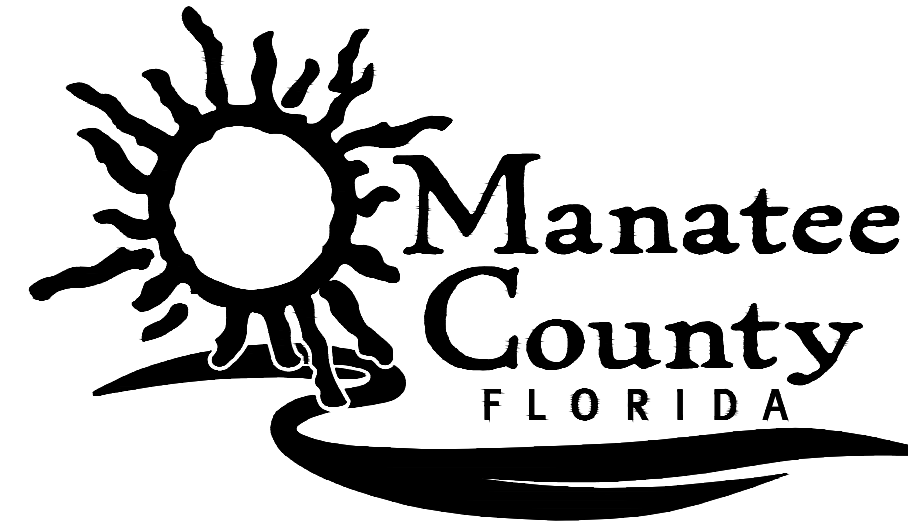


# CONSTRUCTION PLANS FOR FORCE MAIN 13A REPLACEMENT

MANATEE COUNTY, FLORIDA

AUGUST 2016

MANATEE COUNTY PROJECT #6049181



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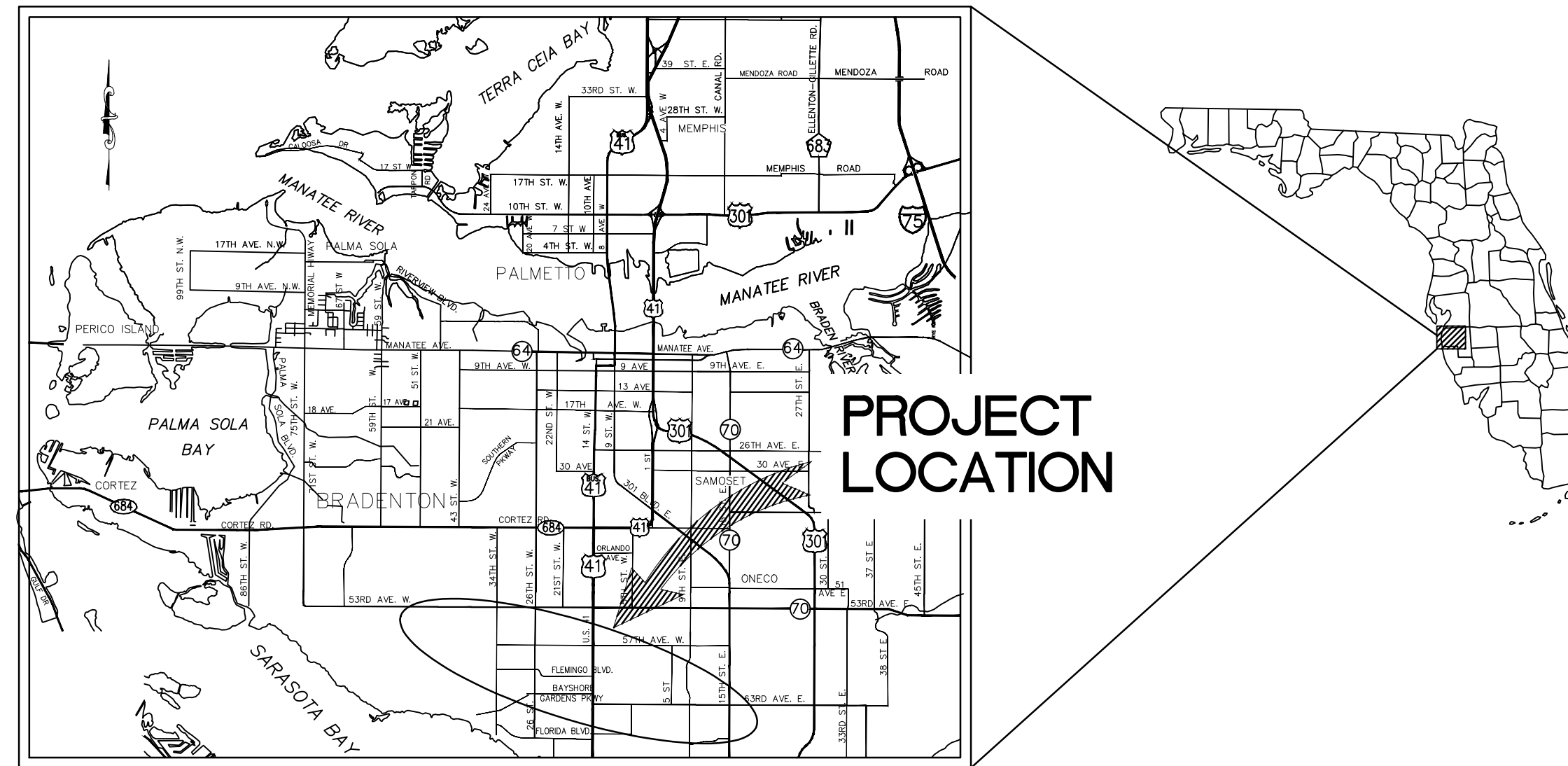
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PROJECT VICINITY MAP  
N.T.S.

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THE SITE CONSTRUCTION STAKEOUT SHALL BE PERFORMED UNDER THE DIRECTION OF A FLORIDA REGISTERED SURVEYOR. AUTOCAD FILES WILL BE FURNISHED TO AID IN THE SITE CONSTRUCTION STAKEOUT. ANY DISCREPANCIES FOUND BETWEEN AUTOCAD FILES AND SITE CONSTRUCTION PLANS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR CLARIFICATION PRIOR TO THAT STAKEOUT.

PREPARED BY  
**Kimley»Horn**

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No.	REVISIONS	DATE	BY

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JORDAN W. WALKER, P.E.  
FLORIDA LICENSE NUMBER:  
78652  
DATE:

DATE  
AUGUST 2016  
PROJECT NO.  
148400011  
SHEET NUMBER  
01

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GENERAL

- 1. ALL CONSTRUCTION ACTIVITIES SHALL BE COORDINATED WITH THE PROJECT MANAGEMENT DIVISION. THE PROJECT MANAGER IS MIKE STURM, P.E. AND CAN BE REACHED AT (941) 708-7450 X7332.
2. SITE VISITS ARE MANDATORY FOR ALL BIDDERS. THESE SITE VISITS CAN BE ARRANGED THROUGH THE PROJECT MANAGER.
3. ALL CONSTRUCTION ON THIS PROJECT SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF MANATEE COUNTY UTILITY AND TRANSPORTATION STANDARDS AND/OR FDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" UNLESS OTHERWISE INDICATED ON THE PLANS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL CONDITIONS AND REQUIREMENTS OF ALL PERMITS AND ALL GOVERNING FEDERAL, STATE, AND LOCAL AGENCIES. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS THAT ARE NOT PROVIDED IN THE BID DOCUMENTS, AT NO ADDITIONAL COST TO THE OWNER.
5. THE INFORMATION PROVIDED IN THESE PLANS IS SOLELY TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF THE CONDITIONS WHICH MAY BE ENCOUNTERED DURING THE COURSE OF WORK. ALL CONTRACTORS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT WHATEVER INVESTIGATION THEY MAY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSIONS REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED, AND UPON WHICH THEIR BIDS WILL BE BASED.
6. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS ON THE PLANS AND REVIEW ALL FIELD CONDITIONS THAT MAY AFFECT CONSTRUCTION. SHOULD DISCREPANCIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO OBTAIN THE ENGINEER'S CLARIFICATION BEFORE COMMENCING WITH CONSTRUCTION.
7. THE CONTRACTOR SHALL NOTIFY SUNSHINE 811 (1-800-432-4770) AT LEAST 2 FULL BUSINESS DAYS PRIOR TO CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL UTILITIES FOR THE POSSIBLE RELOCATION OR THE TEMPORARY MOVEMENT OF ANY EXISTING UTILITIES WITHIN THE RIGHTS-OF-WAY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT EXISTING UTILITIES FROM DAMAGE. EXPLORATORY EXCAVATION MAY BE REQUIRED PRIOR TO CONNECTION TO EXISTING UTILITIES.
8. NO WORK, EXCEPT FOR EMERGENCY TYPE, SHALL BE PERFORMED AFTER 7:00 PM AND BEFORE 7:00 AM. FOR ADDITIONAL PROJECT RESTRAINTS, REFER TO SECTION 01310 OF THE SPECIFICATIONS.
9. THE CONTRACTOR SHALL PROVIDE CERTIFIED RECORD DRAWINGS AS OUTLINED IN THE SPECIFICATIONS. RED-LINE DRAWINGS SHALL BE CURRENT WITH EACH PAY APPLICATION SUBMITTED AND WILL BE CHECKED AS PART OF THE PAY APPLICATION REVIEW PROCESS. PAYMENT WILL NOT BE MADE TO CONTRACTOR WITHOUT APPROVED RED-LINE DRAWINGS. THE MOST CURRENT SET OF RED-LINE DRAWINGS SHALL ALSO BE BROUGHT TO EACH MONTHLY PROGRESS MEETING.
10. THE CONTRACTOR SHALL INCLUDE IN HIS BID: BY-PASS PUMPING FACILITIES, PUMPS, FITTINGS, LABOR, ETC. AS NECESSARY, BASED ON METHOD AND SEQUENCE OF CONSTRUCTION TO COMPLETE ALL WORK WHILE MAINTAINING SEWER SERVICE OPERATIONS AT ALL TIMES.
11. THE CONTRACTOR SHALL PROVIDE THE OWNER AND ENGINEER WITH A DETAILED CONSTRUCTION PHASING PLAN BASED ON THE CONNECTION SEQUENCING BELOW, FOR APPROVAL PRIOR TO BEGINNING CONSTRUCTION. EXISTING FORCE MAIN 13A SHALL REMAIN IN SERVICE UNTIL ALL CONNECTIONS TO THE PROPOSED FORCE MAIN ARE CONSTRUCTED.
12. ALL PROPOSED WORK SHALL BE COORDINATED WITH MANATEE COUNTY UTILITIES DEPARTMENT AT LEAST TWO WEEKS IN ADVANCE OF PROPOSED CONSTRUCTION.
13. THE CONTRACTOR SHALL FURNISH SHOP DRAWINGS TO THE ENGINEER FOR REVIEW OF ALL PIPE CONNECTIONS, TRANSITIONS, AND SPECIAL APPURTENANCES PRIOR TO FABRICATION OR DELIVERY TO THE JOB SITE.
14. UNLESS OTHERWISE INDICATED OR APPROVED, ALL BELOW GROUND DUCTILE IRON PIPE SHALL HAVE PUSH-ON OR MECHANICAL JOINTS, AND ALL ABOVE GROUND DUCTILE IRON PIPE SHALL HAVE FLANGED JOINTS. ALL JOINTS SHALL BE FULLY RESTRAINED. CONTRACTOR TO FULLY RESTRAIN EXISTING PIPE AT TIE-IN LOCATIONS OF NEW PIPE PER THE DETAILS IN THESE PLANS.
15. SANITARY SEWERS AND FORCEMAIN CROSSINGS OVER OR UNDER WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18" BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER OR FORCE MAIN PIPE JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING WITH NO LESS THAN 10" BETWEEN ANY TWO JOINTS. AS AN ALTERNATIVE, THE SEWER OR FORCE MAIN MAY BE PLACED IN A WATERTIGHT CASING PIPE, CONSISTENT WITH F.A.C. RULE 62-555.314.
16. ALL BELOW-GRADE FITTINGS 4-INCHES AND GREATER IN DIAMETER SHALL BE MECHANICAL JOINT DUCTILE IRON WITH FACTORY APPLIED, PROTECTO 401 EPOXY COATINGS FOR THEIR INTERIOR SURFACES AND COAL TAR ENAMEL COATING ON EXTERIOR SURFACES, AS NOTED IN SECTION 02815 OF SPECIFICATIONS.
17. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO SECURE PROPERTY FOR STAGING MATERIALS AND EQUIPMENT.
SAFETY
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE FLORIDA TRENCH SAFETY ACT, 90-96, LAWS OF FLORIDA EFFECTIVE OCTOBER 1, 1990 AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION EXCAVATION SAFETY STANDARDS, 29 CFR 1926.650, SUBPART P, AS AMENDED. THE CONTRACTOR SHALL INCLUDE IN THE TOTAL BID PRICE ALL COSTS FOR COMPLIANCE WITH THESE REGULATIONS.
19. THE CONTRACTOR SHALL USE SHEET PILING, SHEETING, BRACING, ETC., AS REQUIRED IN ALL EXCAVATION AREAS AND CONFORM TO ALL OSHA REQUIREMENTS.
20. THE CONTRACTOR SHALL USE ALL NECESSARY SAFETY PRECAUTIONS TO AVOID CONTACT WITH OVERHEAD AND UNDERGROUND UTILITIES, POWER LINES, ETC.
21. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. THIS EXCLUSION DOES NOT ALLEVIATE THE CONTRACTOR FOR PROVIDING A CONTINUOUS SAFE WORKSPACE.
ENVIRONMENTAL
22. WHEN A BENTONITE SPILL OR FRACK-OUT OCCURS OR THERE IS A LOSS OF RETURN INDICATING EXCESSIVE SEEPAGE OR LOSS OF DRILLING FLUID, DRILLING MUST BE STOPPED UNTIL THE LOCATION OF THE SPILL IS IDENTIFIED. UNDER NO CIRCUMSTANCES WILL DRILLING CONTINUE WHEN A SPILL IS APPARENT.
23. ONCE LOCATED, THE BENTONITE SPILL MUST BE ISOLATED AND SEEPAGE INTO ANY NEARBY WATER BODIES WILL BE BLOCKED DEPENDING ON THE DEGREE OF THE SPILL. THE ISOLATED BENTONITE MUST BE REMOVED MANUALLY OR MECHANICALLY AND DISPOSED OF BY APPROPRIATE MEANS OR REUSED.
24. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY STORM WATER, EROSION, AND SEDIMENTATION CONTROL MEASURES IN ACCORDANCE WITH THE FDEP "FLORIDA STORM WATER, EROSION AND SEDIMENTATION CONTROL INSPECTOR'S MANUAL". IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTROL AND PREVENT EROSION AND TRANSPORT OF SEDIMENT TO SURFACE DRAINS AND TO DITCHES DURING CONSTRUCTION.
25. STOCKPILES SHALL BE PROTECTED AT ALL TIMES BY ON-SITE DRAINAGE CONTROLS WHICH PREVENT EROSION OF THE STOCKPILED MATERIAL. CONTROL OF DUST FROM SUCH STOCKPILES IS REQUIRED, DEPENDING UPON THEIR LOCATION AND THE EXPECTED LENGTH OF TIME THE STOCKPILES WILL BE PRESENT. IN NO CASE SHALL ANY STOCKPILED MATERIAL REMAIN AFTER THIRTY (30) CALENDAR DAYS.
26. STORM WATER INLETS IN THE VICINITY OF THE PROJECT SHALL BE PROTECTED BY SEDIMENT TRAPS SUCH AS SECURED HAY BALES, SOD, STONE, ETC., WHICH SHALL BE MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS, AND WHICH MUST BE APPROVED BY THE ENGINEER BEFORE INSTALLATION. THIS WILL BE MAINTAINED TO PREVENT DEGRADATION OF THE WATERS OF THE COUNTY AND STATE.
27. SEDIMENT BASINS AND TRAPS, PERIMETER BERMS, SEDIMENT BARRIERS, VEGETATIVE BUFFERS, AND OTHER MEASURES INTENDED TO TRAP SEDIMENT AND/OR PREVENT THE TRANSPORT OF SEDIMENT ON ADJACENT PROPERTIES, OR INTO EXISTING BODIES OF WATER, MUST BE INSTALLED, CONSTRUCTED, OR IN THE CASE OF VEGETATIVE BUFFERS, PROTECTED FROM DISTURBANCE AS A FIRST STEP IN THE LAND ALTERATION PROCESS. SUCH SYSTEMS SHALL BE FULLY OPERATIVE BEFORE ANY OTHER DISTURBANCE OF THE SITE BEGINS. EARTHEN STRUCTURES INCLUDING BUT NOT LIMITED TO BERMS, EARTH FILTERS, DAMS OR DIKES SHALL BE STABILIZED AND PROTECTED FROM DRAINAGE DAMAGE OR EROSION WITHIN ONE (1) WEEK OF INSTALLATION.
28. ALL SWALES, DITCHES, AND CHANNELS LEADING FROM THE SITE SHALL BE PROTECTED FROM SILTATION AND EROSION DURING CONSTRUCTION AND BE SODDED WITHIN THREE (3) DAYS OF CONSTRUCTION.
29. SOIL DISPLACED BY CONSTRUCTION WILL BE REMOVED. EROSION CONTROL SHALL BE IMPLEMENTED IN AREAS WHICH ARE CONSIDERED ENVIRONMENTALLY SENSITIVE. EROSION CONTROL SYSTEMS SHALL BE REQUIRED FOR ALL WORK WITHIN JURISDICTIONAL AREAS. THESE SYSTEMS MAY INCLUDE STAKED HAY BALES, SILT SCREENS, FILTER FABRIC, AND TURBIDITY SCREENS.
30. ALL EROSION AND POLLUTION CONTROL DEVICES SHALL BE CHECKED REGULARLY, ESPECIALLY AFTER EACH RAINFALL AND SHALL BE CLEANED OUT AND/OR REPAIRED AS REQUIRED.
31. THE CONTRACTOR SHALL NOT ENTER UPON OR IN ANY WAY ALTER WETLAND AREAS THAT MAY BE ON OR NEAR THE CONSTRUCTION SITE. ALL WORK IN THE VICINITY OF OPEN WATER AND/OR WETLANDS IS TO BE PERFORMED IN COMPLIANCE WITH THE ENVIRONMENTAL REGULATIONS AND/OR PERMITS FOR THE SITE. THE CONTRACTOR WILL BE

- RESPONSIBLE FOR ANY FINES RESULTING FROM HIS VIOLATION OF ANY REGULATIONS OR PERMIT CONDITIONS.
31. CONTRACTOR SHALL PROVIDE PROTECTIVE MATTING, FUEL CONTAINMENT AND ALL OTHER MATERIALS, EQUIPMENT AND LABOR TO PROTECT THE STAGING AREA DURING CONSTRUCTION.
32. CONTRACTOR SHALL, PRIOR TO BEGINNING CONSTRUCTION, SUBMIT A "FUELING SPILL PREVENTION PLAN" THAT SHALL CLEARLY INDICATE HOW FUEL SPILLS WILL BE PREVENTED WHEN FUELING BOTH WITHIN AND OUTSIDE OF THE STAGING AREA.
RIGHT-OF-WAY
33. ALL CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO WITHIN THE MANATEE COUNTY/FDOT RIGHT-OF-WAY AND/OR EASEMENTS SHOWN ON THE DRAWINGS.
34. THE CONTRACTOR SHALL EMPLOY A LAND SURVEYOR REGISTERED IN THE STATE OF FLORIDA TO REFERENCE AND RESTORE PROPERTY CORNER MONUMENTS, PINS, AND LANDMARKS THAT MAY BE DISTURBED BY CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.
35. THE CONTRACTOR, PRIOR TO CONSTRUCTION AND RESTRICTING ANY TRAFFIC, MUST OBTAIN A RIGHTS-OF-WAY USE PERMIT AND A TRAFFIC CONTROL PLAN. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FROM OTHER GOVERNMENTAL AGENCIES HAVING RELEVANT JURISDICTION. ALL MAINTENANCE AND PROTECTION OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE CURRENT FLORIDA DEPARTMENT OF TRANSPORTATION "MANUAL OF TRAFFIC CONTROL AND SAFE PRACTICES". A TRAFFIC CONTROL PLAN SHALL BE SUPPLIED BY THE CONTRACTOR AT THE PRE-CONSTRUCTION MEETING.
36. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ALL DAMAGED STORM WATER STRUCTURES, PIPING, ENTRANCE PIPE AND HEADWALLS WHETHER SHOWN ON THE PLANS OR NOT. THE HEADWALLS SHALL BE REPLACED IN ACCORDANCE WITH F.D.O.T. STANDARDS.
37. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH IN THE FIELD THE RIGHT-OF-WAY LINES, BASE LINES, BENCH MARKS (ELEV.), CENTER LINES, AND STATIONINGS AS REQUIRED TO CONSTRUCT THIS PROJECT.
38. THE CONTRACTOR SHALL COORDINATE THE CUTTING OF DRIVEWAYS WITH THE PROPERTY OWNER PRIOR TO CUT. ALL DRIVEWAYS WILL BE IN PASSABLE CONDITION AT THE END OF THE WORK DAY AND FULLY RESTORED PER SECTION 02575.
39. A RIGHT OF ENTRY AGREEMENT SHALL BE OBTAINED BY THE PROJECT MANAGER FROM THE PROPERTY OWNER BEFORE ANY DRIVEWAY CONSTRUCTION WORK IS DONE OUTSIDE OF THE RIGHT-OF-WAY OR EASEMENT.
UTILITIES
40. LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES AND OTHER FEATURES ARE SHOWN TO THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THERE MAY BE OTHER IMPROVEMENTS, UTILITIES, ETC. WHICH ARE WITHIN THE PROJECT AREA AND WHICH HAVE NOT BEEN LOCATED OR IDENTIFIED, MAY NOT BE IN THE EXACT LOCATION SHOWN OR RELOCATED SINCE THE PREPARATION OF THESE PLANS. THE CONTRACTOR SHALL VERIFY, PRIOR TO CONSTRUCTION, THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES STRUCTURES AND OTHER FEATURES (WHETHER OR NOT SHOWN ON THE PLANS) THAT MAY AFFECT HIS WORK. ALL EXISTING UTILITIES TO BE EXTENDED, CROSSED OR CONNECTION POINTS SHALL BE EXPOSED PRIOR TO CONSTRUCTION TO VERIFY LOCATION AND ELEVATION. ANY DISCREPANCIES OR CONFLICTS FOUND SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR RESOLUTION.
41. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, WATER AND SEWER LINES, STORM DRAINS, UTILITIES, DRIVEWAYS, SIDEWALKS, FENCES, TREES, LANDSCAPING, AND ANY OTHER IMPROVEMENT OR FACILITY IN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ANY DAMAGED ITEM DUE TO HIS CONSTRUCTION ACTIVITIES TO EQUAL OR BETTER THAN PRE-CONSTRUCTION CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
42. THE CONTRACTOR SHALL USE APPROPRIATE TECHNIQUES, AS APPROVED, RECOMMENDED OR OFFERED BY FLORIDA POWER AND LIGHT TO PREVENT UNDERMINING OF POWER POLES DURING CONSTRUCTION. IF HOLDING OF POWER POLES IS RECOMMENDED OR REQUIRED BY THE UTILITY, THE CONTRACTOR SHALL COORDINATE THIS ACTIVITY WITH THE UTILITY AND BEAR ALL RELATED COSTS.
43. ANY TEMPORARY SHUTDOWNS FOR MODIFICATIONS OF EXISTING UTILITY SYSTEMS THAT MUST REMAIN IN SERVICE DURING CONSTRUCTIONS SHALL BE KEPT TO A MINIMUM AND SHALL BE COORDINATED WITH AND APPROVED BY THE MANATEE COUNTY UTILITY OPERATIONS DEPARTMENT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. IT IS NOTED THAT TEMPORARY SHUTDOWNS MAY BE RESTRICTED TO CERTAIN HOURS AT ANY TIME OF THE DAY OR NIGHT AND WILL BE COMPLETED AT NO ADDITIONAL COST TO THE OWNER.
44. FOR WORK BEING DONE ON EXISTING SANITARY SEWER LINES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE FLOW OF ALL SEWAGE DURING CONSTRUCTION, WHICH MAY REQUIRE BY-PASS PUMPING AND/OR PUMPER TRUCKS. THE CONTRACTOR SHALL SUBMIT A DETAILED BY-PASS PUMPING PLAN PER SECTION 02720.
45. RESTRAINED JOINT LENGTHS SHALL MEET THE RESTRAINED JOINT REQUIREMENTS SHOWN IN THE RESTRAINED LENGTH DETAIL ON SHEET 31.
46. ALL FORCE MAINS TO BE ABANDONED IN PLACE SHALL BE GROUTED PER THE SPECIFICATIONS.
47. THE ELEVATIONS OF THE UTILITY SERVICES AND LATERALS HAVE BEEN ASSUMED ON THE BASIS OF TYPICAL ANTICIPATED CONDITIONS. THE CONTRACTOR SHALL NOT RELY ON THIS INFORMATION FOR CONSTRUCTION, BUT SHALL BE RESPONSIBLE FOR FIELD LOCATIONS (HORIZONTAL AND VERTICAL) OF ALL UTILITIES CROSSING THE PROPOSED FORCE MAIN. CONTRACTOR SHALL INCLUDE IN THE UNIT COST OF THE SUBJECT FORCE MAIN CONSTRUCTION, THE COST OF UTILITY ADJUSTMENTS NECESSARY TO ATTAIN DESIGN MINIMUM SEPARATION FOR UTILITIES CONFLICTING WITH THE CONSTRUCTION OF THE PROPOSED FORCE MAIN. INTERRUPTIONS OF ANY EXISTING UTILITY SERVICES SHALL BE NOTICED TO EFFECTED CUSTOMERS A MINIMUM OF 48 HOURS IN ADVANCE AND SHALL NOT EXCEED 4 HOURS IN DURATION.
48. ALL VALVES SHALL BE HOLIDAY FREE AND HAVE TESTING CERTIFICATION PAPERS STATING HOLIDAY FREE TESTING WAS PASSED.
RESTORATION
49. ALL RESTORATION WORK PERFORMED THROUGHOUT THE PROJECT SHALL CONFORM TO EXISTING LINES AND GRADES UNLESS SHOWN OTHERWISE.
50. ALL DISTURBED GRASSED AREAS SHALL BE SODDED OR SEEDDED UNLESS OTHERWISE INDICATED. THE TYPE OF SOD USED TO REPLACE OWNER MAINTAINED AREAS IN RIGHT-OF-WAY SHALL BE COORDINATED WITH THE PROPERTY OWNER.
51. ALL CONCRETE THRUST BLOCKS INSTALLED FOR TESTING PURPOSES AND NOT REQUIRED FOR THE OPERATION OF THE PIPELINE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR, PRIOR TO FINAL ACCEPTANCE, AT NO ADDITIONAL COST TO THE OWNER.
52. ASPHALT DRIVES THAT ARE CUT SHALL BE RESTORED PER SECTION 02513.
53. CONCRETE DRIVEWAYS OR SIDEWALKS THAT ARE CUT SHALL BE RESTORED TO MATCH EXISTING ACCORDING TO THE CURRENT EDITIONS OF THE F.D.O.T. SPECIFICATIONS FOR ROAD AND BRIDGE DESIGN, SECTION 522, AND SECTION 310 OF THE F.D.O.T. DESIGN STANDARDS.
54. WHENEVER A PERMANENT ROADWAY SURFACE IS NOT PLACED IMMEDIATELY AFTER BACKFILLING AND COMPACTION OF THE NEWLY INSTALLED PIPE LINE IN AREAS WHERE TRAFFIC MUST PASS, THE CONTRACTOR SHALL INSTALL A TEMPORARY SURFACE CONSISTING OF NINE INCHES OF COMPACTED LIME ROCK BASE AND A COAT OF ASPHALT EMULSION. PERMANENT ROADWAY REPAIR SHALL BE PERFORMED A MAXIMUM OF TWENTY-ONE CALENDAR DAYS AFTER THE INITIAL OPEN CUTTING.
55. RESTORATION OF CURBS, DRIVEWAYS, SIDEWALKS, AND PLACEMENT OF SOD SHALL BE COMPLETED WITHIN FORTY-FIVE CALENDAR DAYS OF INITIAL DISTURBANCE, OR TWENTY-ONE CALENDAR DAYS OF SUBSTANTIAL COMPLETION, WHICHEVER OCCURS FIRST.
56. ALL EXISTING FINES DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED AND REINSTALLED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER UNLESS SHOWN TO BE REMOVED ON CONSTRUCTION PLANS.
57. WHERE CONCRETE REPAIRS ARE NECESSARY AND EXPANSION JOINTS ARE PRESENT, CONTRACTOR TO REMOVE AND REPLACE CONCRETE UP TO THE NEXT EXPANSION JOINT; OTHERWISE, REPLACE CONCRETE AS NECESSARY.
CONSTRUCTION
58. THE EXHAUST SYSTEM OF ALL GASOLINE AND DIESEL ENGINES SHALL BE EQUIPPED WITH MUFFLERS THAT MEET THE EQUIPMENT MANUFACTURER'S REQUIREMENTS FOR NOISE SUPPRESSION. THE CONTRACTOR SHALL INSTALL NOISE ABATEMENT BARRIERS POSITIONED TO BREAK LINE-OF-SITE FROM THE NOISE SOURCE TO AFFECTED RESIDENCES, AS APPROVED BY THE ENGINEER.
59. NO MATERIAL SHALL BE STOCKPILED IN ROADWAYS. ALL DIRT AND DEBRIS SHALL BE REMOVED FROM THE JOB SITE DAILY. ROADS SHALL BE SWEPT DAILY AS PART OF DAILY CLEAN UP.
60. THE CONTRACTOR IS TO CONTROL ALL FUGITIVE DUST ORIGINATING ON THIS PROJECT BY WATERING OR OTHER METHODS AS REQUIRED.

- 61. INGRESS AND EGRESS TO ALL THE PROPERTIES IN THE CONSTRUCTION AREA SHALL BE MAINTAINED AT ALL TIMES.
62. PRIOR APPROVAL WILL BE REQUIRED FOR REMOVAL OF ANY TREE WITHIN THE CONSTRUCTION AREA.
63. THE CONTRACTOR SHALL PROVIDE ALL DEWATERING EQUIPMENT NECESSARY TO KEEP ALL EXCAVATIONS DRY. DEWATERING IS REQUIRED TO 18" BELOW TRENCH BOTTOM.
64. ALL PIPING AND FITTINGS USED ON THIS PROJECT SHALL BE AS NOTED ON THE PLANS AND IN THE CONTRACT DOCUMENT AND SHALL BE INSTALLED TO THE LINES AND GRADES SHOWN ON THE PLANS AND PROFILES.
65. ALL PIPE SHALL BE COLOR CODED TO CONFORM TO MANATEE COUNTY STANDARDS.
66. ALL PIPE AND FITTINGS SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER AND ALL PIPE JOINTS SHALL BE RESTRAINED WHERE REQUIRED.
67. ALL FITTINGS FOR PRESSURE CLASS-RATED PIPE SHALL BE RESTRAINED DUCTILE IRON. RESTRAINED LENGTHS OF PIPE SHALL ADHERE TO THE REQUIREMENTS AS SHOWN IN THE DETAIL SHEETS.
68. WHERE IT IS NECESSARY TO DEFLECT PIPE EITHER HORIZONTALLY OR VERTICALLY, PIPE DEFLECTION SHALL NOT EXCEED 75% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE RECOMMENDED DEFLECTION.
69. ALL ROCKS OR STONES LARGER THAN SIX INCH DIAMETER SHALL BE REMOVED FROM THE BACKFILL MATERIAL. BACKFILL MATERIAL PLACED WITHIN ONE FOOT OF PIPING AND APPURTENANCES SHALL NOT CONTAIN ANY STONES LARGER THAN TWO INCH DIAMETER.
70. ONLY MANATEE COUNTY UTILITY OPERATIONS STAFF ARE AUTHORIZED TO OPERATE VALVES ON COUNTY OWNED AND MAINTAINED UTILITY SYSTEMS.
71. THE CONTRACTOR, PRIOR TO ANY TEMPORARY WATER SHUT-OFFS DURING WATER MAIN TIE-IN, ETC., SHALL NOTIFY THE AFFECTED RESIDENTS BY POSTING INFORMATIONAL SIGNS IN THE NEIGHBORHOOD AT LEAST TWO DAYS (48 HRS) PRIOR TO THE WATER SHUT-OFF. REFERENCE SECTION 01580, PARAGRAPH 1.03 OF THE SPECIFICATIONS. WHEN FEASIBLE, "DOOR HANGERS" SHALL BE DELIVERED TO AFFECTED RESIDENCES AT LEAST TWO DAYS (48 HRS) PRIOR TO WATER SHUT-OFF. FOR LARGE PROJECTS WITH HUNDREDS OF HOMES AFFECTED, THE CONTRACTOR SHALL ALSO MAKE EXTENSIVE USE OF THE MEDIA AND SHALL HAVE PRIOR CONTACT WITH HOMEOWNER'S ASSOCIATIONS. WRITTEN NOTIFICATIONS SHALL ALSO BE FAXED TO THE TAMPA TRIBUNE, BRADENTON HERALD, SARASOTA HERALD TRIBUNE, WRBO RADIO, EMERGENCY COMMUNITY CENTERS, INSPECTIONS, WATER TREATMENT PLANT, WATER MANAGER, HELPLINE, CUSTOMER SERVICE, AND THE MANATEE COUNTY UTILITY OPERATIONS DEPARTMENT.
72. ALL NEW PIPE LINES SHALL BE PIG CLEANED (4" AND LARGER), FLUSHED, PRESSURE TESTED, AND CERTIFIED PRIOR TO TIE-INS TO EXISTING FACILITIES. THE CONTRACTOR WILL BE ALLOWED TO USE TEMPORARY PLUGS FOR PIG CLEANING AND PRESSURE TESTING.
73. ALL TEST POINT PIPING SHALL BE CUT LOOSE FROM THE CORPORATION STOP AND COMPLETELY REMOVED AND DISPOSED OF BY THE CONTRACTOR PRIOR TO FINAL ACCEPTANCE. A CORPORATION STOP PLUG SHALL BE INSTALLED AND THE CORPORATION STOP SHALL REMAIN IN PLACE.
74. ALL EXISTING MAINS THAT ARE BEING REPLACED SHALL BE ABANDONED IN PLACE UPON ACCEPTANCE AND ACTIVATION OF THE NEW MAINS. ABANDONED MAINS SHALL BE CUT, FILLED WITH GROUT, AND CAPPED. REFER TO SECTION 02064 OF THE SPECIFICATIONS FOR GROUTING OF ABANDONED PIPE.
75. FIELD CONDITIONS MAY NECESSITATE MINOR ALIGNMENT AND GRADE DEVIATION OF THE PROPOSED UTILITIES TO AVOID OBSTACLES, AS ORDERED BY THE ENGINEER.
76. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION FROM THE MANATEE COUNTY UTILITIES DEPARTMENT (MCUD) OFFICE OF INDUSTRIAL COMPLIANCE FOR DELIVERING TO THE MANATEE COUNTY UTILITIES DEPARTMENT AUTHORIZATION TO DISCHARGE APPLICATION IS REQUIRED. FILL OUT FORM AS COMPLETELY AS POSSIBLE AS MISSING INFORMATION DELAYS THE APPROVAL PROCESS.
77. THE MCUD OFFICE OF INDUSTRIAL COMPLIANCE WILL DETERMINE WHETHER A LETTER OF APPROVAL, A DISCHARGE AUTHORIZATION, OR A DISCHARGE PERMIT IS REQUIRED.
78. FOR SITES SUSPECTED OF CONTAMINATED GROUNDWATER MANATEE COUNTY WILL REQUIRE AN APPLICANT TO DEMONSTRATE THAT THE DISCHARGE MEETS THE MANATEE COUNTY SEWER USE ORDINANCE.
FDOT NOTES
ALL WORK PERFORMED WITHIN THE FDOT R/W SHALL CONFORM TO:
79. FDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION (2016) (A.K.A. STANDARD SPECS).
80. FDOT DESIGN STANDARDS FOR DESIGN, CONSTRUCTION, MAINTENANCE AND OPERATIONS ON THE STATE HIGHWAY SYSTEM, 2016, (A.K.A. STANDARD INDEX), COMPLIANCE WITH ALL APPLICABLE INDICES IS REQUIRED.
81. FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY PLANS PREPARATION MANUAL, VOLUME 1, CHAPTERS 2 AND 25. (REVISED 2013).
82. FLORIDA DEPARTMENT OF TRANSPORTATION FLEXIBLE PAVEMENT DESIGN MANUAL FOR NEW CONSTRUCTION AND PAVEMENT REHABILITATION, JANUARY 2015.
83. ALL TRAFFIC STRIPES AND MARKINGS ARE TO BE LEAD FREE, NON-SOLVENT BASED THERMOPLASTIC. THE PERMITTEE SHALL FURNISH THE DEPARTMENT WITH THE MANUFACTURER'S CERTIFICATION THAT THE THERMOPLASTIC IS LEAD FREE.
84. LANE CLOSURE MAY NEED TO BE ALTERED DEPENDING ON THE AREA THE WORK IS TAKING PLACE.
TRAFFIC CONTROL NOTES
85. TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH F.D.O.T. DESIGN STANDARDS INDICES NO. 600, 611, 612, 613, 616, AND 660 DEPENDING ON THE OPERATION BEING PERFORMED.
FOR ALL MULTILANE WORK OUTSIDE SHOULDER UTILIZE INDEX NO. 611.
FOR ALL MULTILANE WORK ON SHOULDER UTILIZE INDEX NO. 612.
FOR ALL MULTILANE WORK WITHIN TRAVEL WAY MEDIAN OR OUTSIDE LANE UTILIZE INDEX NO. 613.
FOR ALL MULTILANE WORK NEAR INTERSECTION MEDIAN OR OUTSIDE LANE UTILIZE INDEX NO. 616.
FOR PEDESTRIAN CONTROL FOR CLOSURE OF SIDEWALK, UTILIZE FDOT INDEX NO. 660.
86. CONTRACTOR TO COORDINATE WITH TIM LONG (941) 708-4432 AT FDOT FOR ALL WORK DONE ON A STATE FACILITY.
87. TO AVOID DISRUPTION DUE TO INCLEMENT WEATHER, THE CONTRACTOR SHOULD PERFORM ANY MILLING AND PAVING OPERATIONS DURING THE SAME WORK PERIOD.
88. ALL EXISTING PAVEMENT MARKINGS OUTSIDE THE CONSTRUCTION LIMITS THAT HAVE BEEN ALTERED BECAUSE OF CONSTRUCTION OPERATIONS SHALL BE REPLACED UPON THE COMPLETION OF THE PROJECT AT THE CONTRACTORS EXPENSE.
89. LANE CLOSURES SHALL OCCUR BETWEEN 9:00 P.M. AND 5:00 A.M., UNLESS LANE CLOSURE CALCULATIONS ARE PROVIDED AND APPROVED OR APPROVAL IS GRANTED BY THE DISTRICT PERMIT ENGINEER.
THE CONTRACTOR SHALL SCHEDULE WORK OPERATIONS SO THAT ALL LANES CAN BE RE-OPENED TO TRAFFIC WITHIN A PERIOD OF 24 HOURS IN CASE OF AN EMERGENCY.
90. PEDESTRIANS, BICYCLES, AND WHEELCHAIRS:
AT THE END OF EACH WORKDAY OR WHENEVER THE WORK ZONE BECOMES INACTIVE, ANY DROP-OFF ADJACENT TO A SIDEWALK SHALL BE BACKFILLED AT A SLOPE NOT TO EXCEED 1:4, OR SHALL BE PROTECTED IN ACCORDANCE WITH STANDARD INDEX 600
91. PEDESTRIAN AND WHEELCHAIR TRAFFIC SHALL BE ACCOMMODATED UTILIZING STANDARD INDEX 660.
92. ONE PORTABLE VARIABLE MESSAGE SIGN SHALL BE USED IN ADVANCE OF EACH LANE CLOSURE. THE FOLLOWING ARE SUGGESTED MESSAGES TO USE IN THE APPROPRIATE SITUATIONS:
MESSAGE 1
"RIGHT" OR "CENTER" OR "LEFT"
"LANE" "LANE" "LANE"
"CLOSED" "CLOSED" "CLOSED"

- 93. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMMEDIATE REMOVAL OF STORMWATER FROM ROADWAYS UTILIZED FOR TRAFFIC CONTROL IN A MANNER APPROVED BY THE ENGINEER.
94. AT THE END OF EACH WORKING DAY'S ACTIVITY, TEMPORARY PAVEMENT MARKINGS AND TEMPORARY RPM'S SHALL BE INSTALLED PRIOR TO OPENING THE LANES UP FOR TRAFFIC.
95. ALL PAVEMENT MARKINGS, SIGNS, MARKERS, CHANNELIZATION REQUIRED TO PHASE WORK OR SHIFT TRAFFIC, SHALL UTILIZE INDICES FOR PLACEMENT.
96. THE CONTRACTOR SHALL RESTRICT THE OPERATIONS SO THAT THE FIRST LIFT OF ASPHALT IS PLACED ON THE SAME DAY THAT THE LANES ARE MILLED, BEFORE OPENING THE LANES TO TRAFFIC. INSTALL TEMPORARY PAVEMENT MARKINGS AFTER THE FIRST LIFT AND PRIOR TO OPENING.
97. MILLING AND RESURFACING SHALL BE ACCOMPLISHED DURING THE OFF-PEAK HOURS.
98. THE CONTRACTOR IS RESPONSIBLE TO RETIME THE TRAFFIC SIGNALS WITHIN THE PROJECT LIMITS (INCLUDING LIMITS OF WORK ZONE TRAFFIC CONTROL) THAT ARE POTENTIALLY AFFECTED DURING VARIOUS PHASES OF CONSTRUCTION. COORDINATE ALL SIGNAL RETIME EFFORTS WITH VISHAD KAKKAD, P.E., PTOE, COUNTY TRAFFIC ENGINEER, AT 941-749-3500, EXT. 7812.
99. CONTRACTOR TO MAINTAIN VEHICLE DETECTION IN OPERATION FOR LANES THAT WILL REMAIN OPEN. CONTRACTOR TO COORDINATE ALL VEHICLE DETECTION ISSUES WITH PAUL VILLA LUZ OF MANATEE COUNTY AT 941-749-3500, EXT. 7859 OR PAUL.VILLALUZ@MYMANATEE.ORG
SURVEY LEGEND
IRON ROD W/ CAP
PK NAIL W/ DISC
CONCRETE MONUMENT
RIGHT-OF-WAY
PARCEL IDENTIFICATION
PLAT BOOK
OFFICIAL RECORD BOOK
PAGE
SITE CONTROL POINT
PORTION OF
SITE BENCHMARK
SIGN
UTILITY POLE
GUY WIRE
WATER METER
SANITARY MANHOLE
STORM MANHOLE
MAILBOX
LIGHT POLE
FIRE HYDRANT
TREES
ABBREVIATIONS
RJ - RESTRAINED JOINT
R/W - RIGHT-OF-WAY
HDD - HORIZONTAL DIRECTIONAL DRILL
RCP - REINFORCED CONCRETE PIPE
ARV - AIR RELEASE VALVE
HOPE - HIGH DENSITY POLYETHYLENE
PVC - POLYVINYL CHLORIDE
ST - STORM DRAIN
EX - EXISTING
BT - BURIED TELEPHONE
BT - SANITARY SEWER
FM - FORCE MAIN
WM - WATER MAIN
RW - RECLAIM WATER MAIN
ECP - ELLIPTICAL CONCRETE PIPE
KIMLEY HORN LEGEND
PROPOSED FORCEMAIN
PROPOSED FORCEMAIN (HDD)
EX. RECLAIM WATER
EX. FORCEMAIN
EX. WATERMAIN
EX. SANITARY SEWER
EX. STORM
EX. BURIED TELEPHONE/FIBER
EX. FIBER OPTICS
EX. BURIED ELECTRIC
EX. TV
EX. GAS
EX. TRAFFIC
LIMITS OF RESTORATION
PROPOSED CONCRETE REPAIR
PROPOSED GRAVEL REPAIR
GROUNDWATER / DEWATERING NOTE:
THE PRESENCE OF GROUNDWATER SHOULD BE ANTICIPATED ON THIS PROJECT. CONTRACTOR'S BID SHALL INCLUDE CONSIDERATION FOR THIS ISSUE. WHEN PERFORMING GRADING OPERATIONS DURING PERIODS OF WET WEATHER, PROVIDE ADEQUATE DEWATERING, DRAINAGE AND GROUND WATER MANAGEMENT TO CONTROL MOISTURE OF SOILS.
811
IT'S HOT. IT'S FREE. IT'S THE LINE.
www.callsunshine.com
SHEET NUMBER
02

Table with 4 columns: No., REVISIONS, DATE, BY

Kimley»Horn
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Table with 2 columns: KHA PROJECT 148400011, DATE 8/12/16, SCALE AS SHOWN, DESIGNED BY JWW, DRAWN BY SNH, CHECKED BY WEW, MANATEE COUNTY

Manatee County Florida
FORCE MAIN 13A REPLACEMENT
LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652
FL DATE:

GENERAL NOTES
SHEET NUMBER 02

This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of any information contained herein without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

**SUBSURFACE UTILITY ENGINEERING INFORMATION**

ITEM NO.	SHEET	STATION	APPROX. OFFSET (FT)	DIRECTION	GRADE (FT)	COVER (FT)	TOP OF PIPE (FT)	DESCRIPTION
VH 101	28	-	-	-	20.62	3.08	17.54	1.25" FO - VERIZON
VH 102	28	-	-	-	20.54	4.08	16.46	16" PVC WATER MAIN - MANATEE CO.
VH 103	28	-	-	-	20.12	6.84	13.28	24" CI FORCE MAIN - MANATEE CO.
VH 104	5	01+01	66	LT	21.28	2.53	18.75	2" PVC TRAFFIC CABLE - MANATEE CO.
VH 105	5	01+05	68	LT	21.24	2.85	18.39	2" PVC CATV - BRIGHTHOUSE
VH 106	5	01+12	45	LT	20.98	3.67	17.31	2" PVC TRAFFIC CABLE (X2) - MANATEE CO.
VH 107	5	01+40	53	LT	20.77	1.46	19.31	1.25" DIRECT BURY CATV - BIRGTHOUSE
VH 108	5	01+40	52	LT	20.73	2.69	18.04	2" PVC CATV - BRIGHTHOUSE
VH 109	5	01+39	46	LT	20.64	11.30	9.34	GAS MAIN - TECO PEOPLES GAS (ELECTRONIC DEPTH)
VH 110	5	01+39	41	LT	20.43	3.12	17.31	STORM RCP (SIZE/MATERIAL)*
VH 111	5	01+49	34	LT	20.70	10.12	10.58	FORCE MAIN - MANATEE CO. (SIZE/MATERIAL)*
VH 112	5	02+12	46	LT	21.25	2.90	18.35	2" POLY GAS - TECO PEOPLES GAS
VH 113	9	23+13	25	LT	21.25	3.30	17.95	2" POLY GAS - TECO PEOPLES GAS
VH 114	9	23+13	20	LT	21.63	3.01	18.62	24" RCP FORCE MAIN - MANATEE CO.
VH 115	9	23+14	26	RT	21.79	2.86	18.93	16" DI RECLAIMED WATER MAIN - MANATEE CO.
VH 116	9	23+14	31	RT	21.75	2.75	19.00	1.5" DIRECT BURY TEL - VERIZON
VH 117	9	23+14	33	RT	21.77	2.40	19.37	4" PVC TEL - VERIZON
VH 118	9	23+14	36	RT	21.67	2.07	19.60	6" PVC WATER MAIN - MANATEE CO.
VH 119	9	23+14	36	RT	21.68	2.30	19.38	4" PVC TEL & 1" PVC TEL - VERIZON
VH 120	9	23+14	38	RT	21.64	2.05	19.59	1.25" FO (X2) - VERIZON
VH 121	9	23+14	40	RT	21.58	2.48	19.10	4" PVC TEL & 1.5" DIRECT BURY TEL - VERIZON
VH 122	11	32+70	2	LT	17.28	4.00	13.28	FORCE MAIN - MANATEE CO. (ELECTRONIC DEPTH)
VH 123	11	32+71	26	RT	17.46	3.20	14.26	4" PVC WATER MAIN - MANATEE CO.
VH 124	11	32+71	33	RT	17.45	3.51	13.94	1" DIRECT BURY TEL - VERIZON
VH 125	11	32+71	36	RT	17.11	5.19	11.92	RECLAIMED WATER MAIN - MANATEE CO. (SIZE/MATERIAL)*
VH 126	13	43+04	23	RT	17.05	3.31	13.74	3" PVC WATER MAIN - MANATEE CO.
VH 127	13	43+04	26	RT	17.20	2.53	14.67	1.25" FO (X2) - VERIZON
VH 128	13	43+04	27	RT	17.22	3.31	13.91	20" DI RECLAIMED WATER MAIN - MANATEE CO.
VH 129	15	53+39	8	LT	15.72	4.00	11.72	FORCE MAIN - MANATEE CO. (ELECTRONIC DEPTH)
VH 130	15	53+38	15	RT	15.95	3.39	12.56	20" DI RECLAIMED WATER MAIN - MANATEE CO.
VH 131	15	53+38	21	RT	16.24	2.21	14.03	8" ASBESTOS CEMENT WATER MAIN - MANATEE CO.
VH 132	17	60+31	31	RT	17.81	3.35	14.46	DI RECLAIMED WATER MAIN - MANATEE CO. (SIZE)*
VH 133	17	60+29	31	RT	17.87	1.55	16.32	3" PVC - UNKNOWN
VH 134	17	60+34	34	RT	17.81	2.90	14.91	8" PVC WATER MAIN - MANATEE CO.
VH 135	19	73+02	17	LT	18.86	2.70	16.16	4" PVC TEL - VERIZON
VH 136	19	72+99	17	LT	18.81	3.25	15.56	DI RECLAIMED WATER MAIN - MANATEE CO. (SIZE)*
VH 137	19	73+01	10	LT	18.96	4.00	14.96	FORCE MAIN - MANATEE CO. (ELECTRONIC DEPTH)
VH 138	19	73+08	13	RT	19.11	2.30	16.81	8" ASBESTOS CEMENT WATER MAIN - MANATEE CO.
VH 139	23	90+29	8	LT	17.81	4.00	13.81	FORCE MAIN - MANATEE CO. (ELECTRONIC DEPTH)
VH 140	23	90+27	16	RT	17.81	4.17	13.64	12" PVC WATER MAIN - MANATEE CO.
VH 141	25	101+30	2	LT	18.01	4.00	14.01	FORCE MAIN - MANATEE CO. (ELECTRONIC DEPTH)
VH 142	25	101+45	15	RT	17.91	5.00	12.91	WATER MAIN - MANATEE CO. (ELECTRONIC DEPTH)
VH 143	26	105+86	18	LT	17.59	3.59	14.00	6" ASBESTOS CEMENT WATER MAIN - MANATEE CO.
VH 144	27	112+84	17	LT	18.62	3.77	14.85	6" ASBESTOS CEMENT WATER MAIN - MANATEE CO.
VH 145	27	113+87	59	LT	18.50	3.70	14.80	6" ASBESTOS CEMENT WATER MAIN - MANATEE CO.
VH 146	27	113+98	48	LT	19.25	3.50	15.75	24" DI FORCE MAIN - MANATEE CO.

\* ESTIMATED DEPTH

**SURVEY NOTES:**

THE SURVEY AND SUBSURFACE UTILITY EXPLORATION INFORMATION WAS PROVIDED BY:

HYATT SURVEY SERVICES, INC.

- THE FOLLOWING NGS VERTICAL CONTROL MONUMENTS WERE RECOVERED AND UTILIZED FOR THE ELEVATIONS INDICATED HEREIN: "BREVARD" NAVD 1988 ELEVATION 20.00' "BAKER" NAVD 1988 ELEVATION 9.90'
- THIS SURVEY IS REFERENCED TO A PROJECTION OF THE FLORIDA STATE PLANE COORDINATE SYSTEM (WEST ZONE NAD 1983/2007 ADJUSTMENT).
- TITLE WORK WAS NOT PROVIDED FOR THIS SURVEY. RIGHT-OF-WAY LINES SHOWN HEREIN ARE BASED ON FOUND BOUNDARY MONUMENTATION TOGETHER WITH PUBLIC INFORMATION AVAILABLE ON BOTH FDOT AND MANATEE COUNTY PUBLIC RECORD WEBSITES.
- THIS SURVEY IS SUBJECT TO PERTINENT EASEMENTS, RIGHTS-OF-WAY AND RESTRICTIONS OF RECORD, IF ANY.
- THIS SURVEY DRAWING WAS PREPARED FOR THE EXCLUSIVE USE OF THE PARTY OR PARTIES CERTIFIED TO BELOW FOR THE EXPRESS PURPOSE STATED HEREON AND/OR CONTAINED IN THE CONTRACT BETWEEN HYATT SURVEY SERVICES, INC. AND THE CLIENT FOR THIS PROJECT. COPYING, DISTRIBUTING AND/OR USING THIS DRAWING, IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN ORIGINALLY INTENDED WITHOUT WRITTEN CONSENT FROM HYATT SURVEY SERVICES, INC. IS STRICTLY PROHIBITED AND RENDERS THE SURVEYOR'S CERTIFICATION, SIGNATURE AND SEAL NULL AND VOID. ANY QUESTIONS CONCERNING THE CONTENT OR PURPOSE OF THIS DRAWING SHOULD BE DIRECTED TO HYATT SURVEY SERVICES, INC.

**SITE CONTROL INFORMATION**

DESIGNATION	NORTHING	EASTING	ELEVATION	DESCRIPTION	STA/OFS
BM #1	1125715.74	472334.60	19.38'	IRC (LB 7203)	101+55.87 1435.99 LT
BM #2	1126470.13	472356.74	18.16'	PKN (LB 7203)	108+47.05 11.90 LT
BM #3	1128095.82	463944.29	23.11'	PKN (LB 7203)	11+23.87 19.80 RT
BM #4	1128195.19	462923.36	21.11'	PKN (LB 7203)	1+00.68 52.73 LT
BM #5	1127158.60	472358.36	17.95'	PKN (LB 7203)	101+66.00 10.53 LT
BM #6	1127171.30	471626.87	17.92'	PKN (LB 7203)	94+40.53 4.79 RT
BM #7	1127247.92	470953.20	17.62'	PKN (LB 7203)	87+59.31 8.54 LT
BM #8	1127221.89	470058.08	18.77'	PKN (LB 7203)	74+10.78 458.63 RT
BM #9	1127697.33	470084.45	18.73'	PKN (LB 7203)	78+95.25 466.69 LT
BM #10	1127698.02	469436.62	18.39'	PKN (LB 7203)	67+89.76 21.30 LT
BM #11	1127682.60	468494.21	17.49'	PKN (LB 7203)	58+47.62 5.94 RT
BM #12	1127682.66	467682.84	15.84'	IRC (LB 7203)	50+36.31 16.04 RT
BM #13	1127723.25	466897.58	17.28'	IRC (LB 7203)	42+50.85 15.93 LT
BM #14	1127671.91	466178.83	16.17'	IRC (LB 7203)	35+31.60 18.45 RT
BM #15	1127870.76	465773.83	18.47'	IRC (LB 7203)	30+59.50 31.75 RT
BM #16	1128098.17	465424.19	19.66'	IRC (LB 7203)	26+03.20 21.39 LT
BM #17	1128114.66	464586.55	23.53'	IRC (LB 7203)	17+65.41 15.89 LT

**GROUNDWATER / DEWATERING NOTE:**  
 THE PRESENCE OF GROUNDWATER SHOULD BE ANTICIPATED ON THIS PROJECT. CONTRACTOR'S BID SHALL INCLUDE CONSIDERATION FOR THIS ISSUE. WHEN PERFORMING GRADING OPERATIONS DURING PERIODS OF WET WEATHER, PROVIDE ADEQUATE DEWATERING, DRAINAGE AND GROUND WATER MANAGEMENT TO CONTROL MOISTURE OF SOILS.



No.	REVISIONS	DATE	BY

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 655 NORTH FRANKLIN STREET, SUITE 150, TAMPA, FL 33602  
 PHONE: 813-620-1460  
 WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT	148400011
DATE	8/12/16
SCALE	AS SHOWN
DESIGNED BY	JWW
DRAWN BY	SNH
CHECKED BY	WEW

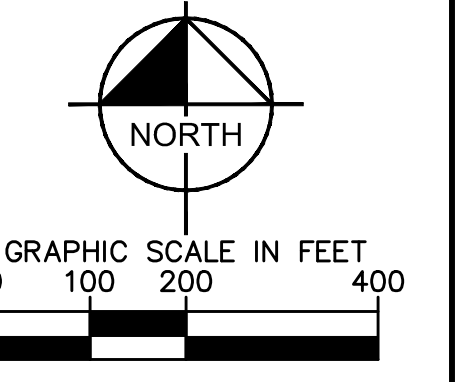
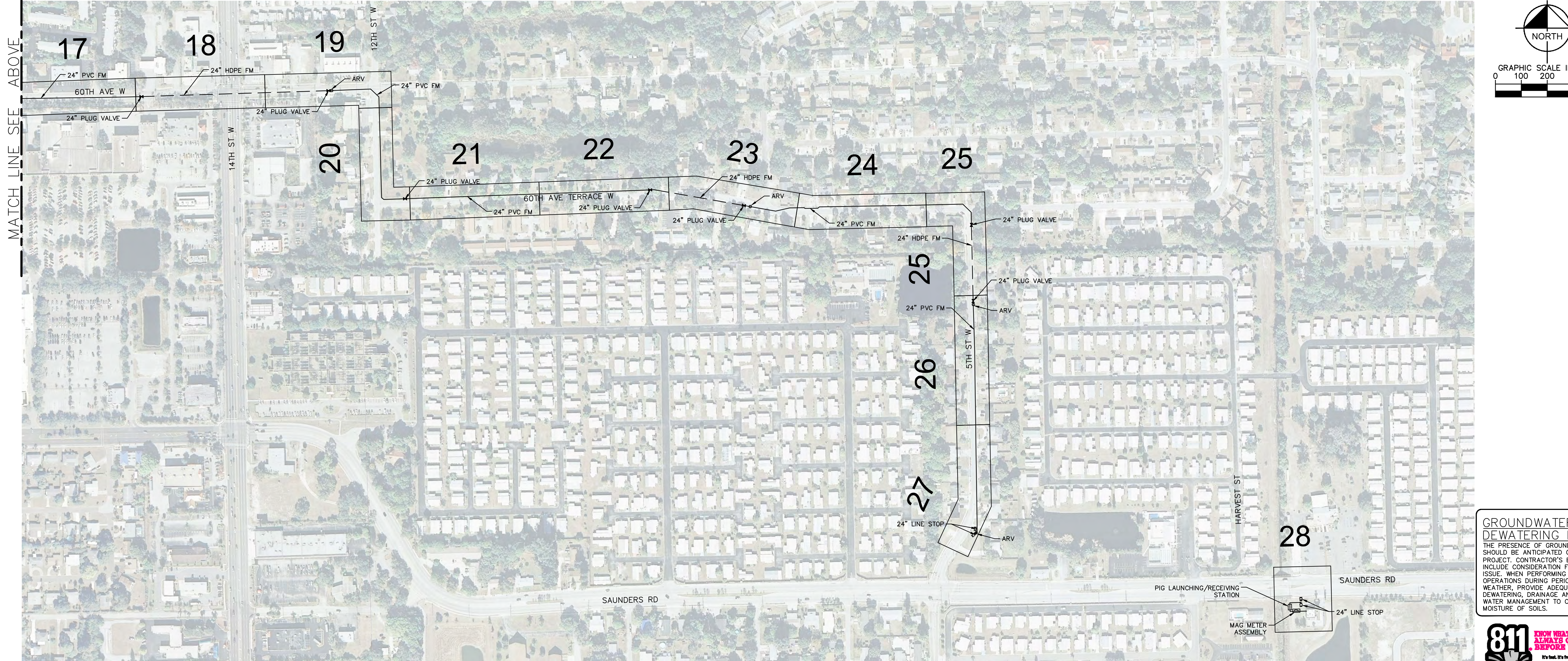
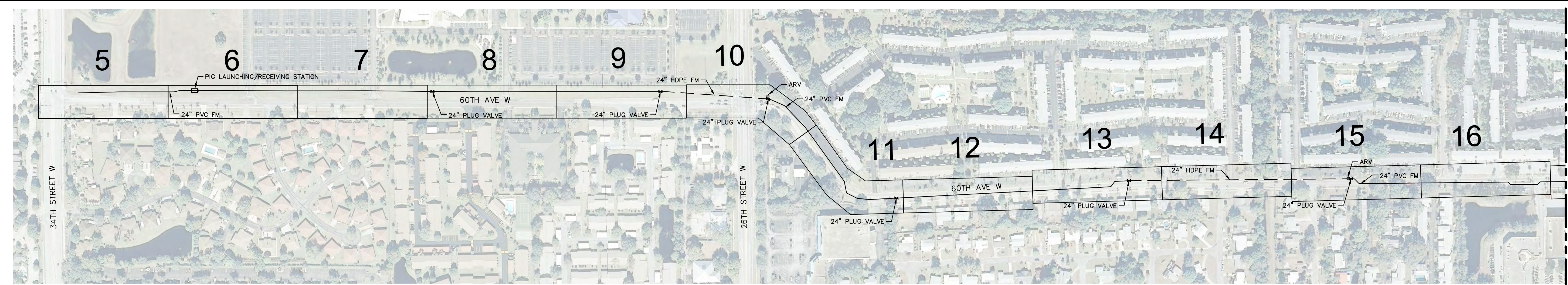
**FORCE MAIN 13A REPLACEMENT**  
 MANATEE COUNTY

LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER
78652

**SURVEY AND SUE DATA TABLE**

SHEET NUMBER
03

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**GROUNDWATER / DEWATERING NOTE:**  
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No.	REVISIONS	DATE	BY

**Kimley»Horn**  
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 PHONE: 813-620-1460  
 WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT  
 148400011  
 DATE  
 8/12/16  
 SCALE AS SHOWN  
 DESIGNED BY JWW  
 DRAWN BY SNH  
 CHECKED BY WEW

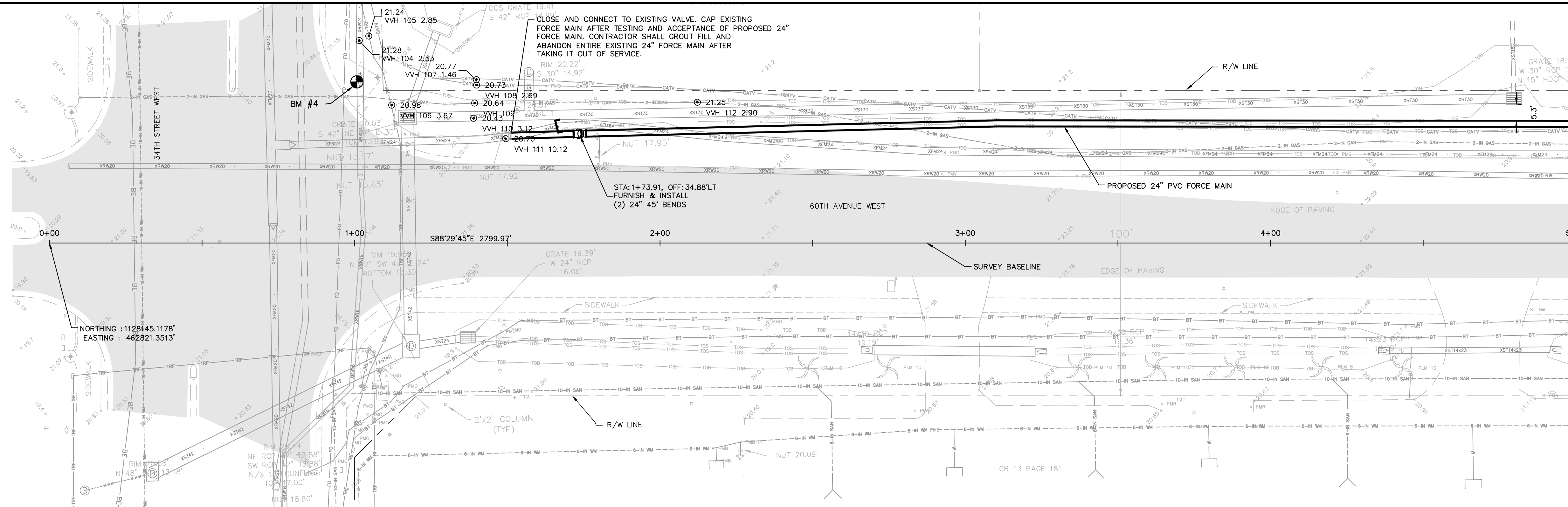
**Manatee County**  
**FORCE MAIN 13A REPLACEMENT**  
 MANATEE COUNTY


LICENSED PROFESSIONAL  
 JORDAN W. WALKER, P.E.  
 FL LICENSE NUMBER  
 78652

**OVERALL KEY SHEET**

SHEET NUMBER  
**04**

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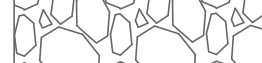
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VERTICAL SCALE: 1"=3'

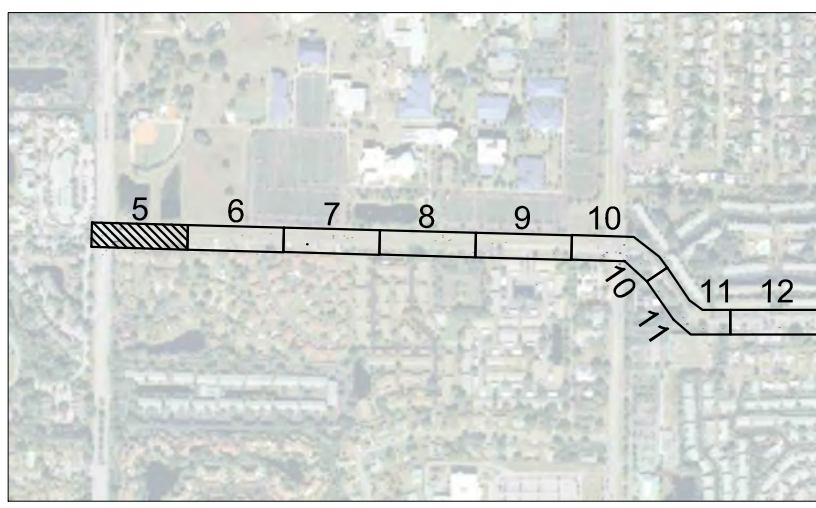
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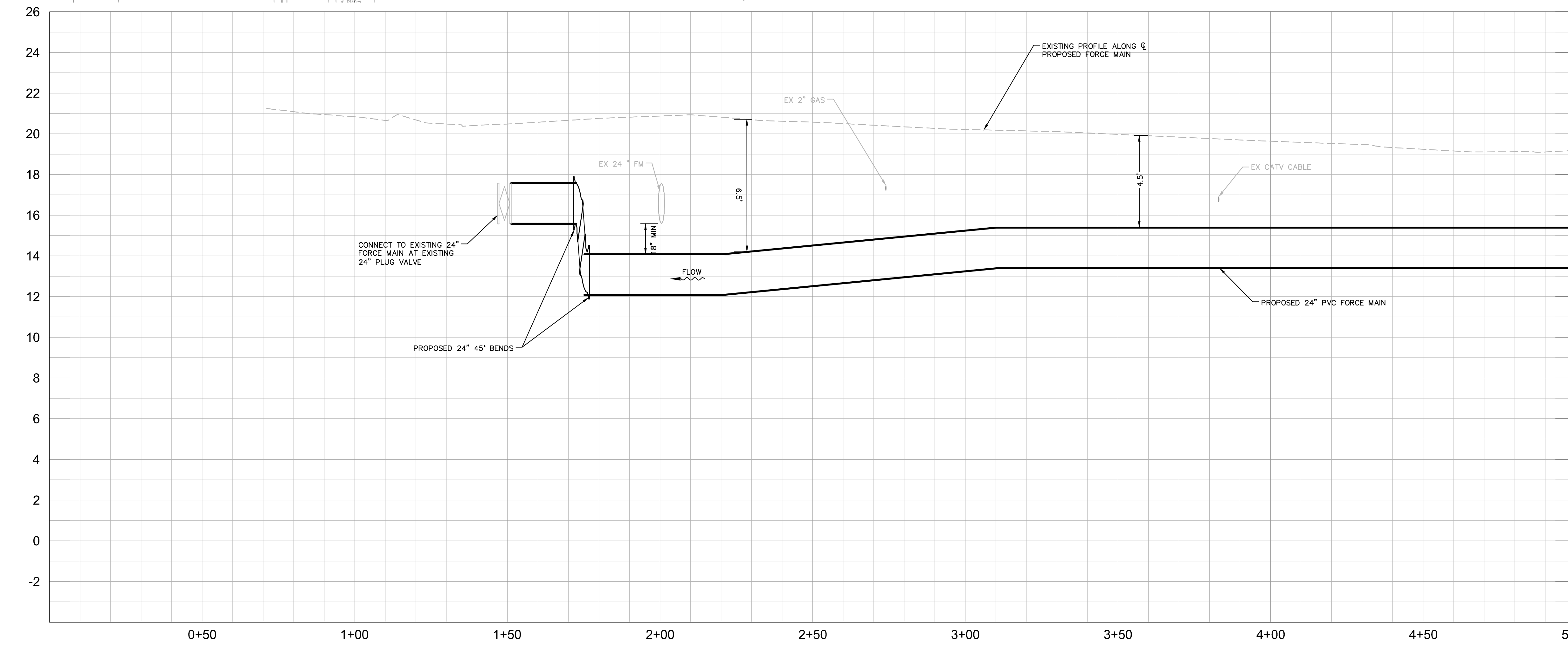
- REFER TO SHEET 03 FOR ADDITIONAL SUBSURFACE UTILITY EXPLORATION INFORMATION.
- CONTRACTOR TO TAKE PRECAUTION WHEN CONSTRUCTING FORCE MAIN AROUND INLET STRUCTURE TO PREVENT UNDERMINED.
- CONTRACTOR TO FOLLOW RESTRAINED LENGTHS SET IN RESTRAIN LENGTH DETAILS ON SHEET 31.
- CONSTRUCTION DEWATERING SHALL BE CONDUCTED IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS INCLUDING BUT NOT LIMITED TO CHAPTERS 62-621.300 AND 62-620 OF THE FLORIDA ADMINISTRATIVE CODE (FAC).

LEGEND

-  LIMITS OF RESTORATION
-  CONCRETE REPAIR
-  GRAVEL REPAIR

KEY SHEET







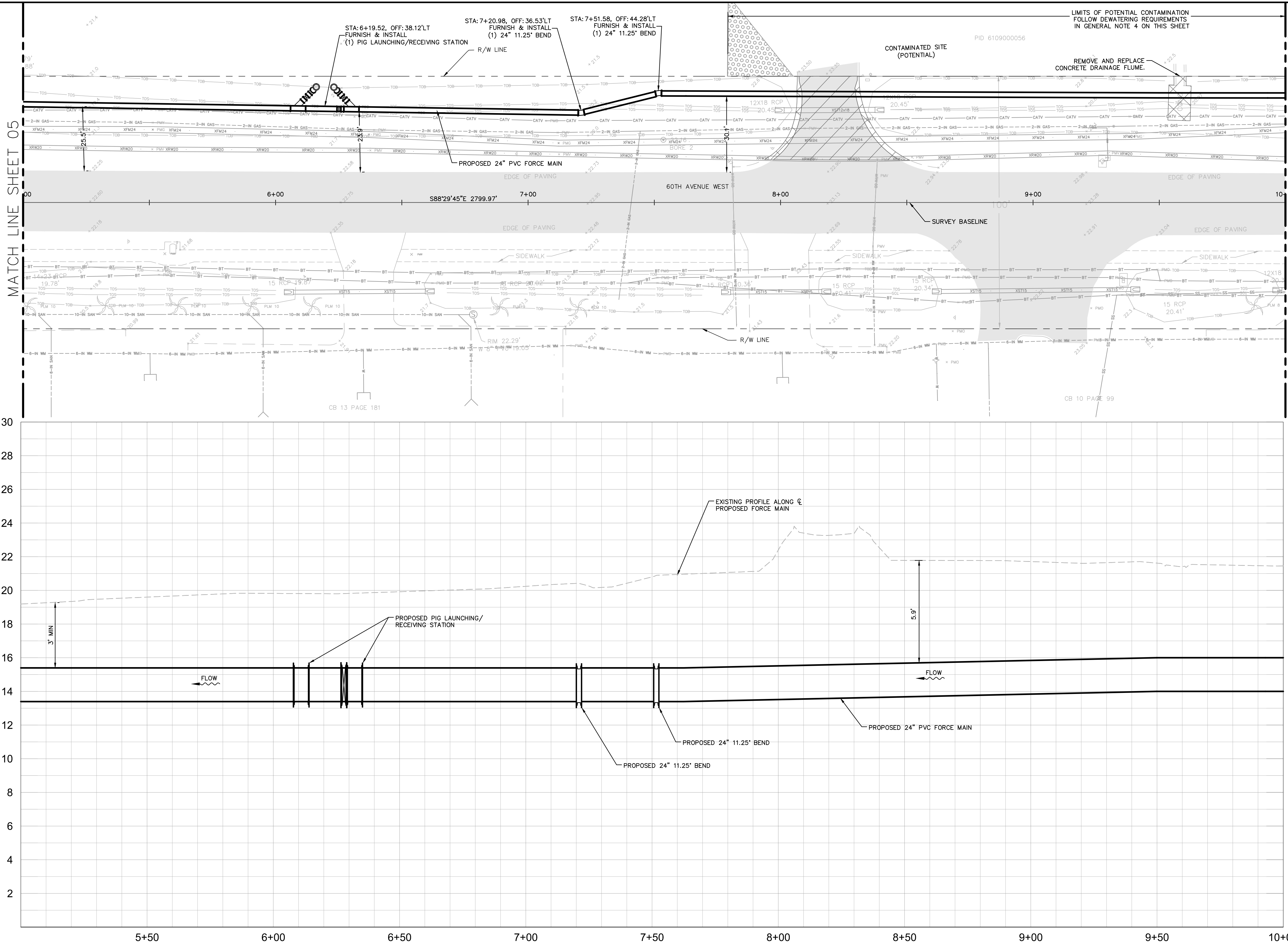
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 <p>© 2016 KIMLEY-HORN AND ASSOCIATES, INC. 655 NORTH FRANKLIN STREET, SUITE 150, TAMPA, FL 33602 PHONE: 813-620-1460 WWW.KIMLEY-HORN.COM CA 00000696</p>	<p>KHA PROJECT 148400011 DATE 8/12/16 SCALE AS SHOWN DESIGNED BY JWW DRAWN BY SNH CHECKED BY WEW</p>	 <p><b>FORCE MAIN 13A REPLACEMENT</b></p>	<p>LICENSED PROFESSIONAL JORDAN W. WALKER, P.E. FL LICENSE NUMBER 78652</p>	<p><b>PLAN AND PROFILE (60TH AVE W) STA 0+00 TO STA 5+00</b></p>	<p>SHEET NUMBER <b>05</b></p>																				
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STATIONING: STA: 6+19.52, OFF: 38.12'LT FURNISH & INSTALL (1) PIG LAUNCHING/RECEIVING STATION

STATIONING: STA: 7+20.98, OFF: 36.53'LT FURNISH & INSTALL (1) 24" 11.25' BEND

STATIONING: STA: 7+51.58, OFF: 44.28'LT FURNISH & INSTALL (1) 24" 11.25' BEND

PROPOSED 24" PVC FORCE MAIN

60TH AVENUE WEST

PROPOSED PIG LAUNCHING/RECEIVING STATION

PROPOSED 24" 11.25' BEND

PROPOSED 24" 11.25' BEND

PROPOSED 24" PVC FORCE MAIN

LIMITS OF POTENTIAL CONTAMINATION FOLLOW DEWATERING REQUIREMENTS IN GENERAL NOTE 4 ON THIS SHEET

CONTAMINATED SITE (POTENTIAL) PID 6109000056

REMOVE AND REPLACE CONCRETE DRAINAGE FLUME.

LEGEND

- LIMITS OF RESTORATION
- CONCRETE REPAIR
- GRAVEL REPAIR

KEY SHEET

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GRAPHIC SCALE IN FEET  
0 10 20 40

HORIZONTAL SCALE: 1"=20'  
VERTICAL SCALE: 1"=3'

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**Kimley»Horn**

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PHONE: 813-620-1460  
WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT  
148400011

DATE  
8/12/16

SCALE AS SHOWN

DESIGNED BY JWW

DRAWN BY SNH

CHECKED BY WEW

MANATEE COUNTY

**Manatee County**  
FLORIDA

**FORCE MAIN 13A  
REPLACEMENT**

LICENSED PROFESSIONAL

JORDAN W. WALKER, P.E.

FL LICENSE NUMBER  
78652

FL DATE:

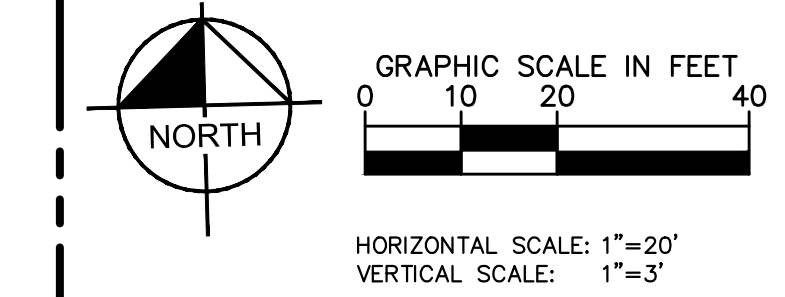
**PLAN AND PROFILE (60TH AVE W)  
STA 5+00 TO STA 10+00**

SHEET NUMBER  
**06**

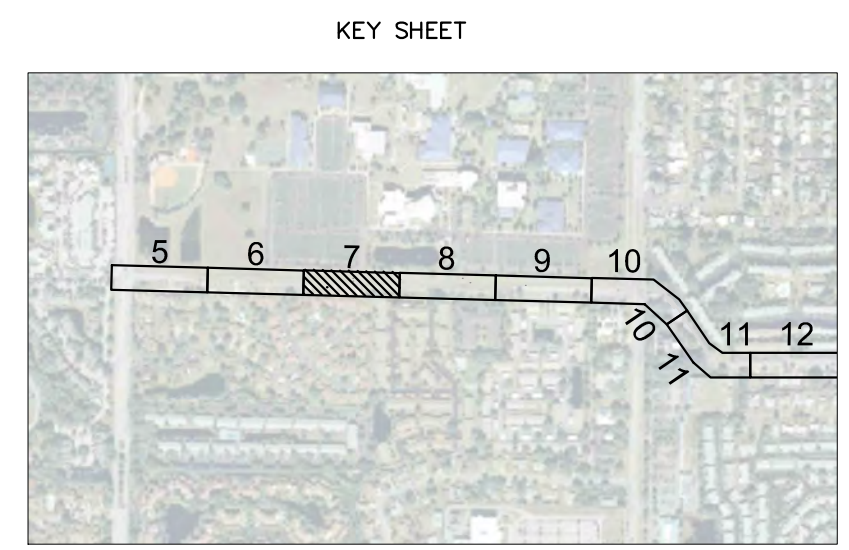
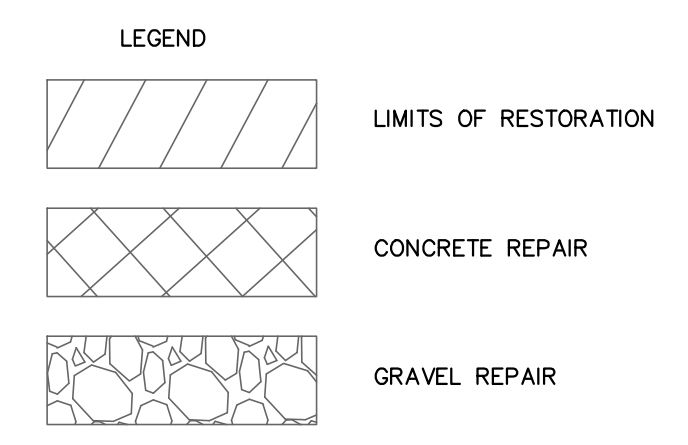


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MATCH LINE SHEET 06

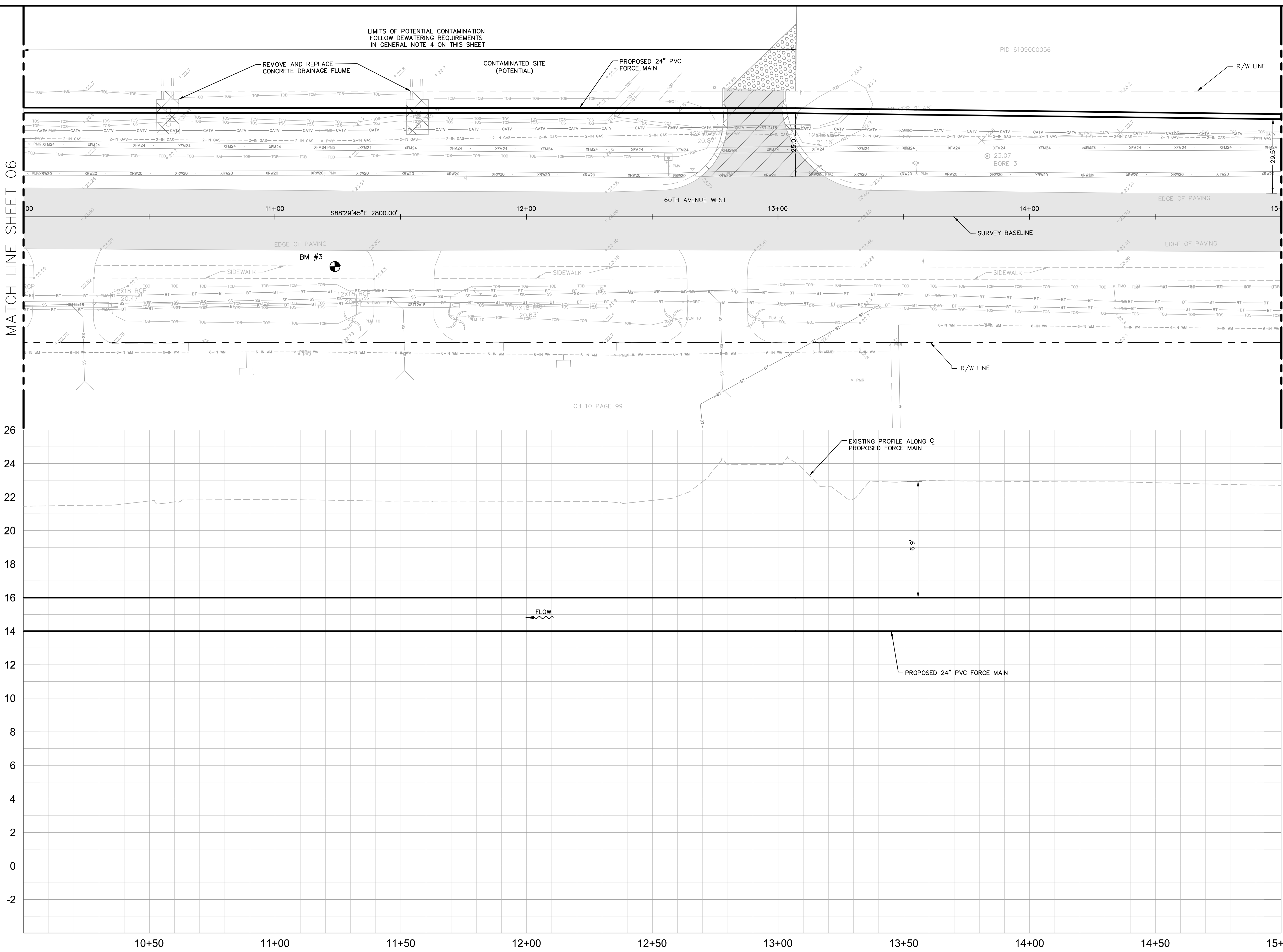


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KHA PROJECT 148400011  
 DATE 8/12/16  
 SCALE AS SHOWN  
 DESIGNED BY JWW  
 DRAWN BY SNH  
 CHECKED BY WEW

**Manatee County**  
**FLORIDA**

**FORCE MAIN 13A REPLACEMENT**

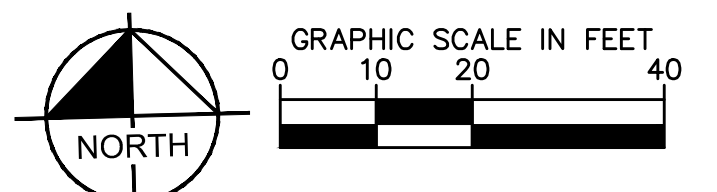
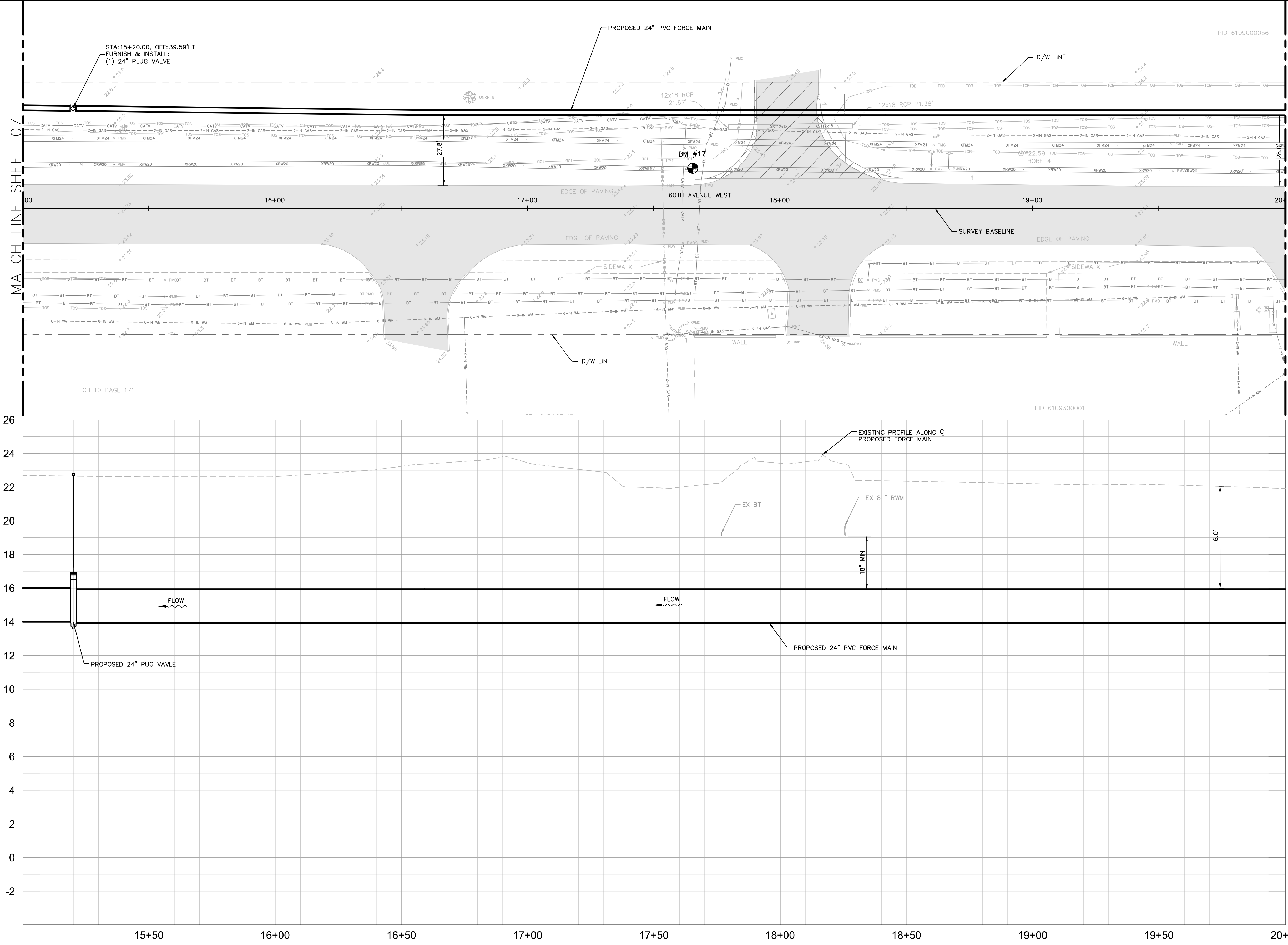
MANATEE COUNTY

LICENSED PROFESSIONAL  
 JORDAN W. WALKER, P.E.  
 FL LICENSE NUMBER 78652

**PLAN AND PROFILE (60TH AVE W)  
 STA 10+00 TO STA 15+00**

SHEET NUMBER  
**07**

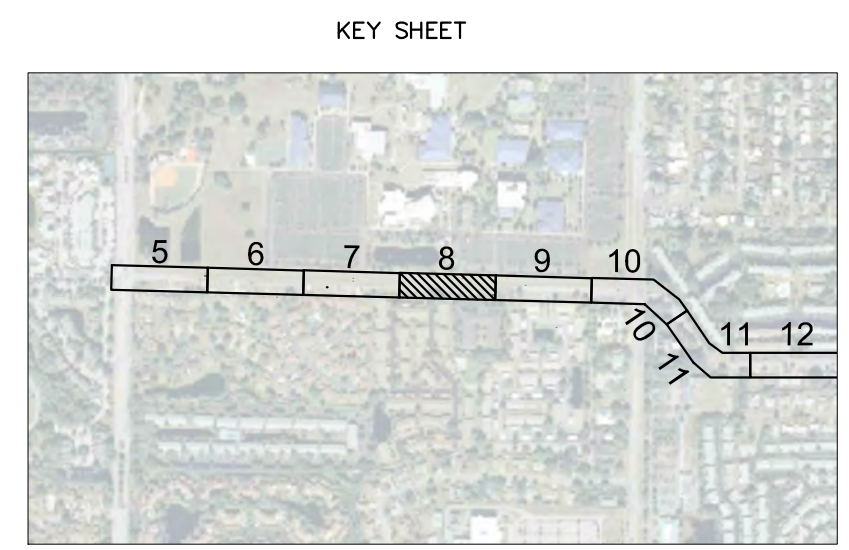
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LEGEND

	LIMITS OF RESTORATION
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 WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County Florida**  
**FORCE MAIN 13A REPLACEMENT**

LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652

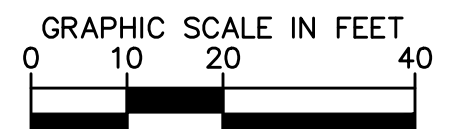
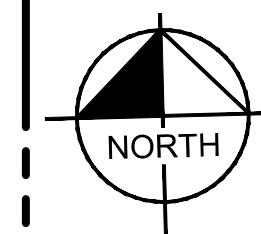
**PLAN AND PROFILE (60TH AVE W)  
 STA 15+00 TO STA 20+00**

SHEET NUMBER
08



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MATCH LINE SHEET 08



HORIZONTAL SCALE: 1"=20'  
VERTICAL SCALE: 1"=3'

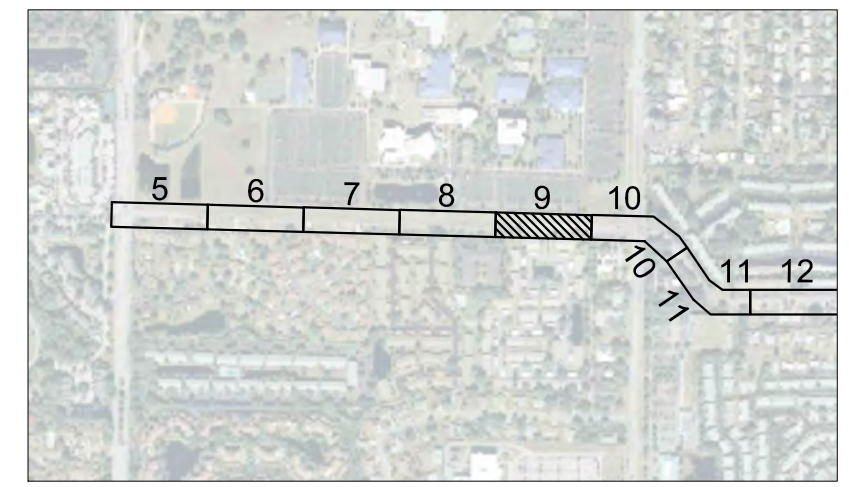
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LEGEND

	LIMITS OF RESTORATION
	CONCRETE REPAIR
	GRAVEL REPAIR

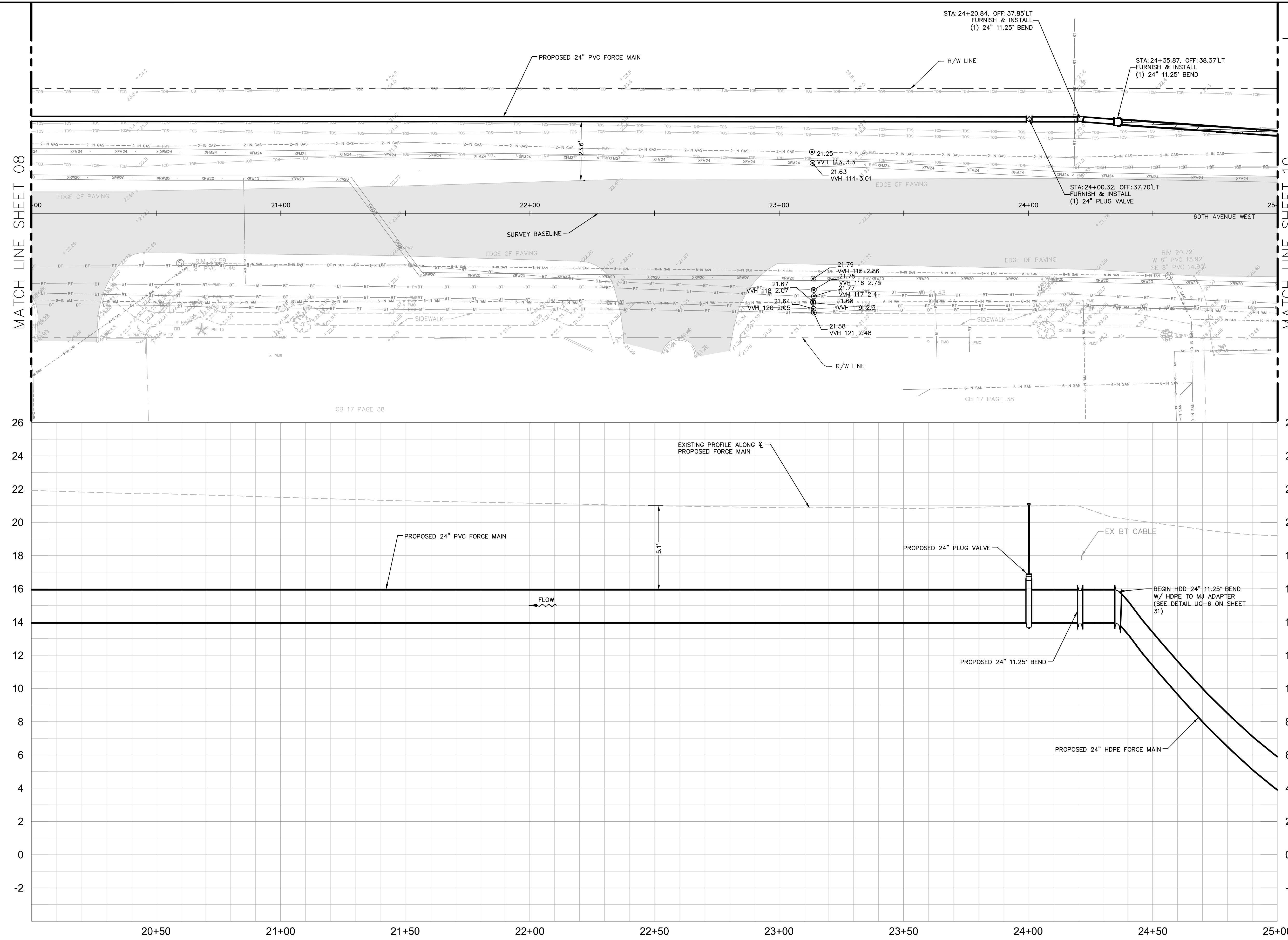
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KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County**  
FLORIDA

**FORCE MAIN 13A REPLACEMENT**

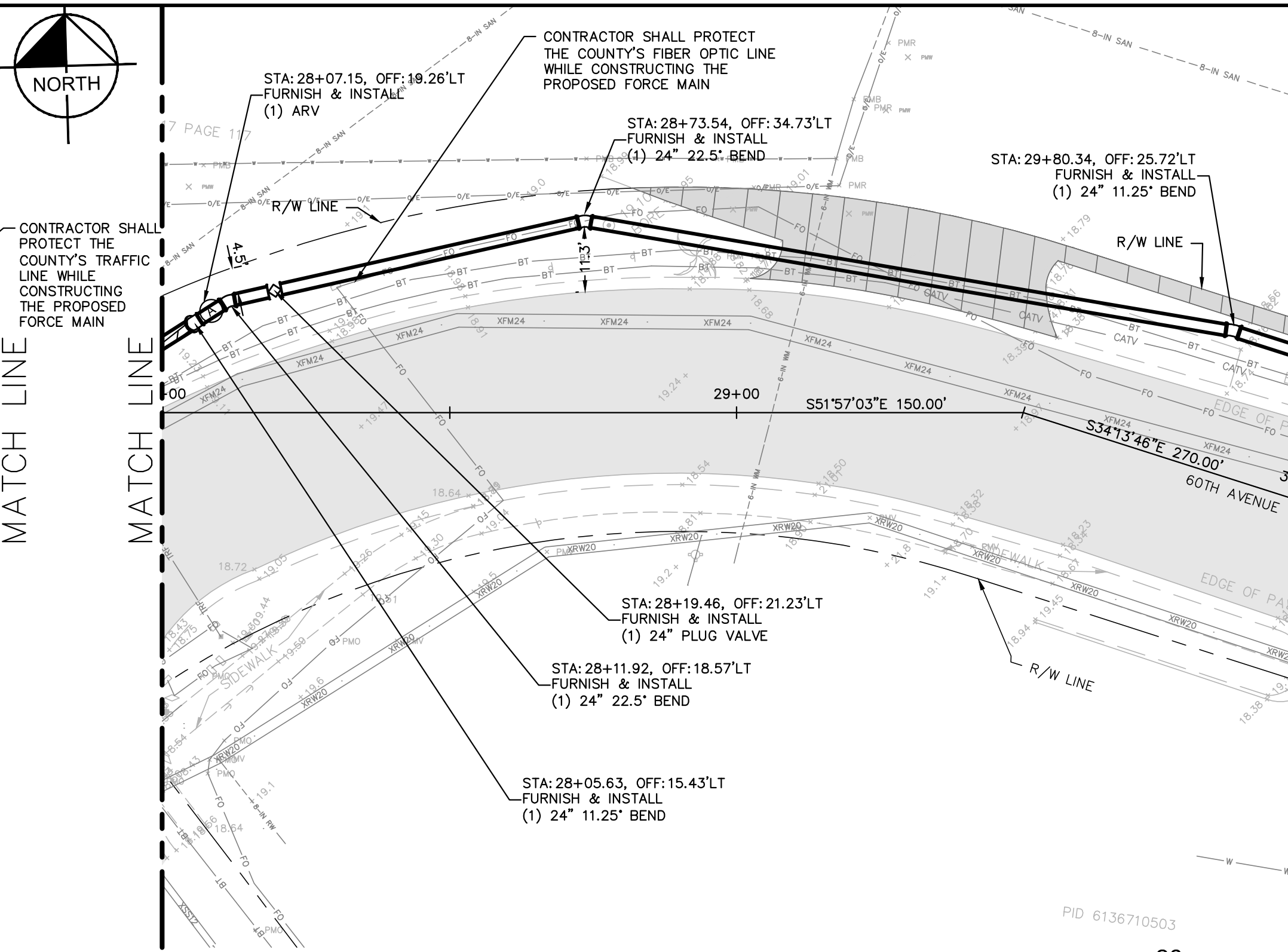
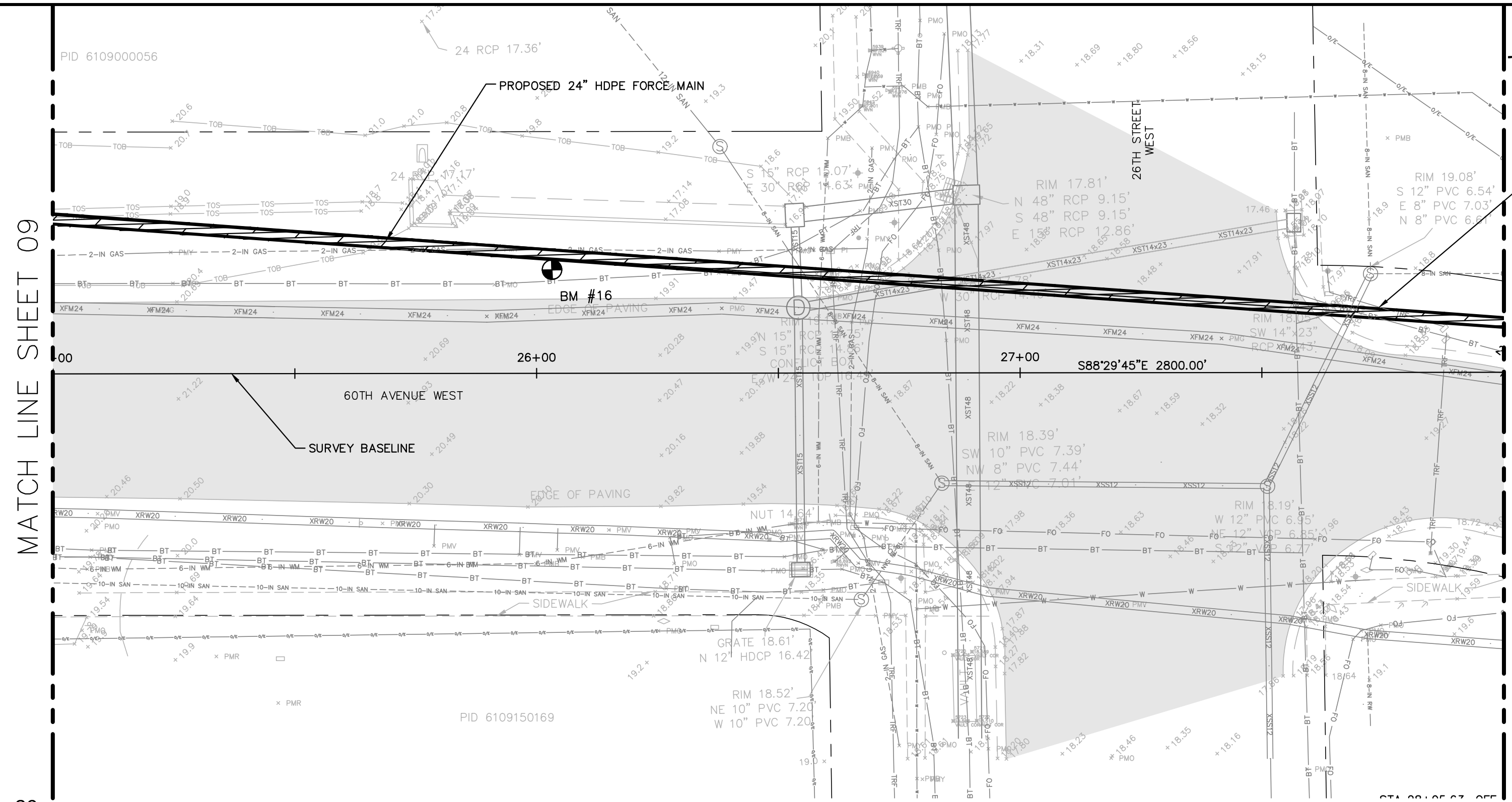
MANATEE COUNTY

LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652

**PLAN AND PROFILE (60TH AVE W)**  
**STA 20+00 TO STA 25+00**

SHEET NUMBER
09

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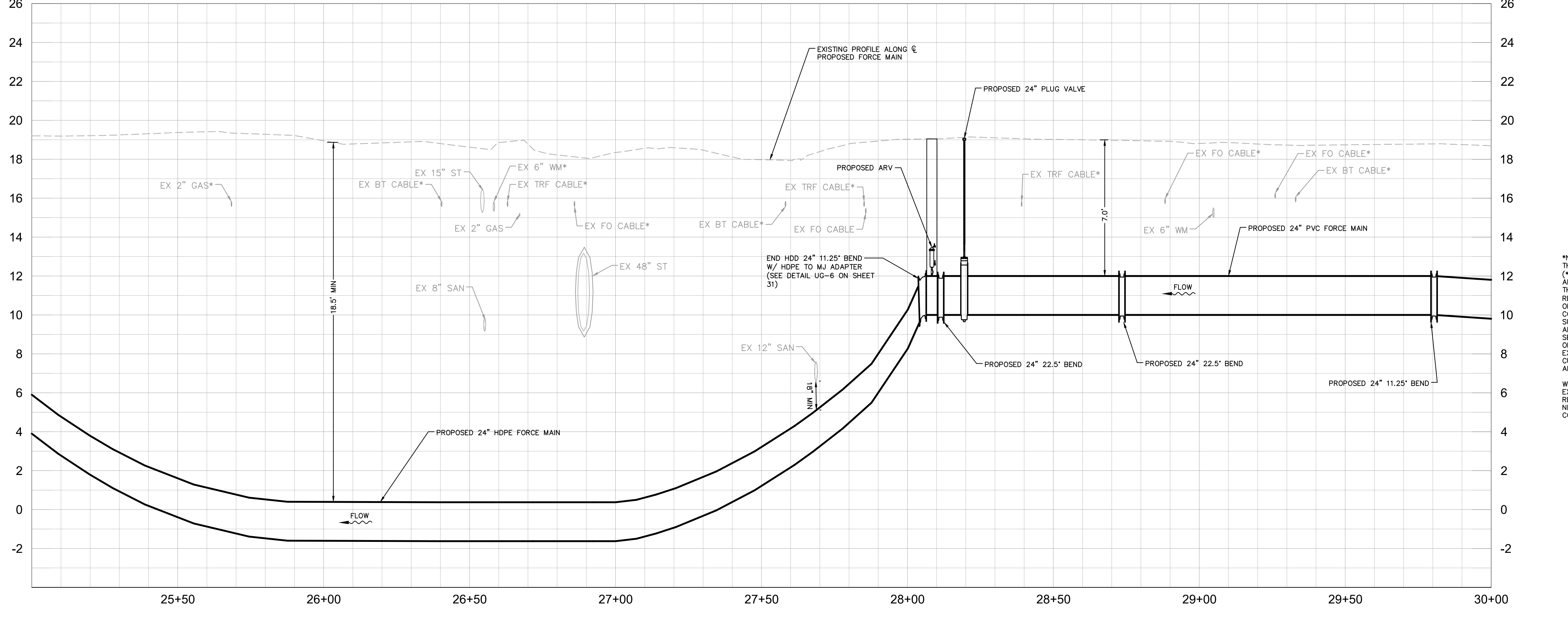
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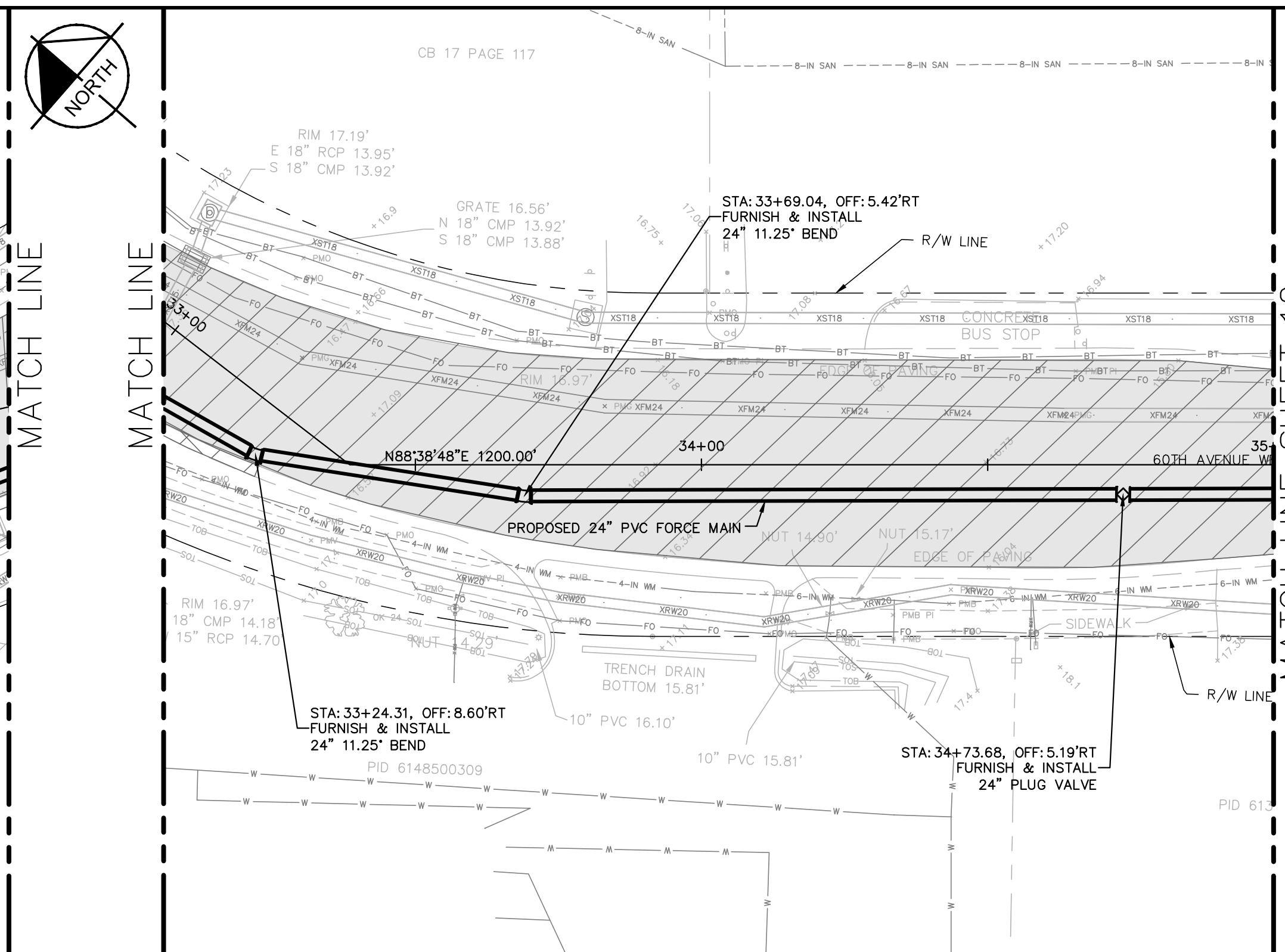
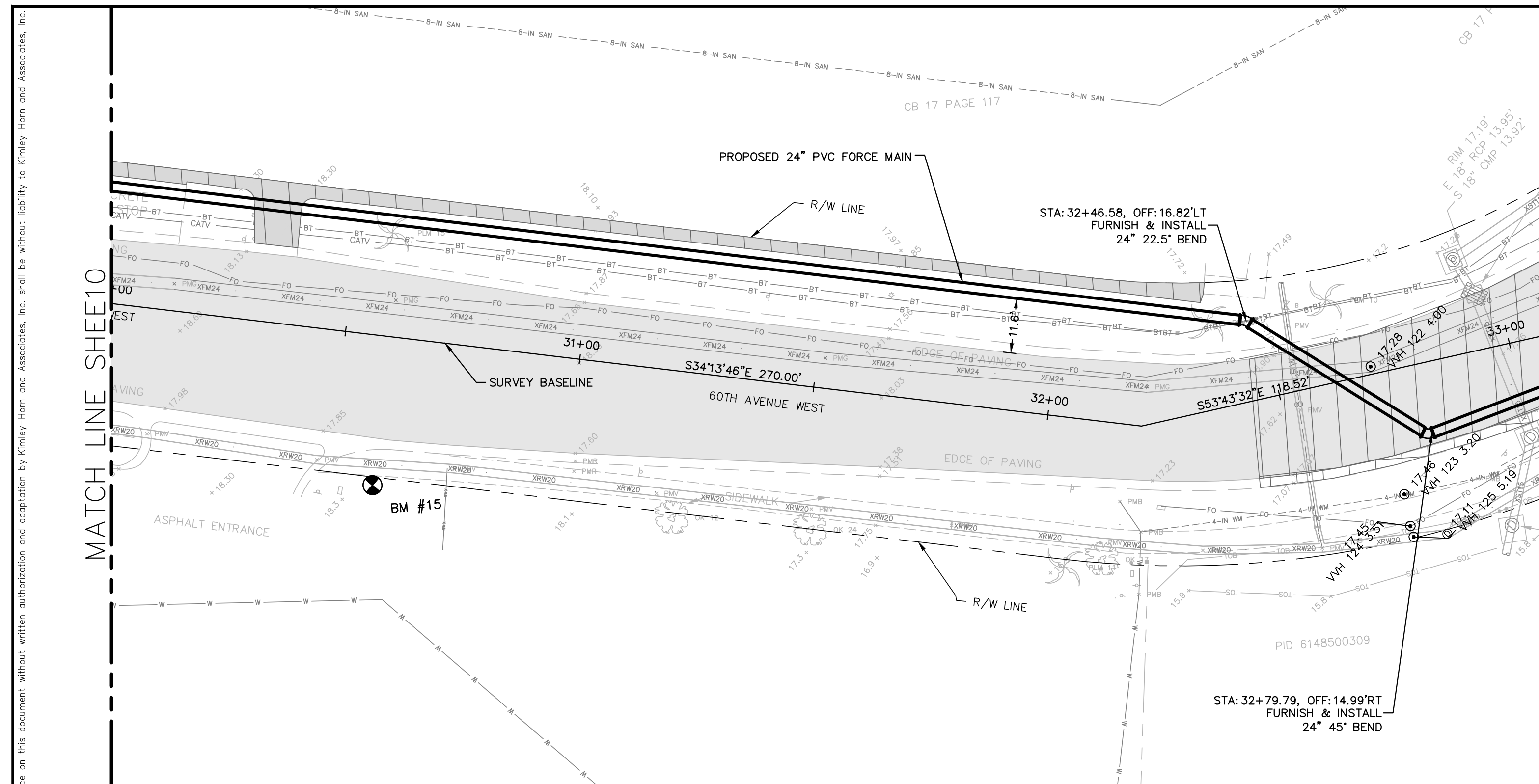
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FL DATE:

**PLAN AND PROFILE (60TH AVE W)**  
**STA 25+00 TO STA 30+00**

SHEET NUMBER
10



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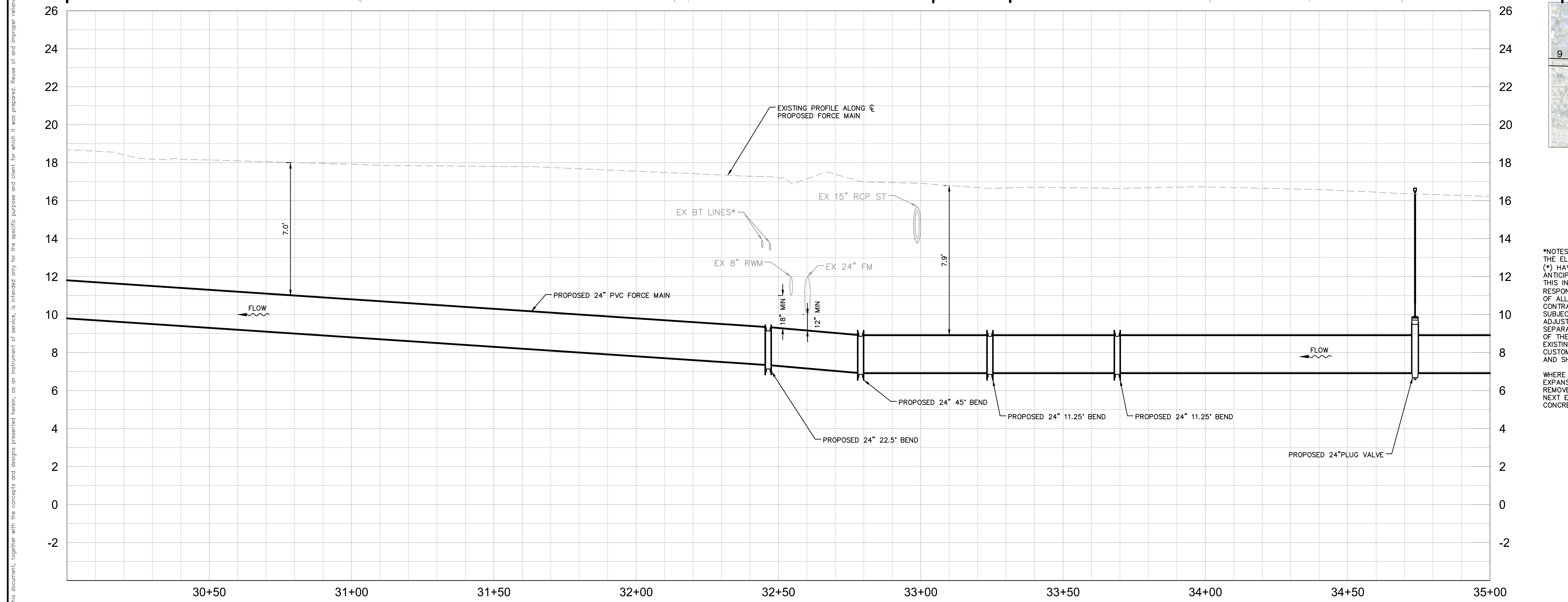
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No.	REVISIONS	DATE	BY

**Kimley»Horn**

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655 NORTH FRANKLIN STREET, SUITE 150, TAMPA, FL 33602  
PHONE: 813-620-1460  
WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT 148400011	MANATEE COUNTY
DATE 8/12/16	
SCALE AS SHOWN	
DESIGNED BY JWW	
DRAWN BY SNH	
CHECKED BY WEW	

**Manatee County FLORIDA**

**FORCE MAIN 13A REPLACEMENT**

LICENSED PROFESSIONAL  
JORDAN W. WALKER, P.E.  
FL LICENSE NUMBER  
78652

FL DATE:

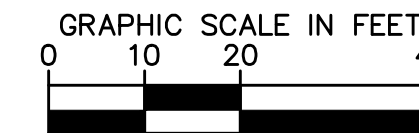
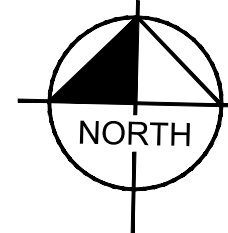
**PLAN AND PROFILE  
(60TH AVE W)  
STA 30+00 TO STA 35+00**

SHEET NUMBER <b>11</b>
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HORIZONTAL SCALE: 1"=20'  
VERTICAL SCALE: 1"=3'

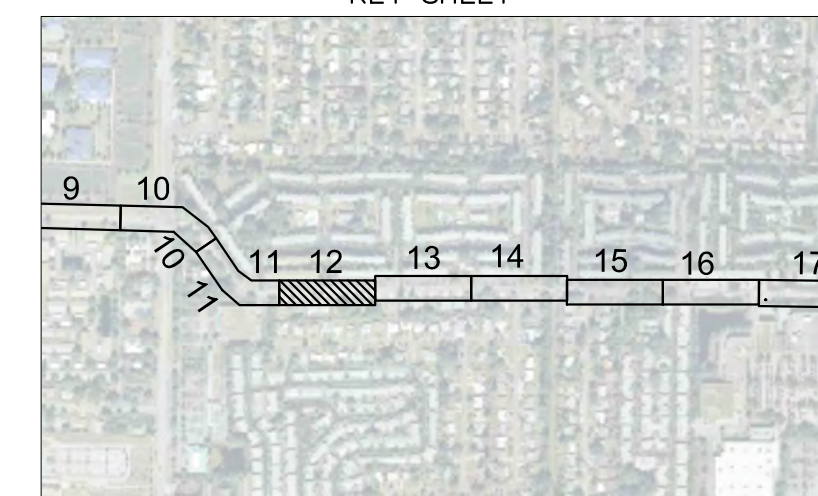
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**LEGEND**

- LIMITS OF RESTORATION
- CONCRETE REPAIR
- GRAVEL REPAIR

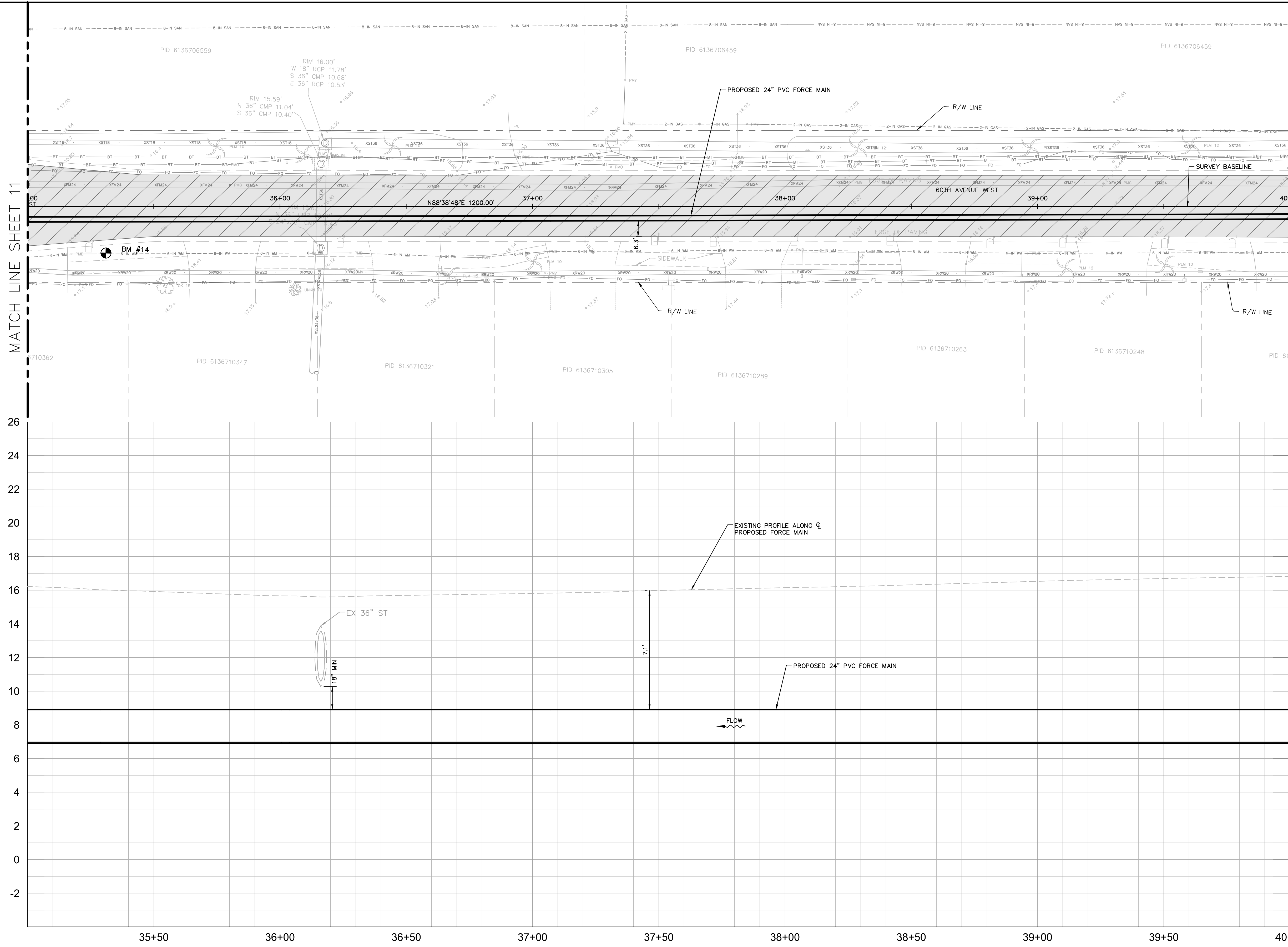
**KEY SHEET**



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PHONE: 813-620-1460  
WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County Florida**  
**FORCE MAIN 13A REPLACEMENT**  
MANATEE COUNTY

LICENSED PROFESSIONAL JORDAN W. WALKER, P.E. FL LICENSE NUMBER 78652
-------------------------------------------------------------------------------

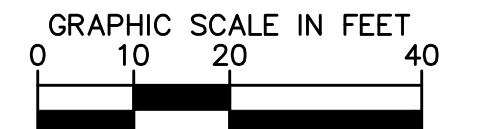
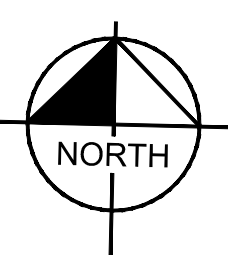
**PLAN AND PROFILE  
(60TH AVE W)  
STA 35+00 TO STA 40+00**

SHEET NUMBER <b>12</b>
---------------------------

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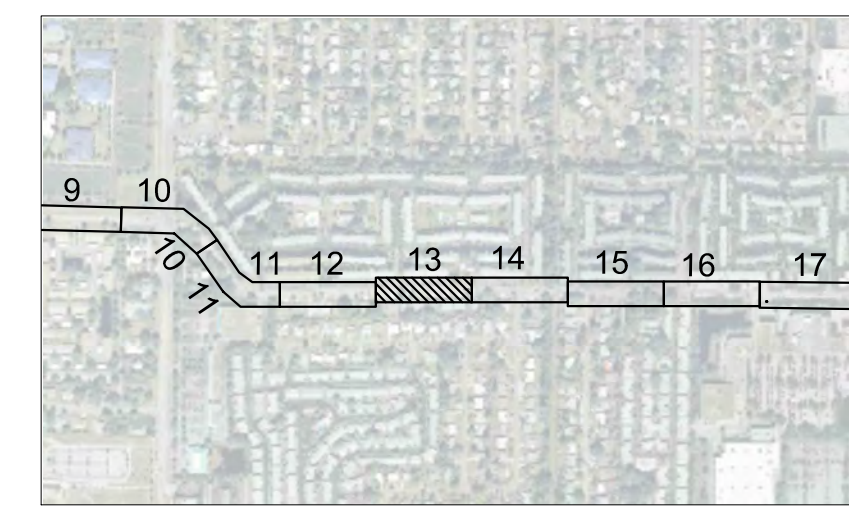
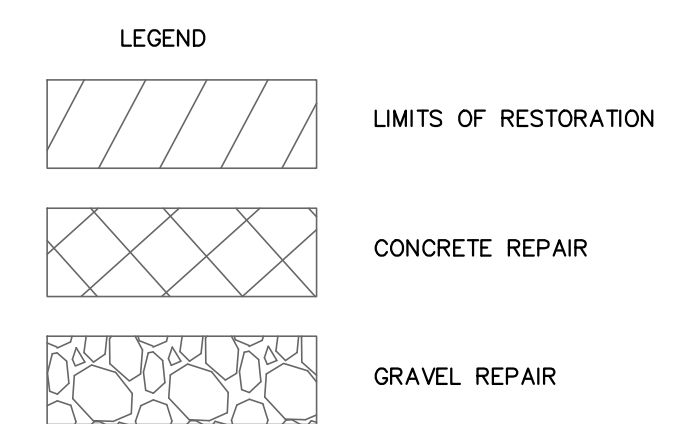
MATCH LINE SHEET 12

MATCH LINE SHEET 14



HORIZONTAL SCALE: 1"=20'  
VERTICAL SCALE: 1"=3'

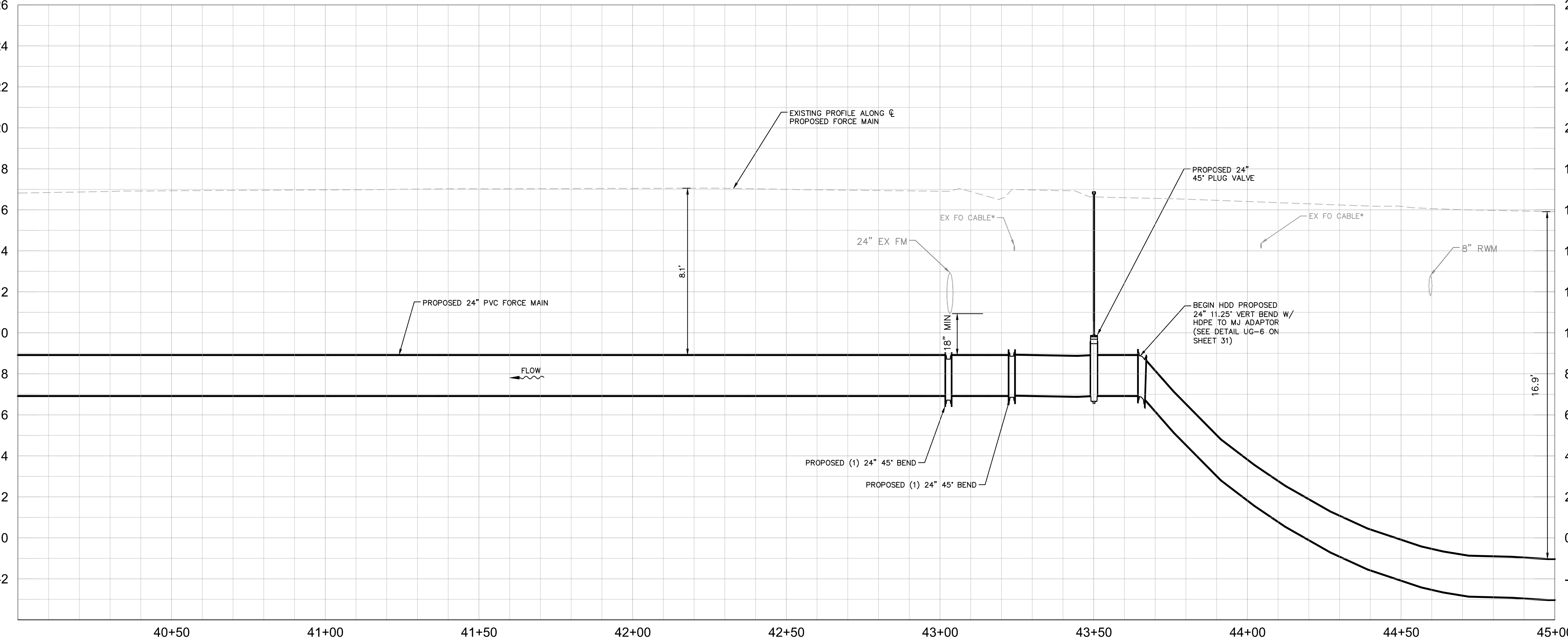
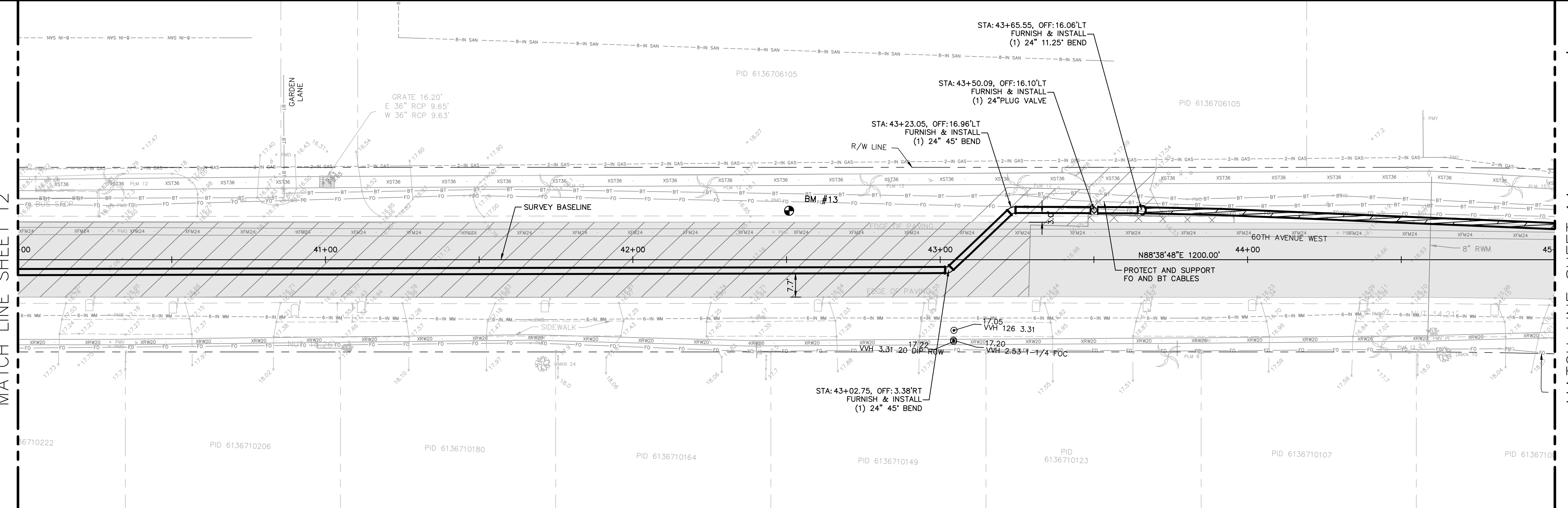
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No.	REVISIONS	DATE	BY

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WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County**  
FLORIDA

**FORCE MAIN 13A  
REPLACEMENT**

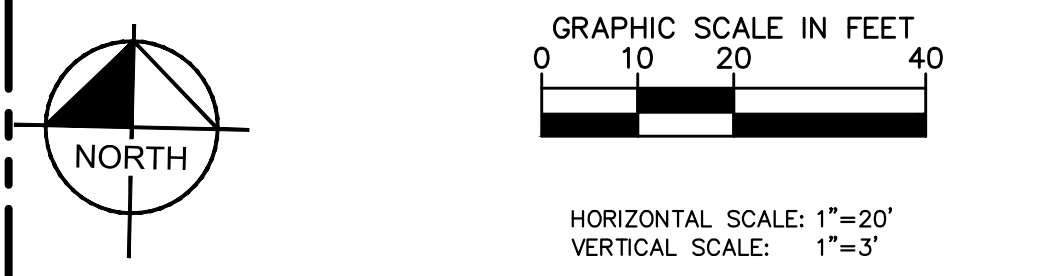
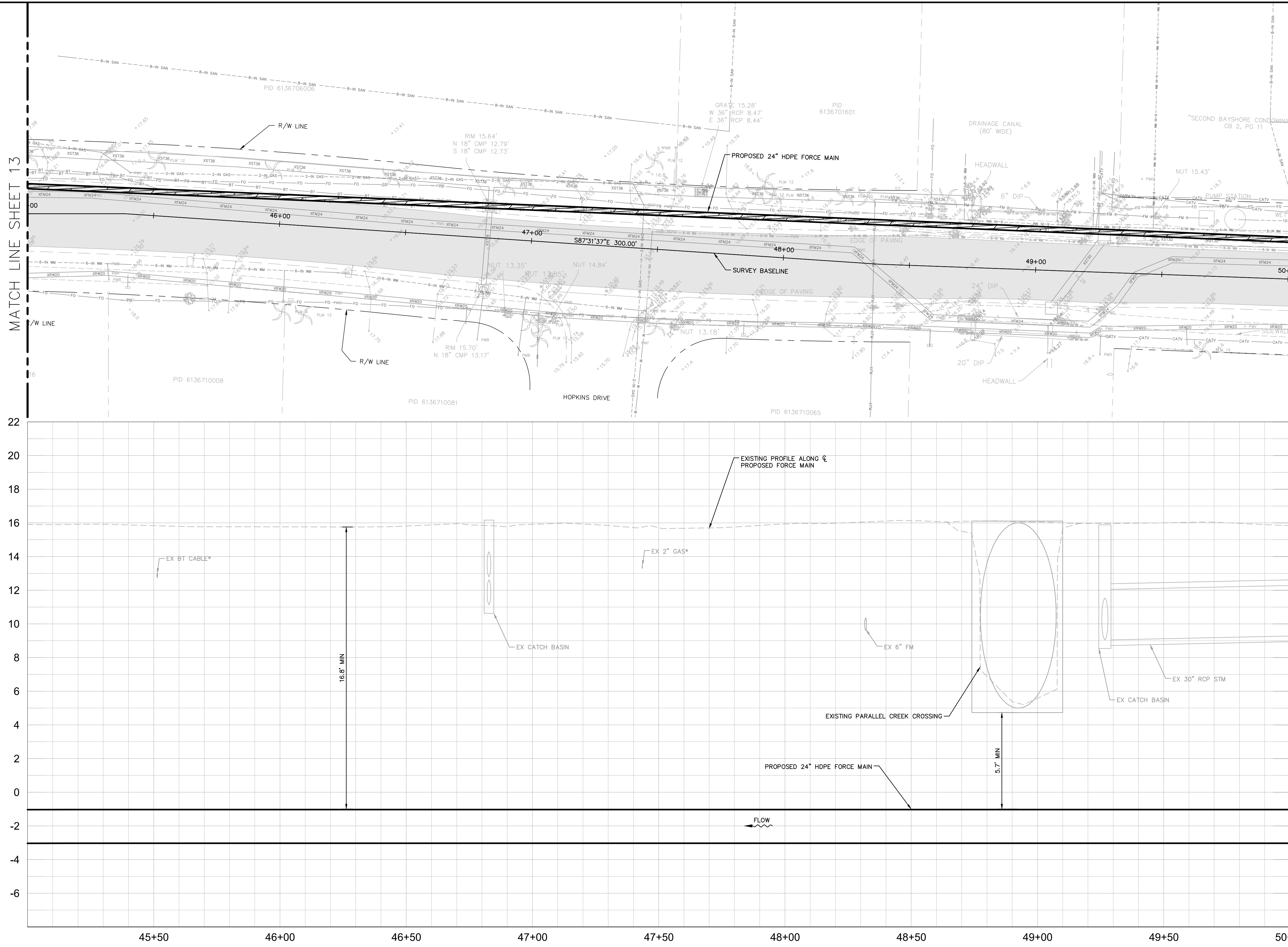
MANATEE COUNTY

LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652

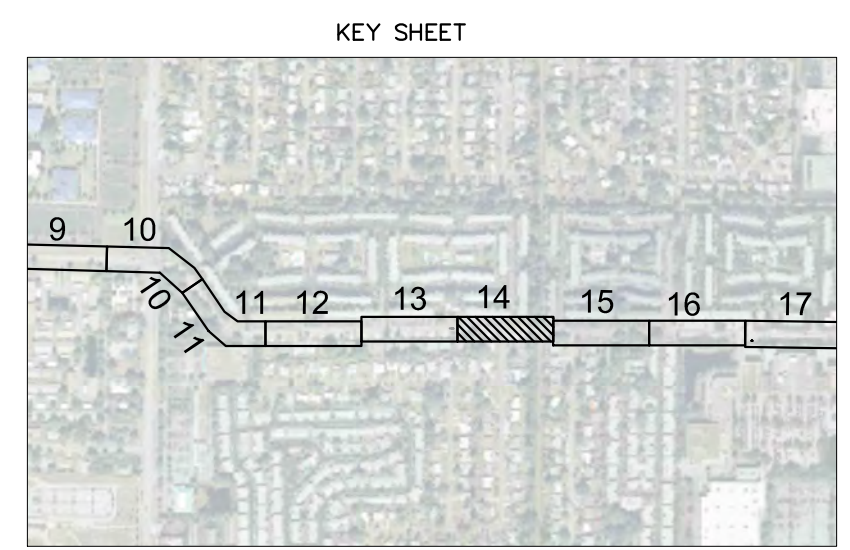
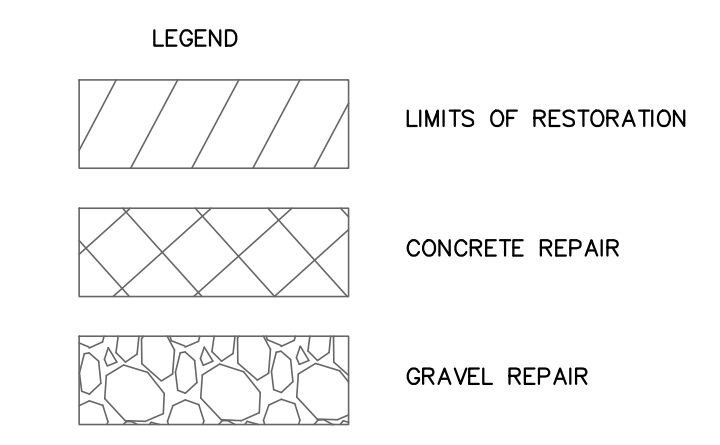
**PLAN AND PROFILE  
(60TH AVE W)  
STA 40+00 TO STA 45+00**

SHEET NUMBER <b>13</b>
---------------------------

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KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County**  
**FLORIDA**

**FORCE MAIN 13A  
 REPLACEMENT**

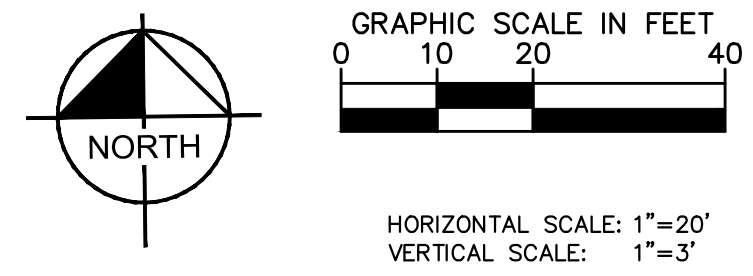
MANATEE COUNTY

LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652
FL DATE:

**PLAN AND PROFILE  
 (60TH AVE W)  
 STA 45+00 TO STA 50+00**

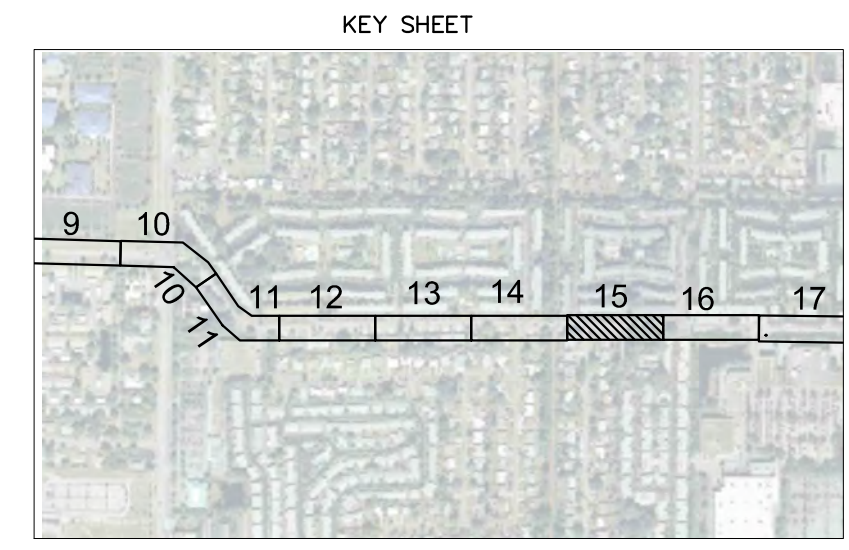
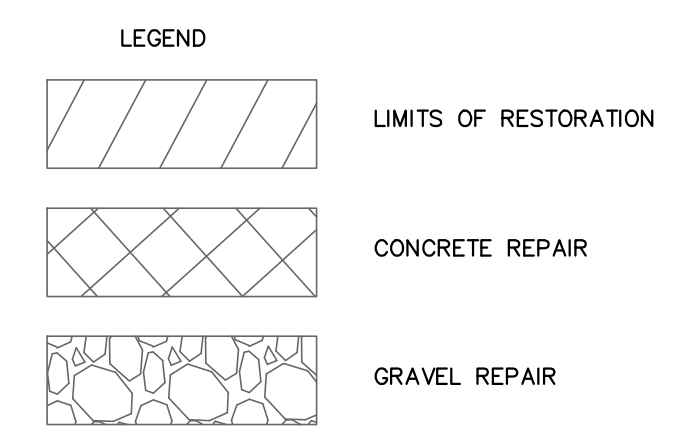
SHEET NUMBER
<b>14</b>

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VERTICAL SCALE: 1"=3'

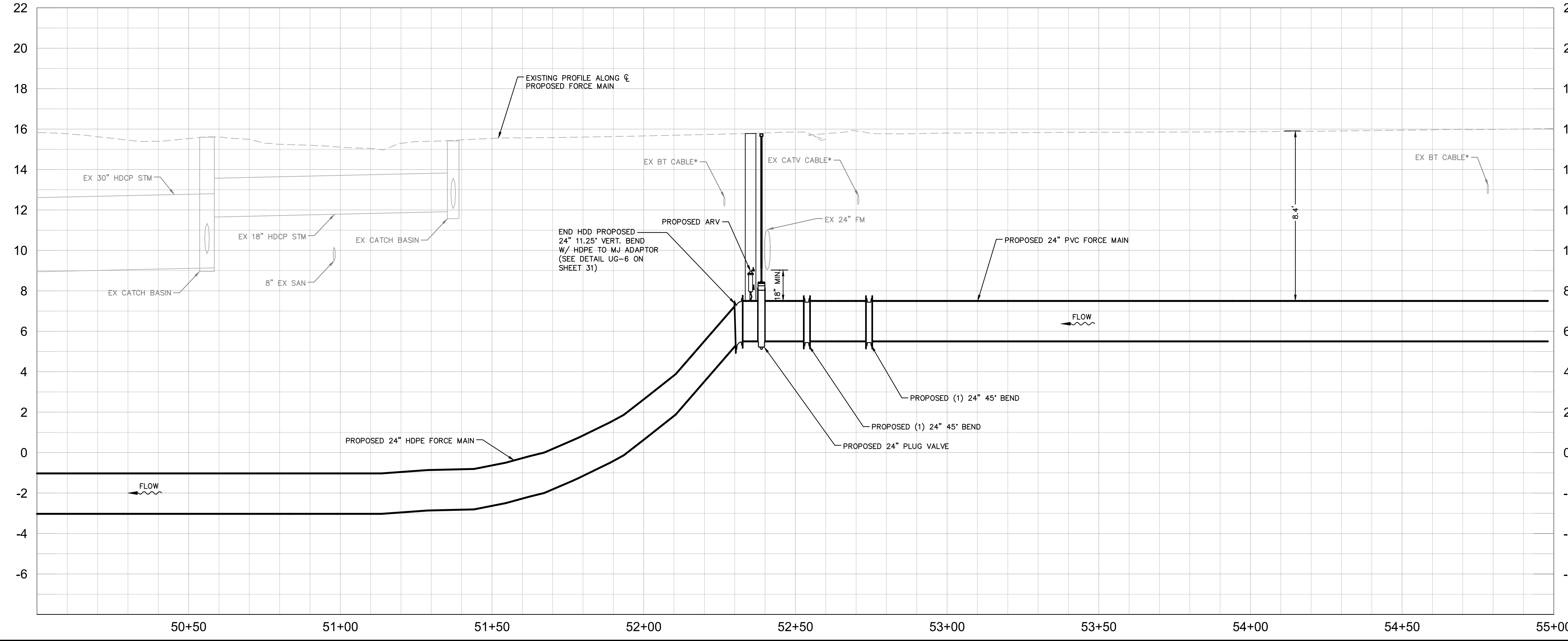
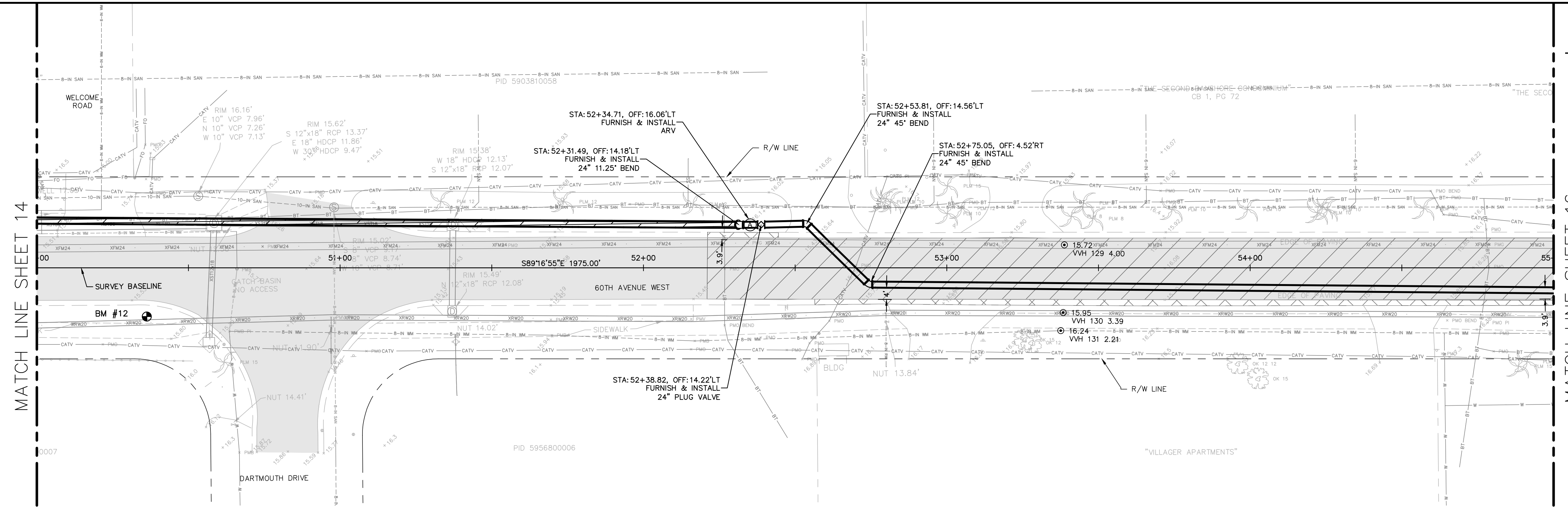
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WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT 148400011
DATE 8/15/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County**  
FLORIDA

**FORCE MAIN 13A  
REPLACEMENT**

MANATEE COUNTY

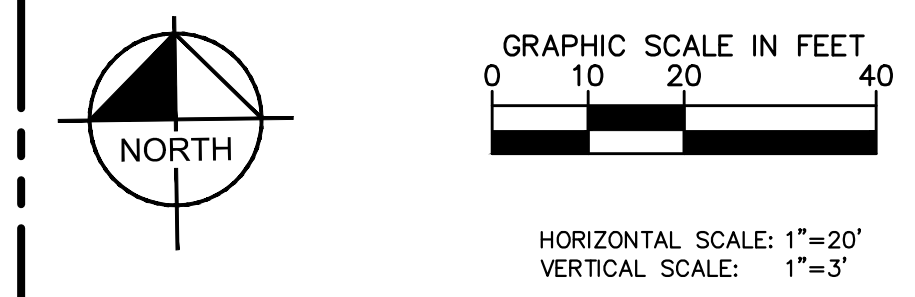
LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652

**PLAN AND PROFILE  
(60TH AVE W)  
STA 50+00 TO STA 55+00**

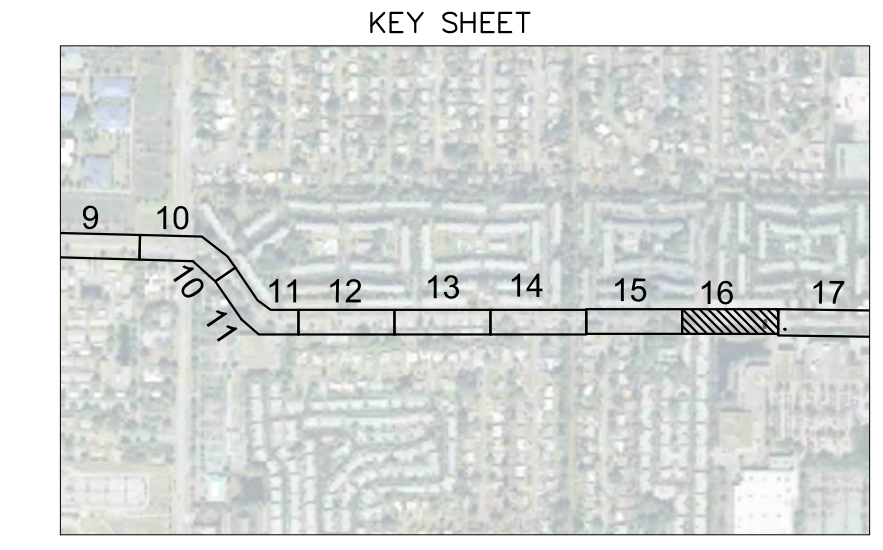
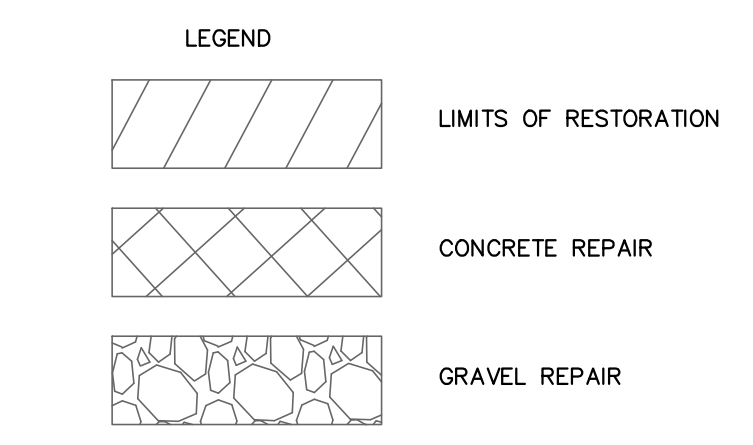
SHEET NUMBER
15

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MATCH LINE SHEET 15

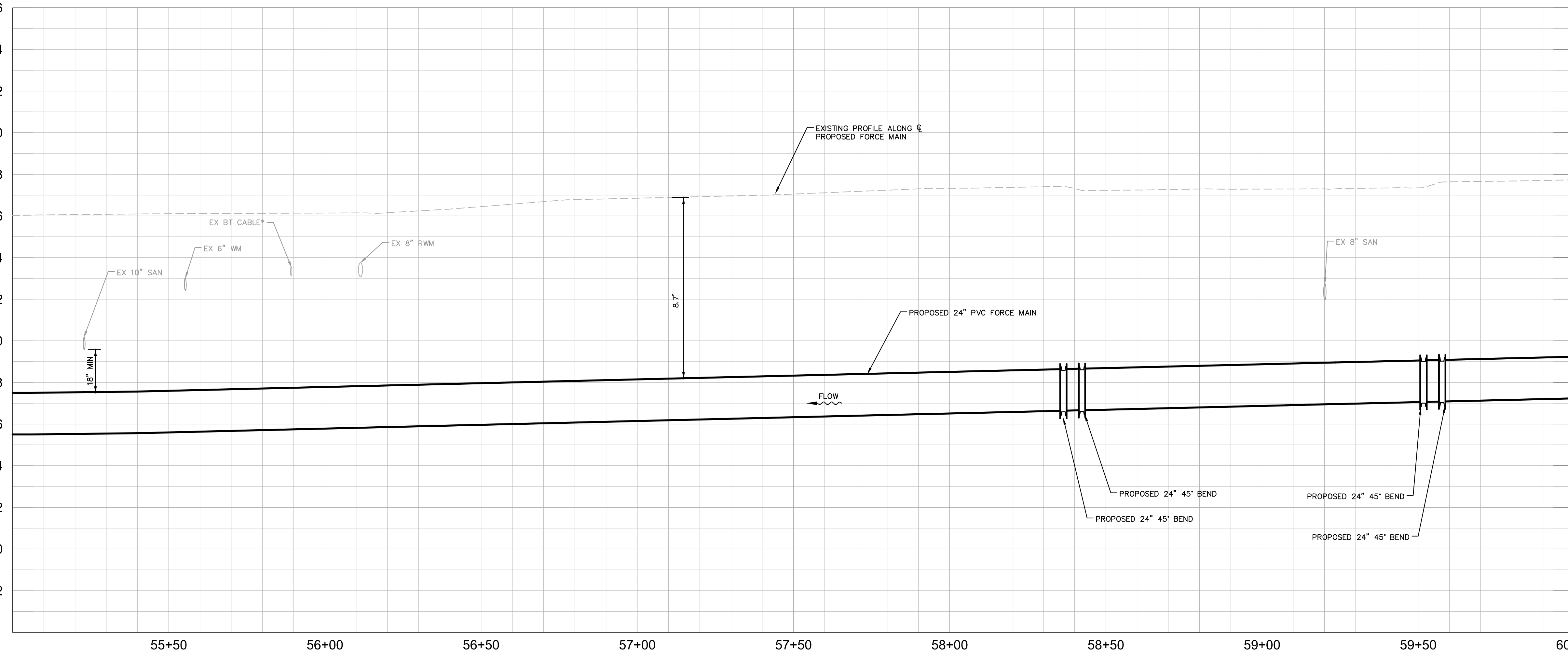
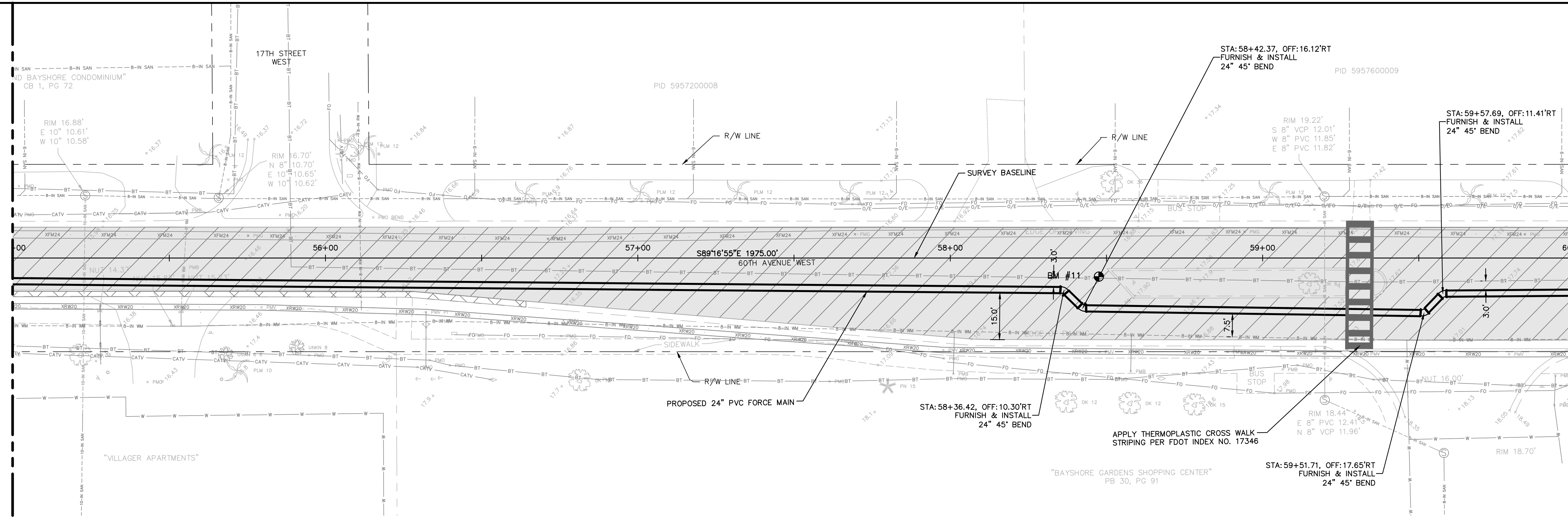


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KHA PROJECT 148400011
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CHECKED BY WEW

**Manatee County**  
**FLORIDA**  
**FORCE MAIN 13A**  
**REPLACEMENT**

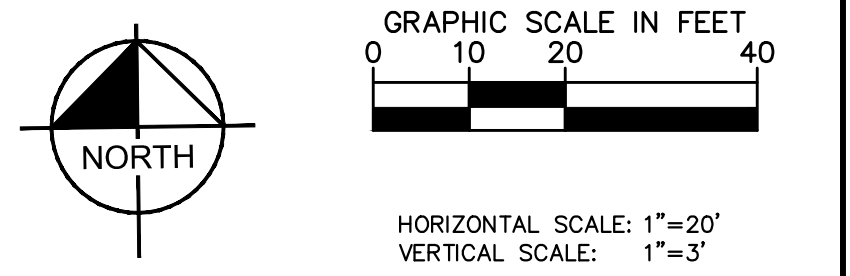
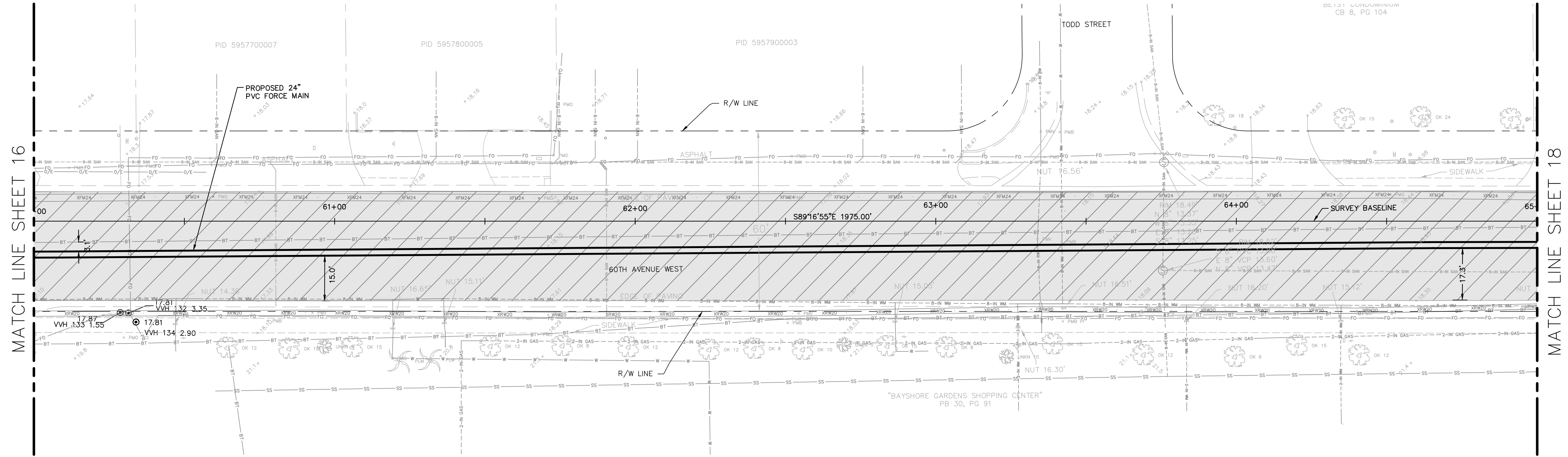
LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652

**PLAN AND PROFILE**  
**(60TH AVE W)**  
**STA 55+00 TO STA 60+00**

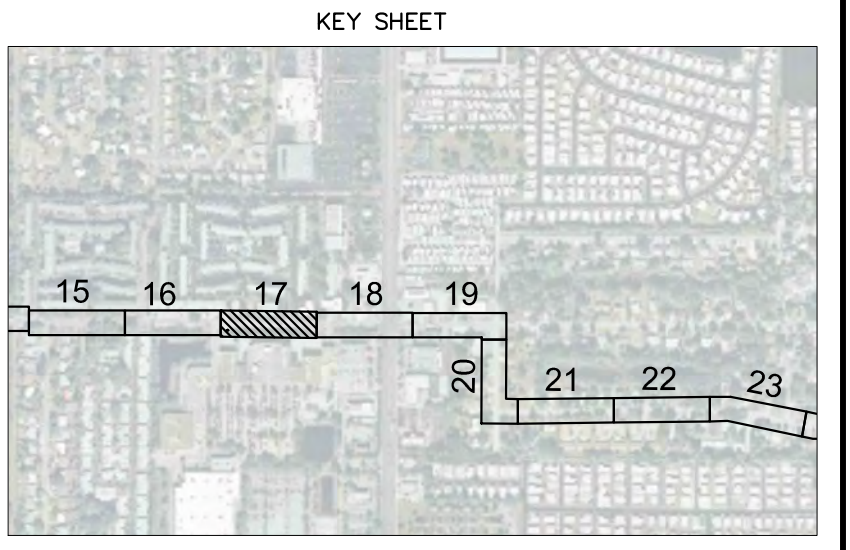
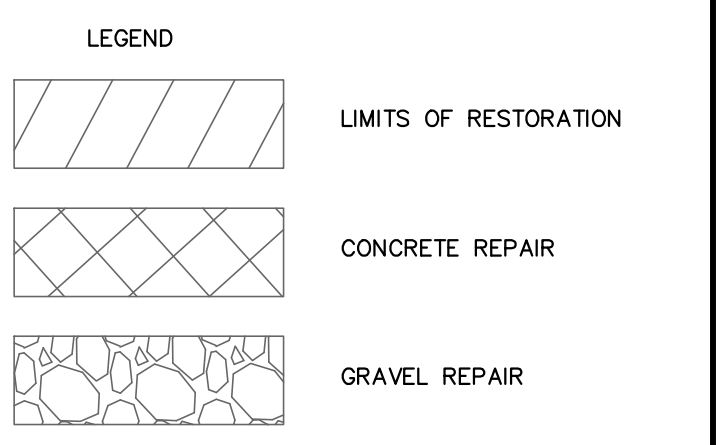
SHEET NUMBER
16



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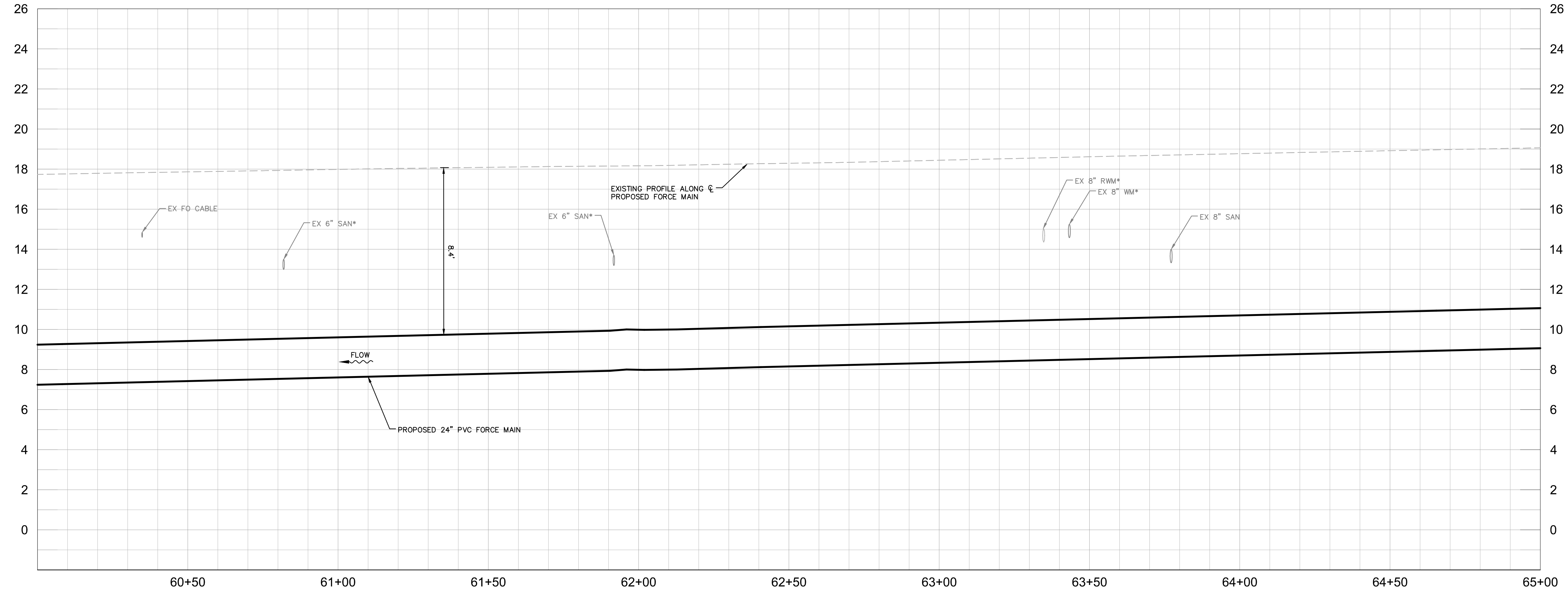
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No.	REVISIONS	DATE	BY

**Kimley»Horn**

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 655 NORTH FRANKLIN STREET, SUITE 150, TAMPA, FL 33602  
 PHONE: 813-620-1460  
 WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County**  
**FLORIDA**

**FORCE MAIN 13A  
 REPLACEMENT**

MANATEE COUNTY

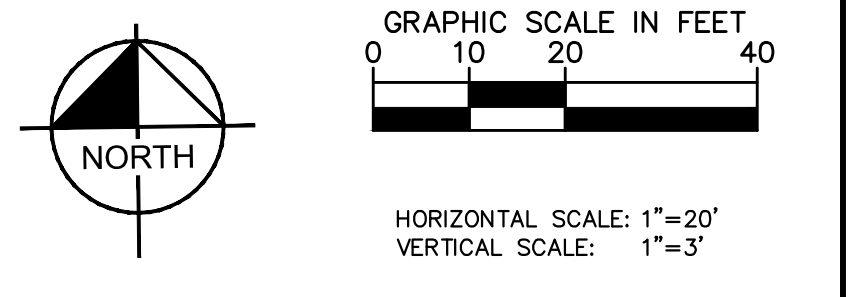
LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652

**PLAN AND PROFILE  
 (60TH AVE W)  
 STA 60+00 TO STA 65+00**

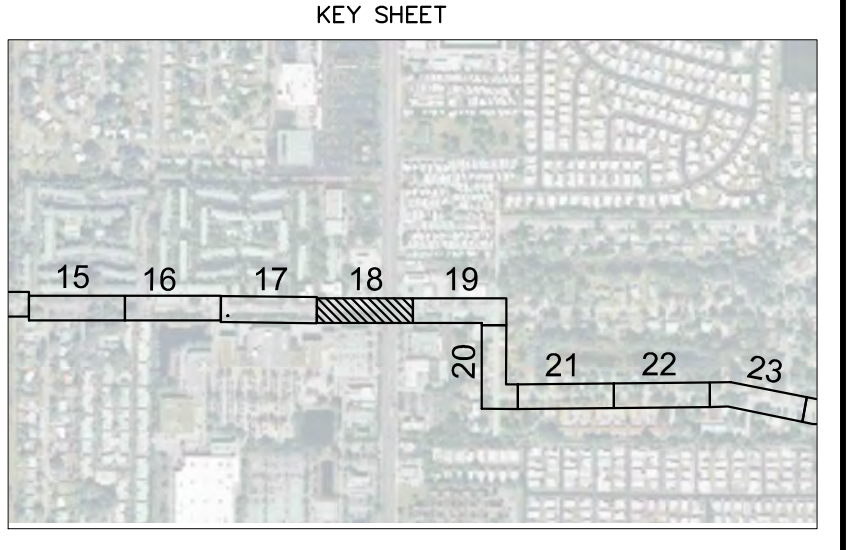
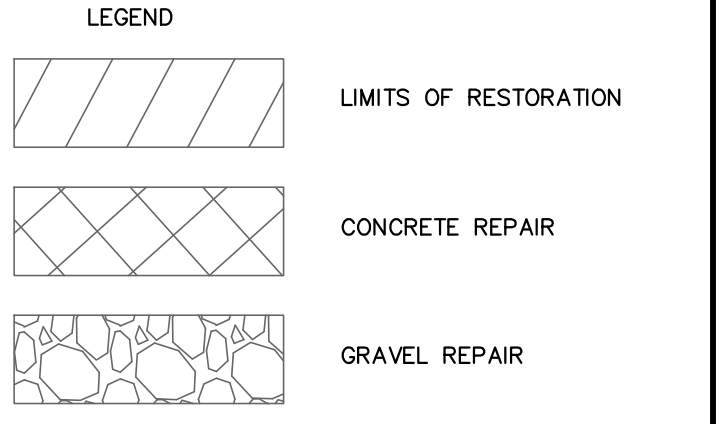
SHEET NUMBER
<b>17</b>



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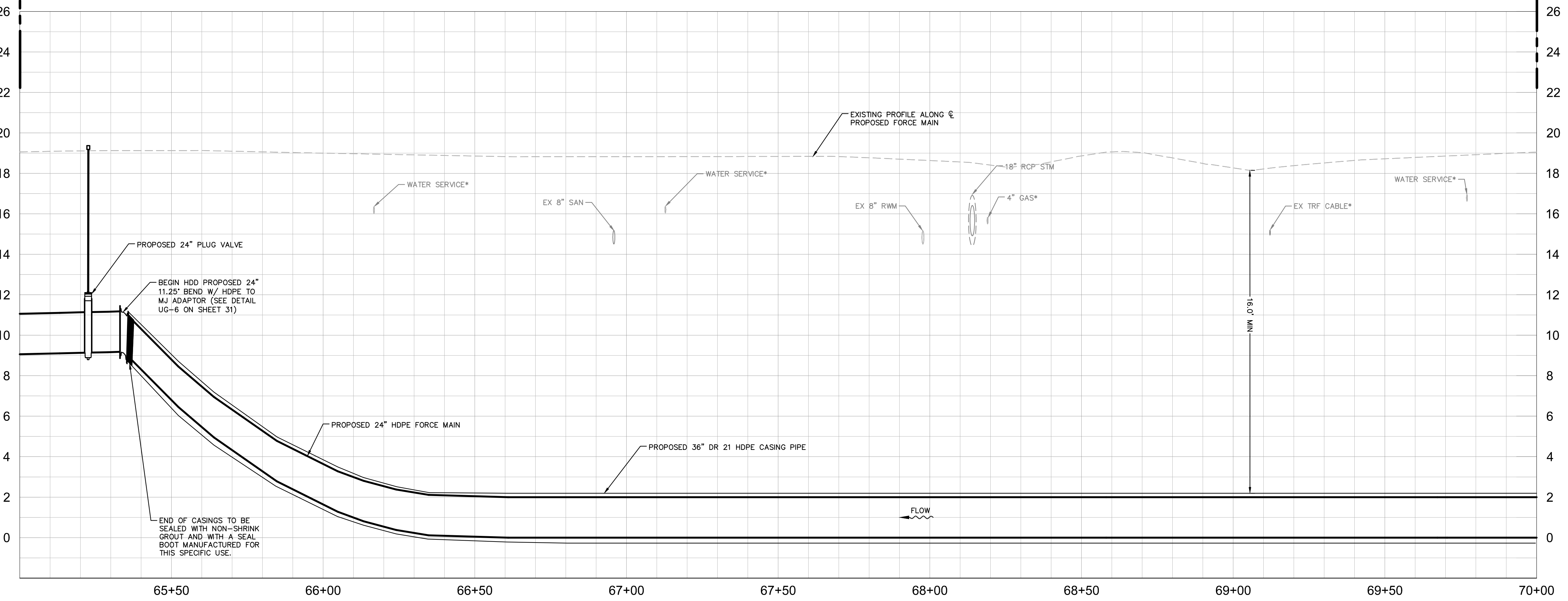
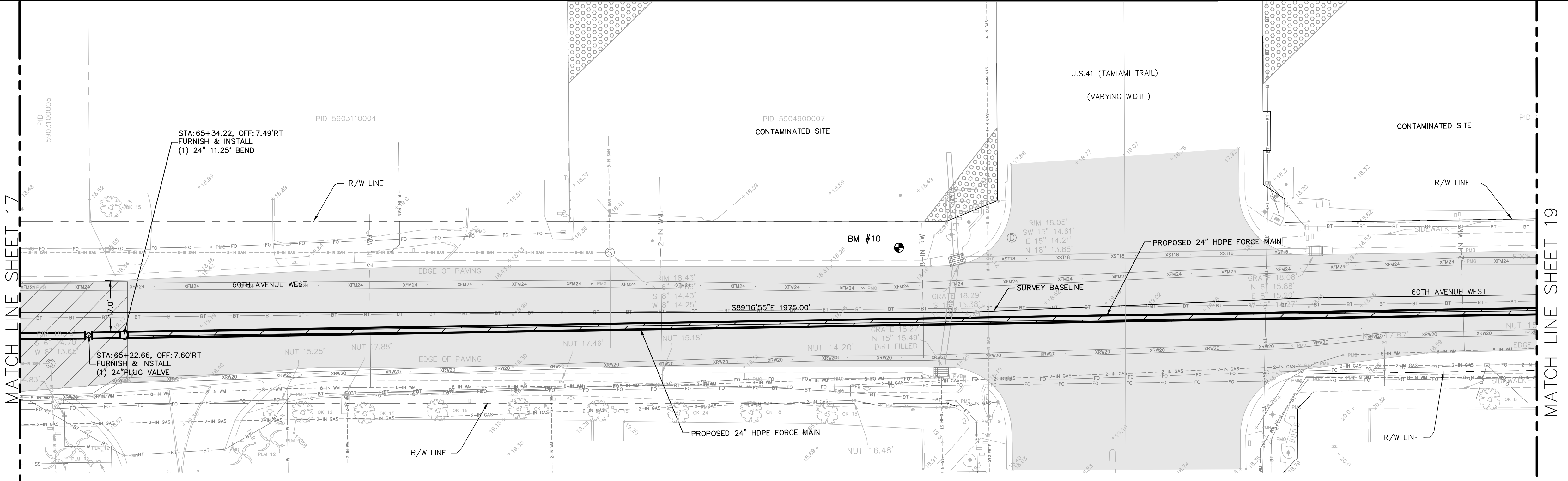


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KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County**  
**FLORIDA**

**FORCE MAIN 13A  
 REPLACEMENT**

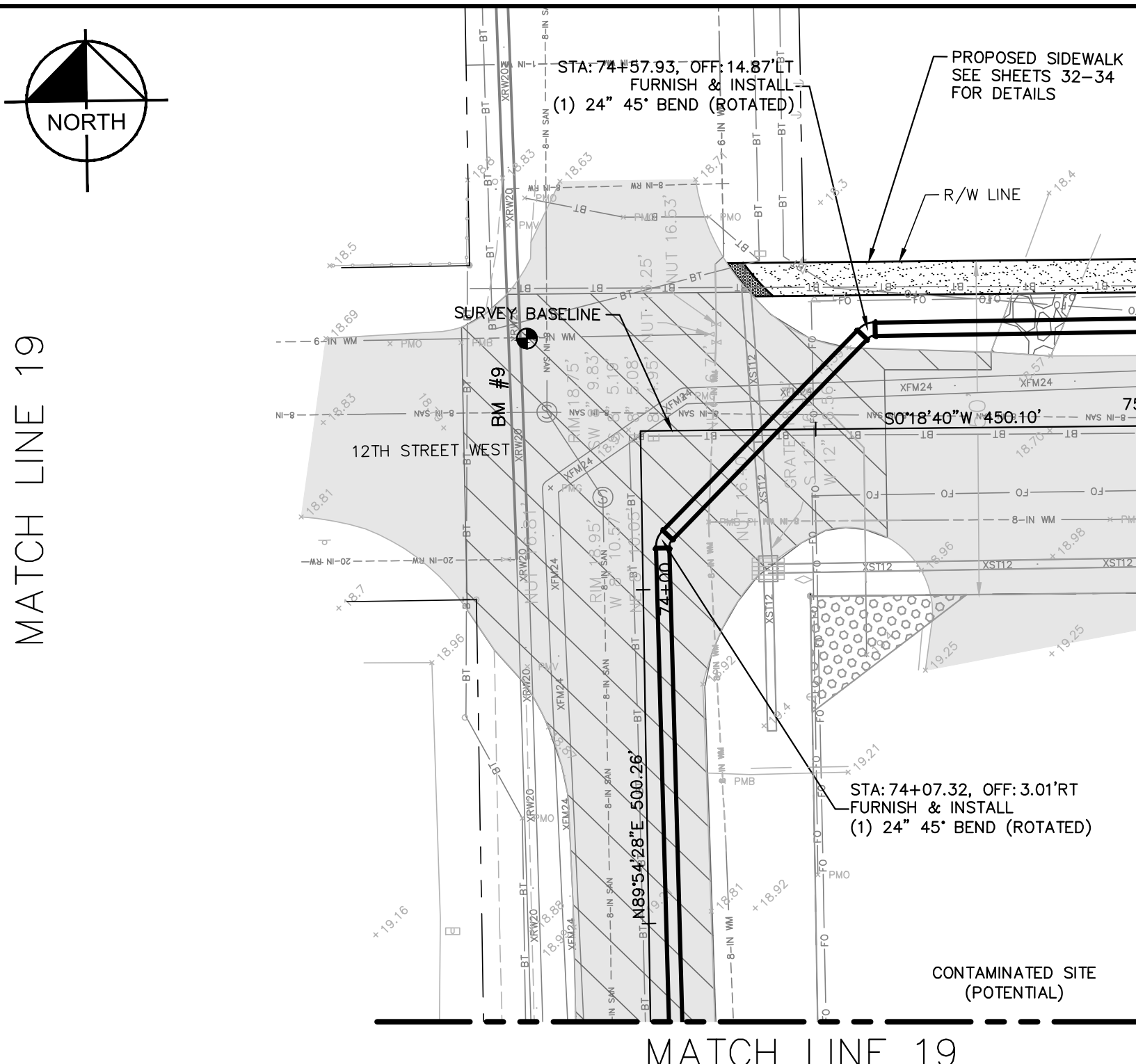
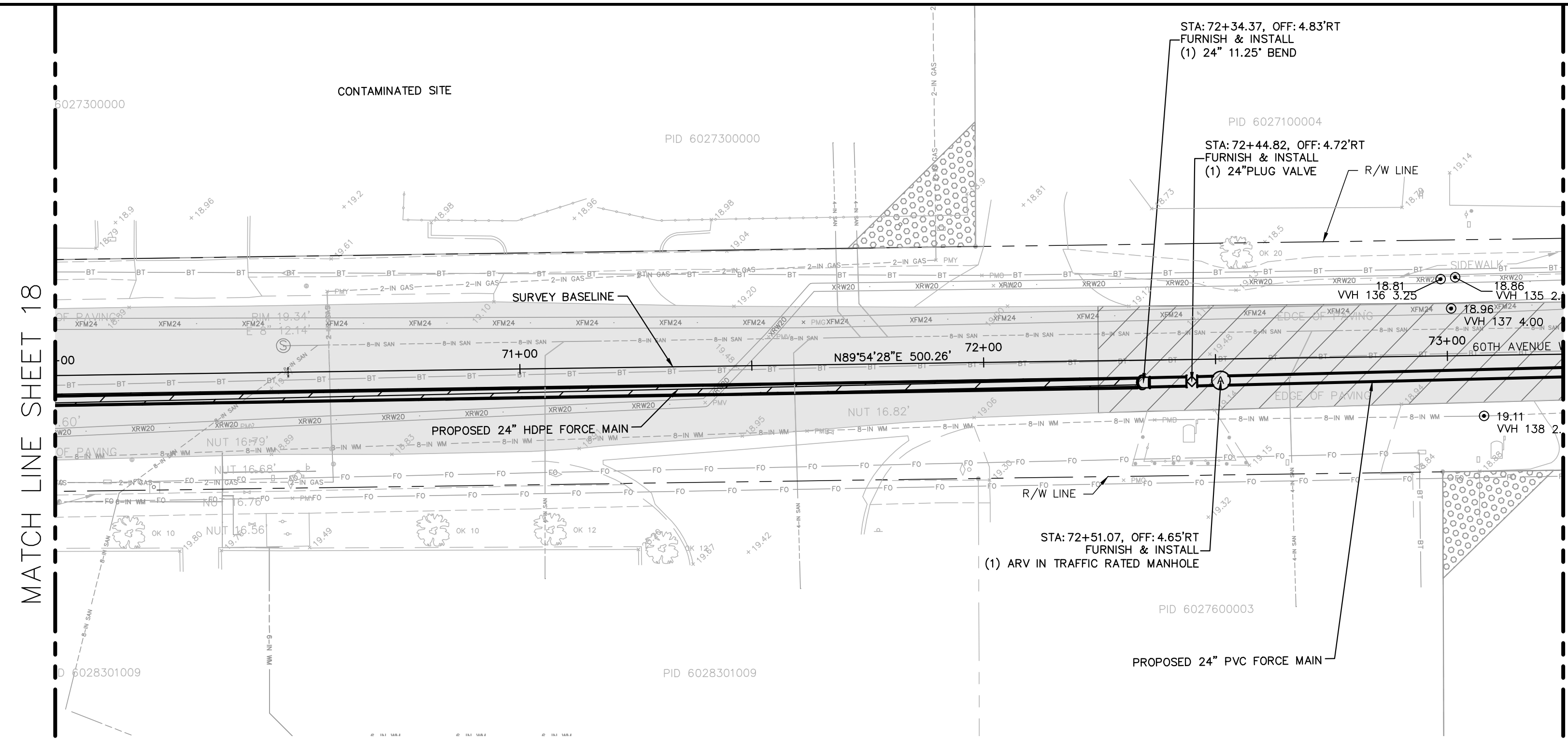
MANATEE COUNTY

LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652

**PLAN AND PROFILE 60TH AVE W)  
 STA 65+00 TO STA 70+00**

SHEET NUMBER
18

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**GRAPHIC SCALE IN FEET**  
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HORIZONTAL SCALE: 1"=20'  
 VERTICAL SCALE: 1"=3'

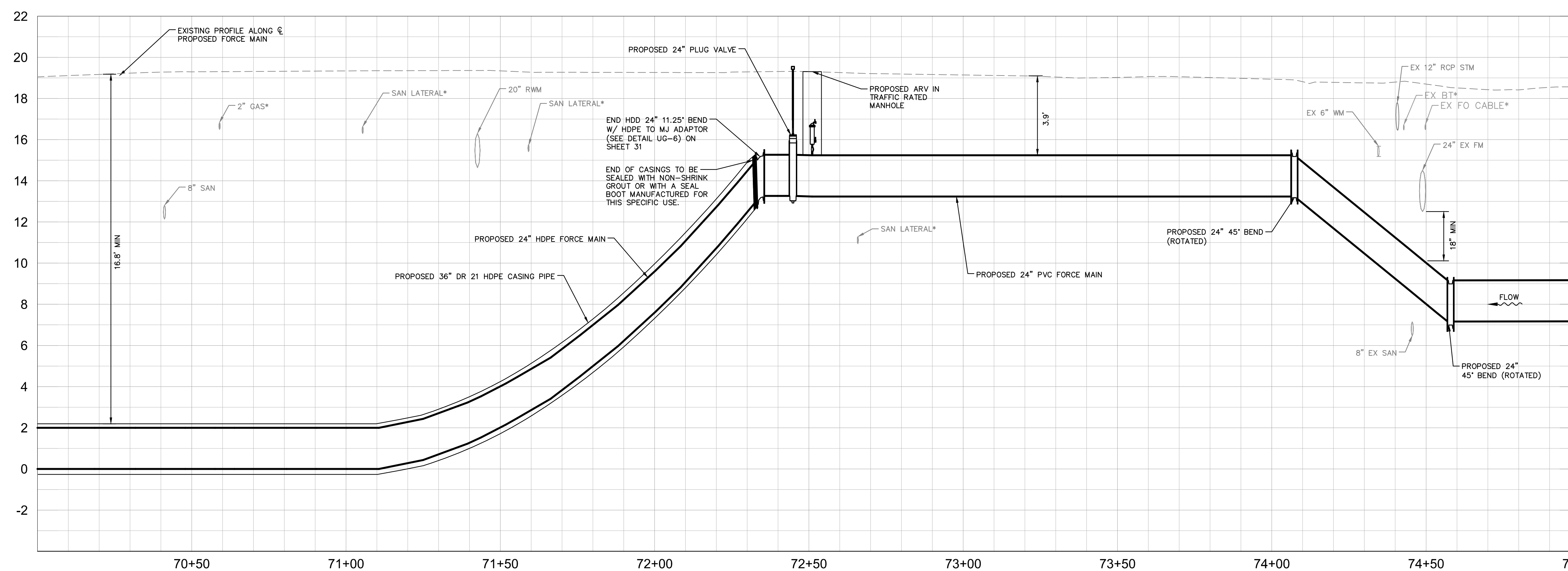
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**LEGEND**

- LIMITS OF RESTORATION
- CONCRETE REPAIR
- GRAVEL REPAIR

**KEY SHEET**



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KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County Florida**

**FORCE MAIN 13A REPLACEMENT**

MANATEE COUNTY

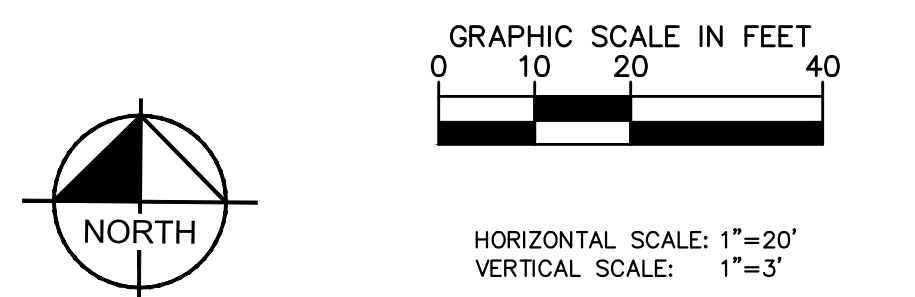
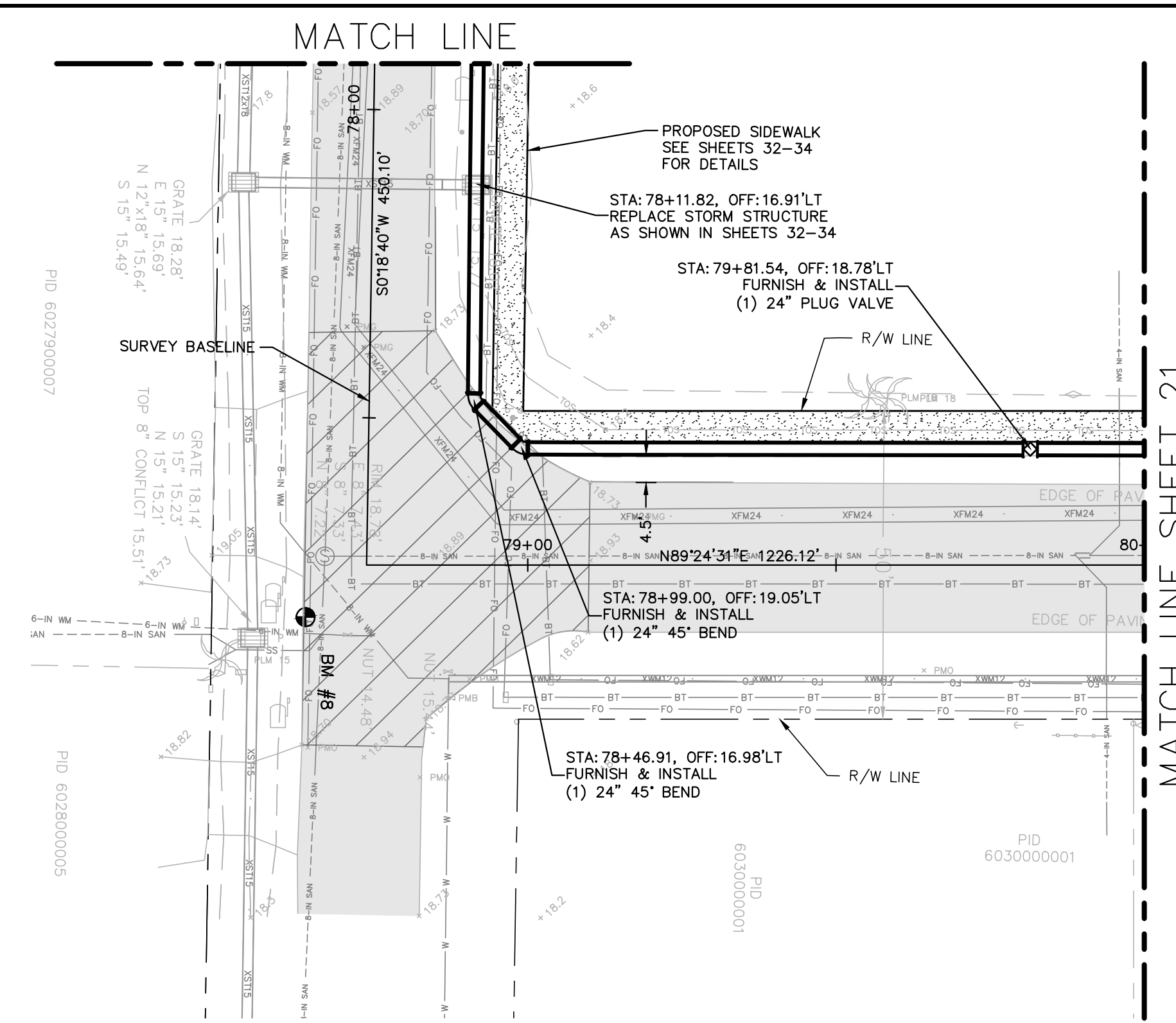
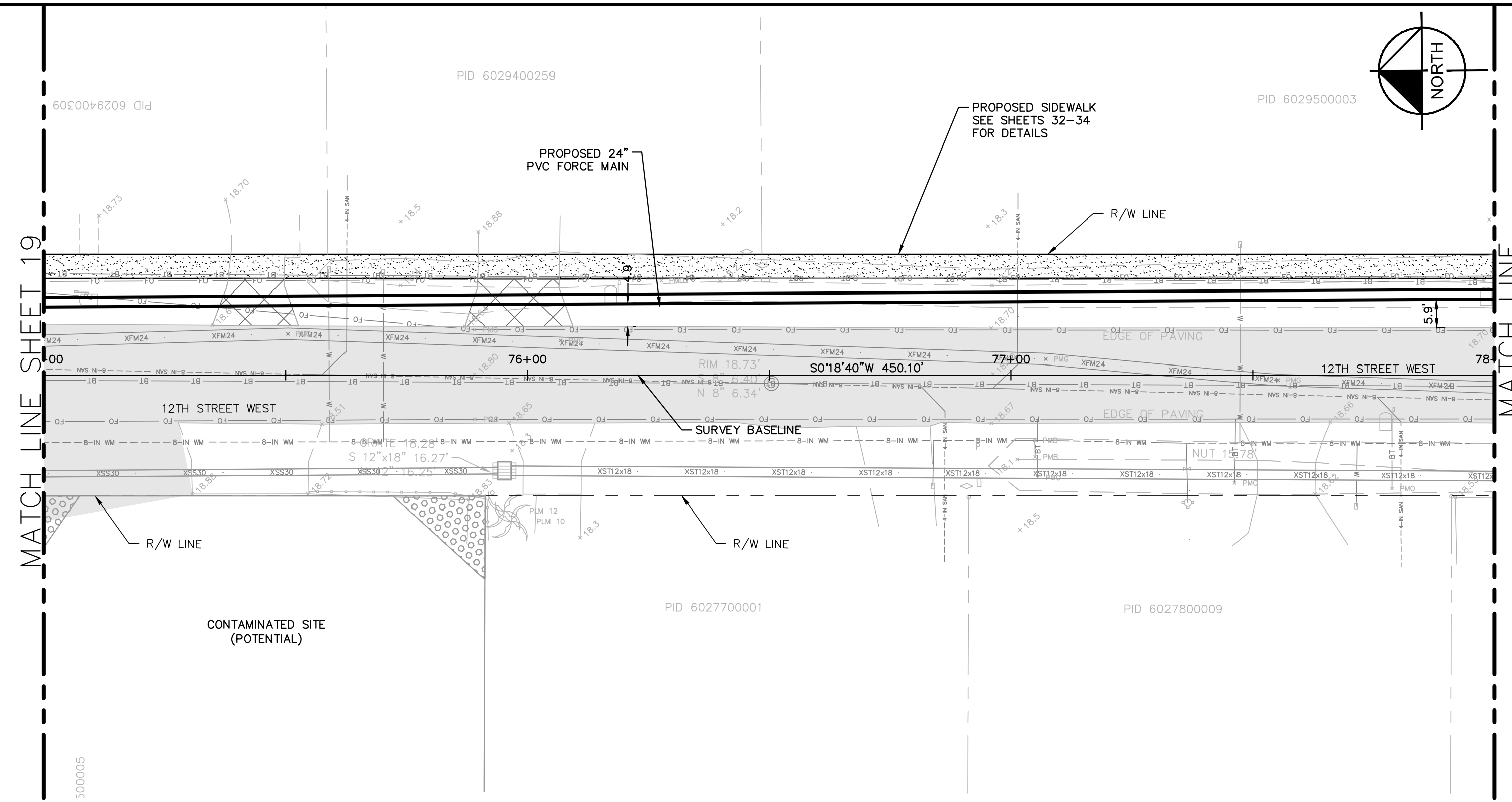
LICENSED PROFESSIONAL  
 JORDAN W. WALKER, P.E.  
 FL LICENSE NUMBER  
 78652

**PLAN AND PROFILE  
 (60TH AVE W)  
 STA 70+00 TO STA 75+00**

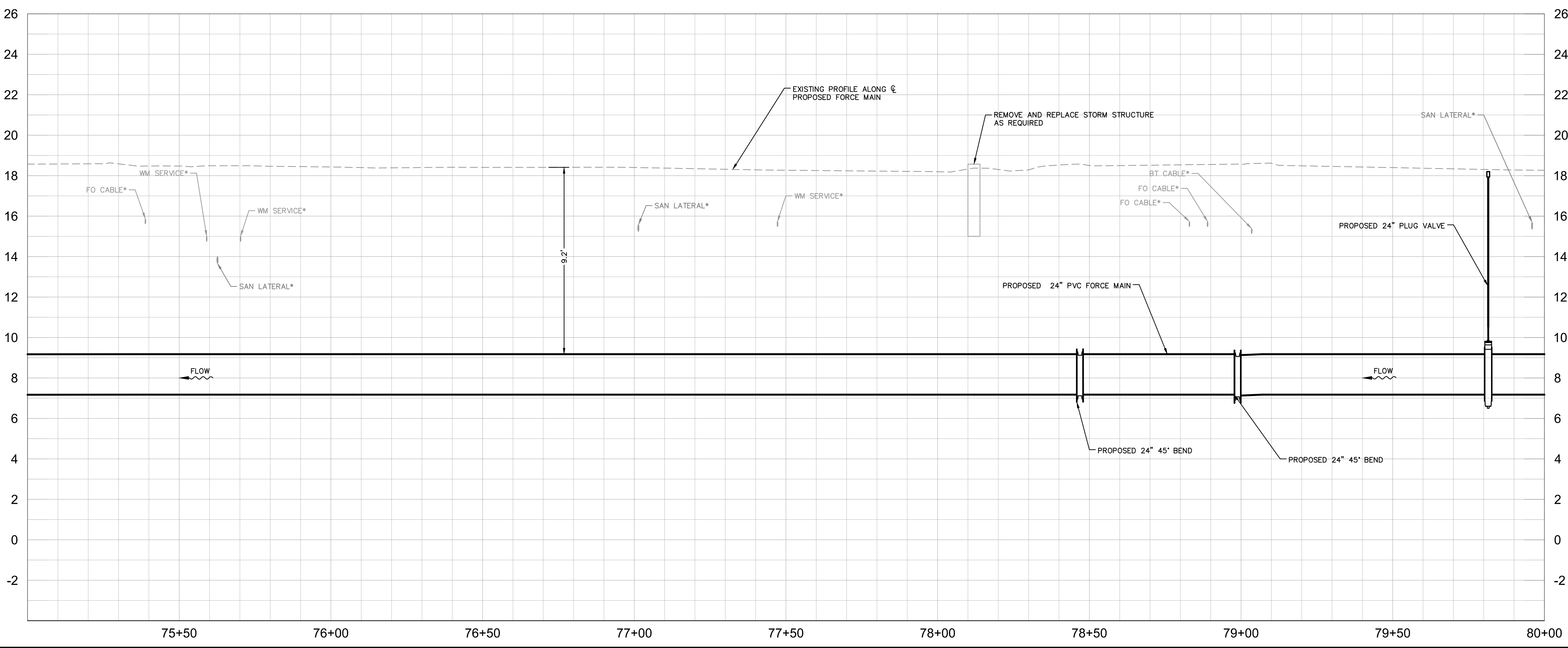
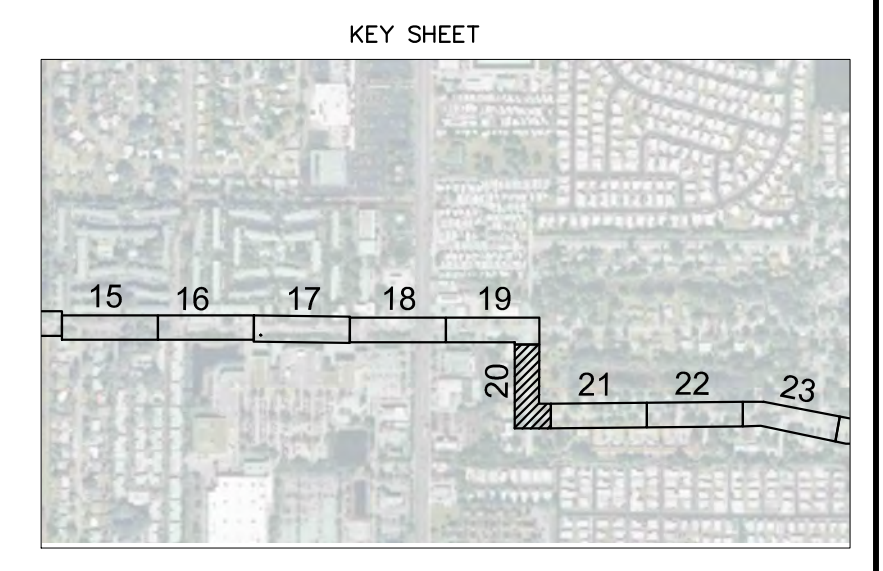
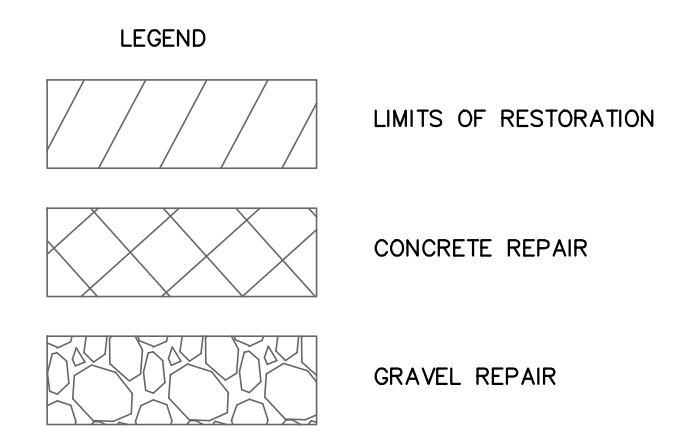
SHEET NUMBER  
**19**



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 PHONE: 813-620-1460  
 WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County**  
**FLORIDA**

**FORCE MAIN 13A REPLACEMENT**

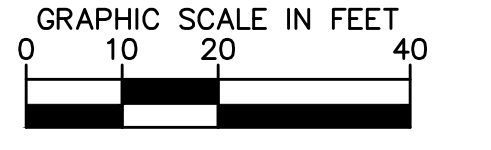
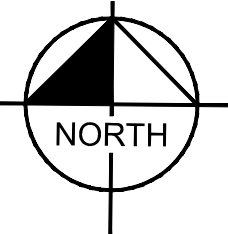
MANATEE COUNTY

LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652

**PLAN AND PROFILE (12TH ST W)**  
**STA 75+00 TO STA 80+00**

SHEET NUMBER
20

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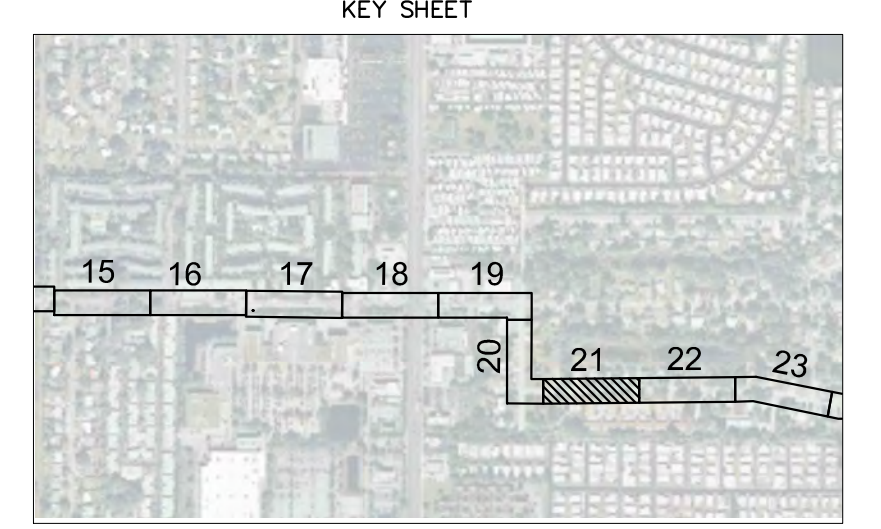


HORIZONTAL SCALE: 1"=20'  
VERTICAL SCALE: 1"=3'

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LEGEND

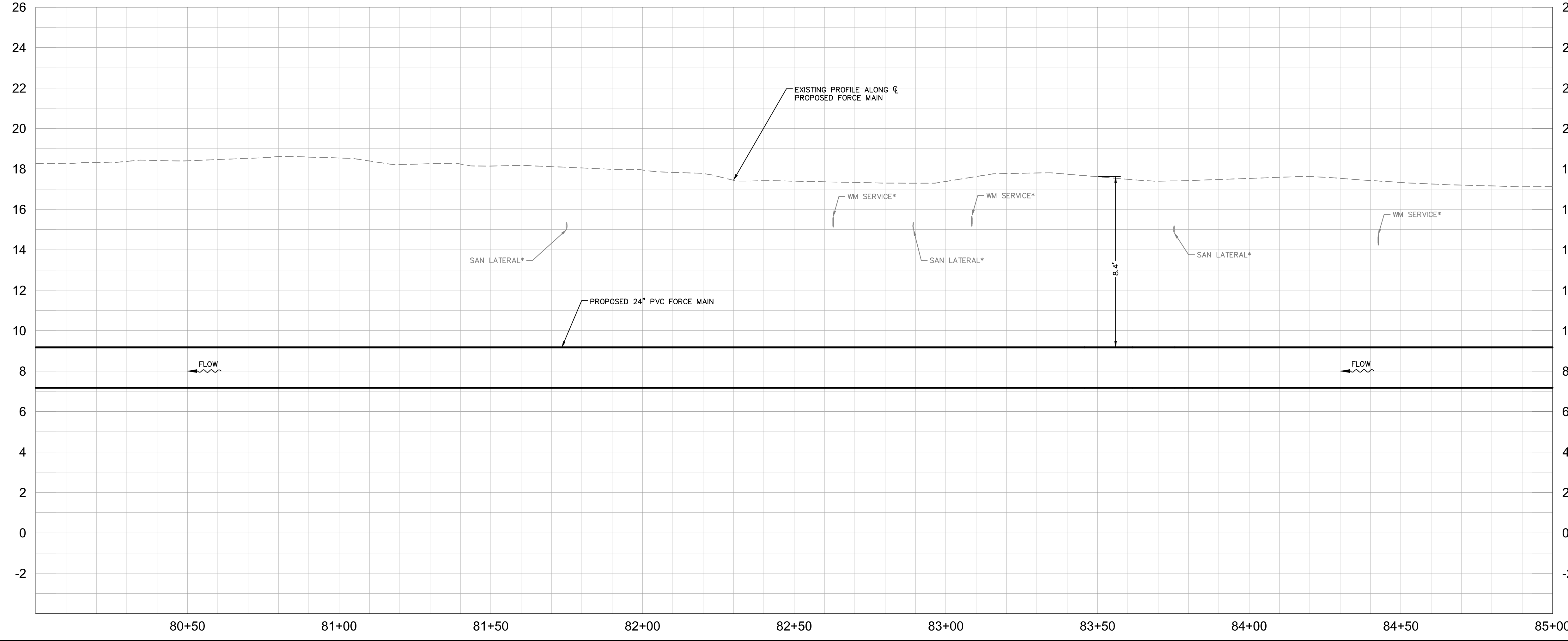
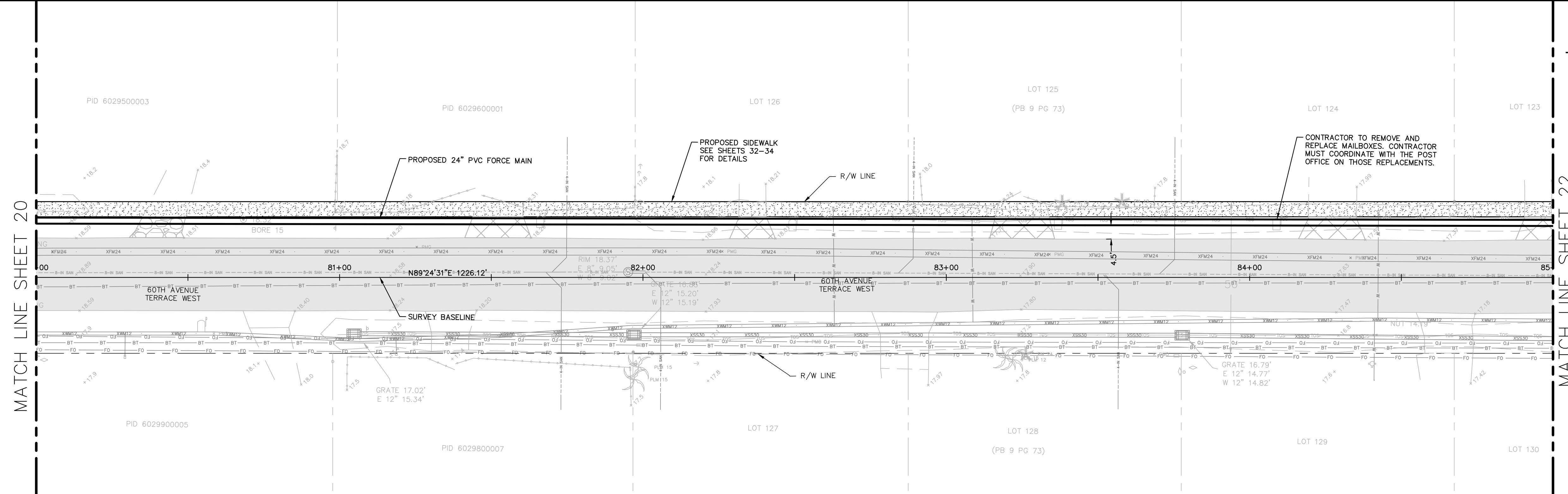
- LIMITS OF RESTORATION
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KHA PROJECT  
148400011  
DATE  
8/12/16  
SCALE AS SHOWN  
DESIGNED BY JWW  
DRAWN BY SNH  
CHECKED BY WEW

**Manatee County**  
FLORIDA

**FORCE MAIN 13A  
REPLACEMENT**

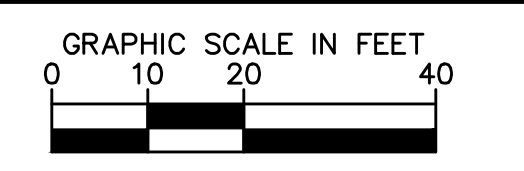
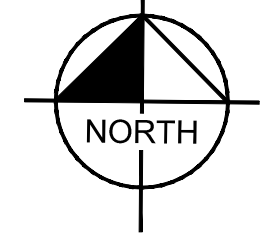
MANATEE COUNTY

LICENSED PROFESSIONAL  
JORDAN W. WALKER, P.E.  
FL LICENSE NUMBER  
78652

**PLAN AND PROFILE  
(60TH AVE TERRACE W)  
STA 80+00 TO STA 85+00**

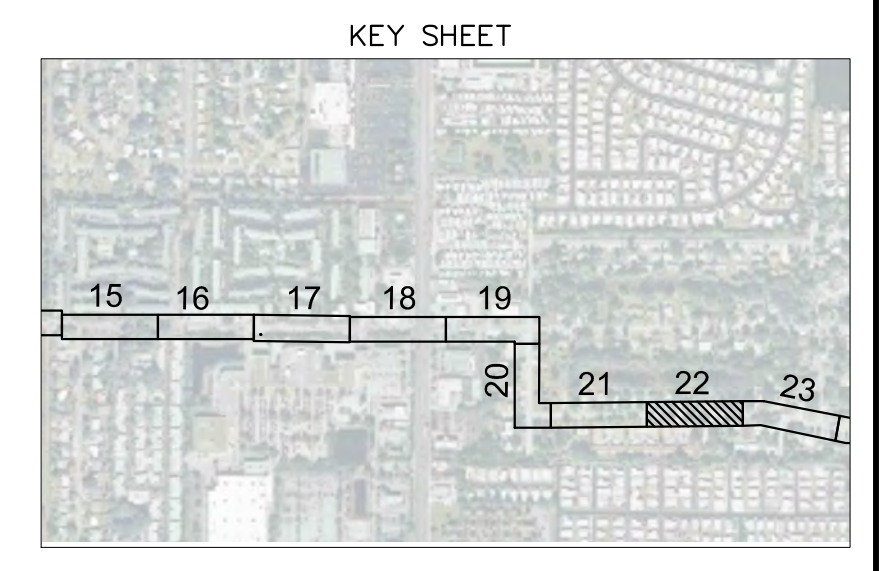
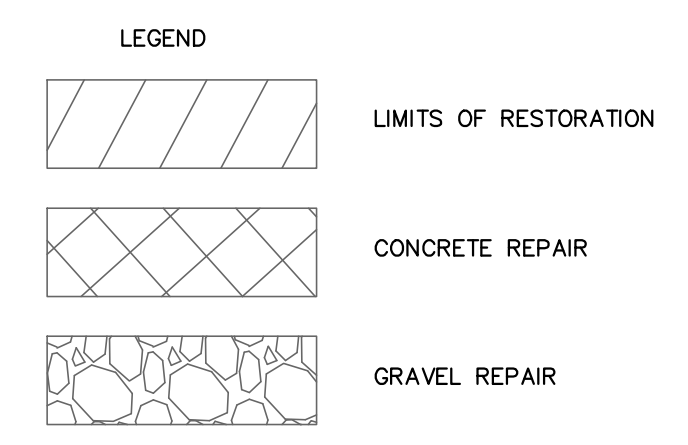
SHEET NUMBER  
**21**

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VERTICAL SCALE: 1"=3'

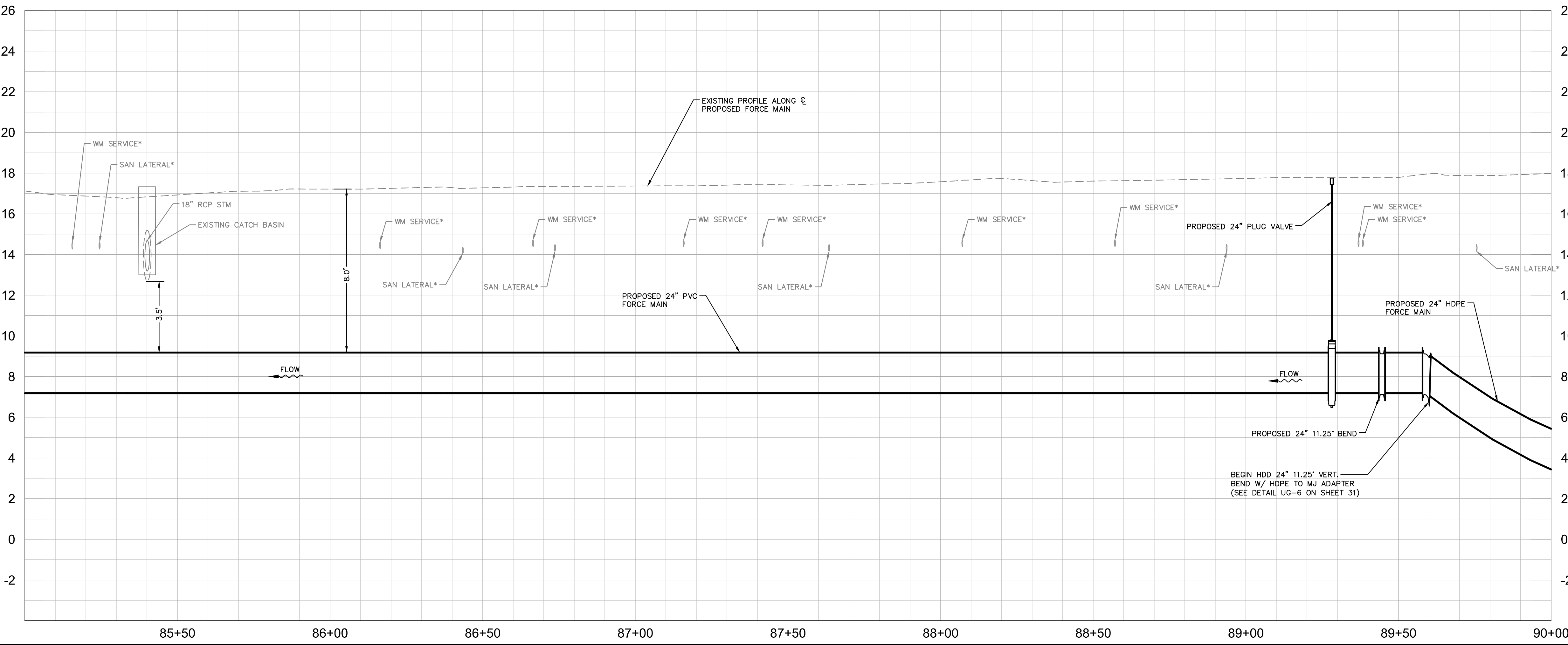
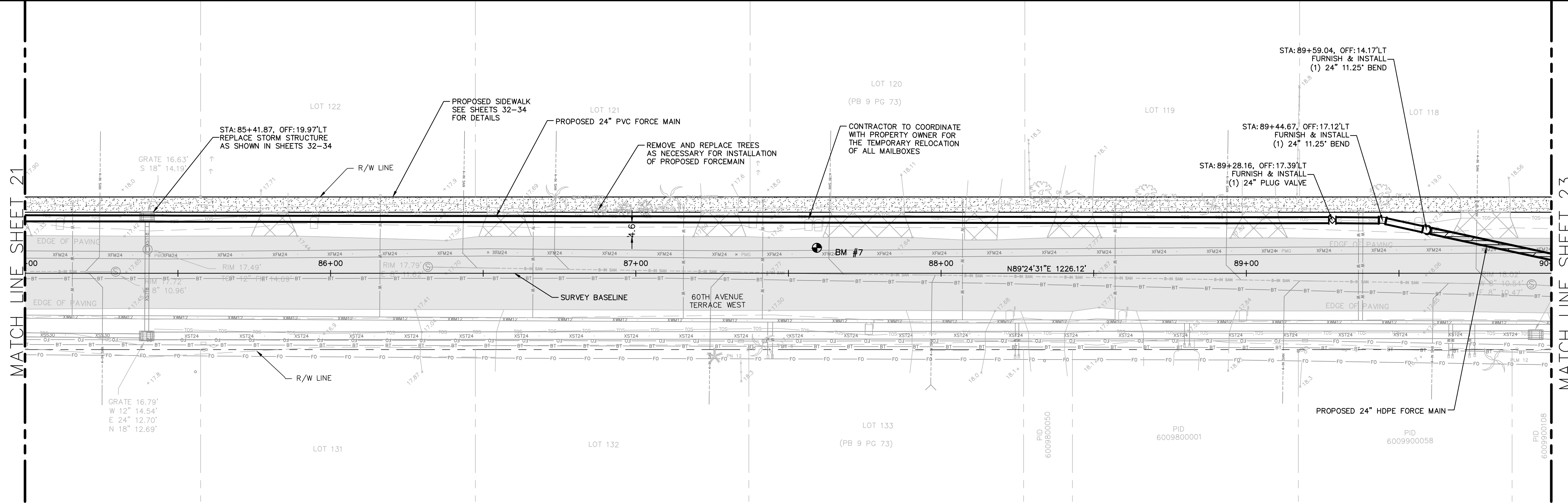
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SCALE AS SHOWN
DESIGNED BY JWW
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CHECKED BY WEW

**Manatee County**  
FLORIDA

**FORCE MAIN 13A  
REPLACEMENT**

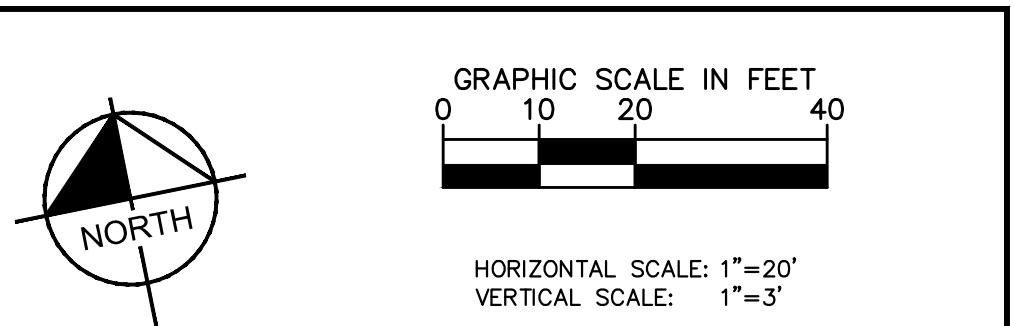
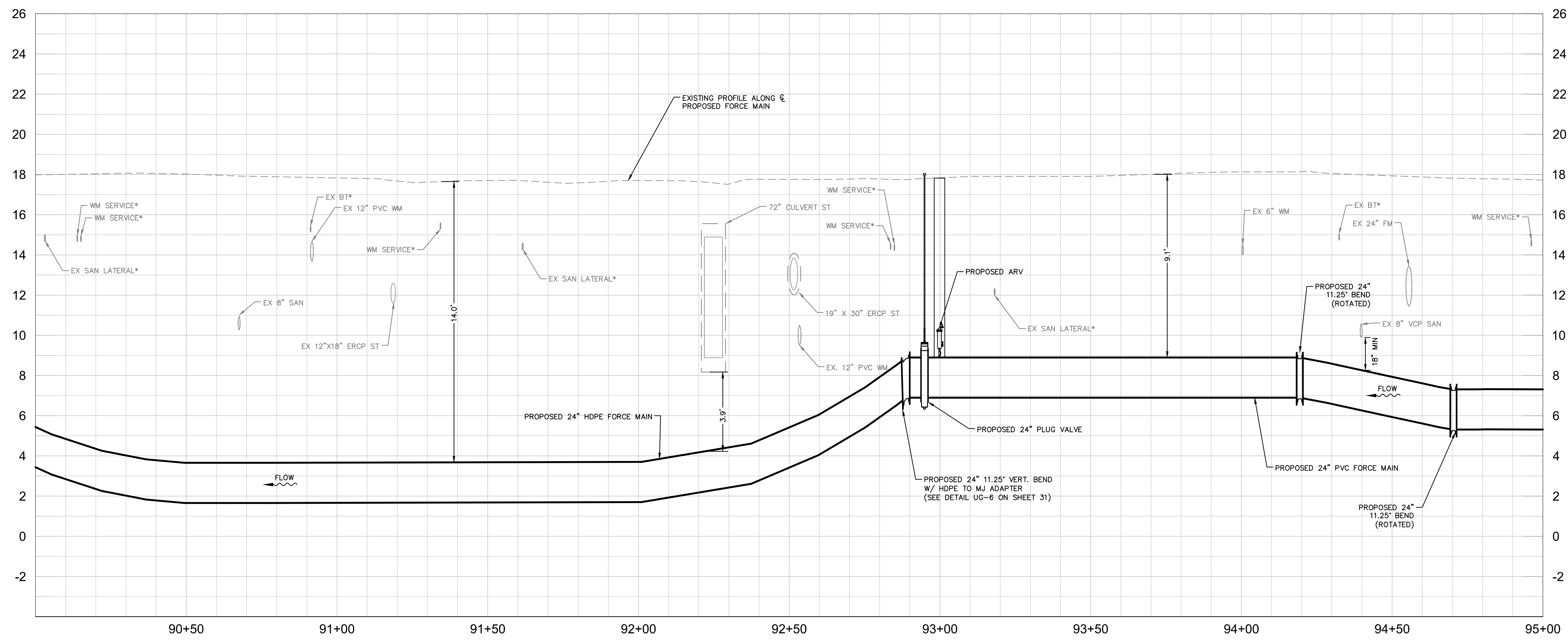
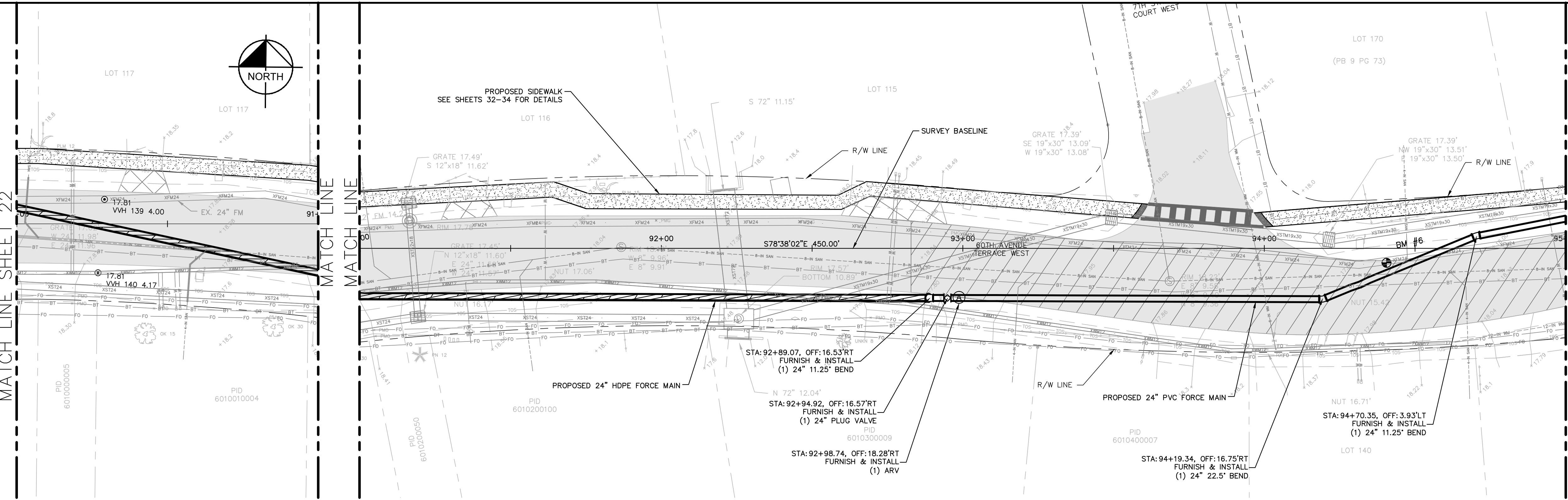
MANATEE COUNTY

LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652
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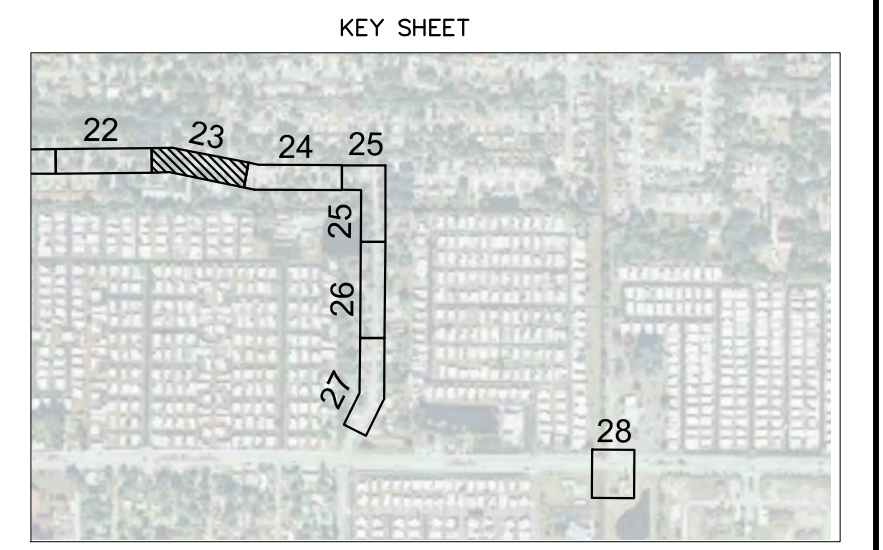
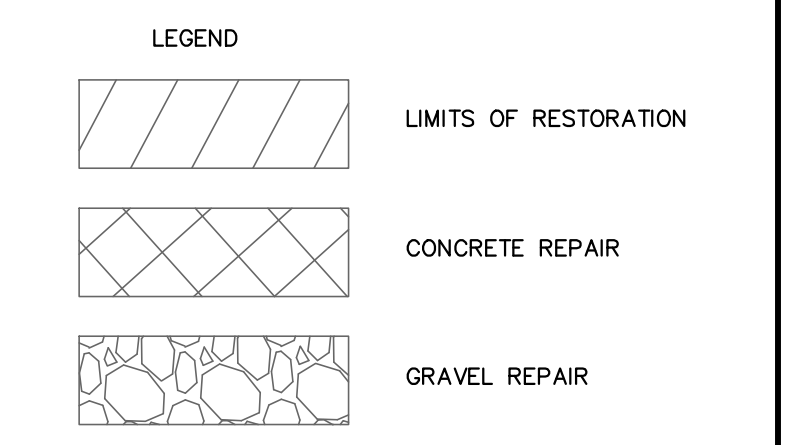
**PLAN AND PROFILE (60TH AVE  
TERRACE W)  
STA 85+00 TO STA 90+00**

SHEET NUMBER
22

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No.	REVISIONS	DATE	BY

**Kimley»Horn**

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 655 NORTH FRANKLIN STREET, SUITE 150, TAMPA, FL 33602  
 PHONE: 813-620-1460  
 WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT 148400011
DATE 8/15/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County**  
**FLORIDA**

**FORCE MAIN 13A  
 REPLACEMENT**

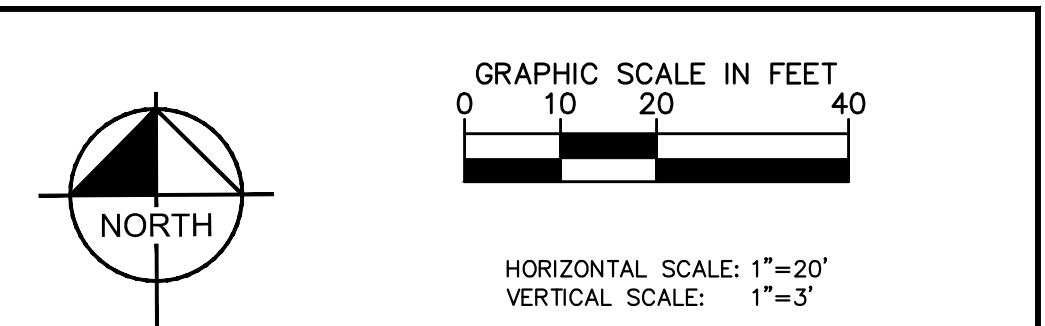
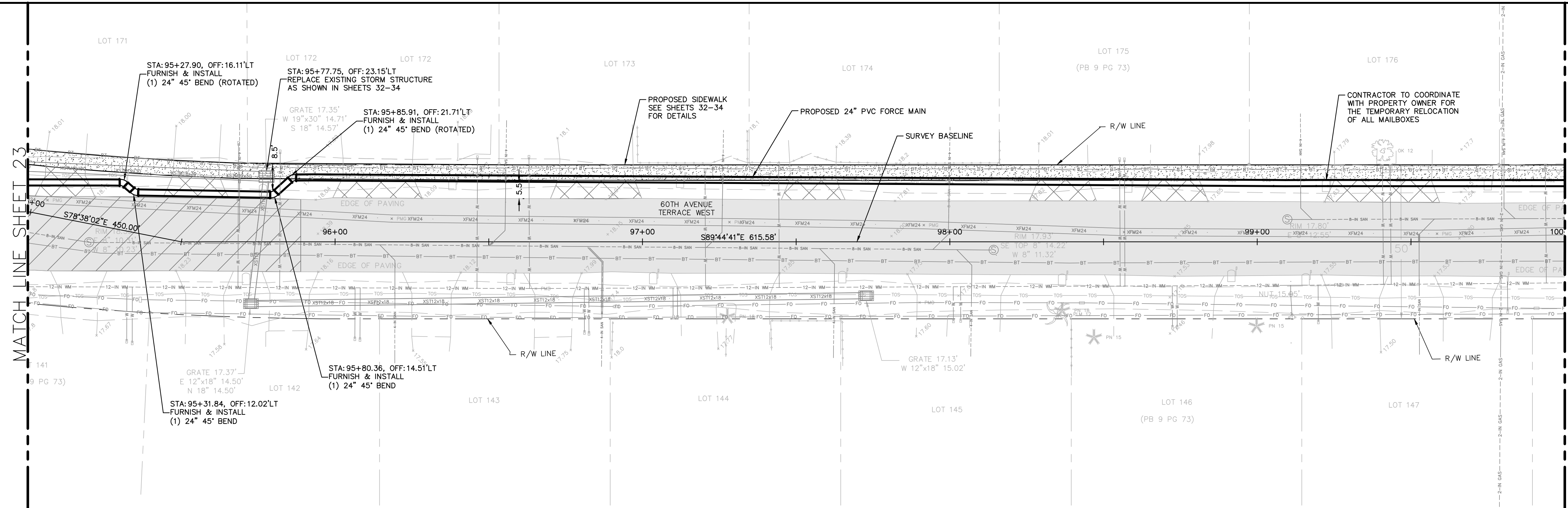
MANATEE COUNTY

LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652
FL DATE:

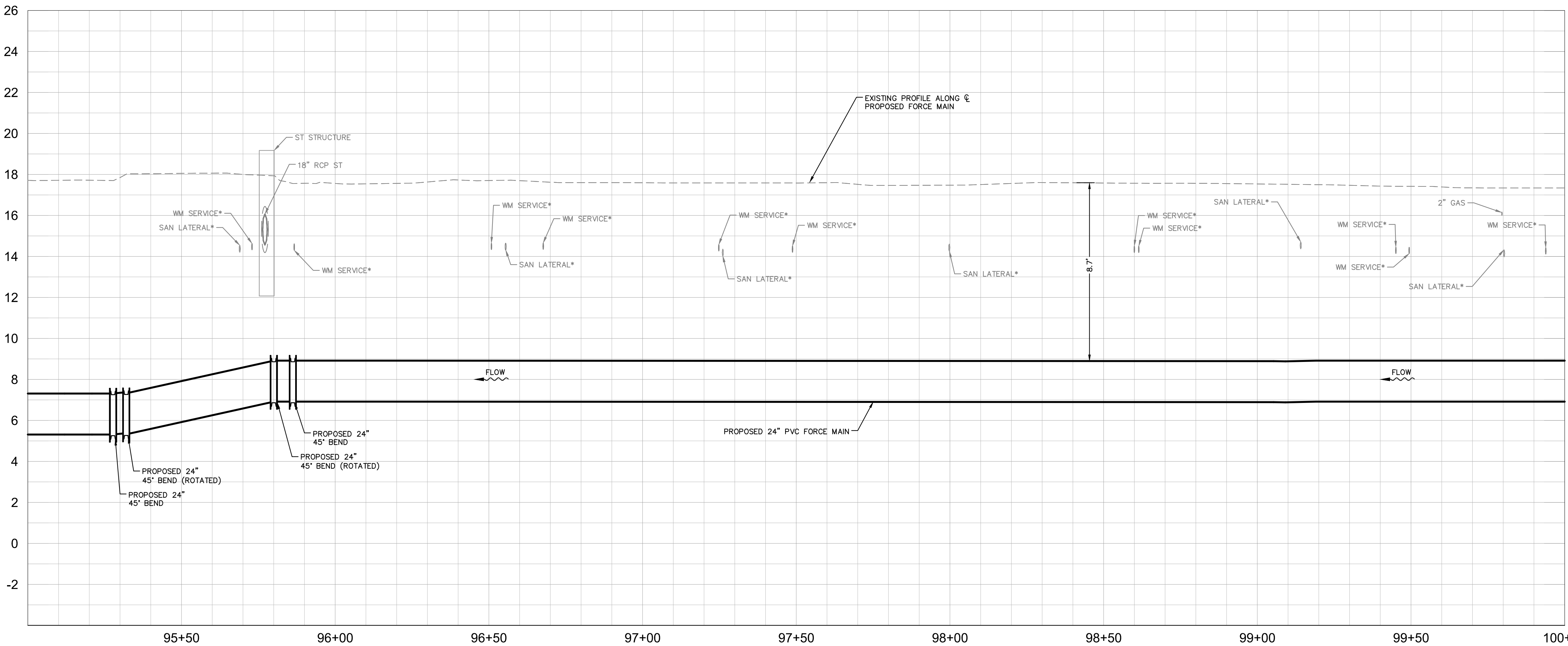
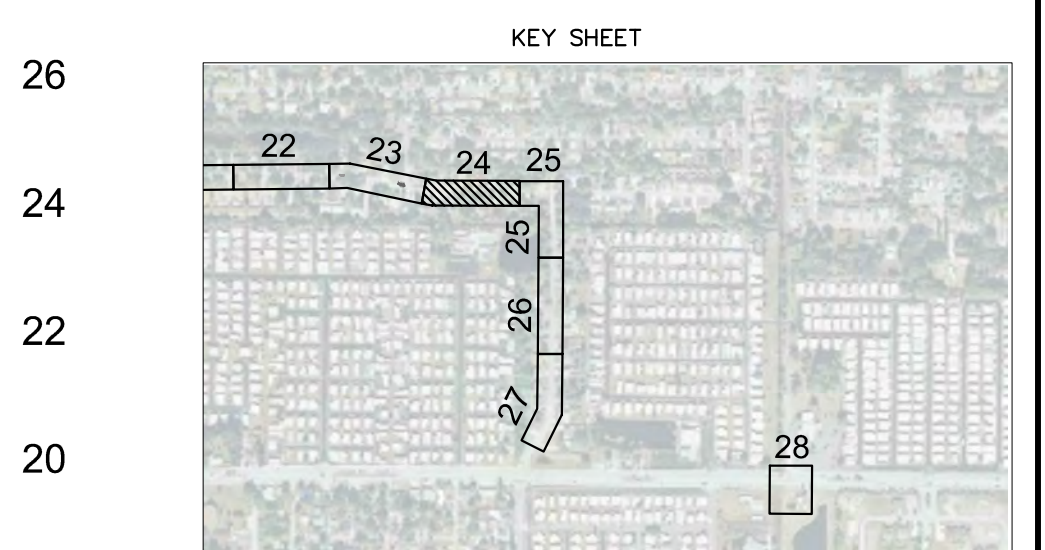
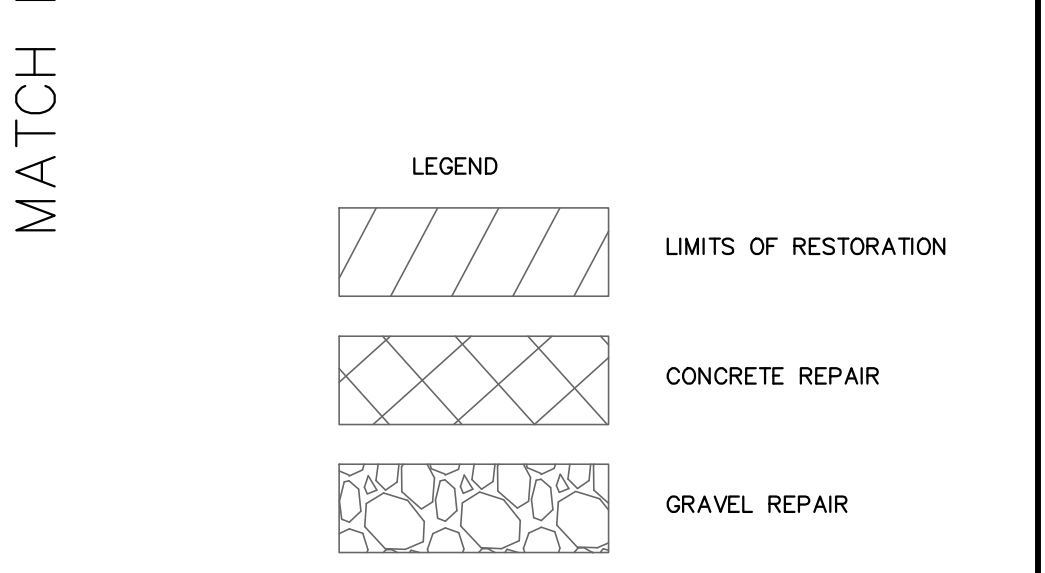
**PLAN AND PROFILE  
 (60TH AVE TERRACE W)  
 STA 90+00 TO STA 95+00**

SHEET NUMBER
<b>23</b>

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KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County**  
FLORIDA

**FORCE MAIN 13A  
REPLACEMENT**

MANATEE COUNTY

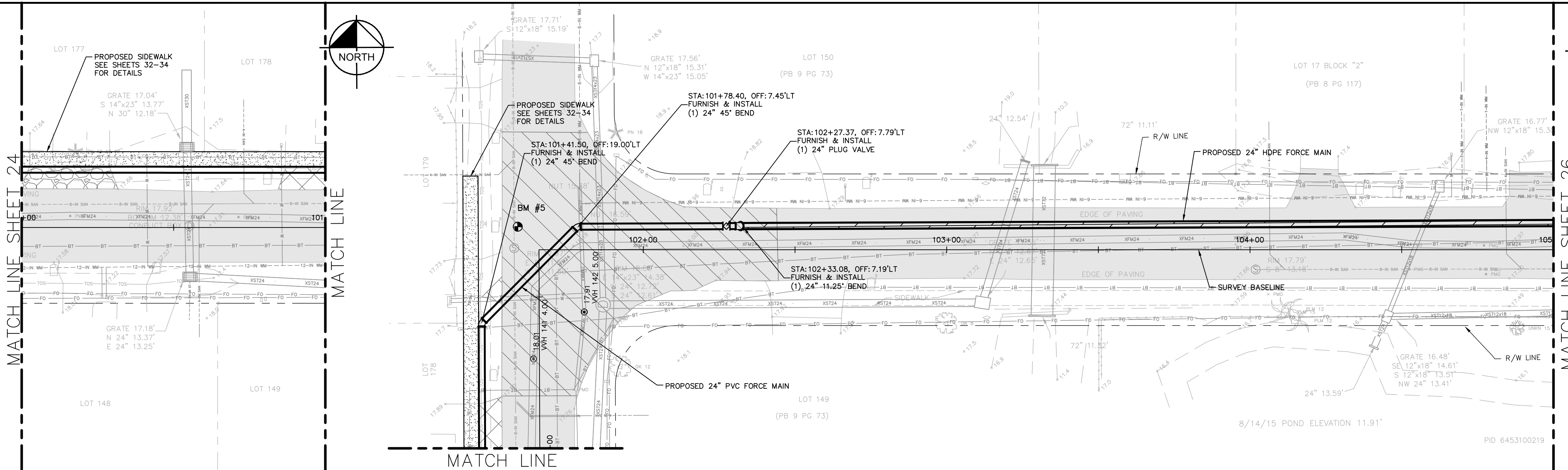
LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652

**PLAN AND PROFILE  
(60TH AVE TERRACE W)  
STA 95+00 TO STA 100+00**

SHEET NUMBER
<b>24</b>



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GRAPHIC SCALE IN FEET  
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HORIZONTAL SCALE: 1"=20'  
VERTICAL SCALE: 1"=3'

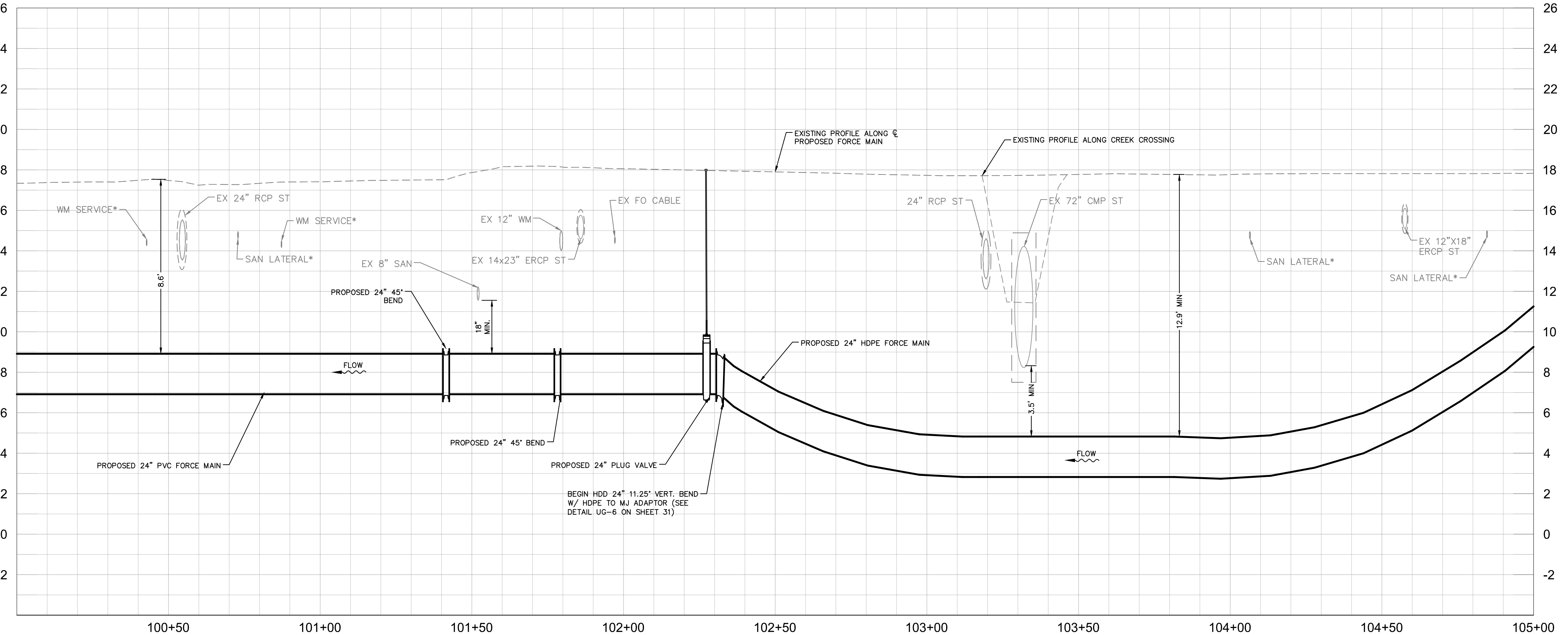
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LEGEND

- LIMITS OF RESTORATION
- CONCRETE REPAIR
- GRAVEL REPAIR

KEY SHEET



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**Manatee County**  
FLORIDA

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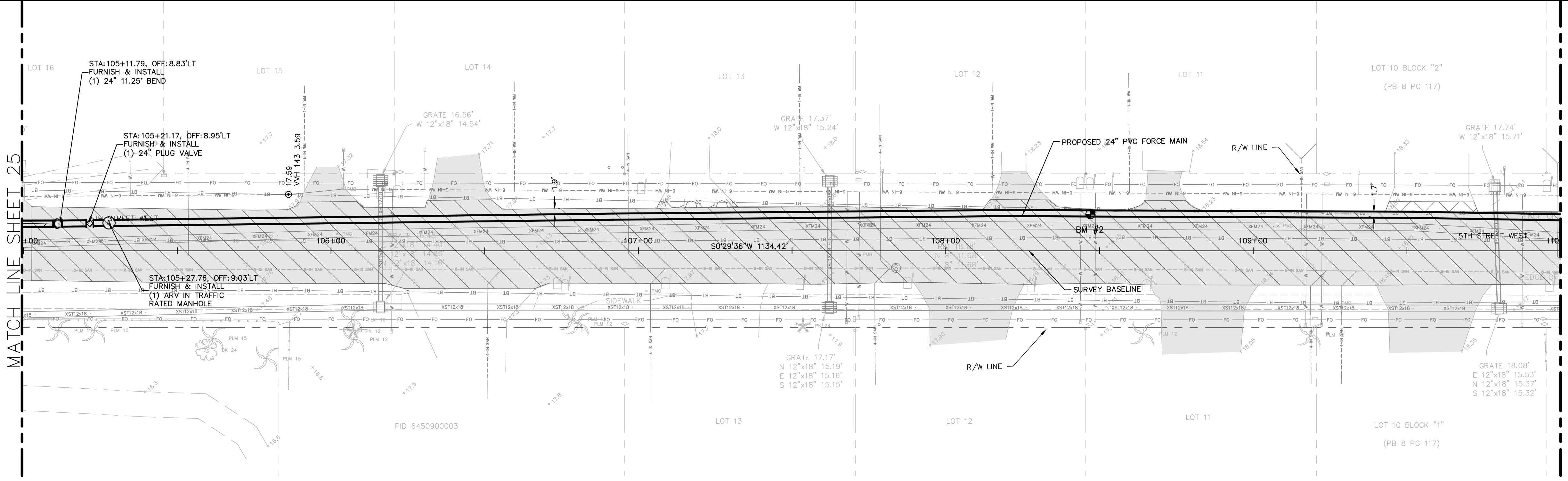
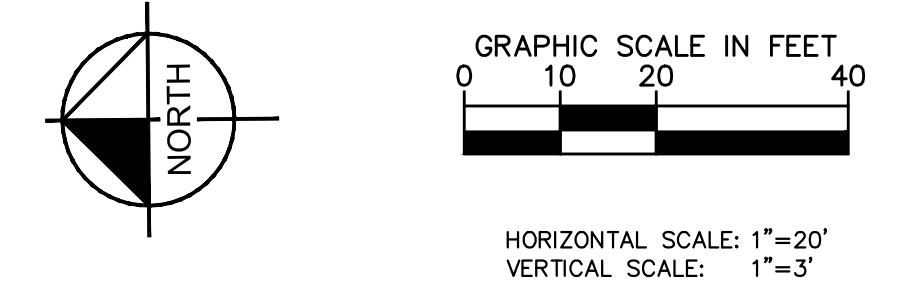
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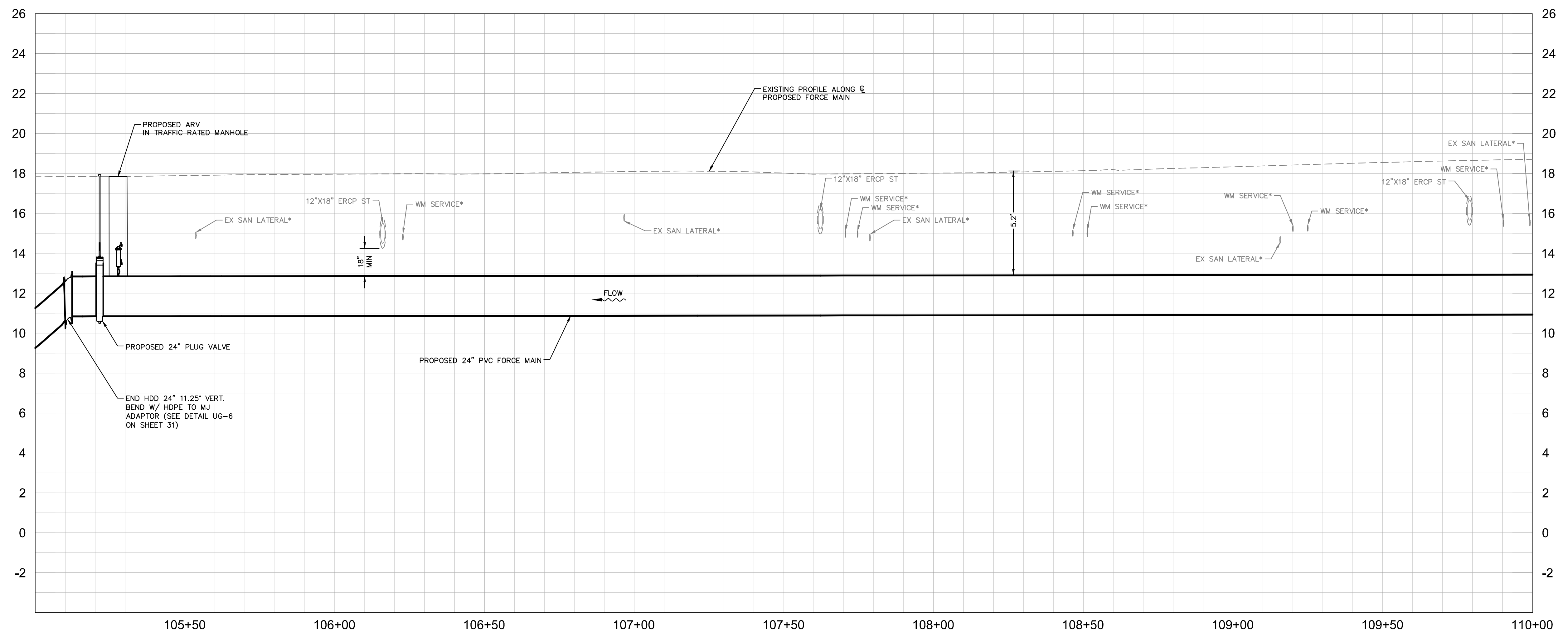
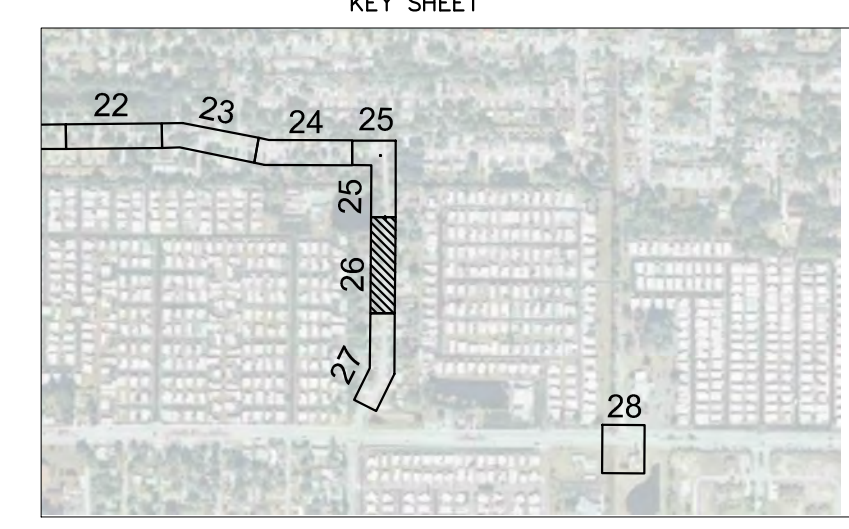
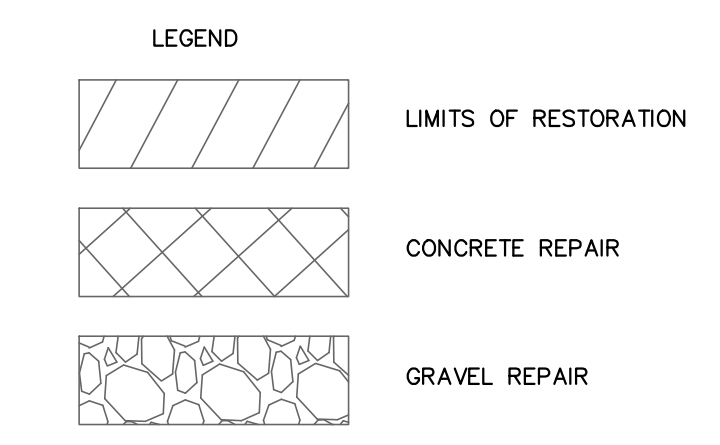
**PLAN AND PROFILE  
(5TH STREET W)  
STA 100+00 TO STA 105+00**

SHEET NUMBER
<b>25</b>

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KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County**  
**FLORIDA**

**FORCE MAIN 13A  
 REPLACEMENT**

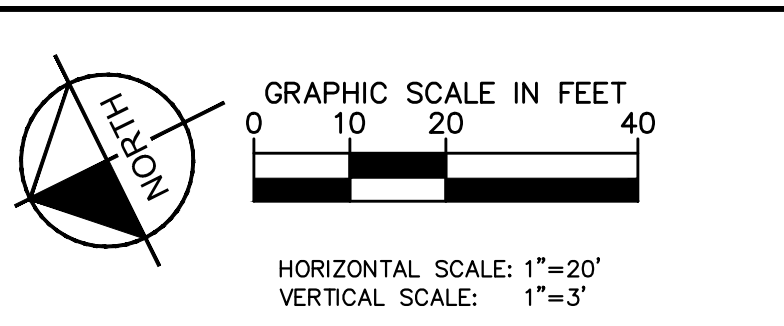
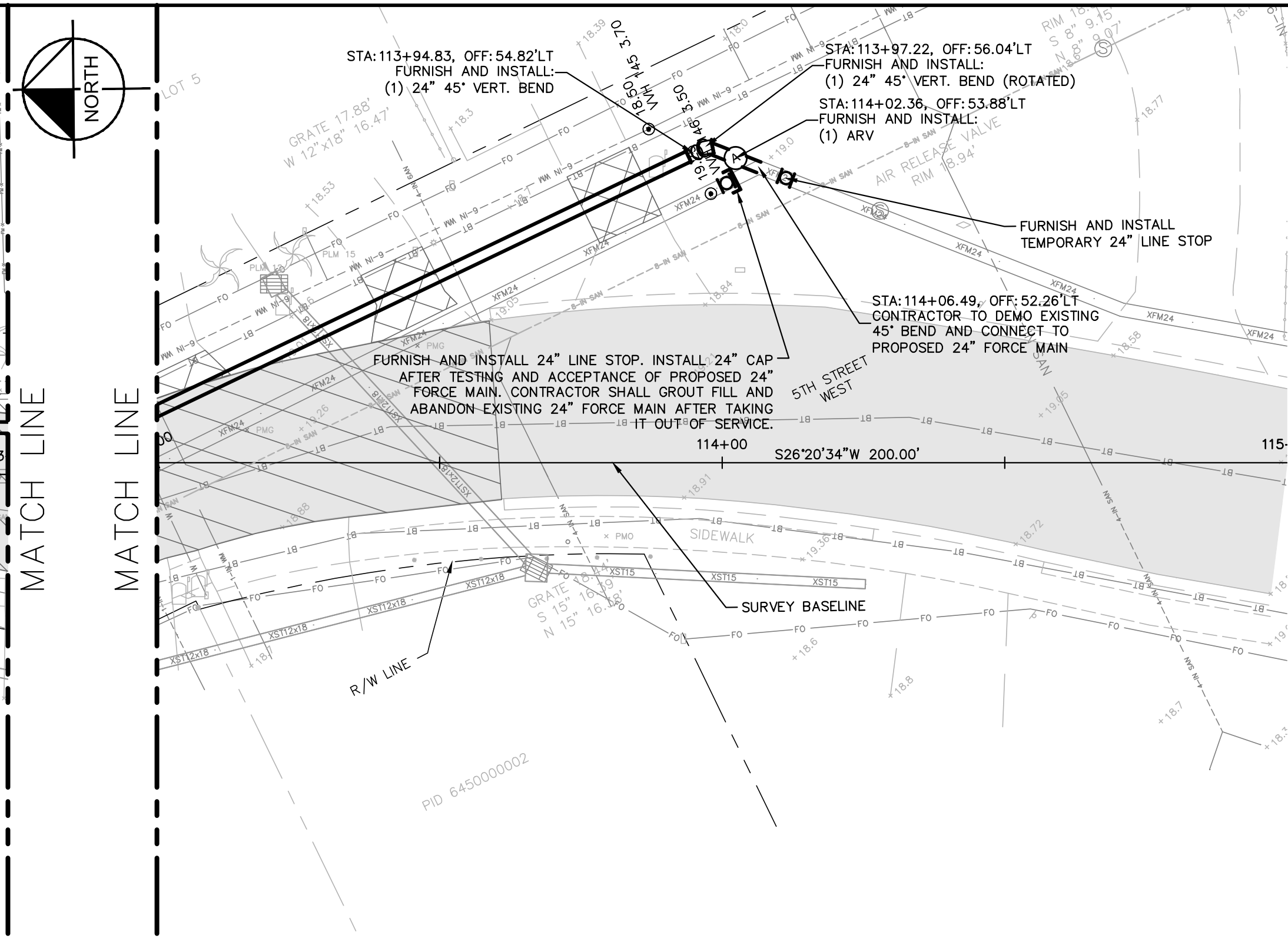
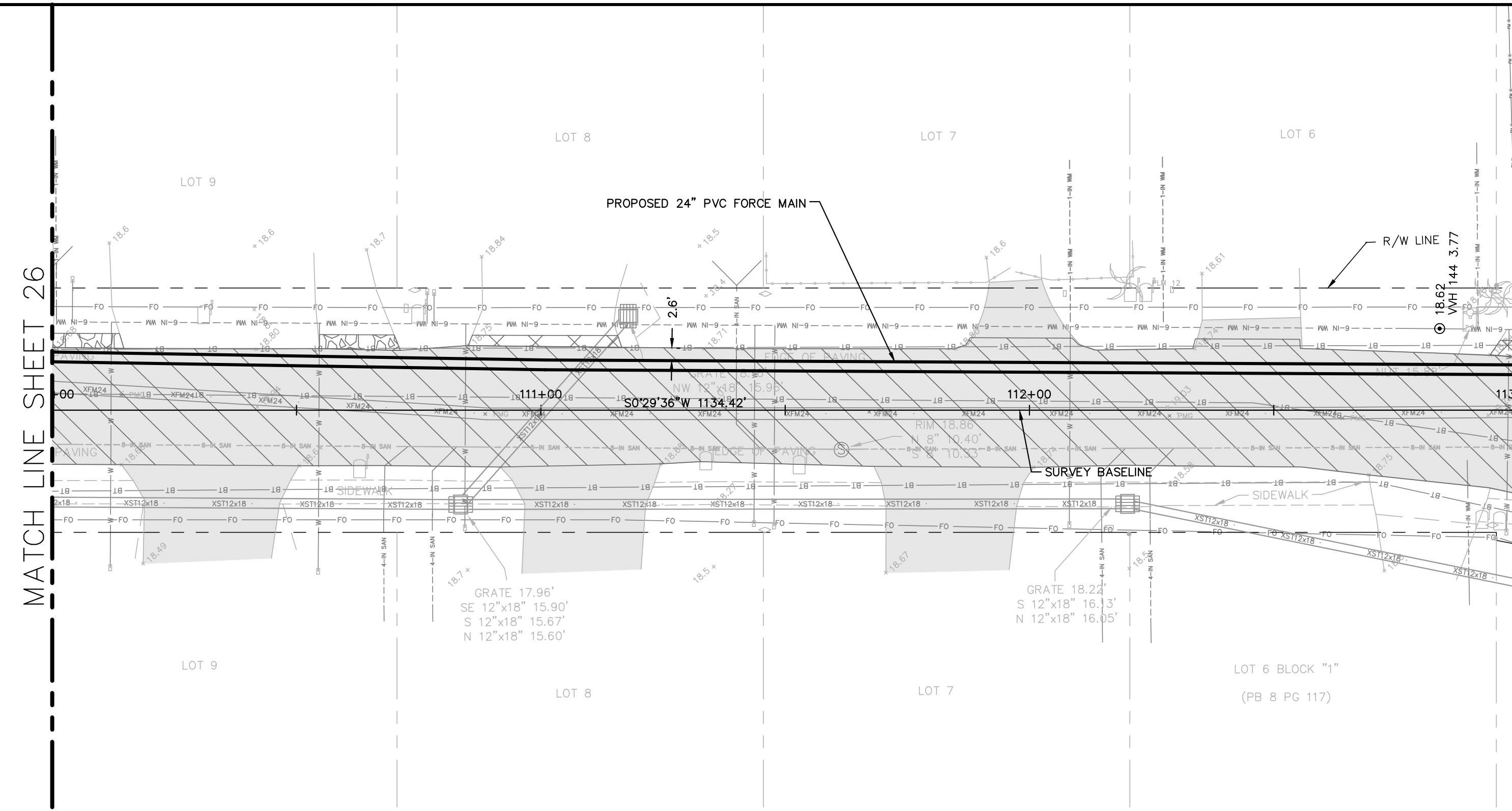
MANATEE COUNTY

LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652

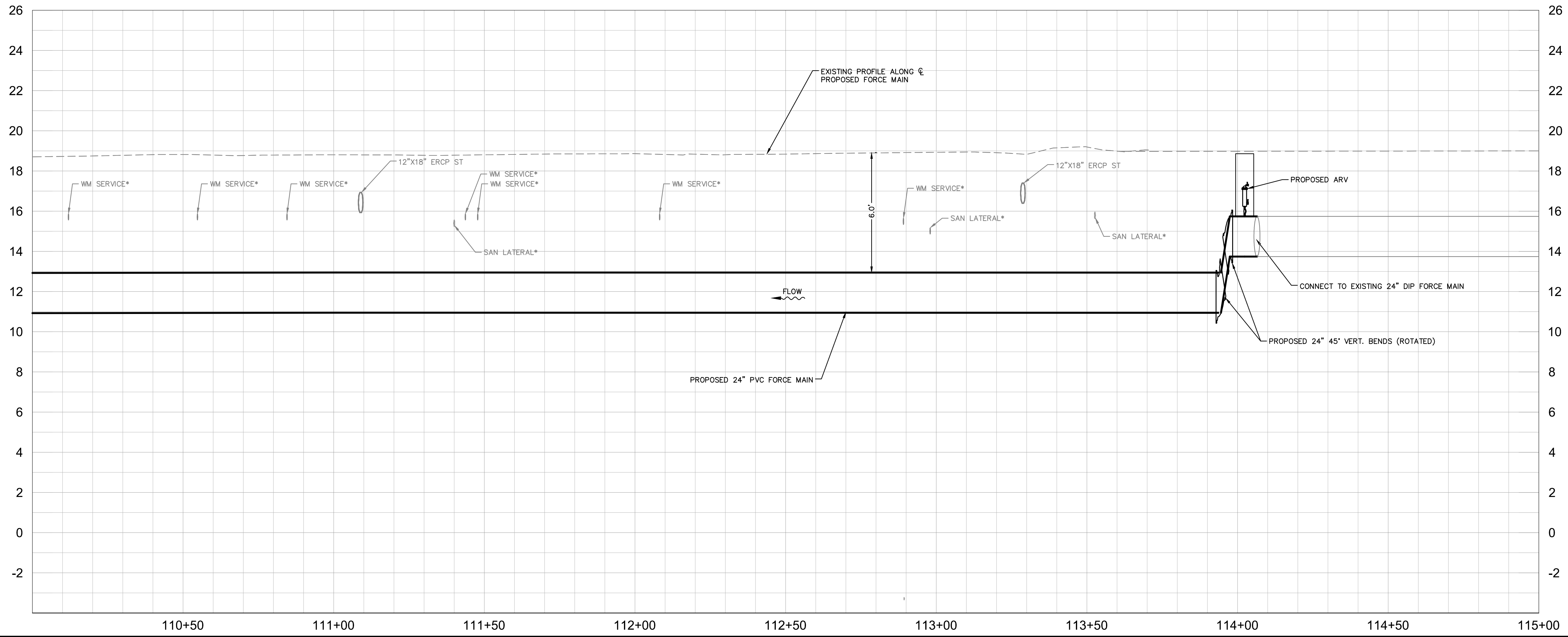
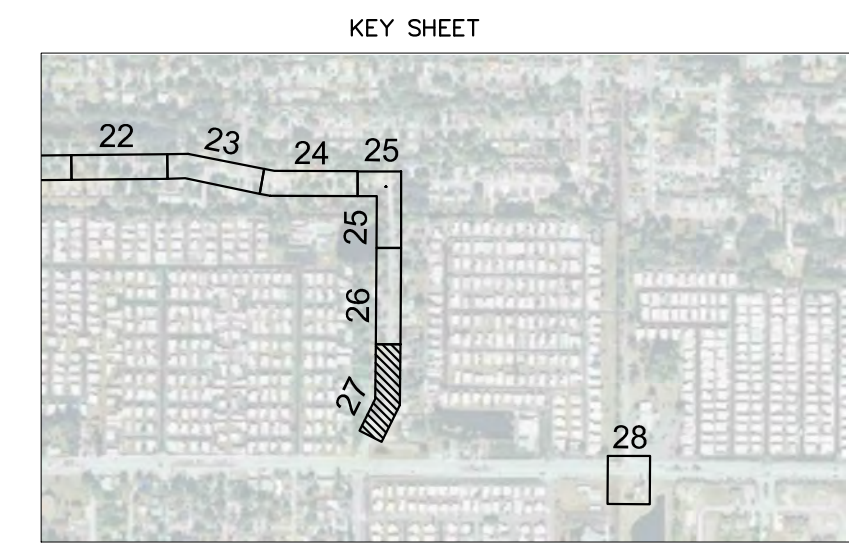
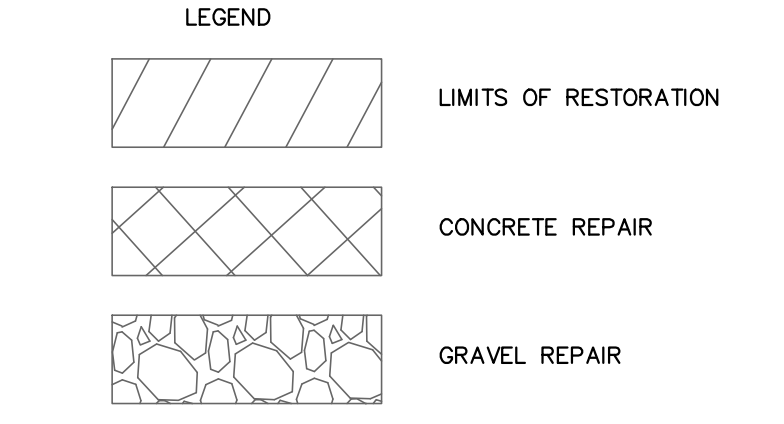
**PLAN AND PROFILE  
 (5TH STREET W)  
 STA 105+00 TO STA 110+00**

SHEET NUMBER
<b>26</b>

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KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County**  
**FLORIDA**

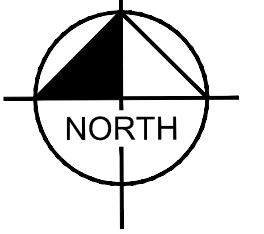
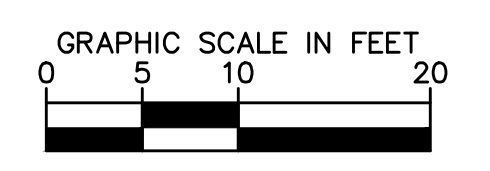
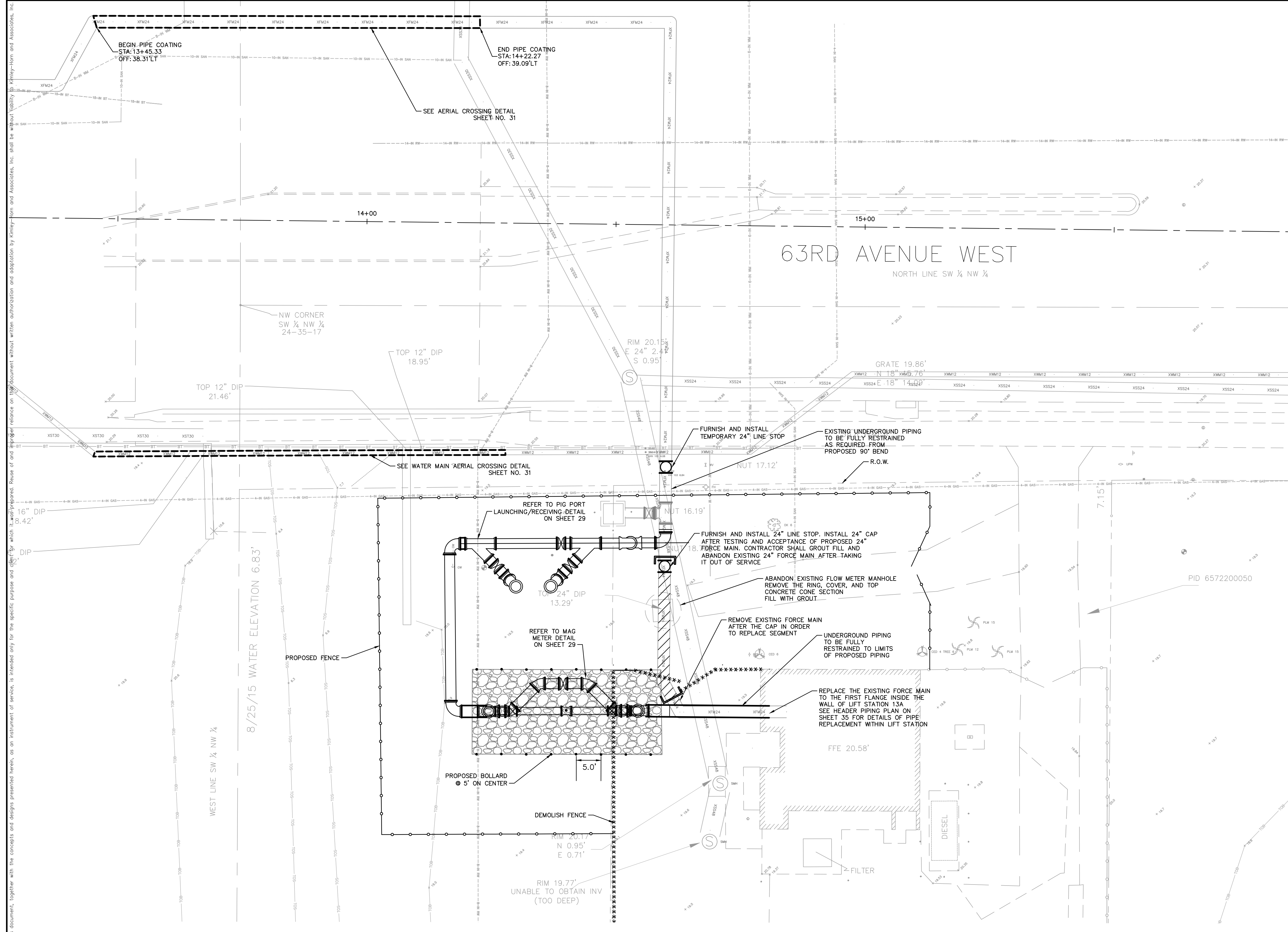
**FORCE MAIN 13A REPLACEMENT**

MANATEE COUNTY

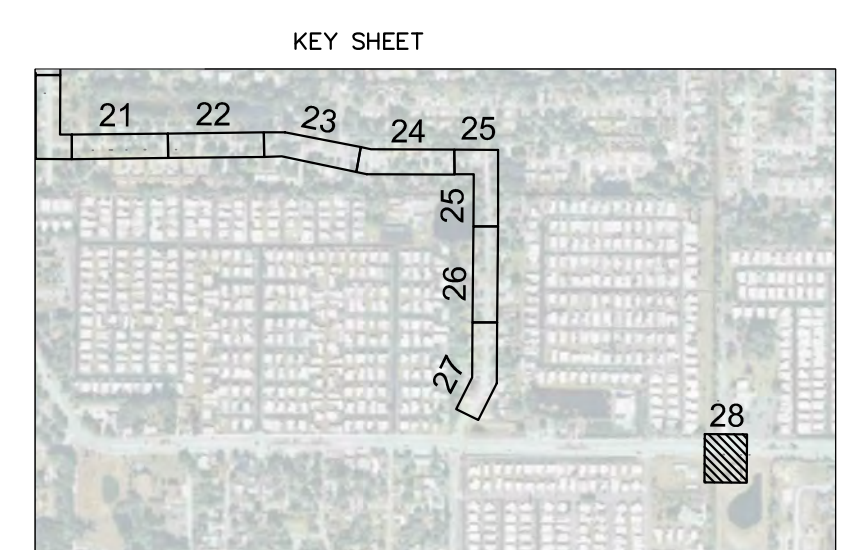
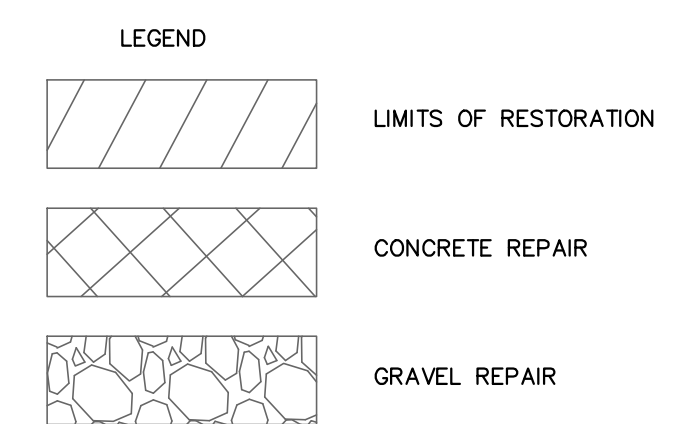
LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652
FL DATE:

**PLAN AND PROFILE (5TH STREET W)**  
**STA 10+00 TO STA 15+00**

SHEET NUMBER
<b>27</b>



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**Manatee County**  
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**FORCE MAIN 13A  
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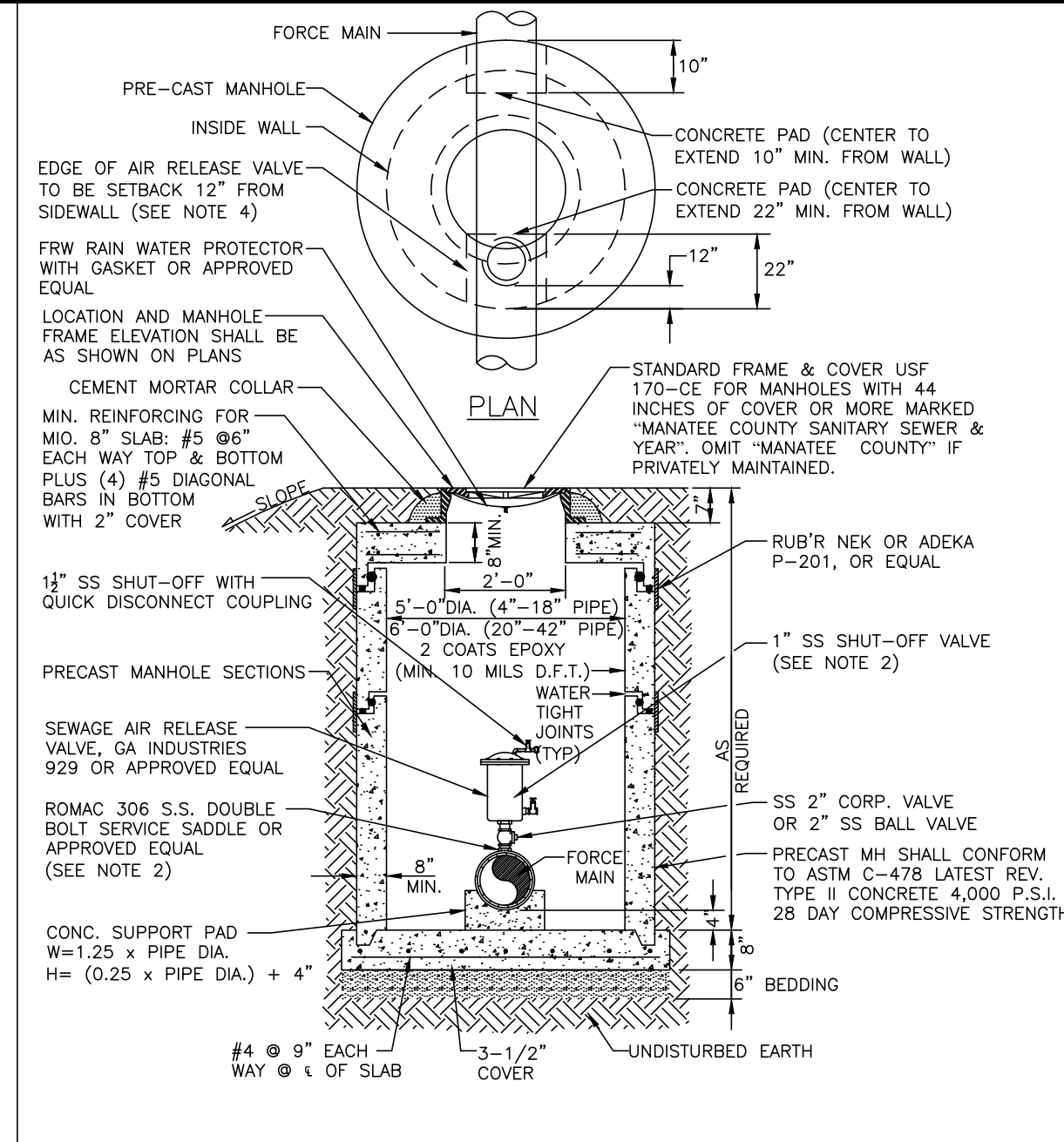
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 FL LICENSE NUMBER  
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MASTER LIFT STATION  
 PLAN 13A

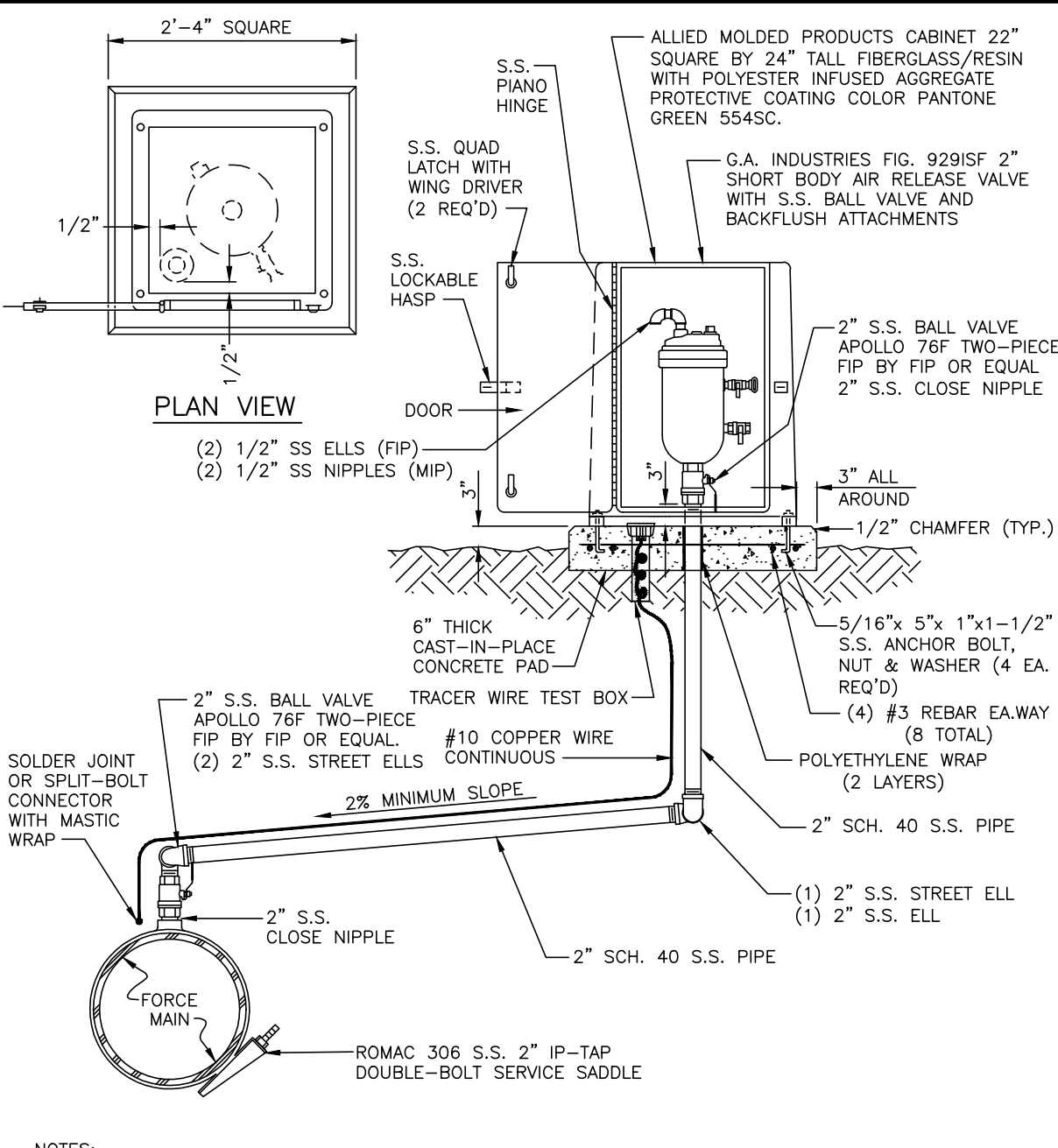
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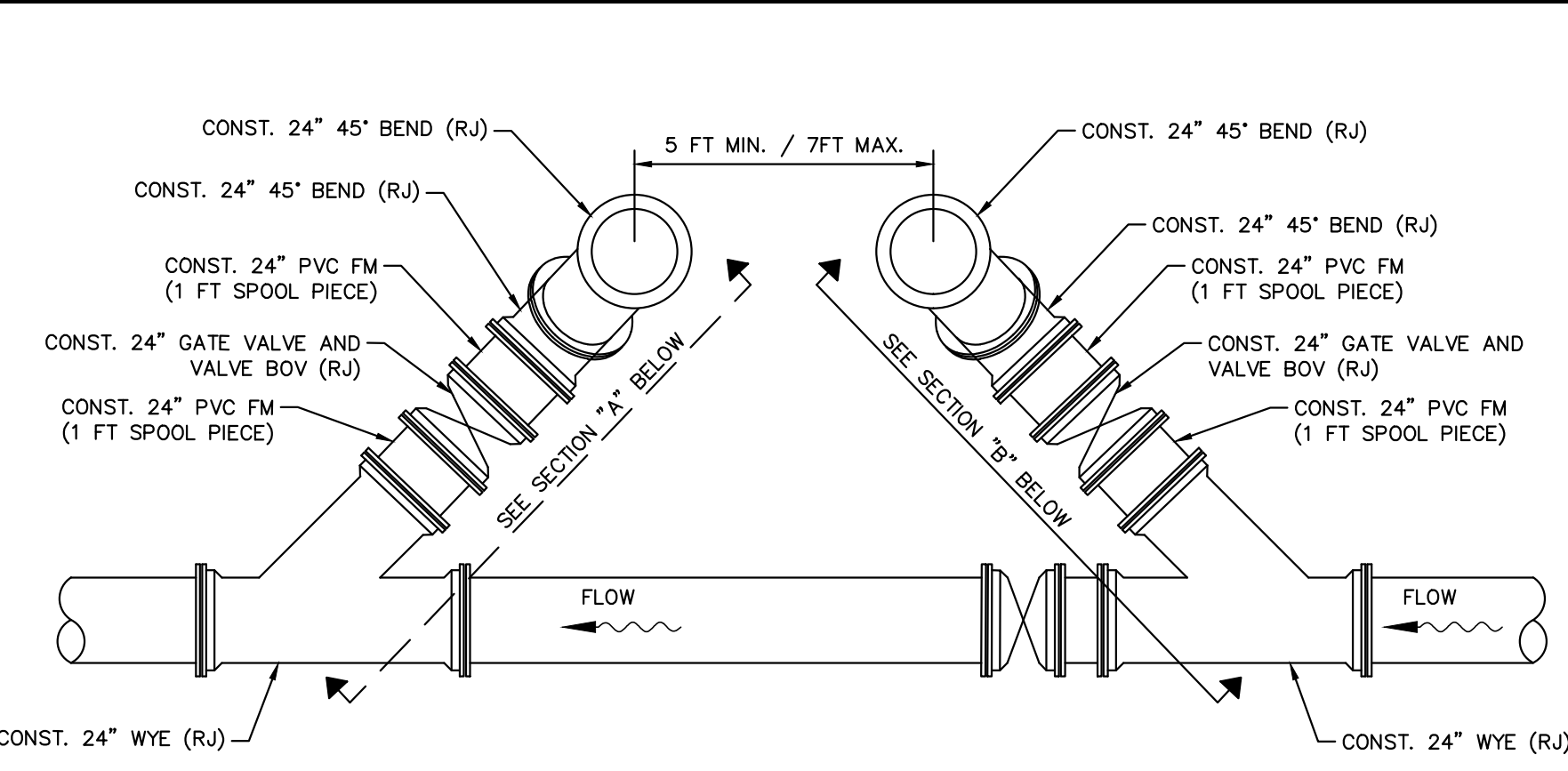
- NOTES:**
- AIR RELEASE VALVES WHERE REQUIRED ON 4" AND LARGER FORCE MAINS.
  - ARV TO BE SIZED ACCORDING TO MANUFACTURER'S RECOMMENDATION FOR FORCE MAIN SIZE.
  - SERVICE SADDLE, NIPPLES AND CORPORATION BALL VALVE SHALL BE STAINLESS STEEL.
  - FOR MANHOLES WITH LESS THAN 44 INCHES OF COVER FROM TOP-OF-PIPE TO TOP-OF-FRAME, FRAME & COVER TO BE 32-INCH FRAMEX WITH 32 INCH OPENING. OFFSET ARV 7.5 INCHES FROM CENTER OF OPENING. MINIMUM ALLOWABLE COVER IS 36 INCHES.
  - ALL PIPE PENETRATING MANHOLE SHALL HAVE RESILIENT PIPE TO MANHOLE SEALS PER ASTM-923.
  - FINAL GRADE TO BE SLOPED AWAY FROM MANHOLE.

<b>MANATEE COUNTY</b> PUBLIC WORKS DEPARTMENT		BELOW GRADE AIR RELEASE VALVE FOR FORCE MAINS	US-10	<b>MANATEE COUNTY</b> PUBLIC WORKS DEPARTMENT		ABOVE-GROUND AIR RELEASE VALVE ASSY. FOR FORCE MAINS	US-25
REV. BY CLB/KE	DATE 11/10			MAY 10, 2011 DATE OF APPROVAL	REV. BY CLB/KE		



- NOTES:**
- AIR RELEASE VALVES TO BE INSTALLED AT HIGH POINTS, OR WHERE AIR WOULD BE ENTRAPPED, ALONG 4" AND LARGER FORCE MAINS.
  - FORCE MAIN VERTICAL ALIGNMENT TO BE DESIGNED SUCH THAT THE MINIMUM NUMBER OF REQUIRED AIR RELEASE VALVES ARE INSTALLED.
  - ALL INCIDENTAL FITTINGS AND HARDWARE TO BE STAINLESS STEEL.
  - ALL PIPE THREADS TO BE SEALED AIR TIGHT.
  - VENT PIPE TO BE LAID ACCURATELY ON SLOPE, WITHOUT HIGH OR LOW POINTS.
  - AIR RELEASE VALVES TO BE IN BELOW-GRADE INSTALLATIONS UNLESS IMPRACTICAL. INSTALLATIONS MAY BE ABOVE-GROUND ONLY WHERE APPROVED AND SPECIFICALLY INDICATED ON THE PLAN.
  - CONCRETE PAD SHALL BE TYPE 1 CONCRETE W/ 3,000 P.S.I., 28 DAY COMPRESSIVE STRENGTH.

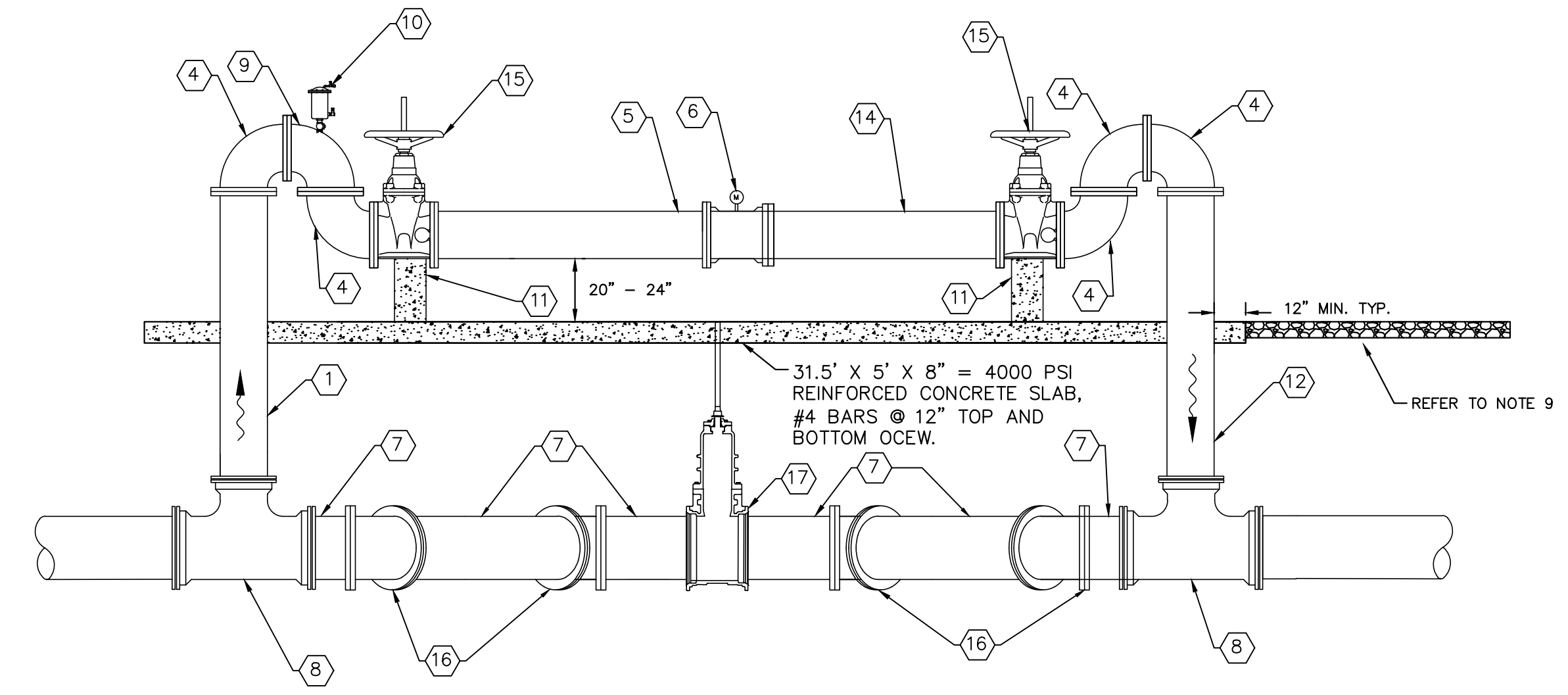
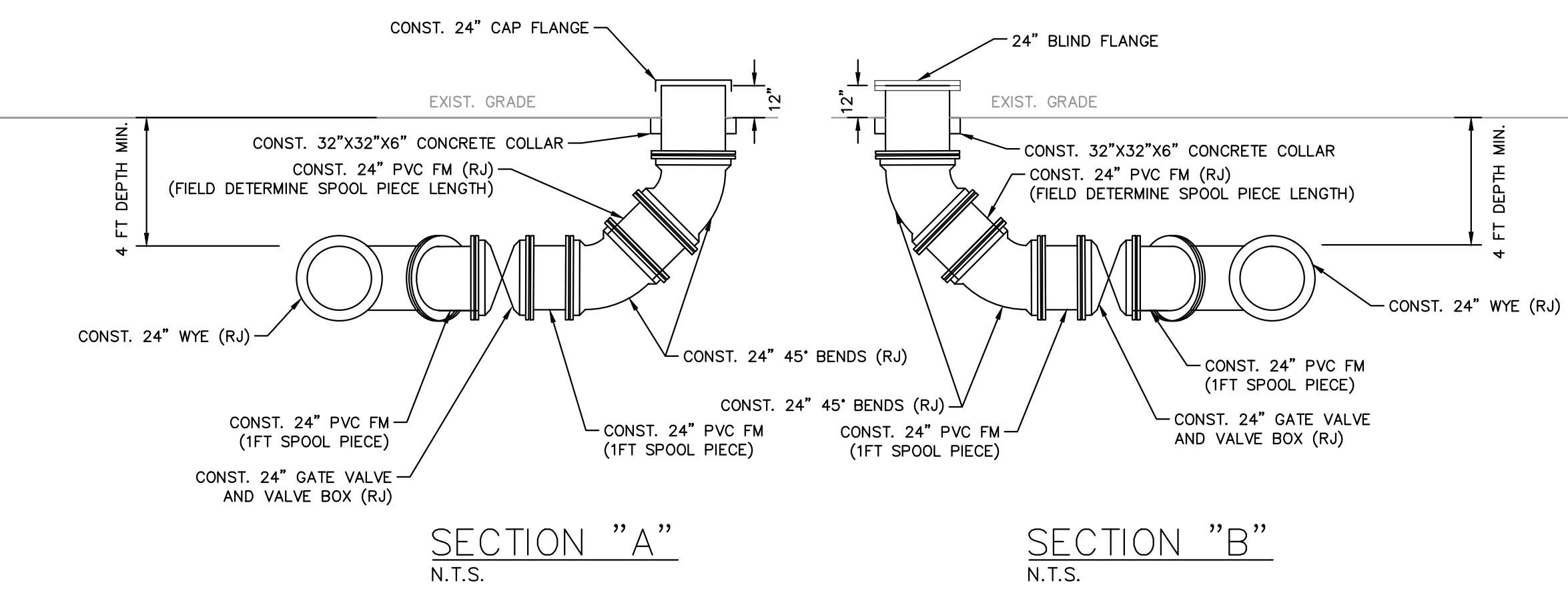
<b>MANATEE COUNTY</b> PUBLIC WORKS DEPARTMENT		BELOW GRADE AIR RELEASE VALVE FOR FORCE MAINS	US-10	<b>MANATEE COUNTY</b> PUBLIC WORKS DEPARTMENT		ABOVE-GROUND AIR RELEASE VALVE ASSY. FOR FORCE MAINS	US-25
REV. BY CLB/KE	DATE 11/10			MAY 10, 2011 DATE OF APPROVAL	REV. BY CLB/KE		



**PIG PORT LAUNCHING/RECEIVING STATION DETAIL**  
N.T.S.

**NOTES:**

- THE ABOVE DETAIL IS FOR A TYPICAL PIG RECOVERY STATION. PIG RECOVERY STATION WILL BE REVERSE TO FLOW.



**MAG METER DETAIL**  
1/4" = 1'

MAG METER PIPING LEGEND	
1	18" D.I. SPOOL PIECE, FLG X MJ
2	18" D.I. 90° BEND (COMPACT), MJ
3	24" X 18" D.I. REDUCER, FLG
4	18" D.I. 90° BEND (COMPACT), FLG
5	18" D.I. SPOOL PIECE, FLG - 8'-6" MIN.
6	18" D.I. MAG METER, FLG - ABB FEW MAG METER
7	24" D.I. SPOOL PIECE, MJ
8	24" X 18" D.I. TEE, MJ
9	18" D.I. 90° BEND (COMPACT), FLG WITH 2" TAP FOR ARV
10	2" ARV (REFER TO DETAIL US-2)
11	CONCRETE PIPE SUPPORT (REFER TO DETAIL PAGE)
12	24" D.I. SPOOL PIECE, FLG X MJ
13	24" D.I. 90° BEND (COMPACT), MJ
14	18" D.I. SPOOL PIECE, FLG - 5'-0" MIN.
15	18" 100% PORT PLUG VALVE (NORMALLY OPEN)
16	24" D.I. 45° BEND (COMPACT), MJ
17	24" GATE VALVE (NORMALLY CLOSED)

- MAG METER DETAIL NOTES:**
- ABOVE GROUND PIPING SHALL BE D.I. BODY FLANGED FITTINGS.
  - ALL PIPING SHALL BE COLOR CODED IN ACCORDANCE W/ MANATEE COUNTY STANDARDS.
  - PIPE THROUGH SLAB AND ABOVE GROUND SHALL BE D.I. PIPE AND FITTINGS.
  - ALL METAL APPURTENANCES INCLUDING BOLTS, NUTS, AND WASHERS SHALL BE STAINLESS STEEL (TYPE 316) UNLESS OTHERWISE NOTED. ALL STAINLESS STEEL BOLTS SHALL BE TREATED WITH NEVER-SIEZE PRIOR TO ASSEMBLY.
  - CONTRACTOR TO PROVIDE REQUIRED LENGTH OF PIPE DOWNSTREAM AND UPSTREAM OF THE PROPOSED METER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
  - ALL BELOW GROUND PIPING SHALL BE RESTRAINED ACCORDINGLY.
  - CONTRACTOR TO REMOVE/ABANDON EXISTING VAULTS AND FORCE MAIN AS NECESSARY TO PROPERLY INSTALL PROPOSED METER ASSEMBLY. ALL VOIDED AREAS SHALL BE REFILLED WITH FLOWABLE FILL.
  - ALL BELOW GROUND D.I. PIPE AND FITTINGS SHALL BE POLYETHYLENE WRAPPED.
  - INSTALL 6" OF COMPACTED 1" WASHED, CRUSHED SHELL OVER ONE LAYER OF WEED BARRIER OVER ALL EXPOSED GROUND SURFACES. ONE LAYER OF WEED BARRIER IS TO BE LAID AND EXTEND TO A LINE 6 FEET OUTSIDE OF THE CONCRETE PAD. THE WEED BARRIER SHALL BE MIRASCAP MANUFACTURED BY MFA71 OR APPROVED EQUAL. ALL FINISHED GRADE SURFACES SHALL SLOPE AWAY FROM THE CONCRETE SLABS AT A MINIMUM SLOPE OF 2%, EXTENDING TO A LINE 6 FEET OUTSIDE OF THE CONCRETE PAD LINE. ALL DISTURBED GROUND SHALL BE COMPACTED TO 95% MAX DENSITY, AASHTO T-180, BEFORE INSTALLING THE WEED BARRIER.

**GROUNDWATER / DEWATERING NOTE:**  
THE PRESENCE OF GROUNDWATER SHOULD BE ANTICIPATED ON THIS PROJECT. CONTRACTOR'S BID SHALL INCLUDE CONSIDERATION FOR THIS ISSUE. WHEN PERFORMING GRADING OPERATIONS DURING PERIODS OF WET WEATHER, PROVIDE ADEQUATE DEWATERING, DRAINAGE AND GROUND WATER MANAGEMENT TO CONTROL MOISTURE OF SOILS.



No.	REVISIONS	DATE	BY

**Kimley»Horn**

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**Manatee County**  
FLORIDA

**FORCE MAIN 13A REPLACEMENT**

KHA PROJECT 148400011  
DATE 8/12/16  
SCALE AS SHOWN  
DESIGNED BY JWW  
DRAWN BY SNH  
CHECKED BY WEW MANATEE COUNTY

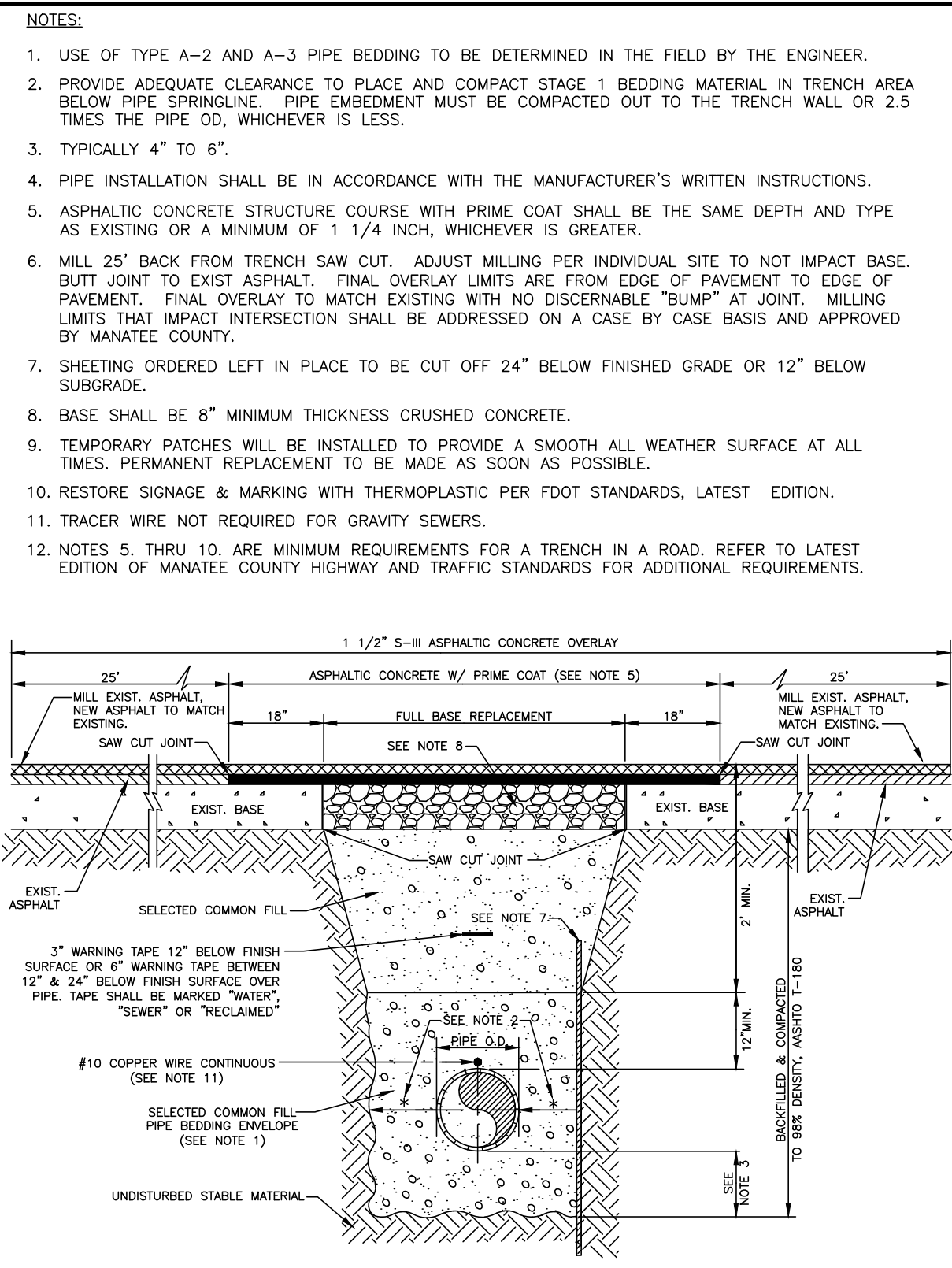
LICENSED PROFESSIONAL  
JORDAN W. WALKER, P.E.  
FL LICENSE NUMBER 78652

**DETAILS**

FL DATE:

SHEET NUMBER  
**29**

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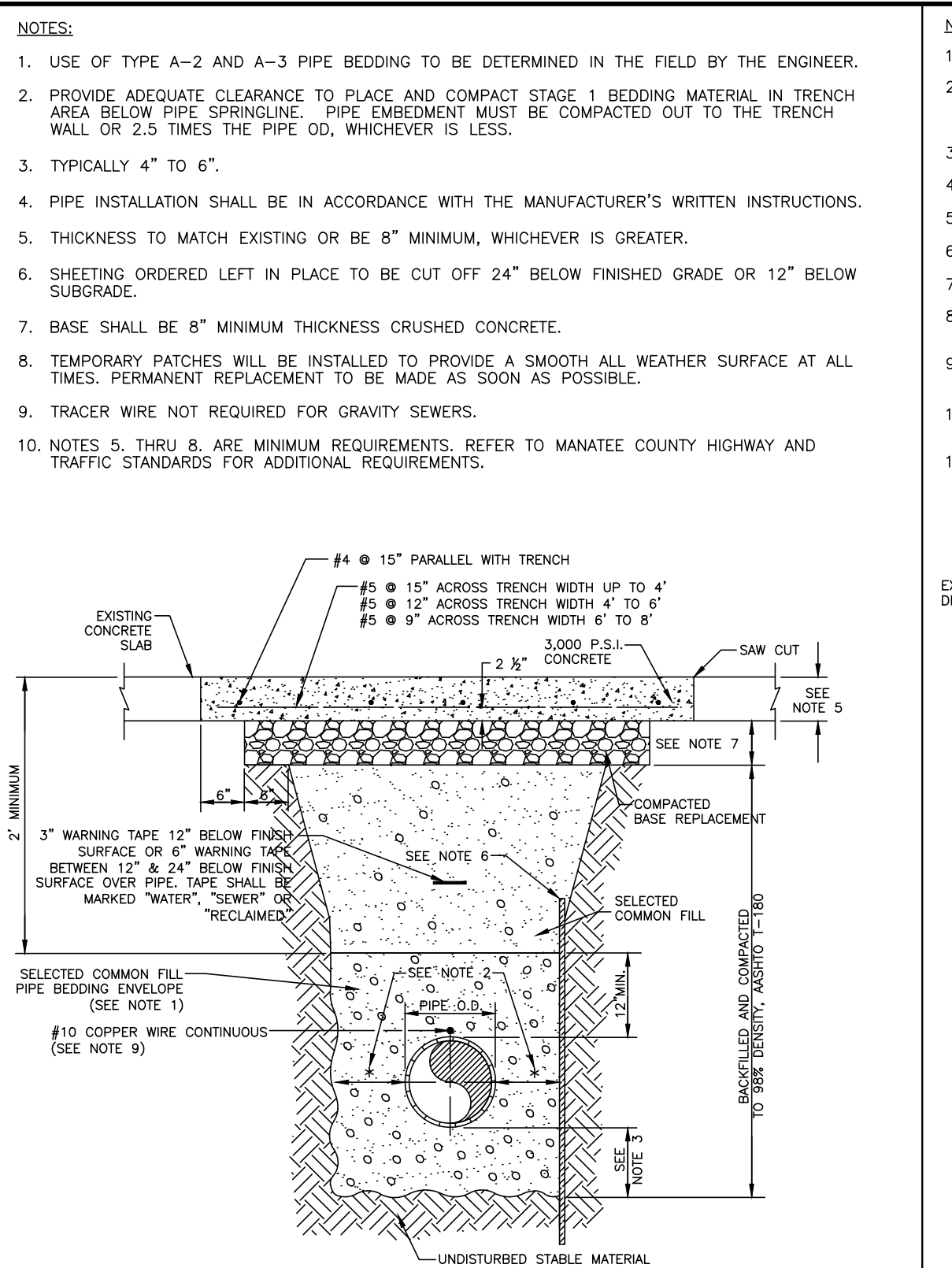
MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TRENCH WITH ASPHALT PAVEMENT SURFACE TYPE A-1 PIPE BEDDING	UG-12
REV. BY WRT/KE	DATE 03/11	MAY 10, 2011	PAGE 112
DATE OF APPROVAL			

**GENERAL NOTES**

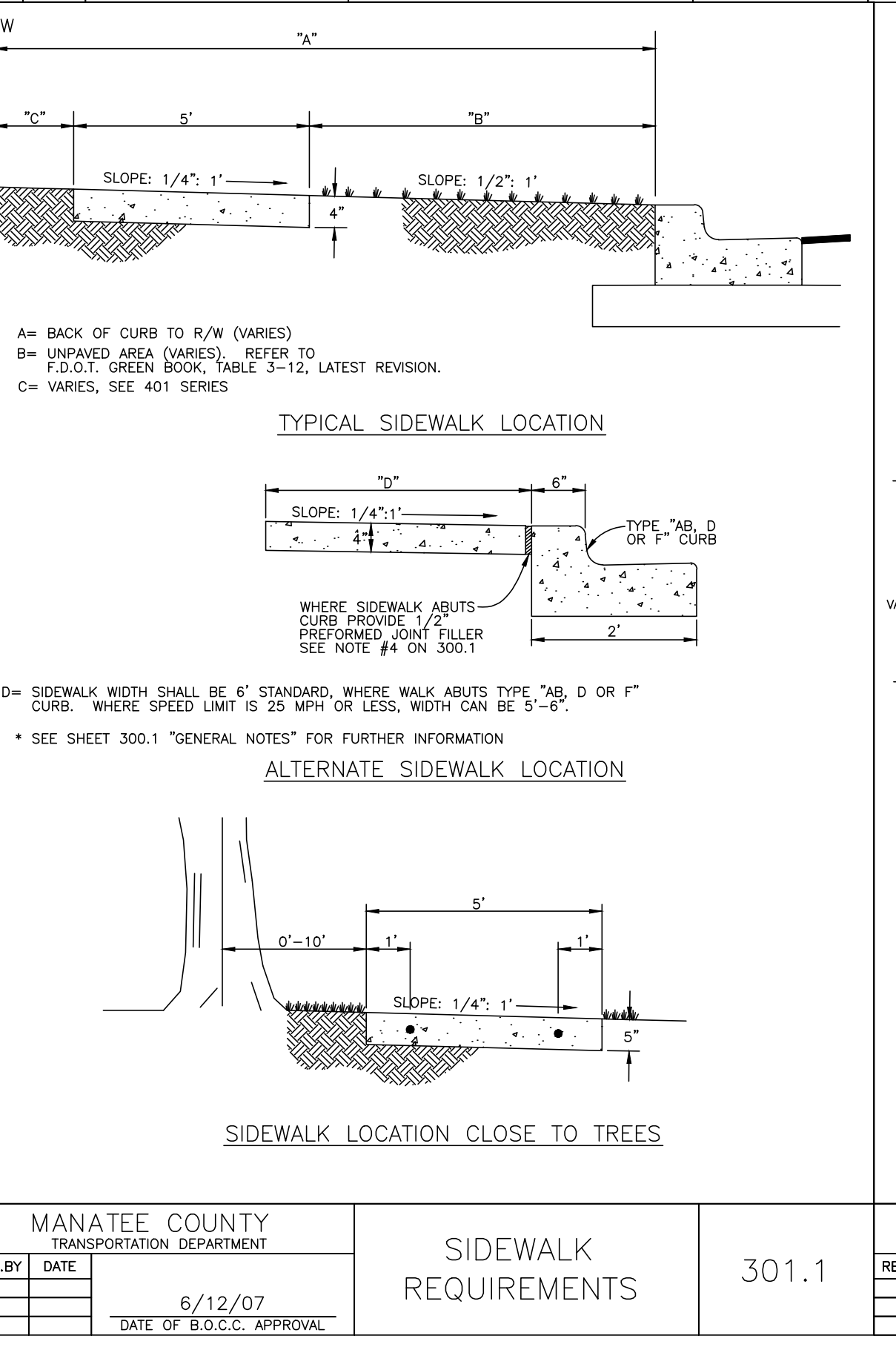
- SIDEWALK SHALL BE CONSTRUCTED A MINIMUM OF 4" THICK, USING 3000 PSI CONCRETE. WHERE SIDEWALK BISECTS A DRIVEWAY, THE MINIMUM SHALL BE 6" OF CLASS I CONCRETE REINFORCED WITH 6"x6" #10 WIRE MESH.
  - SEE SHEETS #101.2 & 101.3.
- ALL SIDEWALKS SHALL BE CONSTRUCTED TO THE SPECIFICATIONS OF THE MANATEE COUNTY LAND DEVELOPMENT CODE, SECTION 722. A MINIMUM (5) FOOT WIDE SIDEWALK SHALL BE INSTALLED ALONG THE NORTH AND WEST SIDES OF ALL NEW LOCAL STREETS WHICH ARE CONSTRUCTED IN CONJUNCTION WITH A NEW RESIDENTIAL DEVELOPMENT. A SIDEWALK A MINIMUM OF (5) FEET IN WIDTH SHALL BE INSTALLED ON BOTH SIDES OF ALL THOROUGHFARES. REFER TO F.D.O.T. ROADWAY AND TRAFFIC STANDARDS, LATEST REVISION FOR CURB CUT RAMP SPECIFICATIONS.
- THE CONCRETE SHALL BE GIVEN A BROOM FINISH. THE SURFACE VARIATIONS SHALL NOT BE MORE THAN 1/4" UNDER A TEN FOOT STRAIGHTEDGE, NOR MORE THAN 1/8" ON A FIVE FOOT TRAVERSE SECTION. THE EDGE OF THE SIDEWALK SHALL BE CAREFULLY FINISHED WITH AN EDGING TOOL HAVING A RADIUS OF 1/2".
- EXPANSION JOINT: EXPANSION JOINTS BETWEEN THE SIDEWALKS AND THE CURB OR DRIVEWAY OR AT FIXED OBJECTS AND SIDEWALK INTERSECTIONS SHALL BE 1/2" MATERIAL SHALL MEET THE REQUIREMENTS OF AASHTO M153 OR AASHTO M213. FOR LONG POORS, AN EXPANSION JOINT SHALL BE PLACED AT INTERVALS NOT TO EXCEED 120'.
- CONTRACTION JOINTS:  
OPEN TYPE JOINTS  
OPEN TYPE CONSTRUCTION JOINTS SHALL BE FORMED BY STAKING A METAL BULKHEAD IN PLACE AND DEPOSITING THE CONCRETE ON BOTH SIDES. AFTER THE CONCRETE HAS SET SUFFICIENTLY TO PRESERVE THE WIDTH AND THE SHAPE OF THE JOINT, THE BULKHEAD SHALL BE REMOVED. AFTER THE SIDEWALK HAS BEEN FINISHED OVER THE JOINT, THE SLOT SHALL BE FINISHED WITH A TOOL HAVING A 1/2" RADIUS.  
SAWED JOINTS  
A SLOT APPROXIMATELY 3/16" WIDE AND NOT LESS THAN 1" DEEP AT 10' CENTERS SHALL BE CUT WITH A CONCRETE SAW AFTER THE CONCRETE HAS SET.
- SIDEWALKS ALONG OTHER STREETS SHALL BE CONSTRUCTED AND DEDICATED AS REQUIRED BY THE APPROVING AUTHORITY WHEN NECESSARY TO CONTINUE AN EXISTING OR PROPOSED SIDEWALK.
- HANDICAP RAMPS SHALL MEET FLORIDA ACCESSIBILITIES STANDARDS, AND SECTIONS 301.0, 301.1 AND 301.2.
- ALL SIDEWALKS ON R/W WITHIN 10' OF AN EXISTING OR PROPOSED TREE THAT WILL EXCEED 6" IN DIAMETER AT MATURITY SHALL BE 5" THICK AND CONTAIN 2-#3 REBAR CENTERED VERTICALLY AND SPACED 3' ON CENTER. PALMS ARE NOT CONSIDERED TREES.

\*NOTE: FOR COMPLETE SIDEWALK DETAILS, SEE F.D.O.T. DESIGN STANDARDS, 2006 EDITION, INDEX 304, SHEETS 1 THROUGH 6 AND INDEX 310, SHEETS 1 & 2.

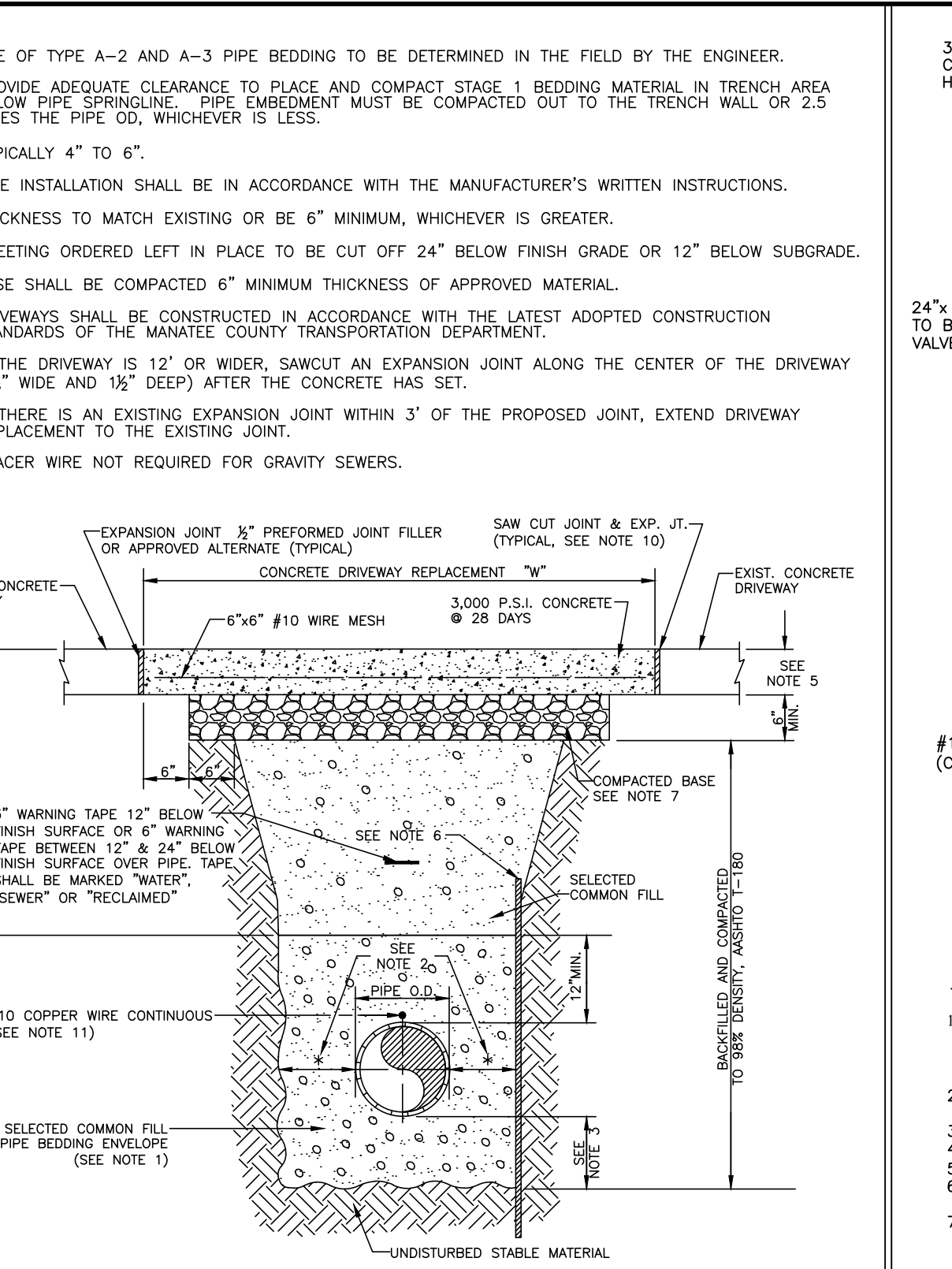
MANATEE COUNTY TRANSPORTATION DEPARTMENT		SIDEWALKS GENERAL NOTES	301.0
REV. BY	DATE	6/12/07	
DATE OF B.O.C.C. APPROVAL			



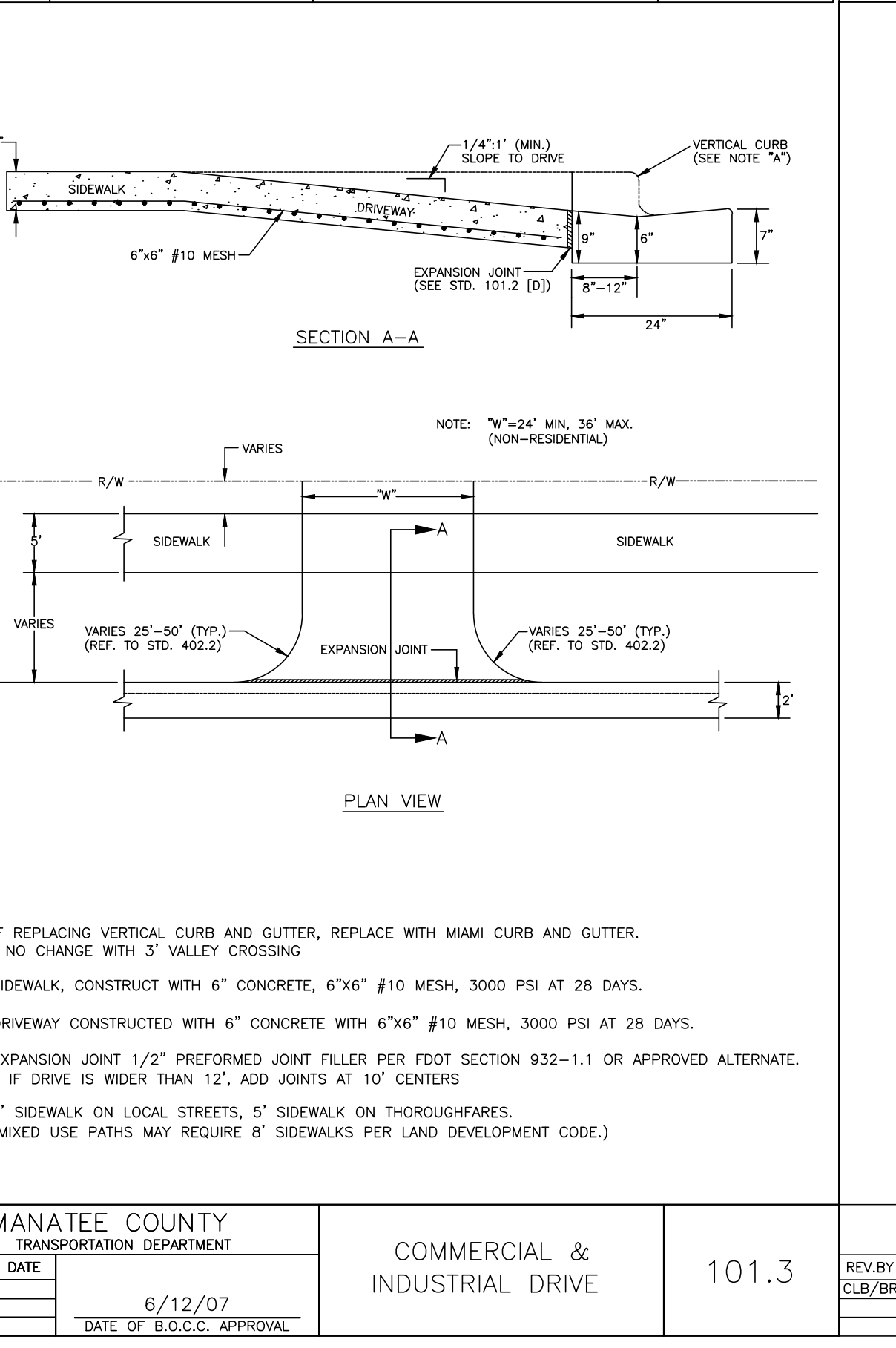
MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TRENCH WITH CONCRETE PAVEMENT SURFACE TYPE A-1 PIPE BEDDING	UG-13
REV. BY CLB/BR	DATE 11/10	MAY 10, 2011	PAGE 113
DATE OF APPROVAL			



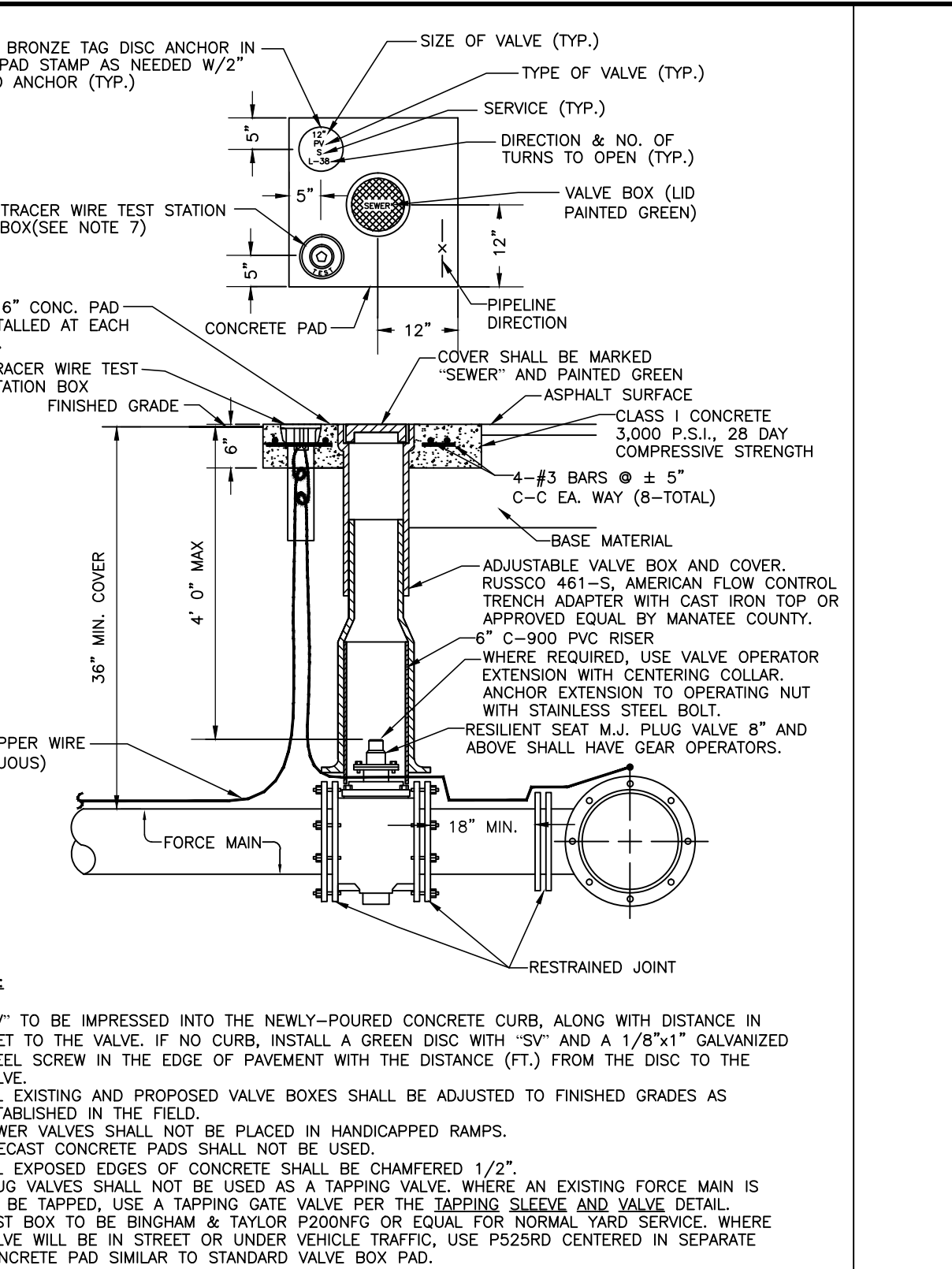
MANATEE COUNTY TRANSPORTATION DEPARTMENT		SIDEWALK REQUIREMENTS	301.1
REV. BY	DATE	6/12/07	
DATE OF B.O.C.C. APPROVAL			



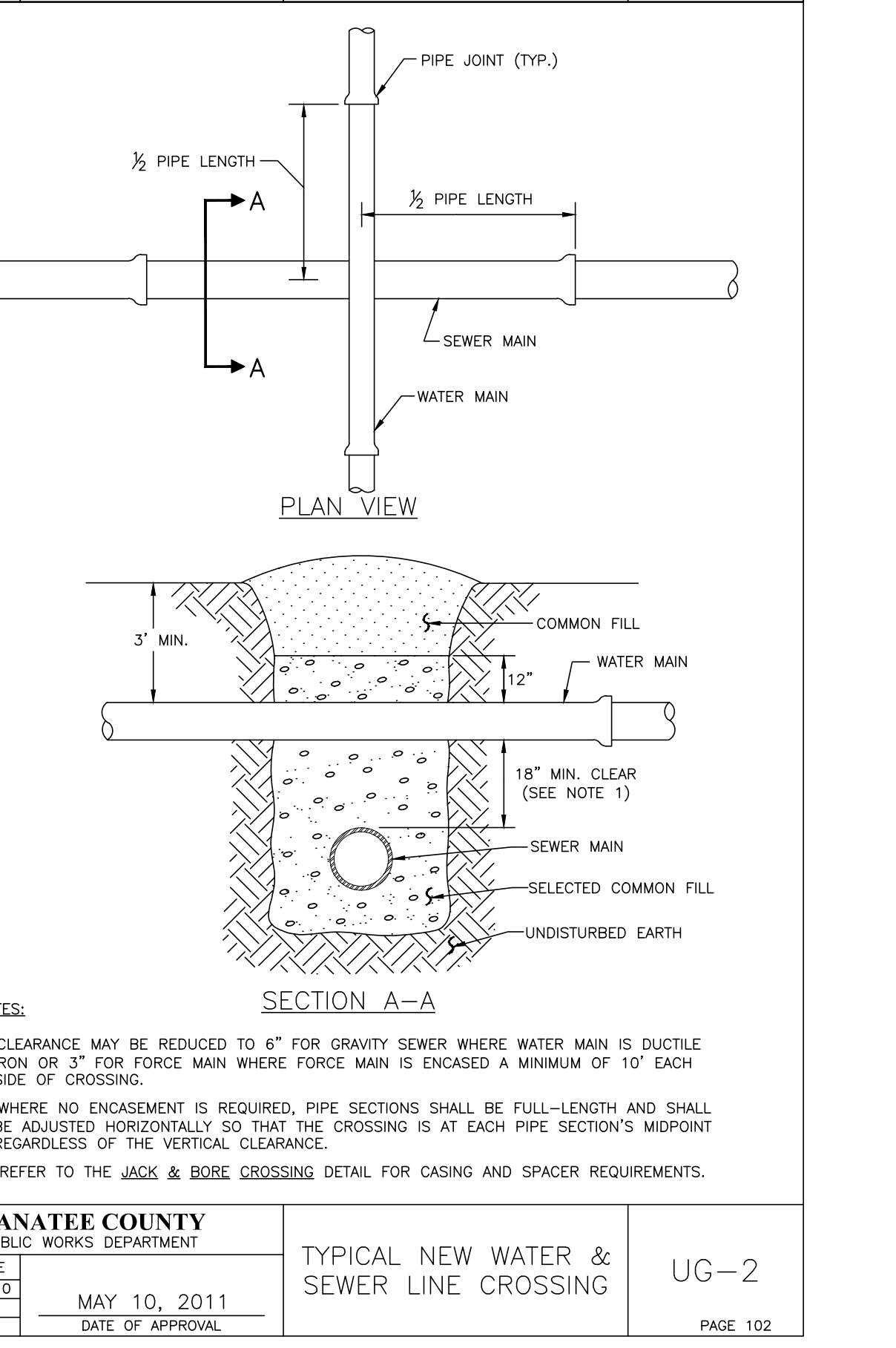
MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TRENCH WITH CONCRETE DRIVEWAY SURFACE TYPE A-1 PIPE BEDDING	UG-14
REV. BY CLB/BR	DATE 11/10	MAY 10, 2011	PAGE 114
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MANATEE COUNTY TRANSPORTATION DEPARTMENT		COMMERCIAL & INDUSTRIAL DRIVE	101.3
REV. BY	DATE	6/12/07	
DATE OF B.O.C.C. APPROVAL			



MANATEE COUNTY PUBLIC WORKS DEPARTMENT		PLUG VALVE, BOX, COVER AND TAG	US-12
REV. BY CLB/DOH	DATE 11/10	MAY 10, 2011	PAGE 152
DATE OF APPROVAL			



MANATEE COUNTY PUBLIC WORKS DEPARTMENT		TYPICAL NEW WATER & SEWER LINE CROSSING	UG-2
REV. BY CLB/BR	DATE 11/10	MAY 10, 2011	PAGE 102
DATE OF APPROVAL			

**GROUNDWATER / DEWATERING NOTE:**  
THE PRESENCE OF GROUNDWATER SHOULD BE ANTICIPATED ON THIS PROJECT. CONTRACTOR'S BID SHALL INCLUDE CONSIDERATION FOR THIS ISSUE. WHEN PERFORMING GRADING OPERATIONS DURING PERIODS OF WET WEATHER, PROVIDE ADEQUATE DEWATERING, DRAINAGE AND GROUND WATER MANAGEMENT TO CONTROL MOISTURE OF SOILS.



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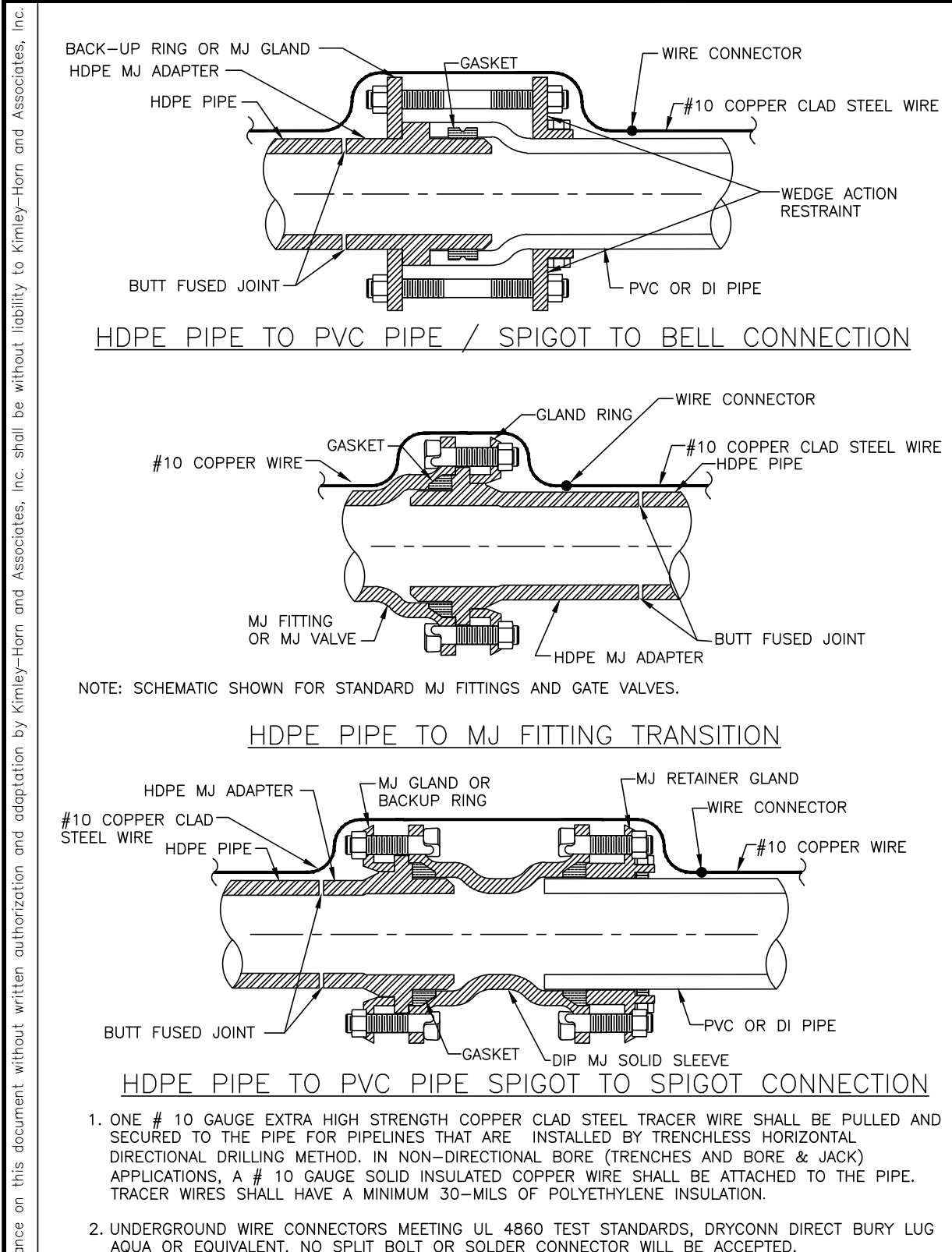
KHA PROJECT  
148400011  
DATE  
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SCALE AS SHOWN  
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CHECKED BY WEW  
MANATEE COUNTY

**Manatee County**  
**FORCE MAIN 13A REPLACEMENT**

LICENSED PROFESSIONAL  
JORDAN W. WALKER, P.E.  
FL LICENSE NUMBER  
78652  
DATE:

**DETAILS**  
SHEET NUMBER  
30

No.	REVISIONS	DATE	BY



MANATEE COUNTY PUBLIC WORKS DEPARTMENT

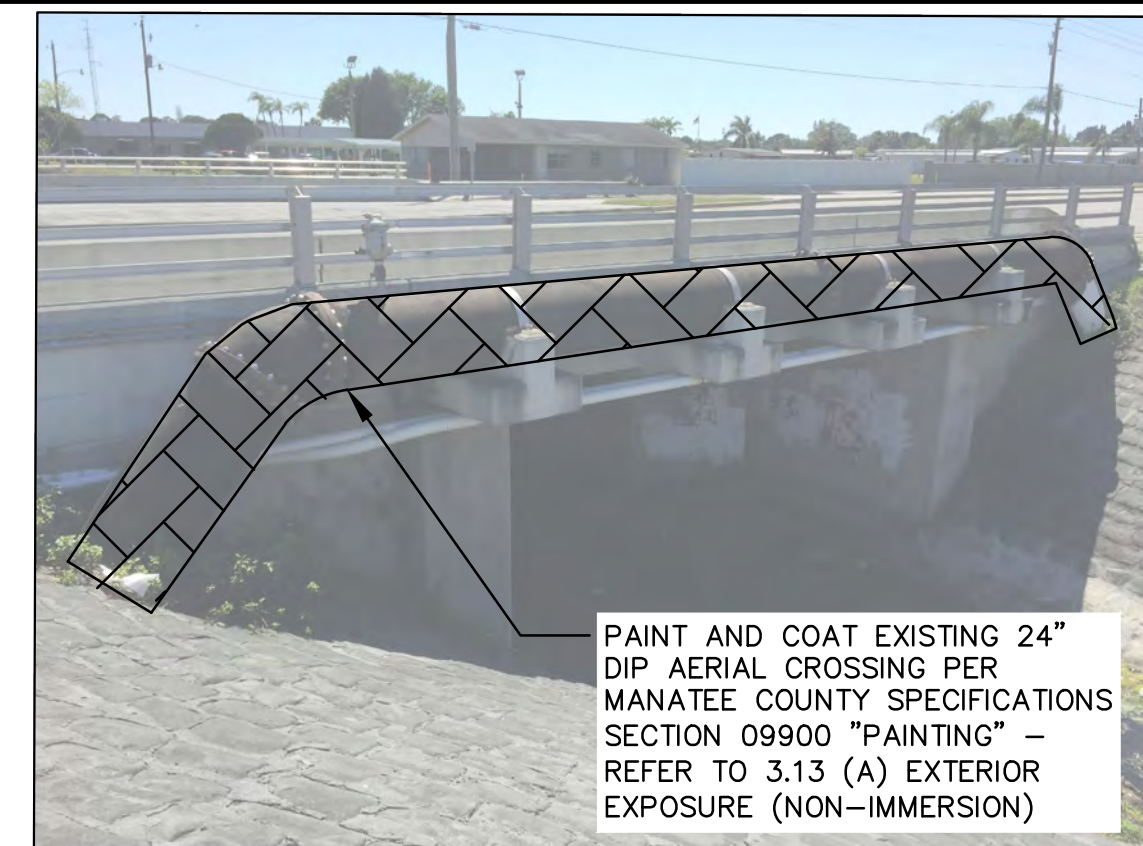
REV. BY DATE CLB/BR 11/10

DATE OF APPROVAL MAY 10, 2011

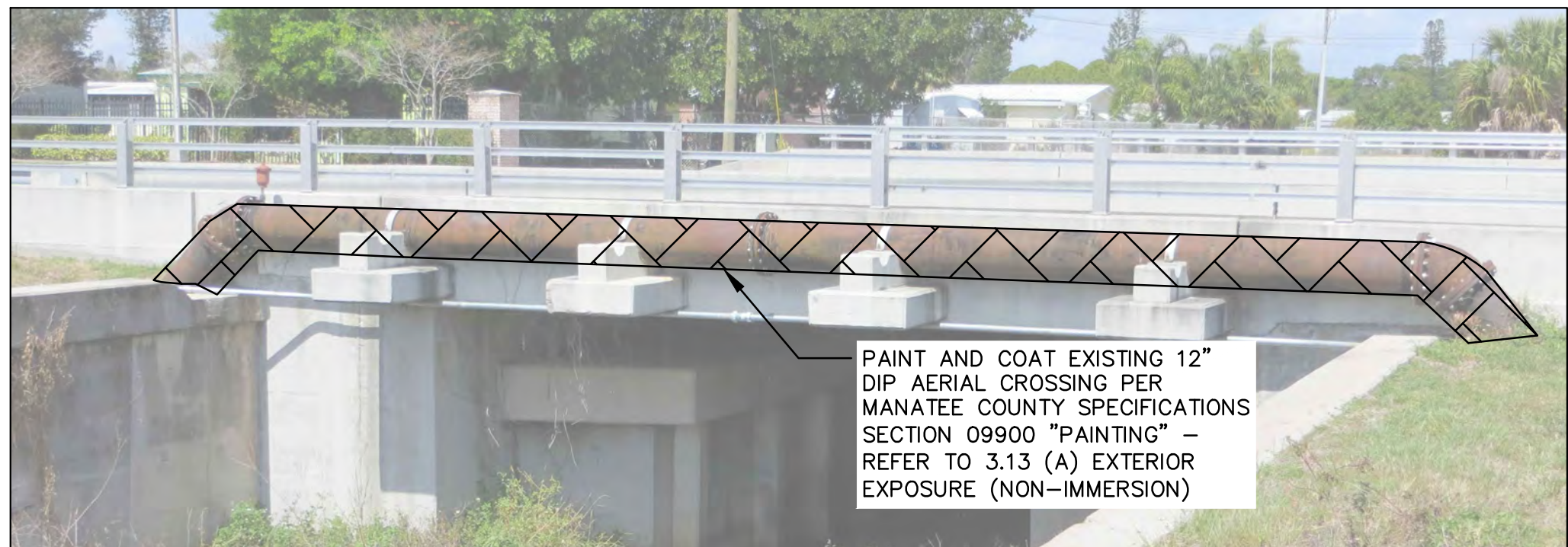
HDPE TO PVC OR DI PIPE ADAPTER

UG-6

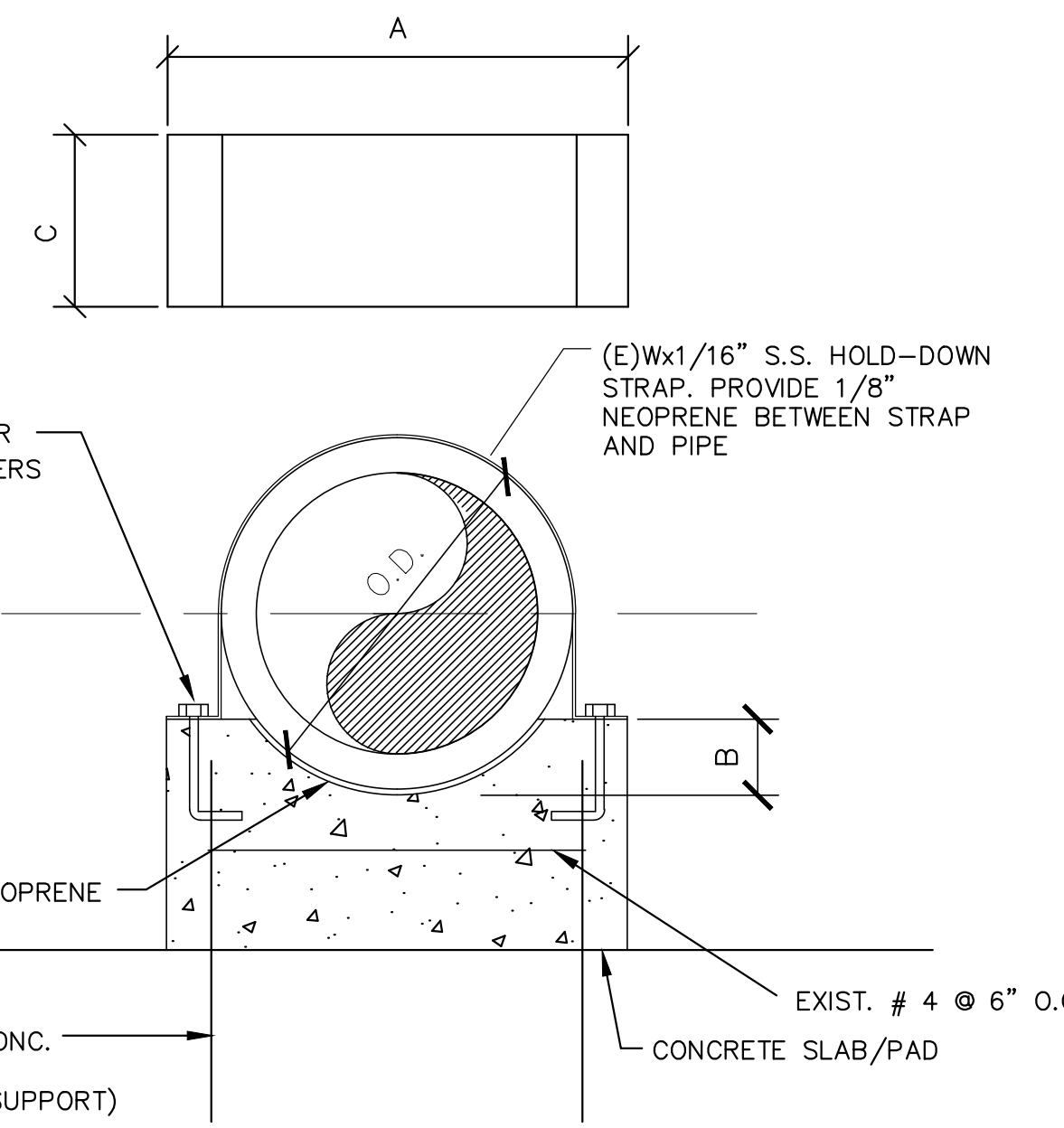
PAGE 106



FORCE MAIN AERIAL CROSSING DETAIL



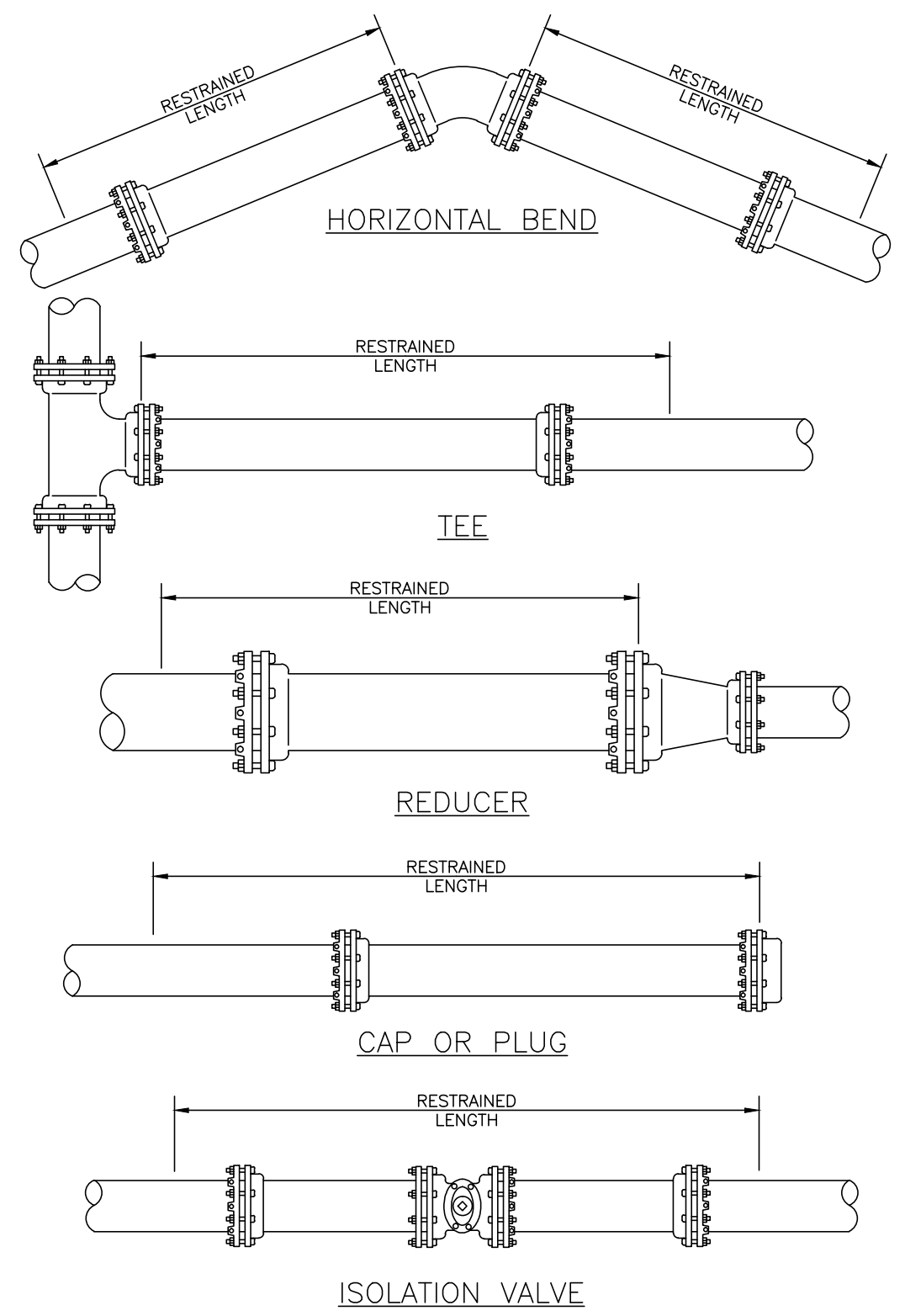
WATER MAIN AERIAL CROSSING DETAIL



CONCRETE PIPE SUPPORT  
N.T.S.

SCHEDULE

PIPE SIZE	A	B	C	E
4"	1'-2"	2"	8"	2"
6"	1'-6"	2"	8"	4"
8"	1'-8"	3"	1'-0"	4"
10"	1'-8"	3"	1'-0"	4"
12"	2'-0"	4"	1'-0"	6"
16"	2'-0"	4"	1'-0"	6"
18"	2'-6"	6"	1'-0"	8"
20"	2'-8"	6"	1'-6"	12"
24"	3'-0"	6"	1'-6"	12"
30"	3'-6"	8"	1'-9"	12"
36"	4'-0"	8"	1'-9"	12"



MANATEE COUNTY PUBLIC WORKS DEPARTMENT

REV. BY DATE CLB/BR 11/10

DATE OF APPROVAL MAY 10, 2011

RESTRAINED LENGTHS FOR PIPE

UG-10

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REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DR-18 PVC PIPE

MAIN PIPE SIZE	HORIZ. BENDS			TEES				REDUCERS				PLUGS & VALVES
	90°	45°	22.5°	SIZE LENGTH				SIZE LENGTH				
24	90	38	18	X24	X20	X16	X12	X24	X18	X12	X8	214
20	78	32	16	X20	X16	X12	X8	X16	X12	X8	X4	184
16	66	27	13	X16	X12	X8	X4	X12	X8	X4	X2	151
12	52	22	10	X12	X8	X4	X2	X8	X4	X2	X1	118
10	44	18	9	X10	X6	X4	X2	X6	X4	X2	X1	100
8	37	15	7	X8	X4	X2	X1	X4	X2	X1	X0.5	83
6	29	12	6	X6	X4	X2	X1	X4	X2	X1	X0.5	63
4	21	8	4	X4	X2	X1	X0.5	X2	X1	X0.5	X0.25	45

- NOTES:
- RESTRAIN 11.25° BENDS 50% OF LENGTH FOR 22.5° BENDS.
  - ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTION SECTIONS OF PIPE.
  - ALL ISOLATION VALVES MUST BE PROPERLY ANCHORED OR RESTRAINED TO RESIST A 180 PSI TEST PRESSURE IN EITHER DIRECTION.
  - PIPE SIZES ARE GIVEN IN INCHES.
  - RESTRAINED PIPE LENGTHS ARE GIVEN IN FEET.
  - LENGTHS SHOWN ARE FOR A TEST PRESSURE OF 180 PSI.
  - THE RESTRAINED LENGTHS SHOWN IN THESE TABLES ARE BASED ON SOIL CLASSIFICATION SP WITH AWWA TYPE 3 TRENCH CONDITIONS, 180 PSI TEST PRESSURE, 3 FEET OF COVER AND 1.5 FACTOR OF SAFETY. ACTUAL BURY CONDITIONS MUST BE DETERMINED BY THE ENGINEER OF RECORD AND THE RESTRAINED LENGTHS MODIFIED ACCORDINGLY.
  - RESTRAINED LENGTHS TO BE APPLIED TO PIPELINES PER DETAIL RESTRAINED LENGTHS FOR PIPE.
  - IF FITTING TYPE OR PIPE SIZE IS NOT SHOWN, REFER TO THE ADDITIONAL RESTRAIN LENGTHS DETAIL FOR SECONDARY REFERENCE ON THIS SHEET.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT

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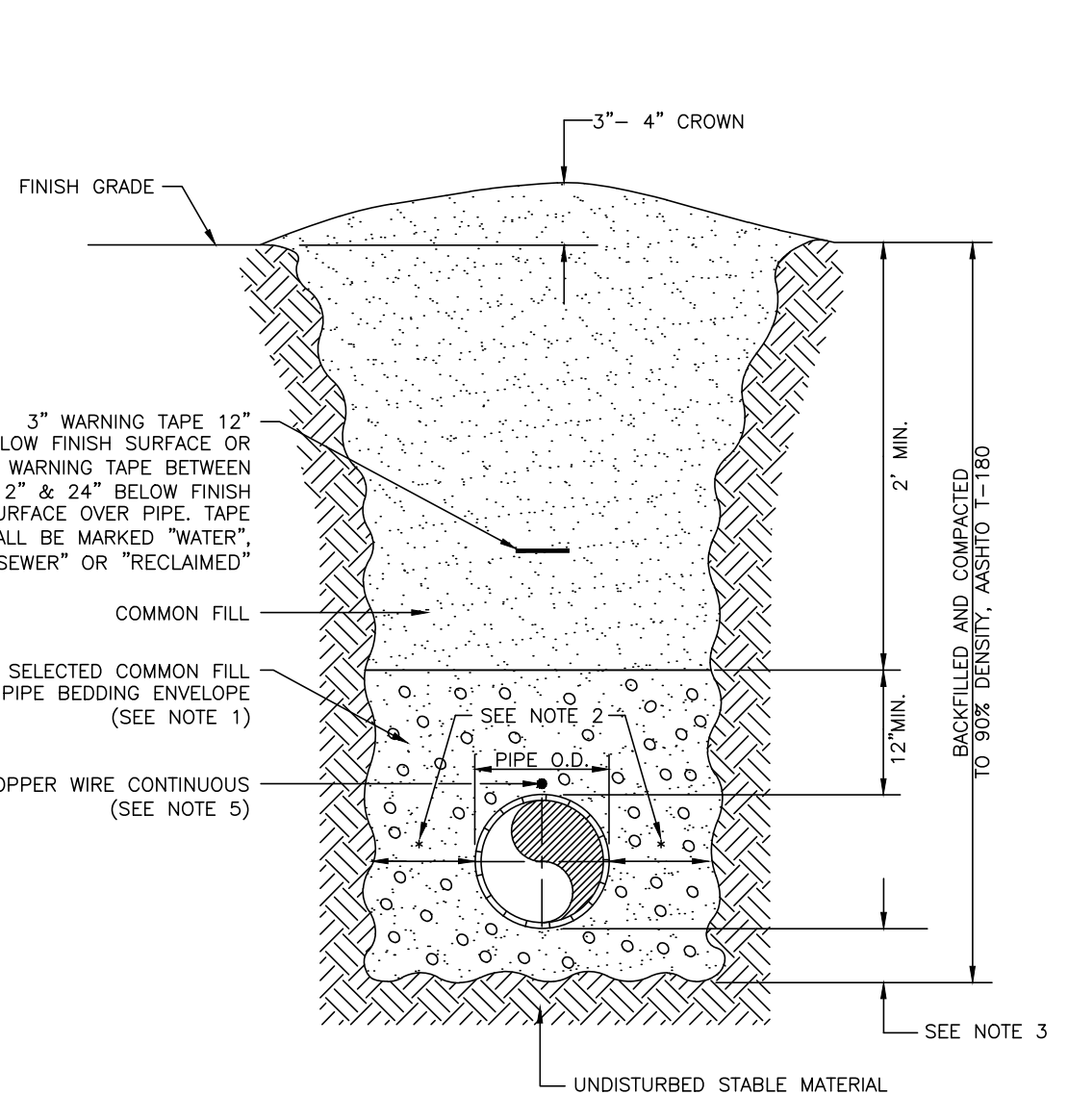
DATE OF APPROVAL MAY 10, 2011

RESTRAINED LENGTHS FOR PVC PIPE

UG-8

PAGE 108

- NOTES:
- USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
  - PROVIDE ADEQUATE CLEARANCE TO PLACE AND COMPACT STAGE 1 BEDDING MATERIAL IN TRENCH AREA BELOW PIPE SPRINGLINE. PIPE EMBEDMENT MUST BE COMPACTED OUT TO THE TRENCH WALL OR 2.5 TIMES THE PIPE OD, WHICHEVER IS LESS.
  - TYPICALLY 4" TO 6".
  - PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
  - TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.



MANATEE COUNTY PUBLIC WORKS DEPARTMENT

REV. BY DATE CLB/BR 11/10

DATE OF APPROVAL MAY 10, 2011

TRENCH WITH UNIMPROVED SURFACE TYPE A-1 PIPE BEDDING

UG-11

PAGE 111

MIN. LENGTH OF PIPE (FEET) TO BE RESTRAINED

FITTING TYPE	PIPE SIZE											
	4"	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"
90° HORIZ. BEND	14	20	25	30	35	45	54	62	98	112	124	135
45° HORIZ. BEND	6	8	11	13	15	19	22	26	41	46	51	56
22.5° HORIZ. BEND	3	4	5	6	7	9	11	12	19	22	25	27
11.25° HORIZ. BEND	1	2	3	3	4	4	5	6	10	11	12	13
90° VERT. OFFSET	29	41	53	64	74	95	115	134	214	246	276	304
45° VERT. OFFSET	12	19	24	29	34	39	48	56	89	102	114	126
22.5° VERT. OFFSET	6	9	12	14	17	19	23	27	43	49	55	60
11.25° VERT. OFFSET	1	2	4	4	4	5	6	7	11	13	15	16
PLUG (DEAD END)	32	45	59	70	83	107	129	151	214	246	276	304
IN-LINE VALVE	32	45	45	45	45	55	65	80	110	125	140	155
TEE (BRANCH RESTRAINT)	4" X	23	-	-	-	-	-	-	-	-	-	-
	6" X	21	35	-	-	-	-	-	-	-	-	-
	8" X	18	34	47	-	-	-	-	-	-	-	-
	10" X	16	32	46	58	-	-	-	-	-	-	-
	12" X	13	30	44	57	69	-	-	-	-	-	-
	16" X	7	26	41	55	67	90	-	-	-	-	-
	20" X	1	21	38	52	65	88	109	-	-	-	-
	24" X	1	16	34	49	62	86	108	129	-	-	-
REDUCER (LARGER PIPE RESTRAINT)	30" X	1	8	28	44	58	83	106	127	208	-	-
	36" X	1	1	22	39	54	80	103	124	206	240	-
	42" X	1	1	15	33	49	77	100	122	205	239	270
	48" X	1	1	7	27	44	73	97	120	203	238	298
	6" X	23	-	-	-	-	-	-	-	-	-	-
	8" X	38	25	-	-	-	-	-	-	-	-	-
	10" X	57	43	24	-	-	-	-	-	-	-	-
	12" X	72	60	44	41	-	-	-	-	-	-	-
16" X	99	90	78	75	45	-	-	-	-	-	-	
20" X	123	116	107	105	81	45	-	-	-	-	-	
24" X	146	140	132	131	111	82	45	-	-	-	-	
30" X	209	204	197	188	177	153	116	75	-	-	-	
36" X	243	236	233	226	217	196	168	135	74	-	-	
42" X	273	270	265	259	252	234	211	183	133	72	-	
48" X	301	298	294	289	283	268	249	226	183	131	71	

- (SOURCES: EBAA IRON RESTRAINT LENGTH CALCULATION PROGRAM FOR PVC PIPE, RELEASE 3.1, AND DIPRA THRUST RESTRAINT FOR DUCTILE IRON PIPE, RELEASE 3.2)
- NOTES:
- THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:  
SOIL TYPE-SAND TEST PRESSURE-150 PSI/200 PSI  
TRENCH TYPE-3 SAFETY FACTOR-1.5  
MINIMUM PIPE LENGTH ALONG TEE RUN-5'  
DEPTH OF BURY-3' VERTICAL OFFSET-3'
  - THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.
  - ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
  - RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.
  - CONTRACTOR TO REFER TO MANATEE COUNTY DETAIL UG-8 FOR RESTRAIN LENGTHS. IF FITTING TYPE OR PIPE SIZE IS NOT SHOWN, REFER TO THIS DETAIL FOR SECONDARY REFERENCE.

ADDITIONAL RESTRAIN LENGTHS DETAIL

**GROUNDWATER / DEWATERING NOTE:**  
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No.	REVISIONS	DATE	BY

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PHONE: 813-620-1460  
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KHA PROJECT 148400011

DATE 8/12/16

SCALE AS SHOWN

DESIGNED BY JWW

DRAWN BY SNH

CHECKED BY WEW

MANATEE COUNTY

**Manatee County**

**FORCE MAIN 13A REPLACEMENT**

LICENSED PROFESSIONAL

JORDAN W. WALKER, P.E.

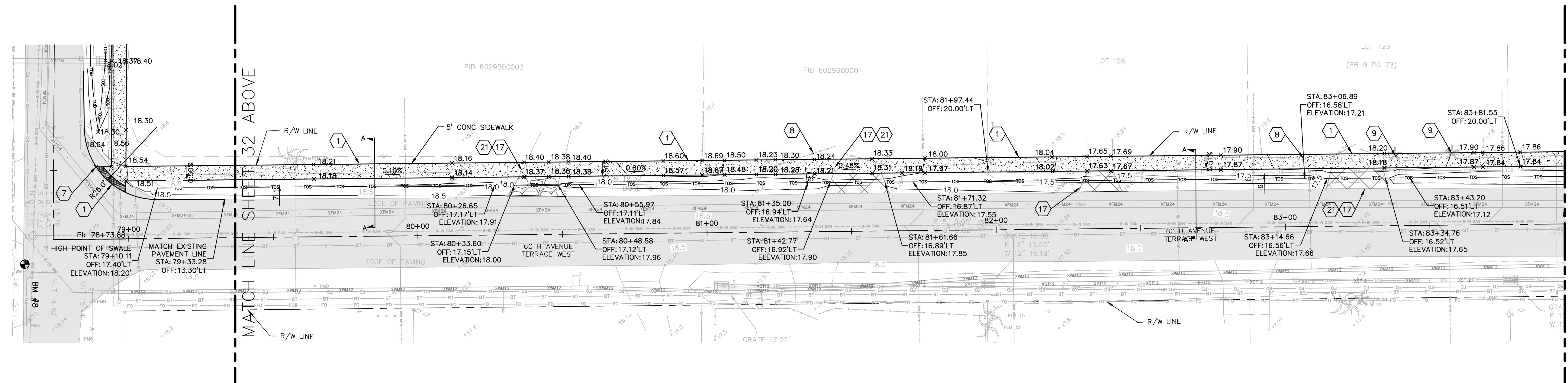
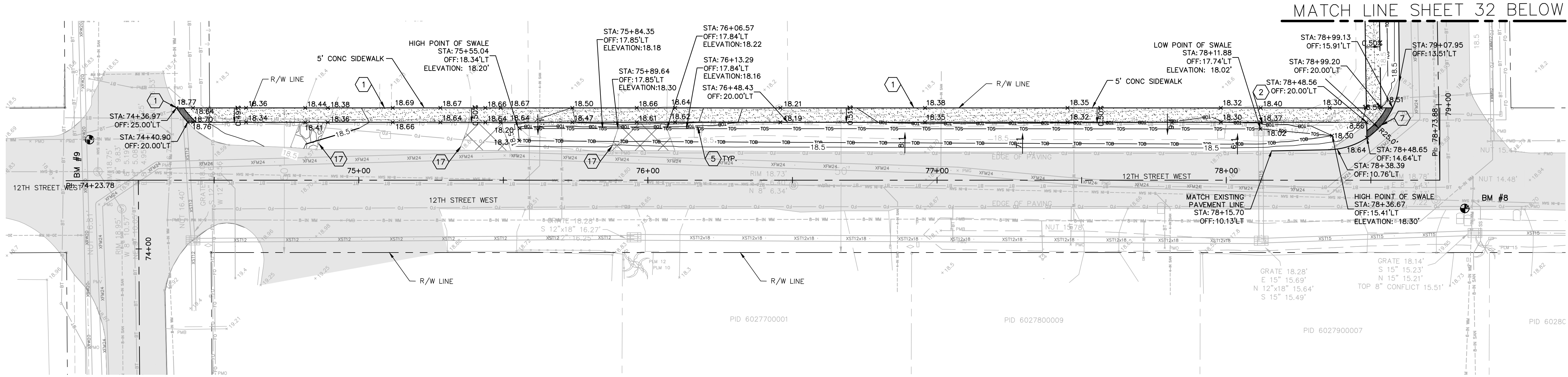
FL LICENSE NUMBER 78652

FL DATE:

**DETAILS**

SHEET NUMBER **31**

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**KEYED NOTES:**

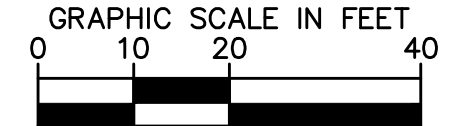
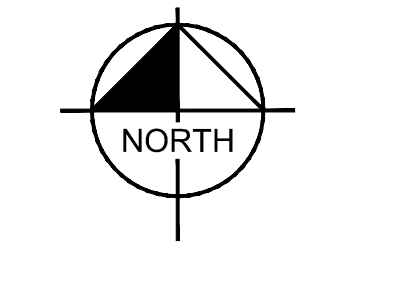
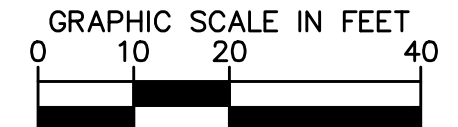
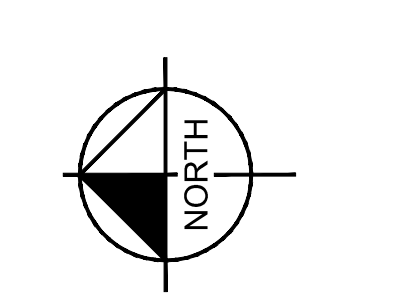
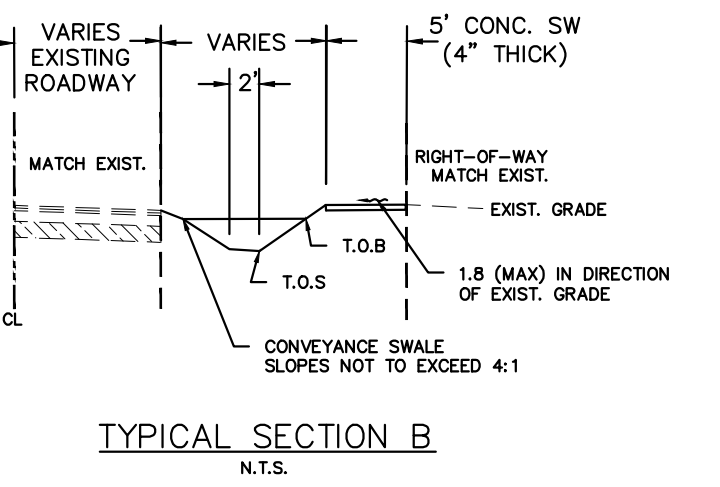
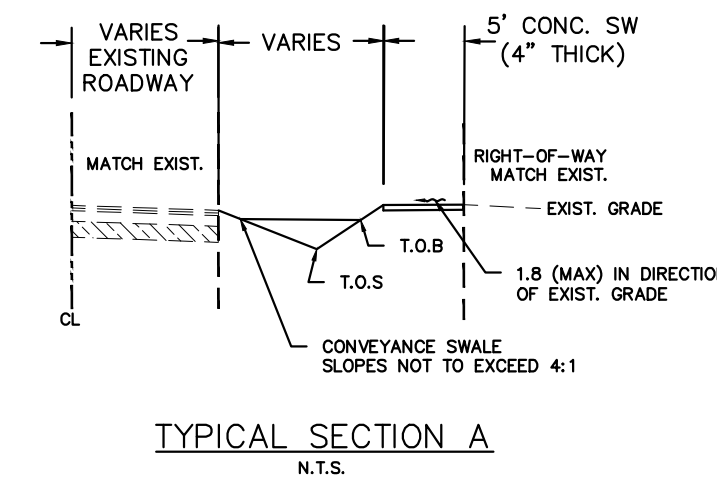
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**LEGEND CONT'D:**

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- EXISTING CONTOUR
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- PROPOSED TOE OF SLOPE
- EXISTING TOP OF BANK
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- × 18.30 PROPOSED SPOT GRADE
- × 18.30 EXISTING SPOT GRADE



**GROUNDWATER / DEWATERING NOTE:**  
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No.	REVISIONS	DATE	BY

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PHONE: 813-620-1460  
WWW.KIMLEY-HORN.COM CA 00000696

KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWW
DRAWN BY SNH
CHECKED BY WEW

**Manatee County**  
**FORCE MAIN 13A REPLACEMENT**  
MANATEE COUNTY

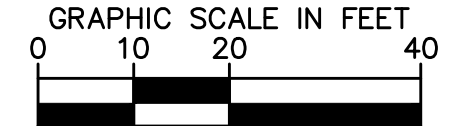
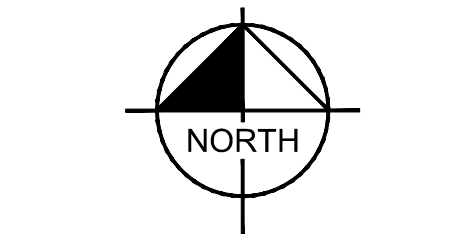
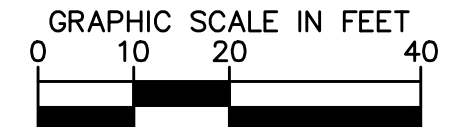
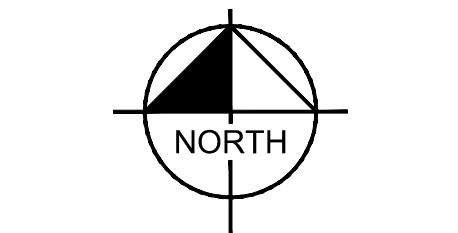
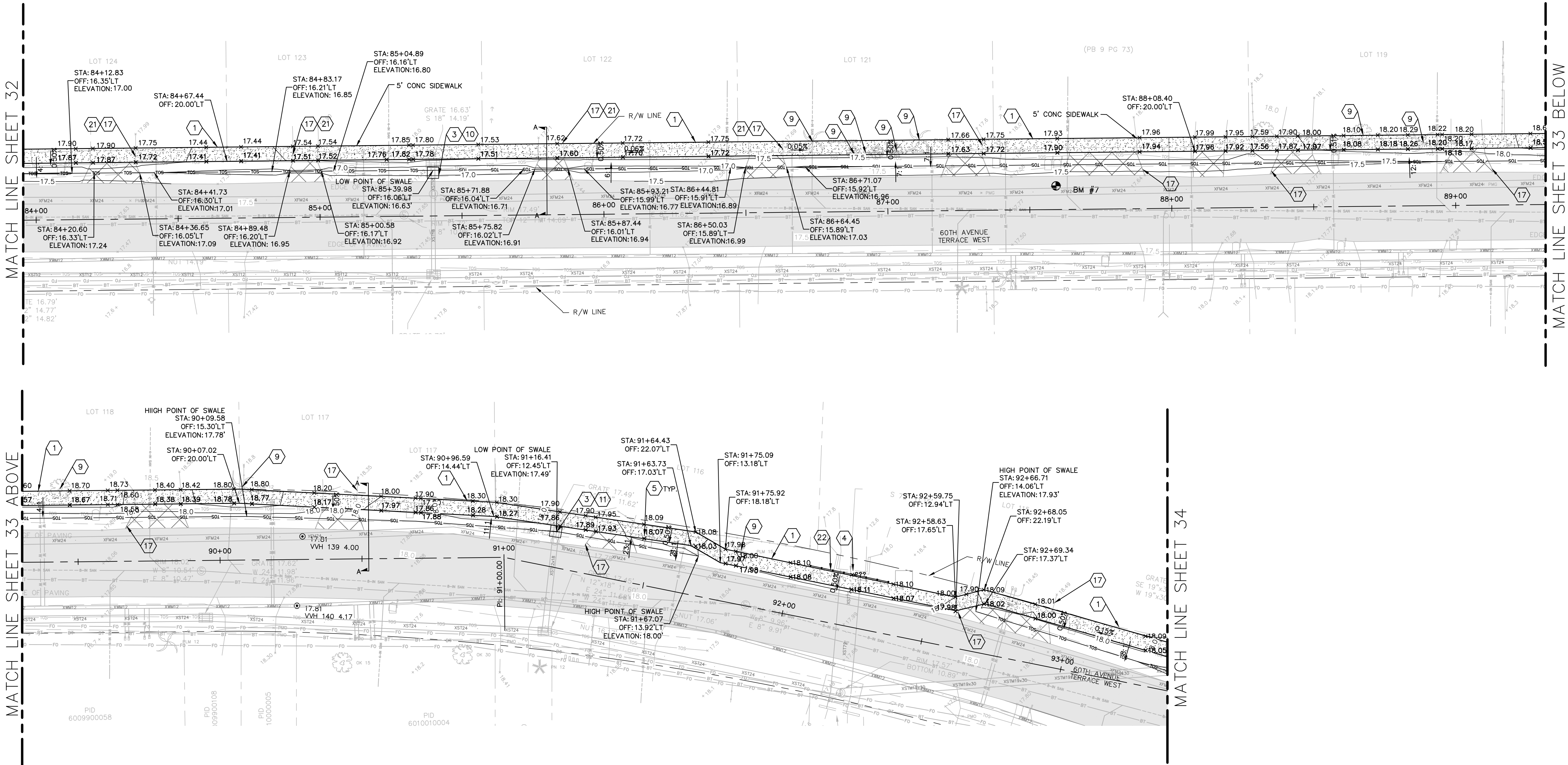
LICENSED PROFESSIONAL JORDAN W. WALKER, P.E. FL LICENSE NUMBER 78652
-------------------------------------------------------------------------------

**SIDEWALK PLAN (12TH ST W)**

SHEET NUMBER <b>32</b>
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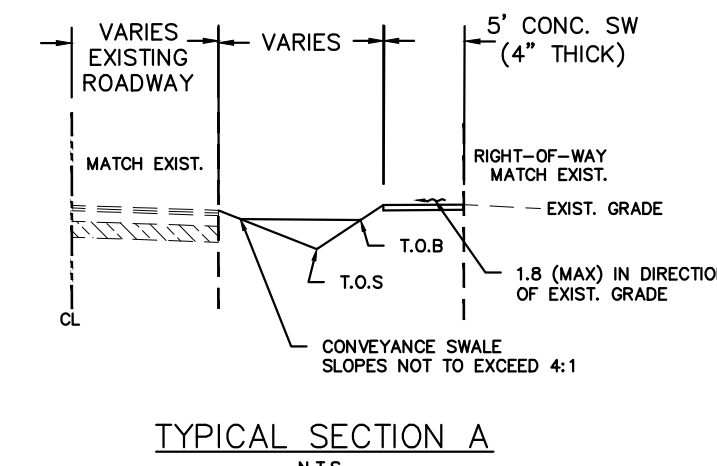
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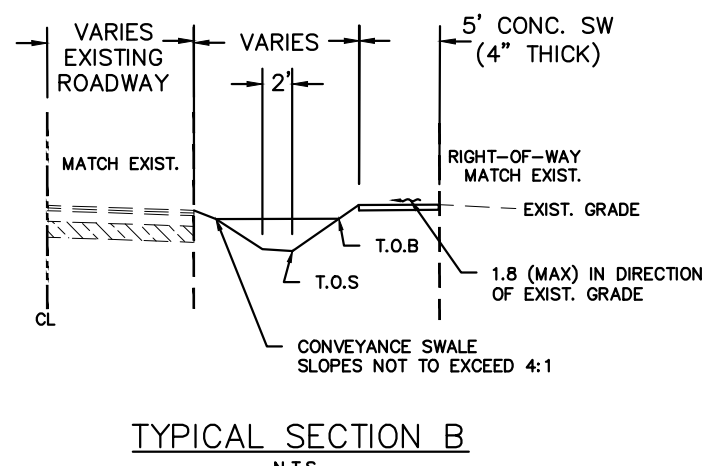
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  - CONCRETE DRIVEWAY REPAIR
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TYPICAL SECTION A  
N.T.S.



TYPICAL SECTION B  
N.T.S.

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PHONE: 813-620-1460  
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KHA PROJECT 148400011
DATE 8/12/16
SCALE AS SHOWN
DESIGNED BY JWJ
DRAWN BY SNH
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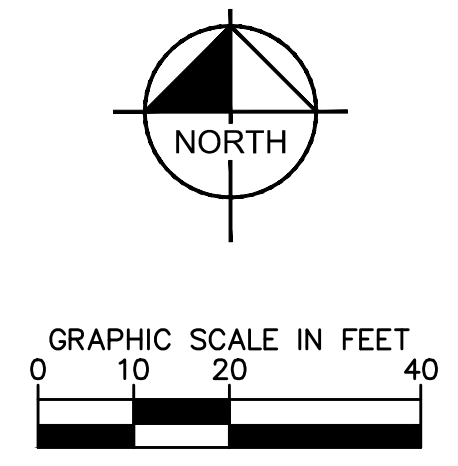
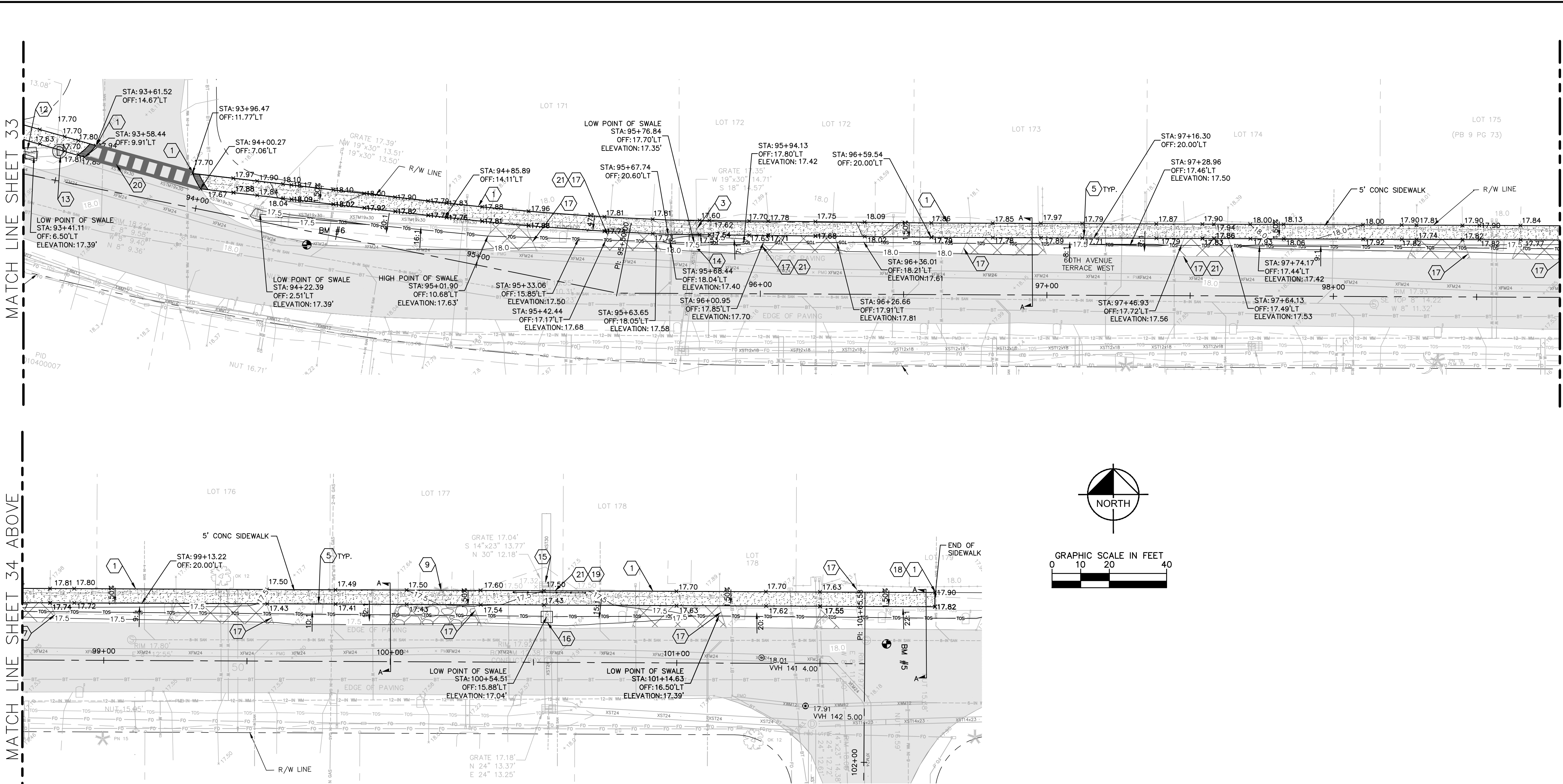
**Manatee County**  
**FORCE MAIN 13A REPLACEMENT**  
MANATEE COUNTY

LICENSED PROFESSIONAL
JORDAN W. WALKER, P.E.
FL LICENSE NUMBER 78652

**SIDEWALK PLAN (60TH AVE W)**

SHEET NUMBER <b>33</b>
---------------------------

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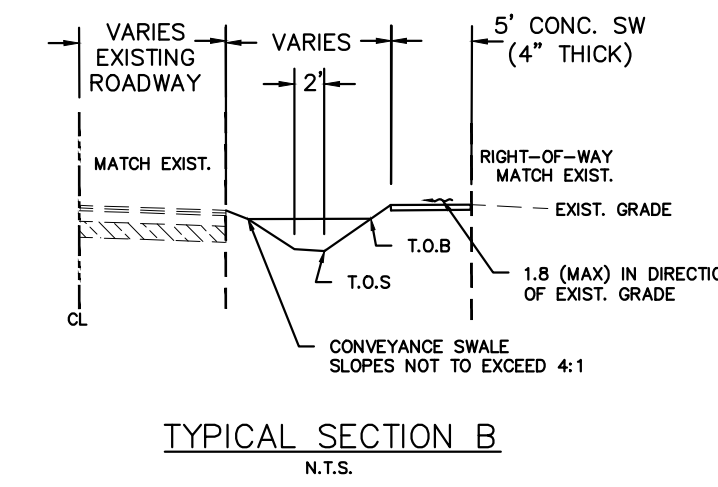
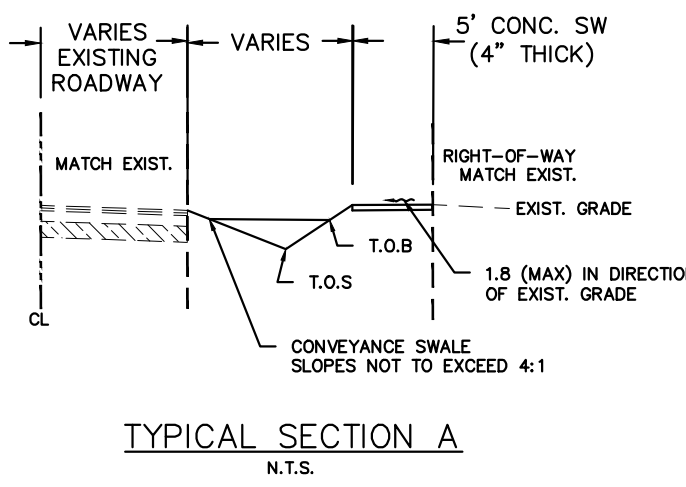


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**Manatee County**  
FLORIDA

**FORCE MAIN 13A REPLACEMENT**

MANATEE COUNTY

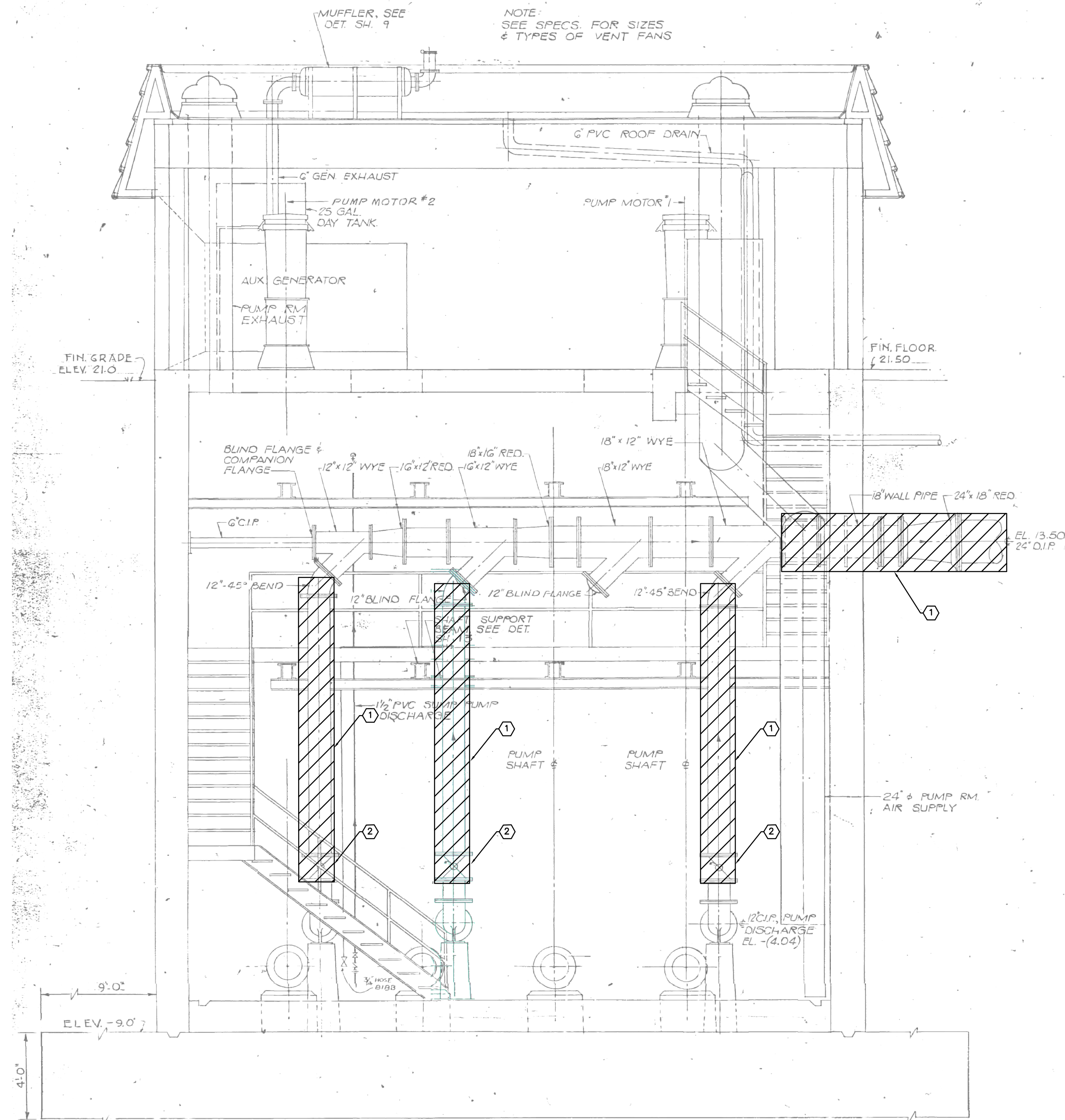
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**SIDEWALK PLAN (60TH AVE W)**

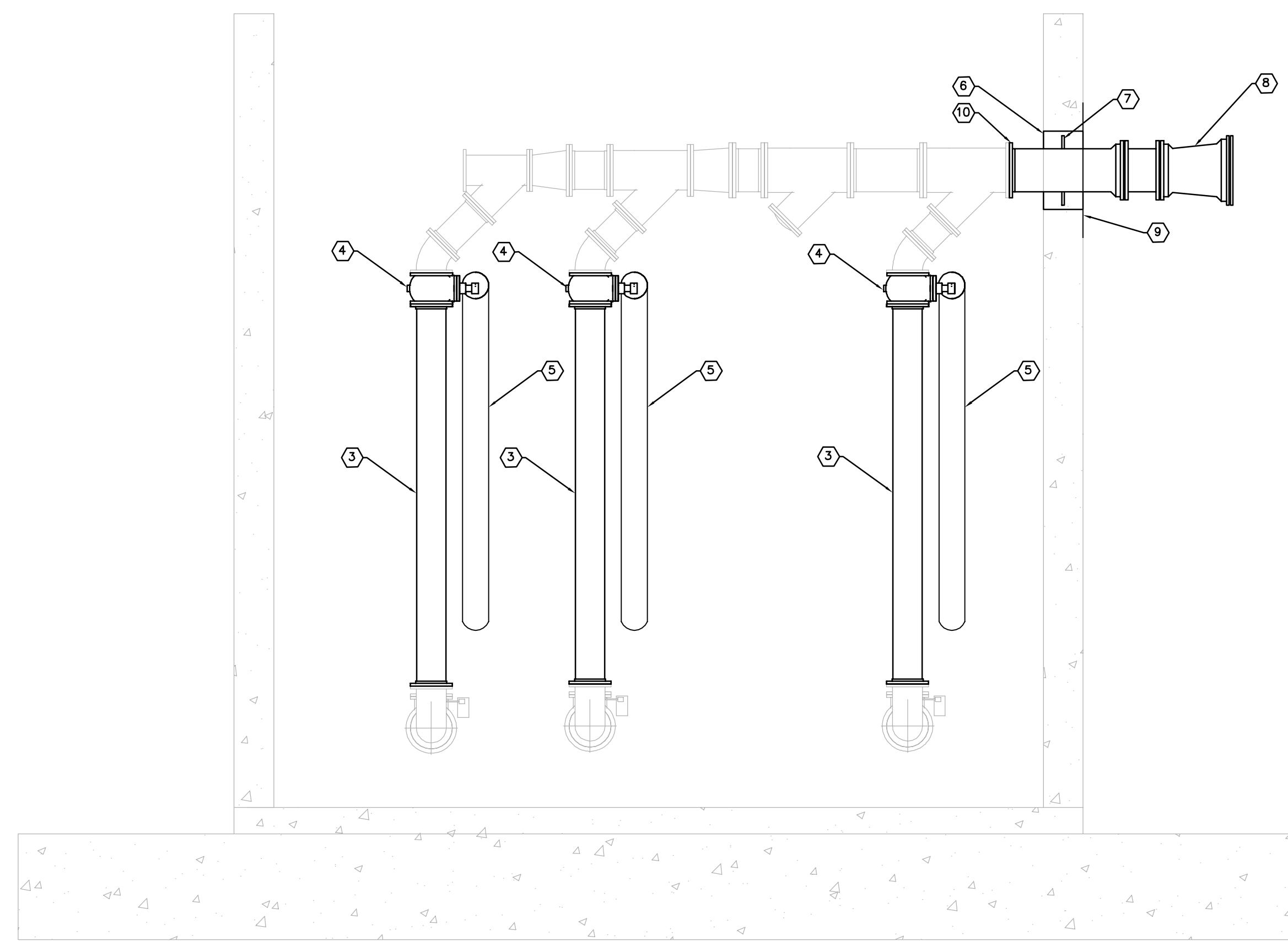
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EXISTING LS 13A WET WELL SECTION 1  
NTS 000



PROPOSED VALVE RELOCATION 2  
1/4" = 1' 000

- KEY NOTES**
- 1 EXISTING PIPING TO BE REMOVED AND REPLACED
  - 2 EXISTING VALVE TO BE REMOVED AND REPLACED
  - 3 PROPOSED 12" D.I. SPOOL PIECE
  - 4 PROPOSED 12" D.I. PLUG VALVE
  - 5 PROPOSED CHAIN WHEEL OPERATOR TO BE FURNISHED WITH THE VALVE
- CONTRACTOR SHALL CHIP OUT CONCRETE FROM AROUND EXISTING FM AT BUILDING IN ORDER TO REMOVE AND REINSTALL PIPING. REMOVE PIPING AND INSTALL NEW FLANGE PIPING INTO THE BUILDING. SECURE TO EXISTING HEADER PIPING IN DRYWELL. MUD UP AROUND NEW FM PIPING WITH NON-SHRINK GROUT INSIDE AND OUT, THEN APPLY BITUMINOUS MASTIC OVER GROUT ON THE OUTSIDE OF THE BUILDING.
- 6 PROPOSED 18" D.I. FL X MJ WALL PIPE WITH WELDED WATERSTOP
  - 7 PROPOSED 24" X 18" D.I. REDUCER
  - 8 PREPARE AND PAINT SURROUNDING CONCRETE WITH COAL TAR-EXPOXY (SYSTEM NO. 46-31) PER THE SPECIFICATIONS
  - 9 TIE-IN PROPOSED 18" FL DIP TO EXISTING 18" FL FITTING

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FL DATE:

**HEADER PIPING PLAN**

SHEET NUMBER  
**35**