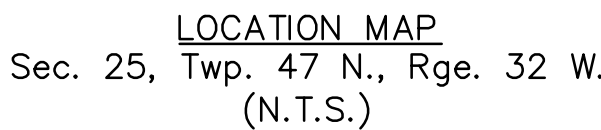


NW 1/4 SECTION 25, TOWNSHIP 47 N, RANGE 32 W
IN LEE'S SUMMIT, JACKSON COUNTY, MO



☒ 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°31'11" 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°42'24" EAST, 37.00 FEET; THENCE NORTH 02°18'36" EAST, 192.00 FEET; THENCE NORTH 87°42'24" 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 SECTION 21 OF SAID HAWTHORN RIDGE 1ST PLAT; THENCE ON THE SOUTHERLY LINE OF SAID HAWTHORN RIDGE 1ST PLAT THE FOLLOWING 8 C&S: 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

Kent Monter Digitally signed
by Kent Monter
Reason: I am
approving this
document
Date: 2021.02.10
20:06:52-06'00'

**RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI**

02/10/2021

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BY

REVISIONS DESCRIPTION

DATE _____

REV.

DEVISIONS

2020

COVER SHEET
STREET & STORM SEWER PLANS

WTHORN 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

DWG: F:\2019\1501-2000\019-1605-A\40-Design\AutoCAD\Final Plans\Sheets\CONV\STREET & STORM\C_TTL01_A191605.dwg
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XREFS: C_PBDY_A191605
C_PBLK_A191605
USER: bworthley

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 ENROACH 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	Raw Description
90009	981383.7330'	2813865.4520'	1064.23'	CP 60D
90012	981431.6120'	2813832.1000'	1062.71'	CP 60D
90033	981440.4750'	2814063.8700'	1047.98'	CP 60D
90044	981710.8560'	2814198.8050'	1027.00'	CP 60D
90052	981859.5430'	2814200.2150'	1017.51'	CP 60D
90056	981975.4580'	2814144.8570'	1011.69'	CP 60D
90080	981971.2190'	2814027.5570'	1016.72'	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.

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	



REV. NO.	DATE	REVISIONS DESCRIPTION	BY

GENERAL NOTES STREET & STORM SEWER PLANS		2020
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

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02/10/2021

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USER: bworthley



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02/10/2021**

GENERAL LAYOUT
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

drawn by: _____ OLS
checked by: _____ BMW
approved by: _____ BMW
QA/QC by: _____ JES
project no.: _____ A19-1603
drawing no.: C GEN01 A191603
date: 10/02/2020

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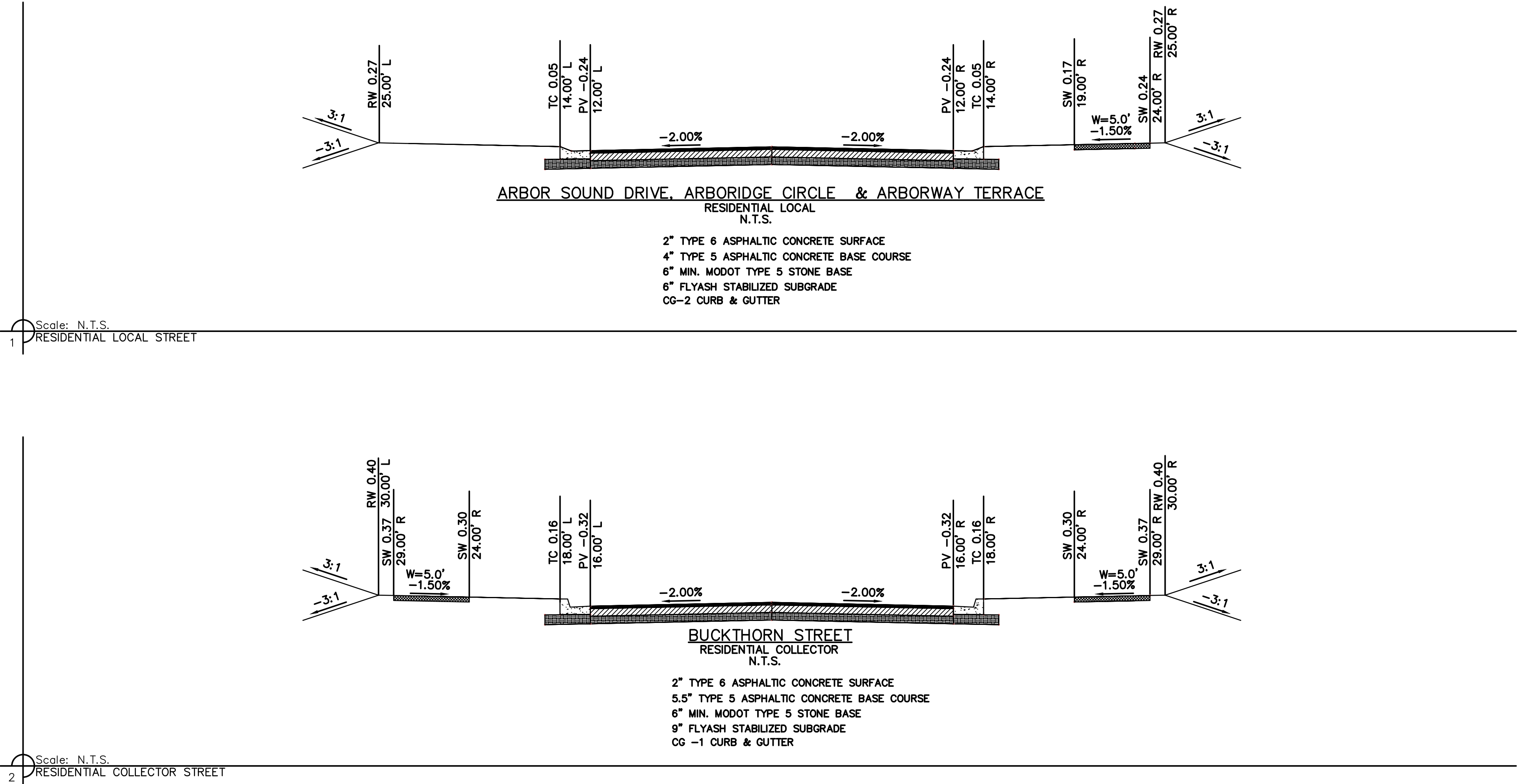
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Scale: N.T.S.
1 RESIDENTIAL LOCAL STREET

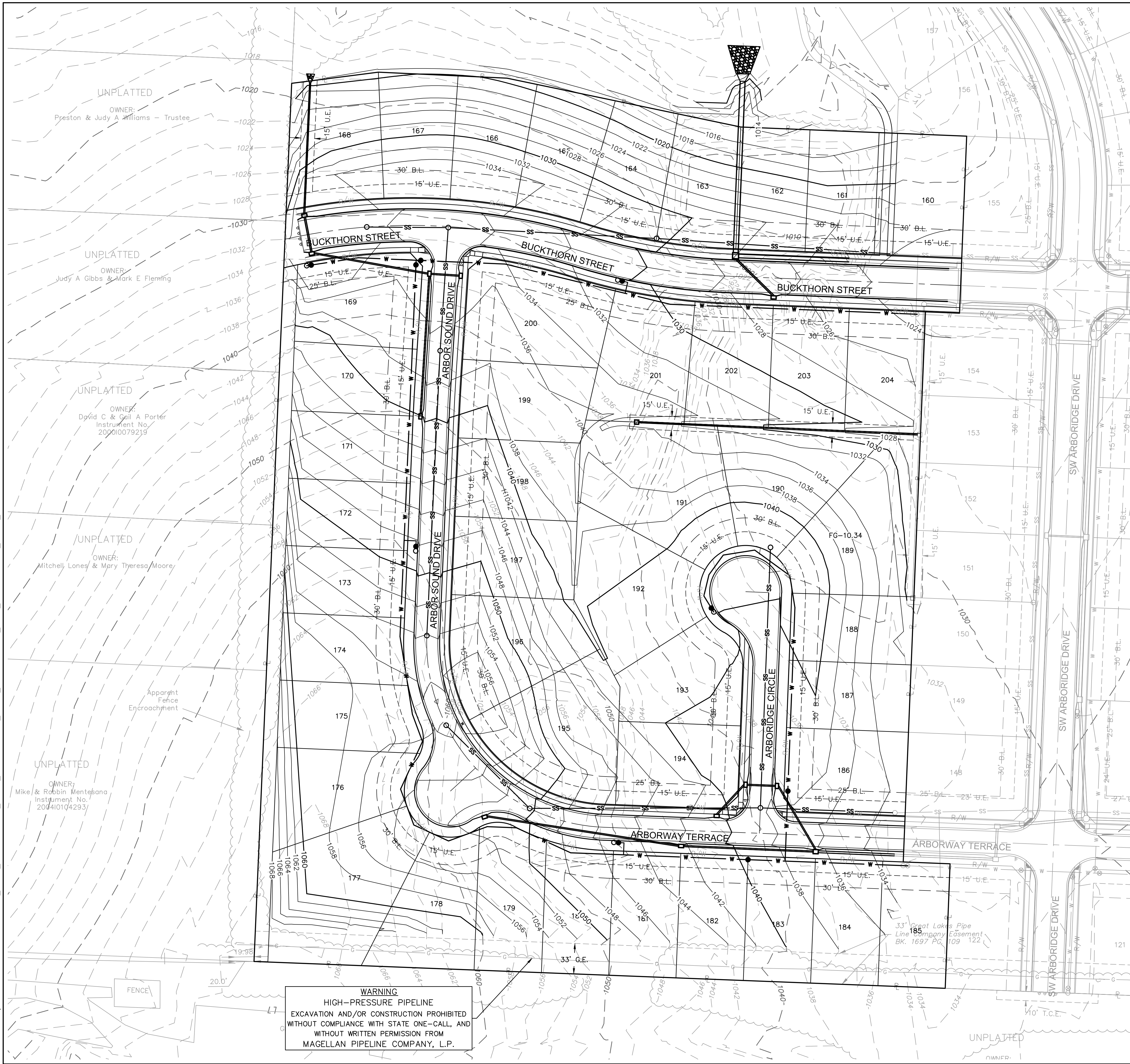
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2 RESIDENTIAL COLLECTOR STREET

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02/10/2021

TYPICAL SECTIONS STREET & STORM SEWER PLANS		REV. NO.		DATE		REVISIONS DESCRIPTION		BY	
HAWTHORN RIDGE THIRD PLAT									
LEE'S SUMMIT, MO		2020				REVISIONS			
drawn by: OLS		checked by: BMW		approved by: BMW		QA/QC by: JES		project no.: A19-1605	
drawing no.: C_TYP01_0191605		date: 10/02/2020							
SHEET C103									

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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 93% 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	

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AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
02/10/2021**

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

REV. NO.	DATE	REVISIONS DESCRIPTION	BY

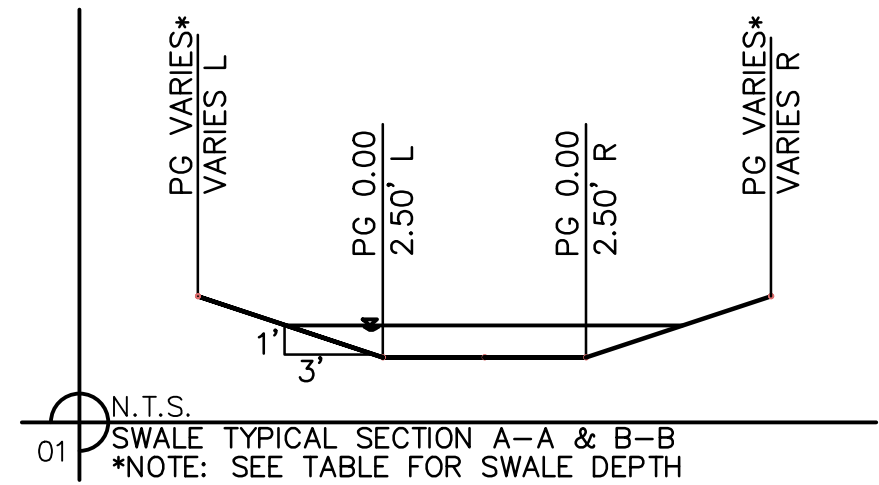
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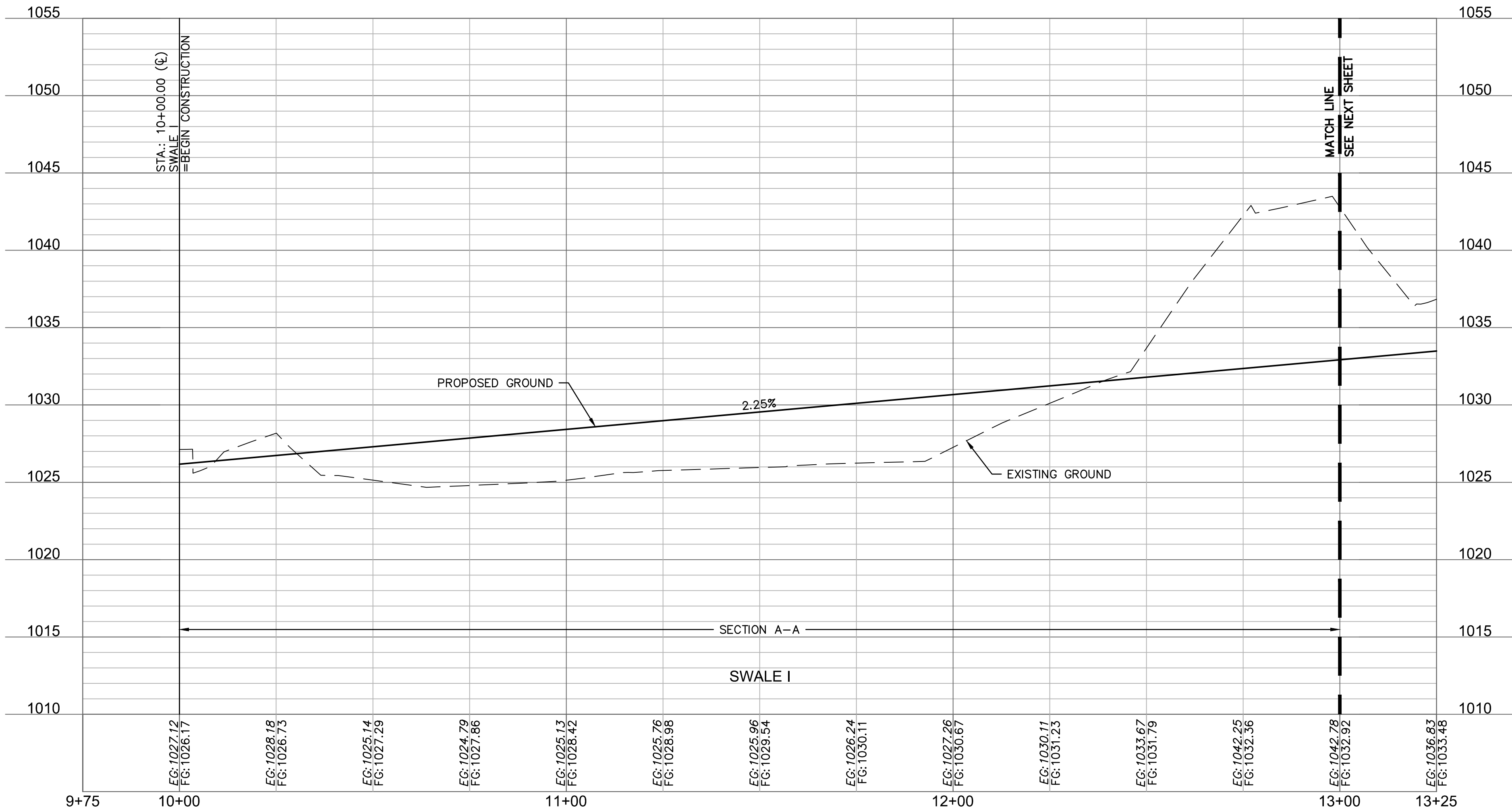
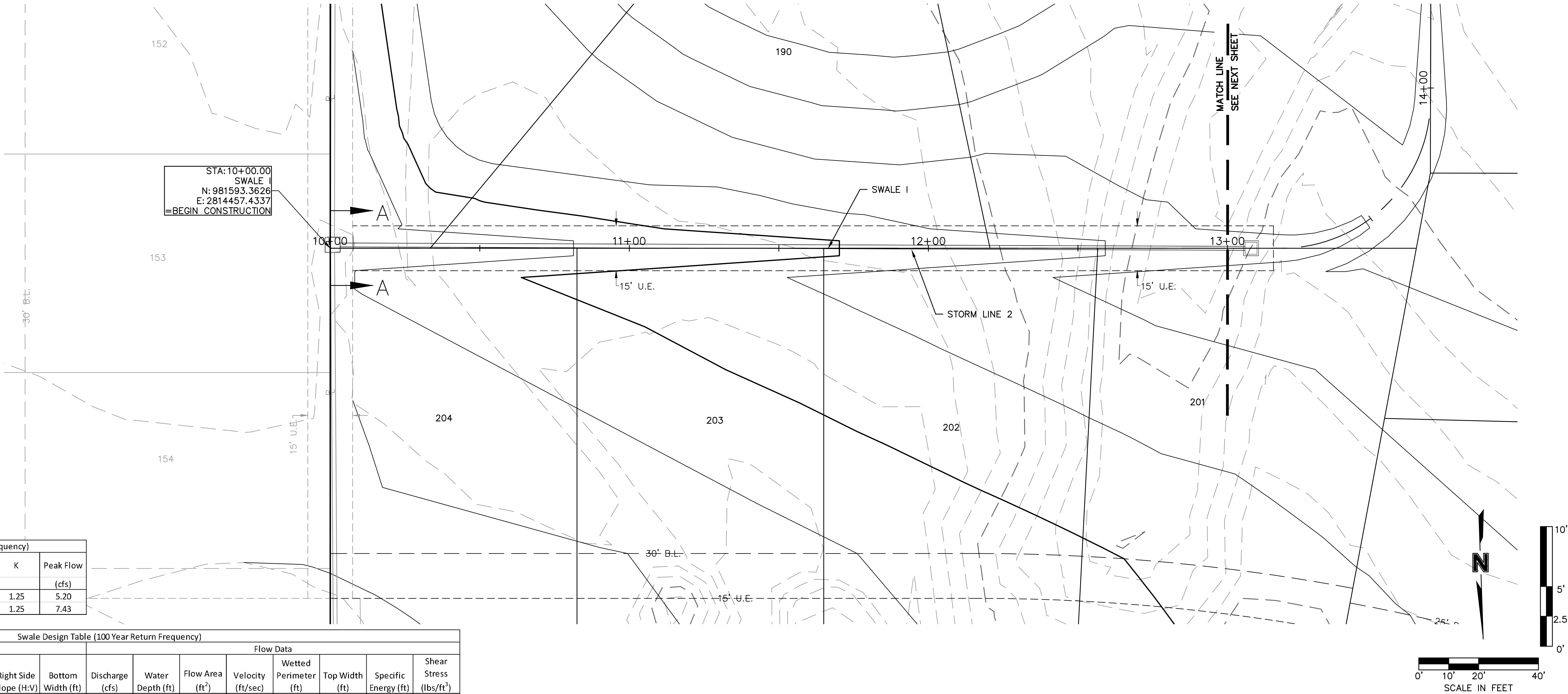


SWALE GRADING NOTES:

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.

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



RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
02/10/2021

olsson

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Missouri Certificate of Authority #001592
1301 Burlington Street
North Kansas City, MO 64116
TEL 816.361.1177
www.olson.com

STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER
PE-2019000237
11/18/2021
PROFESSIONAL ENGINEER

BY

REVISIONS DESCRIPTION

DATE

REV. NO.

2020

SWALE PLAN AND PROFILE
STREET & STORM SEWER PLANS

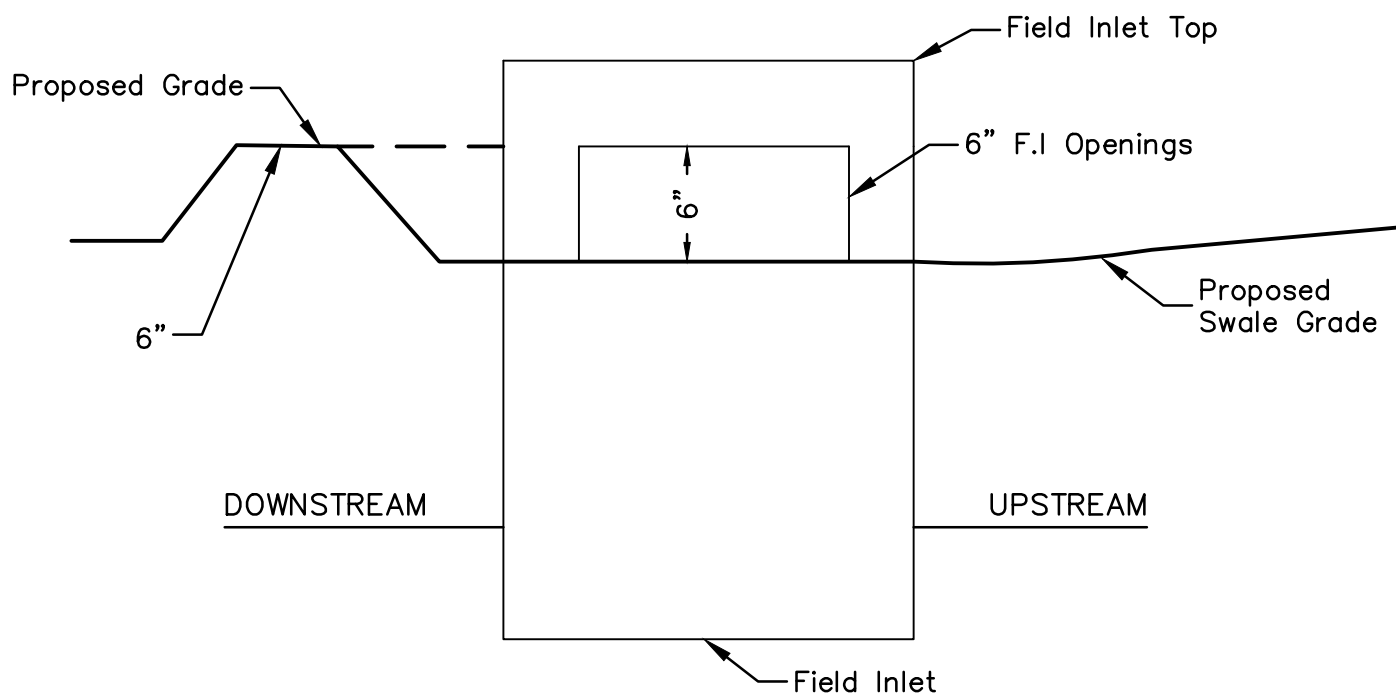
HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C-SWL01_A191605
date: 10/22/2020

SHEET
C105

DWG: F:\2019\1501-2000\019-1605-A\40-Design\AutoCAD\Final Plans\Sheets\GNC\A\STREET & STORM\C-SWM.01_A191605.dwg
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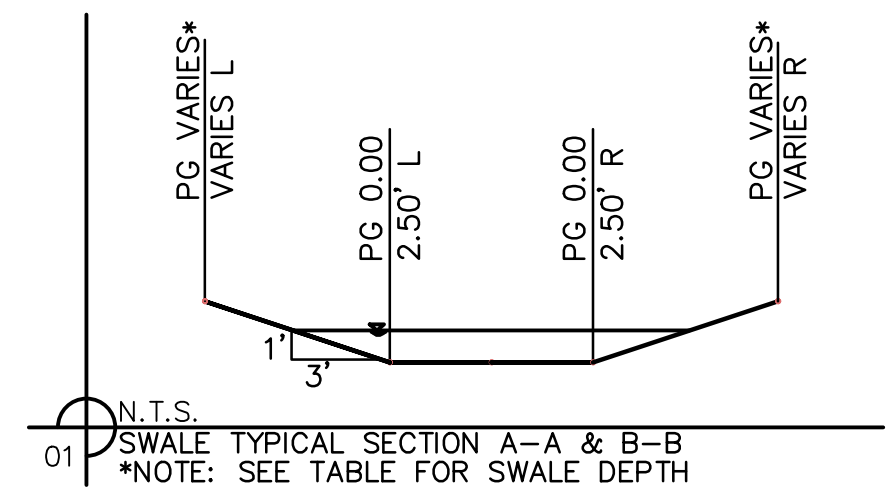


NOTE: INCLUDE SUMP PER ABOVE DETAIL WHERE FIELD INLETS ARE LOCATED WITHIN SWALES.

SUMP DETAIL
N.T.S.

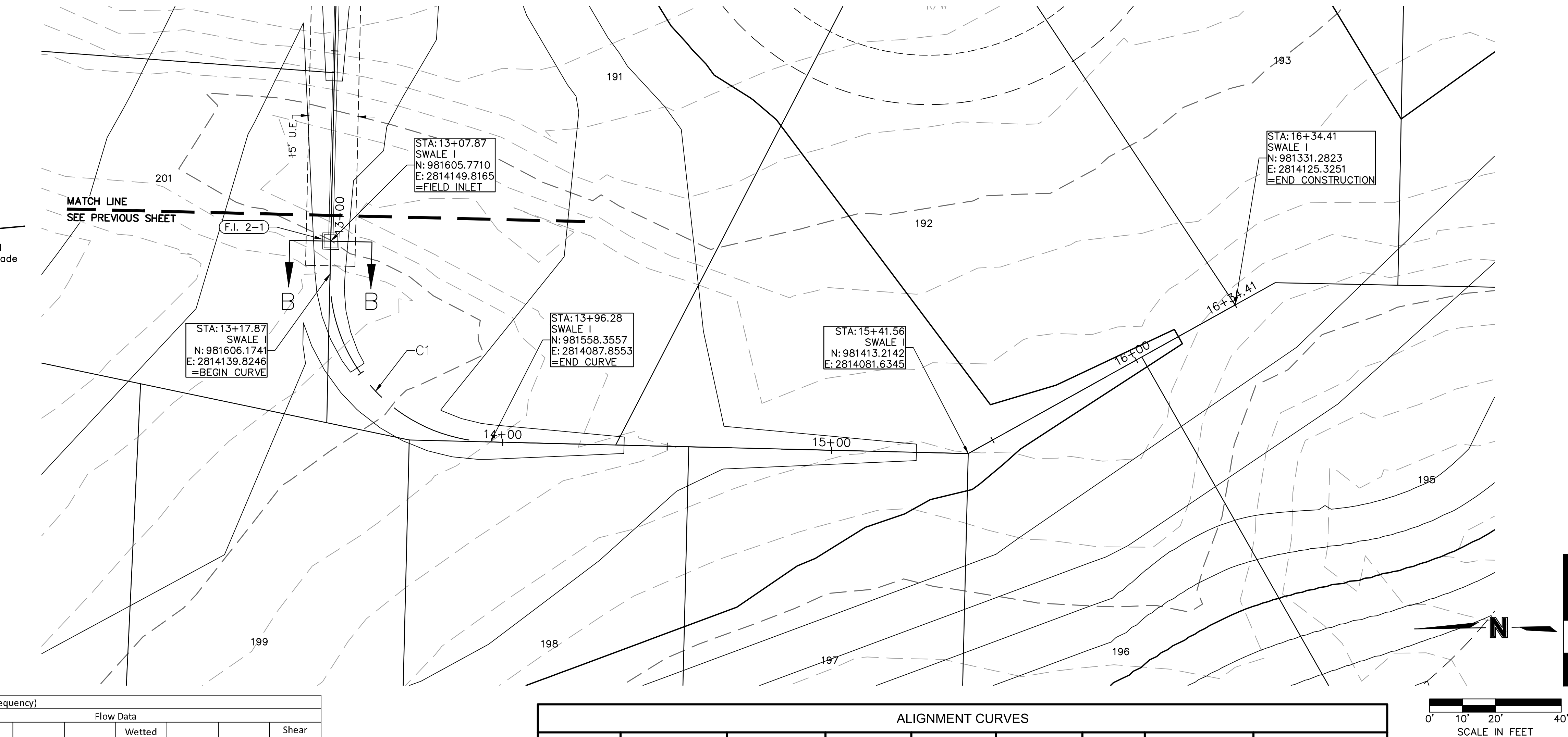
Swale Drainage Area Table (100 year Return Frequency)						
Section	Drainage Area (ac.)	C	Tc (min)	i (in/hr)	K	Peak Flow (cfs)
A-A	0.79	0.51	5	10.32	1.25	5.20
B-B	1.13	0.51	5	10.32	1.25	7.43

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

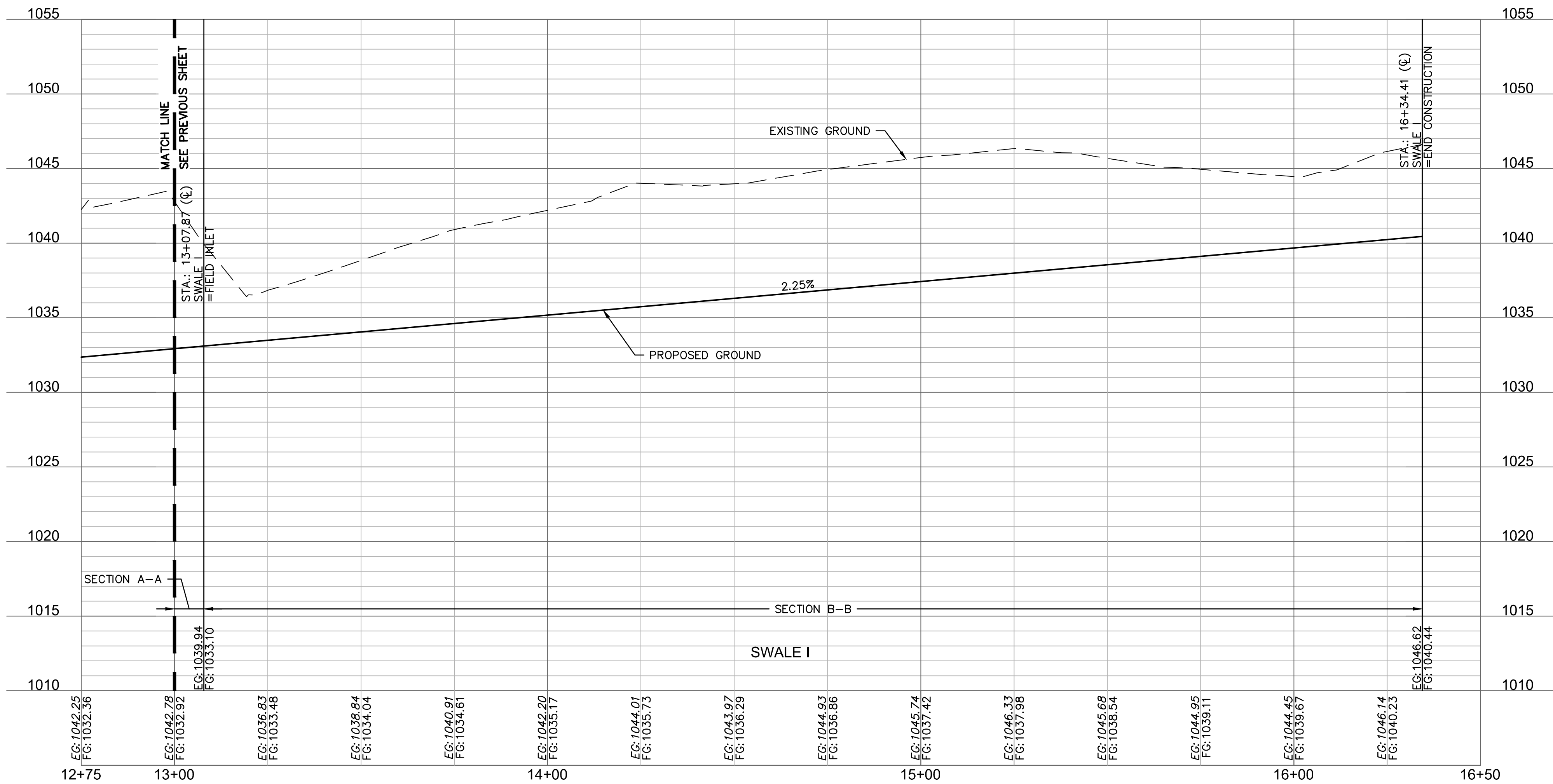


SWALE GRADING NOTES:

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



RELEASE FOR
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LEE'S SUMMIT, MISSOURI
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Professional Engineer
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SWALE PLAN AND PROFILE (CONT)
STREET & STORM SEWER PLANS

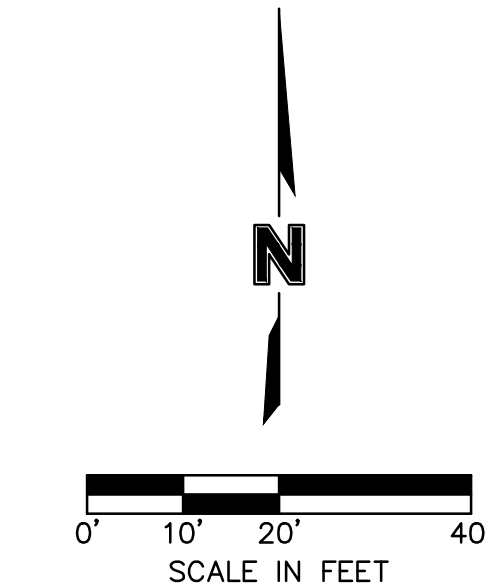
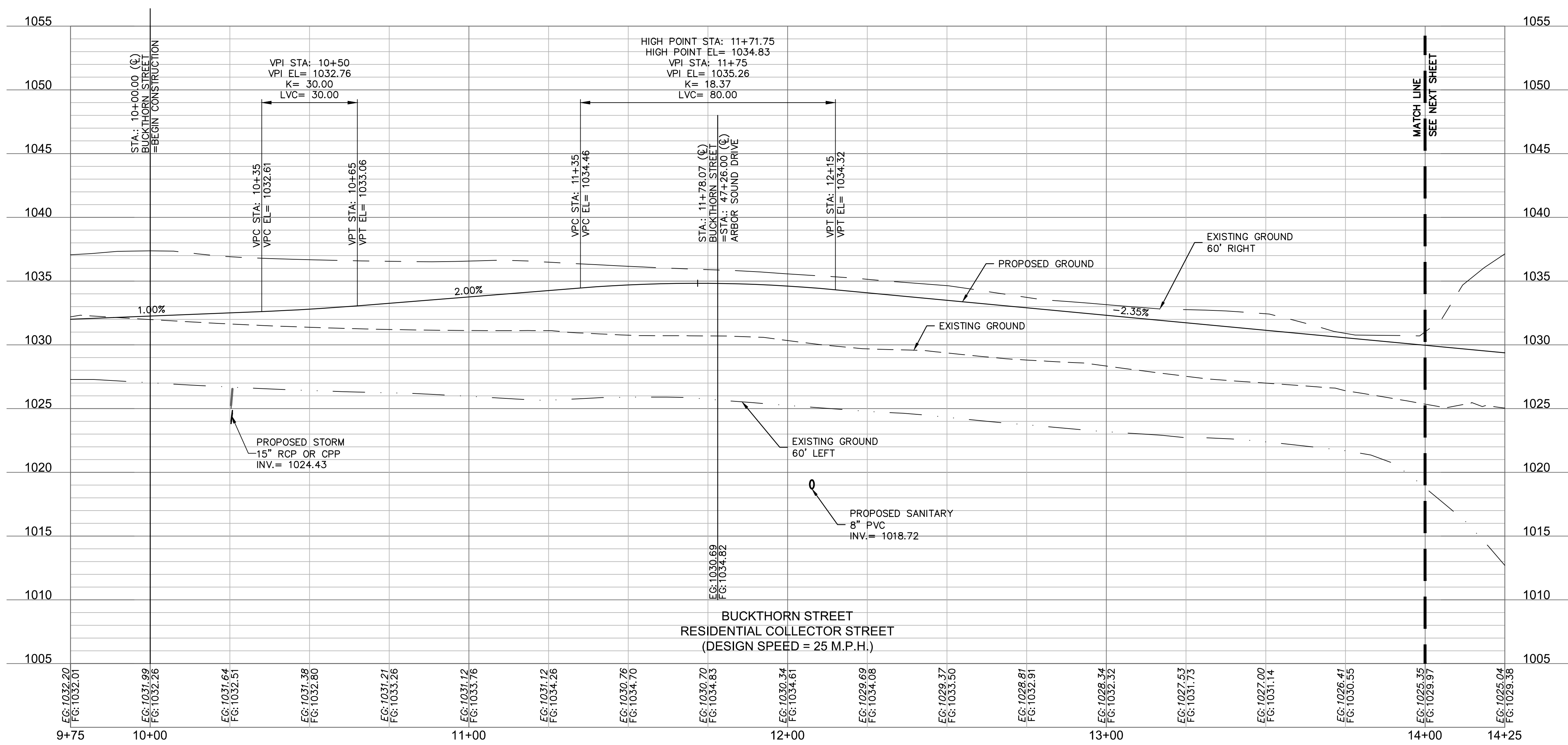
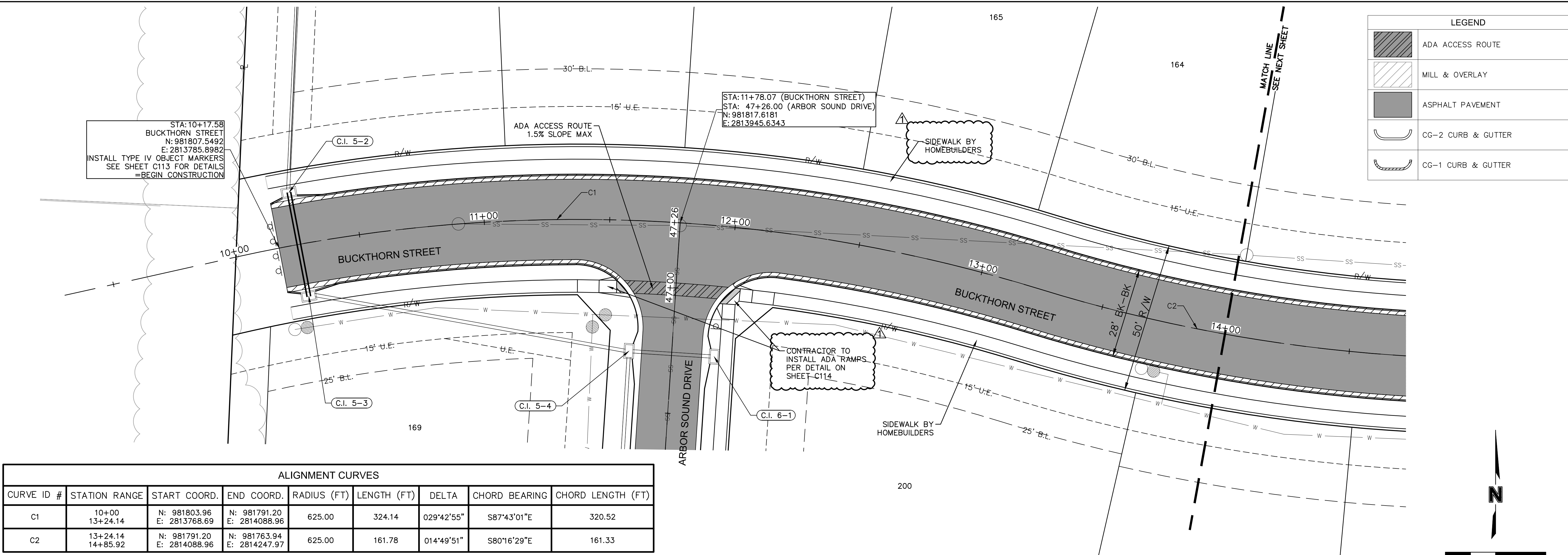
HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

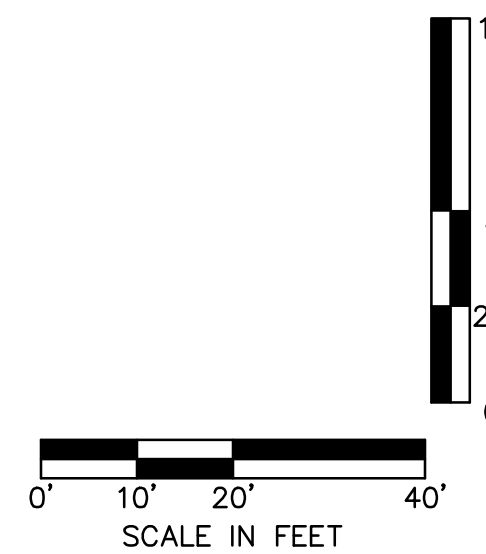
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checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C-SWM.01_A191605
date: 10/02/2020

SHEET
C106

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USER: bwarthley



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STATE OF MISSOURI
BROCK M. WORTHLEY
PROFESSIONAL ENGINEER
NUMBER
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11/18/2021

REVISIONS

2020

ROADWAY PLAN AND PROFILE (BUCKTHORN STREET)
STREET & STORM SEWER PLANS

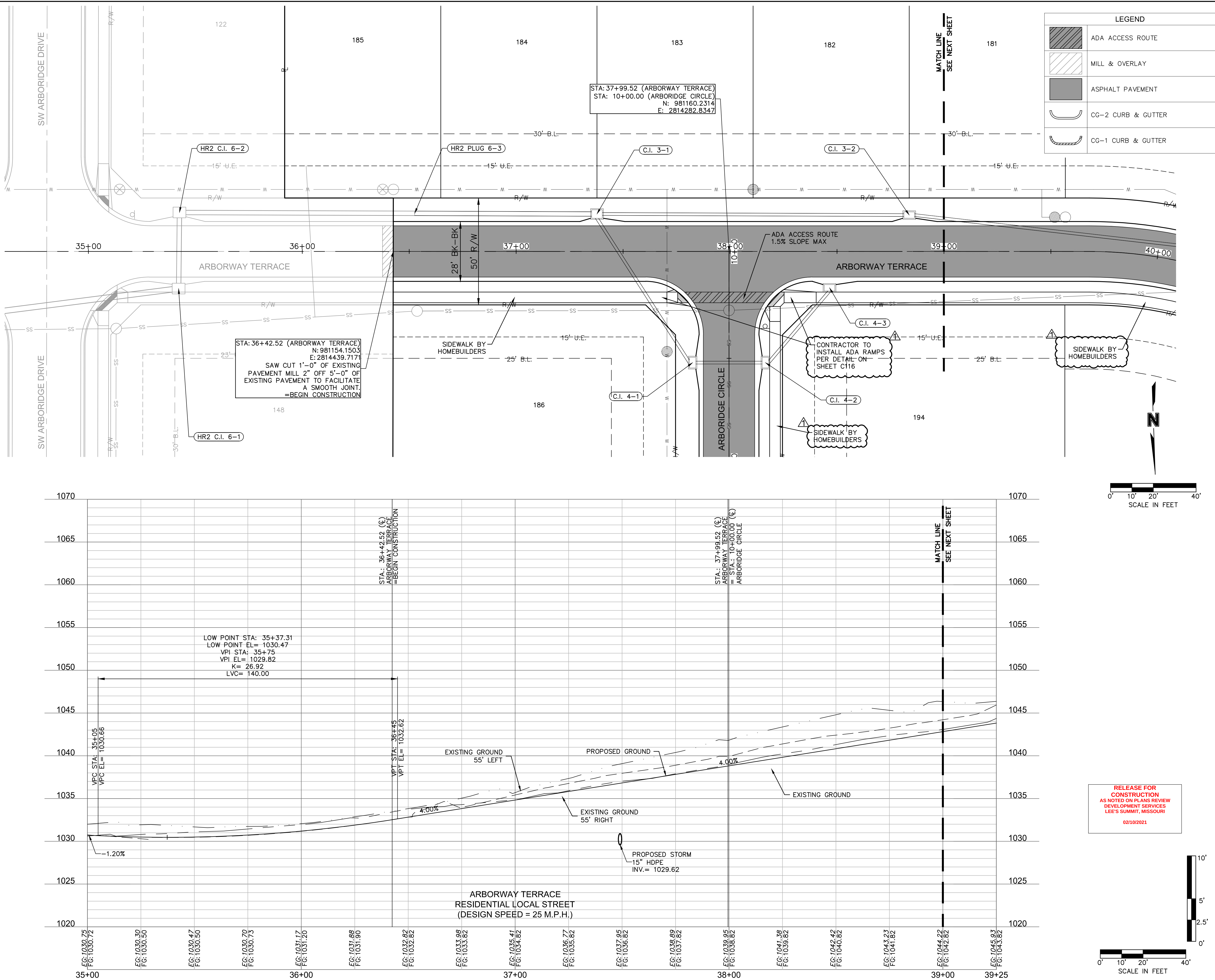
HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

drawn by: OLS
checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: C-PP01_A191605
drawing no.: C-PP01_A191605
date: 10/22/2020

SHEET
C107

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USER: bwerthley



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11/23/2020

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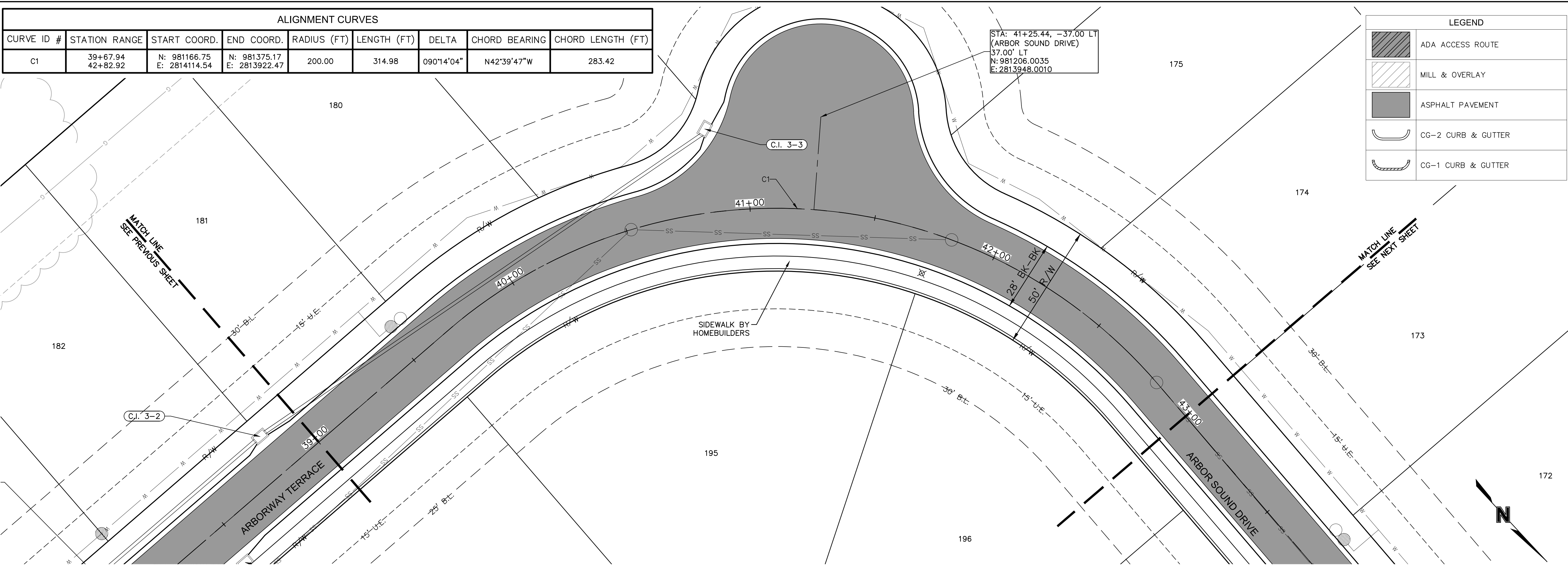
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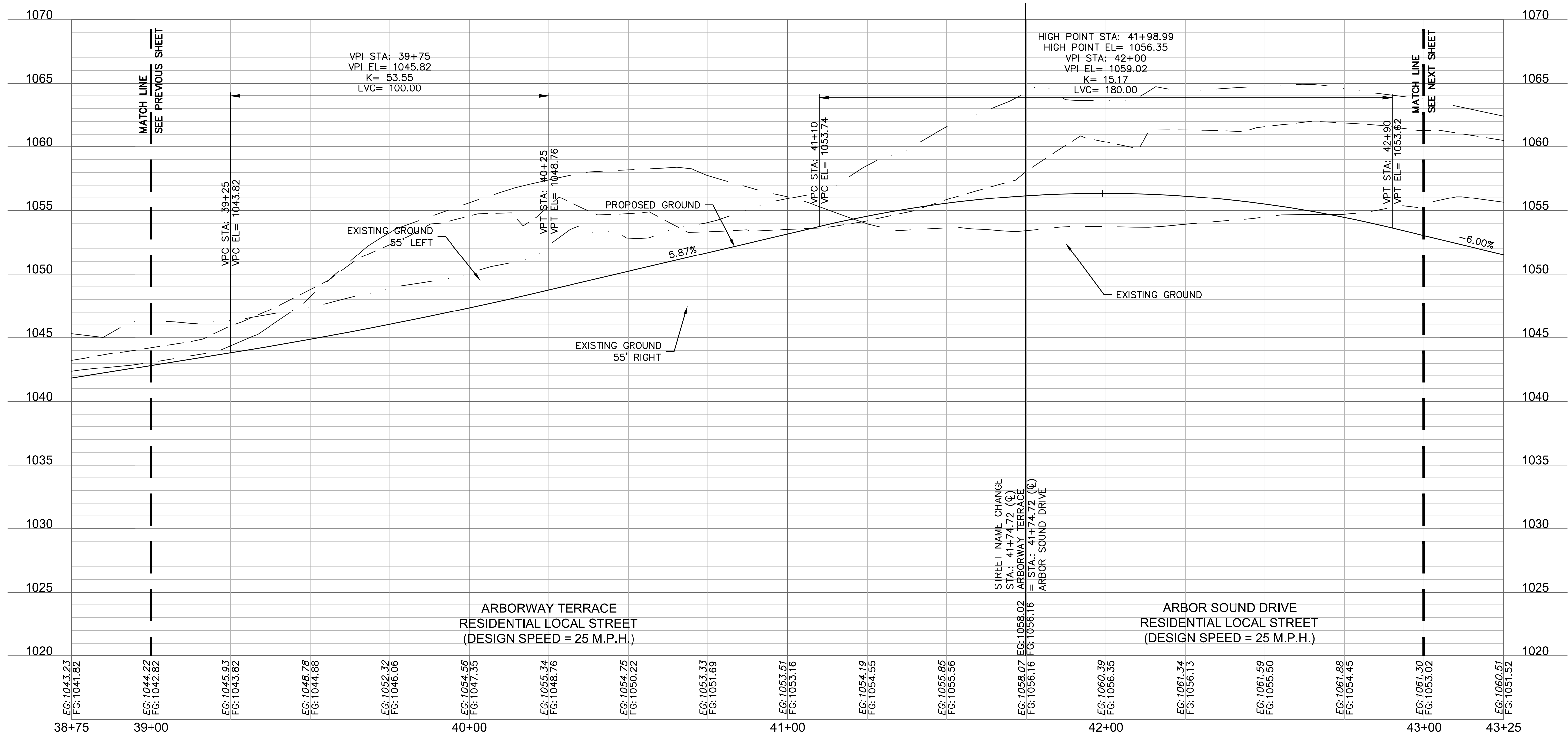
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USER: bworthley



LEGEND	
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	CG-2 CURB & GUTTER
	CG-1 CURB & GUTTER



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DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
02/10/2021

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STATE OF MISSOURI
BROCK M. WORTHLEY
NUMBER
PE-2019000237
11/18/2021
PROFESSIONAL ENGINEER

BY	
REVISIONS DESCRIPTION	
DATE	
REV. NO.	

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

HAWTHORN RIDGE
THIRD PLAT

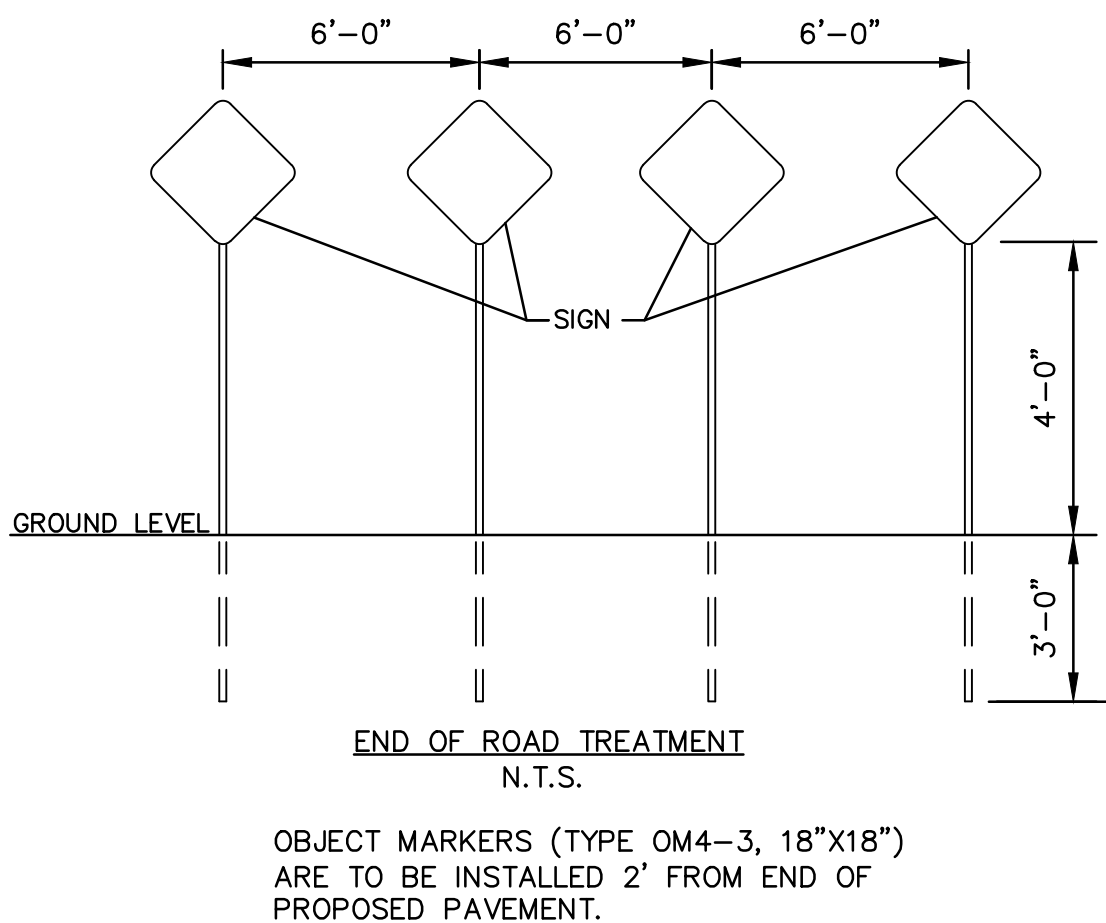
LEE'S SUMMIT, MO

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

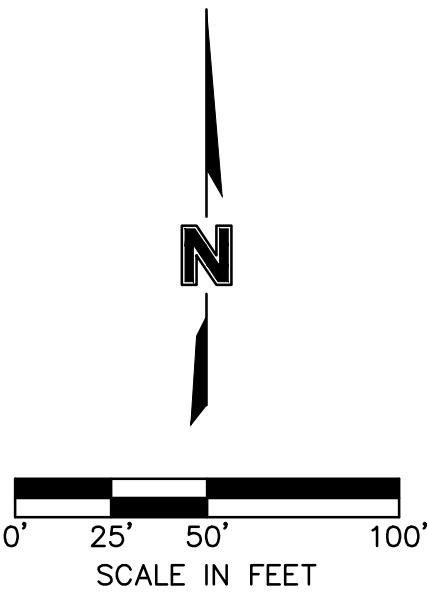
SHEET
C110

2020

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TRAFFIC CONTROL PLAN
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

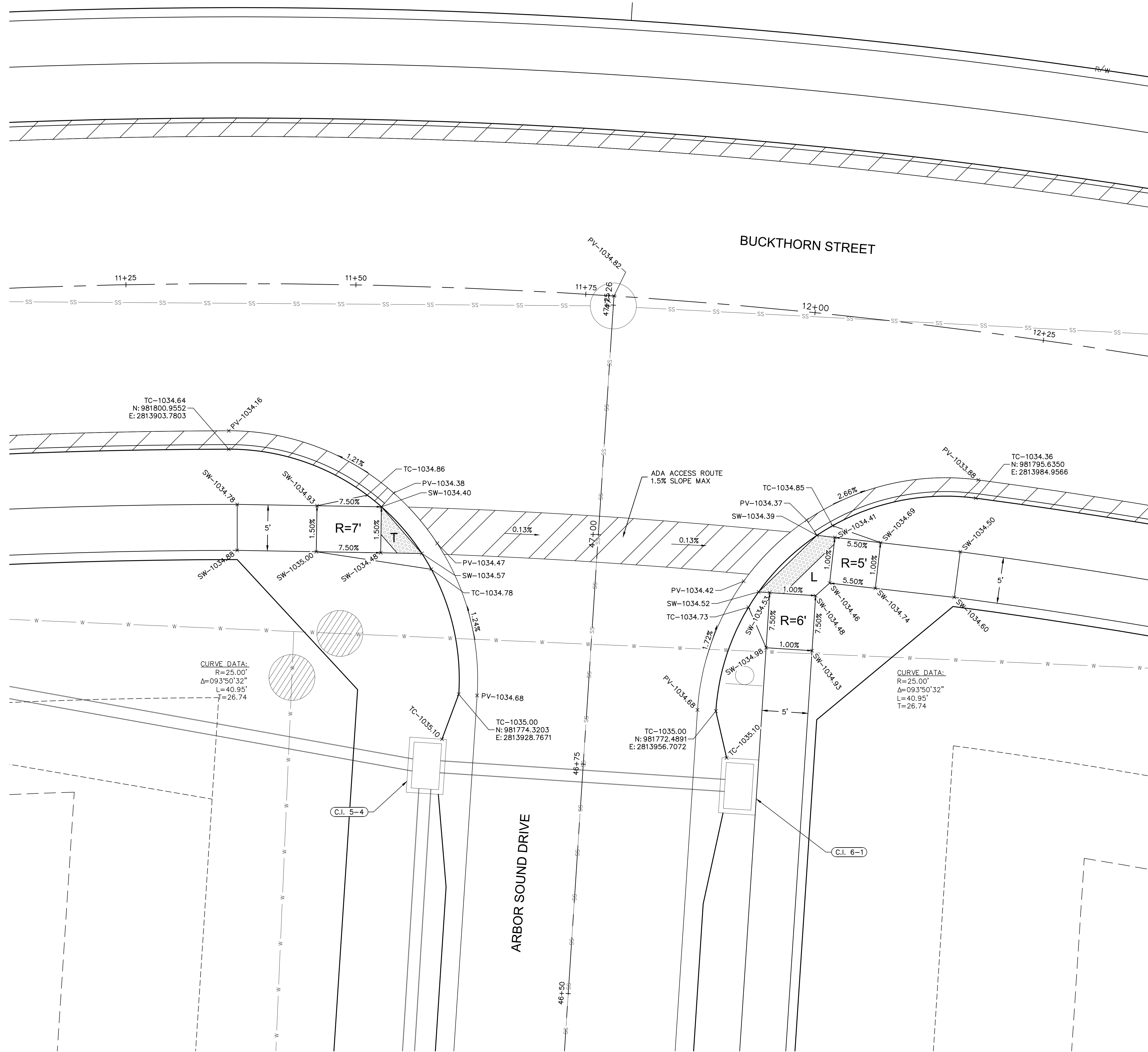
2020

REVISIONS

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SHEET
C113

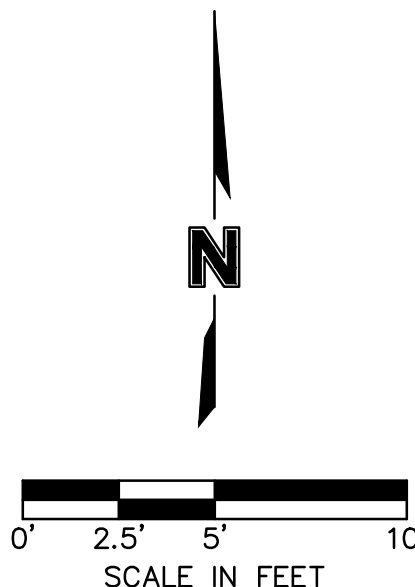
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USER: bworthley



- INTERSECTION AND ADA DETAIL NOTES:
1. ALL ADA CURB RAMPS SHALL BE BUILT PER CURRENT MUNICIPALITY ADOPTED ADA STANDARDS.
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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.
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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

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CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI**



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
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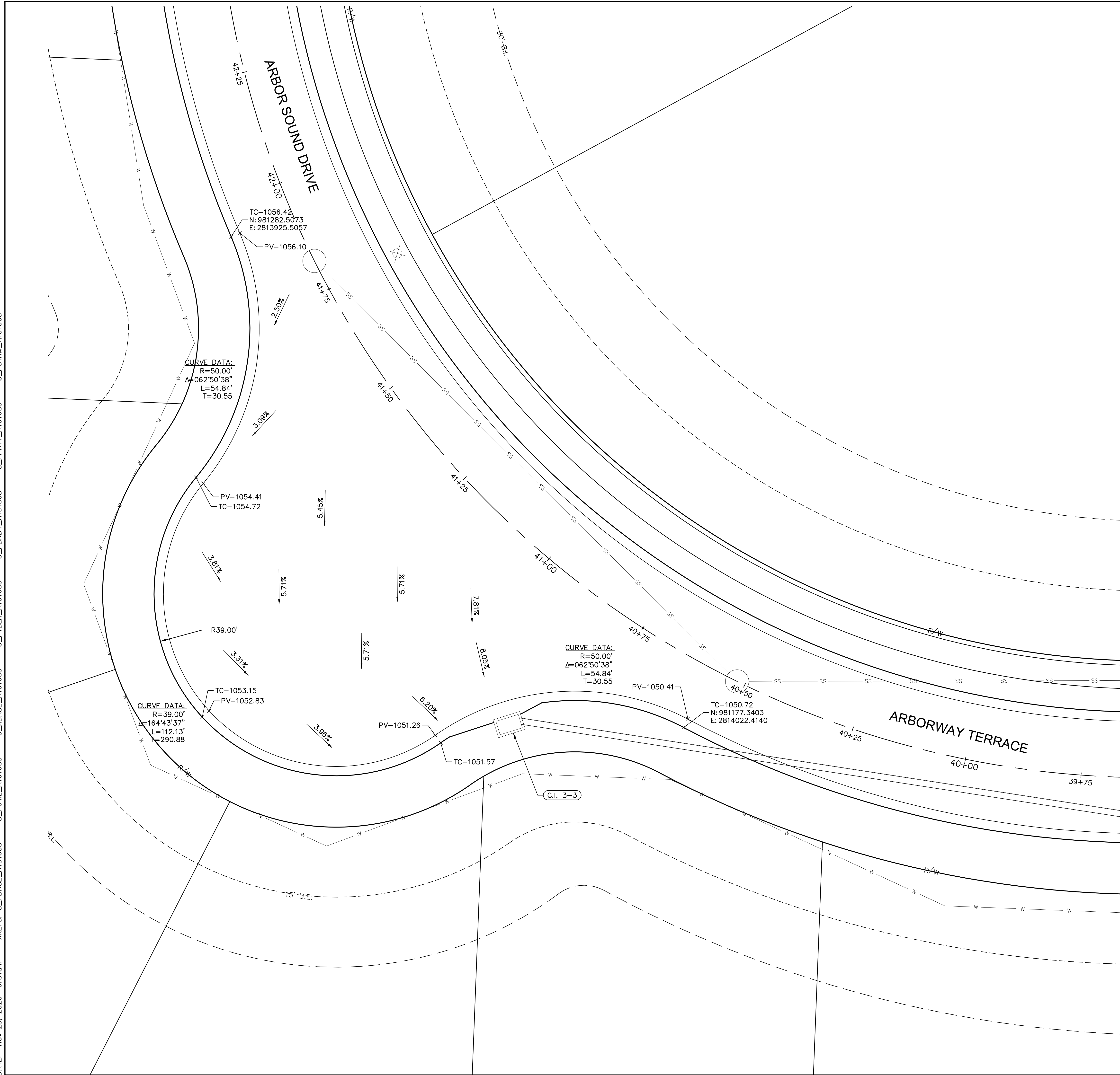
SHEET
C114

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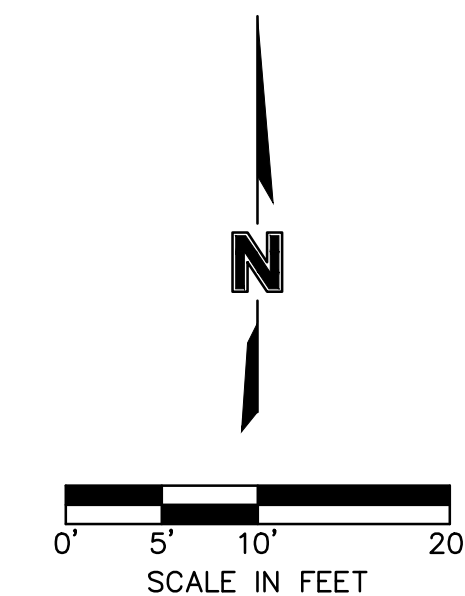
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	ADA ACCESS ROUTE
	CG-2 CURB & GUTTER
	CG-1 CURB & GUTTER

[illegible]

SPOT ELEVATIONS STREET & STORM SEWER PLANS	2020
HAWTHORN RIDGE THIRD PLAT	
EE'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: _____ 10/02/2020

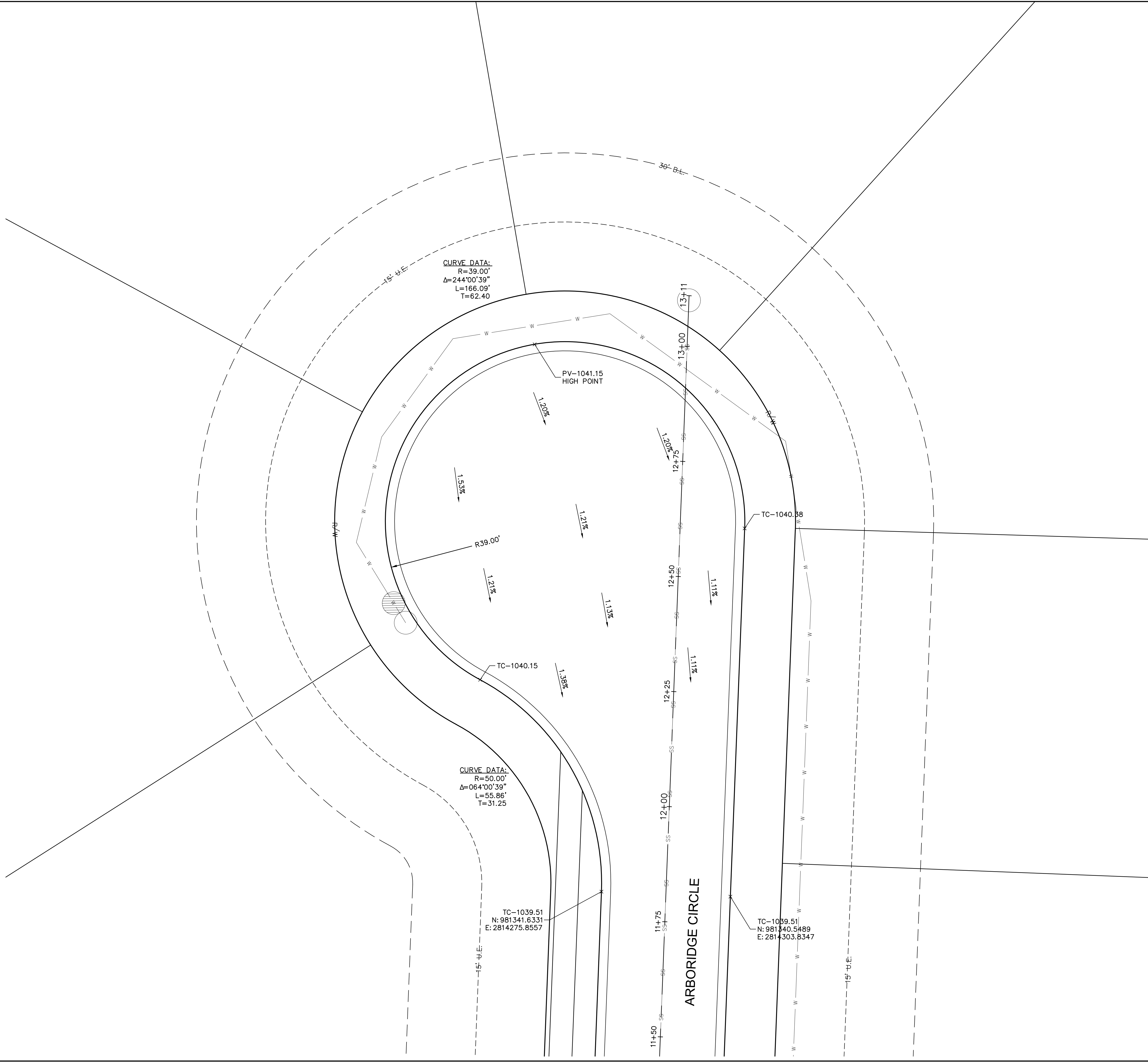
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C114

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USER: bworthley



CURVE DATA:
R=39.00'
Δ=244°00'39"
L=166.09'
T=62.40

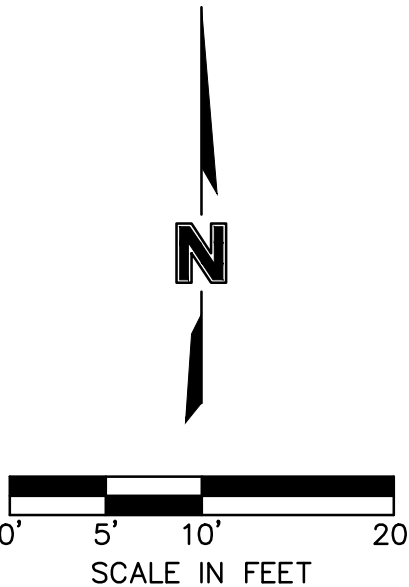
CURVE DATA:
R=50.00'
Δ=064°00'39"
L=55.86'
T=31.25

TC-1039.51
N: 981341.6331
E: 2814275.8557

TC-1039.51
N: 981340.5489
E: 2814303.8347

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LEE'S SUMMIT, MISSOURI
02/10/2021

SPOT ELEVATIONS
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

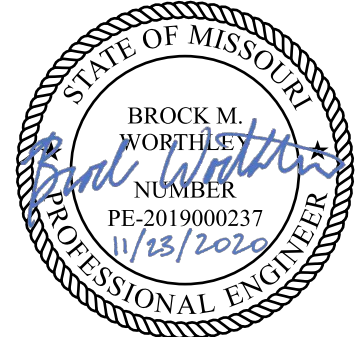
2020

REVISIONS DESCRIPTION

DATE

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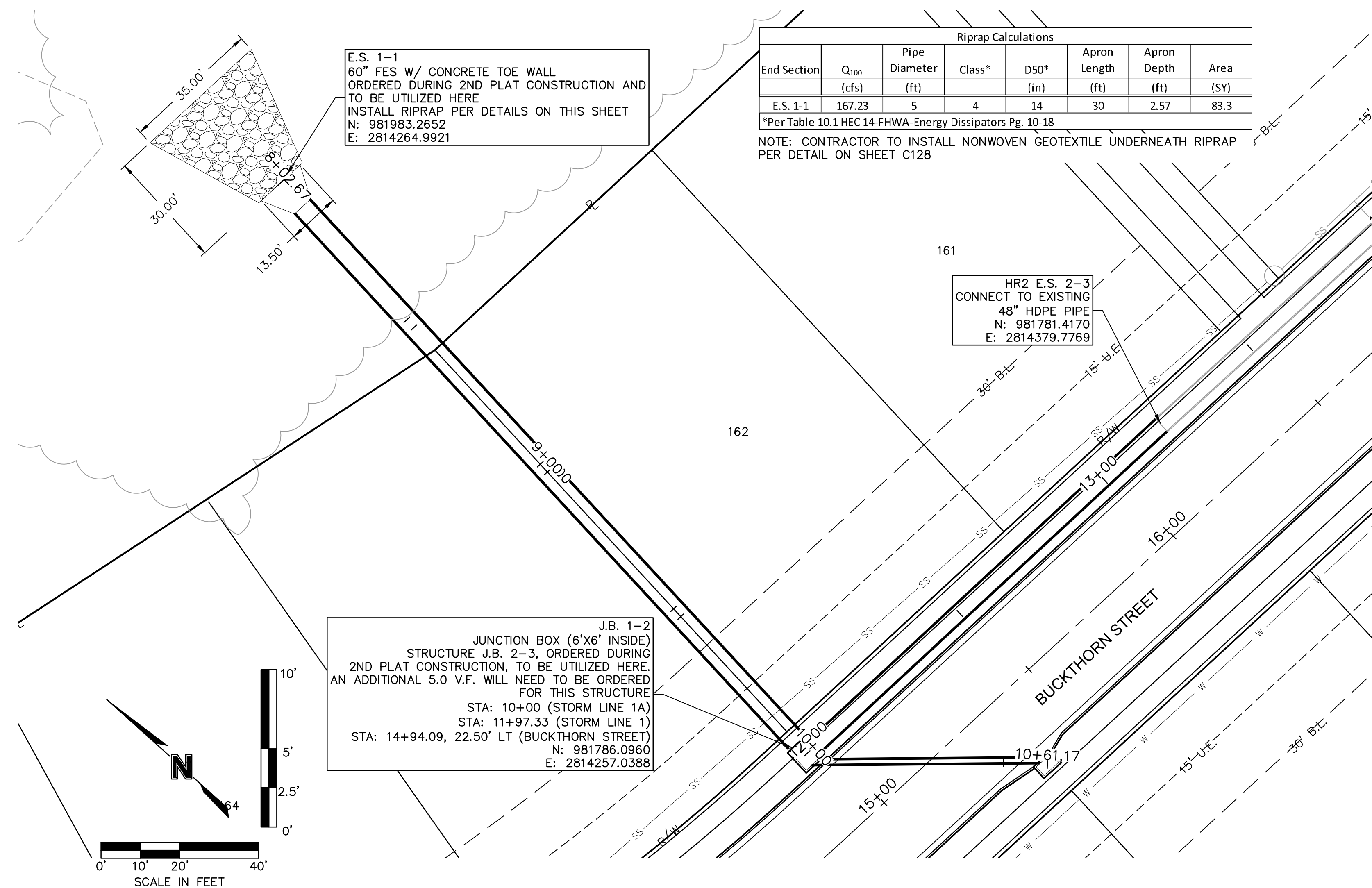
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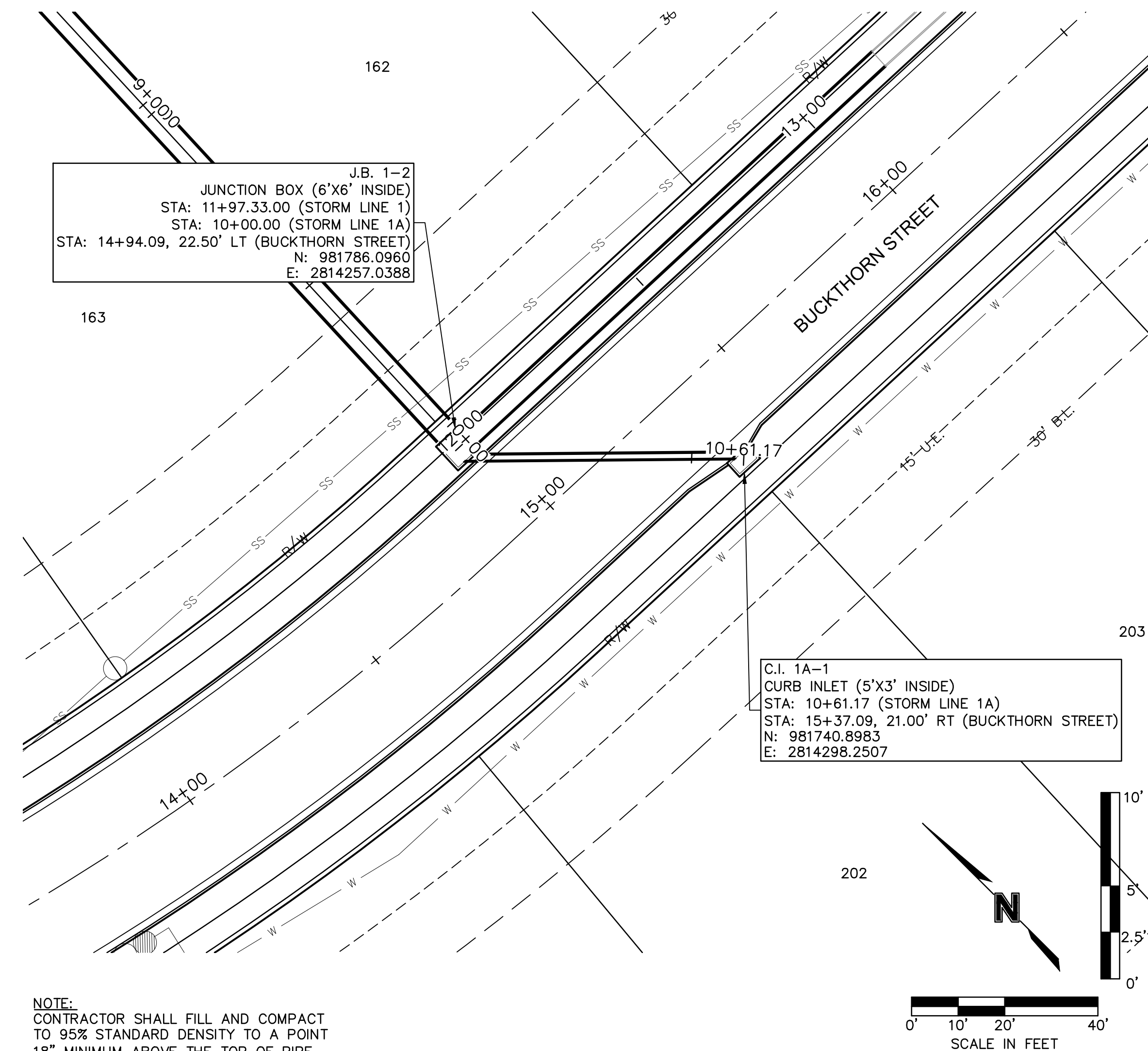
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checked by: BMW
approved by: BMW
QA/QC by: JES
project no.: A19-1605
drawing no.: C_SPT01_A191605
date: 10/02/2020

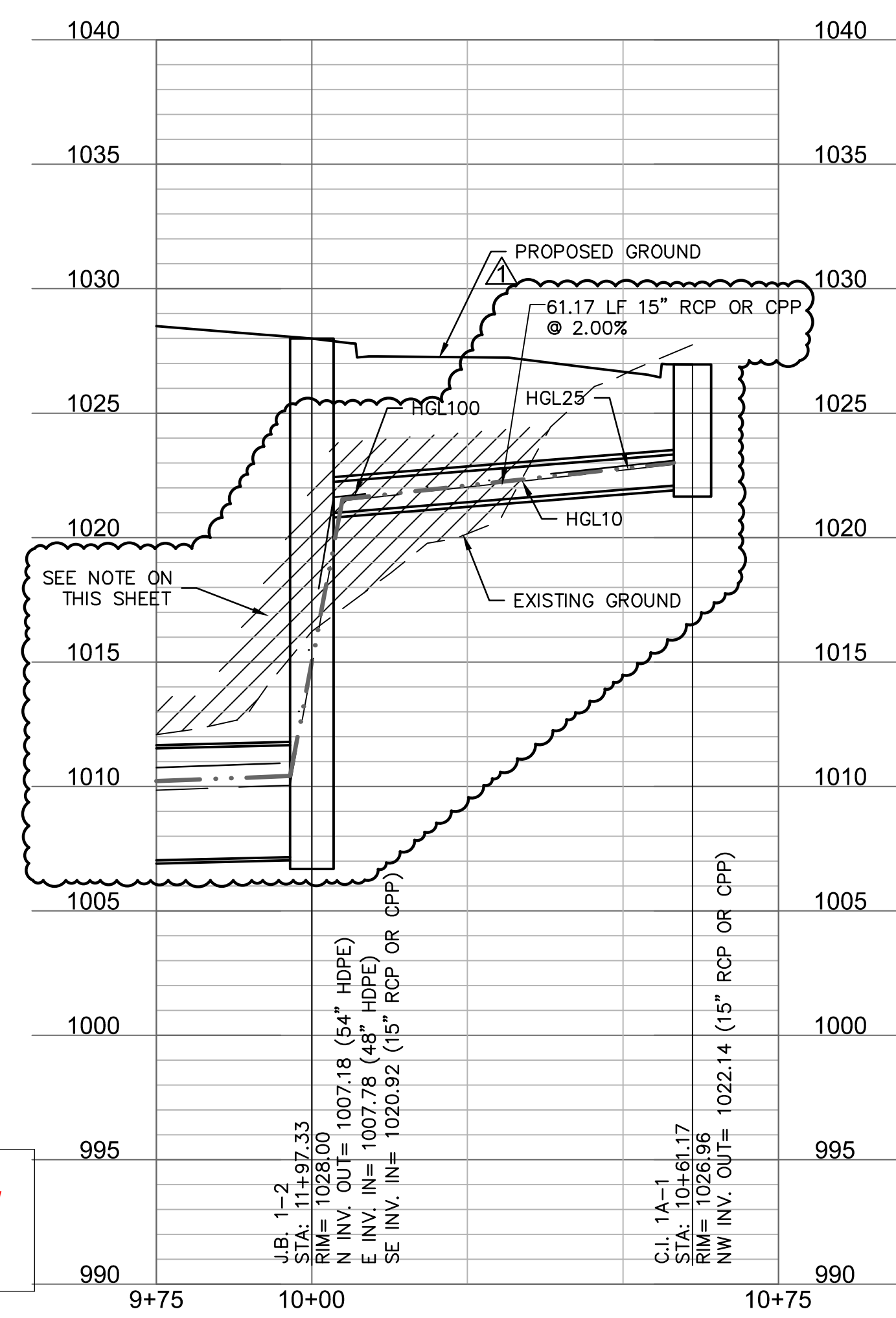
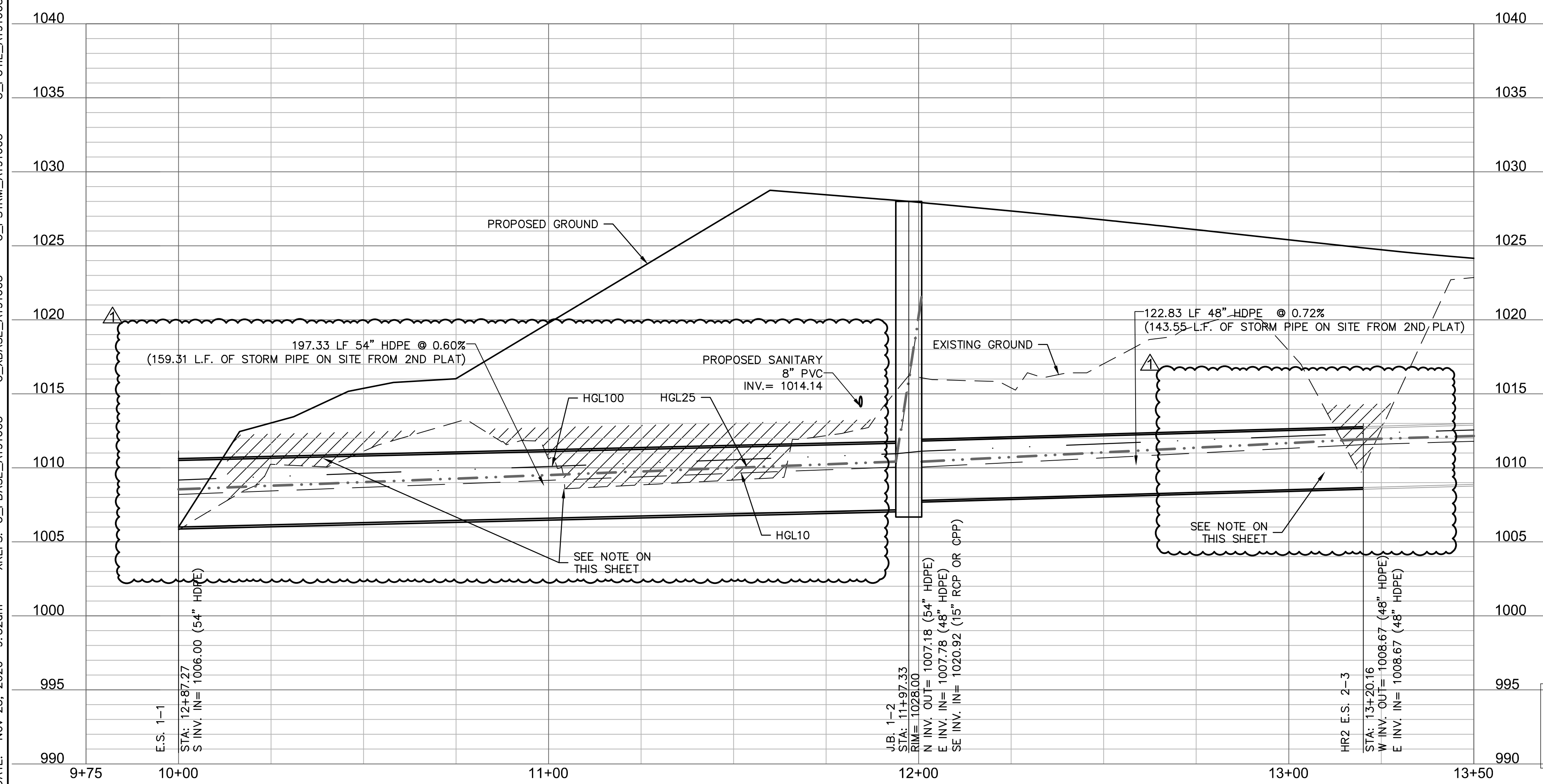
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C117



STORM LINE 1 (9+75 - 13+50)



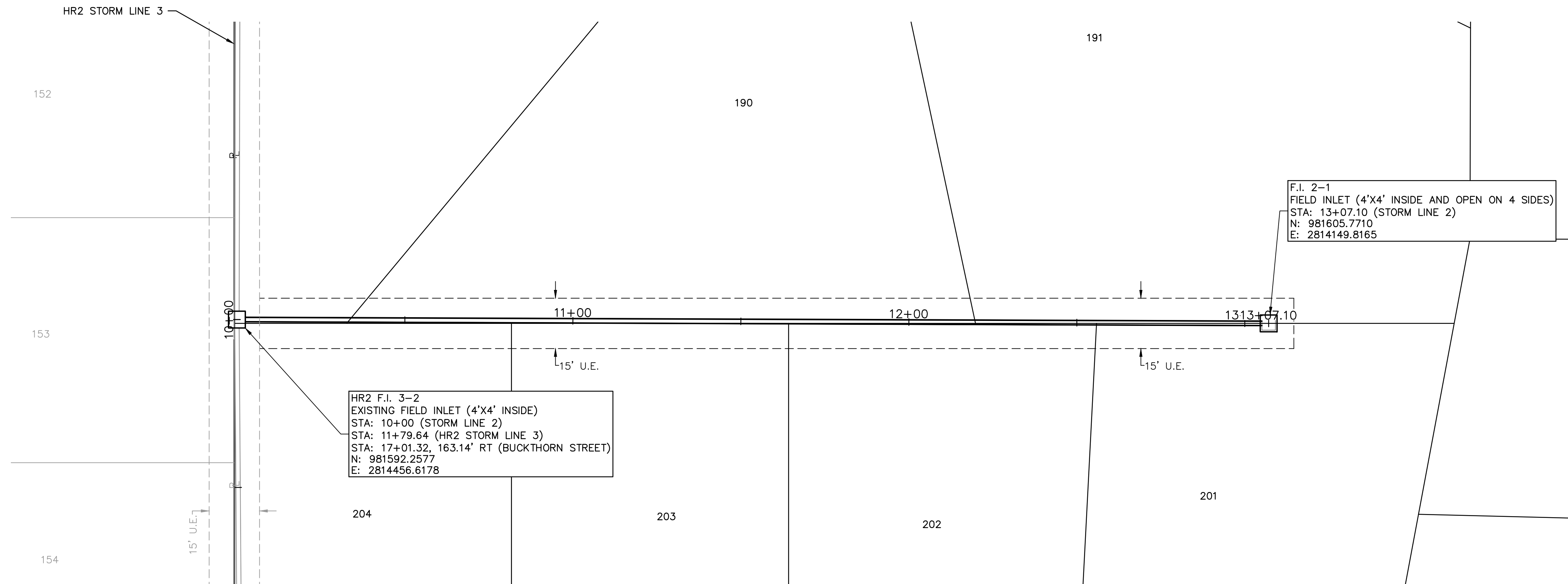
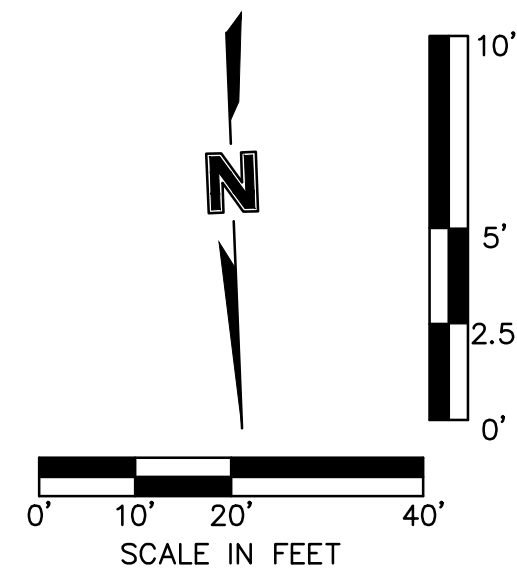
STORM LINE 1A (9+75 - 10+75)



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DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
02/10/2021**

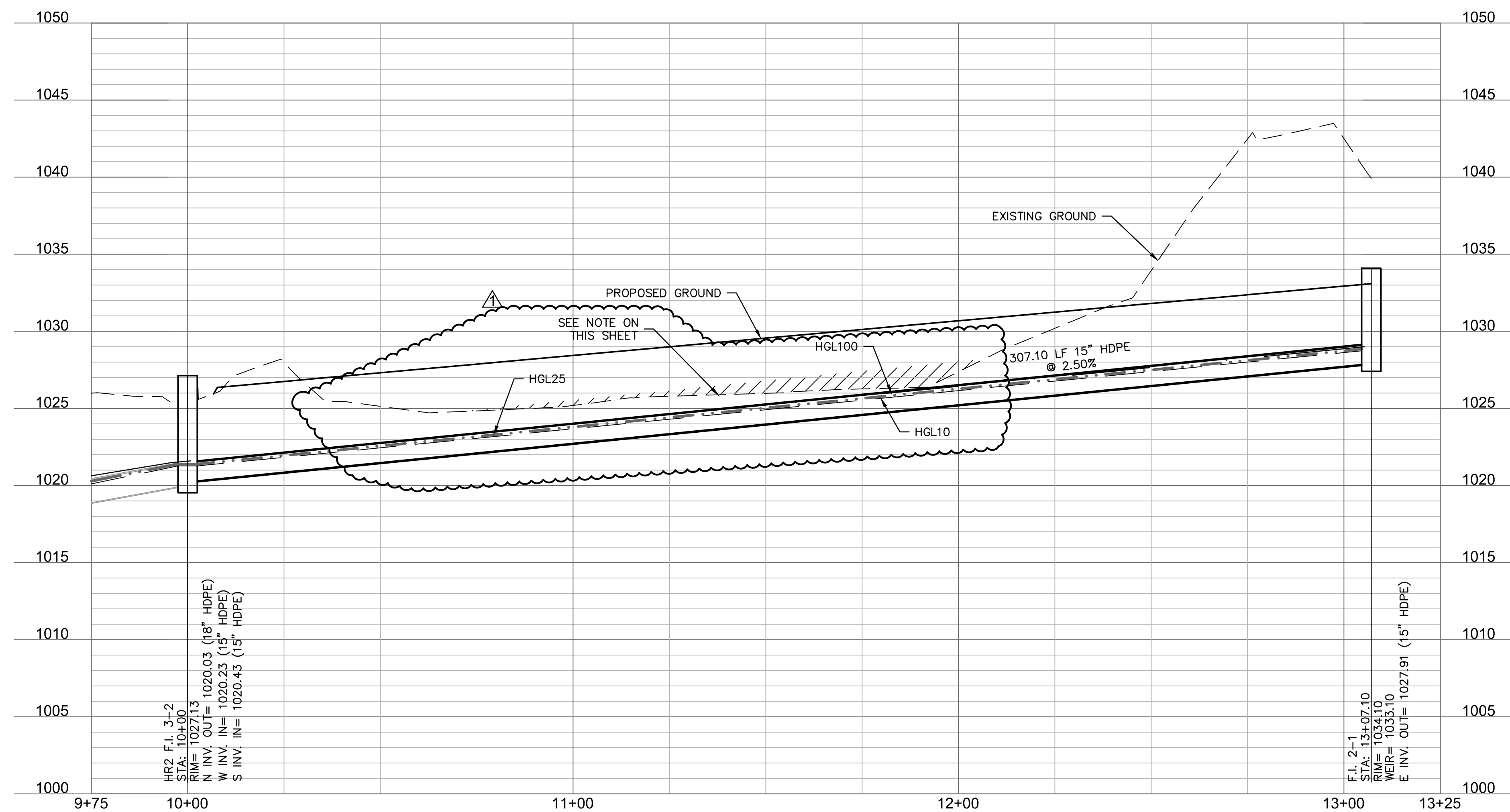
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USER: bworthley



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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drawing no.: C STM01 A191605
date: 10/02/2020

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C119

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

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT. MO

2020

REVISIONS

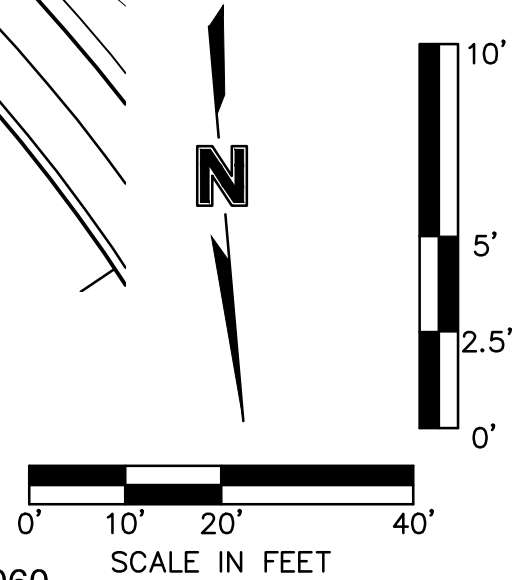
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1	11/23/2020	REVISED PER CITY COMMENTS	



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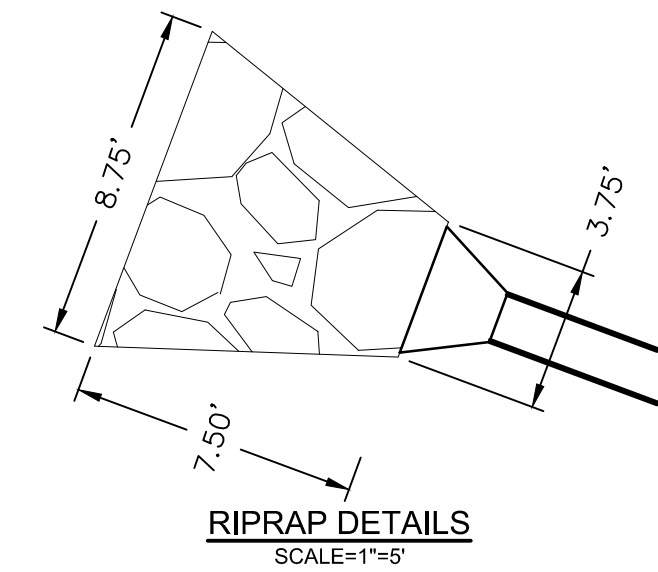
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USER: tworthley



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

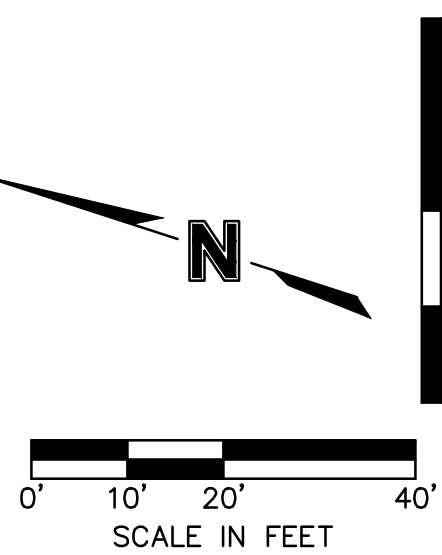
NOTE:
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PRIOR TO EXCAVATION FOR THE PIPE.

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

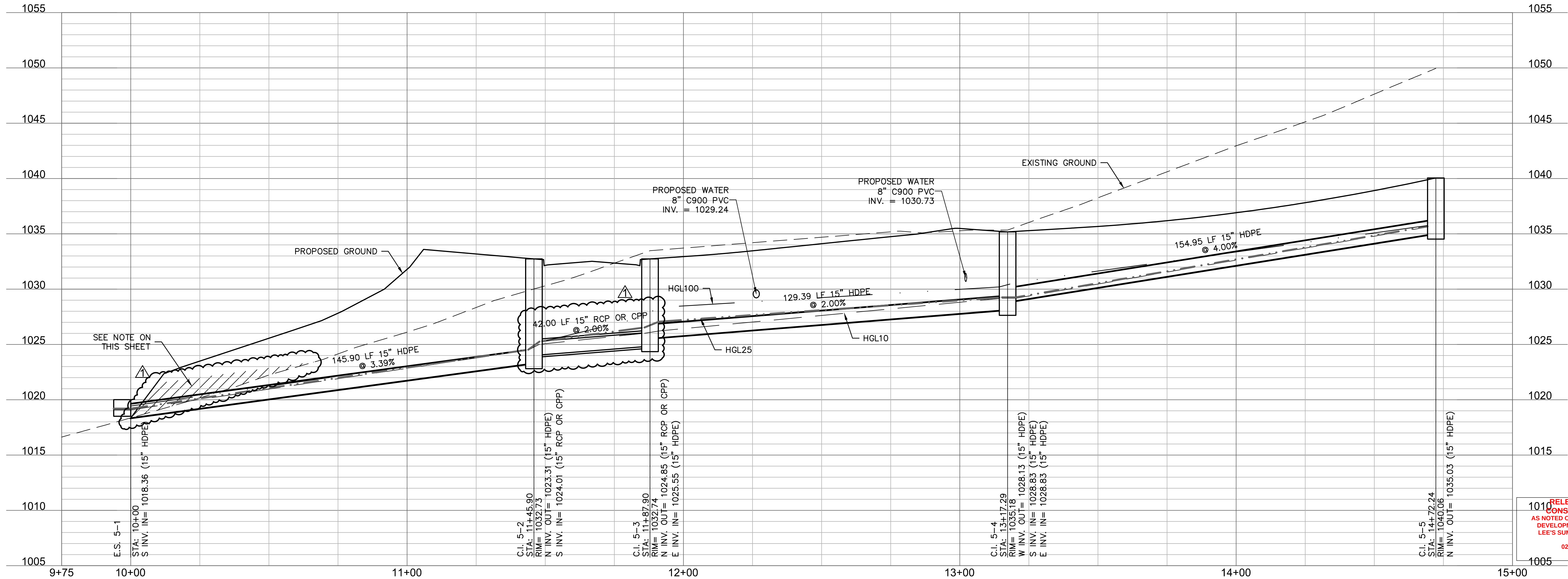
C.I. 5-4
CURB INLET (5'X3' INSIDE)
STA: 13+17.29 (STORM LINE 5)
STA: 10+00.00 (STORM LINE 6)
STA: 46+73.69, 17.00' LT
(ARBOR SOUND DRIVE)
N: 981766.5336
E: 2813925.2504

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)



101
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02/10/2021

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

HAWTHORN RIDGE
THIRD PLAT

LEE'S SUMMIT, MO

REVISIONS

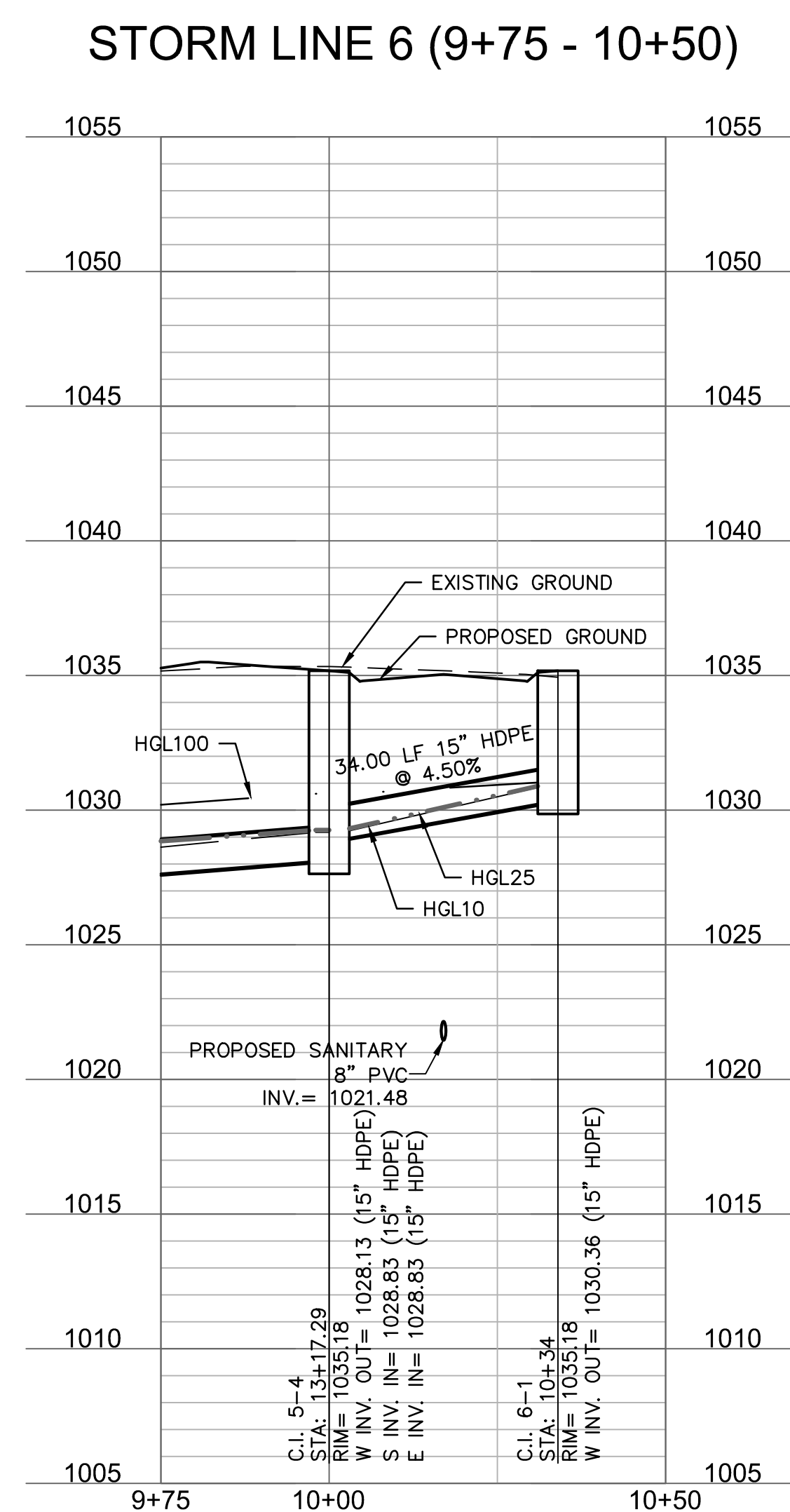
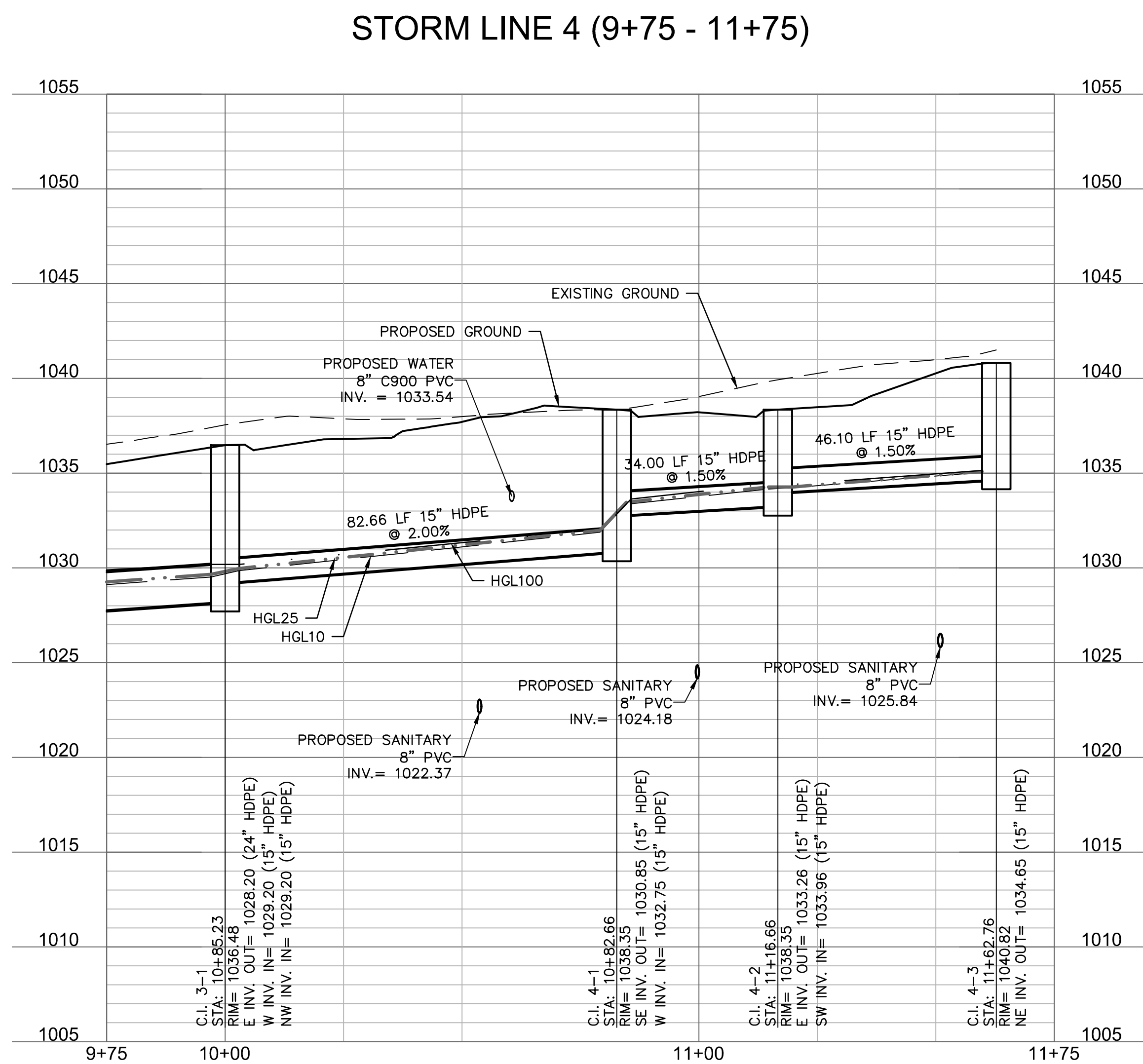
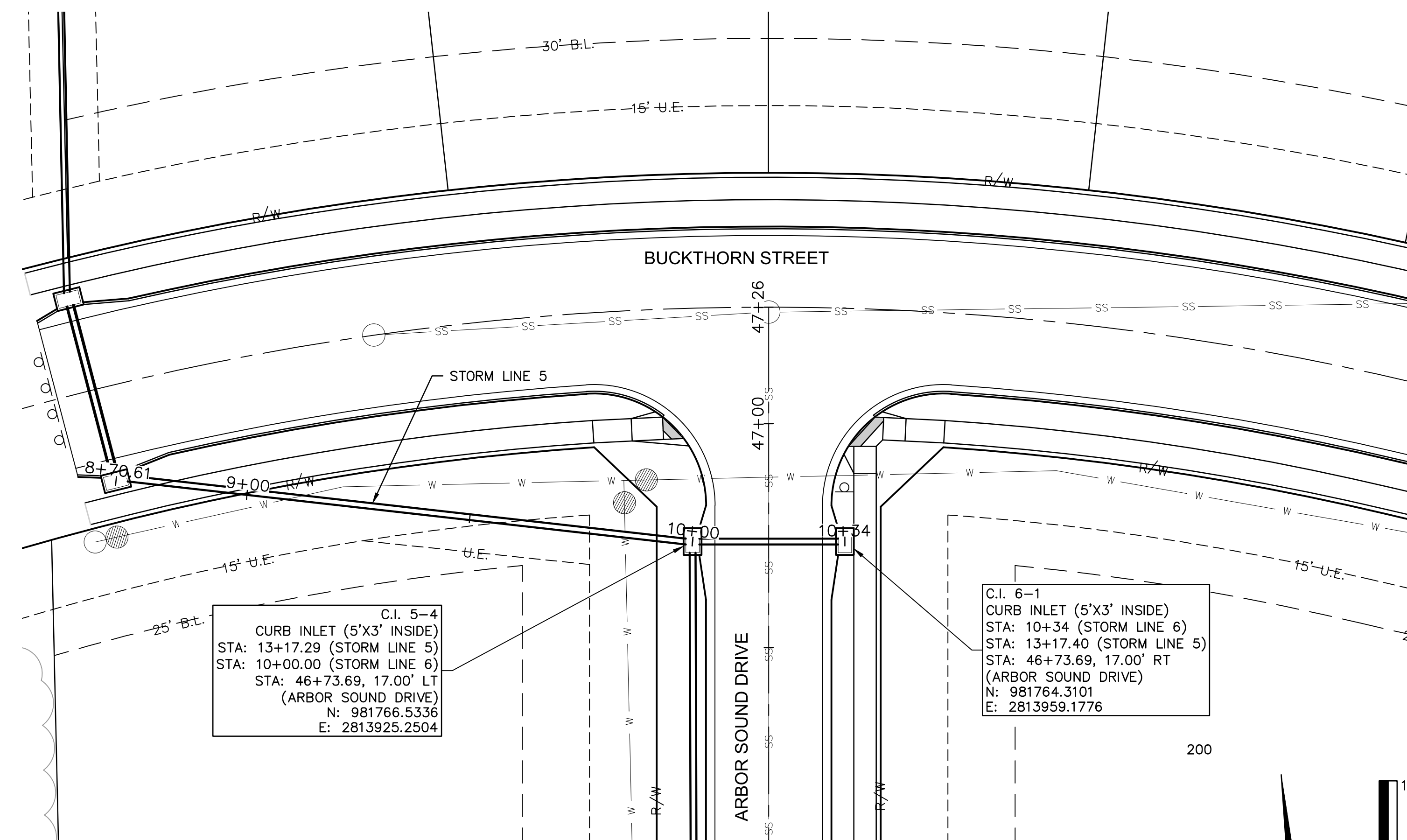
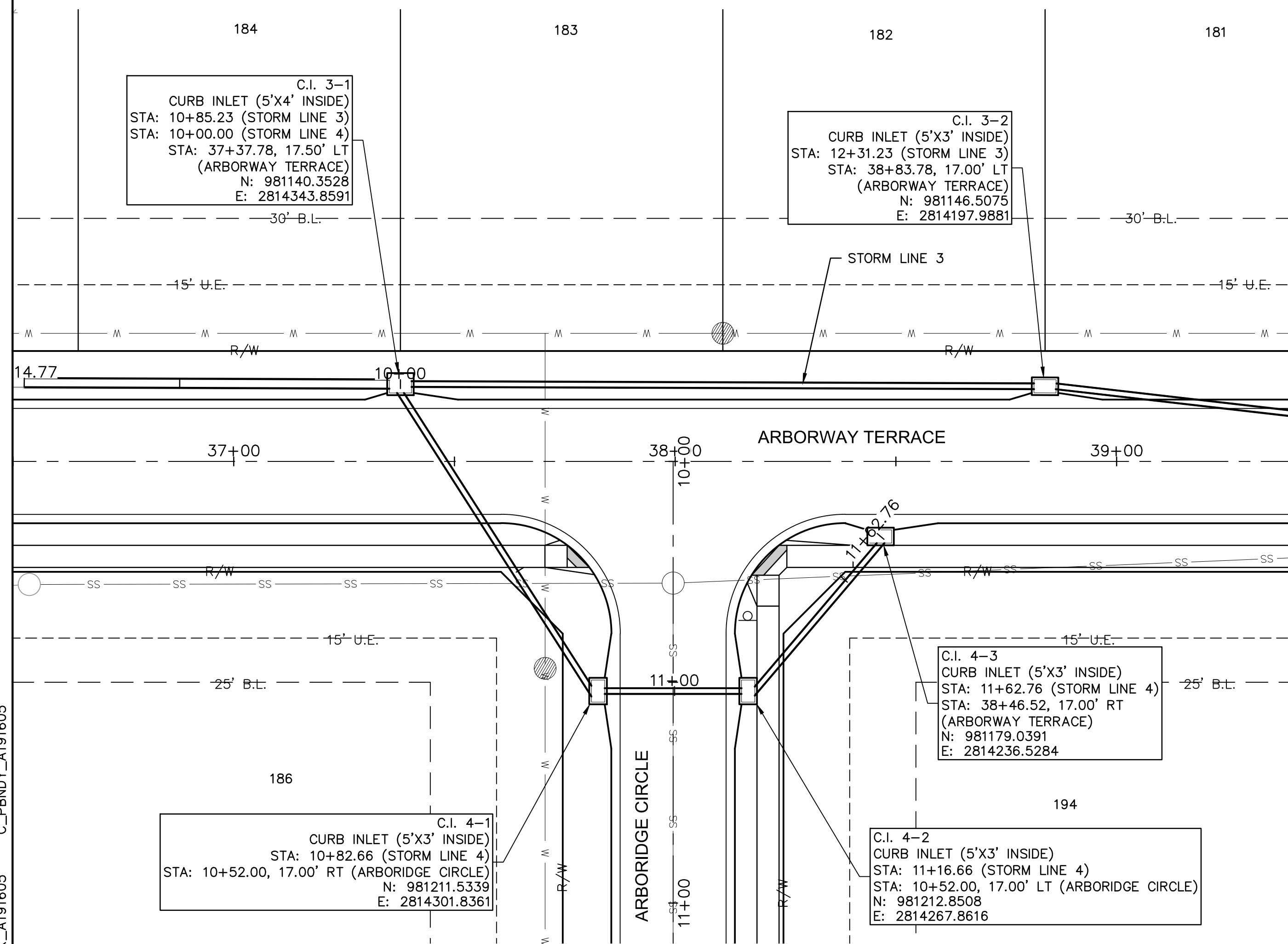
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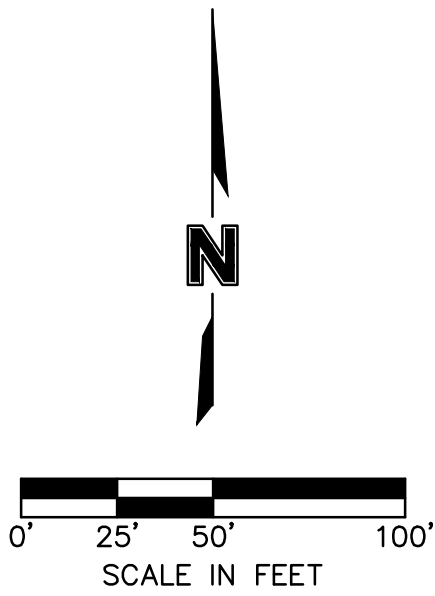
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USER: bworthley



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

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

BY

REVISIONS DESCRIPTION

DATE

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REVISIONS

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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
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drawing no.: C_DRN01_A191605
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SHEET
C123

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DATE: Nov 23, 2020 9:34am XREFS: C:\PBLK_A191605 C:\PBASE_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

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

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.

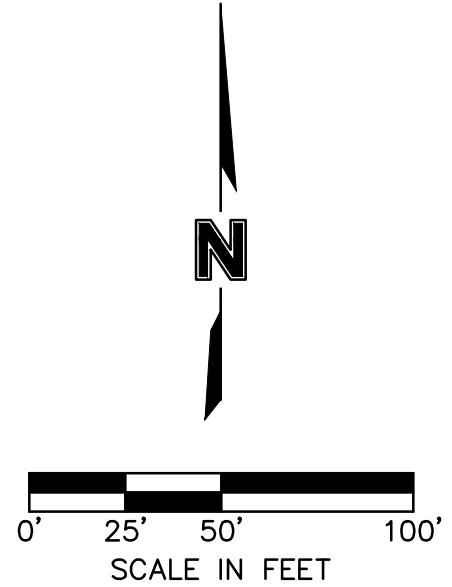
2. Inlet efficiency shown in the tables is Captured Flow/Total Flow, denoting the actual percentage of flow captured after the capacity has been reduced to 80% of theoretical capacity.

Storm Sewer Design Calculation Table													
10 Year Return Frequency													
Upstream Structure	Downstream Structure	Length (ft)	Upstream Invert (ft)	Downstream Invert (ft)	Slope (%)	Diameter (in)	Manning's n	Total Flow (cfs)	Velocity (ft/s)	Capacity (cfs)	Flow Depth (ft)	Upstream Struct. HGL (ft)	Upstream Top Elev (ft)
J.B. 1-2	E.S. 1-1	197.33	1007.18	1006.00	0.60	54	0.010	95.43	10.62	197.70	2.20	1010.05	1028.00
HR2 E.S. 2-3	J.B. 1-2	122.83	1008.67	1007.78	0.72	48	0.010	91.61	10.93	158.96	2.27	1011.57	1013.00
C.I. 1A-1	J.B. 1-2	61.17	1022.15	1020.92	2.01	15	0.013	3.82	5.90	9.16	0.56	1022.94	1026.96
HR2 F.I. 3-2	HR2 M.H. 3-1	141.17	1020.03	1013.60	4.55	18	0.010	10.50	10.92	29.14	0.62	1021.27	1027.13
HR2 F.I. 3-3	HR2 F.I. 3-2	177.37	1024.49	1020.43	2.29	15	0.010	1.95	2.96	12.70	0.84	1025.05	1030.59
F.I. 2-1	HR2 F.I. 3-2	307.10	1027.91	1020.23	2.50	15	0.010	4.24	4.38	13.28	1.04	1028.74	1034.10
HR2 PLUG 6-3	HR2 C.I. 6-2	109.97	1026.71	1024.79	1.75	24	0.010	13.40	6.75	38.85	1.12	1028.03	1029.09
C.I. 3-1	HR2 PLUG 6-3	85.23	1028.20	1026.71	1.75	24	0.010	13.40	6.11	38.88	1.32	1029.52	1036.48
C.I. 3-2	C.I. 3-1	146.00	1034.68	1029.20	3.75	15	0.010	5.04	8.48	16.26	0.48	1035.59	1042.31
C.I. 3-3	C.I. 3-2	215.25	1046.68	1035.38	5.25	15	0.010	3.04	7.86	19.23	0.34	1047.38	1051.39
C.I. 4-1	C.I. 3-1	82.66	1030.85	1029.20	2.00	15	0.010	6.49	7.95	11.86	0.66	1031.88	1038.35
C.I. 4-2	C.I. 4-1	34.00	1033.26	1032.75	1.50	15	0.010	4.95	6.76	10.28	0.61	1034.16	1038.35
C.I. 4-3	C.I. 4-2	46.10	1034.65	1033.96	1.50	15	0.010	1.05	4.23	10.27	0.27	1035.05	1040.82
C.I. 5-2	E.S. 5-1	145.90	1023.31	1018.36	3.39	15	0.010	9.82	10.76	15.46	0.72	1024.49	1032.73
C.I. 5-3	C.I. 5-2	42.00	1024.85	1024.01	2.00	15	0.013	9.03	8.05	9.13	1.01	1026.01	1032.74
C.I. 5-4	C.I. 5-3	129.39	1028.14	1025.55	2.00	15	0.010	6.66	8.04	11.88	0.67	1029.18	1035.18
C.I. 5-5	C.I. 5-4	154.95	1035.03	1028.83	4.00	15	0.010	2.17	5.81	16.79	0.35	1035.62	1040.06
C.I. 6-1	C.I. 5-4	34.00	1030.36	1028.83	4.50	15	0.010	1.82	5.08	17.81	0.35	1030.90	1035.18

DWG: F:\2019\1501-2000\019-1605-A\40-Design\AutoCAD\Final Plans\Sheets\CONVA\STREET & STORM\C-MDR01_A191605.dwg USER: bworthley
DATE: Nov 23, 2020 9:35am XREFS: C_PBLK_A191605 C_PBASE_A191605 C_PUTIL_A191605 C_PBDY_A191605



RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
02/10/2021



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.

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

BY		REVISIONS	
REV. NO.	REVISIONS DESCRIPTION	DATE	2020
1	11/23/2020		
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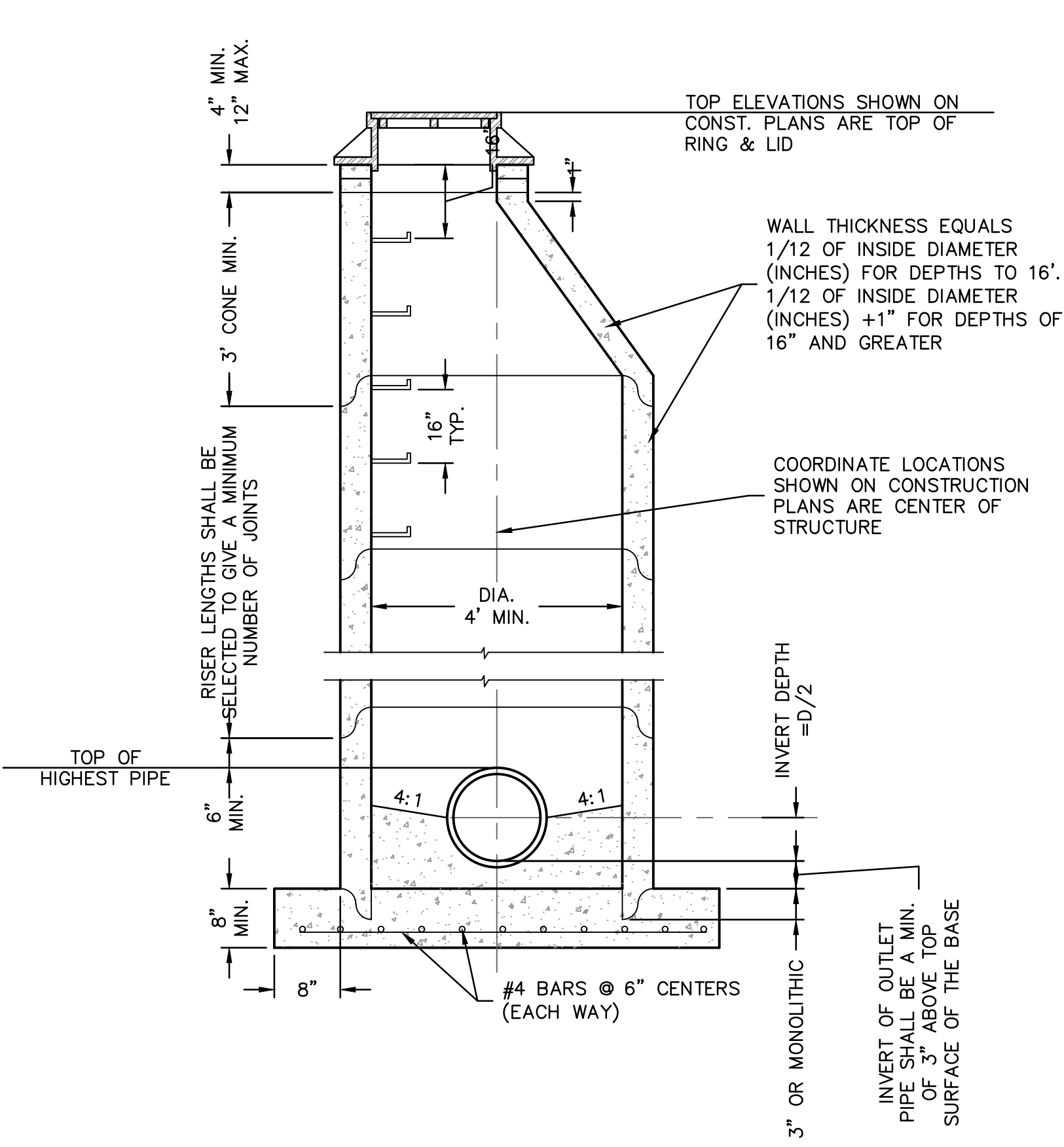
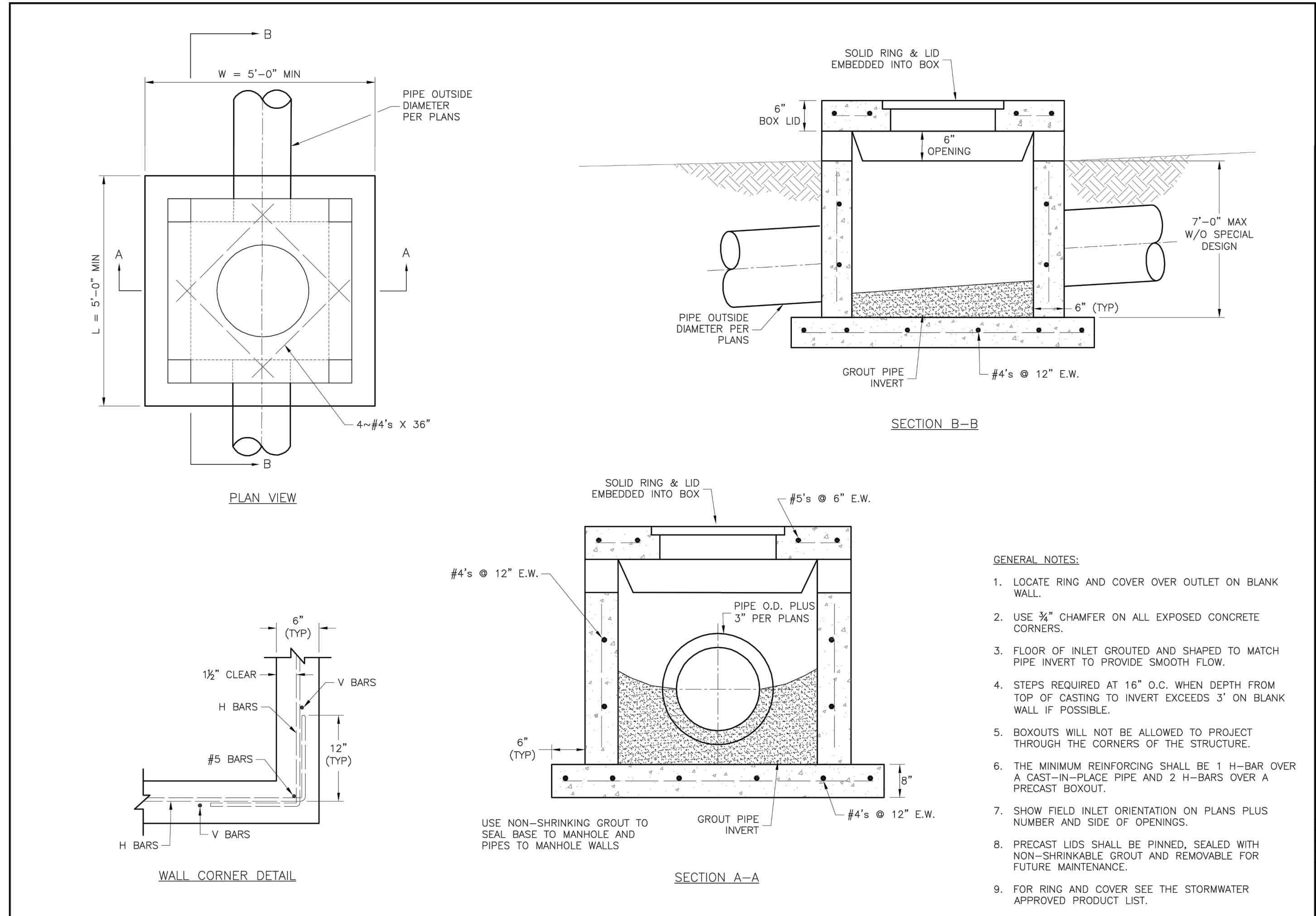
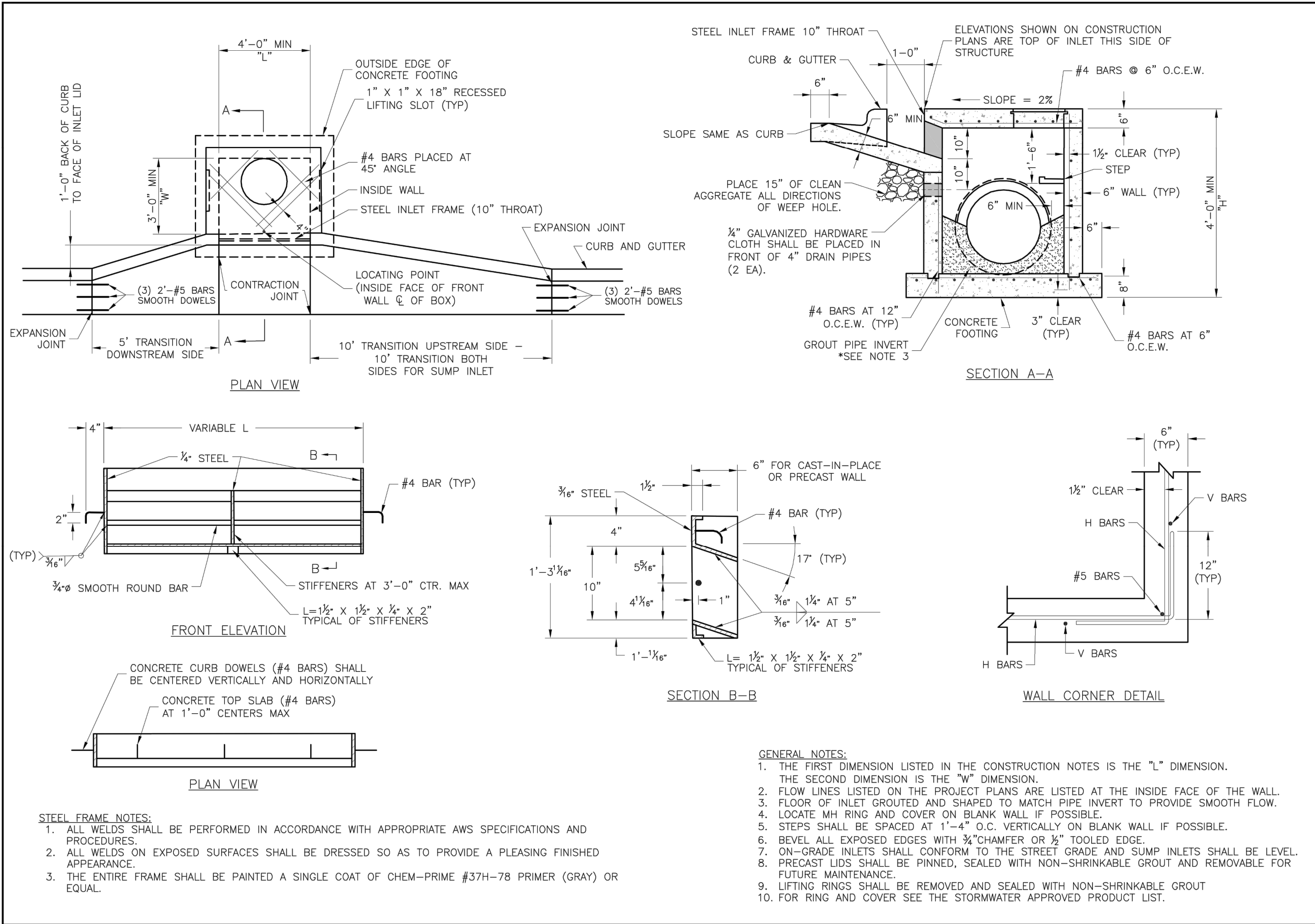
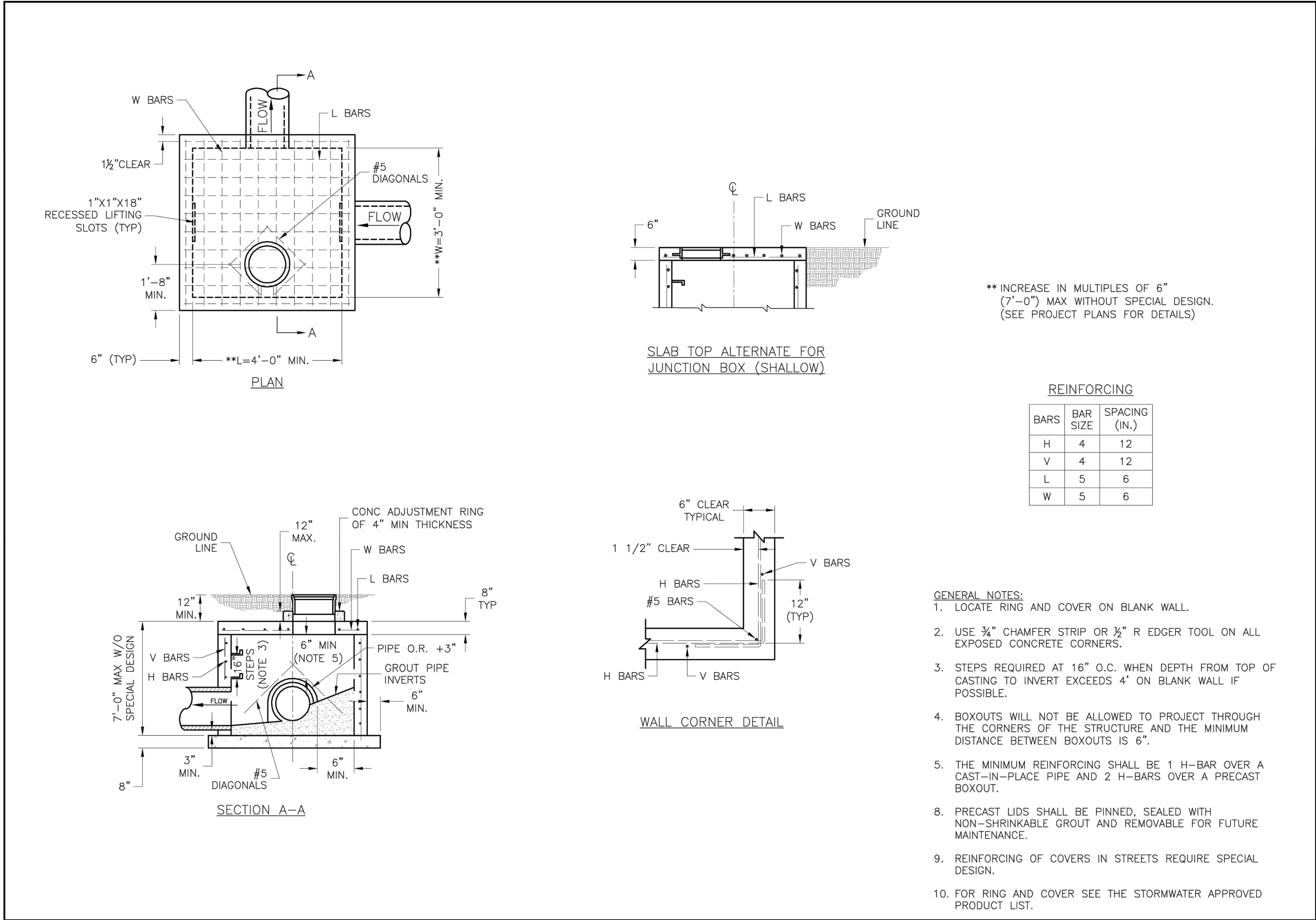
MASTER DRAINAGE PLAN
STREET & STORM SEWER PLANS

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-MDR01_A191605
date: 10/22/2020

SHEET
C125



- 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 SEVER REINFORCING 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.)

RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
02/10/2021

olsson

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

STATE OF MISSOURI
BROCK M. WORTHLEY
PE-2019000237
11/28/2020
PROFESSIONAL ENGINEER

BY

REVISIONS DESCRIPTION

DATE

REV. NO.

2020

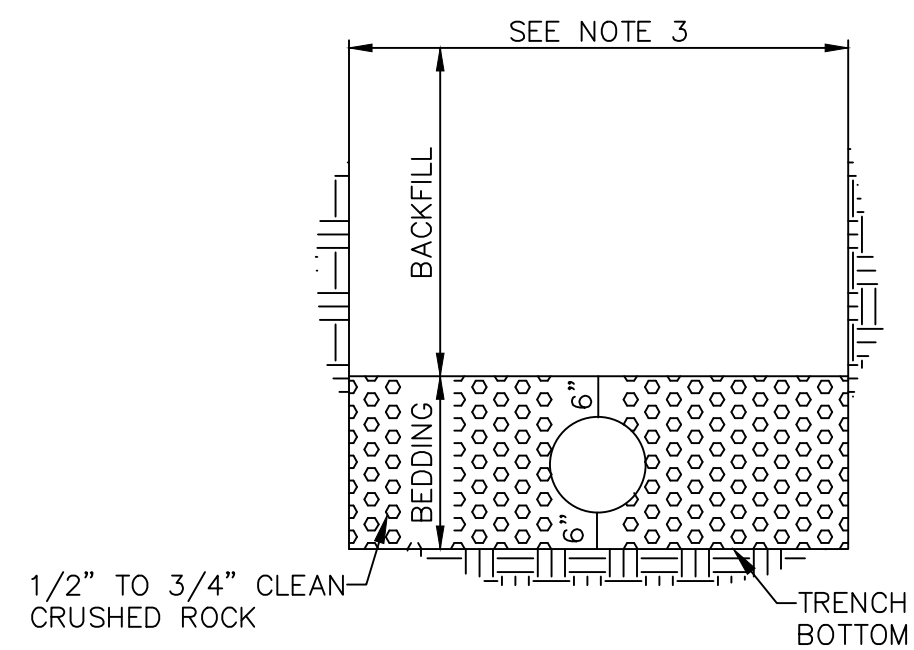
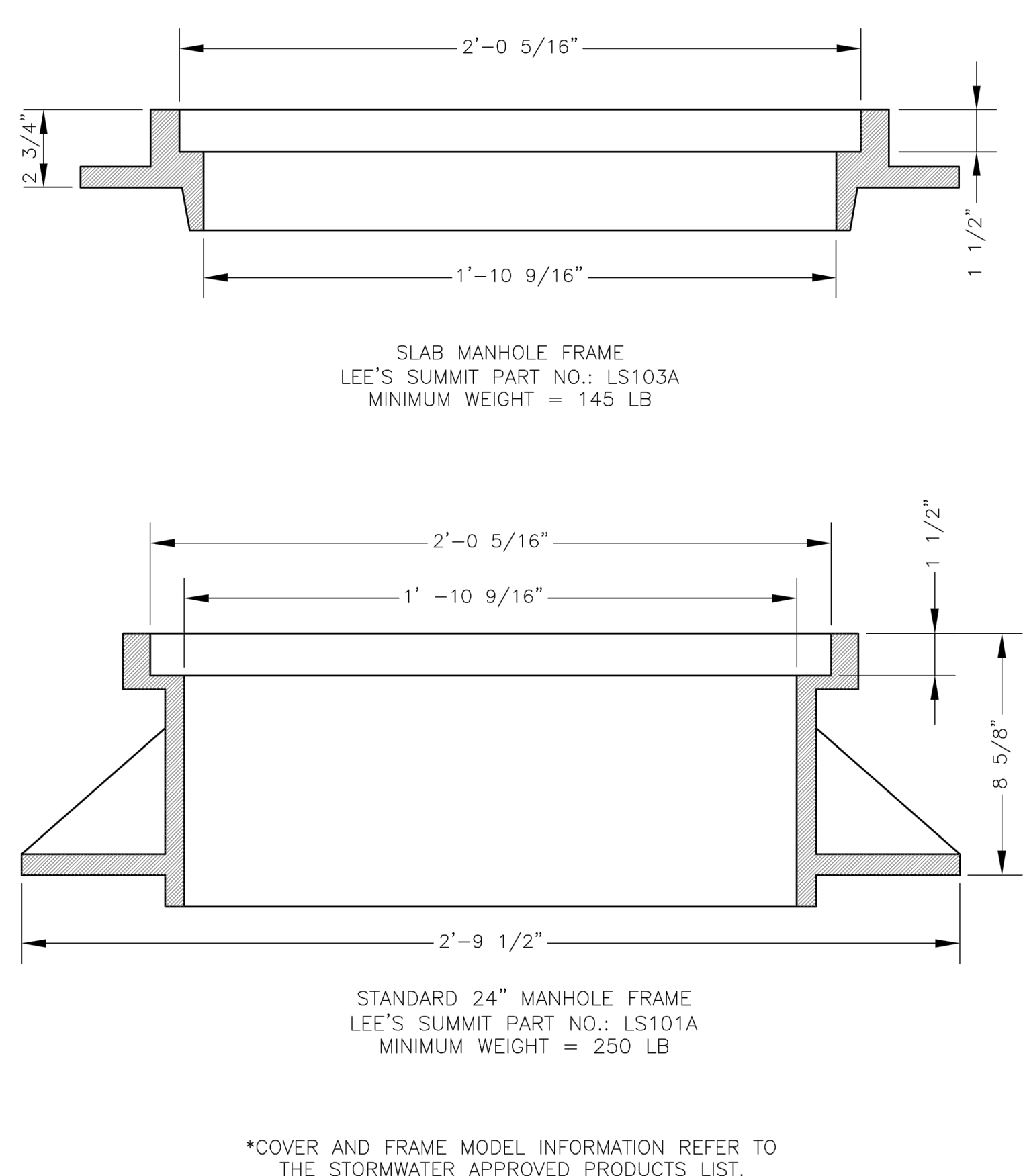
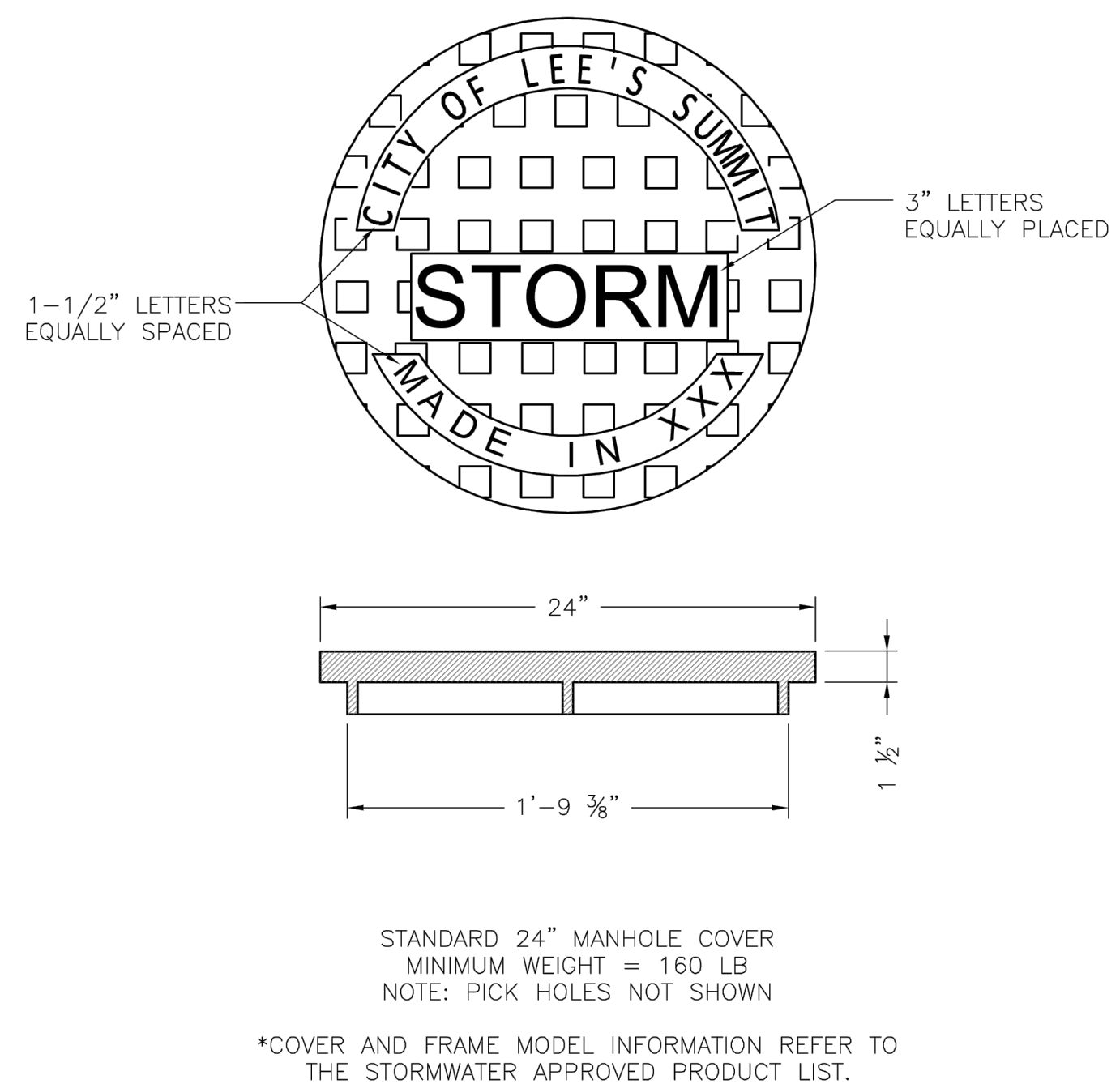
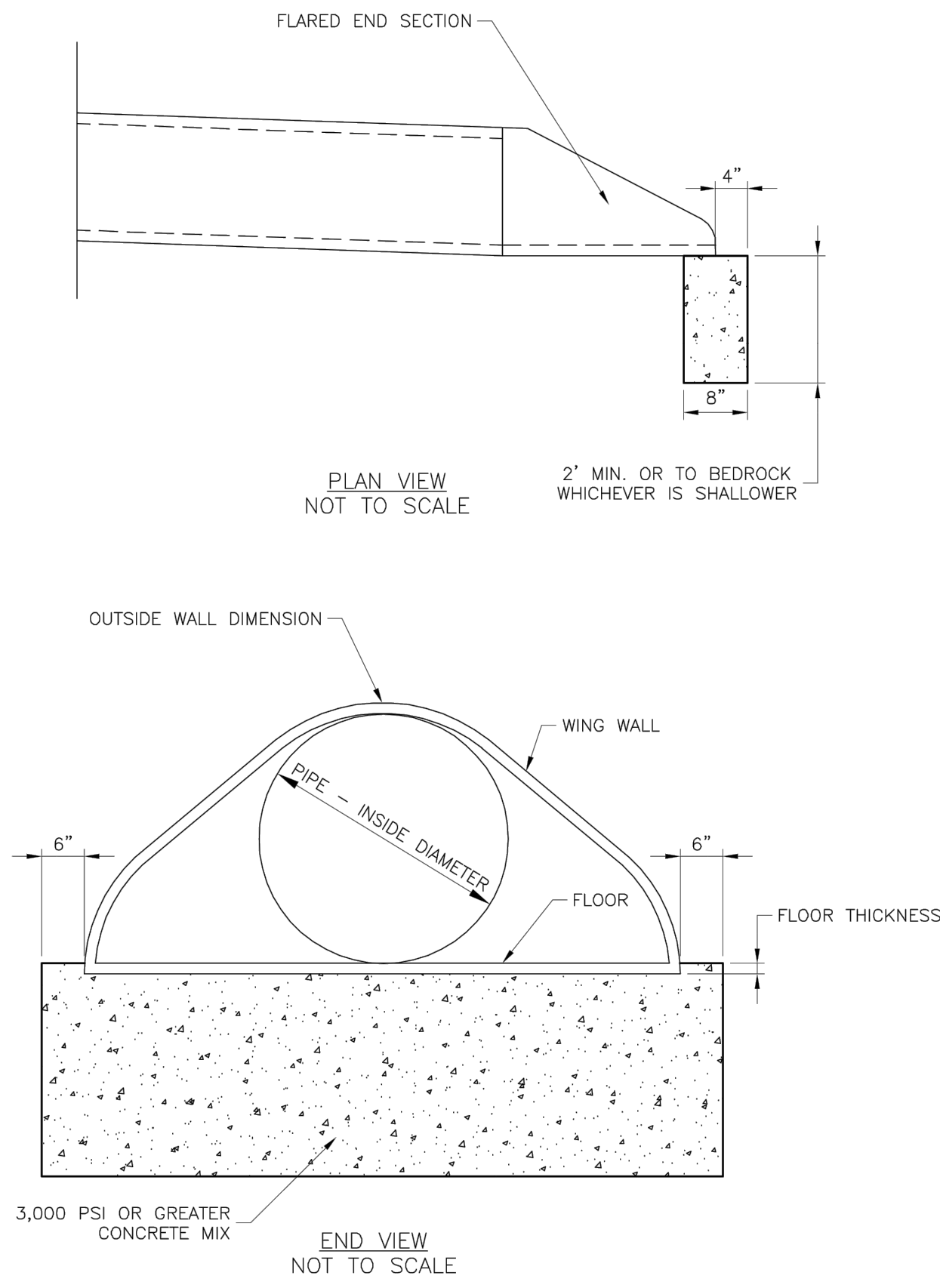
STORM SEWER DETAILS
STREET & STORM SEWER PLANS

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_DTL01_A191605
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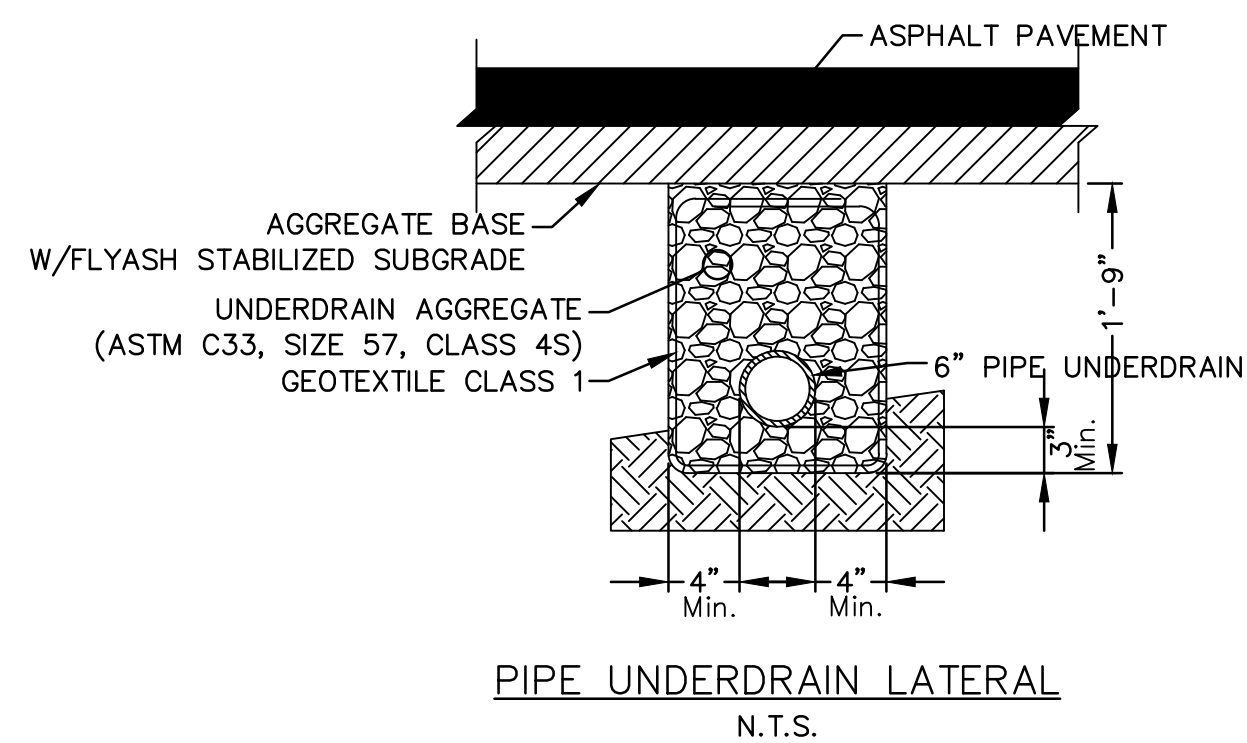


TYPICAL SECTION FOR PLASTIC PIPE
(IN ROCK OR SOIL)

UNDERGROUND PIPE INSTALLATION FOR STORM SEWER LINES

N.T.S.

1. BACKFILL SHALL BE JOG 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.
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.

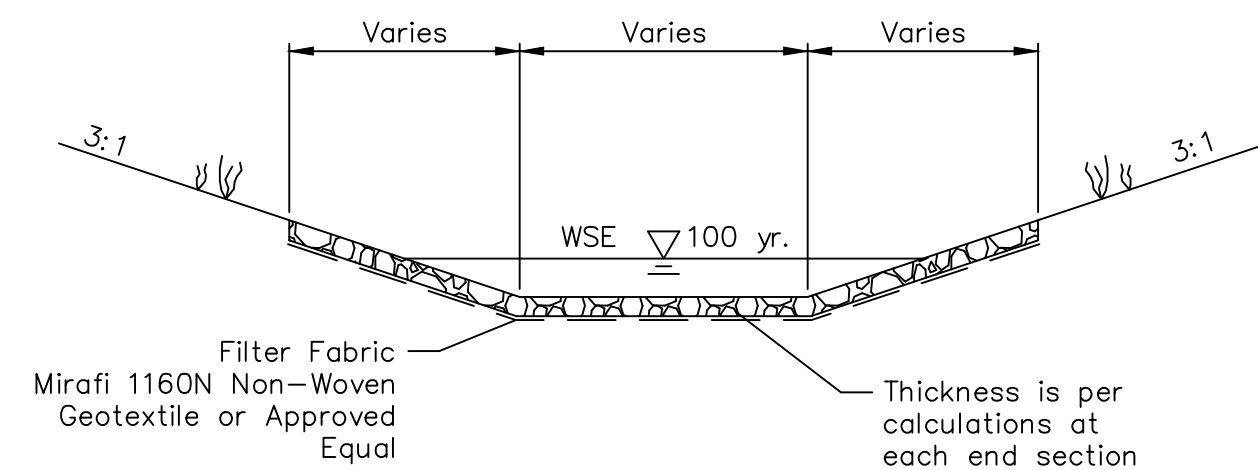


PIPE UNDERDRAIN LATERAL

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 on street layout.
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 Aggregate, Edge Inlets and Outlet Pipe shall conform to City of Lee's Summit Specifications.
5. Overlap geotextile at top of trench a minimum of 12".



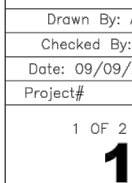
NOTE: DIMENSIONS ARE PER
CALCULATIONS AT EACH END SECTION

RIPRAP DETAIL

N.T.S.

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