ST. TAMMANY PARISH

PATRICIA P. BRISTER
PARISH PRESIDENT

July 3, 2018

Please find the following addendum to the below mentioned BID.

Addendum No.: 2

Bid#: 622-10-18-31-2

Project Name: Colonial Court Lift Station Upgrade

Bid Due Date July 24, 2018

GENERAL INFORMATION:

1. **Please note that the Bid Opening has been pushed to Tuesday, July 24, 2018. Time and location remains the same.**

2. **Last Day for Inquiries and requests for approved equals is Friday, July 13, 2018 no later than 2:00PM.**

3. **All requests for approved equals must be submitted prior to the inquiry deadline. Particular attention must be given by Bidders requesting consideration for an approved equal to provide sufficient information for a determination to be made. Please refer to Section 8, General Conditions for St. Tammany Parish Government, Paragraph 13.04. Generally speaking, the information that must be provided is listed in Part 1 of the appropriate specification section and the criteria that must be met are listed in Part 2 of the appropriate specification section.**

<< End of Addendum # 2>>

ST. TAMMANY PARISH
PATRICIA P. BRISTER
PARISH PRESIDENT

June 27, 2018

Please find the following addendum to the below mentioned BID.

Addendum No.: 1

Bid#: 622-10-18-31-2

Project Name: Colonial Court Lift Station Upgrade

Bid Due Date: July 12, 2018

GENERAL INFORMATION:

1. **Please DELETE Plan Sheet G-101 from Section 11 Project Plans and replace with Plan Sheet G-101R (attached). The Index to Sheets has been revised.**

2. **Please ADD Plan Sheet C-100N (attached) to Section 11 Project Plans before Plan Sheet C-101R (attached). The extent of the demolition work required under this Contract is depicted.**

3. **Please DELETE Plan Sheet C-101 from Section 11 Project Plans and replace with Plan Sheet C-101R (attached). The addition of a fence, revisions to the gravity sewer callouts in plan and profile views, the addition of General Note 7, and the addition of the list of abbreviations are depicted.**

4. **Please DELETE Plan Sheet C-102 from Section 11 Project Plans and replace with Plan Sheet C-102R (attached). Slab penetration and pipe support details have been added.**

5. **Please DELETE Section 00 01 10 – Table of Contents from Section 10 Project Specifications in its entirety and replace with Section 00 01 10 – Table of Contents – Revised (attached). The Table of Contents has been revised.**

6. **Please ADD Section 09 96 00 – High Performance Coatings (attached) to Section 10 Project Specifications between the last page of Section 09 90 00 and the first page of Section 25 02 00.**

7. **Please REPLACE Section 33 31 13 – Sanitary Sewer Pipe in Section 10 Project Specifications in its entirety with Section 33 31 13 – Sanitary Sewer Pipe – Revised (attached).**

QUESTIONS & ANSWERS:

Question #1: Plan Sheet C-101 - 12" Gravity Line between old and new Wet Wells: Site Plan calls for this to be R.C.P. while the New Lift Station Profile shows it to be PVC. Which is correct? If PVC is correct, what class PVC pipe (C-900, SDR-35, SDR-26, other) will be required?

Answer #1: The 12" gravity sewer between the old and new wet well shall be PVC (SDR-35). Please refer to Section 11 Project Plans, Plan Sheet C-101R (attached).

Question #2: Plan Sheet C-101 - Pump Suction Piping: New Lift Station Section shows the 90º bends for the suction lines to be 6" L.R. Shouldn't these be 6" x 4" L.R.?

Answer #2: No. The pump depicted on the plans is the basis of design referenced in the specifications, Model V4A-B-1 as manufactured by Gorman-Rupp. Model V4A-B-1 has a 4" discharge flange and a 6" suction flange. If the pump being provided by the contractor is the same pump as the basis of design, the 6" LR elbow is the appropriate fitting for the suction elbow. The contractor shall supply the appropriate size suction and discharge elbows based on the pump actually being provided.

Question #3: Plan Sheet C-101 - Pump Discharge Piping: Are the 6" x 4" Flg. 90º Bends on the pump discharge to be S.R. or L.R.?

Answer #3: Unless otherwise indicated, all 90˚ elbows shall be LR 90˚ elbows. Please refer to Section 11 Project Plans, Plan Sheet C-101R (attached).

Question #4: Plan Sheet C-101 - Pump Discharge Piping: The New Lift Station Plan and New Lift Station Section both call for (2) 6" DMJ between the discharge 90º bend and the check valve. What does "DMJ" stand for?

Answer #4: DMJ stands for Dismantling Joint. Please refer to Section 11 Project Plans, Plan Sheet C-101R (attached) and Section 10 Project Specifications, Section 33 31 13 – Revised (attached).

Question #5: Plan Sheet C-101 - New Wet Well: The New Lift Station Section shows a 9' Ø wet well with reinforcing steel being required between the wet well walls and the top and base slabs. This would indicate to us that you do not want the new wet well to be pre-cast, but poured in place. Further confirmation of this is the fact that most concrete pipe manufacturers who make 108" Ø precast concrete pipe only have a 10" wall while your drawings require a 12" wall. If it is your intention to require that the wet well walls be poured in place, would you accept an 8' x 8' square (64 S.F. of area) wet well in lieu of the 9' Ø (63.62 S.F of area) wet well? Finding a forming system that provides a 9' I.D. and 11' O.D. will be very hard, if not impossible, to find.

Answer #5: No, a 9' diameter precast wet well with 8" wall thickness will be allowed provided the contractor submits structural and buoyancy calculations sealed by a Louisiana structural engineer. Yes, a cast-in-place 8' x 8' square wet well will be allowed provided the contractor submits structural and buoyancy calculations sealed by a Louisiana structural engineer.

Question #6: Plan Sheet C-101 - Top Slab Penetrations: Please provide a detail as to how you want the pipe penetrations through the top slab. Will a galvanized deck thimble with either the appropriate size Link-Seal type sealing elements or non-shrink grout be required?

Answer #6: Please refer to Section 11 Project Plans, Plan Sheet C-102R (attached) for penetration details.

Question #7: Plan Sheet C-101 - Fence: We noticed that there is no requirement for erecting a fence of any kind around the new Wet Well, Controls, etc. Will a new fence be required? The existing Lift Station does have a wooden fence. Does the existing fence remain or is it to be demolished?

Answer #7: The existing fence is to be demolished. Please refer to Section 11 Project Plans, Plan Sheet C-100N (attached). A new fence is now being included. Please refer to Section 11 Project Plans, Plan Sheet C-101R (attached). Refer to LADOTD Section 705.

Question #8: Plan Sheet C-101 - Demo at Existing Lift Station: To what extent is the existing lift station, pumps, piping, valves, controls, fence, electrical junction boxes, etc. to be demolished once the new Station is operable?

Answer #8: Please refer to Section 11 Project Plans, Plan Sheet C-100N (attached).

Question #9: Plan Sheet C-101 - Note #6: This note states that the Parish will clear the trees from the site for work prior to issuing a NTP for this project. Will that include any stumps that fall within the areas to be excavated under this contract?

Answer #9: No. The Parish will clear trees to be approximately flush with the ground but will not remove stumps. Stumps located within areas to be excavated under this contract will need to be removed by the Contractor.

Question #10: Plan Sheet C-101 - Pump Suction Piping: In the New Lift Station Section there is a note that says "6" SST Suction Line". What does "SST" stand for?

Answer #10: SST stands for stainless steel. Please refer to Section 11 Project Plans, Plan Sheet C-101R (attached) and Section 10, Project Specifications, Section 33 31 13 – Revised (attached).

Question #11: Plan Sheet C-101 - Pipe Supports: Will the supports for the suction and discharge piping need to be galvanized, stainless steel or painted?

Answer #11: Yes, above grade pipe supports shall be galvanized and painted. Please refer to Section 11 Project Plans, Plan Sheet C-102R (attached).

ATTACHMENTS:

1. **Plan Sheet G-101R.pdf**
2. **Plan Sheet C-100N.pdf**
3. **Plan Sheet C-101R.pdf**
4. **Plan Sheet C-102R.pdf**
5. **Section 10 Project Specifications, Section 00 01 10 – Table of Contents – Revised.pdf**
6. **Section 10 Project Specifications, Section 09 96 00 – High Performance Coatings.pdf**
7. **Section 10 Project Specifications, Section 33 31 13 – Sanitary Sewer Pipe – Revised.pdf**

<< End of Addendum # 1>>

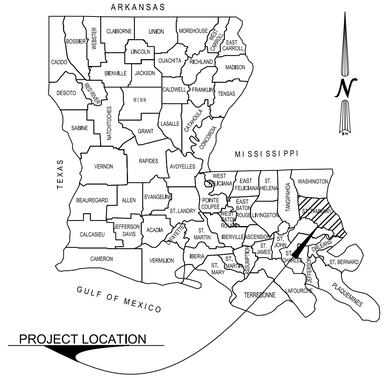
INDEX TO SHEETS

SHEET NO.	DESCRIPTION
	CIVIL SHEETS
G-101R	TITLE SHEET
C-100N	DEMOLITION PLAN
C-101R	SITE PLAN
C-102R	CONCRETE SLAB DETAILS
	ELECTRICAL SHEETS
E-101	ABBREVIATIONS, SYMBOLS, & BACKBOARD DETAIL
E-102	ONE LINE DIAGRAM & DUCTBANK DETAILS
E-103	ELECTRICAL DETAILS

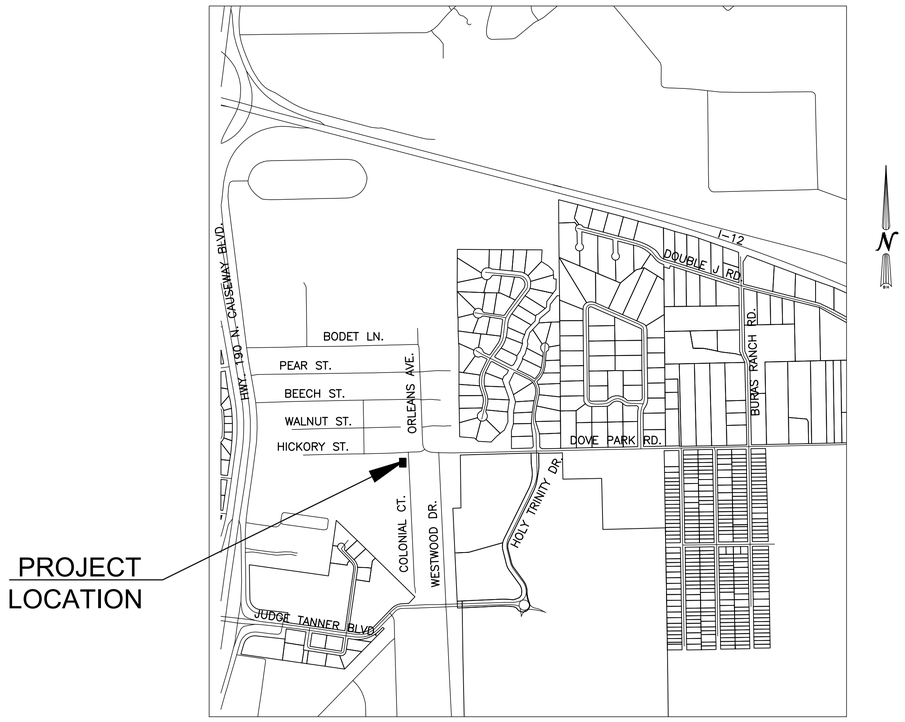
ST. TAMMANY PARISH, LOUISIANA

COLONIAL COURT LIFT STATION UPGRADE

PROJECT NO.: TU16000193
BID NO.: 622-10-18-31-2



VICINITY MAP
NOT TO SCALE



LOCATION MAP
SCALE: 1" = 1000'

PROJECT CLASSIFICATION:
HEAVY CONSTRUCTION AND/OR MUNICIPAL & PUBLIC WORKS CONSTRUCTION

CONSTRUCTION TYPE:
CLEARING & GRUBBING, GRADING, PIPE WORK STORM DRAIN, EQUIPMENT FOUNDATION, CONCRETE FLATWORK, ELECTRICAL, INSTRUMENTAL CONTROLS, PIPE WORK SEWER LINE & WASTE WATER PUMP STATION

ST. TAMMANY PARISH COUNCIL MEMBERS

PATRICIA B. BRISTER – PARISH PRESIDENT

MARTY DEAN	(DISTRICT 1)
DAVID R. FITZGERRALD	(DISTRICT 2)
JAMES A. THOMPSON	(DISTRICT 3)
MICHAEL LORINO, JR.	(DISTRICT 4)
RYKERT O. TOLEDANO, JR	(DISTRICT 5)
RICHARD E. TANNER	(DISTRICT 6)
JACOB B. GROBY, III	(DISTRICT 7)
CHRIS CANULETTE	(DISTRICT 8)
E.L. BELLISARIO	(DISTRICT 9)
MAUREEN O'BRIEN	(DISTRICT 10)
STEVE STEFANCIK	(DISTRICT 11)
JERRY BINDER	(DISTRICT 12)
S. MICHELE BLANCHARD	(DISTRICT 13)
THOMAS J. SMITH	(DISTRICT 14)

PLANS PREPARED AND SUBMITTED BY:

STATE OF LOUISIANA
MIRA K. PARA
License # 34990
PROFESSIONAL ENGINEER

6/22/2018

MIRA K. PARA, P.E. — DATE
BUCHART HORN, INC.
PROJECT ENGINEER

APPROVED BY:

GREG GORDAN, DIRECTOR — DATE
DEPT. OF ENVIRONMENTAL SERVICES, ST. TAMMANY PARISH

BUCHART HORN, INC.
ENGINEERS, ARCHITECTS AND PLANNERS

BUCHART HORN
ENGINEERS • ARCHITECTS • PLANNERS

COLONIAL COURT
LIFT STATION UPGRADE
ST. TAMMANY PARISH

NO.	REVISION	BY	DATE
1	ADDENDUM #1	DMB	5/21/18

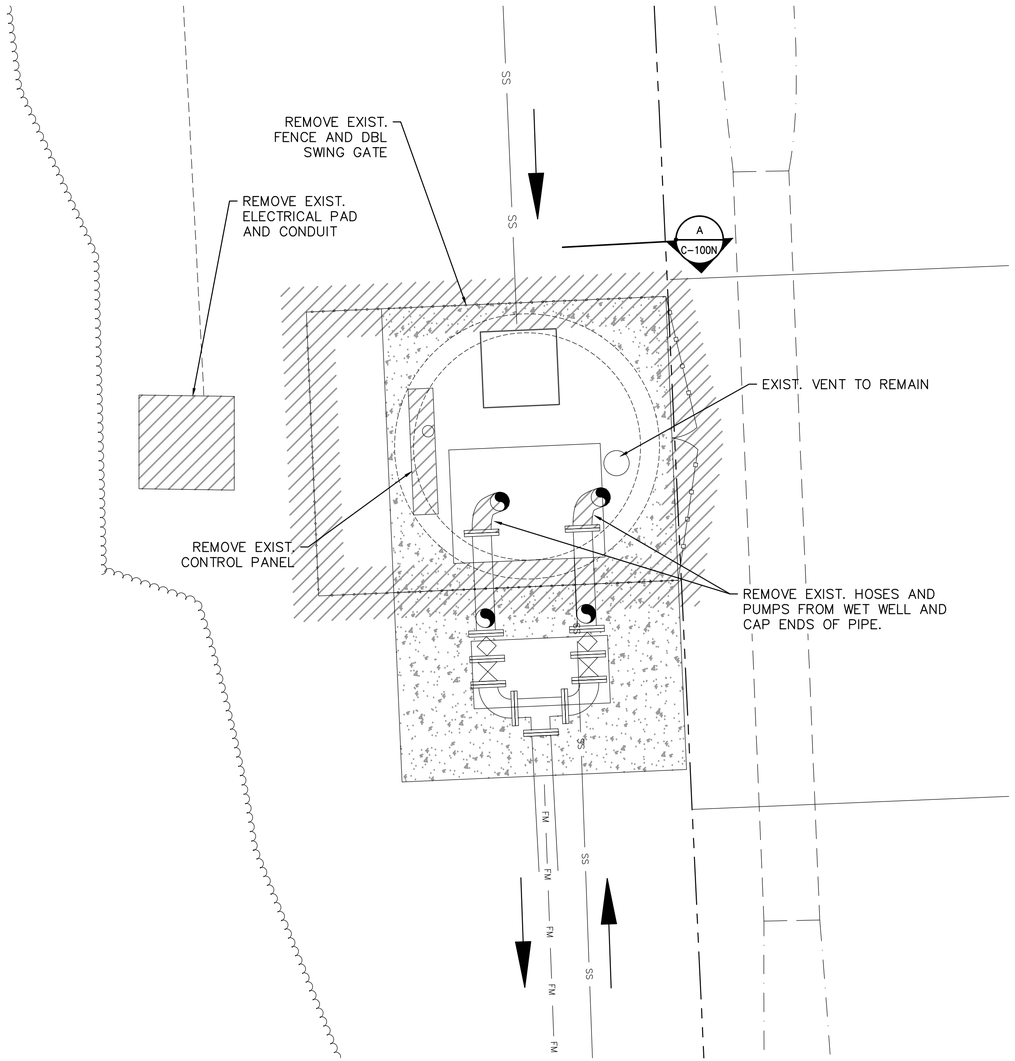
PROJECT NO.:	77183-00
CAD FILE:	G-101R.DWG
ENGR./ARCH.:	MKP
DESIGN BY:	MKP
DRAWN BY:	DMB
CHECKED BY:	MKP
DATE:	04/26/2018

DRAWING INTENT IS TO INDICATE GENERAL ARRANGEMENT, DESIGN AND INTENT OF WORK AND IS PARTLY DIAGRAMMATIC.
DRAWING SHALL NOT BE SCALED.

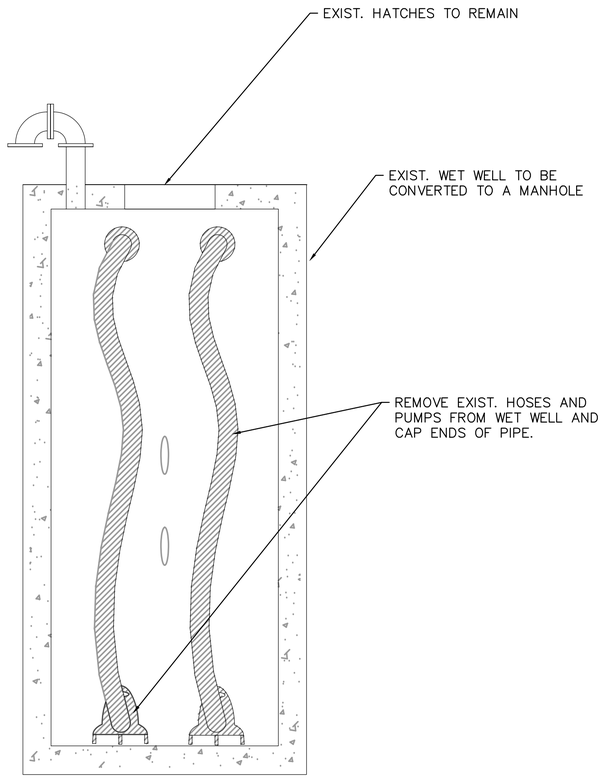
TITLE SHEET

DRAWING NO.
G-101R

SHEET 1 OF 6



1 C-100N **DEMOLITION PLAN**
NTS



A C-100N **SECTION**
NTS

NOTES:

1. AT OWNER'S DISCRETION, EQUIPMENT REMOVED FROM THE EXISTING STATION SHALL BE SALVAGED AND TURNED OVER TO OWNER.
2. ALL PUMP STATION DEMOLITION AND SITE RESTORATION SHALL BE PERFORMED IN ACCORDANCE WITH SECTIONS 02 41 13 AND 26 05 01 OF THE SPECIFICATIONS.
3. CONTRACTOR SHALL LOCATE ALL EXISTING UTILITIES ON THE SITE.
4. CONTRACTOR SHALL COORDINATE ALL POWER SUPPLY DEMOLITION WITH ENTERGY PRIOR TO INITIATING DEMOLITION WORK.
5. THE CONTRACTOR SHALL COORDINATE TO INSTALL NEW EQUIPMENT AND DISCONNECT EXISTING EQUIPMENT TO MINIMIZE DOWNTIME. BYPASS PUMPING IS REQUIRED WHILE PUMP STATION AND INFLUENT GRAVITY SEWER ARE NOT IN SERVICE.
6. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND ENGINEER, AND SUBMIT A SEQUENCE OF CONSTRUCTION TO MEET THE ABOVE REQUIREMENT. THE OWNER AND ENGINEER RESERVE THE RIGHT TO APPROVE, DISAPPROVE OR REVISE AS DEEMED NECESSARY.
7. ALL EXISTING CONDUIT AND JUNCTION BOXES SHALL BE REMOVED BACK TO THEIR SOURCE ORIGIN. JUNCTION BOXS SHALL BE REMOVED. EXISTING UNDERGROUND SERVICE CONDUIT SHALL BE FILLED WITH CONCRETE AND ABANDONED. SEAL AND PATCH PENETRATION. USE UL LISTED MATERIALS.
8. PATCH AND GROUT WALL PENETRATIONS AND COAT INTERIOR OF EXISITNG WET WELL.
9. EXISTING ELECTRICAL SERVICE EQUIPMENT SHALL BE REMOVED IN COORDINATION WITH THE UTILITY COMPANY.
10. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LATEST EDITION OF THE NEC CODE AND LOCAL REQUIREMENTS.

Louisiana One Call. before you dig. 1-800-272-3020

PRIOR TO WORK COMMENCEMENT, THE CONTRACTOR IS RESPONSIBLE FOR FINAL VERIFICATION OF THE LOCATION OF THE UTILITIES SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CALL LOUISIANA ONE CALL (811 OR 800-272-3020) AND CITY PARISH DEPARTMENT OF PUBLIC WORKS TO THE UTILITIES LOCATED PRIOR TO CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE UTILITY COMPANIES FOR ALL AREAS OF CONSTRUCTION.

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BUCHART HORN
ENGINEERS • ARCHITECTS • PLANNERS

STATE OF LOUISIANA
MIRA K. PARA
License # 34990
6/22/2018
PROFESSIONAL ENGINEER

COLONIAL COURT LIFT STATION UPGRADE ST. TAMMANY PARISH

NO.	REVISION	BY	DATE
1	ADDENDUM #1 NEW SHEET	DMB	6/21/18

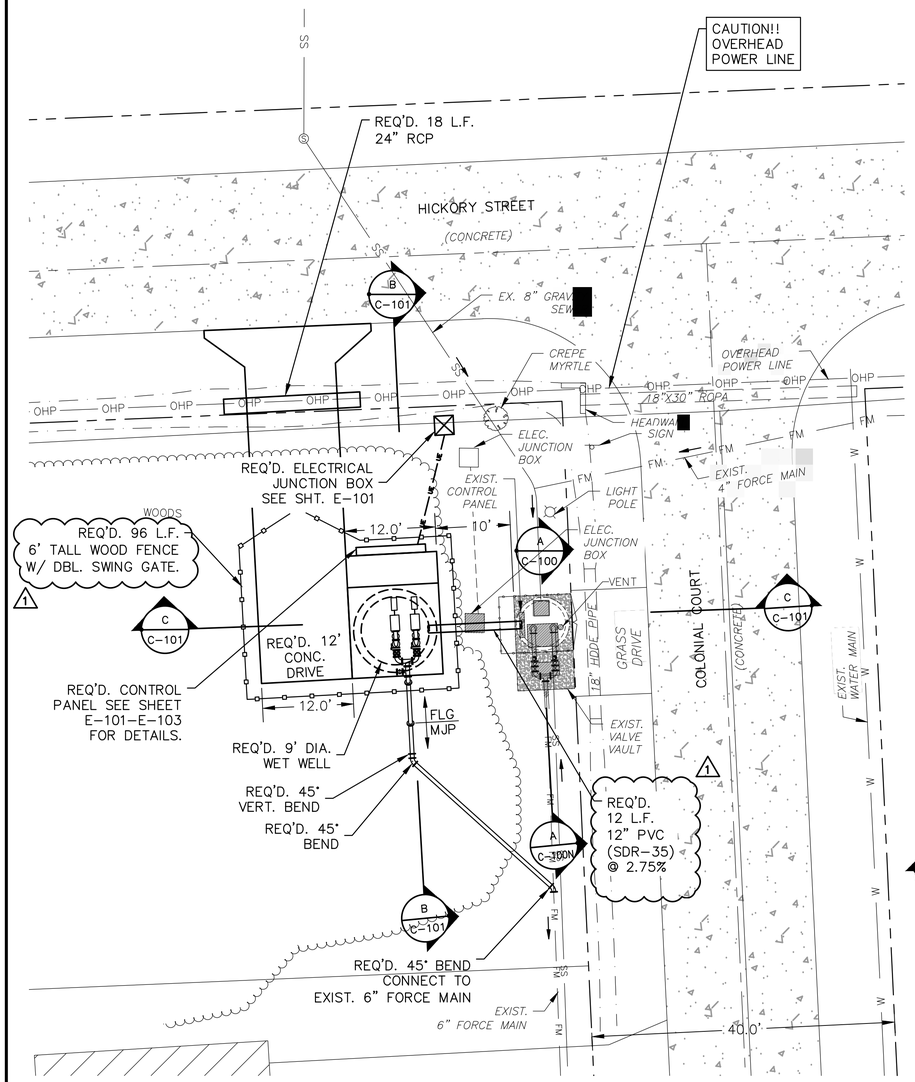
PROJECT NO.:	77183-00
CAD FILE:	C-100N.DWG
ENGR./ARCH.:	MKP
DESIGN BY:	MKP
DRAWN BY:	DMB
CHECKED BY:	MKP
DATE:	04/26/2018

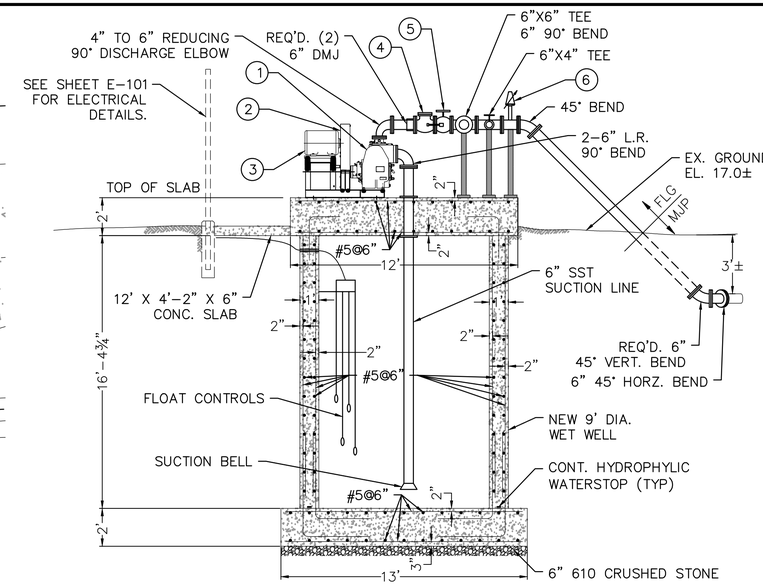
DRAWING INTENT IS TO INDICATE GENERAL ARRANGEMENT, DESIGN AND INTENT OF WORK AND IS PARTLY DIAGRAMMATIC.
DRAWING SHALL NOT BE SCALED.

DEMOLITION PLAN

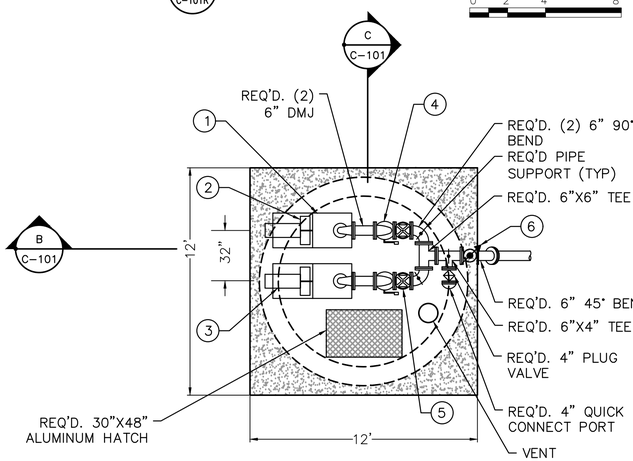
DRAWING NO. C-100N

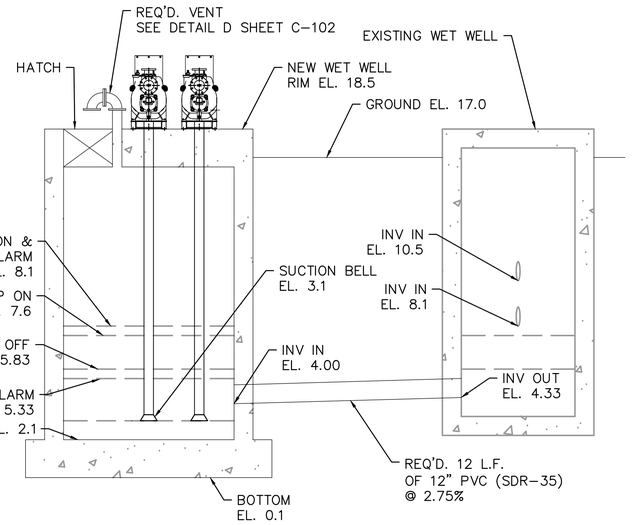
SHEET 2 OF 6





B C-101R NEW LIFT STATION SECTION





1 C-101R SITE PLAN

0 10' 20'

N

GENERAL NOTES: 1

1. UTILITIES SHOWN ARE APPROXIMATE AND HAVE NOT BEEN FIELD VERIFIED. NO SURVEY HAS BEEN CONDUCTED. CONTRACTOR TO EXPOSE AND MEASURE ALL UTILITY DEPTHS AND LOCATIONS PRIOR TO CONSTRUCTION.
2. SITE ADDRESS: 436 COLONIAL COURT
3. ALL HARDWARE BELOW LID OR INSIDE WET WELL (I.E. NUTS, BOLTS, BRACKETS, RAILS, BRACERS, SUPPORTS, LIFTING CABLES, ETC.) SHALL BE 316 STAINLESS STEEL.
4. CONTRACTOR TO SEAL EXISTING WET WELL AND NEW WET WELL WITH SPECTRASHIELD POLYMER LINING SYSTEM OR APPROVED EQUAL. THE FINISHED SYSTEM SHALL PROVIDE 250 MILS MINIMUM COVER. DURING APPLICATION, A WET FILM THICKNESS GAGE SHALL BE USED TO ENSURE A MONOLITHIC COATING AND UNIFORM THICKNESS.
5. DESIRED OPERATING POINT IS 713.5 GPM AT 145 FT. TDH. PUMPS, DRIVE SYSTEMS AND MOTORS SHALL BE PROVIDED AS A COMPLETE SYSTEM CAPABLE OF SUPPLYING THE REQUIRED FLOW AT THE DESIRE OPERATING POINT WITH ONE DUTY PUMP AND ONE STAND BY PUMP.
6. PARISH WILL CLEAR THE TREES FROM THE SITE FOR THE WORK PRIOR TO ISSUING A NTP FOR THIS WORK.
7. UNLESS OTHERWISE INDICATED, ALL 90° ELBOWS SHALL BE LONG RADIUS 90° ELBOWS. 1

A C-101R NEW LIFT STATION PLAN

0 2' 4' 8'

KEY NOTES:

1. SELF PRIMING CENTRIFUGAL PUMP (TYP. OF 2)
2. V BELT DRIVE SYSTEM (TYP. OF 2)
3. 480V, 3 PHASE ELECTRIC MOTOR (TYP. OF 2)
4. 6" CHECK VALVE (TYP. OF 2)
5. 6" PLUG VALVE (TYP. OF 2)
6. 2" COMBINATION AIR VALVE

C C-101R NEW LIFT STATION PROFILE

0 2' 4' 8'

1 ABREVIATIONS

AVE.	AVENUE	L.F.	LINEAR FEET
BLVD.	BOULEVARD	L.R.	LONG RADIUS
CONC.	CONCRETE	LN	LANE
CONT.	CONTINUOUS	MJP	MECHANICAL JOINT PIPE
CT.	COURT	N.	NORTH
DIA.	DIAMETER	OHP	OVERHEAD POWER LINE
DMJ	DISMANTLING JOINT	PVC	POLYVINYLCHLORIDE
DR.	DRIVE	RCP	REINFORCED CONCRETE PIPE
E.	EAST	REQ'D	REQUIRED
EL	ELEVATION	S.	SOUTH
ELEC.	ELECTRICAL	SHT.	SHEET
EX.	EXISTING	SS	SANITARY SEWER
EXIST.	EXISTING	SST	STAINLESS STEEL
FLG	FLANGE PIPE	ST.	STREET, SAINT
FM	FORCE MAIN	TYP	TYPICAL
HDPE	HIGH DENSITY POLYETHELYNE	VERT.	VERTICAL
HORIZ.	HORIZONTAL	W	WEST, WATER MAIN
INV.	INVERT		

Louisiana One Call. before you dig. 1-800-272-3020

PRIOR TO WORK COMMENCEMENT, THE CONTRACTOR IS RESPONSIBLE FOR FINAL VERIFICATION OF THE LOCATION OF THE UTILITIES SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CALL LOUISIANA ONE CALL (811 OR 800-272-3020) AND CITY PARISH DEPARTMENT OF PUBLIC WORKS TO THE UTILITIES LOCATED PRIOR TO CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE UTILITY COMPANIES FOR ALL AREAS OF CONSTRUCTION.

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BUCHART HORN ENGINEERS • ARCHITECTS • PLANNERS

STATE OF LOUISIANA
MIRA K. PARA
License # 34990
6/22/2018
PROFESSIONAL ENGINEER

COLONIAL COURT
LIFT STATION UPGRADE
ST. TAMMANY PARISH

NO.	REVISION	BY	DATE
1	ADDENDUM #1	DMB	6/21/18

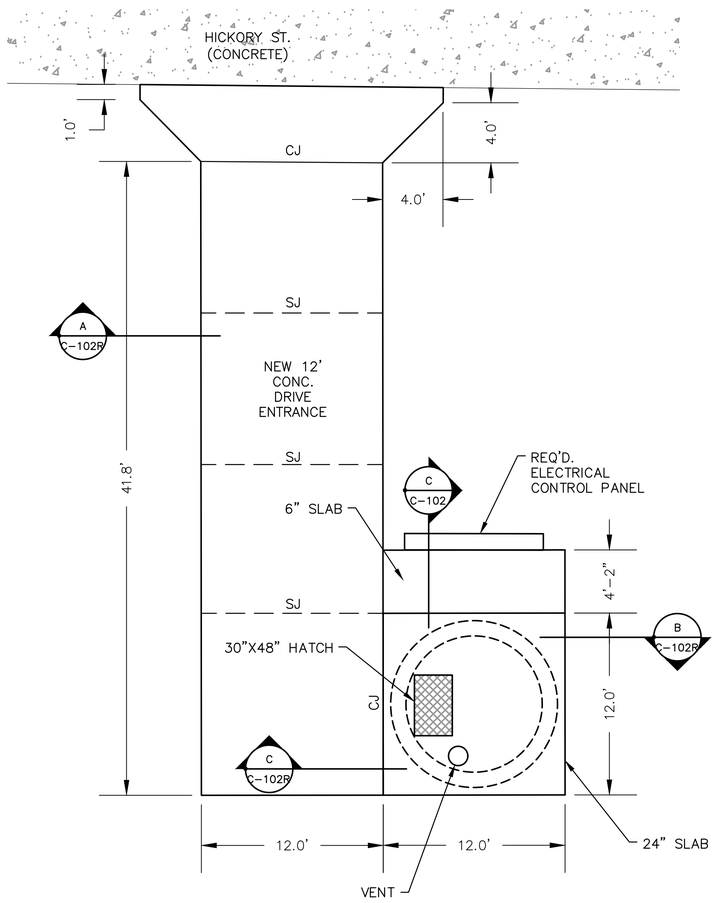
PROJECT NO.:	77183-00
CAD FILE:	C-101R.DWG
ENGR./ARCH.:	MKP
DESIGN BY:	MKP
DRAWN BY:	DMB
CHECKED BY:	MKP
DATE:	04/26/2018

DRAWING INTENT IS TO INDICATE GENERAL ARRANGEMENT, DESIGN AND INTENT OF WORK AND IS PARTLY DIAGRAMMATIC.
DRAWING SHALL NOT BE SCALED.

SITE PLAN

DRAWING NO. C-101R

SHEET 3 OF 6



1 C-102R **CONCRETE SLAB DETAIL**

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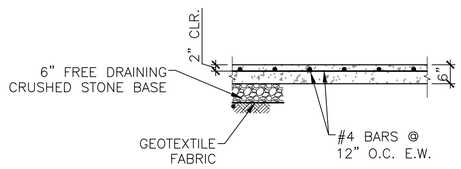
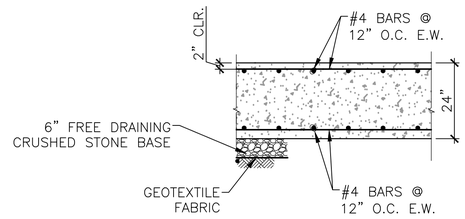


A C-102R **6" CONCRETE PAVEMENT DETAIL**

0 1' 2'



B C-102R **24" CONCRETE SLAB DETAIL**

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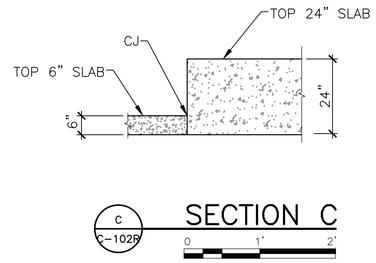
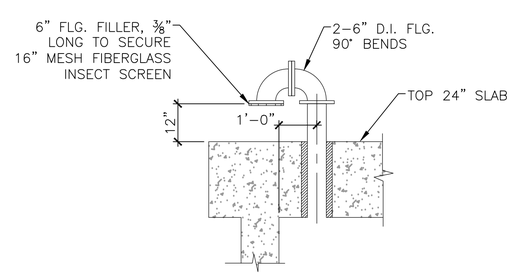


C C-102R **SECTION C**

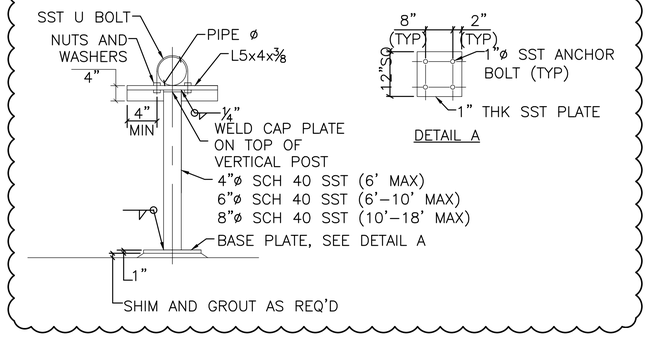
0 1' 2'



D C-102R **VENT PIPE DETAIL**

0 1' 2'

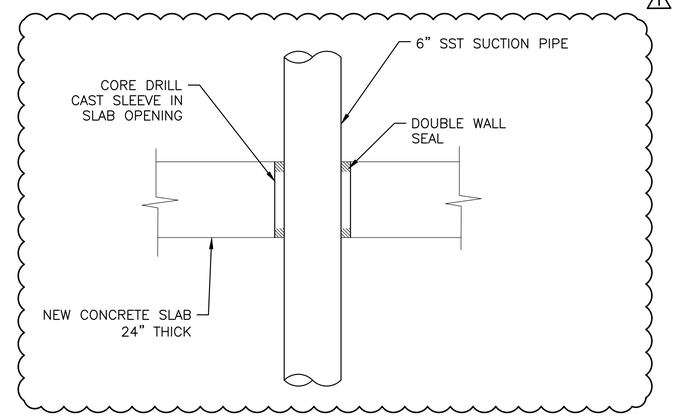
1



2 C-102R **PIPE SUPPORT**

NTS

1



3 C-102R **ROOF PENETRATION**

NTS

N

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BUCHART HORN
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STATE OF LOUISIANA
MIRA K. PARA
License # 34990
6/22/2018
PROFESSIONAL ENGINEER

COLONIAL COURT
LIFT STATION UPGRADE
ST. TAMMANY PARISH

NO.	REVISION	BY	DATE
1	ADDENDUM #1	DMB	5/21/18

PROJECT NO.:	77183-00
CAD FILE:	C-102R.DWG
ENGR./ARCH.:	MKP
DESIGN BY:	MKP
DRAWN BY:	DMB
CHECKED BY:	MKP
DATE:	04/26/2018

DRAWING INTENT IS TO INDICATE GENERAL ARRANGEMENT, DESIGN AND INTENT OF WORK AND IS PARTLY DIAGRAMMATIC.
DRAWING SHALL NOT BE SCALED.

CONCRETE
SLAB
DETAILS

DRAWING NO.
C-102R

SHEET 4 OF 6

SECTION 00 01 10 - TABLE OF CONTENTS - Revised

PROCUREMENT AND CONTRACTING REQUIREMENTS

SPECIFICATIONS

END OF SECTION 00 01 10

SECTION 09 96 00 - HIGH PERFORMANCE COATINGS

PART 1 GENERAL

1.1 DESCRIPTION:

A. A corrosion resistant liner that restores the surface profile and eliminates water infiltration and exfiltration.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. D7234 - Adhesion
   2. D412 - Tensile Strength (PSI)
   3. D412 - Elongation (%)
   4. D624 - Tear Strength (PLI)
   5. D2240 - Hardness
   6. D522 - Flexibility (1/8" mandrel)
   7. D4060 - Taber Abrasion (mg loss)

1.3 SUBMITTALS

A. All materials and procedures required to establish compliance with the specifications shall be submitted upon request to the owner/engineer for review/approval. Submittals shall include at least the following:
   1. Technical Data Sheet on each product used.
   2. Safety Data Sheet (SDS) for each product used.
   3. Manufacturer's Certification of Applicator.
   4. Certified Applicator Minimum Qualifications.
   5. Descriptive literature, bulletins and or catalogs of materials.
   6. Work procedures including flow diversion plan, method of repair, etc.
   7. Material and method for repair of leaks or cracks in the structure.
   8. Applicator and Manufacturer warranty forms

1.4 QUALITY ASSURANCE

A. The manufacturer of the total lining system for wastewater structures shall be a company that specializes in the design and manufacture of corrosion protection materials / systems for wastewater structures.

B. The applicator (company performing the installation) shall be completely trained in leak repair, surface preparation and application of the lining system.

C. The materials/products shall be suitable for installation in a wastewater environment without any deterioration of the liner.

D. The applicator shall be trained and provide a letter of certification from the manufacturer for the handling, mixing, application, and inspection of the liner system as described herein.

E. To ensure total unit responsibility, all materials and installation thereof shall be furnished and coordinated by manufacturer/certified applicator.

1.5 WARRANTY

A. Applicator and Manufacturer must warrant the liner system installation against failure for a period of 10 years from the installation date. Applicator shall correct failures any time prior to 10 years after the installation date. Failure will be deemed to have occurred if the protective liner fails to: (a) prevent the

internal corrosion of the structure or (b) prevent groundwater infiltration. Failure does not include damage resulting from mechanical force or the presence of chemical substances not customarily present or used in Wastewater Structures, defects in the workmanship or devises of others upon which the Wastewater Structure functions or act of God. The liner must be installed in accordance with Manufacturer's instructions by Applicators certified by Manufacturer. Executed 10-year Applicator and Manufacturer warranties are to be provided upon completion of work.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. The materials to be utilized in the lining of wastewater structures shall be designed and manufactured to withstand the severe effects a wastewater environment. The manufacturer of the corrosion protection products shall have at least 10 years of experience in the production of the lining products utilized, and the products shall have satisfactory installation record.

B. Equipment for installation of lining materials shall be of high quality and as recommended by the manufacturer.

C. The lining system to be utilized for wastewater structures shall be a multi-layer 'stress skin panel' liner system as described below:

1. Liner

Installation	Liner
Moisture barrier	Modified Polymer (Silicone modified polyurea)
Surfacer	Polyurethane/Polymeric blend foam
Final corrosion barrier	Modified polymer (Silicone modified Polyurea)

2. The Modified polymer (silicone modified polyurea) shall be sprayable, solvent free, two-component polymeric, moisture/chemical barrier specifically developed for the corrosive wastewater environment.
3. The Polyurethane Rigid Structure Foam, shall be low viscosity two-component, containing flame retardants.
4. Total thickness of multi-layer liner system shall be a minimum of 500 mils.

D. The product shall be SPECTRASHIELD, manufactured by CCI Spectrum, Inc, or equal.

PART 3 EXECUTION

3.1 INITIAL INSPECTION

A. Applicator shall take appropriate action to comply with all local, state, and federal regulations including those set forth by OSHA, EPA, the Owner and any other applicable authorities.

B. Prior to conducting any work, an initial inspection of the structure shall be performed to determine need for protection against hazardous gases or oxygen depleted atmosphere and the need for flow control or flow diversion.

C. If required, submit a plan for flow control or bypass to the owner/engineer for approval prior to conducting the work.

D. New Portland cement structures shall have endured a minimum of 28 days since manufacture prior to commencing installation of the liner system.

3.2 SURFACE PREPARATION

A. The surface preparation program will include checking the atmosphere for hydrogen sulfide, methane, low oxygen, or other gases, approved flow control equipment, and surface preparation equipment.

B. Surface preparation for standard manhole structures shall be in accordance with the manufacturer's recommendations, and may include high pressure water cleaning and shall provide a surface compatible for installation of the liner system.

C. Surface preparation and methods for other structures shall be in accordance with the manufacturer's recommendations, and may include high pressure water cleaning, hydro blasting, abrasive blasting, grinding, or detergent water cleaning, and shall be suited to provide a surface compatible for installation of the liner system.

D. The surface preparation method shall produce a cleaned, abraded and sound surface with no evidence of laitance, loose concrete, loose brick, loose mortar, contaminants or debris, and shall display a surface profile suitable for application of the liner system in accordance with the manufacturer's recommendations.

E. After completion of surface preparation, inspecting for:
   1. Leaks
   2. Cracks
   3. Holes
   4. Exposed Rebar
   5. Ring and Cover Condition
   6. Invert Condition
   7. Inlet and Outlet Pipe Condition

F. After the defects in the structure are identified, repair all leaks and severe cracks with Spectra-Grout, or other methods approved by the manufacturer.

G. Upon completion of leak and crack repair, the surface shall be primed in accordance with the manufacturer's recommendations.

3.3 MATERIAL INSTALLATION

A. Application procedures shall conform to recommendations of the manufacturer, including materials handling, mixing, environmental controls during application, safety and spray equipment.

B. Spray equipment shall be specifically designed to accurately ratio and apply the liner system.

C. Application of multi-component liner system shall be in strict accordance with manufacturer's recommendation. Final installation minimum total thickness shall be 500 mils. A permanent identification and date of work performed shall be affixed to the structure in a readily visible location.

D. A final written report shall be provided to the owner/engineer detailing the location, date of work and description of the work.

3.4 FINAL INSPECTION

A. Final liner system shall be completely free of pinholes or voids. Liner thickness shall be the minimum value as described herein.

B. Visual inspection may be made by the Owner/Engineer. Any deficiencies in the finished liner system shall be marked and repaired according to the procedures set forth by the manufacturer.

END OF SECTION 09 96 00

SECTION 33 31 13 - SANITARY SEWER PIPE - Revised

PART 1 GENERAL

1.1 DESCRIPTION

A. The Work of this section includes, but is not limited to:
   1. Sanitary sewer gravity pipelines
   2. Sanitary sewer pressure pipelines

B. Related Work specified elsewhere:
   1. Section 31 23 17 - Trenching, Backfilling, and Compacting
   2. Section 33 01 30.13 - Sewer Testing

1.2 QUALITY ASSURANCE

A. Reference Standards:
   1. American National Standards Institute (ANSI):
      a. ANSI/AWWA C104/A21.4 - Cement Mortar Lining for Ductile-Iron Pipe and Fittings for Water
      b. ANSI/AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings, 3" through 48", for Water and Other Liquids
      c. ANSI/AWWA C111/A21.11 - Rubber Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
      d. ANSI/AWWA C153/A21.53 - Ductile-Iron Compact Fittings For Water Service
      e. ANSI/AWWA C151/A21.51 - Ductile-Iron Pipe Centrifugally Cast
   2. American Society for Testing and Materials (ASTM):
      a. ASTM C76 Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
      b. ASTM C443 Joints for Circular Concrete Sewer and Culvert Pipe Using Rubber Gaskets

B. Materials contaminated with gasoline, lubricating oil, liquid or gaseous fuel, aromatic compounds, paint solvent, paint thinner, or acid solder will be rejected.

1.3 SUBMITTALS

A. Submit each manufacturer's certification attesting that the pipe, pipe fittings, joints, joint gaskets and lubricants meet or exceed specification requirements.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Do not place materials on private property.

B. During loading, transporting and unloading, exercise care to prevent damage to materials.

C. Do not drop pipe or fittings.

D. Avoid shock or damage at all times.

E. Take measures to prevent damage to the exterior surface or internal lining of the pipe.

F. Do not stack pipe higher than recommended by the pipe manufacturer.

G. Store gaskets for mechanical and push-on joints in a cool, dry location out of direct sunlight and not in contact with petroleum products.

PART 2 PRODUCTS

2.1 CONCRETE SEWER PIPE

A. Reinforced Gravity Sewer Pipe and Fittings: ASTM C76, Reinforced Concrete Culvert, Storm Drain and Sewer Pipe Class III, Wall A.

B. Joints: Tongue and groove, or bell and spigot.

C. Gaskets: Solid circular cross-section O-ring, ASTM C443. Joints for circular concrete sewer and culvert pipe, using rubber gaskets.

D. Provide in the internal design pressure rating, and for the live and dead loads as indicated on the Contract Drawings.

2.2 DUCTILE-IRON PIPE

A. Pipe, ANSI/AWWA C151/A21.51; standard cement mortar lining, ANSI/AWWA C104/A21.4, outside coated.
   1. Pipe - 3" to 12": Pressure Class - 350 psi

B. Ductile Iron Fittings:
   1. ANSI/AWWA C110/A21.10 or C153/A21.53; fittings psi pressure rating to match required pipe rating above.
   2. Fitting to be cement mortar lined and outside coated as for ductile iron pipe.

C. Joints (ANSI/AWWA C111/A21.11): Where not specifically indicated on the Contract Drawings, joints may be either mechanical joint or push-on joint.

D. Flanged Joints: ANSI/AWWA C110/A21.10

E. Rubber Gaskets, Lubricants, Glands, Bolts and Nuts: ANSI/AWWA C111/A21.11.

2.3 STAINLESS STEEL PIPE

A. Pipe: Welded; ASTM A312, TP 304L; and ANSI B36.19, Schedules 5S, 10S and 40S, as indicated on the Drawings.

B. Fittings:
   1. ASTM A403, WP 304L.

C. Joints: Welded, flanged, or threaded as indicated on the Drawings. All flanges shall be stainless steel. All bolts shall be stainless steel.

2.4 DISMANTLING JOINTS

A. Flange Spool: AWWA Class D flange compatible with ANSI Class 125 and 150 bolt circles. For 3 inches through 12 inches, pipe is Schedule 40 ASTM A53. For 14 inches through 24 inches pipe materials are ASTM A36.

B. Body: ASTM A536 ductile (nodular) iron meeting or exceeding Grade 65-45-12 with ANSI Class 125 and 150 bolt circles.

C. Gaskets: ASTM D 2000.

D. Restraining Bolts: 7/8 -9 roll thread, ductile (nodular) iron, meeting or exceeding ASTM A536.

E. Restraining Lugs: Ductile (nodular) iron, meeting or exceeding ASTM A536.

F. Lug Locators: Polyurethane, a thermal plastic.

G. T-bolts and Nuts: High strength low alloy steel T-head bolt. National coarse rolled thread and heavy hex nut. Steel meets AWWA C111 composition specifications.

H. Coatings: Fusion bonded epoxy, NSF 61 certified.

I. Manufacturer: Romac Industries, Inc., Model DJ405, or equal.

2.5 THRUST RESTRAINT

A. Provide pressure pipeline with restrained joints or concrete thrust blocks at all bends, tees, and changes in direction.

B. Submit design calculations showing determination of restrained lengths and submit joint restraint details. Method of joint restraint shall utilize devices specifically designed for the application for which manufacturer's data is available for the application. Submit manufacturer's literature for approval.

2.6 FLEXIBLE COUPLINGS

A. Elastomeric plastic sleeve resistant to chemicals and normal sewer gases leakproof and rootproof; positive seal against infiltration and exfiltration; stainless steel clamp bands.

B. Manufacturer: Fernco, Davison Michigan, or equal.

PART 3 EXECUTION

3.1 PREPARATION

A. Perform trench excavation to the line and grade indicated on the Contract Drawings and as specified in Section 31 23 17 - Trenching, Backfilling and Compacting.

B. Unless otherwise indicated on the Contract Drawings, provide for a minimum cover of 4 feet above the top of piping laid in trenches.

C. Provide pipe bedding as specified in Section 31 23 17 - Trenching, Backfilling and Compacting for each type of pipe used.

D. Place aggregate in a manner to avoid segregation, and compact to the maximum practical density so that the pipe can be laid to the required tolerances.

3.2 LAYING PIPE IN TRENCHES

A. Give ample notice to the Engineer in advance of pipe laying operations.

B. Use laser alignment instruments.

C. Lower pipe into trench using handling equipment designed for the purpose to assure safety of personnel and to avoid damage to pipe. Do not drop pipe.

D. Lay pipe proceeding upgrade with the bell or groove pointing upstream.

E. Lay pipe to a true uniform line with the barrel of the pipe resting solidly in pipe bedding material throughout its length.

F. Excavate recesses in pipe bedding material to accommodate joints, fittings and appurtenances.

G. Do not subject pipe to a blow or shock to achieve solid bearing or grade.

H. Lay each section of pipe in such a manner as to form a close concentric joint with the adjoining section and to avoid offsets in the flow line.

I. Clean and inspect each section of pipe before joining.

J. Assemble to provide tight, flexible joints that permit movement caused by expansion, contraction, and ground movement.

K. Use lubricant recommended by the pipe or fitting manufacturer for making joints.

L. If unusual joining resistance is encountered or if the pipe cannot be fully inserted into the bell, disassemble joint, inspect for damage, reclean joint components, and reassemble joint.

M. Assemble joints in accordance with recommendations of the manufacturer.

N. Push-on Joints:
   1. Clean the inside of the bell and the outside of the spigot.
   2. Insert rubber gasket into the bell recess.
   3. Apply a thin film of gasket lubricant to either the inside of the gasket or the spigot end of the pipe, or both.
   4. Insert the spigot end of the pipe into the socket using care to keep the joint from contacting the ground.
   5. Complete the joint by forcing the plain end to the bottom of the socket.
   6. Mark pipe that is not furnished with a depth mark before assembly to assure that the spigot is fully inserted.

O. Mechanical Joints:
   1. Wash the socket and plain end.
   2. Apply a thin film of soapy water.
   3. Slip the gland and gasket over the plain end of the pipe.
   4. Apply soapy water to gasket.
   5. Insert the plain end of the pipe into the socket and seat the gasket evenly in the socket.
   6. Slide the gland into position, insert bolts, and finger-tighten nuts.
   7. Bring bolts to uniform tightness; tighten bolts 180 degrees apart alternately.

P. Reinforced Concrete Joints:
   1. Wipe clean end of the pipe and inside of rubber gasket.
   2. Equalize gasket circumferential tension.
   3. Apply joint lubricant.
   4. Insert pipe into coupling, bell or groove and force into place to the bottom of the socket.
   5. After joint assembly, check rubber ring location with a suitable gage.

Q. Flanged Joints:
   1. Tighten flange bolts so that the gasket is uniformly compressed and sealed; do not distort flanges; do not exceed manufacturer's recommended maximum torque.
   2. Leave flange bolts with ends projecting 1/8 inch to 1/4 inch beyond the face of the nut after tightening.

R. Disassemble and remake improperly assembled joints using a new gasket.

S. Grade Check:
   1. Check each pipe installed as to line and grade in place.
   2. Correct deviation from grade immediately.

3. A deviation from the designed grade as shown on the Contract Drawings, or deflection of pipe joints, will be cause for rejection.

T. Place sufficient backfill on each section of pipe, as it is laid, to hold firmly in place.

U. Clean interior of the pipe as work progresses; where cleaning after laying is difficult because of small pipe size, use a suitable swab or drag in the pipe and pull forward past each joint immediately after the jointing has been completed.

V. Keep trenches and excavations free of water during construction.

W. When the work is not in progress, and at the end of each workday, securely plug open ends of pipe and fittings to prevent trench water, earth, or other substances from entering the pipes or fittings.

X. When it is necessary to deflect pressure sewer mains from a straight alignment horizontally or vertically, do not exceed the following limits:
   1. Ductile-Iron Pipe: Per AWWA C600.

3.3 BACKFILLING TRENCHES

A. Backfill pipeline trenches only after examination of the pipe laying by the Engineer.

B. Backfill trenches as specified in Section 31 23 17 - Trenching, Backfilling and Compacting.

END OF SECTION 33 31 13