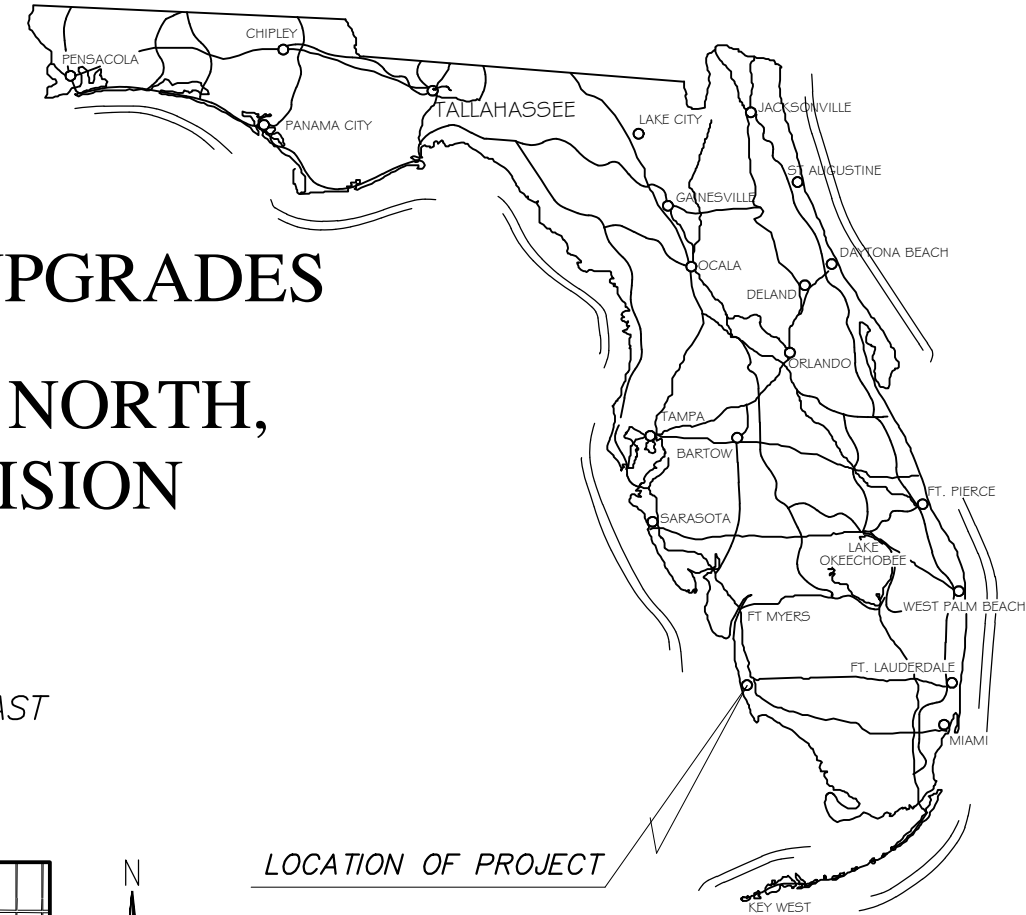


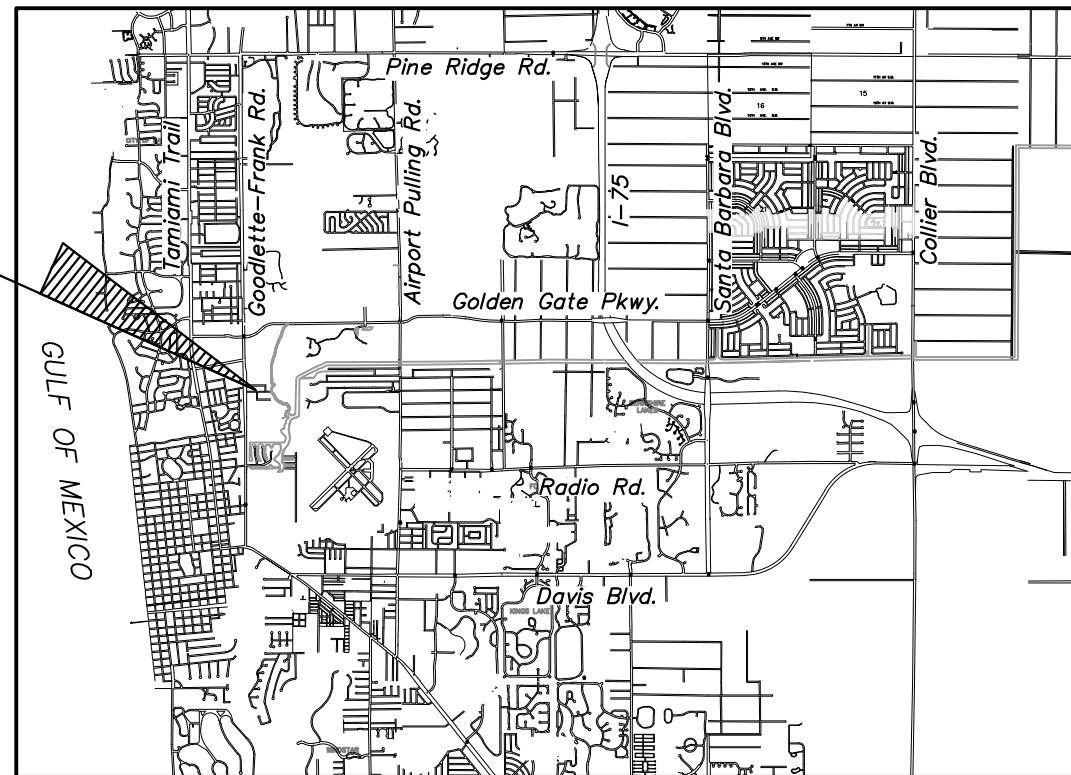


CONSTRUCTION PLANS FOR UTILITY UPGRADES  
 ON  
 14TH AVENUE NORTH, 13TH AVENUE NORTH,  
 15TH STREET & BEMBURY SUBDIVISION  
 FOR  
 CITY OF NAPLES  
 LOCATED IN  
 SECTIONS 34 & 35, TOWNSHIP 49 SOUTH, RANGE 25 EAST  
 COLLIER COUNTY, FLORIDA  
 SEP. 10, 2014

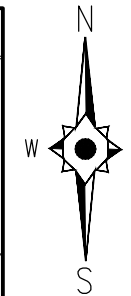


LOCATION OF PROJECT

PROJECT SITE



LOCATION MAP  
 N.T.S.



INDEX OF DRAWINGS

SHEET	TITLE
1	COVER
2	KEY MAP & GENERAL NOTES
3	UTILITY UPGRADES MASTER PLAN

PLAN AND PROFILES

PP1	14TH AVENUE NORTH	STA. 1+00 TO STA. 6+00
PP2	14TH AVENUE NORTH	STA. 6+00 TO STA. 10+35.33
PP3	15TH STREET NORTH	STA. 10+35.33 TO STA. 13+55.72
PP4	13TH AVENUE NORTH	STA. 14+00 TO STA. 18+32.52
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PP6	13TH AVENUE NORTH	STA. 23+00 TO STA. 26+07.98
PP7	BEMBURY DRIVE	STA. 27+00 TO STA. 31+50
PP8	BEMBURY DRIVE	STA. 31+50 TO STA. 33+97.45
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PP10	SITE PLAN FOR LIFT STATION #125000	
PP11	PAVEMENT REPLACEMENT MAP	

DETAILS	TITLE
D1-D8	CITY OF NAPLES UTILITIES STANDARD DETAILS

MICHAEL S. DICKEY, PE  
 FL License No. 60057

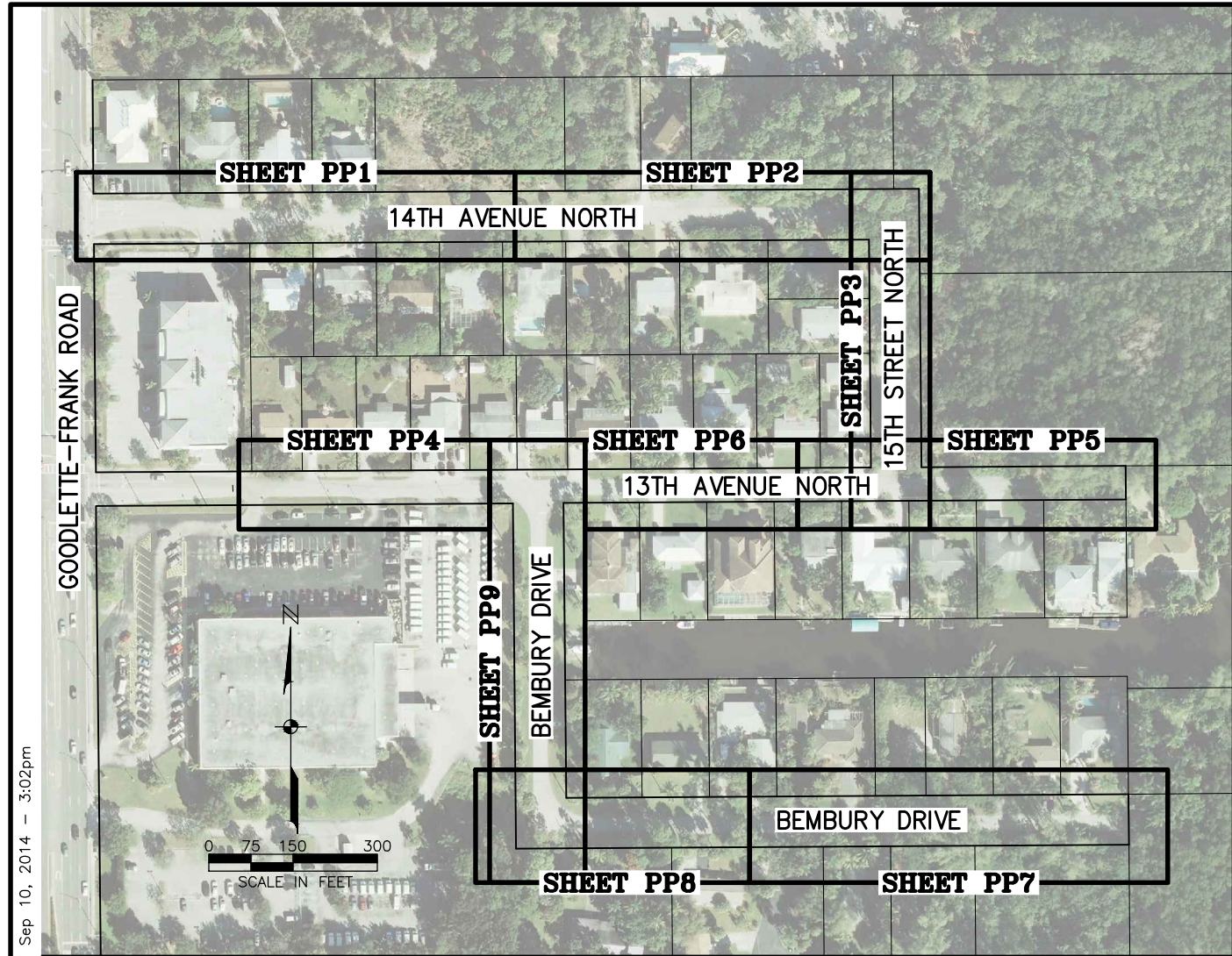
DESIGN CONSULTANT



2122 JOHNSON STREET  
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 FORT MYERS, FLORIDA 33902-1550  
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 FAX (239) 334-3661  
 E.B. #642 & L.B. #642

For Information Regarding  
 This Project, Contact:  
 Michael S. Dickey, PE





**GENERAL NOTES:**

- ALL WATER, AND WASTEWATER FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF NAPLES STANDARD DETAILS AND SPECIFICATIONS. THE MINIMUM COVER FOR ALL PROPOSED UTILITIES SHALL BE 36" UNLESS OTHERWISE INDICATED ON THE CONSTRUCTION PLANS.
- THE CONTRACTOR SHALL CONTACT THE CITY OF NAPLES GIS MANAGER TO OBTAIN COPIES OF THE GEODATA TEMPLATE (DATA BASE) TO PREPARE RECORD DRAWINGS.
- THE CONTRACTOR IS REQUIRED TO MAINTAIN A "RED-LINE" MARKUP SET OF PLANS FOR THE PROJECT, CONVERTED AS THE CONTRACTOR'S AS-BUILT'S, AND TURN THEM OVER TO THE ENGINEER. THE CITY SHALL BE PROVIDED WITH A COPY OF THESE DOCUMENTS.
- CONTRACTOR SHALL NOT EXCEED 75 % OF THE MANUFACTURERS RECOMMENDED MAXIMUM DEFLECTION WHEN DEFLECTING PIPE. ENGINEER WILL DETERMINE MAXIMUM DEFLECTION AFTER PIPE MANUFACTURER IS SELECTED.
- THE CONTRACTOR SHALL KEEP A RECORD OF ALL CHANGES AND MAINTAIN AN AS-BUILT PLAN. PRIOR TO FINAL ACCEPTANCE, THIS PLAN WILL BE FURNISHED TO THE ENGINEER. THE CONTRACTOR SHALL ALSO FURNISH THE ENGINEER WITH A STATEMENT THAT THE AS-BUILT PLAN REPRESENTS ALL CHANGES MADE AND THAT THE LOCATION OF UTILITY LINES SHOWN ARE WITHIN 2'.
- CONTRACTOR TO MAINTAIN EXISTING TRAFFIC/ACCESS, EXISTING DRAINAGE & EXISTING UTILITIES DURING CONSTRUCTION.
- ALL FINAL FITTING AND VALVE LOCATIONS TO BE APPROVED IN THE FIELD BY THE OWNER/ENGINEER.
- THE LOCATION OF EXISTING UTILITIES HAS BEEN PREPARED FROM THE MOST RELIABLE INFORMATION AVAILABLE TO THE ENGINEER. THE INFORMATION IS NOT GUARANTEED. THEREFORE THE CONTRACTOR SHALL VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES IN THE FIELD PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES IN THE AREA 48 HOURS MINIMUM PRIOR TO START OF CONSTRUCTION, AND SHALL HAVE ALL SERVICE LINES LOCATED AND FLAGGED PRIOR TO ANY EXCAVATION.
- THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL UTILITY LINES AND SERVICES DAMAGED DURING CONSTRUCTION, INCLUDING IRRIGATION LINES AND SERVICES. THE APPROPRIATE UTILITY SHALL BE NOTIFIED OF ALL DAMAGED LINES PRIOR TO REPAIR. ALL NECESSARY REPAIRS SHALL BE PERFORMED IMMEDIATELY UPON DAMAGE OF LINE.
- ALL DRIVEWAYS, LANDSCAPING, SIGNS, GRASS, FENCING, ETC. SHALL BE RESTORED TO A CONDITION EQUIVALENT TO PRECONSTRUCTION CONDITION UNLESS OTHERWISE APPROVED BY THE ENGINEER AND CITY.
- ALL ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM (NAVD 1988).
- THE CONTRACTOR IS REQUIRED TO OBTAIN WRITTEN APPROVAL FROM THE ENGINEER FOR ANY DEVIATIONS FROM THE PLANS AND/OR SPECIFICATIONS.
- THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND ELEVATIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY REQUIRED PLAN DEVIATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A NPDES PERMIT FROM FDEP AND A DEWATERING PERMIT FROM THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT AS REQUIRED, IF NECESSARY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC AND USAGE OF THE EXISTING STREETS ADJACENT TO THE PROJECT AREA. ALL TRAFFIC MAINTENANCE CONTROL SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY AND TRAFFIC DESIGN STANDARDS, INDEX 600 SERIES. CONTRACTOR SHALL SUBMIT MAINTENANCE OF TRAFFIC PLAN TO OWNER/ENGINEER PRIOR TO CONSTRUCTION.
- ALL UTILITY CONNECTIONS SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE AGENCY HAVING JURISDICTION OF EACH INDIVIDUAL UTILITY LINE.

- THE UNDERGROUND CONTRACTOR SHALL MINIMIZE THE WORK AREA AND WIDTH OF TRENCHES TO AVOID DISTURBANCES OF NATURAL VEGETATION. SPOIL FROM TRENCHES SHALL BE PLACED ONLY ON PREVIOUSLY CLEARED AREAS. EXISTING RIGHT-OF-WAY OR APPROVED EASEMENT. THE CONTRACTOR SHALL NOT REMOVE OR DISTURB ANY TREES OR SHRUBS WITHOUT PRIOR APPROVAL FROM THE OWNER/ENGINEER.
- ALL FITTINGS SHALL BE RESTRAINED WITH MEGALUG OR APPROVED EQUAL.
- ALL IN LINE VALVES SHALL BE MAIN SIZE MECHANICAL JOINT AND RESTRAINED WITH MOLDED FLANGE ADAPTOR WITH STEEL RETAINING RING AS SUPPLIED BY PIPE MANUFACTURER.
- THE CONTRACTOR SHALL NOTIFY RESIDENCES AND BUSINESS AT LEAST 48 HOURS IN ADVANCE OF ANY DISRUPTION IN SERVICE, INCLUDING DRIVEWAY CUTS.
- FORCE MAINS AND GRAVITY SEWER MAINS SHALL BE SUBJECT TO TESTING PER CITY OF NAPLES SPECIFICATION (LATEST REVISIONS).
- CONTRACTOR IS ADVISED TO VISIT CONSTRUCTION SITE PRIOR TO BIDDING PROJECT. BID IS FINAL AND ACKNOWLEDGES THAT CONTRACTOR IS FAMILIAR WITH EXISTING SITE CONDITIONS.
- MANHOLE CORE BORE SHALL UTILIZED A FLEXIBLE RUBBER SLEEVE AND STAINLESS STEEL STRAPS IN ACCORDANCE WITH STANDARD MANHOLE DETAILS.
- CONTRACTOR IS TO LOCATE AND VERIFY ALL SEWER SERVICES FROM HOMES OR BUSINESSES FOR MULTIPLE TAPS AT THE BUILDING ENVELOPE.
- TEMPORARY CONNECTIONS MAY BE NECESSARY THROUGH OUT THE CONSTRUCTION TO MAINTAIN SEWER SERVICE. LOCATIONS WILL BE MADE IN COORDINATION WITH CITY STAFF.
- SPECIFIED, THE END OF EACH ROADWAY CROSS PIPE IS TO HAVE 4:1 SLOPE TO MATCH THE DITCH SIDE SLOPE. EACH DRIVEWAY CULVERT END IS TO HAVE A 2:1 SLOPE.
- CONTRACTORS SHALL PROVIDE COMPLETE LIST OF 24 HR EMERGENCY PHONE NUMBERS.

**NOTICE TO ALL CONTRACTORS**  
 IT'S THE LAW IN FLORIDA  
 2 BUSINESS DAYS BEFORE YOU DIG  
 CALL SUNSHINE 1-800-432-4770  
 STATE, COUNTIES & CITIES ARE "NOT" PART OF THE ONE CALL SYSTEM, THEY MUST BE CALLED INDIVIDUALLY.

STATE OF FLORIDA DOT  
 ALL INTERSTATE RIGHT-OF-WAY  
 HIGHMAST LIGHTING  
 7-DAY NOTICE REQUIRED  
 239-656-7811  
 239-656-7742 FAX



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ABBREVIATIONS		LEGEND	
ABD = Abandoned	OC = On Center	EX XX" FM = EXISTING FORCE MAIN & PIPE SIZE	= EXISTING CLEANOUT
AE = Access Easement	PAVT = Pavement	XX" FM = PROPOSED FORCE MAIN & PIPE SIZE	= PROPOSED SINGLE CLEANOUT
ALT = Alternate	PKWY = Parkway	EX XX" WM = EXISTING POTABLE WATER MAIN & SIZE	= PROPOSED WATER METER
ARV = Air Release Valve	PS = Pump Station	XX" WM = PROPOSED WATER MAIN & PIPE SIZE	= PROPOSED CONSTRUCTION SIGN
ASPH = Asphalt	PV = Plug Valve	XX" SS = PROPOSED SANITARY SEWER MAIN & SIZE	= PROPOSED SIDEWALK
BLDG = Building	PVC = Polyvinyl Chloride	EX XX" SS = EXISTING SANITARY SEWER MAIN & SIZE	= EXISTING SAN. SEWER AND WATER MAIN OUTSIDE OF PAVEMENT TO BE GROUTED AND ABANDONED
BTM = Bottom	RCWM = Reclaimed Water Main	EX XX" RCWM = PROPOSED RECLAIMED WATER MAIN & SIZE	= EXISTING SAN. SEWER AND WATER MAIN UNDER PAVEMENT TO BE REMOVED
CB = Catch Basin	REQ = Required	XX" RCWM = EXISTING RECLAIMED WATER MAIN & SIZE	= PROPOSED JACK AND BORE
CMP = Corrugated Metal Pipe	RD = Road	= PROPOSED GATE VALVE	= TEMPORARY BLOW-OFF
CO = Cleanout	ROW = Right-of-way	= EX GATE VALVE	= FLOW ARROW
DE = Drainage Easement	SAN = Sanitary	= EXISTING FIRE HYDRANT	= PROPOSED UTILITY ROLLDOWN
DIP = Ductile Iron Pipe	SD = Storm Drain	= PROPOSED FIRE HYDRANT	= EXISTING MH TO BE REHABBED
DR = Dimensional Ratio	SPEC = Specification	= PROPOSED AUTOMATIC AIR RELEASE VALVE	
EOP = Edge of Pavement	SS = Sanitary Sewer	= PROPOSED REDUCER	
EX = Existing	ST = Street	= EXISTING SANITARY MANHOLE	
FE = Flared End Section	STA = Station	= PROPOSED SANITARY MANHOLE	
FH = Fire Hydrant	STD = Standard	MH XX" = EXISTING SANITARY MANHOLE	
FLG = Flanged	STM = Storm	= PROPOSED SANITARY MANHOLE	
FM = Force Main	TEL = Telephone	= EXISTING PUMP STATION	
GV = Gate Valve	TYP = Typical	= PROPOSED PLUG	
HDPE = High Density Poly Ethylene	UE = Utility Easement	= EXISTING PUMP STATION	
INV = Invert	WM = Water Main	= BENCHMARK	
IRR = Irrigation		= SOIL BORING	
MH = Manhole		= CATCH BASIN	
ME = Mitered End Section		= WOOD POWER POLE	
MJ = Mechanical Joint		= CONCRETE POWER POLE	
		= EXISTING WATER METER	

SEPARATION OF WATER AND SEWER LINES	
<b>HORIZONTAL SEPARATION OF PIPELINES</b>	
Minimum Separation Distance	Between The Outside Of The Water Main And The Outside Of Any Existing Or Proposed
Three feet	Storm sewer, stormwater force main, or reclaimed water main
Three feet, and preferably ten feet	Vacuum-type sanitary sewer.
Six feet, and preferably ten feet	Gravity- or pressure-type sanitary sewer, wastewater force main, or reclaimed water main not regulated under part III of chapter 62-610, F.A.C.  The minimum horizontal separation distance between water mains and gravity-type sanitary sewers shall be reduced to three feet where the bottom of the water main is laid at least six inches above the top of the sewer.
Ten feet	"On-site sewage treatment and disposal system"
<b>VERTICAL SEPARATION OF PIPELINES</b>	
Minimum Separation Distance From The (Outside To The Outside)	New Or Relocated, Underground Water Mains Crossing Any Existing Or Proposed
Six inches, and preferably 12 inches above	Gravity- or vacuum-type sanitary sewer or storm sewer
12 inches below	Gravity- or vacuum-type sanitary sewer or storm sewer
12 inches above or below	Pressure-type sanitary sewer, wastewater, stormwater force main, or pipeline conveying reclaimed water main
One full length of water main pipe shall be centered above or below the other pipeline so the water main joints will be as far as possible from the other pipeline.  Alternatively, the pipes shall be arranged so that all water main joints are at least three feet from all joints in vacuum-type sanitary sewers, storm sewers, stormwater force mains, or reclaimed water mains, and at least six feet from all joints in gravity- or pressure-type sanitary sewers, wastewater force mains, or reclaimed water mains.	
<b>ALTERNATE CONSTRUCTION</b>	
Where an underground water main is being laid less than the required minimum horizontal distance from another pipeline and where an underground water main is crossing another pipeline and joints in the water main are being located less than the required minimum distance from joints in the other pipeline	
1. Use of pressure-rated pipe conforming to the American Water Works Association standards incorporated into Rule 62-555.330, F.A.C., for the other pipeline if it is a gravity- or vacuum-type pipeline;	
2. Use of welded, fused, or otherwise restrained joints for either the water main or the other pipeline; or	
3. Use of watertight casing pipe or concrete encasement at least four inches thick for either the water main or the other pipeline.	
Where an underground water main is being laid less than three feet horizontally from another pipeline and where an underground water main is crossing another pipeline and is being laid less than the required minimum vertical distance from the other pipeline	
1. Use of pipe, or casing pipe, having high impact strength (i.e., having an impact strength at least equal to that of 0.25-inch-thick ductile iron pipe) or concrete encasement at least four inches thick for the water main; and	
2. Use of pipe, or casing pipe, having high impact strength (i.e., having an impact strength at least equal to that of 0.25-inch-thick ductile iron pipe) or concrete encasement at least four inches thick for the other pipeline if it is new and is conveying wastewater or reclaimed water.	

REVISIONS	DATE	DESCRIPTION



City of Naples  
 Construction Plans for Utility Upgrades  
 14th Avenue North, 13th Avenue North,  
 15th Street & Bembury Subdivision

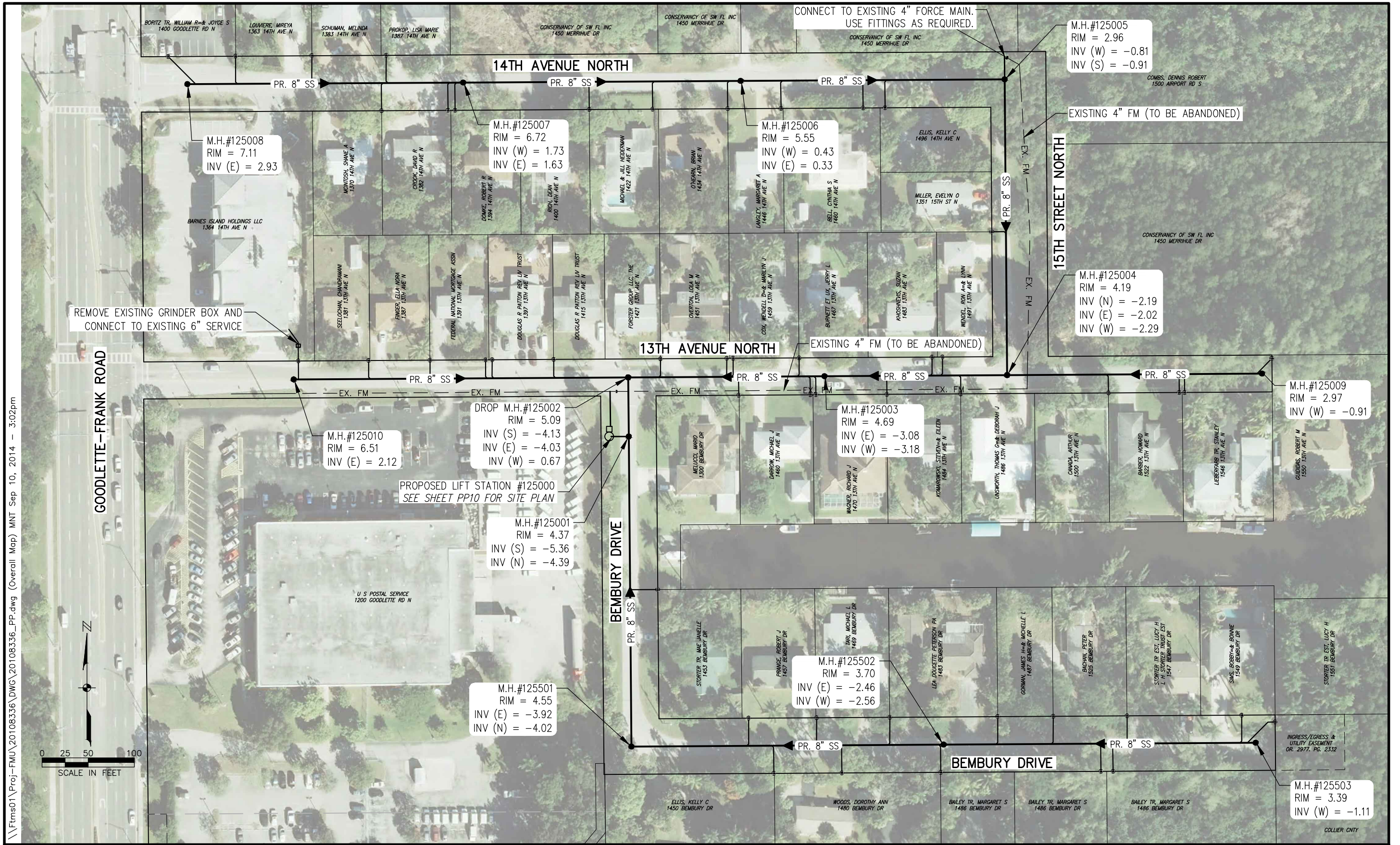


2122 JOHNSON STREET  
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 FAX (239) 334-3661  
 E.B. #642 & L.B. #642

MICHAEL S. DICKEY, PE  
 FL License No. 60057


Key Map & General Notes				
DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	2





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REVISIONS	



City of Naples  
 Construction Plans for Utility Upgrades  
 14th Avenue North, 13th Avenue North,  
 15th Street & Bembury Subdivision

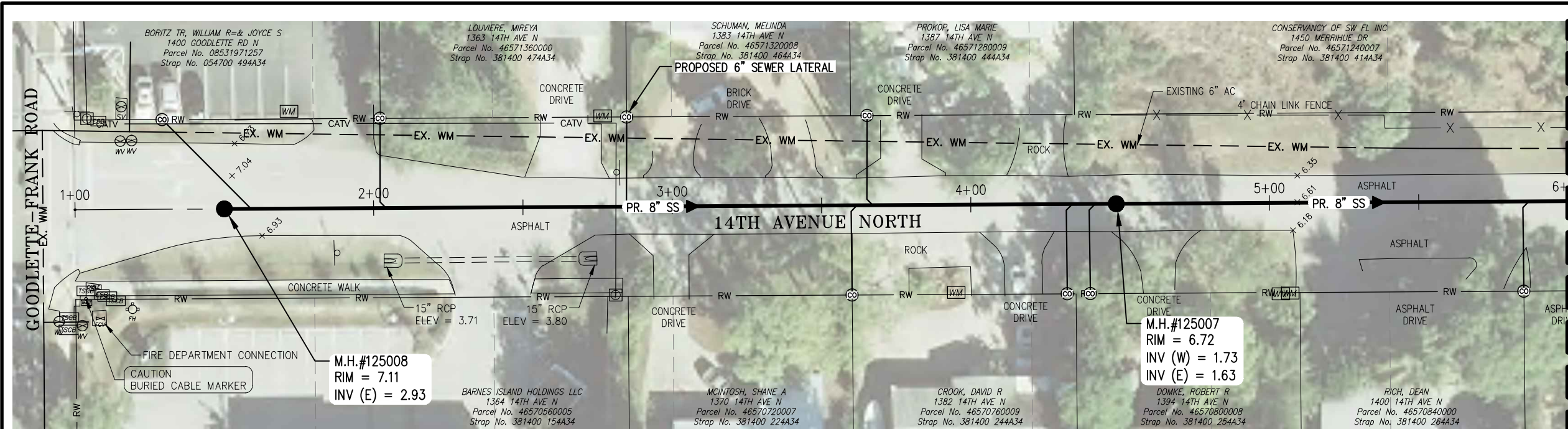


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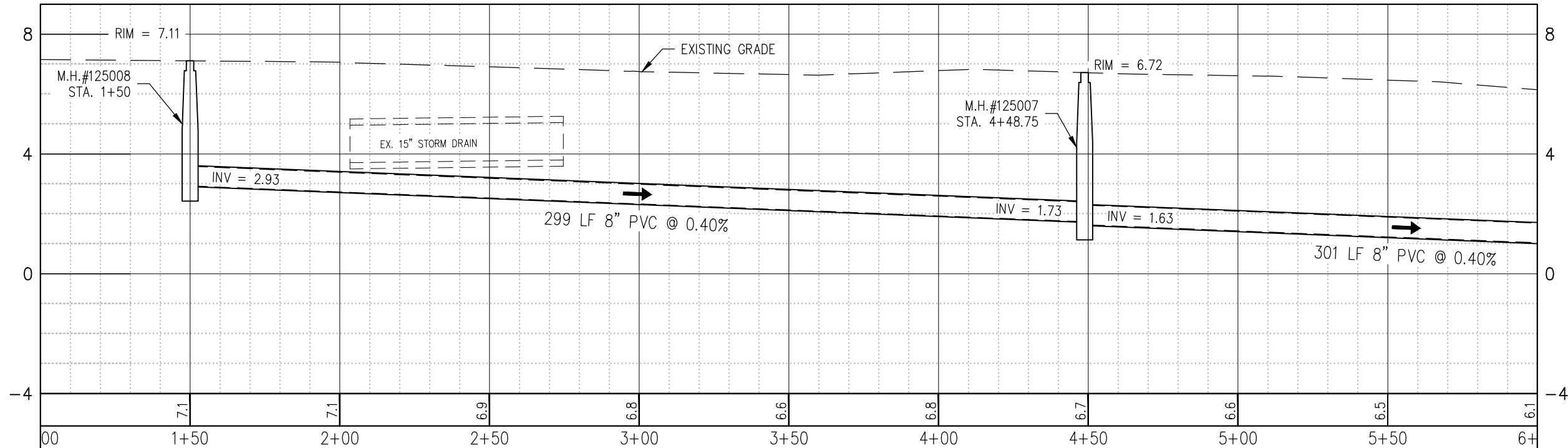
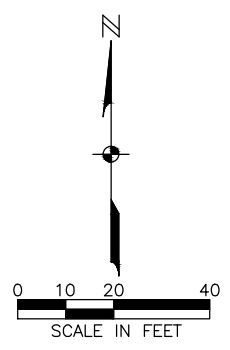
MICHAEL S. DICKEY, PE  
 FL License No. 60057

Utility Upgrades Master Plan				
DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	3






MATCHLINE STA. 6+00  
SEE SHEET PP2



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SCALE 1" = 40' HOR  
1" = 4' VER

REVISIONS	


**City of Naples**  
 Construction Plans for Utility Upgrades  
 14th Avenue North, 13th Avenue North,  
 15th Street & Bembury Subdivision

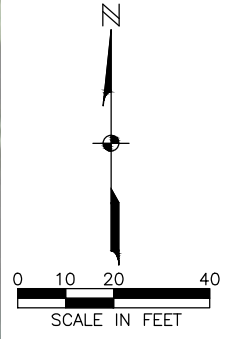
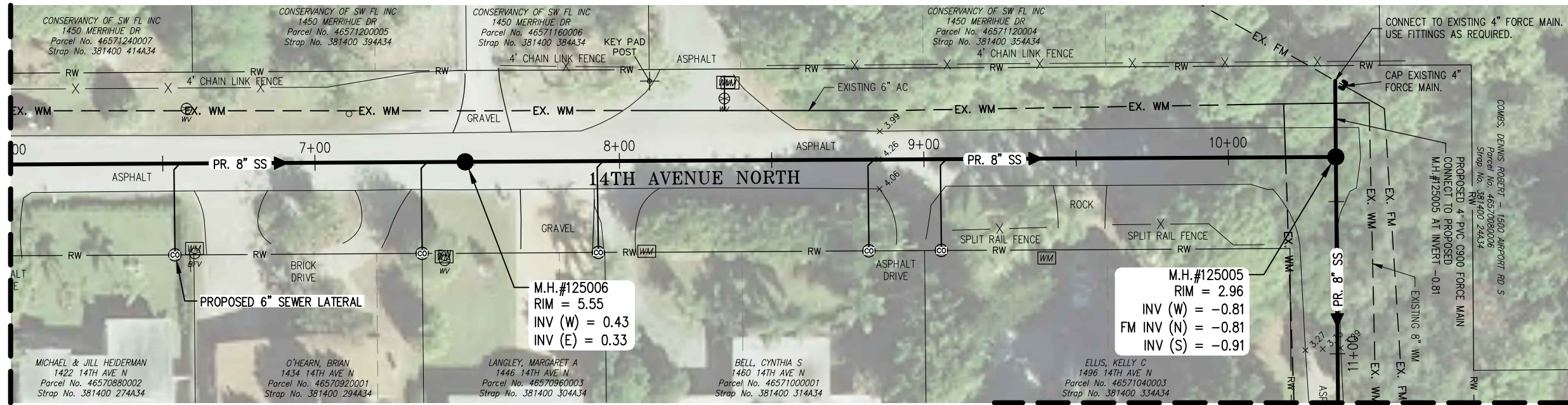

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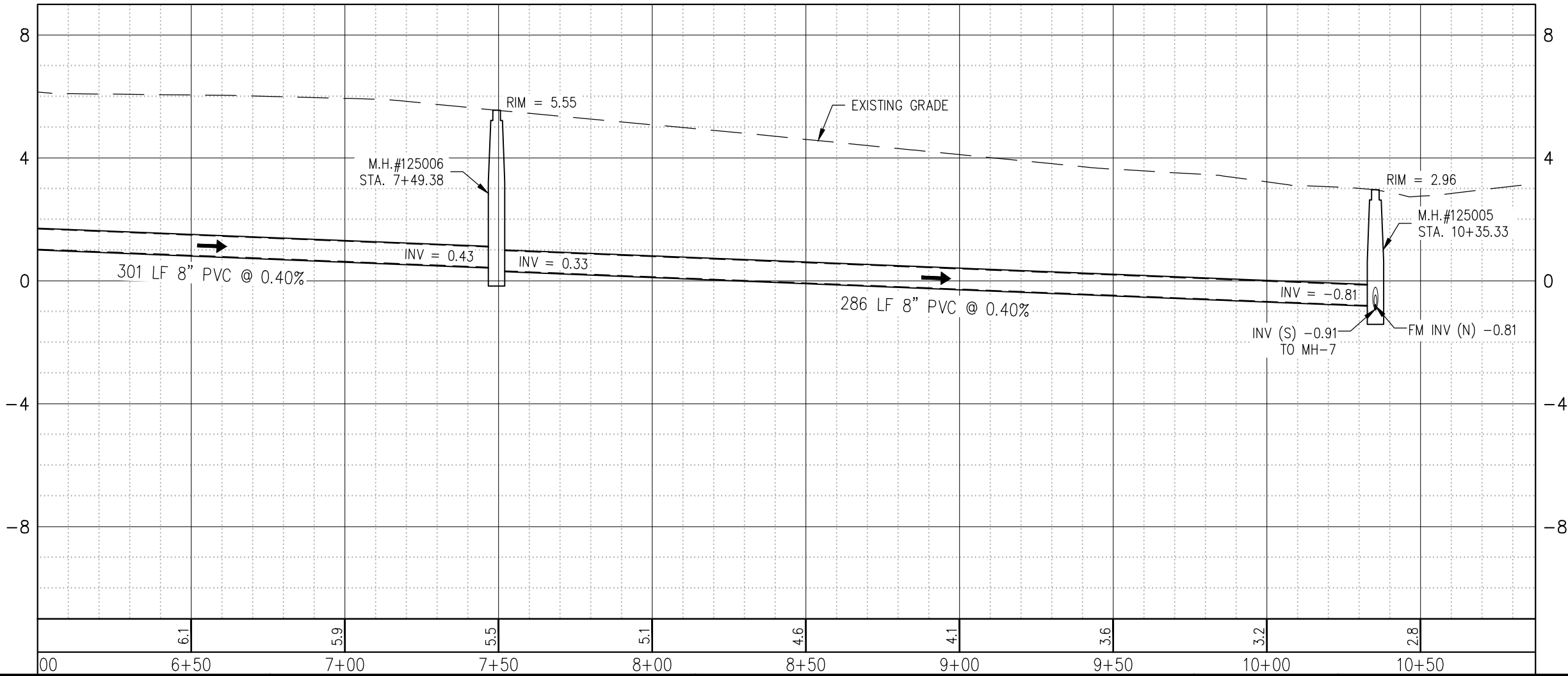
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Sta. 1+00 to Sta. 6+00				
DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	PP1



MATCHLINE STA. 6+00  
SEE SHEET PP1




FOR CONTINUATION SEE SHEET PP3



SCALE 1" = 40' HOR  
1" = 4' VER

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**City of Naples**  
 Construction Plans for Utility Upgrades  
 14th Avenue North, 13th Avenue North,  
 15th Street & Bembury Subdivision

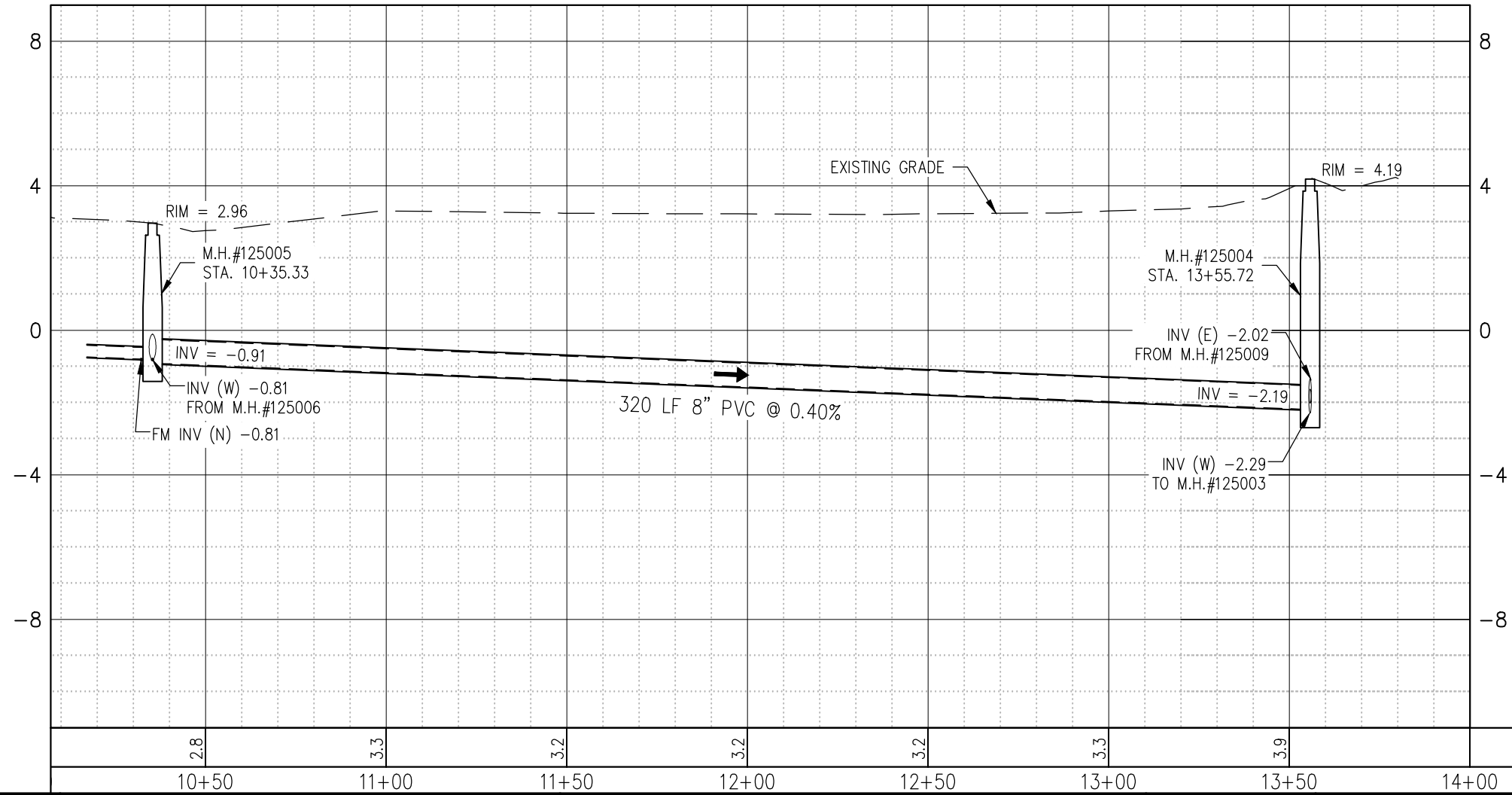
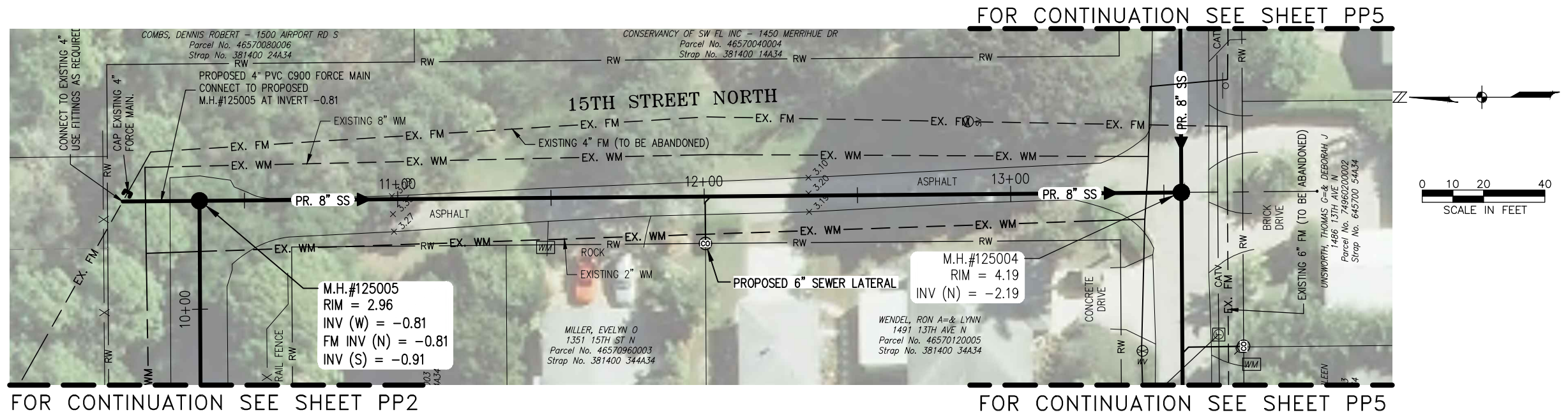

  
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**Plan and Profile - 14th Avenue North**  
 Sta. 6+00 to Sta. 10+35.33


DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	PP2





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REVISIONS	

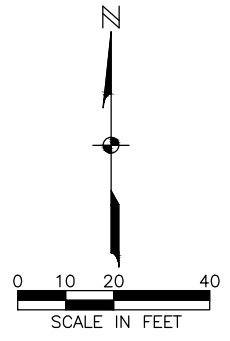
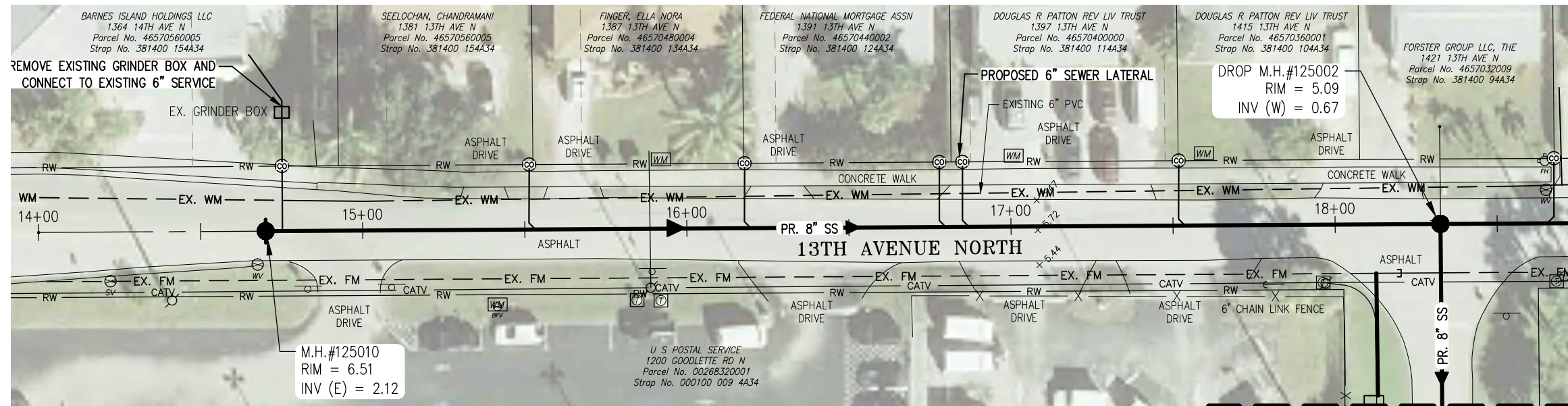

**City of Naples**  
 Construction Plans for Utility Upgrades  
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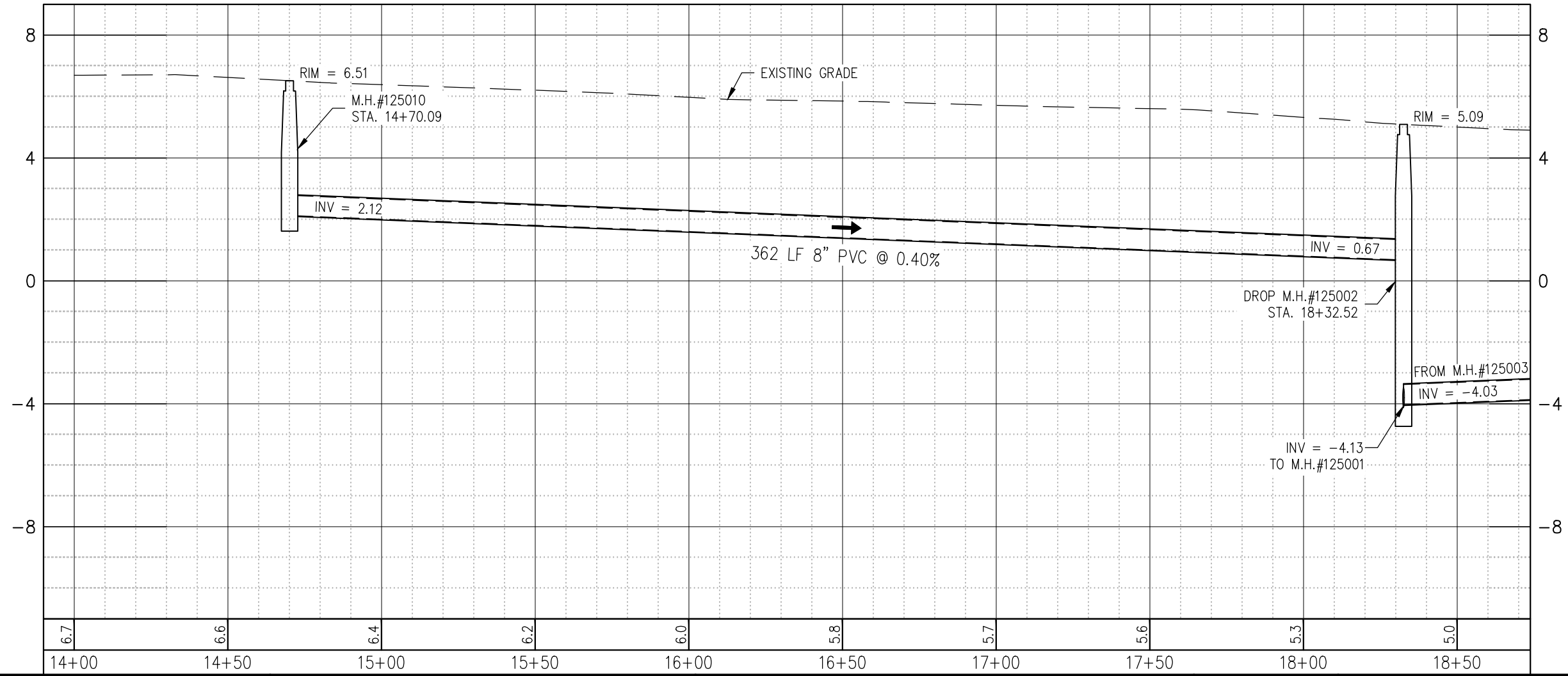
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 FL License No. 60057

Plan and Profile - 15th Street North				
Sta. 10+35.33 to Sta. 13+55.72				
DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	PP3






FOR CONTINUATION SEE SHEET PP9



SCALE 1" = 40' HOR  
1" = 4' VER

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**City of Naples**  
 Construction Plans for Utility Upgrades  
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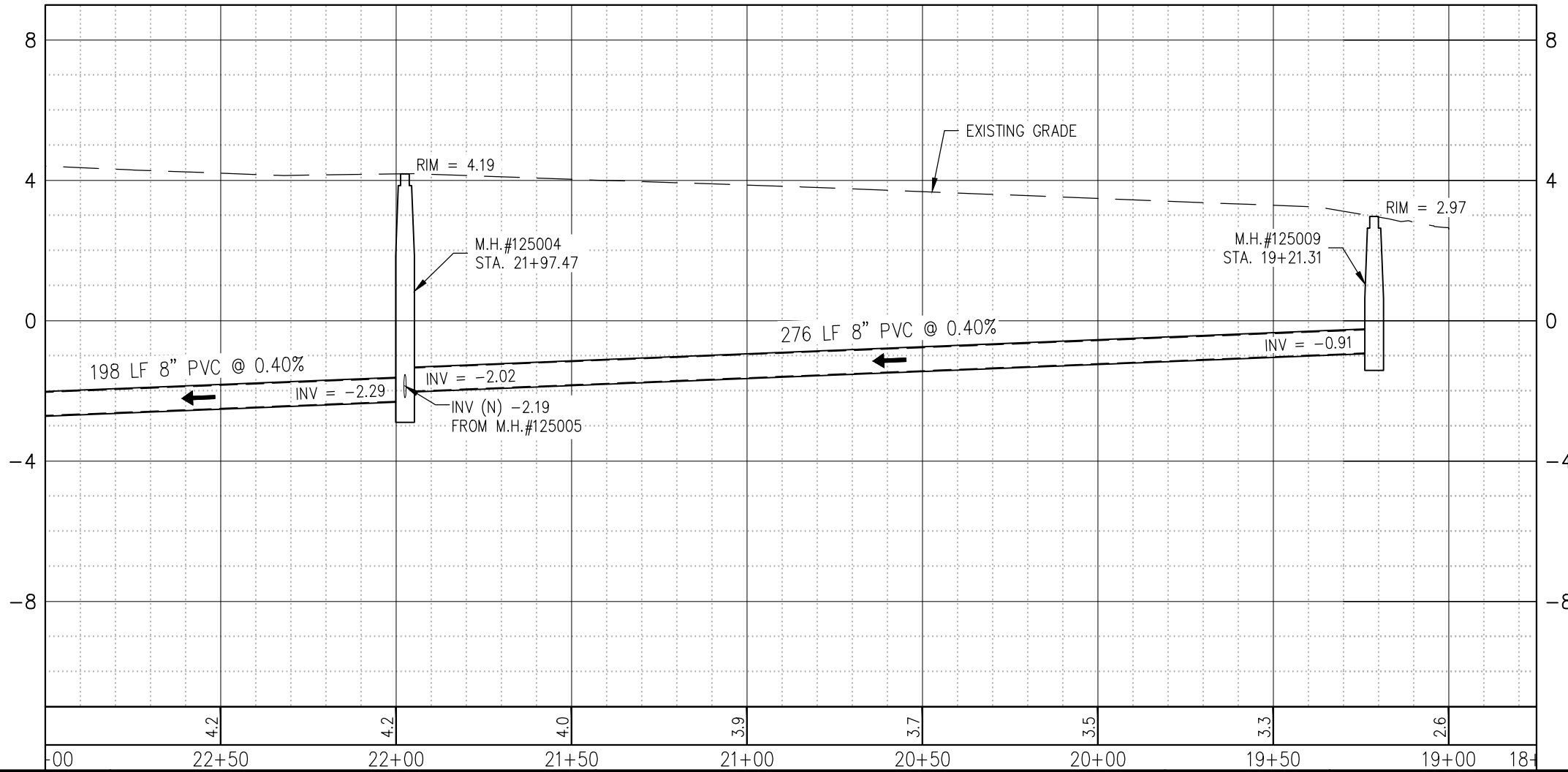
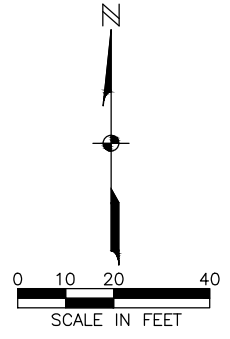
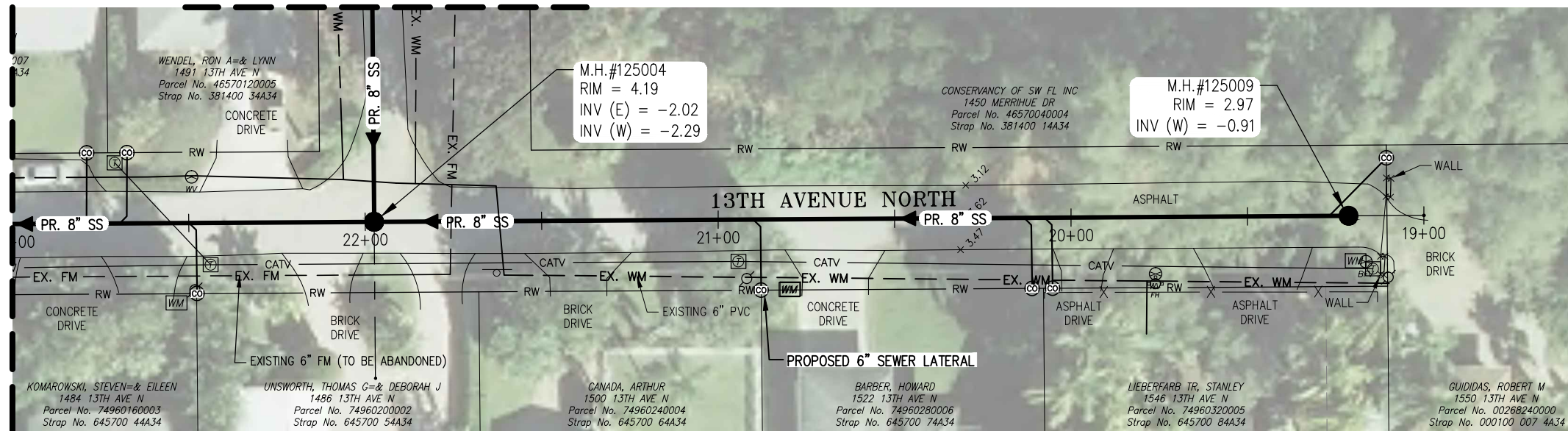
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Plan and Profile - 13th Avenue North				
Sta. 14+00 to Sta. 18+32.52				
DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	PP4



FOR CONTINUATION  
SEE SHEET PP3

MATCHLINE STA. 22+00  
SEE SHEET PP6



SCALE 1" = 40' HOR  
1" = 4' VER

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City of Naples  
Construction Plans for Utility Upgrades  
14th Avenue North, 13th Avenue North,  
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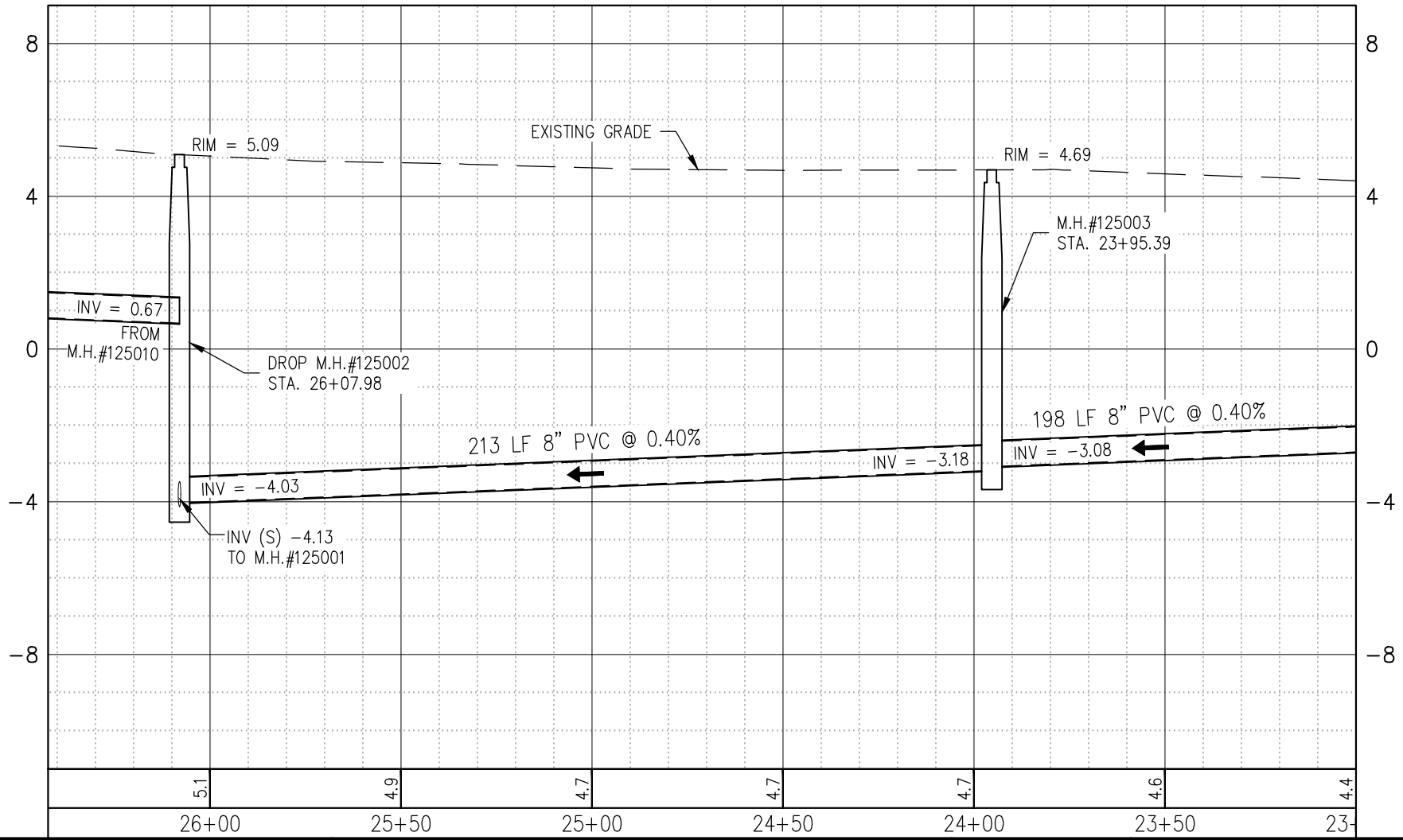
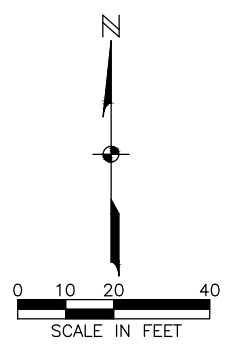
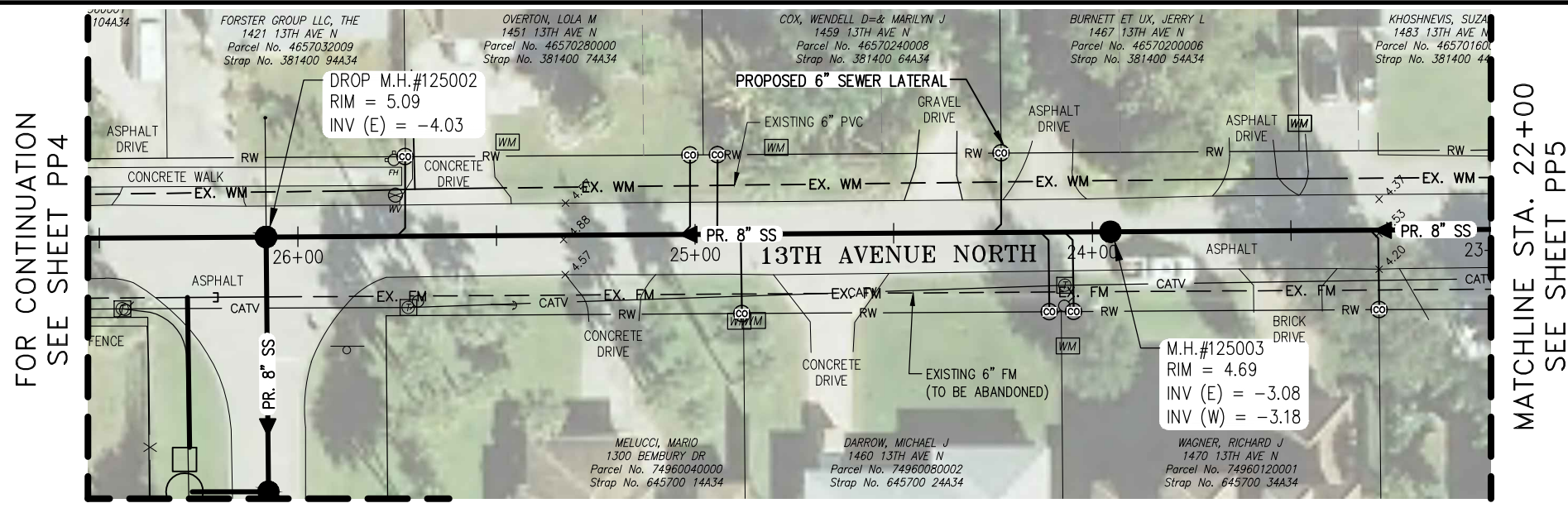
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Plan and Profile - 13th Avenue North Sta. 19+00 to Sta. 23+00				
DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	PP5



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SCALE 1" = 40' HOR  
1" = 4' VER

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**JOHNSON ENGINEERING**

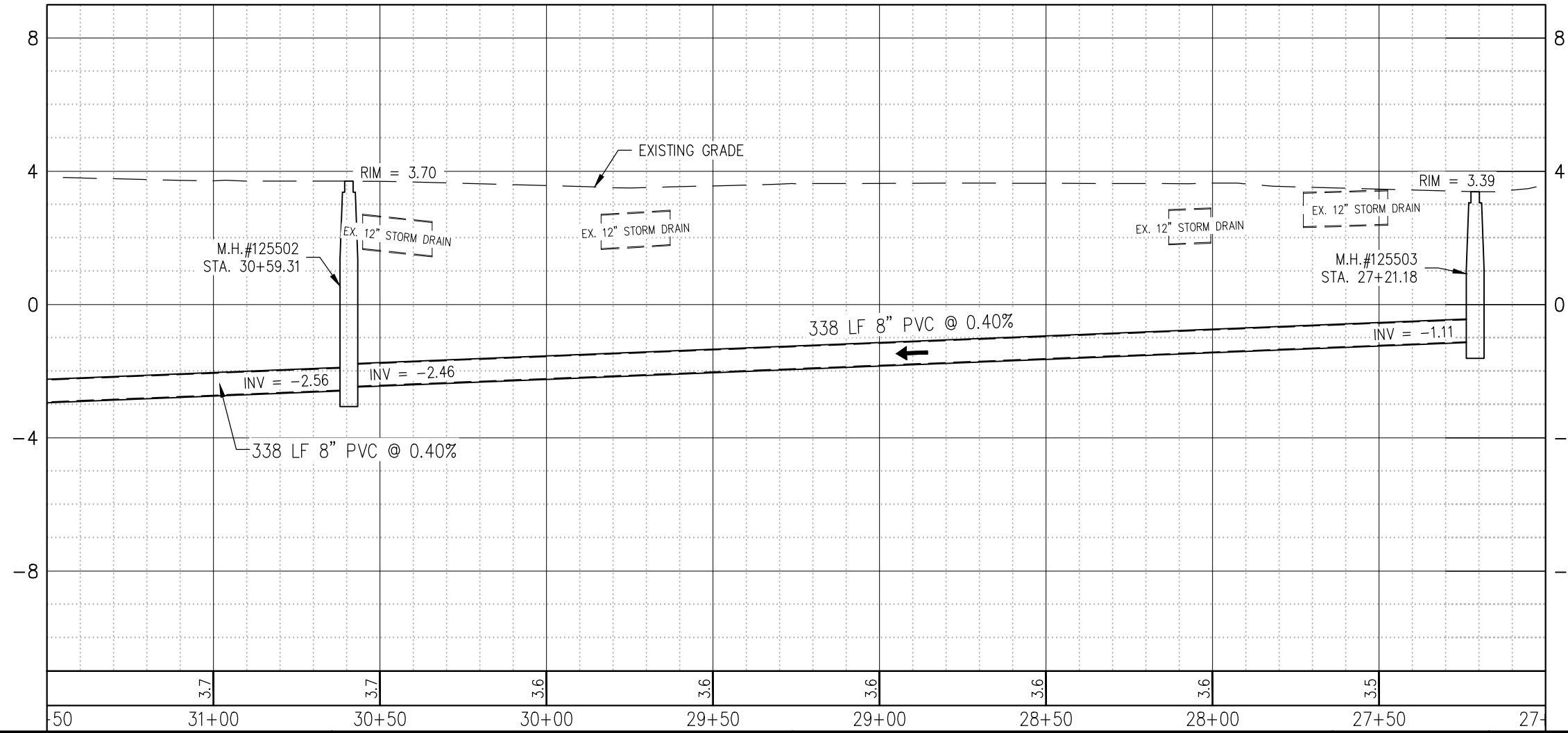
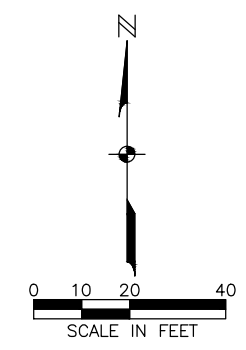
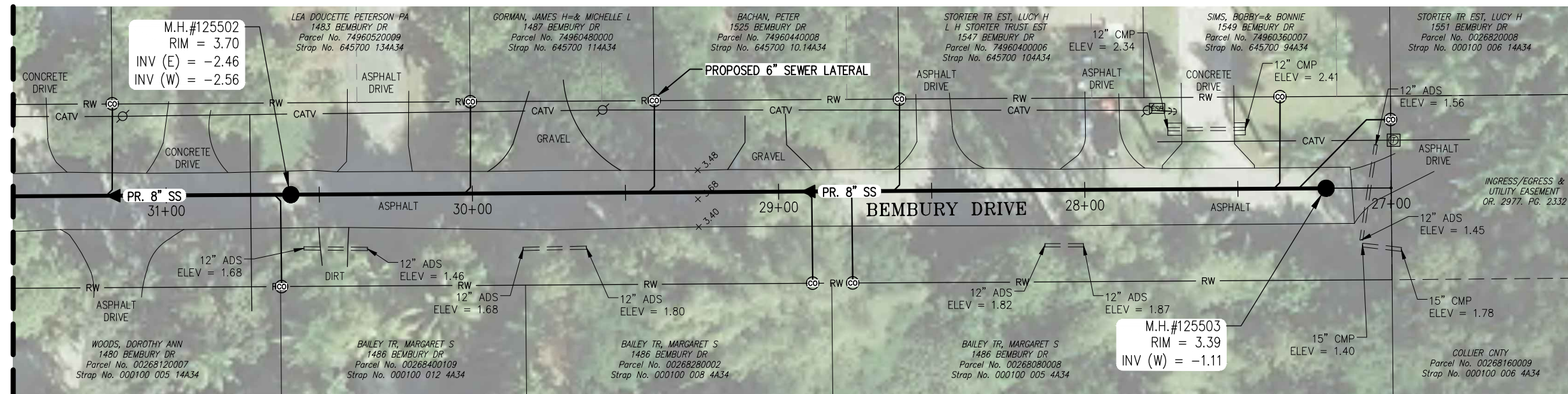
2122 JOHNSON STREET  
P.O. BOX 1550  
FORT MYERS, FLORIDA 33902-1550  
PHONE (239) 334-0046  
FAX (239) 334-3661  
E.B. #642 & L.B. #642

MICHAEL S. DICKEY, PE  
FL License No. 60057

Plan and Profile - 13th Avenue North Sta. 23+00 to Sta. 26+07.98				
DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	PP6



MATCHLINE STA. 30+50  
SEE SHEET PP8



SCALE 1" = 40' HOR  
1" = 4' VER

\\Ftms01\Proj-FMU\20108336\DWG\20108336\_PP.dwg (PP (7)) MNT Sep 10, 2014 - 3:03pm

REVISIONS	



City of Naples  
Construction Plans for Utility Upgrades  
14th Avenue North, 13th Avenue North,  
15th Street & Bembury Subdivision



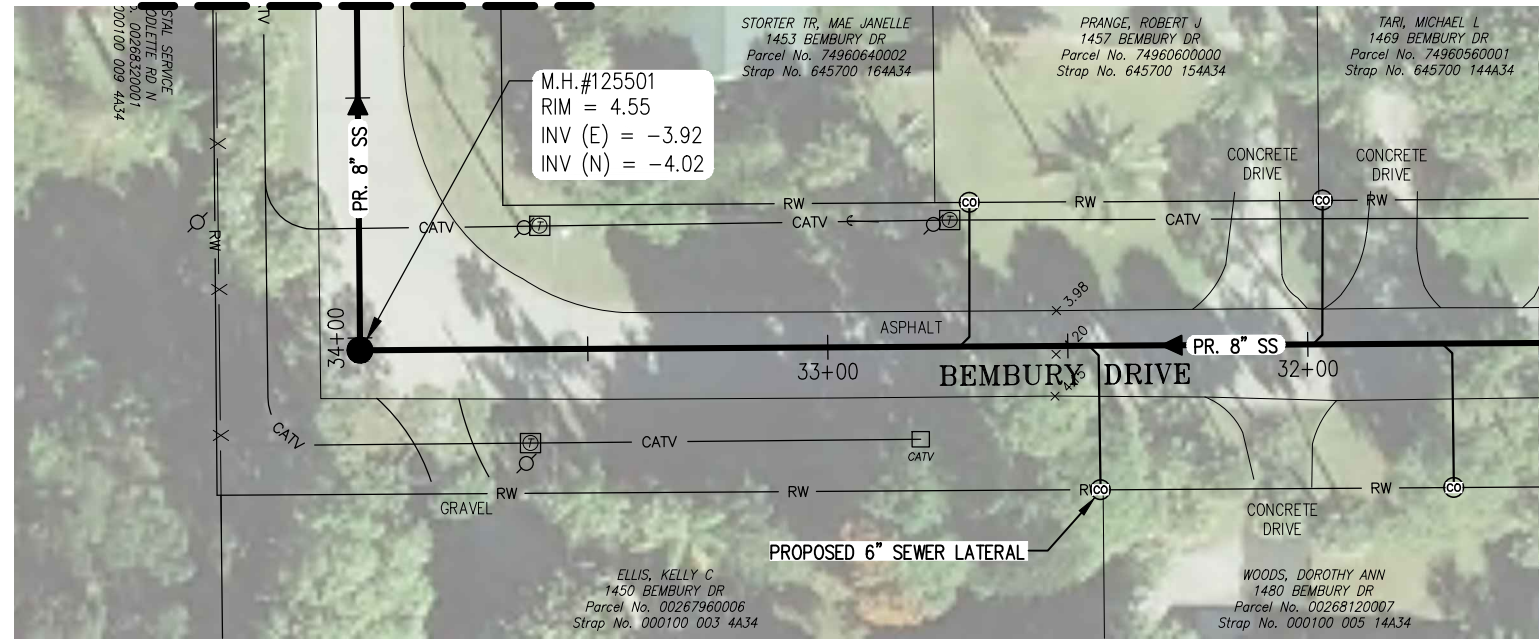
2122 JOHNSON STREET  
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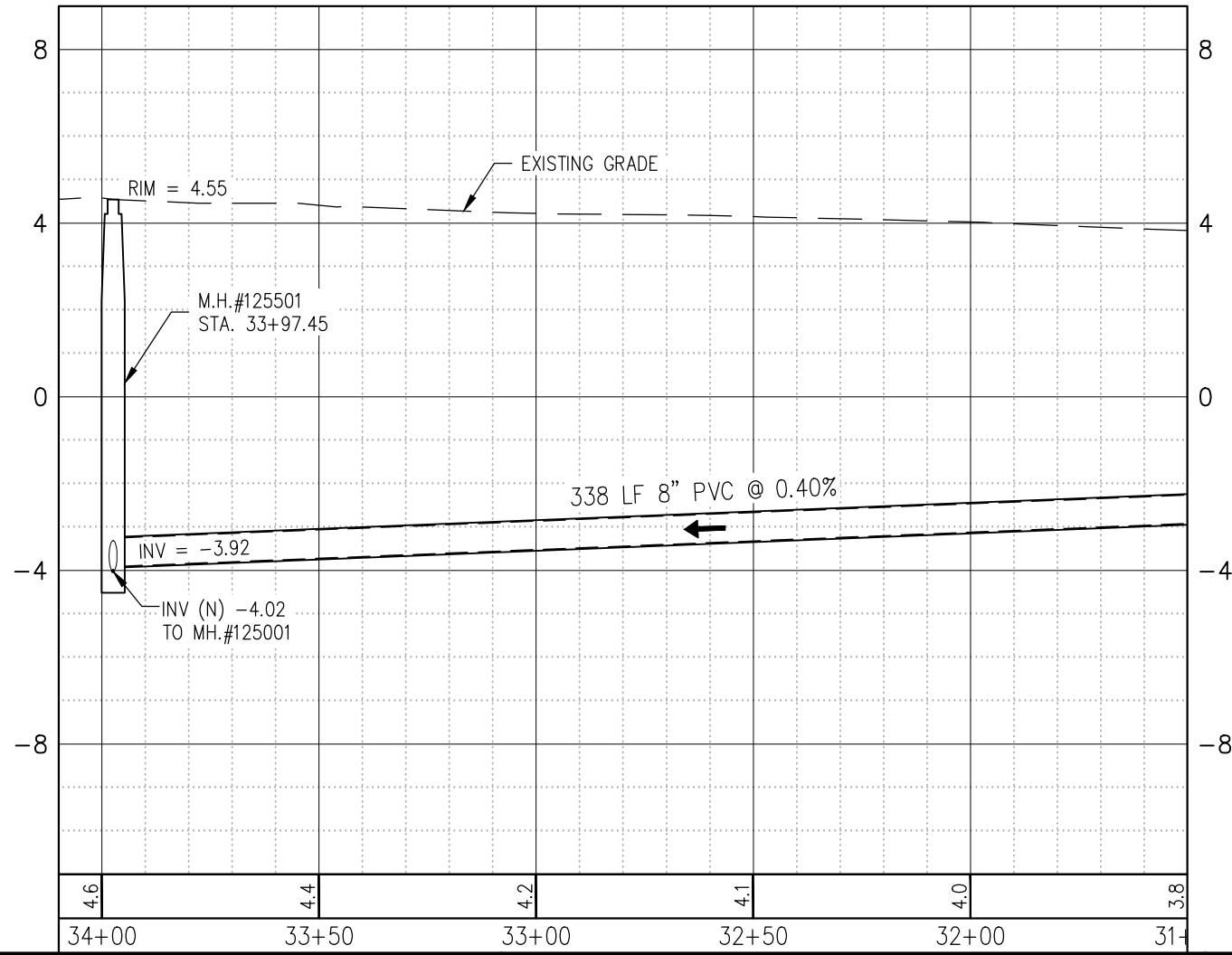
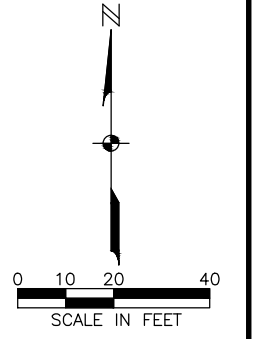
Plan and Profile - Bembury Drive Sta. 27+00 to Sta. 31+50				
DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	PP7



FOR CONTINUATION SEE SHEET PP9




MATCHLINE STA. 30+50  
SEE SHEET PP7



SCALE 1" = 40' HOR  
1" = 4' VER

\\Ftms01\Proj-FMU\20108336\DWG\20108336\_PP.dwg (PP (8)) MNT Sep 10, 2014 - 3:03pm

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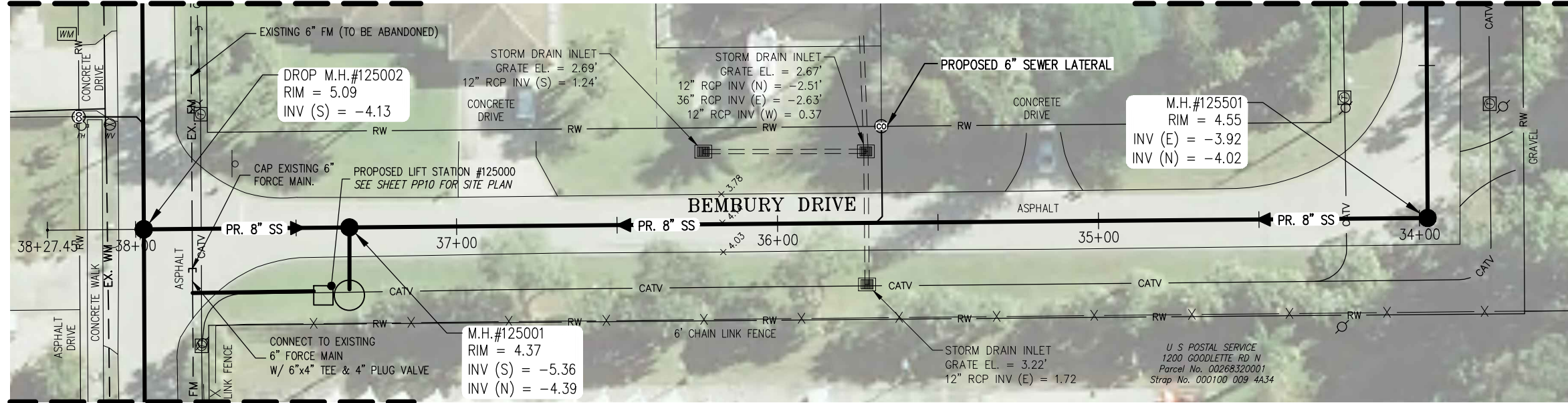
**MICHAEL S. DICKEY, PE**  
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Plan and Profile - Bembury Drive				
Sta. 31+50 to Sta. 33+97.45				
DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	PP8

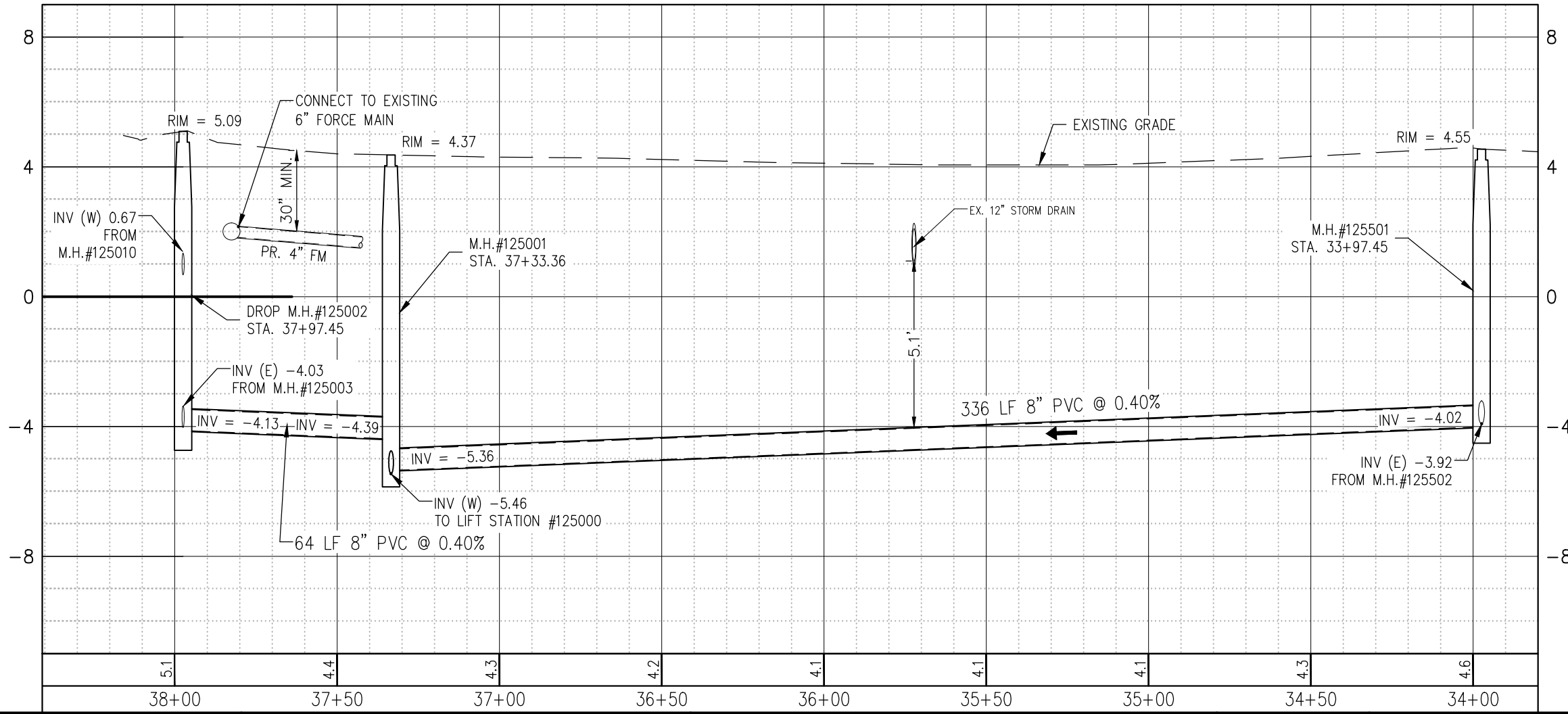


FOR CONTINUATION SEE SHEET PP6

FOR CONTINUATION SEE SHEET PP8




FOR CONTINUATION SEE SHEET PP4



SCALE 1" = 40' HOR  
1" = 4' VER

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 Construction Plans for Utility Upgrades  
 14th Avenue North, 13th Avenue North,  
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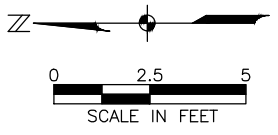

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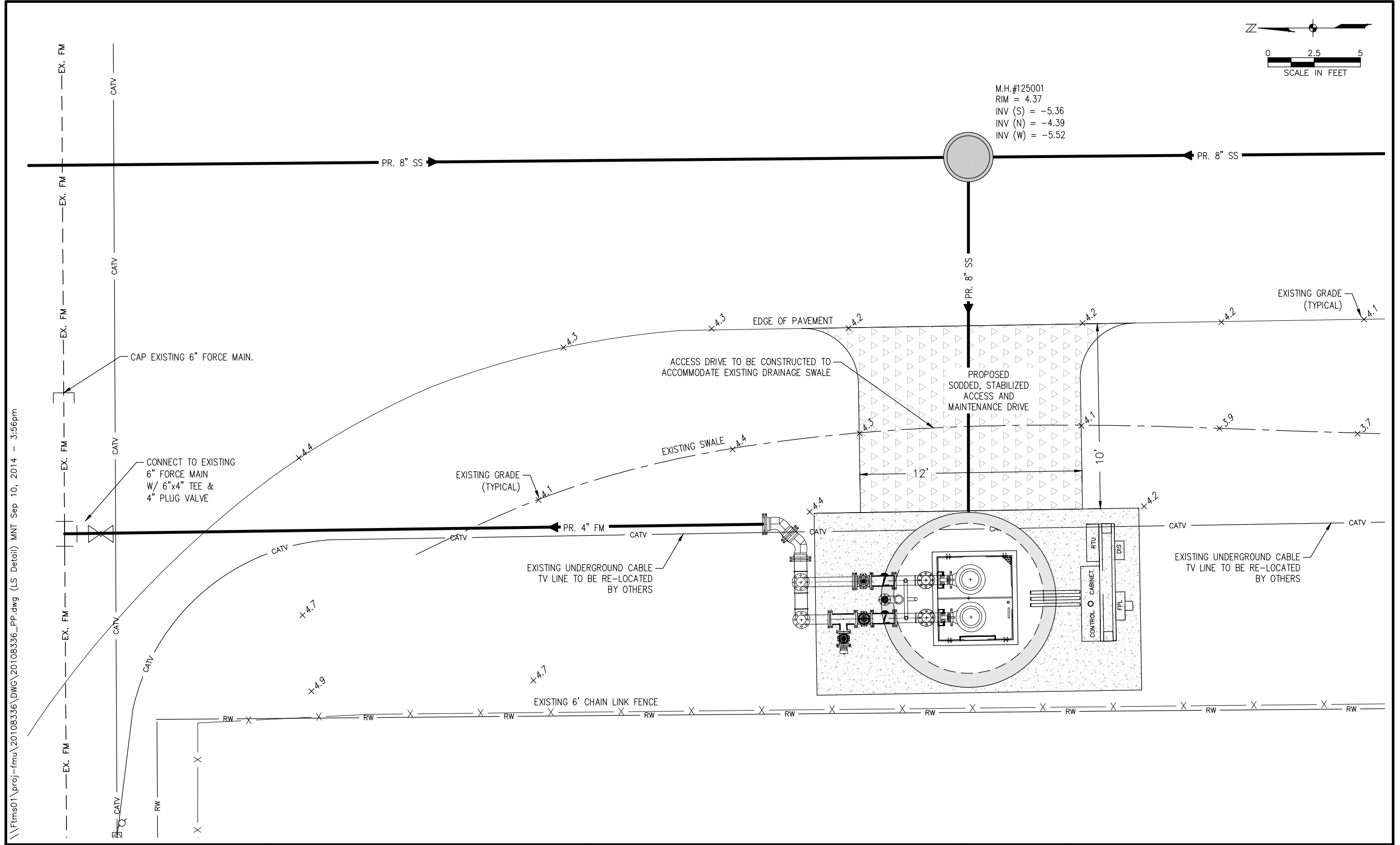
**Plan and Profile - Bembury Drive**  
 Sta. 33+97.45 to Sta. 37+97.45

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
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M.H.#125001  
 RIM = 4.37  
 INV (S) = -5.36  
 INV (N) = -4.39  
 INV (W) = -5.52



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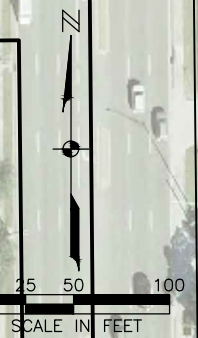
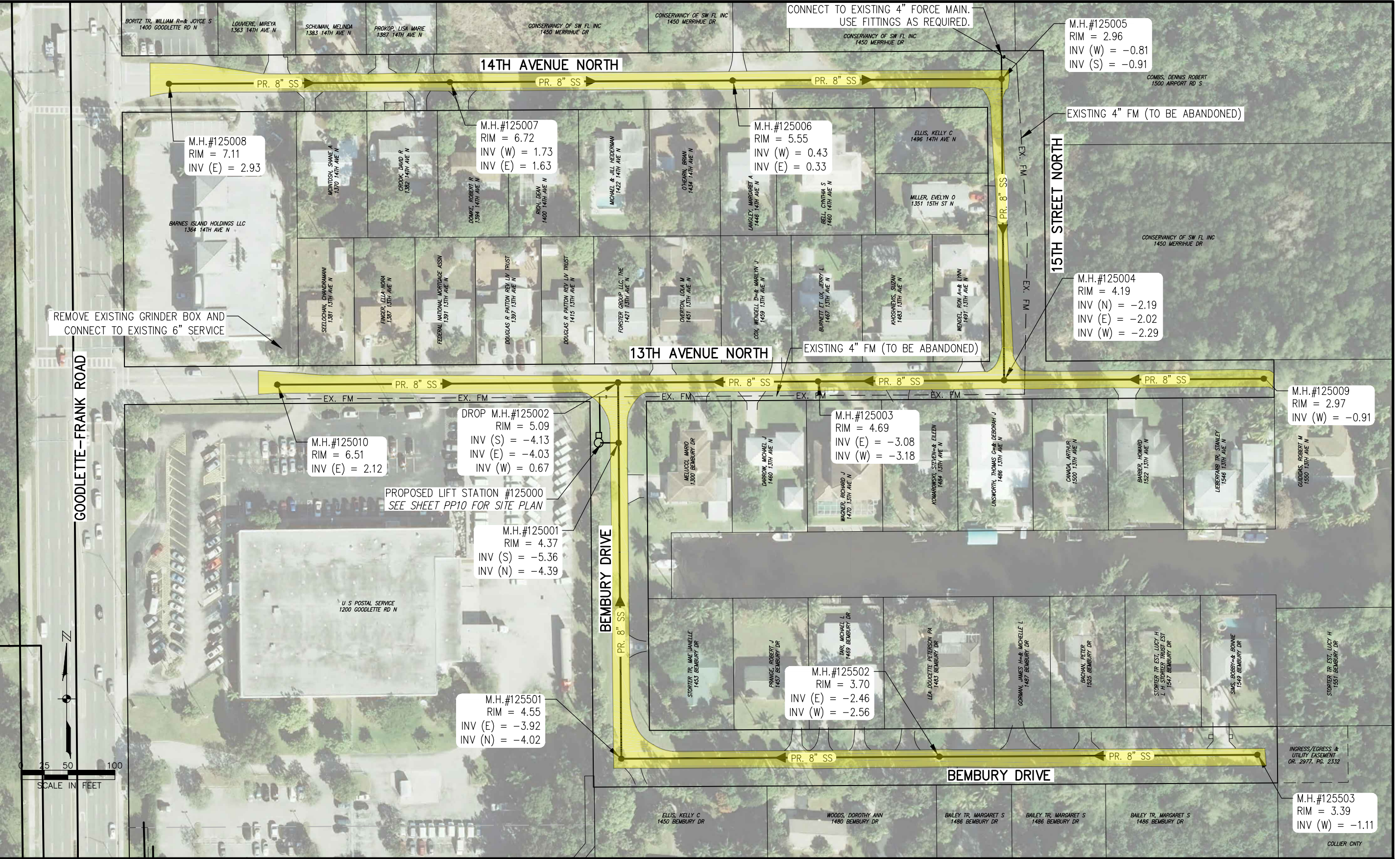
**MICHAEL S. DICKEY, PE**  
 FL License No. 60057

**Bembury Drive**  
**Site Plan for Lift Station #125000**

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	PP10



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City of Naples  
 Construction Plans for Utility Upgrades  
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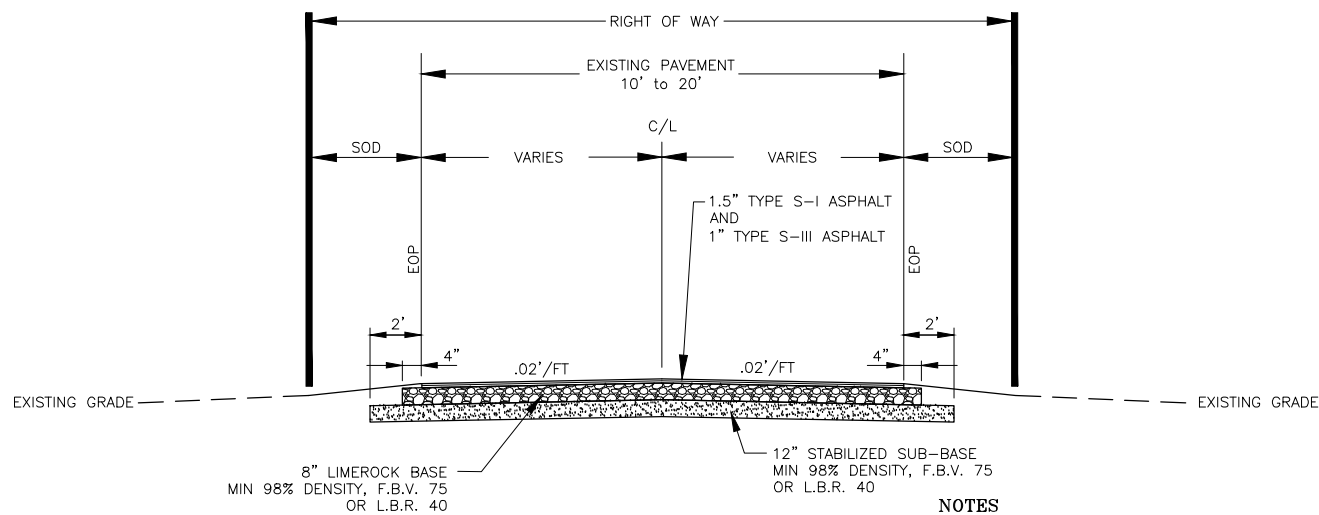
2122 JOHNSON STREET  
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Pavement Replacement Map

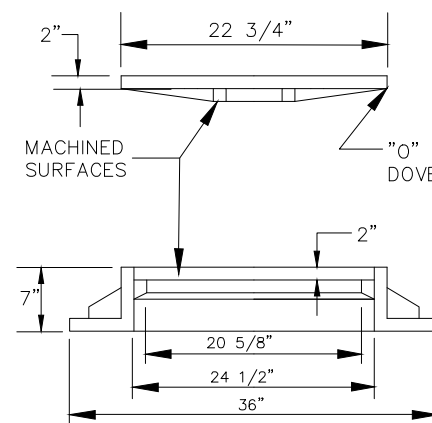
DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	PP11





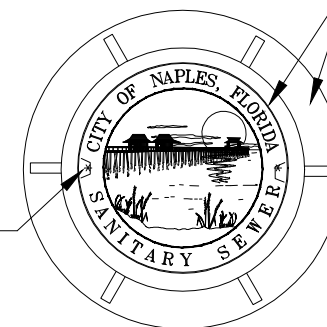
**EXISTING ROAD RESTORATION DETAIL**  
N.T.S.

- NOTES**
- A. SUB-GRADE COMPACTED TO MIN. 95% OF AASHTO T-99 DENSITY
  - B. 12" STABILIZED SUBGRADE, MIN 98% DENSITY, FBV=40, LBR=30, OR AS DIRECTED BY ENGINEER.
  - C. 8" PRIMED LIMEROCK BASE, MINIMUM 98% DENSITY.



**STANDARD MANHOLE COVER DETAIL**  
N.T.S.

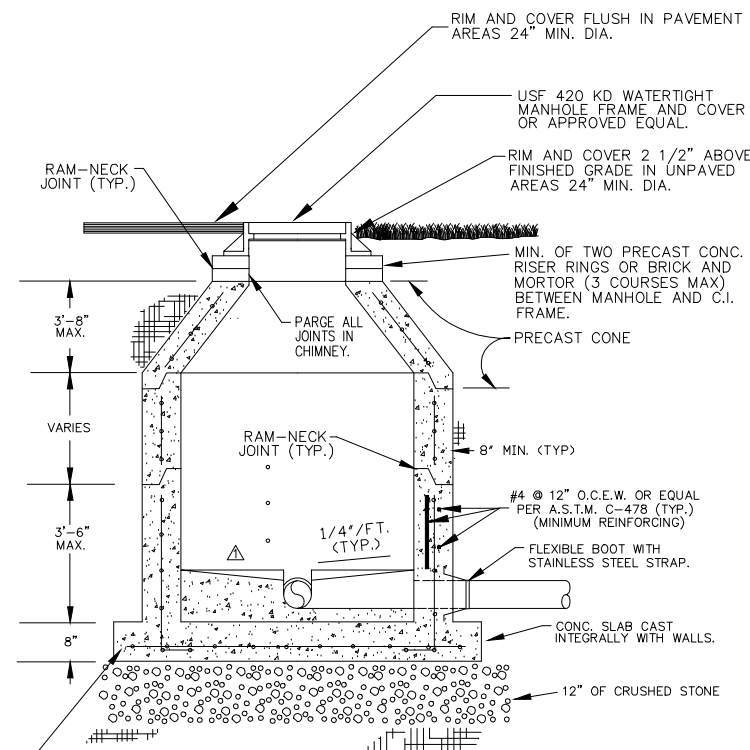
NOTES: U.S.F. TYPE 420 OF ASTM-A48 CLASS 30 GREY CAST IRON  
TOP OF COVER TO BE FLUSH IN PAVED AREAS, 2 1/2" ABOVE UNFINISHED GRADE



FINISH FRAME AND COVER WITH ONE COAT ASPHALT PAINT

2 NON-PENETRATING PICK HOLES

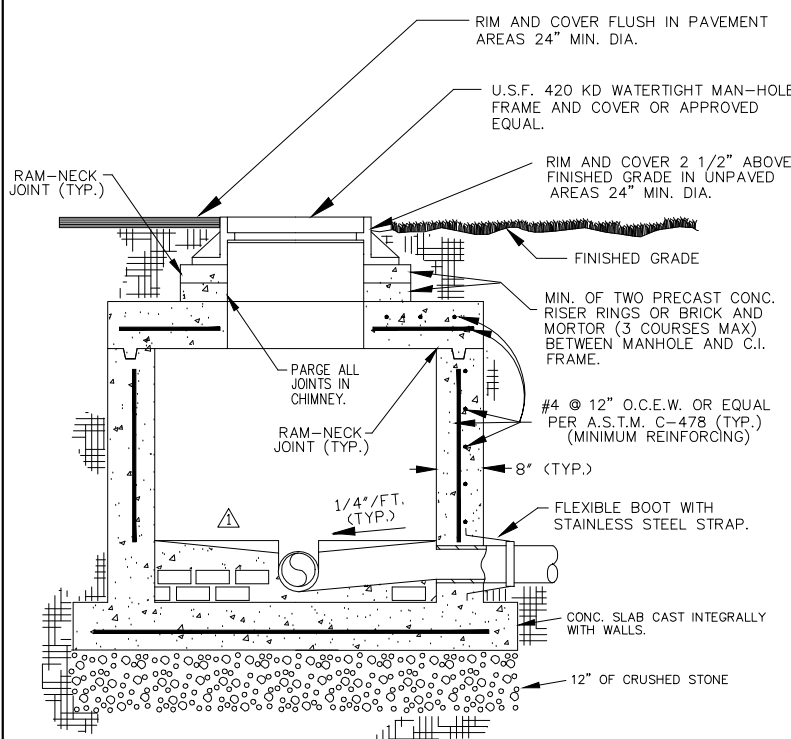
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**STANDARD PRE-CAST MANHOLE**  
N.T.S.

- NOTE:**
- 1) INTERIOR AND EXTERIOR SURFACES SHALL BE DOUBLE COATED PER THE SPECIFICATIONS.
  - 2) MANHOLE LID & FRAME MUST PASS STATIC WATER INFILTRATION TEST.
  - 3) THESE REQUIREMENT WILL BE APPLIED TO ALL MANHOLE MODIFICATIONS AND INSTALLATIONS.

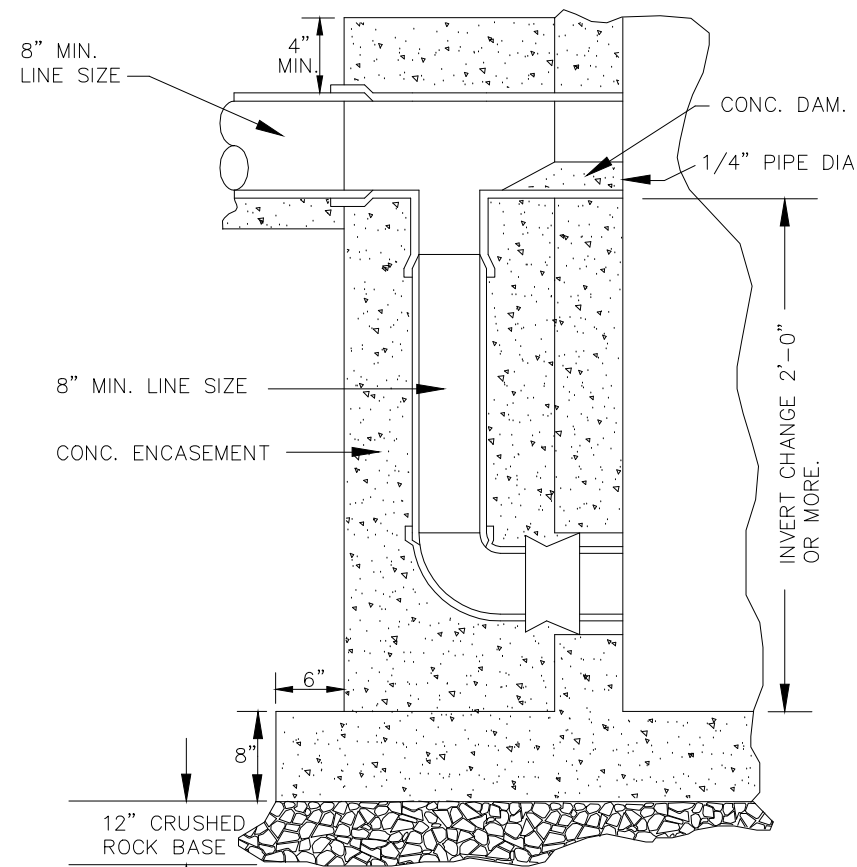
△ FLOW LINE CHANNELS SHALL BE CLAY BRICK HAVING A MIN. OF 2" POURED CONC. OR 2" GROUTED FINISH. 0.1' DROP ACROSS MANHOLE.



**SHALLOW MANHOLE**  
N.T.S.

- NOTE:**
- 1) INTERIOR AND EXTERIOR SURFACES SHALL BE DOUBLE COATED PER THE SPECIFICATIONS.
  - 2) MANHOLE LID & FRAME MUST PASS STATIC WATER INFILTRATION TEST.
  - 3) THESE REQUIREMENT WILL BE APPLIED TO ALL MANHOLE MODIFICATIONS AND INSTALLATIONS.

△ FLOW LINE CHANNELS SHALL BE CLAY BRICK HAVING A MIN. OF 2" POURED CONC. OR 2" GROUTED FINISH. 0.1' DROP ACROSS MANHOLE.



**DROP MANHOLE**  
N.T.S.

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City of Naples  
Construction Plans for Utility Upgrades  
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**JOHNSON ENGINEERING**

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City of Naples Utilities  
Standard Details

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	D1

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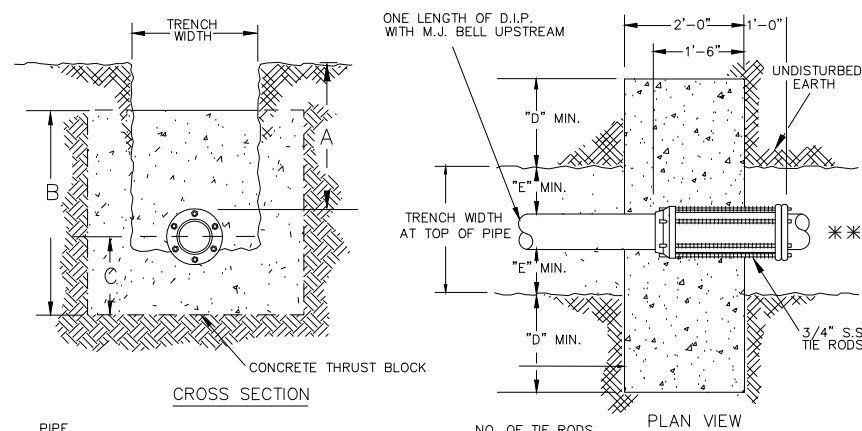
PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET (1)	
	TEE (3)	REDUCER (4)
6 x 4	0	40
6 x 6	34	
8 x 4	0	72
8 x 8	55	
10 x 6	3	74
10 x 10	75	
12 x 4	0	122
12 x 8	31	75
12 x 12	95	
16 x 6	0	153
16 x 10	44	107
16 x 16	134	
18 x 8	0	157
18 x 12	68	108
18 x 18	152	
20 x 10	20	161
20 x 16	120	77
20 x 20	170	
24 x 12	37	187
24 x 18	132	109
24 x 24	204	
30 x 16	78	213
30 x 20	138	165
30 x 30	252	
36 x 18	84	259
36 x 24	170	191
36 x 36	298	

**NOTES:**

- RESTRAIN ALL PIPE JOINTS WITHIN THE DISTANCE SHOWN ON THE TABLES MEASURED FROM THE POINT OF CONNECTION.
- ISOLATION VALVES SHALL BE TREATED AS DEAD ENDS, WITH RESTRAINT ON BOTH SIDES OF THE VALVE.
- RESTRAINT IS FOR BRANCH OF TEE. IF BRANCH SIZE IS NOT ON TABLE, USE NEXT LARGEST BRANCH.
- RESTRAINT IS FOR LARGE DIAMETER SIDE OF REDUCER. IF REDUCER SIZE IS NOT ON TABLE, USE NEXT SMALLER REDUCER (SMALL END).
- THIS SCHEDULE IS TO BE USED FOR DUCTILE IRON AND PVC PIPE.

PIPE SIZE IN INCHES	RESTRAINED PIPE LENGTH IN FEET (1)					45° VERTICAL BENDS	
	HORIZONTAL BENDS				DEAD ENDS (2)	UPPER	LOWER
	90°	45°	22-1/2°	11-1/4°	(2)		
4	23	9	5	2	55	23	8
6	32	13	6	3	77	32	11
8	74	31	15	7	100	41	14
10	87	36	17	9	120	50	17
12	100	41	20	10	141	58	20
16	123	51	24	12	181	75	25
18	133	55	27	13	200	83	28
20	143	59	29	14	218	90	30
24	162	67	32	16	253	105	35
30	184	76	37	18	303	125	41
36	207	86	41	20	350	145	47

**PIPE RESTRAINT SCHEDULE**



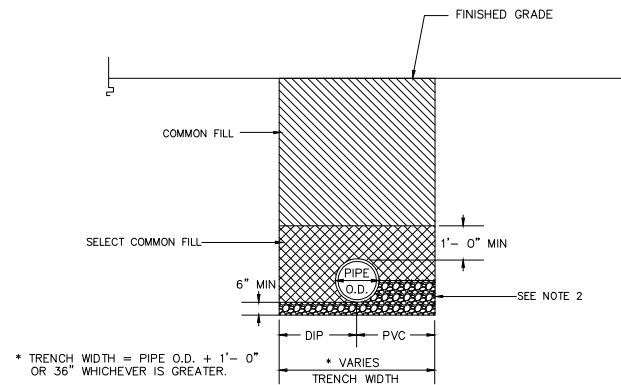
PIPE DIAMETER	A	B	C	D	E	NO. OF TIE RODS REQUIRED
4"	36"	24"	12"	9"	12"	2
6"	36"	24"	12"	12"	12"	2
8"	36"	24"	12"	12"	12"	2
10"	36"	36"	18"	18"	18"	2
12"	36"	36"	18"	18"	18"	2
16"	36"	36"	18"	24"	18"	4

DESIGN ENGINEER SHALL VERIFY ABOVE DIMENSIONS AND THE NUMBER OF THE RODS.

\*\*\* FOR TERMINATION SEE DRAWING TEMBLOFF OR BLOFHYD

**THRUST BLOCK DETAIL FOR LINE TERMINUS**

**LINE TERMINUS**  
N.T.S.

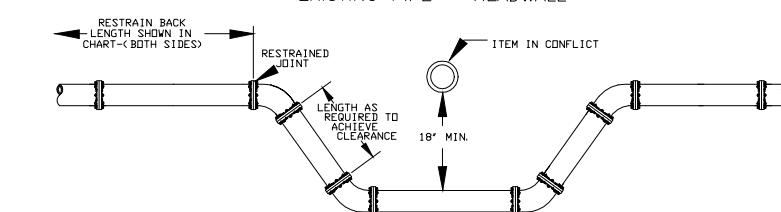
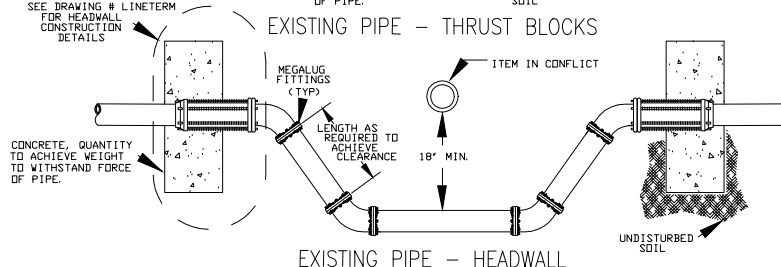
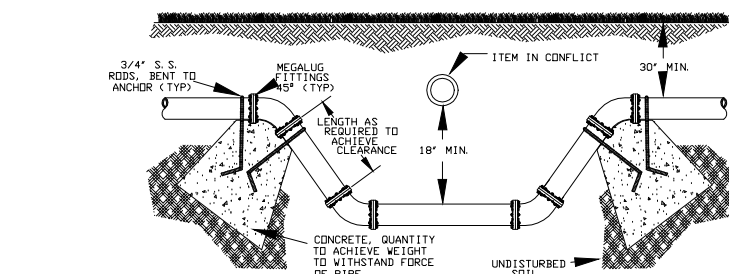


\* TRENCH WIDTH = PIPE O.D. + 1'-0" OR 36" WHICHEVER IS GREATER.

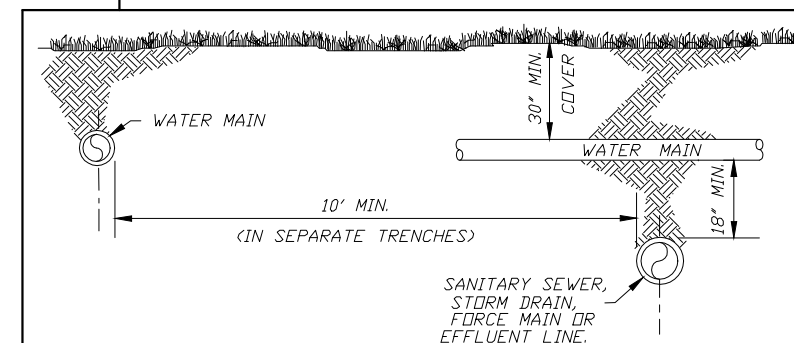
- NOTES:
- COMMON FILL SHALL BE COMPACTED TO MATCH CRITERIA PROVIDED IN BACKFILL DETAILS FOR PAVED AND UNPAVED LOCATIONS RESPECTIVELY.
  - BEDDING MATERIAL SHALL BE FDOT #57 STONE IF BELOW THE SEASONAL LOW GROUNDWATER TABLE, OR FDOT #89 STONE, FDOT #131 OR #132 SCREENING IF ABOVE THE SEASONAL LOW GROUNDWATER TABLE.
  - ORDINANCE 82-91 REQUIRES A R.O.W. PERMIT FOR ALL WORK WITHIN PUBLIC ROADS. THE R.O.W. PERMIT REQUIREMENTS SHALL SUPERSEDE THIS DETAIL.

**PIPE BEDDING AND BACKFILL**  
N.T.S.

PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
8"	74	31	15	7
10"	87	36	17	9
12"	100	41	20	10
16"	123	51	24	12
20"	143	59	29	14
24"	162	67	32	16
30"	184	76	37	18
36"	207	86	41	20



**TYPICAL CONFLICT CROSSING**  
N.T.S.



**NOTES:**

- SANITARY SEWER LINES OR FORCE MAINS SHALL BE SEPARATED FROM WATER MAINS BY A MINIMUM CLEAR VERTICAL DISTANCE OF 18" AND A HORIZONTAL DISTANCE OF 10'-0". ALL CROSSING WITH VERTICAL CLEARANCE LESS THAN 18" SHALL BE MADE USING THICKNESS CLASS 200 AWWA C-900 P.V.C. OR DUCTILE IRON, CLASS 350 PIPE FOR DISTANCE OF 10' EACH SIDE OF THE CROSSING AND SEWER SHALL BE CONCRETE ENCASED. 18" CLEAR DISTANCE SHALL NOT BE REDUCED IN CASES WHERE WATER MAIN CROSSES UNDER SEWER LINE. VERTICAL CLEARANCE LESS THAN 12" SHALL NOT BE ALLOWED, UNLESS APPROVED BY THE CITY ENGINEER

**CROSS OVER DETAIL**  
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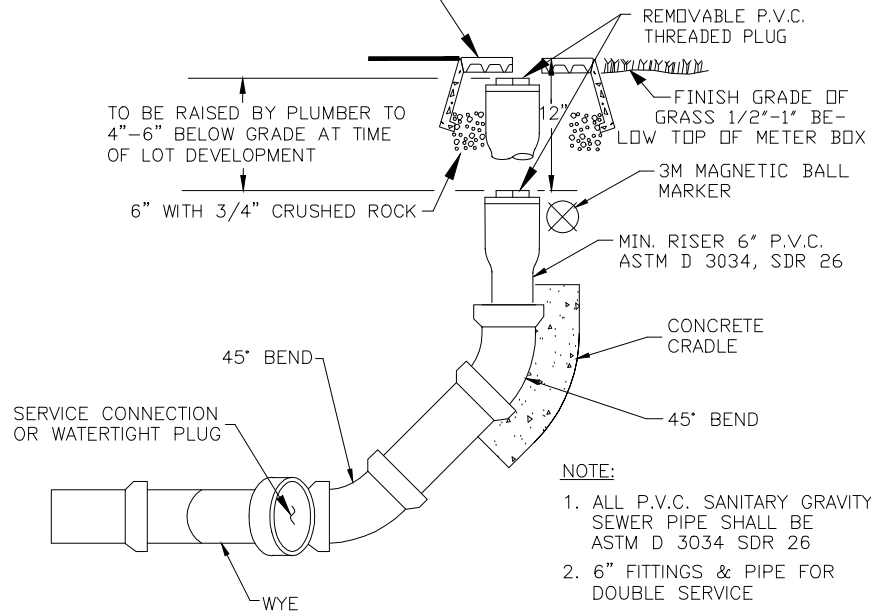


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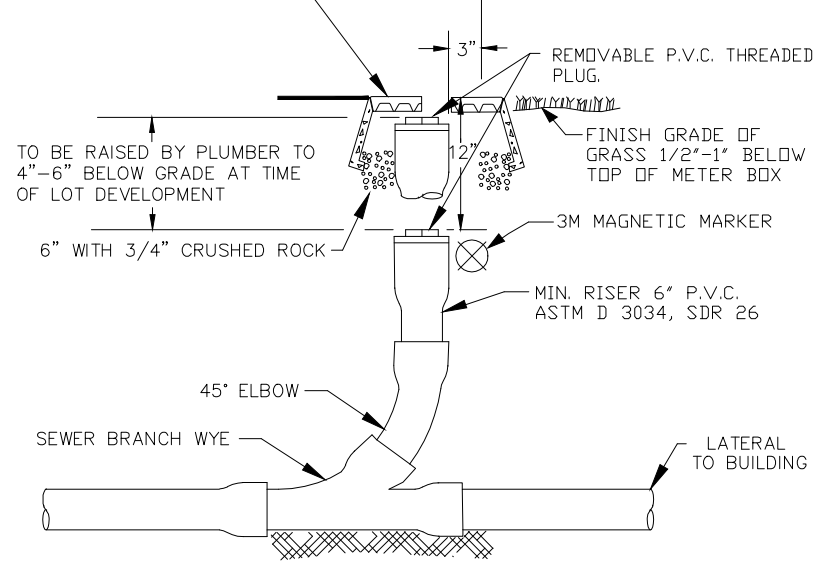


US FOUNDRY 7630 IN PAVEMENT AREA OR GREEN METER BOX IN GRASS AREA - RIM AND COVER FLUSH WITH PAVEMENT OR 1/2"-1" ABOVE GRADE IN GRASS AREA.



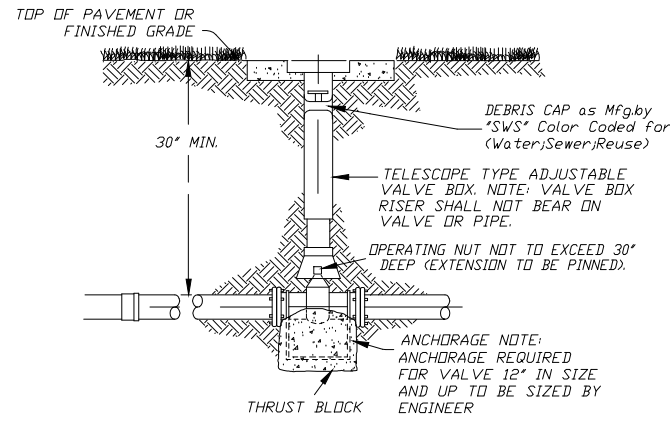
**DEAD END GRAVITY MAIN AND CONNECTION TO HOUSE OR 6 INCH LATERALS**  
N.T.S.

US FOUNDRY 7630 IN PAVEMENT AREA OR GREEN METER BOX IN GRASS AREA - RIM AND COVER FLUSH WITH PAVEMENT OR 1/2"-1" ABOVE GRADE IN GRASS AREA.

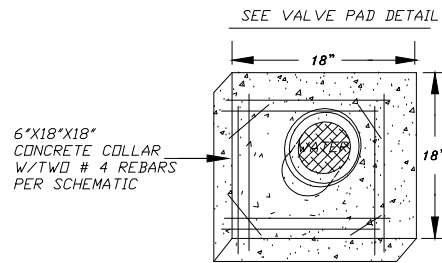


**CLEANOUT DETAIL**  
N.T.S.

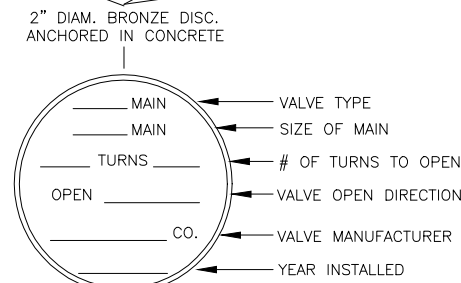
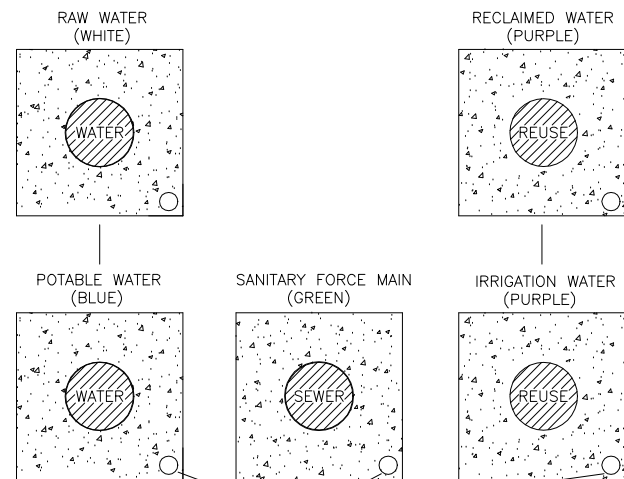
NOTE: DETAIL SHOWS FINISHED CONFIGURATION AFTER LOT DEVELOPMENT.



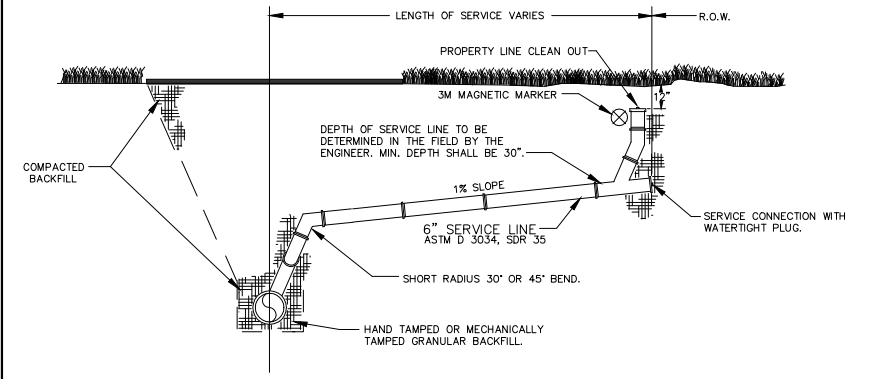
**TYPICAL IN LINE VALVE (WATER/SEWER/REUSE)**  
N.T.S.



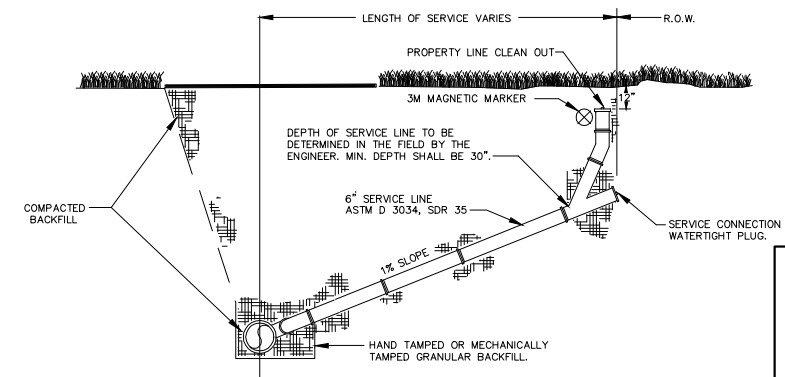
**VALVE PAD DETAIL**  
N.T.S.



**VALVE PAD DETAIL**  
N.T.S.



**DEEP LATERAL (OVER 8' DEEP)**



**STANDARD LATERAL (UNDER 8' DEEP)**

**SEWER LATERALS**  
N.T.S.

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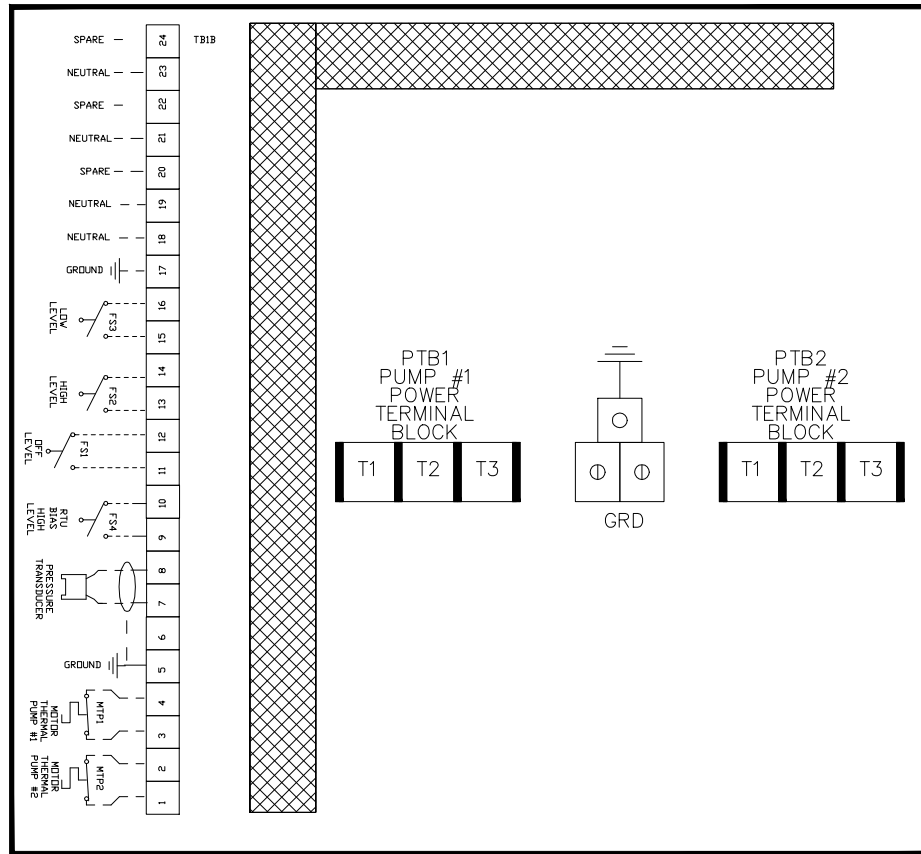


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**JUNCTION BOX BACKPLATE LAYOUT**

**REQUIRED TERMINATIONS IN SPECIFIED JUNCTION BOX**

- 6A. LAYOUT MAY VARY SLIGHTLY AS REQUIRED
- 6B. BACKPLATE SHALL BE ALUMINUM.
- 6C. THE J-BOX SHALL BE ALUMINUM, 3, 4, OR 4X AS REQUIRED, WITH EXTERNAL MOUNTING BRACKETS, HINGED DOOR, GASKET SEAL, DRIP EDGE, & LOCKABLE.
- 6D. THE J-BOX SHALL BE SIZED TO PROPERLY ACCOMMODATE ALL CONDUITS, FITTINGS, TERMINAL BLOCKS, AND SPECIFIED WIRING WITH ADEQUATE CLEARANCES AND SPACING. MINIMUM OR 16"X16"X 8"D. JUNCTION BOX CAN NOT EXCEED 16" HIGH. IF SPACING REQUIREMENTS REQUIRE MORE AREA, THE J-BOX SHALL BE MADE WIDER INSTEAD OF HIGHER; OR USE TWO MATCHING J-BOXES PER SPACE FILL REQUIREMENTS.
- 6E. THE TERMINAL BLOCKS, POWER BLOCKS, LUGS, AND WIRE RACE SHALL BE MOUNTED AS SHOWN IN THE ABOVE DETAIL. TB1B SHALL BE SQ D SERIES 9080, 30AMP RATED OR EQUAL. POWER BLOCKS AND LUGS SHALL BE SIZED ONE SIZE LARGER THAN REQUIRED LOADS.
- 6F. FOR CITY IN-HOUSE INSTALLATIONS: THE SPECIFIED J-BOX SHALL BE SUPPLIED WITH THE CONTROL PANEL; ALONG WITH THE REQUIRED MYERS HUBS, AL/SS NIPPLES, SEAL-OFFS AS REQUIRED BY CITY UTILITY STANDARDS; BUT WILL BE FIELD INSTALLED AND WIRED BY CITY PERSONNEL.
- 6G. FOR CONTRACTOR/DEVELOPER INSTALLED PROJECTS: THE SPECIFIED J-BOX SHALL BE SUPPLIED/INSTALLED WITH THE CONTROL PANEL; ALONG WITH THE REQUIRED MYERS HUBS, ALL/SS NIPPLES, SEAL-OFFS, AND WIRING; AS REQUIRED BY CITY UTILITY STANDARDS

ALL WIRES SHALL BE CLEARLY NUMBERED/ LABELED AT EACH CONNECTION/ TERMINATION.

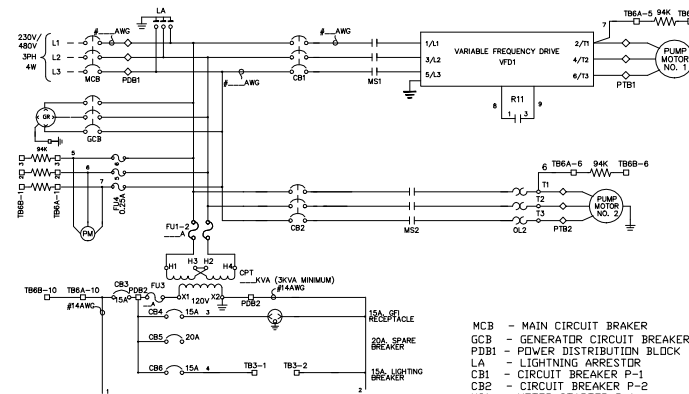
**DUPLEX: 460VAC-3PH-4W-60HZ ONLY**

**DUPLEX PUMP CONTROL PANEL  
J-BOX BACKPLATE LAYOUT  
N.T.S.**

**CONTROL PANEL MINIMUM LABEL REQUIREMENTS**

LABEL	QUAN	COLOR	DESCRIPTION
MCB	2	BLACK	MAIN CIRCUIT BREAKER
ECB	2	BLACK	EMERGENCY CIRCUIT BREAKER
PCB1	2	BLACK	PUMP 1 CIRCUIT BREAKER
PCB2	2	BLACK	PUMP 2 CIRCUIT BREAKER
CB3	1	BLACK	CONTROL CIRCUIT BREAKER
CB4	1	BLACK	DUPLEX RECEPTACLE CIRCUIT BREAKER
CB5	1	BLACK	RTU CIRCUIT BREAKER
CB6	1	BLACK	SPARE CIRCUIT BREAKER
MS1	1	BLACK	P-1 MOTOR STARTER
MS2	1	BLACK	P-2 MOTOR STARTER
VFD1	1	BLACK	VARIABLE FREQUENCY DRIVE 1
VFD2	1	BLACK	VARIABLE FREQUENCY DRIVE 2
FB1-2	1	BLACK	CONTROL POWER TRANSFORMER FUSE BLOCK
FB3	1	BLACK	CONTROL POWER FUSE BLOCK
FB4-6	1	BLACK	PHASE MONITOR FUSE BLOCK
FB11	1	BLACK	CONTROL CIRCUIT TRANSFORMER FUSE BLOCK
PM	1	BLACK	PHASE MONITOR
CPT	1	BLACK	CONTROL POWER TRANSFORMER
CCT	1	BLACK	CONTROL CIRCUIT TRANSFORMER
R1	1	BLUE	PHASE MONITOR CONTROL POWER RELAY
R2	1	BLUE	P-1 PUMP RUN RELAY
R3	1	BLUE	P-2 PUMP RUN RELAY
R4	1	BLUE	VFD RESET RELAY
R6	1	BLUE	P-1 DISABLE/VFD RESET RELAY
R7	1	BLUE	P-2 DISABLE RELAY
R9	1	BLUE	HIGH LEVEL ALARM RELAY
R10	1	BLUE	FLOAT OVER-RIDE "OFF" RELAY (LOW LEVEL)
R11	1	BLUE	VFD1 RUN RELAY
R13	1	BLUE	P-1 MOTOR THERMAL FAULT RELAY
R21	1	BLUE	VFD2 RUN RELAY
R23	1	BLUE	P-2 MOTOR THERMAL FAULT RELAY
TD1	1	BLUE	HIGH LEVEL FLOAT "ON" OVER-RIDE
TB4	1	BLUE	ALARM LIGHT TERMINAL BLOCK
TB1A	1	BLUE	PANEL CONTROLS TERMINAL BLOCK
TB1B	1	BLUE	J-BOX CONTROLS TERMINAL BLOCK
TB6A	1	BLUE	RTU INTERFACE TERMINAL BLOCK A
TB6B	1	BLUE	RTU INTERFACE TERMINAL BLOCK B
PUMP 1	1	BLUE	PUMP 1 RUN
PUMP 2	1	BLUE	PUMP 2 RUN

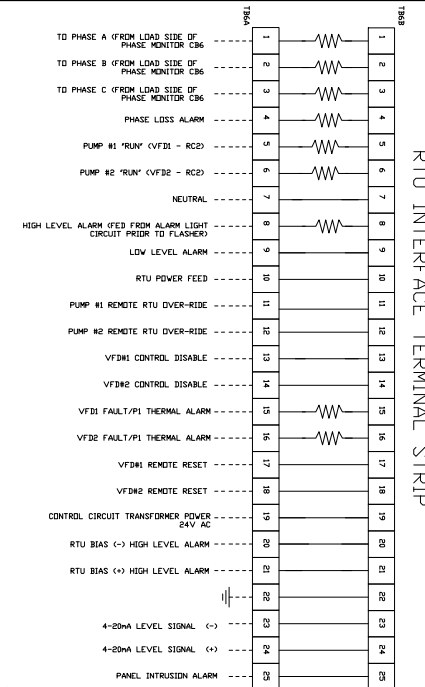
**POWER SCHEMATIC  
BELOW 20HP-230/480V-3PH-4W-60HZ**



NOTE: THIS DETAIL IS FOR PUMP UNITS RATED AT BELOW 20HP. HOWEVER, IF A MOTOR UNIT HAS A FRAME SIZE AT/GREATER THAN 20HP, BUT IS UNDER RATED FOR THIS JOB, THE ALTERNATE DUPLEX PANEL RATED FOR 20HP AND ABOVE, WHICH REQUIRES DUAL VFD MOTOR UNITS, SHALL BE USED

ALL CONTROL WIRES SHALL BE CLEARLY NUMBERED/LABELED AT EACH CONNECTION/TERMINATION.

**DUPLEX PUMP CONTROL PANEL  
POWER SCHEMATIC-BELOW 20 HP  
N.T.S.**



ALL WIRES SHALL BE CLEARLY NUMBERED/ LABELED AT EACH CONNECTION/TERMINATION.

RTU INTERFACE TERMINAL STRIP

**NOTES:**

- 5A. TB6A & TB6B SHALL BE INSTALLED IN THE CONTROL PANEL AS DESCRIBED IN DRAWING "WW-24", WITH UN-OBSTRUCTED ACCESS AND A MINIMUM OF 1.5" SEPARATION FOR THE INSTALLATION OF THE RESISTORS AND JUMPER WIRES. THE 1.5" SEPARATION SHALL BE UNIFORM BETWEEN COMPONENTS AND WIREWAYS TO ALLOW ACCESS.
  - 5B. ALL REQUIRED RESISTORS SHALL BE RATED AT 94K OHM @ 2 WATTS.
  - 5C. TERMINAL BLOCKS TB6A & TB6B SHALL BE SQD 9080 SERIES OR EQUAL
- DUPLEX PUMP CONTROL PANEL  
POWER SCHEMATIC-BELOW 20 HP  
N.T.S.**

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REVISIONS

NO.	DATE	DESCRIPTION



City of Naples  
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14th Avenue North, 13th Avenue North,  
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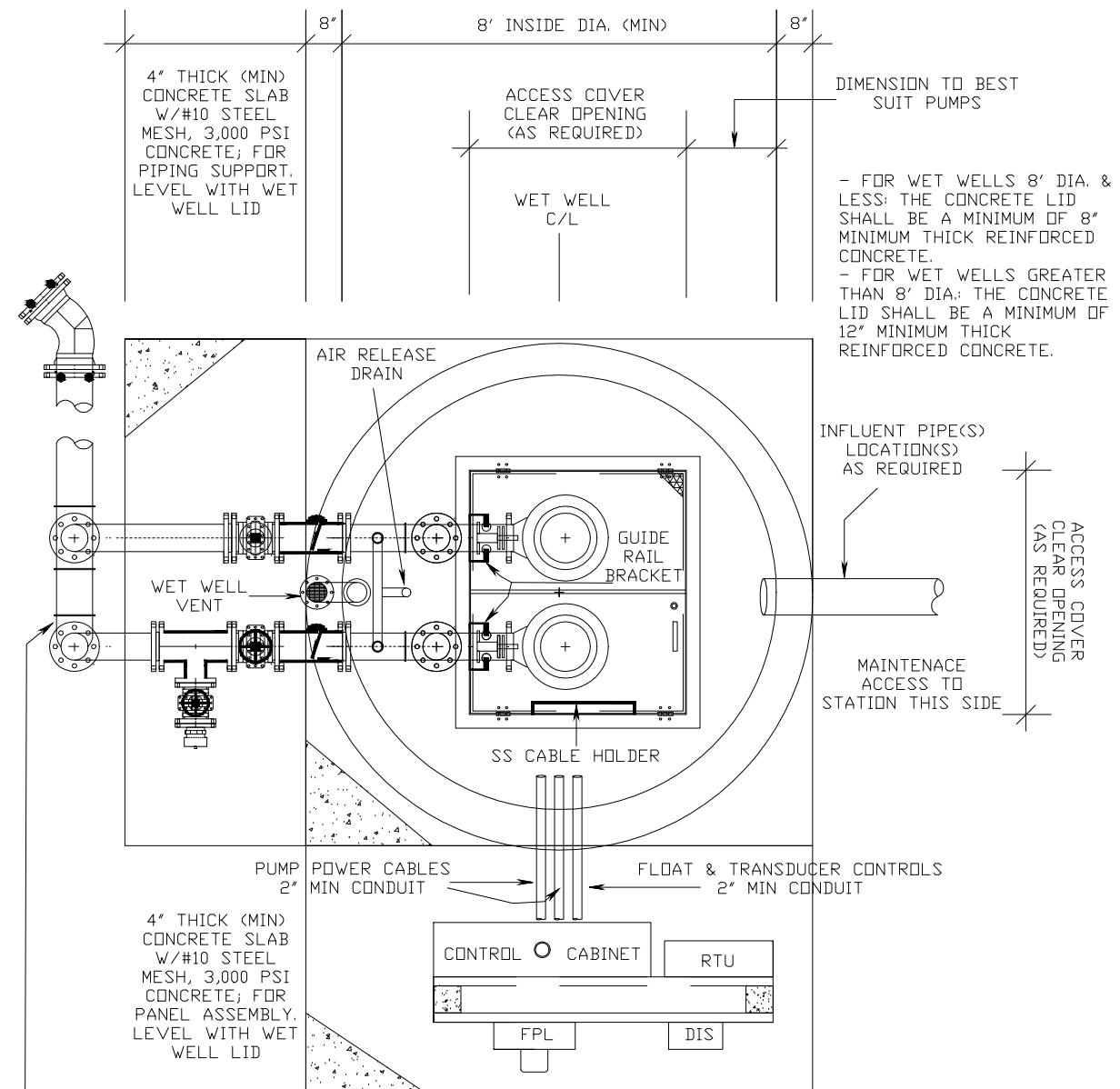
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PHONE (239) 334-0046  
FAX (239) 334-3661  
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City of Naples Utilities  
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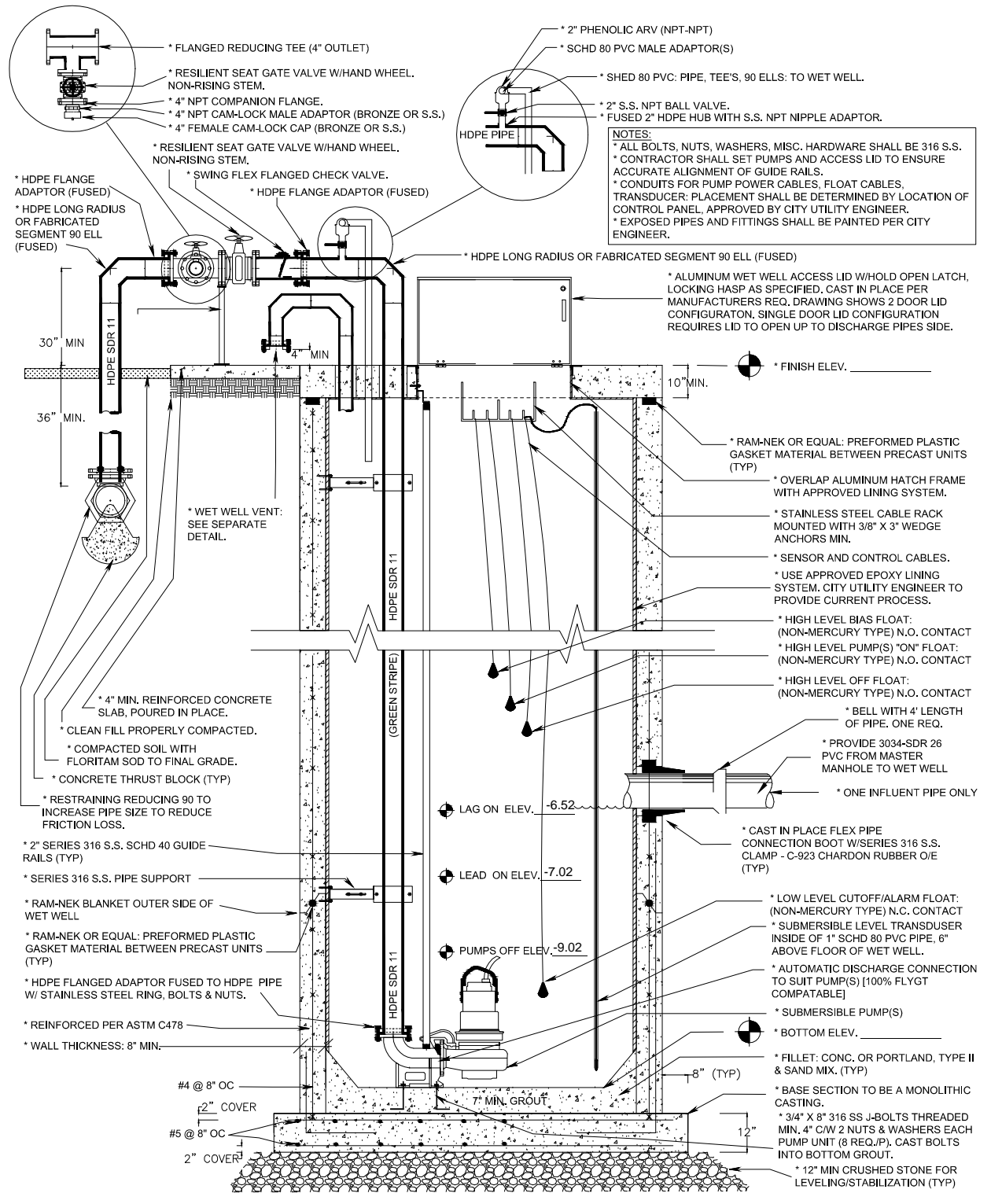
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DISCHARGE MANIFOLD PIPING TO BE A MIN. OF ONE (1) PIPE SIZE LARGER THAN PUMP DISCHARGE PIPE.

ALL STATIONS ACCEPTED BY THE CITY SHALL BE PROVIDED WITH A 7' HIGH, 9 GAGE, BLACK VINYL CHAIN LINK FENCE. ALL POSTS SHALL BE 2"+ DIA, AND ENCLOSURE SHALL HAVE BOTH TOP & BOTTOM RAILS (1" MIN.). A 10" WIDE MINIMUM, LOCKABLE DOUBLE SWING GATE SHALL BE PROVIDED FOR ACCESS OF MAINTENANCE VEHICLES. A 4' WIDE, LOCKABLE, SWING MAN-GATE SHALL BE PROVIDED AT THE LOCATION OF THE FPL METER.

**WASTEWATER PUMP STATION  
SITE PLAN - PLAN VIEW  
N.T.S.**



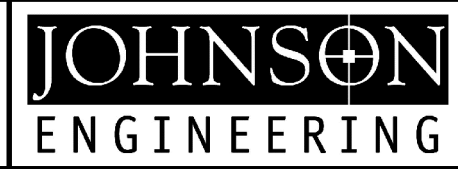
**WASTEWATER PUMP STATION  
CROSS SECTION VIEW  
N.T.S.**

**NOTES:**  
 \* ALL BOLTS, NUTS, WASHERS, MISC. HARDWARE SHALL BE 316 S.S.  
 \* CONTRACTOR SHALL SET PUMPS AND ACCESS LID TO ENSURE ACCURATE ALIGNMENT OF GUIDE RAILS.  
 \* CONDUITS FOR PUMP POWER CABLES, FLOAT CABLES, TRANSDUCER: PLACEMENT SHALL BE DETERMINED BY LOCATION OF CONTROL PANEL, APPROVED BY CITY UTILITY ENGINEER.  
 \* EXPOSED PIPES AND FITTINGS SHALL BE PAINTED PER CITY ENGINEER.

NO.	REVISIONS



City of Naples  
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 14th Avenue North, 13th Avenue North,  
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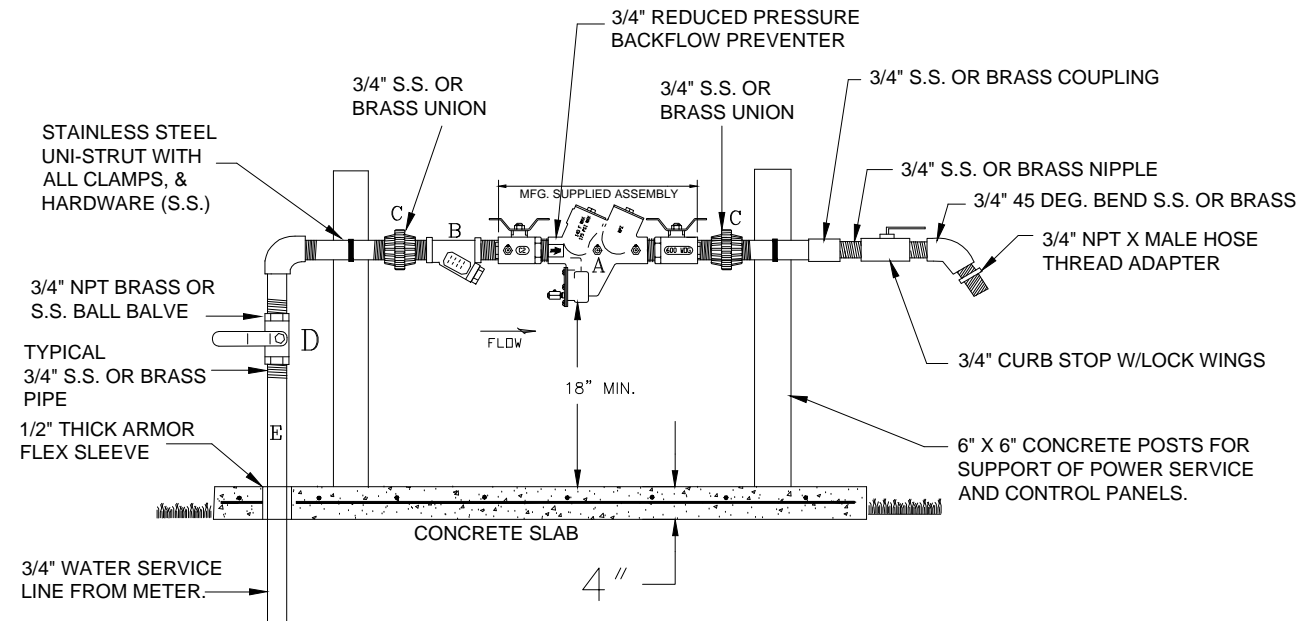
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City of Naples Utilities Standard Details				
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**FLOOD ELEVATION NOTE**  
 25 year flood elevation = 6.4 NGVD  
 (per SFWMD permit number 11-00353-S)  
 100 year flood elevation = 8.3 NGVD (per FEMA map)



**3/4" TO 2"  
 RPBA & WATER SERVICE  
 INSTALLATION FOR A  
 WASTEWATER PUMP STATION**

**GENERAL NOTES FOR INSTALLATION OF  
 REDUCED PRESSURE BACKFLOW ASSEMBLIES (RPBA)**

NOTE \* -TO BE INSTALLED A MINIMUM OF 18" (INCHES) TO A MAXIMUM OF 30" (INCHES) OVER FINAL FINISHED GRADE AS MEASURED TO THE LOWEST POINT OF THE RP ASSEMBLY

-ALL PIPING FOR ASSEMBLY SHALL BE BRASS OR STAINLESS STEEL.  
 -UNPROTECTED CONNECTIONS ARE PROHIBITED BETWEEN BACKFLOW PREVENTER AND METER.

A- REDUCED PRESSURE BACKFLOW ASSEMBLY- HERSEY, WATTS, FEBCO, AMES, WILKINS AND CONBRACO APPROVED FOR USE WITHIN CITY OF NAPLES WATER JURISDICTION.

B - STRAINER

C - UNIONS

D - ISOLATION SHUT OFF VALVES (2), OF BALL VALVE TYPE;

E - SIZES 3/4" TO 2"

-BACKFLOW UNIT REQUIRES INITIAL AND ANNUAL CERTIFICATION BY CERTIFIED TESTER WITH ANNUAL TEST RESULTS SUBMITTED TO THE CITY UTILITY DEPARTMENT.

-ATTACH PIPING AND BACKFLOW TO A STAINLESS STEEL UNI-STRUT WITH STAINLESS STEEL CLAMPS, BOLTS, NUTS, WASHERS, ANCHORS, ETC. (HARDWARE).

**Notes And Specifications**

THIS DETAIL CONSTITUTES MINIMUM STANDARDS. DESIGN ENGINEERS SHALL PROVIDE STANDARDS EQUAL TO OR GREATER THAN THESE.

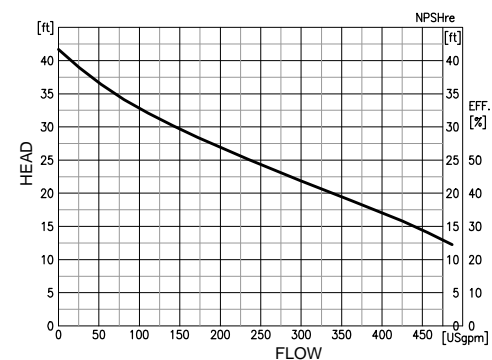
**NOTES:**

- SERIES 316 STAINLESS STEEL SHALL BE USED IN THE WET WELL AND VALVE ASSEMBLY FOR FLANGE, BOLTS, NUTS, BRACKETS, GUIDE RAILS, AND OTHER HARDWARE. CONTROL PANEL STRUCTURE HARDWARE SHALL BE 304 S.S.
- ALL EXTERIOR SURFACES FOR BELOW GROUND STRUCTURES SHALL BE COPPERS, DIE, 300 M COAL TAR EPOXY; HAVING A 34-35% EPOXY RESIN BY WEIGHT, OR ENGINEER OF RECORD APPROVED COATING. TWO COATS WITH A TOTAL DRY FILM THICKNESS OF 18 MILS (MIN). APPLICATION BY SPRAY OR BRUSH.
- CONTRACTOR SHALL FURNISH MASTER PADLOCKS (KEYED ALIKE WITH NUMBER & MODEL PROVIDED BY CITY UTILITY ENGINEER). THERE SHALL BE TWO KEYS PER LOCK PROVIDED. LOCKS SHALL BE PROVIDED FOR ALL: CONTROL & POWER PANELS, WET WELL, AND FENCE GATES.
- ALL CONCRETE SHALL BE TYPE II CEMENT, 3,000 PSI MINIMUM.
- CONTRACTOR SHALL PROVIDE PRECAST STRUCTURES AND SUBMIT SHOP DRAWINGS TO THE CITY UTILITY ENGINEER FOR REVIEW AND APPROVAL. STRUCTURES SHALL BE LIMITED TO 8' 0" MAX SECTIONS OF 8' 0" DIAMETER MINIMUM REINFORCED CONCRETE, IN ACCORDANCE WITH ASTM C-478, WALL THICKNESS, ASTM C-78, WALL 8" MIN., WHENEVER POSSIBLE. NO OPENING SHALL BE WITHIN 12" OF END OF ANY SECTION.
- SEE PUMPING STATION DATA TABLES FOR SPECIFIC ELEVATIONS AND DIAMETERS.
- DISTANCE BETWEEN PUMPS SHALL BE DETERMINED BY MANUFACTURER'S RECOMMENDATIONS OR THE DISTANCE BETWEEN THE DISCHARGE PIPES, WHICHEVER IS GREATER.
- DISCHARGE PIPES SHALL BE PARALLEL TO EACH OTHER.
- DURING INSTALLATION, THE CONTRACTOR SHALL MAINTAIN GROUND WATER ELEVATION BELOW THE BOTTOM OF THE WET WELL, UNTIL FULLY BACKFILLED AND COMPACTED TO AVOID SHIFTING OR FLOTATION.
- ALARM LIGHT SHALL BE 40 WATT INCANDESCENT, RED - IMPACT RESISTANT PLASTIC GLOBE AS DETAILED IN CONTROL PANEL SPECIFICATIONS.
- INSTALLATION OF ACCESS COVER, PUMP ANCHOR BOLTS, GUIDE RAILS/BRACKETS, ETC., SHALL BE COORDINATED WITH THE DETAILS AND SPECIFICATIONS AS RECOMMENDED BY THE PUMP MANUFACTURER.
- THE ELECTRIC SERVICE WIRING TO THE PUMP STATION DISCONNECT SWITCH AND CONTROL PANEL SHALL BE SIZED BY THE ELECTRICAL CONTRACTOR TO PROVIDE A VOLTAGE DROP NOT GREATER THAN 5% OF THE LINE VOLTAGE FROM THE POWER COMPANY, WHEN ALL PUMPS ARE OPERATING AT THEIR MAXIMUM START UP LOAD.
- THE CONTRACTOR SHALL SUBMIT TO THE CITY UTILITY ENGINEER, THE FINAL LOCATIONS OF THE TRANSFORMER AND ELECTRICAL SERVICE CONDUIT.
- ALL ABOVE GROUND PIPING, VALVES, CHECK VALVES, AND FITTINGS SHALL BE PAINTED WITH TWO COATS OF COLOR AND TYPE OF PAINT PROVIDED BY THE CITY ENGINEER.
- THE CONTRACTOR SHALL PROVIDE COMPLETE ELECTRICAL SERVICE. ALL COSTS OF POWER SERVICE, CONNECTION FEES, AND USERS FEES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, UPON FINAL APPROVAL OF THE PUMP STATION BY THE CITY, THE CONTRACTOR SHALL SUBMIT TO THE POWER COMPANY A REQUEST TO TRANSFER THE POWER SERVICE ACCOUNT TO THE CITY OF NAPLES.
- 3/4" X 8" 316 S.S. J-BOLTS THREADED MIN. 4" CW, W/2 NUTS & 2 WASHERS EACH, FOR DISCHARGE ELBOWS, CAST BOLTS INTO BOTTOM GROUT.
- CONTRACTOR SHALL ENSURE THAT THE WET WELL IS LEAK FREE PRIOR TO APPLICATION OF REQUIRED EPOXY LINING SYSTEM. CONTRACTOR TO CONTACT CITY UTILITY ENGINEER FOR CURRENT APPROVED EPOXY LINING SYSTEM.

**PUMP STATION SPECIFICATIONS**

DESCRIPTION	DATA 1	DATA 2	UNITS
NUMBER OF PUMPS	#1	#2	
PUMP MANUFACTURER	FLYGT	FLYGT	
PUMP MODEL NUMBER	CP 3085	CP 3085	
IMPELLER NUMBER	183	183	
TYPE OF PUMP	SUB.	SUB.	
DESIGN CAPACITY PER PUMP	145	145	(GPM)
TOTAL DYNAMIC HEAD	15	15	(TDH)
SHUT OFF HEAD	45	45	(TDH)
DESIGN SPEED	1705	1705	(RPM)
MIN. HORSEPOWER PER PUMP	3	3	(HP)
VOLTS	460	460	(VOLTS)
AMPS	4.5	4.5	(AMPS)
PHASE POWER	3	3	(PH)
PUMP DISCHARGE SIZE	3	3	(INCHES)
RISER PIPE SIZE	3	3	(INCHES)
TOP OF WET WELL ELEV.	6.48	6.48	(FEET)
BIAS HIGH WATER ALARM ELEV.	-6.02	-6.02	(FEET)
HIGH LEVEL PUMP(S) ON ELEV.	-6.52	-6.52	(FEET)
HIGH LEVEL PUMPS OFF ELEV.	-7.02	-7.02	(FEET)
GRAVITY INFLUENT PIPE ELEV.	-5.52	-5.52	(FEET)
LAG PUMP ON ELEV.	-6.52	-6.52	(FEET)
LEAD PUMP ON ELEV.	-7.02	-7.02	(FEET)
PUMPS OFF ELEV.	-9.02	-9.02	(FEET)
BOTTOM OF WET WELL ELEV.	-11.02	-11.02	(FEET)

**Pump Curve**



**BASIS OF DESIGN**

	ADF (GPM)	PHF (GPM)	EDU (1 EDU = 250GPD)
EXISTING	14	58	83
INTERIM	14	58	83
FUTURE	14	58	83

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE:	SEPT 2010	WASTEWATER PUMP STATION
DRAWN:	DAG	NOTES & SPECIFICATIONS
SCALE:	N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FLORIDA, 34102
		SHEET: WW-20
		DIR: WASTEWATER
		DWG. WW-20.DWG

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 15th Street & Bembury Subdivision



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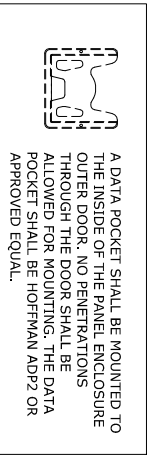
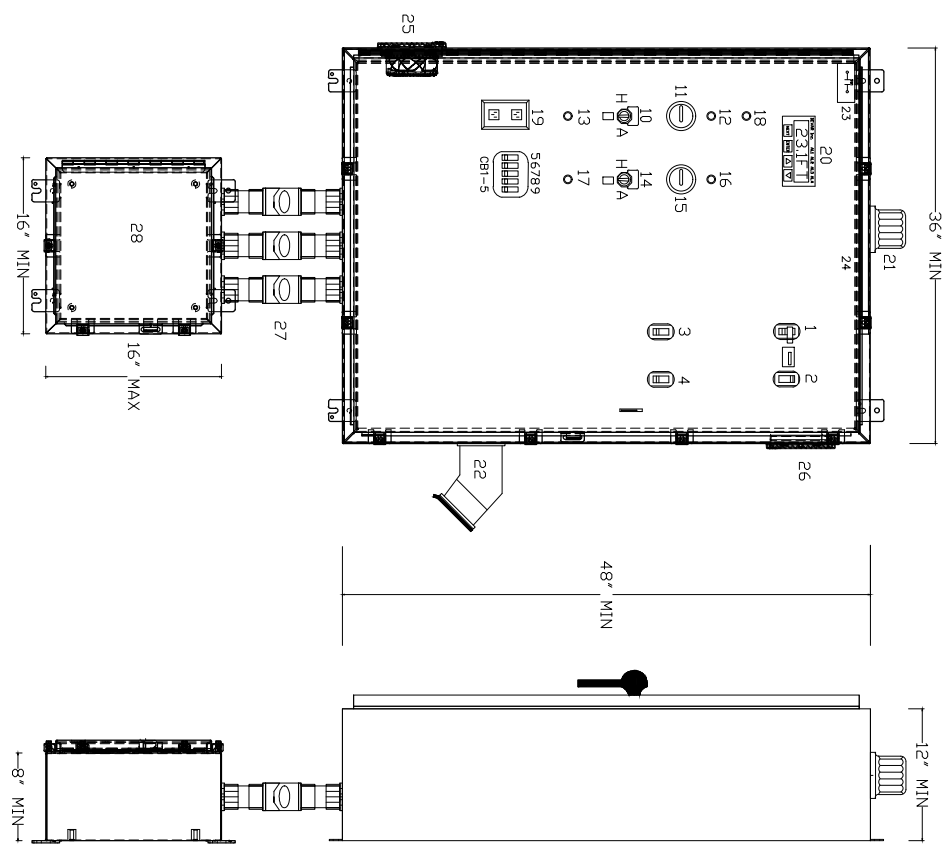
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- 1 - MAIN CIRCUIT BREAKER
- 2 - GENERATOR CIRCUIT BREAKER
- 3 - P-1 MOTOR CIRCUIT BREAKER
- 4 - P-2 MOTOR CIRCUIT BREAKER
- 5 - CB1 CONTROL CIRCUIT BREAKER (15A)
- 6 - CB2 DUPLEX RECEPTACLE C.B. (20A)
- 7 - CB3 LIGHTING CIRCUIT BREAKER (15A)
- 8 - CB4 SPARE CIRCUIT BREAKER (20A)
- 9 - CB5 RTU POWER (15A)
- 10 - P-1 HOA SELECTOR SWITCH
- 11 - P-1 ELAPSED TIME METER
- 12 - P-1 RUN PILOT LIGHT (GREEN)
- 13 - P-1 MOTOR THERMAL ALARM P.L. (RED)

- 14 - P-2 HOA SELECTOR SWITCH
- 15 - P-2 ELAPSED TIME METER
- 16 - P-2 RUN PILOT LIGHT (GREEN)
- 17 - P-2 MOTOR THERMAL ALARM PILOT LIGHT (RED)
- 18 - HIGH LEVEL ALARM PILOT LIGHT (RED)
- 19 - HGCI DUPLEX RECEPTACLE
- 20 - LEVEL PUMP CONTROLLER W/SUBMERSIBLE TRANSDUCER
- 21 - EXTERNAL ALARM LIGHT
- 22 - GENERATOR RECEPTACLE
- 23 - PANEL INTRUSION ALARM SWITCH
- 24 - PANEL CONVENIENCE LIGHT BAR
- 25 - COOLING FAN PACKAGE

- 26 - COOLING EXHAUST PACKAGE
- 27 - PANEL(S) SEAL-OFF ASSEMBLIES
- 28 - JUNCTION BOX



20HP & BELOW: 230VAC-3PH-4W-60HZ ONLY

**KEY NOTES:**

- \* OUTER DOOR HAS BEEN REMOVED FOR CLARITY
- \* PANEL ENCLOSURE SIZE SHALL BE DETERMINED BY PROPER SPACING & CODE REQUIREMENTS OF ALL SPECIFIED COMPONENTS TO BE INSTALLED.
- \* CONFIGURATION MAY VARY, FOR A TYPICAL 10 HP, 460 VAC, 3 PH PANEL, MAINTAINING A 1.5" SEPARATION BETWEEN COMPONENTS & CABLE TRAYS REQUIRES A MINIMUM OF A 36" W X 48" H X 12" D ENCLOSURE.
- \* THE SUB-PANEL DOOR SHALL BE EQUIPPED WITH A WIND (HOLD OPEN) RESTRAINT MECHANISM.
- \* THE PANEL ENCLOSURE SHALL BE SUPPLIED WITH A CONTINUOUS DRIP EDGE.
- \* THE ENCLOSURE SHALL BE ALUMINUM NEMA 3R, 4, OR 12 AS REQUIRED. GASKET SEAL DOORS, A MINIMUM OF A THREE POINT LATCH SYSTEM, LOCKING HASP, AND STAINLESS STEEL HINGES & HARDWARE.
- \* SINGLE DOOR ENCLOSURES SHALL REQUIRE ONE (1) EA INTRUSION DOOR SWITCH, PANEL INTRUSION DOOR MOUNTED. SWITCH SHALL BE CLEANLY AND SECURELY MOUNTED. SWITCH SHALL BE WEATHER RESISTANT, NON-EXPOSED CONTACTS/TERMINALS, IMPACT RESISTANT. SWITCH CAN BE MAGNETIC, MECHANICAL, ETC.
- \* ITEM 23 PANEL CONVENIENCE LIGHT BAR: THE SPECIFIED PORTFOLIO 27" LED LIGHT STRIP SHALL BE MOUNTED BEHIND THE SUB-DOOR AND UNDER THE TOP OF PANEL.

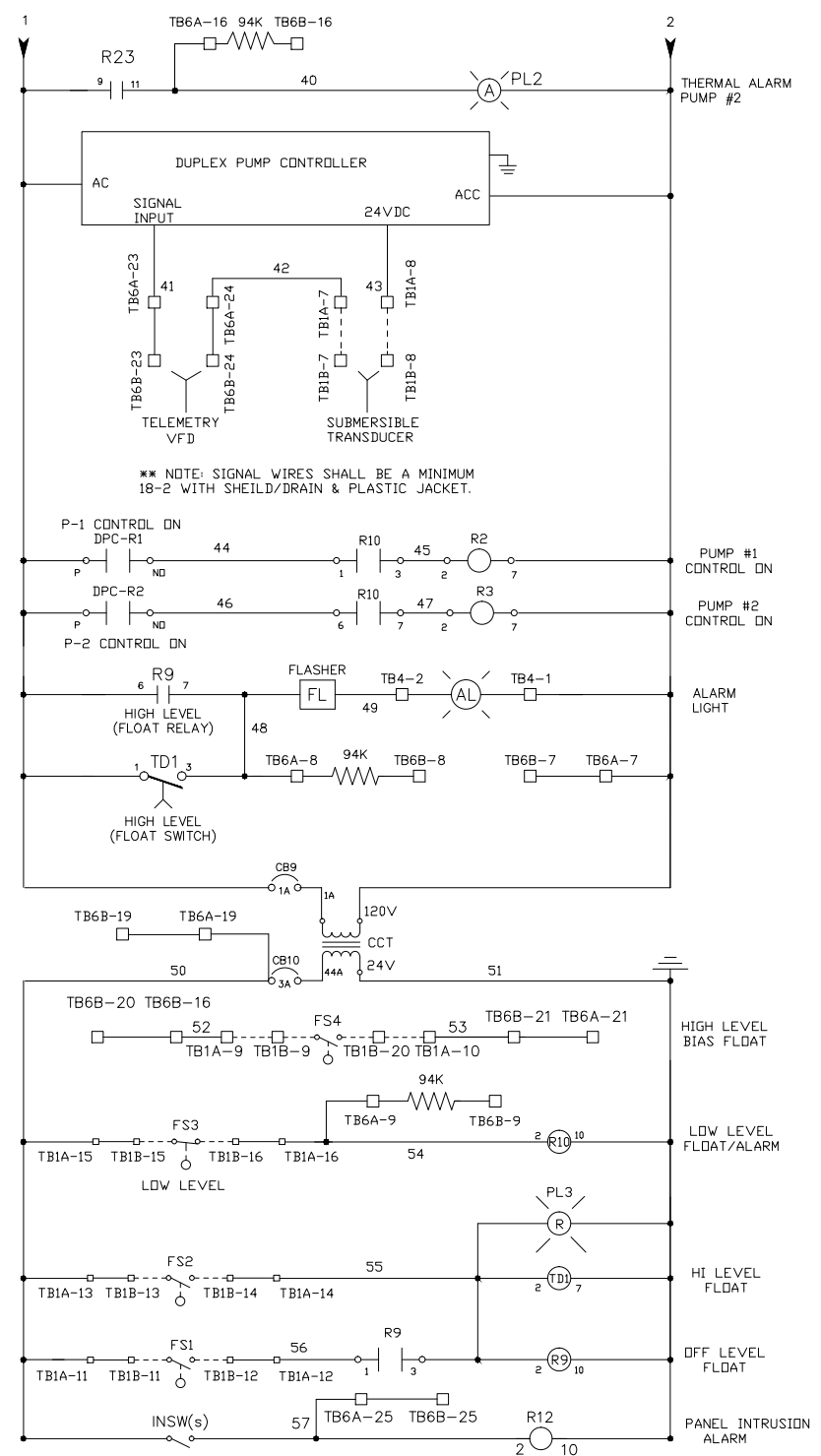
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FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: MAY 2014	DUPLEX PUMP CONTROL PANEL	SHEET: WW-23
DRAWN: DAG	TYPICAL DEAD FRONT PANEL	DIR: WASTEWATER
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FLOIRDA, 34102	DWG. WW-23.DWG

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FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: MAY 2014	DUPLEX PUMP CONTROL PANEL	SHEET: WW-35
DRAWN: DAG	POWER/CONTROL WIRING LAYOUT2	DIR: WASTEWATER
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FLOIRDA, 34102	DWG. WW-35.DWG

ALL WIRES SHALL BE CLEARLY NUMBERED/LABELLED AT EACH CONNECTION/TERMINATION.



DUPLEX: 460VAC-3PH-4W-60HZ ONLY

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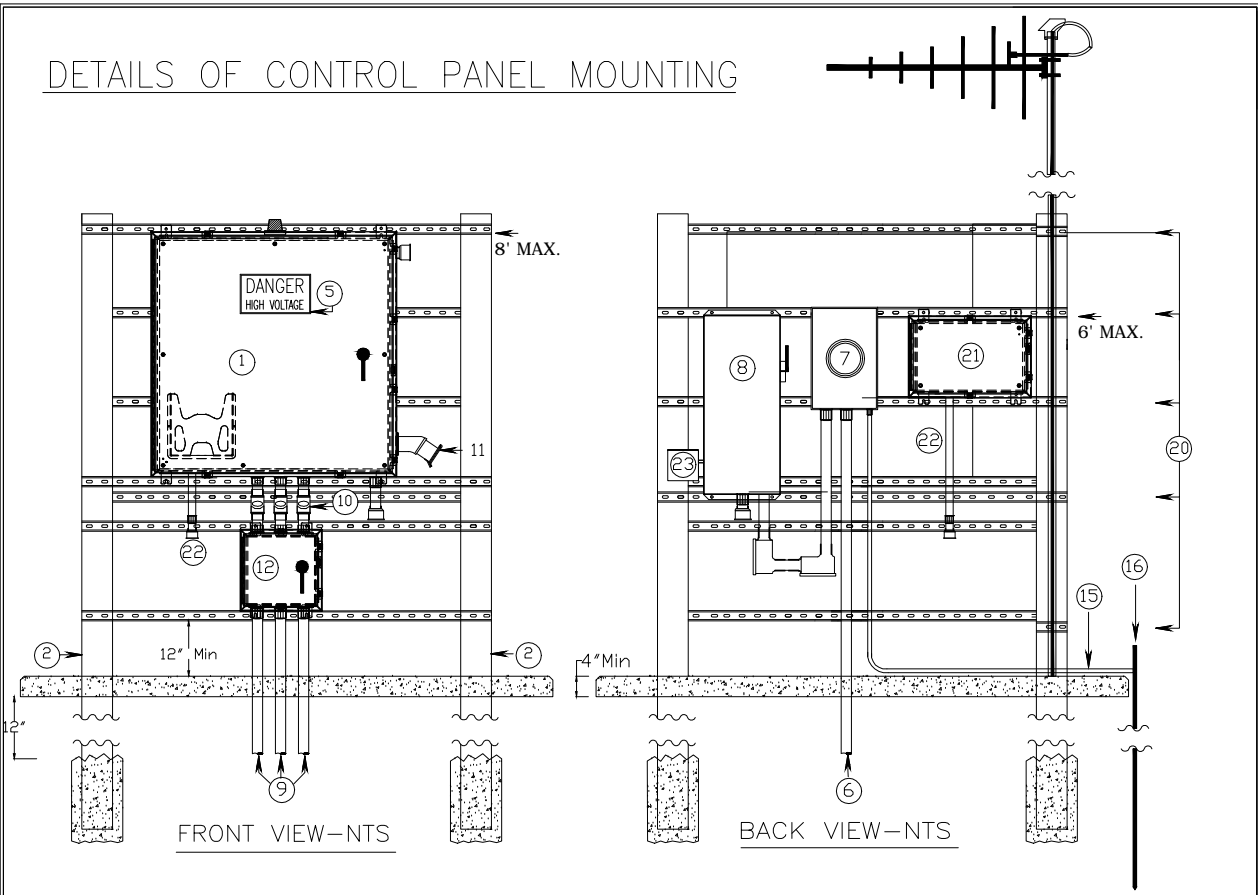
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DETAILS OF CONTROL PANEL MOUNTING



CONTROL PANEL DETAILS & NOTES	
ITEM	DESCRIPTION/NOTES
1	Enclosure ___ x ___ x ___" with aluminum dead-front door & backplate (See Details for Minimum Requirements). Enclosure shall be Type 304 Stainless Steel or Aluminum, NEMA 3, 4, or 4X as required by location, gasketed, continuous hinge, lockable hasp, 3-point latch system, drip edge, and wind restrainer arms for both main door & dead-front door & all hardware to restrain doors in the open position. SS Enclosures shall be utilized for all severe locations, while most locations will require an Aluminum Enclosure. Contact City Utility Engineer for preference.
2	6"x6"x12" long (min) reinforced concrete posts with a minimum of 4' buried. Posts shall be anchored in concrete from 3' below bottom of post, to one foot below finished grade. Posts shall be true and smooth.
3	All enclosures, conduits, and associated equipment shall be mounted to Type 304 Stainless Steel H - 1 7/8" channel strut as supplied by B-Line Systems or approved equal. All mounting hardware shall be type 304 Stainless Steel (Nuts, Bolts, Washers, etc.) (Anchors shall be a minimum of 3/8" x 2 3/4" Wedgit or approved equal).
4	All structural and/or components of the control panel installation shall be as specified herein or Approved Equal. All electrical components shall be in accordance with NEC latest revision. Any local electrical codes in conflict with the detail shown, shall be resolved by the Electrical Contractor/Engineer, with the Approval of the City Utility Engineer, prior to construction.
5	Plastic Warning Label stating "DANGER HIGH VOLTAGE" (to OSHA Standards) shall be supplied and mounted on the outer door of the Control Panel by means of weather-proof adhesive or cement.
6	A ___ Volt, 60Hz, 3 Phase, 4 Wire underground power supply (CU Only) ___ # of conductors ___ wire gauge; in 2" Min. SCH 80 PVC Conduit, to be extended to the FPL Hand-Hole Box (not to exceed 100' from meter can) by the contractor. Contractor shall be responsible for providing FPL Drop and Hand Hole.
7	Service Meter Can shall be furnished by the Contractor.
8	A ___ Amp, Fused Safety Disconnect Switch in Nema 3, 4, or 4X (As Required) Stainless Steel Enclosure with handle locking plate. Power Supply to control panel shall exit through underside of the switch. The disconnect switch shall have a hinged door, lockable, quick release latch.
9	2" Min. SCH 80 PVC conduit for pump power cables and control cables. Cables shall be continuous from pump/sensors to J-Box. No splices allowed.
10	"WYE" Explosion Proof Seals - Cast Aluminum, Min. 2", 3 Min Required. Seals shall be supplied with epoxy sealant kits recommended by MFG. Supply Myers Hubs at panel and j-box, and AL or SS threaded nipples for each unit.

CONTROL PANEL DETAILS & NOTES	
ITEM	DESCRIPTION/NOTES
11	Generator receptacle shall be 100% compatible with Utilities Emergency Generators. Contact Utility Engineer for correct unit.
12	NEMA 3, 4, or 4X Stainless Steel or Aluminum junction box, with 3 point latching system, hinged/lockable/gasketed cover, & back-plate. Min. size 18"x18"x8" I.D.
13	An Anti-Corrosion material shall be placed on electrical connections.
14	Copper conductors from panel to J-Box shall be color coded and one wire size larger than required by pump manufacturer.
15	#4 wire ground in 3/4" SCHD 80 PVC conduit to ground rod. Install two ground rods with 6' separation, connect with brass compression connectors. Not to be installed in concrete slabs.
16	Install 2 - 3/4" x 10' I.D. Copper-Clad ground rods, 6' separation.
17	Schedule 80 PVC (as required by Code) conduit, sized per loads.
18	PVC Type LB Slip Fittings with gasketed PVC screw-down covers.
19	Contractor shall install proper holes, fittings, and sealants to suit required piping.
20	The Antenna pipe shall be mounted and secured to the stainless steel strut, at a minimum of four (4) points, as shown on drawing.
21	DATA-FLOW System RTU 005 TAC II Unit to be installed by authorized personnel only. The system shall be the latest version, include: Cabinet, power supply, RIM/Radio, Monitor & Control Modules, Analog Module (Min. 4 in, 2 out [4-20mA]), Antenna Pole (21" x 1 1/2" galvanized rigid pipe with Rain Cap, threaded Tee), Antenna, Coax, fittings, all hardware required, installation, and startup services.
22	125' PVC SCH 80 Conduit for RTU interface wires. SCHEMATIC SHOWN IS BASED ON 460/230 VOLT, 3 PHASE, 5 WIRE PRIMARY POWER SOURCE. PANEL SCHEMATIC, SHOP DRAWINGS INCLUDE: PANEL LAYOUT, SCHEMATICS, AND COMPLETE PARTS LISTS, SHALL BE SUBMITTED TO THE CITY OF NAPLES UTILITIES ENGINEER FOR REVIEW & APPROVAL, PRIOR TO PANEL CONSTRUCTION. ALL PANEL MANUFACTURER'S MUST CONTACT THE UTILITY ENGINEER FOR DEMONSTRATION OF PRODUCT AND QUALIFICATIONS FOR APPROVAL STATUS.
23	SOD/SCHNEIDER ELECTRIC PANEL SURGE SUPPRESSOR #SDSA3650 FOUR (4) SETS OF CONTROL PANEL AS-BUILT DRAWINGS SHALL BE SUPPLIED DURING START-UP OPERATIONS.
THE PANEL MANUFACTURER SHALL SUPPLY THE CITY THE AS-BUILT DRAWINGS ON A CD IN DWG 2004 FORMAT AT STARTUP.	

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: FEB. 2011	WASTEWATER PUMP STATION	SHEET: WW-15
DRAWN: JAF/DAG	CONTROL PANEL MOUNTING	DIR: WASTEWATER
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FLORIDA, 34102	DWG. WW-15.DWG

Part No	Qty	TAG LABEL	DESC
AAE-AE01L	8	R2,3,4,5,6,7,11,21	Control Relay 115 Vac 8 Pin. with Lamp Indicator
AAE-AE04L	3	R9,10,12	Control Relay 24 Vac 11 Pin. with Lamp Indicator
AAE-AE01L	2	R13,23	Control Relay 115 Vac 11 Pin. with Lamp Indicator
FS127	1	FL	Seac Flasher 120 Vac, 90 Fph
PF083E	9	R2,3,4,5,6,7,11,21,TD1	8 Pin Round Relay Base
PF113A	5	R9,10,12,13,23	11 Pin Round Relay Base
GE1A-C10HAD24	1	TD1	Time Delay Relay, adjustable, 24 Vac
SLA-440ALE	1	PM	Phase Monitor, 8 Pin Plug in Type (460VAC, 3 POLE) DIVERSIFIED
480-2079-ND	2	ETM1 & 2	Hour Meter
9080L BA362101	1	NEU	AB Power Block 1 Pole
9080L BA362104	1	PB1	Power Block, 1IN 4 OUT
LRX-40	1	AL	Alarm Light Red
9001-SKP38A9	2	PL1,2	SOD Pilot Light120VAC Amber Lens Corrosion Resistant Plastic
9001-SK343BH1	2	SS1,2	SOD 3 Pos. Selector SW. with Contacts on Both Side, Cam C.
9001-SKP38G9	2	RL1,2	SOD Pilot Light 120VAC Green Lens corrosion resistant plastic.
9001-SKP38R9	1	PL3	SOD Pilot Light 24VAC, Red Lens corrosion resistant plastic.
9070150D23	1	CCT	SOD 50VA Transformer 120V/24VAC.
907013000D1	1	CCT	SOD Control Power Transformer 3kva min 460V/120VAC.
HDL36-___	2	PCB1,2	SOD MOTOR Breaker 3 Pole ___ Amp, 600 Vac Rating (SIZED FOR SPECIFIED HP)
HDL36-___	2	MOB, ECB	SOD MAIN/GEN Breaker 3 Pole ___ Amp, 600VAC Rating (SIZED FOR FULL LOAD RATING)
ODU15	2	CB1,CB3	SOD Breaker 1 Pole 15 Amps 120/240 Vac
ODU20	2	CB2,CB4	SOD Breaker 1 Pole 20 Amps 120/240 Vac
TE04XCS104X	1	LA	ADVANCED PROTECTION TECHNOLOGIES Lighting Arrestor 460VAC 3 PH
PAS2091V	1	DR	Receptacle 20 Amps
IJH2E	1	TST	FAN THERMOSTAT (DAVT10N)
3020-4	1	DLP, C	Devor Controller
04070010202130913	1	PT	KELLER AMERICA SUBMERSIBLE TRANSDUCER: 0-15PSIG, 10-28VDC IN, 4-20mA OUT, 40' CABLE
C4100R9V	1	GR	Hubbel 100 Amp Generator Receptacle with angle BBI002V
ATV312-___	2	VFD, L2	VFD ALTI/VAR312 ___HP 460VAC BY SOD. (RATED FOR SPECIFIED HP)
1492-EBJ3	AR	TB1A,1B,6A,6B,4	Terminal Blocks end barrier.
ABIABBM35	AR	TBEC	Terminal Blocks end clamp.
9080L BA362101	1	PTB1	1 pole Multi-Tap Power Terminal Block by SOD.
282-91K-RC	10	RES	Resistor 94K OHM 2 watts
MG2410	1	CB6	Phase Monitor Circuit Breaker 3 poles 1 Amps.
MG24526	1	CB7	CPT Line Circuit Breaker 2 poles 25 Amps.
MG17427	1	CB8	CPT Load Circuit Breaker 1 pole 30 Amps.
MG24500	1	CB9	CPT Line Circuit Breaker 1 pole 1 Amp.
MG24502	1	CB10	CCT Line Circuit Breaker 1 pole 3 Amps.
K2A25U	4	GRDL	Double Ground Lug.
___	1	ENC	Nema 3E, DR 12 enclosure 48"Hx38"Wx12"D MIN wall mount w/hold open arms, AL subpanel.
___	1	J-BOX	J-Box Nema 3,4, DR 4X enclosure 16"Hx16"Wx8"D Hinged & gasketed, AL subpanel.
___	6	EYE INSTALL	1 1/2" MIN ALUMINUM DR /SS close nipples PER UTILITY STANDARDS.
EY150	6	EYE INSTALL	1 1/2" MIN MYERS HUBS TO BOTH ENCLOSURES.
29125	3	LTB	CAST ALUMINUM Vertical sealing fitting 1 1/2" MIN
TFP61	1	FAN	PORTFOLIO LED LIGHT BAR
TEP6	1	EXH	6" COOLING FAN ASSM. (HOFFMAN)
AS REQUIRED	1	ALL	ALL DIN RAIL, SCREWS, BOLTS, NUTS, SEALANTS, ADHESIVES, AND MISC. HARDWARE AND SUPPLIES NECESSARY FOR JOB.

FOR:	UTILITIES DEPARTMENT	CITY OF NAPLES
DATE: MAY 2014	DUPLEX PUMP CONTROL PANEL	SHEET: WW-38
DRAWN: DAG	SCHEDULE OF MATERIALS	DIR: WASTEWATER
SCALE: N.T.S.	380 RIVERSIDE CIRCLE, NAPLES, FLOIRDA, 34102	DWG. WW-38.DWG

PANEL MANUFACTURER MUST PROVIDE SUBMITTALS FOR ALL MATERIALS AND COMPONENTS TO BE UTILIZED FOR THIS PROJECT BEFORE ANY ASSEMBLY IS INITIATED. THE CITY RESERVES THE RIGHT TO REFLECT ANY AND ALL MATERIAL OR COMPONENT NOT MEETING STANDARDS.

THIS DRAWING CONTAINS DETAILS DESIGNED BY, STANDARD TO, AND FURNISHED BY City of Naples Utilities. SAID DETAILS WERE NOT DESIGNED BY JOHNSON ENGINEERING, BUT HAVE BEEN REVIEWED BY JOHNSON ENGINEERING AND ARE ACCEPTABLE FOR USE ON THIS PROJECT.

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NO.	REVISIONS

City of Naples  
Construction Plans for Utility Upgrades  
14th Avenue North, 13th Avenue North,  
15th Street & Bemby Subdivision

**JOHNSON ENGINEERING**  
2122 JOHNSON STREET  
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FAX (239) 334-3661  
E.B. #642 & L.B. #642

City of Naples Utilities  
Standard Details

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
Sep. 10, 2014	20108336	34-49-25	As Shown	D8