



City of Republic - Invitation for Bid

Wastewater Infrastructure Installation at Hankins Farm Industrial Park 2561 State Highway MM

SEALED BIDS MUST BE PHYSICALLY RECEIVED AT REPUBLIC CITY HALL PRIOR TO 3:30 P.M. on Monday, July 11, 2022. Bids will be opened by the City at same time and location.

BIDS SHOULD BE ADDRESSED AS FOLLOWS:

**City of Republic
c/o City Clerk, Laura Burbridge
213 N. Main Avenue
Republic, MO 65738**

Bids must be submitted on the forms provided and must be manually signed by the individual authorized to legally bind the Bidder.

- Bids shall be submitted with the **Invitation for Bid ("IFB") project name or item clearly indicated on the outside of the mailing envelope.**
- Bids received after the opening date and time **will be rejected.**
- The attached Terms and Conditions shall become part of any contract, agreement or award resulting from this Invitation for Bid.
- FAXED/EMAILED BIDS WILL NOT BE ACCEPTED.
- You are invited to submit your Bid to furnish the materials and/or services described herein. Please submit your prices/fees net of all discounts.
- Bids will be taken to City Council for approval on **Tuesday July 26, 2022.** Notice to proceed shall follow immediately upon and following approval granted by City Council.

GENERAL DESCRIPTION:

Installation and furnishing of Sewer Gravity Main, Sewer Force Main, New Lift Station, and Decommissioning of Existing Lift Station.

Approximation of work:

Installation of ~2680 LF of gravity sewer main, (10) new manholes, and ~1520 LF of force sewer main, Including two bores with casing under identified blue line stream, removal of pumps at existing lift station and installation of new pumps at new location to be constructed. New lift station construction shall consist of everything required for construction, and/or precast wet well materials, See plans for details quantities listed here are estimates only. Certain portions of gravity sewer to be installed first, as per plan.

See Engineering Plans and Specifications for details

This project is being bid as a city project however, the developer is also bidding a portion of this project separately including but not limited to: earthwork, stormwater infrastructure, curb & gutter, roadway construction, etc. City of Republic crews will be acquiring and installing watermain throughout the project.

Inquiries: All inquiries for information should be directed to:

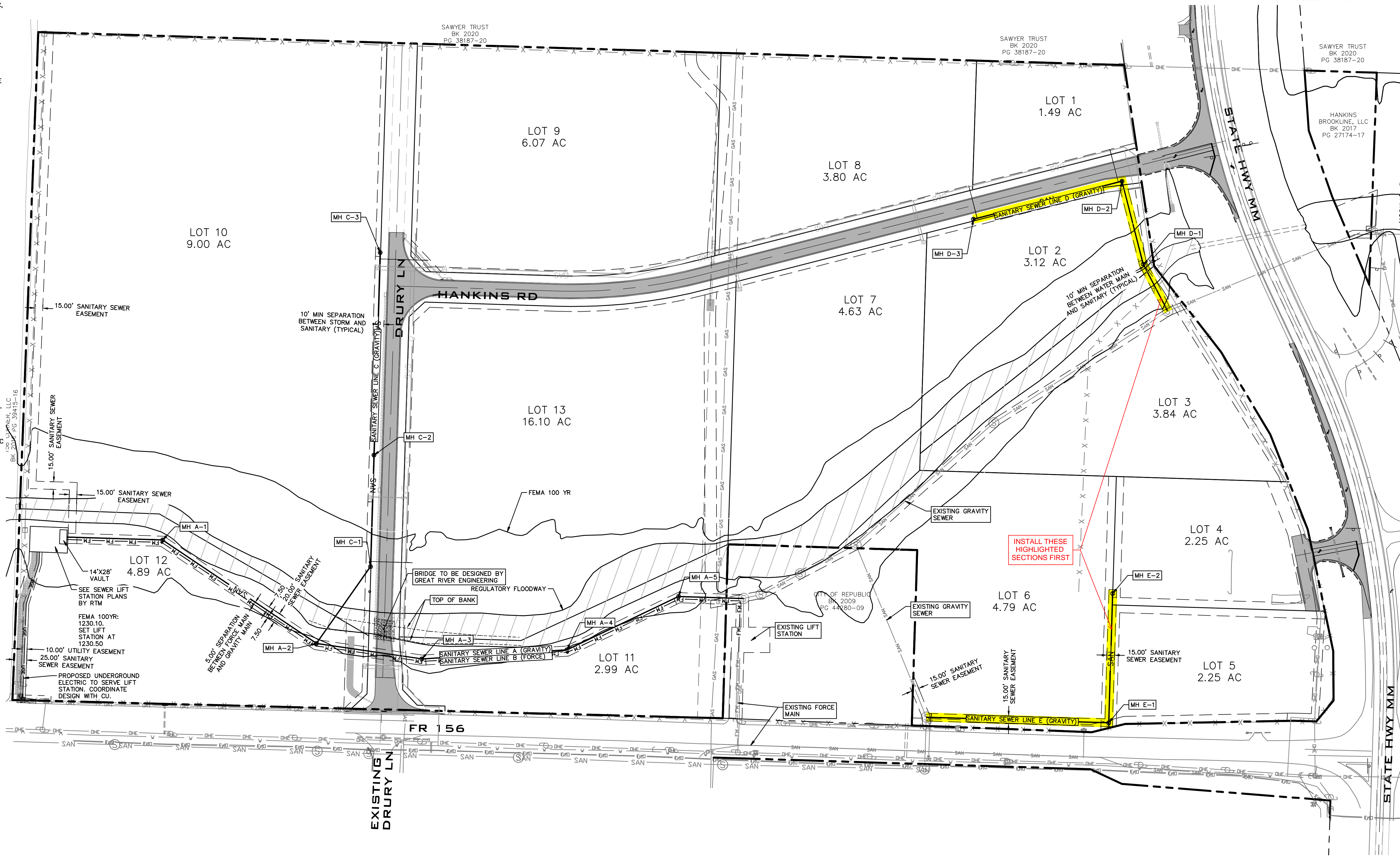
Garrett Brickner, Engineering Manager
BUILDS Department, City of Republic
gbrickner@republicmo.com
(417) 732-3405

Important Notice Regarding Competitive Bidding:

It is the City's intent and desire that this Invitation for Bid promotes competitive Bidding. To the extent any language, requirements, terms and/or requests contained within this Invitation for Bid result in the elimination of all but one source from which a responsive and responsible Bid may be submitted, such restriction/limitation is not intended by the City, but is merely an unintentional error. In the event such error is discovered by any potential Bidder, the potential Bidder must notify the City contact listed above of the error, in writing, no later than three (3) days prior to the Bid opening day. Upon receipt of any such notice, the City will take reasonable efforts to correct the error and resubmit the Invitation for Bid once corrected.

SANITARY SEWER GENERAL NOTES:

- 1) IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF EXISTING UNDERGROUND FACILITIES PRIOR TO BEGINNING INSTALLATION OF NEW FACILITIES. CONTACT THE ENGINEER FOR INSTRUCTIONS WHEREVER ANY CONFLICTS ARE DISCOVERED.
- 2) IT IS THE CONTRACTOR'S RESPONSIBILITY TO CORRECT ANY DAMAGE TO UNDERGROUND UTILITIES OR OTHER OBSTRUCTIONS WHICH IS DUE TO HIS OPERATIONS.
- 3) SANITARY SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE "CONSTRUCTION SPECIFICATIONS FOR PUBLIC IMPROVEMENTS, REPUBLIC, MISSOURI" ISSUED BY THE CITY OF REPUBLIC, MISSOURI.
- 4) ALL AREAS DISTURBED DURING CONSTRUCTION OF THE SANITARY SEWER MUST BE SEEDED AND MULCHED AS SOON AS BACKFILLING IS COMPLETED.
- 5) THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FULLY FAMILIAR WITH ALL OF THE CONDITIONS THAT PERTAIN TO THE WORK DESCRIBED HEREIN. THE FAILURE TO UNDERSTAND OR TO HAVE KNOWLEDGE OF ISSUES THAT COULD HAVE BEEN DETERMINED PRIOR TO BIDDING WILL NOT CONSTITUTE GROUNDS FOR ASKING FOR WORK CHANGE ORDERS OR EXTRA WORK.
- 6) THE CONTRACTOR SHALL STRICTLY COMPLY WITH ALL OSHA SAFETY RULES AND REGULATIONS AND USE ONLY APPROVED EQUIPMENT REQUIRED FOR THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL ALSO STRICTLY COMPLY WITH ALL OSHA SAFETY RULES AND REGULATIONS AND USE ONLY APPROVED METHODS OF EXCAVATION, TRENCHING, AND SHORING METHODS AS DESCRIBED IN OSHA 29 CFR 1926.650. THE CONTRACTOR SHALL MAINTAIN AND CLOSELY SUPERVISE ALL SAFETY PRACTICES AND CODES. EXTREME CARE SHALL BE TAKEN TO SAFEGUARD THE PUBLIC. EMPLOYEES OF THE CITY AND THE EMPLOYEES OF THE CONTRACTOR.
- 7) THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING PAVEMENT, CURB & GUTTER, AND SIDEWALK BACK IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF REPUBLIC'S TECHNICAL SPECIFICATIONS BOOKLET AND DRAWINGS.
- 8) THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES BEFORE EXCAVATION. UTILIZE "MISSOURI ONE-CALL" BY CALLING 1-800-DIG-RITE AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.
- 9) CITY UTILITIES WILL STABILIZE POWER/LIGHT POLES TO PREVENT UNDERMINING DURING CONSTRUCTION.
- 10) THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING DISCHARGE OF SEDIMENT FROM THE SITE AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE NECESSARY MEASURES APPROVED BY THE CITY DURING ALL PHASES OF THESE OPERATIONS REGARDLESS OF WHETHER THEY ARE SPECIFICALLY NOTED ON THE DRAWINGS AND SHALL MAINTAIN AND REPLACE CONTROLS AS NECESSARY DURING THE COURSE OF THESE OPERATIONS.
- 11) THE CONTRACTOR SHALL MINIMIZE DISTURBANCE OF THE CONSTRUCTION AREA AND PHASE CONSTRUCTION SUCH THAT NO DISCHARGE OF SEDIMENT OR SEDIMENT-LADEN WATER OCCURS ON OFF-SITE PROPERTY. ANY ACCUMULATED SEDIMENT IN STORM DRAINS OR OFF-SITE PROPERTY SHALL BE REMOVED PRIOR TO FINAL ACCEPTANCE.
- 12) THE CONTRACTOR SHALL CLEAN STREETS (AS NECESSARY), BOTH INTERIOR AND ADJACENT TO THE SITE, AS NEEDED AFTER EACH RAINFALL, AND AT THE END OF CONSTRUCTION.
- 13) MANHOLE COVERS, VALVE BOXES, AND OTHER UTILITY APPURTENANCES SHALL NOT ENCROACH ON SIDEWALKS, CURBS, OR PAVEMENT. WHERE CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL CONTACT THE ENGINEER PRIOR TO PROCEEDING.
- 14) A COPY OF THE FILED PLANS MUST BE ON SITE AT ALL TIMES.
- 15) BACKFILL WITHIN RIGHT-OF-WAY TO CONFORM TO CITY OF REPUBLIC CONSTRUCTION SPECIFICATIONS FOR PUBLIC IMPROVEMENTS, SECTION 02222.
- 16) THE CONTRACTOR IS RESPONSIBLE FOR ANY PRIVATE PROPERTY DAMAGE.
- 17) NO MEASUREMENTS SHALL BE SCALED OFF THE PLANS. USE ONLY LABELED DISTANCES.
- 18) ALL LATERALS SHALL HAVE A 1" PVC PIPE AT THE END OF THE LATERAL PER CITY DETAIL FIGURE 20: STANDARD SEWER SERVICE CONNECTION FIGURE 02620-2. TRACER WIRE SHALL BE INSTALLED ON ALL LATERALS FROM SEWER MAIN TO CLEANOUT LOCATION PER CITY DETAIL FIGURE 20: STANDARD SEWER SERVICE CONNECTION FIGURE 02620-2.

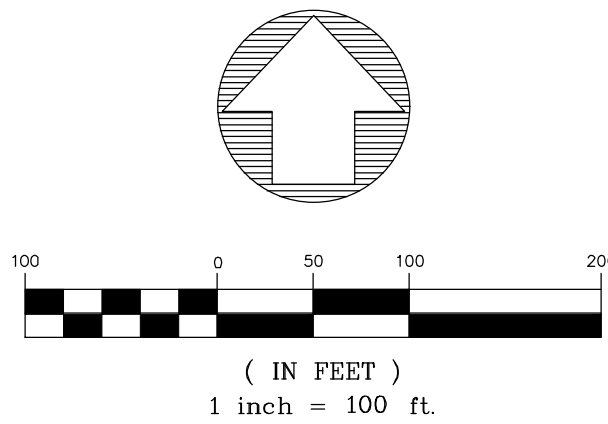


COVER SHEET

SANITARY SEWER PLAN

HANKINS FARM

REPUBLIC, MISSOURI



DATE:	
BY:	
REVISIONS:	
SCALE: 1" = 100'	
FIELD BY: TS, JS	
DRAWN BY: DCR	
CHECKED BY: DCR	

SANITARY SEWER COVER SHEET

DRURY LANE EXTENSION

HANKINS FARM

2561 S STATE HWY MM

REPUBLIC, MO

Missouri State Certificate of Authority

Engineering #2005015604

Land Surveying #2009028050

LEE Engineering & Associates, L.L.C.

1200 E. Woodhurst Dr., Suite D200

Springfield, Missouri 65804

417-886-9100 (phone)

417-886-9336 (fax)

dlc@leeengineering.biz

"Engineering with Integrity"

LEE ENGINEERING & ASSOCIATES, L.L.C.

DANIEL C. LEE

REGISTERED PROFESSIONAL ENGINEER

PE-3021002756

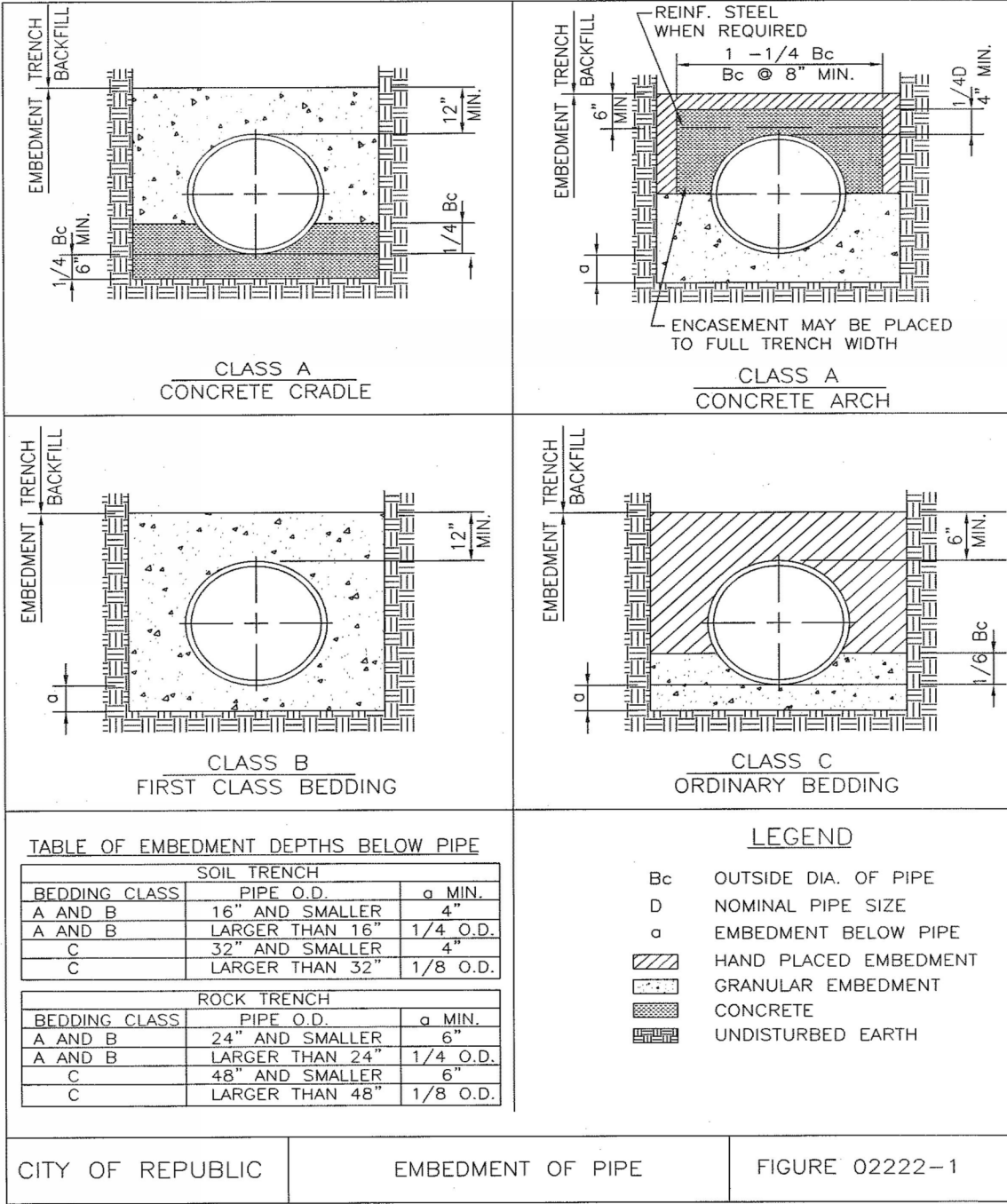
06/10/2022

DATE: 2022-06-10

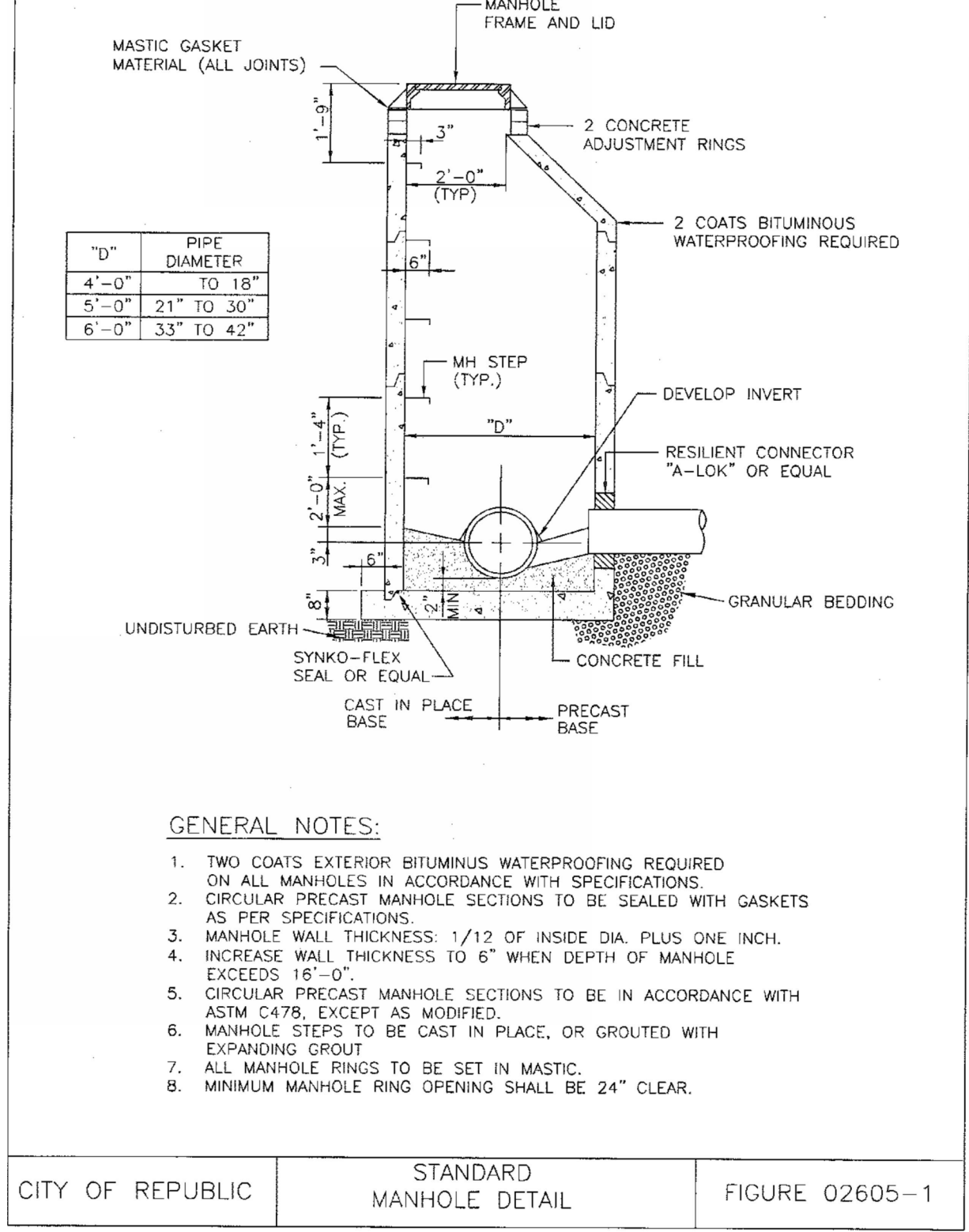
SHEET: S1

PROJECT: 2017

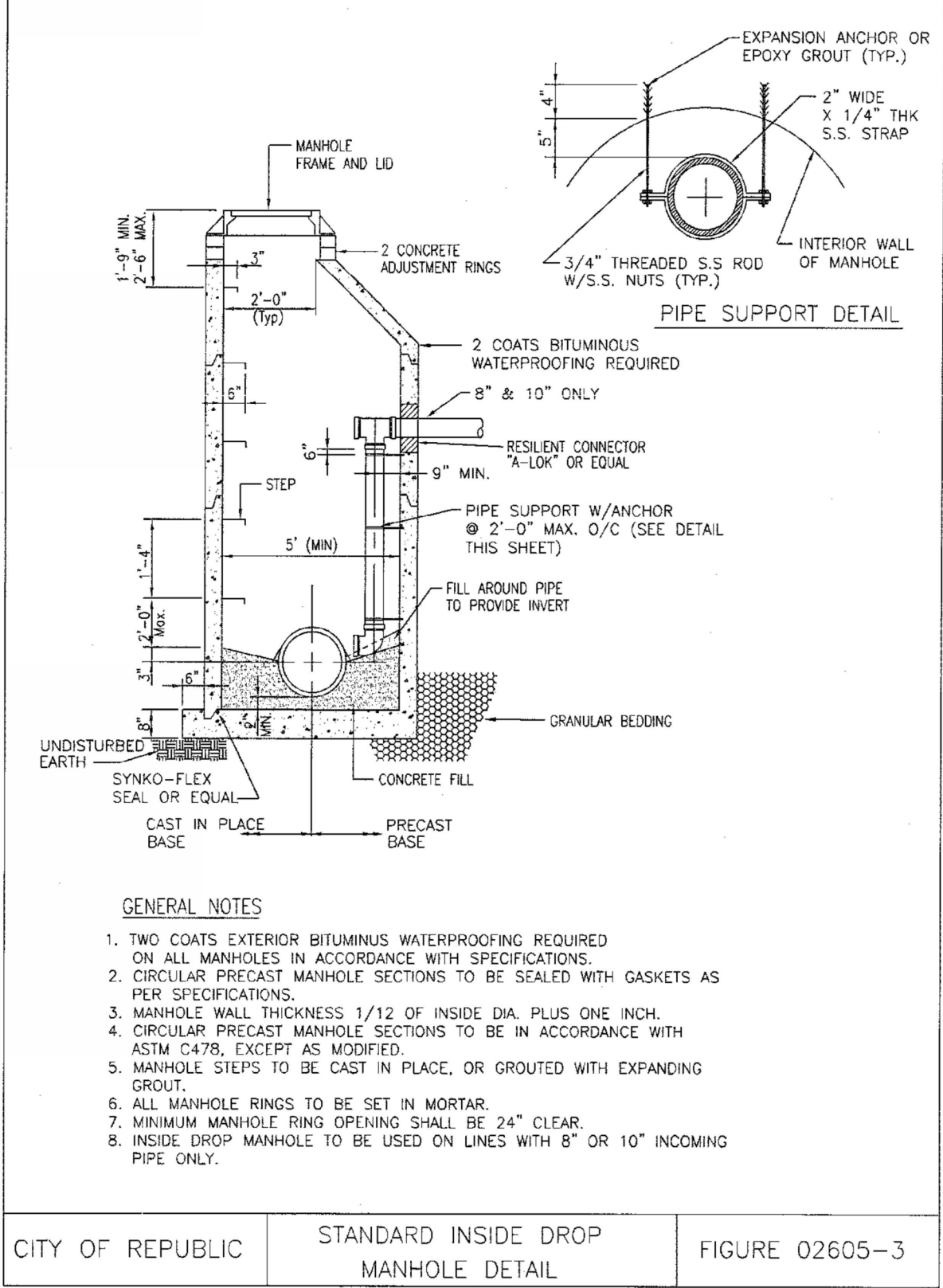
FILE: Drury Lane Sanitary Sewer.dwg



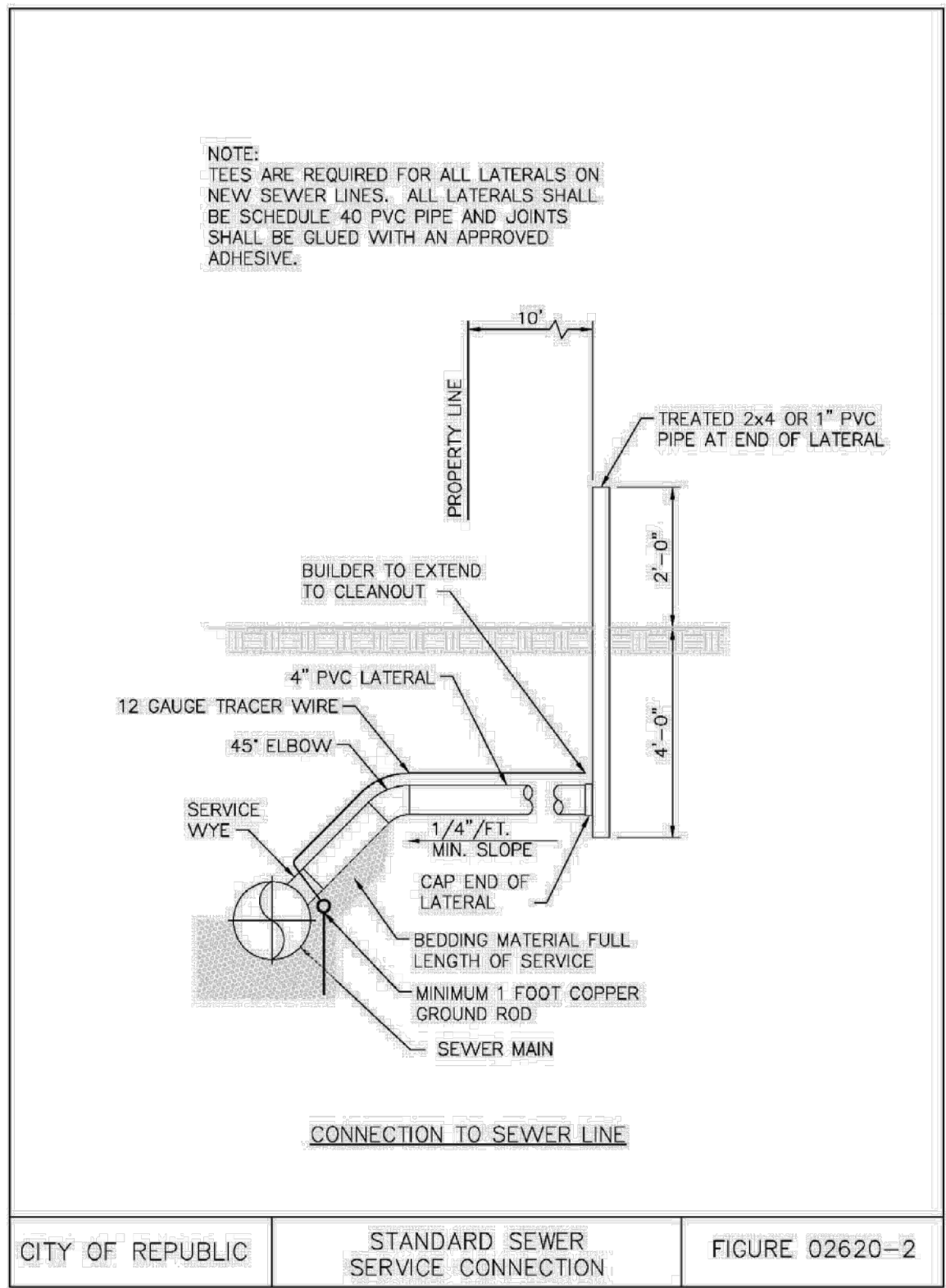
CITY OF REPUBLIC EMBEDMENT OF PIPE FIGURE 02222-1



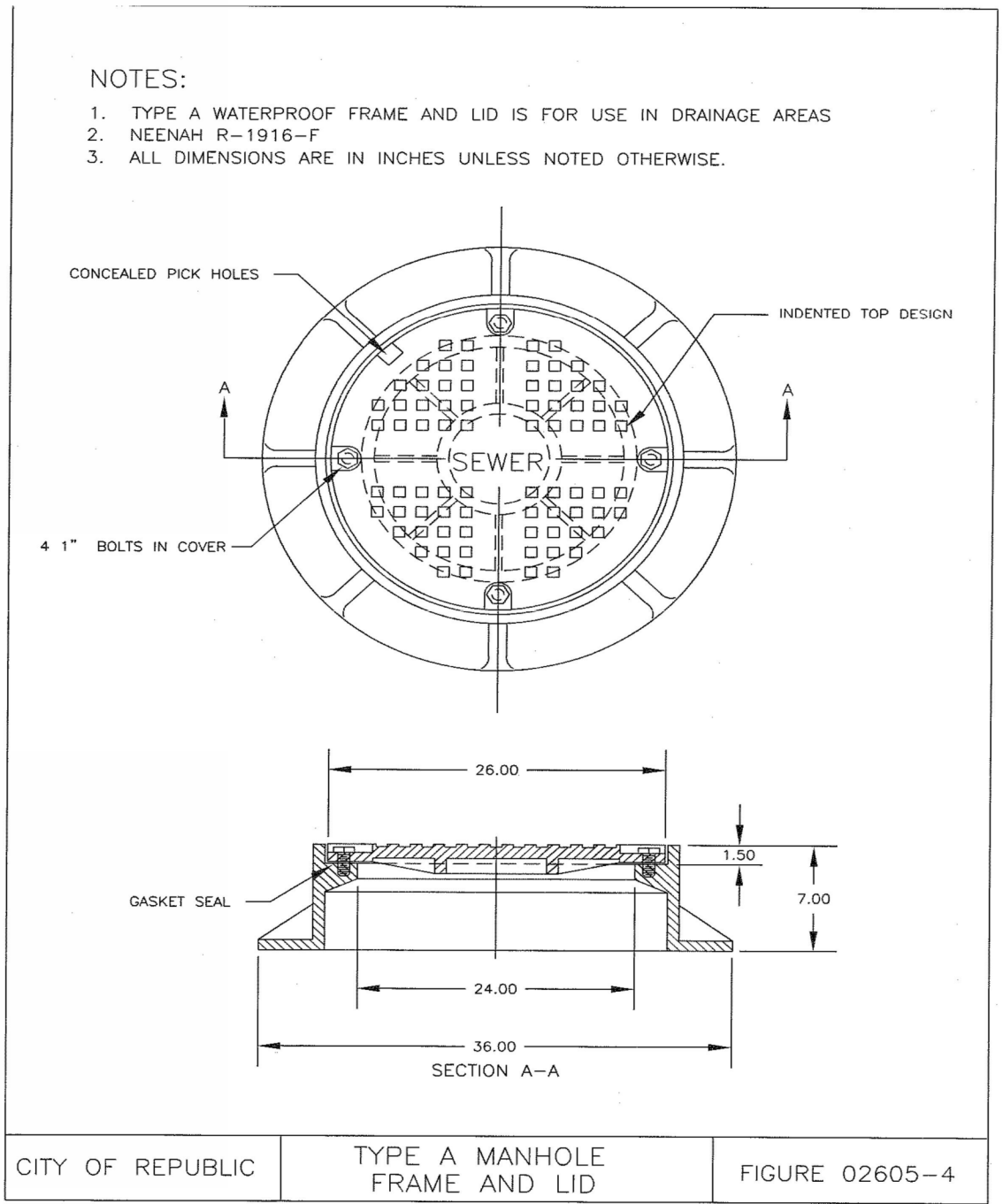
CITY OF REPUBLIC STANDARD MANHOLE DETAIL FIGURE 02605-1



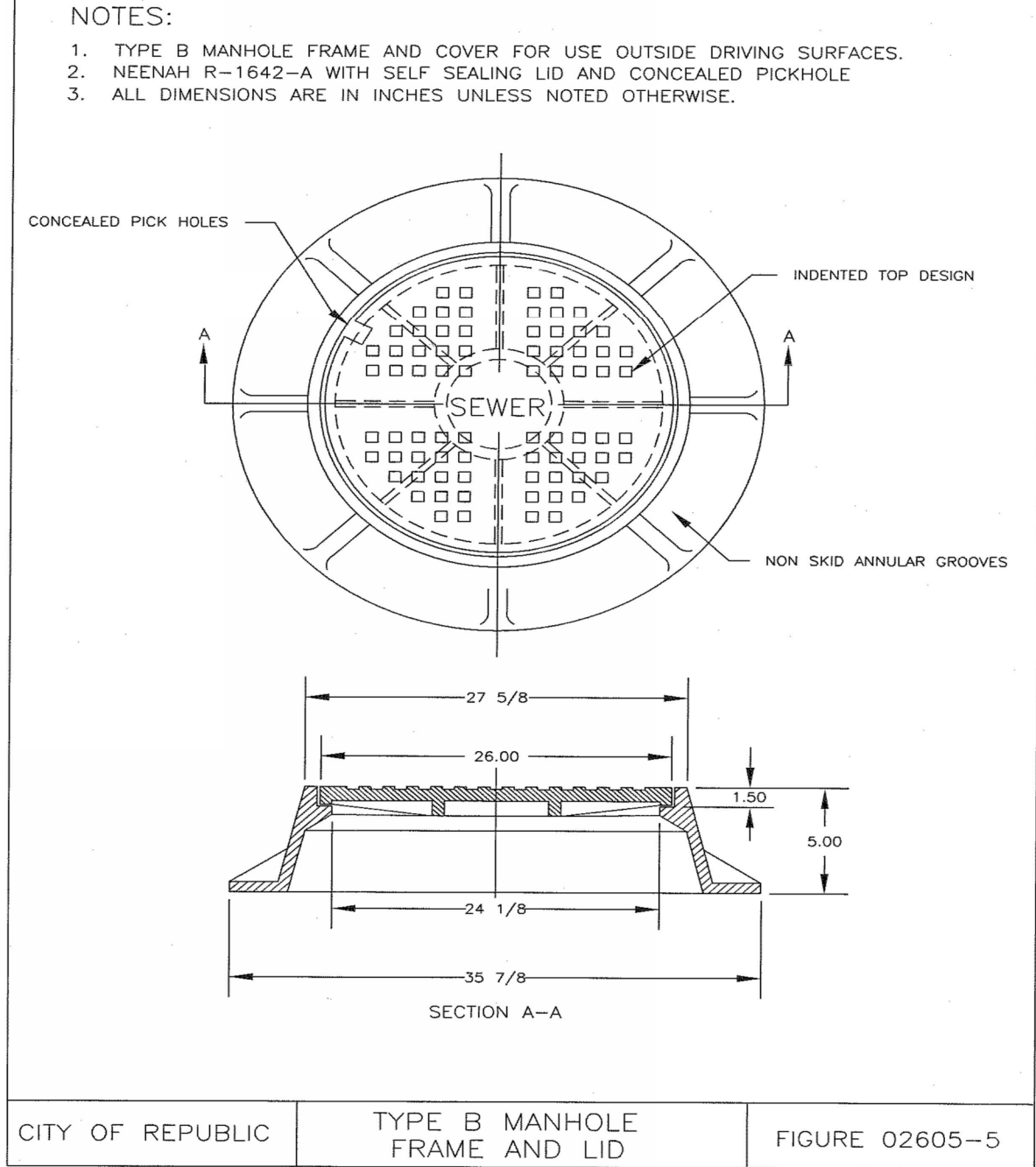
CITY OF REPUBLIC STANDARD INSIDE DROP MANHOLE DETAIL FIGURE 02605-3



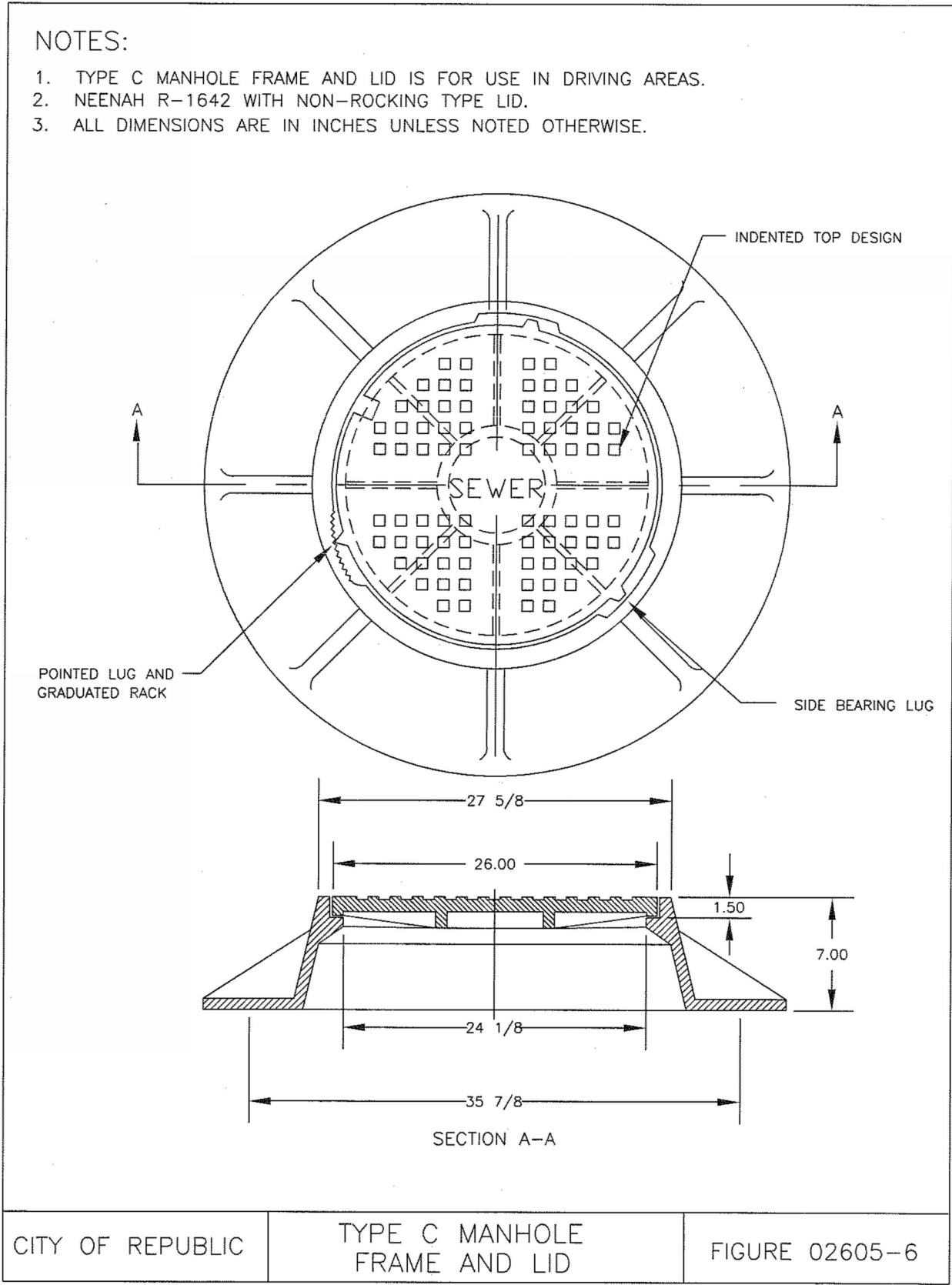
CITY OF REPUBLIC STANDARD SEWER SERVICE CONNECTION FIGURE 02620-2



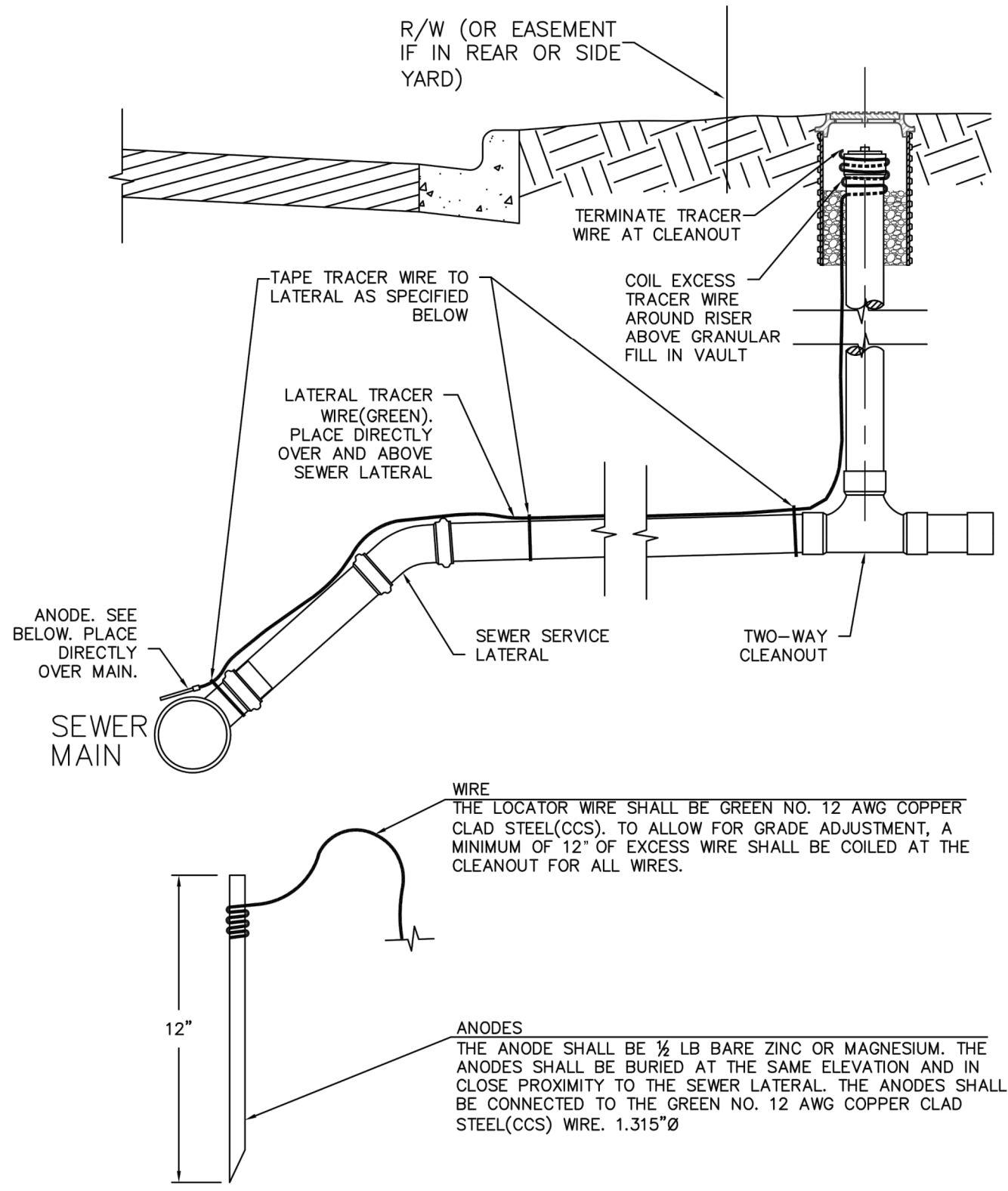
CITY OF REPUBLIC TYPE A MANHOLE FRAME AND LID FIGURE 02605-4



CITY OF REPUBLIC TYPE B MANHOLE FRAME AND LID FIGURE 02605-5



CITY OF REPUBLIC TYPE C MANHOLE FRAME AND LID FIGURE 02605-6



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417-886-9336 (fax)
dlee@leeengineering.biz

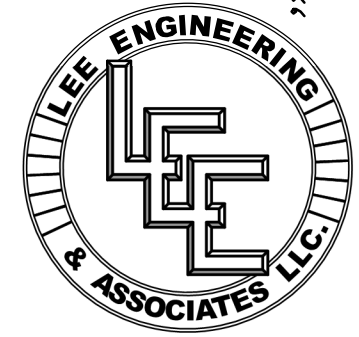
SANITARY SEWER NOTES & DETAILS

DRURY LANE EXTENSION

HANKINS FARM
2561 S STATE HWY MM
REPUBLIC, MO

Missouri State Certificate of Authority
Engineering #2005015504
Land Surveying #2009028050

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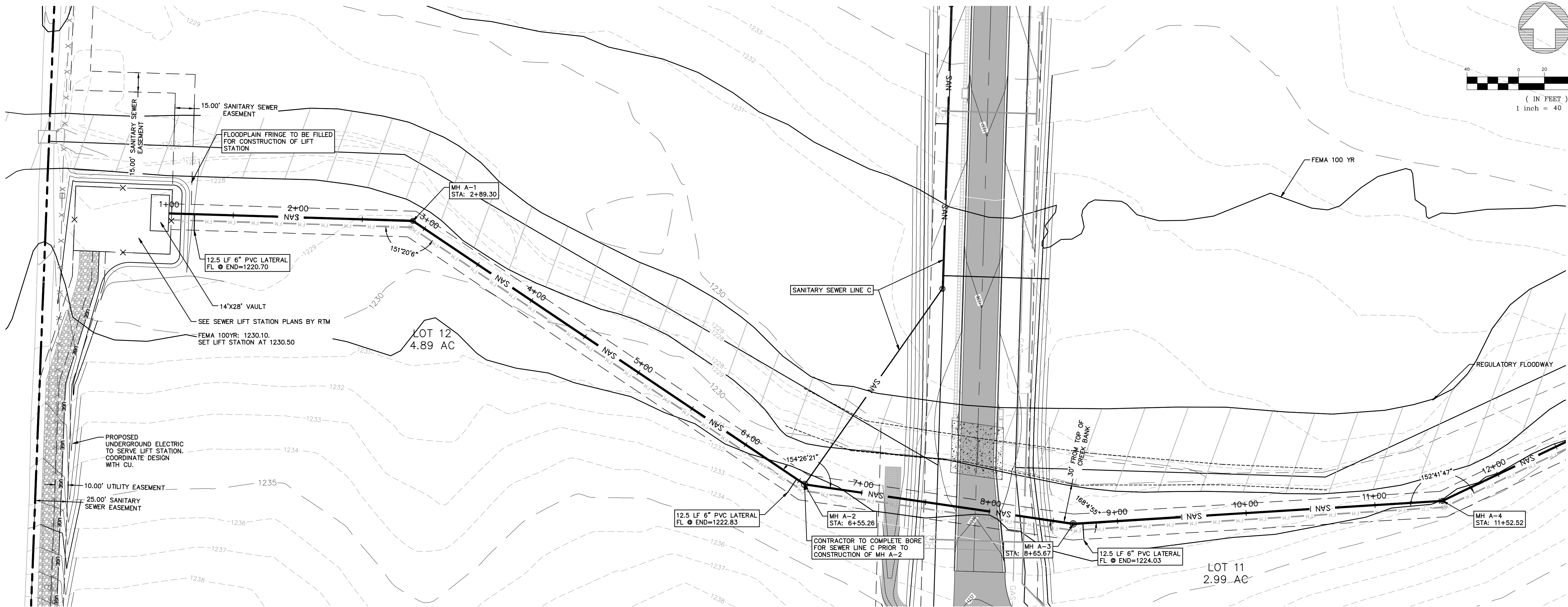


DATE: 2022-06-10

SHEET: S2

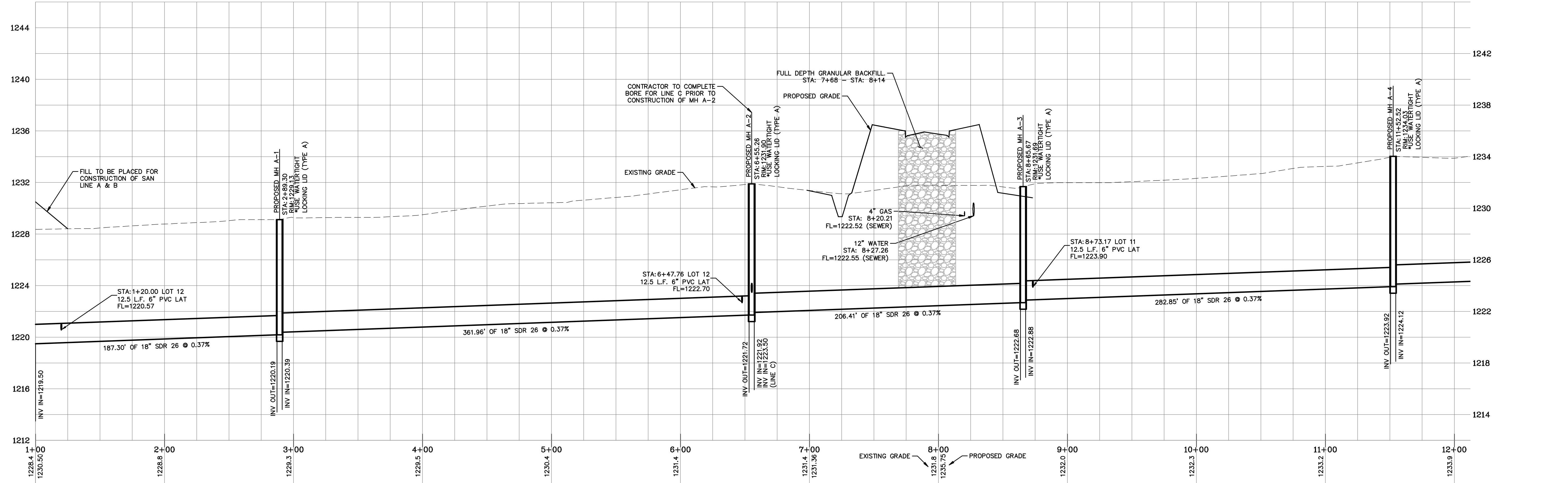
PROJECT: 2017

FILE: Drury Lane Sanitary Sewer.dwg



SANITARY LINE A - STA 1+00 TO STA 11+43
PLAN AND PROFILE
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

SANITARY LATERAL NOTES:
ALL LATERALS TO BE 6" AND INSTALLED WITH AN 18"x6" TEE AND FULL DEPTH GRANULAR BACKFILL. SEE PLAN AND PROFILE FOR ELEVATIONS. MINIMUM SLOPE ON ALL LATERALS IS 1.0% PROVIDE 1" PVC
● END, SEE DETAIL SHEET FOR STANDARD LATERAL DETAIL.



DATE:	2022-06-10
BY:	
REVISIONS:	
SCALE: 1" = 40'	
FIELD BY: TS, JS	
DRAWN BY: DCR	
CHECKED BY: DCR	

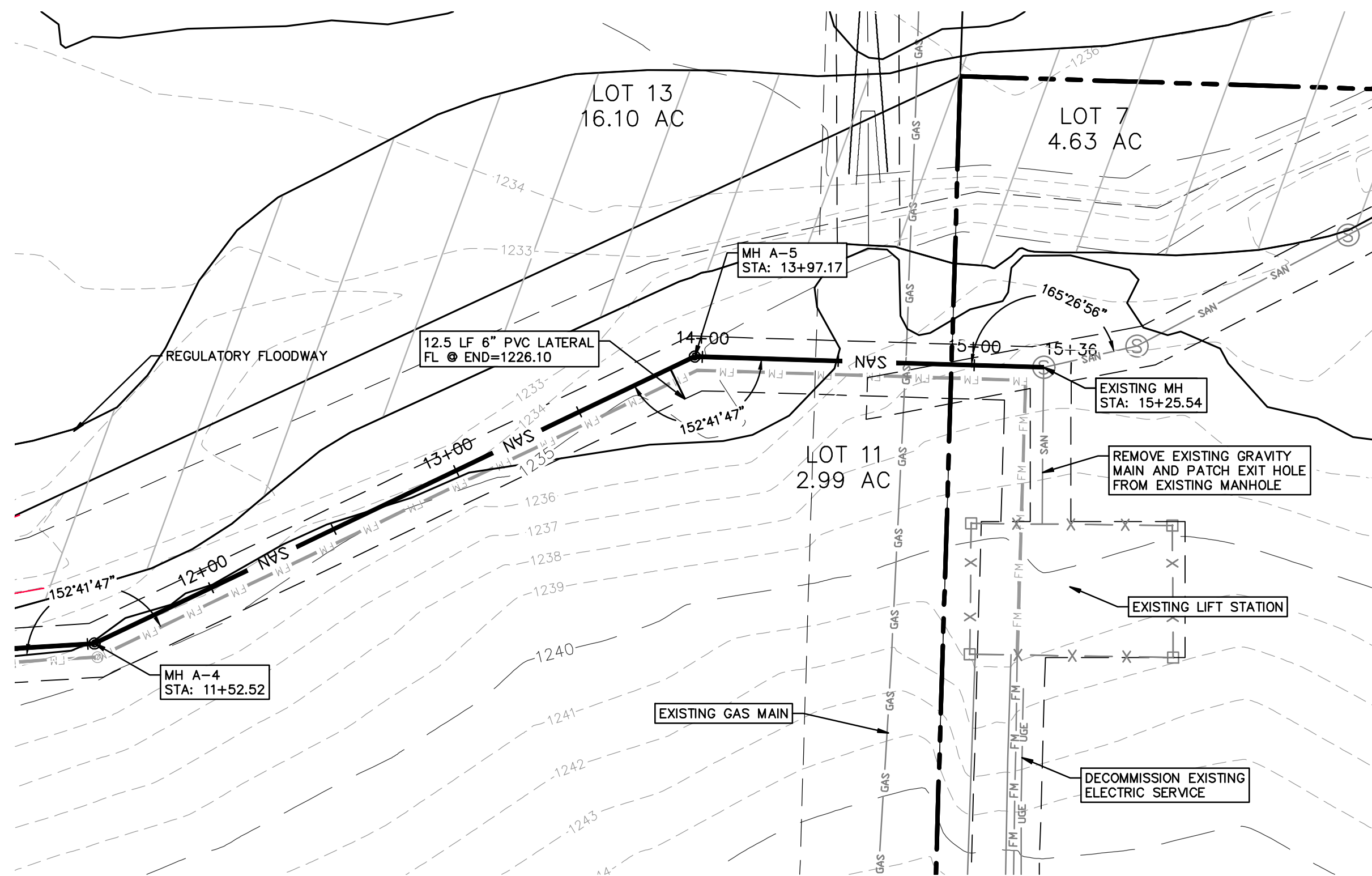
SANITARY SEWER LINE A
DRURY LANE EXTENSION
HANKINS FARM
2561 S STATE HWY MM
REPUBLIC, MO

Missouri State Certificate of Authority
Engineering #2005015504
Land Surveying #2009028050

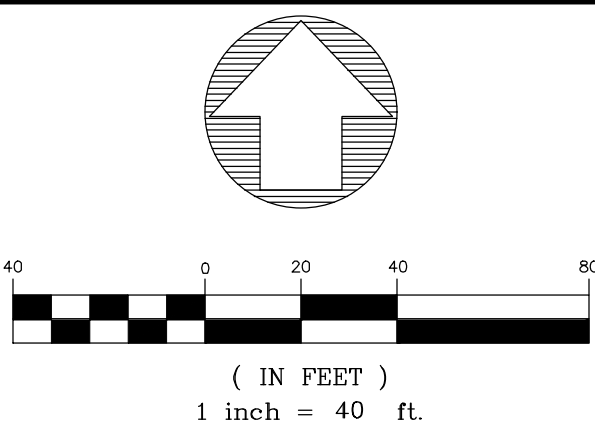
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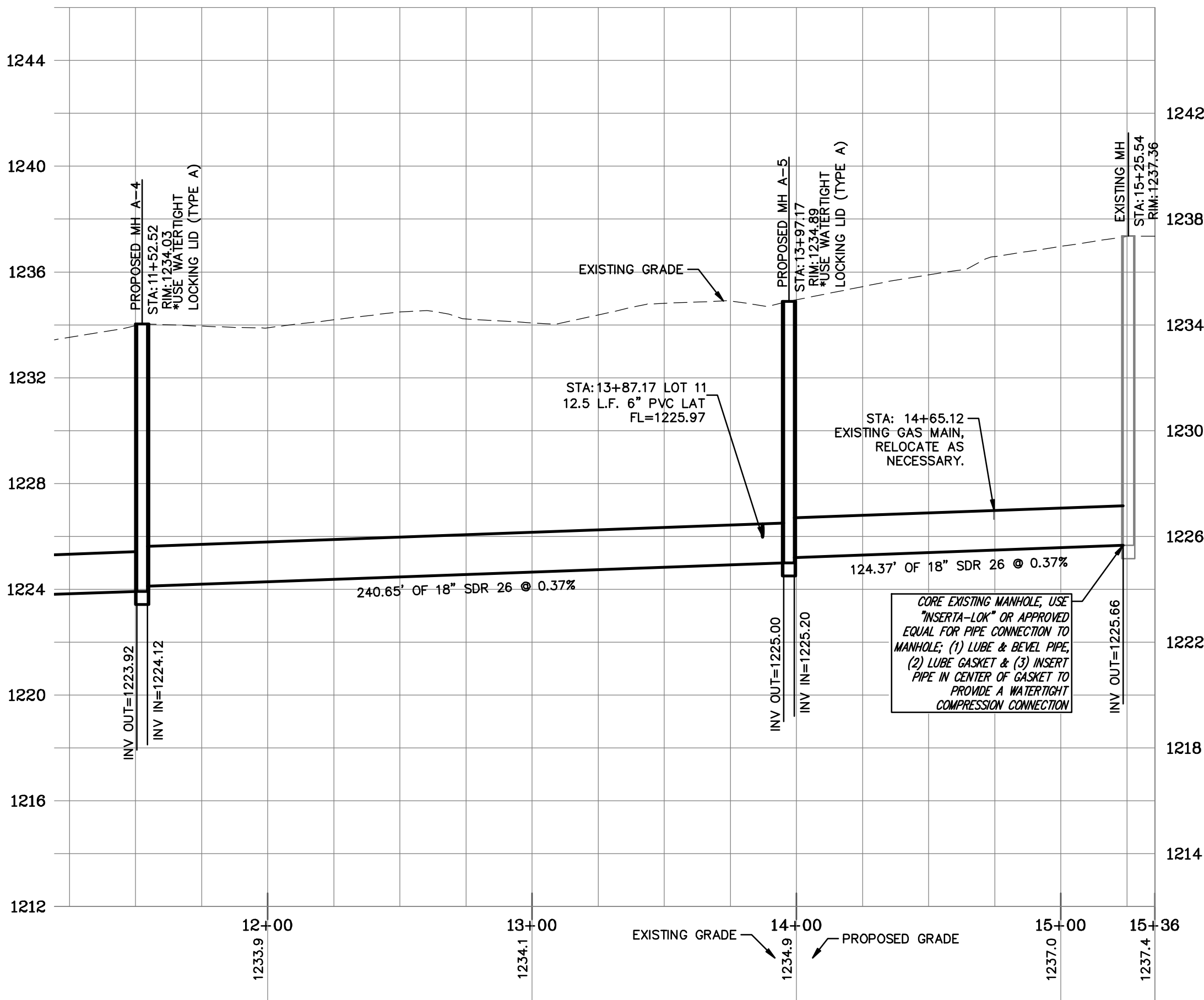
06/10/2022
DATE: 2022-06-10
SHEET: S3
PROJECT: 2017
FILE: Drury Lane Sanitary Sewer.dwg



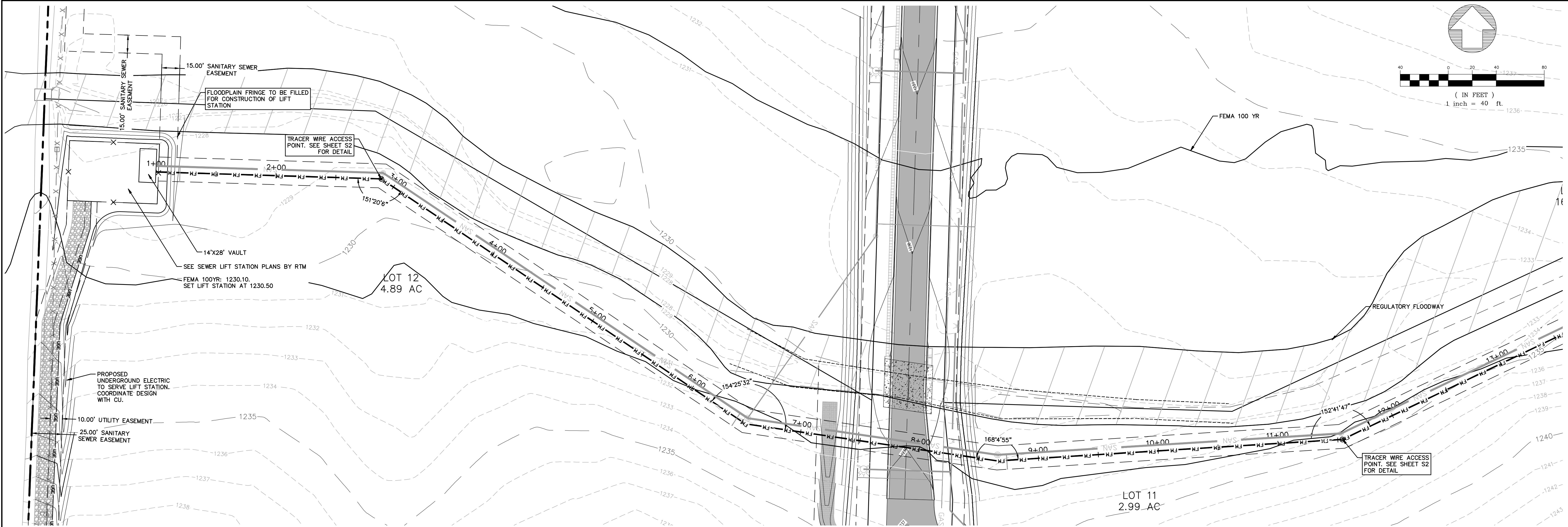
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SEE PLAN AND PROFILE FOR ELEVATIONS.
MINIMUM SLOPE ON ALL LATERALS IS 1.0%.
PROVIDE 1" PVC @ END. SEE DETAIL SHEET FOR STANDARD LATERAL DETAIL.



SANITARY LINE A - STA 11+43 TO STA 15+36
PLAN AND PROFILE
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

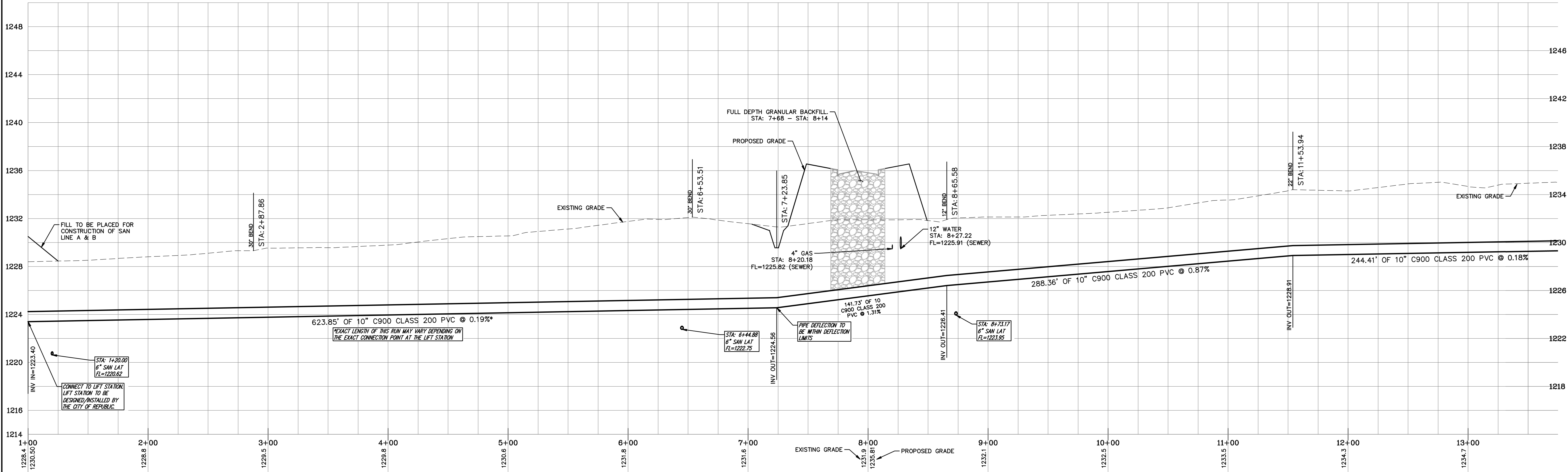


DATE:		REVISIONS:		SCALE: 1" = 40'	FIELD BY: TS, JS	SANITARY SEWER LINE A DRURY LANE EXTENSION HANKINS FARM 2561 S STATE HWY MM REPUBLIC, MO
					DRAWN BY: DCR	
					CHECKED BY: DCR	
Missouri State Certificate of Authority Engineering #2005015504 Land Surveying #2009028050						
LEE Engineering & Associates, L.L.C. 1200 E. Woodhurst Dr., Suite D200 Springfield, Missouri 65804 417-886-9100 (phone) 417-886-9336 (fax) dlee@leeengineering.biz "Engineering with Integrity"						
						
						
DATE:	2022-06-10					
SHEET:	S 4					
PROJECT:	2017					
FILE: Drury Lane Sanitary Sewer.dwg						



SANITARY LINE B - STA 1+00 TO STA 13+75
PLAN AND PROFILE

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'



DATE:	
REVISIONS:	
SCALE: 1" = 40'	
FIELD BY: TS, JS	
DRAWN BY: DCR	
CHECKED BY: DCR	

SANITARY SEWER LINE B

DRURY LANE EXTENSION

HANKINS FARM
2561 S STATE HWY MM
REPUBLIC, MO

Missouri State Certificate of Authority
Engineering #2005015504
Land Surveying #2009028050

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dlee@leeengineering.biz

LEE ENGINEERING & ASSOCIATES, L.L.C.

DANIEL C. RICHARDS
Professional Engineer
PE-202006756

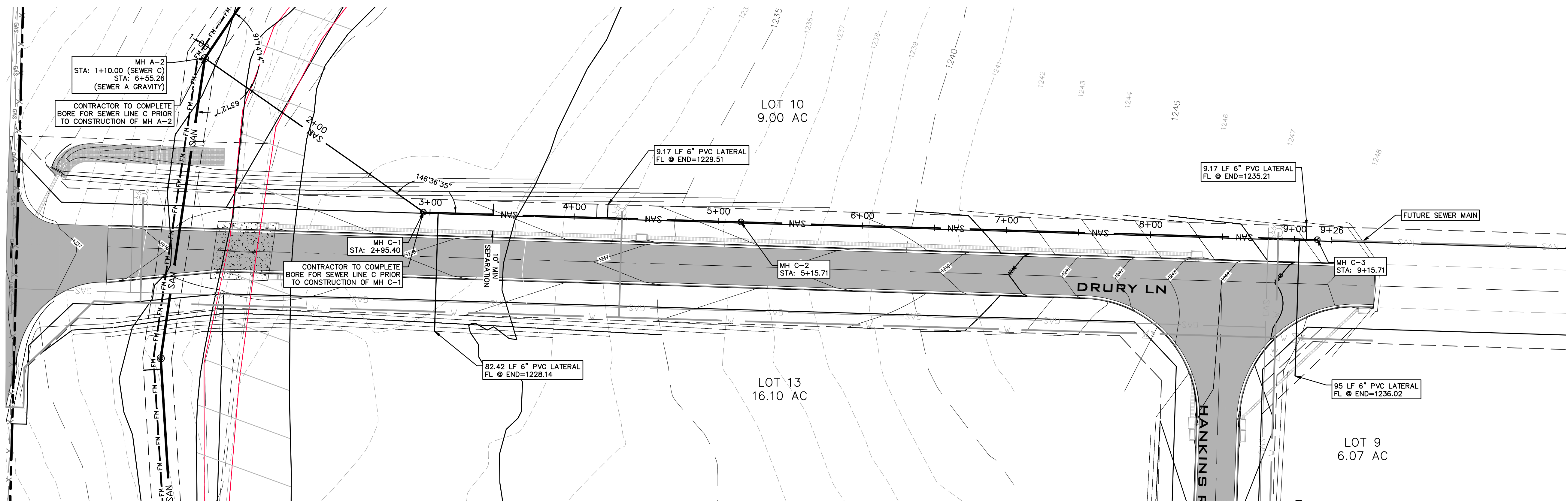
06/10/2022

DATE: 2022-06-10

SHEET: S5

PROJECT: 2017

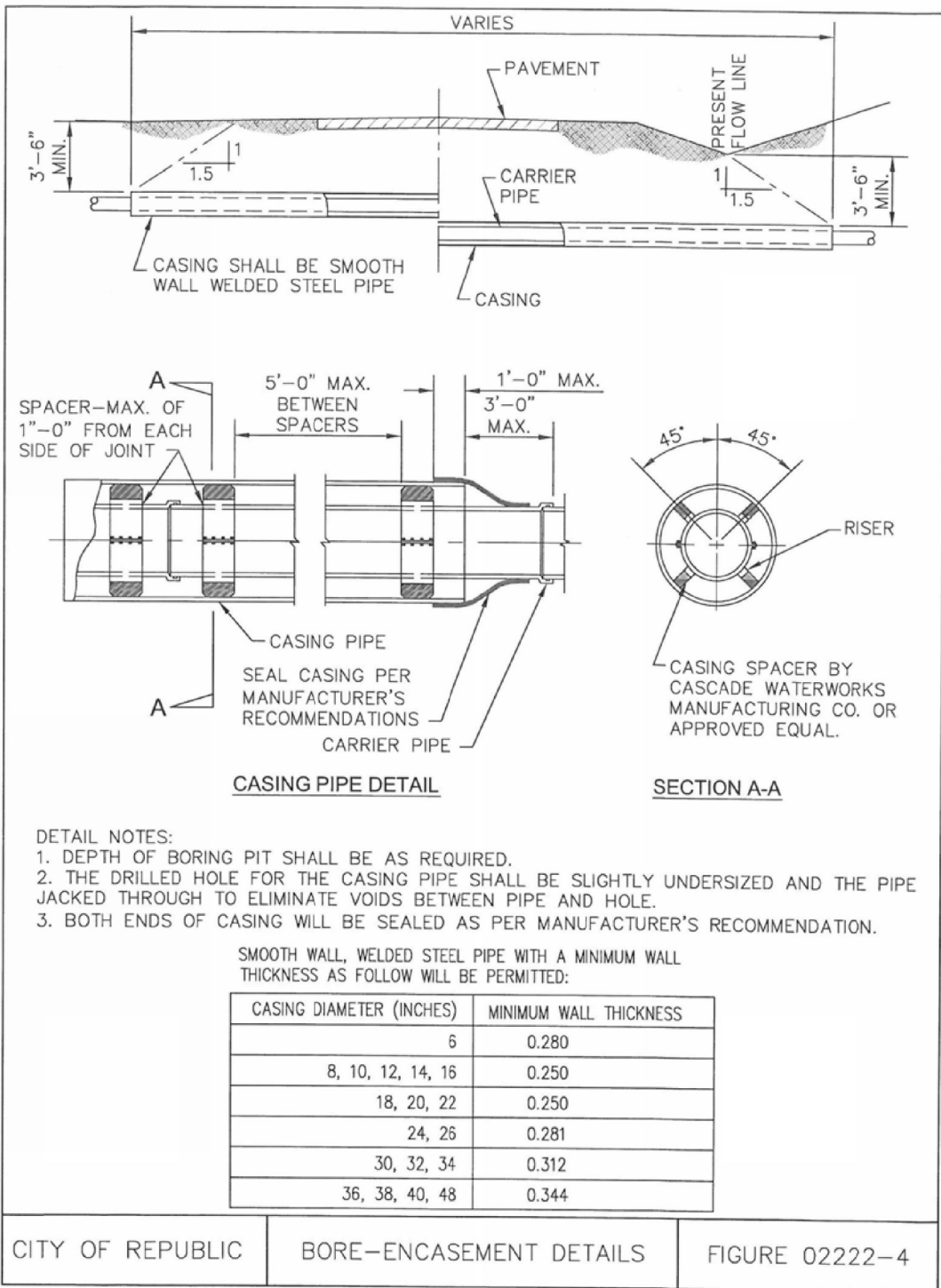
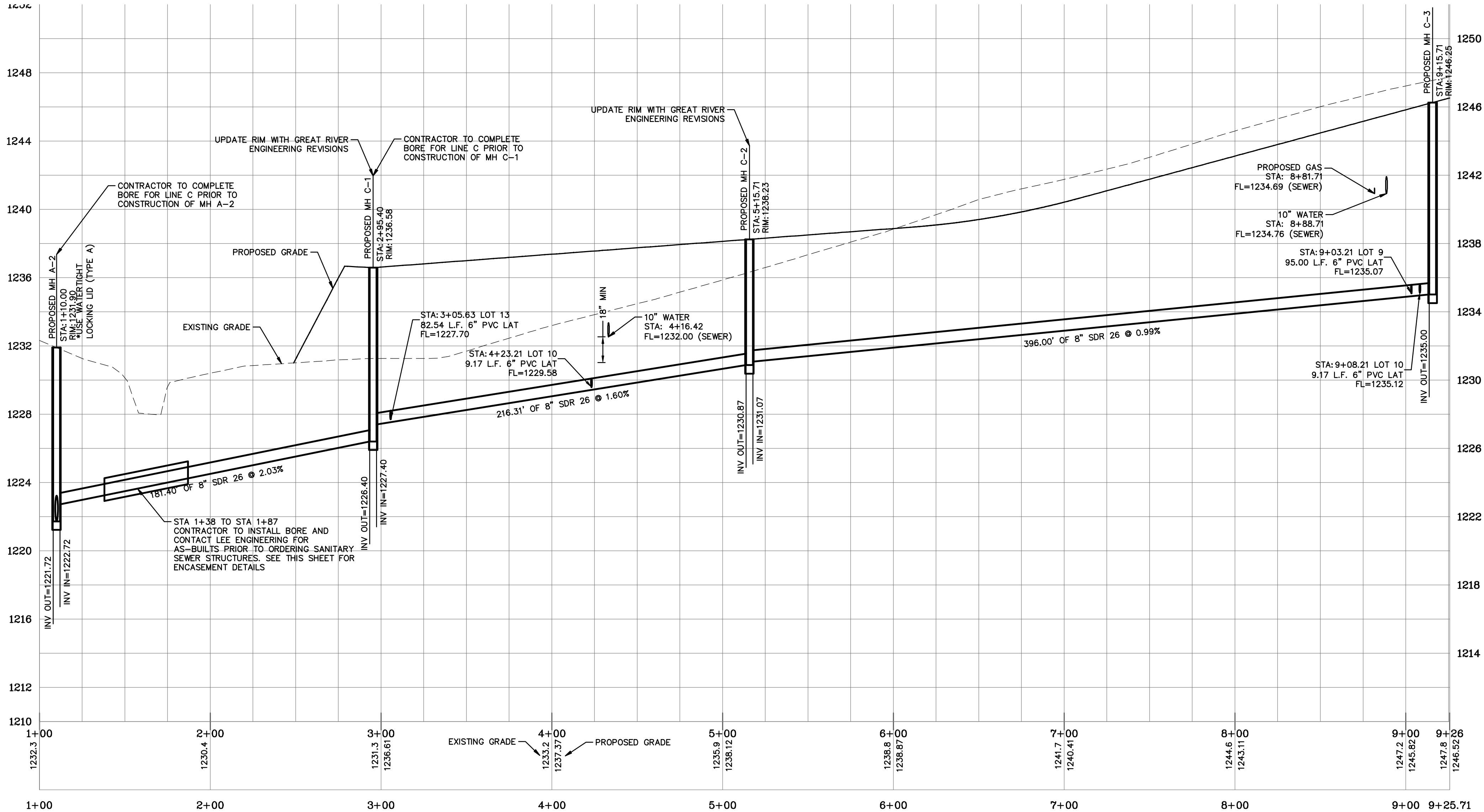
FILE: Drury Lane Sanitary Sewer.dwg



SANITARY LINE C STA 1+00 TO STA 8+00
PLAN AND PROFILE

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

SANITARY LATERAL NOTES:
ALL LATERALS TO BE 6" AND INSTALLED WITH AN 8"x6" TEE AND FULL DEPTH GRANULAR BACKFILL. SEE PLAN AND PROFILE FOR ELEVATIONS. MINIMUM SLOPE ON ALL LATERALS IS 1.0%. PROVIDE 1" PVC @ END. SEE DETAIL SHEET FOR STANDARD LATERAL DETAIL.



DATE: 06/10/2022

BY: [Signature]

REVISIONS:

SCALE: 1" = 40'

FIELD BY: TS, JS

DRAWN BY: DCR

CHECKED BY: DCR

SANITARY SEWER LINE C

DRURY LANE EXTENSION

HANKINS FARM

2561 S STATE HWY MM

REPUBLIC, MO

Missouri State Certificate of Authority

Engineering #2005015504

Land Surveying #2009028050

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Engineering with Integrity

STATE OF MISSOURI

DANIEL C. DEE

Professional Engineer

PE-302082756

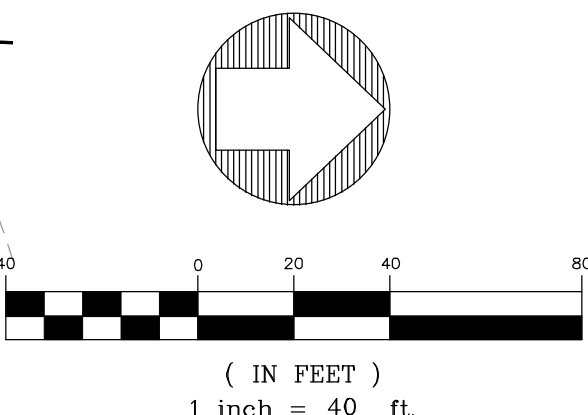
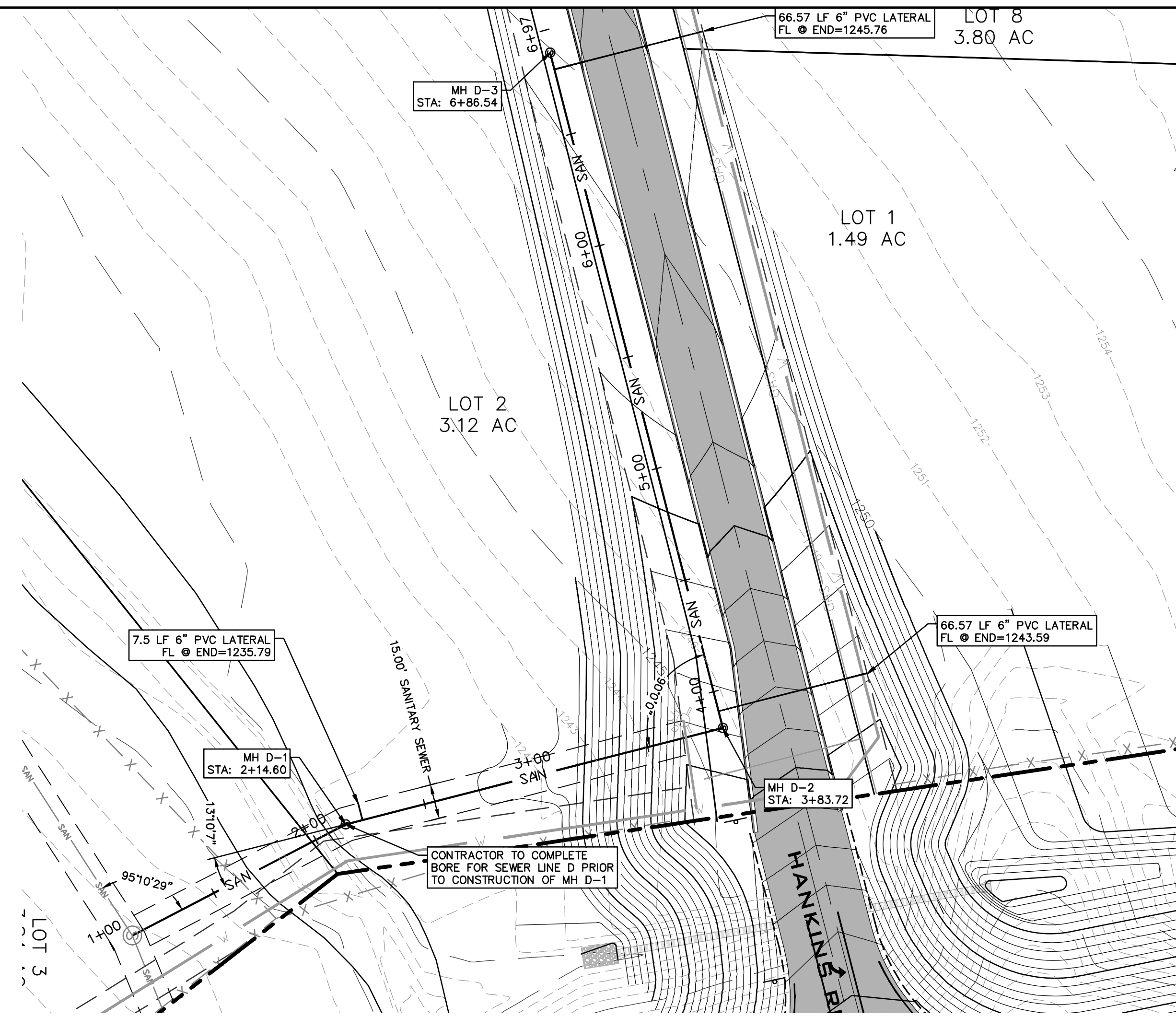
06/10/2022

DATE: 2022-06-10

SHEET: S7

PROJECT: 2017

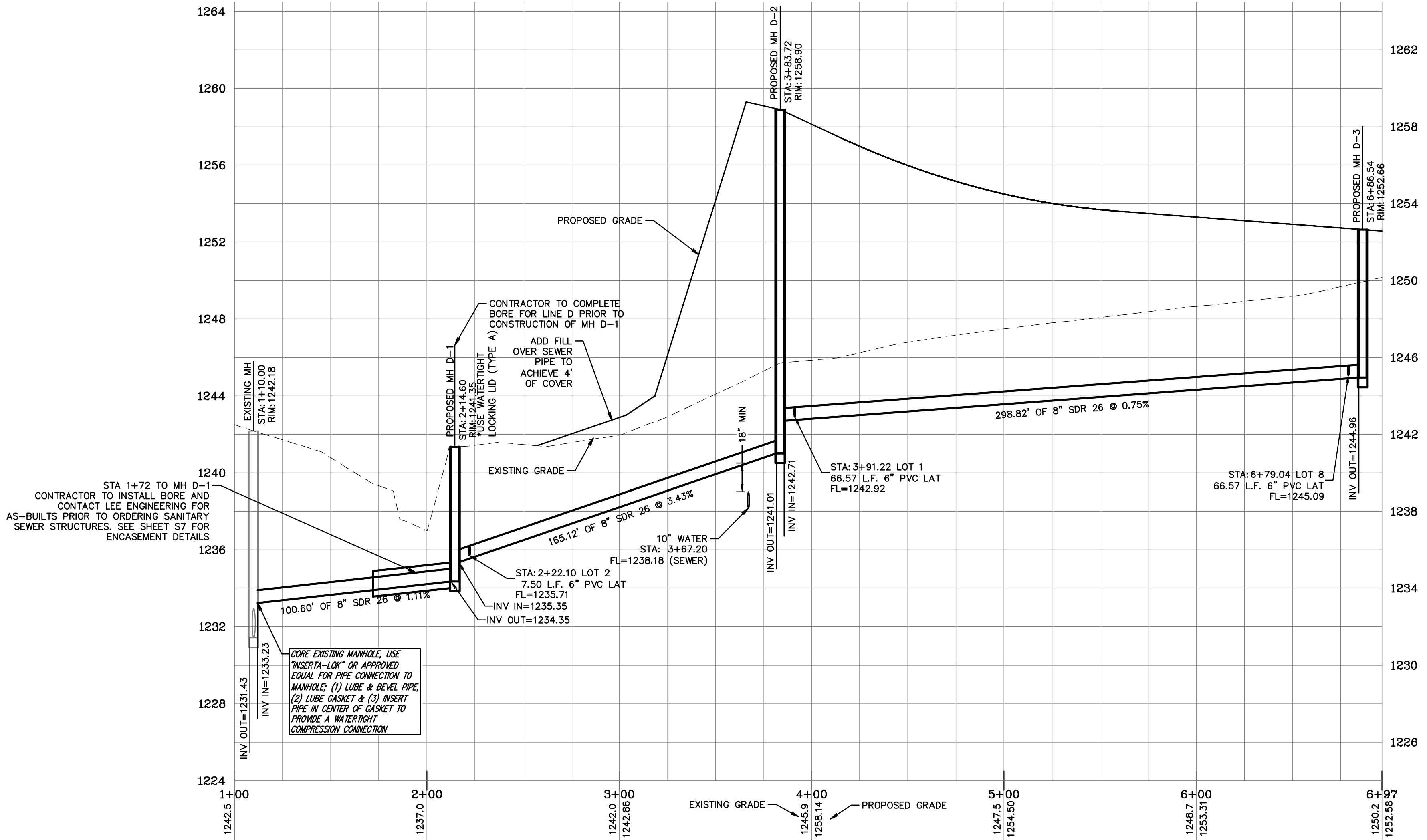
FILE: Drury Lane Sanitary Sewer.dwg



SANITARY LINE D
PLAN AND PROFILE

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

SANITARY LATERAL NOTES:
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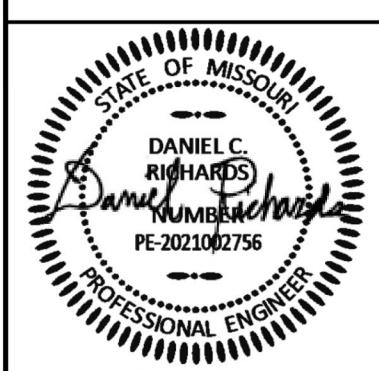
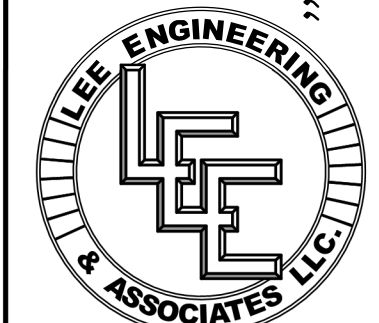


REVISIONS:	SCALE: 1" = 40'	DATE:	BY:
	FIELD BY: TS, JS		
	DRAWN BY: DCR		
	CHECKED BY: DCR		

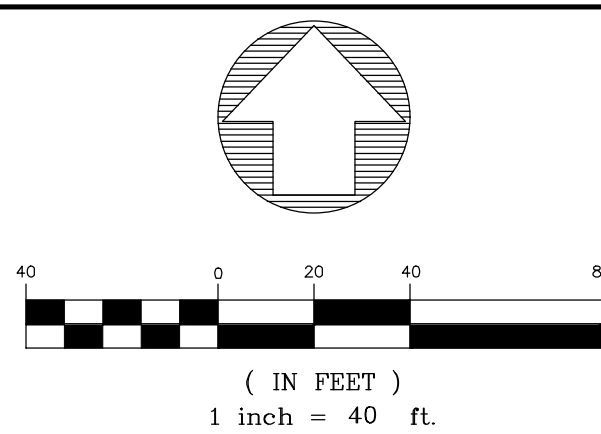
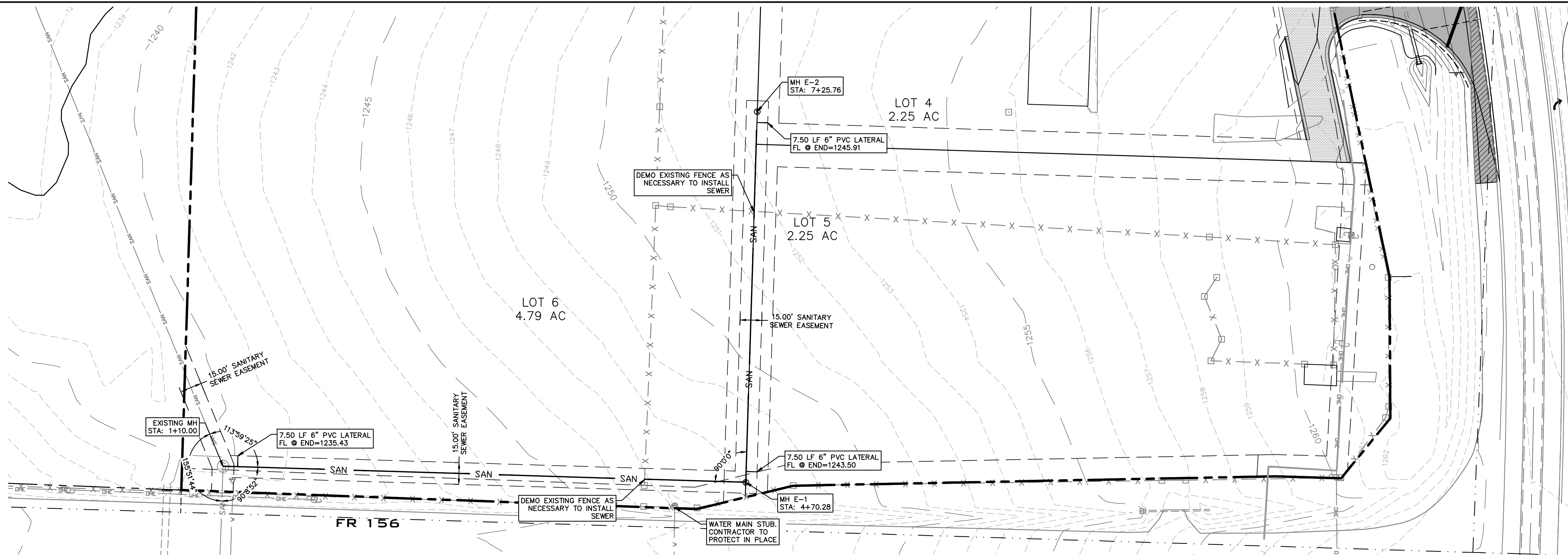
SANITARY SEWER LINE D
DRURY LANE EXTENSION
HANKINS FARM
2561 S STATE HWY MM
REPUBLIC, MO

Missouri State Certificate of Authority
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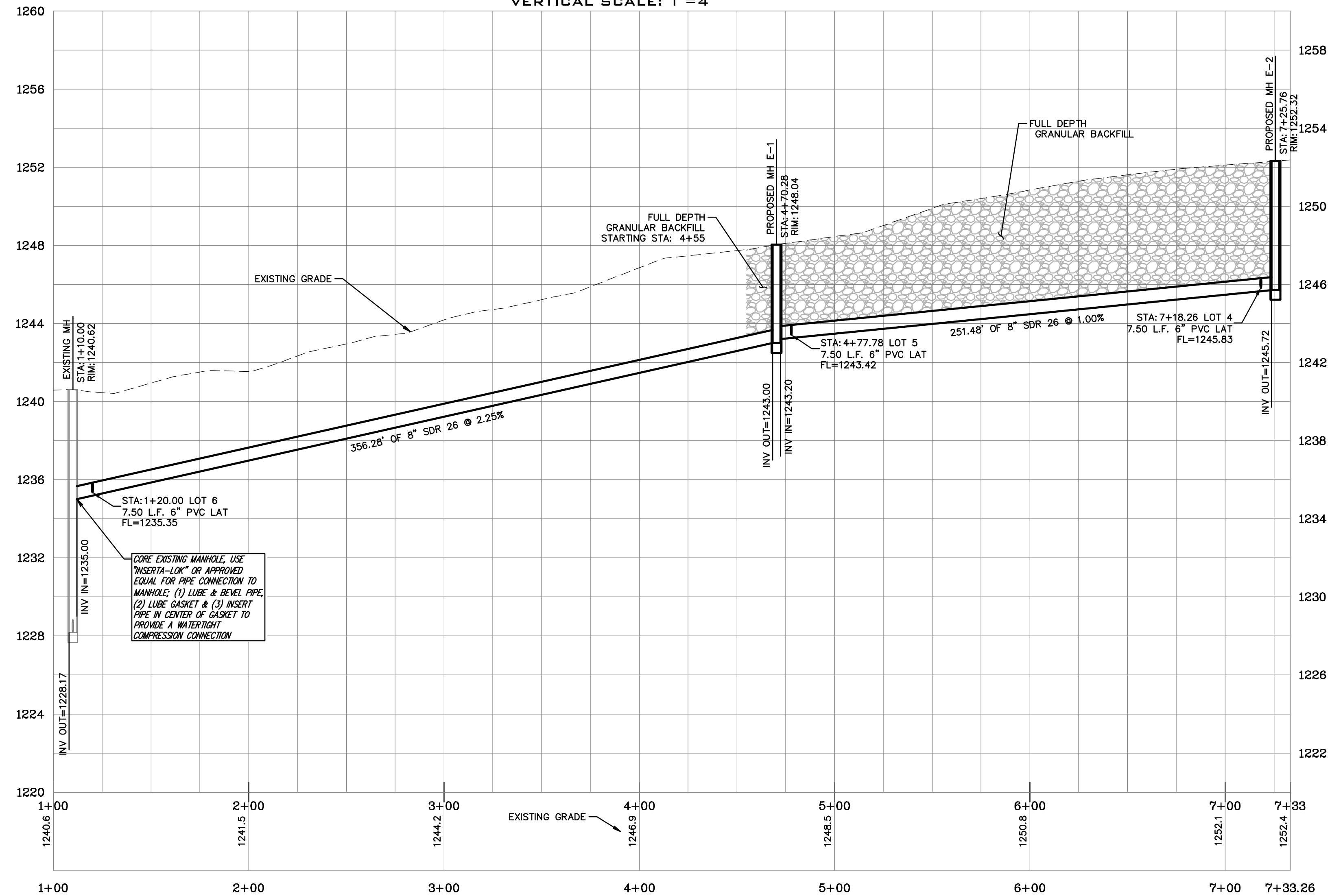


DATE: 2022-06-10
SHEET: S8
PROJECT: 2017
FILE: Drury Lane Sanitary Sewer.dwg



SANITARY LINE E - STA 1+00 TO STA 7+13
PLAN AND PROFILE

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'



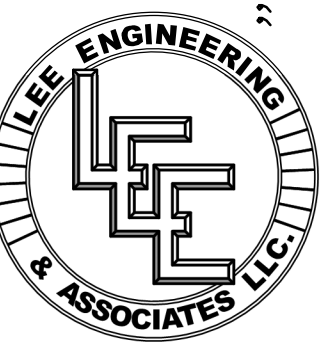
SANITARY LATERAL NOTES:
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SANITARY SEWER LINE E
DRURY LANE EXTENSION

HANKINS FARM
2561 S STATE HWY MM
REPUBLIC, MO

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06/10/2022

DATE: 2022-06-10

SHEET: S9

PROJECT: 2017

FILE: Drury Lane Sanitary Sewer.dwg

TWO ALUMINUM HATCH (MIN 30Wx42) WITH HINGED ACCESS DOORS, ALL 55 INWELDED & LOCKABLE.
 6" GALV SCH 40 STEEL CLOSE RETURN W/ 1/2" HENR-BASED RESISTANT SCREWS (IDENTICAL W/ ON VALVE VAULT)
 TWO PLST CHECK VALVES
 15" INLET 1219.50"
 15" INLET 1219.50"
 SEAL ALL CONDUITS, TYP.
 MOUNT EQUIPMENT TO MATCH EXISTING CONDITIONS
 TOP RM 1230.50
 POWER FEED
 GALVANIZED CONDUIT FOR POWER AND CONTROL CABLES PROVIDE AND INSTALL CLASS 1, DIV 1 EXPLOSION PROOF FITTING W/IN 7" OF WELL PER NEC
 15" INLET 1219.50"
 4" DRIN DUCTILE IRON W/ BACKWATER CHECK TERMINAL VALVE
 DUCTILE IRON DISCHG CONN. COMB. W/ 2" PORT GATE SHUT-OFF AND CHECK VALVE IN VALVE BOX FOR EACH PUMP
 REINFORCED CONCRETE PIPE OR WATERIGHT VAULT WITH REBAR AND WATERSTOPS
 RELOCATE EXISTING FLOATS ADJUST CABLE ELEVATION FOR ADJUSTMENT IN LENGTH
 HIGH LEVEL ALARM 1219.0'
 LAG PUMP ON 1218.5'
 LEAD PUMP ON 1217.5'
 DISCHARGE CONNECTION
 PUMP MOUNTING BASE AND PUMP DISCHARGE CONNECTION ELBOW
 10'11 1/2" OR 15'6"
 PUMP PLATFORM AS REQUIRED, ONE PUMP SHOWN FOR CLARITY
 LIQUID LEVEL FLOATS AND ALARMS
 PROVIDE GRANULAR FILL AROUND COMPACTED SURROUND
 SUBMERSIBLE DUPLEX PUMP SYSTEM, 480V/3 PHASE REFERENCE SPECIFICATIONS
 PUMPS OFF 1218.0'
 P/T. BOTTOM 1214.0'

5 **STAT**
ME1 **NO SCALE**

A cross-sectional diagram of a trench. The trench is filled with a material labeled 'SELECTED BACKFILL - CLEAN GRAVEL UNDER PAVEMENT/CONCRETE'. Below this is a layer of 'CLEAN SAND OR SOIL COMPACTED 95% PROCTOR DENSITY'. At the bottom of the trench are three circular 'ELECTRICAL CONDUIT(S)'. A 'TRENCH WIDTH AS REQUIRED.' is indicated at the top. A 'DETECTABLE WARNING TAPE' is shown as a horizontal line above the backfill. Dimensions include 'MINIMUM FOR 600V+ ELECTRIC SERVICE AND TELEPHONE SERVICE' for the top layer, 'MINIMUM FOR DEETER THAN 600V' for the bottom layer, and '2" MINIMUM BETWEEN CONDUITS' between the conduits. Section lines are marked with '3'- and '2'-.

TRENCH WIDTH AS REQUIRED.

DETECTABLE WARNING TAPE

MINIMUM FOR 600V+ ELECTRIC SERVICE AND TELEPHONE SERVICE

MINIMUM FOR DEETER THAN 600V

SELECTED BACKFILL - CLEAN GRAVEL UNDER PAVEMENT/CONCRETE

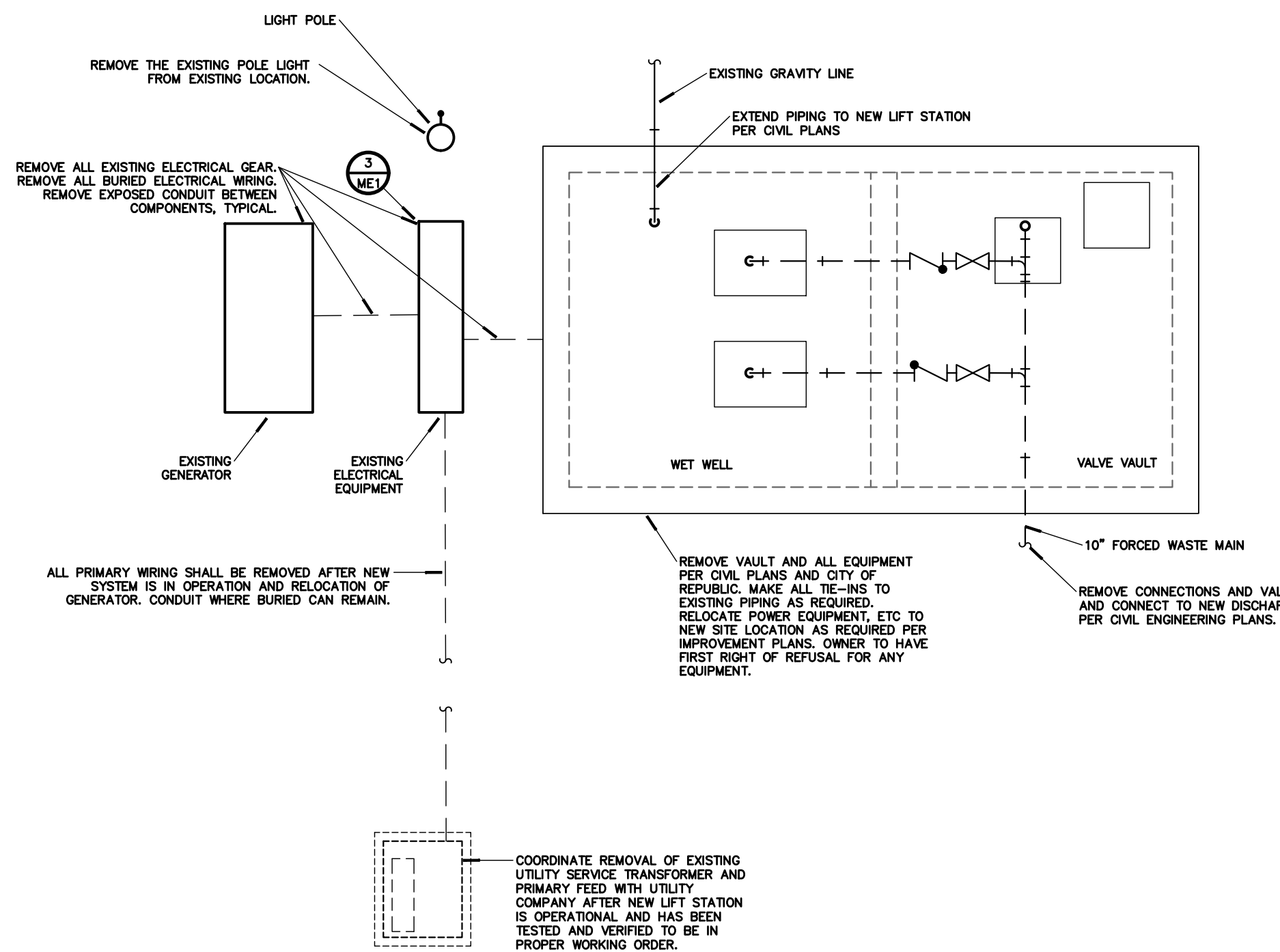
CLEAN SAND OR SOIL COMPACTED 95% PROCTOR DENSITY

ELECTRICAL CONDUIT(S), REFER TO ELECTRICAL PLAN FOR QTY.

2" MINIMUM BETWEEN CONDUITS

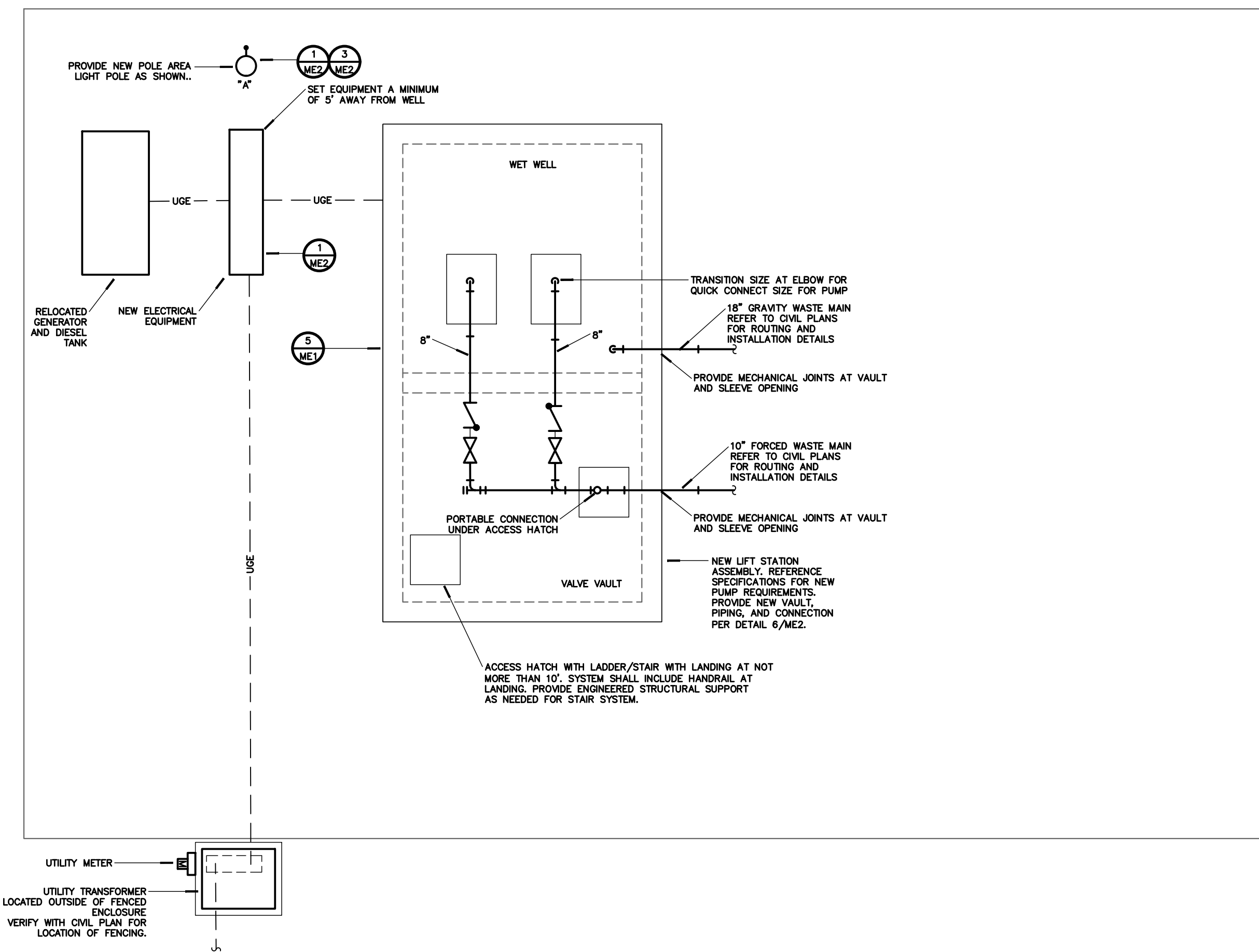
4 **ELEC**
ME1 **NO SCALE**

3 **EXIST**
ME1 **NO SCALE**



2 **LIFT S**
ME1 **SCALE: 1'-5"**

NORTH



1 **LIFT S**
ME1 **SCALE: 1"-5"**

NORT

GENERAL NOTES:

1. CONTACT RTM ENGINEERING CONSULTANTS WITH MECHANICAL, AND ELECTRICAL DEPARTMENTS AT (717) 881-0020. FOR MECHANICAL QUESTIONS CONTACT: JENNIFER LUCE, FOR ELECTRICAL QUESTIONS CONTACT: DEREK BLOOM.
2. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
3. COORDINATE ALL EXISTING AND NEW SITE LOCATIONS, AND ELEVATIONS, WITH CIVIL DRAWINGS.
4. ALL SITE DIMENSIONS ARE ASSUMED FROM EXISTING DRAWINGS AND SHALL BE VERIFIED PRIOR TO CONSTRUCTION. PLAN IS MEANT FOR INFORMATIONAL PURPOSES AND IS DIAGRAMMATICAL IN NATURE.

1. ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE 2018 INTERNATIONAL PLUMBING CODE AS ADOPTED BY THE CITY OF ST. LOUIS, MISSOURI. ALL WORK SHALL COMPLY WITH MOOT GUIDELINES AND STANDARDS.
2. REFERENCE CIVIL ENGINEERING PLANS FOR SITE PLANS AND ALL EXISTING AND NEW GRAVITY SEWER AND FORCED MAIN SEWER INSTALLATION SHALL BE USED.
3. THE CONTRACTOR SHALL CONTACT THE OWNER AND COORDINATE ALL OUTAGES 5 DAYS PRIOR TO ANY SHUT-OFF OF SERVICES.
4. CONTRACTOR SHALL SECURE AND PAY FOR NECESSARY MEP PERMITS AND CERTIFICATES OF INSPECTION REQUIRED BY THE CITY OF ST. LOUIS, MISSOURI, AND ANY OTHER REGULATIONS.
5. FINAL ACCEPTANCE OF WORK SHALL BE SUBJECT TO THE CONDITION THAT ALL SYSTEMS, EQUIPMENT, APPARATUS, AND MATERIALS OPERATE AS INTENDED AND AS SPECIFIED AND AS INTENDED; WORK SHALL INCLUDE REQUIRED REPLACEMENT, REPAIRS, AND MAINTENANCE OF CONTROL EQUIPMENT AND ALL REQUIRED PROGRAMMING INSTALLED. PROVIDE FOR ALL WORK INDICATED ON DRAWINGS OR AS REASONABLY IMPLIED.
6. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE 2017 NATIONAL ELECTRICAL CODE AS ADOPTED BY THE CITY REPUBLIC, MISSOURI.
7. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONSTRUCTION PRIOR TO SUBMITTING HIS BID. NO EXTRAS WILL BE PAID FOR ANY UNANTICIPATED WORK.
8. PLANS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS.
9. ALL CONDUIT BELOW GRADE SHALL BE PVC WHERE ALLOWED BY NEI. PROVIDE TRACER WIRE ABOVE ALL CONDUITS BELOW GRADE.
10. ALL CONDUIT ABOVE GRADE SHALL BE RIGID STEEL.
11. ALL POWER CIRCUITS SHALL HAVE A GROUNDING CONDUCTOR.
12. ALL ELECTRICAL SHALL BE RATED FOR EXTERIOR EXPOSURE UNLESS OTHERWISE NOTED.
13. CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT, ACCESSORIES, AND MATERIAL FURNISHED UNDER THIS CONTRACT FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.
14. ALL POWER CIRCUITS AND MOTOR LOADS SHALL BE PROVIDED WITH DEDICATED NEUTRALS.
15. CONTRACTOR SHALL PROVIDE PULL WIRE IN ALL EMPLOY

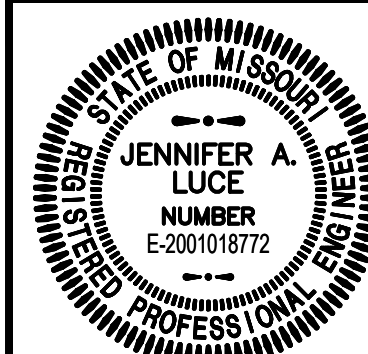
1. CONTRACTOR SHALL CONTACT CITY UTILITIES AND ARRANGE FOR ELECTRICAL SERVICE AT THE NEW LIFT STATION AS INDICATED ON DRAWINGS. INCLUDE ALL CUTS, CHARGES, FEES, ETC. INCURRED BY THE UTILITY COMPANY INTO THE BID. PROVIDE ALL MATERIALS AS REQUIRED BY LOCAL AUTHORITIES FOR ELECTRIC SERVICE INSTALLATION. ALL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF LOCAL AUTHORITIES.

CONTACT RTM ENGINEERING CONSULTANTS WITH QUESTIONS:
OFFICE PHONE (417) 881-0020
JENNIFER LUCE FOR MECHANICAL



DATE	04-11-22
PROJECT NUMBER	22.LEE.001
DRAWN BY	EDH/AGB
CHECKED BY	JAL
SHEET NUMBER	

ME1



JENNIFER A. LUCE
E-2001018772

CITY OF REPUBLIC, MO
DRURY LANE EXTENSION
HANKINS FARM
2561 STATE HWY MM
REPUBLIC, MISSOURI 65738

rtm
engineering consultants
Batfield Road, Ste. 1000, Springfield, MO 65804
3333 E. rtmasociates.com | 417.881.0020
state of Missouri certificate of authority #04400003 for engineering

DATE
04-11-22

PROJECT NUMBER
22.LEE.001

DRAWN BY
EDH/AGB

CHECKED BY
JAL

SHEET NUMBER

ME2

NOTES:

- VERIFY ALL PUMP POWER AND CONTROL CABLE REQUIREMENTS WITH PUMP AND CONTROL PANEL PROVIDER PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL PROVIDE A NEMA 3R RATED ENCLOSURE TO TAP CONDUCTORS AS SHOWN. PROVIDE A POWER DISTRIBUTION BLOCK(S) WITH CONDUCTOR PORTS CAPABLE OF TERMINATING THE WIRE GAUGES AS SHOWN. ADHERE TO ALL TAP RULE REQUIREMENTS PER THE NEC.

BRANCH CIRCUIT & FEEDER SCHEDULE:

- 3 - #3/0 AND 1 - #6 GROUND IN 2" CONDUIT.
- 3 - #1/0 AND 1 - #6 GROUND IN 1.5" CONDUIT.
- 3 - #6 AND 1 - #10 GROUND IN 0.75" CONDUIT.
- 4 - #4 AND 1 - #10 GROUND IN 1" CONDUIT.
- 3 - #10 AND 1 - #10 GROUND IN 0.75" CONDUIT.
- #4AWG-4 + #14AWG-4, SUBMERSIBLE, HARSH CONDITIONS, 600V, VFD RATED POWER CABLE: H07RN8-F PLUS / RHW-2 OR EQUAL.
- 501.5 SUBMERSIBLE, HARSH CONDITIONS, 600V, CONTROL CABLE: H07RN-F OR EQUAL.
- 1 - #4 GROUNDING ELECTRODE CONDUCTOR.
- 1 - #6 GROUNDING ELECTRODE CONDUCTOR.

MECHANICAL SYMBOLS:

- SHUT-OFF VALVE
- CHECK VALVE
- WASTE PIPING - ABOVE FLOOR
- WASTE PIPING - BELOW FLOOR

ELECTRICAL SYMBOLS:

- EXPOSED CONDUIT
- HOME RUN - DIAGONAL LINES INDICATE NUMBER OF WIRES, ARROWS INDICATE NUMBER OF CIRCUITS
- #18 WIRE
- #16 WIRE
- #14 WIRE
- #12 WIRE
- SHEATHED CABLE
- BRANCH CIRCUIT OR FEEDER - SEE SCHEDULE FOR CONDUCTOR & CONDUIT QUANTITY & SIZE
- FLEXIBLE CONDUIT
- GROUND WIRE
- DUPLEX 20AMP, 125V, 2P, 3W GROUNDING TYPE RECEPTACLE
- DISCONNECT SWITCH
- UGE - UNDERGROUND ELECTRIC
- OHE - OVERHEAD ELECTRIC
- LIGHTING & APPLIANCE PANEL

PLAN NOTATIONS:

- INDICATES DIRECTION OF NORTH
- DETAIL REFERENCE - UPPER NUMBER INDICATES DETAIL NUMBER, LOWER NUMBER INDICATES SHEET NUMBER.
- PLAN NOTE REFERENCE
- ROOM NUMBER REFERENCE
- INDICATES CONNECTION TO EXISTING SYSTEM

ELECTRICAL NOTATIONS:

- "AC" or "A" THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES DEVICE BOTTOM TO BE MOUNTED 4" ABOVE COUNTERTOP BACKSPASH
- "GF" THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES GROUND FAULT INTERRUPTER
- "WP" THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES WEATHER-PROOF ENCLOSURE
- "WPI" THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES WEATHER-PROOF IN-USE ENCLOSURE
- "XP" THESE LETTERS ADJACENT TO ANY SYMBOL INDICATES EXPLOSION-PROOF ENCLOSURE
- 60" DIMENSIONS ADJACENT TO ANY SYMBOL INDICATES MOUNTING HEIGHT TO CENTERLINE OF DEVICE
- (TIE) INDICATES HOMERUNS WITH SAME CIRCUIT NUMBER TO BE WIRED TOGETHER ON SAME CIRCUIT.

LIGHT FIXTURE SCHEDULE

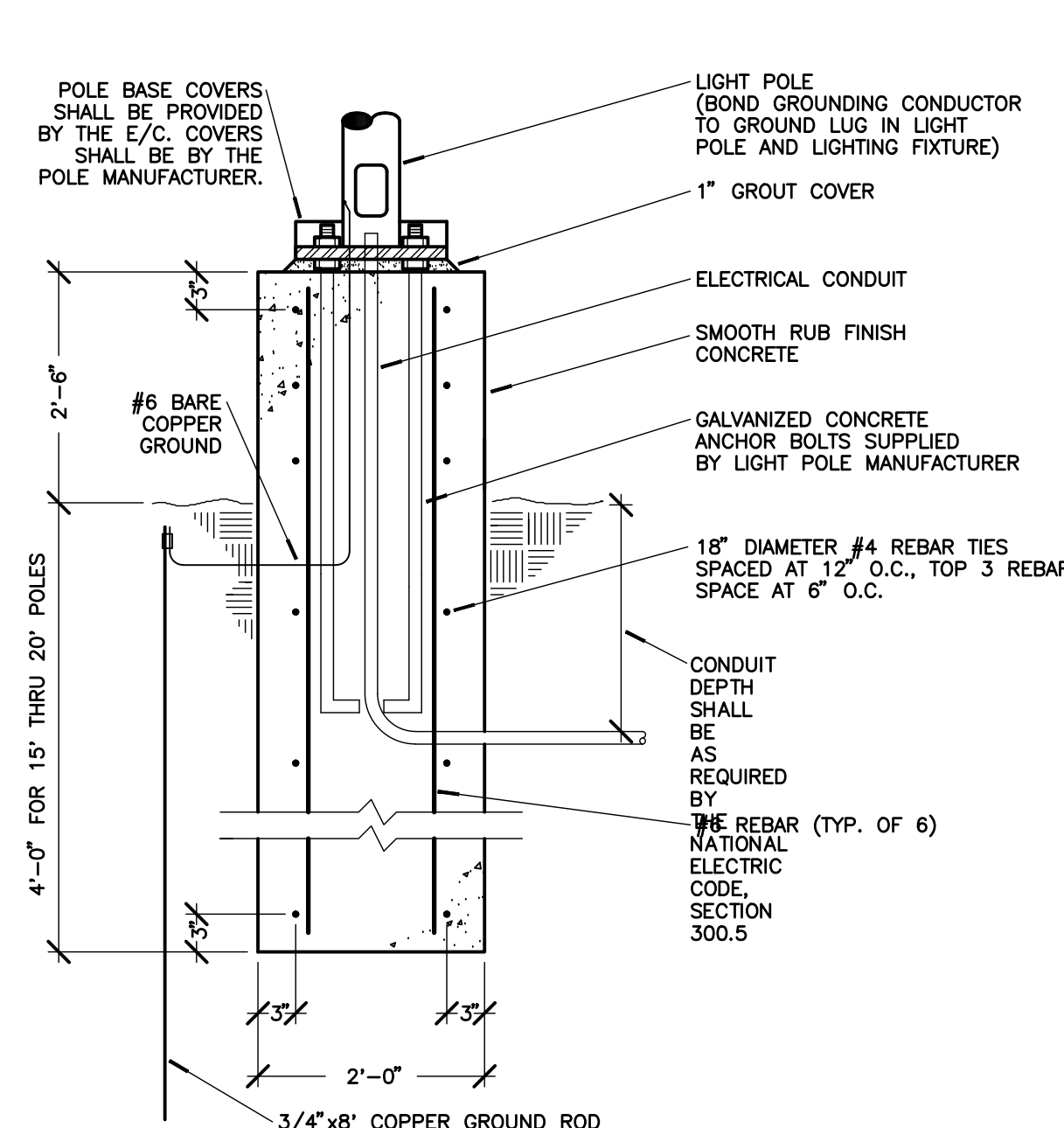
MARK	MFG.	CATALOG #	MTG.	FINISH	LAMPS			EQUIVALENT
					TYPE	CODE	NOTE	
"A"	COOPER	GLEON-SA2-C-740-U-T4W-BK	POLE	BLACK	LED	15,700 LM, 4000K, 129W	1, 2	Li, LSi, Wf

NOTES:

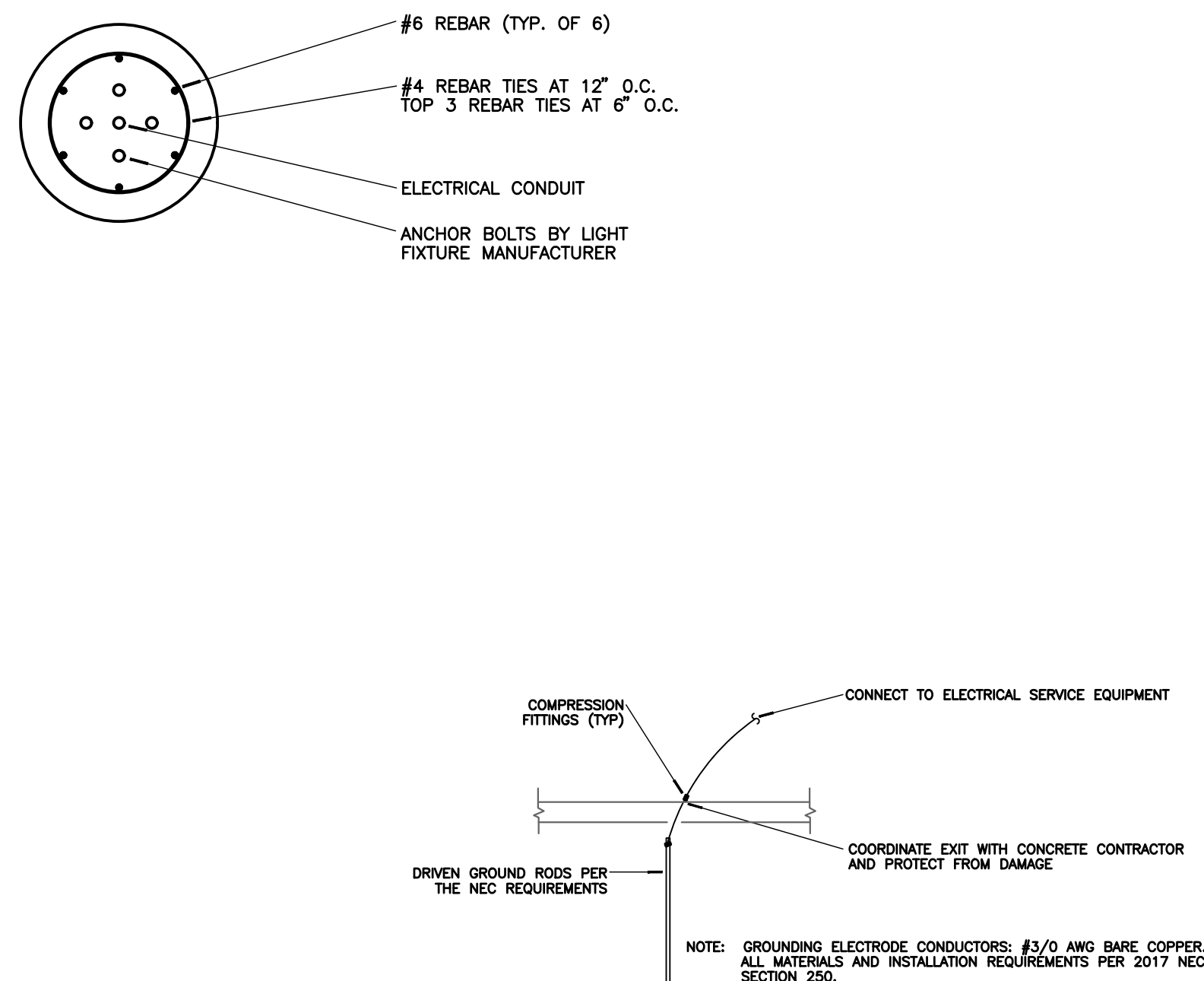
- PROVIDE WITH A 15" SQUARE STEEL LIGHT POLE.
- PROVIDE WITH INTEGRAL PHOTOCELL.

ABBREVIATIONS:

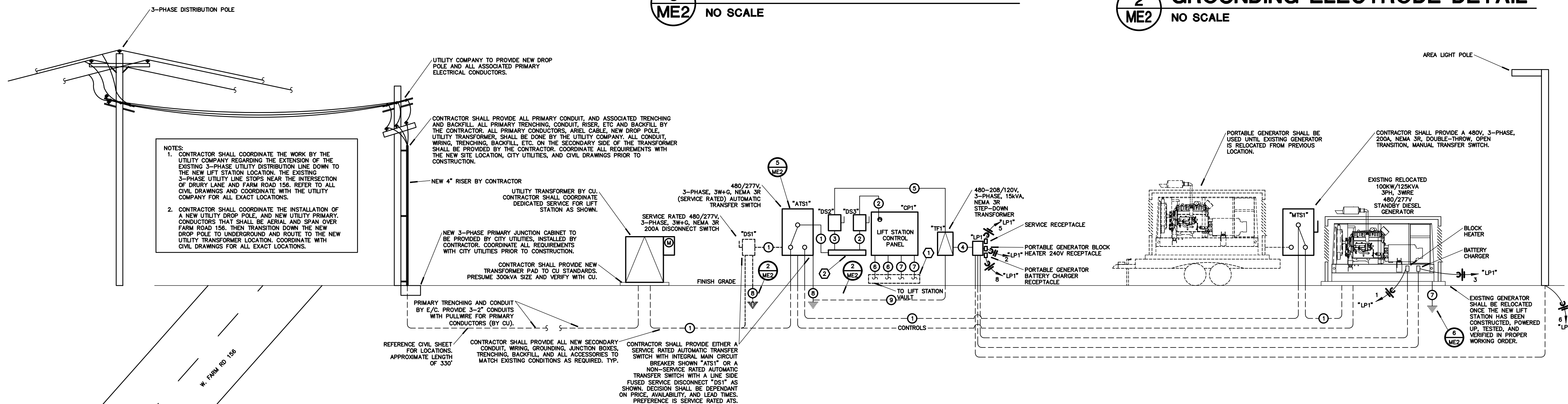
Ab - ABOLITE	GE - GENERAL ELEC	LC - LITECONTROL	Pg - PROGRESS	MTG - MOUNTING
AL - ALCO	GU - GUTH	Le - LEVITON	Pt - PRESOLITE	REC - RECESSED
AP - APPLETON	Ho - HALO	LI - LITONIA	PS - PASS & SEYMOUR	SURF - SURFACE
AAR - ARCH AREA LIGHTING	Hu - HOLOPHANE	LL - LONG LIGHTS	Ro - ROBERTS	GRD - GROUND
Ch - CHLORIDE	Hu - HUBBELL	Ln - LINEAR LIGHTING	SI - STAFF	TRK - TRACK
CL - COAST LIGHTING	Hy - HYDREL	Lt - LIGHTOLIER	SG - SIGNIFY	CABL - CABLE
Co - COLUMBIA	ICE - ICE	Lj - LUMARK	SP - SPALDING	MFG - MANUFACTURER
CH - CROUSE-HINDS	ICE - ICE	Ma - MARCO	SP1 - SP1	QTY - QUANTITY
Dh - DEVINE	In - INDALUX	Me - METALUX	ST - STERNE	FLU - FLUORESCENT
DL - DUAL-LITE	KIM - KIM	ME - MCGRAW EDISON	SL - SURE-LITES	INC - INCANDESCENT
EP - ELP LIGHTING	KV - KURT VERSEN	Nu - NULITE	SV - SYLVAN	HID - HIGH INTENSITY
EL - EMERGI-LITE	LAM - LAM	Pe - PEERLESS	T1 - TIVOLI	DIS - DISCHARGE
FS - FAIL-SAFE	Lo - LIGHTALARMS	Pd - PRUDENTIAL	WT - WILLIAMS	UNIV - UNIVERSAL



3
ME2
NO SCALE
LIGHT POLE BASE DETAIL



2
ME2
NO SCALE
GROUNDING ELECTRODE DETAIL



1
ME2
NO SCALE
LIFT STATION NEW ELECTRIC RISER DIAGRAM

TRANSFORMER SCHEDULE

MARK	EQUIPMENT SERVED AND LOCATION	RATING	PHASE	MOUNTING	PRIMARY	SECONDARY
		KVA			VOLTAGE	VOLTAGE

DISCONNECT SWITCH SCHEDULE

MARK	LOAD	EQUIPMENT SERVED	VOLTS	DUTY	AMP	POLE	FUSE	ENCLOSURE	NOTES:
							TYPE	NEMA TYPE	

ABBREVIATIONS:

- GD - GENERAL DUTY
- HD - HEAVY DUTY

- NOTES:
- SOLID NEUTRAL
 - SWITCHED NEUTRAL
 - DRY CONTACTS FOR SWITCH POSITION
 - SERVICE RATED

NEW CIRCUIT BREAKER LOAD CENTER SCHEDULE

PANELBOARD DESIGNATION: "LP1"		MANUFACTURER: SQUARE D				VOLTAGE: 120/208						
		TYPE: NQ				PHASE: 3						
		ENCLOSURE/SPACES: NEMA 3R / ---				WIRE: 4						
		MOUNTING/MAX. DIMENSION: SURFACE / -				MAIN RATING (AMPS): 100A						
		MIN. AIC RATING (AMPS): 10000				MAIN TYPE: MAIN BREAKER						
CIRC NO.	LOAD DESCRIPTION	CIRCUIT BREAKER AMPS	CIRCUIT BREAKER ACC.	LOAD (VA)	PHASE LOADS (VA)			LOAD (VA)	CIRCUIT BREAKER ACC.	CIRCUIT BREAKER AMPS	LOAD DESCRIPTION	CIRC NO.
					A	B	C					
1	BLOCK HEATER	20	1667	1667	1667	1334	420	0	20		PORT. GEN. BLOCK HEATER RECEPT	2
3	BATTERY CHARGER	20	1334	1334	1334	1334	420	240	20			4
5	SERVICE RECEPTACLE	20	180	180	180	180	420	240	20		POLE LIGHT	6
7	SPARE	20	0	0	0	0	420	0	20		PORT. GEN. BATT CHARGE RECEPT	8
9	SPARE	20	0	0	0	0	0	0	20		SPARE	10
11	SPARE	20	0	0	0	0	0	0	20		SPARE	12
13	SPARE	20	0	0	0	0	0	0	20		SPARE	14
15	SPARE	20	0	0	0	0	0	0	20		SPARE	16
17	SPARE	20	0	0	0	0	0	0	20		SPARE	18
19	SPARE	20	0	0	0	0	0	0	20		SPARE	20
21	SPARE	20	0	0	0	0	0	0	20		SPARE	22
23	SPARE	20	0	0	0	0	0	0	20		SPARE	24
25	SPARE	20	0	0	0	0	0	0	20		SPARE	26
27	SPARE	20	0	0	0	0	0	0	20		SPARE	28
CONNECTED SUBTOTAL (VA):					1667	1334	420					
*DIVERSIFIED COOLING TOTAL (VA):					1667	1334	420	3421	TOTAL CONNECTED (VA)			
*DIVERSIFIED HEATING TOTAL (VA):					1667	1334	420	1.25	CONTROLLING LOAD			
PHASE LOADS (AMPS):					14	12	4	18	FUTURE FACTOR (INCLUDED)			
					CALCULATED PANEL SIZING AMPS							
CIRCUIT BREAKER ACC. ABBREVIATIONS:												
GF - GROUND-FAULT CIRCUIT INTERRUPTER												
AF - ARC-FAULT CIRCUIT INTERRUPTER												
ST - SHUNT TRIP												
HLON - HANDLE-LOCK ON DEVICE												
HLO - HANDLE-LOCK OFF DEVICE												
EPD - EQUIPMENT PROTECTION DEVICE												
PANEL NOTES/ACCESSORIES:												
1. -												
2. -												
3. -												
(* DIVERSIFIED LOADS HAVE BEEN CALCULATED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.)												

CONTACT RTM ENGINEERING CONSULTANTS WITH QUESTIONS:
OFFICE PHONE (417) 881-0020
JENNIFER LUCE FOR MECHANICAL
DEREK BLOOM FOR ELECTRICAL

SECTION 220000 – GENERAL PLUMBING REQUIREMENTS

1.1	SUMMARY	1
1.2	SPECIFICATION FORM AND DEFINITIONS	1
1.3	GENERAL EXTENT OF WORK	1
1.4	LOCAL CONDITIONS	2
1.5	CODES, ORDINANCES, RULES, AND REGULATIONS	2
1.6	CONTRACT CHANGE	2
1.7	LOCATIONS AND INTERFERENCES	3
1.8	SYSTEM PERFORMANCE	4
1.9	WARRANTY	4
1.10	MATERIALS, EQUIPMENT, AND SUBSTITUTIONS	4
1.11	SHOP DRAWINGS, OPERATION, AND MAINTENANCE INSTRUCTION	5
1.12	PROPOSED VALUE ENGINEERING/PROJECT SCOPE REVISIONS	6
1.13	CAD/BIM FILE REQUESTS	7
1.14	CUTTING AND PATCHING	7
1.15	MUTILATION	7
1.16	SETTING, ADJUSTMENT AND EQUIPMENT SUPPORTS	7
1.17	START-UP, CHANGE-OVER, TRAINING, AND OPERATIONAL CHECKS	7
1.18	MAINTENANCE OF SYSTEMS	8
1.19	PROTECTION AND CLEANING OF SYSTEMS AND EQUIPMENT	8
1.20	PAINTING OF MATERIAL	8
1.21	RECORD DOCUMENTS	8

SECTION 221343 – SUBMERSIBLE WASTEWATER PUMP STATION

1.1	SUMMARY	1
1.2	REFERENCES	1
1.3	SUBMITTALS	1
1.4	QUALITY ASSURANCE	1
1.5	FACTORY ASSEMBLY	2
2.1	ACCEPTABLE MANUFACTURERS	2
2.2	GENERAL REQUIREMENTS	2
2.3	DESIGN REQUIREMENTS	2
2.4	MATERIALS AND CONSTRUCTION	3
2.5	ACCESSORIES	5
2.6	ELECTRICAL EQUIPMENT	5

SECTION 260000 – GENERAL ELECTRICAL REQUIREMENTS

1.1	SUMMARY	1
1.2	SPECIFICATION FORM AND DEFINITIONS	1
1.3	GENERAL EXTENT OF WORK	1
1.4	LOCAL CONDITIONS	2
1.5	CODES, ORDINANCES, RULES, AND REGULATIONS	2
1.6	CONTRACT CHANGE	3
1.7	LOCATIONS AND INTERFERENCES	4
1.8	SYSTEM PERFORMANCE	4
1.9	WARRANTY	4
1.10	MATERIALS, EQUIPMENT, AND SUBSTITUTIONS	5
1.11	SHOP DRAWINGS, OPERATION, AND MAINTENANCE INSTRUCTION	6
1.12	PROPOSED VALUE ENGINEERING/PROJECT SCOPE REVISIONS	7
1.13	CAD FILE REQUESTS	7
1.14	CUTTING AND PATCHING	7
1.15	MUTILATION	7
1.16	SETTING, ADJUSTMENT, AND EQUIPMENT SUPPORTS	8
1.17	START-UP, CHANGE-OVER, TRAINING, AND OPERATIONAL CHECKS	8
1.18	MAINTENANCE OF SYSTEMS	8
1.19	PROTECTION AND CLEANING OF SYSTEMS AND EQUIPMENT	8
1.20	RECORDING AND REPORTING TESTS AND DATA	9
1.21	RECORD DOCUMENTS	9

SECTION 260519 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS & CABLES

1.1	SUMMARY	1
1.2	DEFINITIONS	1
2.1	COPPER BUILDING WIRE	1
2.2	CONTROL-CIRCUIT CONDUCTORS	2
2.3	CONNECTORS AND SPLICES	2
3.1	CONDUCTOR MATERIAL APPLICATIONS	2
3.2	CONDUCTOR INSULATION & MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS ...	2
3.3	INSTALLATION OF CONDUCTORS AND CABLES	3
3.4	ELECTRICAL CIRCUITING	3
3.5	CONDUIT APPLICATION	3
3.6	CONNECTIONS	4
3.7	IDENTIFICATION	4
3.8	SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS	4
3.9	FIRESTOPPING	4

SECTION 260526 – GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

1.1	SUMMARY	1
2.1	SYSTEM DESCRIPTION	1
2.2	CONDUCTORS	1
2.3	CONNECTORS	1
2.4	GROUNDING ELECTRODES	2
3.1	APPLICATIONS	2
3.2	GROUNDING AT THE SERVICE	2
3.3	EQUIPMENT GROUNDING	2
3.4	INSTALLATION	3
3.5	FIELD QUALITY CONTROL	3

SECTION 260553 – IDENTIFICATION FOR ELECTRICAL SYSTEMS

1.1	RELATED DOCUMENTS	1
1.2	SUMMARY	1
2.1	PERFORMANCE REQUIREMENTS	1
2.2	COLOR AND LEGEND REQUIREMENTS	1
2.3	LABELS	2
2.4	BANDS AND TUBES	3
2.5	TAPES AND STENCILS	3
2.6	TAGS	4
2.7	SIGNS	4
2.8	CABLE TIES	4
2.9	MISCELLANEOUS IDENTIFICATION PRODUCTS	5
3.1	INSTALLATION	5
3.2	IDENTIFICATION SCHEDULE	7

END OF TABLE OF CONTENTS

SECTION 220000 - GENERAL PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Common plumbing installation requirements.

1.2 SPECIFICATION FORM AND DEFINITIONS

- A. These Specifications are abbreviated form and contain incomplete sentences. Omissions of words or phrases such as "the Contractor shall," "shall be," "as noted on the drawings," "according to the drawings," "a," "an," "the," and "all" are intentional. Omitted words and phrases shall be supplied by inference.
- B. When a word such as "proper," "satisfactory," "equivalent," and "as directed" is used, it requires Engineer's review.
- C. "Provide" means furnish and install.
- D. "Working Day" wherever used in these Specifications, shall mean the normal working days Monday through Friday, exclusive of Saturday, Sunday, and federally observed holidays.
- E. Architect/Engineer hereinafter abbreviated A/E shall mean both the Design Architects and the Design Engineers.
- F. Design Engineer hereinafter abbreviated D/E shall mean the engineering firm, RTM Engineering Consultants, 3333 E. Battlefield Suite 1000 Springfield, MO 65804, Telephone (417) 881-0020. Contact Person: Jennifer Luce.
- G. General Contractor hereinafter abbreviated G/C shall mean the person or company and their subcontractors who enter into contract with the Owner to perform the general division work.
- H. Electrical Contractor hereinafter abbreviated E/C shall mean the person or company and their subcontractors who enter into contract with the G/C to perform the division 26 work.
- I. Plumbing Contractor hereinafter abbreviated P/C shall mean the person or company and their subcontractors who enter into contract with the G/C to perform the division 22 work.
- J. Equipment and/or materials manufacturer hereinafter abbreviated E/M shall mean the manufacturer of equipment or materials specified or referred to.

1.3 GENERAL EXTENT OF WORK

- A. Provide plumbing systems indicated on drawings, specified or reasonably implied. Provide every device and accessory for proper operation and completion of mechanical systems. In no case will claims for "Extra Work" be allowed for work about which P/C could have informed himself before bids were taken.
- B. P/C shall familiarize himself with equipment provided by other contractors.
- C. Make required plumbing connections to equipment provided under Architectural and mechanical divisions of this project, except where shown or specified otherwise. Make required internal field wiring modifications indicated on wiring diagrams of factory installed control system for control sequence specified. These field modifications shall be limited to jumper connections and connection of internal wiring to alternate terminal block lugs. Cost for field modifications requiring re-wiring of factory installed control systems for equipment provided by G/C or P/C shall be included in base bid of each respective contractor.

- D. All plumbing work as required to provide temporary plumbing for construction shall be the responsibility of the plumbing contractor. Include all costs as required in the base bid. Coordinate and verify all requirements with the general contractor.
- E. Refer to the construction documents for owner-supplied, contractor installed materials, equipment or fixtures. Contractor shall be prepared to receive materials and equipment arriving on the project site and shall be responsible for storing, removing from packaging and assembling on site prior to installation. Coordinate delivery times and all requirements with the owner through the general contractor. Contractor shall provide all necessary additional materials, supports, bracing, mounting brackets, back-boxes, etc. as required for installation of owner-supplied, contractor-installed materials, equipment or fixtures.

1.4 LOCAL CONDITIONS

- A. Visit site and determine existing local conditions affecting work in contract.
- B. Failure to determine site conditions or nature of existing or new construction will not be considered a basis for granting additional compensation.

1.5 CODES, ORDINANCES, RULES AND REGULATIONS

- A. Provide work in accordance with applicable codes, rules, ordinances, and regulations of Local, State, and Federal Governments and other authorities having lawful jurisdiction.
- B. Drawings and specifications indicate minimum construction standards, but should any work indicated be sub-standard to any ordinances, laws, codes, rules, or regulations bearing on work, P/C shall promptly notify A/E in writing before proceeding with work so that necessary changes can be made. However, if P/C proceeds with work knowing it to be contrary to any ordinances, laws, rules, and regulations, he shall thereby have assumed full responsibility for and shall bear all costs required to correct non-complying work.
- C. Conform to latest editions and supplements of the following codes, standards, or recommended practices.
 - 1. CITY CODES:
 - a. 2018 International Plumbing Code
 - 2. SAFETY CODES:
 - a. National Electric Safety Code Handbook H30 – National Bureau of Standards.
 - b. Occupational Safety and Health Standards – Department of Labor.
 - c. Specifications for Making Buildings and Facilities Accessible To, and Usable By, the Physically Handicapped – American Standards Institute ANSI A117.1.
 - 3. NATIONAL FIRE CODES:
 - a. NFPA 54 Gas Appliance and Gas Piping Code.
 - b. NFPA 70 National Electric Code – 2017 Edition.
 - c. NFPA 89M Clearances, Heat Producing Appliances.
 - d. NFPA 90A Air Conditioning and Ventilation Systems.
 - e. NFPA 91 Blower and Exhaust Systems.
 - f. NFPA 101 Life Safety Code – 2012 Edition.
- D. Where following standards are applicable to equipment specified, equipment shall conform to requirements of standard and shall display the appropriate seal or seals:
 - 1. ASME – American Society of Mechanical Engineers.
 - 2. NSF – National Sanitation Foundation.
 - 3. UL – Underwriters Laboratories Inc.
- E. P/C shall secure and pay for necessary permits and certificates of inspection required by governmental ordinances, laws, rules, or regulations. Keep a written record of all permits and inspection certificates and submit two (2) copies to A/E with request for final inspection.

1.6 CONTRACT CHANGE

- A. Changes or deviations from contract; including those for extra or additional work must be submitted in writing for review of A/E. No verbal orders will be recognized.
- B. Changes in the work shall be submitted in accordance with AIA Document A201, General Conditions of the Contract for Construction.
- C. All change proposals shall be itemized indicating separately the costs for materials, labor, restocking charges, freight, bonds, insurance, overhead, and profit. All materials shall be listed separately with quantities and individual unit prices. Labor factors shall be from a nationally recognized source with appropriate adjustments.
- D. All submitted breakdowns shall be broken out individually for labor and material for each separate line item in the respective supplemental instruction, contract change directive, or proposal request. Items submitted with lump sums will be returned un-reviewed.
- E. The maximum allowable profit for any change order shall be ten percent (10%).
- F. See Example below:

PRICING SHEET

Project:	Project Name				Date:	August 1, 2022
Location:	Project Location				Estimator:	Jane Doe
Labor Rate:\$22.00						
Material	Units	Unit Measure	Material Per Unit	Man Hours Per Unit	Total Man Hours	Materials Total
Add						
Drill & Patch Holes	1	lot	\$1,285.00	3.000	3.00	\$1,285.00
4" LB w/cover	6	ea	\$105.23	2.750	16.50	\$631.38
4" Compr. Conn	6	ea	\$87.70	1.000	6.00	\$526.20
4" GRC	40	ea	\$9.04	0.280	11.20	\$361.57
4" cut & thread labor	4	ea	\$0.00	1.600	6.40	\$0.00
4" GRC-PVC Adptr.	16	ea	\$4.70	0.675	10.72	\$75.20
4" GRC 90 Ell	4	ea	\$56.34	1.500	6.00	\$225.36
4" Sch 40 PVC	460	ea	\$2.25	0.600	27.60	\$1,034.03
Resocking Fee 20%	1	lot	\$212.26	0.00	0.00	\$212.26
Return Freight	1	lot	\$26.40	0.000	0.000	\$26.40
Deduct						
4" EMT	-330	ea	\$2.46	0.045	(14.85)	(\$812.79)
4" EMT 90 Ell	-6	ea	\$26.64	1.100	(6.60)	(\$159.84)
4" EMT Cplg	--39	ea	\$2.27	0.270	(10.53)	(\$88.66)
SUBTOTAL					55.44	\$3316.12
SALES TAX				6.125%		\$203.11
LABOR	55.4	MH	\$21.74			\$1,205.27
5% OVERHEAD						\$236.23
8% PROFIT						396.86
TOTAL						\$5357.59

1.7 LOCATIONS AND INTERFERENCES

- A. Locations of equipment, piping, and other mechanical work are indicated diagrammatically by plumbing drawings. Lay out work from dimensions on Architectural and Structural Drawings. Verify equipment size from manufacturer's shop drawings.
- B. Study and become familiar with contract drawings of other trades and the general construction drawings and details to obtain necessary information for figuring installation. Cooperate with other workmen and install work to avoid interference with their work. Minor deviations not affecting design characteristics, performance, or space limitations may be permitted if reviewed by A/E prior to installation.

- C. Any conduit, apparatus, appliance, or other plumbing item interfering with proper placement of other work as indicated on drawings, specified, or required shall be removed and if so shown, relocated and reconnected without extra cost. Damage to other work caused by the P/C, his subcontractor, his workmen, or by any cause whatsoever, shall be restored as specified for new work.
- D. Do not scale mechanical and electrical drawings for dimensions. Accurately lay out work from dimensions indicated on architectural drawings unless such is found in error.

1.8 SYSTEM PERFORMANCE

- A. Final acceptance of work shall be subject to the condition that all systems, equipment, apparatus, and appliances operate satisfactorily as designed and intended; work shall include required adjustment of systems and control equipment installed under this specification.

1.9 WARRANTY

- A. Unless noted otherwise in specifications, P/C warrants to Owner and Architect the quality of materials, equipment, workmanship, and operation of equipment provided under this specification division for a period of one (1) year from and after date of substantial completion of building and acceptance of mechanical systems by Owner.
- B. Where manufacturers' warranties expire before or during the one-year warranty period as specified in item 1, the P/C shall include provisions for extending the manufacturer's warranty as required to match the one-year period from substantial completion and shall include cost for warranty extension in his base bid.
- C. P/C warrants to Owner and Architect that on receipt of written notice from either of them within one (1) year warranty period following date of acceptance, all defects that have appeared in materials and/or workmanship shall be promptly corrected to condition required by contract documents at P/C's expense.
- D. The above warranty shall not supersede any separately stated warranty or other requirements by law or by these specifications.
- E. Keeps an itemized list of all equipment warranties listing equipment by name, mark, and type along with length and expiration date of each warranty. Submit two (2) copies to A/E with request for final inspection.
- F. If the Architect's specification includes a warranty requirement that exceeds the above warranty requirements, the Architect's warranty shall take precedence.

1.10 MATERIALS, EQUIPMENT AND SUBSTITUTIONS

- A. The intent of these specifications is to allow ample opportunity for P/C to use his ingenuity and abilities to perform the work to his and the Owner's best advantage, and to permit maximum competition in bidding on standards of materials and equipment required.
- B. Material and equipment installed under this contract shall be first class quality, new, unused, and without damage.
- C. In general, these specifications identify required materials and equipment by naming first the manufacturer whose product was used as the basis for the project design and specifications. The manufacturer's product, series, model, catalog, and/or identification numbers shall set quality requirements for comparing the equivalency of other manufacturer's products in general. Where models are listed or scheduled with information that does not match specified manufacturer's data for size or capacity, the larger, more expensive and/or restrictive requirement between the schedule and the manufacturer's data shall be met and included. Where other manufacturer's names are listed, they are considered an approved manufacturer for the product specified; however, the listing of their names implies no prior approval of any product unless specific model or catalog numbers are listed in these specifications or in subsequent addenda. The naming of a manufacturer, or even a model number, does not alleviate the contractor from being required to provide or submit equipment which meets all of the criteria and items listed in the

specifications or shown on the plans even if the specified model and/or manufacturer does not. All requirements on the drawings must be met, not just the specific model number or manufacturer. Where other than first named products are used for P/C's base bid proposal, it shall be his responsibility to determine prior to bid time that his proposed materials and equipment selections are products of approved manufacturers, which meet or exceed the specifications, fit physically in the spaces provided, are compatible with all other systems and are acceptable to the D/E.

- D. Where varying or conflicting information, notes or specifications may be shown in different locations on the drawings, schedules, or specifications, all requirements are required to be met and the worst case or more expensive and/or restrictive option should be included where duplicate information is not the same. Notify A/E for clarification.
- E. Where materials or equipment are described but not named, provide required items of first quality, adequate in every respect for intended use. Such items shall be submitted to A/E for review prior to procurement.
- F. **PRIOR TO RECEIPT OF BIDS, IF P/C WISHES TO INCORPORATE PRODUCTS OTHER THAN THOSE NAMED IN SPECIFICATIONS IN HIS BASE BID, HE SHALL SUBMIT A WRITTEN REQUEST FOR REVIEW OF SUBSTITUTIONS TO D/E NOT LESS THAN SEVEN (7) WORKING DAYS PRIOR TO BID TIME. D/E WILL REVIEW REQUESTS AND ACCEPTABLE ITEMS WILL BE LISTED IN AN ADDENDUM ISSUED TO PRINCIPAL BIDDERS.**
- G. Materials and equipment proposed for substitutions shall be equal to or superior to that specified in construction, efficiency, utility, aesthetic design, and color, as determined by A/E, whose decision shall be final and without further recourse. Physical size of substitute brand shall be no larger than space provided including allowances for access for installation and maintenance of installed equipment, as well as other systems shared in the same space. Requests must be accompanied by two (2) copies of complete descriptive and technical data including E/M's name, model, and catalog number, photographs or cuts, physical dimensions, operating characteristics, and any other information needed for comparison.
- H. In proposing a substitution prior to or subsequent to receipt of bids, include in such proposal cost of altering other elements of project, including (but not limited to) adjustments in mechanical, electrical, plumbing, controls, fire alarm and/or any other service requirements necessary to accommodate such substitution; whether such affected elements are under this contract or under separate contracts.
- I. Within seven (7) working days after bids are received, apparent lower bidder shall submit to A/E for approval three (3) copies of a list of all major items of equipment he intends to provide. As soon as practicable and within 30 working days after award of contract, P/C shall submit shop drawings for equipment and materials to be incorporated in work, for A/E review. Where 30 day limit is insufficient for preparation of detailed shop drawings on major equipment or assemblies, P/C shall submit manufacturer's descriptive catalog data and indicate date such detailed shop drawings will be submitted along with manufacturer's certification that order was placed within 30 working day limit.
- J. After execution of contract, substitution of product brands for those named in Specifications will be considered, only if:
 - 1. Request is received within 30 days after contract date and request includes statement showing credit due Owner, if any, if substitution products are used, or
 - 2. Owner requests consideration be given to substitute brands.

1.11 SHOP DRAWINGS, OPERATION AND MAINTENANCE INSTRUCTION

- A. Unless noted differently in the general requirements of the specifications, P/C shall furnish one of the following options, whichever format is preferred:
 - 1. Electronic PDF submittals to the Architect. Shop drawings submitted electronically shall be returned electronically via the same path.
 - 2. A minimum of six (6) paper copy sets of shop drawings of all materials and equipment, A/E will retain two (2) sets.
- B. Where catalog cuts are submitted for review, conspicuously mark or provide schedule of equipment, capacities, controls, fittings, sizes, etc., that are to be provided. Mark equipment to match equipment labels provided on the drawings, schedules or specifications. Mark each submitted item with applicable section

and paragraph numbers of these specifications, or plan sheet number, when item does not appear in specifications. Where equipment submitted does not appear in base specifications or specified equivalent, submittals shall be marked with applicable alternate numbers, change order numbers, or letters of authorization where said equipment was approved. Each submittal shall contain at least two (2) sets of original catalog cuts. Each catalog sheet shall bear E/M's name and address. All shop drawings on materials and equipment listed by UL shall indicate UL approval on submittal.

- C. P/C shall check all shop drawings to verify that they meet specifications and/or drawing requirements before forwarding submittals to the A/E for their review. All shop drawings submitted to A/E shall bear P/C approval stamp which shall indicate that P/C has reviewed submittals and that they meet specification and/or drawing requirements. P/C's submittal review shall specifically check for, but not be limited to, the following: equipment capacities, physical size in relation to space allowed; plumbing characteristics, provisions for supply, return, and drainage connections to building systems. All shop drawings not meeting P/C's approval shall be returned to his supplier for resubmittal.
- D. No shop drawing submittals will be considered for review by the A/E without P/C's approval stamp, or that have extensive changes made on the original submittal as a result of P/C's review.
- E. A/E will not be responsible for the cost of returning shop drawing submittals that are submitted to them without P/C's review and approval stamp. A letter will be sent to P/C by either the Architect or Engineer indicating receipt of an improper submittal. P/C shall acknowledge receipt of letter and indicate his plans for pick-up or resubmitting. A/E will hold improper submittals for pick-up by P/C or supplier for 15 working days after date of receipt. If not picked up by the 16th working day, submittals will be disposed of by A/E.
- F. A/E's review of shop drawings will not relieve P/C of responsibility for deviations from drawings and specifications unless such deviations have been specifically approved in writing by Owner or his representative, nor shall it relieve P/C of responsibility for errors in shop drawings. No work shall be fabricated until A/E's review has been obtained. Any time delay caused by correcting and resubmitting shop drawings will be P/C's responsibility.
- G. A/E shall make every effort to provide shop drawing review in a timely fashion, but in no case shall the A/E be held responsible for delays in project construction or completion without prior notification of scheduling requirements specifically for return of shop drawings at least 8 weeks in advance. In no case shall less than 10 working days after A/E receipt of shop drawings be counted on by the contractor for A/E shop drawing review without prior notification and approval.
- H. Operating and Maintenance Instructions:
 - 1. Submit with shop drawings of equipment: copies of installation, operating, maintenance instructions, and parts list for equipment provided. Instructions shall be prepared by E/M.
 - 2. Keep in safe place keys and wrenches furnished with equipment under this contract. Present to Owner and obtain a receipt for same upon completion of project.
 - 3. Contractor shall provide all final documents including drawings, shop drawings, etc., in PDF format on a single disk to Owner. A total of five (5) CD's shall be provided, three (3) to the Owner and two (2) to A/E. No exceptions will be allowed to this requirement. Videotaping, as specified in other parts of this specification, will also be required at closeout.

1.12 PROPOSED VALUE ENGINEERING/PROJECT SCOPE REVISIONS

- A. Where design revisions are requested/required based on value-engineering or proposed changes in project scope, the contractor shall include in his proposed cost savings or adds the necessary MEP design fees that are required for modifying construction documents and associated meetings. In order to determine that value to be included, the contractor shall submit to the A/E the proposed scope of the work required for the changes at least 7 days prior to required pricing submittal so that the design fees can be accurately determined and included. Design work and drawing changes will only commence once the design fee is established and a signed agreement returned to the A/E for inclusion.
- B. Where the contractor proposes to use different size equipment, feeders, feeder materials, circuit breakers, fuses or significant difference in routing of feeders or branches than shown in the construction documents, the contractor shall include the necessary MEP design fees that are required for modifying or creating construction drawings necessary either for construction or submission to the authority having jurisdiction and required for additional review. Design work and drawing changes will only commence once the design fee is established and a signed agreement returned to the A/E for inclusion.

1.13 CAD FILE REQUESTS

- A. CAD files are the property of the D/E. CAD files are only available upon documented written request which must be forwarded to the D/E office. Prior to receiving any CAD files, the contractor shall submit a drawing cost fee of \$50 per construction drawing up to a maximum \$1500. In addition, the contractor must sign a Second Party User Agreement and Drawing Request Form (available upon request) which must be forwarded back to the D/E office prior to any CAD files being released. BIM/Revit models will not be made available.

1.14 CUTTING AND PATCHING

- A. Contractor shall do cutting, and patching of building materials required for installation of work herein specified. Cut no structural members without Architect's approval and in a manner approved by him.
- B. Patching shall be by mechanics of particular trade involved and shall meet approval of Architect.
- C. Drilling and cutting of openings through building materials requires Architect's review and approval. Make openings in concrete with concrete hole saw or concrete drill. Do not use star drill or air hammer for this work.

1.15 MUTILATION

- A. Mutilation of building finishes, caused by installation of plumbing equipment, fixtures, outlets, and other plumbing devices shall be repaired at P/C's expense to approval of Architect.

1.16 SETTING, ADJUSTMENT AND EQUIPMENT SUPPORTS:

- A. Work shall include mounting, alignment, and adjustment of all systems and equipment. Set equipment level on adequate foundations and provide proper anchor bolts and isolation. Level, shim, and grout equipment bases as recommended by E/M. Mount motors, align and adjust drive shafts and belts according to E/M's instructions. Equipment failures resulting from improper installation or field alignment shall be repaired or replaced by P/C at no cost to Owner.
- B. Provide concrete bases for all floor and slab mounted equipment, regardless of whether specifically noted on the drawings or not.

1.17 START-UP, CHANGE-OVER, TRAINING AND OPERATIONAL CHECKS

- A. P/C shall perform initial start-up of systems and equipment. Personnel qualified to start-up and service this equipment, including E/M's technicians, when specified, and Owner's operating personnel shall be present during these operations.
- B. P/C shall be responsible for training Owner's operating personnel to operate and maintain systems and equipment installed. Keep a record of training provided to Owner's personnel listing the date, subject covered, instructor's name, names of Owner's personnel attending, and the total hours given each individual.
- C. P/C shall report in person to Owner's designated operating personnel at end of first month of operation and thereafter at end of sixth and 12th months after date of substantial completion of building to check operation of equipment that was installed under contract. Contractor shall answer operating personnel's questions regarding system operation and shall ascertain that systems are operating normally and are being properly maintained by Owner. If P/C finds that systems are not being operated and maintained as designed, he shall inform the building engineer/Owner and A/E in writing.
- D. After each inspection, P/C shall submit written report to A/E indicating condition of equipment and including any recommended changes in operation of system or other information which will be helpful to Owner.

1.18 MAINTENANCE OF SYSTEMS

- A. P/C shall be responsible for operation, maintenance, and lubrication of equipment installed under his contract. All equipment and systems shall be fully operational when turned over to the owner at project substantial completion.

1.19 PROTECTION AND CLEANING OF SYSTEMS AND EQUIPMENT

- A. It shall be P/C's responsibility to protect and prevent damage to all plumbing materials and equipment stored and/or installed under this contract. All work, materials, and equipment shall be adequately protected by any and all means necessary to prevent damage by weather, flooding, condensation, construction debris, fire, and construction equipment and vehicles.
- B. Equipment not rated for outdoor use shall be protected from moisture damage before and during construction. Covering equipment with a tarp on site is not considered a means of providing protection from moisture. Any equipment not rated for outdoor use exposed to moisture for any duration shall be replaced with new equipment at the contractor's expense.
- C. Where job conditions, or work of other contractors produce the potential for damage to plumbing systems and equipment, P/C shall immediately notify the G/C so that corrective action can be taken.
- D. P/C shall take extra precautions to protect plumbing equipment containing solid state electronics, open relays, and contacts from damage by water, dust, dirt, construction debris, and the formation of condensate. All equipment so damaged shall be replaced by P/C with new equipment at no cost to Owner.
- E. P/C shall periodically inspect and clean all systems and equipment to ensure all systems and equipment remain in like new condition during construction, free from dust and debris. All cleaning shall be done in accordance with E/M's recommendation where available and applicable.
- F. Before request for final inspection, all systems and equipment shall be properly cleaned, vacuumed, polished, painted, etc., as required to return equipment to like new appearance.
- G. All equipment requiring painting or touch-up shall be properly prepared and painted in accordance with this specification.
- H. P/C shall keep a written record listing systems and equipment cleaned. Where special procedures or chemicals were used or where partial or complete disassembly of factory assembled equipment was necessary, P/C shall list special procedures and/or disassembly required and equipment components affected. Prior to final inspection, P/C shall submit two (2) copies of cleaning record to A/E for their records.

1.20 PAINTING OF MATERIAL

- A. Equipment and materials exposed to interior dry environment shall have a minimum of one (1) primer and one (1) finish coat. Equipment and materials mounted in exterior location shall have a minimum of one (1) primer and two (2) finish coats with total thickness of at least 5 mils. Finish coat colors in finish areas shall be as selected by A/E.
- B. After installation, damage to painted surfaces shall be properly prepared and primed with primers equal to factory materials. Finish coating shall be same color and type as factory finish.
- C. Where extensive refinishing of factory applied finishes are required, equipment shall be completely repainted. A/E will make final determination of extent of refinishing required.

1.21 RECORD DOCUMENTS

- A. Record Drawings: Unless noted otherwise in architectural documents, maintain a reproducible set of contract drawings and shop drawings in clean, undamaged condition, with mark-up of actual installations

which vary substantially from the work as originally shown. Mark whichever drawing is most capable of showing "field" condition fully and accurately; however, where shop drawings are used for mark-up, record a cross-reference at corresponding location on working drawings. Mark with red erasable red pencil and, where feasible, use other colors to distinguish between variations in separate categories of work. Mark-up new information, which is recognized to be of importance to Owner, but was for some reason not shown on either contract drawings or shop drawings. Give particular attention to concealed work, which would be difficult to measure and record at a later date. Note related change order numbers where applicable. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates, and other identification on cover of each sheet.

- B. The Contractor shall provide a full set of photographs showing the entire underground equipment. The photographs shall be taken prior to any concrete being poured. The underground equipment shall consist of, but not be limited to, the following:
 - 1. Piping
- C. The Contractor shall provide the photographs in an 8.5-inch by 11-inch format for record keeping purposes with the maintenance manuals. The photos shall all be digital, and a disk or CD shall be provided to the Owner as a permanent record.
- D. As-built documents shall be submitted for approval prior to final payment. Copies of "in-progress" as-built drawings shall be submitted at each pay request.

END OF SECTION 220000

SECTION 221343 - SUBMERSIBLE WASTEWATER PUMPING STATION

PART I - GENERAL

1.1 SUMMARY:

- A. This section covers furnishing and installing submersible wastewater pumping stations and related components.
- B. Pumping stations shall be:
 - 1. Capable of pumping raw wastewater and be of the duplex type.
 - 2. Furnished complete and include pump casings, shafts, bearings, seals, lubrication, floor mounted discharge bases, piping assemblies, guide rails, anchor bolts, submersible motors, controls, power cables, access hatch cover and all other parts and accessories indicated, specified or required for proper installation, operation and maintenance.

1.2 REFERENCES:

- A. Applicable Standards:
 - 1. American National Standards Institute (ANSI).
 - a. B16.1 - Cast Iron Pipe Flanges and Flanged Fittings.
 - 2. American Iron and Steel Institute (AISI).
 - 3. Anti-Friction Bearing Manufacturer's Association (AFBMA).
 - 4. Hydraulic Institute Standards (HIS).
 - 5. National Electrical Manufacturer's Association (NEMA).
 - 6. Institute of Electrical and Electronics Engineers (IEEE).

1.3 SUBMITTALS:

- A. Shop drawings shall be submitted showing materials and assembly of all elements of the pumping station. In addition to pump and motor data to be submitted descriptive literature shall clearly indicate all information necessary to evaluate conformance with specification requirements for all features of the pump station including valves. Complete data for all electrical items, switches, enclosures, relays, motor starters and controls, and a drawing of the control panel layout and a schematic diagram of the control panel circuitry shall be included. Submittals shall include, but not be limited to, the following:
 - 1. Standard performance curves for each pump model furnished. Curves shall cover range from shutoff to 150% of design flow rate at the conditions specified, and shall be submitted for the following parameters as a function of pump capacity:
 - a. Total developed head.
 - b. Required brake horsepower.
 - c. Pump efficiency.
 - d. Required wire-to-water horsepower.
 - e. Minimum nameplate horsepower with 1.15 derating factor (excluding motor S.F.).
 - f. Required NPSH.
 - g. Minimum recommended submergence.
 - h. Report of factory tests.
 - i. Top slab details including reinforcement and access hatch catalog cuts.

1.4 QUALITY ASSURANCE:

- A. Factory Tests and Reports:
 - 1. Perform tests on each pump in accordance with Hydraulic Institute Standards except as otherwise specified.
 - 2. Statically balance pump impellers and dynamically balance all pump/motor units such that equipment vibration displaced (peak-to-peak) as measured at any point on the machine shall not exceed 5.0 mils for 1200 r.p.m. and 4.0 mils for 1800 r.p.m.
 - 3. Submit results of factory tests in accordance with DIVISION 1.
 - 4. Perform standard tests on all motors in accordance with IEEE.

1.5 FACTORY ASSEMBLY:

- A. Pump/motor units shall be completely shop assembled and aligned prior to shipping.
- B. After completion of the specified factory tests, pumps shall be prepared for shipment with the minimum amount of disassembly, and such that no field disassembly, cleaning, or flushing is required.
- C. Any components removed for shipping shall be match-marked prior to removal and shipment.
- D. Prepare all cast iron surfaces and provide manufacturer's standard paint system.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Homa Pumps
- B. Flygt
- C. Meyers
- D. Equal Approved by owner 7 days prior to bid

2.2 GENERAL REQUIREMENTS:

- A. Provide totally sealed submersible electrically operated pumps capable of pumping raw unscreened Sewage for continuous operation.
- B. Pump controls shall be as indicated and as specified in this section.
- C. Pump shall operate at or near maximum efficiency at operating conditions.
- D. Pump head-capacity curve shall be continuously falling from shutoff head.
- F. Pump discharge connection elbow and discharge piping shall be installed such that pump will automatically connect and seal to discharge connection elbow when lowered into place.
- G. Pump shall be easily removable for inspection or service.
- H. Provide guide rail system and pump rail guide bracket to raise or lower pump unit by lifting chain.
- I. Guide entire weight of pump unit with a minimum of two guide bars.
- J. Seal interface of the pump and discharge elbow by O-ring, gaskets, or metal to metal contact.
- K. Pumps shall be capable of pumping 3-inch diameter non-compressible solids.
- L. All equipment to be installed inside the wet well shall be explosion-proof rated for use in Class I, Division 2, Group C and D areas.
- M) Pumping station equipment shall be installed in a concrete wet well.

2.3 DESIGN REQUIREMENTS:

- A. Number of Pumps (2 min.)
- B. Design Capacity: 690 GPM
- C. Design Heads:

1. 82 feet total dynamic head
2. 20 feet static head

D. Maximum Motor Speed: 1800 rpm

E. Minimum Efficiency at Rating Point: 60%

F. Brake horsepower: 29 hp

G. Wire to Water Horsepower: 25.7 hp

H. Minimum Nameplate Motor Horsepower: Nameplate horsepower, regardless of service factor, shall be at least 115 percent of the maximum load imposed by the driven equipment.

I. Maximum Depth of Water in Wet well: See plans.

J. Minimum Depth of Water in Wet well: See plans.

K. Minimum Discharge Elbow Outlet Size: 4 in.

2.4 MATERIALS AND CONSTRUCTION:

A. Construct motor housing, pump casing, and major pump components of cast iron conforming to ASTM A48.

B. Provide bolts, nuts, and washers of AISI Series S00 stainless steel.

C. Motor

1. The motor shall be an air-filled, submersible, squirrel cage, induction-type motor of the NEMA type B design. The motor shall be housed in a watertight enclosure capable of continuous operation at a submergence of 65 feet, and made of ASTM A-48, Class 40B Cast Iron. Fitting the stator into the enclosure with the use of bolts, pins, or other fastening devices which would require penetration of the housing shall not be acceptable.
2. The stator windings shall be insulated with moisture-resistant Class-H insulation. In each phase winding, there shall be embedded a bi-metallic temperature sensor, wired in series and interlocked with the motor overload protection in the control panel. Any of these thermal switches shall cut out electric power if the temperature in its winding exceeds 140°C (284°F), and shall automatically reset when the winding temperature returns to normal conditions.
3. The motor shall be non-overloading through the selected performance curve and shall perform in accordance with NEMA MG1, Part 30. The motor shall be rated for continuous operation in environments up to 104°F or intermittently up to 140°F, and shall be capable of sustaining 15 starts per hour. Motors shall be available to meet NEMA MG1, Part 31 and VFD-rated if required.

D. Impeller

1. Shall be cast as one piece of ASTM A-48, Class 40B Cast Iron, statically and dynamically balanced. Cast Iron shall be hardened to a minimum of 650 BHN using plasma ion nitriding or equal hardening process. The impeller shall be of the single-vane closed (double-shrouded), multi-vane closed (double-shrouded), or multi-vane open (single-shrouded) non-clog design, and shall meet the Ten State Standards requirement for minimum solids passage of 3 inches. Upon request, the manufacturer must certify a test of a static solids passing test to confirm the supplied pump is capable of passing 3" non-compressible solids in a static configuration. Impellers that are not capable of passing a 3 inch, non-compressible solid in a static state, or which require axial movement in order to pass shall not be considered acceptable. Impellers that require adjustment over time in order to maintain proper tolerance to the volute shall not be acceptable.

E. Shaft:

1. Ample diameter to assure first critical speed will occur at not less than 150% of rated pump speed.
2. The pump and motor shaft shall be an integral, one-piece unit composed of AISI 430 Stainless Steel. Shafts that utilize carbon steel, two-piece or sleeved construction shall not be considered acceptable. The maximum allowable shaft deflection at the shaft seal shall not be more than 0.002 inches while within operating range.

F. Bearings:

1. The shaft shall be supported by pre-lubricated, anti-friction bearings. These bearings shall be non-proprietary and shall be produced and branded by a major manufacturer of bearings. The bearings shall have an L-10 life of 100,000 hours at the pump's Best Efficiency Point (BEP). The lower, impeller-side bearing shall be a double-row, deep groove, angular contact ball bearing, axially-retained, to sustain both axial and radial loads. The upper, motor-end bearing shall be a single-row, deep groove ball bearing, axially floating, to sustain radial loads only.

F. Shaft Seal:

1. Two mechanical seals arranged in tandem in an oil bath reservoir shall seal pumped liquid from motor compartment.
2. Moisture detector shall be installed in stator housing and connected to pump controls.
3. The mechanical seals shall be of a non-proprietary design and shall be produced and branded by a major manufacturer of mechanical seals.
4. The top shroud of the impeller shall maintain a close tolerance to a matching surface in the wall of the volute. This tolerance shall be small enough that potentially damaging particles in the pumped media are unable to pass. Arrangements that rely on cutting systems to reduce the size of particles or those that rely on directing particles away from the seal shall not be acceptable.
5. Seal faces shall be made of tungsten carbide and carbon.

H. Oil Chamber:

1. Oil chamber shall contain an inspection plug, drain plug and vent plug.

I. Mating Surface Seals:

1. All mating surfaces of major components shall be machined and fitted with O-rings where watertight sealing is required.
2. The use of elliptical O-rings, gaskets, or seals requiring specific fastener torque to obtain and maintain seal compression and water tightness will not be acceptable.

J. Cable Entry

1. Each cable entry assembly shall contain a cylindrical elastomer grommet, flanked by two washers, closely fitted to the cable O.D. A watertight seal shall be maintained by screwing a threaded cable entry gland into a cable inlet flange which bolts into the motor cap. The cable entry shall not require a specific torque to ensure watertight integrity. The gland shall incorporate a strain-relief and anti-kink feature that shall function independently from the separate sealing action. For pumps over 10.5 horsepower, an isolated junction chamber containing the terminal board shall be sealed from the motor by means of a watertight isolation plate.

K. Motor Cooling

1. Motor cooling shall be accomplished through a cooling jacket encircling the motor housing.
2. The jacket shall operate by either
 - a. Being filled during operation with the pumped liquid to provide sufficient cooling of the motor at any operating point on the selected performance curve. Impeller back vanes shall force circulation throughout the cooling jacket, and an air vent shall ensure air is not entrapped within the jacket.
 - b. A stainless steel motor cooling jacket shall encircle the stator housing, providing for dissipation of motor heat regardless of the type of pump installation. An impeller, integral to the cooling system and driven by the pump shaft, shall provide the necessary circulation of the cooling liquid through the jacket. The cooling liquid shall pass about the stator housing in the closed loop system in turbulent flow providing for superior heat transfer. The cooling system shall have one fill port and one drain port integral to the cooling jacket. The cooling system shall provide for continuous pump operation in liquid or ambient temperatures of up to 104°F (40°C).
3. Cooling shall not require the use of external heat exchangers, fans, or an external supply of cooling liquid.
4. Operational restrictions at temperatures below 104°F are not acceptable.
5. The starter housing shall be an air-filled, watertight casing.
6. Motor insulation shall be moisture resistant, Class F, 155°C and shall be NEMA Design B for continuous duty.
7. Each pump motor shall be provided with a special cable suitable for submersible pump applications.
8. The cable entry water seal design shall be such that a specific fastener torque is not required to ensure a watertight and submersible seal. The use of epoxies, silicones or other secondary sealing systems will not be acceptable.

9. Three additional pump/motor tags shall be provided for each motor/pump unit. Each set shall have identical information as the corresponding motor/pump set.

2.5 ACCESSORIES:

A. Pump Discharge Base:

1. Base shall be sufficiently rigid to firmly support the guide rails, discharge piping and pumping unit under all operating conditions.
2. Base shall be provided with integral support legs suitable for bolting to the floor of the wet well with stainless steel anchor bolts.
3. Designed to automatically connect to the pump discharge without bolts.
4. Constructed of cast or ductile iron.
5. Diameter and drilling of the elbow outlet flange shall conform to ANSI B16.1, Class 125.

B. Rail Guides:

1. Fasten stainless-steel guide supports to pump so that no lifting loads are applied to pump or motor housing.

C. Lifting Cable:

1. Provide one stainless-steel cable of 2 times the lifting load capacity of the weight of each pump for each pump.
2. Design to raise and lower pump with additional safety factor for overcoming force of pump hang-ups.
3. Provide hook for cable when not in use.

D. Guide Rails:

1. Stainless-steel pipe.
 - a. All stainless steel hardware, including rails, brackets, and anchor bolts sized as recommended by manufacturer.
2. Shall not support any portion of the pump weight.
3. Provide a minimum of two guide rails.
4. Shall extend to the top of the wet well at the access hatch cover.

E. Cable Holder:

1. Provide stainless steel kellum grip holders for pump and control cables.
2. Cables shall be easily adjusted to pumping level without splices.
 - a. Provide continuous cables from control panel to pumps and level controls.

F. Access Hatches:

1. Provide access hatch in accordance with the size of the pumps and included fall through protection with safety grate with opening arm.

2.6 ELECTRICAL EQUIPMENT:

A. Conform to NEC, NEMA and IEEE on all electrical equipment and controls. B) Duplex Control Panel shall include:

1. Primary Controls;
 - a. 4 wet well level and alarm controls shall be supplied by a Pressure Transducer and required power supply. The operation of the pumps shall be driven by the VFDs through a 4-20 milliamp signal sent to them from the Programed Logic Controller and the pressure transducer. The lowest level setting shall be for pump shutoff, the next level up shall initiate a VFD and turn on one of the pumps. As the level increases in the wet well, the VFDs shall increase the speed of the pump to match incoming flow. If the pump that is running cannot keep up with incoming flow, then at the next level up, the programmer shall initiate operation of the second pump and the speeds of the pumps shall be set to match incoming flow. As the wet well level decrease, the speed of the pumps will slow down to the point of the shut of level. A high-level set point shall also be set, at which it would activate the high level alarm system.
 - b. The pumps manufacturer or their representative shall be responsible the programming the operation of the equipment in the primary controls. They shall communicate with the City of Republic in setting the operational levels.
2. Secondary Controls;

- a. Wet well level and alarm controls shall be 120 volts and shall be provided by sealed float type mercury switches. The mercury tube switches shall be hermetically sealed stainless-steel capsule surrounded by polyurethane foam and encased in polypropylene for corrosion and shock resistance.
 - b. The support wire for each float switch shall have a neoprene jacket.
 - c. The float shall contain an internal weight to hold the switch in place in the wet well.
 - d. Each float switch shall hang in the wet well supported only by the individual cord connected thereto.
 - e. Three float sensors (normally-open) shall be provided for automatic operation with an electric alternator. The lower float switch control shall be at the turn-off level, the upper control is set at the turn-level required and the override control is set above the upper control so that both pumps will come on if the level rises above upper control. If one pump fails for any reason, the other pump shall automatically operate on the override control until trouble is corrected. A fourth float switch level sensor (normally-open) shall be used to operate a high level alarm and relay to a telephone dialer in the control panel. Alarm shall be audio and visual. A fifth level sensor (normally-closed) shall be provided and used to operate a low level alarm and turn off any pumps that are running and relay to a telephone dialer in the control panel. The Alarm shall also activate both local audible and visual. The fifth float shall work either the primary and secondary controls.
 - f. When the specified switch is place in "float" position, this shall by-pass the VFDs and start the pumps "across" the line by activating the motor starters.
- B. Provide the electrical control panel Variable Frequency Drives, programmed logic controller, appropriately sized uninterrupted power supply, motor starters, and pump controls, as specified. A Human to Machine Interface (HMI) shall be included and allow the operator for on-site programming and changing of settings on site without the need of external programming devices. Control cabinet shall include indicating lights for pump run, moisture detection, overload and thermal trip. All lighted indicators shall be push to test. Provide all power and grounding as required for installation.
- C. Prefabricated Exterior Control Panel Design Requirements:
1. NEMA Type 4X enclosure with gasketed hinged door, padlock hasp, screw-type door clamps and padlock.
 2. Interior steel mounting panel.
 3. Sized to house VFDs, program controller, UPS, all required circuit breakers, 110 VAC receptacle for UPS, surge protection, distribution block, Omni Site Cellular Dialer, motor starters, relays, alternator, etc. switch for the selecting control operation of the pump through VFDs (pressure transducer or across the "line" (float switches).
 4. To be mounted on unistrut rack that is sized adequate to hold the required disconnect switches and the common control panel.
 5. Watertight termination fittings for all pipes and conduits entering enclosure.
 6. Interior of box insulated with 1-inch-thick noncombustible Styrofoam board insulation with foil facing.
 7. Chroma lox 150-watt (minimum) Type S strip heater and a Chroma lox WR-90 thermostat wired to power supply terminal block through a 5-A cartridge type fuse.
 8. Furnished by pump manufacturer.
 9. Panel shall be equipped with a HAND-OFF-AUTO switch for operation. Provide pump reset button to clear alarms once cleared.
 10. Panel shall be equipped with a 2 position swath for the purpose of selecting between pressure level controls and VFDs or the float switches and across the "line" operation. VFD shall include bypass. Provide breaker or disconnect to isolate each pump.
 11. Panel shall be provided with a run time meter for each pump. Meter shall be calibrated in one-hundredth hour increments.
 12. An automatic alternator with manual switch shall be provided to change the sequence of operation at the end of each pumping cycle. The manual switch shall allow for either pump to be selected as lead pump or for automatic alternation. Timed alternation will not be acceptable. The alternator shall have a light indicating which pump is in the lead. In the event that either pump is out of service the alternator shall be bypassed.
 13. Control panel shall be provided with 480V, 3-phase feed, internal transformer, and 120 volt single phase service receptacle.
 14. All control components, programming, contactors, etc shall be included for complete operation.
 15. Provide external lockable service disconnect to switch power off for the entire lift station.
 16. Lightning arrestor
 17. 3-phase monitor
- D. Alarm System:

1. The alarm system shall be activated in cases of power failure, pump failure, low or high water level, unauthorized entry and all available generator alarms based on the approved make/model of generator (example: low fuel, over-temp, low oil pressure).
2. Alarm system shall activate a red warning light located on the electric service pole, an audible horn, and a cellular dialer operation. City shall provide cellular service only with all other programming and operation under this contract. Provide all programming in accordance with the City service provider.

E. System Start-up, Performance Testing, and Warranty:

1. Installation, Inspection, and testing: All Work shall conform to manufacturer's recommendations.
2. Provide 5 year warranty on pumps and 10 year warranty on the motor.
3. Provide equipment manufacturer start-up for system and owner training.
4. Conduct in the presence of Contractor, Engineer and City. B) Equipment Tests:
 - a. Check performance of all components as a functioning unit.
 - b. Check alignment of each unit
5. Conduct such operational tests as necessary to determine that the performance of equipment and controls is as specified.
6. Tests will generally consist of placing equipment in operation under varying conditions and observing performance.
7. Make all necessary equipment adjustments and corrective work indicated by tests.
8. Submit a written test report to the City with one copy to Engineer in a letter form stating operations performed and results obtained for each unit.
9. Prepare surfaces of damaged and uncoated areas and touch-up paint as required for complete protection.

END OF SECTION 221343

SECTION 260000 - GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Common electrical installation requirements.

1.2 SPECIFICATION FORM AND DEFINITIONS

- A. These Specifications are abbreviated form and contain incomplete sentences. Omissions of words or phrases such as "the Contractor shall," "shall be," "as noted on the drawings," "according to the drawings," "a," "an," "the," and "all" are intentional. Omitted words and phrases shall be supplied by inference.
- B. When a word such as "proper," "satisfactory," "equivalent," and "as directed" is used, it requires Engineer's review.
- C. "Provide" means furnish and install.
- D. "Working Day" wherever used in these Specifications, shall mean the normal working days Monday through Friday, exclusive of Saturday, Sunday, and federally observed holidays.
- E. Architect/Engineer hereinafter abbreviated A/E shall mean both the Design Architects and the Design Engineers.
- F. Design Engineer hereinafter abbreviated D/E shall mean the engineering firm, RTM Engineering Consultants, 3333 E. Battlefield Suite 1000 Springfield, MO 65804, Telephone (417) 881-0020. Contact Person Jennifer Luce.
- G. General Contractor hereinafter abbreviated G/C shall mean the person or company and their subcontractors who enter into contract with the Owner to perform the general division work.
- H. Electrical Contractor hereinafter abbreviated E/C shall mean the person or company and their subcontractors who enter into contract with the G/C to perform the division 26 work.
- I. Plumbing Contractor hereinafter abbreviated P/C shall mean the person or company and their subcontractors who enter into contract with the G/C to perform the division 22 work.
- J. Equipment and/or materials manufacturer hereinafter abbreviated E/M shall mean the manufacturer of equipment or materials specified or referred to.

1.3 GENERAL EXTENT OF WORK

- A. Provide electrical systems indicated on drawings, specified or reasonably implied. Provide every device and accessory for proper operation and completion of mechanical systems. In no case will claims for "Extra Work" be allowed for work about which E/C could have informed himself before bids were taken.
- B. E/C shall familiarize himself with equipment provided by other contractors, which require electrical connections and controls.
- C. Make required electrical connections to equipment provided under Architectural and mechanical divisions of this project, except where shown or specified otherwise. Make required internal field wiring modifications indicated on wiring diagrams of factory installed control system for control sequence specified. These field modifications shall be limited to jumper connections and connection of internal wiring to alternate terminal

block lugs. Cost for field modifications requiring re-wiring of factory installed control systems for equipment provided by G/C or M/C shall be included in base bid of each respective contractor.

- D. E/C shall check electrical data and wiring diagrams received from M/C for compliance with project voltages, wiring, controls, and protective devices on electrical drawings. Promptly bring discrepancies found to attention of A/E for a decision.
- E. Coordinate closely with M/C and P/C for all mechanical, plumbing and/or HVAC equipment electrical connection requirements. Disconnecting means as indicated on the drawings is shown schematically. E/C shall verify mounting location and equipment connection points with all other contractors and connect all equipment per the supplied equipment manufacturer's requirements. E/C shall verify mounting location of all disconnecting means with the E/M and install per those requirements and so as not to impact equipment performance, access, operation and/or warranty. Disconnecting means shall be installed in an accessible location with working clearances as required by the National Electric Code. Provide structural supports securely attached to the building structure separate from mechanical equipment and/or supports for mounting of disconnecting means as required and include costs for all such supports and associated equipment in the base bid. Maintain all conduit and conductor feeds to equipment concealed inside the building or below grade and stub up at the equipment inside the curb or at equipment supports. Unistrut shall not be allowed for any roof penetrations.
- F. Coordinate closely with G/C, M/C and P/C for all electrical, lighting, mechanical, plumbing and/or HVAC equipment locations. Refer to the mechanical, plumbing and architectural plans for exact locations and quantities of all HVAC equipment, plumbing equipment, smoke dampers, fire/smoke dampers, pumps, miscellaneous equipment, etc. Locations and quantities shown on the electrical drawings are approximate and may not reflect final position or quantity. The electrical contractor shall be responsible for familiarizing himself with all drawings and specifications in the construction documents, not just the electrical drawings. The electrical contractor shall provide final connection to all equipment and lighting. Where equipment or lighting is shown on the mechanical, plumbing or architectural plans but not shown on the electrical plans, electrical contractor shall provide power to the equipment based on equipment requirements as scheduled or noted, specified and/or per the manufacturer's requirements and include all costs in the base bid. Location shown of electrical connection to mechanical, plumbing or other equipment is schematic and may not reflect actual connection points. Rough-in and connection to the equipment shall be per the equipment manufacturer's requirements, the National Electric Code and as required to keep electrical connections concealed from view. All rough-in requirements shall be verified with the respective contractor and equipment manufacturer prior to any work being performed.
- G. Refer to the construction documents for owner-supplied, contractor installed materials, equipment or fixtures. Contractor shall be prepared to receive materials and equipment arriving on the project site and shall be responsible for storing, removing from packaging and assembling on site prior to installation. Coordinate delivery times and all requirements with the owner through the general contractor. Contractor shall provide any and all necessary additional materials, supports, bracing, mounting brackets, back-boxes, etc. as required for installation of owner-supplied, contractor-installed materials, equipment or fixtures.

1.4 LOCAL CONDITIONS

- A. Visit site and determine existing local conditions affecting work in contract.
- B. Failure to determine site conditions or nature of existing or new construction will not be considered a basis for granting additional compensation.

1.5 CODES, ORDINANCES, RULES AND REGULATIONS

- A. Provide work in accordance with applicable codes, rules, ordinances, and regulations of Local, State, and Federal Governments and other authorities having lawful jurisdiction.
- B. Drawings and specifications indicate minimum construction standards, but should any work indicated be sub-standard to any ordinances, laws, codes, rules, or regulations bearing on work, E/C shall promptly notify A/E in writing before proceeding with work so that necessary changes can be made. However, if E/C proceeds with work knowing it to be contrary to any ordinances, laws, rules, and regulations, he shall

thereby have assumed full responsibility for and shall bear all costs required to correct non-complying work.

- C. Conform to latest editions and supplements of the following codes, standards, or recommended practices.
1. CITY CODES:
 - a. 2018 International Codes
 2. SAFETY CODES:
 - a. National Electric Safety Code Handbook H30 – National Bureau of Standards.
 - b. Occupational Safety and Health Standards – Department of Labor.
 - c. Specifications for Making Buildings and Facilities Accessible To, and Usable By, the Physically Handicapped – American Standards Institute ANSI A117.1.
 3. NATIONAL FIRE CODES:
 - a. NFPA No. 70 – National Electric Code – 2017 Edition.
 - b. NFPA No. 101 – Life Safety Code – 2012 Edition.
 4. UNDERWRITERS LABORATORIES, INC.:
 - a. UL 508 – Standards for Industrial Control Equipment.
 - b. UL 1008 – Standard for Automatic Transfer Switches.
 - c. All materials, equipment and component parts of equipment shall bear UL labels whenever such devices are listed by UL.
- D. E/C shall secure and pay for necessary permits and certificates of inspection required by governmental ordinances, laws, rules, or regulations. Keep a written record of all permits and inspection certificates and submit two (2) copies to A/E with request for final inspection.
- E. E/C shall secure and pay for necessary permits and certificates of inspection required by governmental ordinances, laws, rules or regulations. Keep a written record of all permits and inspection certificates and submit two copies to A/E with request for final inspection.

1.6 CONTRACT CHANGE

- A. Changes or deviations from contract; including those for extra or additional work must be submitted in writing for review of A/E. No verbal orders will be recognized.
- B. Changes in the work shall be submitted in accordance with AIA Document A201, General Conditions of the Contract for Construction.
- C. All change proposals shall be itemized indicating separately the costs for materials, labor, restocking charges, freight, bonds, insurance, overhead, and profit. All materials shall be listed separately with quantities and individual unit prices. Labor factors shall be from a nationally recognized source with appropriate adjustments.
- D. All submitted breakdowns shall be broken out individually for labor and material for each separate line item in the respective supplemental instruction, contract change directive, or proposal request. Items submitted with lump sums will be returned un-reviewed.
- E. The maximum allowable profit for any change order shall be ten percent (10%).
- F. See Example below:

PRICING SHEET

Project:	Project Name					
Location:	Project Location			Date:	August 1, 2022	
Labor Rate:	\$22.00			Estimator:	Jane Doe	
		Unit	Material	Man Hours	Total	Materials
Material	Units	Measure	Per Unit	Per Unit	Man Hours	Total
Add						
Drill & Patch Holes	1	lot	\$1,285.00	3.000	3.00	\$1,285.00
4" LB w/cover	6	ea	\$105.23	2.750	16.50	\$631.38
4" Compr. Conn	6	ea	\$87.70	1.000	6.00	\$526.20
4" GRC	40	ea	\$9.04	0.280	11.20	\$361.57

4" cut & thread labor	4	ea	\$0.00	1.600	6.40	\$0.00
4" GRC-PVC Adptr.	16	ea	\$4.70	0.675	10.72	\$75.20
4" GRC 90 Ell	4	ea	\$56.34	1.500	6.00	\$225.36
4" Sch 40 PVC	460	ea	\$2.25	0.600	27.60	\$1,034.03
Resocking Fee 20%	1	lot	\$212.26	0.00	0.00	\$212.26
Return Freight	1	lot	\$26.40	0.000	0.000	\$26.40
Deduct						
4" EMT	-330	ea	\$2.46	0.045	(14.85)	(\$812.79)
4" EMT 90 Ell	-6	ea	\$26.64	1.100	(6.60)	(\$159.84)
4" EMT Cplg	--39	ea	\$2.27	0.270	(10.53)	(\$88.66)
SUBTOTAL					55.44	\$3316.12
SALES TAX				6.125%		\$203.11
LABOR	55.4	MH	\$21.74			\$1,205.27
5% OVERHEAD						\$236.23
8% PROFIT						396.86
TOTAL						\$5357.59

1.7 LOCATIONS AND INTERFERENCES

- A. Locations of equipment, piping, and other mechanical work are indicated diagrammatically by electrical drawings. Lay out work from dimensions on Architectural and Structural Drawings. Verify equipment size from manufacturer's shop drawings.
- B. Study and become familiar with contract drawings of other trades and in particular the general construction drawings and details to obtain necessary information for figuring installation. Cooperate with other workmen and install work to avoid interference with their work. Minor deviations not affecting design characteristics, performance, or space limitations may be permitted if reviewed by A/E prior to installation.
- C. Any conduit, apparatus, appliance, or other electrical item interfering with proper placement of other work as indicated on drawings, specified, or required shall be removed and if so shown, relocated and reconnected without extra cost. Damage to other work caused by the E/C, his subcontractor, his workmen, or by any cause whatsoever, shall be restored as specified for new work.
- D. Do not scale mechanical and electrical drawings for dimensions. Accurately lay out work from dimensions indicated on architectural drawings unless such is found in error.

1.8 SYSTEM PERFORMANCE

- A. Final acceptance of work shall be subject to the condition that all systems, equipment, apparatus, and appliances operate satisfactorily as designed and intended; work shall include required adjustment of systems and control equipment installed under this specification.

1.9 WARRANTY

- A. Unless noted otherwise in specifications, E/C warrants to Owner and Architect the quality of materials, equipment, workmanship, and operation of equipment provided under this specification division for a period of one (1) year from and after date of substantial completion of building and acceptance of mechanical systems by Owner.
- B. Where manufacturers' warranties expire before or during the one-year warranty period as specified in item 1, the E/C shall include provisions for extending the manufacturer's warranty as required to match the one-year period from substantial completion and shall include cost for warranty extension in his base bid.
- C. E/C warrants to Owner and Architect that on receipt of written notice from either of them within one (1) year warranty period following date of acceptance, all defects that have appeared in materials and/or workmanship shall be promptly corrected to condition required by contract documents at E/C's expense.

- D. The above warranty shall not supersede any separately stated warranty or other requirements by law or by these specifications.
- E. Keeps an itemized list of all equipment warranties listing equipment by name, mark, and type along with length and expiration date of each warranty. Submit two (2) copies to A/E with request for final inspection.
- F. If the Architect's specification includes a warranty requirement that exceeds the above warranty requirements, the Architect's warranty shall take precedence.

1.10 MATERIALS, EQUIPMENT AND SUBSTITUTIONS

- A. The intent of these specifications is to allow ample opportunity for E/C to use his ingenuity and abilities to perform the work to his and the Owner's best advantage, and to permit maximum competition in bidding on standards of materials and equipment required.
- B. Material and equipment installed under this contract shall be first class quality, new, unused, and without damage.
- C. In general, these specifications identify required materials and equipment by naming first the manufacturer whose product was used as the basis for the project design and specifications. The manufacturer's product, series, model, catalog, and/or identification numbers shall set quality requirements for comparing the equivalency of other manufacturer's products in general. Where models are listed or scheduled with information that does not match specified manufacturer's data for size or capacity, the larger, more expensive and/or restrictive requirement between the schedule and the manufacturer's data shall be met and included. Where other manufacturer's names are listed, they are considered an approved manufacturer for the product specified; however, the listing of their names implies no prior approval of any product unless specific model or catalog numbers are listed in these specifications or in subsequent addenda. The naming of a manufacturer, or even a model number, does not alleviate the contractor from being required to provide or submit equipment which meets all of the criteria and items listed in the specifications or shown on the plans even if the specified model and/or manufacturer does not. All requirements on the drawings must be met, not just the specific model number or manufacturer. Where other than first named products are used for E/C's base bid proposal, it shall be his responsibility to determine prior to bid time that his proposed materials and equipment selections are products of approved manufacturers, which meet or exceed the specifications, fit physically in the spaces provided, are compatible with all other systems and are acceptable to the D/E.
- D. Where varying or conflicting information, notes or specifications may be shown in different locations on the drawings, schedules, or specifications, all requirements are required to be met and the worst case or more expensive and/or restrictive option should be included where duplicate information is not the same. Notify A/E for clarification.
- E. Where materials or equipment are described but not named, provide required items of first quality, adequate in every respect for intended use. Such items shall be submitted to A/E for review prior to procurement.
- F. **PRIOR TO RECEIPT OF BIDS, IF E/C WISHES TO INCORPORATE PRODUCTS OTHER THAN THOSE NAMED IN SPECIFICATIONS IN HIS BASE BID, HE SHALL SUBMIT A WRITTEN REQUEST FOR REVIEW OF SUBSTITUTIONS TO D/E NOT LESS THAN SEVEN (7) WORKING DAYS PRIOR TO BID TIME. D/E WILL REVIEW REQUESTS AND ACCEPTABLE ITEMS WILL BE LISTED IN AN ADDENDUM ISSUED TO PRINCIPAL BIDDERS.**
- G. Materials and equipment proposed for substitutions shall be equal to or superior to that specified in construction, efficiency, utility, aesthetic design, and color, as determined by A/E, whose decision shall be final and without further recourse. Physical size of substitute brand shall be no larger than space provided including allowances for access for installation and maintenance of installed equipment, as well as other systems shared in the same space. Requests must be accompanied by two (2) copies of complete descriptive and technical data including E/M's name, model, and catalog number, photographs or cuts, physical dimensions, operating characteristics, and any other information needed for comparison.
- H. In proposing a substitution prior to or subsequent to receipt of bids, include in such proposal cost of altering other elements of project, including (but not limited to) adjustments in mechanical, electrical,

plumbing, controls, fire alarm and/or any other service requirements necessary to accommodate such substitution; whether such affected elements are under this contract or under separate contracts.

- I. Within seven (7) working days after bids are received, apparent lower bidder shall submit to A/E for approval three (3) copies of a list of all major items of equipment he intends to provide. As soon as practicable and within 30 working days after award of contract, E/C shall submit shop drawings for equipment and materials to be incorporated in work, for A/E review. Where 30 day limit is insufficient for preparation of detailed shop drawings on major equipment or assemblies, E/C shall submit manufacturer's descriptive catalog data and indicate date such detailed shop drawings will be submitted along with manufacturer's certification that order was placed within 30 working day limit.
- J. After execution of contract, substitution of product brands for those named in Specifications will be considered, only if:
 - 1. Request is received within 30 days after contract date and request includes statement showing credit due Owner, if any, if substitution products are used, or
 - 2. Owner requests consideration be given to substitute brands.

1.11 SHOP DRAWINGS, OPERATION AND MAINTENANCE INSTRUCTION

- A. Unless noted differently in the general requirements of the specifications, E/C shall furnish one of the following options, whichever format is preferred:
 - 1. Electronic PDF submittals to the Architect. Shop drawings submitted electronically shall be returned electronically via the same path.
 - 2. A minimum of six (6) paper copy sets of shop drawings of all materials and equipment, A/E will retain two (2) sets.
- B. Where catalog cuts are submitted for review, conspicuously mark or provide schedule of equipment, capacities, controls, fittings, sizes, etc., that are to be provided. Mark equipment to match equipment labels provided on the drawings, schedules or specifications. Mark each submitted item with applicable section and paragraph numbers of these specifications, or plan sheet number, when item does not appear in specifications. Where equipment submitted does not appear in base specifications or specified equivalent, submittals shall be marked with applicable alternate numbers, change order numbers, or letters of authorization where said equipment was approved. Each submittal shall contain at least two (2) sets of original catalog cuts. Each catalog sheet shall bear E/M's name and address. All shop drawings on materials and equipment listed by UL shall indicate UL approval on submittal.
- C. E/C shall check all shop drawings to verify that they meet specifications and/or drawing requirements before forwarding submittals to the A/E for their review. All shop drawings submitted to A/E shall bear E/C approval stamp which shall indicate that E/C has reviewed submittals and that they meet specification and/or drawing requirements. E/C's submittal review shall specifically check for, but not be limited to, the following: equipment capacities, physical size in relation to space allowed; electrical characteristics, provisions for supply, return, and drainage connections to building systems. All shop drawings not meeting E/C's approval shall be returned to his supplier for resubmittal.
- D. No shop drawing submittals will be considered for review by the A/E without E/C's approval stamp, or that have extensive changes made on the original submittal as a result of E/C's review.
- E. A/E will not be responsible for the cost of returning shop drawing submittals that are submitted to them without E/C's review and approval stamp. A letter will be sent to E/C by either the Architect or Engineer indicating receipt of an improper submittal. E/C shall acknowledge receipt of letter and indicate his plans for pick-up or resubmitting. A/E will hold improper submittals for pick-up by E/C or supplier for 15 working days after date of receipt. If not picked up by the 16th working day, submittals will be disposed of by A/E.
- F. A/E's review of shop drawings will not relieve E/C of responsibility for deviations from drawings and specifications unless such deviations have been specifically approved in writing by Owner or his representative, nor shall it relieve E/C of responsibility for errors in shop drawings. No work shall be fabricated until A/E's review has been obtained. Any time delay caused by correcting and resubmitting shop drawings will be E/C's responsibility.
- G. A/E shall make every effort to provide shop drawing review in a timely fashion, but in no case shall the A/E be held responsible for delays in project construction or completion without prior notification of scheduling

requirements specifically for return of shop drawings at least 8 weeks in advance. In no case shall less than 10 working days after A/E receipt of shop drawings be counted on by the contractor for A/E shop drawing review without prior notification and approval.

H. Operating and Maintenance Instructions:

1. Submit with shop drawings of equipment: copies of installation, operating, maintenance instructions, and parts list for equipment provided. Instructions shall be prepared by E/M.
2. Keep in safe place keys and wrenches furnished with equipment under this contract. Present to Owner and obtain a receipt for same upon completion of project.
3. Contractor shall provide all final documents including drawings, shop drawings, etc., in PDF format on a single disk to Owner. A total of five (5) CD's shall be provided, three (3) to the Owner and two (2) to A/E. No exceptions will be allowed to this requirement. Videotaping, as specified in other parts of this specification, will also be required at closeout.

1.12 PROPOSED VALUE ENGINEERING/PROJECT SCOPE REVISIONS

- A. Where design revisions are requested/required based on value-engineering or proposed changes in project scope, the contractor shall include in his proposed cost savings or adds the necessary MEP design fees that are required for modifying construction documents and associated meetings. In order to determine that value to be included, the contractor shall submit to the A/E the proposed scope of the work required for the changes at least 7 days prior to required pricing submittal so that the design fees can be accurately determined and included. Design work and drawing changes will only commence once the design fee is established and a signed agreement returned to the A/E for inclusion.
- B. Where the contractor proposes to use different size equipment, feeders, feeder materials, circuit breakers, fuses or significant difference in routing of feeders or branches than shown in the construction documents, the contractor shall include the necessary MEP design fees that are required for modifying or creating construction drawings necessary either for construction or submission to the authority having jurisdiction and required for additional review. Design work and drawing changes will only commence once the design fee is established and a signed agreement returned to the A/E for inclusion.

1.13 CAD FILE REQUESTS

- A. CAD files are the property of the D/E. CAD files are only available upon documented written request which must be forwarded to the D/E office. Prior to receiving any CAD files, the contractor shall submit a drawing cost fee of \$50 per construction drawing up to a maximum \$1500. In addition, the contractor must sign a Second Party User Agreement and Drawing Request Form (available upon request) which must be forwarded back to the D/E office prior to any CAD files being released. BIM/Revit models will not be made available.

1.14 CUTTING AND PATCHING

- A. Contractor shall do cutting, and patching of building materials required for installation of work herein specified. Cut no structural members without Architect's approval and in a manner approved by him.
- B. Patching shall be by mechanics of particular trade involved and shall meet approval of Architect.
- C. Drilling and cutting of openings through building materials requires Architect's review and approval. Make openings in concrete with concrete hole saw or concrete drill. Do not use star drill or air hammer for this work.
- D. Provide polished chrome plated escutcheons as needed for all pipe, tube, etc that penetrates a wall where exposed. Provide fire rated material at all rated wall per UL, NFPA, or as otherwise required.

1.15 MUTILATION

- A. Mutilation of building finishes, caused by installation of electrical equipment, fixtures, outlets, and other electrical devices shall be repaired at E/C's expense to approval of Architect.

1.16 SETTING, ADJUSTMENT AND EQUIPMENT SUPPORTS:

- A. Work shall include mounting, alignment, and adjustment of all systems and equipment. Set equipment level on adequate foundations and provide proper anchor bolts and isolation. Level, shim, and grout equipment bases as recommended by E/M. Mount motors, align and adjust drive shafts and belts according to E/M's instructions. Equipment failures resulting from improper installation or field alignment shall be repaired or replaced by E/C at no cost to Owner.
- B. Provide grout, sleeves, demolition, supports, and anchors as needed for complete professional installation.

1.17 START-UP, CHANGE-OVER, TRAINING AND OPERATIONAL CHECKS

- A. E/C shall perform initial start-up of systems and equipment. Personnel qualified to start-up and service this equipment, including E/M's technicians, when specified, and Owner's operating personnel shall be present during these operations.
- B. E/C shall be responsible for training Owner's operating personnel to operate and maintain systems and equipment installed. Keep a record of training provided to Owner's personnel listing the date, subject covered, instructor's name, names of Owner's personnel attending, and the total hours given each individual.
- C. E/C shall report in person to Owner's designated operating personnel at end of first month of operation and thereafter at end of sixth and 12th months after date of substantial completion of building to check operation of equipment that was installed under contract. Contractor shall answer operating personnel's questions regarding system operation and shall ascertain that systems are operating normally and are being properly maintained by Owner. If E/C finds that systems are not being operated and maintained as designed, he shall inform the building engineer/Owner and A/E in writing.
- D. After each inspection, E/C shall submit written report to A/E indicating condition of equipment and including any recommended changes in operation of system or other information which will be helpful to Owner.

1.18 MAINTENANCE OF SYSTEMS

- A. E/C shall be responsible for operation, maintenance, and lubrication of equipment installed under his contract. All equipment and systems shall be fully operational when turned over to the owner at project substantial completion.

1.19 PROTECTION AND CLEANING OF SYSTEMS AND EQUIPMENT

- A. It shall be E/C's responsibility to protect and prevent damage to all electrical materials and equipment stored and/or installed under this contract. All work, materials, and equipment shall be adequately protected by any and all means necessary to prevent damage by weather, flooding, condensation, construction debris, fire, and construction equipment and vehicles.
- B. Equipment not rated for outdoor use shall be protected from moisture damage before and during construction. Covering equipment with a tarp on site is not considered a means of providing protection from moisture. Any equipment not rated for outdoor use exposed to moisture for any duration shall be replaced with new equipment at the contractor's expense.
- C. Where job conditions, or work of other contractors produce the potential for damage to electrical systems and equipment, E/C shall immediately notify the G/C so that corrective action can be taken.

- D. E/C shall take extra precautions to protect electrical equipment containing solid state electronics, open relays, and contacts from damage by water, dust, dirt, construction debris, and the formation of condensate. All equipment so damaged shall be replaced by E/C with new equipment at no cost to Owner.
- E. E/C shall periodically inspect and clean all systems and equipment to ensure all systems and equipment remain in like new condition during construction, free from dust and debris. All cleaning shall be done in accordance with E/M's recommendation where available and applicable.
- F. Before request for final inspection, all systems and equipment shall be properly cleaned, vacuumed, polished, painted, etc., as required to return equipment to like new appearance.
- G. All equipment requiring painting or touch-up shall be properly prepared and painted in accordance with this specification.

1.20 RECORDING AND REPORTING TESTS AND DATA

- A. Record nameplate horsepower, amperes, volts, phase service factor, and other necessary data on motors and other electrical equipment furnished and/or connected under this contract.
- B. Record voltage and amperes-per-phase readings taken at service entrance equipment after completion of project with building operating at normal electrical load. This reading shall be taken continuously for a 24-hour period and recorded on permanent tape and submitted to A/E.
- C. Submit at least two (2) copies of data noted above to A/E for review prior to final inspection.
- D. Keep a record of all deviations made from routes, locations, circuiting, etc., shown on contract drawings. Prior to final inspection, submit one (1) new set of project drawings with all deviations and change clearly indicated.

1.21 RECORD DOCUMENTS

- A. Record Drawings: Maintain a reproducible set of contract drawings and shop drawings in clean, undamaged condition, with mark-up of actual installations which vary substantially from the work as originally shown. Mark whichever drawing is most capable of showing "field" condition fully and accurately; however, where shop drawings are used for mark-up, record a cross-reference at corresponding location on working drawings. Mark with red erasable red pencil and, where feasible, use other colors to distinguish between variations in separate categories of work. Mark-up new information, which is recognized to be of importance to Owner, but was for some reason not shown on either contract drawings or shop drawings. Give particular attention to concealed work, which would be difficult to measure and record at a later date. Note related change order numbers where applicable. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates, and other identification on cover of each sheet.
- B. The Contractor shall provide a full set of photographs showing the entire underground equipment. The photographs shall be taken prior to any concrete being poured. The underground equipment shall consist of, but not be limited to, the following:
 - 1. Conduits
- C. The Contractor shall provide the photographs in an 8.5-inch by 11-inch format for record keeping purposes with the maintenance manuals. The photos shall all be digital, and a disk or CD shall be provided to the Owner as a permanent record.
- D. As-built documents shall be submitted for approval prior to final payment. Copies of "in-progress" as-built drawings shall be submitted at each pay request.

END OF SECTION 260000

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS & CABLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Backboards.
 - 2. Copper building wire rated 600 V or less.
 - 3. Control-circuit conductors
 - 4. Connectors, splices, and terminations rated 600 V and less.
- B. Related Requirements:
 - 1. Section 260000 "General Electrical Requirements".

1.2 DEFINITIONS

- A. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control and signaling power-limited circuits.

PART 2 - PRODUCTS

2.1 COPPER BUILDING WIRE

- A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.
- B. Provide conductors by Encore Wire and Cable, Southwire, Senator Wire and Cable, and Cerro Wire or equivalent.
- C. Standards:
 - 1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
 - 2. RoHS compliant.
 - 3. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."
- D. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors. Unless noted otherwise conductors referred to are wires and cable. Provide code grade soft annealed copper conductors with specified insulation type in proper colors to conform to color coding specified. Provide conductors No. 8 gauge and larger stranded and conductors No. 10 gauge and smaller shall be solid.
- E. Conductor Insulation all rated for 90 deg C with thermoplastic insulation:
 - 1. Type THHN and Type THWN-2: Comply with UL 83.
 - 2. Type THW and Type THW-2: Comply with NEMA WC-70/ICEA S-95-658 and UL 83.
- F. Plenum-Rated, Paired Cable: NFPA 70, Type CMP. All shall be plenum rated unless noted otherwise.
 - 1. Multi-pair, twisted, No. 18 AWG, stranded (19x30) tinned-copper conductors.
 - 2. PVC insulation.
 - 3. Unshielded.
 - 4. PVC jacket.

- 5. Flame Resistance: Comply with NFPA 262.

2.2 CONTROL-CIRCUIT CONDUCTORS

- A. Class 1 Control Circuits: Stranded copper, Type THHN/THWN-2, complying with UL 83 in raceway.
- B. Class 2 Control Circuits: Stranded copper, Type THHN/THWN-2, complying with UL 83 in raceway.
- C. Class 3 Remote-Control and Signal Circuits: Stranded copper, Type THHN/THWN-2, complying with UL 83 in raceway.
- D. Class 2 Control Circuits and Class 3 Remote-Control and Signal Circuits That Supply Critical Circuits: Circuit Integrity (CI) cable.

2.3 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.
- C. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.
 - 1. Material: Copper.
 - 2. Type: One hole with standard barrels.
 - 3. Termination: Compression

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders:
 - 1. Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits:
 - 1. Copper, Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Lighting and Receptacle Circuits: Type THHN, 600 volt, 90 deg C (194 deg F) thermoplastic insulated building conductor.
- B. Power Circuits and Feeders: Type THHN, 600 volt, 90 deg C (194 deg F) thermoplastic insulated building conductor.
- C. Low Voltage and Line Voltage Conductors Sizes No. 16 and No. 18 AWG: Type TFFN, 600 volt, 90 deg C (194 deg F) thermoplastic insulated building conductor.
- D. Underground Circuits and Feeders: Type THHN/TWHN, 600 volt, 75 deg C (167 deg F) wet rating and 90 deg C (194 deg F) dry rated thermosetting filled insulating cable

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Run conductors in conduit continuous between outlets and junction boxes with no splices or taps pulled into conduits.
- E. Neatly route, tie, and support conductors terminating at switchboards, motor control centers, panelboards, sound equipment, etc., with Thomas & Betts Ty-Rap cable ties and clamps or equivalent by Electrovert or Panduit.
- F. Make circuit conductor splices with Buchanan B- Cap nylon insulated connectors or equivalent by Ideal or 3M.
- G. Make fixture and device taps with Scotchlock self-stripping electrical tap connectors.
- H. Terminate solid conductors at equipment terminal strips and other similar terminal points with insulated solderless terminal connectors. Terminate all stranded conductor terminal points with insulated solderless terminal connectors. Provide Thomas & Betts Sa-Kon insulated terminals and connectors or equivalent by API/AMP Blackburn, Buchanan, or Scotchlock.
- I. Where a total of six (6) or more control and feeder conductors terminate in a multiple device panel or enclosure that has no built-in terminal blocks, provide mounting channel and see-through covers. Equivalent terminal blocks by General Electric, Square D, or approved equal.
- J. Wrap conductor taps and connections requiring additional insulation with a minimum of three (3) overlapped layers of 3M Scotch vinyl plastic electrical tape No. 88 or equivalent.

3.4 ELECTRICAL CIRCUITING

- A. In general, comply with designated circuiting as shown on the electrical drawings where possible. Where circuiting is changed in the field, the contractor shall document actual circuiting and homerun numbers, and panelboard labels shall accurately indicate field-installed circuiting.
- B. For multi-wire branch circuits (or shared neutral), these shall be allowed at the contractor's option where common practice dictates provided the contractor complies with all National Electric Code requirements. The electrical drawings and panelboard schedules in the construction documents reflect single-circuit homeruns with single-pole circuit breakers.
- C. Provide continuous color coding for feeder, branch, and control circuits. Insulation or identification tape color shall be same color for like circuits throughout. Where specified insulation colors are not available in larger wire sizes, color code conductor at all accessible locations with Scotch 35 all-weather color code tape.
- D. Identify the same phase conductor with same color throughout.

3.5 CONDUIT APPLICATION

- A. All circuiting on the project shall be in steel conduit unless noted otherwise in this section, or elsewhere within these specifications or construction documents.
- B. Provide galvanized rigid steel (GRC) conduit for the following applications:

1. Exposed outside circuits
 2. All feeders exceeding 480V.
- C. Non-metallic, rigid conduit (flexible ENT is not allowed for any systems) shall be allowed for the following applications (transition to steel conduit shall be made for all applications prior to conduit coming up from below grade – non-metallic conduit is not allowed above grade for any purpose):
1. Secondary Electrical service entrance feeders fed below grade.
- D. Use no conductors smaller than No. 12 gauge unless specifically called for or approved by D/E. Size wire for 120 volt branch circuits for 3 percent maximum voltage drop. Size feeder circuits for 2 percent maximum voltage drop. Combined voltage drop of feeders and branch circuits shall not exceed 5 percent maximum.

3.6 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.
- D. Comply with requirements in Section 284621.11 "Addressable Fire-Alarm Systems" for connecting, terminating, and identifying wires and cables.

3.7 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.8 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.9 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Section 078413 "Penetration Firestopping."

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes grounding and bonding systems and equipment.
- B. Section includes grounding and bonding systems and equipment, plus the following special applications:
 - 1. Underground distribution grounding.
- C. Related Requirements:
 - 1. Section 260000 "General Electrical Requirements".

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

2.2 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B3.
 - 2. Stranded Conductors: ASTM B8.
 - 3. Tinned Conductors: ASTM B33.
 - 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
 - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 - 6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
 - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.

2.3 CONNECTORS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- C. Bus-Bar Connectors: Compression type, copper or copper alloy, with two wire terminals.
- D. Beam Clamps: Mechanical type, terminal, ground wire access from four directions, with dual, tin-plated or silicon bronze bolts.

- E. Cable-to-Cable Connectors: Compression type, copper or copper alloy.
- F. Conduit Hubs: Mechanical type, terminal with threaded hub.
- G. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with hex head bolt.
- H. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with hex head bolt.
- I. Lay-in Lug Connector: Mechanical type, copper rated for direct burial terminal with set screw.
- J. Service Post Connectors: Mechanical type, bronze alloy terminal, in short- and long-stud lengths, capable of single and double conductor connections.
- K. Signal Reference Grid Clamp: Mechanical type, stamped-steel terminal with hex head screw.
- L. Straps: Solid copper, copper lugs. Rated for 600 A.
- M. Tower Ground Clamps: Mechanical type, copper or copper alloy, terminal two-piece clamp.
- N. U-Bolt Clamps: Mechanical type, copper or copper alloy, terminal listed for direct burial.

2.4 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad steel; 3/4 inch by 10 feet (19 mm by 3 m).

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
- B. Underground Grounding Conductors: Install bare copper conductor, size per drawings.
 - 1. Bury at least 30 inches (750 mm) below grade.
- C. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
 - 3. Connections to Ground Rods at Test Wells: Bolted connectors.
 - 4. Connections to Structural Steel: Welded connectors.

3.2 GROUNDING AT THE SERVICE

- A. Equipment grounding conductors and grounding electrode conductors shall be connected to the ground bus. Install a main bonding jumper between the neutral and ground buses.

3.3 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1. Feeder.
 - 2. Receptacle circuits.

3. Single-phase motor and appliance branch circuits.
4. Three-phase motor and appliance branch circuits.
5. Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.

3.4 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade unless otherwise indicated.
 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
- C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
 3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

3.5 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
 2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
 3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at individual ground rods. Make tests at ground rods before any conductors are connected.
 - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.
- C. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Section 260000 "General Electrical Requirements".

1.2 SUMMARY

- A. Section Includes:
 - 1. Color and legend requirements for raceways, conductors, and warning labels and signs.
 - 2. Labels.
 - 3. Bands and tubes.
 - 4. Tapes and stencils.
 - 5. Tags.
 - 6. Signs.
 - 7. Cable ties.
 - 8. Paint for identification.
 - 9. Fasteners for labels and signs.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Comply with ASME A13.1 and IEEE C2.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Comply with NFPA 70E and Section 260573.19 "Arc-Flash Hazard Analysis" requirements for arc-flash warning labels.
- F. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.
- G. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F ambient; 180 deg F, material surfaces.

2.2 COLOR AND LEGEND REQUIREMENTS

- A. Raceways and Cables Carrying Circuits at 600 V or Less:
 - 1. Black letters on an orange field.
 - 2. Legend: Indicate voltage and system or service type.
- B. Color-Coding for Phase-and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder and branch-circuit conductors.

1. Color shall be factory applied or field applied for sizes larger than No. 8 AWG if authorities having jurisdiction permit.
2. Colors for 208/120-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
3. Colors for 480/277-V Circuits:
 - a. Phase A: Brown.
 - b. Phase B: Orange.
 - c. Phase C: Yellow.
4. Color for Neutral: White or gray.
5. Color for Equipment Grounds: Bare copper, Green (120/208) Green with a yellow stripe(277/480).
6. Colors for Isolated Grounds: Green two or more yellow stripes.
7. Control: Pink

C. Warning Label Colors:

1. Identify system voltage with black letters on an orange background.

D. Warning labels and signs shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."
3. Arc Flash Warning: Nominal system voltage, available fault current, service overcurrent protective device clearing time, and the label date must be included in the arc-flash warning label per requirements of NEC 110.16.

E. Equipment Identification Labels:

1. Black letters on a white field.

2.3 LABELS

A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

1. Equivalent to Brady or approved equal.

B. Snap-around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameter and that stay in place by gripping action.

1. Equivalent to Brady or approved equal.

C. Self-Adhesive Wraparound Labels: Preprinted or written, 3-mil thick vinyl flexible label with acrylic pressure-sensitive adhesive.

1. Equivalent to Brady or approved equal.
2. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over the legend. Labels sized such that the clear shield overlaps the entire printed legend.
3. Marker for Labels: Permanent, waterproof, black ink marker recommended by tag manufacturer.
4. Marker for Labels: Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.

- D. Self-Adhesive Labels: Vinyl, thermal, transfer-printed, 3-mil thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.
 - 1. Equivalent to Brady or approved equal.
 - 2. Minimum Nominal Size:
 - a. 1-1/2 by 6 inches for raceway and conductors.
 - b. 3-1/2 by 5 inches for equipment.
 - c. As required by authorities having jurisdiction.

2.4 BANDS AND TUBES

- A. Snap-around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeves, 2 inches long, with diameters sized to suit diameter and that stay in place by gripping action.
- B. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tubes with machine-printed identification labels, sized to suit diameters of and shrunk to fit firmly around item being identified. Full shrink recovery occurs at a maximum of 200 deg F. Comply with UL 224.

2.5 TAPES AND STENCILS

- A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
- B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mil thick by 1 to 2 inches wide; compounded for outdoor use.
- C. Tape and Stencil: 4-inch wide black stripes on 10-inch centers placed diagonally over orange background and is 12 inches wide. Stop stripes at legends.
- D. Floor Marking Tape: 2-inchwide, 5-mil pressure-sensitive vinyl tape, with yellow and black stripes and clear vinyl overlay.
- E. Underground-Line Warning Tape:
 - 1. Tape:
 - a. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
 - b. Printing on tape shall be permanent and shall not be damaged by burial operations.
 - c. Tape material and ink shall be chemically inert and not subject to degradation when exposed to acids, alkalis, and other destructive substances commonly found in soils.
 - 2. Color and Printing:
 - a. Comply with ANSI Z535.1, ANSI Z535.2, ANSI Z535.3, ANSI Z535.4, and ANSI Z535.5.
 - b. Inscriptions for Red-Colored Tapes: "ELECTRIC LINE, HIGH VOLTAGE"
 - c. Inscriptions for Orange-Colored Tapes: "TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE".
 - 3. Tag: Standard
 - a. Pigmented polyolefin, bright colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
 - b. Width: 3 inches.
 - c. Thickness: 4 mils.
 - d. Weight: 18.5 lb/1000 sq. ft.
 - e. Tensile according to ASTM D882: 30 lbf and 2500 psi.

4. Tag: Detectable

- a. Detectable three-layer laminate, consisting of a printed pigmented polyolefin film, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core; bright colored, **continuous-printed on one side with the inscription of the utility**, compounded for direct-burial service.
- b. Width: 3 inches.
- c. Overall Thickness: 5 mils.
- d. Foil Core Thickness: 0.35 mil.
- e. Weight: 28 lb/1000 sq. ft..
- f. Tensile according to ASTM D882: 70 lbf and 4600 psi.

F. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch.

2.6 TAGS

A. Write-on Tags:

1. Polyester Tags: 0.010 inch thick, with corrosion-resistant grommet and cable tie for attachment.
2. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
3. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.7 SIGNS

A. Baked-Enamel Signs:

1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal Size: 7 by 10 inches.

B. Metal-Backed Butyrate Signs:

1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs, with 0.0396-inch galvanized-steel backing, punched and drilled for fasteners, and with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal Size: 10 by 14 inches.

C. Laminated Acrylic or Melamine Plastic Signs:

1. Engraved legend.
2. Thickness:
 - a. For signs up to 20 sq. in., minimum 1/16 inch thick.
 - b. For signs larger than 20 sq. in., 1/8 inch thick.
 - c. Engraved legend with black letters on white face.
 - d. Self-adhesive.
 - e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.8 CABLE TIES

A. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 Deg F according to ASTM D638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.

4. Color: Black, except where used for color-coding.
- B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.
1. Minimum Width: 3/16 inch.
 2. Tensile Strength at 73 Deg F according to ASTM D638: 12,000 psi.
 3. Temperature Range: Minus 40 to plus 185 deg F.
 4. Color: Black.
- C. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.
1. Minimum Width: 3/16 inch.
 2. Tensile Strength at 73 Deg F according to ASTM D638: 7000 psi.
 3. UL 94 Flame Rating: 94V-0.
 4. Temperature Range: Minus 50 to plus 284 deg F.
 5. Color: Black.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.
- B. Install identifying devices before installing acoustical ceilings and similar concealment.
- C. Verify identity of each item before installing identification products.
- D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.
- E. Apply identification devices to surfaces that require finish after completing finish work.
- F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.
- G. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.
- H. System Identification for Raceways and Cables under 600 V: Identification shall completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.
1. Secure tight to surface of conductor, cable, or raceway.
- I. System Identification for Raceways and Cables over 600 V: Identification shall completely encircle cable or conduit. Place adjacent identification of two-color markings in contact, side by side.

1. Secure tight to surface of conductor, cable, or raceway.
- J. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
- K. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch high letters for emergency instructions at equipment used for power transfer, load shedding and testing.
- L. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from the floor.
- M. Accessible Fittings for Raceways: Identify the covers of each junction and pull box of the following systems with the wiring system legend and system voltage. System legends shall be as follows:
 1. "EMERGENCY POWER."
 2. "POWER."
 3. "UPS."
- N. Vinyl Wraparound Labels:
 1. Secure tight to surface at a location with high visibility and accessibility.
 2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to the location and substrate.
- O. Snap-around Labels: Secure tight to surface at a location with high visibility and accessibility.
- P. Self-Adhesive Wraparound Labels: Secure tight to surface of raceway or cable at a location with high visibility and accessibility.
- Q. Self-Adhesive Labels:
 1. On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
 2. Unless otherwise indicated, provide a single line of text with 1/2-inch high letters on 1-1/2-inch high label; where two lines of text are required, use labels 2 inches high.
- R. Snap-around Color-Coding Bands: Secure tight to surface at a location with high visibility and accessibility.
- S. Heat-Shrink, Preprinted Tubes: Secure tight to surface at a location with high visibility and accessibility.
- T. Marker Tapes: Secure tight to surface at a location with high visibility and accessibility.
- U. Self-Adhesive Vinyl Tape: Secure tight to surface at a location with high visibility and accessibility.
 1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.
- V. Tape and Stencil: Comply with requirements in painting Sections for surface preparation and paint application.
- W. Floor Marking Tape: Apply stripes to finished surfaces following manufacturer's written instructions.
- X. Underground Line Warning Tape:
 1. During backfilling of trenches, install continuous underground-line warning tape directly above cable or raceway at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches overall.
 2. Limit use of underground-line warning tape to direct-buried cables.
 3. Install underground-line warning tape for direct-buried cables and cables in raceways.

Y. Write-on Tags:

1. Place in a location with high visibility and accessibility.
2. Secure using general-purpose, UV-stabilized or plenum-rated cable ties as required.

Z. Baked-Enamel Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch high letters on minimum 1-1/2-inch high sign; where two lines of text are required, use signs minimum 2 inches high.

AA. Metal-Backed Butyrate Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch high letters on minimum 1-1/2-inch high sign; where two lines of text are required, use signs minimum 2 inches high.

BB. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch high letters on minimum 1-1/2-inch high sign; where two lines of text are required, use signs minimum 2 inches high.

CC. Cable Ties: General purpose, for attaching tags, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

3.2 IDENTIFICATION SCHEDULE

- A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.
- B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.
- C. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits, More Than 30A and 120V to Ground: Identify with self-adhesive raceway labels or vinyl tape applied in bands.
1. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.
- D. Accessible Fittings for Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive labels containing the wiring system legend and system voltage. System legends shall be as follows:
1. "EMERGENCY POWER."
 2. "POWER."
 3. "UPS."
- E. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes, manholes, and handholes, use] self-adhesive wraparound labels with the conductor or cable designation, origin, and destination.
- F. Control-Circuit Conductor Termination Identification: For identification at terminations, provide self-adhesive wraparound labels with the conductor designation.

- G. Locations of Underground Lines: Underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.
- H. Workspace Indication: Apply floor marking tape or tape and stencil to finished surfaces. Show working clearances in the direction of access to live parts. Workspace shall comply with NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.
- I. Instructional Signs: Self-adhesive labels, including the color code for grounded and ungrounded conductors.
- J. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive equipment labels.
 - 1. Apply to exterior of door, cover, or other access.
 - 2. For equipment with multiple power or control sources, apply to door or cover of equipment, including, but not limited to, the following:
 - a. Power-transfer switches.
 - b. Controls with external control power connections.
- K. Arc Flash Warning Labeling: Self-adhesive labels.
- L. Operating Instruction Signs: Self-adhesive labels.
- M. Emergency Operating Instruction Signs: Self-adhesive labels with white legend on a red background with minimum 3/8-inch high letters for emergency instructions at equipment used for power transfer, load shedding and testing.
- N. Equipment Identification Labels:
 - 1. Indoor Equipment: Self-adhesive label.
 - 2. Outdoor Equipment: Laminated acrylic or melamine sign 4 inches high.

END OF SECTION 260553

TERMS AND CONDITIONS

01. **Opening Location:** Bids submitted in response to this Invitation for Bid (“IFB”) will be opened at Republic City Hall, located at 213 N. Main Avenue, on 3:30 P.M. on Monday, July 11, 2022. All Bidders (individually, “Bidder”; collectively, “Bidders”) and/or their authorized representative(s) are permitted to attend the opening of the Bids.
02. **IFB Delivery Requirements:** Any Bids received after the above stated time and date will not be considered. It shall be the sole responsibility of the Bidder to have their Bid delivered to Republic City Hall for receipt on or before the due date and time indicated.
- a. If a Bid is sent by U.S. Mail, the Bidder shall be responsible for its timely delivery to Republic City Hall.
 - b. Bids delayed by mail shall not be considered, shall not be opened, and shall be rejected.
 - c. Arrangements may be made for their return at the Bidder’s request and expense.
 - d. Bids may be mailed to Republic City Hall and accepted if the signed Bid form and required information was mailed and received prior to the due date and time.
 - e. Bids sent by email will not be accepted.

Sealed and Marked: If sent by mail, one original signed Bid shall be submitted in one sealed package, clearly marked on the outside of the package with the **IFB project name clearly indicated on the outside of the mailing envelope and addressed to:**

**City of Republic
C/O City Clerk, Laura Burbridge
213 N. Main
Republic MO 65738**

03. **Legal Name and Signature:** Bids shall clearly indicate the legal name, address, and telephone number of the Bidder (company, firm, corporation, partnership, or individual).
- a. Bids shall be manually signed above the printed name and title of signer on the Affidavit of Compliance page.
 - b. The signer shall have the authority to bind the Bidder to the submitted Bid.
 - c. Failure to properly sign the Bid form shall invalidate the Bid, and it shall not be considered for award.
04. **Corrections:** No erasures are permitted.
- a. In the event a correction is necessary, in order for the City to consider the correction, the following formatting must be applied:
 1. A single line (strike-through) to the entered text needing correction, and
 2. The corrected text written above the strike-through text, and
 3. The signer(s) of the Bid must initial all corrections.
05. **Clarification and Addenda:** Bidders are expected to examine all documents attached to and/or provided by the City with this IFB, and prior to submitting any Bid in response to this IFB, make any necessary and/or reasonable inquiries of the City to ensure all such Bidders understand the entirety of the documents.
- a. Any inquiries or suggestions concerning interpretation, clarification, or other additional information pertaining to the IFB shall be made through the listed City contact in writing (email is permitted).
 - b. The City of Republic shall not be responsible for verbal interpretations or other information given by any individual purporting to be employed by or otherwise representing the City.
 - c. The issuance of written addenda is the official method whereby interpretation, clarification, or additional information can be given.
 - d. It shall be the responsibility of each Bidder, prior to submitting their Bid, to direct any inquiries to the listed City contact.

06. **IFB Expenses:** There is no expressed or implied obligation for the City of Republic to reimburse responding Bidders and the City will not reimburse for any expenses incurred in preparing responses to this IFB.
07. **Bid Security:** All Bids must be accompanied by a Bid Security, which shall constitute the Bidder's guarantee that, if awarded the contract under this IFB, the Bidder will promptly execute all contract documents and other documents required under this IFB, and will furnish good and sufficient bond for the performance of the same.
- a. The Bid Security shall consist of a certified check, cashier's check or a Bid bond, guaranteed by a surety company authorized by the Director of the Missouri Department of Insurance and Commerce to conduct surety business in the state of Missouri, in an amount no less than ten percent (10%) of the Bid, and made payable to the City of Republic.
 - b. Bids submitted without the required Bid Security will not be considered for award under this IFB.
 - c. The Bid Securities of all Bidders, except for the three apparent lowest Bidders, will be returned as soon as reasonably possible after the opening and review of Bids.
 - d. The City shall have the right to retain the Bid Security of the three apparent lowest Bidders until either: (1) all contract documents have been duly executed and all required bonds and proof of insurance, including certificates of insurance, have been furnished by the Bidder to the City; or (2) all Bids have been rejected, whichever occurs first.
08. **Irrevocable Offer:** Any Bid may be withdrawn up until the due date and time set for opening of the IFB. Any Bid not so withdrawn shall, upon opening, constitute an irrevocable offer for a minimum period of ninety (90) days to provide to the City the goods or services set forth in the IFB, until one or more of the Bids have been duly accepted by the City.
09. **Responsive and Responsible Bidder:** To be a responsive Bidder, a Bidder shall submit a Bid which conforms in all material respects to the requirements set forth in the IFB. To be a responsible Bidder, the Bidder shall have the capability in all respects to perform fully the contract requirements, and the tenacity, perseverance, experience, integrity, reliability, capacity, facilities, equipment and credit which will ensure good faith performance. The lowest responsible Bidder shall mean the Bidder who makes the lowest Bid to sell goods or services of a quality which conforms closest to the quality of goods or services set forth in the specifications or otherwise required by the City and who is known to be fit and capable to perform the Bid as made.
10. **Reserved Rights:** The City reserves the right to make such investigations as it deems necessary to make the determination of the Bidder's responsiveness and responsibility. Such information may include, but shall not be limited to: current financial statement, verification of availability of equipment and personnel, and past performance records.
11. **The Right to Audit:** The Bidder agrees to furnish supporting detail as may be required by the City to support charges or invoices, to make available for audit purposes all records covering charges pertinent to the purchase, and to make appropriate adjustments in the event discrepancies are found.
- a. The City shall have the right to audit the Bidder's records pertaining to the work/product for a period of three (3) years after final payment.
 - b. The cost of any audit conducted pursuant to this term will be paid by the City.
12. **Applicable Law:** All applicable laws and regulations of the State of Missouri and the City including the City Procurement Regulations and Procedures will apply to any resulting agreement, contract, or purchase order entered into under the terms of this IFB. Any involvement with the City Procurement shall be in accordance with the Procurement Regulations and Procedures.
13. **Right to Protest:** Appeals and remedies are provided for in the City Procurement Regulations.

- a. Protestors shall seek resolution of their complaints initially with the City Purchasing Agent.
- b. Any protest shall state the basis upon which the solicitation or award is contested and shall be submitted within ten (10) calendar days after such aggrieved person knew or could have reasonably been expected to know of the facts giving rise thereto.

14. **Ethical Standards Applicable:** With respect to this IFB, if any Bidder violates or is a party to a violation of the general ethical standards of the City Procurement Code or the State of Missouri Statutes, such Bidder will be disqualified from furnishing the goods or services for which the Bid is submitted and shall be further disqualified from submitting any future Bids.

15. **Collusion Absolutely Prohibited:** All Bidders offering a submission in response to this IFB hereby expressly acknowledge and certify that they have not divulged, discussed, or compared their Bid to the Bids of any other Bidder(s), and further that they have not colluded or conspired with any other Bidder or parties to this IFB, to violate the terms and conditions governing submission of responses to this IFB whatsoever. All Bidders offering a submission in response to this IFB additionally promise that:

- a. Any prices and/or cost data submitted have been arrived at independently, without consultation, communication, or agreement for the purpose of restricting competition, as to any matter relating to such prices and/or cost data, with any other Bidder or with any competitor.
- b. Any prices and/or cost data submitted have not knowingly been disclosed by the Bidder and will not knowingly be disclosed by the Bidder prior to the scheduled opening directly or indirectly to any other Bidder or to any competitor.
- c. No attempt has been made or will be made by the Bidder to induce any other person or firm to submit or not to submit a Bid for the purpose of restricting competition.
- d. The only person or persons interested in this Bid, principal or principals are named therein and that no person other than therein mentioned has any interest in this Bid or in any contract awarded under this IFB. No person or agency has been employed or retained to solicit or secure the contract awarded under this IFB upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee exempting bona fide employees or established commercial agencies maintained by the Purchaser for the purpose of doing business.

16. **Contract Forms:** Any agreement, contract, or purchase order resulting from the acceptance of a Bid shall be on forms either supplied by or approved by the City.

17. **Liability and Indemnity:**

- a. In no event shall the City be liable to the successful Bidder for special, indirect, liquidated, incidental, or consequential damages, except those caused by the City's gross negligence or willful or wanton misconduct arising out of or in any way connected with a breach of any agreement or contract under the terms of this IFB. The maximum liability of the City shall be limited to the amount of money to be paid or received by the City under any agreement or contract awarded under the terms of this IFB.
- b. The successful Bidder shall defend, indemnify and save harmless the City, its elected or appointed officials, agents and employees from and against any and all liability, suits, damages, costs (including attorney fees), losses, outlays, expenses, and claims, caused or allegedly caused by, or arising out of or related in any way whatsoever to (1) any agreement or contract awarded under this IFB, or (2) the work performed pursuant to such contract or agreement or any subcontract thereunder (the successful Bidder expressly acknowledging and assuming full responsibility for its subcontractors), including, but not limited to, claims for personal injuries, death, property damage, or for any other alleged damages.
- c. The successful Bidder shall indemnify and hold the City harmless from all wages or overtime compensation due any employees in rendering services pursuant to this agreement or any subcontract, including payment of reasonable attorneys' fees and costs in the defense of any claim made under the Fair Labor Standards Act, the Missouri Prevailing Wage Law or any other federal or state law.

18. **IFB Forms, Variances, and Alternates:** Bids must be submitted on the forms attached to this IFB as provided by the City; however, additional information may be attached. Bidders must indicate any variances from the City

requested specifications and/or terms and conditions, on the IFB Affidavit of Compliance. Otherwise, Bidders must fully comply with the City requested specifications and terms and conditions. Alternate Bids may or may not be considered at the sole discretion of the City Purchasing Agent.

19. **Bid Form:** All blank spaces must be completed with the appropriate response.
 - a. Bidders must state the price, written in ink, for what is proposed to complete each item of the project.
 - b. Bidders must insert the words “no Bid” in the space provided for any item for which no Bid is made.
 - c. Bidders must submit an executed Bid form, affidavit of compliance with other requested documents.
20. **Modifications or Withdrawal of Bid:** A modification of a Bid already submitted will be considered only if the modification is received prior to the time announced for opening of Bids, and is made in writing; executed and submitted on the same form and manner as the original Bid. Modifications submitted by telephone, fax, or email will not be considered.
21. **No Bid:** If not submitting a Bid, respond by returning the “Statement of No Bid” no later than the stated Bid opening time and date, and explain the reason in the space provided.
22. **Errors in Bids:** Bidders are expected to fully inform themselves as to the conditions, requirements, and specifications before submitting Bids; failure to do so will be at the Bidder’s own risk. Applicable law and regulations do not make allowance for errors either of omission or inclusion on the part of Bidders. In case an error regarding extension of prices in the Bid, the unit price shall govern.
23. **Prices:** Bids must include both unit price and extended total.
 - a. Price must be stated in units of quantity specified in the Bidding specifications. In case of discrepancy in computing the amount of the Bid, the unit price of the Bid will govern.
 - b. All prices shall be F.O.B. destination, freight prepaid (unless otherwise stated in special conditions). FOB, as used in this IFB, shall mean that the successful Bidder, at their own expense, shall transport the equipment and/or materials and bear the risk of loss from successful Bidder’s location to a specified location in the City of Republic. City shall not take title to the materials or equipment until it is delivered and accepted by City at the address specified within the City of Republic.
 - c. Each item must be Bid separately and no attempt is to be made to tie any item or items in with any other item or items.
 - d. If a Bidder offers a discount on payment terms, the discount time will be computed from the date of satisfactory delivery at place of acceptance and receipt of correct invoice at the office specified.
 - e. Payment terms shall be Net 30 if not otherwise specified.
 - f. Pre-payment terms are not acceptable.
24. **Discounts:** Any and all discounts, except cash discounts for prompt payments, must be incorporated as a reduction in the Bid price and not shown separately. The price as shown on the Bid shall be the price used in the City’s determination of award(s).
25. **Descriptive Information:** All equipment, materials, and articles incorporated in the product/work covered by this IFB are to be new and of suitable grade for the purpose intended.
 - a. Brand or trade names referenced in specifications are for comparison purposes only.
 - b. Bidders may submit Bids on items manufactured by an individual/entity other than the manufacturer specified so long as an “or equal” is expressly stated.
26. **Deviations to Specifications and Requirements:** When Bidding on an “or equal,” Bids must be accompanied with all descriptive information necessary for an evaluation of the proposed material or equipment such as the detailed drawings and specifications, certified operation and test data, and experience records.
 - a. Failure of any Bidder to furnish the data necessary to determine whether the product is equivalent, may be cause for rejection of the specific item(s) to which it pertains.
 - b. All deviations from the specifications must be noted in detail by the Bidder on the Affidavit of Compliance

form, at the time of submittal of Bid.

- c. The absence of listed deviations at the time of submittal of the Bid will hold the Bidder strictly accountable to the specifications as written.
- d. Any deviation from the specifications as written and accepted by the City may be grounds for rejection of the material and/or equipment when delivered.

- 27. **Quality Guaranty:** If any product delivered does not meet applicable specifications or otherwise fails to compare with the quality represented by the Bidder, the Bidder shall retrieve the product from the City as its own expense. The Bidder shall refund to the City any money the City has remitted to the Bidder for same. In the event the successful Bidder fails or refuses to retrieve the product and refund to the City any money previously remitted to the Bidder for such product in accord with the terms of this paragraph, the Bidder shall be responsible for the City's attorney fees and other costs it incurs in enforcing its rights under this paragraph.
- 28. **Quality Terms:** The City reserves the right to reject any or all materials if, in its judgment, the item reflects unsatisfactory workmanship, manufacturing, or shipping damages.
- 29. **Tax-Exempt:** The City is exempt from sales taxes and Federal Excise Taxes: Missouri Tax ID Number 12492990.
- 30. **Bid Awards:** Awards will be made to the Bidder whose Bid (1) meets the specifications and all other requirements of the IFB and (2) is the lowest and best Bid, considering price, delivery, responsibility of the Bidder, and all other relevant factors.
 - a. Unless otherwise stated in the IFB, cash discounts for prompt payment of invoices will not be considered in the evaluation of prices. However, such discounts are encouraged to motivate prompt payment.
 - b. As the best interest of the City may require, the right is reserved to make awards by item, group(s) of items, all or none or a combination thereof; and to reject any and all Bids or waive any minor or non-material irregularity or technicality in Bids received.
- 31. **Authorized Product Representation:** The successful Bidder(s) by virtue of submitting the name and specifications of a manufacturer's product will be required to furnish the named manufacturer's product. By virtue of submission of the stated documents, it will be presumed by the City that the Bidder(s) is legally authorized to submit and the successful Bidder(s) will be legally bound to perform according to the documents.
- 32. **Regulations:** It shall be the responsibility of each Bidder to assure compliance with OSHA, EPA, Federal, State of Missouri, and City rules, regulations, or other requirements, as each may apply.
 - a. E-VERIFY COMPLIANCE REQUIREMENTS: All contractors or subcontractors to be utilized by Bidder on contracts exceeding five thousand dollars shall, by sworn affidavit and provision of documentation, affirm its enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services and affirm that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.
 - b. Bidders are herein informed that the work to be performed under this IFB is subject to the requirements of Section 292.675, RSMo., which requires all contractors or subcontractors perform work such to provide and require its on-site employees to complete a ten (10) hour course in construction safety and health approved by the Occupational Safety and Health Administration ("OSHA") or a similar program approved by the Missouri Department of Labor and Industrial Relations which is at least as stringent as an approved OSHA program. The training must be completed within sixty (60) days of the date work on the Project commences. On-site employees found on the worksite without documentation of the required training shall have twenty (20) days to produce such documentation.
 - c. Pursuant to Section 292.675 RSMo., the successful Bidder shall forfeit to the City as a penalty two thousand five hundred dollars (\$2,500.00), plus one hundred dollars (\$100.00) for each on-site employee employed by it, or any contractors or subcontractors hired by it, for each calendar day, or portion thereof, Such on-site employee is employed without the construction

safety training required in the above paragraph.

d. Section 208.009 RSMo. shall apply to any contracts awarded under this Bid.

33. **Termination of Award:** Any failure of the Bidder to satisfy the requirements of the City shall be reason for termination of the award. Any Bid may be rejected in whole or in part for any reason by the City.
34. **Royalties and Patents:** The successful Bidder(s) shall pay all royalties and license fees for equipment or processes in conjunction with the equipment being furnished. Bidder shall defend all suits or claims for infringement of any patent right and shall hold the City harmless from loss on account or cost and attorney's fees incurred.
35. **Equal Employment Opportunity Clause:** The City of Republic, in accordance with the provision of Title VI of the Civil Rights Act of 1964 (78 Stat. 252) and the Regulations of the Department of Commerce (15 CFR, Part 8) issued pursuant to the aforementioned Civil Rights Act, hereby notifies all Bidders that the City takes all reasonably necessary steps to affirmatively ensure that all Bidders, including minority businesses, will be afforded full opportunity to submit Bids in response to this IFB and that no Bidder will be discriminated against on the grounds of race, color, or national origin in determining the successful Bidder for award.
36. **Insurance Requirements:** For the duration of any contract awarded under this IFB, (which, for projects including any labor, means until the work is completed and accepted by the City; and which, for projects involving supply of materials only, means until the materials are delivered and accepted by the City), the successful Bidder is required to maintain certain insurance to protect it and the City against risks of loss in connection with the Project, as defined more fully below. The Successful Bidder will be required to provide the City with proof of insurance that satisfies the requirements stated below, unless otherwise specified by the City. The insurance requirements below may be modified or waived by the City at the City's sole discretion.
- a. **Workers' Compensation:** The Successful Bidder shall maintain Employers Liability and Workers Compensation Insurance for all persons it will employ or retain to perform any work in connection with a contract awarded under this IFB, and in the event the Successful Bidder will sublet or subcontract any such work, the Successful Bidder shall require the subcontractor to provide similar Workers Compensation Insurance for the subcontractor's employees, unless such employees are covered by the Successful Bidder's coverage. Workers Compensation coverage shall meet the minimum requirements under Missouri law of \$500,000 each employee and \$500,000 each accident.
 - b. **Commercial General Liability:** The Successful Bidder shall maintain Commercial General Liability coverage for personal and advertising injury, bodily injury including accidental death, and broad-form property damage, which may arise from the performance of any contract awarded under this IFB, in an aggregate amount of not less than \$2,000,000 each occurrence and \$1,000,000 each person.
 - c. **Commercial Automobile Liability (*applies only to projects involving the Successful Bidder's operation of vehicles in performing the work awarded under this IFB*):** The Successful Bidder shall maintain Commercial Automobile Liability coverage of not less than \$2,000,000 each occurrence and \$1,000,000 each person for "any auto" on an occurrence basis.
37. **Performance Bond and Labor & Materials Payment Bond (*applies only to projects involving labor*):** Pursuant to Section 107.170, RSMo., if the total cost of the project is estimated to exceed \$50,000.00, the successful Bidder shall execute a Performance and Maintenance Bond and a Labor and Materials Payment Bond with surety, approved by the City and on forms approved by the City, each bond shall be in the amount of the total project cost, conditioned upon the full and faithful performance of all major

terms and conditions of the IFB and payment of all labor and material supplies.

38. **Nonresident/Foreign Contractors:** To the extent the successful Bidder utilizes non-resident/foreign contractors to provide services or supplies in connection with this IFB, the successful Bidder shall procure and maintain:
 - a. A certificate of authority to transact business in the State of Missouri from the Secretary of State, unless exempt pursuant to the provisions of Section 351.570, RSMo.
 - b. A certificate from the Missouri Director of Revenue evidencing compliance with the transient employer financial assurance law, unless exempt pursuant to the provisions of Section 285.230, RSMo.
39. **Bid Tabulation:** Bidders may request a copy of the Bid tabulation of the IFB.
40. **Budgetary Constraints:** The City reserves the right to reduce or increase the quantity, retract any item from the Bid, or upon notification, terminate entire agreement without any obligations or penalty based upon availability of funds.
41. **Additional Purchases by Other Public Agencies:** By submitting a Bid in response to this IFB, the Bidder authorizes other public agencies to "Piggy-Back" or purchase equipment and services being proposed in this IFB unless otherwise noted on the Affidavit of Compliance Form.
42. **Order of Precedence:** Any and all Special/General Conditions and Specifications attached hereto, which varies from the instruction to Bidders, shall take precedence.
43. **Affidavit for Service Contracts:** The successful Bidder represents, in accordance with Section 285.530.2, RSMo., that it has not employed, or subcontracted with, unauthorized aliens in connection with the scope of work to be done under this IFB and agrees to provide an affidavit to the City of Republic affirming that it has not, and will not at any point in time relating to this IFB, knowingly employ, or subcontract with, any person who is an unauthorized alien.
44. **Inspection and Acceptance:** No item(s) received by the City pursuant to any agreement or contract awarded under this IFB shall be deemed accepted by the City until the City has had reasonable opportunity to inspect the item(s).
 - a. Any item(s) which are discovered to be defective, or which do not conform to any warranty of the successful Bidder and/or entity/individual who sold the item(s), upon inspection, may be returned by the City to the successful Bidder and/or entity/individual who sold the item(s) for full credit and reimbursement or replacement.
 - b. If, at a later time, any defect is discovered which was not ascertainable upon the initial inspection, the City may also return the defective item(s) to the successful Bidder and/or entity/individual who sold the item(s) for full credit and reimbursement or replacement.
 - c. The City's return of defective items shall not exclude any other legal, equitable or contractual remedies the City has under applicable Missouri or Republic law and/or any agreement or contract awarded under this IFB.
45. **Davis-Bacon Act:** If the Instructions to Bidders have indicated that the Project is financed, in whole or in part, from Federal funds, then all work performed pursuant to any contract awarded under this IFB shall be subject to all applicable federal statutes, rules and regulations, including provisions of the Davis-Bacon Act, 40 U.S.C. §3141 et seq., and the "Federal Labor Standards Provisions," incorporated into this any agreement or contract awarded under this IFB.. Where the Missouri Prevailing Wage Law and the Davis-Bacon Act require payment of different wages for work performed pursuant to any contract awarded under this IFB, all contractors, subcontractors and other individuals/entities hired by the successful Bidder to perform work under this IFB shall pay the greater of the wages required under either law.

46. **Jurisdiction and Venue:** This IFB and any executed agreement required pursuant to the terms of this IFB, shall be taken and deemed to have been fully executed and made by the parties herein and governed by the laws of the State of Missouri for all purposes and intents. Venue under this Agreement or any disputes that come from it shall be in the Circuit Court of Greene County, Missouri. **THE PARTIES HEREBY WAIVE THEIR RIGHT TO A JURY TRIAL UNDER ANY APPLICABLE STATUTE, COMMON LAW OR FEDERAL OR STATE CONSTITUTION.**
47. **Conflict of Interest:** By participating in this IFB and/or accepting an agreement pursuant to the IFB's terms, the successful Bidder certifies that no salaried officer or employee of the City, and no member of the City Council or Mayor of the City of Republic, has a financial interest, direct or indirect, in this Agreement. Any federal regulations and applicable provisions in Section 105.450 et seq., RSMo. shall not be violated.
48. **Sovereign Immunity:** In no event shall any language or requirement in this IFB or any Agreement that comes from this IFB be construed as or constitute a waiver or limitation of City's defenses with regard to sovereign immunity, governmental immunity, or official immunity under federal or state constitutions, states, and/or laws.
49. **Terms:** The City of Republic reserves the right to reject any and all proposals received from this Bid. It further has the right to negotiate with any qualified source, or to cancel in part or in its entirety this Bid. The City also reserves the right to modify, suspend, or terminate at its sole discretion any and all aspects of this bud process, to obtain further information from any and all respondents, and to waive any defects as to form or content of the Bid or any submissions by any firm. This bud does not commit the City to award a contract, to defray any costs incurred in the preparation of a response to this request, or to procure or contract for services. All submissions become the property of the City as public record. All submissions may be subject to public review upon request.

ATTACHMENT A - BID SUBMISSION FORM

BIDDERS MUST PROVIDE THE FOLLOWING INFORMATION:

Item	Description of Work	Price
Base Bid	<ul style="list-style-type: none">• Wastewater Infrastructure Installation at Hankins Farm Industrial Park 2561 State Highway MM All Bids to include:<ul style="list-style-type: none">○ Travel Expenses○ Delivery Costs○ Administrative costs <p>Please note any of the following:</p> <ul style="list-style-type: none">• Any labor personnel requests of the City of Republic for this project.• Any other requests or responsibilities of the City of Republic for this project.	\$ _____

In compliance with this Invitation for Bid and to all terms, conditions, and specifications imposed therein and hereby incorporated by reference, the undersigned offers and agrees to furnish the goods and/or services described herein.

City of Republic, Missouri IFB for: Wastewater Infrastructure Installation at Hankins Farm Industrial Park 2561 State Highway MM 213 N Main Street Republic, MO 65738	Company Legal Name: _____ _____
	Address: _____ _____ _____
	Signature: _____ Name and Title: _____ _____
Telephone: _____ Cellular: _____ Facsimile: _____ E-mail: _____	Dated: _____ Bidder's Federal ID Number: _____

NOTICE AND INSTRUCTIONS TO BIDDERS/VENDORS
Regarding Sections 285.525 through 285.550 RSMo., effective January 1, 2009,
and Section 292.675 RSMo., effective August 28, 2009

Effective January 1, 2009 and pursuant to Section 285.530(1) of the Revised Statutes of Missouri, “[n]o business entity or employer shall knowingly employ, hire for employment, or continue to employ an unauthorized alien to perform work within the state of Missouri.”

State law additionally provides that, as a condition for the award of any contract or grant in excess of five thousand dollars by the state or by any political subdivision of the state (*e.g., the City of Republic*) to a business entity (*e.g., potential bidders in response to this IFB*), the business entity (Company) shall, by sworn affidavit and provision of documentation, affirm its enrollment and participation in a federal work authorization program with respect to the employees working in connection with the contracted services. Every such business entity shall sign an affidavit affirming that it does not knowingly employ any person who is an unauthorized alien in connection with the contracted services. See § 285.530(2), RSMo.

Section 285.530 RSMo. pertains to all solicitations for services over \$5,000, but does not apply to solicitations for goods only. If a solicitation is for a combination of services and goods, Section 285.530 RSMo. applies if the services portion of the solicitation is over \$5,000.

1. **Required Affidavit for Contracts Over \$5,000.00 (US)** – Effective 1-1-2009, the company (submitting a Bid) shall comply with the provisions of Section 285.525 through 285.550, RSMo., which require certain statements to be made under penalty of perjury pertaining to employment of unauthorized aliens. The award of any contract under this IFB is expressly contingent on the company (submitting a Bid) providing an acceptable, notarized affidavit, stating as follows:
 - a. that said company is enrolled in and participates in a federal work authorization program with respect to the employees working in connection with the contracted services; and
 - b. that said company does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.

The terms used in this affidavit shall have the meaning set forth in Section 285.500 RSMo., *et seq.*

2. Additionally, Company must provide documentation evidencing current enrollment in a federal work authorization program (e.g. electronic signature page from E-Verify Program's Memo of Understanding (MOU). See attached sample.

A copy of the required affidavit is included on the following page. A digital copy of the affidavit can also be accessed and downloaded from the City of Republic's official website, URL address: <https://www.republicmo.com/DocumentCenter/View/77/Affidavit-of-Compliance-with-Section-285500-RSMO-PDF?bidId=>

The City of Republic is an E-Verify employer. The City of Republic encourages companies that are not already enrolled and participating in a federal work authorization program to do so. E-Verify is an example of a federal work authorization program. Information regarding E-Verify is available at <http://www.uscis.gov/e-verify> or by calling **888-464-4218**.

**Affidavit of Compliance with Section 285.500, RSMo., et seq.
for all agreements providing services in excess of \$5,000.00**

Effective 1/1/2009

STATE OF MISSOURI)
) ss.
COUNTY OF GREENE)

Before me, the undersigned Notary Public, in and for the County of _____, State of _____, personally appeared _____ (Name) who is _____ (Title) of _____ (Name of company), a (circle one) corporation, partnership, sole proprietorship, limited liability company, and is competent and authorized to make this affidavit, and being duly sworn upon oath deposes and says as follows:

- (1) that said company is enrolled in and participates in a federal work authorization program with respect to the employees working in connection with the contracted services; and
- (2) that said company does not knowingly employ any person who is an unauthorized alien in connection with the contracted services.

The terms used in this affidavit shall have the meaning set forth in Section 285.500 RSMo., et seq.

Documentation of participation in a federal work authorization program is attached to this affidavit.

Signature

Printed Name

Subscribed and sworn to before me this _____ day of _____, _____.

Notary Public

My commission expires: _____

Company ID Number: XXXXXX

The foregoing constitutes the full agreement on this subject between the SSA, DHS (Department of Homeland Security), and the Employer.

The individuals whose signatures appear below represent that they are authorized to enter into this Memorandum of Understanding on behalf of the Employer and DHS respectively.

To be accepted as a participant in E-Verify, you should only sign the Employer’s Section of the signature page. If you have any questions, contact E-Verify Operations at 888-464-4218.

Employer, Your Company Name

John Doe
Name (Please type or print)

Title

Electronically Signed
Signature

Date

Verification

Department of Homeland Security Division

USCIS Verification Division
Name (Please type or print)

Title

Electronically Signed
Signature

Date

Sample
E-Verify
Memo of
Understanding - MOU
Electronic Signature
Page

City of Republic, Missouri
AFFIDAVIT OF COMPLIANCE WITH INVITATION FOR BID

To be submitted with all Bids in response to this IFB

_____ We **DO NOT** take exception to the IFB Documents/Requirements.

_____ We **TAKE** exception to the IFB Documents/Requirements as follows:

I have carefully examined the Invitation for Bid and agree to abide by all submitted pricing, delivery, terms and conditions of this IFB unless otherwise stipulated herein.

Company Name _____

By _____

(Authorized Person's Signature)

Company Address _____

Telephone Number _____

Fax Number _____

Date _____

ADDENDA

Offeror acknowledges receipt of the following addendum:

Addendum No. _____

Addendum No. _____

Addendum No. _____

Addendum No. _____

Email _____

Federal Tax ID No. _____

DBE Vendor (Yes/No): _____ Minority Owned: _____

Women Owned: _____

Veteran Owned: _____

City of Republic, Missouri
STATEMENT OF “NO PROPOSAL” / “NO BID”

RETURN THIS PAGE ONLY IF YOUR COMPANY PROVIDES THE PRODUCTS/SERVICES BEING BID AND DECLINES TO DO SO.

WE, THE UNDERSIGNED, HAVE DECLINED TO BID ON YOUR IFB FOR THE FOLLOWING REASON(S):

- _____ SPECIFICATIONS ARE TOO “TIGHT,” I.E. GEARED TOWARD ONE BRAND OR MANUFACTURER ONLY(PLEASE EXPLAIN IN THE “REMARKS” SECTION BELOW).
- _____ INSUFFICIENT TIME TO RESPOND TO INVITATION FOR BID.
- _____ OUR PRODUCT SCHEDULE WOULD NOT PERMIT US TO PERFORM.
- _____ UNABLE TO MEET SPECIFICATIONS.
- _____ UNABLE TO MEET INSURANCE REQUIREMENTS.
- _____ SPECIFICATIONS UNCLEAR (PLEASE EXPLAIN IN THE “REMARKS” SECTION BELOW).
- _____ OTHER (PLEASE SPECIFY IN THE “REMARKS” SECTION BELOW).

REMARKS:

COMPANY NAME:

ADDRESS:

TITLE:

SIGNATURE:

TELEPHONE NUMBER:

DATE:

State of Missouri

EXEMPTION FROM MISSOURI SALES AND USE TAX ON PURCHASES

Issued to:

CITY OF REPUBLIC
213 N. MAIN AVENUE REPUBLIC, MO 65738

Missouri Tax ID Number: 12492990

Effective Date:
07/11/2002

Your application for sales/use tax exempt status has been approved, pursuant to Section 144.030.1, RSMo. This letter is issued as documentation of your exempt status.

Purchases by your Agency are not subject to sales or use tax if within the conduct of your Agency's exempt functions and activities. When purchasing with this exemption, furnish all sellers or vendors a copy of this letter. This exemption may not be used by individuals making personal purchases.

A contractor may purchase and pay for construction materials exempt from sales tax when fulfilling a contract with your Agency only if your Agency issues a project exemption certificate and the contractor makes purchases in compliance with the provisions of Section 144.062, RSMo.

Sales by your Agency are subject to all applicable state and local sales taxes. If you engage in the business of selling tangible personal property or taxable services at retail, you must obtain a Missouri Retail Sales Tax License and collect and remit sales tax.

This is a continuing exemption subject to legislative changes and review by the Director of Revenue. If your Agency ceases to qualify as an exempt entity, this exemption will cease to be valid. This exemption is not assignable or transferable.

It is an exemption from sales and use taxes only and is not an exemption from real or personal property tax.

Any alteration to this exemption letter renders it invalid.

If you have any questions regarding the use of this letter, please contact the Division of Taxation and Collection, P.O. Box 3300, Jefferson City, MO 65105-3300, phone 573-751-2836.

MISSOURI PROJECT EXEMPTION CERTIFICATE

Authorization for Purchasing Construction Materials for Tax Exempt Project
(The Form and Content of this Exemption Certificate have been approved by the Missouri Department of Revenue)

EXEMPT ENTITY ISSUING CERTIFICATE

Name: City of Republic, Missouri
Address: 213 N. Main Avenue
City/State/Zip: Republic, Missouri 65738

MO Tax Exempt I.D. #: 12492990

Contract Date:

Contract #: _____

Letter Effective Date:

Certificate Expiration Date:

Revised Expiration Date: _____

Project Description: Wastewater Infrastructure Installation at Hankins Farm Industrial Park

Project Location: 2561 State Highway MM

Project Completion Date: TBD

Auth. Signature: _____

Date: _____

The Missouri exempt entity named above hereby authorizes the purchase, without sales tax, of tangible personal property to be incorporated or consumed in the construction of the project identified herein and no other, pursuant to Section 144.62, RSMo.

PURCHASING CONTRACTOR OR SUBCONTRACTOR

Name: _____

Address: _____

City/State/Zip: _____

INSTRUCTIONS

EXEMPT ENTITY - A signed copy of this certificate, along with your MO Tax Exemption Letter, must be furnished to each contractor and/or subcontractor who will be purchasing tangible personal property for use in the project. It is the exempt entity's responsibility to ensure the validity of the certificate. You must issue a certificate with a Revised Expiration Date if purchases will be required to complete the project beyond the original Project Exemption Date.

CONTRACTOR OR SUBCONTRACTOR - The contractor shall furnish a completed copy of this exemption certificate, along with a copy of the exempt entity's MO Tax Exemption Letter, to all subcontractors, and any contractor or subcontractor purchasing materials shall present copies of such documents to all material suppliers as authorization to purchase, on behalf of the exempt entity, all tangible personal property and materials to be incorporated or consumed in the construction of that project and no other on a tax-exempt basis. A copy of each certificate must be retained by the purchaser for a period of five years.

MATERIAL SUPPLIER - A completed copy of this exemption certificate, along with the MO Tax Exemption Letter of the exempt entity contracting for the project, must be obtained from the contractor or subcontractor making purchases of tangible personal property for use in the project, and retained for audit purposes. Invoices issued for such purchases must reflect the name of the exempt entity and the project number assigned by the exempt entity shown above.