# Construction Plans for EXCHANGE DRIVE FORCE MAIN REPLACEMENT

TERESA S. JACOBS Mayor

BOARD OF COUNTY COMMISSIONERS

S. SCOTT BOYD District 1

JENNIFER THOMPSON District 4

FRED BRUMMER District 2

PETE CLARKE District 3

TED EDWARDS District 5

TIFFANY MOORE RUSSELL District 6



# UTILITIES DEPARTMENT ORANGE COUNTY, FLORIDA

MARCH 2014

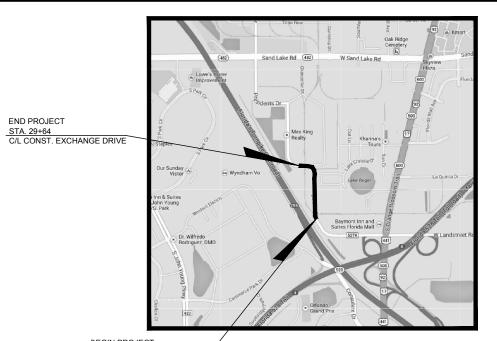
PREPARED BY A Full Service A & E Firm Architects M/E/F Engineers Planners Environmental Surveyors Landscape Architects Traffic/Transporta ww.cphcorp.com 1117 E. Robinson St., Orlando, FL 32801 Ph: 407.425.0452 Licenses: 5 Arch. Lic. No. AA2600926 3 Landscp. Lic. No. LC0000298 Eng. C.O.A. No. 3215

AJIT LALCHANDANI County Administrator

RAYMOND E. HANSON, P.E. Utilities Department Director

> SET BID

**ORG/SUB ORG 1539-16** ORANGE COUNTY UTILITIES **PROJECT SEQUENCE NO. 70585** 



BEGIN PROJECT STA. 10+00 C/L CONST. EXCHANGE DRIVE

# VICINITY MAP

N

| UTILITY CONTACTS                                     |  |                |  |  |  |  |  |  |  |
|--|--|----------------|--|--|--|--|--|--|--|
| UTILITIES  | COMPANY                                | TELEPHONE      |  |  |  |  |  |  |  |
| WATER  | ORLANDO UTILITIES COMMISSION           | (407) 244-8736 |  |  |  |  |  |  |  |
| WATER<br>SANITARY SEWER<br>RECLAIMED WATER           | ORANGE COUNTY FIELD SERVICES           | (407) 836-6818 |  |  |  |  |  |  |  |
| ELECTRIC   | DUKE ENERGY (FORMERLY PROGRESS ENERGY) | (800) 700-8744 |  |  |  |  |  |  |  |
| TELEPHONE/FIBER OPTIC                                | AT&T                                   | (386) 257-7430 |  |  |  |  |  |  |  |
| CABLE - TV   | BRIGHT HOUSE CABLE                     | (407) 532-8509 |  |  |  |  |  |  |  |
| GAS  | TECO (PEOPLE GAS)                      | (407) 420-6609 |  |  |  |  |  |  |  |
| RAILROAD   | CSX COASTLINE RAILROAD                 | (904) 359-1650 |  |  |  |  |  |  |  |
| OCU CONSTRUCTION DIVISIO                             | DN                                     | (407) 254-9798 |  |  |  |  |  |  |  |
| OCU ENGINEERING DIVISION                             |  | (407) 254-9900 |  |  |  |  |  |  |  |
| OCU CONSTRUCTION DIVISION'S INSPECTOR (407) 254-9798 |  |                |  |  |  |  |  |  |  |

OF THIS LISTING IS PROVIDED AS AN AID. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY AND ARRANGE FOR FIELD LOCATION OF ALL FACILITIES THAT WILL BE ENCOUNTERED DURING CONSTRUCTION.

| INDE        | OF SHEETS                   |
|-------------|-----------------------------|
| SHEET NO.   | SHEET DESCRIPTION           |
| C-1         | COVER SHEET                 |
| C-2         | GENERAL NOTES, VICINITY MAP |
|             | AND INDEX OF SHEETS         |
| C-3         | GENERAL NOTES               |
| C-4         | PROJECT SHEET LAYOUT        |
| C-5         | SUMMARY OF PAY ITEMS        |
| C-6 - C-9   | PLAN AND PROFILE SHEETS     |
| C-10 - C-12 | CONSTRUCTION DETAILS        |
| C-13        | ASSET TABLES                |

| No.       Date       Revision       by       No.       Date       Revision       Revision       Date       Revision       Date       Revision       Date       Revision       Date       Revision       Date       Hold of the state       Revision       Date       Revision       Revis arevision       Revision | M / E / P         Florida         Drawn by:         GNP         Scale: AS NOTED         EXCHANGE DRIVE           Planners         Connecticut         Checked by:         SNR         FORCE MAIN REPLACEMENT           Surveyors         •Maryland         Approved by:         DEM         FORCE MAIN REPLACEMENT | Rico<br>Chicut<br>nd Ap | Architects M / E / P<br>Engineers Planners<br>Environmental Surveyors | Gphi | By | ate Revision | No. Date | By | Date Revision E | A |  |
|---|--|-------------------------|---|------|----|--------------|----------|----|-----------------|---|--|
|---|--|-------------------------|---|------|----|--------------|----------|----|-----------------|---|--|



BID SET

# GENERAL NOTES

### ALL WORK AND REQUIREMENTS FROM THE NOTES IN THIS PAGE SHALL BE A REQUIREMENT OF THE CONTRACT AND EXECUTED BY THE CONTRACTOR AT NO DITIONAL COST TO ORANGE COUNT

- ALL COORDINATION AND COMMUNICATIONS WITH ORANGE COUNTY STAFF SHALL BE MADE THROUGH THE ORANGE COUNTY UTILITIES CONSTRUCTION NSPECTOR. CONTACT THE OCU DISPATCH DURING EMERGENCIES
- THE ORANGE COUNTY UTILITIES CONSTRUCTION DIVISION SHALL BE NOTIFIED AT LEAST SEVEN (7) DAYS PRIOR TO ANY CONSTRUCTION ACTIVITY, OR PRIOR TO ANY ACTIVITY REQUIRING THE PRESENCE OF OR AN ACTION BY UTILITIES STAFF SUCH AS SCHEDULING VALVE OPERATION, PRESSURE TESTING, PIPE CONNECTION, PUMP STATION OPERATIONS OR SHUTDOWNS, ETC.

THE CONTRACTOR SHALL NOTIFY THE OCU CONSTRUCTION DIVISION AT LEAST 48 HOURS PRIOR TO ANY UTILITIES CONSTRUCTION BY CALLING (407) 254-9798.

ORANGE COUNTY FIELD SERVICES TELEPHONE NUMBER: 407-836-6818

- SHOULD A PIPE EMERGENCY OCCUR, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OCU DISPATCH OPERATOR (407-836-2777) AND THE OCU INSPECTOR
- WATER, WASTEWATER AND RECLAIMED WATER VALVES, PUMP STATIONS OR OTHER UTILITY INFRASTRUCTURE ARE TO BE OPERATED ONLY BY ORANGE COUNTY UTILITIES OR OUC PERSONNEL FOR THEIR RESPECTIVE UTILITY LINES. ALL VALVES BEING INSTALLED ARE TO REMAIN CLOSED DURING CONSTRUCTION. FOR OPERATION OF ORANGE COUNTY PUMP STATIONS THE CONTRACTOR SHALL COORDINATE ALL PUMP STATION OPERATION AND SHUT DOWN WITH AN ORANGE COUNTY UTILITIES INSPECTOR (407-254-9798).
- ALL EXISTING WATER MAIN, FORCEMAINS, GRAVITY PIPES AND OTHER UTILITY FACILITIES WITHIN THE LIMITS OF THE PROJECT SHALL BE SUPPORTED AND PROTECTED AGAINST DAMAGE DURING CONSTRUCTION. WATER, WASTEWATER AND REUSE VALVES ARE TO BE OPERATED BY THE APPROPRIATE UTILITIES STAFF COORDINATED BY OUL INSPECTOR (407-254-978). ALL VALVES BEING INSTALLED ARE TO REMAIN CLOSED DURING CONSTRUCTION.
- THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN EXCAVATING IN PROXIMITY OF WATER MAINS, WASTEWATER FORCE MAINS, AND GRAVITY MAINS AND RECLAIMED WATER MAINS. WATER MAIN, FORCE MAIN, GRAVITY MAIN AND RECLAIMED WATER MAIN LOCATIONS SHOWN ON THE PLANS ARE NOT EXACT OR GUARANTEED. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING UTILITY LOCATIONS.
- LOCATIONS OF EXISTING UTILITIES AS SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY THE EXISTENCE AND LOCATION OF ALL ABOVEGROUND AND UNDERGROUND UTILITIES AND DETERMINE THE STATUS OF SAID UTILITY, PRIOR TO ANY DEMOLITION OR CONNECTION OF PROPOSED UTILITIES. CONTRACTOR SHALL CONTACT UTILITY OWNERS, INCLUDING FIBER OPTICS COMPANIES, AT LEAST SEVEN (7) DAYS PRIOR TO CONSTRUCTION AND A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION. EXTREME CAUTION SHALL BE EXERCISED IN AREAS OF FIBER OPTICS AND BOTICS AND BAS MAINS.
- MMEDIATELY AT ONSET OF CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES CRITICAL TO COMPLETING THE PROJECT (INCLUDING WATER, SEWER, RECLAIMED WATER, POWER, TELEPHONE, GAS AND CABLE TV) AND SHALL EVALUATE POTENTIAL CONFLICTS IN A WRITTEN REPORT TO OWNER AND ENGINEER. ANY CONFLICTS SHALL BE REPORTED TO ENGINEER/OWNER IMMEDIATELY UPON DISCOVERY AND DETAILED IN THE REPORT
- CONTRACTOR SHALL COORDINATE WITH ALL OTHER UTILITY OWNERS FOR RESOLUTION OF CONFLICTS. CONTRACTOR SHALL HAVE 48 HOURS TO DETERMINE THE RESOLUTION OF ANY UNKNOWN OR UNFORESEEN CONFLICTS. COSTS INCURRED SHALL BE BORNE BY THE UTILITY OWNER AND/OR CONTRACTOR AND NO CLAIMS MAY BE MADE AGAINST ORANGE COUNTY OR THE ENGINEER FOR THESE CONFLICTS. NO ADDITIONAL COMPENSATION SHALL BE MADE FOR THE DETENDED OF THE TO PERSOLVE ANY OPTIMIZED. PERIOD OF TIME TO RESOLVE ANY CONFLICTS.
- USE EXTREME CAUTION WHEN EXCAVATING OR CONNECTING TO ASBESTOS CEMENT PIPE. THE CONTRACTOR MAY BE REQUIRED TO SUPPLY TRUCKS CAPABLE OF PUMPING OUT THE PUMP STATION UPSTREAM FROM BREAKS OR CONNECTING POINT. WHEN CONNECTING TO ASBESTOS CEMENT WATER MAIN OR FORCE MAIN THE CONTRACTOR IS REQUIRED TO REPLACE ANY DAMAGED LENGTHS OF PIPE. THE AMOUNT OF REPLACED PIPE WILL BE DETERMINED BY THE ORANGE COUNTY UTILITIES INSPECTOR.
- ALL ASBESTOS CEMENT PIPE TO BE TAKEN OUT OF SERVICE WILL BE REMOVED UNLESS OTHER WISE NOTED ON PLANS. ASBESTOS CEMENT PIPE WILL BE REMOVED AND DISPOSED OF ACCORDING TO STATE AND FEDERAL ORDINANCES AND REGULATIONS.
- ALL UTILITIES CONSTRUCTION CONNECTING TO THE ORANGE COUNTY UTILITIES SYSTEM SHALL CONFORM TO THE CURRENT ORANGE COUNTY UTILITIES STANDARDS AND SPECIFICATIONS MANUAL FOR WASTEWATER AND WATER MAIN CONSTRUCTION UNLESS OTHERWISE NOTED. ALL MATERIALS USED IN CONSTRUCTION SHALL BE ON THE APPROVED "APPENDIX D" LIST FROM THE CURRENT STANDARDS MANUAL MENTIONED PREVIOUSLY
- SUPPORT AND PROTECT ALL EXISTING UTILITIES. CONTRACTOR SHALL CONTACT UTILITY OWNERS FOR LOCATION OF ALL EXISTING FACILITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH UTILITY OWNERS AND BE RESPONSIBLE FOR PROVIDING TEMPORARY SUPPORT FOR UTILITY POLES AND ALL OTHER UTILITIES DURING CONSTRUCTION
- THE UTILITY IMPROVEMENTS AND ADJUSTMENTS SHOWN ON THESE DRAWINGS ARE INTENDED TO MAINTAIN THE INTEGRITY OF THE ORANGE COUNTY WATER, WASTEWATER AND RECLAIM WATER SYSTEMS. THE DRAWINGS DO NOT INCLUDE WORK PERFORMED ON OR FOR UTILITY SYSTEMS OWNED BY OTHERS, UNLESS STATED OTHERWISE ON THE DRAWINGS.
- THE CONTRACTOR SHALL PROTECT EXISTING WATER METERS AND SERVICE CONNECTIONS DURING CONSTRUCTION AND SHALL COORDINATE THE RELOCATION OF WATER SERVICE METERS WITH THE MAINTENANCE PERSONNEL OF THE ORANGE COUNTY WATER DEPARTMENT. THE CONTRACTOR WILL RELOCATE WATER METERS AS NECESSARY AND AS DIRECTED BY ORANGE COUNTY PERSONNEL.
- ALL PVC WATER MAIN, SEWER AND RECLAIMED WATER MAIN PIPE SHALL CONFORM TO AWWA C900, C909, DR 18, OR C905, DR 18. ALL DUCTILE IRON WATER MAIN AND RECLAIM WATER MAIN SHALL CONFORM TO ANSIAWWA A21.51/C151. ALL PVC PRESSURE PIPES SHALL USE DUCTILE IRON FITTINGS. FITTINGS FOR ALL SERVICES SHALL BE BRASS. GRAVITY MAIN SHALL MEET ASTM 03034, MAX SDR 35.
- ALL PIPE, PIPE FITTINGS AND APPURTENANCES INSTALLED UNDER THIS PROJECT WILL BE COLOR CODED OR MARKED IN ACCORDANCE WITH SUBPARAGRAPH 62-555.320 (21) (b) 3, FAC, USING BLUE AS PREDOMINANT COLOR FOR WATER; GREEN FOR WASTEWATER; AND PURPLE FOR RECLAIMED WATEF
- ALL BACKEILL SHOWN ON PLANS TO BE COMPACTED TO NOT LESS THAN 98% OF MAXIMUM DRY DENSITY AS MEASURED BY AASHTO T-180 METHOD 'D' TEST INCODIFIED PROCTORY UNDER ASPHALT OR CONCRETE PAVEMENT AND WITHIN 3-FT OF PAVEMENT. ALL SOIL TESTING TO BE CONDUCTED BY THE COUNT THE CONTRACTOR SHALL PROVIDE ALL REASONABLE ASSISTANCE DURING THE SOIL TESTING.
- PIPE LENGTHS SHOWN ON PLANS ARE APPROXIMATE. ACTUAL LENGTHS ARE TO BE DETERMINED DURING CONSTRUCTION
- ALL STATIONS AND OFFSETS REFER TO BASELINE OF STATIONING.
- 22. MAINTAIN EMERGENCY VEHICLE ACCESS TO ALL BUSINESSES AND RESIDENCES AT ALL TIMES.
- 23. ALL MAINS SHALL BE CONSTRUCTED AS SHOWN ON PLANS. A MINIMUM COVER OF 36 INCHES SHALL BE MAINTAINED ON ALL MAINS, WHERE IT IS NOT OTHERWISE SPECIFIED ON PLANS OR DIRECTED BY ENGINEER. FOR DUCTILE IRON PIPE, ALL DIRECTION CHANGES IN THE PIPE BOTH HORIZONTAL AND VERTICAL SHALL BE BY INSTALLATION OF FITTINGS UNLESS OTHERWISE NOTED OR DIRECTED BY ENGINEER. JOINT DEFLECTION. IF ALLOWED BY OCU, SHALL NOT EXCEED 50% OF THE MANUFACTURER'S RECOMMENDED DEFLECTION. NO DEFLECTION OR BENDING OF ANY KIND SHALL BE PERMITTED FOR PVC PIPI
- ALL PIPES SHALL BE RESTRAINED IN ACCORDANCE WITH THE RESTRAINT TABLES SHOWN ON DETAIL SHEETS. IN ADDITION, ALL FITTINGS SHALL BE MECHANICAL JOINT RESTRAINED. NO THRUST BLOCKS SHALL BE PERMITTED. RESTRAIN EXISTING PIPE WHERE REQUIRED IN ACCORDANCE WITH THE RESTRAINT TABLE
- PIPE SIZES SHOWN ON PLANS ARE MINIMUM INSIDE DIAMETER.
- KEEP VALVES ON ALL WET TAPS CLOSED UNTIL CLEARED BY FDEP. CONTRACTOR SHALL NOT OPERATE ANY VALVES IN THE SYSTEM.
- ALL CONNECTIONS TO EXISTING MAINS SHALL BE MADE BY THE CONTRACTOR ONLY AFTER THE PROPOSED CONNECTION PROCEDURE AND WORK SCHEDULE HAVE BEEN REVIEWED AND ACCEPTED BY THE OWNER. THE CONTRACTOR SHALL SUBMIT A WRITTEN REQUEST TO THE OWNER A MINIMUM OF SEVEN (7) WORKING DAYS PRIOR TO SCHEDULING ANY CONNECTIONS. THE REQUEST SHALL REFERENCE THE PROFESSIONAL LAND SURVEYOR CERTIFIED COMPLETED AS-BUILT RECORD DRAWINGS PREVIOUSLY SUBMITTED AND SHALL OUTLINE THE FOLLOWING:

POINTS OF CONNECTION, FITTINGS TO BE USED, METHODS OF FLUSHING AND DISINFECTION AND VERIFICATION OF RESTRAINT ON EXISTING PIPE B. ESTIMATED CONSTRUCTION TIME FOR THE CONNECTIONS

THE OWNER SHALL REVIEW THE SUBMITTAL WITHIN FIVE (5) WORKING DAYS AFTER RECEIVING IT AND INFORM THE CONTRACTOR REGARDING APPROVAL OR DENIAL OF THE REQUEST. IF THE OWNER REJECTS THE REQUEST, THE CONTRACTOR SHALL RESUBMIT THE REQUEST MODIFYING IT IN MANNER ACCEPTABLE TO THE OWNER. ALL CONNECTIONS SHALL ONLY BE MADE ON THE AGREED UPON DATE AND TIME. SHOULD THE CONTRACTOR NOT INITIATE AND COMPLETE THE CONNECTION WORK IN THE AGREED UPON MANNER, HE SHALL BE REQUIRED TO RESCHEDULE THE CONNECTION BY FOLLOWING THE PROCEDURE OUTLINED ABOVE. THE CONTRACTOR SHALL NOT OPERATE ANY VALVES IN THE SYSTEM. MAINS SHALL NOT BE PLACED IN SERVICE UNTIL CLEARANCE IS RECEIVED FROM FDEP; AS-BUILT DRAWINGS MUST BE COMPLETED AND SUBMITTED PRIOR TO WATER MAIN CH ORINATION. TO WATER MAIN CHLORINATION

- 28. NO VALVE BOXES, METERS, PORTIONS OF MANHOLES OR OTHER APPURTENCES OF ANY KIND SHALL BE LOCATED IN ANY PORTION OF A CURB-AND-GUTTER SECTION. CONTRACTOR SHALL ADVISE ENGINEER IMMEDIATELY UPON DISCOVERY OF A POTENTIAL CONFLICT
- 29. CONTRACTOR SHALL PROVIDE DETAILED AS-BUILT DRAWINGS OF ALL UTILITIES UNCOVERED IN TRENCHES. THE AS-BUILT SHALL RECORD LOCATION, SIZE, TYPE, ELEVATION AND OWNER OF ALL UTILITY FACILITIES UNCOVERED
- 30. ALL EXISTING WATER MAINS SHALL REMAIN IN SERVICE UNTIL THE PROPOSED MAINS ARE ACCEPTED FOR SERVICE AND ALL SERVICES ARE TRANSFERRED TO THE NEW WATER MAIN OR SERVICES ARE TEMPORARILY TRANSFERRED TO ALTERNATE WATER MAINS FOR SERVICE.
- 31. ALL PROPOSED DUCTILE IRON PIPES SHALL BE WRAPPED WITH 8 MIL POLYETHYLENE. POLYETHYLENE BAGGING SHALL HAVE "ORANGE COUNTY UTILITIES" STAMPED ON THE BAGGING.
- 32. REPLACE ALL EXISTING VALVE BOXES WITH NEW BOXES.
- 33. WHEN USING SCALED DATA CONSIDER THAT THESE PLANS MAY HAVE ALTERED IN SIZE DURING REPRODUCTION
- 34. LOCATIONS AND DIMENSIONS OF EXISTING RIGHT-OF-WAYS AND EASEMENTS ARE BASED ON BEST AVAILABLE INFORMATION. VERIFY AND STAKE THE LIMITS OF THE RIGHT-OF-WAYS AND EASEMENTS IN ORDER TO AVOID ENCROACHMENTS BEFORE ANY CONSTRUCTION.
- 35. WHEN OBTAINING DATA AND INFORMATION FROM THE PLANS, FIGURES SHALL BE USED IN REFERENCE TO SCALED DIMENSIONS. 36. LOCAL RESIDENTIAL ACCESS SHALL BE MAINTAINED AT ALL TIMES. PROVIDE WRITTEN NOTIFICATION TO RESIDENTS SEVEN (7) DAYS PRIOR TO MPLEMENTING ANY ROADWAY OR DRIVEWAY CLOSURE
- 37 ALL PIPE SHALL BE RESTRAINED IN ACCORDANCE WITH THE RESTRAINT TABLES SHOWN ON THE DETAIL SHEETS. IN ADDITION, ALL FITTINGS SHALL BE A CONTRACT OF THE OFFICE OF THE OFFICE OF THE RESTRAINT TABLES SHOWN ON THE DETAIL SHEETS. IN ADDITION, ALL FITTINGS SHALL BE MECHANICAL JOINT RESTRAINED IN ACCORDANCE WITH THE RESTRAINT TABLES. NO THRUST BLOCKS SHALL BE PERMITTED. RESTRAINT EXISTING PIPE WHERE REQUIRED IN ACCORDANCE WITH THE RESTRAINT TABLES.
- 38. COMPLETE ALL CONSTRUCTION WITHIN RIGHT OF WAY LIMITS AND EASEMENT LIMITS, UNLESS OTHERWISE NOTED.
- 39. RESTORE ALL EXISTING IMPROVEMENTS AND DISTURBED AREAS TO ORIGINAL OR BETTER CONDITION. PAVEMENT TO BE RESTORED IN ACCORDANCE WITH THE PAVEMENT RESTORATION DETAILS SHOWN ON THE CONSTRUCTION DETAIL SHEETS.
- 40. IF RELOCATION OF AN EXISTING GAS MAIN IS REQUIRED, IT SHALL BE RELOCATED BY OTHERS.
- 41. PROTECT EXISTING IMPROVEMENTS TO THE MAXIMUM EXTENT POSSIBLE. ALL DAMAGED SIDEWALK, ROADWAY PAVEMENT AND OTHER ROVEMENTS SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION. AT THE CONTRACTOR EXPENSES
- 42 ASPHALTIC CONCRETE DRIVES SHALL BE COMPLETED TO THE ORIGINAL EDGE OF PAVEMENT. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE EXISTING PAVEMENT OUTSIDE OF NEW PAVING LIMITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL DAMAGE TO THE EXISTING ROADWAY OUTSIDE THE NEW PAVING LIMITS.
- 43. ALL COUNTY ROADS TO BE OPEN CUT SHALL BE APPROVED BY ORANGE COUNTY PUBLIC WORKS PRIOR TO OPEN-CUTS. SUBMIT A MAINTENANCE OF TRAFFIC (MOT) PLAN CONFORMING TO ORANGE COUNTY RIGHT-OF-WAY UTILIZATION REGULATIONS TO ORANGE COUNTY PUBLIC WORKS A MINIMUM OF FOURTEEN (14) DAYS PRIOR TO ANY WORK WITHIN COUNTY RIGHT-OF-WAY. A COPY OF THIS PLAN SHALL ALSO BE SUBMITTED TO THE ENGINEER AND COUNTY UTILITY INSPECTOR. NOTIFY THE COUNTY 24 HOURS PRIOR TO ANY OPEN CUT OF ROADWAYS WITHIN THE COUNTY RIGHT-OF-WAY. TWO WAY TRAFFIC MUST BE MAINTAINED AT ALL TIMES DURING THE COURSE OF CONSTRUCTION MAINTAIN A SET OF COUNTY APPROVED CONSTRUCTION PLANS AND MOT PLANS AT THE CONSTRUCTION SITE AT ALL TIMES WHEN WORKING WITHIN THE COUNTY RIGHT-OF-WAY.
- 44. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SATISFYING ALL REQUIREMENTS OF REGULATORY AGENCY PERMITS FOR CONSTRUCTION ACTIVITIES AND RELATED ACTIVITIES.
- 45. BENCHMARK LOCATIONS AND ELEVATIONS ARE SHOWN IN THE PLANS AS REPRESENTED BY THE SURVEYOR AT THE TIME OF SURVEY. CONTRACTOR SHALL VERIEV ITS CORRECTNESS AT THE TIME OF CONSTRUCTION AND INSTALL THEIR OWN TEMPORARY BENCHMARKS AS NECESSARY. AND DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OCU INSPECTOR
- 46 WHERE REQUIRED AT NO ADDITIONAL COST TO THE COUNTY THE CONTRACTOR SHALL USE TEMPORARY SHEETING OR TRENCH BOXES TO MINIMIZE THE SIZE OF EXCAVATIONS AND PROTECT EXISTING ROADWAYS, UTILITIES AND OTHER FACILITIES. CONTRACTOR TO COMPLY WITH OSHA TRENCH SAFETY REQUIREMENTS AT ALL TIMES.
- 47. NEW OR RELOCATED UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY-OR PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCEMAIN, OR PIPELINE CONVEYING RECLAIMED WATER NON TREGULATED UNDER PART III OF CHAPTER 62-610, F.A.C. NEW OR RELOCATED UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED GRAVITY-OR VACUUM-TYPE SANITARY SEWER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX INCHES, AND PREFERABLY 12 INCHES ABOVE 3 OR AT LEAST 12 INCHES BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE. NEW OR RELOCATED UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED PRESSURE TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCEMAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN SADVE THE OTHER PIPELINE. NEW OR RELOCATED UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED PRESSURE TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCEMAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OUTSIDE OF THE HOMEVER IN IS APPEIDED IN THE WATER WATER WATER OR STORMWATER FORCEMAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LAID SO THE OUTSIDE OF THE WATER PROPOSED FORCEMAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OUTSIDE OF THE OUTEP DIPELINE HOWEVER IS APPENDED TO LAY THE WATER MAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OUTSIDE OF THE PROPED PRESIDE TO LAY THE WATER MAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OUTSIDE OF THE OUTEP DIPELINE HOWEVER OT THE PREST PRESTOR THE PROPED DIPELINE OF THE OTHER PROPED PRESTOR TO A PROPOSED FOR DIPELINE WATER MAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OUTSIDE OF THE OTHER PRESTOR TO A PROPOSED FOR MAIN AND THE PROPED PRESTOR THE OTHER P OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE

AT THE UTILITY CROSSINGS DESCRIBED ABOVE. ONE FULL LENGTH OF WATER MAIN SHALL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS. THE PIPES SHALL BE THE WALL MAN THE DE ANT AN OF SOULDE LOSSINGE TRADE THE OTHER AT THE REAL ALL DINTS IN VACUUM-TYPE SANITARY SEWERS, OR PIPELINES ARRANGED SOT THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE TEFF FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART (I) OF CHAPTER 02-001, F.A.C., AND AT LEAST SIX FEFT FROM ALL JOINTS IN GRAVITY-OR PRESSURE-TYPE SANITARY SEWERS, WASTEWATER FORCEMAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610 F A C

- 48. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ON-SITE DURING THE LIFE OF THE PROJECT, A WEATHERPROOF ENCLOSURE CONTAINING A READILY ACCESSIBLE LIST OF EMERGENCY CONTACTS AND PHONE NUMBERS.
- SHALL PROVIDE TANKERS AND SIGNED DOCUMENT ACKNOWLEDGING THE UNDERSTANDING OF THE ORANGE COUNTY UTILITY "EMERGENCY WATER SPILL AND WATER MAIN BREAK PROCEDURES".
- 50. THE CONTRACTOR SHALL CALL SUNSHINE STATE ONE CALL NO LESS THAN FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION PHONE - 800-432-4777
- 51. THE DISPOSAL OF ANY EXCESS EARTHWORK MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 52. SALVAGE AND/OR DISPOSAL OF ALL EXISTING EQUIPMENT SHALL BE AT THE DIRECTION OF THE ORANGE COUNTY RESIDENT PROJECT
- 53. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DISPOSAL OF ALL STRUCTURES, PIPE, CONDUIT, WIRE, FITTINGS, PANELS, ETC. THAT ARE DEMOLISHED, DISASSEMBLED, OR REMOVED, PER SECTION 02650 OF THE SPECIFICATION MANUAL OF THIS PROJECT.
- 54. BY-PASS PUMPING SHALL BE LOW NOISE SUITABLE FOR RESIDENTIAL NEIGHBORHOODS (SEE SECTION 01516.1.04.H OF THE TECHNICAL
- 55. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DE-WATERING REQUIRED DURING CONSTRUCTION AND TO OBTAIN AND PAY FOR ALL PERMITS REQUIRED FOR THE TEMPORARY DEWATERING OF DRAINAGE STRUCTURES.
- 56. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY PLUGS, BLOCKING, TAPS, AND TESTING EQUIPMENT REQUIRED TO COMPLETE PRESSURE TESTING, AS SPECIFIED.
- REPAIR IMMEDIATELY ALL DAMAGE TO ORANGE COUNTY MAINS SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. IF THE REPAIR IS 57. NOT DONE IN A TIMELY MANNER, AS DETERMINED BY THE ORANGE COUNTY UTILITY INSPECTOR, ORANGE COUNTY MAY PERFORM REPAIRS AND THE CONTRACTOR WILL BE CHARGED FOR SAID REPAIRS
- 58 CONTRACTOR TO PROVIDE SIGNED AND SEALED SURVEYED AS BUILTS BY A STATE OF FLORIDA LICENSED SURVEYOR SURVEY TO INCLUDE CONTRACTOR TO PROVIDE SIGNED AND SEALED SURVEYED AS BUILTS BY A STATE OF FLORIDA LICENSED SURVEYOR. SURVEY TO INCLUDE AS-BUILTS ON ALL INSTALLED WATER LINES, VALVES, AND FITTINGS ON THE NEW WATER MAIN. ALL TABLES TO BE UPDATED WITH THE CORRECT DATA TO CORRESPOND WITH THE WATER LINES, VALVES, AND FITTINGS ON THE NEW WATER MAIN. ALL TABLES TO BE UPDATED WITH THE CORRECT PARATION FROM ALL EXISTING WATER LINES, SANITARY SEWER LINES AND STORM LINES. SURVEY TO INCLUDE BOTH HORIZONTAL AND VERTICAL SEPARATION FROM ALL EXISTING WATER LINES, SANITARY SEWER LINES AND STORM LINES. SURVEY TO INCLUDE LOCATION AND SIZE OF ALL CASING PIPES INSTALLED (DIAMETER, END POINT, INVERT LEEVATION). AS-BUILTS TO BE PROVIDED WITH FROUEST FOR CLEARABCE OF WATER LINES. CONTRACTOR TO PROVIDE BACTERIOLOGICAL TEST RESULTS AS PER THE FDEP WATER PERMIT FOR EACH PORTION OF WATER LINE BEING CLEARED TO DURT. FOR USE.

| 28424/     | No. Date | Revision | By | No. | Date | ate Revision By | $\sim mh$       | A Full Service A              |       |   | Designed by: | NWG    | Date: 7/01/2014 |                        | Plans Prepared By:<br>CPH, Inc.                         |
|------------|----------|----------|----|-----|------|-----------------|-----------------|-------------------------------|-------|---|--------------|--------|-----------------|------------------------|---|
| 20V: F : 4 |          |          |    |     |      | (               | (CHIO)INI       |                               | M/E/P | <ul> <li>Florida</li> <li>Puerto Rico</li> </ul>  | Drawn by:    | GNP    | Scale: AS NOTED | EXCHANGE DRIVE         | 1117 E. Robinson St. Orlando, FL 32<br>Ph: 407.425.0452 |
| g name     | <u>A</u> |          |    | A   |      |                 |                 |                               |       | <ul> <li>Connecticut</li> <li>Maryland</li> </ul> | Approved by: | DEM    | -               | FORCE MAIN REPLACEMENT | Eng. C.O.A. No. 3215 Arch. Lic. No. A                   |
| Drawin     | 4        |          |    |     |      |                 | www.cphcorp.com | Landscape Architects Traffic/ |       |   | Job No.      | O28424 | © 2014          |                        | Survey L.B. No. 7143 Landscp. Lic. No. L                |

- - ocu

# SITE SPECIFIC NOTES

59. CONTRACTOR TO RESTORE ALL DAMAGED AND DISTURBED AREAS TO EQUAL OR BETTER CONDITION. CONTRACTOR SHALL INCLUDE IN HIS BID ALL COSTS OR RESTORATION OF ALL LANDSCAPED AND SODDED AREAS DISTURBED AS PART OF HIS WORK

60. CONTRACTOR TO COMPLETE HIS WORK AT THE END OF EACH DAY AND REOPEN SIDEWALKS FOR PUBLIC USE. SIDEWALKS SHALL CONSIST OF A STABILIZED ASPHALTIC SURFACE, OR EQUAL, SUITABLE FOR PUBLIC FOOT TRAFFIC. MATERAIL TO BE USED SHALL BE APPROVED BY THE COUNTY PRIOR TO

THE CONTRACTOR SHALL ADJUST ALL EXISTING OCU MAINS AND FACILITIES IN CONFLICT WITH NEW GRADE, NEW OR ALTERED ROADWAYS, SIDEWALKS, DRIVEWAYS, OR STORM WATER IMPROVEMENTS. OCU FACILITIES TO BE ADJUSTED INCLUDE, BUT ARE NOT LIMITED TO PIPELINES, PUMP STATIONS, VALVE BOXES, AIR RELEASE VALVES, FIRE HYDRANTS, MANHOLE COVERS, AND METERS.

62. CONSTRUCTION ACTIVITIES SHALL NOT CAUSE INTERRUPTIONS IN WATER, WASTEWATER, OR RECLAIMED WATER SERVICE. THE CONTRACTOR SHALL COORDINATE PRE-APPROVED INTERRUPTIONS OF SERVICE WITH THE OCU INSPECTOR 7 WORKING DAYS IN ADVANCE

63. THE CONTRACTOR SHALL PROVIDE FOR BYPASSING AND/OR HAULING WASTEWATER DURING APPROVED INTERRUPTIONS OF WASTEWATER FLOWS AND CONNECTIONS. THE CONTRACTOR SHALL SUBMIT A BYPASS PLAN SIGNED AND SEALED BY A PROFESSIONAL ENGINEER TO OCU DEVELOPMENT ENGINEERI FOR APPROVAL PRIOR TO IMPLEMENTATION BY CONTRACTOR.

64. ALL VALVES INSTALLED AS PART OF THIS CONSTRUCTION PROJECT SHALL REMAIN CLOSED DURING CONSTRUCTION. KEEP VALVES ON ALL WET TAPS CLOSED UNTIL CLEARED BY FDEP. DO NOT CONNECT NEWLY CONSTRUCTED WATER MAINS TO ANY EXISTING WATER MAINS UNLESS CLEARED BY FDEP AND

THE CONTRACTOR SHALL PROVIDE A JUMPER ASSEMBLY WITH A BACKFLOW PREVENTER FOR MAKING TEMPORARY CONNECTIONS TO AN EXISTING POTABLE WATER SOURCE IN ORDER TO CHLORINATE AND FLUSH NEW WATER MAINS WITH POTABLE WATER. ANY TEMPORARY POTABLE WATER CONNECTIONS TO RECLAINED WATER OR WATER OR MALL ALSO BE COUPPED WITH A BACKFLOW PREVENTER.

66. FOR PVC PIPE THAT WILL BE OWNED AND MAINTAINED BY OCU, NO PIPE BENDING IS ALLOWED. THE MAXIMUM ALLOWABLE TOLERANCE FOR JOINT DEFLECTION IS 0.75 DEGREES (3-INCHES PER JOINT PER 20 FT STICK OF PIPE.) ALIGNMENT CHANGE SHALL BE MADE ONLY WITH SLEEVES AND FITTINGS

67. FOR NON-PVC PIPE THAT WILL BE OWNED AND MAINTAINED BY OCU, LONG RADIUS CURVES, EITHER HORIZONTAL OR VERTICAL, MAY BE INSTALLED WITH STANDARD PIPE BY DEFLECTIONS AT THE JOINTS. MAXIMUM DEFLECTIONS AT PIPE JOINTS, FITTINGS AND LAYING RADIUS FOR THE VARIOUS PIPE LENGTHS SHALL NOT EXCEED 75 PERCENT OF THE PIPE MANUFACTURER'S RECOMMENDATION.

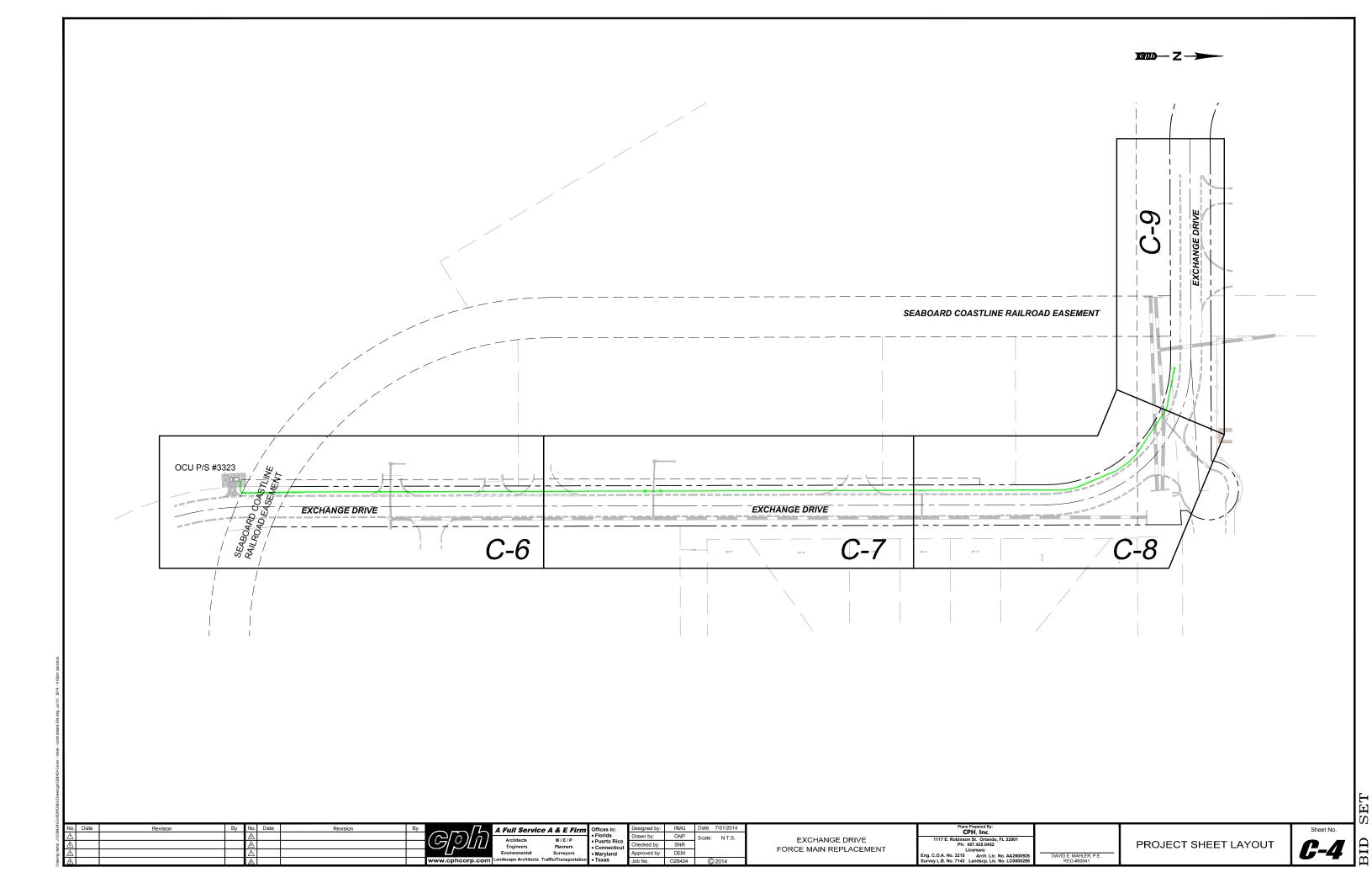
1. TEST HOLE DATA AS PER ASCE-38-02, LEVEL A. ALL OTHER UTILITY INFORMATION IS LEVEL C/D.

TOPOGRAPHIC SURVEY COMPLETED ON 12-7-2012

3. DUKE ENERGY TO BE NOTIFIED 21 DAYS IN ADVANCE OF ANY WORK AROUND EXISTING UTILITY POLES.



L 32801



| ltem | Description   | Quantity | Units | Sheet | Sheet | S |
|------|---|----------|-------|-------|-------|---|
| No.  | Description   | Quantity | Units | C-6   | C-7   |   |
|      |   |          |       |       | •     |   |
| 1    | Mobilization, Demobilization, Bonds & Permits (5%)  | 1        | LS    |       |       |   |
| 2    | Preconstruction Audio-Video Documentation   | 1        | LS    |       |       |   |
| 3    | Indemnification   | 1        | LS    |       |       |   |
| 4    | Project Record Documents  | 1        | LS    |       |       |   |
| 5    | Maintenance of Traffic  | 1        | LS    |       |       |   |
|      |   |          |       |       |       |   |
| 6    | Utility System Dewatering   | 1        | LS    |       |       |   |
| 7    | Asphalt Roadway Replacement (assume 10-ft easement driveway, includes sub grade base & asphalt) | 235      | SY    | 123   | 112   |   |
| 8    | Concrete Curb and/or Curb and Gutter Replacement (assume @ 10-LF each)                          | 78       | LF    | 48    | 30    |   |
| 9    | Chain Link Fence Install/Replacement (assume 20' x 35')   | 110      | LF    | 110   |       |   |
| 10   | Bypass Pump Station   | 1        | LS    |       |       |   |
| 11   | Abandon-in-Place Pipe (4-inch FM)   | 155      | LF    |       |       |   |
| 12   | Remove Existing Pipe (4-inch FM)  | 1,247    | LF    | 459   | 550   |   |
|      |   |          |       |       | •     |   |
| 13   | Furnish and Install Force Main (Open-Cut - 4-inch PVC)  | 1,391    | LF    | 353   | 550   |   |
| 14   | Furnish and Install Force Main (4-inch PVC - w/ casing spacers under railroad)                  | 95       | LF    | 95    |       |   |
|      |   |          |       | •     |       |   |
| 15   | Furnish and Install Gravity Sanitary Sewer Main (10-inch PVC)                                   | 20       | LF    |       |       |   |
| 16   | Precast Concrete Manhole (60-inch Diameter Lined Manhole)                                       | 1        | EA    |       |       |   |
| 17   | Seal & Recoat Manhole (Upstream & Downstream)   | 19       | VF    |       |       |   |
| 18   | Re-Construct Manhole Benching   | 1        | EA    |       |       |   |
|      |   |          |       |       |       |   |
|      |   |          |       |       |       |   |

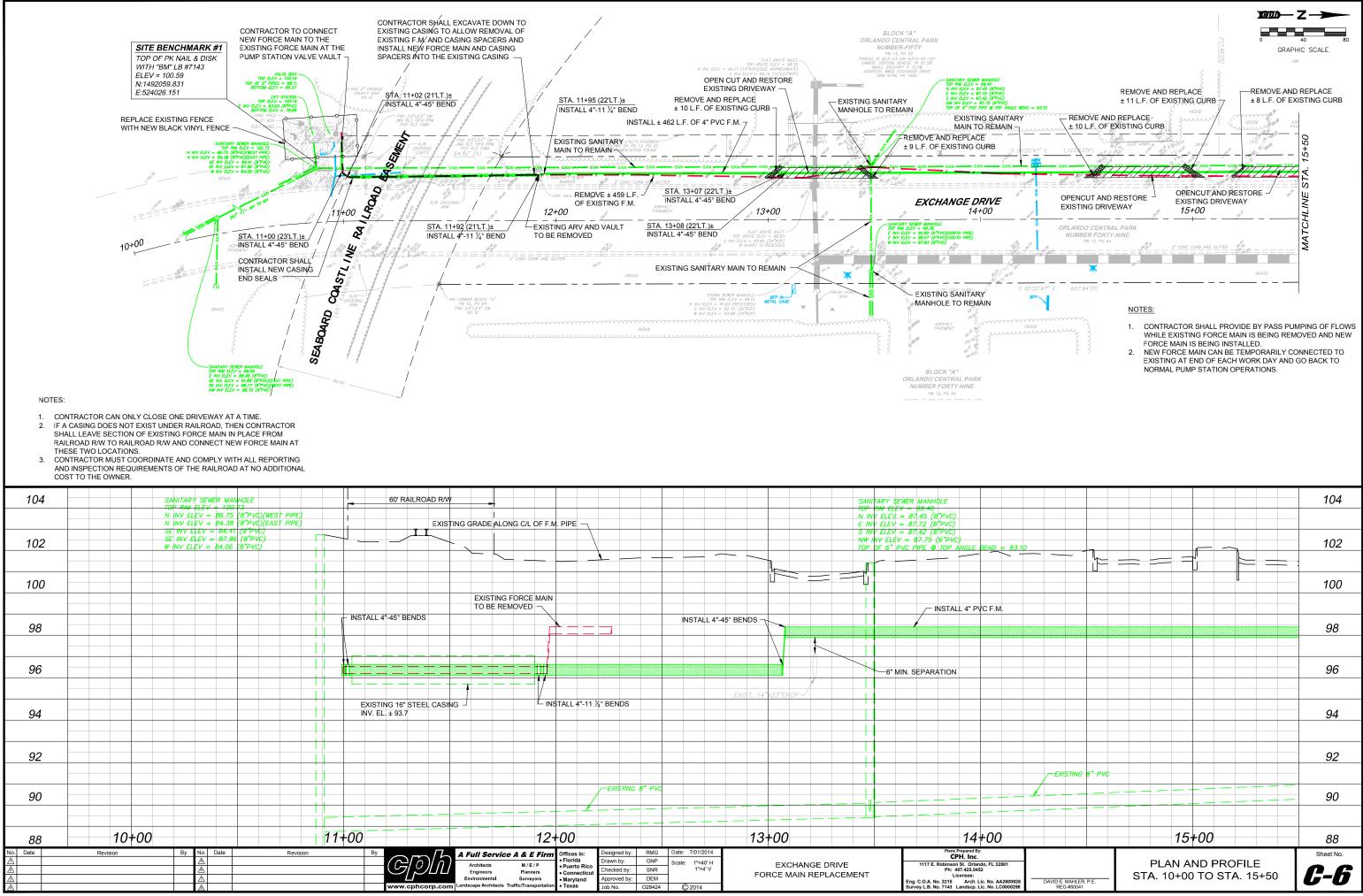
|     | No. Date | Revision | By | No.          | Date | Revision | By |                 | A Full Service A &               | E Firm       | Offices In:                 | Designed by: | RMG    | Date: 7/01/2014 |                        | Plans Prepared By:<br>CPH, Inc.                    |
|-----|----------|----------|----|--------------|------|----------|----|-----------------|----------------------------------|--------------|-----------------------------|--------------|--------|-----------------|------------------------|--|
|     | A        |          |    | $\mathbb{A}$ |      |          |    | GDh             | Architects M                     |              | <ul> <li>Florida</li> </ul> | Drawn by:    | GNP    | Scale: AS NOTED | EXCHANGE DRIVE         | 1117 E. Robinson St. Orlando, FL 32                |
|     | A        |          |    | $\land$      |      |          |    | いっシロロ           | Engineers Pla                    |              | Puerto Rico     Connecticut | Checked by:  | SNR    |                 |                        | Ph: 407.425.0452                                   |
| , . | ▲        |          |    | $\mathbb{A}$ |      |          |    | $\square$       | Environmental Sur                | veyors       | Maryland                    | Approved by: | DEM    |                 | FORCE MAIN REPLACEMENT | Licenses:<br>Eng. C.O.A. No. 3215 Arch. Lic. No. A |
|     | 4        |          |    | A            |      |          |    | www.cphcorp.com | Landscape Architects Traffic/Tra | ansportation | Texas                       | Job No.      | O28424 | © 2014          |                        | Survey L.B. No. 7143 Landscp. Lic. No. L           |



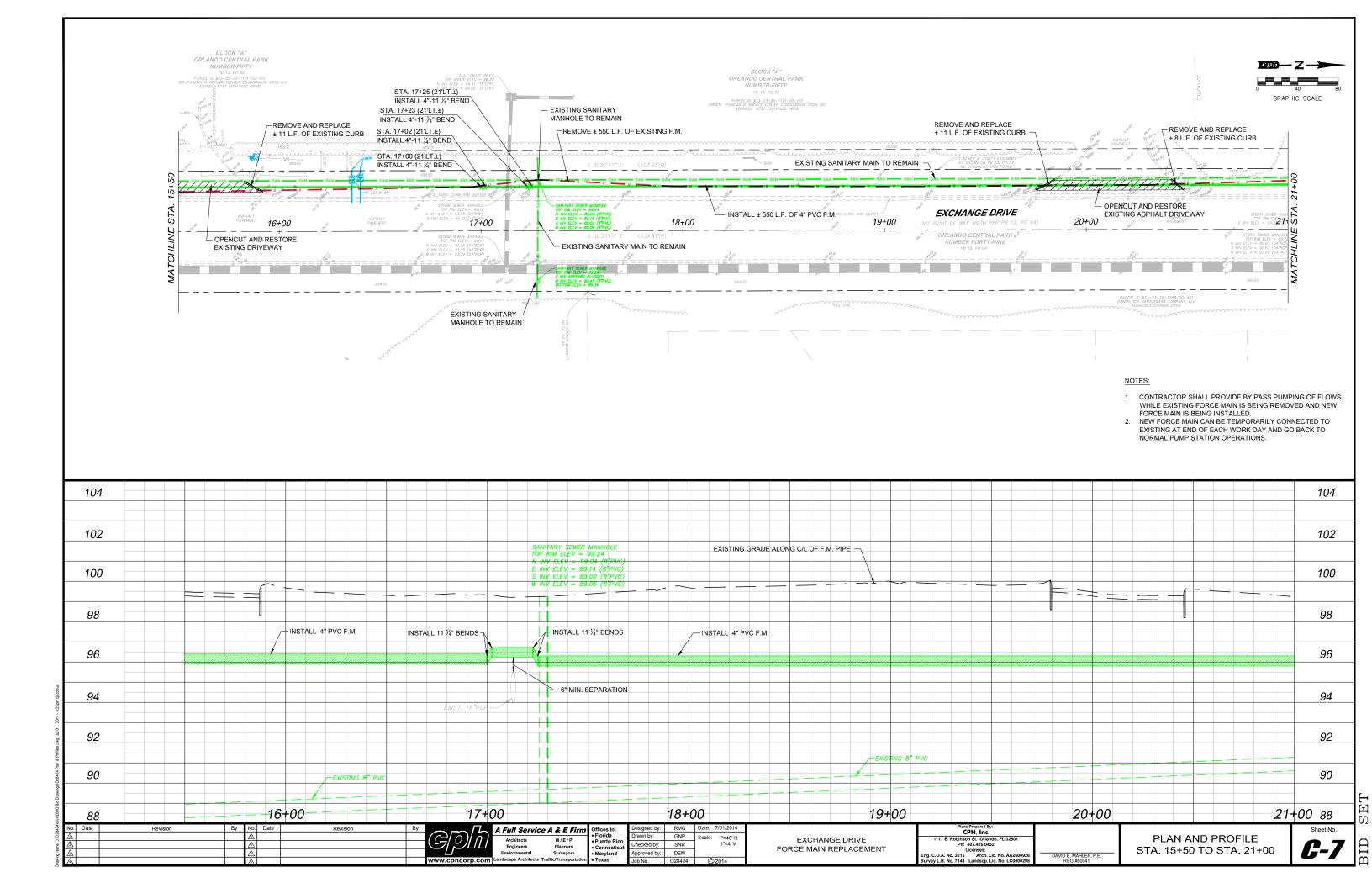
SET

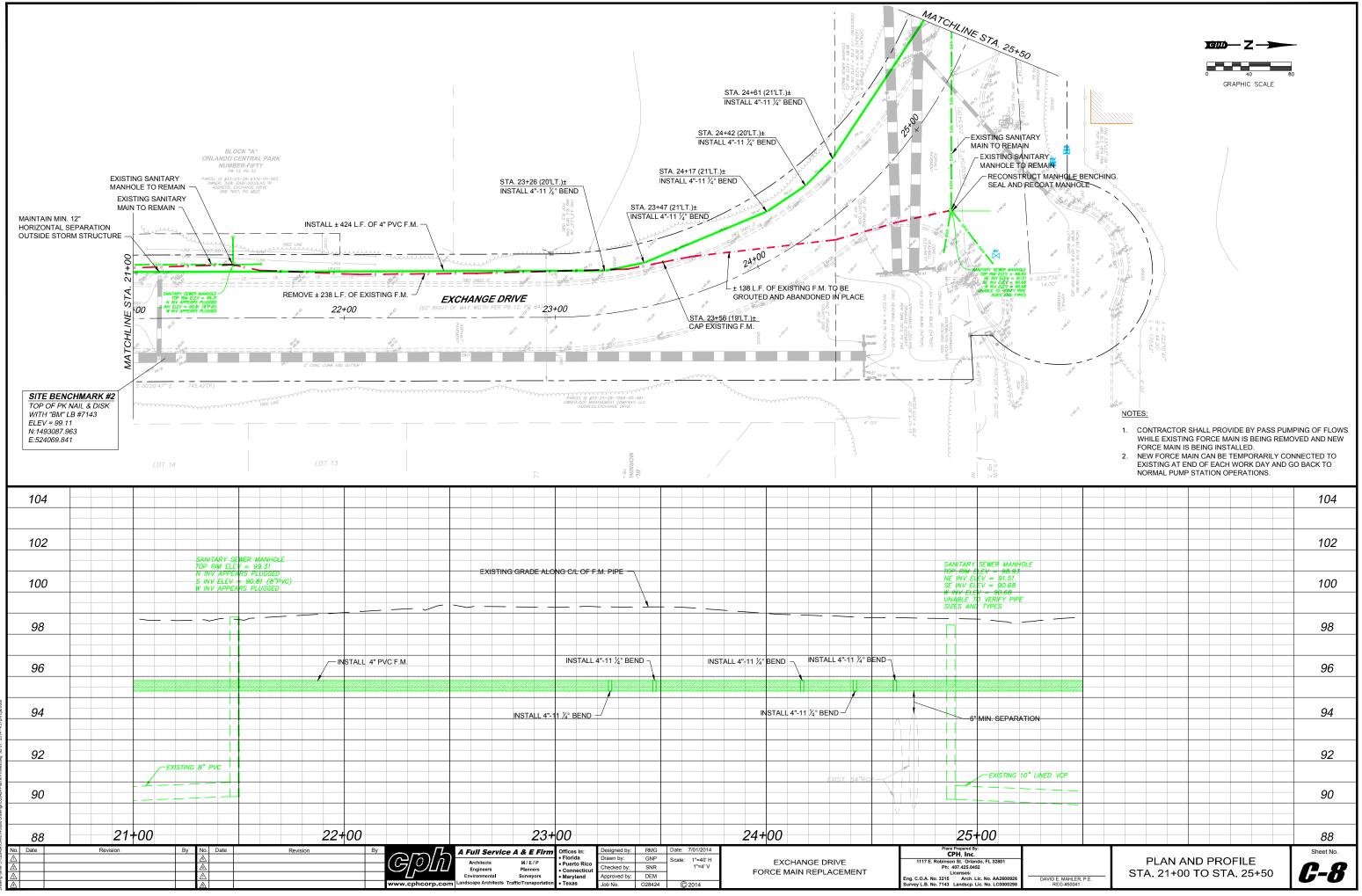
| C-8 | C-9 |
|-----|-----|
|     |     |
|     |     |
|     |     |
|     |     |
|     |     |
|     |     |
|     |     |
|     |     |
|     |     |
|     |     |
|     |     |
|     |     |
| 155 |     |
| 238 |     |
|     |     |
| 424 | 64  |
|     |     |
|     |     |
|     | 20  |
|     | 1   |
| 8   | 11  |
| 1   |     |
|     |     |
|     |     |
|     |     |

Sheet Sheet

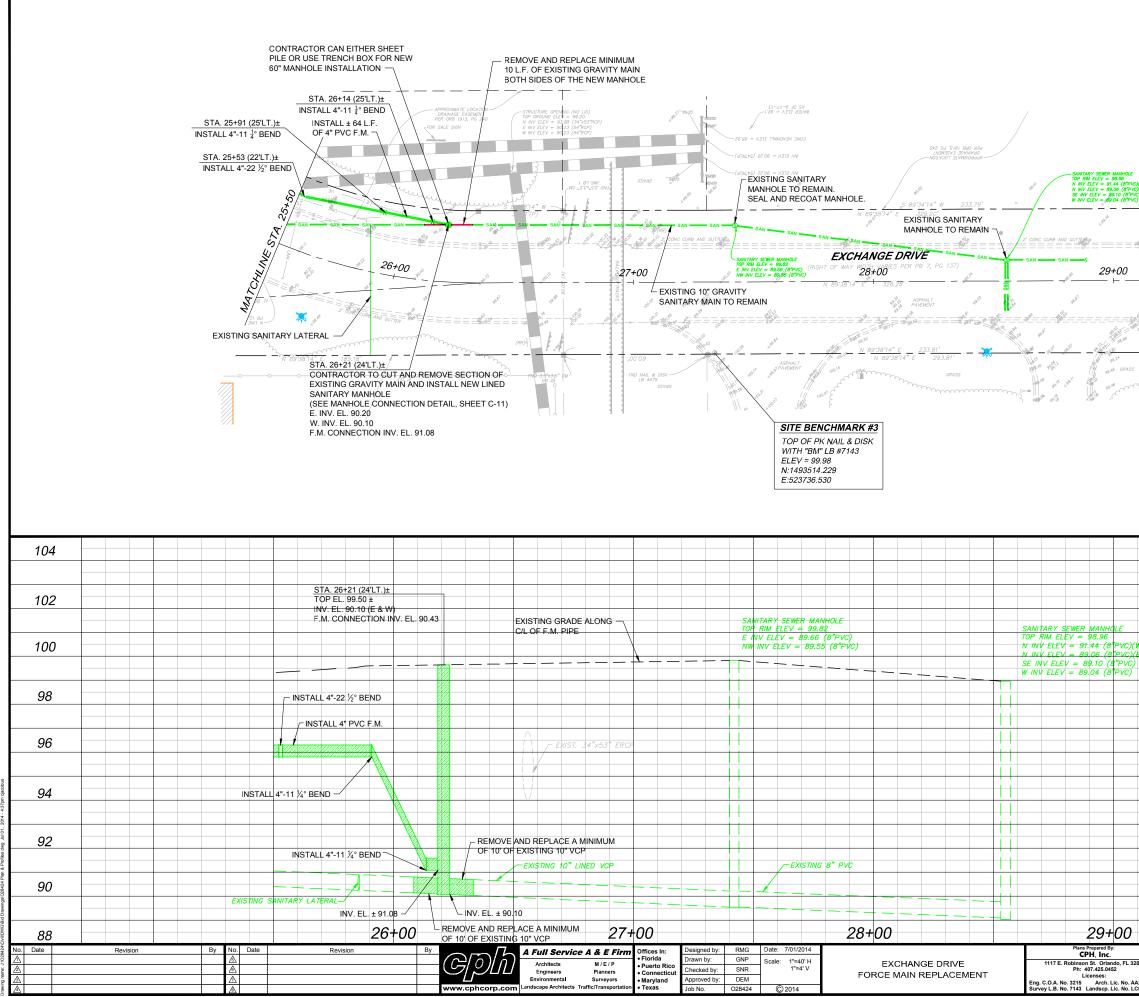


BID

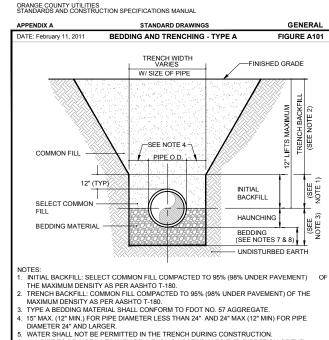




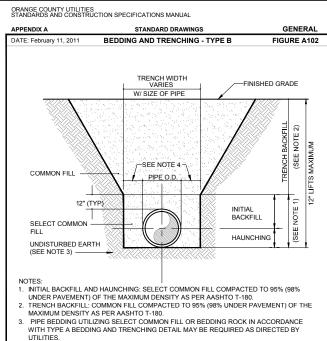
BID



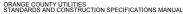
| )(west pipe)<br>((CAST Pipe)<br>)<br>                         | ucia geni stu maa<br>nisi stu awn<br>xsia @ tivn aka  | 1                              |
|---|---|--------------------------------|
| ġ.  | N N   | i<br>f                         |
|   | 29+64   | 80                             |
| μο<br>  | GRAPHIC   |                                |
| مررزینی   | a on<br>no _97%57 au  |                                |
|   | NOTES:<br>1. CONTRACTOR SHALL PROVIDE BY PASS I<br>WHILE EXISTING FORCE MAIN IS BEING R<br>FORCE MAIN IS BEING INSTALLED.<br>2. NEW FORCE MAIN CAN BE TEMPORARILY<br>EXISTING AT END OF EACH WORK DAY AN<br>NORMAL PUMP STATION OPERATIONS.   | EMOVED AND NEW<br>CONNECTED TO |
|   |   | 104                            |
|   | Image: select | 102                            |
| WEST PIPE)  |   | 100                            |
|   |   | 98                             |
|   |   | 96                             |
|   |   | 94                             |
|   |   | 92                             |
|   |   | 90                             |
|   |   | 88<br>Sheet No.                |
| 2801<br>A2600926 DAVID E. MAHLER, P.E.<br>C0000298 REC-#50041 | PLAN AND PROFILE<br>STA. 25+50 TO STA. 29+64  |                                |

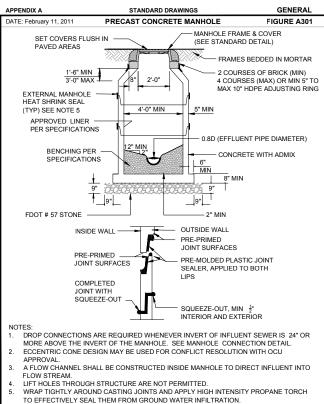


- ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE
- BEDDING DEPTH SHALL BE 4" MINIMUM FOR PIPE DIAMETER UP TO 12" AND 6" MINIMUM FOR PIPE DIAMETER 16" AND LARGER.
- THE DIMINELECTO AND EAROLY. DEPTH FOR REMOVAL OF UNSUITABLE MATERIAL SHALL GOVERN DEPTH OF BEDDING ROCK BELOW THE PIPE. UTILITIES SHALL DETERMINE IN THE FIELD REQUIRED REMOVAL OF UNSUITABLE MATERIAL TO REACH SUITABLE FOUNDATION.
- FINAL RESTORATION IN IMPROVED AREAS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF GOVERNING AGENCIES. SURFACE RESTORATION WITHIN ORANGE COUNTY RIGHT-OF-WAY SHALL COMPLY WITH REQUIREMENTS OF R/W UTILIZATION REGULATIONS AND ROAD CONSTRUCTION SPECIFICATIONS.



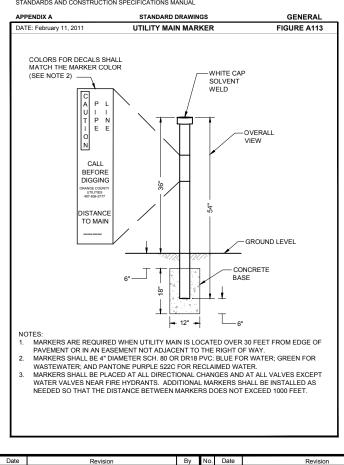
- 4. 15" MAX. (12" MIN.) FOR PIPE DIAMETER LESS THAN 24" AND 24" MAX (12" MIN) FOR PIPE
- DIAMETER 24" AND LARGER. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION 6. ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE
- FINAL RESTORATION IN IMPROVED AREAS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF GOVERNING AGENCIES. SURFACE RESTORATION
- WITHIN ORANGE COUNTY RIGHT-OF-WAY SHALL COMPLY WITH REQUIREMENTS OF RIGHT-OF-WAY UTILIZATION REGULATIONS AND ROAD CONSTRUCTION SPECIFICATIONS.



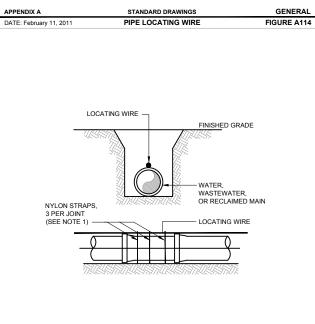


- HDPE ADJUSTING RINGS MAY BE SUBSTITUTED FOR BRICK RISERS
- SECTION HEIGHTS VARY AS REQUIRED, AND AS AVAILABLE, FROM APPROVED MANUFACTURERS LISTED IN APPENDIX D.

# ORANGE COUNTY UTILITIES STANDARDS AND CONSTRUCTION SPECIFICATIONS MANUAL



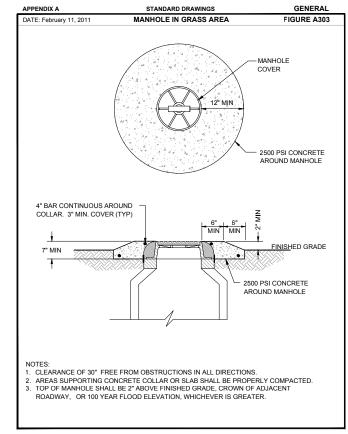
ORANGE COUNTY UTILITIES STANDARDS AND CONSTRUCTION SPECIFICATIONS MANUAL



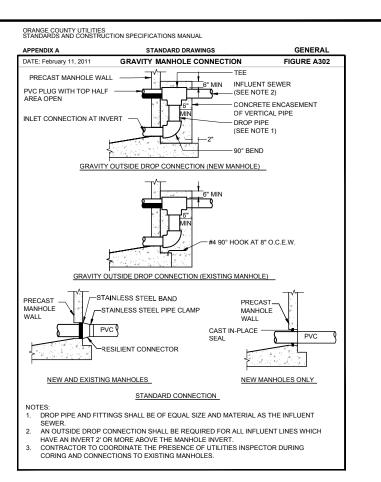
- ALL PIPE SHALL REQUIRE INSULATED LOCATING WIRE (10 GAUGE SOLID COPPER) CAPABLE OF DETECTION BY A CABLE LOCATOR AND SHALL BE WRAPPED WITH NYLON STRAPS TO TOP CENTERLINE OF THE PIPE LOCATING WIRE SHALL BE CONTINUOUS INSIDE VALVE BOXES AND SHALL EXTEND 12"
- ABOVE TOP OF COLLAR. WIRE INSULATION SHALL BE COLOR CODED FOR THE TYPE OF PIPE BEING INSTALLED

NOTES

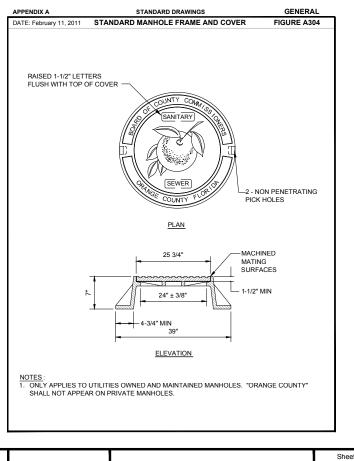




| 28424V    | No.          | Date | Revision | By        | No. | Date | Revision By | $\sim m/h$ | A Full Service A & E Firm                  | 0111000 1111                            | Designed by:             | -             | Date: 7/01/2014 |                        | Plans Prepared By:<br>CPH, Inc.  |
|-----------|--------------|------|----------|-----------|-----|------|-------------|------------|--|---|--------------------------|---------------|-----------------|------------------------|--|
| ne: J:/0  | $\mathbb{A}$ |      |          | ├──       | A   |      |             | CDD        | Architects M / E / P<br>Engineers Planners | Florida     Puerto Rico     Connecticut | Drawn by:<br>Checked by: | GNP<br>SNR    | Scale: AS NOTED | EXCHANGE DRIVE         | 1117 E. Robinson St. Orlando, FL 3280<br>Ph: 407.425.0452  |
| awing nar | A            |      |          | $\square$ | A   |      |             |            |  | Maryland                                | Approved by:<br>Job No.  | DEM<br>028424 | © 2014          | FORCE MAIN REPLACEMENT | Licenses:<br>Eng. C.O.A. No. 3215 Arch. Lic. No. AA26<br>Survey L.B. No. 7143 Landscp. Lic. No. LC00 |



ORANGE COUNTY UTILITIES STANDARDS AND CONSTRUCTION SPECIFICATIONS MANUAL

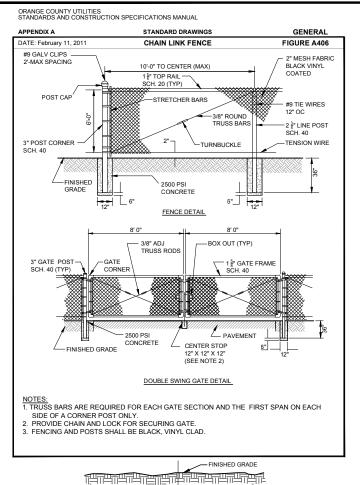


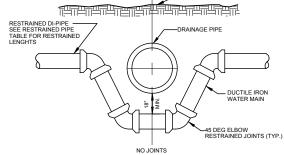
DAVID E. MAHLER, P. REG-#50041

CONSTRUCTION DETAILS



Ē S





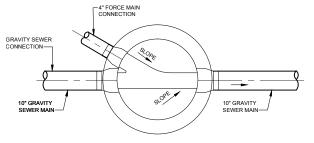
NOTES

1. THIS METHOD TO BE USED WHEN INSUFFICIENT COVER EXISTS TO ALLOW UTILITY PIPE TO CROSS ABOVE STORM SEWER WITH 16\* VERTICAL SEPARATION AND MAINTAIN 35\* MIN. COVER TO FINISHED GRADE.

2. SUBMIT SHOP DRAWINGS FOR EACH PARTICULAR SITUATION.

3. ALL RESTRAINED JOINTS. NO THRUST COLLARS TO BE USED WITH THIS METHOD.

# UTILITY TRANSITION DETAIL

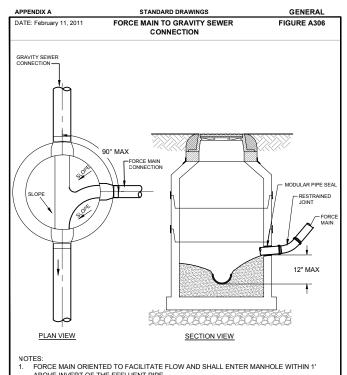


NOTES

- 1. FORCE MAIN ORIENTED TO FACILITATE FLOW AND SHALL ENTER MANHOLE WITHIN 1 ABOVE INVERT OF THE EFFLUENT PIPE. BENCH AS REQUIRED FOR NEW FORCE MAIN.

- MANHOLE RECEIVING FORCE MAIN AND NEXT MANHOLE SHALL BE LINED. FOR CONNECTIONS TO EXISTING MANHOLES, MANHOLE RECEIVING FORCE MAIN AND NEXT UPSTREAM AND DOWNSTREAM MANHOLES SHALL BE COATED OR LINED PER APPENDIX D. 4. CONTRACTOR TO COORDINATE THE PRESENCE OF UTILITIES INSPECTOR DURING CORING AND CONNECTIONS TO EXISTING MANHOLES.
  - MANHOLE CONNECTION DETAIL

# ORANGE COUNTY UTILITIES STANDARDS AND CONSTRUCTION SPECIFICATIONS MANUAL



ABOVE INVERT OF THE EFFLUENT PIPE

- BENCH AS REQUIRED FOR NEW FORCE MAIN. MANHOLE RECEIVING FORCE MAIN AND NEXT MANHOLE SHALL BE LINED. FOR
- CONNECTIONS TO EXISTING MANHOLES, MANHOLE RECEIVING FORCE MAIN AND NEXT

  - MANHOLE SHALL BE COATED OR LINED PER APPENDIX D. CONTRACTOR TO COORDINATE THE PRESENCE OF UTILITIES INSPECTOR DURING
  - CORING AND CONNECTIONS TO EXISTING MANHOLES.

# ORANGE COUNTY UTILITIES

| TANDARDS AND CO | NSTRUCTION SPECIFI | ICATIONS MANUAL |  |
|-----------------|--------------------|-----------------|--|
|                 |                    |                 |  |

| APPE | ENDIX A              | STANDARD DRAWINGS                           | GENERAL     |
|------|----------------------|---|-------------|
| DATE | E: February 11, 2011 | SEPARATION REQUIREMENTS FOR                 | FIGURE A116 |
|      | WATER                | R, WASTEWATER AND RECLAIMED WATER MAINS     |             |
|      |                      |   |             |
|      |                      |   |             |
| Ī    | НО                   | RIZONTAL & VERTICAL SEPARATION REQUIREMENTS |             |

|                                | HONZON           |               | INTICAL SI       |               |              |                   |                  |                     |
|--------------------------------|------------------|---------------|------------------|---------------|--------------|-------------------|------------------|---------------------|
| PROPOSED<br>UTILITY            | POTA<br>WAT      |               | RECL/<br>WA      | AIMED<br>TER  |              | WATER<br>TY & FM) | STORM SEWER      |                     |
| UTILITY                        | HORIZ            | VERT          | HORIZ            | VERT          | HORIZ        | VERT              | HORIZ            | VERT                |
| POTABLE WATER                  | 3'<br>NOTE 1     | 12"           | 3'<br>NOTE 1 & 3 | 12"<br>NOTE 3 | 6'<br>NOTE 3 | 12"<br>NOTE 3     | 3'<br>NOTE 1 & 3 | 12"/18"<br>NOTE 2 & |
| RECLAIMED<br>WATER             | 3'<br>NOTE 1 & 3 | 12"<br>NOTE 3 | 3'<br>NOTE 1     | 12"           | 3'<br>NOTE 1 | 12"               | 3'<br>NOTE 1     | 12"/18"<br>NOTE 2   |
| WASTEWATER<br>(GRAVITY AND FM) | 6'<br>NOTE 3     | 12"<br>NOTE 3 | 3'<br>NOTE 1     | 12"           | 3'<br>NOTE 1 | 12"               | 3'<br>NOTE 1     | 12"/18"<br>NOTE 2   |
| RIGHT OF WAY                   | 3'<br>NOTE 1     | N/A           | 3'<br>NOTE 1     | N/A           | 3'<br>NOTE 1 | N/A               | N/A              | N/A                 |

# NOTES

- THIS SEPARATION REQUIREMENT IS TO PROVIDE ACCESSIBILITY FOR CONSTRUCTION AND MAINTENANCE. THREE FEET OF HORIZONTAL SEPARATION IS THE MINIMUM FOR PIPES WITH THREE FEET OF COVER. FOR PIPES INSTALLED AT GREATER DEPTHS, PROVIDE AN ADDITIONAL FOOT OF SEPARATION FOR EACH ADDITIONAL FOOT OF DEPTH.
- THE 18-INCH SEPARATION REQUIREMENT APPLIES WHEN THE STORM PIPE CROSSES ABOVE THE OCU MAIN, AND WHEN THE STORM PIPE HAS A DIAMETER EQUAL TO OR GREATER THAN 24 INCHES. OTHERWISE, THE REQUIRED SEPARATION IS 12 INCHES
- THIS SEPARATION REQUIREMENT COMPLIES WITH MINIMUM EDEP SEPARATION
- REQUIREMENTS OUTLINED IN 62-555.314, FAC. VARIANCES FROM THE FDEP REQUIREMENTS MUST COMPLY WITH 62-555.314(5), FAC AND MUST BE APPROVED INDIVIDUALLY BY BOTH FDEP AND OCU.
- DISTANCES GIVEN ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE. NO WATER PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF SANITARY OR STORM WATER MANHOLE OR STRUCTURE.

# ORANGE COUNTY UTILITIES STANDARDS AND CONSTRUCTION SPECIFICATIONS MANUAL

|                |                          | S  | TANDA |      | GENERAL       |     |     |     |     |         |     |  |  |  |
|----------------|--------------------------|--|-------|------|---------------|-----|-----|-----|-----|---------|-----|--|--|--|
| DATE: February |                          |  | RAIN  | FIGL | FIGURE A104-2 |     |     |     |     |         |     |  |  |  |
|                |                          |  |       |      |               |     |     |     |     |         |     |  |  |  |
|                | MINIMUM LENGTH (FT       | (FT) TO BE RESTRAINED ON EACH SIDE OF FITTING(S)         |       |      |               |     |     |     |     |         |     |  |  |  |
|                | PVC PIPE SIZE            |  |       |      |               |     |     |     |     |         |     |  |  |  |
|                | TTFE                     | 4"   | 6"    | 8"   | 10"           | 12" | 16" | 20" | 24" | 30" 36" |     |  |  |  |
| ę              | 90° BEND                 | 18   | 24    | 31   | 38            | 43  | 55  | 65  | 75  | 88      | 100 |  |  |  |
| 4              | 45° BEND                 | 8  | 10    | 13   | 15            | 18  | 23  | 26  | 31  | 38      | 43  |  |  |  |
| 2              | 22-1/2° BEND             | 4  | 5     | 6    | 8             | 9   | 11  | 13  | 15  | 18      | 20  |  |  |  |
| 1              | 11-1/4° BEND             | 2  | 3     | 4    | 5             | 6   | 8   | 9   | 10  | 11      | 13  |  |  |  |
|                | PLUG OR BRANCH<br>OF TEE | 38   | 50    | 65   | 79            | 90  | 147 | 139 | 163 | 194     | 223 |  |  |  |
| `              | VALVE                    | 19   | 25    | 32   | 40            | 45  | 59  | 70  | 82  | 98      | 112 |  |  |  |
| F              | REDUCER                  | VARIES BY SIZE; TO BE DETERMINED BY THE DESIGN ENGINEER. |       |      |               |     |     |     |     |         |     |  |  |  |

## NOTES

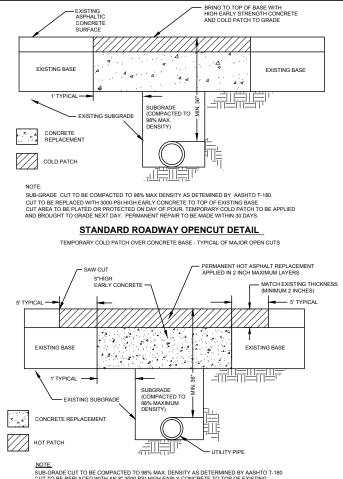
- FITTINGS SHALL HAVE RESTRAINED JOINTS UNLESS OTHERWISE INDICATED.
- 2. INSTALL FULL LENGTH JOINTS WITH TOTAL LENGTH EQUAL TO OR GREATER THAN LENGTH SHOWN IN THE TABLE.
- WHERE TWO OR MORE FITTINGS ARE IN SERIES, SELECT FITTING RESTRAINT LENGTH THAT YIELDS THE LONGEST RESTRAINT DISTANCE.
- ALL INLINE VALVES SHALL BE RESTRAINED.
   WHERE INTERNAL RESTRAINED JOINTS ARE USED, THE ENTIRE BELL SHALL BE
- PAINTED RED.
- PAINTED RED.
   6. LENGTHS SHOWN IN THE TABLE WERE CALCULATED IN ACCORDANCE WITH PROCEDURES OUTLINED IN "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" GUIDELINES PUBLISHED BY DIPRA, USING THE ASSUMPTIONS SHOWN BELOW:

WORKING PRESSURE: 100 PSI SOIL DESIGNATION: SM (SAND SILT) LAYING CONDITIONS: DEPTH OF COVER: SAFETY FACTOR:

SAFETY FACTOR: <u>1.5</u> CONVERSION FACTOR FOR PVC PIPE: <u>1.25</u>

THE DESIGN ENGINEER SHALL INCREASE THE VALUES IN THE TABLE AS WARRANTED BY SITE-SPECIFIC PARAMETERS, SUCH AS SOIL DESIGNATIONS AND LAYING CONDITIONS.

| ving name: J:\O28424\C | No.<br>▲<br>▲ | Date | Revision | Ву | No<br>▲<br>▲ | )ate | Revision By |   | Architects M/E/P<br>Engineers Planners<br>Environmental Surveyors | Florida     Puerto Rico     Connecticut     Maryland | Drawn by:<br>Checked by:<br>Approved by: | RMG<br>GNP<br>SNR<br>DEM | Scale: A | 7/01/2014<br>AS NOTED | EXCHANGE DRIVE<br>FORCE MAIN REPLACEMENT | Plans Prepared By:<br>CPH, Inc.<br>1117 E. Robinson St. Orlando, FL 32801<br>Ph: 407.425.0452<br>Licenses:<br>Eng. C.O.A. No. 3215 Arch. Lic. No. AA268 |
|------------------------|---------------|------|----------|----|--------------|------|-------------|---|---|--|--|--------------------------|----------|-----------------------|--|---|
| Drawing                | $\mathbb{A}$  |      |          |    |              |      |             | w | www.cphcorp.com   |  | Job No.                                  | O28424                   | ©2       | 2014                  |  | Eng. C.O.A. No. 3215 Arch. Lic. No. AA260<br>Survey L.B. No. 7143 Landscp. Lic. No. LC000   |



SUB-GRADE CUT TO BE COMPACTED TO 98% MAX. DENSITY AS DETERMINED BY AASHTO T-180 CUT TO BE REPLACED WITH AN 8° 3000 PSI HIGH EARLY CONCRETE TO TOP OF EXISTING BASE. CUT AREA TO BE PLATED OR PROTECTED ON THE DAY OF POUR. EXISTING SURFACE TO BE CUT TO AN AREA 5 FEET BEYOND BASE CUT.

# STANDARD ROADWAY OPENCUT DETAIL

EINAL RESTORATION - TYPICAL OF MAJOR OPEN CUTS

# PAVEMENT RESTORATION

- I. LONGTUDINAL CUTS MAY REQUIRE OVERLAY/ RESURFACING OF THE COMPLETE WIDTH OF THE TRAVELED WAY.
   CUTS AT INTERSECTIONS OF STREETS GENERALLY MAY REQUIRE A COMPLETE OVERLAY/ RESURFACING TO THE END OF ALL RETURN RADII AND ALSO TO A POINT THE OVERLAY.
   CUT, WHICHEVER IS GREATER.
   ACTUAL REQUIREMENTS WILL BE AS STATED ON THE APPROVED PERMIT.

## GENERAL NOTES:

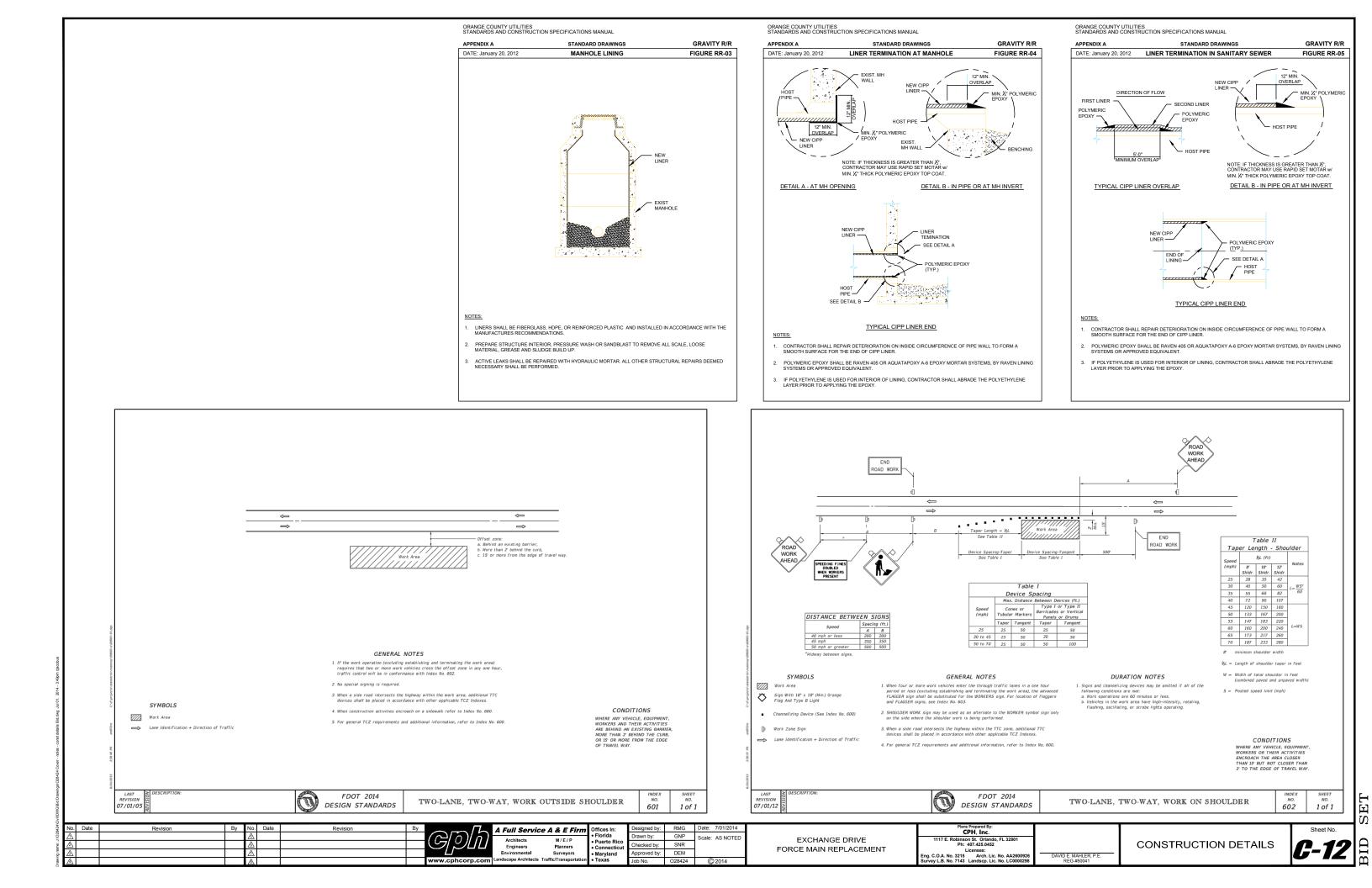
- 1. BASE REPLACEMENT SHALL BE 3000 PSI HIGH EARLY STRENGTH
- CUNCRETE. 2. ASPHALTIC CONCRETE SURFACE MATERIAL SHALL BE REPLACED WITH THE SAME TYPE OF MATERIAL THAT EXISTED AT THE TIME OF REMOVAL, OR AS APPROVED BY THE COUNTY PUBLIC WORKS DEPARTMENT.
- 3. MINIMUM ASPHALTIC CONCRETE SURFACE OVERLAY THICKNESS MINIMUM ASPHALTIC CONCRETE SURFACE OVERLAT FINCINESS SHALL BE ONE AND ONE HALF (1 ½") INCH, OR AS APPROVED BY THE COUNTY PW DEPARTMENT.
   ALL JOINT CUTS SHALL BE MECHANICALLY SAW CUT.



Sheet No.

CONSTRUCTION DETAILS

DAVID E. MAHLER, P.E REG-#50041



| UNIQUE |             | COUNTY      |         |        |          |         |       |         |
|--------|-------------|-------------|---------|--------|----------|---------|-------|---------|
| ID No. | ASSET TYPE  | FEATURE No. | STATION | OFFSET | NORTHING | EASTING | ELEV. | SIZE    |
| FM-1   | Couple      |             | 11+00   | 37' LT |          |         |       | 4" x 4" |
| FM-2   | 45o Bend    |             | 11+00   | 23' LT |          |         |       | 4"      |
| FM-3   | 45o Bend    |             | 11+02   | 21' LT |          |         |       | 4"      |
| FM-4   | 11.25o Bend |             | 11+92   | 21' LT |          |         |       | 4"      |
| FM-5   | 11.25o Bend |             | 11+95   | 22' LT |          |         |       | 4"      |
| FM-6   | 45o Bend    |             | 13+07   | 22' LT |          |         |       | 4"      |
| FM-7   | 45o Bend    |             | 13+08   | 22' LT |          |         |       | 4"      |
| FM-8   | 11.25o Bend |             | 17+00   | 21' LT |          |         |       | 4"      |
| FM-9   | 11.25o Bend |             | 17+02   | 21' LT |          |         |       | 4"      |
| FM-10  | 11.25o Bend |             | 17+23   | 21' LT |          |         |       | 4"      |
| FM-11  | 11.25o Bend |             | 17+25   | 21' LT |          |         |       | 4"      |
| FM-12  | 11.25o Bend |             | 23+26   | 20' LT |          |         |       | 4"      |
| FM-13  | Сар         |             | 23+38   | 19' LT |          |         |       | 4"      |
| FM-14  | 11.25o Bend |             | 23+47   | 21' LT |          |         |       | 4"      |
| FM-15  | 11.25o Bend |             | 24+17   | 21' LT |          |         |       | 4"      |
| FM-16  | 11.25o Bend |             | 24+42   | 20' LT |          |         |       | 4"      |
| FM-17  | 11.25o Bend |             | 24+61   | 21' LT |          |         |       | 4"      |
| FM-18  | 22.50o Bend |             | 25+53   | 22' LT |          |         |       | 4"      |
| FM-19  | 11.25o Bend |             | 25+91   | 25' LT |          |         |       | 4"      |
| FM-20  | 11.25o Bend |             | 26+14   | 25' LT |          |         |       | 4"      |
| FM-21  | Manhole     |             | 26+21   | 24' LT |          |         |       | 60"     |

| Ν  | lo. Date | Revision | By | No.          | Date | Revision | By | m               | A Full Service           | A & E Firm          | 0  | Designed by: | TWIC   | Date: 7/01/2014 |                        | Plans Prepared By:<br>CPH, Inc.                           |
|----|----------|----------|----|--------------|------|----------|----|-----------------|--------------------------|---------------------|--|--------------|--------|-----------------|------------------------|---|
| 12 | 3        |          |    | ⊢≜           |      |          |    | ( n) n)         | Architects               | M/E/P               |  | Drawn by:    | GNP    | Scale: AS NOTED | EXCHANGE DRIVE         | 1117 E. Robinson St. Orlando, FL 32801                    |
| L  | 2        |          |    | ∕≜           |      |          |    | GIYUU           | Engineers                | Planners            | <ul> <li>Puerto Rico</li> <li>Connecticut</li> </ul> | Checked by:  | SNR    |                 | FORCE MAIN REPLACEMENT | Ph: 407.425.0452  |
| Z  | 3        |          |    | $\mathbb{A}$ |      |          |    | $-D^{-}$        | Environmental            |                     | Maryland   | Approved by: | DEM    |                 |                        | Licenses:<br>Eng. C.O.A. No. 3215 Arch. Lic. No. AA260092 |
| L  | 4        |          |    | $\mathbb{A}$ |      |          |    | www.cphcorp.com | Landscape Architects Tra | ffic/Transportation | • Texas  | Job No.      | O28424 | © 2014          |                        | Survey L.B. No. 7143 Landscp. Lic. No. LC000029           |

|   | $\mathbf{SET}$ |
|---|----------------|
| 7 | BID            |

DAVID E. MAHLER, P.E. REG-#50041

ASSET TABLES

