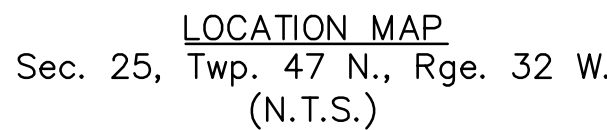


NW 1/4 SECTION 25, TOWNSHIP 47 N, RANGE 32 W
IN LEE'S SUMMIT, JACKSON COUNTY, MO



☒ NOT FOR CONSTRUCTION

☐ REVIEWED FOR CONSTRUCTION



A TRACT OF LAND IN THE NORTHWEST QUARTER OF SECTION 25, TOWNSHIP 47 NORTH, RANGE 32 WEST OF THE 5TH PRINCIPAL MERIDIAN IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI, AND A PORTION OF TRACT E, OF HAWTHORN RIDGE 1ST PLAT, A SUBDIVISION OF LAND RECORDED AS DOCUMENT 2019E0020897 IN BOOK 182 AT PAGE 83, IN THE OFFICE OF RECORDER OF DEEDS FOR JACKSON COUNTY, MISSOURI ALL BEING BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHWEST CORNER OF SAID NORTHWEST QUARTER OF SECTION 25; THENCE SOUTH 87°46'49" EAST ON THE SOUTH LINE OF SAID NORTHWEST QUARTER, 2,653.29 FEET TO THE SOUTHEAST CORNER OF SAID NORTHWEST QUARTER, (CENTER OF SECTION) AND THE POINT OF BEGINNING OF THE TRACT OF LAND TO BE HEREIN DESCRIBED; THENCE ON SAID SOUTH LINE OF SAID NORTHWEST QUARTER, NORTH 87°46'49" WEST, 577.00 FEET; THENCE LEAVING SAID SOUTH LINE, NORTH 02°13'11" EAST, 135.00 FEET; THENCE NORTH 87°46'49" WEST, 50.79 FEET; THENCE NORTH 02°18'36" EAST, 596.57 FEET; THENCE SOUTH 87°41'24" EAST, 37.00 FEET; THENCE NORTH 02°18'36" EAST, 192.00 FEET; THENCE NORTH 87°41'24" WEST, 75.58 FEET; THENCE NORTH 02°18'36" EAST, 39.05 FEET; THENCE NORTH 33°13'50" WEST, 218.11 FEET TO THE SOUTHWESTERLY CORNER OF LOT 21 OF SAID HAWTHORN RIDGE 1ST PLAT; THENCE ON THE SOUTHERLY LINE OF SAID HAWTHORN RIDGE 1ST PLAT THE FOLLOWING 9 CALLS, NORTH 54°57'38" EAST, 130.00 FEET; THENCE SOUTH 35°02'22" EAST, 58.00 FEET; THENCE NORTH 54°57'38" EAST, 175.90 FEET; THENCE SOUTH 65°30'07" EAST, 95.33 FEET; THENCE SOUTH 87°41'24" EAST, 121.73 FEET; THENCE NORTH 02°18'36" EAST, 78.00 FEET; THENCE SOUTH 87°41'24" EAST, 175.00 FEET; THENCE NORTH 02°18'36" EAST, 72.00 FEET; THENCE SOUTH 87°41'24" EAST, 130.00 FEET TO THE SOUTHEASTERLY CORNER OF LOT 28 OF SAID HAWTHORN RIDGE 1ST PLAT AND A POINT ON THE EAST LINE OF SAID NORTHWEST QUARTER; THENCE ON SAID EAST LINE, SOUTH 02°18'36" WEST, 1,392.58 FEET TO THE POINT OF BEGINNING. CONTAINING 827.409 SQUARE FEET OR 19.00 ACRES, MORE OR LESS.

BENCHMARK

RR SPIKE IN SOUTH FACE OF POWER POLE ON NORTH SIDE OF SW. HOOK ROAD, IMMEDIATELY WEST OF DRIVEWAY FOR HOUSE#1622. ELEVATION= 1024.63'

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

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

11/23/2020
DATE

olsson

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COVER SHEET
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

drawn by: _____ OLS
checked by: _____ BMW
approved by: _____ BMW
QA/QC by: _____ JES
project no.: _____ A19-1605
drawing no.: C TTL01 A191605
date: 10/02/2020

SHEET
C100

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 WITHOUT 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 OR CONSIDER THE 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, CAT NO 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 1/2 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

ESTIMATE OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	AS-BUILT
STREET				
	EXCAVATION	C.Y.	5712	
	EMBANKMENT	C.Y.	12363	
	SUBGRADE STABILIZATION (6" FLYASH TREATMENT)	S.Y.	5481	
	SUBGRADE STABILIZATION (9" FLYASH TREATMENT)	S.Y.	2962	
	6" ASPHALT PAVEMENT	S.Y.	4540	
	7.5" ASPHALT PAVEMENT	S.Y.	2625	
	CONCRETE CURB & GUTTER (CG-1)	L.F.	1371	
	CONCRETE CURB & GUTTER (CG-2)	L.F.	2771	
	MILL & OVERLAY	S.Y.	31	
	ADA RAMP	EA.	4	
	STOP SIGNS	EA.	2	
	STREET NAME SIGNS	EA.	6	
	END OF ROAD TREATMENT	EA.	1	
STORM				
	STD. CURB INLET (5'x3' INSIDE)	EA.	11	
	STD. CURB INLET (5'x4' INSIDE)	EA.	1	
	STD. FIELD INLET (4'x4' INSIDE)	EA.	1	
	RAISE EXISTING JUNCTION BOX (6'x6' INSIDE)	V.F.	5.06	
	15" RCP	L.F.	103.17	
	15" HDPE	L.F.	1295.35	
	24" HDPE	L.F.	85.23	
	48" HDPE	L.F.	122.83	
	60" HDPE	L.F.	197.33	
	15" HDPE END SECTION	EA.	1	
	60" CMP END SECTION	EA.	1	
	RIPRAP	S.Y.	88.5	
	CONNECTION TO EXISTING STRUCTURE	EA.	1	
	CONNECTION TO EXISTING PIPE	EA.	2	

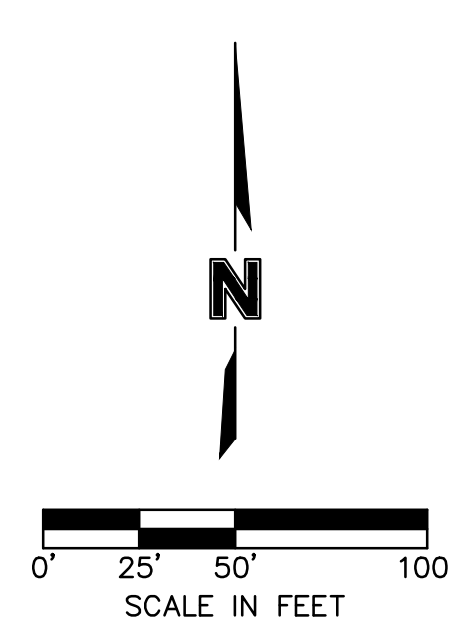
CONTROL POINT TABLE

Point Number	Northing	Easting	Point Elevation	Raw Description
90009	981383.7330 ¹	2813865.4520 ²	1064.23 ³	CP 60D
90012	981431.6120 ¹	2813832.1000 ²	1062.71 ³	CP 60D
90033	981440.4750 ¹	2814063.8700 ²	1047.98 ³	CP 60D
90044	981710.8560 ¹	2814198.8050 ²	1027.00 ³	CP 60D
90052	981859.5430 ¹	2814200.2150 ²	1017.51 ³	CP 60D
90056	981975.4580 ¹	2814144.8570 ²	1011.69 ³	CP 60D
90080	981971.2190 ¹	2814227.5570 ²	1016.72 ³	CP 60D

VERTICAL CONTROL IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). THE DEVELOPER IS ADVISED TO USE BENCHMARK INFORMATION FOR VERTICAL CONTROL.

HORIZONTAL CONTROL (CONTROL POINT INFORMATION) IS BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAVD83). THE DEVELOPER IS ADVISED TO USE CONTROL POINT INFORMATION FOR HORIZONTAL CONTROL.

drawn by: _____ checked by: _____ QA/QC by: _____ project no.: _____ drawing no.: C TLT01 A191605 date: 10/02/2020 OLDS BMWV BMWV JES A19-1605		GENERAL NOTES STREET & STORM SEWER PLANS HAWTHORN RIDGE THIRD PLAT		2020	LEE'S SUMMIT, MO		
		REVISIONS		REV. NO.	DATE	REVISIONS DESCRIPTION	BY
							
							
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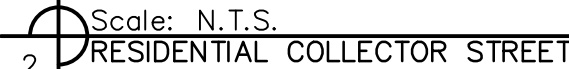
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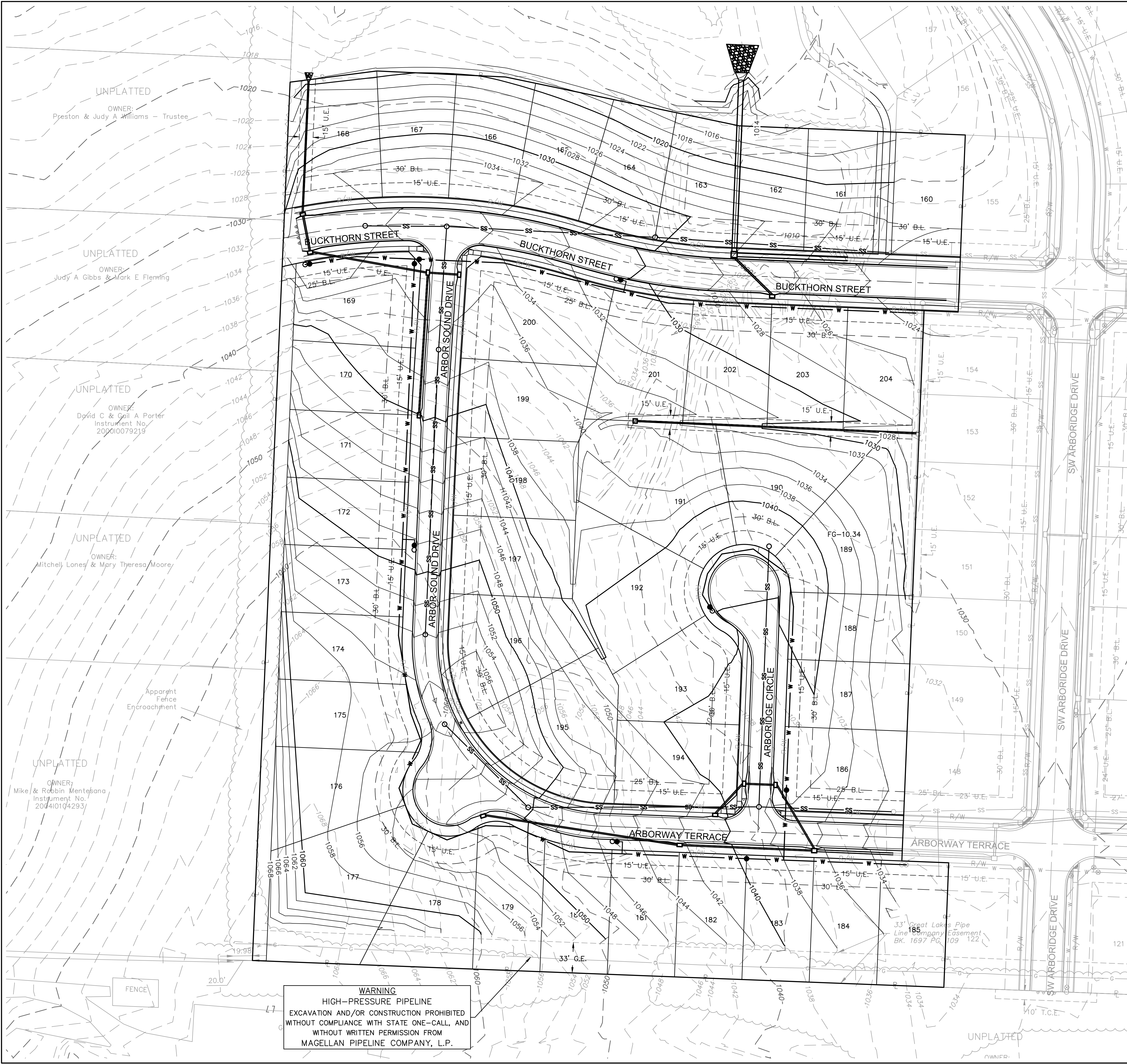
GENERAL LAYOUT STREET & STORM SEWER PLANS	
HAWTHORN RIDGE THIRD PLAT	
LEE'S SUMMIT, MO	2020

drawn by: _____ OLS
checked by: _____ BMW
approved by: _____ BMW
QA/QC by: _____ JES
project no.: _____ A19-1605
drawing no.: C GEN01 A191605
date: _____ 10/02/2020

SHEET
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USER: bworthley



GENERAL NOTES:

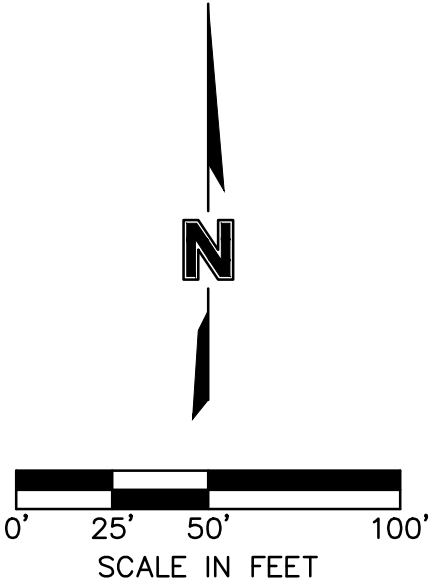
1. CONTRACTOR SHALL ADHERE TO THE "DESIGN AND CONSTRUCTION MANUAL" SECTION 2100 AS ADOPTED BY THE CITY OF LEE'S SUMMIT (LATEST EDITION), FOR EXCAVATION AND EMBANKMENT WORK WITHIN THE PROPOSED RIGHT-OF-WAY.

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.

LOT FILL INFORMATION			
LOT NUMBER	MAX DEPTH OF FILL (OVER 2' PLACED)	FILL PLACED ON EXISTING SLOPES > 5:1	PROPOSED SLOPES > 3:1
160			
161	17.3	X	
162	19.5	X	
163	20.4	X	
164	12.5	X	
165	10.2		
166	10.3		
167	10.1		
168	9.1		
169			
170			
171			
172			
173			
174			
175			
176			
177			
178			
179			
180			
181			
182			
183			
184			
185			
186	3.9	X	
187	7.3	X	
188	10.8	X	
189	12.9	X	
190	13.4		
191	11.0		
192	6.1		
193	4.9		
194			
195	3.6		
196	3.6		
197			
198			
199			
200			
201		X	
202	6.8	X	
203	6.8	X	
204	5.8	X	
X Indicates condition applies to lot			

X Indicates condition applies to lot



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	10,423	8,630
SITE	50,641	44,871
TOTAL	61,064	53,501

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.

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

HAWTHORN RIDGE THIRD PLAT

LEE'S SUMMIT, MO

2020

REVISIONS:

BY



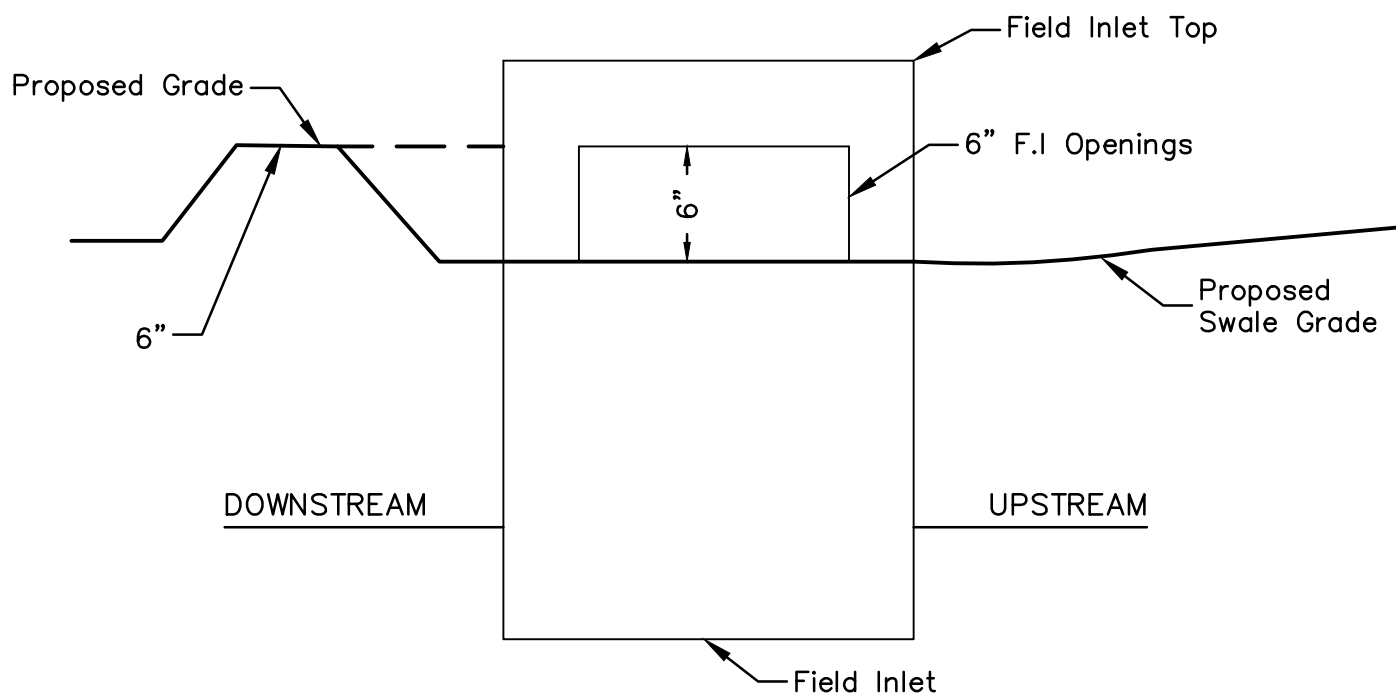
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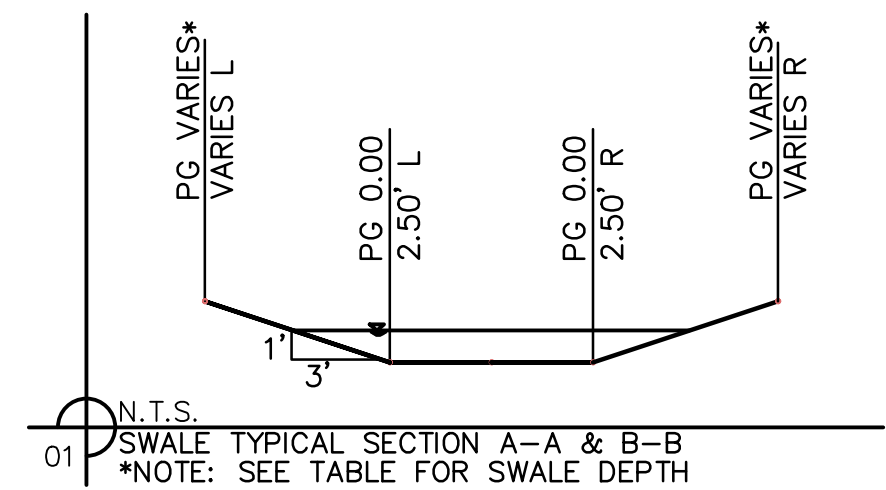


NOTE: INCLUDE SUMP PER ABOVE DETAIL WHERE FIELD INLETS ARE LOCATED WITHIN SWALES.

SUMP DETAIL
N.T.S.

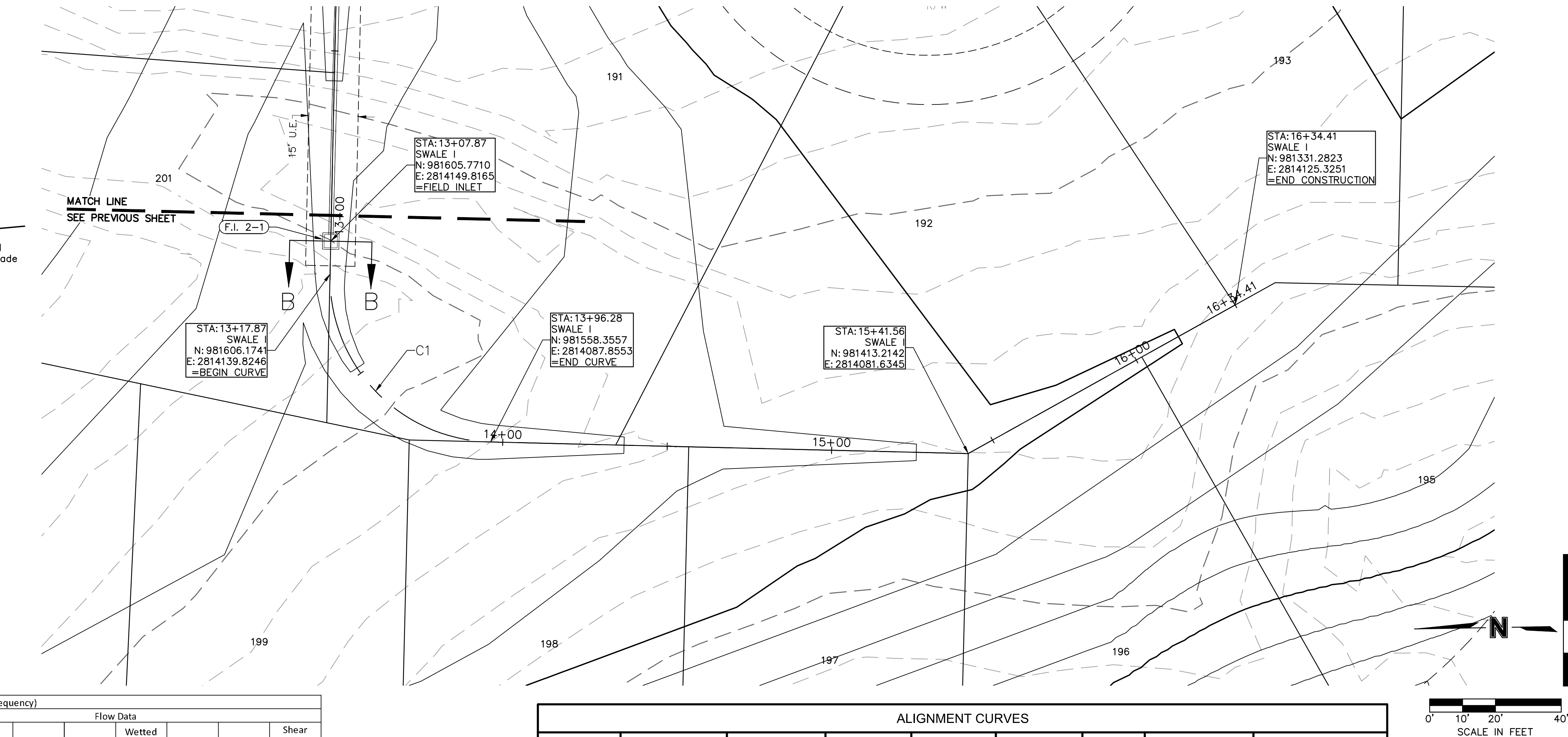
Swale Drainage Area Table (100 year Return Frequency)						
Section	Drainage Area (ac.)	C	Tc (min)	i (in/hr)	K	Peak Flow (cfs)
A-A	0.79	0.51	5	10.32	1.25	5.20
B-B	1.13	0.51	5	10.32	1.25	7.43

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%	1.30	3:1	3:1	5.00	5.20	0.30	1.77	2.94	6.90	6.80	0.43	0.36
B-B	0.03	2.25%	1.37	3:1	3:1	5.00	7.43	0.37	2.26	3.29	7.34	7.22	0.54	0.43

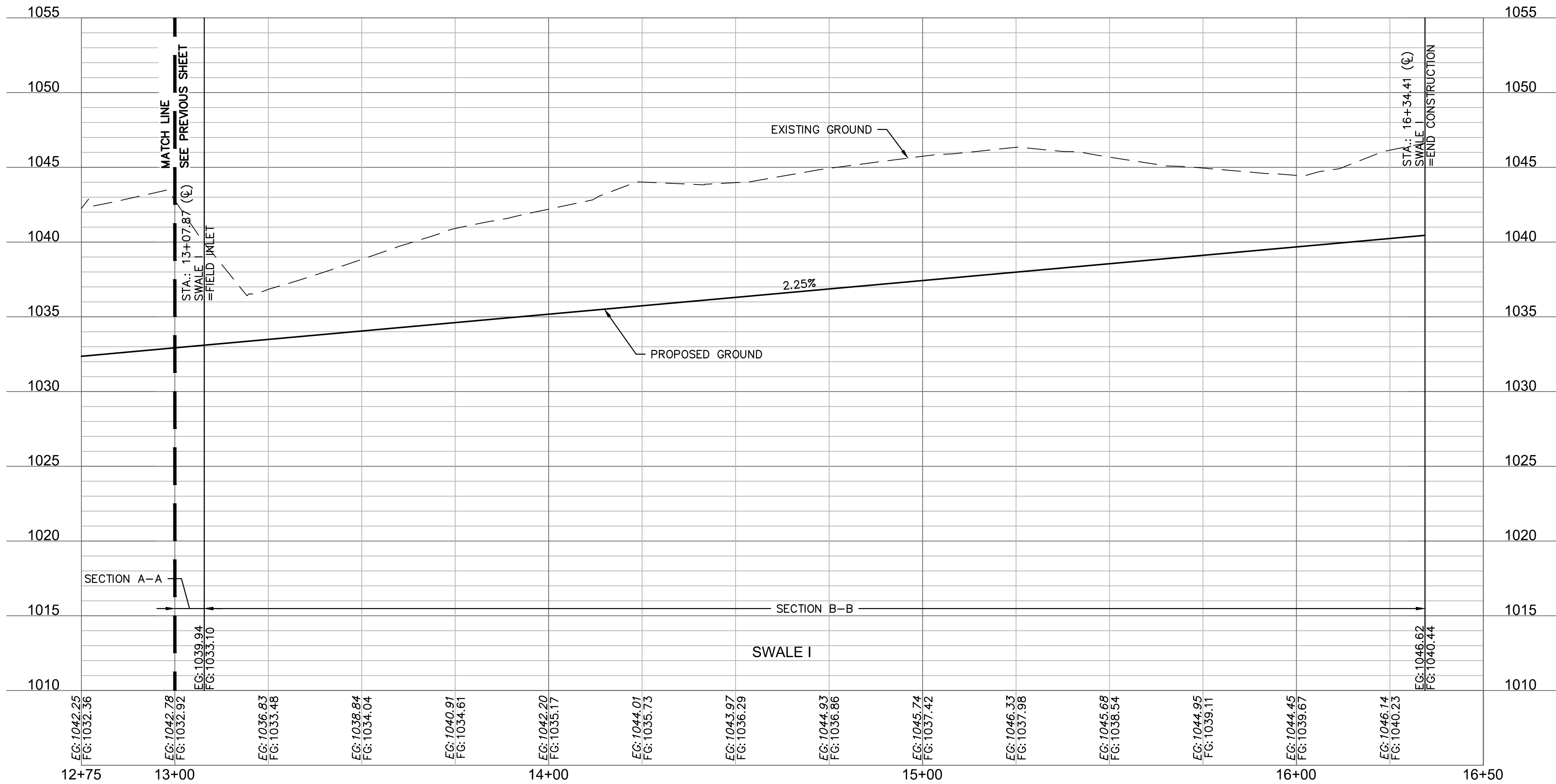


SWALE GRADING NOTES:

- CONTRACTOR SHALL CONSTRUCT SWALES WITH MINIMUM SLOPE, WIDTH AND DEPTH AS SHOWN IN THE SWALE DESIGN TABLES.
- 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.



ALIGNMENT CURVES								
CURVE ID #	STATION RANGE	START COORD.	END COORD.	RADIUS (FT)	LENGTH (FT)	DELTA	CHORD BEARING	CHORD LENGTH (FT)
C1	13+17.87 13+96.28	N: 981606.17 E: 2814139.82	N: 981558.36 E: 2814087.86	50.00	78.41	089°51'21"	S47°22'55"W	70.62



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STATE OF MISSOURI
BROCK M. WORTHLEY
Professional Engineer
PE-2019000237
11/28/2020

BY

REVISIONS DESCRIPTION

DATE

REV. NO.

SWALE PLAN AND PROFILE (CONT)
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

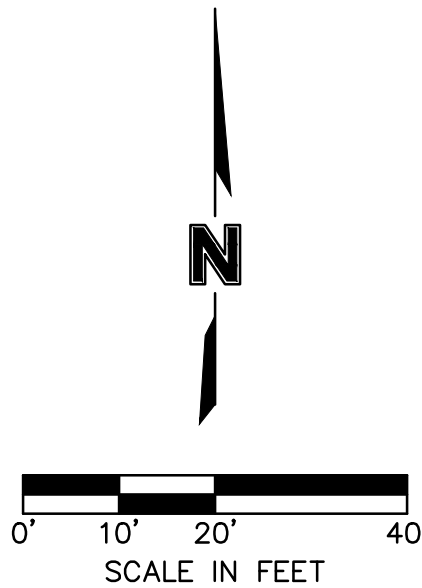
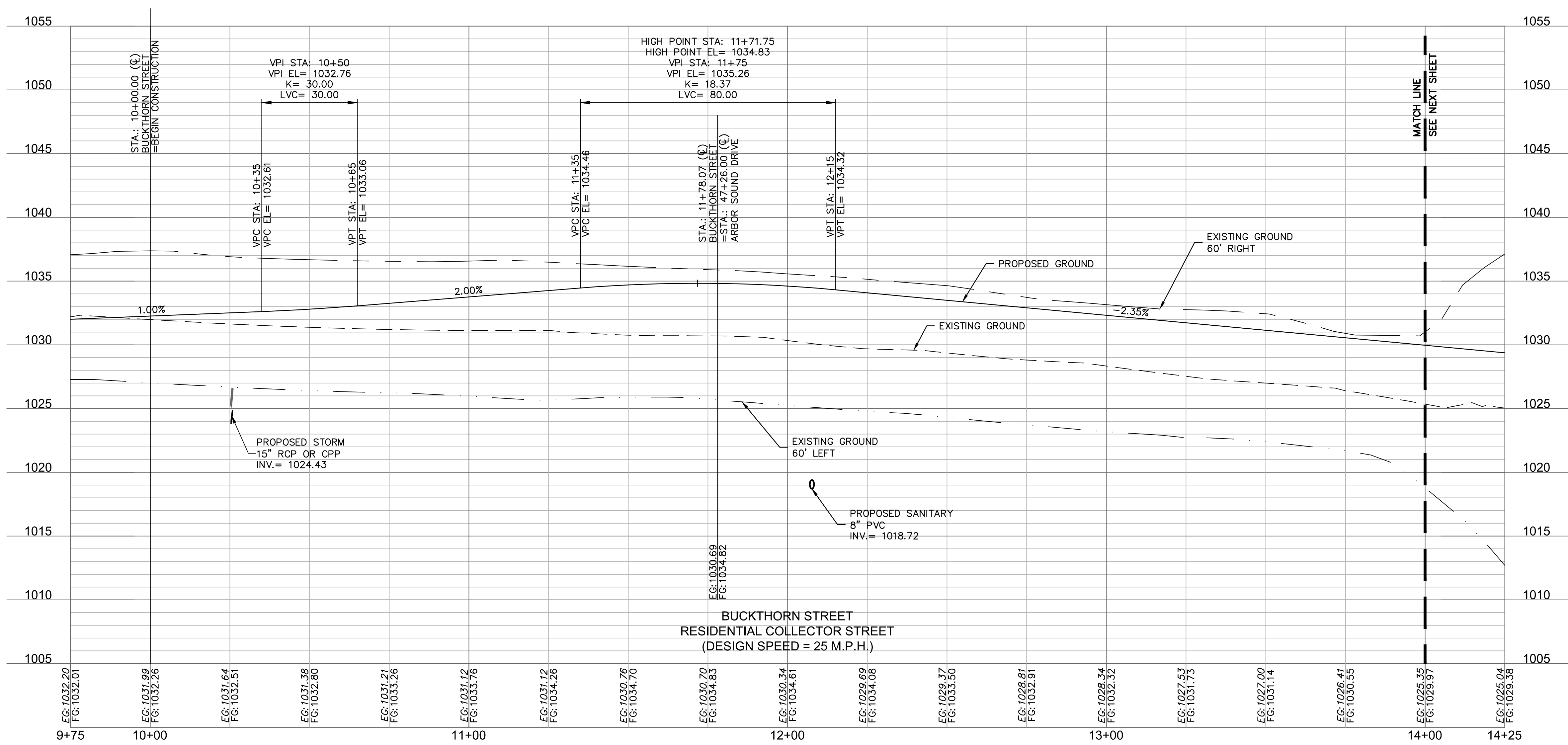
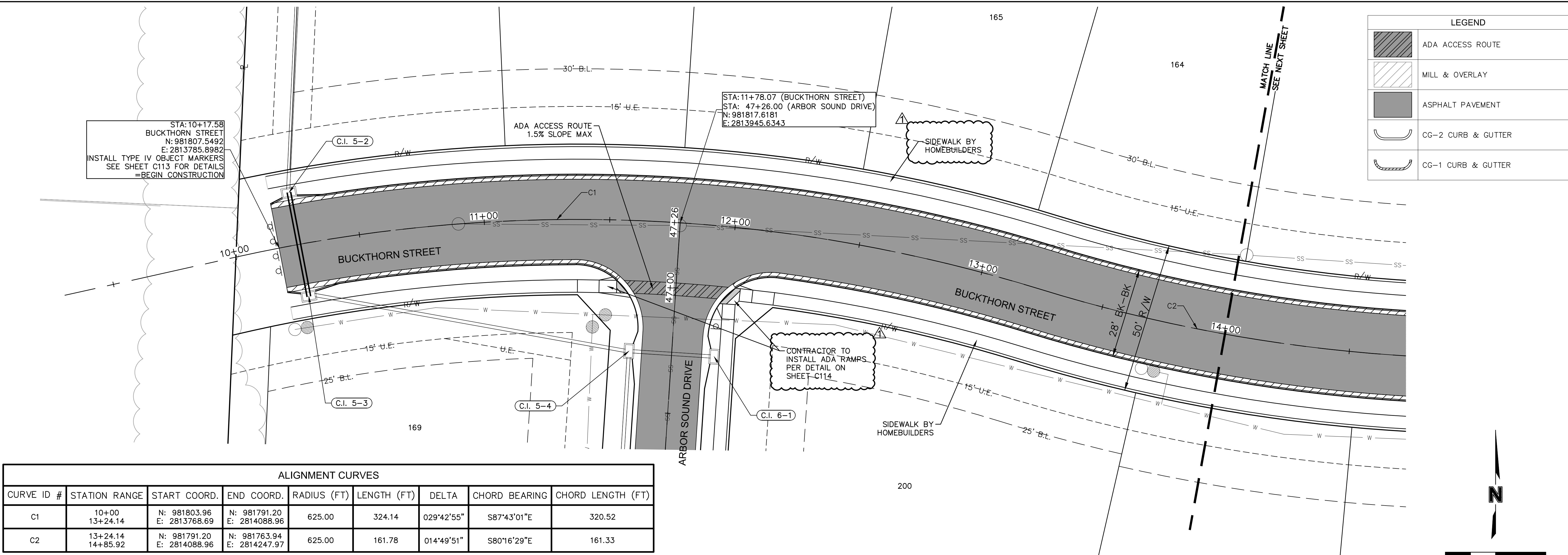
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drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C-SWM.01_A191605
date: 10/22/2020

SHEET
C106

2020

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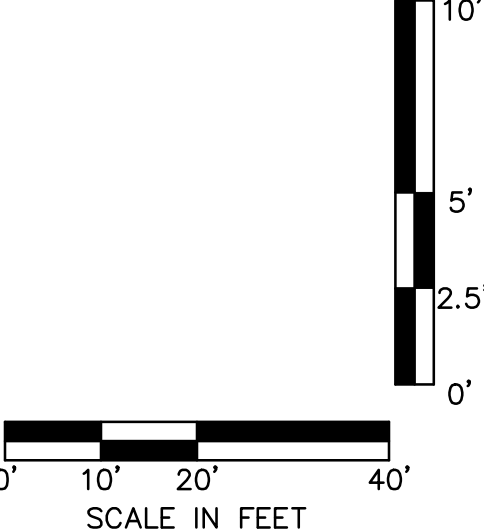
STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER
PE-2019000237
11/23/2020
PROFESSIONAL ENGINEER

BY
REV. NO.
DATE
REVISIONS DESCRIPTION
REVISED PER CITY COMMENTS

ROADWAY PLAN AND PROFILE (BUCKTHORN STREET)
STREET & STORM SEWER PLANS
HAWTHORN RIDGE
THIRD PLAT
LEE'S SUMMIT, MO
2020

drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: C-PP01_A191605
drawing no.: 10022020

SHEET
C107



LEGEND	
	ADA ACCESS ROUTE
	MILL & OVERLAY
	ASPHALT PAVEMENT
	CG-2 CURB & GUTTER
	CG-1 CURB & GUTTER

ROADWAY PLAN AND PROFILE (ARBORWAY TERRACE) STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

drawn by: _____ OLS
checked by: _____ BMW
approved by: _____ BMW
QA/QC by: _____ JES
project no.: _____ A19-1605
drawing no.: C RPP02 A191605
date: _____ 10/02/2020

SHEET
C109

STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER
PE-2019000237
11/23/2020
PROFESSIONAL ENGINEER

[illegible]

REVISIONS

2020

LEE'S SUMMIT, MO

drawn by: _____ OLS
checked by: _____ BMW
approved by: _____ BMW
QA/QC by: _____ JES
project no.: _____ A19-1605
drawing no.: C RPP02 A191605
date: _____ 10/02/2020

SHEET
C109

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MO 64116

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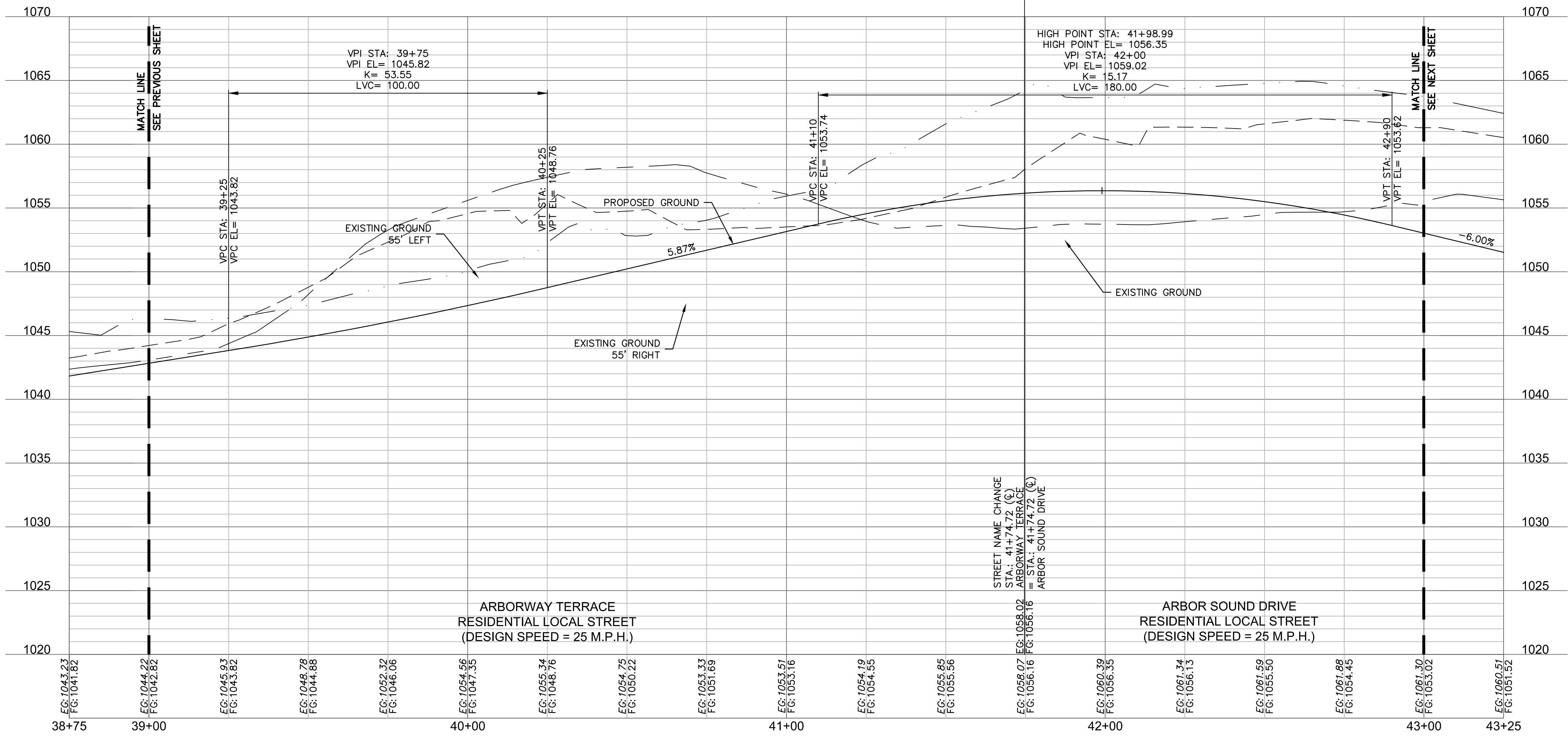
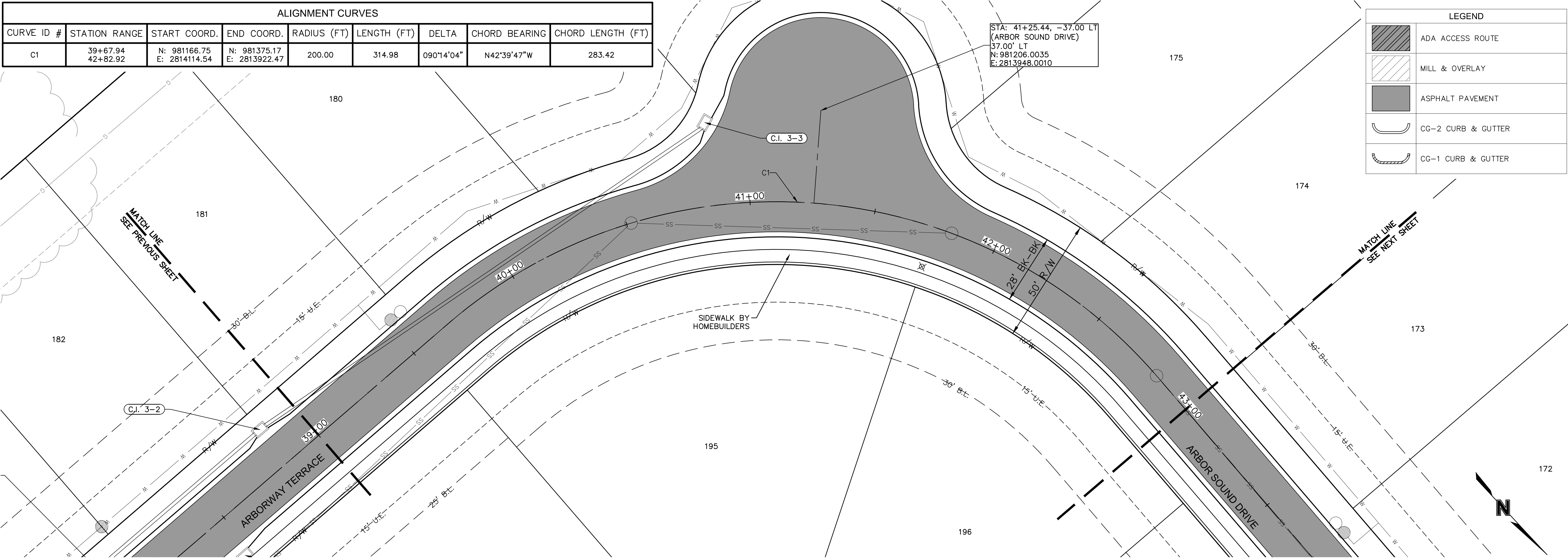
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USER: bworthley

ALIGNMENT CURVES								
CURVE ID #	STATION RANGE	START COORD.	END COORD.	RADIUS (FT)	LENGTH (FT)	DELTA	CHORD BEARING	CHORD LENGTH (FT)
C1	39+67.94 42+82.92	N: 981166.75 E: 2814114.54	N: 981375.17 E: 2813922.47	200.00	314.98	090°14'04"	N42°39'47"W	283.42



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STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER
PE-2019000237
11/18/2020
PROFESSIONAL ENGINEER

BY
DATE
REV. NO.
REVISIONS DESCRIPTION

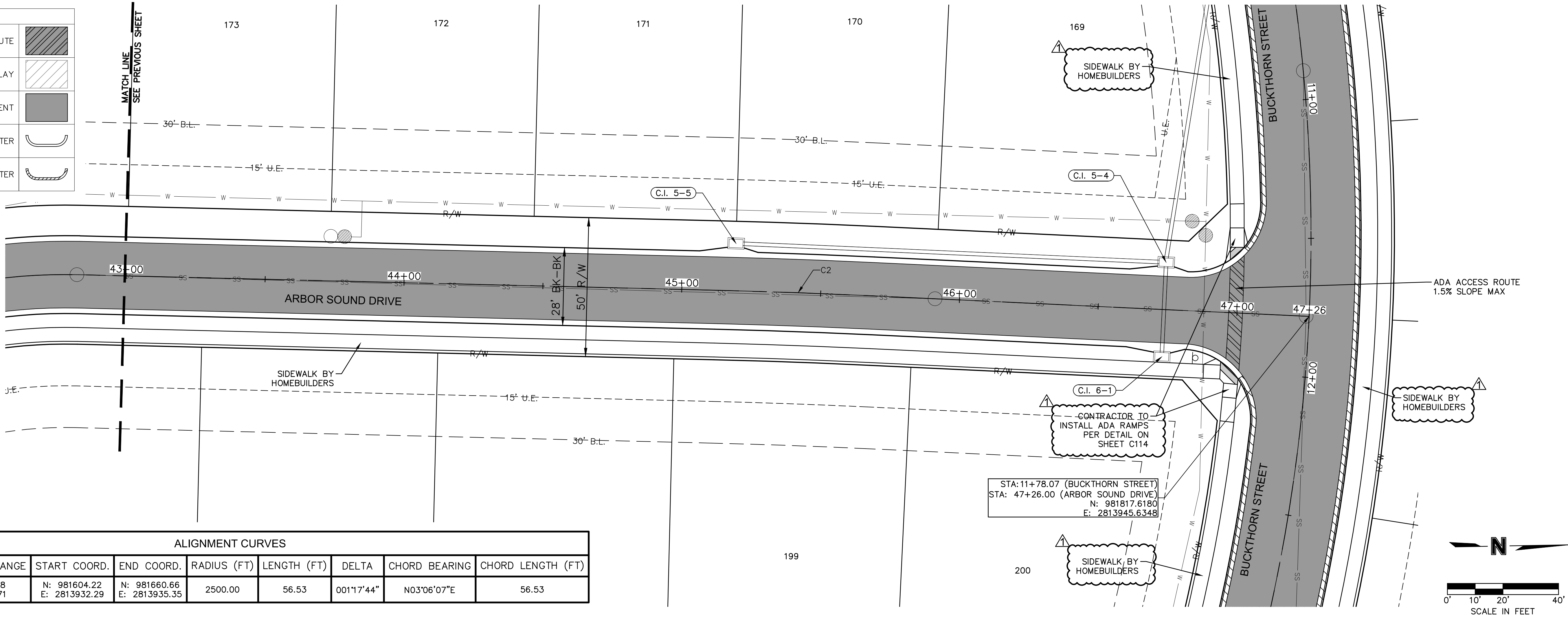
ROADWAY PLAN AND PROFILE (ARBORWAY TERRACE CONT)
STREET & STORM SEWER PLANS
HAWTHORN RIDGE
THIRD PLAT
LEE'S SUMMIT, MO
2020

drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C-REPO2_A191605
date: 10/02/2020

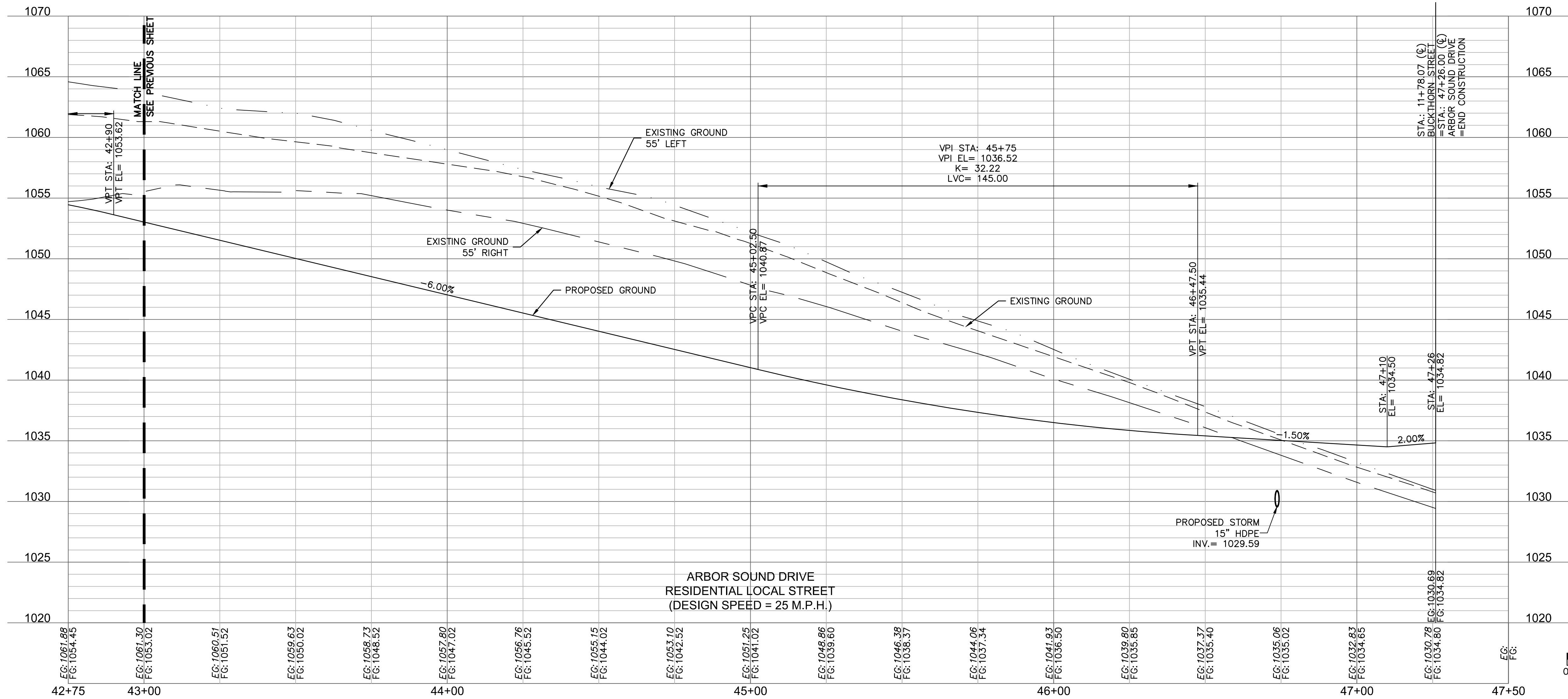
SHEET
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USER: bworthley

LEGEND	
ADA ACCESS ROUTE	
MILL & OVERLAY	
ASPHALT PAVEMENT	
CG-2 CURB & GUTTER	
CG-1 CURB & GUTTER	



ALIGNMENT CURVES								
CURVE ID #	STATION RANGE	START COORD.	END COORD.	RADIUS (FT)	LENGTH (FT)	DELTA	CHORD BEARING	CHORD LENGTH (FT)
C2	45+12.18 45+68.71	N: 981604.22 E: 2813932.29	N: 981660.66 E: 2813935.35	2500.00	56.53	001°17'44"	N03°06'07"E	56.53



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STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER
PE-2019000237
11/23/2020
PROFESSIONAL ENGINEER

BY

REVISIONS DESCRIPTION

DATE

REV. NO.

REVISED PER CITY COMMENTS

ROADWAY PLAN AND PROFILE (ARBORWAY TERRACE CONT)
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

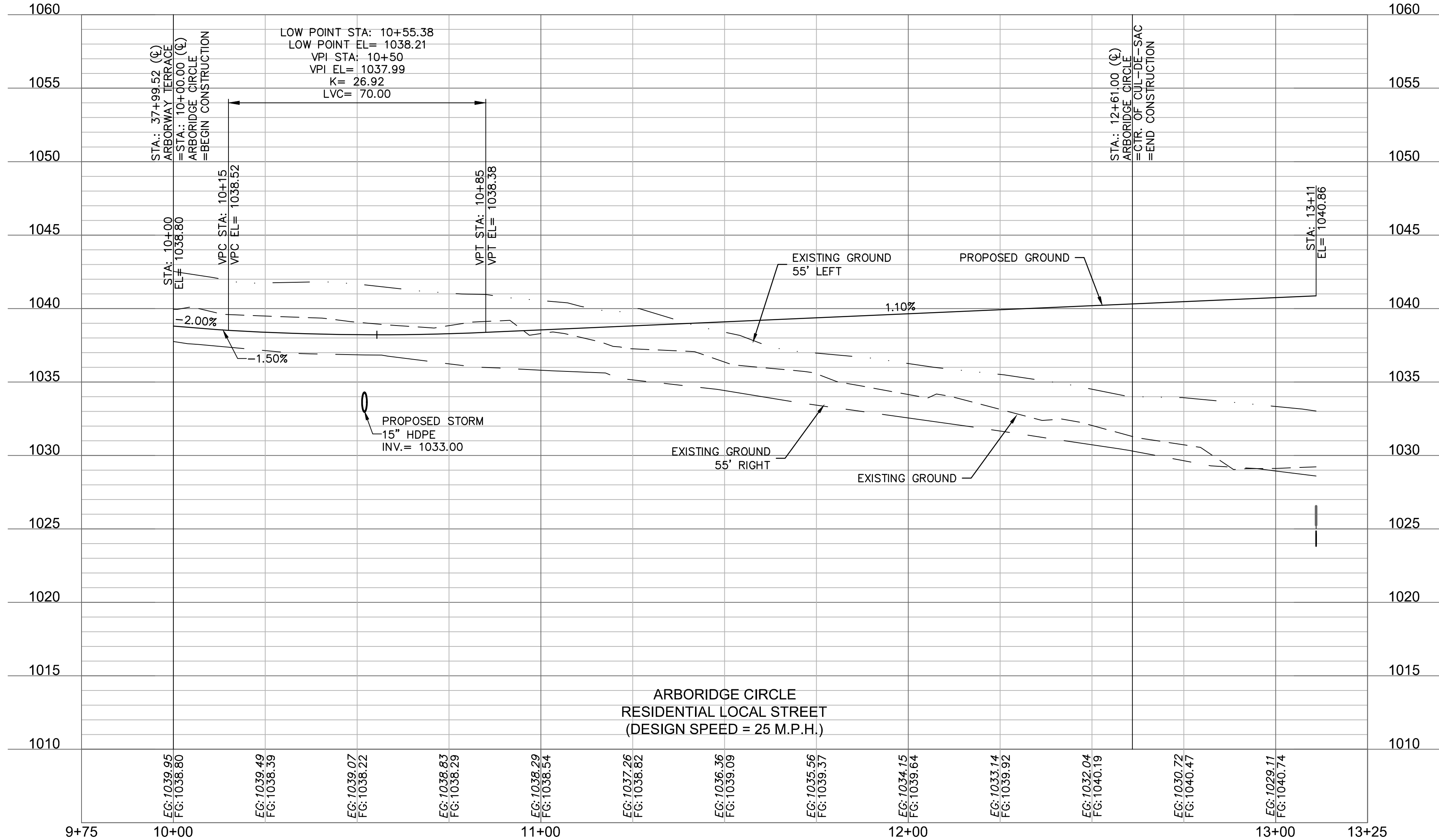
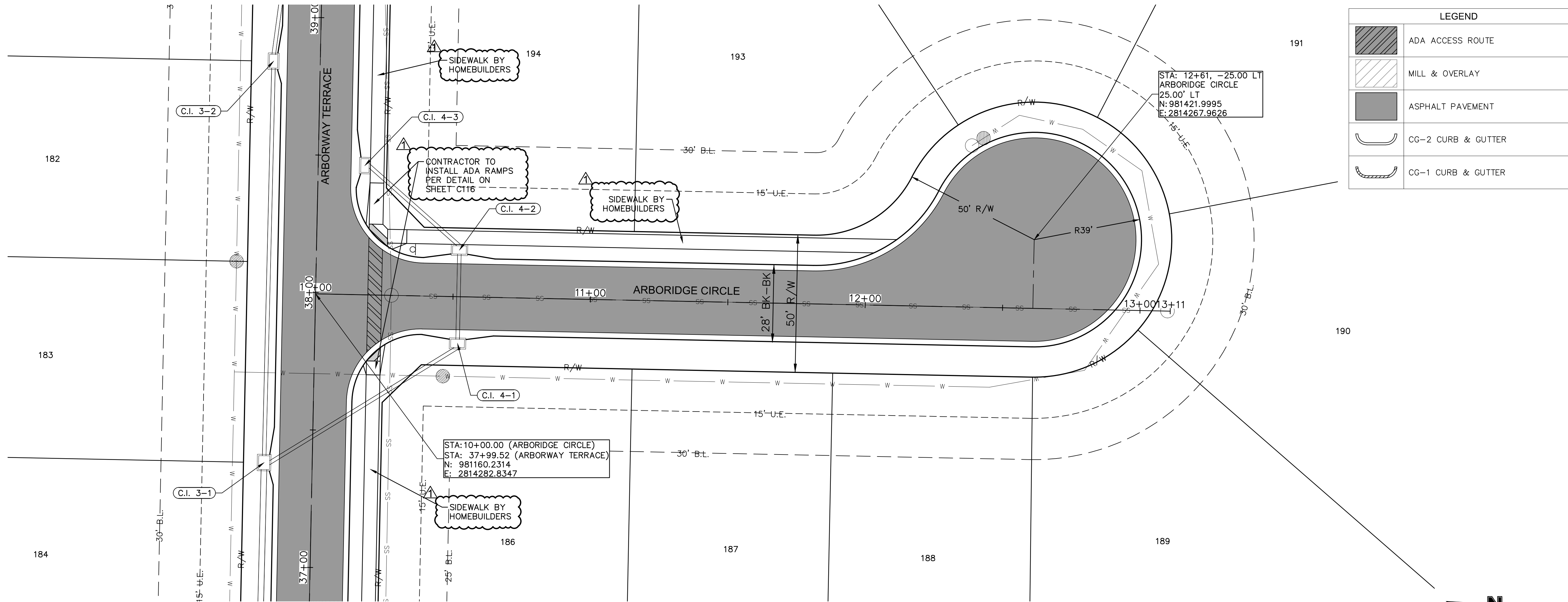
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checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C-REPO2_A191605
date: 10/22/2020

SHEET
C111

2020

REVISIONS

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USER: bworthley



ROADWAY PLAN AND PROFILE (ARBORIDGE CIRCLE)
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C-RPPO3_A191605
date: 10/22/2020

SHEET
C112

REV. NO. 1
DATE 11/23/2020
REVISIONS DESCRIPTION
REVISED PER CITY COMMENTS

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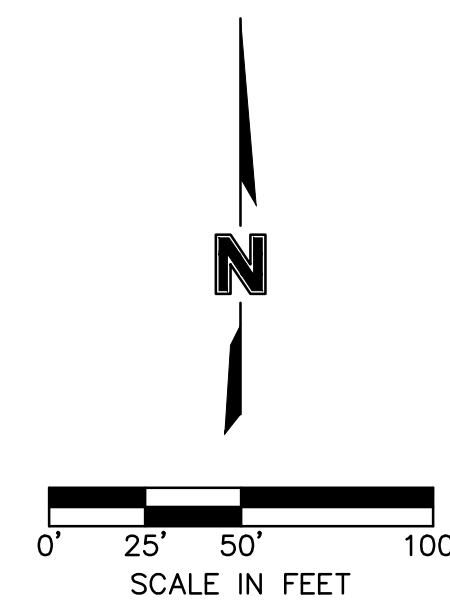
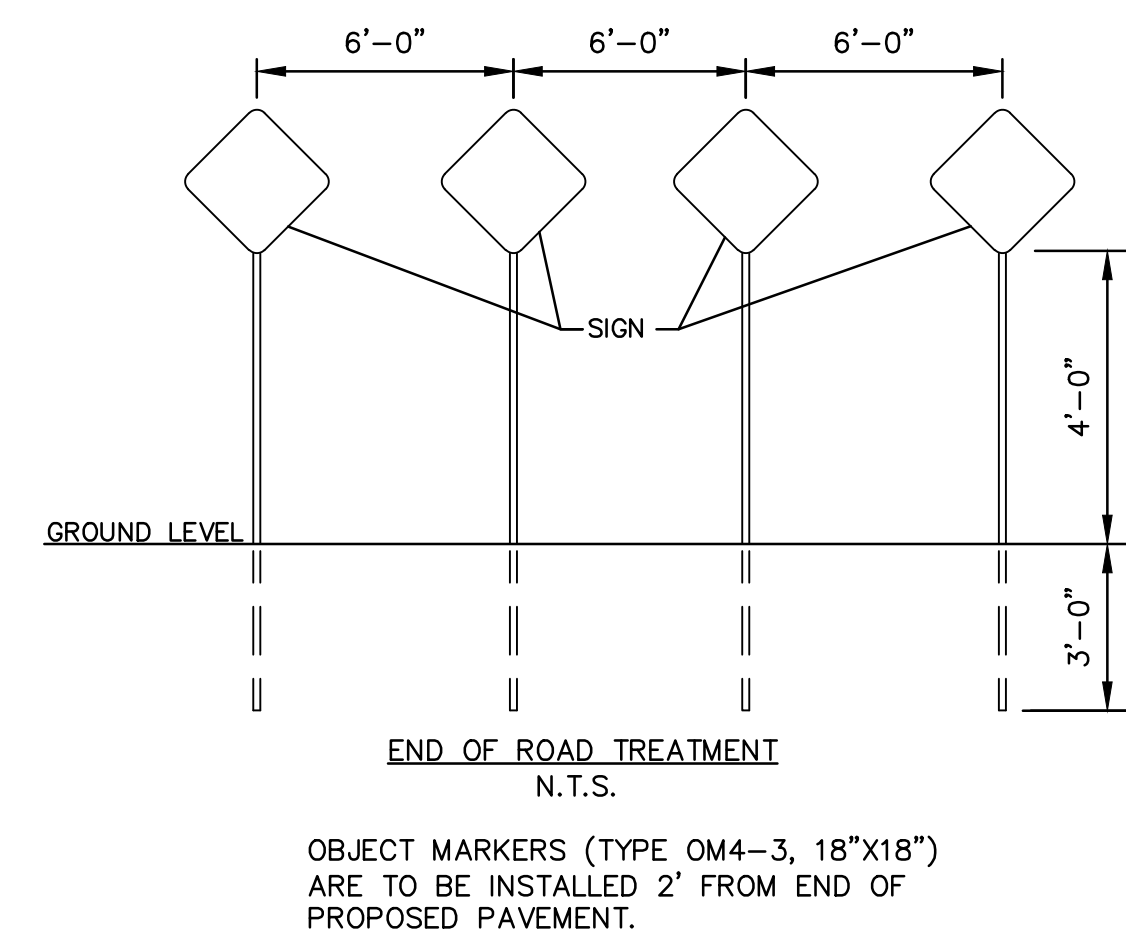
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STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER
PE-2019000237
11/18/2020
PROFESSIONAL ENGINEER

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TRAFFIC CONTROL PLAN
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT MO



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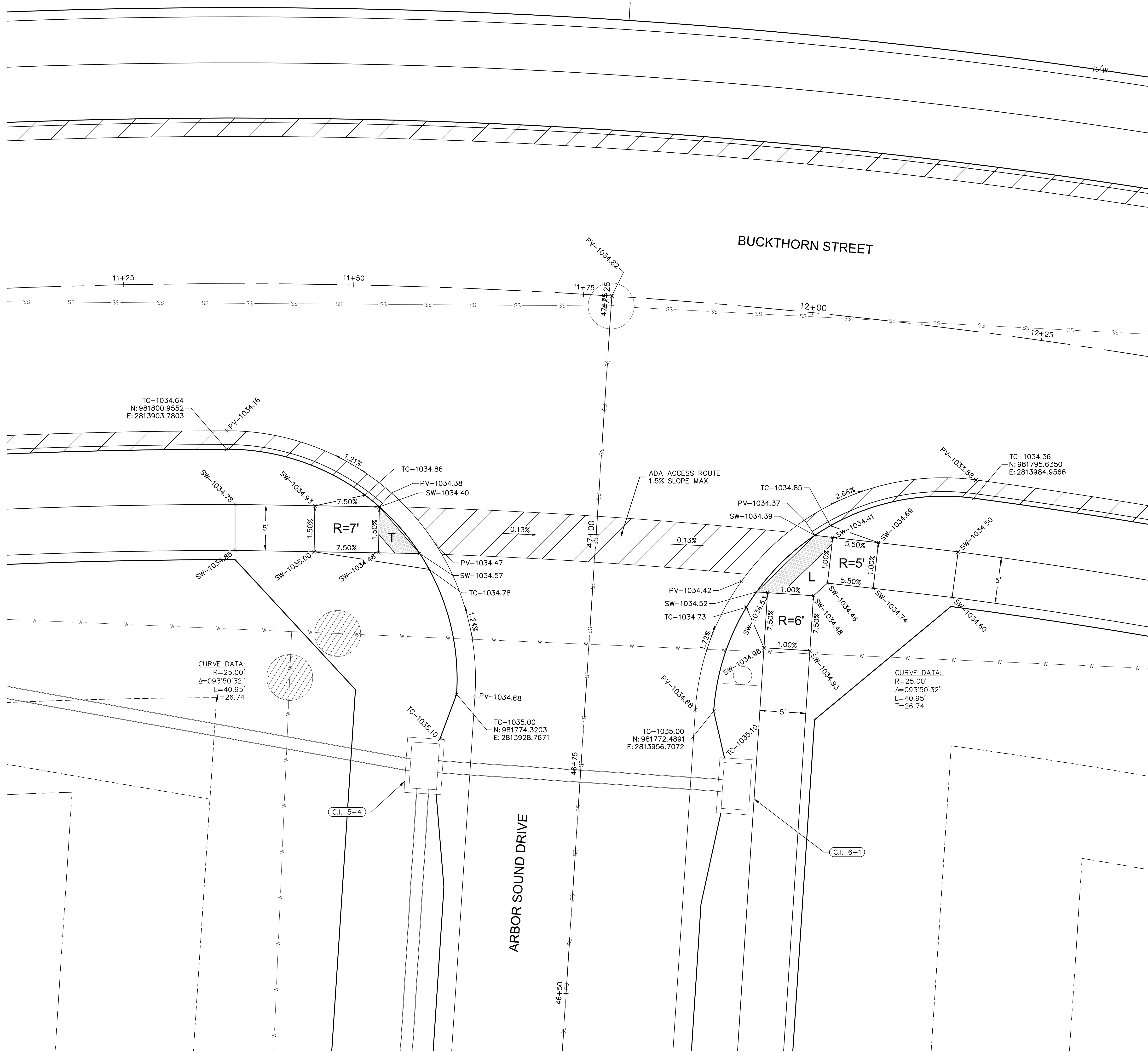
REVISIONS

2020

SHEET
C113

drawn by: _____ OLS
checked by: _____ BMW
approved by: _____ BMW
QA/QC by: _____ JES
project no.: _____ A19-1605
drawing no.: C TCP01 A191605
date: _____ 10/02/2020

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USER: bwortheley



- INTERSECTION AND ADA DETAIL NOTES:
1. ALL ADA CURB RAMPS SHALL BE BUILT PER CURRENT MUNICIPALITY ADOPTED ADA STANDARDS.
 2. CURB RAMP FLARES SHALL NOT BE STEEPER THAN 1:10 MAX SLOPES.
 3. LANDING SHALL BE PROVIDED WHERE INDICATED ON PLAN SHEET OR BY PROWAG STANDARDS. LANDING SHALL BE 4'X4' MINIMUM.
 4. RAMP RUNS SHALL HAVE A MAXIMUM RUNNING SLOPE OF 1:12 UNLESS THE RAMP LENGTH IS OVER 15 FEET, THEN THE SLOPE CAN BE GREATER AS INDICATED IN DETAILS TO REACH STREET GRADES.
 5. LANDINGS SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
 6. CROSS SLOPE FOR RAMPS AND SIDEWALK SHALL NOT EXCEED 2%.
 7. AFTER CURBS HAVE BEEN CONSTRUCTED, AND BEFORE ASPHALT OR CONCRETE PAVEMENT IS POURED, CURBS SHOULD BE MEASURED WITH A LEVEL TO ENSURE CURB ALONG ADA RAMPS AND LANDINGS WILL MEET ADA REQUIREMENTS.
 8. ADA RAMP CONSTRUCTION WILL BE INSPECTED THOROUGHLY BY THE CITY INSPECTOR. CONTRACTOR SHALL BE REQUIRED TO RECONSTRUCT RAMPS, CURBS AND/OR PAVEMENT AT CONTRACTOR'S EXPENSE IF ADA RAMPS AND LANDINGS CANNOT MEET THE ADA REQUIREMENTS, PER APPROVED PLAN OR APPROVED ALTERNATIVE.
 9. CURVE DATA IS FOR BACK OF CURB.

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STATE OF MISSOURI
BROCK M. WORTHELEY
Professional Engineer
No. 2019000237
11/23/2020

BY
REV. NO.
DATE
REVISIONS DESCRIPTION

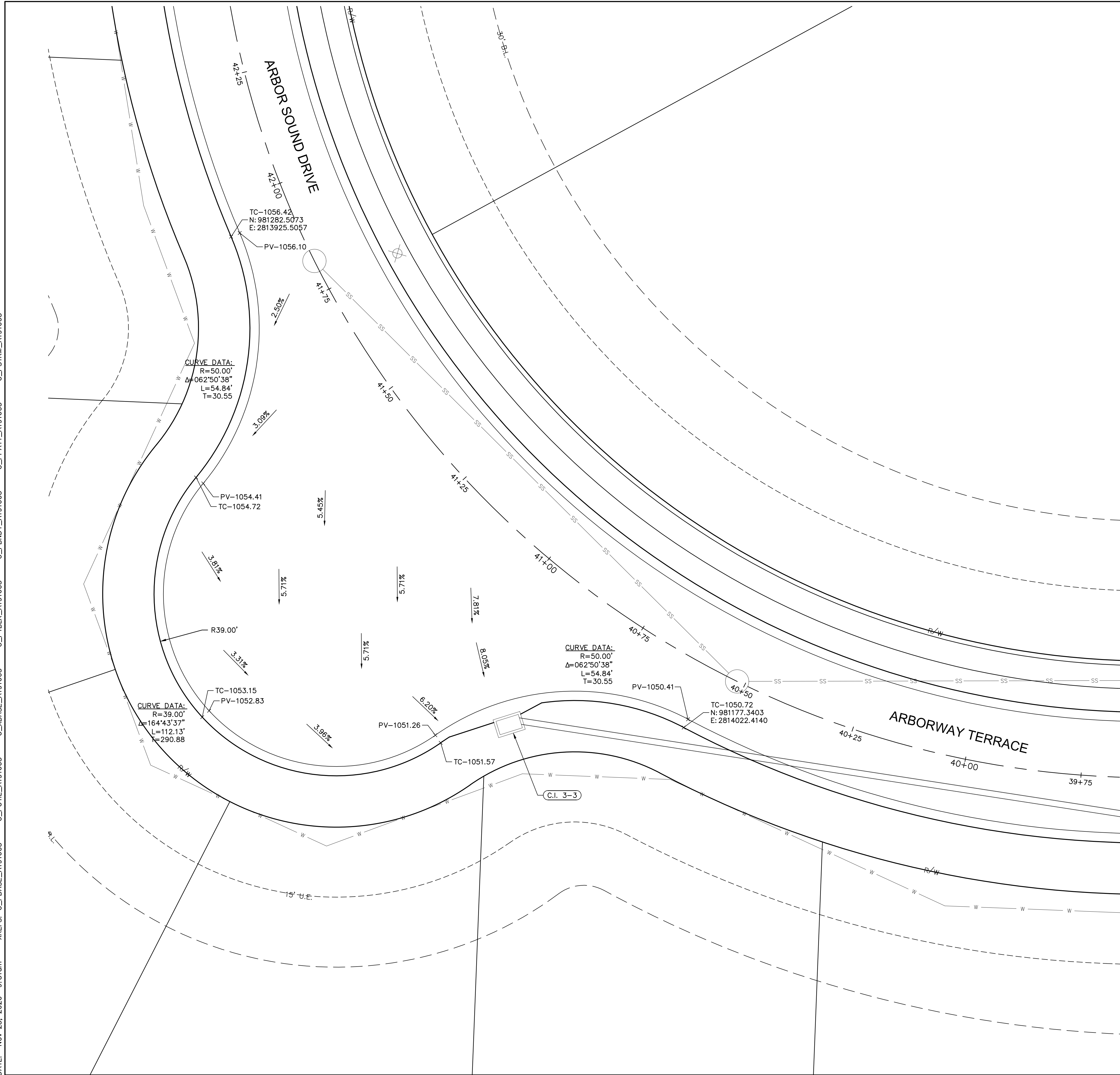
SPOT ELEVATIONS
STREET & STORM SEWER PLANS
HAWTHORN RIDGE
THIRD PLAT
LEE'S SUMMIT, MO

drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C_SPT01_A191605
date: 10/22/2020

2020
REVISIONS

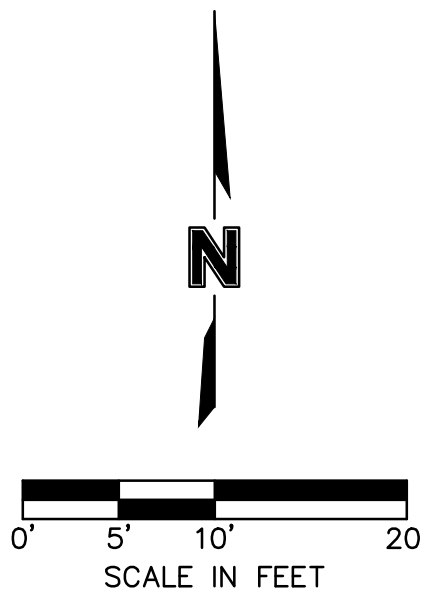
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USER: bworthley



- INTERSECTION AND ADA DETAIL NOTES:
1. ALL ADA CURB RAMPS SHALL BE BUILT PER CURRENT MUNICIPALITY ADOPTED ADA STANDARDS.
2. CURB RAMP FLARES SHALL NOT BE STEEPER THAN 1:10 MAX SLOPES.
3. LANDINGS SHALL BE PROVIDED WHERE INDICATED ON PLAN SHEET OR BY PROWAG STANDARDS. LANDING SHALL BE 4'x4' MINIMUM.
4. RAMP RUNS SHALL HAVE A MAXIMUM RUNNING SLOPE OF 1:12 UNLESS THE RAMP LENGTH IS OVER 15 FEET, THEN THE SLOPE CAN BE GREATER AS INDICATED IN DETAILS TO REACH STREET GRADES.
5. LANDINGS SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
6. CROSS SLOPE FOR RAMPS AND SIDEWALK SHALL NOT EXCEED 2%.
7. AFTER CURBS HAVE BEEN CONSTRUCTED, AND BEFORE ASPHALT OR CONCRETE PAVEMENT IS POURED, CURBS SHOULD BE MEASURED WITH A LEVEL TO ENSURE CURBS ALONG ADA RAMPS AND LANDINGS WILL MEET ADA REQUIREMENTS.
8. ADA RAMP CONSTRUCTION WILL BE INSPECTED THOROUGHLY BY THE CITY INSPECTOR. CONTRACTOR SHALL BE REQUIRED TO RECONSTRUCT RAMPS, CURBS AND/OR PAVEMENT AT CONTRACTOR'S EXPENSE IF ADA RAMPS AND LANDINGS CANNOT MEET THE ADA REQUIREMENTS, PER APPROVED PLAN OR APPROVED ALTERNATIVE.
9. CURVE DATA IS FOR BACK OF CURB.

LEGEND	
TC—	TOP OF CURB
PV—	TOP OF PAVEMENT
SW—	SIDEWALK
L	LANDING AREA
R	RAMP AREA
T	TRANSITION AREA
	ADA ACCESS ROUTE
	CG-2 CURB & GUTTER
	CG-1 CURB & GUTTER



SPOT ELEVATIONS
STREET & STORM SEWER PLANS

HAWTHORN RIDGE THIRD PLAT

LEE'S SUMMIT, MO

2020

REVISIONS

BY

REVISIONS DESCRIPTION

DATE _____

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CJN

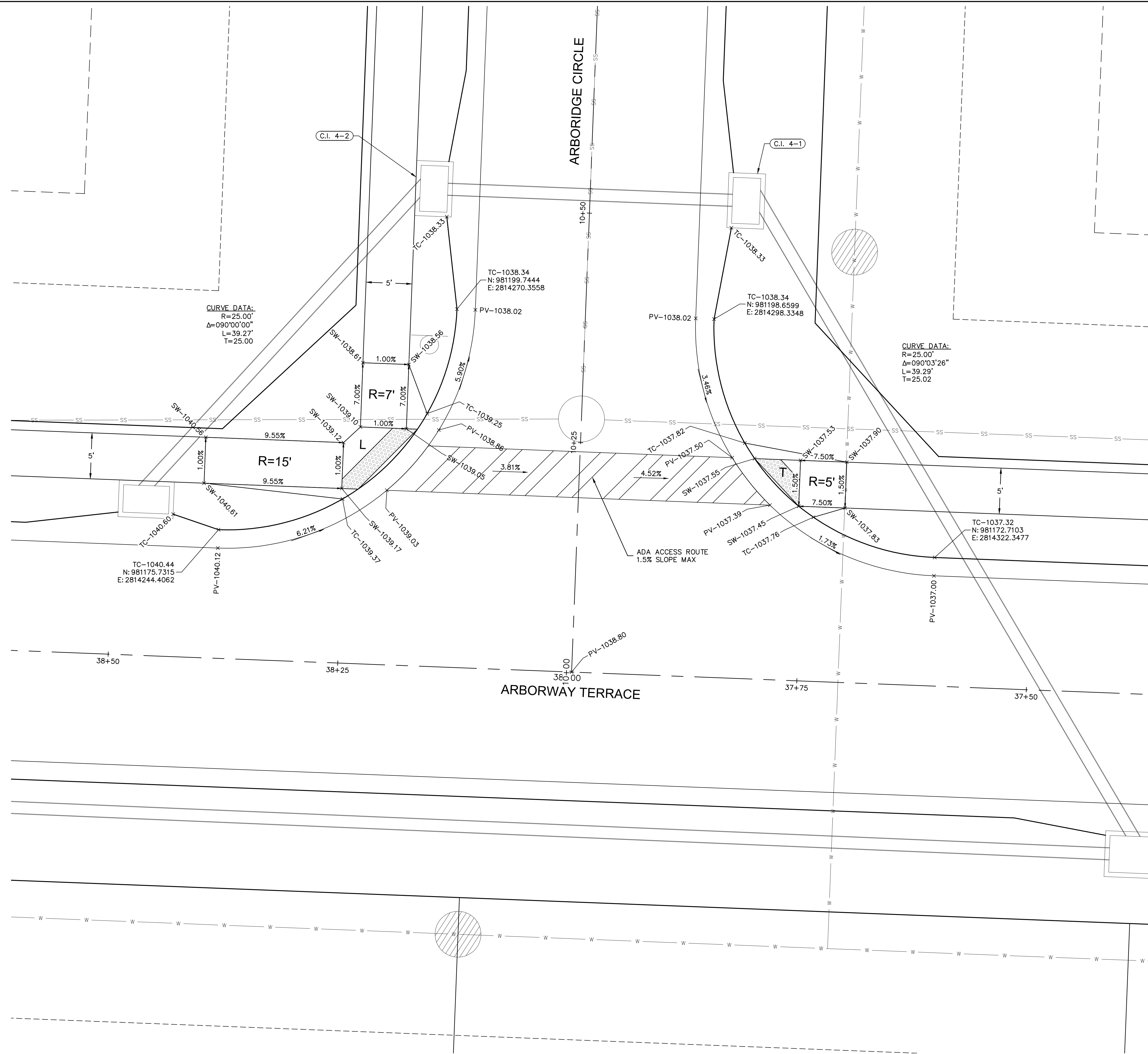
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Missouri Certificate of Authority #001592
1301 Burlington Street
North Kansas City, MO 64116

drawn by: _____ OLS
checked by: _____ BMW
approved by: _____ BMW
QA/QC by: _____ JES
project no.: _____ A19-1605
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date: _____ 10/02/2020

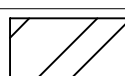
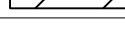
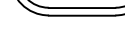
SHEET
C114

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DATE: Nov 23, 2020 9:31am USER: bworthley



INTERSECTION AND ADA DETAIL NOTES:

1. ADA ADA CURB RAMP SHALL BE BUILT PER CURRENT MUNICIPALITY ADOPTED ADA STANDARDS.
2. CURB RAMP FLARES SHALL NOT BE STEEPER THAN 1:10 MAX SLOPES.
3. LANDING SHALL BE PROVIDED WHERE INDICATED ON PLAN SHEET OR BY PROWAG STANDARDS. LANDING SHALL BE 4'X4' MINIMUM.
4. RAMP RUNS SHALL HAVE A MAXIMUM RUNNING SLOPE OF 1:12 UNLESS THE CURB LENGTH OVER 15 FEET, THEN THE SLOPE CAN BE GREATER AS INDICATED IN DETAILS TO REACH STREET GRADES.
5. LANDINGS SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
6. CROSS SLOPE FOR RAMPS AND SIDEWALK SHALL NOT EXCEED 2%.
7. CURBS HAVE 12" MINIMUM CURB HEIGHT BEFORE ASPHALT OR CONCRETE PAVEMENT IS POURED, CURBS SHOULD BE MEASURED WITH A LEVEL TO ENSURE CURB ALONG ADA RAMPS AND LANDINGS WILL MEET ADA REQUIREMENTS.
8. ADA RAMP CONSTRUCTION WILL BE INSPECTED THOROUGHLY BY THE CITY INSPECTOR. CONTRACTOR SHALL BE REQUIRED TO RECONSTRUCT RAMPS, CURBS AND/OR PAVEMENT AT CONTRACTOR'S EXPENSE IF ADA RAMPS AND LANDINGS CANNOT MEET THE ADA REQUIREMENTS, PER APPROVED PLAN OR APPROVED ALTERNATIVE.
9. CURVE DATA IS FOR BACK OF CURB.

LEGEND	
TC-	TOP OF CURB
PV-	TOP OF PAVEMENT
SW-	SIDEWALK
L	LANDING AREA
R	RAMP AREA
T	TRANSITION AREA
	ADA ACCESS ROUTE
	CG-2 CURB & GUTTER
	CG-1 CURB & GUTTER

SPOT ELEVATIONS
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

drawn by: _____ OLS
checked by: _____ BMWW
approved by: _____ BMWW
QA/QC by: _____ JES
project no.: _____ A19-1605
drawing no.: _____ C SPT01 A191605
date: _____ 10/02/2020

SHEET
C116

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REVISIONS

2020

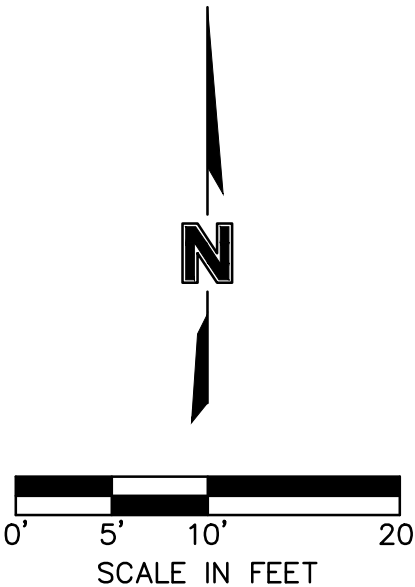
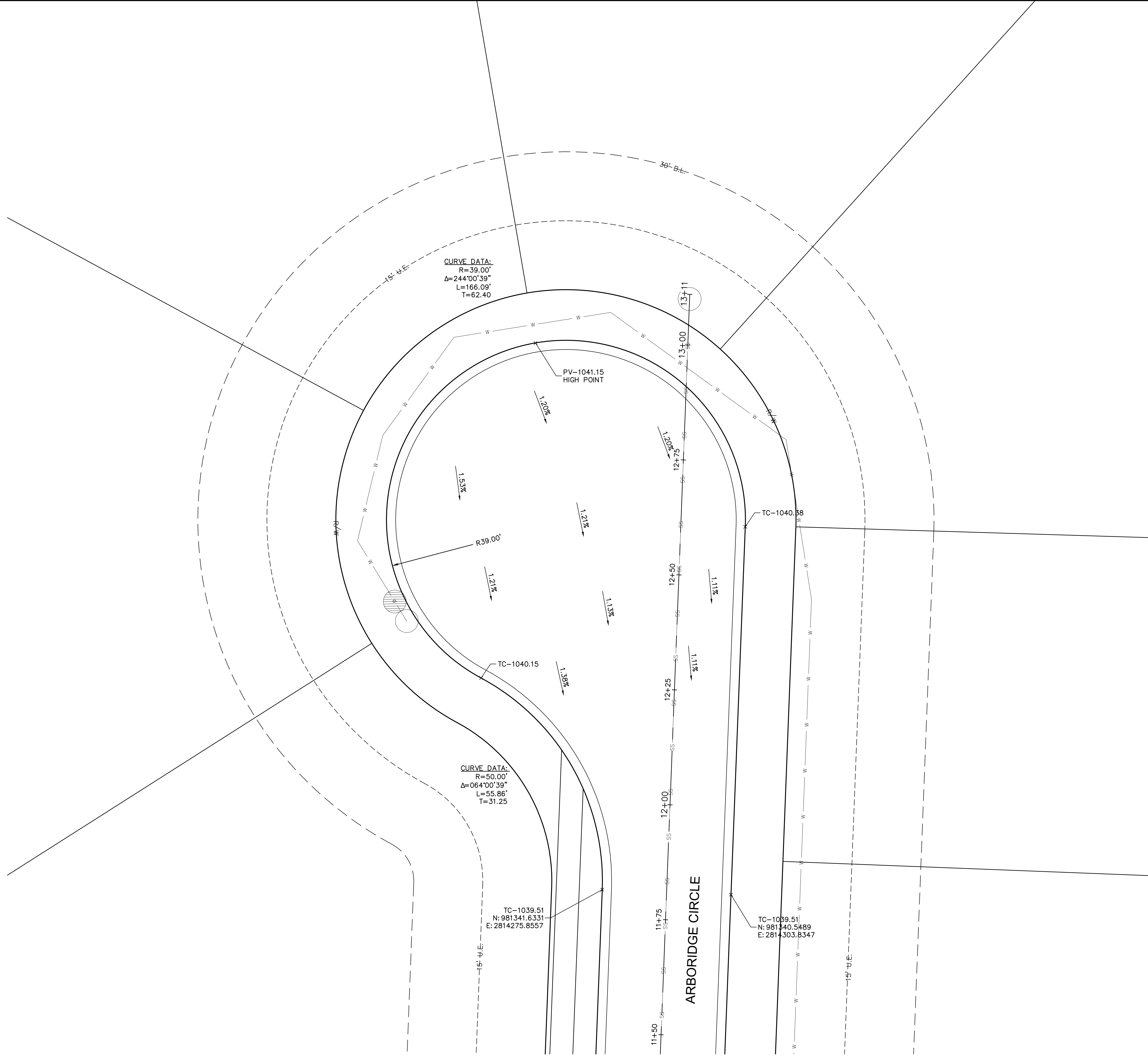
LEE'S SUMMIT MO

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1301 Burlington Street
North Kansas City, MO 64116

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USER: bworthley



- INTERSECTION AND ADA DETAIL NOTES:
1. ALL ADA CURB RAMPS SHALL BE BUILT PER CURRENT MUNICIPALITY ADOPTED ADA STANDARDS.
 2. CURB RAMP FLARES SHALL NOT BE STEEPER THAN 1:10 MAX SLOPES.
 3. LANDING SHALL BE PROVIDED WHERE INDICATED ON PLAN SHEET OR BY PROWAG STANDARDS. LANDING SHALL BE 4'X4' MINIMUM.
 4. RAMP RUNS SHALL HAVE A MAXIMUM RUNNING SLOPE OF 1:12 UNLESS THE RAMP LENGTH IS OVER 15 FEET, THEN THE SLOPE CAN BE GREATER AS INDICATED IN DETAILS TO REACH STREET GRADES.
 5. LANDINGS SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
 6. CROSS SLOPE FOR RAMPS AND SIDEWALK SHALL NOT EXCEED 2%.
 7. AFTER CURBS HAVE BEEN CONSTRUCTED, AND BEFORE ASPHALT OR CONCRETE PAVEMENT IS POURED, CURBS SHOULD BE MEASURED WITH A LEVEL TO ENSURE CURB ALONG ADA RAMPS AND LANDINGS WILL MEET ADA REQUIREMENTS.
 8. ADA RAMP CONSTRUCTION WILL BE INSPECTED THOROUGHLY BY THE CITY INSPECTOR. CONTRACTOR SHALL BE REQUIRED TO RECONSTRUCT RAMPS, CURBS AND/OR PAVEMENT AT CONTRACTOR'S EXPENSE IF ADA RAMPS AND LANDINGS CANNOT MEET THE ADA REQUIREMENTS, PER APPROVED PLAN OR APPROVED ALTERNATIVE.
 9. CURVE DATA IS FOR BACK OF CURB.

LEGEND	
TC-	TOP OF CURB
PV-	TOP OF PAVEMENT
SW-	SIDEWALK
L	LANDING AREA
R	RAMP AREA
T	TRANSITION AREA
	ADA ACCESS ROUTE
	CG-2 CURB & GUTTER
	CG-1 CURB & GUTTER

drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C_SPT01_A191605
date: 10/22/2020

SHEET
C117

SPOT ELEVATIONS
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

REV. NO.

DATE

REVISIONS DESCRIPTION

BY

2020

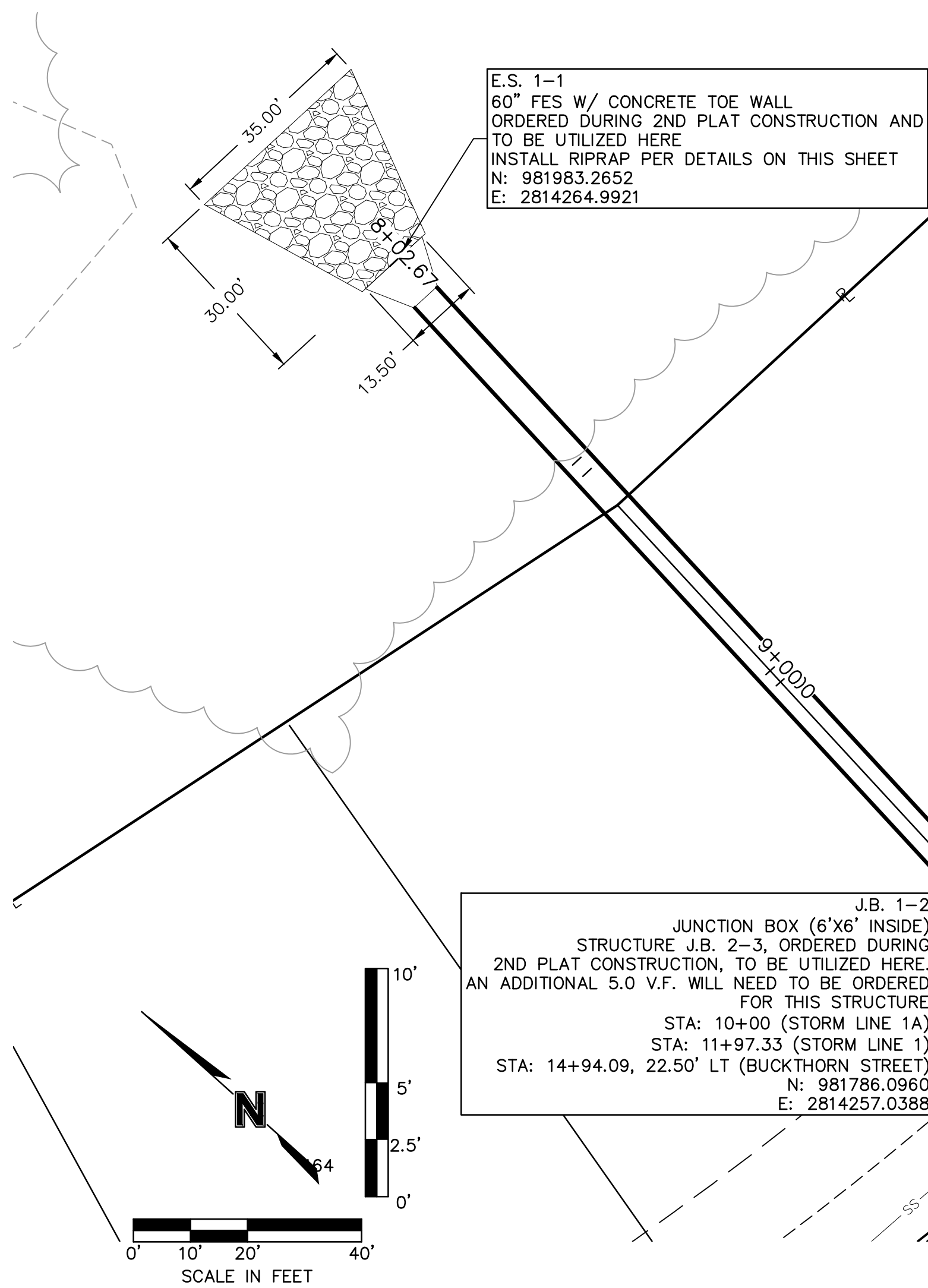
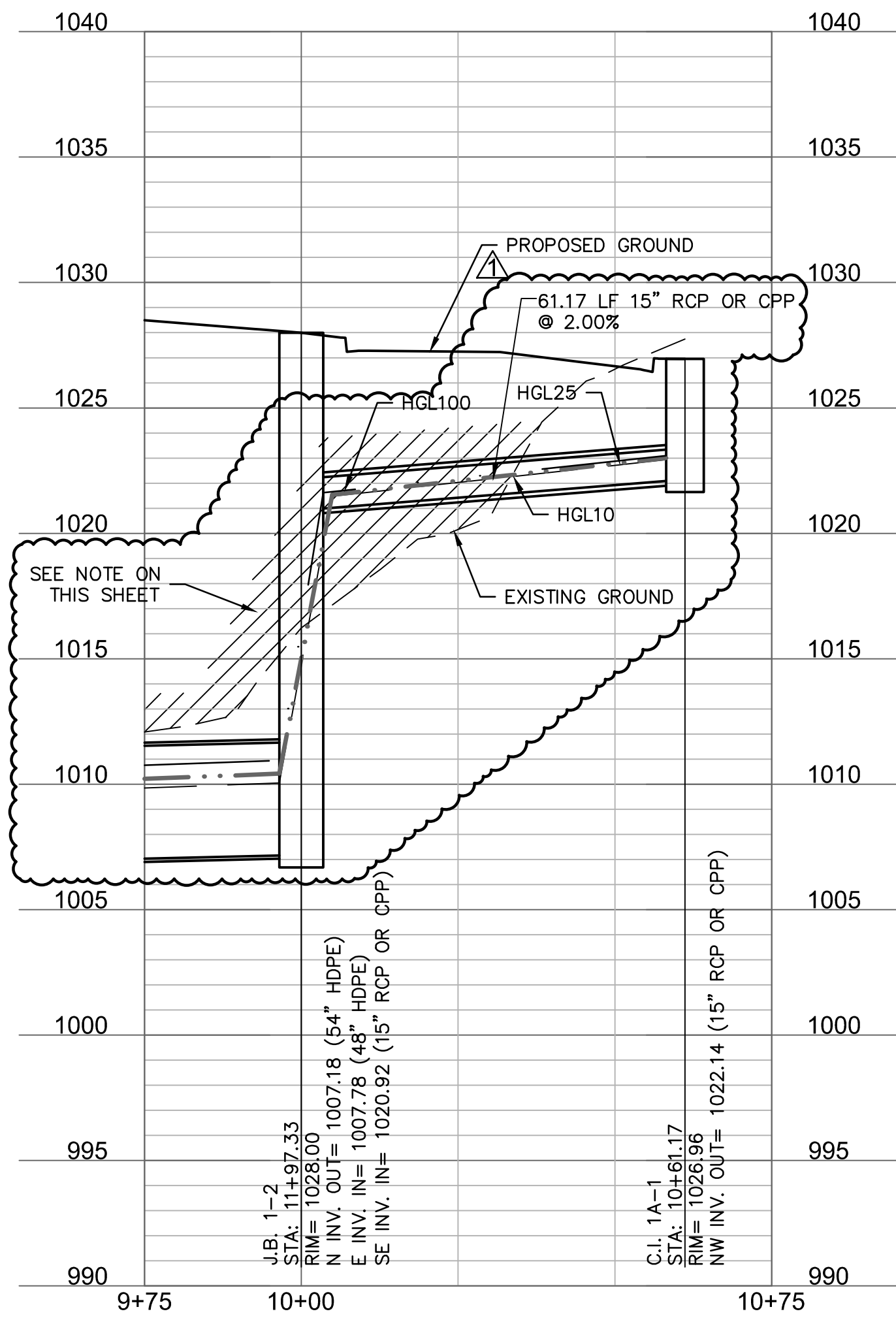
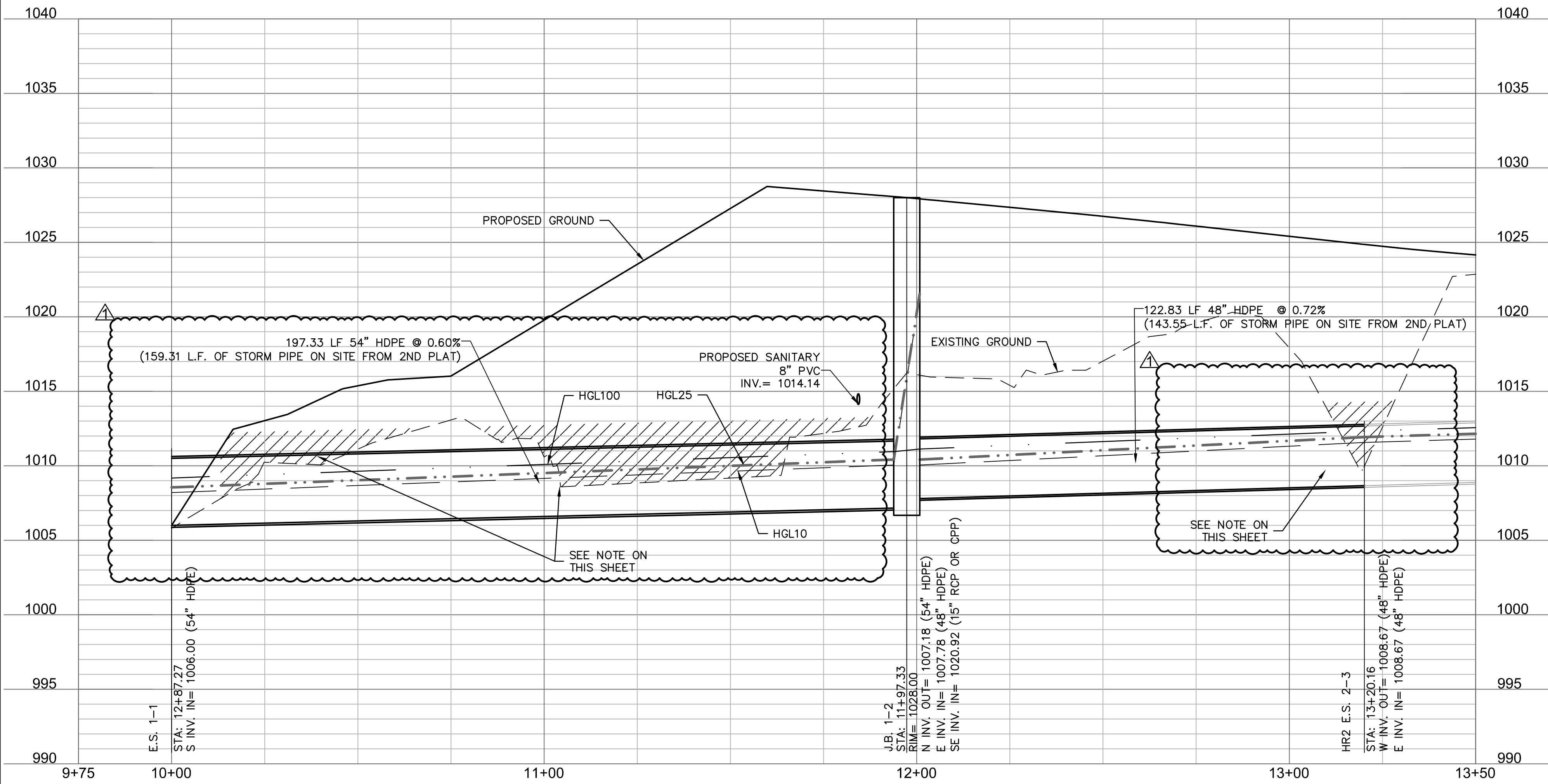
REVISIONS

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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
REGISTERED PROFESSIONAL ENGINEER
NUMBER
PE-2019000237
11/18/2020

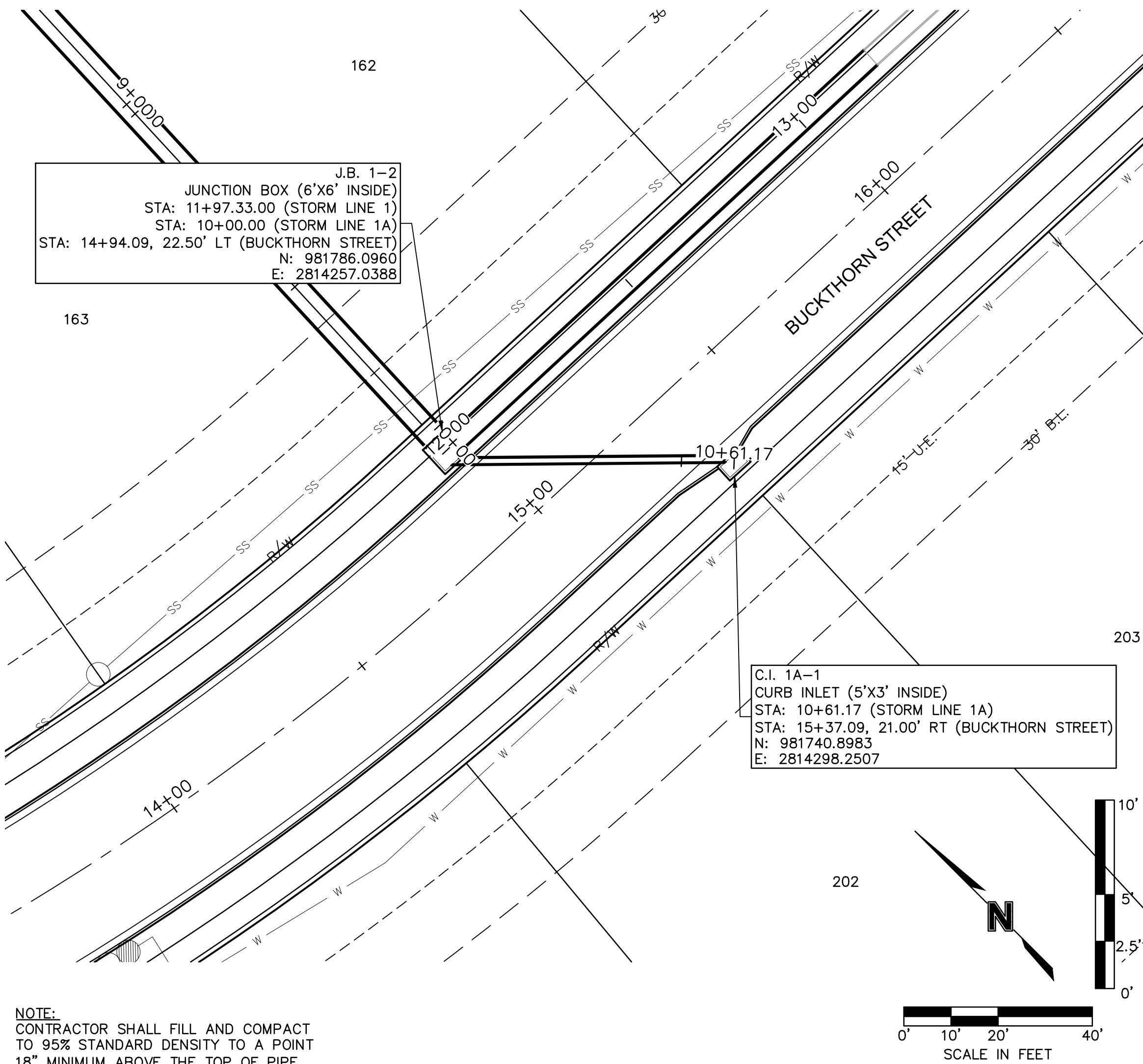
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USER: tworthley



Riprap Calculations						
End Section	Q ₁₀₀ (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)
E.S. 1-1	167.23	5	4	14	30	2.57
Area (SY)						
83.3						

*Per Table 10.1 HEC 14-FHWA-Energy Dissipators Pg. 10-18
NOTE: CONTRACTOR TO INSTALL NONWOVEN GEOTEXTILE UNDERNEATH RIPRAP
PER DETAIL ON SHEET C128

HR2 E.S. 2-3
CONNECT TO EXISTING
48" HDPE PIPE
N: 981781.4170
E: 2814379.7769



STORM SEWER PLAN & PROFILE (LINE 1 & 1A)
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C_STM01_A191605
date: 10/02/2020

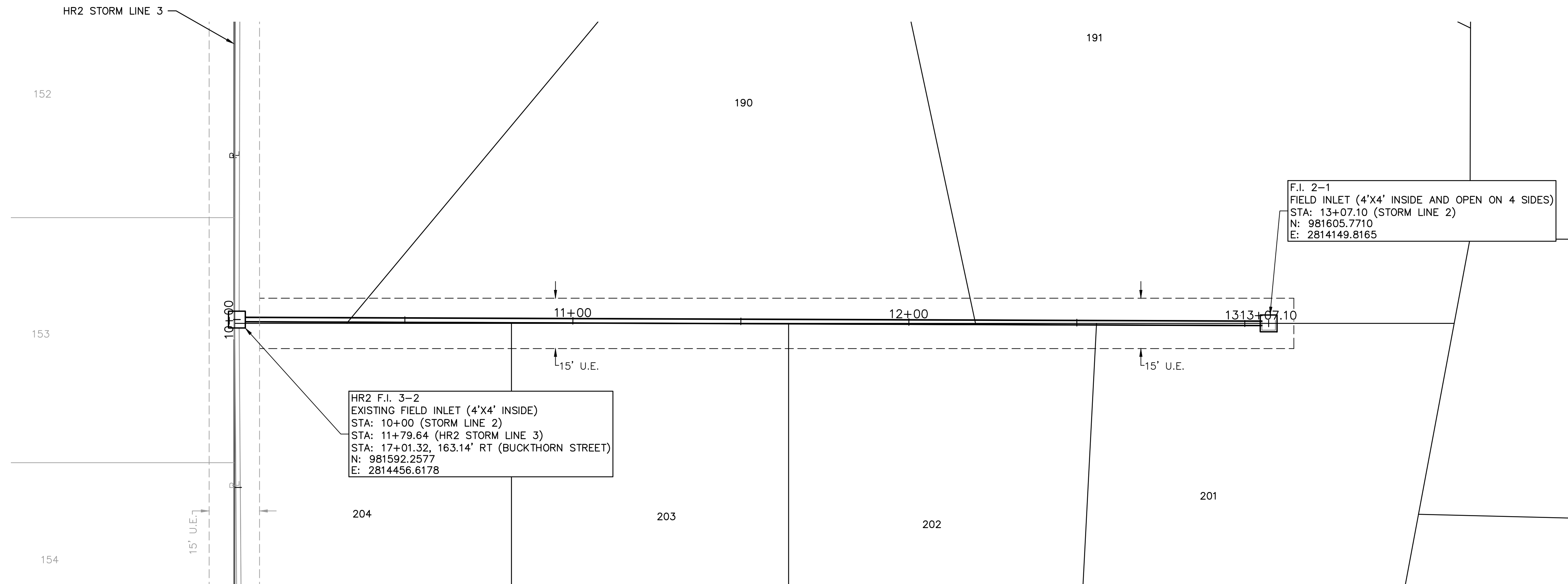
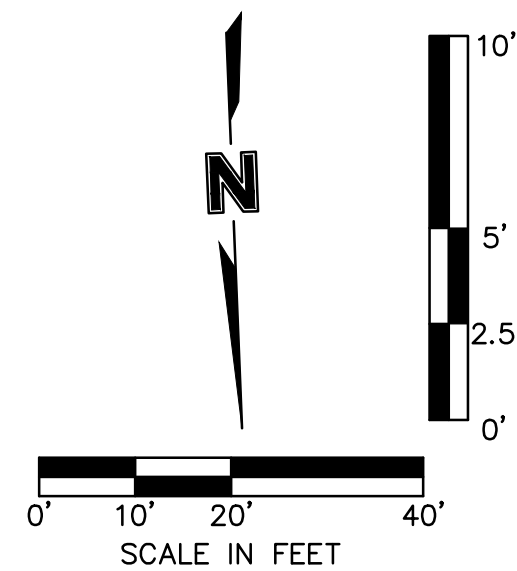
SHEET
C118



REVISIONS		BY	REVISIONS DESCRIPTION	DATE	REV. NO.
1	11/23/2020		REVISED PER CITY COMMENTS		

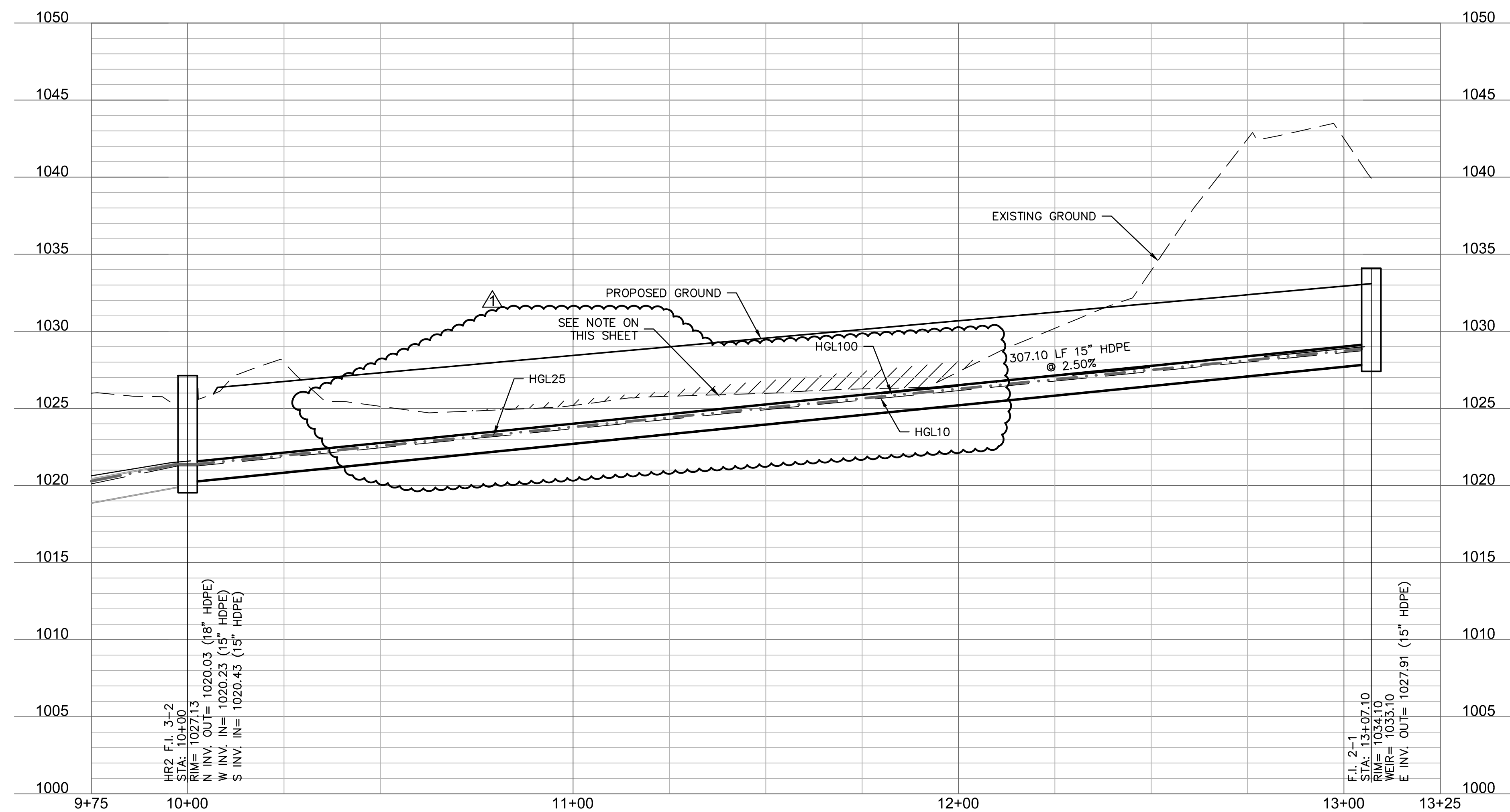
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USER: bworthley



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

STORM LINE 2 (9+75 - 13+25)



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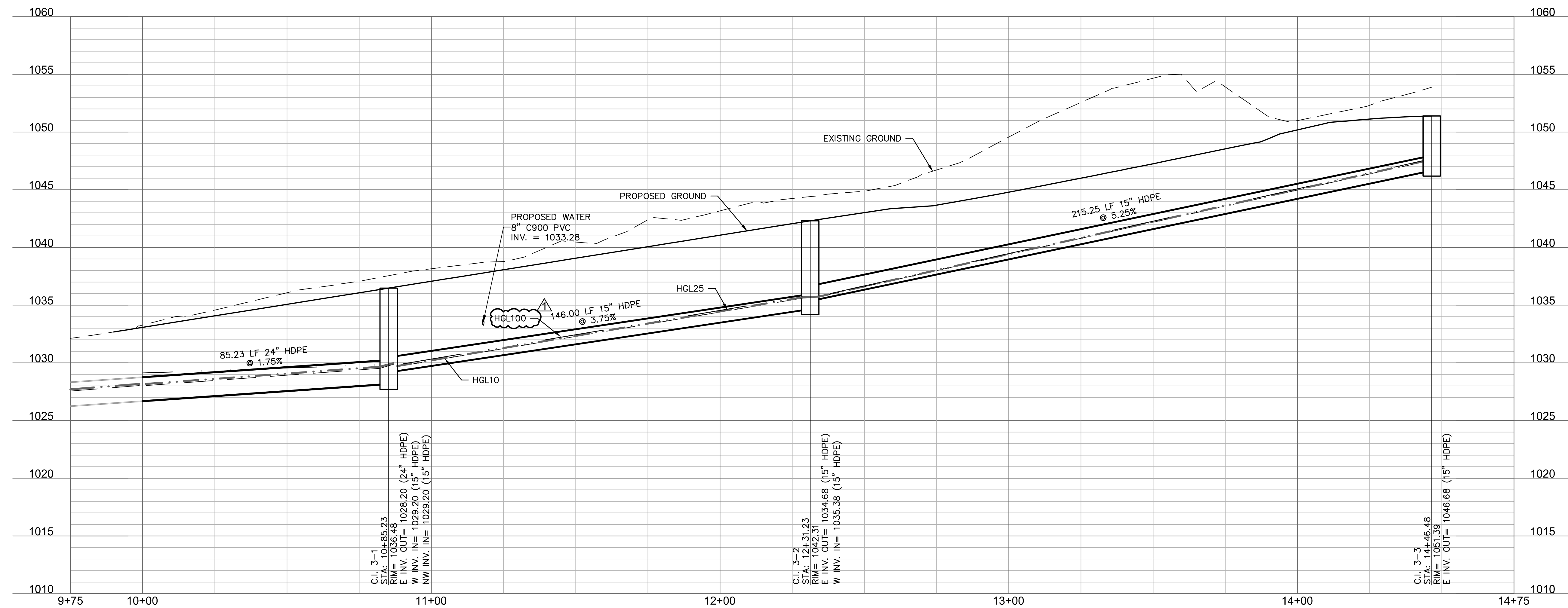
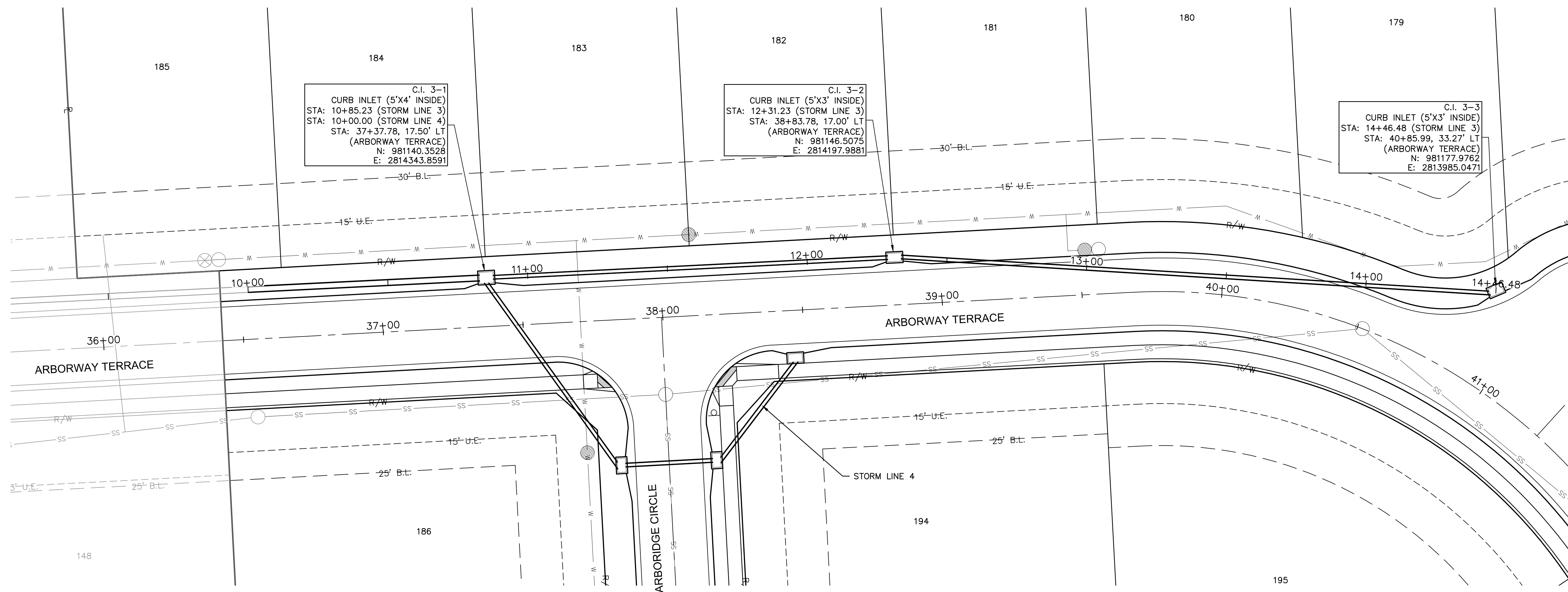
STORM SEWER PLAN & PROFILE (LINE 2)
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

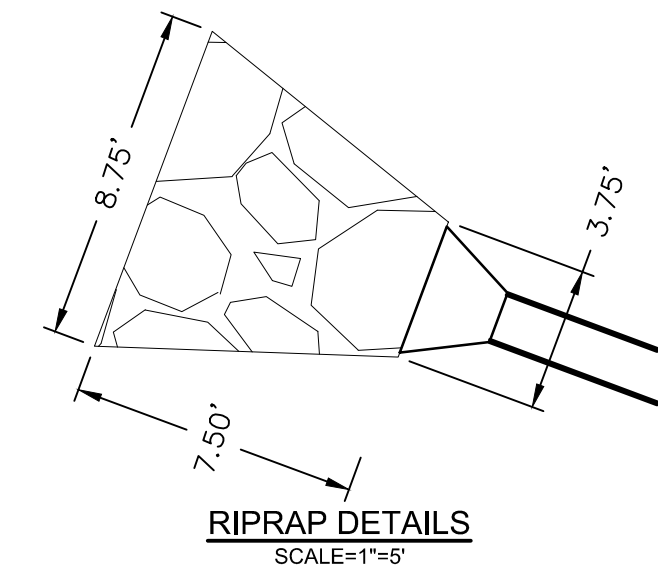
drawn by:	OLS
checked by:	BMW
approved by:	BMW
QA/QC by:	JES
project no.:	A19-1605
drawing no.:	C STM01 A191605
date:	10/02/2020

SHEET
C119



DWG: F:\2019\1501-2000\019-1605-A\40-Design\AutoCAD\Final Plans\Sheets\CONV\STREET & STORM\C_STM01_A191605.dwg
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USER: tworthley

E.S. 5-1
END SECTION (18" HDPE)
W/ CONCRETE TOE WALL
INSTALL RIPRAP PER DETAILS ON THIS SHEET
STA: 10+00 (STORM LINE 5)
N: 981975.4090
E: 2813796.0591



Riprap Calculations						
End Section	Q ₁₀₀ (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)
E.S. 5-1	16.13	1.25	4	14	7.5	2.57

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

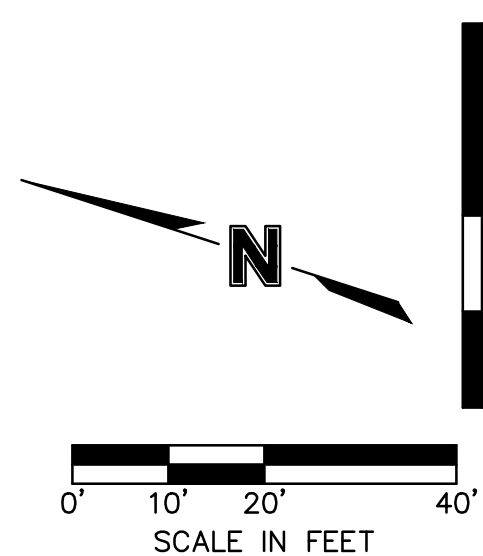
NOTE:
CONTRACTOR SHALL FILL AND COMPACT
TO 95% STANDARD DENSITY TO A POINT
18" MINIMUM ABOVE THE TOP OF PIPE
PRIOR TO EXCAVATION FOR THE PIPE.

C.I. 5-2
CURB INLET (5'X3' INSIDE)
STA: 11+45.90 (STORM LINE 5)
STA: 10+25.35, 21.00' LT (BUCKTHORN STREET)
N: 981829.6454
E: 2813789.8046

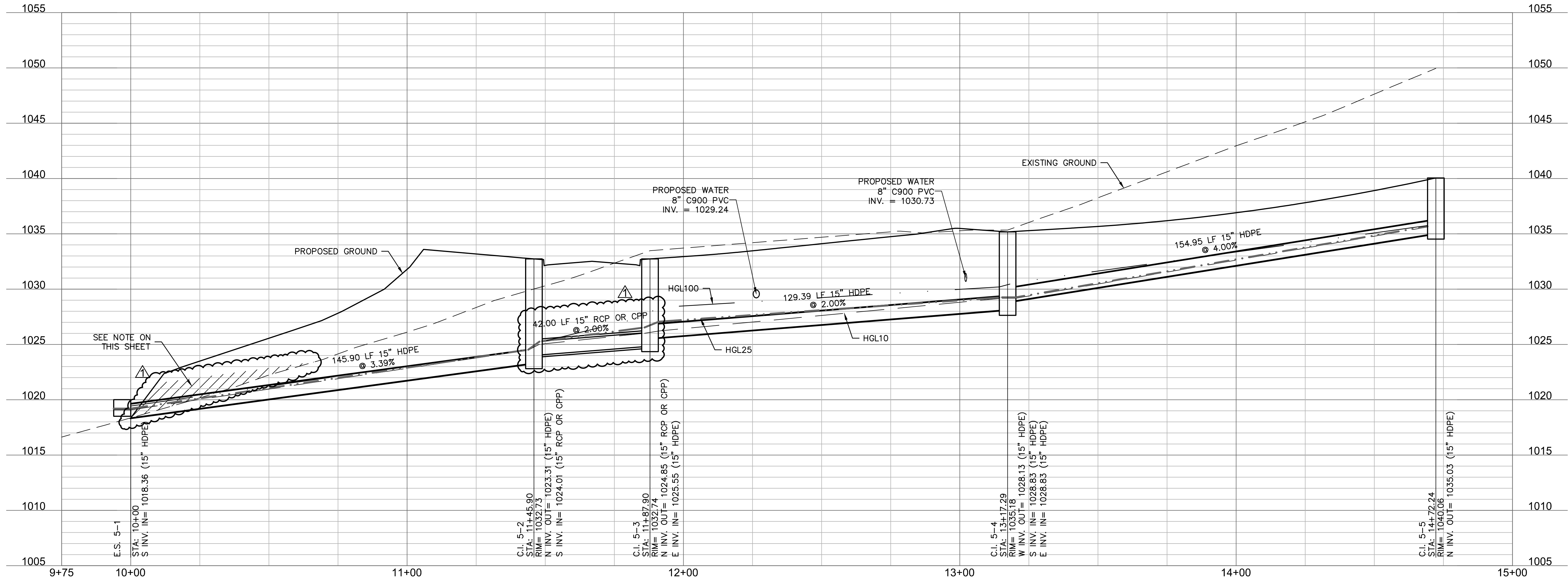
C.I. 5-4
CURB INLET (5'X3' INSIDE)
STA: 13+17.29 (STORM LINE 5)
STA: 10+00.00 (STORM LINE 6)
STA: 46+73.69, 17.00' LT
(ARBOR SOUND DRIVE)
N: 981766.5336
E: 2813925.2504

C.I. 5-3
CURB INLET (5'X3' INSIDE)
STA: 11+87.90 (STORM LINE 5)
STA: 10+25.81, 21.00' RT (BUCKTHORN STREET)
N: 981788.3949
E: 2813797.7171

C.I. 5-5
CURB INLET (5'X3' INSIDE)
STA: 14+72.24 (STORM LINE 5)
STA: 45+19.08, 17.00' LT
(ARBOR SOUND DRIVE)
N: 981611.8853
E: 2813915.6120



STORM LINE 5 (9+75 - 15+00)



STORM SEWER PLAN & PROFILE (LINE 5)
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C_STM01_A191605
date: 10/02/2020

SHEET
C121



BY		REVISIONS DESCRIPTION		DATE	
REV. NO.		REVISED PER CITY COMMENTS		11/23/2020	
1					

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DATE: Nov 23, 2020 9:34am
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USER: bworthley



LEGEND	
	FINISHED INDEX CONTOURS
	FINISHED INTERMEDIATE CONTOURS
	RIDGE LINE
	DRAINAGE AREA
	RUNOFF COEFFICIENT
	STORM STRUCTURE NUMBER

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STATE OF MISSOURI
BROCK M. WORTHLEY
PE-2019000237
11/18/2020
PROFESSIONAL ENGINEER

BY

REVISIONS DESCRIPTION

DATE

REV. NO.

DRAINAGE PLAN
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C_DRN01_A191605
date: 10/22/2020

SHEET
C123

2020

REVISIONS

DWG: F:\2019\1501-2000\019-1605-A\40-Design\AutoCAD\Final Plans\Sheets\CNCL\A STREET & STORM\C_DRN01_A191605.dwg USER: bworthley C_PSTRM_A191605
DATE: Nov 23, 2020 9:34am XREFS: C_PBASE_A191605 C_PBDY_A191605 C_PUTIL_A191605

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. 1A-1	1.21	0.51	5.00	7.35	1.00	4.54
F.I. 2-1	1.13	0.51	5.00	7.35	1.00	4.24
C.I. 3-1	0.43	0.51	5.00	7.35	1.00	1.61
C.I. 3-2	0.56	0.51	5.00	7.35	1.00	2.10
C.I. 3-3	1.16	0.51	5.00	7.35	1.00	4.35
C.I. 4-1(L)	0.32	0.51	5.00	7.35	1.00	1.20
C.I. 4-1(R)	0.00	0.51	5.00	7.35	1.00	0.00
C.I. 4-1(B)	0.09	0.51	5.00	7.35	1.00	0.34
C.I. 4-1	0.41	0.51	5.00	7.35	1.00	1.54
C.I. 4-2(L)	0.00	0.51	5.00	7.35	1.00	0.00
C.I. 4-2(R)	0.38	0.51	5.00	7.35	1.00	1.43
C.I. 4-2(B)	0.57	0.51	5.00	7.35	1.00	2.14
C.I. 4-2	0.95	0.51	5.00	7.35	1.00	3.56
C.I. 4-3	0.37	0.51	5.00	7.35	1.00	1.39
C.I. 5-2	0.21	0.51	5.00	7.35	1.00	0.79
C.I. 5-3	0.42	0.51	5.00	7.35	1.00	1.58
C.I. 5-4	0.81	0.51	5.00	7.35	1.00	3.04
C.I. 5-5	0.72	0.51	5.00	7.35	1.00	2.70
C.I. 6-1	0.58	0.51	5.00	7.35	1.00	2.18
HR2 F.I. 3-2	1.15	0.51	5.00	7.35	1.00	4.31
HR2 F.I. 3-3	0.52	0.51	5.00	7.35	1.00	1.95

Drainage Area Design Table						
25 Year Return Frequency						
Inlet ID	Drainage Area	C	Tc	i	K	Peak Flow
	(ac)		(min)	(in/hr)		(cfs)
C.I. 1A-1	1.21	0.51	5.00	8.53	1.10	5.79
F.I. 2-1	1.13	0.51	5.00	8.53	1.10	5.41
C.I. 3-1	0.43	0.51	5.00	8.53	1.10	2.06
C.I. 3-2	0.56	0.51	5.00	8.53	1.10	2.68
C.I. 3-3	1.16	0.51	5.00	8.53	1.10	5.55
C.I. 4-1(L)	0.32	0.51	5.00	8.53	1.10	1.53
C.I. 4-1(R)	0.00	0.51	5.00	8.53	1.10	0.00
C.I. 4-1(B)	0.09	0.51	5.00	8.53	1.10	0.43
C.I. 4-1	0.41	0.51	5.00	8.53	1.10	1.96
C.I. 4-2(L)	0.00	0.51	5.00	8.53	1.10	0.00
C.I. 4-2(R)	0.38	0.51	5.00	8.53	1.10	1.82
C.I. 4-2(B)	0.57	0.51	5.00	8.53	1.10	2.73
C.I. 4-2	0.95	0.51	5.00	8.53	1.10	4.55
C.I. 4-3	0.37	0.51	5.00	8.53	1.10	1.77
C.I. 5-2	0.21	0.51	5.00	8.53	1.10	1.00
C.I. 5-3	0.42	0.51	5.00	8.53	1.10	2.01
C.I. 5-4	0.81	0.51	5.00	8.53	1.10	3.88
C.I. 5-5	0.72	0.51	5.00	8.53	1.10	3.45
C.I. 6-1	0.58	0.51	5.00	8.53	1.10	2.78
HR2 F.I. 3-2	1.15	0.51	5.00	8.53	1.10	5.50
HR2 F.I. 3-3	0.52	0.51	5.00	8.53	1.10	2.49

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. 1A-1	1.21	0.51	5.00	10.32	1.25	7.96
F.I. 2-1	1.13	0.51	5.00	10.32	1.25	7.44
C.I. 3-1	0.43	0.51	5.00	10.32	1.25	2.83
C.I. 3-2	0.56	0.51	5.00	10.32	1.25	3.69
C.I. 3-3	1.16	0.51	5.00	10.32	1.25	7.63
C.I. 4-1(L)	0.32	0.51	5.00	10.32	1.25	2.11
C.I. 4-1(R)	0.00	0.51	5.00	10.32	1.25	0.00
C.I. 4-1(B)	0.09	0.51	5.00	10.32	1.25	0.59
C.I. 4-1	0.41	0.51	5.00	10.32	1.25	2.70
C.I. 4-2(L)	0.00	0.51	5.00	10.32	1.25	0.00
C.I. 4-2(R)	0.38	0.51	5.00	10.32	1.25	2.50
C.I. 4-2(B)	0.57	0.51	5.00	10.32	1.25	3.75
C.I. 4-2	0.95	0.51	5.00	10.32	1.25	6.25
C.I. 4-3	0.37	0.51	5.00	10.32	1.25	2.43
C.I. 5-2	0.21	0.51	5.00	10.32	1.25	1.38
C.I. 5-3	0.42	0.51	5.00	10.32	1.25	2.76
C.I. 5-4	0.81	0.51	5.00	10.32	1.25	5.33
C.I. 5-5	0.72	0.51	5.00	10.32	1.25	4.74
C.I. 6-1	0.58	0.51	5.00	10.32	1.25	3.82
HR2 F.I. 3-2	1.15	0.51	5.00	10.32	1.25	7.57
HR2 F.I. 3-3	0.52	0.51	5.00	10.32	1.25	3.42

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. 1A-1	GRADE	4.54	0.35	4.89	1.00	3.82	3.82	3.82	1.07	78.16%	0.21	9.77	...
F.I. 2-1	SAG	4.24	0.00	4.24	0.80	18.67	14.93	4.24	0.00	100.00%	...	...	0.19
C.I. 3-1	GRADE	1.61	1.41	3.02	1.00	1.87	1.87	1.87	1.15	62.03%	0.16	7.78	...
C.I. 3-2	GRADE	2.10	1.31	3.41	1.00	2.00	2.00	2.00	1.41	58.64%	0.16	8.14	...
C.I. 3-3	GRADE	4.35	0.00	4.35	1.00	3.04	3.04	3.04	1.31	69.90%	0.21	10.67	...
C.I. 4-1(L)	SAG	1.20	...	...	...	...	...	...	...	...	0.14	7.01	...
C.I. 4-1(R)	SAG	0.00	...	...	...	...	...	...	...	...	0.00	0.00	...
C.I. 4-1(B)	SAG	0.34	...	...	...	...	...	...	...	...	...	...	...
C.I. 4-1	SAG	1.54	0.00	1.54	0.80	19.40	15.52	1.54	0.00	100.00%	...	...	...
C.I. 4-2(L)	SAG	0.00	...	...	...	...	...	...	...	...	0.09	4.34	...
C.I. 4-2(R)	SAG	1.43	...	...	...	...	...	...	...	...	0.15	7.48	...
C.I. 4-2(B)	SAG	2.14	...	...	...	...	...	...	...	...	...	...	...
C.I. 4-2	SAG	3.56	0.33	3.90	0.80	19.40	15.52	3.90	0.00	100.00%	...	...	...
C.I. 4-3	GRADE	1.39	0.00	1.39	1.00	1.05	1.05	1.05	0.33	76.01%	0.11	5.51	...
C.I. 5-2	GRADE	0.79	0.00	0.79	1.00	0.79	0.79	0.79	0.00	99.69%	0.13	5.83	...
C.I. 5-3	GRADE	1.58	0.90	2.47	1.00	2.37	2.37	2.37	0.10	95.95%	0.19	8.86	...
C.I. 5-4	GRADE	3.04	0.53	3.57	1.00	2.67	2.67	2.67	0.90	74.83%	0.20	9.96	...
C.I. 5-5	GRADE	2.70	0.00	2.70	1.00	2.17	2.17	2.17	0.53	80.31%	0.18	8.97	...
C.I. 6-1	GRADE	2.18	0.00	2.18	1.00	1.82	1.82	1.82	0.35	83.89%	0.17	8.27	...
HR2 F.I. 3-2	SAG	4.31	0.00	4.31	0.80	18.67	14.93	4.31	0.00	100.00%	...	...	0.19
HR2 F.I. 3-3	SAG	1.95	0.00	1.95	0.80	18.67	14.93	1.95	0.00	100.00%	...	...	0.11

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.

Inlet Design Table													
25 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. 1A-1	GRADE	5.79	0.56	6.35	1.00	4.54	4.54	4.54	1.81	71.43%	0.23	10.78	...
F.I. 2-1	SAG	5.41	0.00	5.41	0.80	18.67	14.93	5.41	0.00	100.00%	...	...	0.22
C.I. 3-1	GRADE	2.06	2.39	4.44	1.00	2.26	2.26	2.26	2.18	50.84%	0.18	8.99	...
C.I. 3-2	GRADE	2.68	2.02	4.70	1.00	2.31	2.31	2.31	2.39	49.18%	0.18	9.18	...
C.I. 3-3	GRADE	5.55	0.00	5.55	1.00	3.53	3.53	3.53	2.02	63.67%	0.23	11.69	...
C.I. 4-1(L)	SAG	1.53	...	...	...	...	...	...	...	...	0.15	7.68	...
C.I. 4-1(R)	SAG	0.00	...	...	...	...	...	...	...	...	0.00	0.00	...
C.I. 4-1(B)	SAG	0.43	...	...	...	...	...	...	...	...	...	...	...
C.I. 4-1	SAG	1.96	0.00	1.96	0.80	19.40	15.52	1.96	0.00	100.00%	...	...	...
C.I. 4-2(L)	SAG	0.00	...	...	...	...	...	...	...	...	0.10	5.13	...
C.I. 4-2(R)	SAG	1.82	...	...	...	...	...	...	...	...	0.16	8.19	...
C.I. 4-2(B)	SAG	2.73	...	...	...	...	...	...	...	...	...	...	...
C.I. 4-2	SAG	4.55	0.52	5.07	0.80	19.40	15.52	5.07	0.00	100.00%	...	...	...
C.I. 4-3	GRADE	1.77	0.00	1.77	1.00	1.25	1.25	1.25	0.52	70.59%	0.12	6.03	...
C.I. 5-2	GRADE	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	100.00%	0.14	6.39	...
C.I. 5-3	GRADE	2.01	1.49	3.50	1.00	3.22	3.22	3.22	0.28	92.07%	0.22	10.09	...
C.I. 5-4	GRADE	3.88	0.84	4.72	1.00	3.22	3.22	3.22	1.49	68.37%	0.22	11.05	...
C.I. 5-5	GRADE	3.45	0.00	3.45	1.00	2.60	2.60	2.60	0.84	75.58%	0.20	9.83	...
C.I. 6-1	GRADE	2.78	0.00	2.78	1.00	2.22	2.22	2.22	0.56	79.81%	0.18	9.06	...
HR2 F.I. 3-2	SAG	5.50	0.00	5.50	0.80	18.67	14.93	5.50	0.00	100.00%	...	...	0.22
HR2 F.I. 3-3	SAG	2.49	0.00	2.49	0.80	18.67	14.93	2.49	0.00	100.00%	...	...	0.13

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.

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. 1A-1	GRADE	7.96	1.02	8.98	1.00	5.50	5.50	5.50	3.48	61.22%	0.27	12.28	...
F.I. 2-1	SAG	7.44	0.00	7.44	0.80	18.67	14.93	7.44	0.00	100.00%	...	...	0.27
C.I. 3-1	GRADE	2.83	4.53	7.36	1.00	2.64	2.64	2.64	4.72	35.82%	0.22	10.87	...
C.I. 3-2	GRADE	3.69	3.46	7.15	1.00	2.62	2.62	2.62	4.53	36.65%	0.22	10.75	...
C.I. 3-3	GRADE	7.63	0.00	7.63	1.00	4.17	4.17	4.17	3.46	54.63%	0.26	13.18	...
C.I. 4-1(L)	SAG	2.11	...	...	...	...	...	...	...	...	0.17	8.66	...
C.I. 4-1(R)	SAG	0.00	...	...	...	...	...	...	...	...	0.00	0.00	...
C.I. 4-1(B)	SAG	0.59	...	...	...	...	...	...	...	...	...	...	...
C.I. 4-1	SAG	2.70	0.00	2.70	0.80	19.40	15.52	2.70	0.00	100.00%	...	...	...
C.I. 4-2(L)	SAG	0.00	...	...	...	...	...	...	...	...	0.13	6.34	...
C.I. 4-2(R)	SAG	2.50	...	...	...	...	...	...	...	...	0.18	9.23	...
C.I. 4-2(B)	SAG	3.75	...	...	...	...	...	...	...	...	...	...	...
C.I. 4-2	SAG	6.25	0.92	7.17	0.80	19.40	15.52	7.17	0.00	100.00%	...	...	...
C.I. 4-3	GRADE	2.43	0.00	2.43	1.00	1.52	1.52	1.52	0.92	62.41%	0.14	6.80	...
C.I. 5-2	GRADE	1.38	0.00	1.38	1.00	1.38	1.38	1.38	0.01	99.56%	0.16	7.20	...
C.I. 5-3	GRADE	2.76	2.84	5.61	1.00	4.73	4.73	4.73	0.88	84.31%	0.26	12.04	...
C.I. 5-4	GRADE	5.33	1.50	6.83	1.00	3.99	3.99	3.99	2.84	58.39%	0.25	12.70	...
C.I. 5-5	GRADE	4.74	0.00	4.74	1.00	3.23	3.23	3.23	1.50	68.26%	0.22	11.07	...
C.I. 6-1	GRADE	3.82	0.00	3.82	1.00	2.80	2.80	2.80	1.02	73.37%	0.20	10.21	...
HR2 F.I. 3-2	SAG	7.57	0.00	7.57	0.80	18.67	14.93	7.57	0.00	100.00%	...	...	0.27
HR2 F.I. 3-3	SAG	3.42	0.00	3.42	0.80	18.67	14.93	3.42	0.00	100.00%	...	...	0.16

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LEGEND	
	FINISHED INDEX CONTOURS
	FINISHED INTERMEDIATE CONTOURS

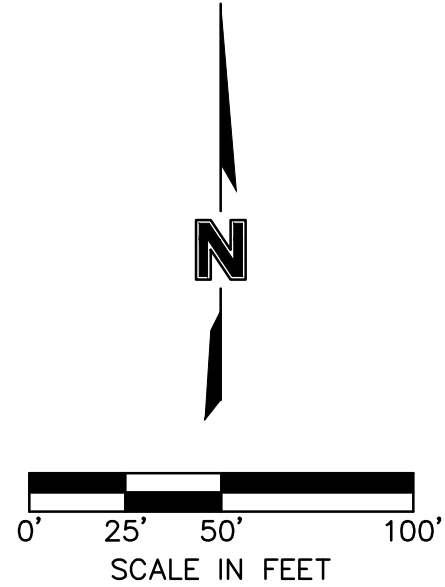
- NOTES:**
- MBOE – MINIMUM BUILDING OPENING ELEVATION
FG – FINISHED GRADE
- NOTES:**
1. INDIVIDUAL LOT OWNERS SHALL NOT CHANGE OR OBSTRUCT THE DRAINAGE FLOW LINES OR PATHS ON THE LOTS, AS SHOWN ON THE MASTER DRAINAGE PLAN, UNLESS SPECIFIC APPLICATION IS MADE AND APPROVED BY THE CITY ENGINEER.
2. PLAT 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 C105-C106 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
(W) WALKOUT
(D) DAYLIGHT

Hawthorn Ridge Third Plat Minimum Building Opening Elevation					
Lot	Rear Left MBOE	Rear Right MBOE	Front Left MBOE	Front Right MBOE	As-Built Grading Plan Required
160	1018.29	1019.86			
161	1016.65	1017.85	-	-	
162	1018.49	1016.65	-	-	
163	1019.51	1018.49	-	-	
164	1022.02	1019.51	-	-	
165	1023.92	1022.02	-	-	
166	1025.31	1023.92	-	-	
167	1024.15	1025.31	-	-	
168	1024.49	1024.15	-	-	
169	1041.11	1038.26	1037.67	1036.02	
170	1044.22	1041.11	1040.82	1037.67	
171	1048.54	1044.22	1045.14	1040.82	
172	1052.92	1048.54	1049.52	1045.14	
173	1057.26	1052.92	1053.90	1049.52	
174	1059.16	1056.14	1056.92	1053.90	
175	1058.30	1059.16	1056.06	1056.92	
176	1056.66	1058.30	1054.42	1056.06	
177	1056.04	1056.66	1053.80	1054.42	
178	1054.46	1056.04	1052.22	1053.80	
179	1054.74	1061.09	1049.74	1052.22	
180	1050.01	1054.74	1046.08	1049.74	
181	1046.20	1050.01	1043.07	1046.08	
182	1043.33	1046.20	1040.15	1043.07	
183	1039.62	1043.33	1037.23	1040.15	
184	1036.92	1039.62	1034.31	1037.23	
185	1034.47	1036.92	1031.88	1034.31	
186	1034.38	1035.03	-	-	
187	1032.64	1033.55	-	-	X
188	1031.75	1032.64	-	-	X
189	1028.12	1031.75	-	-	X
190	1032.33	1028.12	-	-	X
191	1037.21	1032.33	-	-	X
192	1040.98	1037.21	-	-	X
193	1041.85	1043.42	1039.61	1041.18	X
194	1041.35	1041.85	1039.11	1039.61	X
195	1040.98	1042.75	-	-	X
196	1039.63	1040.98	-	-	X
197	1037.71	1039.63	-	-	X
198	1036.95	1037.71	-	-	X
199	1035.32	1037.20	-	-	X
200	1032.73	1035.32	-	-	X
201	1031.92	1033.88	1029.70	1031.66	X
202	1029.96	1031.92	1027.74	1029.70	X
203	1027.76	1029.96	1025.54	1027.74	X
204	1026.35	1027.76	1024.13	1025.54	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.



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BY		REVISIONS	
REV. NO.	REVISIONS DESCRIPTION	DATE	REVISED PER CITY COMMENTS
1	11/23/2020		

MASTER DRAINAGE PLAN
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

2020

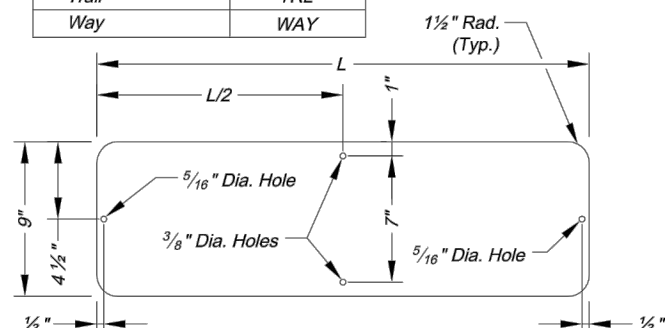
drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C_MDR01_A191605
date: 10/22/2020

SHEET
C125

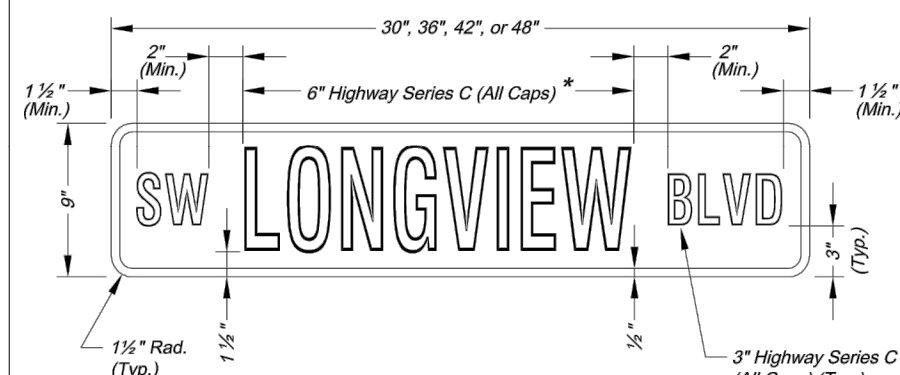
STANDARD ABBREVIATION LISTS

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

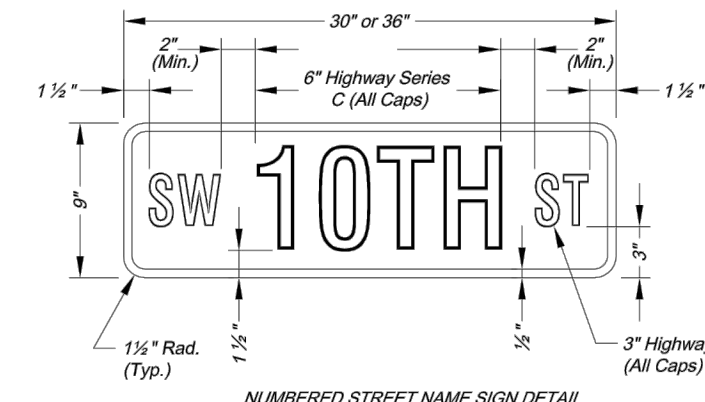
Numbered Streets	
First	ST
Second	ND
Third	RD
Fourth to Tenth	TH



STREET NAME SIGN BLANK DETAILS
For Mounting on Square Steel Posts



NAMED STREET NAME SIGN DETAIL
* Use Highway Series B (All Caps) in lieu of series C (All Caps) if necessary to fit text on a 36" sign blank.

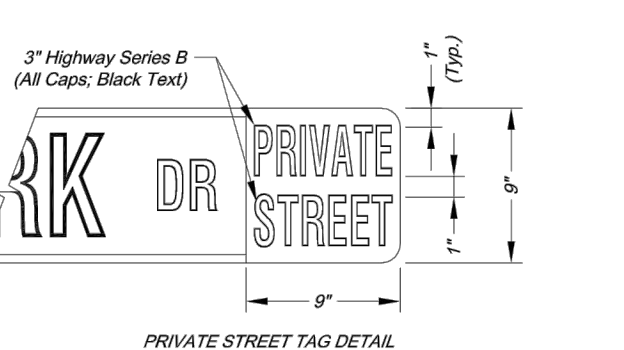
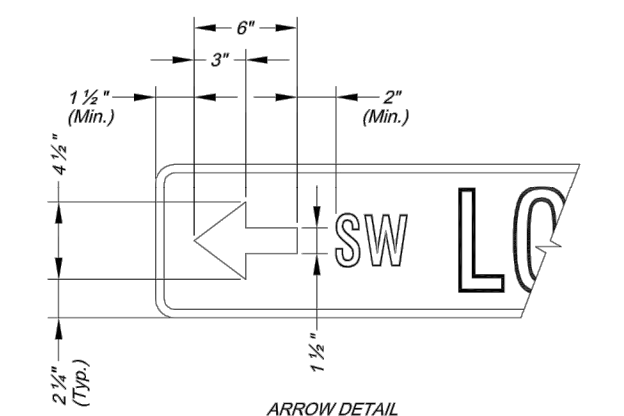


NUMBERED STREET NAME SIGN DETAIL

STREET NAME SIGN QUANTITIES

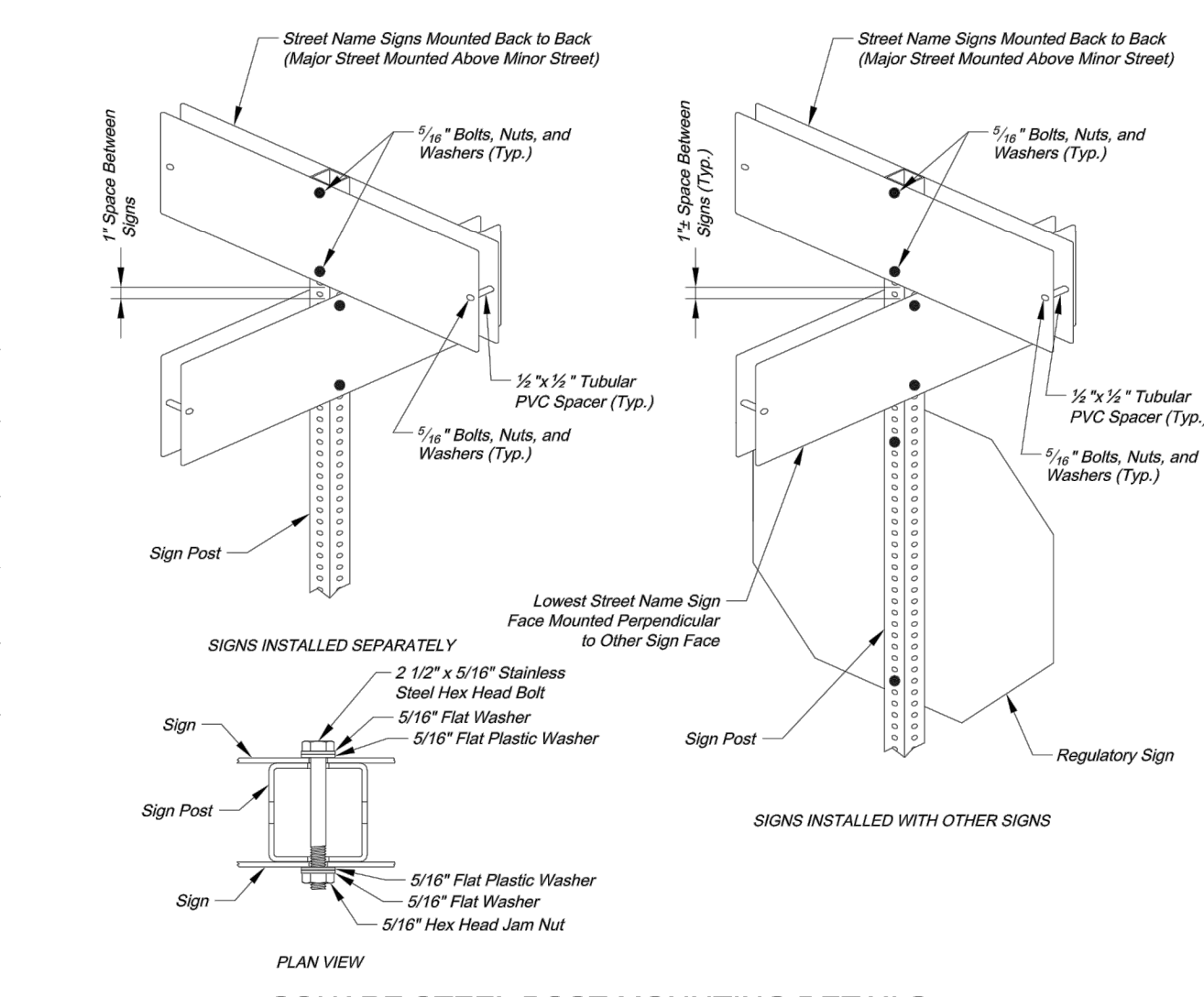
Sign Designation	Sign Size	Sign Area (Sq. Ft.)	Number	Quantity (Sq. Ft.)
D3-1 (SP-1)	9" x 9"	Sq. Ft.	1	1
D3-1 (SP-2)	9" x 9"			
D3-1 (SP-3)	9" x 9"			
D3-1 (SP-4)	9" x 9"			
D3-1 (SP-5)	9" x 9"			
D3-1 (SP-6)	9" x 9"			

PROJECT SIGN DETAILS

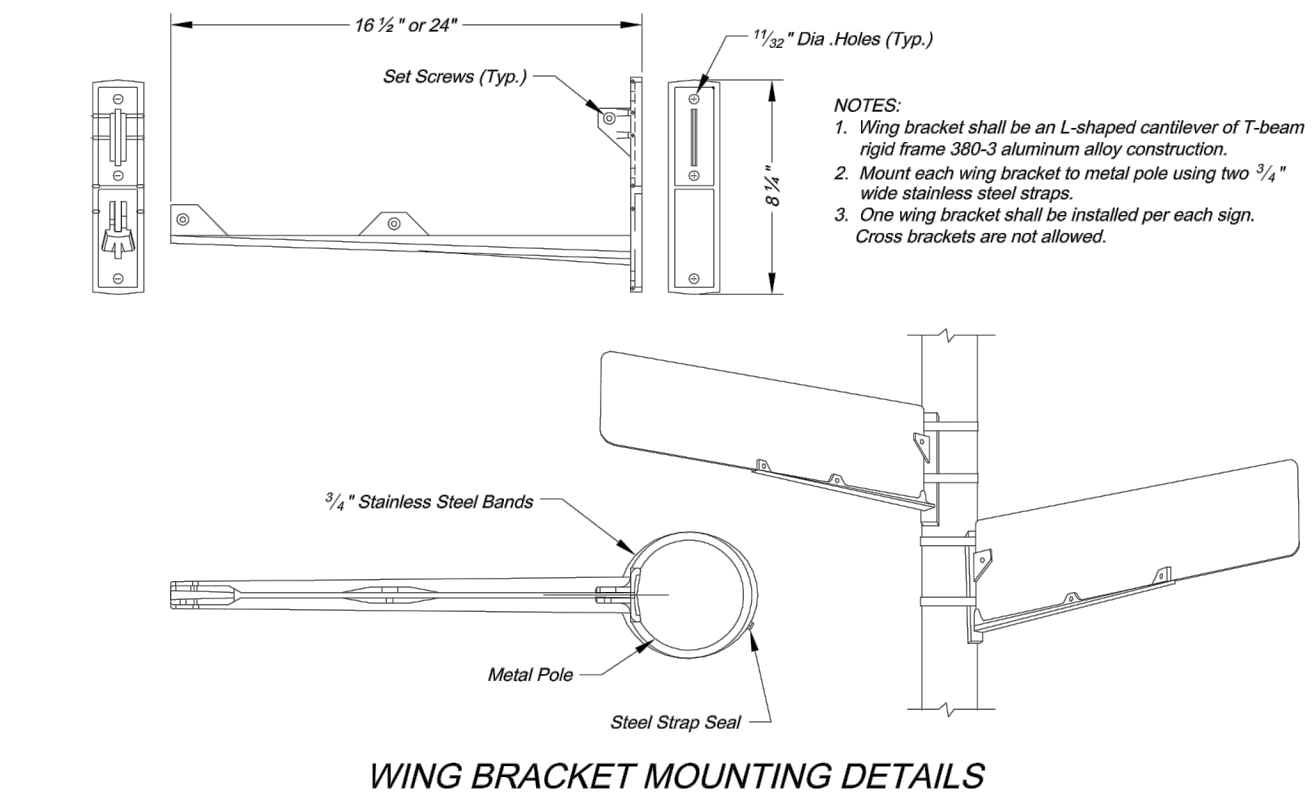


PRIVATE STREET TAG DETAIL
NOTES:
1. For all street name signs, the legend shall be white and the background shall be green.
2. Arrows shall be added to street name signs where the name of a street changes at an intersection. Street name signs with arrows are to be installed on each side of the intersection 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



SQUARE STEEL POST MOUNTING DETAILS



WING BRACKET MOUNTING DETAILS



U-STEEL POST DETAILS

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



SQUARE STEEL POST DETAILS

- SQUARE STEEL POST NOTES:
- 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 1/2" x 2 1/2" x 36" Square Steel Post
Anchor Sleeve - 12 Ga. 2 1/2" x 2 1/2" x 18" Square Steel Post
 - 14 Gauge posts must meet a certified minimum yield strength of 60,000 psi.
 - 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.
 - 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.

Diagram showing various sign installation details for non-curved streets, curved streets, and intersections. It includes dimensions for sign placement, mounting hardware, and overall dimensions.

SIGN INSTALLATION FOR NON-CURVED STREET

SIGN INSTALLATION WITH AUXILIARY SIGN FOR NON-CURVED STREET

SIGN INSTALLATION WITH TWO SIGN POSTS

SIGN INSTALLATION FOR CURVED STREET

SIGN INSTALLATION WITH AUXILIARY SIGN FOR CURVED STREET

SIGN INSTALLATION FOR RAISED MEDIANS

CONTROL SIGN LOCATION

MEDIAN SIGN LOCATION

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 60 inches above the walkway.

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

Diagram showing various sign installation details for non-curved streets, curved streets, and intersections. It includes dimensions for sign placement, mounting hardware, and overall dimensions.

SIGN INSTALLATION FOR NON-CURVED STREET

SIGN INSTALLATION WITH AUXILIARY SIGN FOR NON-CURVED STREET

SIGN INSTALLATION WITH TWO SIGN POSTS

SIGN INSTALLATION FOR CURVED STREET

SIGN INSTALLATION WITH AUXILIARY SIGN FOR CURVED STREET

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STATE OF MISSOURI
BROCK M. WORTHLEY
Professional Engineer
No. 2019000237
11/23/2020

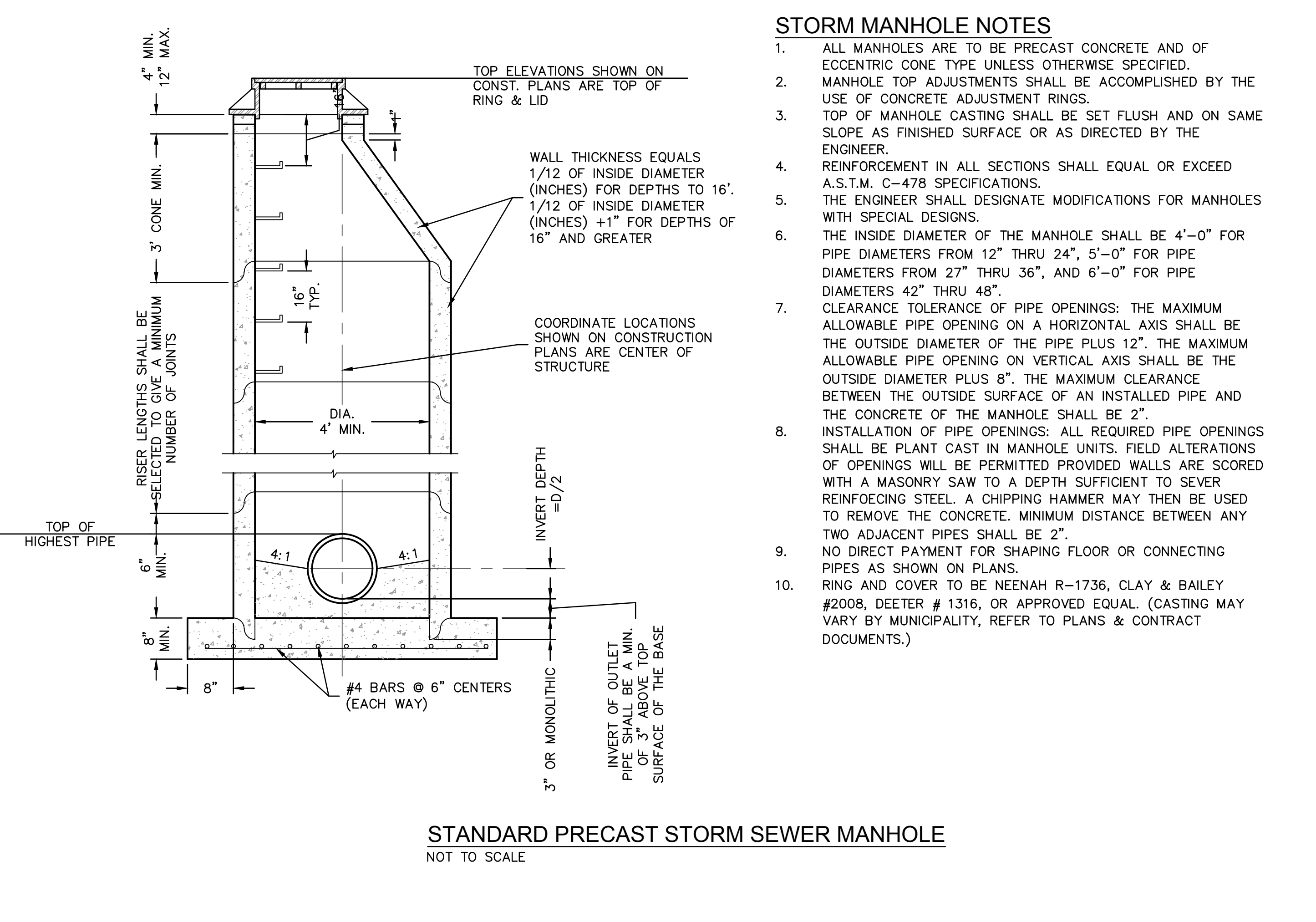
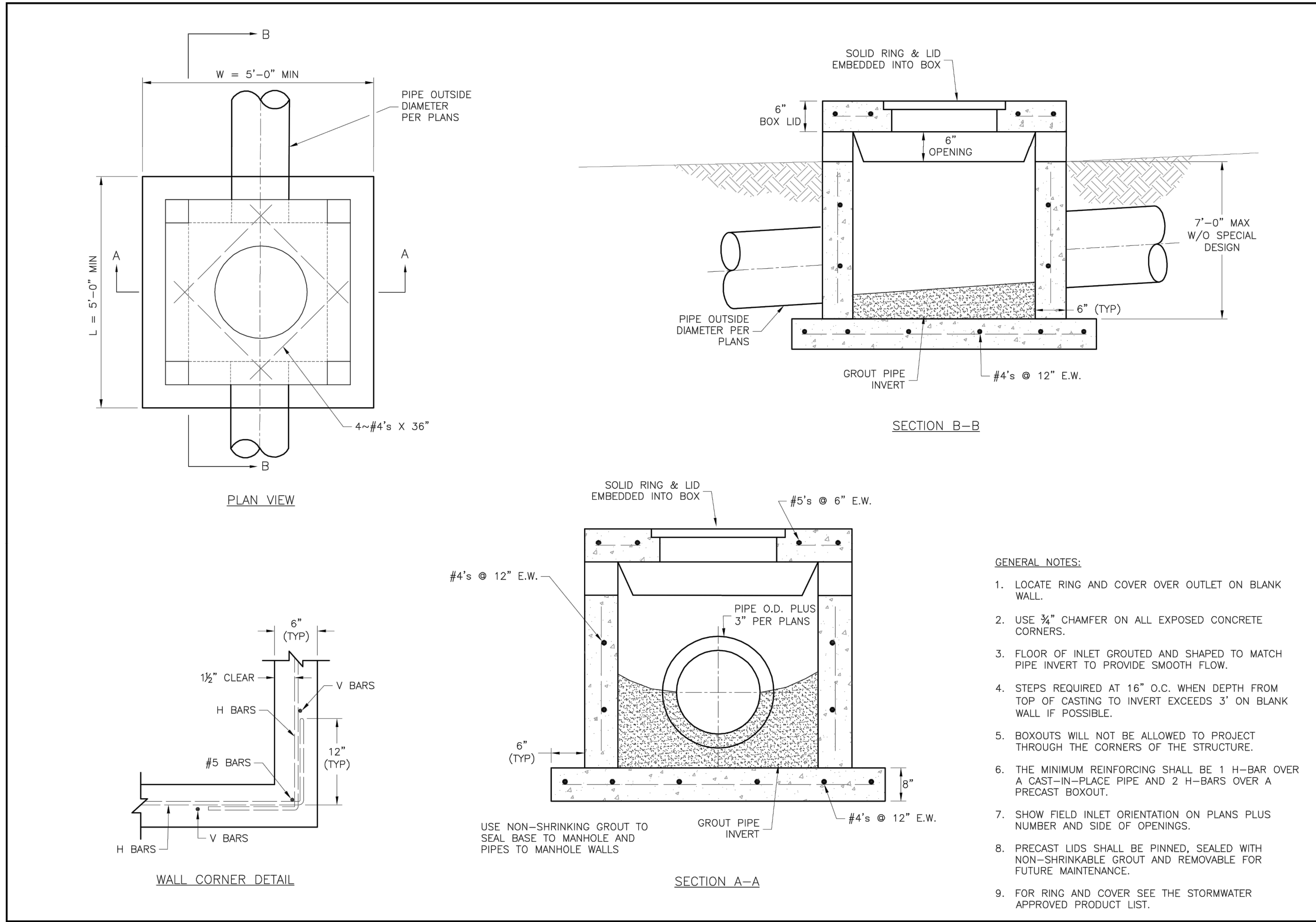
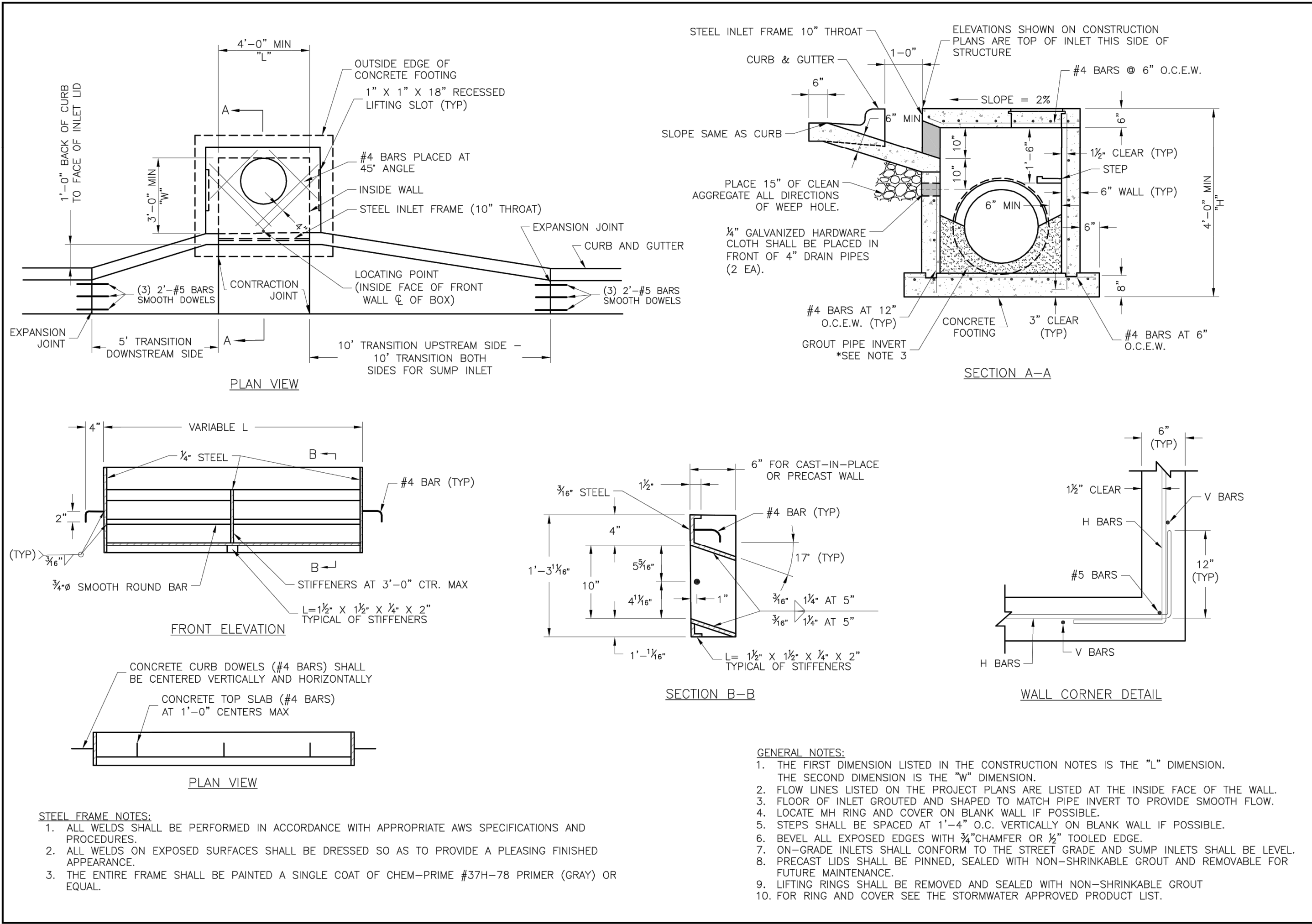
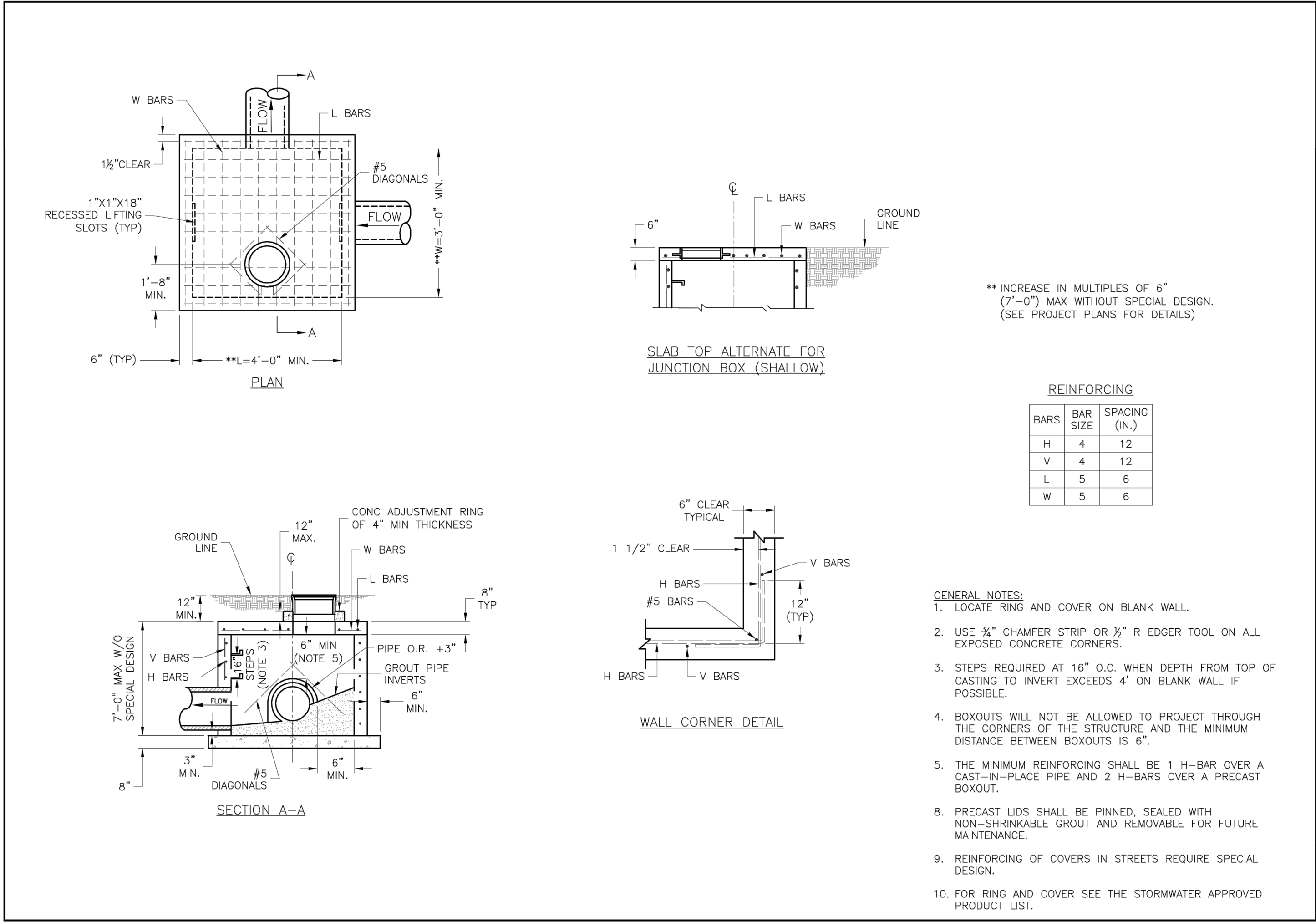
REVISIONS

REV. NO.	DATE	REVISION DESCRIPTION
1		
2		
3		
4		
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SIGN DETAILS
STREET & STORM SEWER PLANS
HAWTHORN RIDGE
THIRD PLAT
LEE'S SUMMIT, MO
2020

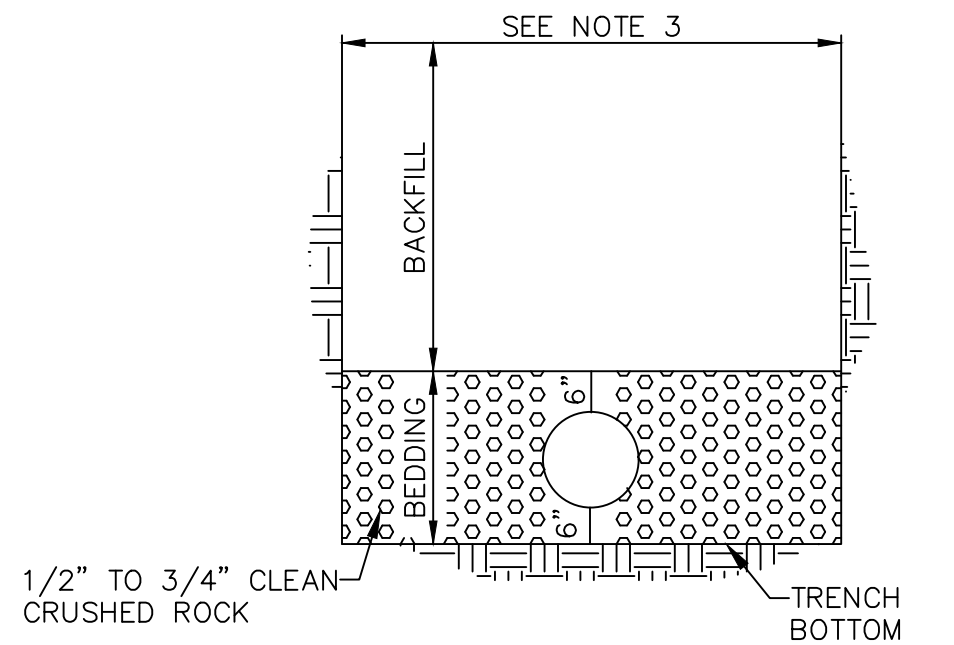
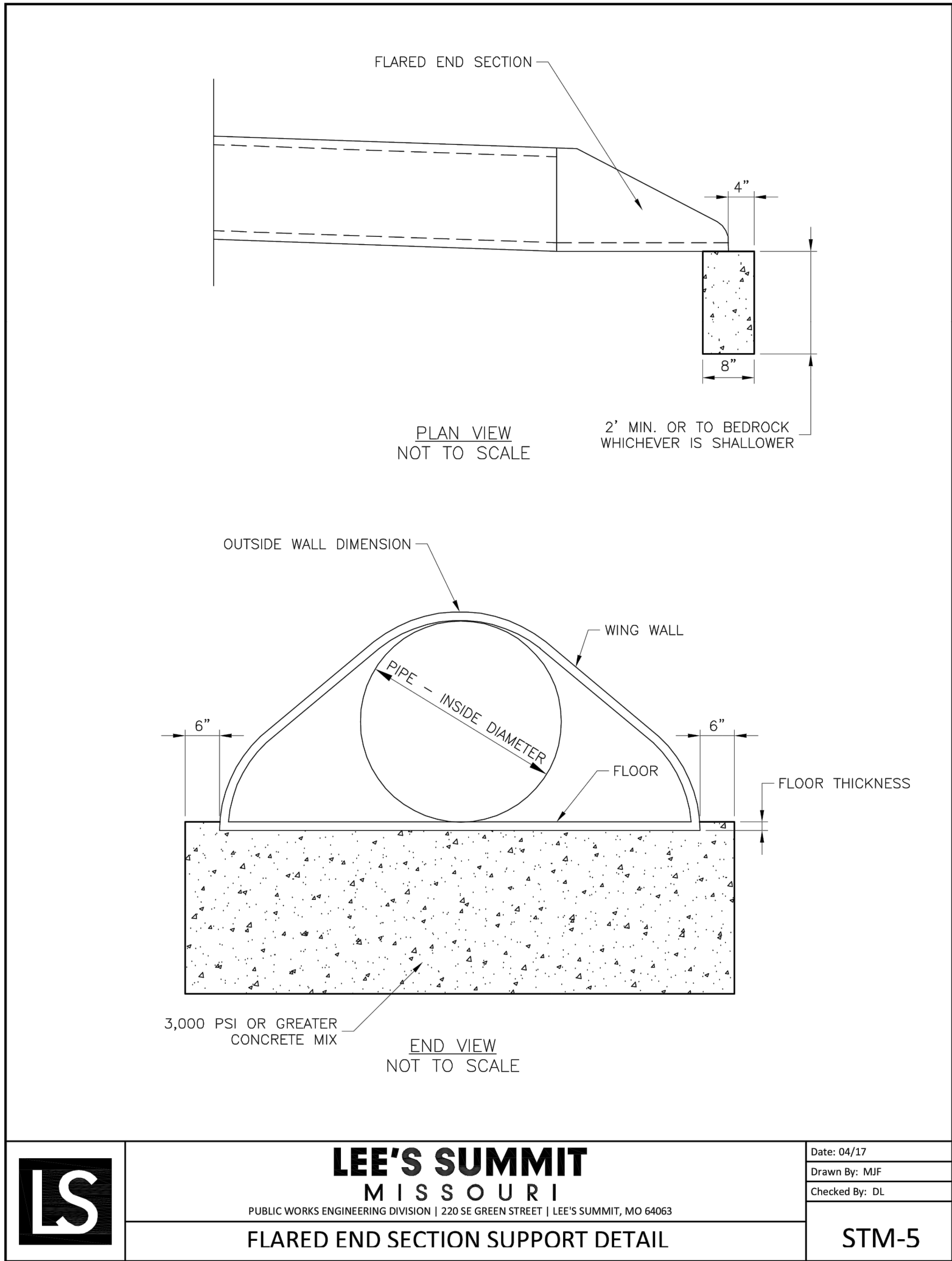
drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C_DTL01_A191605
date: 10/22/2020

SHEET
C126



STANDARD PRECAST STORM SEWER MANHOLE
NOT TO SCALE

DWG: F:\2019\1501-2000\019-1605-A\40-Design\AutoCAD\Final Plans\Sheets\CONV\STREET & STORM\C_DTL01_A191605.dwg
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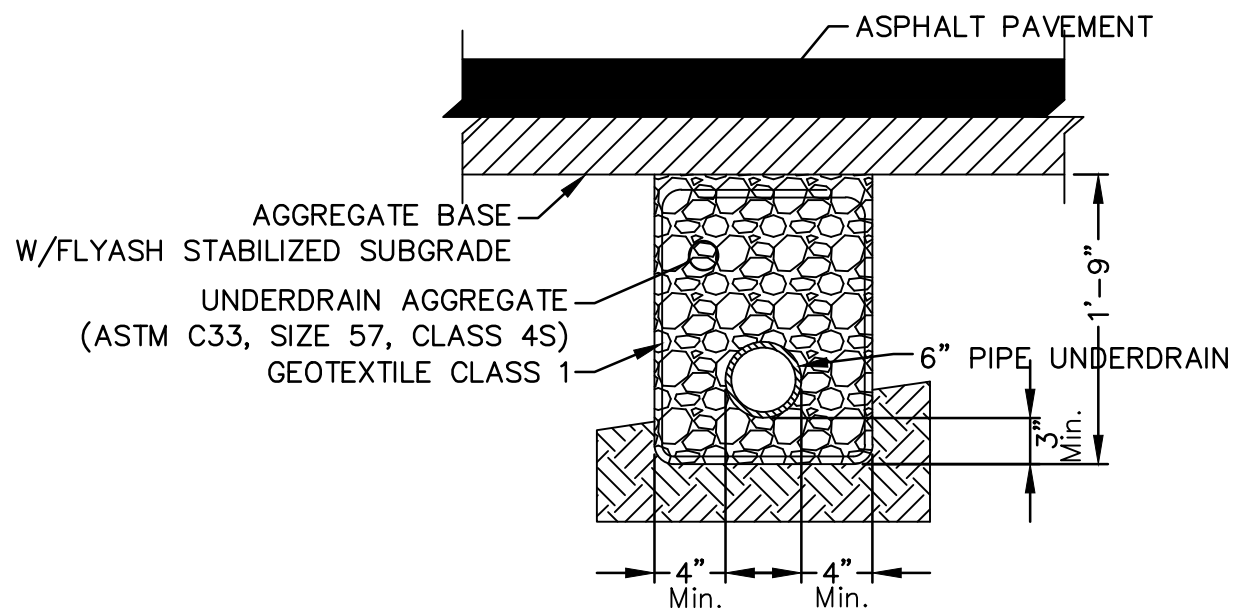
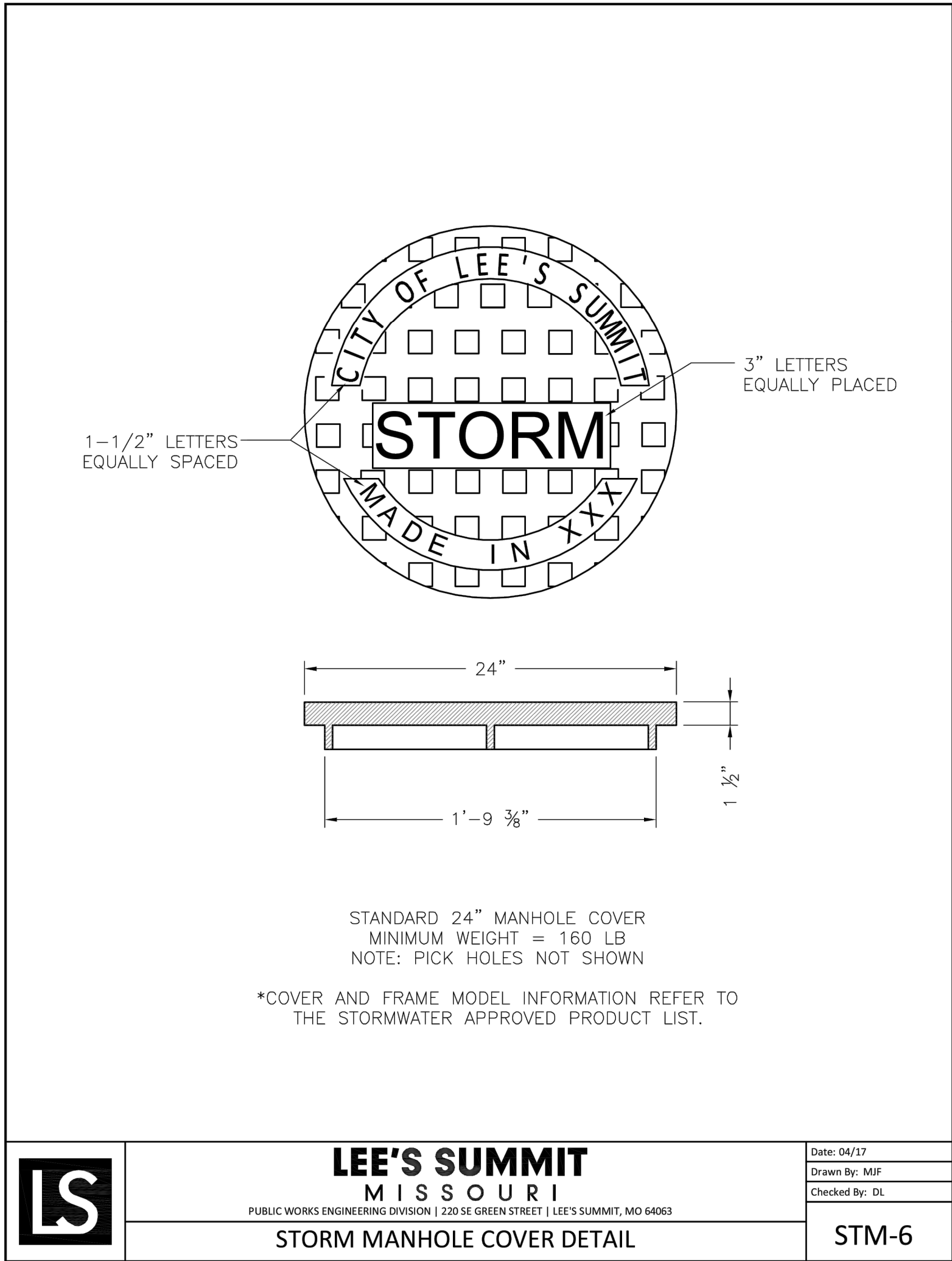


TYPICAL SECTION FOR PLASTIC PIPE
(IN ROCK OR SOIL)

UNDERGROUND PIPE INSTALLATION FOR STORM SEWER LINES

N.T.S.

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

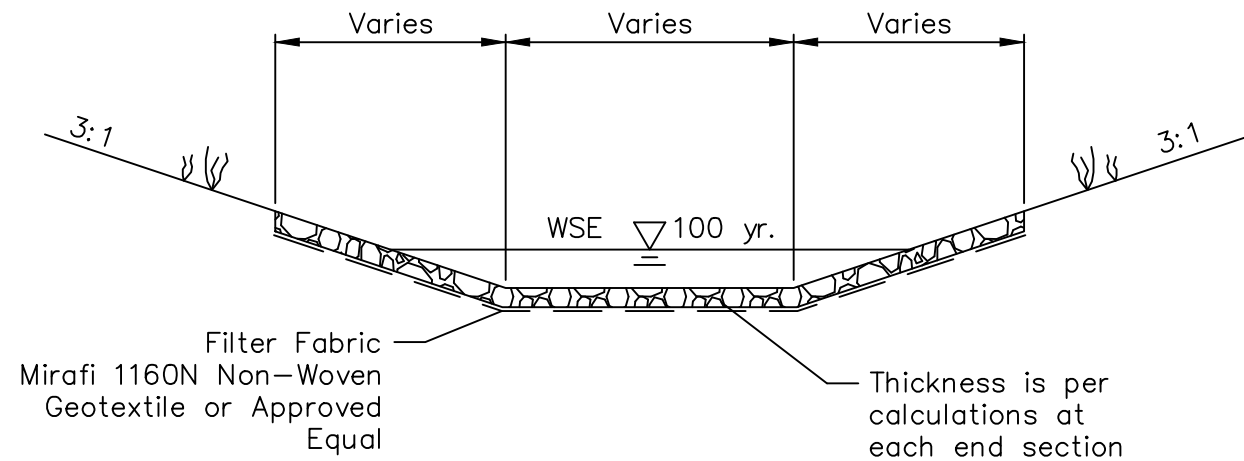
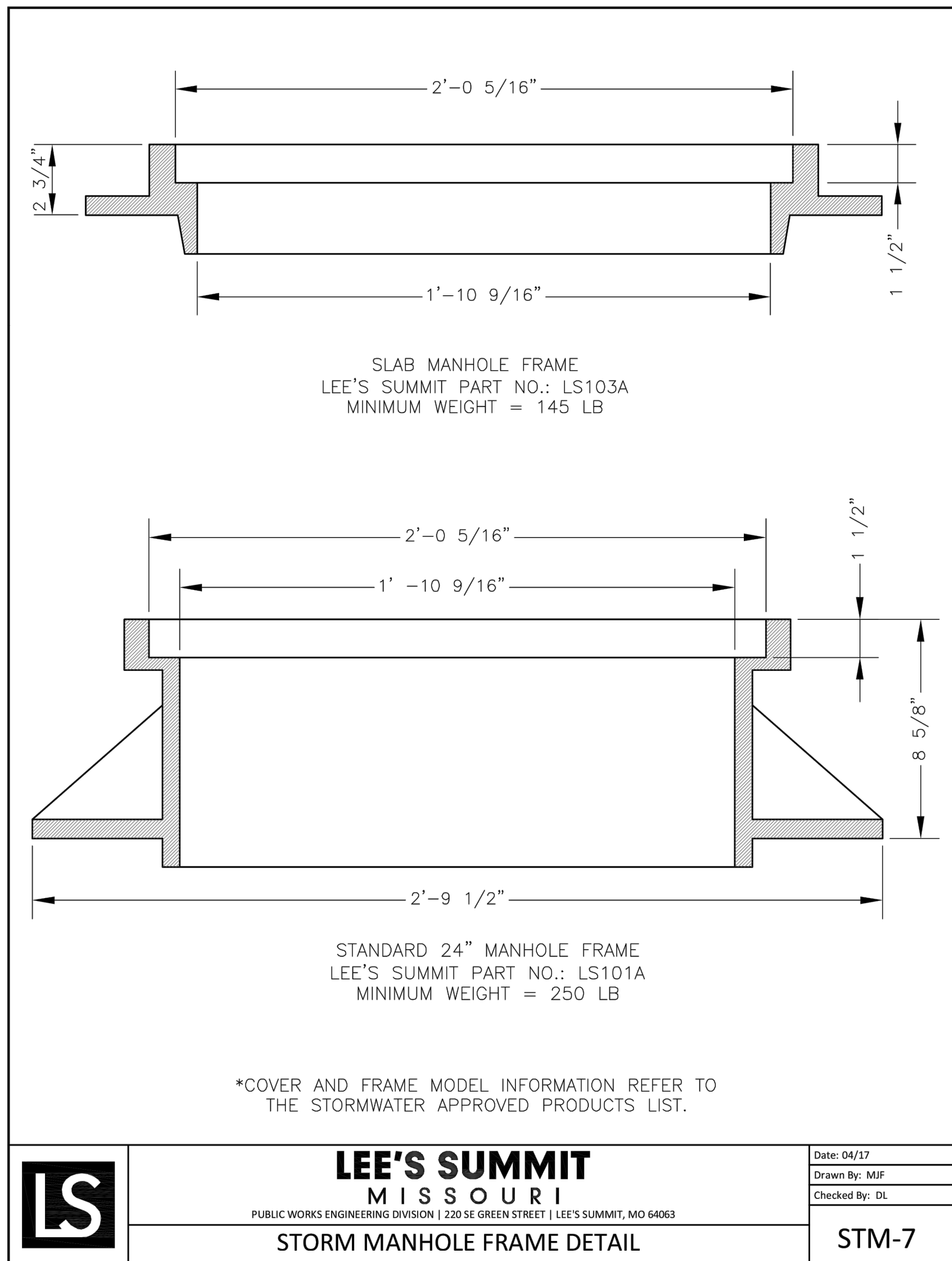


PIPE UNDERDRAIN LATERAL

N.T.S.

NOTES:

- 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.
- All Underdrain Pipes shall be installed at a minimum slope of 1%.
- Underdrain Pipe shall be installed with the perforations placed down.
- Blanket Underdrain Aggregate, Pipe Underdrain Aggregate, Pipe Underdrain, Edge Underdrain and Outlet Pipe shall conform to City of Lee's Summit Specifications.
- Overlap geotextile at top of trench a minimum of 12".



NOTE: DIMENSIONS ARE PER CALCULATIONS AT EACH END SECTION

RIPRAP DETAIL

N.T.S.

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

2020

STORM SEWER DETAILS
STREET & STORM SEWER PLANS
HAWTHORN RIDGE
THIRD PLAT
LEE'S SUMMIT, MO

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