENLARGE THE SEDIMENTATION BASIN AS REQUIRED.
6. STORMWATER MANAGEMENT TRACTS A & B CAN BE USED FOR SEDIMENTATION DURING TRACT C DEWATERING IN LIEU OF A TEMPORARY BASIN.
7. PRIOR TO DEWATERING STORMWATER MANAGEMENT TRACT C, SWALES SHALL BE CONSTRUCTED WEST AND SOUTH OF THE LAKE FOR RECHARGE OF GROUNDWATER AND MITIGATE DRAWDOWN OF THE WETLAND.
8. A PORTION OF THE DISCHARGE FROM DEWATERING SHALL BE DIVERTED (AFTER SETTLING) TO THE SWALE USING A SMALL PUMP (3" DISCHARGE, ADJUSTED AS NEEDED) TO FILL THE SWALE/RECHARGE TRENCH. SWALE/RECHARGE TRENCH SHALL BE KEPT FULL DURING DEWATERING OF TRACT C.
9. DEWATERING DISCHARGE (INCLUDING RECHARGE) SHALL BE NO MORE THAN 29 NTU'S (TURBIDITY) ABOVE BACKGROUND. CONTRACTOR TO PROVIDE SEDIMENTATION OF DEWATERING DISCHARGE AS NEEDED.
10. THE CONTRACTOR SHALL COODINATE WITH THE ENGINEER OR HIS REPRESENTATIVE FOR ALL SEDIMENT/TURBIDITY/EROSION CONTROL.
11. AS AN ALTERNATE THE CONTRACTOR MAY "WET DREDGE" THE STORMWATER MANAGEMENT TRACTS WITHOUT DEWATERING.
12. PRIOR TO DEVIATING FROM THE DEWATERING PLAN THE CONTRACTOR MUST SUBMIT A REVISED PLAN TO THE ENGINEER, FORT PIERCE FARMS, SOUTH FLORIDA WATER MANAGEMENT DISTRICT AND ST. LUCIE COUNTY FOR APPROVAL.
13. IF DEWATERING DISCHARGE CANNOT BE KEPT ON-SITE. THE CONTRACTOR SHALL UTILIZE THE DEWATERING PERMIT CONDITIONS TO DISCHARGE WATERS OFF-SITE AS PER PERMIT REQUIREMENTS AND SEDIMENTIATION/TURBIDITY CONTROLS.


CONSTRUCT COMPACTED EARTHEN BERM (TYP.)
DHWL
4'
3'
3
1
2'
SOD (TYP.)
EXISTING GRADE

TYPICAL SECTION TEMPORARY SEDIMENTATION BASIN

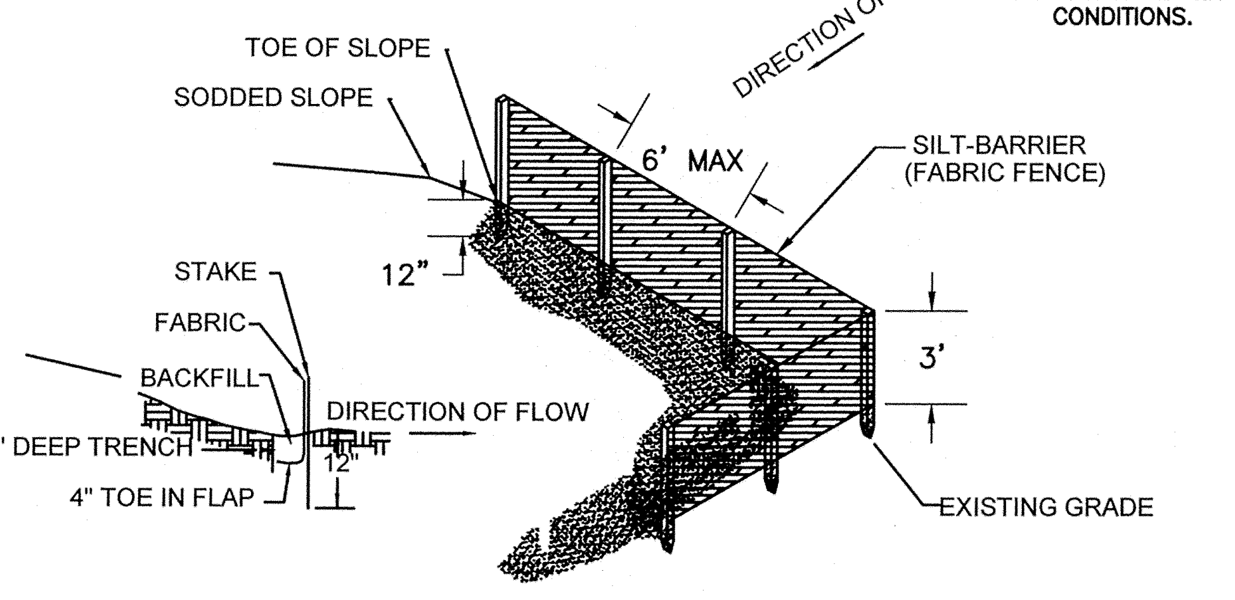
N.T.S.


SP2 (DISCHARGE POINT)
SECURELY BIND BALES
A
SHEET FLOW
AREA UNDER CONSTRUCTION
50'+
SLOPE FLOW
A
WIRE TIE
ADJOINING BALES SHALL BE SECURELY TIED TOGETHER AND STAKED TO PREVENT MOVEMENT.
BALES SHALL BE 2 TIERS HIGH IF FLOW REQUIRES
STRAW BALES
BALE TIES
AREA UNDER CONSTRUCTION
STRAW BALES
2 REBARS, STEEL PICKETS OR 2" X 2" STAKES 2' IN THE GROUND

SECTION A–A

1/C1 STRAW BALE SEDIMENT BARRIER

N.T.S.


TOE OF SLOPE
SODDED SLOPE
DIRECTION OF FLOW
6' MAX
SILT-BARRIER (FABRIC FENCE)
STAKE
FABRIC
12"
BACKFILL
DIRECTION OF FLOW
3'
4" DEEP TRENCH
12"
4" TOE IN FLAP
EXISTING GRADE

PERIMETER EROSION AND SEDIMENT CONTROL

NOTES:
1. CONTRACTOR IS REQUIRED TO PREVENT ANY SEDIMENT TRANSPORT FROM THE PROJECT SITE ON TO ADJACENT PROPERTY. INSTALLATION OF EITHER BALED HAY OR FABRIC FENCE TYPE SILT BARRIER IS ACCEPTABLE. THE BARRIER MUST REMAIN IN PLACE UNTIL UPLAND VEGETATION IS ESTABLISHED.
2. BEFORE REMOVING SILT BARRIER, CONTRACTOR SHALL COLLECT AND DISPOSE OF ANY ACCUMULATED SILT.

2/C1 SILT FENCE DETAIL

N.T.S.

EROSION AND SEDIMENTATION CONTROL NOTES

CONSTRUCTION ACTIVITIES CAN RESULT IN THE GENERATION OF SIGNIFICANT AMOUNTS OF POLLUTANTS WHICH MAY REACH SURFACE OR GROUND WATERS. ONE OF THE PRIMARY POLLUTANTS OF SURFACE WATERS IS SEDIMENT DUE TO EROSION. EXCESSIVE QUANTITIES OF SEDIMENT WHICH REACH WATER BODIES OF FLOODPLAINS HAVE BEEN SHOWN TO ADVERSELY AFFECT THEIR PHYSICAL, BIOLOGICAL AND CHEMICAL PROPERTIES. TRANSPORTED SEDIMENT CAN OBSTRUCT STREAM CHANNELS, REDUCE HYDRAULIC CAPACITY OF WATER BODIES OR FLOODPLAINS, REDUCE THE DESIGN CAPACITY OF CULVERTS AND OTHER WORKS, AND ELIMINATE BENTHIC INVERTEBRATES AND FISH SPAWNING SUBSTRATES BY SILTATION. EXCESSIVE SUSPENDED SEDIMENTS REDUCE LIGHT PENETRATION AND THEREFORE, REDUCE PRIMARY PRODUCTIVITY. MINIMUM STANDARDS:

1. SEDIMENT BASIN AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTRIBUTING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UNSLOPED LAND DISTURBANCE TAKES PLACE.
2. ALL SEDIMENT CONTROL MEASURES ARE TO BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION AND BE CONSTRUCTED PRIOR TO ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL ON BALANCE OF SITE. PERIMETER SEDIMENT BARRIERS SHALL BE CONSTRUCTED TO PREVENT SEDIMENT OR TRASH FROM FLOWING OR FLOATING ON TO ADJACENT PROPERTIES.
3. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN UNDISTURBED FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT UNDISTURBED FOR MORE THAN ONE YEAR.
4. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
5. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT, IN THE OPINION OF THE REVIEWER, IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.
6. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
7. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE SEDIMENT BASIN SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE THE ANTICIPATED SEDIMENT LOADING FROM THE LAND-DISTURBING ACTIVITY. THE OUTFALL DEVICE OR SYSTEM DESIGN SHALL TAKE INTO ACCOUNT THE TOTAL DRAINAGE AREA FLOWING THROUGH THE DISTURBED AREA TO BE SERVED BY THE BASIN.
8. AFTER ANY SIGNIFICANT RAINFALL, SEDIMENT CONTROL STRUCTURES WILL BE INSPECTED FOR INTEGRITY. ANY DAMAGED DEVICES SHALL BE CORRECTED IMMEDIATELY.
9. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN, CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.
10. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
11. SEDIMENT WILL BE PREVENTED FROM ENTERING ANY STORM DRAIN SYSTEM, DITCH OR CHANNEL. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT. NONERODIBLE MATERIAL SHALL BE PROVIDED.
12. BEFORE TEMPORARY OR NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.
13. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.
14. WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES, A TEMPORARY STREAM CROSSING CONSTRUCTED OF FDOT #1 STONE WITH TURBIDITY BARRIERS UPSTREAM AND DOWNSTREAM.
15. THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
16. PERIODIC INSPECTION AND MAINTENANCE OF ALL SEDIMENT CONTROL STRUCTURES MUST BE PROVIDED TO ENSURE INTENDED PURPOSE IS ACCOMPLISHED. THE DEVELOPER, OWNER AND/OR CONTRACTOR SHALL BE CONTINUALLY RESPONSIBLE FOR ALL SEDIMENT LEAVING THE PROPERTY. SEDIMENT CONTROL MEASURES SHALL BE IN WORKING CONDITION AT THE END OF EACH WORKING DAY.
17. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
    - A. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
    - B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
    - C. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
    - D. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
18. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY TRACKING ONTO THE PAVED SURFACE, WHERE SEDIMENT IS TRANSPORTED ONTO A PUBLIC ROAD SURFACE WITH CURBS AND GUTTERS, THE ROAD SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL SUBDIVISION LOTS AS WELL AS TO LARGER LAND-DISTRIBUTING ACTIVITIES.
19. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, IN THE OPINION OF THE REVIEWER. DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
20. PROPERTIES AND WATERWAYS DOWNSTREAM FROM CONSTRUCTION SITE SHALL BE PROTECTED FROM SEDIMENT DISPOSITION AND EROSION.
21. PHASED PROJECTS SHOULD BE CLEARED IN CONJUNCTION WITH CONSTRUCTION OF EACH PHASE.
22. EROSION CONTROL DESIGN AND CONSTRUCTION SHALL FOLLOW THE REQUIREMENTS IN INDEX NOS. 101, 102 AND 103 OF FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS.
23. THE REVIEWER MAY APPROVE MODIFICATIONS OR ALTER PLANS TO THESE EROSION CONTROL CRITERIA DUE TO SITE SPECIFIC CONDITIONS.

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

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△	REVISIONS	DATE	BY
1			
2			
3			
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8			

MARINER COVE

CITY OF FT. PIERCE, FLORIDA

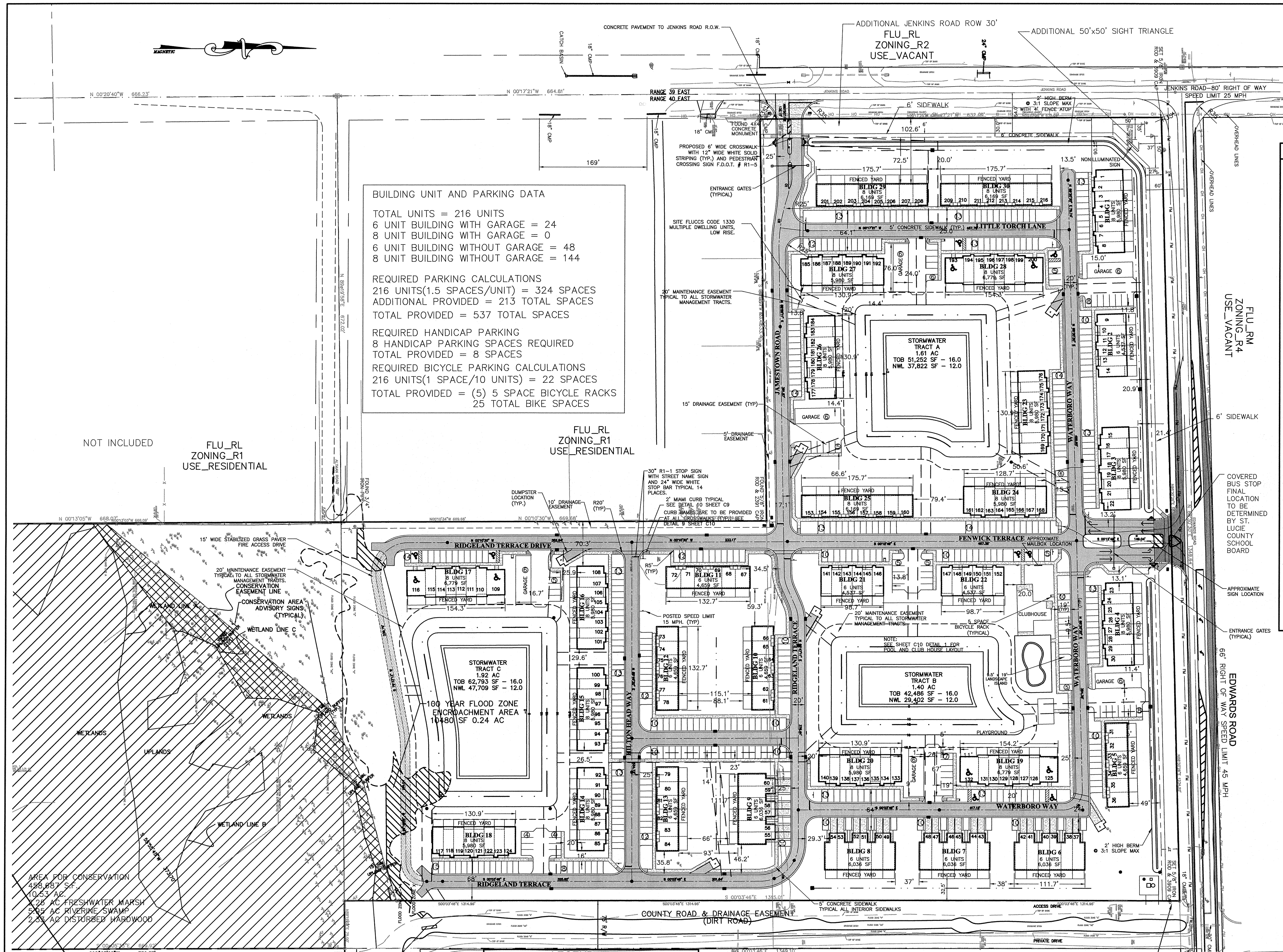
W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

STORMWATER POLLUTION PREVENTION PLAN

DESIGN ENGINEER
No. 50046
WILLIAM F. McCAIN P.E.# 50046
DATE: JUL

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	1"=100'

SHEET
C1
OF 16
14-173


MAGNETIC
CONCRETE PAVEMENT TO JENKINS ROAD R.O.W.
ADDITIONAL JENKINS ROAD ROW 30'
FLU_RL
ZONING_R2
USE_VACANT
ADDITIONAL 50'x50' SIGHT TRIANGLE
SPEED LIMIT 25 MPH
JENKINS ROAD–80' RIGHT OF WAY
RANGE 39 EAST
RANGE 40 EAST
N 00°20'40"W 668.23'
N 00°17'21"W 664.81'
6' SIDEWALK
3' HIGH BERM 3:1 SLOPE MAX WITH 4' FENCE ATOP
FOUND 4"x4" CONCRETE MONUMENT
PROPOSED 6' WIDE CROSSWALK WITH 12" WIDE WHITE SOLID STRIPING (TYP.) AND PEDESTRIAN CROSSING SIGN F.D.O.T. # R1-5
ENTRANCE GATES (TYPICAL)
SITE FLUCCS CODE 1330 MULTIPLE DWELLING UNITS, LOW RISE.
20' MAINTENANCE EASEMENT TYPICAL TO ALL STORMWATER MANAGEMENT TRACTS.
15' DRAINAGE EASEMENT (TYP)
5' DRAINAGE EASEMENT
NON ILLUMINATED SIGN
LITTLE TORCH LANE
JAMESTOWN ROAD
WATERBORO WAY
STORMWATER TRACT A 1.61 AC TOB 51,252 SF – 16.0 NWL 37,822 SF – 12.0
FLU_RM
ZONING_R4
USE_VACANT
6' SIDEWALK
COVERED BUS STOP FINAL LOCATION TO BE DETERMINED BY ST. LUCIE COUNTY SCHOOL BOARD
APPROXIMATE SIGN LOCATION
ENTRANCE GATES (TYPICAL)
FENWICK TERRACE
APPROXIMATE MAILBOX LOCATION
NOT INCLUDED
FLU_RL
ZONING_R1
USE_RESIDENTIAL
FLU_RL
ZONING_R1
USE_RESIDENTIAL
DUMPSTER LOCATION (TYP.)
10' DRAINAGE EASEMENT
30" R1-1 STOP SIGN WITH STREET NAME SIGN AND 24" WIDE WHITE STOP BAR TYPICAL 14 PLACES.
2' MIAMI CURB TYPICAL SEE DETAIL 10 SHEET C9
CURB RAMPS ARE TO BE PROVIDED AT ALL CROSSWALKS (TYP.) SEE DETAIL 9 SHEET C10
15' WIDE STABILIZED GRASS PAVER FIRE ACCESS DRIVE
20' MAINTENANCE EASEMENT TYPICAL TO ALL STORMWATER MANAGEMENT TRACTS.
CONSERVATION AREA ADVISORY SIGNS (TYPICAL)
WETLAND LINE A
WETLAND LINE C
WETLAND LINE B
WETLANDS
UPLANDS
RIDGELAND TERRACE DRIVE
RIDGELAND TERRACE
HILTON HEAD WAY
POSTED SPEED LIMIT 15 MPH. (TYP)
STORMWATER TRACT C 1.92 AC TOB 62,793 SF – 16.0 NWL 47,709 SF – 12.0
100 YEAR FLOOD ZONE ENCROACHMENT AREA 10480 SF 0.24 AC
STORMWATER TRACT B 1.40 AC TOB 42,486 SF – 16.0 NWL 29,402 SF – 12.0
NOTE: SEE SHEET C10 DETAIL 1 FOR POOL AND CLUB HOUSE LAYOUT
CLUBHOUSE
5 SPACE BICYCLE RACK (TYPICAL)
PLAYGROUND
LANDSCAPE ISLAND
GARAGE
FENCED YARD
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
BLDG 7
BLDG 8
BLDG 9
BLDG 10
BLDG 11
BLDG 12
BLDG 13
BLDG 14
BLDG 15
BLDG 16
BLDG 17
BLDG 18
BLDG 19
BLDG 20
BLDG 21
BLDG 22
BLDG 23
BLDG 24
BLDG 25
BLDG 26
BLDG 27
BLDG 28
BLDG 29
BLDG 30
2' HIGH BERM 3:1 SLOPE MAX
5' CONCRETE SIDEWALK TYPICAL ALL INTERIOR SIDEWALKS
AREA FOR CONSERVATION 458,687 S.F. 10.53 AC
2.25 AC FRESHWATER MARSH
5.85 AC RIVERINE SWAMP
2.43 AC DISTURBED HARDWOOD
S00°05'00"W 750.57'
COUNTY ROAD & DRAINAGE EASEMENT (DIRT ROAD)
ACCESS DRIVE
PRIVATE DRIVE
FLU_RM
ZONING_RS-3
USE_RESIDENTIAL
COUNTY ROAD & DRAINAGE EASEMENT
FLU_RH
ZONING_R1
USE_CITRUS
ADDITIONAL EDWARDS ROAD ROW 27' (60' HALF OF FUTURE 120' ROW)
EDWARDS ROAD 66' RIGHT OF WAY SPEED LIMIT 45 MPH

BUILDING UNIT AND PARKING DATA

TOTAL UNITS = 216 UNITS
6 UNIT BUILDING WITH GARAGE = 24
8 UNIT BUILDING WITH GARAGE = 0
6 UNIT BUILDING WITHOUT GARAGE = 48
8 UNIT BUILDING WITHOUT GARAGE = 144

REQUIRED PARKING CALCULATIONS
216 UNITS(1.5 SPACES/UNIT) = 324 SPACES
ADDITIONAL PROVIDED = 213 TOTAL SPACES
TOTAL PROVIDED = 537 TOTAL SPACES

REQUIRED HANDICAP PARKING
8 HANDICAP PARKING SPACES REQUIRED
TOTAL PROVIDED = 8 SPACES

REQUIRED BICYCLE PARKING CALCULATIONS
216 UNITS(1 SPACE/10 UNITS) = 22 SPACES
TOTAL PROVIDED = (5) 5 SPACE BICYCLE RACKS
25 TOTAL BIKE SPACES

SITE DATA

ENGINEER

W. F. MCCAIN & ASSOC., INC.
1171 19th STREET
VERO BEACH, FLORIDA 32960
PHONE (772)-770-1093
FAX (772)-770-1508

APPLICANT

MARINER COVE BUILDERS, LLC
C/O STANLEY MARKOFSKY
1400 EAST OAKLAND BOULEVARD
SUITE 103
FORT LAUDERDALE, FL 33334

SURVEYOR

ALEXANDER J. PIAZZA PSM, INC.
619 SW BILTMORE STREET
PORT ST. LUCIE, FLORIDA 34983

SITE ADDRESS

SOUTH EAST CORNER OF
EDWARDS AND JENKINS ROAD

ZONING

R-4

FUTURE LAND USE

RM

SITE DATA

SITE AREA = 1,703,058 SF = 39.1 AC
OFFSITE CONTRIBUTING AREA = 49,223 SF 1.13 AC
AREA OF DEVELOPMENT = 1,186,319 SF = 27.23 AC = 100%
TOTAL LAKES @ NWL = 114,933 SF = 2.64 AC
PAVEMENT/CURBING = 248,733 SF = 5.71 AC
BUILDING AREA = 177,104 SF = 4.07 AC
DRIVEWAYS = 5,522 SF = 0.13 AC
SIDEWALKS = 38,820 SF = 0.89 AC
CLUBHOUSE/POOL = 7,918 SF = 0.18 AC
TOTAL OPEN SPACE = 570,538 SF = 13.10 AC
TOTAL IMPERVIOUS
INCLUDING LAKES = 607,718 SF = 13.95 AC = 51.23%
EXCLUDING LAKES = 492,785 SF = 11.31 AC
TOTAL PERVIOUS = 578,602 SF = 13.28 AC = 48.77%

SETBACKS

FRONT	25'
SIDE	10', SIDE CORNER 15'
REAR	25'

CONSTRUCTION SCHEDULE

COMMENCE DATE: 11/15
COMPLETION:11/16

PROPOSED FINISHED FLOOR ELEVATION

F.F.EL. = 17.00 FOR ALL BUILDINGS

GENERAL DESCRIPTION

A PROPOSED 216 UNIT 30 BUILDING RESIDENTIAL RENTAL APARTMENT WITH A CLUBHOUSE AND POOL ON 39.1 AC. WITH DRIVEWAY CONNECTIONS ON EDWARDS AND JENKINS ROADS

PROPOSED BUILDING HEIGHT

32' PROPOSED 34' - 2" MAX ALLOWABLE

FLOOD ZONE

THE SUBJECT PROPERTY IS LOCATED IN FLOOD ZONE "X" AND "AE" PER FEDERAL EMERGENCY MANAGEMENT AGENCY, FLOOD INSURANCE RATE MAP NO. 12111C0167 J & 12111C0169 J, EFFECTIVE DATE 2-16-12

DENSITY

PROPOSED DENSITY: 216 UNITS/38.90 ACRES = 5.55 UNITS PER ACRE
ALLOWED DENSITY: 6 UNITS PER ACRE

TRAFFIC DATA

216 UNITS X 5.9 TRIPS = 1275 ADT

STORMWATER

CONSTRUCT 3 ON-SITE DETENTION PONDS

WASTEWATER DATA

CONNECT TO AN EXISTING FORT PIERCE UTILITIES FORCE MAIN ON EDWARDS ROAD

WATER SOURCE

WATER WILL BE PROVIDED VIA WATER MAIN CONNECTIONS TO EXISTING WATER MAINS ALONG EDWARDS ROAD AND JENKINS ROAD.

TAX PARCEL I.D. NO.

2430-231-0001-000-4
2430-234-0001-000-3

PERMITS REQUIRED

- ST. LUCIE COUNTY FIRE DEPARTMENT REVIEW
- ST. LUCIE COUNTY R.O.W. UTILITY
- ST. LUCIE COUNTY R.O.W. TURN LANES
- CITY OF FT. PIERCE BUILDING PERMIT
- CITY OF FT. PIERCE PLAN REVIEW PERMIT
- CITY OF FT. PIERCE LAND CLEARING PERMIT
- CITY OF FT. PIERCE TREE REMOVAL PERMIT
- CITY OF FT. PIERCE LANDSCAPE PERMIT
- S.F.W.M.D. ENVIRONMENTAL RESOURCE PERMIT
- S.F.W.M.D. WATER USE PERMIT
- S.F.W.M.D. DEWATERING PERMIT
- F.D.E.P. WASTEWATER COLLECTION PERMIT
- F.D.E.P. WATER MAIN EXTENSION PERMIT
- F.D.E.P. NOTICE OF INTENT TO USE GENERIC PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES(BY CONTRACTOR)
- N.S.L.R.W.M.D. DRAINAGE PERMIT (APPROVAL)
- S.L.C. DRAINAGE PERMIT

LEGEND

- FM — FM FORCE MAIN
- RIGHT OF WAY
- CENTER LINE
- EASEMENT
- NORMAL WATER LEVEL (NWL)
- 24" STOP BAR
- 30" STOP SIGN/STREET SIGN
- 19.02 EXISTING SPOT ELEVATION
- 20.54 PROPOSED SPOT ELEVATION
- SPEED LIMIT SIGN

80 0 40 80 160
(IN FEET)
1 inch = 80 ft.

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

LEGAL DESCRIPTION

THE NORTH HALF OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 30, TOWNSHIP 35 SOUTH, RANGE 40 EAST, LESS THE NORTH 33 FEET AND LESS THE SOUTH 40 FEET FOR ROADS ALSO LESS AND EXCEPT THE EAST 75.00 FEET FOR CANAL RIGHT OF WAY.
TOGETHER WITH
THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER AND THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER AND THE FOLLOWING DESCRIBED PARCEL OF LAND;
COMMENCE AT THE NORTHEAST CORNER OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER; THENCE SOUTH 00 DEGREES 30 MINUTES WEST, ALONG THE QUARTER –QUARTER SECTION LINE, A DISTANCE OF 653.16 FEET, TO THE POINT OF BEGINNING; THENCE CONTINUE SOUTH 00 DEGREES 30 MINUTES WEST, A DISTANCE OF 88.12 FEET TO A POINT ON THE NORTH TOP OF BLUFF OF TEN MILE CREEK; THENCE SOUTH 54 DEGREES 51 MINUTES 30 SECONDS WEST ALONG SAID CREEK, 413.7 FEET; THENCE NORTH 01 DEGREES 32 MINUTES EAST, A DISTANCE OF 318.28 FEET; THENCE NORTH 88 DEGREES 36 MINUTES EAST, A DISTANCE OF 330.67 FEET TO THE POINT OF BEGINNING.

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△	REVISIONS	DATE	BY
1			
2			
3			
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8			

MARINER COVE

CITY OF FT. PIERCE, FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

MASTER SITE PLAN

DESIGN ENGINEER
No. 50046
WILLIAM F. McCAIN, PE FL# 50046
DATE: JUL 27 2015

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	1"=80'

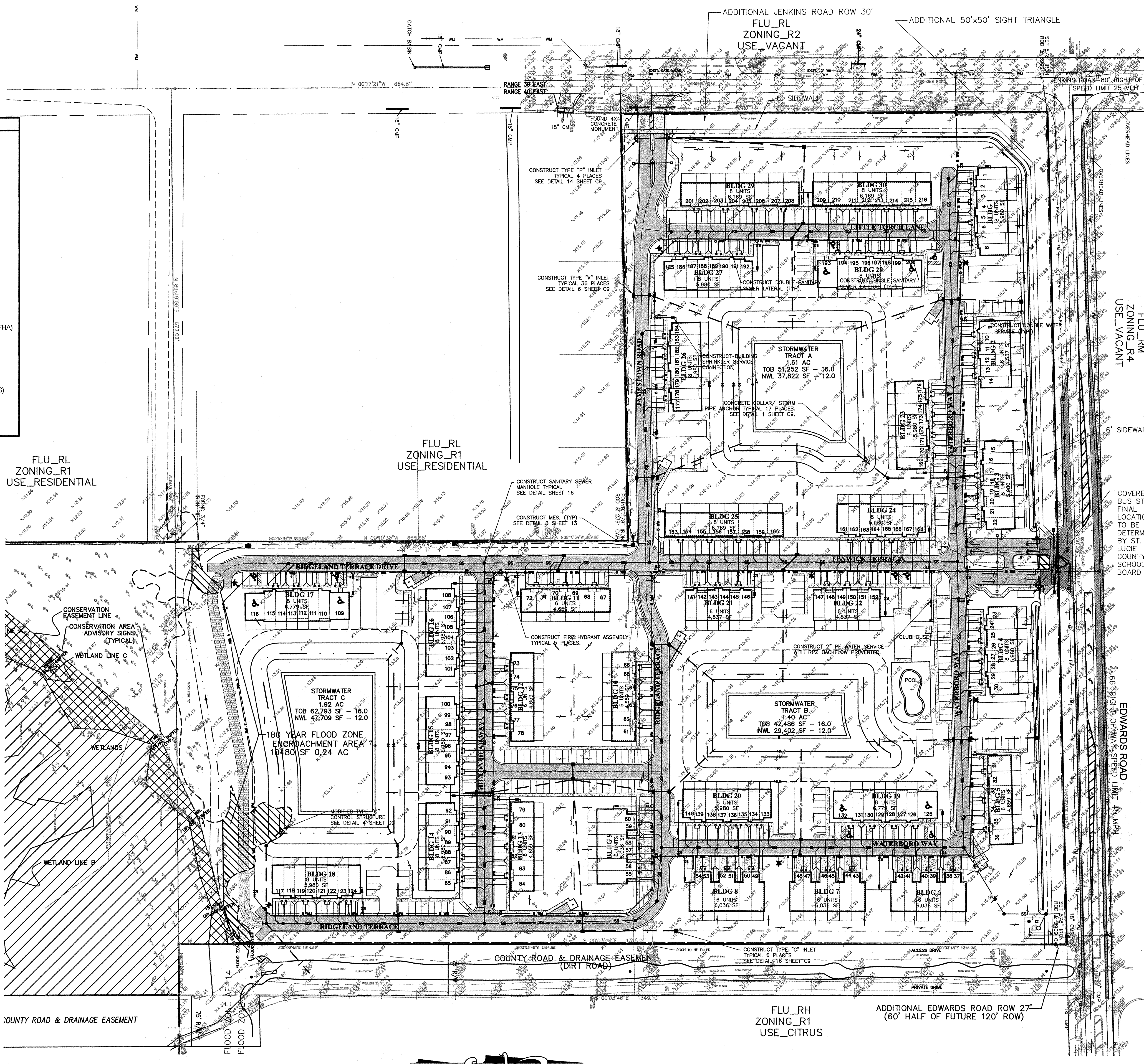
SHEET
C2
OF 16
14-173

LEGEND

— — — —	PROPOSED STORMWATER PIPE
— SS — SS —	PROPOSED SANITARY SEWER
— FM —	FORCE MAIN
— WM — WM —	PROPOSED WATER MAIN
— · — · —	CENTER LINE
— — —	EASEMENT
	EXISTING CONTOR LINES
	NORMAL WATER LEVEL (NWL)
	PROPOSED 24" STOP BAR
	PROPOSED 30" STOP SIGN/STREET SIGN
19.02	EXISTING SPOT ELEVATION
16.82	PROPOSED SPOT ELEVATION
	PROPOSED SITE LIGHTING
	PROPOSED SPEED LIMIT SIGN
	PROPOSED DOUBLE SEWER LATERAL
	PROPOSED SINGLE SEWER SERVICE
	PROPOSED DOUBLE WATER SERVICE
	PROPOSED FIRE HYDRANT ASSEMBLY (FHA)
	PROPOSED TYPE "C" INLET
	PROPOSED TYPE "P" INLET
■	PROPOSED TYPE "V" INLET
	PROPOSED MITERED END SECTION (MES)
●	PROPOSED SANITARY MANHOLE
▷	PROPOSED REDUCER
WV ⋈	PROPOSED WATER VALVE

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR CHECKING ACTUAL CONDITIONS BEFORE STARTING CONSTRUCTION.
2. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCING WORK.
3. CONTRACTOR SHALL OBTAIN ALL REQUIRED BUILDING PERMITS BEFORE COMMENCING WORK.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATIONS OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL CONTACT ALL CONCERNED UTILITIES AT LEAST 48 HOURS IN ADVANCE FOR CONSTRUCTION OPERATIONS.
5. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN TO BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.
6. ALL CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE APPLICABLE ORDINANCES OF THE CITY OF FORT PIERCE, FLORIDA.
7. BOUNDARY AND TOPOGRAPHICAL INFORMATION PREPARED BY DAVID M. JONES, P.S.M., DATED 4/25/05. ALL ELEVATIONS, IF SHOWN, ARE BASED ON N.A.V.D. 1988.
8. REFER TO SOIL REPORTS PREPARED BY KSM ENGINEERING AND TESTING, INC. DATED 5/24/05 FOR EXISTING SOIL CONDITIONS.
9. CONTRACTOR SHALL SUPPLY DENSITY TESTS TO ENGINEER ON ALL SUB GRADE AND BASE. TESTS SHALL BE PREPARED PER AASHTO T-180 METHOD.
10. SLOPE GRADES FROM ELEVATIONS SHOWN TO EXISTING GRADE AT PROPERTY LINE.
11. ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE FOR ANY INSPECTION.
12. CONCRETE PAVEMENT ALTERATIONS SHALL BE PROVIDED WITH CONTRACTIONS JOINTS (20' MAXIMUM SPACING) WITH 1-1/2" DEPTH.
13. CONCRETE PAVEMENT ALTERATIONS SHALL BE PROVIDED WITH A PIGMENTED LIQUID MEMBRANE CURING COMPOUND CONFORMING TO THE REQUIREMENTS OF ASTM DESIGNATION (309).
14. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH M.U.T.C.D STANDARDS.
15. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH FLORIDA DEPARTMENT OF TRANSPORTATION (F.D.O.T) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", DATED 2002.
16. ALL PARKING SPACE MARKINGS, WITH THE EXCEPTION OF THE HANDICAP PARKING SPACES SHALL BE MARKED IN WHITE RETRO-REFLECTIVE TRAFFIC PAINT AND IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION (F.D.O.T) "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", DATED 2002, SECTION 710.
17. ALL HANDICAP PARKING SPACES SHALL BE PROPERLY SIGNED AND MARKED IN ACCORDANCE WITH FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS INDEX NO. 17346, 2002 EDITION
18. ALL PARKING STRIPES WITH THE EXCEPTION OF HANDICAP SPACES SHALL BE 4" WIDE, WHITE REFLECTIVE TRAFFIC PAINT.
19. ALL TREES PRESERVED IN AREAS WHICH SHALL BE FILLED MORE THAN 6" SHALL BE PROTECTED BY A TREE WELL.
20. STREET DESIGNATION SIGNS SHALL BE 12" IN HEIGHT WITH 8" LETTERS
21. ALL NUISANCE AND EXOTIC VEGETATION SHALL BE REMOVED IN CONJUNCTION WITH SITE DEVELOPMENT
22. ALL STORM PIPE EXCEPT IN R.O.W.'S SHALL BE ALUMINUM SPIRAL RIBBED CORRIGATED PIPE.
23. SODDING WILL BE PROVIDED ON ALL RIGHT OF WAY'S AND ALL BANKS


ADDITIONAL JENKINS ROAD ROW 30'
FLU_RL
ZONING_R2
USE_VACANT
ADDITIONAL 50'x50' SIGHT TRIANGLE
JENKINS ROAD 80' RIGHT OF WAY
SPEED LIMIT 25 MPH
6' SIDEWALK
RANGE 39 EAST
RANGE 40 EAST
N 00°17'21"W 664.81'
FOUND 4X4 CONCRETE MONUMENT
18" CMP
OVERHEAD LINES
CONSTRUCT TYPE "P" INLET TYPICAL 4 PLACES SEE DETAIL 14 SHEET C9
CONSTRUCT TYPE "V" INLET TYPICAL 36 PLACES SEE DETAIL 6 SHEET C9
BLDG 29 8 UNITS 6,169 SF
BLDG 30 8 UNITS 6,169 SF
BLDG 1 8 UNITS 5,980 SF
LITTLE TORCH LANE
BLDG 27 8 UNITS 5,980 SF
BLDG 28 8 UNITS
CONSTRUCT DOUBLE SANITARY SEWER LATERAL (TYP).
CONSTRUCT SINGLE SANITARY SEWER LATERAL (TYP).
CONSTRUCT DOUBLE WATER SERVICE (TYP)
FLU_RM
ZONING_R4
USE_VACANT
BLDG 2 6 UNITS 4,537 SF
JAMESTOWN ROAD
BLDG 26 8 UNITS 5,980 SF
CONSTRUCT BUILDING SPRINKLER SERVICE CONNECTION
STORMWATER TRACT A 1.61 AC TOB 51,252 SF – 16.0 NWL 37,822 SF – 12.0
CONCRETE COLLAR/ STORM PIPE ANCHOR TYPICAL 17 PLACES. SEE DETAIL 1 SHEET C9.
BLDG 23 8 UNITS 5,980 SF
WATERBORO WAY
6' SIDEWALK
BLDG 3 8 UNITS 5,980 SF
FLU_RL
ZONING_R1
USE_RESIDENTIAL
FLU_RL
ZONING_R1
USE_RESIDENTIAL
CONSTRUCT SANITARY SEWER MANHOLE TYPICAL SEE DETAIL SHEET 16
CONSTRUCT MES. (TYP) SEE DETAIL 3 SHEET 13
BLDG 25 8 UNITS 6,169 SF
BLDG 24 8 UNITS 5,980 SF
COVERED BUS STOP FINAL LOCATION TO BE DETERMINED BY ST. LUCIE COUNTY SCHOOL BOARD
N 00°10'36"W 669.68'
RIDGELAND TERRACE DRIVE
FENWICK TERRACE
BLDG 17 8 UNITS 6,779 SF
BLDG 11 6 UNITS 4,659 SF
BLDG 21 6 UNITS 4,537 SF
BLDG 22 6 UNITS 4,537 SF
CONSERVATION EASEMENT LINE
CONSERVATION AREA ADVISORY SIGNS (TYPICAL)
WETLAND LINE C
BLDG 16 8 UNITS 5,980 SF
CONSTRUCT FIRE HYDRANT ASSEMBLY TYPICAL 5 PLACES.
CLUBHOUSE
CONSTRUCT 2" PE WATER SERVICE WITH RPZ BACKFLOW PREVENTER
POOL
BLDG 4 8 UNITS 5,980 SF
STORMWATER TRACT C 1.92 AC TOB 62,793 SF – 16.0 NWL 47,709 SF – 12.0
100 YEAR FLOOD ZONE ENCROACHMENT AREA 10480 SF 0.24 AC
WETLANDS
BLDG 15 8 UNITS 5,980 SF
HILTON HEAD WAY
BLDG 12 6 UNITS 4,659 SF
BLDG 10 6 UNITS 4,659 SF
RIDGELAND TERRACE
STORMWATER TRACT B 1.40 AC TOB 42,486 SF – 16.0 NWL 29,402 SF – 12.0
EDWARDS ROAD
66' RIGHT OF WAY SPEED LIMIT 45 MPH
MODIFIED TYPE "C" CONTROL STRUCTURE SEE DETAIL 4 SHEET C9
BLDG 20 8 UNITS 5,980 SF
BLDG 19 8 UNITS 6,779 SF
BLDG 5 6 UNITS 4,659 SF
WETLAND LINE B
BLDG 14 8 UNITS 5,980 SF
BLDG 13 6 UNITS 4,659 SF
BLDG 9 6 UNITS 6,036 SF
BLDG 18 8 UNITS 5,980 SF
BLDG 8 6 UNITS 6,036 SF
BLDG 7 6 UNITS 6,036 SF
BLDG 6 6 UNITS 6,036 SF
CONSTRUCT TYPE "C" INLET TYPICAL 6 PLACES SEE DETAIL 16 SHEET C9
DITCH TO BE FILLED
ACCESS DRIVE
PRIVATE DRIVE
COUNTY ROAD & DRAINAGE EASEMENT (DIRT ROAD)
S 00°03'48"E 1314.96'
S 00°03'46"E 1349.10'
COUNTY ROAD & DRAINAGE EASEMENT
FLOOD ZONE AE 14
FLOOD ZONE X
75' R/W
FLU_RH
ZONING_R1
USE_CITRUS
ADDITIONAL EDWARDS ROAD ROW 27' (60' HALF OF FUTURE 120' ROW)

MAGNETIC

80 0 40 80 160

(IN FEET)
1 inch = 80 ft.

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

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△	REVISIONS	DATE	BY
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MARINER COVE

CITY OF FT. PIERCE, FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

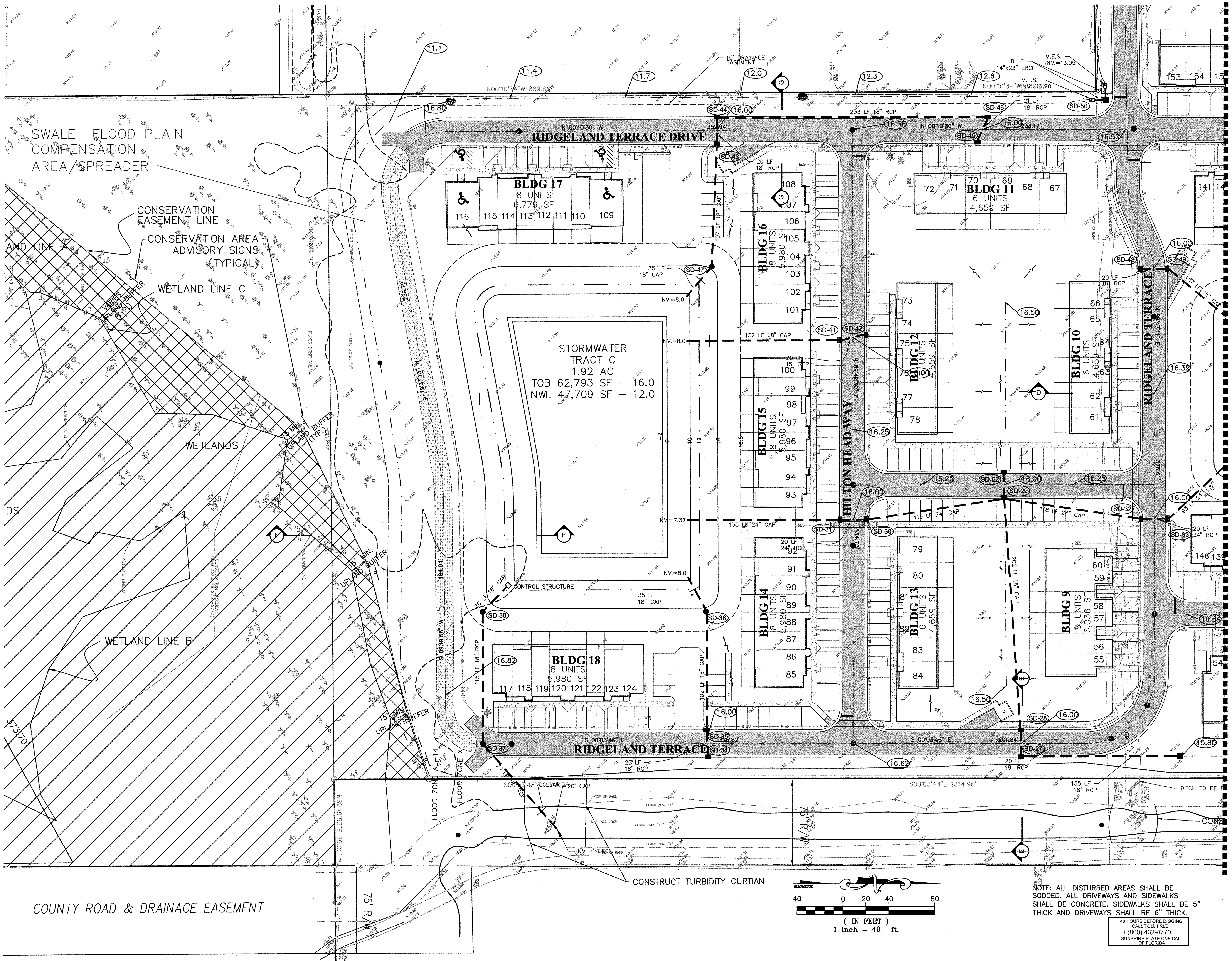
MASTER PAVING, GRADING, DRAINAGE
AND UTILITIES PLAN

DESIGN ENGINEER
WILLIAM F. McCAIN, PE FL# 50046
DATE:

WILLIAM F. McCAIN
LICENSE
No. 50046
STATE OF FLORIDA
PROFESSIONAL ENGINEER

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	1"=80'

SHEET
C3
OF 16
14-173



SWALE FLOOD PLAIN COMPENSATION AREA/SPREADER
CONSERVATION EASEMENT LINE
CONSERVATION AREA ADVISORY SIGNS (TYPICAL)
WETLAND LINE C
WETLANDS
WETLAND LINE B
15' MIN. UPLAND BUFFER (TYP.)
15' MIN. UPLAND BUFFER
VARIES UPLAND BUFFER (TYP.)
10' DRAINAGE EASEMENT
N00°10'34"W 669.66'
RIDGELAND TERRACE DRIVE
N 00°10'30" W
352.94'
233 LF 18" RCP
233.17'
8 LF 14"x23" ERCP
M.E.S. INV.=13.05
M.E.S. INV.=12.90
21 LF 18" RCP
20 LF 18" RCP
BLDG 17
8 UNITS
6,779 SF
116 115 114 113 112 111 110 109
BLDG 16
8 UNITS
5,980 SF
108 107 106 105 104 103 102 101
BLDG 11
6 UNITS
4,659 SF
72 71 70 69 68 67
BLDG 12
6 UNITS
4,659 SF
73 74 75 76 77 78
BLDG 10
6 UNITS
4,659 SF
66 65 64 63 62 61
BLDG 15
8 UNITS
5,980 SF
100 99 98 97 96 95 94 93
BLDG 14
8 UNITS
5,980 SF
92 91 90 89 88 87 86 85
BLDG 13
6 UNITS
4,659 SF
79 80 81 82 83 84
BLDG 9
6 UNITS
6,036 SF
60 59 58 57 56 55
BLDG 18
8 UNITS
5,980 SF
117 118 119 120 121 122 123 124
STORMWATER TRACT C
1.92 AC
TOB 62,793 SF – 16.0
NWL 47,709 SF – 12.0
CONTROL STRUCTURE
INV.=8.0
INV.=7.37
35 LF 18" CAP
132 LF 18" CAP
135 LF 24" CAP
119 LF 24" CAP
118 LF 24" CAP
93 LF 24" CAP
30 LF 18" CAP
115 LF 18" RCP
102 LF 18" CAP
107 LF 18" CAP
202 LF 18" CAP
20 LF 15" RCP
20 LF 24" RCP
135 LF 18" RCP
HILTON HEAD WAY
N 89°49'30" E
RIDGELAND TERRACE
N 89°47'11" E
376.61'
S 00°03'46" E
228.82'
201.84'
S 89°19'58" W
184.04'
S 78°33'13" W
239.79'
S00°03'48"E 1314.96'
N89°19'53"E 75.00'
SOP 48" COLEAR 960' 20'
FLOOD ZONE "X"
FLOOD ZONE "AE"
TOP OF BANK
DRAINAGE DITCH
INV = 7.50
DITCH TO BE
75' R/W
CONSTRUCT TURBIDITY CURTIAN
COUNTY ROAD & DRAINAGE EASEMENT
SD-27 SD-28 SD-29 SD-30 SD-31 SD-32 SD-33 SD-34 SD-35 SD-36 SD-37 SD-38 SD-41 SD-42 SD-43 SD-44 SD-45 SD-46 SD-47 SD-48 SD-49 SD-50 SD-52
11.1 11.4 11.7 12.0 12.3 12.6
16.80 16.00 16.38 16.50 16.25 16.62 16.64 16.82 15.80
MAGNETIC
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

MATCHLINE SHEET C5

NOTE: ALL DISTURBED AREAS SHALL BE SODDED. ALL DRIVEWAYS AND SIDEWALKS SHALL BE CONCRETE. SIDEWALKS SHALL BE 5" THICK AND DRIVEWAYS SHALL BE 6" THICK.

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

STRUCTURE TABLE						
STRUCTURE NO.	TYPE	GRATE/RIM	N. INV.	S. INV.	E. INV	W.INV.
SD–1	P–4	15.80	12.05			
SD–2	P–4	15.80	11.91	12.01		
SD–3	C	15.80	11.49	11.49	9.59	
SD–4	P–4	15.76	12.01	11.91		
SD–5	P–4	15.76		12.05		
SD–6	V	15.64			8.37	8.87
SD–7	V	15.64			7.79	7.89
SD–8	V	15.64	12.05			
SD–9	V	15.64	11.83	10.66		
SD–10	C	15.80		8.51		
SD–11	V	15.64	7.51	7.41		
SD–12	V	15.64	7.36	7.26		
SD–13	V	15.64	8.22			
SD–14	V	15.64	8.13	8.14		
SD–15	C	15.80			12.05	
SD–16	V	15.64		12.05		
SD–17	V	15.64	12.01	11.91		
SD–18	V	15.64			11.00	10.00
SD–19	V	15.64			9.50	11.00
SD–20	P–3	15.56			11.52	11.62
SD–21	P–3	15.56			10.53	11.50
SD–22	C	15.80			9.87	9.88
SD–23	V	15.64	9.68	9.58		
SD–24	V	15.64	9.54	9.44		
SD–25	V	15.64				12.05
SD–26	V	15.64			12.01	11.91
SD–27	V	15.64	8.00	7.37		7.98
SD–28	V	15.64			7.94	7.84
SD–29	V	15.64	8.00	7.37	7.47	
SD–30	V	15.64	7.37	7.37		
SD–31	V	15.64	7.37	7.37		
SD–32	V	15.64	8.00	8.00		
SD–33	V	15.64	8.00	8.00		
SD–34	V	15.64				9.29
SD–35	V	15.64			9.25	9.15
SD–36	M.H.	16.25			8.94	8.84
SD–37	M.H.	16.61			7.51	7.61
SD–38	M.H.	16.25			7.84	7.94
SD–39	V	15.64	12.05			
SD–40	V	15.64	11.91	12.01		
SD–41	V	15.64	9.02	8.92		
SD–42	V	15.64		9.06		
SD–43	V	15.64			9.13	9.23
SD–44	V	15.64	11.44		9.27	
SD–45	V	15.64				12.05
SD–46	V	15.64		11.91	12.01	
SD–47	M.H.	16.10			8.14	8.24
SD–48	V	15.64			12.05	
SD–49	V	15.64			11.91	12.01
SD–50	C	15.00		13.00		13.00
SD–51	M.H.	16.50	10.50	10.40		
SD–52	V	15.64			8.00	

LEGEND	
— — — —	PROPOSED STORMWATER PIPE
—— SS —— SS ——	PROPOSED SANITARY SEWER
—— FM —— FM ——	FORCE MAIN
—— WM —— WM ——	PROPOSED WATER MAIN
— - — - —	CENTER LINE
— — — —	EASEMENT
	EXISTING CONTOR LINES
—— · · ——	NORMAL WATER LEVEL (NWL)
▬	PROPOSED 24" STOP BAR
	PROPOSED 30" STOP SIGN/STREET SIGN
19.02	EXISTING SPOT ELEVATION
16.82	PROPOSED SPOT ELEVATION
	PROPOSED SPEED LIMIT SIGN
	PROPOSED DOUBLE SEWER LATERIAL
	PROPOSED SINGLE SEWER SERVICE
	PROPOSED DOUBLE WATER SERVICE
	PROPOSED SINGLE WATER SERVICE
	PROPOSED FIRE HYDRANT ASSEMBLY (FHA)
▥	PROPOSED TYPE "C" INLET
	PROPOSED TYPE "P" INLET
■	PROPOSED TYPE "V" INLET
	PROPOSED MITERED END SECTION (MES)
●	PROPOSED SANITARY MANHOLE
▷	PROPOSED REDUCER
WV ⋈	PROPOSED WATER VALVE
	PROPOSED DOUBLE DETECTOR CHECK VALVE

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△	REVISIONS	DATE	BY
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MARINER COVE

CITY OF FT. PIERCE, FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

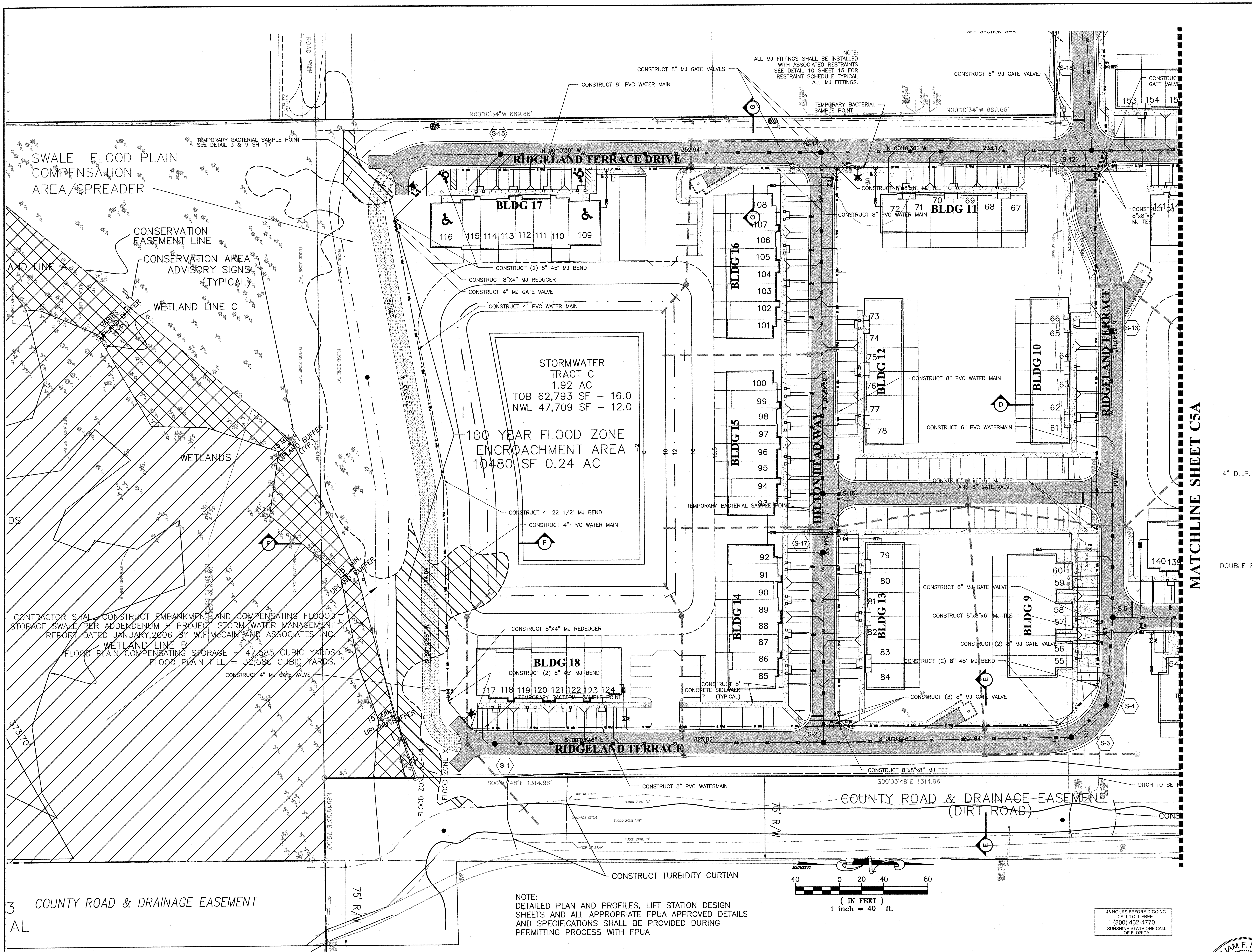
PAVING, GRADING & DRAINAGE PLAN
ENLARGEMENT - SOUTH

DESIGN ENGINEER
WILLIAM F. McCAIN, PE FE# 50046
DATE: JUL 2 7 2015

WILLIAM F. McCAIN
LICENSE
No. 50046
STATE OF FLORIDA
PROFESSIONAL ENGINEER

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	1"=40'

SHEET
C4
OF 16
14-173


RIDGELAND TERRACE DRIVE
RIDGELAND TERRACE
HILTON HEAD WAY
MATCHLINE SHEET C5A
BLDG 9
BLDG 10
BLDG 11
BLDG 12
BLDG 13
BLDG 14
BLDG 15
BLDG 16
BLDG 17
BLDG 18
STORMWATER
TRACT C
1.92 AC
TOB 62,793 SF – 16.0
NWL 47,709 SF – 12.0
100 YEAR FLOOD ZONE
ENCROACHMENT AREA
10480 SF 0.24 AC
SWALE FLOOD PLAIN
COMPENSATION
AREA/SPREADER
CONSERVATION
EASEMENT LINE
CONSERVATION AREA
ADVISORY SIGNS
(TYPICAL)
WETLAND LINE C
WETLAND LINE B
WETLANDS
15' MIN. UPLAND BUFFER
CONTRACTOR SHALL CONSTRUCT EMBANKMENT AND COMPENSATING FLOOOD STORAGE SWALE PER ADDENDENUM H PROJECT STORM WATER MANAGEMENT REPORT DATED JANUARY,2006 BY W.F.McCAIN AND ASSOCIATES INC.
FLOOD PLAIN COMPENSATING STORAGE = 47,585 CUBIC YARDS
FLOOD PLAIN FILL = 32,580 CUBIC YARDS.
NOTE:
ALL MJ FITTINGS SHALL BE INSTALLED
WITH ASSOCIATED RESTRAINTS
SEE DETAIL 10 SHEET 15 FOR
RESTRAINT SCHEDULE TYPICAL
ALL MJ FITTINGS.
CONSTRUCT 8" MJ GATE VALVES
CONSTRUCT 8" PVC WATER MAIN
CONSTRUCT 6" MJ GATE VALVE
TEMPORARY BACTERIAL SAMPLE POINT
TEMPORARY BACTERIAL SAMPLE POINT SEE DETAIL 3 & 9 SH. 17
CONSTRUCT 8"x8"x8" MJ TEE
CONSTRUCT (2) 8" 45' MJ BEND
CONSTRUCT 8"X4" MJ REDUCER
CONSTRUCT 4" MJ GATE VALVE
CONSTRUCT 4" PVC WATER MAIN
CONSTRUCT 4" 22 1/2' MJ BEND
CONSTRUCT 6" PVC WATERMAIN
CONSTRUCT 8"x8"x6" MJ TEE AND 6" GATE VALVE
CONSTRUCT 6" MJ GATE VALVE
CONSTRUCT 8"x8"x6" MJ TEE
CONSTRUCT (2) 8" MJ GATE VALVE
CONSTRUCT (2) 8" 45' MJ BEND
CONSTRUCT (3) 8" MJ GATE VALVE
CONSTRUCT 5' CONCRETE SIDEWALK (TYPICAL)
CONSTRUCT 8"X4" MJ REDEUCER
CONSTRUCT 4" MJ GATE VALVE
CONSTRUCT 8"x8"x8" MJ TEE
CONSTRUCT 8" PVC WATERMAIN
CONSTRUCT TURBIDITY CURTIAN
COUNTY ROAD & DRAINAGE EASEMENT
(DIRT ROAD)
COUNTY ROAD & DRAINAGE EASEMENT
75' R/W
N00°10'34"W 669.66'
N 00°10'30" W 352.94'
N 00°10'30" W 233.17'
S 00°03'46" E 325.82'
S 00°03'46" E 201.84'
S00°03'48"E 1314.96'
N89°19'53"E 75.00'
MAGNETIC
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

NOTE:
DETAILED PLAN AND PROFILES, LIFT STATION DESIGN SHEETS AND ALL APPROPRIATE FPUA APPROVED DETAILS AND SPECIFICATIONS SHALL BE PROVIDED DURING PERMITTING PROCESS WITH FPUA

GENERAL NOTES:

1. ALL WATERMAINS SHALL BE INSTALLED AT A MINIMUM OF 5 FT. BEHIND BACK OF CURB.

2. ALL WATERMAINS SHALL MAINTAIN A MINIMUM 3 FT. SEPARATION BETWEEN ALL STORMWATER STRUCTURES.

3. RESTRAINT SHALL BE PROVIDED AT ALL BENDS, VALVES, AND FITTINGS PER PLANS & SPECIFICATIONS.

4. LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE ONLY, CONTRACTOR IS RESPONSIBLE FOR EXACT FIELD LOCATION.

5. ALL HARD SURFACE DRIVES TO BE DIRECTIONAL BORED. IF DRIVEWAY IS DAMAGED, OR CAN NOT BE BORED, ENTIRE SECTION OF CONCRETE/ASPHALT FROM CUT TO PAVEMENT & CUT TO RIGHT OF WAY SHALL BE REPLACED IN KIND.

6. FINAL GRADE OF RESTORATION SHALL BE 2" BELOW SODDED GRADE TO ALLOW FOR SOD DIFFERENTIAL.

7. ALL DRIVEWAY AND ROAD CROSSINGS SHALL BE DIRECTIONAL BORED USING DR11 H.D.P.E.

8. LOCATION OF GATE VALVES & FITTINGS SHALL BE ADJUSTED AS REQUIRED TO AVOID INTERFERANCE WITH CURB AND OTHER PROPOSED UTILITIES. LOCATION ADJUSTMENTS SHALL BE MADE ONLY AFTER OBTAINING APPROVAL FROM THE ENGINEER OF RECORD.

9. CONTRACTOR IS RESPONSIBLE FOR CHECKING ACTUAL FIELD CONDITIONS BEFORE STARTING CONSTRUCTION.

10. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCING WORK.

11. CONTRACTOR SHALL OBTAIN COPIES OF ALL REQUIRED PERMITS FROM THE ENGINEER BEFORE COMMENCING WORK. ANY PERMITS REQUIRED FOR DEWATERING OR NIGHT TIME OPERATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

12. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATIONS OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL CONTACT THE SUNSHINE STATE ONE CALL AND ALL CONCERNED UTILITIES AT LEAST 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS.

13. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN TO BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.

14. ALL CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH DEP, DOT STANDARD SPECIFICATIONS AND THE APPLICABLE ORDINANCES OF F.P.U.A. & ST. LUCIE COUNTY, FLORIDA.

15. CONTRACTOR SHALL SUPPLY DENSITY TESTS TO ENGINEER ON ALL COMPACTED UTILITY INSTALLATIONS AND ON SUB–GRADE AND BASE SHOULD PAVEMENT RESTORATION BE REQUIRED. TESTS SHALL BE PREPARED PER AASHO T–180 METHOD.

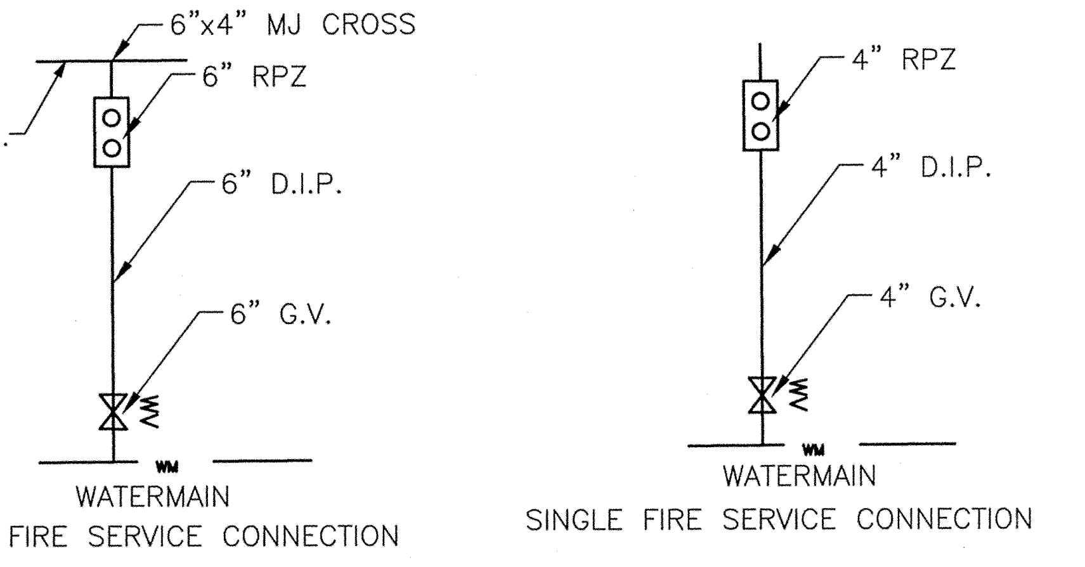
16. ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION AND FOR ANY INSPECTION.

17. ON ANY REQUIRED CONCRETE PAVEMENT ALTERATIONS/RESTORATIONS, ALL CONCRETE POURS SHALL BE PROVIDED WITH CONTRACTIONS JOINTS (20' MAXIMUM SPACING) WITH 1–1/2" DEPTH.

18. CONCRETE PAVEMENT ALTERATIONS SHALL BE PROVIDED WITH A PIGMENTED LIQUID MEMBRANE CURING COMPOUND CONFORMING TO THE REQUIREMENTS OF ASTM DESIGNATION (309).

19. THE CONTRACTOR SHALL PROVIDE RECORD DRAWINGS IN ACCORDANCE WITH ALL STATE, CITY AND COUNTY REQUIREMENTS.

20. ALL DISTURBED AREA ON OR ABOVE GRADE SHALL BE RESTORED IN–KIND PER FDOT AND THE F.P.U.A. STANDARDS.


6"x4" MJ CROSS
6" RPZ
4" D.I.P.
6" D.I.P.
6" G.V.
WM
WATERMAIN
DOUBLE FIRE SERVICE CONNECTION
4" RPZ
4" D.I.P.
4" G.V.
WM
WATERMAIN
SINGLE FIRE SERVICE CONNECTION

LEGEND

— — — —	PROPOSED STORMWATER PIPE
—— SS —— SS ——	PROPOSED SANITARY SEWER
—— FM —— FM ——	FORCE MAIN
—— WM —— WM ——	PROPOSED WATER MAIN
— - — - —	CENTER LINE
— — — —	EASEMENT
	EXISTING CONTOR LINES
—— · · ——	NORMAL WATER LEVEL (NWL)
▬	PROPOSED 24" STOP BAR
—○—	PROPOSED 30" STOP SIGN/STREET SIGN
19.02	EXISTING SPOT ELEVATION
16.82	PROPOSED SPOT ELEVATION
	PROPOSED SITE LIGHTING
—□—	PROPOSED SPEED LIMIT SIGN
	PROPOSED DOUBLE SEWER LATERIAL
	PROPOSED SINGLE SEWER SERVICE
	PROPOSED DOUBLE WATER SERVICE
	PROPOSED SINGLE WATER SERVICE
	PROPOSED FIRE HYDRANT ASSEMBLY (FHA)
▥	PROPOSED TYPE "C" INLET
	PROPOSED TYPE "P" INLET
▬	PROPOSED TYPE "V" INLET
	PROPOSED MITERED END SECTION (MES)
●	PROPOSED SANITARY MANHOLE
▷	PROPOSED REDUCER
WV ⋈	PROPOSED WATER VALVE
	PROPOSED DOUBLE DETECTOR CHECK VALVE

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

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△	REVISIONS	DATE	BY
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MARINER COVE

CITY OF FT. PIERCE, FLORIDA

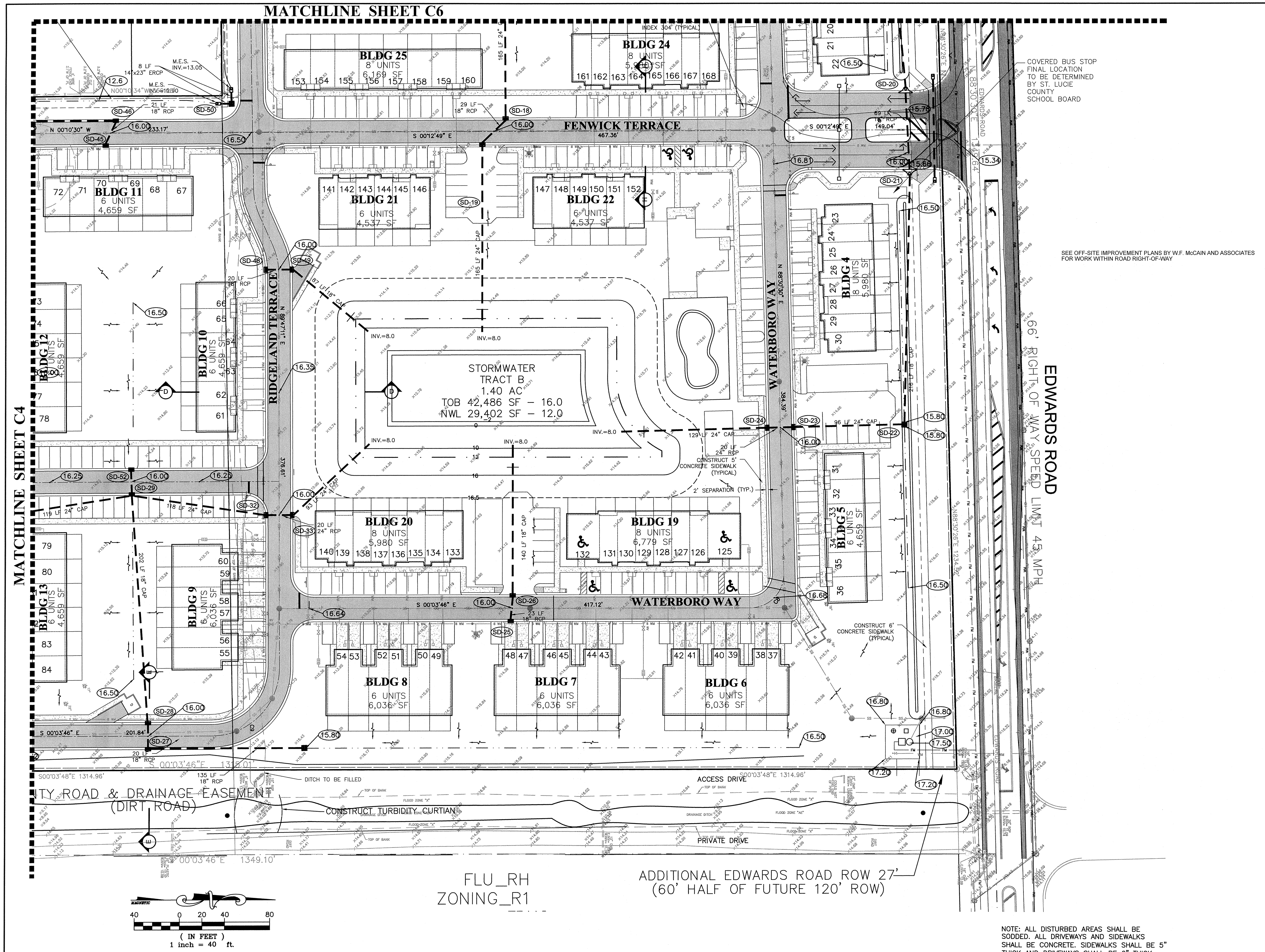
W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

UTILITIES PLAN
ENLARGEMENT - SOUTH

DESIGN ENGINEER
No. 50046
WILLIAM F. McCAIN, PE FL# 50046
DATE: JUL 20 2015

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	1"=40'

SHEET
C4A
OF 16
14-173


MATCHLINE SHEET C6
MATCHLINE SHEET C4
BLDG 25
8 UNITS
6,169 SF
BLDG 24
8 UNITS
INDEX 304 (TYPICAL)
FENWICK TERRACE
467.36'
S 00°12'49" E
N 00°10'30" W
233.17'
BLDG 11
6 UNITS
4,659 SF
BLDG 21
6 UNITS
4,537 SF
BLDG 22
6 UNITS
4,537 SF
BLDG 12
BLDG 10
6 UNITS
4,659 SF
RIDGELAND TERRACE
N 89°47'11" E
376.61'
STORMWATER
TRACT B
1.40 AC
TOB 42,486 SF – 16.0
NWL 29,402 SF – 12.0
INV.=8.0
WATERBORO WAY
384.39'
BLDG 4
8 UNITS
5,980 SF
BLDG 20
8 UNITS
5,980 SF
BLDG 19
8 UNITS
6,779 SF
BLDG 5
6 UNITS
4,659 SF
BLDG 13
6 UNITS
4,659 SF
BLDG 9
6 UNITS
6,036 SF
WATERBORO WAY
S 00°03'46" E
417.12'
BLDG 8
6 UNITS
6,036 SF
BLDG 7
6 UNITS
6,036 SF
BLDG 6
6 UNITS
6,036 SF
CONSTRUCT 5' CONCRETE SIDEWALK (TYPICAL)
2' SEPARATION (TYP.)
CONSTRUCT 6' CONCRETE SIDEWALK (TYPICAL)
COVERED BUS STOP FINAL LOCATION TO BE DETERMINED BY ST. LUCIE COUNTY SCHOOL BOARD
EDWARDS ROAD
66' RIGHT OF WAY SPEED LIMIT 45 MPH
DITCH TO BE FILLED
ACCESS DRIVE
CONSTRUCT TURBIDITY CURTIAN
UTY ROAD & DRAINAGE EASEMENT (DIRT ROAD)
PRIVATE DRIVE
S00°03'48"E 1314.96'
S 00°03'46"E 1349.10'
FLU_RH
ZONING_R1
ADDITIONAL EDWARDS ROAD ROW 27' (60' HALF OF FUTURE 120' ROW)
MAGNETIC
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

SEE OFF-SITE IMPROVEMENT PLANS BY W.F. McCAIN AND ASSOCIATES FOR WORK WITHIN ROAD RIGHT-OF-WAY

STRUCTURE TABLE

STRUCTURE NO.	TYPE	GRATE/RIM	N. INV.	S. INV.	E. INV	W.INV.
SD–1	P–4	15.80	12.05			
SD–2	P–4	15.80	11.91	12.01		
SD–3	C	15.80	11.49	11.49	9.59	
SD–4	P–4	15.76	12.01	11.91		
SD–5	P–4	15.76		12.05		
SD–6	V	15.64			8.37	8.87
SD–7	V	15.64			7.79	7.89
SD–8	V	15.64	12.05			
SD–9	V	15.64	11.83	10.66		
SD–10	C	15.80		8.51		
SD–11	V	15.64	7.51	7.41		
SD–12	V	15.64	7.36	7.26		
SD–13	V	15.64	8.22			
SD–14	V	15.64	8.13	8.14		
SD–15	C	15.80			12.05	
SD–16	V	15.64		12.05		
SD–17	V	15.64	12.01	11.91		
SD–18	V	15.64			11.00	10.00
SD–19	V	15.64			9.50	11.00
SD–20	P–3	15.56			11.52	11.62
SD–21	P–3	15.56			10.53	11.50
SD–22	C	15.80			9.87	9.88
SD–23	V	15.64	9.68	9.58		
SD–24	V	15.64	9.54	9.44		
SD–25	V	15.64				12.05
SD–26	V	15.64			12.01	11.91
SD–27	V	15.64	8.00	7.37		7.98
SD–28	V	15.64			7.94	7.84
SD–29	V	15.64	8.00	7.37	7.47	
SD–30	V	15.64	7.37	7.37		
SD–31	V	15.64	7.37	7.37		
SD–32	V	15.64	8.00	8.00		
SD–33	V	15.64	8.00	8.00		
SD–34	V	15.64				9.29
SD–35	V	15.64			9.25	9.15
SD–36	M.H.	16.25			8.94	8.84
SD–37	M.H.	16.61			7.51	7.61
SD–38	M.H.	16.25			7.84	7.94
SD–39	V	15.64	12.05			
SD–40	V	15.64	11.91	12.01		
SD–41	V	15.64	9.02	8.92		
SD–42	V	15.64		9.06		
SD–43	V	15.64			9.13	9.23
SD–44	V	15.64	11.44		9.27	
SD–45	V	15.64				12.05
SD–46	V	15.64		11.91	12.01	
SD–47	M.H.	16.10			8.14	8.24
SD–48	V	15.64			12.05	
SD–49	V	15.64			11.91	12.01
SD–50	C	15.00		13.00		13.00
SD–51	M.H.	16.50	10.50	10.40		
SD–52	V	15.64			8.00	

LEGEND

— — — — —	PROPOSED STORMWATER PIPE
—— SS —— SS ——	PROPOSED SANITARY SEWER
—— FM —— FM ——	FORCE MAIN
—— WM —— WM ——	PROPOSED WATER MAIN
— - — - —	CENTER LINE
— — — — —	EASEMENT
	EXISTING CONTOR LINES
—— · · ——	NORMAL WATER LEVEL (NWL)
▬	PROPOSED 24" STOP BAR
○	PROPOSED 30" STOP SIGN/STREET SIGN
19.02	EXISTING SPOT ELEVATION
16.82	PROPOSED SPOT ELEVATION
	PROPOSED SITE LIGHTING
□	PROPOSED SPEED LIMIT SIGN
	PROPOSED DOUBLE SEWER LATERIAL
	PROPOSED SINGLE SEWER SERVICE
	PROPOSED DOUBLE WATER SERVICE
	PROPOSED SINGLE WATER SERVICE
	PROPOSED FIRE HYDRANT ASSEMBLY (FHA)
▥	PROPOSED TYPE "C" INLET
	PROPOSED TYPE "P" INLET
▬	PROPOSED TYPE "V" INLET
	PROPOSED MITERED END SECTION (MES)
●	PROPOSED SANITARY MANHOLE
▷	PROPOSED REDUCER
WV ⋈	PROPOSED WATER VALVE
	PROPOSED DOUBLE DETECTOR CHECK VALVE

NOTE: ALL DISTURBED AREAS SHALL BE SODDED. ALL DRIVEWAYS AND SIDEWALKS SHALL BE CONCRETE. SIDEWALKS SHALL BE 5" THICK AND DRIVEWAYS SHALL BE 6" THICK.

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SUNSHINE STATE ONE CALL
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MARINER COVE

CITY OF FT. PIERCE, FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

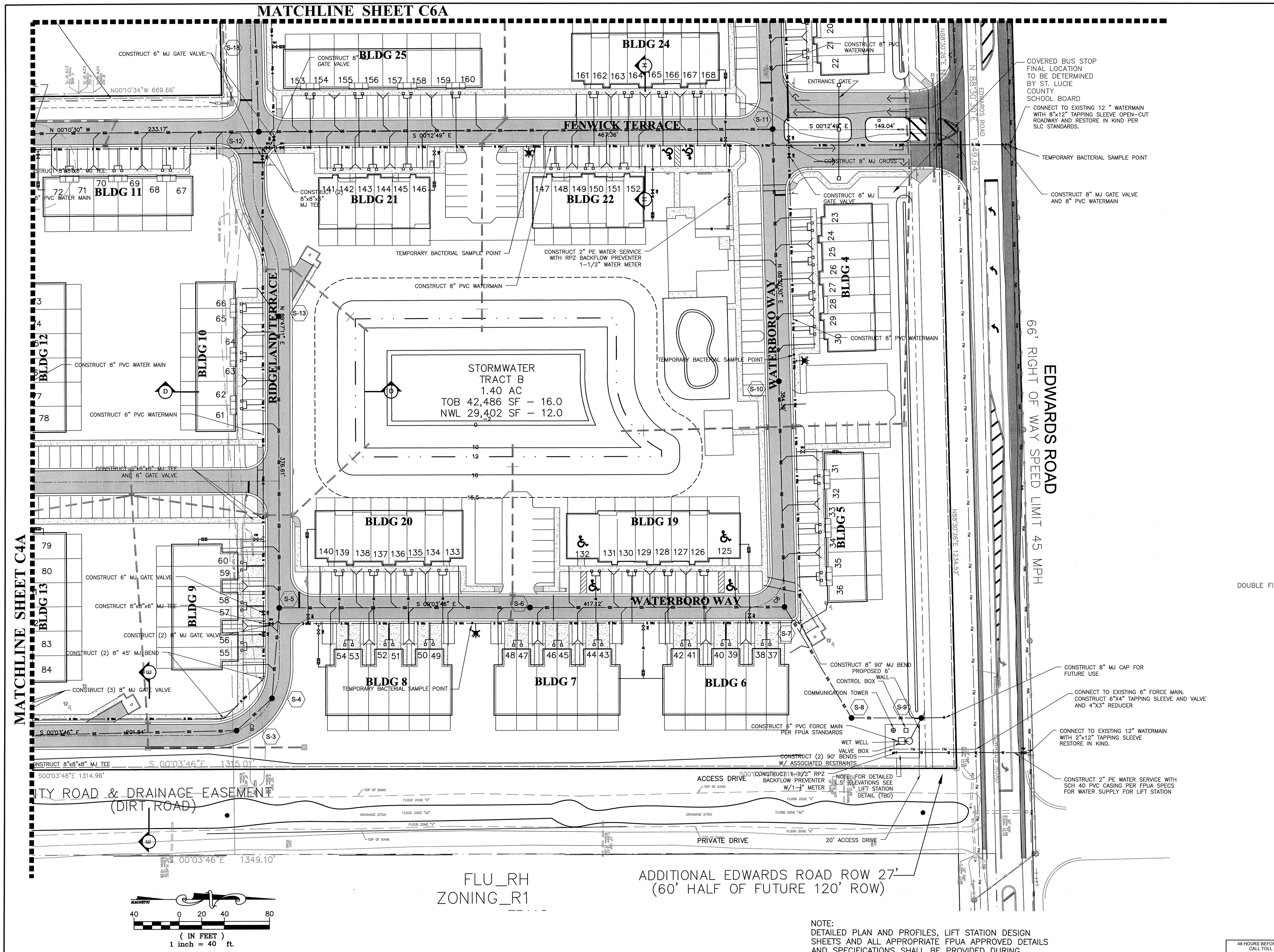
PAVING, GRADING & DRAINAGE PLAN
ENLARGEMENT - NORTHEAST

DESIGN ENGINEER
WILLIAM F. McCAIN, PE FL# 50046
DATE

No. 50046

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	1"=40'

SHEET
C5
OF 16
14-173


MATCHLINE SHEET C6A
MATCHLINE SHEET C4A
CONSTRUCT 6" MJ GATE VALVE.
CONSTRUCT 8" MJ GATE VALVE
N00°10'34"W 669.66'
N 00°10'30" W
233.17'
S 00°12'49" E
467.36'
FENWICK TERRACE
149.04'
CONSTRUCT 8"x8"x8" MJ TEE
8" PVC WATER MAIN
CONSTRUCT (2) 8"x8"x6" MJ TEE
BLDG 25
BLDG 24
BLDG 11
BLDG 21
BLDG 22
BLDG 12
BLDG 10
BLDG 13
BLDG 9
BLDG 20
BLDG 19
BLDG 8
BLDG 7
BLDG 6
BLDG 4
BLDG 5
S-18
S-12
S-11
S-13
S-10
S-5
S-6
S-7
S-4
S-3
S-8
S-9
TEMPORARY BACTERIAL SAMPLE POINT
CONSTRUCT 2" PE WATER SERVICE WITH RPZ BACKFLOW PREVENTER 1-1/2" WATER METER
CONSTRUCT 8" PVC WATERMAIN
CONSTRUCT 8" PVC WATERMAIN
ENTRANCE GATE
CONSTRUCT 8" MJ CROSS
CONSTRUCT 8" MJ GATE VALVE
COVERED BUS STOP FINAL LOCATION TO BE DETERMINED BY ST. LUCIE COUNTY SCHOOL BOARD
CONNECT TO EXISTING 12 " WATERMAIN WITH 8"x12" TAPPING SLEEVE OPEN-CUT ROADWAY AND RESTORE IN KIND PER SLC STANDARDS.
TEMPORARY BACTERIAL SAMPLE POINT
CONSTRUCT 8" MJ GATE VALVE AND 8" PVC WATERMAIN
N88°30'26"E
N 88°30'30" E
149.64'
EDWARDS ROAD
EDWARDS ROAD
66' RIGHT OF WAY SPEED LIMIT 45 MPH
RIDGELAND TERRACE
N 89°47'11" E
376.61'
WATERBORO WAY
N 88°30'30" E
STORMWATER TRACT B 1.40 AC TOB 42,486 SF – 16.0 NWL 29,402 SF – 12.0
CONSTRUCT 8" PVC WATER MAIN
CONSTRUCT 6" PVC WATERMAIN
TEMPORARY BACTERIAL SAMPLE POINT
CONSTRUCT 8" PVC WATERMAIN
CONSTRUCT 8"x6"x6" MJ TEE AND 6" GATE VALVE
CONSTRUCT 6" MJ GATE VALVE
CONSTRUCT 8"x8"x6" MJ TEE
CONSTRUCT (2) 8" MJ GATE VALVE
CONSTRUCT (2) 8" 45° MJ BEND
CONSTRUCT (3) 8" MJ GATE VALVE
S 00°03'46" E
417.12'
S 00°03'46" E
201.84'
CONSTRUCT 8"x8"x8" MJ TEE
S 00°03'46"E 1315.01'
S00°03'48"E 1314.96'
NTY ROAD & DRAINAGE EASEMENT (DIRT ROAD)
S 00°03'46"E 1349.10'
DRAINAGE DITCH
FLOOD ZONE "X"
FLOOD ZONE "AE"
TOP OF BANK
CONSTRUCT 8" 90° MJ BEND
PROPOSED 6' WALL
CONTROL BOX
COMMUNICATION TOWER
CONSTRUCT 6" PVC FORCE MAIN PER FPUA STANDARDS
WET WELL
VALVE BOX
CONSTRUCT (2) 90° BENDS W/ ASSOCIATED RESTRAINTS
CONSTRUCT 1-1/2" RPZ BACKFLOW PREVENTER W/1-½" METER
NOTE: FOR DETAILED L.S. ELEVATIONS SEE LIFT STATION DETAIL (TBD)
ACCESS DRIVE
PRIVATE DRIVE
20' ACCESS DRIVE
CONSTRUCT 8" MJ CAP FOR FUTURE USE
CONNECT TO EXISTING 6" FORCE MAIN. CONSTRUCT 6"X4" TAPPING SLEEVE AND VALVE AND 4"X3" REDUCER
CONNECT TO EXISTING 12" WATERMAIN WITH 2"x12" TAPPING SLEEVE RESTORE IN KIND.
CONSTRUCT 2" PE WATER SERVICE WITH SCH 40 PVC CASING PER FPUA SPECS FOR WATER SUPPLY FOR LIFT STATION
ADDITIONAL EDWARDS ROAD ROW 27' (60' HALF OF FUTURE 120' ROW)
FLU_RH
ZONING_R1
MAGNETIC
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.

NOTE:
DETAILED PLAN AND PROFILES, LIFT STATION DESIGN SHEETS AND ALL APPROPRIATE FPUA APPROVED DETAILS AND SPECIFICATIONS SHALL BE PROVIDED DURING PERMITTING PROCESS WITH FPUA

GENERAL NOTES:

1. ALL WATERMAINS SHALL BE INSTALLED AT A MINIMUM OF 5 FT. BEHIND BACK OF CURB.

2. ALL WATERMAINS SHALL MAINTAIN A MINIMUM 3 FT. SEPARATION BETWEEN ALL STORMWATER STRUCTURES.

3. RESTRAINT SHALL BE PROVIDED AT ALL BENDS, VALVES, AND FITTINGS PER PLANS & SPECIFICATIONS.

4. LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE ONLY, CONTRACTOR IS RESPONSIBLE FOR EXACT FIELD LOCATION.

5. ALL HARD SURFACE DRIVES TO BE DIRECTIONAL BORED. IF DRIVEWAY IS DAMAGED, OR CAN NOT BE BORED, ENTIRE SECTION OF CONCRETE/ASPHALT FROM CUT TO PAVEMENT & CUT TO RIGHT OF WAY SHALL BE REPLACED IN KIND.

6. FINAL GRADE OF RESTORATION SHALL BE 2" BELOW SODDED GRADE TO ALLOW FOR SOD DIFFERENTIAL.

7. ALL DRIVEWAY AND ROAD CROSSINGS SHALL BE DIRECTIONAL BORED USING DR11 H.D.P.E.

8. LOCATION OF GATE VALVES & FITTINGS SHALL BE ADJUSTED AS REQUIRED TO AVOID INTERFERANCE WITH CURB AND OTHER PROPOSED UTILITIES. LOCATION ADJUSTMENTS SHALL BE MADE ONLY AFTER OBTAINING APPROVAL FROM THE ENGINEER OF RECORD.

9. CONTRACTOR IS RESPONSIBLE FOR CHECKING ACTUAL FIELD CONDITIONS BEFORE STARTING CONSTRUCTION.

10. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCING WORK.

11. CONTRACTOR SHALL OBTAIN COPIES OF ALL REQUIRED PERMITS FROM THE ENGINEER BEFORE COMMENCING WORK. ANY PERMITS REQUIRED FOR DEWATERING OR NIGHT TIME OPERATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

12. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATIONS OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL CONTACT THE SUNSHINE STATE ONE CALL AND ALL CONCERNED UTILITIES AT LEAST 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS.

13. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN TO BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.

14. ALL CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH DEP, DOT STANDARD SPECIFICATIONS AND THE APPLICABLE ORDINANCES OF F.P.U.A. & ST. LUCIE COUNTY, FLORIDA.

15. CONTRACTOR SHALL SUPPLY DENSITY TESTS TO ENGINEER ON ALL COMPACTED UTILITY INSTALLATIONS AND ON SUB-GRADE AND BASE SHOULD PAVEMENT RESTORATION BE REQUIRED. TESTS SHALL BE PREPARED PER AASHO T-180 METHOD.

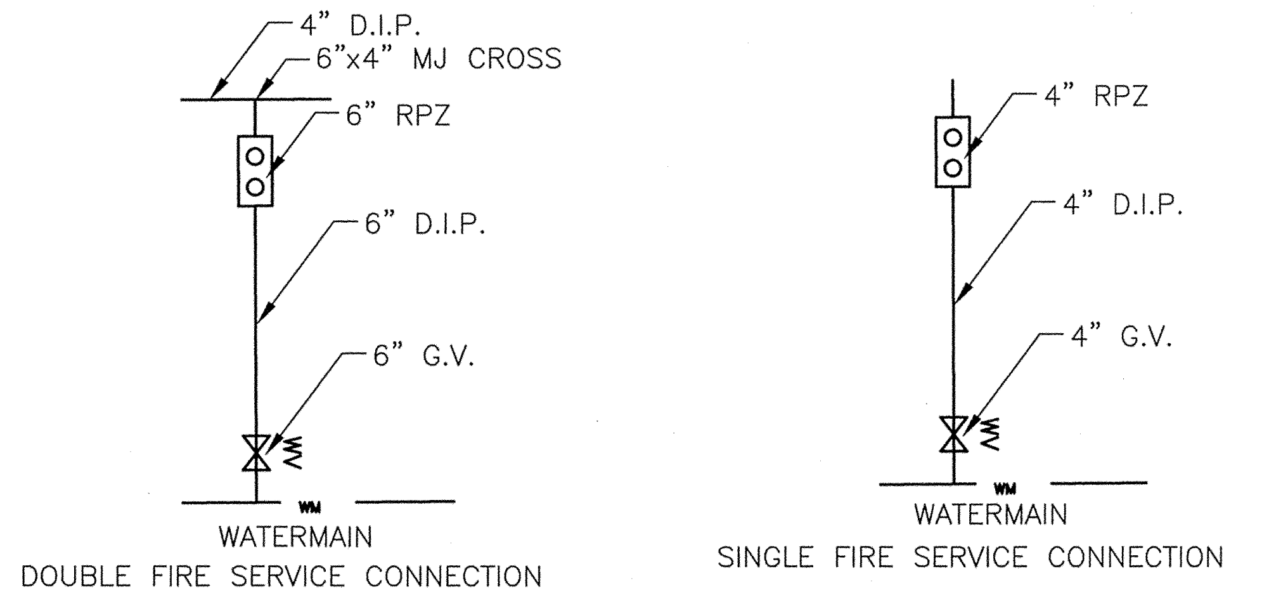
16. ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION AND FOR ANY INSPECTION.

17. ON ANY REQUIRED CONCRETE PAVEMENT ALTERATIONS/RESTORATIONS, ALL CONCRETE POURS SHALL BE PROVIDED WITH CONTRACTIONS JOINTS (20' MAXIMUM SPACING) WITH 1-1/2" DEPTH.

18. CONCRETE PAVEMENT ALTERATIONS SHALL BE PROVIDED WITH A PIGMENTED LIQUID MEMBRANE CURING COMPOUND CONFORMING TO THE REQUIREMENTS OF ASTM DESIGNATION (309).

19. THE CONTRACTOR SHALL PROVIDE RECORD DRAWINGS IN ACCORDANCE WITH ALL STATE, CITY AND COUNTY REQUIREMENTS.

20. ALL DISTURBED AREA ON OR ABOVE GRADE SHALL BE RESTORED IN-KIND PER FDOT AND THE F.P.U.A. STANDARDS.


4" D.I.P.
6"x4" MJ CROSS
6" RPZ
6" D.I.P.
6" G.V.
WM
4" RPZ
4" D.I.P.
4" G.V.
WM

WATERMAIN
DOUBLE FIRE SERVICE CONNECTION

WATERMAIN
SINGLE FIRE SERVICE CONNECTION

LEGEND

— — — —	PROPOSED STORMWATER PIPE
—— SS —— SS ——	PROPOSED SANITARY SEWER
—— FM —— FM ——	FORCE MAIN
—— WM —— WM ——	PROPOSED WATER MAIN
—·—·—·—	CENTER LINE
— — — —	EASEMENT
	EXISTING CONTOR LINES
—— · · ——	NORMAL WATER LEVEL (NWL)
▬	PROPOSED 24" STOP BAR
—○—	PROPOSED 30" STOP SIGN/STREET SIGN
19.02	EXISTING SPOT ELEVATION
16.82	PROPOSED SPOT ELEVATION
	PROPOSED SITE LIGHTING
—□—	PROPOSED SPEED LIMIT SIGN
>—/	PROPOSED DOUBLE SEWER LATERIAL
/—	PROPOSED SINGLE SEWER SERVICE
⊐—	PROPOSED DOUBLE WATER SERVICE
▫—	PROPOSED SINGLE WATER SERVICE
✱	PROPOSED FIRE HYDRANT ASSEMBLY (FHA)
▥	PROPOSED TYPE "C" INLET
▽	PROPOSED TYPE "P" INLET
▬	PROPOSED TYPE "V" INLET
▭	PROPOSED MITERED END SECTION (MES)
●	PROPOSED SANITARY MANHOLE
▷	PROPOSED REDUCER
WV ⋈	PROPOSED WATER VALVE
○○	PROPOSED DOUBLE DETECTOR CHECK VALVE

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

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△	REVISIONS	DATE	BY
1			
2			
3			
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MARINER COVE

CITY OF FT. PIERCE, FLORIDA

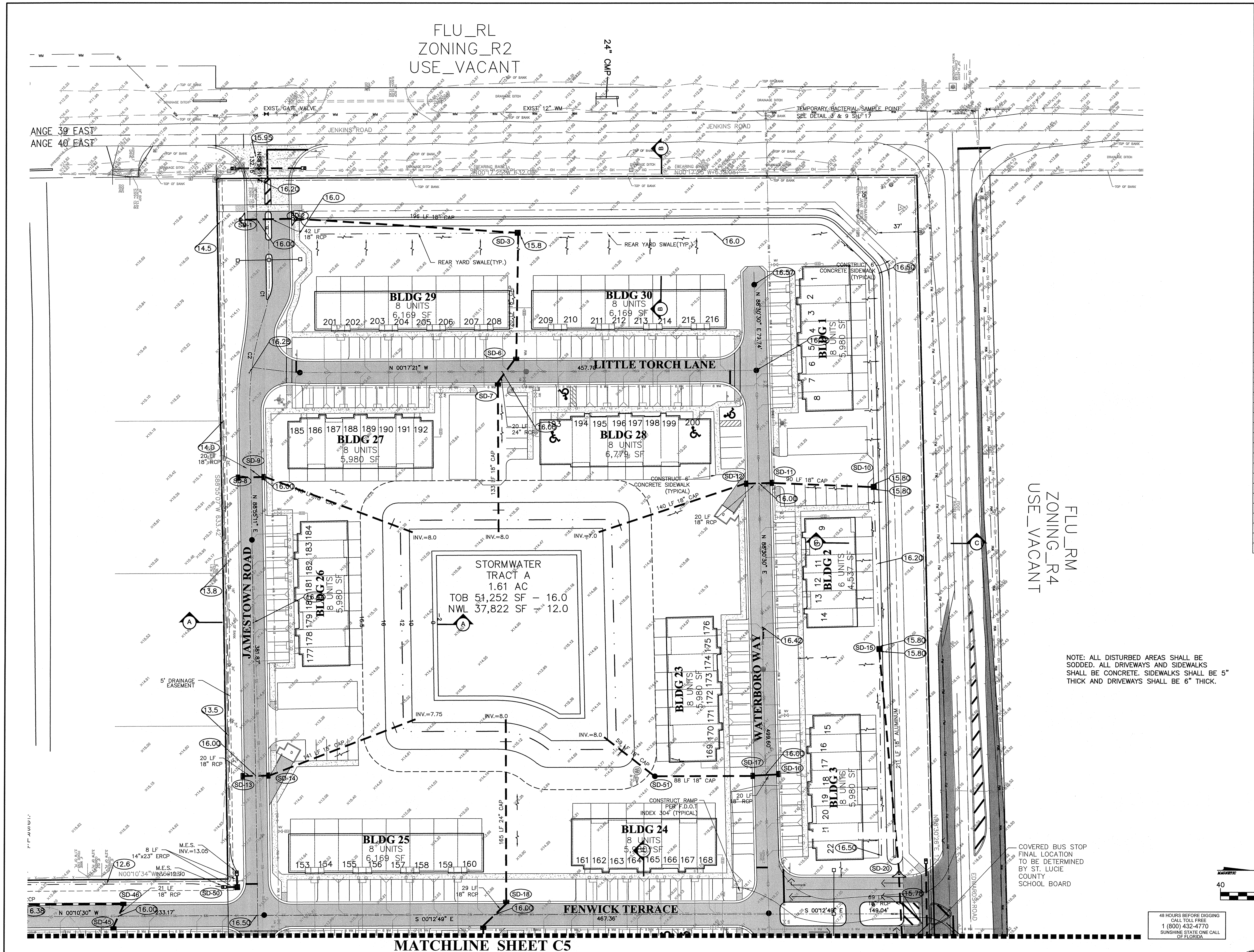
W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

UTILITIES PLAN
ENLARGEMENT - NORTHEAST

DESIGN ENGINEER
No. 50046
WILLIAM F. McCAIN PE FL# 50046
DATE JUL [illegible] 2015

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	1"=40'

SHEET
C5A
OF 16
14-173


FLU_RL
ZONING_R2
USE_VACANT
24" CMP
JENKINS ROAD
EXIST. GATE VALVE
EXIST. 12" WM
TEMPORARY BACTERIAL SAMPLE POINT SEE DETAIL 3 & 9 SH. 17
ANGE 39 EAST
ANGE 40 EAST
REAR YARD SWALE(TYP.)
BLDG 29
8 UNITS
6,169 SF
BLDG 30
8 UNITS
6,169 SF
LITTLE TORCH LANE
N 00°17'21" W
457.70'
BLDG 27
8 UNITS
5,980 SF
BLDG 28
8 UNITS
6,779 SF
BLDG 1
8 UNITS
5,980 SF
BLDG 2
6 UNITS
4,537 SF
BLDG 3
8 UNITS
5,980 SF
BLDG 26
8 UNITS
5,980 SF
BLDG 23
8 UNITS
5,980 SF
BLDG 25
8 UNITS
6,169 SF
BLDG 24
8 UNITS
5,980 SF
CONSTRUCT 6' CONCRETE SIDEWALK (TYPICAL)
STORMWATER
TRACT A
1.61 AC
TOB 51,252 SF – 16.0
NWL 37,822 SF – 12.0
INV.=8.0
INV.=7.75
JAMESTOWN ROAD
WATERBORO WAY
FENWICK TERRACE
S 00°12'49" E
467.36'
N 00°10'30" W
233.17'
5' DRAINAGE EASEMENT
CONSTRUCT RAMP PER F.D.O.T. INDEX 304 (TYPICAL)
M.E.S. INV.=13.05
8 LF 14"x23" ERCP
EDWARDS ROAD
FLU_RM
ZONING_R4
USE_VACANT
37'
211 LF 18" ALUMINUM
196 LF 18" CAP
140 LF 18" CAP
90 LF 18" CAP
88 LF 18" CAP
165 LF 24" CAP
133 LF 18" CAP
149.04'
MAGNETIC
40 0 20 40 80

NOTE: ALL DISTURBED AREAS SHALL BE SODDED. ALL DRIVEWAYS AND SIDEWALKS SHALL BE CONCRETE. SIDEWALKS SHALL BE 5" THICK AND DRIVEWAYS SHALL BE 6" THICK.

COVERED BUS STOP
FINAL LOCATION
TO BE DETERMINED
BY ST. LUCIE
COUNTY
SCHOOL BOARD

(IN FEET)
1 inch = 40 ft.

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

MATCHLINE SHEET C5

STRUCTURE TABLE						
STRUCTURE NO.	TYPE	GRATE/RIM	N. INV.	S. INV.	E. INV	W.INV.
SD–1	P–4	15.80	12.05			
SD–2	P–4	15.80	11.91	12.01		
SD–3	C	15.80	11.49	11.49	9.59	
SD–4	P–4	15.76	12.01	11.91		
SD–5	P–4	15.76		12.05		
SD–6	V	15.64			8.37	8.87
SD–7	V	15.64			7.79	7.89
SD–8	V	15.64	12.05			
SD–9	V	15.64	11.83	10.66		
SD–10	C	15.80		8.51		
SD–11	V	15.64	7.51	7.41		
SD–12	V	15.64	7.36	7.26		
SD–13	V	15.64	8.22			
SD–14	V	15.64	8.13	8.14		
SD–15	C	15.80			12.05	
SD–16	V	15.64		12.05		
SD–17	V	15.64	12.01	11.91		
SD–18	V	15.64			11.00	10.00
SD–19	V	15.64			9.50	11.00
SD–20	P–3	15.56			11.52	11.62
SD–21	P–3	15.56			10.53	11.50
SD–22	C	15.80			9.87	9.88
SD–23	V	15.64	9.68	9.58		
SD–24	V	15.64	9.54	9.44		
SD–25	V	15.64				12.05
SD–26	V	15.64			12.01	11.91
SD–27	V	15.64	8.00	7.37		7.98
SD–28	V	15.64			7.94	7.84
SD–29	V	15.64	8.00	7.37	7.47	
SD–30	V	15.64	7.37	7.37		
SD–31	V	15.64	7.37	7.37		
SD–32	V	15.64	8.00	8.00		
SD–33	V	15.64	8.00	8.00		
SD–34	V	15.64				9.29
SD–35	V	15.64			9.25	9.15
SD–36	M.H.	16.25			8.94	8.84
SD–37	M.H.	16.61			7.51	7.61
SD–38	M.H.	16.25			7.84	7.94
SD–39	V	15.64	12.05			
SD–40	V	15.64	11.91	12.01		
SD–41	V	15.64	9.02	8.92		
SD–42	V	15.64		9.06		
SD–43	V	15.64			9.13	9.23
SD–44	V	15.64	11.44		9.27	
SD–45	V	15.64				12.05
SD–46	V	15.64		11.91	12.01	
SD–47	M.H.	16.10			8.14	8.24
SD–48	V	15.64			12.05	
SD–49	V	15.64			11.91	12.01
SD–50	C	15.00		13.00		13.00
SD–51	M.H.	16.50	10.50	10.40		
SD–52	V	15.64			8.00	

LEGEND

- PROPOSED STORMWATER PIPE
- SS — SS PROPOSED SANITARY SEWER
- FM — FM FORCE MAIN
- WM — WM PROPOSED WATER MAIN
- CENTER LINE
- EASEMENT
- EXISTING CONTOR LINES
- NORMAL WATER LEVEL (NWL)
- PROPOSED 24" STOP BAR
- PROPOSED 30" STOP SIGN/STREET SIGN
- 19.02 EXISTING SPOT ELEVATION
- 16.82 PROPOSED SPOT ELEVATION
- PROPOSED SITE LIGHTING
- PROPOSED SPEED LIMIT SIGN
- PROPOSED DOUBLE SEWER LATERIAL
- PROPOSED SINGLE SEWER SERVICE
- PROPOSED DOUBLE WATER SERVICE
- PROPOSED SINGLE WATER SERVICE
- PROPOSED FIRE HYDRANT ASSEMBLY (FHA)
- PROPOSED TYPE "C" INLET
- PROPOSED TYPE "P" INLET
- PROPOSED TYPE "V" INLET
- PROPOSED MITERED END SECTION (MES)
- ● PROPOSED SANITARY MANHOLE
- PROPOSED REDUCER
- WV PROPOSED WATER VALVE
- PROPOSED DOUBLE DETECTOR CHECK VALVE

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△	REVISIONS	DATE	BY
1			
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3			
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6			
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8			

MARINER COVE

CITY OF FT. PIERCE, FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENG
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

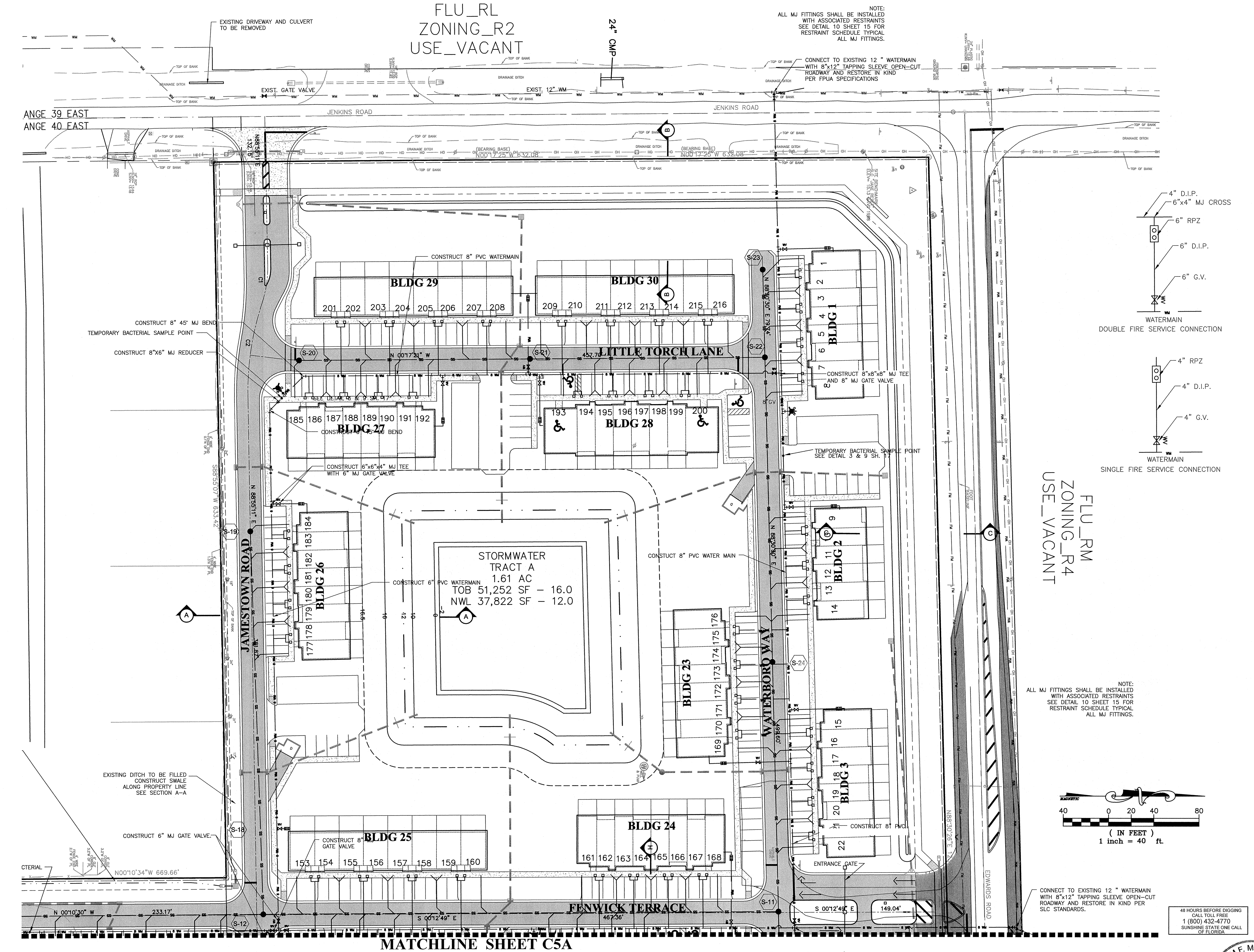
PAVING, GRADING & DRAINAGE PLAN
ENLARGEMENT - NORTHWEST

DESIGN ENGINEER
WILLIAM F. McCAIN PE FL# 50046
DATE:

WILLIAM F. McCAIN
LICENSE
No. 50046
STATE OF FLORIDA
PROFESSIONAL ENGINEER

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	1"=40'

SHEET
C6
OF 16
14-173


FLU_RL
ZONING_R2
USE_VACANT
24" CMP
EXISTING DRIVEWAY AND CULVERT TO BE REMOVED
NOTE: ALL MJ FITTINGS SHALL BE INSTALLED WITH ASSOCIATED RESTRAINTS SEE DETAIL 10 SHEET 15 FOR RESTRAINT SCHEDULE TYPICAL ALL MJ FITTINGS.
CONNECT TO EXISTING 12 " WATERMAIN WITH 8"x12" TAPPING SLEEVE OPEN-CUT ROADWAY AND RESTORE IN KIND PER FPUA SPECIFICATIONS
EXIST. GATE VALVE
EXIST. 12" WM
TOP OF BANK
DRAINAGE DITCH
JENKINS ROAD
ANGE 39 EAST
ANGE 40 EAST
(BEARING BASE)
N00°17'25"W 632.08'
CONSTRUCT 8" PVC WATERMAIN
BLDG 29
201 202 203 204 205 206 207 208
BLDG 30
209 210 211 212 213 214 215 216
CONSTRUCT 8" 45' MJ BEND
TEMPORARY BACTERIAL SAMPLE POINT
CONSTRUCT 8"X6" MJ REDUCER
LITTLE TORCH LANE
N 00°17'21" W
457.76'
S-20
S-21
S-22
S-23
SEE DETAIL 3 & 9 SH. 17
CONSTRUCT 8"x8"x8" MJ TEE AND 8" MJ GATE VALVE
BLDG 27
185 186 187 188 189 190 191 192
BLDG 28
193 194 195 196 197 198 199 200
BLDG 1
1 2 3 4 5 6 7 8
TEMPORARY BACTERIAL SAMPLE POINT SEE DETAIL 3 & 9 SH. 17
CONSTRUCT 6"x6"x4" MJ TEE WITH 6" MJ GATE VALVE
BLDG 26
177 178 179 180 181 182 183 184
JAMESTOWN ROAD
N 88°55'11" E
S-19
STORMWATER TRACT A 1.61 AC
TOB 51,252 SF - 16.0
NWL 37,822 SF - 12.0
CONSTRUCT 6" PVC WATERMAIN
CONSTUCT 8" PVC WATER MAIN
BLDG 2
9 10 11 12 13 14
BLDG 23
169 170 171 172 173 174 175 176
WATERBORO WAY
S-24
NOTE: ALL MJ FITTINGS SHALL BE INSTALLED WITH ASSOCIATED RESTRAINTS SEE DETAIL 10 SHEET 15 FOR RESTRAINT SCHEDULE TYPICAL ALL MJ FITTINGS.
BLDG 3
15 16 17 18 19 20 21 22
CONSTRUCT 8" PVC
EXISTING DITCH TO BE FILLED CONSTRUCT SWALE ALONG PROPERTY LINE SEE SECTION A-A
CONSTRUCT 6" MJ GATE VALVE
S-18
BLDG 25
153 154 155 156 157 158 159 160
CONSTRUCT 8" MJ GATE VALVE
BLDG 24
161 162 163 164 165 166 167 168
ENTRANCE GATE
N00°10'34"W 669.66'
S88°55'07"W 633.42'
N 00°10'30" W
233.17'
S 00°12'49" E
467.36'
FENWICK TERRACE
S-12
S-11
S 00°12'49" E
149.04'
EDWARDS ROAD
N88°30'26"E
CONNECT TO EXISTING 12 " WATERMAIN WITH 8"x12" TAPPING SLEEVE OPEN-CUT ROADWAY AND RESTORE IN KIND PER SLC STANDARDS.
FLU_RM
ZONING_R4
USE_VACANT
4" D.I.P.
6"x4" MJ CROSS
6" RPZ
6" D.I.P.
6" G.V.
WATERMAIN
DOUBLE FIRE SERVICE CONNECTION
4" RPZ
4" D.I.P.
4" G.V.
WATERMAIN
SINGLE FIRE SERVICE CONNECTION
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.
MATCHLINE SHEET C5A

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

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15. CONTRACTOR SHALL SUPPLY DENSITY TESTS TO ENGINEER ON ALL COMPACTED UTILITY INSTALLATIONS AND ON SUB-GRADE AND BASE SHOULD PAVEMENT RESTORATION BE REQUIRED. TESTS SHALL BE PREPARED PER AASHO T-180 METHOD.

16. ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF ANY CONSTRUCTION AND FOR ANY INSPECTION.

17. ON ANY REQUIRED CONCRETE PAVEMENT ALTERATIONS/RESTORATIONS, ALL CONCRETE POURS SHALL BE PROVIDED WITH CONTRACTIONS JOINTS (20' MAXIMUM SPACING) WITH 1-1/2" DEPTH.

18. CONCRETE PAVEMENT ALTERATIONS SHALL BE PROVIDED WITH A PIGMENTED LIQUID MEMBRANE CURING COMPOUND CONFORMING TO THE REQUIREMENTS OF ASTM DESIGNATION (309).

19. THE CONTRACTOR SHALL PROVIDE RECORD DRAWINGS IN ACCORDANCE WITH ALL STATE, CITY AND COUNTY REQUIREMENTS.

20. ALL DISTURBED AREA ON OR ABOVE GRADE SHALL BE RESTORED IN-KIND PER FDOT AND THE F.P.U.A. STANDARDS.

NOTE:
DETAILED PLAN AND PROFILES, LIFT STATION DESIGN SHEETS AND ALL APPROPRIATE FPUA APPROVED DETAILS AND SPECIFICATIONS SHALL BE PROVIDED DURING PERMITTING PROCESS WITH FPUA

LEGEND

— — — — —	PROPOSED STORMWATER PIPE
—— SS —— SS ——	PROPOSED SANITARY SEWER
—— FM —— FM ——	FORCE MAIN
—— WM —— WM ——	PROPOSED WATER MAIN
— - — - — - —	CENTER LINE
— — — — —	EASEMENT
	EXISTING CONTOR LINES
—— · · ——	NORMAL WATER LEVEL (NWL)
▬	PROPOSED 24" STOP BAR
—○—	PROPOSED 30" STOP SIGN/STREET SIGN
19.02	EXISTING SPOT ELEVATION
16.82	PROPOSED SPOT ELEVATION
	PROPOSED SITE LIGHTING
—□—	PROPOSED SPEED LIMIT SIGN
≻—	PROPOSED DOUBLE SEWER LATERIAL
/—	PROPOSED SINGLE SEWER SERVICE
⊐—	PROPOSED DOUBLE WATER SERVICE
▫—	PROPOSED SINGLE WATER SERVICE
✱	PROPOSED FIRE HYDRANT ASSEMBLY (FHA)
▥	PROPOSED TYPE "C" INLET
▽	PROPOSED TYPE "P" INLET
▬	PROPOSED TYPE "V" INLET
◫	PROPOSED MITERED END SECTION (MES)
●	PROPOSED SANITARY MANHOLE
▷	PROPOSED REDUCER
WV ⋈	PROPOSED WATER VALVE
⊡	PROPOSED DOUBLE DETECTOR CHECK VALVE

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△	REVISIONS	DATE	BY
1			
2			
3			
4			
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7			
8			

MARINER COVE

CITY OF FT. PIERCE, FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

UTILITIES PLAN
ENLARGEMENT - NORTHWEST

WILLIAM F. McCAIN, LICENSE No. 50046, STATE OF FLORIDA
DESIGN ENGINEER
WILLIAM F. McCAIN PE FL# 50046
DATE: 2015

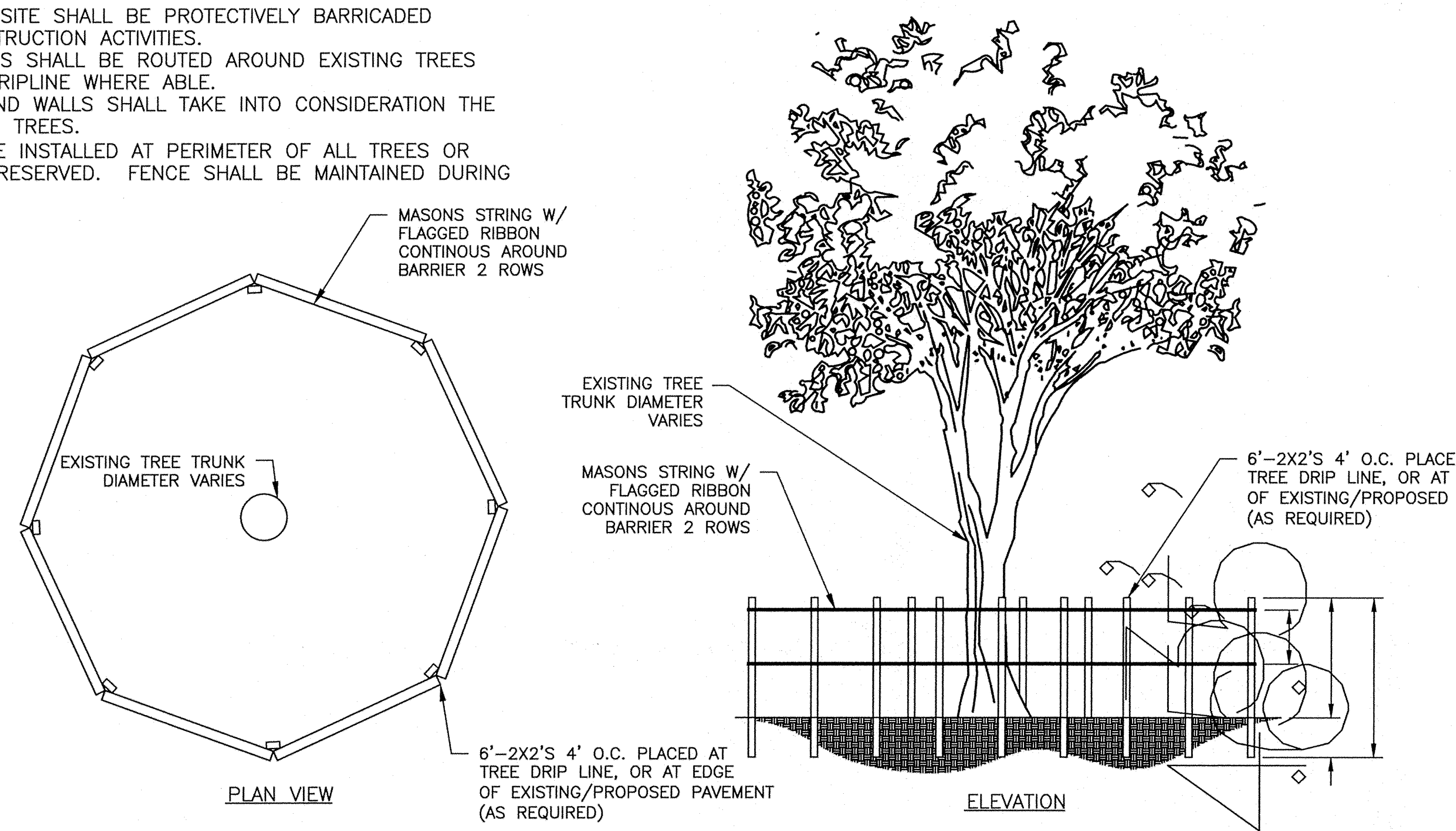
MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	1"=40'

SHEET
C6A
OF 16
14-173

NOT INCLUDED
FOUND 5/8" IRON ROD & 2391 CAP
N 00°13'05"W 668.07'
N00°10'34"W 669.66'
N 00°10'30"W 669.6
FOUND 3/4" IRON PIPE
FLOODWAY AREA ZONE "AE"
FLOOD ZONE "X" ZONE AE-14
CONSERVATION EASEMENT LINE
CONSERVATION AREA ADVISORY SIGNS (TYPICAL)
WETLAND LINE
WETLAND LINE "C"
WETLANDS
UPLANDS
WETLAND LINE "B"
LIMITS OF DEVELOPMENT
S 89°29'22"W 339.85'
N01°32'00"E
N 02°25'22"E 318.28'
SET 5/8" IRON ROD & 3909 CAP
FOUND 5/8" IRON ROD & 2391 CAP
FOUND CONCRETE MONUMENT
TEN MILE CREEK O.H.W.L. (+) 0.1 PER DAVID M. JONES LAND SURVEYOR (NOT ON-SITE)
S 00°05'33"E 669.92'
SET 5/8" IRON ROD & 391
S 00°03'48"E 1314
S00°03'48"E 1314.86'
S 00°03'46"E 1315.6
S 00°03'46"E 1349.10'
FLOOD ZONE
CONSTRUCT TURBIDITY CURTIAN

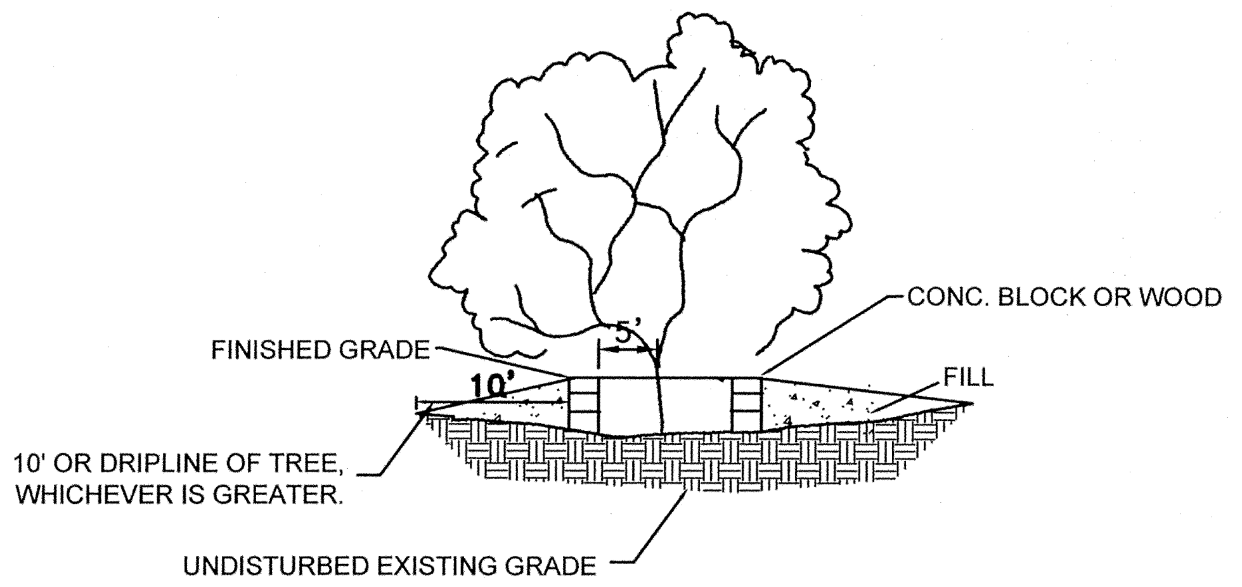
TREE PROTECTION NOTES:

1. ALL TREES RETAINED ON A SITE SHALL BE PROTECTIVELY BARRICADED BEFORE AND DURING CONSTRUCTION ACTIVITIES.
2. UNDERGROUND UTILITIY LINES SHALL BE ROUTED AROUND EXISTING TREES TO THE OUTSIDE OF THE DRIPLINE WHERE ABLE.
3. INSTALLATION OF FENCES AND WALLS SHALL TAKE INTO CONSIDERATION THE ROOT SYSTEMS OF EXISTING TREES.
4. FENCE/BARRICADE SHALL BE INSTALLED AT PERIMETER OF ALL TREES OR GROUP OF TREES TO BE PRESERVED. FENCE SHALL BE MAINTAINED DURING CONSTRUCTION.


MASONS STRING W/ FLAGGED RIBBON CONTINOUS AROUND BARRIER 2 ROWS
EXISTING TREE TRUNK DIAMETER VARIES
6'-2X2'S 4' O.C. PLACED AT TREE DRIP LINE, OR AT EDGE OF EXISTING/PROPOSED PAVEMENT (AS REQUIRED)
PLAN VIEW
EXISTING TREE TRUNK DIAMETER VARIES
MASONS STRING W/ FLAGGED RIBBON CONTINOUS AROUND BARRIER 2 ROWS
6'-2X2'S 4' O.C. PLACED AT TREE DRIP LINE, OR AT EDGE OF EXISTING/PROPOSED PAVEMENT (AS REQUIRED)
ELEVATION

1/8 TREE PROTECTION BARRIER

N.T.S.


CONC. BLOCK OR WOOD
FINISHED GRADE
10'
FILL
10' OR DRIPLINE OF TREE, WHICHEVER IS GREATER.
UNDISTURBED EXISTING GRADE

NOTE:

WHERE FILL IS PLACED WITHIN THE ROOT ZONE/DRIP LINE, FLOWABLE FILL PER FDOT SPECS SHALL BE USED IN LIEU OF COMPACTED EARTHEN FILL. DRAIN TILES OR GRAVEL WELL TO BE USED UNDER ANY FILL (OUTSIDE THE DRIPLINE) TO AVOID POOLING OF WATER IN THE TREE WELL. AND; ANY EXISTING NATIVE VEGITATION WITHIN THE DRIPLINE AREA MUST BE PRESERVED AND PROTECTED AS WELL. THE REMOVAL OF ANY UNDESIRABLE PLANTS WITHIN THE CRITICAL ROOT ZONE MUST BE DONE BY HAND AND PROPERLY TREATED (I.E. NO SOIL DISTURBANCE BY PULLING OUT BY THE ROOTS). NOTHING MAY BE STORED, PARKED, PLACED OR DISPOSED OF WITHIN THE CRITICAL ZONE.

2/8 TREE WELL DETAIL

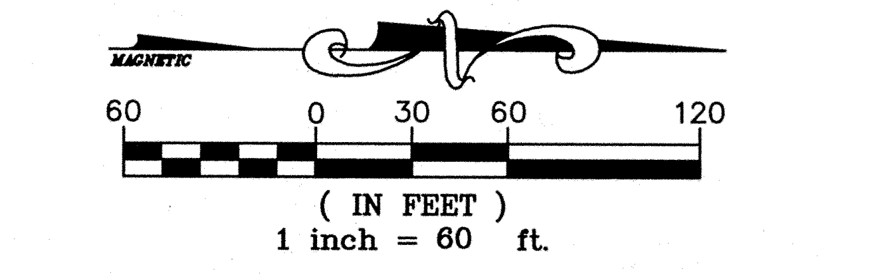
N.T.S.

FOR THR PURPOSES OF THE TREE PRESERVATION CALCULATION, ASSUME THE LOSS OF ALL TREES WITHIN THE DEVELOPMENT AREA. THE CONTRACTOR SHALL ENDEAVOR TO PRESERVE TREES WHERE SITE GRADING PERMITS. ALL TREES OUTSIDE OF THE DEVELOPMENT AREA SHALL BE PRESERVED. THE CONTRACTOR SHALL PROTECT TREES TO BE PRESERVED DURING CONSTRUCTION.

TREE CONSERVATION

TYPE OF TREE	SAVED IN CONSERVATION AREA	SAVED IN PROJECT AREA	REMOVED FROM PROJECT AREA	DIFFERENCE
OAK TREES IN INCHES	2240	1642	829	3053
PALM TREES	270	36	22	284
PINE TREES IN INCHES*	37	97	626	−492
MAPLE TREES IN INCHES	89	0	16	73

*TO BE MITIGATED BY LANDSCAPING PLAN


MAGNETIC
60
0
30
60
120
(IN FEET)
1 inch = 60 ft.

THIS PLAN BASED UPON A SURVEY BY DAVID M. JONES, FLORIDA LICENSE NUMBER LS 3909, DATED MAY 10, 2005.

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

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△	REVISIONS	DATE	BY
1			
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MARINER COVE

CITY OF FT. PIERCE, FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

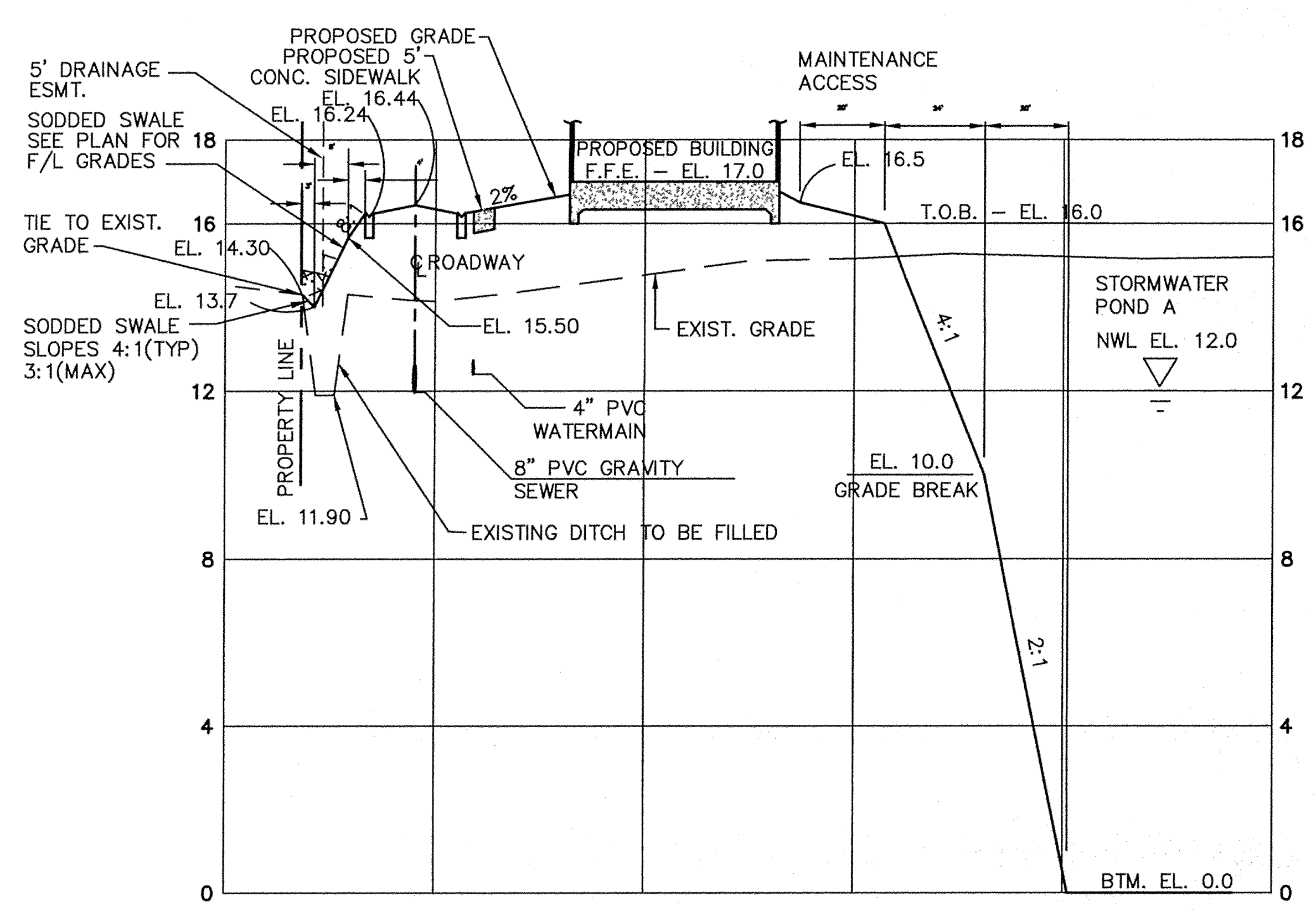
TREE PRESERVATION

DESIGN ENGINEER
WILLIAM F. McCAIN, PE FL# 50046
DATE: JUL 2[illegible] 2015

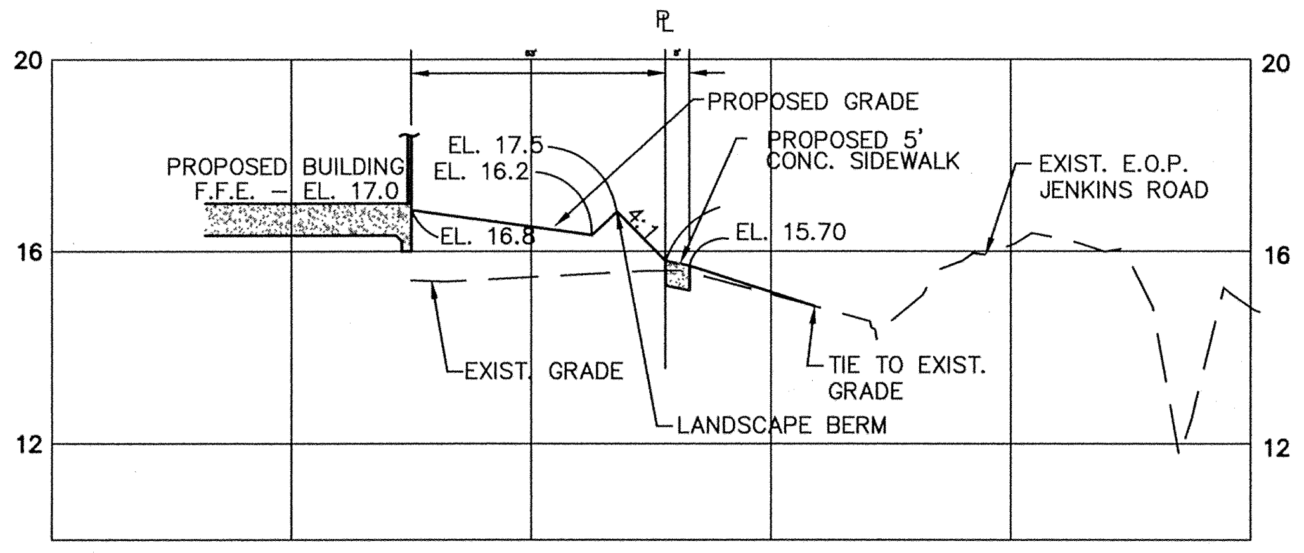
No. 50046

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	1"=60'

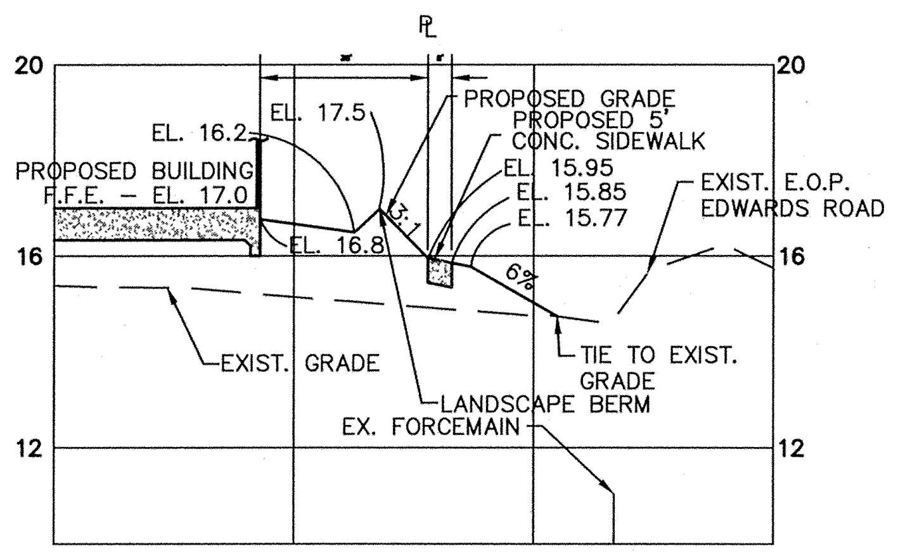
SHEET
C7
OF 16
14-173


PROPOSED GRADE
PROPOSED 5' CONC. SIDEWALK
EL. 16.44
5' DRAINAGE ESMT.
EL. 16.24
SODDED SWALE SEE PLAN FOR F/L GRADES
TIE TO EXIST. GRADE
EL. 14.30
EL. 13.7
SODDED SWALE SLOPES 4:1(TYP) 3:1(MAX)
PROPERTY LINE
EL. 11.90
PROPOSED BUILDING F.F.E. – EL. 17.0
2%
℄ ROADWAY
EL. 15.50
EXIST. GRADE
4" PVC WATERMAIN
8" PVC GRAVITY SEWER
EXISTING DITCH TO BE FILLED
MAINTENANCE ACCESS
EL. 16.5
T.O.B. – EL. 16.0
4:1
2:1
EL. 10.0 GRADE BREAK
STORMWATER POND A
NWL EL. 12.0
BTM. EL. 0.0
18
16
12
8
4
0

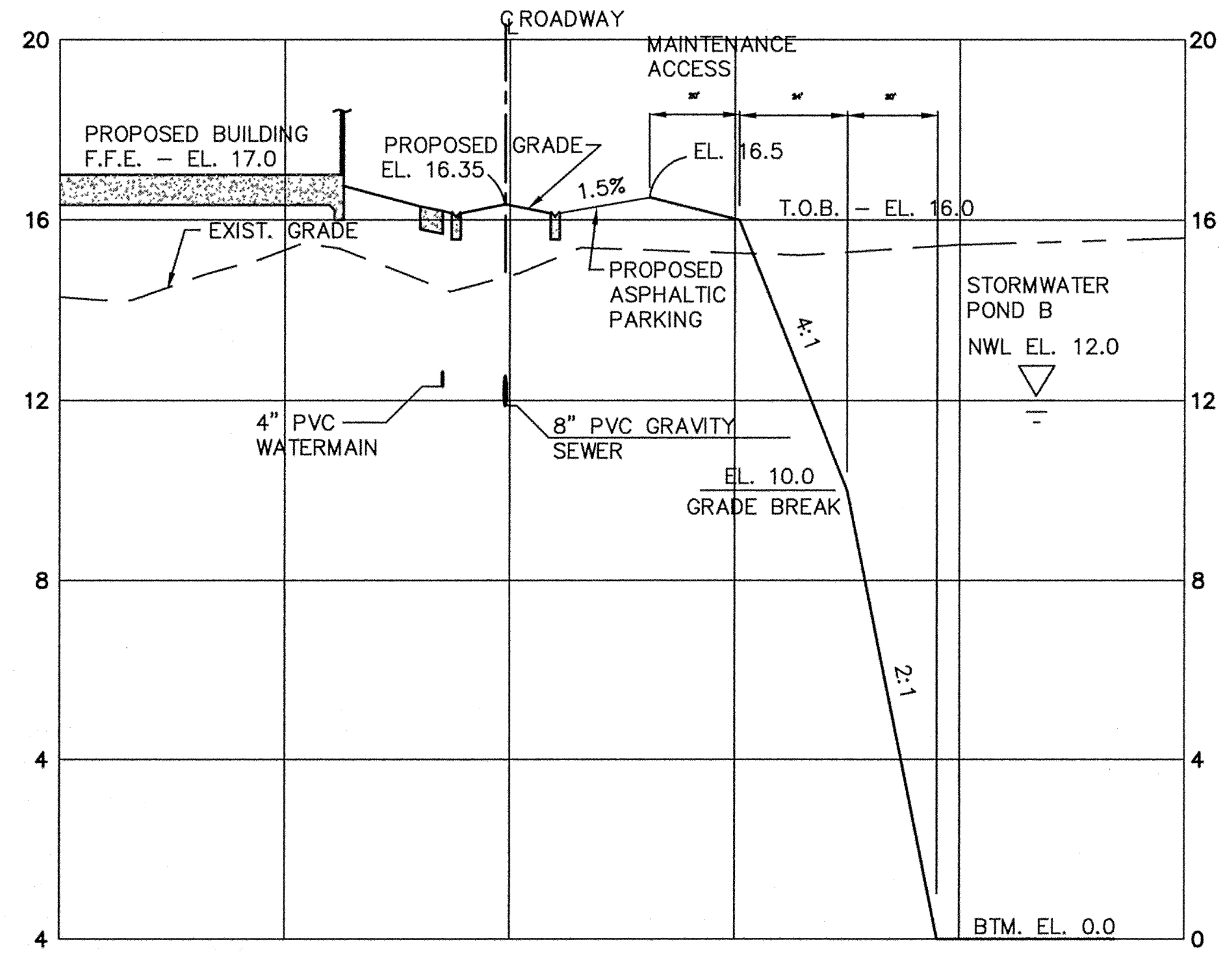
SECTION A-A


℗
PROPOSED GRADE
PROPOSED 5' CONC. SIDEWALK
EXIST. E.O.P. JENKINS ROAD
PROPOSED BUILDING F.F.E. – EL. 17.0
EL. 17.5
EL. 16.2
EL. 16.8
4:1
EL. 15.70
EXIST. GRADE
TIE TO EXIST. GRADE
LANDSCAPE BERM
20
16
12

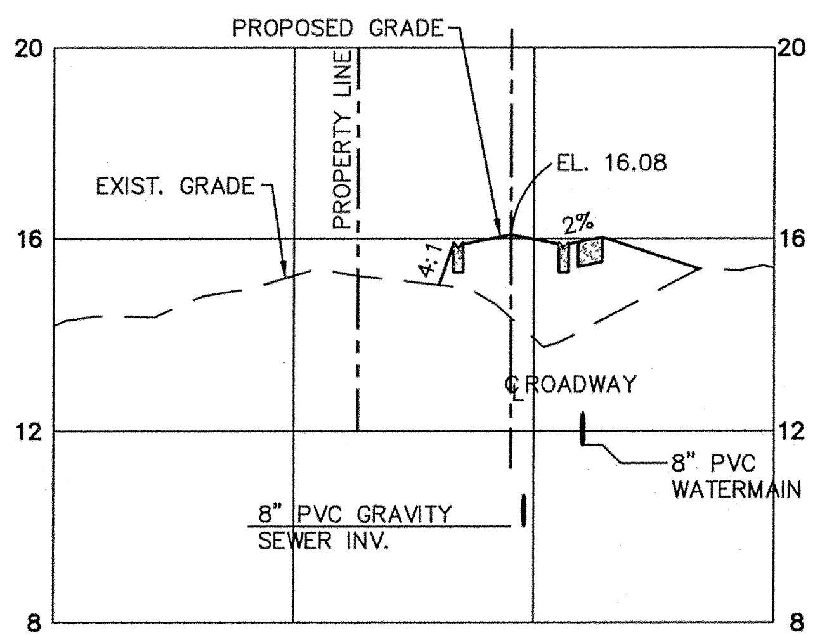
SECTION B-B


℗
EL. 16.2
EL. 17.5
PROPOSED GRADE
PROPOSED 5' CONC. SIDEWALK
EL. 15.95
EL. 15.85
EL. 15.77
EXIST. E.O.P. EDWARDS ROAD
PROPOSED BUILDING F.F.E. – EL. 17.0
EL. 16.8
3:1
6%
EXIST. GRADE
TIE TO EXIST. GRADE
LANDSCAPE BERM
EX. FORCEMAIN
20
16
12

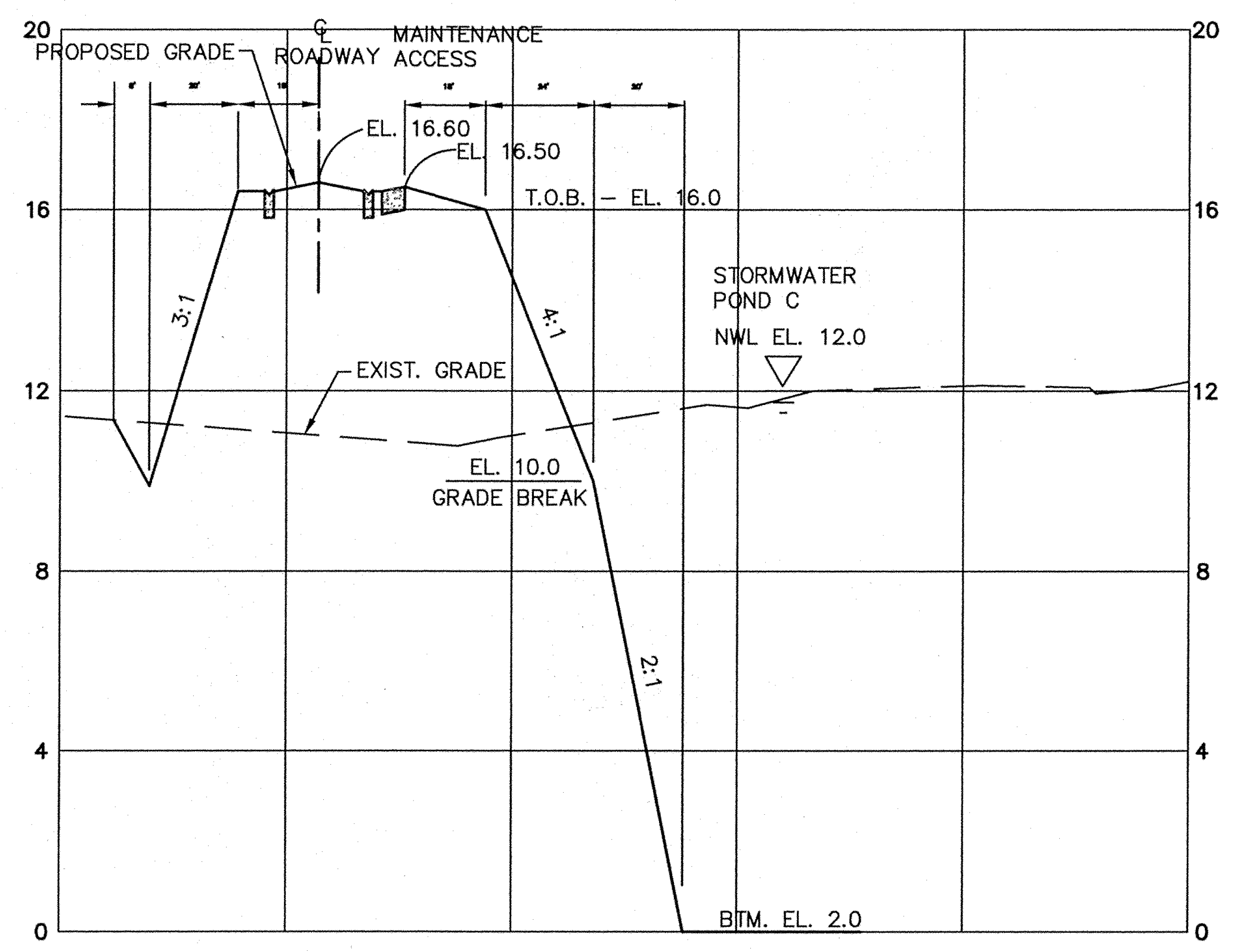
SECTION C-C


℄ ROADWAY
MAINTENANCE ACCESS
PROPOSED BUILDING F.F.E. – EL. 17.0
PROPOSED GRADE
EL. 16.35
1.5%
EL. 16.5
T.O.B. – EL. 16.0
EXIST. GRADE
PROPOSED ASPHALTIC PARKING
STORMWATER POND B
NWL EL. 12.0
4:1
4" PVC WATERMAIN
8" PVC GRAVITY SEWER
EL. 10.0 GRADE BREAK
2:1
BTM. EL. 0.0
20
16
12
8
4

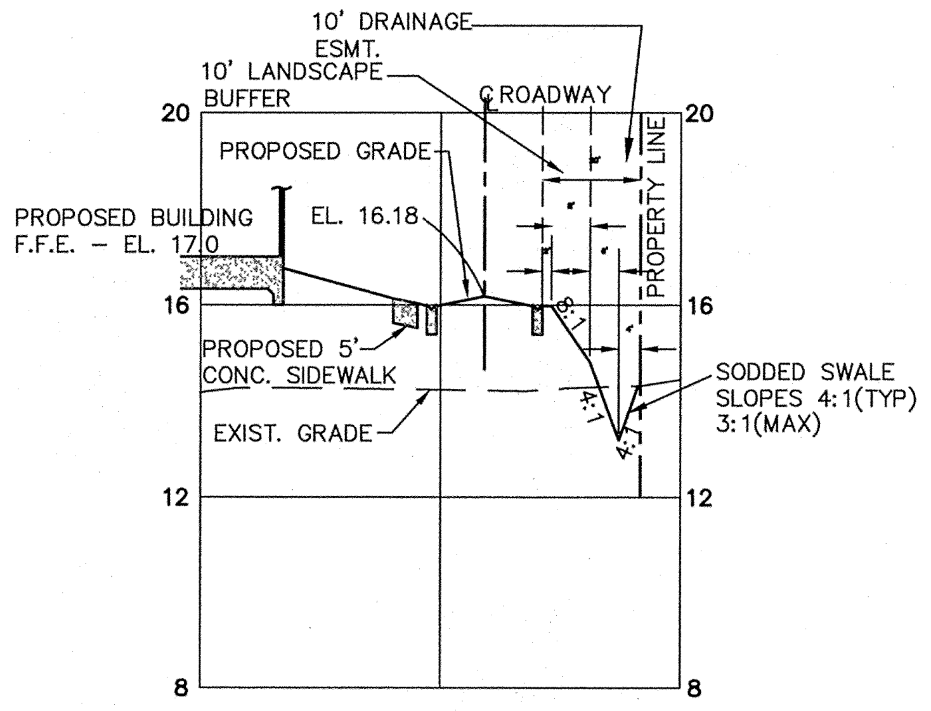
SECTION D-D


PROPOSED GRADE
PROPERTY LINE
EXIST. GRADE
EL. 16.08
2%
4:1
℄ ROADWAY
8" PVC WATERMAIN
8" PVC GRAVITY SEWER INV.
20
16
12
8

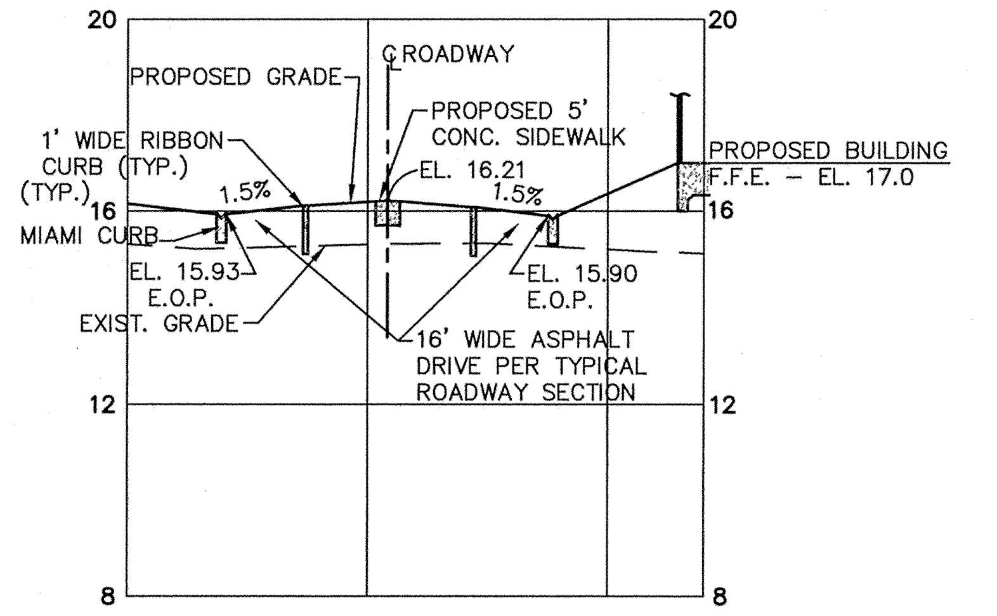
SECTION E-E


PROPOSED GRADE
℄ ROADWAY
MAINTENANCE ACCESS
EL. 16.60
EL. 16.50
T.O.B. – EL. 16.0
3:1
4:1
STORMWATER POND C
NWL EL. 12.0
EXIST. GRADE
EL. 10.0 GRADE BREAK
2:1
BTM. EL. 2.0
20
16
12
8
4
0

SECTION F-F

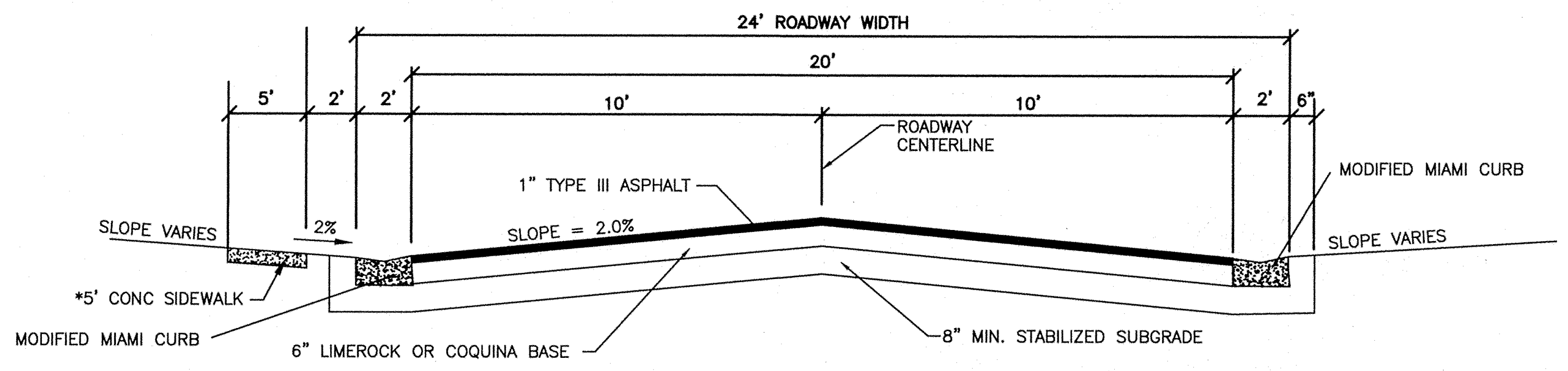

10' DRAINAGE ESMT.
10' LANDSCAPE BUFFER
℄ ROADWAY
PROPOSED GRADE
PROPOSED BUILDING F.F.E. – EL. 17.0
EL. 16.18
PROPERTY LINE
8:1
4:1
PROPOSED 5' CONC. SIDEWALK
EXIST. GRADE
SODDED SWALE SLOPES 4:1(TYP) 3:1(MAX)
20
16
12
8

SECTION G-G


PROPOSED GRADE
℄ ROADWAY
PROPOSED 5' CONC. SIDEWALK
1' WIDE RIBBON CURB (TYP.)
(TYP.)
1.5%
EL. 16.21
1.5%
PROPOSED BUILDING F.F.E. – EL. 17.0
MIAMI CURB
EL. 15.93 E.O.P.
EXIST. GRADE
EL. 15.90 E.O.P.
16' WIDE ASPHALT DRIVE PER TYPICAL ROADWAY SECTION
20
16
12
8

SECTION H-H

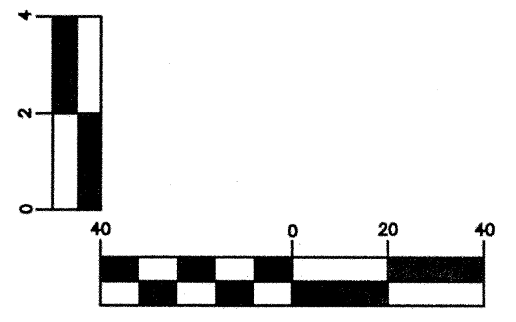
NOTE: SODDING WILL BE PROVIDED ON ALL RIGHT OF WAY'S AND BANK AREAS.


24' ROADWAY WIDTH
20'
5'
2'
2'
10'
10'
2'
6"
ROADWAY CENTERLINE
1" TYPE III ASPHALT
MODIFIED MIAMI CURB
SLOPE VARIES
2%
SLOPE = 2.0%
SLOPE VARIES
*5' CONC SIDEWALK
MODIFIED MIAMI CURB
6" LIMEROCK OR COQUINA BASE
8" MIN. STABILIZED SUBGRADE

TYPICAL ROADWAY SECTION

NOT TO SCALE

* NOTE: CONCRETE SIDEWALKS SHALL BE MIN. 5" THICK.
SIDEWALKS SHALL BE MIN. 6" THICK WHERE THE CROSS DRIVEWAYS AND DUMPSTER APPROCHES.


4
2
0
40
0
20
40

(IN FEET)
1 inch = 40 ft. Hor.
1 inch = 4 ft. Ver.

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

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△	REVISIONS	DATE	BY
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MARINER COVE

CITY OF FT. PIERCE, FLORIDA

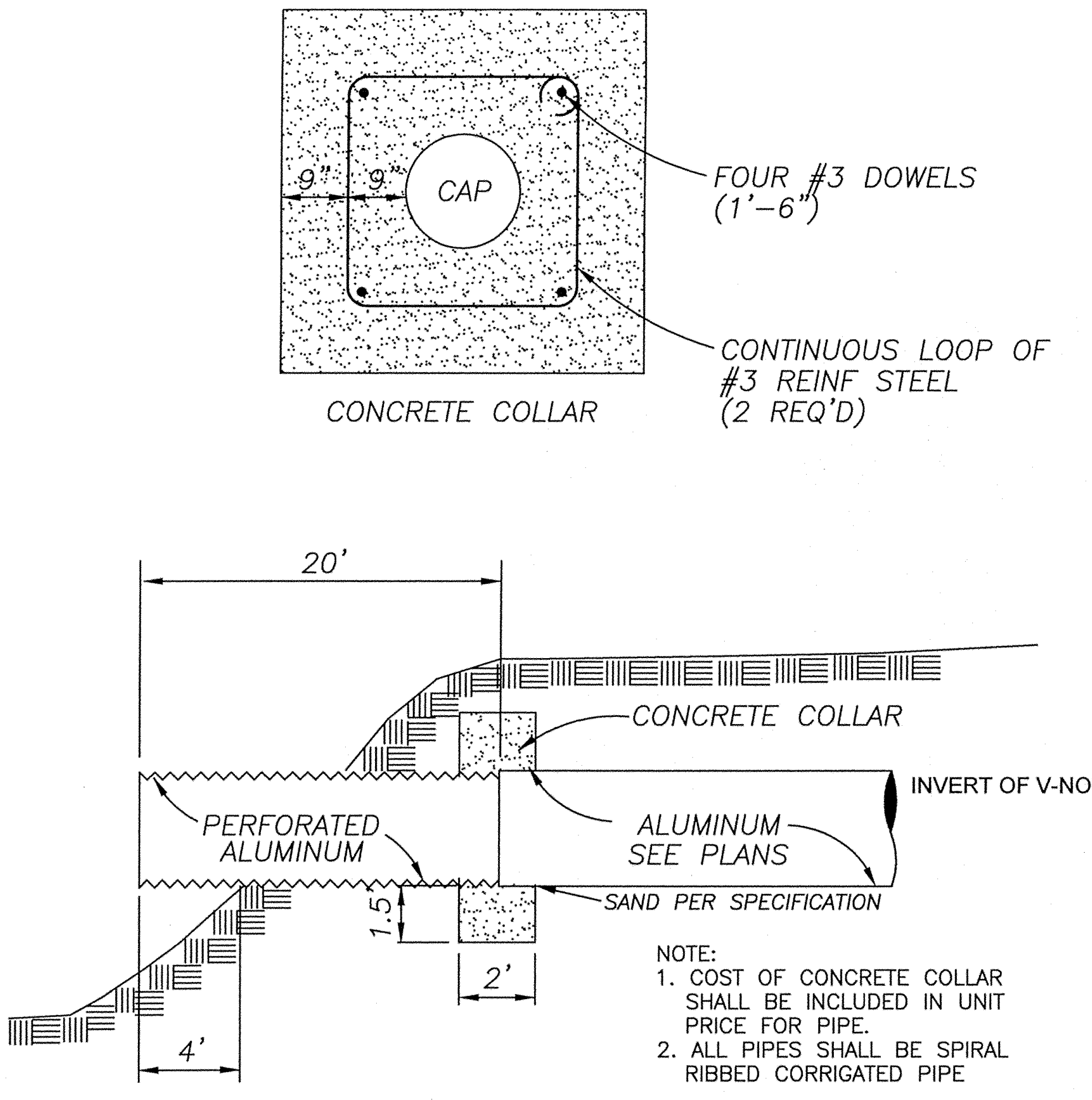
W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

CROSS SECTIONS

DESIGN ENGINEER
WILLIAM F. McCAIN, PE-FL# 50046
DATE:
No. 50046

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	1"=40'

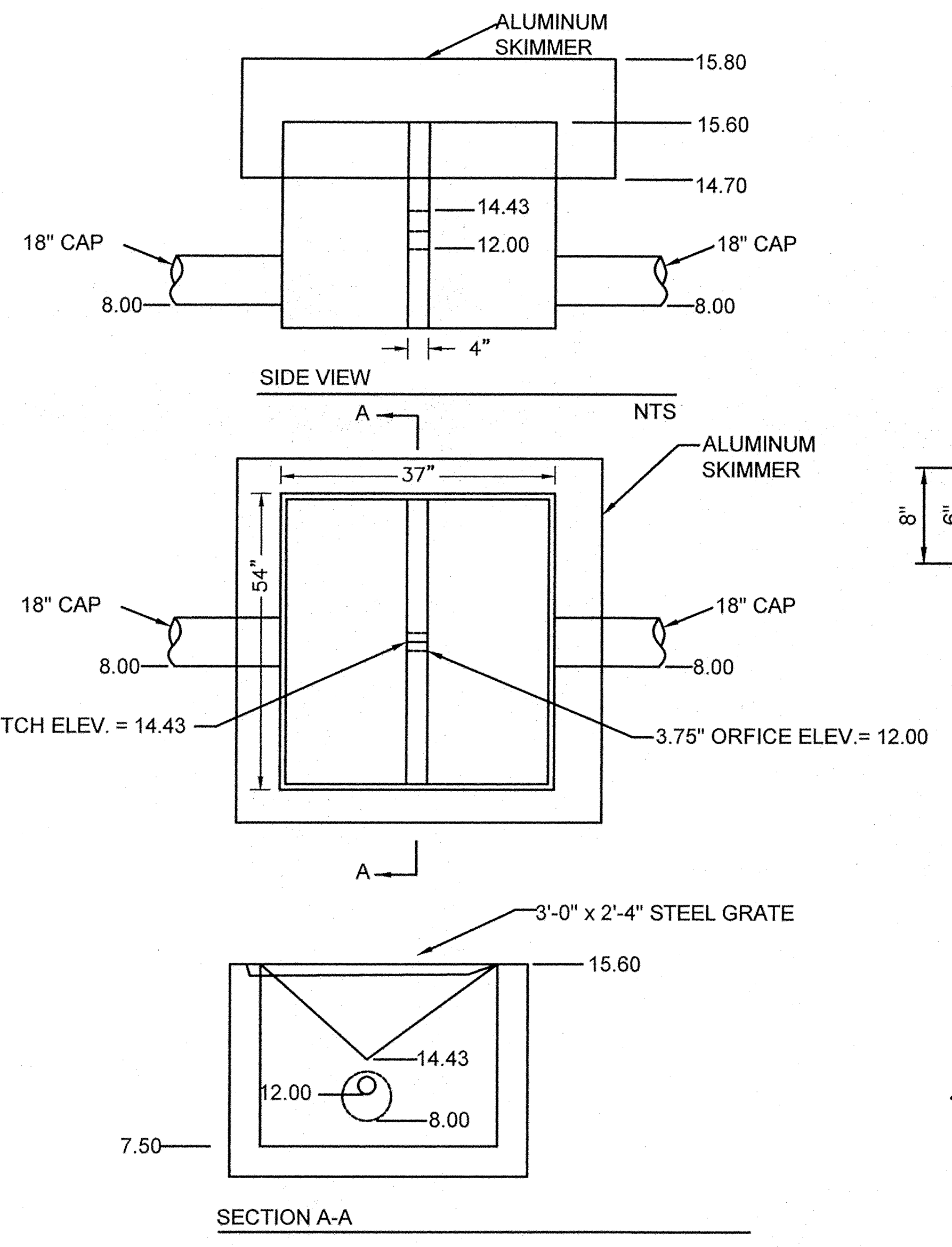
SHEET
C8
OF 16
14-173


CAP
9"
9"
FOUR #3 DOWELS (1'-6")
CONTINUOUS LOOP OF #3 REINF STEEL (2 REQ'D)
CONCRETE COLLAR
20'
CONCRETE COLLAR
PERFORATED ALUMINUM
ALUMINUM SEE PLANS
SAND PER SPECIFICATION
1.5'
2'
4'

NOTE:
1. COST OF CONCRETE COLLAR SHALL BE INCLUDED IN UNIT PRICE FOR PIPE.
2. ALL PIPES SHALL BE SPIRAL RIBBED CORRIGATED PIPE

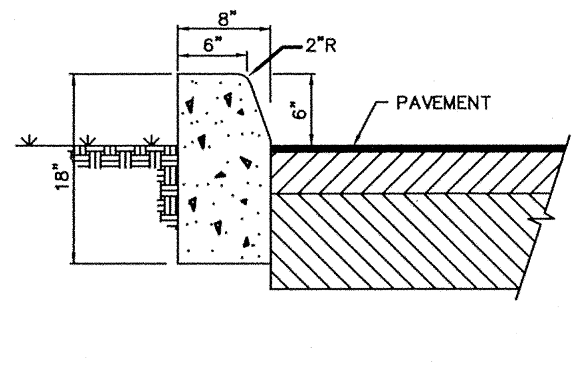
1/C9 STORM PIPE ANCHOR DETAIL

N.T.S.


ALUMINUM SKIMMER
15.80
15.60
14.70
14.43
12.00
18" CAP
18" CAP
8.00
8.00
4"
SIDE VIEW
A
NTS
ALUMINUM SKIMMER
37"
54"
18" CAP
18" CAP
8.00
8.00
INVERT OF V-NOTCH ELEV. = 14.43
3.75" ORFICE ELEV.= 12.00
A
3'-0" x 2'-4" STEEL GRATE
15.60
14.43
12.00
8.00
7.50
SECTION A-A

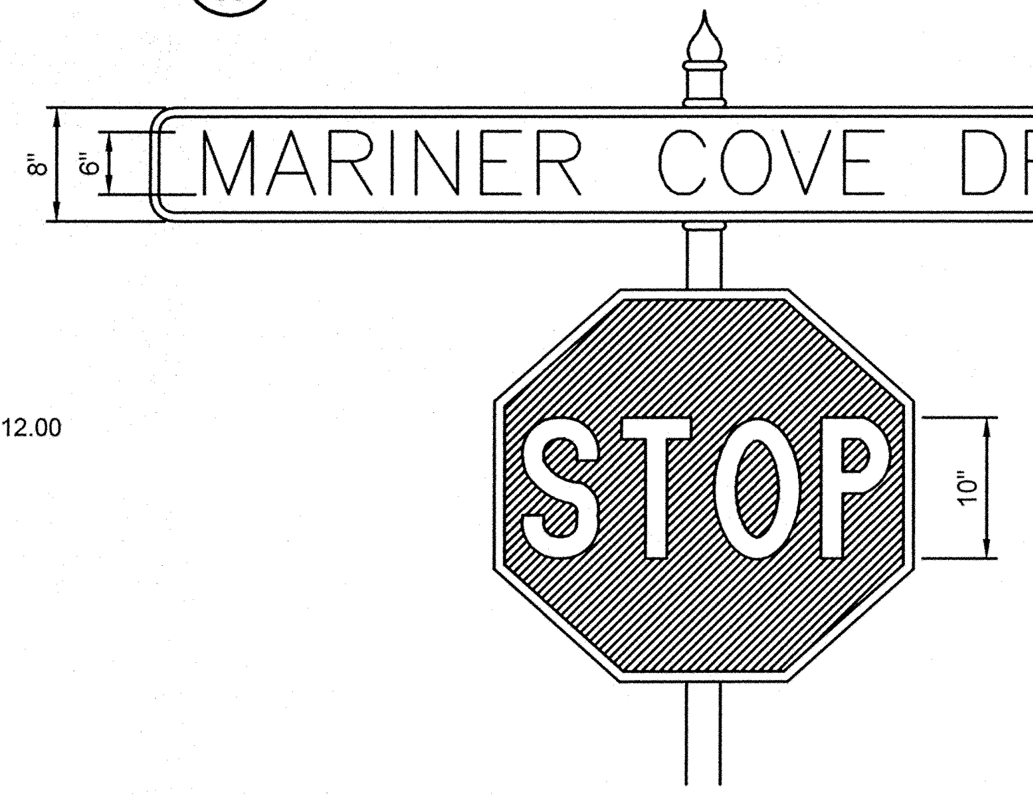
4/C9 CONTROL STRUCTURE – MODIFIED TYPE "C" INLET

N.T.S.


8"
6"
2"R
PAVEMENT
18"
6"

7/C9 TYPE 'D' CURB DETAIL

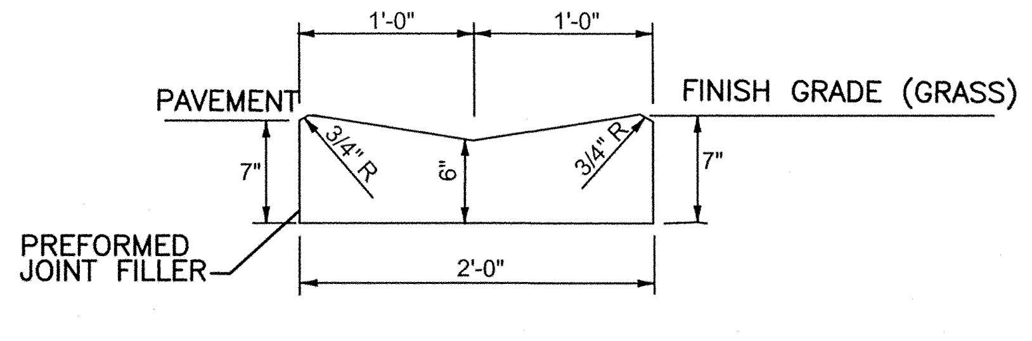
N.T.S.


MARINER COVE DRIVE
8"
6"
STOP
10"

8/C9 TYPICAL STREET NAME SIGN ATOP R1-1 STOP SIGN

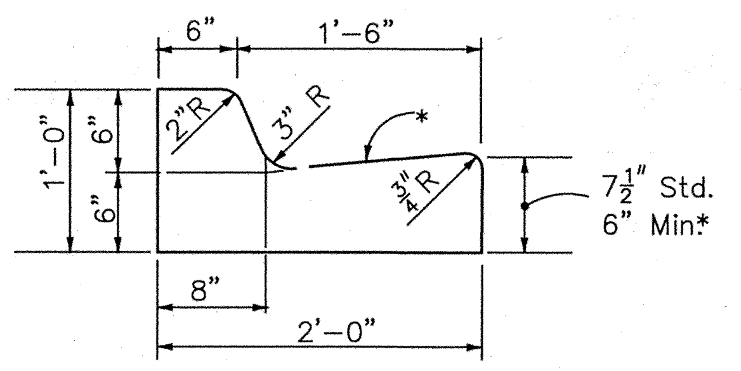
N.T.S.

NOTE: STREET NAME SIGN SHALL BE MOUNTED ATOP STOP SIGN WHERE APPLICABLE.


1'-0"
1'-0"
PAVEMENT
FINISH GRADE (GRASS)
3/4" R.
3/4" R.
7"
6"
7"
PREFORMED JOINT FILLER
2'-0"

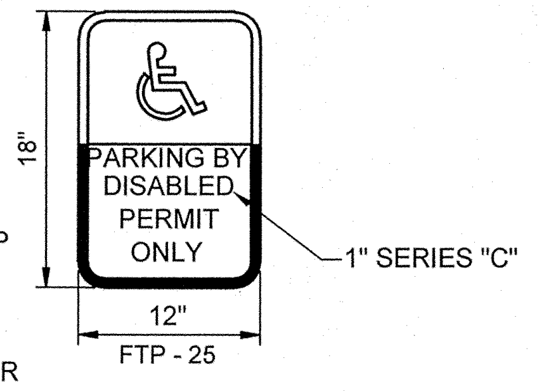
10/C9 MODIFIED MIAMI CURB DETAIL

N.T.S.


6"
1'-6"
1'-0"
6"
2"R
3"R
1 1/2"R
7 1/2" Std.
6" Min.
8"
2'-0"

11/C9 TYPE "F" CURB

N.T.S.


18"
PARKING BY DISABLED PERMIT ONLY
1" SERIES "C"
12"
FTP - 25

SIGNS USED AS PER FLORIDA STATUTES FTP 25 PER F.S. 316.1955.

NOTES:

TOP PORTION OF FTP 25 SHALL HAVE A REFLECTIVE BLUE BACKGROUND WITH WHITE REFLECTIVE SYMBOL AND BORDER

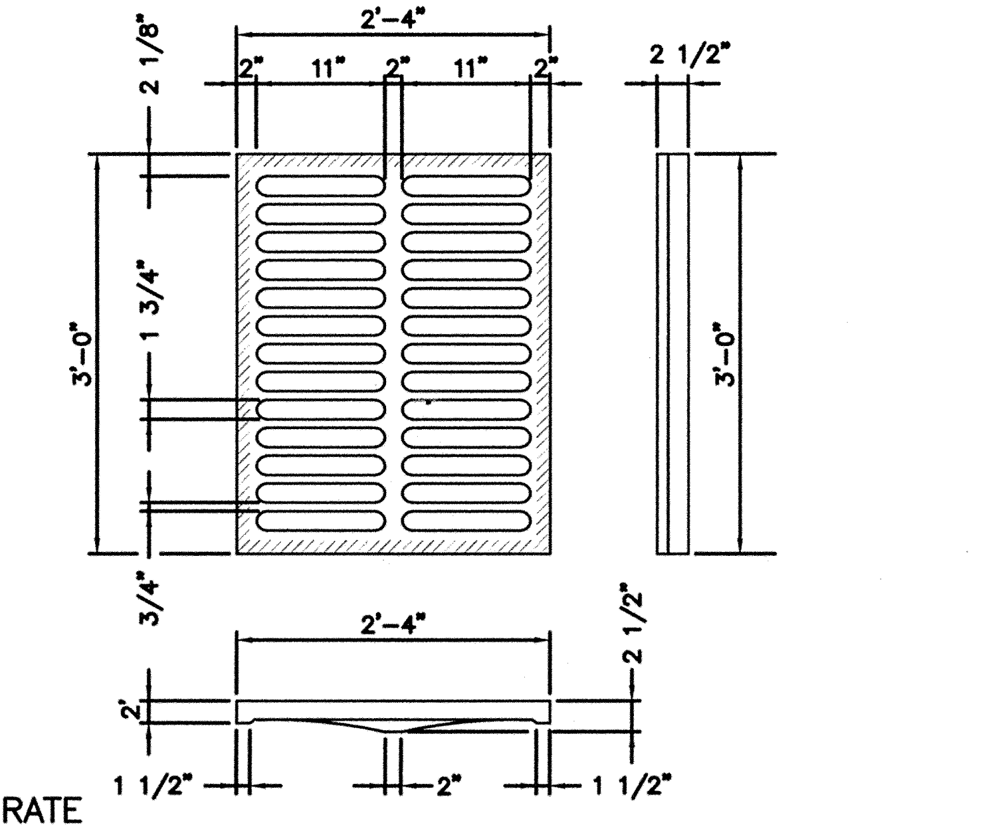
BOTTOM PORTION SHALL HAVE A REFLECTIVE WHITE BACKGROUND WITH BLACK OPAQUE LEGEND AND BORDER.

FTP 25 MAY BE FABRICATED ON ONE PANEL OR TWO.

SIGNS ARE TO BE MOUNTED AT STANDARD HEIGHT. (7' FROM PAVEMENT TO BOTTOM OF SIGN).

12/C9 HANDICAP SIGN DETAIL

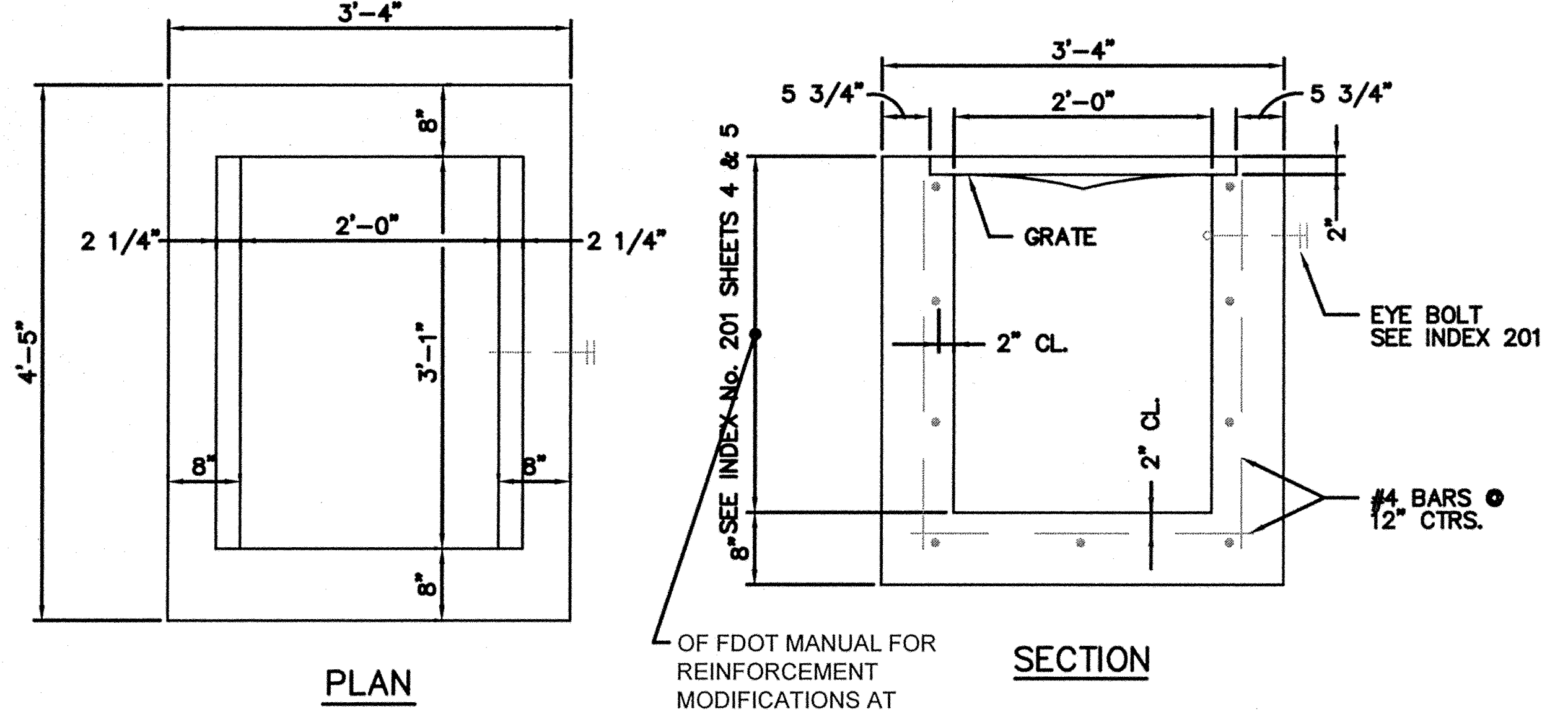
N.T.S.


2'-4"
2 1/8"
2"
11"
2"
11"
2"
2 1/2"
3'-0"
1 3/4"
3'-0"
3/4"
2'-4"
2 1/2"
2"
1 1/2"
2"
1 1/2"

15/C9 TYPE "C" GRATE

N.T.S.

APPROX. WEIGHT 235 LBS

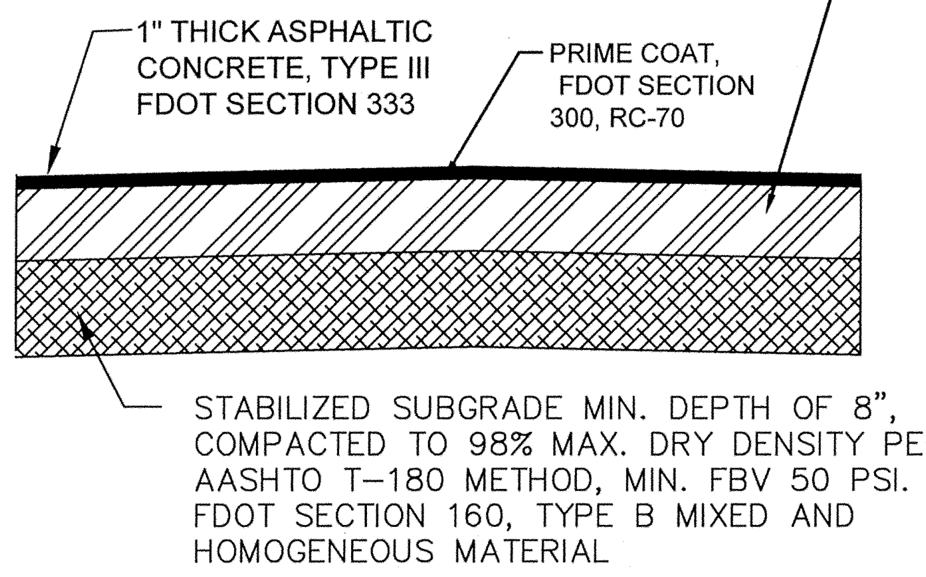

3'-4"
8"
2 1/4"
2'-0"
2 1/4"
4'-5"
3'-1"
8"
8"
8"
PLAN
3'-4"
5 3/4"
2'-0"
5 3/4"
GRATE
2" CL.
2" CL.
2"
EYE BOLT SEE INDEX 201
#4 BARS @ 12" CTRS.
SEE INDEX No. 201 SHEETS 4 & 5
OF FDOT MANUAL FOR REINFORCEMENT MODIFICATIONS AT DEPTHS 13' TO 15'. 15' MAX.
SECTION

16/C9 TYPE "C" INLET

N.T.S.

RECOMMENDED MAXIMUM PIPE SIZE:
2'-0" WALL - 18" PIPE
3'-1" WALL - 24" PIPE

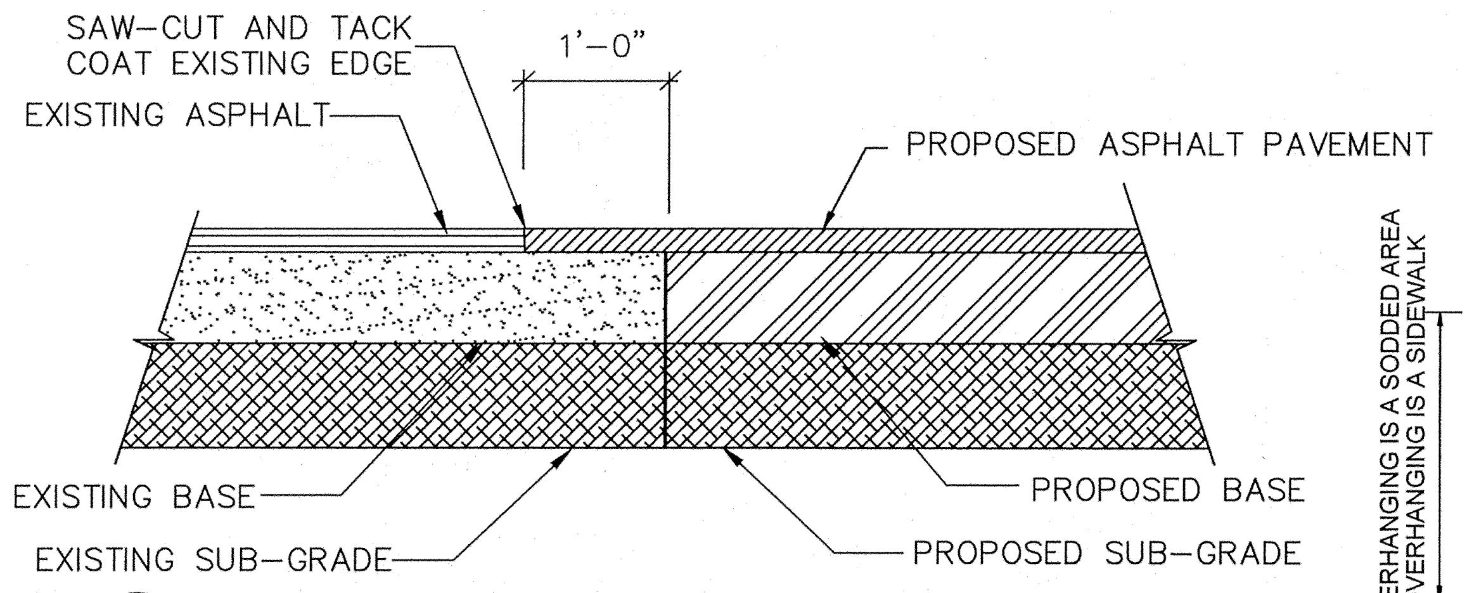
CONSTRUCT 6" LIMEROCK OR COQUINA BASE COMPACTED TO 98% MAX. DRY DENSITY PER AASHTO T-180 METHOD, LBR 100 FDOT SECTION 200


1" THICK ASPHALTIC CONCRETE, TYPE III FDOT SECTION 333
PRIME COAT, FDOT SECTION 300, RC-70

STABILIZED SUBGRADE MIN. DEPTH OF 8", COMPACTED TO 98% MAX. DRY DENSITY PER AASHTO T-180 METHOD, MIN. FBV 50 PSI. PER FDOT SECTION 160, TYPE B MIXED AND HOMOGENEOUS MATERIAL

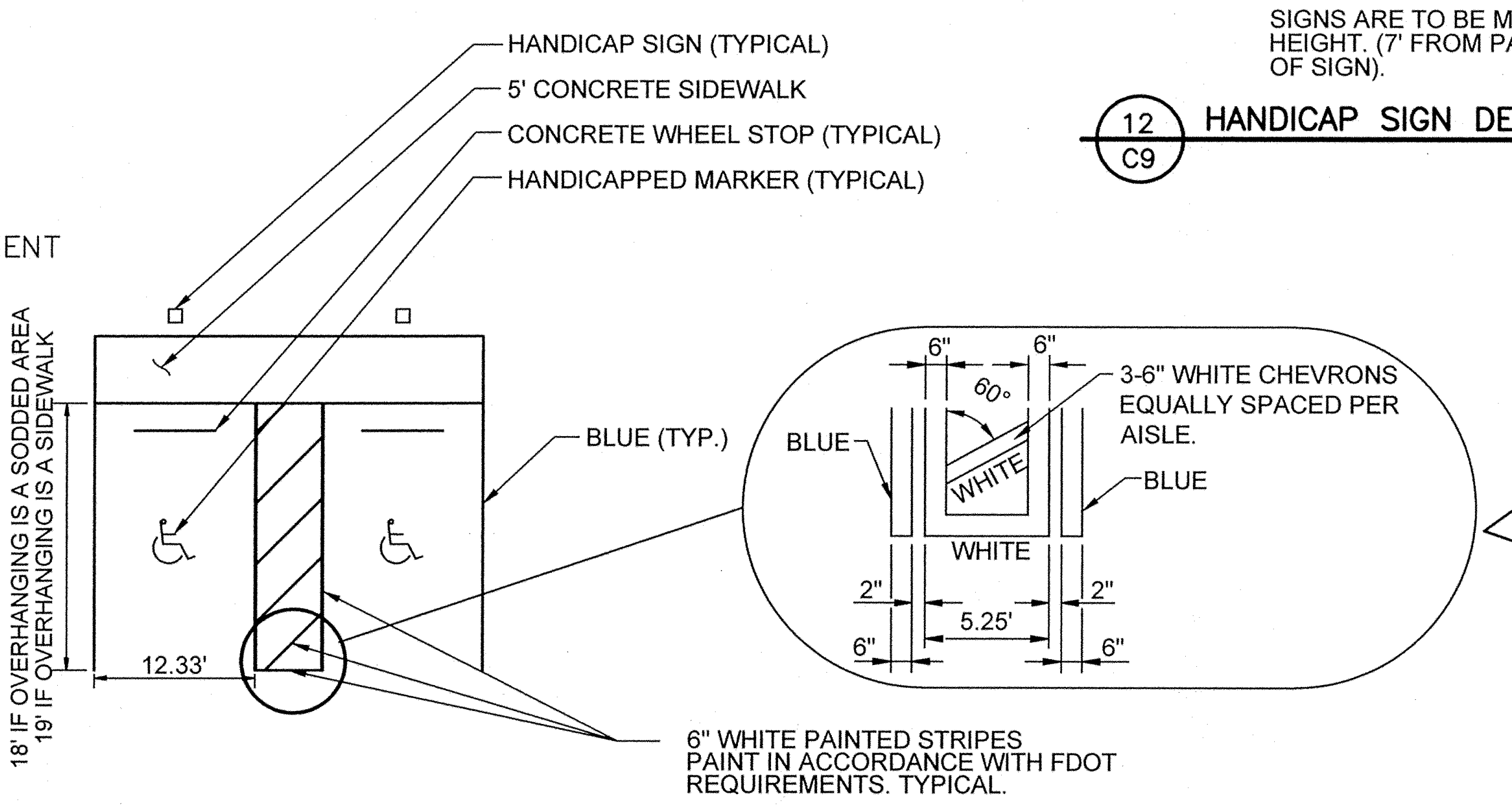
2/C9 ASPHALT PAVEMENT SECTION

N.T.S.


SAW-CUT AND TACK COAT EXISTING EDGE
1'-0"
EXISTING ASPHALT
PROPOSED ASPHALT PAVEMENT
EXISTING BASE
PROPOSED BASE
EXISTING SUB-GRADE
PROPOSED SUB-GRADE

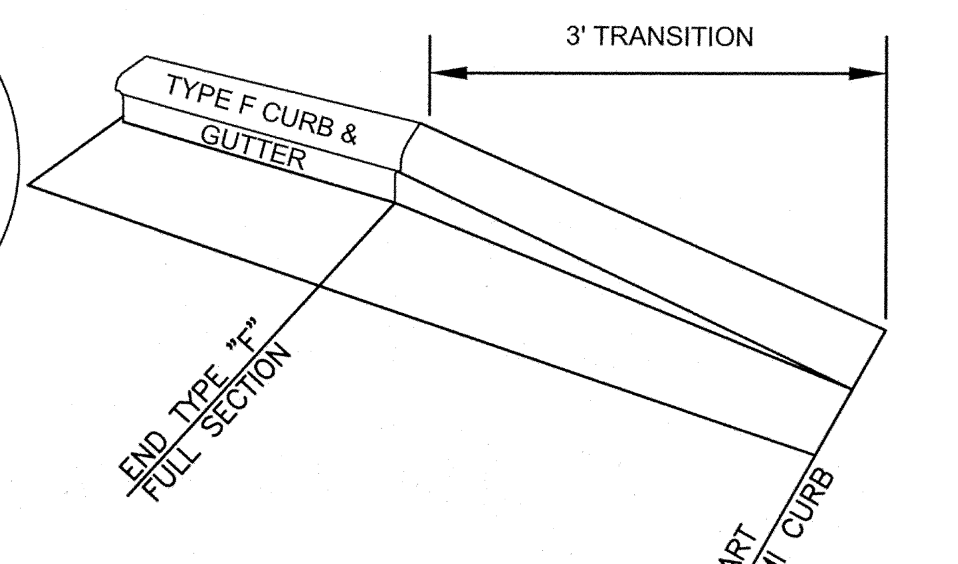
5/C9 PAVEMENT SAW CUT AND BUTT JOINT

N.T.S.


HANDICAP SIGN (TYPICAL)
5' CONCRETE SIDEWALK
CONCRETE WHEEL STOP (TYPICAL)
HANDICAPPED MARKER (TYPICAL)
18' IF OVERHANGING IS A SODDED AREA
19' IF OVERHANGING IS A SIDEWALK
BLUE (TYP.)
12.33'
6"
6"
60°
BLUE
WHITE
3-6" WHITE CHEVRONS EQUALLY SPACED PER AISLE.
BLUE
WHITE
2"
2"
6"
5.25'
6"
6" WHITE PAINTED STRIPES PAINT IN ACCORDANCE WITH FDOT REQUIREMENTS. TYPICAL.

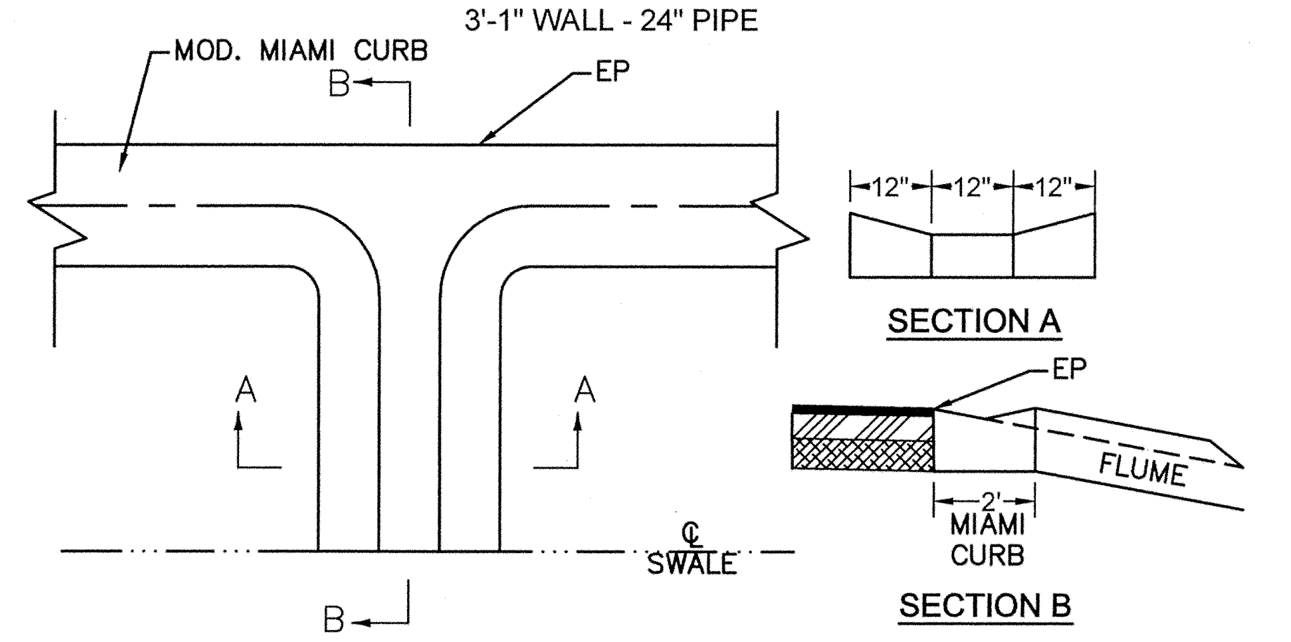
9/C9 HANDICAP PARKING DETAIL

N.T.S.


3' TRANSITION
TYPE F CURB & GUTTER
END TYPE "F" FULL SECTION
START MIAMI CURB

13/C9 CURB TRANSITION DETAIL

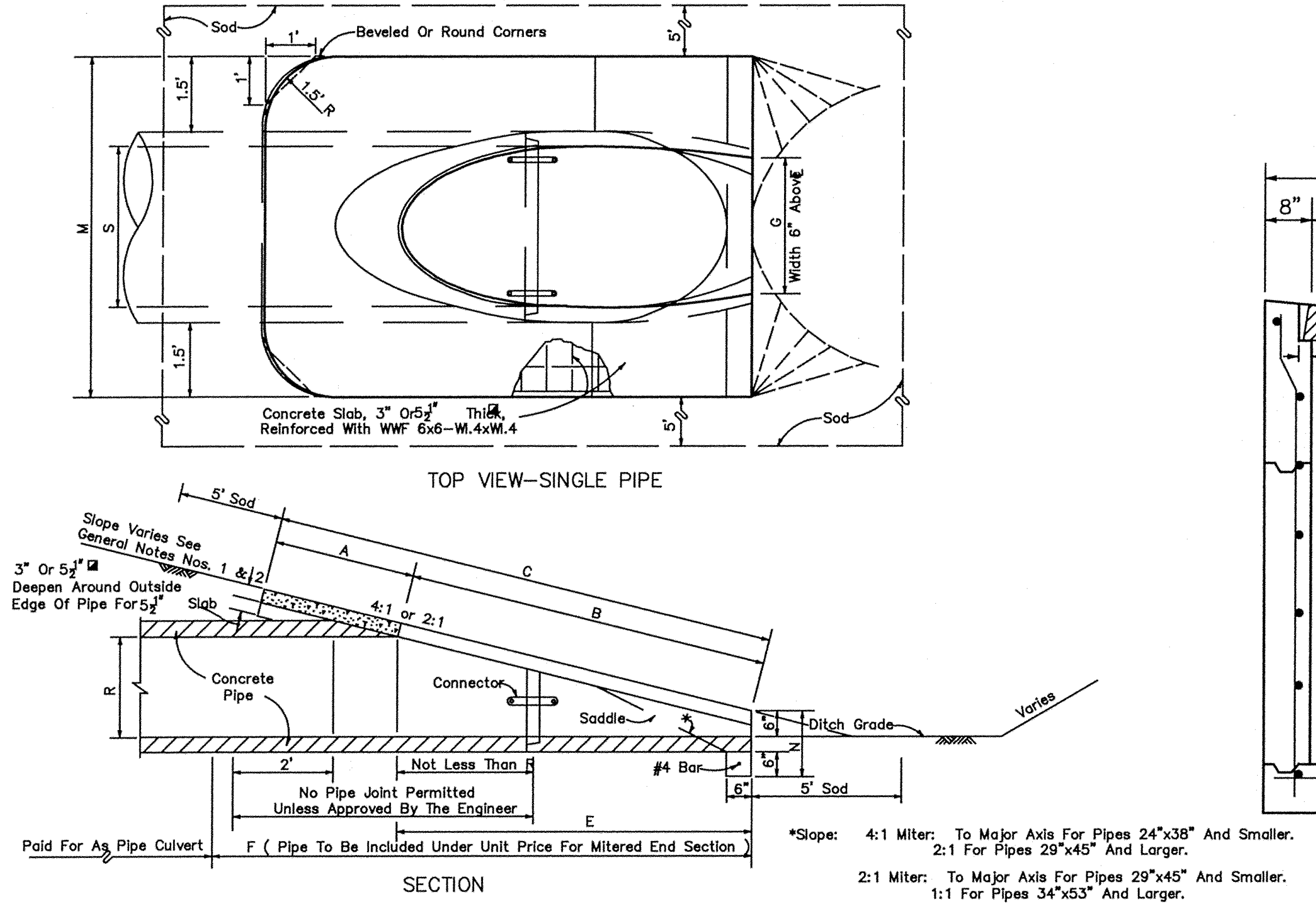
N.T.S.


MOD. MIAMI CURB
B
EP
A
A
℄ SWALE
B
PLAN
12"
12"
12"
SECTION A
EP
FLUME
2"
MIAMI CURB
SECTION B

17/C9 CONCRETE FLUME DETAIL

N.T.S.

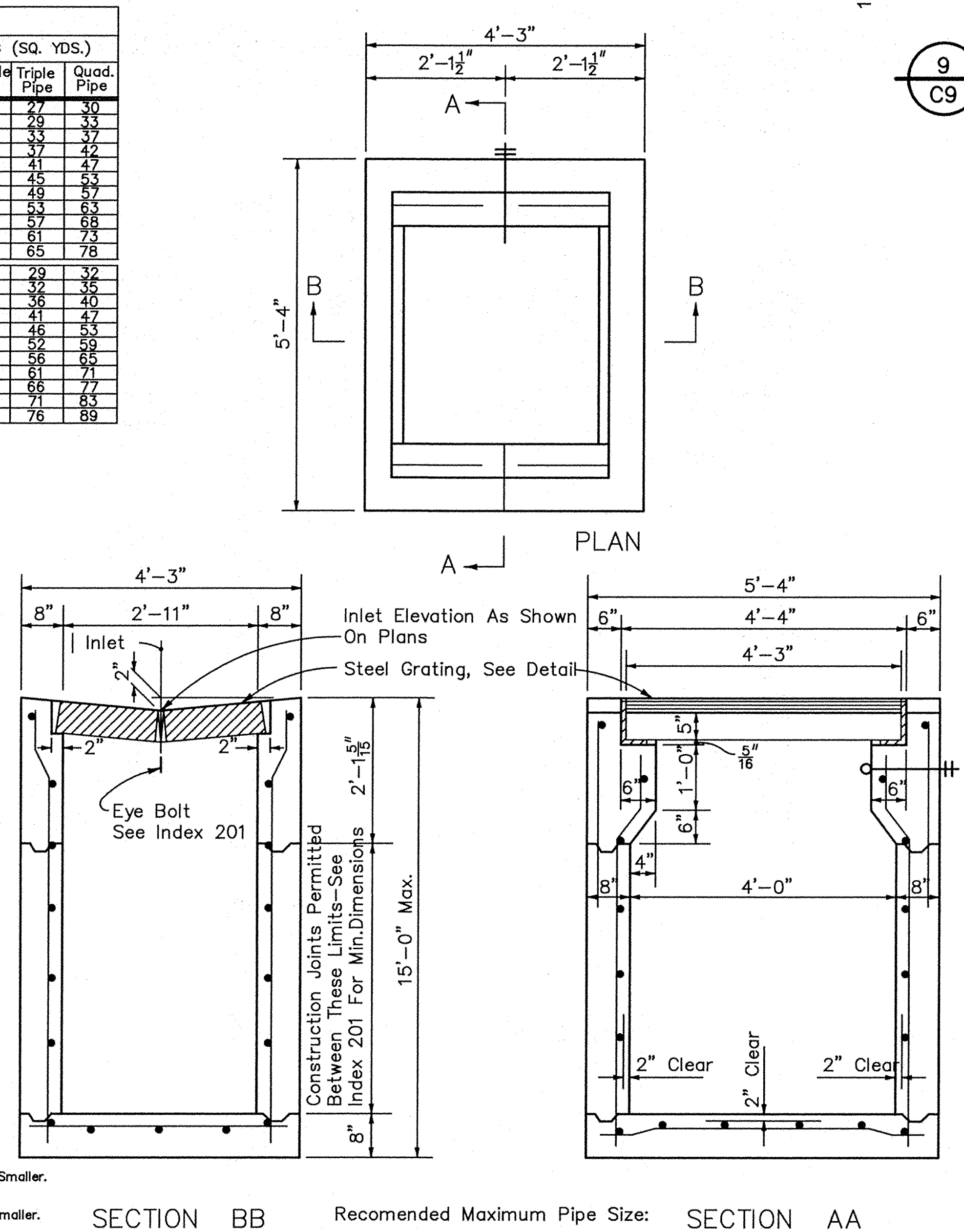
DIMENSIONS & QUANTITIES																					
	Rise R	Span S	X	A	B	C	E	F	G	M				N	5½" CONC. SLAB (CY)■				SODDING (SQ. YDS.)			
										Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe		Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe	Single Pipe	Double Pipe	Triple Pipe	Quad. Pipe
2:1 Slope	12"	18"	2'-10"	1.97'	1.62'	3.59'	1.56'	4'	1.50'	4.92'	7.75'	10.58'	13.42'	1.21'	0.30	0.49	0.67	0.85	21	24	27	30
	14"	23"	3'-4"	2.01'	1.99'	4.00'	1.89'	5'	1.90'	5.38'	8.71'	12.04'	15.38'	1.23'	0.37	0.59	0.81	1.02	22	26	29	33
	19"	30"	4'-0"	2.11'	2.92'	5.03'	2.73'	6'	2.37'	6.04'	10.04'	14.04'	18.04'	1.27'	0.50	0.80	1.09	1.39	24	28	33	37
	24"	38"	5'-0"	2.20'	3.85'	6.05'	3.56'	7'	2.85'	6.79'	11.79'	16.79'	21.79'	1.31'	0.62	1.03	1.45	1.86	26	31	37	42
	29"	45"	5'-11"	2.34'	4.79'	7.13'	4.39'	8'	3.19'	7.50'	13.42'	19.33'	25.25'	1.38'	0.75	1.30	1.84	2.39	28	34	41	47
	34"	53"	7'-0"	2.43'	5.72'	8.15'	5.23'	9'	3.57'	8.25'	15.25'	22.25'	29.25'	1.42'	0.90	1.61	2.32	3.03	30	37	45	53
	38"	60"	7'-10"	2.52'	6.46'	8.98'	5.89'	9'	3.95'	8.92'	16.75'	24.58'	32.42'	1.46'	1.03	1.89	2.74	3.60	31	40	49	57
	43"	68"	8'-11"	2.62'	7.39'	10.01'	6.73'	10'	4.28'	9.67'	18.58'	27.50'	36.42'	1.50'	1.19	2.26	3.33	4.40	33	43	53	63
	48"	76"	9'-11"	2.71'	8.33'	11.04'	7.56'	11'	4.59'	10.42'	20.33'	30.25'	40.17'	1.54'	1.38	2.65	3.93	5.21	35	46	57	68
	53"	83"	10'-8"	2.80'	9.26'	12.06'	8.39'	12'	4.77'	11.08'	21.75'	32.42'	43.08'	1.58'	1.55	3.03	4.50	5.96	37	49	61	73
	58"	91"	11'-8"	2.90'	10.19'	13.09'	9.23'	13'	5.01'	11.83'	23.50'	35.17'	46.83'	1.63'	1.75	3.47	5.20	6.93	39	52	65	78
4:1 Slope	12"	18"	2'-10"	2.36'	3.06'	5.42'	3.03'	5'	1.50'	4.92'	7.75'	10.58'	13.42'	1.21'	0.45	0.68	0.92	1.14	23	26	29	32
	14"	23"	3'-4"	2.44'	3.75'	6.19'	3.70'	6'	1.90'	5.38'	8.71'	12.04'	15.38'	1.23'	0.53	0.83	1.13	1.42	24	28	32	35
	19"	30"	4'-0"	2.62'	5.47'	8.09'	5.36'	8'	2.37'	6.04'	10.04'	14.04'	18.04'	1.27'	0.74	1.15	1.57	1.98	27	32	36	40
	24"	38"	5'-0"	2.79'	7.18'	9.97'	7.03'	10'	2.85'	6.79'	11.79'	16.79'	21.79'	1.31'	0.97	1.57	2.19	2.81	30	36	41	47
	29"	45"	5'-11"	3.05'	8.90'	11.95'	8.70'	12'	3.19'	7.50'	13.42'	19.33'	25.25'	1.38'	1.22	2.07	2.92	3.77	33	40	46	53
	34"	53"	7'-0"	3.22'	10.62'	13.84'	10.36'	13'	3.57'	8.25'	15.25'	22.25'	29.25'	1.42'	1.48	2.62	3.77	4.92	36	44	52	59
	38"	60"	7'-10"	3.39'	11.99'	15.38'	11.70'	15'	3.95'	8.92'	16.75'	24.58'	32.42'	1.46'	1.72	3.12	4.53	5.92	38	47	56	65
	43"	68"	8'-11"	3.56'	13.71'	17.27'	13.36'	17'	4.28'	9.67'	18.58'	27.50'	36.42'	1.50'	2.02	3.78	5.56	7.32	41	51	61	71
	48"	76"	9'-11"	3.73'	15.43'	19.16'	15.03'	19'	4.59'	10.42'	20.33'	30.25'	40.17'	1.54'	2.34	4.49	6.64	8.79	44	55	66	77
	53"	83"	10'-8"	3.91'	17.15'	21.06'	16.70'	20'	4.77'	11.08'	21.75'	32.42'	43.08'	1.58'	2.66	5.17	7.66	10.16	47	59	71	83
	58"	91"	11'-8"	4.08'	18.87'	22.95'	18.36'	22'	5.01'	11.83'	23.50'	35.17'	46.83'	1.63'	3.02	5.98	8.95	11.90	50	63	76	89


Sod
Beveled Or Round Corners
1'
1.5' R
5'
Concrete Slab, 3" Or 5½" Thick Reinforced With WWF 6x6–W.4xW.4
Sod
TOP VIEW-SINGLE PIPE
Slope Varies See General Notes Nos. 1 & 2
3" Or 5½" Deepen Around Outside Edge Of Pipe For 5½" Slab
Concrete Pipe
Connector
Saddle
Ditch Grade
Varies
#4 Bar
5' Sod
No Pipe Joint Permitted Unless Approved By The Engineer
Not Less Than B
Paid For As Pipe Culvert
F (Pipe To Be Included Under Unit Price For Mitered End Section)
SECTION

*Slope: 4:1 Miter: To Major Axis For Pipes 24"x38" And Smaller. 2:1 For Pipes 29"x45" And Larger.
2:1 Miter: To Major Axis For Pipes 29"x45" And Smaller. 1:1 For Pipes 34"x53" And Larger.

3/C9 MITERED END PLAN VIEW – SINGLE PIPE

N.T.S.

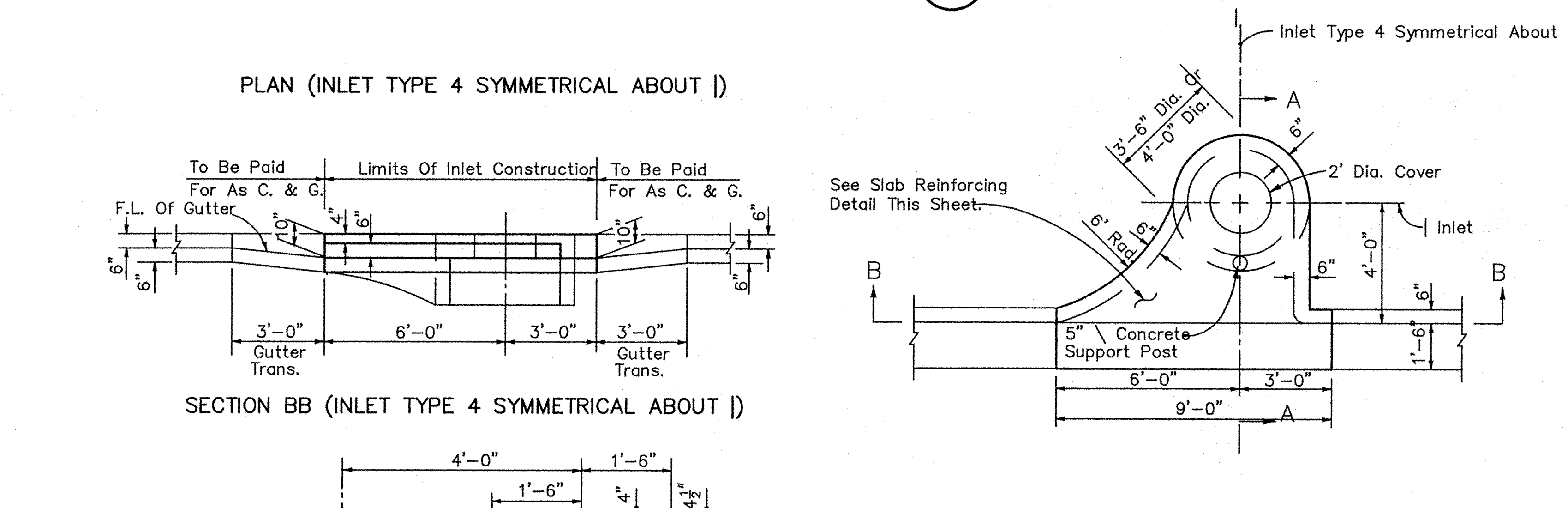

4'-3"
2'-1½"
2'-1½"
A
B
B
5'-4"
A
PLAN
4'-3"
8"
2'-11"
8"
Inlet
Inlet Elevation As Shown On Plans
Steel Grating, See Detail
Eye Bolt See Index 201
2'-1⅛"
15'-0" Max.
Construction Joints Permitted Between These Limits-See Index 201 For Min.Dimensions
8"
5'-4"
4'-4"
4'-3"
6"
6"
4'-0"
8"
8"
2" Clear
2" Clear
2" Clear
SECTION BB
SECTION AA

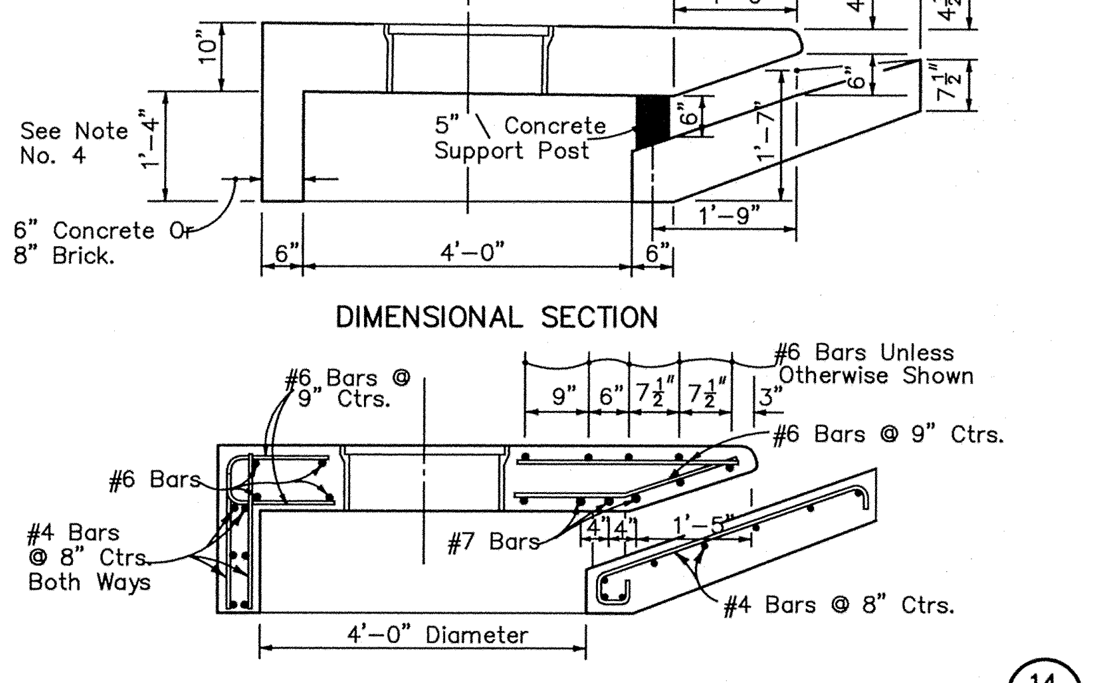
Recomended Maximum Pipe Size:
2'-11" Wall – 24" Size
4'-0" Wall – 36" Size

6/C9 TYPE "V" INLET

SEE INDEX FDOT 221

N.T.S.

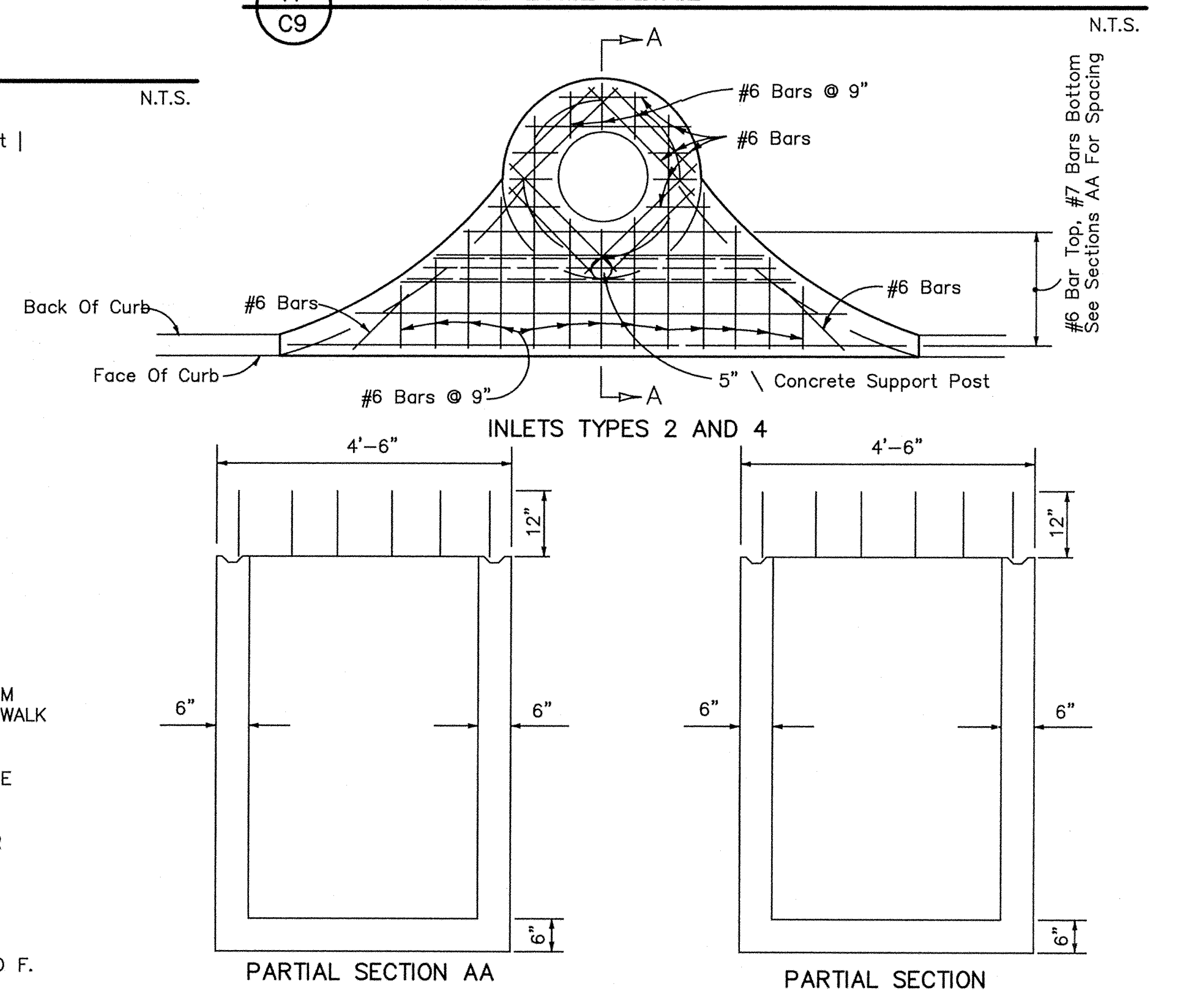

PLAN (INLET TYPE 4 SYMMETRICAL ABOUT ⌊)
To Be Paid For As C. & G.
Limits Of Inlet Construction
To Be Paid For As C. & G.
F.L. Of Gutter
3'-0"
6'-0"
3'-0"
3'-0"
Gutter Trans.
Gutter Trans.
SECTION BB (INLET TYPE 4 SYMMETRICAL ABOUT ⌊)
Inlet Type 4 Symmetrical About ⌊
3'-6" Dia.
4'-0" Dia.
2' Dia. Cover
Inlet
See Slab Reinforcing Detail This Sheet
Back Of Curb
Face Of Curb
5" Concrete Support Post
6'-0"
3'-0"
9'-0"
A
B
B

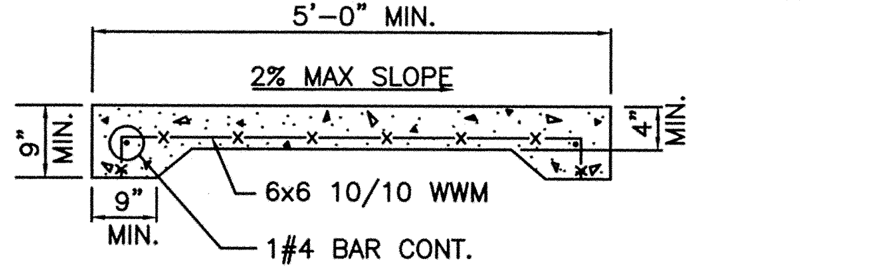

4'-0"
1'-6"
1'-6"
See Note No. 4
5" Concrete Support Post
1'-9"
6" Concrete Or 8" Brick.
4'-0"
DIMENSIONAL SECTION
#6 Bars @ 9" Ctrs.
#6 Bars Unless Otherwise Shown
#6 Bars @ 9" Ctrs.
#6 Bars
#7 Bars
#4 Bars @ 8" Ctrs. Both Ways
4'-0" Diameter
#4 Bars @ 8" Ctrs.

1. THE FINISHED GRADE AND SLOPE OF THE INLET TOPS ARE TO CONFORM WITH THE FINISHED CROSS SLOPE AND GRADE OF THE PROPOSED SIDEWALK AND/OR BORDER.
2. WHEN INLETS ARE TO BE CONSTRUCTED ON A CURVE, REFER TO THE PLANS TO DETERMINE THE RADIUS AND, WHERE NECESSARY, MODIFY THE INLET DETAILS ACCORDINGLY. BEND STEEL WHEN NECESSARY.
3. ALL STEEL IN INLET TOP SHALL HAVE 1¼" MINIMUM COVER UNLESS OTHERWISE SHOWN. INLET TOPS SHALL BE EITHER CAST-IN-PLACE OR PRECAST CONCRETE.
4. THE REAR WALL PORTION OF INLET TOPS TYPES 1, 2, 3 & 4 MAY BE CONSTRUCTED WITH BRICK. DOWELS TO TOP SLAB REQUIRED.
5. ONLY ROUND CONCRETE SUPPORT POST WILL BE ACCEPTABLE.
6. FOR SUPPLEMENTAL DETAILS SEE INDEX NO. 201.
7. THESE INLETS ARE TO BE USED WITH CURB AND GUTTER TYPES E AND F. LOCATE OUTSIDE OF PEDESTRAIN CROSSWALK WHERE PRACTICAL.
8. FOR STURCTURE BOTTOMS SEE INDEX NO. 200.
9. INLET TO BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR INLETS (CURB) (TYPE_), EACH.

14/C9 TYPE "P4" INLET AND GRATE DETAILS

N.T.S.


A
#6 Bars @ 9"
#6 Bars
#6 Bars
#6 Bars
#6 Bars @ 9"
A
5" Concrete Support Post
#6 Bar Top, #7 Bars Bottom See Sections AA For Spacing
INLETS TYPES 2 AND 4
4'-6"
12"
6"
6"
6"
PARTIAL SECTION AA
4'-6"
12"
6"
6"
6"
PARTIAL SECTION


5'-0" MIN.
2% MAX SLOPE
9" MIN.
4" MIN.
6x6 10/10 WWM
9"
MIN.
1#4 BAR CONT.

18/C9 CONCRETE SIDEWALK DETAIL

N.T.S.

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△ REVISIONS	DATE	BY
1		
2		
3		
4		
5		
6		
7		
8		

MARINER COVE

CITY OF FT. PIERCE, FLORIDA

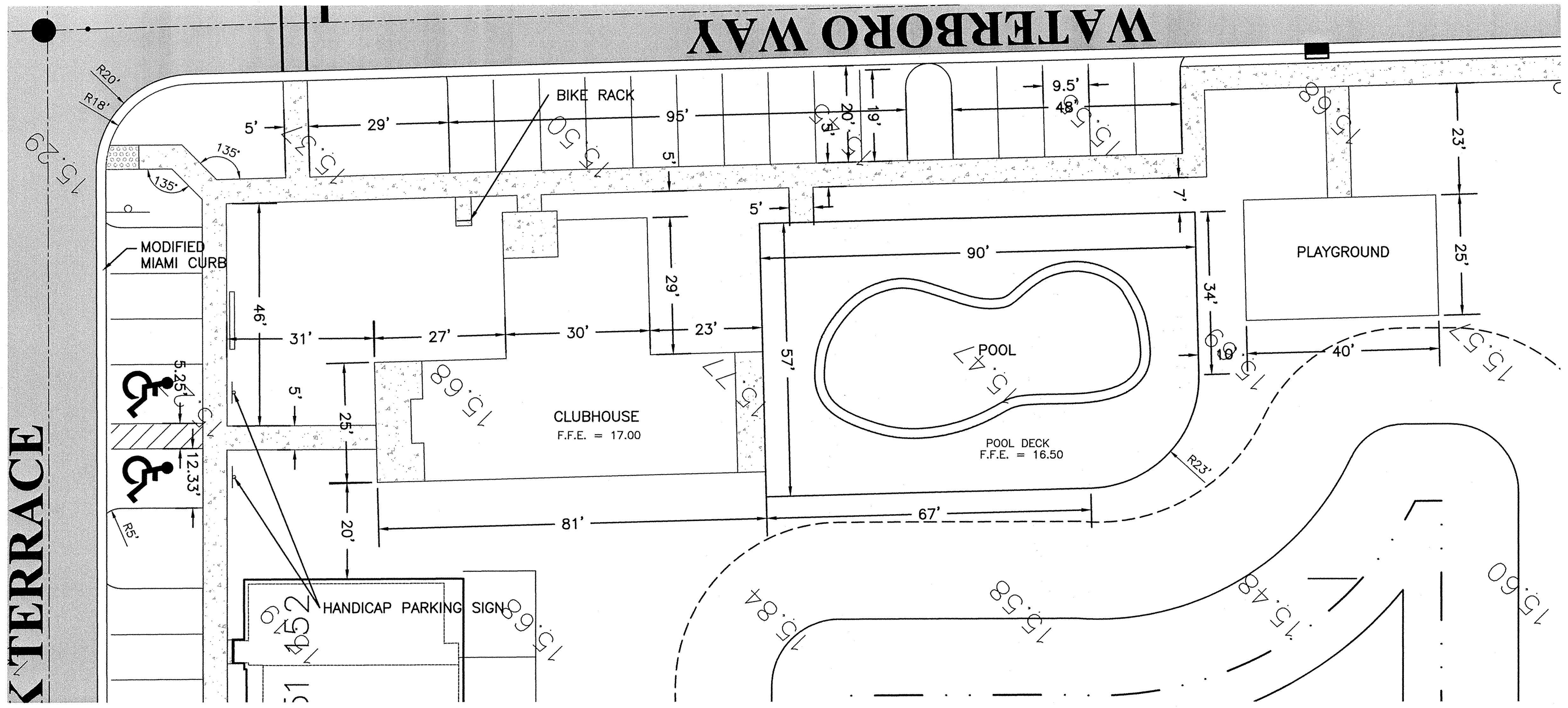
W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

PAVING, GRADING & DRAINAGE DETAILS

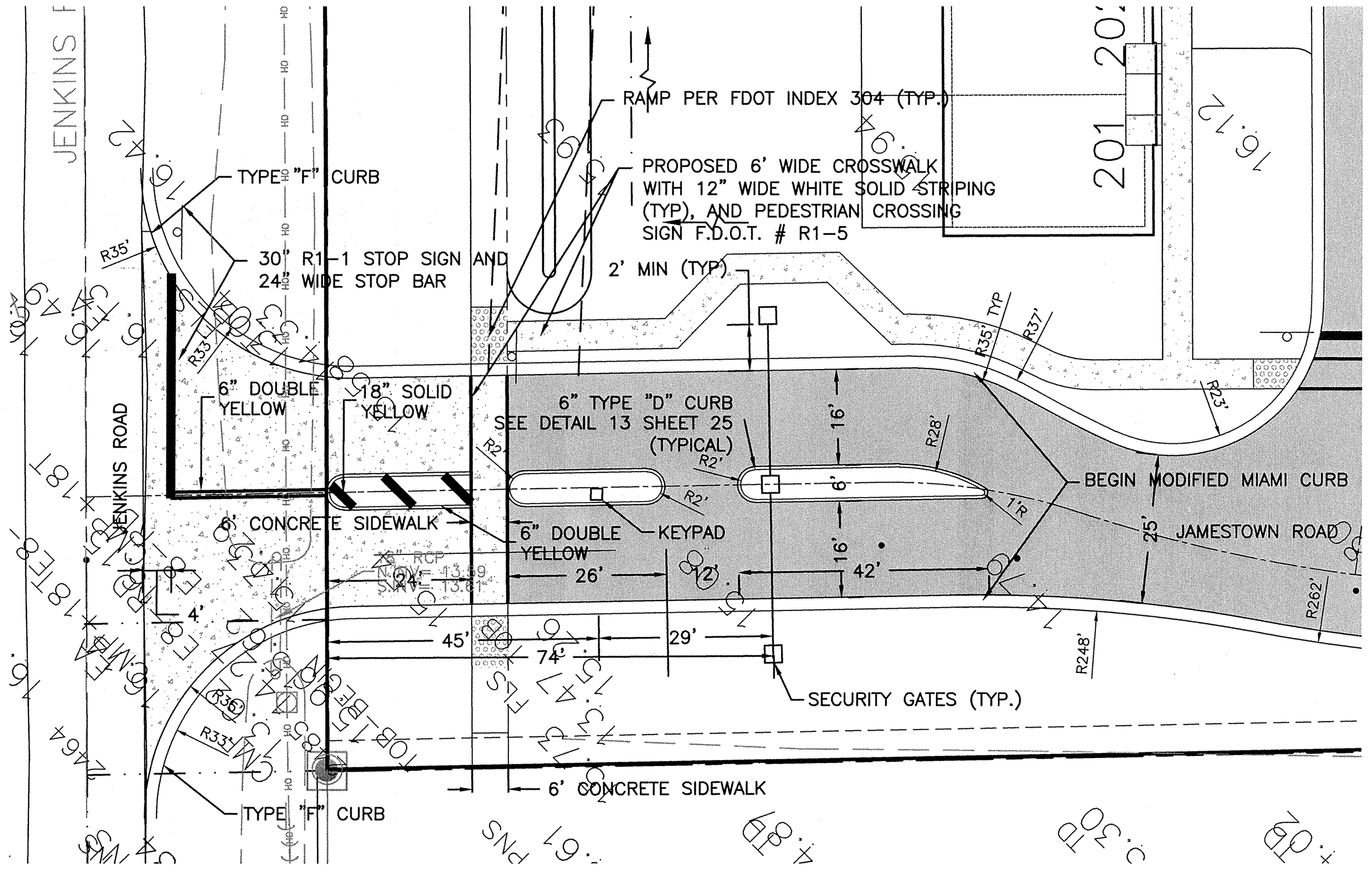
DESIGN ENGINEER
No. 50046
WILLIAM F. McCAIN, P.E.L# 50046
DATE:

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	AS SHOWN

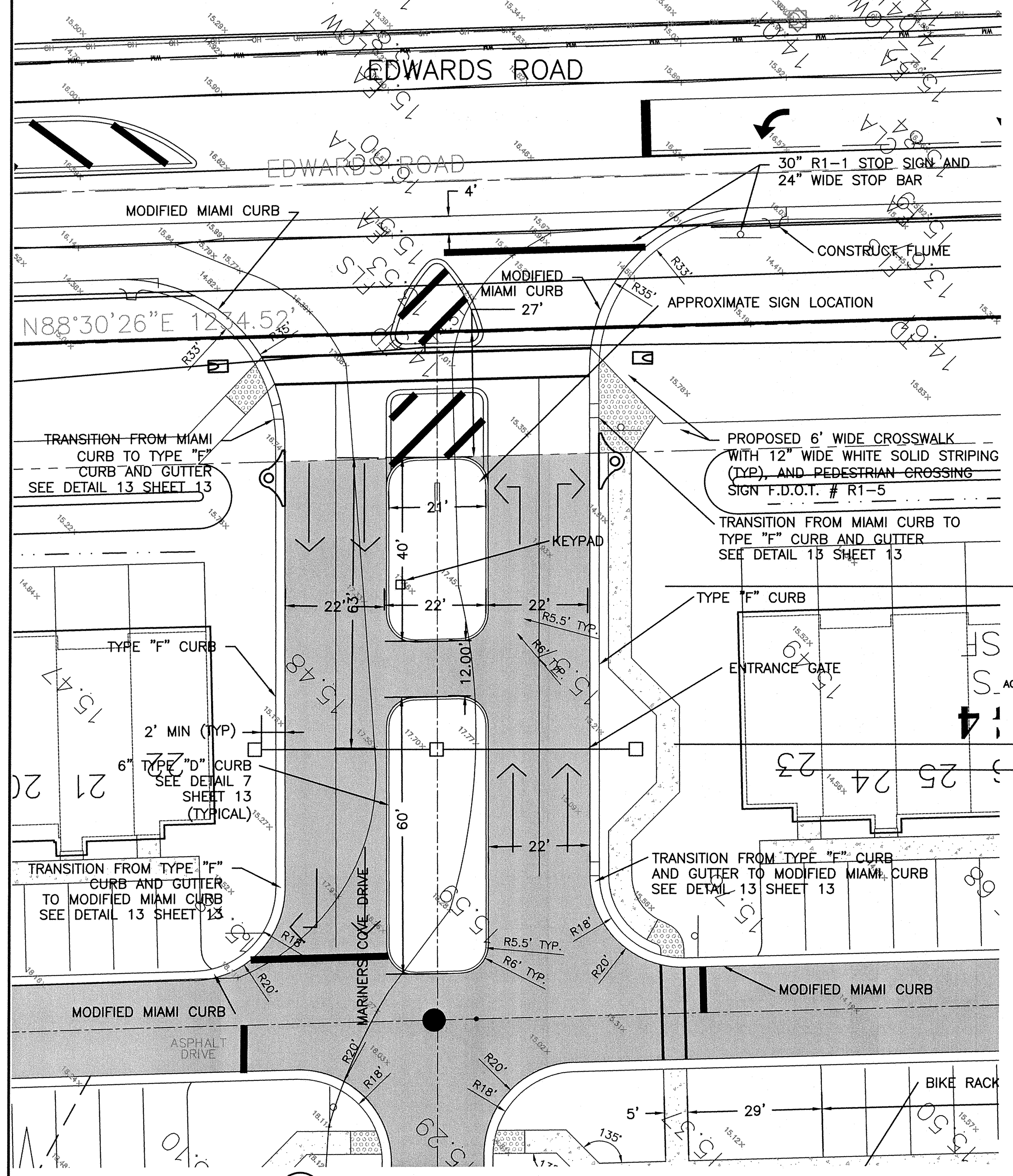
SHEET
C9
OF 16
14-173


WATERBORO WAY
TERRACE
BIKE RACK
MODIFIED MIAMI CURB
PLAYGROUND
POOL
POOL DECK F.F.E. = 16.50
CLUBHOUSE F.F.E. = 17.00
HANDICAP PARKING SIGN
95'
29'
90'
81'
67'
40'
31'
27'
30'
23'
57'
34'
25'
20'
R20'
R18'
R23'
135°

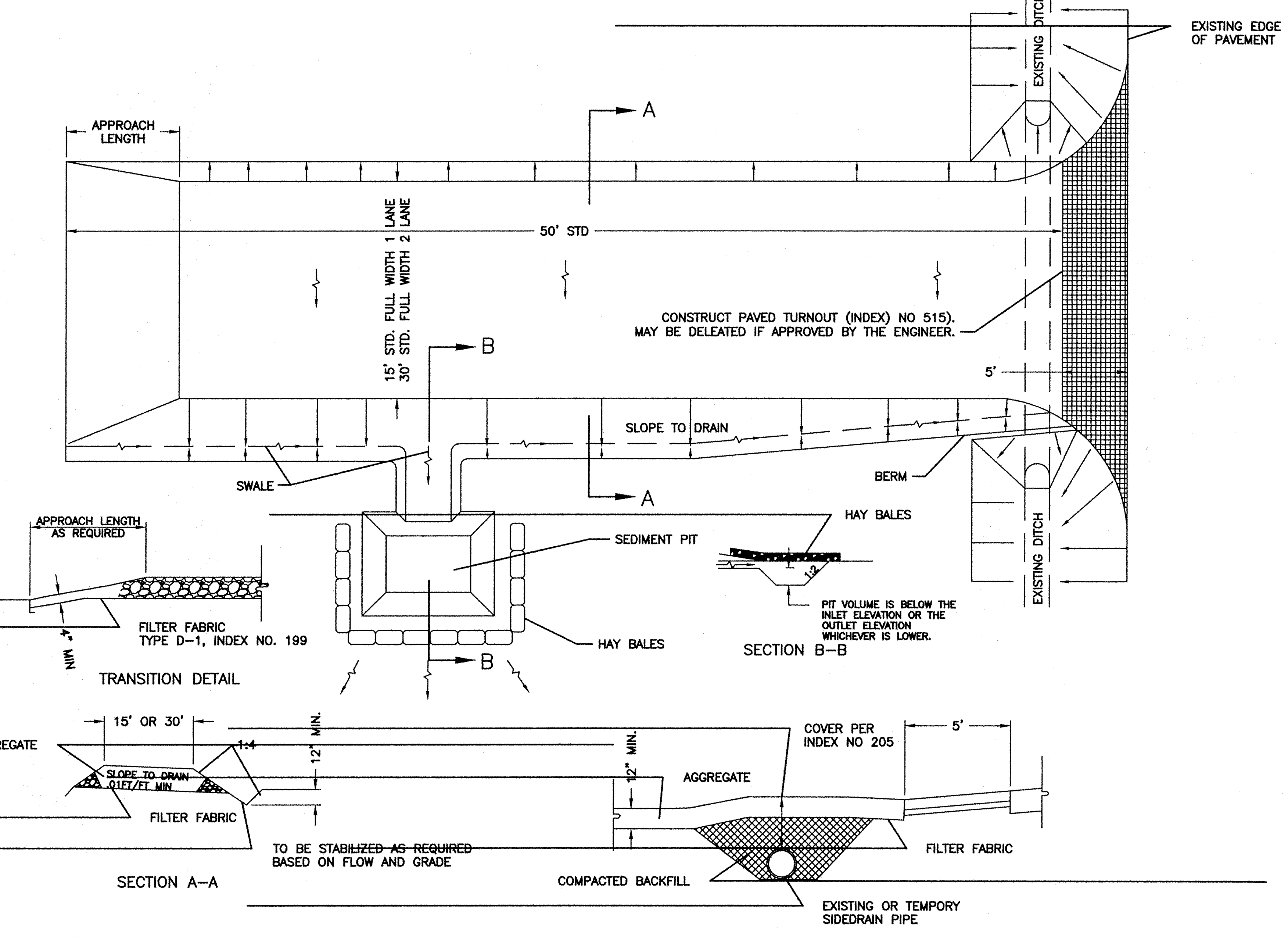
1 CLUBHOUSE DETAIL
C10
N.T.S.


JENKINS ROAD
RAMP PER FDOT INDEX 304 (TYP.)
PROPOSED 6' WIDE CROSSWALK WITH 12" WIDE WHITE SOLID STRIPING (TYP), AND PEDESTRIAN CROSSING SIGN F.D.O.T. # R1-5
TYPE "F" CURB
30" R1-1 STOP SIGN AND 24" WIDE STOP BAR
2' MIN (TYP)
6" DOUBLE YELLOW
18" SOLID YELLOW
6" TYPE "D" CURB SEE DETAIL 13 SHEET 25 (TYPICAL)
BEGIN MODIFIED MIAMI CURB
JAMESTOWN ROAD
6' CONCRETE SIDEWALK
6" DOUBLE YELLOW
KEYPAD
SECURITY GATES (TYP.)
6' CONCRETE SIDEWALK
TYPE "F" CURB
16'
6'
16'
26'
42'
45'
74'
29'
25'
R35'
R23'
R248'
R282'

6 JENKINS ROAD ENTRANCE DETAIL
C10
N.T.S.


EDWARDS ROAD
N88°30'26"E
30" R1-1 STOP SIGN AND 24" WIDE STOP BAR
MODIFIED MIAMI CURB
CONSTRUCT FLUME
MODIFIED MIAMI CURB 27'
APPROXIMATE SIGN LOCATION
TRANSITION FROM MIAMI CURB TO TYPE "F" CURB AND GUTTER SEE DETAIL 13 SHEET 13
PROPOSED 6' WIDE CROSSWALK WITH 12" WIDE WHITE SOLID STRIPING (TYP), AND PEDESTRIAN CROSSING SIGN F.D.O.T. # R1-5
KEYPAD
TRANSITION FROM MIAMI CURB TO TYPE "F" CURB AND GUTTER SEE DETAIL 13 SHEET 13
TYPE "F" CURB
TYPE "F" CURB
ENTRANCE GATE
2' MIN (TYP)
6" TYPE "D" CURB SEE DETAIL 7 SHEET 13 (TYPICAL)
TRANSITION FROM TYPE "F" CURB AND GUTTER TO MODIFIED MIAMI CURB SEE DETAIL 13 SHEET 13
TRANSITION FROM TYPE "F" CURB AND GUTTER TO MODIFIED MIAMI CURB SEE DETAIL 13 SHEET 13
MODIFIED MIAMI CURB
MODIFIED MIAMI CURB
MARINERS COVE DRIVE
ASPHALT DRIVE
BIKE RACK
21'
22'
22'
22'
22'
40'
60'
12.00'
R5.5' TYP.
R6' TYP.
R18'
R20'

2 EDWARDS ROAD ENTRANCE DETAIL
C10
N.T.S.


APPROACH LENGTH
50' STD
15' STD. FULL WIDTH 1 LANE
30' STD. FULL WIDTH 2 LANE
EXISTING EDGE OF PAVEMENT
EXISTING DITCH
CONSTRUCT PAVED TURNOUT (INDEX) NO 515). MAY BE DELEATED IF APPROVED BY THE ENGINEER.
SLOPE TO DRAIN
SWALE
BERM
SEDIMENT PIT
HAY BALES
HAY BALES
PIT VOLUME IS BELOW THE INLET ELEVATION OR THE OUTLET ELEVATION WHICHEVER IS LOWER.
SECTION B-B
APPROACH LENGTH AS REQUIRED
FILTER FABRIC TYPE D-1, INDEX NO. 199
TRANSITION DETAIL
AGGREGATE
15' OR 30'
SLOPE TO DRAIN 0.02FT/FT MIN
FILTER FABRIC
TO BE STABILIZED AS REQUIRED BASED ON FLOW AND GRADE
SECTION A-A
COVER PER INDEX NO 205
AGGREGATE
COMPACTED BACKFILL
FILTER FABRIC
EXISTING OR TEMPORY SIDEDRAIN PIPE

RURAL CONNECTION DETAIL

8 EMERGENCY ENTRANCE STABILAZATION DETAIL
C10
N.T.S.

GENERAL NOTES

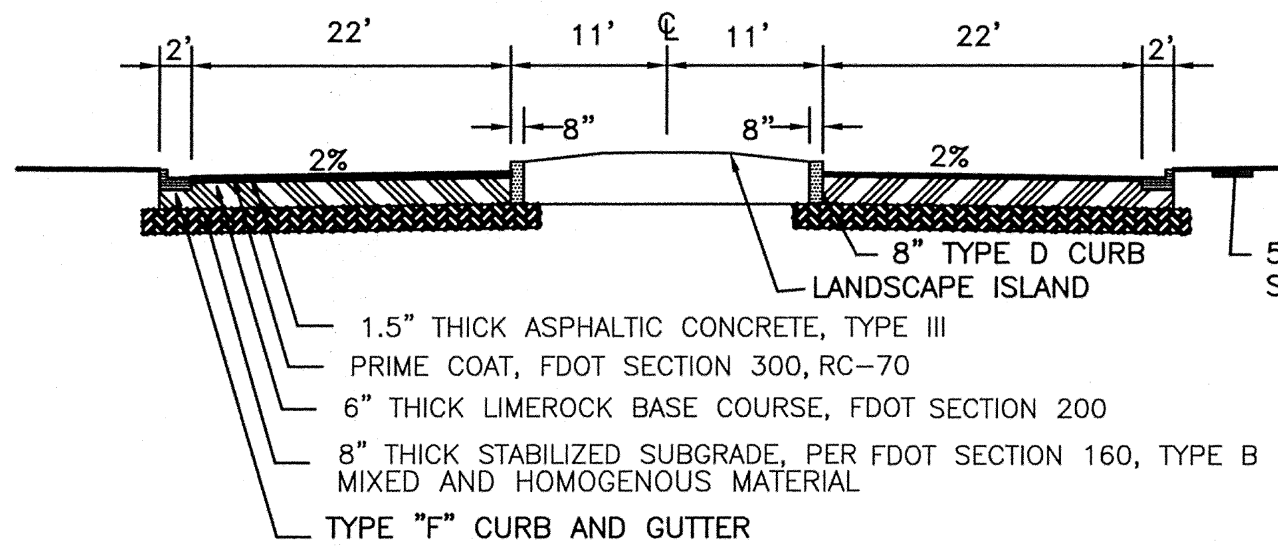
1. A SOIL TRACKING PREVENTION DEVICE (STPD) SHALL BE CONSTRUCTED AT LOCATIONS DESIGNATED BY THE ENGINEER FOR POINTS OF EGRESS FROM UNSTABILIZED AREAS OF THE PROJECT TO PUBLIC ROADS WHERE OFFSITE TRACKING OF MUD COULD OCCUR. TRAFFIC FROM UNSTABILIZED AREAS OF THE CONSTRUCTION PROJECT SHALL BE DIRECTED THRU A STPD. BARRIERS, FLAGGING, OR OTHER POSITIVE MEANS SHALL BE USED AS REQUIRED TO LIMIT AND DIRECT VEHICULAR EGRESS ACROSS THE STPD.
2. THE CONTRACTOR MAY PROPOSE AN ALTERNATIVE TECHNIQUE TO MINIMIZE OFFSITE TRACKING OF SEDIMENT. THE ALTERNATIVE MUST BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO ITS USE.
3. ALL MATERIALS SPILLED, DROPPED, OR TRACKED ONTO PUBLIC ROADS (INCLUDING THE STPD AGGREGATE AND CONSTRUCTION MUD) SHALL BE REMOVED

DAILY, OR MORE FREQUENTLY IF SO DIRECTED BY THE ENGINEER. AGGREGATES SHALL BE AS DESCRIBED IN SECTION 901 EXCLUDING 901-2.3. AGGREGATES SHALL BE FDOT SIZE #1, IF THIS SIZE IS NOT AVAILABLE, THE NEXT AVAILABLE SMALLER SIZE AGGREGATE MAY BE SUBSTITUTED WITH THE APPROVAL OF THE ENGINEER. SIZES CONTAINING EXCESSIVE SMALL AGGREGATE WILL TRACK OFF THE PROJECT AND ARE UNSUITABLE.

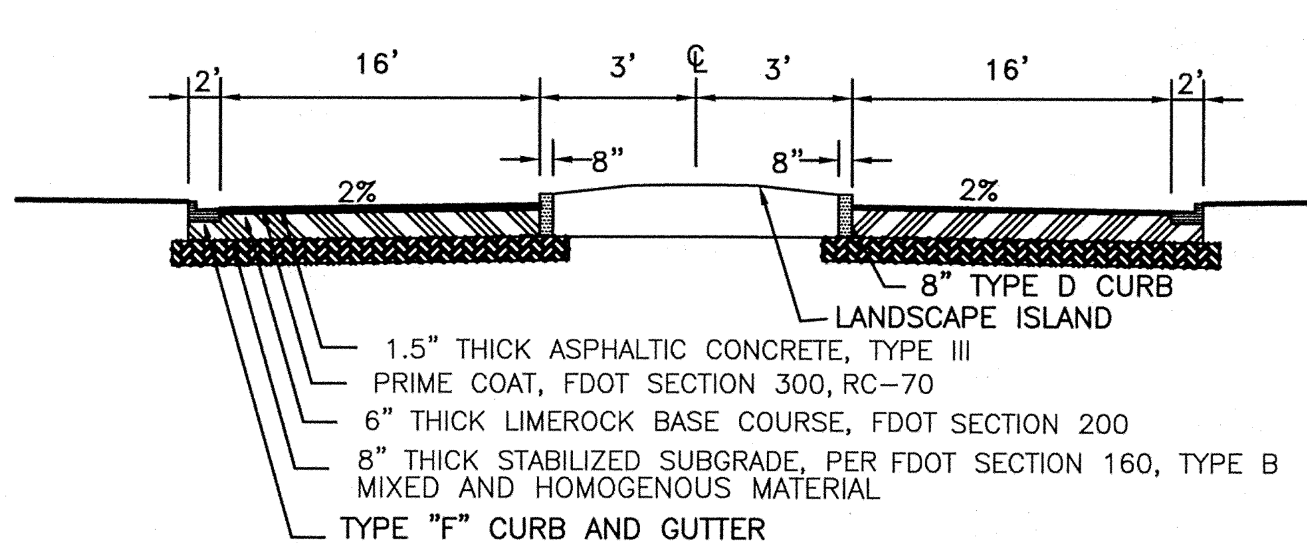
5. THE SEDIMENT PIT SHOULD PROVIDE A RETENTION VOLUME OF 3600 CUBIC FEET/ACRE OF SURFACE AREA DRAINING TO THE PIT. WHEN THE STPD IS ISOLATED FROM OTHER DRAINAGE AREAS, THE FOLLOWING PIT VOLUMES WILL SATISFY THIS REQUIREMENT:

   15'X 50' =100 FT3 30' X 50' = 200 FT'

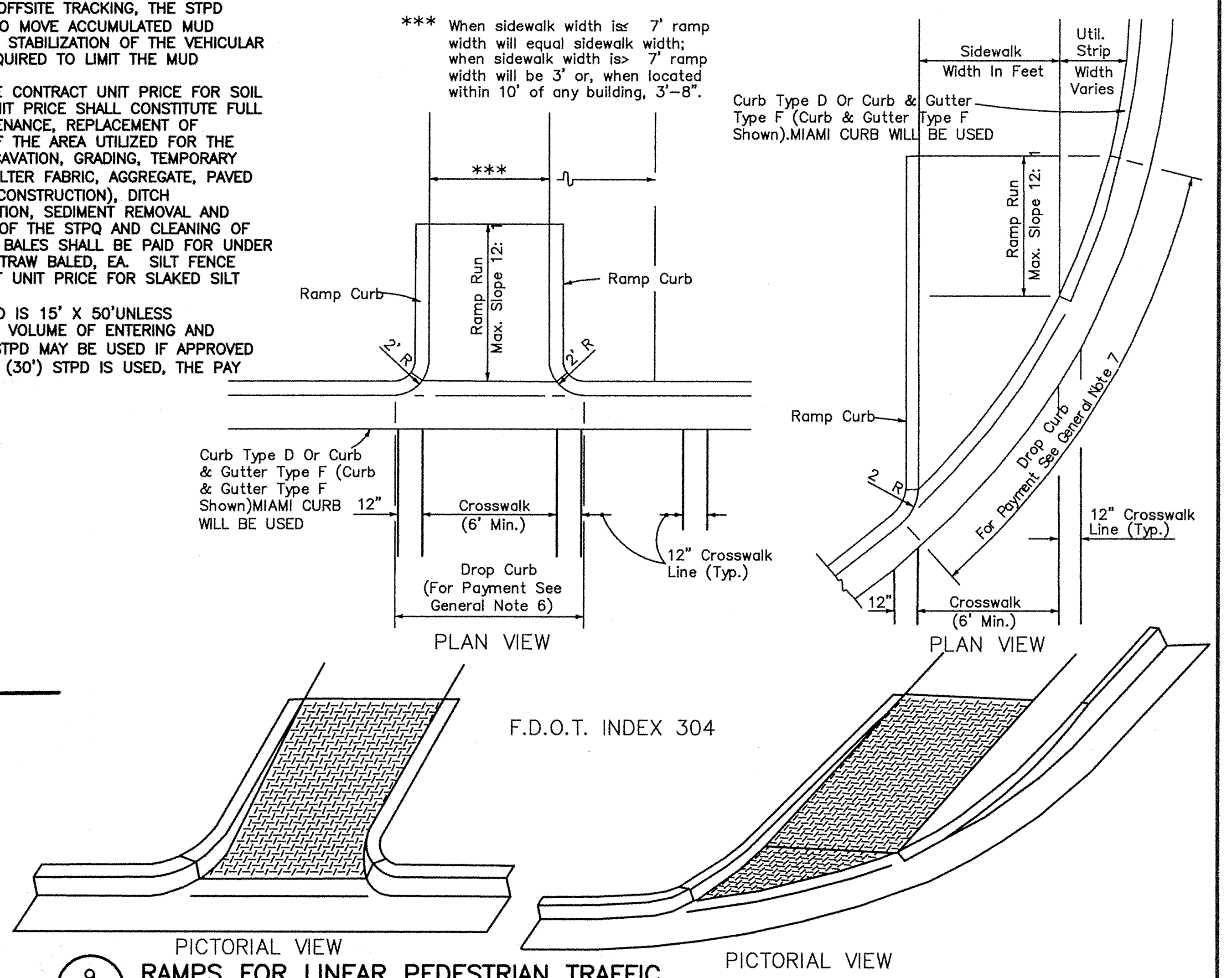
   AS AN OPTION TO THE SEDIMENT PIT , THE WIDTH OF THE SWALE BOTTOM CAN BE INCREASED TO OBTAIN THE VOLUME. WHEN THE SEDIMENT PIT OR SWALE VOLUME HOS BEEN REDUCED TO ONE HALF, IT SHALL BE CLEANED. WHEN A SWALE IS USED, HOY BALES OR SILT FENCE SHALL BE PLACED ALONG THE ENTIRE LENGTH.
6. THE SWALE DITCH DRAINING THE STPD SHALL HAVE A 0.2% MINIMUM AND A 1.0% MAXIMUM GRADE ALONG THE STPD AND TO THE SEDIMENT PIT.
7. UITERED END SECTIONS ARE NOT REQUIRED WHEN THE SIDEDROIN PIPE SATISFIES THE CLEAR ZONE REQUIREMENTS.
8. THE STPD SHALL BE MAINTAINED IN A CONDITION THAT WILL ALLOW IT TO PERFORM ITS FUNCTION. TO PREVENT OFFSITE TRACKING, THE STPD SHALL BE RINSED (DAILY WHEN IN USE) TO MOVE ACCUMULATED MUD DOWNWARD THRU THE STONE. ADDITIONAL STABILIZATION OF THE VEHICULAR ROUTE LEADING TO THE STPD MAY BE REQUIRED TO LIMIT THE MUD TRACKED.
9. A STPD SHALL BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR SOIL TRACKING PREVENTION DEVICE, EA. THE UNIT PRICE SHALL CONSTITUTE FULL COMPENSATION FOR CONSTRUCTION, MAINTENANCE, REPLACEMENT OF MATERIALS, REMOVAL, AND RESTORATION OF THE AREA UTILIZED FOR THE STPD; INCLUDING BUT NOT LIMITED TO EXCAVATION, GRADING, TEMPORARY PIPE (INCLUDING MES WHEN REQUIRED), FILTER FABRIC, AGGREGATE, PAVED TURNOUT (INCLUDING ASPHALT AND BASE CONSTRUCTION), DITCH STABILIZATION, APPROACH ROUTE STABILIZATION, SEDIMENT REMOVAL AND DISPOSAL, WATER, RINSING AND CLEANING OF THE STPQ AND CLEANING OF PUBLIC ROADS, GRASSING AND SOD. HAY BALES SHALL BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR HAY OR STRAW BALED, EA. SILT FENCE SHALL BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR SLAKED SILT FENCE, LF.
10. THE NOMINAL SIZE OF A STANDARD STPD IS 15' X 50'UNLESS OTHERWISE SHOWN IN THE PLANS. IF THE VOLUME OF ENTERING AND EXITING VEHICLES WARRANT, A 30' WIDTH STPD MAY BE USED IF APPROVED BY THE ENGINEER. WHEN A DOUBLE WIDTH (30') STPD IS USED, THE PAY QUANTITY


2'
22'
11'
℄
11'
22'
2'
8"
8"
2%
2%
5" CONC. SIDEWALK
8" TYPE D CURB
LANDSCAPE ISLAND
1.5" THICK ASPHALTIC CONCRETE, TYPE III
PRIME COAT, FDOT SECTION 300, RC-70
6" THICK LIMEROCK BASE COURSE, FDOT SECTION 200
8" THICK STABILIZED SUBGRADE, PER FDOT SECTION 160, TYPE B MIXED AND HOMOGENOUS MATERIAL
TYPE "F" CURB AND GUTTER

3 EDWARDS ROAD ENTRANCE ROAD SECTION
C10
N.T.S.


2'
16'
3'
℄
3'
16'
2'
8"
8"
2%
2%
8" TYPE D CURB
LANDSCAPE ISLAND
1.5" THICK ASPHALTIC CONCRETE, TYPE III
PRIME COAT, FDOT SECTION 300, RC-70
6" THICK LIMEROCK BASE COURSE, FDOT SECTION 200
8" THICK STABILIZED SUBGRADE, PER FDOT SECTION 160, TYPE B MIXED AND HOMOGENOUS MATERIAL
TYPE "F" CURB AND GUTTER

4 JENKINS ROAD ENTRANCE ROAD SECTION
C10
N.T.S.


*** When sidewalk width is≥ 7' ramp width will equal sidewalk width; when sidewalk width is< 7' ramp width will be 3' or, when located within 10' of any building, 3'-8".
Curb Type D Or Curb & Gutter Type F (Curb & Gutter Type F Shown).MIAMI CURB WILL BE USED
Sidewalk Width In Feet
Util. Strip Width Varies
***
Ramp Curb
Ramp Curb
Ramp Run Max. Slope 12:1
2' R
Curb Type D Or Curb & Gutter Type F (Curb & Gutter Type F Shown)MIAMI CURB WILL BE USED
12"
Crosswalk (6' Min.)
Drop Curb (For Payment See General Note 6)
12" Crosswalk Line (Typ.)
PLAN VIEW
Ramp Curb
Ramp Run Max. Slope 12:1
Drop Curb For Payment See General Note 7
12" Crosswalk Line (Typ.)
Crosswalk (6' Min.)
PLAN VIEW
F.D.O.T. INDEX 304
PICTORIAL VIEW
PICTORIAL VIEW

9 RAMPS FOR LINEAR PEDESTRIAN TRAFFIC
C10
N.T.S.

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△		
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MARINER COVE

CITY OF FT. PIERCE, FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

PAVING, GRADING & DRAINAGE DETAILS

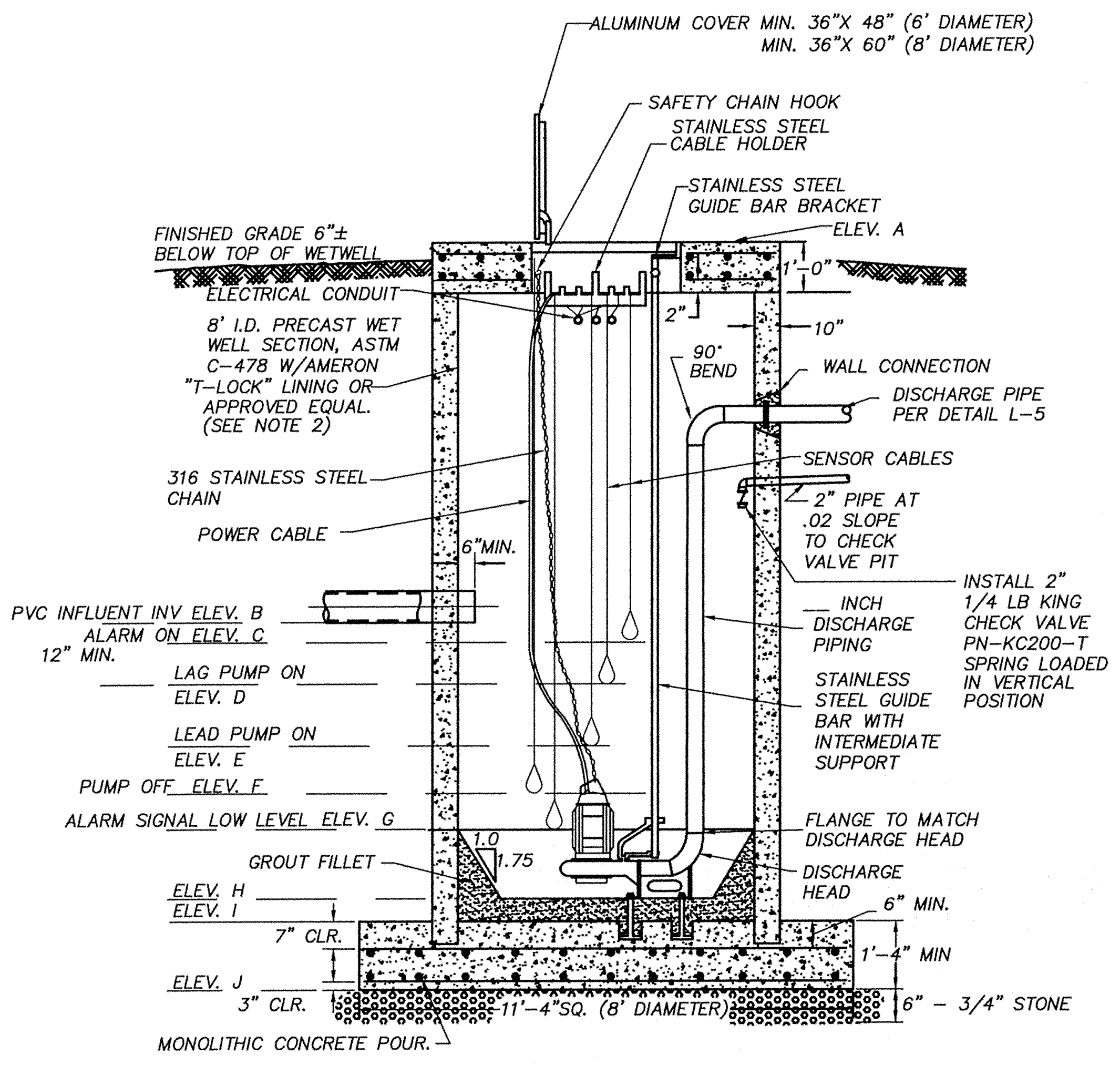
DESIGN ENGINEER

WILLIAM F. McCAIN, PE FL# 50046
DATE: JUL 2 7

No. 50046

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	AS SHOWN

SHEET
C10
OF 16
14-173



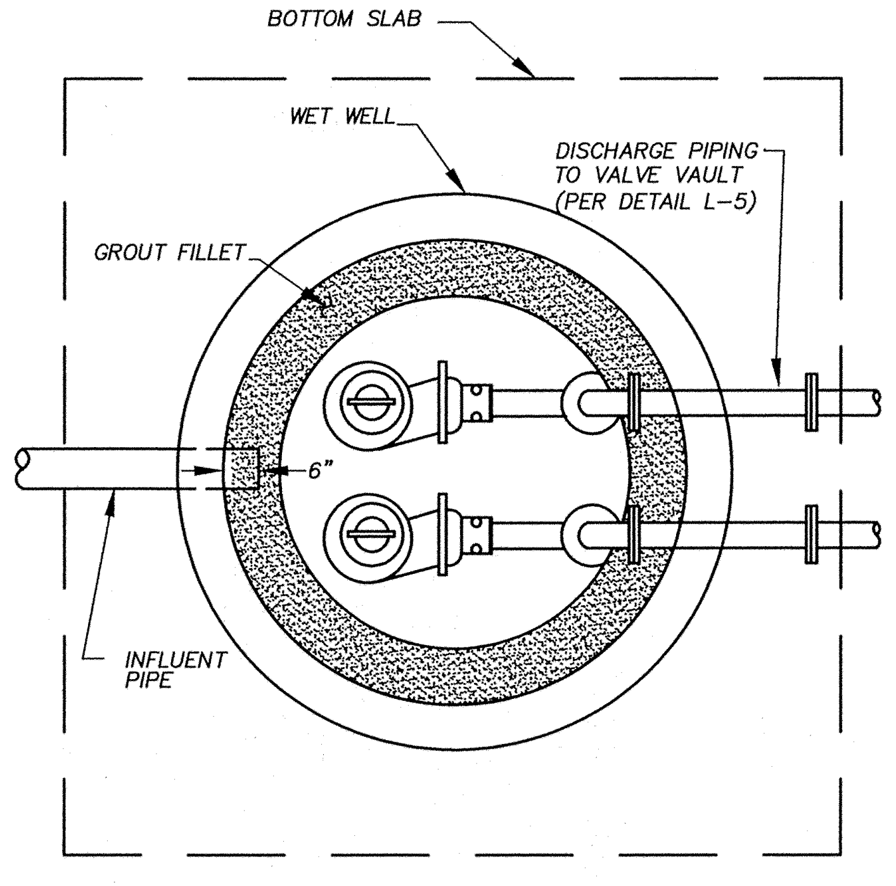
ALUMINUM COVER MIN. 36"X 48" (6' DIAMETER) MIN. 36"X 60" (8' DIAMETER)
SAFETY CHAIN HOOK
STAINLESS STEEL CABLE HOLDER
STAINLESS STEEL GUIDE BAR BRACKET
ELEV. A
FINISHED GRADE 6"± BELOW TOP OF WETWELL
ELECTRICAL CONDUIT
1'-0"
2"
10"
8' I.D. PRECAST WET WELL SECTION, ASTM C-478 W/AMERON "T-LOCK" LINING OR APPROVED EQUAL. (SEE NOTE 2)
90° BEND
WALL CONNECTION
DISCHARGE PIPE PER DETAIL L-5
316 STAINLESS STEEL CHAIN
SENSOR CABLES
2" PIPE AT .02 SLOPE TO CHECK VALVE PIT
POWER CABLE
6" MIN.
INSTALL 2" 1/4 LB KING CHECK VALVE PN-KC200-T SPRING LOADED IN VERTICAL POSITION
PVC INFLUENT INV ELEV. B
12" MIN.
ALARM ON ELEV. C
INCH DISCHARGE PIPING
LAG PUMP ON ELEV. D
STAINLESS STEEL GUIDE BAR WITH INTERMEDIATE SUPPORT
LEAD PUMP ON ELEV. E
PUMP OFF ELEV. F
ALARM SIGNAL LOW LEVEL ELEV. G
FLANGE TO MATCH DISCHARGE HEAD
GROUT FILLET
1.0
1.75
DISCHARGE HEAD
ELEV. H
ELEV. I
6" MIN.
7" CLR.
1'-4" MIN
ELEV. J
3" CLR.
11'-4"SQ. (8' DIAMETER)
6" - 3/4" STONE
MONOLITHIC CONCRETE POUR.

NOTES:

1. ALL INTERIOR CONCRETE SURFACES OF WET WELL NOT COVERED WITH AMERON "T-LOCK" SHALL HAVE 2 COATS OF COAL TAR EPOXY IN INSTANCES WHERE FPUA ENGINEERING DIRECTS.
2. "T-LOCK" OR APPROVED EQUAL SHALL ALSO BE REQUIRED ON THE INTERIOR OF THE TOP SLAB.
3. TRIPLEX MASTER LIFT STATIONS SHALL HAVE 12' DIAMETER WETWELL.
4. MINIMUM SIZE DISCHARGE PIPING SHALL BE AS FOLLOWS: 4" FOR 6' DIA WETWELL, 6" FOR 8' DIA WETWELL, AND 8" FOR 12' DIA WETWELL.
5. STRUCTURAL DESIGN- PER MANUFACTURERS SHOP DRAWINGS.
6. FLOTATION PER DESIGN ENGINEER.

1 / C11 LIFT STATION (SECTION VIEW)

N.T.S.



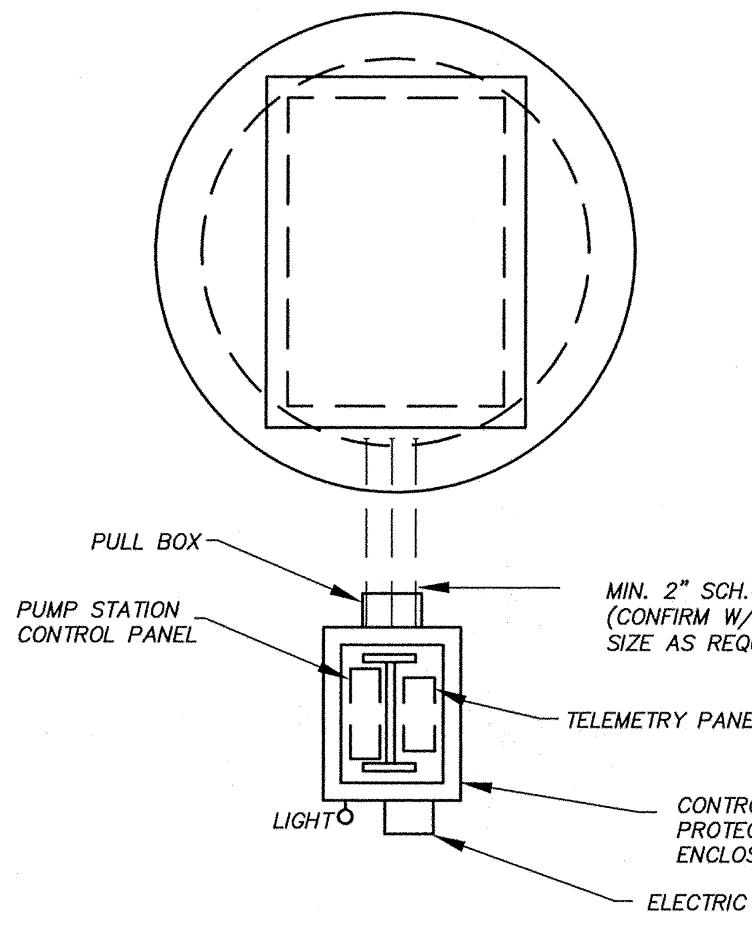
BOTTOM SLAB
WET WELL
DISCHARGE PIPING TO VALVE VAULT (PER DETAIL L-5)
GROUT FILLET
6"
INFLUENT PIPE

NOTE:

TOP SLAB NOT SHOWN FOR CLARITY

3 / C11 WET WELL (PLAN VIEW)

N.T.S.

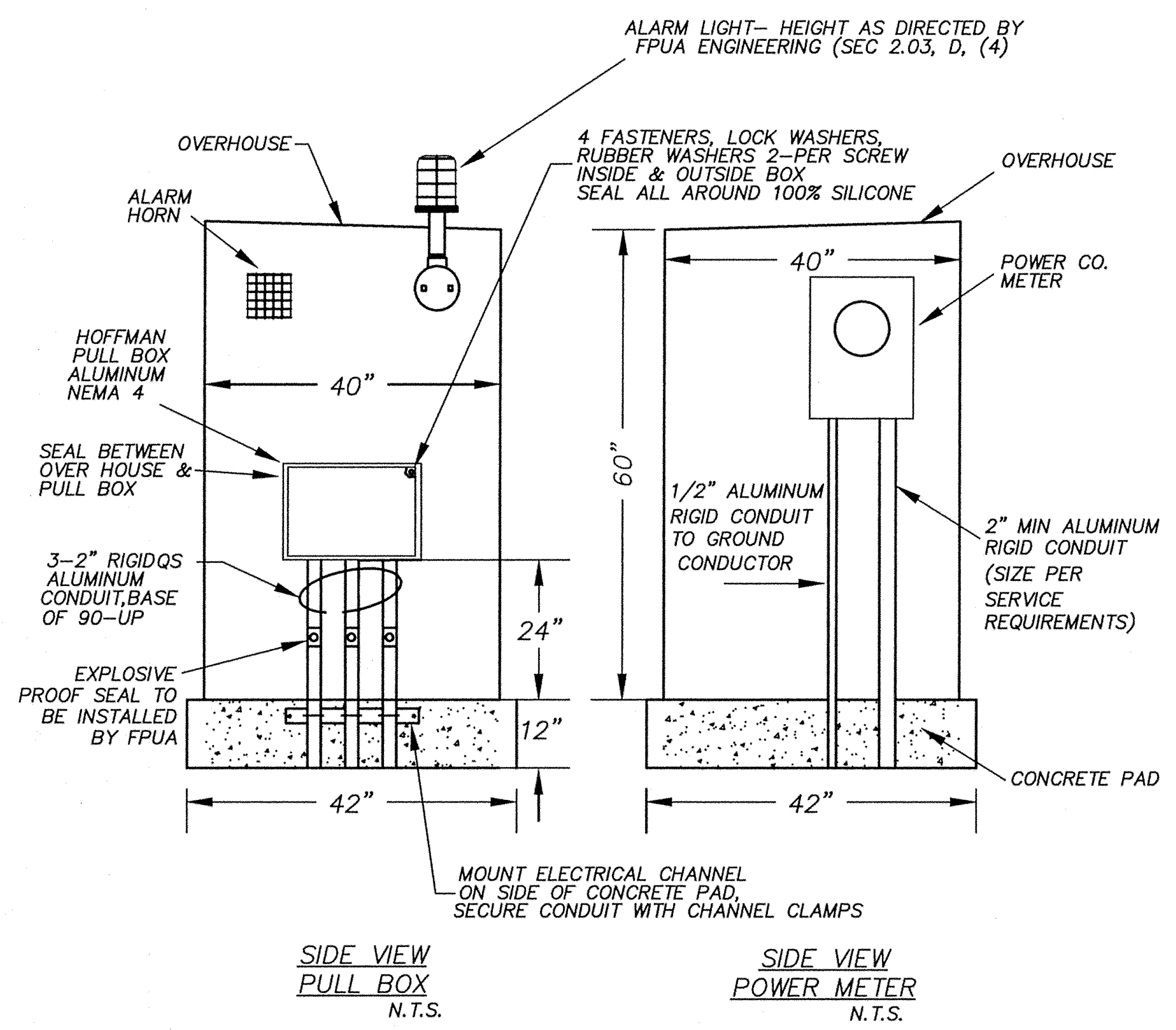


PULL BOX
PUMP STATION CONTROL PANEL
MIN. 2" SCH.40 PVC CONDUIT (CONFIRM W/PIPE MFGR) SIZE AS REQUIRED
TELEMETRY PANEL
LIGHT
CONTROL PANEL PROTECTIVE ENCLOSURE
ELECTRIC METER

ENGINEER SHALL BE REQUIRED TO SUBMIT A DETAILED LIFT STATION SITE LAYOUT PLAN.

5 / C11 LIFT STATION (PLAN)

N.T.S.



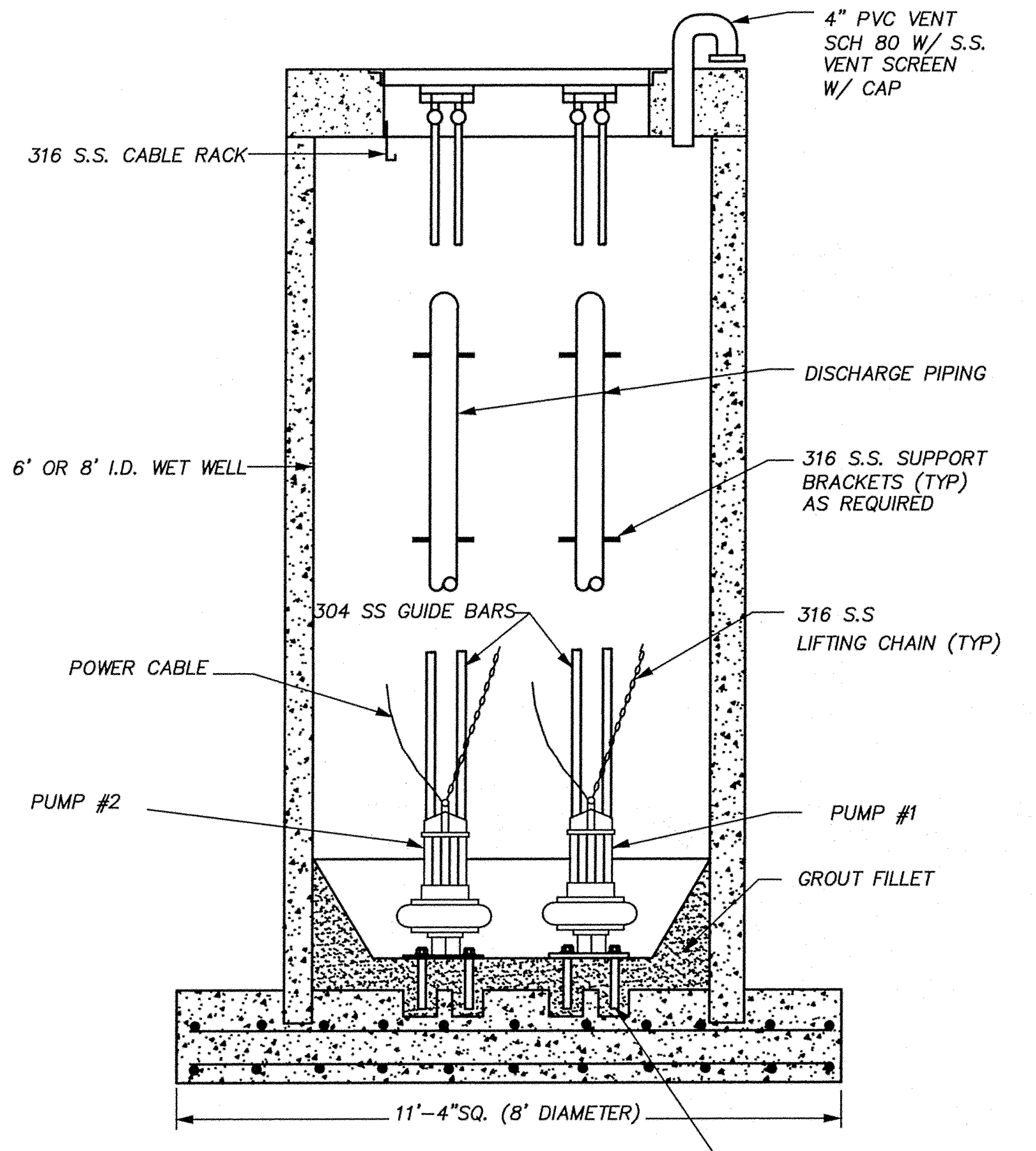
ALARM LIGHT- HEIGHT AS DIRECTED BY FPUA ENGINEERING (SEC 2.03, D, (4)
OVERHOUSE
4 FASTENERS, LOCK WASHERS, RUBBER WASHERS 2-PER SCREW INSIDE & OUTSIDE BOX SEAL ALL AROUND 100% SILICONE
OVERHOUSE
ALARM HORN
40"
POWER CO. METER
HOFFMAN PULL BOX ALUMINUM NEMA 4
40"
60"
SEAL BETWEEN OVER HOUSE & PULL BOX
1/2" ALUMINUM RIGID CONDUIT TO GROUND CONDUCTOR
2" MIN ALUMINUM RIGID CONDUIT (SIZE PER SERVICE REQUIREMENTS)
3-2" RIGIDQS ALUMINUM CONDUIT,BASE OF 90-UP
24"
EXPLOSIVE PROOF SEAL TO BE INSTALLED BY FPUA
12"
42"
42"
CONCRETE PAD
MOUNT ELECTRICAL CHANNEL ON SIDE OF CONCRETE PAD, SECURE CONDUIT WITH CHANNEL CLAMPS

SIDE VIEW PULL BOX N.T.S.

SIDE VIEW POWER METER N.T.S.

7 / C11 LIFT STATION CONTROL PANEL OVERHOUSE (SIDE VIEWS)

N.T.S.

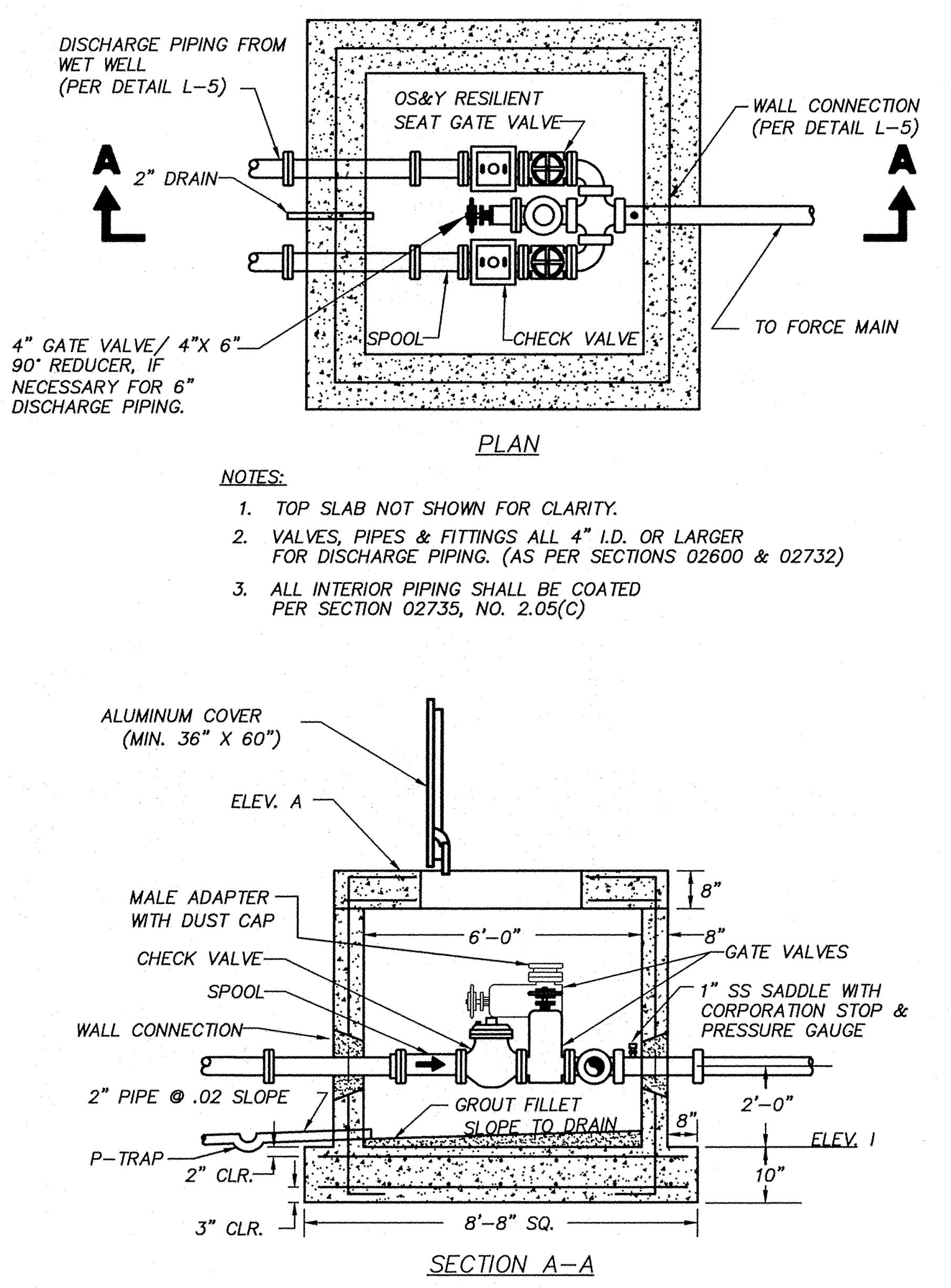


4" PVC VENT SCH 80 W/ S.S. VENT SCREEN W/ CAP
316 S.S. CABLE RACK
DISCHARGE PIPING
6' OR 8' I.D. WET WELL
316 S.S. SUPPORT BRACKETS (TYP) AS REQUIRED
304 SS GUIDE BARS
316 S.S LIFTING CHAIN (TYP)
POWER CABLE
PUMP #2
PUMP #1
GROUT FILLET
11'-4"SQ. (8' DIAMETER)

HOLES FOR STAINLESS STEEL ANCHOR BOLTS SHALL BE DRILLED A MINIMUM OF 4" INTO BOTTOM OF WET WELL & BOLTS SHALL BE GROUTED IN PLACE WITH NON-SHRINK GROUT ALL ANCHOR BOLTS, NUTS & WASHERS TO BE 316 STAINLESS STEEL.

2 / C11 SECTION VIEW-DUPLEX (PUMP INSTALLATION)

N.T.S.



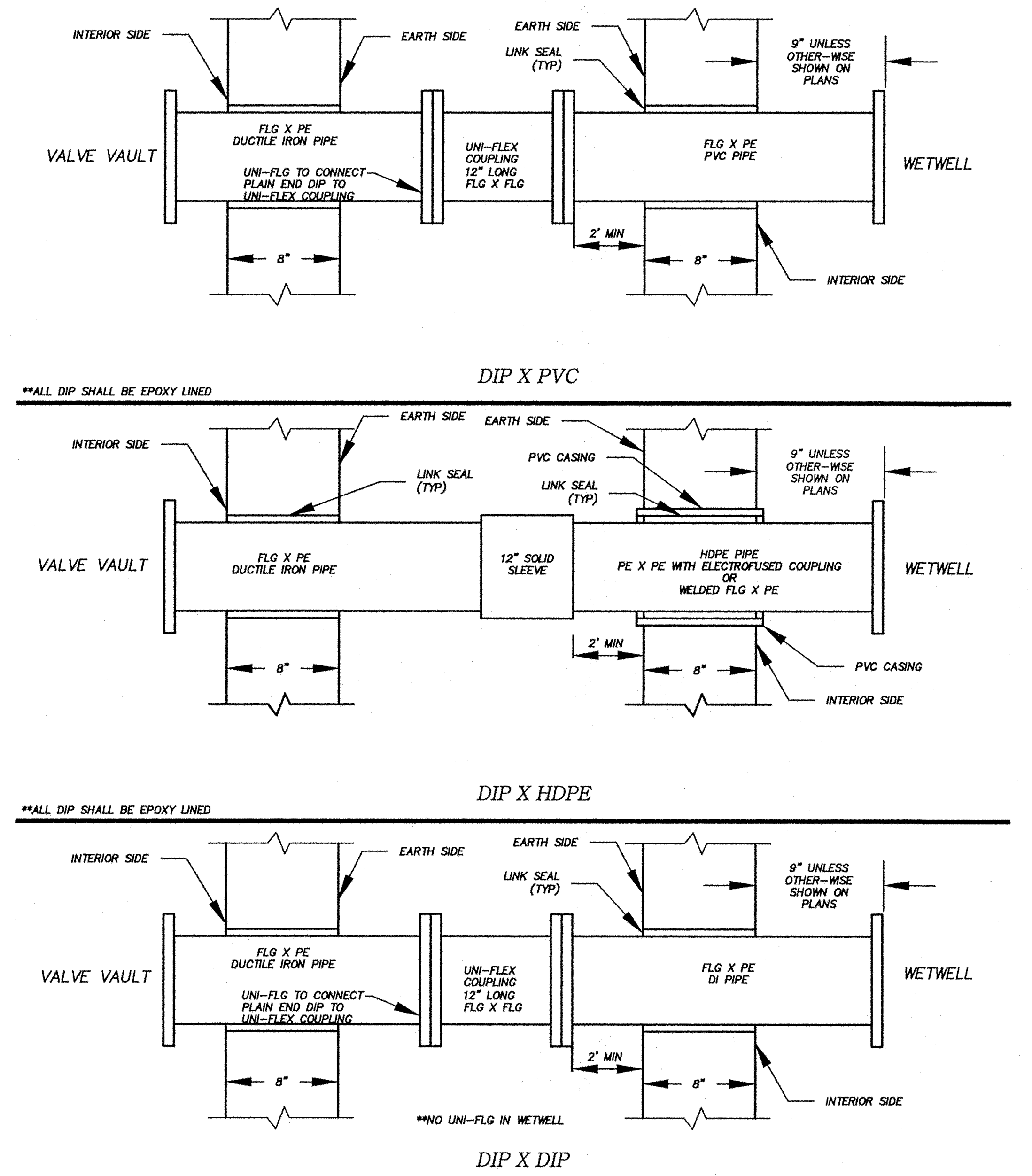
DISCHARGE PIPING FROM WET WELL (PER DETAIL L-5)
OS&Y RESILIENT SEAT GATE VALVE
WALL CONNECTION (PER DETAIL L-5)
A
A
2" DRAIN
TO FORCE MAIN
SPOOL
CHECK VALVE
4" GATE VALVE/ 4"X 6" 90° REDUCER, IF NECESSARY FOR 6" DISCHARGE PIPING.
PLAN
ALUMINUM COVER (MIN. 36" X 60")
ELEV. A
8"
6'-0"
MALE ADAPTER WITH DUST CAP
8"
GATE VALVES
CHECK VALVE
1" SS SADDLE WITH CORPORATION STOP & PRESSURE GAUGE
SPOOL
WALL CONNECTION
2" PIPE @ .02 SLOPE
GROUT FILLET SLOPE TO DRAIN
2'-0"
8"
ELEV. I
P-TRAP
2" CLR.
10"
3" CLR.
8'-8" SQ.
SECTION A-A

NOTES:

1. TOP SLAB NOT SHOWN FOR CLARITY.
2. VALVES, PIPES & FITTINGS ALL 4" I.D. OR LARGER FOR DISCHARGE PIPING. (AS PER SECTIONS 02600 & 02732)
3. ALL INTERIOR PIPING SHALL BE COATED PER SECTION 02735, NO. 2.05(C)

4 / C11 LIFT STATION (VALVE PIT)

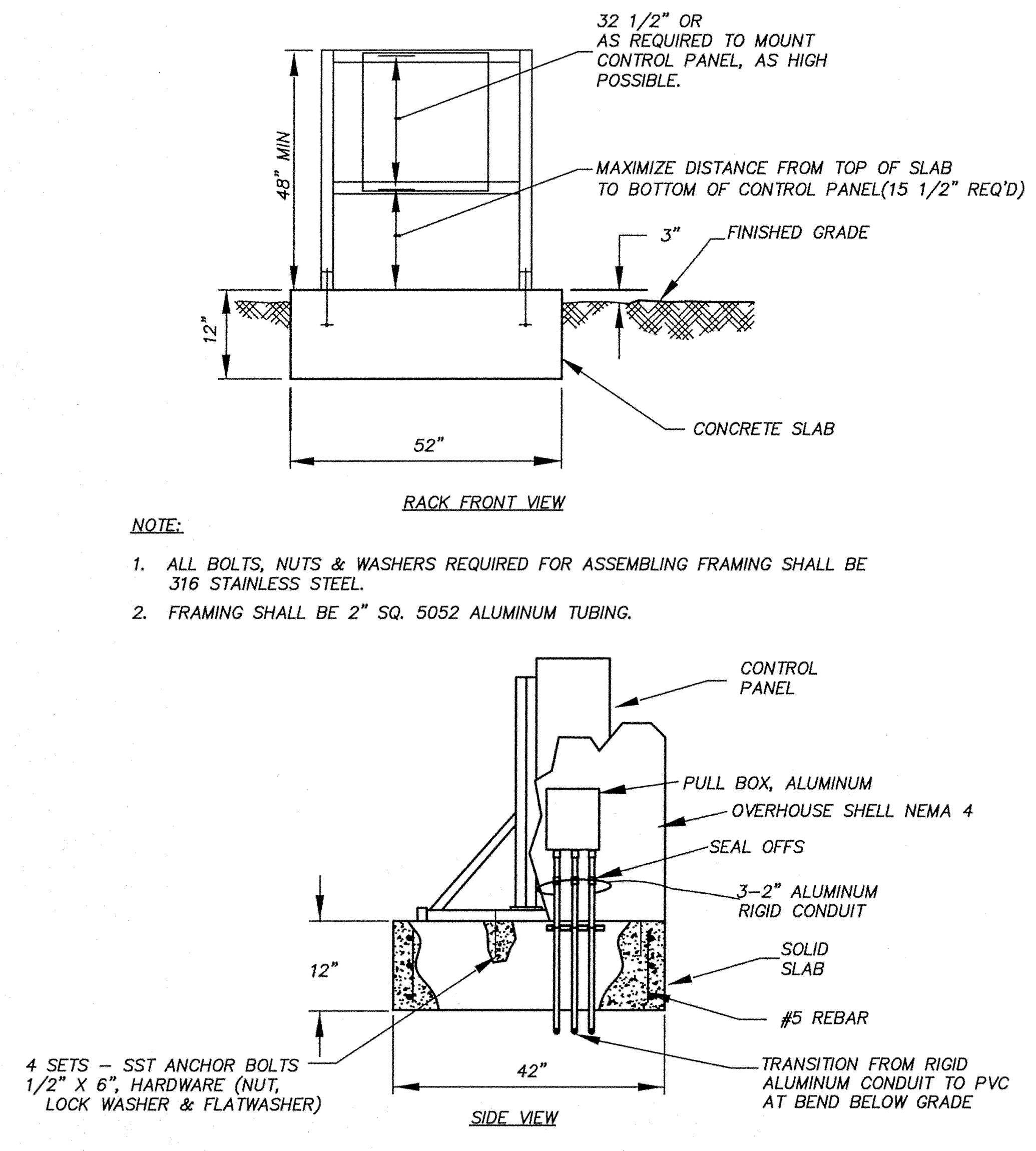
N.T.S.



INTERIOR SIDE
EARTH SIDE
EARTH SIDE
LINK SEAL (TYP)
9" UNLESS OTHER-WISE SHOWN ON PLANS
VALVE VAULT
FLG X PE DUCTILE IRON PIPE
UNI-FLG TO CONNECT PLAIN END DIP TO UNI-FLEX COUPLING
UNI-FLEX COUPLING 12" LONG FLG X FLG
FLG X PE PVC PIPE
WETWELL
2" MIN
8"
8"
INTERIOR SIDE
DIP X PVC
**ALL DIP SHALL BE EPOXY LINED
INTERIOR SIDE
EARTH SIDE
EARTH SIDE
LINK SEAL (TYP)
PVC CASING
LINK SEAL (TYP)
9" UNLESS OTHER-WISE SHOWN ON PLANS
VALVE VAULT
FLG X PE DUCTILE IRON PIPE
12" SOLID SLEEVE
HDPE PIPE PE X PE WITH ELECTROFUSED COUPLING OR WELDED FLG X PE
WETWELL
2" MIN
8"
8"
PVC CASING
INTERIOR SIDE
DIP X HDPE
**ALL DIP SHALL BE EPOXY LINED
INTERIOR SIDE
EARTH SIDE
EARTH SIDE
LINK SEAL (TYP)
9" UNLESS OTHER-WISE SHOWN ON PLANS
VALVE VAULT
FLG X PE DUCTILE IRON PIPE
UNI-FLG TO CONNECT PLAIN END DIP TO UNI-FLEX COUPLING
UNI-FLEX COUPLING 12" LONG FLG X FLG
FLG X PE DI PIPE
WETWELL
2" MIN
8"
8"
INTERIOR SIDE
**NO UNI-FLG IN WETWELL
DIP X DIP

6 / C11 LIFT STATION TO VALVE VAULT (PIPING CONNECTION DETAIL)

N.T.S.



32 1/2" OR AS REQUIRED TO MOUNT CONTROL PANEL, AS HIGH POSSIBLE.
48" MIN
MAXIMIZE DISTANCE FROM TOP OF SLAB TO BOTTOM OF CONTROL PANEL(15 1/2" REQ'D)
3"
FINISHED GRADE
12"
CONCRETE SLAB
52"
RACK FRONT VIEW
CONTROL PANEL
PULL BOX, ALUMINUM
OVERHOUSE SHELL NEMA 4
SEAL OFFS
3-2" ALUMINUM RIGID CONDUIT
12"
SOLID SLAB
#5 REBAR
4 SETS - SST ANCHOR BOLTS 1/2" X 6", HARDWARE (NUT, LOCK WASHER & FLATWASHER)
42"
TRANSITION FROM RIGID ALUMINUM CONDUIT TO PVC AT BEND BELOW GRADE
SIDE VIEW

NOTE:

1. ALL BOLTS, NUTS & WASHERS REQUIRED FOR ASSEMBLING FRAMING SHALL BE 316 STAINLESS STEEL.
2. FRAMING SHALL BE 2" SQ. 5052 ALUMINUM TUBING.

8 / C11 LIFT STATION (EQUIPMENT MOUNTING RACK)

N.T.S.

NOTE:
DETAILED PLAN AND PROFILES, LIFT STATION DESIGN SHEETS AND ALL APPROPRIATE FPUA APPROVED DETAILS AND SPECIFICATIONS SHALL BE PROVIDED DURING PERMITTING PROCESS WITH FPUA

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△	REVISIONS	DATE	BY
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LIFT STATION DETAILS

CITY OF FT. PIERCE, FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

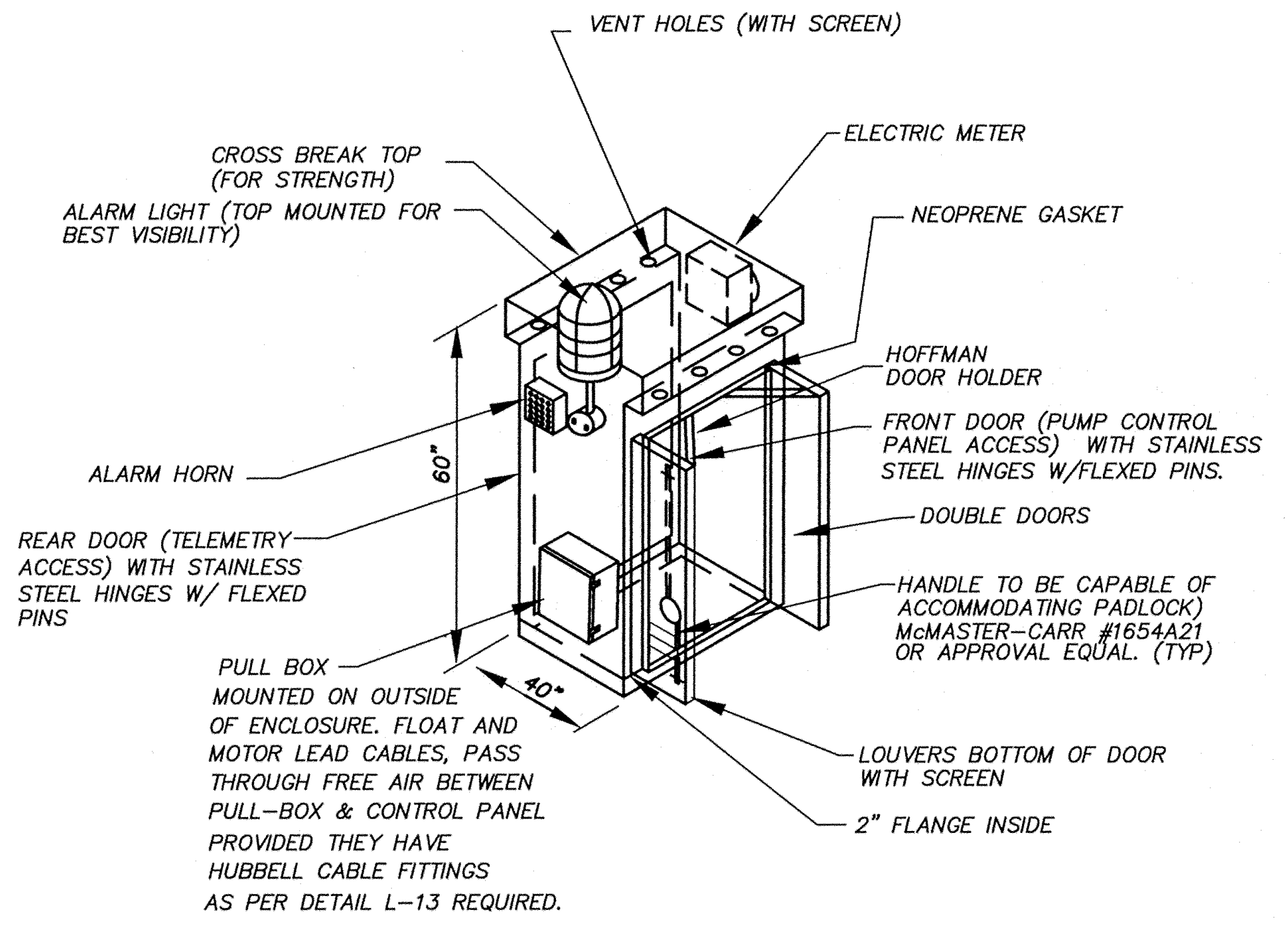
LIFT STATION DETAILS

DESIGN ENGINEER
WILLIAM F. McCAIN, PE FL# 50046
DATE:

No. 50046

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	NTS

SHEET
C11
OF 16
14-173

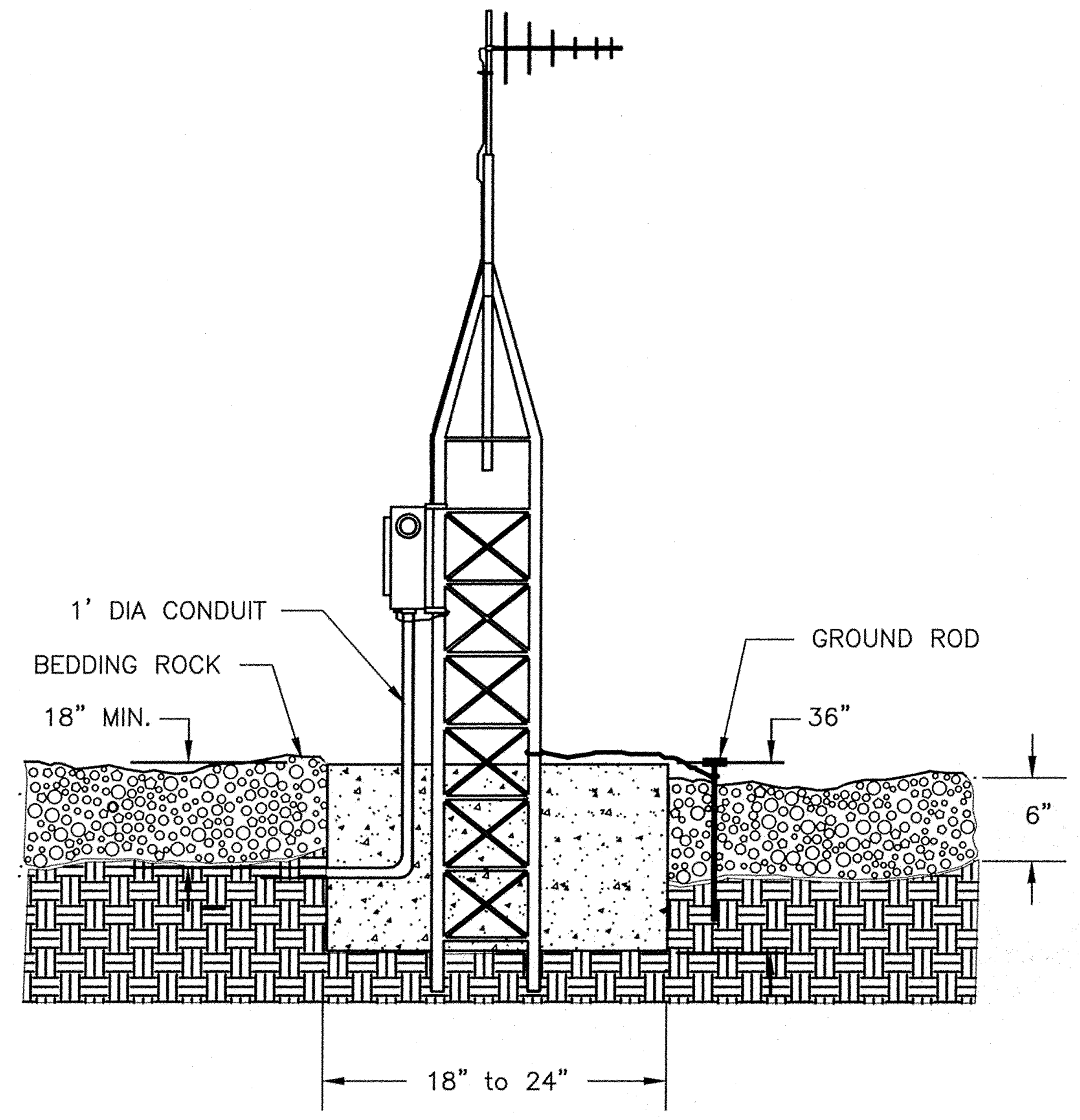

VENT HOLES (WITH SCREEN)
ELECTRIC METER
CROSS BREAK TOP (FOR STRENGTH)
ALARM LIGHT (TOP MOUNTED FOR BEST VISIBILITY)
NEOPRENE GASKET
HOFFMAN DOOR HOLDER
FRONT DOOR (PUMP CONTROL PANEL ACCESS) WITH STAINLESS STEEL HINGES W/FLEXED PINS.
ALARM HORN
60"
DOUBLE DOORS
REAR DOOR (TELEMETRY ACCESS) WITH STAINLESS STEEL HINGES W/ FLEXED PINS
HANDLE TO BE CAPABLE OF ACCOMMODATING PADLOCK) McMASTER-CARR #1654A21 OR APPROVAL EQUAL. (TYP)
PULL BOX MOUNTED ON OUTSIDE OF ENCLOSURE. FLOAT AND MOTOR LEAD CABLES, PASS THROUGH FREE AIR BETWEEN PULL-BOX & CONTROL PANEL PROVIDED THEY HAVE HUBBELL CABLE FITTINGS AS PER DETAIL L-13 REQUIRED.
40"
LOUVERS BOTTOM OF DOOR WITH SCREEN
2" FLANGE INSIDE

NOTE

1. ATTACH ENCLOSURE TO EQUIPMENT PAD WITH A MINIMUM OF 12- 3/8" x 3 1/2" STAINLESS STEEL DRILLED ANCHORS.
2. ENCLOSURE SHALL BE OF 1/8" GAUGE 5052 ALUMINUM.

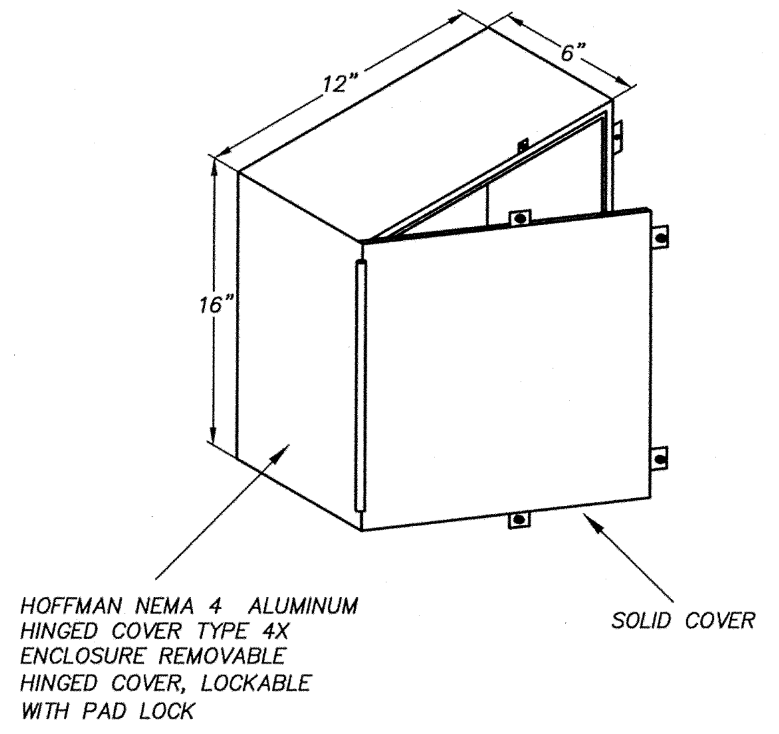
1/C12 LIFT STATION (OVER-HOUSE CONTROL PANEL)

N.T.S.


1' DIA CONDUIT
BEDDING ROCK
18" MIN.
GROUND ROD
36"
6"
18" to 24"

2/C12 RADIO TOWER LAYOUT

N.T.S.

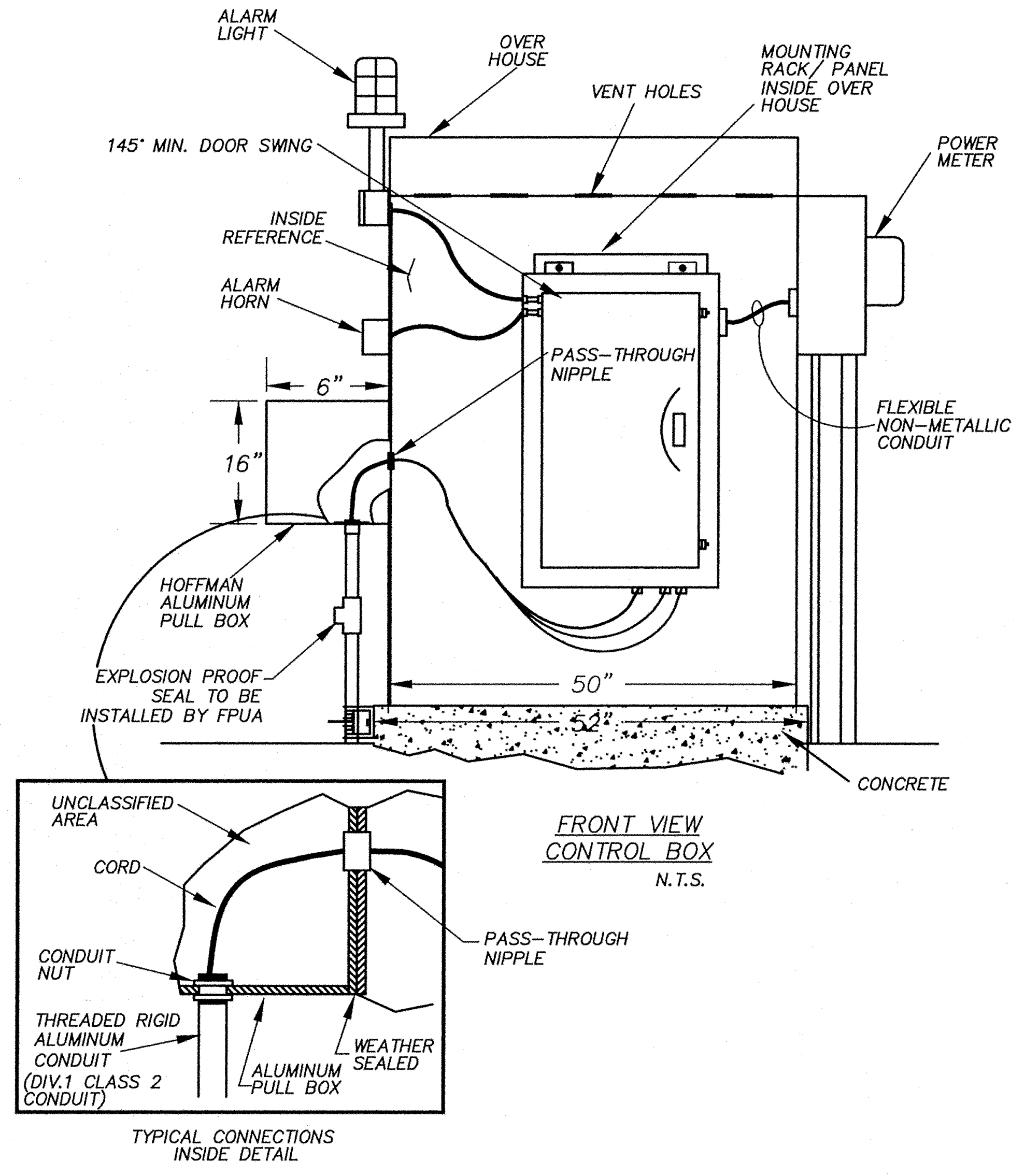

12"
6"
16"
HOFFMAN NEMA 4 ALUMINUM HINGED COVER TYPE 4X ENCLOSURE REMOVABLE HINGED COVER, LOCKABLE WITH PAD LOCK
SOLID COVER

NOTES

1. MOTOR LEADS AND FLOAT LEADS SHALL BE CONTINUOS THROUGH PULL BOX.
2. CABLES FROM PULL BOX TO CONTROL PANEL SHALL BE SEALED OFF WITH HUBBLE FITTINGS P-200KLBK (SEE DETAIL L-11.)
3. CAT NO. A-16P12AL (18X12X6), LARGER ENCLOSER MAY BE REQUIRED.

3/C12 LIFT STATION (PULL BOX)

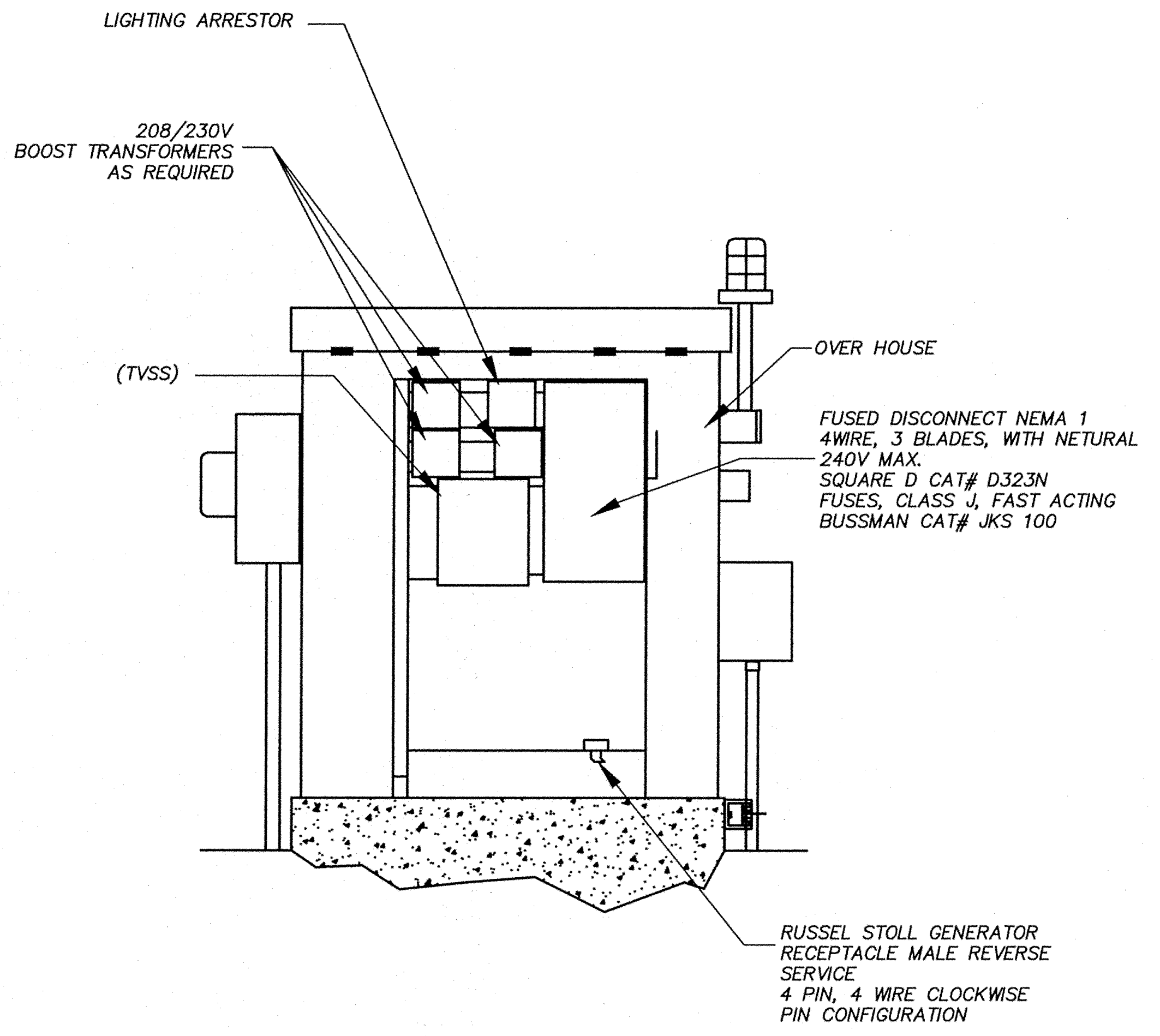
N.T.S.


ALARM LIGHT
OVER HOUSE
VENT HOLES
MOUNTING RACK/ PANEL INSIDE OVER HOUSE
145° MIN. DOOR SWING
POWER METER
INSIDE REFERENCE
ALARM HORN
PASS-THROUGH NIPPLE
6"
16"
FLEXIBLE NON-METALLIC CONDUIT
HOFFMAN ALUMINUM PULL BOX
EXPLOSION PROOF SEAL TO BE INSTALLED BY FPUA
50"
52"
CONCRETE
FRONT VIEW CONTROL BOX
N.T.S.
UNCLASSIFIED AREA
CORD
PASS-THROUGH NIPPLE
CONDUIT NUT
THREADED RIGID ALUMINUM CONDUIT (DIV.1 CLASS 2 CONDUIT)
ALUMINUM PULL BOX
WEATHER SEALED
TYPICAL CONNECTIONS INSIDE DETAIL

PULL BOX MUST BE NEMA 4, CONDUIT WILL BE ALUMINUM, RIGID AND THREADED ENDS, CONNECTIONS FROM ELBOW TO BOTTOM OF PULL BOX, AS PER "NFPA 820 STANDARDS, CLASS1 DIVISION2, AND NEC, SECTION 501-4 UNDER EXCEPTION4.

4/### CONTROL PANEL / OVERHOUSE (FRONT VIEW)

N.T.S.


LIGHTING ARRESTOR
208/230V BOOST TRANSFORMERS AS REQUIRED
(TVSS)
OVER HOUSE
FUSED DISCONNECT NEMA 1 4WIRE, 3 BLADES, WITH NETURAL 240V MAX. SQUARE D CAT# D323N FUSES, CLASS J, FAST ACTING BUSSMAN CAT# JKS 100
RUSSEL STOLL GENERATOR RECEPTACLE MALE REVERSE SERVICE 4 PIN, 4 WIRE CLOCKWISE PIN CONFIGURATION

5/C12 CONTROL PANEL / OVERHOUSE (REAR VIEW)

N.T.S.

PUMP STATION GENERAL NOTES

1. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS AGAINST FLOATATION OF WET WELL UNTIL ALL BACK FILL IS IN PLACE.
2. ALL CONCRETE SHALL BE CLASS A-A(4,000 P.S.I. FOR PRECAST AND 3,000 P.S.I. FOR CAST-IN-PLACE) UNLESS OTHERWISE SPECIFIED.
3. REINFORCING STEEL SHALL BE GRADE 60 FABRICATED AND PLACED IN ACCORDANCE WITH THE A.C.I. CODE SPLICES SHALL BE 6 TIMES THE BAR DIAMETER NUMBER SIZE OR 18" MIN. UNLESS OTHERWISE NOTED (STAG. SPL.,TYP.).
4. ALL BACKFILL AROUND THE PUMP STATION SITE SHALL BE COMPACTED @ 98% DENSITY.
5. CHAMFER EXPOSED CONCRETE EDGES 3/4" (TYP.).
6. WET WELL WALL SHALL CONTAIN A MIN. OF 0.22 SQ.IN./LINEAR FOOT REINFORCEMENT, IN THE VERTICAL AND HORIZONTAL DIRECTIONS.
7. ALL PIPING AT THE PUMP STATION SITE SHALL BE RESTRAINED.
8. PUMPS SHALL BE FLYGHT OR ABS, EXCLUDING FLYGHT GRINDER PUMPS AND ABS V2 PIRANA GRINDER PUMPS.
9. STAINLESS STEEL CABLE HOLDER SHALL BE LOCATED ON OPPOSITE SIDE OF WET WELL FROM THE INFLUENT PIPE.
10. BUOYANCY CALCULATIONS SHALL BE REQUIRED FOR ALL PUMP STATIONS ALONG WITH THE REQUIRED PUMP STATION CALCULATIONS.
11. NO UNI-FLANGE PIPE CONNECTIONS ALLOWED.
12. MAINTAIN MINIMUM OF 6" BETWEEN ANY PIPING, FITTINGS, ETC. AND PRECAST CONCRETE.
13. FIBERGLASS LINERS SHALL BE INSTALLED ON ALL MANHOLES RECEIVING PUMP SEWAGE.
14. PUMP STATION CONTROL PANEL SHALL BE PROVIDED WITH APPROPRIATE LIGHTENING ARRESTOR. VERIFY ALL DRIVER GROUNDS PER N.E.S.C.
15. AN ACCESS DRIVE SHALL BE PROVIDED TO ALL INDIAN RIVER COUNTY MAINTAINED LIFT STATIONS. ALL ACCESS DRIVES SHALL BE A MINIMUM OF 8' WIDE AND SHALL INCLUDE A 12' DEEP BY 12' WIDE (MIN.) APRON TURN AROUND. (SEE DETAIL THIS SHEET) DRIVES SHALL BE CONCRETE OR ASPHALT PER THE CONSTRUCTION REQUIREMENTS SET FORTH BY THE ENGINEERING DEPARTMENT OF FPUA. ACCESS DRIVE DETAILS SHALL BE SHOWN ON ALL SUBMITTED UTILITY PLANS AND APPROVED BY I.R.C. DEPT. OF UTILITY SERVICES ON A CASE BY CASE BASIS.

FLOAT CONTROL SYSTEM

PUMPING STATION DATA TABLE

LIFT STATION NUMBER				
PRIMARY CONDITION	PUMPING CAPACITY	G.P.M.		
	TOTAL HEAD (±)	FEET		
	EFFICIENCY	%		
INTER-MEDIATE CONDITION	PUMPING CAPACITY	G.P.M.	--	
	TOTAL HEAD	FEET	--	
	EFFICIENCY	%	--	
SECONDARY CONDITION	PUMPING CAPACITY	G.P.M.	--	
	TOTAL HEAD (*)	FEET	--	
	EFFICIENCY	%	--	
MIN. SOLIDS PASS. IMPELLER		INCHES		
PUMP MODEL NUMBER		NO.		
PUMP IMPELLER		INCHES		
PUMP SPEED (DESIGN)		R.P.M.		
MOTOR NAMEPLATE H.P.		H.P.		
MAX. PUMP BRAKE H.P.		H.P.		
MAX. NPSHR @ SECONDARY		FEET	--	
MAX. MOTOR SPEED		R.P.M.		
INITIAL INFLUENT FLOW RATE PEAK		G.P.M.		
MIN. PUMP CYCLE TIME		MINS.		
TOP OF STATION		ELEV."A"		
INFLUENT PIPE INV. ELEV.		ELEV."B"		
ALARM SIGNAL ON ELEV.		ELEV."C"		
LAG PUMP ON ELEV.		ELEV."D"		
LEAD PUMP ON ELEV. (+)		ELEV."E"		
PUMPS OFF ELEVATION		ELEV."F"		
ALARM SIGNAL LOW LEVEL		ELEV."G"		
BOTTOM OF WET WELL		ELEV."H"		
BOTTOM OF CONC. WETWELL		ELEV."I"		
TOP OF GRAVEL		ELEV."J"		
PUMP MANUFACTURER				

(*) PUMP WILL OPERATE BETWEEN PRIMARY AND SECONDARY POINTS.

FINAL DESIGN PENDING PER COORDINATION WITH FPUA

6/C12 TYPICAL PUMPING STATIONS (DATA TABLE & NOTES)

N.T.S.

NOTE:
DETAILED PLAN AND PROFILES, LIFT STATION DESIGN SHEETS AND ALL APPROPRIATE FPUA APPROVED DETAILS AND SPECIFICATIONS SHALL BE PROVIDED DURING PERMITTING PROCESS WITH FPUA

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△	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			

MARINER COVE

CITY OF FT. PIERCE, FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

LIFT STATION DETAILS

DESIGN ENGINEER
WILLIAM F. McCAIN, PE FL# 50046
DATE

WILLIAM F. McCAIN
LICENSE No. 50046
STATE OF FLORIDA
PROFESSIONAL ENGINEER

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	NTS

SHEET
C12
OF 16
14-173

LIFT STATIONS, PUMPS, AND CONTROLS PART 1

GENERAL:

A. THIS SECTION INCLUDES THE GENERAL REQUIREMENTS FOR THE DESIGN CRITERIA AND INSTALLATION OF LIFT STATIONS, PUMPS, AND CONTROLS FOR THE FORT PIERCE UTILITIES AUTHORITY (FPUA).

B. THE RELEVANT PROVISIONS INCLUDED IN DIVISION 2. "TECHNICAL REQUIREMENTS, GENERAL", SECTION 02730, "WASTEWATER COLLECTION SYSTEM", SECTION 02732, "WASTEWATER FORCE MAINS", AND THE "FORT PIERCE UTILITIES AUTHORITY STANDARD DETAILS" SHALL BE APPLICABLE TO THIS SECTION, UNLESS OTHERWISE INDICATED HEREIN OR APPROVED BY FPUA ENGINEERING.

C. ON PROJECTS WHERE FPUA IS THE OWNER, PUMPS, APPURTENANCES, AND CONTROLS WILL BE SUPPLIED FROM PUMP MANUFACTURER WITH WARRANTY PACKAGE. ALL PIPING, FITTINGS, AND APPURTENANCES NOT INCLUDED IN PUMP MANUFACTURERS' PACKAGE SHALL BE WARRANTED PER FPUA WATER/WASTEWATER SUPPLY AGREEMENT AND/OR PER STANDARD MANUFACTURERS WARRANTY

DESIGN STANDARDS:

A. REQUIRED REFERENCE:

THE PLANS SHALL COMPLY WITH THE REGULATIONS ESTABLISHED BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION. ADDITIONALLY, THE CRITERIA PROVIDED IN CHAPTER 30, "SEWAGE PUMPING STATIONS", OF THE "TEN STATE STANDARDS – RECOMMENDED STANDARDS FOR WASTEWATER WORKS", MAY GENERALLY BE UTILIZED AS DESIGN GUIDELINES, IF NOT IN CONFLICT WITH STATE, COUNTY, OR OTHER REGULATORY AGENCY REQUIREMENTS.

B. DESIGN FLOWS:

WASTEWATER LIFT STATIONS SHALL BE DESIGNED FOR THE TOTAL ULTIMATE DEVELOPMENT FLOW FROM ALL CONTRIBUTORY AREAS. SAID CONTRIBUTIONS SHALL INCLUDE THE IMMEDIATE GRAVITY SYSTEM, SUBSIDIARY SOURCES, AND KNOWN OR PROJECTED FUTURE DEVELOPMENT WITHIN THE DESIGNATED STATION SERVICE AREA. THE DESIGN AVERAGE DAILY FLOW SHALL BE COMPUTED AT THE UNIT RATES SET FORTH UNDER SECTION 02730, "WASTEWATER COLLECTION SYSTEM". THE MAXIMUM REQUIRED PUMPING CAPABILITY SHALL BE THE PRODUCT OF SELECTED PEAK FACTORS TIMES THE MAXIMUM MONTHLY AVERAGE DAILY FLOW (MMADF) FROM THE TOTAL SERVICE AREA. IN GENERAL, THE FOLLOWING FACTORS SHALL BE APPLICABLE FOR THE RANGE OF FLOW CONTRIBUTIONS INDICATED (MILLION GALLONS PER DAY – AVERAGE DAILY FLOW: MGD–ADF), UNLESS LARGER VALUES ARE REQUIRED OR SMALLER AMOUNTS ARE JUSTIFIED, WITH PRIOR APPROVAL FROM FPUA ENGINEERING.

FLOW RANGE (MMADF)	PEAK FACTOR
0.000 TO 0.050 MGD	4.0
0.050 TO 0.250 MGD	3.0
0.250 TO 1.000 MGD	2.5
1.000 TO 4.000 MGD	2.4

C. SITE:

LIFT STATIONS SHALL BE INSTALLED ON READILY ACCESSIBLE SITES NOT REQUIRING TRESPASSING OVER PRIVATE PROPERTY AND MUST BE APPROVED BY FPUA. SITES SHALL BE IN A MINIMUM, 30 X 30 EASEMENT, BE WELL DRAINED AND NOT SUBJECT TO FLOODING. SITE FENCING SHALL BE PROVIDED WHEN SPECIFICALLY REQUESTED BY FPUA. A PAVED ACCESS ROAD, MINIMUM OF 12 FEET WIDE, SHALL PROVIDE ACCESS FOR WORK VEHICLES TO THE WET WELL AND VALVE VAULT

PART 2 – PRODUCTS

GENERAL REQUIREMENTS:

A. STRUCTURES:

1. WHERE BUILDINGS AND/OR STRUCTURES ARE CONSTRUCTED, THE RELEVANT PROVISIONS OF THE APPLICABLE AGENCY BUILDING CODES SHALL APPLY, WITH SPECIAL DESIGN CONSIDERATION, WHERE APPLICABLE. ALL STATE AND FEDERAL SAFETY CODES SHALL BE COMPLIED WITH.
2. LIFT STATION STRUCTURES SHALL BE OF ADEQUATE SIZE TO ALLOW EASY ACCESS TO ALL OPERATING EQUIPMENT FOR SERVICE AND MAINTENANCE.
3. STRUCTURAL OPENINGS SHALL BE PROVIDED THROUGH WALLS OR ROOFS TO FACILITATE EQUIPMENT REMOVAL, INCLUDING PUMPS AND MOTORS, STANDBY GENERATORS, OR BAR SCREENS AND OTHER LARGE ITEMS.
4. STRUCTURAL PROVISIONS SHALL BE MADE FOR FUTURE PUMPING STATION EXPANSION, IF ANTICIPATED OR PLANNED.
5. STRUCTURE LIDS SHALL BE PRECAST CONCRETE, 4000 P.S.I. @ 28 DAYS, ASTM C–478 WITH ALUMINUM HATCH COVER AND STAINLESS STEEL HARDWARE RATED FOR A STATIC LOAD OF 300 POUNDS PER SQUARE FOOT.

B. PIPING SYSTEM FOR LIFT STATIONS:

1. APPROVED PIPE, FITTINGS AND VALVES: THE FOLLOWING MATERIALS OR ITEMS SHALL BE SUITABLE FOR THE INDICATED OPERATIONAL SERVICE:

(A) WASTEWATER GRAVITY INFLUENT PIPE AND FITTINGS (WITHIN THE LIMITS OF THE SITE). THE INFLUENT PIPE SHALL EXTEND SIX (6) INCHES INTO THE WET WELL. PVC PIPE SHALL BE USED.

(B) WASTEWATER PRESSURE PIPE AND FITTINGS I. DUCTILE IRON WITH EPOXY INTERIOR LINING THAT MEETS ASTM SPECIFICATION NUMBER A746. II. CERTA–LOC PVC PIPE THAT MEETS AWWA C900 OR GREATER. III. HDPE PIPE THAT MEETS ASTM SPECIFICATION NUMBER D3350. (SPECIAL NOTE: NO RAW SEWAGE PIPING SHALL BE LESS THAN FOUR–INCH DIAMETER WITHOUT APPROVAL FROM FPUA.)

(C) WASTEWATER SERVICE VALVES – GATE VALVES (RESILIENT WEDGE), WITH NON–RISING STEM AND OPERATING NUTS FOR UNDERGROUND SERVICE OR RISING STEM AND HAND WHEELS FOR EXPOSED UNITS; CHECK VALVES, AS SPECIFIED IN SECTION 02600.

(D) POTABLE WATER SERVICE PIPING – POLYETHYLENE PIPING WITH APPROPRIATE GATE VALVES, CORPORATION STOPS, CURB STOPS, AND BACK FLOW PREVENTERS SEE SECTION 02600.

2. CONNECTIONS AT STRUCTURES: WHERE DUCTILE IRON PIPES OR PVC PIPES ARE TO EXTEND INTO OR THROUGH STRUCTURES FROM THE EXTERIOR, FLEXIBLE CONNECTIONS (MECHANICAL OR PUSH ON TYPE JOINTS PER DRAWINGS) SHALL BE PROVIDED AS PER FORT PIERCE UTILITIES AUTHORITY STANDARD DETAIL L–5 (I.E. – UNI–FLEX COUPLINGS).
3. WALL PENETRATIONS: FOR PIPES PASSING THROUGH STRUCTURAL WALLS, "LINK–SEAL", OR APPROVED EQUAL, SHALL BE INSTALLED. WHERE HDPE IS SELECTED AS THE DISCHARGE PIPING, A PVC CASING SHALL BE INSTALLED IN THE STRUCTURE WALL TO HOUSE THE HDPE PIPING. (PER FORT PIERCE UTILITIES AUTHORITY STANDARD DETAIL L–5)
4. PIPING FLEXIBILITY: IN ORDER TO PROVIDE FOR EXPANSION AND CONTRACTION OR EXPEDITE INSTALLATION AND MAINTENANCE, FLEXIBLE CONNECTIONS (FLANGED COUPLING ADAPTERS, EXPANSION JOINTS, COUPLINGS, ETC.) SHALL BE PROVIDED WITHIN FLANGED PIPING SYSTEMS. SPECIFICALLY, WASTEWATER PUMPS SHALL GENERALLY BE PRECEDED BY A FLANGED COUPLING ADAPTER AND FOLLOWED BY AN EXPANSION JOINT.
5. SUPPORTS AND RESTRAINING: SPECIAL CONSIDERATION SHALL BE GIVEN TO THE SUPPORT AND RESTRAINING OF PIPING SYSTEMS. THIS REQUIREMENT SHALL APPLY TO BOTH INTERIOR AND EXTERIOR SYSTEMS, WITH RESTRAINING OF FLANGED PRESSURE PIPING REQUIRED WHERE FLEXIBLE CONNECTIONS ARE USED. NO MECHANICAL JOINT RESTRAINTS SHALL BE USED IN WET WELL. ALL PIPE SUPPORTS SHALL BE 316 STAINLESS STEEL. FPUA STANDARDS SECTION 02735 PAGE 3 OF 19

C. LIFT STATION WATER SERVICE:

ALL WASTEWATER LIFT STATIONS SHALL BE PROVIDED WITH A 2–INCH WATER SERVICE WITH POLYETHYLENE PIPING AND ALL APPURTENANCES AS STATED IN SECTION 02600. THE SYSTEM WILL BE PROVIDED WITH A 1–1/2 INCH METER AND RPZ BACKFLOW PREVENTER BY FPUA AT DEVELOPER'S EXPENSE (ASSUMING THE LIFT STATION IS CONSTRUCTED FOR FPUA OWNERSHIP AS OUTLINED IN WATER/WASTEWATER SUPPLY AGREEMENT).

D. PRESSURE GAUGES: A PRESSURE GAUGE SHALL BE PROVIDED ON THE DISCHARGE PIPE EXITING THE VALVE VAULT AS PER FORT PIERCE UTILITIES AUTHORITY STANDARD DETAIL L–4. GAUGE SHALL BE OIL FILLED ONLY. THE GAUGE SHALL READ IN POUNDS PER SQUARE INCH AND/OR FEET OF WATER, WITH A RANGE SUITABLE FOR THE REQUIRED SERVICE. GAUGE SHALL HAVE A FOUR–INCH DIAL, STAINLESS STEEL CASE, AND SHALL BE "DURAGAUGE", AS MANUFACTURED BY ASHCROFT, OR APPROVED EQUAL. GAUGE SHALL BE EQUIPPED WITH STAINLESS STEEL SERVICE SADDLE AND CORPORATION STOP (NORMALLY CLOSED) TO FACILITATE REMOVAL OR REPLACEMENT OF THE GAUGE, AND SHALL BE INSTALLED AT AN ANGLE FOR EASE OF READING FROM GROUND LEVEL. 2.02

PUMPS:

A. WASTEWATER PUMPS AND MOTORS:

1. GENERAL: WASTEWATER PUMPING UNITS SHALL BE CAPABLE OF HANDLING RAW, UNSCREENED SEWAGE AND SHALL BE CAPABLE OF PASSING A SPHERE OF AT LEAST THREE INCHES IN DIAMETER. PUMPS SHALL BE ELECTRIC MOTOR DRIVEN AND OF A PROVEN DESIGN THAT HAS BEEN IN WASTEWATER SERVICE UNDER SIMILAR CONDITIONS FOR AT LEAST FIVE YEARS. PUMPS SHALL PROVIDE THE REQUIRED PEAK DESIGN PERFORMANCE REQUIREMENTS AND BE SUITABLE FOR OPERATION WITHIN THE TOTAL HYDRAULIC RANGE OF OPERATION.
2. PUMP MOTORS: MOTORS SHALL COMPLY WITH THE REQUIREMENTS SET FORTH UNDER NATIONAL ELECTRICAL CODES AND SHALL ADDITIONALLY BE NON–OVERLOADING, EXCLUDING SERVICE FACTOR, THROUGHOUT THE ENTIRE OPERATING RANGE OF THE PUMPS. TWO OR MORE NORMALLY CLOSED HEAT SENSING MINIATURE SWITCHES CONNECTED IN SERIES AND EMBEDDED WITHIN THE MOTOR WINDINGS SHALL BE PROVIDED TO SHUT OFF POWER AND INITIATE ALARM LIGHT FOR MOTOR OVER–TEMPERATURE CONDITION. SUBMERSIBLE PUMP MOTORS SHALL BE CAPABLE OF CONTINUOUS OPERATION UNDER SUBMERGED, AS WELL AS DRY CONDITIONS, WITHOUT DAMAGE. POWER CABLE SHALL HAVE A MINIMUM LENGTH OF THIRTY FEET, BUT SHALL BE SIZED BY THE MANUFACTURER FOR THE APPLICATION.

B. PUMP SELECTION:

1. LIFT STATIONS SHALL HAVE A MINIMUM OF TWO PUMPS PER UNIT. WHERE THE PEAK DESIGN FLOW EXCEEDS 1000 GPM, THREE OR MORE UNITS MAY BE REQUIRED IN THE FACILITY. IN ALL CASES, STANDBY–PUMPING CAPABILITY SHALL BE PROVIDED, SUCH THAT IF ANY ONE PUMP IS OUT OF SERVICE, AN ALTERNATE PUMP IS AVAILABLEAT EQUAL OR GREATER CAPACITY. PUMPS SHALL BE MANUFACTURED BY ONE OF THE FOLLOWING COMPANIES:
   - (A) BARNES
   - (B) HYDROMATIC
   - (C) MYERS

   PUMPS SHALL BE SUBMERSIBLE, FM AND UL APPROVED. FPUA RESERVES THE RIGHT TO APPROVE AND ACCEPT THE PUMP MANUFACTURER THAT BEST FULFILLS THE DESIGN CRITERIA.
2. THE SELECTED WASTEWATER PUMP SYSTEM SHALL HAVE THE MINIMUM CAPABILITY OF PUMPING THE DESIGN PEAK FLOW AT THE MAXIMUM COMPUTED SYSTEM TOTAL DYNAMIC HEAD (TDH) REQUIREMENTS. HOWEVER, UNDER NO CIRCUMSTANCES SHALL THE PUMPING RATE PRODUCE A VELOCITY OF LESS THAN 2.0 FEET PER SECOND IN THE FORCE MAIN. ADDITIONALLY, FINAL SELECTION SHALL BE COORDINATED WITH FORCE MAIN SYSTEMS SIZING AS DESCRIBED UNDER PARAGRAPH C, "OPERATIONAL COST CONSIDERATIONS"
3. HEAD–CAPACITY CURVES SHALL BE PREPARED FOR THE PROPOSED PUMPING SYSTEMS IN ORDER TO DETERMINE THE VARIOUS OPERATIONAL CONDITIONS. HYDRAULIC COMPUTATIONS SHALL BE IN ACCORDANCE WITH GOOD ENGINEERING PRACTICE, WITH PIPE FRICTION LOSS CALCULATED BY THE "HAZEN–WILLIAMS FORMULA", USING STANDARD FRICTION FACTORS BASED ON THE MATERIAL UTILIZED; HOWEVER, NOT GREATER THAN "C=140", UNLESS THE JUSTIFICATION FOR HIGHER VALUES IS AUTHORIZED BY THE FPUA ENGINEERING. HEAD–CAPACITY CURVES SHALL ALSO BE CALCULATED USING A FRICTION FACTOR OF "C=120", THAT WILL ALLOW FOR THE FUTURE OPERATING POINT TO BE DETERMINED DUE TO THE INCREASED FRICTION OBTAINED IN AN OLDER PIPING SYSTEM. IN ADDITION, A PUMP CURVE SHALL BE SELECTED TO ALLOW A MINIMUM OF ONE IMPELLER UPGRADE. THE SYSTEM HEAD–CAPACITY ANALYSIS SHALL PROVIDE THE FOLLOWING AND BE SUBJECT TO REVIEW BY FPUA:
   - (A) SYSTEM OPERATION UNDER PEAK FLOW CONDITIONS, WITH ONE PUMP OR MULTIPLE PARALLEL PUMPING, AS DESIGNED. SHOULD THE RECEIVING FORCE MAIN SYSTEM BE INTERCONNECTED TO ADDITIONAL PUMPING STATIONS, HYDRAULIC DESIGN CONDITIONS SHALL ALSO INCLUDE SAID PUMPING SYSTEMS OPERATING AT RATED CAPACITY.
   - (B) PUMPING CAPABILITY WITH ONE PUMP RUNNING, ALL UNITS OPERATING IN PARALLEL AND OTHER COMBINATIONS, IF APPLICABLE.
   - (C) FOR MULTIPLE LIFT STATION FORCE MAIN SYSTEMS, THE SYSTEM CURVE FOR ALL PROPOSED AND EXISTING PUMPING SHALL BE EVALUATED UNDER MAXIMUM AND MINIMUM FLOW CONTRIBUTION CONDITIONS.

C. LIFT STATIONS SHALL BE DESIGNED WITH SUBMERSIBLE PUMPS 230 VOLT, 3–PHASE, AND BE INSTALLED SUCH THAT EACH UNIT WILL BE AUTOMATICALLY CONNECTED TO THE DISCHARGE PIPING WHEN LOWERED INTO PLACE ON THE DISCHARGE CONNECTION. THE PUMP(S) SHALL BE EASILY REMOVABLE FOR INSPECTION OR SERVICE, REQUIRING NO BOLTS, NUTS, OR OTHER FASTENINGS TO BE REMOVED FOR THIS PURPOSE, AND NO NEED FOR PERSONNEL TO ENTER PUMP WELL. EACH PUMP SHALL BE FITTED WITH A 316 STAINLESS STEEL CHAIN AND LIFTING EYE OF ADEQUATE STRENGTH AND LENGTH TO PERMIT RAISING THE PUMP FOR INSPECTION AND REMOVAL. MINIMUM LENGTH OF CHAIN SHALL BE THREE FEET ABOVE WET WELL TOP SLAB TO LIFTING EYE OF PUMP WHEN SEATED IN PUMPING POSITION.

D. THE CONDUCTOR TO THE PUMP MOTOR SHALL BE OF CONTINUOUS STRANDED CABLE (NO SPLICES), IN COMPLIANCE WITH INDUSTRY STANDARD FOR LOAD AND RESISTANCE AGAINST SEWAGE. THE CONDUCTOR SHALL ENTER THE PUMP MOTOR CASING THROUGH A HEAVY–DUTY ENTRY ASSEMBLY TO PROTECT AGAINST LEAKAGE ONCE SECURED AND MUST HAVE A STRAIN RELIEF ASSEMBLY AS PART OF STANDARD CONSTRUCTION. THE PUMP MOTOR CONDUCTOR SHALL BE A MINIMUM LENGTH OF THIRTY FEET, BUT SHALL BE SIZED BY THE MANUFACTURER FOR THE APPLICATION.

E. EACH PUMP SHALL BE PROVIDED WITH A GUIDE RAIL ASSEMBLY DESIGNED SO THAT EACH PUMP AUTOMATICALLY CONNECTS TO THE DISCHARGE PIPING WHEN THE PUMP IS LOWERED INTO PLACE. LOWERING OF THE PUMP SHALL BE ACCOMPLISHED BY SIMPLE LINEAR DOWNWARD MOTION OF THE PUMP WITH THE ENTIRE WEIGHT OF THE PUMP GUIDED BY THE RAIL SYSTEM. EACH PUMP CASING SHALL HAVE A SEALING FLANGE TO MATE WITH THE DISCHARGE CONNECTORS PROVIDED WITH THE BOTTOM OF EACH GUIDE RAIL ASSEMBLY. DISCHARGE CONNECTION SHALL BE BOLTED TO THE SUMP FLOOR AND SHALL MATE AND SEAL WITH THE PUMP FLANGE WITHOUT THE IMMEDIATE INSTALLATION OF ANY BOLTS OR NUTS. WHEN LOWERED INTO PLACE, NO ROTARY MOTION OF THE PUMP SHALL BE REQUIRED FOR SEALING WITH THE DISCHARGE CONNECTION. THE PUMP TO GUIDE RAIL ASSEMBLY CONNECTION AND THE PUMP TO DISCHARGE PIPE CONNECTION SHALL BE NON–SPARKING FOR INSTALLATION IN CLASS I, GROUP C & D, DIVISION I ATMOSPHERES. FERROUS METAL TO FERROUS METAL CONTACT SHALL NOT BE USED.

ELECTRICAL CONTROLS:

A. LIFT STATIONS SHALL UTILIZE THREE–PHASE EQUIPMENT. ALL COMPONENTS SHALL BE SIZED TO CONSIDER ANY FUTURE UPGRADING OF THE STATION. ALL MOTOR CONTROLS SHALL BE 120 VOLT AC, EXCEPT INTRINSICALLY SAFE CIRCUITRY OR COMPONENTS. REFER TO THE FORT PIERCE UTILITIES AUTHORITY STANDARD DETAIL FOR LIFT STATIONS FOR APPROVED MATERIAL LIST AND TYPE.

B. OPERATION:

1. THE FUNCTION OF THE CONTROL CIRCUIT PROVIDES FOR ALTERNATING OPERATION OF THE LEAD PUMP UNDER NORMAL CONDITIONS. SHOULD THE INCOMING FLOW EXCEED THE PUMPING CAPACITY OF THE LEAD PUMP, THE LAG PUMP SHALL AUTOMATICALLY BE ACTIVATED, AND BOTH PUMPS SHALL OPERATE SIMULTANEOUSLY UNTIL DISENGAGED BY FLOAT #1–PUMPS OFF. IN THE EVENT OF A MALFUNCTION OR AN INCOMING FLOW THAT EXCEEDS THE PUMPING CAPACITY OF BOTH PUMPS, AN AUDIBLE ALARM AND VISUAL LIGHT SHALL BE ENERGIZED BY THE "ALARM FLOAT" TO INDICATE ALARM CONDITIONS. A SILENCING SWITCH SHALL DISCONTINUE THE AUDIBLE ALARM, BUT THE ALARM LIGHT SHALL REMAIN ACTIVATED UNTIL THE HIGH LEVEL CONDITION IS CORRECTED.
2. IF ONE PUMP SHOULD FAIL FOR ANY REASON, THE SECOND PUMP SHALL BE ACTIVATED AT THE "LAG–PUMP–ON" ELEVATION. IN ADDITION, A LIGHT AND HORN SHALL GIVE VISUAL AND AUDIBLE INDICATION OF A HIGH LEVEL ABOVE THE PUMP ON ELEVATIONS. WHEN THE "HAND–OFF–AUTO" SWITCH IS IN THE "HAND" POSITION, THE "TURN–OFF" LEVEL CONTROL SHALL NOT KEEP EITHER PUMP FROM OPERATING.

C. BASIC CONTROL PANEL:

(1) FIBERGLASS ENCLOSURE.
(1) ALUMINUM INNER SAFETY DOOR.
(1) MAIN CIRCUIT BREAKER (SQUARE D OR APPROVED EQUAL).
(1) EMERGENCY CIRCUIT BREAKER OR (SQUARE D OR APPROVED EQUAL).
(2) MOTOR CIRCUIT BREAKERS (SQUARE D OR APPROVED EQUAL).
(1) CONTROL CIRCUIT BREAKER – 15–AMP (SQUARE D OR APPROVED EQUAL).
(2) SEAL LEAK SENSOR INDICATOR LIGHTS.
(1) LIGHTNING ARRESTER.
(1) EQUIPMENT GROUND TERMINAL MULTI LUG FAN BLOCK.
(1) FEEDER CONDUCTOR TERMINAL MULTI LUG FAN BLOCK.
(1) NEUTRAL TERMINAL MULTI LUG FAN BLOCK.
(1) 15–AMP CIRCUIT BREAKER FOR CONVENIENCE OUTLET (SQUARE D OR APPROVED EQUAL).
(1) PANEL MOUNTED DUPLEX RECEPTACLE (GFI) 125V.
(1) AUDIBLE ALARM HORN (EDWARDS CATALOG #876–N5 OR APPROVED EQUAL).
(1) VISUAL ALARM (EDWARDS PART NUMBER 92R–N5 OR APPROVED EQUAL).
(1) GENERATOR POWER RECEPTACLE (RUSSELL STOLL JRFB1044FR OR APPROVED EQUAL) WITH ENGRAVED PLATE, CLOCKWISE.
(3) ELAPSED TIME METERS WITH ENGRAVED NAMEPLATE (REDINGTON 711 SERIES MODEL 711–0160 OR APPROVED EQUAL), ETM–1, ETM–2, AND ETM–TOTALIZER.
(1) TELEMETRY CONTROL UNIT (DATA FLOW SYSTEMS, INC. TCU001–18) (2) RADIO TERMINAL UNIT (DATA FLOW SYSTEMS, INC.)
(3) FVNR NEMA MOTOR STARTERS WITH 115V HOLDING COILS (FURNAS CLASS 14 OR APPROVED EQUAL).

CLASS HP RATING
14DSD32AA 2
14DSF32AA 7.5 14FSH32AA
15 14HSK32AA 30

ALL CIRCUIT BREAKERS, MODULAR CONTROL UNIT, AND OVERLOAD RESETS SHALL BE LOCATED TO ALLOW FOR OPERATION THROUGH THE INNER DOOR; ELAPSED TIME METERS AND CONVENIENCE RECEPTACLE SHALL BE MOUNTED ON THE INNER DOOR. D. COMPONENTS/FEATURES:

1. CONTROL PANEL OVERHOUSE: THE OVER–HOUSE SHALL BE NEMA 3R RATED PROTECTIVE ENCLOSURE WITH OVERALL DIMENSIONS OF 60 INCHES HIGH, 50 INCHES WIDE, AND 40 INCHES DEEP AS SHOWN ON FORT PIERCE UTILITIES AUTHORITY STANDARD DETAIL L–9. SCREENED VENT HOLES SHALL BE PROVIDED ON THE UNDERSIDE OF THE OVERHANG ABOVE THE DOORS. THE OVER–HOUSE SHALL HAVE FRONT AND REAR DOUBLE DOORS WITH PAD LOCKABLE HANDLES AND THREE POINT LOCKING SYSTEM, (MCMASTER–CARR SUPPLY–MODEL 1654A21 OR APPROVED EQUAL). THE DOORS SHALL BE EQUIPPED WITH HOFFMAN DOOR HOLDERS AND SCREENED LOUVERS. ALL HARDWARE INCLUDING FASTENERS, HINGE SYSTEM, AND DOOR HANDLE MECHANISM SHALL BE MADE OF CORROSION RESISTANT 316 STAINLESS STEEL.
2. PANEL ENCLOSURE: PANEL ENCLOSURE SHALL BE NEMA 4X FIBERGLASS REINFORCED POLYESTER CONSTRUCTION AND SHALL BE SIZED TO PROVIDE ADEQUATE ELECTRICAL CLEARANCES AND INTERIOR VOLUME TO LIMIT THE INTERNAL HEAT RISE TO PREVENT DAMAGE OR DETERIORATION OF COMPONENTS. A COMBINATION BREATHER–DRAIN ON THE BOTTOM OF THE PANEL SHALL BE PROVIDED. THE ENCLOSURE DOOR SHALL BE HINGED, AND HAVE MULTIPLE FASTENINGS TO BE PAD–LOCKABLE. ENCLOSURE SHALL CONTAIN AN INTERIOR SWING PANEL, WHICH SHALL BE THE DEAD–FRONT MOUNTING PANEL. ALL OPERATING COMPONENTS SHALL MOUNT ON OR THROUGH THIS PANEL TO ALLOW FOR OPERATION WITHOUT OPENING DEAD–FRONT SWING PANEL. MAIN CIRCUIT BREAKER, GENERATOR CIRCUIT BREAKER, AND TELEMETRY CONTROL UNIT, (TCU) SHALL BE OPERABLE WITHOUT OPENING THE DEAD–FRONT PANEL. THE PANEL SHALL HAVE A MINIMUM SWING OF 145 DEGREES AND SHALL HAVE QUARTER–TURN HAND LATCHES WITH WIND RESTRAINTS.
3. MAIN AND EMERGENCY GENERATOR BREAKERS: THE PANEL ENCLOSURE SHALL INCLUDE CIRCUIT BREAKERS SIZED AS REQUIRED FOR MAIN POWER AND EMERGENCY POWER DISCONNECTS. BREAKER SHALL BE MOUNTED IN PANEL WITH HANDLES THROUGH INNER DOOR AND SHALL INCLUDE A MECHANICAL INTERLOCK ON THE HANDLES TO INSURE THAT ONLY ONE BREAKER CAN BE IN THE "ON" POSITION AT ANY ONE TIME. THE PANEL SHALL BE U.L. LISTED AND SUITABLE FOR USE AS "SERVICE ENTRY RATED" WITH A PERMANENTLY ATTACHED IDENTIFICATION INDICATING THIS RATING.
4. HIGH LEVEL ALARM SYSTEM: THE OVERHOUSE SHALL INCLUDE A VAPOR–PROOF RED LIGHT MOUNTED ON THE SIDE OF THE ENCLOSURE BUT ELEVATED ABOVE THE TOP OF THE OVERHOUSE FOR HIGH LEVEL ALARM VISUAL INDICATION. IN ADDITION, A WEATHERPROOF HORN SHALL BE MOUNTED ON THE OUTSIDE OF THE OVERHOUSE. THE ALARM LIGHT AND HORN SHALL BE PREWIRED TO TERMINALS TO OPERATE ON A HIGH–LEVEL CONTROL SIGNAL. AN ALARM SILENCE PUSH BUTTON LABELED "ALARM FPUA SILENCE" SHALL BE MOUNTED ON THE OUTSIDE OF THE ENCLOSURE AND PREWIRED TO A RELAY WHICH WILL SILENCE THE HORN UNDER ALL CONDITIONS, AND AUTOMATICALLY RESET WHEN HIGH LEVEL CONDITION IS CORRECTED. THE HIGH LEVEL LIGHT SHALL BE A RED EXTERNAL STROBE LIGHT, OR OTHER APPROVED EQUAL THAT IS VISIBLE 24 HOURS PER DAY AND ILLUMINATES AT THE HIGH LEVEL CONDITION. A MOMENTARY PUSH BUTTON SWITCH SHALL BE PROVIDED TO SIMULATE THE AUDIO AND VISUAL ALARM TO BE USED TO TEST THE ALARM SYSTEM.

   NOTE: ALARM LIGHT SHALL BE DESIGNED AND POSITIONED AS PER DETAIL DRAWINGS TO PROVIDE UNOBSTRUCTED ACCESS AND VIEW.
5. ELAPSED TIME METERS: THE PANEL SHALL INCLUDE AN ELAPSED TIME METER (NON RESETTABLE) FOR EACH STARTER MOUNTED ON THE INNER DOOR TO RECORD THE ACCUMULATED RUNNING TIME OF EACH PUMP. A TOTALIZER TO RECORD RUNNING TIME OF BOTH PUMPS SHALL ALSO BE PROVIDED.
6. CONVENIENCE RECEPTACLE: THE PANEL SHALL HAVE A GFI (GROUND FAULT INTERRUPTER) TYPE CONVENIENCE RECEPTACLE MOUNTED ON THE INNER DOOR TO PROVIDE PLUG–IN 120V POWER.
7. SEAL FAILURE INDICATOR: THE PANEL SHALL HAVE A SEAL FAILURE (LEAK DETECTOR) INDICATOR PILOT LIGHT FOR EACH PUMP. THESE PILOT LIGHTS SHALL BE OPERATED BY MOISTURE SENSING MONITORS, WHICH ARE SIGNALED BY PROBES SUPPLIED IN EACH PUMP. MOMENTARY TEST SWITCHES TO SIMULATE SEAL FAILURE ARE TO BE INCLUDED AND SO MARKED WITH PERMANENT WEATHERPROOF NAMEPLATES.
8. LIGHTNING ARRESTER:
   - A. THE PANEL SHALL HAVE THREE–PHASE SECONDARY LIGHTNING ARRESTER PROTECTION. THE ELECTRICIAN SHALL WIRE THE ARRESTERS TO THE ENTRY POINT OF INCOMING LINE SERVICE. THE ARRESTER SHALL BE MOUNTED TO THE OUTSIDE OF THE FIBERGLASS ENCLOSURE BUT INSIDE THE OVERHOUSE.
   - B. THE THREE–POLE, THREE–PHASE SECONDARY SURGE ARRESTER FOR THE ELECTRICAL SERVICE SHALL BE CAPABLE OF HANDLING UP TO 600 VOLTS AC. THE LIGHTNING ARRESTER SHALL BE PARALLEL MOV DESIGN AND PROVIDE PROTECTION FOR CATEGORY C TRANSIENT SURGES AS DEFINED IN ANSI/IEEE C62.11–1991. THE ARRESTER SHALL PROVIDE PROTECTION BETWEEN EACH PHASE LINE AND THE GROUND LINE. THE ARRESTER SHALL BE UL LISTED AS A SECONDARY SURGE ARRESTER, UL CATEGORY OWHX. ALL ELECTRICAL CONNECTIONS SHALL BE SEALED IN A UL COMPONENT RECOGNIZED EPOXY TO EXCLUDE MOISTURE, DIRT AND CORROSION. LEADS SHALL BE COLOR–CODED AND A MINIMUM OF 18 INCHES LONG, SQUARE D MODEL SDSA3650 OR APPROVED EQUAL.
9. TVSS: SHALL BE A LINEMASTER–IBP 3–PH, 4 WIRE + G. 110,000 AMPS PER PHASE, THREE PHASE, TVSS UNIT INSTALLED ON THE BREAKER PROVIDED FOR IT (OUTSIDE THE CONTROL PANEL BUT INSIDE OVERHOUSE PER FORT PIERCE UTILITIES AUTHORITY STANDARD DETAIL L–12).

E. MAIN POWER DISCONNECT:

SHALL INCLUDE A FUSED CIRCUIT BREAKER SIZED AS REQUIRED FOR DISCONNECTING MAIN POWER TO PANEL BOX AND WILL BE HOUSED IN SEPARATE ENCLOSURE MOUNTED BEHIND MAIN PANEL BOX AS INDICATED ON DETAIL DRAWING.

F. HINGED AND LOCKABLE ELECTRICAL PULL BOX: PULL BOX SHALL BE NON–CORRODING HEAVY–DUTY TYPE TO BE INSTALLED ON OUTSIDE OF OVERHOUSE, HINGED AND LOCKABLE. PULL BOX TO BE OF HIGH QUALITY ALUMINUM CONSTRUCTION WITH WEATHERPROOF COVER WITH DIMENSIONS OF 18"X16"X10". CABLE FITTINGS SHALL BE PASS–THROUGH NIPPLE TYPE, SIZED TO ALLOW MINIMAL CORD RESISTANCE AND INSTALLED IN THE PULL BOX AS PER DETAIL.

G. EMERGENCY GENERATOR CONNECTIONS: FOR WASTEWATER LIFT STATIONS NOT EQUIPPED WITH STATIONARY STANDBY POWER GENERATORS, CONNECTIONS SHALL BE PROVIDED FOR PORTABLE EMERGENCY AUXILIARY GENERATOR. THE CONNECTOR SHALL BE A RUSSELL STOLL, ENCLOSED MALE (REVERSE SERVICE) RECEPTACLE, (4) PIN, (4) WIRE, PART NUMBER (JRSB1044FR). THE RECEPTACLE SHALL BE WIRED DIRECTLY INTO THE EMERGENCY POWER GENERATOR BREAKER WITH A CLOCKWISE PIN CONFIGURATION AND MINIMUM OF 100A CAPACITY OR 200A CAPACITY (JRSB2044FR) IF REQUIRED. A ROTATION INDICATING PLATE SHALL BE AFFIXED ABOVE THE RECEPTACLE.

H. WIRING AND CONDUIT: ALL WIRING SHALL BE COLOR–CODED AS PER CODE, 120/208V BLACK, RED, BLUE, WHITE, GREEN. 277/480V BROWN, ORANGE, YELLOW, GRAY, GREEN AND NEATLY ARRANGED FOR EASY TROUBLESHOOTING, MAINTENANCE AND REPLACEMENT. ALL WIRE SHALL BE EQUIPPED WITH STRAIN RELIEF CORD GRIPS AT THE POINT OF ENTRY INTO THE CONTROL PANEL. ALL CONDUIT TO BE RIGID ALUMINUM ELECTRICAL TUBING UNLESS OTHERWISE SPECIFIED ON THE DRAWING "PROJECT LIFT STATION DETAILS". THE CONDUIT SHALL BE A MINIMUM OF TWO–INCHES IN DIAMETER FOR 10 HP OR UNDER AND OVER 10 HP SHALL BE PROPERLY SIZED TO ACCOMMODATE THE CONDUCTORS. CONDUITS SHALL EXTEND 6 INCHES INTO THE WET WELL UNLESS OTHERWISE APPROVED BY FPUA ENGINEERING. THE CONDUIT BETWEEN THE WET WELL AND THE ALUMINUM 90 DEGREE ELBOW BELOW THE PULL BOX SHALL BE SCHEDULE 40 PVC. ALL EXPLOSION PROOF SEALANT SHALL BE APPLIED BY FPUA AFTER INITIAL START–UP TEST. NOTE: ALL ELECTRICAL COMPONENTS TO BE AS PER DRAWING OR APPROVED EQUAL BY FPUA ENGINEERING.

I. TELEMETRY: THE TCU SHALL BE TCU001–18 MANUFACTURED BY DATA FLOW SYSTEM, INC. DATA FLOW SYSTEMS WILL INSPECT AND START UP THE TCU AND REMOTE TERMINAL UNIT (RTU). THE TCU SHALL BE MOUNTED TO THE CONTROL PANEL IN CUT OUT SECTION OF THE INNER DOOR SO THAT IT MAY BE OPERATED WITH THE INNER DOOR SHUT.

J. RADIO TERMINAL UNIT: CONTROL PANEL SHALL BE CAPABLE OF BEING MONITORED BY EXISTING CITY OPERATED RADIO TELEMETRY SYSTEM MAIN TERMINAL UNIT. THE RTU SHALL BE MANUFACTURED AND INSTALLED BY DATA FLOW SYSTEMS, INC. OF MELBOURNE, FLORIDA. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF RTU, ANTENNA, ALL WIRE AND PIPE FROM RTU TO CONTROL PANEL. RTU WILL BE DATA FLOW TAC II SYSTEM. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE DATA FLOW SYSTEMS INSPECT AND START UP RTU SYSTEM. CITY SHALL BE GIVEN 48 HOURS NOTICE PRIOR TO RTU START UP. CITY REPRESENTATIVE TO BE ON SITE AT TIME OF RTU START UP. RTU WILL CONTAIN: RTU/W BACK PLATE, BUS EXTENDER MODULE (BEM001), RIM005/W RADIO, POWER SUPPLY–PSM001–25 WATT, BATTERY, ANTENNA, TOWER, CABLE AND ALL PARTS TO PROVIDE A WORKING TELEMETRY SYSTEM COMPATIBLE WITH EXISTING SYSTEM. (MODEL # SUBJECT TO CHANGE)

2.04 WET WELLS:

A. WET WELL DESIGN:

1. THE WET WELL STRUCTURE SHALL PROVIDE A CAPACITY, BETWEEN OPERATIONAL WATER LEVELS, SUFFICIENT TO ALLOW A MINIMUM OF EIGHT (8) MINUTES BETWEEN SUCCESSIVE STARTS OF THE PUMPS, UNDER THE FOLLOWING CONDITION: INFLUENT RATE OF ONE–HALF THE MAXIMUM ONE PUMP CAPACITY, IF APPLICABLE; AND ONE PUMP RUNNING AT SAID MAXIMUM. TOP ELEVATION OF WET WELL SHALL BE A MINIMUM OF SIX INCHES ABOVE THE 25–YEAR STORM EVENT FLOOD PLAIN, OR AS PER THE LOCAL PERMITTING AGENCY. ADDITIONALLY, WET WELLS SHALL PROVIDE SUFFICIENT SPACE FOR INSTALLED EQUIPMENT, REQUIRED SUCTION PIPE SUBMERGENCE AND SPACING, AND SHALL NOT BE LESS THAN SIX FEET IN MINIMUM HORIZONTAL DIMENSION OR PROVIDE LESS THAN 12 INCHES BETWEEN SHUTOFF (LOW WATER) AND LEAD PUMP START LEVELS. A MINIMUM OF SIX INCHES SHALL BE PROVIDED BETWEEN THE ALARM LEVEL AND THE LAG PUMP "ON" LEVEL. LOW WATER LEVEL SHALL BE SET TO ALLOW PUMPS TO REMAIN COMPLETELY SUBMERGED AT SHUT–OFF.

2. IN GENERAL, THE NORMAL OPERATIONAL WATER LEVEL SHALL PROVIDE A POSITIVE SUCTION HEAD FOR THE SEWAGE PUMPS. OPERATIONAL MAXIMUM OR HIGH WATER LEVELS SHALL NOT EXCEED THE INVERT ELEVATION OF THE LOWER INFLUENT PIPE, WITH HIGH WATER ALARM NO HIGHER THAN THE LOWEST INVERT OF SAID PIPE. A MINIMUM SIZE HOPPER BOTTOM SHALL BE PROVIDED, WITH THE WET WELL FLOOR SLOPING TO SAID BOTTOM AT A SLOPE OF NOT LESS THAN ONE TO ONE (1:1). A FOUR–INCH PVC VENT WITH BUG SCREEN SHALL BE INSTALLED ON ALL WET WELLS. SEE FPUA DETAIL DRAWINGS.

B. WET WELL SHALL BE PRECAST CONCRETE, 4000 P.S.I. AT 28 DAYS, ASTM C–478, AND SHALL BE LINED (SIDE WALLS AND TOP SLAB) WITH AMERON "T–LOCK" LINER UNLESS OTHERWISE DIRECTED BY FPUA ENGINEERING.

C. EACH WET WELL SHALL BE PROVIDED WITH AN ACCESS COMPLETE WITH HINGED AND HASP–EQUIPPED COVER, UPPER GUIDE HOLDER, LEVEL SENSOR CABLE HOLDER AND HOOKS FOR SECURING PUMP MOTOR CONDUCTORS. COVER SHALL BE ABLE TO SUPPORT A STATIC LOAD EQUAL TO 300 POUNDS PER SQUARE FOOT. FRAME SHALL BE SECURELY MOUNTED ABOVE THE PUMPS. EACH DOOR SHALL HAVE SAFETY–LOCKING BRACE TO RETAIN DOORS IN OPEN POSITION. ALL COMPONENTS SHALL BE OF ALUMINUM AND/OR STAINLESS STEEL.

D. DOORS SHALL SWING TO PROVIDE UNOBSTRUCTED ACCESS FOR REMOVAL OF PUMPS.

E. DUCTILE IRON PIPE FITTINGS TO BE COATED WITH KOPPERS BITUMASTIC NO. 300 (NOT REQUIRED FOR HDPE OR PVC FITTINGS), OR APPROVED EQUAL, COATING AS A DETERRENT TO DETERIORATION FROM SEWER GASES.

F. ALL HARDWARE WITHIN WET WELLS TO BE 316 STAINLESS STEEL (EXCEPT AS PROVIDED FOR BY MANUFACTURER'S SPECIFICATIONS). ALL NON–STAINLESS COMPONENTS TO BE COATED AS SPECIFIED ABOVE. NO GALVANIZED HARDWARE WILL BE ALLOWED.

G. EACH PUMP TO BE EQUIPPED WITH 316 STAINLESS STEEL LIFTING CHAIN WITH MINIMUM LENGTH OF THREE (3) FEET ABOVE WET WELL TOP SLAB FROM LIFTING EYE OF PUMPS WHEN SEATED IN THE PUMPING POSITION.

H. WET WELL SIZE AND DEPTH TO BE CALCULATED TO PREVENT FAST CYCLING OF PUMPS WITHOUT SURCHARGING OF GRAVITY SYSTEM UNDER NORMAL OPERATING CONDITIONS.

I. ALL FITTINGS WITHIN WET WELLS TO HAVE FABRICATED FLANGE ENDS OR APPROVED EQUAL.

2.05 VALVE VAULTS:

A. VALVE VAULT SHALL BE PRECAST CONCRETE, 4000 P.S.I. AT 28 DAYS, ASTM C–478.

B. EACH VALVE VAULT SHALL BE PROVIDED WITH AN ACCESS OPENING COMPLETE WITH HINGED AND HASP–EQUIPPED COVER SIZED THAT PROVIDES ADEQUATE ACCESS. COVER SHALL BE ABLE TO SUPPORT A STATIC LOAD EQUAL TO 300 POUNDS PER SQUARE FOOT. ALL SUPPORT BRACING TO BE INCORPORATED INTO LIDS, THUS PROVIDING UNRESTRICTED ACCESS. NO FRAME MOUNTED CROSS SUPPORTS WILL BE ALLOWED. FRAME SHALL BE SECURELY MOUNTED IN CONCRETE SLAB. EACH DOOR SHALL HAVE SAFETY LOCKING BRACE IN OPEN POSITION. ALL COMPONENTS SHALL BE OF ALUMINUM AND/OR STAINLESS STEEL.

C. ALL PIPE AND FITTINGS SHALL BE COATED WITH KOPPERS BITUMASTIC NO. 300, OR APPROVED EQUAL, COATING AS A DETERRENT TO DETERIORATION FROM SEWER GASES. VALVE VAULT WALLS AND STAINLESS STEEL NUTS AND BOLTS OF CHECK VALVES AND/OR O.S.&Y. GATE VALVES (BONNET SECTIONS) SHALL NOT BE COATED FOR ACCESSIBILITY.

D. VALVE VAULT ELEVATION SHALL BE SET AS PER WET WELL DESIGN (SECTION 1.02, D.,1.)

E. ALL HARDWARE TO BE 316 STAINLESS STEEL.

F. CHECK VALVES TO INCLUDE EXTERNALLY WEIGHTED SWING ARMS. ACCEPTABLE MANUFACTURERS ARE CLOW, M&H AND AMERICAN OR APPROVED EQUAL WITH EPOXY COATED INTERIOR. CHECK VALVES SHALL BE CENTERED UNDER HATCH OPENING FOR ACCESSIBILITY.

G. SHUTOFF VALVES TO BE RESILIENT WEDGE GATE VALVES WITH OUTSIDE STEM AND YOKE (OS&Y) DESIGN WITH EPOXY COATED INTERIOR AND APPROVED BY THE FPUA ENGINEERING DEPARTMENT. GATE VALVES SHALL BE CENTERED UNDER HATCH OPENING FOR ACCESSIBILITY.

H. EMERGENCY PUMP CONNECTION DEVICE SHALL BE FOUR–INCH MALE "CAM–LOC" FITTING WITH PROTECTIVE CAP.

I. ALL FITTINGS WITHIN VALVE VAULTS TO HAVE FLANGE ENDS. PIPE SPOOL PIECES TO HAVE FABRICATED FLANGE ENDS. FLANGE–TYPE PLAIN–END ADAPTER FITTINGS WILL NOT BE PERMITTED EXCEPT AS FOLLOWS: FLANGE COUPLING ADAPTER MAY BE INSTALLED BETWEEN STRUCTURES WHERE PLAIN END DIP MEETS UNI–FLEX COUPLING AS SHOWN IN DETAIL DRAWINGS.

J. VALVE VAULT FLOOR SHALL BE GROUTED TO MAINTAIN POSITIVE SLOPE FROM ALL CORNERS OF VAULT TO 2–INCH DRAINPIPE. (SEE FORT PIERCE UTILITIES AUTHORITY STANDARD DETAIL L–4)

2.06 WARRANTY:

A. IN ORDER TO ASSURE THE PROPER PERFORMANCE AND COMPATIBILITY OF INTERACTING COMPONENTS CONSISTENT WITH THE INTENT OF THESE SPECIFICATIONS, THE PUMPS, CONTROL CENTER, ACCESS FRAME, AND ASSOCIATED APPURTENANCES SHALL BE WARRANTED BY THE SAME SUPPLIER.

B. THE PUMP MANUFACTURER SHALL WARRANT THE PUMPS AND ACCESSORIES BEING SUPPLIED TO THE FPUA AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF FIVE YEARS UNDER NORMAL USE, OPERATION, AND SERVICE. THE FIVE–YEAR WARRANTY SHALL BEGIN UPON ISSUANCE OF THE LETTER OF ACCEPTANCE BY FPUA ENGINEERING. IN ADDITION, THE MANUFACTURER SHALL REPLACE CERTAIN PARTS WHICH SHALL BECOME DEFECTIVE THROUGH NORMAL USE AND WEAR ON A PRORATED SCHEDULE COST FOR A PERIOD OF FIVE YEARS; PARTS INCLUDED ARE THE MECHANICAL SEAL, IMPELLER, PUMP HOUSING, WEAR RING, AND BALL BEARINGS. THE WARRANTY SHALL BE IN PUBLISHED FORM FROM THE MANUFACTURER AND APPLY TO ALL SIMILAR UNITS.

MANUFACTURER'S SHOP DRAWINGS:

A. THE OWNER/DEVELOPER'S ENGINEER SHALL PROVIDE, ALONG WITH THE PRELIMINARY DRAWINGS, ENGINEERING DATA CLEARLY MARKED WITH THE NAME OF THE PROJECT, EQUIPMENT, AND FABRICATED MATERIALS TO BE FURNISHED BY THE MANUFACTURER TO THE FPUA.

NOTE: THREE SETS OF SHOP DRAWINGS SHALL BE FURNISHED FOR ENGINEERING REVIEW.

B. SHOP DRAWINGS WILL INCLUDE INFORMATION ON PUMPS, GUIDE RAILS, CONTROL PANEL, ELECTRICAL SCHEMATICS, ACCESS DOORS, AND ANY OTHER REQUIREMENTS NECESSARY TO COMPLETE THE LIFT STATION INSTALLATION.

C. DATA SHALL INCLUDE DRAWINGS AND DESCRIPTIVE INFORMATION IN SUFFICIENT DETAIL TO SHOW THE KIND, SIZE, ARRANGEMENT, AND OPERATION OF COMPONENT MATERIALS AND DEVICES; THE EXTERNAL CONNECTIONS, ANCHORAGES, AND SUPPORTS REQUIRED; AND DIMENSIONS NEEDED FOR INSTALLATION AND CORRELATION WITH OTHER MATERIALS AND EQUIPMENT. ALL PART NUMBERS AND CATALOG DATA REQUIRED FOR ORDERING SPARES AND REPLACEMENTS SHALL BE PROVIDED.

D. THE FPUA'S ACCEPTANCE OF DRAWINGS RETURNED MARKED "ACCEPTED" OR "ACCEPTED AS NOTED" WILL NOT CONSTITUTE A BLANKET APPROVAL OF DIMENSIONS, QUANTITIES, AND DETAILS OF THE MATERIALS, EQUIPMENT, DEVICE, OR ITEM SHOWN AND DOES NOT RELIEVE ANY RESPONSIBILITY FOR ERRORS OR DEVIATIONS FROM THE REQUIREMENTS.

E. THE SUBMITTED DRAWINGS AND DATA SHALL BE PUBLISHED BY THE MANUFACTURER AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

1. MECHANICAL EQUIPMENT
   - (A) ASSEMBLY DRAWINGS, NOMENCLATURE, AND MATERIALS LIST.
   - (B) OUTLINE DIMENSIONS AND WEIGHTS.
   - (C) DRAWINGS, METHOD OF ANCHORING EQUIPMENT, AND PIPING CONNECTION DETAILS SUFFICIENT TO PERMIT DESIGN OF SUPPORTIVE STRUCTURES AND CONNECTIONS.
2. ELECTRIC MOTORS
   - (A) NAME OF MANUFACTURER.
   - (B) TYPE, MODEL, AND FRAME SIZE.
   - (C) MOTOR HORSEPOWER.
   - (D) FULL LOAD SPEED.
   - (E) CONSTRUCTION.
   - (F) TEMPERATURE RISE AND CLASS OF INSULATION. FPUA STANDARDS SECTION 02735 PAGE 14 OF 19
   - (G) SERVICE FACTOR.
   - (H) VOLTAGE, FREQUENCY, NUMBER OF PHASES.
   - (I) FULL LOAD CURRENT.
   - (J) LOCKED ROTOR CURRENT.
   - (K) MOTOR EFFICIENCIES AT ½, ¾, AND FULL LOAD.
3. CONTROLS AND WIRING DIAGRAM
   - (A) WIRING DIAGRAM OF ALL ELECTRICAL AND CONTROL COMPONENTS.
   - (B) ASSEMBLY DRAWINGS, NOMENCLATURE, AND MATERIALS LIST.
   - (C) OUTLINE AND DIMENSIONS AND HEIGHTS.
   - (D) RECOMMENDED METHOD OF ANCHORING CONTROL PANELS, AND ELECTRICAL CONNECTION DETAILS SUFFICIENT TO PERMIT DESIGN OF SUPPORTIVE STRUCTURES AND CONNECTIONS.
   - (E) DETAIL DESCRIPTION AND CUT SHEETS OF ALL COMPONENTS.

F. EACH PUMP SHALL BE TESTED IN THE MANUFACTURER'S SHOP TO DEMONSTRATE THE PROPER OPERATION OF ALL COMPONENTS. THE TESTING SHALL DETERMINE OVER HEATING OF BEARINGS, MOTORS, OR OTHER COMPONENTS. MANUFACTURER'S DOCUMENTATION OF THIS TESTING SHALL BE PROVIDED UPON REQUEST.

EVALUATION OF MATERIALS:

A. THE EVALUATION OF THE SHOP DRAWINGS SHALL BE ON THE BASIS OF CONFORMANCE TO THESE SPECIFICATIONS AND THE FORT PIERCE UTILITIES AUTHORITY STANDARD DETAILS.

B. THE EVALUATIONS SHALL BE BASED ON MANUFACTURER'S DATE SUBMITTED AND SHALL INCLUDE THE FOLLOWING CONSIDERATIONS:

1. EQUIPMENT AND MATERIALS TO BE PROVIDED.
2. MANUFACTURER'S RECOMMENDED INVENTORY OF SPARE PARTS.
3. PROJECT DESIGN CHANGES WHICH WOULD BE REQUIRED TO ACCOMMODATE PROPOSED EQUIPMENT AND MATERIALS.
4. MAINTENANCE AND FREQUENCY OF INSPECTION TO INSURE RELIABILITY AND PERFORMANCE OF THE EQUIPMENT. FPUA STANDARDS SECTION 02735 PAGE 15 OF 19
5. EXPERIENCE AND PERFORMANCE RECORD OF THE MANUFACTURER, AND/OR THE MANUFACTURER'S LOCAL REPRESENTATIVE, WORK OF COMPARABLE SIZE AND TYPE OF APPLICATION.
6. MANUFACTURER'S SERVICE FACILITIES, EXPERIENCE, AND AVAILABILITY OF QUALIFIED FIELD SERVICE PERSONNEL.

PART 3 – EXECUTION

LIFT STATION CONSTRUCTION:

A. DUPLEX STATION: TWO–PUMP STATION, THREE–PHASE 230–VOLT EQUIPMENT. WET WELL IS SIZED 6 FEET OR 8 FEET IN DIAMETER.

B. THE PUMPS SHALL BE MANUFACTURED BY, HYDROMATIC, MYERS OR BARNES (SEE PARAGRAPH 1.02C1). THE CONTROL PANEL SHALL BE MANUFACTURED ACCORDING TO FPUA DESIGN REQUIREMENTS AS SHOWN IN THE "FORT PIERCE UTILITIES AUTHORITY STANDARD DETAILS".

RESPONSIBILITIES:

A. ALL WORK SHALL BE IN ACCORDANCE WITH THESE FORT PIERCE UTILITIES AUTHORITY STANDARD DETAILS AND SPECIFICATIONS.

B. THE OWNER/DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR COORDINATING ALL DESIGN WITH FPUA ENGINEERING.

C. FPUA ENGINEERING SHALL APPROVE ALL DESIGNS AND DETERMINE THE REQUIREMENTS FOR FUTURE UPGRADING OF ALL LIFT STATIONS. LIFT STATIONS REQUIRING UPGRADING SHALL BE DESIGNED AND CONSTRUCTED TO MEET THE ANTICIPATED FLOWS OF THE DEVELOPMENT.

D. AN OVERALL LAYOUT OF THE ENTIRE DEVELOPMENT, INCLUDING PHASING, SHALL BE REQUIRED. LIFT STATIONS SHALL BE DESIGNED FOR THE ULTIMATE BUILD OUT. LIFT STATIONS SHALL REQUIRE AN EASEMENT AND ACCESS ROAD AS FOLLOWS UNLESS OTHERWISE APPROVED BY FPUA ENGINEERING:

1. EASEMENT OR IN RIGHT–OF–WAY WITH A CROWNED ROADWAY WITH ADEQUATE DRAINAGE. ROADWAY SHALL BE 12 FEET WIDE WITH A MINIMUM OF EIGHT INCHES OF LIME ROCK BASE WITH COMPACTION EQUAL TO 98% MAXIMUM DENSITY AS DETERMINED BY AASHTO SPECIFICATION T–180. THE ROADWAY SHALL HAVE A SMOOTH FINISH OF 1–INCH MINIMUM ASPHALTIC CONCRETE AND PROVIDE UNOBSTRUCTED ACCESS TO THE WET WELL. SITE SHALL BE SECURED WITH GALVANIZED STEEL FENCING (SEE FORT PIERCE UTILITIES AUTHORITY STANDARD DETAILS FOR WATER AND WASTEWATER) WHEN SPECIFICALLY REQUESTED BY FPUA ENGINEERING. PVC OR OTHER FENCE SLATING MAY ALSO BE REQUIRED, DEPENDING ON THE LOCATION. WHERE SLATING IS REQUIRED, A WIND LOAD ANALYSIS SIGNED AND SEALED BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER SHALL BE SUBMITTED To FPUA ENGINEERING.

INSPECTIONS:

A. INSPECTIONS SHALL BE COORDINATED WITH FPUA ENGINEERING. INSPECTIONS SHALL BE CONDUCTED IN TWO PHASES AS FOLLOWS:

1. PHASE I: CIVIL/MECHANICAL PHASE, INCLUDING PIPING, RECEIVING MANHOLES, WET WELLS, AND VALVE PITS INSPECTION SHALL BE PERFORMED BY FPUA ENGINEERING.
2. PHASE II: ELECTRICAL PHASE, INCLUDING CONTROL PANEL, PUMPS, AND DISTRIBUTION SYSTEM INSPECTION SHALL BE PERFORMED JOINTLY BETWEEN FPUA, AND THE COUNTY OR CITY BUILDING DEPARTMENT ELECTRICAL INSPECTOR, AS APPLICABLE.

   NOTE: GENERAL CONTRACTOR SHALL BE REQUIRED TO RETAIN THE SERVICES OF A LICENSED ELECTRICAL CONTRACTOR DURING THE ELECTRICAL CONSTRUCTION PHASE OF THE LIFT STATION. CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND REMOVING PUMPS FROM WET WELLS FOR INSPECTION.

START–UP/FINAL ACCEPTANCE:

A. FPUA ENGINEERING SHALL BE NOTIFIED 48 HOURS PRIOR TO START UP OF THE LIFT STATION. DURING START UP, THE CONTRACTOR, THE FORT PIERCE UTILITIES AUTHORITY'S REPRESENTATIVE, ELECTRICIAN, AND THE MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT AT THE JOB SITE. THE MANUFACTURER'S REPRESENTATIVE SHALL BE RESPONSIBLE FOR DELIVERY OF THE FOLLOWING:

1. THREE PARTS MANUALS
2. THREE PUMP OPERATIONS AND MAINTENANCE MANUALS.
3. THREE COMPLETE SETS OF SCHEMATICS AND DRAWINGS.

B. THE FPUA INSPECTORS WILL ADHERE TO THE FOLLOWING LIFT STATION CHECKLIST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR, BUT NOT LIMITED TO, THE FOLLOWING:

1. ORIENTATION OF LIFT STATION, ACCESS ROAD, CONTROL PANEL, AND FENCING, IF REQUIRED, SHALL BE CONSTRUCTED AS INDICATED ON THE LIFT STATION SITE PLAN PROVIDED TO AND APPROVED BY FPUA ENGINEERING. CONTROL PANEL DOORS MUST OPEN SUCH THAT THE OPERATOR DOES NOT HAVE HIS BACK TO THE WET WELL. UNOBSTRUCTED ACCESS MUST BE PROVIDED TO WET WELL. FPUA STANDARDS SECTION 02735 PAGE 17 OF 19
2. REACTION PLATES AND RESTRAINING RODS MUST BE SECURED TO ELIMINATE VIBRATIONS THAT MAY CRACK GROUT. ALL 90 DEGREE BENDS LOCATED AT TOP OF THE DISCHARGE LINE SHALL NOT BE INSTALLED INTO THE GROUT.
3. ALL GUIDE RAILS SHALL BE ATTACHED TO ACCESS LID FRAME WITH APPROVED BRACKET ASSEMBLIES. INTERMEDIATE GUIDE RAIL SUPPORTS SHALL BE PROVIDED PER MANUFACTURER'S RECOMMENDATIONS. GUIDE RAILS AND SUPPORTS SHALL BE STAINLESS STEEL PIPING.
4. WET WELL AND VALVE VAULT LIFTING EYES SHALL BE REMOVED BELOW SURFACE AND GROUTED FLUSH AFTER INSTALLATION TO AVOID ANY TRIPPING HAZARDS.
5. ALL CONCRETE FOUNDATIONS SHALL BE PROFESSIONALLY FORMED AND POURED TO ASSURE PROFESSIONAL APPEARANCE AND ASSURE THAT THE ANCHOR BOLTS AND OTHER ITEMS REQUIRED IN THE DESIGN ARE PROPERLY LOCATED. CONCRETE SURFACE TO BE OF PROFESSIONAL QUALITY WITH NONSKID FINISH.
6. TWO–INCH DRAINPIPE WITH "P" TRAP TO BE INSTALLED BETWEEN WET WELL AND VALVE VAULT WITH SPRING LOADED CHECK VALVE.
7. FORCE MAIN CHECK VALVES SHALL BE INSTALLED IN THE PROPER FLOW DIRECTION. SHUTOFF VALVES MUST BE RESILIENT WEDGE GATE VALVES.
8. ALL DISCHARGE ELBOWS SHALL BE LEVEL AND PLUMB TO ENSURE ALL GUIDE RAILS WORK PROPERLY AND PUMPS CAN BE REMOVED EASILY AND SEAT PROPERLY.
9. ALL ADAPTER FLANGES SHALL BE INSTALLED ACCORDING TO DRAWINGS TO ALLOW EASY REMOVAL OF VALVES. TORQUE ALL BOLTS ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
10. THE CONDUIT AND FITTINGS FOR CONDUCTORS BETWEEN PULL BOX AND WET WELL SHALL BE TWO–INCH (MINIMUM). THE CONDUIT FROM WET WELL TO THE BASE OF THE 90–DEGREE ELBOW SHALL BE PVC. THE ELBOW AND CONDUIT FROM THAT POINT ON SHALL BE THREADED RIGID ALUMINUM CONDUIT INTO THE PULL BOX.
11. A 2–INCH WATER SERVICE TO BE INSTALLED WITH REDUCED PRESSURE DEVICE AND PIPED ABOVE GROUND WITH 1 ½ INCH THREADED NIPPLE CAM–LOC TYPE FITTING.
12. ALL ELECTRICAL EQUIPMENT SHALL BE PROPERLY GROUNDED UTILIZING A LOOPED BURIED BARE CABLE WITH ALL OF THE NECESSARY GROUND RODS CONNECTED TO THIS CABLE.

C. UPON COMPLETION OF THE WORK AND PRIOR TO THE RELEASE OF ANY ASSURANCES OF COMPLETION OR PERFORMANCE BOND, FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION CERTIFICATION OF COMPLETION NEEDS TO BE OBTAINED. FPUA STANDARDS SECTION 02735 PAGE 18 OF 19

NOTE:
DETAILED PLAN AND PROFILES, LIFT STATION DESIGN SHEETS AND ALL APPROPRIATE FPUA APPROVED DETAILS AND SPECIFICATIONS SHALL BE PROVIDED DURING PERMITTING PROCESS WITH FPUA

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△	REVISIONS	DATE	BY
1			
2			
3			
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6			
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MARINER COVE

CITY OF FT. PIERCE, FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

LIFT STATION SPECIFICATIONS

DESIGN ENGINEER
No. 50046
WILLIAM F. McCAIN, PE FL# 50046
DATE JUL 2 7

MARINER COVE	
DESIGNED	W.F.M.
DRAWN	B.J.K.
CHECKED	W.F.M.
DATE	JUNE 2015
SCALE	NTS

SHEET
C13
OF 16
14-173

Luminaire Schedule

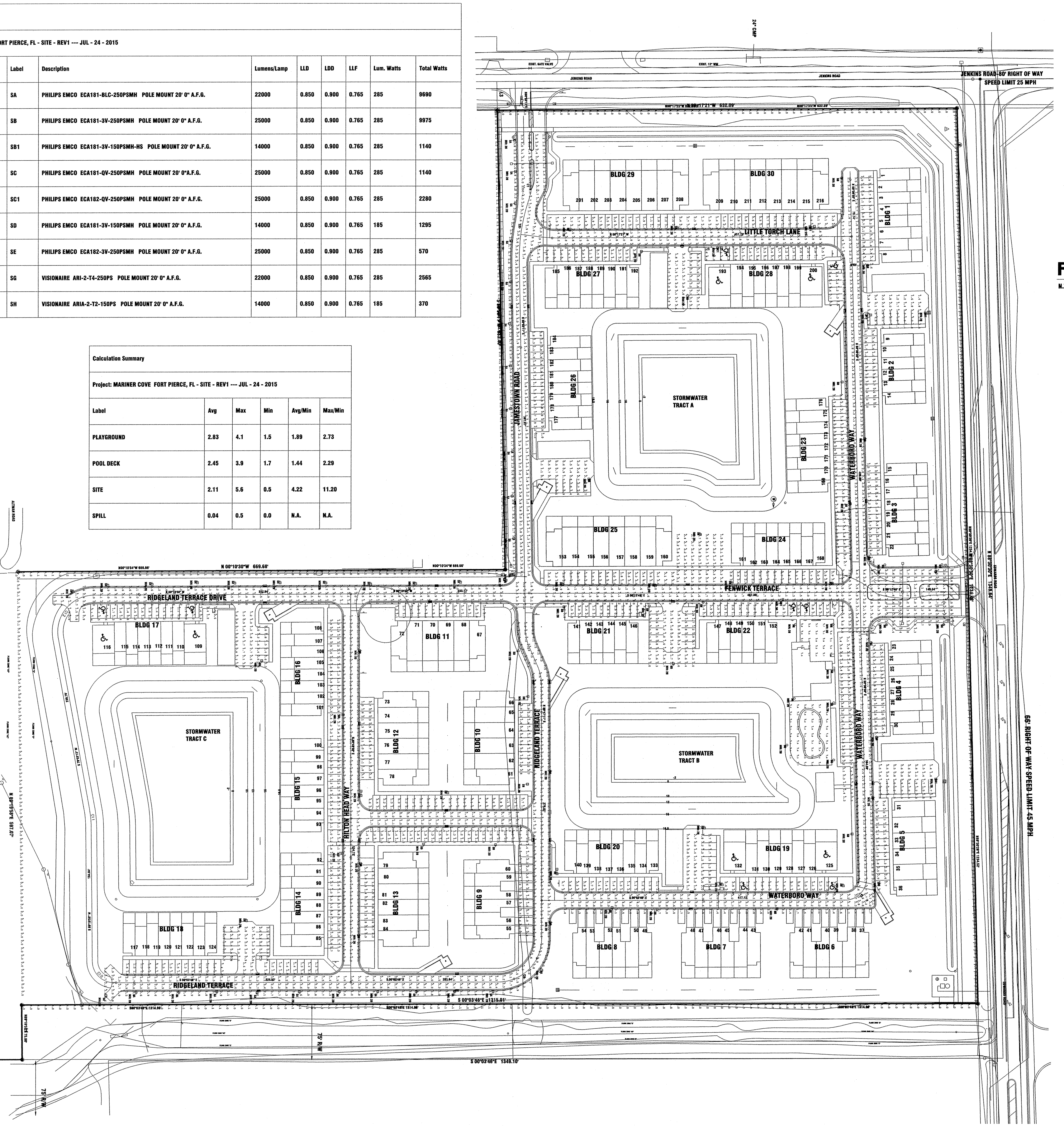
Project: MARINER COVE FORT PIERCE, FL - SITE - REV1 --- JUL - 24 - 2015

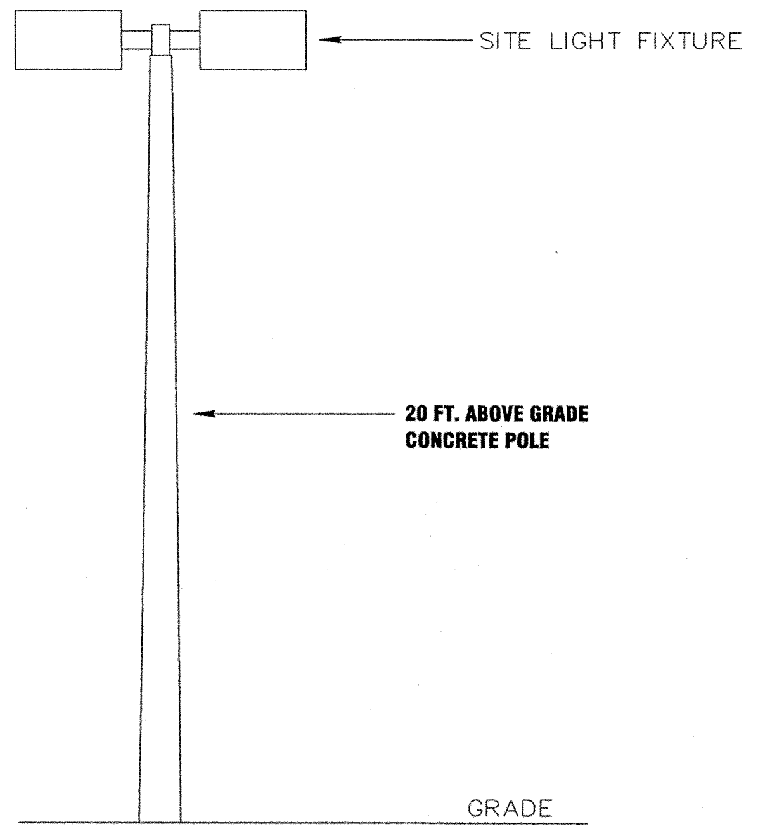
Symbol	Qty	Label	Description	Lumens/Lamp	LLD	LDD	LLF	Lum. Watts	Total Watts
─⊡	34	SA	PHILIPS EMCO ECA181-BLC-250PSMH POLE MOUNT 20' 0" A.F.G.	22000	0.850	0.900	0.765	285	9690
─⊡	35	SB	PHILIPS EMCO ECA181-3V-250PSMH POLE MOUNT 20' 0" A.F.G.	25000	0.850	0.900	0.765	285	9975
─⊡	4	SB1	PHILIPS EMCO ECA181-3V-150PSMH-HS POLE MOUNT 20' 0" A.F.G.	14000	0.850	0.900	0.765	285	1140
─⊡	4	SC	PHILIPS EMCO ECA181-QV-250PSMH POLE MOUNT 20' 0"A.F.G.	25000	0.850	0.900	0.765	285	1140
⊡─⊡	4	SC1	PHILIPS EMCO ECA182-QV-250PSMH POLE MOUNT 20' 0" A.F.G.	25000	0.850	0.900	0.765	285	2280
─⊡	7	SD	PHILIPS EMCO ECA181-3V-150PSMH POLE MOUNT 20' 0" A.F.G.	14000	0.850	0.900	0.765	185	1295
⊡─⊡	1	SE	PHILIPS EMCO ECA182-3V-250PSMH POLE MOUNT 20' 0" A.F.G.	25000	0.850	0.900	0.765	285	570
⊙	9	SG	VISIONAIRE ARI-2-T4-250PS POLE MOUNT 20' 0" A.F.G.	22000	0.850	0.900	0.765	285	2565
⊙	2	SH	VISIONAIRE ARIA-2-T2-150PS POLE MOUNT 20' 0" A.F.G.	14000	0.850	0.900	0.765	185	370

Calculation Summary

Project: MARINER COVE FORT PIERCE, FL - SITE - REV1 --- JUL - 24 - 2015

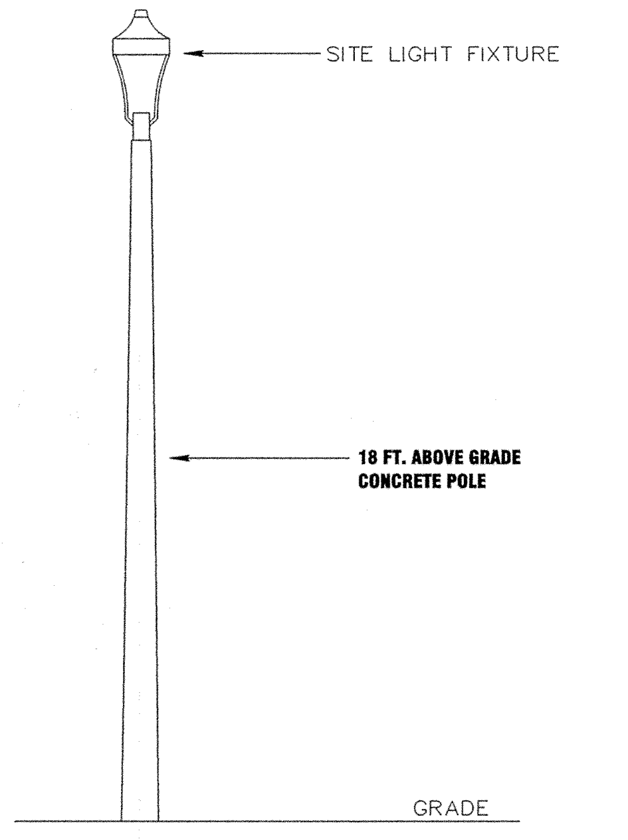
Label	Avg	Max	Min	Avg/Min	Max/Min
PLAYGROUND	2.83	4.1	1.5	1.89	2.73
POOL DECK	2.45	3.9	1.7	1.44	2.29
SITE	2.11	5.6	0.5	4.22	11.20
SPILL	0.04	0.5	0.0	N.A.	N.A.


JENKINS ROAD
JENKINS ROAD-80' RIGHT OF WAY
SPEED LIMIT 25 MPH
BLDG 29
BLDG 30
BLDG 1
LITTLE TORCH LANE
BLDG 27
BLDG 28
BLDG 26
BLDG 2
STORMWATER TRACT A
JAMESTOWN ROAD
BLDG 23
WATERBORO WAY
BLDG 3
BLDG 25
BLDG 24
N 00°10'30"W 669.68'
FENWICK TERRACE
RIDGELAND TERRACE DRIVE
BLDG 17
BLDG 16
BLDG 11
BLDG 21
BLDG 22
BLDG 4
STORMWATER TRACT C
BLDG 12
BLDG 10
RIDGELAND TERRACE
STORMWATER TRACT B
BLDG 15
HILTON HEAD WAY
BLDG 20
BLDG 19
BLDG 5
BLDG 14
BLDG 13
BLDG 9
WATERBORO WAY
BLDG 18
BLDG 8
BLDG 7
BLDG 6
RIDGELAND TERRACE
66' RIGHT OF WAY SPEED LIMIT 45 MPH


SITE LIGHT FIXTURE
20 FT. ABOVE GRADE CONCRETE POLE
GRADE

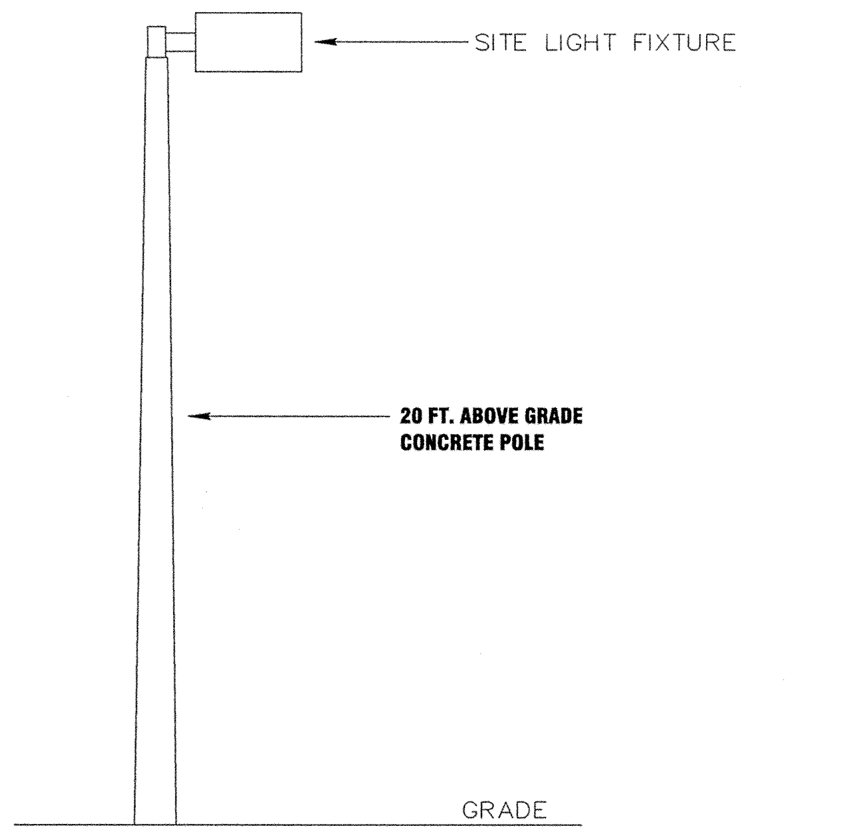
FIXTURE "SC1, SE" DETAIL

N.T.S.


SITE LIGHT FIXTURE
18 FT. ABOVE GRADE CONCRETE POLE
GRADE

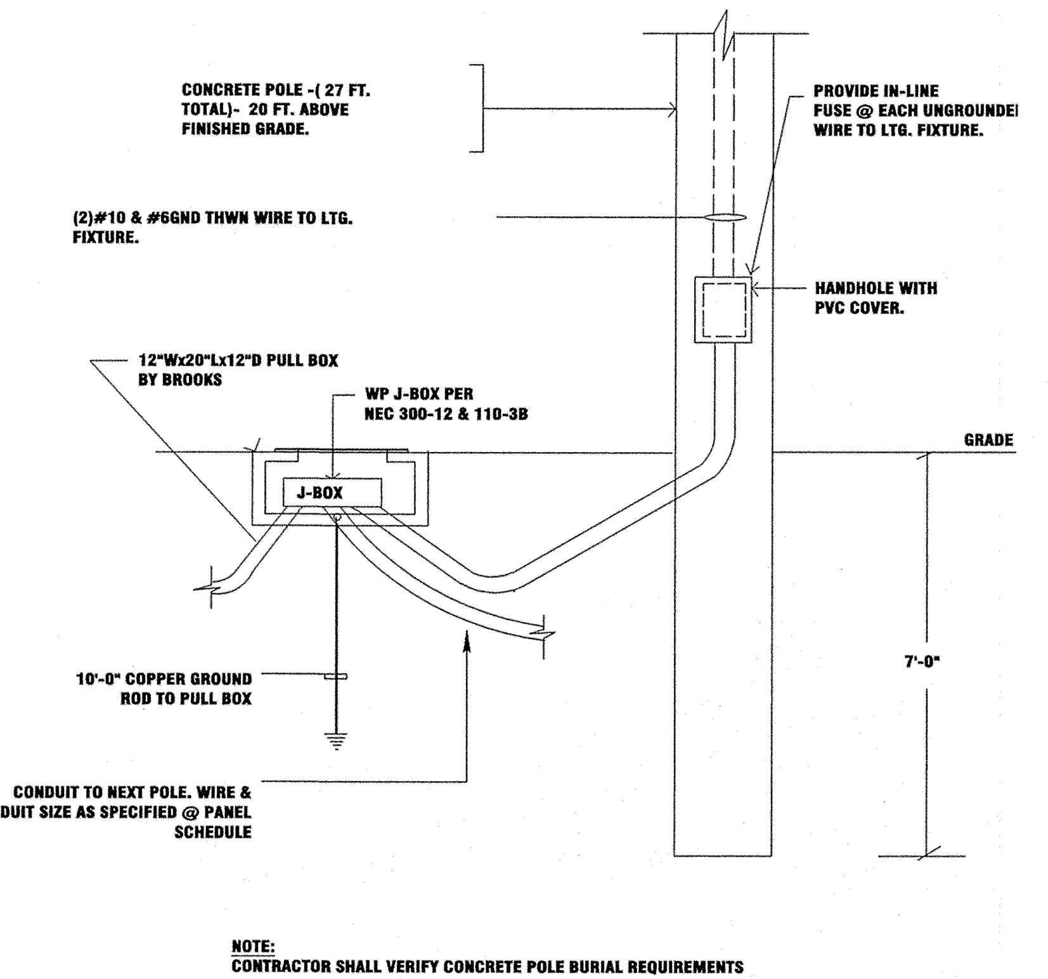
FIXTURE "SG, SH" DETAIL

N.T.S.


SITE LIGHT FIXTURE
20 FT. ABOVE GRADE CONCRETE POLE
GRADE

FIXTURE "SA, SB, SB1, SC, SD" DETAIL

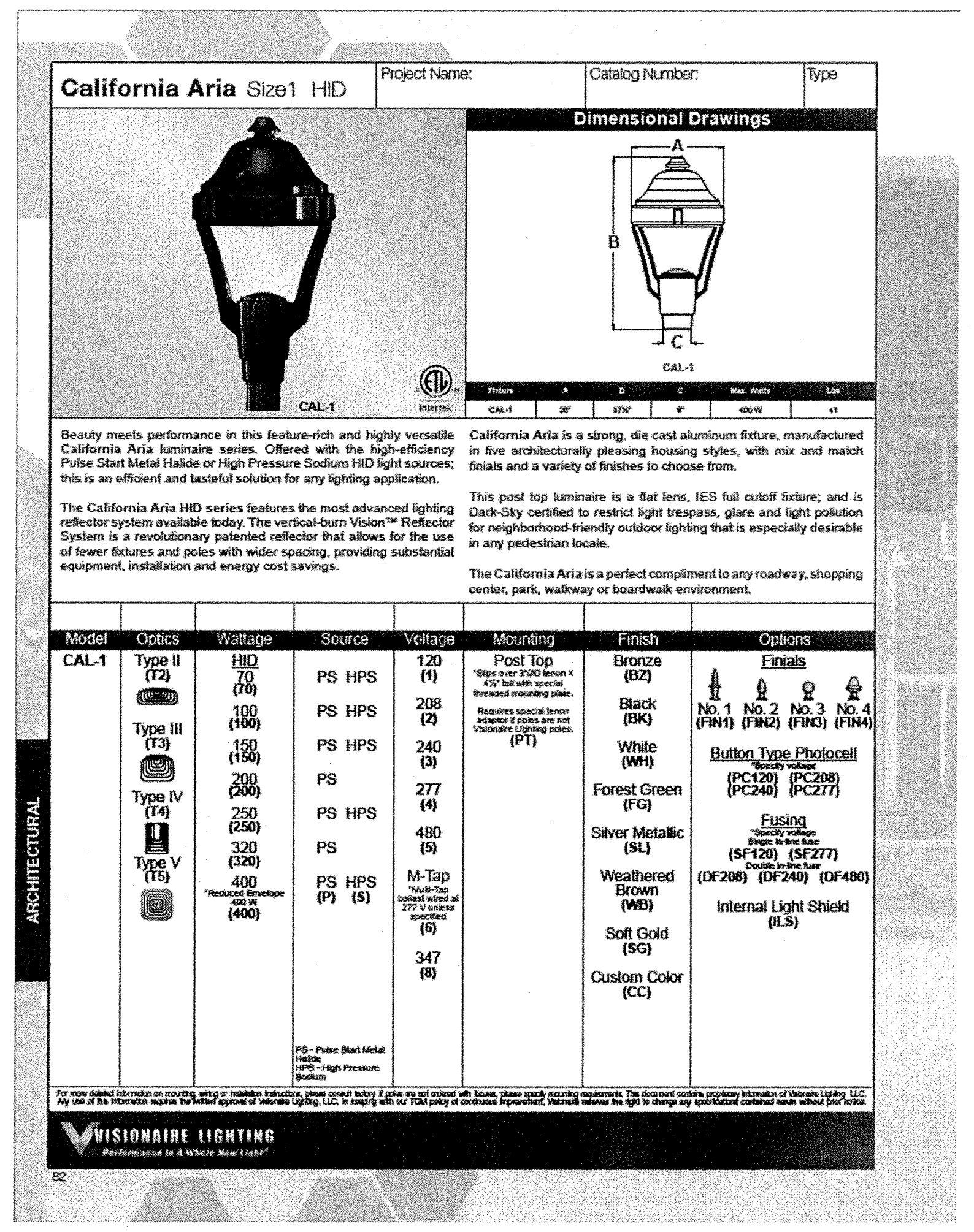
N.T.S.


CONCRETE POLE -(27 FT. TOTAL)- 20 FT. ABOVE FINISHED GRADE.
(2)#10 & #6GND THWN WIRE TO LTG. FIXTURE.
PROVIDE IN-LINE FUSE @ EACH UNGROUNDED WIRE TO LTG. FIXTURE.
HANDHOLE WITH PVC COVER.
12"Wx20"Lx12"D PULL BOX BY BROOKS
WP J-BOX PER NEC 300-12 & 110-3B
J-BOX
GRADE
7'-0"
10'-0" COPPER GROUND ROD TO PULL BOX
CONDUIT TO NEXT POLE. WIRE & CONDUIT SIZE AS SPECIFIED @ PANEL SCHEDULE

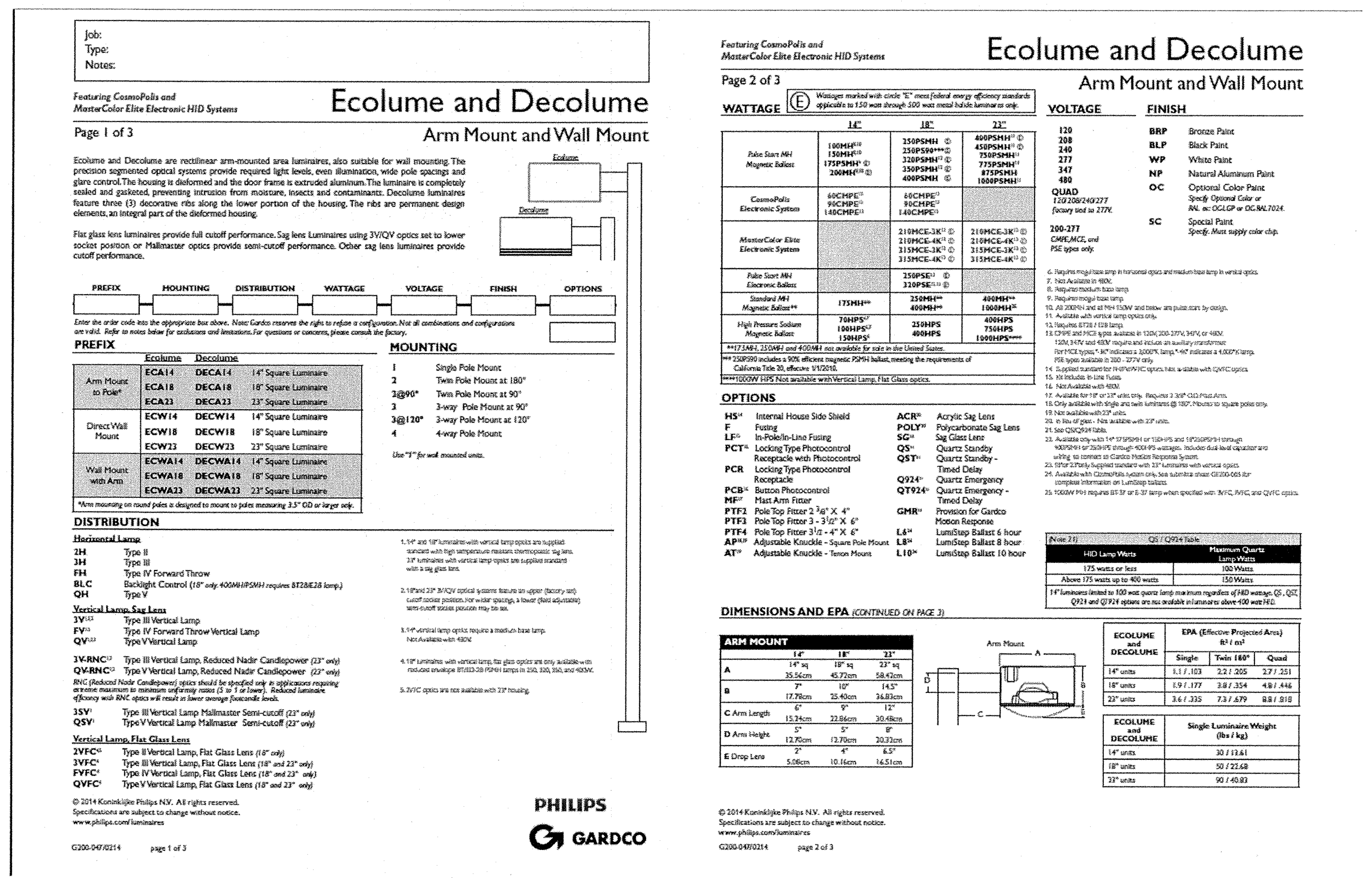
NOTE:
CONTRACTOR SHALL VERIFY CONCRETE POLE BURIAL REQUIREMENTS WITH A FLORIDA REGISTERED STRUCTURAL ENGINEER

CONCRETE POLE MOUNTING DETAIL

N.T.S.

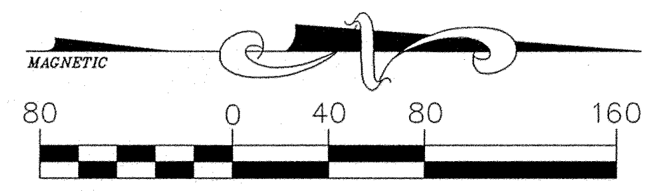

California Aria Size1 HID
Dimensional Drawings
VISIONAIRE LIGHTING

FIXTURE "SG, SH"


Ecolume and Decolume
Arm Mount and Wall Mount
PHILIPS
GARDCO

FIXTURE "SA, SB, SB1, SC, SD"

PHOTOMETRIC PLAN PROVIDED BY SESCO LIGHTING


MAGNETIC
80
0
40
80
160

(IN FEET)
1 inch = 80 ft.

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△ REVISIONS	DATE	BY
1		
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8		

MARINER COVE

CITY OF FT. PIERCE, FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

PHOTOMETRIC EXHIBIT

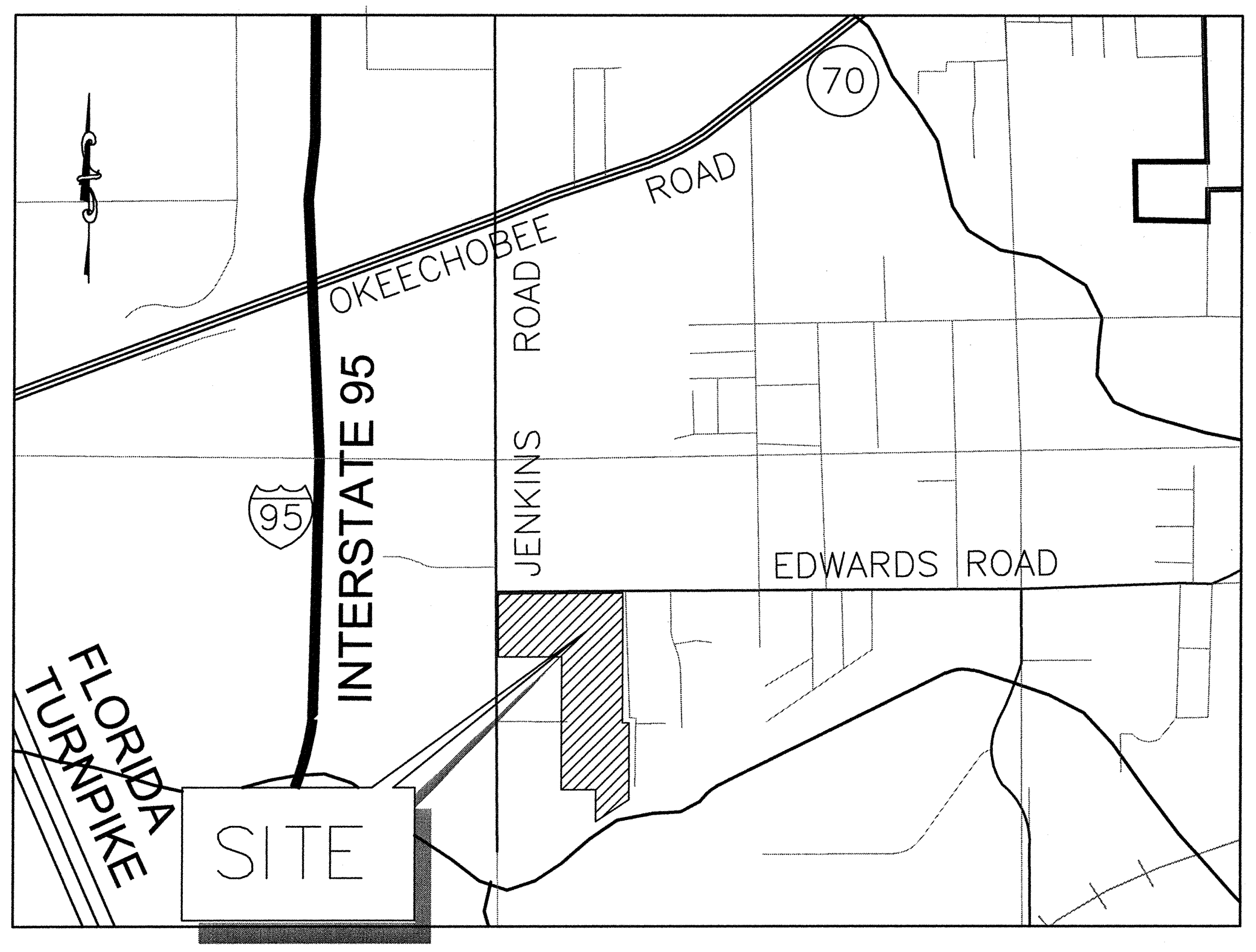
MARINER COVE	
DESIGNED	SESCO
DRAWN	SESCO
CHECKED	SESCO
DATE	JULY 2015
SCALE	1"=80'

SHEET 1 OF 1

14-173

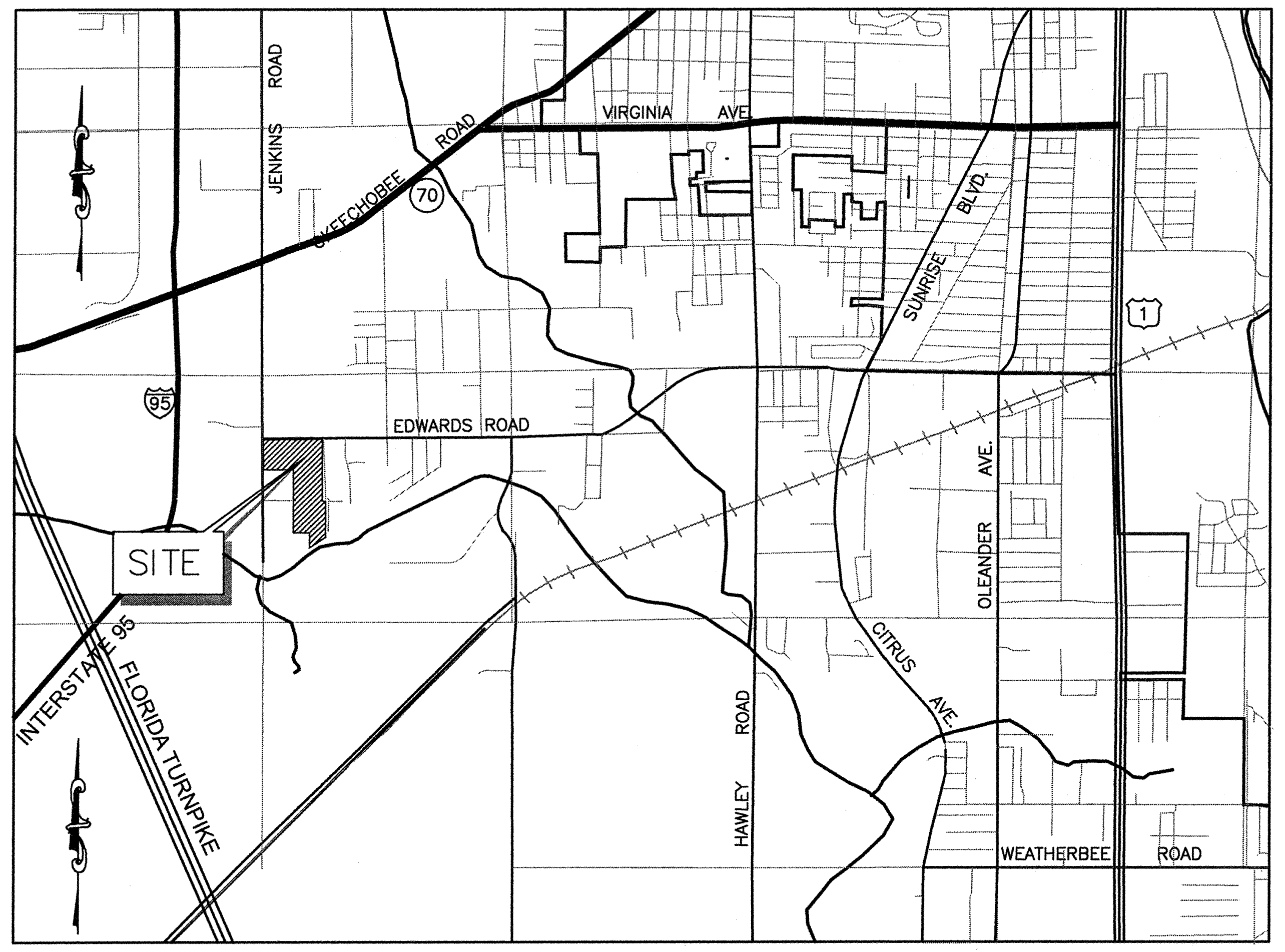
MARINER COVE

SECTION 30, TOWNSHIP 35S, RANGE 40E
LANDSCAPE AND IRRIGATION PLAN
CITY OF FORT PIERCE, FLORIDA
MAY 2015



70
OKEECHOBEE ROAD
JENKINS ROAD
INTERSTATE 95
95
EDWARDS ROAD
FLORIDA TURNPIKE
SITE

VICINITY MAP
N.T.S.



JENKINS ROAD
OKEECHOBEE ROAD
70
VIRGINIA AVE.
SUNRISE BLVD.
1
95
EDWARDS ROAD
SITE
INTERSTATE 95
FLORIDA TURNPIKE
HAWLEY ROAD
OLEANDER AVE.
CITRUS AVE.
WEATHERBEE ROAD

LOCATION MAP
N.T.S.

ENGINEER

W.F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19th STREET
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LANDSCAPE DESIGNER

JEFFREY M. SMITH
1486 24TH STREET SW
VERO BEACH, FL 32962
PHONE (772)-532-6884
jmsvero@aol.com

SURVEYOR

ALEXANDER J. PIAZZA PSM, INC
619 SW BILTMORE STREET
PORT SAINT LUCIE, FLORIDA 34983
(561)-644-3085

OWNER

MARINER COVE BUILDERS, LLC
CONTACT: MR. STANLEY MARKOFSKY
1400 EAST OAKLAND PARK BOULEVARD, SUITE 103
FORT LAUDERDALE, FL. 33334
PHONE: (954) 567-5161

INDEX OF DRAWINGS

1. COVER SHEET
2. LANDSCAPE AND IRRIGATION MASTER PLAN
3. LANDSCAPE AND IRRIGATION PLAN, WEST ENLARGEMENT
4. LANDSCAPE AND IRRIGATION PLAN, SOUTH ENLARGEMENT
5. LANDSCAPE AND IRRIGATION PLAN, NORTH EAST ENLARGEMENT
6. TYPICAL BUILDING LAYOUT
7. LANDSCAPE INSTALLATION DETAILS
8. LANDSCAPE AND IRRIGATION DETAILS
9. IRRIGATION INSTALLATION DETAILS
10. LANDSCAPE SPECIFICATIONS
11. IRRIGATION SPECIFICATIONS

NOT VALID WITHOUT THE ORIGINAL SIGNATURE
AND SEAL OF THE LANDSCAPE DESIGNER

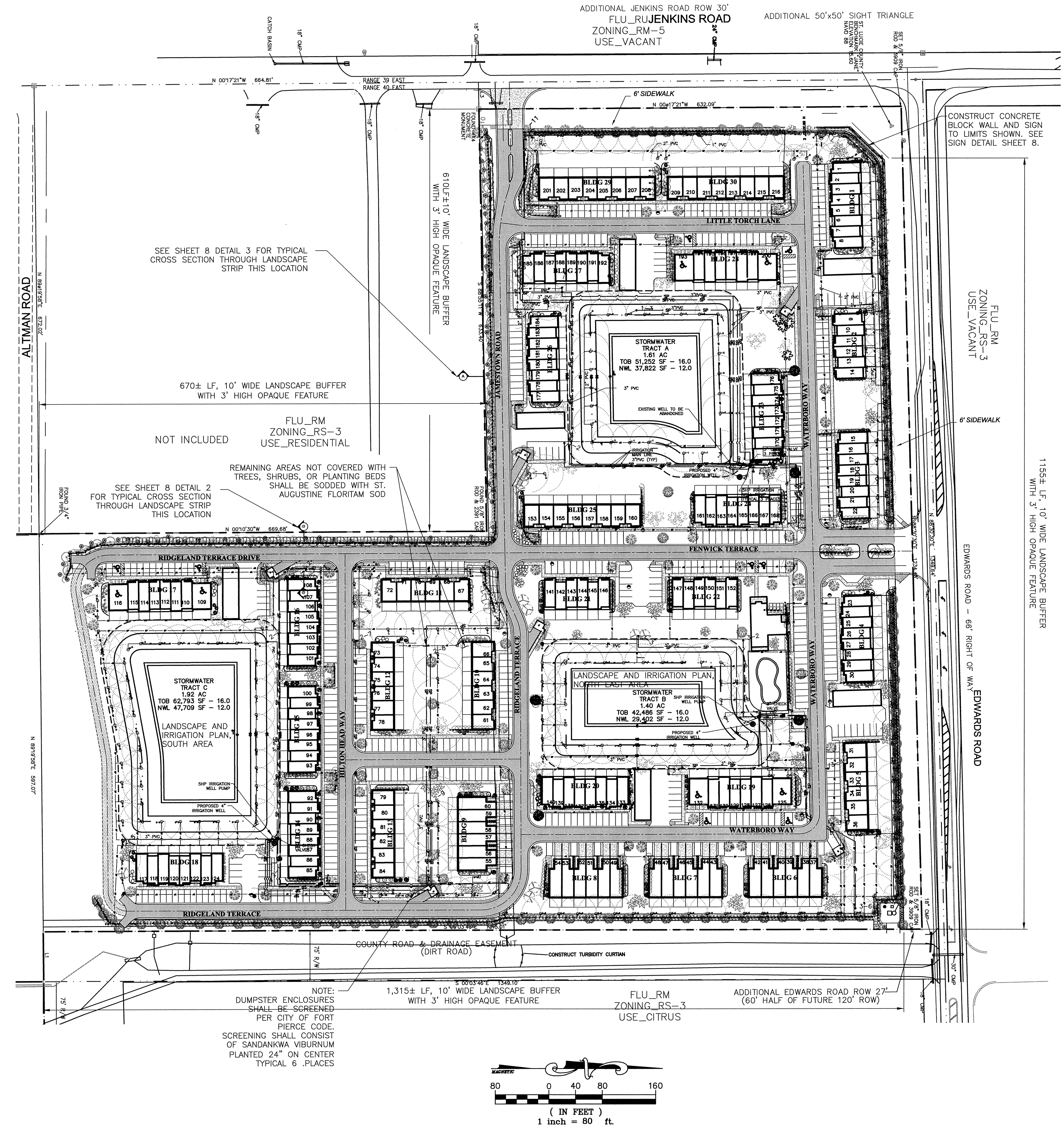
FNGLA CERTIFIED PROFESSIONAL DESIGNER #0069 exp. 2018

JEFFREY M. SMITH, FCLD # 00069
DATE: JUL 2 7 2015

W. F. McCAIN & ASSOCIATES, INC.

△	REVISIONS	DATE	BY	MARINER COVE
1				DESIGNED JMS
2				DRAWN JMS
3				CHECKED JMS
4				DATE 5-22-15
5				PROJECT # 14-173A
6				
7				
8				

ENGINEER'S PROJECT NO. 14-173A


ADDITIONAL JENKINS ROAD ROW 30'
FLU_RU JENKINS ROAD
ZONING_RM-5
USE_VACANT
ADDITIONAL 50'x50' SIGHT TRIANGLE
CATCH BASIN
N 00°17'21"W 664.81'
RANGE 39 EAST
RANGE 40 EAST
6' SIDEWALK
N 00°17'21"W 632.09'
CONSTRUCT CONCRETE BLOCK WALL AND SIGN TO LIMITS SHOWN. SEE SIGN DETAIL SHEET 8.
610LF±10' WIDE LANDSCAPE BUFFER WITH 3' HIGH OPAQUE FEATURE
ALTMAN ROAD
SEE SHEET 8 DETAIL 3 FOR TYPICAL CROSS SECTION THROUGH LANDSCAPE STRIP THIS LOCATION
670± LF, 10' WIDE LANDSCAPE BUFFER WITH 3' HIGH OPAQUE FEATURE
NOT INCLUDED
FLU_RM
ZONING_RS-3
USE_RESIDENTIAL
REMAINING AREAS NOT COVERED WITH TREES, SHRUBS, OR PLANTING BEDS SHALL BE SODDED WITH ST. AUGUSTINE FLORITAM SOD
SEE SHEET 8 DETAIL 2 FOR TYPICAL CROSS SECTION THROUGH LANDSCAPE STRIP THIS LOCATION
N 00°10'30"W 669.68'
FLU_RM
ZONING_RS-3
USE_VACANT
6' SIDEWALK
1155± LF, 10' WIDE LANDSCAPE BUFFER WITH 3' HIGH OPAQUE FEATURE
EDWARDS ROAD – 66' RIGHT OF WAY
EDWARDS ROAD
BLDG 29
BLDG 30
LITTLE TORCH LANE
BLDG 27
BLDG 23
JAMESTOWN ROAD
STORMWATER TRACT A 1.61 AC TOB 51,252 SF – 16.0 NWL 37,822 SF – 12.0
EXISTING WELL TO BE ABANDONED
WATERBORO WAY
BLDG 25
BLDG 24
FENWICK TERRACE
RIDGELAND TERRACE DRIVE
BLDG 7
BLDG 11
BLDG 21
BLDG 22
STORMWATER TRACT C 1.92 AC TOB 62,793 SF – 16.0 NWL 47,709 SF – 12.0
LANDSCAPE AND IRRIGATION PLAN, SOUTH AREA
5HP IRRIGATION WELL PUMP
PROPOSED 4" IRRIGATION WELL
LANDSCAPE AND IRRIGATION PLAN, NORTH EAST AREA
STORMWATER TRACT B 1.40 AC TOB 42,486 SF – 16.0 NWL 29,402 SF – 12.0
HILTON HEAD WAY
RIDGELAND TERRACE
BLDG 20
BLDG 19
BLDG 18
BLDG 8
BLDG 7
BLDG 6
RIDGELAND TERRACE
COUNTY ROAD & DRAINAGE EASEMENT (DIRT ROAD)
CONSTRUCT TURBIDITY CURTIAN
NOTE: DUMPSTER ENCLOSURES SHALL BE SCREENED PER CITY OF FORT PIERCE CODE. SCREENING SHALL CONSIST OF SANDANKWA VIBURNUM PLANTED 24" ON CENTER TYPICAL 6 .PLACES
1,315± LF, 10' WIDE LANDSCAPE BUFFER WITH 3' HIGH OPAQUE FEATURE
FLU_RM
ZONING_RS-3
USE_CITRUS
ADDITIONAL EDWARDS ROAD ROW 27' (60' HALF OF FUTURE 120' ROW)
MAGNETIC
80 0 40 80 160
(IN FEET)
1 inch = 80 ft.

LANDSCAPE REQUIREMENTS

NORTH PERIMETER

REQUIRED LANDSCAPING ADJACENT TO PUBLIC OR PRIVATE STREET OR ROAD RIGHTS–OF–WAY
1154.71 L.F. OF 10' WIDE LANDSCAPE STRIP = 11547.1 S.F. @
1 CANOPY TREE PER 300 SF. =38.49 TREES
A CONTINUOUS HEDGE OR DURABLE LANDSCAPE MATERIAL 3' HIGH AT TIME OF PLANTING

EAST PERIMETER

REQUIRED LANDSCAPING ADJACENT TO PUBLIC OR PRIVATE STREET OR ROAD RIGHTS–OF–WAY
1,315 L.F. OF 10' WIDE LANDSCAPE STRIP = 13,150 S.F. @
1 CANOPY TREE PER 300 SF. =43.83 TREES
A CONTINUOUS HEDGE OR DURABLE LANDSCAPE MATERIAL 3' HIGH AT TIME OF PLANTING

SOUTH PERIMETER

PERIMETER LANDSCAPING RELATING TO ABUTTING PROPERTIES
609.45 L.F. OF 10' WIDE LANDSCAPE STRIP = 6,094.5 S.F. @
1 CANOPY TREE PER 200 SF. =30.47 TREES
A CONTINUOUS HEDGE OR DURABLE LANDSCAPE MATERIAL 3' HIGH AT TIME OF PLANTING

SOUTH WEST PERIMETER

PERIMETER LANDSCAPING RELATING TO ABUTTING PROPERTIES
669.80 L.F. OF 10' WIDE LANDSCAPE STRIP = 6,698 S.F. @
1 CANOPY TREE PER 200 SF. =33.49 TREES
A CONTINUOUS HEDGE OR DURABLE LANDSCAPE MATERIAL 3' HIGH AT TIME OF PLANTING

WEST PERIMETER

REQUIRED LANDSCAPING ADJACENT TO PUBLIC OR PRIVATE STREET OR ROAD RIGHTS–OF–WAY
561.33 L.F. OF 10' WIDE LANDSCAPE STRIP = 5613.3 S.F. @
1 CANOPY TREE PER 300 SF. =18.71 TREES
A CONTINUOUS HEDGE OR DURABLE LANDSCAPE MATERIAL 3' HIGH AT TIME OF PLANTING

INTERIOR VEHICULAR USE AREA

254,256 SF OF VEHICULAR USE AREA @
1 SF OF LANDSCAPE AREA PER 15 SF OF VEHICULAR USE AREA =
16,950 SF OF LANDSCAPE AREA @
1 CANOPY TREE PER 100 SF. LANDSCAPE AREA =169.5 TREES

TOTAL TREES REQUIRED = 303 TREES
TOTAL TREES PROVIDED = 319 TREES

NOTE:
1.REFER TO SHEET 6 FOR TREE AND SHRUB PLANTING DETAILS.
2.SEE SHEET 7 FOR ALL LANDSCAPE SPECIFICATIONS.

LANDSCAPE LEGEND

QUANTITY	SYMBOL	DESCRIPTION	SIZE AT PLANTING
87	○	AZALEA, FLORIDA\RHODODENDRON AUSTRINUM	1 GALLON
192	❀	BEGONIA, GOLDILOCKS\BEGONIA 'GOLDILOCKS'	EACH
89	✿	BIRD–OF–PARADISE BUSH\CAESALPINIA GILLIESII	1 GALLON
*87 = 29	✲	CABBAGE PALM\SABAL PALMETTO	MIN 10' CLEAR TRUNK
227	⊛	COCOPLUM\CHRYSOBALANUS ICACO	24" HIGH AT PLANTING
33	◉	DIANA HIBISCUS\HIBISCUS SYRIACUS 'DIANA'	1 GALLON
33	⊕	GARDENIA\GARDENIA JASMINOIDES	1 GALLON
672	◎	INDIA HAWTHORNE, PINK LADY\RHAPHIOLEPIS INDICA	24" HIGH AT PLANTING
16	❋	MAGNOLIA, SOUTHERN\MAGNOLIA GRANDIFLORA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
92	✺	OAK, LAUREL–LEAVED\QUERCUS LAURIFOLIA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
155	❊	OAK, SOUTHERN LIVE\QUERCUS VIRGINIANA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
145	✕	ORNAMENTAL GRASS \MISCANTHUS SINENSIS 'GRAZIELLA'	EACH
29	⊻	SILVER BUTTONWOOD \CONOCARPUS ERECTUS VAR. SERICEUS	24" HIGH AT PLANTING
444	☼	VIBURNUM, SANDANKWA\VIBURNUM SUSPENSUM	24" HIGH AT PLANTING
*81=27	✷	WASHINGTON PALM\WASHINGTONIA ROBUSTA	MIN 10' CLEAR TRUNK

* NOTE 3 PALM TREES COUNT AS ONE PER CITY OF FORT PIERCE REQUIREMENTS

IRRIGATION LEGEND

QUANTITY	SYMBOL	DESCRIPTION	PART NUMBER	PRESSURE	FLOW	RADIUS
3	⊙	HUNTER PGJ–.75 PGJ–04	.75	40	0.75	16
44	⊙	HUNTER PGJ–1.0 PGJ–04	1.0	40	1	19
8	⊙	HUNTER PGJ–1.5 PGJ–04	1.5	40	1.5	22
6	⊙	HUNTER PGJ–2.0 PGJ–04	2.0	40	2	25
393	⊙	HUNTER PGJ–2.5 PGJ–04	2.5	40	2.5	28
1	⊙	HUNTER PGJ–3.0 PGJ–04	3.0	40	3	31
28	⊙	HUNTER PGJ–4.0 PGJ–04	4.0	40	4	34
23	⊙	HUNTER PGJ–5.0 PGJ–04	5.0	40	5	37
1	⊙	HUNTER PGJ–.75 PGJ–00	.75	40	0.75	16
37	⊙	HUNTER PGJ–1.0 PGJ–00	1.0	40	1	19
1	⊙	HUNTER PGJ–1.5 PGJ–00	1.5	40	1.5	22
1478	○	HUNTER MS–F	MS–F	40	0.56	5
879	◠	HUNTER MS–H	MS–H	40	0.28	5
3	●	WILKINS 950 – 4" CHECK VALVE	950 – 4"			
3	P	4 INCH IRRIGATION PUMP	HBV–301E			
32	◕	HUNTER HBV–301E–P CONTROL VALVE	HBV–301E–P			
—— SP —— SP ——		MAIN LINE IRRIGATION PIPE	PVC.	NA	NA	NA
——·——·——·——		LATERAL IRIGATION PIPE		NA	NA	NA

IRRIGATION NOTES:
1. CONTRACTOR TO ADHERE TO ANY AND ALL STANDARDS AND SPECIFICATIONS SET FORTH BY THE CITY OF FORT PIERCE AND THE FLORIDA IRRIGATION SOCIETY
2. ALL MAINLINE IRRIGATION PIPING SHALL BE 3" PVC
3. ALL LATERAL IRRIGATION PIPING SHALL BE A COMBINATION OF 2 1/2", 2", 1 1/2", AND 1' AS NEEDED.
4. ALL LOW VOLUME IRRIGATION IN PLANTING BEDS SHALL BE PIPED WITH LOW VOLUME POLYETHYLENE TUBING.
5. SPRINKLER AND PIPING PLACEMENT MAY VARY AND ARE TO BE FIELD DETERMINED AND VERIFIED BY THE CONTRACTOR.
6. CONTRACTOR TO CONSTRUCT (3) 4" IRRIGATION WELLS AND PUMP SYSTEMS COMPLETE
7. CONTRACTOR IS RESPONSIBLE FOR TEMPORARY POWER VIA FLORIDA POWER AND LIGHT.
8. PUMP SPECIFICATIONS: MANUFACTURE– GOULDS, 5 HP, MODEL J+
9. PUMP SHALL PRODUCE 80 GPM SUSTAINED IRRIGATION FLOW WITH A WELL DRAW DOWN NOT MORE THAN 12' OVER A 6 HOUR PERIOD.
10. PRIMARY IRRIGATION SOURCE SHALL BE STORMWATER TRACTS UNLESS WATER LEVELS ARE UNSUSTAINABLE IN WHICH CASE A MANUAL SWITCH–OVER TO WELLS WILL BE MADE.

LANDSCAPE AND IRRIGATION PHASING:
PRIOR TO C.O. OF EACH BUILDING PERIMETER LANDSCAPE AND IRRIGATION ASSOCIATED WITH EACH BUILDING AND BUILDING SPECIFIC LANDSCAPE AND IRRIGATION ACCORDING TO BUILDING TYPICALS SHOWN ON SHEET 6 OF 11, SHALL BE COMPLETED.

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

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△	REVISIONS	DATE	BY
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MARINER COVE

CITY OF FT. PIERCE FLORIDA

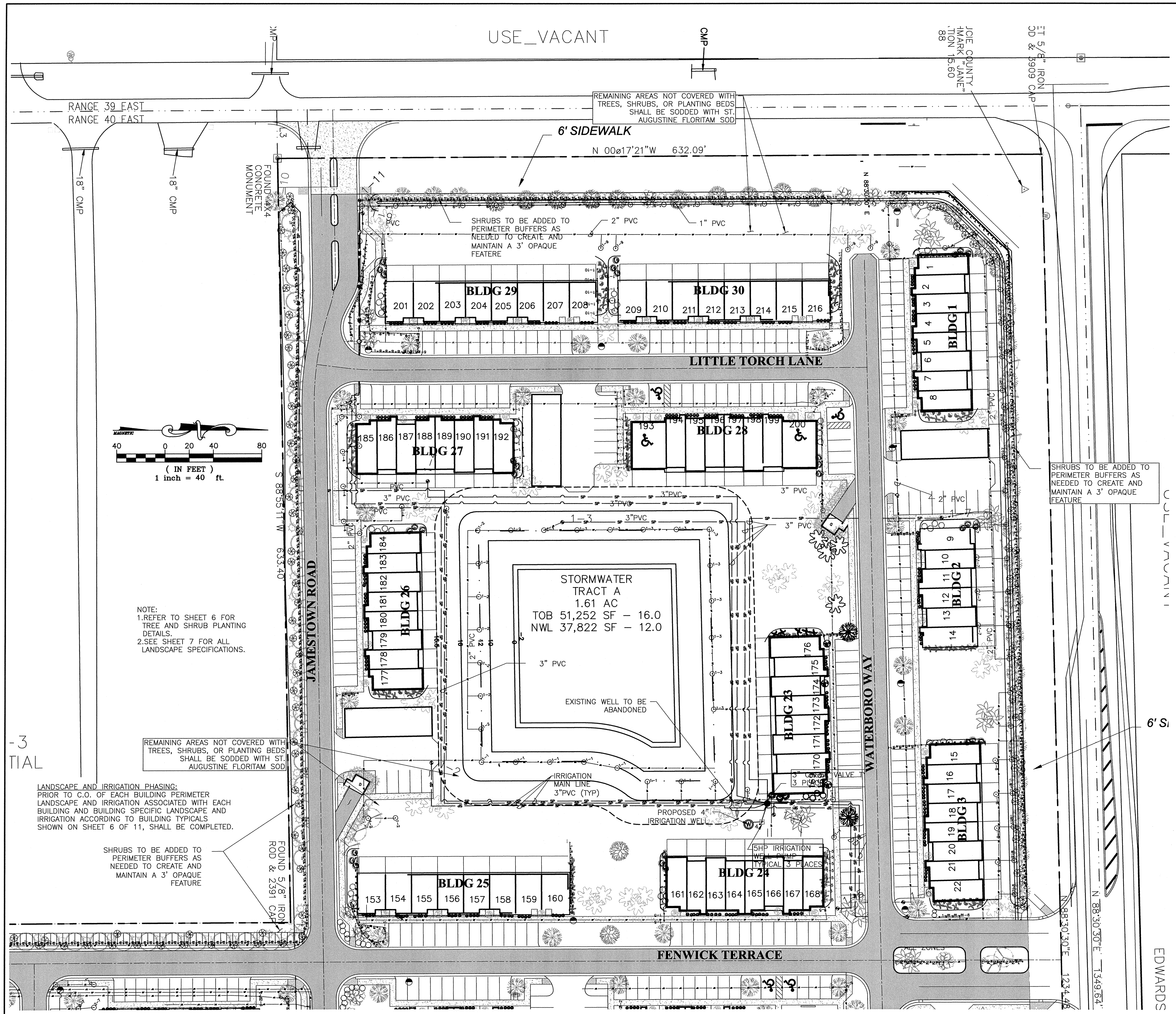
W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

MASTER
LANDSCAPE AND IRRIGATION
PLAN

DESIGN ENGINEER
CERTIFIED PROFESSIONAL
DESIGNER #0069 exp. 2018
JEFFREY M. SMITH, FCLD # 00069
DATE: JUL 27 2015

MARINER COVE	
DESIGNED	JMS
DRAWN	JMS
CHECKED	JMS
DATE	5-22-15
SCALE	1"=80'

SHEET
2
OF 11
14-173A


USE_VACANT
CMP
RANGE 39 EAST
RANGE 40 EAST
18" CMP
18" CMP
FOUND 4x4 CONCRETE MONUMENT
6' SIDEWALK
N 00ø17'21"W 632.09'
REMAINING AREAS NOT COVERED WITH TREES, SHRUBS, OR PLANTING BEDS SHALL BE SODDED WITH ST. AUGUSTINE FLORITAM SOD
SHRUBS TO BE ADDED TO PERIMETER BUFFERS AS NEEDED TO CREATE AND MAINTAIN A 3' OPAQUE FEATERE
2" PVC
1" PVC
BLDG 29
201 202 203 204 205 206 207 208
BLDG 30
209 210 211 212 213 214 215 216
LITTLE TORCH LANE
BLDG 1
1 2 3 4 5 6 7 8
BLDG 27
185 186 187 188 189 190 191 192
BLDG 28
193 194 195 196 197 198 199 200
MAGNETIC
40 0 20 40 80
(IN FEET)
1 inch = 40 ft.
S 88°55'11"W 633.40'
3" PVC
SHRUBS TO BE ADDED TO PERIMETER BUFFERS AS NEEDED TO CREATE AND MAINTAIN A 3' OPAQUE FEATURE
BLDG 26
177 178 179 180 181 182 183 184
STORMWATER
TRACT A
1.61 AC
TOB 51,252 SF – 16.0
NWL 37,822 SF – 12.0
EXISTING WELL TO BE ABANDONED
JAMESTOWN ROAD
WATERBORO WAY
BLDG 2
9 10 11 12 13 14
BLDG 23
169 170 171 172 173 174 175 176
6' S
-3
TIAL
REMAINING AREAS NOT COVERED WITH TREES, SHRUBS, OR PLANTING BEDS SHALL BE SODDED WITH ST. AUGUSTINE FLORITAM SOD
IRRIGATION MAIN LINE 3"PVC (TYP)
PROPOSED 4" IRRIGATION WELL
3 PLACES
VALVE
BLDG 3
15 16 17 18 19 20 21 22
5HP IRRIGATION WELL PUMP TYPICAL 3 PLACES
SHRUBS TO BE ADDED TO PERIMETER BUFFERS AS NEEDED TO CREATE AND MAINTAIN A 3' OPAQUE FEATURE
FOUND 5/8" IRON ROD & 2391 CAP
BLDG 25
153 154 155 156 157 158 159 160
BLDG 24
161 162 163 164 165 166 167 168
FENWICK TERRACE
N 88°30'30"E 1234.48'
1349.64'
EDWARDS

NOTE:
1. REFER TO SHEET 6 FOR TREE AND SHRUB PLANTING DETAILS.
2. SEE SHEET 7 FOR ALL LANDSCAPE SPECIFICATIONS.

LANDSCAPE AND IRRIGATION PHASING:
PRIOR TO C.O. OF EACH BUILDING PERIMETER LANDSCAPE AND IRRIGATION ASSOCIATED WITH EACH BUILDING AND BUILDING SPECIFIC LANDSCAPE AND IRRIGATION ACCORDING TO BUILDING TYPICALS SHOWN ON SHEET 6 OF 11, SHALL BE COMPLETED.

LANDSCAPE LEGEND

QUANTITY	SYMBOL	DESCRIPTION	SIZE AT PLANTING
87	○	AZALEA, FLORIDA\RHODODENDRON AUSTRINUM	1 GALLON
192	✿	BEGONIA, GOLDILOCKS\BEGONIA 'GOLDILOCKS'	EACH
36	✿	BIRD-OF-PARADISE BUSH\CAESALPINIA GILLIESII	1 GALLON
*87 = 29	✳	CABBAGE PALM\SABAL PALMETTO	MIN 10' CLEAR TRUNK
227	✿	COCOPLUM\CHRYSOBALANUS ICACO	24" HIGH AT PLANTING
33	●	DIANA HIBISCUS\HIBISCUS SYRIACUS 'DIANA'	1 GALLON
33	⊙	GARDENIA\GARDENIA JASMINOIDES	1 GALLON
54	●	INDIA HAWTHORNE, PINK LADY\RHAPHIOLEPIS INDICA	24" HIGH AT PLANTING
16	✳	MAGNOLIA, SOUTHERN\MAGNOLIA GRANDIFLORA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
92	●	OAK, LAUREL-LEAVED\QUERCUS LAURIFOLIA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
155	✳	OAK, SOUTHERN LIVE\QUERCUS VIRGINIANA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
145	✕	ORNAMENTAL GRASS \MISCANTHUS SINENSIS 'GRAZIELLA'	EACH
29	✿	SILVER BUTTONWOOD \CONOCARPUS ERECTUS VAR. SERICEUS	24" HIGH AT PLANTING
444	✳	VIBURNUM, SANDANKWA\VIBURNUM SUSPENSUM	24" HIGH AT PLANTING
*81=27	✳	WASHINGTON PALM\WASHINGTONIA ROBUSTA	MIN 10' CLEAR TRUNK
64	⊙	CYPRESS, BALD\TAXODIUM DISTICHUM	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL

* NOTE 3 PALM TREES COUNT AS ONE PER CITY OF FORT PIERCE REQUIREMENTS

IRRIGATION LEGEND

QUANTITY	SYMBOL	DESCRIPTION	PART NUMBER	PRESSURE	FLOW	RADIUS
3	⊙	HUNTER PGJ-.75 PGJ-04	.75	40	0.75	16
44	⊙	HUNTER PGJ-1.0 PGJ-04	1.0	40	1	19
8	⊙	HUNTER PGJ-1.5 PGJ-04	1.5	40	1.5	22
6	⊙	HUNTER PGJ-2.0 PGJ-04	2.0	40	2	25
393	⊙	HUNTER PGJ-2.5 PGJ-04	2.5	40	2.5	28
1	⊙	HUNTER PGJ-3.0 PGJ-04	3.0	40	3	31
28	⊙	HUNTER PGJ-4.0 PGJ-04	4.0	40	4	34
23	⊙	HUNTER PGJ-5.0 PGJ-04	5.0	40	5	37
1	⊙	HUNTER PGJ-.75 PGJ-00	.75	40	0.75	16
37	⊙	HUNTER PGJ-1.0 PGJ-00	1.0	40	1	19
1	⊙	HUNTER PGJ-1.5 PGJ-00	1.5	40	1.5	22
1478	○	HUNTER MS-F	MS-F	40	0.56	5
879	◓	HUNTER MS-H	MS-H	40	0.28	5
3	●	WILKINS 950 – 4" CHECK VALVE	950 – 4"			
3	⊙	4 INCH IRRIGATION PUMP	HBV-301E			
32	⊕	HUNTER HBV-301E-P CONTROL VALVE	HBV-301E-P			
—— SP —— SP ——		MAIN LINE IRRIGATION PIPE	PVC.	NA	NA	NA
—•—•—•—•—		LATERAL IRIGATION PIPE		NA	NA	NA

IRRIGATION NOTES:
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3. ALL LATERAL IRRIGATION PIPING SHALL BE A COMBINATION OF 2 1/2", 2", 1 1/2", AND 1' AS NEEDED.
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5. SPRINKLER AND PIPING PLACEMENT MAY VARY AND ARE TO BE FIELD DETERMINED AND VERIFIED BY THE CONTRACTOR.
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8. PUMP SPECIFICATIONS: MANUFACTURER – GOULDS, 5 HP, MODEL J+
9. PUMP SHALL PRODUCE 80 GPM SUSTAINED IRRIGATION FLOW WITH A WELL DRAW DOWN NOT MORE THAN 12' OVER A 6 HOUR PERIOD.
10. PRIMARY IRRIGATION SOURCE SHALL BE STORMWATER TRACTS UNLESS WATER LEVELS ARE UNSUSTAINABLE IN WHICH CASE A MANUAL SWITCH-OVER TO WELLS WILL BE MADE.

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△	REVISIONS	DATE	BY
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MARINER COVE

CITY OF FT. PIERCE FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

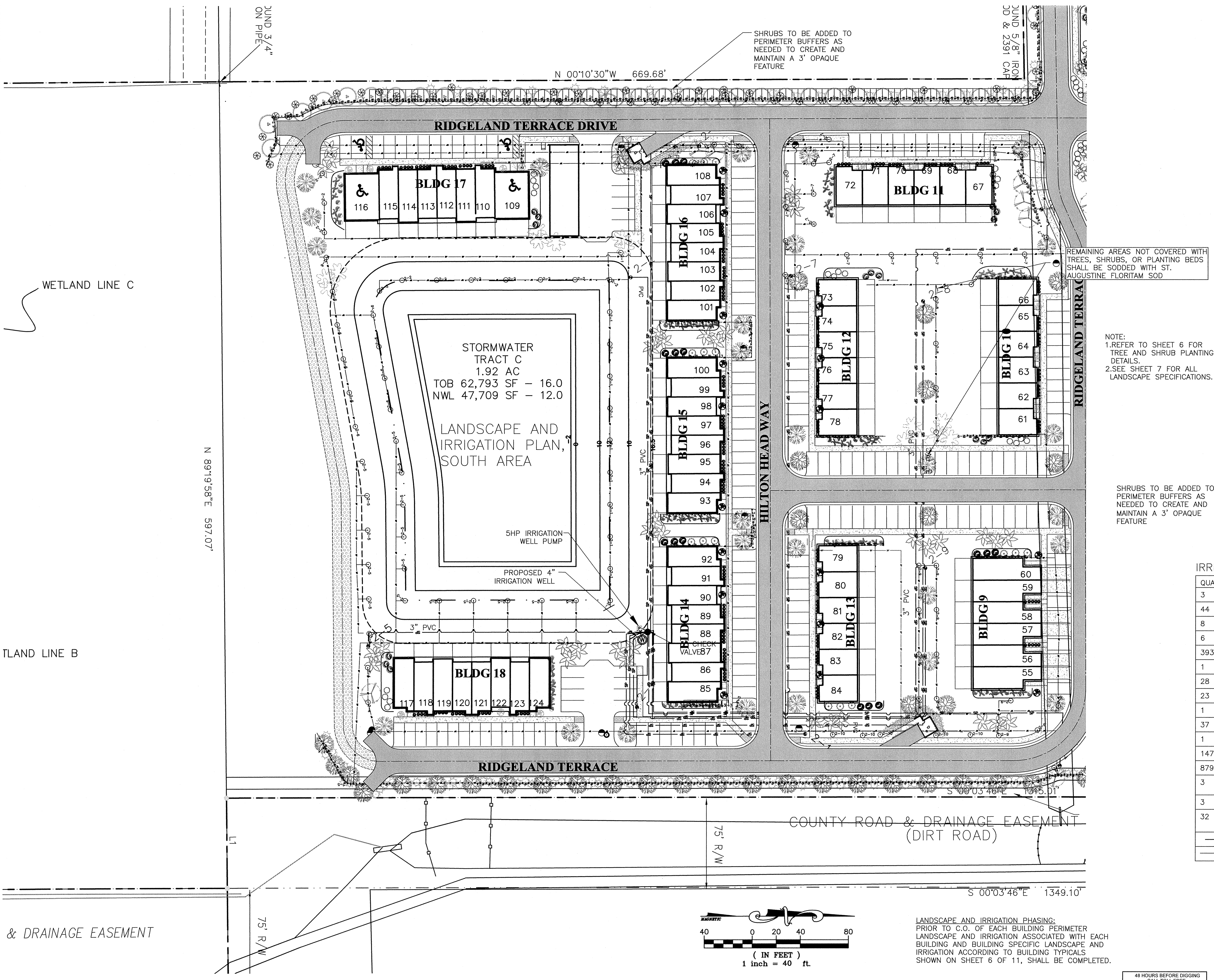
LANDSCAPE AND IRRIGATION
PLAN
WEST AREA

FNGLA
DESIGN ENGINEER
CERTIFIED PROFESSIONAL
DESIGNER #0069 Exp. 2018

JEFFREY M. SMITH, FLCD # 00069
DATE: JUL 2 7 2015

MARINER COVE	
DESIGNED	JMS
DRAWN	JMS
CHECKED	JMS
DATE	5-22-15
SCALE	1"=40'

SHEET
3
OF 11
14-173A


FOUND 3/4" ON PIPE
FOUND 5/8" IRON ROD & 2391 CAP
SHRUBS TO BE ADDED TO PERIMETER BUFFERS AS NEEDED TO CREATE AND MAINTAIN A 3' OPAQUE FEATURE
N 00°10'30"W 669.68'
RIDGELAND TERRACE DRIVE
BLDG 17
116
115
114
113
112
111
110
109
BLDG 16
108
107
106
105
104
103
102
101
BLDG 11
72
71
70
69
68
67
REMAINING AREAS NOT COVERED WITH TREES, SHRUBS, OR PLANTING BEDS SHALL BE SODDED WITH ST. AUGUSTINE FLORITAM SOD
WETLAND LINE C
STORMWATER TRACT C
1.92 AC
TOB 62,793 SF – 16.0
NWL 47,709 SF – 12.0
LANDSCAPE AND IRRIGATION PLAN, SOUTH AREA
BLDG 12
73
74
75
76
77
78
BLDG 10
66
65
64
63
62
61
RIDGELAND TERRACE
BLDG 15
100
99
98
97
96
95
94
93
HILTON HEAD WAY
N 89°19'58"E 597.07'
3" PVC
5HP IRRIGATION WELL PUMP
PROPOSED 4" IRRIGATION WELL
BLDG 14
92
91
90
89
88
87
86
85
CHECK VALVE
BLDG 13
79
80
81
82
83
84
BLDG 9
60
59
58
57
56
55
WETLAND LINE B
BLDG 18
117
118
119
120
121
122
123
124
RIDGELAND TERRACE
S 00°03'46"E 1045.01'
COUNTY ROAD & DRAINAGE EASEMENT (DIRT ROAD)
75' R/W
L1
S 00°03'46"E 1349.10'
& DRAINAGE EASEMENT
75' R/W
40
0
20
40
80
(IN FEET)
1 inch = 40 ft.

NOTE:
1. REFER TO SHEET 6 FOR TREE AND SHRUB PLANTING DETAILS.
2. SEE SHEET 7 FOR ALL LANDSCAPE SPECIFICATIONS.

SHRUBS TO BE ADDED TO PERIMETER BUFFERS AS NEEDED TO CREATE AND MAINTAIN A 3' OPAQUE FEATURE

LANDSCAPE LEGEND

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*87 = 29	✲	CABBAGE PALM\SABAL PALMETTO	MIN 10' CLEAR TRUNK
227	⊛	COCOPLUM\CHRYSOBALANUS ICACO	24" HIGH AT PLANTING
33	●	DIANA HIBISCUS\HIBISCUS SYRIACUS 'DIANA'	1 GALLON
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16	✺	MAGNOLIA, SOUTHERN\MAGNOLIA GRANDIFLORA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
92	✺	OAK, LAUREL-LEAVED\QUERCUS LAURIFOLIA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
155	✺	OAK, SOUTHERN LIVE\QUERCUS VIRGINIANA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
145	✕	ORNAMENTAL GRASS \MISCANTHUS SINENSIS 'GRAZIELLA'	EACH
29	⊖	SILVER BUTTONWOOD \CONOCARPUS ERECTUS VAR. SERICEUS	24" HIGH AT PLANTING
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QUANTITY	SYMBOL	DESCRIPTION	PART NUMBER	PRESSURE	FLOW	RADIUS
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37	⊙	HUNTER PGJ-1.0 PGJ-00	1.0	40	1	19
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1478	○	HUNTER MS-F	MS-F	40	0.56	5
879	◓	HUNTER MS-H	MS-H	40	0.28	5
3	●	WILKINS 950 – 4" CHECK VALVE	950 – 4"			
3	P	4 INCH IRRIGATION PUMP	HBV-301E			
32	◕	HUNTER HBV-301E-P CONTROL VALVE	HBV-301E-P			
——SP——SP——		MAIN LINE IRRIGATION PIPE	PVC.	NA	NA	NA
——•——•——•——		LATERAL IRIGATION PIPE		NA	NA	NA

IRRIGATION NOTES:
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PRIOR TO C.O. OF EACH BUILDING PERIMETER LANDSCAPE AND IRRIGATION ASSOCIATED WITH EACH BUILDING AND BUILDING SPECIFIC LANDSCAPE AND IRRIGATION ACCORDING TO BUILDING TYPICALS SHOWN ON SHEET 6 OF 11, SHALL BE COMPLETED.

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SUNSHINE STATE ONE CALL
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△ REVISIONS	DATE	BY
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MARINER COVE

CITY OF FT. PIERCE FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

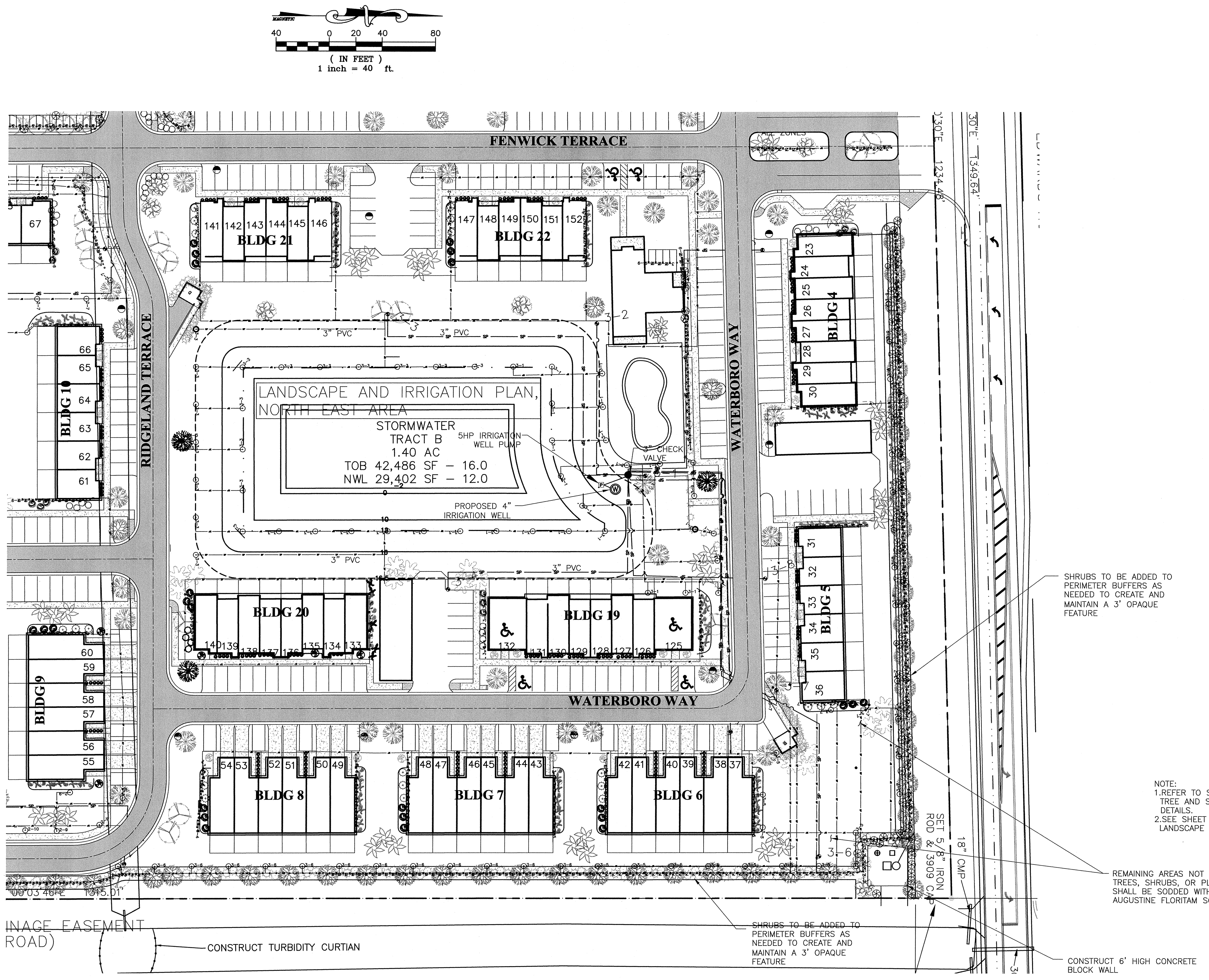
LANDSCAPE AND IRRIGATION
PLAN
SOUTH AREA

FNGLA
DESIGN ENGINEER
CERTIFIED PROFESSIONAL
DESIGNER #0069 exp. 2018

JEFFREY M. SMITH, FCLD # 00069
DATE: JUL 2 7 2015

MARINER COVE	
DESIGNED	JMS
DRAWN	JMS
CHECKED	JMS
DATE	5-22-15
SCALE	1"=40'

SHEET
4
OF 11
14-173A


MAGNETIC
40
0
20
40
80
(IN FEET)
1 inch = 40 ft.
FENWICK TERRACE
RIDGELAND TERRACE
WATERBORO WAY
WATERBORO WAY
BLDG 21
141 142 143 144 145 146
BLDG 22
147 148 149 150 151 152
BLDG 10
66 65 64 63 62 61
67
BLDG 4
23 24 25 26 27 28 29 30
BLDG 5
31 32 33 34 35 36
BLDG 20
140 139 138 137 136 135 134 133
BLDG 19
132 131 130 129 128 127 126 125
BLDG 9
60 59 58 57 56 55
BLDG 8
54 53 52 51 50 49
BLDG 7
48 47 46 45 44 43
BLDG 6
42 41 40 39 38 37
LANDSCAPE AND IRRIGATION PLAN, NORTH EAST AREA
STORMWATER
TRACT B
1.40 AC
TOB 42,486 SF – 16.0
NWL 29,402 SF – 12.0
5HP IRRIGATION WELL PUMP
PROPOSED 4" IRRIGATION WELL
3" CHECK VALVE
3" PVC
3" PVC
3" PVC
3" PVC
3-2
3-6
SET 5/8" IRON ROD & 3909 CAP
18" CMP
INAGE EASEMENT
ROAD)
CONSTRUCT TURBIDITY CURTIAN
SHRUBS TO BE ADDED TO PERIMETER BUFFERS AS NEEDED TO CREATE AND MAINTAIN A 3' OPAQUE FEATURE
REMAINING AREAS NOT COVERED WITH TREES, SHRUBS, OR PLANTING BEDS SHALL BE SODDED WITH ST. AUGUSTINE FLORITAM SOD
SHRUBS TO BE ADDED TO PERIMETER BUFFERS AS NEEDED TO CREATE AND MAINTAIN A 3' OPAQUE FEATURE
CONSTRUCT 6' HIGH CONCRETE BLOCK WALL

NOTE:
1. REFER TO SHEET 6 FOR TREE AND SHRUB PLANTING DETAILS.
2. SEE SHEET 7 FOR ALL LANDSCAPE SPECIFICATIONS.

LANDSCAPE AND IRRIGATION PHASING:
PRIOR TO C.O. OF EACH BUILDING PERIMETER LANDSCAPE AND IRRIGATION ASSOCIATED WITH EACH BUILDING AND BUILDING SPECIFIC LANDSCAPE AND IRRIGATION ACCORDING TO BUILDING TYPICALS SHOWN ON SHEET 6 OF 11, SHALL BE COMPLETED.

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL OF FLORIDA

LANDSCAPE LEGEND

QUANTITY	SYMBOL	DESCRIPTION	SIZE AT PLANTING
87	○	AZALEA, FLORIDA\RHODODENDRON AUSTRINUM	1 GALLON
192		BEGONIA, GOLDILOCKS\BEGONIA 'GOLDILOCKS'	EACH
36		BIRD-OF-PARADISE BUSH\CAESALPINIA GILLIESII	1 GALLON
*87 = 29		CABBAGE PALM\SABAL PALMETTO	MIN 10' CLEAR TRUNK
227		COCOPLUM\CHRYSOBALANUS ICACO	24" HIGH AT PLANTING
33	●	DIANA HIBISCUS\HIBISCUS SYRIACUS 'DIANA'	1 GALLON
33		GARDENIA\GARDENIA JASMINOIDES	1 GALLON
54		INDIA HAWTHORNE, PINK LADY\RHAPHIOLEPIS INDICA	24" HIGH AT PLANTING
16		MAGNOLIA, SOUTHERN\MAGNOLIA GRANDIFLORA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
92		OAK, LAUREL-LEAVED\QUERCUS LAURIFOLIA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
155		OAK, SOUTHERN LIVE\QUERCUS VIRGINIANA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
145		ORNAMENTAL GRASS \MISCANTHUS SINENSIS 'GRAZIELLA'	EACH
29		SILVER BUTTONWOOD \CONOCARPUS ERECTUS VAR. SERICEUS	24" HIGH AT PLANTING
444		VIBURNUM, SANDANKWA\VIBURNUM SUSPENSUM	24" HIGH AT PLANTING
*81=27		WASHINGTON PALM\WASHINGTONIA ROBUSTA	MIN 10' CLEAR TRUNK
64	⊙	CYPRESS, BALD\TAXODIUM DISTICHUM	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL

* NOTE 3 PALM TREES COUNT AS ONE PER CITY OF FORT PIERCE REQUIREMENTS

IRRIGATION LEGEND

QUANTITY	SYMBOL	DESCRIPTION	PART NUMBER	PRESSURE	FLOW	RADIUS
3	⊙	HUNTER PGJ-.75 PGJ-04	.75	40	0.75	16
44	⊙	HUNTER PGJ-1.0 PGJ-04	1.0	40	1	19
8	⊙	HUNTER PGJ-1.5 PGJ-04	1.5	40	1.5	22
6	⊙	HUNTER PGJ-2.0 PGJ-04	2.0	40	2	25
393	⊙	HUNTER PGJ-2.5 PGJ-04	2.5	40	2.5	28
1	⊙	HUNTER PGJ-3.0 PGJ-04	3.0	40	3	31
28	⊙	HUNTER PGJ-4.0 PGJ-04	4.0	40	4	34
23	⊙	HUNTER PGJ-5.0 PGJ-04	5.0	40	5	37
1	⊙	HUNTER PGJ-.75 PGJ-00	.75	40	0.75	16
37	⊙	HUNTER PGJ-1.0 PGJ-00	1.0	40	1	19
1	⊙	HUNTER PGJ-1.5 PGJ-00	1.5	40	1.5	22
1478	○	HUNTER MS-F	MS-F	40	0.56	5
879	◠	HUNTER MS-H	MS-H	40	0.28	5
3	●	WILKINS 950 – 4" CHECK VALVE	950 – 4"			
3	P	4 INCH IRRIGATION PUMP	HBV-301E			
32	◐	HUNTER HBV-301E-P CONTROL VALVE	HBV-301E-P			
—— SP —— SP ——		MAIN LINE IRRIGATION PIPE	PVC.	NA	NA	NA
—•—•—•—•—		LATERAL IRIGATION PIPE		NA	NA	NA

IRRIGATION NOTES:
1. CONTRACTOR TO ADHERE TO ANY AND ALL STANDARDS AND SPECIFICATIONS SET FORTH BY THE CITY OF FORT PIERCE AND THE FLORIDA IRRIGATION SOCIETY
2. ALL MAINLINE IRRIGATION PIPING SHALL BE 3" PVC
3. ALL LATERAL IRRIGATION PIPING SHALL BE A COMBINATION OF 2 1/2", 2", 1 1/2", AND 1' AS NEEDED.
4. ALL LOW VOLUME IRRIGATION IN PLANTING BEDS SHALL BE PIPED WITH LOW VOLUME POLYETHYLENE TUBING.
5. SPRINKLER AND PIPING PLACEMENT MAY VARY AND ARE TO BE FIELD DETERMINED AND VERIFIED BY THE CONTRACTOR.
6. CONTRACTOR TO CONSTRUCT (3) 4" IRRIGATION WELLS AND PUMP SYSTEMS COMPLETE
7. CONTRACTOR IS RESPONSIBLE FOR TEMPORARY POWER VIA FLORIDA POWER AND LIGHT.
8. PUMP SPECIFICATIONS: MANUFACTURER – GOULDS, 5 HP, MODEL J+
9. PUMP SHALL PRODUCE 80 GPM SUSTAINED IRRIGATION FLOW WITH A WELL DRAW DOWN NOT MORE THAN 12' OVER A 6 HOUR PERIOD.
10. PRIMARY IRRIGATION SOURCE SHALL BE STORMWATER TRACTS UNLESS WATER LEVELS ARE UNSUSTAINABLE IN WHICH CASE A MANUAL SWITCH-OVER TO WELLS WILL BE MADE.

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△	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
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7			
8			

MARINER COVE

CITY OF FT. PIERCE FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

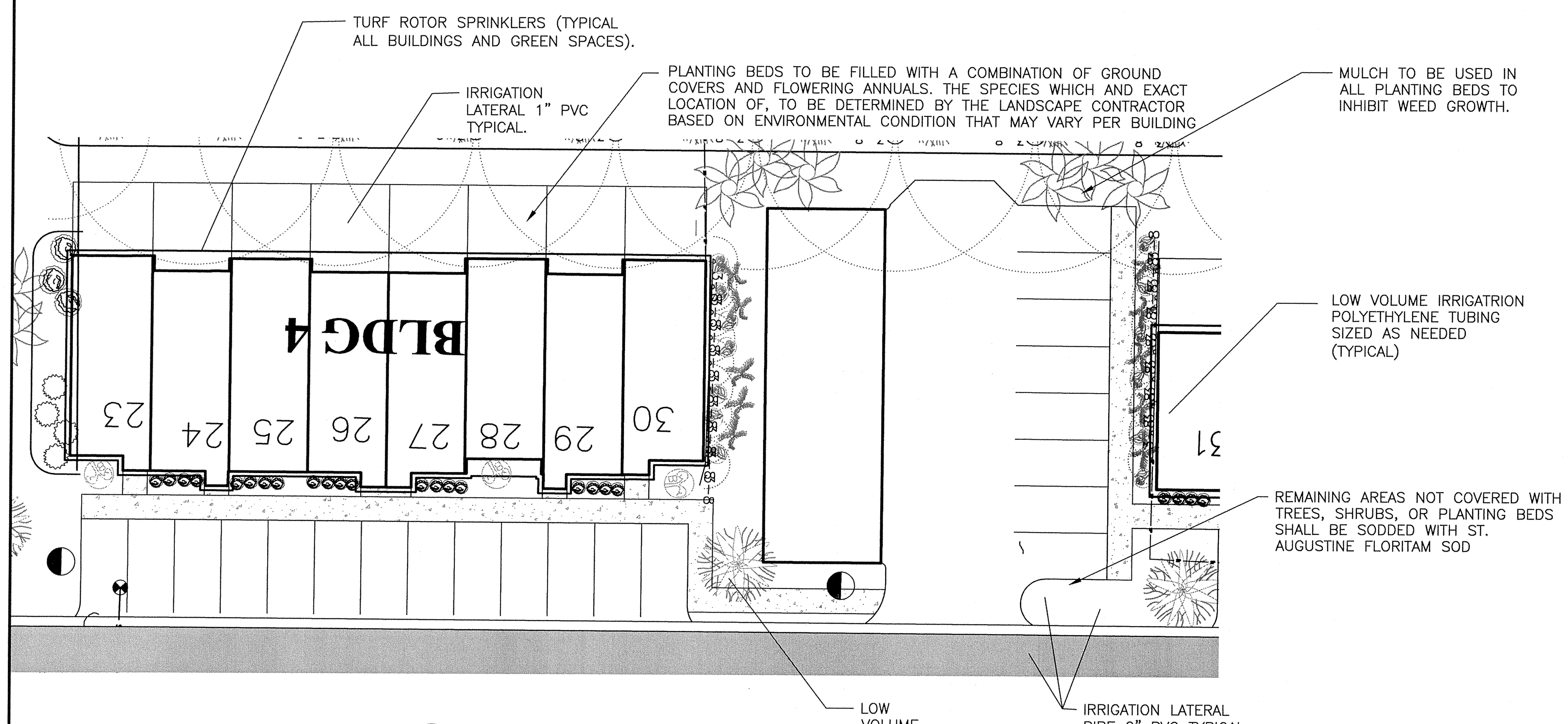
LANDSCAPE AND IRRIGATION
PLAN
NORTH EAST AREA

ENGLA
DESIGN ENGINEER
CERTIFIED PROFESSIONAL
DESIGNER #0069 exp. 2018

JEFFREY M. SMITH, FCLD # 00069
DATE: JUL 2 7 2015

MARINER COVE	
DESIGNED	JMS
DRAWN	JMS
CHECKED	JMS
DATE	5-22-15
SCALE	1"=40'

SHEET
5
OF 11
14-173A


TURF ROTOR SPRINKLERS (TYPICAL ALL BUILDINGS AND GREEN SPACES).
IRRIGATION LATERAL 1" PVC TYPICAL.
PLANTING BEDS TO BE FILLED WITH A COMBINATION OF GROUND COVERS AND FLOWERING ANNUALS. THE SPECIES WHICH AND EXACT LOCATION OF, TO BE DETERMINED BY THE LANDSCAPE CONTRACTOR BASED ON ENVIRONMENTAL CONDITION THAT MAY VARY PER BUILDING
MULCH TO BE USED IN ALL PLANTING BEDS TO INHIBIT WEED GROWTH.
BLDG 4
23
24
25
26
27
28
29
30
31
LOW VOLUME IRRIGATRION POLYETHYLENE TUBING SIZED AS NEEDED (TYPICAL)
REMAINING AREAS NOT COVERED WITH TREES, SHRUBS, OR PLANTING BEDS SHALL BE SODDED WITH ST. AUGUSTINE FLORITAM SOD
LOW VOLUME
IRRIGATION LATERAL PIPE 2" PVC TYPICAL

1/6 TYPICAL 8 UNIT BUILDING LAYOUT

1"=20'

NOTES.:
1. PLANTINGS SHOWN PER TYPICAL BUILDING LAYOUTS ARE MEANT TO BE USED AS A PLANTING GUIDE. LOCATION AND SPECIES MAY VARIES DEPENDENT UPON SPECIFIC ENVIRONMENTAL CONDITIONS OF EACH BUILDING.

IRRIGATION LEGEND

QUANTITY	SYMBOL	DESCRIPTION	PART NUMBER	PRESSURE	FLOW	RADIUS
3	⊙	HUNTER PGJ–.75 PGJ–04	.75	40	0.75	16
44	⊙	HUNTER PGJ–1.0 PGJ–04	1.0	40	1	19
8	⊙	HUNTER PGJ–1.5 PGJ–04	1.5	40	1.5	22
6	⊙	HUNTER PGJ–2.0 PGJ–04	2.0	40	2	25
393	⊙	HUNTER PGJ–2.5 PGJ–04	2.5	40	2.5	28
1	⊙	HUNTER PGJ–3.0 PGJ–04	3.0	40	3	31
28	⊙	HUNTER PGJ–4.0 PGJ–04	4.0	40	4	34
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37	⊙	HUNTER PGJ–1.0 PGJ–00	1.0	40	1	19
1	⊙	HUNTER PGJ–1.5 PGJ–00	1.5	40	1.5	22
1478	○	HUNTER MS–F	MS–F	40	0.56	5
879	⌓	HUNTER MS–H	MS–H	40	0.28	5
3	●	WILKINS 950 – 4" CHECK VALVE	950 – 4"			
3	P	4 INCH IRRIGATION PUMP	HBV–301E			
32	◐	HUNTER HBV–301E–P CONTROL VALVE	HBV–301E–P			
—— SP —— SP ——		MAIN LINE IRRIGATION PIPE	PVC.	NA	NA	NA
—•—•—•—•—		LATERAL IRIGATION PIPE		NA	NA	NA

IRRIGATION NOTES:
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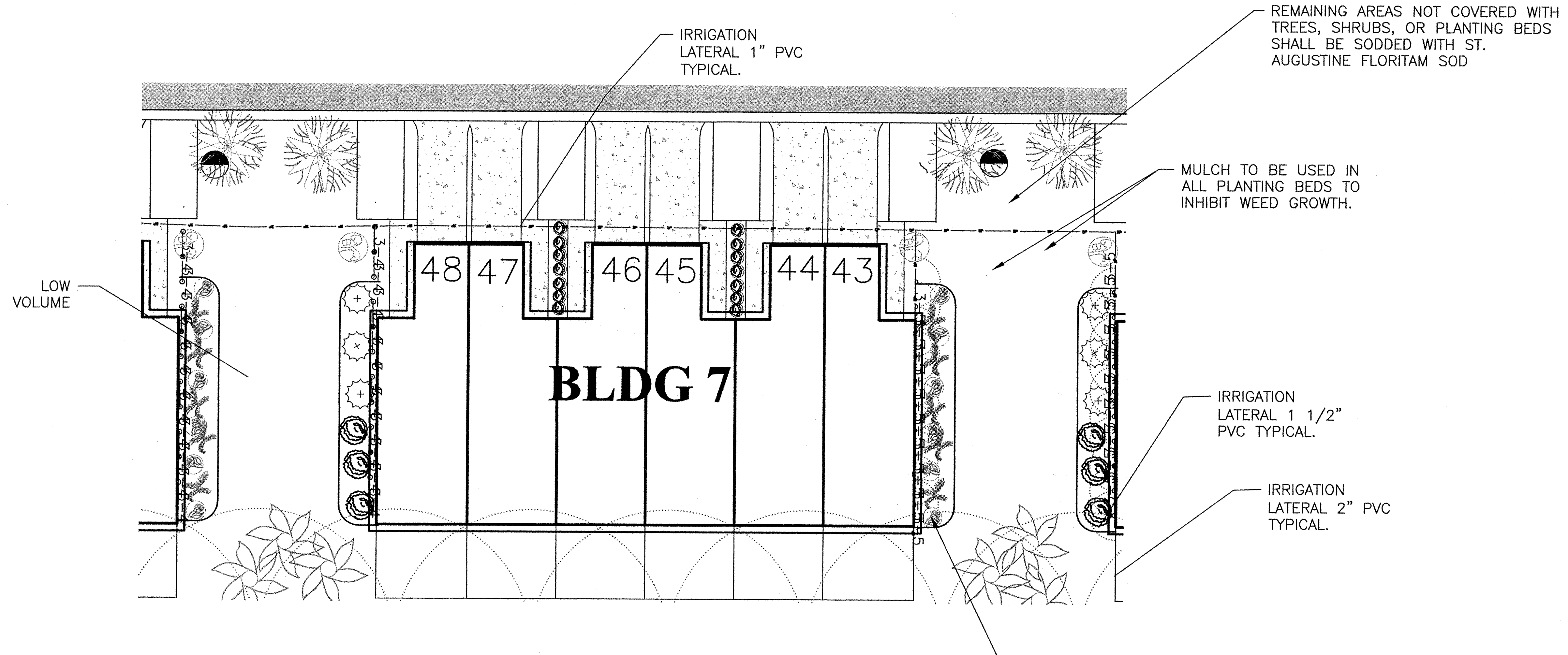
3. ALL LATERAL IRRIGATION PIPING SHALL BE A COMBINATION OF 2 1/2", 2", 1 1/2", AND 1' AS NEEDED.
4. ALL LOW VOLUME IRRIGATION IN PLANTING BEDS SHALL BE PIPED WITH LOW VOLUME POLYETHYLENE TUBING.
5. SPRINKLER AND PIPING PLACEMENT MAY VARY AND ARE TO BE FIELD DETERMINED AND VERIFIED BY THE CONTRACTOR.
6. CONTRACTOR TO CONSTRUCT (3) 4" IRRIGATION WELLS AND PUMP SYSTEMS COMPLETE
7. CONTRACTOR IS RESPONSIBLE FOR TEMPORARY POWER VIA FLORIDA POWER AND LIGHT.
8. PUMP SPECIFICATIONS: MANUFACTURER – GOULDS, 5 HP, MODEL J+
9. PUMP SHALL PRODUCE 80 GPM SUSTAINED IRRIGATION FLOW WITH A WELL DRAW DOWN NOT MORE THAN 12' OVER A 6 HOUR PERIOD.
10. PRIMARY IRRIGATION SOURCE SHALL BE STORMWATER TRACTS UNLESS WATER LEVELS ARE UNSUSTAINABLE IN WHICH CASE A MANUAL SWITCH–OVER TO WELLS WILL BE MADE.

LANDSCAPE AND IRRIGATION PHASING:
PRIOR TO C.O. OF EACH BUILDING PERIMETER LANDSCAPE AND IRRIGATION ASSOCIATED WITH EACH BUILDING AND BUILDING SPECIFIC LANDSCAPE AND IRRIGATION ACCORDING TO BUILDING TYPICALS SHOWN ON SHEET 6 OF 11, SHALL BE COMPLETED.

LANDSCAPE LEGEND

QUANTITY	SYMBOL	DESCRIPTION	SIZE AT PLANTING
87	○	AZALEA, FLORIDA\RHODODENDRON AUSTRINUM	1 GALLON
192	✿	BEGONIA, GOLDILOCKS\BEGONIA 'GOLDILOCKS'	EACH
36	✿	BIRD–OF–PARADISE BUSH\CAESALPINIA GILLIESII	1 GALLON
*87 = 29	✲	CABBAGE PALM\SABAL PALMETTO	MIN 10' CLEAR TRUNK
227	⊛	COCOPLUM\CHRYSOBALANUS ICACO	24" HIGH AT PLANTING
33	●	DIANA HIBISCUS\HIBISCUS SYRIACUS 'DIANA'	1 GALLON
33	⊕	GARDENIA\GARDENIA JASMINOIDES	1 GALLON
54	◎	INDIA HAWTHORNE, PINK LADY\RHAPHIOLEPIS INDICA	24" HIGH AT PLANTING
16	✽	MAGNOLIA, SOUTHERN\MAGNOLIA GRANDIFLORA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
92	✹	OAK, LAUREL–LEAVED\QUERCUS LAURIFOLIA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
155	✺	OAK, SOUTHERN LIVE\QUERCUS VIRGINIANA	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL
145	✕	ORNAMENTAL GRASS \MISCANTHUS SINENSIS 'GRAZIELLA'	EACH
29	⊖	SILVER BUTTONWOOD \CONOCARPUS ERECTUS VAR. SERICEUS	24" HIGH AT PLANTING
444	☼	VIBURNUM, SANDANKWA\VIBURNUM SUSPENSUM	24" HIGH AT PLANTING
*81=27	✲	WASHINGTON PALM\WASHINGTONIA ROBUSTA	MIN 10' CLEAR TRUNK
64	⊙	CYPRESS, BALD\TAXODIUM DISTICHUM	MIN 12' HIGH AND 2½"DIA. @ 4½ ' ABOVE GROUND LEVEL

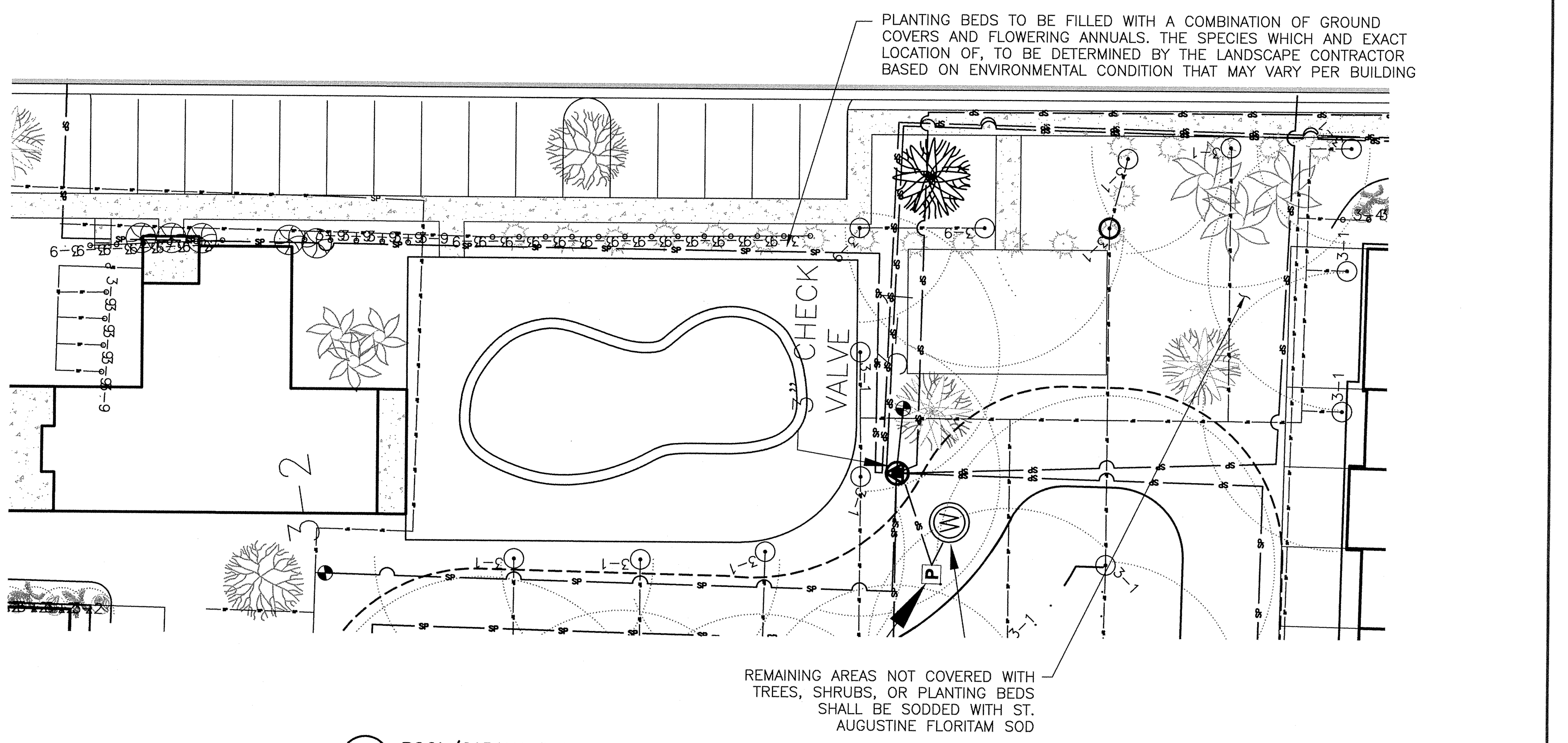
* NOTE 3 PALM TREES COUNT AS ONE PER CITY OF FORT PIERCE REQUIREMENTS


IRRIGATION LATERAL 1" PVC TYPICAL.
REMAINING AREAS NOT COVERED WITH TREES, SHRUBS, OR PLANTING BEDS SHALL BE SODDED WITH ST. AUGUSTINE FLORITAM SOD
MULCH TO BE USED IN ALL PLANTING BEDS TO INHIBIT WEED GROWTH.
LOW VOLUME
48
47
46
45
44
43
BLDG 7
IRRIGATION LATERAL 1 1/2" PVC TYPICAL.
IRRIGATION LATERAL 2" PVC TYPICAL.

2/6 TYPICAL 6 UNIT BUILDING LAYOUT

1"=20'

PLANTING BEDS TO BE FILLED WITH A COMBINATION OF GROUND COVERS AND FLOWERING ANNUALS. THE SPECIES WHICH AND EXACT LOCATION OF, TO BE DETERMINED BY THE LANDSCAPE CONTRACTOR BASED ON ENVIRONMENTAL CONDITION THAT MAY VARY PER BUILDING


PLANTING BEDS TO BE FILLED WITH A COMBINATION OF GROUND COVERS AND FLOWERING ANNUALS. THE SPECIES WHICH AND EXACT LOCATION OF, TO BE DETERMINED BY THE LANDSCAPE CONTRACTOR BASED ON ENVIRONMENTAL CONDITION THAT MAY VARY PER BUILDING
3" CHECK VALVE
W
P
REMAINING AREAS NOT COVERED WITH TREES, SHRUBS, OR PLANTING BEDS SHALL BE SODDED WITH ST. AUGUSTINE FLORITAM SOD

2/6 POOL/CABANA DETAIL

1"=20'

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

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△ REVISIONS	DATE	BY
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MARINER COVE

CITY OF FT. PIERCE FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

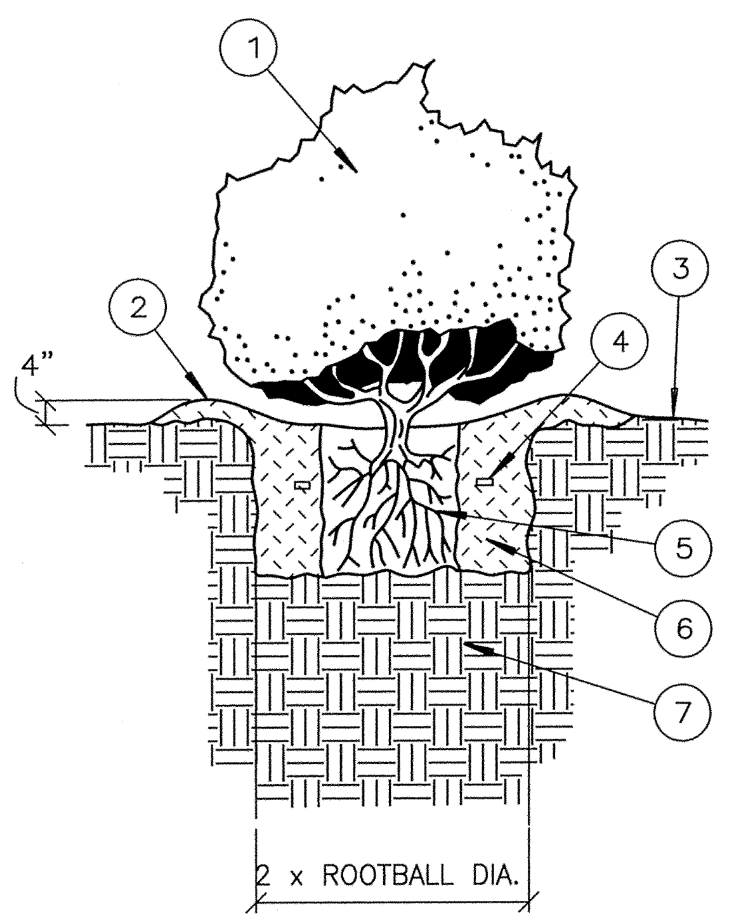
TYPICAL BUILDING LAYOUT

ENGLA
DESIGN ENGINEER
CERTIFIED PROFESSIONAL
DESIGNER #0069 exp. 2018

JEFFREY M. SMITH, FCLD # 00069
DATE: JUL 2 7 2015

MARINER COVE	
DESIGNED	JMS
DRAWN	JMS
CHECKED	JMS
DATE	5-22-15
SCALE	AS NOTED

SHEET
6
OF 11
14-173A

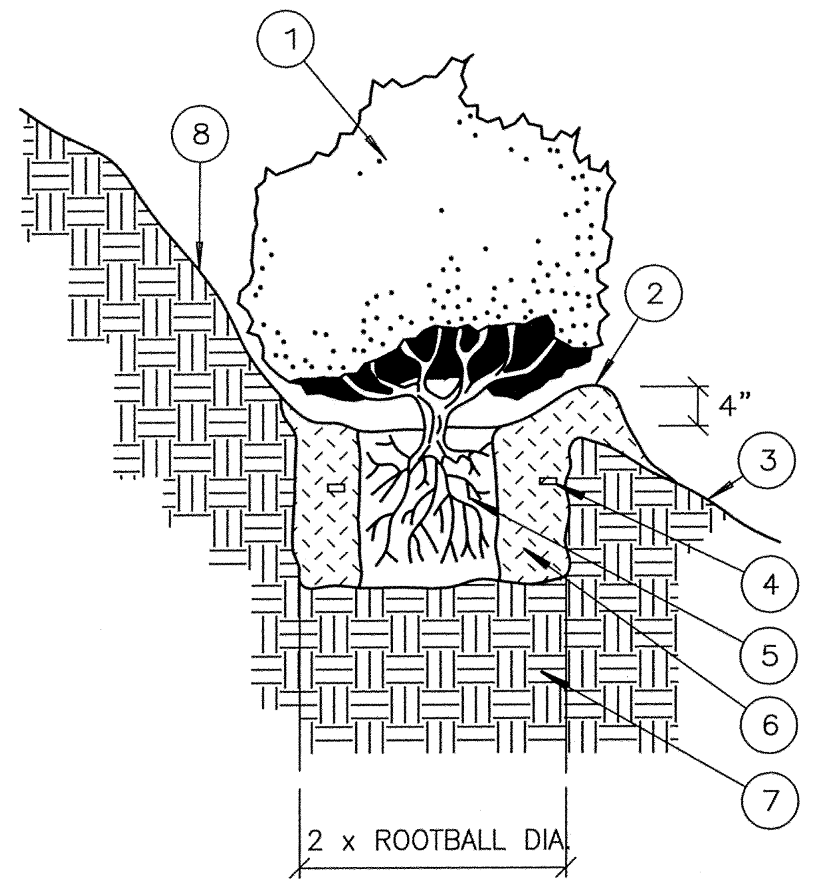

1
2
3
4
4"
5
6
7
2 x ROOTBALL DIA.

LEGEND

1. SHRUB OR VINE PER PLAN
2. EARTH WATERING BASIN (RAKE SMOOTH PRIOR TO SEEDING IN HYDROSEED AREAS; AT END OF PLANT ESTABLISHMENT PERIOD FOR ALL REMAINING BASINS)
3. FINISH GRADE
4. 7 GRAM PLANT TABLETS
   1 GAL = 3, 5 GAL = 6, 15 GAL = 9
5. ROOTBALL (SET CROWN +/- ABOVE FINISH GRADE)
6. COMPACTED BACKFILL MIX (PER PLANTING SPECS/NOTES)
7. UNDISTURBED NATIVE SOIL

1/7 SHRUB PLANTING

N.T.S.

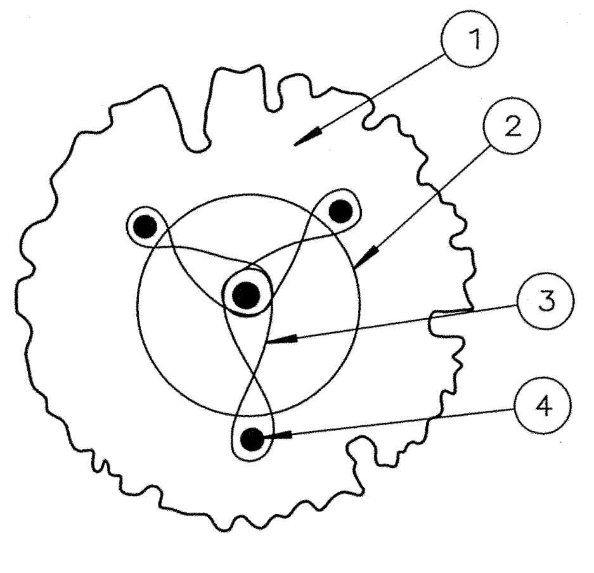

1
8
2
4"
3
4
5
6
7
2 x ROOTBALL DIA.

LEGEND

1. SHRUB OR VINE PER PLAN
2. EARTH WATERING BASIN (RAKE SMOOTH PRIOR TO SEEDING IN HYDROSEED AREAS; AT END OF PLANT ESTABLISHMENT PERIOD FOR ALL REMAINING BASINS)
3. FINISH GRADE
4. 7 GRAM PLANT TABLETS
   1 GAL = 3, 5 GAL = 6
   15 GAL = 9, 24 GAL = 12
5. ROOTBALL (SET CROWN +/- ABOVE FINISH GRADE)
6. COMPACTED BACKFILL MIX (PER PLANTING SPECS/NOTES)
7. UNDISTURBED NATIVE SOIL
8. CUT INTO SLOPE TO CREATE LEVEL BASIN

2/7 SHRUB PLANTING – SLOPE

N.T.S.



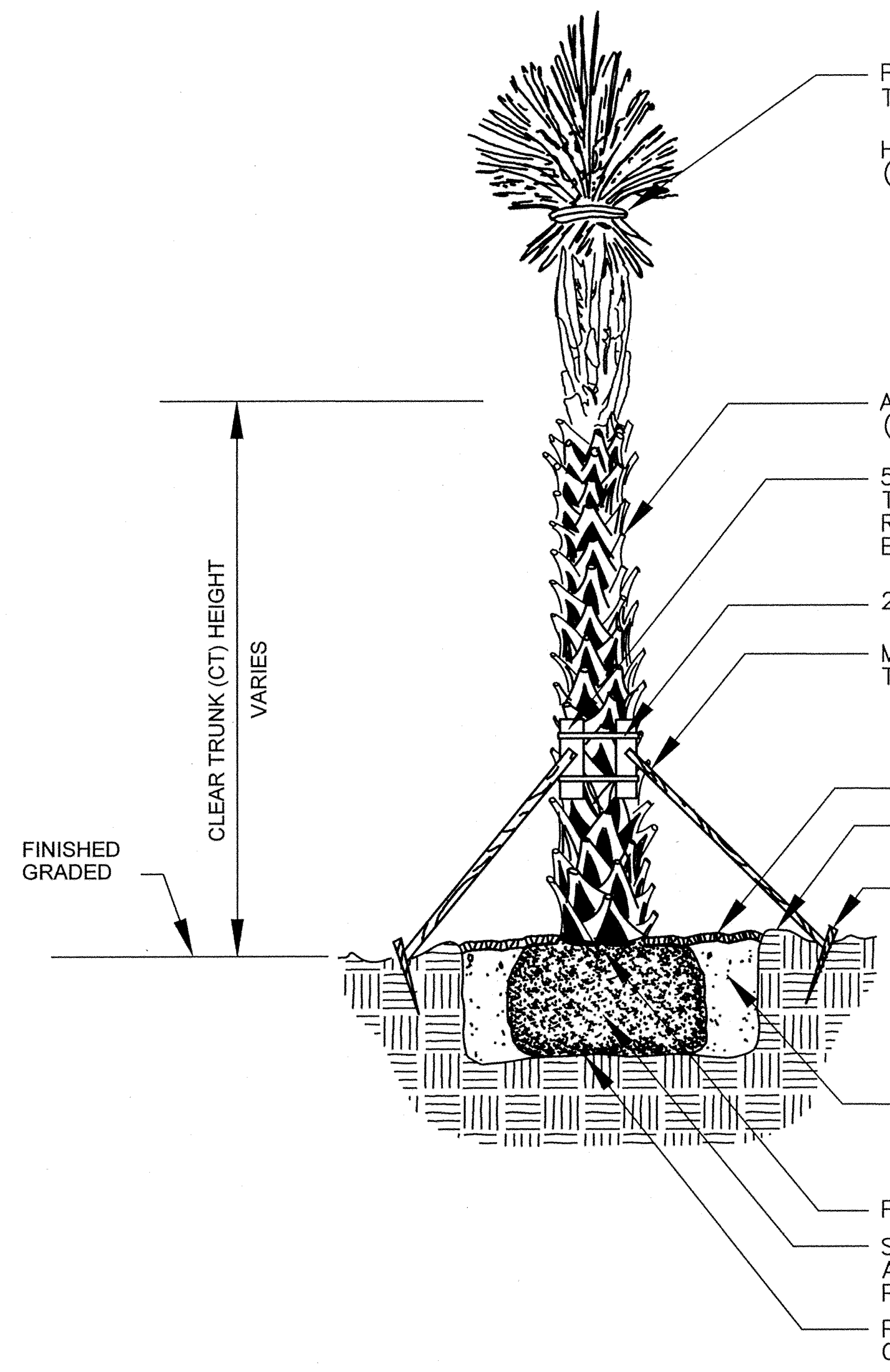
LEGEND

1. TREE CANOPY PER PLAN
2. ROOTBALL (DO NOT PENETRATE WITH STAKES)
3. (6) TREE TIES PER PLANTING SPECS/NOTES – 3 @ EACH HEIGHT LEVEL PER TREE PLANTING DETAIL
4. (3) 2" DIA. x 10' LONG LODGE POLE STAKES

NOTE: REFER TO TREE PLANTING DETAIL FOR PLANTING AND MATERIAL SPECIFICATIONS

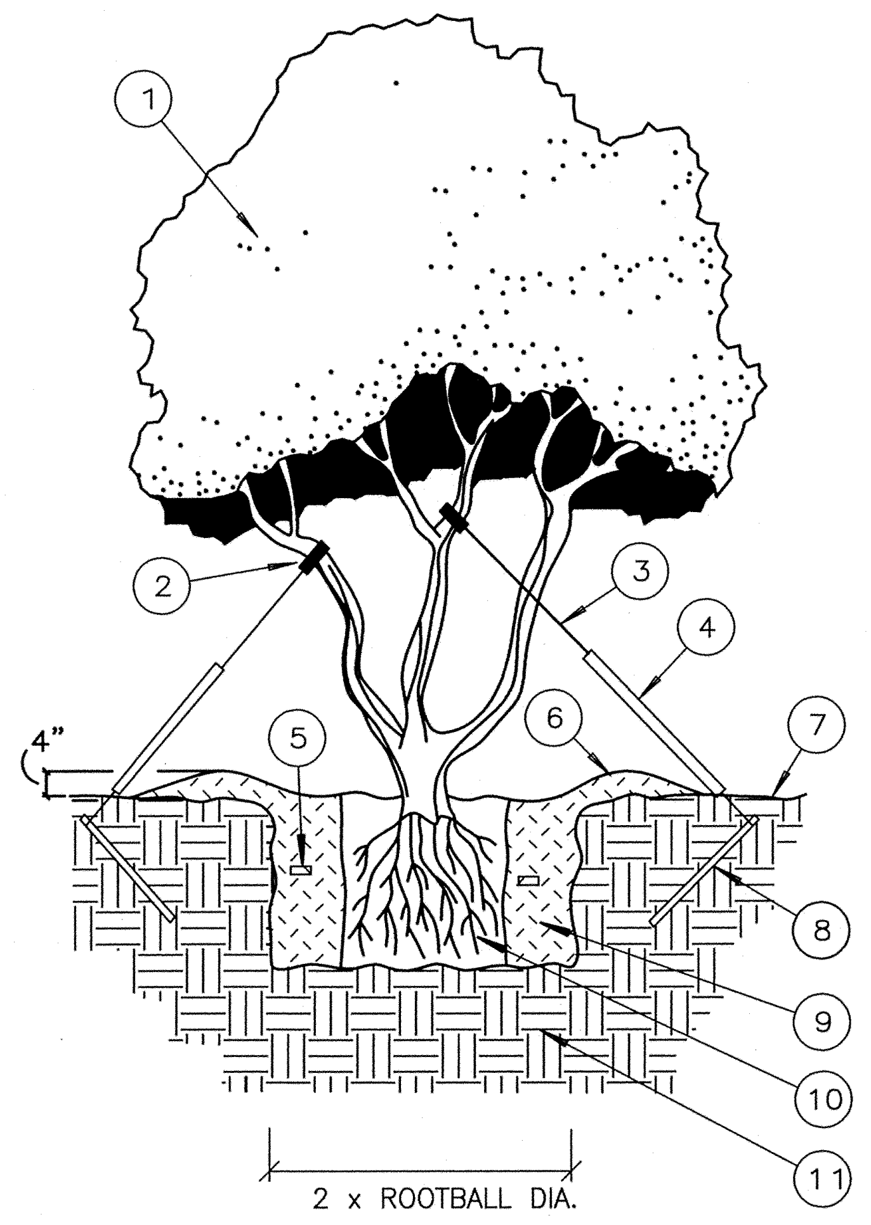
5/7 TREE TRIPLE STAKE

N.T.S.


CLEAR TRUNK (CT) HEIGHT VARIES
FINISHED GRADED
PRUNE & TIE FRONDS TOGETHER WITH DEGRADABLE TWINE (MINIMUM 6–8 FRONDS)
HURRICANE CUT PALM TREES ARE ACCEPTABLE (UNLESS OTHERWISE NOTED)
ALL PALMS TO BE BOOTED (UNLESS OTHERWISE NOTED)
5 – 2"x4"x18" WOOD BATTENS. DO NOT NAIL BATTENS TO PALM. HEIGHT OF BATTENS SHALL BE LOCATED IN RELATION TO THE HEIGHT OF THE PALM FOR ADEQUATE BRACING
2 STEEL BANDS
MINIMUM 3 – 2"x4" WOOD BRACES SHALL BE TOENAILED TO WOOD BATTENS
MULCH
FORM SAUCER WITH 4"–6" CONTINUOUS EARTHEN RIM AROUND PLANTING HOLE
2"x4"x24" WOOD STAKE REMAINING ABOVE GRADE
BACKFILL AROUND ROOTBALL AS SPECIFIED
PLANT ROOTBALL 2"– BELOW FINISHED GRADE
SIZE OF ROOTBALL WILL BE IN PROPORTION TO SIZE AND TYPE OF PALM IN RELATION TO SOUND NURSERY PRATICE
PLACE ROOTBALL AT BOTTOM OF PLANTING PIT ON UNDISTURBED SUBGRADE

3/7 PALM TREE PLANTING

N.T.S.

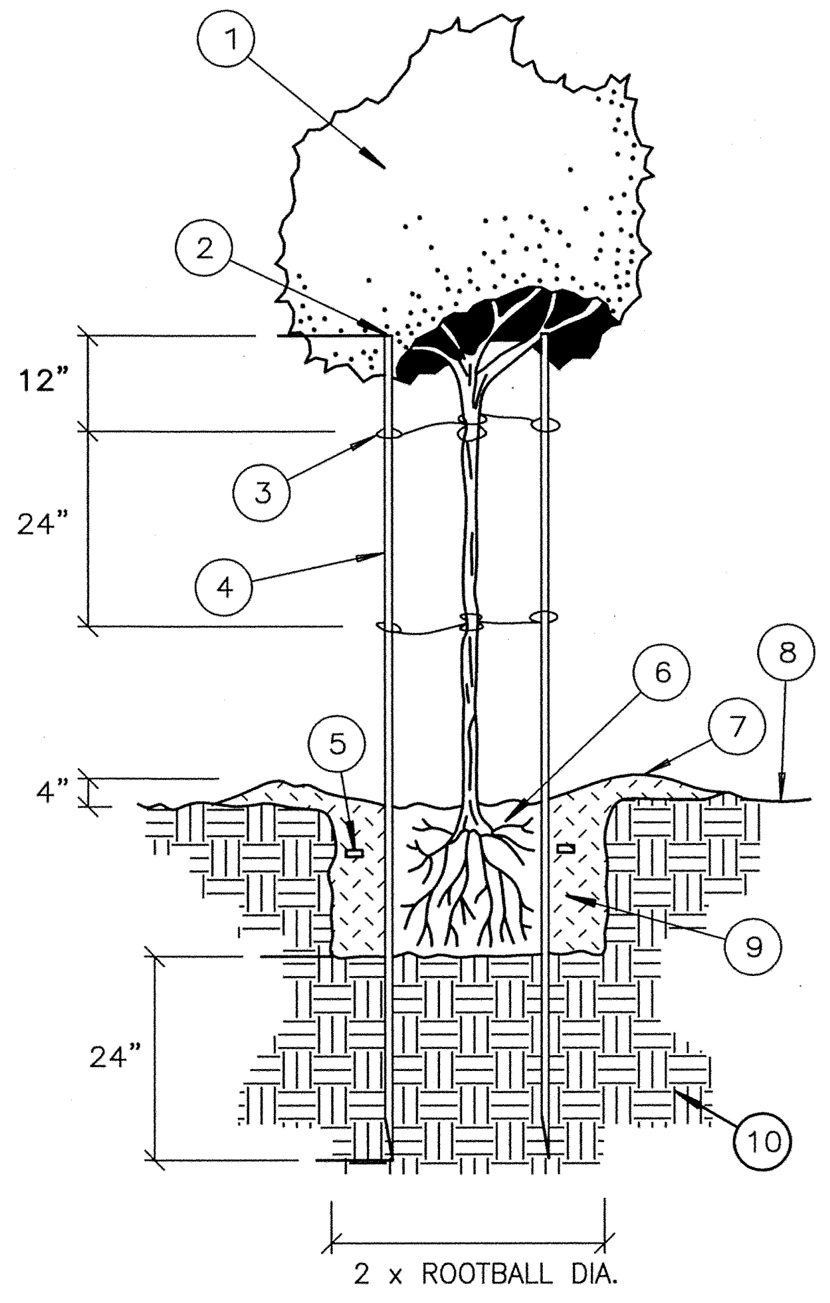

1
2
3
4
4"
5
6
7
8
9
10
11
2 x ROOTBALL DIA.

LEGEND

1. TREE PER PLAN
2. 1/2" DIA. BLACK RUBBER HOSE WHERE WIRE CONNECTS TO TREE
3. GALVANIZED WIRE (NO SPLICES)
   3 GUY SETS MINIMUM PER TREE
   12 GA. WIRE MINIMUM FOR 24"–36" BOX
   10 GA. WIRE MINIMUM FOR 42" + BOX
4. 1/2" DIA. x 36" LONG WHITE PVC SLEEVE
   1 PER GUY WIRE
5. 7 GRAM PLANT TABLETS
   24" BOX = 12, 30" BOX = 15
   36" BOX = 18, 42" BOX = 21
   48" BOX = 24, 54" BOX = 27
   60" BOX = 30, 72" BOX = 33
6. EARTH WATERING BASIN (RAKE SMOOTH PRIOR TO HYDROSEEDING IN HYDROSEED AREAS; AT END OF PLANT ESTABLISHMENT PERIOD FOR ALL REMAINING BASINS)
7. FINISH GRADE
8. ANCHOR STAKES (2x2x30" REDWOOD OR 1" DIA. x 30" GALVANIZED PIPE)
9. COMPACTED BACKFILL MIX (PER PLANTING SPECS/NOTES)
10. ROOTBALL (SET CROWN +/- ABOVE FINISH GRADE)
11. UNDISTURBED NATIVE SOIL

4/7 TREE GUYING

N.T.S.

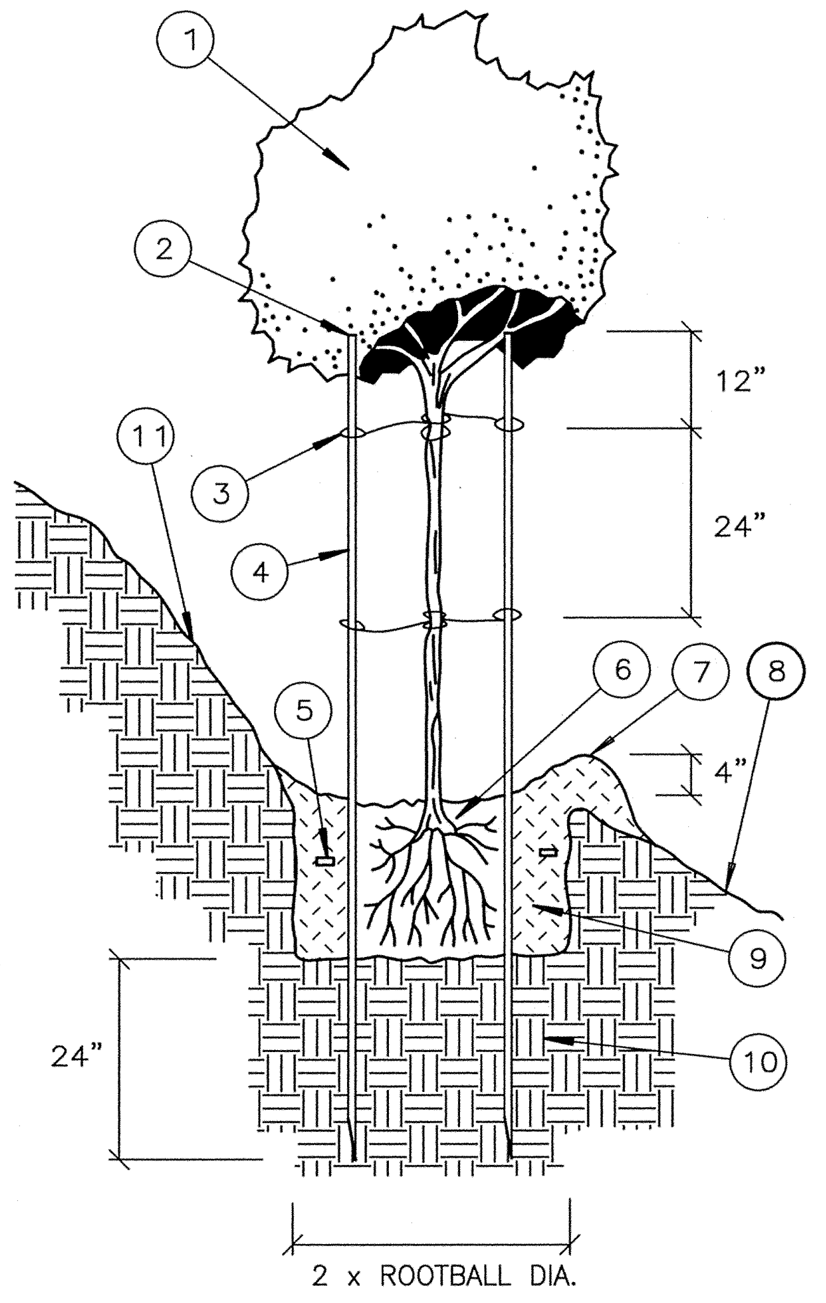

1
2
12"
3
24"
4
5
4"
6
7
8
9
24"
10
2 x ROOTBALL DIA.

LEGEND

1. TREE PER PLAN
2. TRIM TOP OF STAKES BELOW LOWEST BRANCHES TO PREVENT DAMAGE
3. CROSS TIE BETWEEN STAKE AND TREE PER PLANTING SPECIFICATIONS
4. 2" DIA. x 10' LONG LODGE POLE STAKES (INSTALL WIDER THAN ROOTBALL)
5. 21 GRAM PLANT TABLETS
   5 GAL = 3, 15 GAL = 5, 24" BOX = 8
6. ROOTBALL (SET CROWN +/- ABOVE FINISH GRADE)
7. EARTH WATERING BASIN (RAKE SMOOTH PRIOR TO SEEDING IN HYDROSEED AREAS; AT END OF PLANT ESTABLISHMENT PERIOD FOR ALL REMAINING BASINS)
8. FINISH GRADE
9. COMPACTED BACKFILL MIX (PER PLANTING SPECS/NOTES)
10. UNDISTURBED NATIVE SOIL

6/7 TREE PLANTING

N.T.S.


1
2
11
12"
3
24"
4
5
6
7
8
4"
9
24"
10
2 x ROOTBALL DIA.

LEGEND

1. TREE PER PLAN
2. TRIM TOP OF STAKES BELOW LOWEST BRANCHES TO PREVENT DAMAGE
3. CROSS TIE BETWEEN STAKE AND TREE PER PLANTING SPECIFICATIONS
4. 2" DIA. x 10' LONG LODGE POLE STAKES (INSTALL WIDER THAN ROOTBALL)
5. 21 GRAM PLANT TABLETS
   5 GAL = 3, 15 GAL = 5, 24" BOX = 8
6. ROOTBALL (SET CROWN +/- ABOVE FINISH GRADE)
7. EARTH WATERING BASIN (RAKE SMOOTH PRIOR TO SEEDING IN HYDROSEED AREAS; AT END OF PLANT ESTABLISHMENT PERIOD FOR ALL REMAINING BASINS)
8. FINISH GRADE
9. COMPACTED BACKFILL MIX (PER PLANTING SPECS/NOTES)
10. UNDISTURBED NATIVE SOIL
11. CUT INTO SLOPE TO CREATE A LEVEL BASIN

7/7 TREE PLANTING – SLOPE

N.T.S.

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

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△	REVISIONS	DATE	BY
1			
2			
3			
4			
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8			

MARINER COVE

CITY OF FT. PIERCE FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

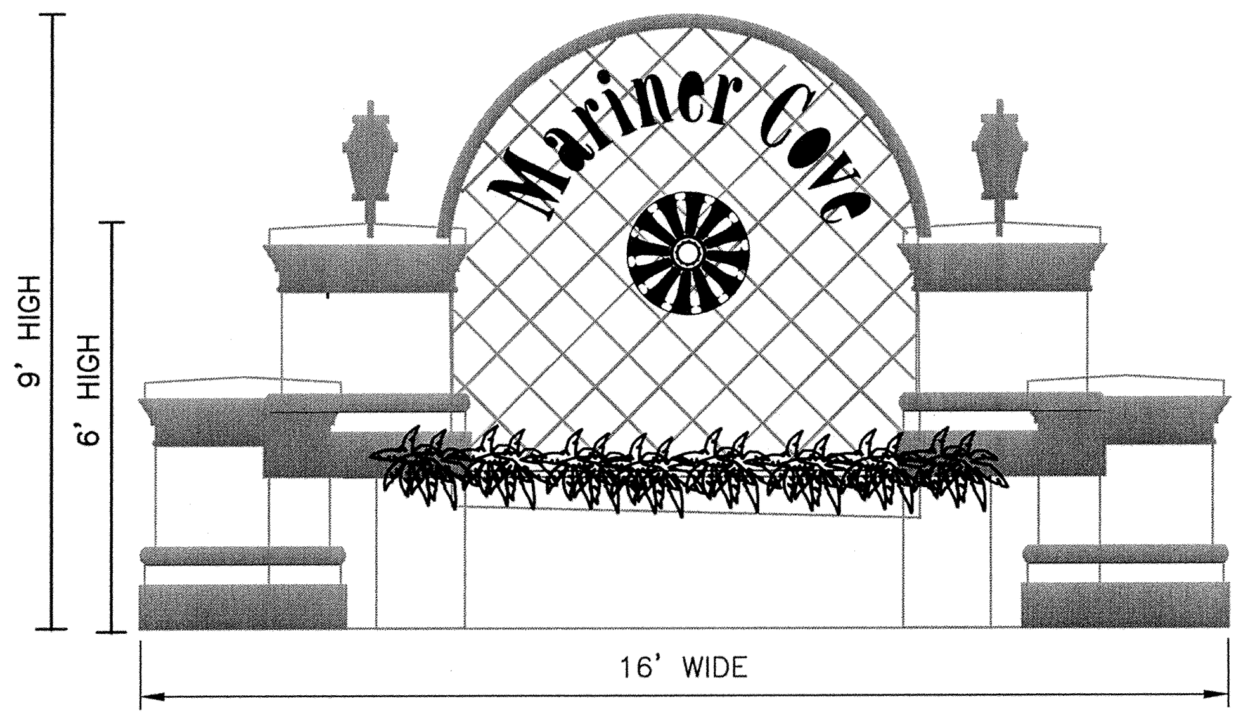
LANDSCAPE INSTALLATION DETAILS

FNGLA
DESIGN ENGINEER
CERTIFIED PROFESSIONAL
DESIGNER #0069 exp. 2013

JEFFREY M. SMITH, FCLD # 00069
DATE: JUL 2 7 2015

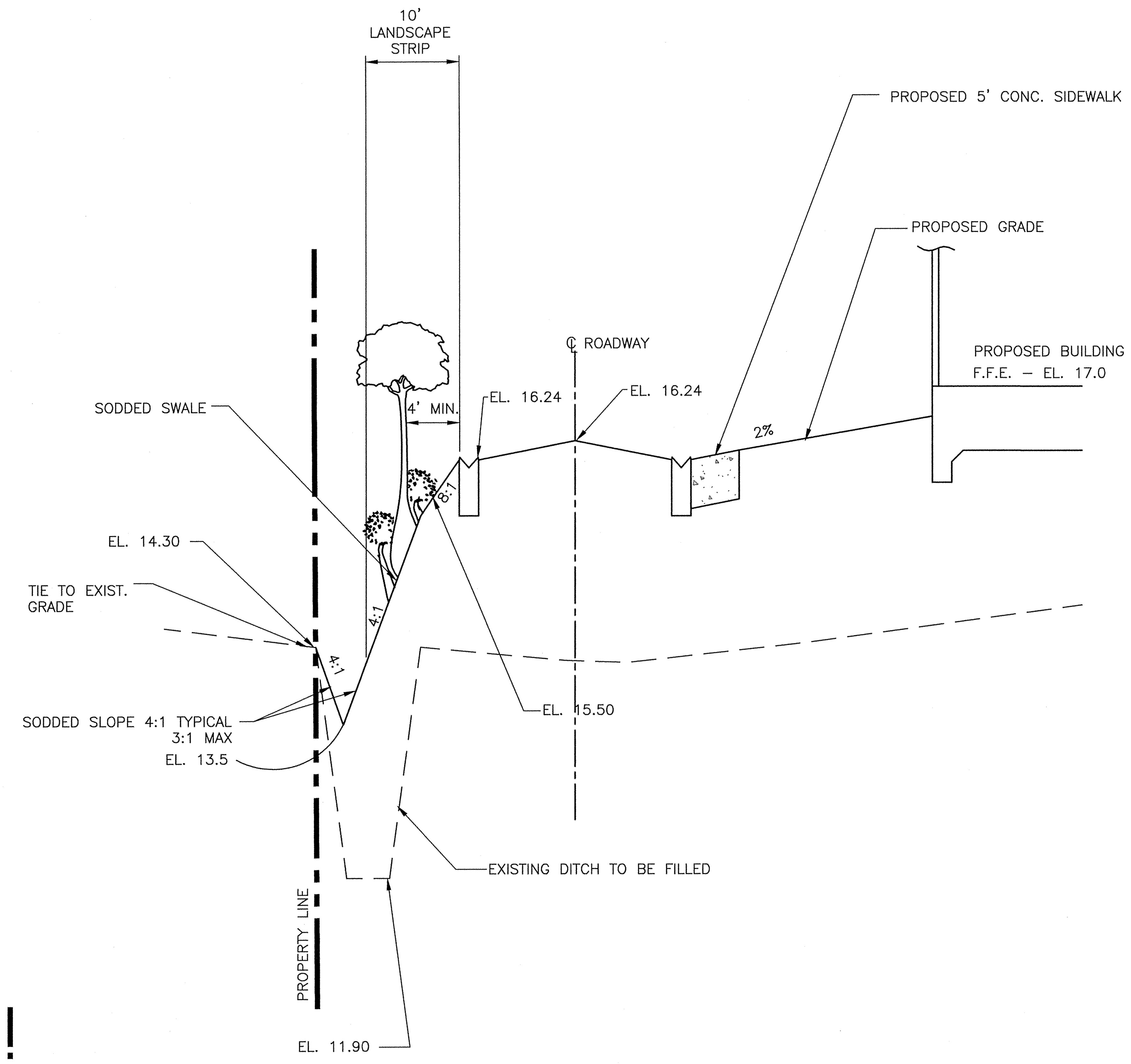
MARINER COVE	
DESIGNED	JMS
DRAWN	JMS
CHECKED	JMS
DATE	5-22-15
SCALE	N.T.S.

SHEET
7
OF 11
14-173A


Mariner Cove
9' HIGH
6' HIGH
16' WIDE

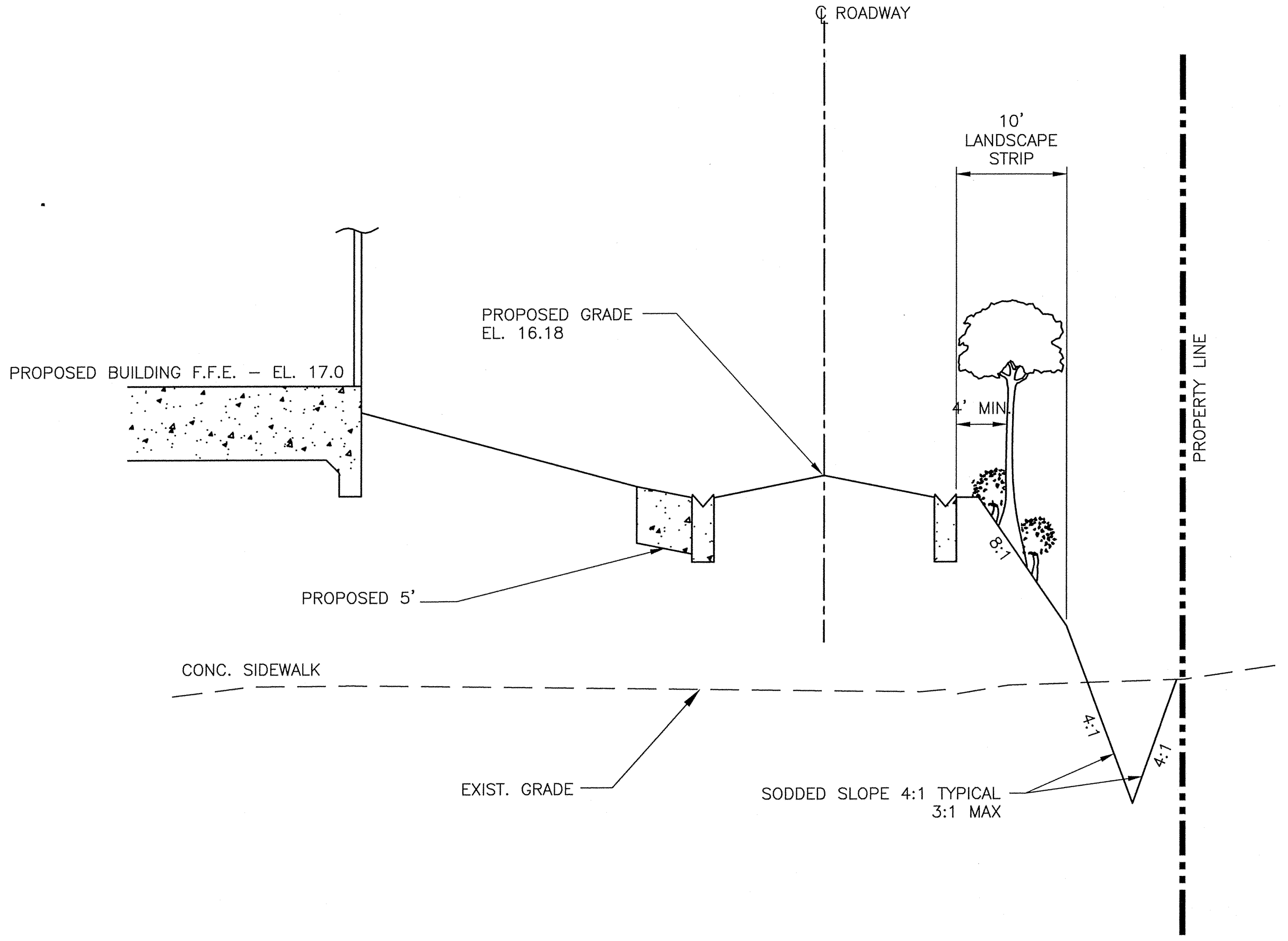
1/8 PROPOSED SIGN

N.T.S.


10' LANDSCAPE STRIP
PROPOSED 5' CONC. SIDEWALK
PROPOSED GRADE
℄ ROADWAY
PROPOSED BUILDING F.F.E. – EL. 17.0
SODDED SWALE
4' MIN.
EL. 16.24
EL. 16.24
2%
8:1
EL. 14.30
TIE TO EXIST. GRADE
4:1
4:1
SODDED SLOPE 4:1 TYPICAL 3:1 MAX
EL. 13.5
EL. 15.50
EXISTING DITCH TO BE FILLED
PROPERTY LINE
EL. 11.90

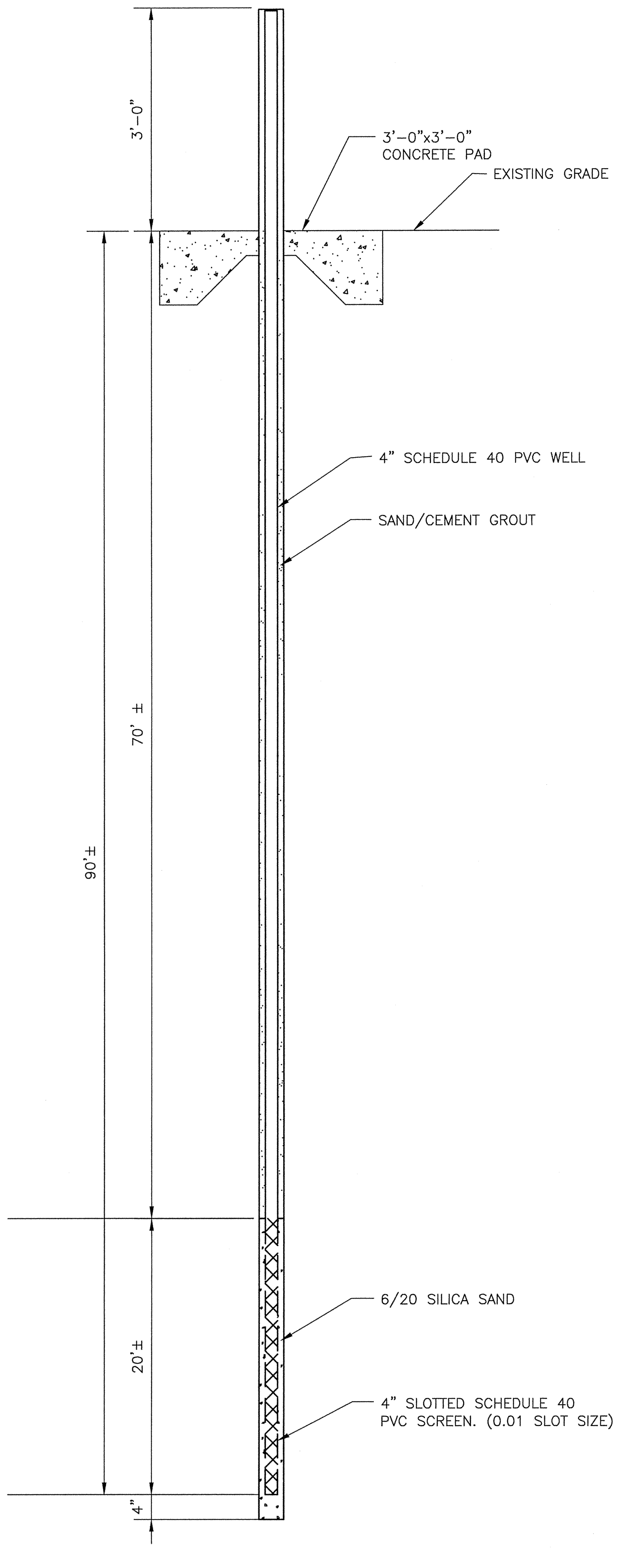
3/8 SECTION A–A

N.T.S.


℄ ROADWAY
10' LANDSCAPE STRIP
PROPOSED GRADE EL. 16.18
PROPOSED BUILDING F.F.E. – EL. 17.0
4' MIN.
PROPERTY LINE
8:1
PROPOSED 5'
CONC. SIDEWALK
EXIST. GRADE
SODDED SLOPE 4:1 TYPICAL 3:1 MAX
4:1
4:1

2/8 SECTION G–G

N.T.S.


3'-0"
3'-0"x3'-0" CONCRETE PAD
EXISTING GRADE
90'±
70' ±
4" SCHEDULE 40 PVC WELL
SAND/CEMENT GROUT
20'±
6/20 SILICA SAND
4" SLOTTED SCHEDULE 40 PVC SCREEN. (0.01 SLOT SIZE)
4"

4/8 TYPICAL IRRIGATION WELL DETAIL

N.T.S.

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
OF FLORIDA

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△	REVISIONS	DATE	BY
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MARINER COVE

CITY OF FT. PIERCE FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

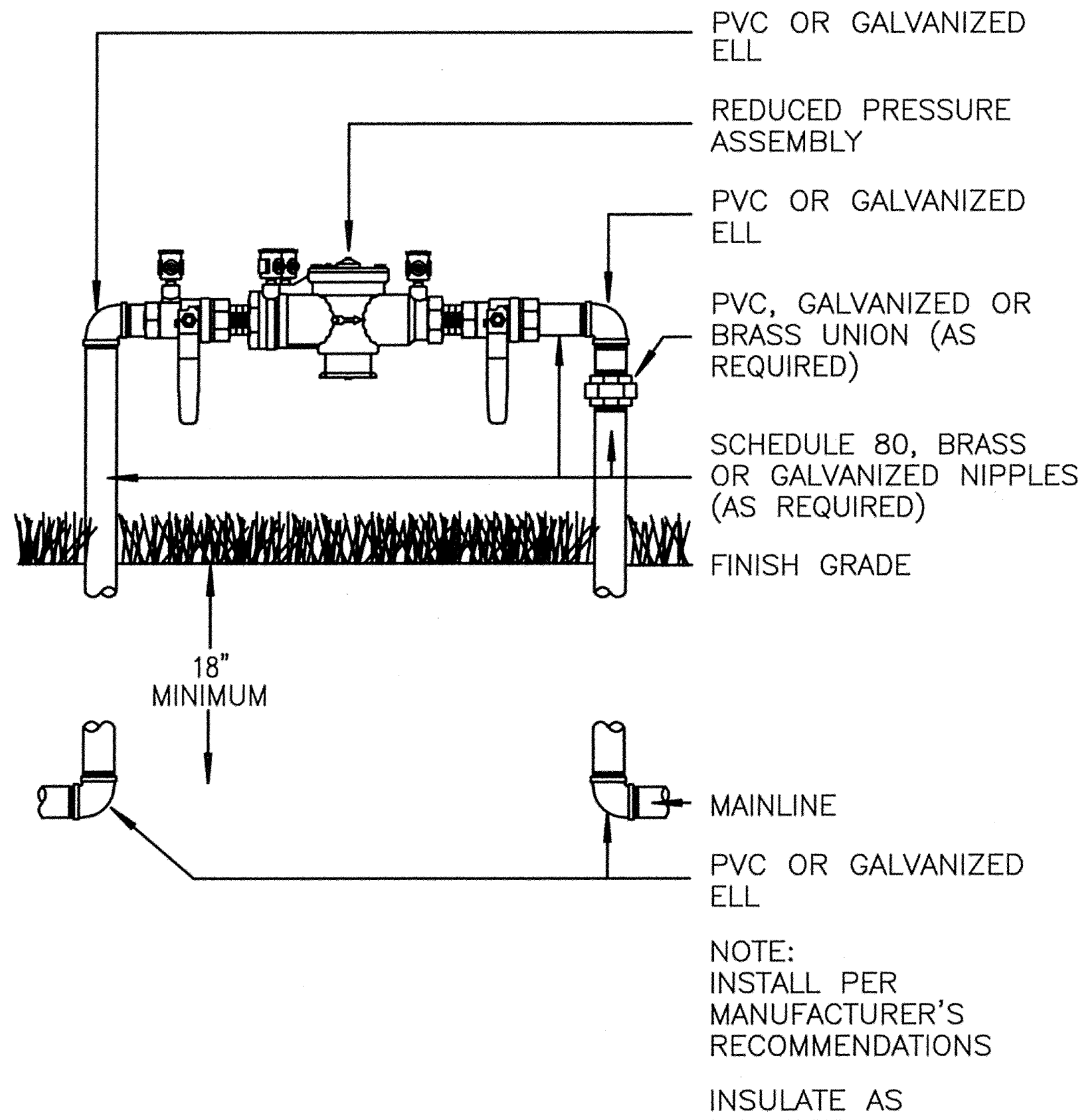
LANDSCAPE AND IRRIGATION DETAILS

DESIGN ENGINEER
ENGLA CERTIFIED PROFESSIONAL DESIGNER #0069
JEFFREY M. SMITH, FCLD # 00069
DATE: JUL 2 7 2015

MARINER COVE	
DESIGNED	JMS
DRAWN	JMS
CHECKED	JMS
DATE	5-22-15
SCALE	N.T.S.

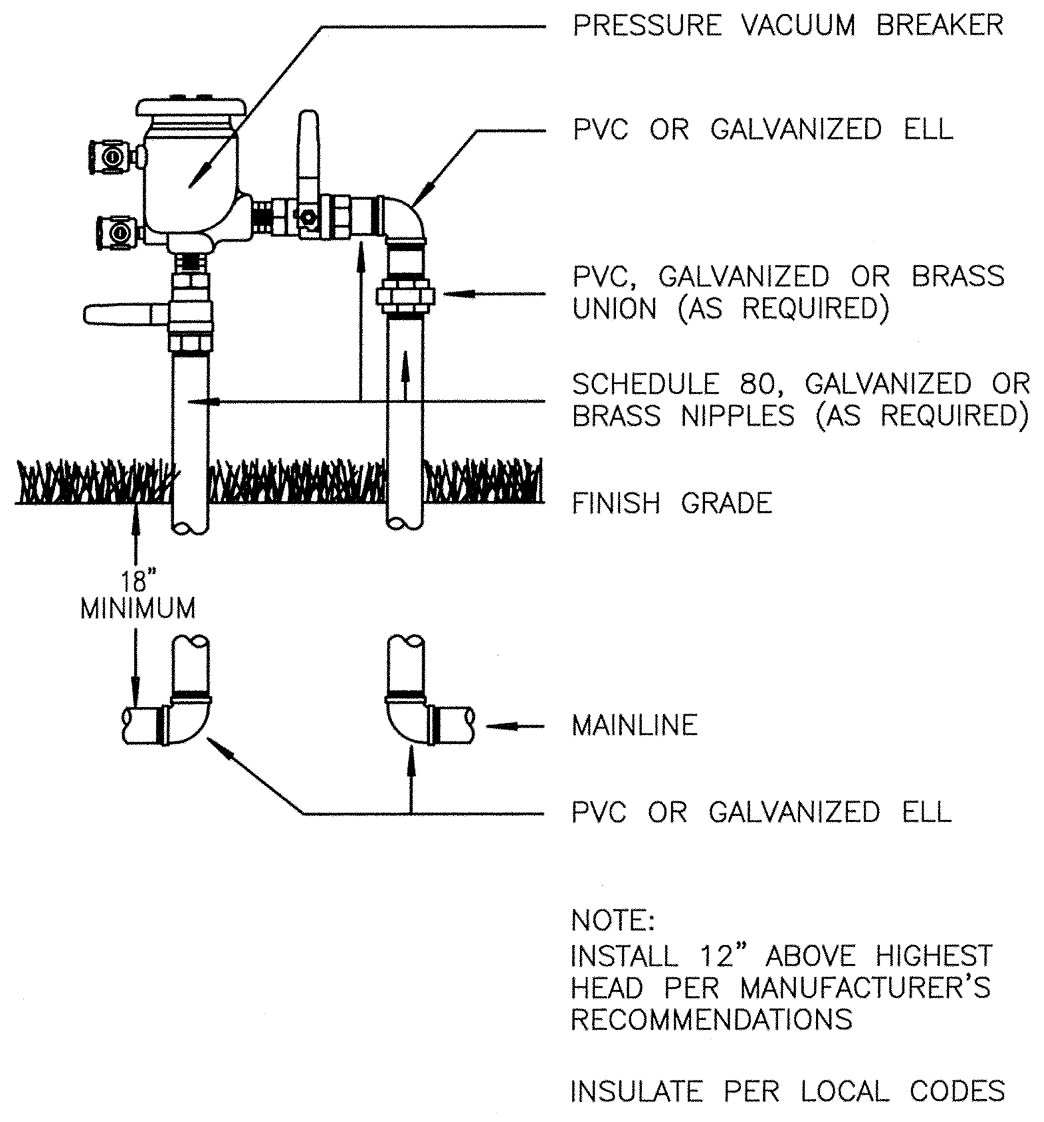
SHEET 8 OF 11

14-173A


PVC OR GALVANIZED ELL
REDUCED PRESSURE ASSEMBLY
PVC OR GALVANIZED ELL
PVC, GALVANIZED OR BRASS UNION (AS REQUIRED)
SCHEDULE 80, BRASS OR GALVANIZED NIPPLES (AS REQUIRED)
FINISH GRADE
18" MINIMUM
MAINLINE
PVC OR GALVANIZED ELL
NOTE:
INSTALL PER MANUFACTURER'S RECOMMENDATIONS
INSULATE AS REQUIRED

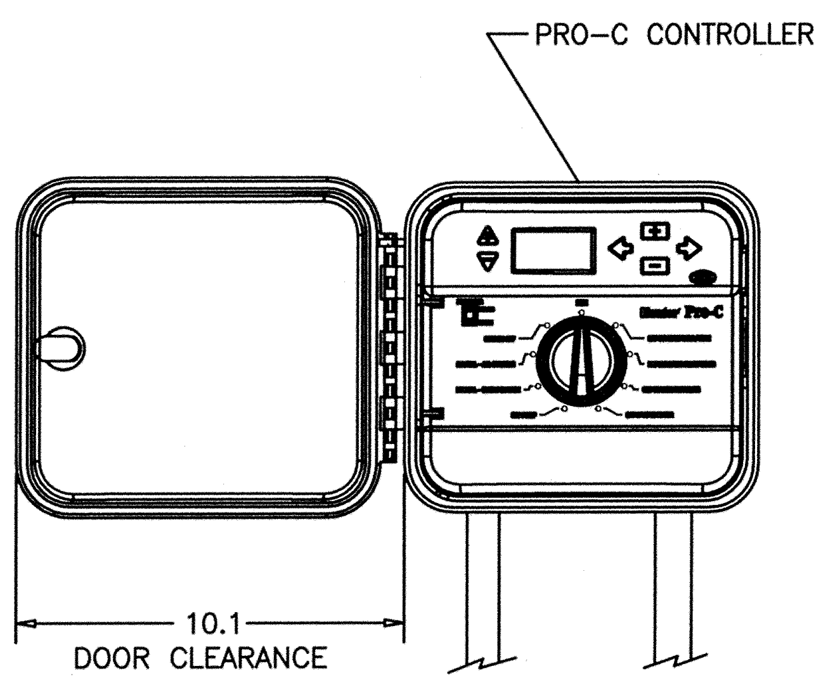
1/3 REDUCED PRESSURE ASSEMBLY

N.T.S.


PRESSURE VACUUM BREAKER
PVC OR GALVANIZED ELL
PVC, GALVANIZED OR BRASS UNION (AS REQUIRED)
SCHEDULE 80, GALVANIZED OR BRASS NIPPLES (AS REQUIRED)
FINISH GRADE
18" MINIMUM
MAINLINE
PVC OR GALVANIZED ELL
NOTE:
INSTALL 12" ABOVE HIGHEST HEAD PER MANUFACTURER'S RECOMMENDATIONS
INSULATE PER LOCAL CODES

2/3 PRESSURE VACUUM BREAKER

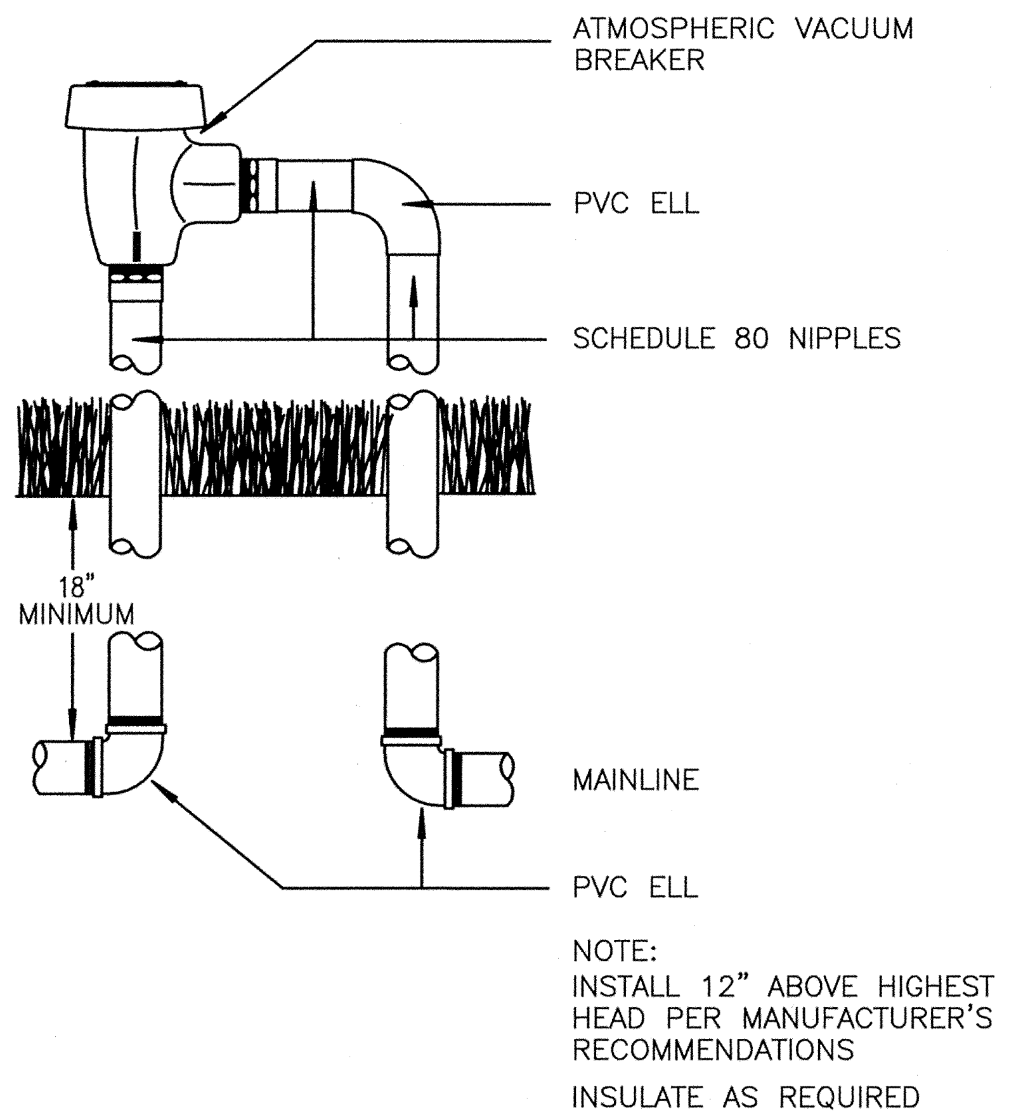
N.T.S.


PRO-C CONTROLLER
10.1
DOOR CLEARANCE

3/3 Hunter® PS-00 SPRAY HEAD WITH HCV

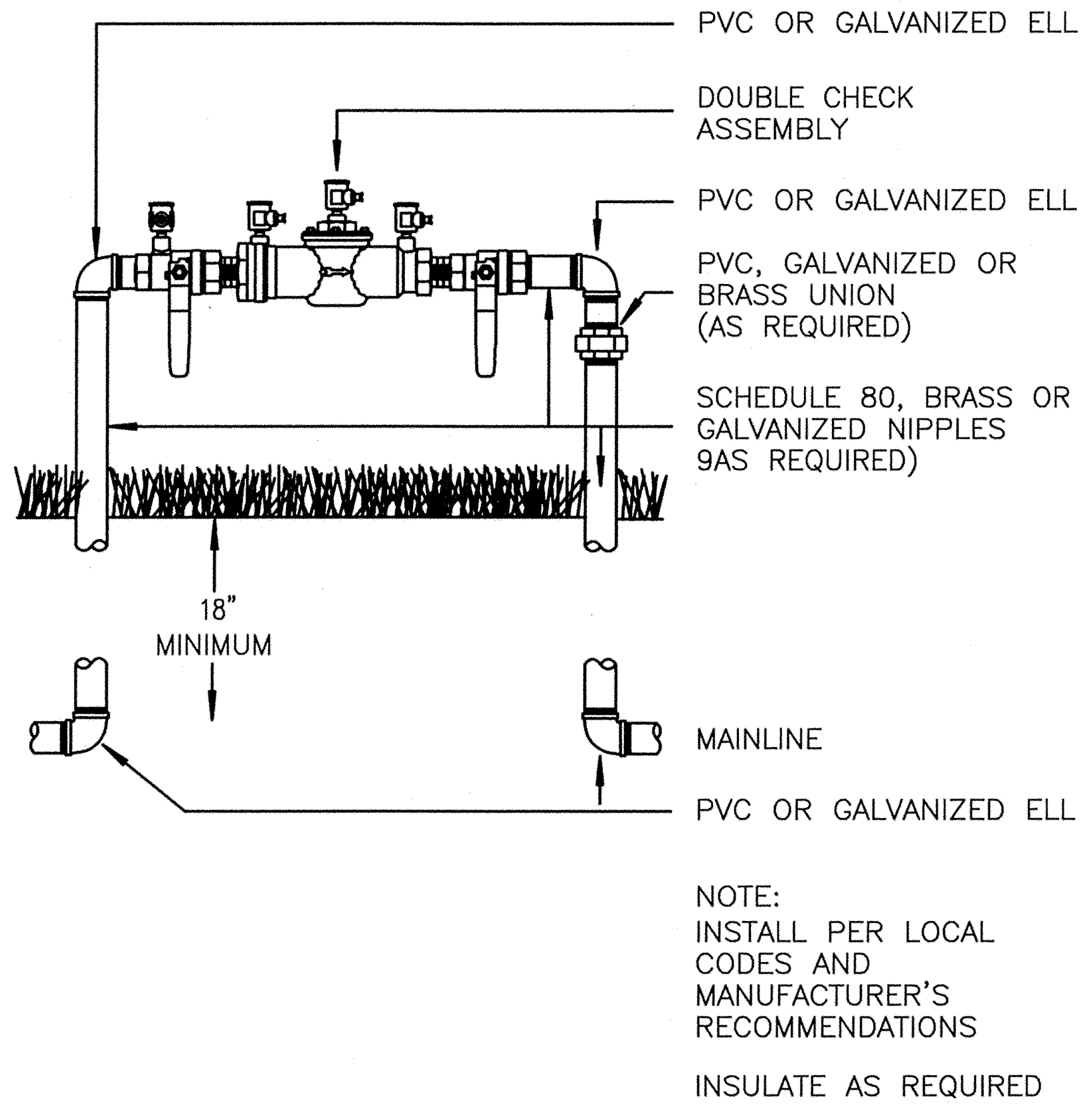
INSTALLATION DETAIL

N.T.S.


ATMOSPHERIC VACUUM BREAKER
PVC ELL
SCHEDULE 80 NIPPLES
18" MINIMUM
MAINLINE
PVC ELL
NOTE:
INSTALL 12" ABOVE HIGHEST HEAD PER MANUFACTURER'S RECOMMENDATIONS
INSULATE AS REQUIRED

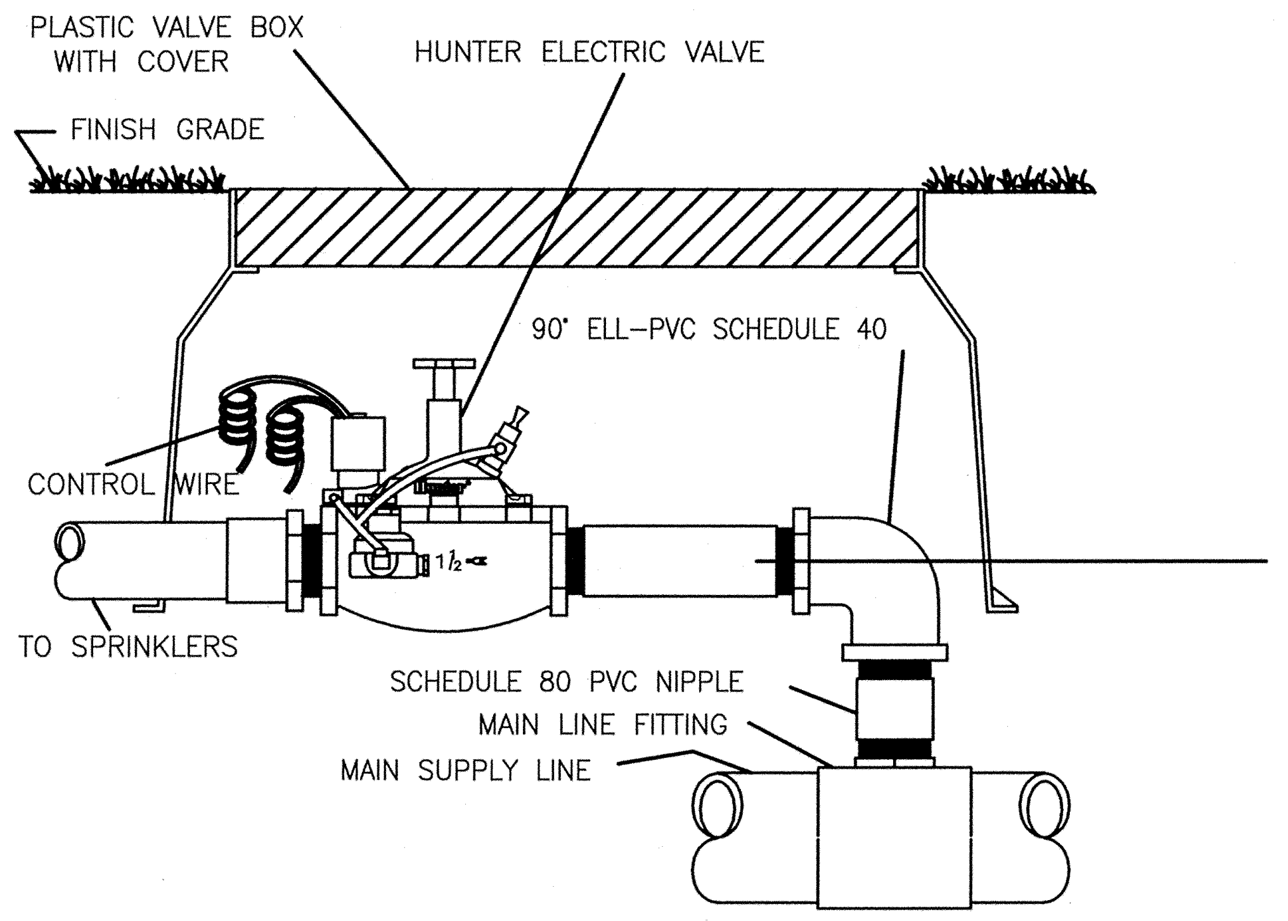
4/3 ATMOSPHERIC VACUUM BREAKER

N.T.S.


PVC OR GALVANIZED ELL
DOUBLE CHECK ASSEMBLY
PVC OR GALVANIZED ELL
PVC, GALVANIZED OR BRASS UNION (AS REQUIRED)
SCHEDULE 80, BRASS OR GALVANIZED NIPPLES 9AS REQUIRED)
18" MINIMUM
MAINLINE
PVC OR GALVANIZED ELL
NOTE:
INSTALL PER LOCAL CODES AND MANUFACTURER'S RECOMMENDATIONS
INSULATE AS REQUIRED

5/3 DOUBLE CHECK ASSEMBLY

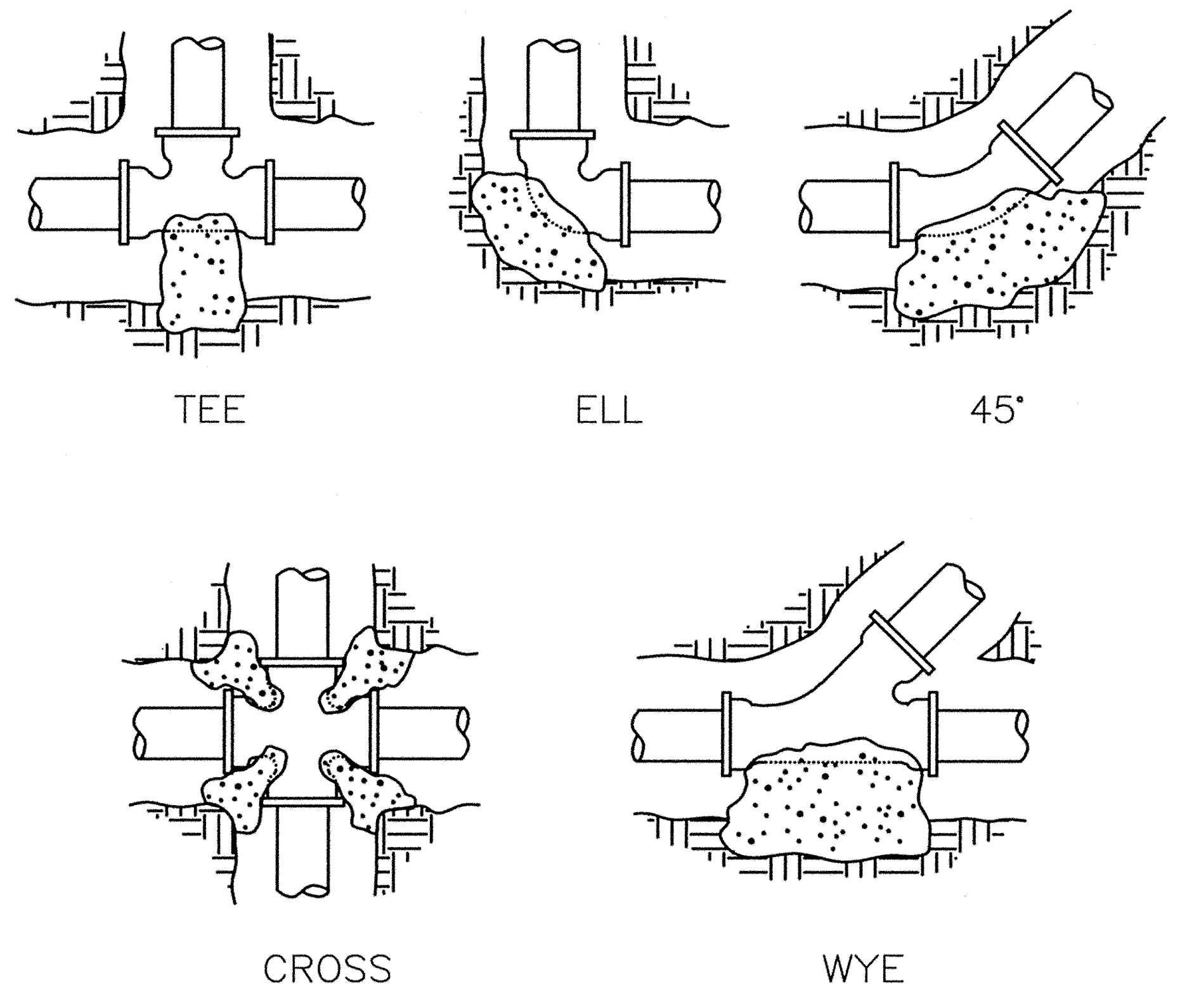
N.T.S.


PLASTIC VALVE BOX WITH COVER
HUNTER ELECTRIC VALVE
FINISH GRADE
90° ELL-PVC SCHEDULE 40
CONTROL WIRE
TO SPRINKLERS
SCHEDULE 80 PVC NIPPLE
MAIN LINE FITTING
MAIN SUPPLY LINE

6/3 Hunter® HBV PRES.REGU. IN VAL.-BOX

INSTALLATION DETAIL

N.T.S.

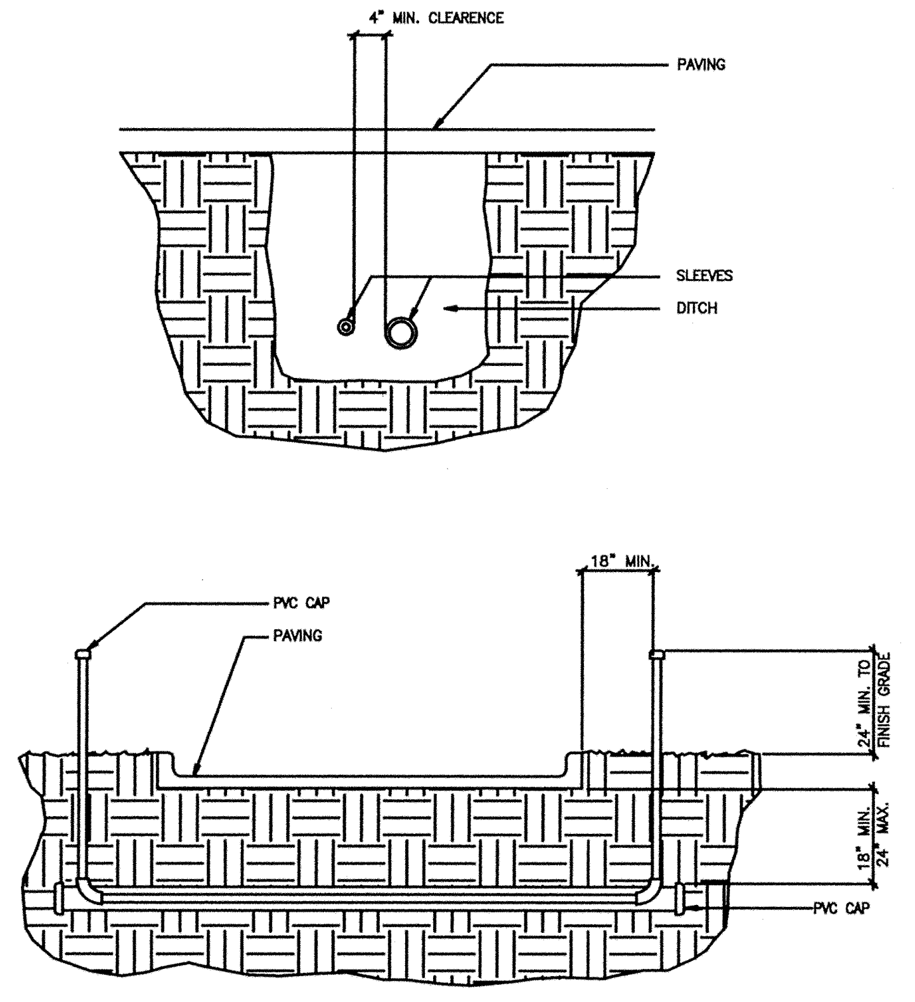

TEE
ELL
45°
CROSS
WYE

NOTES:

1. SUPPLY LINES 4 IN DIAMETER AND LARGER SHALL RECEIVE CONCRETE THRUST BLOCKS.
2. A MINIMUM OF 6" OF CONCRETE SHALL BE POURED ON VIRGIN OR COMPACTED SOIL BENEATH EACH INSTALLATION.

7/3 CONCRETE THRUST BLOCKS

N.T.S.

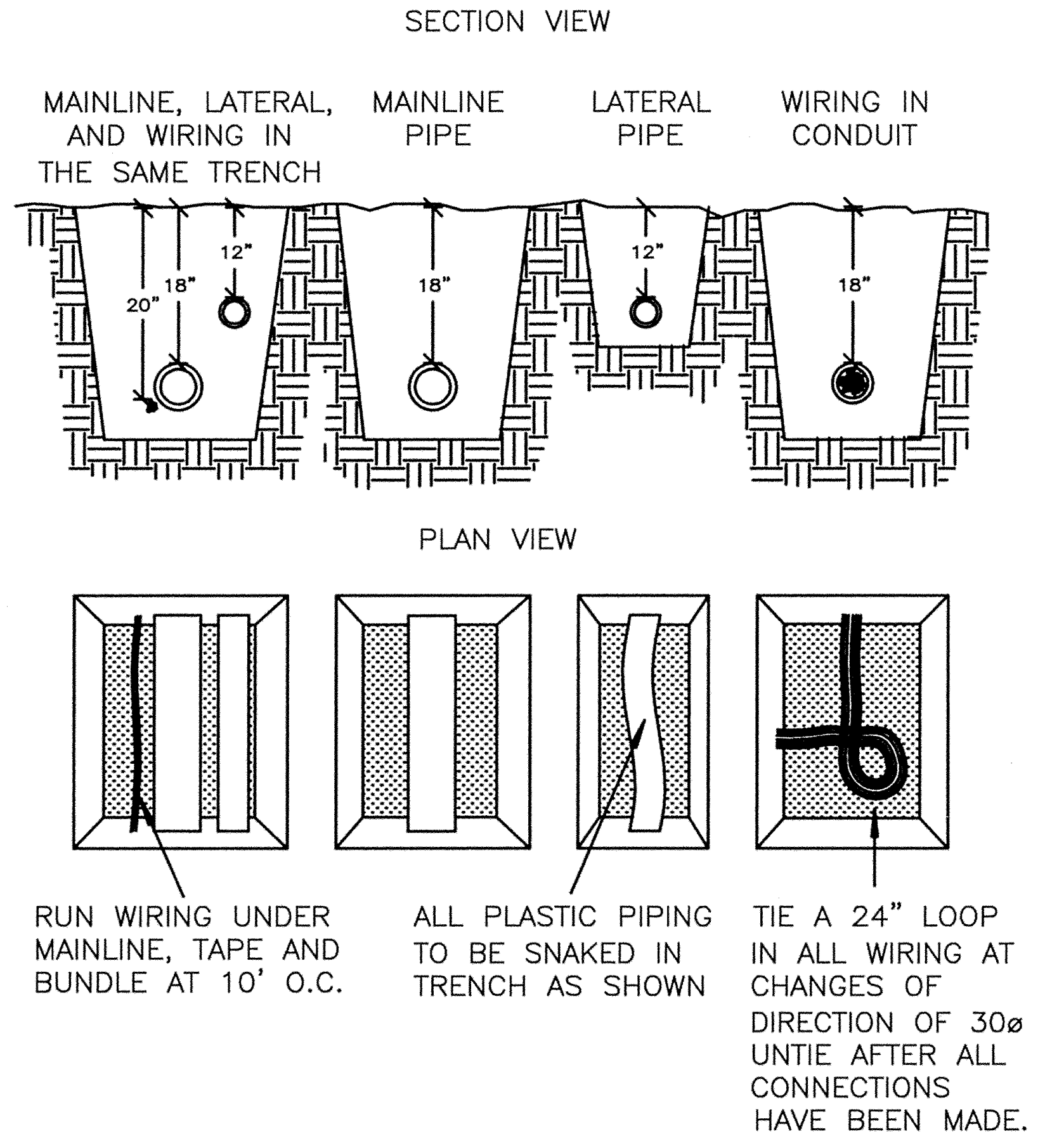

4" MIN. CLEARENCE
PAVING
SLEEVES
DITCH
18" MIN.
PVC CAP
PAVING
24" MIN. TO FINISH GRADE
18" MIN. 24" MAX.
PVC CAP

NOTES:

1. ALL PVC IRRIGATION SLEEVING TO BE CLASS 200.
2. ALL JOINTS TO BE SOLVENT WELDED AND WATERTIGHT.
3. WHERE THERE IS MORE THAN ONE SLEEVE, EXTEND SMALLER SLEEVE TO 24" MIN. ABOVE FINISH GRADE.
4. MECHANICALLY TAMP TO 95% PROCTOR.

8/3 IRRIGATION SLEEVING

N.T.S.


SECTION VIEW
MAINLINE, LATERAL, AND WIRING IN THE SAME TRENCH
MAINLINE PIPE
LATERAL PIPE
WIRING IN CONDUIT
20"
18"
12"
18"
12"
18"
PLAN VIEW
RUN WIRING UNDER MAINLINE, TAPE AND BUNDLE AT 10' O.C.
ALL PLASTIC PIPING TO BE SNAKED IN TRENCH AS SHOWN
TIE A 24" LOOP IN ALL WIRING AT CHANGES OF DIRECTION OF 30ø UNTIE AFTER ALL CONNECTIONS HAVE BEEN MADE.

NOTE:
SLEEVE BELOW ALL HARDSCAPE ELEMENTS WITH SCHEDULE 40 PVC 2 TIMES THE DIAMETER OF THE PIPE WITHIN.

9/3 PIPE & WIRE TRENCHING

N.T.S.

48 HOURS BEFORE DIGGING
CALL TOLL FREE
1 (800) 432-4770
SUNSHINE STATE ONE CALL
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△	REVISIONS	DATE	BY
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MARINER COVE

CITY OF FT. PIERCE
FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
FAX (772)770-1508

IRRIGATION INSTALLATION DETAILS

FNGLA
DESIGN ENGINEER
CERTIFIED PROFESSIONAL
DESIGNER #0069 exp. 2018

JEFFREY M. SMITH, FCLD # 00069
DATE: JUL 27 2015

MARINER COVE	
DESIGNED	JMS
DRAWN	JMS
CHECKED	JMS
DATE	5-22-15
SCALE	N.T.S.

SHEET 9 OF 11
14-173A

GENERAL LANDSCAPE REQUIREMENTS:

ALL LANDSCAPE PLANS SHALL MEET OR EXCEED THE FOLLOWING GENERAL LANDSCAPING REQUIREMENTS WHICH SHALL BE CONSIDERED COMPLIMENTARY TO THE LANDSCAPING PROVISIONS OF ANY OTHER CITY ORDINANCE. THIS SECTION SHALL NOT APPLY TO LOTS SUBJECT TO SECTION 22-186 ABOVE. A CERTIFICATE OF OCCUPANCY SHALL NOT BE ISSUED ON ANY PERMIT FOR THE USE, CONSTRUCTION, REPAIR OR RENOVATION OF ANY STRUCTURE WITHIN THE CITY, WHETHER RESIDENTIAL, COMMERCIAL, INDUSTRIAL OR ACCESSORY, UNLESS APPLICATION FOR ANY SUCH PERMIT IS ACCOMPANIED BY A DETAILED LANDSCAPE PLAN MEETING ALL REQUIREMENTS OF THIS ARTICLE. THE DEPARTMENT IS NOT AUTHORIZED TO EXEMPT THE PERMIT APPLICATION FROM ANY REQUIREMENT EXCEPT AS EXPRESSLY PROVIDED FOR IN THIS ARTICLE.

(1) REQUIREMENTS FOR PLANT MATERIALS. PLANT MATERIALS USED FOR CONFORMANCE WITH THIS ARTICLE SHALL MEET OR EXCEED THE STANDARDS FOR FLORIDA NO. 1 AS SET OUT IN THE MOST CURRENT EDITION OF "GRADES AND STANDARDS FOR NURSERY PLANTS PART 1 AND PART 2.", STATE OF FLORIDA, DEPARTMENT OF AGRICULTURE, TALLAHASSEE THE CLERK'S OFFICE SHALL MAINTAIN A STOCK OF THESE MANUALS TO BE GIVEN TO PERMIT APPLICANTS, PARTICULARLY THOUGH NOT EXCLUSIVELY TO HOMEOWNERS, FOR THE APPLICANT'S USE IN SUBMITTING THE REQUIRED LANDSCAPE PLAN. ALL TREES REQUIRED BY THIS ORDINANCE (EXCLUDING PALMS THAT ARE EXEMPT FROM THE GRADES AND STANDARDS) SHALL HAVE A FLORIDA NO. 1 OR BETTER "GRADES AND STANDARDS" CERTIFICATION TAG ATTACHED AT TIME OF DELIVERY THRU FINAL INSPECTION. GRASS SOD SHALL BE CLEAN AND FREE OF WEEDS, PESTS AND DISEASES.

TREES:

(A) TREES USED TO MEET THE REQUIREMENTS OF THIS SECTION SHALL BE SPECIES WHICH WHEN PLANTED HAVE A HEIGHT OF AT LEAST TWELVE (12) FEET AND HAVE TRUNKS WHICH CAN BE MAINTAINED IN A CLEAN CONDITION FOR OVER FIVE (5) FEET OF CLEAR WOOD. AT PLANTING, THE TREES SHALL HAVE A DIAMETER OF AT LEAST TWO AND ONE-HALF (2-1/2) INCHES AT A POINT FOUR AND ONE-HALF (4-1/2) FEET ABOVE GROUND LEVEL AND A SPREAD OF AT LEAST FIVE (5) FEET (EXCEPT FOR PALMS WHICH SHALL HAVE A MINIMUM CLEAR TRUNK OF 10').

(B) TREES USED TO MEET THE REQUIREMENTS OF THIS SECTION SHALL ALSO BE SPECIES WHICH IN ST. LUCIE COUNTY NORMALLY GROW IN A MANNER SUCH THAT AT MATURITY THEY WILL HAVE A MINIMUM CROWN SPREAD OF FIFTEEN (15) FEET AND A MINIMUM HEIGHT OF FIFTEEN (15). TREES WHICH CAN MEET THE HEIGHT REQUIREMENT AT MATURITY BUT NOT THE CROWN REQUIREMENTS MAY BE GROUPED TO FORM A WIDER CROWN, BUT WILL BE COUNTED AS ONE TREE. THREE PALMS MAY BE SUBSTITUTED FOR ONE TREE PROVIDED THAT 50% OF REQUIREMENT SHALL BE TREES.

(C) FIFTY (50%) PERCENT OF THE REQUIRED TREES SHALL BE SPECIES OTHER THAN PALM TREES (PALMACEAE FAMILY) EXCEPT WHEN PLANTED IN ACCORDANCE WITH AN APPROVED PLAN PREPARED BY A FLORIDA REGISTERED LANDSCAPE ARCHITECT.

(D) TREES OF SPECIES WHOSE ROOTS ARE KNOWN TO CAUSE DAMAGE TO PUBLIC ROADWAYS OR OTHER PUBLIC WORKS SHALL NOT BE PLANTED CLOSER THAN TWELVE (12) FEET TO SUCH PUBLIC WORKS, UNLESS THE TREE ROOT SYSTEM IS COMPLETELY CONTAINED WITHIN A BARRIER FOR WHICH THE MINIMUM INTERIOR CONTAINING DIMENSIONS SHALL BE THREE (3) FEET TIMES FIVE (5) FEET AND FIVE (5) DEEP, AND FOR WHICH THE CONSTRUCTION REQUIREMENTS SHALL BE SIX-INCH THICK CONCRETE WITH FIBER MESH AND NO WIRE MESH OR BY A ROOT BARRIER PRODUCT APPROVED BY THE CITY ENGINEER.

(E) NONE OF THE FOLLOWING TREES SHALL BE PLANTED IN THE CITY OF FORT PIERCE AND WHERE THEY PRESENTLY EXIST WHEN PERMIT APPLICATION IS MADE, THEIR REMOVAL SHALL BE A CONDITION OF ANY FINAL DEVELOPMENT ORDER: MELALEUCA, LEUCADENDRON (PUNK TREE), SCHINUS TEREBINTHIFOLIUS (BRAZILIAN PEPPER) AND CASUARINA SBP. (AUSTRALIAN PINE). NOR MAY ANY OF THE FOLLOWING TREES BE PLANTED FOR PURPOSES OF COMPLYING WITH REQUIREMENTS OF THIS ARTICLE: ANY SPECIES DESIGNATED AS CATEGORY I ON THE EXOTIC PLANT PEST COUNCIL'S CURRENT LIST OF "FLORIDA'S MOST INVASIVE SPECIES", CUPANIOPSIS ANACARDIOIDES (CARROTWOOD), DALBERGIA SISSOO (ROSEWOOD), ALBIZZIA LEBBECK (WOMAN'S TONGUE), ARAUCARIA HETEROPHYLIA (NORFOLK ISLAND PINE), GREVILLEA ROBUSTA (SILK OAK), MELIA AZADARACHA (CHINABERRY), FICUS SPP. (NON-NATIVE FICUS), EUCALYPTUS SPP. (EUCALYPTUS).

(F) SHRUBS AND HEDGES. SHRUBS USED TO MEET THE REQUIREMENTS OF THIS SECTION SHALL BE A MINIMUM OF TWENTY-FOUR (24) INCHES IN HEIGHT WHEN PLANTED. HEDGES, WHERE REQUIRED, SHALL BE PLANTED AND MAINTAINED SO AS TO FORM A THIRTY-SIX (36) INCH OR HIGHER CONTINUOUS, UNBROKEN, SOLID, VISUAL SCREEN.

(G) GROUND COVERS. GROUND COVERS USED IN LIEU OF GRASS, OR IN PART, TO MEET THE REQUIREMENTS OF THIS SECTION, SHALL BE PLANTED IN SUCH A MANNER AS TO PRESENT A FINISHED APPEARANCE AND REASONABLY COMPLETE COVERAGE WITHIN THREE (12) MONTHS AFTER PLANTING.

(H) GRASS. GRASS USED TO MEET THE REQUIREMENTS OF THIS SECTION SHALL BE PLANTED WITH SPECIES NORMALLY GROWN AS PERMANENT LAWNS IN ST. LUCIE COUNTY. GRASS AREAS WILL BE SODDED, EXCEPT THAT PLUGGING, SPRIGGING OR SEEDING OF GRASSY AREAS IS PERMISSIBLE WITH RESPECT TO SINGLE FAMILY AND TWO FAMILY RESIDENTIAL LOTS. AS TO ALL LOTS, SOLID SOD SHALL BE USED IN SWALES, DETENTION OR RETENTION AREAS AND OTHER AREAS SUBJECT TO EROSION.

(I) EXISTING PLANT MATERIAL. WHEN PLANT MATERIAL EXISTS ON A SITE PRIOR TO THE DATE APPLICATION FOR A PERMIT IS MADE, CREDIT MAY BE ALLOWED FOR SUCH PLANT MATERIAL PROVIDED THAT IT IS PROTECTED DURING CONSTRUCTION AND INCORPORATED INTO THE REQUIRED LANDSCAPING IN A MANNER WHICH SATISFIES THE REQUIREMENTS OF THIS ARTICLE.

(2) LANDSCAPED AREAS. EACH SEPARATE LANDSCAPED AREA SHALL HAVE AT LEAST ONE TREE, ONE OR MORE SHRUBS AS APPROVED BY THE DEPARTMENT, OR ONE OR MORE HEDGES, AND GROUND COVER. SO AS TO SUPPORT LONG TERM PLANT HEALTH, PLANTING SOIL FOR ALL LANDSCAPED AREAS SHALL CONSIST OF EXISTING SOIL MIXED WITH FIFTY (50) PERCENT RECYCLED TOP SOIL. SUCH PLANTING SOIL SHALL BE FREE OF DEBRIS, ROOTS, CLAY, STONES, PLANTS OR OTHER FOREIGN MATERIALS. THE PLANTING SOIL MEETING REQUIREMENTS OF THIS SUBSECTION SHALL EXTEND TO AN APPROPRIATE DEPTH SO AS TO ELIMINATE ANY HINDRANCE TO PLANTING OPERATIONS OR DETRIMENT TO GOOD PLANT GROWTH. COMPLIANCE WITH THESE SOIL REQUIREMENTS SHALL BE VERIFIED AS PART OF THE FINAL INSPECTION.

(3) LANDSCAPING DESIGN STANDARDS. FOR COMMERCIAL, PROFESSIONAL, MULTI-FAMILY, INDUSTRIAL AND INSTITUTIONAL STRUCTURES, THESE DESIGN STANDARDS ARE IN ADDITION TO, AND NOT IN PLACE OF, OTHER REQUIREMENTS IMPOSED BY THIS ARTICLE.

(4) LANDSCAPE STRIPS. BETWEEN STREET RIGHTS-OF-WAY AND VEHICULAR USE, BUILDING AND RETENTION/DETENTION AREAS, THERE SHALL BE A LANDSCAPED STRIP OF LAND, EXCEPT WHERE DRIVEWAYS ARE LOCATED, MEETING THESE REQUIREMENTS:

A. THE STRIP SHALL BE AT LEAST SIX (6) FEET WIDE FOR LOTS UNDER TEN THOUSAND (10,000) SQUARE FEET IN SIZE AND AT LEAST TEN (10) FEET WIDE FOR LOTS TEN THOUSAND (10,000) SQUARE FEET OR LARGER;

B. THE LANDSCAPE STRIP SHALL INCLUDE AN AVERAGE OF AT LEAST ONE TREE FOR EACH THREE HUNDRED (300) SQUARE FEET OF REQUIRED LANDSCAPED AREA. THE REMAINDER OF THE REQUIRED LANDSCAPED AREA SHALL BE COMPLETELY COVERED WITH GRASS, GROUND COVER OR OTHER LANDSCAPED TREATMENT AND SHALL ADDITIONALLY CONTAIN A SCREEN OF LANDSCAPING WHICH SHALL BE INSTALLED AND MAINTAINED SO AS TO FORM A THIRTY-SIX (36) INCH OR HIGHER CONTINUOUS, UNBROKEN, SOLID, VISUAL SCREEN WITHIN A MAXIMUM OF ONE YEAR AFTER THE LANDSCAPING TAKES PLACE, EXCEPT IN CLEAR VISION AREAS REQUIRED IN SECTION 22-53.

(5) OTHER PROPERTY. ALL PROPERTY, OTHER THAN THE REQUIRED LANDSCAPE STRIP, LOCATED BETWEEN STREET RIGHT -OF-WAY AND BUILDINGS, SHALL BE COMPLETELY COVERED WITH GRASS OR OTHER GROUND COVER EXCEPT TO THE EXTENT THERE ARE PERMITTED, IMPERVIOUS SURFACE STRUCTURE SUCH AS SIDEWALKS, PLAZAS AND DRIVEWAYS.

(6) VEHICULAR USE, BUILDING, RETENTION/DETENTION AREAS ADJACENT TO OTHER PROPERTY. LANDSCAPE STANDARDS FOR THESE AREAS ARE AS FOLLOWS:

A. WHERE A VEHICULAR USE AREA DOES NOT ABUT A STREET RIGHT-OF-WAY BUT ABUTS OTHER PROPERTY, THERE WILL BE A LANDSCAPED STRIP OF LAND WHICH IS AT LEAST TEN (10) FEET WIDE. WHEN A PROPERTY LINE ABUTS A BUILDING, ANOTHER STRUCTURE, A JOINT DRIVEWAY OR JOINT PARKING AREA, SUCH LANDSCAPED STRIP SHALL NOT BE REQUIRED.

B. THE LANDSCAPING STRIP REQUIRED BY THE IMMEDIATELY FOREGOING SUBSECTION SHALL INCLUDE AN AVERAGE OF AT LEAST ONE TREE FOR EACH TWO HUNDRED (200) SQUARE FEET OF THE REQUIRED LANDSCAPE AREA. THE REMAINDER OF THE REQUIRED LANDSCAPE AREA SHALL BE LANDSCAPED WITH GRASS, GROUND COVER OR OTHER LANDSCAPE TREATMENT. WHEN THE AREA TO BE SCREENED ABUTS RESIDENTIALLY ZONED PROPERTY, A SITE-OBSCURING FENCE OR PLANTED MATERIAL WHICH IS NOT LESS THAN SIX (6) FEET IN HEIGHT SHALL BE INCLUDED. IF PLANTED MATERIAL IS USED, IT SHALL BE PLANTED AND MAINTAINED SO AS TO FORM A THREE-FOOT OR HIGHER CONTINUOUS, UNBROKEN, SOLID VISUAL SCREEN WITHIN A MAXIMUM OF ONE YEAR AFTER PLANTING. THE PLANTED MATERIAL SHALL BE A SPECIES WHICH IN ST. LUCIE COUNTY NORMALLY GROWS TO A HEIGHT OF SIX FEET OR MORE.

(7) INTERIOR VEHICULAR USE AREAS. THE FOLLOWING ARE STANDARDS RELATING TO LANDSCAPING OF INTERIOR VEHICULAR USE AREAS:

A. LOTS WITH VEHICULAR USE AREAS THAT ARE FOUR THOUSAND (4000) OR MORE SQUARE FEET IN SIZE SHALL HAVE AT LEAST ONE SQUARE FOOT OF INTERIOR LANDSCAPING FOR EACH FIFTEEN (15) SQUARE FEET OF VEHICULAR USE AREA, EXCEPT THAT AREAS IN AN I-1 OR I-2 ZONE SHALL ONLY BE REQUIRED TO HAVE AT LEAST ONE SQUARE FOOT OF INTERIOR LANDSCAPING FOR EACH THIRTY (30) SQUARE FEET OF VEHICULAR USE AREA. EACH SEPARATE LANDSCAPED AREA SHALL BE CURBED AND CONTAIN A MINIMUM OF ONE HUNDRED (100) SQUARE FEET OF AREA AND SHALL BE AT LEAST TEN (10) FEET WIDE AND TEN (10) FEET DEEP EXCLUSIVE OF CURBING IN ALL LOCATIONS. PROGRESSIVE URBAN PARKING AREA DESIGNS MAY BE USED TO PROVIDE ADEQUATE SPACE FOR MULTIPLE TREE PLANTINGS AND ALLOW FOR PROPER TREE ROOT DEVELOPMENT SO SHADE TREES CAN GROW AND DEVELOP LARGE CANOPIES TO REDUCE PARKING LOT HEAT ISLANDS.

B. INTERIOR LANDSCAPING SHALL INCLUDE AN AVERAGE OF AT LEAST ONE TREE FOR EACH ONE HUNDRED (100) SQUARE FEET OF REQUIRED LANDSCAPED AREA. THE REMAINDER OF THE REQUIRED LANDSCAPED AREA SHALL BE LANDSCAPED WITH GRASS, GROUND COVER OR OTHER LANDSCAPED TREATMENT. SUCH LANDSCAPED AREAS SHALL BE LOCATED IN SUCH A MANNER AS TO DIVIDE AND BREAK UP THE EXPANSE OF PAVING AND AT STRATEGIC POINTS TO GUIDE TRAFFIC FLOW AND DIRECTION.

C. WHEN TREES EXIST ON A SITE PRIOR TO SITE DEVELOPMENT, THE AMOUNT OF THE REQUIRED INTERIOR LANDSCAPED AREA MAY BE REDUCED BY THE FOLLOWING AMOUNT FOR PRESERVING EXISTING TREES, PROVIDED THAT THE TOTAL AMOUNT OF THE INTERIOR LANDSCAPED AREA IS NOT REDUCED BY MORE THAN FIFTY (50) PERCENT. DIAMETER OF TREE REDUCTION IN INTERIOR 4.5 FEET ABOVE GROUND LEVEL LANDSCAPED AREAS OVER 12" 500 SQUARE FEET 6" TO 12" 400 SQUARE FEET UNDER 6" BUT OVER 3" 100 SQUARE FEET THESE REDUCTIONS IN THE INTERIOR LANDSCAPED AREAS SHALL ONLY APPLY WHERE THE PRESERVED TREE IS IN A PLANTING AREA WHICH HAS DIMENSIONS NOT LESS THAN THE RADIUS OF THE CROWN SPREAD MEASURED FROM THE TRUNK CENTER AND WHERE NO GRADE CHANGES WITHIN THE LANDSCAPED AREA MAY BE ANTICIPATED.

(8) LANDS ADJACENT TO STREET RIGHT-OF-WAY. LANDS IMMEDIATELY ADJACENT TO STREET RIGHT-OF-WAY SHALL MEET THE FOLLOWING REQUIREMENTS: A. TREES WILL BE PLANTED ALONG THE PUBLIC RIGHT-OF-WAY IN A MANNER DIRECTED BY THE DEPARTMENT SO AS TO ASSURE SHADING FOR SIDEWALKS AND TO CONTRIBUTE TO THE STREETSCAPE DESIGN OF THE ROADWAY; B. PALMS, TREES AND SHRUBS MAY BE REQUIRED FOR DRIVEWAY ENTRANCES OR OTHER KEY POINTS OF INTEREST AS DETERMINED BY THE DEPARTMENT TO THE EXTENT THAT SUCH PLANTINGS DO NOT EXCEED REQUIREMENTS SET FOR CLEAR VISION AREAS AS SPECIFIED BY SECTION 22-53.

(9) RETENTION/DETENTION AREAS. ALL RETENTION/DETENTION AREAS SHALL BE LOCATED AT THE REAR OF THE PROPERTY AWAY FROM PUBLIC ROADWAYS AND SHALL BE LANDSCAPED WITH AT LEAST A THIRTY-SIX 36) INCH HEDGE AROUND THE PERIMETER SO AS TO SCREEN SUCH AREAS FROM VIEW OF VEHICLES USING THE PUBLIC ROADWAYS.

(10) OTHER AREAS. WHEN AN AREA OTHER THAN A VEHICULAR USE AND RETENTION/DETENTION AREA OF A DEVELOPED LOT IN A C-1, C-2, C-3, C-4, C-5, I-1, OR I-2 ZONE ABUTS A LOT IN AN E-1, R-1, R-2, R-3, R-4, R-5, OS-1, OR OS-2, SUCH AREA IN A COMMERCIAL OR INDUSTRIAL ZONE SHALL HAVE A SITE OBSCURING FENCE OR PLANTED MATERIAL SO AS TO PROVIDE A VISUAL AND NOISE BUFFER BETWEEN SUCH AREAS AND THE LOT IN THE RESIDENTIAL OR OPEN SPACE ZONE. SUCH FENCE WILL BE CONSTRUCTED FROM WOOD, STONE, BRICK OR OTHER SUITABLE MATERIAL AND BE A MINIMUM OF SIX (6) FEET HIGH. IF PLANTED MATERIAL IS USED, IT SHALL BE PLANTED AND MAINTAINED SO AS TO FORM A THIRTY SIX (36) INCH OR HIGHER CONTINUOUS, UNBROKEN SOLID SCREEN. THERE SHALL BE AT LEAST ONE (1) SHRUB, BUSH OR VINE PLANTED ALONG THE FENCE FOR EACH TEN (10) FEET OF FENCE FOR THE PURPOSE OF BEAUTIFYING THE FENCE. SLATS SHALL NOT BE PUT INTO CHAIN-LINK FENCE TO OBSCURE THE VIEW. THE PLANTED MATERIAL SHALL BE A SPECIES WHICH IN ST. LUCIE COUNTY NORMALLY GROWS TO A HEIGHT OF SIX (6) FEET OR MORE.

(11) SCREENING OF REFUSE COLLECTION AREAS. REFUSE AND RECYCLING DUMPSTERS UTILIZED BY MULTI-FAMILY RESIDENTIAL COMPLEXES, IN COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL FACILITIES SHALL BE SCREENED FROM VIEW ON ALL SIDES AND SHALL BE GATED. GATES MAY BE LEFT OPEN ONLY ON SCHEDULED PICK UP DAYS AND MUST BE CLOSED FOLLOWING PICK UP. SUCH SCREENING SHALL CONSIST OF A SIX-FOOT HIGH MASONRY WALL OR WOODEN FENCE. IN ADDITION, WHEN FEASIBLE, ONE SHRUB OR HEDGE SHALL BE PLANTED AT TWO FOOT CENTERS ALONG THE OUTSIDE PERIMETER OF THE SCREEN. DUMPSTERS SHALL BE LOCATED IN AN AREA THAT MINIMIZES PUBLIC VIEW. THIS SUBSECTION SHALL APPLY TO DUMPSTERS SERVICING STRUCTURES BUILT ON OR AFTER JUNE 1, 1996.

(11) SCREENING OF REFUSE COLLECTION AREAS. REFUSE AND RECYCLING DUMPSTERS UTILIZED BY MULTI-FAMILY RESIDENTIAL COMPLEXES, IN COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL FACILITIES SHALL BE SCREENED FROM VIEW ON ALL SIDES AND SHALL BE GATED. GATES MAY BE LEFT OPEN ONLY ON SCHEDULED PICK UP DAYS AND MUST BE CLOSED FOLLOWING PICK UP. SUCH SCREENING SHALL CONSIST OF A SIX-FOOT HIGH MASONRY WALL OR WOODEN FENCE. IN ADDITION, WHEN FEASIBLE, ONE SHRUB OR HEDGE SHALL BE PLANTED AT TWO FOOT CENTERS ALONG THE OUTSIDE PERIMETER OF THE SCREEN. DUMPSTERS SHALL BE LOCATED IN AN AREA THAT MINIMIZES PUBLIC VIEW. THIS SUBSECTION SHALL APPLY TO DUMPSTERS SERVICING STRUCTURES BUILT ON OR AFTER JUNE 1, 1996.

(12) INSTALLATION OF LANDSCAPING. ALL LANDSCAPING REQUIRED BY THIS ARTICLE SHALL BE INSTALLED IN COMPLIANCE WITH THESE REQUIREMENTS:

(A) LANDSCAPING SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED LANDSCAPE PLAN, INCLUDING ALL SPECIFIED CONDITIONS TO A PARTICULAR LANDSCAPE APPROVAL, AND INSPECTED PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY. SUCH INSPECTION SHALL INCLUDE VERIFICATION THAT PLANTING SOIL MEETS SPECIFIED COMPOSITION AND DEPTH REQUIREMENTS. IN THE EVENT THERE ARE ANY CHANGES TO THE APPROVED LANDSCAPE PLAN, SUCH CHANGES MUST BE REVIEWED AND APPROVED BY THE DEPARTMENT AND NOTED ON THE PLAN PRIOR TO NOTIFICATION FOR THE FINAL INSPECTION FOR A CERTIFICATE OF OCCUPANCY.

(B) LANDSCAPED AREAS SHALL BE COVERED IN THEIR ENTIRETY WITH SHRUBS, GROUND COVER, TURF, OR THREE (3) INCHES OF BULK ORGANIC MULCH OR OTHER SUITABLE MATERIAL WHICH PERMITS PERCOLATION AND IS APPROVED BY THE DEPARTMENT. WHERE MULCH IS USED, IT MUST BE PROTECTED FROM WASHING OUT OF THE PLANTING BED. INORGANIC MULCH, SUCH AS GRAVEL OR ROCK, SHOULD ONLY BE USED WHERE WASHOUTS OCCUR. THE FINAL INSPECTION PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY, SHALL INCLUDE VERIFICATION THAT ANY MULCH IS INSTALLED AT THE REQUISITE DEPTH.

(C) TREES WHICH ARE BALLED AND BURLAPED MUST HAVE THE BURLAP REMOVED OR FOLDED DOWN AT THE TIME OF THE PLANTING. ALL TWINE OR ROPE MUST BE REMOVED. IF WIRE BASKETS ARE USED, THE UPPER ROWS MUST BE CUT BEFORE PLANTING. REMOVE ALL SOIL FROM ABOVE THE ROOT FLARE AND PLANT THE TREE SO THE TOP OF THE ROOT BALL IS 10 % ABOVE THE LANDSCAPE SOIL. DO NOT PLACE ANY SOIL OR MULCH OVER THE ROOT BALL. IF STAKES OR GUIDE WIRES ARE USED TO SUPPORT A TREE, THE WIRE MUST BE COVERED WITH PROTECTIVE MATERIAL WHERE IT IS IN CONTACT WITH THE TREE AND THE STAKES OR GUIDE WIRES MUST BE REMOVED AFTER ONE (1) YEAR.

(D) ALL LANDSCAPING REQUIRED BY THE CITY MUST BE PROTECTED FROM VEHICULAR AND PEDESTRIAN TRAFFIC BY THE INSTALLATION OF CURBING, WHEEL STOPS OR OTHER PROTECTIVE DEVICES ALONG THE PERIMETER OF ANY LANDSCAPING WHICH ADJOINS VEHICULAR USE AREAS OR SIDEWALKS. THESE PROTECTED DEVICES SHALL HAVE A MINIMUM HEIGHT OF SIX (6) INCHES ABOVE GRADE.

(E) NO PARKING, DISPLAY OF VEHICLES OR OUTSIDE STORAGE OR DISPLAY OF MERCHANDISE IS PERMITTED IN OR OVER ANY REQUIRED LANDSCAPE AREA, NOR ARE VEHICLES PERMITTED TO OVERHANG ANY REQUIRED LANDSCAPED AREA.

(F) SOIL, EXCEPT FOR PLANTING SOIL, IN WHICH REQUIRED LANDSCAPE IS TO BE INSTALLED MUST BE GENERALLY INDIGENOUS TO THE LOCALE. SOIL MUST BE LOOSE, FRIABLE, AND FREE OF LIMESTONE AND OTHER CONSTRUCTION MATERIALS, ROAD BASE MATERIAL, ROCKS, WEEDS, GRASSES, HARD PAN, CLAY OR OTHER DEBRIS. PH SHALL BE ADJUSTED WHERE NECESSARY TO BE COMPATIBLE WITH THE PLANT SPECIES BEING INSTALLED. SOIL SHALL BE SLIGHTLY SWALED TO RETAIN SURFACE STORMWATER. BACKFILL SOIL MATERIAL SHALL BE THOROUGHLY WATERED IN AND AROUND PLANT ROOT BALLS TO PREVENT ANY AIR POCKETS. THE USE OF AMENDED AND ENRICHED SOILS MAY BE REQUIRED BY THE DEPARTMENT WHERE NECESSARY TO INCREASE THE WATER RETENTION CAPABILITIES OF SOIL IN ORDER TO REDUCE THE AMOUNT OF WATERING NEEDED TO MEET THE LANDSCAPING WATER REQUIREMENT. FINAL INSPECTION OF REQUIRED LANDSCAPE PRIOR TO ISSUANCE OF THE CERTIFICATE OF OCCUPANCY SHALL INCLUDE PH TESTING TO VERIFY COMPATIBILITY WITH PERMITTED PLANTINGS. (G) TO MINIMIZE TRAFFIC HAZARDS AT STREET OR DRIVEWAY INTERSECTIONS, ALL LANDSCAPING INSTALLATIONS MUST PROVIDE UNOBSTRUCTED VIEWS AS REQUIRED IN SECTION 22-53.

(H) ANY IRRIGATION SYSTEM PLACED ON CITY RIGHT-OF-WAY WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER WHO SHALL RELOCATE, REPLACE OR REPAIR THE SYSTEM AS APPROPRIATE IN THE EVENT IT IS DAMAGED DUE TO PERMITTED CONSTRUCTION IN THE RIGHT-OF-WAY.

(I) PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY, FINAL LANDSCAPE INSTALLATION SHALL BE CERTIFIED AS COMPLETE AND IN CONFORMANCE TO THE APPROVED LANDSCAPE PLAN BY SUBMISSION OF A CERTIFICATION LETTER BY A LANDSCAPE ARCHITECT.

(13) MAINTENANCE OF LANDSCAPING. PROPERTY OWNERS SHALL MAINTAIN ALL REQUIRED LANDSCAPING SO THAT IT CONTINUES TO PRESENT A HEALTHY, NEAT AND ORDERLY APPEARANCE FREE OF REFUSE AND DEBRIS, IN CONFORMITY WITH THE FOLLOWING REQUIREMENTS:

(A) VEGETATION REQUIRED BY THIS ARTICLE SHALL BE REPLACED WITH EQUIVALENT VEGETATION IF IT IS NOT LIVING. ALL TREES FOR WHICH CREDIT IS AWARDED AND WHICH SUBSEQUENTLY DIE SHALL BE REPLACED BY THE SAME NUMBER OF LIVING TREES ACCORDING TO THE STANDARDS ESTABLISHED IN THIS ARTICLE.

(B) MAINTENANCE SHALL INCLUDE SUFFICIENT WEEDING, WATERING, FERTILIZING, PRUNING, MOWING, EDGING, MULCHING AND OTHER HORTICULTURAL PRACTICES SO AS TO ASSURE THAT THE LANDSCAPING CONTINUES TO MAINTAIN A HEALTHY, NEAT AND ORDERLY APPEARANCE.

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CITY OF FT. PIERCE FLORIDA

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CERTIFIED PROFESSIONAL
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JEFFREY M. SMITH, FCLD # 00069
DATE: JUL 2 7 2015

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IRRIGATION SPECIFICATIONS

GENERAL PIPE AND FININGS

PIPE BEARING RECLAIMED WATER SHALL BE PURPLE COLORED OR IDENTIFIED BY OTHER ACCEPTED METHOD AS DESCRIBED IN S62-610FAC TO DIFFERENTIATE RECLAIMED WATER FROM DOMESTIC OR OTHER WATER.

PVC PIPE AND FITTINGS

A. PVC PIPE SHOULD COMPLY WITH ONE OF THE FOLLOWING STANDARDS: ASTM D-1785-99, ASTM, D-2241-00, AWWA C-900-97, OR AWWA C-905-97. SDR-PR PIPE SHALL HAVE A MINIMUM WALL THICKNESS AS REQUIRED BY SDR-26.

B. ALL SOLVENT-WELD PVC FITTINGS SHALL, AT A MINIMUM, MEET THE REQUIREMENTS OF SCHEDULE 40 AS SET FORTH IN ASTM D-2466-01.

C. THREADED PVC PIPEFITTINGS SHALL MEET THE REQUIREMENTS OF SCHEDULE 40 AS SET FORTH IN ASTM D-2464-99.

D. PVC GASKETED FITTINGS SHALL CONFORM TO ASTM D-3139-98. GASKETS SHALL CONFORM TO ASTM F-477-99.

E. PVC FLEXIBLE PIPE SHOULD BE PRESSURE RATED WITH STANDARD OUTSIDE DIAMETERS COMPATIBLE WITH PVC IPS SOLVENT-WELD FITTINGS.

F. PVC CEMENT SHOULD MEET ASTM D-2564-96A. PVC CLEANER SHOULD MEET ASTM F-656-96A .

DUCTILE IRON PIPE AND FITTINGS

A. GASKET FITTINGS FOR IRON PIPE SHOULD BE OF MATERIALS AND TYPE COMPATIBLE WITH THE PIPING MATERIAL BEING USED.

STEEL PIPE AND FITTINGS

A. ALL STEEL PIPE SHALL BE RATED SCHEDULE 40 OR GREATER AND BE HOT-DIPPED GALVANIZED OR BLACK IN ACCORDANCE WITH ASTM A-53-01.

B. THREADED FITTINGS FOR STEEL PIPE SHOULD BE SCHEDULE 40 MALLEABLE IRON.

POLYETHYLENE PIPE

A. SWING JOINTS SHALL BE THICK-WALLED WITH A MINIMUM PRESSURE RATING OF 75 PSI IN ACCORDANCE WITH ASTM D-2239-99.

B. LOW PRESSURE POLYETHYLENE PIPE FOR MICRO IRRIGATION SYSTEMS SHALL CONFORM TO ASAE S435.

C. USE FITTINGS MANUFACTURED SPECIFICALLY FOR THE TYPE AND DIMENSIONS OF POLYETHYLENE PIPE USED.

SPRINKLERS, SPRAY HEADS AND EMITTERS

A. SELECT UNITS AND NOZZLES IN ACCORDANCE WITH THE SIZE OF THE AREA AND THE TYPE OF PLANT MATERIAL BEING IRRIGATED.

B. USE EQUIPMENT THAT IS PROTECTED FROM CONTAMINATION AND DAMAGE BY USE OF SEALS, SCREENS, AND SPRINGS WHERE SITE CONDITIONS PRESENT A POTENTIAL FOR DAMAGE.

C. SUPPORT RISER-MOUNTED SPRINKLERS TO MINIMIZE MOVEMENT OF THE RISER RESULTING FROM THE ACTION OF THE SPRINKLER.

D. SWING JOINTS SHALL BE CONSTRUCTED TO PROVIDE A FLEXIBLE, LEAK-FREE CONNECTION BETWEEN THE SPRINKLER AND LATERAL PIPELINE TO ALLOW MOVEMENT IN ANY DIRECTION AND TO PREVENT EQUIPMENT DAMAGE.

E. SPRINKLERS AND EMITTERS USED WITH RECLAIMED WATER SHALL BE COLORED PURPLE OR IDENTIFIED BY OTHER ACCEPTED MEANS AS DESCRIBED IN S62-610FAC TO DIFFERENTIATE RECLAIMED WATER FROM DOMESTIC OR OTHER WATER.

VALVES

A. VALVES MUST HAVE A MAXIMUM WORKING PRESSURE RATING EQUAL TO OR GREATER THAN THE MAXIMUM PRESSURE OF THE SYSTEM, BUT NOT LESS THAN 125 PSI. THIS REQUIREMENT MAY BE WAIVED FOR LOW MAINLINE PRESSURE SYSTEMS (30 PSI OR LESS).

B. USE VALVES THAT ARE CONSTRUCTED OF MATERIALS DESIGNED FOR USE WITH THE WATER AND SOIL CONDITIONS OF THE INSTALLATION.

C. USE VALVES THAT ARE DESIGNED TO BE PROTECTED FROM DEBRIS BUILDUP IN THE CONTROL PASSAGES IF THERE IS A POTENTIAL FOR SUCH CONTAMINATION FROM THE WATER SUPPLY.

D. USE VALVES THAT ARE CONSTRUCTED FROM MATERIALS THAT WILL NOT BE DETERIORATED BY CHEMICALS INJECTED INTO THE SYSTEM.

E. VALVES USED WITH RECLAIMED WATER SHALL BE COLORED PURPLE OR IDENTIFIED BY OTHER ACCEPTED MEANS AS DESCRIBED IN S62-61OFAC TO DIFFERENTIATE RECLAIMED WATER FROM DOMESTIC OR OTHER WATER.

VALVE BOXES

A. USE VALVE BOXES THAT ARE CONSTRUCTED TO WITHSTAND TRAFFIC LOADS COMMON TO THE AREA IN WHICH THEY ARE INSTALLED. THEY SHOULD BE SIZED TO ALLOW MANUAL OPERATION OF THE ENCLOSED VALVES WITHOUT EXCAVATION.

B. EACH VALVE BOX SHOULD BE PERMANENTLY LABELED TO IDENTIFY ITS CONTENTS.

C. VALVE BOXES USED WITH RECLAIMED WATER SHALL BE PURPLE OR IDENTIFIED BY OTHER ACCEPTED MEANS **AS DESCRIBED IN S62-61 OFAC TO DIFFERENTIATE RECLAIMED WATER FROM DOMESTIC OR OTHER WATER.**

LOW VOLTAGE WIRING

A. ALL LOW VOLTAGE WIRE, WHICH IS DIRECTLY BURIED, MUST BE LABELED FOR DIRECT BURIAL. WIRE NOT LABELED FOR DIRECT BURIAL MUST BE INSTALLED IN WATERTIGHT CONDUITS, AND BE UL LISTED TWN OR THHN TYPE WIRE AS DESCRIBED IN THE NEC.

B. CONNECTIONS ARE TO BE MADE USING UL APPROVED DEVICES SPECIFICALLY DESIGNED FOR DIRECT BURIAL.

IRRIGATION CONTROLLERS

A. ALL IRRIGATION CONTROLLERS SHALL BE UL LISTED, CONFORM TO THE PROVISIONS OF THE NATIONAL ELECTRIC CODE, AND PROPERLY GROUNDED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.THE CONTROLLER HOUSING OR ENCLOSURE SHALL PROTECT THE CONTROLLER FROM THE HAZARDS OF THE ENVIRONMENT IN WHICH IT IS INSTALLED.

C. USE CONTROLLERS THAT ARE PROGRAMMABLE FOR VARYING IRRIGATION DURATIONS THAT ARE CONSISTENT WITH THE WATER TO BE APPLIED IN EACH ZONE.

D. EQUIP COMMERCIAL INSTALLATIONS USING SOLID-STATE CONTROLS WITH SURGE SUPPRESSORS ON THE PRIMARY AND SECONDARY WIRING.

PUMPS AND WELLS

A. IRRIGATION PUMP ELECTRICAL CONTROL SYSTEMS MUST CONFORM TO NEC AND LOCAL BUILDING CODES.

B. THE PUMPING SYSTEM SHALL BE PROTECTED FROM THE HAZARDS OF THE ENVIRONMENT IN WHICH IT IS INSTALLED.

C. USE ELECTRIC MOTORS WITH A NOMINAL HORSEPOWER RATING GREATER THAN THE MAXIMUM HORSEPOWER REQUIREMENT OF THE PUMP DURING NORMAL OPERATION. MOTOR SHOULD HAVE A SERVICE FACTOR OF AT LEAST 1.15.

D. THE WELL SHALL BE CONSTRUCTED FOLLOWING LOCAL WATER MANAGEMENT DISTRICT REGULATIONS TO PROTECT THE AQUIFER FROM CONTAMINATION.

E. CASINGS FOR DRILLED WELLS MAY BE STEEL, REINFORCED PLASTIC MORTAR, PLASTIC, OR FIBERGLASS PIPE. ONLY STEEL PIPE CASINGS SHALL BE USED IN DRIVEN WELLS. STEEL PIPE MUST HAVE A WALL THICKNESS EQUAL TO OR GREATER THAN SCHEDULE 40. SEE NRCS CODE FL-642. STEEL CASINGS SHALL BE EQUAL TO OR EXCEED REQUIREMENTS OF ASTM A-589-96.

CHEMICAL INJECTION EQUIPMENT

A. CHEMICAL INJECTION EQUIPMENT MUST BE CONSTRUCTED OF MATERIALS CAPABLE OF WITHSTANDING THE POTENTIAL CORROSIVE EFFECTS OF THE CHEMICALS BEING USED. EQUIPMENT SHALL BE USED ONLY FOR THOSE CHEMICALS FOR WHICH IT WAS INTENDED AS STATED BY THE INJECTION EQUIPMENT MANUFACTURER.

BACKFLOW PREVENTION

A. AIR GAP SEPARATION: THIS METHOD CONSISTS OF A PHYSICAL SEPARATION BETWEEN THE WATER SUPPLY AND THE IRRIGATION SYSTEM, SO THAT THERE IS NO POSSIBILITY OF THE DISCHARGED WATER FLOWING BACK TO THE WATER SUPPLY. THE AIR GAP SEPARATION MUST BE A MINIMUM OF TWICE THE DIAMETER OF THE DISCHARGE PIPE OR 1-INCH, WHICHEVER IS LARGER. REFER TO LOCAL PLUMBING CODES FOR NON-STANDARD AIR GAP INSTALLATIONS.

B. BACKFLOW PREVENTION ASSEMBLIES:

1. AN ATMOSPHERIC VACUUM BREAKER CONSISTS OF AN AIR INLET PORT AND A FLOAT TYPE CHECK VALVE. THIS DEVICE MUST MEET ASSE STANDARD 1001.
2. A PRESSURE VACUUM BREAKER CONSISTS OF AN AIR INLET PORT, ONE POSITIVE SEATING CHECK VALVE AND AN INTERNALLY FORCE LOADED DISC FLOAT ASSEMBLY DOWNSTREAM OF THE CHECK VALVE, INSTALLED AS A UNIT BETWEEN TWO RESILIENT SEATED SHUTOFF VALVES AND FITTED WITH PROPERLY LOCATED TEST COCKS. THIS DEVICE MUST MEET ASSE STANDARD #1020 AND BE APPROVED BY THE FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH OF THE UNIVERSITY OF SOUTHERN CALIFORNIA.
3. A DUAL CHECK CONSISTS OF INDEPENDENTLY ACTING, SPRING-LOADED CHECK VALVES IN A CORROSION RESISTANT MATERIAL. DUAL CHECKS USUALLY HAVE TO BE REMOVED FOR TESTING. THEY ARE NOT RECOMMENDED FOR HIGH HAZARD CONDITIONS. THIS DEVICE MUST MEET ASSE STANDARD #1024 AND BE APPROVED BY THE FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH OF THE UNIVERSITY OF SOUTHERN CALIFORNIA.
4. A DOUBLE CHECK VALVE ASSEMBLY CONSISTS OF TWO POSITIVE-SEATING CHECK VALVES INSTALLED AS A UNIT BETWEEN TWO RESILIENT-SEATED SHUTOFF VALVES AND FITTED WITH PROPERLY LOCATED TEST COCKS. THIS DEVICE MUST MEET ASSE #1015 AND BE APPROVED BY THE FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH OF THE UNIVERSITY OF SOUTHERN CALIFORNIA.
5. A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTED CONSISTS OF TWO POSITIVE-SEATING CHECK VALVES AND AN AUTOMATICALLY-OPERATING PRESSURE DIFFERENTIAL RELIEF VALVE INTEGRALLY LOCATED BETWEEN THE TWO CHECK VALVES, INSTALLED AS A UNIT BETWEEN TWO TIGHTLY CLOSING, RESILIENT-SEATED SHUTOFF VALVES AND FITTED WITH PROPERLY LOCATED TEST COCKS. THIS DEVICE MUST MEET ASSE STANDARD #1013 AND BE APPROVED BY THE FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH OF THE UNIVERSITY OF SOUTHERN CALIFORNIA.

FILTERS AND STRAINERS

A. USE FILTRATION EQUIPMENT AND STRAINERS CONSTRUCTED OF MATERIALS RESISTANT TO THE POTENTIAL CORROSIVE AND EROSIVE EFFECTS OF THE WATER, AND SIZED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

B. USE THE EQUIPMENT THAT IS CONSTRUCTED OF MATERIALS CAPABLE OF WITHSTANDING THE POTENTIAL MECHANICAL DAMAGE CAUSED BY CONTAMINANTS (FOR EXAMPLE, SAND) IN THE WATER.

C. THE FILTER ELEMENT, STRAINER, OR FILTRATION MEDIA MUST BE SIZED TO PREVENT THE PASSAGE OF FOREIGN MATERIAL IN SIZES OR QUANTITIES WHICH WOULD OBSTRUCT THE SPRINKLER/EMITTER OUTLETS, TYPICALLY 1/4 THE DIAMETER OF THE SMALLEST OUTLET OR THE MESH SIZE RECOMMENDED BY THE EMITTER MANUFACTURER.

RAINFALL SHUTOFF DEVICE

A. RAINFALL SHUT OFF DEVICES SHALL BE CAPABLE OF BEING INCREMENTALLY ADJUSTED TO ACTIVATE AT A RANGE OF RAINFALL AMOUNTS.

INSTALLATION

PRE-LNSTALLATION

A. VERIFY LOCATION OF EXISTING UTILITIES WITH MUNICIPAL AND PRIVATE UTILITIES AND WITH THE PROPERTY OWNER.

B. OBTAIN ALL NECESSARY PERMITS AND LICENSES.

C. INSPECT THE SITE FOR EXISTING CONDITIONS THAT WILL AFFECT THE IRRIGATION SYSTEM DESIGN OR INSTALLATION, AND DEVELOP A PLAN TO MINIMIZE DISTURBANCE OF EXISTING AND/OR PROPOSED STRUCTURES AND LANDSCAPE.

4.02 INSTALLATION OF BACKFLOW PREVENTION ASSEMBLIES

A. FLUSH AIL LINES BEFORE INSTALLING BACKFLOW PREVENTION ASSEMBLIES.

B. PROVIDE PROTECTION OF BACKFLOW PREVENTION ASSEMBLIES IF THEY ARE INSTALLED IN A MANNER THAT SUBJECTS THEM TO ANNUAL DAMAGE BY FREEZING TEMPERATURES.

C. ISTALL WITH ROOM TO ALLOW FOR SERVICE AND TEST. DCA AND RPZ DEVICES MUST BE INSTALLED HORIZONTALLY UNLESS APPROVED FOR VERTICAL INSTALLATION BY A RECOGNIZED TESTING AUTHORITY.

4.03 PIPE INSTALLATION

A. FLAG THE LOCATION OF ALL SPRINKLERS, VALVES, CONTROLLERS, SOURCE OF WATER AND ELECTRICAL COMPONENTS IN THE FIELD PRIOR TO INSTALLATION.

B. CONDUCT ALL NECESSARY EXCAVATION FOR THE PROPER INSTALLATION OF PIPELINES AND ACCESSORIES. DEWATER, SHORE, AND BRACE AS NEEDED TO COMPLETELY INSTALL THE PIPE.

C. PIPE SHALL BE INSTALLED AT SUFFICIENT DEPTH BELOW GROUND TO PROTECT IT FROM HAZARDS SUCH AS VEHICULAR TRAFFIC. DEPTHS OF COVER SHALL CONFORM TO NRCS-FL- 430-DD, WATER CONVEYANCE, AS FOLLOWS:

1. VEHICLE TRAFFIC AREAS

PIPE SIZE (INCHES)	DEPTH OF COVER* (INCHES)
1/2" - 2"	18"
3"-5"	24"
6" AND LARGER	36"

2. NON-TRAFFIC AND NON-CULTIVATED AREAS

PIPE SIZE (INCHES)	DEPTH OF COVER* (INCHES)
1/2" -11/2"	6"
2"-3"	12"
6" AND LARGER	24"

D. MAKE ALL PIPE JOINTS AND CONNECTIONS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. PERFORM ALL SOLVENT-WELD CONNECTIONS IN ACCORDANCE WITH ASTM D-2855.

E. THRUST BLOCKS MUST BE FORMED AGAINST A SOLID, HAND-EXCAVATED TRENCH WALL UNDAMAGED BY MECHANICAL EQUIPMENT. THEY SHALL BE CONSTRUCTED OF CONCRETE, AND THE SPACE BETWEEN THE PIPE AND TRENCH SHALL BE FILLED TO THE HEIGHT OF THE OUTSIDE DIAMETER OF THE PIPE.

F. AFTER INSTALLATION, BACKFILL AND COMPACT THE EXCAVATED SOIL TO MINIMIZE POST-CONSTRUCTION SETTLEMENT IN THE PIPE TRENCH.

G. NATIVE EXCAVATED MATERIAL MAY BE USED TO BACKFILL THE PIPE TRENCH. HOWEVER, THE INITIAL BACKFILL MATERIAL SHALL BE FREE FROM ROCKS OR STONES LARGER THAN 1 -INCH IN DIAMETER. AT THE TIME OF PLACEMENT, THE MOISTURE CONTENT OF THE MATERIAL SHALL BE SUCH THAT THE REQUIRED DEGREE OF COMPACTION CAN BE OBTAINED WITH THE BACKFILL METHOD TO BE USED. THE INITIAL BACKFILL MATERIAL SHALL BE PLACED SO THAT THE PIPE WILL NOT BE DISPLACED, EXCESSIVELY DEFORMED, OR DAMAGED. THE INITIAL FILL SHALL BE COMPACTED FIRMLY AROUND AND ABOVE THE PIPE TO THE DENSITY SPECIFIED BY THE DESIGNER TO PROVIDE ADEQUATE LATERAL SUPPORT TO THE PIPE. IF THE WATER PACKING METHOD OF COMPACTION IS USED, FILL THE PIPELINE FIRST WITH WATER. THE INITIAL BACKFILL BEFORE WETTING SHALL BE OF SUFFICIENT DEPTH TO INSURE COMPLETE COVERAGE OF THE PIPE AFTER CONSOLIDATION. WATER PACKING IS ACCOMPLISHED BY ADDING ENOUGH WATER TO DICED LENGTHS OF THE TRENCH TO THOROUGHLY SATURATE THE INITIAL BACKFILL WITHOUT EXCESSIVE POOLING. AFTER THE BACKFILL IS SATURATED, THE PIPELINE SHALL REMAIN FULL OF WATER UNTIL AFTER THE FINAL BACKFILL IS MADE. THE WETTED FILL SHALL BE ALLOWED TO DRY UNTIL FIRM BEFORE BEGINNING THE FINAL BACKFILL.

H. THE TRENCH BOTTOM MUST BE UNIFORM, FREE OF DEBRIS, AND OF SUFFICIENT WIDTH TO PROPERLY PLACE PIPE AND SUPPORT IT OVER ITS ENTIRE LENGTH. BLOCKING OR MOUNDING SHALL NOT BE USED TO BRING THE PIPE TO FINAL GRADE.

I. ENDS OF PIPE SHALL BE CLOSED TO PREVENT ENTRY OF FOREIGN MATERIALS WHEN PIPE LAYING IS NOT IN PROGRESS.

J. PIPE SLEEVES MUST BE USED TO PROTECT PIPES OR WIRES INSTALLED UNDER PAVEMENT OR ROADWAYS. USE PIPE SLEEVES AT LEAST TWO PIPE SIZES LARGER THAN THE CARRIER PIPE OR TWICE THE DIAMETER OF THE WIRE BUNDLE TO BE PLACED UNDER THE PAVING OR ROADWAY, AND EXTENDING A MINIMUM OF 3 FEET BEYOND THE PAVED AREA OR AS REQUIRED BY THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT). USE SLEEVE PIPE WITH WALL THICKNESS AT LEAST EQUAL TO THE THICKNESS OF SCHEDULE 40 OR PR 160 PIPE, WHICHEVER IS THICKER.

PIPING UNDER PAVED TRAFFIC AREAS SHALL BE ENCASED IN FULL LENGTHS OF SLEEVING MATERIAL TO AVOID PLACEMENT OF JOINTS UNDER PAVEMENT IF POSSIBLE. USE THE SAME TECHNIQUES TO PLACE PIPE SLEEVES TO SERVE AS CONDUITS FOR AUTOMATIC CONTROL WIRES OR TUBING. SLEEVE MATERIAL MAY BE STEEL OR PLASTIC PIPE, SUITABLE TO SLIDE PIPE, WIRE OR TUBING THROUGH. PROPER BACKFILL AND COMPACTION PROCEDURES SHOULD BE FOLLOWED.

K. PIPES CONVEYING RECLAIMED WATER SHALL BE SEPARATED FROM OTHER PIPING OR UTILITY SERVICES BY 3 FEET HORIZONTAL DISTANCE. AN 18-INCH VERTICAL SEPARATION SHALL BE MAINTAINED WHERE RECLAIMED LINES CROSS OTHER PIPING OR UTILITY SERVICES.

CONTROL VALVE INSTALLATION

A. VALVE INSTALLATION SHALL ALLOW ENOUGH CLEARANCE FOR PROPER OPERATION AND MAINTENANCE. WHERE VALVES ARE INSTALLED UNDERGROUND, THEY SHALL BE PROVIDED WITH A VALVE BOX WITH COVER EXTENDING FROM GRADE TO THE BODY OF THE VALVE. THE TOP OF THE VALVE BODY SHOULD HAVE A MINIMUM OF 6 INCHES OF COVER IN NON-TRAFFIC AND NON-CULTIVATED AREAS AND 18 INCHES OF COVER IN TRAFFIC AREAS.

B. AUTOMATIC CONTROL VALVES INSTALLED UNDERGROUND SHALL BE INSTALLED IN A VALVE BOX. IF AN AUTOMATIC VALVE IS INSTALLED UNDER EACH SPRINKLER, THEN THE VALVE BOX MAY BE OMITTED. VALVES MUST BE INSTALLED WITH ENOUGH CLEARANCE FOR OPERATION AND MAINTENANCE.

C. INSTALL VALVE BOXES SO THAT THEY DO NOT REST ON THE PIPE, THE BOX COVER DOES NOT CONFLICT WITH THE VALVE STEM OR INTERFERE WITH VALVE OPERATION AND SO THAT THE VALVE BOX LIDS ARE FLUSH WITH THE GROUND SURFACE.

D. INSTALL QUICK COUPLING VALVES ON SWING JOINTS OR FLEXIBLE PIPE WITH THE TOP OF THE VALVE AT GROUND LEVEL UNLESS INSTALLED IN A VALVE BOX.

E. VALVES BEARING RECLAIMED WATER SHALL BE PURPLE COLORED OR IDENTIFIED BY OTHER ACCEPTED METHOD AS DESCRIBED IN S62-610FAC TO DIFFERENTIATE RECLAIMED WATER FROM DOMESTIC OR OTHER WATER.

SPRINKLER INSTALLATION

A. ON FLAT LANDSCAPED AREAS, INSTALL SPRINKLERS PLUMB. IN AREAS WHERE THEY ARE INSTALLED ON SLOPES, SPRINKLERS MAY BE TILTED AS REQUIRED TO PREVENT EROSION.

B. SPRINKLERS SHOULD BE ADJUSTED TO AVOID UNNECESSARY DISCHARGE ON PAVEMENTS AND STRUCTURES.

C. PROVIDE A MINIMUM SEPARATION OF 4-INCHES BETWEEN SPRINKLERS AND PAVEMENT. PROVIDE A MINIMUM SEPARATION OF 12-INCHES BETWEEN SPRINKLERS AND BUILDINGS AND OTHER VERTICAL STRUCTURES.

D. PIPING MUST BE THOROUGHLY FLUSHED BEFORE INSTALLATION OF SPRINKLER NOZZLES. SURFACE MOUNTED POP-UP HEADS SHALL BE INSTALLED ON SWING JOINTS, FLEXIBLE PIPE, OR POLYETHYLENE (PE) NIPPLES. ABOVE-GROUND (RISER MOUNTED) SPRINKLERS SHALL BE AT A MINIMUM MOUNTED ON SCHEDULE 40 PVC OR STEEL PIPE AND BE EFFECTIVELY STABILIZED.

E. MICRO-IRRIGATION DEVICES SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS FOR THE SPECIFIC APPLICATION.

PUMP INSTALLATION

A. THE WELL SHALL BE DEVELOPED UNTIL IT STOPS PRODUCING DETRIMENTAL QUANTITIES OF SOLID PARTICLES AT A CONTINUOUS DISCHARGE RATE OF APPROXIMATELY 20% GREATER THAN THE ANTICIPATED NORMAL PRODUCTION RATE (SEE NRCS-FL-642) PRIOR TO SETTING THE PERMANENT PUMP.

B. SET PUMPS PLUMB AND SECURE TO A FIRM CONCRETE BASE. THERE SHOULD BE NO STRAIN OR DISTORTION ON THE PIPE AND FITTINGS. PIPE AND FITTINGS SHOULD BE SUPPORTED TO AVOID PLACING UNDUE STRAIN ON THE PUMP.

C. PUMPS MUST BE INSTALLED IN A MANNER TO AVOID LOSS OF PRIME. INSTALL SUCTION LINE TO PREVENT THE ACCUMULATION OF AIR POCKETS. ALL CONNECTIONS AND REDUCTIONS IN SUCTION PIPE SIZES SHOULD BE DESIGNED TO AVOID CAUSING AIR POCKETS AND CAVITATIONS.

D. PUMPS MUST BE LOCATED TO FACILITATE SERVICE AND EASE OF REMOVAL. APPROPRIATE FITTINGS SHOULD BE PROVIDED TO ALLOW THE PUMP TO READILY BE DISCONNECTED.

E. THE INSTALLER SHOULD VERIFY THAT THE ELECTRICAL CONNECTION PRODUCES CORRECT ROTATION OF THE PUMP MOTOR AND THAT THE ELECTRIC POWER SOURCE IS OF THE PROPER VOLTAGE AND PHASE

LOW VOLTAGE WIRE INSTALLATION

A. INSTALL LOW VOLTAGE WIRE (30 VOLTS OR LESS) WITH A MINIMUM DEPTH OF COVER OF 12 INCHES.

B. INSTALL WIRE THAT IS NOT UL LISTED FOR DIRECT BURIAL IN A WATER-TIGHT CONDUIT.

C. USE WIRE CONNECTORS THAT ARE APPROVED FOR DIRECT BURIAL.

D. PROVIDE A SUFFICIENT LENGTH OF WIRE AT EACH CONNECTION TO ALLOW FOR THERMAL EXPANSION/SHRINKAGE. AS A MINIMUM, PROVIDE A F2-INCH DIAMETER LOOP AT ALL SPLICES AND CONNECTIONS. TERMINATIONS AT VALVES WILL HAVE 24" MINIMUM FREE WIRE.

E. INSTALL ALL ABOVE-GROUND WIRE RUNS AND WIRE ENTRIES INTO BUILDINGS IN CONDUIT.

F. PROVIDE COMMON WIRES WITH A DIFFERENT COLOR THAN THE POWER WIRES (WHITE SHALL BE USED FOR COMMON WIRES).

HYDRAULIC CONTROL TUBING

A. FOR HYDRAULIC CONTROL SYSTEMS, USE A WATER SUPPLY THAT IS FILTERED AND FREE OF DELETERIOUS MATERIALS, AS DEFINED BY THE HYDRAULIC CONTROL SYSTEM MANUFACTURER.

B. INSTALL A BACKFLOW PREVENTION DEVICE WHERE THE HYDRAULIC CONTROL SYSTEM IS CONNECTED TO POTABLE WATER SUPPLIES.

C. INSTALL TUBING IN TRENCHES FREELY AND SPACED SO THAT IT WILL NOT RUB AGAINST PIPE, FITTINGS, OR OTHER OBJECTS THAT COULD SCORE THE TUBING, AND WITH A MINIMUM 12-INCH DIAMETER LOOP AT ALL TURNS AND CONNECTIONS. PROVIDE A MINIMUM DEPTH OF COVER OF 12-INCHES.

D. CONNECT TUBING WITH COUPLINGS AND COLLARS RECOMMENDED BY THE TUBING MANUFACTURER. ALL SPLICES SHOULD BE MADE IN VALVE BOXES.

E. PRE-FILL TUBING WITH WATER, EXPEL ENTRAPPED AIR, FLUSH PARTICULATES AND TEST FOR LEAKS PRIOR TO INSTALLATION.

F. INSTALL EXPOSED TUBING IN A PROTECTIVE CONDUIT MANUFACTURED FROM SCHEDULE 40 PVC OR ELECTRICAL CONDUIT.

RAINFALL SHUTOFF DEVICE

A. RAIN SENSOR SHALL BE PLACED ON THE TOP OF THE FASCIA OR PARAPET IF AT ALL PRACTICAL. IF NOT THE RAIN SENSOR CAN BE PLACED ON THE WALL BUT MUST EXTEND OUT A MINIMUM OF 18 INCHES FROM THE WALL. IT CAN ALSO BE PLACED ON OTHER STATIONARY STRUCTURES, SUCH AS POSTS OR FENCES.

B. THE DEVICE SHALL NOT BE LOCATED WHERE RAINWATER IS CHANNELED, TO AVOID FALSE READINGS.

C. THE VERTICAL AREA DIRECTLY ABOVE THE RAIN SENSOR SHALL BE UNOBSTRUCTED TO THE SKY.

D. THE RAIN SENSOR SHALL NOT BE INSTALLED OVER OR WITHIN 5 FEET OF THE EDGE OF EITHER AN AIR CONDITIONER'S COMPRESSOR OR A POOL HEATER UNIT.

E. RAIN SENSOR SHALL NOT BE INSTALLED ON A BACKFLOW PREVENTION ASSEMBLY.

F. RAIN SENSORS SHALL BE INSTALLED ABOVE THE HEIGHT OF THE SPRINKLER SPRAY. WHEN THIS IS NOT POSSIBLE, LOCATE THE SENSOR IN THE LAST ZONE TO OPERATE.

G. RAIN SENSORS SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE CONTROL EQUIPMENT.

H. RAIN SENSOR WIRE THAT IS UV RESISTANT MAY BE LEFT EXPOSED TO SUNLIGHT. THE FIRST 18 INCHES WHERE THE WIRE LEAVES THE GROUND SHALL BE ENCASED IN A CONDUIT. IF THE WIRE IS NOT UV RESISTANT, ITS ENTIRE ABOVE GROUND LENGTH SHALL BE ENCASED IN A CONDUIT.

I. RAIN SENSOR WIRE THAT IS UL LISTED UF WIRE FOR DIRECT BURIAL MAY BE INSTALLED IN THE GROUND WITHOUT A CONDUIT, BUT THE FIRST 18 INCHES WHERE THE WIRE LEAVES THE GROUND SHALL BE ENCASED IN A CONDUIT. WIRE THAT IS NOT SO RATED MUST BE ENCASED IN A CONDUIT.

J. IN SYSTEMS PRESSURIZED BY A PUMP, PROVISION SHALL BE MADE TO ENSURE SHUTOFF DEVICE DOES NOT ALLOW PUMP TO ACTIVATE

TESTING & INSPECTIONS

PURPOSE

THIS SECTION ADDRESSES ITEMS WHICH ARE REQUIRED TO BE CERTIFIED IN WRITING TO THE OWNER BY THE INSTALLING CONTRACTOR PRIOR TO SCHEDULING AN INSPECTION BY A GOVERNING AGENCY.

PERIODIC INSPECTIONS

PERIODIC INSPECTIONS WILL BE PERFORMED THROUGHOUT THE DURATION OF THE INSTALLATION. THESE INSPECTIONS WILL BE MADE BY THE CONTRACTOR TO INSURE THAT THE INSTALLATION IS IN COMPLIANCE WITH THE DESIGN INTENT, SPECIFICATIONS, THESE STANDARDS, LOCAL AND STATE CODES AND ORDINANCES. INSPECTIONS WILL BE MADE ON THE FOLLOWING ITEMS:

A. SPRINKLER/EMITTER LAYOUT AND SPACING: THIS INSPECTION WILL VERIFY THAT THE IRRIGATION SYSTEM DESIGN IS ACCURATELY INSTALLED IN THE FIELD. IT WILL ALSO PROVIDE FOR ALTERATION OR MODIFICATION OF THE SYSTEM TO MEET FIELD CONDITIONS. TO PASS THIS INSPECTION, SPRINKLER/EMITTER SPACING SHOULD BE WITHIN + 5% OF THE DESIGN SPACING.

B. PIPE INSTALLATION DEPTH: ALL PIPE IN THE SYSTEM SHALL BE INSTALLED TO DEPTHS AS PREVIOUSLY DESCRIBED IN THIS STANDARD.

C. CROSS CONNECTION CONTROL AND BACKFLOW PREVENTION

1. PUBLIC OR DOMESTIC POTABLE WATER SYSTEMS: CHECK THAT AN APPROVED BACKFLOW PREVENTION ASSEMBLY IS PROPERLY INSTALLED AND FUNCTIONING CORRECTLY. REVIEW THE LOCATION OF THE ASSEMBLY TO CHECK THAT IT IS NOT CREATING A HAZARD TO PEDESTRIANS OR VEHICULAR TRAFFIC.

2. FOR WATER SYSTEMS OTHER THAN PUBLIC OR DOMESTIC WATER SYSTEMS, CHECK THAT THE PROPER BACKFLOW PREVENTION ASSEMBLIES ARE PROVIDED.

D. INSPECTION **LOG:** AN INSPECTION LOG SHALL BE KEPT AT THE JOB SITE. THIS LOG WILL SHOW SIGNATURES AND DATES WITH DESCRIPTION OF INSPECTIONS PERFORMED. THIS LOG MAY BE REQUIRED TO BE SUBMITTED TO THE GOVERNING AGENCY UPON THEIR REQUEST.

LEAKAGE TESTING

A. TEST ALL MAINLINES UPSTREAM OF THE ZONE VALVES AS FOLLOWS:

1. FILL THE COMPLETELY INSTALLED PIPELINE SLOWLY WITH WATER TO EXPEL AIR. ALLOW THE PIPE TO SIT FULL OF WATER FOR 24 HOURS TO DISSOLVE REMAINING TRAPPED AIR.

2. USING A METERING PUMP, ELEVATE THE WATER PRESSURE TO THE MAXIMUM STATIC SUPPLY PRESSURE EXPECTED AND HOLD THERE FOR **A** PERIOD OF 2 HOURS, ADDING WATER AS NEEDED TO MAINTAIN THE PRESSURE.

3. RECORD THE AMOUNT OF WATER ADDED TO THE SYSTEM OVER THE 2 HOUR PERIOD.

4. USE THE FOLLOWING FORMULAS TO DETERMINE THE MAXIMUM ALLOWABLE LEAKAGE LIMIT OF GASKETED PIPE.

FORMULA EIGHT

DUCTILE IRON:

L = S DP/133,200

WHERE:

L = ALLOWABLE LEAKAGE (GPHJ,
D = NOMINAL DIAMETER OF PIPE (INCHES),
P = AVERAGE TEST PRESSURE (PSI), AND
S = LENGTH OF PIPE (FT).

FORMULA NINE

PVC, GASKETED JOINT:

$$L = \frac{N D\sqrt{P}}{7400}$$

WHERE:

L = ALLOWABLE LEAKAGE (GPH),
N = NUMBER OF JOINTS,
D = NOMINAL DIAMETER OF PIPE (INCHES),
P = AVERAGE TEST PRESSURE (PSI).

B. PVC SOLVENT-WELD PIPE CONNECTIONS SHALL HAVE NO LEAKAGE. POLYETHYLENE CONTROL TUBING LINES SHALL HAVE NO LEAKAGE.

C. WHEN TESTING A SYSTEM WHICH CONTAINS METAL-SEATED VALVES, AN ADDITIONAL LEAKAGE PER CLOSED VALVE OF 0.078 GPH/INCH OF NOMINAL VALVE SIZE IS ALLOWED.

D. REPAIR ALL LEAKS AND RETEST THE PIPELINE UNTIL IT PASSES THE TEST.

APPLICATION UNIFORMITY TESTING

A. THE UNIFORMITY OF APPLICATION IS A MEASURE OF SYSTEM PERFORMANCE. FACTORS AFFECTING UNIFORMITY ARE:

1. WIND.
2. SPACING OF SPRINKLERS.
3. WATER PRESSURE AT THE SPRINKLER.
4. NOZZLE SIZES AND COMPATIBILITY BETWEEN SPRINKLERS.
5. SPRINKLER DISCHARGE PATTERN.
6. SPEED AND UNIFORMITY OF ROTATION OF ROTARY SPRINKLERS.
7. RADIUS ADJUSTMENT.

B. APPLICATION UNIFORMITY TESTING IS NOT MANDATORY. HOWEVER, IF IT IS DESIRED TO CONDUCT A UNIFORMITY TEST, IN ADDITION TO THE OTHER TESTS DESCRIBED HEREIN, IT SHOULD BE CONDUCTED IN ACCORDANCE WITH ASAE S-398.1, PROCEDURE FOR SPRINKLER TESTING AND PERFORMANCE REPORTING. THE UNIFORMITY OF MICROIRRIGATION SYSTEMS CAN BE TESTED BY DIRECT MEASUREMENT OF THE EMITTER DISCHARGE RATES.

C. THE APPLICATION UNIFORMITY CAN BE DETERMINED BY COLLECTING FIELD DATA AND CALCULATING THE COEFFICIENT OF UNIFORMITY (UC) USING EITHER THE CHRISTIANSEN OR STATISTICAL UNIFORMITY COEFFICIENTMETHODS DESCRIBED IN THE FOLLOWING SECTION. FOR SPRINKLER SYSTEMS, A MINIMUM OF THREE LOCATIONS WITHIN A ZONE SHOULD BE SELECTED FOR DATA COLLECTION. THESE LOCATIONS SHOULD BE SELECTED NEAR THE BEGINNING, MIDDLE AND END OF THE SPRINKLER LATERAL. FOR MICROIRRIGATION SYSTEMS, A MINIMUM OF 18 TO 24 DATA POINTS OR LOCATIONS SHOULD BE RANDOMLY COLLECTED ACROSS THE FIELD BEING EVALUATED. IF THE RESULTING COEFFICIENT OF UNIFORMITY IS LOW, THEN ADDITIONAL FIELD DATA SHOULD BE TAKEN TO IMPROVE THE STATISTICAL RELIABILITY OF THE ESTIMATE.

D. UNIFORMITY COEFFICIENTS SHOULD BE CALCULATED USING THE CHRISTIANSEN UNIFORMITY COEFFICIENT CU GIVEN IN EQUATION 10 OR THE STATISTICAL UNIFORMITY COEFFICIENT CUS) GIVEN IN EQUATION 11. FOR RANDOMLY DISTRIBUTED DATA, BOTH METHODS WILL PRODUCE APPROXIMATELY THE SAME RESULT.

FORMULA TEN

$CU_c = (100)\ [1.0 - (EX/MN)\ ]$

WHERE:

CU = CHRISTIANSEN'S UNIFORMITY COEFFICIENT (PERCENT) .WHICH RANGES FROM 0% (LOW UNIFORMITY) TO 100% (PERFECT UNIFORMITY);
N = NUMBER OF MEASUREMENTS, OBSERVATION POINTS, OR CALCULATED WATER APPLICATIONS AT POINTS BENEATH THE IRRIGATION SYSTEM;
M = THE MEAN VALUE OF ALL OBSERVATIONS, AND
EX = THE SUM OF THE DEVIATIONS OF THE INDIVIDUAL OBSERVATIONS FROM THE MEAN VALUE.

FORMULA ELEVEN

$\mathbf{CU_s = 100\% - 80\%(S/X)}$

WHERE:

CU_s = THE STATISTICAL UNIFORMITY COEFFICIENT (PERCENT) WHICH RANGES FROM 0% (LOW UNIFORMITY) TO 100% (PERFECT UNIFORMITY),
S = STANDARD DEVIATION OF THE NUMBER OF OBSERVATIONS, MEASUREMENTS OR CALCULATED WATER APPLICATIONS AT POINTS BENEATH THE IRRIGATION SYSTEM, AND
X = AVERAGE DEPTH OR VOLUME OF WATER MEASURED AT ALL OBSERVATION POINTS.

SPRINKLER/EMITTER COVERAGE TESTING

A. ALL SPRINKLERS MUST BE ADJUSTED TO MINIMIZE OVER-SPRAY ONTO BUILDINGS AND PAVED AREAS.

B. ALL SPRINKLER CONTROLS MUST BE ADJUSTED TO MINIMIZE RUNOFF OF IRRIGATION WATER.

C. ALL SPRINKLERS MUST OPERATE AT THEIR DESIGN RADIUS OF THROW.

D. SPRAY PATTERNS MUST OVERLAP AS DESIGNED.

E. VERIFY THAT THE SPRINKLERS ARE CONNECTED TO THE APPROPRIATE ZONE.

F. VERIFY THAT NOZZLE OR EMITTER SIZES AND TYPES CALLED FOR IN THE SYSTEM DESIGN HAVE BEEN USED.

PRESSURE DISTRIBUTION TESTING

A. PRESSURE HEAD LOSS TESTS: THE DESIGN OPERATING PRESSURE OF THE SYSTEM SHALL BE STATED ON THE PLAN. THE PRESSURE AT ANY POINT IN THE SYSTEM SHALL NOT BE MORE THAN PLUS OR MINUS 10% OF THE DESIGN OPERATING PRESSURE AT THAT POINT.

B. TESTING WILL BE PERFORMED AS FOLLOWS:

1. ZONES TO BE TESTED WILL INCLUDE, AT MINIMUM, THE LARGEST ZONE, SMALLEST ZONE, THE ZONE CLOSEST TO THE SOURCE IN TERMS OF MAINLINE DISTANCE, AND THE ZONE FARTHEST FROM THE SOURCE IN TERMS OF MAINLINE DISTANCE.
2. TESTING OF EACH ZONE WILL BE DONE BY MEASURING PRESSURE AT A MINIMUM OF 2 POINTS. ONE PRESSURE WILL BE MEASURED AT THE SPRINKLER CLOSEST TO THE ZONE CONTROL VALVE AND THE SECOND WILL BE MEASURED AT THE SPRINKLER FARTHEST FROM THE ZONE CONTROL VALVE.

BACKFLOW PREVENTION ASSEMBLY TESTING

A. A CERTIFIED TECHNICIAN WILL TEST ALL ASSEMBLIES THAT CAN BE TESTED PRIOR TO BEING PLACED INTO SERVICE.

SITE RESTORATION

A. VERIFY THAT ALL EXISTING LANDSCAPING, PAVEMENT, AND GRADE OF AREAS AFFECTED BY WORK WERE RESTORED TO ORIGINAL CONDITION OR TO THE SATISFACTION OF THE SYSTEM OWNER.

B. VERIFY THAT THE PIPELINE TRENCHES HAVE BEEN PROPERLY COMPACTED TO THE DENSITIES REQUIRED BY THE PLANS AND SPECIFICATIONS.

RAINFALL SHUTOFF DEVICE

THE DEVICE SHALL BE TESTED TO ENSURE PROPER SHUT OFF OF CONTROL EQUIPMENT.

CERTIFICATION

A. ALL INSPECTIONS AND TESTS DESCRIBED HEREIN WILL BE CERTIFIED TO THE OWNER IN WRITING BY THE INSTALLING CONTRACTOR. CERTIFICATION WILL INCLUDE THE FOLLOWING:

1. THE DATE ON WHICH INSPECTIONS AND/OR TESTS WERE PERFORMED.
2. LIST OF ATTENDEES AT INSPECTIONS/TESTS.
3. THE SIGNATURE OF THE CONTRACTORS.
4. RECORD DRAWING.

B. IT IS SUGGESTED THAT, UPON RECEIPT OF THE LETTER OF CERTIFICATION, THE GOVERNING INSPECTION AUTHORITIES PERFORM AT LEAST THE FOLLOWING INSPECTIONS:

1. INSPECT BACKFLOW PREVENTION ASSEMBLIES TO VERIFY THAT THE MAKE, MODEL, AND SIZE CONFORM TO SPECIFICATIONS, AND IT WAS INSTALLED AND FUNCTIONS IN CONFORMANCE WITH APPLICABLE CODE.
2. INSPECT VALVES TO VERIFY THEY ARE PROPERLY HOUSED AND INSTALLED TO GRADE. WIRE SPLICES AND CONNECTIONS SHALL BE MADE USING APPROPRIATE METHODS.
3. INSPECT CONTROLLING DEVICES TO VERIFY THAT THEY FUNCTION, AND TO ASSURE THAT THEY CONFORM TO APPLICABLE CODES.
4. OBSERVE THE SYSTEM OPERATING THROUGH ONE COMPLETE CYCLE (WITH ABBREVIATED IRRIGATION PERIODS) OF THE CONTROL SYSTEM.

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△	REVISIONS	DATE	BY
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MARINER COVE

CITY OF FT. PIERCE
FLORIDA

W. F. McCAIN & ASSOCIATES, INC.
INNOVATIVE SOLUTIONS IN CIVIL AND ENVIRONMENTAL ENGINEERING SERVICES
CERTIFICATE OF AUTHORIZATION NO. 00008221
1171 19TH STREET
VERO BEACH, FLORIDA 32960
PHONE (772)770-1093
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IRRIGATION SPECIFICATIONS

DESIGN ENGINEER
CERTIFIED PROFESSIONAL DESIGNER #0069 exp. 2018

JEFFREY M. SMITH, FCLD # 00069
DATE: JUL 2 7 2015

MARINER COVE	
DESIGNED	JMS
DRAWN	JMS
CHECKED	JMS
DATE	5-22-15
SCALE	N.T.S.

SHEET
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OF 11
14-173A