

G:\12220\Civil_3D\Production Drawings\Sanitary Sewer Plans - LS.MXD\127200100.dwg Layout: 1 Cover Sheet -- Wednesday, March 18, 2020, 10:56am -- Copyright 2020, George Butler Associates, Inc. 000133, Landscape Architect 000025, Professional Land Surveyor 000059

GENERAL NOTES

1. The construction covered by these plans shall conform to the current "City Standards" and specifications of the Public Works Department, Lee's Summit, Missouri, except as noted. It shall be the Contractors responsibility to have one copy of these approved plans and the most current standards and specifications on the job site at all times.
2. The location and size of existing utilities is approximate. The location and elevation of all utilities must be verified in the field by the contractor prior to the start of construction and notify the Engineer of any discrepancies.
3. Contractor shall control downstream erosion and silting during construction.
4. Prior to ordering pre-cast structures, shop drawings are to be submitted to the design engineer for approval. The design engineer shall indicate approval of the shop drawings and add the permit type and number on them and then submit them to the City Planning & Development Dept., Land Development Division, Development Services City Hall, 220 SE. Green St. Lee's Summit, MO 64063.

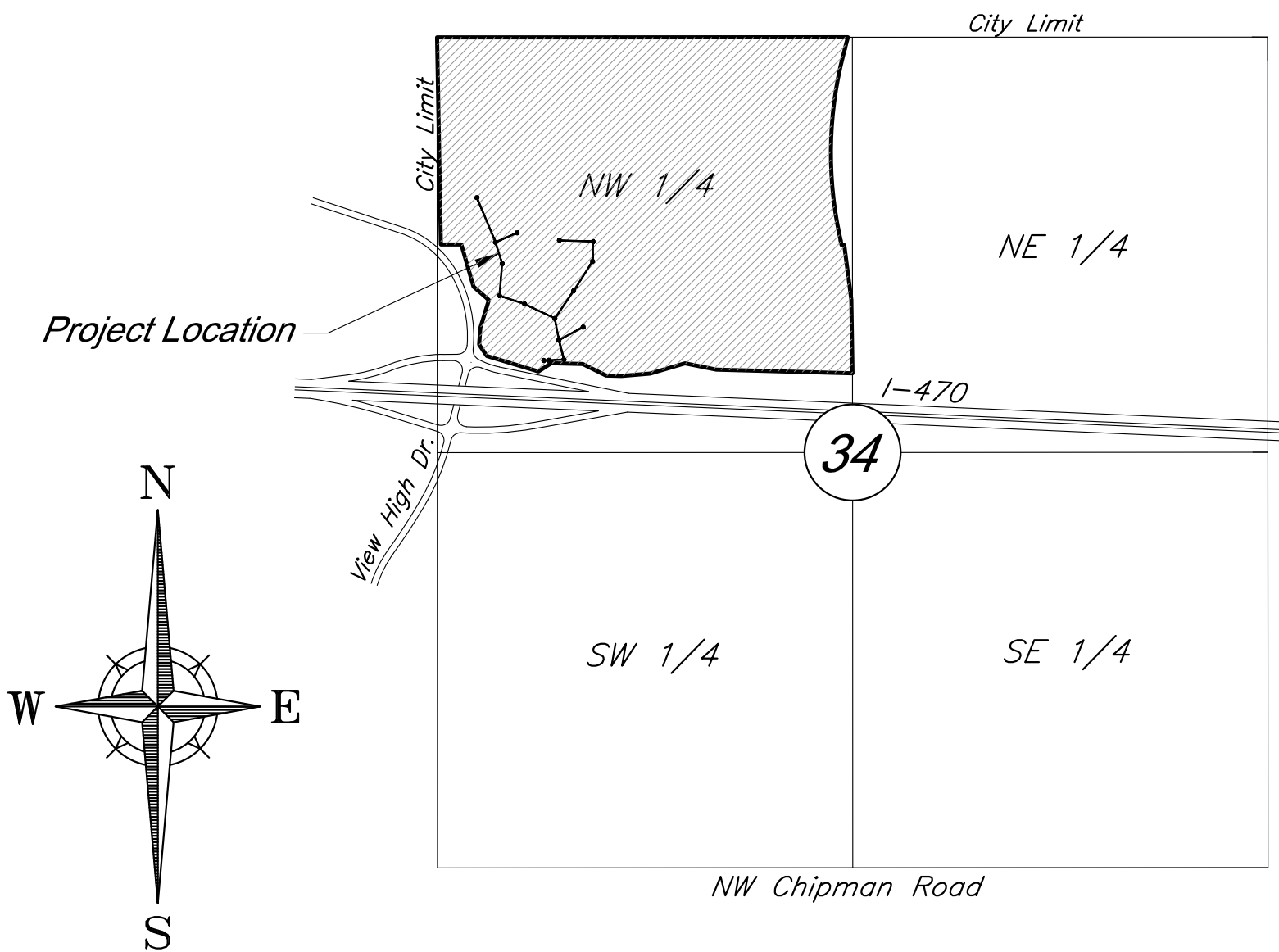
SUMMARY OF QUANTITIES

No.	DESCRIPTION	UNIT	QUANTITY
1	Manholes	E.A.	16
2	Reinforced Concrete Encasement	L.F.	20
3	4" SDR 26 PVC Service Lateral	L.F.	223
4	6" SDR 26 PVC Service Lateral	L.F.	747
5	8" SDR 26 PVC	L.F.	2224
6	10" SDR 26 PVC	L.F.	194
7	10" DIP	L.F.	10
8	16" DIP	L.F.	257
9	Grease Interceptor	E.A.	4
10	Meter	E.A.	1
11	Odor Control Unit	E.A.	1

NOT FOR CONSTRUCTION

REVIEWED FOR CONSTRUCTION

SANITARY SEWER PLANS
FOR
PARAGON STAR DEVELOPMENT
Sections 34-Township 48-Range 32
City of Lee's Summit
Jackson County, Missouri



VICINITY MAP

Section 34-T48N-R32W

UTILITY CONTACTS

Sanitary Sewers	Mr. Jeff Thorn, PE City of Lee's Summit Water Utilities 1200 SE Hamblen Road Lee's Summit, MO 64063 (816) 969-1922 email: jeff.thorn@cityofLS.net	Gas	Mr. Donnie Richards Missouri Gas Energy 7500 E. 35th Terrace Kansas City, MO 64129 (816) 472-9464 Fax (816) 472-3488 email: donnie.richards@sug.com
	Mr. John Flathers Little Blue Valley Sewer District 21208 E. Old Atherton Road Independence, MO 64058 (816) 769-7660 email: flathers@lbvsd.org	Cable Television	Mr. Greg Thomas Time Warner Cable 8221 W. 119th Street Overland Park, KS 66213 (913) 643-1950 email: greg.thomas@twcable.com
Water	Mr. Jeff Thorn, PE City of Lee's Summit Water Utilities 1200 SE Hamblen Road Lee's Summit, MO 64063 (816) 969-1922 email: jeff.thorn@cityofLS.net	Telephone	Ms. Glenda Charles AT&T 1425 Oak Street Kansas City, MO 64106 (816) 365-1669 Fax (816) 275-1109 email: gc6954@att.com
Electric Service	Mr. Nathan Michael Kansas City Power & Light P.O. Box 418679 Kansas City, MO 64141 (816) 220-5210 Fax (816) 245-3623 email: Nathan.Michael@kcpl.com		

PROJECT WATERSHED

This project is located in the Little Blue River Watershed.

FLOOD ZONE DESIGNATION

This project is in Zone X-Areas outside the 0.2% chance floodplain, Zone AE Floodplain, and Other Flood Zone X, according to the FEMA Flood Insurance Rate Map 29095C0404G, dated January 20, 2017.

PROJECT BENCHMARK

BM #11 - Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of I470 bridge spanning View High Drive.
EL=833.80

INDEX OF SHEETS

Sht. No.	Description
1	Cover Sheet
2	General Layout
3	Plan & Profile - Line LB
4	Plan & Profile - Line A
5	Plan & Profile -Line D and E
6	Grease Interceptor
7	LBVSD MeterStructure Connection Plan
8	Meter Station Dimension Site Plan
9	View High Metering Station Site Plan
10	Metering Structure Plan
11-12	Sanitary Sewer Details
13	Electrical Building Plan
14-15	Electrical Specification
16-17	Electrical Plans



PROJECT ENGINEER:

3/18/2020
DATE:

APPROVED:

CITY ENGINEER:

DATE:

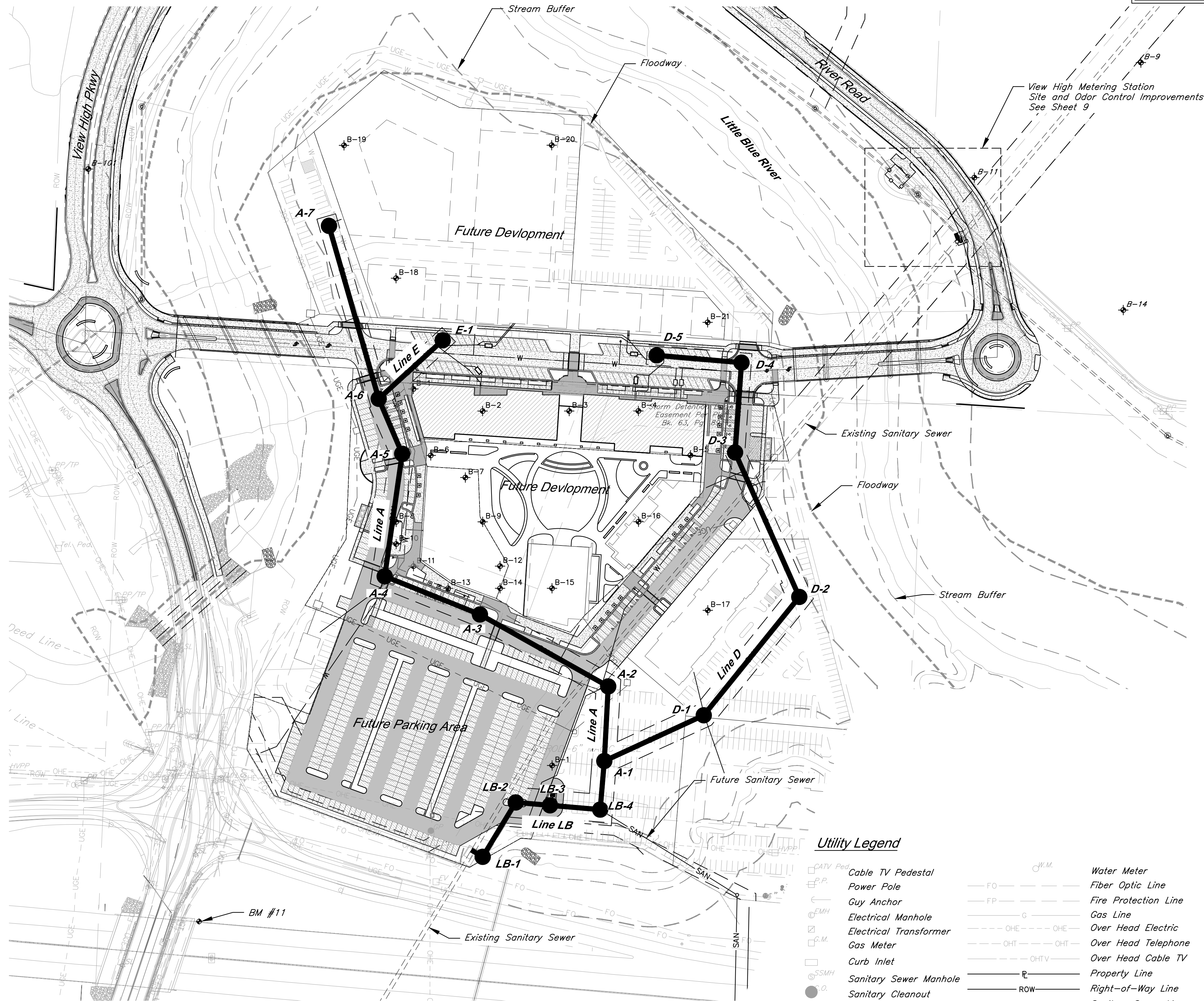
DEVELOPED AND OWNED BY:
PARAGON STAR LLC
801 NORTHWEST COMMERCE CENTER
LEE'S SUMMIT, MISSOURI 64086
PHONE: (816) 802-6801
CONTACT: Mr. Flip Short
EMAIL: fshort@legacytouch.com

PREPARED & SUBMITTED BY:
GEORGE BUTLER ASSOCIATES, INC.
9801 RENNER BOULEVARD
LENEXA, KANSAS 66219
PHONE: 913-492-0400
FAX: 913-577-8312
CONTACT: CLINT LOUMASTER P.E.
EMAIL: CLOUMASTER@GBATEAM.COM



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Lenexa, Kansas 66219
913.492.0400
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CAUTION!
Numerous Utilities on Site.
Contractor to verify location
and elevation of all utilities
prior to commencing
construction.

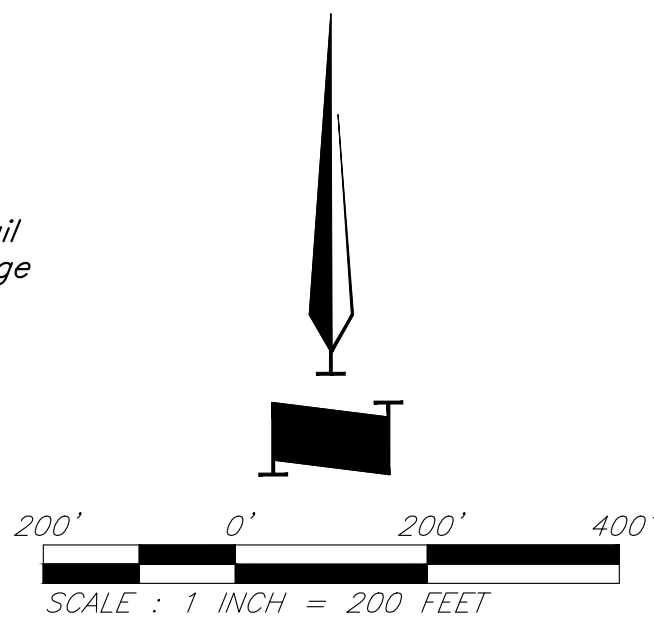
	GBA 9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com	DATE: 3/18/2020	
		DESIGN BY: CEL	
		DRAWN BY: JMS	
PROJECT NO.: 12720		SHEET NO. 2	TOTAL SHEETS 17
Clint Loumaster Professional Engineer License No. 2011009651		Sanitary Sewer Plans Paragon Star Development Lee's Summit, Missouri	
NO. DATE		REVISIONS BY APPROVED	
1 12-27-19		Sanitary Sewer City Comments 12-12-19	

GENERAL NOTES

- General Notes:**
- All Construction shall conform to Lee's Summit's Technical Specifications in effect at the time of the City's approval date shown on the approved plans and incorporated herein by reference.
 - All traffic control shall be the responsibility of the Contractor and shall be in conformance with the Manual of Uniform Traffic Control Devices (MUTCD).
 - Property Corners and/or Section corners disturbed or damaged by construction activities shall be reset by a Registered Land Surveyor licensed in the state of Missouri at the Contractor's expense.
 - Construction Staking shall be the responsibility of the General Contractor.
 - The Contractor shall be responsible for the restoration of the Right-of-Way and for damaged improvements such as curbs, driveways, sidewalks, street light and traffic signal junction boxes, traffic signal equipment, irrigation systems, etc. Damaged improvements shall be repaired in conformance with the latest City standards and to the City's satisfaction.
 - All work shall be confined within easements and/or construction limits as shown on the plans.
 - The Contractor shall, prior to the commencement of work, investigate surface and subsurface conditions to be encountered across the site and notify the Engineer if any discrepancies or changed conditions are noted.
 - This project will include numerous activities occurring on site including storm sewer, sanitary sewer, grading, utility, building construction etc. Contractor shall coordinate his work with other contractors on site.
 - All trash and debris identified on site shall be properly handled and disposed of in accordance with state of Missouri regulations.
 - All measurements on these plans are horizontal distances, not slope distances.
 - Items not listed separately in the Summary of Quantities are subsidiary to other items.
 - All site concrete shall be KCMMB - 4,000 PSI unless otherwise noted.
- Permitting:**
- Excavation for Utility work within the Right of Way requires a Right of Way work permit from the Public Works Department, in addition to all other permits.
 - Contractor is responsible for obtaining all required permits, paying all fees, and for otherwise complying with all applicable regulations governing the work.
- Erosion Control:**
- The Contractor is responsible for providing erosion and sediment control BMP's to prevent sediment from reaching paved areas, storm sewer systems, drainage courses, and adjacent properties. In the event the prevention measures are not effective, the contractor shall remove any debris, silt, or mud and restore the Right-Of-Way, or adjacent properties to original or better condition.
 - Contractor shall ensure that all construction shall conform to the requirements of the Stormwater Pollution Prevention Plan (SWPPP) a copy of which shall be maintained and updated on site by the Contractor.
 - The Contractor shall sod all disturbed areas within the Public Street Right-of-Way unless otherwise noted in the plans.
 - No trees shall be damaged or removed without prior authorization from owner unless otherwise shown on this plan.
- Earthwork:**
- Slopes shall be constructed to a maximum slope of 3:1 (Horiz:Vert).
 - Unless otherwise noted, all spot elevations and contours are shown to "finish" grade surface. Contractor shall adjust for any overcut required in paving, parking, landscape, or building pad areas as defined in the Geotechnical Report, these plans, or the project specifications.
 - All temporary slopes and excavations should conform to Occupational Safety and Health Administration (OSHA) standards for the Construction Industry (29 CFR part 1026, subpart P).
 - Refer to "Geotechnical Engineering Report - Paragon Star Roadways and Borrow Site" Dated December 8, 2016 - along with Addendum #1 dated 1/4/17, and "Geotechnical Engineering Report - Soccer Fields" Dated July 27, 2016 and "Geotechnical Engineering Report - Paragon Star Village" Dated August 2, 2019 and "Geotechnical Engineering Report - Paragon Star Sanitary Junction Structure" Dated July 22, 2019 prepared by Terracon Consultants, Inc. for grading recommendations and boring logs. All earthwork shall conform to the recommendations of the Reports.
- Utility:**
- All Manholes, Catch Basins, Utility Valves, Meter Pits, and other utility equipment shall be adjusted or rebuilt to grade as required.
 - Prior to beginning work, the Contractor shall notify all utility companies who have facilities in the vicinity of the project area of the work to be performed.
 - All Utility extensions and construction shall conform to the Standards and Specifications of the applicable Utility Companies.

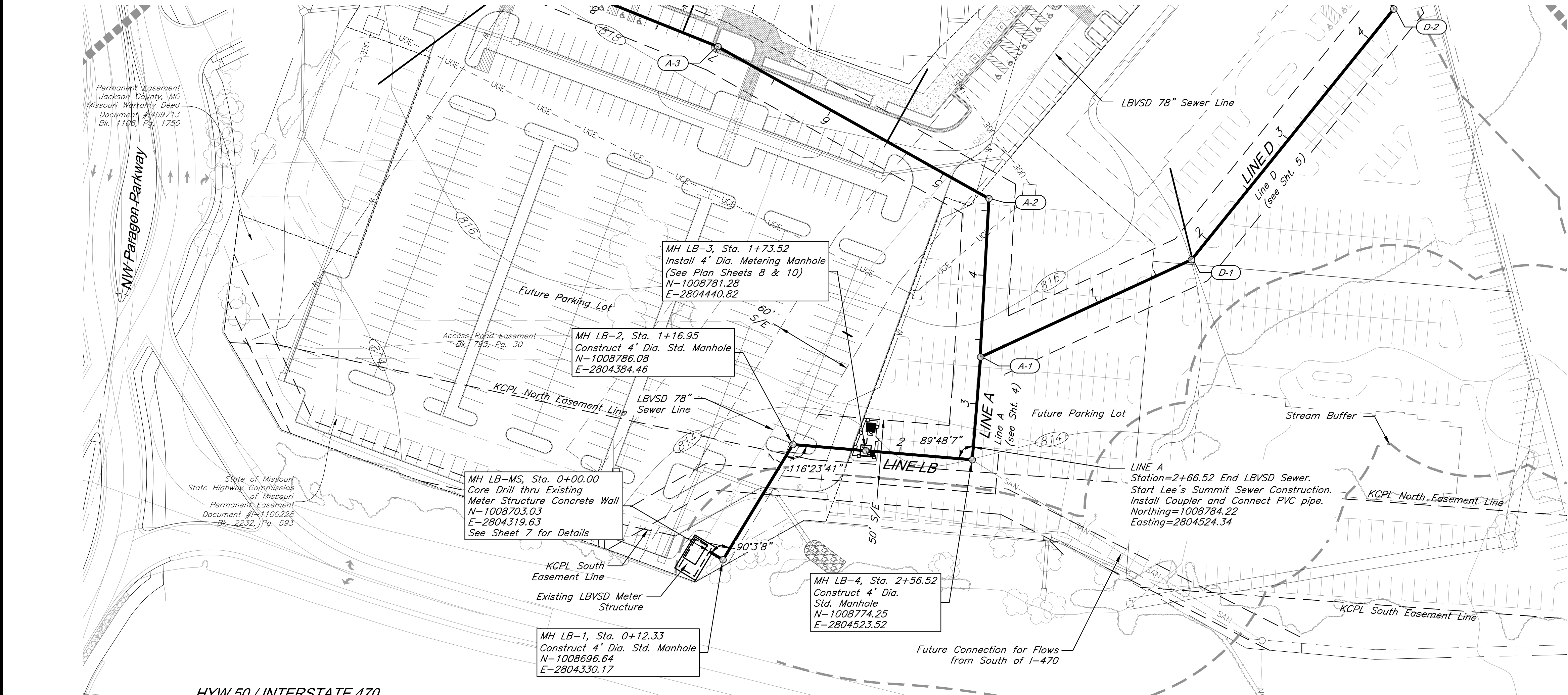
PROJECT BENCHMARK:

BM #11 - Chiseled "L" on top
Northeast corner of concrete guardrail
at the Northeast corner of 1470 bridge
spanning View High Drive.
EL=833.80



General Layout

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DATE: 3/18/2020
DESIGN BY: CEL
DRAWN BY: JMS
PROJECT NO.: 12720
SHEET NO. 3
TOTAL SHEETS 17

Sanitary Sewer Plans
Paragon Star Development
Lee's Summit, Missouri

Clint Loumaster
Professional Engineer
License No. 2011009651

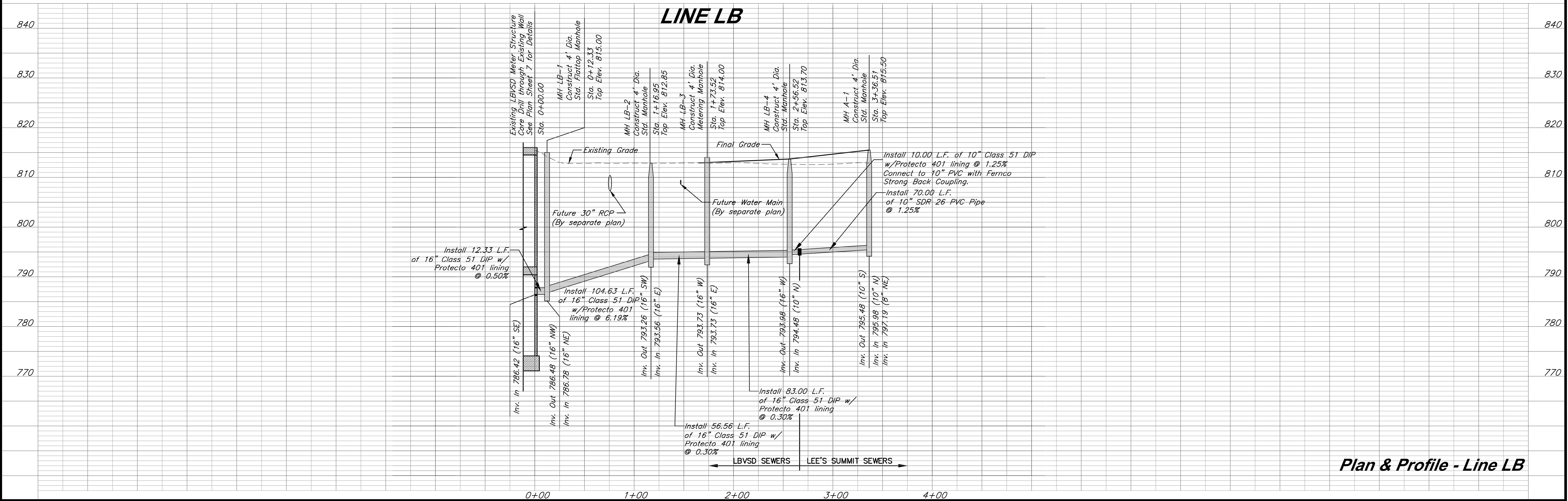
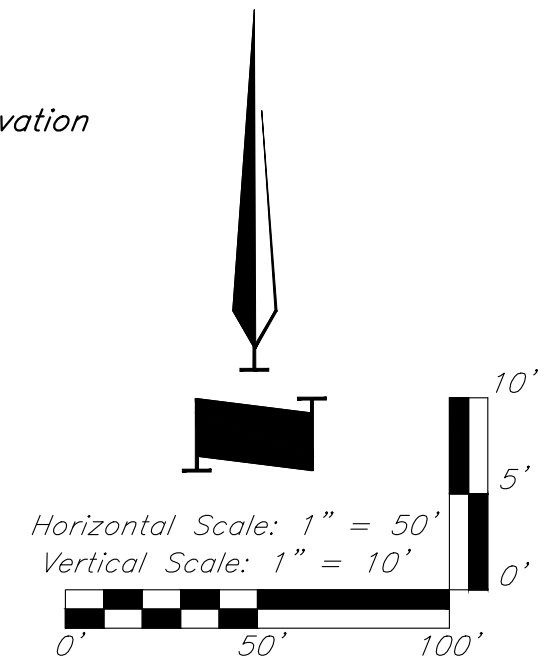
REVISIONS
Sanitary Sewer City Comments 12-12-19

NO.	DATE	BY	APPROVED
1	12-27-19		

CAUTION:
Numerous utilities in area. Contractor to verify location and depth of all utilities prior to beginning any work.

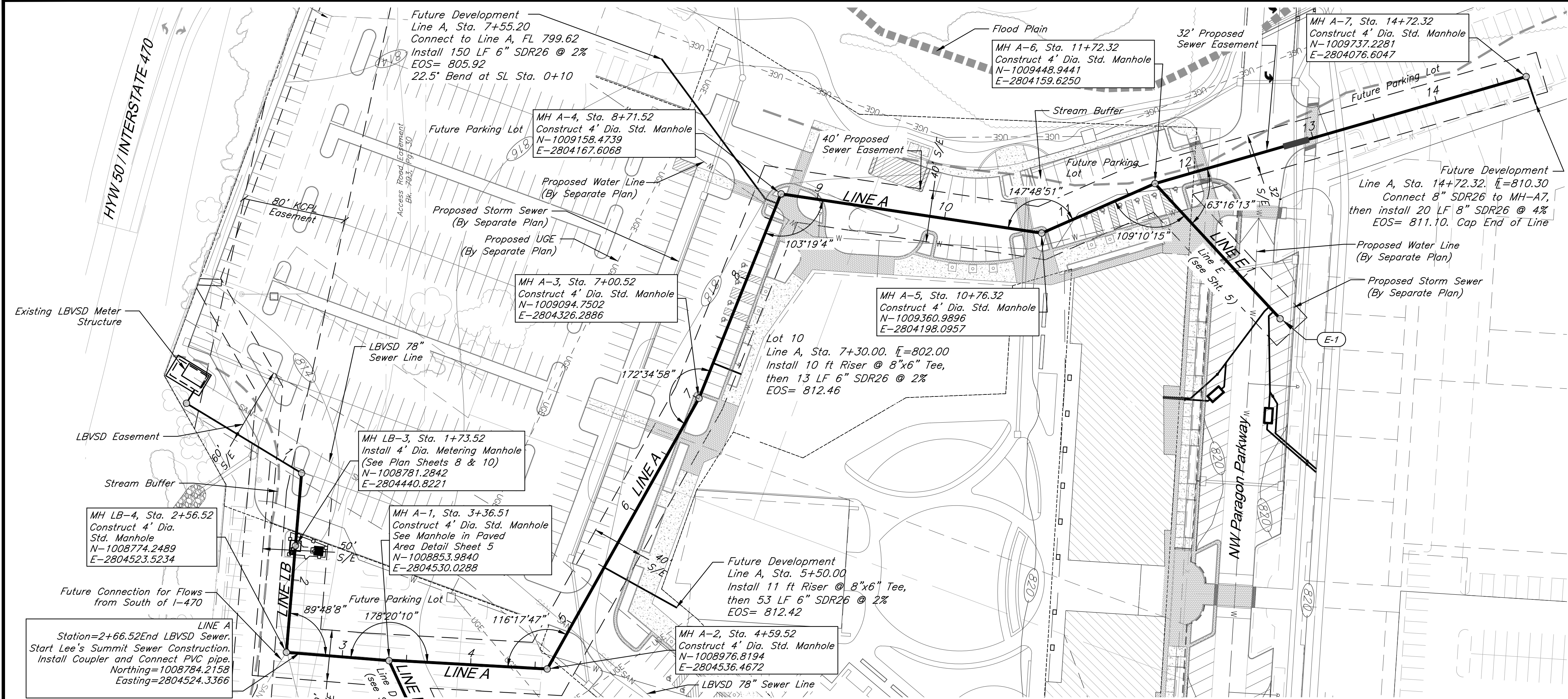
BENCHMARK:
BM #11 - Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of I470 bridge spanning View High Drive.
EL=833.80

LEGEND
LBVSD - Little Blue Valley Sewer District
S/E - Sewer Easement
EOS $\overline{\text{E}}$ - End of Service Flow Line Elevation



Plan & Profile - Line LB

C:\12720\Civil 3D Production Drawings\Sanitary Sewer Plans - Line A.dwg -- Wednesday March 18, 2020, 10:50am -- Copyright 2020, George Loumaster, Professional Engineer, 000025, Landscape Architect, 000025, Professional Land Surveyor, 000029



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Clint Loumaster Professional Engineer License No. 2011009651		Sanitary Sewer Plans Paragon Star Development Lee's Summit, Missouri	
NO.	DATE	REVISIONS	BY APPROVED
1	12-27-19	Sanitary Sewer City Comments 12-12-19	

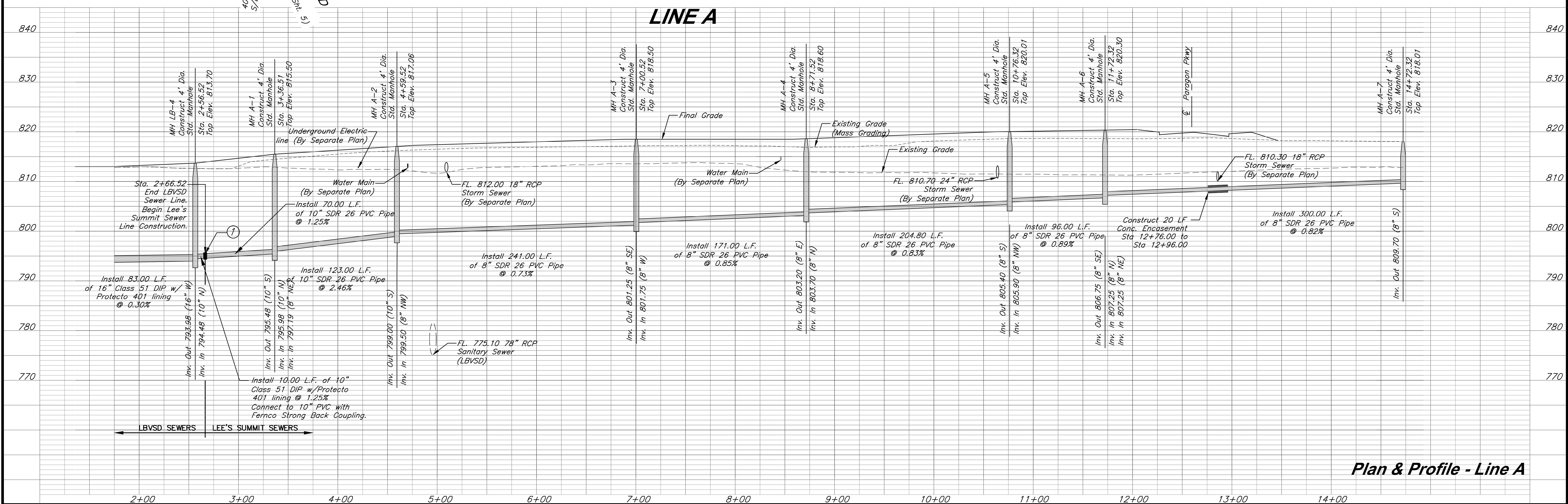
CAUTION:
Numerous utilities in area. Contractor to verify location and depth of all utilities prior to beginning any work.

BENCHMARK:
BM #11 - Chiseled "L" on top Northeast corner of concrete guardrail at the Northeast corner of I470 bridge spanning View High Drive.
EL=833.80

LEGEND
LBVSD - Little Blue Valley Sewer District
S/E - Sewer Easement
EOS E - End of Service Flow Line Elevation

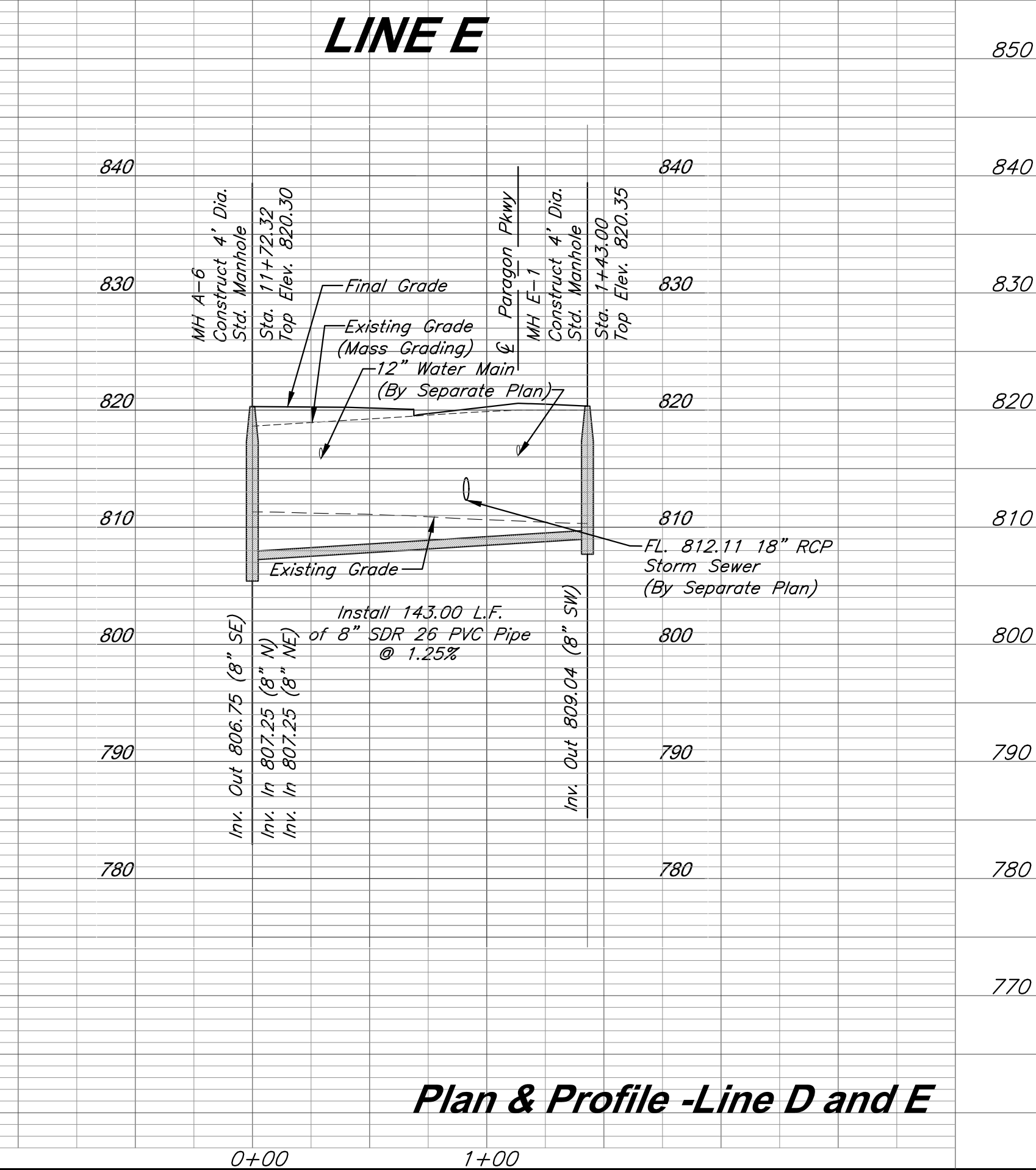
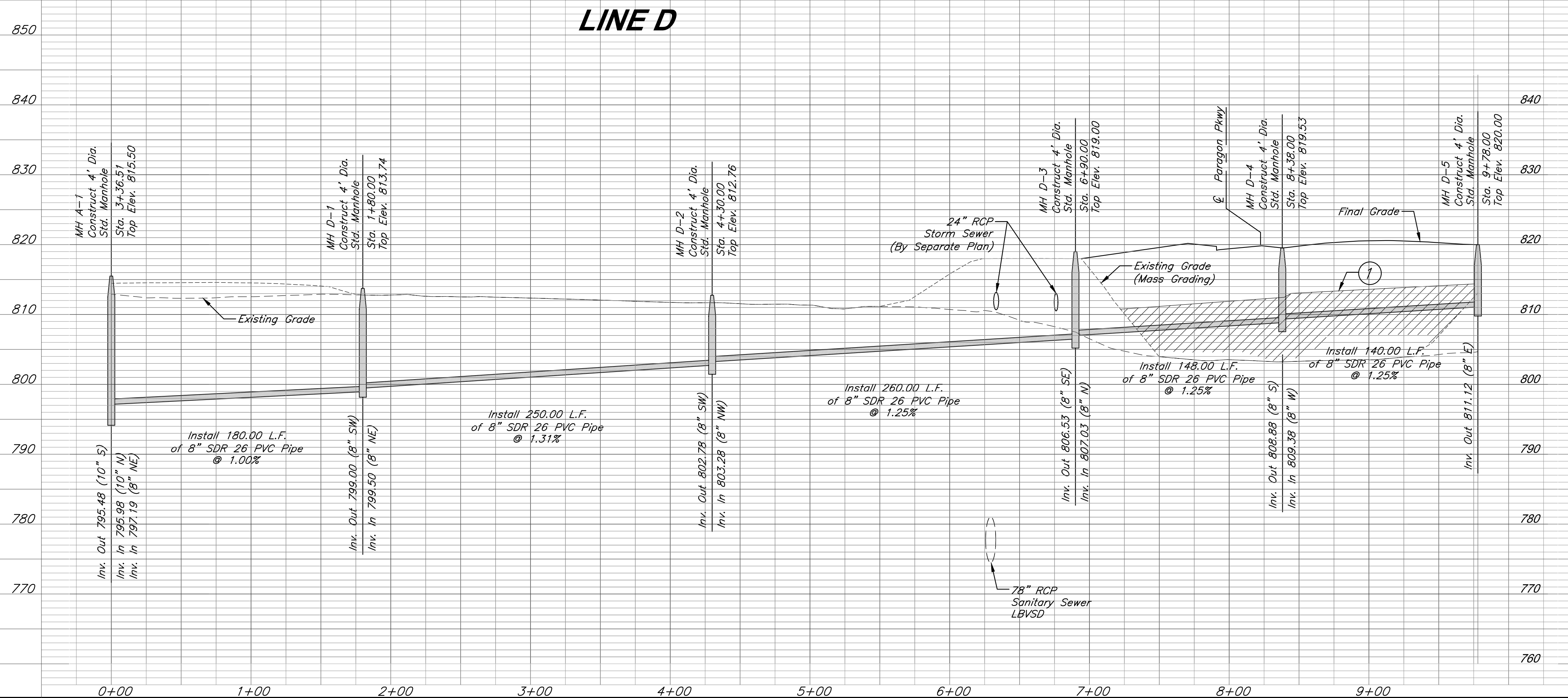
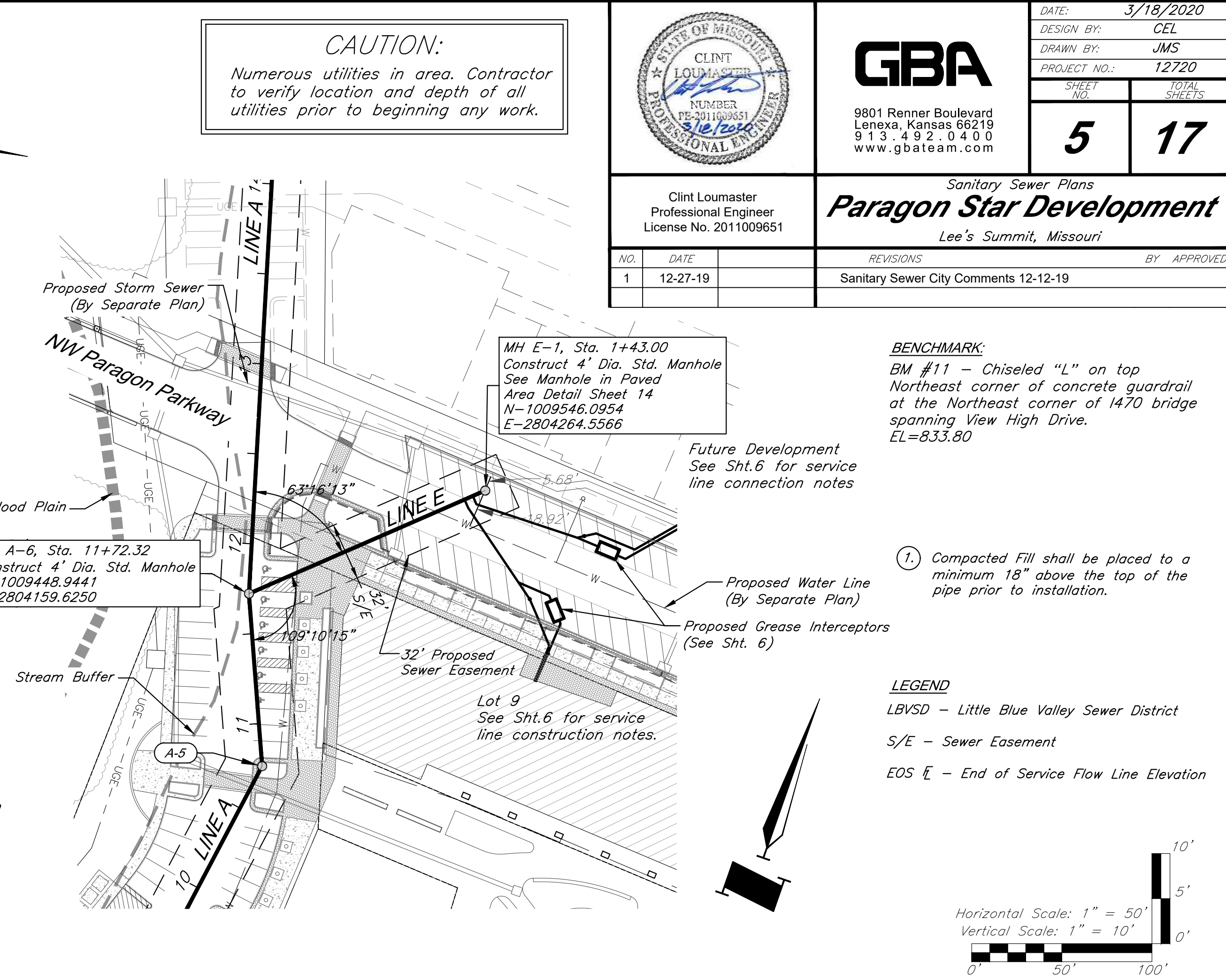
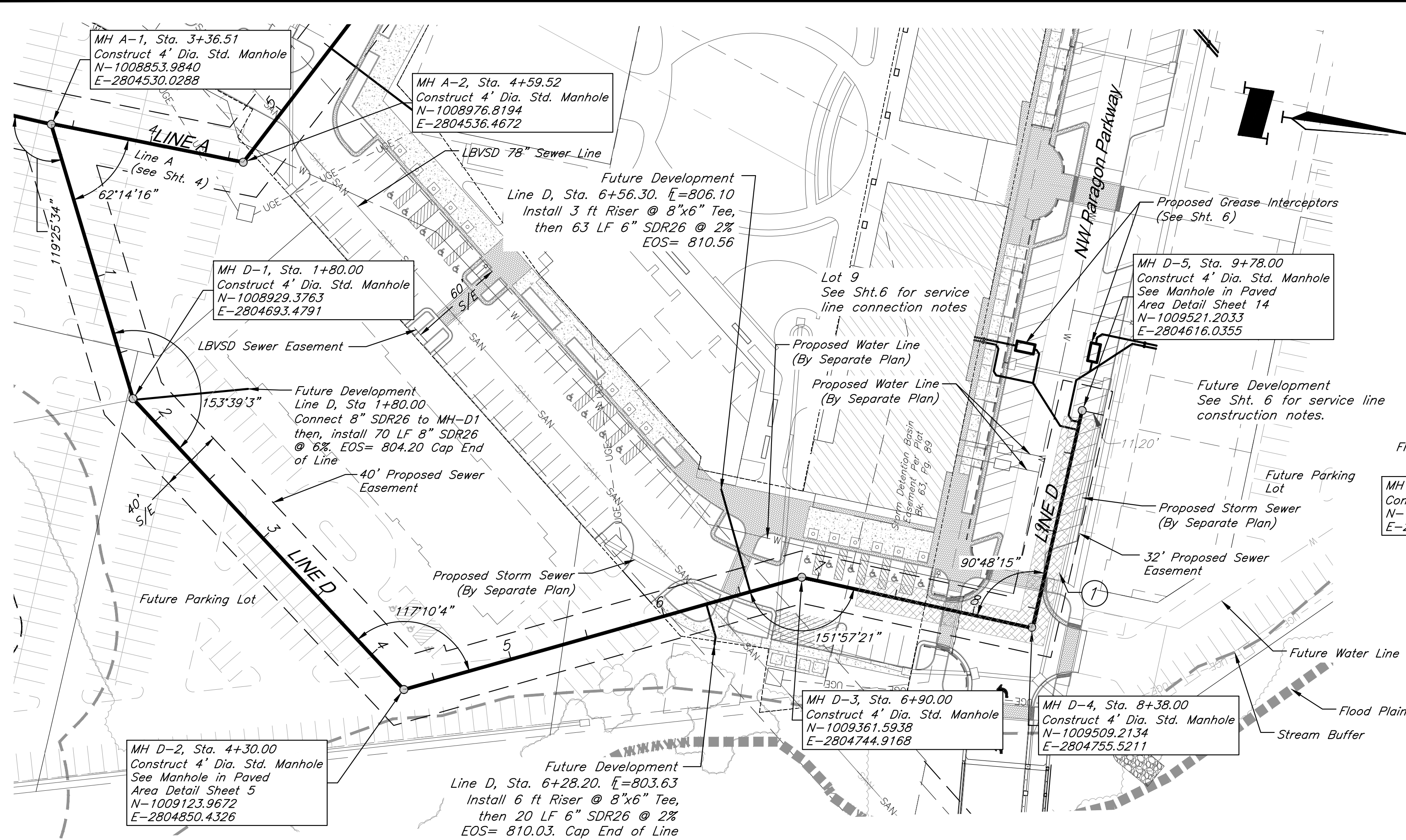
CONSTRUCTION NOTES
① Install Fernco Strong Back Coupling and Connect PVC Pipe

Horizontal Scale: 1" = 50'
Vertical Scale: 1" = 10'



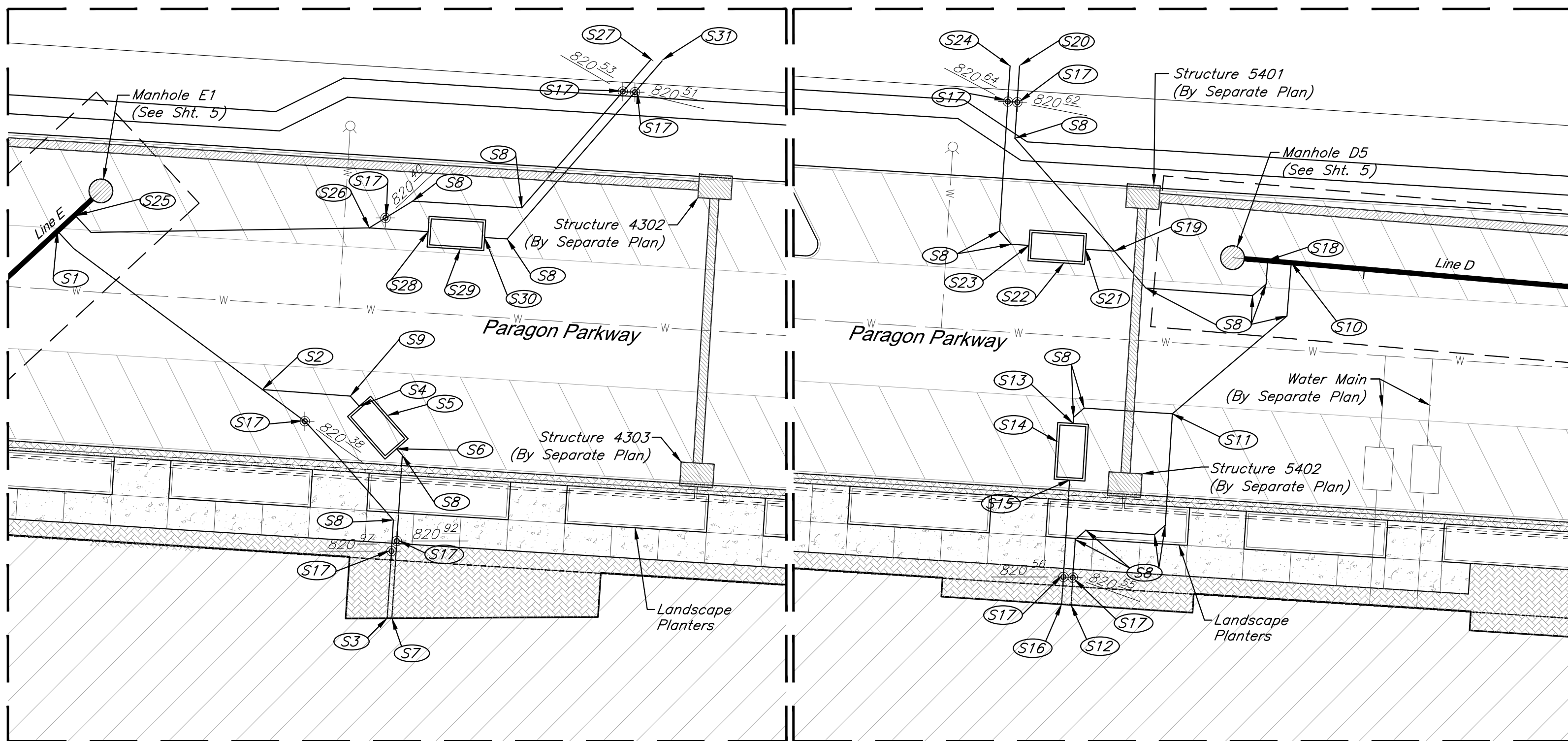
Plan & Profile - Line A

C:\12720\Civil 3D\Production Drawings\Sanitary Sewer Plans - LS.MXD, 12720C1500.dwg Layout: 4 Plan & Profile -Line D and E --- Wednesday March 18, 2020, 11:00am --- Copyright 2020, GBA, Inc. All Rights Reserved. Professional Engineer, 000025, Landscape Architect, 000025, Professional Land Surveyor, 0000259



Plan & Profile -Line D and E

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Enlargement #1
Scale: 1"=10'

Enlargement #2
Scale: 1"=10'

Sanitary Sewer Construction Notes:

- (S1) Connect 6" Service Line to Sanitary Sewer Line E, Sta=1+30.5 ℓ =808.68 Install 55 LF 6" Dia. SRD26 PVC pipe @ 5.02% to S2.
- (S2) Install wye connection, ℓ =811.44. Install 60 LF 6" Dia. SDR26 PVC pipe @ 5.10% to S3. Install 22 LF 4" Dia. SDR26 PVC pipe @ 4.68% to S4.
- (S3) Connect to 6" building stub, ℓ =814.50. See MEP plan for continuation.
- (S4) Connect 4" to grease interceptor, ℓ =812.47.
- (S5) Install 2000 gallon grease interceptor. See construction details.
- (S6) Connect 4" to grease interceptor, ℓ =812.47. Install 35 LF 4" Dia. SDR26 PVC pipe @ 5.80% to S7.
- (S7) Connect to 4" building stub, ℓ =814.50. See MEP plan for continuation.
- (S8) 45' Bend
- (S9) 22.5' Bend
- (S10) Connect to Sanitary Sewer Line D, Sta=7+65.50, ℓ =811.08 Install 43 LF 6" Dia. SRD26 PVC pipe @ 1.00% to S11.
- (S11) Install wye connection, ℓ =811.51. Install 58 LF 6" Dia. SDR26 PVC pipe @ 1.5% to S12. Install 23 LF 4" Dia. SDR26 PVC pipe @ 1.5% to S13.
- (S12) Connect to 6" building stub, ℓ =812.38. See MEP plan for continuation.
- (S13) Connect 4" to grease interceptor, ℓ =811.86.
- (S14) Install 2000 gallon grease interceptor. See construction details.
- (S15) Connect 4" to grease interceptor, ℓ =811.86. Install 26.5 LF 4" Dia. SDR26 PVC pipe @ 1.96% to S16.
- (S16) Connect to 4" building stub, ℓ =812.38. See MEP plan for continuation.
- (S17) Install Cleanout W/Casting
- (S18) Connect 6" Service Line to Sanitary Sewer Line D, Sta=7+70.50, ℓ =811.12. Install 42 LF 6" Dia. SRD26 PVC pipe @ 1.0% to S19.
- (S19) Install wye connection, ℓ =811.54. Install 47 LF 6" Dia. SDR26 PVC pipe @ 3.53% to S20. Install 6 LF 4" Dia. SDR26 PVC pipe @ 2.5% to S21.
- (S20) End of 6" Service Line. Cap end of pipe ℓ =813.20.
- (S21) Connect 4" to grease interceptor, ℓ =811.70.
- (S22) Install 2000 gallon grease interceptor. See construction details.
- (S23) Connect 4" to grease interceptor, ℓ =811.70. Install 42.5 LF 4" Dia. SDR26 PVC pipe @ 3.53% to S24.
- (S24) Cap End of 4" Service Line. Future building stub connection, ℓ =813.20.
- (S25) Connect 6" Service Line to Sanitary Sewer Line E, Sta. 1+35.50, ℓ =808.74 Install 64 LF 6" Dia. SRD26 PVC pipe @ 1.5% to S26.
- (S26) Install wye connection, ℓ =809.70. Install 75 LF 6" Dia. SDR26 PVC pipe @ 1.5% to S27. Install 12.5 LF 4" Dia. SDR26 PVC pipe @ 1.5% to S28.
- (S27) Cap End of Service Line. Future building stub connection, ℓ =810.83.
- (S28) Connect 4" to grease interceptor, ℓ =809.89.
- (S29) Install 2000 gallon grease interceptor. See construction details.
- (S30) Connect 4" to grease interceptor, ℓ =809.89. Install 55 LF 4" Dia. SDR26 PVC pipe @ 1.7% to S31.
- (S31) End of Service Line Cap and Plug for future connect to 4" building stub, ℓ =810.83.



GBA

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DATE:	3/18/2020
DESIGN BY:	CEL
DRAWN BY:	JMS
PROJECT NO.:	12720
SHEET NO.	TOTAL SHEETS
6	17

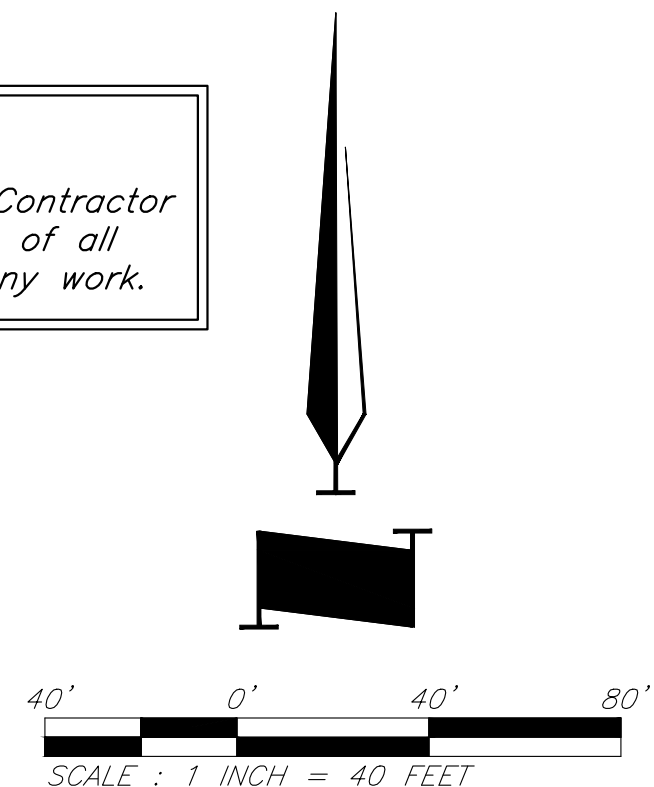
Clint Loumaster
Professional Engineer
License No. 2011009651

Sanitary Sewer Plans
Paragon Star Development
Lee's Summit, Missouri

NO.	DATE
1	12-27-19

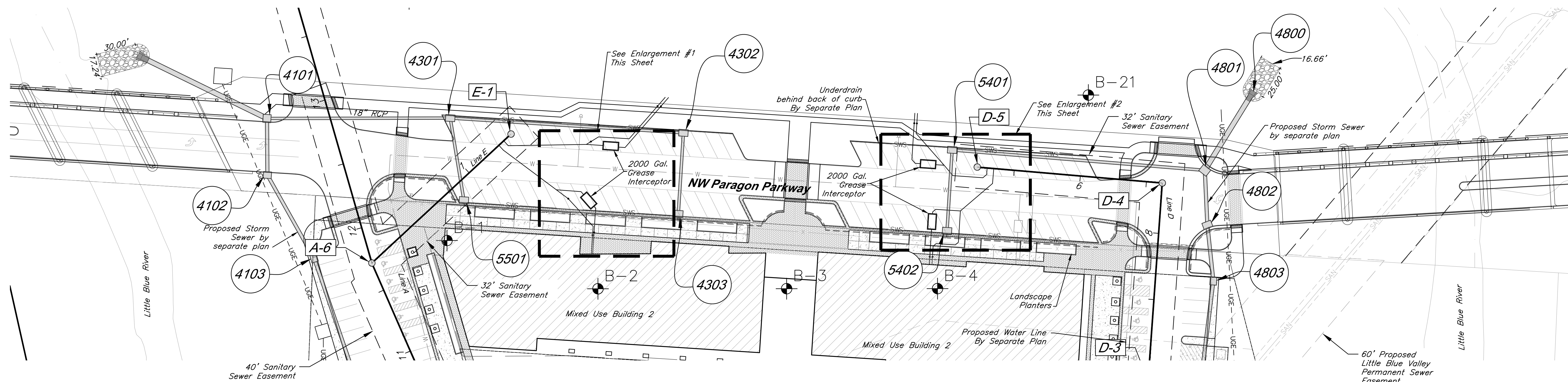
REVISIONS
Sanitary Sewer City Comments 12-12-19

CAUTION:
Numerous utilities in area. Contractor to verify location and depth of all utilities prior to beginning any work.



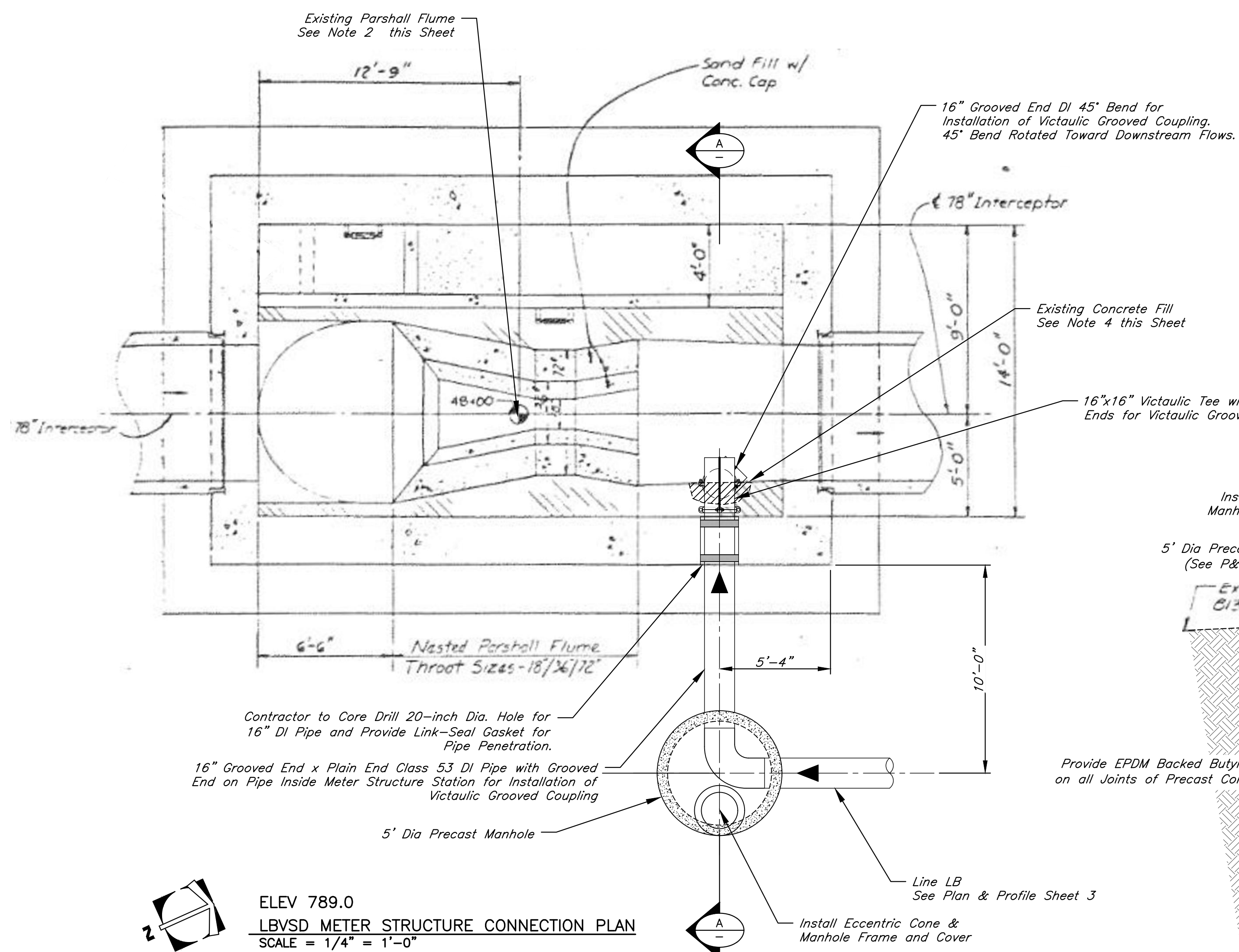
Utility Legend

	Cable TV Pedestal		Fiber Optic Line
	Power Pole		Fire Protection Line
	Guy Anchor		Gas Line
	Electrical Manhole		Over Head Electric
	Gas Meter		Over Head Telephone
	Curb Inlet		Over Head Cable TV
	Sanitary Sewer Manhole		Property Line
	Sanitary Cleanout		Right-of-Way Line
	Light Pole		Existing Sanitary Sewer Line
	Boring Hole		Underground Electric
	Sign		Underground Telephone
	Telephone Pedestal		Underground Cable TV
	Traffic Signal Post		Water Line
	Traffic Manhole		Proposed Storm Sewer
	Fire Hydrant		Future Storm Sewer
	Water Meter		Proposed Sanitary Sewer Line
			Proposed Underdrain

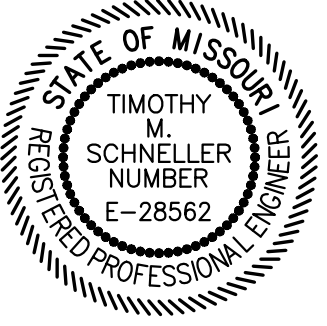


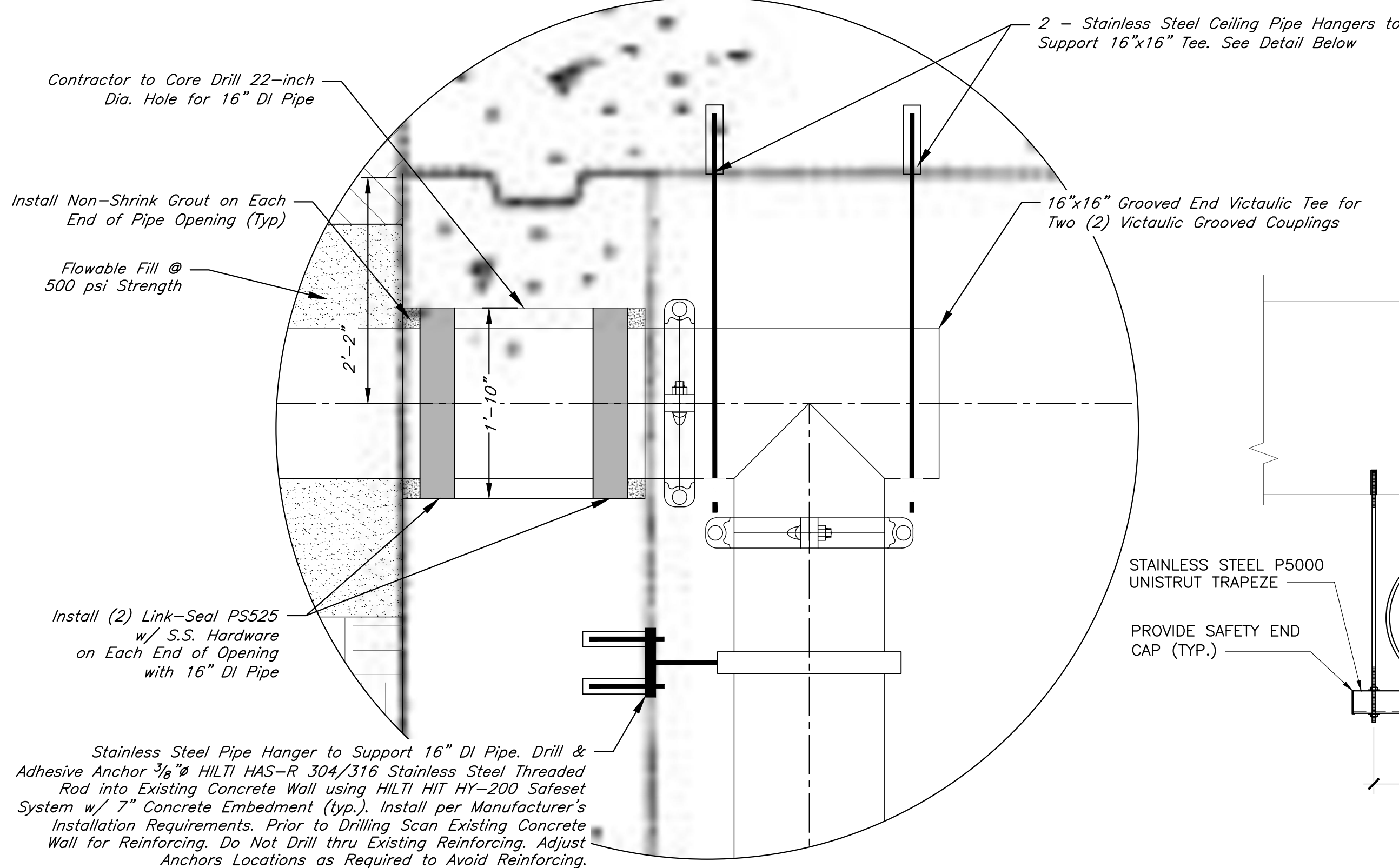
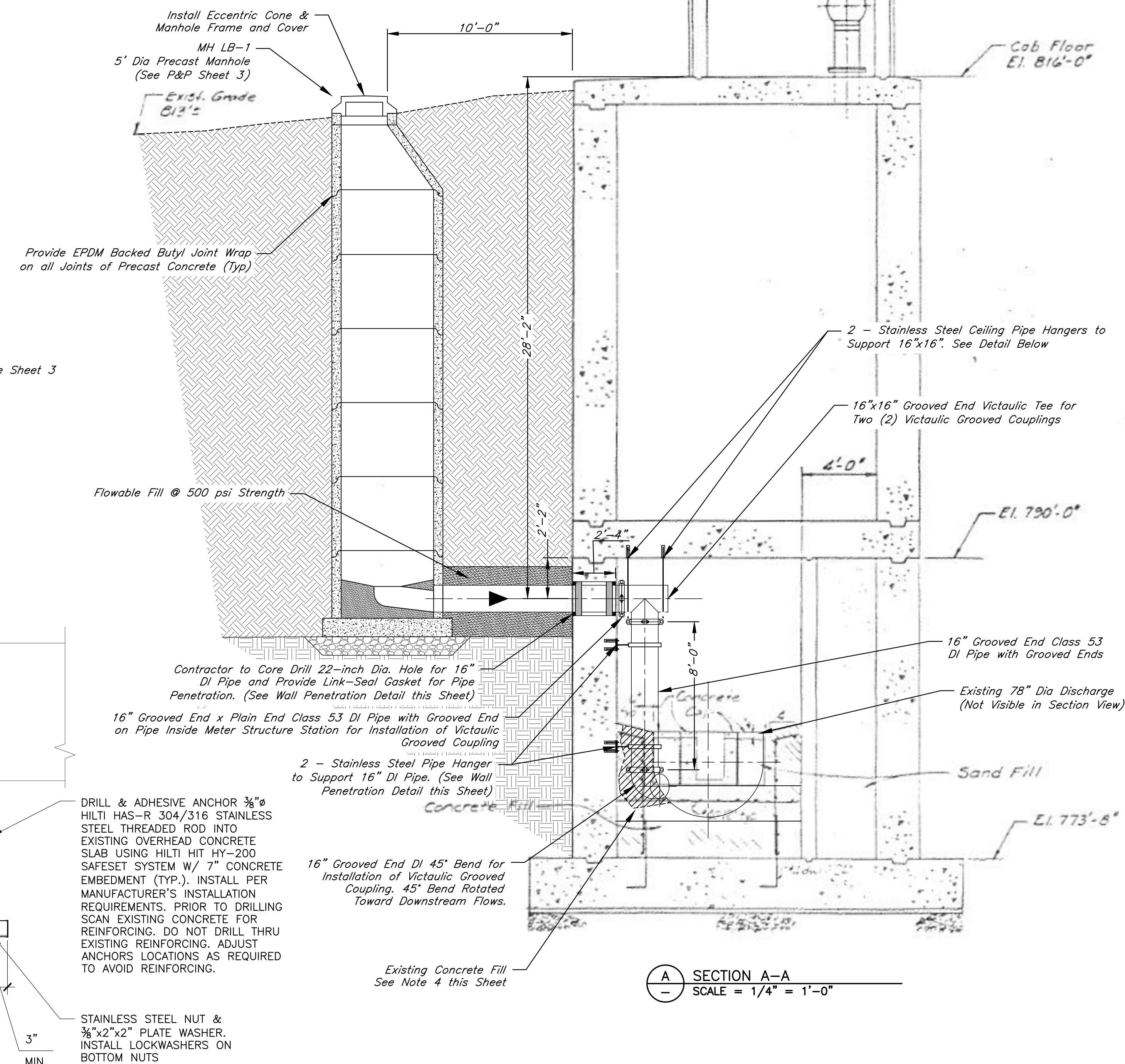
Grease Interceptor

G:\12720\Civil 3D\Production Drawings\Sanitary Sewer Plans - LS.MXD 127200601.dwg Layout: LBVSD Meter Structure Connection Plan -- Wednesday March 18, 2020, 10:21am -- Copyright 2000-2020 Timothy M. Schneller, Professional Engineer, 000025, Landscape Architect, 000025, Professional Land Surveyor, 000029



- Notes:
- The existing Meter Structure plan and section were provided by LBVSD. The dimensions, layout, and features were not field verified. The Contractor shall field verify the structure dimensions, layout, and features before beginning construction. Any discrepancies between the plan and actual conditions shall be immediately reported to the Engineer.
 - Existing equipment and electrical equipment at the existing Parshall flume are not shown on the drawings. The Contractor shall field verify locations prior to beginning construction. Any conflicts with proposed plan shall be immediately reported to the Engineer.
 - The lower levels of the Meter Structure are confined spaces. The Contractor's Health and Safety Plan shall address work to be completed in these spaces.
 - The installation of the drop pipe will require that the Contractor remove existing steel reinforced concrete fill bench. Following installation of the drop pipe, the Contractor shall fill the void between the remaining existing concrete fill bench and the new pipe with a non-shrink grout. The Contractor shall coat the non-shrink grout with one coat of 125 mil high-build epoxy suitable for corrosive wastewater environments.
 - New piping inside of the Meter Structure shall be coated with a high-build polyamine epoxy coating system. The coating system shall be Inspec Series 22 (or approved equal) with manufacture recommended surface treatment and primer.

		DATE: 3/18/2020	
		DESIGN BY: DMH	
		DRAWN BY: DMH	
		PROJECT NO.: 12720	
SHEET NO. 7		TOTAL SHEETS 17	
Timothy M. Schneller Professional Engineer License No. E-28562		Sanitary Sewer Plans Paragon Star Development Lee's Summit, Missouri	
		REVISIONS Sanitary Sewer City Comments 12-12-19	
NO.	DATE	BY	
1	12-27-19	APPROVED	

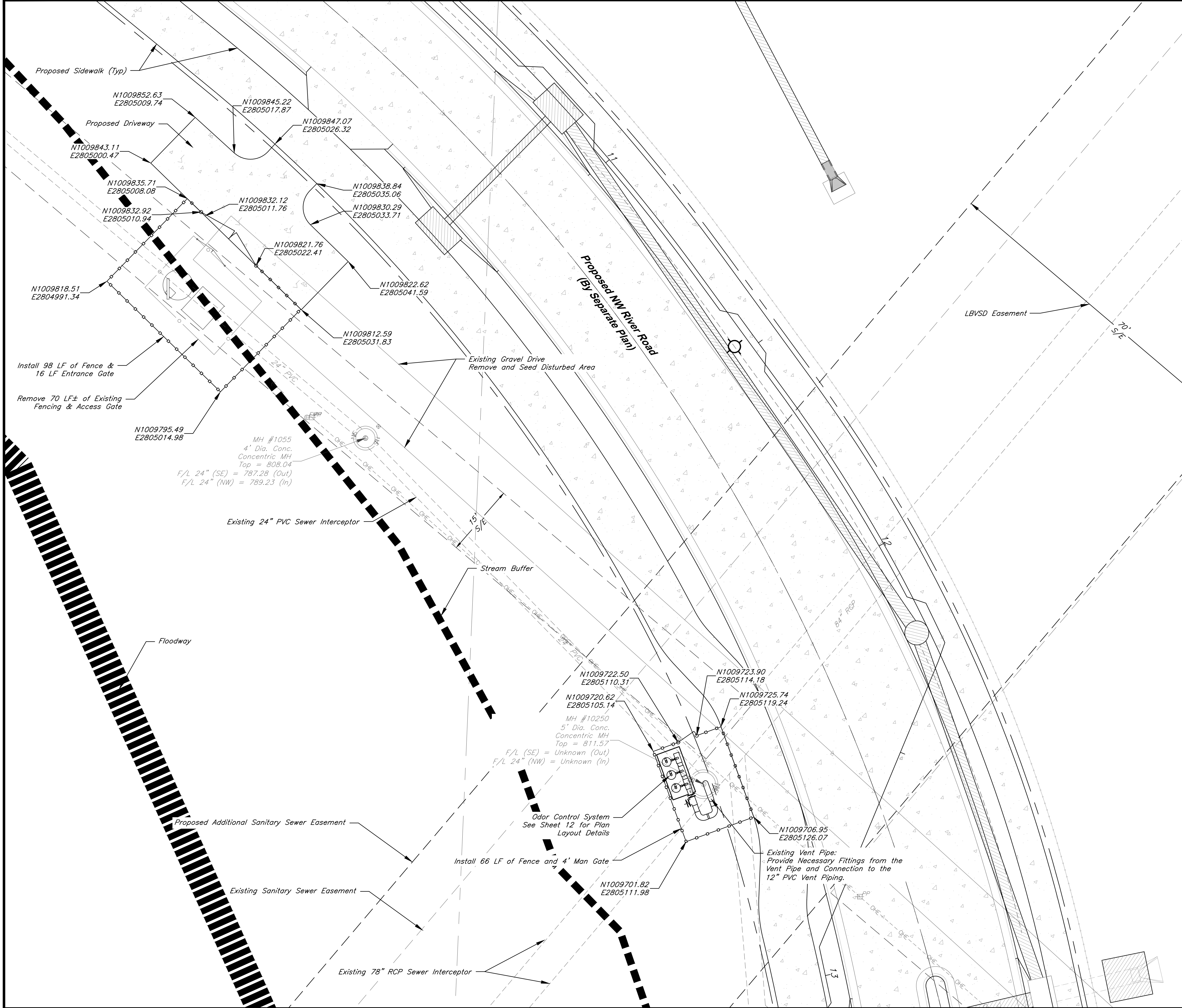


WALL PENETRATION DETAIL
NOT TO SCALE

CEILING PIPE HANGER DETAIL
NOT TO SCALE

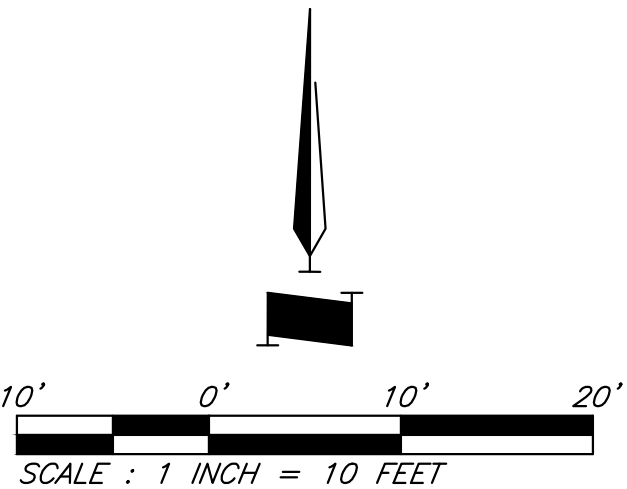
LBVSD Meter Structure Connection Plan

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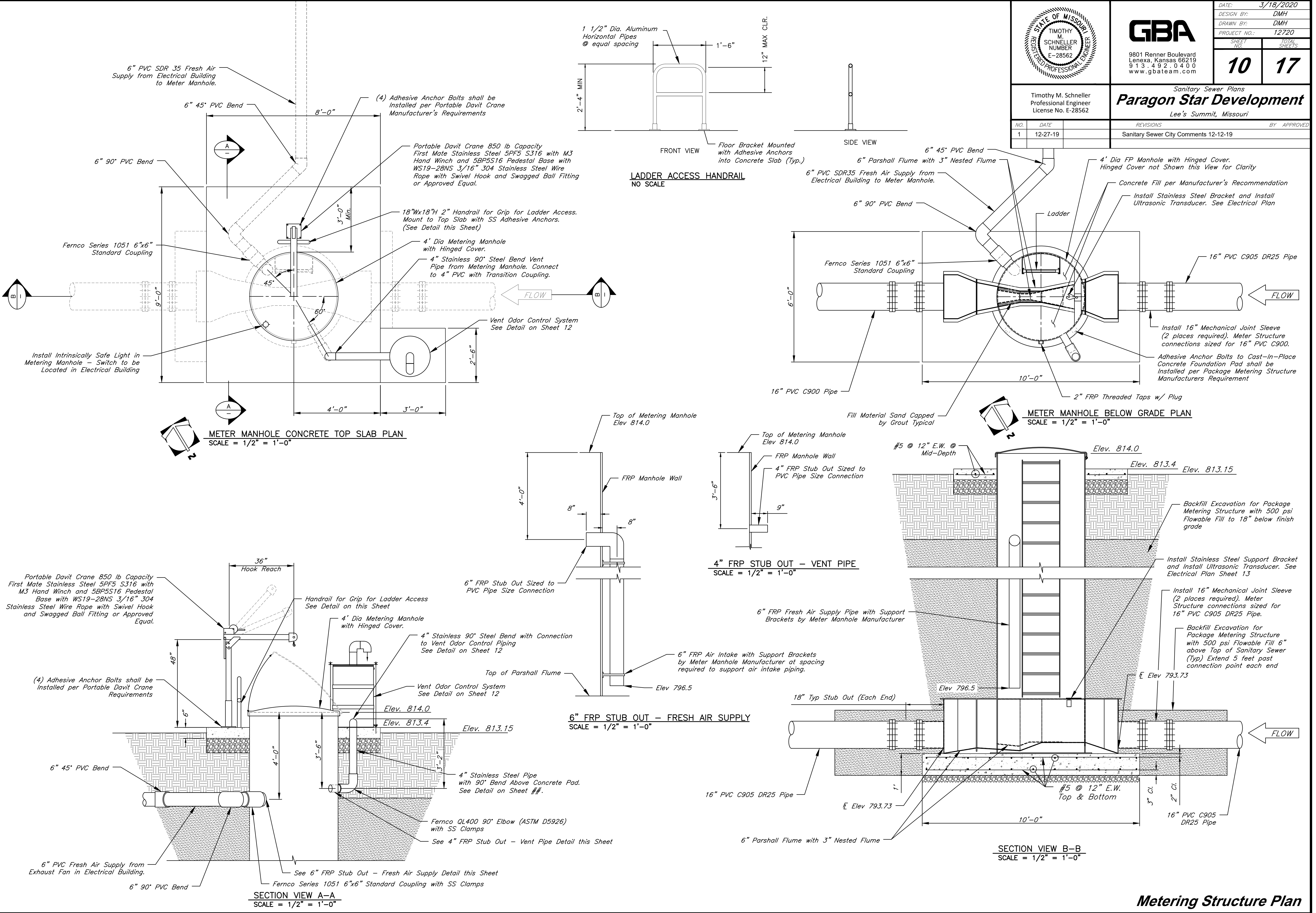
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		DRAWN BY: DMH	
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SHEET NO. 9		TOTAL SHEETS 17	
Timothy M. Schneller Professional Engineer License No. E-28562		Sanitary Sewer Plans Paragon Star Development Lee's Summit, Missouri	
NO. DATE		REVISIONS BY APPROVED	

LEGEND
LBVSD - Little Blue Valley Sewer District
S/E - Sewer Easement
EOS - End of Service Flow Line Elevation

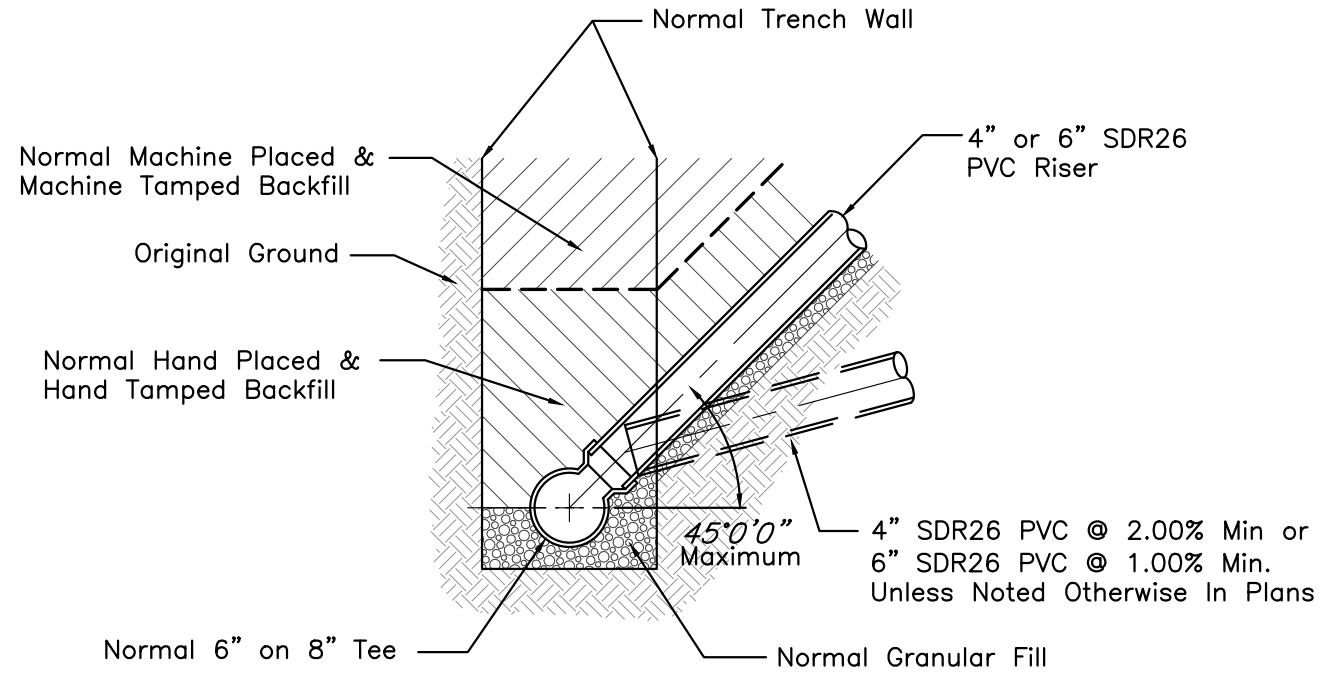
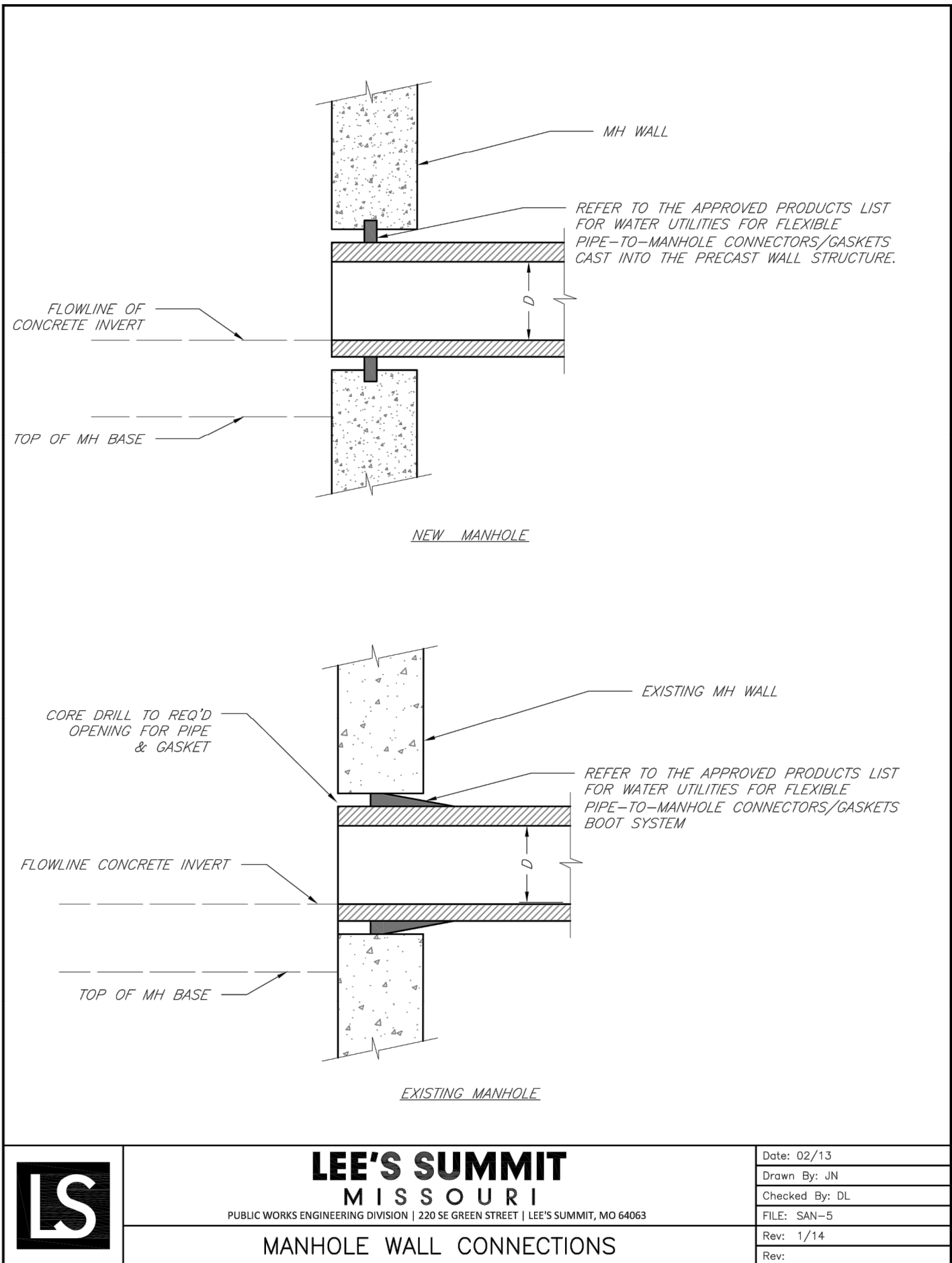
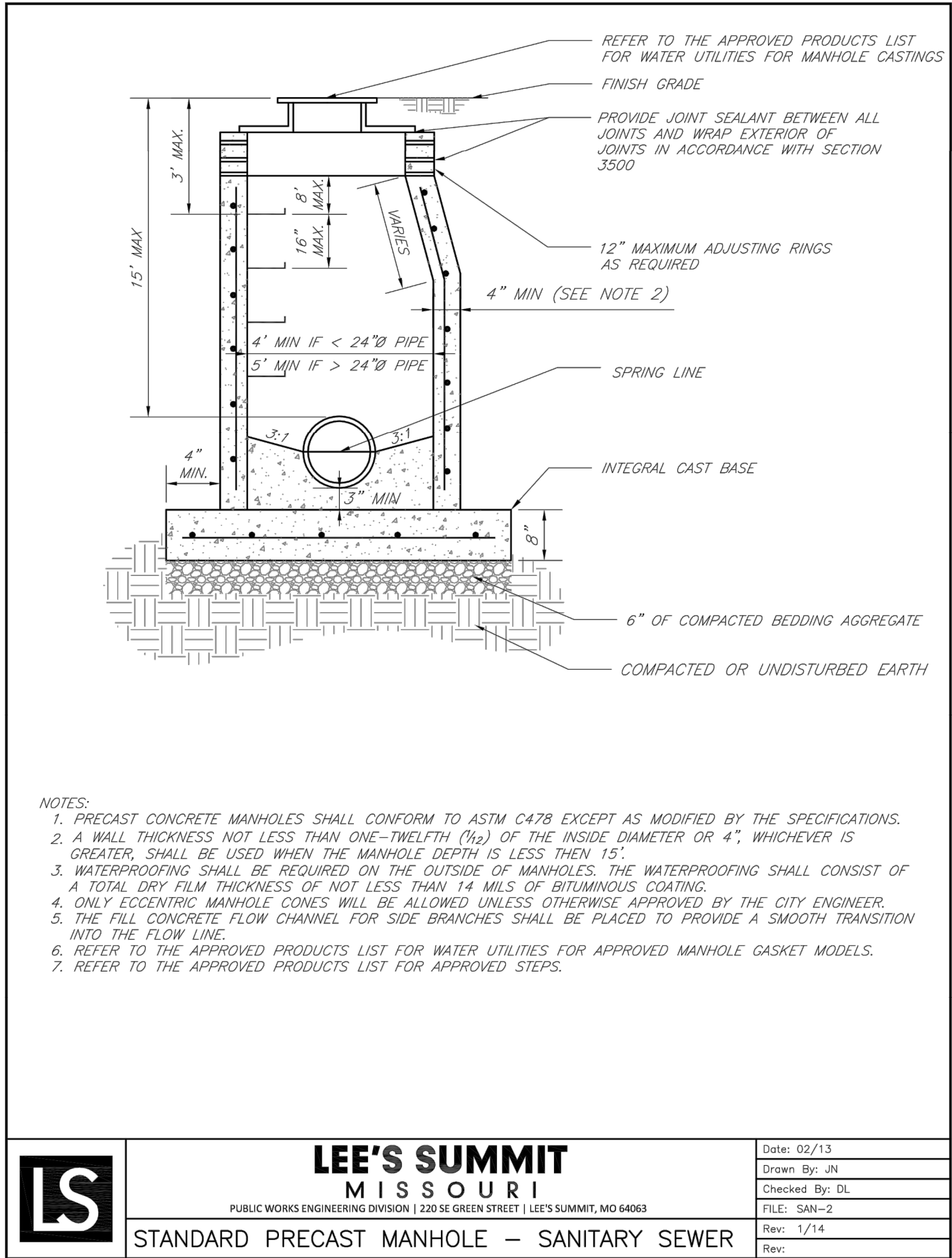


View High Metering Station Site Plan

C:\12720\civil 3d\Production Drawings\Sanitary Sewer Plans - 15 MW\127200601.dwg, Layout: 12 Metering Structure Plan --, Wednesday March 18, 2020, 10:24am -- Copyright 2020, George H. Schneller, Professional Engineer, 000133, Landscape Architect, 000025, Professional Land Surveyor, 000029



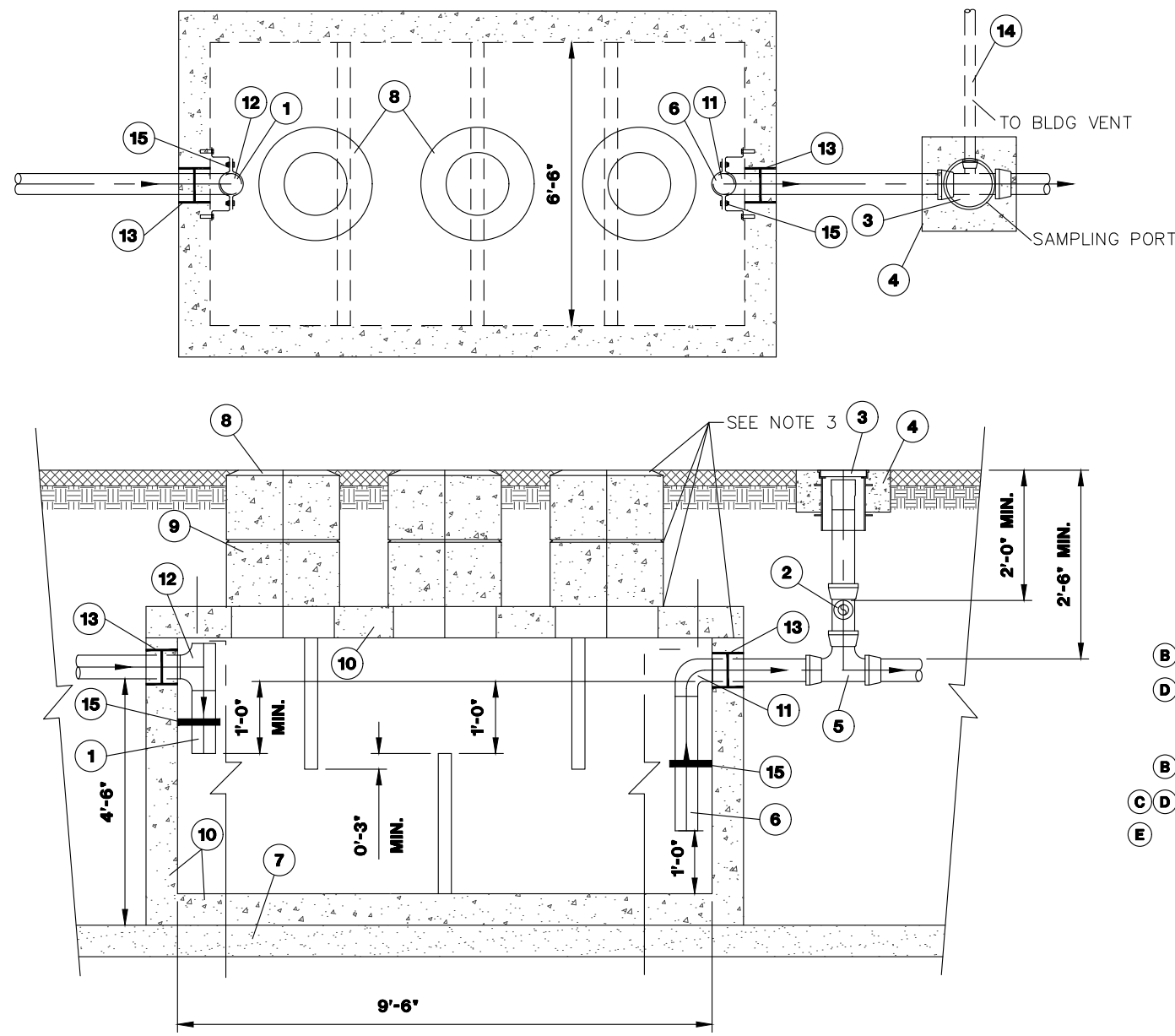
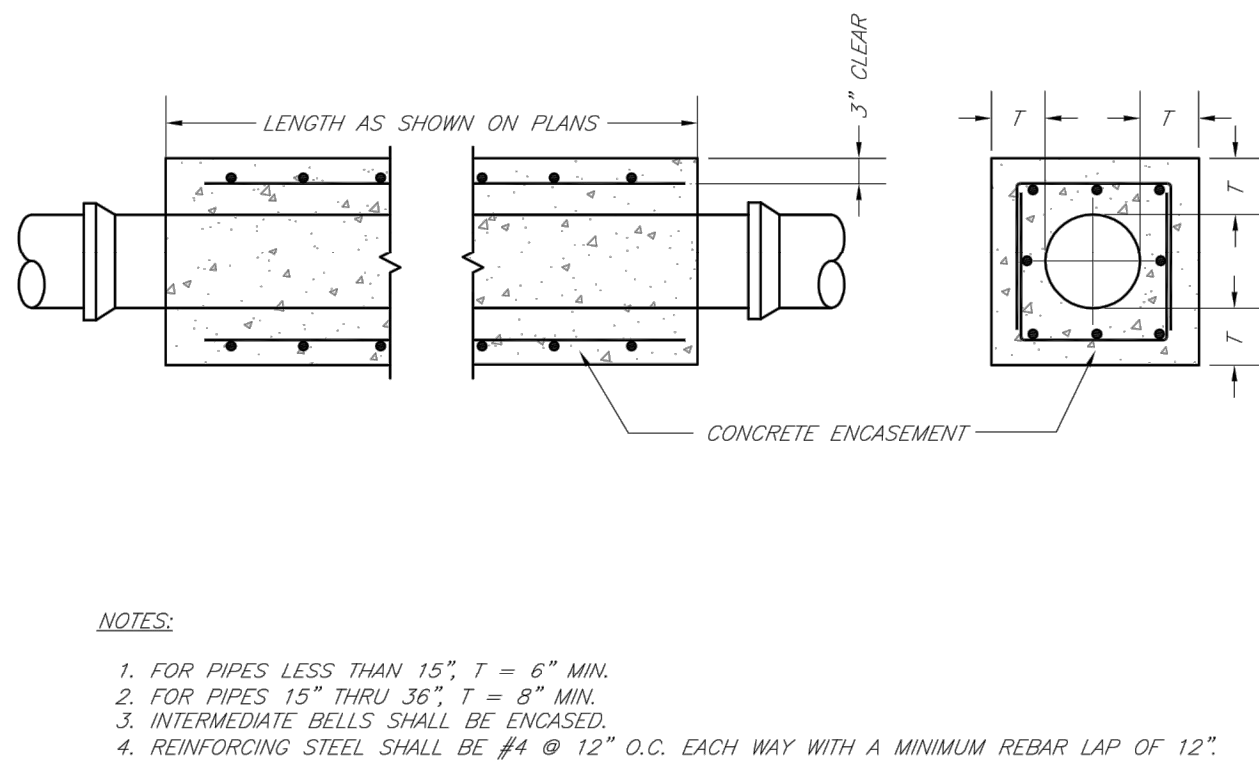
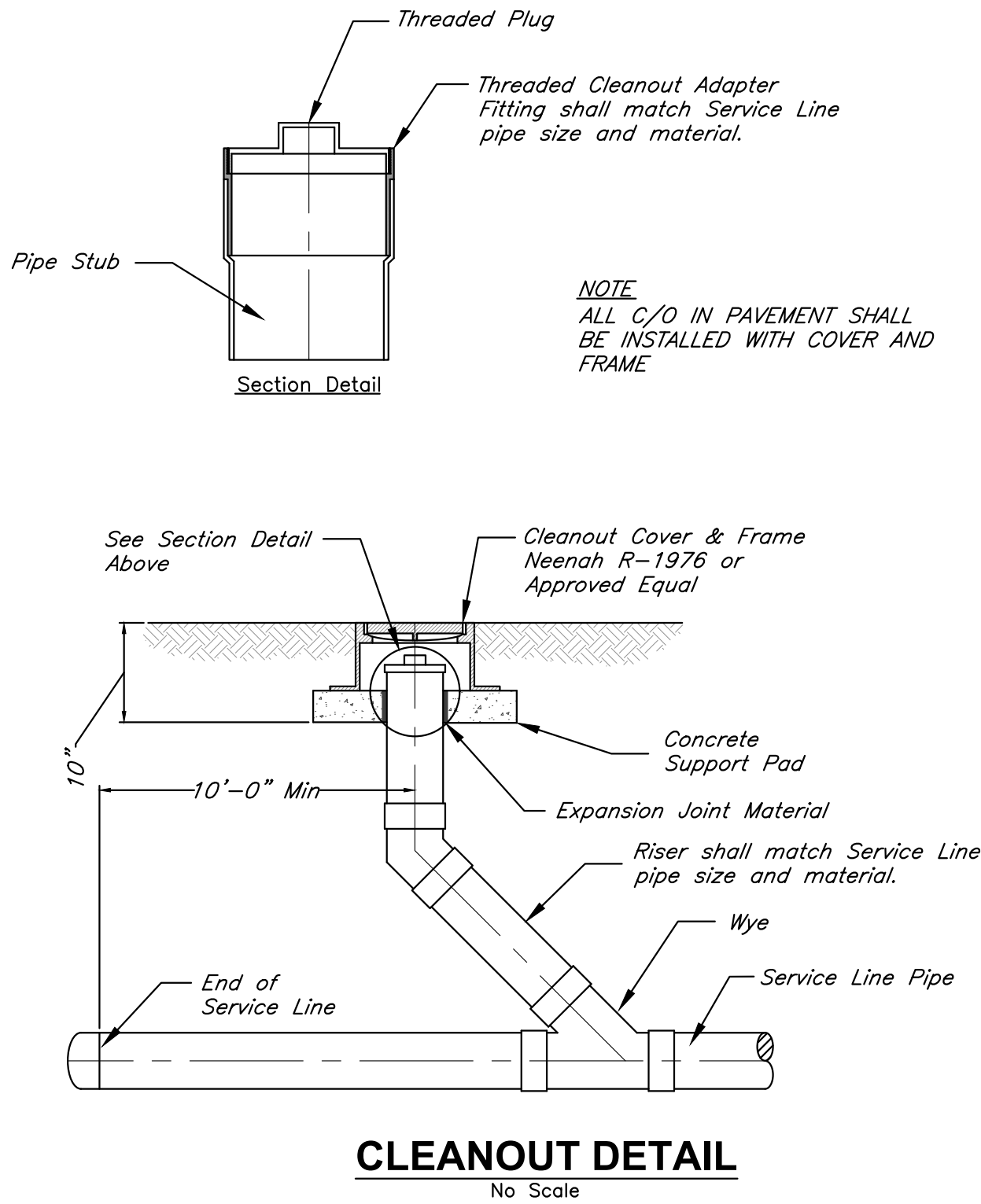
C:\12720\Civil 3D\Production Drawings\Sanitary Sewer Plans - LS.MXD | 12720C2300.dwg Layout: 16 Sanitary Sewer Details --- Wednesday, March 18, 2020, 11:04am --- Copyright 2020, George Hadericks@Gba2, Inc./Professional Engineer 0000133, Landscape Architect 000025, Professional Land Surveyor 000059



TEE ORIENTATION AND RISER DETAIL

Note:

1. Concrete anchors will be required where the service line is installed at a grade of 30' or greater. See Section 2536 of the Specifications and detail on this sheet.
2. No service line shall be installed with a grade greater than 45'.



GREASE INTERCEPTOR DETAILS

Not to Scale

ITEM	DESCRIPTION
1	4" ABS INLET PIPE*
2	4"x4"x2" TEE WITH 2" PIPE TO BUILDING VENT*
3	THREADED C/O CAP JOSAM 58860 OR APP EQUAL**
4	CONCRETE PAD
5	4"x4"x4" TWO-WAY CLEANOUT TEE*
6	4" ABS OUTLET*
7	4" - 6" GRAVEL BEDDING
8	HEAVY-DUTY CAST IRON FRAME AND COVER ***
9	CONCRETE ADJUSTMENT RINGS
10	REINFORCE AS REQUIRED FOR SERVICE CONDITIONS
11	4" ABS 90° ELBOW*
12	4" ABS TEE*
13	A-LOK OR PRESS SEAL PSX PIPE/WALL CONNECTOR
14	2" VENT PIPE (IDENTIFY PIPE TYPE, CLASS & JOINT AS REQUIRED FOR PROJECT)
15	STAINLESS STEEL PIPE SUPPORT CLAMP ****

* 6" PIPE MAY BE SUBSTITUTED TO MATCH UPSTREAM PIPE DIAMETER.
** REFER TO CLEAN OUT DETAIL(S) ON STANDARD DETAIL SHEET.
*** CLAY & BAILEY 2008 BV OR EQUAL (ROST PROOF COVERS OPTIONAL)
**** FM STAINLESS FASTENERS #63 OR EQUAL. 1/2"x2-1/2" SS BRACKET W/ 1/2"x1-1/2" FULLY THREADED SS HEX BOLT WITH 1/2" SS WASHER AND 1/2"x1-3/4" SS ANCHORS. CLAMP TO BE FACTORY INSTALLED.

NOTES:

1. THREE COVERS AND RISERS SHOWN. TWO COVERS AND RISERS CENTERED OVER UPPER TWO BAFFLES ARE OPTIONAL.
2. INTERCEPTOR SIZE - 2000 GAL (REVISE THE SIZE DIMENSIONS, AS NEEDED, FOR LARGER CAPACITY INTERCEPTORS)
3. ALL JOINTS AT THE FRAME & COVER*, CONCRETE ADJUSTMENT RINGS AND THE LID OF THE INTERCEPTOR SHALL BE SEALED WITH A MINIMUM OF TWO (2) ROWS OF 3/4 TO 1 INCH PREFORMED BUTYL JOINT SEALER AND A 6" BUTYL JOINT WRAP AROUND SLEEVE (EZ WRAP). THE ENDS OF THE 6" EZ WRAP SHALL OVERLAP BY 12".
4. PIPING ON THE INTERIOR OF THE INTERCEPTOR SHALL BE ABS WITH SOLVENT-CEMENTED JOINTS.
5. GREASE INTERCEPTOR INCLUDING ADJUSTMENT RINGS AND CASTINGS SHALL BE VACUUM TESTED FOR WATER TIGHTNESS AFTER THE BACKFILL OPERATIONS HAVE BEEN COMPLETED IN ACCORDANCE WITH LEE'S SUMMIT TECHNICAL SPECIFICATIONS. A VACUUM OF 10 INCHES OF MERCURY SHALL BE DRAWN AND WITH THE VACUUM PUMP SHUT OFF THE MERCURY SHALL NOT DROP BELOW 9 INCHES WITHIN 1 MINUTE OR BELOW 5 INCHES WITHIN 5 MINUTES.

G:\12720\Civil 3D\Production Drawings\Sanitary Sewer Plans - (LS MW) 12720220061.dwg Layout: 17 Sanitary Sewer Scrubber Details -- Wednesday, March 18, 2020, 10:24am -- Copyright 2006-2020 GBA, All Rights Reserved. Engineer: 0000133, Landscape Architect: 000025, Professional Land Surveyor: 0000259

STATE OF MISSOURI
TIMOTHY M. SCHNELLER
NUMBER E-28562
REGISTERED PROFESSIONAL ENGINEER

9801 Renner Boulevard
Lenexa, Kansas 66219
913.492.0400
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DATE: 3/18/2020
DESIGN BY: TMS
DRAWN BY: DMH
PROJECT NO.: 12720
SHEET NO. 12
TOTAL SHEETS 17

Timothy M. Schneller
Professional Engineer
License No. E-28562

Sanitary Sewer Plans
Paragon Star Development
Lee's Summit, Missouri

REVISIONS
1 12-27-19
Sanitary Sewer City Comments 12-12-19

BY: APPROVED

The diagram illustrates the details of a sanitary sewer scrubber system, showing both elevation and plan views for a meter station and a high meter station.

ELEVATION VIEW METER STATION (SEE SHEET 8 & 10)
SCALE = 1" = 1'-0"

This view shows a single scrubber unit. Key components include:

- 4" PVC Piping (Typ.)**: Connected to the meter manhole.
- 4" PVC Goose Neck**: Connects the piping to the scrubber.
- 55-Gallon Tie-Down Kit**: Used to secure the scrubber.
- Passive Carbon Odor Control Canister**: Labeled as VENTSORB PE, CARBTROL "G", or Engineer Approved Equal.
- Concrete Pad**: The base for the scrubber.
- Existing Grade**: Indicated by a dashed line.
- 4" Min of 3/4" Clean Crushed Rock**: A layer beneath the concrete pad.
- 2" Cl.**: A 2-inch clearance between the scrubber and the rock.
- Install Tie-Down Bolt into Concrete Pad with Epoxy Adhesive (Typ.)**: A note for securing the unit.

VIEW HIGH METER STATION (SEE SHEET 9)
SCALE = 1" = 1'-0"

This view shows three scrubber units in a row. Key components include:

- 12" Piping Shown for Clarity**: A note indicating the 12-inch piping.
- 12" Schedule 80 PVC Flange**: Located at the top of the piping.
- 12" PVC Wafer Check Valve 2 Required**: Valves on the piping.
- 4" Isolation Valve 3 Required**: Valves on the piping.
- 12" Schedule 80 Spigot Flange**: Located at the bottom of the piping.
- 12"x12" Schedule 80 PVC Flange Tee**: A tee fitting for the piping.
- 12" Schedule 80 PVC Interconnecting Piping (Typ.)**: The main piping connecting the units.
- 12"x4" Schedule 80 PVC Reducing Tee 3 Required**: Reducing tees for the piping.
- 4" Schedule 80 PVC Goose Neck 3 Required**: Goose necks for the piping.
- 55-Gallon Tie-Down Kit (1 per Drum)**: Kits for securing the units.
- Passive Carbon Odor Control Canisters: VENTSORB PE, CARBTROL "G", or Engineer Approved Equal (3 Required)**: Canisters for odor control.
- Concrete Pad**: The base for the scrubbers.
- Existing Grade**: Indicated by a dashed line.
- 4" Min of 3/4" Clean Crushed Rock**: A layer beneath the concrete pad.
- 2" Cl.**: A 2-inch clearance between the scrubbers and the rock.
- Install Tie-Down Bolt into Concrete Pad with Epoxy Adhesive (Typ.)**: A note for securing the units.

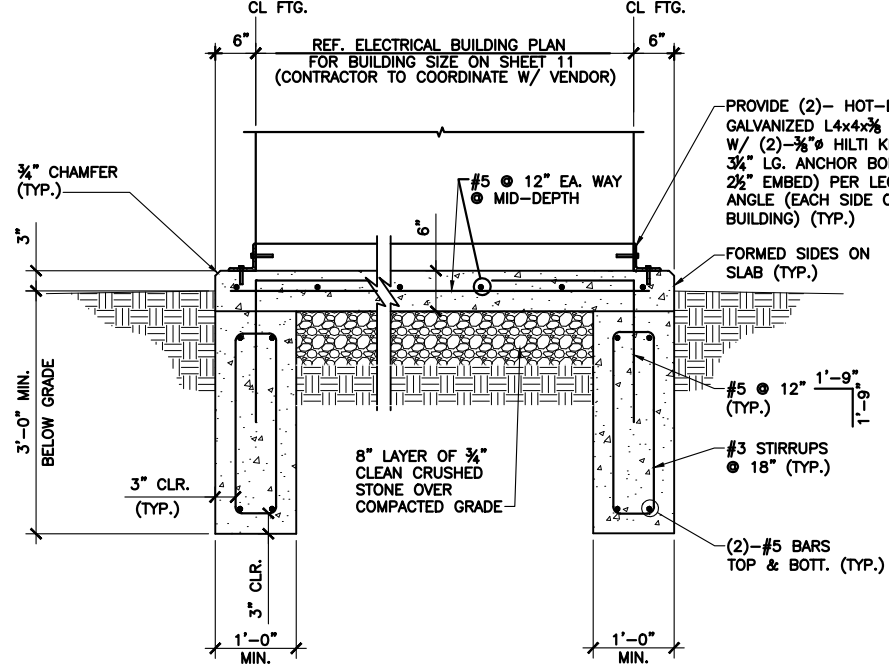
SANITARY SEWER SCRUBBER DETAILS

G:\12720\Civil 3D\Production Drawings\Sanitary Sewer Sewer Plans - (LS MW)\12720\0601.dwg Layout: 13 Electrical Building Plan -- Wednesday, March 18, 2020, 10:24am -- Copyright 2020, George Balliet&Sons00246g, Professional Engineer, 000133, Landscape Architect, 000025, Professional Land Surveyor, 000039

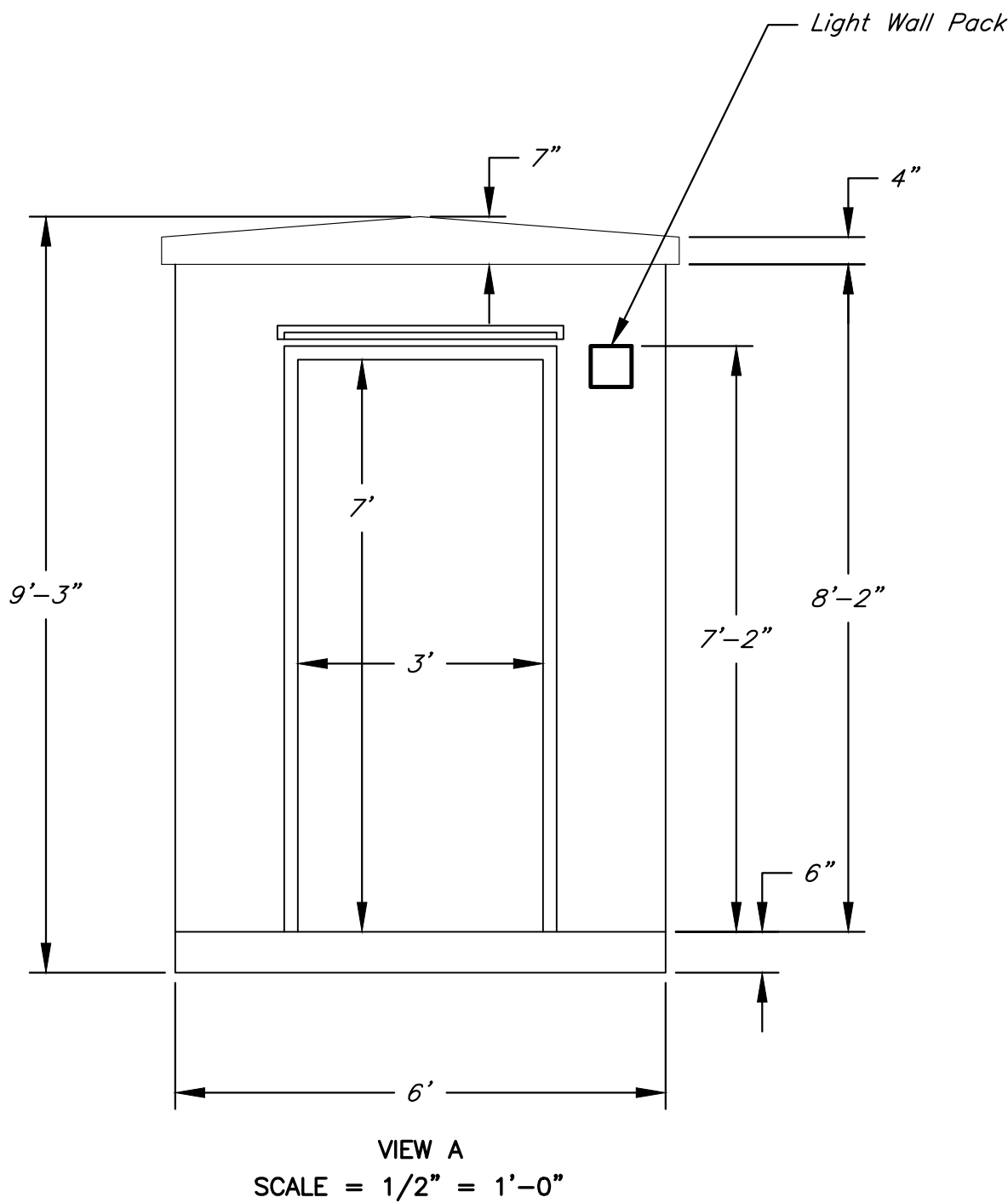
Pre-cast Concrete Building Specification:

1. The supplier's equipment shelters shall be prefabricated and complete when transported to the site. The floors, walls and roof shall be constructed of pre-cast concrete panels with a minimum thickness of 4-inches. The dimensions of the shelter shall match those shown on the drawings.
2. The shelter shall be loaded and anchored onto a perimeter grade beam foundation shown on the Drawings. The grade beam shall be poured prior to the setting of the precast box. The supplier shall provide sufficient anchorage in a minimum of four (4) locations, one in each corner. The anchor plates and anchor bolts shall be galvanized or stainless steel.
3. Structural Design:
- A. The shelter's structural design, including the perimeter grade beam foundation shall be performed and certified by a qualified professional engineer who is legally authorized to practice in the jurisdiction where the Project is located.
- B. The perimeter grade beam foundation has been designed based on an assumed soil bearing capacity of 1500 psf. Contractor shall be responsible for employing a competent Geotechnical Engineer to verify that these minimum soil values exist prior to construction.
- C. The concrete roof shall be designed to support a minimum live load of 140 psf for roof spans up to 8-feet wide.
- D. The shelter shall be designed to withstand winds in excess of 150 miles per hour.
- E. The shelter and foundation shall be designed to meet or exceed seismic design Category B requirements.
4. Materials:
- A. REINFORCEMENT: Reinforcement of concrete panels shall conform to ASTM A615 Grade 60 and ACI 318-08. Welded wire fabric reinforcement shall conform to ASTM A185 (fy=60,000 psi) and ACI 318.
- B. CEMENT: Portland cement shall conform to ASTM C150 Type I or Type III.
- C. SAND: Sand shall conform to ASTM C33.
- D. AGGREGATE: Lightweight coarse aggregate shall conform to ASTM C330. Coarse aggregate shall be 3/4 -inch nominal maximum size.
- E. ADMIXTURES:
- (1) Air entraining admixtures shall conform to ASTM C260.
- (2) Water reducing admixtures shall conform to ASTM C494.
- F. WATER: Mixing water shall be clean and free of oils, acids, alkalis, salts, organic minerals, or other substances harmful to concrete or reinforcement. Non-potable water shall not be used.
- G. STRUCTURAL STEEL: Structural steel plate and shapes shall conform to ASTM A36.
- H. DOOR AND FRAME: The shelter shall have one (1) flush panel aluminum door and aluminum frame as specified in Section 08100 of these specifications. The doors shall be provided with hardware as specified in Section 08700 of these specifications.
- I. INSULATION: Insulation shall be R-18 as determined by ASHRAE Standard 90. The shelter supplier shall provide thermal calculations showing the corrected U-value for the assembly. Insulation shall adhere to Federal Specification HH-I-1972/1 and UL Class A.
- J. INTERIOR FINISH: The finish for the interior walls and ceiling shall be fiberglass reinforced plastic (FRP) paneling and white vinyl trim at all joints.
5. Execution:
- A. CONCRETE:
- (1) Concrete compressive strength shall have a design mix of at least 3,000 psi at 7 days and 4,000 psi at 28 days.
- (2) At the time of form removal, concrete compressive strength shall be at least 2,000 psi, and verified by ASTM C39 or impact hammer test. Concrete shall be cured in the forms and protected from moisture loss, freezing, and excessive heat until compressive strength reaches this minimum.
- (3) Concrete shall have a slump of 1-inch to 3-inch before the addition of the superplasticizer.
- (4) Concrete shall contain 4% to 6% entrained air, as measured in conformance with ASTM C173, C231, or the air indicator method.
- (5) Cement and aggregate shall be stored in such a manner as to prevent deterioration or intrusion of foreign matter. Any deteriorated or contaminated cement shall not be used for concrete.
- (6) Concrete samples for strength tests shall be taken for each concrete batch. Four (4) samples shall be prepared: one (1) for 7 day test, two (2) for 28 day test, and one (1) spare.
- (7) Samples for strength tests shall be taken in accordance with ASTM C172, molded in accordance with ASTM C31, and tested in accordance with ASTM C39.
- (8) Boxes that fail to meet the 7 day strength requirements shall be rejected.
- (9) Cured concrete shall have a density of 90-120 pcf, as determined by weighing test samples prior to strength testing.
- (10) Concrete shall be measured, mixed, transported and placed in conformance with ACI 304R.
- (11) Concrete cover for reinforcing steel shall be determined according to ACI 318.
- (12) Concrete shall be consolidated in conformance with ACI 309R Chapter 3.
- (13) Provisions for cold weather concreting shall conform to ACI 305R.
- (14) Provisions for cold weather concreting shall conform to ACI 306R.
- (15) All cracks, chips, etc. that do not affect the structural integrity of the racked member shall be repaired, if required, for aesthetic purposes, and conform to ACI 224.1R or equivalent. Repairs shall not be visually distracting, and shall be watertight.

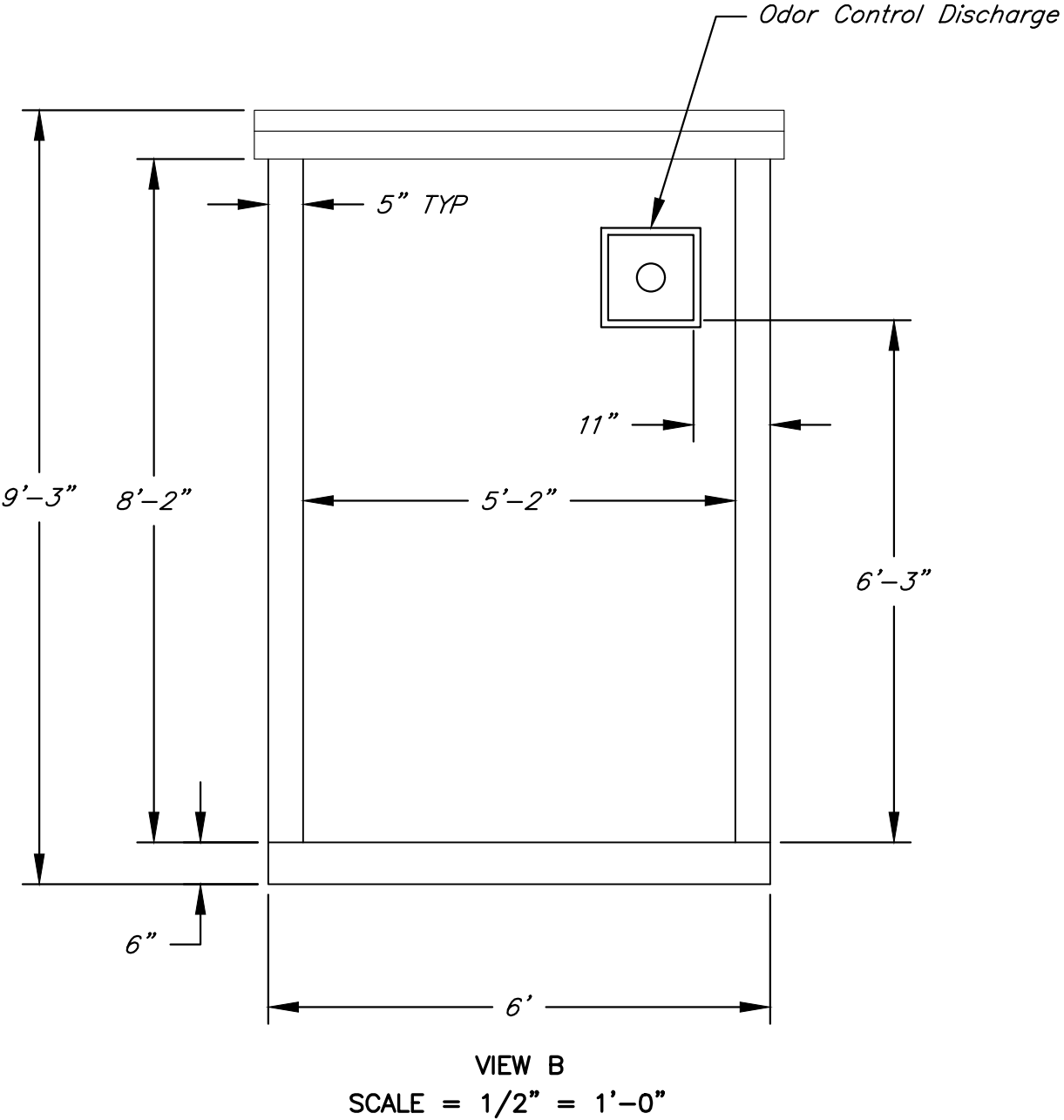
- (16) Severe craters, spalling, honeycombing, etc., shall be evaluated by the supplier's engineering department before repairs are attempted. Any appreciable impairment of the structural adequacy shall be cause for rejection.
- (17) Copies of the test data, including slump, air content, density, and compressive strength, shall be provided to the Engineer after the 7 day and 28 day breaks. The tests shall be performed by a qualified testing laboratory and paid for by the shelter supplier.
- B. ROOF CONSTRUCTION:
- (1) The shelter shall have a 4-inch thick (minimum) concrete sloped panel roof.
- (2) Reinforcement shall be #4 bars or larger (Grade 60 KSI) spaced according to building width and loading requirements.
- C. WALL CONSTRUCTION:
- (1) The shelter's walls shall be 4-inch thick (per ACI 318-08 Chapter 14), flat, concrete panels with welded wire fabric (WWF) 4"x 4", with reinforcement along panel edges and around door and other openings.
- (2) Outside surfaces of wall panels shall be in accordance with ACI 318-08 Chapter 6.
- (3) Door frames shall be galvanized steel, painted, and cast into the concrete wall panel.
- D. FLOOR CONSTRUCTION:
- (1) The floor shall be a flat slab design and a minimum of 4" thick.
- (2) Reinforcement shall be a minimum of WWF 4" x 4" -W4 x W4 in the flange (deck).
- (3) The floor shall be provided with housekeeping pads as required for the proposed electrical equipment and openings for the proposed penetrations.
- (4) The floor shall contain provisions for lifting the shelter and for securing it to the foundation.
- E. PANEL CONNECTIONS:
- (1) Panel-to-panel connections shall be welded using plates that are cast into the floor, roof, and wall panels.
- (2) Welding shall conform to AWS D1.1 and AWS D1.4.
- (3) Panel construction shall conform to ACI 318-08.
- F. FINISHES:
- (1) The exposed concrete surfaces of the building shall have a light Commercial Blast Cleaning to remove all form lines prior to shipping and all exterior concrete surfaces shall be clean and free of voids when delivered to the site.
- (2) The wall panels shall be provided with reveals as indicated on the drawings. After the structure is delivered to the site and in place, the structure shall receive the same light sandblast finish that the cast-in-place structure is to receive. Building provider shall include in his price the cost of this sandblast finish.
- (3) All metal surfaces shall be prepared with a SSPC-SP6 Commercial Blast Cleaning, primed with one coat of epoxy primer, and a finish coat of aliphatic polyurethane. The color of the finish coat shall be selected by the Owner. A spare can of paint shall be provided to the Owner for touch-up.
- (4) The interior walls and roof shall be insulated and finished with the interior architectural paneling.
- G. TRANSPORTATION AND SETUP:
- (1) Transportation: The shelter supplier shall be responsible for transporting shelters to final destination utilizing a tractor trailer combination designed to haul over-width, overheight, and overweight shelters to remote sites per DOT regulations. Trailers shall have air-ride suspension.
- (2) Off Loading: The shelter supplier shall provide a crane adequate to off load the shelter to the foundation. Shelter supplier shall provide detailed off loading drawings depicting recommended rigging requirements to facilitate the shelter off load process.
- (3) On-Site Services: The shelter supplier shall provide trained supervision throughout the loading process.
6. Shop Drawings: Six (6) sets of professional engineer sealed shop drawings and calculations shall be supplied for review by the Engineer prior to the construction of the shelter. The drawing package shall include but not be limited to the following:
- A. Finished Interior Details
- B. Shelter Layout and Dimensions Showing Openings for Mechanical Equipment, Housekeeping Slabs and Floor Penetrations
- C. List of Materials



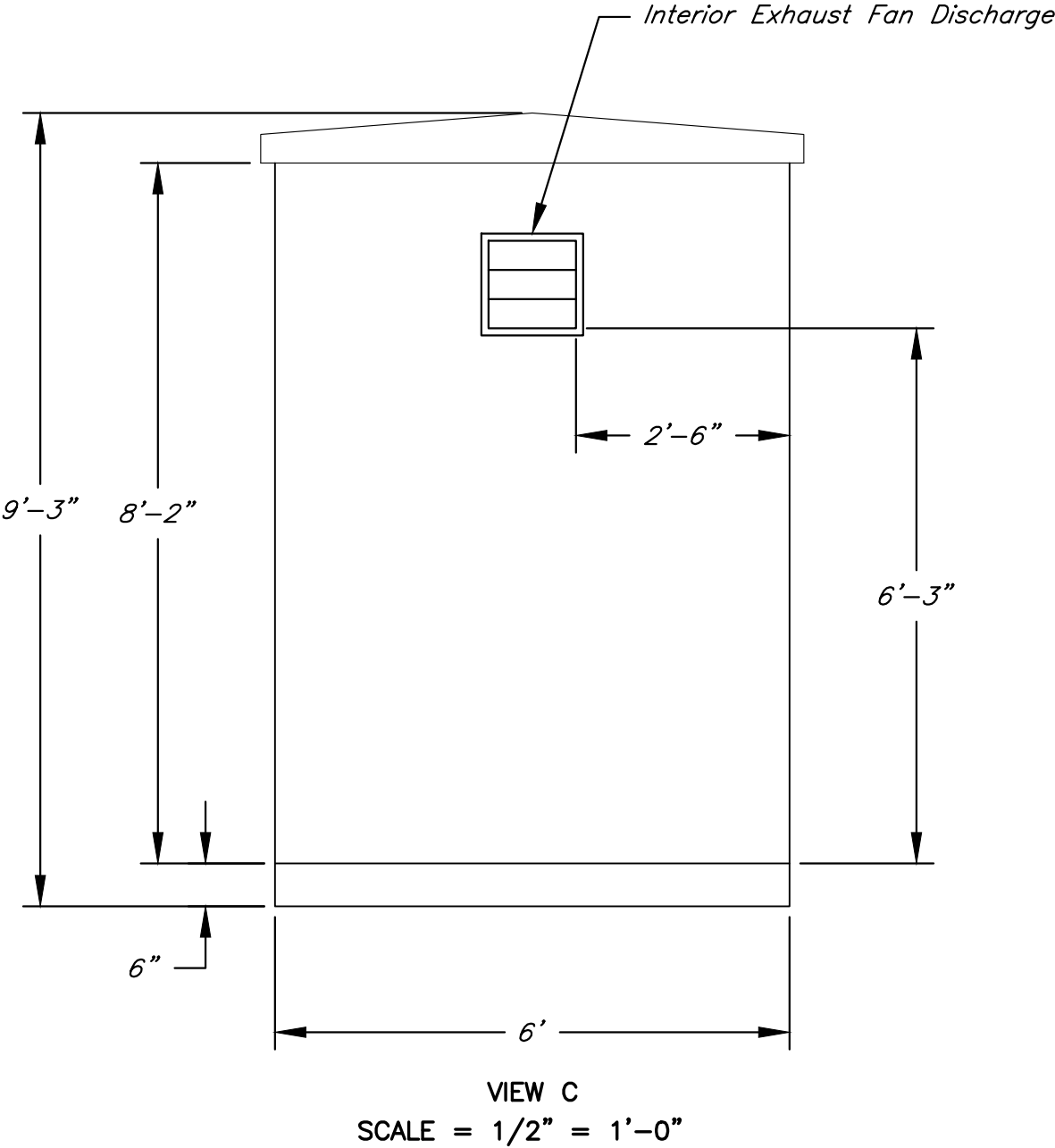
ELECTRICAL BUILDING FOUNDATION DETAIL
SCALE: N.T.S.



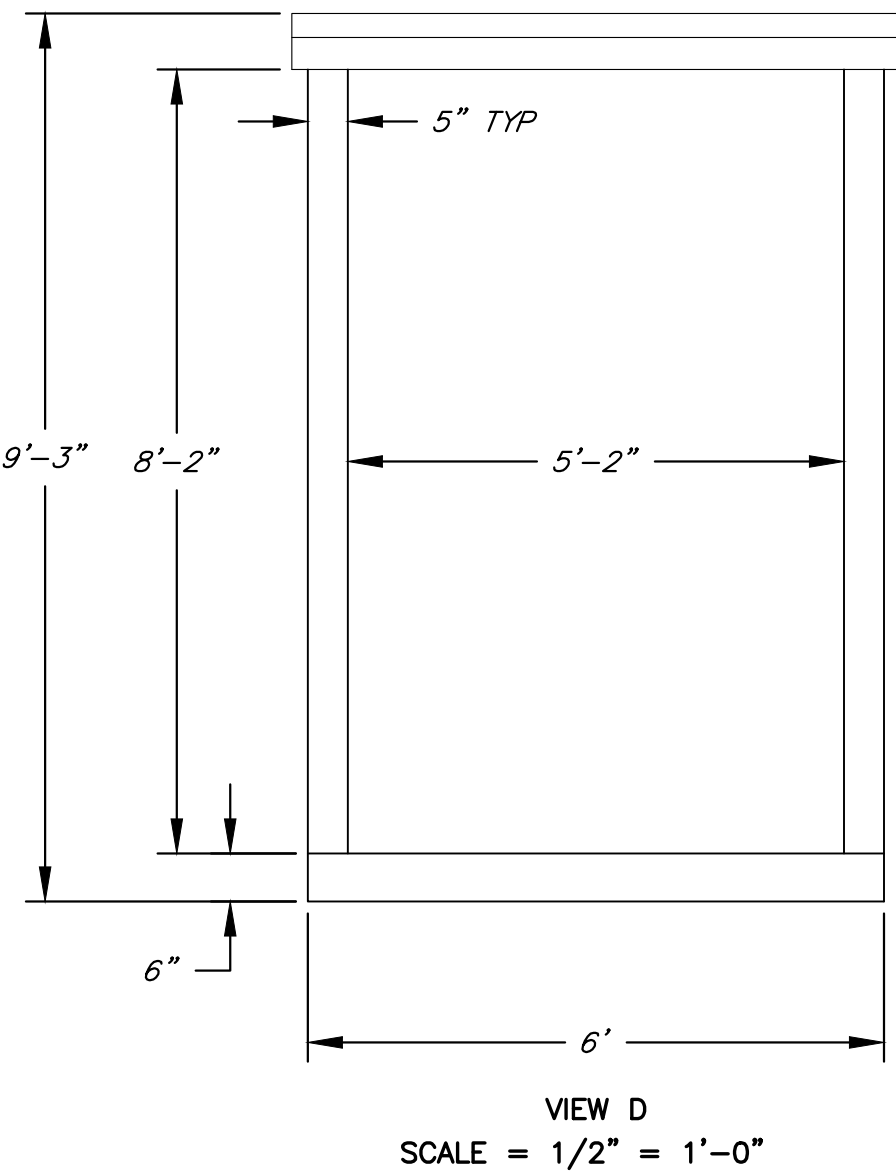
VIEW A
SCALE = 1/2" = 1'-0"



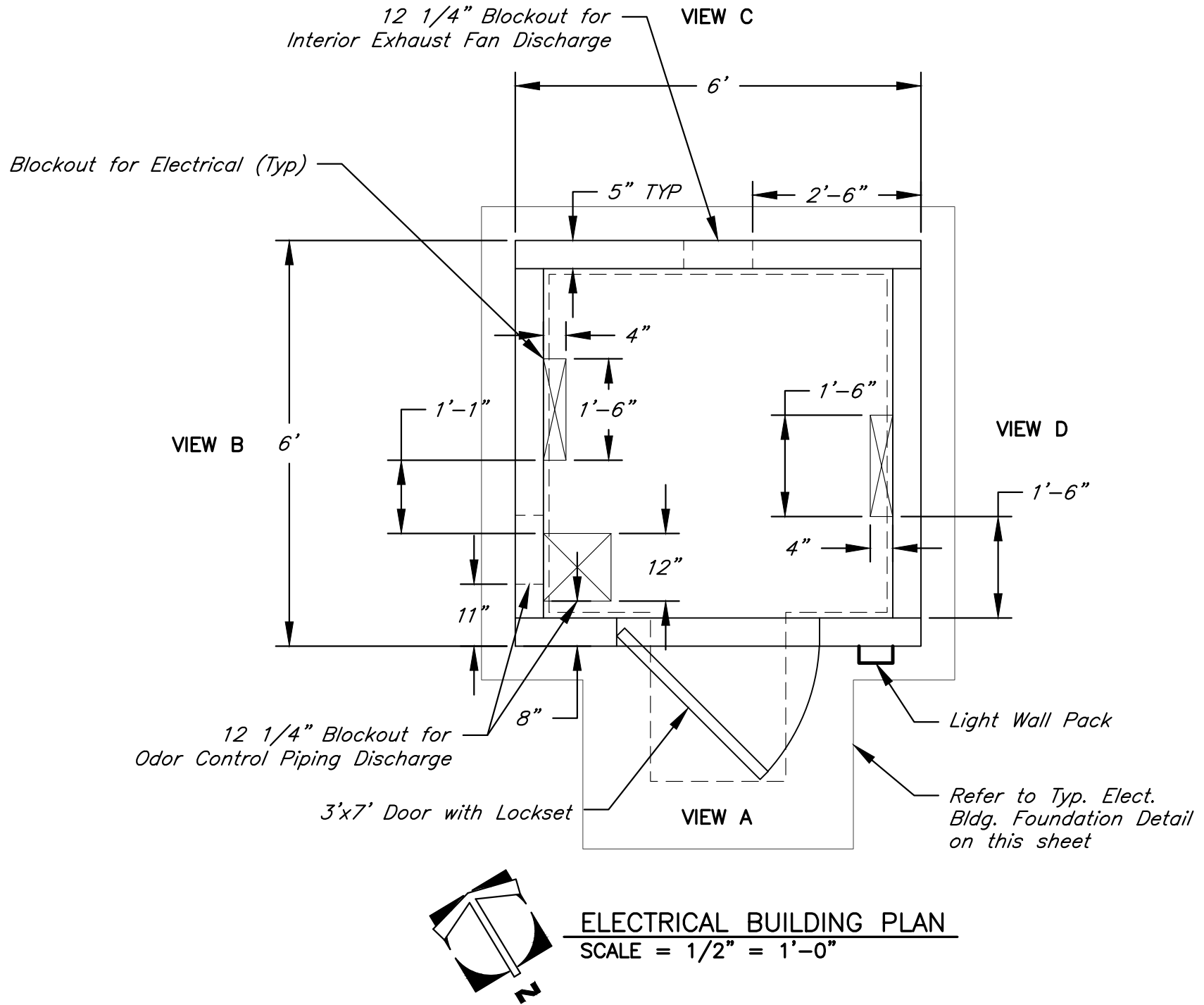
VIEW B
SCALE = 1/2" = 1'-0"




VIEW C
SCALE = 1/2" = 1'-0"



VIEW D
SCALE = 1/2" = 1'-0"



G:\12720\Civil 3D\Production Drawings\Sanitary Sewer Plans - (S MWD\Electrical)\12720E002 - specs 1.dwg Layout: 14 12720E000 - SHEET 14 -- Wednesday, March 18, 2020, 11:04am -- Copyright©2002 CadSoftEngineering, Inc.000133, Landscape Architect 000025, Professional Land Surveyor 000059

NOT FOR CONSTRUCTION	 9801 Renner Boulevard Lenexa, Kansas 66219 913.492.0400 www.gbateam.com	DATE: 3/18/2020	
		DESIGN BY: AMG	
		DRAWN BY: AMG	
		PROJECT NO.: 12720	
		SHEET NO.	TOTAL SHEETS
14	17		
		Sanitary Sewer Plans Paragon Star Development Lee's Summit, Missouri	
NO.	DATE	REVISIONS	
1	12-27-19	Sanitary Sewer City Comments 12-12-19	
		BY: APPROVED	

Project: 000099
Subject: 000099
Revision: 000099
Sewer Pipe
G:\12720\Civil\301\12720

- a. MOTOR CONTROL CENTERS.
b. MOTOR CONTROL CENTER FEEDER AND BRANCH DEVICES.
c. MECHANICAL EQUIPMENT WITH ELECTRICAL CONNECTIONS.
d. ENCLOSED SWITCHES.
e. ENCLOSED CIRCUIT BREAKERS.
f. ENCLOSED CONTROLLERS.
g. VARIABLE SPEED CONTROLLERS.
h. POWER TRANSFER EQUIPMENT.
i. PUSH-BUTTON STATIONS.
j. CONTACTORS.
k. ACCESS DOORS AND PANELS FOR CONCEALED ELECTRICAL ITEMS.
l. REMOTE-CONTROLLED SWITCHES AND CONTROL DEVICES.
m. POWER-GENERATING UNITS.
n. EMERGENCY SYSTEM BOXES AND ENCLOSURES.
o. MONITORING AND CONTROL EQUIPMENT.
p. GROUNDING SYSTEM COMPONENTS.

FOR ITEMS 2a THROUGH 2p ABOVE, IDENTIFICATION SHALL BE ENGRAVED, LAMINATED ACRYLIC OR MELAMINE LABEL. LABELS SHALL INCLUDE EQUIPMENT SPECIFIC NAME, FEEDER SOURCE, FEEDER CIRCUIT NUMBER, VOLTAGE, AND PHASE CONDUCTOR COLOR CODE EXCEPT FOR WIRING DEVICES.

I. PROVIDE SCHEDULE OF ALL ENGRAVED NAMEPLATE LABELS.

- J. WIRING DEVICE LABELS SHALL BE ADHESIVE FILM LABEL WITH BLACK LETTERING ON CLEAR BACKGROUND PROVIDING IDENTIFICATION OF SERVING PANELBOARD NAME AND CIRCUIT NUMBER.

VIII. GROUNDING
A. GROUNDING AND BONDING PRODUCTS

1. PRODUCTS: OF TYPES INDICATED AND OF SIZES AND RATINGS TO COMPLY WITH NEC. WHERE TYPES, SIZES, RATINGS, AND QUANTITIES INDICATED ARE IN EXCESS OF NEC REQUIREMENTS, THE MORE STRINGENT REQUIREMENTS AND THE GREATER SIZE, RATING, AND QUANTITY INDICATIONS GOVERN.
2. CONDUCTOR MATERIALS: COPPER.

IX. ENCLOSED SWITCHES AND FUSES

- A. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING

1. ATON ELECTRICAL INC.; CUTLER-HAMMER BUSINESS UNIT.
2. GENERAL ELECTRIC COMPANY; GE CONSUMER & INDUSTRIAL - ELECTRICAL DISTRIBUTION.
3. SQUARE D; A BRAND OF SCHNEIDER ELECTRIC.
4. SIEMENS.

- B. FUSIBLE SWITCHES-TYPE HD, HEAVY DUTY, SINGLE THROW, 600-V AC, 1200 A AND SMALLER: UL 98 AND NEMA KS 1, HORSEPOWER RATED, WITH CLIPS OR BOLT PADS TO ACCOMMODATE INDICATED FUSES, LOCKABLE HANDLE WITH CAPABILITY TO ACCEPT THREE PADLOCKS, AND INTERLOCKED WITH COVER IN CLOSED POSITION.

SWITCH ACCESSORIES SHALL INCLUDE:

1. EQUIPMENT GROUND KIT: INTERNALLY MOUNTED AND LABELED FOR COPPER AND ALUMINUM GROUND CONDUCTORS.
2. CLASS R FUSE KIT: PROVIDES REJECTION OF OTHER FUSE TYPES WHEN CLASS R FUSES ARE SPECIFIED.
3. UGS: MECHANICAL TYPE, SUITABLE FOR NUMBER, SIZE, AND CONDUCTOR MATERIAL.
4. SERVICE-RATED SWITCHES: LABELED FOR USE AS SERVICE EQUIPMENT.

- C. NON-FUSIBLE SWITCHES-TYPE HD, HEAVY DUTY, DOUBLE THROW, 600-V AC, 1200 A AND SMALLER: UL 98 AND NEMA KS 1, HORSEPOWER RATED, LOCKABLE HANDLE WITH CAPABILITY TO ACCEPT THREE PADLOCKS, AND INTERLOCKED WITH COVER IN CLOSED POSITION. SWITCH ACCESSORIES SHALL INCLUDE:

1. EQUIPMENT GROUND KIT: INTERNALLY MOUNTED AND LABELED FOR COPPER AND ALUMINUM GROUND CONDUCTORS.
2. UGS: MECHANICAL TYPE, SUITABLE FOR NUMBER, SIZE, AND CONDUCTOR MATERIAL.

- D. EXAMINE ELEMENTS AND SURFACES TO RECEIVE ENCLOSED SWITCHES FOR COMPLIANCE WITH INSTALLATION TOLERANCES AND OTHER CONDITIONS AFFECTING PERFORMANCE OF THE WORK.

E. INSTALL FUSES IN FUSIBLE DEVICES.

F. COMPLY WITH NECA 1.

G. COMPLY WITH REQUIREMENTS IN SECTION "IDENTIFICATION."

1. IDENTIFY FIELD-INSTALLED CONDUCTORS, INTERCONNECTING WIRING, AND COMPONENTS; PROVIDE WARNING SIGNS.

2. LABEL EACH ENCLOSURE WITH ENGRAVED METAL OR LAMINATED-PLASTIC NAMEPLATE.

- H. FUSE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING:

1. COOPER BUSSMANN, INC.
2. MERSEN, INC.
3. ITTEL FUSE, INC.

- I. CHARACTERISTICS: NEMA FU 1, NONRENEWABLE CARTRIDGE FUSES WITH VOLTAGE RATINGS CONSISTENT WITH CIRCUIT VOLTAGES.

- J. EXAMINE FUSES BEFORE INSTALLATION. REJECT FUSES THAT ARE MOISTURE DAMAGED OR PHYSICALLY DAMAGED.

- K. SERVICE ENTRANCE: [CLASS L, FAST ACTING] [CLASS L, TIME DELAY] [CLASS RK1, FAST ACTING] [CLASS RK1, TIME DELAY] [CLASS J, FAST ACTING] [CLASS J, TIME DELAY] [CLASS T, FAST ACTING].

- L. FEEDERS: [CLASS L, FAST ACTING] [CLASS L, TIME DELAY] [CLASS RK1, FAST ACTING] [CLASS RK1, TIME DELAY] [CLASS RK5, FAST ACTING] [CLASS RK5, TIME DELAY] [CLASS J, FAST ACTING] [CLASS J, TIME DELAY].

- M. INSTALL FUSES IN FUSIBLE DEVICES. ARRANGE FUSES SO RATING INFORMATION IS READABLE WITHOUT REMOVING FUSE.

- N. INSTALL LABELS COMPLYING WITH REQUIREMENTS FOR IDENTIFICATION SPECIFIED IN SECTION "IDENTIFICATION" AND INDICATING FUSE REPLACEMENT INFORMATION ON INSIDE DOOR OF EACH FUSED SWITCH AND ADJACENT TO EACH FUSE BLOCK, SOCKET, AND HOLDER.

X. PANELBOARDS

A. MANUFACTURERS

1. SHALL BE SQUARE D PANEL. INSTALLATION BY THIS CONTRACTOR.
2. ATON
3. GE
4. SIEMENS

B. INSTALLATION

1. GENERAL: INSTALL PANELBOARDS AND ACCESSORY ITEMS IN ACCORDANCE WITH NEMA PB 1.1, "GENERAL INSTRUCTIONS FOR PROPER INSTALLATION, OPERATION AND MAINTENANCE OF PANELBOARDS RATED 600 VOLTS OR LESS" AND MANUFACTURERS' WRITTEN INSTALLATION INSTRUCTIONS.
2. MOUNTING: PLUMB AND RIGID WITHOUT DISTORTION OF BOX.
3. CIRCUIT DIRECTORY: TYPED AND REFLECTIVE OF FINAL CIRCUIT CHANGES REQUIRED TO BALANCE PANEL LOADS. OBTAIN APPROVAL BEFORE INSTALLING.
4. INSTALL FILLER PLATES IN UNUSED SPACES.
5. COMPLY WITH ALL NEC REQUIREMENTS FOR THE LOCATION AND CONDITIONS IN WHICH PANELBOARD IS INSTALLED.

C. IDENTIFICATION

1. IDENTIFY FIELD-INSTALLED WIRING AND COMPONENTS AND PROVIDE WARNING SIGNS IN ACCORDANCE WITH SECTION "ELECTRICAL IDENTIFICATION."

D. GROUNDING

1. PROVIDE GROUND CONTINUITY TO MAIN ELECTRICAL GROUND BUS INDICATED.

E. CONNECTIONS

1. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS, INCLUDING GROUNDING CONNECTIONS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. WHERE MANUFACTURER'S TORQUE VALUES ARE NOT INDICATED, USE THOSE SPECIFIED IN UL 486A AND UL 486B.

F. CLEANING

1. UPON COMPLETION OF INSTALLATION, INSPECT INTERIOR AND EXTERIOR OF PANELBOARDS. REMOVE PAINT SPLATTERS AND OTHER SPOTS, DIRT, AND DEBRIS. TOUCH UP SCRATCHES AND MARS OF FINISH TO MATCH ORIGINAL FINISH.

XI. LIGHTING FIXTURES

A. FIXTURES, GENERAL

1. COMPLY WITH THE REQUIREMENTS SPECIFIED BELOW AND IN THE LIGHTING FIXTURE SCHEDULE.

B. LED FIXTURES

1. FIXTURES: CONFORM TO UL 8750, "LED LIGHTING FIXTURES".

C. LED LIGHT ENGINE

1. LED LIGHT ENGINE: CONFORM TO UL 8750, "LED LIGHTING FIXTURES".

- a. LED DRIVER: POWER FACTOR >0.9

- b. LIFE: RATED FOR 50,000 HOURS AT 70% LUMEN MAINTENANCE

D. LAMP

1. PROVIDE LEDS OF TYPES AS INDICATED IN SCHEDULE.

NOT FOR CONSTRUCTION	DATE: 3/18/2020	
	DESIGN BY: AMG	
	DRAWN BY: AMG	
	PROJECT NO.: 12720	
	SHEET NO.	TOTAL SHEETS
	15	17
	Sanitary Sewer Plans	
	Paragon Star Development	
	Lee's Summit, Missouri	
	NO.	DATE
	1	12-27-19
	REVISIONS BY APPROVED	
	Sanitary Sewer City Comments 12-12-19	

C:\12720\Civil 3D\Production Drawings\Sanitary Sewer Plans - (LS MYD)\Electrical\12720E000.dwg Layout: 16 12720E000 - SHEET 16 --- Wednesday March 18, 2020, 11:05am --- Copyright 2020\cch@hughes 00042\ssch@hughes\lhal Engineer 000133, Landscape Architect 000025, Professional Land Surveyor 000059

GENERAL NOTES

- ELECTRICAL LAYOUT DRAWINGS ARE PARTIALLY DIAGRAMMATIC. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR GUIDANCE ON: DIMENSIONS, CEILING HEIGHTS, DOOR SWINGS, ROOM FINISHES, STRUCTURAL & ARCHITECTURAL DETAILS, LOCATION OF STRUCTURAL STEEL.
- PROVIDE ADDITIONAL SUPPORTS FOR SWITCHES, STARTERS, RACEWAYS AND OTHER ELECTRICAL EQUIPMENT WHEREVER THE BUILDING STRUCTURE IS NOT SUITABLE FOR DIRECT MOUNTING.
- ON WIRING PLANS THE NUMBER BESIDE A BRANCH CIRCUIT OUTLET INDICATES PANELBOARD BRANCH CIRCUIT CONNECTION. WHERE OUTLETS ARE LOCALLY SWITCHED A LOWER CASE LETTER BESIDE AN OUTLET INDICATES THE SWITCH LEG CONNECTION.
- CONNECT BRANCH CIRCUIT NEUTRAL TO RECEPTACLE TERMINAL BY MEANS OF A SHORT "PIGTAIL" PERMANENTLY SPLICED TO THE NEUTRAL MOUNT GROUPED DEVICES IN A SINGLE CONTINUOUS GANG BOX.
- ALL WORK SHALL BE AS REQUIRED PER LATEST EDITION OF THE NEC, NFPA REQUIREMENTS, ALL APPLICABLE STATE AND LOCAL CODES, AND AS NECESSARY FOR EASE OF MAINTENANCE.
- ALL CIRCUITS SHOWN SHALL BE A MINIMUM #12 AWG WIRE IN 1/2" CONDUIT UNLESS NOTED OTHERWISE. ALL 120 VOLT CIRCUITS LONGER THAN 75 FEET BE A MINIMUM OF #10 AWG.
- ALL WIRE THROUGHOUT A CIRCUIT SHALL BE THE SAME SIZE.
- ELECTRICAL WORK SHALL BE COORDINATED WITH ALL TRADES BEFORE PROCEEDING WITH INSTALLATION.
- THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS BEFORE PROCEEDING WITH CUTTING OR DRILLING OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR, AND REPLACE AT HIS EXPENSE, ANY DAMAGE HE MIGHT INCUR.
- PROVIDE TYPED CIRCUIT DIRECTORIES IN ALL PANELBOARDS, TO NEW CIRCUITRY.
- ALL RECEPTACLES SHALL BE IDENTIFIED WITH SERVING PANELBOARD AND CIRCUIT NUMBER WITH PERMANENT ENGRAVED LABELING.
- ALL STUB-UPS SHALL BE GALVANIZED RIGID STEEL CONDUITS. REFER TO SPECIFICATIONS FOR ADDITIONAL LOCATION-SPECIFIC CONDUIT REQUIREMENTS.
- PROVIDE CADWELD EXOTHERMIC GROUNDING/BONDING CONNECTIONS IN LIEU OF CRIMP OR BOLTED CONNECTIONS WHERE POSSIBLE.
- DISCONNECT SWITCHES AT EXHAUST FAN SHALL BE MOUNTED ON FAN AT LOCATION DIRECTED BY MANUFACTURER.
- ALL EXTERIOR WALL PENETRATIONS SHALL BE MADE WATERTIGHT.
- PROVIDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR A COMPLETE AND PROPERLY OPERATING ELECTRICAL INSTALLATION.
- ALL MATERIAL AND EQUIPMENT FURNISHED SHALL BE NEW AND FIRST QUALITY OF A STANDARD MANUFACTURER.
- ALL WORKMANSHIP SHALL BE FIRST CLASS AND IN ACCORDANCE WITH INDUSTRY STANDARDS.
- COORDINATE ELECTRICAL EQUIPMENT AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS.
- JUNCTION AND PULL BOX LOCATIONS ARE SHOWN IN APPROXIMATE LOCATIONS. THE CONTRACTOR SHALL SIZE AND INSTALL ALL JUNCTION AND PULL BOXES FOR A COMPLETE AND CORRECT INSTALLATION PER THE NEC. LARGER BOXES SHALL BE COORDINATED WITH ALL DISCIPLINES PRIOR TO INITIATING WORK TO AVOID CONFLICTS.
- NOT ALL CONDUITS ARE SHOWN. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUIT REQUIRED FOR A CORRECT INSTALLATION PER NEC.
- CONDUIT EMBEDDED IN AND PENETRATING THROUGH CONCRETE SHALL BE COORDINATED WITH APPROPRIATE DISCIPLINES PRIOR TO INITIATING WORK TO AVOID CONFLICTS.
- FURNISH, PROVIDE, AND INSTALL WHERE USED ON THESE DOCUMENTS EACH MEANS THAT THE CONTRACTOR SHALL FURNISH AND PROPERLY INSTALL ALL REFERENCED EQUIPMENT AND MATERIALS U.N.O.
- WHERE THE WORDS CIRCUIT OR CIRCUITRY ARE USED ON THESE DOCUMENTS, THEY MEAN BOTH CONDUIT, WIRE AND ASSOCIATED BOXES.
- SANITARY SEWER METERING VAULTS AND ODOR-CONTROL SYSTEMS ARE CLASS 1 GROUP D HAZARDOUS CLASSIFIED AREAS. ELECTRICAL INSTALLATIONS IN HAZARDOUS CLASSIFIED AREAS SHALL MEET ALL NEC REQUIREMENTS FOR THE AREA CLASSIFICATION IN WHICH THEY ARE INSTALLED. NOT ALL CLASSIFIED AREAS MAY BE IDENTIFIED ON THESE PLANS.

ELECTRICAL SYMBOLS

LIGHTING FIXTURES - SEE FIXTURE SCHEDULE

- X

LED VAPOR TIGHT FIXTURE
- X

LED WALL PACK

SWITCHES

- S

SWITCH, SINGLE POLE

RECEPTACLES (NEMA 5-20R U.N.O.)

- RECEPTACLE, DUPLEX
- RECEPTACLE, DUPLEX W/ GND. FAULT INTERRUPTER

STANDARD SYMBOLS

- CONSTRUCTION NOTE
- REVISION NOTE
- REVISION CLOUD

MISCELLANEOUS POWER - ALL WALL MTD. DEVICES 18" AFF U.N.O.

- JUNCTION BOX, CEILING OR FLOOR
- JUNCTION BOX, WALL MOUNTED
- ELECTRICAL ENCLOSURE AS NOTED
- HOME RUN TO PANEL. SHORT DASH INDICATES HOT, LONG DASH NEUTRAL, AND CURVED DASH GROUND. NUMBER OF ARROWS INDICATED NUMBER OF CIRCUITS. #12 WIRE, #12 GND IN 3/4" CONDUIT UNLESS OTHERWISE NOTED ON PLAN OR DIAGRAM.
- FLEXIBLE CONDUIT
- GROUND ROD, 3/4" X 8' COPPER CLAD STEEL
- CIRCUIT BREAKER

ABBREVIATIONS:

- MCA

MINIMUM CIRCUIT AMPACITY
- AFF

ABOVE FINISHED FLOOR
- NF

NON-FUSED
- U.N.O.

UNLESS NOTED OTHERWISE
- FLA

FULL LOAD AMPS
- WP

WEATHERPROOF
- SBTC

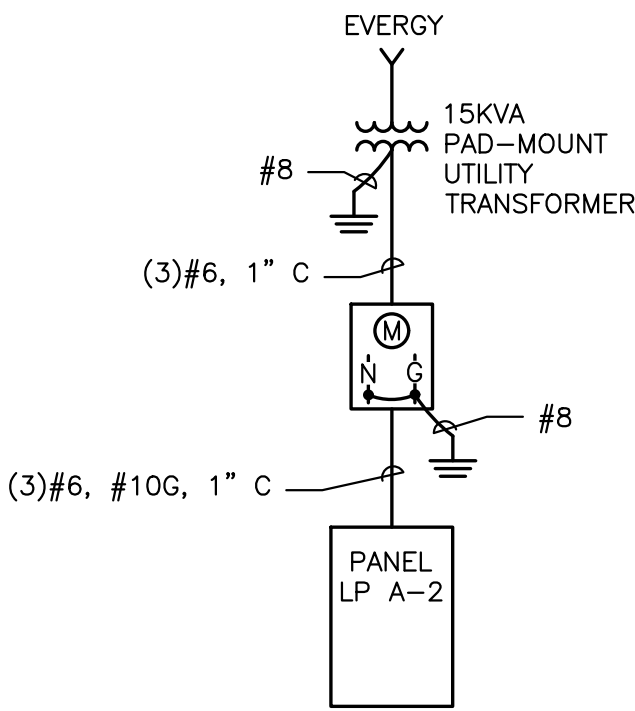
SOLID BARE TINNED COPPER
- REF.

REFERENCE
- C

CONDUIT
- ARC

ALUMINUM RIGID CONDUIT
- SS

STAINLESS STEEL



ONE LINE DIAGRAM

LOCATION: FLOW METER BUILDING				PANEL: LP A-2				KAIC: 10 MAIN: 60A FED FROM: UTILITY TRANSFORMER MOUNTING: SURFACE BUS RATING: 100A			
CLASS 1 DIV 2 ENCLOSURE											
240/120V 1-PHASE 3-WIRE											
DESCRIPTION		LOAD VA	C/B	CCT	PH	CCT	C/B	LOAD VA	DESCRIPTION		
SURGE PROTECTOR			50	1	A	2	20	180	CONTROL PANEL RECEPTACLE		
SURGE PROTECTOR				3	B	4	20	180	RECEPTACLE UNDER PANELBOARD		
INTERIOR & EXTERIOR LIGHTING		55	15	5	A	6	20	500	HEATER		
GAS DETECTOR		200	15	7	B	8		500	HEATER		
ODOR CTRL BLOWER FAN RECEP		180	20	9	A	10	15	200	EXHAUST FAN		
METER VAULT LIGHT		15	15	11	B	12	15		SPARE		
				13	A	14					
				15	B	16					
				17	A	18					
				19	B	20					
TOTAL: 2010 VA				DIVERSITY: 1				TOTAL CONN. LOAD: 2010 VA			

PANEL SCHEDULE

LIGHTING FIXTURE SCHEDULE

LABEL	MANUFACTURER	CATALOG #	DESCRIPTION	LAMP	VOLTS	WATTS	NOTES
A	LITHONIA	HW4G 10C 1000 50K T3M MVOLT GYSDP	HAZARDOUS LOCATION LED WALL PACK	LED	120V	39	1
B	CROUSE-HINDS	EV LED W201	HAZARDOUS LOCATION LED FIXTURE	LED	120V	15	1

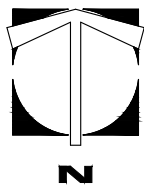
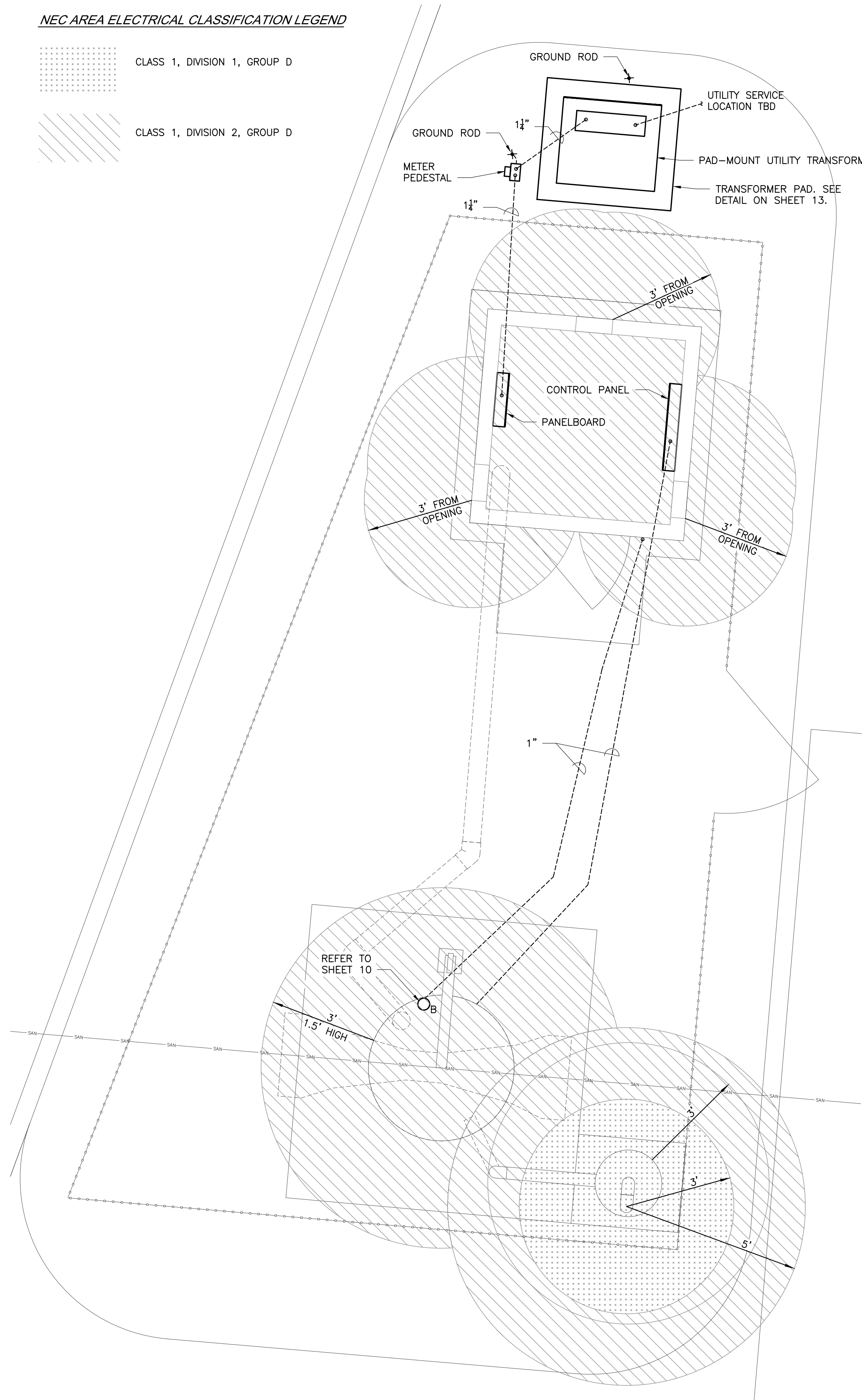
NOTES

- PROVIDE BASIS OF DESIGN FIXTURE, OR APPROVED EQUAL.

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NEC AREA ELECTRICAL CLASSIFICATION LEGEND

- CLASS 1, DIVISION 1, GROUP D
- CLASS 1, DIVISION 2, GROUP D



ELECTRICAL SITE PLAN

SCALE: 1/2" = 1'-0"

SANITARY SEWER METERING VAULTS AND ODOR CONTROL SYSTEMS ARE CLASS 1 GROUP D HAZARDOUS CLASSIFIED AREAS PER NFPA 820.

ELECTRICAL INSTALLATIONS IN HAZARDOUS CLASSIFIED AREAS SHALL COMPLY WITH ALL NEC REQUIREMENTS FOR THE AREA CLASSIFICATION IN WHICH THEY ARE INSTALLED. NOT ALL CLASSIFIED AREAS MAY BE IDENTIFIED ON THESE PLANS.

NOT FOR CONSTRUCTION

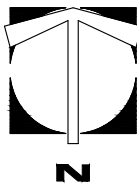
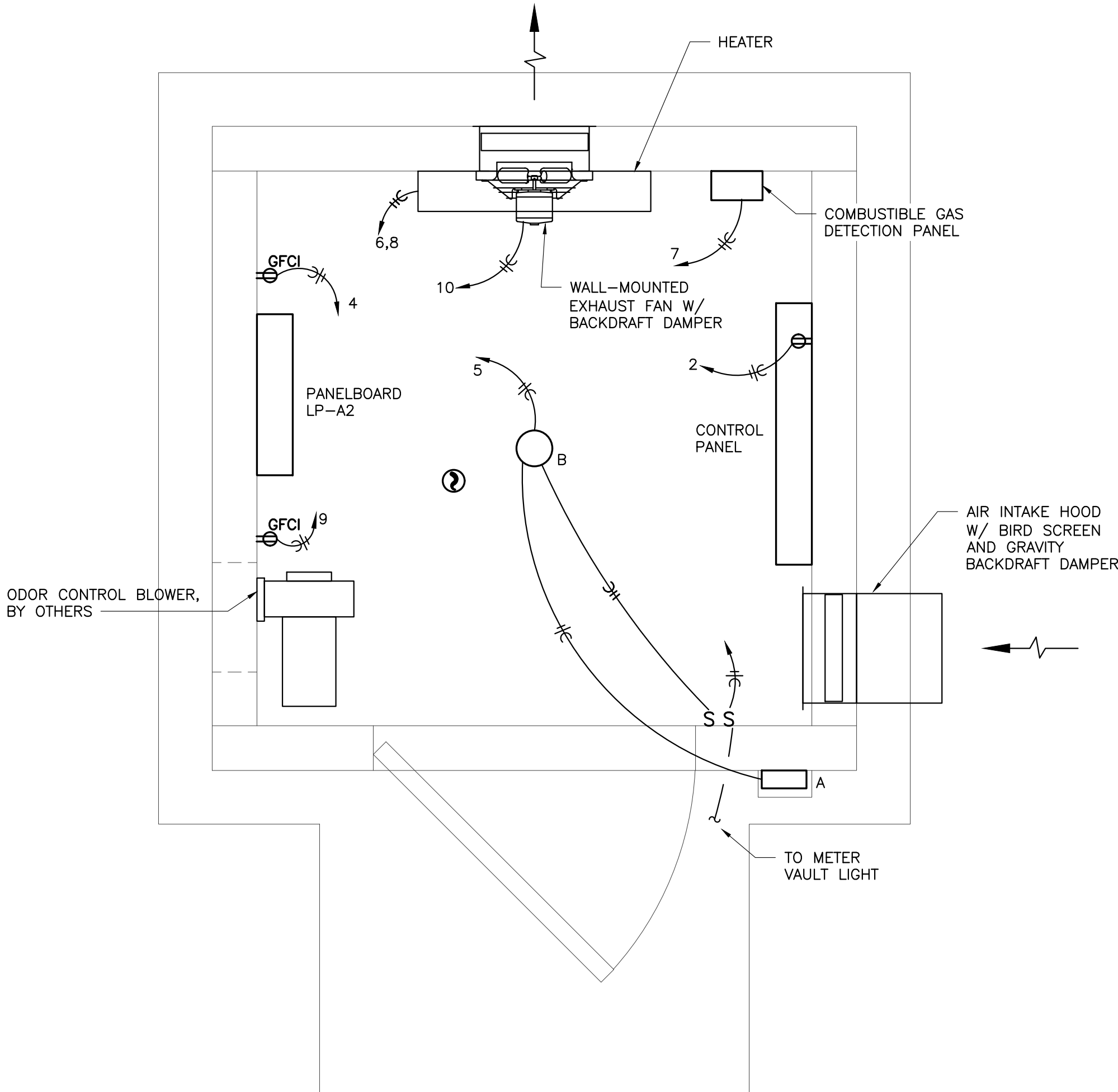
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DRAWN BY:	AMG
PROJECT NO.:	12720
SHEET NO.	TOTAL SHEETS
17	17

Sanitary Sewer Plans
Paragon Star Development
Lee's Summit, Missouri

NO.	DATE	REVISIONS	BY	APPROVED
1	12-27-19	Sanitary Sewer City Comments 12-12-19		



ELECTRICAL BUILDING PLAN

SCALE: 1" = 1'-0"

NOTE: NEC CLASSIFIED AREAS NOT SHOWN.