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DATE: Apr 20, 2020 3:36pm  
USER: emorton

GENERAL NOTES:

1. LINEAR FOOT MEASUREMENTS SHOWN ON THE PLANS ARE HORIZONTAL MEASUREMENTS (NOT SLOPE MEASUREMENTS) FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
2. THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO THE CURRENT "CITY STANDARDS" AND SPECIFICATIONS OF THE CPD-DS-LDD, LEE'S SUMMIT, EXCEPT AS NOTED.
3. THE DEVELOPER SHALL PERFORM ALIGNMENT AND GRADE, INFILTRATION – EXFILTRATION, DEFLECTION, SOIL DENSITY, AND MANHOLE TESTS AS CALLED OUT IN SECTION 2500 OF THE CURRENT APWA (AMERICAN PUBLIC WORKS ASSOCIATION) STANDARDS AND SPECIFICATIONS. ANY SECTION OF SEWER FAILING ANY OF THE ABOVE MENTIONED TESTS SHALL BE RETESTED BY THE DEVELOPER AFTER REPLACEMENT OR REPAIR.
4. THE DEVELOPER MAY, AS AN ALTERNATE, SUBSTITUTE A.B.S. OR V.C.P. PIPE FOR P.V.C. PIPE. THE FOLLOWING PIPE DEFLECTION TEST SHALL BE IMPLEMENTED ON A.B.S. AND P.V.C. PIPE:
- THE DEVELOPER SHALL PERFORM DIAMETRICAL DEFLECTION TESTS ON FLEXIBLE AND SEMI-FLEXIBLE (I.E. POLY-VINYL-CHLORIDE AND ACRYLONITRILE BUTADIENE STYRENE) PIPE WHEN USED AS A PUBLIC DIAMETER. ALL TESTS HALL BE CONDUCTED BETWEEN MANHOLES. SEWER TESTS SHALL BE CONDUCTED BETWEEN MANHOLES. SEWER TESTED SHALL BE 100% OF THE TOTAL SEWER INSTALLED. A MANDREL WITH A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE BEING INSTALLED SHALL BE USED.
5. THE DEVELOPER SHALL PERFORM DIAMETRICAL DEFLECTION TESTS ON FLEXIBLE AND SEMI-FLEXIBLE (I.E. POLY-VINYL-CHLORIDE AND ACRYLONITRILE BUTADIENE STYRENE) PIPE WHEN USED AS A PUBLIC SEWER PRIOR TO FINAL ACCEPTANCE. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE 5% OF THE INSIDE DIAMETER. ALL TESTS SHALL BE CONDUCTED BETWEEN MANHOLES. SEWER TESTED SHALL BE 100% OF THE TOTAL SEWER INSTALLED. A MANDREL WITH A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE BEING INSTALLED SHALL BE USED.
6. 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.
7. DEVELOPER SHALL PROVIDE EARTHWORK AND MATERIAL TESTING TO COMPLY WITH THE STANDARD SPECIFICATIONS OF THE CPD-DS-LDD.
8. DURING CONSTRUCTION OF THE PROJECT, THE DEVELOPER SHALL KEEP ONE RECORD COPY OF ALL SPECIFICATIONS, DRAWINGS, ADDENDA, MODIFICATIONS, AND SHOP DRAWINGS AT THE SITE IN GOOD CONDITION. THESE DOCUMENTS SHALL BE ANNOTATED TO SHOW ALL CHANGES MADE DURING CONSTRUCTION. THE EXACT LOCATION OF ALL SEWER WYES, TEES, AND SERVICE LINES SHALL BE RECORD ON THESE DOCUMENTS. AT THE CONCLUSION OF CONSTRUCTION, THESE DOCUMENTS SHALL BE FORWARDED TO THE DESIGN ENGINEER FOR PREPARATION OF AS-BUILT DRAWINGS.
9. THE PROJECT BENCHMARKS AND ALL ELEVATIONS SHOWN ON THE PROFILES ARE N.G.V.D.
10. THE DEVELOPER IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES. AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE DEVELOPER MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT IS THE DEVELOPERS RESPONSIBILITY TO RELOCATE AND/OR ADJUST ALL EXISTING UTILITIES, CONFLICT WITH PROPOSED SITE IMPROVEMENTS.
11. THE DEVELOPER SHALL ALSO UTILIZE THE FOLLOWING TOLL FREE PHONE NUMBER PROVIDED BY "MISSOURI ONE CALL SYSTEM, INC." 1-800-DIG-RITE. THIS PHONE NUMBER IS APPLICABLE ANYWHERE WITHIN THE STATE OF MISSOURI. THE NAMES AND TELEPHONE NUMBERS OF UTILITY COMPANIES, EVEN IF ONLY REMOTELY INVOLVED WITH THIS HIS PROJECT ARE LISTED UNDER "UTILITY CONTACTS" THIS SHEET.
12. THE DEVELOPER SHALL PROVIDE AND MAINTAIN ALL TRAFFIC CONTROL MEASURES NECESSARY TO ENSURE THAT THE GENERAL PUBLIC IS PROTECTED AT ALL TIMES. TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD-LATEST EDITION).
13. THE SITE PLAN IS BASED ON SURVEY BY OLSSON ASSOCIATES, COMPLETED 12-13-16. CONDITIONS ON SITE AT THE TIME OF CONSTRUCTION MAY VARY FROM THE SURVEYED CONDITIONS. DEVELOPER SHALL VERIFY EXISTING SITE CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.
14. THE DEVELOPER IS RESPONSIBLE FOR OBTAINING ALL PERMITS (EXCEPT LAND DISTURBANCE), BONDS, INSURANCE, ETC. AND PAYING ALL FEES. THE COST OF DEVELOPERS BONDS AND INSURANCE AS REQUIRED BY THE CITY OF LEE'S SUMMIT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER.
15. DEVELOPER SHALL COMPLY WITH ALL APPLICABLE REGULATIONS REQUIRED BY THE CITY AND THE STATE.
16. THE DEVELOPER MUST REMOVE AT HIS COST ANY BAD SUBSURFACE SOIL WHICH WOULD NOT BE ABLE TO SUPPORT ANY PROPOSED PUBLIC IMPROVEMENT. BACKFILL SHALL BE ACCOMPLISHED IN ACCORDANCE WITH SECTIONS 2100 AND 2201 ENTITLED "GRADING AND SITE PREPARATION" AND "SUBGRADE PREPARATION".
17. VERTICAL CONTROL IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). THE DEVELOPER IS ADVISED TO USE BENCHMARK INFORMATION FOR VERTICAL CONTROL. HORIZONTAL CONTROL (CONTROL POINT INFORMATION) IS BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83). THE DEVELOPER IS ADVISED TO USE CONTROL POINT INFORMATION FOR HORIZONTAL CONTROL.
18. THE CONTRACTOR SHALL CONSTRUCT ALL MH LIDS AT THE CENTERLINE OF THE ROAD.

PLUMBING NOTES:

1. ALL LOTS HAVE BEEN SUPPLIED WITH WYES OR LATERALS. PLUMBER SHALL CONNECT HOUSE SERVICE TO MAIN AT LOCATIONS INDICATED.
2. ALL SERVICE LINES SHALL BE LAID AT 2% MINIMUM SLOPE, UNLESS OTHERWISE NOTED.
3. M.S.F.E. ELEVATION – INDICATES BASEMENT FLOOR ELEVATION OR LOWEST FLOOR ELEVATION SERVICEABLE BY PROPOSED SANITARY SEWER.
- EXCAVATING NOTES:
1. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO CONTROL DOWNSTREAM EROSION AND SILTATION DURING ALL PHASES OF CONSTRUCTION.
2. THE DEVELOPER SHALL BE RESPONSIBLE FOR RECORDING ROCK ELEVATIONS AT 25 FOOT (MAXIMUM) INTERVALS WHERE ENCOUNTERED, AND FURNISHING THIS INFORMATION TO THE DESIGN ENGINEER FOR USE ON AS-BUILTS.
3. THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ARE APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES. EROSION CONTROL PLANS AND PROCEDURES SHALL BE IN PLACE PRIOR TO ANY EXCAVATION.
4. NO SUBSURFACE EXPLORATION FOR THE DETERMINATION OF AND/OR THE LOCATION OF EXISTING ROCK HAS BEEN MADE.
5. WHEN SEWER LINES CROSS A LOW POINT IN A CREEK, THE SEWER LINE MUST BE ENCASED ACCORDING TO LEE'S SUMMIT.
6. DEVELOPER IS RESPONSIBLE FOR KEEPING ALL PUBLIC ROADWAYS ADJACENT TO THE CONSTRUCTION SITE FREE OF DIRT AND DEBRIS RESULTING FROM ACTIVITIES RELATED TO THE CONSTRUCTION OF THIS PROJECT. INSPECTIONS AND CLEANUP TO OCCUR ON A DAILY BASIS.
7. DEVELOPER SHALL KEEP THE ENTIRE PROJECT SITE FREE OF DEBRIS AND TRASH AT ALL TIMES. DEVELOPER SHALL EXECUTE WORK USING METHODS THAT MINIMIZE EXCESSIVE NOISE OR DUST EMISSIONS. DEVELOPER SHALL PROVIDE METHODS, MEANS AND FACILITIES TO PREVENT CONTAMINATION OF SOIL OR WATER FROM DISCHARGE OF REGULATED MATERIALS (I.E. FUEL) USED DURING CONSTRUCTION.
8. THE DEVELOPER SHALL ERECT AND MAINTAIN ORANGE COLORED TEMPORARY CONSTRUCTION FENCE AROUND ALL AREAS INDICATED ON THE PLANS TO BE LEFT UNDISTURBED BOTH TEMPORARY AND PERMANENTLY THE DEVELOPER WILL BE GIVEN NOTICE WHEN HE MAY ENTER THESE AREAS MARKED TEMPORARY BY THE OWNER ONCE PERMITS HAVE BEEN OBTAINED. THE FENCE MATERIAL SHALL BE 48" TALL. HIGH DENSITY POLYETHYLENE (HDPE) WITH NOMINAL MESH OPENING SIZE OF 1.25 INCHES X 1.25 INCHES.

LEGEND	
	EXISTING CABLE TV, OVERHEAD
	EXISTING CABLE TV, UNDERGROUND
	PROPOSED CABLE TV, OVERHEAD
	PROPOSED CABLE TV, UNDERGROUND
	FUTURE CABLE TV, OVERHEAD
	FUTURE CABLE TV, UNDERGROUND
	EXISTING FIBER OPTIC, OVERHEAD
	EXISTING FIBER OPTIC, UNDERGROUND
	PROPOSED FIBER OPTIC, OVERHEAD
	PROPOSED FIBER OPTIC, UNDERGROUND
	FUTURE FIBER OPTIC, OVERHEAD
	FUTURE FIBER OPTIC, UNDERGROUND
	EXISTING FIRE PROTECTION SYSTEM LINE
	PROPOSED FIRE PROTECTION SYSTEM LINE
	FUTURE FIRE PROTECTION SYSTEM LINE
	EXISTING FUEL LINE
	PROPOSED FUEL LINE
	FUTURE FUEL LINE
	EXISTING NATURAL GAS LINE
	PROPOSED NATURAL GAS LINE
	FUTURE NATURAL GAS LINE
	EXISTING TELEPHONE LINE, OVERHEAD
	EXISTING TELEPHONE LINE, UNDERGROUND
	PROPOSED TELEPHONE LINE, OVERHEAD
	PROPOSED TELEPHONE LINE, UNDERGROUND
	FUTURE TELEPHONE LINE, OVERHEAD
	FUTURE TELEPHONE LINE, UNDERGROUND
	EXISTING POWER\ELECTRIC LINE, OVERHEAD
	EXISTING POWER\ELECTRIC LINE, UNDERGROUND
	PROPOSED POWER\ELECTRIC LINE, OVERHEAD
	PROPOSED POWER\ELECTRIC LINE, UNDERGROUND
	FUTURE POWER\ELECTRIC LINE, OVERHEAD
	FUTURE POWER\ELECTRIC LINE, UNDERGROUND
	EXISTING SANITARY SEWER
	PROPOSED SANITARY SEWER
	FUTURE SANITARY SEWER
	EXISTING STEAM LINE
	PROPOSED STEAM LINE
	FUTURE STEAM LINE
	EXISTING STORM SEWER
	PROPOSED STORM SEWER
	FUTURE STORM SEWER
	EXISTING WATER LINE
	PROPOSED WATER LINE
	FUTURE WATER LINE

AS-BUILT / SERVICE LINE NOTE

- 1.) CONTRACTOR SHALL PLACE 2"x4" TIMBER OR METALLIC TAPE AT END OF EACH SERVICE LINE STUB. STANDARD 8' LENGTH MAY BE VARIED WITH 3' EXPOSED WHEN PLACED DIRECTLY OVER THE SERVICE LINE TERMINATION POINT. 2"x4" TIMBER SHALL BE MARKED APPROPRIATELY TO IDENTIFY SEWER SERVICE STUB.
- 2.) CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING OF ROCK ELEVATIONS AT 25' INTERVALS WHERE ENCOUNTERED. CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR RECORDING SERVICE LINE LOCATIONS FROM THE DOWNSTREAM OR UPSTREAM MANHOLE AND SERVICE LINE LENGTHS DURING CONSTRUCTION OPERATIONS. CONTRACTOR SHALL ALSO RECORD VERTICAL ELEVATIONS WITH A REFERENCE POINT. ALL INFORMATION SHALL BE PROVIDED TO THE ENGINEER OF RECORD FOR PREPARATION OF AS-BUILT PLANS.

CONTROL POINT TABLE				
POINT NUMBER	EASTING	NORTHING	POINT ELEVATION	DESCRIPTION
1	2813424.811	1004323.277	978.52	SET 3/8" IB/CAP ON THE WEST SIDE OF PRYOR ROAD ON THE NORTH SIDE OF THE NORTH ENTRANCE TO THE JOHN KNOX VILLAGE CARE CENTER. 23.0' S TO BACK OF CURB. 51.0' SE TO POWER POLE. 52.4' S TO LIGHT POLE.
2	2810579.799	1003600.769	965.27	SET 3/8" IB/CAP ON THE SW CORNER OF THE INTERSECTION OF NW ASHURST AND NW ESSEX AVE. 12.2' NW TO CENTERLINE FIBER BOX. 37.3' E TO STOP SIGN. 39.7' E-NE TO LIGHT POLE.
3	2810569.194	1000980.591	904	SET 3/8" IB/CAP AT THE SE CORNER OF NW CODY DRIVE AND NW WHITLOCK DRIVE. 12.2' E TO NW CORNER CURB INLET. 7.7' SE TO POWER POLE. 49.7' W-NW TO STOP SIGN.
4	2813406.046	1000727.167	958.11	SET 3/8" IB/CAP ON THE SE CORNER SW PRYOR ROAD AND SW 1ST STREET. 10.8' NE TO FIRE HYDRANT. 22.1' NE TO SE CORNER CURB INLET. 22.0' SW TO NE CORNER CURB INLET.
6	2813383.638	1002469.496	979.56	SET 3/8" IB/CAP ON THE SW CORNER OF PRYOR ROAD AND O'BRIEN ROAD. IT IS IN LINE WITH THE PC OF THE CURB RETURN N AND THE BENCHMARK E.
BENCHMARK				
POINT NUMBER	EASTING	NORTHING	POINT ELEVATION	DESCRIPTION
5	2813403.101	1002468.034	979.24	CHISELED BOX ON THE SE CORNER OF A CONCRETE PAD FOR A TRAFFIC SIGNAL BOX AT THE SW CORNER OF PRYOR ROAD AND O'BRIEN ROAD.

ALL NOTES REFERENCED ON THIS PLAN SHEET MAY HAVE APPLICATIONS TO EVERY FACET OF THE CONSTRUCTION PLANS. THE NOTE HEADINGS OR TITLES ARE TO BE USED AS A GENERAL GUIDE TO APPLICABLE SITUATIONS.

BY

REV. NO.

DATE

REVISIONS DESCRIPTION

GENERAL NOTES

SANITARY SEWER PLANS

THE RETREAT AT HOOK FARMS

CONSTRUCTION DOCUMENTS

2020

LEE'S SUMMIT, MO

drawn by: EM

checked by: EM

designed by: RB

QA/QC by: NH

project no.: 019-4059

drawing n6: GEN&TABL\_0194059

date: 4/20/2020

SHEET

C201

28 OF 53

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SANITARY SEWER LINE 3

SANITARY SEWER LINE 1

EXISTING 24"  
SANITARY SEWER MAIN

EX. SANITARY  
MANHOLE A-1

EX. SANITARY  
MANHOLE A-2

PROPOSED  
SANITARY  
SERVICE (TYP.)

EX. SANITARY  
MANHOLE A-3



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GENERAL LAYOUT	2020
SANITARY SEWER PLANS	
THE RETREAT AT HOOK FARMS CONSTRUCTION DOCUMENTS	
LEE'S SUMMIT, MO	

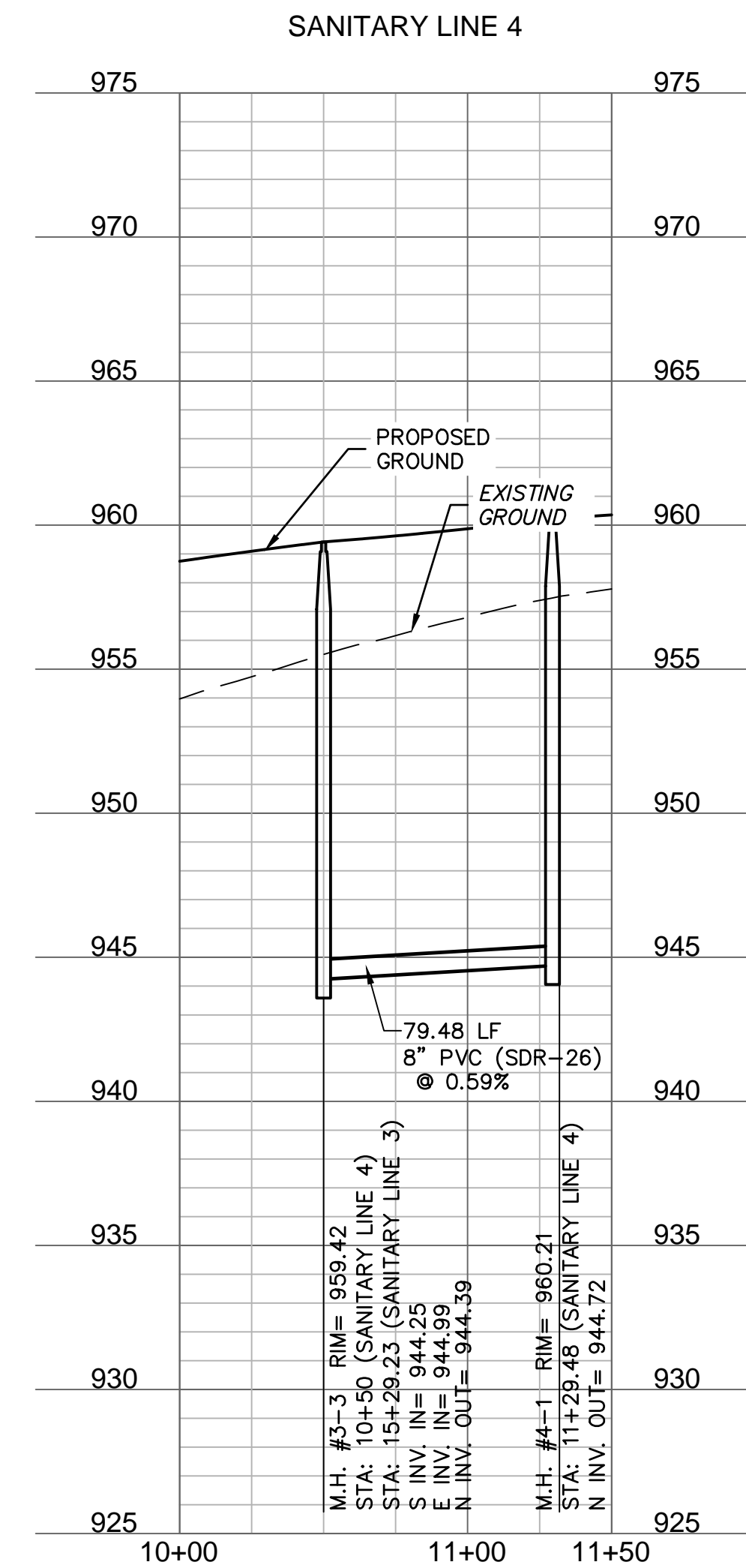
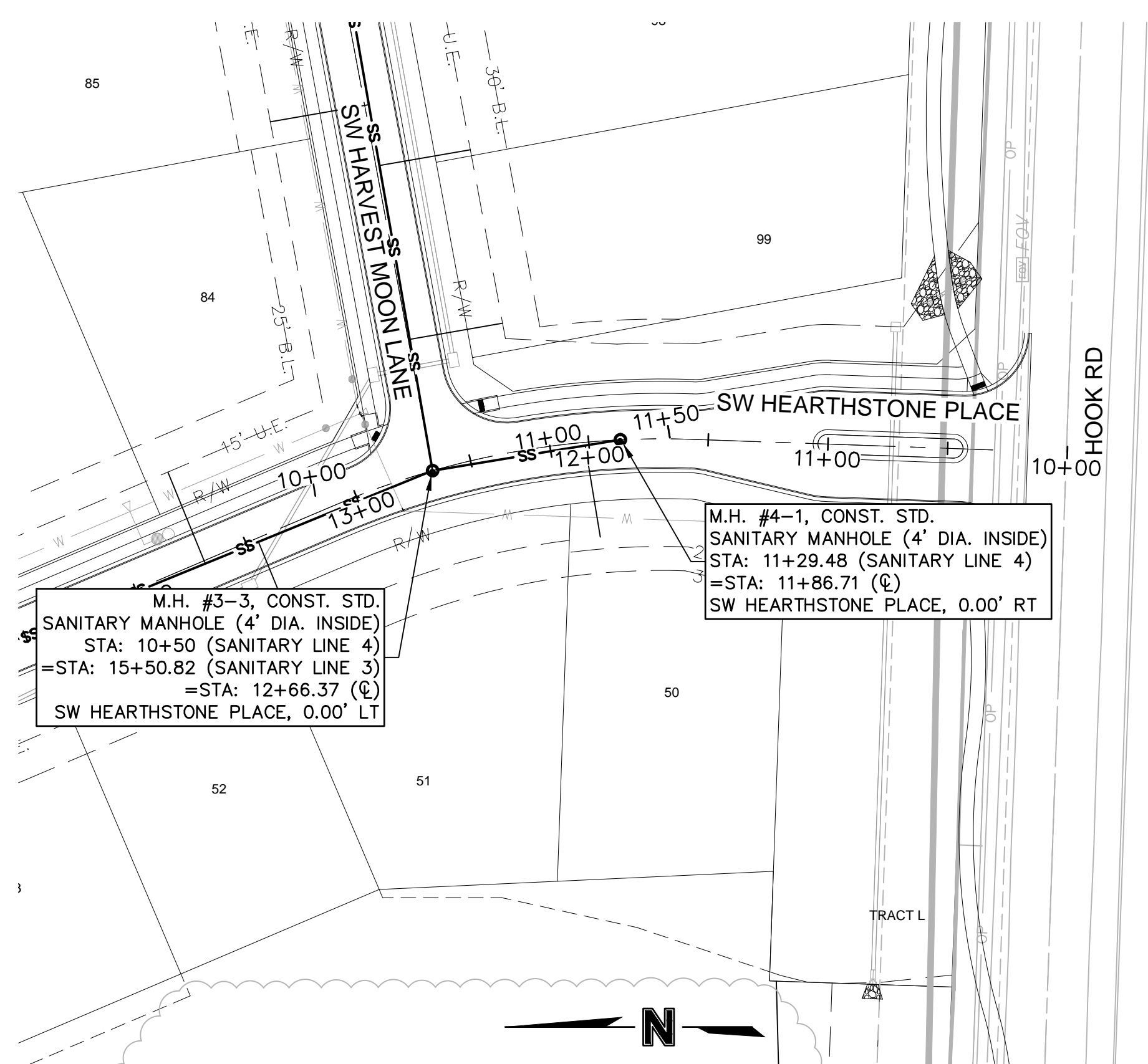
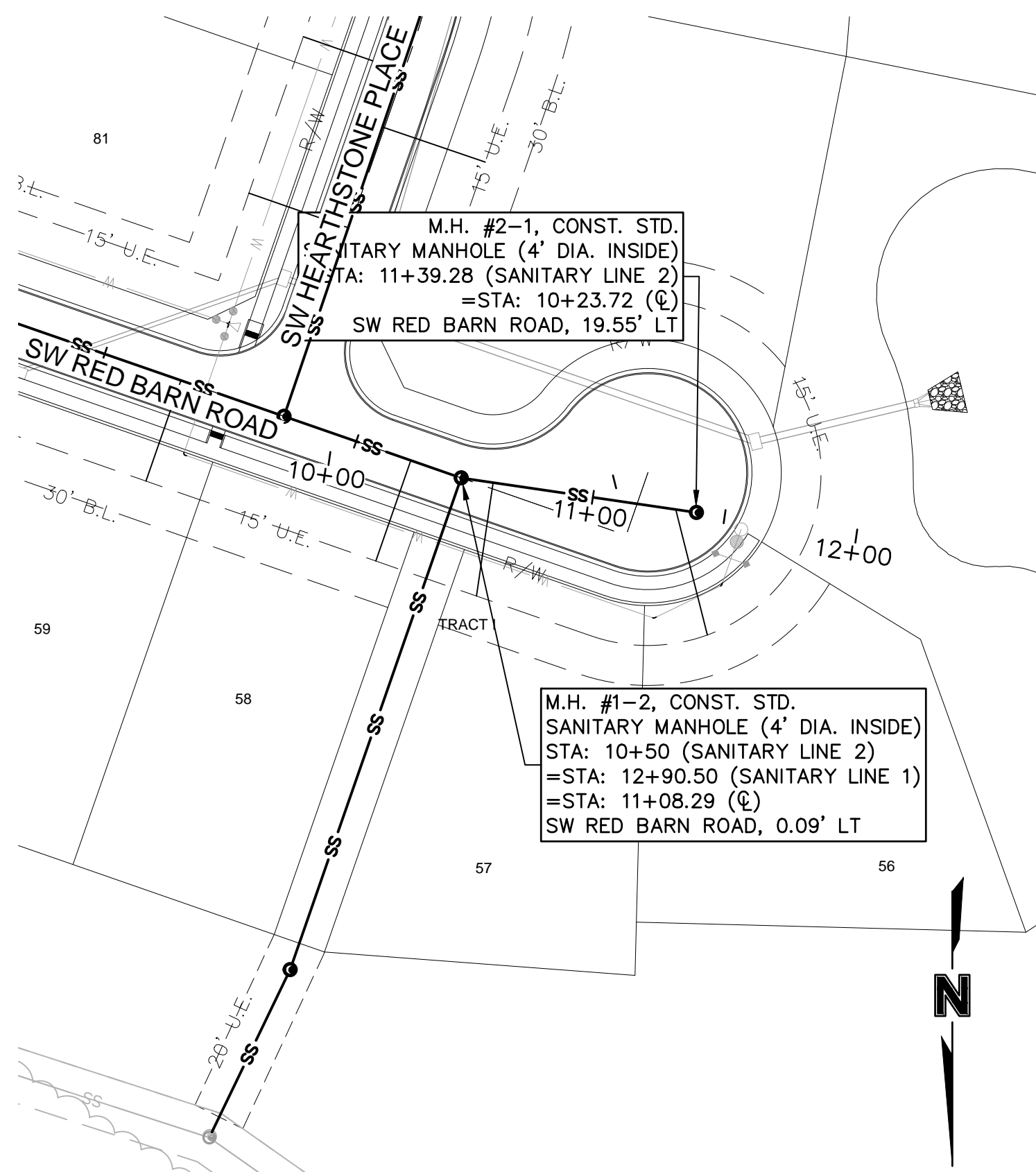
drawn by: \_\_\_\_\_ EM  
checked by: \_\_\_\_\_ EM  
designed by: \_\_\_\_\_ RB  
QA/QC by: \_\_\_\_\_ NH  
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SHEET C202  
29 OF 53



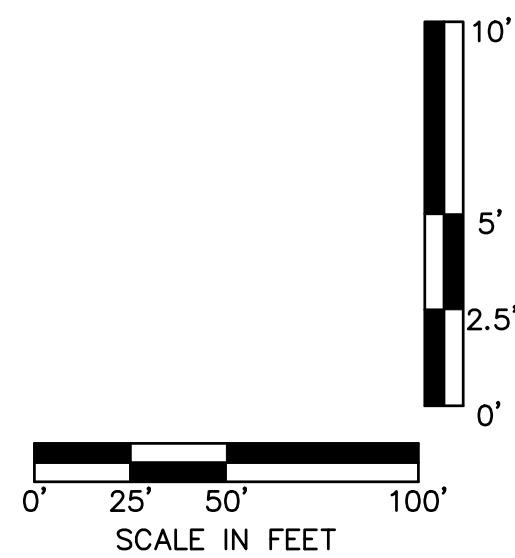






- NOTES:

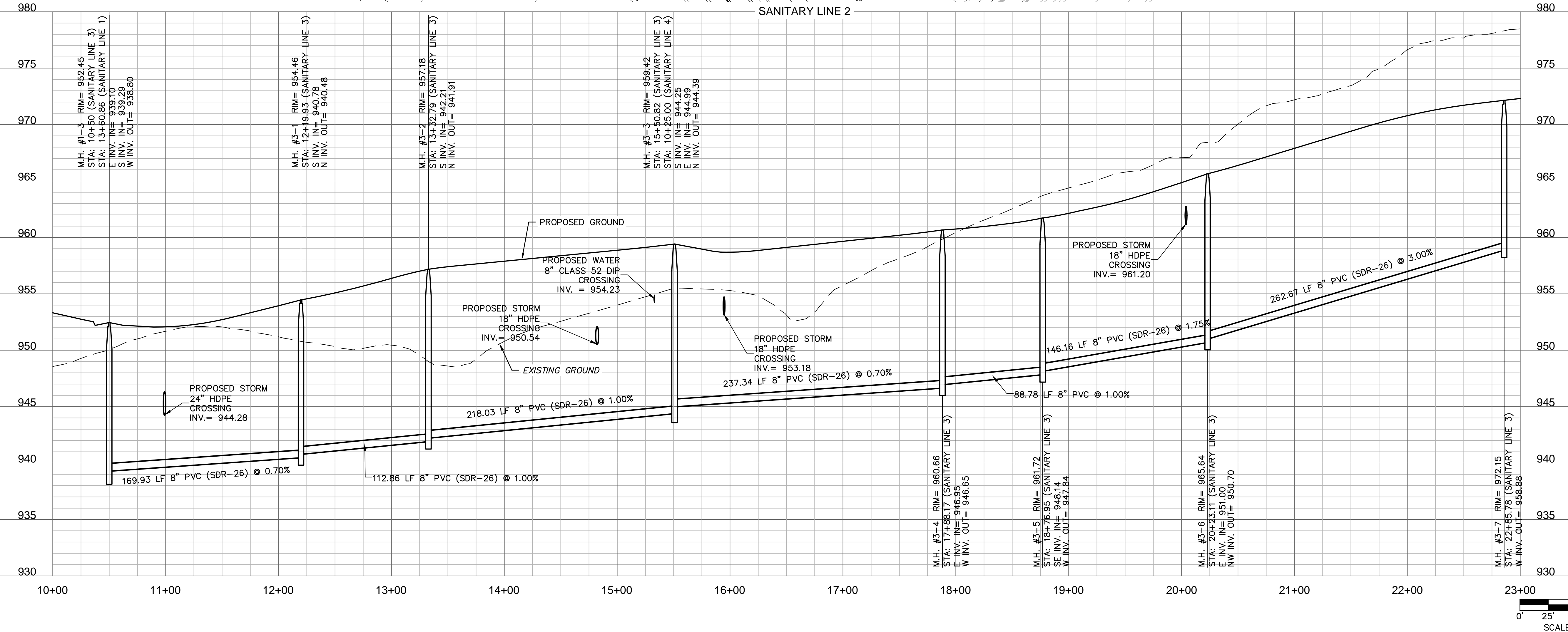
1. CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 36" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.
2. ALL SERVICE LINE CONNECTIONS SHALL BE MADE WITH AN 8"x4" PVC WYE, 4" PVC 45° BEND, AND THE APPROPRIATE LENGTH OF 4" PVC LATERAL (UNLESS OTHERWISE SHOWN) AND CAP.
3. REFER TO SHEET C206FOR SANITARY DESIGN AND LATERAL INSTALLATION DETAILS.
4. MAXIMUM DEVIATION FROM LATERAL STATION LOCATIONS AS CALLED OUT SHALL BE 2'0 TO AVOID PIPE JOINT.
5. SANITARY LATERALS ARE DESIGNED @2.00% SLOPE. IF RISER IS INDICATED, IT IS TO BE AT THE SANITARY MAIN UNLESS OTHERWISE NOTED.
6. TRENCH CHECKS SHALL BE PROVIDED IN ACCORDANCE WITH STANDARD LEE'S SUMMIT TRENCH CHECK DETAIL (SEE SHEET C207) ON ALL PRIVATE SANITARY SEWER SERVICE LATERALS.
7. FOR PIPE ANGLES AT MANHOLE, REFER TO SHEET C203 OR C205.





NOTES:

- CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 36" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.
- ALL SERVICE LINE CONNECTIONS SHALL BE MADE WITH AN 8"x4" PVC WYE, 4" PVC 45° BEND, AND THE APPROPRIATE LENGTH OF 4" PVC LATERAL (UNLESS OTHERWISE SHOWN) AND CAP.
- REFER TO SHEET C206FOR SANITARY DESIGN AND LATERAL INSTALLATION DETAILS.
- MAXIMUM DEVIATION FROM LATERAL STATION LOCATIONS AS CALLED OUT SHALL BE 2.0 TO AVOID PIPE JOINT.
- SANITARY LATERALS ARE DESIGNED @2.00% SLOPE. IF RISER IS INDICATED, IT IS TO BE AT THE SANITARY MAIN UNLESS OTHERWISE NOTED.
- TRENCH CHECKS SHALL BE PROVIDED IN ACCORDANCE WITH STANDARD LEE'S SUMMIT TRENCH CHECK DETAIL (SEE SHEET C207) ON ALL PRIVATE SANITARY SEWER SERVICE LATERALS.





Sanitary Sewer Laterals							
Lot Number	Lateral Station	Upstream Manhole	Lateral Length	Riser	Flowline at Main	Flowline at End of Lateral	Minimum Servicable Floor Elevation
			(ft)	(ft)	(ft)	(ft)	(ft)
50	11+14.62	MH 4-1	38.74	1.0	945.3	948.1	950.90
51	14+72.29	MH 3-3	38.36	1.0	943.6	946.4	949.16
52	13+82.30	MH 3-3	39.63	1.0	942.7	945.5	948.28
53	13+09.56	MH 3-2	45.82	1.0	941.7	944.6	947.38
54	12+29.93	MH 3-2	43.57	2.0	940.9	944.7	947.52
55	11+64.73	MH 3-1	40.44	0.0	940.1	941.9	944.71
56	11+31.45	MH 2-1	48.61	0.0	937.3	939.3	942.10
57	10+62.14	MH 2-1	43.04	1.0	936.6	939.5	942.28
58	13+10.50	MH 1-3	40.00	2.0	937.3	941.0	943.84
59	14+01.92	MH 1-4	40.00	1.0	939.7	942.4	945.25
60	14+70.50	MH 1-4	40.00	1.0	940.6	943.4	946.21
61	15+55.50	MH 1-4	40.00	1.0	941.8	944.6	947.40
62	16+30.50	MH 1-4	40.00	1.0	942.9	945.6	948.45
63	17+10.50	MH 1-4	40.00	1.0	944.0	946.8	949.57
64	17+90.50	MH 1-4	40.00	1.0	945.1	947.9	950.69
65	18+75.50	MH 1-5	40.35	0.0	946.3	948.2	950.95
66	19+50.50	MH 1-5	40.76	0.0	947.1	948.9	951.71
67	2+10.96	MH A-2	50.00	6.0	942.6	950.5	953.26
68	2+70.47	MH A-2	50.00	6.0	943.2	951.1	953.85
69	3+58.30	MH A-2	50.00	6.0	944.1	951.9	954.73
70	4+56.96	MH A-2	50.00	8.0	945.0	954.9	957.68
71	5+77.95	MH A-2	50.00	10.0	946.2	958.0	960.85
72	7+30.73	MH A-3	50.00	10.0	948.7	960.5	963.26
73	8+34.44	MH A-3	50.00	11.0	950.3	963.0	965.84
74	9+16.44	MH A-3	50.00	11.0	951.5	964.3	967.10
75	20+09.52	MH 1-5	39.03	1.0	947.7	950.4	953.25
76	19+27.69	MH 1-5	39.37	0.0	946.9	948.7	951.46
77	18+67.69	MH 1-5	39.70	0.0	946.3	948.1	950.86
78	17+04.69	MH 1-4	40.00	1.0	943.9	946.7	949.49
79	16+24.69	MH 1-4	40.00	2.0	942.8	946.5	949.35
80	15+49.69	MH 1-4	40.00	2.0	941.7	945.5	948.30
81	11+24.82	MH 3-1	39.56	0.0	940.8	941.6	944.41
82	11+87.00	MH 3-1	39.07	2.0	941.3	944.0	946.80
83	13+64.30	MH 3-3	40.12	2.0	943.5	946.3	949.09
84	14+48.30	MH 3-3	41.31	2.0	944.4	947.2	949.96
85	17+06.49	MH 3-4	41.77	1.0	947.1	948.9	951.70
86	17+80.73	MH 3-4	41.23	1.0	947.6	949.4	952.21
87	19+09.80	MH 3-6	40.22	1.0	949.7	951.5	954.30
88	19+87.03	MH 3-6	33.75	3.0	951.1	954.7	957.48
89	21+15.12	MH 3-7	37.12	3.0	954.8	958.4	961.24
90	21+95.11	MH 3-7	38.47	2.0	957.2	959.9	962.69
91	22+75.10	MH 3-7	39.82	1.0	959.6	961.3	964.14
92	22+52.02	MH 3-7	40.57	1.0	958.9	960.7	963.46
93	21+69.01	MH 3-7	41.98	2.0	956.4	959.2	961.98
94	20+86.75	MH 3-7	43.38	2.0	953.9	956.7	959.54
95	20+14.86	MH 3-6	42.49	3.0	951.6	955.3	958.15
96	19+28.45	MH 3-6	43.56	2.0	950.0	952.9	955.68
97	17+62.78	MH 3-4	37.75	2.0	947.5	950.2	952.99
98	16+79.77	MH 3-4	38.53	1.0	946.9	948.6	951.45
99	16+06.06	MH 3-4	39.37	1.0	946.4	948.1	950.95

FOR SERVICES TO LOTS 67-74:  
CONTRACTOR TO VERIFY ELEVATION OF EXISTING SANITARY SEWER MAIN AND  
CONSTRUCT 6" SANITARY SERVICE @ 2.00% THAT EXTENDS 30 FEET INTO LOT PER  
DETAIL SAN-1 ON SHEET C207. REFERENCE TABLE ABOVE FOR APPROXIMATE  
INVERT ELEVATIONS AND RISER LENGTHS.

Sanitary Sewer Design Information										
Upstream Manhole	Downstream Pipe Slope	Downstream Pipe Diameter	Proposed Cumulative Area	Future Cumulative Area	Minimum Hourly Peak Design Flow	Proposed Cumulative Peak Flows	Future Cumulative Peak Flows	Downstream Pipe Mannings N	Downstream Pipe Capacity	Downstream Pipe Full Flow Velocity
	(%)	(in)	(Ac.)	(Ac.)	(cfs/ac)	(cfs)	(cfs)		(cfs)	(fps)
EX MH 1-0	2.00%	8	12.33	0.00	0.02	0.234	0.234	0.014	1.59	4.55
MH 1-1	0.60%	8	12.33	0.00	0.02	0.234	0.234	0.014	0.87	2.49
MH 1-2	0.60%	8	12.33	0.00	0.02	0.234	0.234	0.014	0.87	2.49
MH 1-3	3.00%	8	11.25	0.00	0.02	0.214	0.214	0.014	1.94	5.57
MH 1-4	1.40%	8	1.77	0.00	0.02	0.034	0.034	0.014	1.33	3.80
MH 1-5	1.00%	8	0.00	0.00	0.02	0.000	0.000	0.014	1.12	3.21
MH 2-1	1.00%	8	0.00	0.00	0.02	0.000	0.000	0.014	1.12	3.21
MH 3-1	0.70%	8	4.90	0.00	0.02	0.093	0.093	0.014	0.94	2.69
MH 3-2	1.00%	8	4.19	0.00	0.02	0.080	0.080	0.014	1.12	3.21
MH 3-3	1.00%	8	2.64	0.00	0.02	0.050	0.050	0.014	1.12	3.21
MH 3-4	0.70%	8	0.00	0.00	0.02	0.000	0.000	0.014	0.94	2.69
MH 3-5	1.00%	8	2.37	0.00	0.02	0.045	0.045	0.014	1.12	3.21
MH 3-6	1.75%	8	0.00	0.00	0.02	0.000	0.000	0.014	1.48	4.25
MH 4-1	1.00%	8	0.00	0.00	0.02	0.000	0.000	0.014	1.12	3.21
MH A-1	0.52%	24	2.62	0.00	0.02	0.050	0.050	0.014	15.15	4.82
MH A-2	1.00%	24	2.62	0.00	0.02	0.050	0.050	0.014	21.01	6.69
MH A-3	1.54%	24	0.92	0.00	0.02	0.017	0.017	0.014	26.07	8.30

\*Sanitary lines in *Italics* are existing

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STATE OF MISSOURI  
4/20/20  
MEGAN J. WALTER  
NUMBER  
PE-2012028697  
Professional Engineer

SANITARY SEWER TABLES  
SANITARY SEWER PLANS  
THE RETREAT AT HOOK FARMS  
CONSTRUCTION DOCUMENTS

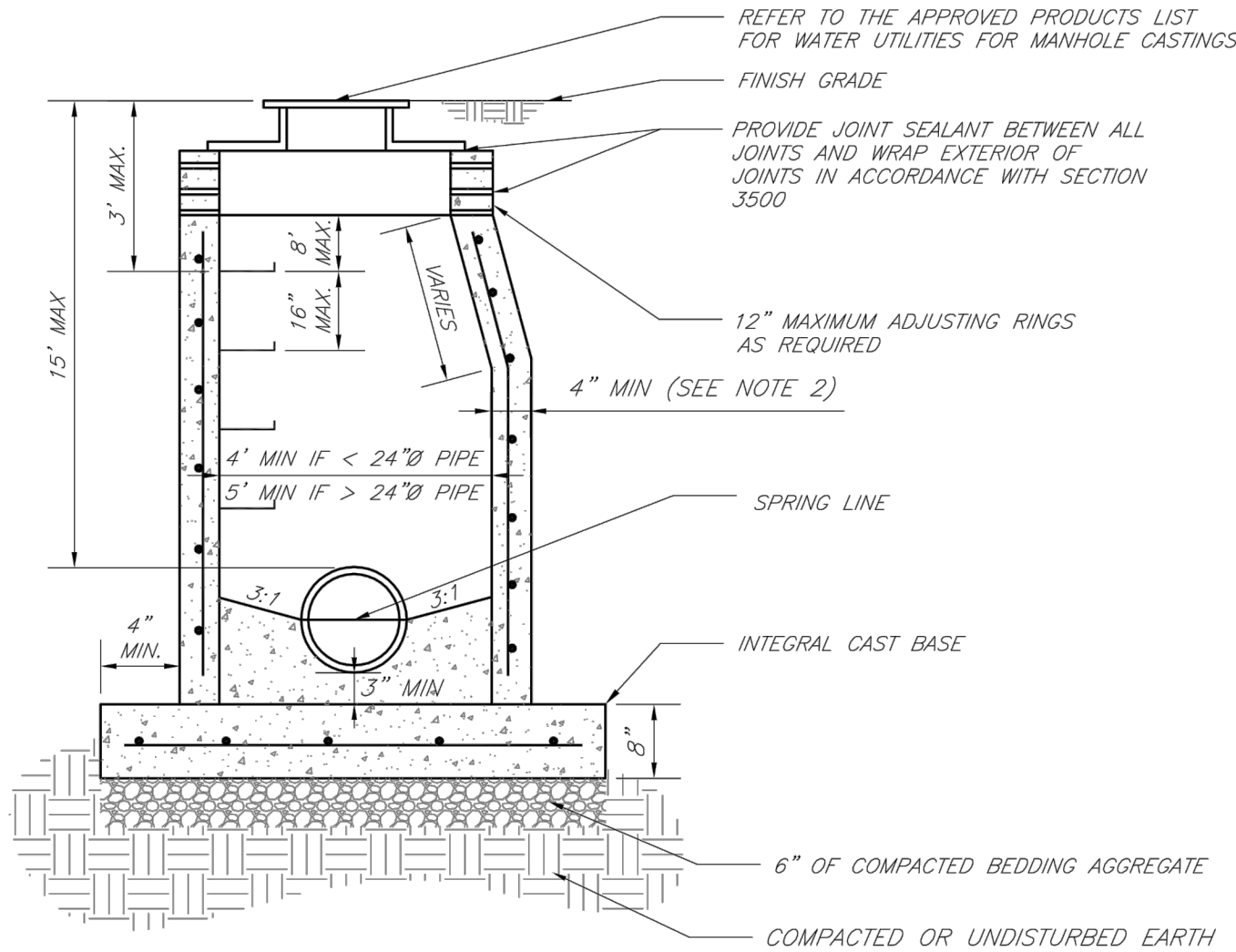
2020

drawn by: \_\_\_\_\_ EM  
checked by: \_\_\_\_\_ EM  
designed by: \_\_\_\_\_ RB  
QA/QC by: \_\_\_\_\_ NH  
project no.: 019-4059  
drawing n6: GEN&TABL\_0194059  
date: 4/20/2020

SHEET C206

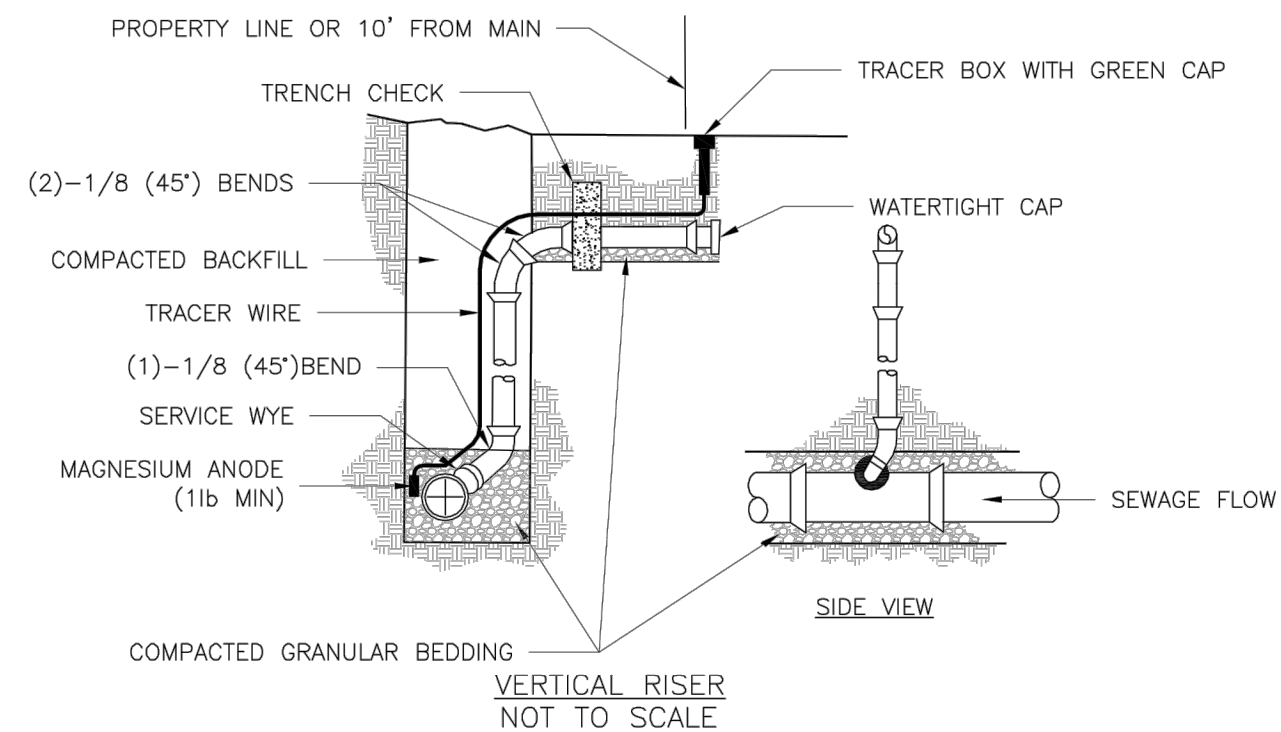
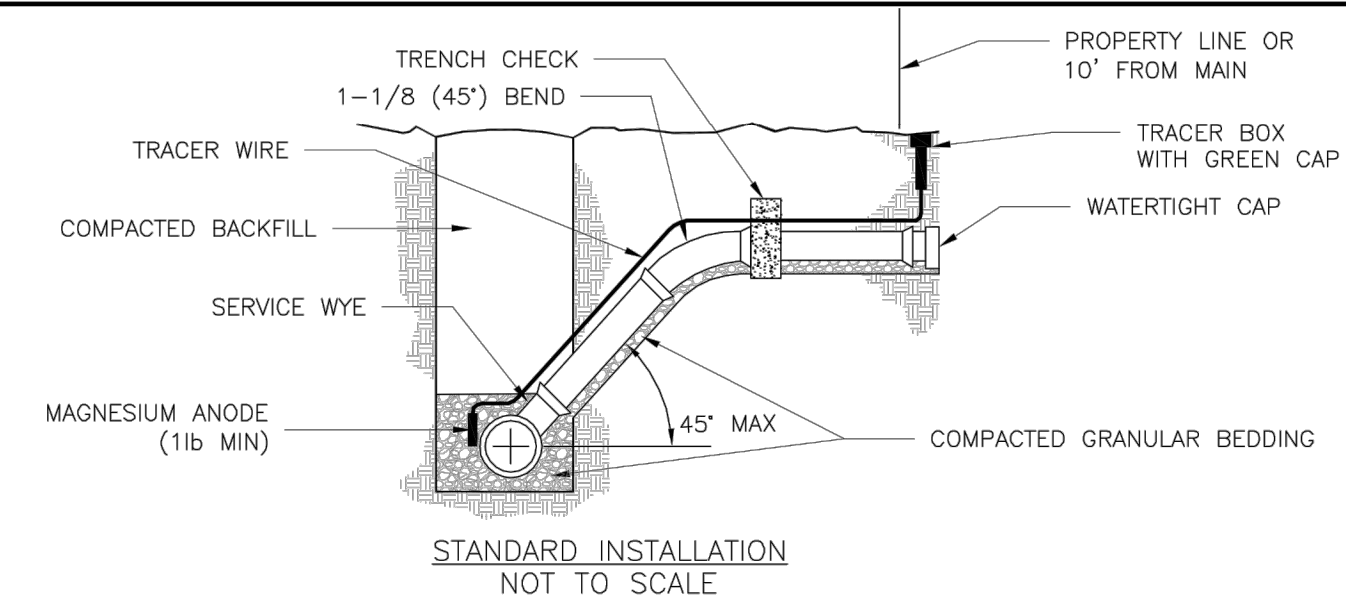
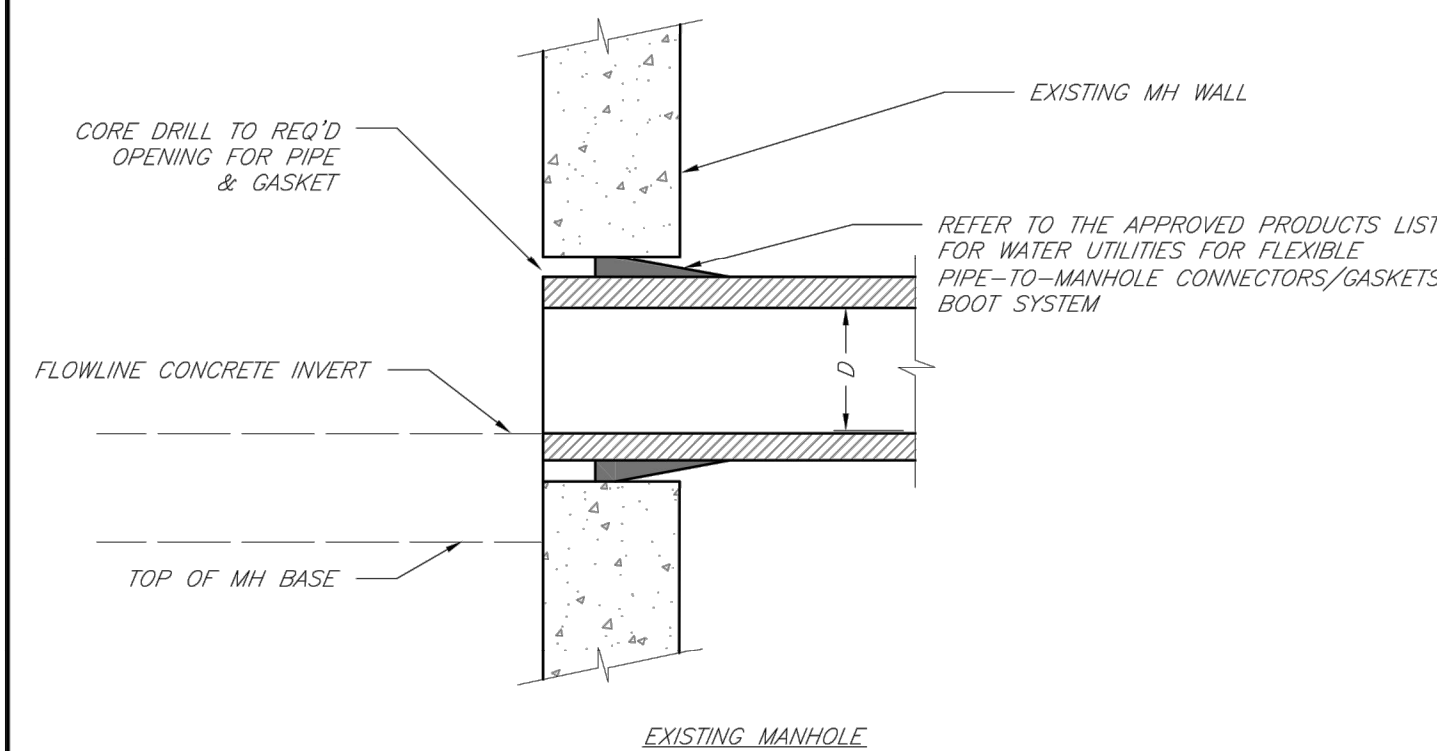
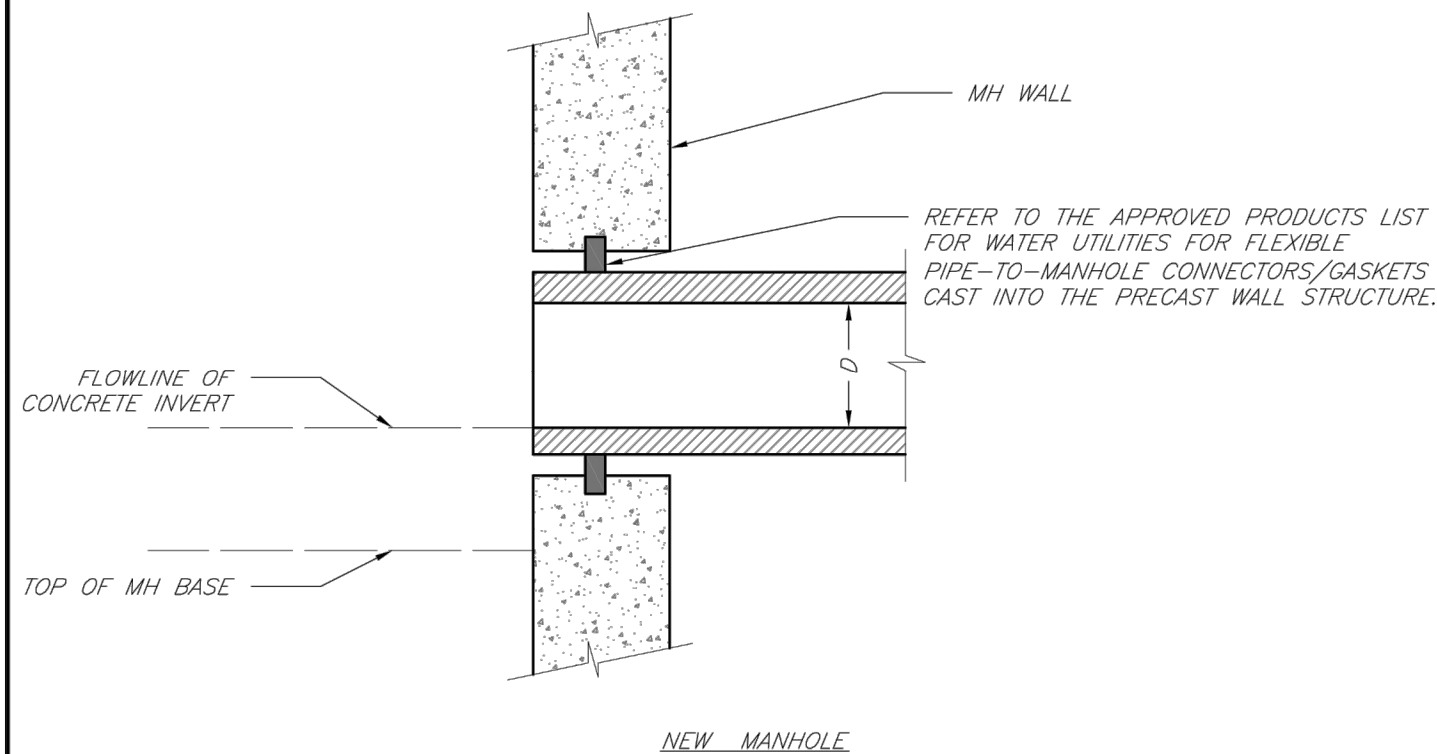
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NOTES:

1. PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
2. WALL THICKNESS NOT LESS THAN ONE-THIRTEEN (1/13) OF THE INSIDE DIAMETER OR 4", WHICHEVER IS GREATER. SHALL BE USED WHEN THE MANHOLE DEPTH IS LESS THAN 15'.
3. WATERPROOFING SHALL BE REQUIRED ON THE OUTSIDE OF MANHOLES. THE WATERPROOFING SHALL CONSIST OF TWO DRY FILM THICKNESS OF NOT LESS THAN 14 MILS OF BITUMINOUS COATING.
4. ONE INCH (1") OF POLYETHYLENE GASKET SHALL BE PROVIDED BY THE CITY ENGINEER.
5. THE FILL CONCRETE FLOW CHANNEL FOR SIDE BRANCHES SHALL BE PLACED TO PROVIDE A SMOOTH TRANSITION INTO THE FLOW LINE.
6. REFER TO THE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR APPROVED MANHOLE GASKET MODELS.
7. REFER TO THE APPROVED PRODUCTS LIST FOR APPROVED STEPS.



NOTES:

1. ALL SEWER STUBS SHALL BE CONSTRUCTED TO PROPERTY LINE OR 10' MINIMUM FROM THE MAIN, WHERE SIDEWALKS OR DRIVEWAYS ARE PRESENT. CONTRACTOR SHALL EXTEND SERVICE LINE UNDER EXISTING SIDEWALK TO TWO FEET BEFORE.
2. ALL NEW CONSTRUCTION OF SEWER STUBS SHALL BE TEMPORARILY MARKED WITH A MARKING STAKE, 36" ABOVE GROUND AND PAINTED GREEN.
3. IMPERVIOUS TRENCH CHECKS SHALL BE PLACED ON BUILDING SEWER STUBS (AT LEAST 5' AWAY FROM THE SANITARY SEWER MAIN).
4. TRENCH CHECKS ON THE BUILDING SEWER STUBS SHALL EXTEND 6" BELOW THE BOTTOM OF THE PIPE. LENGTH SHALL BE A MINIMUM OF 12". THE HEIGHT OF THE TRENCH CHECK SHALL EXTEND 12" ABOVE THE TOP OF THE PIPE. THE WIDTH OF THE TRENCH CHECK SHALL BE THE WIDTH OF THE TRENCH.
5. SEE SECTION 2100 FOR SEWER MAIN BEDDING AND BACKFILL.
6. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER.
7. TRACER WIRE SHALL RUN FROM THE WIRE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON LOCKABLE TOP. WIRE SHALL BE TAPED OR TIED TO THE PIPE AT 5' INTERVALS.
8. TRACER WIRE BOX SHALL BE INSTALLED WITHIN 1.0' OF PROPERTY LINE.
9. THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPIRAL BOLT CONNECTORS. WIRE NUTS SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.



**LEE'S SUMMIT**

MISSOURI


PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

STANDARD PRECAST MANHOLE – SANITARY SEWER

Date: 02/13
Drawn By: JN
Checked By: DL
FILE: SAN-2
Rev: 1/14
Rev:

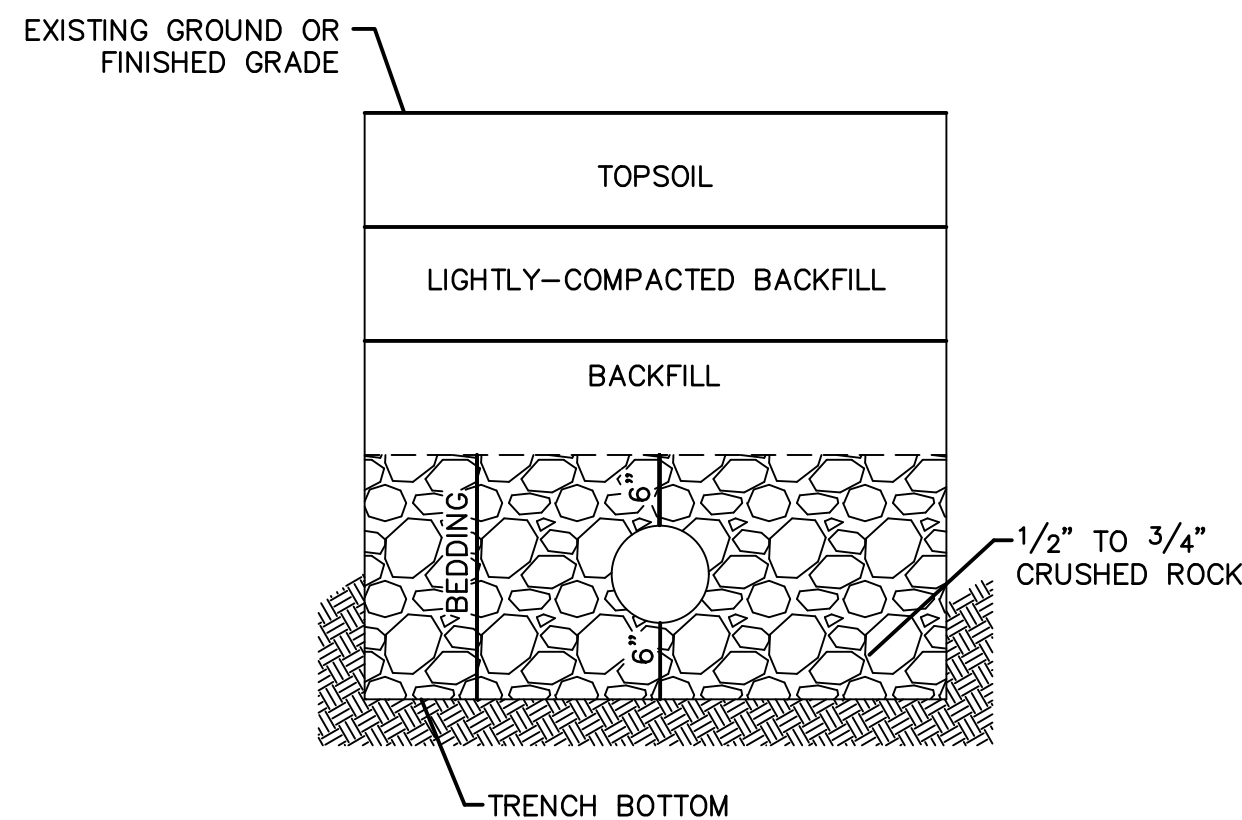
	<p><b>LEE'S SUMMIT</b> MISSOURI</p> <p>PUBLIC WORKS ENGINEERING DIVISION   220 SE GREEN STREET   LEE'S SUMMIT, MO 64063</p>
	<p>MANHOLE WALL CONNECTIONS</p>

Date: 02/13
Drawn By: JN
Checked By: DL
FILE: SAN-5
Rev: 1/14
Rev:

<p>PREVENT CORROSION.</p>		<p>DATE: 04/17</p>	
<p>  </p>		<p>Drawn By: MJF</p>	
<p> <b>LEE'S SUMMIT</b>  <b>MISSOURI</b>          PUBLIC WORKS ENGINEERING DIVISION   220 SE GREEN STREET   LEE'S SUMMIT, MO 64063       </p>		<p>Checked By: DL</p>	
<p><b>BUILDING SEWER STUB AND RISER</b></p>		<p><b>SAN-1</b></p>	

Date: 04/17  
Drawn By: MJF  
Checked By: DL

**SAN-1**



## UNDERGROUND PIPE INSTALLATION FOR SANITARY SEWER

**NOTES:**

1. A MINIMUM OF 36 INCHES OF COVER SHALL BE OVER THE TOP OF THE PIPE. THIS MINIMUM OF COVER SHALL BE FROM THE TOP OF PIPE TO THE FINISHED GRADE.
2. BEDDING AGGREGATE SHALL BE PLACED FROM A LEVEL 6 INCHES BELOW THE BOTTOM OF THE PIPE TO A LEVEL 6 INCHES ABOVE THE TOP OF THE PIPE.
3. TRENCH BACKFILL IN PAVED AREAS WITHIN STREET OR ALLEY RIGHT OF WAYS
  - a. NARROW TRENCH: SUITABLE BACKFILL MATERIAL FOR TRENCHES 24 INCHES OR LESS IN WIDTH AND SHALL BE TYPE A FLOWABLE FILL
  - b. STANDARD TRENCH: SUITABLE BACKFILL MATERIAL FOR TRENCHES BETWEEN 24 TO 48 INCHES WIDE SHALL BE EITHER TYPE A FLOWABLE FILL OR DENSE, WELL GRADED AGGREGATE BASE MATERIAL. AGGREGATE BASE MATERIAL SHALL MEET THE REQUIREMENTS FOR KDOT AB-3; MODOT TYPES 1 OR 5; OR APWA 2202.2.
  - c. WIDE TRENCH: SUITABLE BACKFILL MATERIAL FOR TRENCHES GREATER THAN 48 INCHES WIDE SHALL BE SUITABLE MATERIAL AS SPECIFIED FOR EARTH EMBANKMENT IN APWA STANDARD SPECIFICATIONS, SECTION 2102.2.C.
4. SUITABLE BACKFILL MATERIAL OUTSIDE OF PAVED AREAS WITHIN RIGHT OF WAY, AND ALL AREAS OUTSIDE RIGHT OF WAY, MAY BE SUITABLE MATERIAL AS SPECIFIED FOR EARTH EMBANKMENT IN APWA STANDARD SPECIFICATIONS, SECTION 2102.2.C. SUITABLE BACKFILL MATERIAL MAY ALSO BE OTHER TRENCH BACKFILL MATERIAL (FLOWABLE FILL OR AGGREGATE BASE) DEPENDING ON SITE CONDITIONS, TRENCH WIDTHS OR AT THE DIRECTION OF THE CITY'S ON SITE INSPECTOR.

[illegible]

<p>SANITARY SEWER DETAILS</p> <p>SANITARY SEWER PLANS</p>	2020
<p>THE RETREAT AT HOOK FARMS</p> <p>CONSTRUCTION DOCUMENTS</p>	LEE'S SUMMIT, MO

drawn by: \_\_\_\_\_ EM  
checked by: \_\_\_\_\_ EM  
designed by: \_\_\_\_\_ RB  
QA/QC by: \_\_\_\_\_ NH  
project no.: \_\_\_\_\_ 019-4059  
drawing no.: C\_DTL00\_0194059  
date: \_\_\_\_\_ 4/20/2020