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Attachments

SHEET NO.	DESCRIPTION
R-01 TO R-02	FDOT DETAILS
U-01 TO U-03	CITY OF MARCO ISLAND UTILITY DETAILS
	LANDSCAPE PLANS
	LIGHTING PLANS

LEGAL DESCRIPTION

LOTS 11, 12, 13, AND 14, BLOCK "133", MARCO BEACH UNIT 4, AS RECORDED IN PLAT BOOK 6, PAGES 32–37, PUBLIC RECORDS OF COLLIER COUNTY, FLORIDA.

CONTAINING 1.05 ACRES OF LAND MORE OR LESS.

AND

PART OF TRACT "A", MARCO BEACH UNIT 4, (PLAT BOOK 6, PAGES 32–37), AS DESCRIBED IN OR. 232, PAGE 24, PUBLIC RECORDS OF COLLIER COUNTY, FLORIDA.

CONTAINING 3.49 ACRES OF LAND MORE OR LESS.

AND

PART OF TRACT "A", MARCO BEACH UNIT 4, (PLAT BOOK 6, PAGES 32–37), AS DESCRIBED IN OR. 252, PG. 876, PUBLIC RECORDS OF COLLIER COUNTY, FLORIDA.

CONTAINING 2.23 ACRES OF LAND MORE OR LESS.

AND

TRACT "B", MARCO BEACH UNIT 11, AS RECORDED IN PLAT BOOK 6, PAGES 80–86, PUBLIC RECORDS OF COLLIER COUNTY, FLORIDA.

CONTAINING 2.18 ACRES OF LAND MORE OR LESS.

AND

LOT 1, BLOCK 783, MARCO BEACH UNIT 11, AS RECORDED IN PLAT BOOK 12, PAGES 24–26, PUBLIC RECORDS OF COLLIER COUNTY, FLORIDA.

CONTAINING 0.93 ACRES OF LAND MORE OR LESS.
(ALL) SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD.

Utility Services

WATER & SEWER SERVICE:
MARCO ISLAND UTILITIES
50 Bald Eagle Drive
Marco Island, FL 34145
PHONE (239) 394-3880

ELECTRIC SERVICE:
LEE COUNTY ELECTRIC COOPERATIVE
4980 BAYLINE DR, FORT MYERS, FL 33917
PHONE (800) 599-2356

PHONE SERVICE:
CENTURY LINK
6438 NAPLES BLVD #100
NAPLES, FLORIDA 34109
PHONE (239) 596-6220

CABLE TELEVISION:
COMCAST
301 TOWER ROAD
NAPLES, FLORIDA 34113
PHONE (239) 793-3577

WASTE DISPOSAL:
WASTE MANAGEMENT OF COLLIER COUNTY
4500 EXCHANGE AVENUE
NAPLES, FL 34104, 34112
PHONE (239) 249-2212

FIRE CONTROL DISTRICT:
MARCO ISLAND FIRE DISTRICT
1280 SAN MARCO RAOD
MARCO ISLAND, FLORIDA 34145
PHONE (239) 389-5040

REVISION	DESCRIPTION	DATE	
1	REVISED PER CITY OF MARCO ISLAND COMMENTS	5-4-2015	

2014-077 COVER.dwg, May 04, 2015, 9:43pm

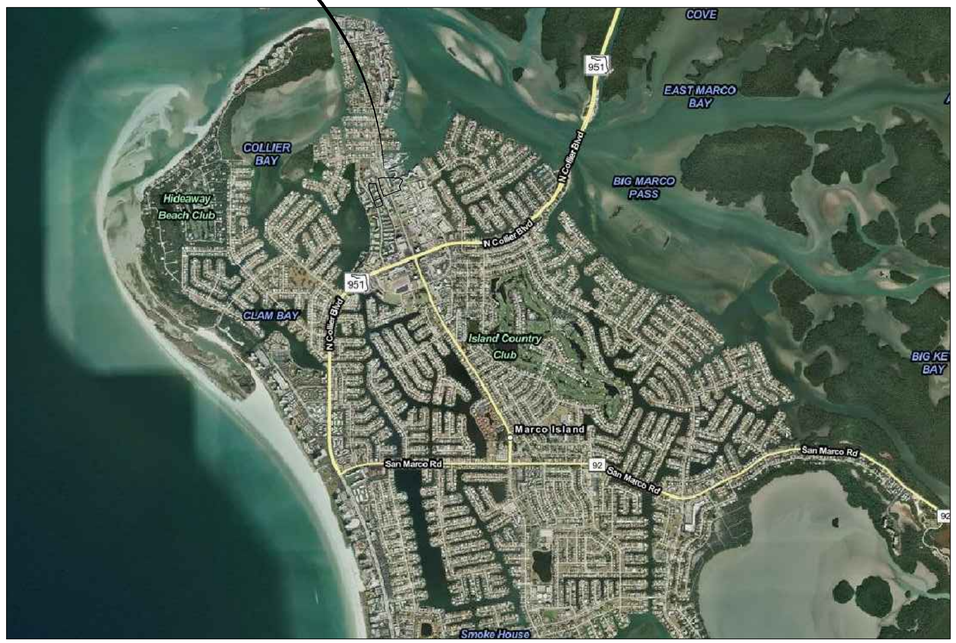
For Planning Board packet

Permit Plans
for

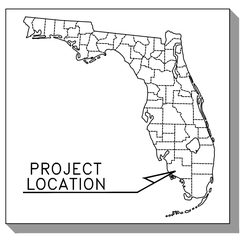
ROSE MARINA

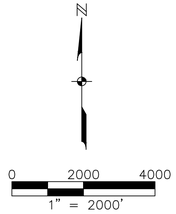
SECTIONS 5 & 8, TOWNSHIP 52 SOUTH, RANGE 26 EAST
COLLIER COUNTY, FLORIDA

Project Location



LOCATION MAP





Owner

ROSE MARINA
951 BLAD EAGLE DRIVE
NAPLES, FL 34145

Collier County Folio Nos.

56930080005, 57991760004, 57920080001

Size of Parcel

8.78 ACRES

City Council Members

Councilor Joe Batte
Councilor Bob Brown
Chairman Kenneth E. Honecker
Councilor Larry Honig
Councilor Chuck Kiester
Councilor Amadeo R. Petricca
Vice Chairman Larry Sacher

PROJECT CONSULTANTS

PROJECT MANAGEMENT:
TURRELL, HALL & ASSOCIATES, INC.
3584 EXCHANGE AVE
NAPLES, FL 34104
PHONE: (239) 643-0166

ENGINEERING:
HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE 203B
NAPLES, FL 34102
PHONE: (239) 852-8239

SURVEYING:
AGNOLI, BARBER & BRUNDAGE, INC.
7400 TAMIAMI TRAIL NORTH SUITE 200
NAPLES, FL 34108
PHONE: (239) 566-2203

LANDSCAPING:
ENSITE, INC.
2401 FIRST STREET, SUITE 201
FORT MYERS, FL 33901
PHONE: (239) 226-0024

TRAFFIC ENGINEERING:
NORMAN J. TREBILCOCK, AICP, PE
TREBILCOCK CONSULTING SOLUTIONS, PA
1205 PIPER BOULEVARD, SUITE 202
NAPLES, FL 34110
PHONE: (239) 566-9551

ARCHITECT:
PDS ARCHITECTURE, INC
12800 UNIVERSITY DRIVE #402
FORT MYERS, FL 33907
PHONE: (239) 437-8090

STRUCTURAL ENGINEERING:
ATLAS STRUCTURAL ENGINEERING
12610 WORLD PLAZA LANE BUILDING 61, STE. 2
FORT MYERS, FL 34102
PHONE: (239) 274-6820

ELECTRICAL ENGINEERING:
HUFF ENGINEERING, INC.
1267 CARLENE AVE
FORT MYERS, FL 33901
PHONE: (239) 274-3659

FIRE CONTROL:
REDI ENGINEERING, INC
141 GULFSTREAM ST
MARCO ISLAND, FL 34145
PHONE: (239) 389-0078

HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

2015 SDP

NOVEMBER 2014

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

SHEET
C-1

GENERAL NOTES

1. ELEVATIONS ARE REFERENCED TO AMERICAN GEODETIC VERTICAL DATUM N.A.V.D. OF 1988.
2. THE LOCATION OF EXISTING UTILITIES, PAVEMENT, VEGETATION, AND MISCELLANEOUS IMPROVEMENTS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
3. ANY PUBLIC LAND CORNER WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF A CORNER MONUMENT IS IN DANGER OF BEING DESTROYED AND HAS NOT BEEN PROPERLY REFERENCED, THE CONTRACTOR SHOULD NOTIFY THE OWNER/ENGINEER WITHOUT DELAY.
4. EXISTING FACILITIES SHALL BE RESTORED TO A CONDITION EQUIVALENT TO THAT WHICH EXISTED PRIOR TO COMMENCING CONSTRUCTION, AT NO ADDITIONAL COST TO OWNER.
5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, ROADWAY AND TRAFFIC DESIGN STANDARDS, (LATEST EDITION), CITY OF MARCO ISLAND DEVELOPMENT STANDARDS AND SPECIFICATIONS AND CITY OF MARCO ISLAND UTILITIES REQUIREMENTS.
6. LOCATIONS OF INLETS AND STORM DRAINS MAY BE FIELD ADJUSTED TO PRESERVE EXISTING VEGETATION.
7. THE CONTRACTOR IS REQUIRED TO ADJUST ALL VALVE BOXES, MANHOLE RIMS, GRATES, ETC. AS NECESSARY TO MATCH PROPOSED GRADES.
8. CONTRACTOR SHALL NOTIFY THE CITY OF MARCO ISLAND DIVISION OF DEVELOPMENT REVIEW A MINIMUM OF 72 HOURS PRIOR TO ALL REQUIRED INSPECTIONS.
9. CONTRACTOR TO PROVIDE SILT FENCE, STAKED HAY BALES AND OTHER APPROPRIATE MEASURES TO EFFECT THE FILTRATION OF SURFACE WATER FLOWS AND TO PROVIDE EROSION PROTECTION DURING CONSTRUCTION ACTIVITIES. PROTECTION IS TO BE MAINTAINED DURING THE CONSTRUCTION PERIOD UNTIL DISTURBED SOILS HAVE BEEN STABILIZED WITH GRASS OR SUITABLE EROSION PROTECTION TREATMENT.
11. ALL UNPAVED AREAS DISTURBED DURING CONSTRUCTION SHALL BE SEEDED AND MULCHED UNLESS NOTED OTHERWISE.
12. EXISTING OFF-SITE DRAINAGE PATTERNS SHALL BE MAINTAINED DURING CONSTRUCTION.
13. CONTRACTOR SHALL RETAIN, ON THE WORK SITE, COPIES OF ANY PERMITS NECESSARY FOR CONSTRUCTION.
14. CONTRACTOR SHALL PROMPTLY REPORT ALL FIELD CHANGES TO THE ENGINEER.
15. CONTRACTOR SHALL CLEAR ALL EXCAVATION AND FILL AREAS; ACTUAL LIMITS OF CLEARING SHALL BE DETERMINED IN THE FIELD BY OWNER OR ENGINEER.
15. SITE GRADES MAY BE ADJUSTED IN FIELD BY ENGINEER.
16. LOCATION OF STORM DRAINAGE HEADWALLS ARE SUBJECT TO MODIFICATION IN THE FIELD BY OWNER OR ENGINEER TO PRESERVE EXISTING VEGETATION.
17. CONTRACTOR SHALL USE DESIGNATED CONSTRUCTION ENTRANCES FOR EMPLOYEES AND DELIVERY OF MATERIALS.
21. DURING CONSTRUCTION, GRATE INLET AND JUNCTION BOX OPENINGS SHALL BE COVERED WITH FILTER FABRIC (MIRAFI 140N OR APPROVED EQUAL) TO PREVENT DEBRIS AND FILL FROM FALLING INTO THE INLET.
22. THE CONTRACTOR SHALL ACCURATELY PLOT THE LOCATIONS AND DEPTHS OF ALL IMPROVEMENTS INSTALLED ON A FINAL SET OF RECORDED DRAWINGS WHICH SHALL BE DELIVERED TO THE ENGINEER.
23. CONTRACTOR IS REQUIRED TO OBTAIN FROM THE ENGINEER AND OWNER WRITTEN APPROVAL FOR ANY DEVIATIONS FROM THE PLANS AND/OR SPECIFICATIONS.
24. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND USAGE OF THE EXISTING STREETS ADJACENT TO THE PROJECT, ALL TRAFFIC MAINTENANCE CONTROL SHALL BE IN ACCORDANCE WITH THE FLORIDA MANUAL OF TRAFFIC CONTROL AND SAFE PRACTICES FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, AND UTILITY OPERATIONS.
25. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY REQUIRED DEWATERING PERMITS.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY REQUIRED TREE REMOVAL PERMITS.
27. CONTRACTOR SHALL SOD, SEED, AND MULCH ALL MEDIAN ISLANDS.
28. THE REVIEW AND APPROVAL OF IMPROVEMENT PLANS DOES NOT AUTHORIZE THE CONSTRUCTION OF REQUIRED IMPROVEMENTS WHICH ARE INCONSISTENT WITH EXISTING EASEMENTS OF RECORD.
29. EASEMENTS DEPICTED ARE FOR INFORMATIONAL PURPOSES ONLY.
30. IN THE EVENT THAT SANITARY SEWER PIPES ARE DAMAGED AT CONFLICTS DURING CONSTRUCTION, THE CONTRACTOR SHALL BE PREPARED TO REPAIR OR RECONSTRUCT THE LINE PER CITY OF MARCO ISLAND SPECIFICATIONS.
31. ALL SWALE ELEVATIONS SHALL BE AT TOP OF SOD.
31. SHOP DRAWINGS OF ALL MATERIALS BEING USED SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
32. THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF CONSTRUCTION PLANS ON THE JOB SITE DURING ALL PHASES OF CONSTRUCTION.
33. ALL PRELIMINARY AND FINAL 1 YEAR INSPECTIONS OF WATER AND/OR SEWER SHALL BE COORDINATED THROUGH CITY OF MARCO ISLAND UTILITIES WITH A 48 HOUR WRITTEN NOTIFICATION.
34. AN ON-SITE PRE-CONSTRUCTION MEETING FOR WATER AND/OR SEWER IS REQUIRED PRIOR TO CONSTRUCTION.
35. EXOTIC VEGETATION SHALL BE REMOVED FROM THE SITE AND SUBSEQUENT ANNUAL EXOTIC REMOVAL (IN PERPETUITY) SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER.
36. CONTRACTOR RESPONSIBLE FOR COMPLYING WITH FEDERAL (OSHA), STATE (FLORIDA STATUTES), AND LOCAL TRENCHING AND EXCAVATION SAFETY STANDARDS.

⚠ GENERAL UTILITY NOTES

1. ALL WORK TO BE DONE IN ACCORDANCE W/ THE COLLIER COUNTY LAND DEVELOPMENT CODE, ORD. 93-82, AS AMENDED AND THE UTILITY STANDARDS AND PROCEDURES, ORD. 2004-31 AND 2007-60, AS AMENDED AND CITY OF MARCO ISLAND UTILITY STANDARDS, AS AMENDED.
2. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE AGENCY PRIOR TO COMMENCING WORK WITHIN SUCH AGENCY'S JURISDICTION.
3. PRIOR TO COMPACTION OF SUBGRADE AND ROADWAY CONSTRUCTION ALL SUBSURFACE CONSTRUCTION SUCH AS WATER LINES, SEWER LINES, PUBLIC UTILITIES, AND STORM DRAINAGE MUST BE COMPLETED.
4. ALL WATER MAINS AND FORCE MAINS SHALL HAVE A MINIMUM OF 36" OF COVER FROM FINAL GRADE, MAXIMUM DEPTH 5' FROM FINAL GRADE. FOR DEPTHS GREATER THAN 5' WRITTEN REQUEST MUST BE SUBMITTED TO MIU FOR APPROVAL.
5. WATER LINES AND FORCE MAIN SHALL HAVE A MAXIMUM OF 48" OF COVER.
6. ALL CONFLICTS OF WATER LINES OVER OR GRAVITY SEWER LINES UNDER RCP DRAINAGE LINES SHALL BE C900 DR14 (MINIMUM) OR EQUAL FOR 10' EACH WAY OF CONFLICT.
7. ALL PRESSURE LINES (WATER & SEWER) SHALL BE DEFLECTED AROUND CATCH BASINS TO MAINTAIN 5' MINIMUM SEPARATION. 45DEG. BENDS SHELL BE UTILIZED IF NECESSARY.
8. ALL PVC WATER MAIN SHALL BE AWWA C-900, CLASS 200, DR14, UNLESS OTHERWISE NOTED.
9. ALL TEMPORARY BLOWOFFS ARE TO BE REMOVED AFTER SATISFACTORY BACTERIAL TESTING IS COMPLETED AND THE CONNECTION IS MADE TO THE EXISTING WATER MAIN.
10. ALL WATER MAINS MUST BE FLUSHED AND DETERMINED TO BE BACTERIOLOGICAL CLEARED BEFORE CONNECTIONS ARE MADE TO THE PROPOSED WATER DISTRIBUTION SYSTEM.
11. BACTERIOLOGICAL SAMPLING POINTS SHALL BE POSITIONED AT THE BEGINNING OF EACH NEW SYSTEM, AT 1000 FOOT INTERVALS AND ALL DEAD ENDS UNLESS OTHERWISE DIRECTED. THE SAMPLING POINTS WILL BE UTILIZED BY UTILITIES PERSONNEL FOR WATER MAIN AND BACTERIAL CLEARANCE PROCEDURES. AT THE COMPLETION OF THE PROJECT, WHEN AUTHORIZATION IS GIVEN BY MIU, PERMANENT SAMPLING POINTS SHALL REMAIN EVERY 3000 FEET OR ONE AT 2/3 OF THE LENGTH FROM THE POINT OF CONNECTION TO THE MIU SYSTEM IF THE LINE IS LESS THAN 3000 FEET LONG. ALL OTHERS SHALL BE REMOVED DOWN TO THE MAIN AND PROPERLY CAPPED BY THE CONTRACTOR. THE PERMANENT SAMPLING POINT STILL BE CONSTRUCTED AS SHOWN IN THE UTILITY DETAIL DRAWINGS. MIU WILL REVIEW THE PERMANENT SAMPLING POINT LOCATIONS DURING FINAL PLANS REVIEW.
12. ALL WATER OR FORCE MAIN DIPS SHALL USE C900 DR14 PVC WITH RESTRAINING JOINTS. PIPE CONFLICT FITTINGS ARE SHOWN IN PIPE CONFLICT THE DETAIL.
13. EACH SEWER LATERAL SHALL BE MARKED WITH A 3M MAGNETIC MARKER FOR FUTURE LOCATION.
14. ALL SEWER SERVICES SHALL BE 6" DR26 PVC & CONSTRUCTED AT 0.5% SLOPE MINIMUM PER PLUMBING CODE.
15. ALL INSPECTIONS REQUIRE 48 HOUR NOTICE. CONSTRUCTION-RELATED INSPECTIONS, WHERE APPLICABLE, SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
    a) ALL WATER, REUSE, AND SEWER TAPS AND CONNECTIONS WILL REQUIRE INSPECTION FROM MIU WITHIN CITY RIGHT OF WAY
    b) MASTER METER AND BYPASS PIPING.
    c) JACK & BORE CASINGS.
    d) PRESSURE TESTS.
    e) INFILTRATION/EXFILTRATION TESTS.
    f) LIFT STATION INSTALLATION, PRIOR TO COVER-UP AND START-UP.
    g) LIFT STATIONS START-UP.
    h) CONNECTIONS TO EXISTING POTABLE WATER, NON-POTABLE IRRIGATION WATER AND WASTEWATER SYSTEMS.
    i) 8" DIAMETER OR LARGER CASING INSTALLATIONS.
    j) OTHER SPECIAL REQUIREMENTS AS SPECIFIED BY THE CITY OF MARCO ISLAND STAFF AT THE TIME OF CONSTRUCTION DOCUMENT APPROVAL.
    k) CHLORINATION OF WATER LINES AND REFLUSHING OF LINE AFTER CHLORINATION (NEEDS WATER DEPARTMENT INSPECTION ONLY). MIU MAY REQUIRE DE-CHLORINATION OF CHLORINATED FLUSH WATER TO MEET ENVIRONMENTAL REQUIREMENTS. MIU REQUIRES 48 HOUR NOTIFICATION.
    l) INSTALLATION OF TEMPORARY METERS/BACKFLOWS.
    m) POTABLE WATER BACTERIAL TESTING MUST BE DONE BY A TESTING LABORATORY APPROVED BY FDEP. COPIES OF RESULTS WILL BE SUPPLIED TO MIU TO OBTAIN C.O. (CERTIFICATE OF OCCUPANCY).
    n) HOT TAPS TO ANY WATER CONCRETE MAINS, PRESSURE TEST ON LINES 20" AND GREATER, AND CONNECTIONS TO EXISTING POTABLE SYSTEMS GREATER THAN 12" NEED TO BE INSPECTED BY THE WATER DEPARTMENT AND CDES
    o) FIRE FLOW TESTING.
    * AN INSPECTOR ON BEHALF OF THE CITY OF MARCO ISLAND OR OTHER QUALIFIED EMPLOYEE OF THE COUNTY MUST BE PRESENT DURING INSPECTIONS MARKED WITH AN
16. ALL PVC PIPE 4" TO 12" INSTALLED BELOW PAVED STREETS SHALL BE C900, DR14.
17. METERS & METER BOXES FOR METER SIZES 5/8 X 3/4 THROUGH 2-INCH WILL BE INSTALLED BY MIU WITHIN THE RIGHT OF WAY. ALL METERS AND BOXES THAT ARE ON PRIVATE PROPERTY WILL BE INSTALLED BY CONTRACTOR. METER BOXES THAT ARE IN PAVED AREAS WILL BE TRAFFIC RATED AND FLUSH TO FINAL GRADE, ALL METER BOXES WILL BE DFW 1200 OR LARGER WITH AMR HOLE IN THE CORRECT LOCATION FOR PROPER FIT OF LID TO METER LOCATION. MIU DOES NOT SIZE METERS, THE ENGINEER OF RECORD WILL SIZE THE METER AND DETERMINE THE CORRECT MODEL FOR THE APPLICATION THE METER WILL BE USED IN. CALCULATIONS OF METER SIZING AND MODEL MUST BE PROVIDED ON PLANS. ALL BACKFLOW PREVENTERS WILL BE REDUCE PRESSURE ZERO ASSEMBLIES, MUST BE TESTED AND COPIES OF THE TEST PROVIDED TO MIU, AND ARE NOT THE PROPERTY OF MIU.
18. METERS 2" AND SMALLER WILL BE NEPTUNE, METERS 3" AND LARGER WILL BE SENSUS OMNI C-2 COMPOUND.
19. ALL WATER METER COMPONENTS THAT COME IN CONTACT WITH DRINKING WATER SHALL CONFORM WITH NSF STANDARD 61.
20. CONTRACTOR TO VERIFY CONDUIT SIZE AND LOCATIONS WITH UTILITY PROVIDERS PRIOR TO INSTALLATION.
21. POLYVINYL CHLORIDE PIPE (PVC) FOR PIPE SIZES 4"-12"SHALL MEET THE REQUIREMENTS OF AWWA C-900.
22. BACKFLOW PREVENTER ASSEMBLIES SHALL CONFORM TO AWWA M-14 STANDARDS AND MUST BE REDUCED PRESSURE ZONE (RPZ).
23. FIRE HYDRANTS SHALL BE IN ACCORDANCE WITH L.D.C. OF COLLIER COUNTY OR NFPA REGULATIONS, LATEST REVISIONS, WHICHEVER IS MORE RESTRICTIVE, AND MEET THE APPROVAL OF THE LOCAL FIRE CONTROL DISTRICT. PAVEMENT REFLECTORS SHALL BE LOCATED AT THE CENTERLINE OF FINISHED PAVEMENT OPPOSITE EACH HYDRANT.
24. FIRE HYDRANTS SHALL NOT BE USED FOR TEMPORARY BACTERIAL SAMPLE POINTS. ONLY TEMP. OR PERMANENT SAMPLE POINTS SHALL BE USED.
25. ALL WATER AND SEWER FACILITIES WITHIN THE PUBLIC ROW WILL BE CONVEYED TO CITY OF MARCO ISLAND FOR OWNERSHIP & MAINTENANCE.
26. HYDRANTS TO BE BAGGED UNTIL BACTERIOLOGICAL SAMPLING IS CLEARED AND OPERATIONAL.
27. ALL DIPS SHALL USE 45 DEG. MECHANICAL JOINT FITTINGS WITH RETAINER GLANDS AND CLASS 200 PVC PIPE.
28. ALL EXISTING METERS, METER BOXES, VALVE RISERS, CLEAN OUTS, HYDRANTS WILL BE ADJUSTED TO FINAL GRADE. THIS MAY REQUIRE TRAFFIC RATED METER BOX LIDS AND CLEAN OUT COVERS. AREAS WHERE ROAD, CROSS WALKS, SIDEWALKS, DRIVEWAYS, MAY BE IN CONFLICT WITH THE CONSTRUCTION OF MAY REQUIRE DEFLECTION OR RELOCATION OF MAINS AND SERVICES.

PAVING, GRADING, AND DRAINAGE NOTES

1. LENGTH OF STORM DRAIN PIPES ARE APPROXIMATE AND ARE MEASURED FROM CENTER OF STRUCTURE.
3. PLACE 18" OF SOD CONTINUOUS ALONG EDGES OF PAVEMENT OF ALL ROADS AND/OR CURB, LAYING PARALLEL WITH THE ROAD MAINTAINING 1" BELOW FINISHED PAVEMENT GRADE.
4. CONTRACTOR TO PROVIDE SILT FENCE, STAKED HAY BALES AND OTHER APPROPRIATE MEASURES TO EFFECT THE FILTRATION OF SURFACE WATER FLOWS AND TO PROVIDE EROSION PROTECTION DURING CONSTRUCTION ACTIVITIES. PROTECTION IS TO BE MAINTAINED DURING THE CONSTRUCTION PERIOD UNTIL DISTURBED SOILS HAVE BEEN STABILIZED WITH GRASS OR SUITABLE EROSION PROTECTION TREATMENT.
5. THE PROPOSED STABILIZED SUBGRADE SHALL HAVE L.BR OF 40 AND SHALL BE COMPACTED TO 98% MINIMUM DENSITY AS DETERMINED BY AASHTO T-180.
6. THE PROPOSED LIMEROCK BASE SHALL HAVE L.B.R. OF 100 AND SHALL BE PLACED IN TWO (2) LIFTS, WITH EACH LIFT COMPACTED TO 98% MINIMUM DENSITY AS DETERMINED BY AASHTO T-180.
7. LIMEROCK BASE SHALL BE PRIMED IN ACCORDANCE WITH SECTION 200-8 OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION (CURRENT EDITION.)
8. ONE (1) FIELD DENSITY TEST SHALL BE REQUIRED EVERY 300 LF. OR PART THEREOF ON THE FINISHED SUBGRADE MATERIAL AND ON EACH LIFT OF LIMEROCK BASE MATERIAL.
9. TWO (2) COPIES OF THE L.B.R. MODIFIED (AASHTO T-180) PROCTOR AND COMPACTION TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER.
10. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT WATER DISCHARGED FROM THE SITE DURING CONSTRUCTION SHALL MEET OR EXCEED STATE WATER QUALITY STANDARDS. SPECIFICALLY, THE TURBIDITY OF DISCHARGED WATER SHALL NOT EXCEED 29 NTU ABOVE THE BACKGROUND LEVEL. WATER QUALITY AND SILTATION CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL EROSION OF CONTROL MEASURES ARE INSTALLED, ESTABLISHED AND ACCEPTED.
13. ALL FRAME AND GRATE INLETS TO BE HEAVY DUTY TRAFFIC RATED. SEE ASPHALT PAVEMENT SECTION DETAILS SHEET C-17
14. ROSE MARINA WILL BE RESPONSIBLE FOR THE MAINTENANCE OF THE WATER MANAGEMENT FACILITY.

MIU – MARCO ISLAND UTILITIES

SYMBOLS

- GATE VALVE / PLUG VALVE
- TEE ASSEMBLY
- REDUCER
- BLOW OFF
- FIRE HYDRANT
- FIRE HYDRANT ASSEMBLY W/ GATE VALVE
- FIRE DEPARTMENT CONNECTION
- MITERED END SECTION
- MANHOLE W/ NUMBER (MH-1)
- PLUG VALVE
- IRRIGATION SERVICE (DOUBLE)
- IRRIGATION SERVICE (SINGLE)
- SEWER SERVICE (DOUBLE)
- SEWER SERVICE (SINGLE)
- WATER SERVICE (DOUBLE)
- WATER SERVICE (SINGLE)
- HEADWALL
- DRAINAGE INLET (SEE PLAN FOR TYPES)
- THROAT INLET
- FLARED END SECTION
- FLOW ARROW

LINETYPES

	EXISTING	PROPOSED
BASIN		
RIGHT-OF-WAY LINE		
LAKE MAINTENANCE EASEMENT		
PUBLIC UTILITY EASEMENT		
DRAINAGE EASEMENT		
CENTER LINE		
WETLAND BOUNDARY		
FORCE MAIN	FM	FM
SANITARY SEWER	SS	SS
WATER MAIN	WM	WM
PERIMETER BERM		
DITCH / SWALE		
FENCE LINE	X	X
SILT FENCE		
BULKHEAD		
STRUCTURAL BUFFER		

ABBREVIATIONS

AC	ACRE
ALT	ALTERNATE
APPROX	APPROXIMATE
ASB	ASBESTOS
BM	BENCH MARK
BLDG.	BUILDING
BOT	BOTTOM
CB	CATCH BASIN
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CIP	CAST IRON PIPE
CJ	CONSTRUCTION JOINT
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
CV	CHECK VALVE
CF	CUBIC FOOT
CY	CUBIC YARD
℄	CENTER LINE
CLKG	CAULKING
CLF	CHAIN LINK FENCE
COL	COLUMN, COLOR
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CTRS	CENTERS
CU	COPPER
CU IN	CUBIC INCH
DIA, ø	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIST	DISTANCE
DIP	DUCTILE IRON PIPE
DE	DRAINAGE EASEMENT
DWG	DRAWING
E	EAST
EA	EACH
EL/ELEV	ELEVATION
EQUIP	EQUIPMENT
ERCP	ELLIPTICAL CONCRETE PIPE
EX, EXIST	EXISTING
FF	FINISHED FLOOR
FFE	FINISHED FLOOR ELEVATION
FM	FORCE MAIN
FDC	FIRE DEPARTMENT CONNECTION
FDN	FOUNDATION
FIN	FINISH
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FEET
G	NATURAL GAS
GC	GENERAL CONTRACTOR
GI	GALVANIZED IRON
GPM	GALLONS PER MINUTE
GV	GATE VALVE
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GR	GRADE
HDPE	HIGH DENSITY POLYETHYLENE
HOR	HORIZONTAL
HYD	HYDRANT
ID	INSIDE DIAMETER
IDD	IONA DRAINAGE DISTRICT
INV	INVERT
LAE	LAKE ACCESS EASEMENT
LF	LINEAL FEET
LME	LAKE MAINTENANCE EASEMENT
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MJ	MECHANICAL JOINT
MAX	MAXIMUM
MECH	MECHANICAL
MES	MITERED END SECTION
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
NE	NORTHEAST
NW	NORTHWEST
NPW	NON POTABLE WATER
NTS	NOT TO SCALE
NUM/#	NUMBER
NOM	NOMINAL
NG	NATURAL GAS
OC	ON CENTERS
OCEW	ON CENTER EACH WAY
OD	OUTSIDE DIAMETER
PBSP	PERMANENT BACTERIAL SAMPLE POINT
PCF	POUNDS PER CUBIC FOOT
PSF	POUNDS PER SQUARE FOOT
PV	PLUG VALVE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
POLY, PE	POLYETHYLENE
PAVT	PAVEMENT
PC	POINT OF CURVATURE
℄	PROPERTY LINE
PLBG	PLUMBING
PLWD	PLYWOOD
PW	POTABLE WATER
PT	POINT OF TANGENCY
PUE	PUBLIC UTILITY EASEMENT
PVI	POINT OF VERTICAL INTERSECTION
QUAN	QUANTITY
R	RADIUS
RD	ROAD
RCP	REINFORCED CONCRETE PIPE
REQ'D	REQUIRED
ROW	RIGHT OF WAY
R/W	RIGHT OF WAY
S	SOUTH
SE	SOUTHEAST
SW	SOUTHWEST
SS	STAINLESS STEEL
SAN	SANITARY
SCH	SCHEDULE
SECT	SECTION
SEW	SEWER
SH	SHEET
SPEC	SPECIFICATION
SQ	SQUARE
ST	STREET
STA	STATION
STL	STEEL
STD	STANDARD
SUR	SURFACE
SYM	SYMMETRICAL
TBSP	TEMPORARY BACTERIAL SAMPLE POINT
TOE	TOE OF SLOPE
TOB	TOP OF BANK
THK	THICK
TEL	TELEPHONE
TEMP	TEMPERATURE
TRANS	TRANSFORMER
TYP	TYPICAL
UE	UTILITY EASEMENT
VERT	VERTICAL
W	WATER
WM	WATER MAIN
W/	WITH
W/O	WITHOUT
WD	WOOD
WT	WEIGHT
WV	WATER VALVE
WH	WALL HYDRANT

REVISIONS		
⚠	REVISED PER CITY OF MARCO ISLAND COMMENTS	5-4-2015

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

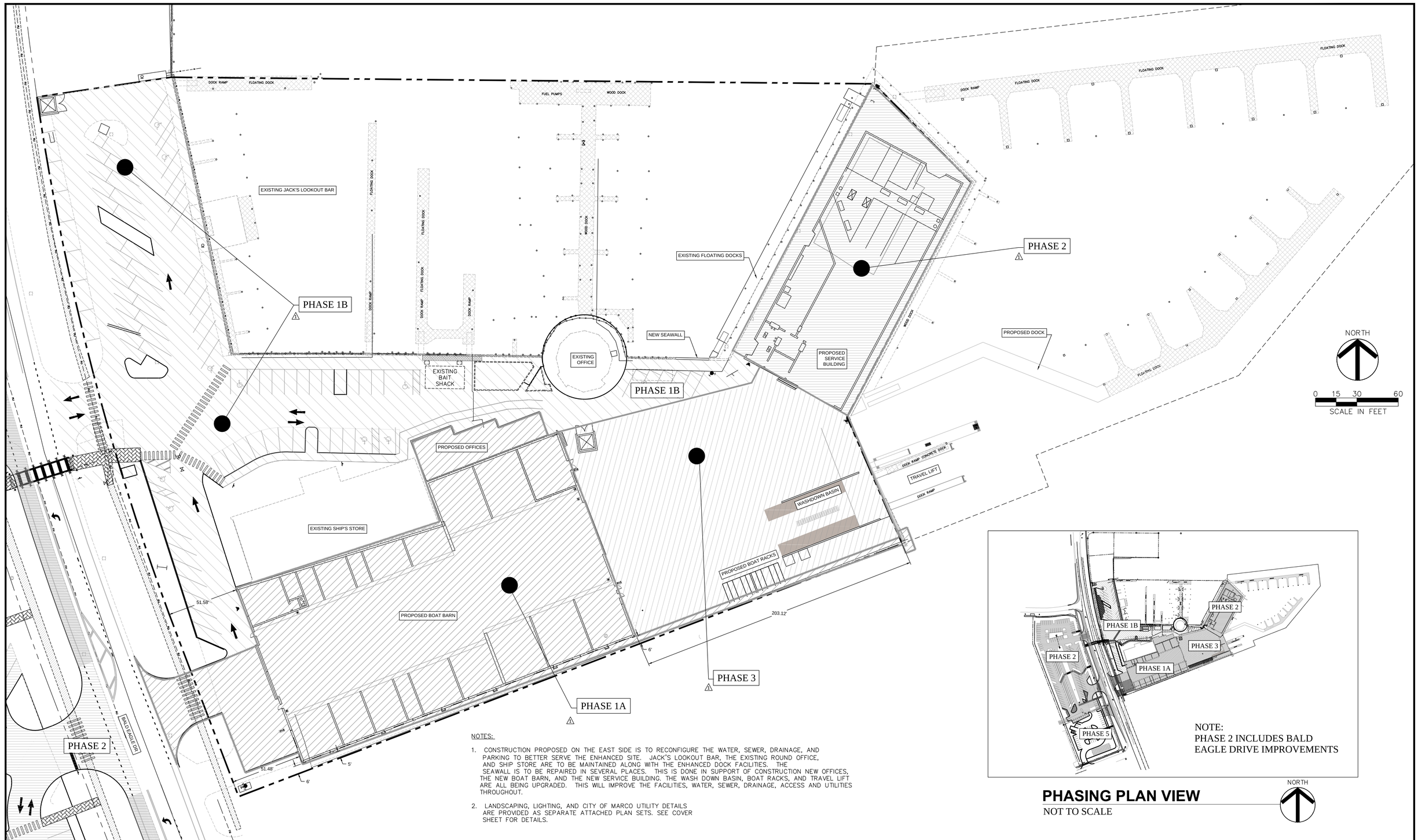
PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

ABBREVIATIONS & GENERAL NOTES

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-2

REVISIONS	ROSE MARINA REDEVELOPMENT PLANS	CITY OF MARCO ISLAND COLLIER COUNTY, FLORIDA	HAGAN ENGINEERING	PERMIT PLANS		EXISTING CONDITIONS - EAST
			1250 TAMIAMI TRAIL N., STE. 203B Naples, Florida 34102 Phone (239) 851-8239		C. D. HAGAN, P.E. FL REGT. #38649 EB #29474 DATE:	DATE: 09-20-14 · PROJECT NO.: 2014-077 · SCALE: As Shown · SHEET: C-3



NOTE:
PHASE 2 INCLUDES BALD EAGLE DRIVE IMPROVEMENTS

NOTES:

1. CONSTRUCTION PROPOSED ON THE EAST SIDE IS TO RECONFIGURE THE WATER, SEWER, DRAINAGE, AND PARKING TO BETTER SERVE THE ENHANCED SITE. JACK'S LOOKOUT BAR, THE EXISTING ROUND OFFICE, AND SHIP STORE ARE TO BE MAINTAINED ALONG WITH THE ENHANCED DOCK FACILITIES. THE SEAWALL IS TO BE REPAIRED IN SEVERAL PLACES. THIS IS DONE IN SUPPORT OF CONSTRUCTION NEW OFFICES, THE NEW BOAT BARN, AND THE NEW SERVICE BUILDING. THE WASH DOWN BASIN, BOAT RACKS, AND TRAVEL LIFT ARE ALL BEING UPGRADED. THIS WILL IMPROVE THE FACILITIES, WATER, SEWER, DRAINAGE, ACCESS AND UTILITIES THROUGHOUT.

2. LANDSCAPING, LIGHTING, AND CITY OF MARCO UTILITY DETAILS ARE PROVIDED AS SEPARATE ATTACHED PLAN SETS. SEE COVER SHEET FOR DETAILS.

PHASING PLAN VIEW

NOT TO SCALE

NORTH

REVISIONS		
1	REVISED PER CITY OF MARCO ISLAND	5-4-2015

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

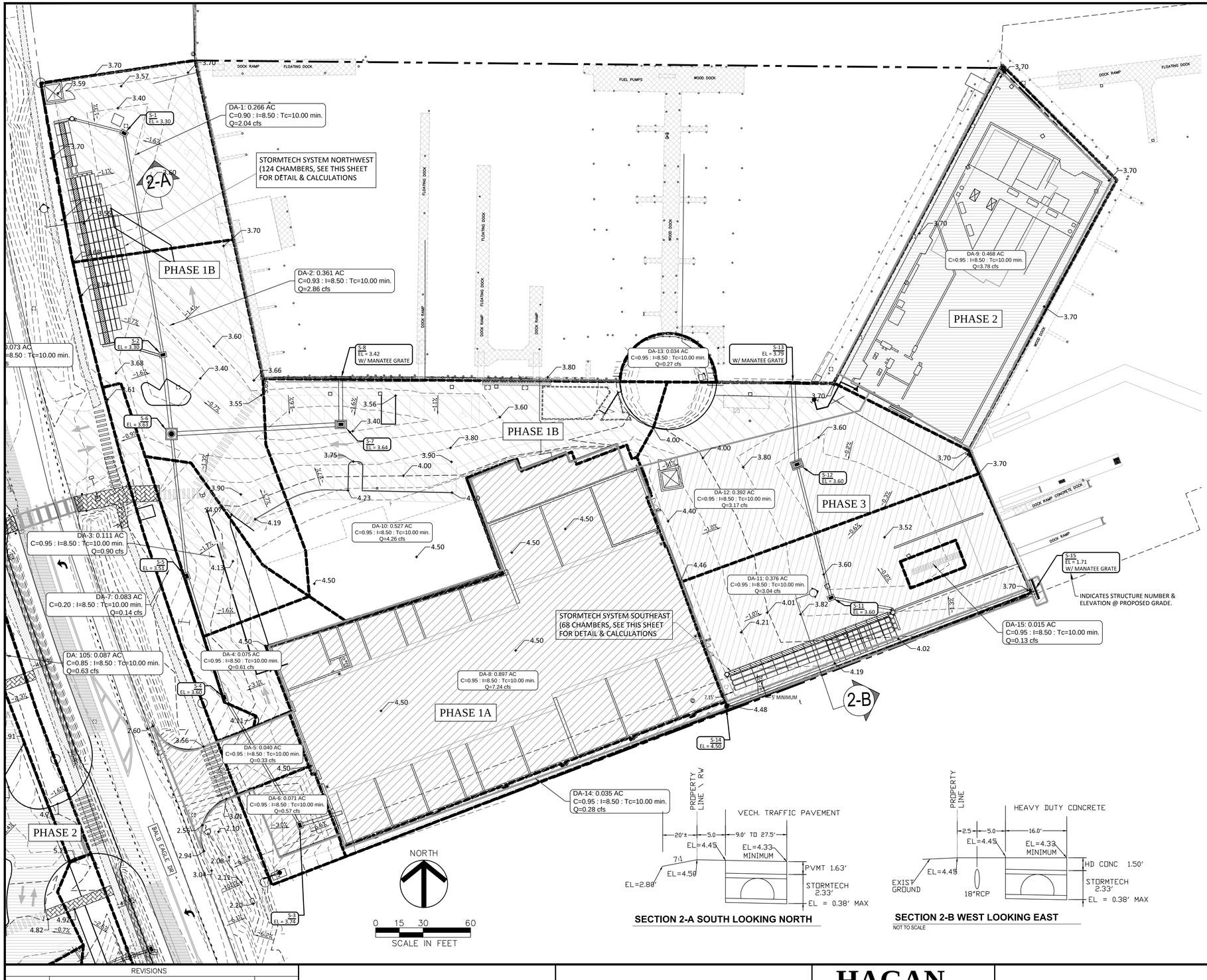
HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

MASTER SITE PLAN - EAST

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-4



ality Treatment Calculations
s and flows

Area #	Acres	Description	Treatment for 0.75" Volume (cf)		C Constant	I (in/hr)	Q=CIA (cfs)	Discharge
1	0.266	Pavement	724.2		0.9	8.5	2.03	S-1
2	0.361	Pavement	982.8		0.9	8.5	2.76	S-2
3	0.111	Pavement and roof	302.2		0.9	8.5	0.85	S-5
4	0.075	Pavement and roof	204.2		0.9	8.5	0.57	S-4
5	0.04	Outside basin	0.0	N/A	0.9	8.5	0.31	Overland to Bald Eagle Drive
6	0.071	Pavement	193.3		0.9	8.5	0.54	S-3
7	0.083	Outside Basin	0.0	N/A	0.9	8.5	0.63	Overland to Bald Eagle Drive
8	0.897	Barn and office Roof	0.0	N/A	0.9	8.5	6.86	P-8 to Bay
9	0.468	Service Center Roof	0.0	N/A	0.9	8.5	3.58	Rain leaders to bay
10	0.527	Pavement	1434.8		0.9	8.5	4.03	S-7
11	0.376	Pavement	1023.7		0.9	8.5	2.88	S-11
12	0.392	Pavement and roof	1067.2		0.9	8.5	3.00	S-12
13	0.034	Outside basin	0.0	N/A	0.9	8.5	0.26	Rain leaders to bay
14	0.035	Outside basin	0.0	N/A	0.9	8.5	0.27	Overland off site
15	0.015	Outside basin	0.0	N/A	0.9	8.5	0.11	Washdown excluded from drainage plan

otal in Basin: 5932.3 cf

n cross-section

	Elevation
r	4.50 NAVD
water	0.38 NAVD
eight	4.12 NAVD
ver	21.00 In
n cover	12.00 In
eight	16.44 In Max

STORMTECH SYSTEM SOUTHEAST		
Area #	Acres	Treat Vol
11	0.376	1023.7
12	0.392	1067.2
Total CF Req-d =		2090.9

STORMTECH SYSTEM NORTHEAST	
ALL REMAINING AREAS	
Total CF Req-d =	3841.4

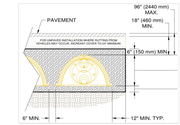
Use StormTech SC-130		
Volume per Chamber	31	CF
Chambers needed	191	Chambers

StormTech — Isolator Row Plus — "Subsurface Stormwater Management"

Project: Rose Marina - Northeast, East Basin
By: Hagan Engineering
Point of Contact: Chris Hagan
Date: 3/5/2015
Units: Imperial

System Requirements

Required Storage Volume	2,091	CF
Select Stormtech Chamber System	SC-310	
Stone Porosity (Industry Standard = 40%)	40%	
Stone Foundation Depth	9	Inches
Storage Volume Per Chamber	31.00	CF
Avg Cover over Chambers (18 in min. & 96 in max.)	16	Inches
Number of Chambers Required -	**68**	
Approximate Bed Size Required	1,810	SF
Tons of Stone Required	167	Tons
Volume of Excavation	223	CY
Area of Filter Fabric	520	SY
# of End Caps Required	16	Each
Length of ISOLATOR ROW	64.00	FT
ISOLATOR FABRIC	28	SY



Is the limiting dimension for the bed the width or length? width

Controlled by Width (Rows)		Controlled by Length	
Width	29 FT	Length	66 FT
# of Chambers Long	9 EA	# of Chambers long	- EA
# of Rows	8 EA	# of Rows	- EA
Actual Length	67.68 FT	Actual Length	- FT
Actual Width	28.14 FT	Actual Width	- FT

4 of the chambers rows will contain only 8 chambers

Material Estimate

To use this sheet: Please enter data into the blue and green cells. If switching between Imperial and Metric units please check the correct units and data is input in the green cells.

Please call StormTech @ 888-892-2694 for conceptual cost estimates.

www.stormtech.com | 20 Beaver Road | Suite 104 | Wethersfield | Connecticut | 06109 | 888.892.2694 | fax 866.328.8401

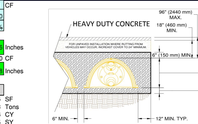
STORMTECH SYSTEM SOUTHEAST

StormTech — Isolator Row Plus — "Subsurface Stormwater Management"

Project: Rose Marina - East Basin
By: Hagan Engineering
Point of Contact: Chris Hagan
Date: 9/9/2014
Units: Imperial

System Requirements

Required Storage Volume	3,841	CF
Select Stormtech Chamber System	SC-310	
Stone Porosity (Industry Standard = 40%)	40%	
Stone Foundation Depth	9	Inches
Storage Volume Per Chamber	31.00	CF
Avg Cover over Chambers (18 in min. & 96 in max.)	16	Inches
Number of Chambers Required -	**124**	
Approximate Bed Size Required	3,205	SF
Tons of Stone Required	293	Tons
Volume of Excavation	396	CY
Area of Filter Fabric	895	SY
# of End Caps Required	22	Each
Length of ISOLATOR ROW	65.44	FT
ISOLATOR FABRIC	38	SY



Is the limiting dimension for the bed the width or length? width

Controlled by Width (Rows)		Controlled by Length	
Width	48 FT	Length	66 FT
# of Chambers Long	12 EA	# of Chambers long	- EA
# of Rows	11 EA	# of Rows	- EA
Actual Length	89.04 FT	Actual Length	- FT
Actual Width	38.13 FT	Actual Width	- FT

8 of the chambers rows will contain only 11 chambers

Material Estimate

To use this sheet: Please enter data into the blue and green cells. If switching between Imperial and Metric units please check the correct units and data is input in the green cells.

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www.stormtech.com | 20 Beaver Road | Suite 104 | Wethersfield | Connecticut | 06109 | 888.892.2694 | fax 866.328.8401

STORMTECH SYSTEM NORTHWEST

REVISIONS		
1	REVISED PER CITY OF MARCO ISLAND COMMENTS	5-4-2015

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

HAGAN ENGINEERING
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Naples, Florida 34102
Phone (239) 851-8239

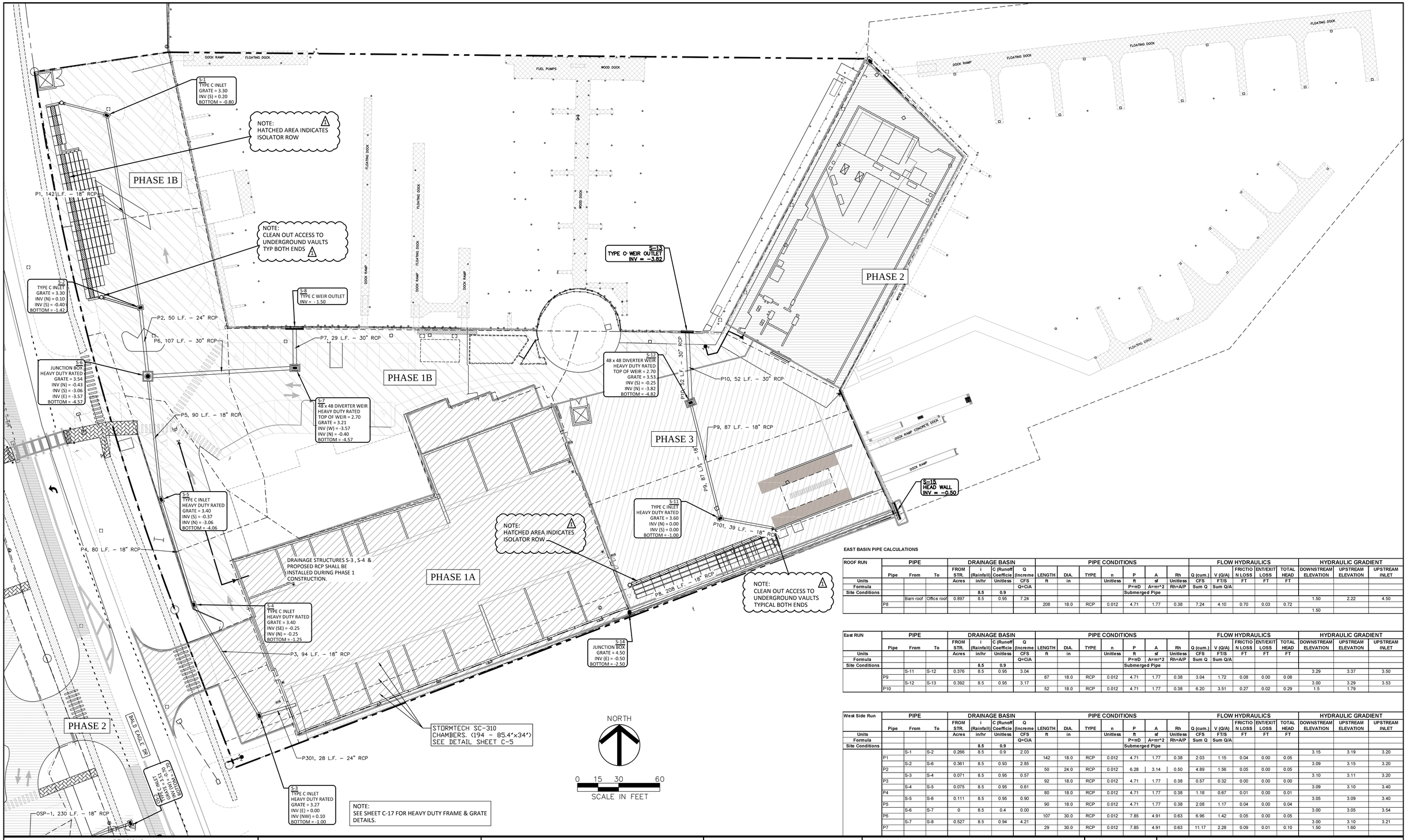
PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474

DATE:

MASTER GRADING PLAN - EAST

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-5



EAST BASIN PIPE CALCULATIONS

ROOF RUN	PIPE			DRAINAGE BASIN				PIPE CONDITIONS							FLOW HYDRAULICS					HYDRAULIC GRADIENT		
	Pipe	From	To	FROM STR.	i (Rainfall)	C (Runoff Coefficie	Q (Increme	LENGTH	DIA.	TYPE	n	P	A	Rh	Q (cum.)	V (Q/A)	FRICTIO N LOSS	ENT/EXIT LOSS	TOTAL HEAD	DOWNSTREAM ELEVATION	UPSTREAM ELEVATION	UPSTREAM INLET
Units				Acres	in/hr	Unitless	CFS	ft	in		Unitless	ft	sf	Unitless	CFS	FT/S	FT	FT	FT			
Formula							Q=CIA					P=πD	A=πr^2	Rh=A/P	Sum Q	Sum Q/A						
Site Conditions					8.5	0.9						Submerged Pipe										
		Barn roof	Office roof	0.897	8.5	0.95	7.24													1.50	2.22	4.50
	P8							208	18.0	RCP	0.012	4.71	1.77	0.38	7.24	4.10	0.70	0.03	0.72			
																				1.50		

East RUN	PIPE			DRAINAGE BASIN				PIPE CONDITIONS							FLOW HYDRAULICS					HYDRAULIC GRADIENT		
	Pipe	From	To	FROM STR.	i (Rainfall)	C (Runoff Coefficie	Q (Increme	LENGTH	DIA.	TYPE	n	P	A	Rh	Q (cum.)	V (Q/A)	FRICTIO N LOSS	ENT/EXIT LOSS	TOTAL HEAD	DOWNSTREAM ELEVATION	UPSTREAM ELEVATION	UPSTREAM INLET
Units				Acres	in/hr	Unitless	CFS	ft	in		Unitless	ft	sf	Unitless	CFS	FT/S	FT	FT	FT			
Formula							Q=CIA					P=πD	A=πr^2	Rh=A/P	Sum Q	Sum Q/A						
Site Conditions					8.5	0.9						Submerged Pipe										
		S-11	S-12	0.376	8.5	0.95	3.04													3.29	3.37	3.50
	P9							87	18.0	RCP	0.012	4.71	1.77	0.38	3.04	1.72	0.08	0.00	0.08			
		S-12	S-13	0.392	8.5	0.95	3.17													3.00	3.29	3.53
	P10							52	18.0	RCP	0.012	4.71	1.77	0.38	6.20	3.51	0.27	0.02	0.29	1.5	1.79	

West Side Run	PIPE			DRAINAGE BASIN				PIPE CONDITIONS							FLOW HYDRAULICS					HYDRAULIC GRADIENT		
	Pipe	From	To	FROM STR.	i (Rainfall)	C (Runoff Coefficie	Q (Increme	LENGTH	DIA.	TYPE	n	P	A	Rh	Q (cum.)	V (Q/A)	FRICTIO N LOSS	ENT/EXIT LOSS	TOTAL HEAD	DOWNSTREAM ELEVATION	UPSTREAM ELEVATION	UPSTREAM INLET
Units				Acres	in/hr	Unitless	CFS	ft	in		Unitless	ft	sf	Unitless	CFS	FT/S	FT	FT	FT			
Formula							Q=CIA					P=πD	A=πr^2	Rh=A/P	Sum Q	Sum Q/A						
Site Conditions					8.5	0.9						Submerged Pipe										
		S-1	S-2	0.266	8.5	0.9	2.03													3.15	3.19	3.20
	P1							142	18.0	RCP	0.012	4.71	1.77	0.38	2.03	1.15	0.04	0.00	0.05			
		S-2	S-6	0.361	8.5	0.93	2.85													3.09	3.15	3.20
	P2							50	24.0	RCP	0.012	6.28	3.14	0.50	4.89	1.56	0.05	0.00	0.05			
		S-3	S-4	0.071	8.5	0.95	0.57													3.10	3.11	3.20
	P3							92	18.0	RCP	0.012	4.71	1.77	0.38	0.57	0.32	0.00	0.00	0.00			
		S-4	S-5	0.075	8.5	0.95	0.61													3.09	3.10	3.40
	P4							80	18.0	RCP	0.012	4.71	1.77	0.38	1.18	0.67	0.01	0.00	0.01			
		S-5	S-6	0.111	8.5	0.95	0.90													3.05	3.09	3.40
	P5							90	18.0	RCP	0.012	4.71	1.77	0.38	2.08	1.17	0.04	0.00	0.04			
		S-6	S-7	0	8.5	0.4	0.00													3.00	3.05	3.54
	P6							107	30.0	RCP	0.012	7.85	4.91	0.63	6.96	1.42	0.05	0.00	0.05			
		S-7	S-8	0.527	8.5	0.94	4.21													3.00	3.10	3.21
	P7							29	30.0	RCP	0.012	7.85	4.91	0.63	11.17	2.28	0.09	0.01	0.10	1.50	1.60	

REVISIONS

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

HAGAN ENGINEERING
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Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

MASTER DRAINAGE PLAN - EAST

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-6

NOTE:
WATER SERVICE FOR HOSE BIBS SHALL BE FROM POTABLE WATER MAIN.

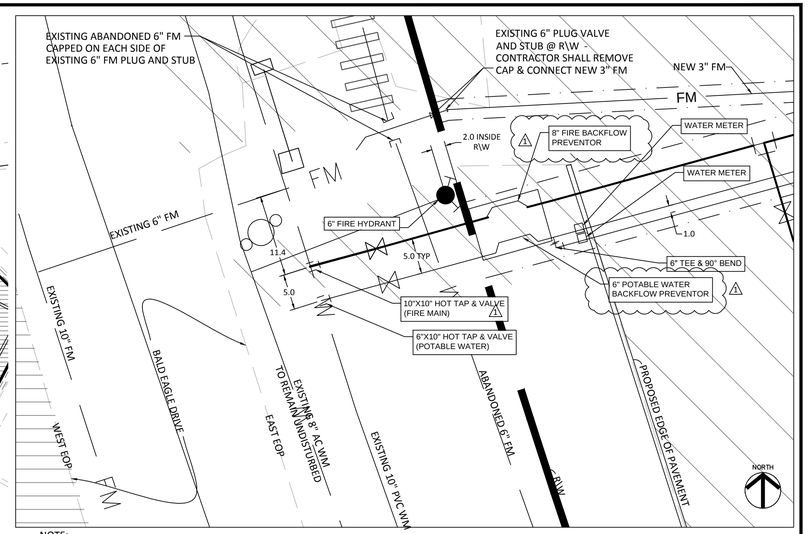
NOTE:
ALL EXISTING METERS, METER BOXES, VALVE RISERS, CLEAN OUTS, HYDRANTS WILL BE ADJUSTED TO FINAL GRADE. THIS MAY REQUIRE TRAFFIC RATED METER BOX LIDS AND CLEAN OUT COVERS. AREAS WHERE ROAD CROSSWALKS, SIDEWALKS, DRIVEWAYS, MAY BE IN CONFLICT WITH THE CONSTRUCTION OF MAY REQUIRE DEFLECTION OR RELOCATION OF ALL MAINS AND SERVICES.

EXISTING PUMP OUT FACILITY FOR BOATS
CONNECT TO EXISTING 2" WATER MAIN HOSE SERVICE
DOCK RAMP
FLOATING DOCK
CONNECT TO EXISTING 4" STAND PIPE
5' UTILITY TRENCH
2" WATER MAIN
2" LOW PRESSURE FORCE MAIN
DETAIL "A"
SEE THIS SHEET FOR DETAIL
NOTE: JACK'S LOOKOUT SHALL INSTALL AN UNDER COUNTER GREASE TRAP
CONNECT TO EXISTING 1" POTABLE WATER SERVICE CONNECTION
PHASE 1B
CONNECT TO EXISTING 2" WATER MAIN HOSE SERVICE
DETAIL "B"
SEE THIS SHEET FOR DETAIL
CONNECT TO EXISTING 4" STAND PIPE
STUB FOR CONNECTION 4" STAND PIPE
CONFLICT 2
PHASE 1B
(2) 6"-4" REDUCERS & 4" WATER METERS
SEE TRENCH DETAIL THIS SHEET
6" FIRE HYDRANT
3" FM CONNECTION
8' UTILITY TRENCH
CONFLICT 1
3" FORCE MAIN
10" FIRE CONNECTION GAP CONFIGURATION
10" FIRE MAIN
4" WATER MAIN
4" POTABLE WATER SERVICE
6" SANITARY SEWER
CONNECT TO EXISTING 1" POTABLE WATER SERVICE CONNECTION
6" SANITARY SEWER
6" WM CONNECTION
CLEANOUT (TYPICAL)
FIRE DEPARTMENT CONNECTION
SEE ENLARGED UTILITY CONNECTION DETAIL THIS SHEET
10" FM
10"FM
TYPE D CURB (144 LF)
PHASE 2
CONVERT EXISTING BACKFLOW PREVENTOR TO 6" FIRE HYDRANT
PHASE 1A
4" HOT TAP W\VALVE AND STUB FOR CONNECTION W\4" STAND PIPE
EXISTING MANHOLE & LIFT STATION
LIFT PUMP WAS REPLACED ON OCT. 4TH 1991 WITH 1729 HOURS ON THE METER. IT WAS REPLACED WITH ABS PUMPS INC AF60-4, 8 HP, 230V 3 PHASE.
4" HOT TAP W\VALVE AND STUB FOR CONNECTION W\4" STAND PIPE
CONNECT TO EXISTING 2" WATER MAIN HOSE SERVICE
(2) - 1250 GAL. GREASE TRAPS SEE CITY OF MARCO ISLAND GREASE INTERCEPTOR DETAIL, SHEET U-04
3" FM VALVE BOX
48" WET WELL PUMP STATION
2" LOW PRESSURE FORCE MAIN
CONNECT TO EXISTING 1" POTABLE WATER SERVICE CONNECTION
1" POTABLE WATER SERVICE CONNECTION
CONNECT TO EXISTING
2" WATER SERVICE CONNECTION
PHASE 3
CONNECT TO EXISTING 4" STAND PIPE
4" FIRE MAIN
(FUTURE USE) 3" LOW PRESSURE FORCE MAIN.
2" WATER MAIN
4" FIRE MAIN
PHASE 2
4" POTABLE WATER SERVICE LINE TERMINATION.
6" FIRE HYDRANT
CONNECT TO EXISTING FIRE DEPARTMENT CONNECTION
CONNECT TO EXISTING 1" POTABLE WATER SERVICE CONNECTION
4" FIRE MAIN
CONFLICT 3
6" SANITARY SEWER
(FUTURE USE) 3" LOW PRESSURE FORCE MAIN.
CONNECT TO EXISTING 4" STAND PIPE
2" WATER MAIN HOSE SERVICE
DOCK RAMP CONCRETE DOCK
CONNECT TO EXISTING 2" WATER MAIN
DOCK RAMP
FUEL PUMPS
WOOD DOCK
SEE ENLARGED UTILITY CONNECTION DETAIL THIS SHEET

NORTH
0 15 30 60
SCALE IN FEET

2" F.M. FROM PUMP OUT FACILITY FOR BOATS
NORTH
2" LOW PRESSURE FORCEMAIN FROM NORTH PUMP OUT
JACK'S LOOKOUT
2" MID PRESSURE FORCEMAIN FROM JACK'S LOOKOUT
EXISTING MID PRESSURE GRINDER PUMP
INDICATES F.M. FLOW DIRECTION
DETAIL "A"
1" = 20'

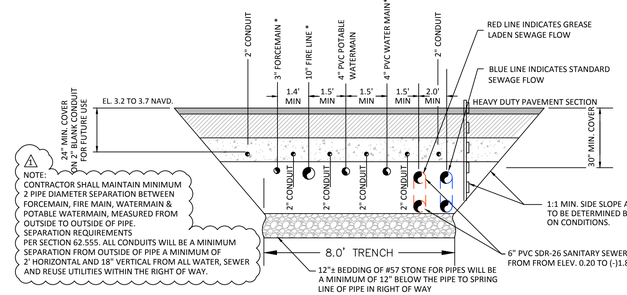
NORTH
2" MID PRESSURE FORCEMAIN FROM JACK'S LOOKOUT
8' UTILITY TRENCH SEE DETAIL THIS SHEET
FM — 3"FM — 45°
10" FIRE
4"WM
6" POTABLE WM
6" GRAVITY SEWER
2" MID PRESSURE FORCEMAIN TO CONNECT \ TERMINATE INTO CLEANOUT AS SHOWN
DETAIL "B"
1" = 20'



NOTE:
EXISTING UTILITY INFORMATION SHOWN PER CITY OF MARCO ISLAND NORTH MARCO SEWER DISTRICT WASTEWATER COLLECTION SYSTEM EXPANSION CONTRACT NO. 07-008 RECORD DRAWINGS PREPARED BY BOYLE ENGINEERING CORPORATION, DATED: 2/20/09.

ENLARGED UTILITY CONNECTION DETAIL

SCALE: 1" = 10'

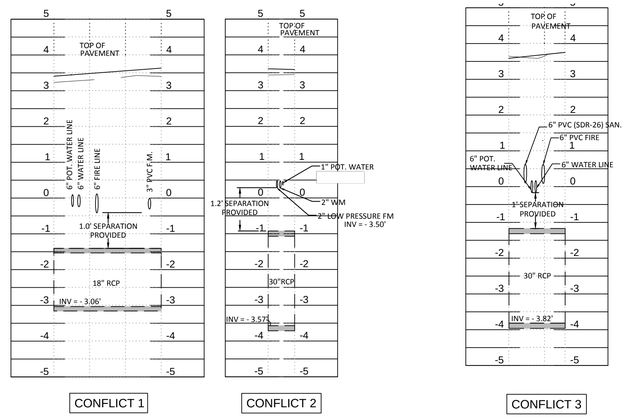


NOTE:
CONTRACTOR SHALL MAINTAIN MINIMUM 2 PIPE DIAMETER SEPARATION BETWEEN FORCEMAIN, FIRE MAIN, WATERMAIN & POTABLE WATERMAIN, MEASURED FROM OUTSIDE TO OUTSIDE OF PIPE. SEPARATION REQUIREMENTS PER SECTION 62.555. ALL CONDUITS WILL BE A MINIMUM SEPARATION FROM OUTSIDE OF PIPE A MINIMUM OF 2' HORIZONTAL AND 18" VERTICAL FROM ALL WATER, SEWER AND REUSE UTILITIES WITHIN THE RIGHT OF WAY.

TYPICAL UTILITY TRENCH DETAIL

* ALL PRESSURIZED PVC LINES SHALL BE C-900, CLASS 200, DR 14

NOT TO SCALE



CONFLICT DETAILS

SCALE: 1" = 20'

REVISIONS		
1	REVISED PER CITY OF MARCO ISLAND	5-4-2015

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

MASTER UTILITY PLAN - EAST

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-7

DATA TAKEN FROM AUGUST 6, 2013 ABB SURVEY OVER 2012 COLLIER COUNTY AERIAL.

REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

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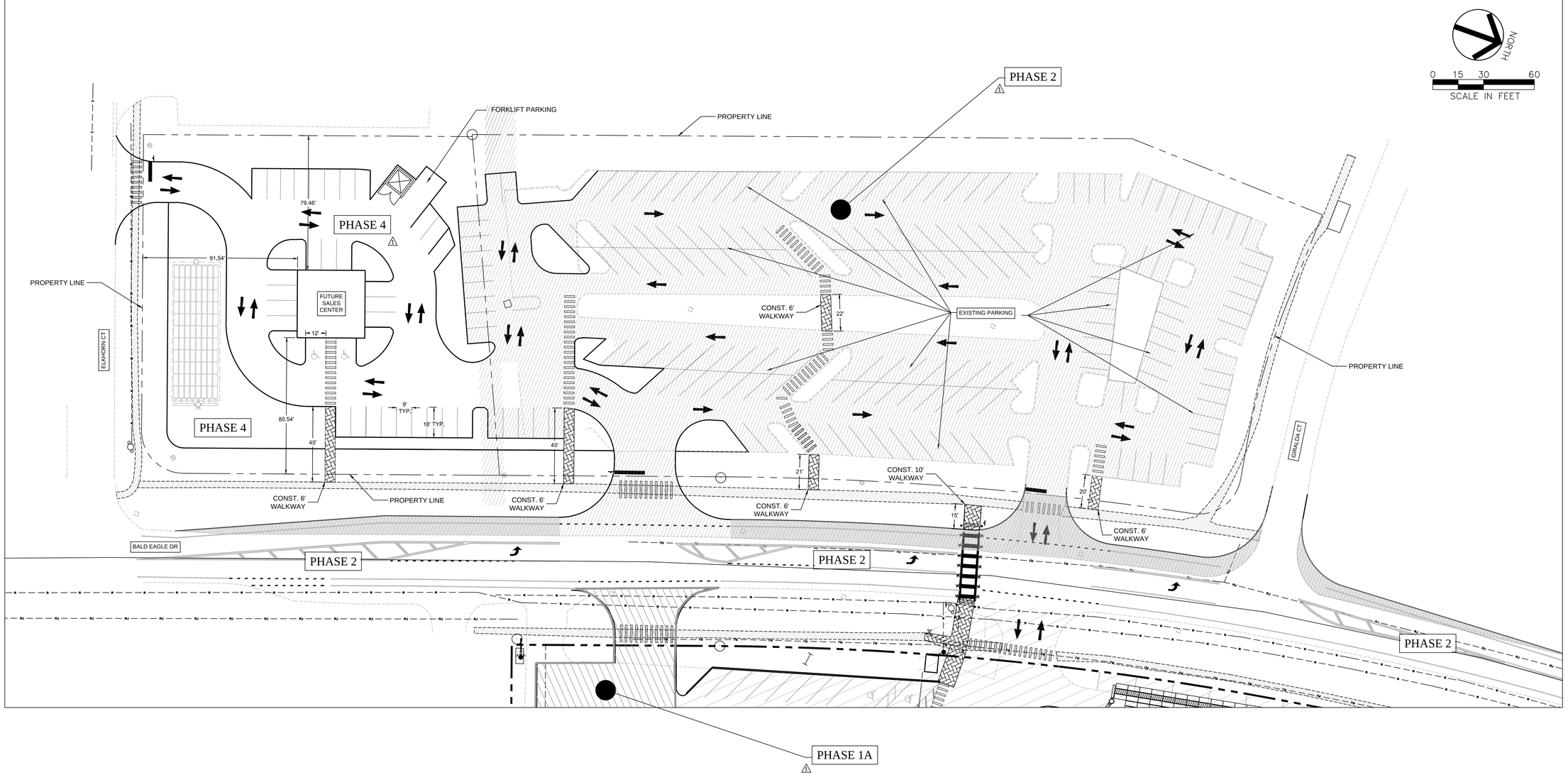
PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

EXISTING CONDITIONS - WEST

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-8



NOTES:

1. LANDSCAPING, LIGHTING, AND CITY OF MARCO UTILITY DETAILS ARE PROVIDED AS SEPARATE ATTACHED PLAN SETS. SEE COVER SHEET FOR DETAILS.

REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

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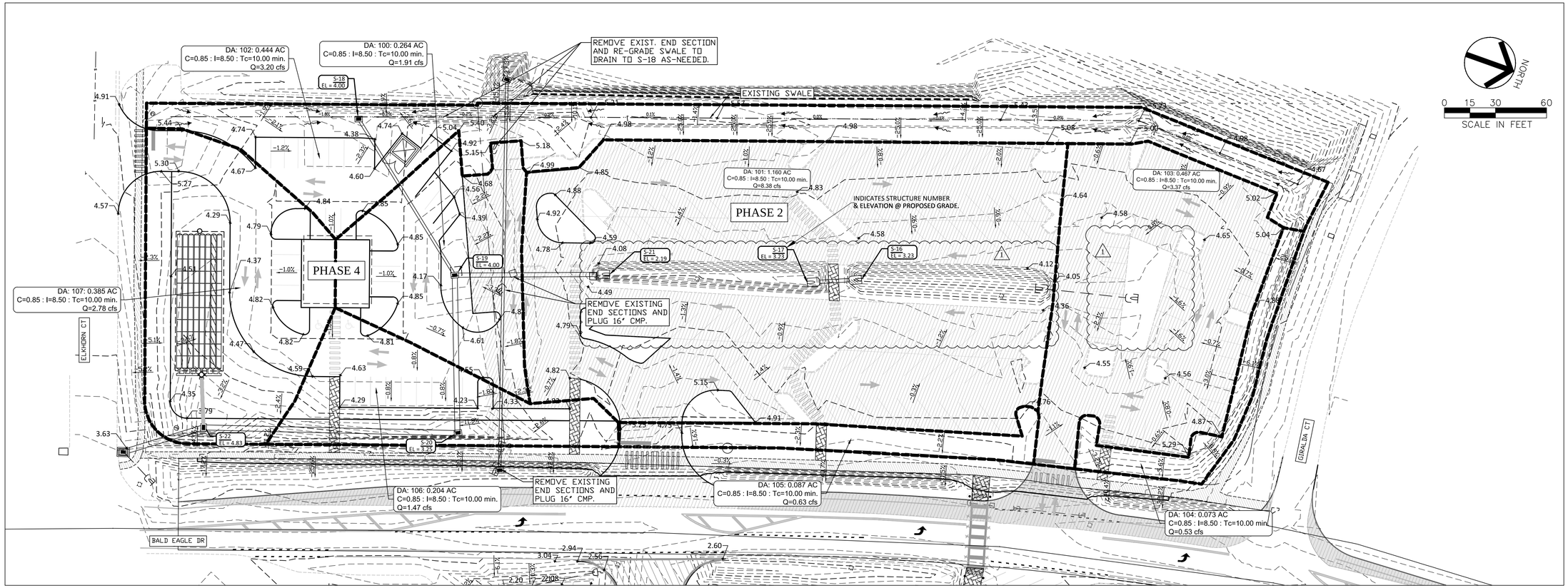
PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

MASTER SITE PLAN - WEST

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-9



Water Quality Treatment Calculations
Basin areas and flows

Area #	Acres	Description	Treatment for 0.75" Volume (cf)		25 Year design flows C Constant	i (in/hr)	Q = CiA (cfs)	Discharge
100	0.264	Parking lot	718.7		0.85	8.5	1.91	S-19
101	1.16	Parking lot	3158.1		0.85	8.5	8.38	S-21
102	0.44	Parking/landscape	1197.9		0.70	8.5	2.62	S-18
103	0.467	Parking lot	1271.4		0.85	8.5	3.37	ES-1
104	0.073	Outside basin	0.0	N/A	0.60	8.5	0.37	Overland to Bald Eagle Drive
105	0.087	Outside basin	0.0	N/A	0.60	8.5	0.44	Overland to Bald Eagle Drive
106	0.204	Parking lot	555.4		0.80	8.5	1.39	S-20
107	0.385	Parking lot	1048.2		0.80	8.5	2.62	S-22
Total in Basin			**7950**	cf				

Treatment areas and capacity
Swale Treatment

Area #	Acres	Description	Area (sf)	Depth(ft)	Vol (cf)	
DA 101	0	Retention	730	1.5	1095	
DA 103	0	Retention	2850	1.5	4275	
					5370	Total swale volume

Infiltration Treatment
Remaining Vol **2580** cf

Infiltration cross-section

Elevation	
Finish floor	4.50 NAVD
Mean High water	0.38 NAVD
Available height	4.12 NAVD
Min Top cover	21.00 In
Min Bottom cover	12.00 In
Chamber height	16.44 In

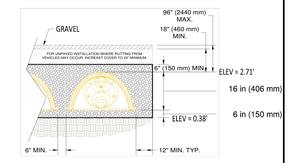
High capacity H-20 is 16" high
Bedded this yields a rate of **0.96 cf/sf**

StormTech® Detention • Retention • Recharge
Subsurface Stormwater Management™

Project: Rose Marina - East Basin
By: Hagan Engineering
Point of Contact: Chris Hagan
Date: 10/9/2014
Units: Imperial

System Requirements

Required Storage Volume	2,580	CF
Select Stormtech Chamber System	SC-310	
Stone Porosity (Industry Standard = 40%)	40%	
Stone Foundation Depth	9	Inches
Storage Volume Per Chamber	31.00	CF
Avg Cover over Chambers (18 in min. & 96 in max.)	16	Inches
Number of Chambers Required -	**84**	
Approximate Bed Size Required	2,210	SF
Tons of Stone Required	203	Tons
Volume of Excavation	273	CY
Area of Filter Fabric	631	SY
# of End Caps Required	16	Each
Length of ISOLATOR ROW	78.32	FT
ISOLATOR FABRIC	35	SY



Is the limiting dimension for the bed the width or length? width

Controlled by Width (Rows)		Controlled by Length	
Width	30 FT	Length	22 FT
# of Chambers Long	11 EA	# of Chambers long	- EA
# of Rows	8 EA	# of Rows	- EA
Actual Length	81.92 FT	Actual Length	- FT
Actual Width	28.14 FT	Actual Width	- FT
4 of the chambers rows will contain only	10 chambers		

Material Estimate

To use this sheet: Please enter data into the blue and green cells. If switching between Imperial and Metric units please check the correct units and data is input in the green cells.

Please call StormTech @ 888-892-2694 for conceptual cost estimates.

www.stormtech.com | 20 Beaver Road | Suite 104 | Wethersfield | Connecticut | 06109 | 888.892.2694 | fax 866.328.8401

REVISIONS		
1	REVISED PER CITY OF MARCO ISLAND COMMENTS	4-30-2015

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

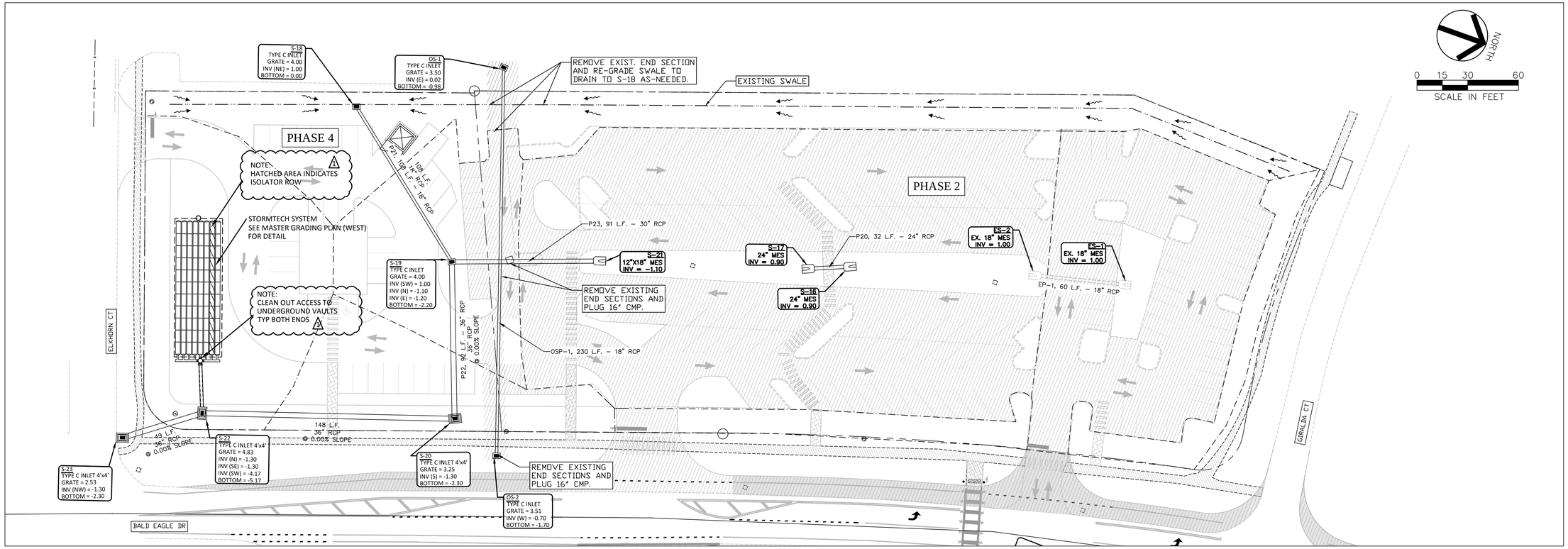
HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

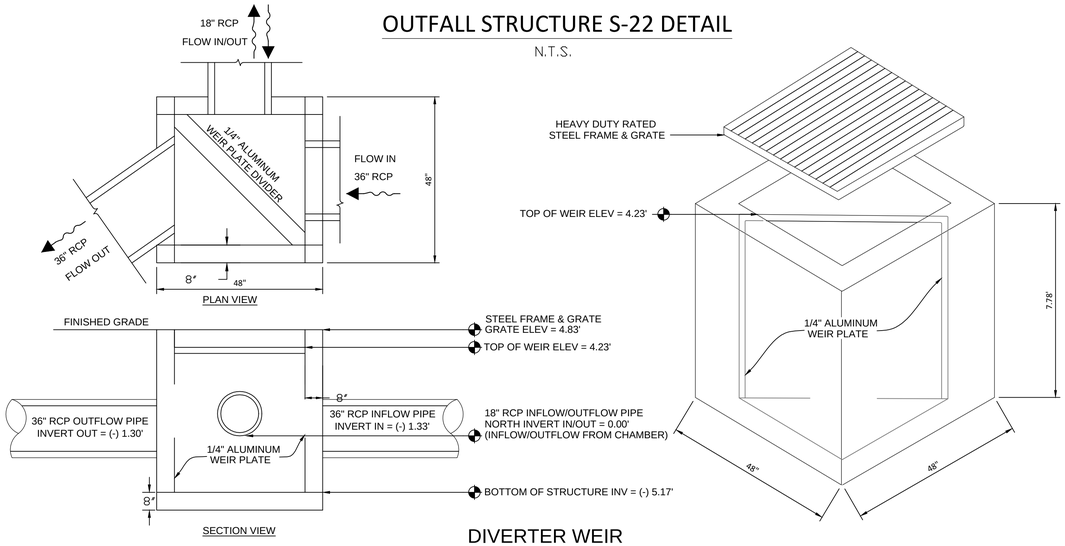
MASTER GRADING PLAN - WEST

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-10



OUTFALL STRUCTURE S-22 DETAIL

N.T.S.



DIVERTER WEIR
48" X 48" MODIFIED INLET W \ STEEL FRAME & GRATE

CHURCH	PIPE			DRAINAGE BASIN				PIPE CONDITIONS							FLOW HYDRAULICS					HYDRAULIC GRADIENT		
	Pipe	From	To	FROM STR.	i (Rainfall)	C (Runoff Coefficie	Q (Increme	LENGTH	DIA.	TYPE	n	P	A	Rh	Q (cum.)	V (Q/A)	FRICTIO N LOSS	ENT/EXIT LOSS	TOTAL HEAD	DOWNSTREAM ELEVATION	UPSTREAM ELEVATION	UPSTREAM INLET
Units				Acres	in/hr	Unitless	CFS	ft	in		Unitless	ft	sf	Unitless	CFS	FT/S	FT	FT	FT			
Formula							Q=CiA					P=πD	A=πr^2	Rh=A/P	Sum Q	Sum Q/A						
Site Conditions					8.5	0.8						Submerged Pipe										
	CHURCH	OUTLET		1.5	8.5	0.8	10.20													1.50	3.03	3.50
	OSP -1							230	18.0	RCP	0.012	4.71	1.77	0.38	10.20	5.77	1.48	0.05	1.53			
																				1.50		

West Side Run	PIPE			DRAINAGE BASIN				PIPE CONDITIONS							FLOW HYDRAULICS					HYDRAULIC GRADIENT		
	Pipe	From	To	FROM STR.	i (Rainfall)	C (Runoff Coefficie	Q (Increme	LENGTH	DIA.	TYPE	n	P	A	Rh	Q (cum.)	V (Q/A)	FRICTIO N LOSS	ENT/EXIT LOSS	TOTAL HEAD	DOWNSTREAM ELEVATION	UPSTREAM ELEVATION	UPSTREAM INLET
Units				Acres	in/hr	Unitless	CFS	ft	in		Unitless	ft	sf	Unitless	CFS	FT/S	FT	FT	FT			
Formula							Q=CiA					P=πD	A=πr^2	Rh=A/P	Sum Q	Sum Q/A						
Site Conditions					8.5	VARIES						Submerged Pipe										
	ES-1	ES-2		0.467	8.5	0.86	3.41													3.35	3.44	3.20
	EP-1							60	18.0	RCP	0.012	4.71	1.77	0.38	3.41	1.93	0.09	0.01	0.09			
	S-16	S-17		0.47	8.5	0.82	3.28													3.26	3.35	3.20
	P-20							23	24.0	RCP	0.012	6.28	3.14	0.50	6.69	2.13	0.08	0.01	0.09			
	S-21	S-19		0.69	8.5	0.87	5.10													3.27	3.42	3.20
	P-23							85	30.0	RCP	0.012	7.85	4.91	0.63	11.79	2.40	0.13	0.01	0.14			
	S-18	S-19		0.44	8.5	0.34	1.27													3.26	3.27	3.40
	P-21							108	18.0	RCP	0.012	4.71	1.77	0.38	1.27	0.72	0.02	0.00	0.02			
	S-19	S-20		0.26	8.5	0.85	1.88													3.15	3.26	3.40
	P-22							92	36.0	RCP	0.012	9.42	7.07	0.75	14.94	2.11	0.10	0.01	0.11			
	S-20	S-22		0.2	8.5	0.80	1.36													3.00	3.15	3.54
	P-24							141	36.0	RCP	0.012	9.42	7.07	0.75	16.30	2.31	0.14	0.01	0.15			
	S-22	OFF		0.385	8.5	0.80	2.62													3.00	3.15	3.21
	P-25							54	36.0	RCP	0.012	9.42	7.07	0.75	18.92	2.68	0.14	0.01	0.15	1.50	1.65	

REVISIONS

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

HAGAN ENGINEERING
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Naples, Florida 34102
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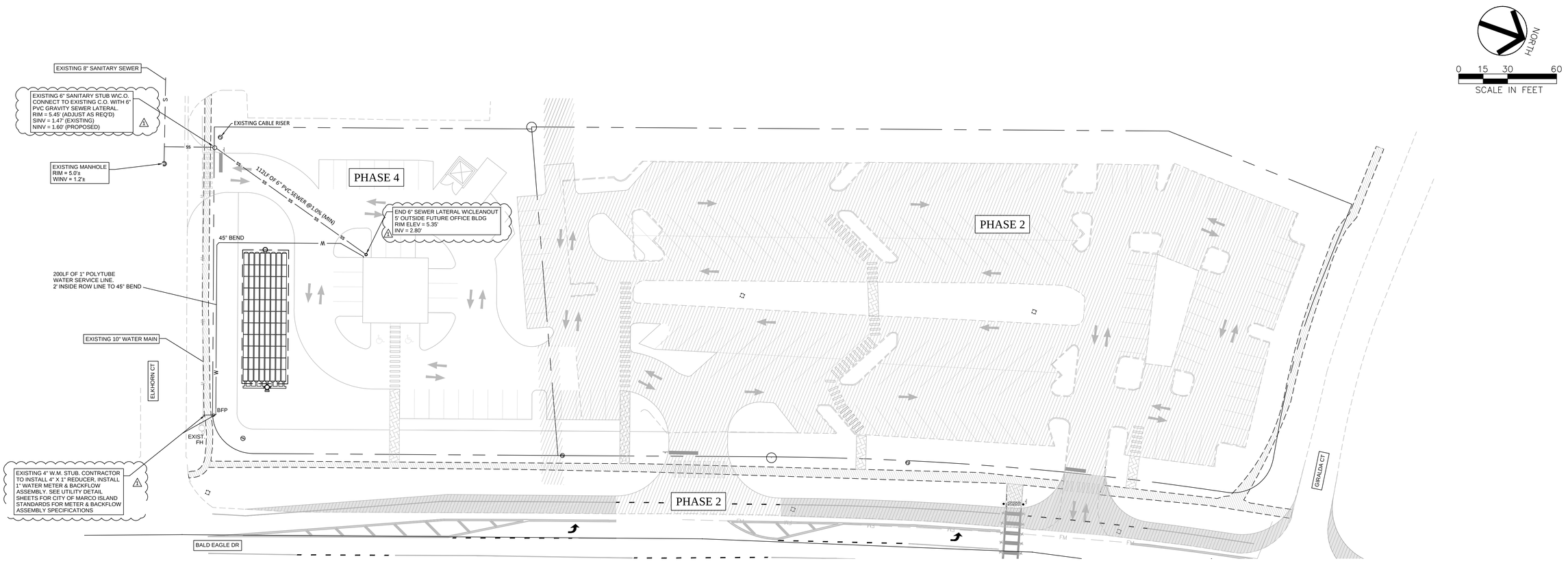
PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

MASTER DRAINAGE PLAN - WEST

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-11



⚠ NOTE:
ALL EXISTING METERS, METER BOXES, VALVE RISERS, CLEAN OUTS, HYDRANTS WILL BE ADJUSTED TO FINAL GRADE. THIS MAY REQUIRE TRAFFIC RATED METER BOX LIDS AND CLEAN OUT COVERS. AREAS WHERE ROAD CROSSWALKS, SIDEWALKS, DRIVEWAYS, MAY BE IN CONFLICT WITH THE CONSTRUCTION OF MAY REQUIRE DEFLECTION OR RELOCATION OF ALL MAINS AND SERVICES.

REVISIONS		
⚠	REVISED PER CITY OF MARCO ISLAND	5-4-2015

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

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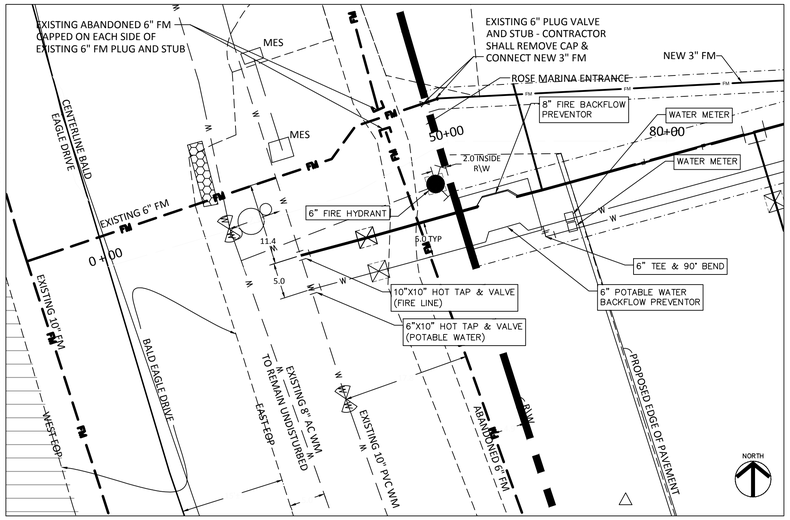
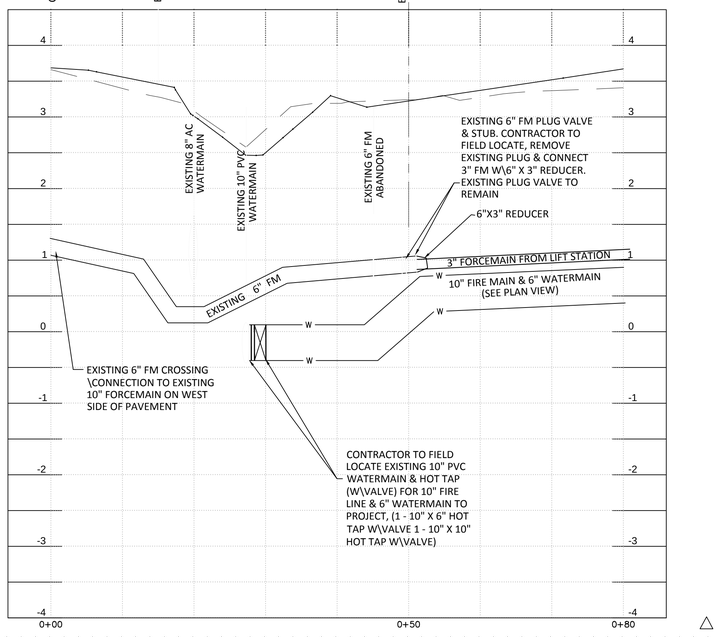
MASTER UTILITY PLAN - WEST

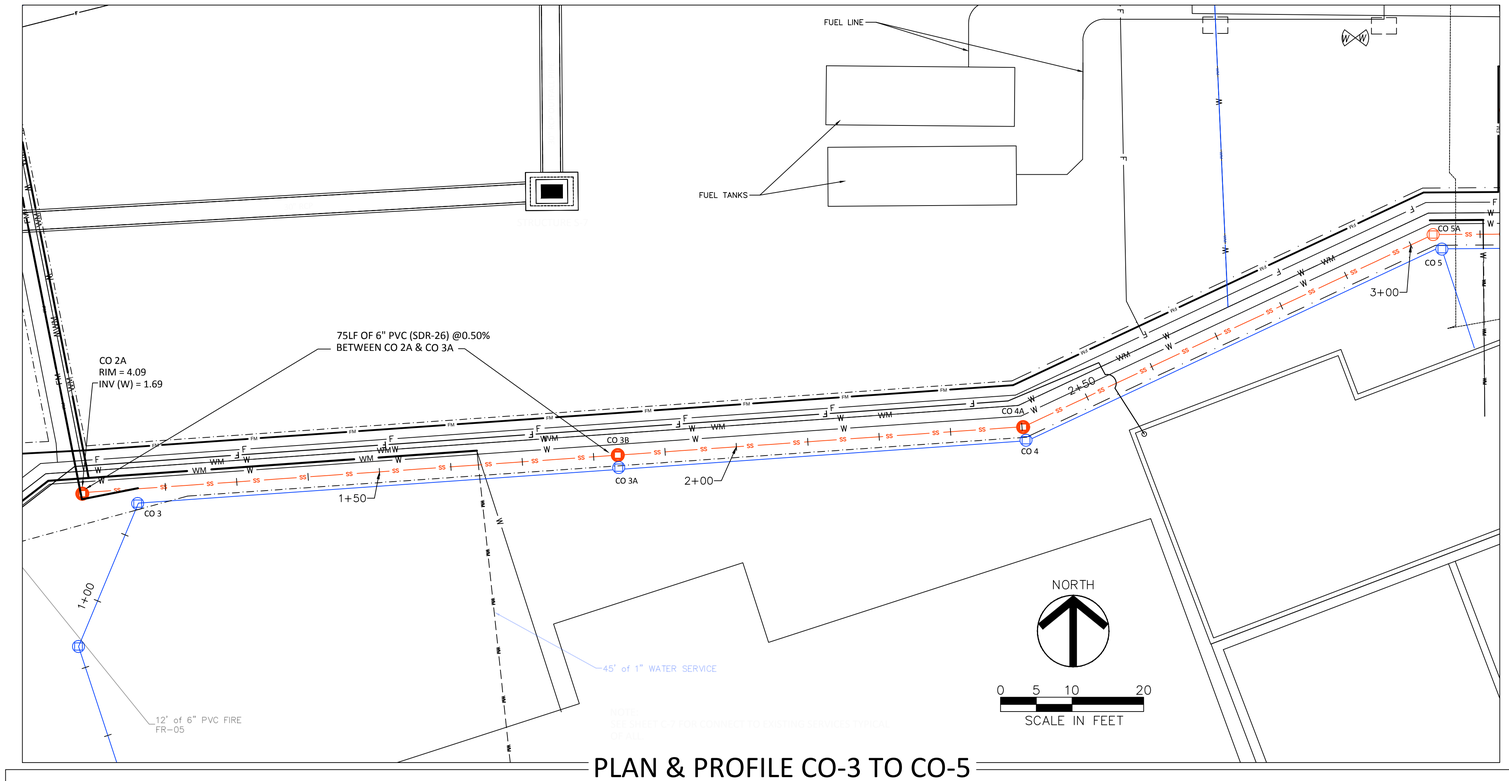
DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-12

NOTE:
EXISTING UTILITY INFORMATION SHOWN PER CITY OF MARCO ISLAND NORTH MARCO SEWER DISTRICT WASTEWATER COLLECTION SYSTEM EXPANSION CONTRACT NO. 07-008 RECORD DRAWINGS PREPARED BY BOYLE ENGINEERING CORPORATION, DATED: 2/20/09.

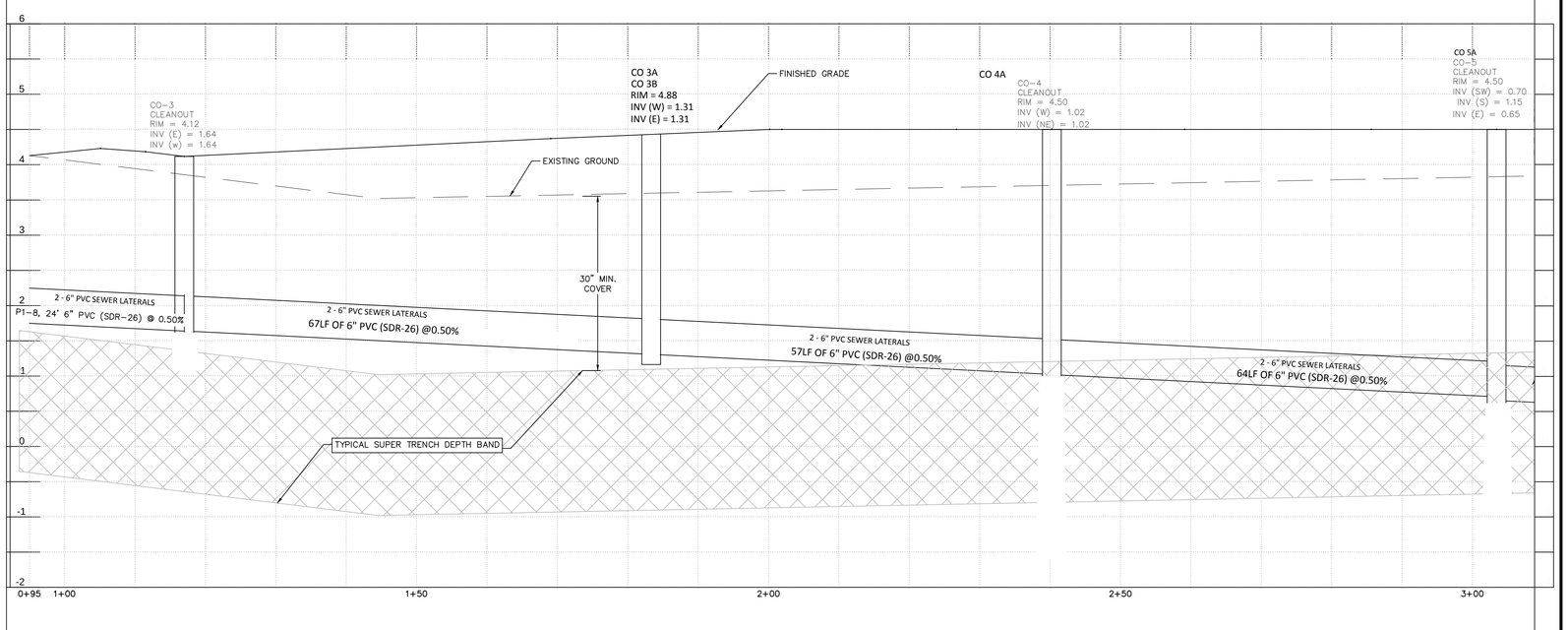


PLAN & PROFILE ENTRANCE





PLAN & PROFILE CO-3 TO CO-5



REVISIONS

△		

ROSE MARINA
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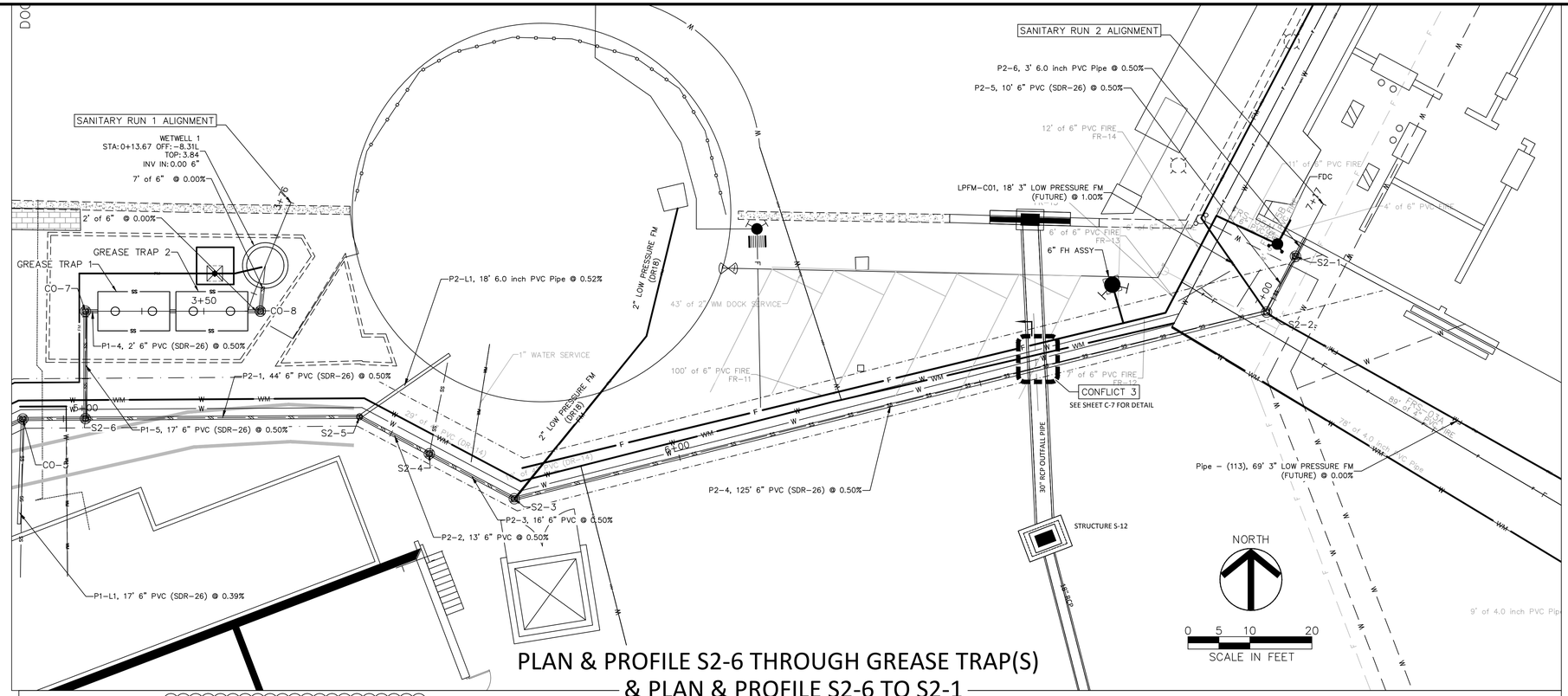
DATE:

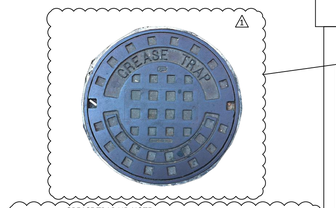
PLAN AND PROFILE

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-13

⚠ NOTE:
WATER SERVICE FOR HOSE BIBS SHALL BE FROM POTABLE WATER MAIN.

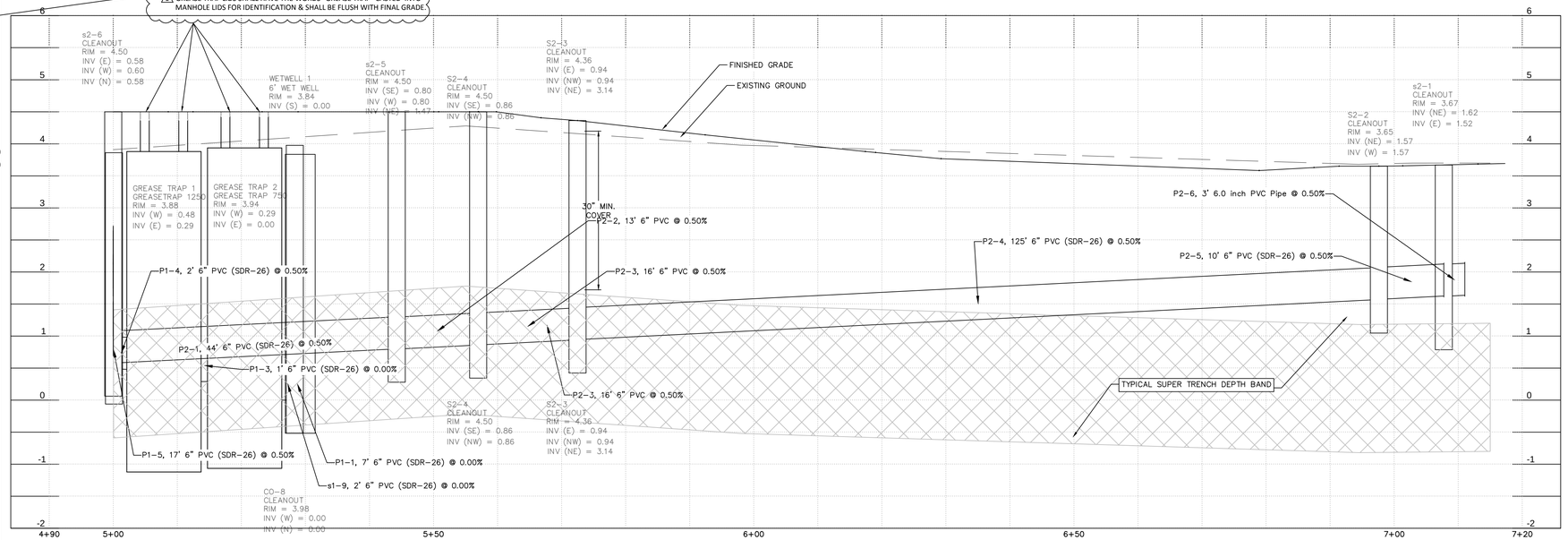


PLAN & PROFILE S2-6 THROUGH GREASE TRAP(S) & PLAN & PROFILE S2-6 TO S2-1



⚠ GREASE TRAP LID NOTE:
GREASE TRAP LIDS MANHOLE POSITIONS SHALL ALLOW CLEAR VIEW OF PIPING SYSTEM OF INFLOW, OUTFLOW & BAFFLE WALL.

⚠ GREASE TRAP NOTE:
GREASE TRAP LIDS SHALL HAVE THE WORDS "GREASE TRAP" CASTED INTO MANHOLE LIDS FOR IDENTIFICATION & SHALL BE FLUSH WITH FINAL GRADE.



REVISIONS		
⚠	REVISED PER CITY OF MARCO ISLAND	5-4-2015

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PLAN AND PROFILE

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-14

PUMP STATION CALCULATIONS

Rose Marina - Sewage Flow Calculations

The project is the existing Rose Marina that is in the process of being renovated. The project is divided into two parcels for development. On the west side of Bald Eagle Drive there will be parking lot renovations and construction of a new boat sales facility. The new sales facility will connect to existing water and sewer stub outs on Elkhorn Drive with the appropriate backflow protection on the water service and sanitary sewer service connection. The east side is an existing marina that will be going under significant renovation and remodeling. This renovation and remodeling will include increasing the onsite water and sewer demand. The following calculations are provided to outline the changes in the proposed sewage collection and pump station force main design. The east side renovations include the design of the new master pump station and grease trap. Currently the facility includes two boat pump outs, a small grinder pump that moves sewage to the master pump station and one master pump station that is tied into the City force main. All of this is to be replaced with a centralized master pump station. The new sewage collection system is all designed to route the flow through a grease trap before being introduced to the master pump station. From that master pump station it will be pumped out to the City's force main.

In order to support the design calculations for the pump station and grease trap we estimate the eastern sewage flow:

- Marco Princess: 100 dinner passengers @ 5 GPD/passenger = 500 GPD (avg. daily)
  15 GPM is Max. pump flow for the peak hour.
  Confirm Princess tank is 250 Gal pumped out approximately 50 Gal/day for an average.
- Jack's Lookout: 38 seat restaurant @ 30 GPD/seat = 1,140 GPD (avg. daily). Peak hour (PF=4.0) = 3.17 GPM (peak hour) Max. pump flow estimated at 20 GPM
- T-Dock Pump Out: 15 boats/day avg. @ 10 Gal/boat = 150 GPD (avg. daily) Peak hour is Max. pump flow of 15 GPM
- Ship Store: 8,365 SF @ 0.10 GPD/SF + 70% of 106 slips @ 40 GPD/slip = 3,804 GPD.
  Peak hour (PF 4.0) = 10.6 GPM
- Round Building: 1,369 SF @ 0.20 GPD/SF + 30% of 106 slips @ 40 GPD/slip = 1,546 GPD.
  Peak hour (PF 4.0) = 4.3 GPM
- New Offices: 5,850 SF @ 0.20 GPD/SF = 1,170 GPD (avg. daily) Peak hour (PF 4.0) = 3.25 GPM
- Service Center: 4,940 SF of Boater's Lounge @ 40 visitors/day @ 10 GPD/visitor = 400 GPD plus15 Service Center employees @ 20 GPD each = 300 GPD for a total of 700 GPD (avg. daily) Peak hour (PF 4.0) = 3.40 GPM

The peak flows for the project are going to include the two pumped flows on top of the peak hour flows from each of the listed sources. This runs us to a grand total of 54.72 gallons per minute being the peak hour flow. This also leaves us with an average daily flow of 9,010 gallons per day. The pump station will need to be designed to accommodate both these conditions.

Grease trap calculations

Currently the system does not have a grease trap. Marco Island has been dealing with grease issues at the sewage treatment plant and has requested that the site be retrofitted with new grease traps to accommodate any grease sources. Currently there is only grease introduced into the sewage collection system at Jack's Lookout and in the Marco Princess pump out. Based on this we have made the following grease trap calculations:

- Grease Trap: S x GS x Hr/12 x LF + M(GM)LF
- Jack's - (38 seats)(30 GPD/seat)(11 Hr/12)(1.25) = 1,306 gal
- Princess - (100 meals/day)(5 GPD/meal)(1.0) = 500 gal
- Total = 1,806 Gallons

Based on City ordinance we will provide one 1,250 gallon grease trap in series with a 750 gallon grease trap to provide 2,000 gallons of grease trap volume.

Should an additional restaurant or other use be added a grease trap will be sized and located in between the source and the pump station to ensure that grease is removed from the network.

Pump Station Design

Discharge is via 350 feet of 3" force main. It ties into an existing force main on Bald Eagle Drive. The existing force main has a design pressure of 65 psi (150 ft) at the connection point. It is designed to accommodate an average daily flow of 9,010 gpd with a peak hour flow of 54.72 gpm.

The pump will be set at Elevation -4.0 NAVD. The force main high point will be at Elevation +1.0 NAVD. The static head result is 5.0 feet.

The peak flow of 54.72 gpm yields a friction head loss of 2.5 feet. This generates 2.5 fps in the 3" force main, which is above the 2 fps minimum.

Total head is static + friction + pressure = 5.0 + 2.5 + 150 = 157.5 feet of head.

The operating point for the pump station needs to provide 55 gpm at a total head of 157.5 feet.

Pump Type		NP3127	FLYGT
Impeller		247	
Pump Horsepower		11	HP
Pump Voltage		200	Volts
Pump Phase		3	Phase
Pump Curve (attached)			
Design Pumping			
Rate (Qdp)	60 gpm at 158 TDH	QAVG = 6.3 gpm	

Pump Run and Cycle Times (6' Wetwell)

1. Minimum Pump Run Time (min. 2.5 minutes)
2. Tmin = Volume of Wet Well / Design Pumping Rate - Tmin = 7.1 minutes
3. Pumping Station Cycle Time At Average Flow Conditions

   The time for one pump cycle under average flow conditions (in minutes). (minimum 2 cycles / hour or 30 minutes / cycle)
   Tavg = [Vavg / (Qdp - Qavg)] + [Vavg / Qavg]
   Tavg = 75 minutes/cycle or 0.8 cycles/hour
4. Pumping Station Cycle Time At Intermittent Peak Flow Conditions

   Time for one pump cycle under peak hour flow (in minutes) (maximum 10 cycles/hour of 6 minutes/cycle)
   Tpeak = [Vavg/Qdp] + [Vavg/Qpeak]
   Tpeak = 14.7 minutes/cycle or 4.1 cycles/hour

Wet Well Design	
Inside Wet Well Diameter	6 feet
Wall Thickness	8 inches
Slab Diameter	8.7 feet
Slab Thickness (1 ft typical)	1.0 feet
Finished Grade (use actual slab elevation)	+3.5 NAVD
Influent Elevation	+0.00 NAVD
Wet Well Interior Cross-Sectional Area	28.27 square ft
Storage Depth (2 ft min)	2.0 feet
Actual Storage Provided	423 gallons
High Water Alarm*	-0.5 NAVD
Lag On*	-1.0 NAVD
Lead On*	-1.5 NAVD
Pump Off*	-2.0 NAVD
Bottom Elevation*	-4.0 NAVD

Flotation Calculations

1. Force Up on Cylinder

   Total Wetwell Cross-Sectional Area x (Finished Grade - Bottom Elevation) x 62.4/lb/cubic ft
   [where Total Wetwell Cross-Sectional Area= pi x ½ (inside wetwell diameter + 2 x wall thickness/12in/ft)^2] = 19,803 lb up
2. Force Up on Slab

   pi/4 x (Slab Diameter^2) x Slab Thickness x 62.4 lb/cubic ft = 3,710 lb up
3. Total Buoyancy Force

   Force Up on Cylinder + Force Up on Slab = 23,513 lb up
4. Cylinder Weight (does not include top slab)

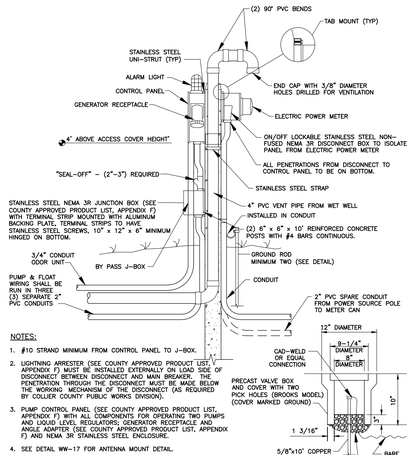
   (Total Wetwell Cross-Sectional Area - Inside Wetwell Cross-sectional Area) x (Finished Grade at Bottom Elevation - Top Slab Thickness) x 150 lb/cf
   = 15,790 lb down
5. Slab Weight

   pi/4 x (Slab Diameter^2) x Slab Thickness x 150 lb/cf
   = 8,917 lb down
6. Soil Overburden (Does not consider top slab)

   (Area of Slab - Total Cross-Sectional Wetwell Area) x (Finished Grade - Bottom Elevation - Top Slab Thickness) x 37.6 lb/cubic ft
   = 4,188 lb down
7. Total Downward Force

   Cylinder Weight + Slab Weight + Soil Overburden = 28,895 lb down
8. Net Force

   Total Downward Force - Total Buoyancy Force = 5,382 lb down

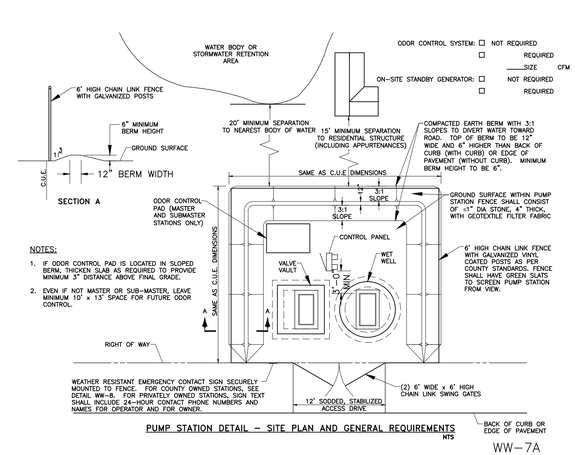


NOTES:

1. #10 STRAND MINIMUM FROM CONTROL PANEL TO J-BOX.
2. LIGHTNING ARRESTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) MUST BE INSTALLED EXTERNALLY ON LOAD SIDE OF DISCONNECT BUT INTERNAL TO CONTROL AND MAIN BREAKS. THE GROUNDING CONNECTION TO GROUND ROD MUST BE MADE BELOW THE WORKING MECHANISM OF THE DISCONNECT (AS REQUIRED BY COLLIER COUNTY PUBLIC WORKS DIVISION).
3. PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTER (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) AND NEMA 3R STAINLESS STEEL ENCLOSURE.
4. SEE DETAIL WW-17 FOR ANTENNA MOUNT DETAIL.
5. GROUND WIRE FROM SERVICE SHALL BE INSTALLED IN CONDUIT.

PUMPING STATION CONTROL PANEL DETAIL
NTS

WW-9
REVISED: AUGUST 2008

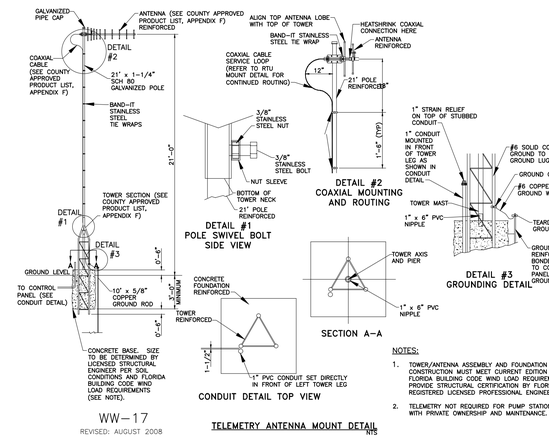


NOTES:

1. IF ODOR CONTROL PAD IS LOCATED IN SLOPED BERM, THICKEN SLAB AS REQUIRED TO PROVIDE MINIMUM 3" DISTANCE ABOVE FINAL GRADE.
2. EVEN IF NOT MASTER OR SUB-MASTER, LEAVE MINIMUM 10' x 13' SPACE FOR FUTURE ODOR CONTROL.

PUMP STATION DETAIL – SITE PLAN AND GENERAL REQUIREMENTS
NTS

WW-7A
REVISED: AUGUST 2009

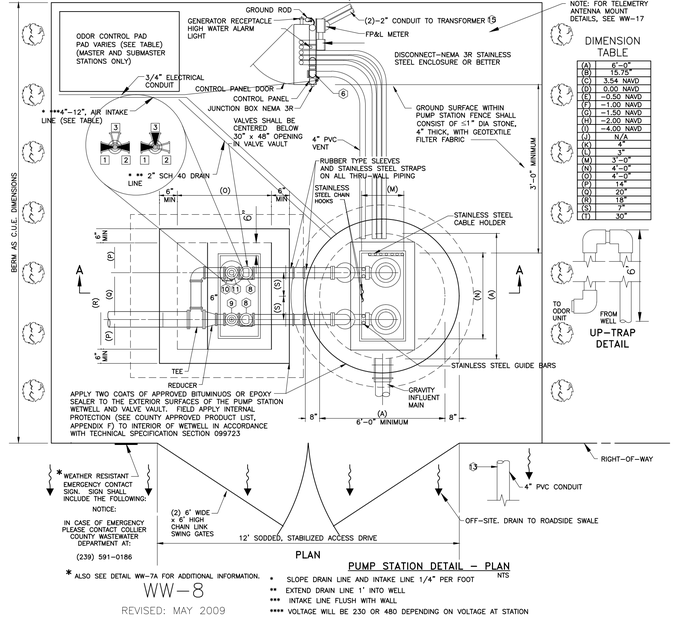


NOTES:

1. TOWER/ANTENNA ASSEMBLY AND FOUNDATION CONSTRUCTION MUST MEET CURRENT EDITION FLORIDA BUILDING CODE WIND LOAD REQUIREMENTS. PROVIDE STRUCTURAL CERTIFICATION BY FLORIDA REGISTERED LICENSED PROFESSIONAL ENGINEER.
2. TELEMETRY NOT REQUIRED FOR PUMP STATIONS WITH PRIVATE OWNERSHIP AND MAINTENANCE.

TELEMETRY ANTENNA MOUNT DETAIL
NTS

WW-17
REVISED: AUGUST 2008



PLAN

PUMP STATION DETAIL – PLAN
NTS

* ALSO SEE DETAIL WW-7A FOR ADDITIONAL INFORMATION.

WW-8
REVISED: MAY 2009

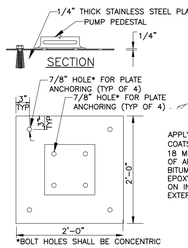
* SLOPE DRAIN LINE AND INTAKE LINE 1/4" PER FOOT
** EXTEND DRAIN LINE 1' INTO WELL
*** INTAKE LINE FLUSH WITH WALL
**** VOLTAGE WILL BE 230 OR 480 DEPENDING ON VOLTAGE AT STATION

EQUIPMENT SPECIFICATIONS

MARK	QTY	
1	2	DUPLEX 4" INCH DISCHARGE SUBMERSIBLE SEWAGE PUMPS EQUIPPED WITH 230/460 VOLT MOTORS. EACH PUMP SHALL HAVE THE CAPACITY AND RANGE SET FORTH ON THIS SHEET AS THE "REQUIRED PUMP PERFORMANCE CURVE" OR COUNTY APPROVED EQUAL. PUMP PERFORMANCE DATA WILL BE REQUIRED AS SET FORTH IN THE SPECIFICATIONS. CONTRACTOR SHALL VERIFY LOCAL VOLTAGE PRIOR TO PLACEMENT OF PUMP ORDER.
2	4	LIQUID LEVEL REGULATORS (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), EACH PROVIDED WITH A MINIMUM OF 40 FEET OF ELECTRICAL CABLE.
3	1	ACCESS FRAME (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH HINGED AND HASP EQUIPPED COVER, TWO UPPER GUIDE HOLDERS, CHAIN HOLDERS AND CABLE HOLDERS. ACCESS FRAMES SHALL BE ALUMINUM, H-20 LOADING WITH OPTIONS, COLLIER COUNTY STANDARD.
4	1	ACCESS FRAME (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH HINGED AND HASP EQUIPPED COVER. ACCESS FRAME SHALL BE ALUMINUM, H-20 LOADING WITH OPTIONS, COLLIER COUNTY STANDARD. ACCESS FRAME SHALL BE ALUMINUM, H-20 LOADING WITH OPTIONS, COLLIER COUNTY STANDARD.
5	1	PUMP CONTROL PANEL (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) WITH ALL COMPONENTS FOR OPERATING TWO PUMPS AND LIQUID LEVEL REGULATORS; GENERATOR RECEPTACLE AND ANGLE ADAPTOR (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), AND NEMA 3R STAINLESS STEEL ENCLOSURE.
6	1	4" PVC VENT PIPE WITH 90° ELBOWS AND END CAP WITH 3/8" DIAMETER DRILLED HOLES FOR VENTILATION.
7	1	WETWELL: REINFORCED CONCRETE PIPE CONFORMING TO TABLE II, WALL B OF ASTM C-76, O-RING JOINTS SHALL CONFORM TO ASTM C-443 OR COUNTY APPROVED EQUAL WETWELL CONSTRUCTION: APPLY TWO COATS OF APPROVED BITUMINOUS OR EPOXY SEALER ON EXTERIOR SURFACES OF THE WELL.
8	2	CHECK VALVE, (K") IRON BODY, FLANGED, BRONZE MOUNTED WITH BRONZE FACED DISC. WEIGHT AND LEVER TYPE HORIZONTAL SWING CHECK VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F).
9	1	PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F) (K") NON-LUBRICATED, NICKEL IRON, NEOPRENE COATED PLUG, 100% OPENING VALVE AND SHALL BE COMPLETE WITH WRENCH.
10	1	3-WAY PLUG VALVE (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), (K") – 3 PORT, FLANGED, LEVEL ACTIVATED. VALVE SHALL BE MOUNTED SO THAT THE THIRD PORT IS ON TOP.
11	1	3" QUICK-COUPLING UNIT COMPLETE. CONNECT TO THIRD PORT OF 3-WAY VALVE WITH A BRONZE MALE THREAD ADAPTOR AND 2-HANDLE BRONZE LOCKING CAP.
12	3	ALL PUMP STATION INTERIORS SHALL HAVE INTERNAL PROTECTION (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX S) IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS SECTION 099723.
13	1	IN CASES WHERE A PUMP STATION REQUIRES AN ODOR CONTROL UNIT AND IS ON THE OPPOSITE SIDE OF THE STREET FROM A WATER MAIN, A 4" PVC CONDUIT SHALL BE INSTALLED FROM THE NEAREST LOT CORNER ON OPPOSITE OF STREET TO A POINT 5 FOOT BEYOND BACK OF SIDEWALK ON SAME SIDE OF STREET AS PUMP STATION
14	1	CHAIN LINK FENCE SHALL BE NEW, HOT DIP GALVANIZED AFTER FABRICATION WITH MINIMUM 1.2 OUNCES PER SQUARE FOOT OF ZINC COATING. FENCE FABRIC SHALL BE WOVEN #9 GAUGE WIRE WITH 2 INCH DIAMOND MESH AND KNUCKLED SELVAGES. FENCE SHALL HAVE TOP RAIL AND BOTTOM TENSION WIRE WITH TIE CLIPS AT MAX 24 INCH SPACING. FENCE SHALL HAVE WEATHER-TIGHT POST CAPS ON EACH POST. GATE FRAMES SHALL BE CONSTRUCTED OF TUBULAR MEMBERS WELDED AT ALL CORNERS. GATE POSTS SHALL BE EMBEDDED IN CONCRETE (30" MINIMUM EMBEDMENT). INSTALLATION TO MEET ASTM F567.
15	1	ALL FPL TRANSFORMERS SHALL BE INSTALLED OUTSIDE OF PUMP STATION FENCE LINE

ODOR CONTROL UNITS – U.S. FILTER ZABOCS

UNIT	CFM SIZE	INTAKE LINE	PAD SIZE
ZB–8000	1500	12"	10'x13'
ZB–7000	1150	12"	9'x12'
ZB–6000	850	10"	8'x11'
ZB–5000	500	8"	7'x9.5'
ZB–4000	350	6"	6'x8.5'
ZB–42	140	4"	5'x5'
ZB–30	70	4"	4'x4'



ANCHOR PLATE DETAIL

(A)	6'–0"	(K)	4"
(B)	15.75"	(L)	3"
(C)	3.54 NAVD	(M)	3'–0"
(D)	0.00 NAVD	(N)	4'–0"
(E)	–0.50 NAVD	(O)	4'–0"
(F)	–1.00 NAVD	(P)	15"
(G)	–1.50 NAVD	(Q)	20"
(H)	–2.00 NAVD	(R)	18"
(I)	–4.00 NAVD	(S)	10"
(J)	N/A	(T)	30"

EQUIPMENT SPECIFICATIONS

MARK	QTY	
1	2	DUPLEX 4" INCH DISCHARGE SUBMERSIBLE SEWAGE PUMPS EQUIPPED WITH 230/460 VOL MOTORS. EACH PUMP SHALL HAVE THE CAPABILITY AND RANGE SET FORTH ON THIS SHEET AS THE "REQUIRED PUMP PERFORMANCE CURVE" OR COUNTY APPROVED EQUAL. PUMP PERFORMANCE DATA WILL BE REQUIRED AS SET FORTH IN THE SPECIFICATIONS. CONTRACTOR SHALL VERIFY LOCAL VOLTAGE PRIOR TO PLACEMENT OF PUMP ORDER.
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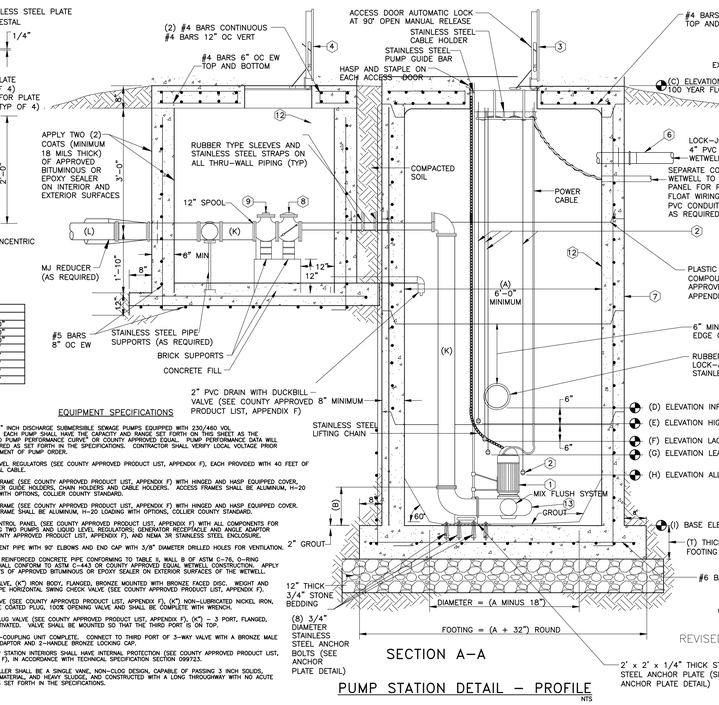
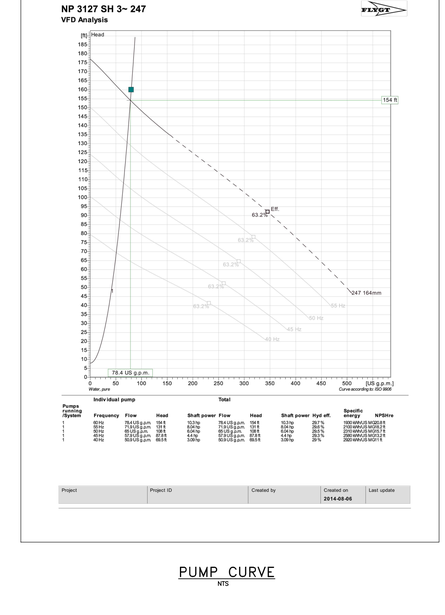
11	1	3" QUICK-COUPLING UNIT COMPLETE. CONNECT TO THIRD PORT OF 3-WAY VALVE WITH A BRONZE MALE THREAD ADAPTOR AND 2-HANDLE BRONZE LOCKING CAP.
12	3	ALL PUMP STATION INTERIORS SHALL HAVE INTERNAL PROTECTION (SEE COUNTY APPROVED PRODUCT LIST, APPENDIX F), IN ACCORDANCE WITH TECHNICAL SPECIFICATION SECTION 099723.
13	1	THE IMPELLER SHALL BE A SINGLE VANE, NON-CLOG DESIGN, CAPABLE OF PASSING 3 INCH SOLIDS, FIBROUS MATERIAL, AND HEAVY SLUDGE, AND CONSTRUCTED WITH A LONG THROUGHWAY WITH NO ACUTE TURNS AS SET FORTH IN THE SPECIFICATIONS.



SECTION A–A

PUMP STATION DETAIL – PROFILE
NTS

WW-7
REVISED: AUGUST 2008



PUMP CURVE
NTS

REVISIONS			

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

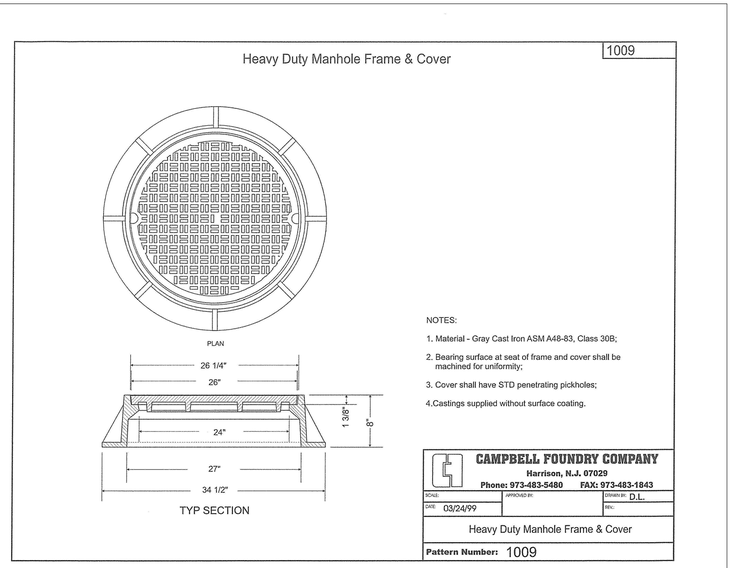
PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474

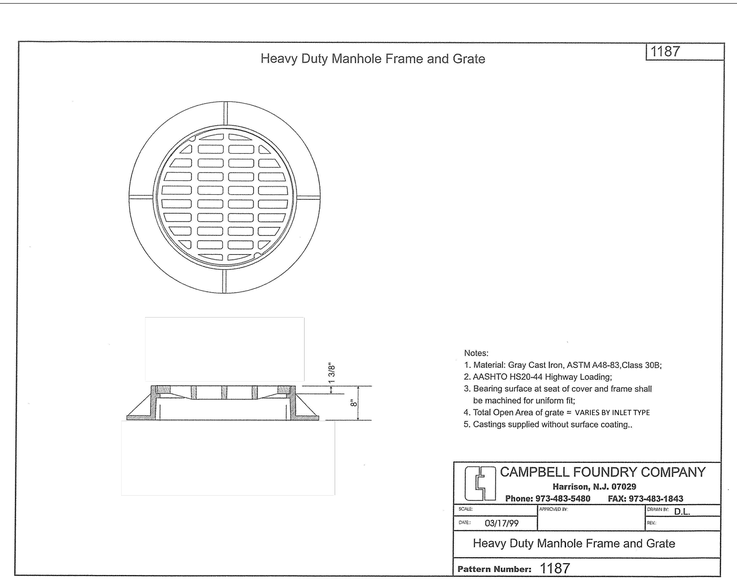
DATE:

PUMP STATION DETAIL SHEET

| DATE |

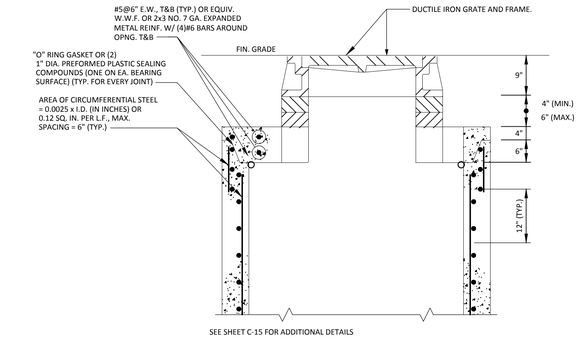


HEAVY DUTY MANHOLE FRAME & COVER
N.T.S

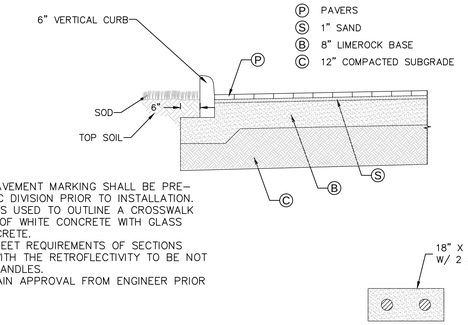


HEAVY DUTY MANHOLE FRAME & GRATE
N.T.S

NOTE:
CONTRACTOR TO INSTALL HEAVY DUTY MANHOLE COVER OR INLET TOP AS SHOWN ON SHEET C-6. USE ABOVE DETAIL(S) OR APPROVED EQUAL.

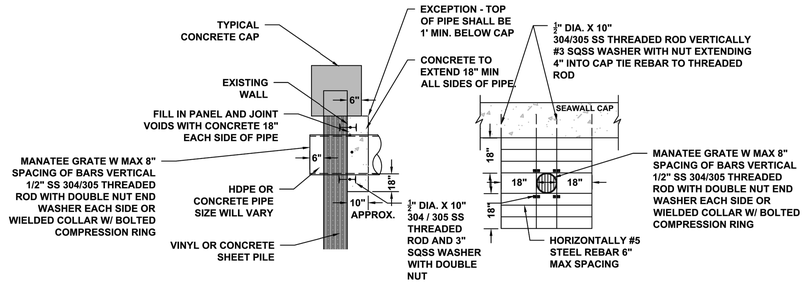


STEEL FRAME & GRATE
N.T.S.



NOTES:
1. PAVERS USED FOR PAVEMENT MARKING SHALL BE PRE-APPROVED BY TRAFFIC DIVISION PRIOR TO INSTALLATION.
2. WHEN HEADER CURB IS USED TO OUTLINE A CROSSWALK THE CURB SHALL BE OF WHITE CONCRETE WITH GLASS BEADS IN WHITE CONCRETE.
3. GLASS SPHERES TO MEET REQUIREMENTS OF SECTIONS 971-1 AND 971-14 WITH THE RETROFLECTIVITY TO BE NOT LESS THAN 300 MINICANDLES.
4. CONTRACTOR TO OBTAIN APPROVAL FROM ENGINEER PRIOR TO INSTALLATION

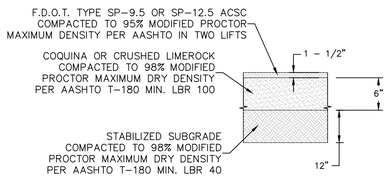
INTERLOCKING PAVER BLOCKS DETAIL
N.T.S



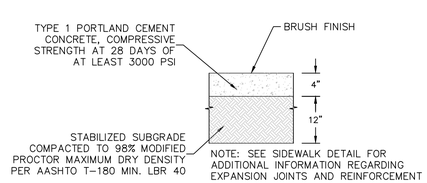
TYPICAL STORM DRAIN COLLAR PIPE THRU WALL

CONCRETE COLLAR SHALL BE 4000 PSI FORM SHALL BE DE-WATERED OR TREME PLACE CONCRETE

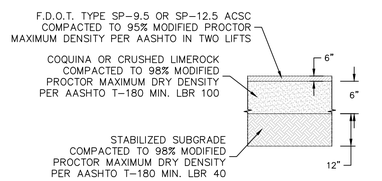
THREADED ROD IN CONCRETE SHALL BE INSTALLED WITH HILTI 150 ADHESIVE EPOXY OR EQUAL PER MANUFACTURE SPECIFICATION



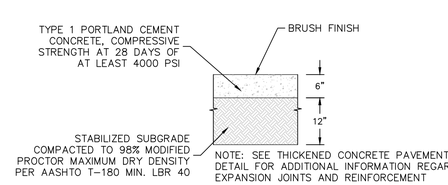
STANDARD DUTY ASPHALT
N.T.S



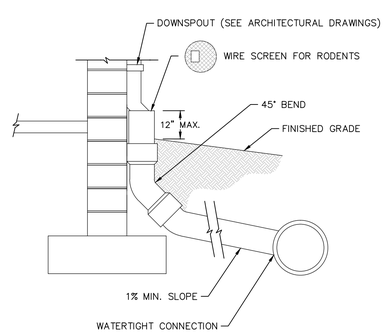
STANDARD DUTY CONCRETE
N.T.S



HEAVY DUTY ASPHALT
N.T.S



HEAVY DUTY CONCRETE
N.T.S



NOTES:
1. PIPE MUST BE SCHEDULE 40 PVC.
2. THE DOWNSPOUT COLLECTOR DRAIN SHALL BE INSTALLED BEFORE THE DOWNSPOUTS ARE INSTALLED ON THE BUILDING. SITEWORK CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK TO AND INCLUDING THE RODENT SCREEN. BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONNECTION AT THE POINT OF THE RODENT SCREEN.

DOWNSPOUT COLLECTOR DETAIL
N.T.S

REVISIONS

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

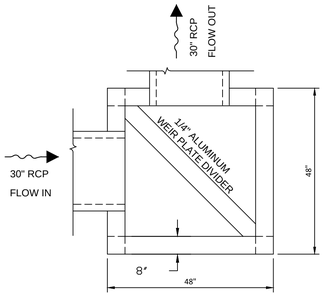
NOTE:
CONTRACTOR TO REFER TO THE GEOTECHNICAL REPORT FOR SITE WORK SPECIFICATIONS.

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

DRAINAGE DETAILS

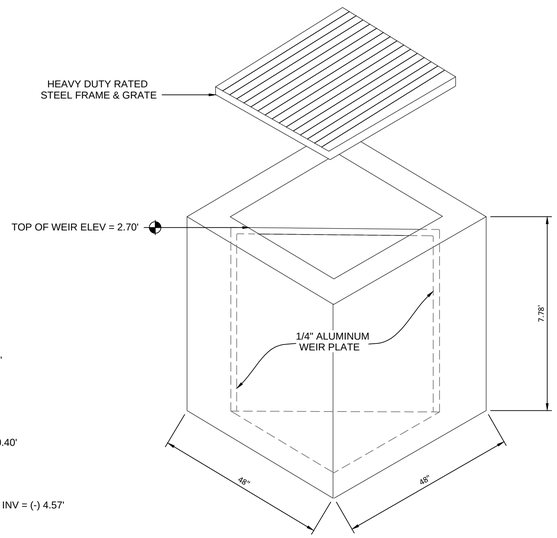
DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-16



PLAN VIEW

NORTH

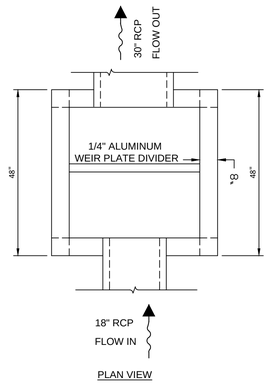
SECTION VIEW



DIVERTER WEIR
48" X 48" MODIFIED INLET W \ STEEL FRAME & GRATE

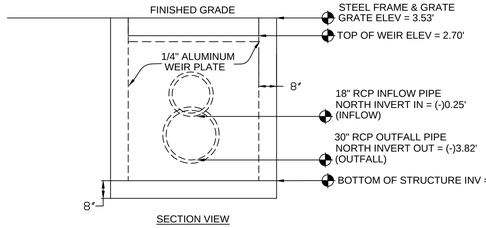
OUTFALL STRUCTURE S-7 DETAIL

N.T.S.

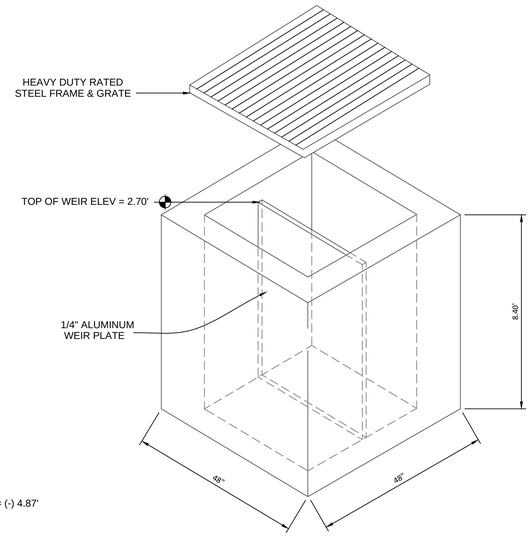


PLAN VIEW

NORTH



SECTION VIEW



DIVERTER WEIR
48" X 48" MODIFIED INLET W \ STEEL FRAME & GRATE

OUTFALL STRUCTURE S-12 DETAIL

N.T.S.

REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

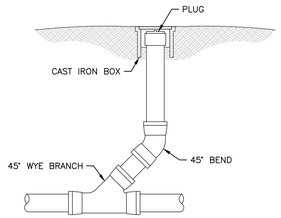
HAGAN
ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

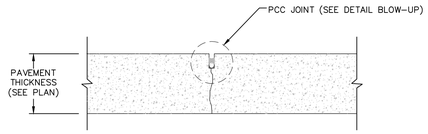
C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

DRAINAGE DETAILS

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-17

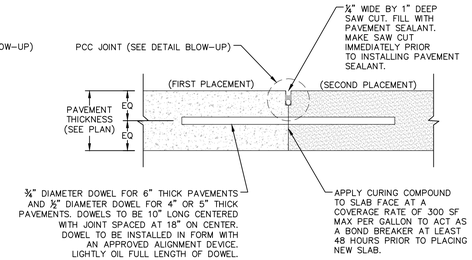


CLEANOUT
N.T.S

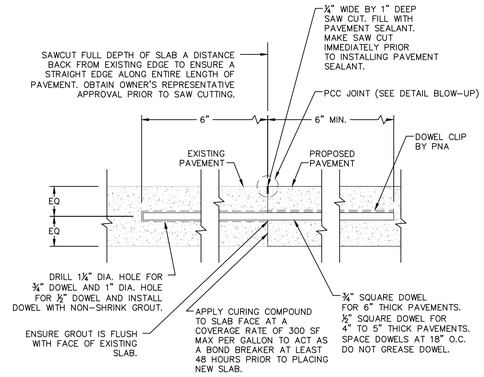


NOTE: SEE PLAN FOR JOINT SPACING.

CONTRACTION JOINT

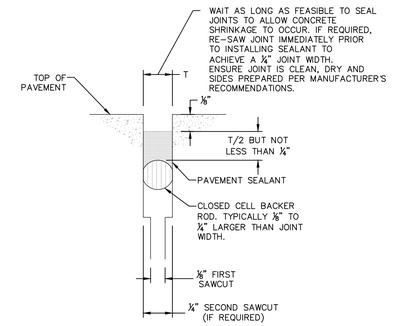


CONSTRUCTION JOINT



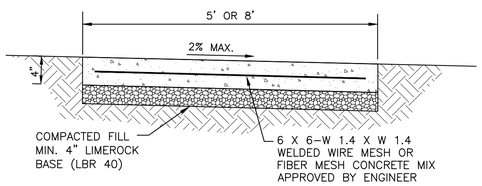
CONSTRUCTION JOINT TO EXISTING PAVEMENT

CONCRETE JOINT DETAILS
N.T.S



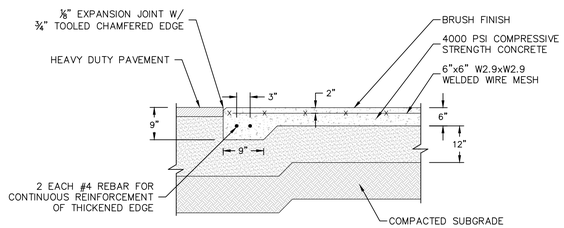
NOTES:
1. ENSURE JOINTS ARE CLEAN AND DRY PRIOR TO THE APPLICATION OF THE JOINT SEALANT.
2. INSTALL CLOSED CELL BACKER ROD AFTER JOINTS HAVE BEEN CLEANED AND DRIED IN ACCORDANCE WITH SEALANT MANUFACTURER'S REQUIREMENTS.
3. INSTALL BACKER TOD AT CONSISTENT AND UNIFORM DEPTH.
4. JOINT SEALANT APPLICATION SHALL BE IN STRICT COMPLIANCE WITH SEALANT MANUFACTURER'S REQUIREMENTS.

PCC JOINT DETAIL BLOW-UP (TYP.)

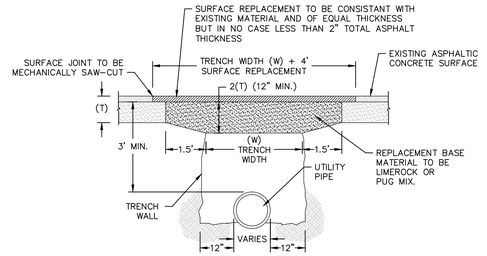


TYPICAL CONCRETE SIDEWALK DETAIL
NOT TO SCALE

NOTE: CONCRETE IN SIDEWALK TO BE 3,000 P.S.I. SIDEWALK CONTRACTION JOINTS TO BE AT 5' INTERVALS.



THICKENED CONCRETE PAVEMENT EDGE
N.T.S



NOTES:
1. BACKFILL SHALL BE PLACED IN 6" LAYERS FROM BENEATH THE HAUNCHES OF THE PIPE TO THE BASE AND COMPACTED TO 98% DENSITY PER AASHTO T-180 MODIFIED PROCTER.
2. BASE MATERIALS TO BE PLACED IN TWO OR THREE LAYERS ROLLED AND TAMPED TO ABOVE SPECIFIED DENSITY.

ROADWAY OPEN CUT
N.T.S

REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

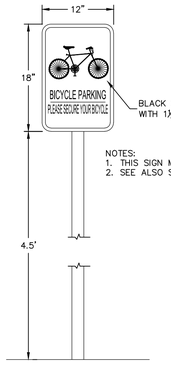
HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

SITE DETAILS

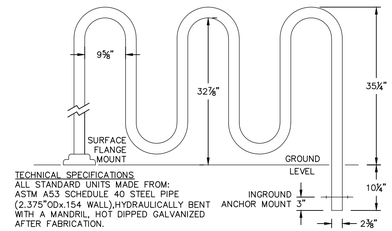
DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-18



NOTES:
1. THIS SIGN MAY ALSO BE WALL MOUNTED
2. SEE ALSO SIGN BASE DETAILS

THIS SIGN TYPICAL AT EACH BICYCLE RACK

BICYCLE PARKING SIGN
N.T.S



TECHNICAL SPECIFICATIONS
ALL STANDARD UNITS MADE FROM:
ASTM A53 SCHEDULE 40 STEEL PIPE (2.375"OD x.154 WALL),HYDRAULICALLY BENT WITH A MANDRIL, HOT DIPPED GALVANIZED AFTER FABRICATION.

INSTALLATION METHODS:
INGROUND ANCHOR MOUNT (STANDARD)
FREESTANDING MOUNT (OPTIONAL AND EXTRA)
SURFACE FLANGE MOUNT (OPTIONAL AND EXTRA)

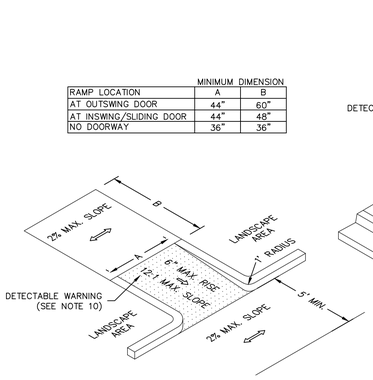
MODEL NUMBER	# OF BICYCLES	RACK LENGTH
RB 05	5	38.375"
RB 07	7	62.375"
RB 09	9	86.375"
RB 11	11	110.375"

RACK SHALL BE
AAA RIBBON RACK Co.
DIVISION OF:
BRANDIR INTERNATIONAL, INC.
521 FIFTH AVENUE, 17TH FLOOR
NEW YORK, NY 10175 USA
212-505-6500 FAX 212-505-6813

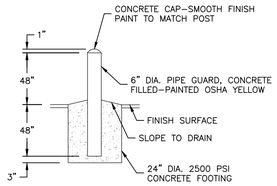
BICYCLE RACK
N.T.S

NOTES:
1. ALL ACCESSIBLE COMPONENTS CONSTRUCTED AS PART OF THESE PLANS SHALL COMPLY WITH CHAPTER 11 OF THE FLORIDA BUILDING CODE.
2. ACCESSIBLE ROUTE TO ACCESSIBLE SPACES, BUILDING ENTRANCES, AND PUBLIC STREETS SHALL NOT EXCEED 5% RUNNING SLOPE AND 2% CROSS SLOPE.
3. CHANGE IN ELEVATION WITHIN THE ACCESSIBLE ROUTE IS NOT TO EXCEED ½" WITHOUT A CURB RAMP.
4. UNLESS OTHERWISE SHOWN ON THE PLANS, THE MINIMUM CLEAR ROUTE SHALL BE 36" WIDE WITH A 60"x60" PASSING SPACE EVERY 200 FEET.
5. ACCESSIBLE ROUTES THROUGH PLANTERS SHALL BE LEVEL WITH THE SURROUNDING PAVEMENT OR PROVIDE CURB RAMPS AT EACH END WITH A MINIMUM 48" LEVEL LANDING IN BETWEEN.
6. THE ACCESSIBLE ROUTE IN FRONT OF PULL-IN PARKING SHALL BE A MINIMUM OF 44" WIDE AND NOT REDUCED BY VEHICLE OVERHANGS, CURBING, SIGN POSTS, OR OTHER OBSTRUCTIONS.
7. ANY WALK THAT CROSSES OR ADJOINS A VEHICULAR WAY NOT SEPARATED BY CURBS, RAILINGS, OR OTHER ELEMENTS SHALL BE DEFINED BY A CONTINUOUS 36" WIDE DETECTABLE WARNING.
8. SPECIAL RAMP RULES APPLY FOR ANY RISE GREATER THAN 6" INCLUDING BUT NOT LIMITED TO RESTRICTION ON SLOPE, TOTAL RISE BETWEEN LANDINGS, AND USE OF HANDRAILS, PER F.B.C 11-4.8.
9. PUBLIC SIDEWALK CURB RAMPS CONSTRUCTED WITHIN A PUBLIC RIGHT-OF-WAY, IN ABSENCE OF LOCAL ROADWAY GUIDELINES, SHALL MEET THE REQUIREMENTS OF F.D.O.T INDEX 304.
10. CURB RAMPS SHALL HAVE A DETECTABLE WARNING EXTENDING THE FULL WIDTH AND DEPTH OF THE RAMP
11. DETECTABLE WARNINGS SHALL CONSIST OF EXPOSED AGGREGATE CONCRETE, CUSHIONED SURFACES MADE OF RUBBER OR PLASTIC, OR RAISED STRIPS. GROOVED SURFACES ON OUTDOOR CURB RAMPS ARE NOT PERMITTED. VERIFY LOCAL REQUIREMENTS WITH THE BUILDING DEPARTMENT.

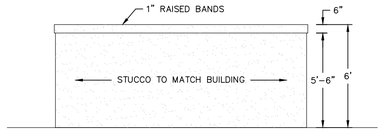
RAMP LOCATION	MINIMUM DIMENSION A	MINIMUM DIMENSION B
AT OUTSWING DOOR	44"	60"
AT INSWING/SLIDING DOOR	44"	48"
NO DOORWAY	36"	36"



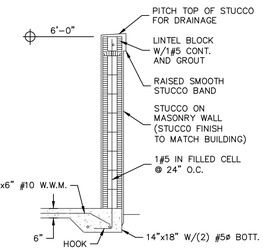
ACCESSIBLE RAMPS
N.T.S



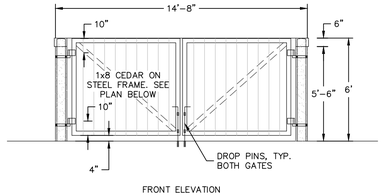
PIPE BOLLARD
N.T.S



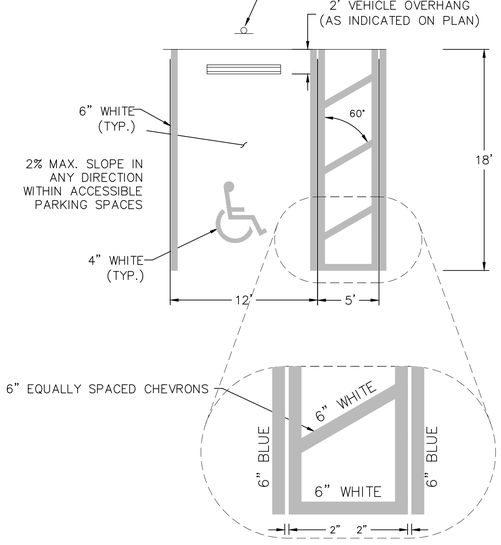
REAR ELEVATION



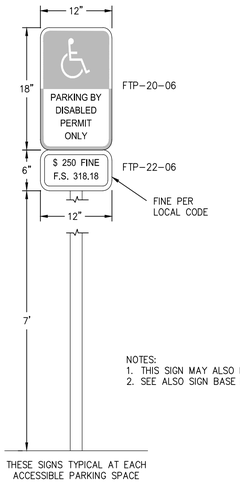
TYPICAL WALL SECTION



FRONT ELEVATION



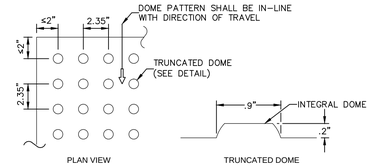
ACCESSIBLE STRIPING
N.T.S



NOTES:
1. THIS SIGN MAY ALSO BE WALL MOUNTED
2. SEE ALSO SIGN BASE DETAILS

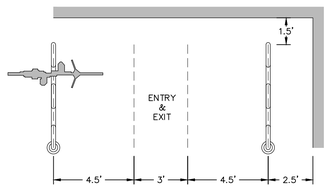
THESE SIGNS TYPICAL AT EACH ACCESSIBLE PARKING SPACE

ACCESSIBLE PARKING SIGN
N.T.S

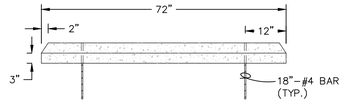


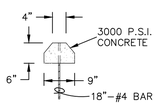
NOTES
1. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 IN. (23 MM), A HEIGHT OF NOMINAL 0.2 IN (5MM AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 IN. (60 MM)
2. DETECTABLE WARNINGS SHALL EXTEND THE FULL WIDTH AND DEPTH OF THE CURB RAMP.
3. TRANSITION SLOPES ARE NOT TO HAVE DETECTABLE WARNINGS.
4. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTREGAL PART OF THE WALKING SURFACE.

TRUNCATED DOME DETECTABLE WARNING
N.T.S



SPACE REQUIREMENTS AND CLEARANCES

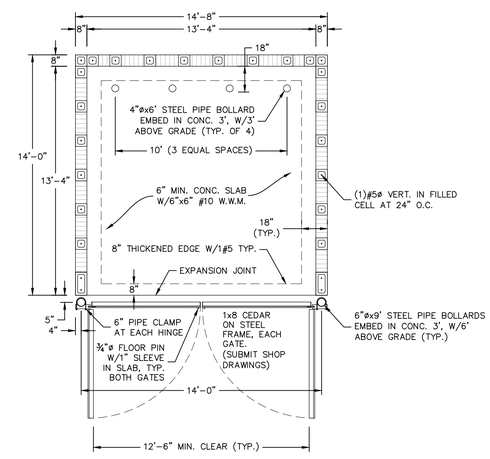




CONCRETE WHEEL STOP
N.T.S

PLACEMENT CONSIDERATIONS
IF RACKS ARE TO BE PLACED IN 'PARALLEL,' PLEASE ALLOW 12' (FEET) ON CENTER OF SPACING BETWEEN THE RACKS. THIS PERMITS 4½' (FEET) CLEARANCE FOR BICYCLES ON EACH RACK WITH A 3' (FEET) COMMON AREA IN BETWEEN FOR INGRESS AND EGRESS.

IF RACKS ARE TO BE PLACED IN 'SERIES,' PLEASE ALLOW A MINIMUM OF 2' (FEET) ON CENTER TO ACHIEVE MAXIMUM RACK CAPACITY. PLEASE NOTE: THE RACKS CAN BE PLACED 1' (FOOT) ON CENTER TO ACHIEVE A 'CONTINUOUS' LOOK BUT WILL RESULT IN A LOSS OF ONE SPACE AS THE END POSITION COUNTS AS A SPACE.



PLAN VIEW

DUMPSTER ENCLOSURE (SINGLE)
N.T.S

REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

SITE DETAILS

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-19

NORTH

0 15 30

SCALE IN FEET

BEGIN WIDENING
STATION=100+49.99
OFFSET=16.12L

BEGIN DOCK RAMP

END DOCK RAMP

END FLOATING DOCK

REVISIONS		

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PERMIT PLANS

C. D. HAGAN, P.E.
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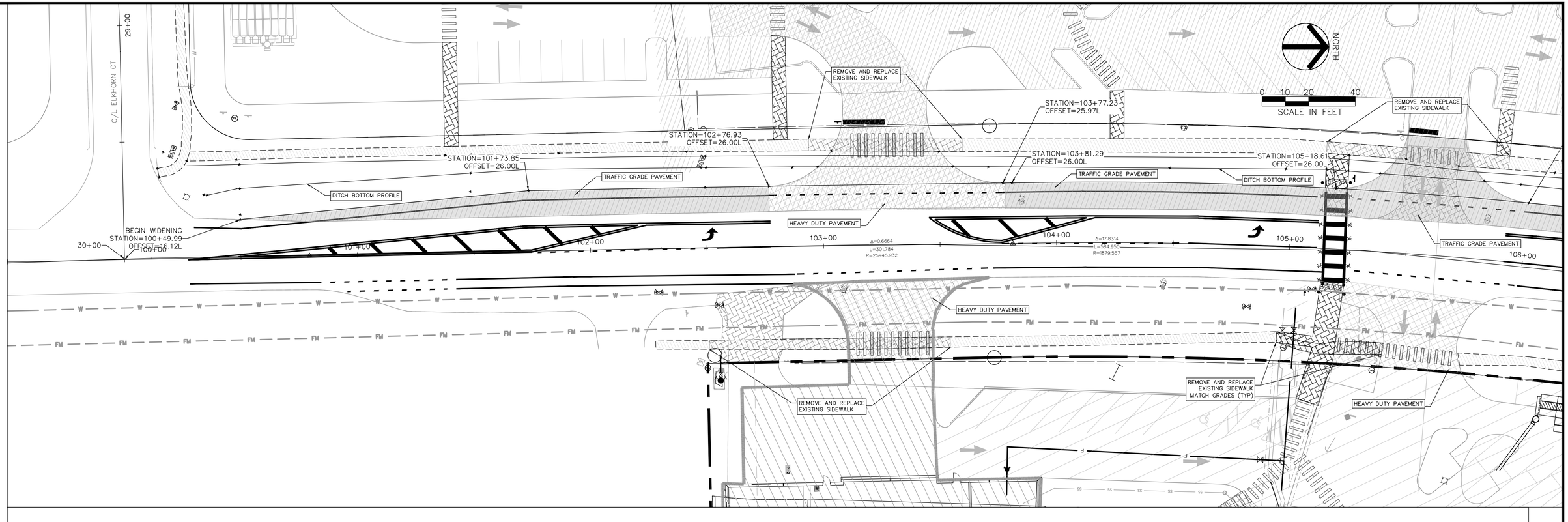
EB #29474

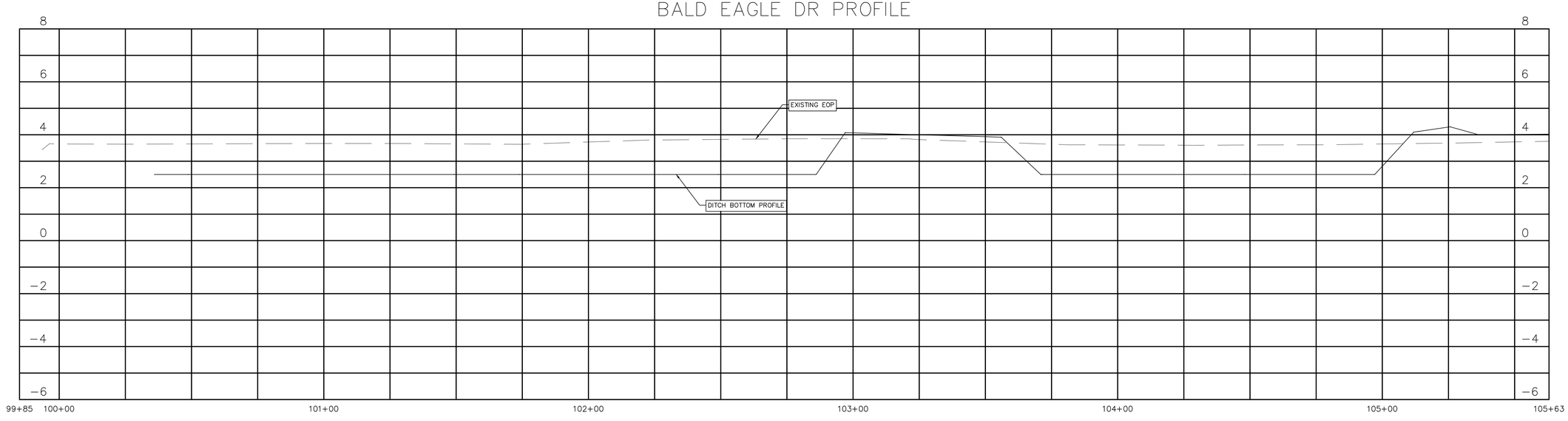
DATE:

BALD EAGLE DR - SIGNING & MARKING

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-20



BALD EAGLE DR PROFILE



REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

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PERMIT PLANS

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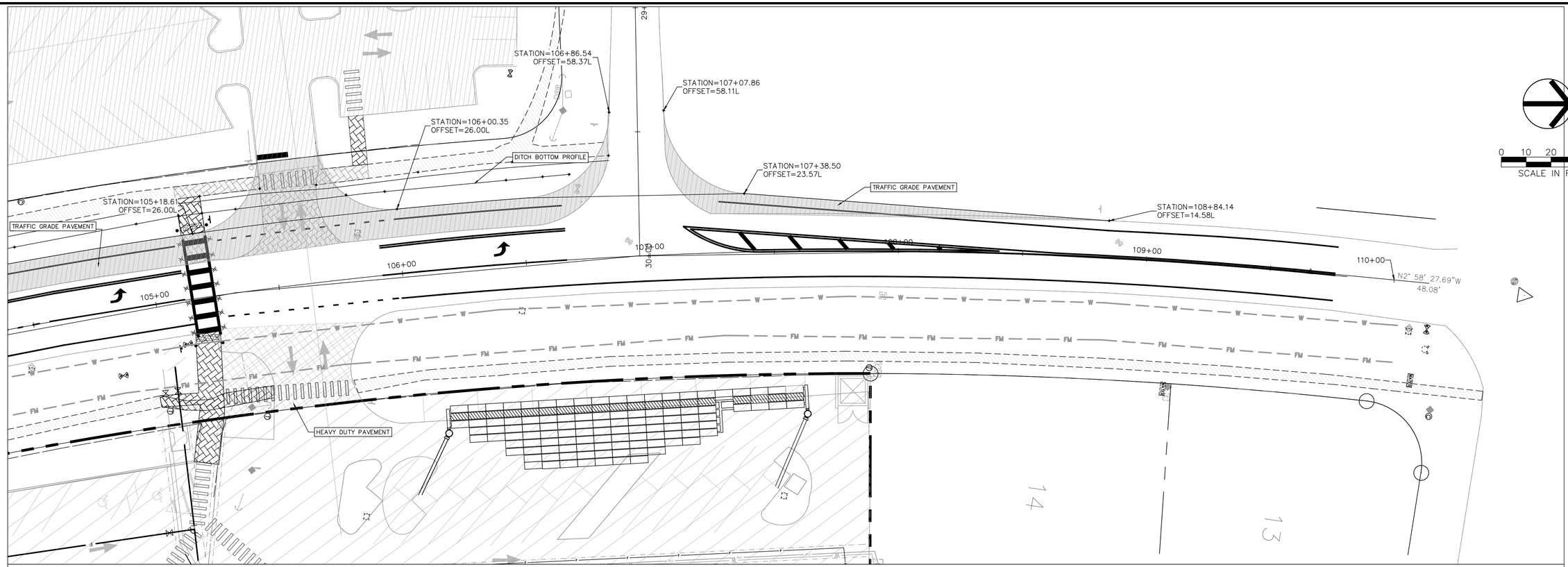
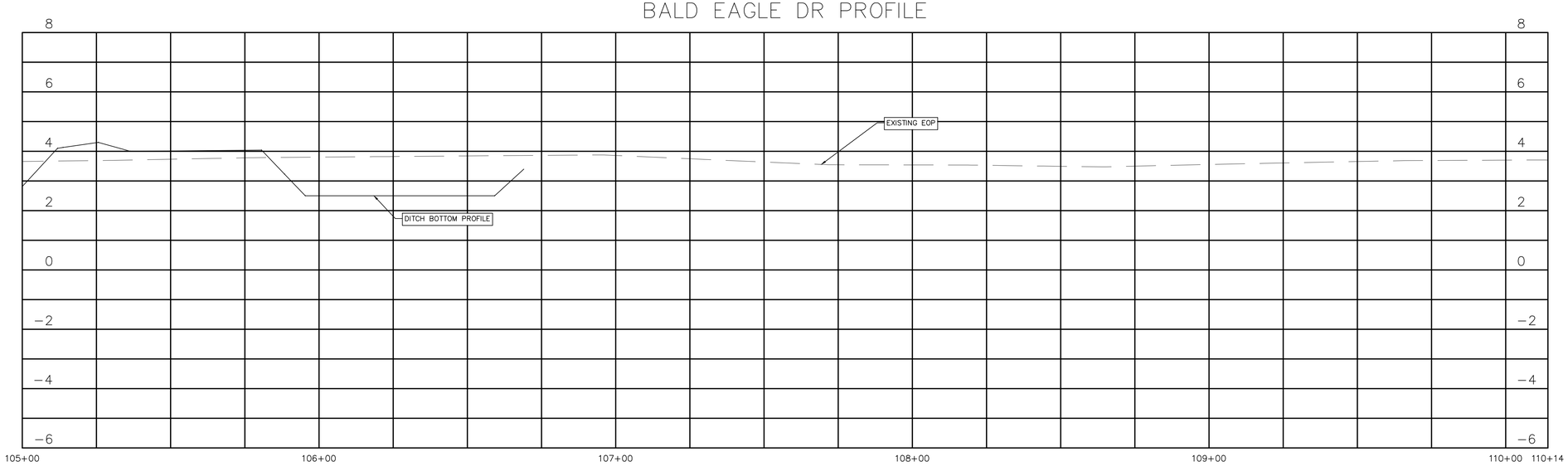
EB #29474
DATE:

BALD EAGLE PLAN & PROFILE

DATE	PROJECT NO.	SCALE	SHEET
09−20−14	2014−077	As Shown	C−21



BALD EAGLE DR PROFILE



REVISIONS		

ROSE MARINA
REDEVELOPMENT PLAN

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

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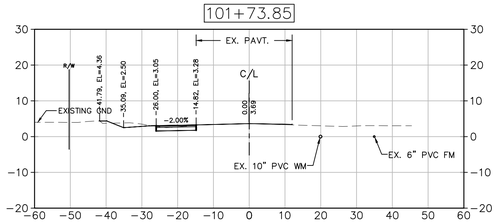
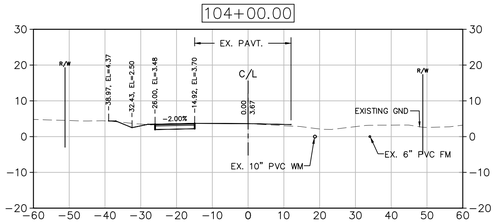
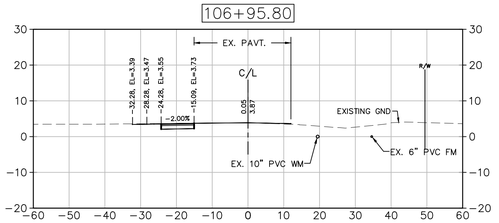
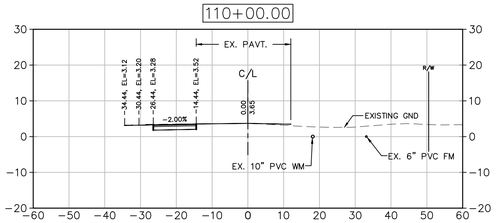
BALD EAGLE PLAN & PROFILE

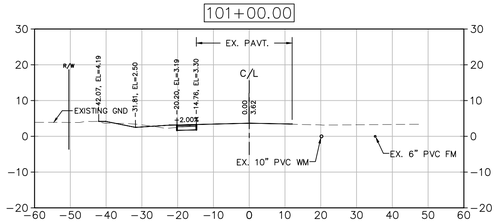
DATE	PROJECT NO.	SCALE	SHEET
09−20−14	2014−077	As Shown	C−22

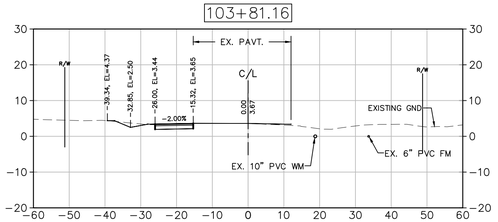


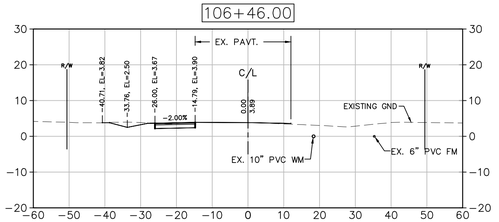


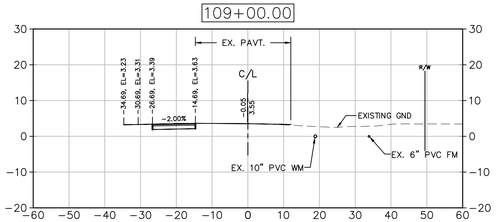


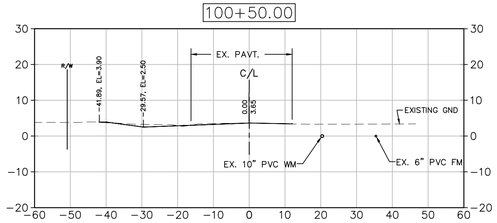


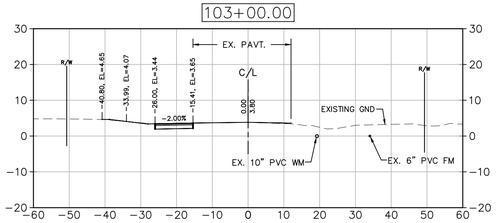


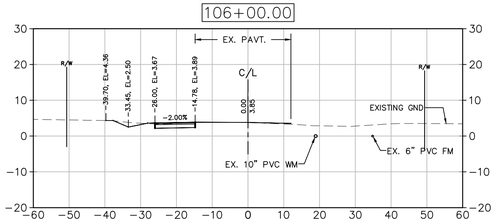


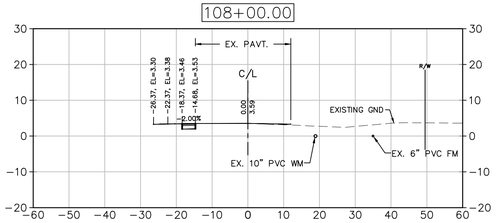


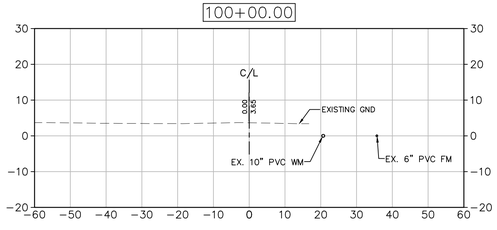


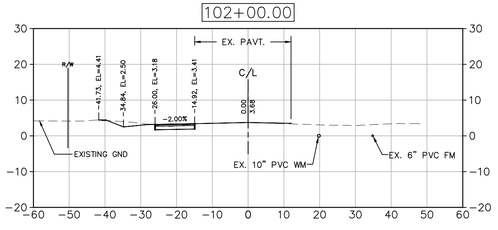


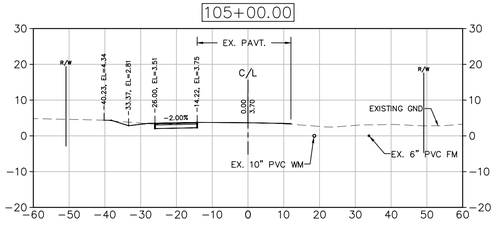


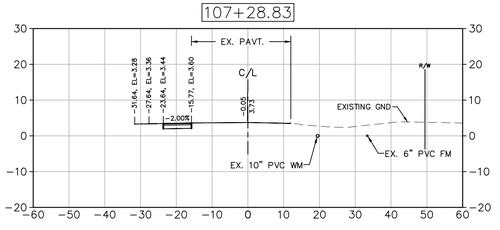












REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

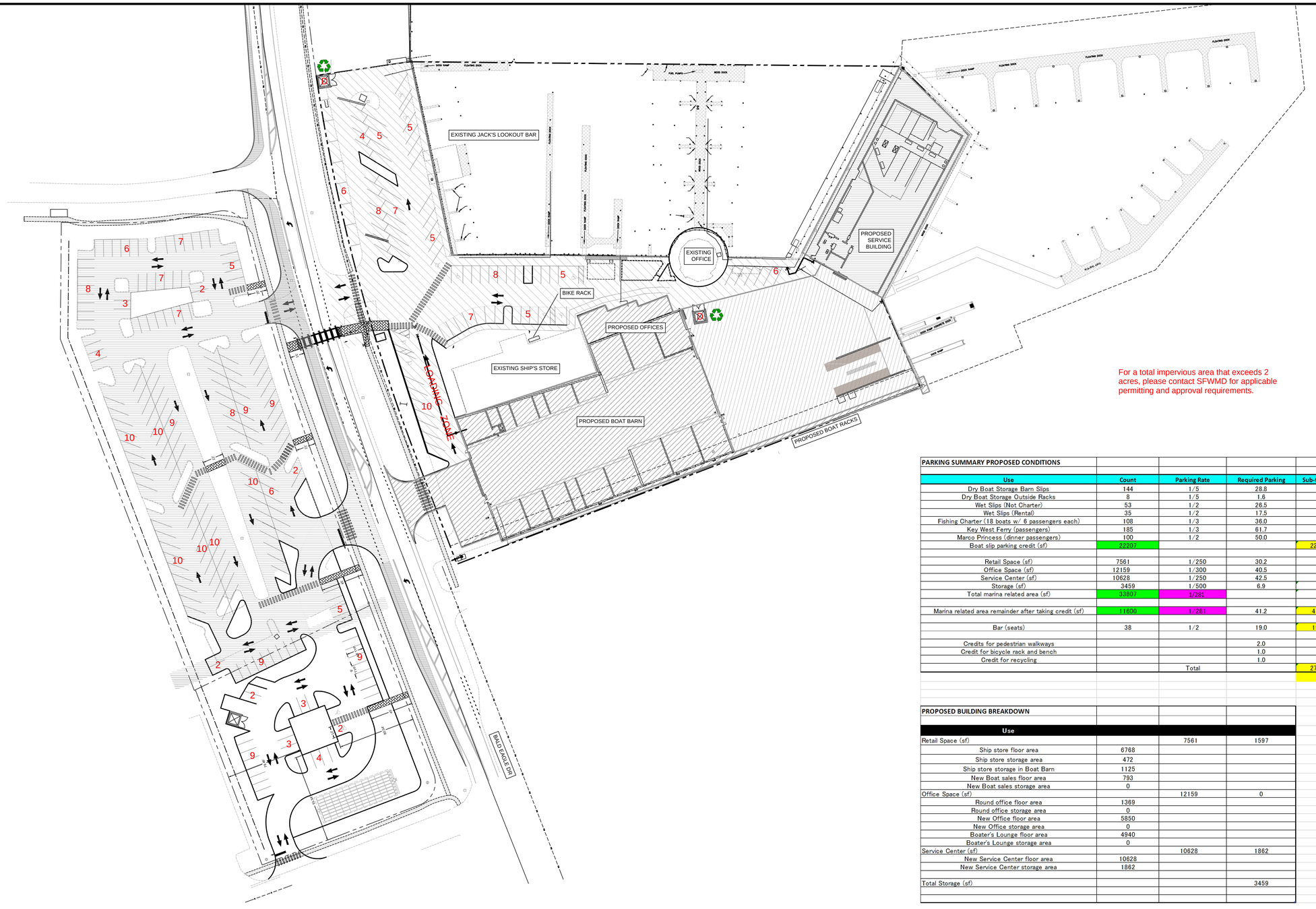
HAGAN
ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

BALD EAGLE DR - CROSS SECTIONS

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-23



For a total impervious area that exceeds 2 acres, please contact SFWMD for applicable permitting and approval requirements.

PARKING SUMMARY PROPOSED CONDITIONS

Use	Count	Parking Rate	Required Parking	Sub-total	Notes	Credits
Dry Boat Storage Barn Slips	144	1/5	28.8			
Dry Boat Storage Outside Racks	8	1/5	1.6			
Wet Slips (Not Charter)	53	1/2	26.5			
Wet Slips (Rental)	35	1/2	17.5			
Fishing Charter (18 boats w/ 6 passengers each)	108	1/3	36.0			
Key West Ferry (passengers)	185	1/3	61.7			
Marco Princess (dinner passengers)	100	1/2	50.0			
Boat slip parking credit (sf)	22207			222	Boat slip parking total	
Retail Space (sf)	7561	1/250	30.2		Store and boat sales	
Office Space (sf)	12159	1/300	40.5			
Service Center (sf)	10628	1/250	42.5			
Storage (sf)	3459	1/500	6.9			
Total marina related area (sf)	33807	1/281			120	Required w/o credit
					79	Credits from boat slips
Marina related area remainder after taking credit (sf)	11600	1/281	41.2	41		
Bar (seats)	38	1/2	19.0	19		
Credits for pedestrian walkways			2.0			
Credit for bicycle rack and bench			1.0			
Credit for recycling			1.0			
		Total		278		

PROPOSED BUILDING BREAKDOWN

Use			
Retail Space (sf)		7561	1597
Ship store floor area	6768		
Ship store storage area	472		
Ship store storage in Boat Barn	1125		
New Boat sales floor area	793		
New Boat sales storage area	0		
Office Space (sf)		12159	0
Round office floor area	1369		
Round office storage area	0		
New Office floor area	5850		
New Office storage area	0		
Boater's Lounge floor area	4940		
Boater's Lounge storage area	0		
Service Center (sf)		10628	1862
New Service Center floor area	10628		
New Service Center storage area	1862		
Total Storage (sf)			3459

Plan provides 281 parking spaces
11 are HC spaces

Could claim 6 transient slips = parking spaces

surplus of 3 (or 9)

This site development plan only approves the following uses on 900 Bald Eagle Drive: Boat Sales and on 900 and 950 Bald Eagle Drive: Parking for Rose Marina.

REVISIONS

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

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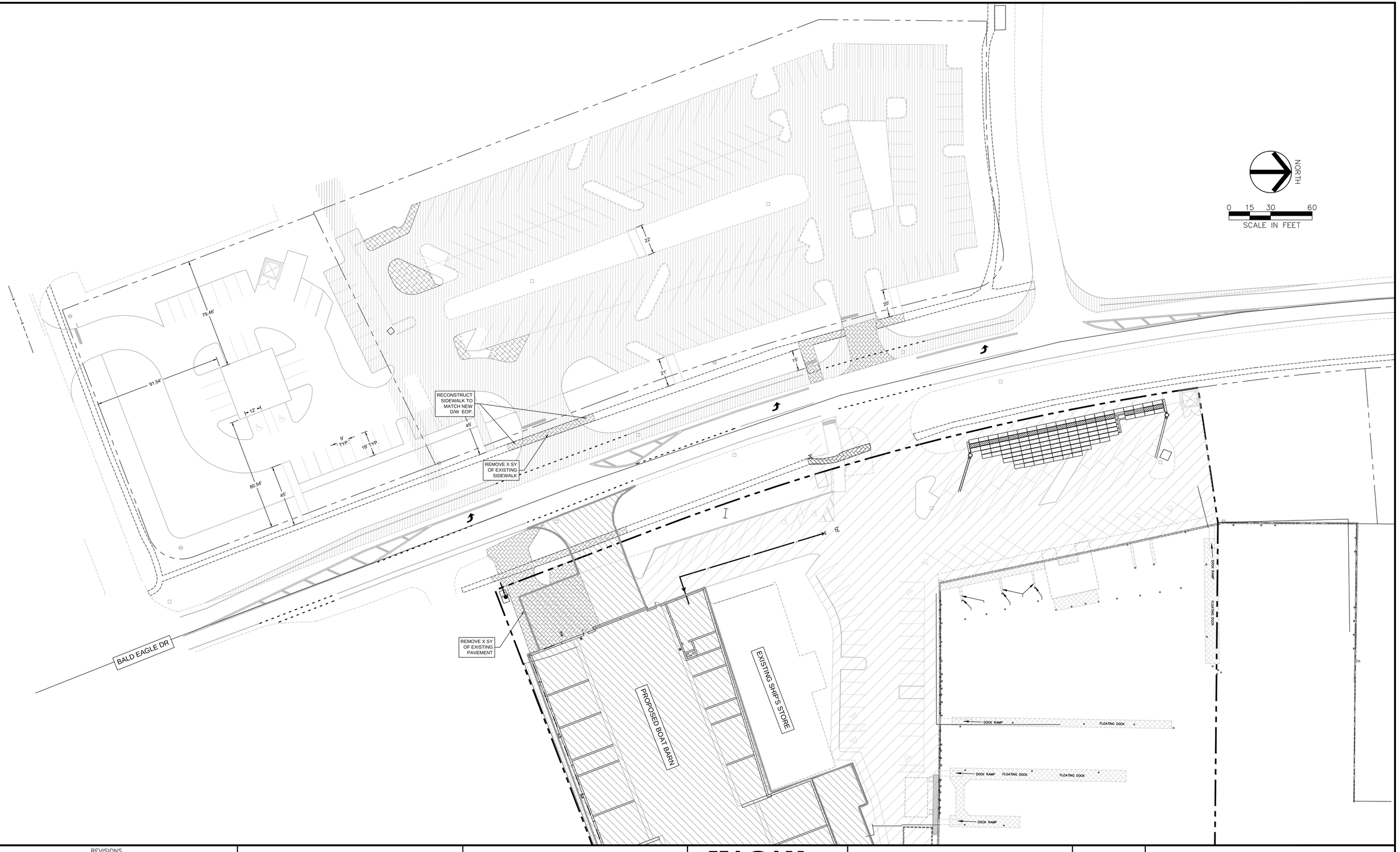
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

PEDESTRIAN & PARKING PLAN

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-24



REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

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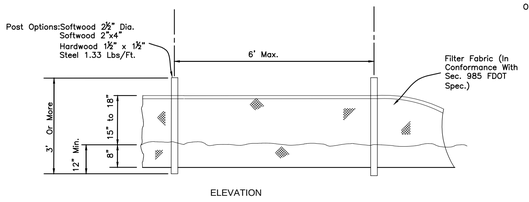
PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

DEMOLITION PLAN

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-25



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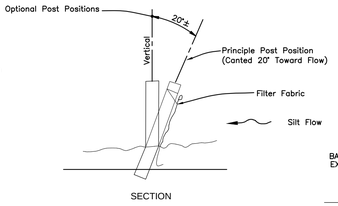
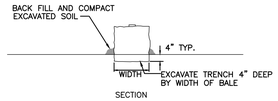


SECTION

Note: Silt Fence to be paid for under the contract unit price for Staked Silt Fence (LF).

TYPE III SILT FENCE
N.T.S.

DETAIL TAKEN FROM:
FDOT DESIGN STANDARDS
INDEX NO. 102
SHEET 3 of 3



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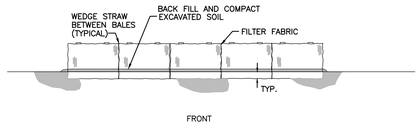
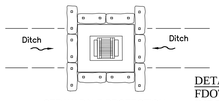


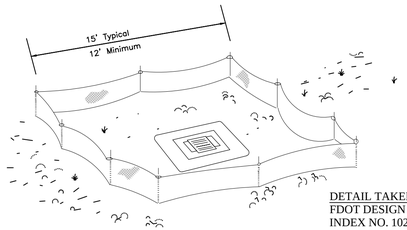
FRONT

STRAW BALE BARRIER
N.T.S.



STRAW BALE PROTECTION
DITCH BOTTOM INLET

DETAIL TAKEN FROM:
FDOT DESIGN STANDARDS
INDEX NO. 102
SHEET 2 of 3



SILT FENCE PROTECTION
AROUND DITCH BOTTOM INLETS

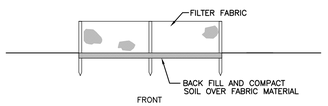
DETAIL TAKEN FROM:
FDOT DESIGN STANDARDS
INDEX NO. 102
SHEET 3 of 3

Do not deploy in a manner that silt fences will act as a dam across permanent flowing watercourses. Silt fences are to be used at upland locations and turbidity barriers used at permanent bodies of water.

PROTECTION AROUND INLETS OR SIMILAR STRUCTURES
N.T.S.

CLEARING AND EROSION NOTES:

1. EXOTIC VEGETATION, AS DEFINED BY THE COLLIER COUNTYAND S.F.W.M.D. SHALL BE REMOVED FROM THE SITE AND SUBSEQUENT ANNUAL EXOTIC REMOVAL (IN PERPETUITY) SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER.
2. THE REVIEW AND APPROVAL OF IMPROVEMENT PLANS DOES NOT AUTHORIZE THE CONSTRUCTION OF REQUIRED IMPROVEMENTS WHICH ARE INCONSISTENT WITH EASEMENTS OF RECORD.
3. NO EXISTING NATIVE VEGETATION WILL BE RETAINED IN THE CLEARED AREA. CONTRACTOR IS TO CLEAR & FILL LOTS DURING THE EXCAVATION OF THE POND.
4. BARRICADES AND SILT BARRIERS WILL REMAIN IN PLACE UNTIL FINAL GRADING AND SEEDING OR SODDING IS COMPLETE.
5. ALL PROPOSED INLETS SHALL BE PROTECTED WITH FILTER FABRIC DURING CONSTRUCTION.
6. ACCESS SHALL BE ON EXISTING PAVEMENT. DUST AND SOIL TRACKING ARE MANAGED ON SITE AS PART OF NORMAL BUSINESS OPERATIONS.
7. ALL DISTURBED AREAS TO BE STABILIZED WITH SOD OR SEED AND MULCH.
8. ALL PROPOSED EROSION CONTROL MEASURES ARE RECOMMENDED AND MAY BE MODIFIED AS NEEDED BY THE CONTRACTOR.
9. PLASTIC SNOW FENCING WILL BE USED AS A BARRICADE TO PROTECT PRESERVED VEGETATION.
10. VEGETATION TO REMAIN SHALL BE PROTECTED WITH APPROVED BARRICADING AND BARRICADING WILL REMAIN IN PLACE UNTIL COMPLETION OF CONSTRUCTION. (SECTION 3.9.5.1.5)



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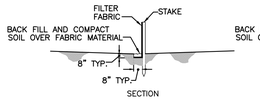
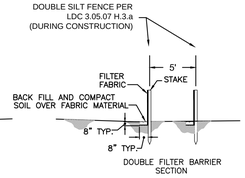
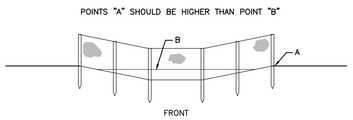


SECTION



DOUBLE FILTER BARRIER
SECTION

FILTER BARRIER
N.T.S.



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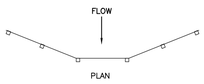
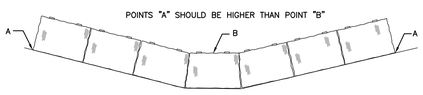
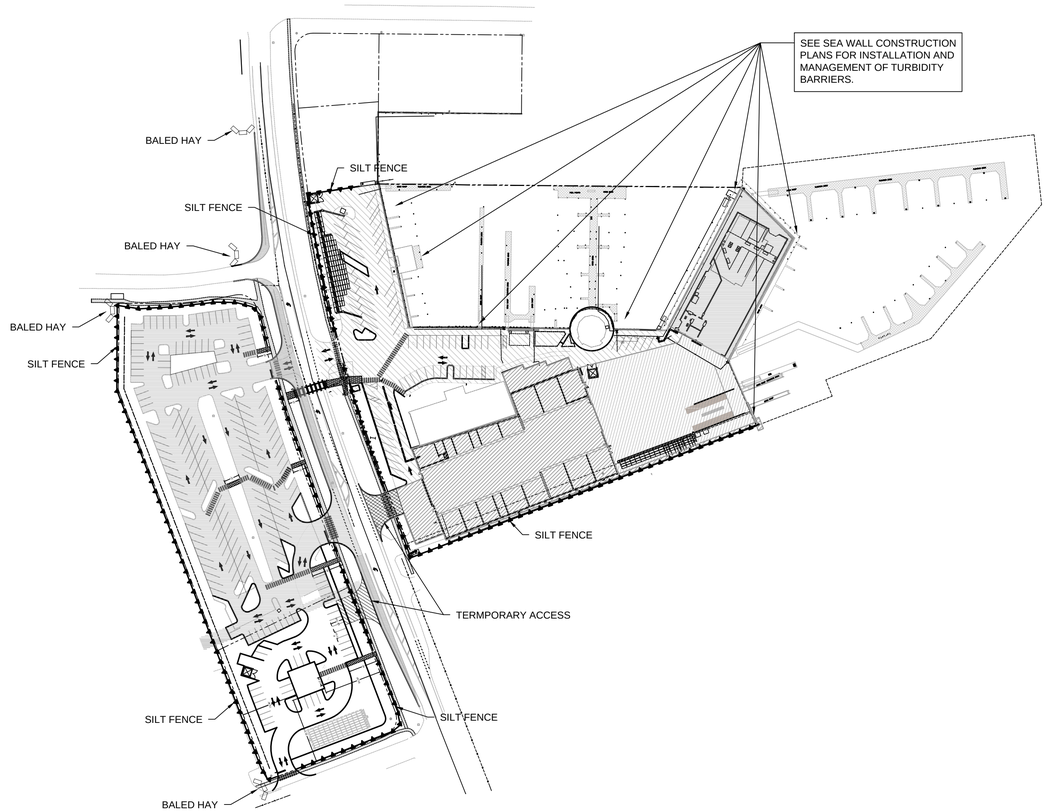


PLAN

PROPER PLACEMENT OF FILTER BARRIER
IN DRAINAGE WAY
N.T.S.



PROPER PLACEMENT OF STRAW BALE BARRIER
IN DRAINAGE WAY
N.T.S.



LEGEND

SILT FENCE
STAKED HAY BALES

REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

HAGAN ENGINEERING
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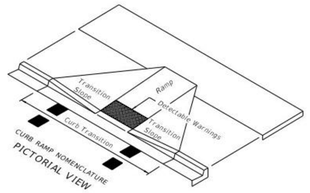
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

EROSION CONTROL PLAN

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-26



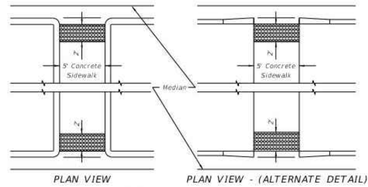
GENERAL NOTES

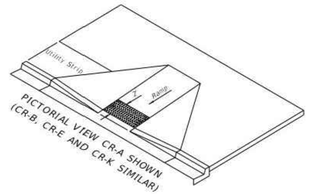
1. Sidewalk curb ramps shall be constructed at locations that will provide continuous unobstructed pedestrian circulation path to pedestrian areas, elements and facilities within the right of way and to accessible pedestrian routes on adjacent sites. Curbed facilities with sidewalks and those without sidewalks are to have curb ramps constructed for all intersections and turnouts with curbed returns. To accommodate curb ramps, partial curb returns are to extend to the limits prescribed in Index No. 515. Ramps constructed at locations without sidewalks are to have a landing constructed at the top of each ramp, see LANDINGS FOR CURB RAMPS WITHOUT SIDEWALKS.
2. When altering existing pedestrian facilities, where existing restricted conditions preclude the accommodation of a ramp slope of 1:12, a ramp slope between 1:12 and 1:10 is permitted for a rise of 6" maximum. Where compliance with the requirements for cross slope cannot be fully met, the minimum feasible cross slope shall be provided. Ramp slopes are not required to exceed 15' in length.
3. If sidewalk curb ramps are located where pedestrians must walk across the ramp, then provide transition slopes to the ramp; otherwise a sidewalk curb may be required.
4. All sidewalks, ramps, and landings with a cross slope of 0.02 shown in this Index are 0.02 maximum. All ramp slopes shown in this Index as 1:12 are 1:12 maximum. Landings shall have slopes less than or equal to 0.02 in any direction.
5. Grade breaks at the top and bottom of ramps shall be parallel to each other and perpendicular to the direction of the ramp slope.
6. Where a sidewalk curb ramp is constructed within existing curb, curb and gutter and/or sidewalk, the existing curb or curb and gutter shall be removed to the nearest joint beyond the curb transition or to the extent that no remaining section of curb or curb and gutter is less than 5' long. Existing sidewalks shall be removed to the nearest joint beyond the transition slope or to the extent that no remaining section of sidewalk is less than 5' long. For CONCRETE SIDEWALK details refer to Index 310.
7. Sidewalk curb ramp alpha-identifications are for reference purposes (plans, permits, etc.). Alpha-identifications CR-I and CR-J were intentionally omitted.
8. Detectable warnings shall extend the full width of the ramp and to a depth of 2'. Detectable warnings shall be constructed in accordance with Specification Section 527. For the layout of detectable warnings, refer to the TYPICAL PLACEMENT OF DETECTABLE WARNINGS details. Detectable warnings shall not be provided on transition slopes.
9. When detectable warnings are placed on a slope greater than 5%, domes shall be aligned with the centerline of the ramp; otherwise domes are not required to be aligned.
10. Detectable warnings shall be required on sidewalks at:
    a. Intersecting roads,
    b. Median Crossings greater than or equal to 6' in width,
    c. Railroad Crossings,
    d. Signalized driveways.
11. Detectable Warnings – Acceptance Criteria:
    a. Color and texture shall be complete and uniform.
    b. 90% of individual truncated domes shall be in accordance with the Americans with Disabilities Act Standards for Transportation Facilities, Section 705.
    c. There shall be no more than 4 non-compliant domes in any one square foot.
    d. Non-compliant domes shall not be adjacent to other non-compliant domes.
    e. Surfaces shall not deviate more than 0.10" from a true plane.
12. Detectable warnings shall be installed no greater than 5' from the back of curb or edge of pavement.
13. Detectable warnings shall not be installed over grade breaks.

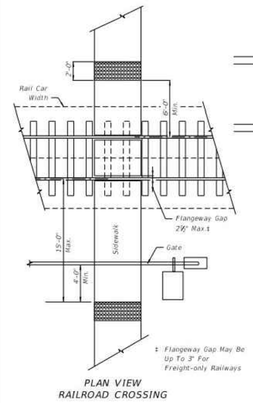
LEGEND

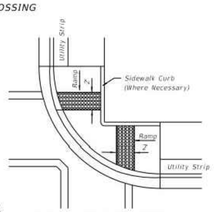
Detectable Warnings

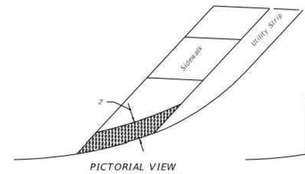
LAST REVISION	DESCRIPTION:				
07/01/13		FDOT 2014 DESIGN STANDARDS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX NO. 304	SHEET NO. 1 of 7

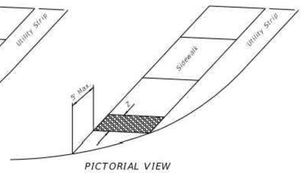


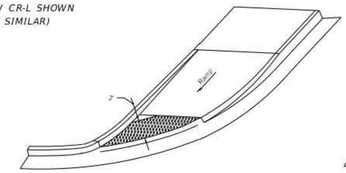


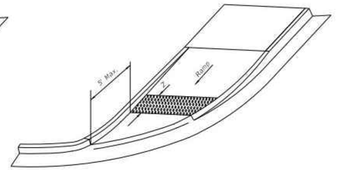






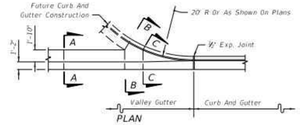


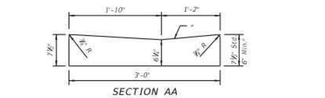


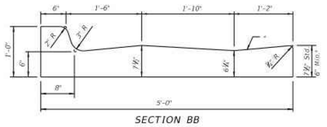


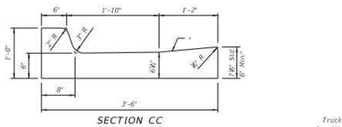
TYPICAL PLACEMENT OF DETECTABLE WARNINGS

LAST REVISION	DESCRIPTION:				
07/01/13		FDOT 2014 DESIGN STANDARDS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX NO. 304	SHEET NO. 6 of 7





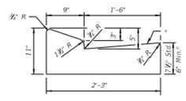


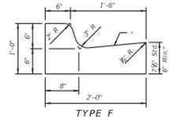


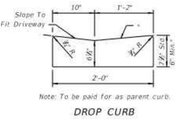
* When used on high side of roadways, the cross slope of the gutter shall match the cross slope of the adjacent pavement. The thickness of the lip shall be 6", unless otherwise shown on plans.

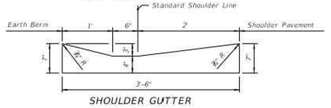
◢ Rotate entire section so that gutter cross slope matches slope of adjacent circulating roadway pavement.

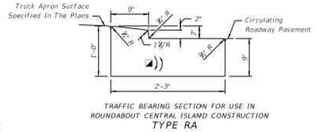
For use adjacent to concrete or flexible pavement. For details depicting usage adjacent to flexible pavement, see Sheet 2. Expansion joint, preformed joint filler and joint seal are required between curb & gutter and concrete pavement only, see Sheet 2.

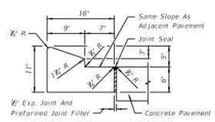


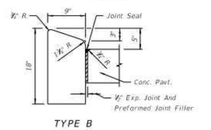


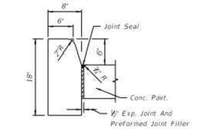










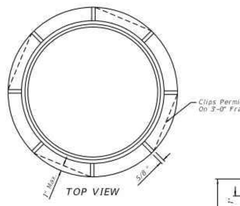


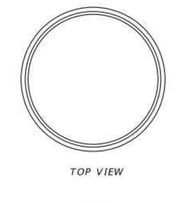
Note: For use adjacent to concrete or flexible pavement, concrete shown. Expansion joint, preformed joint filler and joint seal are required between curbs and concrete pavement only, see Sheet 2.

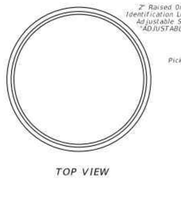
CONCRETE CURB

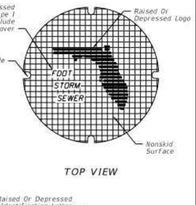
CONCRETE CURB AND GUTTER

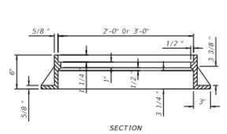
LAST REVISION	DESCRIPTION:				
00		FDOT DESIGN STANDARDS FY 2012/2013	CURB & CURB AND GUTTER	INDEX NO. 300	SHEET NO. 1

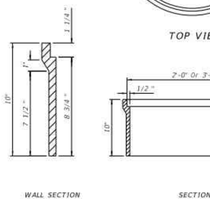


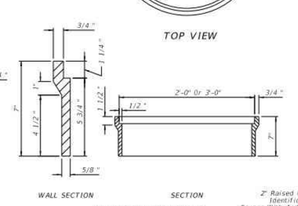


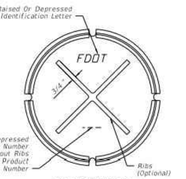


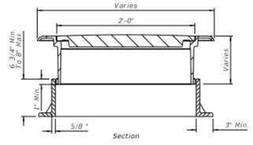












WEIGHT OF CASTINGS

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

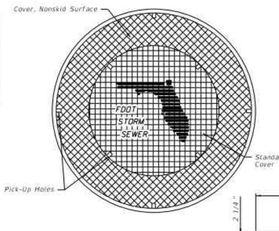
* Includes Type I Adjustable

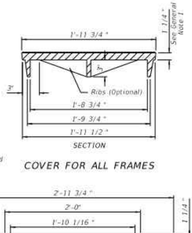
NOTES (FRAMES, AND COVER)

1. The standard cover is to be used for all frames Types I, II, III and the 2-piece cover, and is the replacement cover for all previous frames with 1⅛" deep seats (traffic type). The 185 lb. cover (nontraffic type), 1984 Roadway and Traffic Design Standards Index No. 201, is the replacement cover for existing frames with ½" deep seats. Installation of frame with ½" deep seats is not permitted.
2. Use the 2'-0" cover, unless the 2-piece cover is called for in the plans, except at inlets and manholes with sump bottoms use the 2-piece cover when the sump depth exceeds 2', unless otherwise noted.

DESIGNER NOTE:

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





LAST REVISION	DESCRIPTION:				
01/01/12		FDOT DESIGN STANDARDS FY 2012/2013	SUPPLEMENTARY DETAILS FOR MANHOLES & INLETS	INDEX NO. 201	SHEET NO. 1

REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

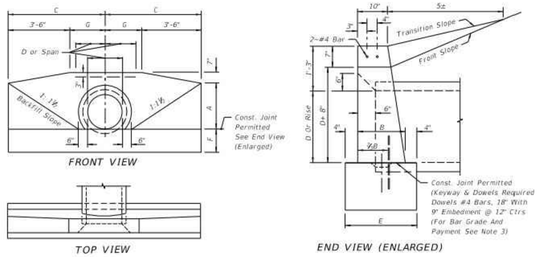
HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

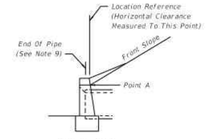
PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

FDOT DETAILS

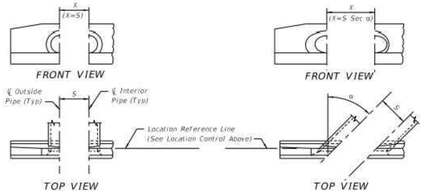
DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	R-01





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

ENDWALL DIMENSIONS (EXCLUSIVE OF MULTIPLE PIPE SPACING)



LEGEND

a : Pipe Skew
S : Center To Center Pipe Spacing
X : Centerline To Centerline Dimension At Face Of Headwall

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

GENERAL NOTES

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

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

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

STANDARD LOCATION CONTROL

LAST REVISION	DESCRIPTION:	FDOT DESIGN STANDARDS FY 2012/2013	STRAIGHT CONCRETE ENDWALLS SINGLE AND MULTIPLE PIPE	INDEX NO.	SHEET NO.
07/01/09				250	1

DATA AND ESTIMATED QUANTITIES FOR ONE ENDWALL

ROUND CONCRETE AND CORRUGATED METAL PIPE

D	Opening Area (SF)	Dimensions											Class I Concrete (CY)																		D
													Number And Type Of Pipe And Skew Angle Of Pipe																		
													Single		Double				Triple				Quadruple								
	Number Of Pipes									X			Conc	Metal	Concrete				Metal				Concrete				Metal				
	1	2	3	4	A	B	C	E	F	G	S	0°	15°	30°	45°			0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°	
15"	1.23	2.46	3.69	4.92	1'-11"	1'-2"	4'-0"	1'-10"	1'-2"	0'-6"	2'-7"	2'-7"	2'-8"	3'-0"	3'-8"	1.23	1.24	1.59	1.60	1.65	1.74	1.62	1.63	1.68	1.78	1.94	1.96	2.05	2.23	1.99	2.02	2.11	2.30	2.30	2.34	2.47	2.74	2.37	2.41	2.75	2.84	15"
18"	1.77	3.54	5.31	7.08	2'-2"	1'-2"	4'-6"	1'-11"	1'-3"	1'-0"	2'-10"	2'-10"	2'-11"	3'-3"	4'-0"	1.56	1.59	1.99	2.01	2.06	2.17	2.04	2.06	2.11	2.23	2.43	2.46	2.56	2.79	2.51	2.54	2.65	2.89	2.86	2.91	3.06	3.40	2.96	3.01	3.17	3.53	18"
21"	2.41	4.82	7.23	9.64	2'-5"	1'-4"	5'-0"	2'-0"	1'-4"	1'-6"	3'-2"	3'-2"	3'-3"	3'-8"	4'-6"	1.97																									21"
24"	3.14	6.28	9.42	12.56	2'-8"	1'-4"	5'-6"	2'-0"	1'-4"	2'-0"	3'-5"	3'-5"	3'-6"	3'-11"	4'-10"	2.24	2.29	2.82	2.84	2.91	3.06	2.91	2.93	3.01	3.17	3.39	3.43	3.57	3.87	3.52	3.56	3.71	4.03	3.97	4.03	4.24	4.69	4.14	4.20	4.43	4.91	24"
27"	3.98	7.96	11.94	15.92	2'-11"	1'-5"	6'-0"	2'-1"	1'-5"	2'-0"	3'-10"	3'-10"	4'-0"	4'-5"	5'-5"	2.73																									27"
30"	4.91	9.82	14.73	19.64	3'-2"	1'-6"	6'-6"	2'-2"	1'-6"	3'-0"	4'-3"	4'-3"	4'-5"	4'-11"	6'-0"	3.26	3.34	4.13	4.16	4.26	4.49	4.28	4.31	4.43	4.67	4.98	5.04	5.25	5.69	5.20	5.27	5.49	5.97	5.84	5.93	6.24	6.91	6.13	6.23	6.56	7.29	30"
36"	7.07	14.14	21.21	28.28	3'-8"	1'-8"	7'-6"	2'-4"	1'-8"	4'-0"	5'-1"	5'-1"	5'-3"	5'-10"	7'-2"	4.53	4.64	5.73	5.77	5.92	6.23	5.95	6.00	6.15	6.49	6.92	7.00	7.39	7.91	7.25	7.34	7.65	8.33	8.13	8.26	8.69	9.62	8.57	8.71	9.18	10.20	36"
42"	9.62	19.24	28.86	38.48	4'-2"	1'-10"	8'-6"	2'-6"	2'-0"	5'-0"	6'-0"	6'-0"	6'-3"	6'-11"	8'-6"	6.33	6.49	8.11	8.17	8.39	8.85	8.43	8.50	8.73	9.23	9.90	10.02	10.45	11.38	10.38	10.52	10.98	11.99	11.68	11.87	12.51	13.89	12.32	12.52	13.22	14.73	42"
48"	12.57	25.14	37.71	50.28	4'-8"	2'-1"	9'-6"	2'-9"	2'-0"	6'-0"	6'-9"	6'-9"	7'-0"	7'-10"	9'-7"	8.15	8.38	10.40	10.48	10.75	11.33	10.85	10.94	11.23	11.87	12.64	12.80	13.34	14.50	13.34	13.51	14.11	15.39	14.89	15.13	15.93	17.68	15.82	16.08	16.97	18.90	48"
54"	15.90	31.80	47.70	63.60	5'-2"	2'-6"	10'-6"	3'-2"	2'-3"	7'-0"	7'-8"	7'-8"	7'-11"	8'-10"	10'-10"	11.71	11.77	15.23	15.35	15.78	16.69	15.35	15.48	15.90	16.83	18.77	19.02	19.86	21.69	18.93	19.18	20.04	21.89	22.29	22.66	23.93	26.67	22.51	22.89	24.17	26.96	54"

CORRUGATED METAL PIPE ARCH

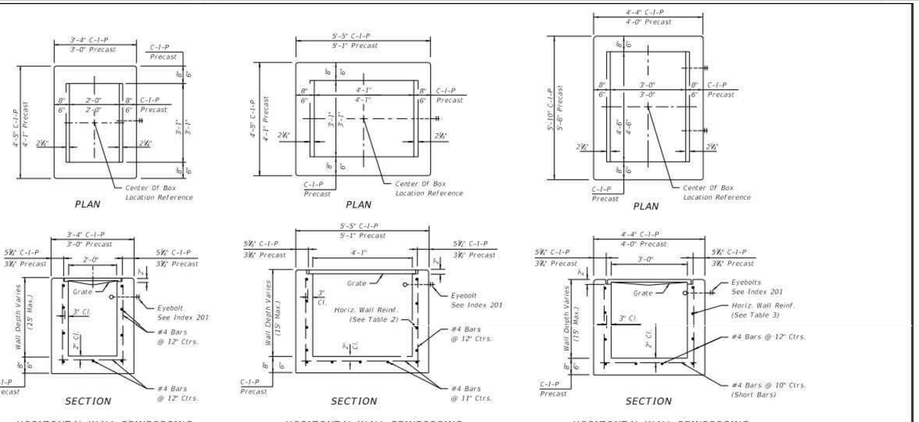
Span	Rise	Opening Area (SF)				Dimensions							Class I Concrete (CY)												Span	Rise	Approx. Equiv. Round Pipe
													Number Of Pipe And Skew Angle Of Pipe														
		Number Of Pipes										X	Single	Double				Triple				Quadruple					
		1	2	3	4	A	B	C	E	F	G	S	0°	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°			
17"	13"	1.1	2.2	3.3	4.4	1'-9"	1'-2"	3'-10"	1'-10"	1'-2"	0'-4"	2'-6"	2'-6"	2'-7"	2'-11"	3'-6"		1.16	1.47	1.48	1.52	1.60	1.78	1.80	1.88	2.04	2.09	2.12	2.23	2.48	17"	13"	15"
21"	15"	1.6	3.2	4.8	6.4	1'-11"	1'-2"	4'-3"	1'-10"	1'-2"	0'-9"	2'-10"	2'-10"	2'-11"	3'-3"	4'-0"		1.33	1.69	1.70	1.75	1.84	2.04	2.06	2.15	2.33	2.40	2.44	2.57	2.84	21"	15"	18"
28"	20"	2.8	5.6	8.4	11.2	2'-4"	1'-3"	5'-2"	1'-11"	1'-3"	1'-8"	3'-5"	3'-5"	3'-6"	3'-11"	4'-10"		1.78	2.31	2.33	2.39	2.53	2.83	2.87	2.99	3.26	3.36	3.42	3.60	4.01	28"	20"	24"
35"	24"	4.3	8.6	12.9	17.2	2'-8"	1'-4"	5'-11½"	2'-0"	1'-4"	2'-5½"	4'-0"	4'-0"	4'-2"	4'-7"	5'-8"		2.34	3.03	3.05	3.14	3.32	3.72	3.77	3.93	4.29	4.40	4.47	4.72	5.25	35"	24"	30"
42"	29"	5.9	11.8	17.7	23.6	3'-1"	1'-5"	6'-10½"	2'-1"	1'-5"	3'-4½"	4'-9"	4'-9"	4'-11"	5'-6"	6'-9"		3.13	4.06	4.09	4.20	4.45	4.99	5.06	5.28	5.76	5.93	6.03	6.36	7.09	42"	29"	36"
49"	33"	8.4	16.8	25.2	33.6	3'-5"	1'-7"	7'-8"	2'-3"	1'-7"	4'-2"	5'-6"	5'-6"	5'-8"	6'-4"	7'-9"		3.83	5.00	5.04	5.18	5.48	6.16	6.24	6.52	7.12	7.32	7.44	7.86	8.76	49"	33"	42"
57"	38"	10.6	21.2	31.8	42.4	3'-10"	1'-7"	8'-2½"	2'-3"	1'-7"	5'-1½"	6'-4"	6'-4"	6'-7"	7'-4"	8'-11"		4.87	6.31	6.36	6.53	6.91	7.74	7.84	8.18	8.93	9.18	9.33	9.85	10.96	57"	38"	48"
64"	43"	13.2	26.4	39.6	52.8	4'-3"	1'-8"	9'-6½"	2'-4"	1'-8"	6'-0½"	7'-1"	7'-1"	7'-4"	8'-2"	10'-0"		5.88	7.64	7.70	7.91	8.37	9.40	9.52	9.94	10.86	11.15	11.33	11.97	13.33	64"	43"	54"
71"	47"	16.9	33.8	50.7	67.6	4'-7"	1'-10"	10'-4"	2'-6"	2'-0"	6'-10"	7'-10"	7'-10"	8'-1"	9'-1"	11'-1"		7.80	10.15	10.23	10.51	11.12	12.49	12.65	13.22	14.43	14.85	15.10	15.94	17.77	71"	47"	60"

CONCRETE ELLIPTICAL PIPE

Rise	Span	Opening Area (SF)				Dimensions							Class I Concrete (CY)												Rise	Span	Approx. Equiv. Round Pipe
													Number Of Pipe And Skew Angle Of Pipe														
		Number Of Pipes										X	Single	Double				Triple				Quadruple					
		1	2	3	4	A	B	C	E	F	G	S	0°	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°	30°	45°			
12"	18"	1.3	2.6	3.9	5.2	1'-8"	1'-2"	3'-9"	1'-10"	1'-2"	0'-3"	2'-10"	2'-10"	2'-11"	3'-3"	4'-0"		1.09	1.45	1.46	1.51	1.60	1.80	1.82	1.91	2.09	2.16	2.20	2.33	2.60	12"	18"	15"
14"	23"	1.8	3.6	5.4	7.2	1'-10"	1'-3"	4'-2½"	1'-11"	1'-3"	0'-8½"	3'-5"	3'-5"	3'-6"	3'-11"	4'-10"		1.36	1.82	1.84	1.89	2.01	2.29	2.32	2.43	2.68	2.75	2.80	2.97	3.33	14"	23"	18"
19"	30"	3.3	6.6	9.9	13.2	2'-3"	1'-4"	5'-1½"	2'-0"	1'-4"	1'-7½"	4'-2"	4'-2"	4'-4"	4'-10"	5'-11"		1.89	2.55	2.57	2.65	2.82	3.22	3.27	3.43	3.77	3.88	3.95	4.19	4.70	19"	30"	24"
24"	38"	5.1	10.2	15.3	20.4	2'-8"	1'-5"	6'-3"	2'-1"	1'-5"	2'-3"	5'-2"	5'-2"	5'-4"	6'-0"	7'-4"		2.64	3.55	3.58	3.69	3.93	4.48	4.54	4.77	5.24	5.39	5.49	5.82	6.53	24"	38"	30"
29"	45"	7.4	14.8	22.2	29.6	3'-1"	1'-6"	7'-0"	2'-2"	1'-6"	3'-6"	6'-0"	6'-0"	6'-3"	6'-11"	8'-6"		3.32	4.48	4.52	4.66	4.96	5.64	5.72	6.00	6.60	6.80	6.92	7.34	8.24	29"	45"	36"
34"	53"	10.2	20.4	30.6	40.8	3'-6"	1'-7"	7'-11½"	2'-3"	1'-7"	4'-5½"	7'-1"	7'-1"	7'-4"	8'-2"	10'-0"		4.24	5.76	5.81	6.00	6.39	7.29	7.40	7.76	8.55	8.81	8.97	9.52	10.70	34"	53"	42"
38"	60"	12.9	25.8	38.7	51.6	3'-10"	1'-8"	8'-9"	2'-4"	1'-8"	5'-3"	7'-11"	7'-11"	8'-2"	9'-2"	11'-2"		5.22	7.16	7.23	7.46	7.96	9.10	9.24	9.70	10.71	11.05	11.25	11.95	13.46	38"	60"	48"
43"	68"	16.3	32.6	49.8	66.4	4'-3"	1'-10"	9'-8½"	2'-6"	1'-10"	6'-2½"	8'-10"	8'-10"	9'-2"	10'-2"	12'-6"		6.63	9.01	9.09	9.38	10.00	11.39	11.56	12.13	13.26	13.57	13.77	14.62	16.43	43"	68"	54"
48"	76"	20.5	41.0	61.5	82.0	4'-8"	2'-1"	10'-8"	2'-9"	2'-0"	7'-2"	9'-9"	9'-9"	10'-1"	11'-3"	13'-9"		8.66	11.74	11.85	12.22	13.02	14.82	15.04	15.77	17.37	17.91	18.23	19.34	21.74	48"	76"	60"
53"	83"	24.8	49.6	74.4	99.2	5'-1"	2'-6"	11'-7"	3'-2"	2'-6"	8'-1"	10'-7"	10'-7"	10'-11"	12'-3"	15'-0"		12.50	16.98	16.98	17.67	18.83	21.47	21.78	22.96	25.18	25.97	26.44	28.06	31.55	53"	83"	66"
58"	91"	29.5	59.0	88.5	118.0	5'-6"	2'-10"	12'-6½"	3'-6"	2'-10"	9'-0½"	11'-4"	11'-4"	11'-9"	13'-1"	16'-0"		16.46	22.26	22.46	23.16	24.66	28.05	28.46	29.85	32.85	33.85	34.46	36.55	41.05	58"	91"	72"

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

LAST REVISION	DESCRIPTION:	FDOT DESIGN STANDARDS FY 2012/2013	STRAIGHT CONCRETE ENDWALLS SINGLE AND MULTIPLE PIPE	INDEX NO.	SHEET NO.
07/01/01				250	2



HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 1)

WALL DEPTH	SCHEDULE	AREA (in²/ft.)	MAX. SPACING BARS	MAX. SPACING WWF
0'-15'	A12	0.20	12"	8"

TYPE C

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

HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 2)

WALL DEPTH	SCHEDULE	AREA (in²/ft.)	MAX. SPACING BARS	MAX. SPACING WWF
0'-6'	A12	0.20	12"	8"
6'-10'	A6	0.20	6"	5"
10'-13'	A4	0.20	4"	3"
10'-15'	B5.5	0.24	5½"	5"

TYPE D

Recommended Maximum Pipe Size:
3'-1" Wall - 24" Pipe
4'-1" Wall - 36" Pipe

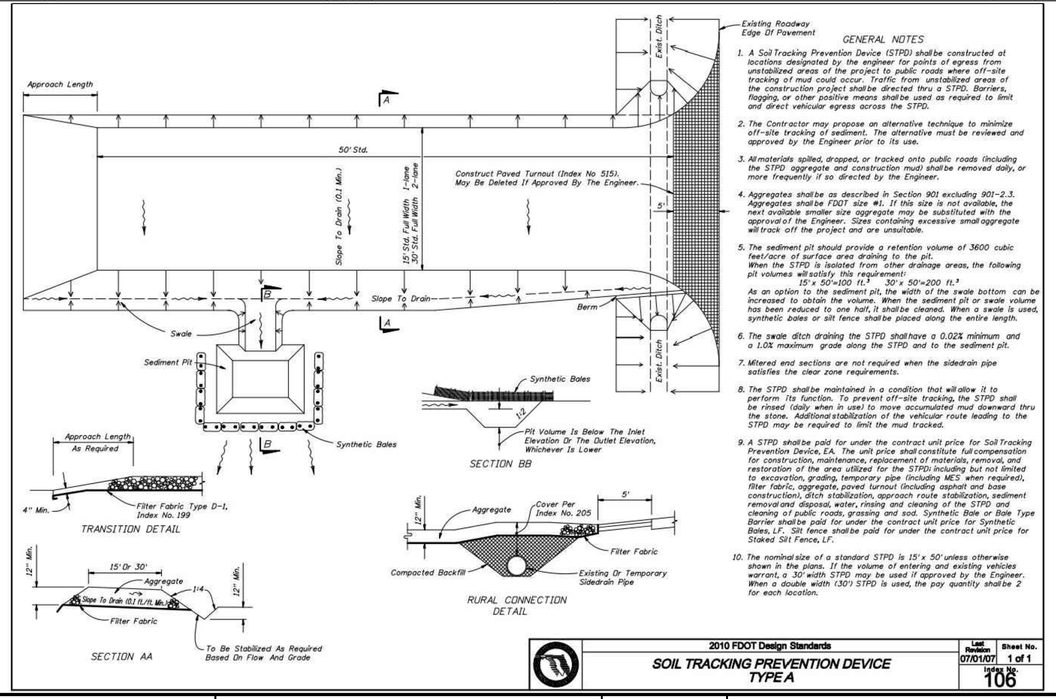
HORIZONTAL WALL REINFORCING SCHEDULES (TABLE 3)

WALL DEPTH	SCHEDULE	AREA (in²/ft.)	MAX. SPACING BARS	MAX. SPACING WWF
0'-5'	A12	0.20	12"	8"
0'-7.5'	A6	0.20	6"	5"
7.5'-10'	B5.5	0.24	5½"	5"
10'-15'	C6.5	0.37	6½"	6"

TYPE E

Recommended Maximum Pipe Size:
3'-0" Wall - 24" Pipe
4'-6" Wall - 36" Pipe

LAST REVISION	DESCRIPTION:	FDOT DESIGN STANDARDS FY 2012/2013	DITCH BOTTOM INLET TYPES C, D, E AND H	INDEX NO.	SHEET NO.
07/01/05				232	1



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 off-site tracking of mud could occur. Traffic from unstabilized areas of the construction project shall be directed thru a STPD. Barriers, flagging, or other positive means shall be used as required to limit and direct vehicular egress across the STPD.
2. The Contractor may propose an alternative technique to minimize off-site tracking of sediment. The alternative must be reviewed and approved by the Engineer prior to its use.
3. All materials spilled, dropped, or tracked onto public roads (including the STPD aggregate and construction mud) shall be removed daily, or more frequently if so directed by the Engineer.
4. Aggregates shall be as described in Section 901 excluding 901-2.3. Aggregates shall be FDOT size #1. If this size is not available, the next available smaller size aggregate may be substituted with the approval of the Engineer. Sizes containing excessive small aggregate will track off the project and are unsuitable.
5. The sediment pit should provide a retention volume of 3600 cubic feet/acre of surface area draining to the pit. When the STPD is isolated from other drainage areas, the following pit volumes will satisfy this requirement:
   15' x 50'=100 ft.³ 30' x 50'=200 ft.³
   As an option to the sediment pit, the width of the swale bottom can be increased to obtain the volume. When the sediment pit or swale volume has been reduced to one half, it shall be cleaned. When a swale is used, synthetic bales or silt fence shall be placed along the entire length.
6. The swale ditch draining the STPD shall have a 0.02% minimum and a 1.0% maximum grade along the STPD and to the sediment pit.
7. Mitered end sections are not required when the sidedrain pipe satisfies the clear zone requirements.
8. The STPD shall be maintained in a condition that will allow it to perform its function. To prevent off-site tracking, the STPD shall be rinsed (daily when in use) to move accumulated mud downward thru the stone. Additional stabilization of the vehicular route leading to the STPD may be required to limit the mud tracked.
9. A STPD shall be paid for under the contract unit price for Soil Tracking Prevention Device, EA. The unit price shall constitute full compensation for construction, maintenance, replacement of materials, removal, and restoration of the area utilized for the STPD including but not limited to excavation, grading, temporary pipe (including MES when required), filter fabric, aggregate, paved turnout (including asphalt and base construction), ditch stabilization, approach route stabilization, sediment removal and disposal, water, rinsing and cleaning of the STPD and cleaning of public roads, grassing and sod. Synthetic Bale or Bale Type Barrier shall be paid for under the contract unit price for Synthetic Bales, LF. Silt fence shall be paid for under the contract unit price for Staked Silt Fence, 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 existing 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 shall be 2 for each location.

2010 FDOT Design Standards		Last Revision	Sheet No.
SOIL TRACKING PREVENTION DEVICE TYPE A		07/01/07	1 of 1
		Index No.	106

REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

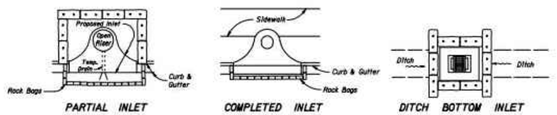
HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

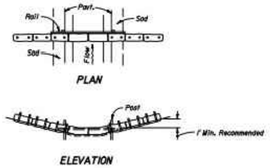
FDOT DETAILS

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	R-02



PARTIAL INLET COMPLETED INLET DITCH BOTTOM INLET

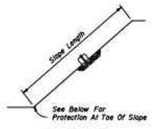
PROTECTION AROUND INLETS OR SIMILAR STRUCTURES



PLAN

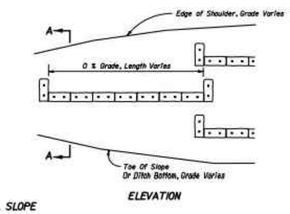
ELEVATION

BARRIER FOR PAVED DITCH



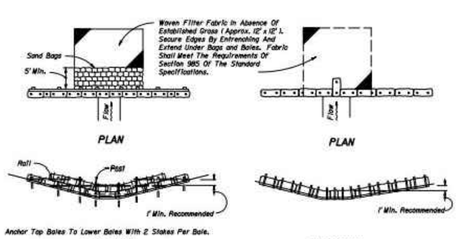
SECTION AA

Notes:
Where the slope length exceeds 125 feet, construct one row of bale barriers at 0% longitudinal grade midway up the slope. Construct two rows of bale barriers where the slope length exceeds 50 feet.



ELEVATION

ALONG FILL SLOPE

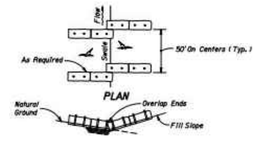


PLAN PLAN

ELEVATION ELEVATION

TYPE II TYPE I

BARRIERS FOR UNPAVED DITCHES



PLAN

ELEVATION

TO BE USED WHERE THE NATURAL GROUND SLOPES TOWARD THE TOE OF SLOPE

PLAN

ELEVATION

TO BE USED WHERE THE NATURAL GROUND SLOPES AWAY FROM THE TOE OF SLOPE

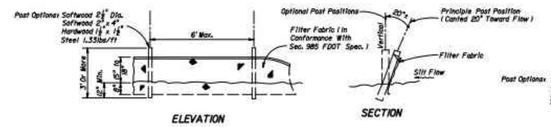
AT TOE OF SLOPE

BARRIERS FOR FILL SLOPES

NOTES FOR BALED HAY OR STRAW BARRIERS

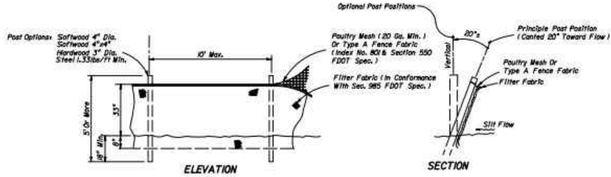
1. Type I and II Barriers should be spaced in accordance with Chart I, Sheet 1.
2. Hay bales shall be trenched 3" to 4" and anchored with 2 - 1" x 2" (or 1" dia.) x 4' wood stakes. Stakes of other material or shape providing equivalent strength may be used if approved by the Engineer. Stakes other than wood shall be removed upon completion of the project.
3. Rails and posts shall be 2" x 4" wood. Other materials providing equivalent strength may be used if approved by the Engineer.
4. Adjacent bales shall be butted firmly together. Unavoidable gaps shall be plugged with hay or straw to prevent silt from passing.
5. Where used in conjunction with silt fence, hay bales shall be placed on the upstream side of the fence.
6. Bales to be paid for under the contract unit price for Baled Hay or Straw, EA. The unit price shall include the cost of filter fabric for Type I and II Barriers. Sand bags shall be paid for under the unit price for Sandbagging, CY. Rock bags to be paid for under the contract unit price for Rock Bags, EA.

2006 FDOT Design Standards	Last Revision	Sheet No.
TEMPORARY EROSION AND SEDIMENT CONTROL	00	2 of 3
	Index No.	102



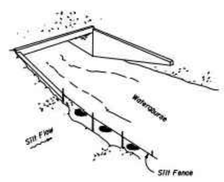
ELEVATION SECTION

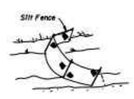
TYPE III SILT FENCE



ELEVATION SECTION

TYPE IV SILT FENCE





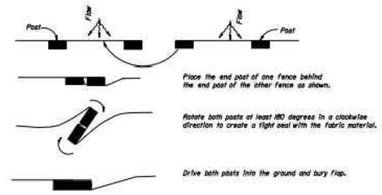
Silt Fence Protection In Ditches with Intermittent Flow

Silt Fence Protection Around Ditch Bottom Inlets.

SILT FENCE APPLICATIONS

NOTES FOR SILT FENCES

1. Type III Silt Fence to be used at most locations. Where used in ditches, the spacing for Type III Silt Fence shall be in accordance with Chart I, Sheet 1.
2. Type IV Silt Fence to be used where large sediment loads are anticipated. Suggested use is where fill slope is 1:2 or steeper and length of slope exceeds 25 feet. Avoid use where the detained water may back into travel lanes or off the right of way.
3. Do not construct silt fences across permanent flowing watercourses. Silt fences are to be at upland locations and turbidity barriers used at permanent bodies of water.
4. Where used as slope protection, Silt Fence Is to be constructed on 0% longitudinal grade to avoid channelizing runoff along the length of the fence.
5. Silt Fence to be paid for under the contract unit price for Staked Silt Fence, (LF).



Place the end post of one fence behind the end post of the other fence as shown.

Rotate both posts at least 180 degrees in a clockwise direction to create a tight seal with the fabric material.

Drive both posts into the ground and bury flap.

PLAN VIEW

JOINING TWO SILT FENCES

2006 FDOT Design Standards	Last Revision	Sheet No.
TEMPORARY EROSION AND SEDIMENT CONTROL	07/01/05	3 of 3
	Index No.	102

REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

FDOT DETAILS

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	R-03

RESTRAINT TABLE

PIPE SIZE	HORIZONTAL BENDS 90° BENDS Lr (FT.)	45° BENDS Lr (FT.)	22.5° BENDS Lr (FT.)	11.25° BENDS Lr (FT.)	VERTICAL OFFSETS 45° BENDS (SEE NOTE 2) Lhs (FT.)	Lls (FT.)	DEAD ENDS Lr (FT.)
4"	27	11	5	3	31	8	60
6"	37	15	7	4	43	11	84
8"	48	20	10	5	57	15	110
10"	57	24	11	6	68	17	131
12"	57	24	11	6	68	19	131
16"	58	24	12	6	55	19	106
20"	70	29	14	7	67	23	129
24"	81	33	16	8	78	27	150

REDUCERS (SEE NOTES) SIZE	L(A) (FT.)	L(B) (FT.)
6 x 4	64	43
8 x 6	60	46
8 x 4	153	79
10 x 8	55	44
10 x 6	133	81
12 x 10	46	38
12 x 8	104	69
16 x 12	61	45
16 x 10	103	63
20 x 16	58	45
20 X 12	139	81
24 x 20	55	45
24 x 16	128	82

TEES RUN SIZE	BRANCH SIZE	Lrn (FT.)	Lbr (FT.)
4"	4"	10	11
6"	6"	10	34
	4" OR LESS	10	FITTING ONLY
8"	8"	10	59
	6"	10	47
	4" OR LESS	10	FITTING ONLY
10"	10"	10	80
	8"	10	65
	6" OR LESS	10	FITTING ONLY
12"	12"	10	79
	10"	10	49
	8"	10	15
	6" OR LESS	10	FITTING ONLY
16"	16"	10	73
	12"	10	38
	10"	10	76
	8" OR LESS	10	FITTING ONLY
20"	20"	10	95
	16"	10	69
	12"	10	32
	10" OR LESS	10	FITTING ONLY
24"	24"	10	116
	20"	10	87
	16"	10	55
	12"	10	10
	10" OR LESS	10	FITTING ONLY

NOTES:
1. LENGTHS SHOWN ON THIS TABLE ARE TO BE INTERPRETED AS FOLLOWS:
Lhs = RESTRAINED LENGTH FROM HIGH SIDE FITTING OF A VERT. BEND
Lls = RESTRAINED LENGTH FROM LOW SIDE FITTING OF A VERT. BEND
Lr = RESTRAINED LENGTH ON BOTH SIDES FROM FITTING
Lrn = MINIMUM LENGTH TO FIRST JOINT OF RUN ON BOTH SIDES
Lbr = RESTRAINED LENGTH REQUIRED ON BRANCH FROM FITTING
L(A) = LENGTH OF PIPE ON SMALL SIDE FREE OF FITTING
L(B) = RESTRAINED LENGTH ON LARGE SIDE OF REDUCER

2. A SAFETY FACTOR = 2.5 IS USED FOR VERTICAL OFFSETS TO COMPENSATE FOR SATURATED SOIL CONDITIONS. A SAFETY FACTOR = 2.0 IS USED FOR ALL OTHER CASES.

3. L(A) AND L(B) ABOVE ARE TWO OPTIONS FOR PROVIDING THE REQUIRED THRUST RESTRAINT FOR THE FITTING. EITHER L(A) LENGTH OF PIPE FREE OF FITTINGS (BENDS, TEES, REDUCERS OR VALVES) ON THE SMALL SIDE OF THE REDUCER WILL PROVIDE THE REQUIRED RESTRAINT OR L(B) LENGTH CAN BE RESTRAINED ON THE LARGE SIDE OF THE FITTING.

4. THE FOLLOWING ARE ASSUMED :
4" – 10" PIPE HAS 30" MIN. COVER
12" – 24" PIPE HAS 36" MIN. COVER
4" – 24" PIPE IS PVC

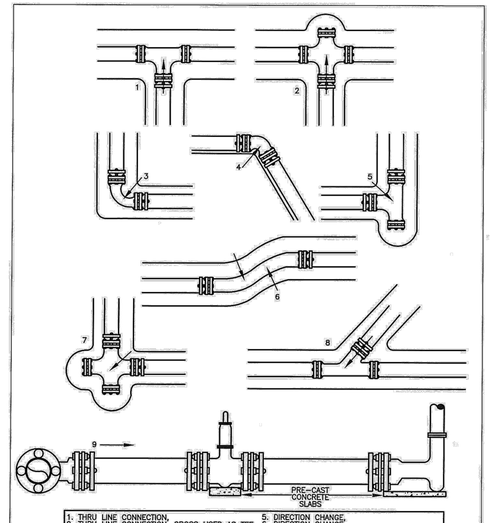
5. VALVES SHALL BE RESTRAINED ON EITHER SIDE OF THE FITTING AS A MINIMUM. IN LINE VALVES SHALL HAVE NO FITTINGS WITHIN THE LENGTHS SHOWN ON THIS TABLE FOR THE SAME SIZE DEAD END. IN CASES WHERE THIS LENGTH CAN NOT BE PROVIDED FREE OF FITTINGS, ADDITIONAL RESTRAINT SHALL BE REQUIRED AS APPROVED BY ENGINEER.

6. ALL DEAD END LINES, PERMANENT OR TEMPORARY, SHALL BE RESTRAINED PER THE ABOVE RESTRAINT TABLE.

CB-1 – *RESTRAINT TABLE*
NOT TO SCALE

MARCO ISLAND UTILITIES
960 North Collier Blvd.
MARCO ISLAND, FL 34145

SCALE: NOT TO SCALE
DATE: APRIL 2007
DWG #: CB-1.DWG

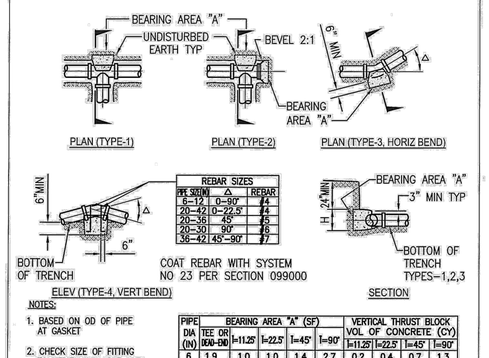


1. THRU LINE CONNECTION.
2. THRU LINE CONNECTION, CROSS USED AS TEE
3. DIRECTION CHANGE, ELBOW
4. DIRECTION CHANGE, VERTICAL, BEND
5. DIRECTION CHANGE.
6. DIRECTION CHANGE.
7. DIRECTION CHANGE, CROSS USED AS ELBOW
8. THRU LINE CONNECTION.
9. HYDRANT RUNOUT

CB-2 – *THRUST RESTRAINING*
NOT TO SCALE

MARCO ISLAND UTILITIES
960 North Collier Blvd.
MARCO ISLAND, FL 34145

SCALE: NOT TO SCALE
DATE: APRIL 2007
DWG #: CB-2.DWG



PLAN (TYPE-1) PLAN (TYPE-2) PLAN (TYPE-3, HORIZ BEND)

REBAR SIZES PIPE SIZE(IN)	Δ	REBAR
6–12	0–90°	#4
20–42	0–22.5°	#4
20–36	45°	#5
20–30	90°	#6
36–42	45–90°	#7

COAT REBAR WITH SYSTEM NO 23 PER SECTION 099000

ELEV (TYPE-4, VERT BEND) SECTION

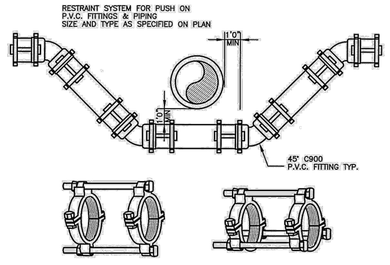
NOTES:
1. BASED ON OD OF PIPE AT GASKET
2. CHECK SIZE OF FITTING TO VERIFY AVAILABLE AREA FOR BEARING ON CONCRETE
3. DO NOT USE THIS DETAIL WITH VERTICAL THRUST BLOCKS FOR PIPE SIZES AND BENDS NOT SHOWN IN THE TABLES
4. TEST PRESS = 100 PSI SOIL BRG PRESS = 2000 LB/SF
5. FOR RESTRAINING EXISTING UNRESTRAINED PIPE ONLY.

PIPE DIA (IN)	TEE OR BND-BD	BEARING AREA "A" (SF) l=11.25°	l=22.5°	l=45°	l=90°	VERTICAL THRUST BLOCK VOL OF CONCRETE (CY) l=11.25°	l=22.5°	l=45°	l=90°
6	1.9	1.0	1.0	1.4	2.7	0.2	0.4	0.7	1.3
8	3.3	1.0	1.3	2.5	4.6	0.3	0.6	1.2	2.3
10	5.4	1.1	2.1	4.1	7.6	0.5	1.0	2.0	3.8
12	7.6	1.5	3.0	5.8	10.7	0.7	1.5	2.9	5.3
14	10.3	2.0	4.0	7.9	14.6	1.0	2.0	3.9	7.2
16	13.4	2.6	5.2	10.3	19.0	1.3	2.6	5.1	9.4
18	17.2	3.4	6.7	13.1	24.3	1.7	3.3	6.5	12.0
20	21.3	4.2	8.3	16.3	30.2	2.1	4.1	8.1	—
24	30.8	6.0	12.0	23.6	43.5	3.0	5.9	11.6	—

CB-3 – *TYPICAL THRUST BLOCKS*
NOT TO SCALE

MARCO ISLAND UTILITIES
960 North Collier Blvd.
MARCO ISLAND, FL 34145

SCALE: NOT TO SCALE
DATE: APRIL 2007
DWG #: CB-3.DWG

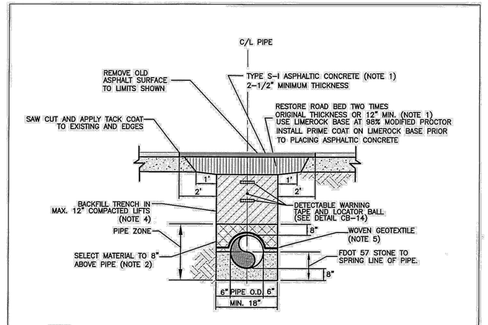


RESTRAINT DETAIL FOR ADJUSTING PVC PRESSURE LINE DUE TO CONFLICTS

CB-7 – *PVC PRESSURE LINE CONFLICT ADJUSTMENT FITTINGS*
NOT TO SCALE

MARCO ISLAND UTILITIES
960 North Collier Blvd.
MARCO ISLAND, FL 34145

SCALE: NOT TO SCALE
DATE: APRIL 2007
DWG #: CB-7.DWG

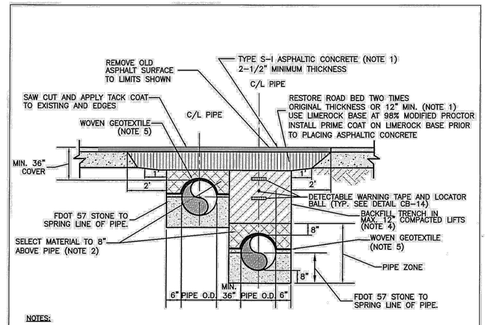


NOTES:
1. IN LIEU OF LIMEROCK FOR TRENCH BASE RESTORATION, ONE OF THE FOLLOWING TWO OPTIONS MAY BE SELECTED: (1) PROVIDE 12 INCHES MINIMUM THICKNESS OF EXCAVATABLE FLOWABLE FILL PER FDOT SECTION 121 OR (2) PROVIDE 6 INCHES MINIMUM OF TYPE ABC–3, BASE COURSE ASPHALT CONCRETE, PER FDOT SECTION 331. SELECT ONE OF THE THREE OPTIONS FOR USE THROUGHOUT THE ENTIRE PROJECT.
2. BACKFILL ABOVE THE SPRING LINE OF THE PIPE SHALL BE GRANULAR SELECT MATERIAL. SELECT MATERIAL IN THIS AREA MAY BE NATIVE MATERIAL AS LONG AS THE MATERIAL WILL PASS THROUGH A 3/8–INCH SIEVE, AND BE FREE OF ROCKS, CLAY AND ORGANIC MATERIAL.
3. IN UNPAVED AREAS, CONSTRUCT BACKFILL TO BOTTOM OF SOD. INSTALL SOD IN AREAS DISTURBED BY CONSTRUCTION. MATCH EXISTING GRADE.
4. MATERIAL ABOVE THE PIPE ZONE TO THE BOTTOM OF THE PAVEMENT ZONE SHALL BE SELECT BACKFILL CONSISTING OF NATIVE MATERIAL FREE OF ROCKS, CLAY AND ORGANIC MATERIAL. MATERIAL SHALL PASS THROUGH A 3–INCH SIEVE. MILLED ASPHALT AND ROAD BASE MATERIAL THAT PASSES A 2–INCH SIEVE MAY BE BLENDED WITH THE SELECT BACKFILL AND USED IN THIS TRENCH ZONE.
5. INSTALL GEOTEXTILE ALONG ENTIRE LENGTH AND WIDTH OF TRENCH, MIRAFI FW402 OR PRE–APPROVED EQUAL.

CB-10 – *TRENCH AND PAVING RESTORATION*
NOT TO SCALE

MARCO ISLAND UTILITIES
960 North Collier Blvd.
MARCO ISLAND, FL 34145

SCALE: NOT TO SCALE
DATE: APRIL 2007
DWG #: CB-10.DWG



NOTES:
1. IN LIEU OF LIMEROCK FOR TRENCH BASE RESTORATION, ONE OF THE FOLLOWING TWO OPTIONS MAY BE SELECTED: (1) PROVIDE 12 INCHES MINIMUM THICKNESS OF EXCAVATABLE FLOWABLE FILL PER FDOT SECTION 121 OR (2) PROVIDE 6 INCHES MINIMUM OF TYPE ABC–3, BASE COURSE ASPHALT CONCRETE, PER FDOT SECTION 331. SELECT ONE OF THE THREE OPTIONS FOR USE THROUGHOUT THE ENTIRE PROJECT.
2. BACKFILL ABOVE THE SPRING LINE OF THE PIPE SHALL BE GRANULAR SELECT MATERIAL. SELECT MATERIAL IN THIS AREA MAY BE NATIVE MATERIAL AS LONG AS THE MATERIAL WILL PASS THROUGH A 3/8–INCH SIEVE, AND BE FREE OF ROCKS, CLAY AND ORGANIC MATERIAL.
3. IN UNPAVED AREAS, CONSTRUCT BACKFILL TO BOTTOM OF SOD. INSTALL SOD IN AREAS DISTURBED BY CONSTRUCTION. MATCH EXISTING GRADE.
4. MATERIAL ABOVE THE PIPE ZONE TO THE BOTTOM OF THE PAVEMENT ZONE SHALL BE SELECT BACKFILL CONSISTING OF NATIVE MATERIAL FREE OF ROCKS, CLAY AND ORGANIC MATERIAL. MATERIAL SHALL PASS THROUGH A 3–INCH SIEVE. MILLED ASPHALT AND ROAD BASE MATERIAL THAT PASSES A 2–INCH SIEVE MAY BE BLENDED WITH THE SELECT BACKFILL AND USED IN THIS TRENCH ZONE.
5. INSTALL GEOTEXTILE ALONG ENTIRE LENGTH AND WIDTH OF TRENCH, MIRAFI FW402 OR PRE–APPROVED EQUAL.

CB-11 – *DUAL PIPELINE TRENCH AND PAVING RESTORATION*
NOT TO SCALE

MARCO ISLAND UTILITIES
960 North Collier Blvd.
MARCO ISLAND, FL 34145

SCALE: NOT TO SCALE
DATE: APRIL 2007
DWG #: CB-11.DWG

REVISIONS

ROSE MARINA
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COLLIER COUNTY, FLORIDA

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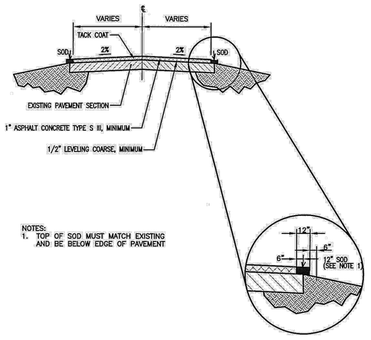
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

UTILITY DETAILS

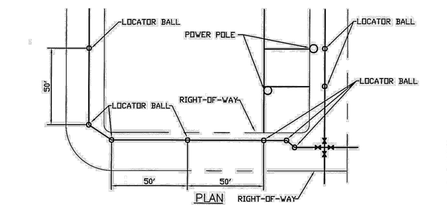
DATE	PROJECT NO.	SCALE	SHEET
09–20–14	2014–077	As Shown	U–01



NOTES:
1. TOP OF SOD MUST MATCH EXISTING AND BE BELOW EDGE OF PAVEMENT

CB-13 — ASPHALT OVERLAY
NOT TO SCALE

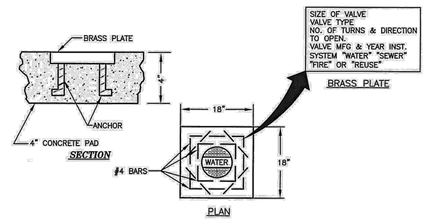
MARCO ISLAND UTILITIES	SCALE: NOT TO SCALE
960 North Collier Blvd. MARCO ISLAND, FL 34145	DATE: APRIL 2007
	DWG #: CB-13.DWG



NOTES:
1. LOCATOR MARKERS ARE TO BE 4" BALL MARKER AS MANUFACTURED BY 3M, MODEL 1423-XR/10 FOR WATER (BLUE), 1424-XR/10 FOR WASTEWATER (GREEN) AND 1424-XR/10 FOR REUSE WATER (PINK).
2. PRESSURE MAINS CROSSING ROAD: LOCATE BALLS TO BE PLACED NO MORE THEN 2'-0" FROM OUTSIDE EDGE OF PAVEMENT.
3. MARKERS ARE TO BE INSTALLED AT ALL CHANGE OF DIRECTIONS AND FITTINGS ABSENT OF ANY VALVE, ON STRAIGHT RUNS, MARKERS ARE TO BE INSTALLED EVERY 50'.
4. PROVIDE CONSTRUCTION RECORD DRAWINGS SHOWING THE LOCATION OF PRESSURE MAIN LOCATOR BALLS AND THE BAR CODE FOR EACH BALL.
5. SEE DETAILS SS-20 THROUGH SS-23 FOR LOCATOR TAPE AND BALL MARKERS FOR GRAVITY SEWER MAINS AND LATERALS.
6. METALLIC LOCATOR TAPE IS REQUIRED ABOVE GRAVITY SEWER MAINS. LOCATOR BALLS ARE NOT REQUIRED ABOVE GRAVITY SEWER MAINS.

CB-14 — LOCATOR TAPE AND BALL MARKERS FOR PRESSURE MAINS
NOT TO SCALE

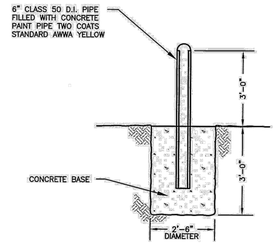
MARCO ISLAND UTILITIES	SCALE: NOT TO SCALE
960 North Collier Blvd. MARCO ISLAND, FL 34145	DATE: APRIL 2007
	DWG #: CB-14.DWG



NOTES:
1. ALL VALVE BOX LIDS IN TRAFFIC AREAS ARE TO BE TYLER PIPE LOCKLID OR MIU APPROVED EQUAL.

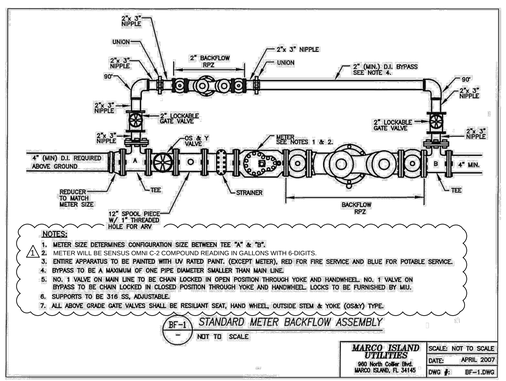
CB-16 — VALVE PAD
NOT TO SCALE

MARCO ISLAND UTILITIES	SCALE: NOT TO SCALE
960 North Collier Blvd. MARCO ISLAND, FL 34145	DATE: APRIL 2007
	DWG #: CB-16.DWG



CB-17 — GUARD POST
NOT TO SCALE

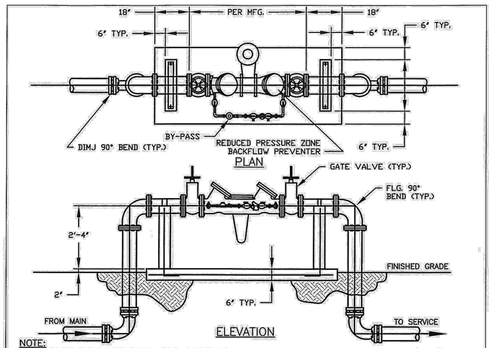
MARCO ISLAND UTILITIES	SCALE: NOT TO SCALE
960 North Collier Blvd. MARCO ISLAND, FL 34145	DATE: APRIL 2007
	DWG #: CB-17.DWG



NOTES:
1. METER SIZE DETERMINES CONFIGURATION SIZE BETWEEN TEE "A" & "B".
2. METER WILL BE SENSUS OMNI C-2 COMPOUND READING IN GALLONS WITH 6 DIGITS. ⚠
3. ENTIRE APPARATUS TO BE PAINTED WITH UV RATED PAINT. (EXCEPT METER), RED FOR FIRE SERVICE AND BLUE FOR POTABLE SERVICE.
4. BYPASS TO BE A MAXIMUM OF ONE PIPE DIAMETER SMALLER THAN MAIN LINE.
5. NO. 1 VALVE ON MAIN LINE TO BE CHAIN LOCKED IN OPEN POSITION THROUGH YOKE AND HANDWHEEL. NO. 1 VALVE ON BYPASS TO BE CHAIN LOCKED IN CLOSED POSITION THROUGH YOKE AND HANDWHEEL. LOCKS TO BE FURNISHED BY MIU.
6. SUPPORTS TO BE 316 SS, ADJUSTABLE.
7. ALL ABOVE GRADE GATE VALVES SHALL BE RESILIANT SEAT, HAND WHEEL, OUTSIDE STEM & YOKE (OS&Y) TYPE.

BF-1 — STANDARD METER BACKFLOW ASSEMBLY
NOT TO SCALE

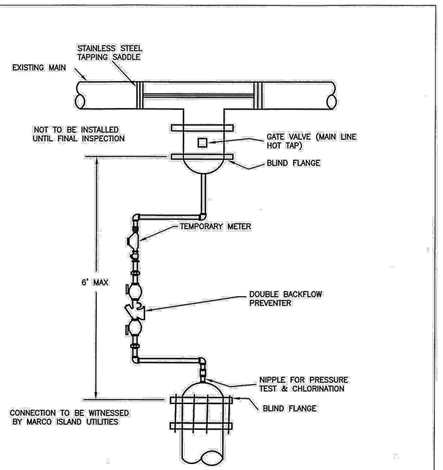
MARCO ISLAND UTILITIES	SCALE: NOT TO SCALE
960 North Collier Blvd. MARCO ISLAND, FL 34145	DATE: APRIL 2007
	DWG #: BF-1.DWG



NOTE:
1. ALL ABOVE GRADE GATE VALVES SHALL BE RESILIANT SEAT, HAND WHEEL, OUTSIDE STEM & YOKE (OS&Y) TYPE.
2. ALL ABOVE GRADE PIPING 3 INCHES IN DIA. & LARGER SHALL BE DUCTILE IRON WITH FLANGED ENDS, CLASS 53. ALL BELOW GRADE PIPING SHALL BE DIMJ W/ RESTRAINING TYPE DEVICES, MEGA-LUG OR APPROVED EQUAL. PIPING SMALLER THAN 3 INCHES SHALL BE BRASS.
3. ALL ASSEMBLIES SHALL BE 30 INCHES ABOVE FINISHED GRADE LEVEL, AND HAVE A 6" (MINIMUM) THICK CONCRETE SLAB REINFORCED W/ #5 @ 12" E.W. THE OVERALL SLAB DIMENSIONS SHALL BE DETERMINED BY THE ASSEMBLY SIZE.
4. BY-PASS DETECTOR METER WILL BE CENSUS OMNI C-2 WATER METER WITH TOUCH READ REGISTER, IN GALLONS AND WILL READ IN 6-DIGITS. ⚠
5. DEPENDING ON LOCATION, A FENCE MAY BE REQUIRED AROUND ASSEMBLY FOR SAFETY.
6. FIRE MAIN SHALL BE IN ADDITION TO CUSTOMER SERVICE/SUPPLY MAIN.
7. OWNER SHALL TEST ASSEMBLY AND SUBMIT TEST REPORTS TO MIU ANNUALLY.
8. SUPPORTS TO BE 316 SS, ADJUSTABLE.
9. NO. 1 VALVE ON MAIN LINE TO BE CHAIN LOCKED IN OPEN POSITION THROUGH YOKE AND HANDWHEEL. NO. 1 VALVE ON BYPASS TO BE CHAIN LOCKED IN CLOSED POSITION THROUGH YOKE AND HANDWHEEL. LOCKS TO BE FURNISHED BY MIU.
10. ENTIRE APPARATUS TO BE PAINTED WITH RED UV RATED PAINT. (EXCEPT METER).

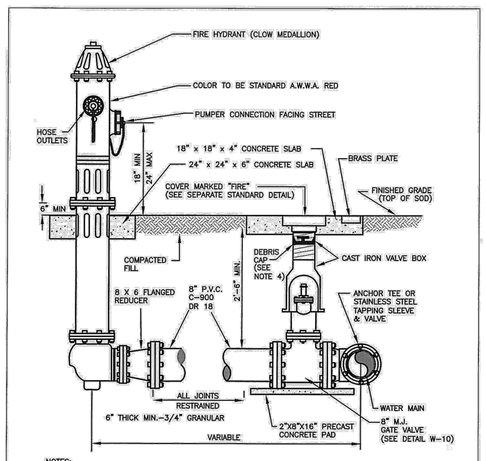
BF-4 — DEDICATED FIRE FLOW BACKFLOW ASSEMBLY
NOT TO SCALE

MARCO ISLAND UTILITIES	SCALE: NOT TO SCALE
960 N. COLLIER BLVD. MARCO ISLAND, FL 34145	DATE: APRIL 2007
	DWG #: BF-4.DWG



W-1 — CONSTRUCTION JUMPER ASSEMBLY (OPTIONAL)
NOT TO SCALE

MARCO ISLAND UTILITIES	SCALE: NOT TO SCALE
960 North Collier Blvd. MARCO ISLAND, FL 34145	DATE: APRIL 2007
	DWG #: W-1.DWG



NOTES:
1. IF EXISTING WATER MAIN IS 10-INCHES OR LARGER, DRAFT TUBE ASSEMBLY AND TEE MUST BE A MINIMUM OF 8-INCH REDUCING TO 6-INCH FOR HYDRANT CONNECTION AS SHOWN.
2. IF EXISTING MAIN IS 8 TO 6 INCHES IN DIAMETER, DRAFT TUBE ASSEMBLY AND TEE IS REQUIRED TO BE 6 INCHES MINIMUM.
3. ALL BURIED DUCTILE IRON FITTINGS AND VALVES TO BE POLYETHYLENE ENCASED IN ACCORDANCE WITH MIU STANDARD SPECIFICATIONS.
4. CAST IRON VALVE RISER MUST BE ADJUSTED TO ACCEPT DEBRIS CAP.
5. HYDRANT TO BE PAINTED SAFETY YELLOW IF OWNED BY MIU. PRIVATELY OWNED WILL BE SAFETY RED. ⚠

W-2 — FIRE HYDRANT ASSEMBLY
NOT TO SCALE

MARCO ISLAND UTILITIES	SCALE: NOT TO SCALE
960 North Collier Blvd. MARCO ISLAND, FL 34145	DATE: APRIL 2007
	DWG #: W-2.DWG

REVISIONS		
⚠	REVISED PER CITY OF MARCO ISLAND	5-4-2015

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

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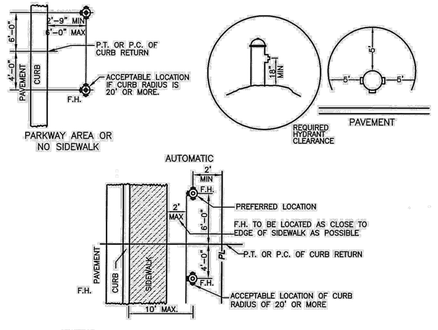
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

UTILITY DETAILS

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	U-02



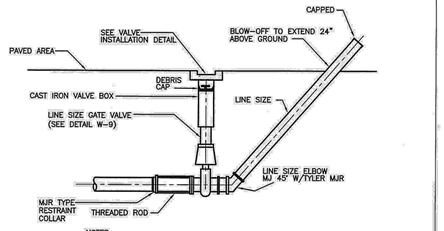
AUTOMATIC

NOTES:
1. OBSTRUCTIONS SUCH AS UTILITY POLES, STREET SIGNS, IRRIGATION BOXES, FENCES, ETC. MUST NOT BE PLACED BETWEEN CURB AND HYDRANT.
2. SOME LOCATIONS APPLY AT EITHER END OF CURB RETURNS.
3. DIMENSION SHOWN OF CONSTRUCTION DRAWINGS SUPERCEDE LOCATIONS SHOWN HERE.
4. PIPE BOLLARDS MAY BE APPROVED OR REQUIRED AT THE DISCRETION OF MIU.
5. ALL BURIED DUCTILE IRON FITTINGS AND VALVES TO BE POLYETHYLENE ENCASED IN ACCORDANCE WITH MIU STANDARD SPECIFICATIONS.

W-4 — *FIRE HYDRANT LOCATIONS/CLEARANCE*

NOT TO SCALE

MARCO ISLAND UTILITIES 950 North Collier Blvd. MARCO ISLAND, FL 34145	SCALE: NOT TO SCALE
	DATE: APRIL 2007
	DWG #: W-4.DWG

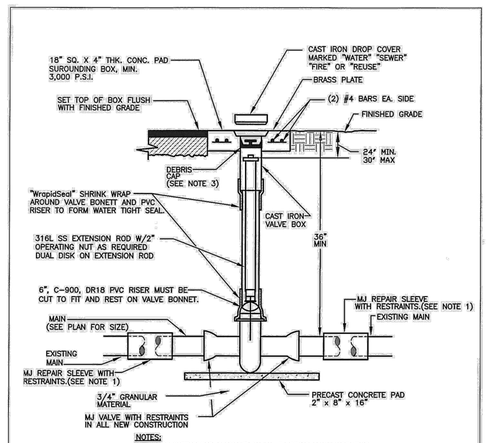


NOTES:
1. VALVE BOX RISER SHALL NOT BEAR ON THE VALVE OR PIPE.
2. SEE VALVE INSTALLATION DETAIL FOR VALVE SUPPORT.
3. TEMPORARY BLOW-OFF TO REMAIN IN PLACE UNTIL DISTRIBUTION SYSTEM HAS BEEN FLUSHED.
4. AFTER CLEARANCE IS OBTAINED REFER TO PERMANENT BLOW-OFF DETAIL FOR FINAL BLOW-OFF CONFIGURATION.
5. ALL BURIED DUCTILE IRON FITTINGS AND VALVES TO BE POLYETHYLENE ENCASED IN ACCORDANCE WITH MIU STANDARD SPECIFICATIONS.

W-7 — *TEMPORARY FLUSHING ASSEMBLY*

NOT TO SCALE

MARCO ISLAND UTILITIES 950 North Collier Blvd. MARCO ISLAND, FL 34145	SCALE: NOT TO SCALE
	DATE: APRIL 2007
	DWG #: W-7.DWG

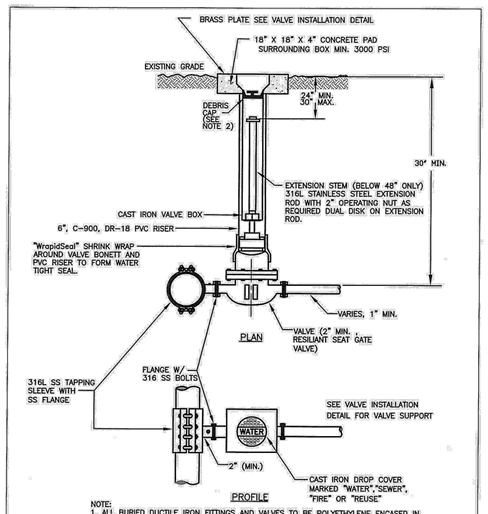


NOTES:
1. WHEN INSTALLING A VALVE IN AN EXISTING MAIN USE TWO REPAIR SLEEVES (MJ FOR DIP, OR PVC FOR PVC MAINS) ONE AT EACH END OF THE CUT.
2. ALL BURIED DUCTILE IRON FITTINGS AND VALVES TO BE POLYETHYLENE ENCASED IN ACCORDANCE WITH MIU STANDARD SPECIFICATIONS.
3. CAST IRON VALVE RISER MUST BE ADJUSTED TO ACCEPT DEBRIS CAP.
4. PROVIDE VALVE OPERATOR EXTENSION (DETAIL W-16) WHEN DEPTH TO TOP OF PIPE IS 48" OR GREATER.

W-10 — *VALVE INSTALLATION*

NOT TO SCALE

MARCO ISLAND UTILITIES 950 North Collier Blvd. MARCO ISLAND, FL 34145	SCALE: NOT TO SCALE
	DATE: APRIL 2006
	DWG #: W-10.DWG



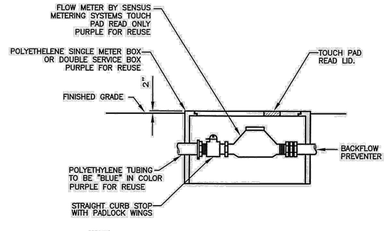
NOTE:
1. ALL BURIED DUCTILE IRON FITTINGS AND VALVES TO BE POLYETHYLENE ENCASED IN ACCORDANCE WITH MIU STANDARD SPECIFICATIONS.
2. CAST IRON VALVE RISER MUST BE ADJUSTED TO ACCEPT DEBRIS CAP.

W-12 — *1" – 30" TAPPING SLEEVE AND VALVE FOR 1" TO 30" SERVICES*

NOT TO SCALE

MARCO ISLAND UTILITIES 950 North Collier Blvd. MARCO ISLAND, FL 34145	SCALE: NOT TO SCALE
	DATE: APRIL 2007
	DWG #: W-12.DWG

⚠ METERS & METER BOXES SIZES 5/8 X 3/4 WILL BE NEPTUNE T-10, READ IN GALLONS, TOUCH PAD READ. METER BOXES AND LIDS WILL BE DFW1200 WITH AMR HOLE LOCATED AS NOT TO INTERFERE WITH METER AND LID FIT AND MUST BE BEE PROOF. METERS 1.5" – 2.0" WILL BE DFW 1500 WITH AMR HOLE LOCATED AS NOT TO INTERFERE WITH METER AND LID FIT AND MUST BE BEE PROOF.



NOTE:
1. ALL BURIED DUCTILE IRON FITTINGS AND VALVES TO BE POLYETHYLENE ENCASED IN ACCORDANCE WITH MIU STANDARD SPECIFICATIONS.

W-13 — *METER BOX ASSEMBLY*

NOT TO SCALE

MARCO ISLAND UTILITIES 950 North Collier Blvd. MARCO ISLAND, FL 34145	SCALE: NOT TO SCALE
	DATE: APRIL 2007
	DWG #: W-13.DWG

REVISIONS

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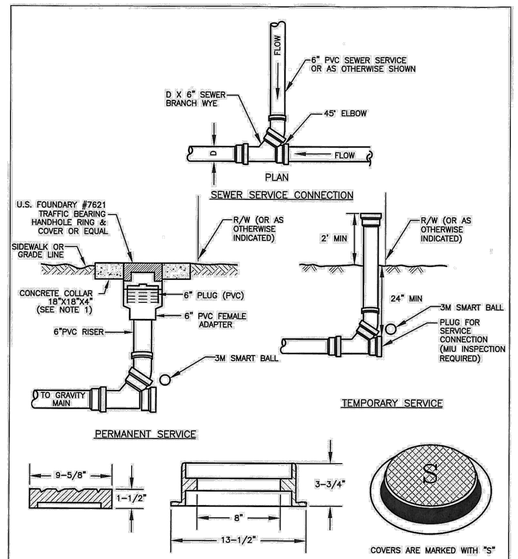
Phone (239) 851-8239

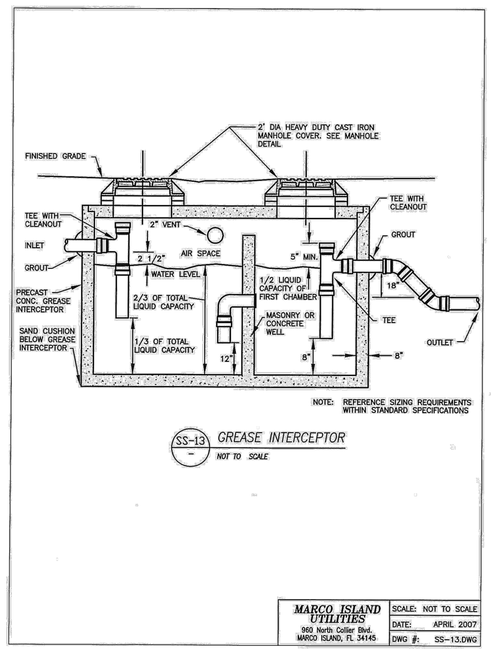
PERMIT PLANS

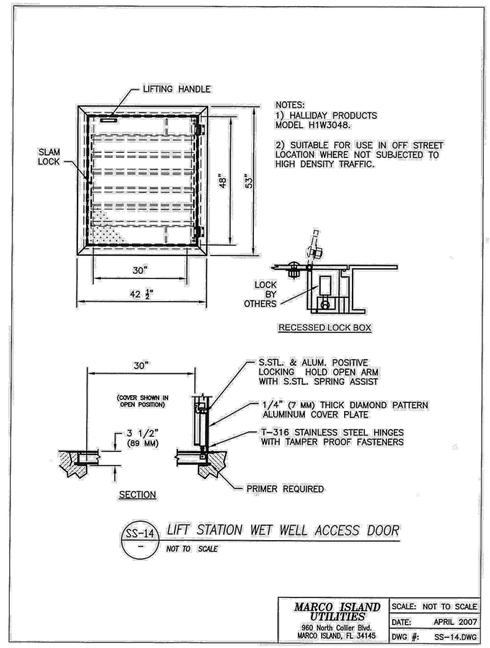
C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

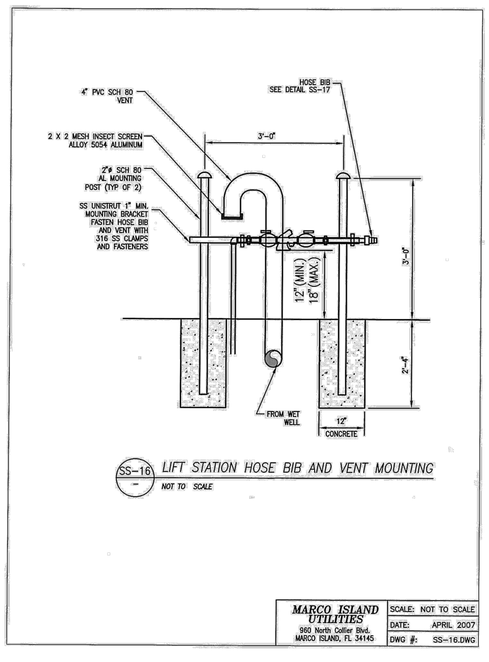
UTILITY DETAILS

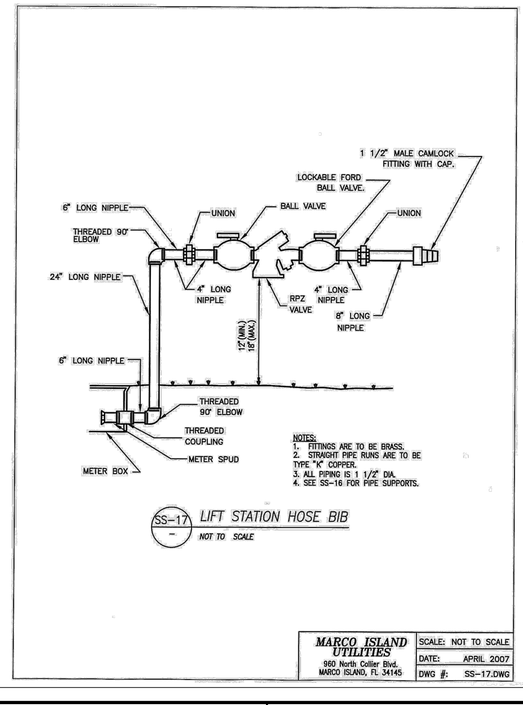
DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	U-03

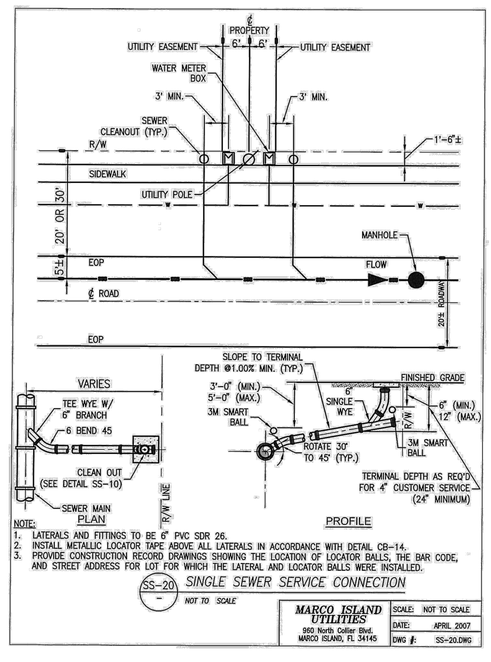












REVISIONS

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

HAGAN ENGINEERING
1250 TAMIAMI TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

UTILITY DETAILS

DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	U-04