

GENERAL NOTES

- ELEVATIONS ARE REFERENCED TO AMERICAN GEODETIC VERTICAL DATUM N.A.V.D. OF 1988.
- THE LOCATION OF EXISTING UTILITIES, PAVEMENT, VEGETATION, AND MISCELLANEOUS IMPROVEMENTS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
- 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.
- EXISTING FACILITIES SHALL BE RESTORED TO A CONDITION EQUIVALENT TO THAT WHICH EXISTED PRIOR TO COMMENCING CONSTRUCTION, AT NO ADDITIONAL COST TO OWNER.
- 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.
- LOCATIONS OF INLETS AND STORM DRAINS MAY BE FIELD ADJUSTED TO PRESERVE EXISTING VEGETATION.
- THE CONTRACTOR IS REQUIRED TO ADJUST ALL VALVE BOXES, MANHOLE RIMS, GRATES, ETC. AS NECESSARY TO MATCH PROPOSED GRADES.
- CONTRACTOR SHALL NOTIFY THE CITY OF MARCO ISLAND DIVISION OF DEVELOPMENT REVIEW A MINIMUM OF 72 HOURS PRIOR TO ALL REQUIRED INSPECTIONS.
- 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.
- ALL UNPAVED AREAS DISTURBED DURING CONSTRUCTION SHALL BE SEEDED AND MULCHED UNLESS NOTED OTHERWISE.
- EXISTING OFF-SITE DRAINAGE PATTERNS SHALL BE MAINTAINED DURING CONSTRUCTION.
- CONTRACTOR SHALL RETAIN, ON THE WORK SITE, COPIES OF ANY PERMITS NECESSARY FOR CONSTRUCTION.
- CONTRACTOR SHALL PROMPTLY REPORT ALL FIELD CHANGES TO THE ENGINEER.
- CONTRACTOR SHALL CLEAR ALL EXCAVATION AND FILL AREAS; ACTUAL LIMITS OF CLEARING SHALL BE DETERMINED IN THE FIELD BY OWNER OR ENGINEER.
- SITE GRADES MAY BE ADJUSTED IN FIELD BY ENGINEER.
- LOCATION OF STORM DRAINAGE HEADWALLS ARE SUBJECT TO MODIFICATION IN THE FIELD BY OWNER OR ENGINEER TO PRESERVE EXISTING VEGETATION.
- CONTRACTOR SHALL USE DESIGNATED CONSTRUCTION ENTRANCES FOR EMPLOYEES AND DELIVERY OF MATERIALS.
- 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.
- 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.
- CONTRACTOR IS REQUIRED TO OBTAIN FROM THE ENGINEER AND OWNER WRITTEN APPROVAL FOR ANY DEVIATIONS FROM THE PLANS AND/OR SPECIFICATIONS.
- 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.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY REQUIRED DEWATERING PERMITS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY REQUIRED TREE REMOVAL PERMITS.
- CONTRACTOR SHALL SOD, SEED, AND MULCH ALL MEDIAN ISLANDS.
- THE REVIEW AND APPROVAL OF IMPROVEMENT PLANS DOES NOT AUTHORIZE THE CONSTRUCTION OF REQUIRED IMPROVEMENTS WHICH ARE INCONSISTENT WITH EXISTING EASEMENTS OF RECORD.
- EASEMENTS DEPICTED ARE FOR INFORMATIONAL PURPOSES ONLY.
- 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.
- ALL SWALE ELEVATIONS SHALL BE AT TOP OF SOD.
- SHOP DRAWINGS OF ALL MATERIALS BEING USED SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF CONSTRUCTION PLANS ON THE JOB SITE DURING ALL PHASES OF CONSTRUCTION.
- 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.
- AN ON-SITE PRE-CONSTRUCTION MEETING FOR WATER AND/OR SEWER IS REQUIRED PRIOR TO CONSTRUCTION.
- EXOTIC VEGETATION SHALL BE REMOVED FROM THE SITE AND SUBSEQUENT ANNUAL EXOTIC REMOVAL (IN PERPETUITY) SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER.
- CONTRACTOR RESPONSIBLE FOR COMPLYING WITH FEDERAL (OSHA), STATE (FLORIDA STATUTES), AND LOCAL TRENCHING AND EXCAVATION SAFETY STANDARDS.

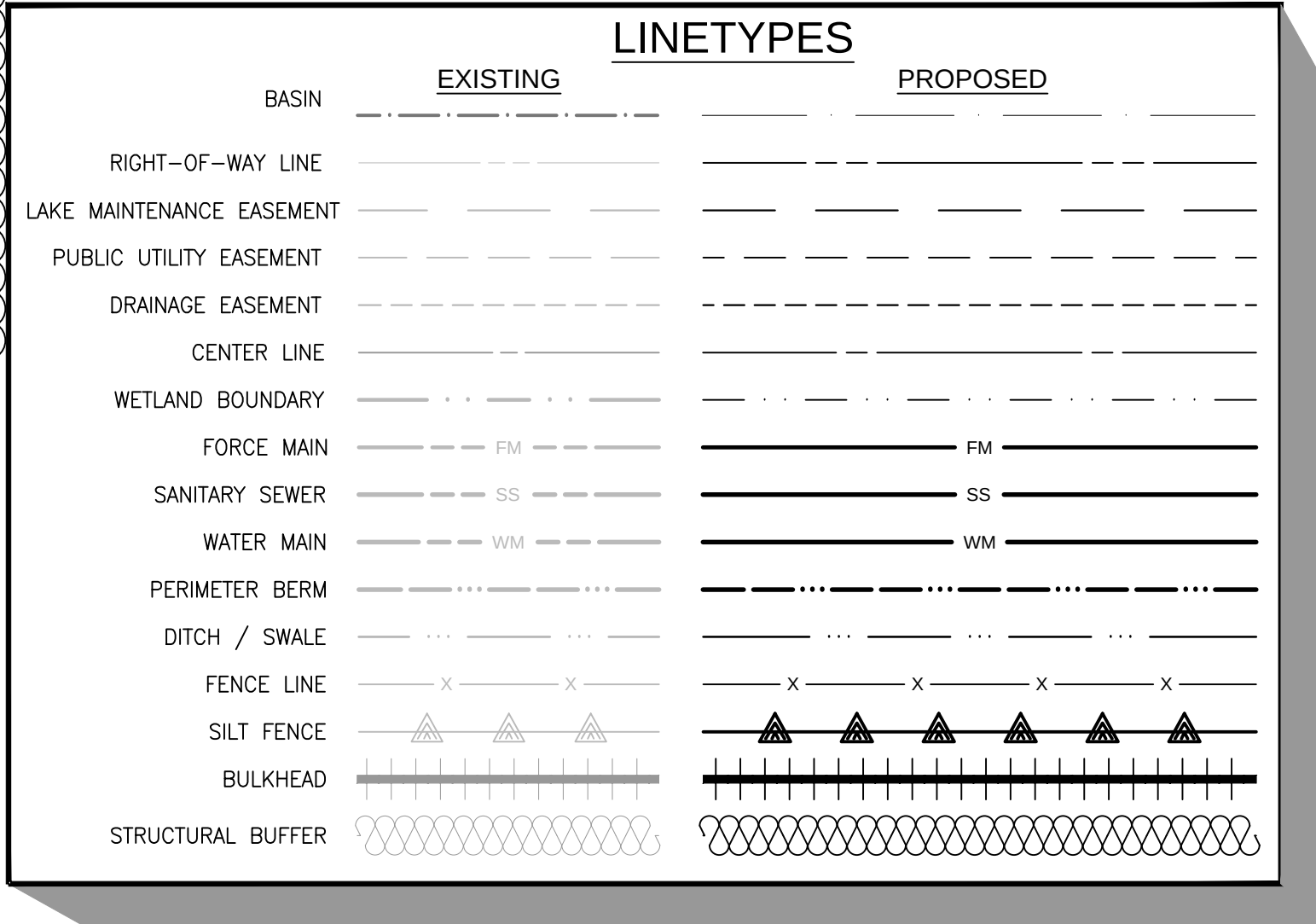
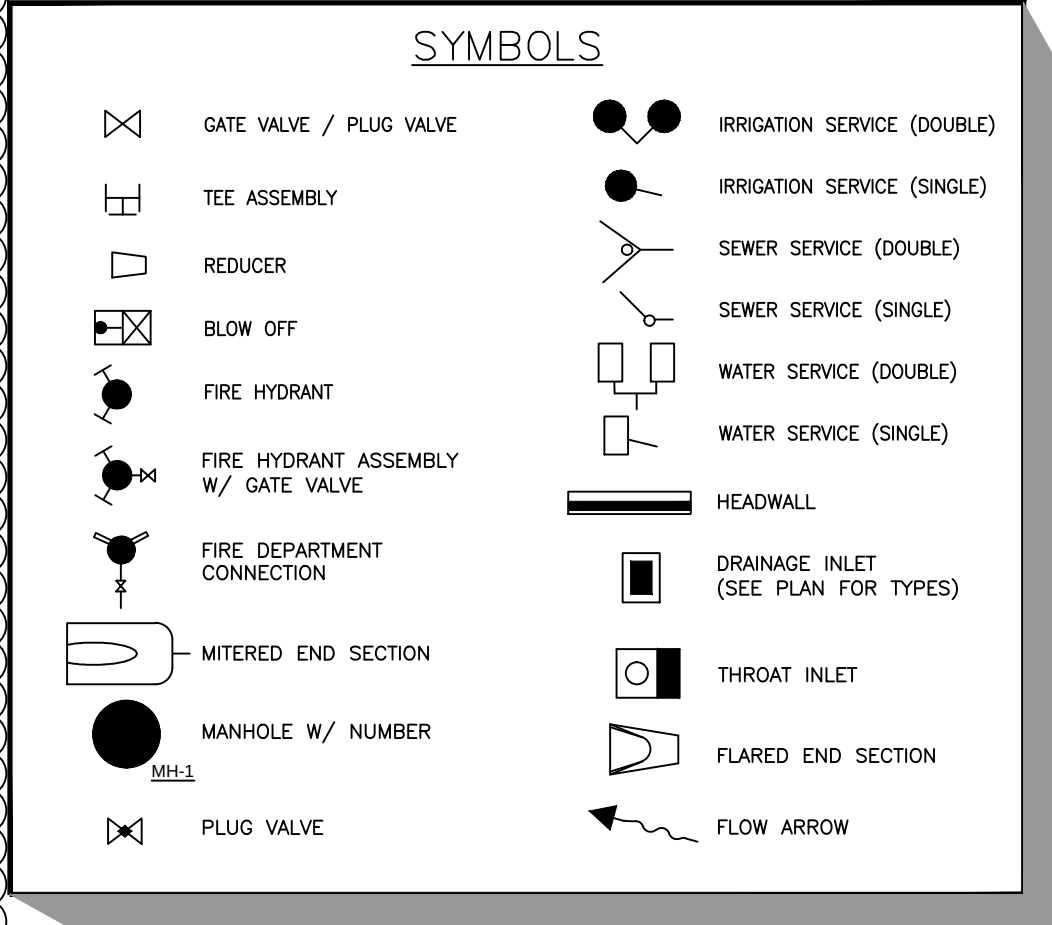
GENERAL UTILITY NOTES

- 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.
- THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE AGENCY PRIOR TO COMMENCING WORK WITHIN SUCH AGENCY'S JURISDICTION.
- 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.
- 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.
- WATER LINES AND FORCE MAIN SHALL HAVE A MAXIMUM OF 48" OF COVER.
- 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.
- ALL PRESSURE LINES (WATER & SEWER) SHALL BE DEFLECTED AROUND CATCH BASINS TO MAINTAIN 5' MINIMUM SEPARATION. 45DEG. BENDS SHELL BE UTILIZED IF NECESSARY.
- ALL PVC WATER MAIN SHALL BE AWWA C-900, CLASS 200, DR14, UNLESS OTHERWISE NOTED.
- ALL TEMPORARY BLOWOFFS ARE TO BE REMOVED AFTER SATISFACTORY BACTERIAL TESTING IS COMPLETED AND THE CONNECTION IS MADE TO THE EXISTING WATER MAIN.
- ALL WATER MAINS MUST BE FLUSHED AND DETERMINED TO BE BACTERIOLOGICAL CLEARED BEFORE CONNECTIONS ARE MADE TO THE PROPOSED WATER DISTRIBUTION SYSTEM.
- 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.
- ALL WATER OR FORCE MAIN DIPS SHALL USE C900 DR14 PVC WITH RESTRAINING JOINTS. PIPE CONFLICT FITTINGS ARE SHOWN IN PIPE CONFLICT THE DETAIL.
- EACH SEWER LATERAL SHALL BE MARKED WITH A 3M MAGNETIC MARKER FOR FUTURE LOCATION.
- ALL SEWER SERVICES SHALL BE 6" DR26 PVC & CONSTRUCTED AT 0.5% SLOPE MINIMUM PER PLUMBING CODE.
- ALL INSPECTIONS REQUIRE 48 HOUR NOTICE. CONSTRUCTION-RELATED INSPECTIONS, WHERE APPLICABLE, SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
 - ALL WATER, REUSE, AND SEWER TAPS AND CONNECTIONS WILL REQUIRE INSPECTION FROM MIU WITHIN CITY RIGHT OF WAY
 - MASTER METER AND BYPASS PIPING.
 - JACK & BORE CASINGS.
 - PRESSURE TESTS.
 - INFILTRATION/EXFILTRATION TESTS.
 - LIFT STATION INSTALLATION, PRIOR TO COVER-UP AND START-UP.
 - LIFT STATIONS START-UP.
 - CONNECTIONS TO EXISTING POTABLE WATER, NON-POTABLE IRRIGATION WATER AND WASTEWATER SYSTEMS.
 - 8" DIAMETER OR LARGER CASING INSTALLATIONS.
 - OTHER SPECIAL REQUIREMENTS AS SPECIFIED BY THE CITY OF MARCO ISLAND STAFF AT THE TIME OF CONSTRUCTION DOCUMENT APPROVAL.
 - CHLORINATION OF WATER LINES AND REFUSHING 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.
 - INSTALLATION OF TEMPORARY METERS/BACKFLOWS.
 - 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).
 - 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
 - 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
- ALL PVC PIPE 4", TO 12", INSTALLED BELOW PAVED STREETS SHALL BE C900, DR14.
- 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.
- METERS 2" AND SMALLER WILL BE NEPTUNE, METERS 3" AND LARGER WILL BE SENSUS OMNI C-2 COMPOUND.
- ALL WATER METER COMPONENTS THAT COME IN CONTACT WITH DRINKING WATER SHALL CONFORM WITH NSF STANDARD 61.
- CONTRACTOR TO VERIFY CONDUIT SIZE AND LOCATIONS WITH UTILITY PROVIDERS PRIOR TO INSTALLATION.
- POLYVINYL CHLORIDE PIPE (PVC) FOR PIPE SIZES 4"-12" SHALL MEET THE REQUIREMENTS OF AWWA C-900.
- BACKFLOW PREVENTER ASSEMBLIES SHALL CONFORM TO AWWA M-14 STANDARDS AND MUST BE REDUCED PRESSURE ZONE (RPZ).
- 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.
- FIRE HYDRANTS SHALL NOT BE USED FOR TEMPORARY BACTERIAL SAMPLE POINTS. ONLY TEMP. OR PERMANENT SAMPLE POINTS SHALL BE USED.
- ALL WATER AND SEWER FACILITIES WITHIN THE PUBLIC ROW WILL BE CONVEYED TO CITY OF MARCO ISLAND FOR OWNERSHIP & MAINTENANCE.
- HYDRANTS TO BE BAGGED UNTIL BACTERIOLOGICAL SAMPLING IS CLEARED AND OPERATIONAL.
- ALL DIPS SHALL USE 45 DEG. MECHANICAL JOINT FITTINGS WITH RETAINER GLANDS AND CLASS 200 PVC PIPE.
- 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

- LENGTH OF STORM DRAIN PIPES ARE APPROXIMATE AND ARE MEASURED FROM CENTER OF STRUCTURE.
- 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.
- 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.
- THE PROPOSED STABILIZED SUBGRADE SHALL HAVE L.B.R OF 40 AND SHALL BE COMPACTED TO 98% MINIMUM DENSITY AS DETERMINED BY AASHTO T-180.
- 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.
- LIMEROCK BASE SHALL BE PRIMED IN ACCORDANCE WITH SECTION 200-8 OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION (CURRENT EDITION.)
- 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.
- TWO (2) COPIES OF THE L.B.R. MODIFIED (AASHTO T-180) PROCTOR AND COMPACTION TEST RESULTS SHALL BE SUBMITTED TO THE ENGINEER.
- 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.
- ALL FRAME AND GRATE INLETS TO BE HEAVY DUTY TRAFFIC RATED. SEE ASPHALT PAVEMENT SECTION DETAILS SHEET C-17
- ROSE MARINA WILL BE RESPONSIBLE FOR THE MAINTENANCE OF THE WATER MANAGEMENT FACILITY.

MIU - MARCO ISLAND UTILITIES



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
CL	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	DIAMETER
DIAG	DIAGONAL
DM	DIMENSION
DIST	DISTANT
DIP	DUCTILE IRON PIPE
DE	DRAINAGE EASEMENT
DWG	DRAWING
E	EAST
EA	EACH
EL/ELEV	ELEVATION
EQUIP	EQUIPMENT
EROP	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
PS	PLUG VALVE
PVC	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
POLY, PE	POLYETHYLENE
PAVT	PAVEMENT
PC	POINT OF CURVATURE
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
SO	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

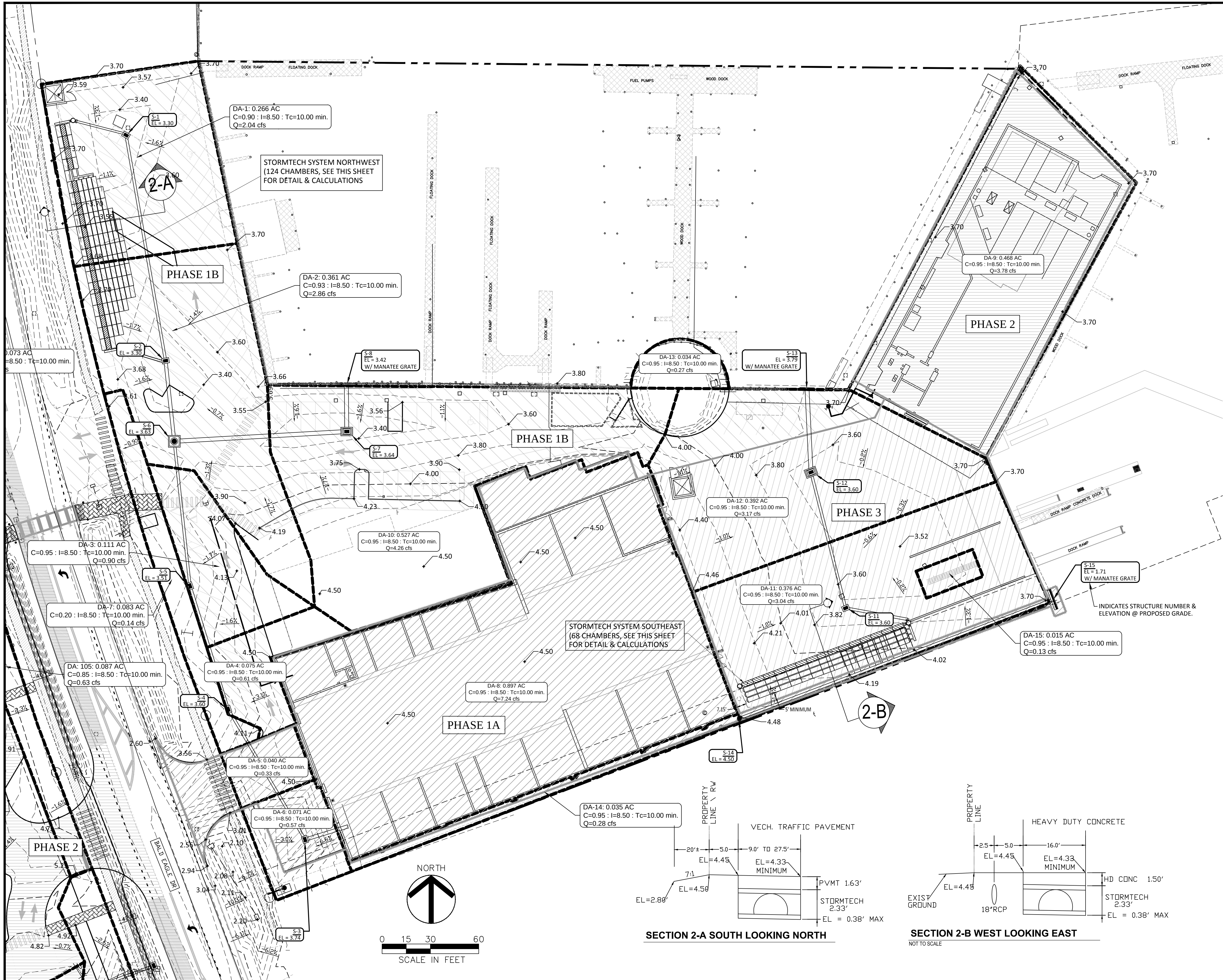
1250 TAMiami TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

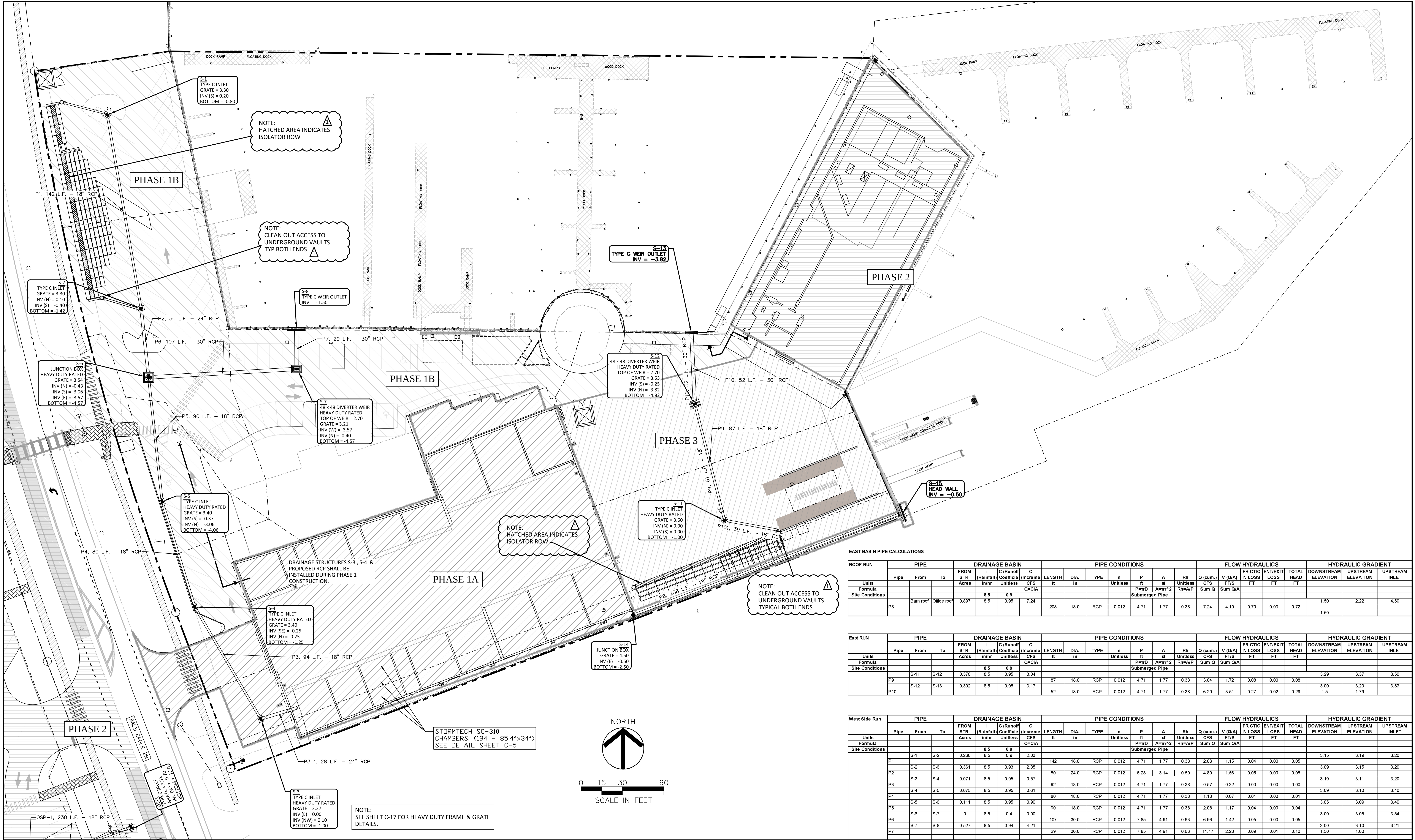
C. D. HAGAN, P.E.
FL REG. #38649
EB #29474
DATE:

ABBREVIATIONS & GENERAL NOTES

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



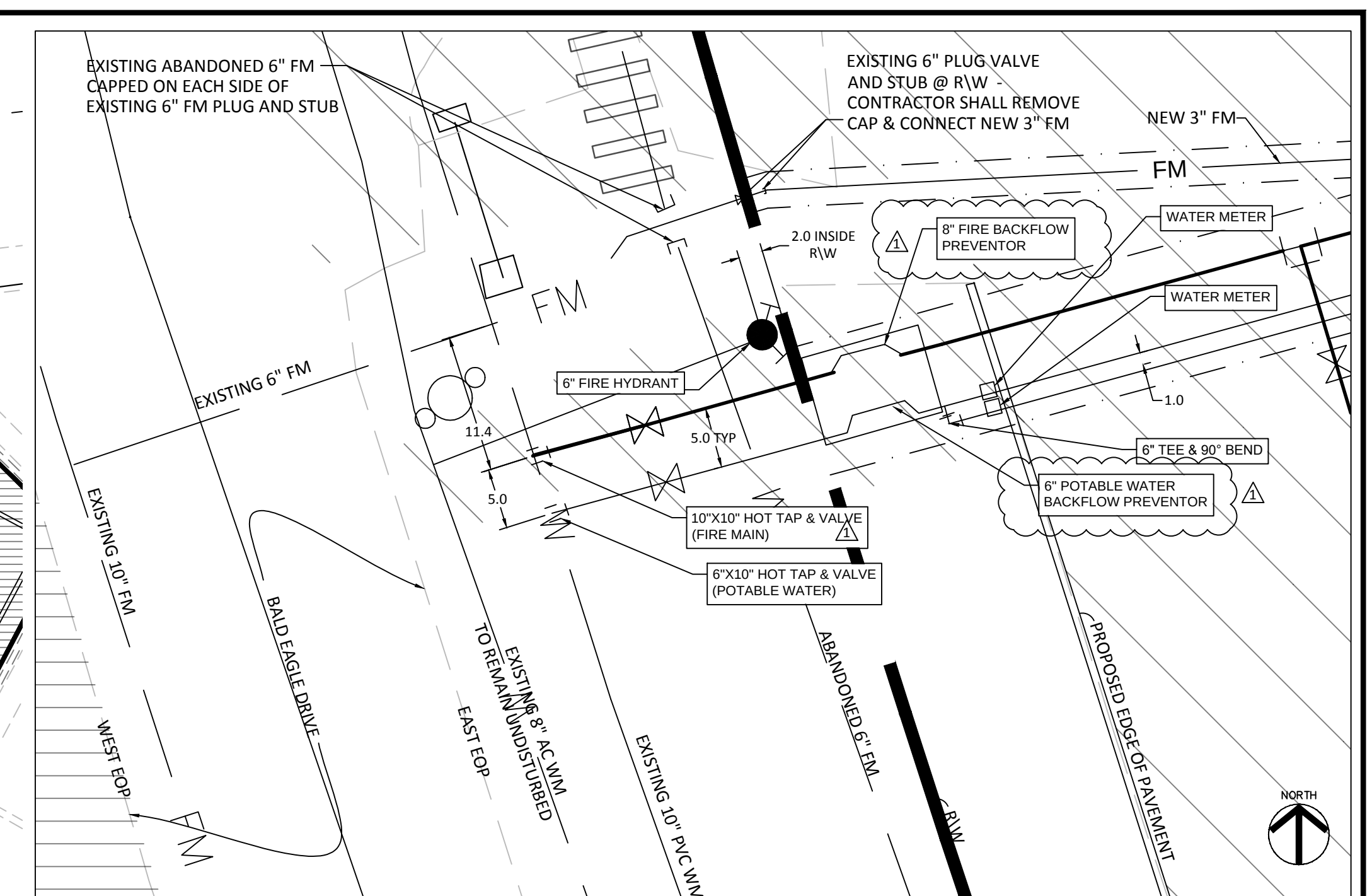
Quality Treatment Calculations is and flows								
Area #	Acres	Description	Treatment for 0.75" Volume		25 Year design flows		Q = C/A (cfs)	Discharge
			C (cf)	Constant (in/hr)				
1	0.266	Pavement	724.2	0.9	8.5	2.03	S-1	
2	0.361	Pavement	982.8	0.9	8.5	2.76	S-2	
3	0.111	Pavement and roof	302.2	0.9	8.5	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	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	0.63	Overland to Bald Eagle Drive	
8	0.897	Barn and office Roof	0.0	N/A	0.9	8.66	P-8 to Bay	
9	0.468	Service Center Roof	0.0	N/A	0.9	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	0.26	Rain leaders to bay	
14	0.035	Outside basin	0.0	N/A	0.9	0.27	Overland off site	
15	0.015	Outside basin	0.0	N/A	0.9	0.11	Washdown excluded from drainage plan	
total In Basin			5932.3	cf				
n cross-section							STORMTECH SYSTEM SOUTHEAST	
Elevation			Area #	Acres	TreatVol	STORMTECH SYSTEM NORTHWEST		
			11	0.376	1023.7	ALL REMAINING AREAS		
r	4.50 NAVD		12	0.392	1067.2	Total CF Req'd = 3841.4		
water	0.38 NAVD		Total CF Req'd = 2090.9					
height	4.12 NAVD							
ver	21.00 In		CF					
n cover	12.00 In		Chambers					
eight	16.44 In Max		Use StormTech SC-130					
			Volume per Chamber					
			Chambers needed					
			31					
			191					



FAST BASIN PIPE CALCULATIONS																										
ROOF RUN		PIPE			DRAINAGE BASIN						PIPE CONDITIONS						FLOW HYDRAULICS						HYDRAULIC GRADIENT			
		Pipe	From	To	FROM STR.	I (Rainfall)	C (Runoff Coefficient)	Q (Incremental)	LENGTH	DIA.	TYPE	n	P	A	Rh	Q (cum.)	V (Q/A)	FRIC TION LOSS	ENTRANCE LOSS	TOTAL HEAD	DOWNSTREAM ELEVATION	UPSTREAM ELEVATION	UPSTREAM INLET			
Units	Formula				Acres	In/hr	Unitless	QFS CFS	ft	In	Unitless	ft	ft ²	Rh Unitless	CFS	FT/S	FT	FT	FT							
Site Conditions						8.5	0.9	Q=CIA				P=PD	A=PI ²	Rh=AP/2	Sum Q	Sum Q/A	Sum Q/A									
		P8	Barn roof	Office roof	0.897	8.5	0.95	7.24													1.50	2.22	4.50			
									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	I	C (Runoff	Q	LENGTH	DIA.	TYPE	n	P	A	Rh	Q (cum.)	FRIC	ENTR	TOTAL	DOWNSTREAM	UPSTREAM	UPSTREAM				
				STR.	(Rainfall)	Coefficient	(Incremental									LOSS	LOSS					HEAD	ELEVATION	ELEVATION	INLET
				Acres	In/In	Unitless	Q=CIA									FT	FT					FT			
Units	Formula											P=PrD	A=Pr*2	Rh=A/P	Sum Q	Sum Q/A									
Site Conditions																									
P9	S-11	S-12	0.376	8.5	0.95	3.04		87	18.0	RCP	0.012	4.71	1.77	0.38	3.04	1.72	0.08	0.00	0.08	3.29	3.37	3.50			
	S-12	S-13	0.392	8.5	0.95	3.17		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	3.53			

West Side Run	PIPE			DRAINAGE BASIN				PIPE CONDITIONS				FLOW HYDRAULICS						HYDRAULIC GRADIENT								
	Pipe	From	To	FROM	I	C	Q	LENGTH	Dia.	TYPE	n	P	A	Rh	Q (cum.)	V (Q/A)	FRIC	ENTR	TOTAL	DOWNSTREAM	UPSTREAM	UPSTREAM				
				STR.	(Rainfall)	(Runoff)	(Incremental)										LOSS	LOSS					HEAD	ELEVATION	ELEVATION	ELEVATION
				Acres	In/In	Coef	Q-CIA										N	FT					FT	FT	FT	FT
Units	Formula																									
Site Conditions																										
		S-1	S-2	0.266	8.5	0.9	2.03																			
P1		S-2	S-6	0.361	8.5	0.93	2.85	142	18.0	RCP	0.012	4.71	1.77	0.38	2.03	1.15	0.04	0.00	0.05				3.15	3.19	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				3.09	3.15	3.20	
P3		S-3	S-4	0.071	8.5	0.95	0.57	92	18.0	RCP	0.012	4.71	1.77	0.38		0.57	0.32	0.00	0.00	0.00				3.10	3.11	3.20
P4		S-4	S-5	0.075	8.5	0.95	0.61	80	18.0	RCP	0.012	4.71	1.77	0.38	1.18	0.67	0.01	0.00	0.01				3.09	3.10	3.40	
P5		S-5	S-6	0.111	8.5	0.95	0.90	90	18.0	RCP	0.012	4.71	1.77	0.38	2.08	1.17	0.04	0.00	0.04				3.05	3.09	3.40	
P6		S-6	S-7	0	8.5	0.4	0.00	107	30.0	RCP	0.012	7.85	4.91	0.63	6.96	1.42	0.05	0.00	0.05				3.00	3.05	3.54	
P7		S-7	S-8	0.527	8.5	0.94	4.21	29	30.0	RCP	0.012	7.85	4.91	0.63	11.17	2.28	0.09	0.01	0.10				3.00	3.10	3.21	



ENLARGED UTILITY CONNECTION DETAIL

Diagram illustrating a trench cross-section with various utilities and construction details:

- Utilities (from left to right):**
 - 3" FORCEMAIN *
 - 10" FIRE LINE *
 - 4" PVC POTABLE WATERMAIN
 - 4" PVC WATER MAIN *
- Conduits:**
 - 2" CONDUIT (multiple locations)
 - 2" CONDUIT (multiple locations)
 - 2" CONDUIT (multiple locations)
 - 2" CONDUIT (multiple locations)
- Other Features:**
 - RED LINE INDICATES GREASE LADEN SEWAGE FLOW
 - BLUE LINE INDICATES STANDARD SEWAGE FLOW
 - HEAVY DUTY PAVEMENT SECTION
 - 30" MIN. COVER
 - 1:1 MIN. SIDE SLOPE AND/OR TRENCH SHIELD TO BE DETERMINED BY ENGINEER BASED ON CONDITIONS.
 - 6" PVC SDR-26 SANITARY SEWER PIPE DEPTH VARIES FROM FROM ELEV. 0.20 TO (-)1.80
 - 12" ± BEDDING OF #57 STONE FOR PIPES WILL BE A MINIMUM OF 12" BEFORE THE PIPE TO SPRING LINE OF PIPE IN RIGHT OF WAY
 - 8.0' TRENCH
 - 2" HORIZONTAL AND 18" VERTICAL FROM ALL WATER, SEWER AND REUSE UTILITIES WITHIN THE RIGHT OF WAY.
 - 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.
 - 34" MIN. COVER ON 2" BLANK CONDUIT FOR FUTURE USE
 - EL. 3.2 TO 3.7 NAVD.

TYPICAL UTILITY TRENCH DETAIL * ALL PRESSURIZED PVC LINES SHALL BE C-900, CLASS 200, DR 14

CONFLICT DETAILS

C. D. HAGAN, P.E. FL REG. # 38649 EB #29474 DATE:	DATE 09-20-14	PROJECT NO. 2014-077	SCALE As Shown	SHEET C-7
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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

HAGAN

ENGINEERING

1250 TAMiami TRAIL N., STE. 203B

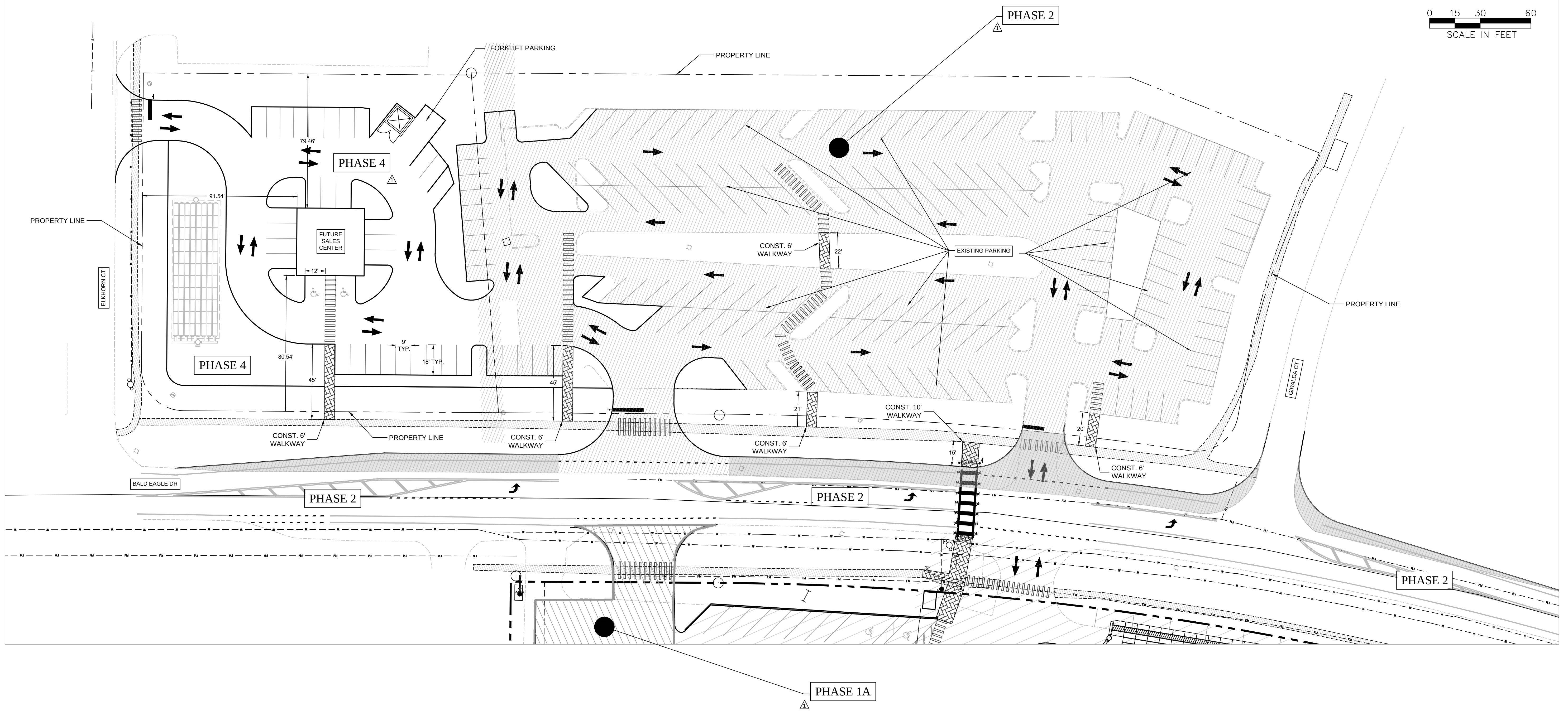
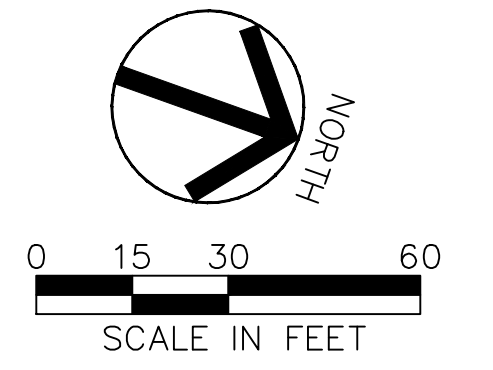
Naples, Florida 34102

Phone (239) 851-8239

PERMIT PLANS

C. D. HAGAN, P.E.
REG. #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

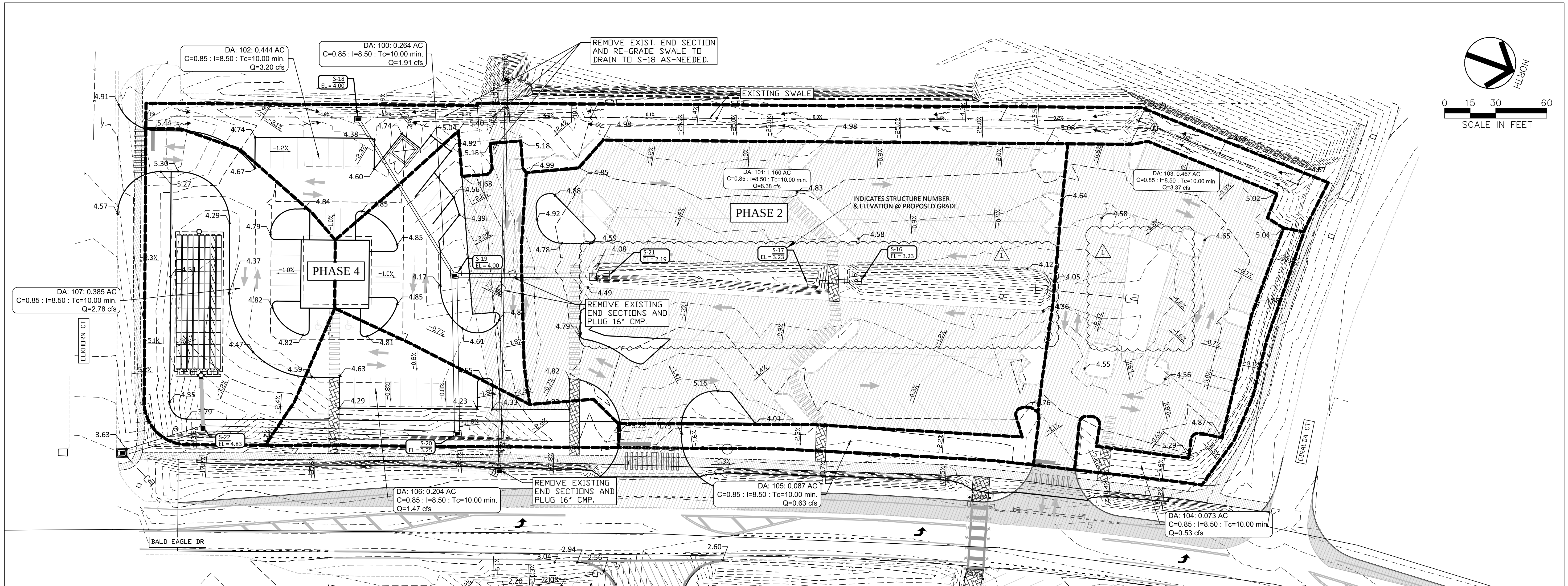
HAGAN
ENGINEERING

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

PERMIT PLANS

C. D. HAGAN, P.E.
FL REG. #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		25 Year design flows		Discharge
			(cf)	Volume	C	Q = C x I	
100	0.264	Parking lot	719.7	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
105	0.087	Outside basin	0.0	N/A	0.60	8.5	0.44
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	
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

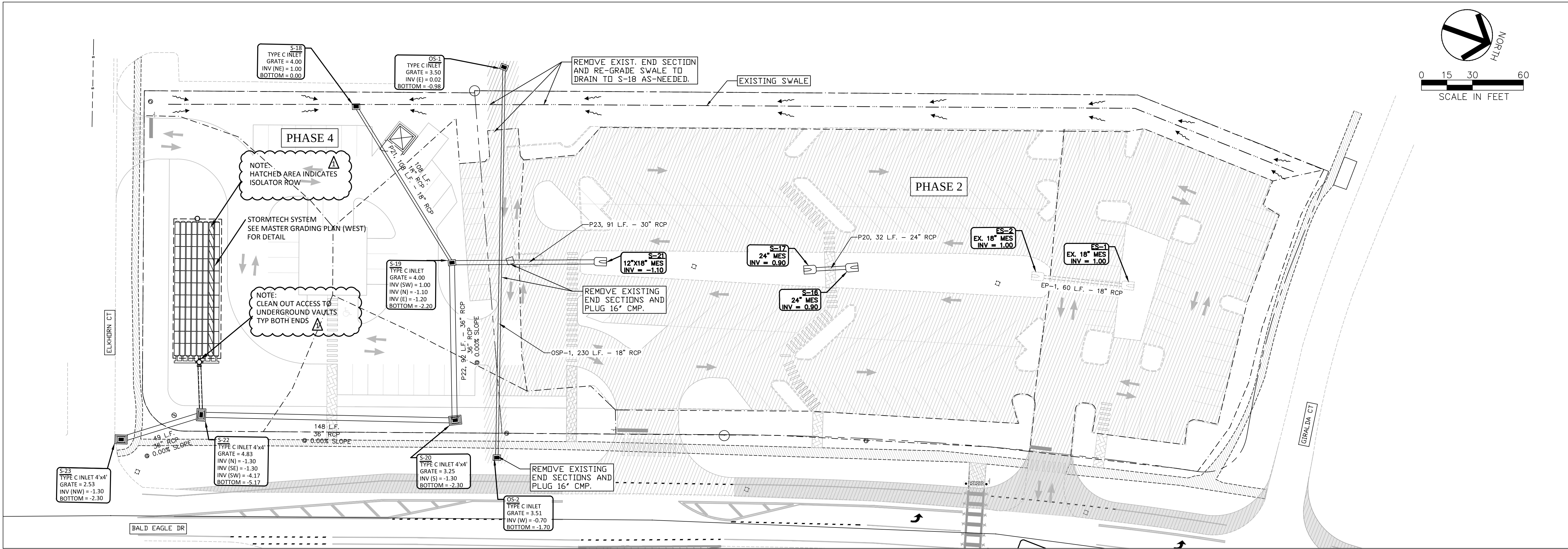
Subsurface Stormwater Management™

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

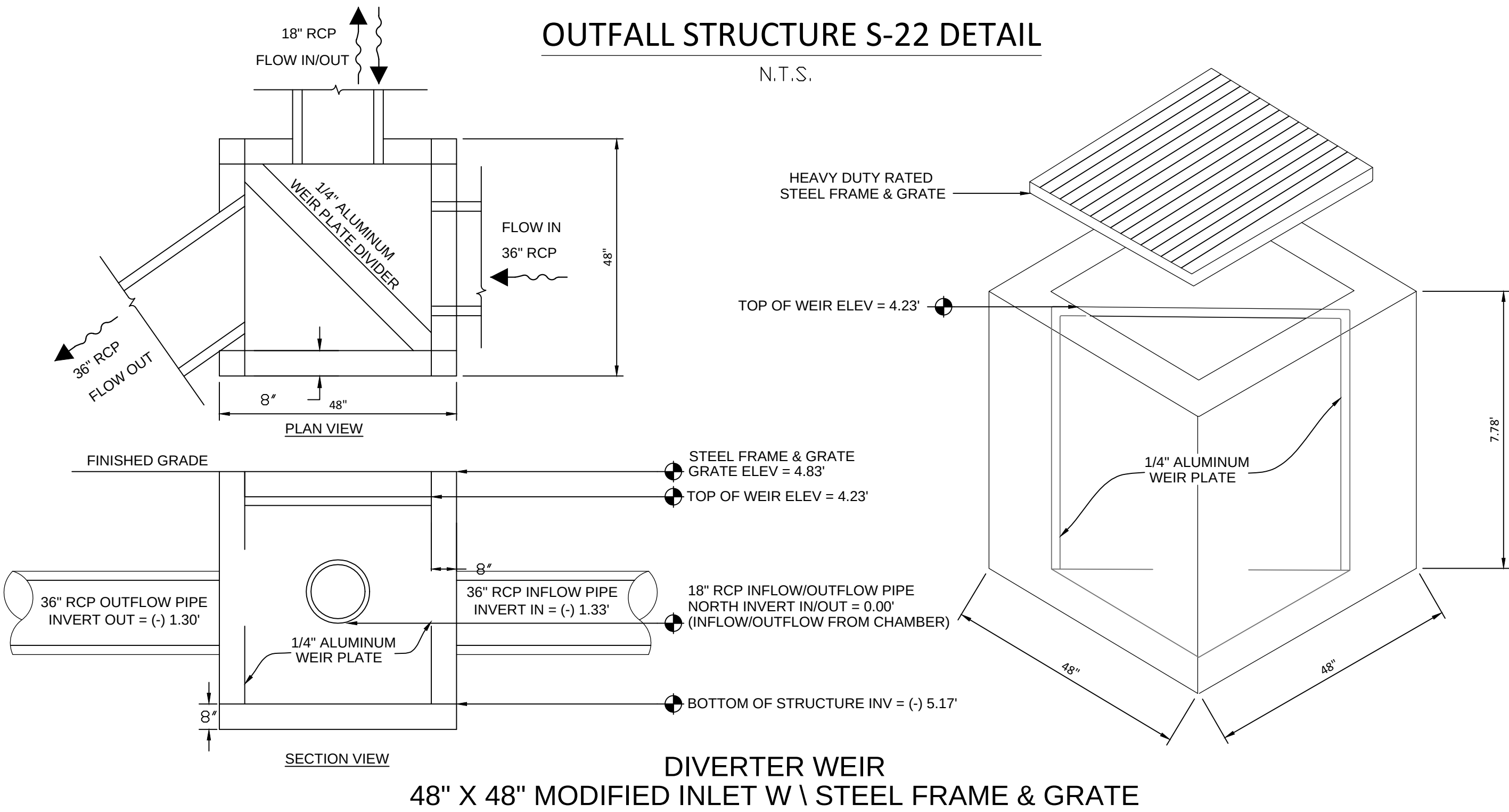
Units: Imperial

System Requirements

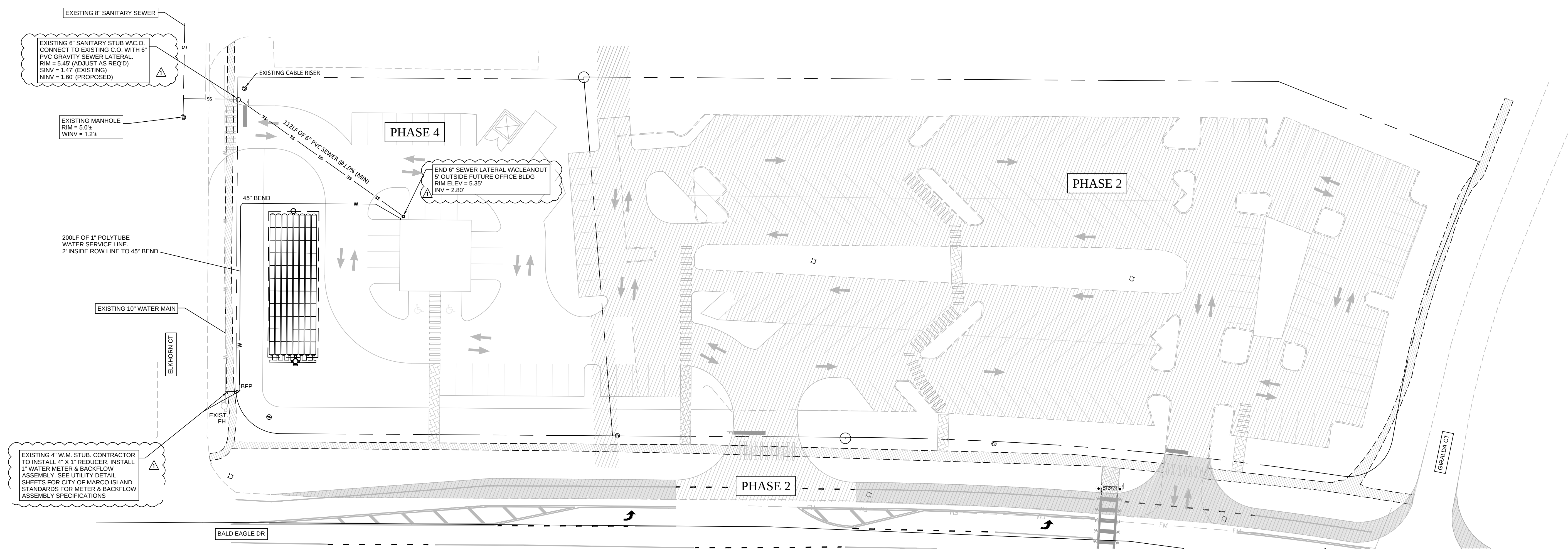
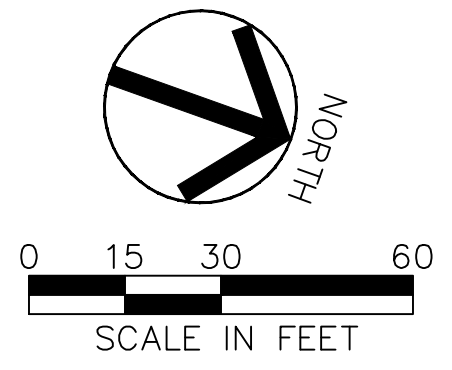
Required Storage Volume: 2,580 CF
Select Stormtech Chamber System: SC-310
Stone Porosity (Industry Standard = 40%): 40%
Stone Foundation Depth: 18 inches
Storage Volume Per Chamber: 31.00 CF
Avg Cover over Chambers (18 in min. & 96 in max.): 18 inches
Number of Chambers Required - 84
Approximate Bed 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): 30 FT
Controlled by Length: 28 FT
of Chambers Long: 11 EA
of Rows: 8 EA
Actual Length: 81.92 FT
Actual Width: 28.14 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



OUTFALL STRUCTURE S-22 DETAIL



CHURCH	PIPE			DRAINAGE BASIN				PIPE CONDITIONS							FLOW HYDRAULICS					HYDRAULIC GRADIENT		
	Pipe	From	To	FROM STR.	i	C (Runoff Coefficient)	Q (Increment)	LENGTH	DIA.	TYPE	n	P	A	Rh	Q (cum.)	V (Q/A)	FRIC TION LOSS	ENTR/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					$P=\pi D$	$A=\pi r^2$	$Rh=A/P$	Sum Q	Sum Q/A						
Site Conditions					8.5	0.8						Submerged Pipe										
	OSP -1	CHURCH	OUTLET	1.5	8.5	0.8	10.20													1.50	3.03	3.50
								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	C (Runoff Coefficient)	Q (Increment)	LENGTH	DIA.	TYPE	n	P	A	Rh	Q (cum.)	V (Q/A)	FRIC TION LOSS	ENTR/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					$P=\pi D$	$A=\pi r^2$	$Rh=A/P$	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	S-21	S-19	0.69	8.5	0.87	5.10		23	24.0	RCP	0.012	6.28	3.14	0.50	6.69	2.13	0.08	0.01	0.09		
	P-23	S-18	S-19	0.44	8.5	0.34	1.27		85	30.0	RCP	0.012	7.85	4.91	0.63	11.79	2.40	0.13	0.01	0.14		
	P-21	S-19	S-20	0.26	8.5	0.85	1.88		108	18.0	RCP	0.012	4.71	1.77	0.38	1.27	0.72	0.02	0.00	0.02		
	P-22	S-20	S-22	0.2	8.5	0.80	1.36		92	36.0	RCP	0.012	9.42	7.07	0.75	14.94	2.11	0.10	0.01	0.11		
	P-24	S-22	OFF	0.385	8.5	0.80	2.62		141	36.0	RCP	0.012	9.42	7.07	0.75	16.30	2.31	0.14	0.01	0.15		
	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	



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			ROSE MARINA REDEVELOPMENT PLANS		CITY OF MARCO ISLAND COLLIER COUNTY, FLORIDA		HAGANENGINEERING 1250 TAMiami TRAIL N., STE. 203B Naples, Florida 34102 Phone (239) 851-8239		PERMIT PLANS		MASTER UTILITY PLAN - WEST			
	REVISED PER CITY OF MARCO ISLAND	5-4-2015												
											DATE	09-20-14	PROJECT NO.	2014-077
											SCALE	As Shown	SHEET	C-12

CVL BALD EAGLE DRIVE

EASTERLY
EDGE OF PAVEMENT

EASTERLY R/W LINE
(PROPERTY LINE)

4
3
2
1
0
-1
-2
-3
-4

0+00 0+50 0+80

EXISTING 8" AC WATERMAIN

EXISTING 10" PVC WATERMAIN

EXISTING 6" FM ABANDONED

EXISTING 6" FM PLUG VALVE & STUB. CONTRACTOR TO FIELD LOCATE, REMOVE EXISTING PLUG & CONNECT 3" FM W/6" X 3" REDUCER. EXISTING PLUG VALVE TO REMAIN

6"X3" REDUCER

3" FORCEMAIN FROM LIFT STATION

10" FIRE MAIN & 6" WATERMAIN (SEE PLAN VIEW)

EXISTING 6" FM CROSSING \ CONNECTION TO EXISTING 10" FORCEMAIN ON WEST SIDE OF PAVEMENT

CONTRACTOR TO FIELD LOCATE EXISTING 10" PVC WATERMAIN & HOT TAP W(W/VALVE) FOR 10" FIRE LINE & 6" WATERMAIN TO PROJECT, (1 - 10" X 6" HOT TAP W/VALVE 1 - 10" X 10" HOT TAP W/VALVE)

W

W

W

ROSE MARINA
REDEVELOPMENT PLANS



HAGAN
ENGINEERING

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

[illegible]

Sanitary Sewer Main Profile

Vertical Scale: Elevation (feet) from -2 to 6.

Horizontal Scale: Stationing from 4+90 to 7+20.

Key Features and Elevation Data:

- Manholes:**
 - s2-6 CLEANOUT: RIM = 4.50, INV (E) = 0.58, INV (W) = 0.60, INV (N) = 0.58
 - s2-5 CLEANOUT: RIM = 4.50, INV (SE) = 0.80, INV (W) = 0.80, INV (NE) = 1.47
 - s2-4 CLEANOUT: RIM = 4.50, INV (SE) = 0.86, INV (NW) = 0.86
 - s2-3 CLEANOUT: RIM = 4.36, INV (E) = 0.94, INV (NW) = 0.94, INV (NE) = 3.14
 - s2-2 CLEANOUT: RIM = 3.65, INV (NE) = 1.57, INV (W) = 1.57
 - s2-1 CLEANOUT: RIM = 3.67, INV (NE) = 1.62, INV (E) = 1.52
 - CO-8 CLEANOUT: RIM = 3.98, INV (W) = 0.00, INV (N) = 0.00
- Wet Wells:**
 - WET WELL 1: RIM = 3.84, INV (S) = 0.00
- Traps:**
 - GREASE TRAP 1: RIM = 3.88, INV (W) = 0.48, INV (E) = 0.29
 - GREASE TRAP 2: RIM = 3.94, INV (W) = 0.29, INV (E) = 0.00
- Pipe Segments:**
 - P1-4, 2' 6" PVC (SDR-26) @ 0.50%
 - P2-1, 44' 6" PVC (SDR-26) @ 0.50%
 - P1-3, 1' 6" PVC (SDR-26) @ 0.00%
 - P1-5, 17' 6" PVC (SDR-26) @ 0.50%
 - P1-1, 7' 6" PVC (SDR-26) @ 0.00%
 - s1-9, 2' 6" PVC (SDR-26) @ 0.00%
 - P2-3, 16' 6" PVC @ 0.50%
 - P2-2, 13' 6" PVC @ 0.50%
 - P2-4, 125' 6" PVC (SDR-26) @ 0.50%
 - P2-5, 10' 6" PVC (SDR-26) @ 0.50%
 - P2-6, 3' 6.0 inch PVC Pipe @ 0.50%
- Ground and Trench:**
 - FINISHED GRADE
 - EXISTING GROUND
 - TYPICAL SUPER TRENCH DEPTH BAND

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

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 as follows:

- 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: 5,859 SF @ 0.20 GPD/SF = 1,170 GPD (avg. daily) Peak hour (PF 4.0) = 3.25 GPM
- Service Center: 5,540 SF of Boat's Lounge @ 40 visitors/day @ 10 GPD/visitor = 400 GPD plus 15 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: $S \times GS \times H/12 \times LF \times M(GM)/LF$
- Jack's - (38 seats) $\times 30 \text{ GPD/seat} \times 11 \text{ Hr}/12 \times 1.25 = 1,306 \text{ gal}$
- Princess - (100 meals/day) $\times 5 \text{ GPD/meal} \times 1.0 = 500 \text{ gal}$
- 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 gpd at a total head of 157.5 feet.

Pump Type	NP3127	FLYGT
Impeller	11	247
Pump Horsepower	HP	
Pump Voltage	3	200
Pump Phase	Phase	Volts

Pump Curve (attached)
Design Pumping Rate (Q_{dp}) 60 gpm at 158 TDH QAVG = 6.3 gpm

Pump Run and Cycle Times (6 Wetwell)

- Minimum Pump Run Time (min. 2.5 minutes)
- Tmin = Volume of Wet Well / Design Pumping Rate - Tmin = 7.1 minutes
- 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)
 $T_{avg} = (V_{avg} / (Q_{dp} - Q_{avg})) + (V_{avg} / Q_{avg})$
 $T_{avg} = 75 \text{ minutes/cycle} \approx 0.8 \text{ cycles/hour}$

Pumping Station Cycle Time At Intermittent Peak Flow Conditions
Time for one pump cycle under peak hour flow (in minutes):
(maximum 10 cycles/hour or 6 minutes/cycle)
 $T_{peak} = (V_{avg} / Q_{dp}) + (V_{avg} / Q_{peak})$
 $T_{peak} = 14.7 \text{ minutes/cycle} \approx 4.1 \text{ cycles/hour}$

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 (see actual slab elevation) +3.5 NAVD
Inlet Elevation +0.00 NAVD
Wet Well Interior Cross-Sectional Area 28.37 square ft
Storage Depth (2 ft min) 2.0 feet
Actual Storage Provided 42.3 gallons
High Water Alarm -4.5 NAVD
Lag On* -1.0 NAVD
Lead Off* -1.5 NAVD
Pump Off* -2.0 NAVD
Bottom Elevation* -4.0 NAVD

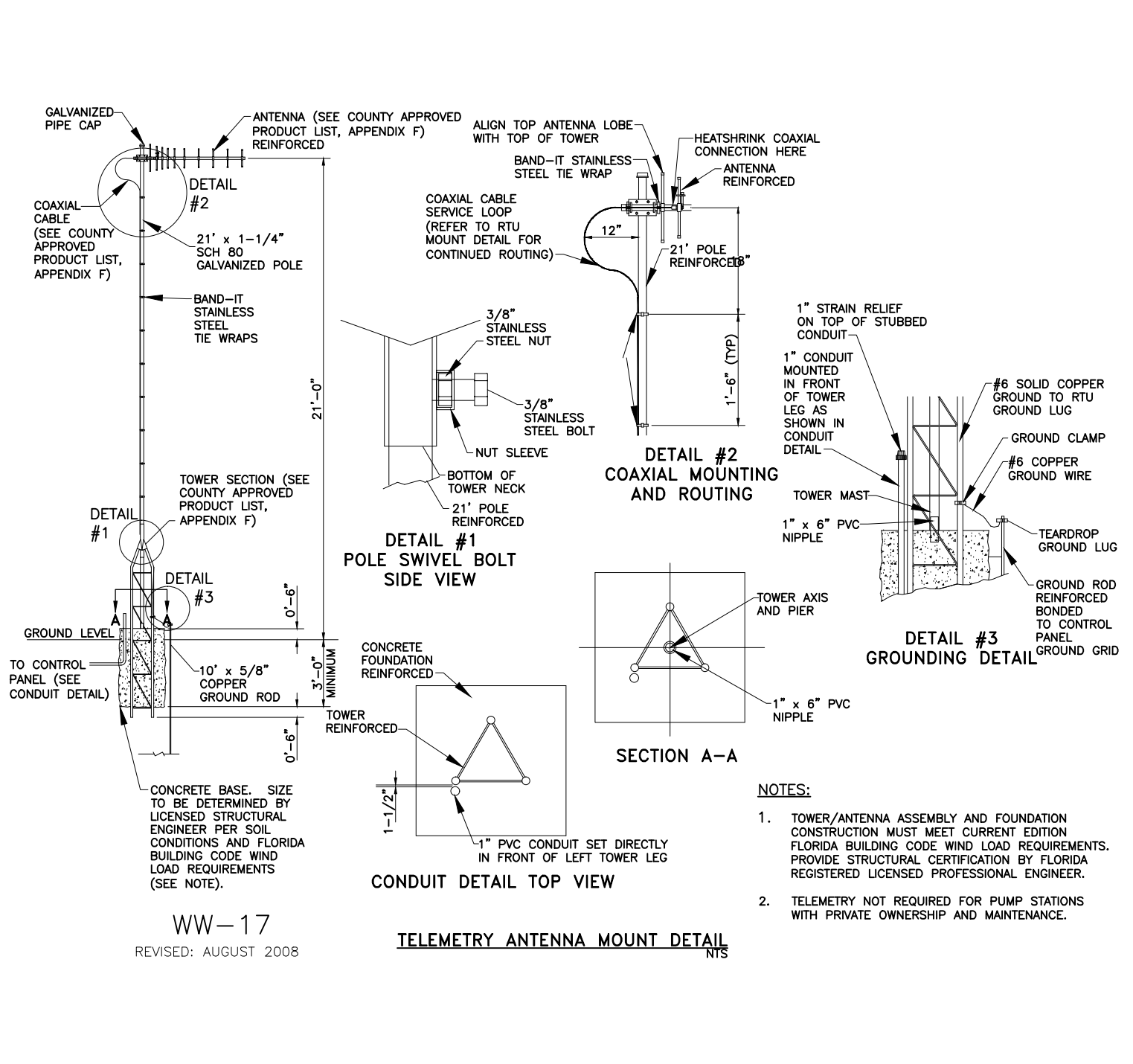
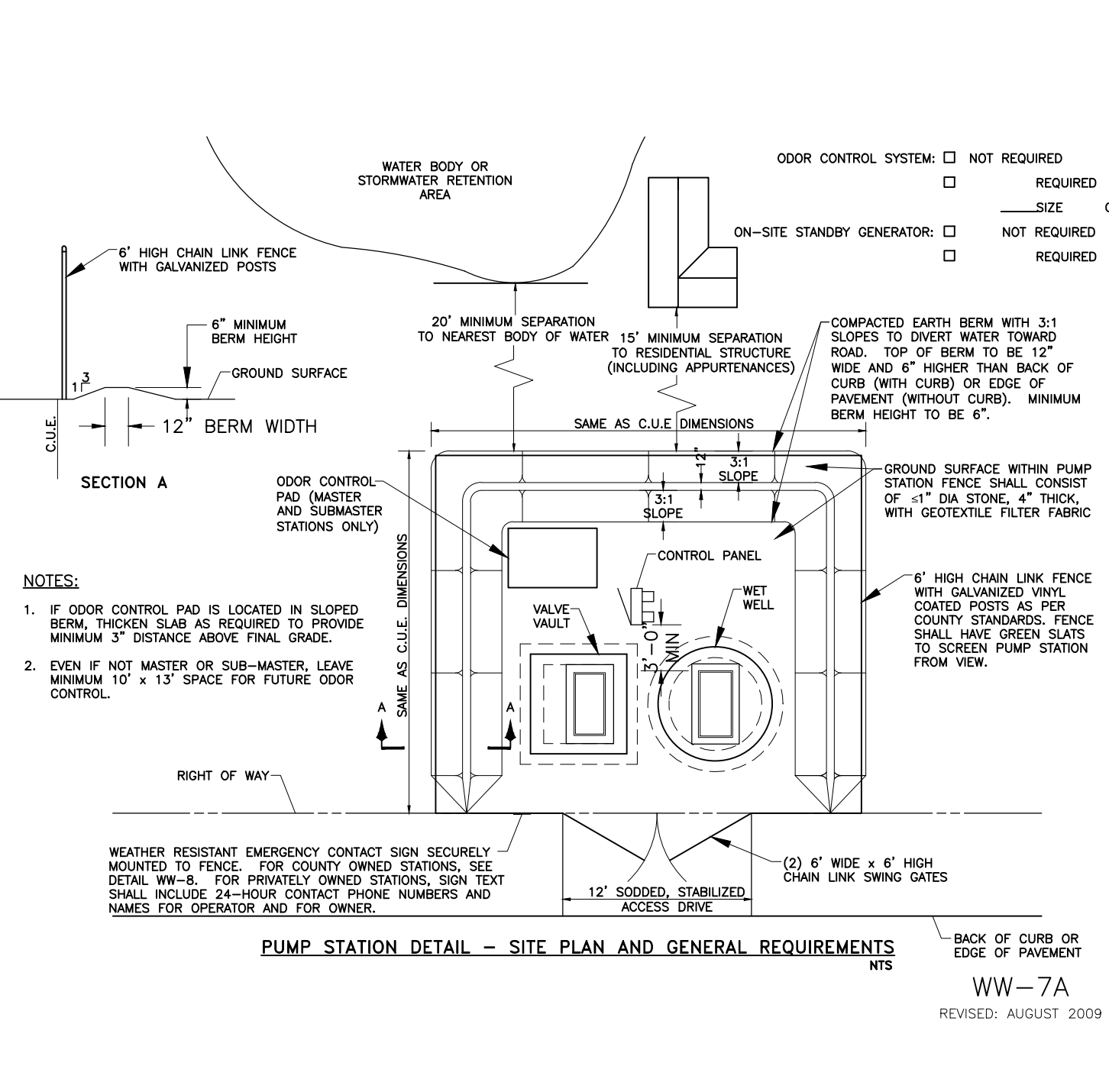
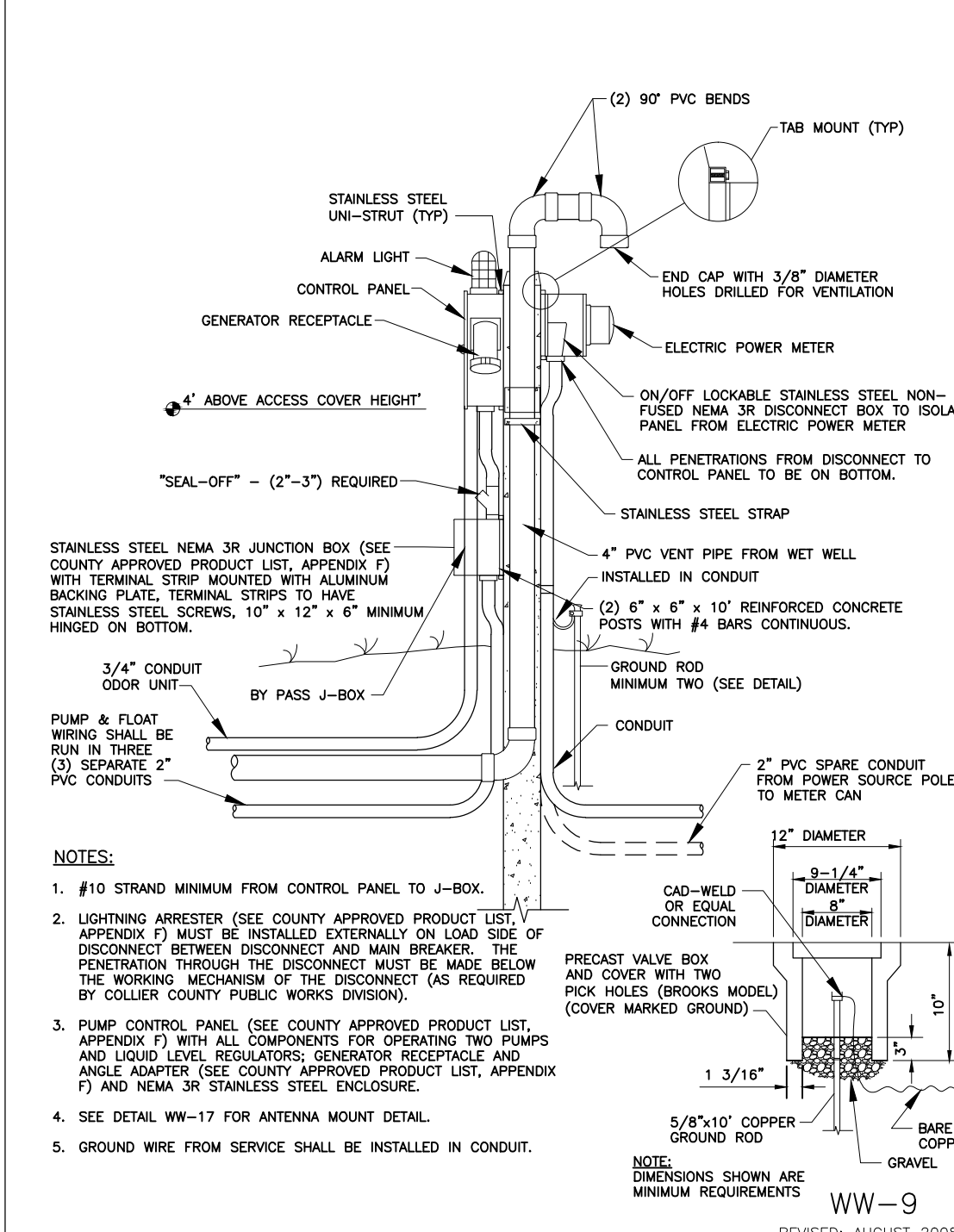
Flotation Calculations
1. Force Up on Cylinder
Total Wetwell Cross-Sectional Area x (Finished Grade - Bottom Elevation) x 62.4 lb/cubic ft
[where Total Wetwell Cross-Sectional Area = $\pi \times \frac{1}{4}$ (inside wetwell diameter) + 2 x wall thickness (12in)/2] = 19,803 lb up
Force Up on Slab
 $\pi \times \frac{1}{4} \times (\text{Slab Diameter})^2 \times \text{Slab Thickness} \times 62.4 \text{ lb/cubic ft} = 3,710 \text{ lb up}$
Total Buoyancy Force
Force Up on Cylinder + Force Up on Slab = 23,513 lb up

2. Cylinder Weight (does not include top slab)
(Total Wetwell Cross-Sectional Area - Inside Wetwell Cross-Sectional Area) x (Finished Grade - Top Slab Thickness) x 150 lb/cf = 15,790 lb down
3. Slab Weight
 $\pi \times \frac{1}{4} \times (\text{Slab Diameter})^2 \times \text{Slab Thickness} \times 150 \text{ lb/cf} = 8,917 \text{ lb down}$

4. 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

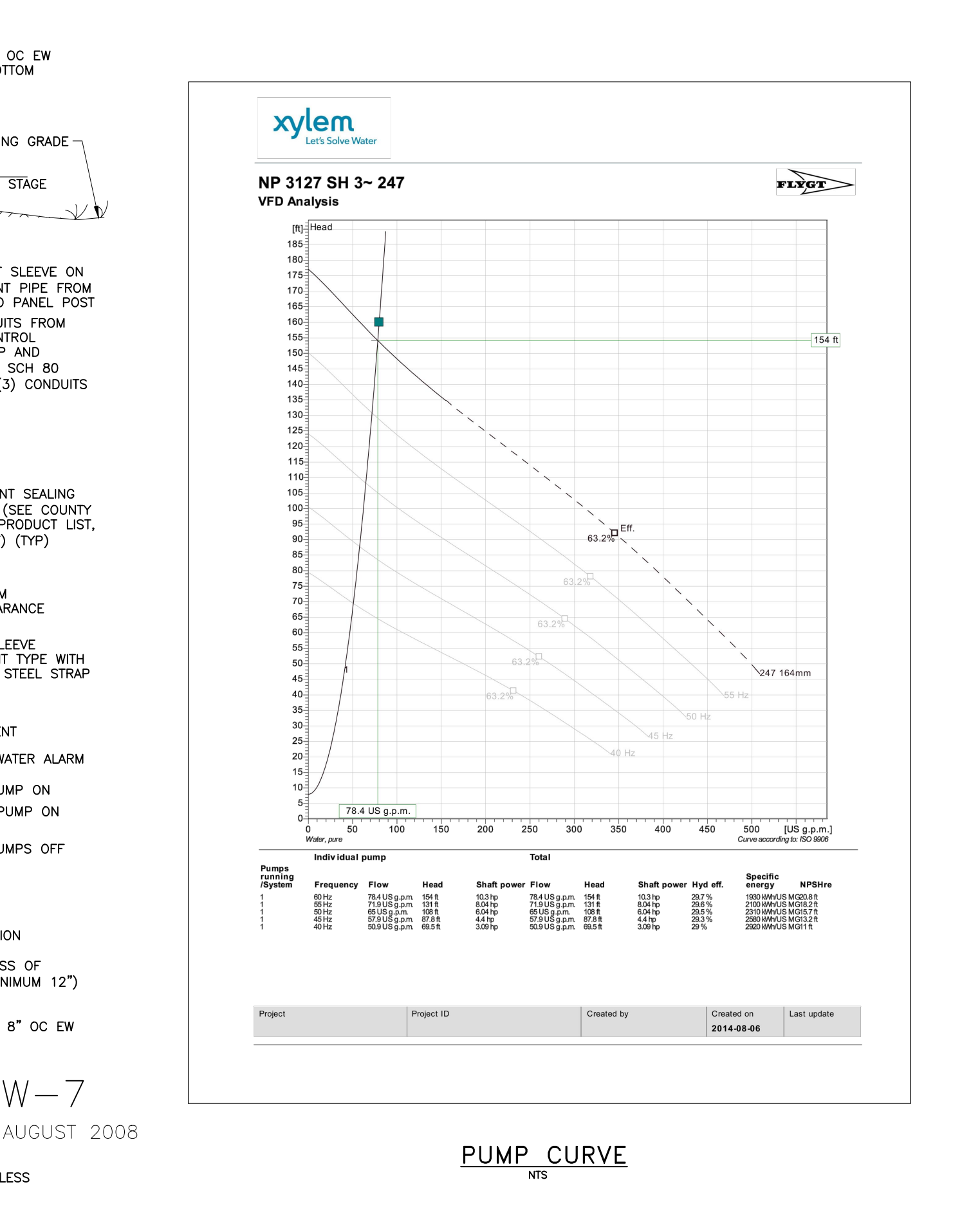
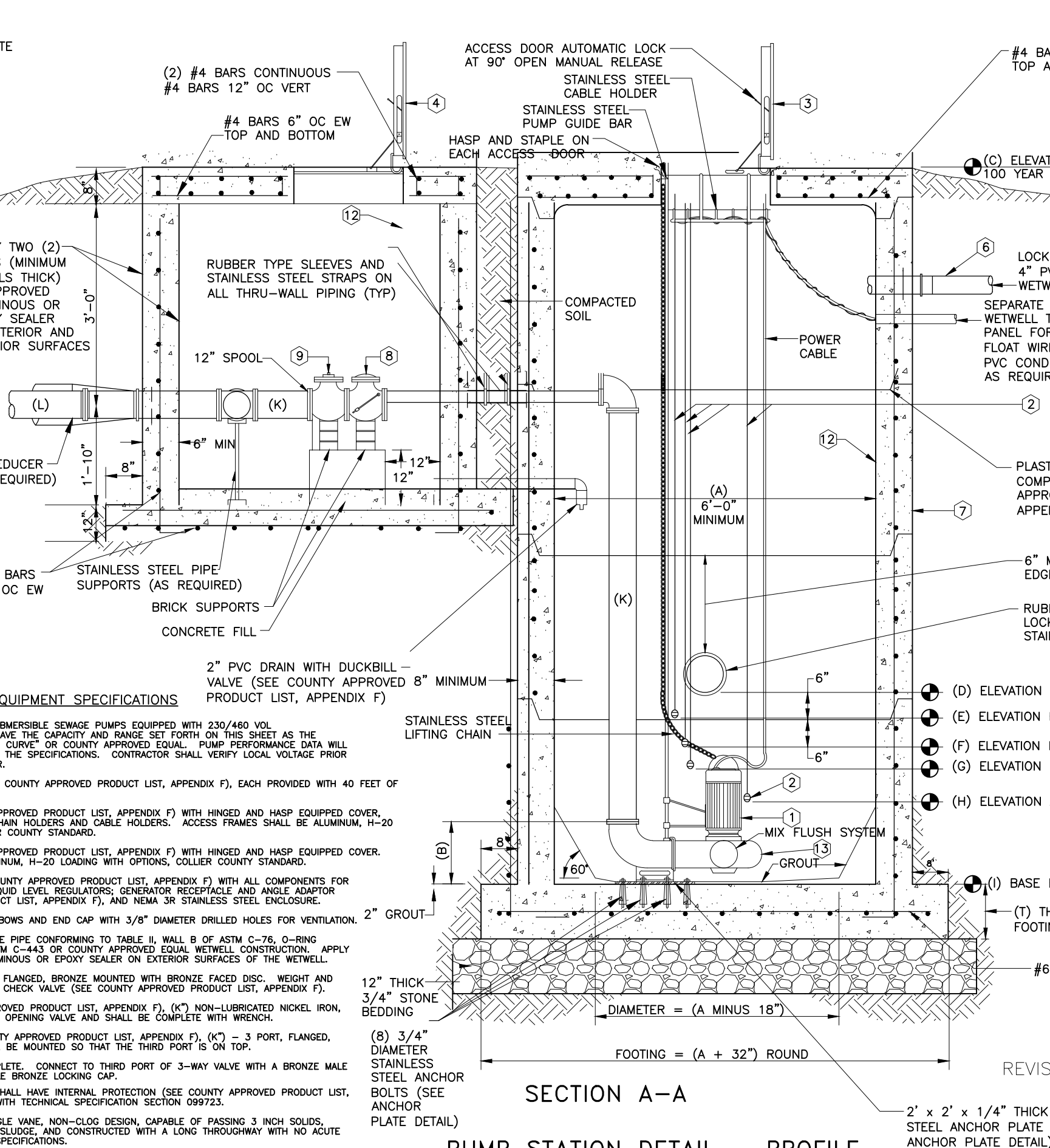
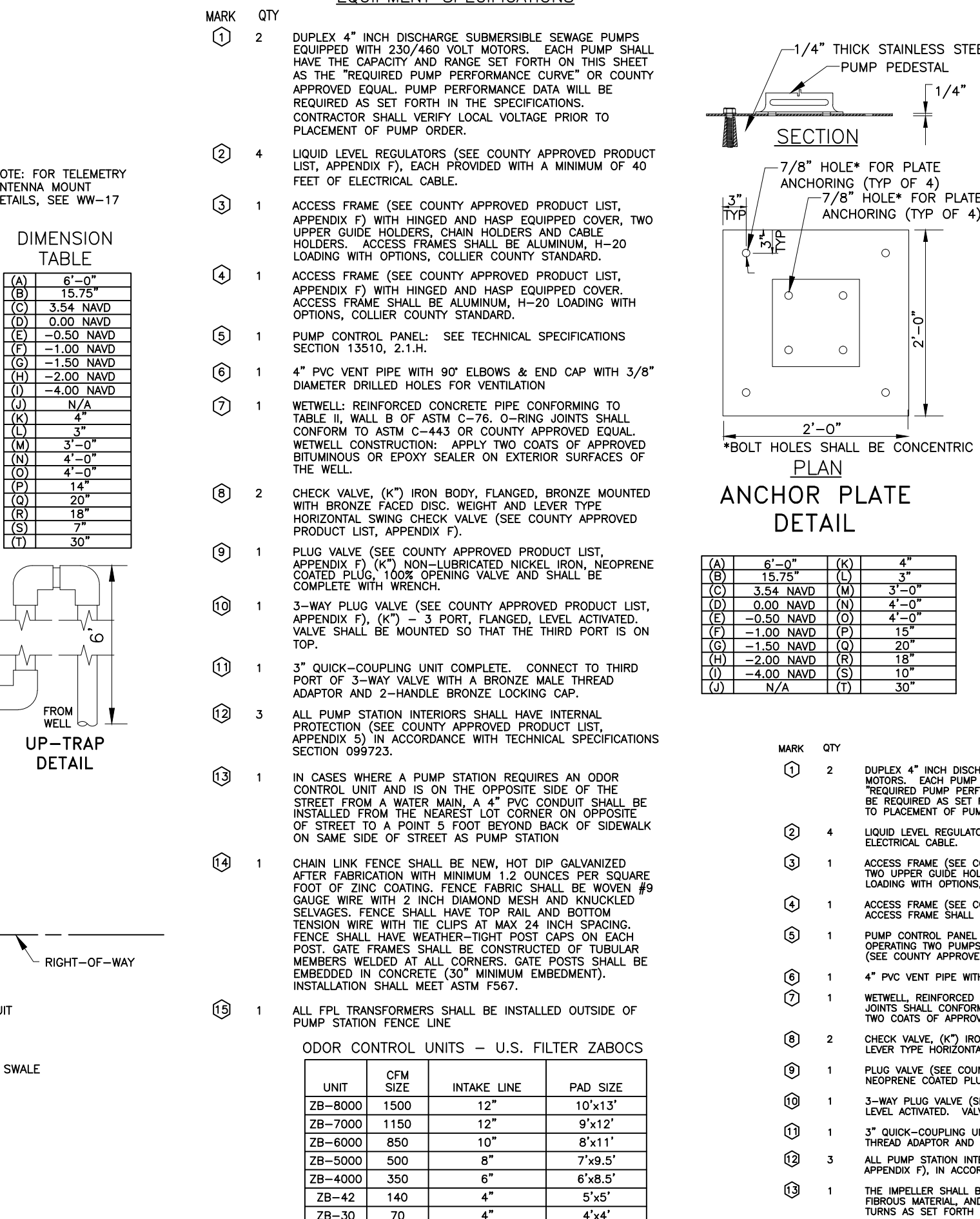
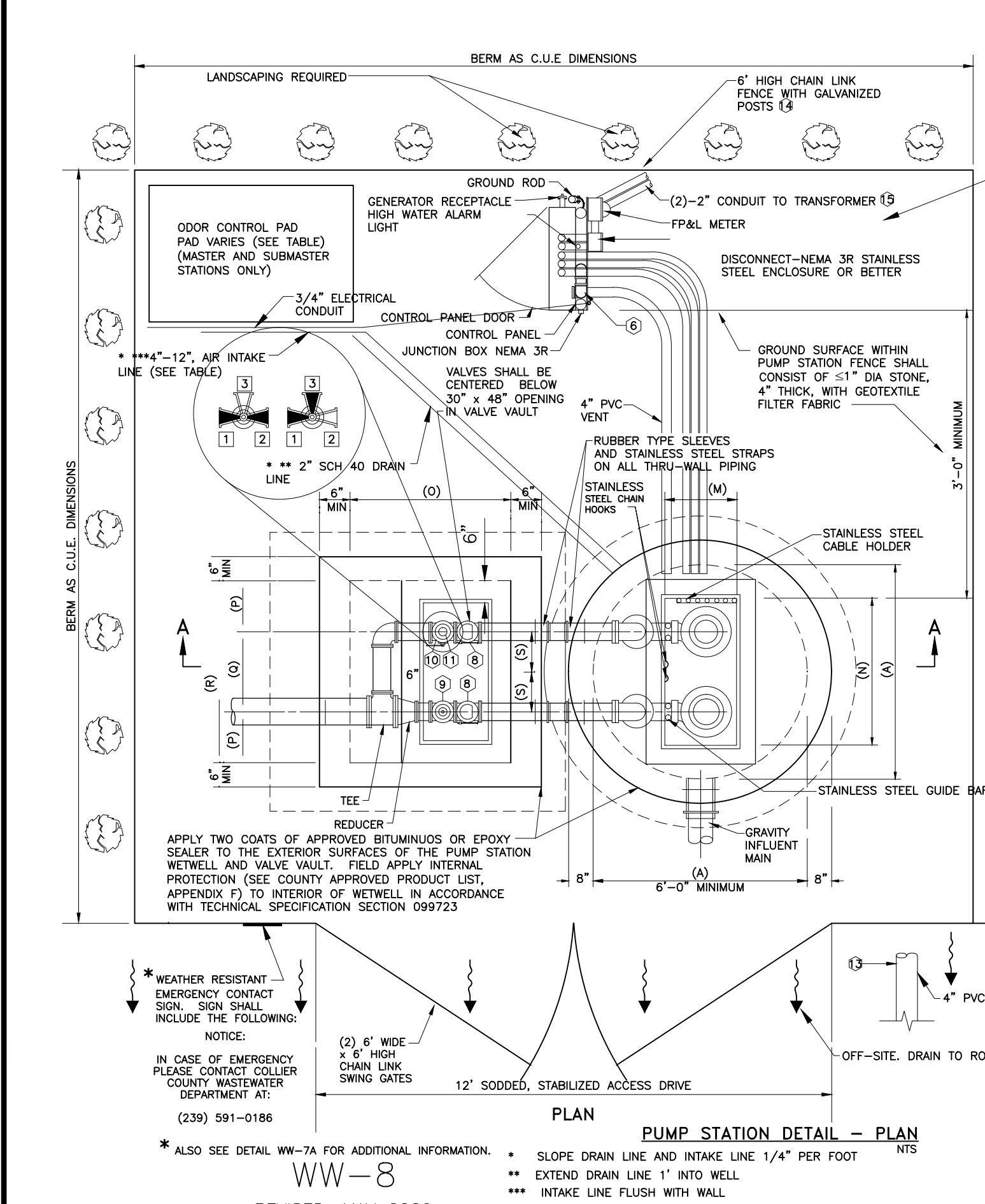
5. Total Downward Force
Cylinder Weight + Slab Weight + Soil Overburden = 28,995 lb down

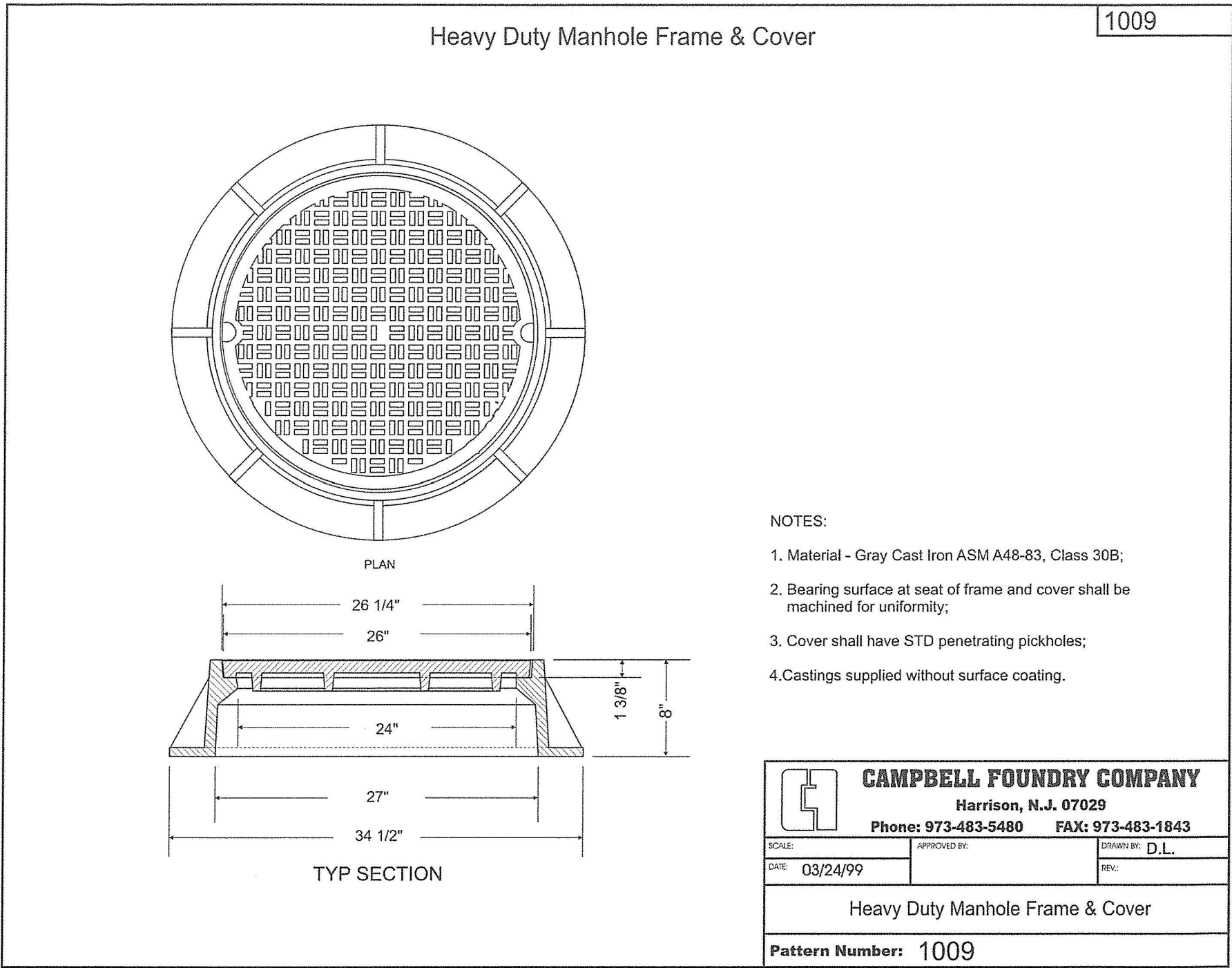
6. Net Force
Total Downward Force - Total Buoyancy Force = 5,382 lb down



PUMP STATION CALCULATIONS

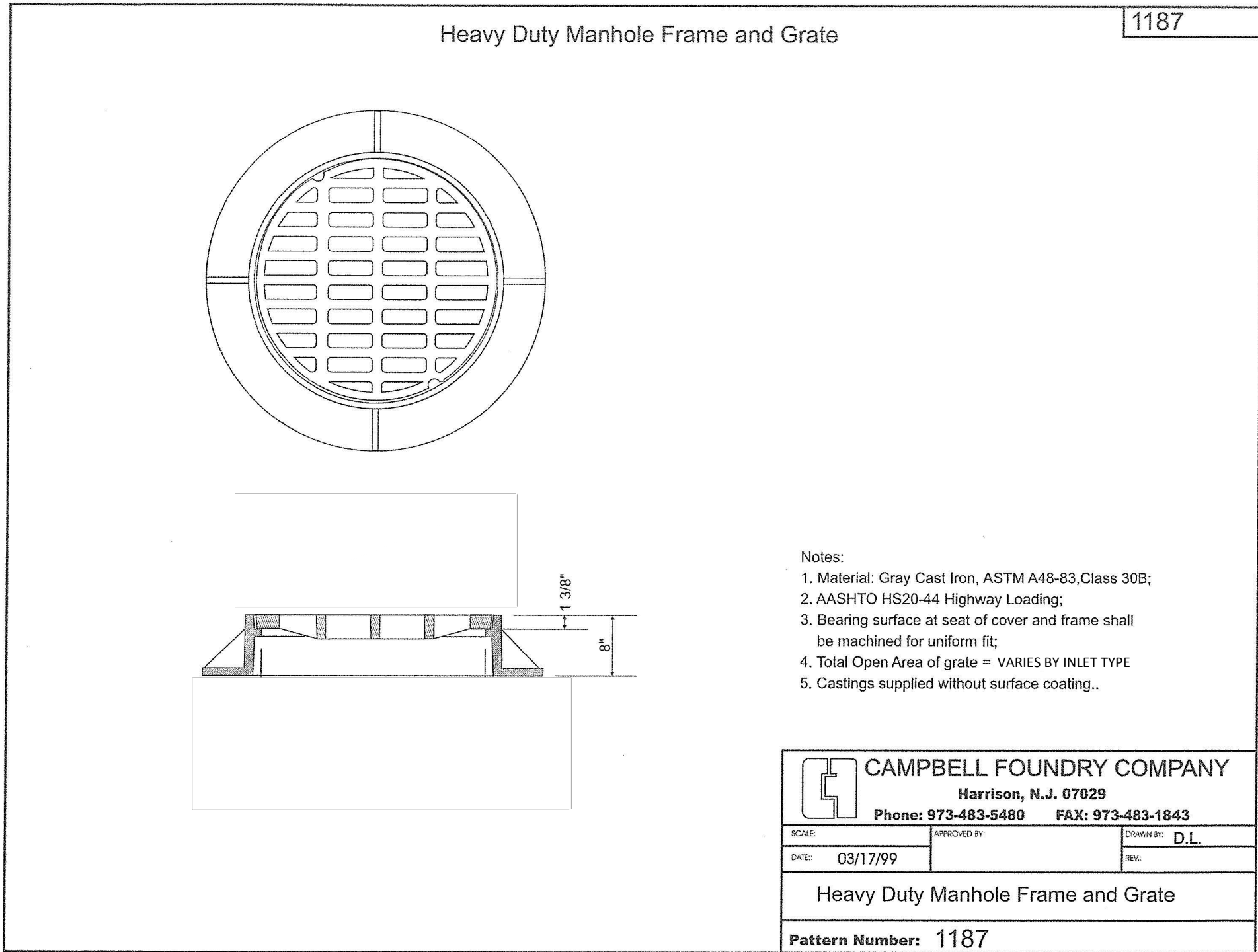
EQUIPMENT SPECIFICATIONS



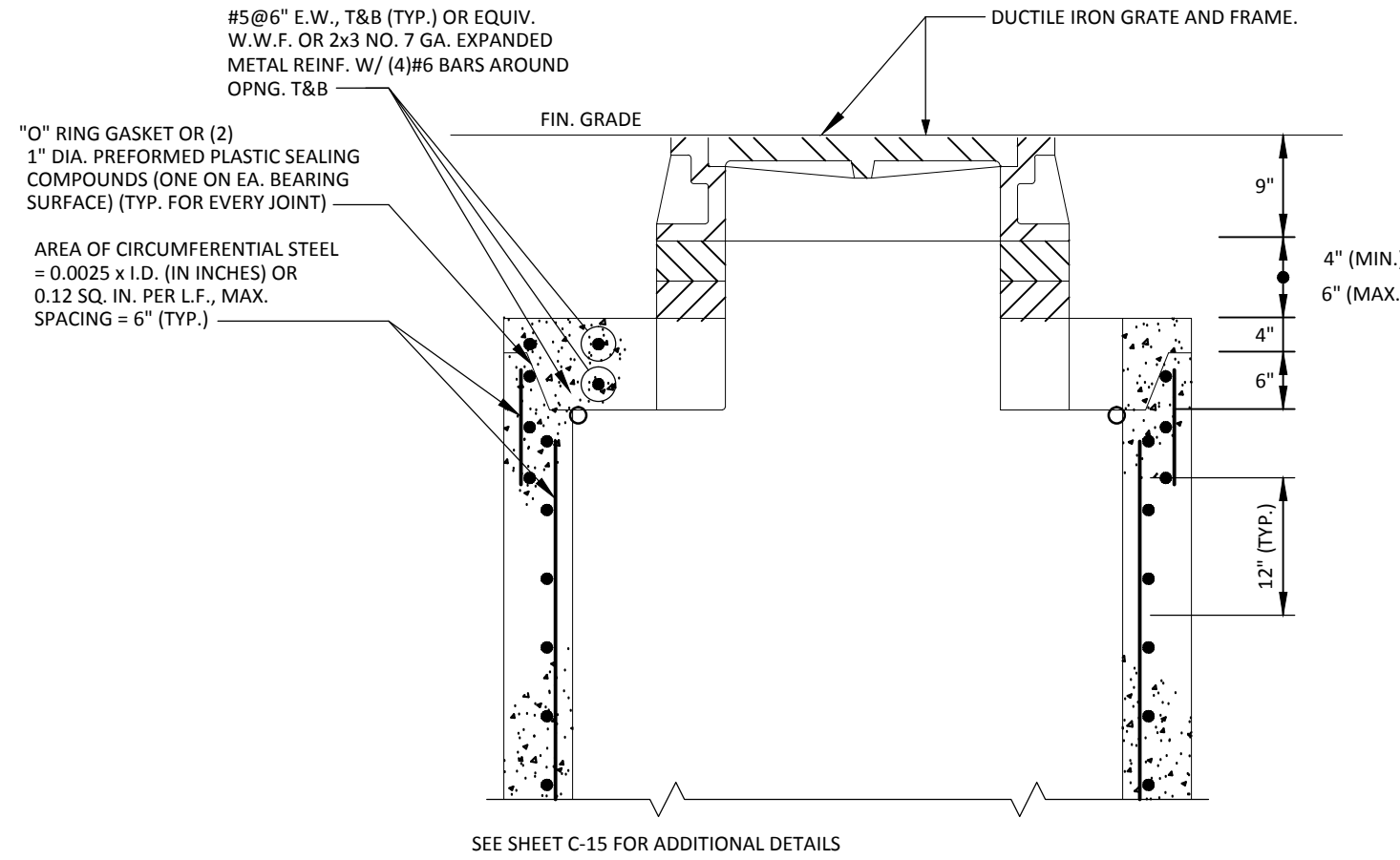


HEAVY DUTY MANHOLE FRAME & COVER

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

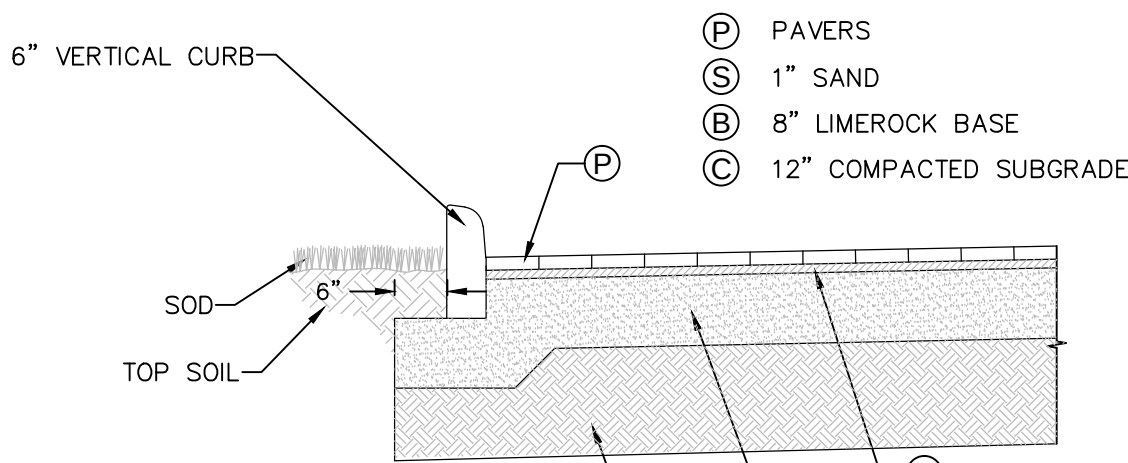


HEAVY DUTY MANHOLE FRAME & GRATE

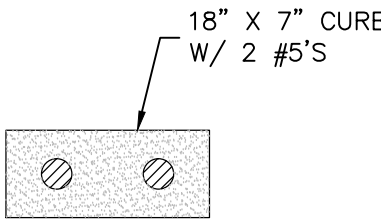


STEEL FRAME & GRATE

N.T.S.

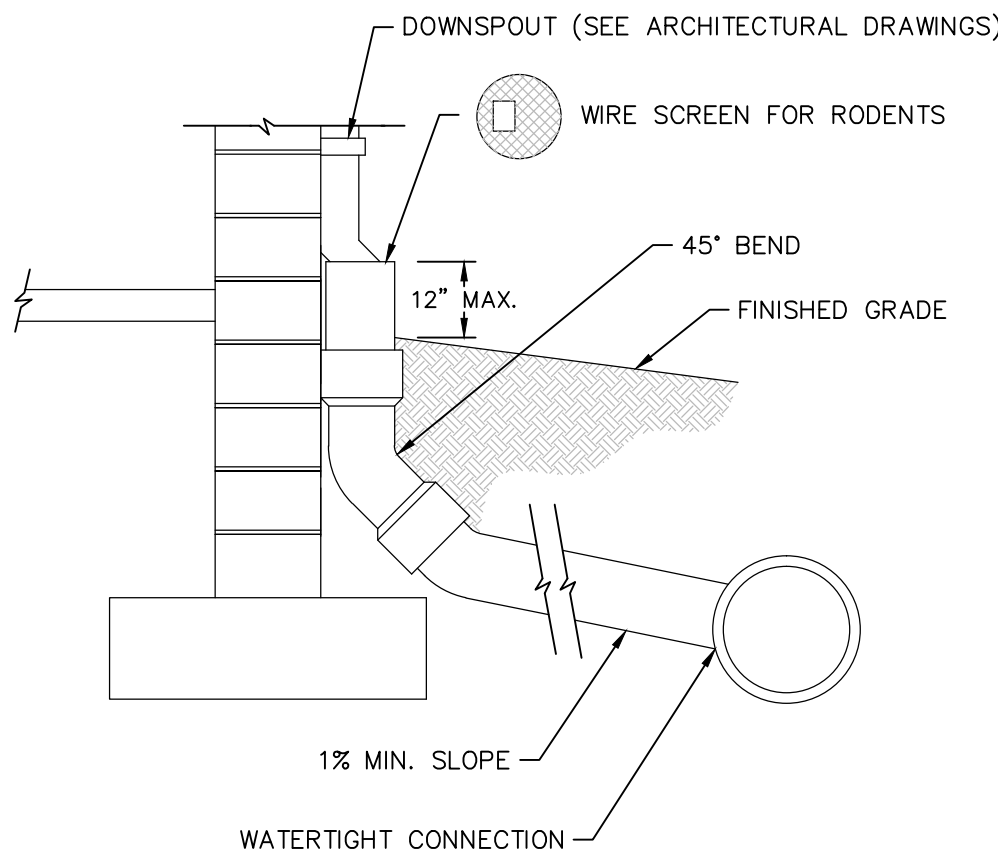


- NOTES:
1. PAVERS USED FOR PAVEMENT MARKING SHALL BE PRE-APPROVED BY TRAFFIC DIVISION PRIOR TO INSTALLATION.
 2. WHEN HEADER CURB IS USED TO OUTLINE A CROSSWALK THE CURB SHALL BE OF WHITE CONCRETE WITH GLASS BEADS IN WHITE CONCRETE.
 3. GLASS SPHERES TO MEET REQUIREMENTS OF SECTIONS 971-1 AND 971-14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



INTERLOCKING PAVER BLOCKS DETAIL

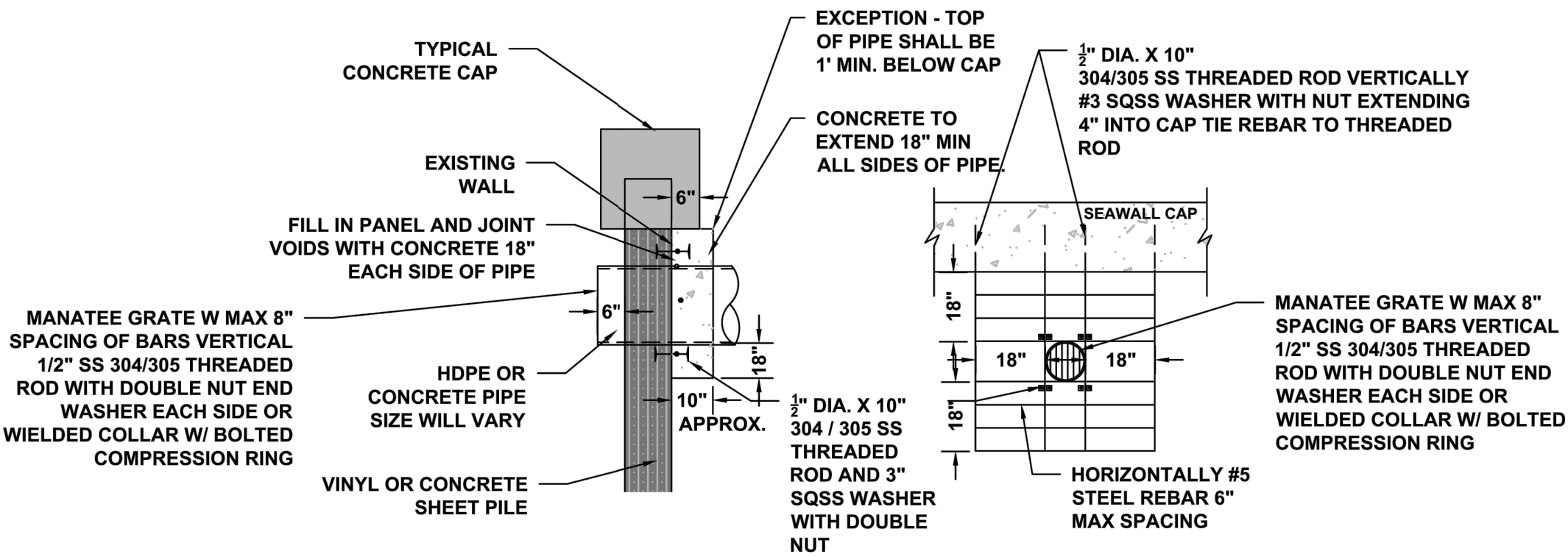
N.T.S.



- NOTES:
1. PIPE MUST BE SCHEDULE 40 PVC.
 2. THE DOWNSPOUT COLLECTOR DRAIN SHALL BE INSTALLED BEFORE THE DOWNSPOUTS ARE INSTALLED ON THE BUILDING. STEWOK 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

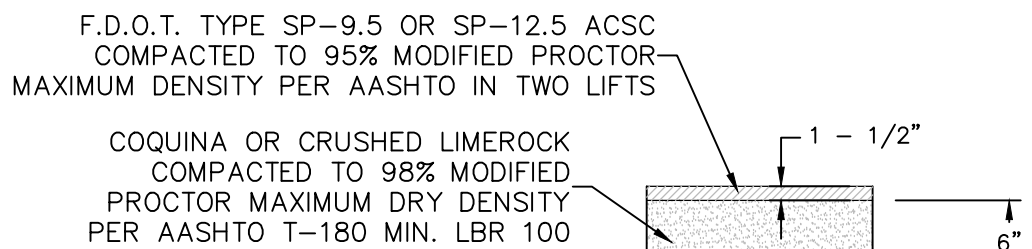
N.T.S.



TYPICAL STORM DRAIN COLLAR PIPE THRU WALL

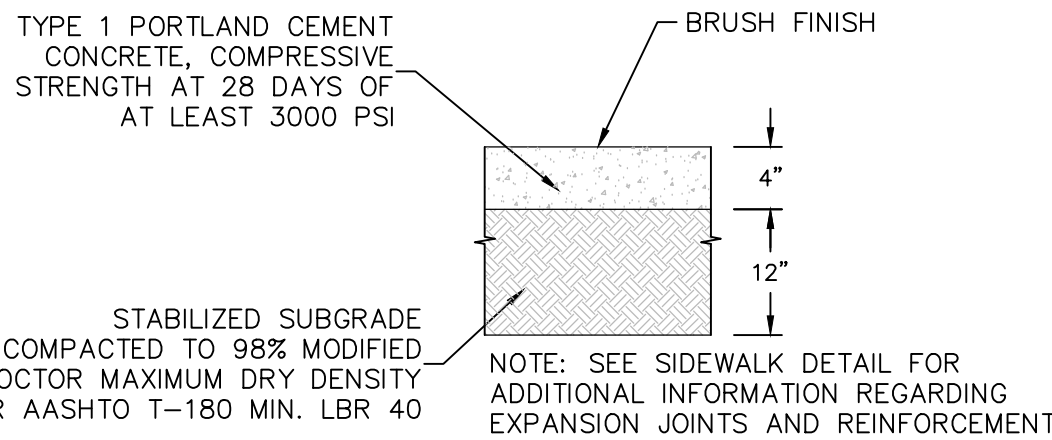
CONCRETE COLLAR SHALL BE 4000 PSI FORM SHALL BE DE-WATERED OR TREME PLACE CONCRETE

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



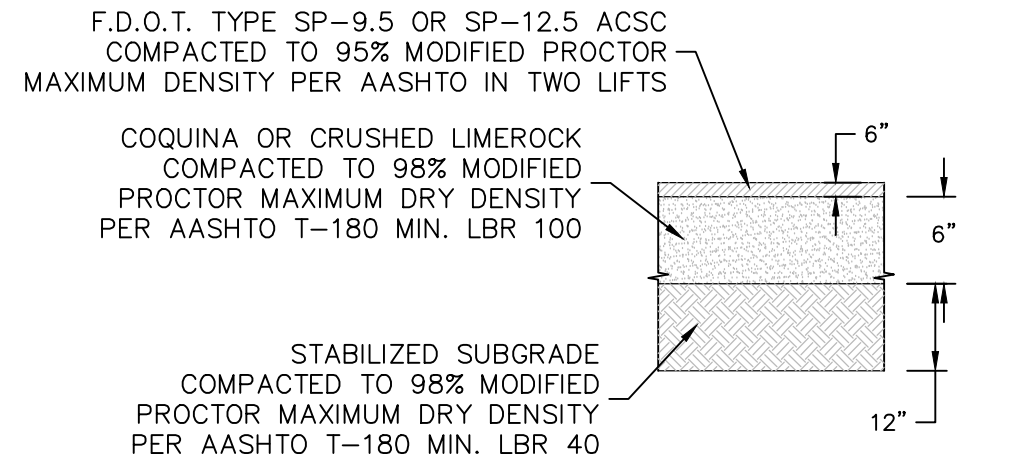
STANDARD DUTY ASPHALT

N.T.S.



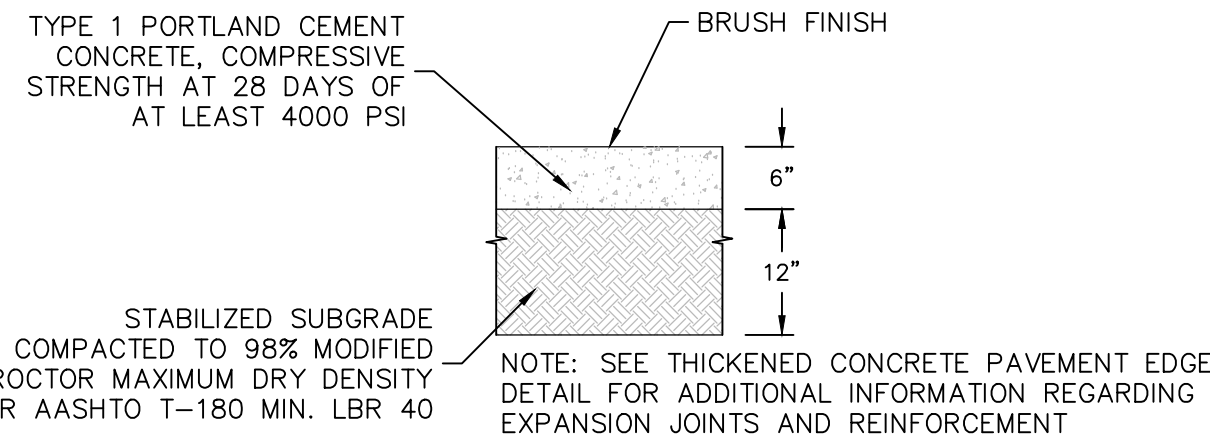
STANDARD DUTY CONCRETE

N.T.S.



HEAVY DUTY ASPHALT

N.T.S.



HEAVY DUTY CONCRETE

N.T.S.

REVISIONS

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA



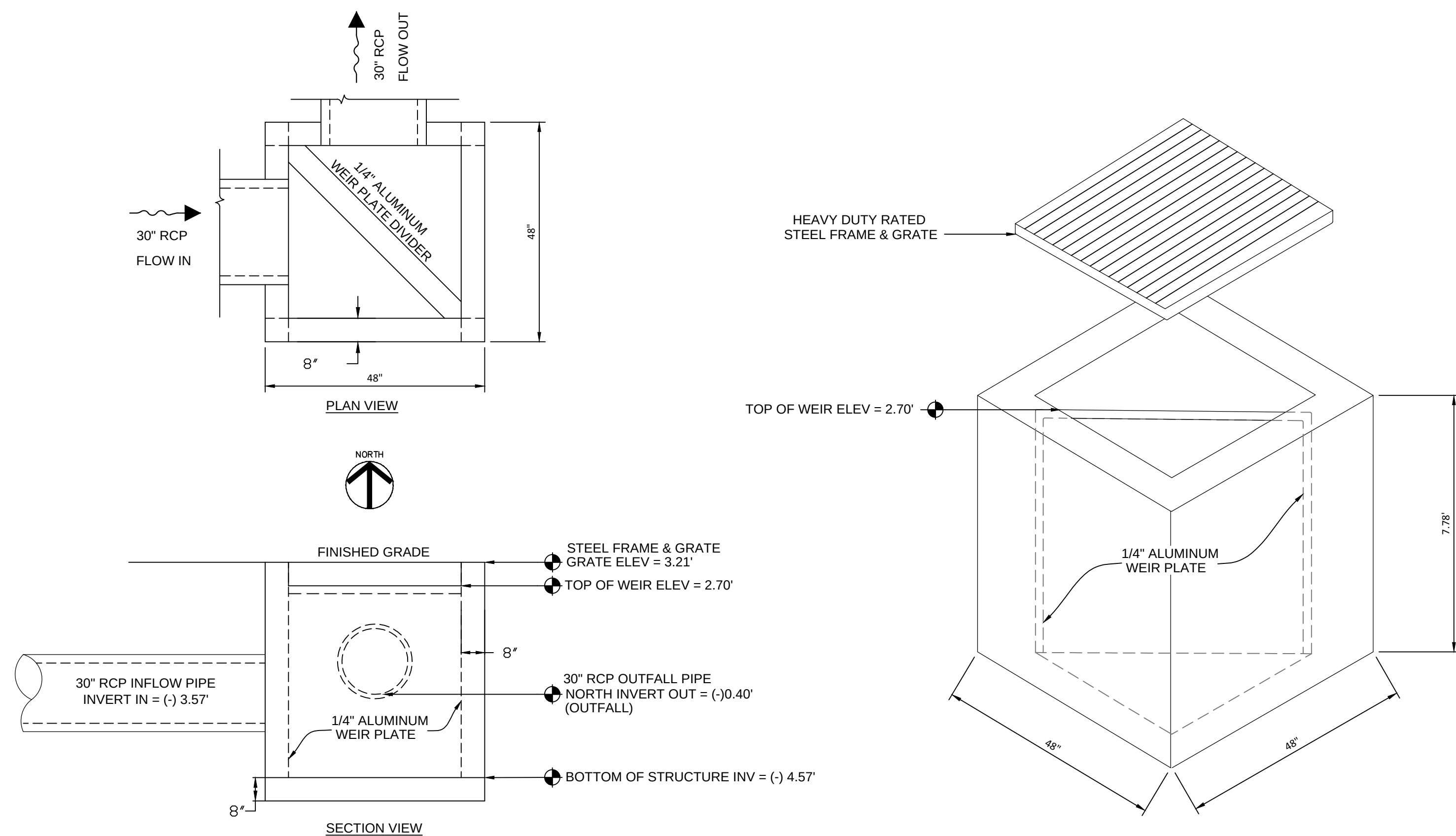
NOTE:
CONTRACTOR TO REFER TO THE GEOTECHNICAL REPORT FOR SITE WORK SPECIFICATIONS.

PERMIT PLANS

C. D. HAGAN, P.E.
FL REG. #38649
EB #23474
DATE:

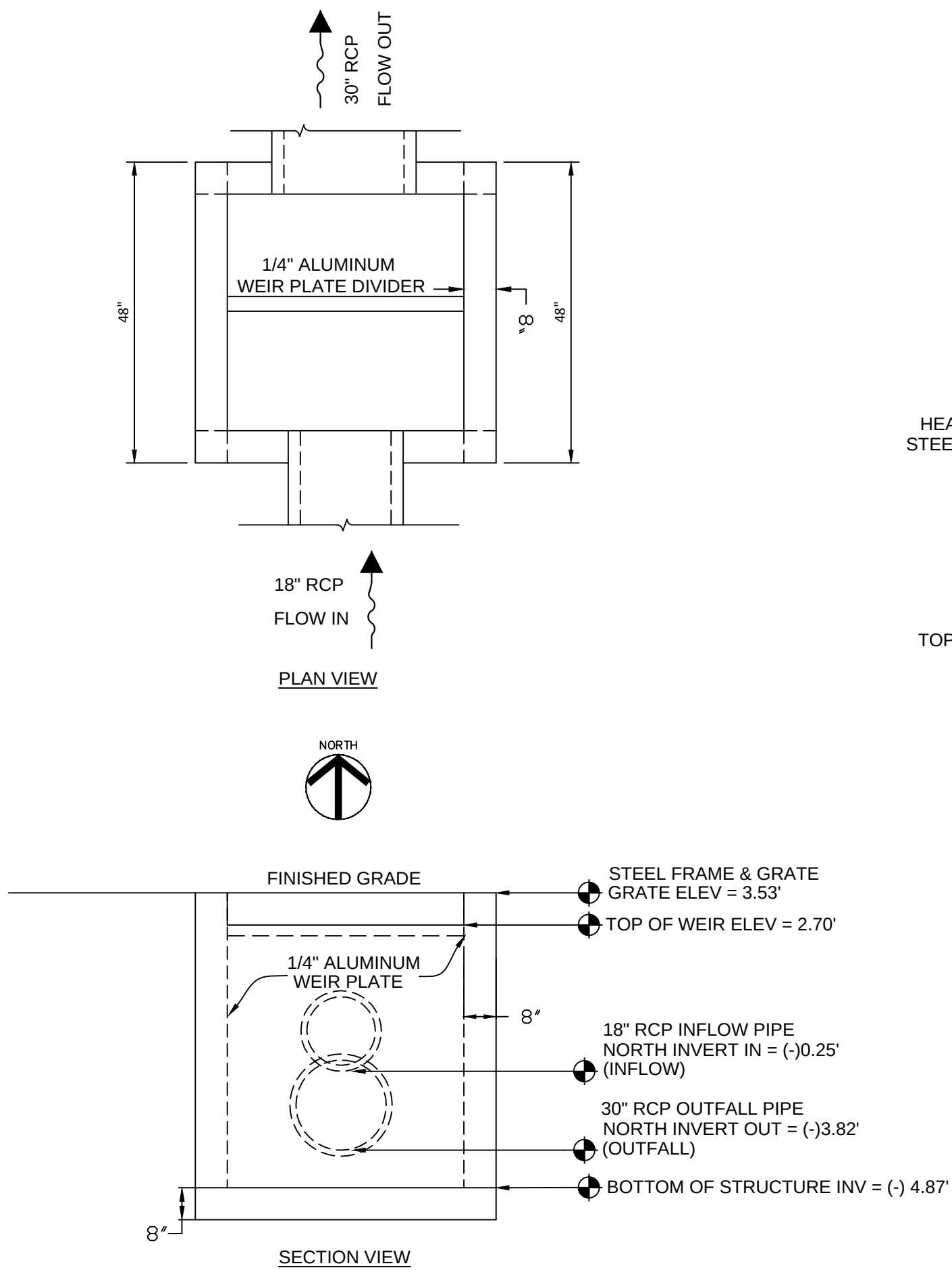
DRAINAGE DETAILS

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



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

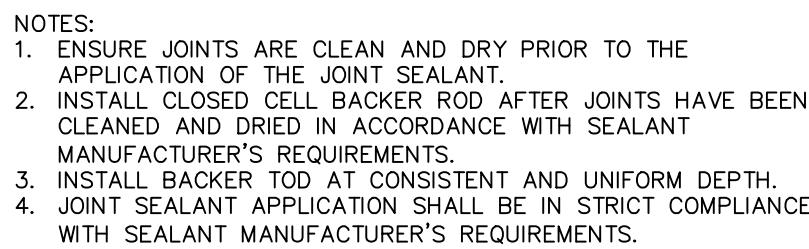
OUTFALL STRUCTURE S-7 DETAIL
N.T.S.



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 REG. #38649 EB #29474 DATE:	DRAINAGE DETAILS			
								DATE	PROJECT NO.	SCALE	SHEET
								09-20-14	2014-077	As Shown	C-17



N.T.S.

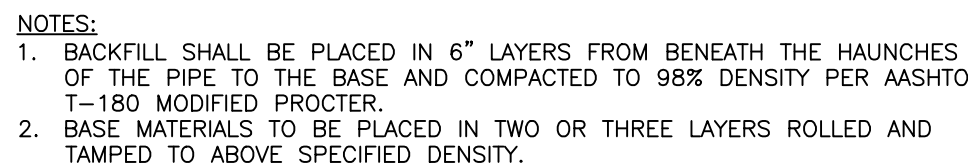


NOT TO SCALE

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



N.T.S.

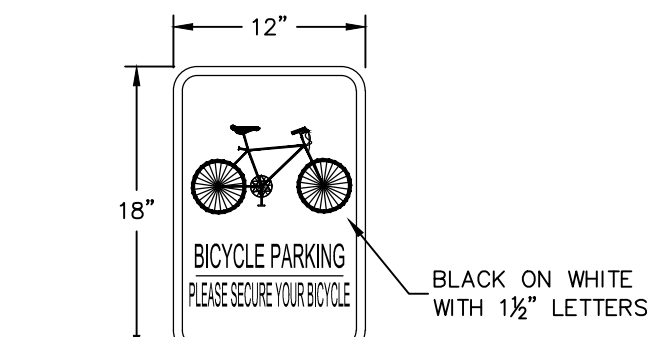


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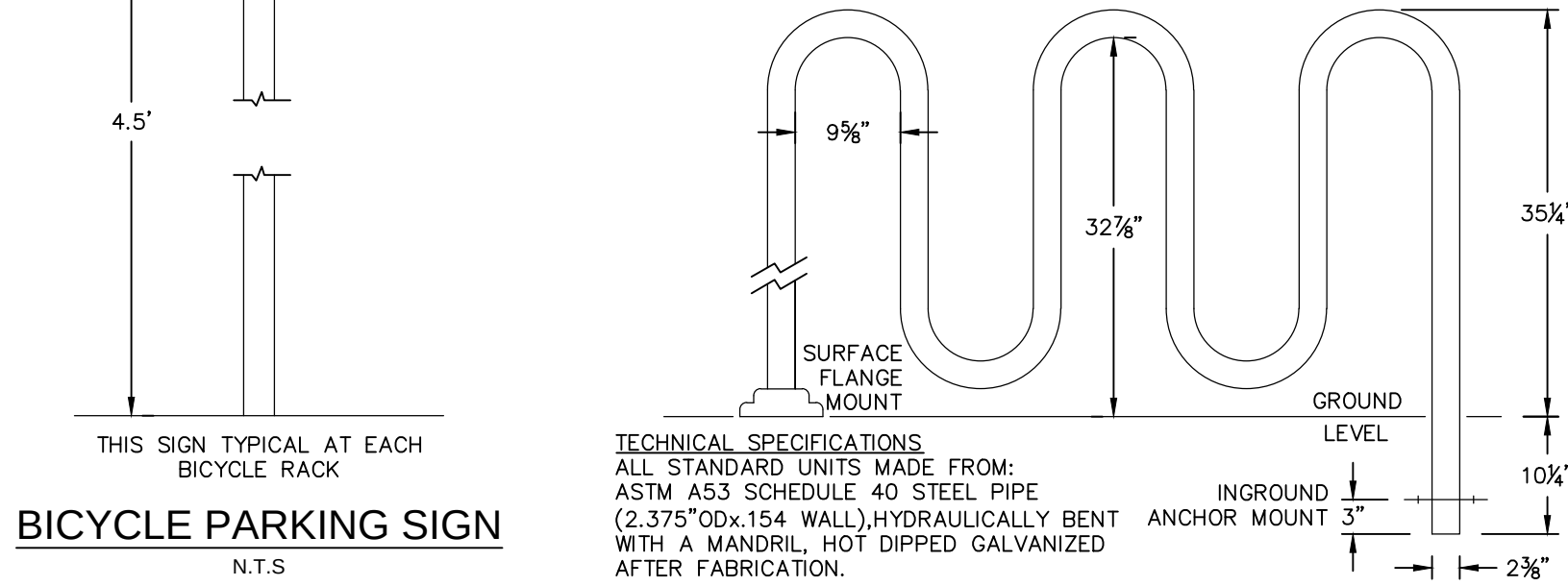


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ENGINEERING

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



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

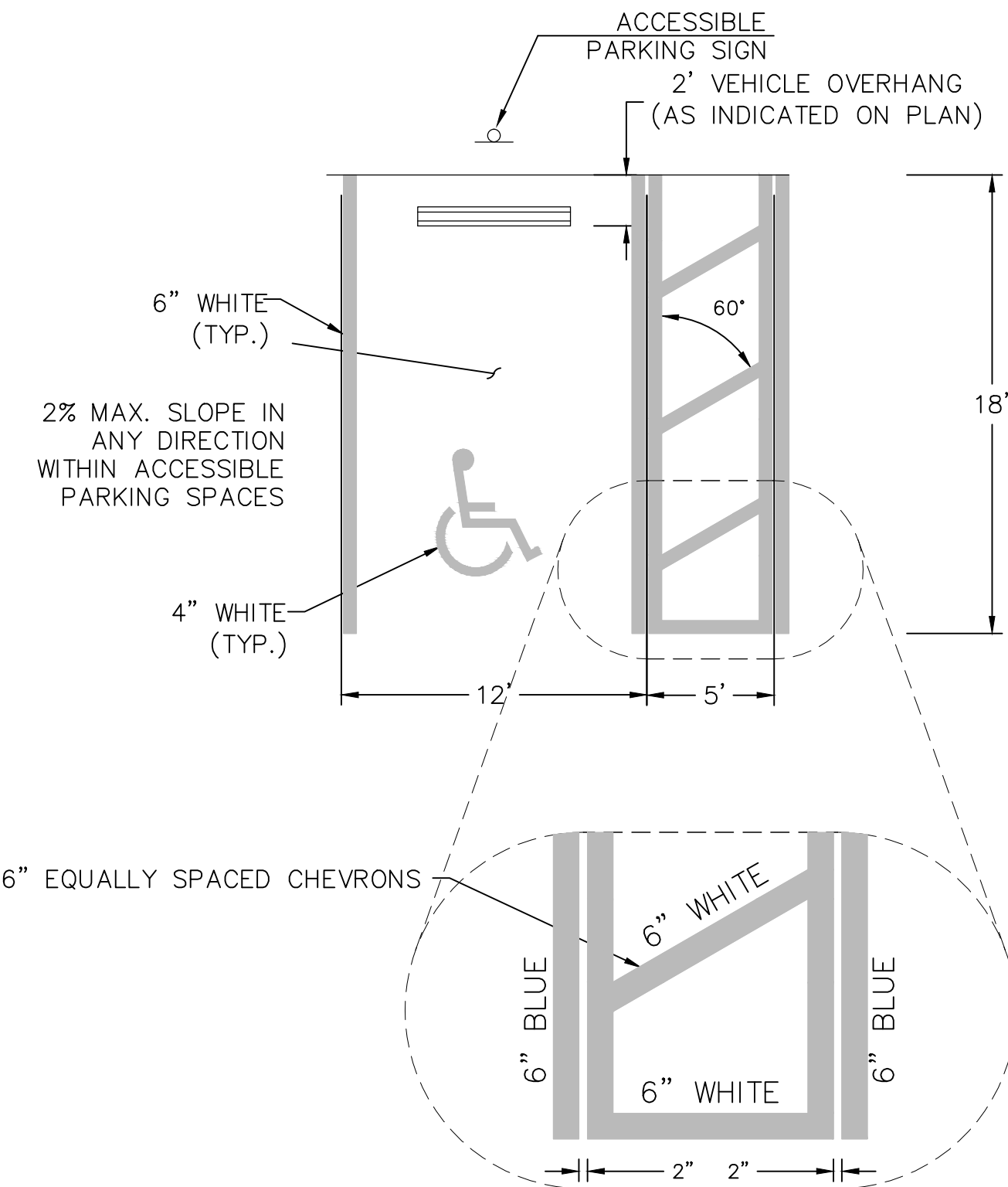


INSTALLATION METHODS:
INGROUND ANCHOR MOUNT (STANDARD)
FREESTANDING MOUNT (OPTIONAL AND EXTRA)
SURFACE FLANGE MOUNT (OPTIONAL AND EXTRA)

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



ACCESSIBLE STRIPING

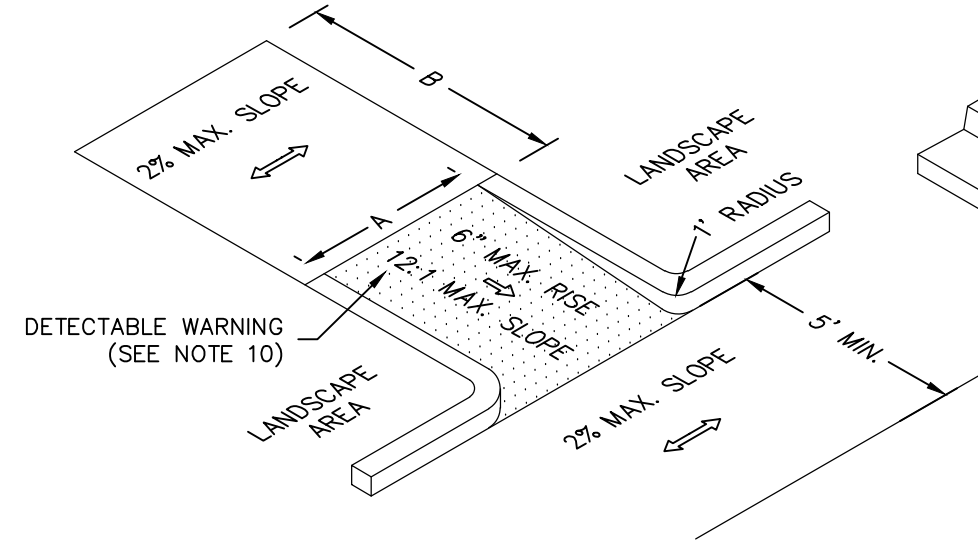
ACCESSIBLE PARKING SIGN

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

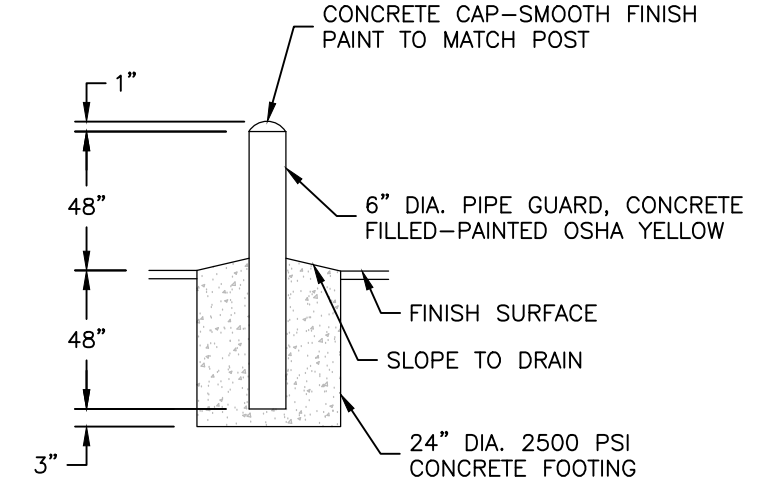
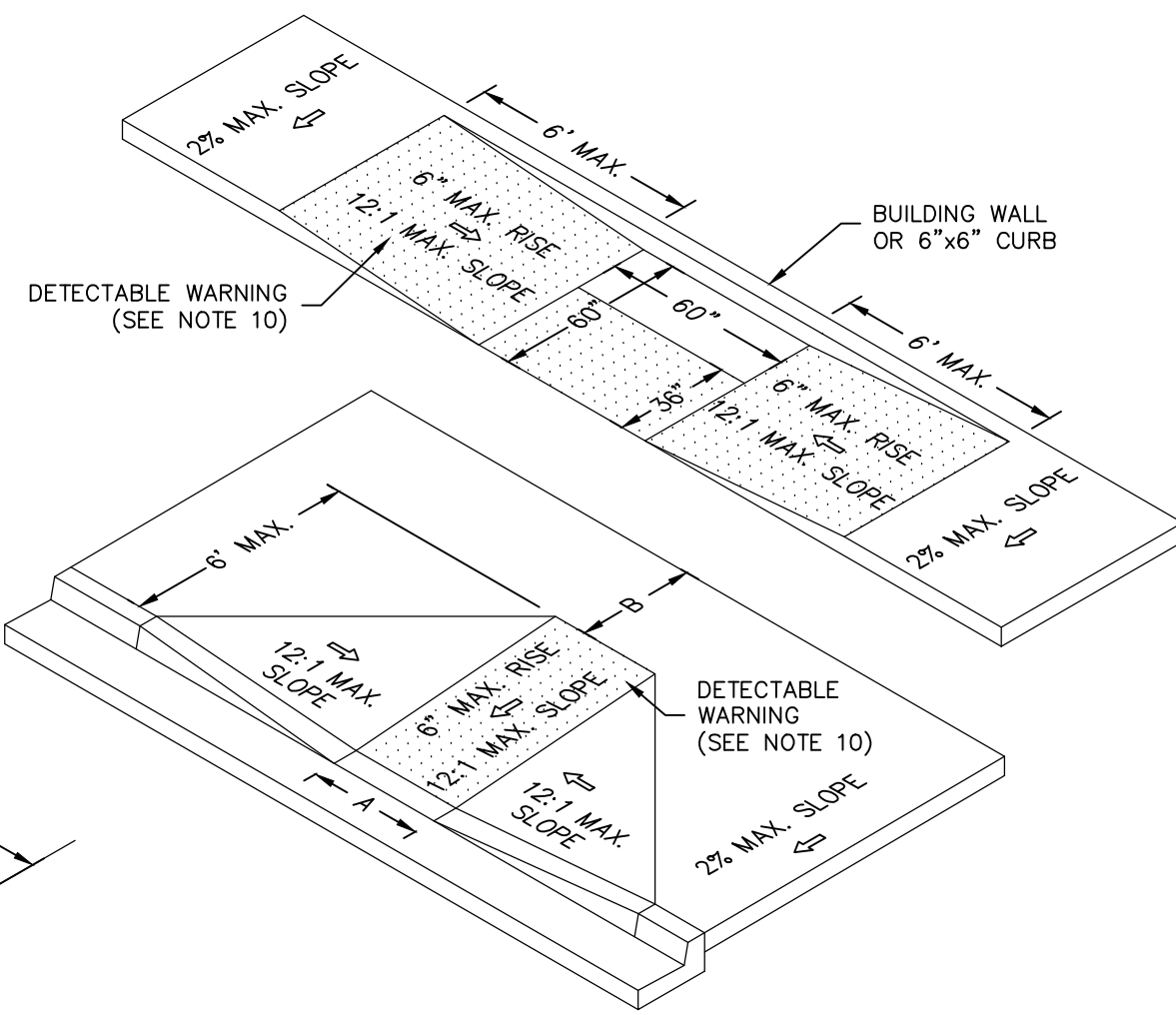
NOTES:

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 1/4" 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.

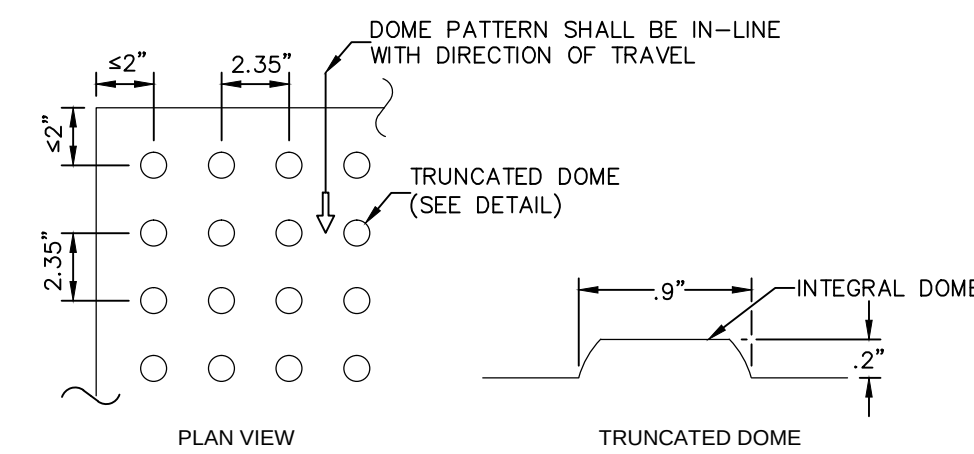
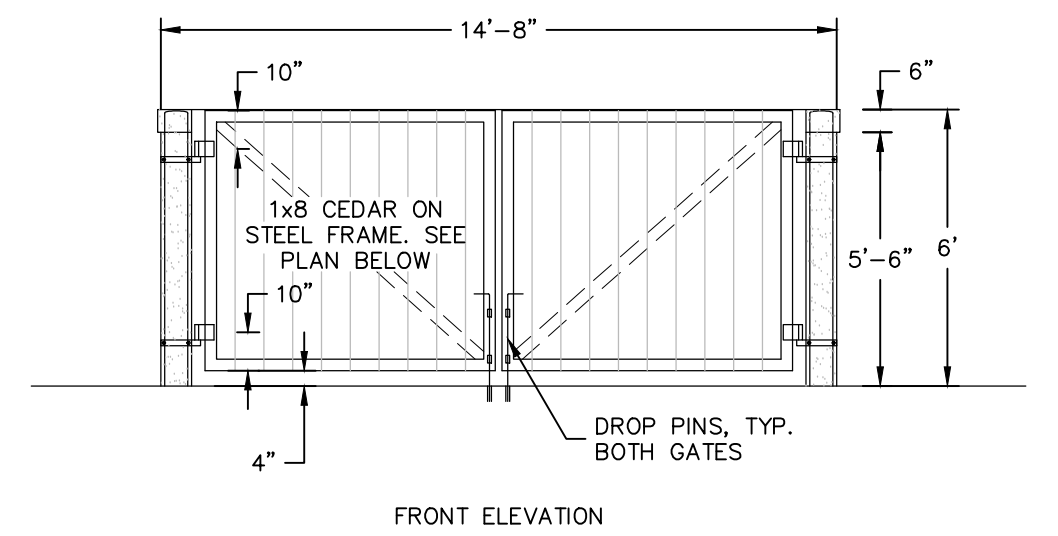
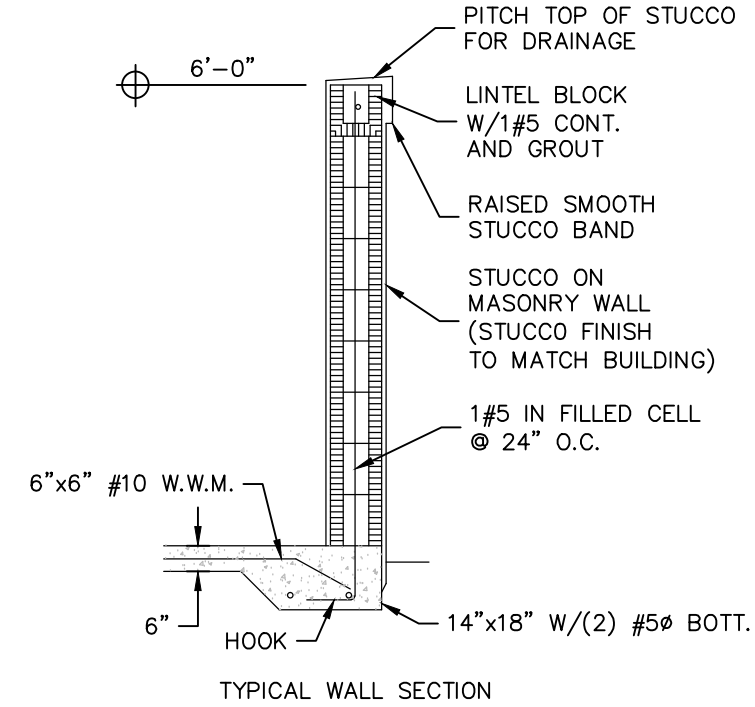
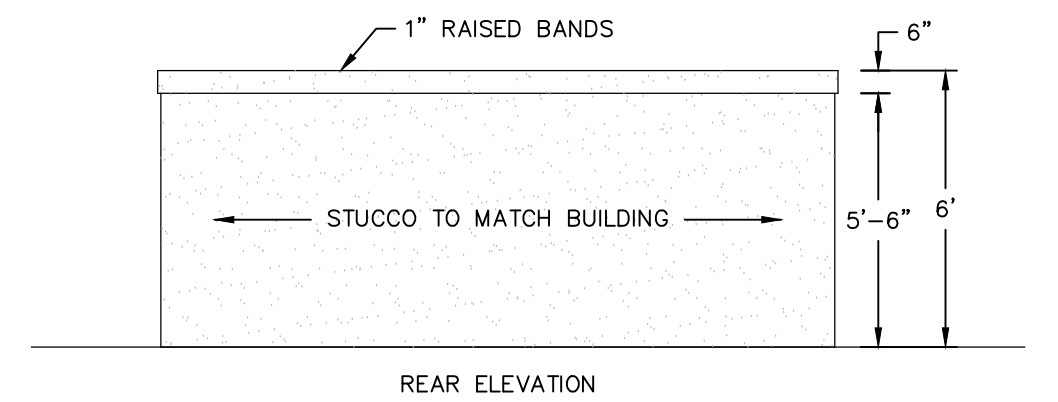
RAMP LOCATION	MINIMUM DIMENSION	A	B
AT OUTSWING DOOR	44"	44"	60"
AT INSWING/SLIDING DOOR	44"	44"	48"
NO DOORWAY	36"	36"	36"



ACCESSIBLE RAMPS

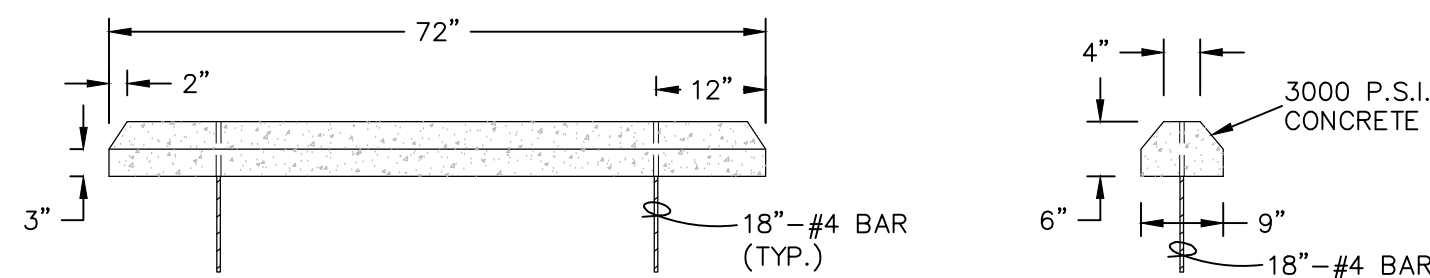


PIPE BOLLARD

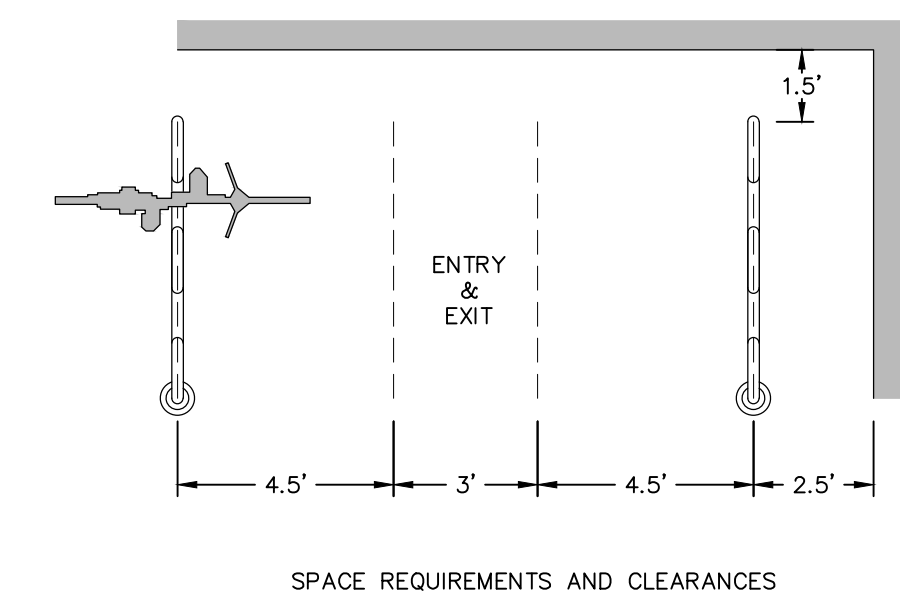


TRUNCATED DOME DETECTABLE WARNING

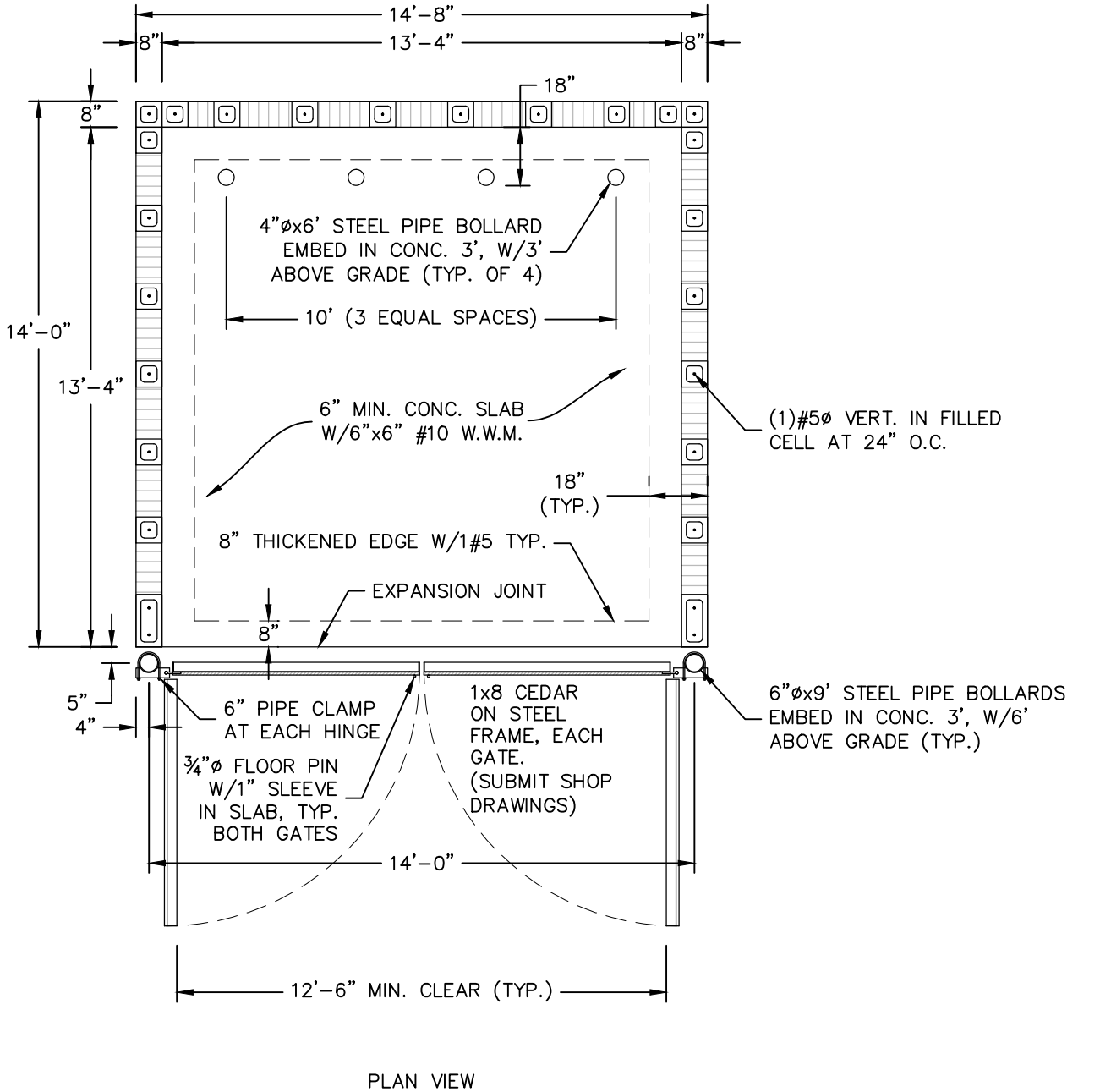
- NOTES:
1. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 IN. (23 MM), A HEIGHT OF NOMINAL 0.2 IN. (5MM) AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 IN. (60 MM)
 2. DETECTABLE WARNINGS SHALL EXTEND THE FULL WIDTH AND DEPTH OF THE CURB RAMP.
 3. TRANSITION 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 INTEGRAL PART OF THE WALKING SURFACE.



CONCRETE WHEEL STOP



PLACEMENT CONSIDERATIONS
IF RACKS ARE TO BE PLACED IN 'PARALLEL,' PLEASE ALLOW 12' (FEET) ON CENTER TO CENTER OF SPACING BETWEEN THE RACKS. THIS PERMITS 4 1/2' (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 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.



DUMPSTER ENCLOSURE (SINGLE)

REVISIONS

ROSE MARINA REDEVELOPMENT PLANS

CITY OF MARCO ISLAND COLLIER COUNTY, FLORIDA

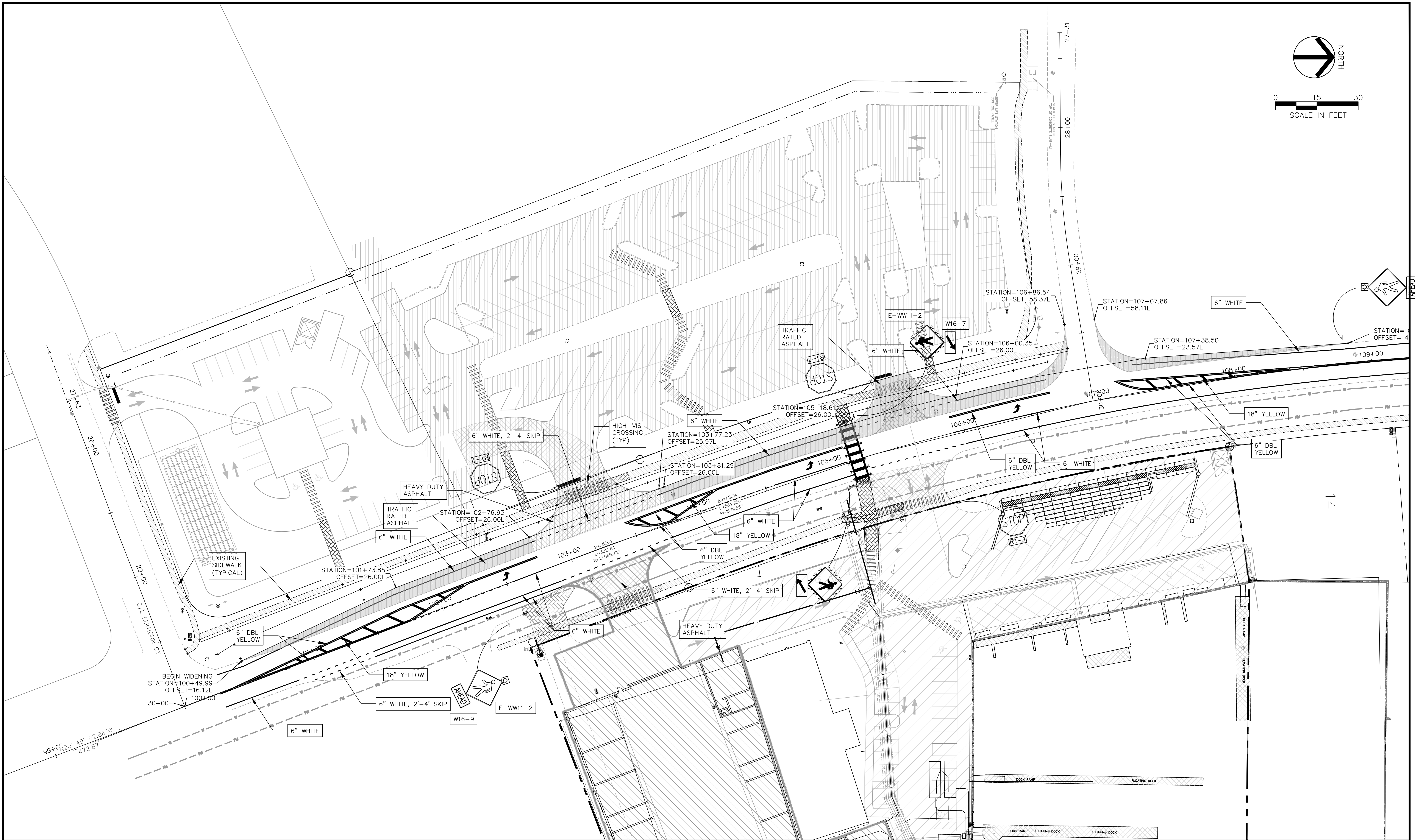


PERMIT PLANS

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

SITE DETAILS

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



REVISIONS		

ROSE MARINA
REDEVELOPMENT PLANS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

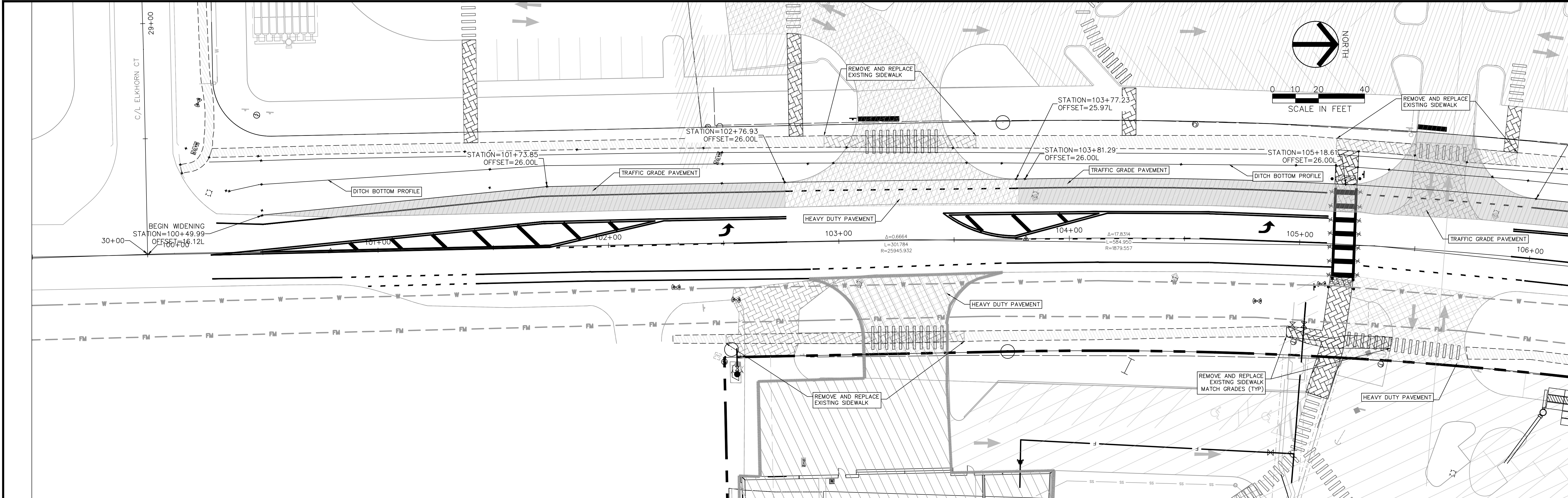
HAGAN
ENGINEERING

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

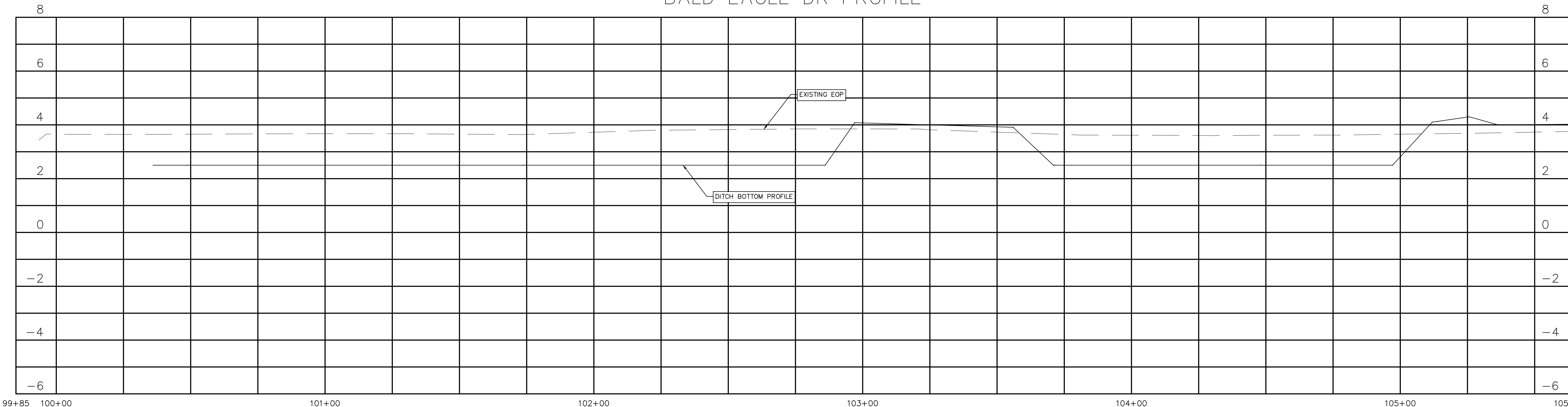
PERMIT PLANS

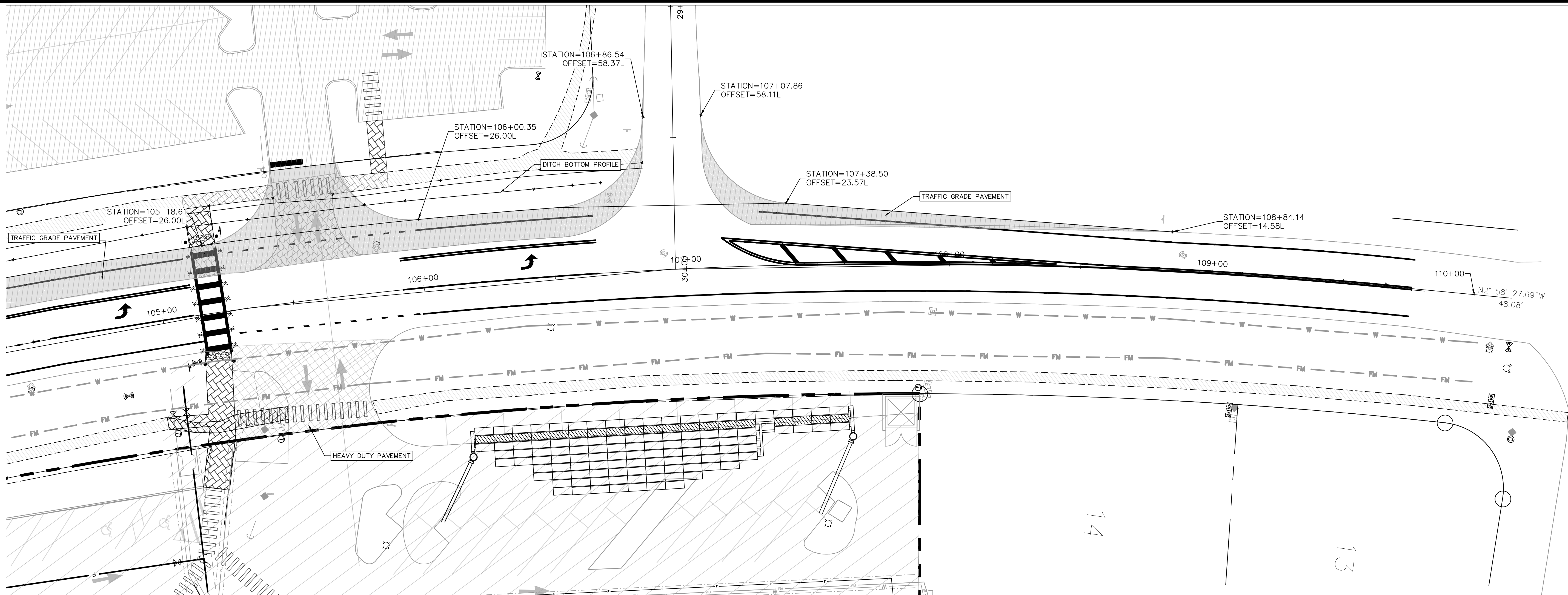
C. D. HAGAN, P.E.
FL. REG. #38649
EB #29474
DATE:

BALD EAGLE DR - SIGNING & MARKING			
DATE	PROJECT NO.	SCALE	SHEET
09-20-14	2014-077	As Shown	C-20

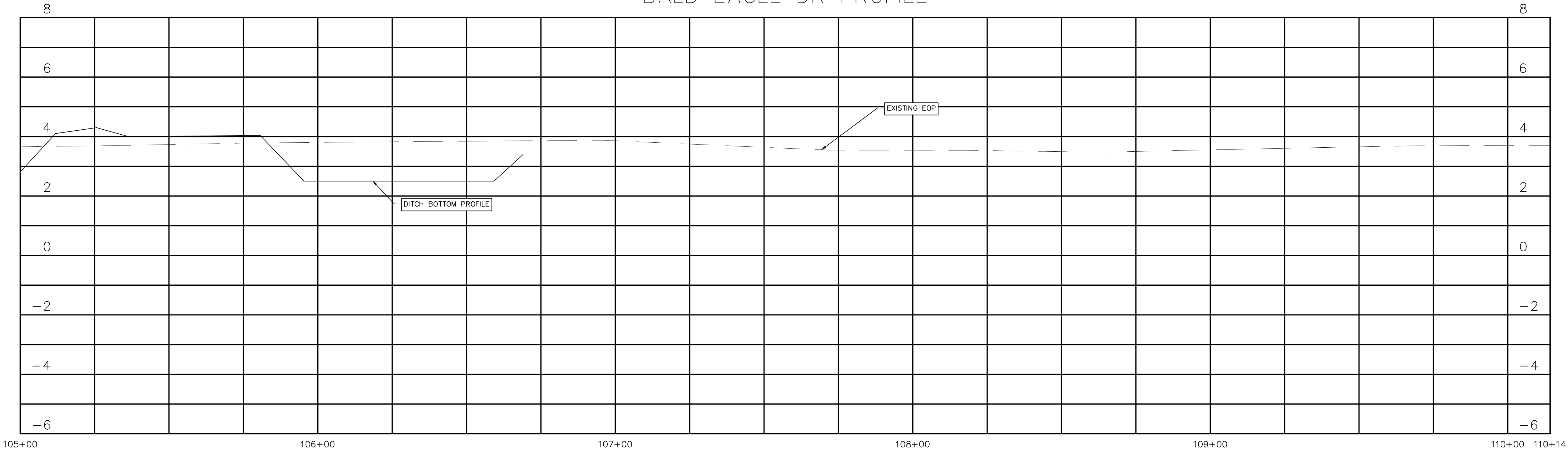


BALD EAGLE DR PROFILE





BALD EAGLE DR PROFILE



REVISIONS		

ROSE MARINA
REDEVELOPMENT PLAN

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

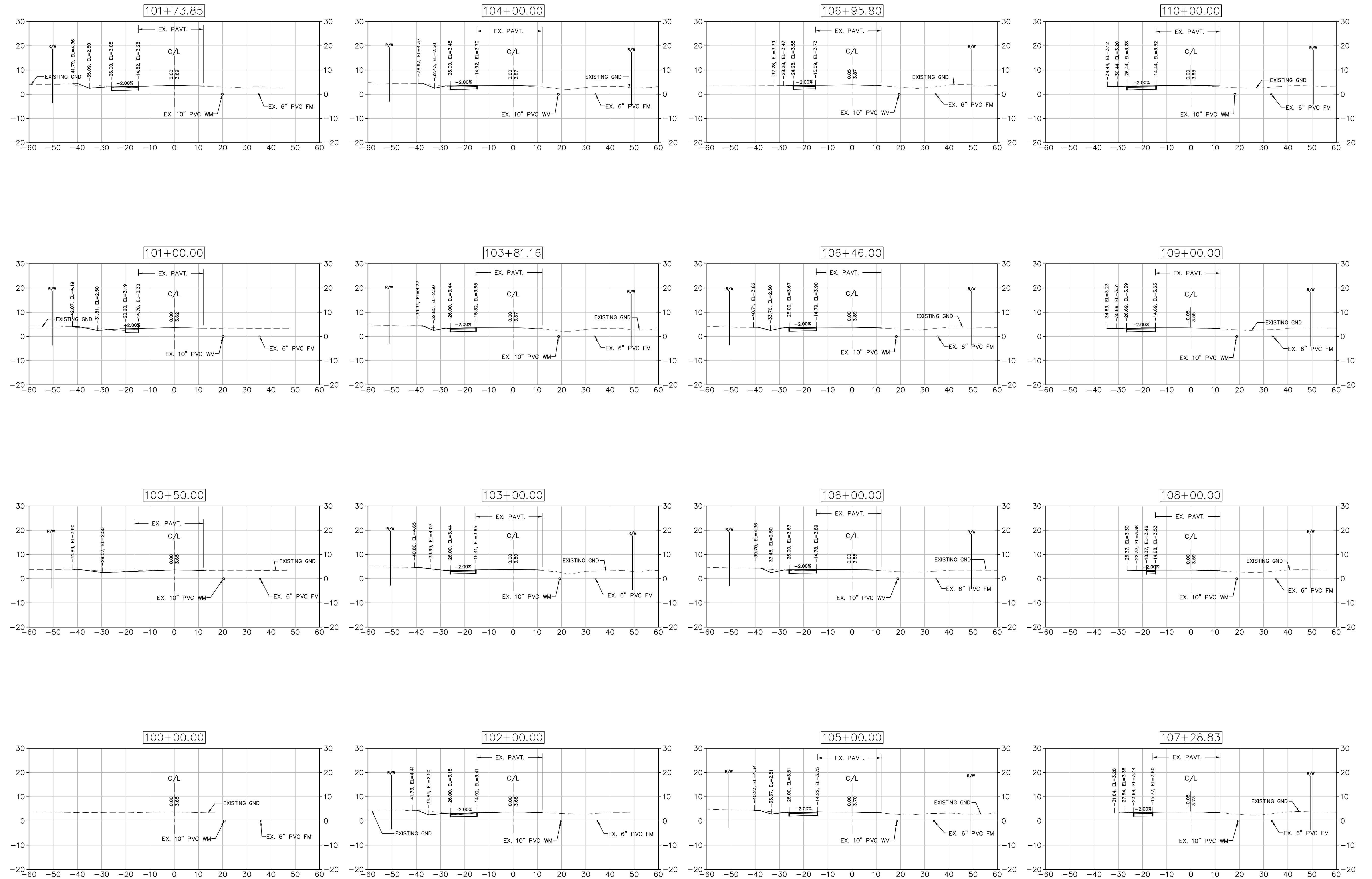
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ENGINEERING

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Naples, Florida 34102
Phone (239) 851-8239

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

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



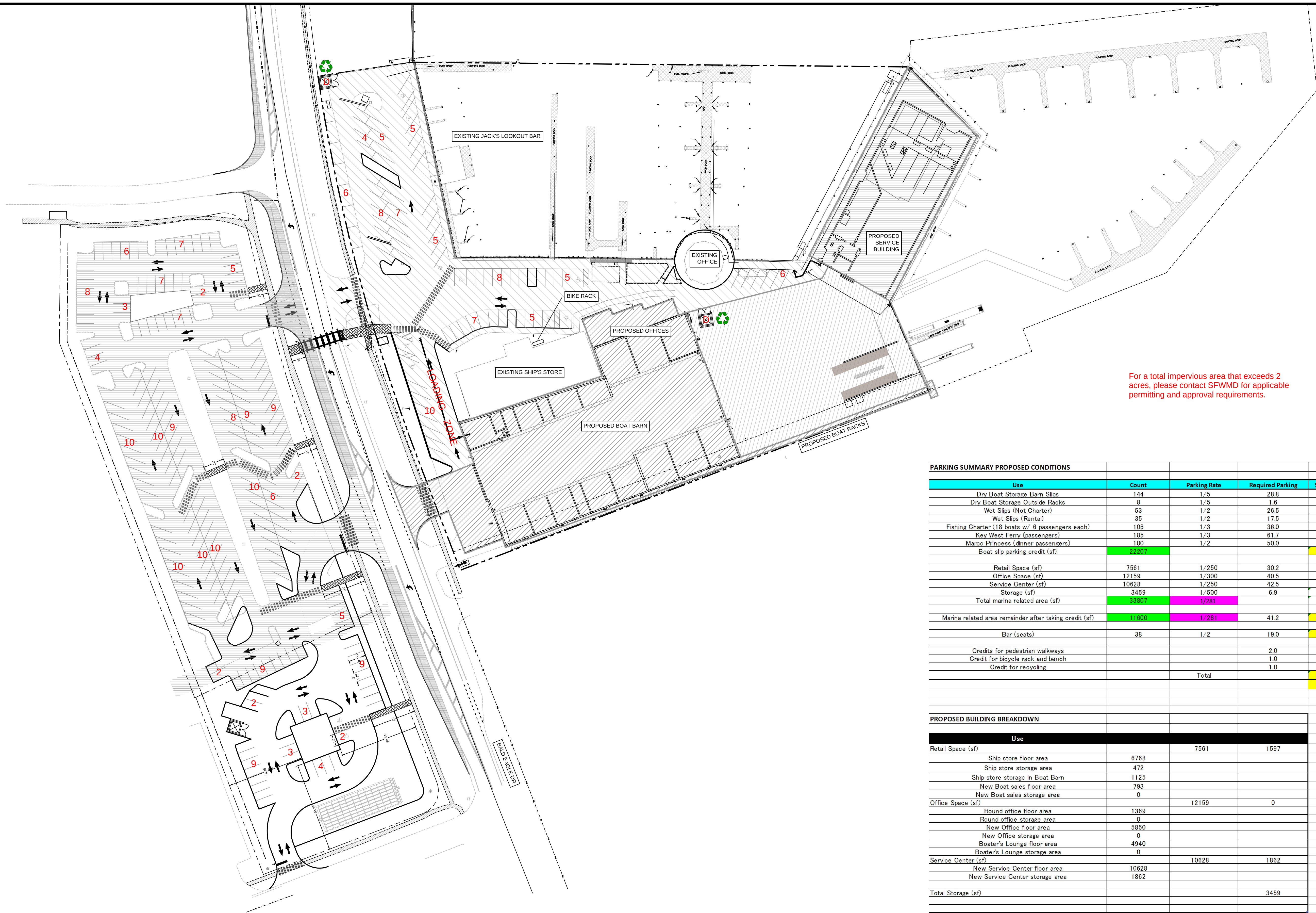
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Naples, Florida 34102
Phone (239) 851-8239

PERMIT PLANS

BALD EAGLE DR - CROSS SECTIONS

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

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.

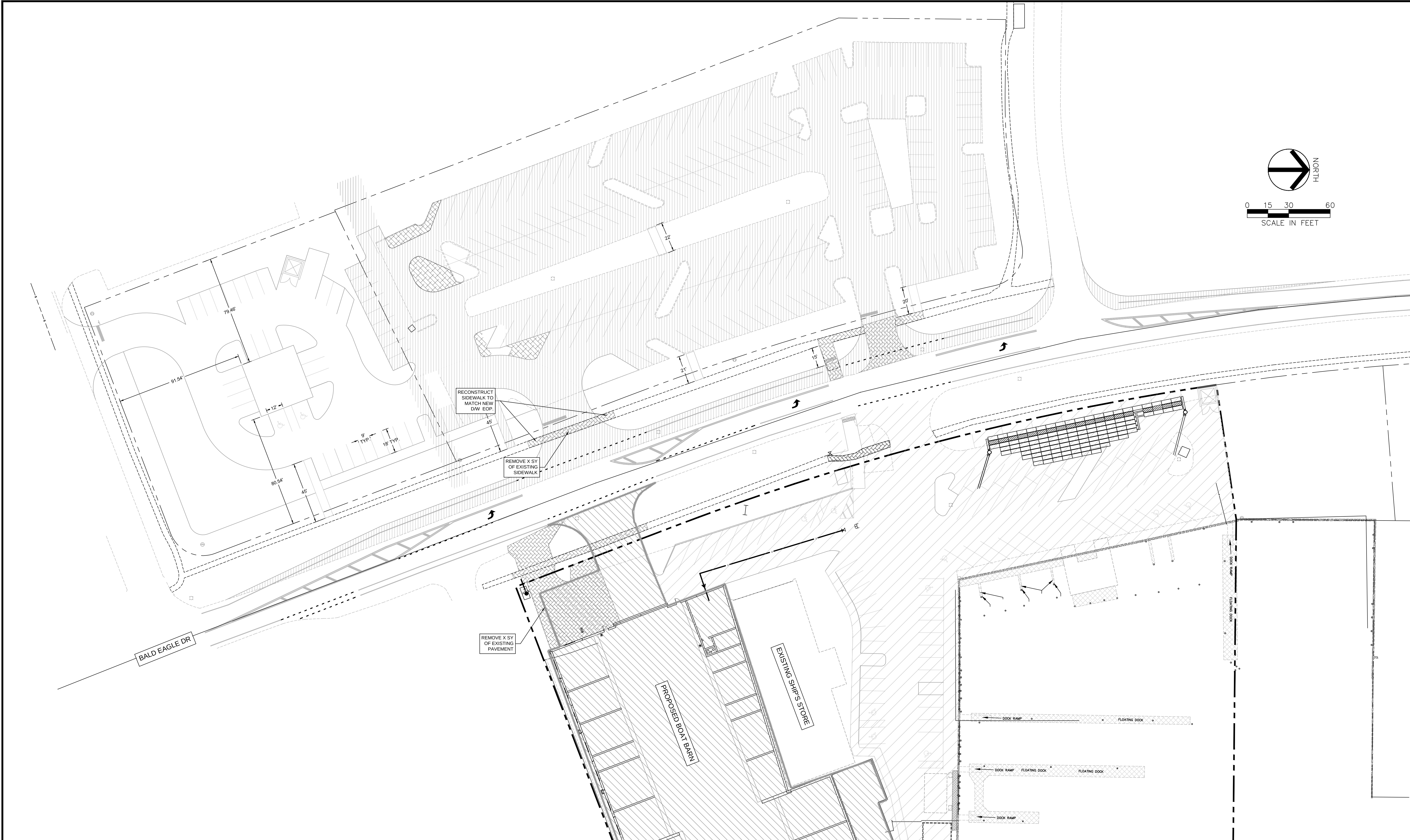
PARKING SUMMARY PROPOSED CONDITIONS						
Use	Count	Parking Rate	Required Parking	Sub-total	Notes	Credits
Dry Boat Storage Barn Slips	144	1/5	28.8			
Dry Boat Storage Outside Racks	8	1/5	1.6			
Wet Slips (Not Charter)	53	1/2	26.5			
Wet Slips (Rental)	35	1/2	17.5			
Fishing Charter (18 boats w/ 6 passengers 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
Marina related area remainder after taking credit (sf)	11600	1/281	41.2	41	79	Credits from boat slips
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		HAGAN ENGINEERING		PERMIT PLANS		DEMOLITION PLAN			
NO.	DESCRIPTION	DATE												

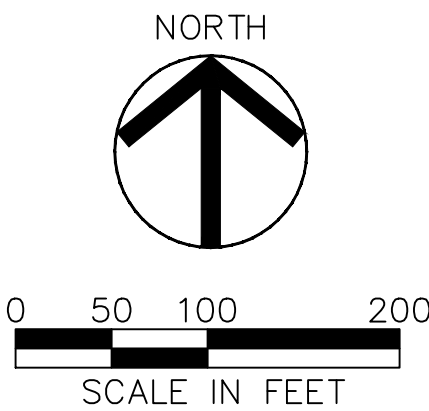
1250 TAMiami TRAIL N., STE. 203B
Naples, Florida 34102
Phone (239) 851-8239

C. D. HAGAN, P.E.
FL REG. #38649
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DATE: 09-20-14

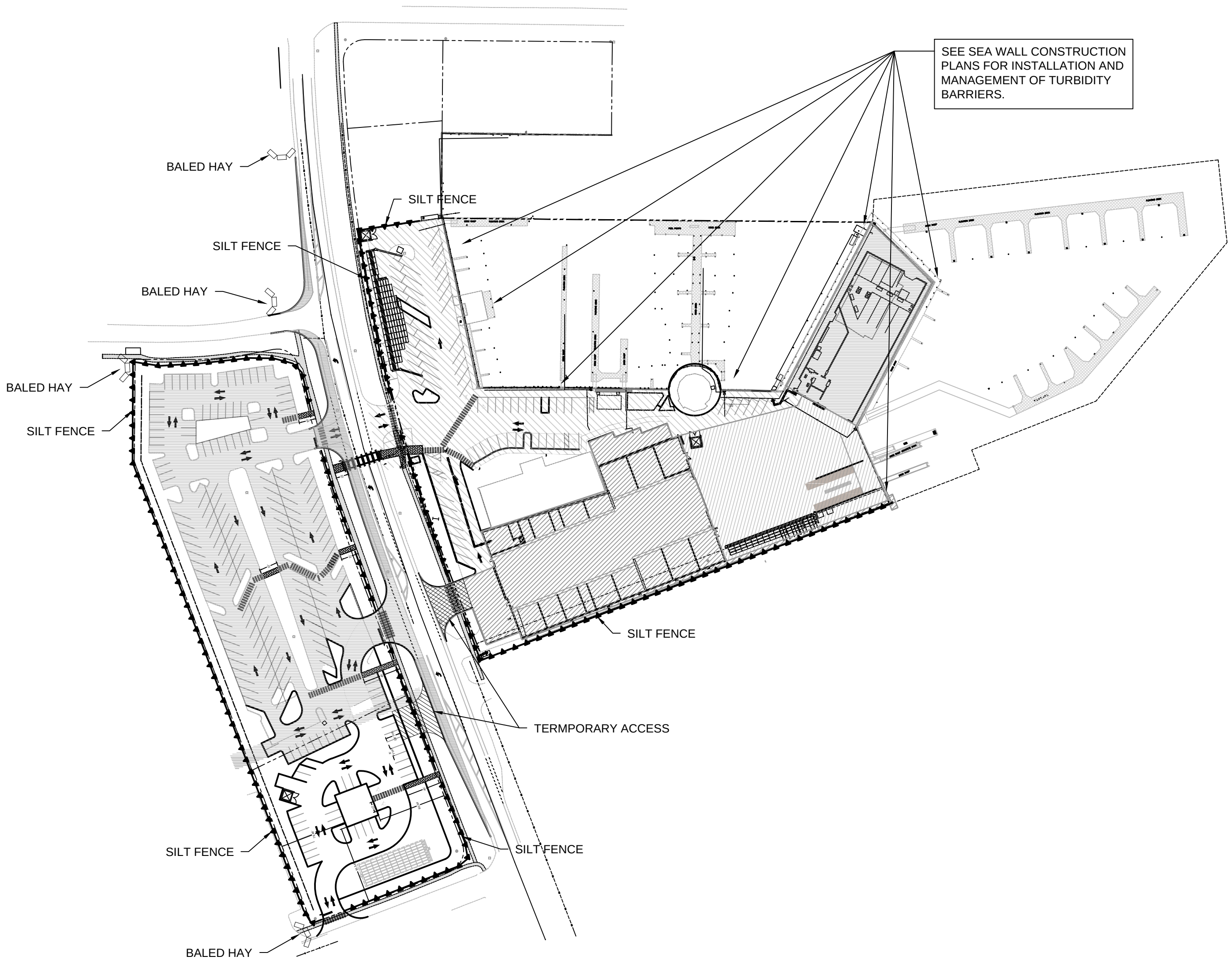
PROJECT NO. 2014-077

SCALE As Shown

SHEET C-25



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



SEE SEA WALL CONSTRUCTION
PLANS FOR INSTALLATION AND
MANAGEMENT OF TURBIDITY
BARRIERS.

LEGEND

 SILT FENCE
 STAKED HAY BALES

REVISIONS		

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA



HAGAN
ENGINEERING

1250 TAMiami TRAIL N., STE. 203B
Naples, Florida 34102
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PERMIT PLANS

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

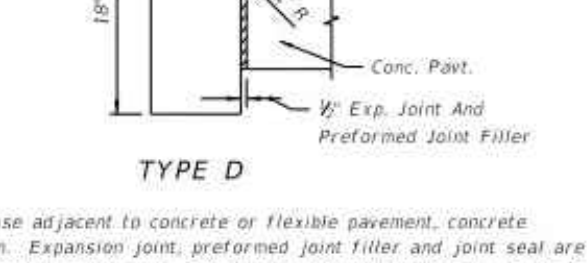
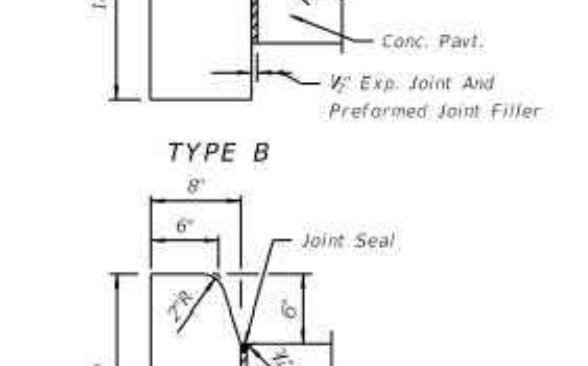
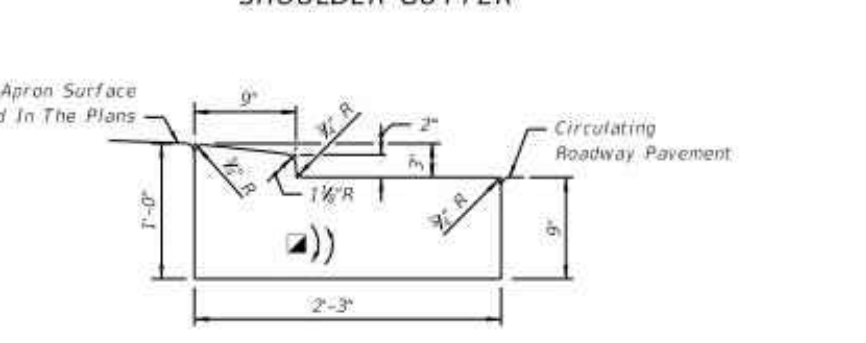
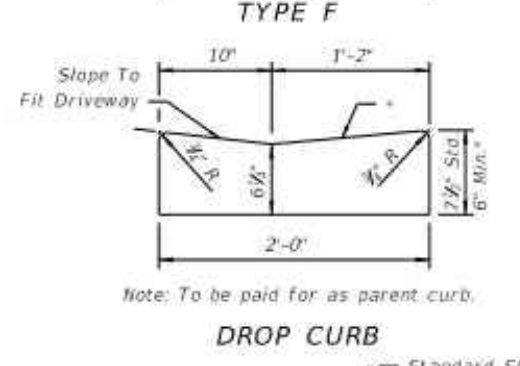
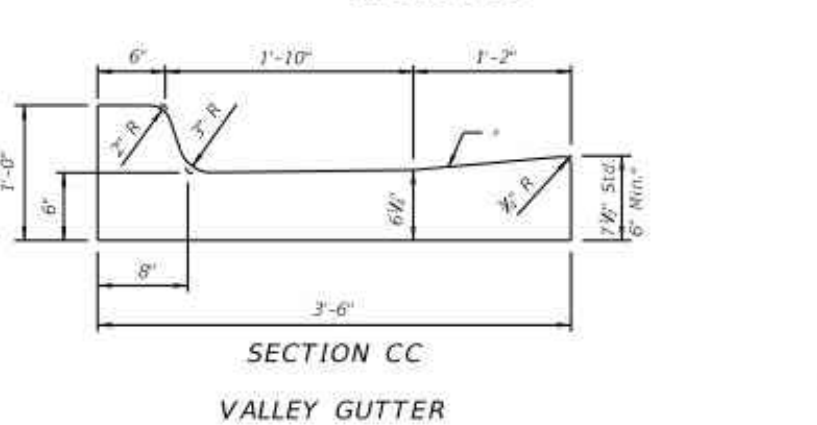
EROSION CONTROL PLAN

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



3. 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 streets. Curbed facilities with sidewalks and those without sidewalks shall have curb ramps constructed with intersections and turnouts with curbed turnouts. To accommodate curb ramps, parallel curbs are to be extended to the limits prescribed in Index No. 515. Ramp slopes 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 installation of a cross 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 can not fully met, the minimum feasible cross slope shall be provided. Ramp slopes are not required to exceed 15" in length.
 - If sidewalk curb ramps are located where pedestrians must walk across the ramp, then provide transition slopes to the ramp; otherwise a sidewalk slope 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 with 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-1 and CR-2 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 WARNING** details. Detectable warnings shall not be provided on transition slopes.
9. When detectable warnings are placed on a slope greater than 3% 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.

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

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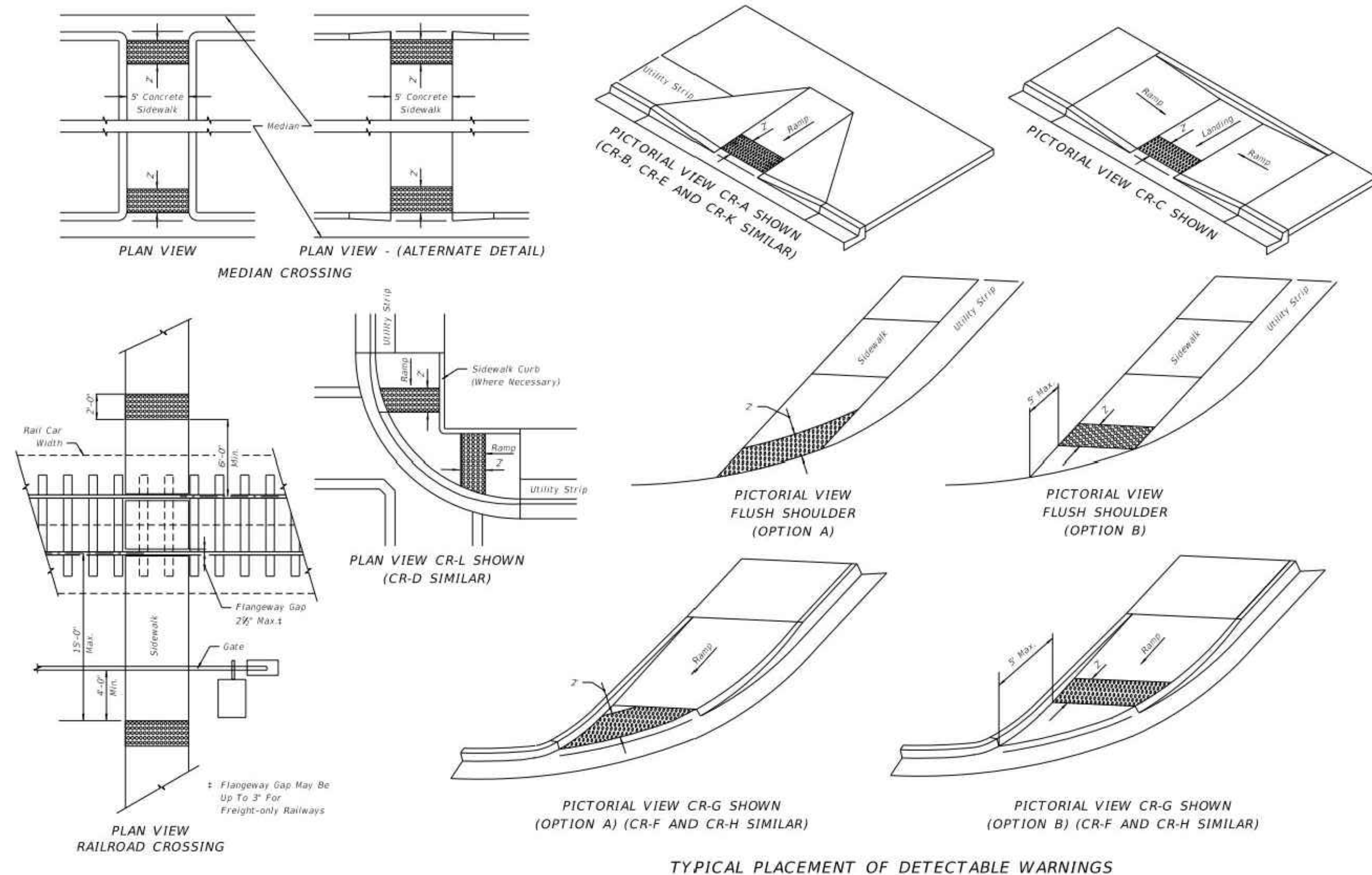
REVISIONS

CITY OF MARCO ISLAND
COLLIER COUNTY, FLORIDA

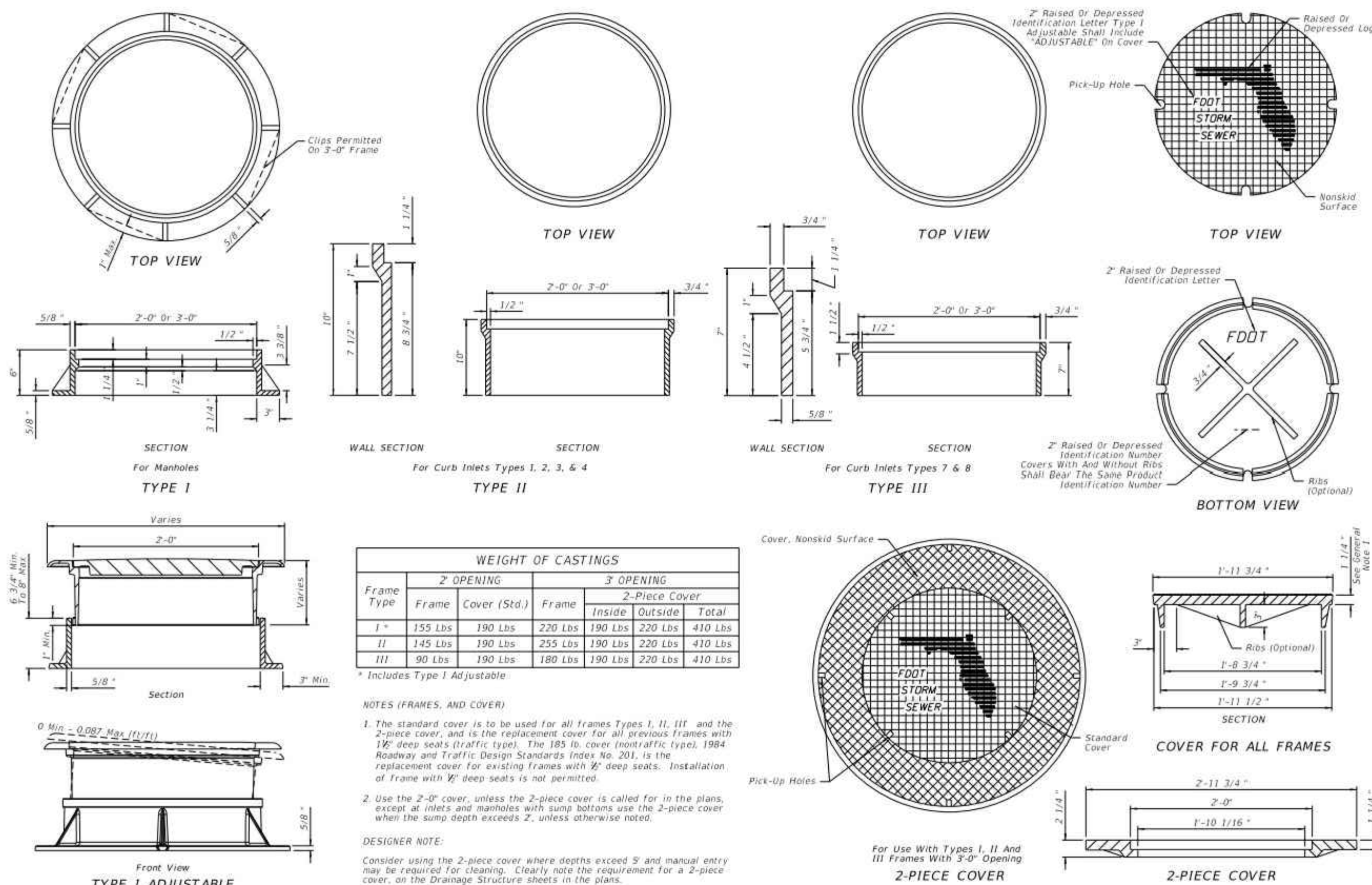


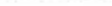
C. D. HAGAN, P.E.
FL REGT. #38649
EB #29474
DATE:

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



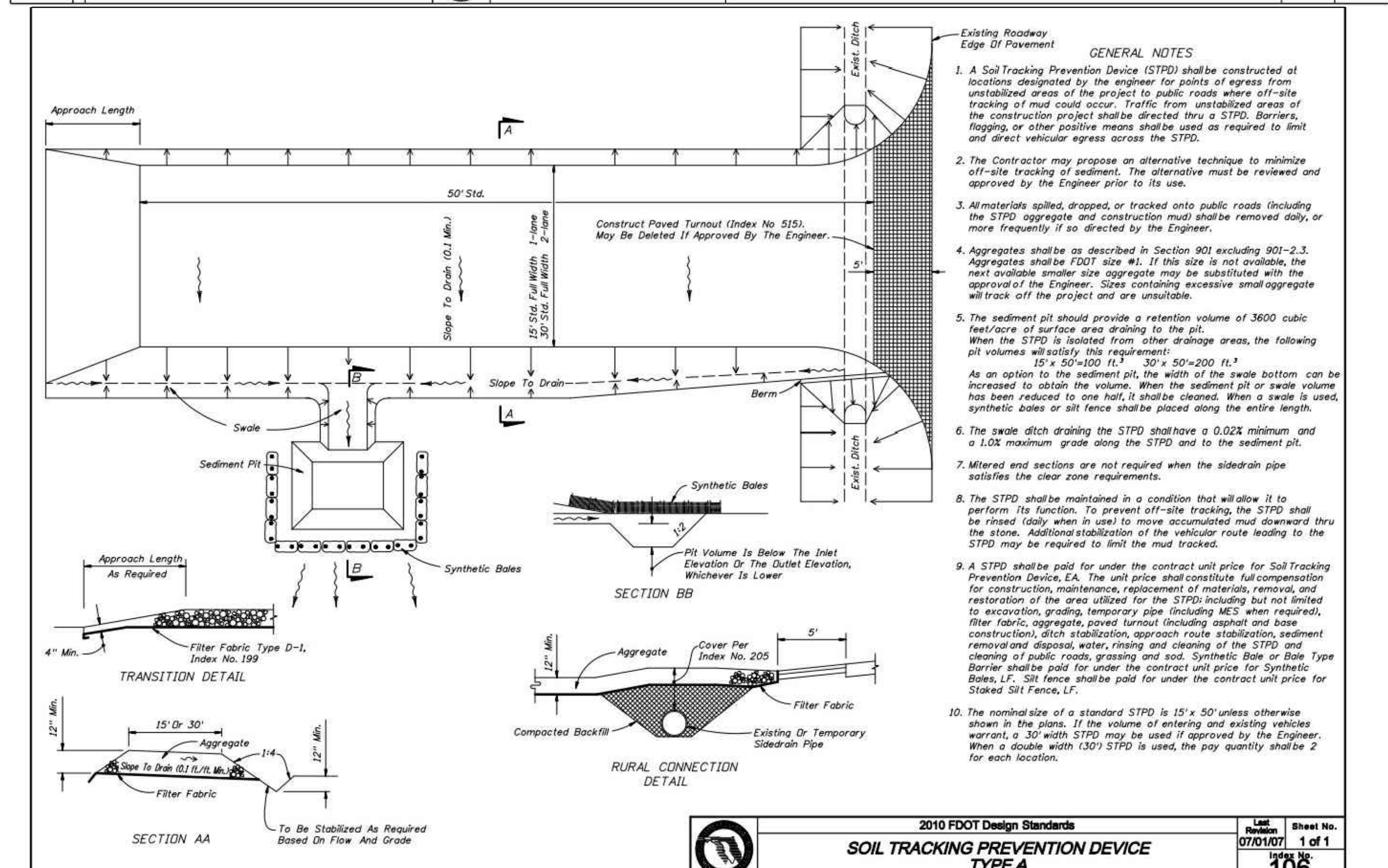
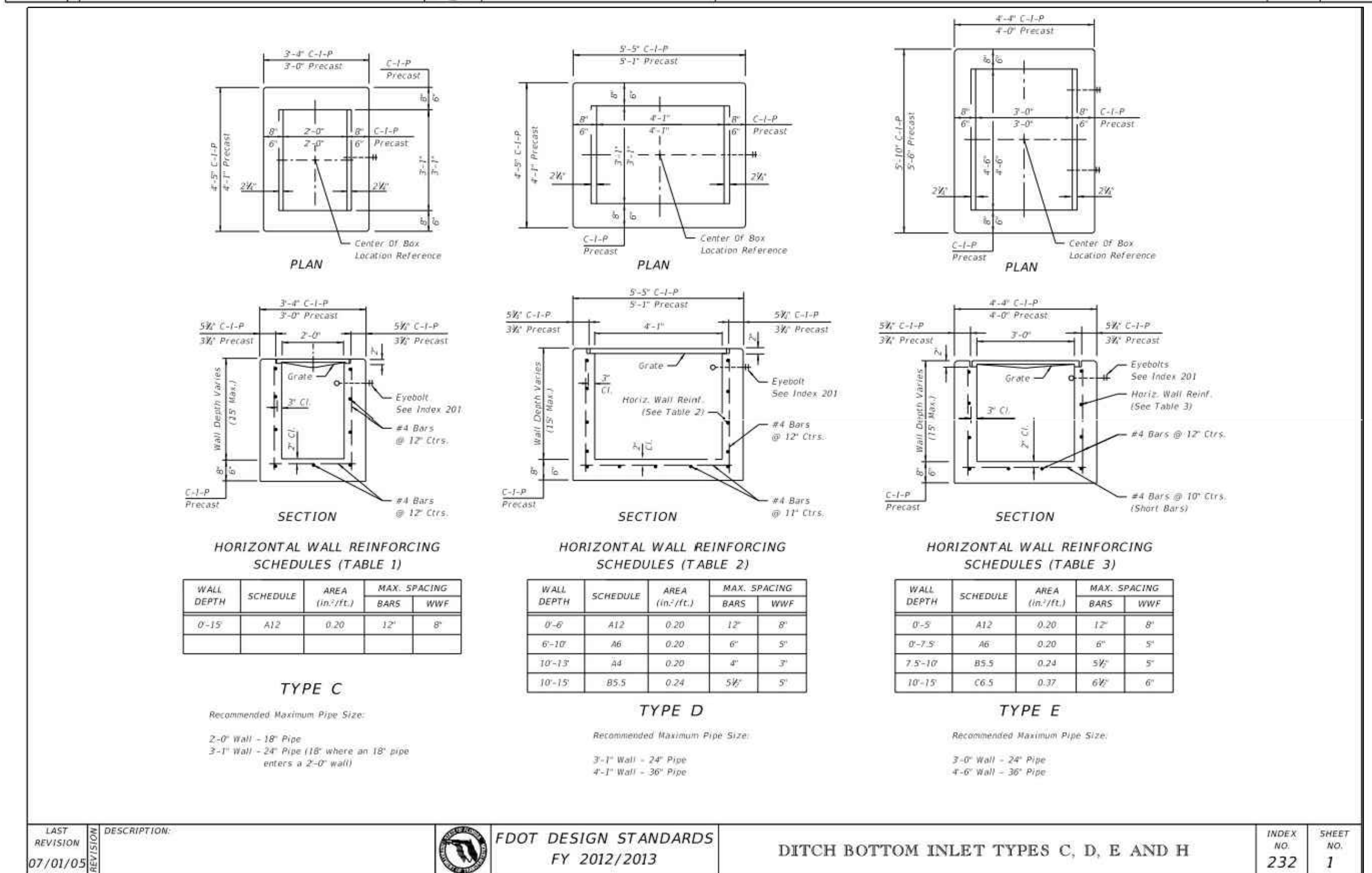
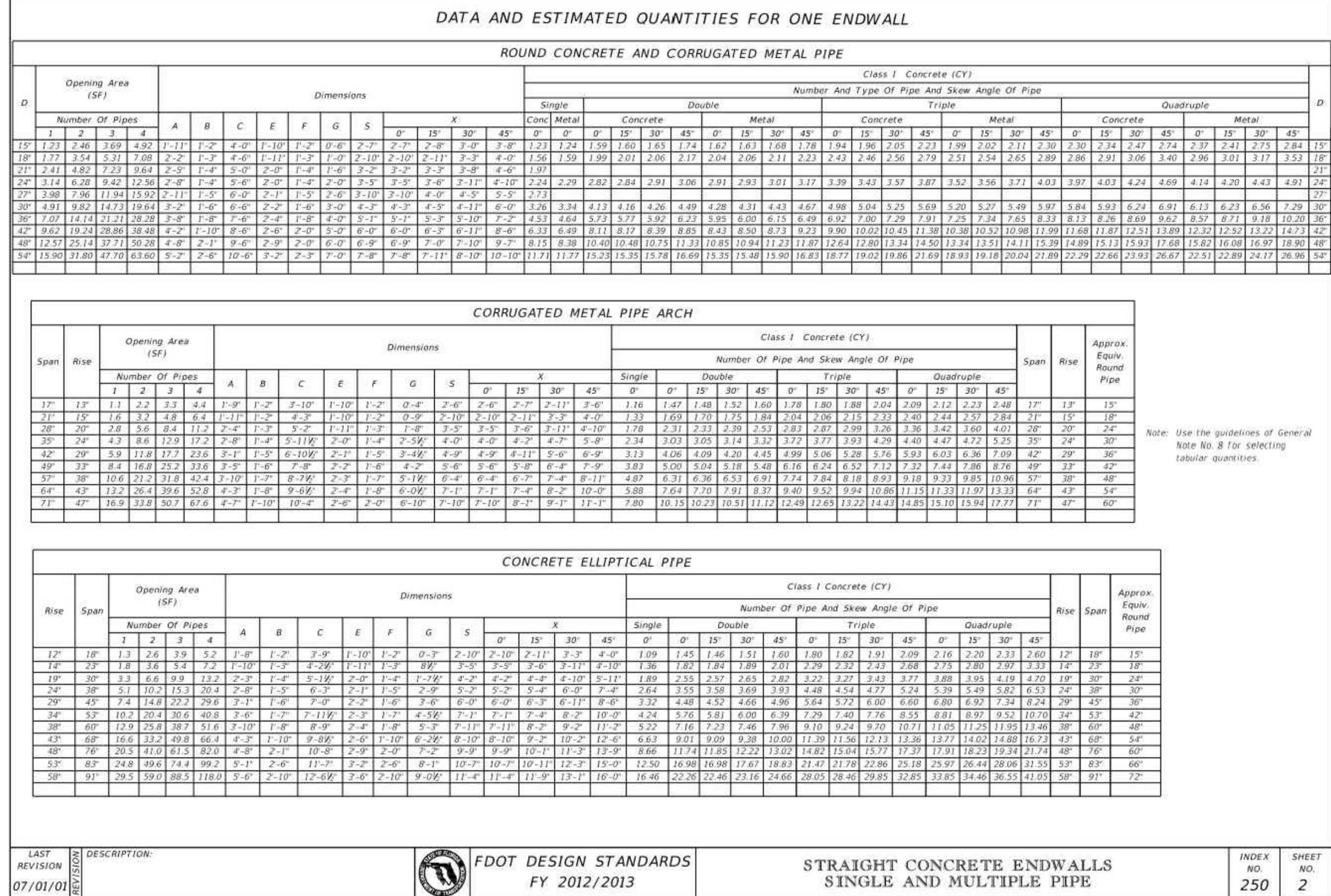
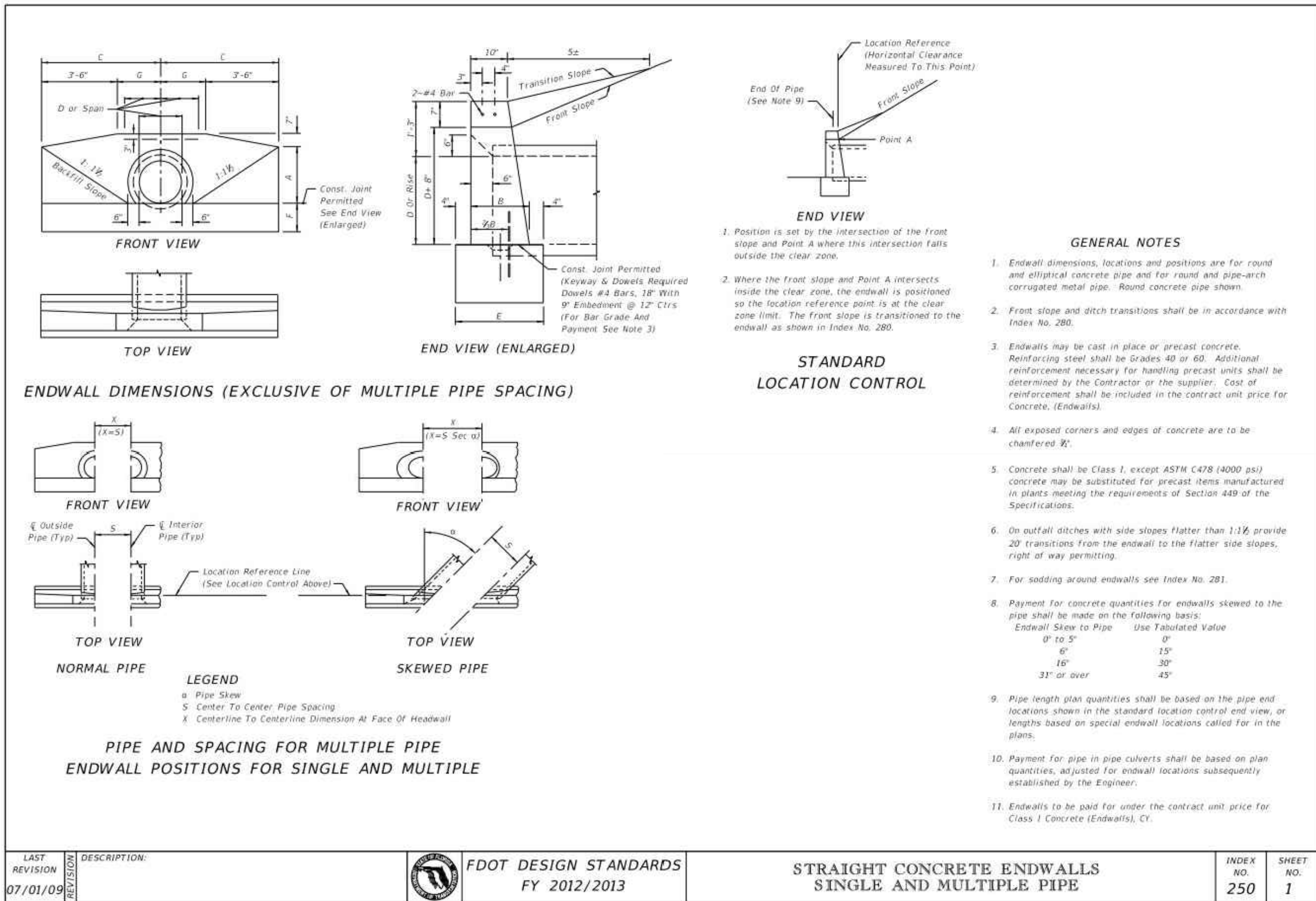
LAST REVISION 07/01/13	DESCRIPTION:  FDOT 2014 DESIGN STANDARDS	DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS	INDEX NO. 304	SHEET NO. 6 of 7
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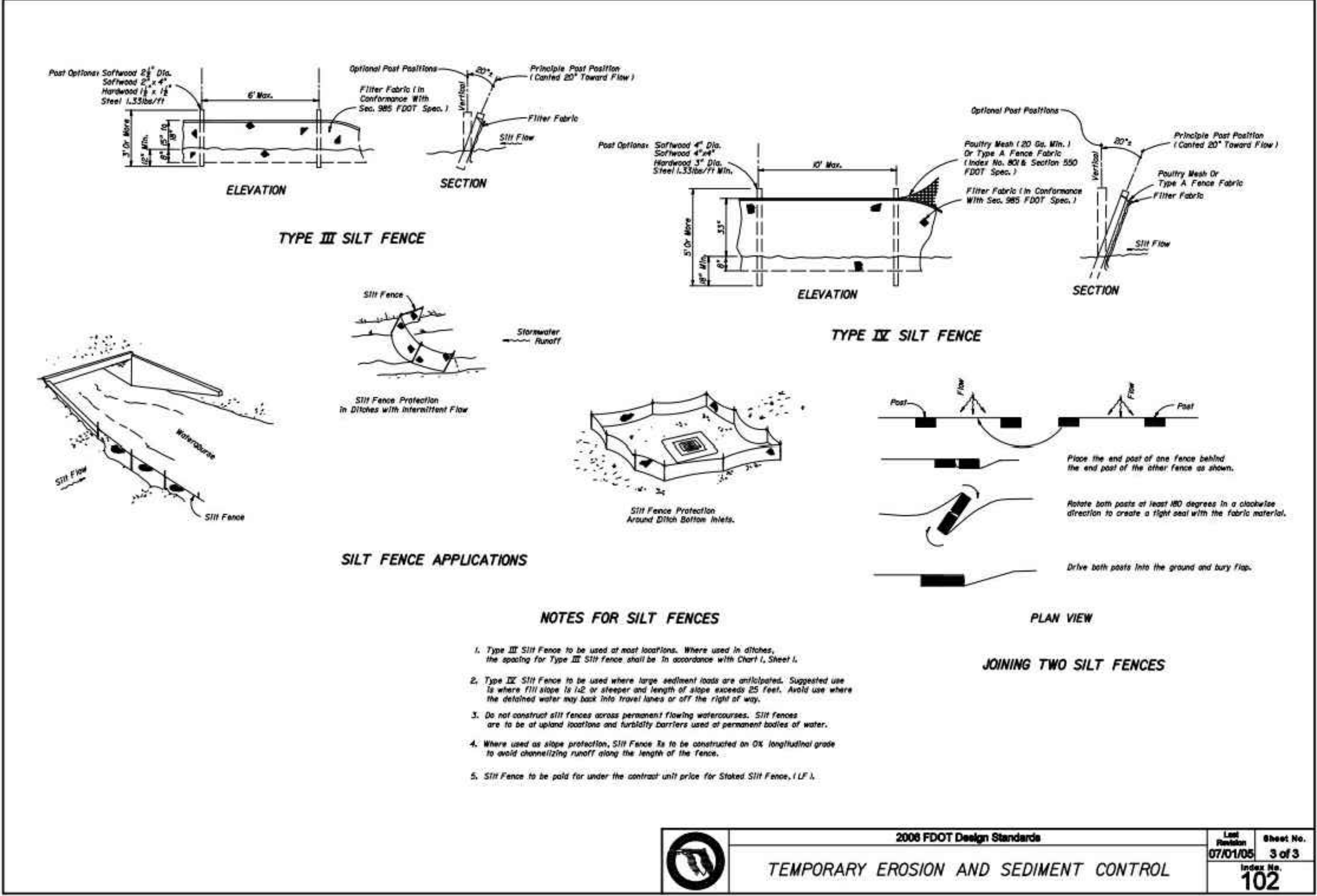
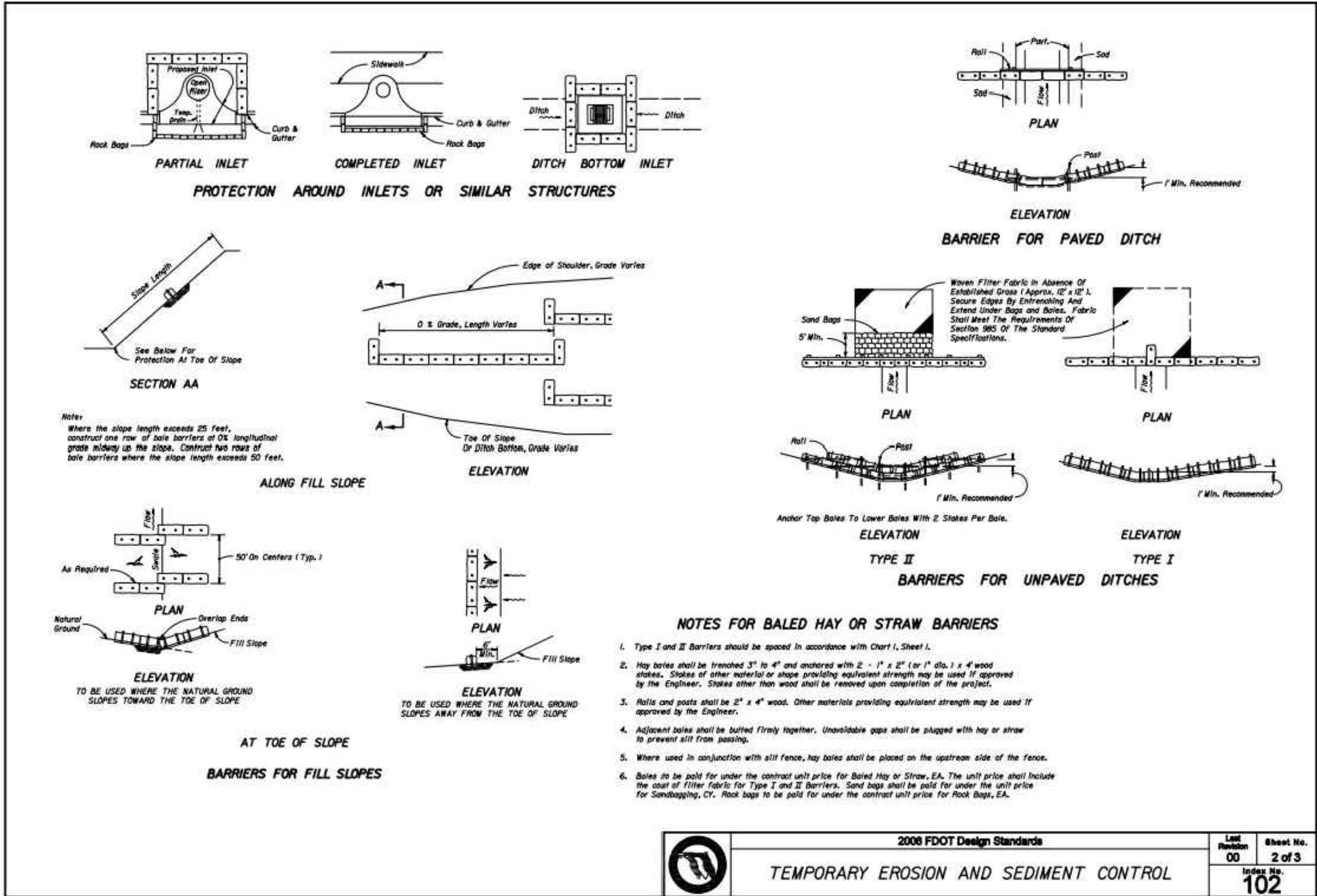


LAST REVISION 01/01/12	DESCRIPTION:	 FDOT DESIGN STANDARDS FY 2012/2013	SUPPLEMENTARY DETAILS FOR MANHOLES & INLETS	INDEX NO. 201	SHEET NO. 1

SUPPLEMENTARY DETAILS FOR MANHOLES & INLETS

INDEX NO.	SHEEP NO.
201	1





REVISIONS			ROSE MARINA REDEVELOPMENT PLANS	CITY OF MARCO ISLAND COLLIER COUNTY, FLORIDA	HAGAN ENGINEERING	PERMIT PLANS	C. D. HAGAN, P.E. FL REG. #38649 EB #29474 DATE:	FDOT DETAILS			
								DATE	PROJECT NO.	SCALE	SHEET
								09-20-14	2014-077	As Shown	R-03

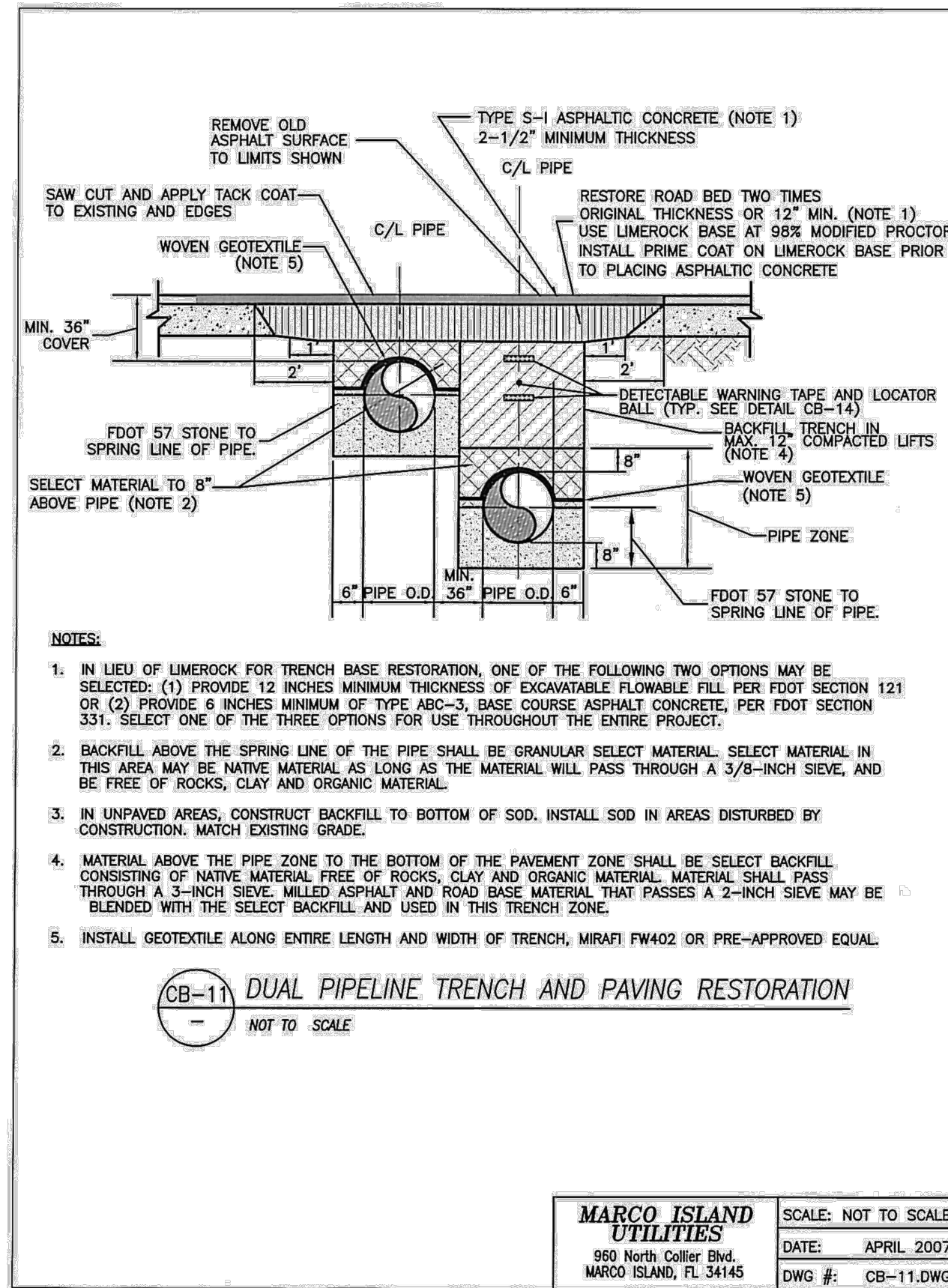
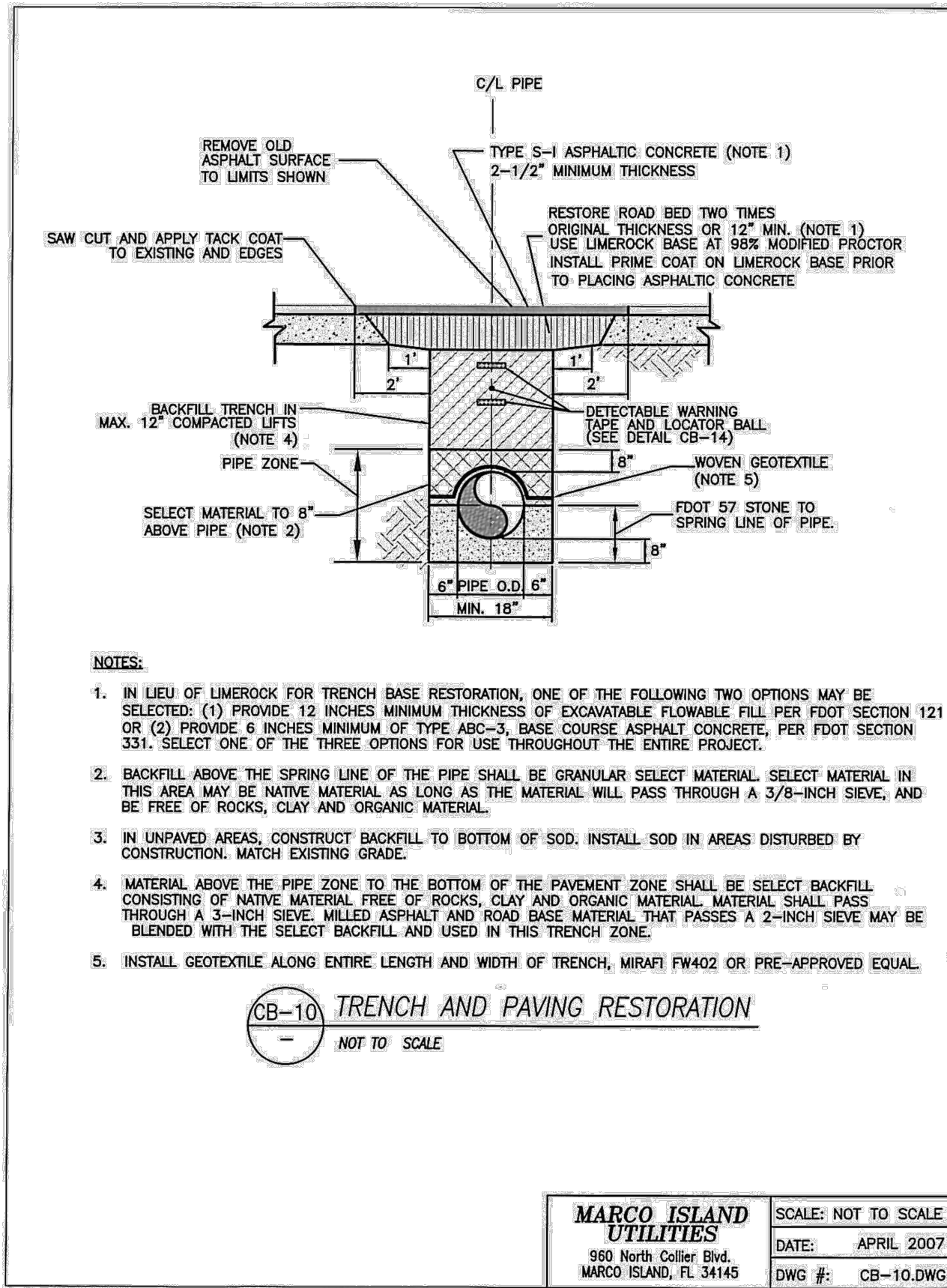
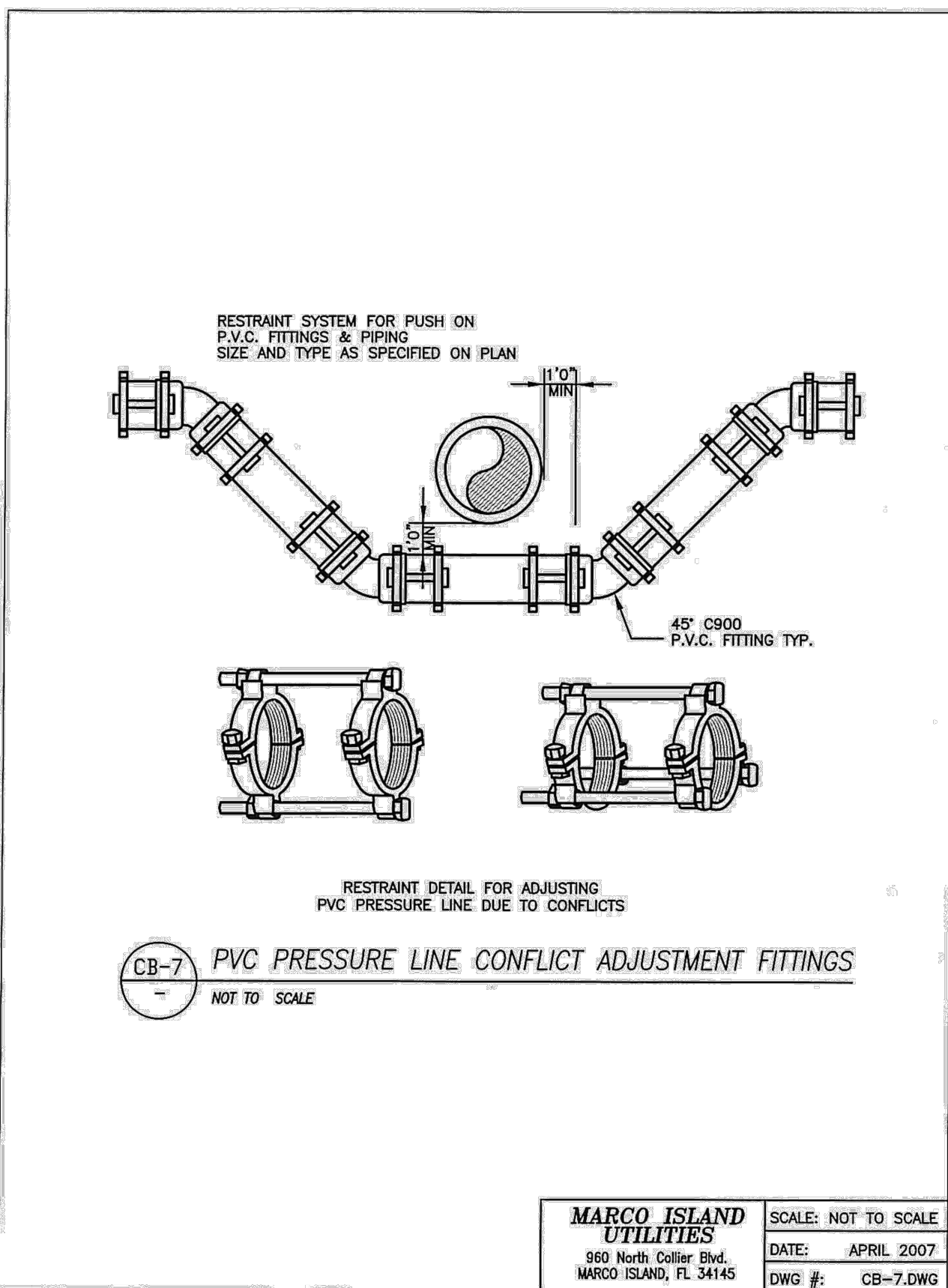
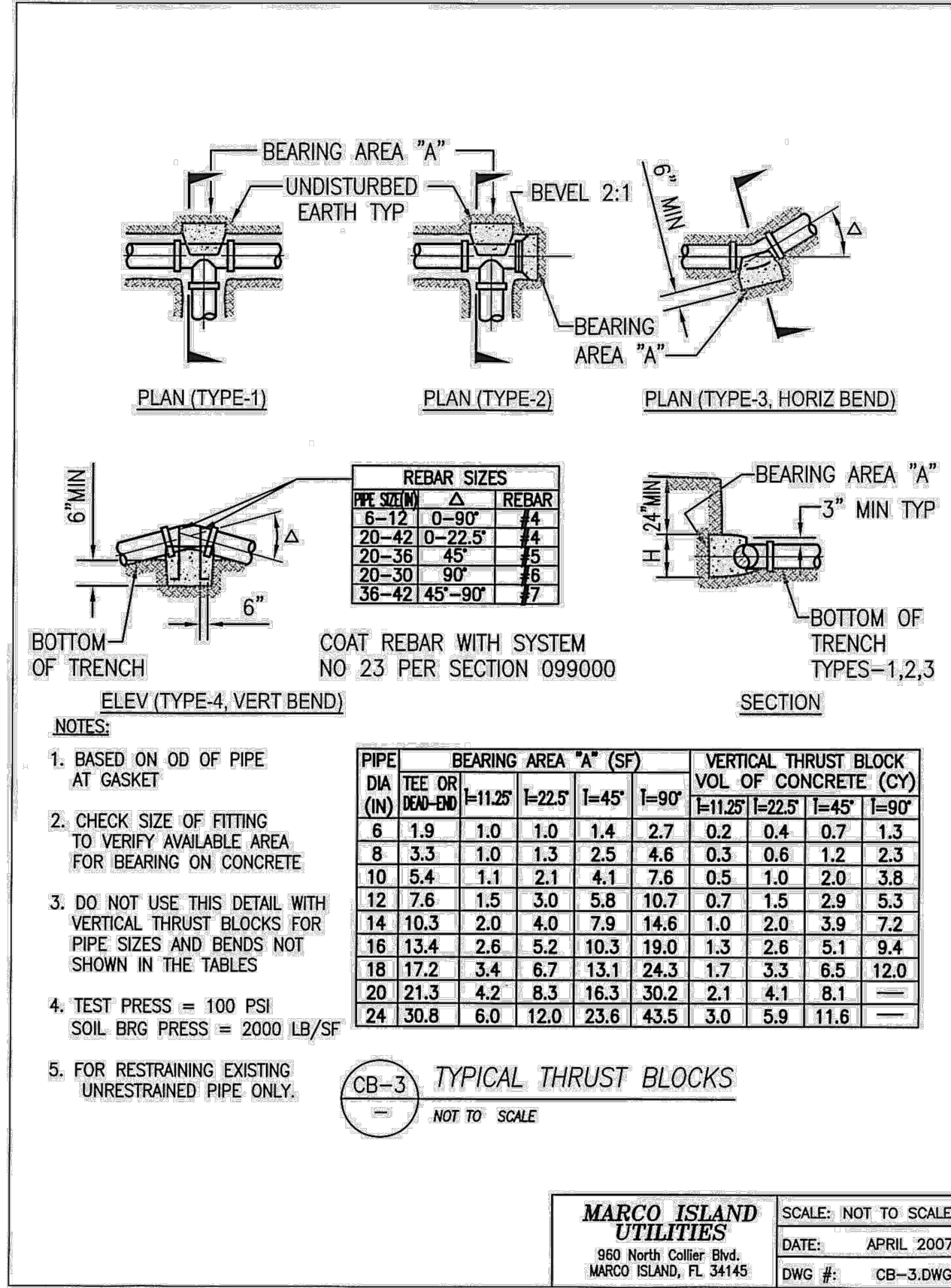
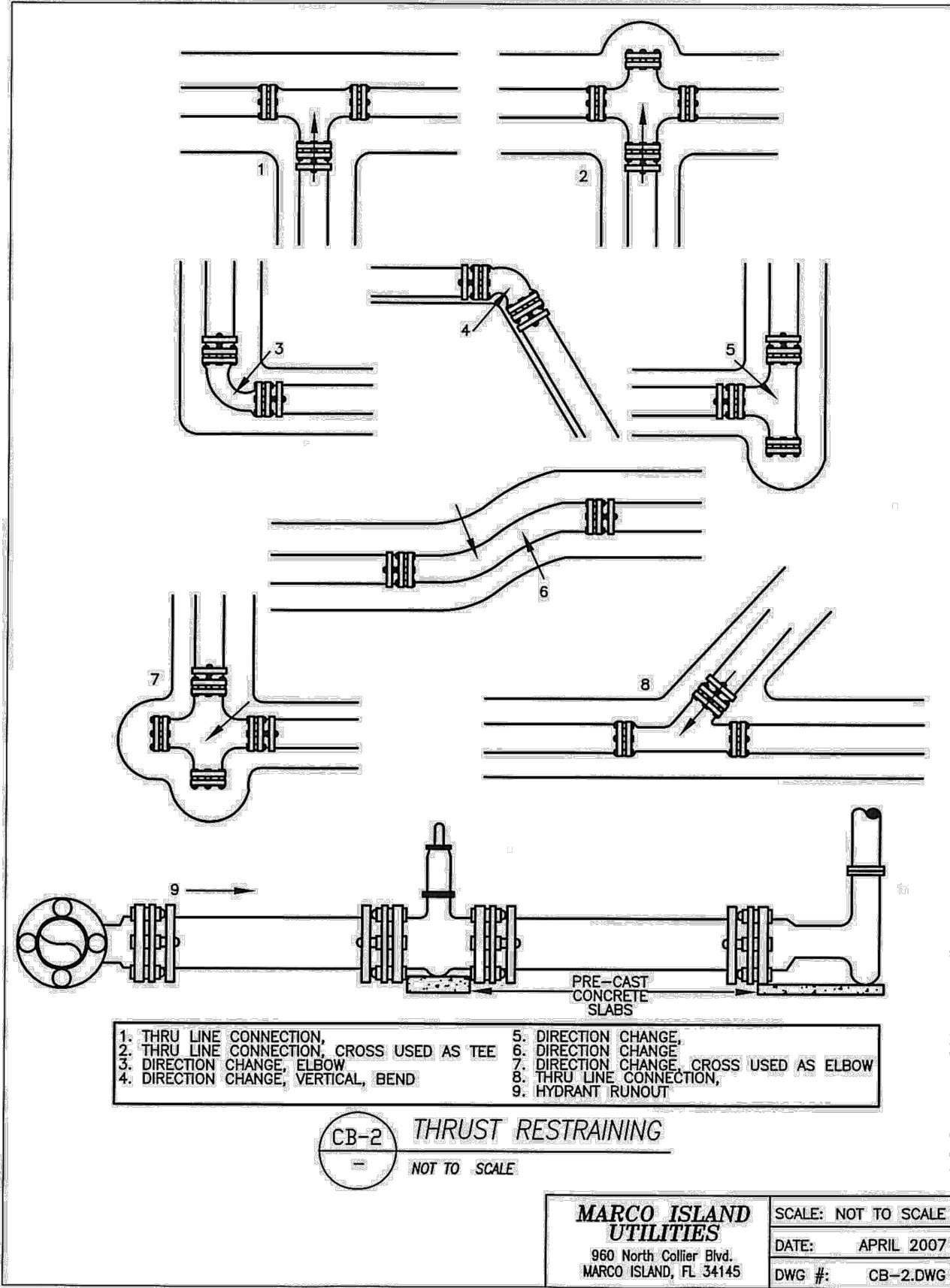
RESTRAINT TABLE														
SIZE (IN)	HORIZONTAL BENDS				VERTICAL OFFSETS				REDUCERS (SEE NOTES)				TEES	
	90° BENDS (IN)	45° BENDS (IN)	22.5° BENDS (IN)	11.25° BENDS (IN)	45° BENDS (IN)	22.5° BENDS (IN)	11.25° BENDS (IN)	5° BENDS (IN)	SIZE (IN)	REDUCER (IN)	BRANCH (IN)	TEE (IN)	SIZE (IN)	TEE (IN)
4"	27	11	5	3	31	8	60	6 x 4	64	43	4"	10	34	11
6"	37	15	7	4	43	11	84	8 x 6	60	46	6"	10	34	11
8"	48	20	10	5	57	15	110	8 x 8	153	79	8"	10	34	11
10"	57	24	11	6	68	17	131	10 x 8	55	44	10"	10	34	11
12"	67	29	14	7	81	20	153	12 x 10	46	35	12"	10	34	11
16"	84	37	18	10	101	25	199	16 x 12	61	45	16"	10	34	11
20"	101	45	22	12	122	30	241	20 x 16	58	45	20"	10	34	11
24"	118	53	27	15	143	36	290	24 x 20	55	45	24"	10	34	11
								24 x 16	128	82				

NOTES:

- LENGTHS SHOWN ON THIS TABLE ARE TO BE INTERPRETED AS FOLLOWS:
 L_{HS} = RESTRAINED LENGTH FROM HIGH SIDE FITTING OF A VERT. BEND
 L_{LS} = RESTRAINED LENGTH FROM LOW SIDE FITTING OF A VERT. BEND
 L_T = RESTRAINED LENGTH ON BOTH SIDES FROM FITTING
 L_{MB} = MINIMUM LENGTH TO FIRST JOINT OF RUN ON BOTH SIDES
 L_{BR} = 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
- 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.
- 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.
- THE FOLLOWING ARE ASSUMED:
 4" - 10" PIPE HAS 30" MIN. COVER
 12" - 24" PIPE HAS 36" MIN. COVER
 4" - 24" PIPE IS PVC
- 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.
- 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



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

UTILITY DETAILS

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

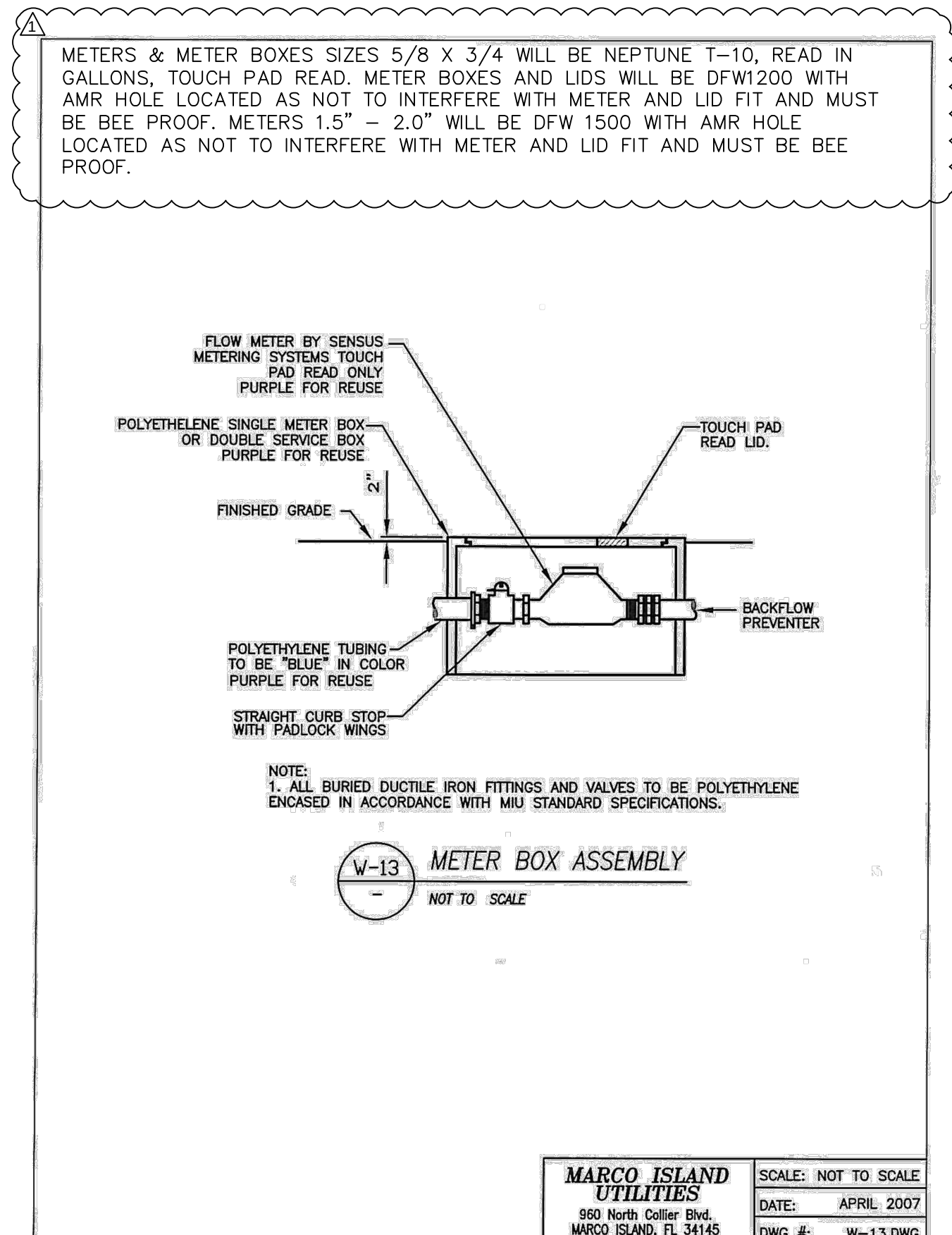
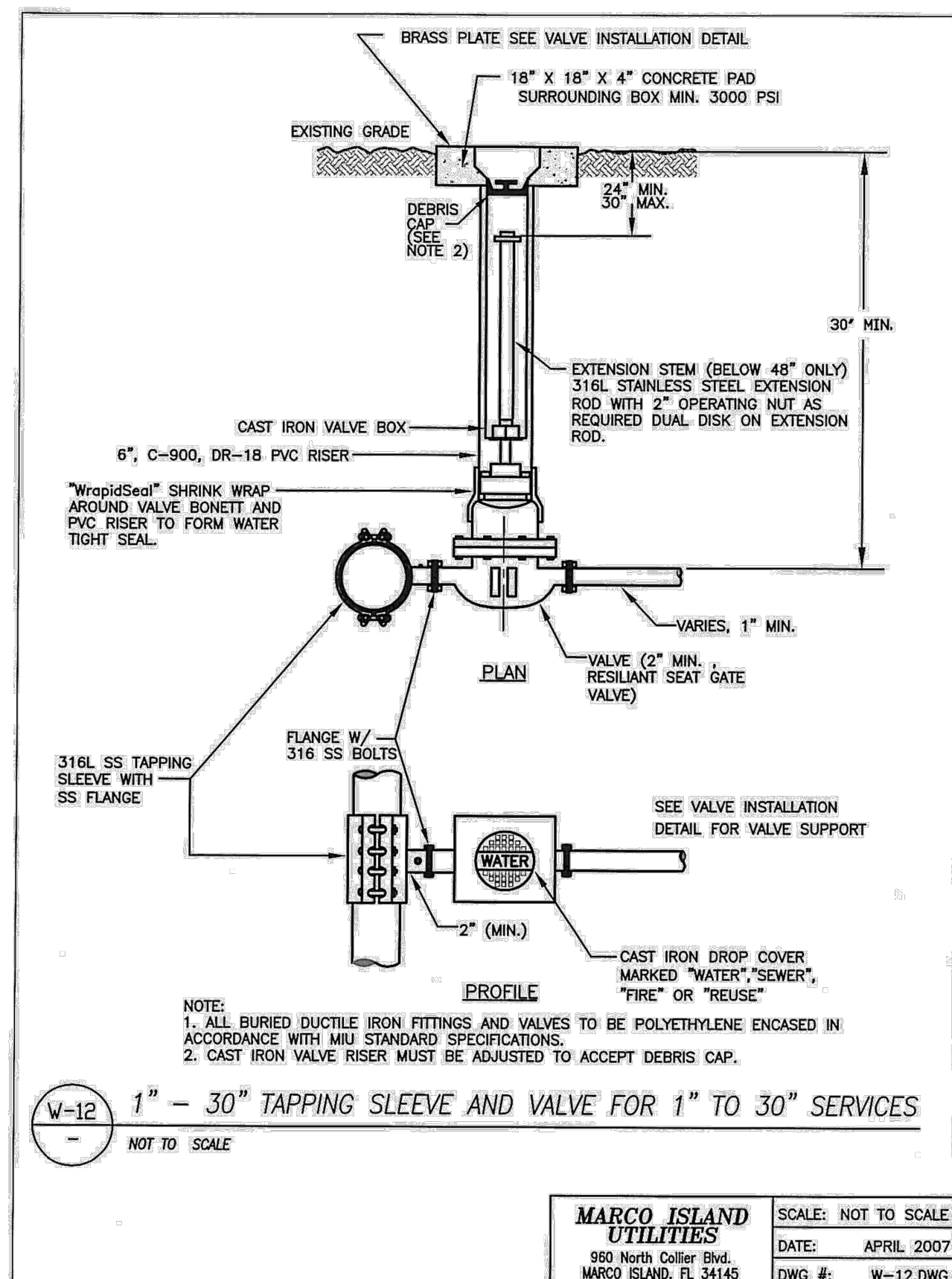
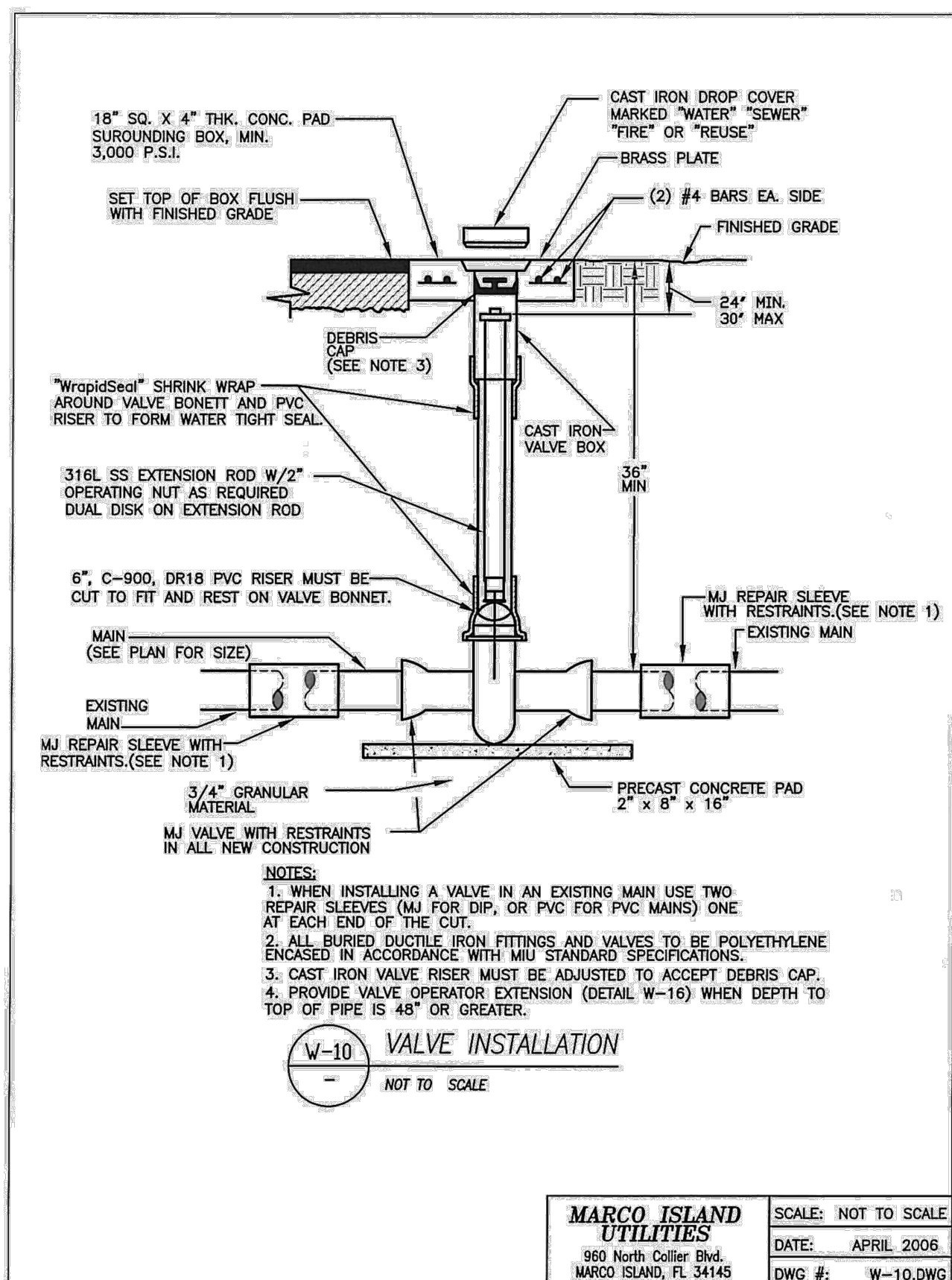
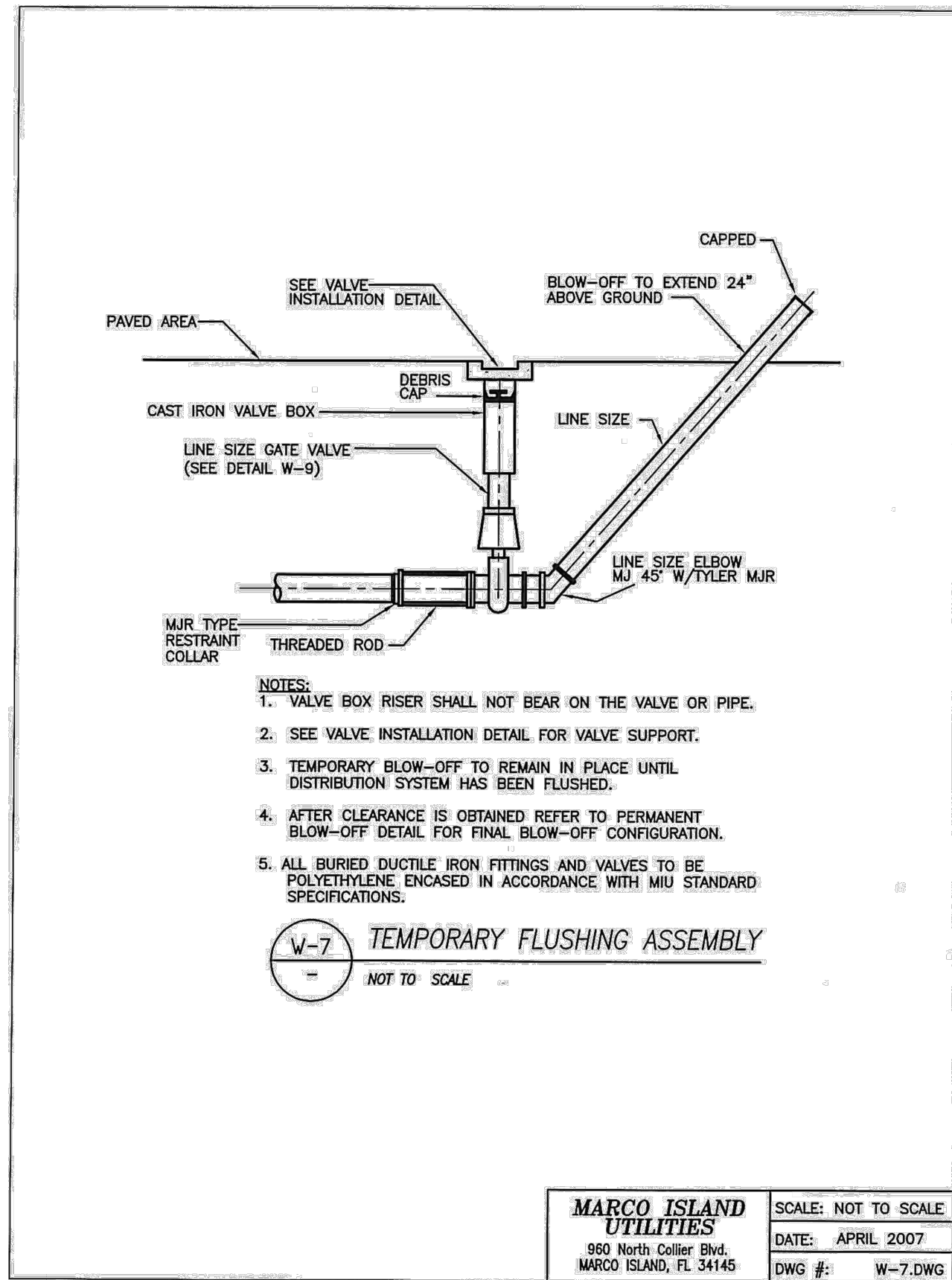
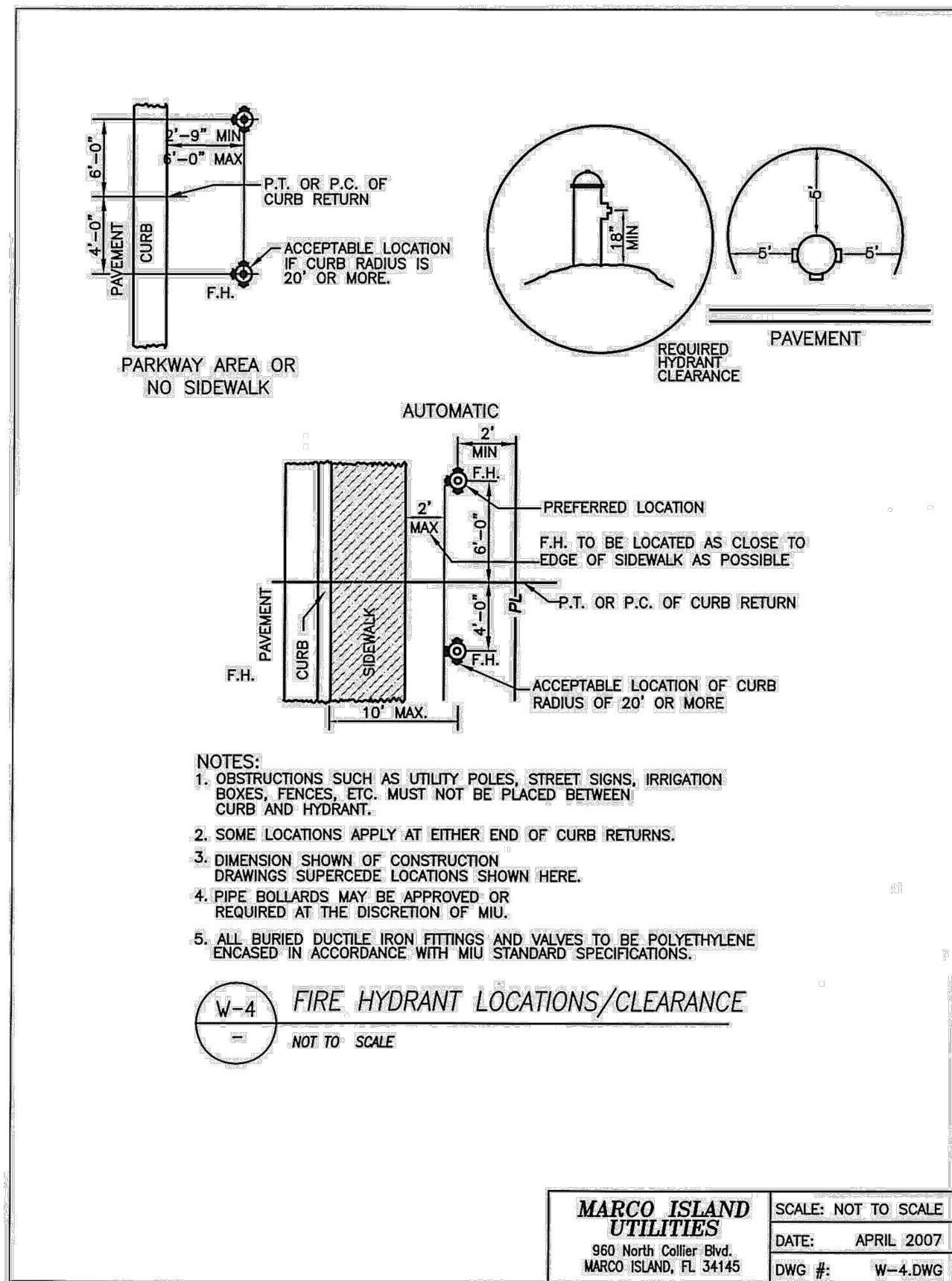
DATE
09-20-14

PROJECT NO.
2014-077

SCALE
As Shown

SHEET
U-01

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



REVISIONS				ROSE MARINA REDEVELOPMENT PLANS		CITY OF MARCO ISLAND COLLIER COUNTY, FLORIDA		HAGAN ENGINEERING		PERMIT PLANS		UTILITY DETAILS			

