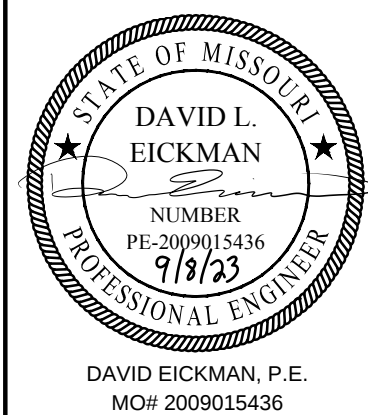


SECTION 25, TOWNSHIP 48N, RANGE 32W
SECTION 30, TOWNSHIP 48N, RANGE 31W
IN LEE'S SUMMIT, JACKSON COUNTY, MO

olsson

Olsson - Civil Engineering
Missouri Certificate of Authority #001592
1301 Burlington Street
North Kansas City, MO 64116



OIL/GAS WELLS:

NO OIL OR GAS WELLS ARE LOCATED WITHIN PROJECT LIMITS.
INFORMATION OBTAINED FROM THE MISSOURI DEPARTMENT OF NATURAL RESOURCES,
GEOLOGICAL SURVEY GEOSCIENCES TECHNICAL RESOURCE ASSESSMENT TOOL (GEOSTRAT).

THE ENTIRE SITE IS LOCATED WITHIN ZONE X, "AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM THE 1% ANNUAL CHANCE FLOOD" AS DEPICTED ON THE FEMA FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 290095C0409G. REVISION DATE JANUARY 20, 2017.

[illegible]

drawn by: _____ GS/SOS/JUN checked by: _____ AR/JUN approved by: _____ DE QA/QC by: _____ JS/SH project no.: D21-04643 drawing: <u>RTL</u> <u>PUB</u> <u>01</u> <u>D2104643</u> date: _____ 09.08.2023		TITLE SHEET PUBLIC STORM SEWER PLANS THE VILLAGE AT DISCOVERY PARK ZONE 1 NW COLBERN RD & NE DOUGLAS ST		2023 LEE'S SUMMIT, MISSOURI	
SHEET C450					

drawn by: GS/OS/JN
checked by: AR/JN
approved by: DE
QA/QC by: JS/NH
project no.: D21-04643
drawing no.: D21-04643
date: 09.08.2023

DWG: F:\2021\04501-05000\021-04643-d\40-design\AutoCAD\final plans\Sheets\GNCV\Street & Storm Plans\C_TTL_PUB_01_D2104643.dwg
DATE: Sep 08, 2023 8:38am XREFS: C:\PTBLK_D2104643 USER: aramov



GENERAL NOTES

1.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT THE PLANS IN THEIR POSSESSION ARE THE MOST CURRENT VERSION ISSUED, ARE FULLY COORDINATED WITH ALL SUBCONTRACTORS, AND PRESENT ON SITE AT ALL TIMES. CURRENT PLANS PREPARED BY OLSSON MAY BE OBTAINED AT THE DIRECTION OF OLSSON'S CLIENT. DIRECT REQUESTS TO OLSSON MAY REQUIRE ADDITIONAL AUTHORIZATIONS, AGREEMENTS, AND/OR FEES. PLEASE CONTACT THE ENGINEER FOR INFORMATION.
2.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DEVIATIONS FROM THESE PLANS UNLESS WRITTEN APPROVAL FROM ENGINEER, OWNER, AND DEVELOPER.
3.

ALL WORK AND MATERIALS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE OWNER OR THE OWNER'S REPRESENTATIVE.
4.

ALL ESTIMATES OF QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY; THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING QUANTITIES AND ITEMS OF WORK.
5.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO COMPLETE THE WORK SHOWN IN THE PLANS.
6.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS, PAYING ALL FEES, AND FOR OTHERWISE COMPLYING WITH ALL APPLICABLE REGULATIONS GOVERNING THE WORK.
7.

THE CONTRACTOR SHALL NOT ENGAGE IN ACTIVITIES THAT MAY ENCROACH ON WATERS OF THE U.S., INCLUDING WETLANDS, UNTIL ANY NECESSARY PERMITS MAY BE OBTAINED. THE CONTRACTOR SHALL REVIEW AND COMPLY WITH ALL CONDITIONS DESCRIBED IN THE PERMIT.
8.

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, THE SAFETY OF ALL PERSONS INCLUDING VISITORS AND THE GENERAL PUBLIC, AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY THROUGHOUT THE PROJECT AND NOT BE LIMITED BY WORKING HOURS. ANY CONSTRUCTION OBSERVATION BY THE ENGINEER OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES.
9.

PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL NOTIFY AND COORDINATE WITH ALL UTILITY COMPANIES AND OBTAIN ANY RELEVANT INFORMATION. NOTIFY ENGINEER OF ANY DISCREPANCIES.
10.

THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL BOUNDARY CORNERS AND SECTION CORNERS. ANY BOUNDARY CORNER AND/OR SECTION CORNER DISTURBED OR DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE RESET BY A LAND SURVEYOR LICENSED IN THE STATE OF MISSOURI, AT THE CONTRACTOR'S EXPENSE.
11.

THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ADJACENT PROPERTIES AND SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE DURING CONSTRUCTION. THE CONTRACTOR IS ALSO RESPONSIBLE FOR REPAIRING ANY DAMAGE RESULTING FROM CONSTRUCTION ACTIVITIES.
12.

PRIOR TO MOVING OFF THE JOB THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER TO PERFORM A FINAL WALK-THROUGH OF THE CONSTRUCTION SITE.

REFERENCES

1.

ARCHITECTURAL AND STRUCTURAL ELEMENTS SHOWN IN THESE PLANS ARE FOR REFERENCE ONLY. CONTRACTORS AND SURVEYORS SHALL REFERENCE THEIR RESPECTIVE PLANS FOR DESIGN INFORMATION.
2.

THE CONTRACTOR SHALL ADHERE TO THE SITE PREPARATION AND STRUCTURAL FILL RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AS PROVIDED BY THE GEOTECHNICAL ENGINEER INCLUDING ALL CURRENT ADDENDUMS, THE STANDARDS AND SPECIFICATIONS OF LEE'S SUMMIT, MISSOURI SHALL ALSO APPLY AND TAKE PRECEDENCE WHEN STRICTER THAN THE GEOTECHNICAL REPORT OR WHEN NO GEOTECHNICAL REPORT IS GIVEN.
3.

UNLESS EXPLICITLY DESCRIBED OTHERWISE WITHIN THESE PLANS THE FOLLOWING SHALL APPLY;

A.

ALL CONSTRUCTION, INCLUDING THOSE LISTED BELOW, SHALL CONFORM TO THE LATEST CODES AND ORDINANCES OF LEE'S SUMMIT, MISSOURI.

B.

ALL CONSTRUCTION IN MISSOURI DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY SHALL CONFORM TO THE LATEST SPECIFICATIONS ADOPTED BY U.S. DEPARTMENT OF TRANSPORTATION AND MISSOURI DEPARTMENT OF TRANSPORTATION.

C.

ALL TRAFFIC CONTROL SIGNAGE SHALL CONFORM WITH THE CURRENT EDITION OF THE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

D.

ALL UTILITY EXTENSIONS AND CONSTRUCTION SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE UTILITY COMPANIES..

E.

ALL EXTERIOR PAVEMENT (PCC, ASPHALT, ETC.) SHALL BE IN CONFORMANCE WITH THE SPECIFICATIONS OF LEE'S SUMMIT, MISSOURI AND THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.
4.

THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE DELIVERY MANAGER AND COORDINATING ANY MAILBOXES THAT MAY BE DISTURBED. FAILURE TO DO SO MAY SUBJECT THE CONTRACTOR TO PROSECUTION BY THE FEDERAL GOVERNMENT.

EXISTING CONDITIONS

1.

THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS OF THE PROJECT AREA.
2.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING THEIR OWN INVESTIGATIONS AND MAKING THEIR OWN ASSUMPTIONS REGARDING SITE SURFACE AND SUBSURFACE CONDITIONS. THIS INCLUDES THE LOCATION AND CONSISTENCY OF ANY EXISTING ROCK LAYERS UNDERLYING THE PROJECT SITE. CONTACT THE ENGINEER REGARDING ANY DISCREPANCIES THAT MAY AFFECT THE ABILITY TO CONSTRUCT FROM THESE PLANS AS DESIGNED.
3.

EXISTING CONDITIONS WERE DETERMINED THROUGH A VARIETY OF METHODS THAT MAY INCLUDE SURVEY, AERIAL IMAGERY, AVAILABLE RECORDS, GIS DATA, ETC. SUBSURFACE CONDITIONS ARE APPROXIMATE AND MAY NOT INCLUDE ALL UTILITIES AND OTHER SITE IMPROVEMENTS PRESENT ON SITE. THE CONTRACTOR SHALL MAKE EXPLORATION EXCAVATIONS AND LOCATE EXISTING UNDERGROUND UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS WHEN CONFLICTS AND DISCREPANCIES ARE FOUND.

CONSTRUCTION

1.

THE CONTRACTOR SHALL INSTALL TRAFFIC CONTROL WHILE WORKING IN THE PUBLIC RIGHT-OF-WAY AS SHOWN IN THESE PLANS. IF PLANS ARE NOT PROVIDED, CONTRACTOR SHALL COORDINATE AND PROVIDE CONTROLS TO THE SATISFACTION OF THE RIGHT-OF-WAY OWNER.
2.

THE CONTRACTOR SHALL PROTECT ALL TREES OVER 3" CALIPER FROM DAMAGE. NO TREE SHALL BE REMOVED WITHOUT PERMISSION OF THE OWNER, UNLESS SHOWN OTHERWISE ON THESE PLANS.
3.

IN ADDITION TO THE CONDITIONS OF THE GEOTECHNICAL REPORT AND AS A MINIMUM THE CONTRACTOR SHALL PERFORM THE GRADING AS FOLLOWS:

A.

THE CONSTRUCTION AREA SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL AND ORGANIC MATTER FROM ALL AREAS TO BE OCCUPIED BY BUILDING AND PAVING. STRIPPING EXISTING TOPSOIL AND ORGANIC MATTER SHALL BE TO A MINIMUM DEPTH OF 6 INCHES. TOPSOIL FOR REPLACEMENT ON SLOPES MAY BE STOCKPILED ON SITE IN AREAS DESIGNATED BY THE OWNER. CONTRACTOR SHALL REMOVE EXCESS STRIPPINGS AND EXCESS EXCAVATION WITHIN 30 DAYS OF COMPLETION OF GRADING OPERATIONS.

B.

AREAS TO RECEIVE FILL AND AREAS CUT TO SUBGRADE LEVEL SHALL BE SCARIFIED AND THE TOP 8-INCH DEPTH COMPACTED TO 95% STANDARD PROCTOR DENSITY. THE SUBGRADE SHALL BE PROOF ROLLED WITH A MODERATELY HEAVY LOADED DUMP TRUCK OR SIMILAR APPROVED CONSTRUCTION EQUIPMENT TO DETECT UNSUITABLE SOIL CONDITIONS. ANY UNSUITABLE AREAS SHALL BE UNDERCUT AND REPLACED WITH SUITABLE MATERIAL BEFORE ANY FILL MATERIAL CAN BE APPLIED.

C.

FILL SHALL BE PLACED IN MAXIMUM OF 8 INCH LIFTS.

D.

TOPSOIL SHALL BE PLACED TO A MINIMUM DEPTH OF 6 INCHES OVER ALL AREAS DISTURBED BY THE WORK. LARGE STONES, STICKS AND LUMPS SHALL BE REMOVED OR BROKEN UP, AND THE TOPSOIL SHALL BE LEVELED AND RAKED. ALL DISTURBED AREAS SHALL BE LANDSCAPED PER LANDSCAPE PLANS OR SHALL BE SEEDED, FERTILIZED, MULCHED, WATERED AND MAINTAINED UNTIL HARDY GRASS GROWTH IS ESTABLISHED.

E.

CONTRACTOR SHALL PROVIDE COMPACTION TEST RESULTS AS REQUIRED.
4.

THE CONTRACTOR SHALL DISPOSE ALL WASTE MATERIAL RESULTING FROM THE PROJECT OFF-SITE AND IN STRICT CONFORMANCE WITH ALL LOCAL CODES AND ORDINANCES.
5.

ALL MANHOLES, CATCH BASINS, UTILITY VALVES AND METER PITS ARE TO BE ADJUSTED OR REBUILT TO GRADE AS REQUIRED. NOT ALL ADJUSTMENTS ARE INDICATED IN THE PLANS.
6.

THE CONTRACTOR SHALL STREET SWEEP OR OTHERWISE CLEAN ALL ACCESS ROUTES TO THE SITE AT CONCLUSION OF THE PROJECT.

SHOP DRAWINGS

1.

THE CONTRACTOR SHALL SUBMIT SHOP DRAWING A MINIMUM OF 7 DAYS PRIOR TO THE REQUESTED DATE OF APPROVAL. ENGINEER SHALL REVIEW SHOP DRAWINGS OR SAMPLES CONFORMANCE WITH THE DESIGN FOR THIS PROJECT AS DESCRIBED IN THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ERRORS OR OMISSIONS IN SHOP DRAWINGS. THE ENGINEER'S REVIEW SHALL NOT EXTEND TO MEANS OR METHODS OF CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY VARIATION FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS UNLESS CONTRACTOR HAS NOTIFIED ENGINEER OF EACH SUCH VARIATION AT THE TIME OF SUBMISSION, AND OBTAINED ENGINEER'S WRITTEN APPROVAL OF EACH SUCH VARIATION. PRIOR TO SUBMITTING EACH SHOP DRAWING OR SAMPLE, CONTRACTOR SHALL HAVE REVIEWED AND VERIFIED:

A.

ALL FIELD MEASUREMENTS, QUANTITIES, DIMENSIONS, SPECIFIED PERFORMANCE CRITERIA, INSTALLATION REQUIREMENTS, MATERIALS, CATALOG NUMBERS AND SIMILAR INFORMATION WITH RESPECT THERETO;

B.

ALL MATERIALS WITH RESPECT TO INTENDED USE, FABRICATION, SHIPPING, HANDLING, STORAGE, ASSEMBLY AND INSTALLATION PERTAINING TO THE PERFORMANCE OF THE WORK;

C.

ALL INFORMATION RELATIVE TO MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION AND SAFETY PRECAUTIONS AND PROGRAMS INCIDENT THERETO;

D.

CONTRACTOR SHALL ALSO HAVE REVIEWED AND COORDINATED EACH SHOP DRAWING OR SAMPLE WITH OTHER SHOP DRAWINGS AND SAMPLES, AND WITH THE REQUIREMENTS OF THE WORK AND THE CONTRACT DOCUMENTS.

E.

ALL SUBMITTED SHOP DRAWINGS SHALL BEAR A STAMP OR SPECIFIC WRITTEN INDICATION AND SIGNATURE THAT CONTRACTOR HAS FULLY COMPLETED THE ABOVE TASKS.
2.

SHOP DRAWINGS AS DESCRIBED ABOVE ARE REQUIRED FOR, BUT NOT LIMITED TO, THE FOLLOWING:

A.

ALL STORM SEWER STRUCTURES TO BE INSTALLED WITH THIS PROJECT.

B.

ALL SANITARY SEWER STRUCTURES TO BE INSTALLED WITH THIS PROJECT.

C.

ALL SITE FENCING AND RAILING INCLUDING ANY GATES.

D.

ALL LANDSCAPE AND RETAINING WALLS.

E.

ANY ITEMS IN THESE PLANS THAT ALLOW FOR AN "APPROVED EQUAL" ALTERNATIVE.
3.

COORDINATES ARE PROVIDED AT THE CENTER OF STRUCTURE. ADDITIONAL COORDINATES PROVIDED ARE PER LOCAL CODES AND ORDINANCES OR AS AN AID WHEN ORIENTING THE BOX DURING INSTALLATION.
4.

THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICT AND POINTS OF CONNECTION PRIOR TO ANY CONSTRUCTION OF STORM SEWER.
5.

STORM SEWER TRENCHES SHALL BE CONSTRUCTED SUCH THAT UNDISTURBED EXISTING SOIL OR FILL COMPACTED TO 95% PROCTOR DENSITY IS AT A DEPTH THAT IS 18" ABOVE TOP OF PROPOSED PIPE.
6.

STRUCTURE INVERT CHANNELS SHALL BE SMOOTH, CIRCULAR, AND CONFORMING TO ½ THE ADJACENT PIPE SECTION (INVERT TO CENTER). CHANGES IN DIRECTION OF FLOW SHALL BE MADE WITH A SMOOTH CURVE AND MAINTAIN SHAPE THROUGHOUT. CHANGES IN GRADE OF ADJACENT PIPES SHALL BE TRANSITIONED SMOOTHLY AND EVENLY THROUGH THE STRUCTURE.
7.

PIPE PENETRATIONS SHALL BE GROUTED TO ENSURE WATERTIGHT SEALS.

ESTIMATE OF QUANTITIES				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	AS-BUILT
STORM				
1	30" HDPE	L.F.	289.05	
2	36" HDPE	L.F.	696.39	
3	42" HDPE	L.F.	269.99	
4	48" HDPE	L.F.	80.81	
5	60" HDPE	L.F.	382.10	
6	7'x13' REINFORCED CONCRETE BOX	L.F.	727.92	
7	STD. JUNCTION BOX (5'x5' INSIDE)	EA.	2	
8	STD. FIELD INLET (5'x5' INSIDE)	EA.	1	
9	STD. FIELD INLET (7'x7' INSIDE)	EA.	1	
10	STD. CURB INLET (5'x3' INSIDE)	EA.	2	
11	STD. CURB INLET (5'x4' INSIDE)	EA.	1	
12	STD. CURB INLET (5'x5' INSIDE)	EA.	1	
13	STD. CURB INLET (6'x6' INSIDE)	EA.	1	
14	STD. CURB INLET (7'x6' INSIDE)	EA.	1	
15	STD. CURB INLET (8'x7' INSIDE)	EA.	1	
16	4'-0" I.D. STD MANHOLE	EA.	4	
17	4'-0" I.D. RCB ACCESS MANHOLE	EA.	4	
18	5'-0" I.D. STD MANHOLE	EA.	3	
19	6'-0" I.D. STD MANHOLE	EA.	1	
20	17'x17' RCB JUNCTION BOX	EA.	1	
21	7'x13' RCB BEND	EA.	3	
22	7'x13' RCB END SECTION	EA.	1	
23	CONNECTION TO PROPOSED RCB LINE	EA.	1	
24	CONNECTION TO EXISTING STORM STRUCTURE	EA.	2	
25	CONNECTION TO EXISTING RCB LINE	EA.	1	
26	REMOVAL OF EXISTING FLARED END SECTION	EA.	2	
27	REMOVAL OF EXISTING STORM PIPE	L.F.	20.03	

SUMMARY OF QUANTITIES AS INDICATED ABOVE AND ANY QUANTITIES AS SHOWN WITHIN THE PLANS HAVE BEEN PROVIDED FOR PERMITTING PURPOSES ONLY AND ARE NOT INTENDED FOR USE IN PREPARATION OF CONTRACT DOCUMENTS. QUANTITIES INTENDED FOR, BUT NOT LIMITED TO, THE PREPARATION OF PROPOSALS AND BID DOCUMENTS SHALL BE INDEPENDENTLY EVALUATED BY THE ESTIMATING PARTY BASED UPON THE CONTENTS OF THESE PLANS.

RELEASED FOR CONSTRUCTION
As Noted on Plan Review

Development Services Department
Lee's Summit, Missouri

10/27/2023

olsson

Olsson - Civil Engineering
Missouri Certificate of Authority #001592
1301 Burlington Street
North Kansas City, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
DAVID L. EICKMAN
NUMBER PE-2009015436
10/27/23
PROFESSIONAL ENGINEER

DAVID EICKMAN, P.E.
MOR 2009015436

BY

REV. NO.

DATE

REVISIONS DESCRIPTION

REVISIONS

2023

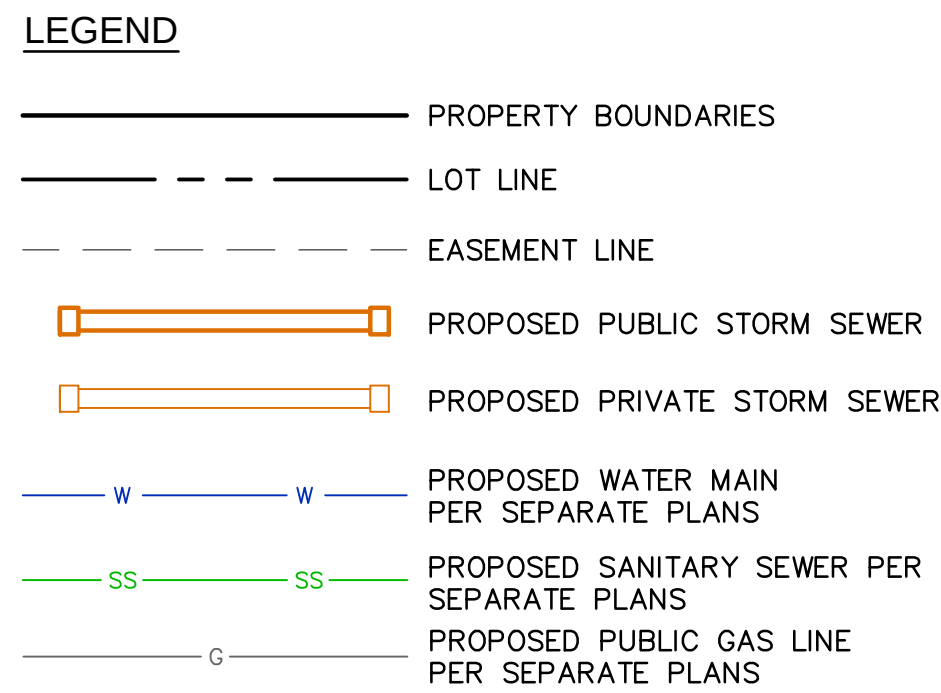
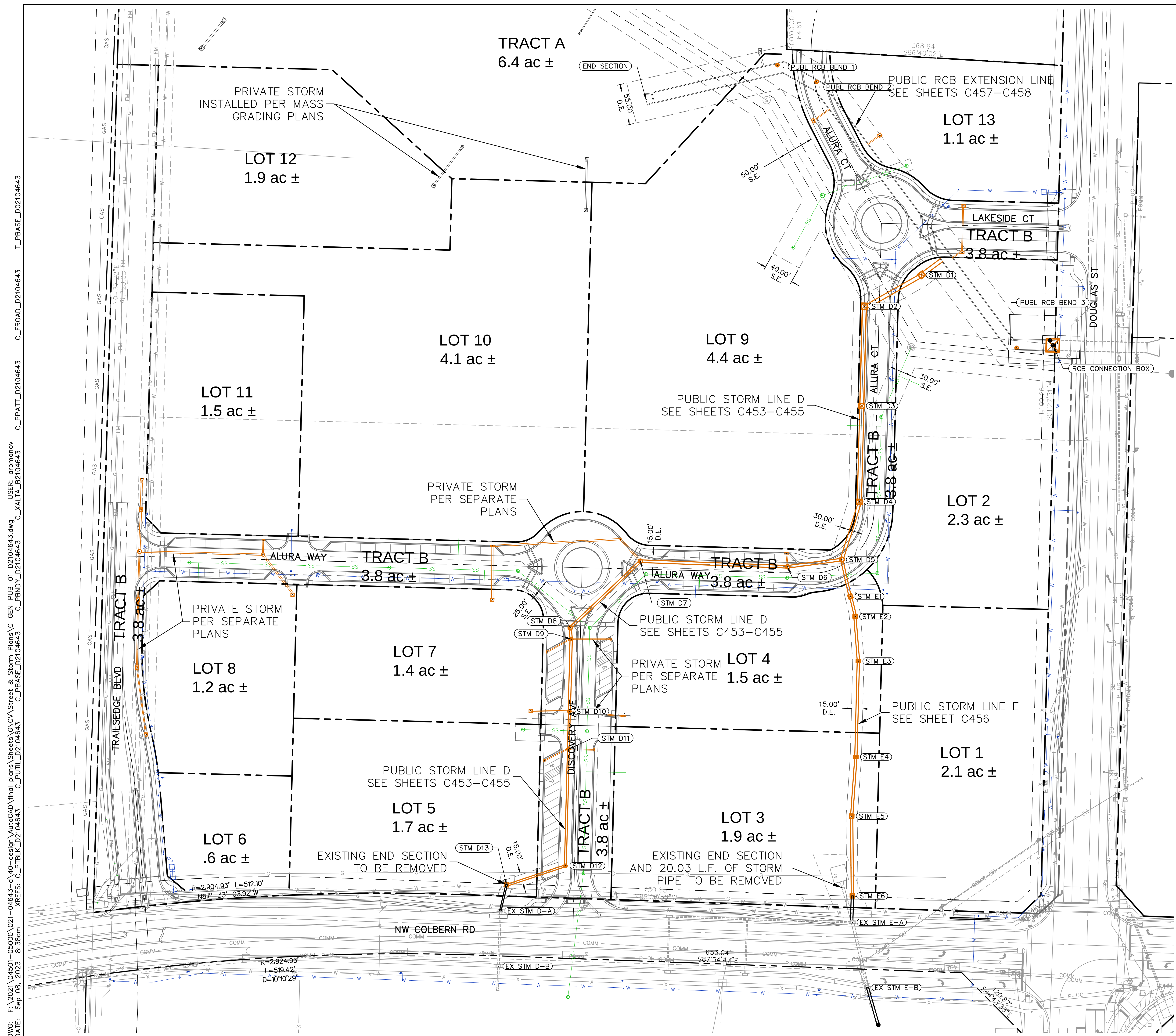
GENERAL NOTES
PUBLIC STORM SEWER PLANS

THE VILLAGE AT DISCOVERY PARK ZONE 1
NW COLBERN RD & NE DOUGLAS ST

LEE'S SUMMIT, MISSOURI

drawn by: GS/SOS/JN
checked by: AR/JN
approved by: DE
QA/QC by: JS/NH
project no.: D21-04643
drawing: 007L_PUB_01_D2104643
date: 08/08/2023

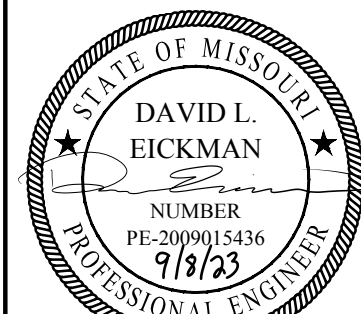
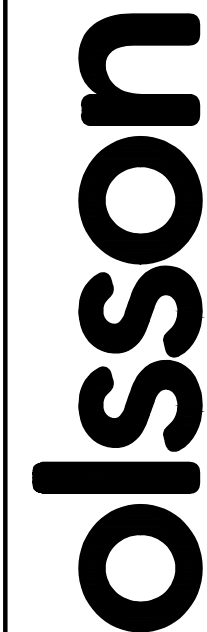
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Lee's Summit, Missouri

10/27/2023



DAVID EICKMAN, P.E.
MO# 2009015436

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REVISIONS

2023

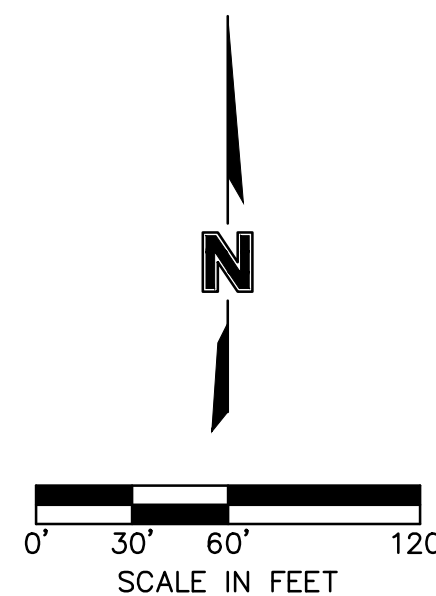
GENERAL LAYOUT
PUBLIC STORM SEWER PLANS

THE VILLAGE AT DISCOVERY PARK ZONE 1
NW COLBERN RD & NE DOUGLAS ST

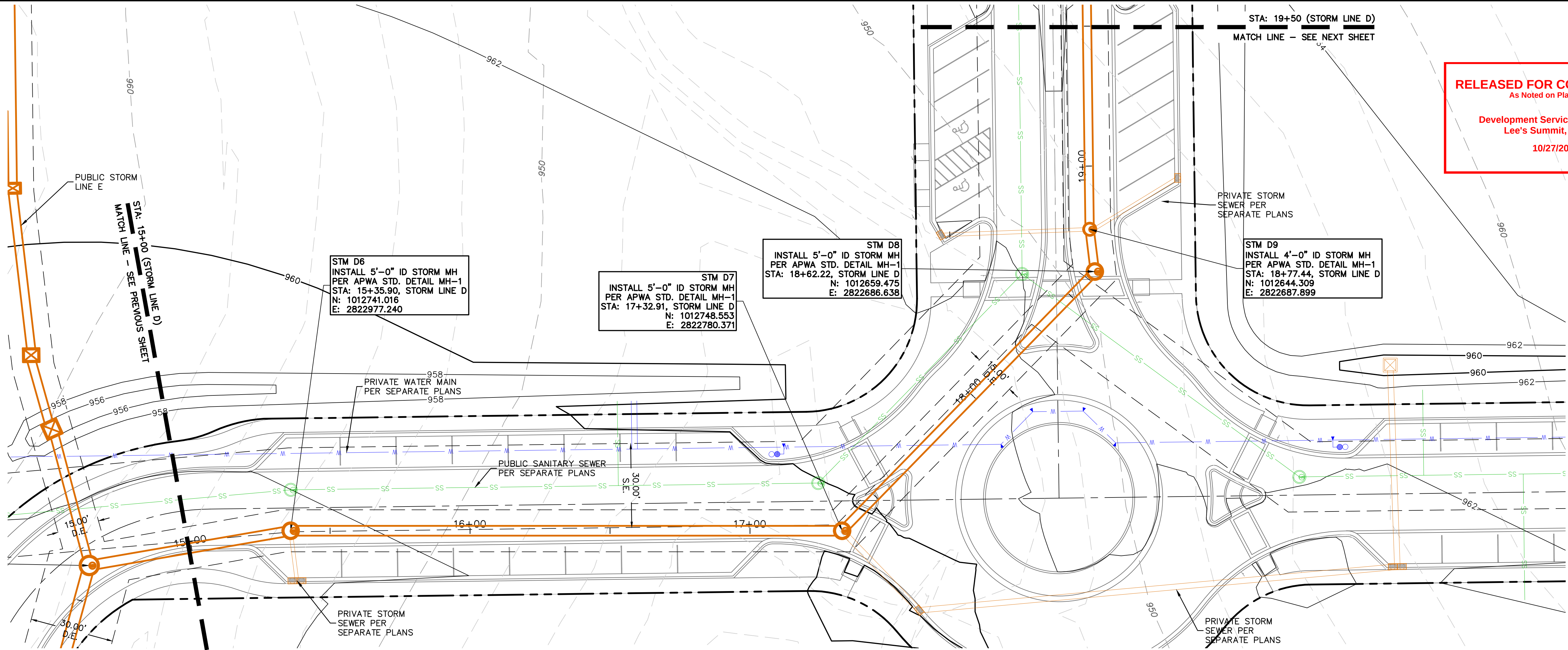
LEE'S SUMMIT, MISSOURI

drawn by: _____ GS/OS/JN
checked by: _____ AR/JN
approved by: _____ DE
QA/QC by: _____ JS/NH
project no.: _____ D21-04643
drawing GEN_PUB 01 D2104643
date: _____ 09.08.2023

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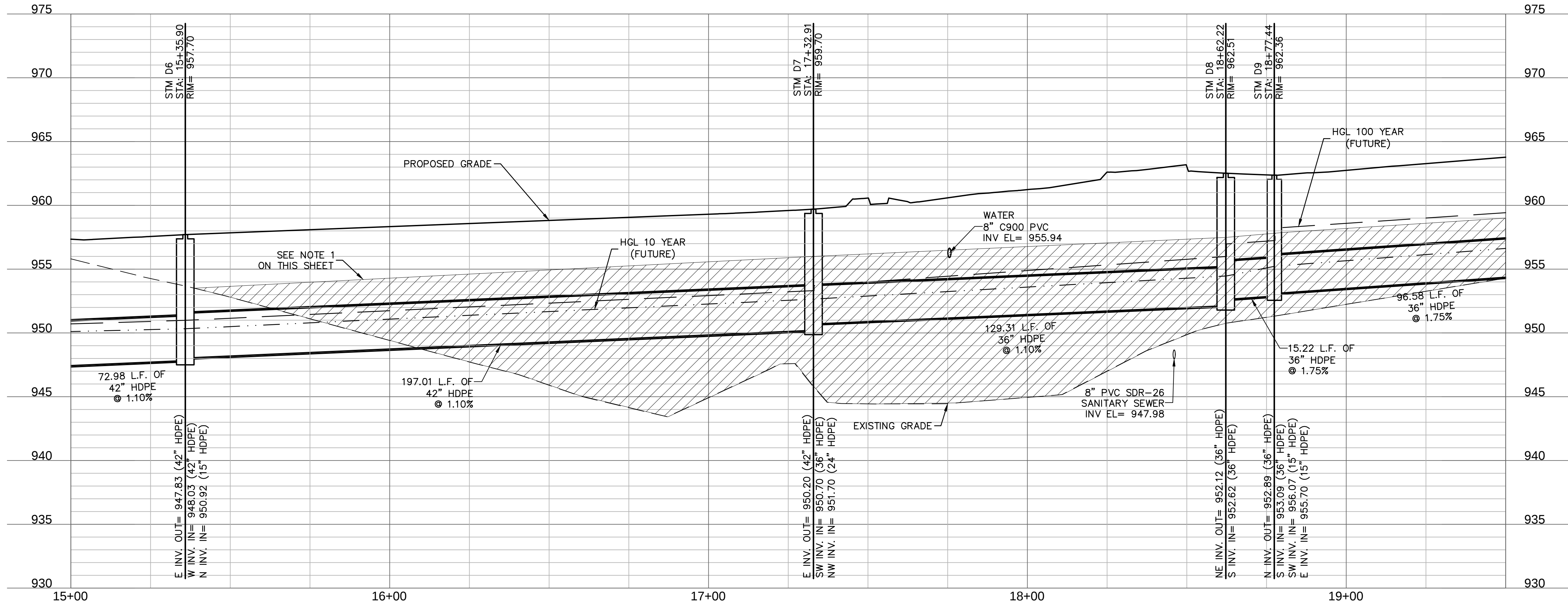
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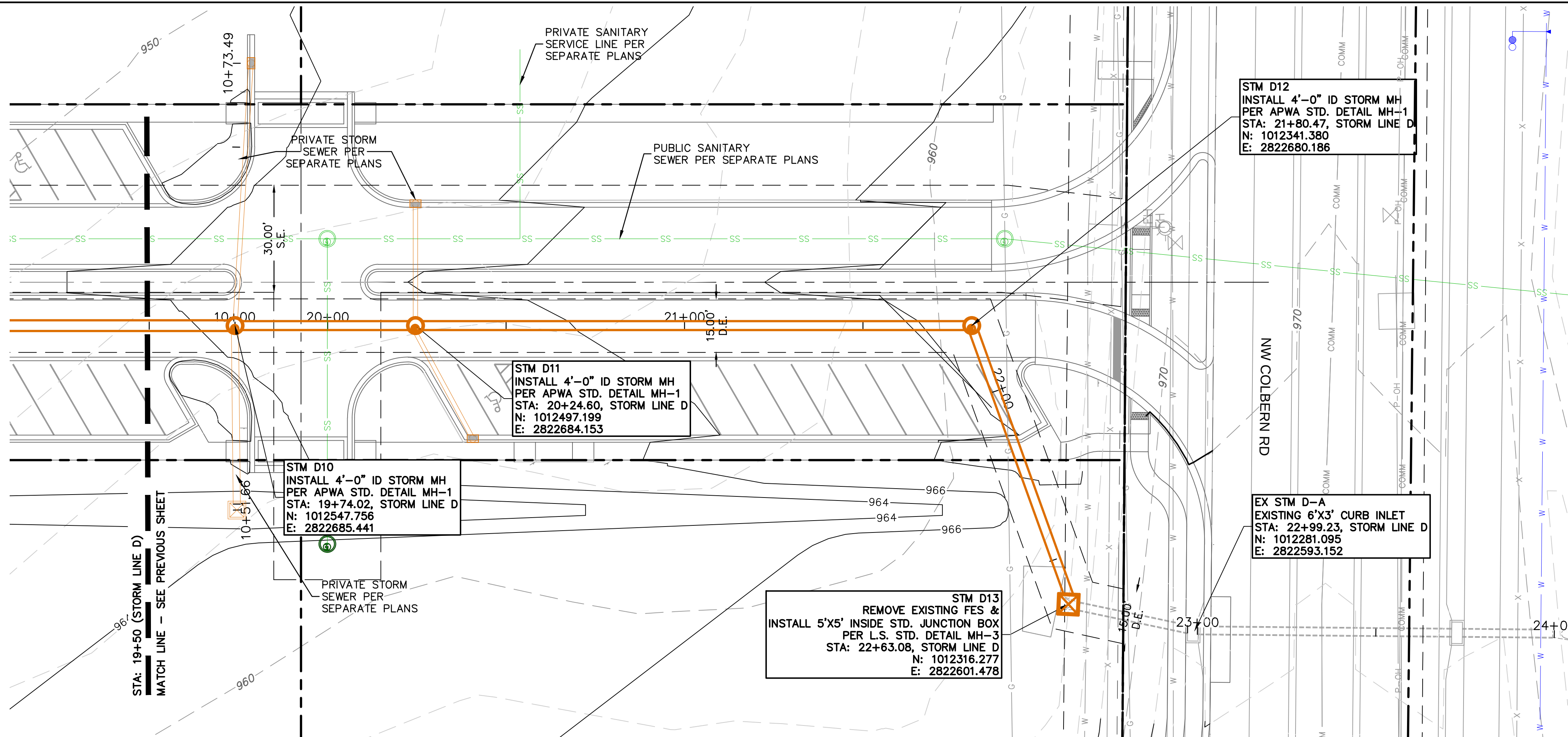
Development Services Department
Lee's Summit, Missouri
10/27/2023

STORM LINE D (15+00 - 19+50)



NOTES:
1. CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

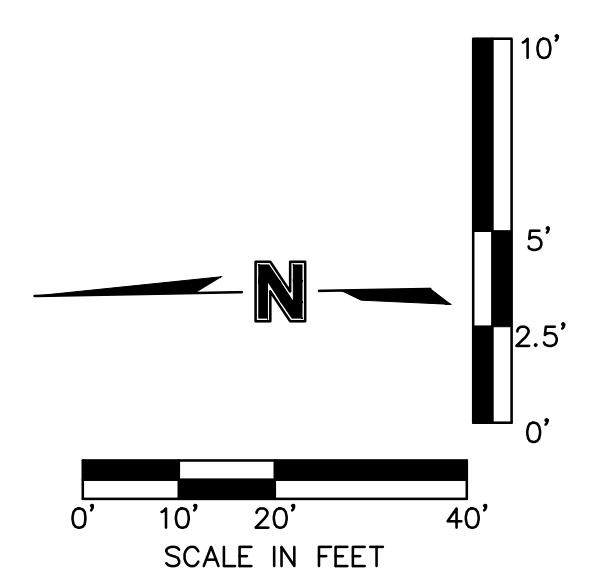
olsson Olsson - Civil Engineering Missouri Certificate of Authority #001592 1301 Burlington Street North Kansas City, MO 64116 TEL 816.361.1177 www.olson.com		STATE OF MISSOURI DAVID L. EICKMAN NUMBER PE-2009015436 10/23 PROFESSIONAL ENGINEER DAVID EICKMAN, P.E. MOR 2009015436		BY	
REVISIONS		REV. NO.		DATE	
STORM SEWER PLAN & PROFILE (LINE D CONT'D)		PUBLIC STORM SEWER PLANS		THE VILLAGE AT DISCOVERY PARK ZONE 1 NW COLBURN RD & NE DOUGLAS ST	
LEE'S SUMMIT, MISSOURI		2023			
SHEET C454		drawn by: GS/SJS/JN		checked by: AR/JN	
		approved by: DE		QA/QC by: JS/NH	
		project no.: D21-04643		drawing: STM_PUB_01_D2104643	
		date: 08.08.2023			



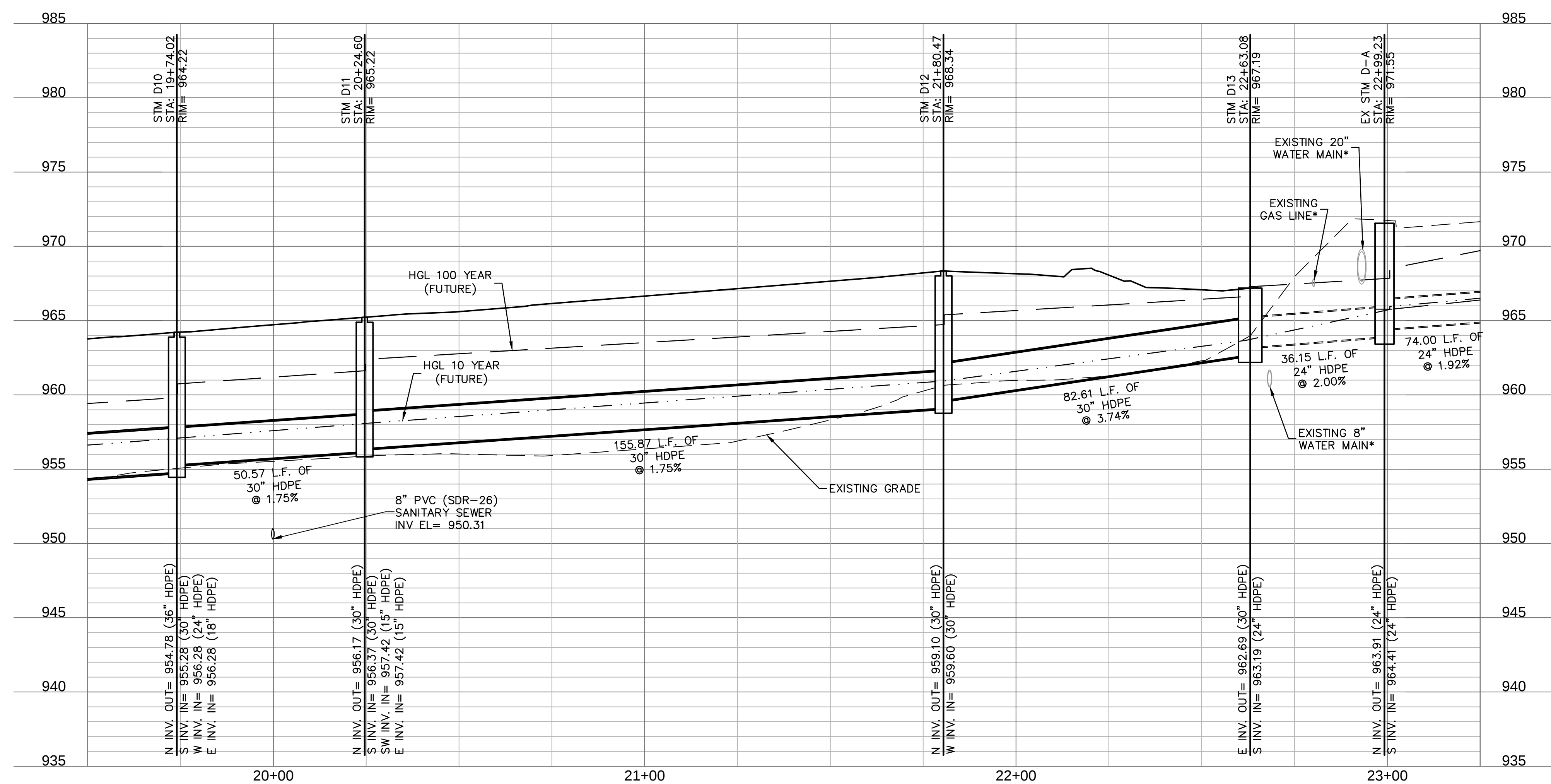
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Lee's Summit, Missouri

10/27/2023

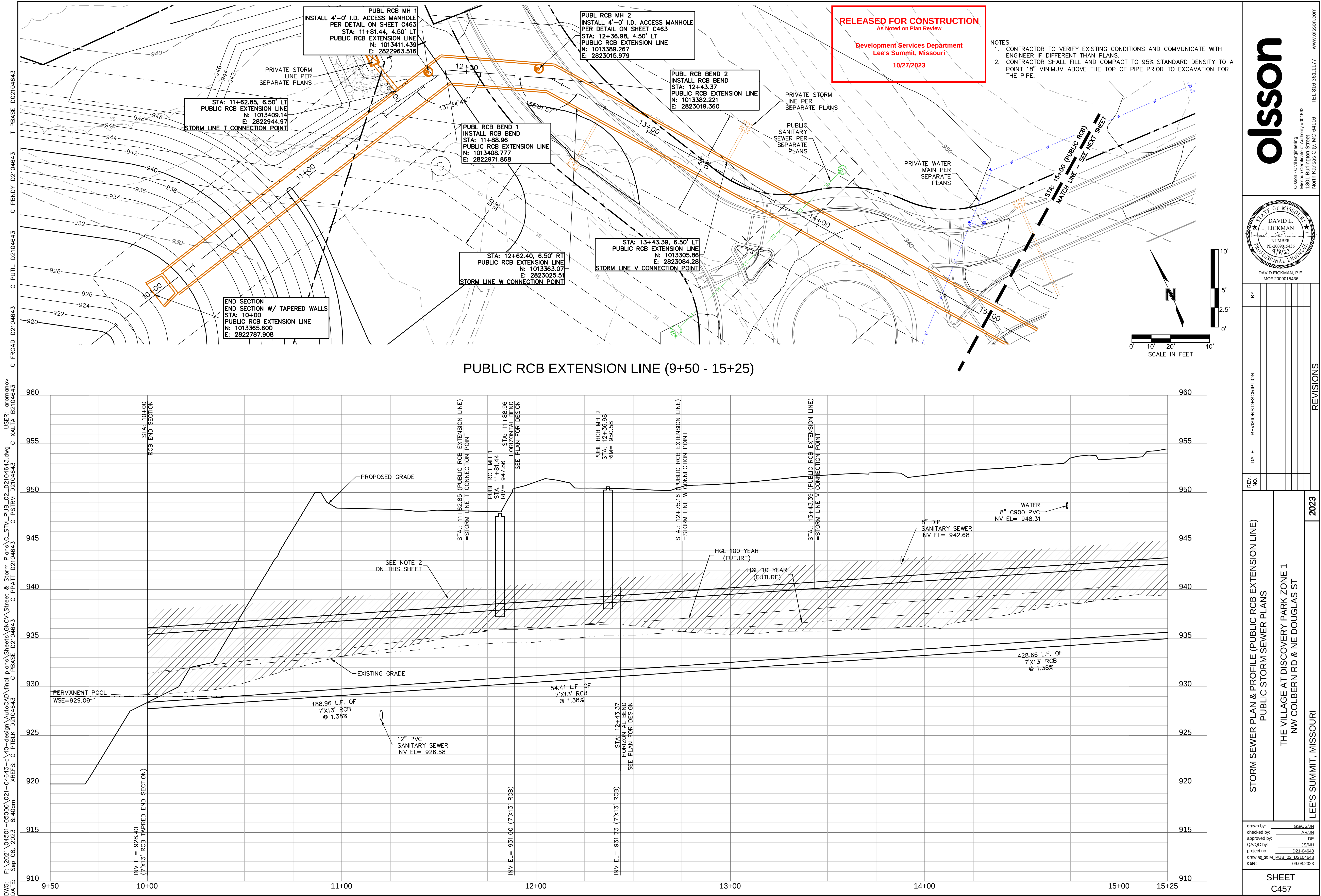


STORM LINE D (19+50 - 23+25)



- NOTES:
1. CONTRACTOR TO VERIFY EXISTING CONDITIONS AND COMMUNICATE WITH ENGINEER IF DIFFERENT THAN PLANS.
 2. CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.
- *EXACT LOCATION AND DEPTH OF EXISTING UTILITY UNKNOWN. CONTRACTOR TO VERIFY LOCATION AND DEPTH ON SITE

olsson Olsson - Civil Engineering Missouri Certificate of Authority #001932 1301 Burlington Street North Kansas City, MO 64116 TEL 816.351.1177 www.olson.com		 DAVID EICKMAN, P.E. MO# 2009015436		
STORM SEWER PLAN & PROFILE (LINE D CONT'D) PUBLIC STORM SEWER PLANS	REV. NO.	DATE	REVISIONS DESCRIPTION	BY
THE VILLAGE AT DISCOVERY PARK ZONE 1 NW COLBERN RD & NE DOUGLAS ST				
LEE'S SUMMIT, MISSOURI				
drawn by: _____ GS/OS/AN		2023	REVISIONS	
checked by: _____ AR/JN				
approved by: _____ DE				
QA/QC by: _____ JS/NH				
project no.: _____ D21-04643				
drawing title: PUB 01 D2104643				
date: _____ 09.08.2023				
SHEET C455				





PROPERTY BOUNDARIES

LOT LINE

EASEMENT LINE

EXISTING WATER MAIN

PROPOSED PUBLIC STORM SEWER

PROPOSED PRIVATE STORM SEWER

PROPOSED SANITARY SEWER

PROPOSED PRIVATE WATER MAIN

PROPOSED PUBLIC WATER MAIN
(PER SEPARATE PLAN SET)

PROPOSED WATER MAIN
(PER NW COLBERN RD PLANS)

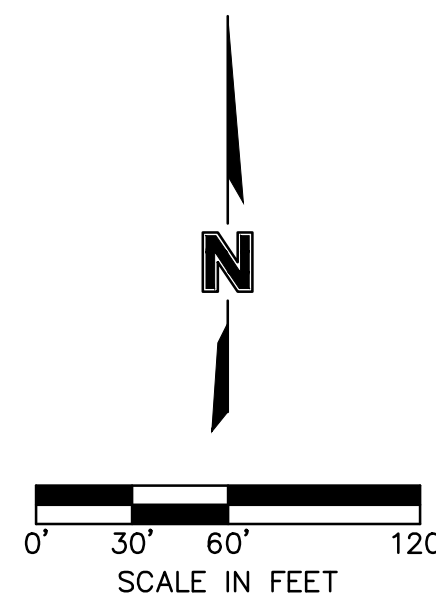
FINISHED MAJOR CONTOUR (10' INTERVAL)

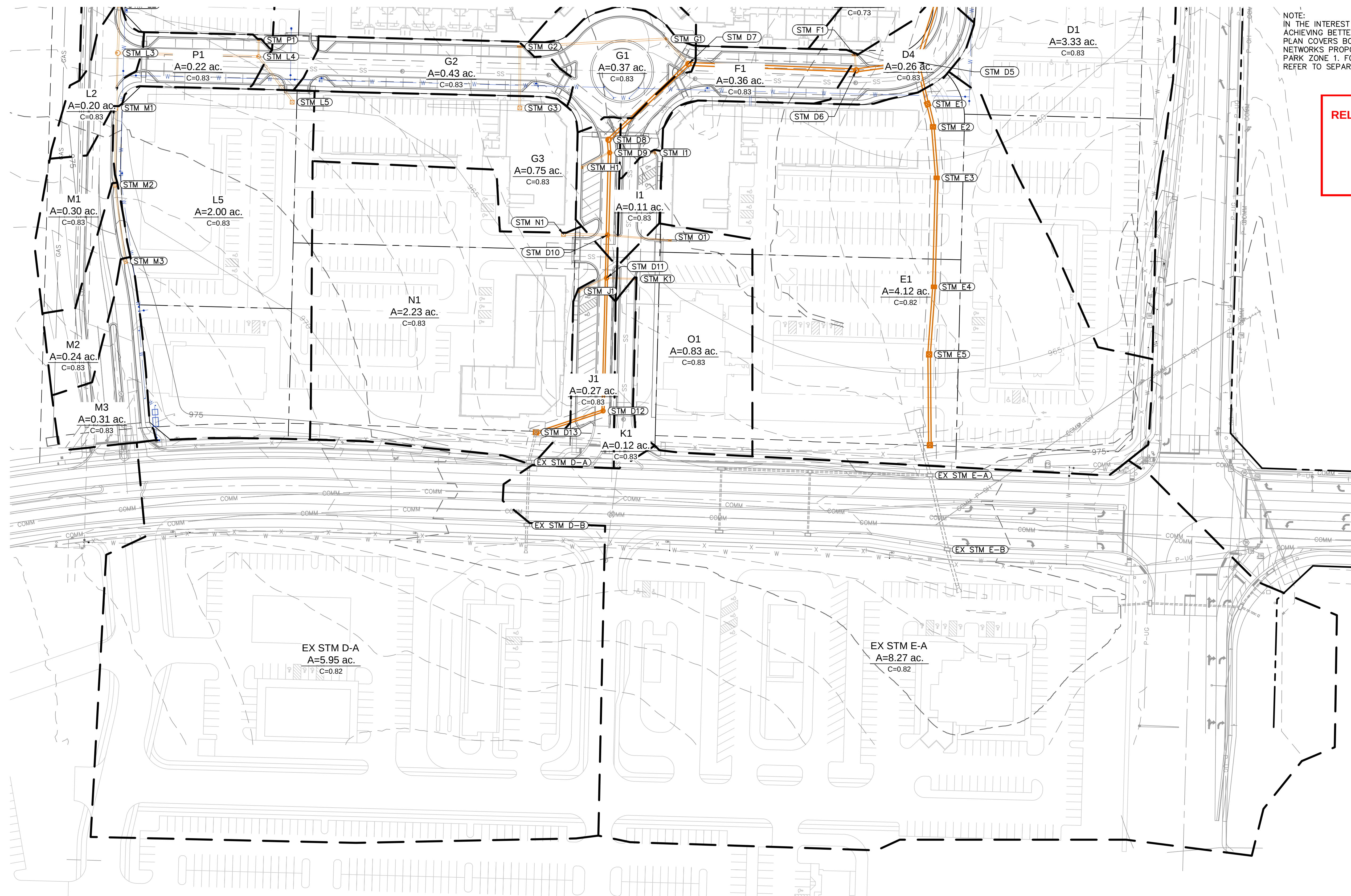
FINISHED MINOR CONTOUR (2' INTERVAL)

RELEASED FOR CONSTRUCTION
As Noted on Plan Review

Development Services Department
Lee's Summit, Missouri

10/27/2023

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LEGEND

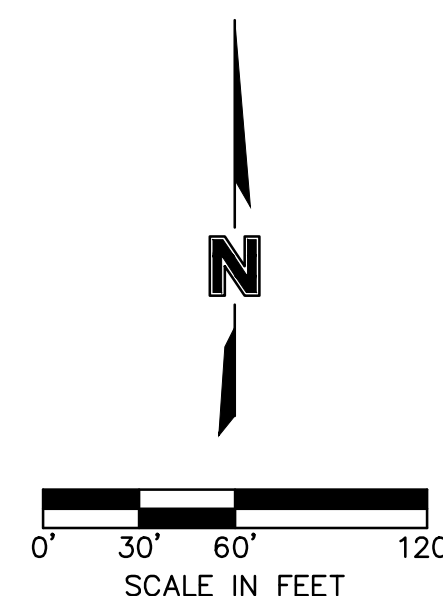
- PROPERTY BOUNDARIES
- - - - - LOT LINE
- - - - - EASEMENT LINE
- EXISTING WATER MAIN
- PROPOSED PUBLIC STORM SEWER
- PROPOSED PRIVATE STORM SEWER
- SS — SS PROPOSED SANITARY SEWER
- W — W PROPOSED PRIVATE WATER MAIN
- PROPOSED PUBLIC WATER MAIN
(PER SEPARATE PLAN SET)
- PROPOSED WATER MAIN
(PER NW COLBERN RD PLANS)
- 1000' FINISHED MAJOR CONTOUR (10' INTERVAL)
- 995' FINISHED MINOR CONTOUR (2' INTERVAL)

NOTE:
IN THE INTEREST OF SHOWING THE OVERALL PICTURE AND
ACHIEVING BETTER CLARITY, THIS STORMWATER MANAGEMENT
PLAN COVERS BOTH PRIVATE AND PUBLIC STORM SEWER
NETWORKS PROPOSED WITH THE DEVELOPMENT OF DISCOVERY
PARK ZONE 1. FOR DETAILS ON PRIVATE STORM SEWER
REFER TO SEPARATE SITE DEVELOPMENT PLANS.

RELEASED FOR CONSTRUCTION
As Noted on Plan Review

Development Services Department
Lee's Summit, Missouri

10/27/2023



10 Year Return Frequency						
Inlet ID	Drainage Area	C	Tc	i	K	Peak Flow
	(ac)		(min)	(in/hr)		(cfs)
A2	3.37	0.83	5.00	7.35	1.00	20.57
B2	3.79	0.83	5.00	7.35	1.00	23.13
C2	2.08	0.83	5.00	7.35	1.00	12.69
D2	2.04	0.83	5.00	7.35	1.00	12.45
D3	0.42	0.83	5.00	7.35	1.00	2.56
D4	0.26	0.83	5.00	7.35	1.00	1.59
F1	0.36	0.83	5.00	7.35	1.00	2.20
G1	0.37	0.83	5.00	7.35	1.00	2.26
G2	0.43	0.83	5.00	7.35	1.00	2.62
H1	0.16	0.83	5.00	7.35	1.00	0.98
I1	0.11	0.83	5.00	7.35	1.00	0.67
J1	0.27	0.83	5.00	7.35	1.00	1.65
K1	0.12	0.83	5.00	7.35	1.00	0.73
L2	0.20	0.83	5.00	7.35	1.00	1.22
M1	0.30	0.83	5.00	7.35	1.00	1.83
M2	0.24	0.83	5.00	7.35	1.00	1.46
M3	0.31	0.83	5.00	7.35	1.00	1.89
N1	2.23	0.83	5.00	7.35	1.00	13.61
O1	0.83	0.83	5.00	7.35	1.00	5.07
P1	0.22	0.83	5.00	7.35	1.00	1.34
U1	0.12	0.83	5.00	7.35	1.00	0.73
U2	0.09	0.83	5.00	7.35	1.00	0.55
V1	1.20	0.83	5.00	7.35	1.00	7.32
W1	0.87	0.83	5.00	7.35	1.00	5.31

Drainage Area Design Table						
100 Year Return Frequency						
Inlet ID	Drainage Area	C	Tc	i	K	Peak Flow
	(ac)		(min)	(in/hr)		(cfs)
A2	3.37	0.83	5.00	10.32	1.25	34.79
B2	3.79	0.83	5.00	10.32	1.25	39.12
C2	2.08	0.83	5.00	10.32	1.25	21.47
D2	2.04	0.83	5.00	10.32	1.25	21.06
D3	0.42	0.83	5.00	10.32	1.25	4.34
D4	0.26	0.83	5.00	10.32	1.25	2.68
F1	0.36	0.83	5.00	10.32	1.25	3.72
G1	0.37	0.83	5.00	10.32	1.25	3.82
G2	0.43	0.83	5.00	10.32	1.25	4.44
H1	0.16	0.83	5.00	10.32	1.25	1.65
I1	0.11	0.83	5.00	10.32	1.25	1.14
J1	0.27	0.83	5.00	10.32	1.25	2.79
K1	0.12	0.83	5.00	10.32	1.25	1.24
L2	0.20	0.83	5.00	10.32	1.25	2.06
M1	0.30	0.83	5.00	10.32	1.25	3.10
M2	0.24	0.83	5.00	10.32	1.25	2.48
M3	0.31	0.83	5.00	10.32	1.25	3.20
N1	2.23	0.83	5.00	10.32	1.25	23.02
O1	0.83	0.83	5.00	10.32	1.25	8.57
P1	0.22	0.83	5.00	10.32	1.25	2.27
U1	0.12	0.83	5.00	10.32	1.25	1.24
U2	0.09	0.83	5.00	10.32	1.25	0.93
V1	1.20	0.83	5.00	10.32	1.25	12.39
W1	0.87	0.83	5.00	10.32	1.25	8.98

10 Year Return Frequency						
Inlet ID	Captured Flow	Bypass Flow	Inlet Efficiency (Note 2)	Gutter Depth	Gutter Spread	Ponding Depth
	(cfs)	(cfs)	(%)	(ft)	(ft)	(ft)
A2	18.67	2.11	89.83%	...	...	0.46
B2	14.93	8.20	64.57%	...	...	0.36
C2	12.69	0.00	100.00%	...	...	0.39
D2	9.19	3.35	73.26%	0.35	16.37	...
D3	2.48	0.10	96.27%	0.20	9.04	...
D4	1.57	0.01	99.14%	0.16	7.54	...
F1	2.20	0.00	100.00%	...	...	...
G1	2.26	0.00	100.00%	...	...	...
G2	2.62	0.00	100.00%	...	...	...
H1	0.98	0.00	100.00%	...	...	...
I1	0.67	0.00	100.00%	...	...	...
J1	1.65	0.00	100.00%	...	...	...
K1	0.73	0.00	99.99%	0.11	4.96	...
L2	1.33	0.07	94.89%	0.12	5.55	...
M1	1.76	0.18	90.83%	0.14	6.27	...
M2	1.52	0.11	93.16%	0.13	5.88	...
M3	1.73	0.17	91.21%	0.13	6.21	...
N1	13.61	0.00	100.00%	...	...	...
O1	5.07	0.00	100.00%	...	...	...
P1	1.34	0.00	100.00%	...	...	...
U1	0.73	0.00	99.99%	0.11	4.96	...
U2	0.55	0.00	99.70%	0.10	4.45	...
V1	7.32	0.00	100.00%	...	...	0.43
W1(L)	...	...	...	0.30	13.87	...
W1(R)	...	...	...	0.11	5.27	...
W1	8.67	0.00	100.00%	...	...	...

Notes:

1. Inlet capacity at sag location has been reduced by a clogging factor of 0.80, reducing theoretical and theoretical capacity and reduced capacity are shown.

2. Inlet efficiency shown in the tables is Captured Flow/Total Flow, denoting the actual percentage

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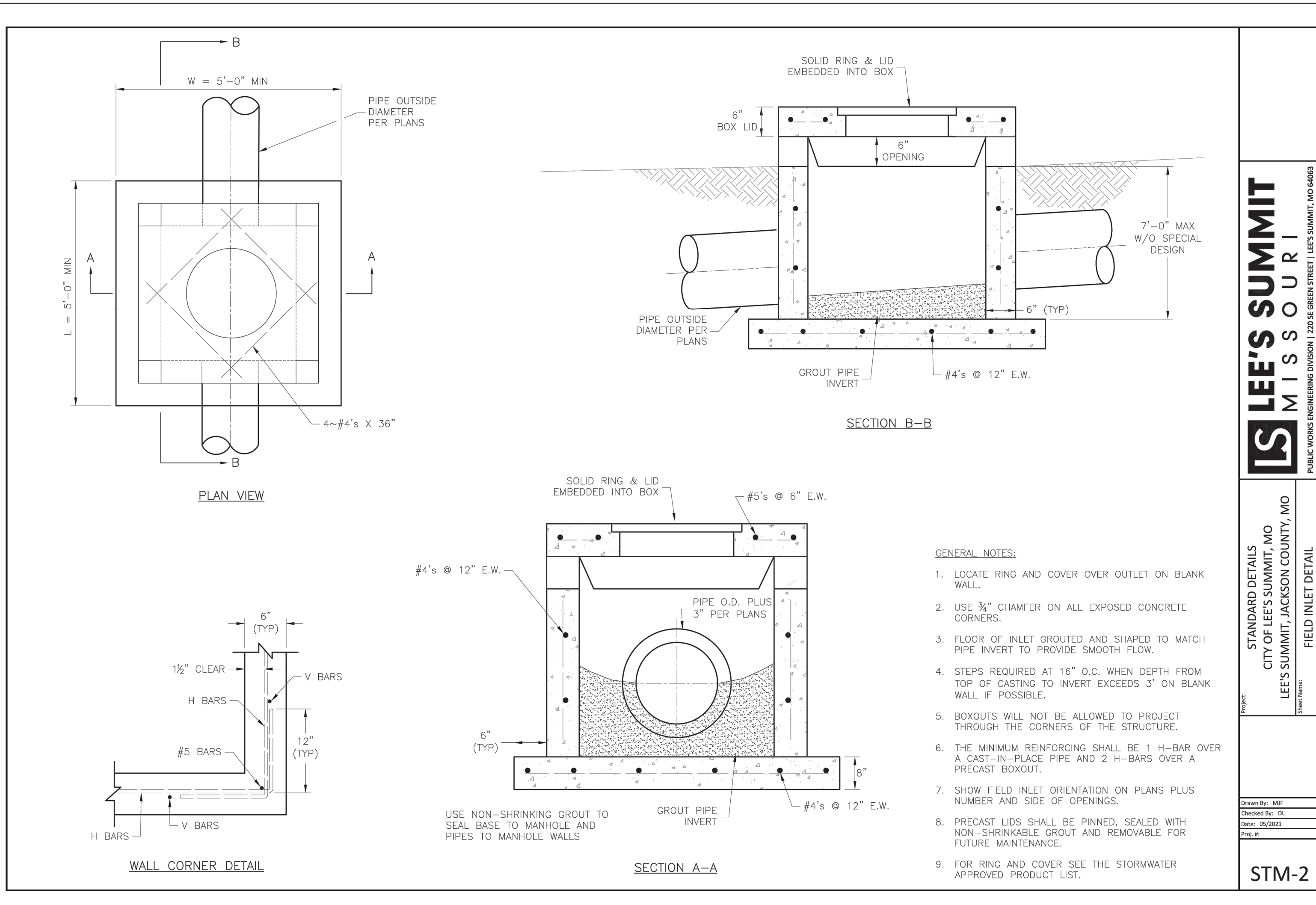
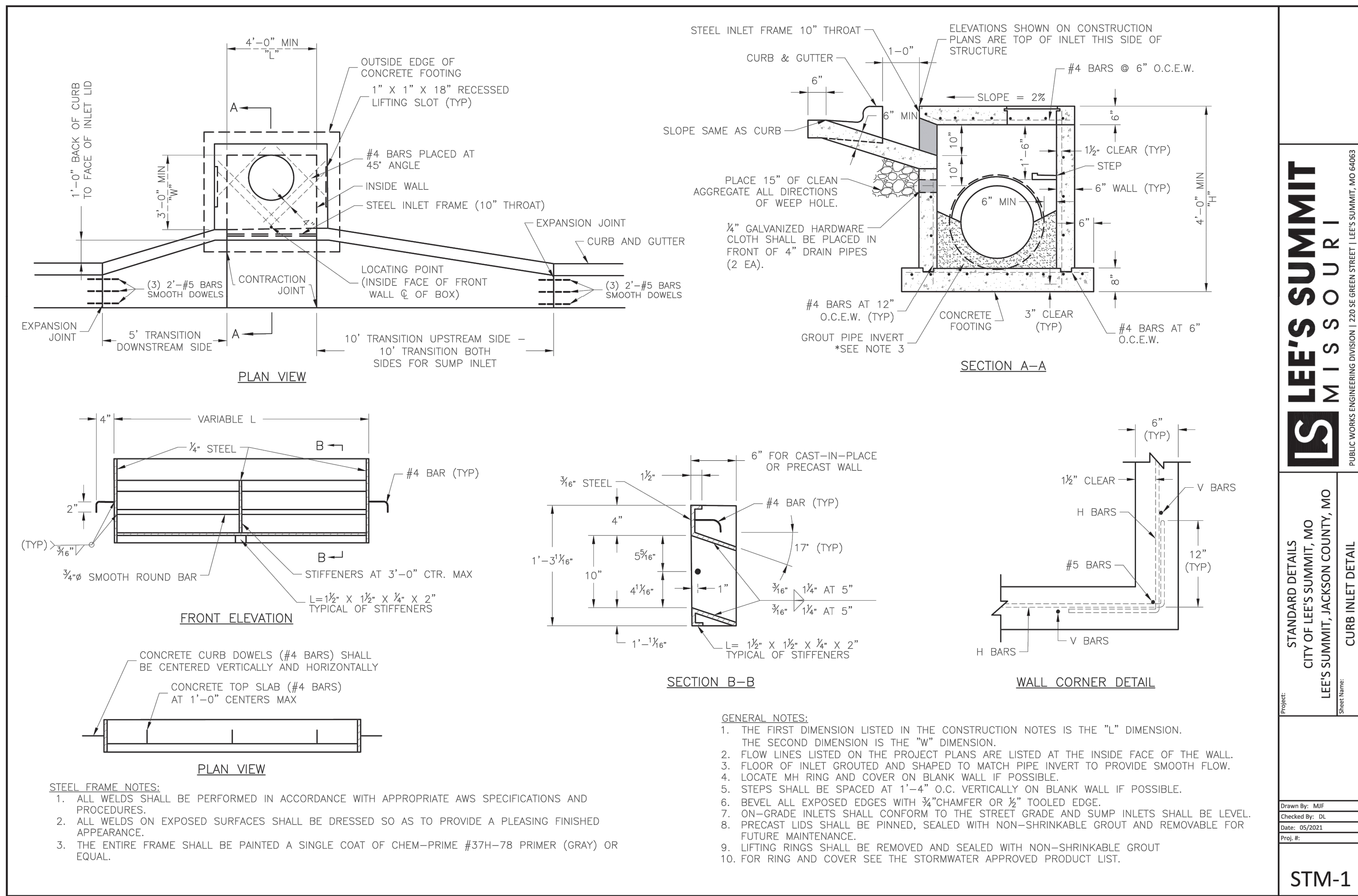
100 Year Return Frequency						
Inlet ID	Captured Flow	Bypass Flow	Inlet Efficiency (Note 2)	Gutter Depth	Gutter Spread	Ponding Depth
	(cfs)	(cfs)	(%)	(ft)	(ft)	(ft)
A2	18.67	17.43	51.71%	...	...	0.50
B2	14.93	24.19	38.17%	...	...	0.50
C2	14.93	6.54	69.55%	...	...	0.31
D2	12.48	9.01	58.07%	0.43	20.04	...
D3	4.01	0.44	90.17%	0.24	11.10	...
D4	2.57	0.11	95.93%	0.20	9.18	...
F1	3.72	0.00	100.00%	...	...	...
G1	3.82	0.00	100.00%	...	...	...
G2	4.44	0.00	100.00%	...	...	...
H1	1.65	0.00	100.00%	...	...	...
I1	1.14	0.00	100.00%	...	...	...
J1	2.79	0.00	100.00%	...	...	...
K1	1.21	0.03	97.86%	0.13	6.03	...
L2	2.38	0.44	84.48%	0.16	7.22	...
M1	2.86	0.76	79.11%	0.17	7.92	...
M2	2.53	0.52	82.85%	0.16	7.44	...
M3	2.62	0.58	81.88%	0.16	7.56	...
N1	15.52	7.50	67.43%	...	...	...
O1	8.57	0.00	100.00%	...	...	...
P1	2.27	0.00	100.00%	...	...	...
U1	1.22	0.02	98.53%	0.13	6.03	...
U2	0.93	0.00	99.65%	0.12	5.42	...
V1	12.39	0.00	100.00%	...	...	0.41
W1(L)	...	...	...	0.40	18.34	...
W1(R)	...	...	...	0.14	6.42	...
W1	15.52	2.49	86.15%	...	...	...

Notes:

- Inlet capacity at sag location has been reduced by a clogging factor of 0.80, reducing theoretical and both theoretical capacity and reduced capacity are shown.
- Inlet efficiency shown in the tables is Captured Flow/Total Flow, denoting the actual percentage

Storm Sewer Design Calculation Table													
10 Year Return Frequency													
Upstream Structure	Downstream Structure	Length (ft)	Upstream Invert (ft)	Downstream Invert (ft)	Slope (%)	Diameter (in)	Manning's n	Total Flow (cfs)	Velocity (ft/s)	Capacity (cfs)	Flow Depth (ft)	Upstream Struct. HGL (ft)	Upstream Top Elev. (ft)
STM A2	STM A1	50.22	931.43	930.00	2.85	36	0.013	40.46	11.20	112.54	2.07	933.50	939.00
STM B2	STM B1	66.27	932.65	930.00	4.00	24	0.013	23.13	11.28	45.23	1.71	934.36	946.00
STM C2	STM C1	70.49	932.82	930.00	4.00	24	0.013	12.69	9.16	45.24	1.28	934.10	946.00
STM D1	PUBL RCB	33.40	936.80	936.25	1.65	60	0.013	156.75	13.57	334.26	3.59	940.39	950.67
STM D2	STM D1	87.42	938.61	937.30	1.50	60	0.013	140.23	10.46	318.85	3.39	942.00	953.83
STM D3	STM D2	133.06	941.17	939.11	1.55	60	0.013	127.78	10.20	324.09	3.23	944.40	955.16
STM D4	STM D3	128.22	943.89	941.27	2.04	60	0.013	125.30	9.57	372.32	3.20	947.09	956.44
STM D5	STM D4	80.81	946.53	944.89	2.03	48	0.013	123.73	14.05	204.83	3.34	949.87	956.95
STM D6	STM D5	72.98	947.83	947.03	1.10	42	0.013	63.39	8.11	105.33	2.49	950.32	957.70
STM D7	STM D6	197.01	950.20	948.03	1.10	42	0.013	61.19	8.84	105.52	2.45	952.65	959.70
STM D8	STM D7	129.31	952.12	950.70	1.10	36	0.013	51.88	9.72	69.95	2.34	954.46	962.59
STM D9	STM D8	15.22	952.89	952.62	1.75	36	0.013	51.88	10.08	88.22	2.34	955.23	962.46
STM D10	STM D9	96.59	954.78	953.09	1.75	36	0.013	50.23	8.97	88.23	2.30	957.08	964.22
STM D11	STM D10	50.57	956.17	955.28	1.75	30	0.013	31.55	8.07	54.25	1.91	958.08	965.22
STM D12	STM D11	155.87	959.10	956.37	1.75	30	0.013	29.17	7.85	54.25	1.84	960.94	968.36
STM D13	STM D12	81.40	961.84	959.60	2.75	30	0.013	29.17	9.22	68.01	1.84	963.68	968.75
EX STM D-A	STM D13	38.59	963.91	962.34	4.07	30	0.013	29.17	9.22	82.72	1.84	965.75	971.55
STM E1	STM D5	50.53	949.05	947.53	3.01	36	0.013	60.34	9.88	115.67	2.51	951.56	956.17
STM E2	STM E1	27.73	950.08	949.25	2.99	36	0.013	60.34	9.96	115.39	2.51	952.59	959.31
STM E3	STM E2	59.68	951.47	950.28	1.99	36	0.013	60.34	9.96	94.17	2.51	953.98	960.41
STM E4	STM E3	128.00	954.23	951.67	2.00	36	0.013	60.34	9.96	94.32	2.51	956.74	962.96
STM E5	STM E4	79.72	956.02	954.43	1.99	36	0.013	60.34	9.96	94.19	2.51	958.53	964.55
EX STM E-A	STM E5	143.57	960.13	956.22	2.72	36	0.013	60.34	9.96	110.06	2.51	962.64	972.11
STM F1	STM D6	18.00	951.28	950.92	2.00	15	0.013	2.20	4.98	9.13	0.59	951.87	957.60
STM G1	STM D7	39.56	952.29	951.70	1.49	24	0.013	9.31	5.83	27.62	1.09	953.38	959.71
STM G2	STM G1	171.49	955.36	952.79	1.50	24	0.013	7.05	6.10	27.69	0.94	956.30	961.53
STM G3	STM G2	72.05	956.71	955.86	1.18	24	0.013	4.43	5.06	24.57	0.74	957.45	959.92
STM H1	STM D9	20.35	956.86	956.45	2.01	15	0.013	0.98	3.01	9.17	0.39	957.25	962.22
STM I1	STM D9	53.15	956.76	955.70	1.99	15	0.013	0.67	3.52	9.12	0.32	957.08	962.11
STM J1	STM D11	22.74	958.18	957.73	1.98	15	0.013	1.65	3.50	9.08	0.51	958.69	965.14
STM K1	STM D11	34.16	958.10	957.42	1.99	15	0.013	0.73	1.94	9.11	0.33	958.43	965.27
STM L1	STM L1	41.03	956.12	955.71	1.00	24	0.013	19.89	7.74	22.61	1.60	957.72	964.76
STM L3	STM L2	56.59	956.90	956.33	1.00	24	0.013	18.56	7.55	22.62	1.55	958.45	966.39
STM L4	STM L3	165.14	959.05	957.40	1.00	24	0.013	13.55	6.83	22.62	1.32	960.37	964.75
STM L5	STM L4	66.64	959.92	959.25	1.01	24	0.013	12.21	6.30	22.68	1.25	961.17	962.59
STM M1	STM L3	64.41	964.57	961.83	4.25	15	0.013	5.01	7.67	13.32	0.91	965.48	969.35
STM M2	STM M1	90.14	968.39	964.77	4.02	15	0.013	3.25	4.47	12.94	0.73	969.12	973.16
STM M3	STM M2	90.49	972.29	968.60	4.08	15	0.013	1.73	3.59	13.04	0.52	972.81	976.84
STM N1	STM D10	51.657	956.87	956.28	1.14	24	0.013	13.61	7.03	24.17	1.33	958.2	961.12
STM O1	STM D10	73.489	957.75	956.28	2	18	0.013	5.07	5.02	14.85	0.87	958.62	963.92
STM P1	STM L4	19.51	960.09	959.8	1.49	15	0.013	1.34	2.87	7.87	0.46	960.55	964.6
STM U1	PUBL RCB BEND 1	14.935	939.49	938	9.98	15	0.013	1.28	6.25	20.4	0.45	939.94	954.22
STM U2	STM U1	62	949.36	948.12	2	15	0.013	0.55	3.33	9.13	0.29	949.65	954.67
STM V1	PUBL RCB	20	938	936	10	18	0.013	7.32	10.29	33.21	1.05	939.05	953.21
STM W1	PUBL RCB	23.713	938.85	936	12.02	15	0.013	5.37	10.13	22.39	0.94	939.79	951.03
PUBL RCB BEND 1	Outfall	188.958	931	928.4	1.38	84 x 156	0.013	567.95	15.11	2111.18	3.9	934.9	939.87
PUBL RCB BEND 2	PUBL RCB BEND 1	54.413	931.75	931	1.38	84 x 156	0.013	567.95	11.22	2113.02	3.9	935.65	940.25
PUBL RCB BEND 3	PUBL RCB BEND 2	423.772	937.58	931.75	1.38	84 x 156	0.013	567.95	11.21	2111.6	3.9	941.48	946.71
RCB CONNECTION	PUBL RCB BEND 3	60.78	938.42	937.58	1.38	84 x 156	0.013	567.95	11.22	2115.82	3.90	942.32	946.84

Storm Sewer Design Calculation Table													
100 Year Return Frequency													
Upstream Structure	Downstream Structure	Length (ft)	Upstream Invert (ft)	Downstream Invert (ft)	Slope (%)	Diameter (in)	Manning's n	Total Flow (cfs)	Velocity (ft/s)	Capacity (cfs)	Flow Depth (ft)	Upstream Struct. HGL (ft)	Upstream Top Elev. (ft)
STM A2	STM A1	50.22	931.43	930.00	2.85	36	0.013	68.10	13.52	112.54	2.63	934.06	939.00
STM B2	STM B1	66.27	932.65	930.00	4.00	24	0.013	39.12	12.50	45.23	1.95	934.60	946.00
STM C2	STM C1	70.49	932.82	930.00	4.00	24	0.013	21.47	10.96	45.24	1.66	934.48	946.00
STM D1	PUBL RCB	33.40	936.80	936.25	1.65	60	0.013	268.37	16.64	334.26	4.53	941.33	950.67
STM D2	STM D1	87.42	938.61	937.30	1.50	60	0.013	240.21	13.70	318.85	4.36	942.97	953.83
STM D3	STM D2	133.06	941.17	938.11	1.55	60	0.013	219.15	12.97	324.09	4.20	945.37	955.16
STM D4	STM D3	128.22	943.89	941.27	2.04	60	0.013	215.14	12.40	372.32	4.17	948.06	956.44
STM D5	STM D4	80.81	946.53	944.89	2.03	48	0.013	212.57	17.79	204.84	3.88	950.41	956.95
STM D6	STM D5	72.98	947.83	947.03	1.10	42	0.013	108.46	11.64	105.33	3.15	950.98	957.70
STM D7	STM D6	197.01	950.20	948.03	1.10	42	0.013	104.74	11.83	105.52	3.12	953.32	959.70
STM D8	STM D7	129.31	952.12	950.70	1.10	36	0.013	88.70	12.55	69.95	3.00	955.99	962.59
STM D9	STM D8	15.22	952.89	952.62	1.75	36	0.013	88.70	12.55	88.22	3.00	957.24	962.59
STM D10	STM D9	96.59	954.78	953.09	1.75	36	0.013	85.91	12.15	88.23	3.00	959.82	964.22
STM D11	STM D10	50.57	956.17	955.28	1.75	30	0.013	54.32	11.07	54.25	2.50	961.63	965.22
STM D12	STM D11	155.87	959.10	956.37	1.75	30	0.013	50.32	10.25	54.25	2.50	964.74	968.36
STM D13	STM D12	81.40	961.84	959.60	2.75	30	0.013	50.32	10.25	68.01	2.50	966.62	968.75
EX STM D-A	STM D13	38.59	963.91	962.34	4.07	30	0.013	50.32	10.25	82.72	2.50	967.85	971.55
STM E1	STM D5	50.53	949.05	947.53	3.01	36	0.013	104.11	14.89	115.67	2.91	951.96	956.17
STM E2	STM E1	27.73	950.08	949.25	2.99	36	0.013	104.11	15.18	115.39	2.91	952.99	959.31
STM E3	STM E2	59.68	951.47	950.28	1.99	36	0.013	104.11	14.73	94.17	3.00	954.74	960.41
STM E4	STM E3	128.00	954.23	951.67	2.00	36	0.013	104.11	14.73	94.32	3.00	958.87	962.96
STM E5	STM E4	79.72	956.02	954.43	1.99	36	0.013	104.11	14.73	94.19	3.00	961.83	964.55
EX STM E-A	STM E5	143.57	960.13	956.22	2.72	36	0.013	104.11	14.73	110.06	3.00	966.34	972.11
STM F1	STM D6	18.00	951.28	950.92	2.00	15	0.013	3.72	5.84	9.13	0.78	952.06	957.60
STM G1	STM D7	39.56	952.29	951.70	1.49	24	0.013	16.04	6.25	27.62	1.44	953.73	959.71
STM G2	STM G1	171.49	955.36	952.79	1.50	24	0.013	12.22	7.14	27.69	1.26	956.62	961.53
STM G3	STM G2	72.05	956.71	955.86	1.18	24	0.013	7.78	5.97	24.57	0.99	957.70	959.92
STM H1	STM D9	20.35	956.86	956.45	2.01	15	0.013	1.65	1.34	9.17	1.25	958.25	962.22
STM I1	STM D9	53.15	956.76	955.70	1.99	15	0.013	1.14	0.93	9.12	1.25	958.23	962.11
STM J1	STM D11	22.74	958.18	957.73	1.98	15	0.013	2.79	2.27	9.08	1.25	962.49	965.14
STM K1	STM D11	34.16	958.10	957.42	1.99	15	0.013	1.21	0.99	9.11	1.25	962.40	965.27
STM L1	STM L1	41.03	956.12	955.71	1.00	24	0.013	33.31	10.70	22.61	2.00	958.51	964.76
STM L3	STM L2	56.59	956.90	956.33	1.00	24	0.013	30.93	9.85	22.62	2.00	960.09	966.39
STM L4	STM L3	165.14	959.05	957.40	1.00	24	0.013	22.92	7.30	22.62	2.00	962.39	964.75
STM L5	STM L4	66.64	959.92	959.25	1.01	24	0.013	20.65	6.57	22.68	2.00	963.28	962.59
STM M1	STM L3	64.41	964.57	961.83	4.25	15	0.013	8.01	9.14	13.32	1.11	965.68	969.35
STM M2	STM M1	90.14	968.39	964.77	4.02	15	0.013	5.15	5.34	12.94	0.92	969.31	973.16
STM M3	STM M2	90.49	972.29	968.60	4.08	15	0.013	2.62	3.86	13.04	0.65	972.94	976.84
STM N1	STM D10	51.657	956.87	956.28	1.14	24	0.013	23.02	7.33	24.17	2.00	961.28	961.12
STM O1	STM D10	73.489	957.75	956.28	2	18	0.013	8.57	4.85	14.85	1.50	961.23	963.92
STM P1	STM L4	19.51	960.09	959.8	1.49	15	0.013	2.27	1.85	7.87	1.25	962.75	964.60
STM U1	PUBL RCB	14.935	939.49	938	9.98	15	0.013	2.15	7.30	20.40	0.58	940.07	954.22
STM U2	STM U1	62	949.36	948.12	2	15	0.013	0.93	3.87	9.13	0.38	949.74	954.67
STM V1	PUBL RCB	20	938	936	10	18	0.013	12.39	12.45	33.21	1.33	939.33	953.21
STM W1	PUBL RCB	23.713	938.85	936	12.02	15	0.013	9.39	12.66	22.39	1.17	940.02	951.03
PUBL RCB BEND 1	Outfall	188.958	931	928.4	1.38	84 x 156	0.013	895.62	17.5	2111.18	5.28	936.28	939.87
PUBL RCB BEND 2	PUBL RCB BEND 1	54.413	931.75	931	1.38	84 x 156	0.013	895.62	13.06	2113.02	5.28	937.03	940.25
PUBL RCB BEND 3	PUBL RCB BEND 2	423.772	937.58	931.75	1.38	84 x 156	0.013	895.62	13.05	2111.61	5.28	942.86	946.71
RCB CONNECTION	PUBL RCB BEND 3	60.78	938.42	937.58	1.38	84 x 156	0.013	895.62	13.06	2115.82	5.28	943.70	946.84



RELEASED FOR CONSTRUCTION
As Noted on Plan Review

Development Services Department
Lee's Summit, Missouri

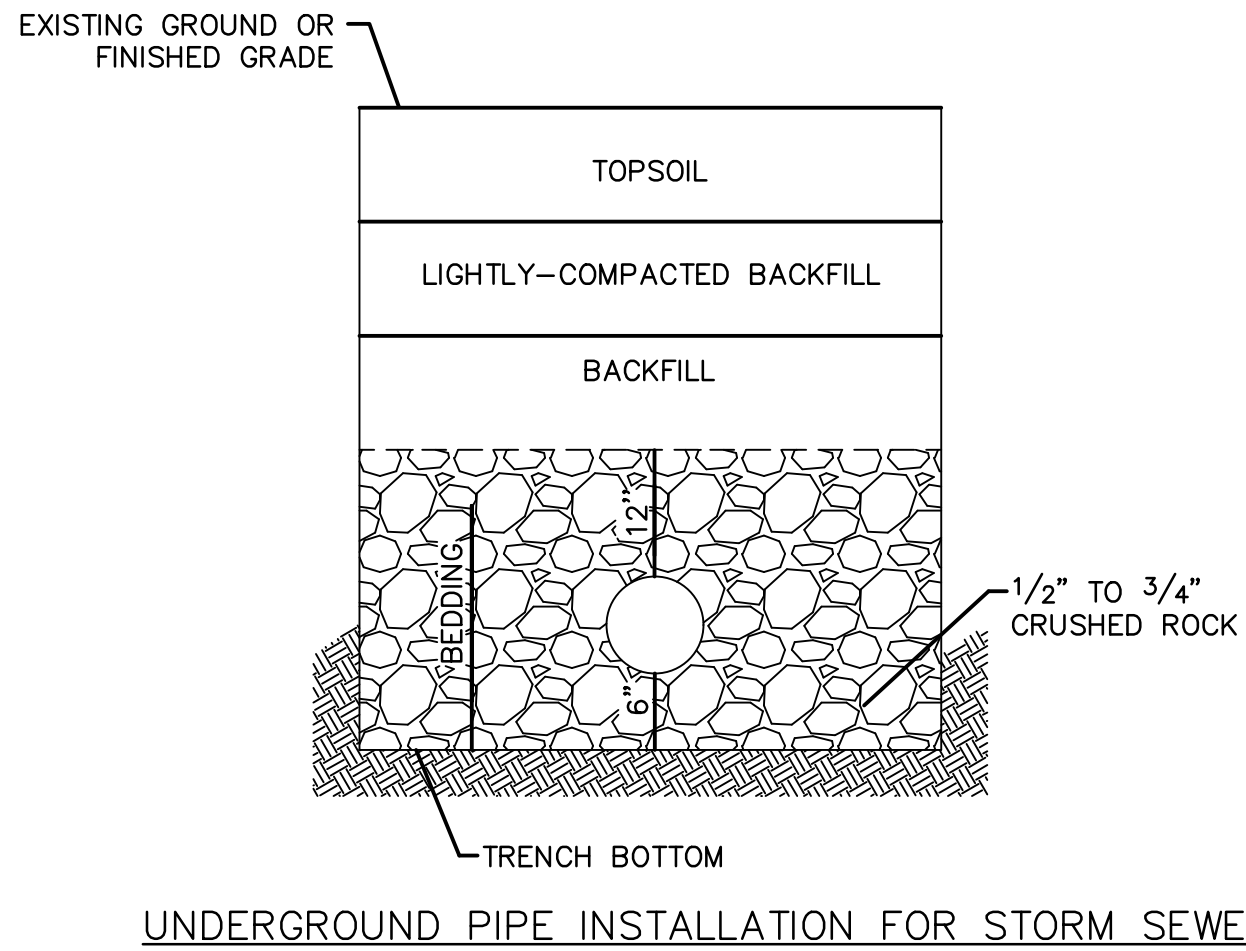
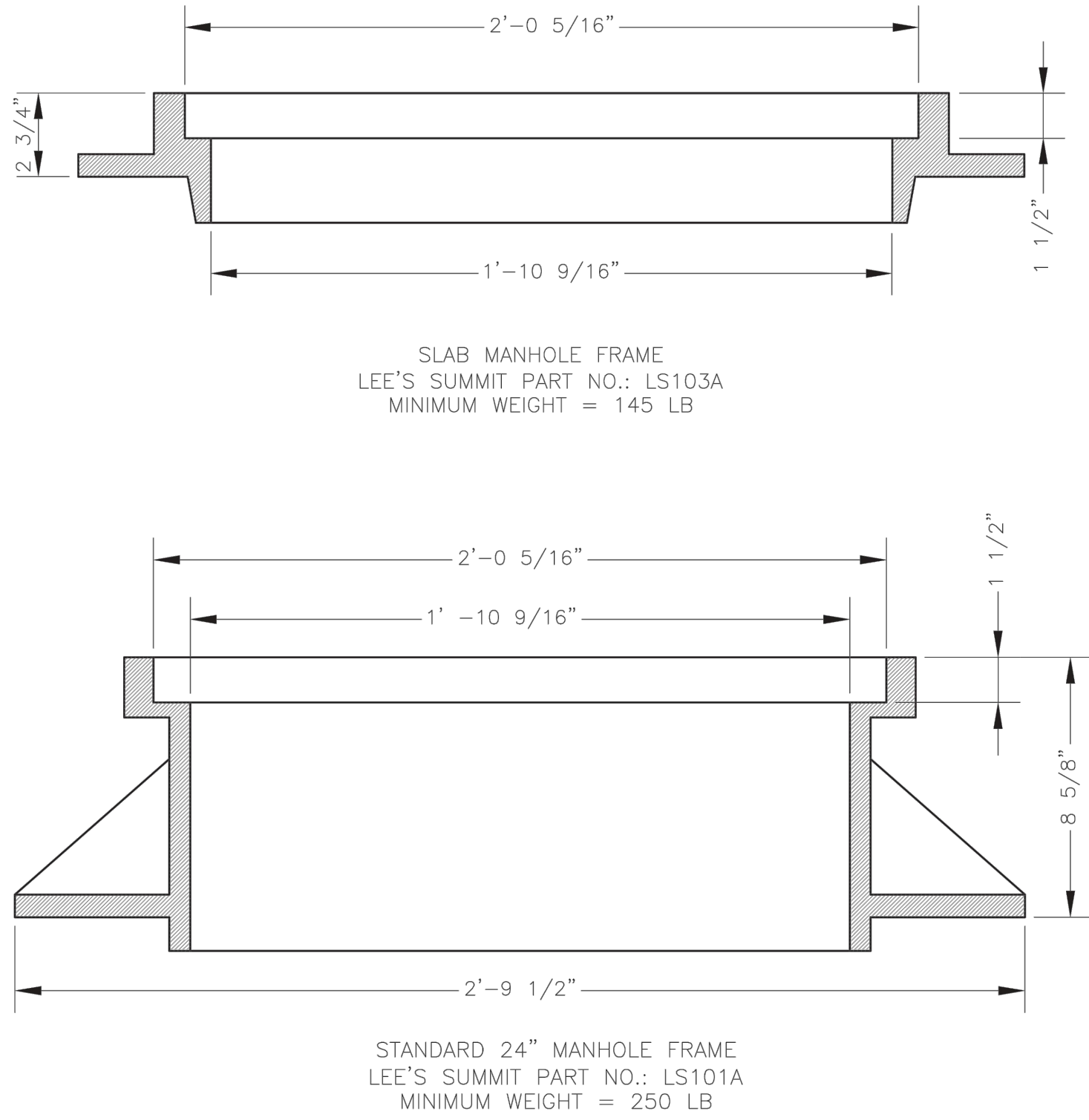
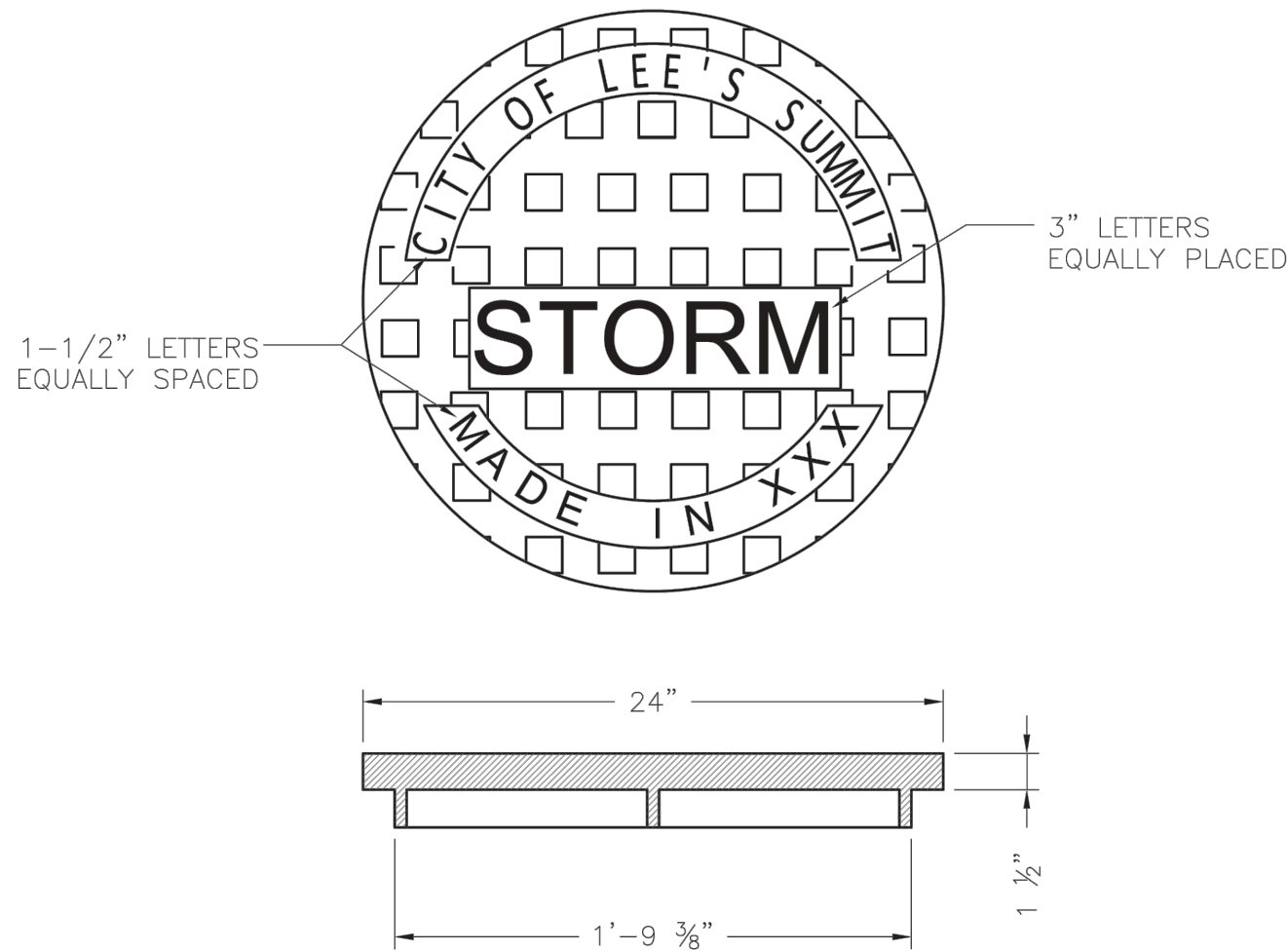
10/27/2023

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NOTES:

1. THE DETAIL IS INTENDED TO SHOW MINIMUM INTERNAL DIMENSIONS OF RCB AS WELL AS OUTLINE LOW FLOW CHANNEL CHANNEL DIMENSIONS. CONTRACTOR AND/OR PRECAST MANUFACTURER TO DETERMINE WALL THICKNESS, REINFORCEMENT DESIGN, BOX SECTION LENGTH, JOINTING PLAN, ETC. AND SUBMIT SHOP DRAWINGS AND PRELIMINARY STRUCTURAL DESIGN TO ENGINEER FOR REVIEW
2. RCB SHALL MEET THE REQUIREMENTS OF HL-93. DOCUMENTATION SHALL BE PROVIDED TO THE CITY OF LEE'S SUMMIT TO ENSURE THEY MEET THE STANDARDS OF HL-93.



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10/27/2023

- 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 12 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.
5. PRECAST CONCRETE BOX CULVERT SECTIONS SHALL BE INSTALLED ON A 4-INCH LEVELING COURSE OF UNTREATED COMPACTED AGGREGATE CONFORMING TO SECTION 2200 PAVING. LEVELING COURSES SHALL EXTEND 1 FOOT PAST THE LINE OF THE BOX SECTION, AND BE FINISHED TO A TRUE PLANE SURFACE TO PROVIDE UNIFORM BEARING FOR THE PRECAST SECTION.
6. CAST IN PLACE BOX CULVERTS SHALL HAVE A 3 INCH THICK GRADE SLAB CAST UNDER THE BOTTOM SLAB, THE GRADE SLAB SHALL BE AT LEAST AS WIDE AS THE STRUCTURE AND SHALL STOP SHORT OF THE TOE WALLS. COMMERCIAL GRADE CONCRETE MAY BE USED WITH MINIMUM 2500 PSI COMPRESSIVE STRENGTH. THE SLAB SHOULD BE SET WITH PROPER GRADE CONTROL TO MATCH ELEVATION REQUIRED FOR THE CULVERT.