HAZEN CONSTRUCTION, LLC

September 21, 2018 VIA EMAIL: PonitzShannon@CODB.US

City of Daytona Beach
125 Basin Street
Daytona Beach, Florida 32114
Attn: Shannon Ponitz

RE: Emergency Manhole Replacement – Clyde Morris Blvd. & Dunn Ave.
(City Lift Station No. 10, Manhole #34)

Dear Shannon,

Hazen Construction is pleased to submit this proposal for the above-mentioned project. As discussed, we propose to complete this work as an extension of the City forces and will work in conjunction with the City to determine the best means to complete this project. The scope of the project, and the proposed allocation of responsibilities between Hazen and the City (including our respective subcontractors) is preliminarily described as Exhibit A, attached. However, Hazen and the City both recognize that unknown conditions, which are discoverable only once the project is underway, may require work outside of normal construction methods. These conditions may require significant changes to the scope of the project, and the allocation of responsibilities between Hazen and the City as laid out in Exhibit A. While the parties agree that time is of the essence, these conditions may also require extension of the deadlines set forth in Exhibit A. Hazen and the City will work as a team to determine the best means to complete the project.

Additional terms and conditions are as follows:

1. Payment. These payment provisions are based in large part on the City's need to have the project performed immediately. In accepting this proposal, the City recognizes that payments provided for are required, in large part, to ensure that Hazen has the ability to complete the tasks assigned to Hazen within the time required.

a. Hazen will be paid Hazen $12,500 per crew day for every weekday (Monday – Friday) that Hazen performs work on the project. Hazen will be paid $15,000 per crew day for weekend work. A crew is defined as a foreman with two to four workers. A crew day is defined as any time in excess of three hours up to eight hours. Any time over eight hours would start a second crew day. This lump sum cost will include the labor for the crew and all associated cost for equipment being used that is owned by Hazen Construction.

b. Hazen will be paid for all equipment required to be rented by Hazen to perform the project, and for all materials required to be used by Hazen in performing the project, at Hazen's cost plus 15%. Hazen will only rent equipment required for the work if Hazen does not have such equipment readily available.

c. Hazen will be paid for all subcontractors provided by Hazen to perform Hazen's assigned tasks at Hazen's cost (i.e., the amount billed invoiced by the subcontractors to Hazen) plus

15%. At this time, it is anticipated that we will have the following subcontractors: maintenance of traffic, dewatering, concrete, asphalt and sod. More subcontractors may be required as the field conditions dictate and at Hazen's discretion.

d. Hazen will be paid for the cost of payment and performance bonds (see below), at Hazen's cost plus 15%.

e. Hazen will invoice the City upon completion of the project, and will provide sufficient detail and documentation (including where applicable invoices) to allow the City to confirm the accuracy of the invoice. The terms of the Florida Prompt Payment Act, Florida Statutes Section 218.70, will apply to the extent not in conflict with these payment provisions.

2. **General Terms and Conditions**.

a. Hazen will perform all services in a workmanlike manner. All equipment and materials provided by Hazen and installed or incorporated into the completed work will be of good quality and new condition.

b. Hazen will comply with the City's insurance standards, described in Exhibit B, attached.

c. Hazen will provide performance and payment bonds using forms provided or approved by the City. These bonds will be the amount of $350,000, which represents Hazen's preliminary assessment of the cost of the services to be provided by Hazen (inclusive of labor, equipment, and materials).

d. Hazen will not commence work until receiving a notice to proceed ("NTP") from the City's project representative. Hazen acknowledges that the NTP may not be issued until Hazen provides proof of insurance and the bonds referenced above, and the City has performed the City's preliminary tasks as identified in Exhibit A.

e. Exhibit C, attached, contains provisions regarding the potential applicability of Florida's Public Records Law to documents created or received by Hazen in the performance of the project. These provisions are required to be incorporated by Florida Statutes Section 119.0701.

This proposal is intended to be a firm offer, good for 10 days from the date of this letter. The City may accept this offer by issuance of a standard City purchasing order, to which this proposal and all Exhibits will be attached. The date of the contract resulting from City's acceptance will be the date of such signature or purchase order.

If you have any questions or require additional information, please give me a call.

Sincerely,

HAZEN CONSTRUCTION, LLC

Hazen Construction

Chad S. Hazen
Owner

EXHIBIT A: SCOPE OF SERVICES

The Emergency Manhole Replacement – Clyde Morris Blvd & Dunn Ave Project scope of services is generally summarized below. The Clyde Morris Blvd & Dunn Ave Lift Station 10 Manhole 34 Replacement drawings are attached hereto and incorporated herein.

Time for Performance: Subject to unforeseeable or unknown conditions, construction can be completed within 21 days after the City issues the Notice to Proceed. Hazen agrees to provide 21 full crew days of labor during this period, which will include weekends if the City deems necessary. (If such unforeseen conditions require work beyond this 21 day period, Hazen will continue to provide full crew day services until project is complete.) The City acknowledges pipe conditions are unknown and construction of the project has the potential for pipe breaks resulting in chasing of the pipe.

Permitting: Except as specifically provided below, Hazen will be primarily responsible for permitting and permit compliance; the City will provide coordination and assistance in expediting the permits and pay for all permitting costs.

Project Tasks:

- Except as provided below, Hazen will create and implement a maintenance of traffic plan ("MOT"). Hazen will notify the Volusia County School Board, Votran and emergency services of the maintenance of traffic plan and construction schedule. Maintenance of traffic will include providing safe passage on sidewalks for pedestrians.
- Hazen will coordinate bypass pumping as detailed in the attached drawings. The City will remove the existing cones on the manholes and provide a barricade around the manholes. The barricade will be provided in the form of a plywood "at grade box" unless a different arrangement is agreed upon based on field conditions. Hazen will cut holes in the plywood barricade to allow the bypass piping to enter the manholes at ground level. The City will contract separately with Thompson Pump to rent the bypass pumps and fuse the material in the field. Hazen will complete the final connections and bypass installation. The following details the general bypass schedule:
    - Bypass 18-inch gravity main – to be completed during normal operating hours
    - Bypass 16-inch force main – to be completed afterhours (10 pm – 2 am)
    - Bypass 10-inch force main – to be completed afterhours (10 pm – 2 am)
- Hazen will remove the damaged manhole (MH-34) and disconnect the associated piping.
- Hazen will install a new fiberglass manhole paid for and furnished by the City as detailed in the attached drawings. Hazen will furnish and install rock base for the new manhole. Once the fiberglass manhole is installed, Hazen will pour concrete around the manhole and pour concrete benches inside the manhole.
- Hazen will reconnect the 18-inch and 8-inch gravity mains and remove the 18-inch gravity bypass.
- Hazen will reconnect the 16-inch and 10-inch force mains afterhours (10 pm – 2 am) and remove the 16-inch and 10-inch force main bypass.
- Hazen will furnish and install precast concrete slabs, cones rings and covers on MH-35 and MH-32 and install a ring and over on MH-34.
- Hazen will reasonably restore the project site upon completion of the work. Site restoration will include concrete sidewalk, curb and sod. Hazen will remove all maintenance of traffic and reopen roadways.

THE CITY OF DAYTONA BEACH

CLYDE MORRIS BLVD & DUNN AVE

LIFT STATION 10/MANHOLE No. 34 REPLACEMENT

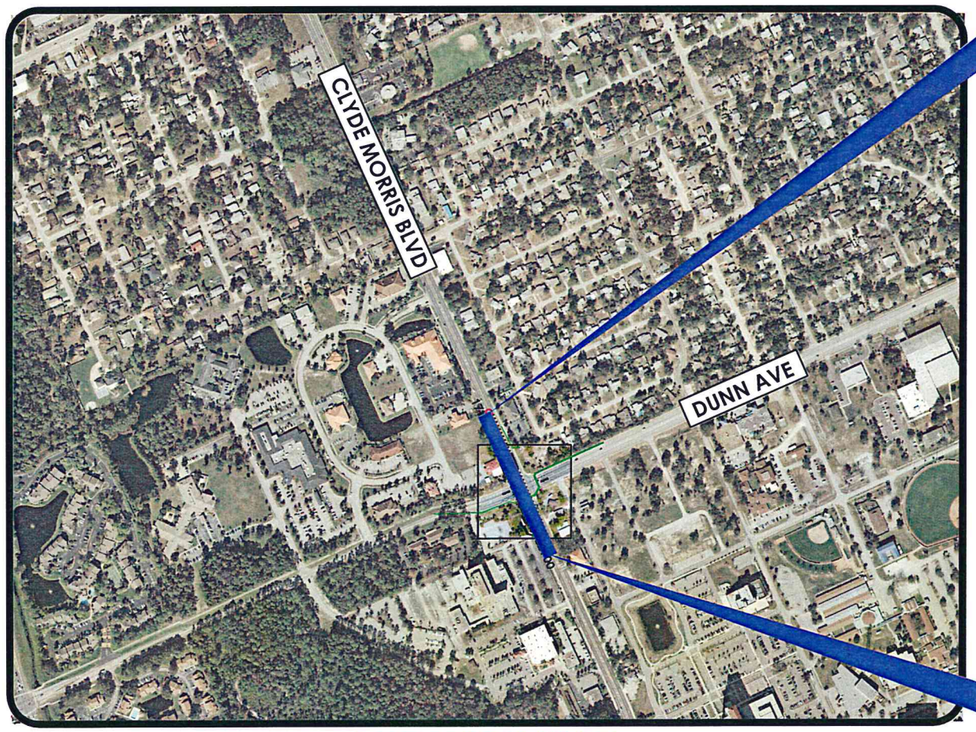
COMPONENTS OF THE UTILITY CONTRACT PLAN SET

- SAN SEWER MANHOLE REPLACEMENT

UTILITIES PROJECT NO. 6787

DRAWING INDEX

SHEET No.	DESCRIPTION
1	COVER SHEET & INDEX
2	GENERAL NOTES & LEGEND
3	SEWER CONST. NOTES
4	SUMMARY OIF PAY ITEMS
5	PLANVIEW & PROFILE
6	BY-PASS PUMPING
7&8	FIBERGLASS MH SPEC.



LOCATION MAP

LENGTH OF PROJECT - 620 FEET

STA: 17+00.00
END PROJECT

STA: 10+80.00
BEGIN PROJECT

THE CITY OF DAYTONA BEACH
UTILITIES DEPARTMENT
ENGINEERING DIVISION

CITY MANAGER
JAMES CHISHOLM

UTILITIES DIRECTOR
SHANNON T. PONITZ

GOVERNING STANDARDS AND SPECIFICATIONS:

CITY OF DAYTONA BEACH UTILITIES DEPARTMENT STANDARD DETAILS, LATEST EDITION

FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION

MANUAL OF UNIFORM MINIMUM STANDARDS FOR DESIGN, CONSTRUCTION AND MAINTENANCE FOR STREETS AND HIGHWAYS, LATEST EDITION

FLORIDA DEPARTMENT OF TRANSPORTATION DESIGN STANDARDS, LATEST EDITION

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

Name	Revision:	Date:		
			Contract No.:	Project No.: 6787
			Survey Date: DATE(SURV)	Plot Date: 08/2018
			Drawn By: KLH	Scale:(HOR.) NA
			Checked By: JMP	(Vert.) NA
			File Name: NAME	Design Date: 08/2018
			Rotation X:ROTATE	Drawn By: KLH
			Xref Name: NAME	Checked By: JMP

THE CITY OF DAYTONA BEACH
UTILITIES DEPARTMENT
DIRECTOR OF UTILITIES • SHANNON T. PONITZ
125 BASIN STREET • DAYTONA BEACH • FLORIDA • 32114
PHONE: (386) 671-8800 FAX: (386) 671-8805

CLYDE MORRIS BLVD & DUNN AVE.
MANOHOLE REPLACEMENT L10-34
PROJECT No. 6787

GENERAL NOTES

1. GRADES SHOWN ARE FINISHED GRADES.
2. ALL STATIONS AND OFFSETS REFER TO CENTERLINE CONSTRUCTION UNLESS OTHERWISE NOTED IN PLANS.
3. ALL UNDERGROUND UTILITIES HAVE BEEN LOCATED HORIZONTALLY AND VERTICALLY BASED ON THE BEST INFORMATION AVAILABLE AND SHOULD BE CONSIDERED APPROXIMATE ONLY. IT IS POSSIBLE THAT CERTAIN UTILITIES MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS. SURVEY OBTAINED FROM SLIGER & ASSOC. INC.
4. INDIVIDUAL UTILITY OWNERS SHALL BE RESPONSIBLE FOR ANY UTILITIES TO BE ADJUSTED BY OTHERS AS DIRECTED BY THE CITY'S REPRESENTATIVE FOR THE CONSTRUCTION OF THIS PROJECT.
5. THE CONTRACTOR SHALL NOTIFY ALL UTILITY OWNERS 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION. (CALL SUNSHINE 1-800-432-4770)

APPARENT UTILITY OWNERS:

BRIGHTHOUSE NETWORKS	(386) 760-9941 x 7216
TECO PEOPLES GAS INC.	(386) 671-2253
CITY OF DAYTONA BEACH	(386) 671-8815
BELL SOUTH	(386) 257-7913
FLORIDA POWER & LIGHT	(386) 322-3417
VOLUSIA COUNTY SIGNAL SHOP	(386) 239-6537
FPL FIBER NET LLC	(305) 522-3249

6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION OF EXISTING UTILITIES AND TO DETERMINE IF OTHER UTILITIES WILL BE ENCOUNTERED DURING THE COURSE OF THE WORK AND TAKE WHATEVER STEPS NECESSARY TO PROVIDE FOR THEIR PROTECTION (I.E. SHEETING, DE-WATERING, ETC.). CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES OR CONFLICTS.
7. ALL CONSTRUCTION WITHIN FDOT ROW SHALL CONFORM TO THE 2010 EDITION OF THE FDOT DESIGN STANDARD INDEXES, THE FDOT UTILITY ACCOMMODATION MANUAL, AND THE 2000 EDITION FDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION.
8. ANY MAIL BOX WITHIN THE LIMITS OF CONSTRUCTION TO BE TAKEN DOWN BY THE CONTRACTOR IS TO BE RESET IN ACCORDANCE WITH POSTAL REQUIREMENTS. COST OF WORK & MATERIALS TO BE INCIDENTAL TO CLEARING AND GRUBBING ITEM.
9. ANY NGVD MONUMENT WITHIN THE LIMITS OF CONSTRUCTION SHALL NOTIFY:

   GEODETIC INFORMATION CENTER
   ATTN: MARK MAINTENANCE SECTION
   6001 EXECUTIVE BOULEVARD
   ROCKVILLE, MARYLAND 20852
   TELEPHONE: (301) 443-8319
10. ANY PUBLIC LAND CORNER WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF A CORNER MONUMENT IS IN DANGER OF BEING DESTROYED AND HAS NOT BEEN PROPERLY REFERENCED, THE PROJECT ENGINEER SHOULD NOTIFY THE CITY SURVEYOR WITHOUT DELAY BY TELEPHONE. IT SHALL BE THE CONTRACTOR'S FULL RESPONSIBILITY TO REPLACE/RESTORE ANY PROPERTY CORNER DISTURBED BY CONSTRUCTION ACTIVITIES.
11. SIGNS SHALL BE RELOCATED IN EQUAL OR BETTER THAN PRE-CONSTRUCTION CONDITION AT THEIR EXISTING STATION ACCORDING TO F.D.O.T. ROADWAY AND TRAFFIC DESIGN STANDARDS (LATEST EDITION).
12. SIGNS SHALL BE STOCK PILED BY THE CONTRACTOR, ANY EXISTING SIGNS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AT HIS COST.
13. ALL EXISTING DRAINAGE STRUCTURES AND UTILITIES WITHIN THE CONSTRUCTION LIMITS SHALL REMAIN, UNLESS OTHERWISE NOTED IN PLANS.
14. B.M. DATUM IS NATIONAL GEODETIC VERTICAL DATUM OF 1988 (NGVD-88) AND STATE PLANE COORDINATES ARE BASED UPON NAD 83.
15. TEMPORARY DRAINAGE SHALL BE PROVIDED DURING CONSTRUCTION TO ELIMINATE ANY FLOODING OF PRIVATE PROPERTY, OR VEHICULAR TRAVEL LANES.
16. ALL STORM SEWER LINES AND INLETS SHALL BE CLEANED OF DEBRIS AND ERODED MATERIALS AS REQUIRED BY THE CITY AND COUNTY AT LAST STAGES OF CONSTRUCTION.
17. ANY DRAINAGE PROBLEMS CREATED BY CONSTRUCTION, OR EXISTING BEFORE CONSTRUCTION AND NOT ALLEVIATED, SHOULD BE BROUGHT TO THE ATTENTION OF THE COUNTY OF PROJECT MANAGER AT THE TIME. OF DISCOVERY.
18. ALL UNSUITABLE SOILS AND UNSUITABLE MATERIALS (SUCH AS CLAY, ORGANICS, ROCK, CEMENTED COQUINA, DEBRIS, ETC...) SHALL BE REMOVED, DISPOSED OF AND REPLACED WITH DRY COMPACTED GRANULAR MATERIAL SATISFACTORY TO THE CITY. THE COST OF ALL WORK AND MATERIALS IS TO BE INCLUDED IN THE UNIT PRICE OF THE ASSOCIATED CONSTRUCTION ITEMS UNLESS OTHERWISE SHOWN IN THE PLANS.
19. NO ALTERNATE PIPE OR PAVEMENT MATERIAL WILL BE ALLOWED UNLESS OTHERWISE NOTED IN PLANS.
20. ALL DELINEATED WETLAND AREAS SHALL BE STAKED AND FENCED WITH TYPE III SILT FENCING PRIOR TO CONSTRUCTION. FENCING SHALL NOT BE REMOVED UNTIL ALL CONSTRUCTION IS COMPLETED.
21. THE EROSION, SEDIMENT, AND TURBIDITY CONTROL MEASURES DELINEATED HEREON ARE THE MINIMUM REQUIRED. ADDITIONAL CONTROLS MAY BE NEEDED, DEPENDING UPON THE ACTUAL SITE CONDITIONS, JURISDICTIONAL AGENCY PERMIT REQUIREMENTS AND CONSTRUCTION OPERATIONS.
22. STAKED SILT FENCE SHALL BE UTILIZED TO CONTROL EROSION AND RELEASE OF SUSPENDED SOLIDS AND SEDIMENT TRACKING CONTROL DEVICES SHALL BE USED TO PREVENT THE OFFSITE TRANSPORT OF SEDIMENT BY MOTORIZED VEHICLES. IF CONTROL MEASURES DO NOT PROVE SATISFACTORY, WORK SHALL CEASE UNTIL NEW MEASURES ARE ADOPTED WITH SATISFACTORY RESULTS, AS PER FDOT INDEX NO. 102.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS AS WELL AS THE REQUIREMENTS OF ST. JOHNS RIVER WATER MANAGEMENT DISTRICT AND E.P.A. (NPDES), CONTRACTOR SHALL ESTABLISH BEST MANAGEMENT PRACTICES AND EROSION CONTROL METHODS PRIOR TO COMMENCING ANY SITE CLEARING OR DEMOLITION AND SHALL MAINTAIN THOSE BARRIERS UNTIL FINAL ACCEPTANCE OF THE PROJECT.
24. ALL EROSION AND SEDIMENT TRACKING CONTROL DEVICES SHALL BE INSPECTED DAILY AND IMMEDIATELY FOLLOWING A RAINFALL EVENT. ANY DEFICIENCES FOUND IN THE EROSION CONTROL MEASURES SHALL BE REPAIRED IMMEDIATELY. THE CONTRACTOR SHALL KEEP A LOG BOOK DOCUMENTING THESE DAILY INSPECTIONS, DEFICIENCIES AND REMEDIAL ACTIONS.
25. LIMITS OF SILT FENCE ARE APPROXIMATE AND ARE TO BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
26. ALL CURB RAMP CUTS TO BE CONSTRUCTED PER STANDARD INDEX 304, TURNOUTS PER FDOT STANDARD INDEX 515, AND CURB TERMINAL TRANSITIONS PER STANDARD INDEX 300, AND BE IN COMPLIANCE WITH CURRENT A.D.A. REQUIREMENTS.
27. DRIVEWAYS OR CITY APPROVED ALTERNATIVE ONSITE ACCESS SHALL BE MAINTAINED DURING CONSTRUCTION.
28. MAINTENANCE OF TRAFFIC WILL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAY CONSTRUCTION, MAINTENANCE AND UTILITY OPERATIONS" AND "THE FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS" LATEST EDITIONS.
29. NONE OF THE EXISTING LIMEROCK BASE THAT IS REMOVED IS TO BE USED IN THE CONSTRUCTION OF THE NEW LIMEROCK BASE UNLESS OTHERWISE NOTED ON PLANS.
30. FOR STABILIZING AT INTERSECTIONS, TURNOUTS, AND GRADED CONNECTIONS SEE FDOT STANDARD INDEX NO. 515. SEE TYPICAL SECTION FOR DEPTH AND LBR 40 TESTING REQUIREMENTS.
31. FOR THE PAVEMENT CONNECTION AT THE BEGINNING AND THE END OF CONSTRUCTION, THE EXISTING PAVEMENT SHALL BE SAW CUT TO AN APPROXIMATE 1" DEPTH BUTT JOINT IN ORDER TO MAKE A CLEAN CONNECTION JOINT.
32. ACCESS TO SIDE ROADS MUST BE PROVIDED AT ALL TIMES. TEMPORARY CONNECTIONS SHALL BE PROVIDED AT INTERSECTIONS AS DIRECTED BY THE CITY'S REPRESENTATIVE. EXISTING SIDE ROAD SIGNING IS TO REMAIN OR BE ADJUSTED AS REQUIRED DURING EACH CONSTRUCTION PHASE TO MAINTAIN CONTROL OF SIDE ROAD TRAFFIC. LOCAL RESIDENTS AND BUSINESSES WITHIN THE AREA OF CONSTRUCTION SHALL BE GIVEN REASONABLE ACCESS TO THEIR PROPERTY DURING ALL PHASES OF CONSTRUCTION.
33. SPECIAL ATTENTION IS DIRECTED TO THE FACT THAT PORTIONS OF SOME DRAINAGE STRUCTURES EXTEND INTO THE STABILIZED PORTION OF THE ROADBED. EXTREME CAUTION WILL BE NECESSARY DURING COMPACTION AND STABILIZATION OPERATIONS AT THESE LOCATIONS TO AVOID DAMAGE AND ACHIEVE THE REQUIRED COMPACTION.
34. EXISTING DRIVEWAYS WITHIN THE LIMITS OF THIS PROJECT ARE TO BE REPLACED AT THE SAME LOCATION AND WIDTH WITH THE SAME TYPE OF MATERIAL, UNLESS OTHERWISE SHOWN IN THE PLANS. CONTRACTOR SHALL MAINTAIN ACCESS TO PROPERTY.
35. MAINTENANCE OF TRAFFIC: THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING VEHICULAR AND PEDESTRIAN TRAFFIC SAFELY THROUGH THE WORK ZONE AT ALL TIMES. FDOT STANDARD INDEX 600 SERIES SHALL BE APPLIED AS A MINIMUM STANDARD. ANY SIDEWALK, LANE OR ROAD CLOSURE REQUIRES REVIEW AND APPROVAL IN ADVANCE AND A SEVEN (7) DAY MINIMUM NOTICE TO CITY OF DAYTONA BEACH TRAFFIC OPERATIONS (386-671-8650) AND CITY OF DAYTONA BEACH'S INFORMATION OFFICER (386-671-8014). THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REQUIRED COORDINATION.

SYMBOL LEGEND

EXISTING	PROPOSED
CURB INLET	TEMPORARY EASEMENT LINE
CONCRETE MONUMENT	PROPOSED UTILITY
GUY ANCHOR	REUSE WATER MAIN
IRON PIPE	WATER MAIN
IRON ROD	SANITARY SEWER
CABINET METAL ACCESS CABINET	IT CONDUIT
MONITORING WELL	SANITARY MANHOLE
SIGN	GATE/PLUG VALVE
SANITARY MANHOLE	REUSE WATER METER (RWM)
TELEPHONE JUNCTION BOX (TE)	REUSE WATER LINE
TELEPHONE MANHOLE (T)	FIRE HYDRANT AND VALVE
POWER POLE	PULL BOX
LIGHT POLE	VALVE IN PROFILE
UTILITY MARKER	
WATER VALVE	
#2 SOIL BORING LOCATION	
O/E OVERHEAD ELECTRIC	
CABLE TV LINE	
G GAS MAIN	
OVERHEAD TELEPHONE	
UT UNDERGROUND TELEPHONE	
FM SANITARY SEWER FORCE MAIN	
W WATER MAIN	
S SANITARY SEWER MAIN	
STORM WATER MAIN	
FO FIBER OPTIC CABLE	
WM WATER METER	
STORM WATER MANHOLE	
RIGHT OF WAY	
DITCH	
FENCE	
FIRE HYDRANT	
RWM REUSE WATER MAIN	
SOIL BORING LOCATIONS	

Name	Revision:	Date:
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Contract No.: NA	Project No.: 6787
Survey Date: NA	Plot Date: 08/2018
Drawn By: KLH	Scale:(HOR.) NA
Checked By: JMP	(Vert.) NA
File Name: manhole repair Clyde morris & dunn.dwg	Design Date: 08/2018
Rotation X: 0d	Drawn By: KLH
Xref Name: NA	Checked By: JMP

SHANNON T. PONITZ, PE
LIC. NO. 52067

THE CITY OF DAYTONA BEACH
UTILITIES DEPARTMENT
UTILITIES DIRECTOR • SHANNON T. PONITZ
125 BASIN ST., STE. 130 • DAYTONA BEACH • FLORIDA 32114
PHONE: (386) 671-8800 FAX: (386) 671-8805

CONSTRUCTION NOTES
CLYDE MORRIS BLVD & DUNN AVE.
MANOHOLE REPLACEMENT L10-34
PROJECT No. 6787

SANITARY SEWER
CONSTRUCTION & DESIGN STANDARDS

1. THE CITY'S UTILITIES DEPARTMENT SHALL BE GIVEN A MINIMUM OF 2 BUSINESS DAYS ADVANCE NOTICE (NOT INCLUDING HOLIDAYS) PRIOR TO BEGINNING ANY SANITARY SEWER CONSTRUCTION.
2. ALL DEWATERING ACTIVITIES EITHER DIRECTLY DISCHARGED OR THAT SUBSEQUENTLY USE THE CITY'S STORMWATER SYSTEM TO CONVEY GROUND OR SURFACE WATER FROM A SITE SHALL REQUIRE A STANDARD OR GENERAL USE PERMIT AS PER ARTICLE 7 SECTION 7 OF THE LAND DEVELOPMENT CODE. A PERMIT SHALL BE REQUIRED PRIOR TO ENGAGING IN ANY DEWATERING ACTIVITIES, OR IN ANY CONSTRUCTION ACTIVITIES. DEWATERING ACTIVITIES INCLUDE THE REMOVAL OF GROUND WATER FROM A CONSTRUCTION SITE, ENCLOSED VAULT, COFFERDAM, OR TRENCHES ALLOWING CONSTRUCTION OR MAINTENANCE TO BE DONE IN THE DRY, OR ANY ACTIVITY WHICH CHANGES THE IMPERVIOUS AREA OF LAND. SITE SPECIFIC PERMITS SHALL REQUIRE THE PAYMENT OF A PER ACRE FEE BASED ON THE SIZE OF THE DEVELOPMENT. GENERAL PURPOSE PERMITS SHALL REQUIRE THE PAYMENT OF AN ANNUAL FEE BASED ON ROUTINE SCHEDULE OF MAINTENANCE ACTIVITIES DISCHARGING DIRECTLY OR SUBSEQUENTLY INTO THE CITY'S MS4. DEWATERING PERMIT APPLICATIONS MAY BE FOUND AT http://www.codb.us/index.aspx?NID=262. FEES ARE SUBJECT TO ARTICLE 20 SECTION 3.1 OF THE LAND DEVELOPMENT CODE AND MUST BE SUBMITTED TO THE CITY OF DAYTONA BEACH UTILITY DEPARTMENT AT 125 BASIN STREET SUITE 100, DAYTONA BEACH FL 32114 BEFORE ANY USE OF THE MS4 WILL BE ALLOWED. FAILURE TO COMPLY WILL RESULT IN THE TERMINATION OF ACCESS TO THE CITY'S MS4 SYSTEM.
3. UPON COMPLETION, THE CONTRACTOR SHALL PROVIDE THE CITY UTILITIES DEPARTMENT WITH A CCTV INSPECTION LOG ON DVD AND A PRINTED REPORT FOR ALL GRAVITY MAINS AND LATERALS CONSTRUCTED. ALL WORK, WITH THE EXCEPTION OF FINAL GRADE ADJUSTMENT TO THE MANHOLES, SHALL BE COMPLETED PRIOR TO COMMENCING THE CCTV INSPECTION. THE CONTRACTOR SHALL COORDINATE THE CCTV INSPECTION TIME WITH THE CITY UTILITY INSPECTOR PRIOR TO INITIATING THE WORK. FINAL PAVING SHALL NOT COMMENCE UNTIL APPROVAL HAS BEEN RECEIVED FROM THE CITY UTILITY INSPECTOR.
4. SEWER LATERALS LOCATIONS SHALL BE MARKED ALONG THE OUTSIDE OF THE CURB WITH A SAW CUT "V", OR BY A METAL TAB SET INTO THE PAVEMENT.
5. THE CONTRACTOR SHALL BE REQUIRED TO PIG ALL FORCE MAINS EQUAL TO OR GREATER THAN 6" IN DIAMETER AND PRIMARY TRANSMISSION MAINS LOCATED ON COLLECTOR AND ARTERIAL ROADWAYS. LAUNCHING AND EXTRACTION POINTS SHALL BE DETERMINED BY THE CITY.
6. WITH RESPECT TO TIE-IN CONNECTIONS AND CORING OPERATIONS, THE CITY RESERVES THE RIGHT TO REQUIRE CONNECTIONS TO BE PERFORMED DURING PERIODS OF LOW FLOW (MIDNIGHT TO 6:00 A.M.) IN ORDER TO MINIMIZE SERVICE DISRUPTION TO EXISTING CUSTOMERS.
7. ALL WORK PERFORMED UPON SANITARY SEWER FACILITIES OWNED OR PROPOSED TO BE OWNED BY THE CITY SHALL BE CONSTRUCTED BY A LICENSED UNDERGROUND UTILITY CONTRACTOR OR LICENSED GENERAL CONTRACTOR, WHO IS LICENSED IN THE STATE OF FLORIDA AND REGISTERED WITH THE CITY.
8. UPON CONSTRUCTION COMPLETION AND ACCEPTANCE OF THE SYSTEM, IT SHALL BE THE DESIGN ENGINEER'S RESPONSIBILITY TO ENSURE THAT THE SYSTEM IS PROPERLY CERTIFIED AND ACCEPTED BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND AS-BUILTS ARE PROVIDED TO THE CITY'S UTILITIES DEPARTMENT PRIOR TO ANY USE OF THE SYSTEM.
9. FOR CONSTRUCTION PURPOSES, THE PLANS SHALL DIMENSION THE LOCATION OF ALL FORCE MAINS, VALVES, MANHOLES & LATERALS FROM THE BASELINE CONSTRUCTION AND FROM RIGHT-OF-WAY LINE.
10. LANDSCAPE PLANS SHALL CLEARLY DEPICT THE DESIGN LOCATION OF PLANTINGS RELATIVE TO THE LOCATION OF PUBLIC UTILITIES AND STORM WATER INFRASTRUCTURE IN ORDER TO EVALUATE POTENTIAL CONFLICTS.
11. ALL SANITARY STANDARD DETAILS SHALL APPLY TO ALL CONSTRUCTION WORK PERFORMED IN THE CITY OF DAYTONA BEACH BY REFERENCE IN THESE NOTES (S-1 TO S-16).
12. ALL VALVES SHALL BE IDENTIFIED AS SUCH WITH AN ENGRAVED BRASS 2" x 6" NAME PLATE EMBEDDED IN SURFACE OF CONCRETE COLLAR WITH SIZE, TYPE AND NUMBER OF TURNS.
13. FOR AS-BUILTS INFORMATION SEE THE CITY'S AS-BUILT DRAWING REQUIREMENTS ATTACHED TO THE BACK OF THE UTILITIES DEPARTMENT'S STANDARD DETAILS.
14. ALL LIFT STATION WETWELL FASTENERS AND THROUGH-TOP CONNECTORS THAT CONTACT THE WETWELL (SUCH AS NIPPLES) SHALL BE 316 SS FASTENERS.
15. ALL GRAVITY SANITARY SEWER MAIN LINES SHALL BE 8" DIAMETER MINIMUM. COMMERCIAL SERVICE LATERALS ALL SHALL BE GREEN 6" DIA. OR LARGER. ALL SINGLE FAMILY RESIDENTIAL SERVICE LATERALS SHALL BE 6" – SINGLE SERVICES WITH CLEAN OUTS INSTALLED AT PROPERTY LINE.
16. ALL GRAVITY SANITARY SEWER MAIN LINES SHALL BE GREEN PVC SDR-26, ASTM D-3034, OR C-900 DR-25 MINIMUM PRESSURE CLASS 100. IN PLACES WHERE A MINIMUM COVER OF 4.0' CANNOT BE MAINTAINED OR IN DEPTHS OF TEN (10) FEET OR GREATER C-900 OR C-905 GREEN PVC DR-25, MINIMUM PRESSURE CLASS 100 SHALL BE USED.
17. FOR SINGLE FAMILY HOMES, SINGLE SIX INCH SEWER SERVICES LATERALS SHALL BE CONSTRUCTED AT EACH LOT OR UNIT AND LOCATED ON THE DOWNSTREAM SIDE OF THE LOT CENTER LINE. THESE SERVICES SHALL BE EXTENDED 4 FEET ABOVE GROUND AT THE PROPERTY LINE WITH A PVC RISER AND PLUG BEING EASILY VISIBLE FROM THE ROAD. RUBBER SEAL FITTINGS SHALL BE USED ON ALL LINES. NO GLUED JOINTS ARE PERMITTED ON LATERALS.
18. FOR MULTI-FAMILY AND COMMERCIAL SITES, SIX INCH MINIMUM SEWER SERVICES AND CLEANOUTS SHALL BE PROVIDED AS APPROVED BY THE CITY.
19. ALL SANITARY SEWER FORCE MAINS, INCLUDING FITTINGS, SHALL BE DUCTILE IRON PIPE (D.I.P.), EPOXY LINED, CLASS 350. FORCE MAIN MINIMUM DEPTH OF COVER SHALL BE 36". ALL FORCE MAINS SHALL BE DISTINCTLY MARKED BY A GREEN STRIPE OR COLORED GREEN. ALL NON DIP HORIZONTAL DIRECTIONAL DRILL FORCE MAINS SHALL HAVE A MINIMUM WORKING PRESSURE RATING OF 160 PSI. THE CITY MAY REQUIRE A HIGHER PRESSURE RATING DEPENDENT ON SITE CONDITIONS.
20. ALL SANITARY SEWER FORCE MAINS SHALL USE A THRUST RESTRAINT JOINT METHOD IN COMPLIANCE WITH THE DUCTILE IRON PIPE RESEARCH ASSOCIATION GUIDELINES. IN NO INSTANCE SHALL THRUST BLOCKS BE PERMITTED.
21. AS A GENERAL RULE, THE NUMBER OF JOINTS SHALL BE LIMITED WHENEVER POSSIBLE. IN SPECIAL CASES WHERE A POINT REPAIR TO AN 8" TO 12" PVC SEWER MAIN IS REQUIRED, THE PROPER RIGID WRAP AROUND SLEEVE MAY BE ALLOWED BY SPECIAL APPROVAL BY THE CITY.
22. ALL IN-LINE SANITARY SEWER FORCE MAIN VALVES SHALL BE PLUG VALVES UNLESS OTHERWISE NOTED. VALVES SHALL BE SPACED A MAXIMUM OF 1000 FEET APART
23. ALL C-900 PVC PIPE REQUIREMENTS ARE REFERENCED TO THE C-900-97 STANDARDS. DR UPGRADES FOR BURST PROTECTION MAY BE REQUESTED WHEN USING THE C-900-07 STANDARDS.
24. MINIMUM GRAVITY SANITARY SEWER SLOPES ARE AS FOLLOWS:

    8" PIPE 0.40%
    10" PIPE 0.28%
    12" PIPE 0.22%
    15" PIPE 0.15%

    OR OTHERWISE NOTED BY THE UTILITIES DEPARTMENT.
25. GRAVITY SANITARY SEWER LINES SHALL BE INSTALLED WHENEVER POSSIBLE UNDER PAVED AREAS WITHIN PUBLIC RIGHT-OF-WAYS. UTILITY EASEMENTS SHALL BE PROVIDED WHENEVER PUBLICLY-OWNED SEWER LINES ARE CONSTRUCTED OUTSIDE OF A PUBLIC RIGHT-OF-WAY.
26. GRAVITY SANITARY SEWER LINE CONSTRUCTION SHALL BE ACCOMPLISHED BY THE USE OF A LASER INSTRUMENT UNLESS ANOTHER METHOD IS PREVIOUSLY APPROVED BY THE CITY.
27. THE CONTRACTOR SHALL AT ALL TIMES, DURING PIPE LAYING OPERATIONS, DEWATER THE GROUND SUFFICIENTLY TO KEEP THE GROUNDWATER ELEVATION A MINIMUM OF 6" BELOW THE PIPE BEING LAID WITHIN THE AREA OF THE TRENCH.
28. ALL PIPES SHALL BE LAID ON A FIRM FOUNDATION. SOFT OR SPONGY BEDDING FOR PIPES IS NOT ACCEPTABLE. ANY UNSUITABLE MATERIAL SHALL BE REMOVED AND REPLACED WITH A DRY, COMPACTED, GRANULAR MATERIAL SATISFACTORY TO THE CITY.
29. ON ALL EXCAVATION AND BACKFILLING THE CONTRACTOR SHALL PROVIDE ADEQUATE SHEETING AND BRACING IN ORDER TO PROVIDE FOR THE SAFETY OF WORKERS, AS WELL AS REPRESENTATIVES OF THE CITY, THE DESIGN ENGINEER, AND THE DEVELOPER.
30. ALL TRENCHES SHALL BE BACKFILLED WITH ACCEPTABLE MATERIAL AND COMPACTED TO THE SPECIFIED MINIMUM COMPACTION (95% IN UNPAVED AREAS AND 98% IN PAVED AREAS) OF THE OPTIMUM DENSITY OF THAT MATERIAL BASED ON THE AASHTO T-180 MODIFIED PROCTOR TEST.
31. ALL GASKETS SHALL BE LUBRICATED BEFORE BEING INSTALLED.
32. THE CONTRACTOR SHALL INSTALL A #12-GAUGE MINIMUM COPPER TRACER WIRE TAPED TO THE TOP OF THE PIPE AT INTERVALS NO GREATER THEN 4-FEET. COPPER WIRE SHALL HAVE A MIN. TENSILE STRENGH/BREAK LOAD OF 452 LBS. AND APPROVED BY THE CITY FOR THE FULL LENGTH OF ALL SEWER FORCE MAINS. THIS PIPE LOCATOR ALARM TAPE SHALL BE INSTALLED BETWEEN 15" AND 24" BELOW FINISHED GRADE OR AS DIRECTED BY THE MANUFACTURER. TAPE SHALL BE BE COLOR CODED GREEN FOR SANITARY SEWER AND FORCE MAIN. LOCATER WIRE/DEVICE SHALL TERMINATE AT A LOCATION AND IN A MANNER CONVENIENT FOR CITY LOCATER STAFF.
33. ALL SEWER LINES WHICH ARE CONSTRUCTED OUTSIDE OF PUBLIC RIGHT-OF-WAYS WITHIN SIDE YARDS, BACKYARDS, AND OTHER POORLY ACCESSIBLE AREAS SHALL BE CONSTRUCTED OF GREEN C-900 PVC. ABSOLUTELY NO USE OF PLASTIC STYRENE FITTINGS SHALL BE ALLOWED.
34. ALL LOCAL COLLECTION SANITARY SEWER MANHOLES SHALL BE PRECAST WITH A MINIMUM INSIDE DIAMETER OF 4 FEET. MANHOLES OVER 6 FEET IN DEPTH SHALL HAVE THE BOTTOM PRE-CAST SECTION AT A MINIMUM OF FOUR FEET TALL.
35. STANDARD MANHOLES SHALL BE LOCATED AT INTERVALS NOT EXCEEDING 400 FEET.
36. ALL SEWER FITTINGS TO BE "HARCO" OR APPROVED EQUAL.
37. MANHOLE RIMS SHALL MATCH FLUSH WITH THE FINISH GRADE ELEVATION IN PAVED AREAS AND A MINIMUM OF 0.5 FEET AND MAXIMUM OF 1.0 FEET ABOVE GRADE GENERALLY IN UNPAVED AREAS.
38. THE CONTRACTOR SHALL CONSTRUCT SANITARY SEWER MANHOLES IN SUCH A WAY THAT SEWER LINES DO NOT INTERSECT SEALED JOINTS BETWEEN SECTIONS OF THE MANHOLE.
39. RUBBER BOOTS AND STAINLESS STEEL BANDS SHALL BE UTILIZED IN THE CONNECTION OF THE SEWER MAIN TO THE MANHOLES (SEE STANDARD MANHOLE AND BOOT DETAIL).
40. INDIVIDUAL SANITARY SERVICE CONNECTORS ON NEW CONSTRUCTION SHALL NOT BE CONNECTED DIRECTLY INTO MANHOLES, AND MUST BE CONNECTED TO SEWER MAIN LINES BY USE OF WYE CONNECTIONS, UNLESS OTHERWISE APPROVED BY THE CITY.
41. SANITARY SEWER DROP MANHOLES SHALL ONLY BE USED UNDER SPECIAL CONDITIONS AS APPROVED BY THE CITY. DROPS LESS THAN 3.0' SHALL NOT BE ALLOWED.
42. ALL SANITARY SEWER MANHOLE COVERS SHALL HAVE THE WORD "SANITARY" CAST INTO THEM AS SHOWN ON 'SANITARY SEWER COVER DETAIL'.
43. SANITARY SEWER MANHOLES WHICH HAVE SEWER FORCE MAINS DISCHARGING DIRECTLY INTO THEM SHALL BE FIBERGLASS OR POLY-ETHYLENE LINED. RETRO-FITTING OF MANHOLES WITH LINERS SHALL BE REQUIRED WHEN NEW CONNECTIONS SUCH AS THIS ARE MADE. FIBERGLASS SHALL BE A MINIMUM 1/2" THICKNESS UNLESS APPROVED OTHERWISE BY THE CITY. OTHER TYPES OF LINING METHODS AND MATERIALS MAY BE CONSIDERED ON A CASE BY CASE BASIS. UNDER SPECIAL CIRCUMSTANCES WHERE HYDROGEN SULFIDE IS A MAJOR CONCERN MANHOLES UPSTREAM AND/OR DOWNSTREAM OF THE FORCE MAIN TIE-IN OR WET WELL MAY ALSO BE REQUIRED TO HAVE LININGS INSTALLED.
44. EZ-WRAP PLASTIC, AS MANUFACTURED BY PRESS SEAL GASKET CORPORATION, SHALL BE USED ON THE OUTSIDE OF ALL MANHOLE AND WETWELL JOINTS. APPLY ONE LAYER OF 9" WRAP CENTERED ON EACH JOINT. A CITY INSPECTOR SHALL PERSONALLY INSPECT ALL JOINT SEALS PRIOR TO BACKFILLING OPERATIONS.
45. ANY NEW OR EXISTING ESTABLISHMENT WITH THE POTENTIAL TO DISCHARGE INDUSTRIAL OR COMMERCIAL WASTES INTO THE SEWER SYSTEM SHALL CONSTRUCT AND MAINTAIN AT HIS EXPENSE A SUITABLE CONTROL MANHOLE, OR MANHOLES, DOWNSTREAM FROM ANY TREATMENT, STORAGE, OR OTHER APPROVED WORKS, PRIOR TO THE CITY'S COLLECTION SYSTEM TO FACILITATE OBSERVATION, MEASUREMENT, AND SAMPLING OF ALL WASTES, INCLUDING ALL DOMESTIC SEWAGE FROM THE ESTABLISHMENT.
46. THE CONTROL MANHOLE OR MANHOLES SHALL BE CONSTRUCTED AT SUITABLE AND SATISFACTORY LOCATIONS MAKING THE MANHOLE ACCESSIBLE TO CITY PERSONNEL AT ALL TIMES FOR SAMPLING.
47. SANITARY SEWER LIFT STATIONS AND FORCE MAINS SIZE, MATERIAL, AND DESIGNS SHALL BE APPROVED BY THE CITY. LIFT STATIONS SHALL BE CONSTRUCTED WITH A MINIMUM WET WELL AS PER THE LIFT STATION DETAIL. A MINIMUM OF 6 FEET SHALL BE MAINTAINED BETWEEN LOWEST INFLUENT INVERT AND WETWELL FLOOR.
48. IT SHALL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO PREPARE AND SUBMIT FLOTATION CALCULATIONS TO SIZE THE BASE OF THE WET WELL, AND ANY MANHOLES AS DEEMED NECESSARY BY THE CITY.
49. TRACER WIRE SHALL BE TESTED FOR CONTINUITY UNDER SUPERVISION BY CITY REPRESENTATIVE AFTER INSTALLATION.
50. ALL FITTINGS SHALL MEET THE MINIMUM RESTRAINED REQUIREMENTS PER ANSI/AWWA/DIPRA, AND ALL PRESSURE PIPES UNDER THE ROADWAY SHALL BE RESTRAINED.

SANITARY SEWER
CONSTRUCTION & DESIGN STANDARDS

TESTING REQUIREMENTS:

1. THE CONTRACTOR SHALL EMPLOY AN INDEPENDENT TESTING LABORATORY AT HIS OWN EXPENSE TO INSURE THAT COMPACTION OF ALL FILL MATERIAL IS COMPLETED PROPERLY. TESTS SHALL BE DONE ONE FOOT ABOVE THE PIPE AND THEN AT ONE FOOT VERTICAL INTERVALS UNTIL FINAL GRADE IS REACHED. TESTING SHALL BE COMPLETED AND TEST DOCUMENTS SUBMITTED TO THE CITY AT A MINIMUM FREQUENCY OF ONE SET OF TESTS PER EACH 300 FOOT OF PIPING AND ONE ADDITIONAL SET OF TESTS AT EVERY MANHOLE. IDENTIFICATION OF TEST LOCATIONS SHALL BE CLEARLY INDICATED ON TEST REPORTS. TEST RESULTS SHALL BE FORWARDED PROMPTLY TO THE CITY'S DESIGNATED SITE INSPECTOR.
2. ALL TESTING REQUIRED BY THE CITY SHALL BE PAID FOR BY THE CONTRACTOR / DEVELOPER.
3. THE CITY OF DAYTONA BEACH RESERVES THE RIGHT TO REQUIRE THE DEVELOPER TO PERFORM VACUUM TESTING OF ALL SANITARY MANHOLES AND TO AIR TEST SEWER MAINS.
4. ALL PROPOSED SEWER FORCE MAINS SHALL BE FLUSHED, PRESSURE TESTED AND CLEARED FOR SERVICE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF ENVIROMENTAL PROTECTION REQUIREMENTS. THE CONTRACTOR SHALL NOTIFY THE CITY'S DESIGNATED SITE INSPECTOR WHO SHALL COORDINATE WITH CITY PERSONNEL AT THE WASTEWATER TREATMENT PLANT AT LEAST (3) THREE BUSINESS DAYS PRIOR TO BEGINNING A FULL-DIAMETER FLUSH OF THE MAINS PRIOR TO THE COMMENCEMENT OF PRESSURE TESTING. (SUBJECT TO AVAILABILITY).
5. SANITARY SEWER FORCE MAINS SHALL BE PRESSURE TESTED TO 100 PSI FOR 2 HOURS. WITH ALLOWABLE LEAKAGE TO BE X GAL/HR PER X" DIA. OF PIPE, PER X' OF MAIN TO BE TESTED.

ALLOWABLE LEAKAGE PER 1000 FT. OF PIPELINE * -GPH

AVERAGE TEST PRESSURE (PSI)	NOMINAL PIPE DIAMETER – INCHES																	AVERAGE TEST PRESSURE (PSI)
	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	54	60	64	
450	0.48	0.64	0.95	1.27	1.59	1.91	2.23	2.55	2.87	3.18	3.82	4.78	5.73	6.69	7.64	8.60	9.56	10.19	450
400	0.45	0.60	0.90	1.20	1.50	1.80	2.10	2.40	2.70	3.00	3.60	4.50	5.41	6.31	7.21	8.11	9.01	9.61	400
350	0.42	0.56	0.84	1.12	1.40	1.69	1.97	2.25	2.53	2.81	3.37	4.21	5.06	5.90	6.74	7.58	8.43	8.99	350
300	0.39	0.52	0.78	1.04	1.30	1.56	1.82	2.08	2.34	2.60	3.12	3.90	4.68	5.46	6.24	7.02	7.80	8.32	300
275	0.37	0.50	0.75	1.00	1.24	1.49	1.74	1.99	2.24	2.49	2.99	3.73	4.48	5.23	5.98	6.72	7.47	7.97	275
250	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90	2.14	2.37	2.85	3.56	4.27	4.99	5.70	6.41	7.12	7.60	250
225	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.25	2.70	3.38	4.05	4.73	5.41	6.03	6.76	7.21	225
200	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70	1.91	2.12	2.55	3.19	3.82	4.46	5.09	5.73	6.37	6.80	200
175	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59	1.79	1.98	2.38	2.98	3.58	4.17	4.77	5.36	5.96	6.36	175
150	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.66	1.84	2.21	2.76	3.31	3.86	4.41	4.97	5.52	5.88	150
125	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34	1.51	1.68	2.01	2.52	3.02	3.53	4.03	4.53	5.04	5.37	125
100	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	1.50	1.80	2.25	2.70	3.15	3.60	4.05	4.50	4.80	100

** IF THE PIPELINE UNDER TEST CONTAINS SECTIONS OF VARIOUS DIAMETERS, THE ALLOWABLE LEAKAGE WILL BE THE SUM OF THE COMPUTED LEAKAGE FOR EACH SIZE.*

$$L = \frac{SD\sqrt{P}}{133{,}200}$$

WHERE:

L = ALLOWABLE LEAKAGE, IN GALLONS PER HOUR
S = LENGTH OF PIPE TESTED, IN FEET
D = NOMINAL DIAMETER OF PIPE, IN INCHES
P = AVERAGE TEST PRESSURE DURING THE LEAKAGE TEST, IN POUNDS PER SQUARE INCH (GAUGE)

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Contract No.: NA | Project No.: 6787
Survey Date: NA | Plot Date: 08/2018
Drawn By: KLH | Scale:(HOR.) NA
Checked By: JMP | (Vert.) NA
File Name: manhole repair Clyde morris & dunn.dwg | Design Date: 08/2018
Rotation ⅄: 0d | Drawn By: KLH
Xref Name: NA | Checked By: JMP

SHANNON T. PONITZ, PE
LIC. NO. 52067

THE CITY OF DAYTONA BEACH
UTILITIES DEPARTMENT
UTILITIES DIRECTOR • SHANNON T. PONITZ
125 BASIN ST., STE. 130 • DAYTONA BEACH • FLORIDA 32114
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SANITARY SEWER NOTES
CLYDE MORRIS BLVD & DUNN AVE.
MANOHOLE REPLACEMENT L10-34
PROJECT No. 6787

ITEM NO.	(F&I) FURNISH & INSTALL, (IO) INSTALL ONLY – DESCRIPTION		QUANTITY
1	MOBILIZATION (FDOT ITEM #101–1)	LS	1
2	MAINTENANCE OF TRAFFIC (FDOT ITEM #102–1)	LS	1
3	EROSION & SEDIMENT CONTROL	LS	1
4	CLEARING AND GRUBBING (FDOT ITEM# 110–1–1)	LS	1
5	BY PASS PUMPING GRAVITY SEWER (F&I)	LS	1
6	BY PASS 16" FORCE MAIN (F&I)	LS	1
7	BY PASS 10" FORCE MAIN (F&I)	LS	1
8	REMOVE AND REPLACE MANHOLE CONES, RING & COVER	EA	2
9	SHEETING / SHORING (F&I)	LS	1
10	DEWATERING (F&I)	LS	1
11	FIBER GLASS MANHOLE (IO)	LS	1
12	RECONNECTION OF GRAVITY AND FORCEMAINS TO THE NEW MAN HOLE (F&I)	LS	1
13	18" PVC (C–900) PIPE (F&I)	LF	40
14	18" FERNCO FITTINGS (F&I)	EA	2
15	16" DIP (PIPE)(CLASS 350)(WITH P–401 LINING) (F&I)	LF	20
16	16" DIP (SLEEVE)(CLASS 350)(WITH P–401 LINING) (F&I)	EA	1
17	16" DIP (45 BEND)(CLASS 350)(WITH P–401 LINING)(F&I)	EA	4
18	10" DIP (PIPE)(CLASS 350)(WITH P–401 LINING)(F&I)	LF	20
19	10" DIP (SLEEVE)(CLASS 350)(WITH P–401 LINING)(F&I)	EA	1
20	10" DIP (45 BEND)(CLASS 350)(WITH P–401 LINING)(F&I)	EA	4
21	8" PVC (C–900) PIPE (F&I)	LF	20
22	8" FERNCO FITTINGS (F&I)	EA	2
23	RESTORATION SIDEWALK, DRIVEWAYS, CURB GUTTER, MISC. (F&I)	SY	35
24	FABRICATE A SIDEWALK RAMP OVER BYPASS PIPES (F&I)	LS	1
25	SODDING (F&I)	SY	300
26	AS–BUILTS	LS	1

PAY ITEM FOOTNOTES

GENERAL:

THE UNIT COST FOR EACH UTILITY PAY ITEM SHALL INCLUDE ALL COORDINATION, MATERIAL, INCIDENTAL ITEMS AND WORK NECESSARY FOR CONSTRUCTION COMPLETION IN COMPLIANCE WITH THE "CITY OF DAYTONA BEACH UTILITIES DEPARTMENT STANDARD DETAILS" (LATEST EDITION) UNLESS OTHERWISE NOTED IN THE PLANS.

PAY ITEMS WITH FDOT ITEM NUMBERS NOTED IN THEIR DESCRIPTION ARE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) COMPLIANT PAY ITEMS. PAY ITEMS THAT ARE NOT OTHERWISE NOTED ARE CITY COMPLIANT PAY ITEMS.

ALL FDOT PAY ITEMS SHALL BE COSTRUCTED, MEASURED AND PAID FOR IN ACCORDANCE WITH THEIR GOVERNING SECTION REQUIREMENTS IN THE "FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", YEAR 2000 EDITION UNLESS OTHERWISE NOTED.

SPECIFIC:

~~NOTE: BE SURE TO REVIEW MEASUREMENT AND PAYMENT SECTION OF THE CONTRACT.~~

ITEM #2 MAINTENANCE OF TRAFFIC SEE MEASUREMENT AND PAYMENT SECTION FOR DETAILS.

ITEM #3 EROSION & SEDIMENT CONTROL UNIT PRICE INCLUDES ALL WORK AND ITEMS NECESSARY FOR THE EFFECTIVE CONTROL REQUIRED BY THE CITY AND STATE TO PREVENT THE MIGRATION OF POLLUTANTS INTO THE WATER BODIES, STORM WATER SYSTEM AND ONTO ADJACENT PROPERTY. CONTRACTOR TO OBTAIN COVERAGE UNDER NPDES STORMWATER PERMIT AND SHALL SUBMIT NOI W/SWPPP @ PRECON SEE MEASUREMENT AND PAYMENT SECTION FOR DETAILS.

ITEM #4 CLEARING & GRUBBING SHALL INCLUDE THE EXCAVATION AND DISPOSAL OF ALL ASPHALT, CONCRETE MATERIALS AND UNWANTED ITEMS.

ITEM #5, 6, 7 THE BYPASS PUMPING GRAVITY SEWER & 16" & 10" FORCE MAINS WILL BE LUMP SUM UNIT PRICE FOR THE COMPLETE INSTALLATION. THE UNIT PRICE INCLUDES ALL WORK AND ITEMS NECESSARY TO CONNECT AND MATERIALS (PUMPS, PIPE, FITTINGS, FUEL) NECESSARY RESTRAINTS, EQUIPMENT, AND LABOR TO BY PASS THE SEWER.

ITEM #11 THE FIBER GLASS MANHOLE SHALL BE A LUMP SUM PRICE THAT INCLUDES ALL WORK AND MATERIALS NECESSARY TO CONNECT TO THE EXISTING PIPE INFRASTRUCTURES AND DISPOSE OF THE EXISTING PIPES AND FITTINGS THAT NEED TO BE REMOVED FOR THE CONNECTION PROCESS, UNLESS OTHERWISE SPECIFIED OR REQUIRED. FILL MATERIAL, ROCK, CONCRETE, RING & COVER IS TO BE INCLUDED IN THE LIMP SUM PRICE. ALSO AS NOTED ABOVE, NO SEPARATE PAYMENT WILL BE MADE FOR THE TRENCH AND ROADWAY EXCAVATION, INCLUDING ROCK AND CEMENTED COQUINA EXCAVATION AND DISPOSAL, EXCAVATION AND REMOVAL OF UNSUITABLE SOILS AND UNSUITABLE MATERIALS OF ANY NATURE UNLESS OTHER–WISE SPECIFIED. DENSITY TESTING WILL BE FURNISHED BY THE CITY AT THE DIRECTION OF THE CITY'S PROJECT REPRESENTATIVE.

ITEM #12 RECONNECTION OF GRAVITY AND FORCEMAINS SHALL BE A LUMP SUM PRICES INCLUDES ALL WORK AND MATERIALS NECESSARY TO REMOVE CONNECTS FROM THE BY PASS PUMPING, AND FORCE MAINS TO THE NEW MANHOLE. PIPES AND FITTINGS THAT ARE NEEDED TO BE CLEANED AND REMOVED.

ITEM #15, 18 10", 16" DIP (CLASS 350)(EXPOXY LINING P–401) UNIT PRICES INCLUDES ALL WORK AND MATERIALS NECESSARY TO CONNECT TO THE EXISTING PIPE INFRASTRUCTURES AND DISPOSE OF THE EXISTING PIPES AND FITTING THAT ARE NEEDED TO BE REMOVED FOR THE CONNECTION PROCESS, UNLESS OTHERWISE SPECIFIED OR REQUIRED. ALL FITTING SHALL MEET THE MINIMUM RESTRAINED REQUIREMENTS PER ANSI/AWWA. ALSO AS NOTED ABOVE, NO SEPARATE PAYMENT WILL BE MADE FOR THE REQUIRED RESTRAINS. TRENCH AND ROADWAY EXCAVATION, INCLUING ROCK AND CEMENTED COQUINA EXCAVATIONAND DIEPOSAL, EXCAVATION AND REMOVAL OF UNSUITABLE SOILS AND UNSUITABLE MATERIALS OF ANY NATURE UNLESS OTHER–WISE SPECIFIED, INCLUDING NECESSARY PAVEMENT BASE REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE.

ITEM #15–#20 PAYMENT SHALL BE MADE AT THE PER EACH UNIT PRICE PER APPLICABLE DIAMETER TO FURNISH AND INSTALL A COMPLETE CONNECTION CONSISTING OF AN MJ SLEEVE & FITTINGS (WHERE APPLICABLE) THE UNIT PRICE SHALL BE FULL COMPENSATION FOR ALL DEWATERING, EXCAVATION, BACKFILL COMPACTION, CONNECTIONS, MATERIALS (SLEEVES /FITTINGS), NECESSARY RESTRAINTS, EQUIPMENT, LABOR, MARKERTAPE AND ALL ITEMS NECESSARY TO COMPLETE THE INSTALLATION OF THE CONNECTION. FITTINGS AND THEIR RESTRAINTS REQUIRED. DENSITY TESTING WILL BEFURNISHED BY THE CITY AT THE DIRECTION OF THE CITY'S PROJECT REPRESENTATIVE.

ITEM #24 FABRICATE A SIDEWALK RAMP OVER THE BYPASS PIPE PAYMENT SHALL BE MADE AT THE LUMP SUM PRICE FURNISH AND INSTALL A COMPLETE RAMP FOR THE CHILDREN TO CROSS OVER THE PIPE ON THE NORTH SIDE OF DUNN AVE. TO THE SIDEWALK ON THE NORTHWEST SIDEWALK ON CYLDE MORRIS & DUNN AVE. THIS WAY THE SCHOOL CROSSING GUARD CAN CROSS THE CHILDREN ACROSS CLYDE MORRIS TO THE EAST. NOTE: IT WILL BE REPUIRED THAT THE RAMP BE ADA COMPLIANT AND CAPABLE OF PROVIDING SAFE PASSAGE (INCLUDING HANDRAILS, ECT. OVER THE BYPASS PIPING.

NOTE: ALL PERMANENT PIPES, AND FITTINGS FOR FORCE MAIN PIPING SHALL HAVE EXPOXY P–401 LINING.

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Contract No.:.	Project No.: 6787
Survey Date: .	Plot Date: 8/2018
Drawn By: JMP	Scale:(HOR.) NA
Checked By: STP	(Vert.) NA
File Name: NAME	Design Date: 8/2018
Rotation 2: ROTATE	Drawn By: J.M.P.
Xref Name: NAME	Checked By: STP

SHANNON T. PONITZ, PE
LIC. NO. 52067

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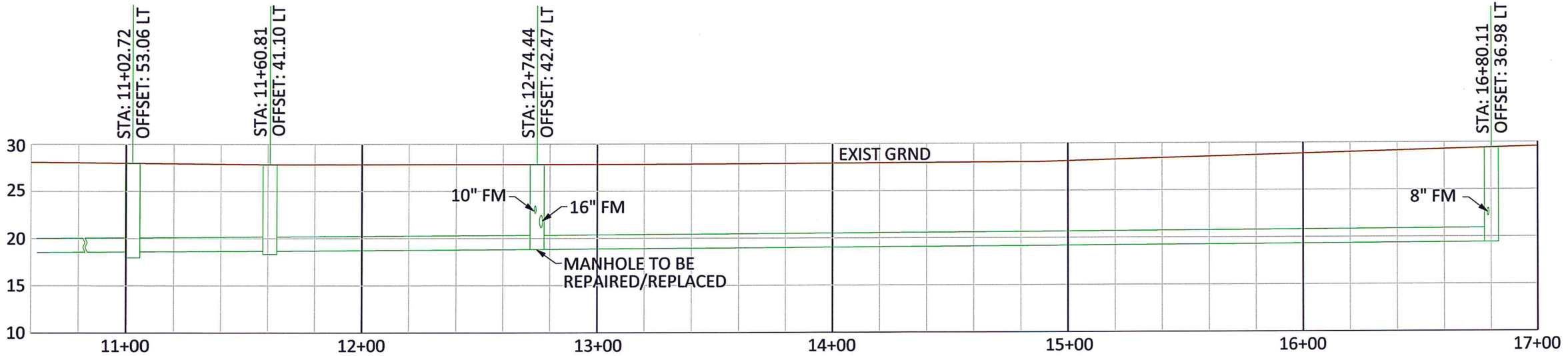
SUMMARY OF PAY ITEMS
CLYDE MORRIS BLVD & DUNN AVE.
MANOHOLE REPLACEMENT L10–34
PROJECT No. 6787



Contract No.:		Project No.: 6787	
Survey Date: DATE(SURV)		Plot Date: 08/2018	
Drawn By: KLH		Scale:(HOR.) 1"=40'	
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File Name: NAME		Design Date: 08/2018	
Rotation ∠: ROTATE		Drawn By: KLH	
Xref Name: NAME		Checked By: JMP	

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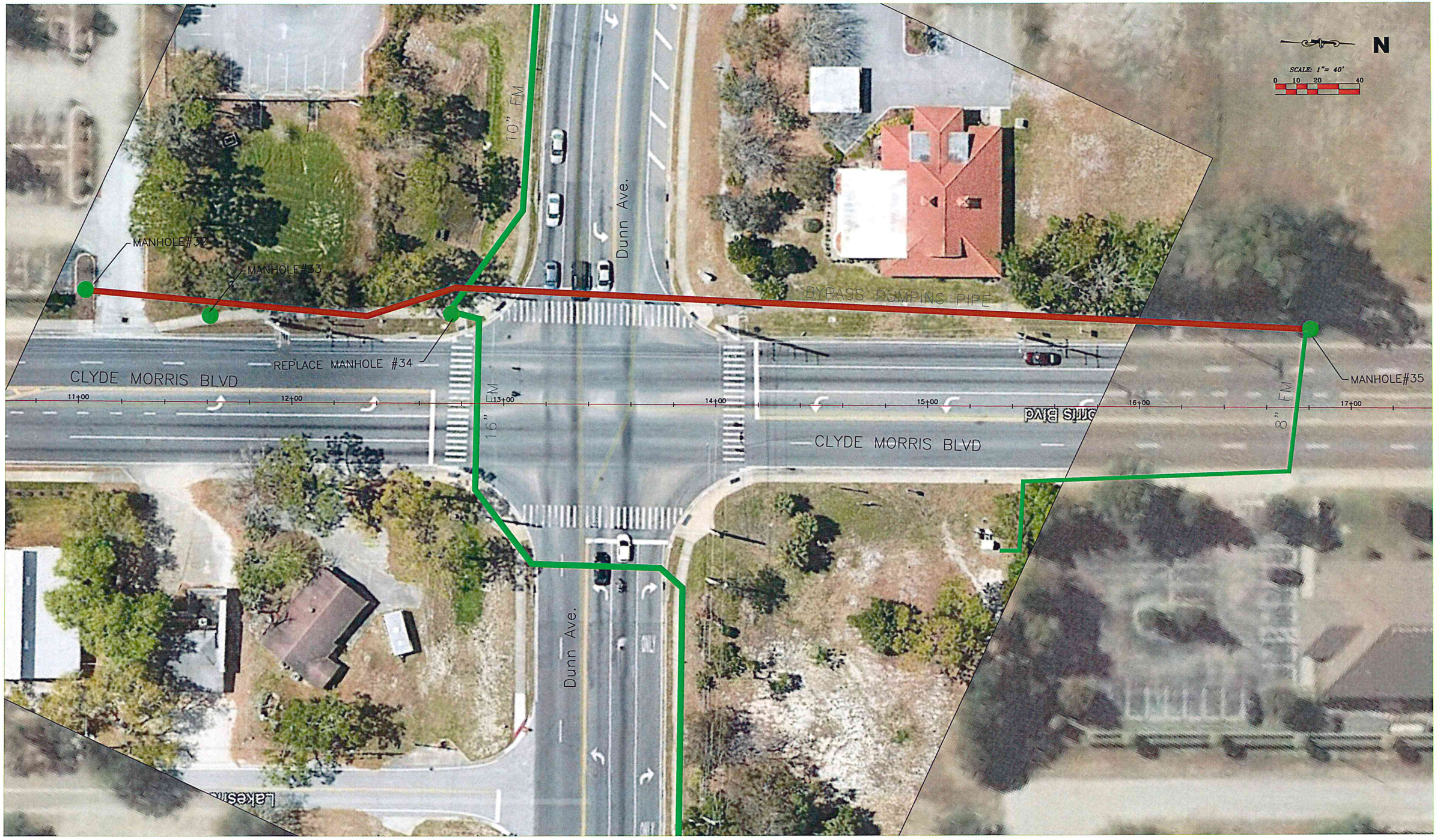
PLAN & PROFILE
CLYDE MORRIS BLVD & DUNN AVE.
MANOHOLE REPLACEMENT L10-34
PROJECT No. 6787

SHEET 5 of 6 SHEETS



.	.	.	Contract No.:.	Project No.: 6787	SHANNON T. PONITZ, PE LIC. NO. 52067	THE CITY OF DAYTONA BEACH UTILITIES DEPARTMENT	BYPASS PUMPING CLYDE MORRIS BLVD & DUNN AVE. MANOHOLE REPLACEMENT L10-34 PROJECT No. 6787
.	.	.	Survey Date: .	Plot Date: 8/2018		DIRECTOR OF UTILITIES • SHANNON T. PONITZ	SHEET 6 of 6 SHEETS
.	.	.	Drawn By: JMP	Scale:(HOR.) 1"=40'		125 BASIN STREET • DAYTONA BEACH • FLORIDA • 32114	
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LFM
FRP SPECIALISTS

Watertight Fiberglass Manholes

Experience...

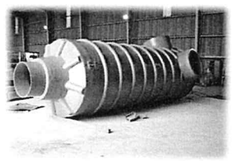
LFM has been building quality fiberglass reinforced manholes, manhole liners, wetwells and wetwell liners since 1982. We utilize the latest in chop and filament winding equipment, therefore providing our customers with the highest quality fiberglass products on the market today.

Quality Built Right In...

LFM incorporates a comprehensive in-plant testing and quality control program. This insures complete and consistent workmanship in all of our fiberglass products. Each manhole that we build is inspected and tested before it is released for shipping. Our testing procedures include wall thickness reports, raw material analysis, and continuous chemical analysis reports. Individual testing reports are recorded and maintained at our office and are available upon request.

Economical...

Our fiberglass manholes are light-weight, greatly reducing delivery and installation costs. Due to the anti-corrosive nature of LFM's fiberglass manholes, repair and replacement costs due to corrosion are reduced as well.



Professional Delivery...

LFM maintains its own fleet of delivery trucks, helping to lower delivery costs considerably.

Protects the Environment...

We build fiberglass manholes that are corrosion resistant to sewer and waste water gases. This reduces the possibility of untreated waste water leaking into the environment. With our quality fiberglass manholes, the risk of environmental contamination is minimized.

Strong & Lasting Construction...

Fiberglass manholes by LFM are designed and manufactured to meet or exceed all ASTM D3753 standard specifications. In addition to complying with all ASTM standards, our fiberglass manholes carry an H-20 load rating. Our products are engineered to provide you with long and trouble-free service.

Quality Assurance...

LFM stands behind our products. Our fiberglass manholes carry a limited one year warranty. For further information, refer to the warranty section of our brochure.

Available Diameters...

LFM builds fiberglass manholes to your specified dimensions with the following diameters available from 36 inches through 14 feet. Depths are available by the half foot from 2' through 40'. We manufacture several different wall thicknesses for different load, depth and diameter specifications. Contact your LFM sales representative to find which dimensions best suit your needs.

Connections...

Fiberglass manholes by LFM can be built with pipe connectors and adaptors already in place. We offer a wide range of pipe stubouts on our manholes from 4" diameter all the way to 48" diameter for larger applications. We also offer Kor-N-Seal™ boots, as well as connectors from other manufacturers, from 4" through 24" diameters. LFM's watertight manholes include a solid FRP anti-flotation bottom and a fully enclosed fiberglass bench and invert area.

Installation Instructions...

1. Prepare excavation in a normal manner. Be sure excavation has been properly shored for safety. The fiberglass manhole should be placed on six inches of crushed stone or stabilized sand compacted to 95% Standard Proctor Density. In areas where a water table exists, set the fiberglass manhole on six inches of wet concrete and pour the required amount of concrete on top of the anti-flotation flange to prevent floating.

2. Normal installations require six inches of brick or grade rings be installed on top of the fiberglass manhole. In traffic areas you should use a minimum of twelve and not more than eighteen inches of brick or grade rings. Grade rings or brick transfer the load to the outside walls of the manhole. Install standard ring and cover.

3. Backfill with screened native material, free from large stones or debris, a minimum of one foot from the fiberglass manhole wall using a maximum of one-foot lifts. Backfill should be compacted so as to prevent any voids along the wall of the manhole. Always refer to project engineer requirements.

Summary of Test Results	
Tests Performed	**Average Results**
Stiffness	5% Deflection @ 2.45 lbs. / in²
	10% Deflection @ 2.28 lbs. / in²
Material Composition	54.25 wt. % Resin
Compressive Strength	Transverse: 22,7000 psi
	Longitudinal: 10,500 psi
Flexural Strength	Transverse: 56,000 psi
	Longitudinal: 11,700 psi
Modulus	Transverse: 2,084,000 psi
	Longitudinal: 1,114,000 psi
Load Rating	24,000 lbs. – 0.157" Deflection
	40,000 lbs. – No Damage
Barcol Hardness	Cylinder: 43.1
	Reducer: 41.0
Wall Thickness	Cylinder: 0.308
Soundness	No Leaks Detected at 5 psi
	Air Pressure

5528 E. Highway 290
Giddings, Texas 78942
Phone 800.237.5791
Fax 979.542.0911

300 W. Riddleville Road
Karnes City, Texas 78118
Phone 800.237.5791
Fax 979.542.0911

2450 Industrial Boulevard
Waycross, Georgia 31503
Phone 912.285.7576
Fax 912.285.7553

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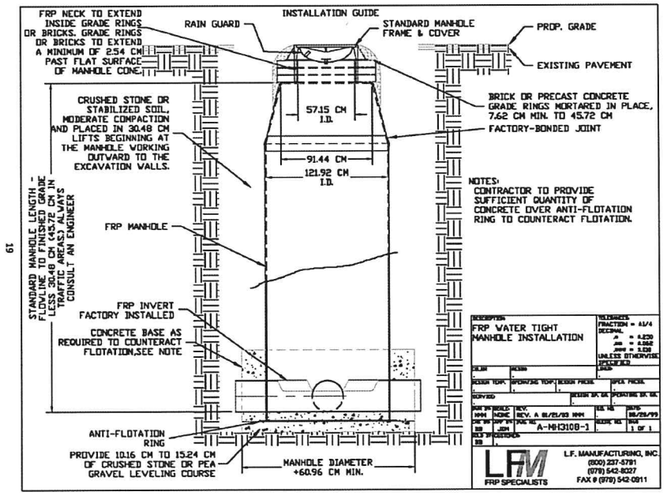
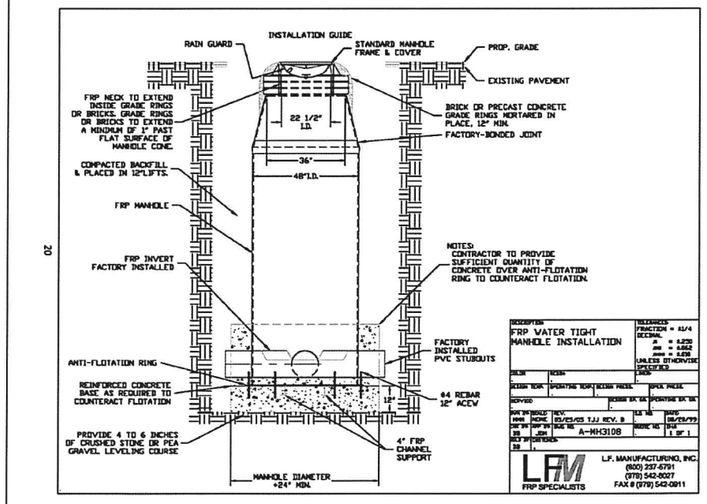
Technical Support & Sales:

800.237.5791
www.lfm-frp.com





L. F. Manufacturing, Inc.

WATERTIGHT FIBERGLASS MANHOLE SPECIFICATION

Specification # LFMH002

A.1 GENERAL: Fiberglass reinforced polyester manhole shall be manufactured from commercial grade polyester resin or other suitable polyester or vinyl ester resins with fiberglass reinforcements. Manhole shall be a one piece unit manufactured to meet or exceed all specifications of A.S.T.M. D-3753 latest edition as manufactured by L.F. Manufacturing, Inc., Giddings, Texas, 1-800-237-5791 or an approved equal.

A.2 GENERAL:
Resin: The resins used shall be a commercial grade unsaturated polyester resin or other suitable polyester or vinyl ester resin.

Reinforcing Materials: The reinforcing materials shall be commercial Grade "E" type glass in the form of continuous roving and chop roving, having a coupling agent that will provide a suitable bond between the glass reinforcement and the resin.

Interior Surfacing Material: The inner surface exposed to the chemical environment shall be a resin-rich layer of 0.010 to 0.020 inch thick. The inner surface layer exposed to the corrosive environment shall be followed with a minimum of two passes of chopped roving of minimum length 0.5 inch (13 mm) to maximum length of 2.0 inch (50.8 mm) and shall be applied uniformly to an equivalent weight of 3 oz/ft. Each pass of chopped roving shall be well rolled prior to the application of additional reinforcement. The combined thickness of the inner surface and interior layer shall not be less than o.10 inch (2.5 mm).

Wall Construction Procedure: After the inner layer has been applied the manhole wall shall be constructed with chop and continuous strand filament wound manufacturing process, which insures continuous reinforcement and uniform strength and composition. The cone section, if produced separately, shall be affixed to the barrel section at the factory with resin-glass reinforced joint resulting in a one-piece unit. Seams shall be fiberglassed on the inside and the outside using the same glass-resin jointing procedure. Field joints shall not be acceptable by anyone other than L.F. Manufacturing, Inc. Giddings, Texas or an approved equal.

Exterior Surface: For a UV inhibitor the resin on the exterior surface of the manhole shall have gray pigment added to a minimum thickness .125 inches.

Stubouts and Connections: Upon request stubouts may be installed. Installation of SDR, PVC, or sewer pipe must be performed by sanding, priming, and using resin fiber-reinforced hand lay-up. The resin and fiberglass shall be the same type and grade as used in the fabrication of the fiberglass manhole. Inserta-Tee fittings may be requested and installed per manufacturer's instructions. Kor-N-Seal boots may be installed by the manhole manufacturer using fiberglass reinforced pipe stubouts for the Kor-N-Seal boot sealing surface.

Manhole Bottom: Fiberglass manholes will be required to have resin fiber-reinforced bottom. Deeper manholes may require a minimum of two fiberglass channel stiffening supports. All fiberglass manholes manufactured with a fiberglass bottom will have a minimum 3-inch wide anti-flotation ring. The manhole bottom shall be a minimum of ½ inch thick.

Fiberglass enclosed Invert and bench area: A fiberglass enclosed invert and bench area shall be installed in the manhole by the manufacturer. The invert will be formed using a non-corrosive material and completely enclosed in a minimum 1/4-inch layer of fiberglass chop.

Height Adjustment: Fiberglass manholes must have the ability to be height adjustable with the use of a height adjustment ring. Height adjustment can be made as a field operation without the use of uncured resins or fiberglass lay-ups. Fiberglass manholes must maintain all load and soundness characteristics required by A.S.T.M. D3753 after height adjustment has occurred.

Fillers and Additives: Fillers, when used, shall be inert to the environment and manhole construction. Sand shall not be accepted as an approved filler. Additives, such as thixotropic agents, catalysts, promoters, etc., may be added as required by the specific manufacturing process to be used to meet the requirements of the A.S.T.M D-3753 standard. The resulting reinforced-plastic material must meet the requirements of this specification.

A.3 MANUFACTURE: Manhole cylinders, manway reducers, and connectors shall be produced from fiberglass-reinforced polyester resin using a combination of chop and continuous filament wound process.

Interior Access: All manholes shall be designed so that a ladder or step system can be supported by the installed manhole.

Manway Reducer: Manway reducers will be concentric with respect to the larger portion of the manhole diameters through 60 inches. Larger manholes may have concentric or eccentric manway reducer openings.

Cover and Ring Support: The manhole shall provide an area from which a grade ring or brick can be installed to accept a typical metal ring and cover and have the strength to support a traffic load without damage to the manhole.

A.4 REQUIREMENTS:
Exterior Surface: The exterior surface shall be relatively smooth with no sharp projections. Handwork finish is acceptable if enough resin is present to eliminate fiber show. The exterior surface shall be free of blisters larger than 0.5 inch in diameter, de-lamination or fiber show.

Interior Surface: The interior surface shall be resin rich with no exposed fibers. The surface shall be free of crazing, de-lamination, blisters larger than 0.5 inch in diameter, and wrinkles of 0.125 inch or greater in depth. Surface pits shall be permitted if they are less than 0.75 inch in diameter and less than 0.0625 inch deep. Voids that cannot be broken with finger pressure and are entirely below the resin surface shall be permitted if they are less than 0.5 inch in diameter and less than 0.0625 inch thick.

Wall Thickness: Fiberglass manholes 48" in diameter and up to 20 feet in depth will have a minimum wall thickness of .3125 inches. Fiberglass manholes 48" in diameter and 20 feet to 30 feet in depth will have a minimum wall thickness of .5 inches.

Repairs: Any manhole repairs are subject to meet all requirements of this specification.

Manhole Length: Manhole lengths shall be in 6-inch increments +/- 2 inches.

Diameter Tolerance: Tolerance of inside diameter shall be +/- 1% of required manhole diameter.

Load Rating: The complete manhole shall have a minimum dynamic-load rating of 16,000 lbs. when tested in accordance with A.S.T.M. 3753 8.4 (note 1). To establish this rating the complete manhole shall not leak, crack, or suffer other damage when load tested to 40,000 lbs. and shall not deflect vertically downward more than 0.25 inch at the point of load application when loaded to 24,000 lbs.

Stiffness: The manhole cylinder shall have the minimum pipe-stiffness values shown in the table below when tested in accordance with A.S.T.M. 3753 8.5 (note 1).

LENGTH - FT.	F/AY - PSI
3 - 6.5	0.75
7 - 12.5	1.26
13 - 20.5	2.01
21 - 25.5	3.02
26 - 35	5.24

Soundness: In order to determine soundness, the manufacturer shall apply an air or water pressure test to the manhole test sample. Test pressure shall not be less than 3 psig or greater than 5 psig. While holding at the established pressure, inspect the entire manhole for leaks. Any leakage through the laminate is cause for failure of the test. Refer to A.S.T.M. 3753 8.6.

Chemical Resistance: The fiberglass manhole and all related components shall be fabricated from corrosion proof material suitable for atmospheres containing hydrogen sulfide and dilute sulfuric acid as well as other gases associated with the wastewater collection system.

A.5 PHYSICAL PROPERTIES:

	Hoop Direction	Axial Direction
a. Tensile Strength (psi)	18,000	5,000
b. Tensile Modules (psi)	0.6×10^5	0.7×10^6
c. Flexural Strength (psi)	26,000	4,500
d. Flexural Modulus (psi)	1.4×10^6	0.7×10^6
e. Compressive (psi)	18,000	10,000

A.6 TEST METHODS: All tests shall be performed as specified in A.S.T.M. 3753 latest edition, section 8. Test method D-790 (see note 5) and test method D-695.

A.7 QUALITY CONTROL: Each completed manhole shall be examined by the manufacturer for dimensional requirements, hardness, and workmanship. All required A.S.T.M. 3753 testing shall be completed and records of all testing shall be kept and copies of test records shall be presented to customer upon formal written request within a reasonable time period.

A.8 CERTIFICATIONS: As a basis of acceptance the manufacturer shall provide an independent certification which consists of a copy of the manufacturer's test report and accompanied by a copy of the test results stating the manhole has been sampled, tested, and inspected in accordance with the provisions of this specification and meets all requirements.

A.9 SHIPPING and HANDLING: Do not drop or impact the fiberglass manhole. Fiberglass manhole may be lifted by inserting a 4"x4"x30" timber into the top of manhole with cable attached or by a sling or "choker" connection around the center of manhole, lift as required. Use of chains or cables in contact with the manhole surface is prohibited.

A.10 INSTALLATION:
CLOSED BOTTOM MANHOLE INSTALLATION: Bottom of excavation should be compacted to 95% Standard Proctor Density. Manholes with diameters less than 60 inches and depths less than 12 feet, require a base of 6 inches of crushed stone. Manholes with depths of 10 feet and greater, and diameters of at least 48 inches should have a poured reinforced concrete base at least one foot deep and at least two feet larger than fiberglass manhole outside diameter. The fiberglass manhole shall be lowered into the wet concrete and brought to plumb. Pour reinforced concrete over the anti-flotation flange. The concrete shall be a minimum of one foot deep and two feet from outside wall of the manhole. More concrete may be required in high water table areas. In high water table areas you should consult your Engineer for backfill requirements.

A.11 Internal Bottom Channel Stiffening Supports: Manholes with internal bottom FRP Channel stiffening supports will require that concrete be poured on the inside of the manhole to a depth equal to that of the stiffening support. This is typically 4 – 6 inches. This is **NOT** required on manholes that have a factory installed integral fiberglass bench and invert area.

A.12 BACKFILL:
Backfill Material: Unless shown otherwise on drawings and approved by the engineer, sand, crushed stone, or pea gravel shall be used for backfill around the manhole for a minimum distance of one foot from the outside surface and extending from the bottom of the excavation to the top of the reducer section. Suitable material chosen from the excavation may be used for the remainder of the backfill. The material chosen shall be free of large lumps or clods, which will not readily break down under compaction. This material will be subject to approval by the engineer.

Backfill Procedure: Backfill shall be placed in layers of not more than 12 loose measure inches and mechanically tamped to 95% Standard Proctor Density, unless otherwise approved by the engineer. Flooding will not be permitted. Backfill shall be placed in such a manner as to prevent any wedging action against the fiberglass manhole structure.

A.13 MARKING and IDENTIFICATION: Each manhole shall be marked on the inside and outside with the following information:

1. Manufacturer's name or trademark
2. Manufacturer's factory location
3. Manufacturer's serial number
4. Total manhole depth.

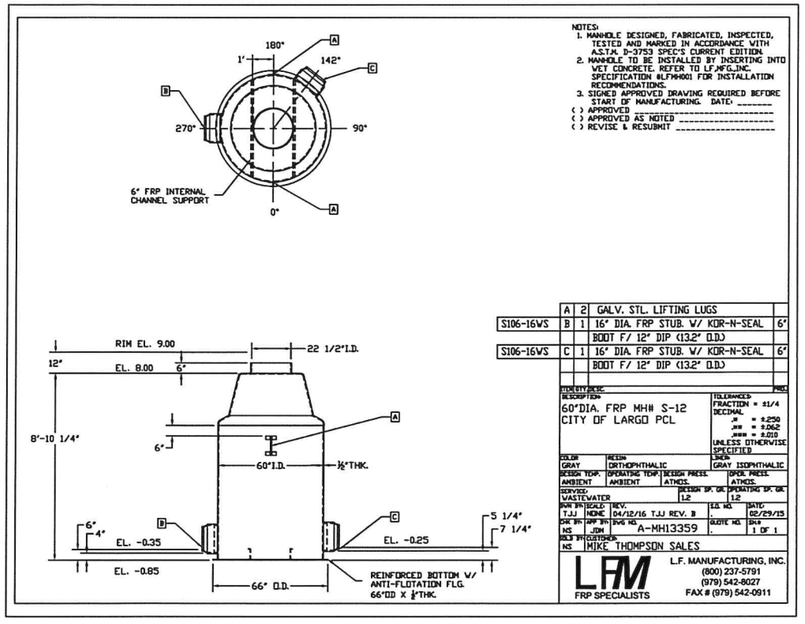


EXHIBIT B: Standard Insurance Provisions

CONTRACTOR will provide and maintain at CONTRACTOR's sole expense, insurance of the kinds of coverage and in the amounts set forth in this Article, primary and non-contributory with the CITY's own insurance, in form and from companies satisfactory to the CITY.

1. **COVERAGE AND AMOUNTS**. Subject to Section 2, below, required coverages and amounts are as follows:

a) Workers Compensation Insurance as required by Florida Statutes, Chapter 440 (and any other applicable federal laws), for all employees of CONTRACTOR, employed at the site of the service or in any way connected with the services being provided under this Contract. The insurance required by this provision will comply fully with the Florida Workers' Compensation Law and include Employers' Liability insurance with limits of not less than $500,000 per occurrence, project specific. Any associated or subsidiary company involved in the service must be named in the Workers' Compensation coverage.

Commercial General Liability insurance, including coverage for operations, independent contractors, products-completed operations, broad form property damage, and personal injury on an "occurrence" basis insuring the CONTRACTOR and any other interests, including but not limited to any associated or subsidiary companies involved in the services being provided under this Contract. *The Commercial General Liability Insurance shall name the CITY as additional insured.* CONTRACTOR's Commercial General Liability insurance policy shall provide coverage to CONTRACTOR, and CITY when required to be named as an additional insured either by endorsement or pursuant to a blanket additional insured endorsement, for those sources of liability which would be covered by the latest edition of the standard Commercial General Liability Coverage Form (ISO Form CG 00 01) without the attachment of any endorsements excluding or limiting coverage for Products/Completed Operations, Independent Contractors, Property of CITY in CONTRACTOR's Care, Custody or Control or Property of CITY on which contracted operations are being performed, Explosion, Collapse or Underground hazards (XCU Coverage, Contractual Liability or Separation of Insureds. When CITY is added as additional insured by endorsement, ISO Endorsements CG 20 10 and CG 20 37 or their equivalent shall be used to provide such Additional Insured status

b) Automobile Liability insurance which shall insure claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle used by the CONTRACTOR at the site of the project or in any way connected with the services being provided under this Contract.

The limit of liability under the Commercial general liability and automobile liability policies will be a combined single limit for bodily injury and property damage of no less than $1,000,000 per occurrence, project specific. If insurance is provided with a general aggregate, then the aggregate shall be in an amount of no less than $2,000,000, project specific. The Risk Manager for the CITY may authorize lower liability limits for the automobile policy only, at the Risk Manager's sole discretion.

Unless specifically waived hereafter in writing by the Risk Manager, CONTRACTOR agrees that the insurer shall waive its rights of subrogation, if any, against the CITY on each of the above listed insurance coverages.

Loss Deductible Clause: The CITY shall be exempt from, and in no way liable for, any sums of money that may represent a deductible in any insurance policy. The payment of such deductible shall be the sole responsibility of the CONTRACTOR or sub-contractor providing such insurance.

2. **SUBCONTRACTOR'S INSURANCE**. Each of CONTRACTOR'S subcontractors will be required to provide insurance in substantially similar form to the insurance required of CONTRACTOR above based on services provided.

3. **REASONABLE DEDUCTIBLE**. Any insurance policy required by or pursuant to this Section may contain a reasonable deductible provision provided advance notice of said deductible provision is given by the CONTRACTOR to the CITY and approval from the Risk Manager for the CITY is given, which approval shall not be unreasonably withheld or delayed.

4. **PROOF OF INSURANCE**. CONTRACTOR will furnish proof of the required forms and coverages referenced above to the Risk Manager for the CITY prior to or at the time of execution of this Contract. CONTRACTOR will not commence work until all proof of such insurance has been filed with and approved by the Risk Manager. CONTRACTOR will furnish proof of any new or amended coverages to the Risk Manager promptly upon being directed to do so. The CITY may require CONTRACTOR to halt operations until CONTRACTOR has provided such insurance. CONTRACTOR will furnish evidence of all required insurance in the form of certificate of insurance which will clearly outline all hazards covered as itemized above, the amounts of insurance applicable to each hazard, the expiration dates. If requested by Risk Manager, CONTRACTOR will furnish copies of the insurance contracts to support the certificates of insurance and the copies of said insurance must be acceptable to the Risk Manager.

5. **LIABILITIES UNAFFECTED**. Anything to the contrary notwithstanding, the liabilities of the CONTRACTOR under this Agreement shall survive and not be terminated, reduced or otherwise limited by any expiration, limitation, exclusion or termination of insurance coverage. Neither approval nor failure to disapprove insurance furnished by the contractor shall relieve the contractor or its sub-contractors from responsibility to provide insurance as required by the contract.

6. **REPLACEMENT REQUIRED**. CONTRACTOR will file replacement certificates 30 days prior to expiration or termination of the required insurance occurring prior to the acceptance of the work by the CITY. If such insurance will lapse, the CITY expressly reserves the right to renew the insurance at CONTRACTOR's expense.

7. **TERMINATION OF INSURANCE**. CONTRACTOR may not cancel the insurance required by this Contract until all services are completed, accepted by the CITY, and CONTRACTOR has received written notification from the Risk Management Division of the CITY that CONTRACTOR may cancel the insurance required by this Contract and the date upon which the insurance may be cancelled.

EXHIBIT C: PUBLIC RECORDS PROVISIONS

To the extent applicable, CONTRACTOR will comply with the requirements of Florida's Public Records Law, Chapter 119, Florida Statutes, which include the following:

(a) Keeping and maintaining public records that the CITY requires for performance of the service provided herein.

(b) Upon the request of the City Clerk of the CITY, (i) providing the City Clerk with a copy of requested public records or (ii) allowing inspection or copying of the records, within a reasonable time after receipt of the City Clerk's request, at a cost that does not exceed the cost provided in Ch. 119, Florida Statutes, or as otherwise provided by law.

(c) Ensuring that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law until completion of this Contract, and following such completion if CONTRACTOR fails to transfer such records to the CITY.

(d) Upon completion of this Contract, keep and maintain public records required by the CITY to perform the service. CONTRACTOR will meet all applicable requirements for retaining public records. All records stored electronically must be provided to the CITY upon request from the City Clerk, in a format that is compatible with the CITY's information technology systems.

IF CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTRACTOR MUST CONTACT THE CITY CLERK, WHOSE CONTACT INFORMATION IS AS FOLLOWS:

(Phone) 386 671-8023
(Email) clerk@codb.us
(Address) 301 S. Ridgewood Avenue
Daytona Beach, FL 32114