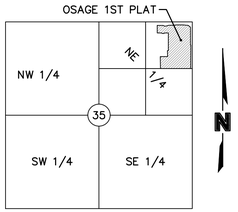
OSAGE
FIRST PLAT
STREET & STORM SEWER PLANS

NE 1/4 SECTION 35, TOWNSHIP 47 N, RANGE 32 W.
IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI



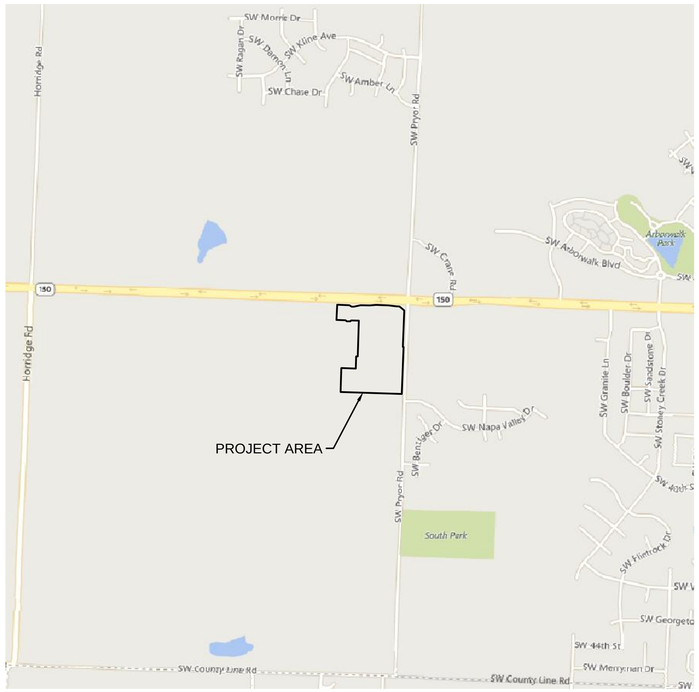
LOCATION MAP
SEC. 35, TWP. 47N., RGE. 32W.
(N.T.S.)

PROJECT TEAM & UTILITY CONTACT LIST	
OWNER / DEVELOPER CLAYTON PROPERTIES GROUP, INC. D.B.A. SUMMIT HOMES 120 SE 30TH STREET CONTACT: VINCENT WALKER LEE'S SUMMIT, MO 64082 PHONE: 816.246.6700 EMAIL: VINCENT@SUMMITHOMESKC.COM	UTILITY SERVICE NUMBERS NAME: LEE'S SUMMIT PUBLIC WORKS PHONE: 816-969-1800 NAME: LEE'S SUMMIT WATER & SERVICES DEPARTMENT PHONE: 816-969-1940 NAME: SPIRE (MGE) PHONE: 314-342-0500 NAME: AT&T PHONE: 800-286-8313 NAME: KCP&L PHONE: 816-471-5275 NAME: SPECTRUM (TWC) PHONE: 877-772-2253 NAME: GOOGLE FIBER PHONE: 877-454-6959
ENGINEER OLSSON 1301 BURLINGTON ST. SUITE 100 NORTH KANSAS CITY, MO 64116 CONTACT: BROCK WORTHLEY PHONE: 816.361.1177 EMAIL: BWORTHLEY@OLSSON.COM	
SURVEYOR OLSSON 1301 BURLINGTON ST. SUITE 100 NORTH KANSAS CITY, MO 64116 CONTACT: JASON ROUDEBUSH PHONE: 816.361.1177 EMAIL: JROUDEBUSH@OLSSON.COM	

☒ NOT FOR CONSTRUCTION

☐ REVIEWED FOR CONSTRUCTION

MISSOURI ONE CALL SYSTEM — CALL BEFORE YOU DIG — 1-800-DIG-RITE



PROPERTY DESCRIPTION:

A tract of land in the Northeast Quarter of the Northeast Quarter of Section 35, Township 47 North, Range 32 West of the 5th Principal Meridian, and including part of Lots 1, 2 and 3 SALVAGGIO'S RANCH, a subdivision of land, recorded as Instrument Number I1210418 in Book I53 at Page 73 in Jackson County Recorder of Deeds Office, all in Lee's Summit, Jackson County, Missouri being bounded and described by Jason S. Roudebush, P.L.S. 2002014092 as follows: Commencing at the Northeast corner of said Northeast Quarter; thence South 02°08'00" West, on the East line of said Northeast Quarter, 658.78 feet to the Southeast corner of the North half of the Northeast Quarter of said Northeast Quarter; thence North 88°08'29" West, on the South line of said North half, 50.00 feet to the Southeast corner of said Lot 3, said point also being on the existing Westerly right-of-way line of SW Pryor Road, as now established, and also being the Point of Beginning of the tract of land to be herein described; thence South 88°08'29" East, on said North line and said existing Westerly right-of-way line, 10.00 feet to the existing Westerly right-of-way line of said SW Pryor Road as established by Document 1963I814460 in Book 1634 at Page 487 being on a line on that is 40.00 West of and parallel with the East line of said Northeast Quarter of said Northeast Quarter; thence South 02°08'00" West, on said existing Westerly right-of-way line and said parallel line, 658.80 feet to a point on the South line of the said Northeast Quarter of said Northeast Quarter; thence North 88°09'45" West, on said South line, 857.08 feet; thence leaving said South line, North 01°48'53" East, 335.30 feet; thence South 88°11'07" East, 202.50 feet; thence North 01°48'53" East, 170.00 feet; thence South 88°11'07" East, 21.62 feet; thence North 01°48'53" East, 500.00 feet; thence North 88°11'07" West, 106.00 feet; thence South 46°48'53" West, 19.80 feet; thence North 88°11'07" West, 50.00 feet; thence North 43°11'07" West, 19.80 feet; thence North 88°11'07" West, 127.17 feet to a point on the West line of the East half of the Northwest Quarter of said Northeast Quarter; thence North 02°09'46" East, on said West line, 212.32 feet to a point on the existing Southerly right-of-way line of Missouri State Highway No. 150, as established by Document Number 2009E0064160, being 80.00 feet right of Centerline Station 316+29.79 (Station 316+29.51 Deed); thence leaving said West line, South 88°11'07" East, along said existing Southerly right-of-way line, 170.21 feet to a point that is 80+00.00 right of Centerline Station 318+00.00 thence South 58°26'25" East, along said Southerly right of way line, 40.31 feet to a point that is 100.00 feet right of centerline Station 318+35.00; thence South 88°11'07" East, along said Southerly right of way line, 30.00 feet to a point that is 100.00 feet right of centerline Station 318+65.00; thence North 76°55'17" East, along said Southerly right of way line, 97.27 feet to a point on the Southerly right of way line of Missouri State Highway No. 150 as established by Document 2009E0006361, being 75.00 feet right of centerline Station 319+59.00; thence South 88°11'07" East, along said Southerly right of way line, 126.00 feet to a point that is 75.00 feet right of centerline Station 320+85.00; thence North 85°28'29" East, along said Southerly right of way line, 90.55 feet to a point that is 65.00 feet right of centerline Station 321+75.00; thence South 88°11'07" East, along said Southerly right of way line and along the Southerly right of way line of Missouri State Highway No. 150 as established by Document 2009E0006351, 175.00 feet to a point that is 65.00 feet right of centerline Station 323+50.00; thence South 82°44'41" East, along said Southerly right of way line, 105.48 feet to a point that is 75.00 feet right of centerline Station 324+55.00; thence South 88°11'07" East, along said Southerly right of way line, 45.00 feet to a point that is 75.00 feet right of centerline Station 325+00.00; thence South 49°40'27" East, along said Southerly right of way line, 88.33 feet to a point that is 130.00 feet right of centerline Station 325+69.12 (Station 325+69.30 Deed), said point also being on the East line of said Lot 2, SALVAGGIO'S RANCH and on the West right of way of said SW Pryor Road as now established; thence South 02°08'00" West, along said East lot line and said West right of way line, 509.17 feet to the Point of Beginning. Containing 917,234 square feet or 21.06 acres, more or less.

BENCHMARK

BENCHMARK NO. 1
CHISELED PLUS ON THE EAST FLANGED BOLT OF THE FIRE HYDRANT ON THE WEST SIDE OF SW PRYOR ROAD ON ADJOINING PROPERTY SOUTH OF THE SOUTHWEST CORNER OF SUBJECT PROPERTY.
ELEVATION = 1014.830

BENCHMARK NO. 2
RAILROAD SPIKE IN THE NORTH FACE OF POWER POLE LOCATED ON THE SOUTH SIDE MISSOURI STATE HIGHWAY 150 AT THE WEST SIDE OF THE DRIVEWAY TO 2025 MISSOURI STATE HIGHWAY 150, LEE'S SUMMIT, MO.
ELEVATION = 1031.313

Sheet List Table

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C107	SWALE 2 PLAN & PROFILE
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C109	ROADWAY PLAN & PROFILE (SW WALSH DRIVE)
C110	ROADWAY PLAN & PROFILE (SW WALSH DRIVE)
C111	ROADWAY PLAN & PROFILE (SW WALSH DRIVE)
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C131	STORM SEWER PLAN & PROFILE
C132	STORM SEWER PLAN & PROFILE
C133	STORM SEWER PLAN & PROFILE
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C135	STORM SEWER PLAN & PROFILE
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C144	STORM SEWER DETAILS
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C146	ROAD DETAILS

REVIEWED BY:

CITY OF LEE'S SUMMIT — DATE

OLSSON HAS BEEN RETAINED TO PROVIDE AS-BUILT DRAWINGS FOR THIS PROJECT.

Brad Worthley — 3/17/2020

BROCK M. WORTHLEY, P.E.
CIVIL ENGINEER
MO# PE-2019000237

DATE

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
BROCK M. WORTHLEY
NUMBER PE-2019000237
PROFESSIONAL ENGINEER
3/17/2020

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

TITLE SHEET
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_TTL01_A192339
date: 3/17/2020

SHEET
C101

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_TTL01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 10:13am XREFS: C_PTBLK_A192339 C_PBNDY_A192339

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. 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 MODOT RIGHT-OF-WAY SHALL CONFORM TO THE LATEST SPECIFICATIONS ADOPTED BY U.S. DEPARTMENT OF TRANSPORTATION AND MODOT.
   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. THE CONTRACTOR SHALL DISPOSE ALL WASTE MATERIAL RESULTING FROM THE PROJECT OFF-SITE AND IN STRICT CONFORMANCE WITH ALL LOCAL CODES AND ORDINANCES.
4. 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.
5. 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 DRAWINGS A MINIMUM OF 7 DAYS PRIOR TO THE REQUESTED DATE OF APPROVAL. ENGINEER SHALL REVIEW SHOP DRAWINGS OR SAMPLES IN 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. ANY ITEMS IN THESE PLANS THAT ALLOW FOR AN "APPROVED EQUAL" ALTERNATIVE.

STORM SEWER GENERAL NOTES:

1. STORM STRUCTURES SHALL BE PER CURRENT CITY DETAILS. IF CITY DOES NOT HAVE PUBLISHED DETAILS STRUCTURES SHALL BE PER CURRENT APWA SPECIFICATIONS.
2. PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL NOTIFY AND COORDINATE CONSTRUCTION WITH CITY OF LEE'S SUMMIT, MISSOURI.
3. ALL PIPE LENGTHS AND ELEVATIONS ARE CALCULATED LINEARLY FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
4. ALL STRUCTURE DIMENSIONS ARE TO INSIDE FACE OF STRUCTURE.
5. 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.
6. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICT AND POINTS OF CONNECTION PRIOR TO ANY CONSTRUCTION OF STORM SEWER.
7. 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.
8. 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.
9. PIPE PENETRATIONS SHALL BE GROUTED TO ENSURE WATERTIGHT SEALS.
10. MAINTAIN MINIMUM DEPTH OF COVER PER APWA 5606.06

CONTROL POINT TABLE

POINT NUMBER	NORTHING	EASTING	POINT ELEVATION	DESCRIPTION
11	978424.224	2811650.442	1030.85	⅝" IB/CAP SET IN THE CENTER MEDIAN OF ROUTE 150. IT IS DUE NORTH OF THE CENTER LINE OF THE DRIVEWAY TO PROPERTY ADDRESS 2025 ROUTE 150. IT IS 12.15 FT WEST OF A LIGHT POLE, 8.5 FT SOUTH OF THE BACK OF CURB, AND 8.1 FT NORTH OF THE BACK OF CURB.
12	978340.573	2812332.280	1036.11	⅝" IB/CAP SET ON THE EAST SIDE OF SW PRYOR RD AT THE SOUTHEAST CORNER OF THE INTERSECTION OF ROUTE 150 AND SW PRYOR RD. IT IS 2.15 FT EAST OF THE BACK OF CURB, 19 FT WEST OF THE TRAFFIC SIGNAL POLE, AND 9.6 FT WEST OF A VAULT.
13	977064.448	2812265.992	1012.10	⅝" IB/CAP SET ON THE NORTHEAST CORNER OF THE INTERSECTION OF SW PRYOR RD AND SW NAPA VALLEY DR. IT IS 6 FT EAST OF THE BACK OF CURB, 10.2 FT NORTH OF THE CORNER OF THE SIDEWALK, AND 7.25 FT WEST OF ROCK LANDSCAPE BORDER.
14	977092.478	2810924.856	1040.93	⅝" IB/CAP SET IN THE NORTHWEST CORNER OF THE SOUTH ADJOINING PROPERTY. IT IS 7.5 FT EAST OF THE FENCE LINE, AND 45 FT SOUTH OF OF THE TREE LINE.
18	978446.811	2810956.695	1050.47	⅝" IB/CAP SET IN THE CENTER MEDIAN OF ROUTE 150. THE POINT IS DIRECTLY SOUTH OF A WHITE MAILBOX ON AN ORANGE POST FOR HOUSE ADDRESS 2144 ROUTE 150. IT IS 6.6 FT SOUTH OF THE BACK OF CURB, 5.8 FT NORTH OF THE BACK OF CURB, AND 31 FT EAST OF A LIGHT POLE.
BENCHMARK				
BMK1	977045.350	2812211.924	1014.83	CHISELED PLUS ON THE EAST FLANGED BOLT OF THE FIRE HYDRANT ON THE WEST SIDE OF SW PRYOR ROAD ON ADJOINING PROPERTY SOUTH OF THE SOUTHWEST CORNER OF SUBJECT PROPERTY.
BMK2	978357.416	2811627.737	1031.31	RAILROAD SPIKE IN THE NORTH FACE OF POWER POLE LOCATED ON THE SOUTH SIDE MISSOURI STATE HIGHWAY 150 AT THE WEST SIDE OF THE DRIVEWAY TO 2025 MISSOURI STATE HIGHWAY 150, LEE'S SUMMIT, MO.

ESTIMATE OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	AS-BUILT
	STREET			
1	6" ASPHALT PAVEMENT	S.Y.	10361	
2	SUBGRADE STABILIZATION (6" FLYASH TREATMENT)	S.Y.	12670	
3	CONCRETE CURB & GUTTER (CG-2)	L.F.	6690	
4	CONCRETE CURB & GUTTER (CG-2 DRY)	L.F.	218	
5	5' CONCRETE SIDEWALK	L.F.	171	
6	ADA RAMP	EA.	20	
7	STOP SIGNS	EA.	7	
8	YIELD SIGNS	EA.	1	
9	STREET NAME SIGNS	EA.	12	
10	TYPE IV OBJECT MARKERS	EA.	20	
	STORM			
11	STD. CURB INLET (5'x3' INSIDE)	EA.	30	
12	STD. CURB INLET (5'x4' INSIDE)	EA.	4	
13	STD. CURB INLET (5'x5' INSIDE)	EA.	1	
14	STD. CURB INLET (7'x3' INSIDE)	EA.	1	
15	STD. FIELD INLET (4'x4' INSIDE)	EA.	6	
16	STD. FIELD INLET (5'x5' INSIDE)	EA.	1	
17	STD. FIELD INLET (6'x6' INSIDE)	EA.	1	
18	STD. MANHOLE (4' DIA. INSIDE)	EA.	1	
19	STD. MANHOLE (5' DIA. INSIDE)	EA.	5	
20	DETENTION BASIN OUTLET STRUCTURE (6'x6' INSIDE)	EA.	1	
21	15" HDPE	L.F.	1493.88	
22	18" HDPE	L.F.	360.09	
23	24" HDPE	L.F.	1309.28	
24	24" RCP	L.F.	34.00	
25	30" HDPE	L.F.	563.98	
26	36" HDPE	L.F.	240.35	
27	42" HDPE	L.F.	281.17	
28	48" HDPE	L.F.	14.54	
29	48" RCP	L.F.	55.36	
30	30" CMP END SECTION	EA.	2	
31	42" CMP END SECTION	EA.	1	
32	48" RCP END SECTION	EA.	1	
33	15" HDPE PLUG	EA.	1	
34	24" HDPE PLUG	EA.	1	
35	RIPRAP	S.Y.	127.45	
36	SWALE TURF REINFORCEMENT MAT	S.Y.	343	
37	CONNECTION TO EXISTING	EA.	1	

olsson
Olsson - Civil Engineering
Missouri Certificate of Authority #: 001592
1301 Burlington Street, Suite 400
North Kansas City, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER PE-2019000237
PROFESSIONAL ENGINEER
3/17/2020

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

GENERAL NOTES
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C TTL01 A192339
date: 3/17/2020

SHEET
C102

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_TTL01_A192339.dwg USER: bworthley
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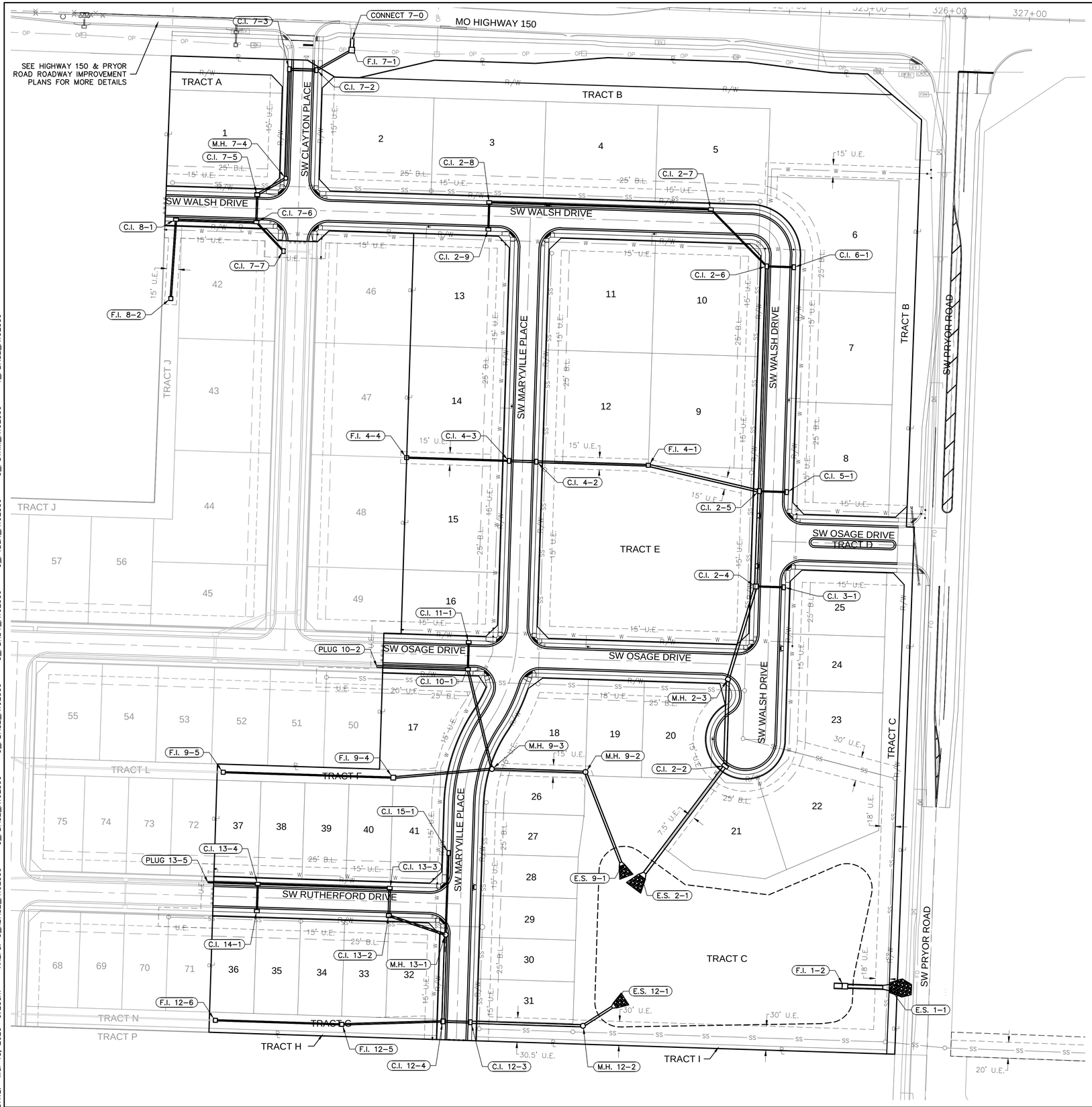

STRUCTURES		
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C.I. 2–4	977692.4187	2812026.3213
C.I. 2–5	977811.3432	2812030.5897
C.I. 2–6	978092.1864	2812039.9885
C.I. 2–7	978163.4319	2811970.2098
C.I. 2–8	978172.2043	2811693.3487
C.I. 2–9	978138.2214	2811692.2720
C.I. 3–1	977691.3103	2812061.3037
C.I. 4–2	977848.1807	2811752.1166
C.I. 4–3	977849.2574	2811718.1337
C.I. 5–1	977810.2506	2812065.0724
C.I. 6–1	978091.1096	2812073.9714
C.I. 7–2	978337.3681	2811477.4711
C.I. 7–3	978338.4239	2811443.4875
C.I. 7–5	978181.8882	2811403.5100
C.I. 7–6	978147.4055	2811402.4174
C.I. 7–7	978111.3146	2811436.2915
C.I. 8–1	978150.5883	2811301.9679
C.I. 10–1	977588.7590	2811666.5942
C.I. 11–1	977622.7420	2811667.6676
C.I. 12–3	977147.9332	2811669.8990
C.I. 12–4	977149.0136	2811635.4159
C.I. 13–2	977281.0969	2811567.9474
C.I. 13–3	977315.5796	2811569.0400
C.I. 13–4	977320.8051	2811404.1227

STRUCTURES		
STRUCTURE ID	NORTHING	EASTING
C.I. 14–1	977286.8221	2811403.0460
C.I. 15–1	977359.4044	2811642.5825
CONNECT 7–0	978376.9050	2811522.3190
E.S. 1–1	977191.3061	2812193.0089
E.S. 2–1	977329.8018	2811884.1121
E.S. 9–1	977343.7014	2811859.1483
E.S. 12–1	977168.9630	2811850.2767
F.I. 1–2	977193.0635	2812137.6738
F.I. 4–1	977843.7470	2811892.0464
F.I. 4–4	977853.3111	2811590.1979
F.I. 7–1	978362.3801	2811521.5678
F.I. 8–2	978052.0411	2811295.4838
F.I. 9–4	977453.5763	2811573.4124
F.I. 9–5	977460.3060	2811361.0190
F.I. 12–5	977145.2863	2811509.1437
F.I. 12–6	977150.3910	2811351.1993
M.H. 2–3	977576.1928	2811991.4471
M.H. 7–4	978202.2690	2811439.1734
M.H. 9–2	977460.5422	2811813.5020
M.H. 9–3	977464.2507	2811696.4606
M.H. 12–2	977143.4837	2811810.3285
M.H. 13–1	977257.3396	2811638.8487
PLUG 10–2	977592.3647	2811552.7975
PLUG 13–5	977322.7844	2811341.6541

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North Kansas City, MO 64116
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STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER PE-2019000237
PROFESSIONAL ENGINEER
3/17/2020

REV. NO.	DATE	REVISIONS DESCRIPTION	BY
		REVISIONS	

GENERAL LAYOUT
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

2020

LEE'S SUMMIT, MISSOURI

drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_GEN01_A192339
date:	3/17/2020

SHEET
C103

0' 30' 60' 120'
SCALE IN FEET

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_GEN01_A192339.dwg USER: bworthley
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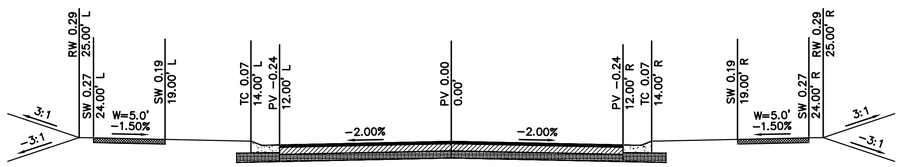
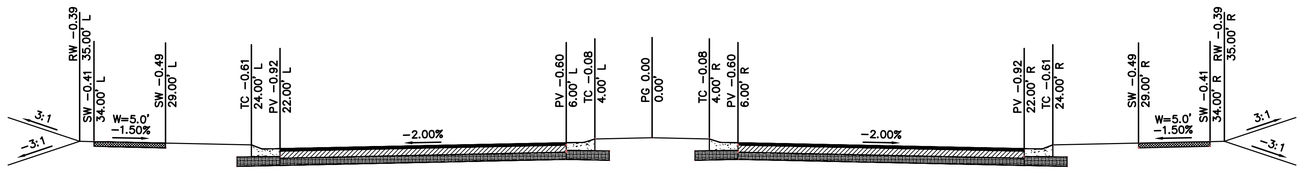


CLAYTON PLACE, WALSH DRIVE, MARYVILLE PLACE, OSAGE DRIVE & RUTHERFORD DRIVE
RESIDENTIAL LOCAL
N.T.S.

2" TYPE 6 ASPHALTIC CONCRETE SURFACE
4" TYPE 5 ASPHALTIC CONCRETE BASE COURSE
6" MIN. MODOT TYPE 5 STONE BASE
6" FLYASH STABILIZED SUBGRADE
CG-2 CURB & GUTTER

1 Scale: N.T.S.
RESIDENTIAL LOCAL STREET



OSAGE DRIVE ENTRY
RESIDENTIAL LOCAL
N.T.S.

2" TYPE 6 ASPHALTIC CONCRETE SURFACE
4" TYPE 5 ASPHALTIC CONCRETE BASE COURSE
6" MIN. MODOT TYPE 5 STONE BASE
6" FLYASH STABILIZED SUBGRADE
CG-2 CURB & GUTTER
CG-2 DRY CURB & GUTTER AT MEDIAN

2 Scale: N.T.S.
RESIDENTIAL LOCAL STREET

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STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER
PE-2019000237
PROFESSIONAL ENGINEER
3/17/2020

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

TYPICAL SECTIONS
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_TYP01_A192339
date: 3/17/2020

SHEET
C104

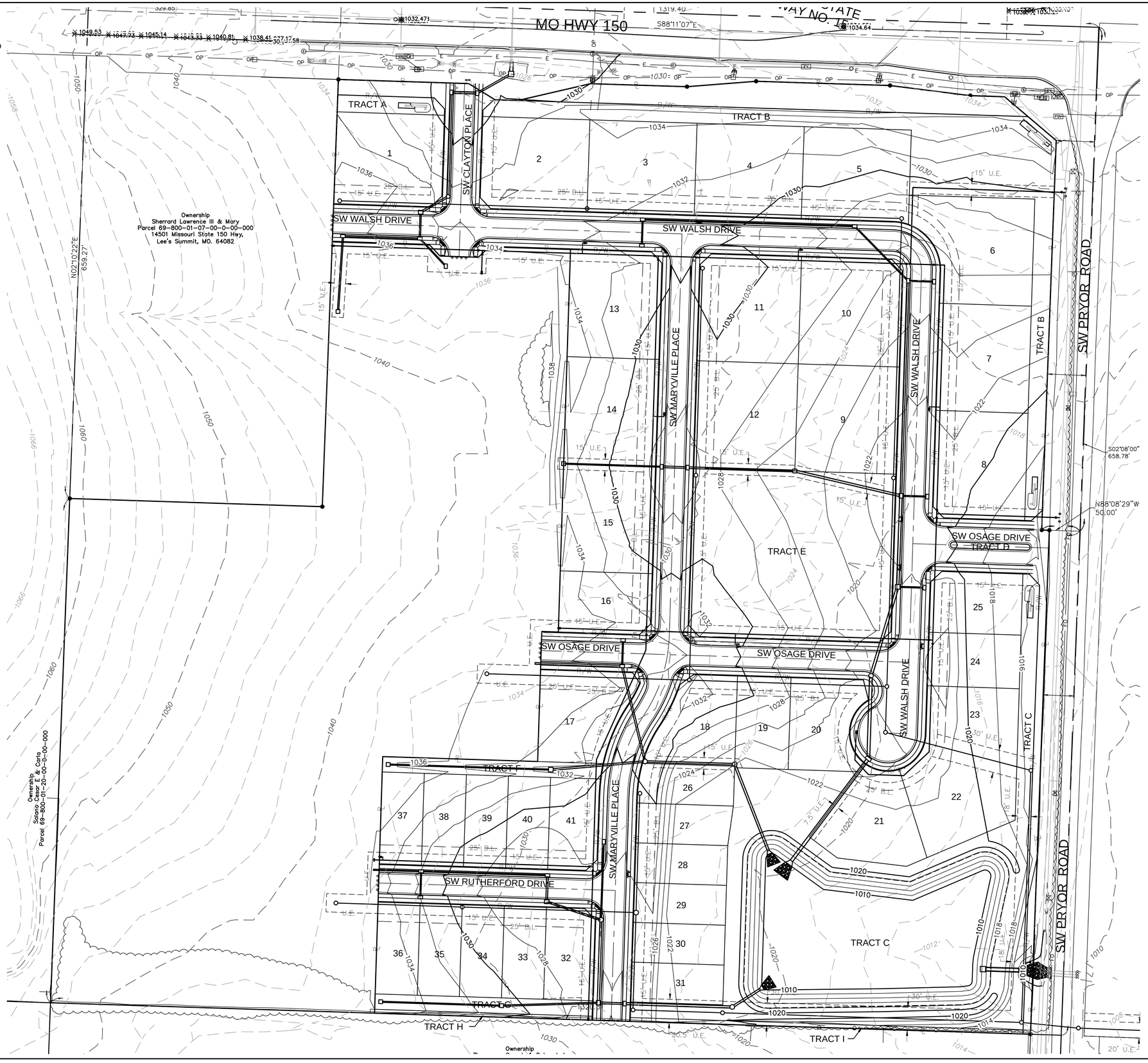
DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_TYP01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 9:28am XREFS: C_PTBLK_A192339

GENERAL NOTES:

1. CONTRACTOR SHALL ADHERE TO THE "DESIGN AND CONSTRUCTION MANUAL" SECTION 2100 AS ADOPTED BY THE CITY OF LEE'S SUMMIT (LATEST EDITION), FOR EXCAVATION AND EMBANKMENT WORK WITHIN THE PROPOSED RIGHT-OF-WAY.

2. AREAS OF CONSTRUCTION SHALL BE STRIPPED OF ALL VEGETATION, ORGANIC MATTER AND TOPSOIL TO A DEPTH AS RECOMMENDED BY GEOTECHNICAL ENGINEER AND OR TESTING AGENCY. SOILS REMOVED DURING SITE STRIPPING SHOULD BE EVALUATED TO DETERMINE IF PORTIONS OF THE TOPSOIL STRATUM MAY BE UTILIZED AS STRUCTURAL FILL WITHIN PAVEMENT AREAS. ANY MATERIAL NOT DEEMED AS SUITABLE FILL MATERIAL BY THE GEOTECHNICAL ENGINEER AND OR TESTING AGENCY SHALL BE REMOVED FROM THE JOB SITE BY THE CONTRACTOR AT HIS EXPENSE.

3. ALL EMBANKMENT OUTSIDE OF RIGHT-OF-WAY SHOULD BE PLACED IN CONTROLLED LIFTS HAVING A MAXIMUM LOOSE LIFT THICKNESS OF 8". EMBANKMENT SHOULD BE COMPACTED TO A MINIMUM OF 95% OF THE MATERIALS MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698 (STANDARD PROCTOR COMPACTION). MOISTURE CONTENT OF THE FILL AT THE TIME OF COMPACTION SHALL BE WITHIN A RANGE OF -0 TO +4 PERCENT OF OPTIMUM MOISTURE CONTENT.



N

0' 30' 60' 120'
SCALE IN FEET

LEGEND	
100	EXISTING INDEX CONTOURS
100	EXISTING INTERMEDIATE CONTOURS
100	PROPOSED INDEX CONTOURS
100	PROPOSED INTERMEDIATE CONTOURS

EARTHWORK QUANTITIES		
LOCATION	CUT (C.Y.)	FILL (C.Y.)
STREET	5,570	9,578
SITE	27,647	33,741
TOTAL	33,217	43,319

EARTHWORK QUANTITIES NOTES:
1. EARTHWORK QUANTITIES BASED ON FINISHED GRADE SURFACE AND DO NOT INCLUDE ADJUSTMENTS FOR TOPSOIL AND SHRINKAGE.

2. EARTHWORK QUANTITIES DO NOT TAKE INTO CONSIDERATION EXCAVATION, REMOVAL AND DISPOSAL OF MATERIAL DEEMED UNSUITABLE BY A GEOTECHNICAL ENGINEER. THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR EXCAVATION, REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL AND FOR REPLACING IT WITH SUITABLE MATERIAL.

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North Kansas City, MO 64116
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STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER PE-2019000237
3/17/2020
PROFESSIONAL ENGINEER

REVISIONS		
REV. NO.	DATE	REVISIONS DESCRIPTION	BY

GRADING PLAN (FOR REFERENCE ONLY)
STREET & STORM SEWER PLANS

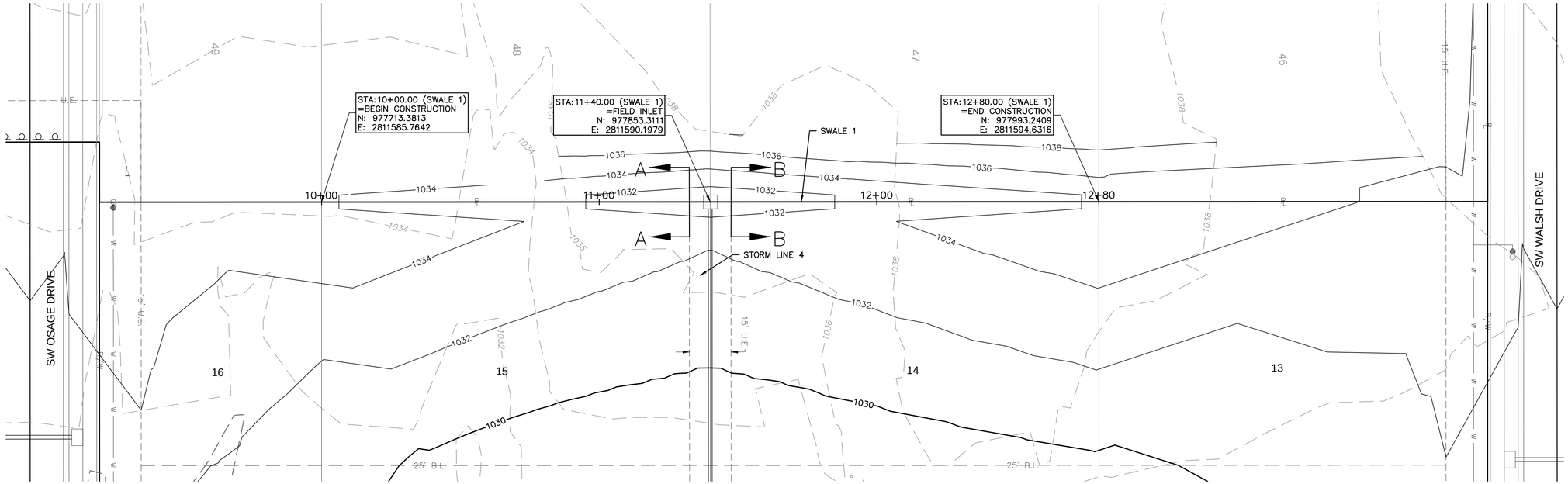
OSAGE
FIRST PLAT

2020

LEE'S SUMMIT, MISSOURI

drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_GRD01_A192339
date:	3/17/2020

SHEET
C105



Swale Design Table (100 Year Return Frequency)

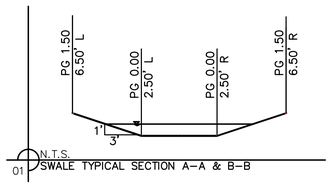
Section Data							Flow Data							
SECTION	Mannings Coefficient	Channel Slope (%)	Swale Depth (ft)	Left Side Slope (H:V)	Right Side Slope (H:V)	Bottom Width (ft)	Discharge (cfs)	Water Depth (ft)	Flow Area (ft^2)	Velocity (ft/sec)	Wetted Perimeter (ft)	Top Width (ft)	Specific Energy (ft)	Shear Stress (lbs/ft^2)
A-A	0.03	2.25%	1.50	3:1	3:1	5.00	10.14	0.44	2.78	3.65	7.78	7.64	0.65	0.50
B-B	0.03	2.25%	1.50	3:1	3:1	5.00	2.17	0.18	1.00	2.18	6.14	6.08	0.25	0.23
A-A Future	0.03	2.25%	1.50	3:1	3:1	5.00	2.04	0.18	1.00	2.05	6.14	6.08	0.25	0.23
B-B Future	0.03	2.25%	1.50	3:1	3:1	5.00	1.91	0.17	0.94	2.04	6.08	6.02	0.23	0.22

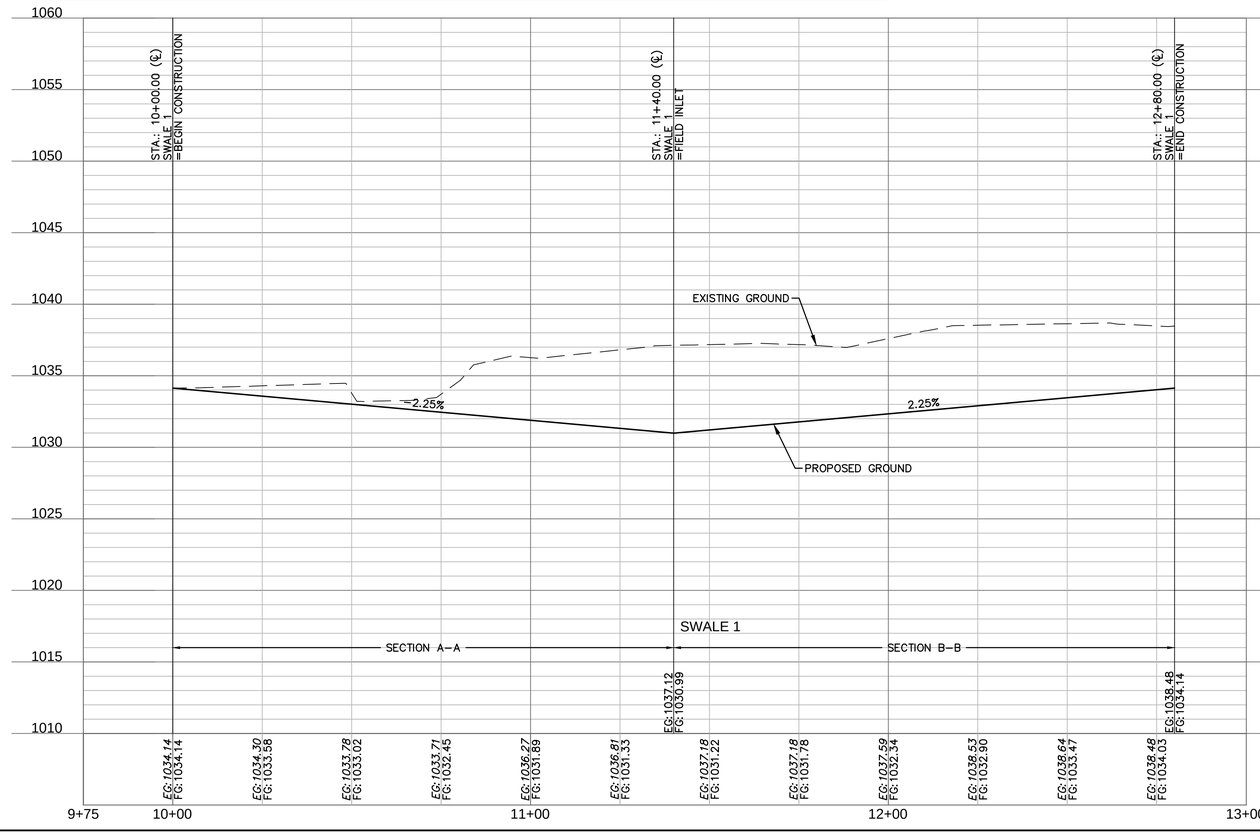
Swale Drainage Area Table (100 year Return Frequency)

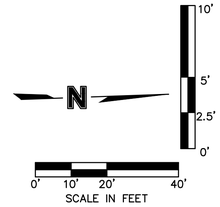
Section	Drainage Area (ac.)	C	Tc (min)	i (in/hr)	K	Peak Flow (cfs)
A-A	2.14	0.47	11	8.06	1.25	10.14
B-B	0.33	0.51	4	10.32	1.25	2.17
A-A Future	0.31	0.51	5	5.73	2.25	2.04
B-B Future	0.29	0.51	5	10.32	1.25	1.91

SWALE GRADING NOTES:

1. CONTRACTOR SHALL CONSTRUCT SWALES WITH MINIMUM SLOPE, WIDTH AND DEPTH AS SHOWN IN THE SWALE DESIGN TABLES.
2. AS-BUILT SURVEY IS REQUIRED/APPROVED BY CITY FOR ALL SWALES AND PRIOR TO APPROVAL FOR ANY BUILDING FOUNDATION PERMIT. CONTRACTOR SHALL BE REQUIRED TO REGRADE SWALES AT CONTRACTOR'S EXPENSE IF ABOVE REQUIREMENTS ARE NOT MET.







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BROCK M. WORTHLEY
NUMBER
PE-2019000237
PROFESSIONAL ENGINEER
3/17/2020

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

SWALE 1 PLAN & PROFILE
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_SWL01_A192339
date: 3/17/2020

SHEET
C106

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_SWL01_A192339.dwg USER: bworthley
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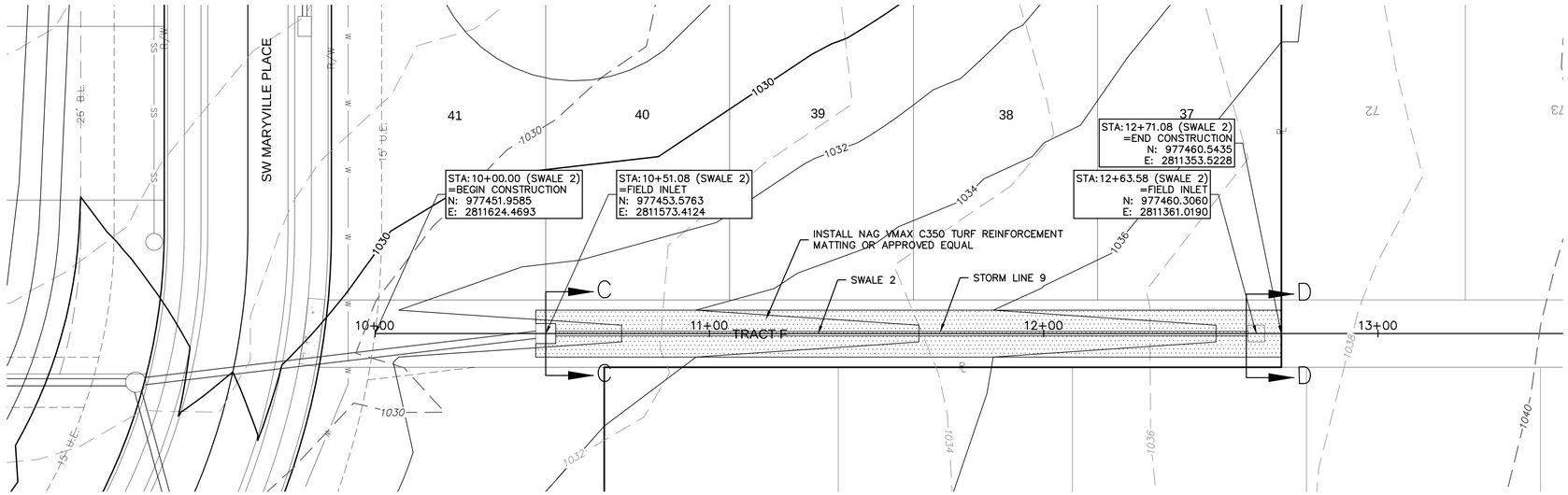


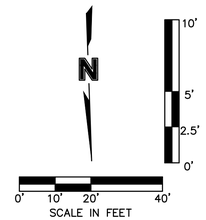
LEGEND	
	NAG VMAX C350 TURF REINFROCEMENT MAT OR APPROVED EQUAL

Swale Design Table (100 Year Return Frequency)

Section Data							Flow Data							
SECTION	Mannings Coefficient	Channel Slope (%)	Swale Depth (ft)	Left Side Slope (H:V)	Right Side Slope (H:V)	Bottom Width (ft)	Discharge (cfs)	Water Depth (ft)	Flow Area (ft^2)	Velocity (ft/sec)	Wetted Perimeter (ft)	Top Width (ft)	Specific Energy (ft)	Shear Stress (lbs/ft^3)
C-C	0.03	2.25%	1.64	3:1	3:1	5.00	20.20	0.64	4.43	4.56	9.05	8.84	0.96	0.69
D-D	0.03	2.25%	1.50	3:1	3:1	5.00	3.22	0.23	1.31	2.46	6.45	6.38	0.32	0.28
C-C Future	0.03	2.25%	1.64	3:1	3:1	5.00	5.00	0.29	1.70	2.94	6.83	6.74	0.42	0.35
D-D Future	0.03	2.25%	1.50	3:1	3:1	5.00	1.78	0.16	0.88	2.03	6.01	5.96	0.22	0.20

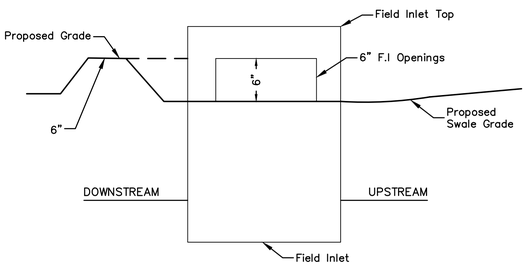
Swale Drainage Area Table (100 year Return Frequency)

Section	Drainage Area (ac.)	C	Tc (min)	i (in/hr)	K	Peak Flow (cfs)
C-C	3.83	0.51	12	8.27	1.25	20.20
D-D	0.49	0.51	4	10.32	1.25	3.22
C-C Future	0.76	0.51	5	5.73	2.25	5.00
D-D Future	0.27	0.51	5	10.32	1.25	1.78



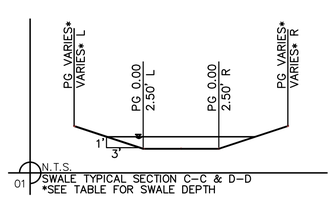
SWALE GRADING NOTES:

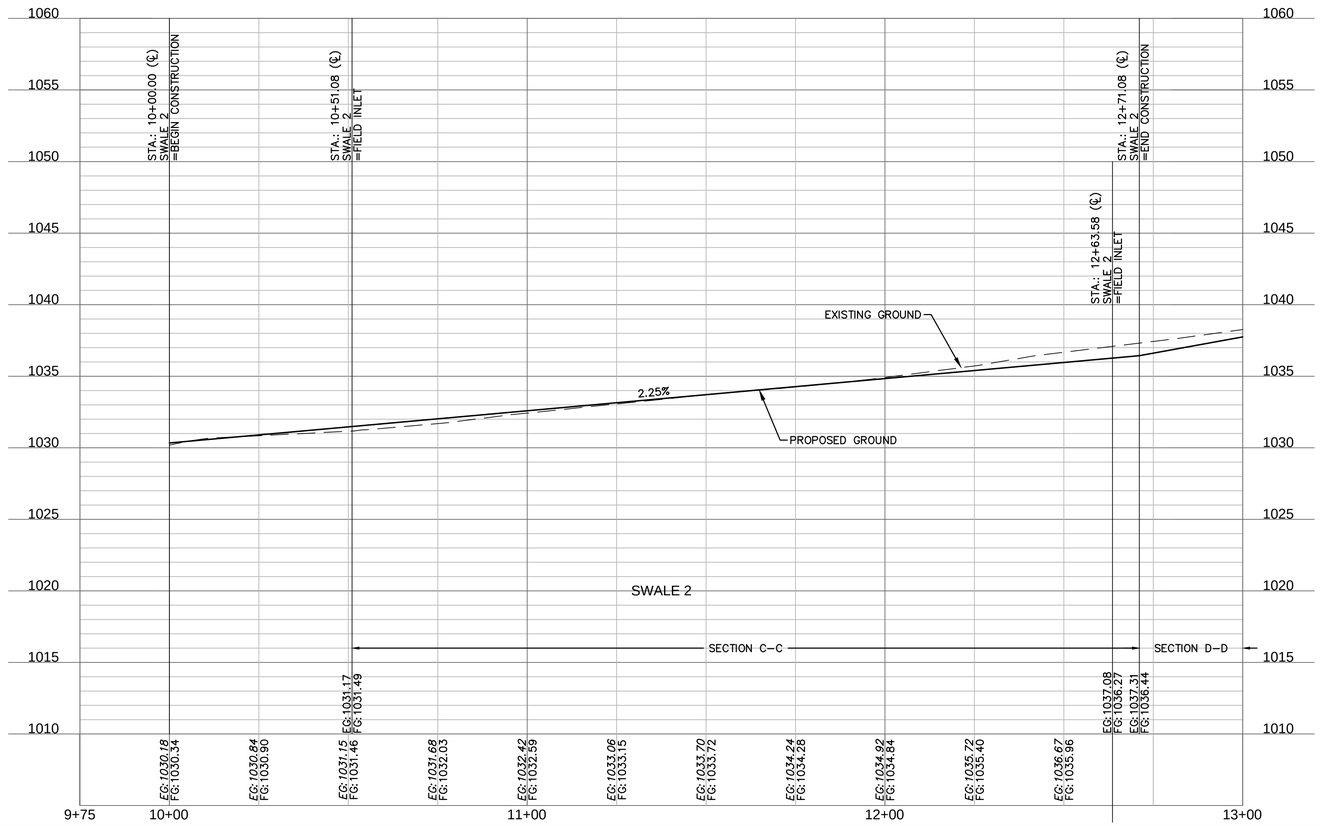
1. CONTRACTOR SHALL CONSTRUCT SWALES WITH MINIMUM SLOPE, WIDTH AND DEPTH AS SHOWN IN THE SWALE DESIGN TABLES.
2. AS-BUILT SURVEY IS REQUIRED/APPROVED BY CITY FOR ALL SWALES AND PRIOR TO APPROVAL FOR ANY BUILDING FOUNDATION PERMIT. CONTRACTOR SHALL BE REQUIRED TO REGRADE SWALES AT CONTRACTOR'S EXPENSE IF ABOVE REQUIREMENTS ARE NOT MET.



NOTE: INCLUDE SUMP PER ABOVE DETAIL WHERE FIELD INLETS ARE LOCATED WITHIN SWALES.

SUMP DETAIL
N.T.S.





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STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER PE-2019000237
PROFESSIONAL ENGINEER
3/17/2020

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

SWALE 2 PLAN & PROFILE
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

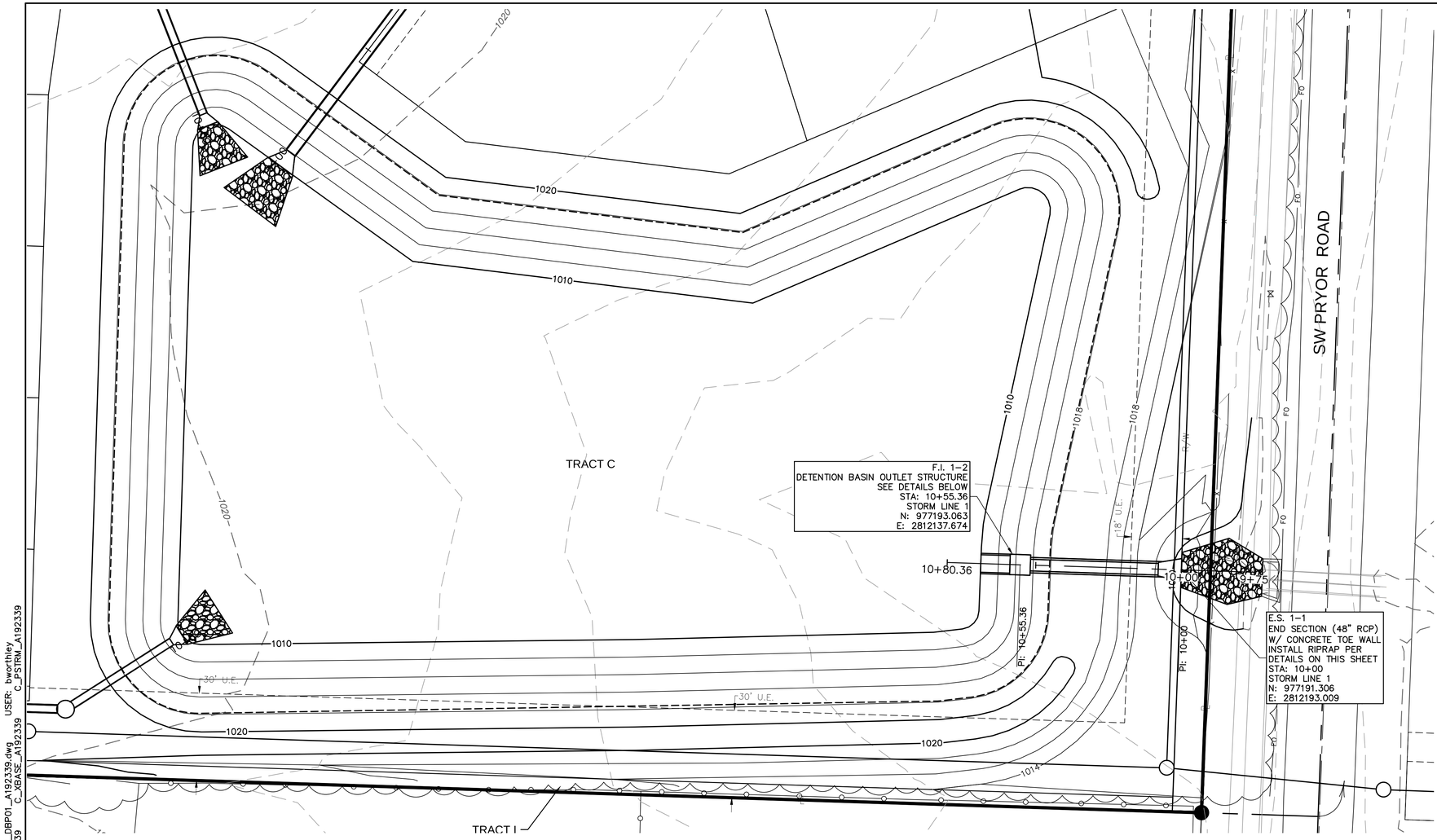
LEE'S SUMMIT, MISSOURI

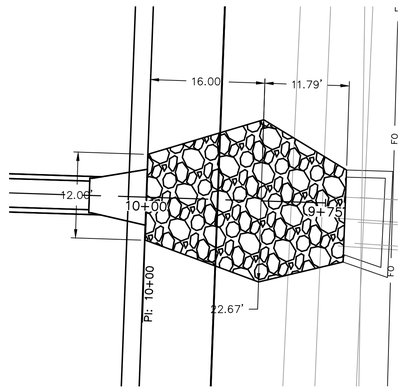
2020

drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_SWL01_A192339
date: 3/17/2020

SHEET
C107

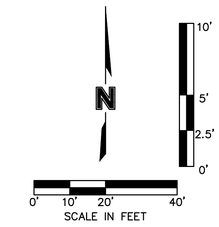
DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_SWL01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 10:52am XREFS: C_XBASE_A192339 C_FBASE_A192339 C_PSURF_A192339 C_PPATT_A192339
C_PBNDY_A192339 C_PTBLK_A192339



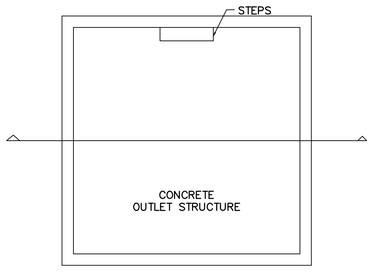


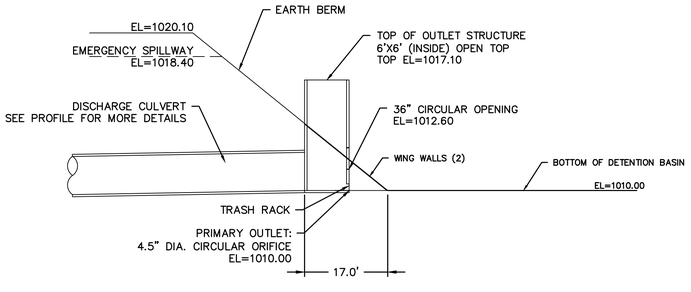
RIP RAP DETAIL
1"=10'

Riprap Calculations							
End Section	Q_{100} (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)	Minimum Area (SY)
E.S. 1-1	56.3	4	2	6	16	1.65	30.8
*Per Table 10.1 HEC 14-FHWA-Energy Dissipators Pg. 10-18							

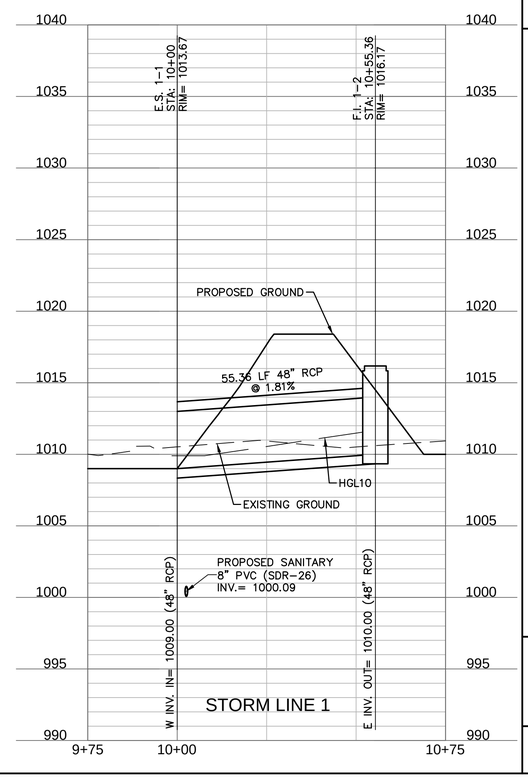


BASIN SPILLWAY DETAILS	
TYPE	RECTANGULAR BROAD CRESTED WEIR
LENGTH	160 FT
SPILLWAY ELEVATION	1018.40 FT
SPILLWAY DEPTH	1.70 FT
TOP ELEVATION	1020.10 FT
100-YR FLOW (AT 0.68' FLOW DEPTH)	233.27 CFS





BASIN OUTLET STRUCTURE DETAIL
N.T.S.



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BROCK M. WORTHLEY
NUMBER
PE-2019000237
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3/17/2020

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

DETENTION BASIN PLAN
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_DBP01_A192339
date:	3/17/2020

SHEET
C108

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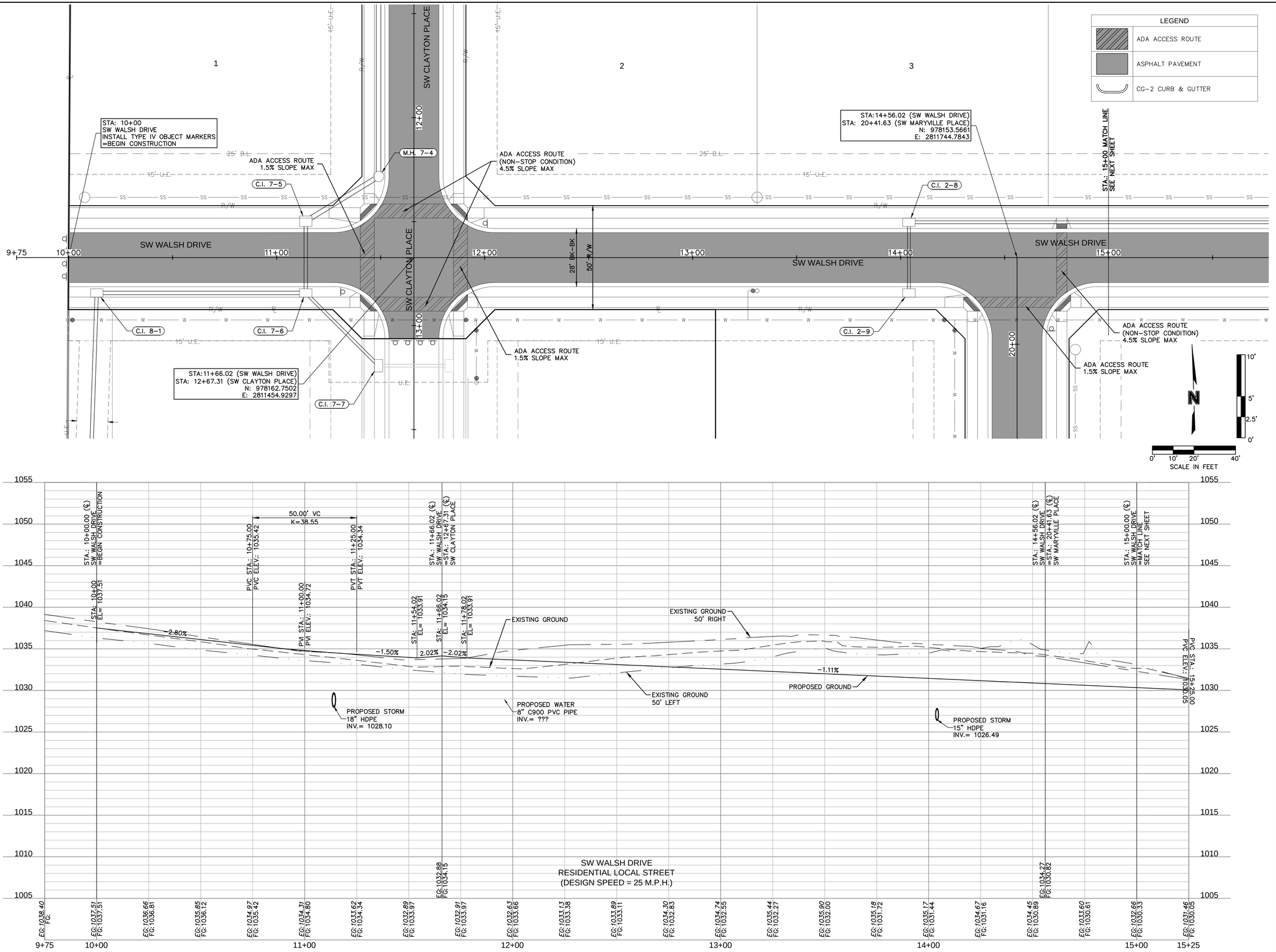

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3/17/2020

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

ROADWAY PLAN & PROFILE (SW WALSH DRIVE)
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

2020

LEE'S SUMMIT, MISSOURI

drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_RPP01_A192339
date:	3/17/2020

SHEET
C109

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_RPP01_A192339.dwg USER: bworthley
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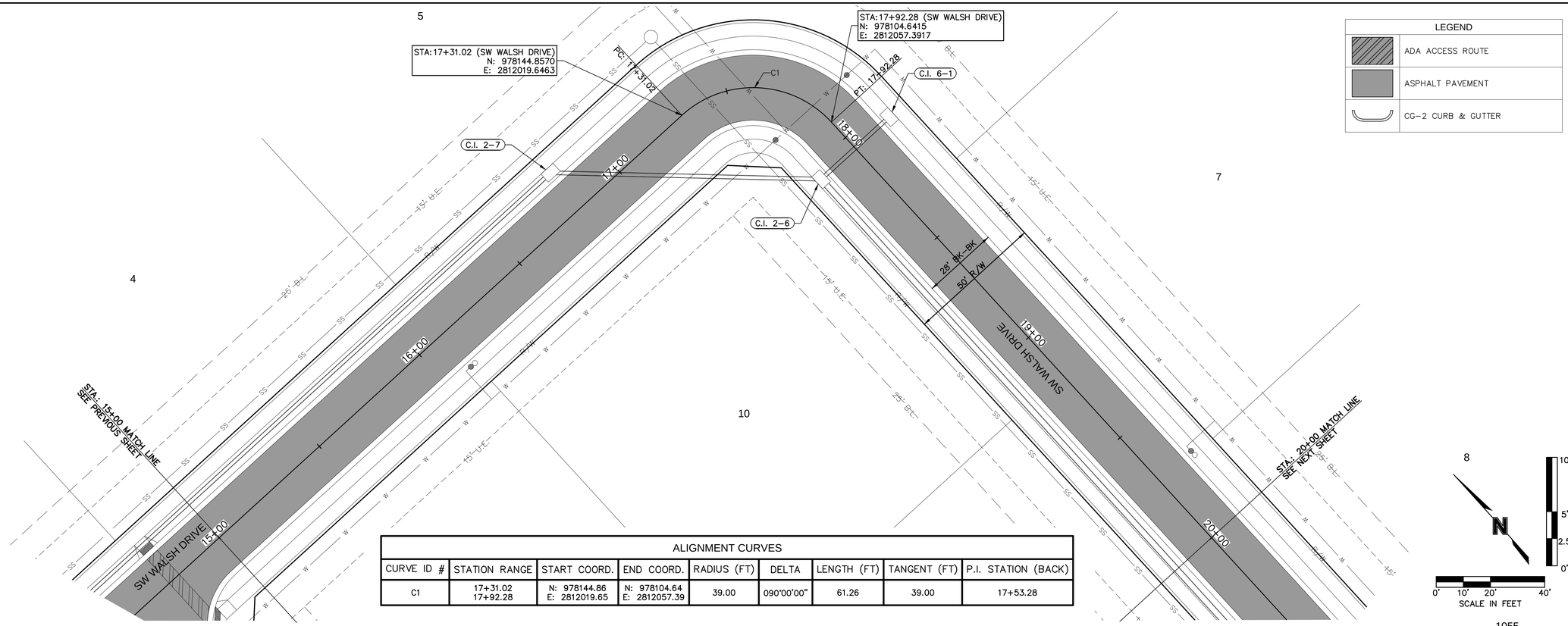

ALIGNMENT CURVES								
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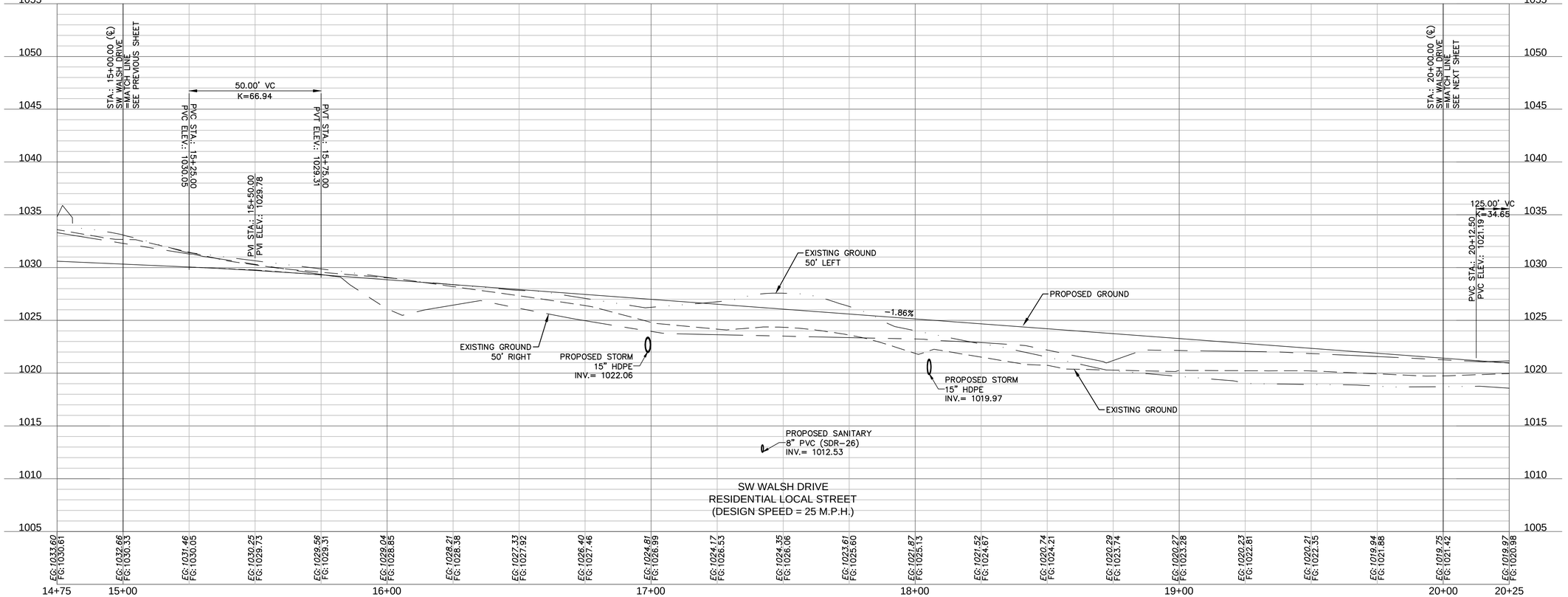
C1	17+31.02 17+92.28	N: 978144.86 E: 2812019.65	N: 978104.64 E: 2812057.39	39.00	090°00'00"	61.26	39.00	17+53.28



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REVISIONS			
REV. NO.	DATE	REVISIONS DESCRIPTION	BY

ROADWAY PLAN & PROFILE (SW WALSH DRIVE)
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_RPP01_A192339
date: 3/17/2020

SHEET
C110

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_RPP01_A192339.dwg USER: bworthley
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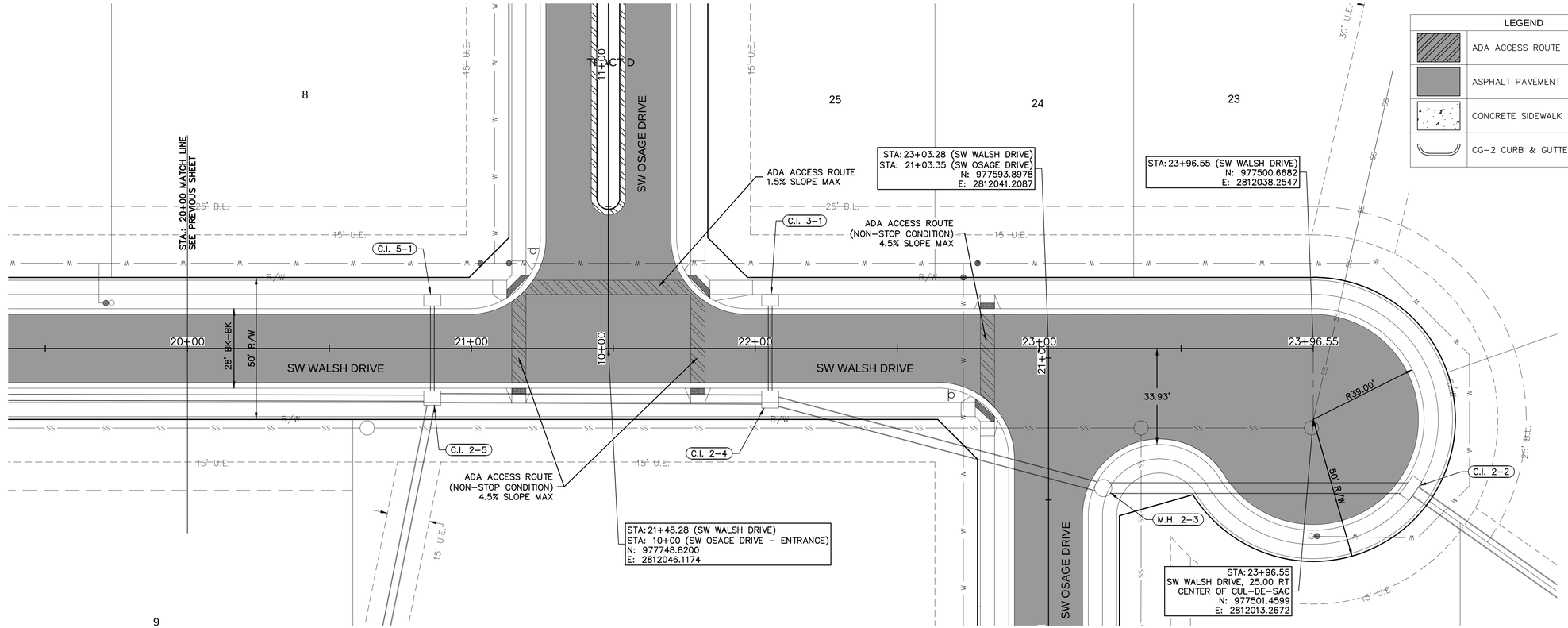

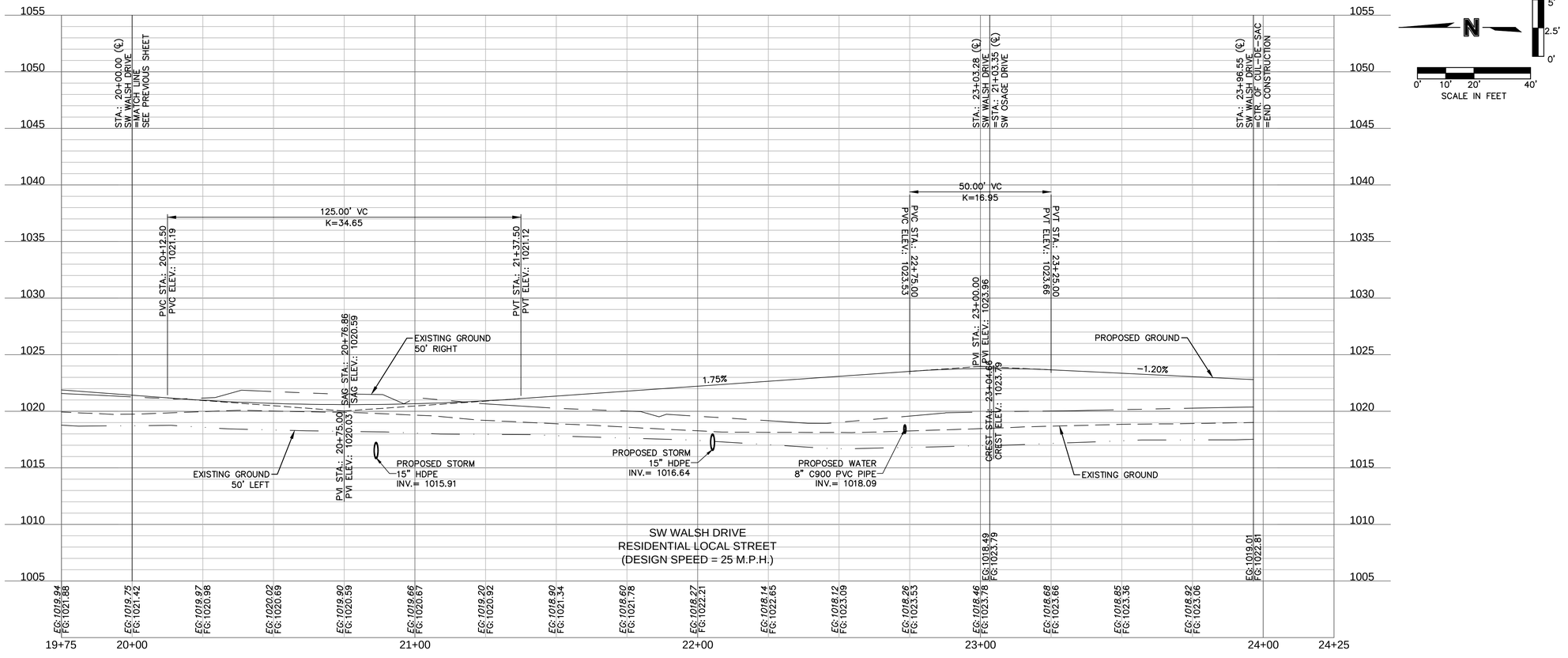

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REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

ROADWAY PLAN & PROFILE (SW WALSH DRIVE)
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_RPP01_A192339
date:	3/17/2020

SHEET
C111

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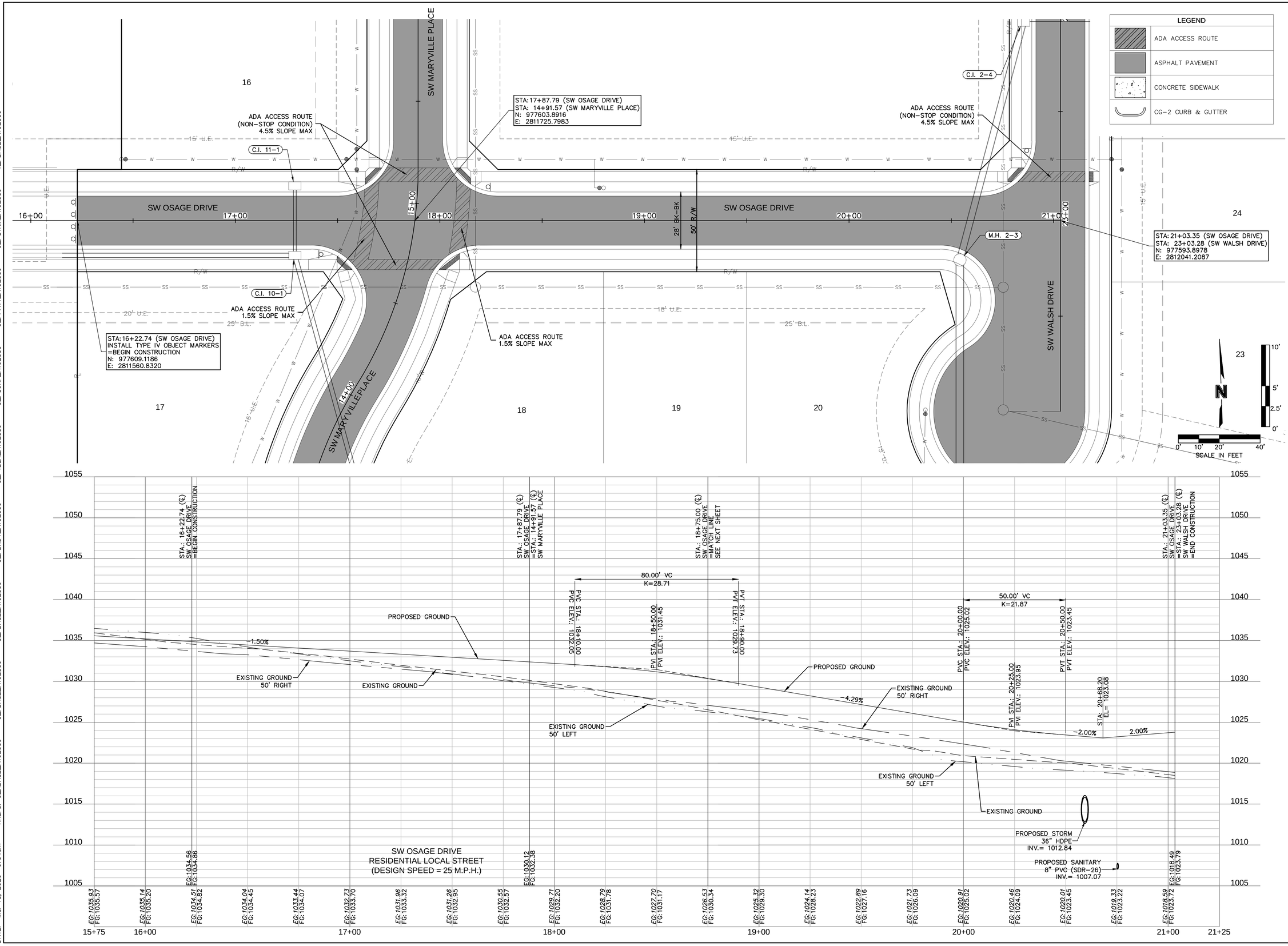

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REV. NO.	DATE	REVISIONS DESCRIPTION	BY

ROADWAY PLAN & PROFILE (SW OSAGE DRIVE)
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by:	GS
checked by:	GS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_RPP02_A192339
date:	3/17/2020

SHEET
C112

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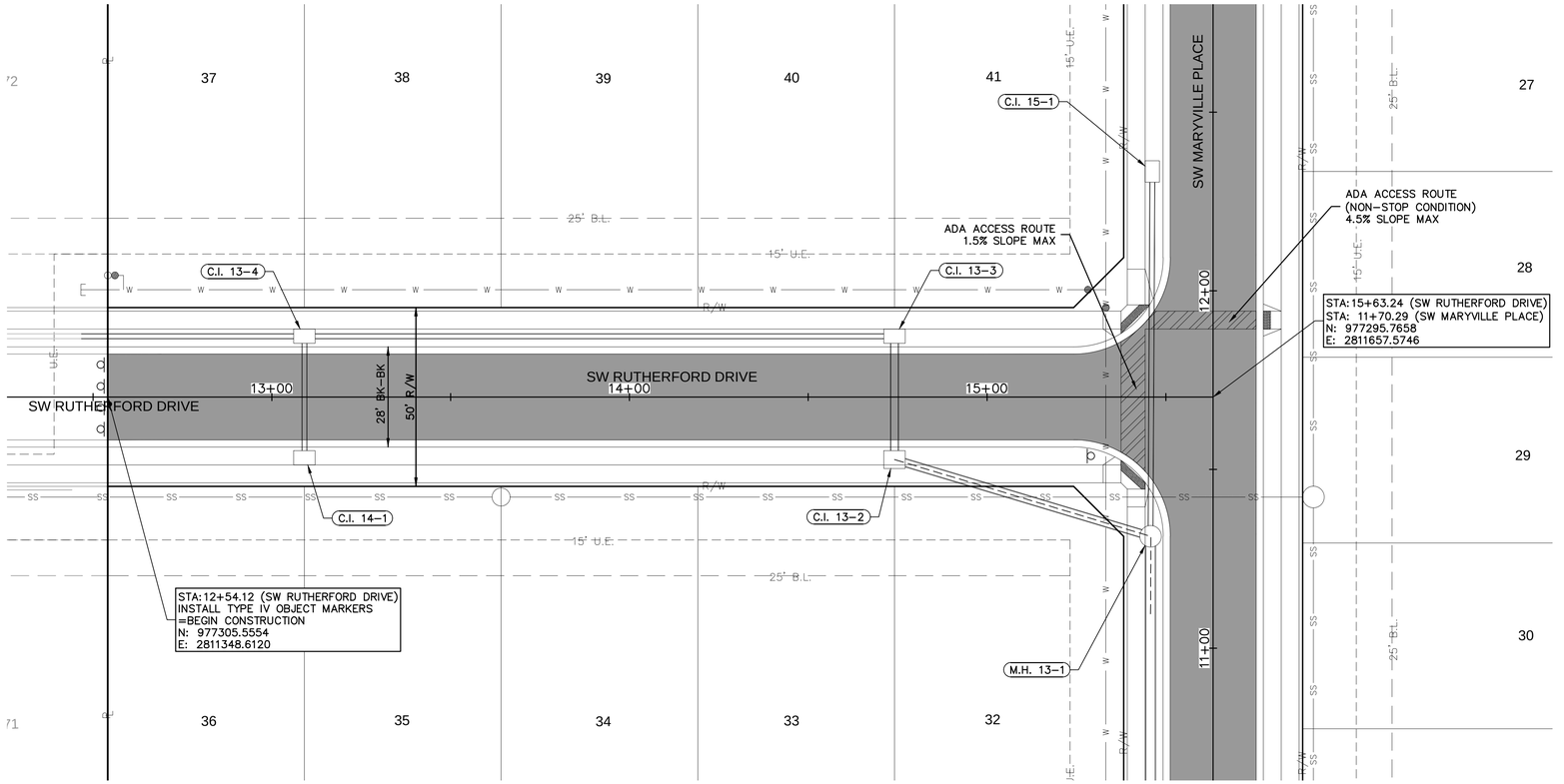

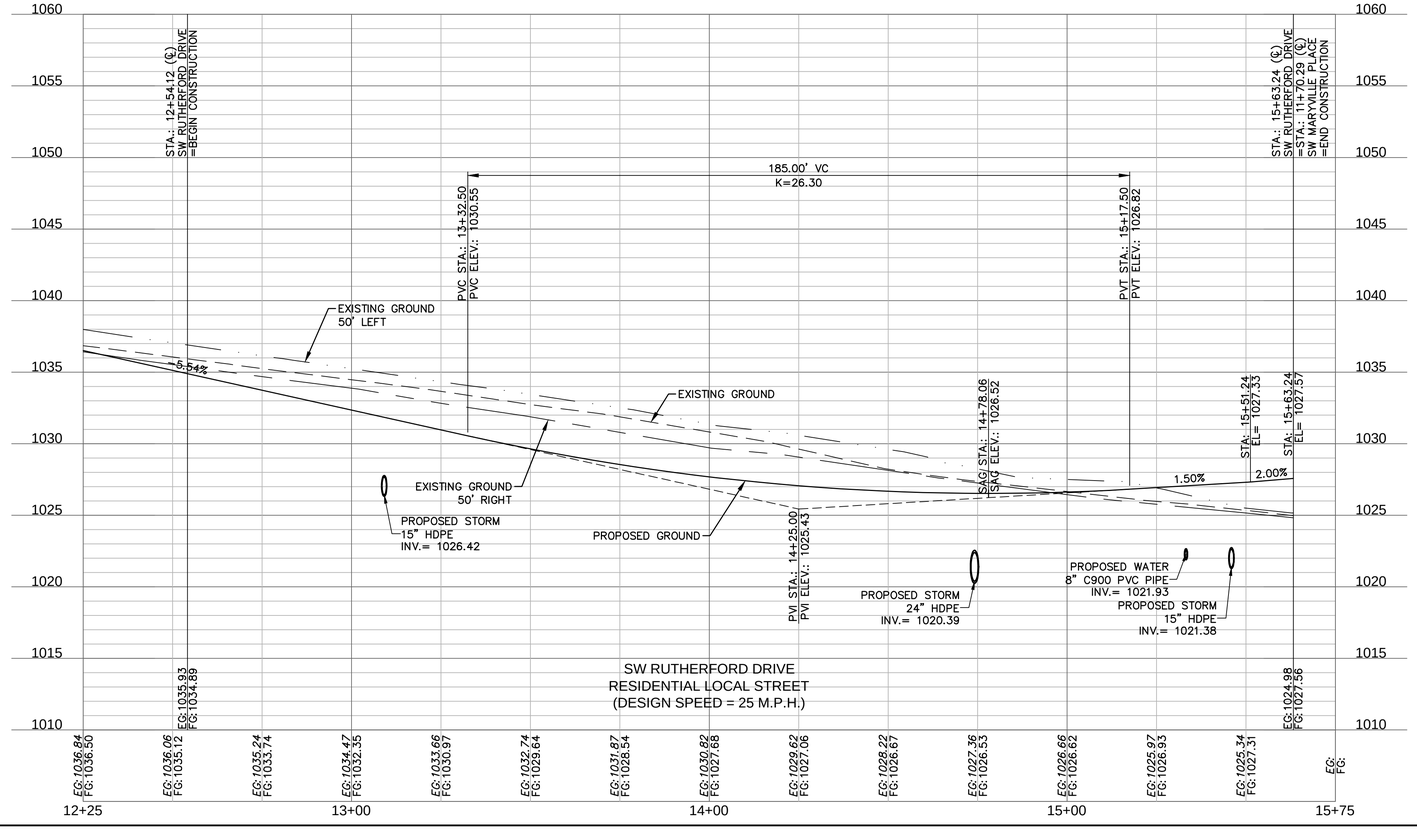

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REV. NO.	DATE	REVISIONS DESCRIPTION	BY

ROADWAY PLAN & PROFILE (SW RUTHERFORD DRIVE)
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by:	GS
checked by:	RS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_RPP02_A192339
date:	3/17/2020

SHEET
C113

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_RPP02_A192339.dwg USER: bworthley
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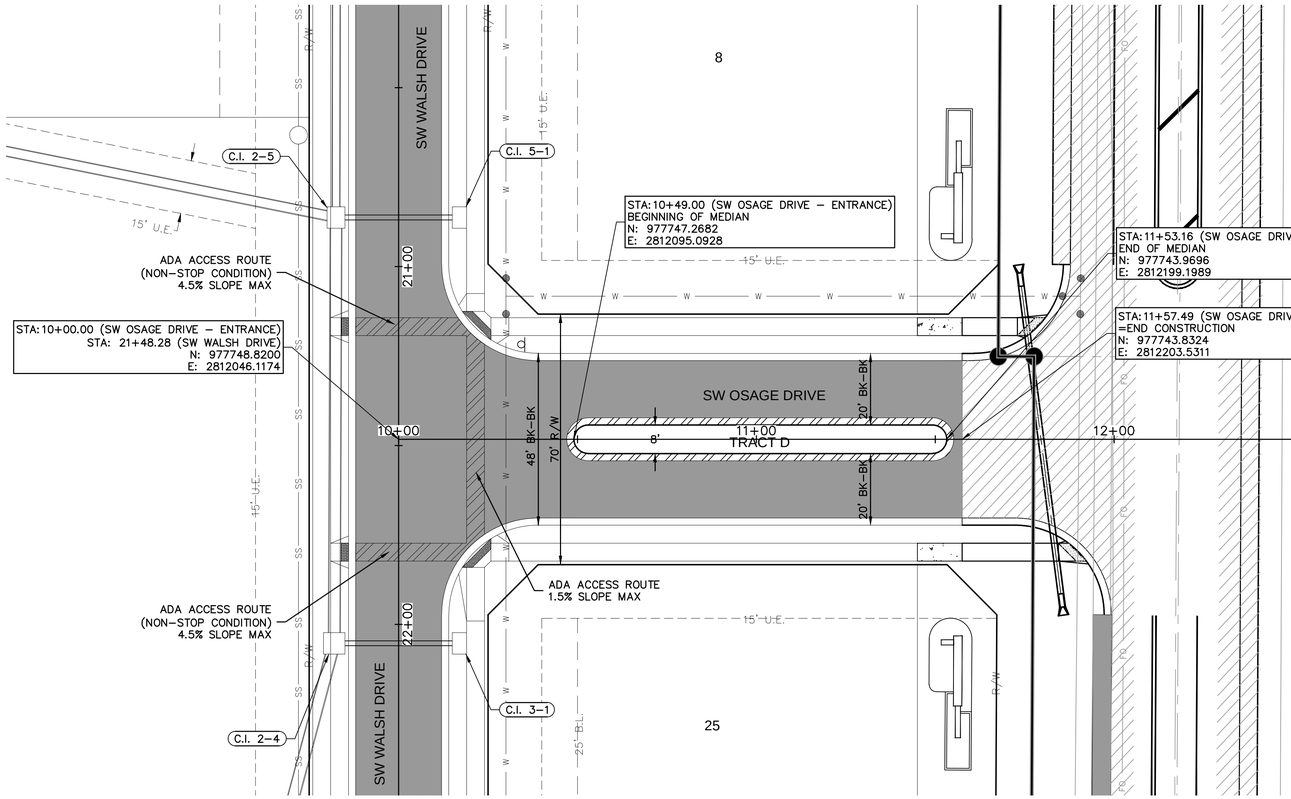
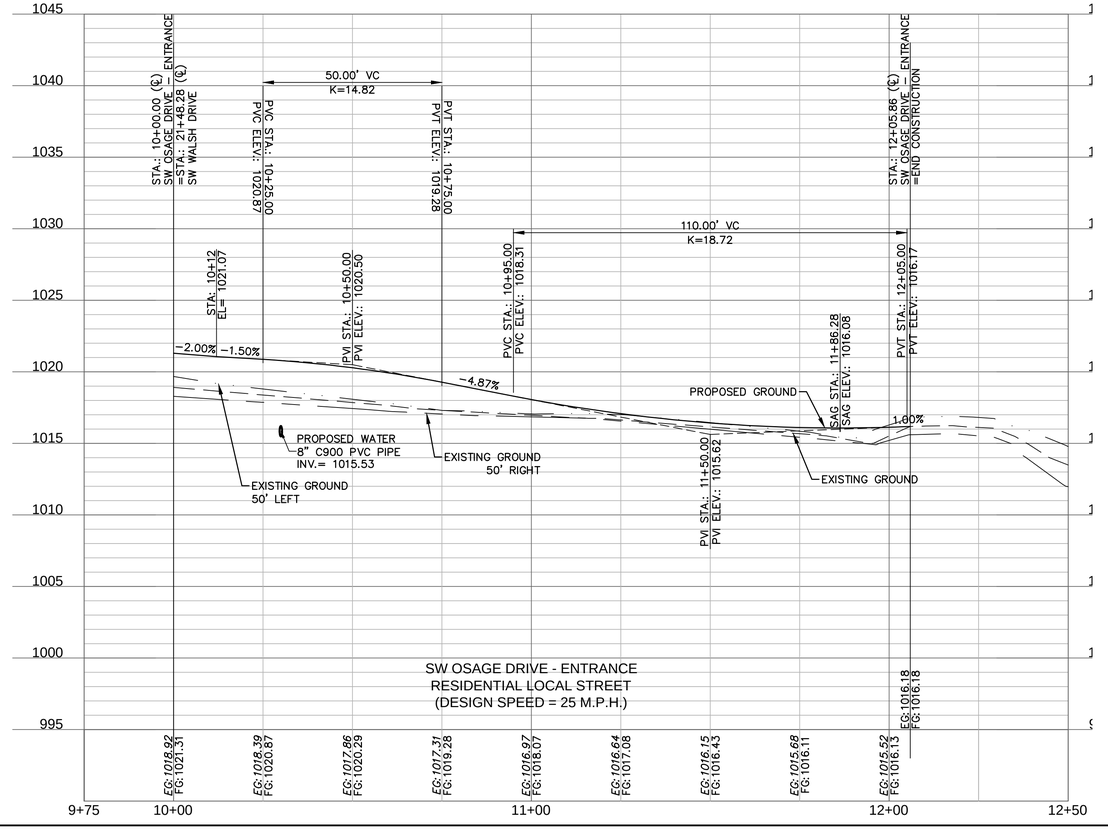
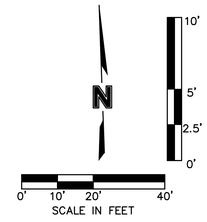




LEGEND	
	ADA ACCESS ROUTE
	ASPHALT PAVEMENT
	CONCRETE SIDEWALK
	CG-2 CURB & GUTTER
	CG-2 DRY CURB & GUTTER
	SEE HIGHWAY 150 & PRYOR ROAD ROADWAY IMPROVEMENT PLANS



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REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

ROADWAY PLAN & PROFILE (SW OSAGE DRIVE - ENTRANCE)
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

2020

LEE'S SUMMIT, MISSOURI

drawn by:	GS
checked by:	RS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_RPP02_A192339
date:	3/17/2020

SHEET
C114

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_RPP02_A192339.dwg USER: bworthley
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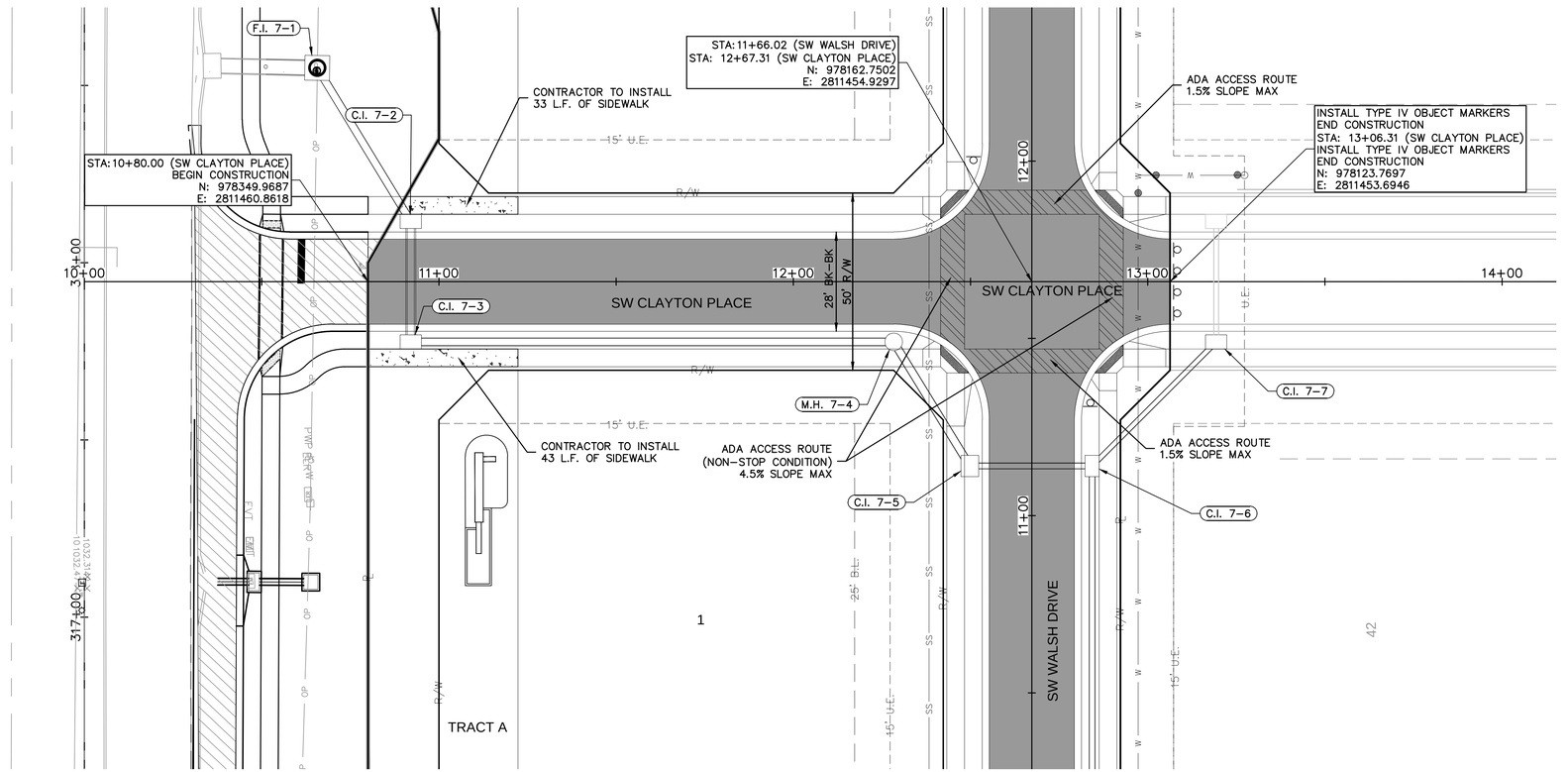
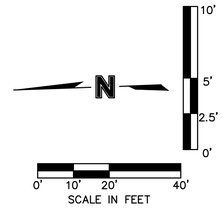
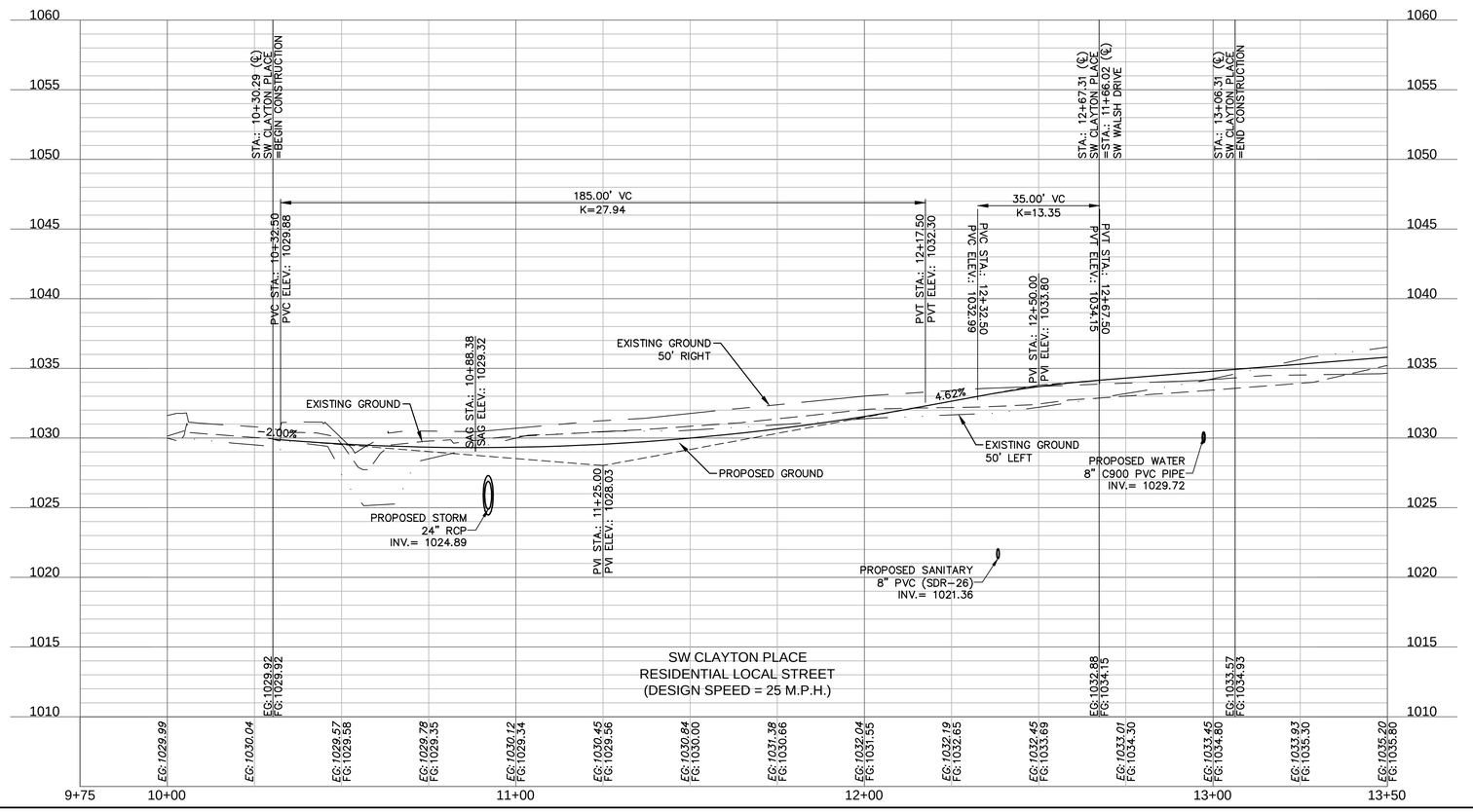


LEGEND

- ADA ACCESS ROUTE
- ASPHALT PAVEMENT
- CONCRETE SIDEWALK
- CG-2 CURB & GUTTER
- SEE HIGHWAY 150 & PRYOR ROAD ROADWAY IMPROVEMENT PLANS





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3/17/2020

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

ROADWAY PLAN & PROFILE (SW CLAYTON PLACE)
STREET & STORM SEWER PLANS

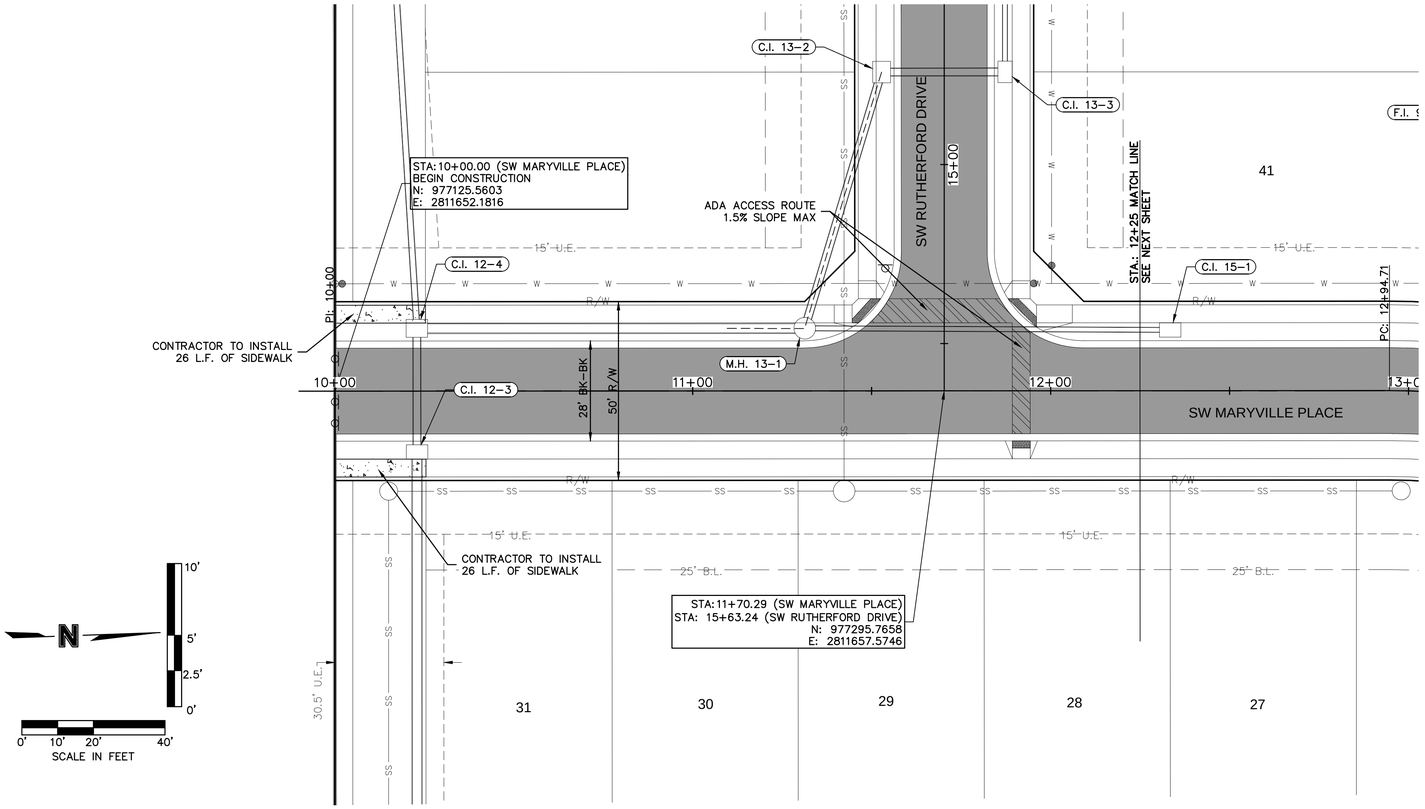
OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

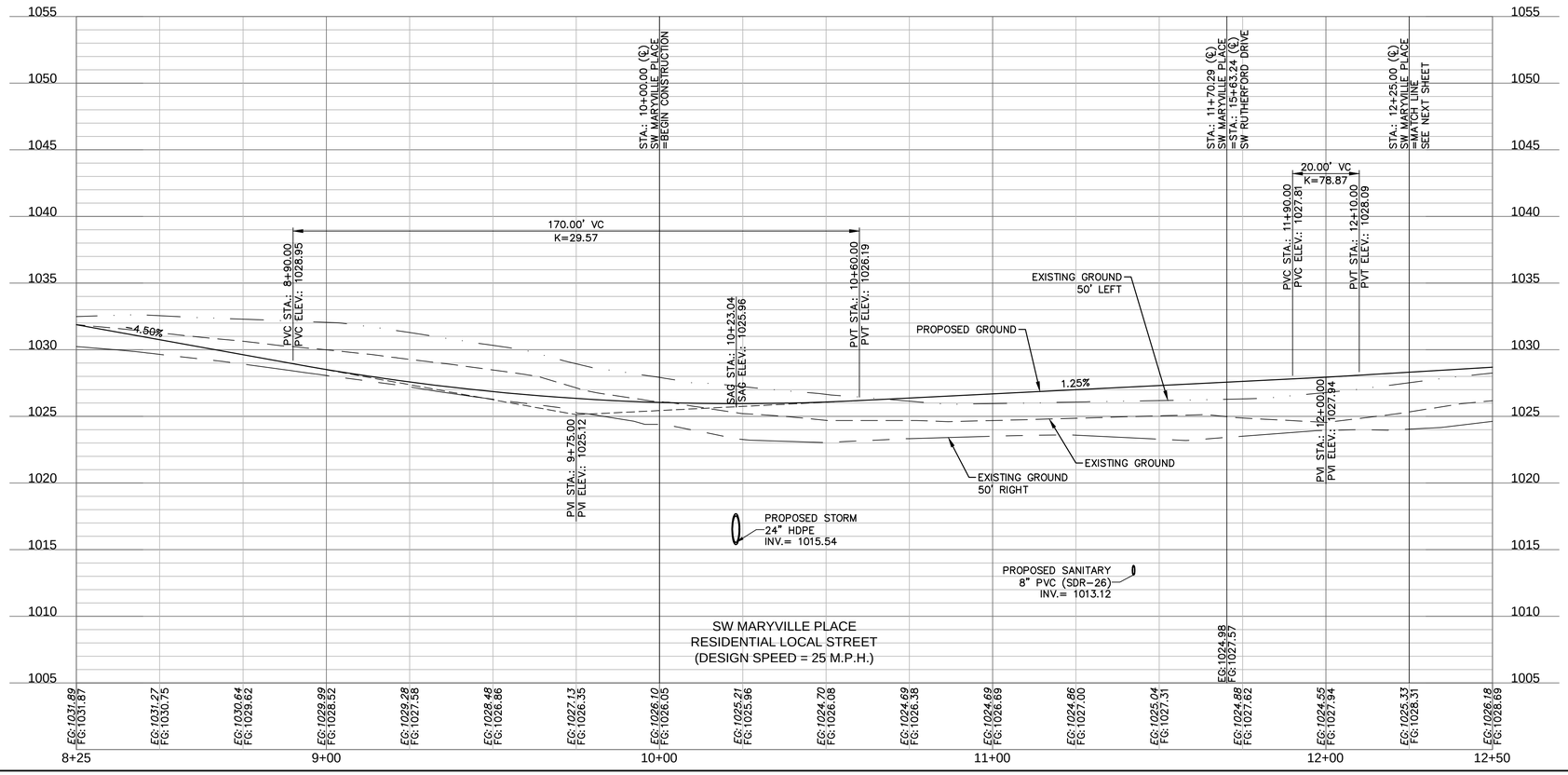
2020

drawn by:	GS
checked by:	BS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_RPP02_A192339
date:	3/17/2020

SHEET
C115



LEGEND	
	ADA ACCESS ROUTE
	ASPHALT PAVEMENT
	CONCRETE SIDEWALK
	CG-2 CURB & GUTTER



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3/17/2020

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

ROADWAY PLAN & PROFILE (SW MARYVILLE PLACE)
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

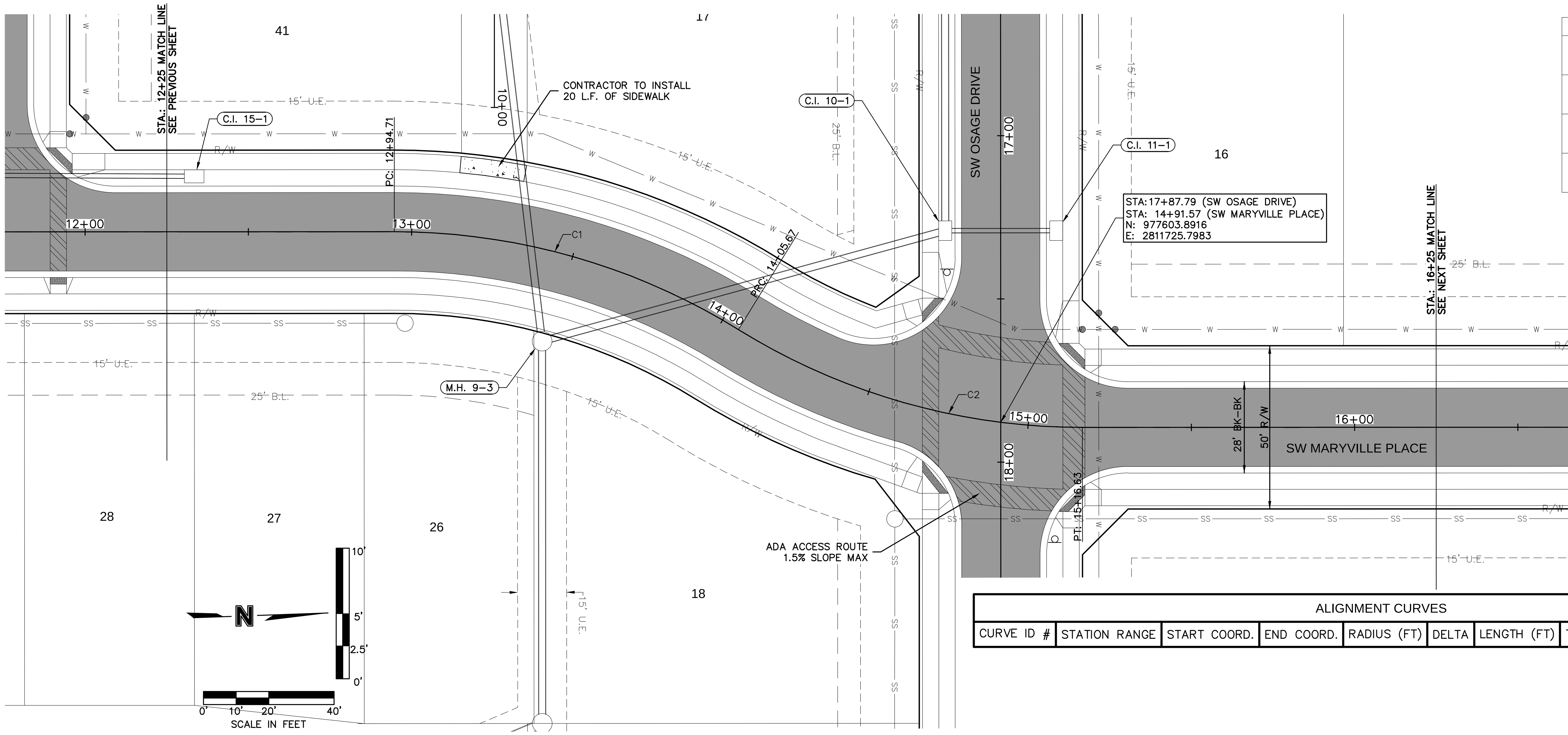
LEE'S SUMMIT, MISSOURI

2020

drawn by:	GS
checked by:	GS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_RPP03_A192339
date:	3/17/2020

SHEET
C116

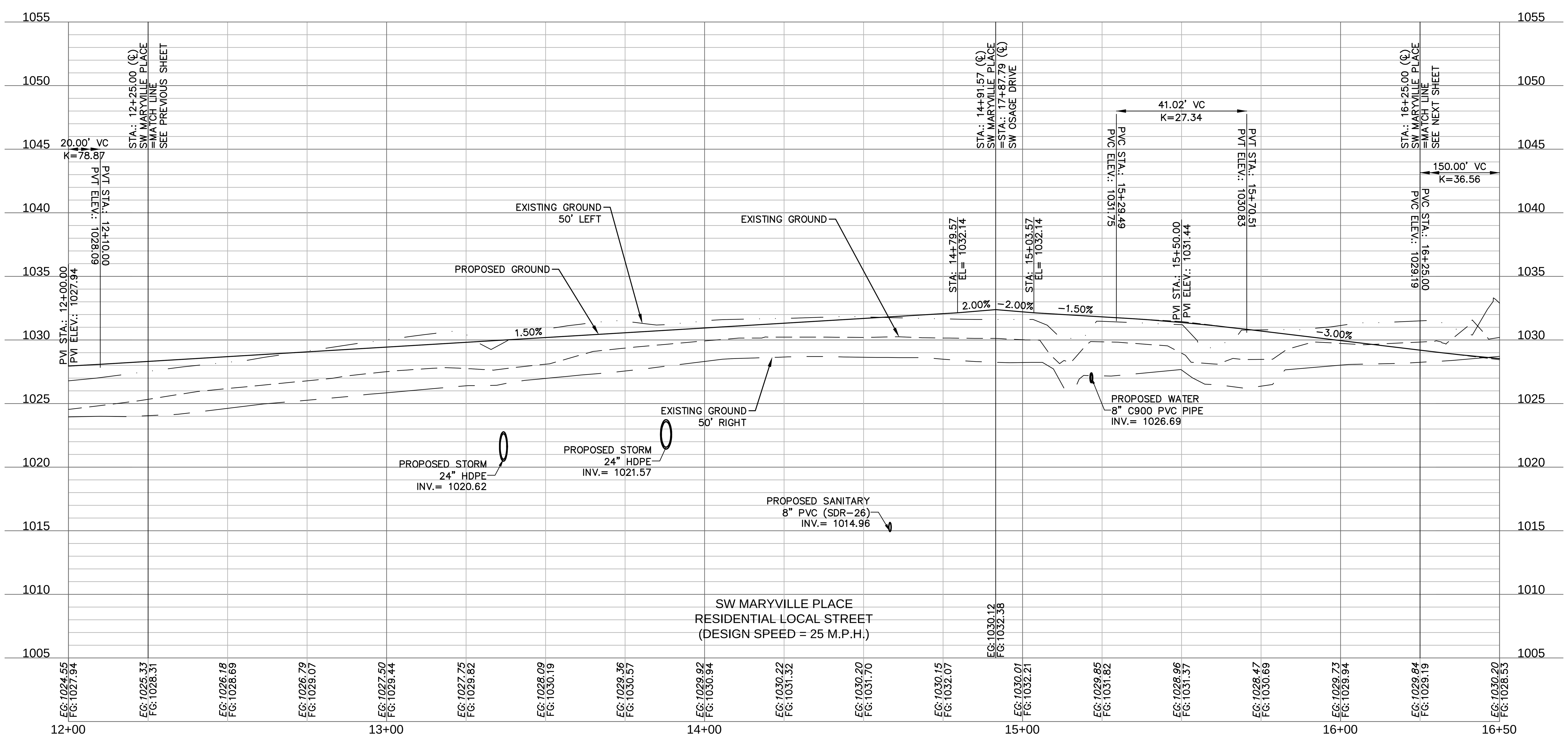
DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_RPP03_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 9:35am XREFS: C_XBASE_A192339 C_FBASE_A192339 C_PBASE_A192339 C_PBNDY_A192339 C_PTBLK_A192339 C_PSURF_A192339 C_PPATT_A192339 C_PSTRM_A192339



LEGEND	
	ADA ACCESS ROUTE
	ASPHALT PAVEMENT
	CONCRETE SIDEWALK
	CG-2 CURB & GUTTER

ALIGNMENT CURVES

CURVE ID #	STATION RANGE	START COORD.	END COORD.	RADIUS (FT)	DELTA	LENGTH (FT)	TANGENT (FT)	P.I. STATION (BACK)



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3/17/2020

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

ROADWAY PLAN & PROFILE (SW MARYVILLE PLACE)
STREET & STORM SEWER PLANS

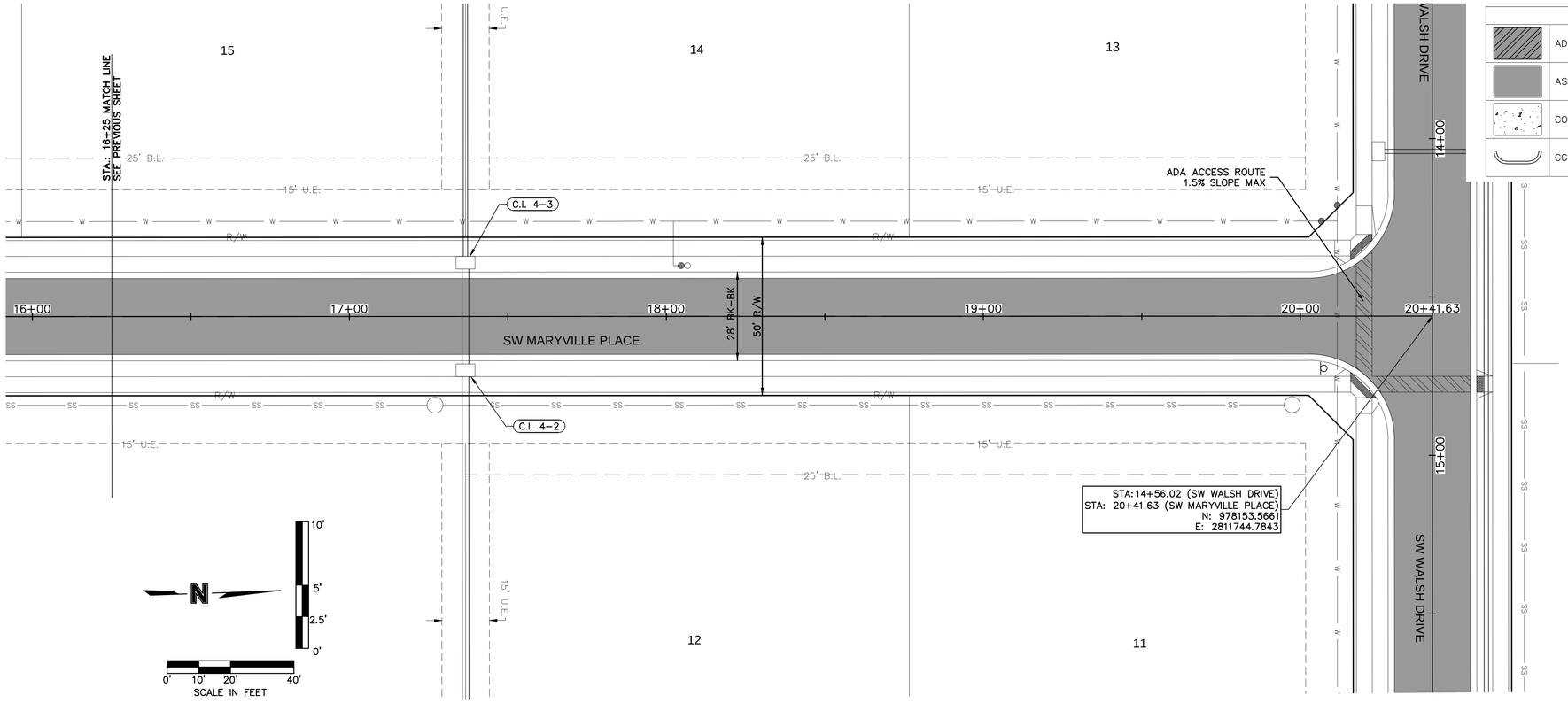
OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

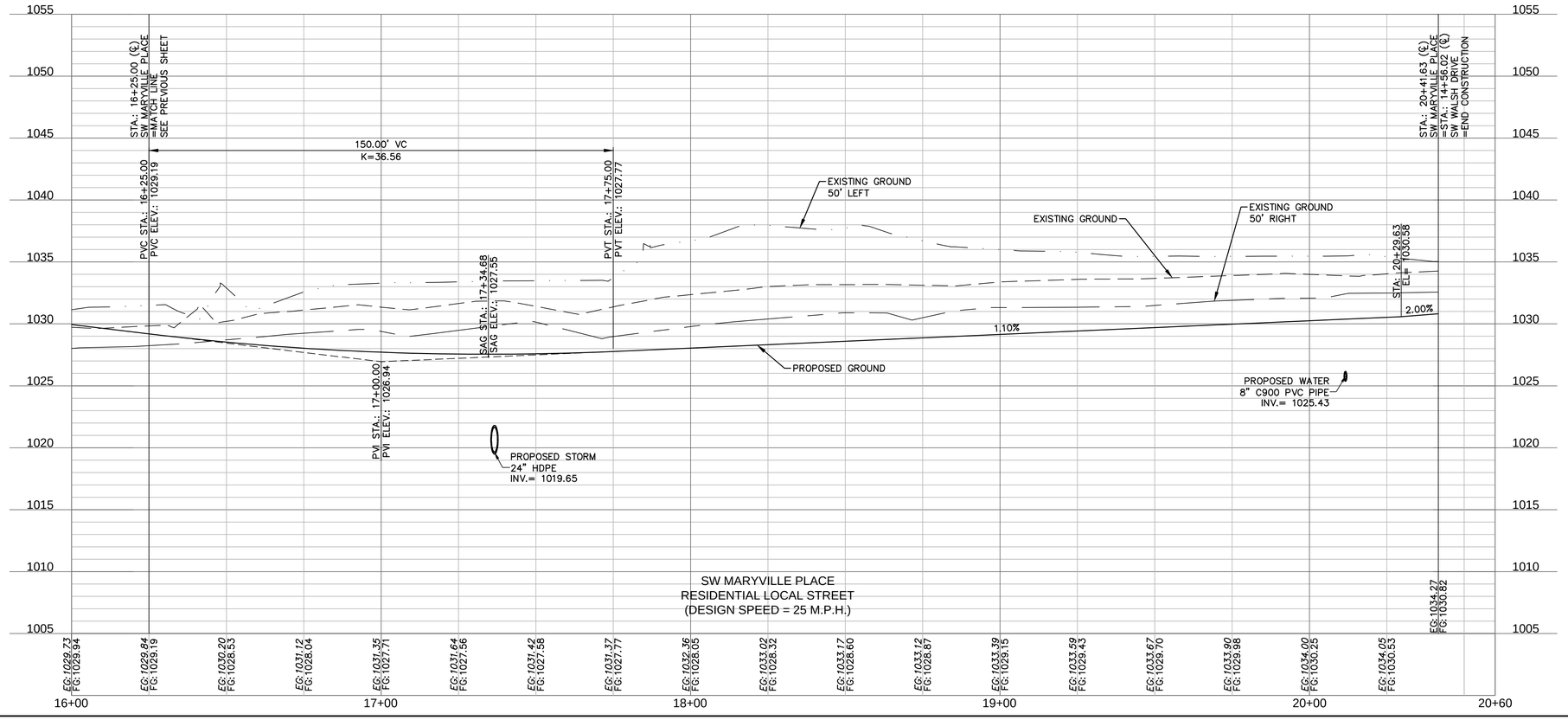
drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_RPP03_A192339
date: 3/17/2020

SHEET
C117



LEGEND

- ADA ACCESS ROUTE
- ASPHALT PAVEMENT
- CONCRETE SIDEWALK
- CG-2 CURB & GUTTER



SW MARYVILLE PLACE
RESIDENTIAL LOCAL STREET
(DESIGN SPEED = 25 M.P.H.)

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REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

ROADWAY PLAN & PROFILE (SW MARYVILLE PLACE)
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by:	GS
checked by:	BS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_RPP03_A192339
date:	3/17/2020

SHEET
C118

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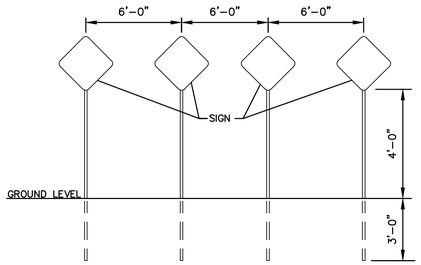
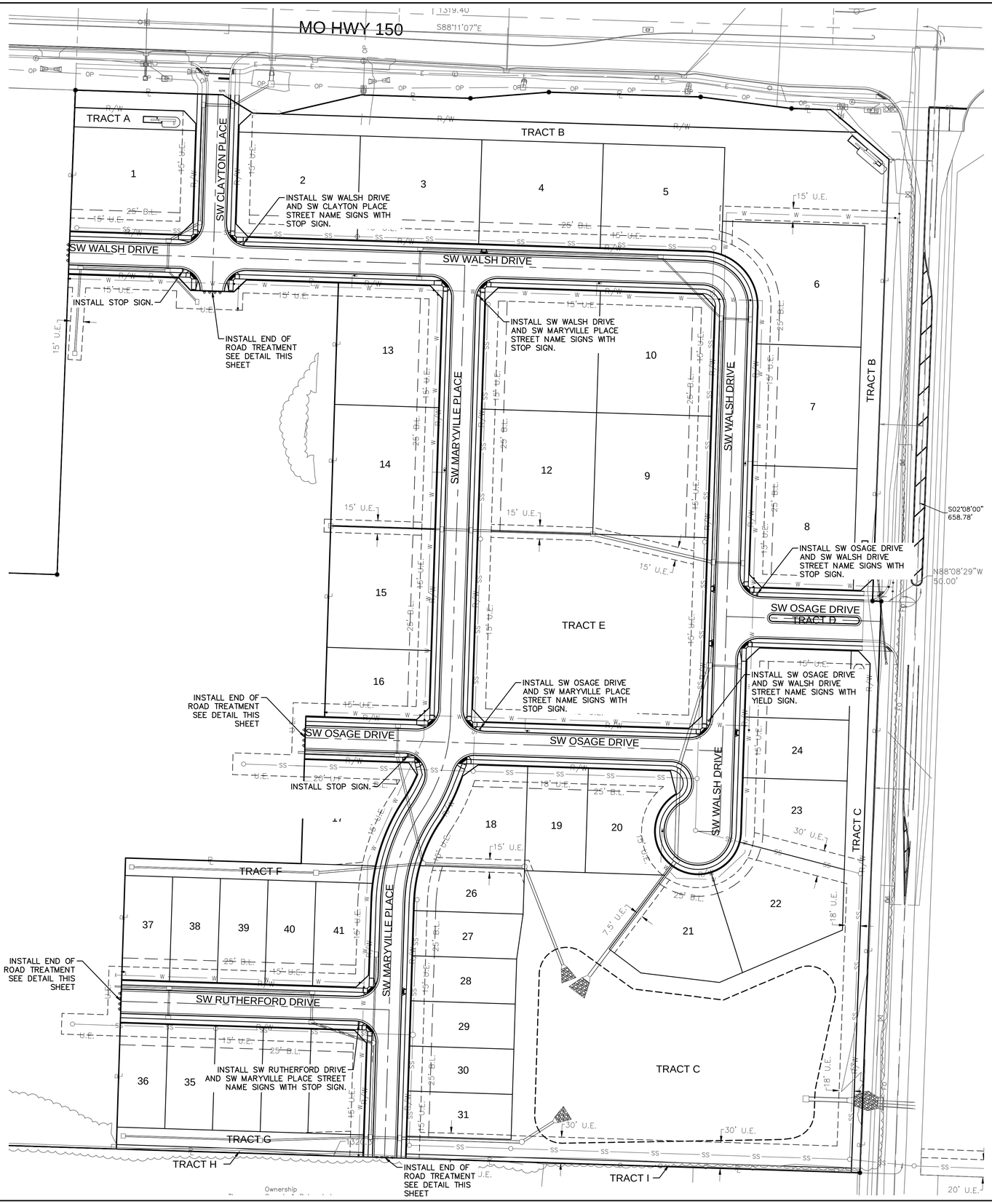
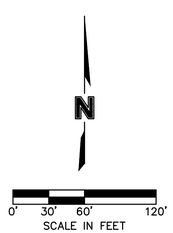


END OF ROAD TREATMENT
N.T.S.

OBJECT MARKERS (TYPE OM4-3, 18"X18") ARE TO BE INSTALLED 2' FROM END OF PROPOSED PAVEMENT.





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STATE OF MISSOURI
BROCK M. WORTHLEY
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3/17/2020

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

TRAFFIC CONTROL PLAN
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

2020

LEE'S SUMMIT, MISSOURI

drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_TCP01_A192339
date:	3/17/2020

SHEET
C119

SW CLAYTON DRIVE

SW WALSH DRIVE

SW CLAYTON PLACE

M.H. 7-4

C.I. 7-5

C.I. 7-6

TC-1032.79
N: 978202.1740
E: 2811442.1719

TC-1032.79
N: 978201.2872
E: 2811470.1578

TC-1034.38
N: 978177.9782
E: 2811416.3927

TC-1034.38
N: 978149.9923
E: 2811415.5059

TC-1033.68
N: 978175.5080
E: 2811494.3535

TC-1033.68
N: 978147.5221
E: 2811493.4668

TC-1035.00
N: 978124.2449
E: 2811439.7008

TC-1035.00
N: 978123.3684
E: 2811467.6957

CURVE DATA:
R=25.00'
D=090°00'00"
L=39.27'
T=25.00'

CURVE DATA:
R=25.00'
D=090°00'00"
L=39.27'
T=25.00'

CURVE DATA:
R=25.00'
D=090°00'00"
L=39.27'
T=25.00'

CURVE DATA:
R=25.00'
D=090°00'00"
L=39.27'
T=25.00'

ADA ACCESS ROUTE
1.5% SLOPE MAX

ADA ACCESS ROUTE
1.5% SLOPE MAX

ADA ACCESS ROUTE
1.5% SLOPE MAX

ADA ACCESS ROUTE
1.5% SLOPE MAX

11+00

12+00

13+00

SCALE IN FEET
0' 2.5' 5' 10'

N

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SW WALSH DRIVE & SW CLAYTON PLACE INTERSECTION
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_INT01_A192339
date:	3/17/2020

SHEET
C120

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_INT01_A192339.dwg USER: bworthley
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DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_INT01_A192339.dwg USER: bworthley
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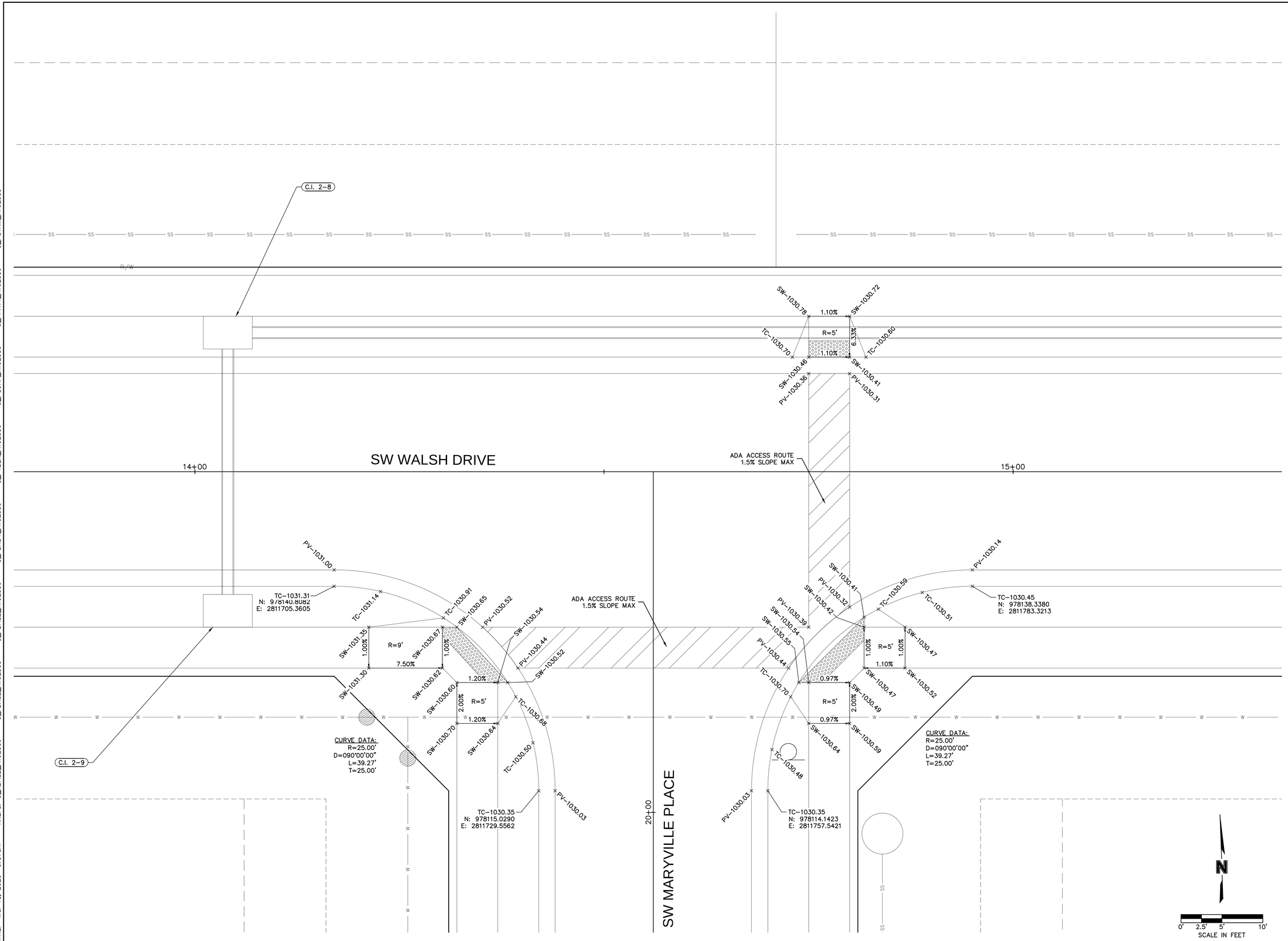

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3/17/2020

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REVISIONS

SW WALSH DRIVE & SW MARYVILLE PLACE INTERSECTION
STREET & STORM SEWER PLANS

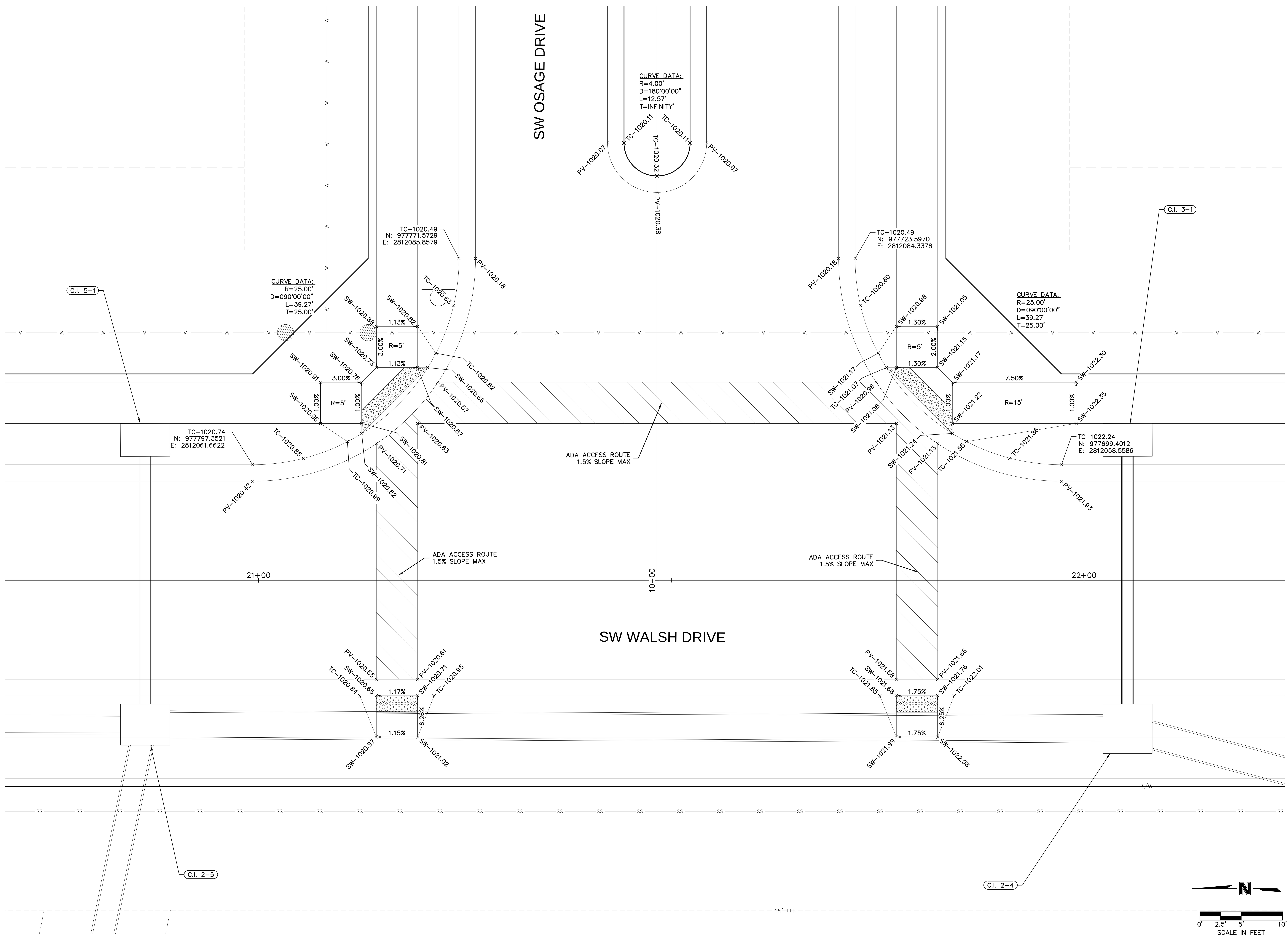
OSAGE
FIRST PLAT

2020

LEE'S SUMMIT, MISSOURI

drawn by:	GS
checked by:	GS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_INT01_A192339
date:	3/17/2020

SHEET
C121



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3/17/2020

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

SW WALSH DRIVE & SW OSAGE DRIVE INTERSECTION
STREET & STORM SEWER PLANS

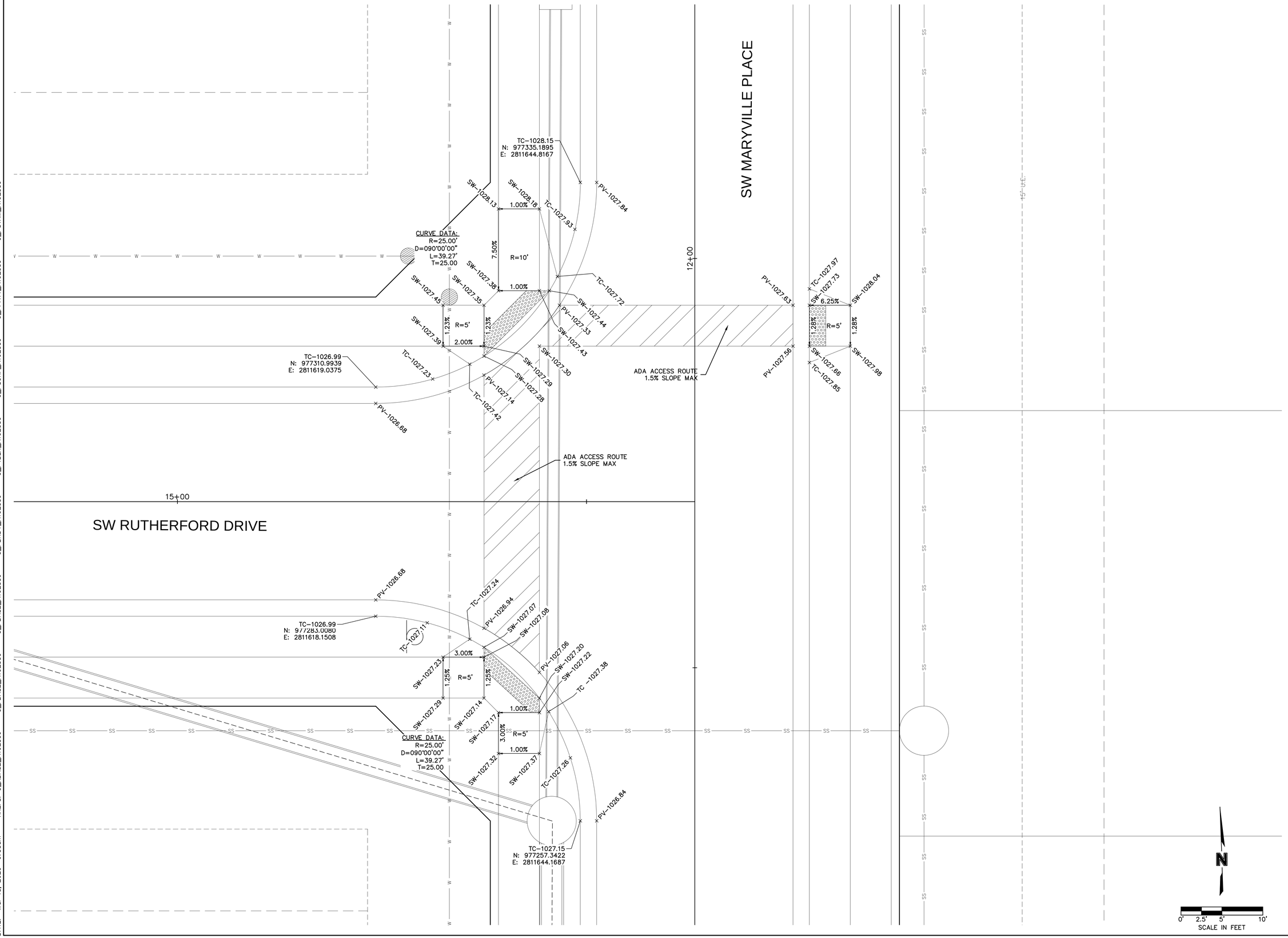
OSAGE
FIRST PLAT

2020

LEE'S SUMMIT, MISSOURI

drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_INT01_A192339
date:	3/17/2020

SHEET
C122



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3/17/2020

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

SW RUTHERFORD DRIVE & SW MARYVILLE PLACE INTERSECTION
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

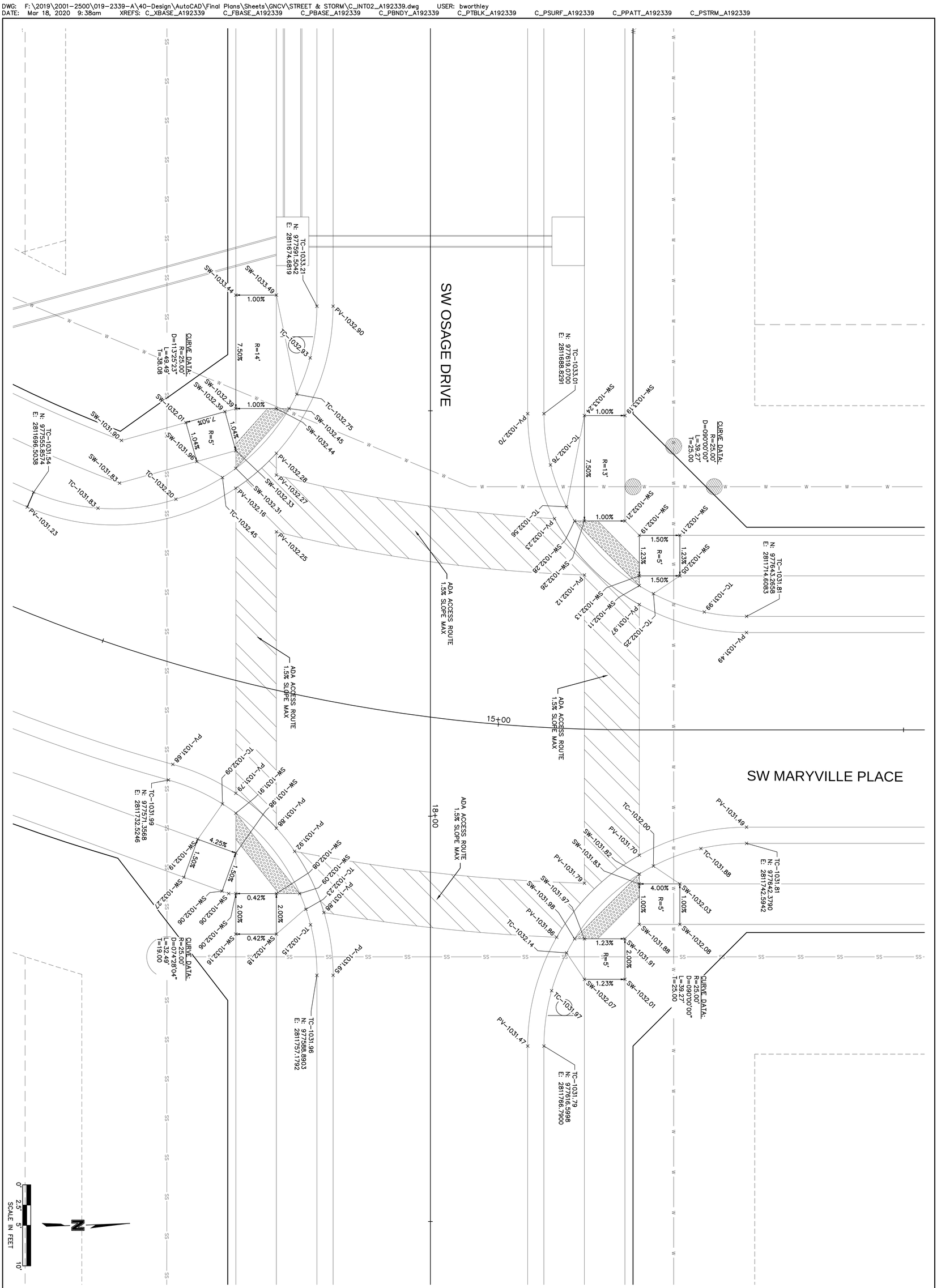
LEE'S SUMMIT, MISSOURI

2020

drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_INT02_A192339
date:	3/17/2020

SHEET
C123

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_INT02_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 9:38am XREFS: C_XBASE_A192339 C_FBASE_A192339 C_PBASE_A192339 C_PBNDY_A192339 C_PTBLK_A192339 C_PSURF_A192339 C_PPATT_A192339 C_PSTRM_A192339



SHEET C124

SW OSAGE DRIVE & SW MARYVILLE PLACE INTERSECTION
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI | 2020

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: BBS
project no.: A192339
drawing no.: C_INT02_A192339
date: 3/17/2020

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STA: 23+03.28 (SW WALSH DRIVE)
STA: 21+03.35 (SW OSAGE DRIVE)
N: 977593.8978
E: 2812041.2087

STA: 23+96.55 (SW WALSH DRIVE)
N: 977500.6682
E: 2812038.2547

25

24

23

22

25' B.L.

15' U.E.

C.I. 3-1

R/W

R=5'

SW-1023.76
TC-1023.64
1.35%
SW-1023.83
TC-1023.76
1.36%
TC-1023.86
TC-1023.72
0.57%
TC-1023.40
TC-1023.14
TC-1022.88
TC-1022.39

SW-1023.45
PV-1023.35
PV-1023.42
SW-1023.52

ADA ACCESS ROUTE
1.5% SLOPE MAX

22+00
23+00
21+00
23+96.55

SW WALSH DRIVE

PV-1023.10
TC-1023.54
TC-1023.67
SW-1023.50
SW-1023.41
SW-1023.52
PV-1023.50
SW-1023.63
SW-1023.65
TC-1023.78
TC-1023.57
PV-1023.06

TC-1023.41
N: 977633.3216
E: 2812028.4508
SW-1023.69
3.50%
1.25%
1.25%
R=5'
SW-1023.75
1.00%
SW-1023.58
2.00%
SW-1023.60
1.00%
R=5'
SW-1023.70
SW-1023.75

CURVE DATA:
R=25.00'
D=090°00'00"
L=39.27'
T=25.00

TC-1023.37, LOW POINT
N: 977609.1259
E: 2812002.6716

TC-1023.64
N: 977610.1100
E: 2811982.4152

M.H. 2-3

1022.42

CURVE DATA:
R=25.00'
D=148°00'08"
L=64.58'
T=87.19

TC-1022.24
TC-1021.96
TC-1021.65
TC-1021.44
TC-1021.94

C.I. 2-2

CURVE DATA:
R=39.00'
D=238°00'08"
L=162.00'
T=70.35

STA: 23+96.55 (SW WALSH DRIVE)
CENTER OF CUL-DE-SAC
N: 977501.4599
E: 2812013.2672

SW OSAGE DRIVE

20+00

15' U.E.

25' B.L.

N

0' 5' 10' 20'
SCALE IN FEET

20

C_PSTRM_A192339
C_PPATT_A192339
C_PSURF_A192339
C_PTBLK_A192339
C_PBNDY_A192339
C_PBASE_A192339
C_FBASE_A192339
C_XBASE_A192339

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_INT02_A192339.dwg USER: bworthley
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REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

SW WALSH DRIVE & SW OSAGE DRIVE INTERSECTION
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_INT02_A192339
date:	3/17/2020

SHEET
C125

E.S. 2-1
END SECTION (42" CMP) W/ CONCRETE TOE WALL
INSTALL RIP RAP PER DETAIL ON THIS SHEET
STA: 10+00 (STORM LINE 2)
N: 977329.802
E: 2811884.112

M.H. 2-3
STORM MANHOLE (5' DIA. INSIDE)
STA: 12+81.17 (STORM LINE 2)
STA: 20+54.18, 19.27 RT (SW OSAGE DRIVE)
N: 977576.193
E: 2811991.447

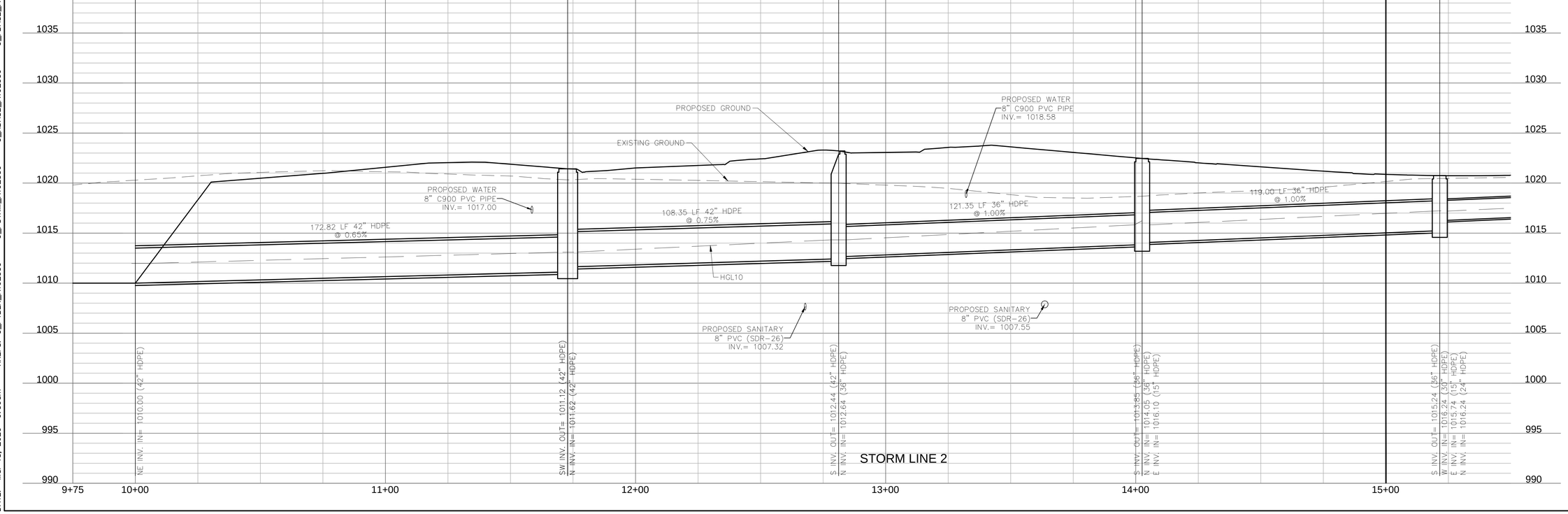
C.I. 2-4
CURB INLET (5'X5' INSIDE)
STA: 14+02.51 (STORM LINE 2)
STA: 22+05.28, 18.00 RT (SW WALSH DRIVE)
N: 977692.419
E: 2812026.321

C.I. 2-2
CURB INLET (7'X3' INSIDE)
STA: 11+72.82 (STORM LINE 2)
N: 977467.899
E: 2811988.016

STA: 15+00
(STORM LINE 2)
SEE NEXT SHEET

Riprap Calculations							
End Section	Q_{100} (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)	Area (SY)
E.S. 1-1	56.3	4	2	6	16	1.65	30.8
*Per Table 10.1 HEC 14-FHWA-Energy Dissipators Pg. 10-18							

SW WALSH DRIVE
SW OSAGE DRIVE
TRACT D
STORM LINE 3
STORM LINE 5
20
21
25
SCALE IN FEET



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STORM SEWER PLAN & PROFILE
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

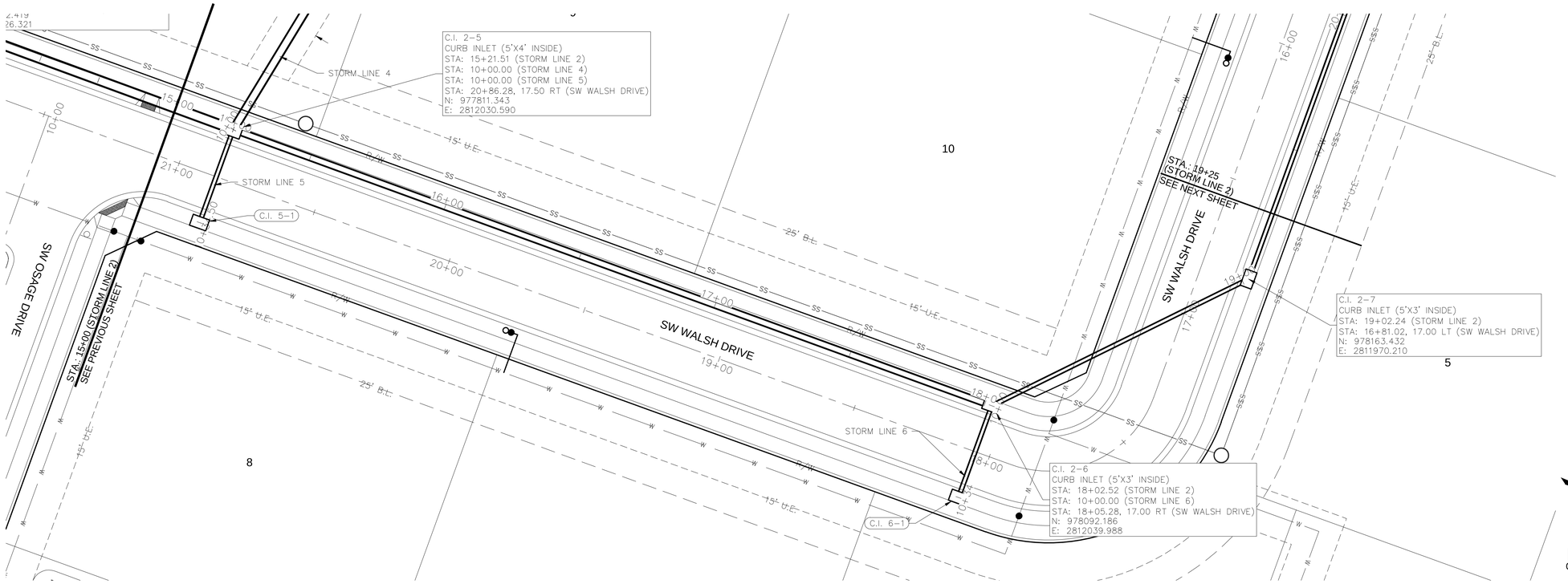
LEE'S SUMMIT, MISSOURI

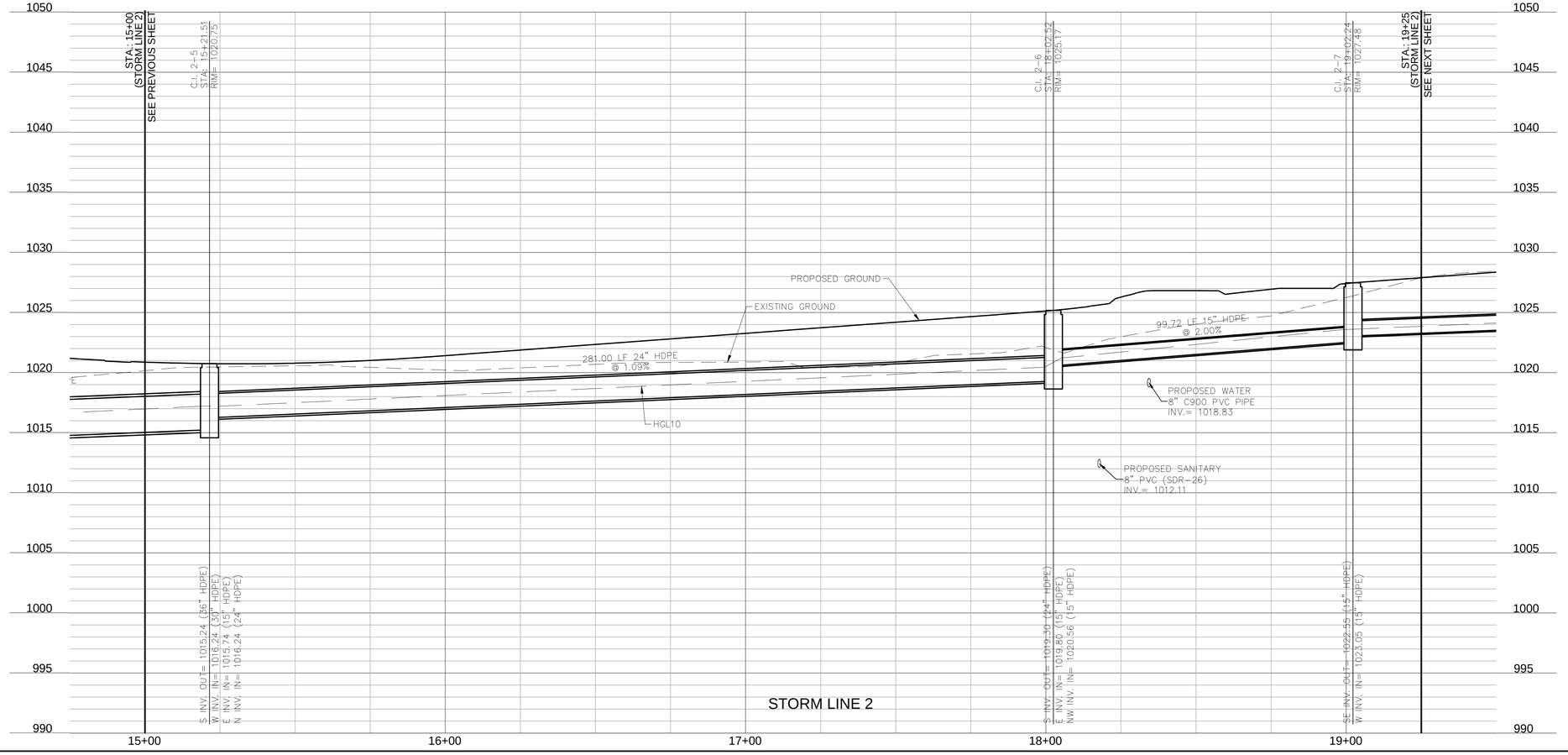
2020

drawn by:	GS
checked by:	RS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_STM01_A192339
date:	3/17/2020

SHEET
C126

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_STM01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 9:39am XREFS: C_PTBLK_A192339 C_PSTRM_A192339 C_XBASE_A192339 C_FBASE_A192339 C_PBASE_A192339 C_PUTIL_A192339 C_PBNDY_A192339





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REVISIONS

STORM SEWER PLAN & PROFILE
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

2020

LEE'S SUMMIT, MISSOURI

drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_STM01_A192339
date:	3/17/2020

SHEET
C127

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_STM01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 9:40am XREFS: C_PTBLK_A192339 C_PSTRM_A192339 C_XBASE_A192339 C_FBASE_A192339 C_PBNDY_A192339
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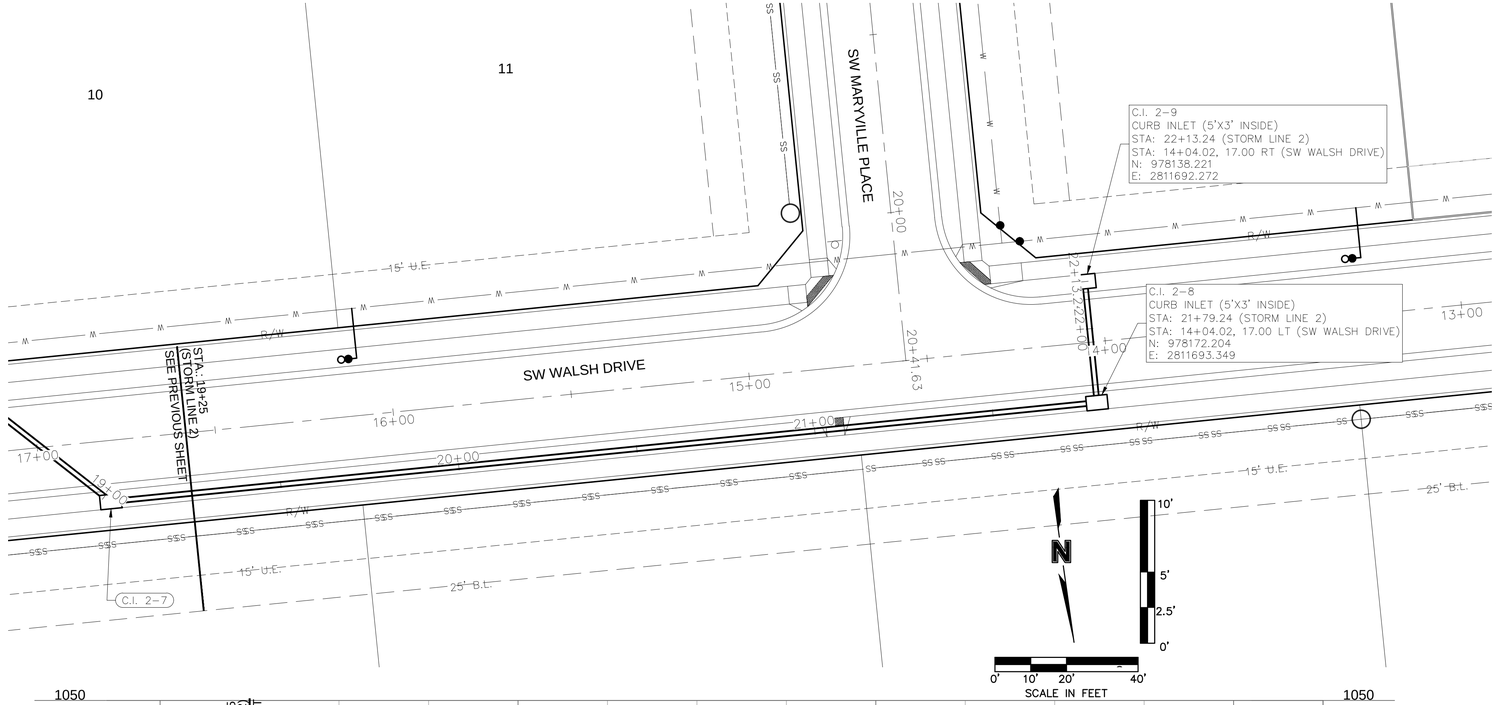

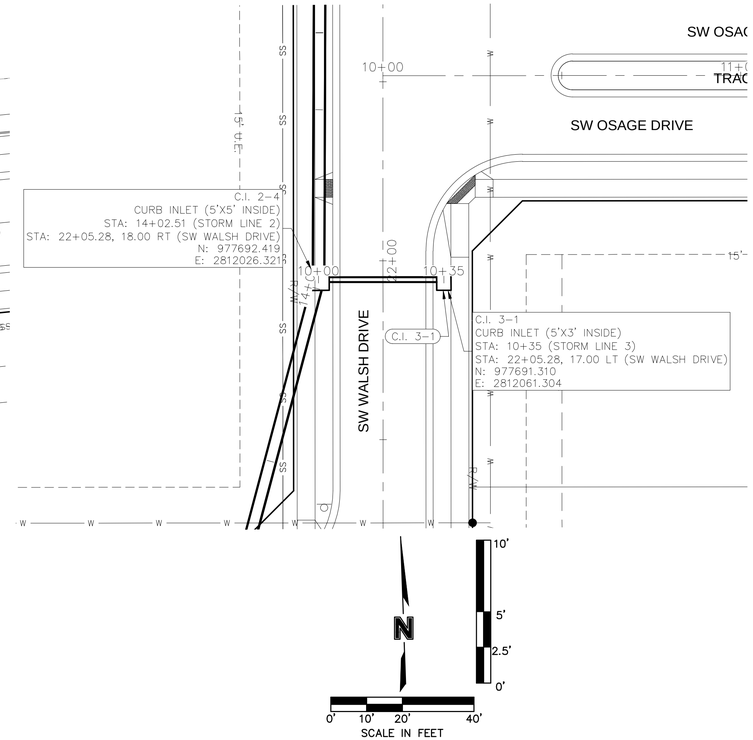

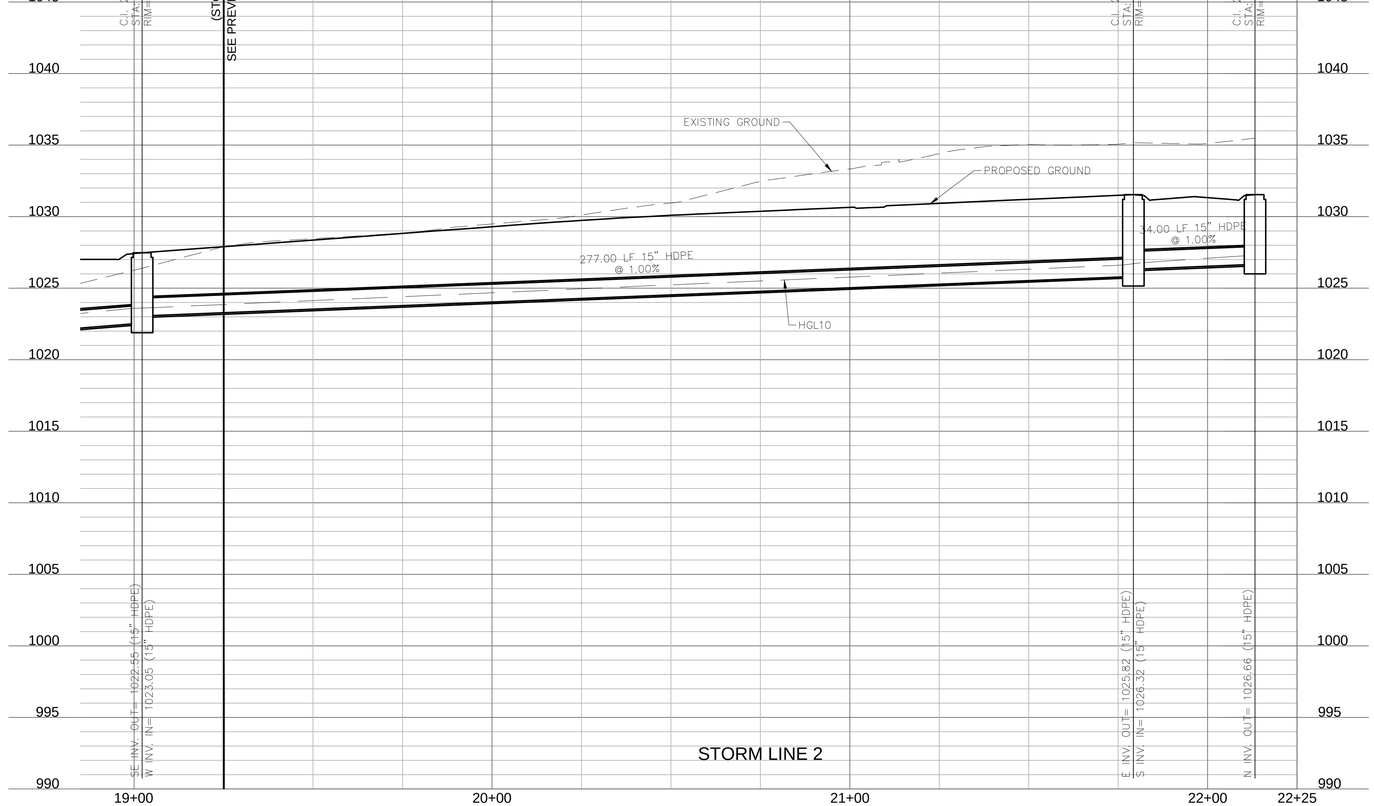

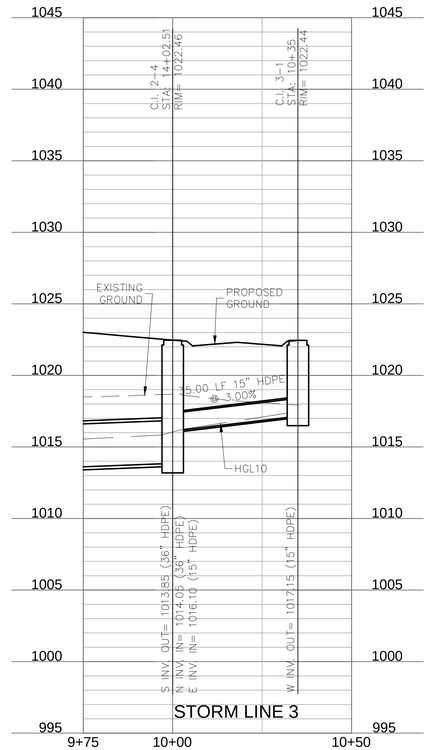

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STORM SEWER PLAN & PROFILE
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

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checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_STM01_A192339
date:	3/17/2020

SHEET
C128

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_STM01_A192339.dwg USER: bworthley
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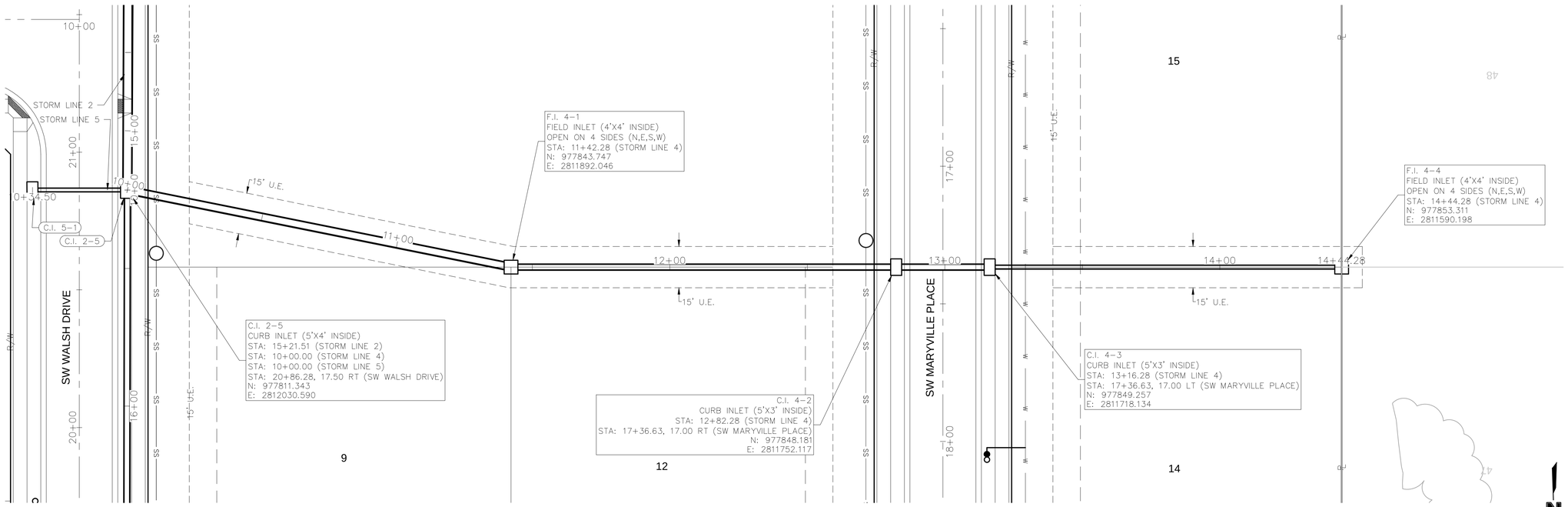

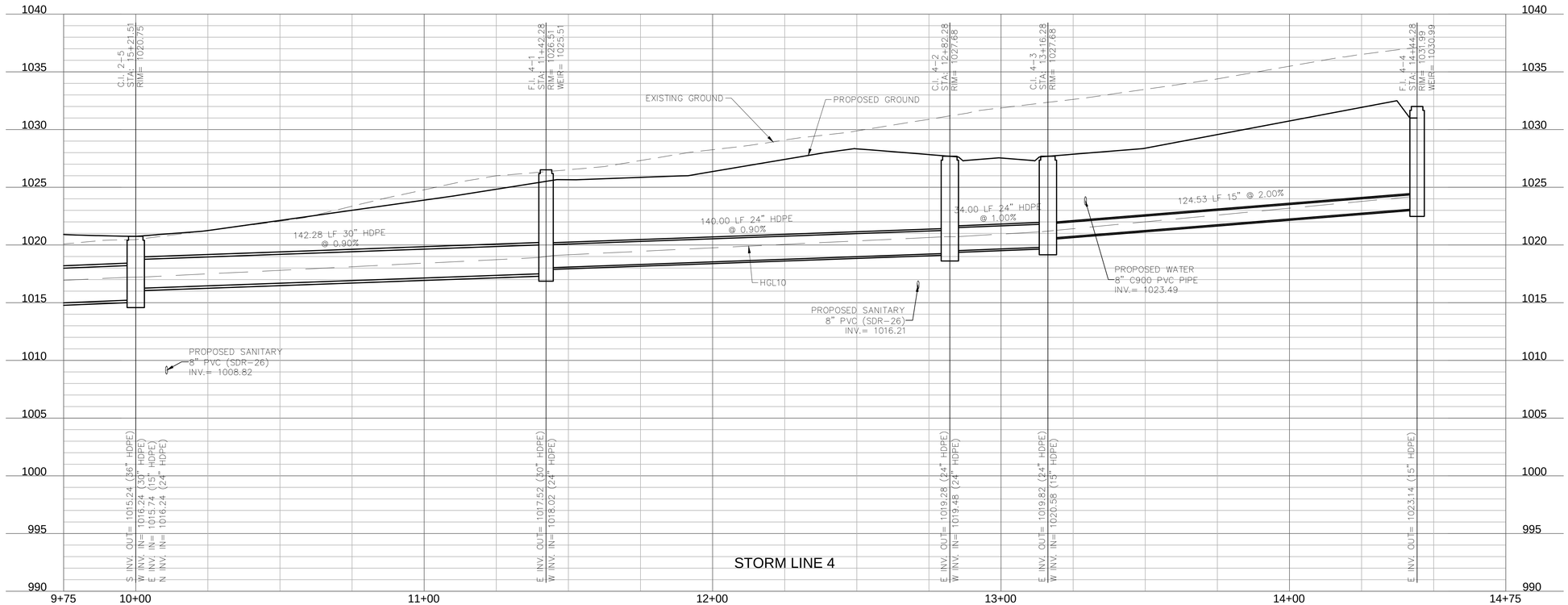

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REVISIONS

STORM SEWER PLAN & PROFILE
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

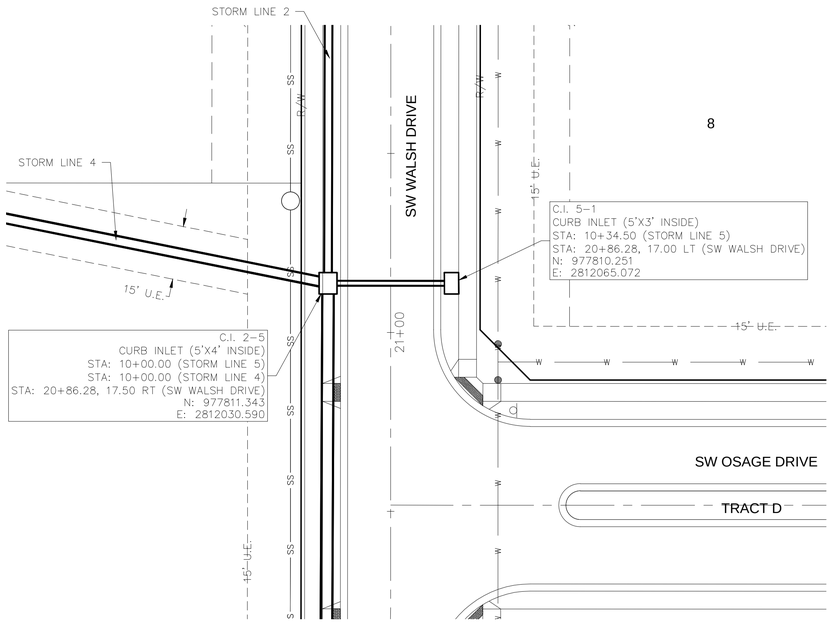
LEE'S SUMMIT, MISSOURI

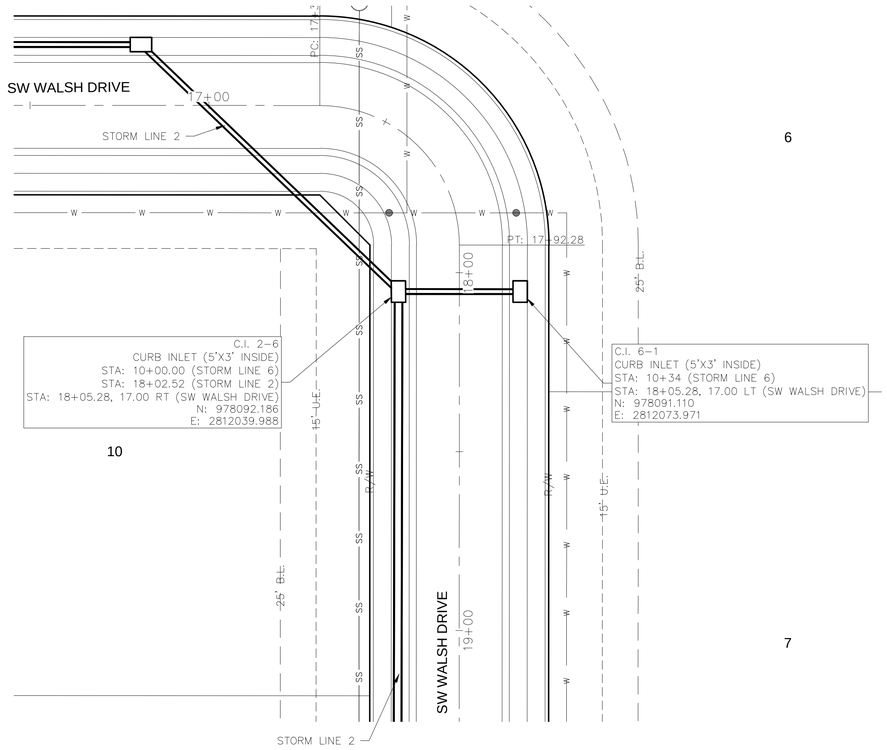
2020

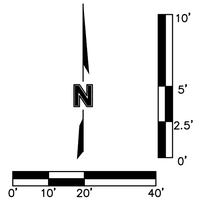
drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_STM01_A192339
date: 3/17/2020

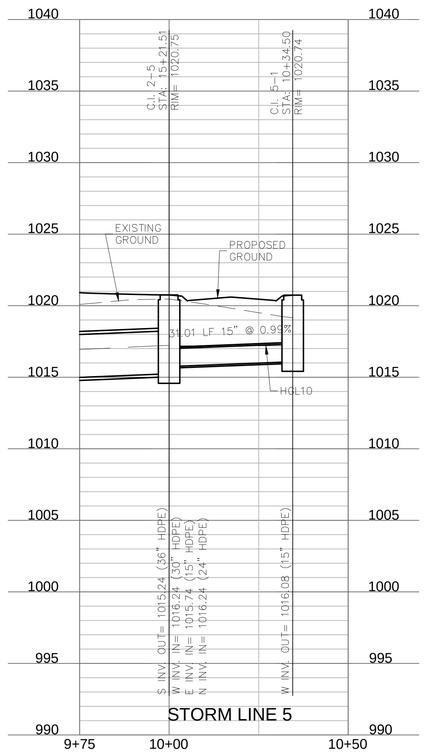
SHEET
C129

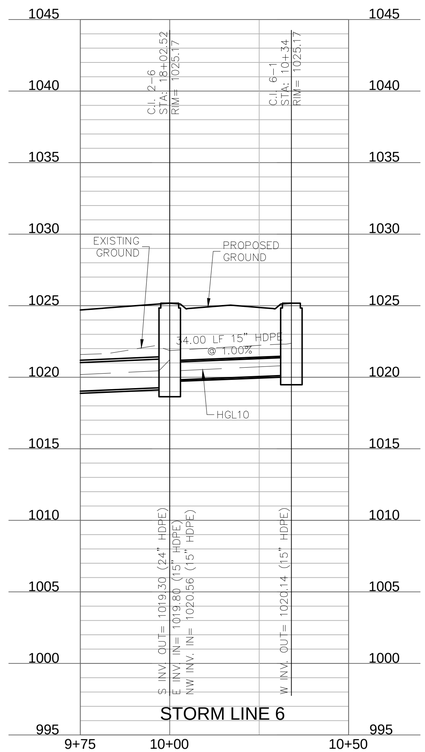
DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_STM01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 9:40am XREFS: C_PTBLK_A192339 C_PSTRM_A192339 C_XBASE_A192339 C_FBASE_A192339
C_PBNDY_A192339 C_PUTIL_A192339 C_PBASE_A192339











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3/17/2020

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

STORM SEWER PLAN & PROFILE
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

2020

LEE'S SUMMIT, MISSOURI

drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_STM02_A12339
date:	3/17/2020

SHEET
C130

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_STM02_A12339.dwg USER: bworthley
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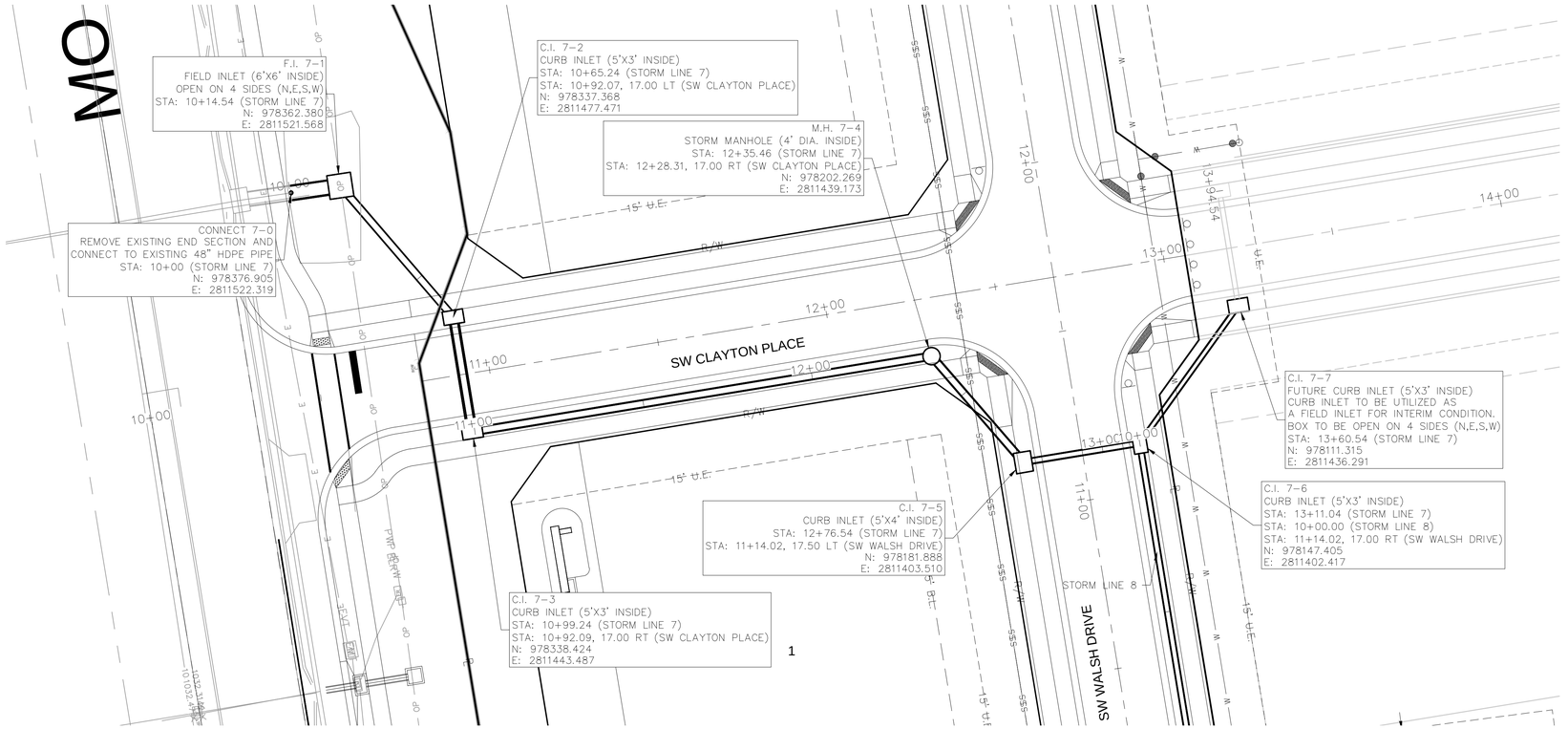

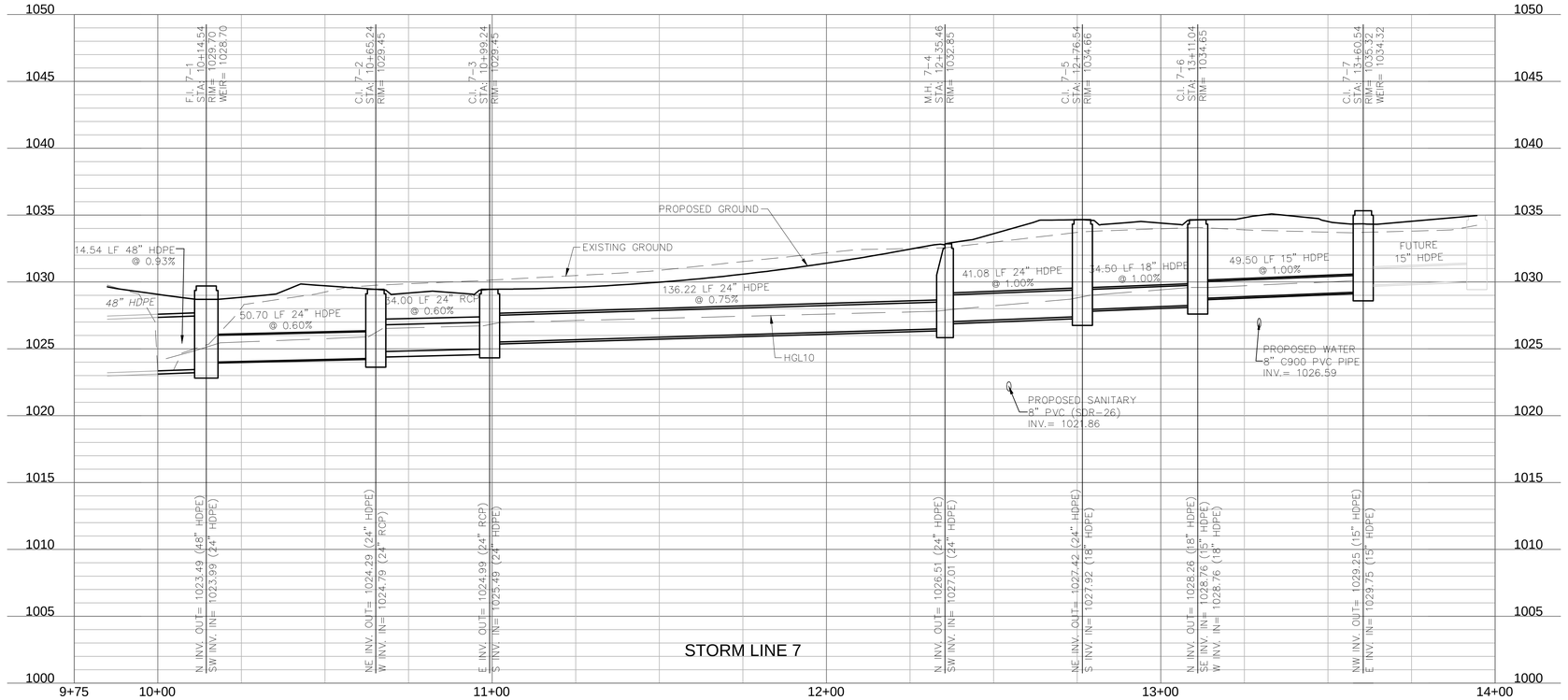

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designed by:	BMW
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project no.:	A19-2339
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date:	3/17/2020

SHEET
C131

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_STM02_A12339.dwg USER: bworthley
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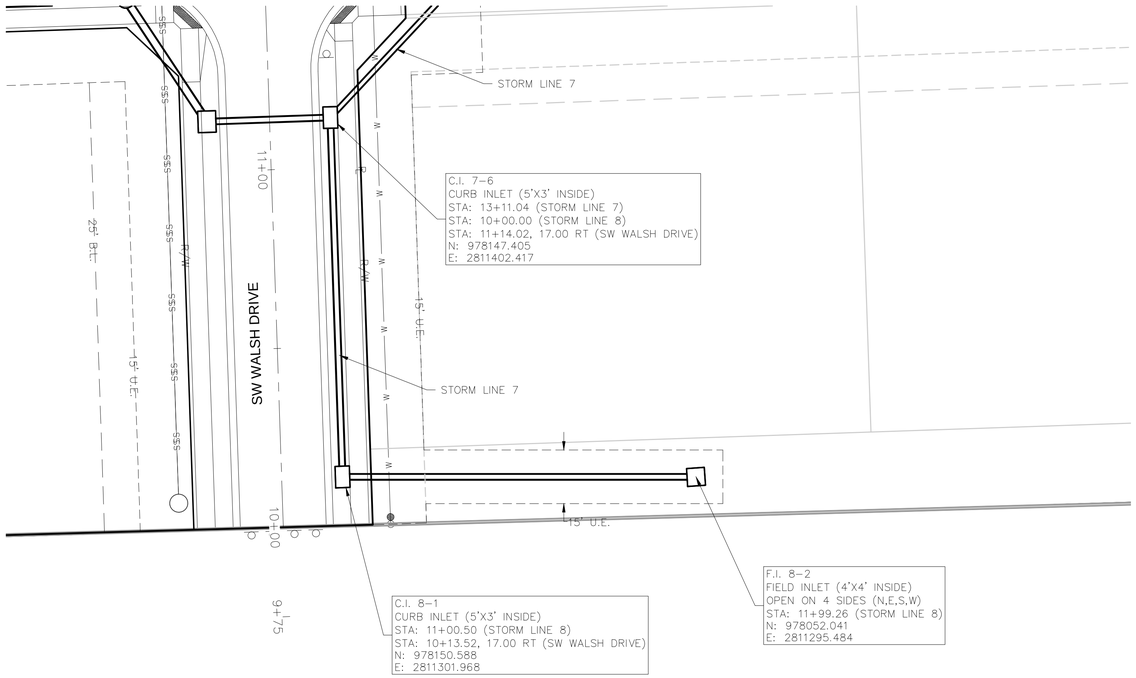

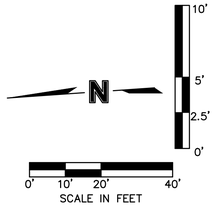

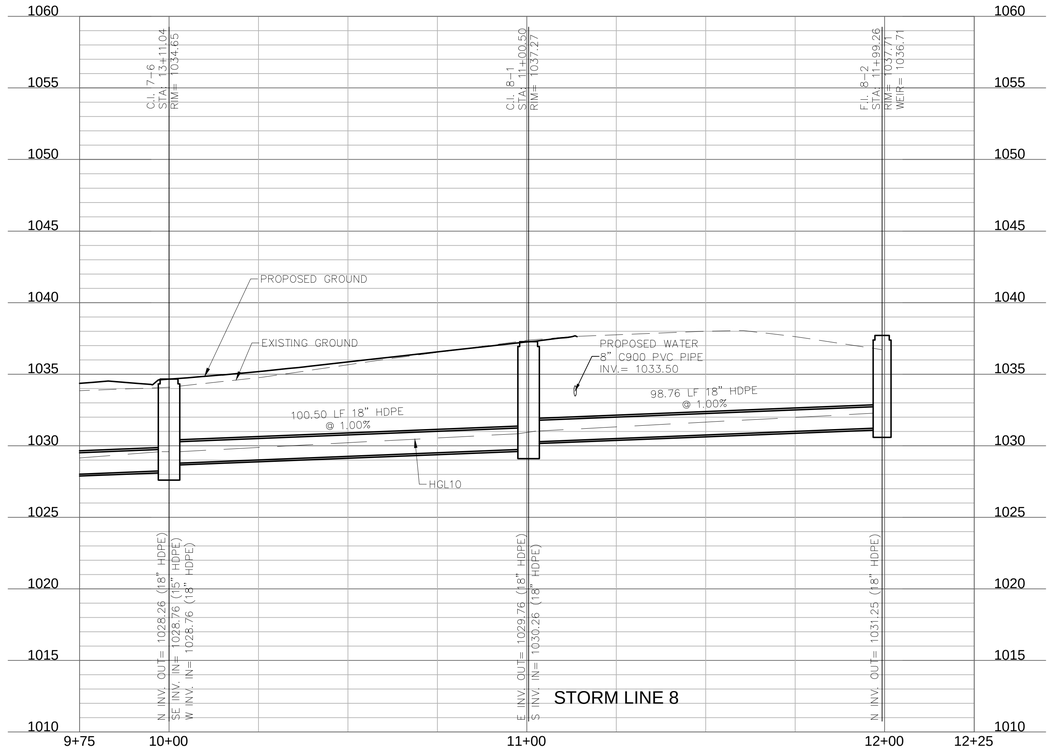

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SHEET
C132

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_STM02_A12339.dwg USER: bworthley
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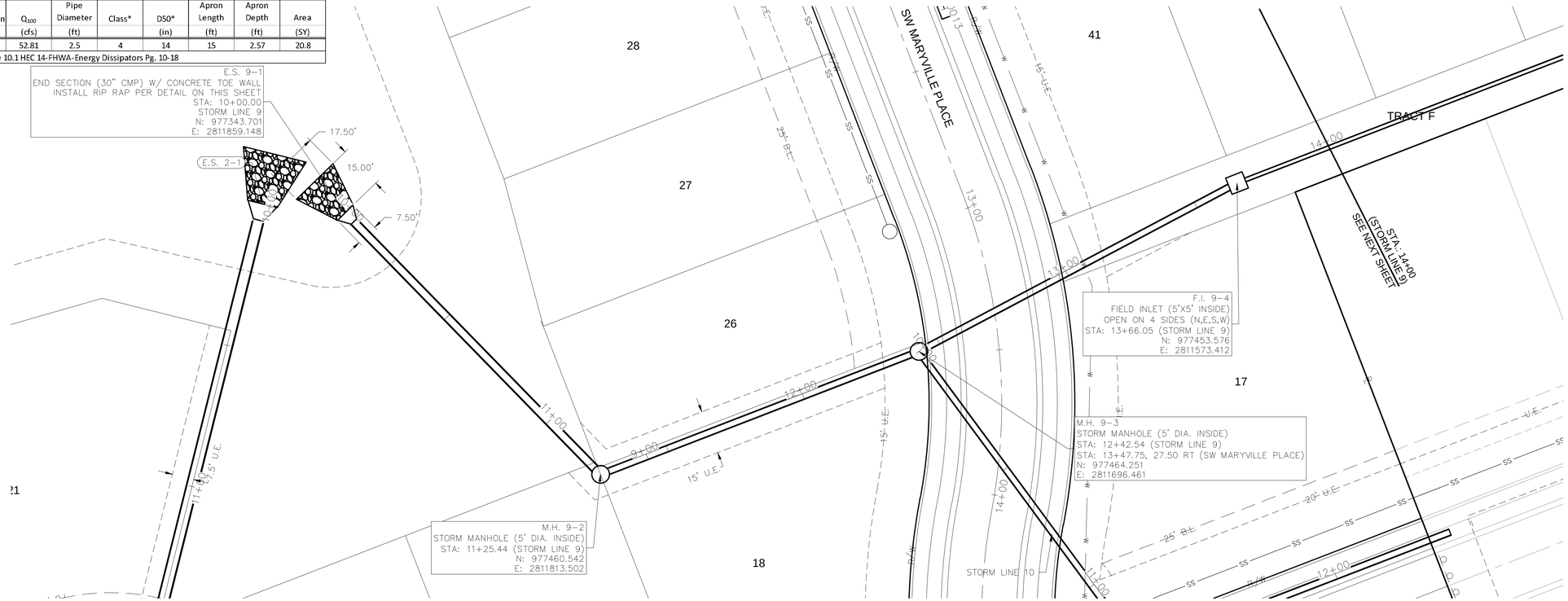
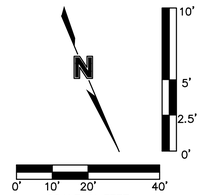
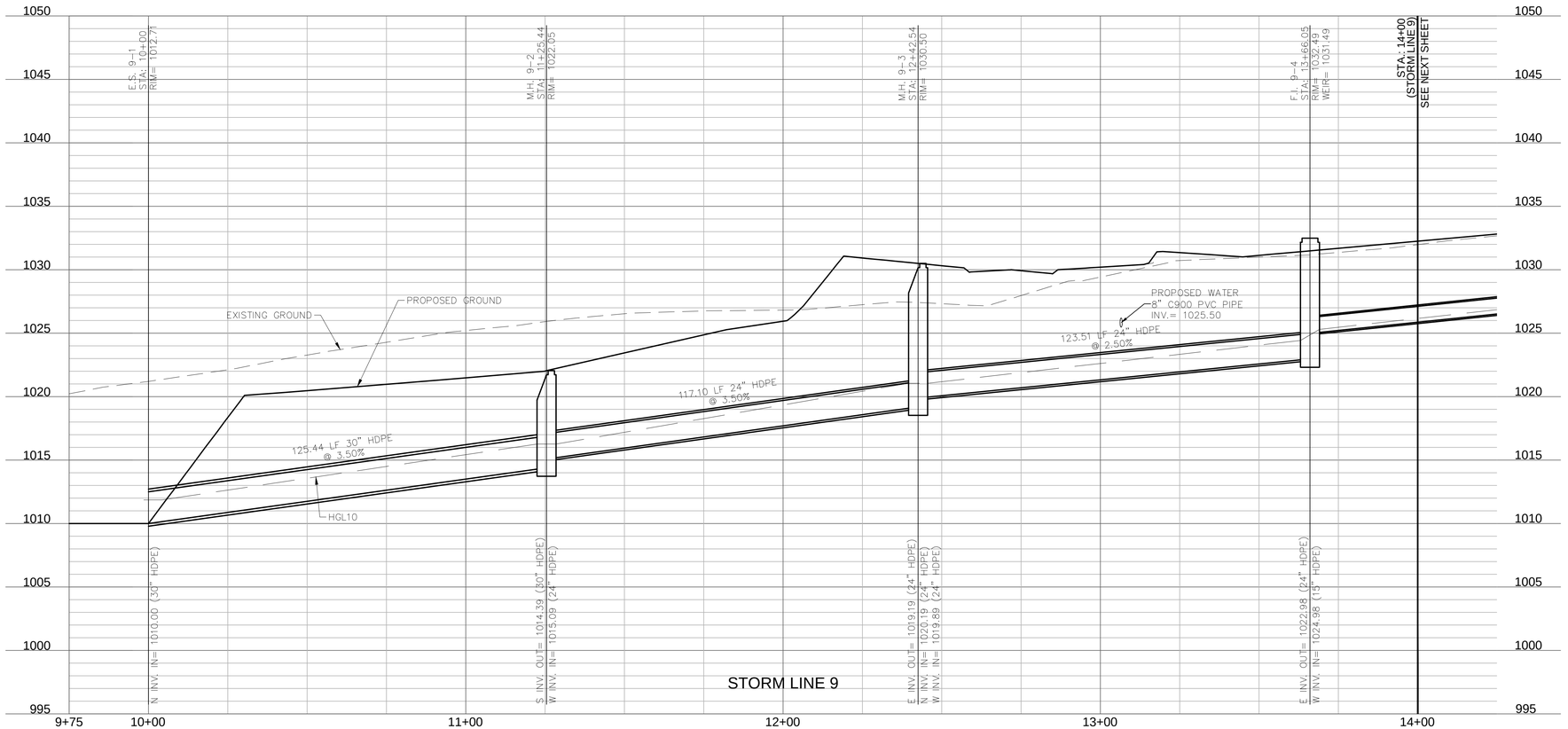
C_PBNDY_A192339 C_PUTIL_A192339 C_PBASE_A192339 T_PBASE_A192339

Riprap Calculations							
End Section	Q_{100} (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)	Area (SY)
E.S. 9-1	52.81	2.5	4	14	15	2.57	20.8
*Per Table 10.1 HEC 14-FHWA-Energy Dissipators Pg. 10-18							







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drawing no.:	C_STM02_A12339
date:	3/17/2020

SHEET
C133

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_STM02_A12339.dwg USER: bworthley
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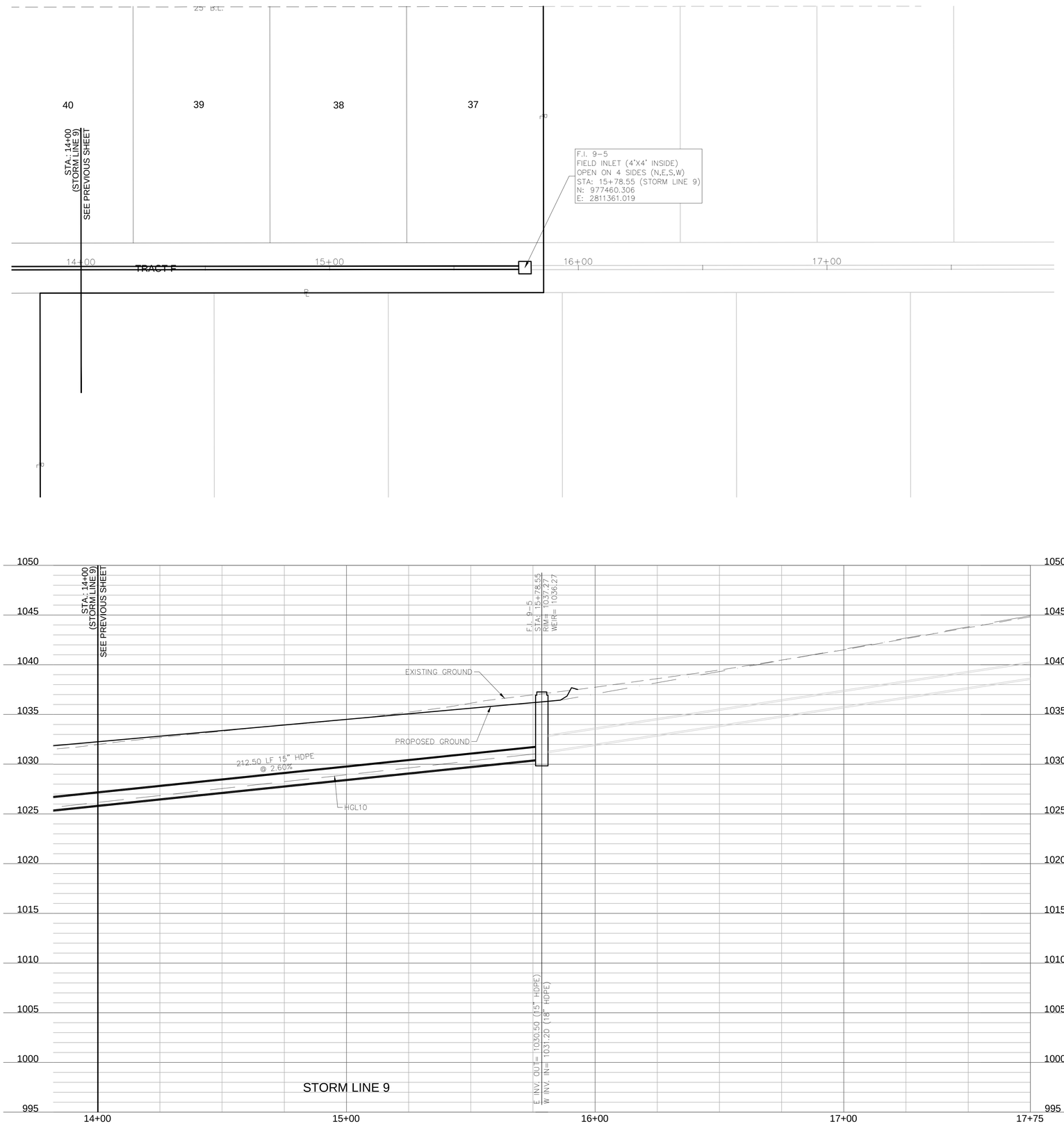

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QA/QC by:	JES
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drawing no.:	C_STM02_A12339
date:	3/17/2020

SHEET
C134

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_STM02_A12339.dwg USER: bworthley
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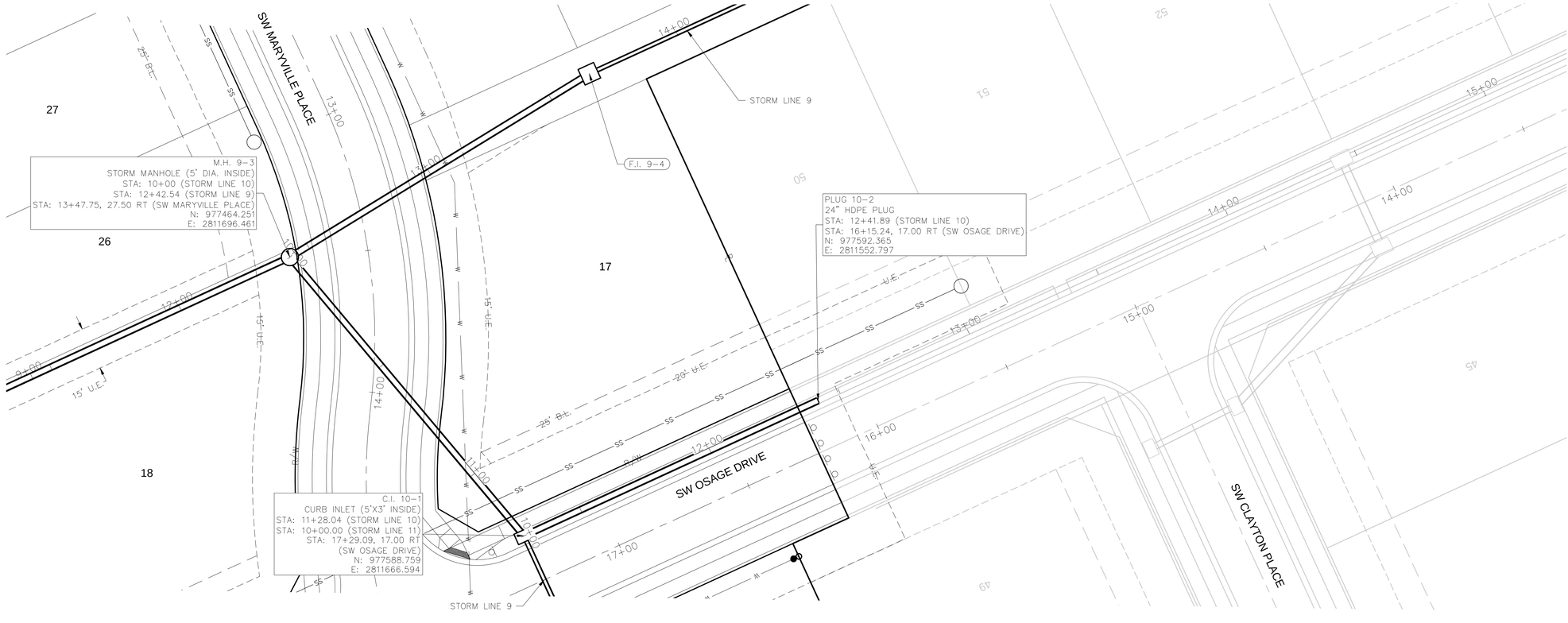

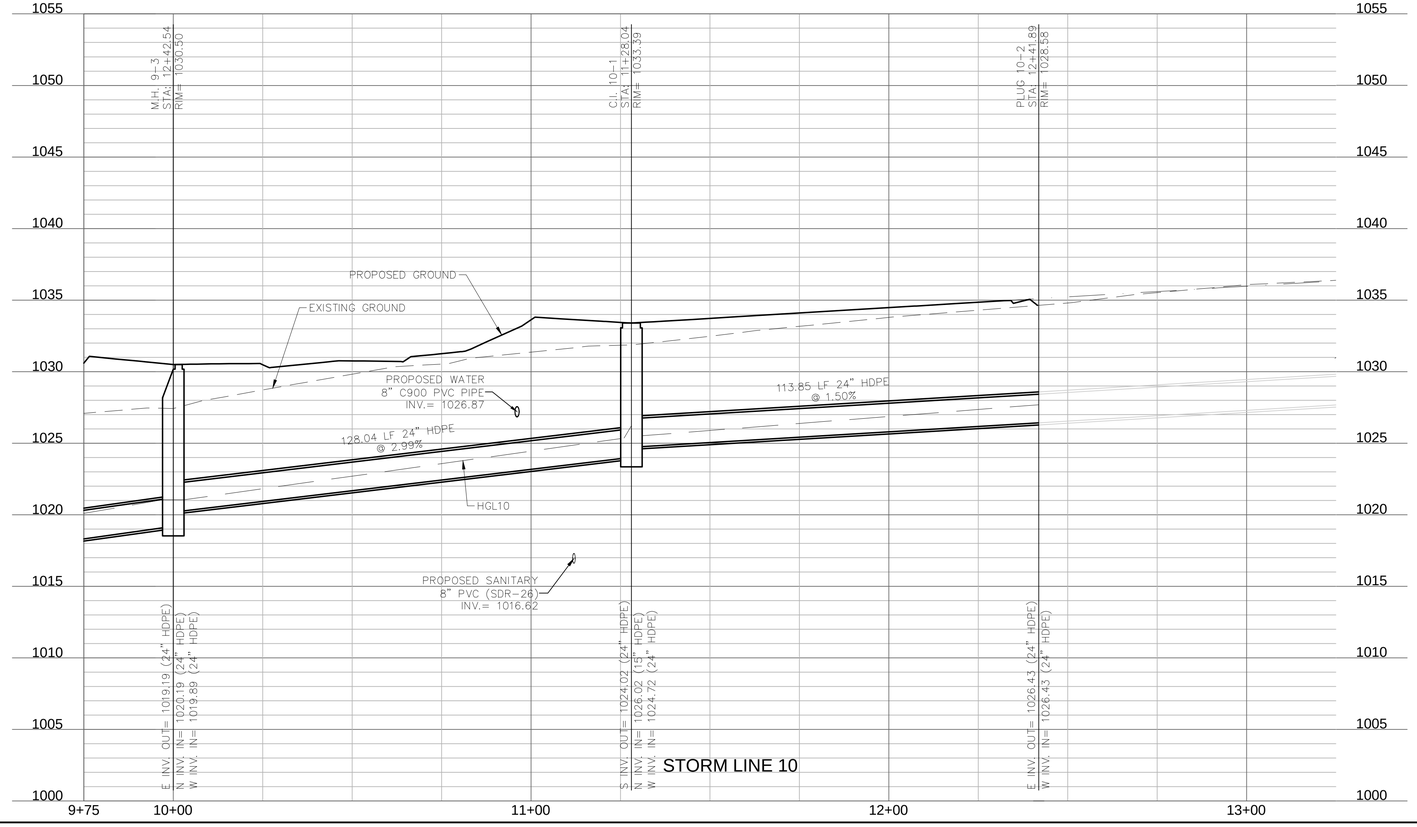

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designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_STM03_A12339
date:	3/17/2020

SHEET
C135

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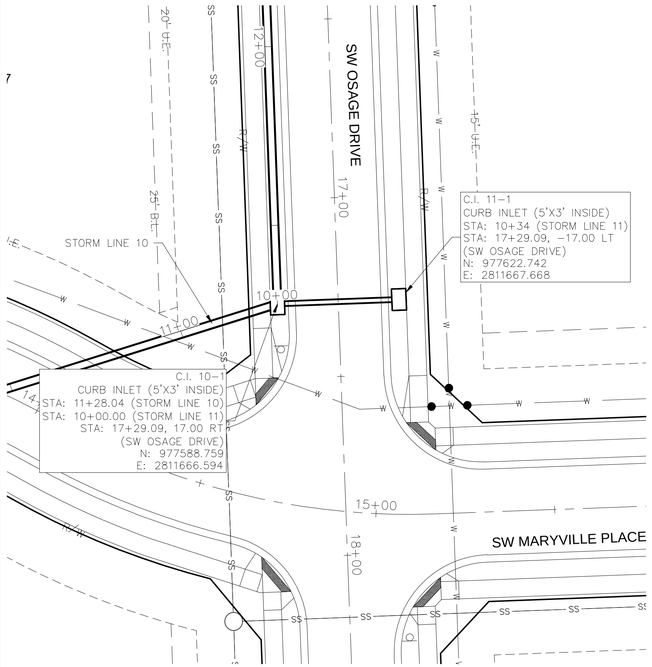

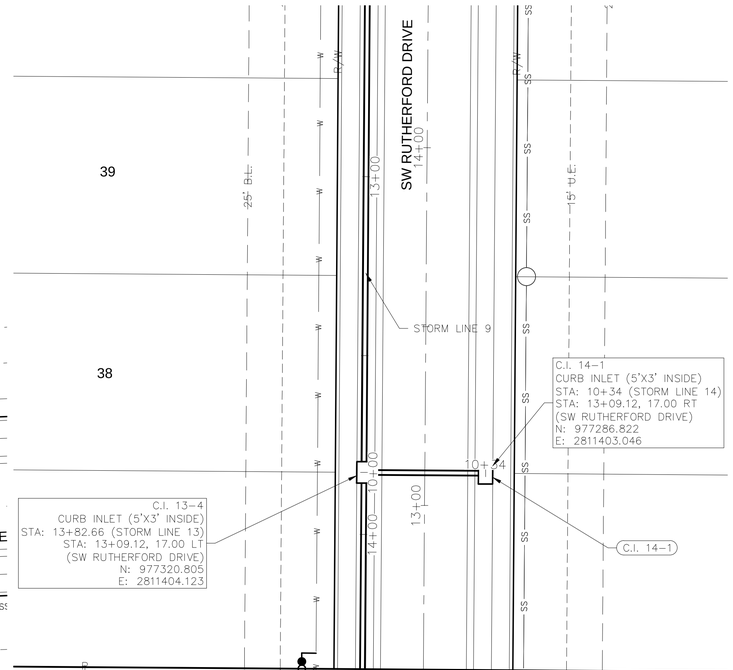

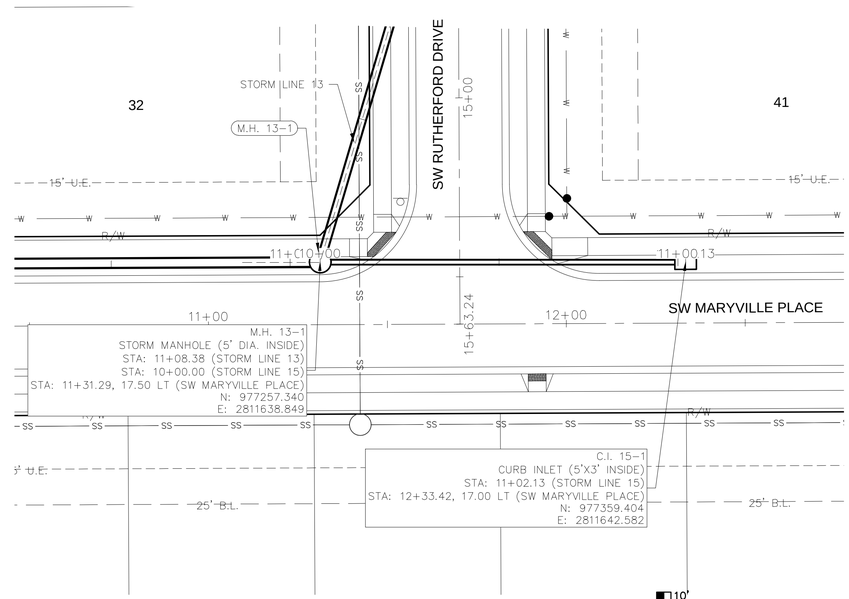

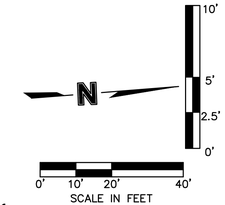

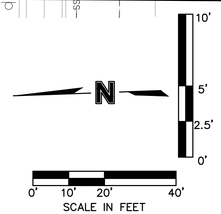

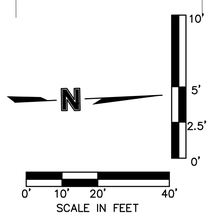

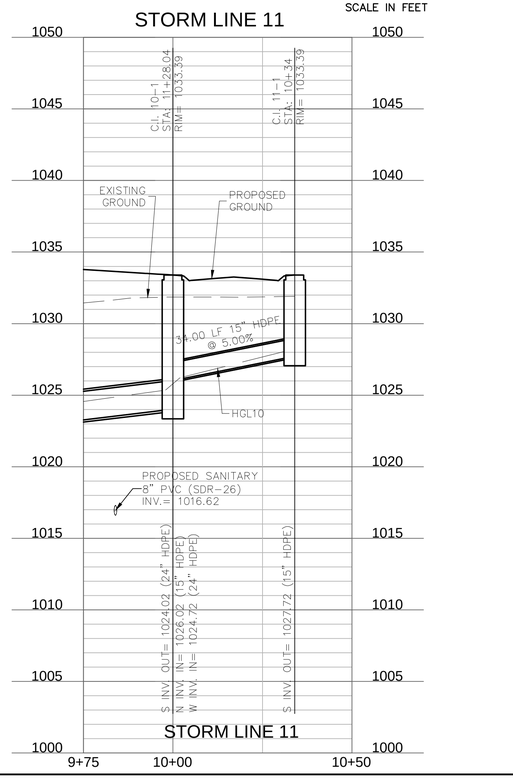

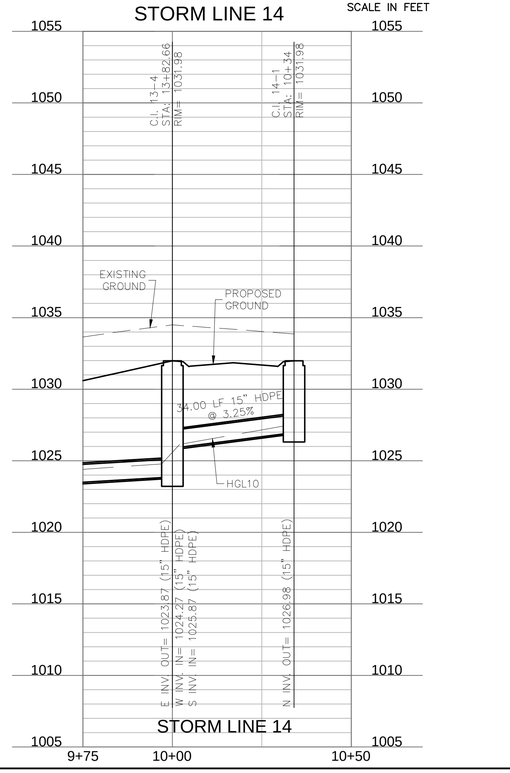

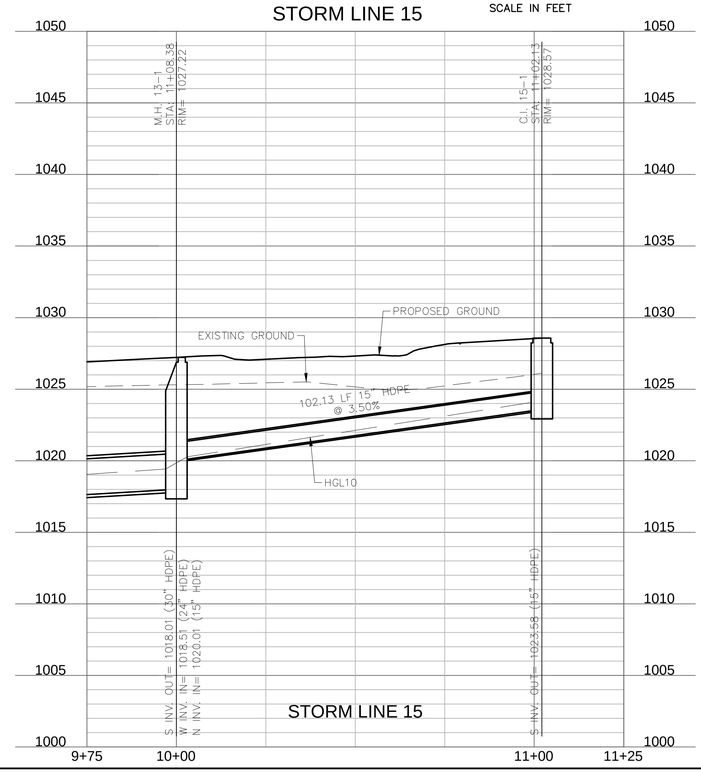

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STREET & STORM SEWER PLANS

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drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_STM03_A12339
date:	3/17/2020

SHEET
C136

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_STM03_A12339.dwg USER: bworthley
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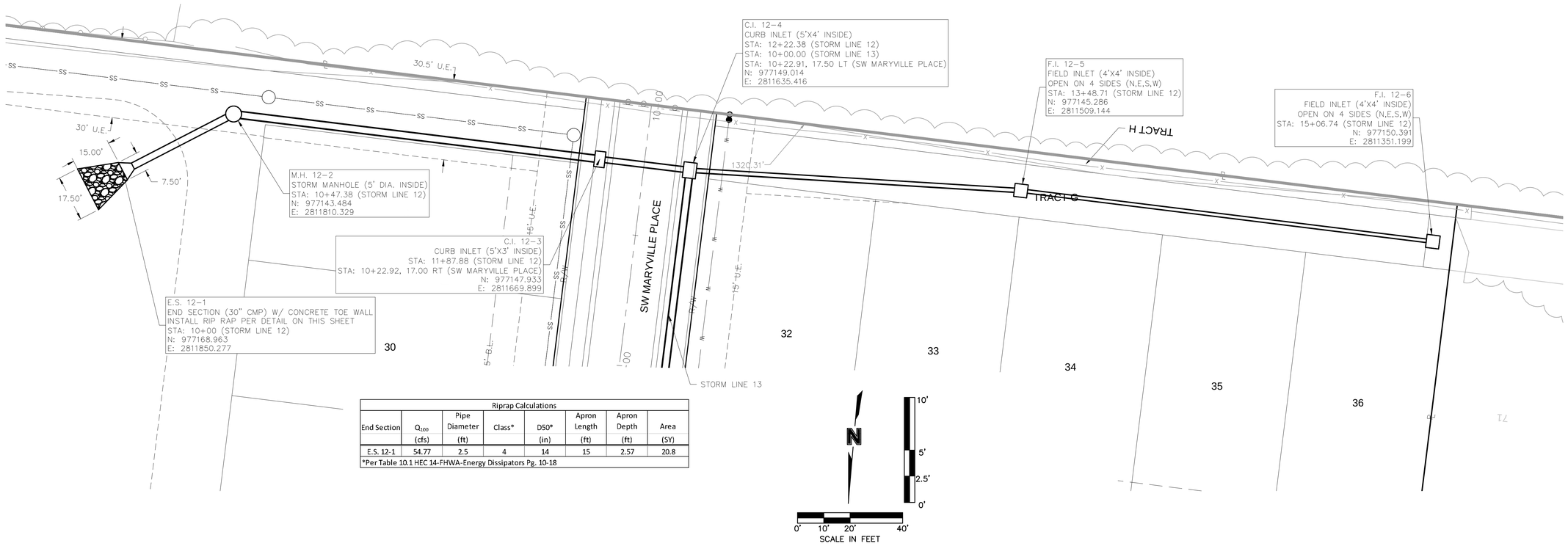
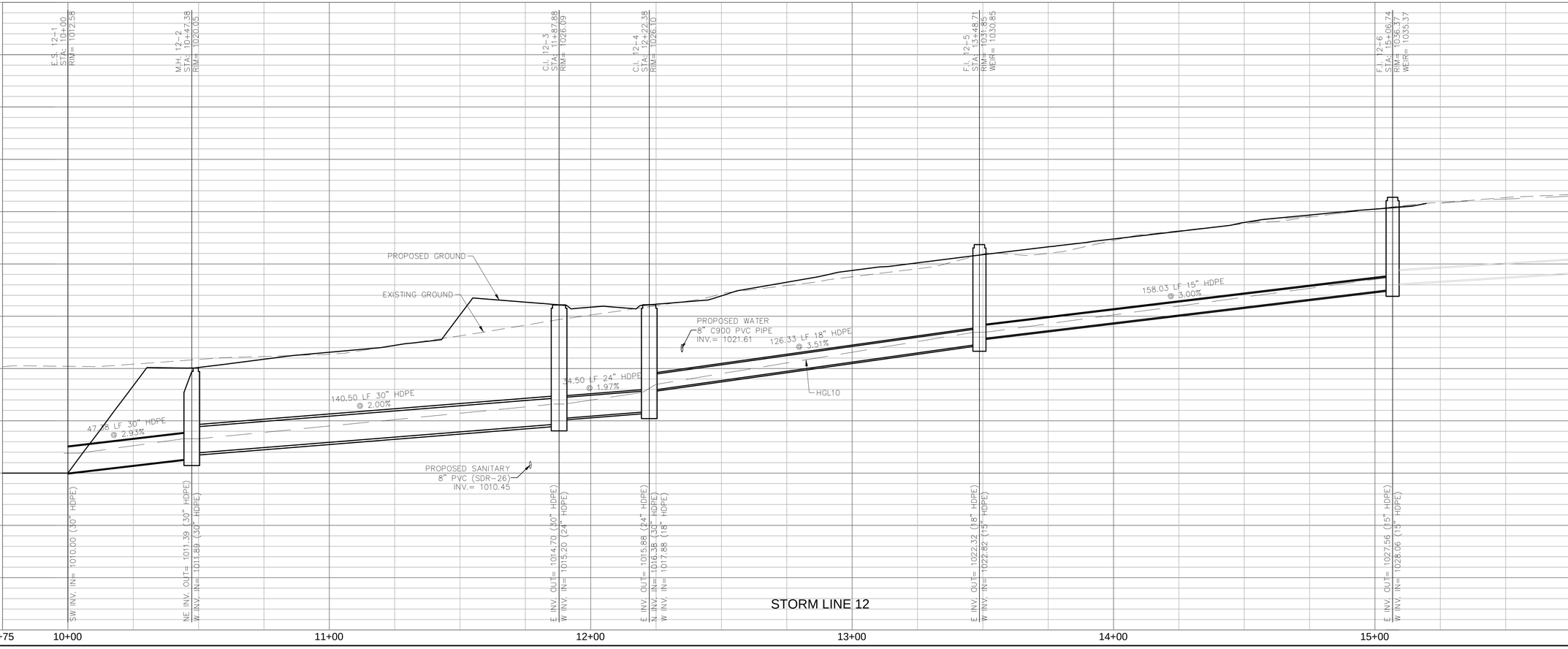


Riprap Calculations							
End Section	Q_{100}	Pipe Diameter	Class*	D50*	Apron Length	Apron Depth	Area
	(cfs)	(ft)		(in)	(ft)	(ft)	(SY)
E.S. 12-1	54.77	2.5	4	14	15	2.57	20.8

*Per Table 10.1 HEC 14-FHWA-Energy Dissipators Pg. 10-18



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LEE'S SUMMIT, MISSOURI

2020

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checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_STM03_A12339
date: 3/17/2020

SHEET
C137

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C_PUTIL_A192339 C_PBASE_A192339

C.I. 12-4
CURB INLET (5'X4' INSIDE)
STA: 12+22.38 (STORM LINE 12)
STA: 10+00.00 (STORM LINE 13)
STA: 10+22.91, 17.50 LT (SW MARYVILLE PLACE)
N: 977149.014
E: 2811635.416

TRACT G

STORM LINE 12

1320.31'

SW MARYVILLE PLACE

11+00

15' U.E.

25' B.L.

C.I. 13-2
CURB INLET (5'X4' INSIDE)
STA: 11+83.16 (STORM LINE 13)
STA: 14+74.12, 17.50 RT (SW RUTHERFORD DRIVE)
N: 977281.097
E: 2811567.947

C.I. 14-1

U.E.

STORM LINE 14

13+00

12+00

PLUG 13-5
15" HDPE PLUG
STA: 14+45.16 (STORM LINE 13)
STA: 12+46.62, 17.00 LT (SW RUTHERFORD DRIVE)
N: 977322.784
E: 2811341.654

M.H. 13-1
STORM MANHOLE (5' DIA. INSIDE)
STA: 11+08.38 (STORM LINE 13)
STA: 10+00.00 (STORM LINE 15)
STA: 11+31.29, 17.50 LT (SW MARYVILLE PLACE)
N: 977257.340
E: 2811638.849

SW RUTHERFORD DRIVE

14+00

15+00

15+63.24

C.I. 13-4
CURB INLET (5'X3' INSIDE)
STA: 13+82.66 (STORM LINE 13)
STA: 13+09.12, 17.00 LT (SW RUTHERFORD DRIVE)
N: 977320.805
E: 2811404.123

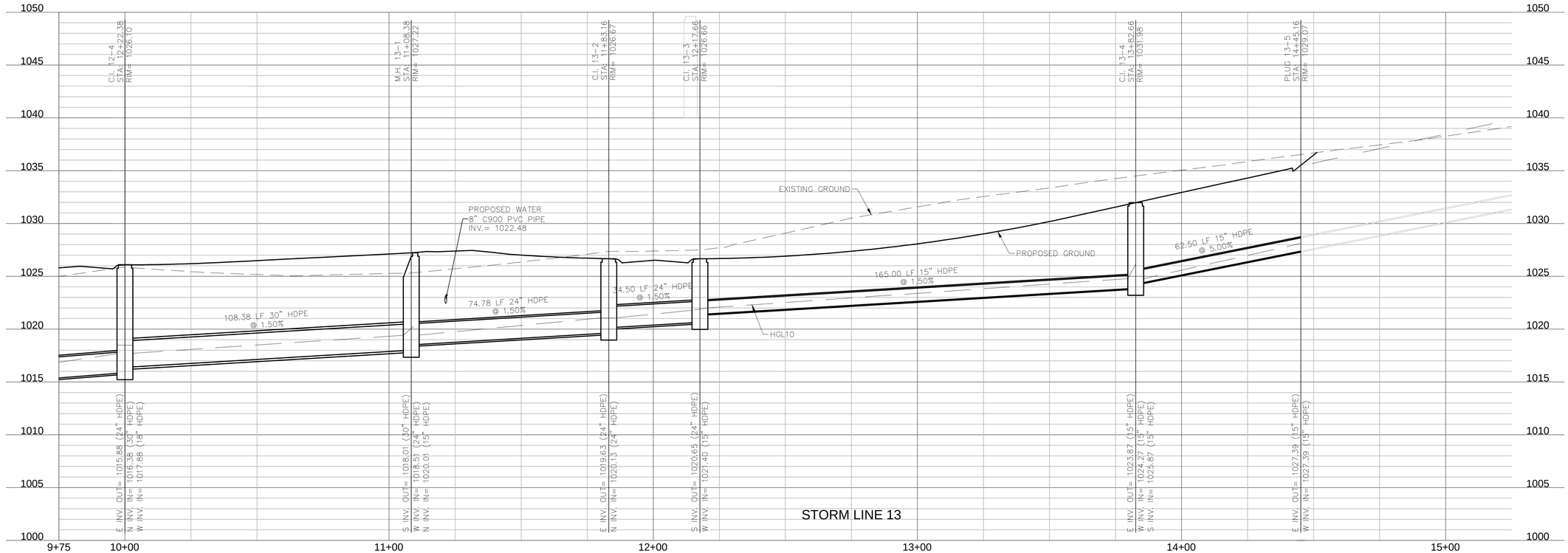
C.I. 13-3
CURB INLET (5'X3' INSIDE)
STA: 12+17.66 (STORM LINE 13)
STA: 14+74.12, 17.00 LT (SW RUTHERFORD DRIVE)
N: 977315.580
E: 2811569.040

29 30 31 32 33 34 35 36 37 38

69 70 71 72 73 74

N

SCALE IN FEET
0' 10' 20' 40'
0' 2.5' 5' 10'



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SHEET
C138

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_STM03_A12339.dwg USER: bworthley
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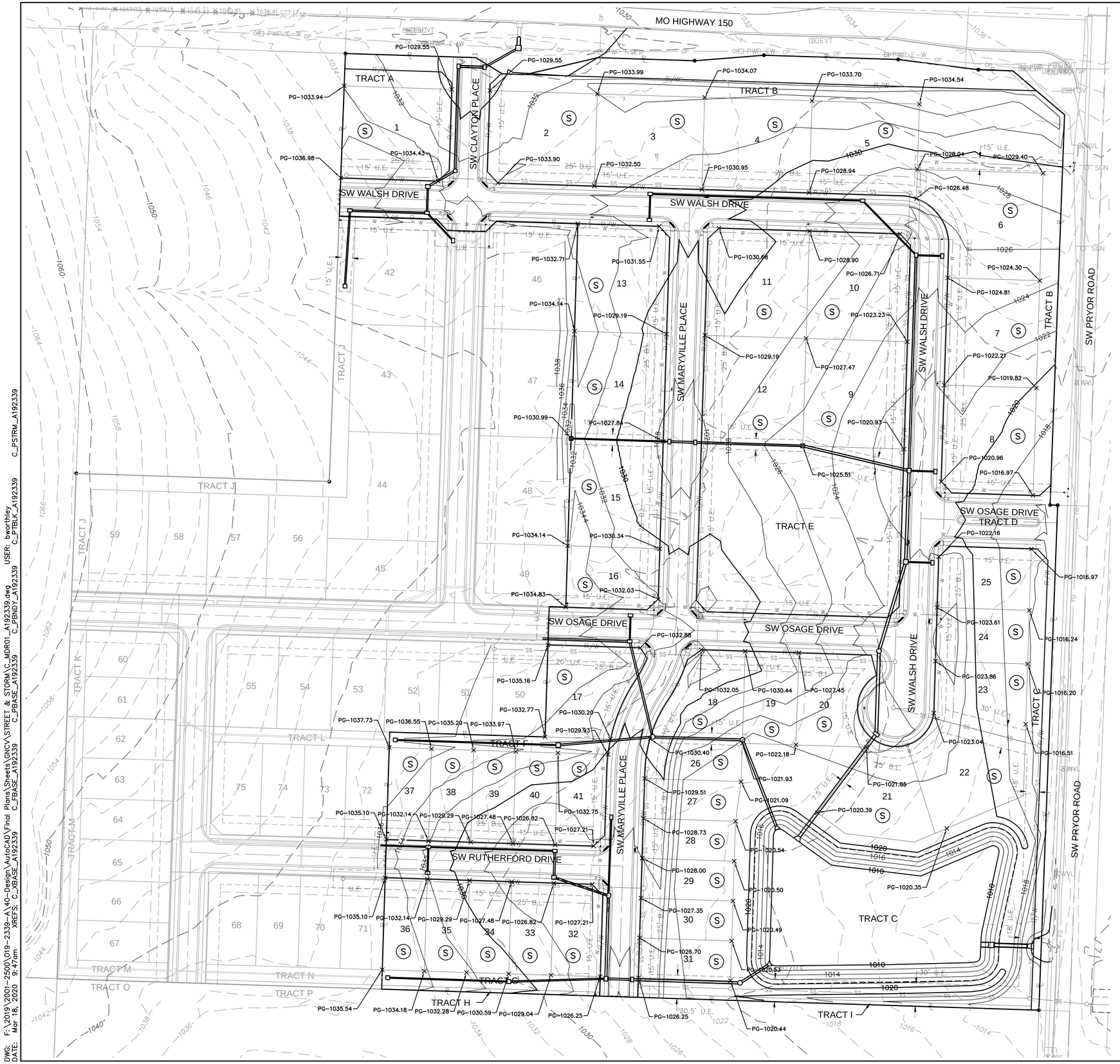

LEGEND	
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—100—	FINISHED INTERMEDIATE CONTOURS
— —	RIDGE LINE
A	DRAINAGE AREA
C	RUNOFF COEFFICIENT
C.I. 0-0	STORM STRUCTURE NUMBER

NOTES:

MBOE – MINIMUM BUILDING OPENING ELEVATION

NOTES:
1. INDIVIDUAL LOT OWNERS SHALL NOT CHANGE OR OBSTRUCT THE DRAINAGE FLOW LINES OR PATHS ON THE LOTS, AS SHOWN ON THE MATER DRAINAGE PLAN, UNLESS SPECIFIC APPLICATION IS MADE AND APPROVED BY THE CITY ENGINEER.

2. PLAT IS LOCATION IN ZONE X, "AREAS OUTSIDE THE 1-PERCENT ANNUAL CHANCE FLOODPLAINS, AREAS OF 1-PERCENT ANNUAL CHANCE SHEET FLOW FLOODING WHERE THE AVERAGE DEPTHS ARE LESS THAN 1 FOOT, AREAS OF 1-PERCENT ANNUAL CHANCE STREAM FLOODING WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 1 SQUARE MILE, OR AREAS PROTECTED FROM THE 1-PERCENT ANNUAL CHANCE FLOOD BY LEVEES. NO BASE FLOOD ELEVATIONS OR DEPTHS ARE SHOWN WITHIN THIS ZONE"

3. PLAT IS LOCATED OUTSIDE OF ANY REQUIRED BUFFER ZONES FOR NATURAL STREAMS.

4. MBOE ELEVATIONS HAVE BEEN PROVIDED AT EACH LOT CORNER. INTERPOLATION WILL BE ALLOWED BETWEEN THE RIGHT AND LEFT SIDE MBOE'S SHOWN ON THE MASTER DRAINAGE PLAN, DEPENDING ON THE LOCATION OF THE LOWEST OPENING ON THE PROPOSED STRUCTURE.

5. REFER TO SHEET C106-C107 FOR SWALE GRADING DETAILS.

6. DRAINAGE PATHS TO BE CONSTRUCTED BETWEEN EACH OF THE LOTS LABELED AS STANDARD LOTS TO DRAIN WEST.

7. NO BUILDING PERMITS WILL BE ISSUED UNTIL AN AS-GRADED MASTER DRAINAGE PLAN HAS BEEN SUBMITTED TO THE CITY AND APPROVED BY THE CITY.

BASEMENT TYPES

(S) STANDARD

Osage First Plat
Minimum Building Opening Elevation

Lot	Rear Left MBOE	Rear Right MBOE	Front Left MBOE	Front Right MBOE	As-Built Grading Plan Required
1	1035.17	1030.89	-	-	
2	1030.89	1034.06	-	-	
3	1034.96	1033.42	1032.98	1031.44	
4	1033.42	1031.42	1031.44	1029.44	
5	1031.42	1028.91	1029.44	1026.93	
6	1029.95	1025.14	-	-	
7	1025.14	1021.26	-	-	
8	1021.26	1018.64	-	-	
9	1023.41	1025.71	1021.43	1023.73	
10	1025.71	1028.03	1023.73	1026.05	
11	1030.28	1028.73	-	-	
12	1028.73	1026.35	-	-	
13	1031.66	1033.03	1029.68	1031.05	
14	1030.32	1031.66	1028.34	1029.68	X
15	1032.82	1030.32	1030.84	1028.34	X
16	1034.79	1033.12	1032.51	1030.84	
17	1031.24	1032.53	-	-	X
18	1023.89	1023.51	-	-	
19	1023.92	1023.89	-	-	X
20	1022.61	1023.92	-	-	X
21	1021.22	1021.30	-	-	X
22	1018.37	1021.22	-	-	X
23	1017.95	1018.37	-	-	
24	1017.82	1017.95	-	-	
25	1017.82	1017.82	-	-	
26	1023.51	1021.87	-	-	X
27	1021.87	1021.45	-	-	X
28	1021.45	1021.43	-	-	X
29	1021.43	1021.40	-	-	X
30	1021.40	1021.49	-	-	X
31	1021.49	1021.60	-	-	X
32	1029.98	1029.60	1027.70	1027.32	
33	1029.60	1030.26	1027.32	1027.98	
34	1030.26	1032.07	1027.98	1029.79	
35	1032.07	1034.92	1029.79	1032.64	
36	1034.92	1037.96	1032.64	1035.68	
37	1037.96	1034.92	1035.68	1032.64	X
38	1034.92	1032.07	1032.64	1029.79	X
39	1032.07	1030.26	1029.79	1027.98	X
40	1030.26	1029.60	1027.98	1027.32	X
41	1029.60	1029.98	1027.32	1027.70	X

X indicates condition applies to the lot.
MBOE's have been provided per lot lines, facing the lot from the street. Interpolation will be allowed between the right and left side MBOE's provided, depending on the location of the lowest opening on the proposed structure.

olsson
Olsson - Civil Engineering
Missouri Certificate of Authority #: 001592
1301 Burlington Street, Suite 100
North Kansas City, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER
PE-2019000237
PROFESSIONAL ENGINEER
3/17/2020

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

MASTER DRAINAGE PLAN
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by:	GS
checked by:	GS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_MDR01_A192339
date:	3/17/2020

SHEET
C139

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_MDR01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 9:47am XREFS: C_XBASE_A192339 C_PBASE_A192339 C_PBNDY_A192339
C_FBASE_A192339 C_PTBLK_A192339 C_PSTRM_A192339

LEGEND	
100	FINISHED INDEX CONTOURS
100	FINISHED INTERMEDIATE CONTOURS
— —	RIDGE LINE
A	DRAINAGE AREA
C	RUNOFF COEFFICIENT
C.I. 0–0	STORM STRUCTURE NUMBER

MO HWY 150

MO HIGHWAY 150

SW CLAYTON PLACE

SW WALSH DRIVE

SW MARYVILLE PLACE

SW PRYOR ROAD

SW OSAGE DRIVE

SW RUTHERFORD DRIVE

TRACT A

TRACT B

TRACT C

TRACT D

TRACT E

TRACT F

TRACT I

TRACT J

TRACT K

TRACT L

TRACT M

TRACT N

TRACT O

TRACT P

CONNECT 7–0

C.I. 7–3

C.I. 7–2

F.I. 7–1

A=0.40 ac. C=0.51

A=0.49 ac. C=0.51

M.H. 7–4

A=1.69 ac. C=0.30

C.I. 7–5

A=0.45 ac. C=0.36

A=0.07 ac. C=0.51

A=0.29 ac. C=0.30

C.I. 8–1

C.I. 7–6

C.I. 7–7

F.I. 8–2

A=1.73 ac. C=0.42

A=2.99 ac. C=0.30

A=0.43 ac. C=0.51

C.I. 2–8

A=1.00 ac. C=0.51

A=0.77 ac. C=0.51

C.I. 2–7

A=0.28 ac. C=0.51

C.I. 2–9

C.I. 6–1

C.I. 2–6

A=0.76 ac. C=0.51

A=2.53 ac. C=0.51

A=0.37 ac. C=0.51

A=0.53 ac. C=0.51

F.I. 4–4 A=0.74 ac. C=0.51

C.I. 4–3

C.I. 4–2

A=0.24 ac. C=0.51

F.I. 4–1

C.I. 5–1

C.I. 2–5

C.I. 2–4

A=2.47 ac. C=0.47

C.I. 11–1

A=0.29 ac. C=0.51

A=3.81 ac. C=0.51

A=0.19 ac. C=0.51

C.I. 10–1

F.I. 9–5

F.I. 9–4

A=0.46 ac. C=0.51

M.H. 9–2

M.H. 9–3

C.I. 2–2

C.I. 15–1

C.I. 13–4

C.I. 13–3

A=0.06 ac. C=0.51

A=0.68 ac. C=0.51

A=3.07 ac. C=0.51

A=0.59 ac. C=0.51

E.S. 9–1

E.S. 2–1

C.I. 14–1

C.I. 13–2

M.H. 13–1

F.I. 12–6

F.I. 12–5

A=0.80 ac. C=0.51

A=0.21 ac. C=0.51

C.I. 12–4

C.I. 12–3

A=0.12 ac. C=0.51

A=0.11 ac. C=0.51

C.I. 3–1

M.H. 2–3

A=0.97 ac. C=0.51

F.I. 1–2

E.S. 1–1

M.H. 12–2

E.S. 12–1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

0' 30' 60' 120'

SCALE IN FEET

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_DRN01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 10:43am XREFS: C_XBASE_A192339 C_FBASE_A192339 C_PBASE_A192339 C_PBNDY_A192339 C_PTBLK_A192339 C_PSTRM_A192339

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REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

DRAINAGE PLAN
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by:	GS
checked by:	SS
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project no.:	A19-2339
drawing no.:	C_DRN01_A192339
date:	3/17/2020

SHEET
C140

Inlet Design Table

10 Year Return Frequency

Inlet ID	Inlet Location	Peak Flow	Upstream Bypass	Total Flow	Clogging Factor	Inlet Capacity	Sag Inlet Capacity (Note 1)	Captured Flow	Bypass Flow	Inlet Efficiency (Note 2)	Gutter Depth	Gutter Spread	Ponding Depth
		(cfs)	(cfs)	(cfs)		(cfs)	(cfs)	(cfs)	(cfs)	(%)	(ft)	(ft)	(ft)
C.I. 2-2(L)	SAG	0.34	...	...	...	...	...	...	...	...	0.08	3.95	...
C.I. 2-2(R)	SAG	2.21	...	...	...	...	...	...	...	...	0.17	8.51	...
C.I. 2-2	SAG	3.64	0.00	3.64	0.80	27.16	21.73	3.64	0.00	100.00%	...	...	...
C.I. 2-4	GRADE	0.45	0.00	0.45	1.00	0.44	0.44	0.44	0.01	96.83%	0.09	4.45	...
C.I. 2-5(L)	SAG	1.31	...	...	...	...	...	...	...	...	0.13	6.68	...
C.I. 2-5(R)	SAG	3.75	...	...	...	...	...	...	...	...	0.21	10.60	...
C.I. 2-5	SAG	7.81	0.11	7.92	0.80	19.40	15.52	7.92	0.00	100.00%	...	...	...
C.I. 2-6	GRADE	1.05	0.00	1.05	1.00	0.95	0.95	0.95	0.10	90.91%	0.12	6.03	...
C.I. 2-7	GRADE	3.75	0.16	3.91	1.00	2.71	2.71	2.71	1.20	69.31%	0.20	9.89	...
C.I. 2-8	GRADE	1.61	0.00	1.61	1.00	1.46	1.46	1.46	0.16	90.38%	0.16	7.83	...
C.I. 2-9	GRADE	2.85	0.00	2.85	1.00	2.37	2.37	2.37	0.48	83.06%	0.19	9.70	...
C.I. 3-1	GRADE	0.41	0.00	0.41	1.00	0.40	0.40	0.40	0.01	97.17%	0.09	4.30	...
F.I. 4-1	SAG	0.90	0.00	0.90	0.80	18.67	14.93	0.90	0.00	100.00%	...	...	0.07
C.I. 4-2(L)	SAG	0.94	...	...	...	...	...	...	...	...	0.13	6.40	...
C.I. 4-2(R)	SAG	0.56	...	...	...	...	...	...	...	...	0.10	5.04	...
C.I. 4-2	SAG	1.99	0.00	1.99	0.80	19.40	15.52	1.99	0.00	100.00%	...	...	...
C.I. 4-3(L)	SAG	2.03	...	...	...	...	...	...	...	...	0.17	8.30	...
C.I. 4-3(R)	SAG	2.63	...	...	...	...	...	...	...	...	0.20	10.00	...
C.I. 4-3	SAG	6.53	0.57	7.09	0.80	19.40	15.52	7.09	0.00	100.00%	...	...	...
F.I. 4-4	SAG	6.60	0.00	6.60	0.80	18.67	14.93	6.60	0.00	100.00%	...	...	0.25
C.I. 5-1(L)	SAG	0.94	...	...	...	...	...	...	...	...	0.13	6.47	...
C.I. 5-1(R)	SAG	0.00	...	...	...	...	...	...	...	...	...	...	...
C.I. 5-1	SAG	1.39	0.10	1.48	0.80	19.40	15.52	1.48	0.00	100.00%	...	...	...
C.I. 6-1	GRADE	2.89	1.20	4.09	1.00	2.79	2.79	2.79	1.30	68.19%	0.20	10.06	...
F.I. 7-1	SAG	1.50	0.00	1.50	0.80	23.33	18.67	1.50	0.00	100.00%	...	...	0.08
C.I. 7-2(L)	SAG	0.08	...	...	...	...	...	...	...	...	0.05	2.34	...
C.I. 7-2(R)	SAG	0.56	...	...	...	...	...	...	...	...	0.09	4.70	...
C.I. 7-2	SAG	1.84	0.00	1.84	0.80	19.40	15.52	1.84	0.00	100.00%	...	...	...
C.I. 7-3(L)	SAG	0.54	...	...	...	...	...	...	...	...	0.10	5.07	...
C.I. 7-3(R)	SAG	0.29	...	...	...	...	...	...	...	...	0.08	3.84	...
C.I. 7-3	SAG	4.85	0.14	4.99	0.80	19.40	15.52	4.99	0.00	100.00%	...	...	...
C.I. 7-5	GRADE	1.19	0.00	1.19	1.00	1.06	1.06	1.06	0.14	88.66%	0.12	6.18	...
C.I. 7-6	GRADE	0.26	0.04	0.31	1.00	0.30	0.30	0.30	0.01	97.76%	0.07	3.71	...
C.I. 7-7	SAG	4.17	0.00	4.17	0.80	18.67	14.93	4.17	0.00	100.00%	...	...	0.18
C.I. 8-1	GRADE	0.64	0.00	0.64	1.00	0.60	0.60	0.60	0.04	93.30%	0.09	4.73	...
F.I. 8-2	SAG	6.60	0.00	6.60	0.80	18.67	14.93	6.60	0.00	100.00%	...	...	0.25
F.I. 8-2 FTR	SAG	6.99	0.00	6.99	0.80	18.67	14.93	6.99	0.00	100.00%	...	...	0.26
F.I. 9-4	SAG	14.36	0.00	14.36	0.80	36.20	28.96	14.36	0.00	100.00%	...	...	0.36
F.I. 9-5	SAG	1.91	0.00	1.91	0.80	18.67	14.93	1.91	0.00	100.00%	...	...	0.11
F.I. 9-5 FTR	SAG	1.82	0.00	1.82	0.80	18.67	14.93	1.82	0.00	100.00%	...	...	0.11
C.I. 10-1	GRADE	0.71	0.00	0.71	1.00	0.68	0.68	0.68	0.04	95.08%	0.11	5.44	...
PLUG 10-2	GRADE	12.21	...	...	...	...	...	...	...	...	...	...	...
C.I. 11-1	GRADE	1.09	0.00	1.09	1.00	1.00	1.00	1.00	0.09	92.03%	0.13	6.38	...
C.I. 12-3(L)	SAG	1.54	...	...	...	...	...	...	...	...	0.15	7.51	...
C.I. 12-3(R)	SAG	0.00	...	...	...	...	...	...	...	...	0.00	0.00	...
C.I. 12-3	SAG	2.21	0.00	2.21	0.80	19.40	15.52	2.21	0.00	100.00%	...	...	...
C.I. 12-4(L)	SAG	0.00	...	...	...	...	...	...	...	...	0.00	0.00	...
C.I. 12-4(R)	SAG	0.79	...	...	...	...	...	...	...	...	0.12	5.85	...
C.I. 12-4	SAG	3.00	0.00	3.00	0.80	19.40	15.52	3.00	0.00	100.00%	...	...	...
F.I. 12-5	SAG	0.79	0.00	0.79	0.80	18.67	14.93	0.79	0.00	100.00%	...	...	0.06
F.I. 12-6	SAG	0.38	0.00	0.38	0.80	18.67	14.93	0.38	0.00	100.00%	...	...	0.04
F.I. 12-6 FTR	SAG	7.75	0.00	7.75	0.80	18.67	14.93	7.75	0.00	100.00%	...	...	0.28
C.I. 13-2(L)	SAG	0.04	...	...	...	...	...	...	...	...	0.03	1.72	...
C.I. 13-2(R)	SAG	2.51	...	...	...	...	...	...	...	...	0.18	9.23	...
C.I. 13-2	SAG	4.43	1.01	5.43	0.80	19.40	15.52	5.43	0.00	100.00%	...	...	...
C.I. 13-3(L)	SAG	3.00	...	...	...	...	...	...	...	...	0.16	8.03	...
C.I. 13-3(R)	SAG	0.19	...	...	...	...	...	...	...	...	0.08	4.15	...
C.I. 13-3	SAG	5.29	0.24	5.53	0.80	19.40	15.52	5.53	0.00	100.00%	...	...	...
C.I. 13-4	GRADE	0.23	0.00	0.23	1.00	0.22	0.22	0.22	0.01	96.33%	0.06	2.76	...
PLUG 13-5	GRADE	3.13	...	...	...	...	...	...	...	...	...	...	...
C.I. 14-1	GRADE	2.55	0.00	2.55	1.00	1.54	1.54	1.54	1.01	60.41%	0.14	6.87	...
C.I. 15-1	GRADE	1.73	0.04	1.76	1.00	1.53	1.53	1.53	0.23	86.88%	0.15	7.64	...

Notes:

1. Inlet capacity at sag location has been reduced by a clogging factor of 0.80, reducing theoretical capacity to 80% capacity, as required per APWA Section 5600.
   Both theoretical capacity and reduced capacity are shown.
2. Inlet efficiency shown in the tables is Captured Flow/Total Flow, denoting the actual percentage of flow captured after the capacity has been reduced to 80% of theoretical capacity.

Drainage Area Design Table

10 Year Return Frequency

Inlet ID	Drainage Area	C	Tc	i	K	Peak Flow
	(ac)		(min)	(in/hr)		(cfs)
C.I. 2-2(L)	0.09	0.51	5.00	7.35	1.00	0.34
C.I. 2-2(R)	0.59	0.51	5.00	7.35	1.00	2.21
C.I. 2-2(B)	0.29	0.51	5.00	7.35	1.00	1.09
C.I. 2-2	0.97	0.51	5.00	7.35	1.00	3.64
C.I. 2-4	0.12	0.51	5.00	7.35	1.00	0.45
C.I. 2-5(L)	0.35	0.51	5.00	7.35	1.00	1.31
C.I. 2-5(R)	1.00	0.51	5.00	7.35	1.00	3.75
C.I. 2-5(B)	1.18	0.51	10.10	6.06	1.00	3.64
C.I. 2-5	2.53	0.51	10.10	6.06	1.00	7.81
C.I. 2-6	0.28	0.51	5.00	7.35	1.00	1.05
C.I. 2-7	1.00	0.51	5.00	7.35	1.00	3.75
C.I. 2-8	0.43	0.51	5.00	7.35	1.00	1.61
C.I. 2-9	0.76	0.51	5.00	7.35	1.00	2.85
C.I. 3-1	0.11	0.51	5.00	7.35	1.00	0.41
F.I. 4-1	0.24	0.51	5.00	7.35	1.00	0.90
C.I. 4-2(L)	0.25	0.51	5.00	7.35	1.00	0.94
C.I. 4-2(R)	0.15	0.51	5.00	7.35	1.00	0.56
C.I. 4-2(B)	0.13	0.51	5.00	7.35	1.00	0.49
C.I. 4-2	0.53	0.51	5.00	7.35	1.00	1.99
C.I. 4-3(L)	0.54	0.51	5.00	7.35	1.00	2.03
C.I. 4-3(R)	0.70	0.51	5.00	7.35	1.00	2.63
C.I. 4-3(B)	0.50	0.51	5.00	7.35	1.00	1.88
C.I. 4-3	1.74	0.51	5.00	7.35	1.00	6.53
F.I. 4-4	2.47	0.47	11.96	5.69	1.00	6.60
C.I. 5-1(L)	0.25	0.51	5.00	7.35	1.00	0.94
C.I. 5-1(R)	0.00	0.51	5.00	7.35	1.00	0.00
C.I. 5-1(B)	0.12	0.51	5.00	7.35	1.00	0.45
C.I. 5-1	0.37	0.51	5.00	7.35	1.00	1.39
C.I. 6-1	0.77	0.51	5.00	7.35	1.00	2.89
F.I. 7-1	0.40	0.51	5.00	7.35	1.00	1.50
C.I. 7-2(L)	0.02	0.51	5.00	7.35	1.00	0.08
C.I. 7-2(R)	0.15	0.51	5.00	7.35	1.00	0.56
C.I. 7-2(B)	0.32	0.51	5.00	7.35	1.00	1.20
C.I. 7-2	0.49	0.51	5.00	7.35	1.00	1.84
C.I. 7-3(L)	0.19	0.39	5.00	7.35	1.00	0.54
C.I. 7-3(R)	0.10	0.39	5.00	7.35	1.00	0.29
C.I. 7-3(B)	1.40	0.39	5.00	7.35	1.00	4.01
C.I. 7-3	1.69	0.39	5.00	7.35	1.00	4.85
C.I. 7-5	0.45	0.36	5.00	7.35	1.00	1.19
C.I. 7-6	0.07	0.51	5.00	7.35	1.00	0.26
C.I. 7-7	1.73	0.42	11.70	5.74	1.00	4.17
C.I. 8-1	0.29	0.30	5.00	7.35	1.00	0.64
F.I. 8-2	2.99	0.30	5.00	7.35	1.00	6.60
F.I. 8-2 FTR	3.99	0.30	11.16	5.84	1.00	6.99
F.I. 9-4	3.83	0.51	5.00	7.35	1.00	14.36
F.I. 9-5	0.51	0.51	5.00	7.35	1.00	1.91
F.I. 9-5 FTR	0.48	0.51	5.00	7.35	1.00	1.82
C.I. 10-1	0.19	0.51	5.00	7.35	1.00	0.71
PLUG 10-2	4.71	0.45	11.57	5.76	1.00	12.21
C.I. 11-1	0.29	0.51	5.00	7.35	1.00	1.09
C.I. 12-3(L)	0.41	0.51	5.00	7.35	1.00	1.54
C.I. 12-3(R)	0.00	0.51	5.00	7.35	1.00	0.00
C.I. 12-3(B)	0.18	0.51	5.00	7.35	1.00	0.68
C.I. 12-3	0.59	0.51	5.00	7.35	1.00	2.21
C.I. 12-4(L)	0.00	0.51	5.00	7.35	1.00	0.00
C.I. 12-4(R)	0.21	0.51	5.00	7.35	1.00	0.79
C.I. 12-4(B)	0.59	0.51	5.00	7.35	1.00	2.21
C.I. 12-4	0.80	0.51	5.00	7.35	1.00	3.00
F.I. 12-5	0.21	0.51	5.00	7.35	1.00	0.79
F.I. 12-6	0.10	0.51	5.00	7.35	1.00	0.38
F.I. 12-6 FTR	3.29	0.41	11.67	5.74	1.00	7.75
C.I. 13-2(L)	0.01	0.51	5.00	7.35	1.00	0.04
C.I. 13-2(R)	0.67	0.51	5.00	7.35	1.00	2.51
C.I. 13-2(B)	0.50	0.51	5.00	7.35	1.00	1.88
C.I. 13-2	1.18	0.51	5.00	7.35	1.00	4.43
C.I. 13-3(L)	0.80	0.51	5.00	7.35	1.00	3.00
C.I. 13-3(R)	0.05	0.51	5.00	7.35	1.00	0.19
C.I. 13-3(B)	0.56	0.51	5.00	7.35	1.00	2.10
C.I. 13-3	1.41	0.51	5.00	7.35	1.00	5.29
C.I. 13-4	0.06	0.51	5.00	7.35	1.00	0.23
PLUG 13-5	0.83	0.51	5.00	7.35	1.00	3.13
C.I. 14-1	0.68	0.51	5.00	7.35	1.00	2.55
C.I. 15-1	0.46	0.51	5.00	7.35	1.00	1.73

Storm Sewer Design Calculation Table

10 Year Return Frequency

Upstream Structure	Downstream Structure	Length	Upstream Invert	Downstream Invert	Slope	Diameter	Manning's n	Total Flow	Velocity	Capacity	Flow Depth	Upstream Struct. HGL	Upstream Top Elev.
		(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(ft/s)	(cfs)	(ft)	(ft)	(ft)
C.I. 2-2	E.S. 2-1	172.82	1011.12	1010.00	0.65	42	0.010	40.74	7.24	105.29	1.98	1013.10	1021.43
M.H. 2-3	C.I. 2-2	108.35	1012.44	1011.62	0.75	42	0.010	37.10	8.28	113.57	1.48	1014.33	1023.22
C.I. 2-4	M.H. 2-3	121.35	1013.85	1012.64	1.00	36	0.010	37.10	8.28	86.58	1.69	1015.83	1022.46
C.I. 2-5	C.I. 2-4	119.00	1015.24	1014.05	1.00	36	0.010	36.26	7.87	86.70	1.78	1017.20	1020.74
C.I. 2-6	C.I. 2-5	281.00	1019.30	1016.24	1.09	24	0.010	10.28	6.22	30.68	0.96	1020.45	1025.17
C.I. 2-7	C.I. 2-6	99.73	1022.56	1020.56	2.01	15	0.010	6.54	7.98	11.89	0.66	1023.59	1027.48
C.I. 2-8	C.I. 2-7	277.00	1025.82	1023.05	1.00	15	0.010	3.83	5.68	8.39	0.59	1026.61	1031.52
C.I. 2-9	C.I. 2-8	34.00	1026.66	1026.32	1.00	15	0.010	2.37	4.91	8.40	0.45	1027.28	1031.52
C.I. 3-1	C.I. 2-4	35.00	1017.15	1016.10	3.00	15	0.010	0.40	3.75	14.54	0.14	1017.40	1022.44
F.I. 4-1	C.I. 2-5	142.77	1017.53	1016.24	0.90	30	0.010	16.58	7.62	50.68	0.98	1018.91	1026.51
C.I. 4-2	F.I. 4-1	140.00	1019.28	1018.02	0.90	24	0.010	15.68	7.84	27.89	1.07	1020.71	1027.68
C.I. 4-3	C.I. 4-2	34.00	1019.82	1019.48	1.00	24	0.010	13.69	6.47	29.40	1.23	1021.15	1027.68
F.I. 4-4	C.I. 4-3	128.00	1023.14	1020.58	2.00	15	0.010	6.60	8.01	11.87	0.67	1024.17	1031.99
C.I. 5-1	C.I. 2-5	34.00	1016.08	1015.74	1.00	15	0.010	1.48	1.24	8.40	1.25	1017.20	1020.74
C.I. 6-1	C.I. 2-6	34.00	1020.14	1019.80	1.00	15	0.010	2.79	4.26	8.40	0.65	1020.81	1025.17
F.I. 7-1	CONNECT 7-0	14.54	1023.49	1023.35	0.96	48	0.010	21.45	7.71	183.22	0.92	1024.85	1029.70
C.I. 7-2	F.I. 7-1	50.70	1024.29	1023.99	0.59	24	0.010	19.95	7.76	22.62	1.46	1025.89	1029.23
C.I. 7-3	C.I. 7-2	34.00	1024.99	1024.79	0.59	24	0.013	18.11	6.27	17.34	1.73	1026.72	1029.23
M.H. 7-4	C.I. 7-3	136.22	1026.51	1025.49	0.75	24	0.010	13.12	5.67	25.44	1.48	1027.81	1032.85
C.I. 7-5	M.H. 7-4	41.08	1027.42	1027.01	1.00	24	0.010	13.12	7.57	29.38	0.94	1028.72	1034.82
C.I. 7-6	C.I. 7-5	34.50	1028.27	1027.92	1.01	18	0.010	12.06	8.06	13.75	1.09	1029.59	1034.81
C.I. 7-7	C.I. 7-6	49.50	1029.26	1028.76	1.01	15	0.010	4.17	4.85	8.44	0.83	1030.09	1036.32
C.I. 8-1	C.I. 7-6	100.50	1029.77	1028.76	1.00	18	0.010	7.59	6.63	13.69	0.83	1030.84	1037.30
F.I. 8-2	C.I. 8-1	98.76	1031.25	1030.26	1.00	18	0.010	6.99	6.61	13.67	0.76	1032.27	1037.71
M.H. 9-2	E.S. 9-1	125.44	1014.39	1010.00	3.50	30	0.010	30.16	7.66	99.74	1.87	1016.26	1022.02
M.H. 9-3	M.H. 9-2	117.10	1019.19	1015.09	3.50	24	0.010	30.16	12.84	55.00	1.17	1021.05	1030.50
F.I. 9-4	M.H. 9-3	123.51	1022.98	1019.89	2.50	24	0.010	16.27	7.62	46.51	1.16	1024.43	1032.49
F.I. 9-5	F.I. 9-4	212.50	1030.50	1024.98	2.60	15	0.010	1.91	5.73	13.53	0.32	1031.05	1037.43
C.I. 10-1	M.H. 9-3	128.04	1024.02	1020.19	2.99	24	0.010	13.89	8.46	50.85	0.86	1025.36	1033.39
PLUG 10-2	C.I. 10-1	113.85	1026.43	1024.72	1.50	24	0.010	12.21	8.12	36.04	0.80	1027.69	1028.58
C.I. 11-1	C.I. 10-1	34.00	1027.72	1026.02	5.00	15	0.010	1.00	5.57	18.77	0.20	1028.11	1033.39
M.H. 12-2	E.S. 12-1	47.38	1011.39	1010.00	2.93	30	0.010	31.13	7.78	91.32	1.90	1013.29	1020.70
C.I. 12-3	M.H. 12-2	140.50	1014.70	1011.89	2.00	30	0.010	31.13	9.40	75.40	1.40	1016.60	1026.09
C.I. 12-4	C.I. 12-3	34.00	1015.88	1015.20	2.00	24	0.010	28.92	10.93	41.58	1.40	1017.72	1026.09
F.I. 12-5	C.I. 12-4	126.83	1022.32	1017.88	3.50	18	0.010	8.54	9.49	25.54	0.60	1023.45	1031.85
F.I. 12-6	F.I. 12-5	158.03	1027.56	1022.82	3.00	15	0.010	7.75	9.40	14.54	0.65	1028.66	1036.52
M.H. 13-1	C.I. 12-4	108.38	1018.01	1016.38	1.50	30	0.010	17.38	6.28	65.38	1.34	1019.42	1027.22
C.I. 13-2	M.H. 13-1	74.78	1019.63	1018.51	1.50	24	0.010	15.85	8.83	35.98	0.93	1021.06	1026.67
C.I. 13-3	C.I. 13-2	34.50	1020.65	1020.13	1.51	24	0.010	10.42	6.39	36.10	0.93	1021.81	1026.66
C.I. 13-4	C.I. 13-3	165.00	1023.88	1021.40	1.50	15	0.010	4.89	6.74	10.29	0.61	1024.78	1031.98
PLUG 13-5	C.I. 13-4	62.50	1027.40	1024.27	5.01	15	0.010	3.13	5.53	18.79	0.51	1028.11	1029.07
C.I. 14-1	C.I. 13-4	34.00	1026.98	1025.87	3.26	15	0.010	1.54	5.69	15.17	0.27	1027.47	1031.98
C.I. 15-1	M.H. 13-1	102.13	1023.58	1020.01	3.50	15	0.010	1.53	5.77	15.69	0.26	1024.07	1028.57

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STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER PE-2019000237
PROFESSIONAL ENGINEER
3/17/2020

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

DRAINAGE TABLES
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

LEE'S SUMMIT, MISSOURI

2020

drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_DRN01_A192339
date: 3/17/2020

SHEET
C141

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_DRN01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 10:18am XREFS: C_XBASE_A192339 C_FBASE_A192339 C_PBASE_A192339 C_PTBLK_A192339 C_PSTRM_A192339

Inlet Design Table

100 Year Return Frequency

Inlet ID	Inlet Location	Peak Flow	Upstream Bypass	Total Flow	Clogging Factor	Inlet Capacity	Sag Inlet Capacity (Note 1)	Captured Flow	Bypass Flow	Inlet Efficiency (Note 2)	Gutter Depth	Gutter Spread	Ponding Depth
		(cfs)	(cfs)	(cfs)		(cfs)	(cfs)	(cfs)	(cfs)	(%)	(ft)	(ft)	(ft)
C.I. 2-2(L)	SAG	0.59	...	...	...	...	...	...	...	...	0.10	4.88	...
C.I. 2-2(R)	SAG	3.88	...	...	...	...	...	...	...	...	0.21	10.51	...
C.I. 2-2	SAG	6.38	0.00	6.38	0.80	27.16	21.73	6.38	0.00	100.00%	...	...	...
C.I. 2-4	GRADE	0.79	0.00	0.79	1.00	0.74	0.74	0.74	0.05	93.71%	0.11	5.49	...
C.I. 2-5(L)	SAG	2.30	...	...	...	...	...	...	...	...	0.17	8.28	...
C.I. 2-5(R)	SAG	6.58	...	...	...	...	...	...	...	...	0.26	13.17	...
C.I. 2-5	SAG	13.81	0.34	14.15	0.80	19.40	15.52	14.15	0.00	100.00%	...	...	...
C.I. 2-6	GRADE	1.84	0.00	1.84	1.00	1.55	1.55	1.55	0.29	84.01%	0.15	7.45	...
C.I. 2-7	GRADE	6.58	0.48	7.06	1.00	3.74	3.74	3.74	3.31	53.04%	0.25	12.35	...
C.I. 2-8	GRADE	2.83	0.00	2.83	1.00	2.35	2.35	2.35	0.48	83.18%	0.19	9.67	...
C.I. 2-9	GRADE	5.00	0.00	5.00	1.00	3.61	3.61	3.61	1.39	72.16%	0.24	11.98	...
C.I. 3-1	GRADE	0.72	0.00	0.72	1.00	0.68	0.68	0.68	0.04	94.28%	0.11	5.31	...
F.I. 4-1	SAG	1.58	0.00	1.58	0.80	18.67	14.93	1.58	0.00	100.00%	...	...	0.10
C.I. 4-2(L)	SAG	1.65	...	...	...	...	...	...	...	...	0.16	7.91	...
C.I. 4-2(R)	SAG	0.99	...	...	...	...	...	...	...	...	0.12	6.22	...
C.I. 4-2	SAG	3.49	0.00	3.49	0.80	19.40	15.52	3.49	0.00	100.00%	...	...	...
C.I. 4-3(L)	SAG	3.55	...	...	...	...	...	...	...	...	0.21	10.37	...
C.I. 4-3(R)	SAG	4.61	...	...	...	...	...	...	...	...	0.26	12.80	...
C.I. 4-3	SAG	11.45	1.66	13.11	0.80	19.40	15.52	13.11	0.00	100.00%	...	...	...
F.I. 4-4	SAG	11.70	0.00	11.70	0.80	18.67	14.93	11.70	0.00	100.00%	...	...	0.37
C.I. 5-1(L)	SAG	1.65	...	...	...	...	...	...	...	...	0.16	8.20	...
C.I. 5-1(R)	SAG	0.00	...	...	...	...	...	...	...	...	...	...	...
C.I. 5-1	SAG	2.43	0.29	2.73	0.80	19.40	15.52	2.73	0.00	100.00%	...	...	...
C.I. 6-1	GRADE	5.07	3.31	8.38	1.00	4.01	4.01	4.01	4.37	47.87%	0.26	13.17	...
F.I. 7-1	SAG	2.63	0.00	2.63	0.80	23.33	18.67	2.63	0.00	100.00%	...	...	0.12
C.I. 7-2(L)	SAG	0.13	...	...	...	...	...	...	...	...	0.06	2.88	...
C.I. 7-2(R)	SAG	0.99	...	...	...	...	...	...	...	...	0.12	5.80	...
C.I. 7-2	SAG	3.22	0.00	3.22	0.80	19.40	15.52	3.22	0.00	100.00%	...	...	...
C.I. 7-3(L)	SAG	0.96	...	...	...	...	...	...	...	...	0.13	6.61	...
C.I. 7-3(R)	SAG	0.50	...	...	...	...	...	...	...	...	0.09	4.74	...
C.I. 7-3	SAG	8.50	0.44	8.94	0.80	19.40	15.52	8.94	0.00	100.00%	...	...	...
C.I. 7-5	GRADE	2.09	0.00	2.09	1.00	1.68	1.68	1.68	0.41	80.50%	0.15	7.63	...
C.I. 7-6	GRADE	0.46	0.14	0.60	1.00	0.57	0.57	0.57	0.03	94.66%	0.10	4.77	...
C.I. 7-7	SAG	7.38	0.00	7.38	0.80	18.67	14.93	7.38	0.00	100.00%	...	...	0.27
C.I. 8-1	GRADE	1.12	0.00	1.12	1.00	0.99	0.99	0.99	0.14	87.83%	0.12	5.84	...
F.I. 8-2	SAG	11.57	0.00	11.57	0.80	18.67	14.93	11.57	0.00	100.00%	...	...	0.36
F.I. 8-2 FTR	SAG	12.36	0.00	12.36	0.80	18.67	14.93	12.36	0.00	100.00%	...	...	0.38
F.I. 9-4	SAG	25.20	0.00	25.20	0.80	36.20	28.96	25.20	0.00	100.00%	...	...	0.27
F.I. 9-5	SAG	3.36	0.00	3.36	0.80	18.67	14.93	3.36	0.00	100.00%	...	...	0.16
F.I. 9-5 FTR	SAG	3.19	0.00	3.19	0.80	18.67	14.93	3.19	0.00	100.00%	...	...	0.15
C.I. 10-1	GRADE	1.25	0.00	1.25	1.00	1.13	1.13	1.13	0.12	90.75%	0.13	6.72	...
PLUG 10-2	GRADE	21.62	...	...	...	...	...	...	...	...	...	...	...
C.I. 11-1	GRADE	1.91	0.00	1.91	1.00	1.64	1.64	1.64	0.27	85.80%	0.16	7.87	...
C.I. 12-3(L)	SAG	2.70	...	...	...	...	...	...	...	...	0.19	9.28	...
C.I. 12-3(R)	SAG	0.00	...	...	...	...	...	...	...	...	0.00	0.00	...
C.I. 12-3	SAG	3.88	0.00	3.88	0.80	19.40	15.52	3.88	0.00	100.00%	...	...	...
C.I. 12-4(L)	SAG	0.00	...	...	...	...	...	...	...	...	0.00	0.00	...
C.I. 12-4(R)	SAG	1.38	...	...	...	...	...	...	...	...	0.14	7.22	...
C.I. 12-4	SAG	5.26	0.00	5.26	0.80	19.40	15.52	5.26	0.00	100.00%	...	...	...
F.I. 12-5	SAG	1.38	0.00	1.38	0.80	18.67	14.93	1.38	0.00	100.00%	...	...	0.09
F.I. 12-6	SAG	0.66	0.00	0.66	0.80	18.67	14.93	0.66	0.00	100.00%	...	...	0.05
F.I. 12-6 FTR	SAG	13.72	0.00	13.72	0.80	18.67	14.93	13.72	0.00	100.00%	...	...	0.41
C.I. 13-2(L)	SAG	0.07	...	...	...	...	...	...	...	...	0.04	2.12	...
C.I. 13-2(R)	SAG	4.41	...	...	...	...	...	...	...	...	0.24	11.89	...
C.I. 13-2	SAG	7.77	2.52	10.28	0.80	19.40	15.52	10.28	0.00	100.00%	...	...	...
C.I. 13-3(L)	SAG	5.26	...	...	...	...	...	...	...	...	0.20	9.93	...
C.I. 13-3(R)	SAG	0.33	...	...	...	...	...	...	...	...	0.12	5.84	...
C.I. 13-3	SAG	9.28	0.74	10.02	0.80	19.40	15.52	10.02	0.00	100.00%	...	...	...
C.I. 13-4	GRADE	0.39	0.00	0.39	1.00	0.37	0.37	0.37	0.03	92.85%	0.07	3.41	...
PLUG 13-5	GRADE	5.48	...	...	...	...	...	...	...	...	...	...	...
C.I. 14-1	GRADE	4.47	0.00	4.47	1.00	1.96	1.96	1.96	2.52	43.75%	0.17	8.48	...
C.I. 15-1	GRADE	3.03	0.12	3.14	1.00	2.43	2.43	2.43	0.71	77.45%	0.19	9.49	...

Notes:

1. Inlet capacity at sag location has been reduced by a clogging factor of 0.80, reducing theoretical capacity to 80% capacity, as required per APWA Section 5600.
   Both theoretical capacity and reduced capacity are shown.
2. Inlet efficiency shown in the tables is Captured Flow/Total Flow, denoting the actual percentage of flow captured after the capacity has been reduced to 80% of theoretical capacity.

Drainage Area Design Table

100 Year Return Frequency

Inlet ID	Drainage Area	C	Tc	i	K	Peak Flow
	(ac)		(min)	(in/hr)		(cfs)
C.I. 2-2(L)	0.09	0.51	5.00	10.32	1.25	0.59
C.I. 2-2(R)	0.59	0.51	5.00	10.32	1.25	3.88
C.I. 2-2(B)	0.29	0.51	5.00	10.32	1.25	1.91
C.I. 2-2	0.97	0.51	5.00	10.32	1.25	6.38
C.I. 2-4	0.12	0.51	5.00	10.32	1.25	0.79
C.I. 2-5(L)	0.35	0.51	5.00	10.32	1.25	2.30
C.I. 2-5(R)	1.00	0.51	5.00	10.32	1.25	6.58
C.I. 2-5(B)	1.18	0.51	10.10	8.56	1.25	6.44
C.I. 2-5	2.53	0.51	10.10	8.56	1.25	13.81
C.I. 2-6	0.28	0.51	5.00	10.32	1.25	1.84
C.I. 2-7	1.00	0.51	5.00	10.32	1.25	6.58
C.I. 2-8	0.43	0.51	5.00	10.32	1.25	2.83
C.I. 2-9	0.76	0.51	5.00	10.32	1.25	5.00
C.I. 3-1	0.11	0.51	5.00	10.32	1.25	0.72
F.I. 4-1	0.24	0.51	5.00	10.32	1.25	1.58
C.I. 4-2(L)	0.25	0.51	5.00	10.32	1.25	1.65
C.I. 4-2(R)	0.15	0.51	5.00	10.32	1.25	0.99
C.I. 4-2(B)	0.13	0.51	5.00	10.32	1.25	0.86
C.I. 4-2	0.53	0.51	5.00	10.32	1.25	3.49
C.I. 4-3(L)	0.54	0.51	5.00	10.32	1.25	3.55
C.I. 4-3(R)	0.70	0.51	5.00	10.32	1.25	4.61
C.I. 4-3(B)	0.50	0.51	5.00	10.32	1.25	3.29
C.I. 4-3	1.74	0.51	5.00	10.32	1.25	11.45
F.I. 4-4	2.47	0.47	11.96	8.06	1.25	11.70
C.I. 5-1(L)	0.25	0.51	5.00	10.32	1.25	1.65
C.I. 5-1(R)	0.00	0.51	5.00	10.32	1.25	0.00
C.I. 5-1(B)	0.12	0.51	5.00	10.32	1.25	0.79
C.I. 5-1	0.37	0.51	5.00	10.32	1.25	2.43
C.I. 6-1	0.77	0.51	5.00	10.32	1.25	5.07
F.I. 7-1	0.40	0.51	5.00	10.32	1.25	2.63
C.I. 7-2(L)	0.02	0.51	5.00	10.32	1.25	0.13
C.I. 7-2(R)	0.15	0.51	5.00	10.32	1.25	0.99
C.I. 7-2(B)	0.32	0.51	5.00	10.32	1.25	2.11
C.I. 7-2	0.49	0.51	5.00	10.32	1.25	3.22
C.I. 7-3(L)	0.19	0.39	5.00	10.32	1.25	0.96
C.I. 7-3(R)	0.10	0.39	5.00	10.32	1.25	0.50
C.I. 7-3(B)	1.40	0.39	5.00	10.32	1.25	7.05
C.I. 7-3	1.69	0.39	5.00	10.32	1.25	8.50
C.I. 7-5	0.45	0.36	5.00	10.32	1.25	2.09
C.I. 7-6	0.07	0.51	5.00	10.32	1.25	0.46
C.I. 7-7	1.73	0.42	11.70	8.13	1.25	7.38
C.I. 8-1	0.29	0.30	5.00	10.32	1.25	1.12
F.I. 8-2	2.99	0.30	5.00	10.32	1.25	11.57
F.I. 8-2 FTR	3.99	0.30	11.16	8.27	1.25	12.36
F.I. 9-4	3.83	0.51	5.00	10.32	1.25	25.20
F.I. 9-5	0.51	0.51	5.00	10.32	1.25	3.36
F.I. 9-5 FTR	0.48	0.51	5.00	10.32	1.25	3.19
C.I. 10-1	0.19	0.51	5.00	10.32	1.25	1.25
PLUG 10-2	4.71	0.45	11.57	8.16	1.25	21.62
C.I. 11-1	0.29	0.51	5.00	10.32	1.25	1.91
C.I. 12-3(L)	0.41	0.51	5.00	10.32	1.25	2.70
C.I. 12-3(R)	0.00	0.51	5.00	10.32	1.25	0.00
C.I. 12-3(B)	0.18	0.51	5.00	10.32	1.25	1.18
C.I. 12-3	0.59	0.51	5.00	10.32	1.25	3.88
C.I. 12-4(L)	0.00	0.51	5.00	10.32	1.25	0.00
C.I. 12-4(R)	0.21	0.51	5.00	10.32	1.25	1.38
C.I. 12-4(B)	0.59	0.51	5.00	10.32	1.25	3.88
C.I. 12-4	0.80	0.51	5.00	10.32	1.25	5.26
F.I. 12-5	0.21	0.51	5.00	10.32	1.25	1.38
F.I. 12-6	0.10	0.51	5.00	10.32	1.25	0.66
F.I. 12-6 FTR	3.29	0.41	11.67	8.14	1.25	13.72
C.I. 13-2(L)	0.01	0.51	5.00	10.32	1.25	0.07
C.I. 13-2(R)	0.67	0.51	5.00	10.32	1.25	4.41
C.I. 13-2(B)	0.50	0.51	5.00	10.32	1.25	3.29
C.I. 13-2	1.18	0.51	5.00	10.32	1.25	7.77
C.I. 13-3(L)	0.80	0.51	5.00	10.32	1.25	5.26
C.I. 13-3(R)	0.05	0.51	5.00	10.32	1.25	0.33
C.I. 13-3(B)	0.56	0.51	5.00	10.32	1.25	3.69
C.I. 13-3	1.41	0.51	5.00	10.32	1.25	9.28
C.I. 13-4	0.06	0.51	5.00	10.32	1.25	0.39
PLUG 13-5	0.83	0.51	5.00	10.32	1.25	5.48
C.I. 14-1	0.68	0.51	5.00	10.32	1.25	4.47
C.I. 15-1	0.46	0.51	5.00	10.32	1.25	3.03

Storm Sewer Design Calculation Table

100 Year Return Frequency

Upstream Structure	Downstream Structure	Length	Upstream Invert	Downstream Invert	Slope	Diameter	Manning's n	Total Flow	Velocity	Capacity	Flow Depth	Upstream Struct. HGL	Upstream Top Elev.
		(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(ft/s)	(cfs)	(ft)	(ft)	(ft)
C.I. 2-2	E.S. 2-1	172.82	1011.12	1010.00	0.65	42	0.010	69.82	7.26	105.29	3.50	1017.65	1021.43
M.H. 2-3	C.I. 2-2	108.35	1012.44	1011.62	0.75	42	0.010	63.44	6.59	113.57	3.50	1018.24	1023.22
C.I. 2-4	M.H. 2-3	121.35	1013.85	1012.64	1.00	36	0.010	63.44	8.98	86.58	3.00	1019.16	1022.46
C.I. 2-5	C.I. 2-4	119.00	1015.24	1014.05	1.00	36	0.010	62.02	8.77	86.70	3.00	1020.27	1020.74
C.I. 2-6	C.I. 2-5	281.00	1019.30	1016.24	1.09	24	0.010	15.26	4.86	30.68	2.00	1021.50	1025.17
C.I. 2-7	C.I. 2-6	99.73	1022.56	1020.56	2.01	15	0.010	9.70	8.32	11.89	1.09	1023.74	1027.48
C.I. 2-8	C.I. 2-7	277.00	1025.82	1023.05	1.00	15	0.010	5.96	6.58	8.39	0.78	1026.81	1031.52
C.I. 2-9	C.I. 2-8	34.00	1026.66	1026.32	1.00	15	0.010	3.61	5.58	8.40	0.57	1027.43	1031.52
C.I. 3-1	C.I. 2-4	35.00	1017.15	1016.10	3.00	15	0.010	0.68	0.55	14.54	1.25	1019.66	1022.44
F.I. 4-1	C.I. 2-5	142.77	1017.53	1016.24	0.90	30	0.010	29.88	6.09	50.68	2.50	1021.19	1026.51
C.I. 4-2	F.I. 4-1	140.00	1019.28	1018.02	0.90	24	0.010	28.30	9.01	27.89	2.00	1022.72	1027.68
C.I. 4-3	C.I. 4-2	34.00	1019.82	1019.48	1.00	24	0.010	24.81	7.90	29.40	2.00	1023.47	1027.68
F.I. 4-4	C.I. 4-3	128.00	1023.14	1020.58	2.00	15	0.010	11.70	9.53	11.87	1.25	1026.35	1031.99
C.I. 5-1	C.I. 2-5	34.00	1016.08	1015.74	1.00	15	0.010	2.73	2.22	8.40	1.25	1020.78	1020.74
C.I. 6-1	C.I. 2-6	34.00	1020.14	1019.80	1.00	15	0.010	4.01	3.27	8.40	1.25	1021.73	1025.17
F.I. 7-1	CONNECT 7-0	14.54	1023.49	1023.35	0.96	48	0.010	37.77	9.11	183.22	1.23	1025.32	1029.70
C.I. 7-2	F.I. 7-1	50.70	1024.29	1023.99	0.59	24	0.010	35.14	11.19	22.62	2.00	1026.72	1029.23
C.I. 7-3	C.I. 7-2	34.00	1024.99	1024.79	0.59	24	0.013	31.92	10.16	17.34	2.00	1028.17	1029.23
M.H. 7-4	C.I. 7-3	136.22	1026.51	1025.49	0.75	24	0.010	22.98	7.32	25.44	2.00	1029.65	1032.85
C.I. 7-5	M.H. 7-4	41.08	1027.42	1027.01	1.00	24	0.010	22.98	7.32	29.38	2.00	1030.23	1034.82
C.I. 7-6	C.I. 7-5	34.50	1028.27	1027.92	1.01	18	0.010	21.30	12.05	13.75	1.50	1031.40	1034.81
C.I. 7-7	C.I. 7-6	49.50	1029.26	1028.76	1.01	15	0.010	7.38	6.01	8.44	1.25	1032.69	1036.32
C.I. 8-1	C.I. 7-6	100.50	1029.77	1028.76	1.00	18	0.010	13.35	7.56	13.69	1.50	1033.27	1037.30
F.I. 8-2	C.I. 8-1	98.76	1031.25	1030.26	1.00	18	0.010	12.36	6.99	13.67	1.50	1034.43	1037.71
M.H. 9-2	E.S. 9-1	125.441	1014.39	1010	3.5	30	0.010	52.98	10.79	99.74	2.50	1018.4	1022.02
M.H. 9-3	M.H. 9-2	117.1	1019.19	1015.09	3.5	24	0.010	52.98	16.87	55.00	2.00	1023.89	1030.5
F.I. 9-4	M.H. 9-3	123.51	1022.98	1019.89	2.50	24	0.010	28.59	9.10	46.51	2.00	1026.83	1032.49
F.I. 9-5	F.I. 9-4	212.50	1030.50	1024.98	2.60	15	0.010	3.39	3.62	13.53	1.25	1031.24	1037.27
C.I. 10-1	M.H. 9-3	128.04	1024.02	1020.19	2.99	24	0.010	24.39	7.76	50.85	2.00	1026.54	1033.39
PLUG 10-2	C.I. 10-1	113.85	1026.43	1024.72	1.50	24	0.010	21.62	7.32	36.04	2.00	1028.09	1028.58
C.I. 11-1	C.I. 10-1	34.00	1027.72	1026.02	5.00	15	0.010	1.64	2.63	18.77	0.89	1028.23	1033.39
M.H. 12-2	E.S. 12-1	47.38	1011.39	1010.00	2.93	30	0.010	54.78	11.16	91.32	2.50	1017.66	1020.70
C.I. 12-3	M.H. 12-2	140.50	1014.70	1011.89	2.00	30	0.010	54.78	11.16	75.40	2.50	1019.92	1026.09
C.I. 12-4	C.I. 12-3	34.00	1015.88	1015.20	2.00	24	0.010	50.90	16.20	41.58	2.00	1021.72	1026.09
F.I. 12-5	C.I. 12-4	126.83	1022.32	1017.88	3.50	18	0.010	15.10	8.55	25.54	1.50	1024.90	1031.85
F.I. 12-6	F.I. 12-5	158.03	1027.56	1022.82	3.00	15	0.010	13.72	11.18	14.54	1.25	1029.58	1036.37
M.H. 13-1	C.I. 12-4	108.38	1018.01	1016.38	1.50	30	0.010	30.54	6.22	65.30	2.50	1023.70	1027.22
C.I. 13-2	M.H. 13-1	74.78	1019.63	1018.51	1.50	24	0.010	28.11	8.95	35.98	2.00	1024.63	1026.67
C.I. 13-3	C.I. 13-2	34.50	1020.65	1020.13	1.51	24	0.010	17.83	5.68	36.10	2.00	1025.25	1026.66
C.I. 13-4	C.I. 13-3	165.00	1023.88	1021.40	1.50	15	0.010	7.81	6.36	10.29	1.25	1026.88	1031.98
PLUG 13-5	C.I. 13-4	62.50	1027.40	1024.27	5.01	15	0.010	5.48	4.98	18.79	1.25	1028.35	1029.07
C.I. 14-1	C.I. 13-4	34.00	1026.98	1025.87	3.26	15	0.010	1.96	2.65	15.17	1.25	1027.54	1031.98
C.I. 15-1	M.H. 13-1	102.13	1023.58	1020.01	3.50	15	0.010	2.43	2.98	15.69	1.25	1024.20	1028.57

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Missouri Certificate of Authority #: 001592
1301 Burlington Street
North Kansas City, MO 64116
TEL 816.361.1177
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STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER
PE-2019000237
PROFESSIONAL ENGINEER
3/17/2020

REVISIONS

REV NO.	DATE	REVISIONS DESCRIPTION	BY

DRAINAGE TABLES
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

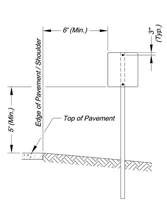
LEE'S SUMMIT, MISSOURI

2020

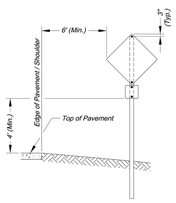
drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_DRN01_A192339
date: 3/17/2020

SHEET
C142

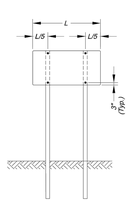
DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_DRN01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 10:18am XREFS: C_XBASE_A192339 C_PBASE_A192339 C_PBNDY_A192339 C_PTBLK_A192339
C_PSTRM_A192339 C_PTBLK_A192339



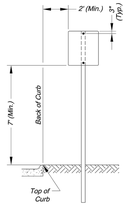
SIGN INSTALLATION FOR NON-CURBED STREET



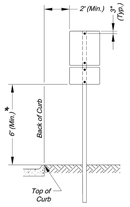
SIGN INSTALLATION WITH AUXILARY SIGN FOR NON-CURBED STREET



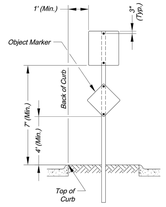
SIGN INSTALLATION WITH TWO SIGN POSTS



SIGN INSTALLATION FOR CURBED STREET



SIGN INSTALLATION WITH AUXILARY SIGN FOR CURBED STREET

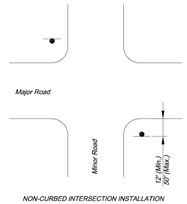


SIGN INSTALLATION FOR RAISED MEDIANS

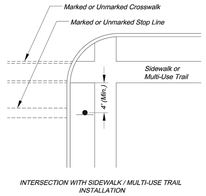
SIGN MOUNTING DETAILS

* The height to the bottom of a sign when it is located in a pedestrian walkway or extends into a walkway shall be a minimum of 80 inches above the walkway.

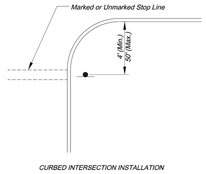
NOTE:
1. Generally, the sign mounting height should not be more than 1' greater than the minimum mounting height.



NON-CURBED INTERSECTION INSTALLATION

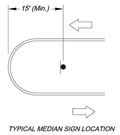


INTERSECTION WITH SIDEWALK / MULTI-USE TRAIL INSTALLATION



CURBED INTERSECTION INSTALLATION

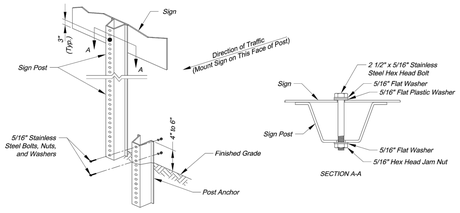
CONTROL SIGN LOCATION



TYPICAL MEDIAN SIGN LOCATION

MEDIAN SIGN LOCATION

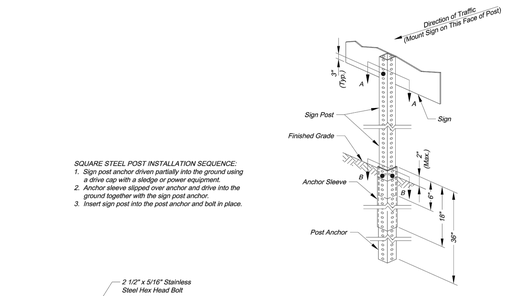
NOTES:
1. A 4" P.V.C. sleeve shall be installed in new concrete medians at each location where a sign is to be installed.
2. For existing concrete medians, a 4" hole shall be cored into the concrete.



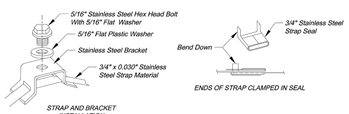
U-STEEL POST DETAILS

U-STEEL POST NOTES:
1. Splice shall be positioned entirely between finished grade line and 16" above finished grade line. Only one splice will be allowed per post.
2. U-Steel post shall be 3 lb./ft., galvanized according to ASTM A123.
3. U-Steel post can be used for installation of signs with an area of less than 2.5 square feet.
4. All posts shall be embedded a minimum of 3 feet.

PERMANENT SIGNING GENERAL NOTES:
1. All signing shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).
2. The Contractor is responsible for avoiding any and all utilities when installing sign posts, whether the utility is indicated on the plans or not.
3. All workmanship and materials shall be subject to the inspection and approval of the Public Works Department of the City of Lee's Summit.
4. The Contractor shall stake the location of all sign posts to be installed. The City Inspector shall inspect the staking prior to installation. Minor relocation to avoid conflicts may be allowed with the approval of the City Traffic Engineer or designee.
5. Signs shown to be installed on the side of metal poles shall be mounted with stainless steel straps or wing brackets as detailed. No signs are to be installed on wood poles. See Traffic Signal Standard Drawings for the installation of signs on mast arms.
6. All post mounted signs shall be installed with breakaway anchors according to the Standard Drawings.
7. All existing signs will be used in place during construction and protected from damage unless otherwise indicated in the plans. If the Contractor damages any existing sign or posts during construction, the Contractor will be required to replace the damaged materials with new signs or posts of the same type and size at the Contractor's expense. The Contractor shall be responsible for removing and storing any signs that are to be reinstalled on the project. All equipment shall be reinstalled in good condition.
8. Existing permanent signs and posts removed by the Contractor for construction purposes which are not to be reinstalled shall be delivered to the City's Public Works Maintenance Facility (1971 SE Hamblen Road). The Contractor shall be responsible for removing and storing equipment in good condition and is fully responsible for the equipment until it is delivered.
9. All Stop, Yield, or street name signs shall be maintained in a conspicuous location for the driving public. All Stop and Yield signs removed for construction purposes can be temporarily erected in reflectorized drums (no less than 7 feet above the pavement surface) until they can be reinstalled. Any temporary Stop or Yield sign installation to be left in place overnight will require prior approval from the City Inspector.

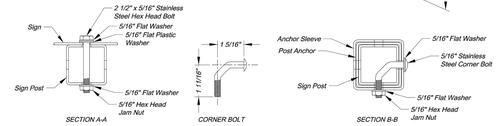


SQUARE STEEL POST INSTALLATION SEQUENCE:
1. Sign post anchor driven partially into the ground using a drive cap with a sledge or power equipment.
2. Anchor sleeve slipped over anchor and drive into the ground together with the sign post anchor.
3. Insert sign post into the post anchor and bolt in place.



STRAP TYPE SIGN SUPPORT DETAILS

METAL POLE SIGN MOUNTING NOTES:
1. Signs on metal poles shall be attached with two brackets and stainless steel bands.
2. Holes in sign for attachment to the mounting brackets shall be offset a minimum of 2 inches from the edge of the sign.
3. Holes in sign shall be located such that the sign is level.
4. All strap, bracket, and seal materials should be Type 201 stainless steel.



SQUARE STEEL POST DETAILS

SQUARE STEEL POST NOTES:
1. Square steel sign posts and break-away anchor shall consist of the following materials:
   Sign Post - 14 Ga. 2" x 2" Square Steel Post
   Post Anchor - 12 Ga. 2 ½" x 2 ½" x 36" Square Steel Post
   Anchor Sleeve - 12 Ga. 2 ½" x 2 ½" x 18" Square Steel Post
2. 14 Gauge posts must meet a certified minimum yield strength of 60,000 psi.
3. In all installations the first hole above the finished grade line on the sign post, anchor, and anchor sleeve must be in line for the insertion of the corner bolt.
4. The maximum area for one sign post is 9.0 square feet. A sign or combination of signs with an area greater than 9.0 square feet will require two posts. Also, signs with a width greater than 36" (not including 36" x 36" diamond shaped signs) will require two posts.

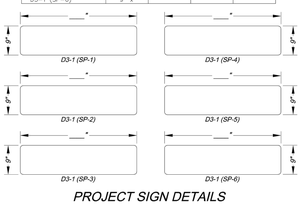
STANDARD ABBREVIATION LISTS

Named Streets	
Avenue	AVE
Boulevard	BLVD
Circle	CIR
Creek	CR
Court	CT
Crossing	XING
Drive	DR
Highway	HWY
Lane	LN
Parkway	PKWY
Place	PL
Road	RD
Street	ST
Terrace	TER
Trail	TRL
Way	WAY

Numbered Streets	
First	ST
Second	ND
Third	RD
Fourth to Tenth	TH

STREET NAME SIGN QUANTITIES

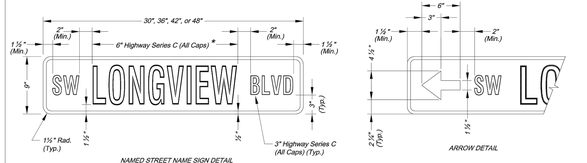
Sign Designation	Sign Size	Sign Area (Sq. Ft.)	Number	Quantity (Sq. Ft.)
D3-1 (SP-1)	9" x	Sq. Ft.	1	1
D3-1 (SP-2)	9" x			
D3-1 (SP-3)	9" x			
D3-1 (SP-4)	9" x			
D3-1 (SP-5)	9" x			
D3-1 (SP-6)	9" x			



STREET NAME SIGN BLANK DETAILS

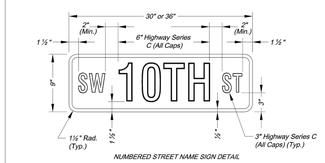
For Mounting on Square Steel Posts

PROJECT SIGN DETAILS



NAMED STREET NAME SIGN DETAIL

* Use Highway Series B (All Caps) in lieu of series C if necesary to fit text on a 36" sign blank.



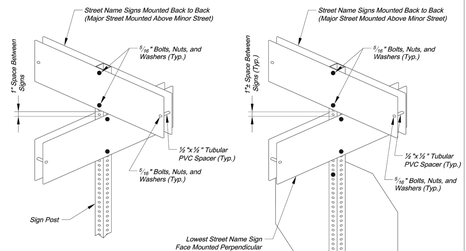
NUMBERED STREET NAME SIGN DETAIL

ARROW DETAIL

PRIVATE STREET TAG DETAIL

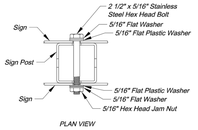
NOTES:
1. For all street name signs, the legend shall be white and the background shall be green.
2. Arrows shall be added to street name signs where the name of a street changes at an intersection. Street name signs with arrows are to be installed on each side of the intersection to indicate the change in names. Arrows shall be white.
3. The "PRIVATE STREET" tag should be added to the end of street name signs to indicate where a street that is outside the right-of-way intersects a public street. The background for the "PRIVATE STREET" tag shall be yellow.

STREET NAME SIGN FACE DETAILS



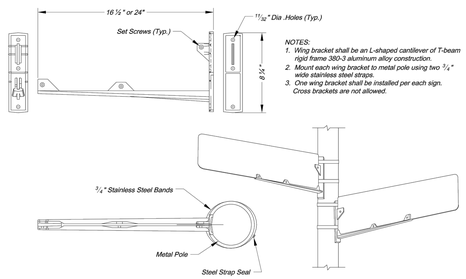
SIGNS INSTALLED SEPARATELY

SIGNS INSTALLED WITH OTHER SIGNS



PLAN VIEW

SQUARE STEEL POST MOUNTING DETAILS



NOTES:
1. Wing bracket shall be an L-shaped cantilever of T-beam rigid frame 380-3 aluminum alloy construction.
2. Mount each wing bracket to metal pole using two ⅝" wide stainless steel straps.
3. One wing bracket shall be installed per each sign. Cross brackets are not allowed.

WING BRACKET MOUNTING DETAILS

olsson
Olsson - Civil Engineering
Missouri Certificate of Authority #: 001592
1301 Burlington Street, Suite 400
North Kansas City, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER PE-2019000237
PROFESSIONAL ENGINEER
3/17/2020

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

SIGN DETAILS
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

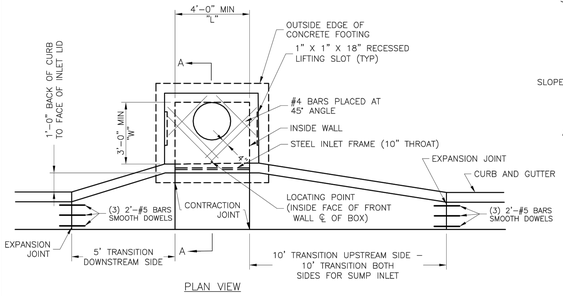
LEE'S SUMMIT, MISSOURI

2020

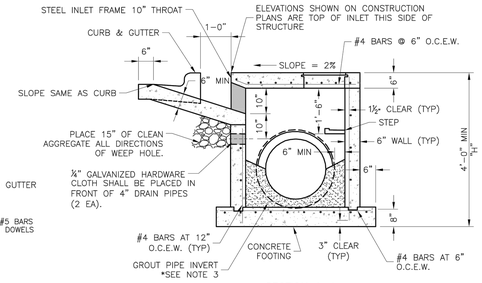
drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_DTL01_A192339
date: 3/17/2020

SHEET
C143

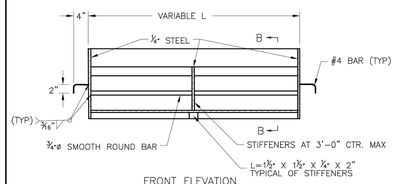
DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_DTL01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 9:49am XREFS: C_PTBLK_A192339



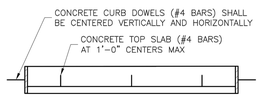
PLAN VIEW



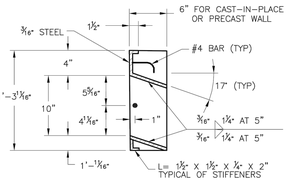
SECTION A–A



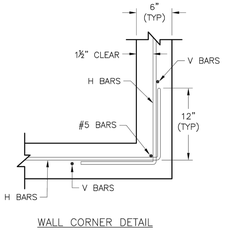
FRONT ELEVATION



PLAN VIEW



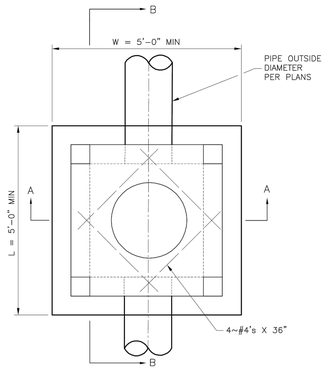
SECTION B–B



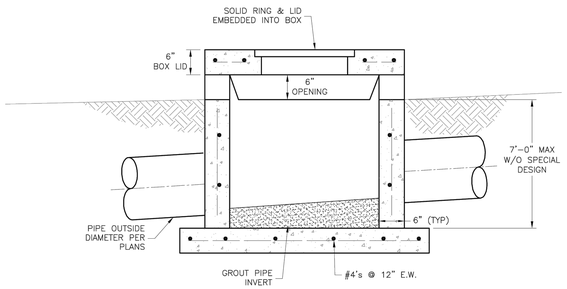
WALL CORNER DETAIL

STEEL FRAME NOTES:
1. ALL WELDS SHALL BE PERFORMED IN ACCORDANCE WITH APPROPRIATE AWS SPECIFICATIONS AND PROCEDURES.
2. ALL WELDS ON EXPOSED SURFACES SHALL BE DRESSED SO AS TO PROVIDE A PLEASING FINISHED APPEARANCE.
3. THE ENTIRE FRAME SHALL BE PAINTED A SINGLE COAT OF CHEM–PRIME #37H–78 PRIMER (GRAY) OR EQUAL.

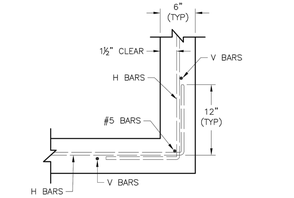
GENERAL NOTES:
1. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION.
2. FLOW LINES LISTED ON THE PROJECT PLANS ARE LISTED AT THE INSIDE FACE OF THE WALL.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
4. LOCATE MH RING AND COVER ON BLANK WALL IF POSSIBLE.
5. STEPS SHALL BE SPACED AT 1'–4" O.C. VERTICALLY ON BLANK WALL IF POSSIBLE.
6. BEVEL ALL EXPOSED EDGES WITH ¾"CHAMFER OR ¾" TOOLED EDGE.
7. ON–GRADE INLETS SHALL CONFORM TO THE STREET GRADE AND SUMP INLETS SHALL BE LEVEL.
8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON–SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
9. LIFTING RINGS SHALL BE REMOVED AND SEALED WITH NON–SHRINKABLE GROUT
10. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.



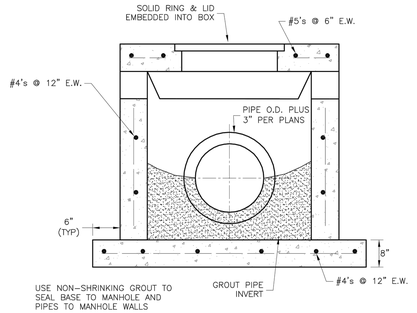
PLAN VIEW



SECTION B–B

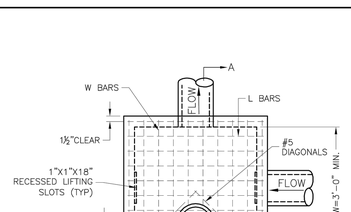


WALL CORNER DETAIL

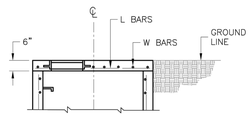


SECTION A–A

GENERAL NOTES:
1. LOCATE RING AND COVER OVER OUTLET ON BLANK WALL.
2. USE ¾" CHAMFER ON ALL EXPOSED CONCRETE CORNERS.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
4. STEPS REQUIRED AT 16" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 3' ON BLANK WALL IF POSSIBLE.
5. BOXOUTS WILL NOT BE ALLOWED TO PROJECT THROUGH THE CORNERS OF THE STRUCTURE.
6. THE MINIMUM REINFORCING SHALL BE 1 H–BAR OVER A CAST–IN–PLACE PIPE AND 2 H–BARS OVER A PRECAST BOXOUT.
7. SHOW FIELD INLET ORIENTATION ON PLANS PLUS NUMBER AND SIDE OF OPENINGS.
8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON–SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
9. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.



PLAN

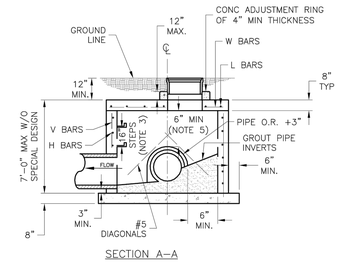


SLAB TOP ALTERNATE FOR JUNCTION BOX (SHALLOW)

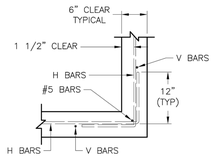
** INCREASE IN MULTIPLES OF 6" (7'–0") MAX WITHOUT SPECIAL DESIGN. (SEE PROJECT PLANS FOR DETAILS)

REINFORCING

BARS	BAR SIZE	SPACING (IN.)
H	4	12
V	4	12
L	5	6
W	5	6

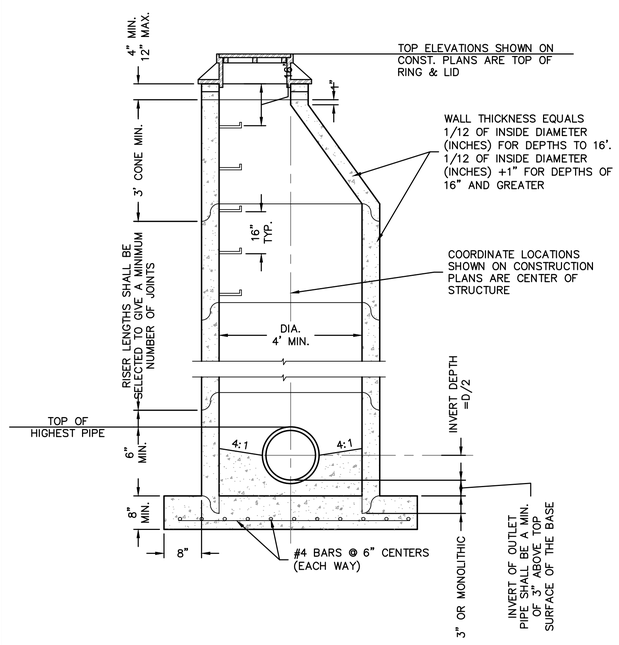


SECTION A–A



WALL CORNER DETAIL

GENERAL NOTES:
1. LOCATE RING AND COVER ON BLANK WALL.
2. USE ¾" CHAMFER STRIP OR ½" R EDGER TOOL ON ALL EXPOSED CONCRETE CORNERS.
3. STEPS REQUIRED AT 16" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 4' ON BLANK WALL IF POSSIBLE.
4. BOXOUTS WILL NOT BE ALLOWED TO PROJECT THROUGH THE CORNERS OF THE STRUCTURE AND THE MINIMUM DISTANCE BETWEEN BOXOUTS IS 6".
5. THE MINIMUM REINFORCING SHALL BE 1 H–BAR OVER A CAST–IN–PLACE PIPE AND 2 H–BARS OVER A PRECAST BOXOUT.
8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON–SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
9. REINFORCING OF COVERS IN STREETS REQUIRE SPECIAL DESIGN.
10. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.



STANDARD PRECAST STORM SEWER MANHOLE
NOT TO SCALE

STORM MANHOLE NOTES

1. ALL MANHOLES ARE TO BE PRECAST CONCRETE AND OF ECCENTRIC CONE TYPE UNLESS OTHERWISE SPECIFIED.
2. MANHOLE TOP ADJUSTMENTS SHALL BE ACCOMPLISHED BY THE USE OF CONCRETE ADJUSTMENT RINGS.
3. TOP OF MANHOLE CASTING SHALL BE SET FLUSH AND ON SAME SLOPE AS FINISHED SURFACE OR AS DIRECTED BY THE ENGINEER.
4. REINFORCEMENT IN ALL SECTIONS SHALL EQUAL OR EXCEED A.S.T.M. C–478 SPECIFICATIONS.
5. THE ENGINEER SHALL DESIGNATE MODIFICATIONS FOR MANHOLES WITH SPECIAL DESIGNS.
6. THE INSIDE DIAMETER OF THE MANHOLE SHALL BE 4'–0" FOR PIPE DIAMETERS FROM 12" THRU 24", 5'–0" FOR PIPE DIAMETERS FROM 27" THRU 36", AND 6'–0" FOR PIPE DIAMETERS 42" THRU 48".
7. CLEARANCE TOLERANCE OF PIPE OPENINGS: THE MAXIMUM ALLOWABLE PIPE OPENING ON A HORIZONTAL AXIS SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 12". THE MAXIMUM ALLOWABLE PIPE OPENING ON VERTICAL AXIS SHALL BE THE OUTSIDE DIAMETER PLUS 8". THE MAXIMUM CLEARANCE BETWEEN THE OUTSIDE SURFACE OF AN INSTALLED PIPE AND THE CONCRETE OF THE MANHOLE SHALL BE 2".
8. INSTALLATION OF PIPE OPENINGS: ALL REQUIRED PIPE OPENINGS SHALL BE PLANT CAST IN MANHOLE UNITS. FIELD ALTERATIONS OF OPENINGS WILL BE PERMITTED PROVIDED WALLS ARE SCORED WITH A MASONRY SAW TO A DEPTH SUFFICIENT TO SEWER REINFOECING STEEL. A CHIPPING HAMMER MAY THEN BE USED TO REMOVE THE CONCRETE. MINIMUM DISTANCE BETWEEN ANY TWO ADJACENT PIPES SHALL BE 2".
9. NO DIRECT PAYMENT FOR SHAPING FLOOR OR CONNECTING PIPES AS SHOWN ON PLANS.
10. RING AND COVER TO BE NEENAH R–1736, CLAY & BAILEY #2008, DEETER # 1316, OR APPROVED EQUAL. (CASTING MAY VARY BY MUNICIPALITY, REFER TO PLANS & CONTRACT DOCUMENTS.)

olsson
Olsson - Civil Engineering
Missouri Certificate of Authority # 001592
1301 Burlington Street Suite 400
North Kansas City, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER PE-2019000237
PROFESSIONAL ENGINEER
3/17/2020

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

STORM SEWER DETAILS
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

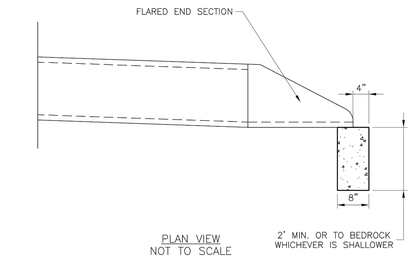
2020

LEE'S SUMMIT, MISSOURI

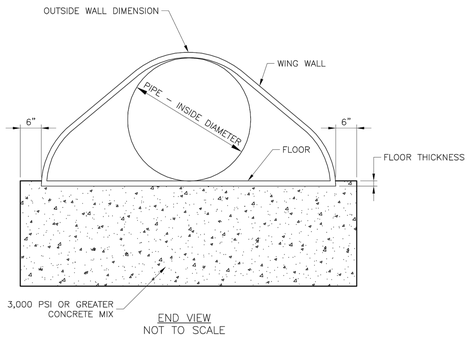
drawn by:	GS
checked by:	SS
designed by:	BMW
QA/QC by:	JES
project no.:	A19-2339
drawing no.:	C_DTL01_A192339
date:	3/17/2020

SHEET
C144

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_DTL01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 9:49am XREFS: C_PTBLK_A192339



PLAN VIEW
NOT TO SCALE



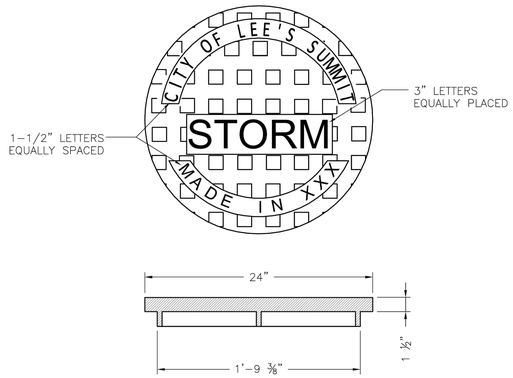
END VIEW
NOT TO SCALE

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

FLARED END SECTION SUPPORT DETAIL

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

STM-5



STANDARD 24" MANHOLE COVER
MINIMUM WEIGHT = 160 LB
NOTE: PICK HOLES NOT SHOWN

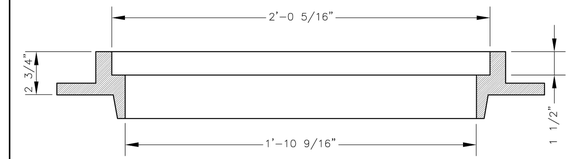
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCT LIST.

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

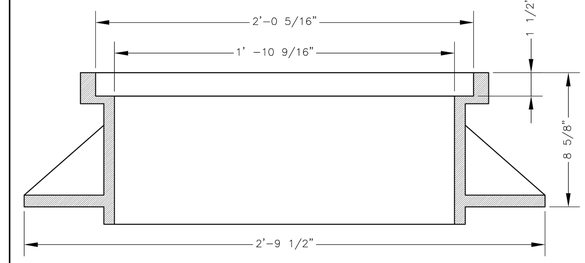
STORM MANHOLE COVER DETAIL

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

STM-6



SLAB MANHOLE FRAME
LEE'S SUMMIT PART NO.: LS103A
MINIMUM WEIGHT = 145 LB



STANDARD 24" MANHOLE FRAME
LEE'S SUMMIT PART NO.: LS101A
MINIMUM WEIGHT = 250 LB

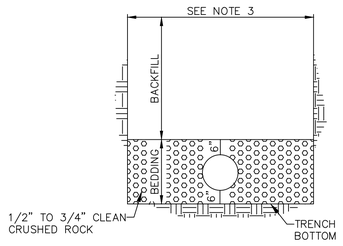
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCTS LIST.

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

STORM MANHOLE FRAME DETAIL

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

STM-7



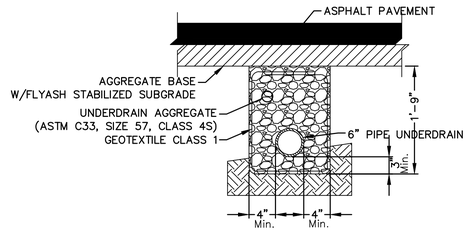
TYPICAL SECTION FOR PLASTIC PIPE
(IN ROCK OR SOIL)

UNDERGROUND PIPE INSTALLATION FOR STORM SEWER LINES
N.T.S.

1. BACKFILL SHALL BE JOB EXECAVATED MATERIAL FREE FROM DEBRIS AND STONES COMPACTED TO 90% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698. BACKFILL UNDER PAVEMENT (EXISTING OR PROPOSED), SHALL BE FLOWABLE FILL.

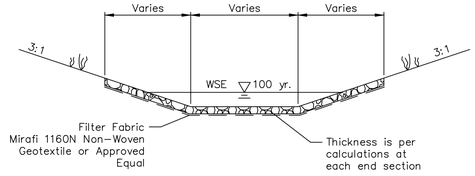
2. TRENCH BANKS MAY BE CUT BACK ON SLOPES IN ACCORDANCE WITH CURRENT OSHA REGULATIONS, BUT ONLY IN AREAS WHERE THE INCREASED TRENCH WIDTH WILL NOT INTERFERE WITH SURFACE FEATURES. SLOPES MUST NOT EXTEND BELOW TOP OF BEDDING.

3. MINIMUM AND MAXIMUM WIDTHS SHALL BE IN ACCORDANCE WITH PIPE MANUFACTURER'S RECOMMENDATION AS APPROVED ON ENGINEERING PLANS.



PIPE UNDERDRAIN LATERAL
N.T.S.

NOTES:
1. Where Pipe Underdrains are used, all Underdrain Outlet Pipes shall be solid wall with watertight joints. All Outlets Pipes shall be tied into the nearest storm sewer inlets at roadway sag locations as indicated in the street profile.
2. All Underdrain Pipes shall be installed at a minimum slope of 1%.
3. Underdrain Pipe shall be installed with the perforations placed down.
4. Blanket Underdrain Aggregate, Pipe Underdrain Aggregate, Pipe Underdrain, Edge Underdrain and Outlet Pipe shall conform to City of Lee's Summit Specifications.
5. Overlap geotextile at top of trench a minimum of 12".



NOTE: DIMENSIONS ARE PER
CALCULATIONS AT EACH END SECTION

RIPRAP DETAIL
N.T.S.

olsson
Olsson - Civil Engineering
Missouri Certificate of Authority #: 001592
1301 Burlington Street | Suite 100
North Kansas City, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER
PE-2019000237
PROFESSIONAL ENGINEER
3/17/2020

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

STORM SEWER DETAILS (2)
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

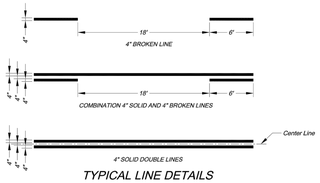
2020

LEE'S SUMMIT, MISSOURI

drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_DTL01_A192339
date: 3/17/2020

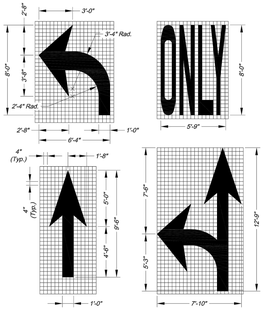
SHEET
C145

DWG: F:\2019\2001-2500\019-2339-A\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET & STORM\C_DTL01_A192339.dwg USER: bworthley
DATE: Mar 18, 2020 9:49am XREFS: C_PTBLK_A192339



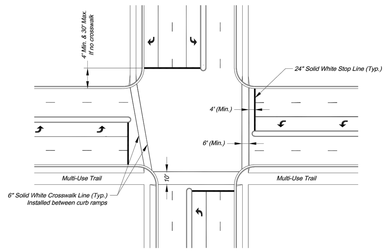
TYPICAL LINE DETAILS

NOTES:
1. All edge line, center line, and lane line pavement markings shall be 4" wide unless otherwise noted.
2. Edge lines shall be continuous solid white or yellow lines. Right side edge lines shall be solid white. Median or left side edge lines on divided roadways are to be solid yellow. Edge lines and center lines shall be continuous across driveways.



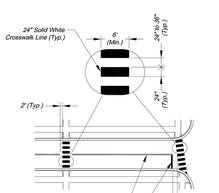
ARROW AND SYMBOL DETAILS

NOTES:
1. All arrow and symbol markings shall be white, and shall be centered in their respective traffic lanes.
2. Right-turn and combination right-turn/straight arrows are reverse of arrows shown.

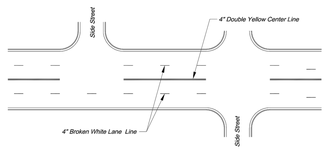


TYPICAL INTERSECTION MARKINGS

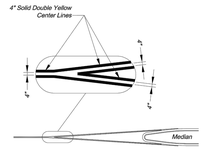
NOTES:
1. Transverse crosswalk lines shall be installed such that the distance between lines is at least 6 or 10 feet.
2. Stop lines are required at signalized intersections, on multi-lane stop controlled approaches, or in front of crosswalks at controlled intersections.



TYPICAL MIDBLOCK OR SCHOOL CROSS WALK



TYPICAL MARKINGS FOR FOUR-LANE UNDIVIDED ROADWAY



TYPICAL MEDIAN NOSE CENTER LINE DETAIL

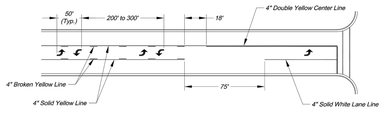
PAVEMENT MARKING GENERAL NOTES:
1. All pavement markings shall be in accordance with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).
2. All words and symbols shall conform to the latest edition of Standard Alphabets for Highway Signs and Pavement Markings printed by the U.S. Department of Transportation, Federal Highway Administration.
3. Pavement markings, either temporary or permanent are required at all times if the roadway is open to traffic.
4. All pavement markings that conflict with the desired markings shall be completely removed. Removals shall not leave the road surface scarred with an image that misleads traffic. Any excess damage or scarring of pavement shall be repaired at the Contractor's expense.
5. The proposed permanent markings shall be laid out by the Contractor in advance of the marking installation. Markings shall not be applied until the layout has been approved by the City Traffic Engineer.
6. Center lines shall be marked on all undivided arterial streets, and any other undivided street with more than two lanes and/or a speed limit of 30 mph or more.
7. Edge lines shall be marked on all non-curbed streets.

CITY OF LEE'S SUMMIT
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
PHONE: (816) 969-1800 FAX: (816) 969-1809

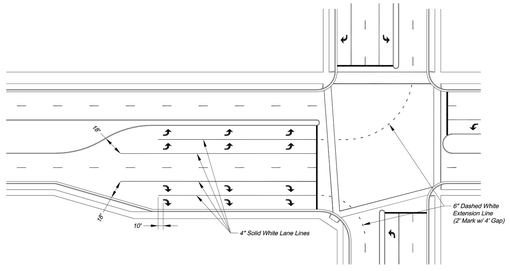
Project:
ROADWAY MARKING DETAILS
Sheet Name: STANDARD DRAWING PM-1

Drawn By: AS
Checked By: JW
Date: 09/09/2009
Project#

1 OF 2
1

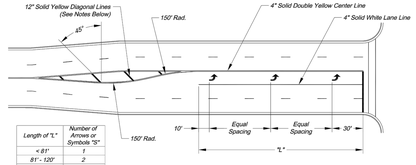


TYPICAL MARKINGS FOR TWO-WAY LEFT-TURN LANE



TYPICAL DUAL TURN LANE MARKINGS

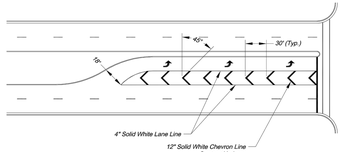
NOTE:
1. Dashed extension lines shall not extend through crosswalks.



Length of "L"	Number of Arrows or Symbols "S"
< 81'	1
81' - 120'	2
121' - 200'	3
201' - 280'	4
281' - 360'	5
361' - 440'	6

TYPICAL TURN LANE MARKINGS

NOTES:
1. Diagonal lines are required between centerlines if the width of the area between the center lines is greater than 12' and/or the length of the area between center lines is greater than 250'.
2. Diagonal lines should be spaced at 5' increments, equal to the posted speed limit.
3. Equal Spacing is calculated as (L - 40) / (S - 1).
4. When a through lane of traffic terminates as a mandatory turn lane, Arrow and "ONLY" symbols should be marked in the turn lane, in alternating order. The first and last symbols should be Arrows.



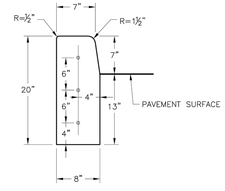
TYPICAL STRIPED OUT TURN LANE MARKINGS

CITY OF LEE'S SUMMIT
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
PHONE: (816) 969-1800 FAX: (816) 969-1809

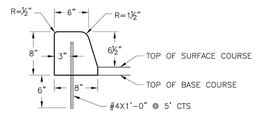
Project:
INTERSECTION MARKING DETAILS
Sheet Name: STANDARD DRAWING PM-2

Drawn By: AS
Checked By: JW
Date: 09/09/2009
Project#

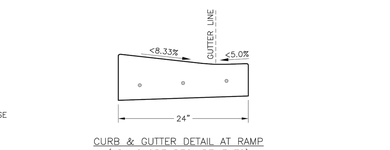
2 OF 2
2



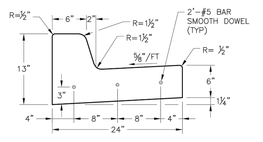
STRAIGHT CURB
(TYPE C-1)



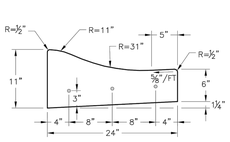
DOWELLED CURB
(TYPE DC)



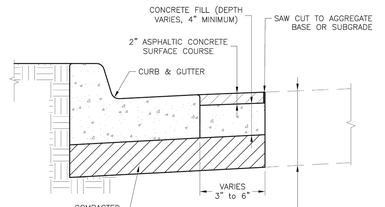
CURB & GUTTER DETAIL AT RAMP
(ADA SLOPE REQUIREMENTS)



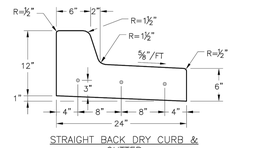
STRAIGHT BACK CURB & GUTTER
(TYPE CG-1)



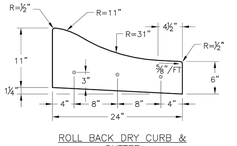
ROLL BACK CURB & GUTTER
(TYPE CG-2)



CURB REPLACEMENT DETAIL



STRAIGHT BACK DRY CURB & GUTTER
(TYPE CG-1 DRY)



ROLL BACK DRY CURB & GUTTER
(TYPE CG-2 DRY)

GENERAL NOTES

1. ¾" ISOLATION JOINTS WITH 3 (2'-#5 BAR) SMOOTH DOWELS SHALL BE PLACED AT RADIUS POINTS AND AT 150' INTERVALS. THESE DOWEL BARS SHALL BE GREASED AND WRAPPED ON ONE END WITH EXPANSION TUBES.
2. 3" DEEP CONTRACTION JOINTS SHALL BE INSTALLED AT APROXIMATELY 10' INTERVALS. THESE JOINTS SHALL PASS ACROSS THE ENTIRE CURB SECTION.
3. CONCRETE FILL SHALL HAVE UNIFORM AND SMOOTH FINISH
4. KCMMB 4K CONCRETE SHALL BE USED FOR ALL CURB.
5. ASPHALTIC CONCRETE SURFACE COURSE SHALL CONFORM TO STANDARD SPECIFICATIONS SECTION 2205.2.
6. CURBS FOR NEW STREETS SHALL BE BUILT ON ASPHALT OR AGGREGATE BASE AS SHOWN IN TYPICAL SECTION DETAIL.
7. WHITE CURING COMPOUND MUST BE APPLIED UNIFORMLY TO THE CONCRETE SURFACE IMMEDIATELY AFTER FINAL FINISHING.

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

Project:
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Sheet Name: CURB & GUTTER DETAIL

Drawn By: MJF
Checked By: DL
Date: 04/17
Proj.#:

GEN-4

olsson
Olsson - Civil Engineering
Missouri Certificate of Authority #: 001592
1301 Burlington Street | Suite 400
North Kansas City, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER PE-2019000237
3/17/2020
PROFESSIONAL ENGINEER

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

ROAD DETAILS
STREET & STORM SEWER PLANS

OSAGE
FIRST PLAT

2020

LEE'S SUMMIT, MISSOURI

drawn by: GS
checked by: SS
designed by: BMW
QA/QC by: JES
project no.: A19-2339
drawing no.: C_DTL01_A192339
date: 3/17/2020

SHEET
C146

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DATE: Mar 18, 2020 9:49am XREFS: C_PTBLK_A192339