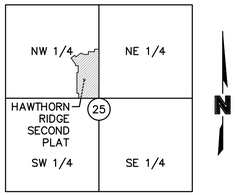
HAWTHORN RIDGE
SECOND PLAT
STREET & STORM SEWER PLANS

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

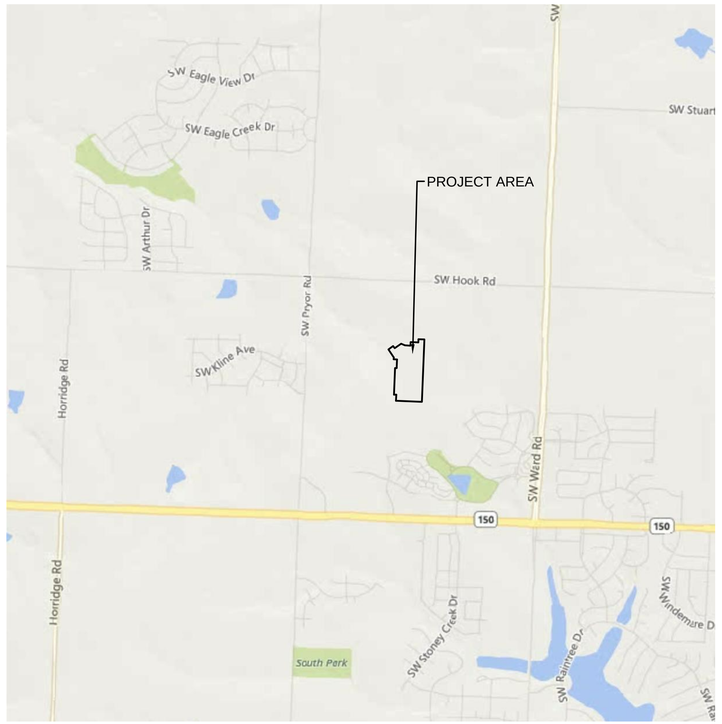


LOCATION MAP
Sec. 25, Twp. 47 N., Rge. 32 W.
(N.T.S.)

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

☐ NOT FOR CONSTRUCTION

☒ REVIEWED FOR CONSTRUCTION



PROPERTY DESCRIPTION:

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'

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

SHEET INDEX

Sheet Number	Sheet Title
C100	COVER SHEET
C101	GENERAL NOTES
C102	GENERAL LAYOUT
C103	GRADING PLAN
C104	TYPICAL SECTIONS
C105	SWALE PLAN & PROFILE
C106	SWALE PLAN & PROFILE
C107	SWALE PLAN & PROFILE
C108	SWALE PLAN & PROFILE
C109	ROAD PLAN & PROFILE
C110	ROAD PLAN & PROFILE
C111	ROAD PLAN & PROFILE
C112	ROAD PLAN & PROFILE
C113	ROAD PLAN & PROFILE
C114	ROAD PLAN & PROFILE
C115	ROAD PLAN & PROFILE
C116	ROAD PLAN & PROFILE
C117	TRAFFIC CONTROL
C118	SIGN DETAILS
C119	ROADWAY MARKING DETAILS
C120	SPOT ELEVATIONS
C121	SPOT ELEVATIONS
C122	SPOT ELEVATIONS
C123	SPOT ELEVATIONS
C124	STORM PLAN & PROFILE
C125	STORM PLAN & PROFILE
C126	STORM PLAN & PROFILE
C127	STORM PLAN & PROFILE
C128	STORM PLAN & PROFILE
C129	STORM PLAN & PROFILE
C130	STORM PLAN & PROFILE
C131	STORM PLAN & PROFILE
C132	STORM PLAN & PROFILE
C133	STORM PLAN & PROFILE
C134	STORM PLAN & PROFILE
C135	STORM PLAN & PROFILE
C136	STORM SEWER DETAILS
C137	STORM SEWER DETAILS
C138	DRAINAGE PLAN
C139	DRAINAGE TABLES
C140	DRAINAGE TABLES
C141	MASTER DRAINAGE PLAN
C142	SITE DISTURBANCE PHASE 1
C143	SITE DISTURBANCE PHASE 2
C144	SITE DISTURBANCE PHASE 3
C145	SITE DISTURBANCE PHASE 4
C146	SEDIMENT BASIN DETAIL
C147	SITE DISTURBANCE DETAILS
C148	SITE DISTURBANCE DETAILS

REVIEWED BY:

CITY OF LEE'S SUMMIT — DATE

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

MELISSA G. DEGONIA
CIVIL ENGINEER
MO#2011000892 — 8-13-19 DATE

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

olsson
OLSSON - CIVIL ENGINEERING
MO CERTIFICATE OF AUTHORITY #:001592
1301 BURLINGTON, SUITE 100
NORTH KANSAS CITY, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8-13-19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	REVISED PER CITY COMMENTS	

REVISIONS

COVER SHEET
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C100

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_TTL01_0191605.dwg USER: bworthley
DATE: Aug 12, 2019 1:17pm XREFS: C_PTBLK_0191605 C_PBNDY_0191605

GENERAL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT THE PLANS IN THEIR POSSESSION ARE THE MOST CURRENT VERSION ISSUED, ARE FULLY COORDINATED WITH ALL SUBCONTRACTORS, AND PRESENT ON SITE AT ALL TIMES. CURRENT PLANS PREPARED BY OLSSON MAY BE OBTAINED AT THE DIRECTION OF OLSSON'S CLIENT. DIRECT REQUESTS TO OLSSON MAY REQUIRE ADDITIONAL AUTHORIZATIONS, AGREEMENTS, AND/OR FEES. PLEASE CONTACT THE ENGINEER FOR INFORMATION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DEVIATIONS FROM THESE PLANS UNLESS WRITTEN APPROVAL FROM ENGINEER, OWNER, AND DEVELOPER.
3. ALL WORK AND MATERIALS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE OWNER OR THE OWNER'S REPRESENTATIVE.
4. ALL ESTIMATES OF QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING QUANTITIES AND ITEMS OF WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO COMPLETE THE WORK SHOWN IN THE PLANS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS, PAYING ALL FEES, AND FOR OTHERWISE COMPLYING WITH ALL APPLICABLE REGULATIONS GOVERNING THE WORK.
7. THE CONTRACTOR SHALL NOT ENGAGE IN ACTIVITIES THAT MAY ENCROACH ON WATERS OF THE U.S., INCLUDING WETLANDS, UNTIL ANY NECESSARY PERMITS MAY BE OBTAINED. THE CONTRACTOR SHALL REVIEW AND COMPLY WITH ALL CONDITIONS DESCRIBED IN THE PERMIT.
8. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, THE SAFETY OF ALL PERSONS INCLUDING VISITORS AND THE GENERAL PUBLIC, AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY THROUGHOUT THE PROJECT AND NOT BE LIMITED BY WORKING HOURS. ANY CONSTRUCTION OBSERVATION BY THE ENGINEER OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES.
9. PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL NOTIFY AND COORDINATE WITH ALL UTILITY COMPANIES AND OBTAIN ANY RELEVANT INFORMATION. NOTIFY ENGINEER OF ANY DISCREPANCIES.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL BOUNDARY CORNERS AND SECTION CORNERS. ANY BOUNDARY CORNER AND/OR SECTION CORNER DISTURBED OR DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE RESET BY A LAND SURVEYOR LICENSED IN THE STATE OF MISSOURI, AT THE CONTRACTOR'S EXPENSE.
11. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ADJACENT PROPERTIES AND SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT DAMAGE DURING CONSTRUCTION. THE CONTRACTOR IS ALSO RESPONSIBLE FOR REPAIRING ANY DAMAGE RESULTING FROM CONSTRUCTION ACTIVITIES.
12. PRIOR TO MOVING OFF THE JOB THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER TO PERFORM A FINAL WALK-THROUGH OF THE CONSTRUCTION SITE.

REFERENCES

1. UNLESS EXPLICITLY DESCRIBED OTHERWISE WITHIN THESE PLANS THE FOLLOWING SHALL APPLY;
   A. ALL CONSTRUCTION, INCLUDING THOSE LISTED BELOW, SHALL CONFORM TO THE LATEST CODES AND ORDINANCES OF LEE'S SUMMIT, MISSOURI.
   B. ALL CONSTRUCTION IN MODOT RIGHT-OF-WAY SHALL CONFORM TO THE LATEST SPECIFICATIONS ADOPTED BY U.S. DEPARTMENT OF TRANSPORTATION AND MODOT.
   C. ALL TRAFFIC CONTROL SIGNAGE SHALL CONFORM WITH THE CURRENT EDITION OF THE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
   D. ALL UTILITY EXTENSIONS AND CONSTRUCTION SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE UTILITY COMPANIES..
   E. ALL EXTERIOR PAVEMENT (PCC, ASPHALT, ETC.) SHALL BE IN CONFORMANCE WITH THE SPECIFICATIONS OF LEE'S SUMMIT, MISSOURI AND THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.
4. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE DELIVERY MANAGER AND COORDINATING ANY MAILBOXES THAT MAY BE DISTURBED. FAILURE TO DO SO MAY SUBJECT THE CONTRACTOR TO PROSECUTION BY THE FEDERAL GOVERNMENT.

EXISTING CONDITIONS

1. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS OF THE PROJECT AREA.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING THEIR OWN INVESTIGATIONS AND MAKING THEIR OWN ASSUMPTIONS REGARDING SITE SURFACE AND SUBSURFACE CONDITIONS. THIS INCLUDES THE LOCATION AND CONSISTENCY OF ANY EXISTING ROCK LAYERS UNDERLYING THE PROJECT SITE. CONTACT THE ENGINEER REGARDING ANY DISCREPANCIES THAT MAY AFFECT THE ABILITY TO CONSTRUCT FROM THESE PLANS AS DESIGNED.
3. EXISTING CONDITIONS WERE DETERMINED THROUGH A VARIETY OF METHODS THAT MAY INCLUDE SURVEY, AERIAL IMAGERY, AVAILABLE RECORDS, GIS DATA, ETC. SUBSURFACE CONDITIONS ARE APPROXIMATE AND MAY NOT INCLUDE ALL UTILITIES AND OTHER SITE IMPROVEMENTS PRESENT ON SITE. THE CONTRACTOR SHALL MAKE EXPLORATION EXCAVATIONS AND LOCATE EXISTING UNDERGROUND UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS WHEN CONFLICTS AND DISCREPANCIES ARE FOUND.

CONSTRUCTION

1. THE CONTRACTOR SHALL INSTALL TRAFFIC CONTROL WHILE WORKING IN THE PUBLIC RIGHT-OF-WAY AS SHOWN IN THESE PLANS. IF PLANS ARE NOT PROVIDED, CONTRACTOR SHALL COORDINATE AND PROVIDE CONTROLS TO THE SATISFACTION OF THE RIGHT-OF-WAY OWNER.
2. THE CONTRACTOR SHALL PROTECT ALL TREES OVER 3" CALIPER FROM DAMAGE. NO TREE SHALL BE REMOVED WITHOUT PERMISSION OF THE OWNER, UNLESS SHOWN OTHERWISE ON THESE PLANS.
3. THE CONTRACTOR SHALL DISPOSE ALL WASTE MATERIAL RESULTING FROM THE PROJECT OFF-SITE AND IN STRICT CONFORMANCE WITH ALL LOCAL CODES AND ORDINANCES.
4. ALL MANHOLES, CATCH BASINS, UTILITY VALVES AND METER PITS ARE TO BE ADJUSTED OR REBUILT TO GRADE AS REQUIRED. NOT ALL ADJUSTMENTS ARE INDICATED IN THE PLANS.
5. THE CONTRACTOR SHALL STREET SWEEP OR OTHERWISE CLEAN ALL ACCESS ROUTES TO THE SITE AT CONCLUSION OF THE PROJECT.

SHOP DRAWINGS

1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS A MINIMUM OF 7 DAYS PRIOR TO THE REQUESTED DATE OF APPROVAL. ENGINEER SHALL REVIEW SHOP DRAWINGS OR SAMPLES IN CONFORMANCE WITH THE DESIGN FOR THIS PROJECT AS DESCRIBED IN THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ERRORS OR OMISSIONS IN SHOP DRAWINGS. THE ENGINEER'S REVIEW SHALL NOT EXTEND TO MEANS OR METHODS OF CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY VARIATION FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS UNLESS CONTRACTOR HAS NOTIFIED ENGINEER OF EACH SUCH VARIATION AT THE TIME OF SUBMISSION, AND OBTAINED ENGINEER'S WRITTEN APPROVAL OF EACH SUCH VARIATION. PRIOR TO SUBMITTING EACH SHOP DRAWING OR SAMPLE, CONTRACTOR SHALL HAVE REVIEWED AND VERIFIED:
   A. ALL FIELD MEASUREMENTS, QUANTITIES, DIMENSIONS, SPECIFIED PERFORMANCE CRITERIA, INSTALLATION REQUIREMENTS, MATERIALS, CATALOG NUMBERS AND SIMILAR INFORMATION WITH RESPECT THERETO;
   B. ALL MATERIALS WITH RESPECT TO INTENDED USE, FABRICATION, SHIPPING, HANDLING, STORAGE, ASSEMBLY AND INSTALLATION PERTAINING TO THE PERFORMANCE OF THE WORK;
   C. ALL INFORMATION RELATIVE TO MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION AND SAFETY PRECAUTIONS AND PROGRAMS INCIDENT THERETO;
   D. CONTRACTOR SHALL ALSO HAVE REVIEWED AND COORDINATED EACH SHOP DRAWING OR SAMPLE WITH OTHER SHOP DRAWINGS AND SAMPLES, AND WITH THE REQUIREMENTS OF THE WORK AND THE CONTRACT DOCUMENTS.
   E. ALL SUBMITTED SHOP DRAWINGS SHALL BEAR A STAMP OR SPECIFIC WRITTEN INDICATION AND SIGNATURE THAT CONTRACTOR HAS FULLY COMPLETED THE ABOVE TASKS.
2. SHOP DRAWINGS AS DESCRIBED ABOVE ARE REQUIRED FOR, BUT NOT LIMITED TO, THE FOLLOWING:
   A. ALL STORM SEWER STRUCTURES TO BE INSTALLED WITH THIS PROJECT.
   B. ANY ITEMS IN THESE PLANS THAT ALLOW FOR AN "APPROVED EQUAL" ALTERNATIVE.

STORM SEWER GENERAL NOTES:

1. STORM STRUCTURES SHALL BE PER CURRENT CITY DETAILS. IF CITY DOES NOT HAVE PUBLISHED DETAILS STRUCTURES SHALL BE PER CURRENT APWA SPECIFICATIONS.
2. PRIOR TO COMMENCEMENT OF WORK THE CONTRACTOR SHALL NOTIFY AND COORDINATE CONSTRUCTION WITH CITY OF LEE'S SUMMIT, MISSOURI.
3. ALL PIPE LENGTHS AND ELEVATIONS ARE CALCULATED LINEARLY FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
4. ALL STRUCTURE DIMENSIONS ARE TO INSIDE FACE OF STRUCTURE.
5. COORDINATES ARE PROVIDED AT THE CENTER OF STRUCTURE. ADDITIONAL COORDINATES PROVIDED ARE PER LOCAL CODES AND ORDINANCES OR AS AN AID WHEN ORIENTING THE BOX DURING INSTALLATION.
6. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT LOCATIONS OF POSSIBLE CONFLICT AND POINTS OF CONNECTION PRIOR TO ANY CONSTRUCTION OF STORM SEWER.
7. STORM SEWER TRENCHES SHALL BE CONSTRUCTED SUCH THAT UNDISTURBED EXISTING SOIL OR FILL COMPACTED TO 95% PROCTOR DENSITY IS AT A DEPTH THAT IS 18" ABOVE TOP OF PROPOSED PIPE.
8. STRUCTURE INVERT CHANNELS SHALL BE SMOOTH, CIRCULAR, AND CONFORMING TO ½ THE ADJACENT PIPE SECTION (INVERT TO CENTER). CHANGES IN DIRECTION OF FLOW SHALL BE MADE WITH A SMOOTH CURVE AND MAINTAIN SHAPE THROUGHOUT. CHANGES IN GRADE OF ADJACENT PIPES SHALL BE TRANSITIONED SMOOTHLY AND EVENLY THROUGH THE STRUCTURE.
9. PIPE PENETRATIONS SHALL BE GROUTED TO ENSURE WATERTIGHT SEALS.
10. MAINTAIN MINIMUM DEPTH OF COVER PER APWA 5606.06

ESTIMATE OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	AS-BUILT
	STREET			
1	EXCAVATION	C.Y.	42779	
2	EMBANKMENT	C.Y.	29854	⚠1
3	SUBGRADE STABILIZATION (6" FLYASH TREATMENT)	S.Y.	5724	
4	SUBGRADE STABILIZATION (9" FLYASH TREATMENT)	S.Y.	7659	
5	6" ASPHALT PAVEMENT	S.Y.	4776	
6	7.5" ASPHALT PAVEMENT	S.Y.	6501	
7	CONCRETE CURB & GUTTER (CG-1)	L.F.	3213	
8	CONCRETE CURB & GUTTER (CG-2)	L.F.	2959	
9	MILL & OVERLAY	S.Y.	31	
10	ADA RAMP	EA.	20	
11	STOP SIGNS	EA.	6	⚠1
12	STREET NAME SIGNS	EA.	12	
13	END OF ROAD TREATMENT	EA.	16	
	STORM			
14	STD. CURB INLET (5'x3' INSIDE)	EA.	11	
15	STD. CURB INLET (5'x4' INSIDE)	EA.	5	
16	STD. CURB INLET (5'x5' INSIDE)	EA.	3	
17	STD. CURB INLET (6'x6' INSIDE)	EA.	4	
18	STD. FIELD INLET (4'x4' INSIDE)	EA.	4	
19	STD. MANHOLE (5' DIA. INSIDE)	EA.	3	
20	STD. MANHOLE (6' DIA. INSIDE)	EA.	1	
21	STD. MANHOLE (7' DIA. INSIDE)	EA.	2	
22	STD. JUNCTION BOX (6'x6' INSIDE)	EA.	1	
23	15" HDPE	L.F.	1046.87	
24	18" HDPE	L.F.	577.91	
25	24" HDPE	L.F.	778.43	
26	30" HDPE	L.F.	240.12	
27	36" HDPE	L.F.	515.73	
28	42" HDPE	L.F.	209.50	
29	48" HDPE	L.F.	238.55	
30	54" HDPE	L.F.	159.31	
31	54" CMP END SECTION	EA.	1	
32	24" HDPE PLUG	EA.	1	
33	RIPRAP	S.Y.	102	
34	CONNECTION TO EXISTING STRUCTURE	EA.	1	
	EROSION CONTROL			
35	VEHICLE TRACKING DEVICE	EA.	1	
36	SEDIMENT BASIN	EA.	1	
37	SILT FENCE	LF.	3971	
38	DIVERSION BERM	LF.	910	
39	ROCK CHECK DAM	EA.	6	
40	CURB INLET PROTECTION	EA.	25	
41	AREA INLET PROTECTION	EA.	6	
42	PERMANENT SEEDING	AC.	19	

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

olsson
www.olsson.com
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MO CERTIFICATE OF AUTHORITY #:001592
1301 BURLINGTON, SUITE 100
NORTH KANSAS CITY, MO 64116
TEL 816.361.1177

STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
8/15/19
PROFESSIONAL ENGINEER

MELISSA G. DEGONIA
PE# 2011000892

NO	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	QUANTITIES UPDATED	

REVISIONS

GENERAL NOTES
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C101

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_TTL01_0191605.dwg USER: bworthley
DATE: Aug 12, 2019 1:17pm XREFS: C_PTBLK_0191605 C_PBNDY_0191605



RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020
Kent Monier

olsson
OLSSON - CIVIL ENGINEERING
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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
8-23-19
PROFESSIONAL ENGINEER
MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	BY	REVISIONS DESCRIPTION

GENERAL LAYOUT
STREET & STORM SEWER PLANS
HAWTHORN RIDGE
SECOND PLAT
LEE'S SUMMIT, MISSOURI
2019

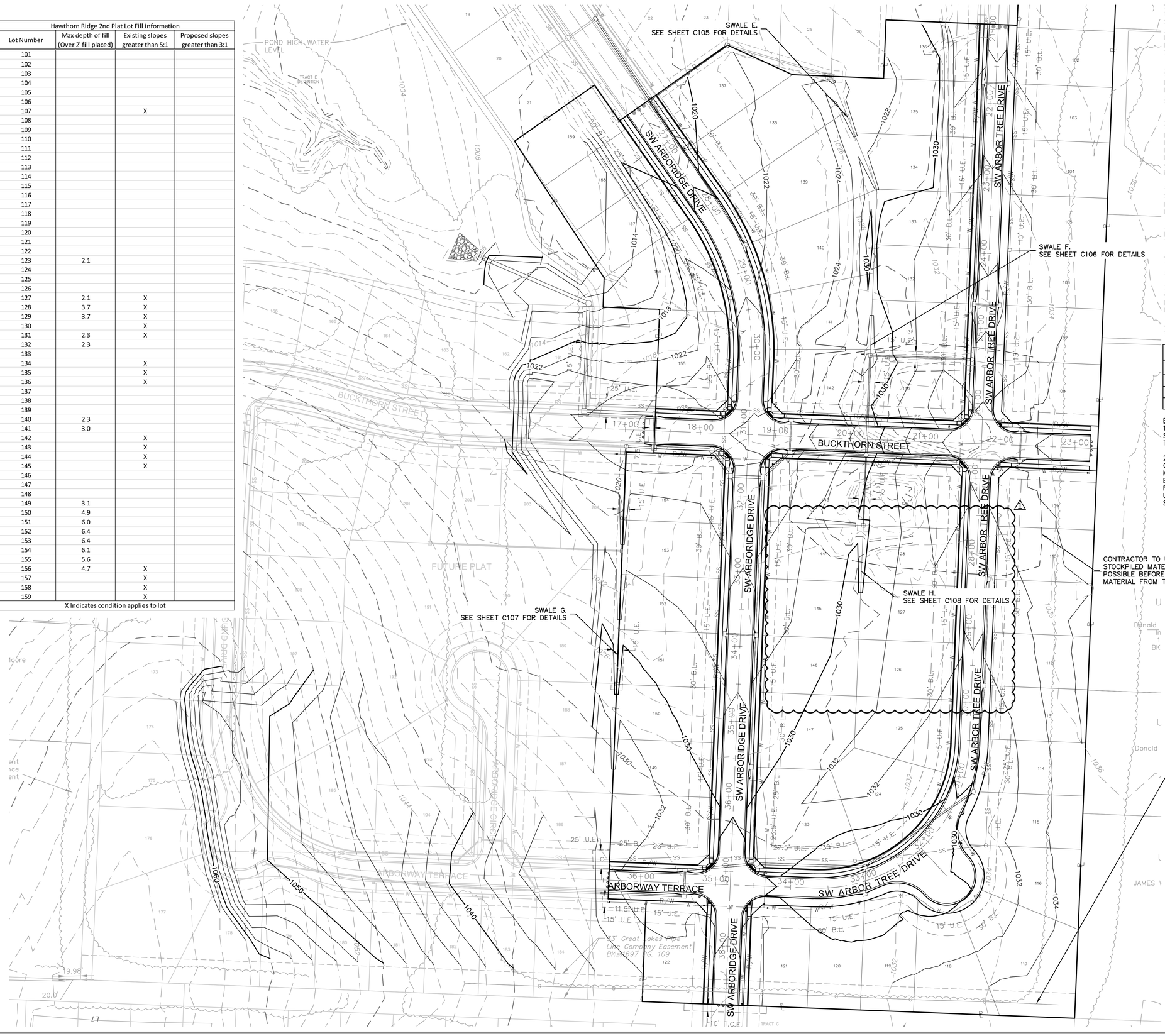
drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C102

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_GEN01_0191605.dwg USER: bworthley
DATE: Aug 12, 2019 1:18pm XREFS: C_PTBLK_0191605 C_PBNDY_0191605 C_PBASE_0191605 C_XBASE_0191605
C_PSTRM_0191605 C_PUTIL_0191605 C_FBASE_0191605

Hawthorn Ridge 2nd Plat Lot Fill information			
Lot Number	Max depth of fill (Over 2' fill placed)	Existing slopes greater than 5:1	Proposed slopes greater than 3:1
101			
102			
103			
104			
105			
106			
107		X	
108			
109			
110			
111			
112			
113			
114			
115			
116			
117			
118			
119			
120			
121			
122			
123	2.1		
124			
125			
126			
127	2.1	X	
128	3.7	X	
129	3.7	X	
130		X	
131	2.3	X	
132	2.3		
133			
134		X	
135		X	
136		X	
137			
138			
139			
140	2.3		
141	3.0		
142		X	
143		X	
144		X	
145		X	
146			
147			
148			
149	3.1		
150	4.9		
151	6.0		
152	6.4		
153	6.4		
154	6.1		
155	5.6		
156	4.7	X	
157		X	
158		X	
159		X	

X Indicates condition applies to lot



WARNING
HIGH–PRESSURE PIPELINE
EXCAVATION AND/OR CONSTRUCTION PROHIBITED WITHOUT COMPLIANCE WITH STATE ONE–CALL, AND WITHOUT WRITTEN PERMISSION FROM MAGELLAN PIPELINE COMPANY, L.P.

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

0' 30' 60' 120'
SCALE IN FEET

GRADING NOTES:

1. CONTRACTOR SHALL ADHERE TO THE "STANDARDS, SPECIFICATIONS AND DESIGN CRITERIA" SECTION 2100 AS ADOPTED BY LEE'S SUMMIT, MO (LATEST EDITION), FOR EXCAVATION AND EMBANKMENT WORK WITHIN THE PROPOSED RIGHT–OF–WAY, OR SPECIFICATIONS IN THESE PLANS, WHICHEVER IS STRICTER.

2. AREAS OF CONSTRUCTION SHALL BE STRIPPED OF ALL VEGETATION, ORGANIC MATTER AND TOPSOIL, PRIOR TO PLACEMENT OF FILL MATERIAL. THE EXPOSED GRADES SHALL BE OBSERVED AND PROOF ROLLED USING A LOADED TANDEM AXLE DUMP TRUCK WITH A MINIMUM GROSS WEIGHT OF 20 TONS OR SIMILAR EQUIPMENT.

3. WHERE THE EXISTING GRADE IS STEEPER THEN ONE UNIT VERTICAL IN FIVE UNITS HORIZONTAL AND THE DEPTH OF FILL EXCEEDS 5 FEET, BENCHING OF THE FILL INTO THE NATURAL SLOPE SHALL BE PERFORMED. A KEY SHALL BE PROVIDED AT THE TOE OF THE FILL THAT IS AT LEAST 10 FEET WIDE AND 2 FEET IN DEPTH. BENCHES SHOULD BE CUT AS THE FILL PROGRESSES AND SHOULD HAVE A MAXIMUM BENCH HEIGHT OF 3 FEET.

4. MATERIAL FOR USE AS FILL SHALL BE IDENTIFIED AND SAMPLED FOR CLASSIFICATION, STANDARD PROCTOR (ASTM D–698) AND ATTERBERG LIMITS (ASTM D–4318) TESTING PRIOR TO COMMENCING FILL PLACEMENT.

5. ALL FILL OUTSIDE OF RIGHT–OF–WAY SHOULD BE PLACED IN CONTROLLED LIFTS HAVING A MAXIMUM LOOSE LIFT THICKNESS OF 9".

6. FILL SHOULD BE COMPACTED TO A MINIMUM OF 95% OF THE MATERIALS MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D–698 (STANDARD PROCTOR COMPACTION).

7. MOISTURE CONTENT OF THE FILL AT THE TIME OF COMPACTION SHALL BE WITHIN A RANGE OF –1 TO +3 PERCENT OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D–698.

8. SEE SHEET C141 FOR MINIMUM LOW OPENINGS AND THIS SHEET FOR FILL DEPTHS FOR EACH LOT.

EARTHWORK QUANTITIES		
LOCATION	CUT (C.Y.)	FILL (C.Y.)
STREET	7,977	2,205
SITE	34,802	27,649
TOTAL	42,779	29,854

1

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.

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

olsson
OLSSON - CIVIL ENGINEERING
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2500 CLIFF RACE PARKWAY, SUITE 300
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TEL 816.361.1177
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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8-15-19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	SWALE H ADDED AND GRADING QUANTITIES UPDATED	

REVISIONS

GRADING PLAN
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

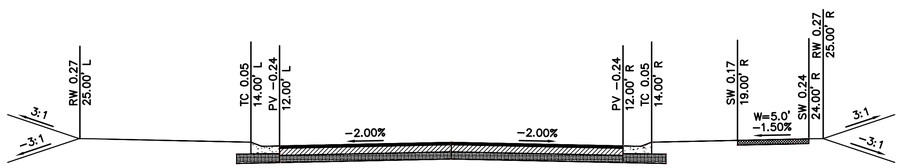
LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C103

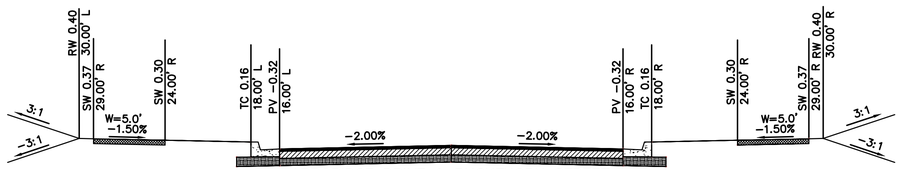
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ARBOR TREE DRIVE, & ARBORWAY TERRACE
RESIDENTIAL LOCAL
N.T.S.

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

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



ARBORIDGE DRIVE & BUCKTHORN STREET
RESIDENTIAL COLLECTOR
N.T.S.

2" TYPE 6 ASPHALTIC CONCRETE SURFACE
5.5" TYPE 5 ASPHALTIC CONCRETE BASE COURSE
6" MIN. MODOT TYPE 5 STONE BASE
9" FLYASH STABILIZED SUBGRADE
CG -1 CURB & GUTTER

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

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LEE'S SUMMIT, MISSOURI
04/17/2020

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PROFESSIONAL ENGINEER

MELISSA G. DEGONIA
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NO. REV.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

TYPICAL SECTIONS
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

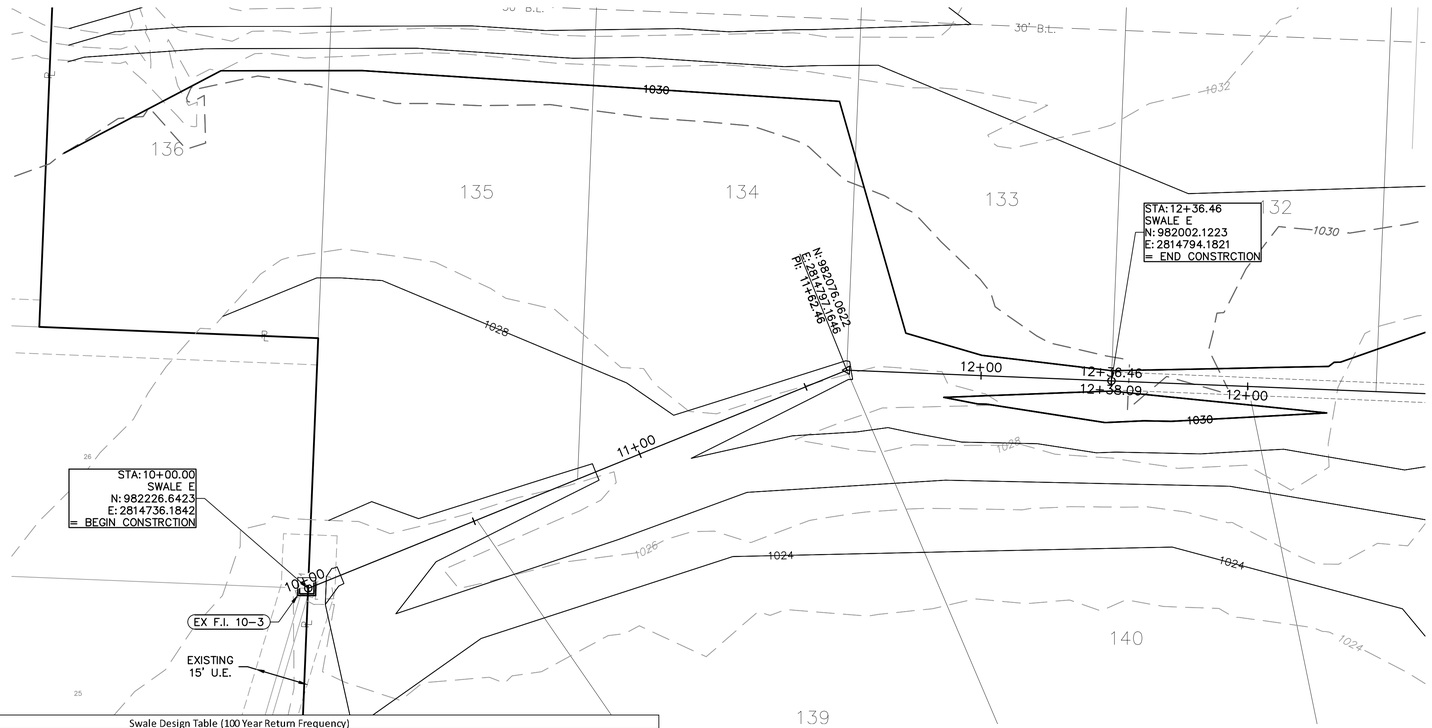
LEE'S SUMMIT, MISSOURI

2019

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checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

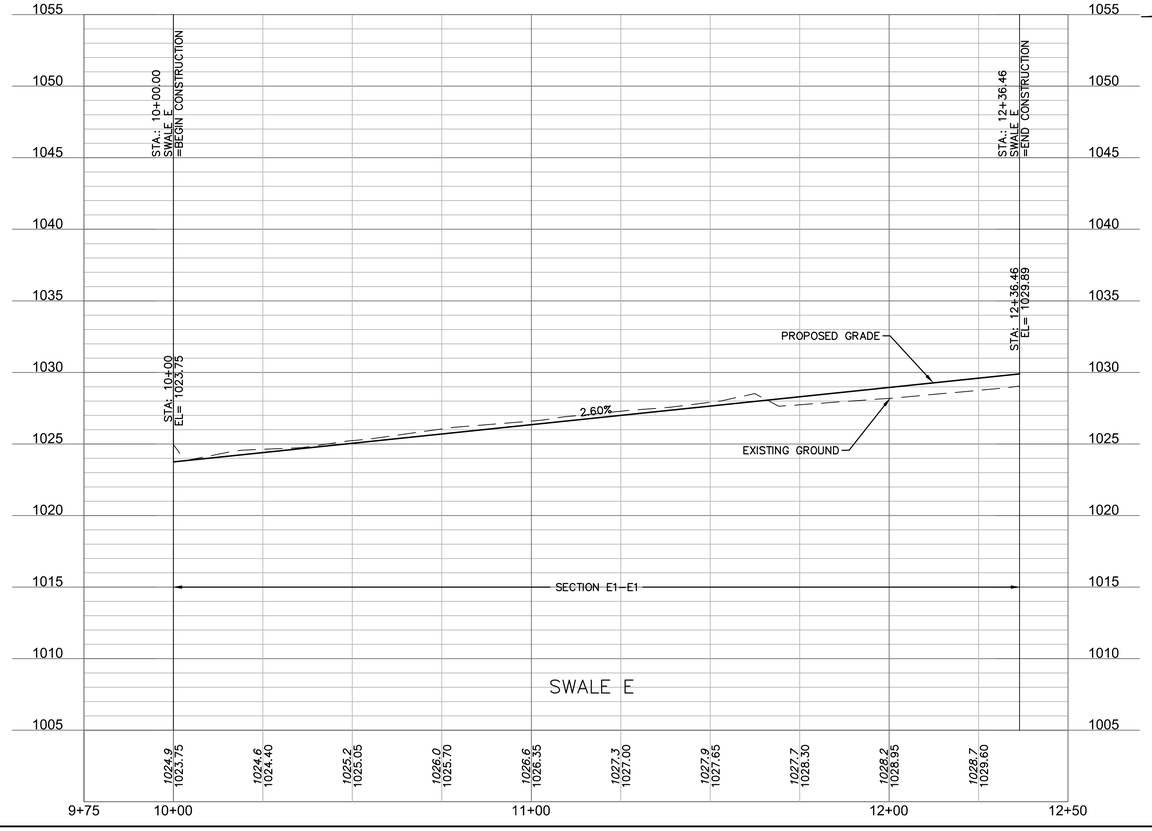
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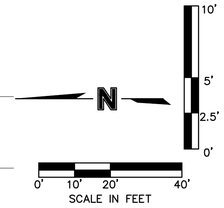
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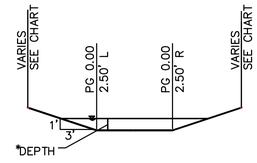


Swale Design Table (100 Year Return Frequency)														
Section Data							Flow Data							
SECTION	Mannings Coefficient	Channel Slope (%)	Min. Swale Depth (ft)	Left Side Slope (H:V)	Right Side Slope (H:V)	Bottom Width (ft)	Discharge (cfs)	Water Depth (ft)	Flow Area (ft^2)	Velocity (ft/sec)	Wetted Perimeter (ft)	Top Width (ft)	Specific Energy (ft)	Shear Stress (lbs/ft^3)
E1-E1	0.03	2.60%	1.25	3:1	3:1	5.00	3.92	0.25	1.44	2.73	6.58	6.50	0.37	0.35

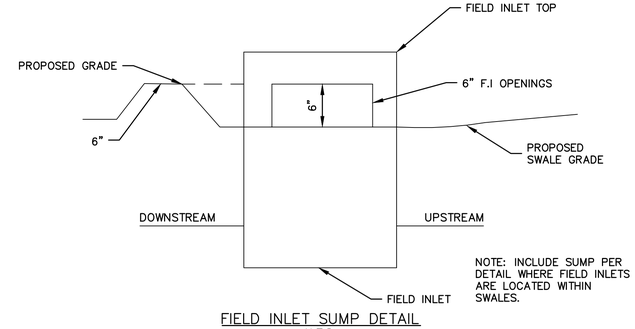
Swale Drainage Area Table (100 year Return Frequency)						
Section	Drainage Area	C	Tc	i	K	Peak Flow
	(ac.)		(min)	(in/hr)		(cfs)
E1-E1	0.60	0.51	5	10.32	1.25	3.92







SWALE TYPICAL SECTION
* SEE TABLE FOR SWALE DEPTH
NTS



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

FIELD INLET SUMP DETAIL
N.T.S.

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

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STATE OF MISSOURI
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NUMBER PE-2011000892
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8-13-19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

SWALE PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

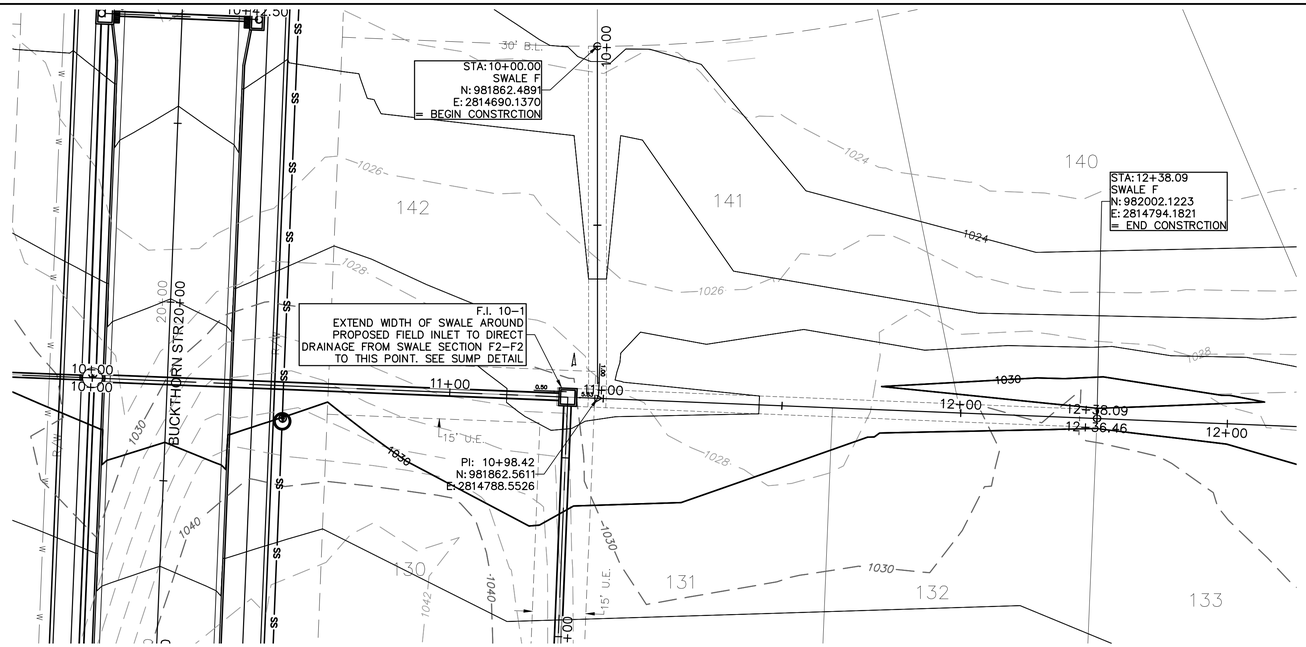
LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.Q
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

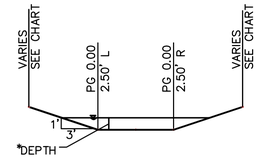
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C_FBASE_0191605 C_PUTIL_0191605 C_PSURF_0191605 C_PSTRM_0191605
USER: bworthley



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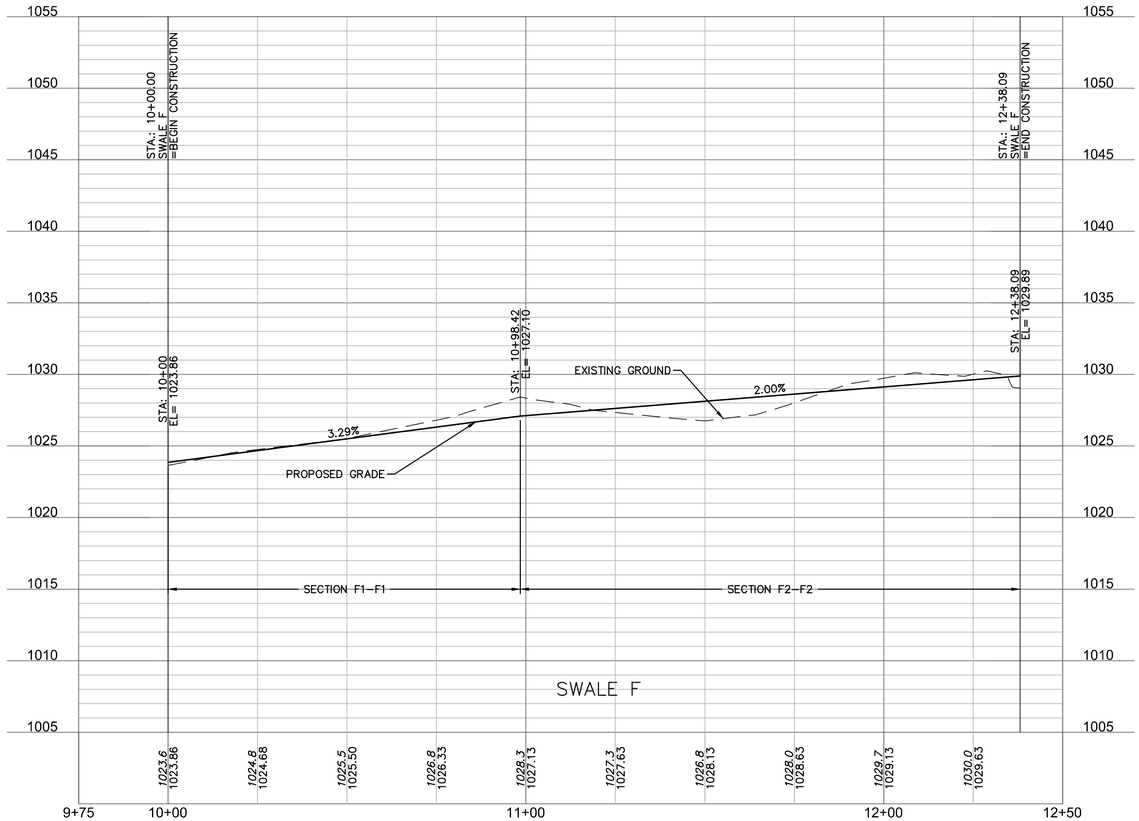
SWALE TYPICAL SECTION
* SEE TABLE FOR SWALE DEPTH
NTS

Swale Design Table (100 Year Return Frequency)

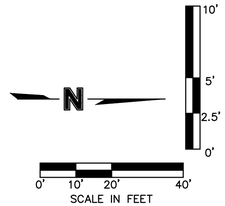
Section Data							Flow Data							
SECTION	Mannings Coefficient	Channel Slope (%)	Min. Swale Depth (ft)	Left Side Slope (H:V)	Right Side Slope (H:V)	Bottom Width (ft)	Discharge (cfs)	Water Depth (ft)	Flow Area (ft^2)	Velocity (ft/sec)	Wetted Perimeter (ft)	Top Width (ft)	Specific Energy (ft)	Shear Stress (lbs/ft^2)
F1-F1	0.03	3.29%	1.18	3:1	3:1	5.00	2.50	0.18	1.00	2.51	6.14	6.08	0.28	0.33
F2-F2	0.03	2.00%	1.12	3:1	3:1	5.00	0.92	0.12	0.64	1.43	5.76	5.72	0.15	0.14

Swale Drainage Area Table (100 year Return Frequency)

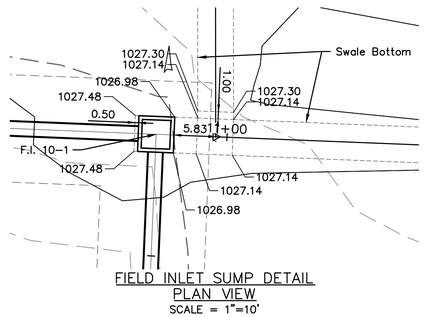
Section	Drainage Area	C	Tc	i	K	Peak Flow
	(ac.)		(min)	(in/hr)		(cfs)
F1-F1	0.38	0.51	5	10.32	1.25	2.50
F2-F2	0.14	0.51	5	10.32	1.25	0.92



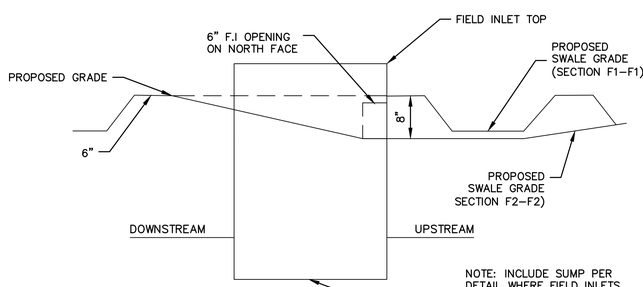
SWALE F



SCALE IN FEET



FIELD INLET SUMP DETAIL
PLAN VIEW
SCALE = 1"=10'



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

FIELD INLET SUMP DETAIL
PROFILE VIEW
N.T.S.

RELEASE FOR CONSTRUCTION
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DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8-25-19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	BY

REVISIONS

REVISIONS DESCRIPTION

SWALE PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

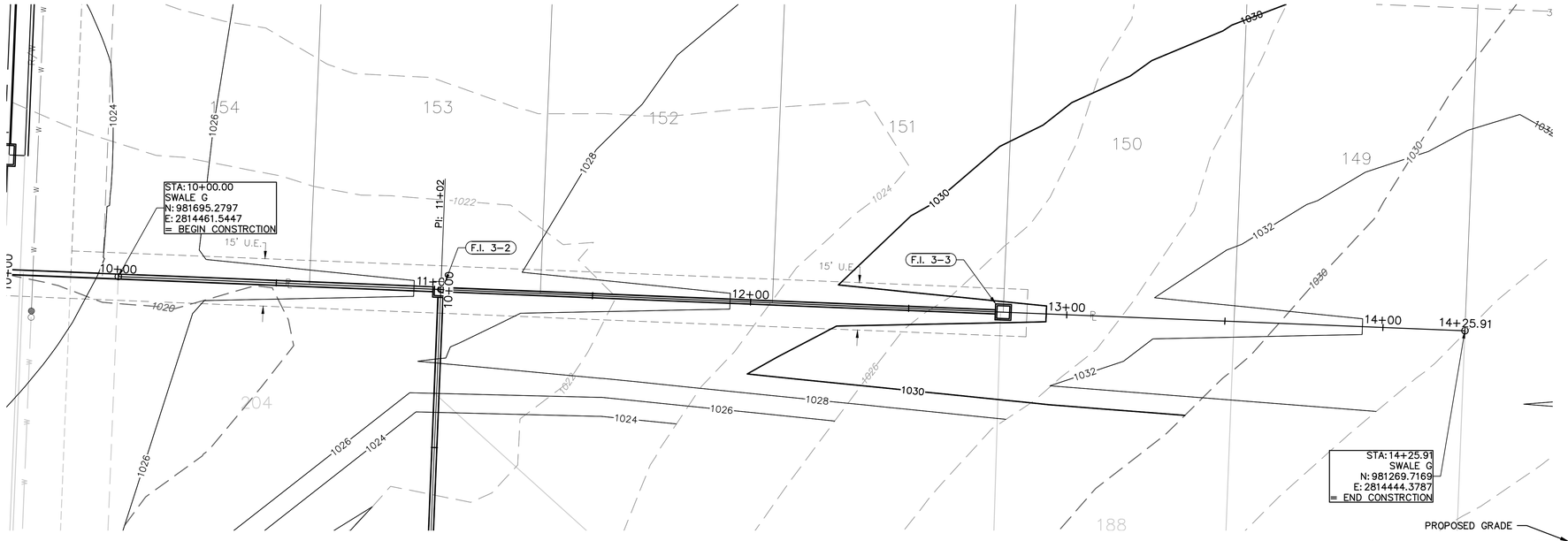
LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
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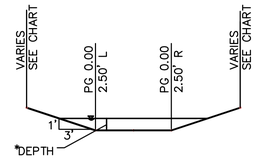
SHEET
C106

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SWALE GRADING NOTES:

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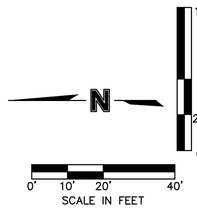
SWALE TYPICAL SECTION
* SEE TABLE FOR SWALE DEPTH
NTS

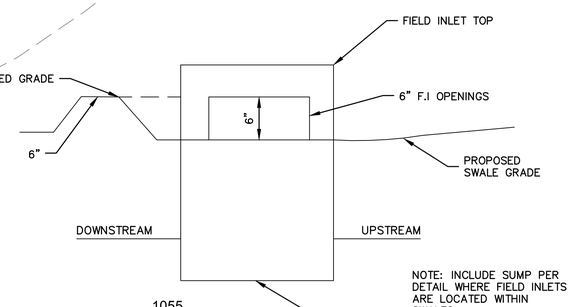
Swale Design Table (100 Year Return Frequency)

Section Data							Flow Data							
SECTION	Mannings Coefficient	Channel Slope (%)	Min. 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)
G1-G1	0.03	2.00%	1.07	3:1	3:1	5.00	0.34	0.07	0.37	0.93	5.44	5.42	0.08	0.08
G2-G2	0.03	2.00%	1.20	3:1	3:1	5.00	2.40	0.20	1.12	2.14	6.26	6.20	0.27	0.22
G3-G3	0.03	2.00%	1.24	3:1	3:1	5.00	3.28	0.24	1.37	2.39	6.52	6.44	0.33	0.26

Swale Drainage Area Table (100 year Return Frequency)

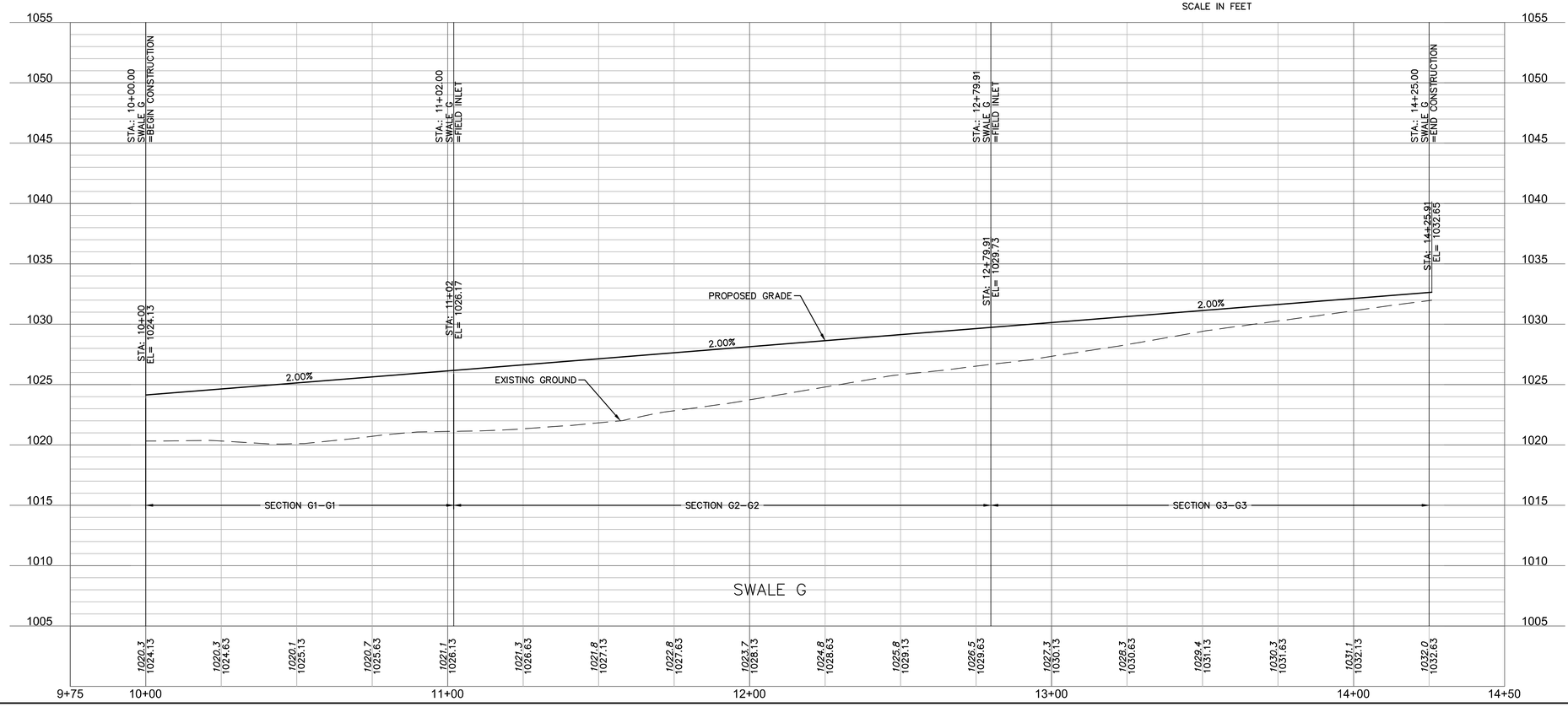
Section	Drainage Area (ac.)	C	Tc (min)	i (in/hr)	K	Peak Flow (cfs)
G1-G1	0.05	0.51	5	10.32	1.25	0.34
G2-G2	0.36	0.51	5	10.32	1.25	2.40
G3-G3	0.50	0.51	5	10.32	1.25	3.28





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

FIELD INLET SUMP DETAIL
N.T.S.



SWALE G

RELEASE FOR CONSTRUCTION
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LEE'S SUMMIT, MISSOURI
04/17/2020

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NO. REV.	DATE	BY

REVISIONS DESCRIPTION

REVISIONS

SWALE PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

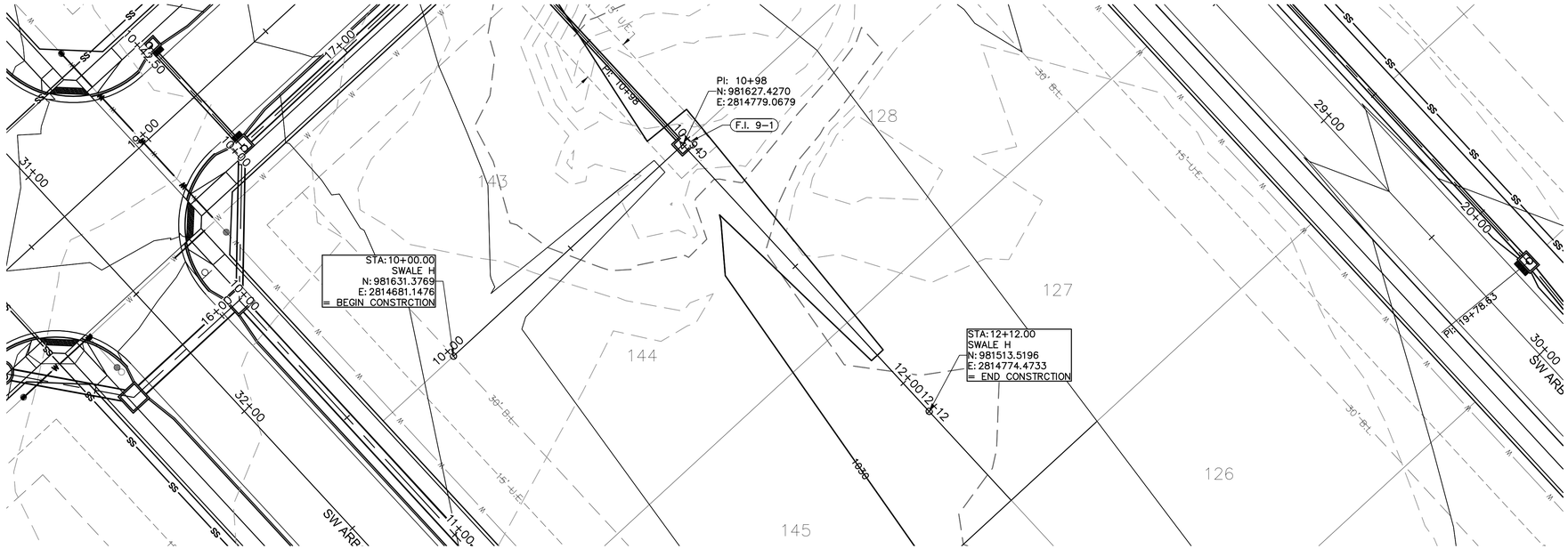
LEE'S SUMMIT, MISSOURI

2019

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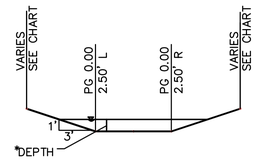
SHEET
C107

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USER: bworthley



SWALE GRADING NOTES:

1. CONTRACTOR SHALL CONSTRUCT SWALES WITH MINIMUM SLOPE, WIDTH AND DEPTH AS SHOWN IN THE SWALE DESIGN TABLES.
2. CONTRACTOR SHALL CONSTRUCT ENTIRE DEPTH OF SWALES WITHIN THE RECORDED SURFACE DRAINAGE EASEMENTS AS SHOWN ON THE PLANS.
3. 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.



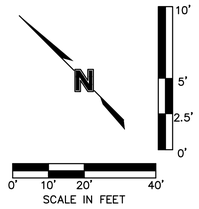
SWALE TYPICAL SECTION
* SEE TABLE FOR SWALE DEPTH
NTS

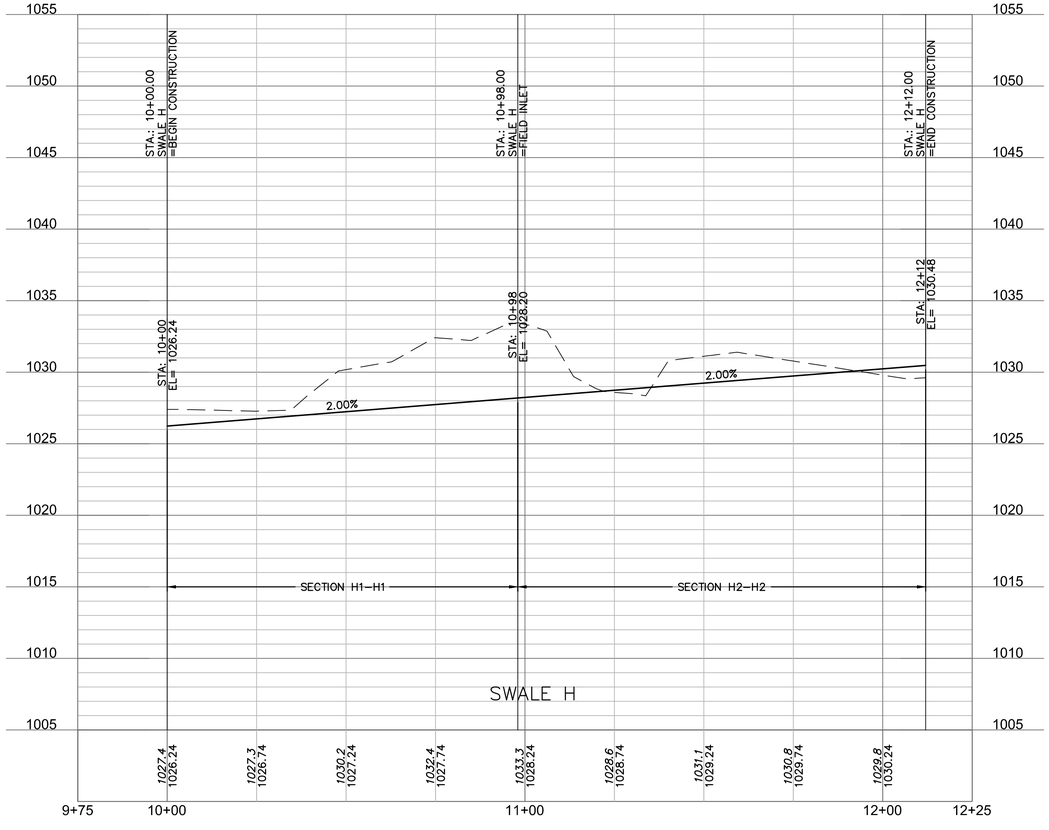
Swale Design Table (100 Year Return Frequency)

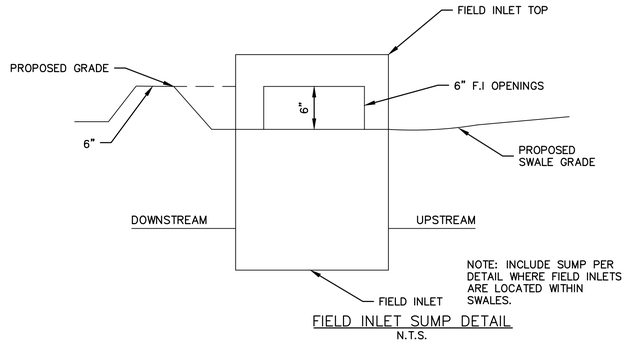
Section Data							Flow Data								
SECTION	Mannings Coefficient	Channel Slope (%)	Min. Swale Depth (ft)	Left Side Slope (H:V)	Right Side Slope (H:V)	Bottom Width (ft)	Discharge (cfs)	Water Depth (ft)	Flow Area (ft^2)	Velocity (ft/sec)	Wetted Perimeter (ft)	Top Width (ft)	Specific Energy (ft)	Shear Stress (lbs/ft^2)
H1-H1	0.03	2.00%	1.07	3:1	3:1	5.00	0.39	0.07	0.37	1.07	5.44	5.42	0.09	0.08
H2-H2	0.03	2.00%	1.20	3:1	3:1	5.00	2.37	0.20	1.12	2.12	6.26	6.20	0.27	0.22

Swale Drainage Area Table (100 year Return Frequency)

Section	Drainage Area (ac.)	C	Tc (min)	i (in/hr)	K	Peak Flow (cfs)
H1-H1	0.06	0.51	5	10.32	1.25	0.39
H2-H2	0.36	0.51	5	10.32	1.25	2.37







FIELD INLET SUMP DETAIL
N.T.S.

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8-25-19

MELISSA G. DEGONIA
PE# 2011000892

NO./REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	SWALE H PLAN AND PROFILE ADDED	

REVISIONS

SWALE PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: R.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C108

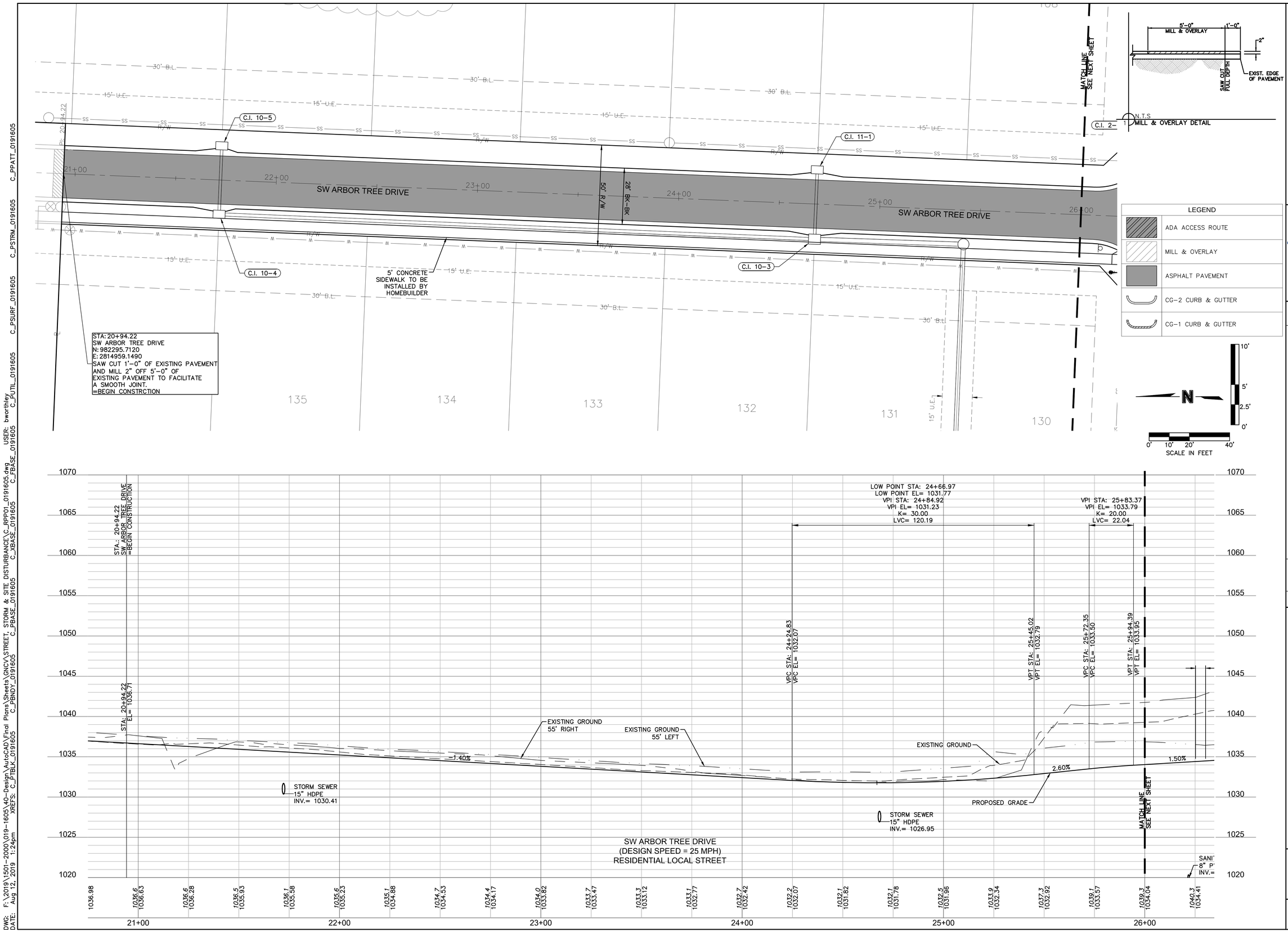
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RELEASE FOR CONSTRUCTION
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LEE'S SUMMIT, MISSOURI
04/17/2020

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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
12-12-19

MELISSA G. DEGONIA
PE# 2011000892



REVISIONS DESCRIPTION	DATE	NO. REV.	BY
REVISIONS			

ROAD PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

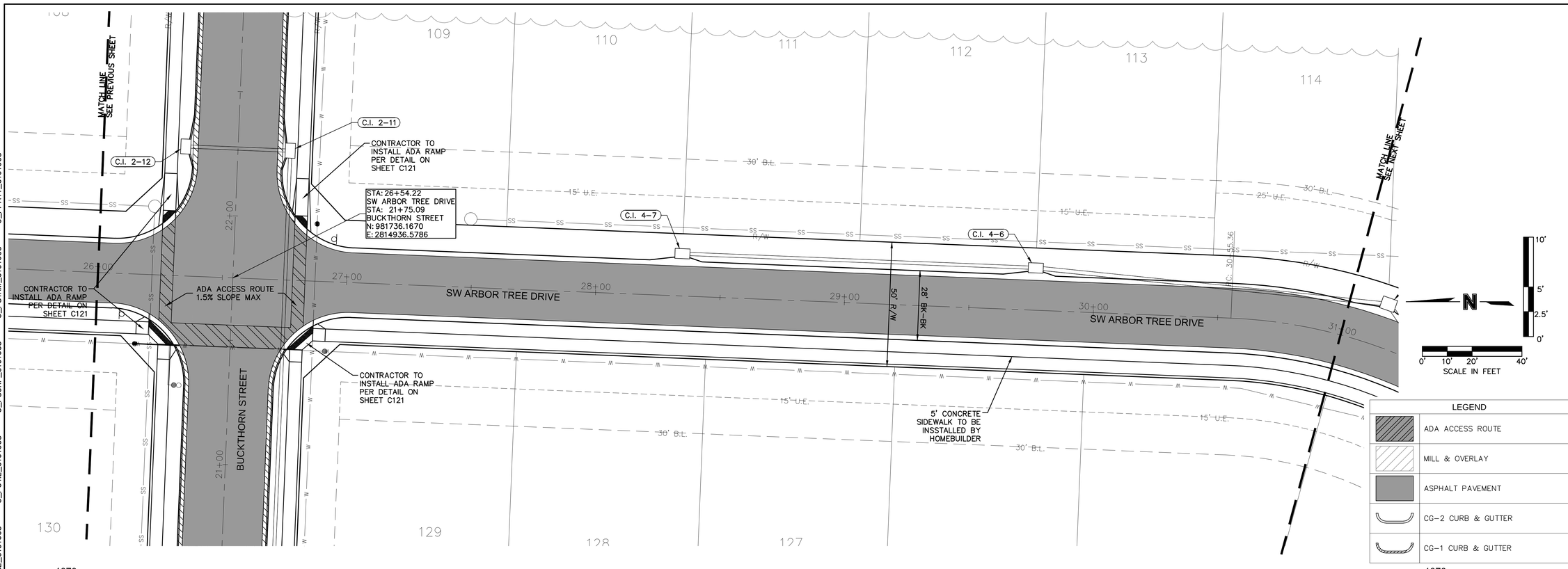
drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C109

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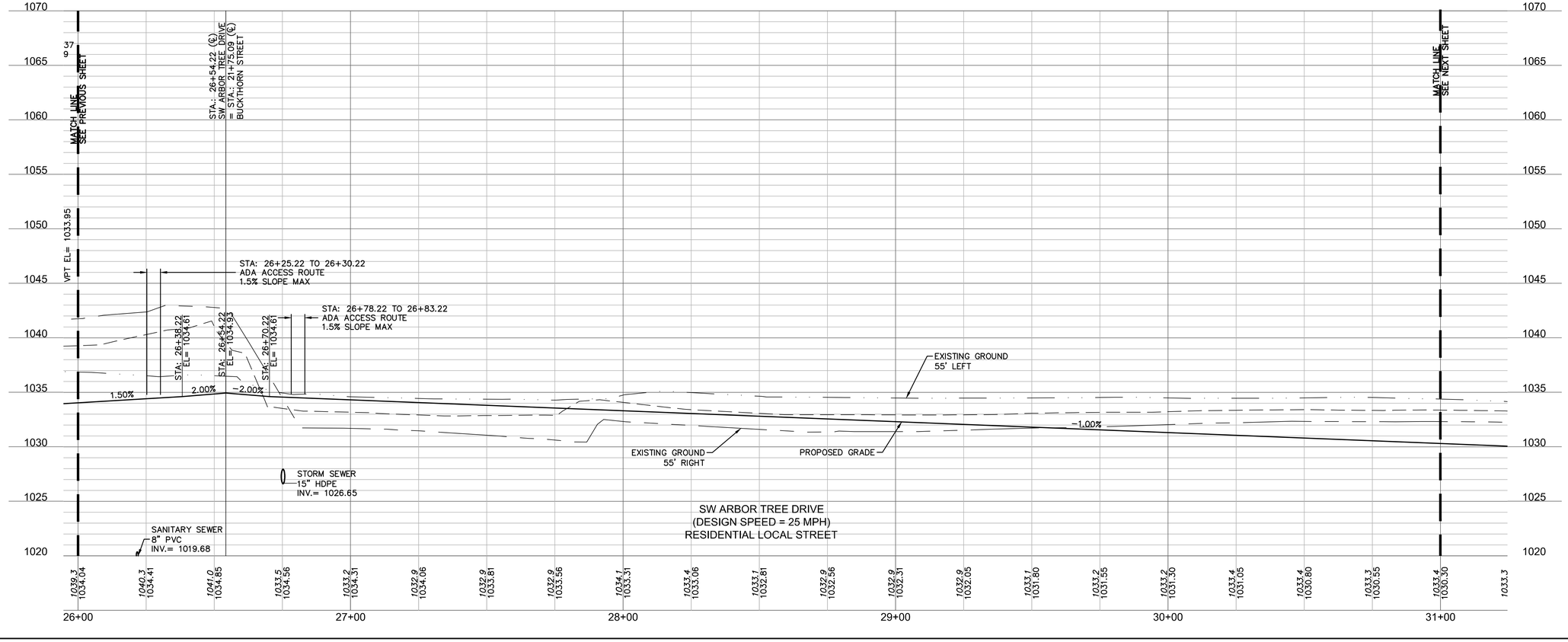
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DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

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2301 MAIN STREET, SUITE 200
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TEL 816.361.1177
www.olsson.com



LEGEND

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



STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
8/15/19
PROFESSIONAL ENGINEER
MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	BY	REVISIONS DESCRIPTION
			REVISIONS

ROAD PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

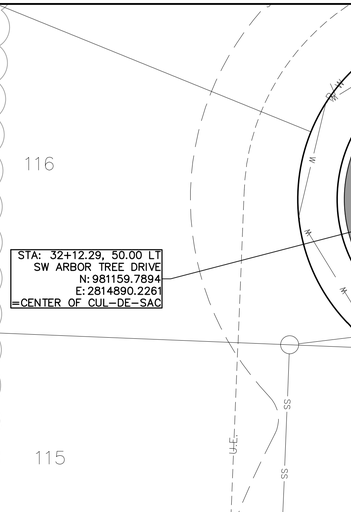
drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C110

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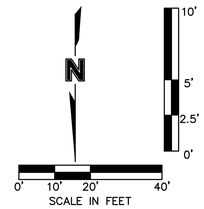
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DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

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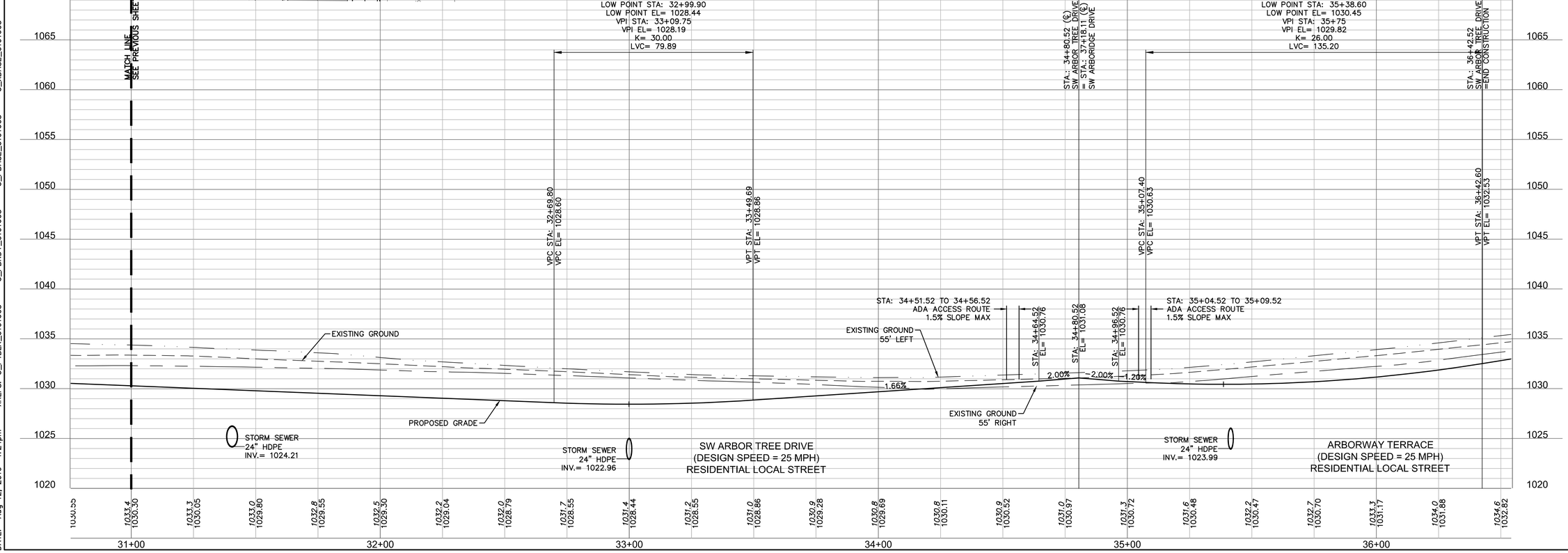


MELISSA G. DEGONIA
PE# 2011000892

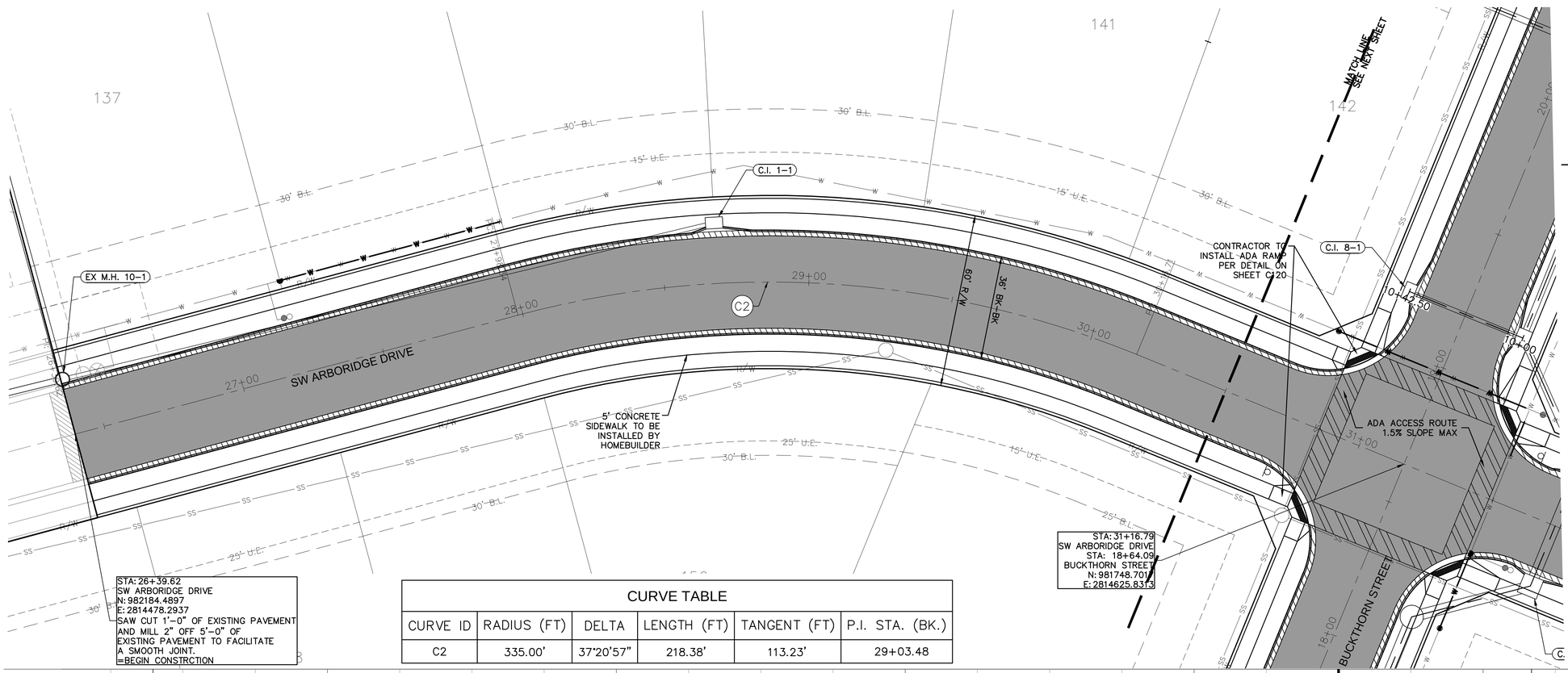
CURVE TABLE					
CURVE ID	RADIUS (FT)	DELTA	LENGTH (FT)	TANGENT (FT)	P.I. STA. (BK.)
C1	200.00'	89°54'36"	313.84'	199.69'	31+69.52



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



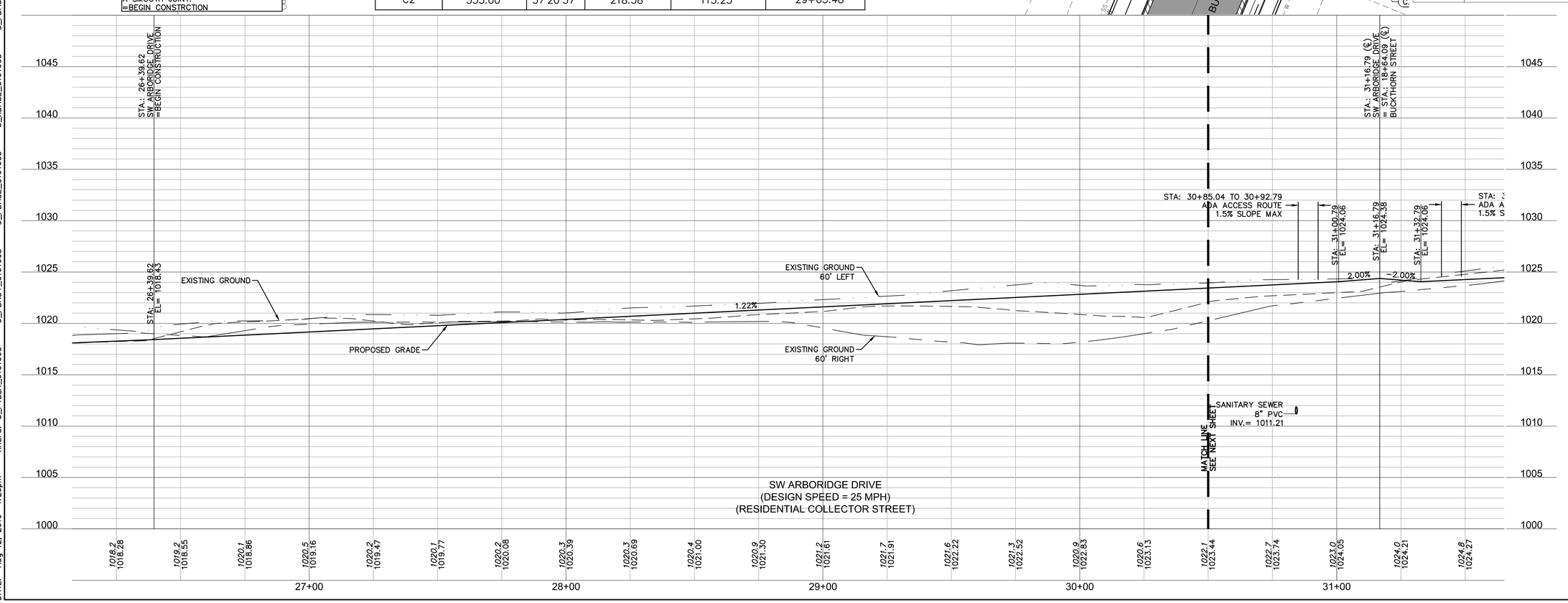
| | | | | |



CURVE TABLE					
CURVE ID	RADIUS (FT)	DELTA	LENGTH (FT)	TANGENT (FT)	P.I. STA. (BK.)
C2	335.00'	37°20'57"	218.38'	113.23'	29+03.48

LEGEND

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



RELEASE FOR CONSTRUCTION
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04/17/2020

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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8/25/19
MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

ROAD PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

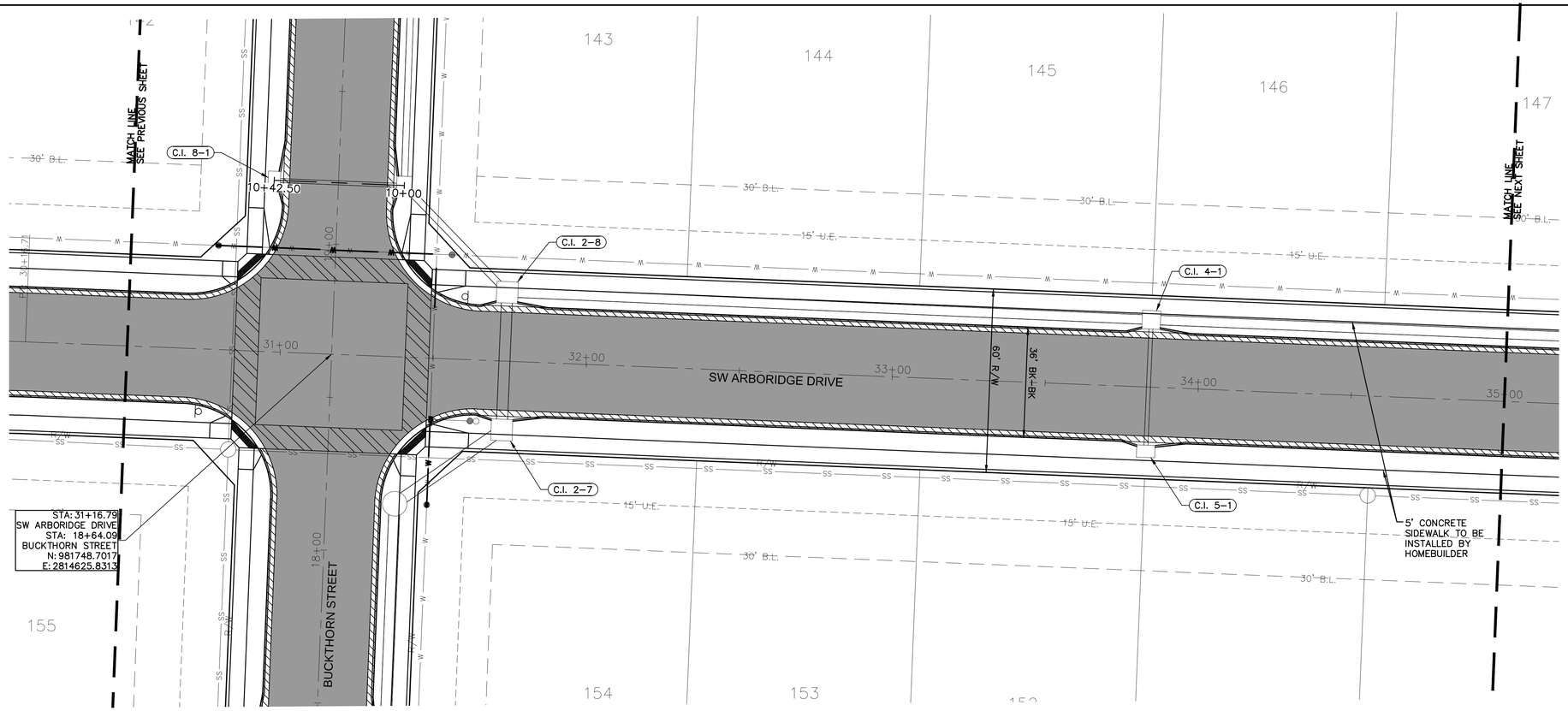
drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

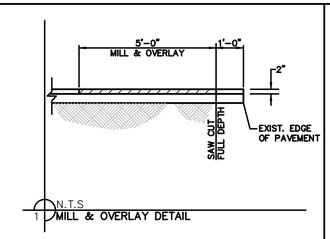
SHEET
C112

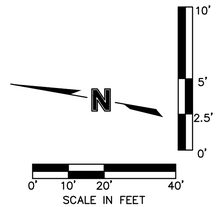
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USER: bworthley
C_PUTIL_0191605 C_PSURF_0191605 C_PSTRM_0191605 C_PPATT_0191605
C_FBASE_0191605

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

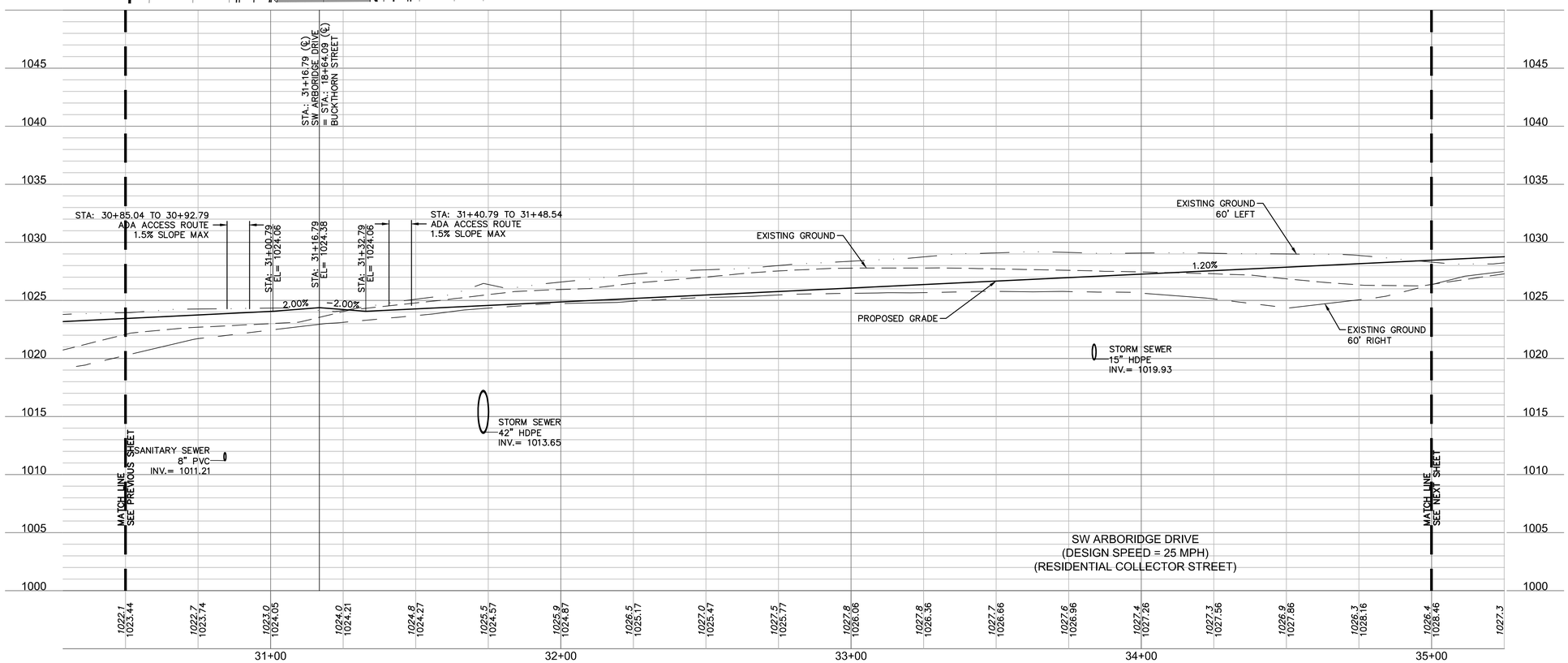
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LEGEND	
	ADA ACCESS ROUTE
	MILL & OVERLAY
	ASPHALT PAVEMENT
	CG–2 CURB & GUTTER
	CG–1 CURB & GUTTER



STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

ROAD PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C113

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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8/15/19

MELISSA G. DEGONIA
PE# 2011000892

WARNING
HIGH–PRESSURE PIPELINE
EXCAVATION AND/OR CONSTRUCTION PROHIBITED WITHOUT COMPLIANCE WITH STATE ONE–CALL, AND WITHOUT WRITTEN PERMISSION FROM
MAGELLAN PIPELINE COMPANY, L.P.

STA: 34+80.52
SW ARBOR TREE DRIVE
STA: 37+18.11
SW ARBORIDGE DRIVE
N: 981147.8756
E: 2814601.5957

STA: 38+78.11
SW ARBORIDGE DRIVE
N: 980988.0054
E: 2814595.1470
INSTALL TYPE IV OBJECT MARKERS
=END CONSTRCTION

CONTRACTOR TO INSTALL ADA RAMP PER DETAIL ON SHEET C122

ADA ACCESS ROUTE 1.5% SLOPE MAX

5' CONCRETE SIDEWALK TO BE INSTALLED BY HOMEBUILDER

SW ARBORIDGE DRIVE

M.H. 4–3
C.I. 4–2
C.I. 6–1
C.I. 6–2

PT: 33+69.21

TRACT Z
P.O.S.
(1.80 ac.)

TRACT A
P.O.S.
UNPLATTED
(0.64 ac.)

OWNER:
CMH PARKS, INC.

147 123 121 122

30' B.L. 25' B.L. 23.5' U.E. 27.5' U.E. 15' U.E. 23' U.E. 10' T.C.E.

60' R/W 36' BK–BK

MATCH LINE
SEE PREVIOUS SHEET

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

LEGEND

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

VPI STA: 37+18.11
VPI EL= 1031.08
K= 100.00
LVC= 13.64

VPC STA: 37+11.29
VPC EL= 1031.00
VPT STA: 37+24.93
VPT EL= 1031.17

STA: 36+90.35 TO 36+99.11
ADA ACCESS ROUTE
1.5% SLOPE MAX

EXISTING GROUND
60' RIGHT
EXISTING GROUND
60' LEFT
EXISTING GROUND
60' RIGHT

1.20%

PROPOSED GRADE
1.34%
–2.00%

HIGH POINT STA: 38+52.55
HIGH POINT EL= 1032.70
VPI STA: 38+59.19
VPI EL= 1032.97
K= 20.00
LVC= 66.72

VPC STA: 38+25.83
VPC EL= 1032.52
VPT STA: 38+92.55
VPT EL= 1032.30
STA: 39+25
EL= 1031.65

EXISTING GROUND

PETROLEUM LINE
8" STEEL PIPE
INV.= 1027.90

STORM SEWER
30" HDPE
INV.= 1021.59

SANITARY SEWER
8" PVC
INV.= 1016.10

EXISTING
33' PIPELINE
EASEMENT

= STA: 34+80.52 (℄)
SW ARBOR TREE DRIVE
STA: 37+18.11 (℄)
SW ARBORIDGE DRIVE

=END CONSTRUCTION
STA: 38+78.11
SW ARBORIDGE DRIVE

SW ARBORIDGE DRIVE
(DESIGN SPEED = 25 MPH)
(RESIDENTIAL COLLECTOR STREET)

1045 1040 1035 1030 1025 1020 1015 1010 1005 1000

1028.3 1028.16 | 1028.4 1028.46 | 1027.3 1028.76 | 1028.1 1029.06 | 1028.8 1029.36 | 1029.3 1029.66 | 1029.8 1029.96 | 1030.2 1030.26 | 1030.5 1030.56 | 1030.8 1030.86 | 1031.2 1031.17 | 1031.4 1031.51 | 1031.6 1031.84 | 1031.8 1032.18 | 1031.8 1032.51 | 1032.1 1032.70 | 1032.0 1032.57 | 1031.8 1032.15 | 1031.7 1031.65

35+00 36+00 37+00 38+00 39+00

NO. REV.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

ROAD PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C114

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_RPP02_0191605.dwg
DATE: Aug 12, 2019 1:27pm
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XREFS: C_PTBLK_0191605 C_PBASE_0191605 C_PBNDY_0191605 C_PSURF_0191605 C_PUTIL_0191605 C_PSTRM_0191605 C_PPATT_0191605 C_FBASE_0191605 C_XBASE_0191605

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

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NORTH KANSAS CITY, MO 64116
TEL 816.361.1177
www.olsson.com



MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	STOP SIGNS AND STREET NAME SIGNS REMOVED FROM BUCKTHORN STREET	

REVISIONS

ROAD PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C115

LEGEND

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

STA: 31+16.79
SW ARBORIDGE DRIVE
STA: 18+64.09
BUCKTHORN STREET
N: 981748.7017
E: 2814625.8313

CONTRACTOR TO INSTALL ADA RAMP PER DETAIL ON SHEET C120

CONTRACTOR TO INSTALL ADA RAMP PER DETAIL ON SHEET C120

5' CONCRETE SIDEWALK TO BE INSTALLED BY HOMEBUILDER (TYP.)

ADA ACCESS ROUTE
1.5% SLOPE MAX

STA: 17+25.55
BUCKTHORN STREET
N: 981754.2855
E: 2814487.4066
INSTALL TYPE IV OBJECT MARKERS
= BEGIN CONSTRCTION

BUCKTHORN STREET

SW ARBORIDGE DRIVE

MATCH LINE SEE NEXT SHEET

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

LOW POINT STA: 17+37.81
LOW POINT EL= 1022.99
VPI STA: 17+10.44
VPI EL= 1022.07
K= 45.00
LVC= 189.75

VPC STA: 16+15.56
VPC EL= 1024.65

VPT STA: 18+05.31
VPT EL= 1023.50

STA.: 18+64.09 (℄)
BUCKTHORN STREET
STA.: 31+16.79 (℄)
SW ARBORIDGE DRIVE

VPC STA: 18+90.43
VPC EL= 1024.77

VPI STA: 19+75.25
VPI EL= 1026.05
K= 37.00
LVC= 169.64

VPR STA: 20+60.07
VPR EL= 1031.21

EXISTING GROUND
60' RIGHT

STA: 18+32.34 TO 18+40.09
ADA ACCESS ROUTE
1.5% SLOPE MAX

STA: 18+88.09 TO 18+95.84
ADA ACCESS ROUTE
1.5% SLOPE MAX

PROPOSED GRADE

1.50%

6.08%

EXISTING GROUND

EXISTING GROUND
60' LEFT

STORM SEWER
42" HDPE
INV.= 1010.54

SANITARY SEWER
8" PVC
INV.= 1009.99

STORM SEWER
15" HDPE
INV.= 1018.76

STORM SEWER
24" HDPE
INV.= 1021.55

=BEGIN CONSTRUCTION
STA.: 17+25.55
BUCKTHORN STREET

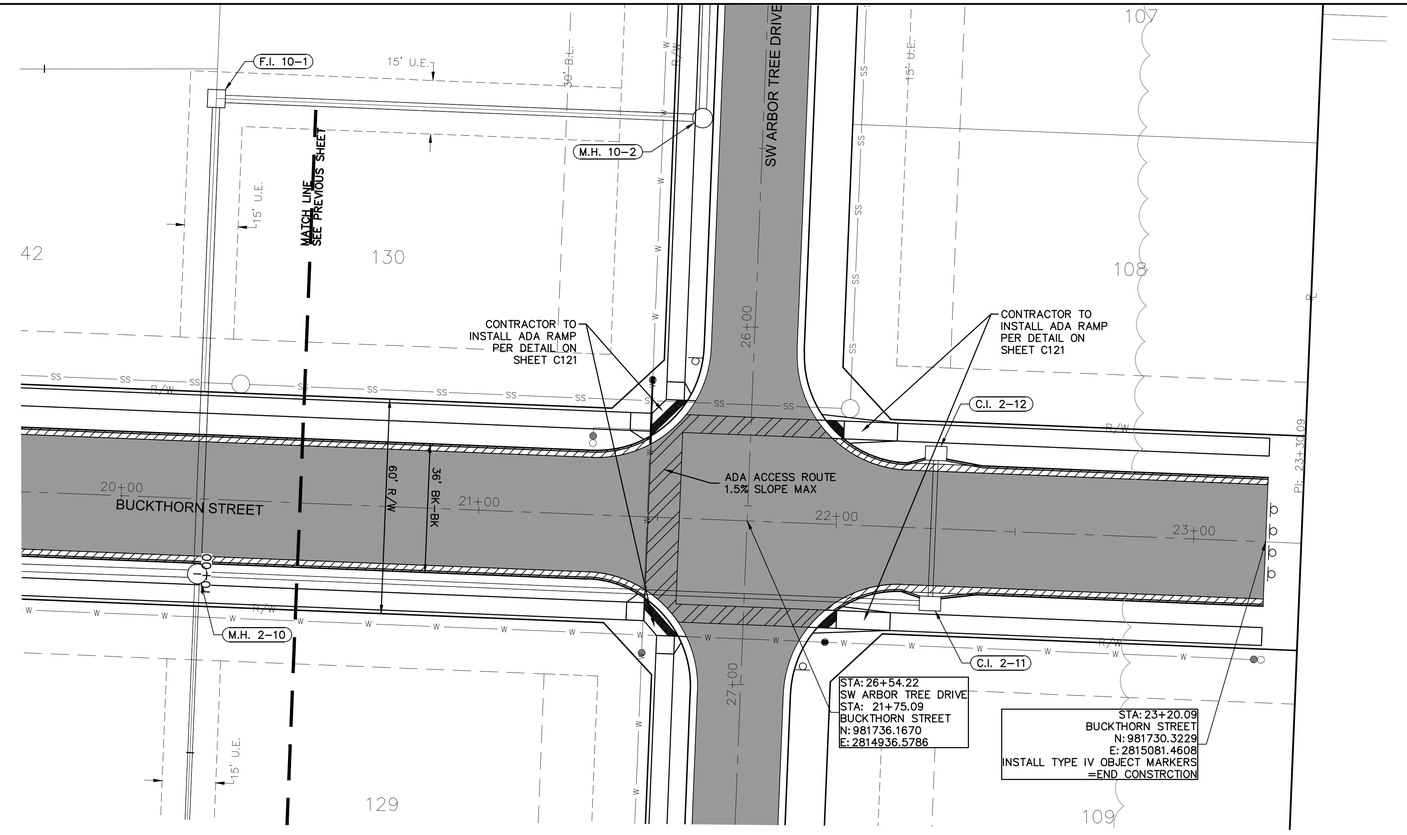
BUCKTHORN STREET
(DESIGN SPEED = 25 MPH)
(RESIDENTIAL COLLECTOR STREET)

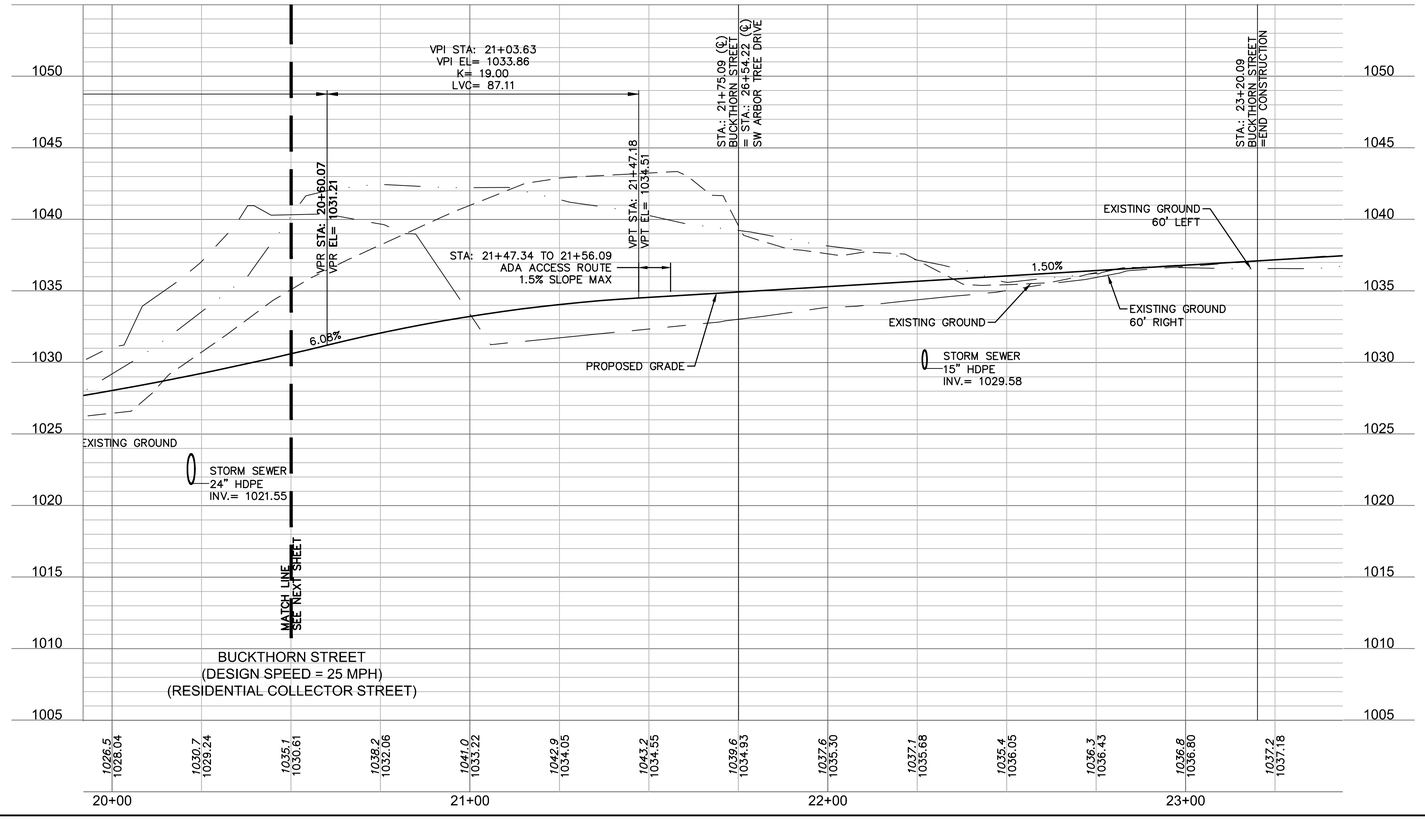
1050 1045 1040 1035 1030 1025 1020 1015 1010 1005

1017.5 1024.40 | 1017.7 1023.85 | 1018.7 1023.43 | 1019.6 1023.15 | 1020.5 1023.01 | 1021.5 1023.01 | 1022.7 1023.14 | 1022.9 1023.42 | 1023.2 1023.79 | 1023.7 1024.17 | 1023.3 1024.54 | 1023.5 1024.93 | 1024.2 1025.45 | 1024.9 1026.15 | 1025.6 1027.01 | 1026.5 1028.04 | 1030.7 1029.24 | 1035.1 1030.61 | 1038.2 1032.66

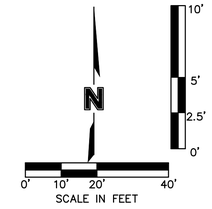
17+00 18+00 19+00 20+00

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USER: bworthley





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



RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

olsson
OLSSON - CIVIL ENGINEERING
MO CERTIFICATE OF AUTHORITY #:001592
1301 WILLOW LAKE BLVD, SUITE 105
NORTH KANSAS CITY, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
8/15/19
PROFESSIONAL ENGINEER
MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

ROAD PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

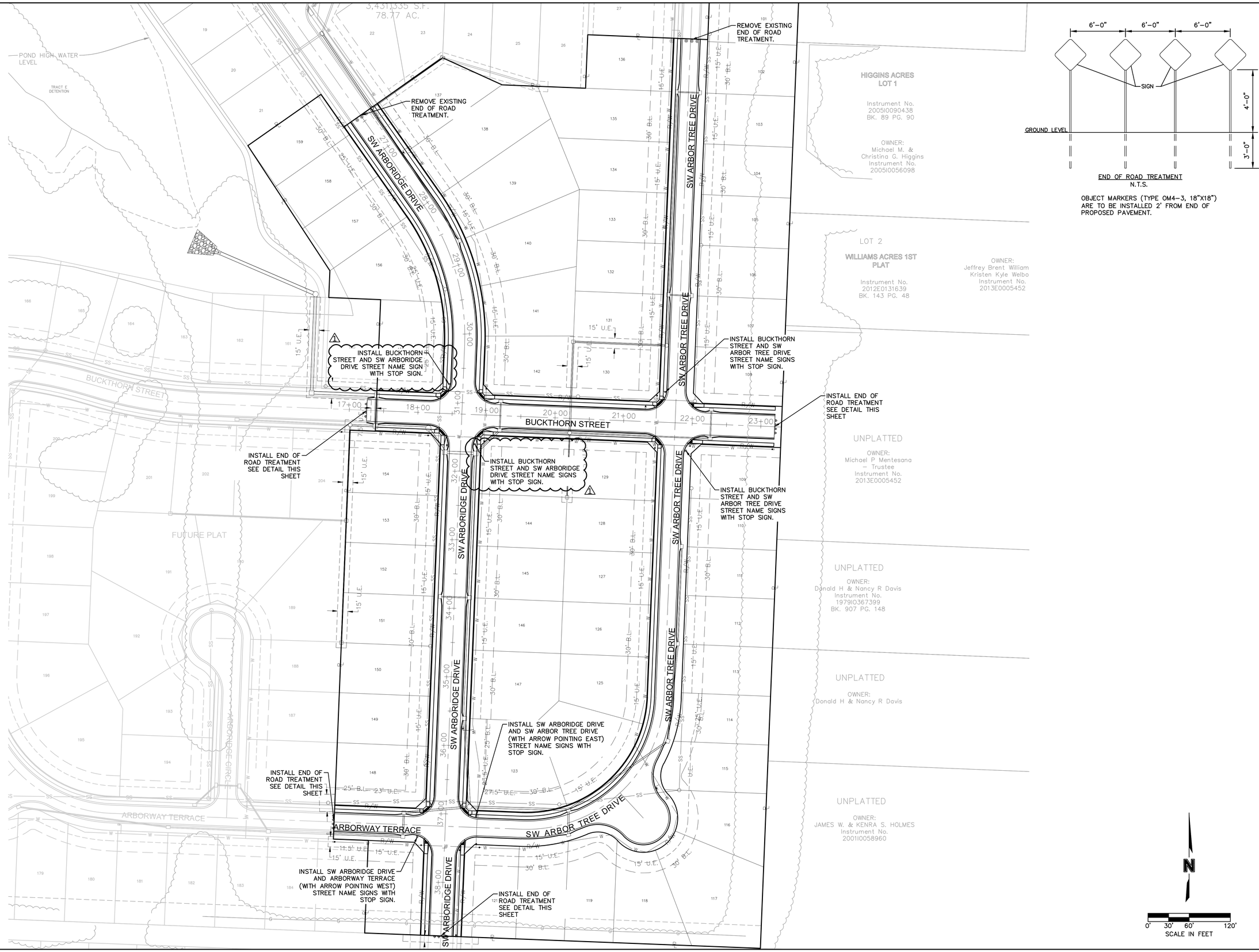
drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C116

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_RPP03_0191605.dwg
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RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

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NORTH KANSAS CITY, MO 64116
TEL 816.361.1177
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END OF ROAD TREATMENT
N.T.S.

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

STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8/13/19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	BY	REVISIONS DESCRIPTION
1	08-12-2019		STOP SIGNS AND STREET NAME SIGNS REMOVED FROM BUCKTHORN STREET

REVISIONS

TRAFFIC CONTROL
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

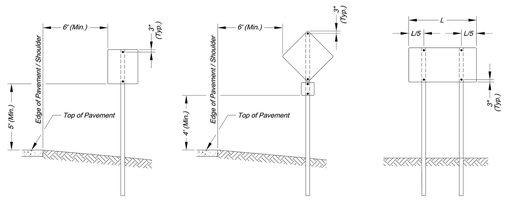
LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
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project no.: 019-1605
date: 07-12-2019

SHEET
C117

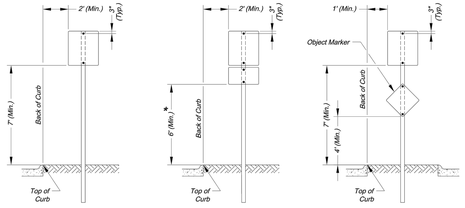
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SIGN INSTALLATION FOR NON-CURBED STREET

SIGN INSTALLATION WITH AUXILARY SIGN FOR NON-CURBED STREET

SIGN INSTALLATION WITH TWO SIGN POSTS



SIGN INSTALLATION FOR CURBED STREET

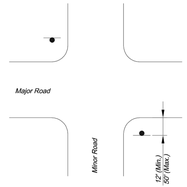
SIGN INSTALLATION WITH AUXILARY SIGN FOR CURBED STREET

SIGN INSTALLATION FOR RAISED MEDIANS

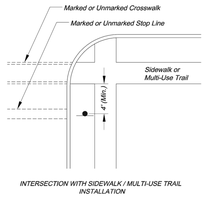
SIGN MOUNTING DETAILS

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

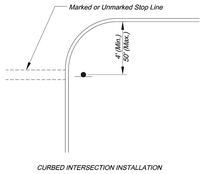
NOTE:
1. *Generally, the sign mounting height should not be more than 1' greater than the minimum mounting height.*



NON-CURBED INTERSECTION INSTALLATION

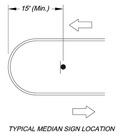


INTERSECTION WITH SIDEWALK / MULTI-USE TRAIL INSTALLATION



CURBED INTERSECTION INSTALLATION

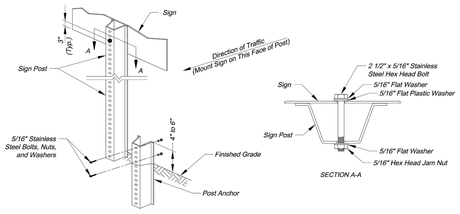
CONTROL SIGN LOCATION



TYPICAL MEDIAN SIGN LOCATION

MEDIAN SIGN LOCATION

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

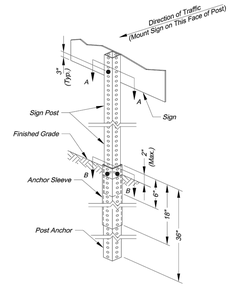


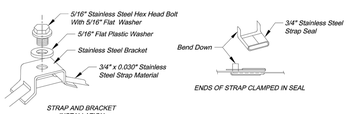
U-STEEL POST DETAILS

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

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

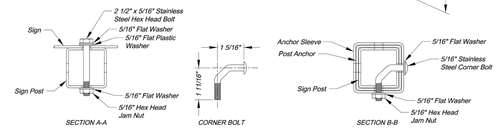
SQUARE STEEL POST INSTALLATION SEQUENCE:
1. *Sign post anchor driven partially into the ground using a drive cap with a sledge or power equipment.*
2. *Anchor sleeve slipped over anchor and drive into the ground together with the sign post anchor.*
3. *Insert sign post into the post anchor and bolt in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





STRAP TYPE SIGN SUPPORT DETAILS

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



SQUARE STEEL POST DETAILS

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

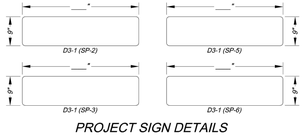
STANDARD ABBREVIATION LISTS

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

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

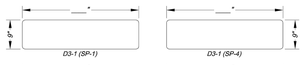
STREET NAME SIGN QUANTITIES

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



STREET NAME SIGN BLANK DETAILS

For Mounting on Square Steel Posts

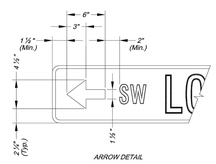


PROJECT SIGN DETAILS

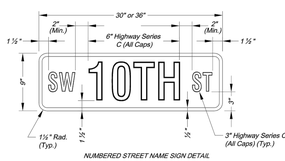


NAMED STREET NAME SIGN DETAIL

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



ARROW DETAIL



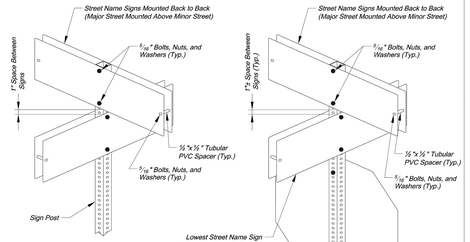
NUMBERED STREET NAME SIGN DETAIL



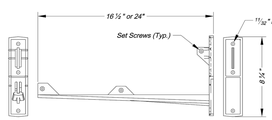
PRIVATE STREET TAG DETAIL

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

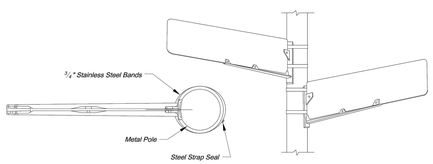
STREET NAME SIGN FACE DETAILS



SQUARE STEEL POST MOUNTING DETAILS



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



WING BRACKET MOUNTING DETAILS

RELEASE FOR CONSTRUCTION
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DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

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1301 BURLINGTON, SUITE 100
NORTH KANSAS CITY, MO 64116
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NO. REV.	DATE	REVISIONS DESCRIPTION	BY
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SIGN DETAILS
STREET AND STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

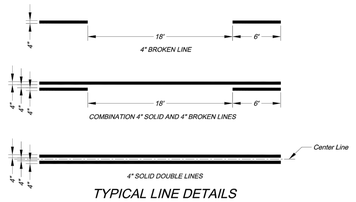
LEE'S SUMMIT, MISSOURI

2019

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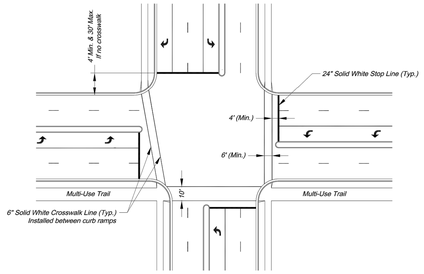
SHEET
C118

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USER: bworthley



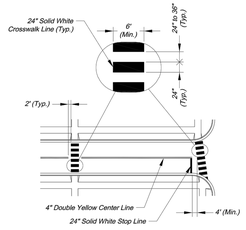
TYPICAL LINE DETAILS

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

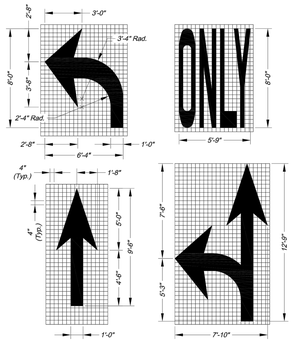


TYPICAL INTERSECTION MARKINGS

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

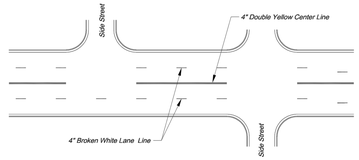


TYPICAL MIDBLOCK OR SCHOOL CROSS WALK

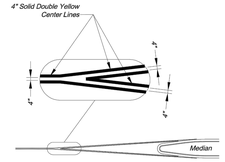


ARROW AND SYMBOL DETAILS

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

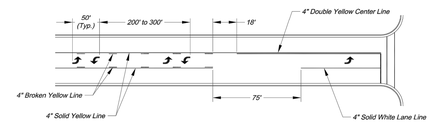


TYPICAL MARKINGS FOR FOUR-LANE UNDIVIDED ROADWAY

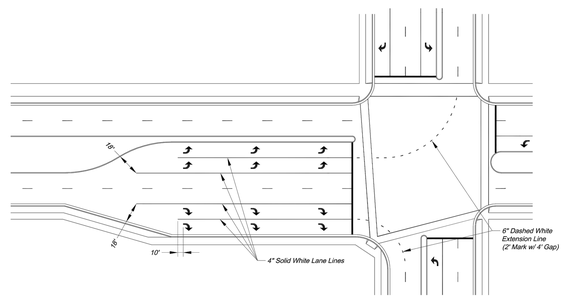


TYPICAL MEDIAN NOSE CENTER LINE DETAIL

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

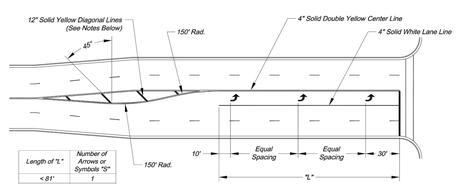


TYPICAL MARKINGS FOR TWO-WAY LEFT-TURN LANE



TYPICAL DUAL TURN LANE MARKINGS

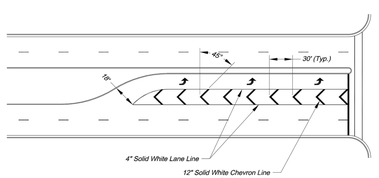
NOTE:
1. Dashed extension lines shall not extend through crosswalks.



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

TYPICAL TURN LANE MARKINGS

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



TYPICAL STRIPED OUT TURN LANE MARKINGS

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

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

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

1 OF 2
1

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

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

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

2 OF 2
2

RELEASE FOR CONSTRUCTION
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LEE'S SUMMIT, MISSOURI
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STATE OF MISSOURI
MELISSA G. DEGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8/25/19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

ROADWAY MARKING DETAILS
STREET AND STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

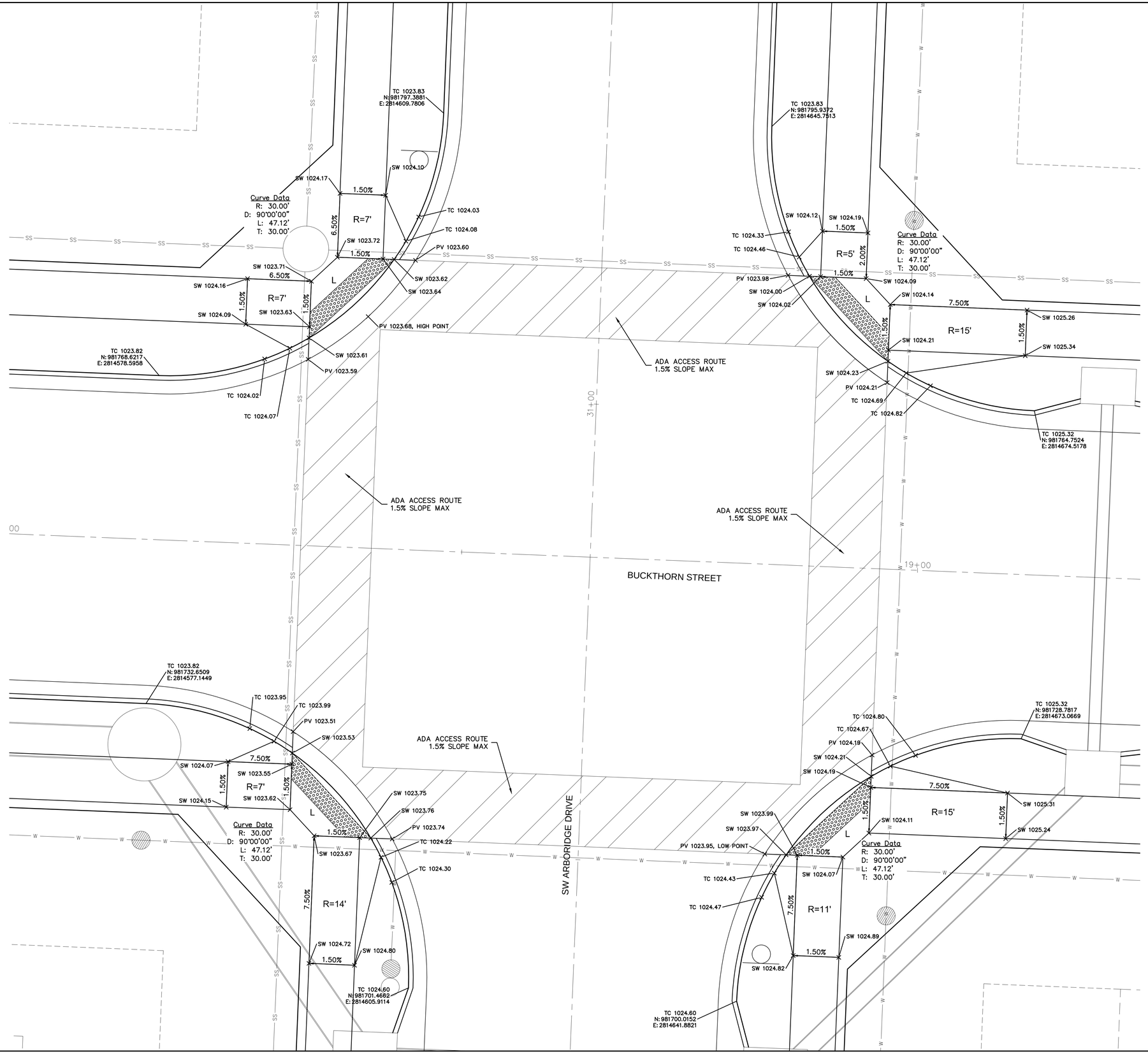
LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C119

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_DTL01_0191605.dwg
DATE: Aug 12, 2019 1:30pm USER: bworthley
XREFS: C_PTBLK_0191605



INTERSECTION AND ADA DETAIL NOTES:

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LEGEND	
TC–	TOP OF CURB
PV–	TOP OF PAVEMENT
SW–	SIDEWALK
L	LANDING AREA
R	RAMP AREA
T	TRANSITION AREA

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

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NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8-25-19
MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	BY	REVISIONS DESCRIPTION

SPOT ELEVATIONS
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

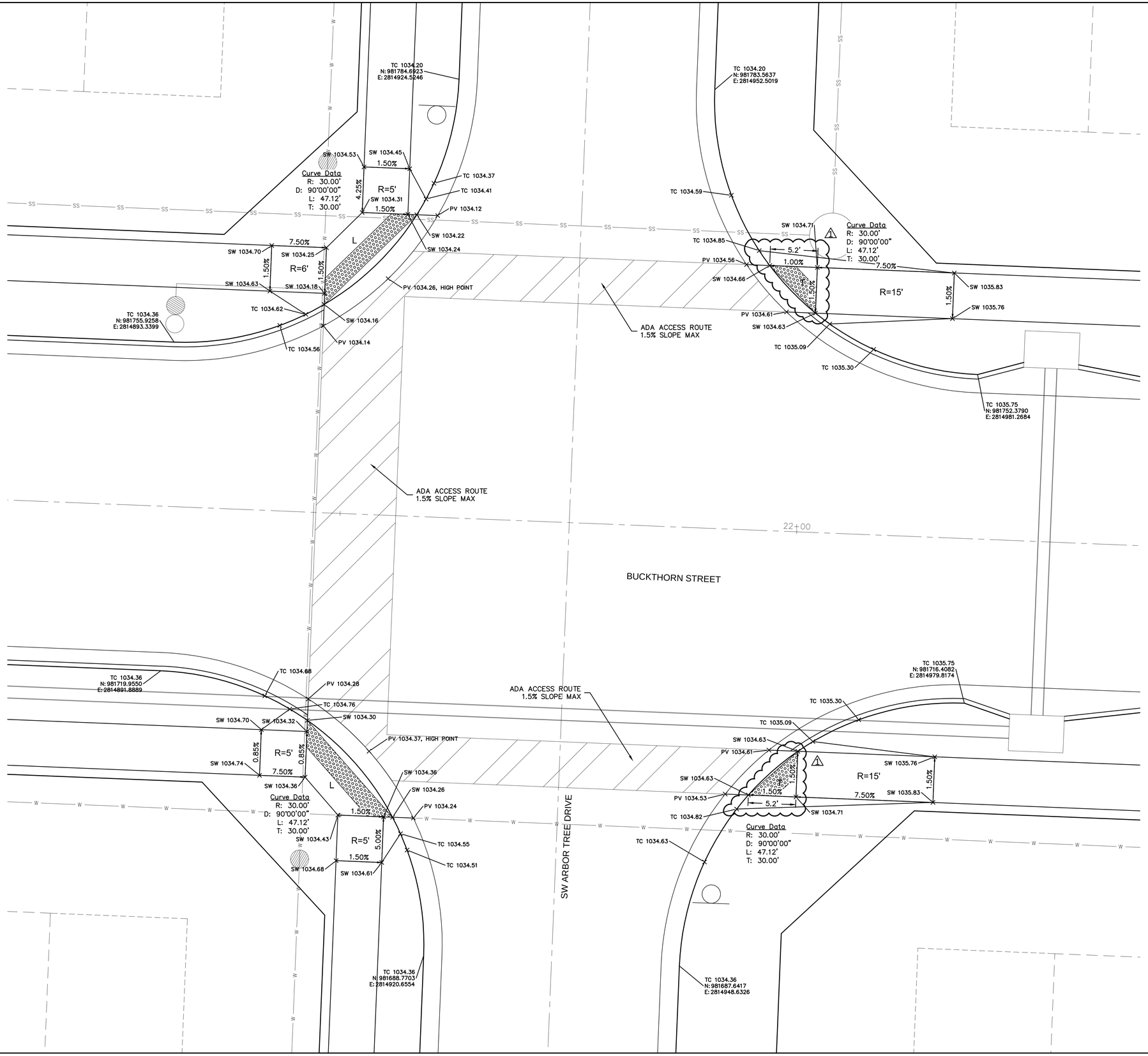
LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.Q
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C120

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T	TRANSITION AREA

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STATE OF MISSOURI
MELISSA G. DEGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8-25-19
MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	TACTILE WARNING STRIP MOVED TO BACK OF CURB	

REVISIONS

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STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C121

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RELEASE FOR CONSTRUCTION
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PV–	TOP OF PAVEMENT
SW–	SIDEWALK
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R	RAMP AREA
T	TRANSITION AREA

SW ARBORIDGE DRIVE

ARBORWAY TERRACE

37+00

TC 1030.71
N: 981192.4900
E: 2814585.3807

SW 1031.06
1.50%
SW 1030.98
TC 1030.92
TC 1030.97
6.50%
R=7'
Curve Data
R: 30.00'
D: 89°54'40"
L: 47.08'
T: 29.95'
SW 1030.60
1.50%
PV 1030.49
SW 1030.51
SW 1030.53
SW 1030.85
3.50%
SW 1030.68
1.50%
R=5'
1.50%
L
SW 1030.78
PV 1030.62, HIGH POINT
SW 1030.60
SW 1030.59
PV 1030.49
TC 1030.78
TC 1030.73
TC 1030.53
N: 981163.7216
E: 2814554.2431

ADA ACCESS ROUTE
1.5% SLOPE MAX

TC 1030.71
N: 981191.1899
E: 2814621.3575

SW 1030.97
SW 1031.04
1.50%
TC 1030.85
TC 1030.88
R=7'
7.50%
Curve Data
R: 30.00'
D: 90°05'20"
L: 47.17'
T: 30.05'
SW 1030.52
1.50%
PV 1030.40
SW 1030.42
SW 1030.44
L
SW 1030.55
2.00%
SW 1030.65
PV 1030.49, HIGH POINT
1.50%
R=5'
1.50%
SW 1030.57
SW 1030.47
SW 1030.46
PV 1030.36
TC 1030.65
TC 1030.58
TC 1030.30
N: 981160.0033
E: 2814650.1712

ADA ACCESS ROUTE
1.5% SLOPE MAX

TC 1030.54
N: 981135.7480
E: 2814553.0203
TC 1030.80
TC 1030.98
PV 1030.69
SW 1030.79
SW 1030.87
PV 1030.77
SW 1030.79
TC 1031.25
TC 1031.44
Curve Data
R: 30.00'
D: 90°05'20"
L: 47.17'
T: 30.05'
5.2'
1.45%
1.50%
7.00%
R=15'
1.50%
SW 1031.92
SW 1031.84
TC 1031.83
N: 981104.5614
E: 2814581.8339

TC 1030.30
N: 981132.0296
E: 2814648.9484
TC 1030.65
TC 1030.88
PV 1030.59
SW 1030.69
SW 1030.78
PV 1030.69
SW 1030.71
TC 1031.17
TC 1031.38
Curve Data
R: 30.00'
D: 89°54'40"
L: 47.08'
T: 29.95'
1.84%
5.2'
1.50%
R=15'
7.50%
1.50%
SW 1031.83
SW 1031.91
TC 1031.82
N: 981103.2613
E: 2814617.8107

N

0' 2.5' 5' 10'
SCALE IN FEET

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8-12-19

MELISSA G. DEGONIA
PE# 2011000892

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STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

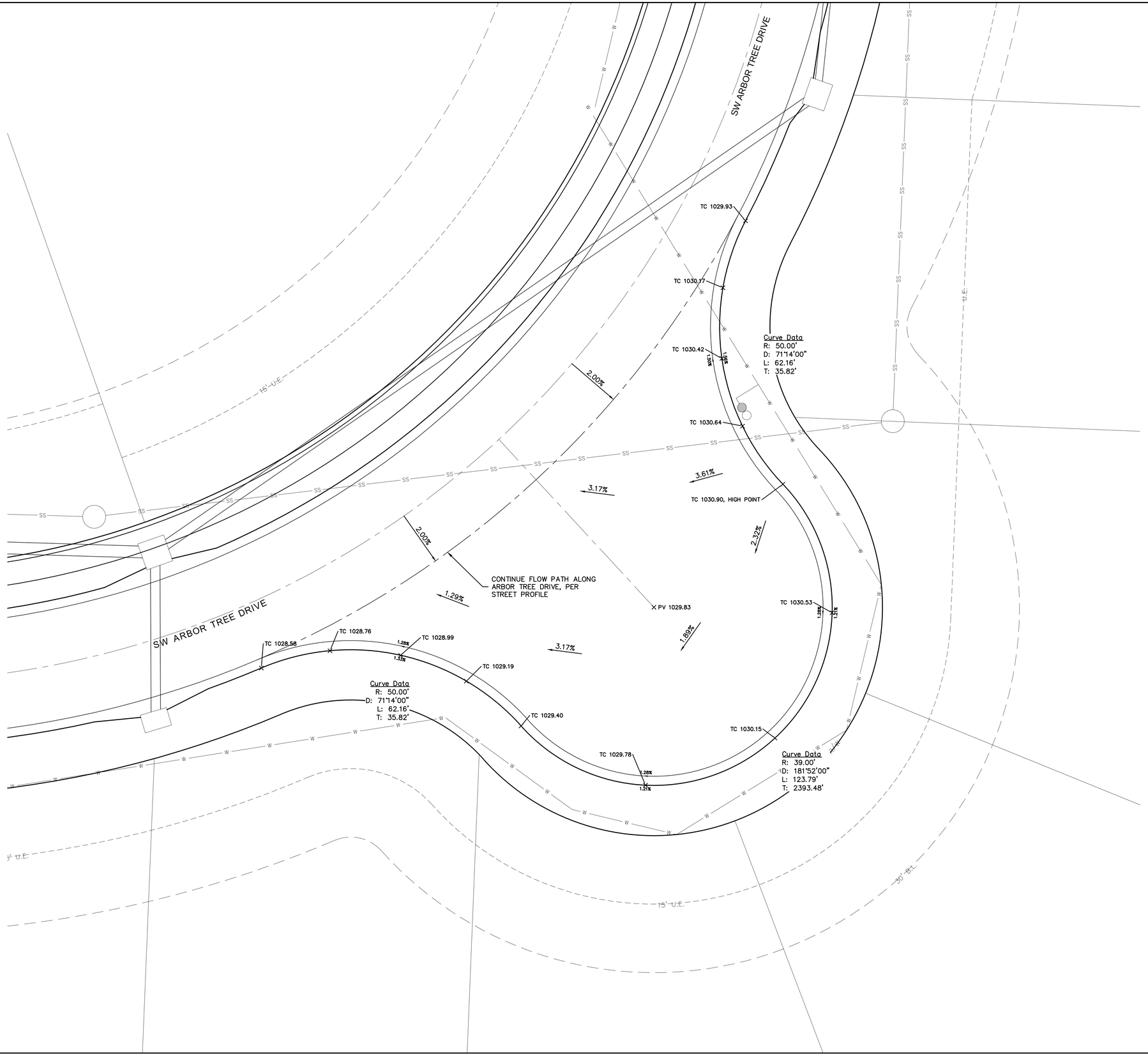
LEE'S SUMMIT, MISSOURI

2019

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checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C122

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NO/REV	DATE	BY

REVISIONS

REVISIONS DESCRIPTION

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STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

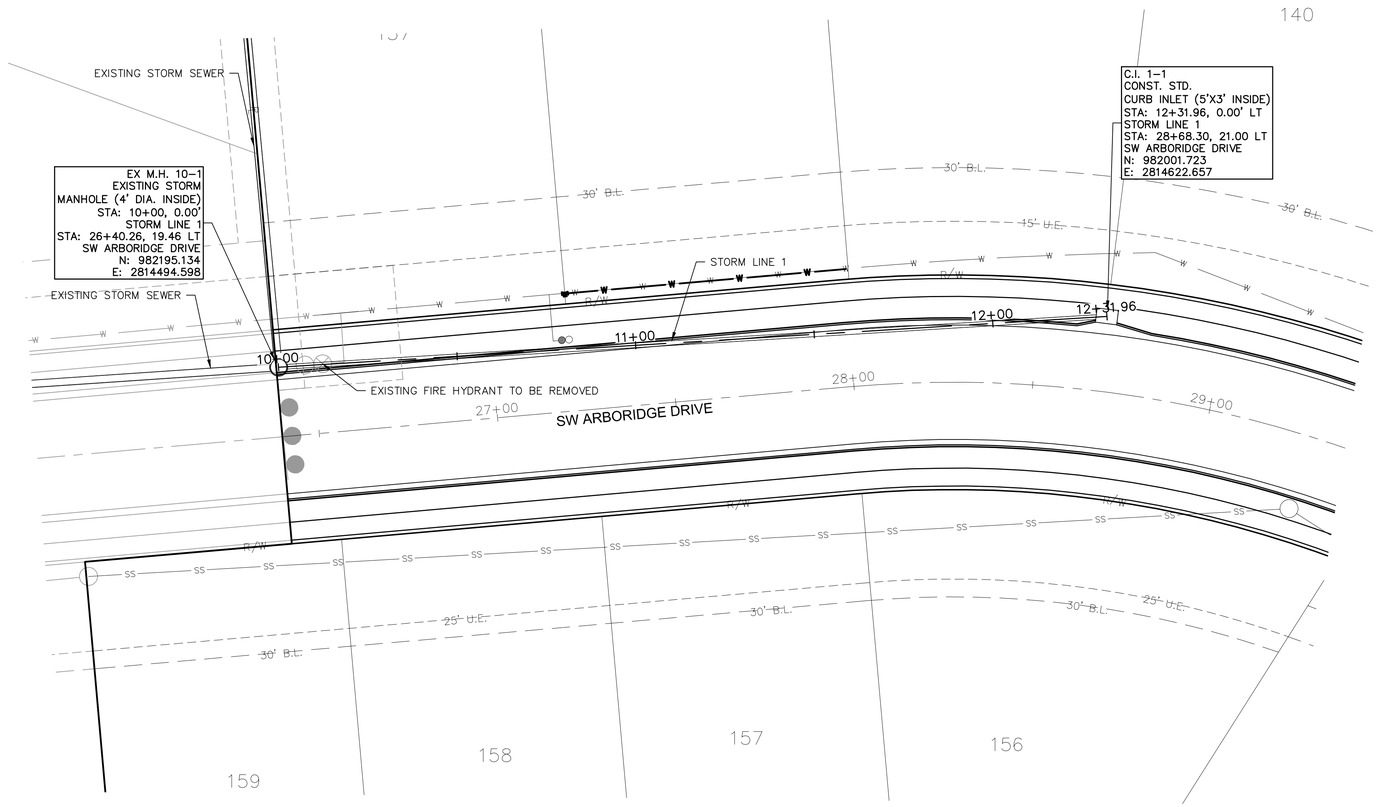
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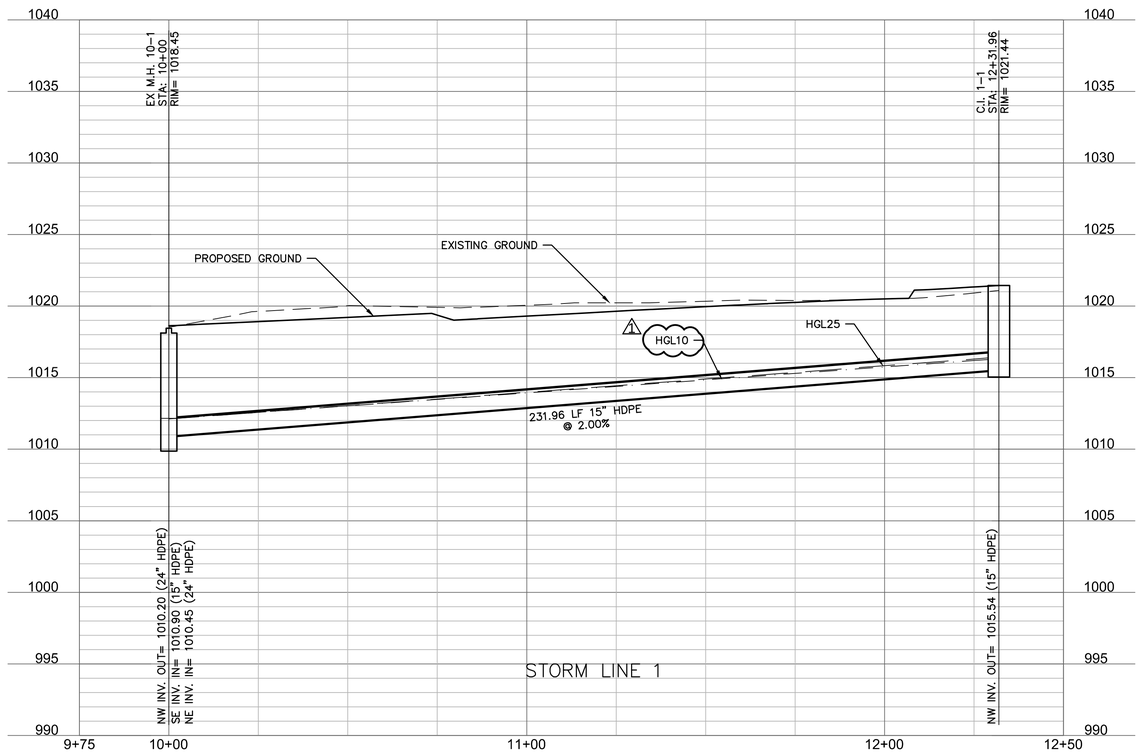
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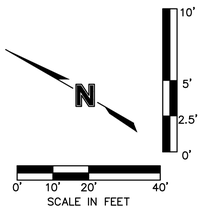
SHEET
C123

0' 5' 10' 20'
SCALE IN FEET

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LEE'S SUMMIT, MISSOURI
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PROFESSIONAL ENGINEER

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NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	10-YEAR STORM HGL ADDED TO PROFILE VIEW	

REVISIONS

STORM PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

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SHEET
C124

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LEE'S SUMMIT, MISSOURI
04/17/2020

Riprap Calculations							
End Section	Q_{100} (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)	Area (SY)
E.S. 2-1	198.84	4.5	6	22	36	3.67	102.0

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

⚠1 NOTE: CONTRACTOR TO INSTALL NONWOVEN GEOTEXTILE UNDERNEATH RIPRAP PER DETAIL ON SHEET C137

E.S. 2–1
CONSTRUCT END SECTION (54" CMP)
W/ CONCRETE TOE WALL
INSTALL RIPRAP PER
DETAILS ON THIS SHEET.
STA: 10+00.
STORM LINE 2
N: 981986.484
E: 2814266.378

M.H. 2–2
CONST. FLAT TOP
MANHOLE (7' DIA. INSIDE)
STA: 11+59.31,
STORM LINE 2
N: 981923.484
E: 2814412.703

C.I. 2–4
CONST. STD.
CURB INLET (6'X6' INSIDE)
STA: 13+97.86, 0.00'
STORM LINE 2
STA: 17+39.09, 22.50 LT
BUCKTHORN STREET
N: 981776.221
E: 2814501.840

J.B. 2–3
CONST. STD.
JUNCTION BOX (6'X6' INSIDE)
STA: 13+02.86, 0.00'
STORM LINE 2
STA: 16+44.09, 22.50 LT
BUCKTHORN STREET
N: 981780.050
E: 2814406.917

C.I. 2–5
CONST. STD.
CURB INLET (6'X6' INSIDE)
STA: 14+42.86, 0.00'
STORM LINE 2
STA: 17+39.09, 22.50 RT
BUCKTHORN STREET
N: 981731.258
E: 2814500.026

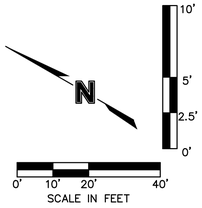
MATCH LINE SEE NEXT SHEET

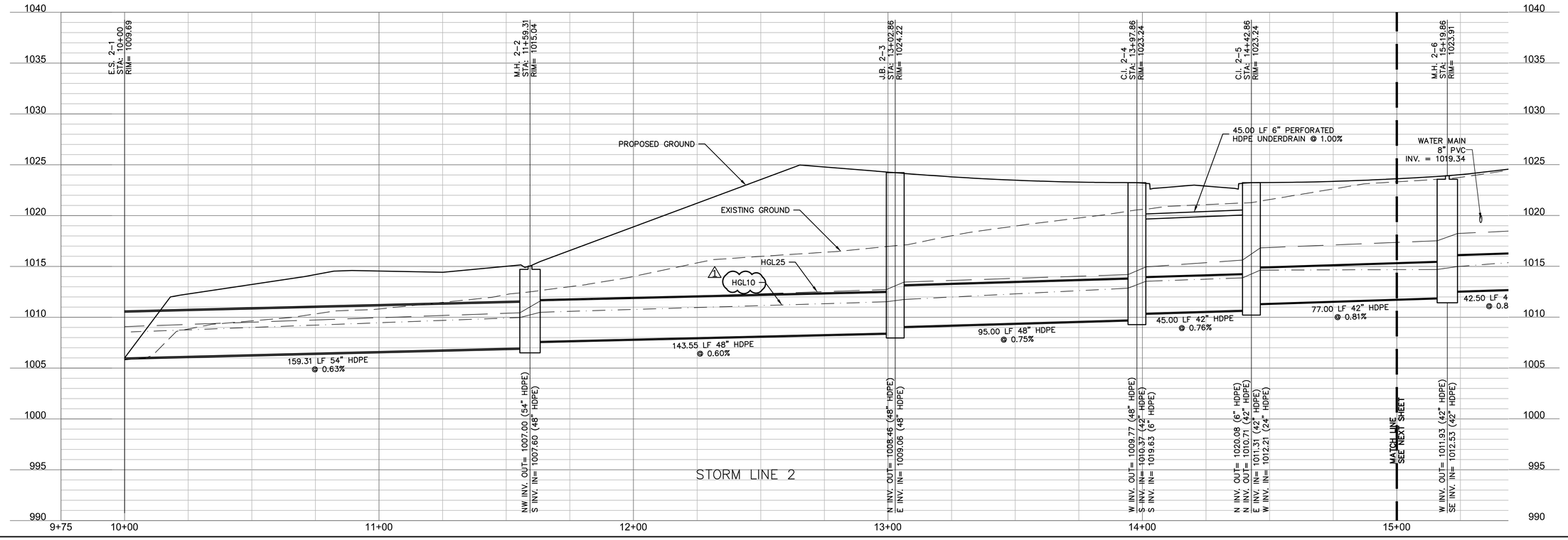
STORM LINE 3

15' U.E.

25' U.E.

37.50'
36.00'
13.50'





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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
04-15-19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	GEOFABRIC NOTE ADDED AND 15" HDPE STORM HGL ADDED TO PROFILE VIEW	

REVISIONS

STORM PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C125

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LEE'S SUMMIT, MISSOURI
04/17/2020

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MELISSA G. DEGONIA
PE# 2011000892

M.H. 2–6
CONST. STD. STORM MANHOLE (7' DIA. INSIDE)
STA: 15+19.86, 0.00'
STORM LINE 2
STA: 18+16.09, 22.50 RT
BUCKTHORN STREET
N: 981728.155
E: 2814576.964

C.I. 2–7
CONST. STD.
CURB INLET (6'X6' INSIDE)
STA: 15+62.36, 0.00'
STORM LINE 2
STA: 31+73.29, 22.50 RT
SW ARBORIDGE DRIVE
N: 981693.154
E: 2814601.072

C.I. 2–9
CONST. STD.
CURB INLET (5'X4' INSIDE)
STA: 16+55.81, 0.00'
STORM LINE 2
STA: 19+20.09, 21.50 RT
BUCKTHORN STREET
N: 981724.962
E: 2814680.919

C.I. 2–8
CONST. STD.
CURB INLET (6'X6' INSIDE)
STA: 16+07.36, 0.00'
STORM LINE 2
STA: 31+73.29, 22.50 LT
SW ARBORIDGE DRIVE
N: 981691.341
E: 2814646.036

M.H. 2–10
CONST. STD. STORM MANHOLE (5' DIA. INSIDE)
STA: 17+57.81, 0.00'
STORM LINE 2
STA: 20+22.09, 21.00 RT
BUCKTHORN STREET
N: 981721.351
E: 2814782.857

C.I. 2–12
CONST. STD.
CURB INLET (5'X3' INSIDE)
STA: 20+04.81, 0.00'
STORM LINE 2
STA: 22+27.09, 21.00 LT
BUCKTHORN STREET
N: 981755.054
E: 2814989.383

C.I. 2–11
CONST. STD.
CURB INLET (5'X3' INSIDE)
STA: 19+62.81, 0.00'
STORM LINE 2
STA: 22+27.09, 21.00 RT
BUCKTHORN STREET
N: 981713.088
E: 2814987.690

MATCH LINE SEE PREVIOUS SHEET
STORM LINE 10
STORM LINE 8
STORM LINE 4
STORM LINE 9
BUCKTHORN STREET
SW ARBORIDGE DRIVE
SW ARBOR TREE DRIVE
STORM LINE 2 CONT.

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

WATER MAIN 8" PVC INV. = 1019.34
WATER MAIN 8" PVC INV. = 1020.24
WATER MAIN 8" PVC INV. = 1020.41
WATER MAIN 8" PVC INV. = 1029.70
PROPOSED GROUND
EXISTING GROUND
HGL25
HGL10
42.50 LF 42" HDPE @ 0.80%
45.00 LF 42" HDPE @ 0.80%
48.45 LF 24" HDPE @ 4.40%
102.00 LF 24" HDPE @ 2.53%
205.00 LF 15" HDPE @ 3.47%
42.00 LF 15" HDPE @ 2.00%
SANITARY SEWER 8" PVC INV.= 1010.42

M.H. 2–6 STA: 15+19.86 RIM= 1023.91
C.I. 2–7 STA: 15+62.36 RIM= 1024.79
C.I. 2–8 STA: 16+07.36 RIM= 1024.79
C.I. 2–9 STA: 16+55.81 RIM= 1025.57
M.H. 2–10 STA: 17+57.81 RIM= 1029.31
C.I. 2–11 STA: 19+62.81 RIM= 1035.93
C.I. 2–12 STA: 20+04.81 RIM= 1035.93

W INV. OUT= 1011.93 (42" HDPE)
SE INV. IN= 1012.53 (42" HDPE)
NW INV. OUT= 1012.87 (42" HDPE)
E INV. IN= 1013.47 (42" HDPE)
W INV. OUT= 1013.83 (42" HDPE)
S INV. IN= 1014.43 (36" HDPE)
NE INV. IN= 1015.33 (24" HDPE)
SW INV. OUT= 1017.46 (24" HDPE)
E INV. IN= 1018.06 (24" HDPE)
N INV. IN= 1018.06 (15" HDPE)
W INV. OUT= 1020.64 (24" HDPE)
N INV. IN= 1021.34 (24" HDPE)
E INV. IN= 1021.34 (15" HDPE)
S INV. IN= 1021.34 (15" HDPE)
W INV. OUT= 1028.46 (15" HDPE)
N INV. IN= 1029.16 (15" HDPE)
S INV. OUT= 1030.00 (15" HDPE)

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	10-YEAR STORM HGL ADDED TO PROFILE VIEW	

REVISIONS

STORM PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

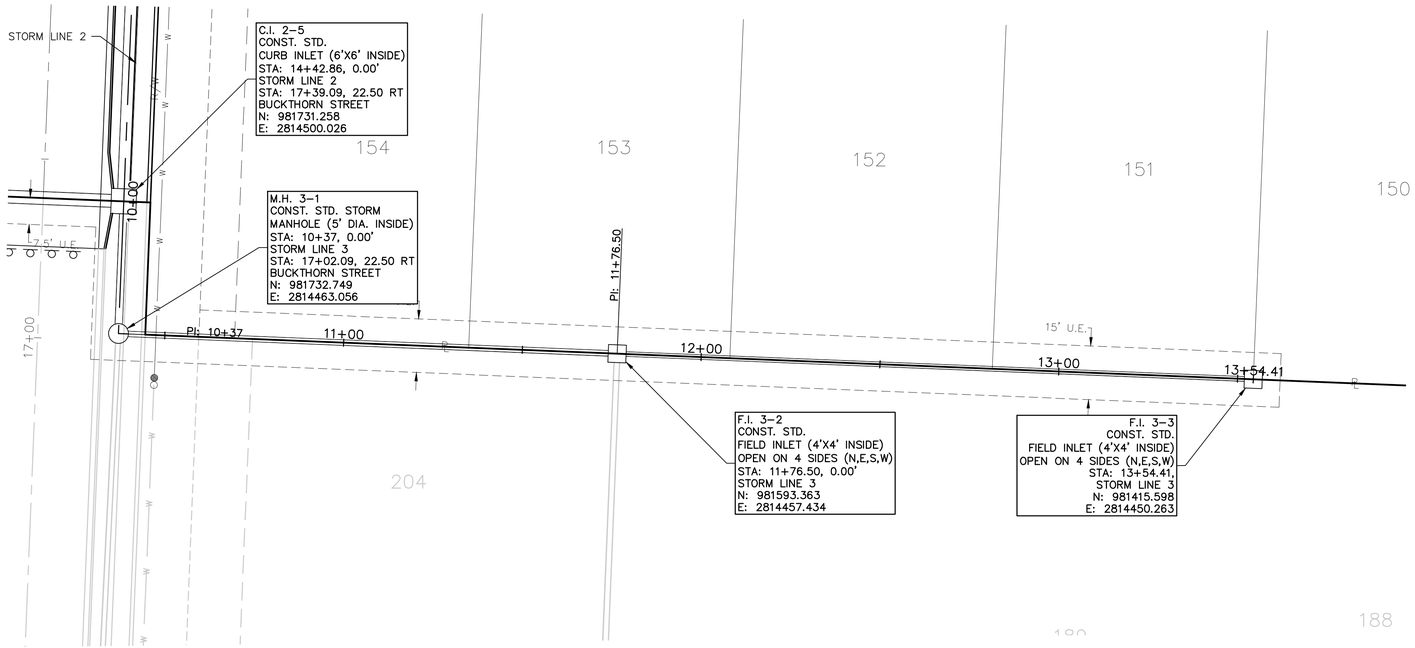
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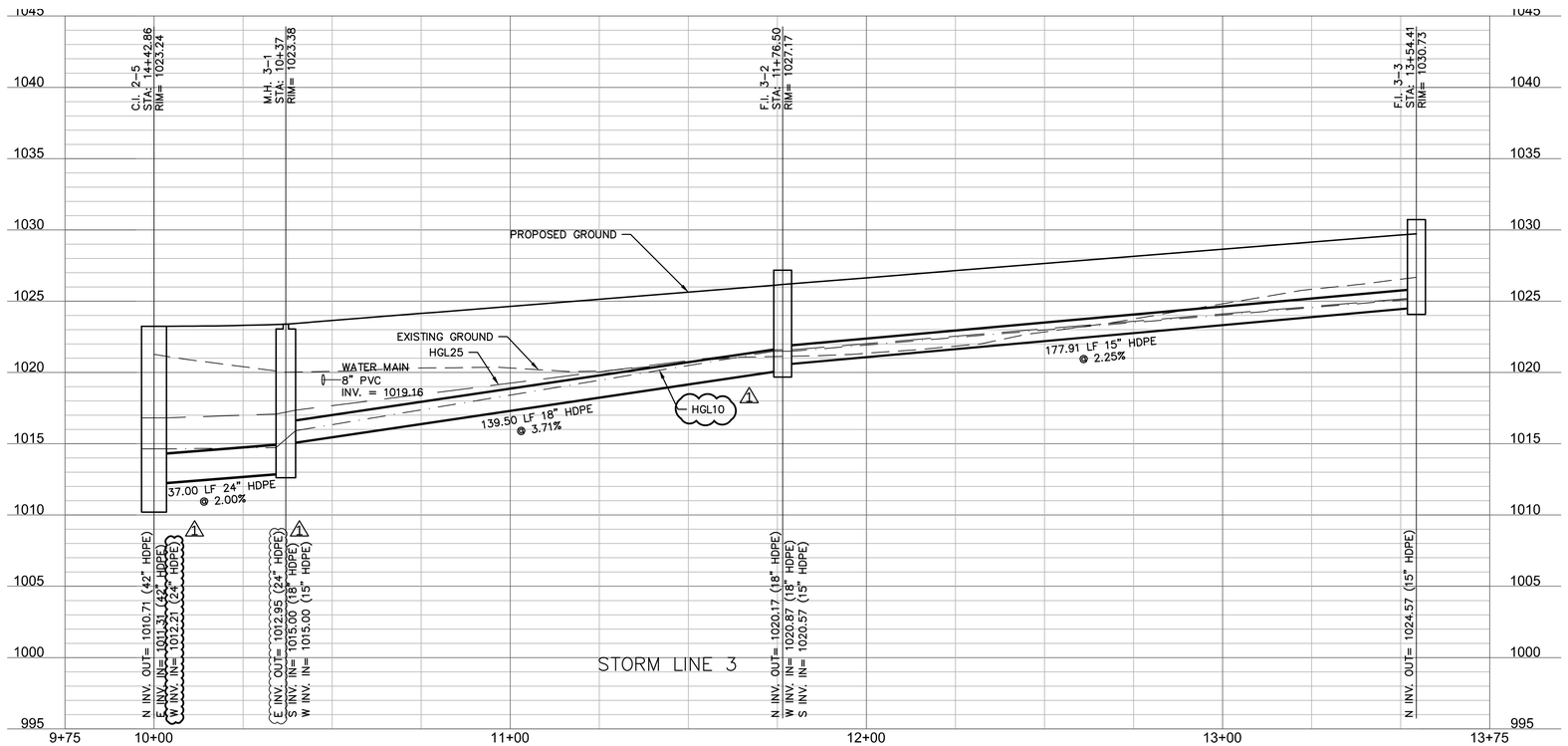
2019

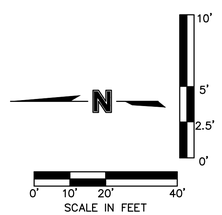
drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C126

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PROFESSIONAL ENGINEER

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NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	PIPE 3-1 TO 2-5 FLOWLINES ADJUSTED AND 10-YEAR STORM HGL ADDED TO PROFILE VIEW	

REVISIONS

STORM PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C127

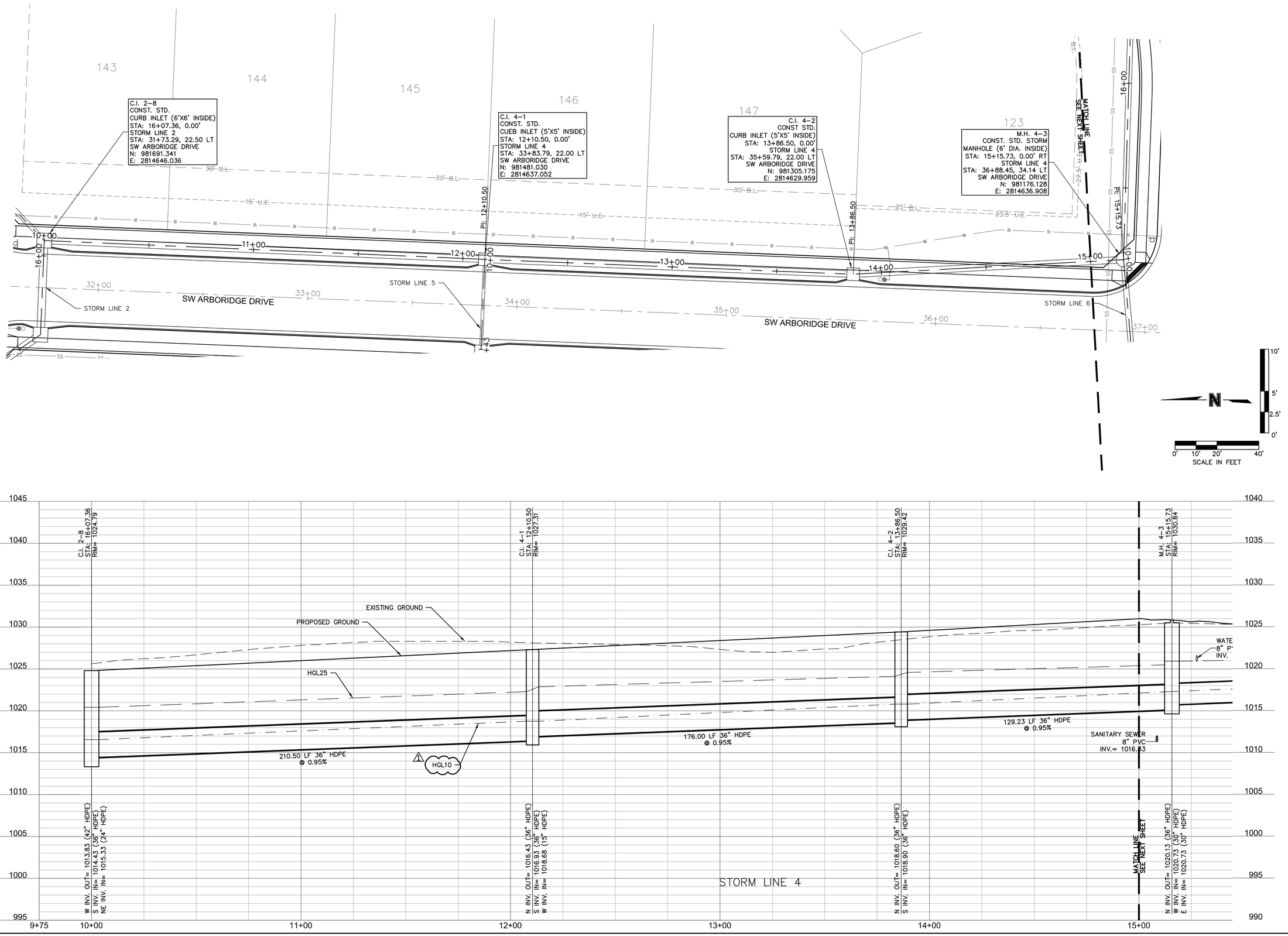
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REVISIONS

STORM PLAN & PROFILE
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HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C128

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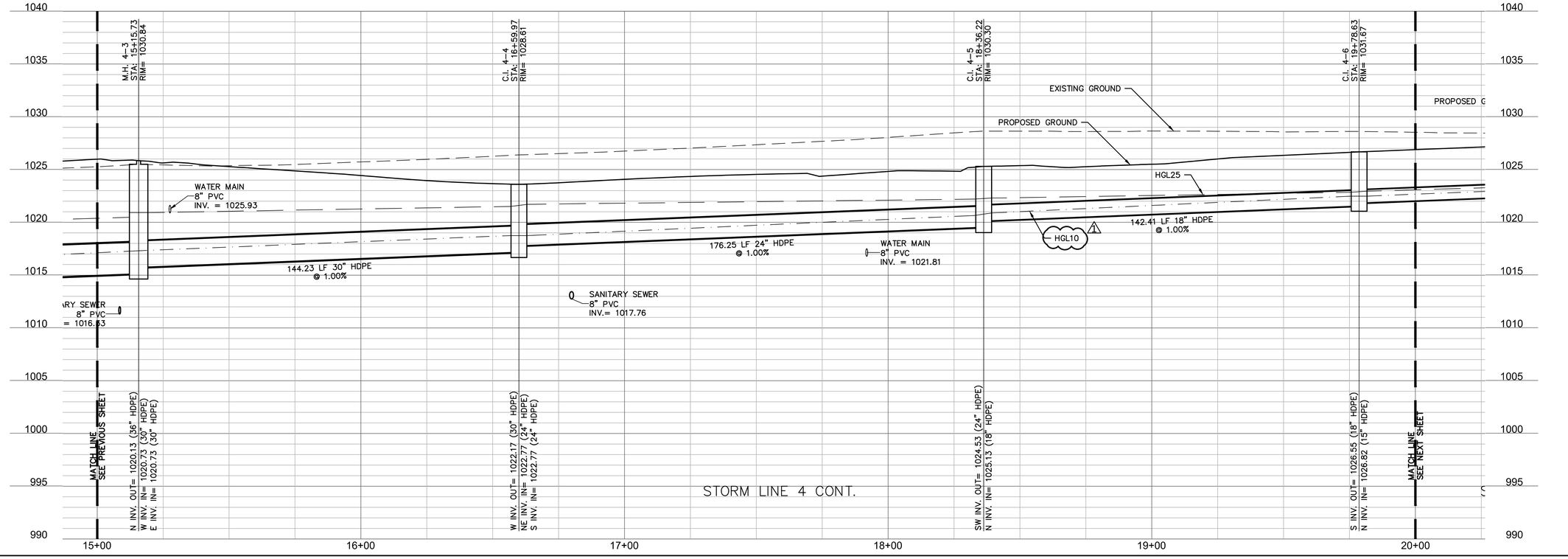
M.H. 4–3
CONST. STD. STORM MANHOLE (6' DIA. INSIDE)
STA: 15+15.73, 0.00' RT
STORM LINE 4
STA: 36+88.45, 34.14 LT
SW ARBORIDGE DRIVE
N: 981176.128
E: 2814636.908

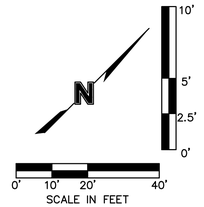
C.I. 4–4
CONST. STD.
CURB INLET (5'X5' INSIDE)
STA: 16+59.97, 0.00'
STORM LINE 4
STA: 32+93.67, 18.02 RT
SW ARBOR TREE DRIVE
N: 981171.791
E: 2814781.077

C.I. 4–5
CONST. STD.
CURB INLET (5'X4' INSIDE)
STA: 18+36.22, 0.00'
STORM LINE 4
STA: 31+14.14, 17.47 LT
SW ARBOR TREE DRIVE
N: 981272.079
E: 2814926.015

C.I. 4–6
CONST. STD.
CURB INLET (5'X3' INSIDE)
STA: 19+78.63, 0.00'
STORM LINE 4
STA: 29+76.22, 17.00 LT
SW ARBOR TREE DRIVE
N: 981413.743
E: 2814940.587

MATCH LINE SEE PREVIOUS SHEET
MATCH LINE SEE NEXT SHEET
STORM LINE 7
SW ARBOR TREE DRIVE
Pt. 15+15.73
Pt. 16+59.97
Pt. 18+36.22
Pt. 19+78.63
124
15' U.E.
30' B.L.
45' U.E.





NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	10-YEAR STORM HGL ADDED TO PROFILE VIEW	

REVISIONS

STORM PLAN & PROFILE
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

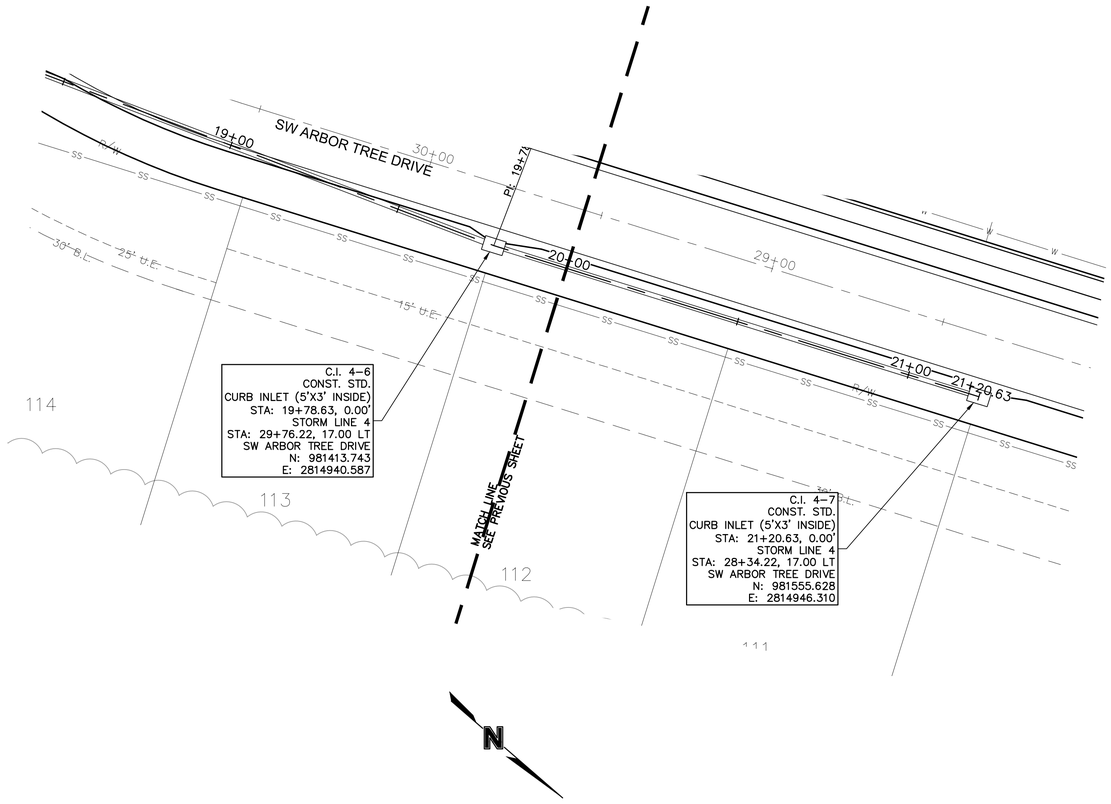
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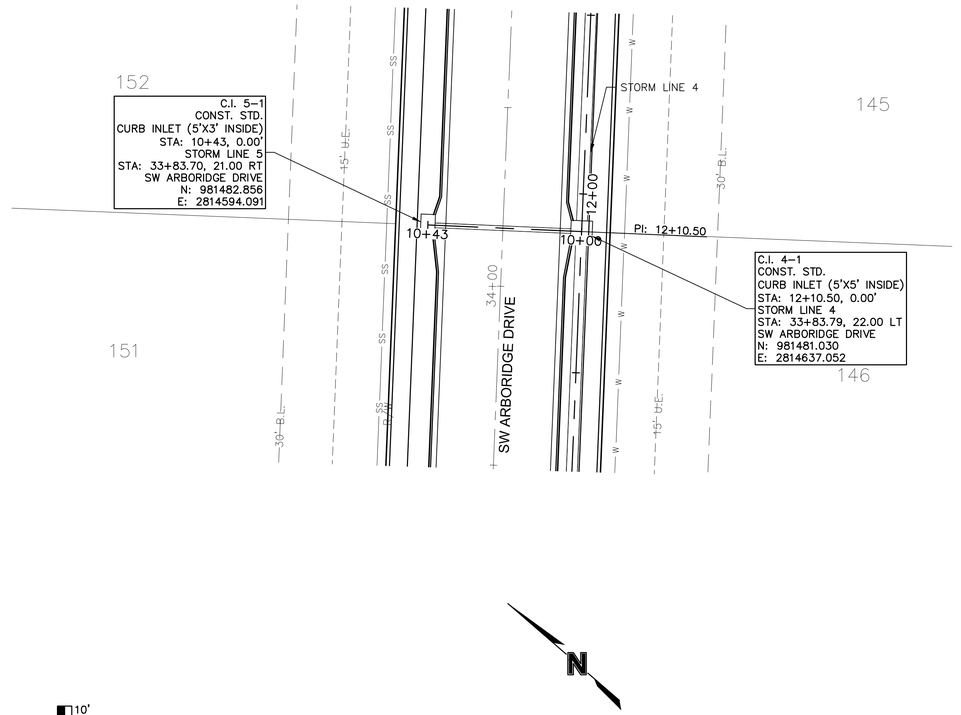
2019

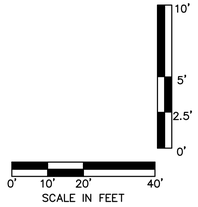
drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
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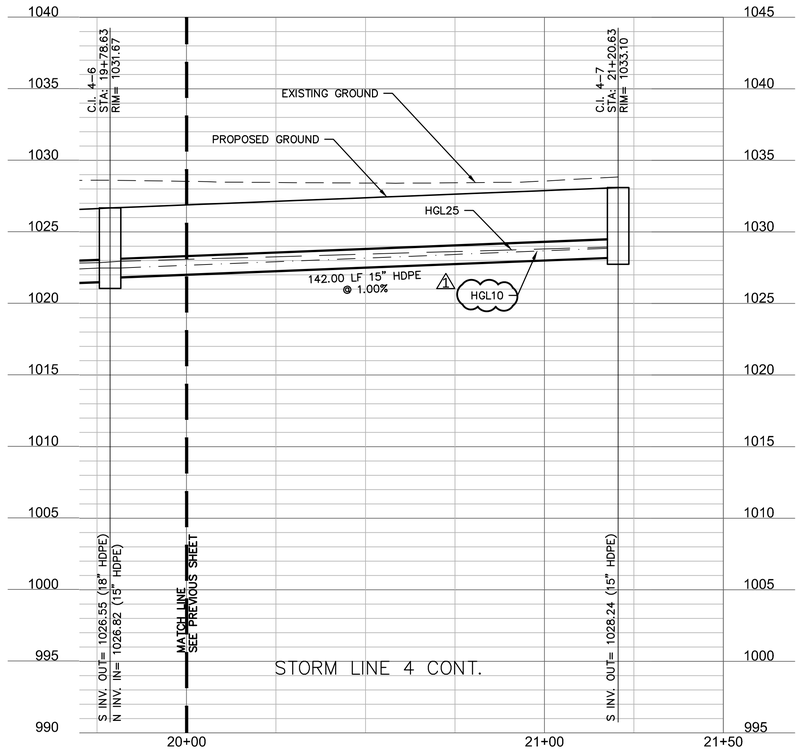
SHEET
C129

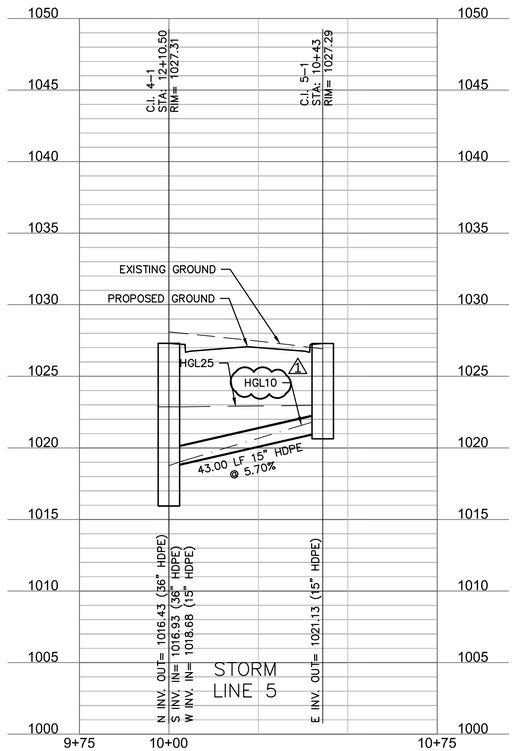
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REVISIONS

STORM PLAN & PROFILE
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HAWTHORN RIDGE
SECOND PLAT

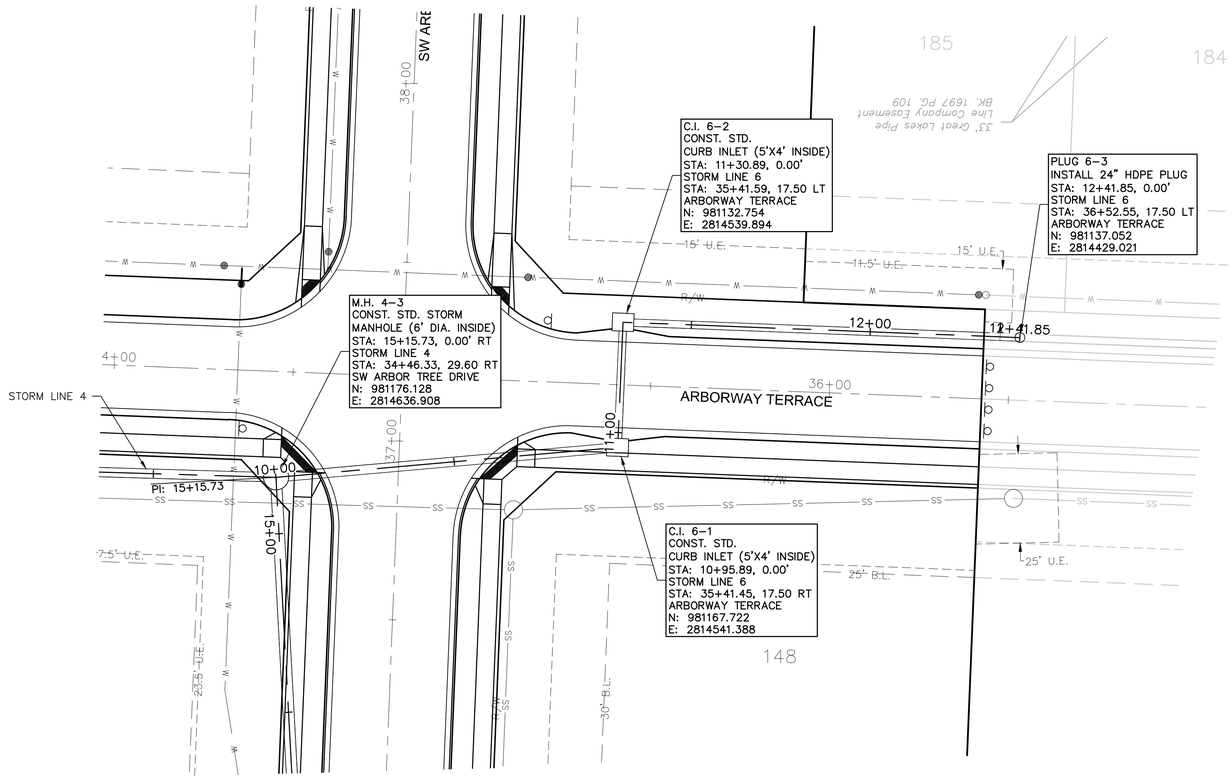
LEE'S SUMMIT, MISSOURI

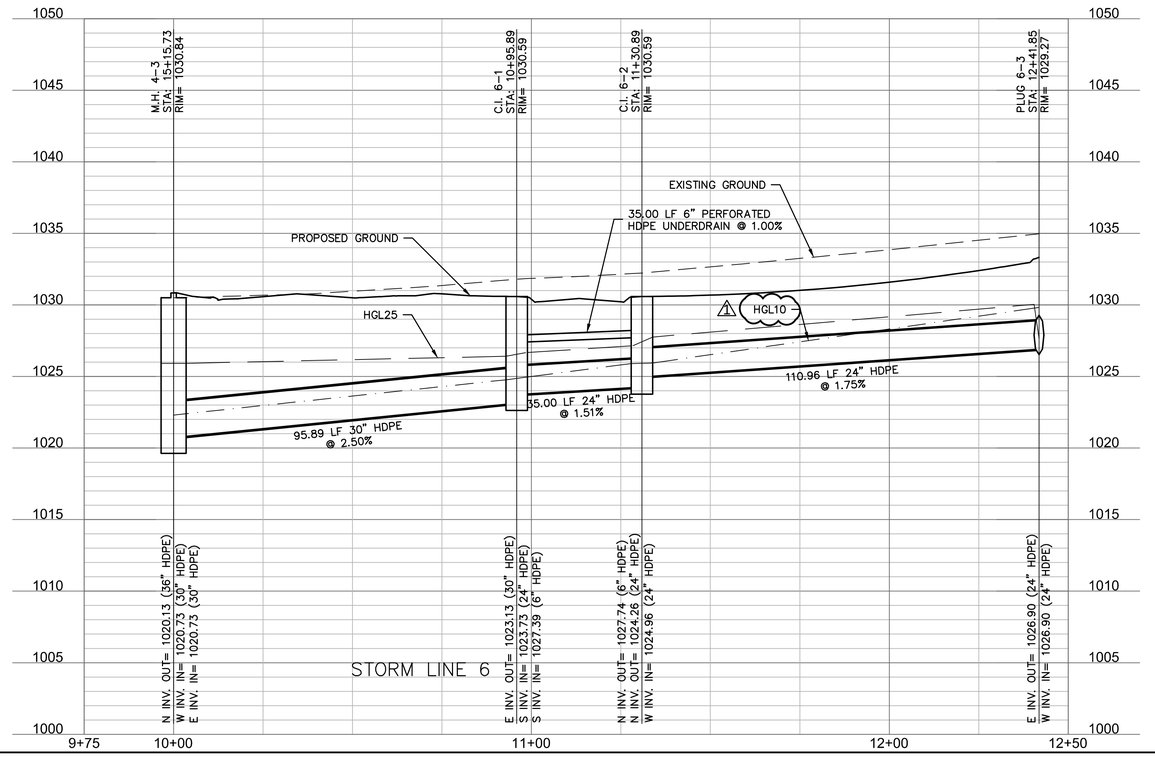
2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C130

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_STM03_0191605.dwg USER: bworthley
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REVISIONS

STORM PLAN & PROFILE
STREET & STORM SEWER PLANS

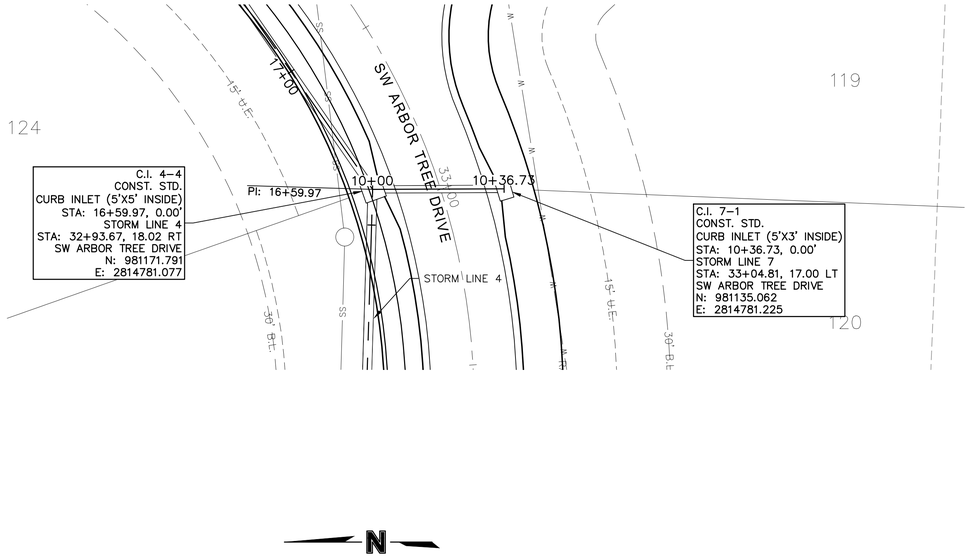
HAWTHORN RIDGE
SECOND PLAT

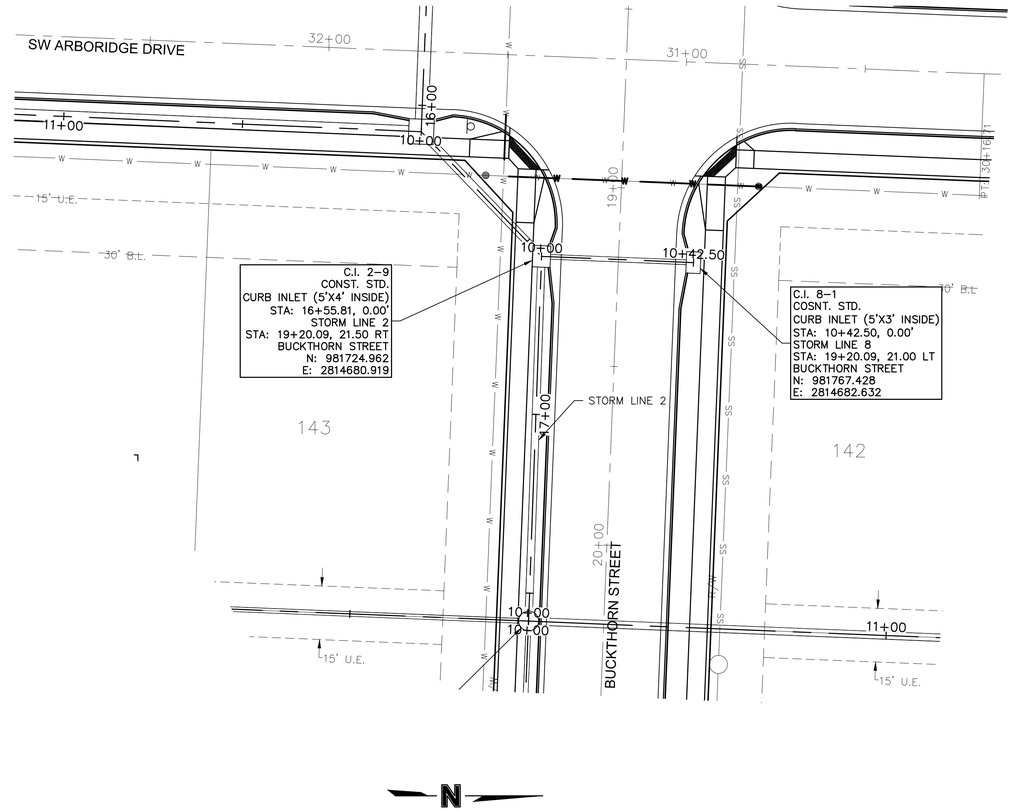
LEE'S SUMMIT, MISSOURI

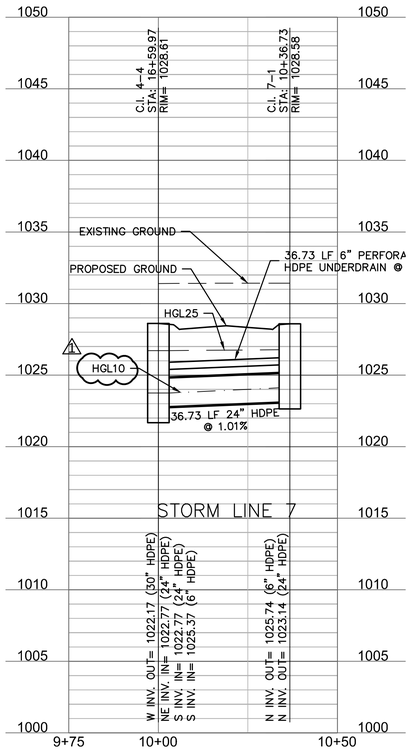
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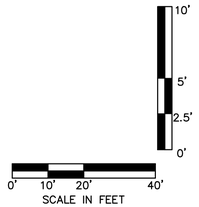
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checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

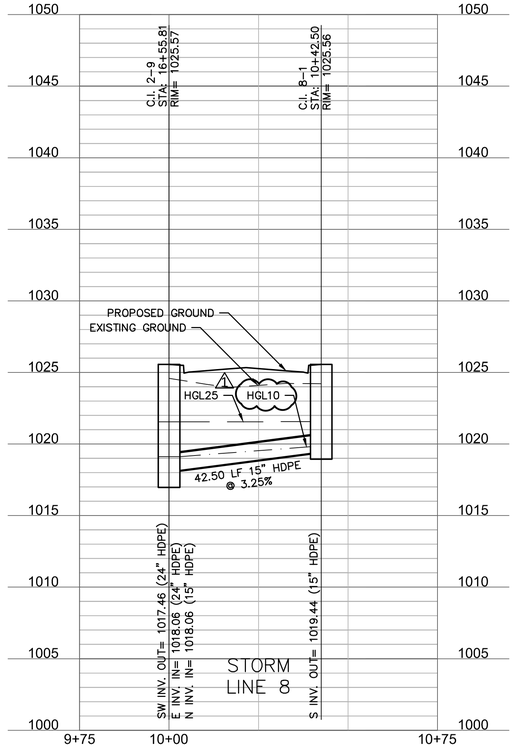
SHEET
C131











RELEASE FOR CONSTRUCTION
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LEE'S SUMMIT, MISSOURI
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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8/15/19

MELISSA G. DEGONIA
PE# 2011000892

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HAWTHORN RIDGE
SECOND PLAT

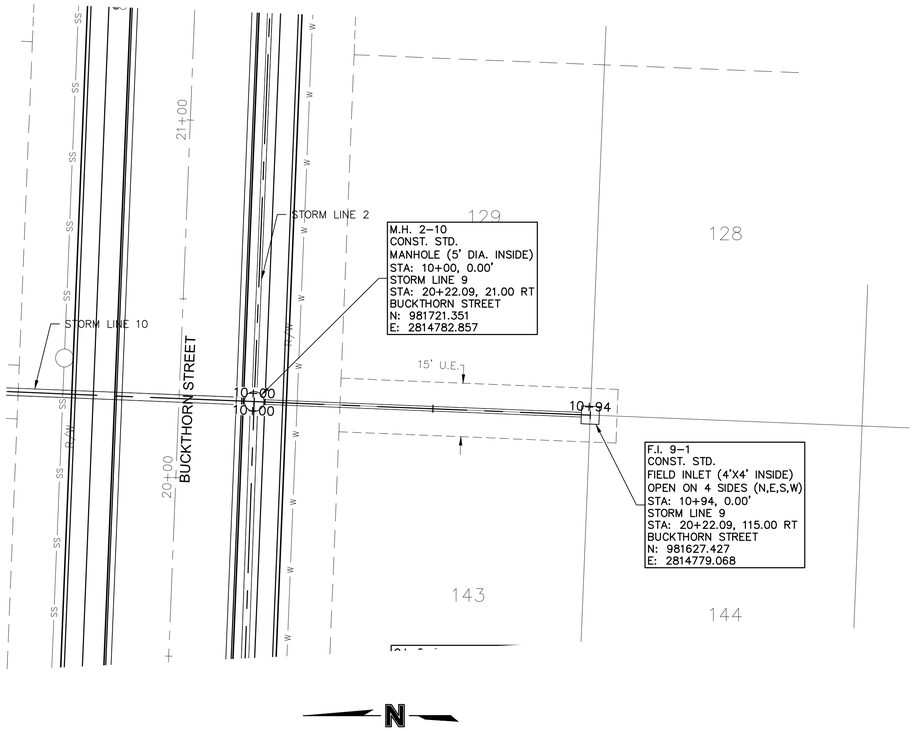
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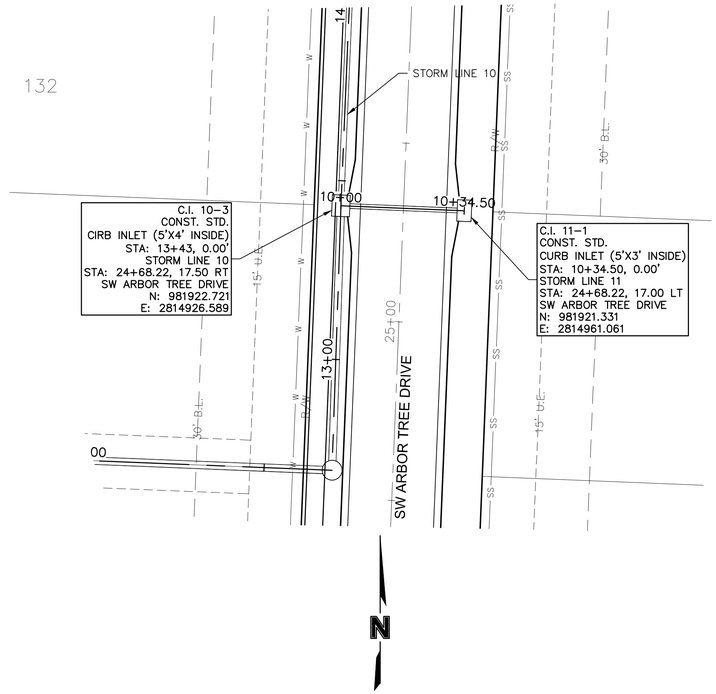
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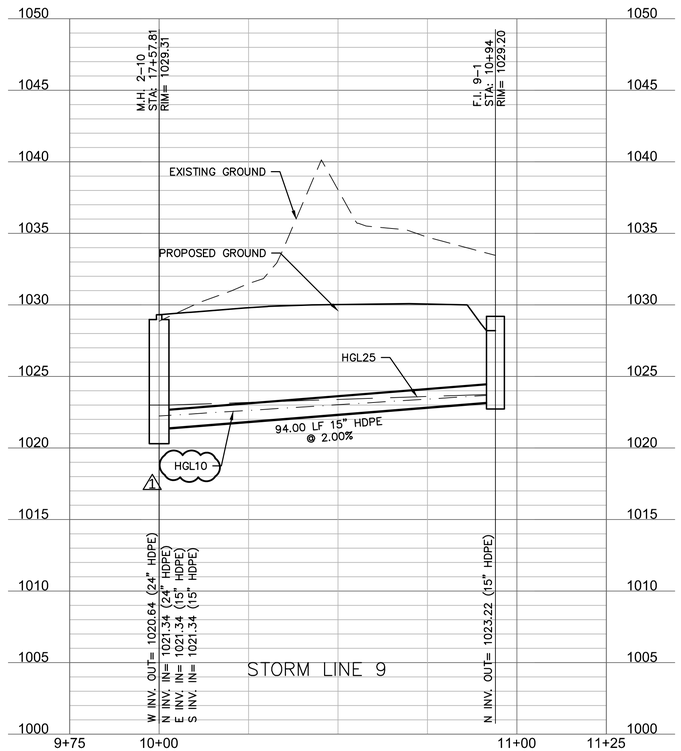
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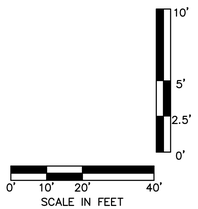
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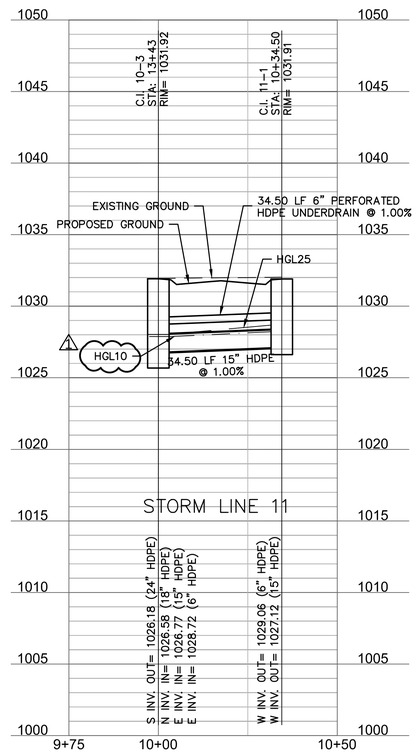
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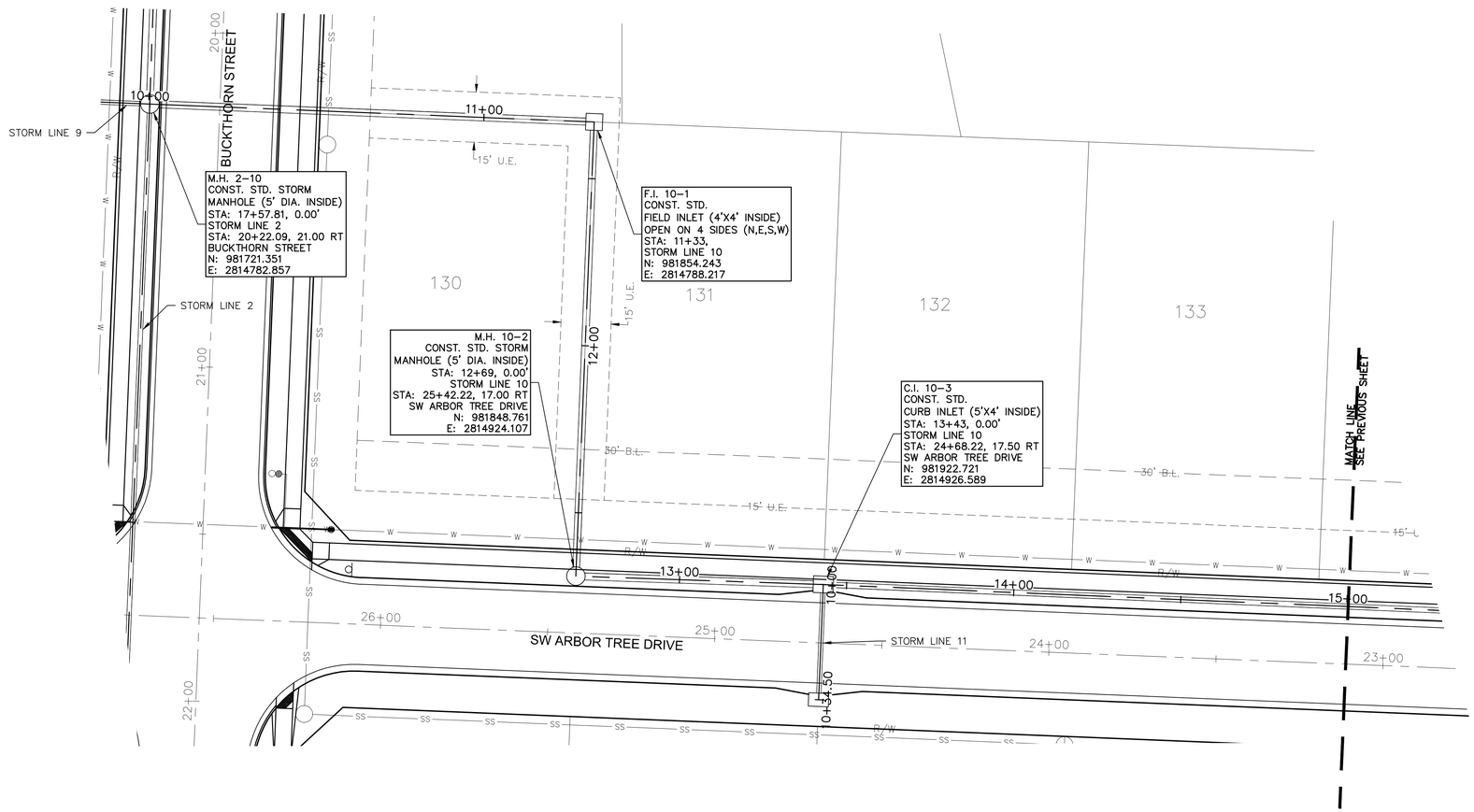
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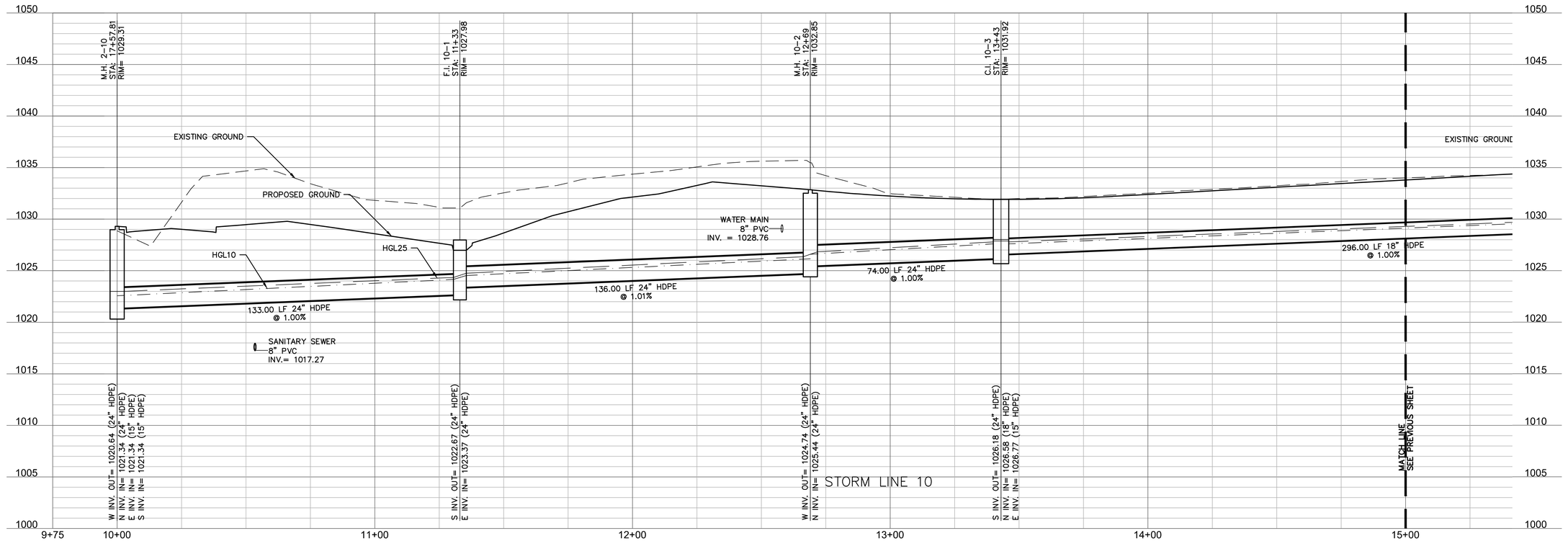
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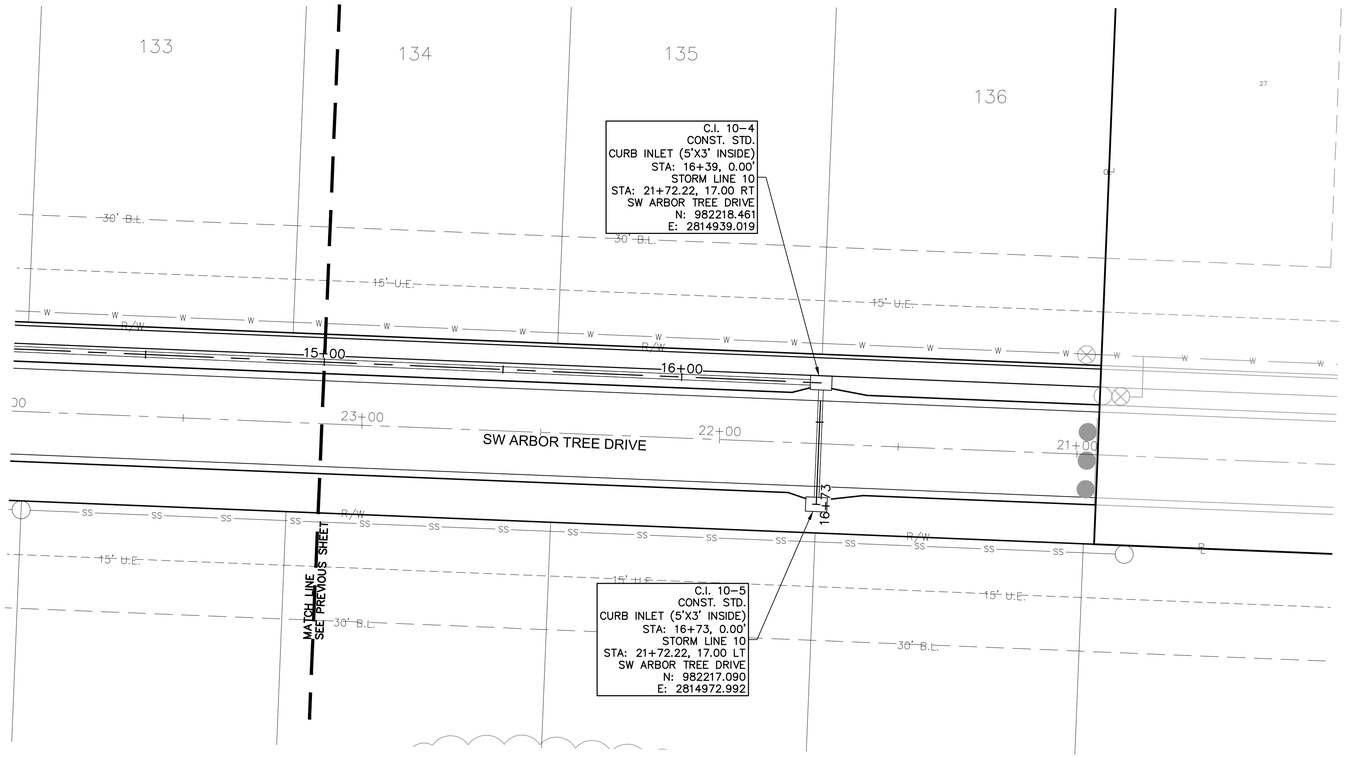
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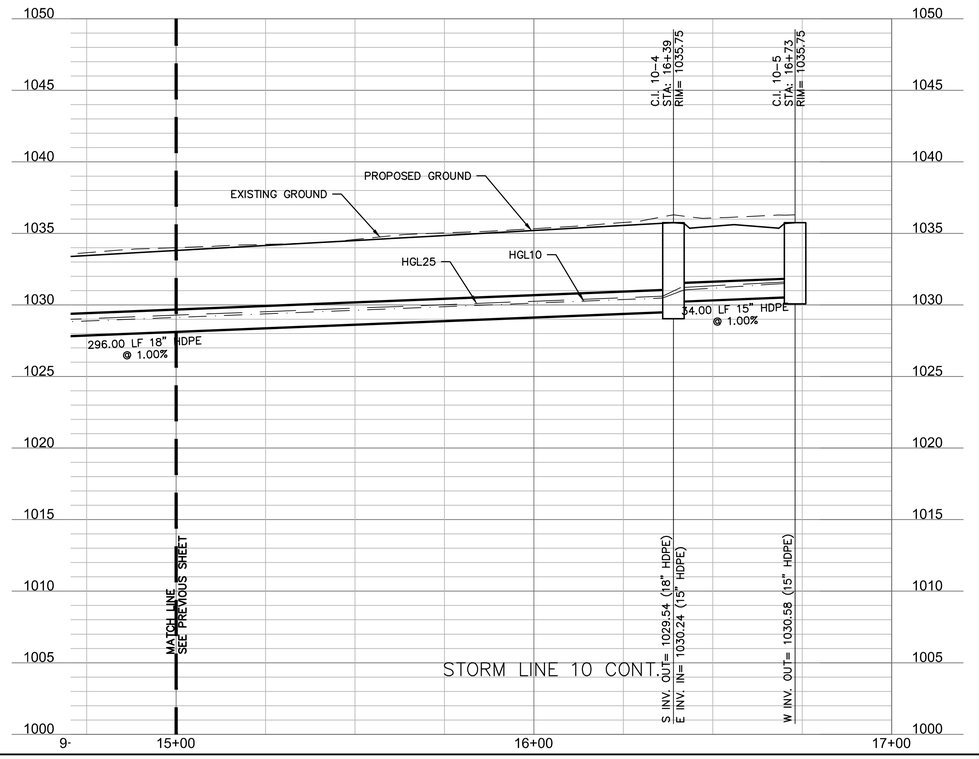
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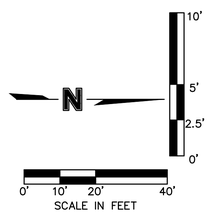
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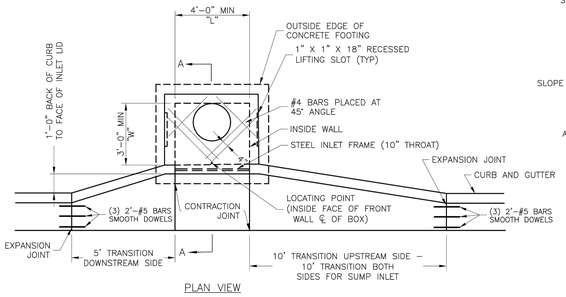
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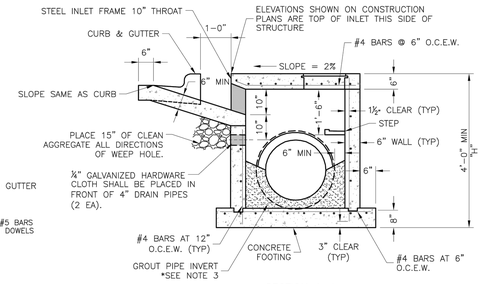
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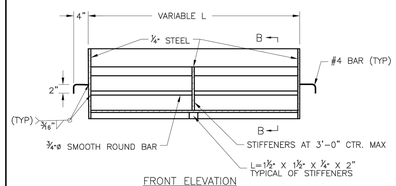
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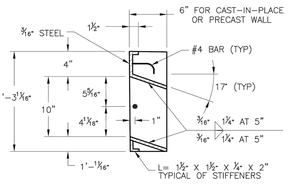
PLAN VIEW



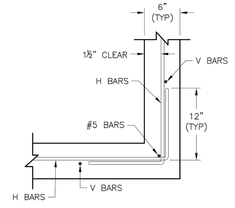
SECTION A–A



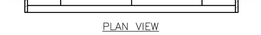
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SECTION B–B



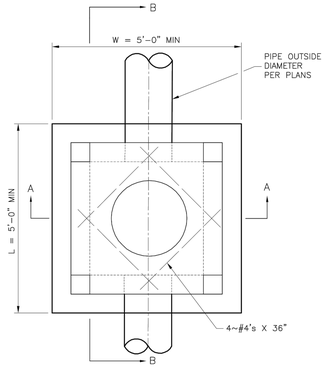
WALL CORNER DETAIL



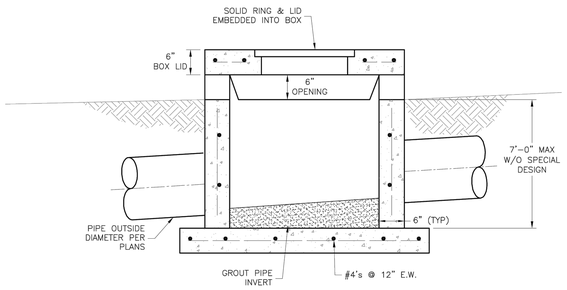
PLAN VIEW

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

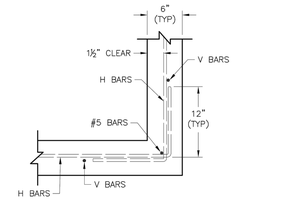
GENERAL NOTES:
1. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION.
2. FLOW LINES LISTED ON THE PROJECT PLANS ARE LISTED AT THE INSIDE FACE OF THE WALL.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
4. LOCATE MH RING AND COVER ON BLANK WALL IF POSSIBLE.
5. STEPS SHALL BE SPACED AT 1'–4" O.C. VERTICALLY ON BLANK WALL IF POSSIBLE.
6. BEVEL ALL EXPOSED EDGES WITH ¾"CHAMFER OR ½" TOOLED EDGE.
7. ON–GRADE INLETS SHALL CONFORM TO THE STREET GRADE AND SUMP INLETS SHALL BE LEVEL.
8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON–SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
9. LIFTING RINGS SHALL BE REMOVED AND SEALED WITH NON–SHRINKABLE GROUT
10. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.



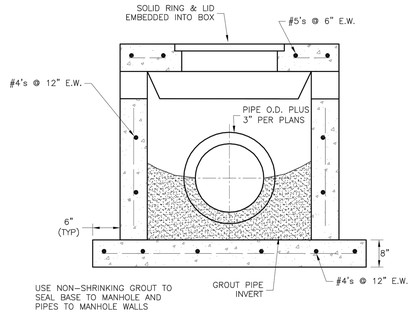
PLAN VIEW



SECTION B–B

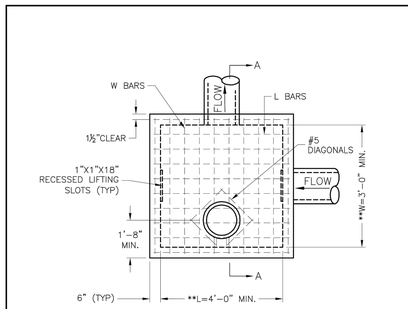


WALL CORNER DETAIL

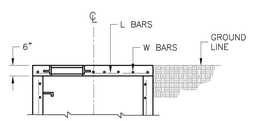


SECTION A–A

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



PLAN

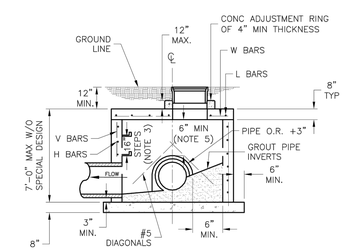


SLAB TOP ALTERNATE FOR JUNCTION BOX (SHALLOW)

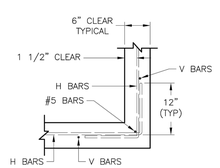
** INCREASE IN MULTIPLES OF 6" (7'–0") MAX WITHOUT SPECIAL DESIGN. (SEE PROJECT PLANS FOR DETAILS)

REINFORCING

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

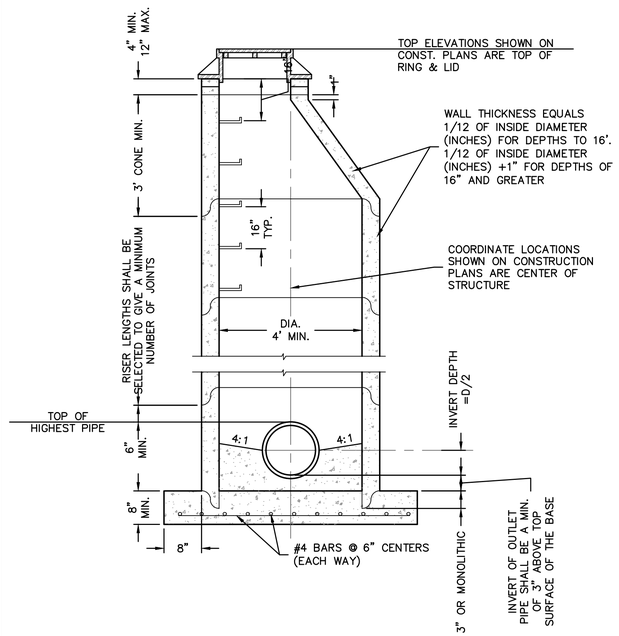


SECTION A–A



WALL CORNER DETAIL

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



STANDARD PRECAST STORM SEWER MANHOLE

NOT TO SCALE

STORM MANHOLE NOTES

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

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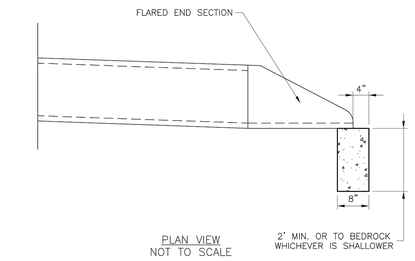
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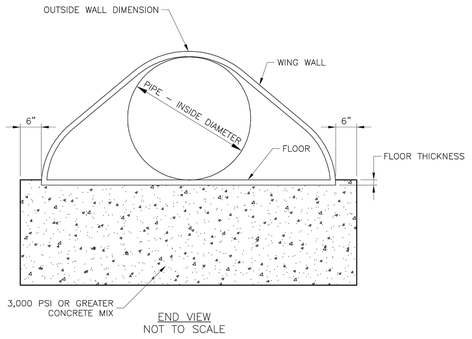
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checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C136

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_DTL01_0191605.dwg
DATE: Aug 12, 2019 1:38pm
USER: bworthley
XREFS: C_PTBLK_0191605



PLAN VIEW
NOT TO SCALE



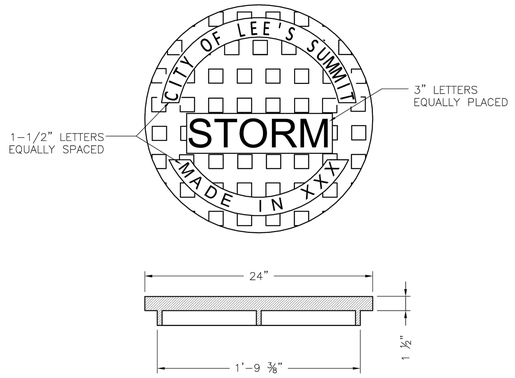
END VIEW
NOT TO SCALE

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

FLARED END SECTION SUPPORT DETAIL

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

STM-5



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

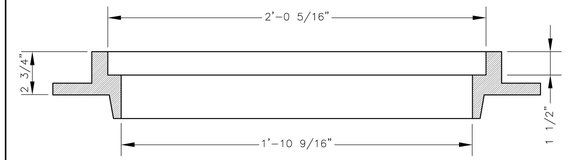
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCT LIST.

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

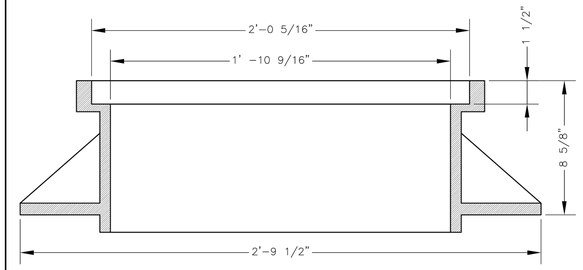
STORM MANHOLE COVER DETAIL

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

STM-6



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



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

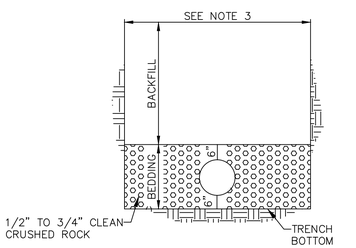
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCTS LIST.

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

STORM MANHOLE FRAME DETAIL

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

STM-7



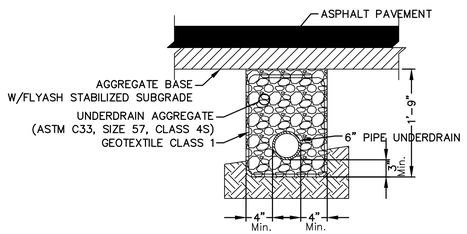
TYPICAL SECTION FOR PLASTIC PIPE
(IN ROCK OR SOIL)

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

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

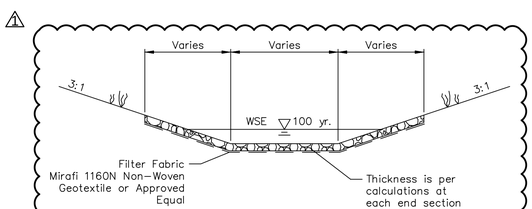
2. TRENCH BANKS MAY BE CUT BACK ON SLOPES IN ACCORDANCE WITH CURRENT OSHA REGULATIONS, BUT ONLY IN AREAS WHERE THE INCREASED TRENCH WIDTH WILL NOT INTERFERE WITH SURFACE FEATURES. SLOPES MUST NOT EXTEND BELOW TOP OF BEDDING.

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



PIPE UNDERDRAIN LATERAL
N.T.S.

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



NOTE: DIMENSIONS ARE PER CALCULATIONS AT EACH END SECTION

RIPRAP DETAIL
N.T.S.

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

olsson
www.olsson.com
OLSSON - CIVIL ENGINEERING
MO CERTIFICATE OF AUTHORITY #:003592
1301 MCGEE STREET, SUITE 500
NORTH KANSAS CITY, MO 64116
TEL 816.361.1177

STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8-12-19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	RIPRAP DETAIL ADDED	

REVISIONS

STORM SEWER DETAILS
STREET AND STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C137

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_DTL01_0191605.dwg
DATE: Aug 12, 2019 1:38pm USER: bworthley
XREFS: C_PTBLK_0191605

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

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

olsson
OLSSON - CIVIL ENGINEERING
MO CERTIFICATE OF AUTHORITY # 001592
KS CERTIFICATE OF AUTHORITY # E-2007
4301 INDIAN CREEK PKWY, SUITE 300
NORTH KANSAS CITY, MO 64116
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www.olsson.com

STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
8-15-19
PROFESSIONAL ENGINEER

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

DRAINAGE PLAN
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C138

0' 40' 80' 160'
SCALE IN FEET

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_DRN01_0191605.dwg USER: bworthley
DATE: Aug 12, 2019 1:38pm XREFS: C_PTBLK_0191605 C_PUTIL_0191605 C_PSTRM_0191605
C_PBNDY_0191605 C_FBASE_0191605 C_XBASE_0191605

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. 1-1	0.88	0.51	5.00	7.35	1.00	3.30
C.I. 2-4(L)	0.68	0.51	5.00	7.35	1.00	2.56
C.I. 2-4(R)	0.05	0.51	5.00	7.35	1.00	0.18
C.I. 2-4(B)	0.17	0.51	7.00	6.78	1.00	0.59
C.I. 2-4	0.90	0.51	7.00	6.78	1.00	3.11
C.I. 2-5(L)	0.20	0.51	5.00	7.35	1.00	0.74
C.I. 2-5(R)	0.65	0.51	5.00	7.35	1.00	2.46
C.I. 2-5(B)	0.58	0.51	7.00	6.78	1.00	2.00
C.I. 2-5	1.43	0.51	7.00	6.78	1.00	4.95
C.I. 2-7	0.59	0.51	5.00	7.35	1.00	2.21
C.I. 2-8	1.13	0.51	10.88	5.90	1.00	3.40
C.I. 2-9	0.25	0.51	5.00	7.35	1.00	0.94
C.I. 2-11	0.17	0.51	5.00	7.35	1.00	0.64
C.I. 2-12	0.20	0.51	5.00	7.35	1.00	0.75
F.I. 3-2	1.24	0.51	5.00	7.35	1.00	4.65
F.I. 3-3	0.50	0.51	5.00	7.35	1.00	1.88
C.I. 4-1	0.77	0.51	5.00	7.35	1.00	2.89
C.I. 4-2	0.21	0.51	5.00	7.35	1.00	0.79
C.I. 4-4(L)	0.14	0.51	5.00	7.35	1.00	0.51
C.I. 4-4(R)	0.82	0.51	5.00	7.35	1.00	3.09
C.I. 4-4(B)	0.31	0.51	7.00	6.78	1.00	1.07
C.I. 4-4	1.27	0.51	7.00	6.78	1.00	4.39
C.I. 4-5	0.88	0.51	5.00	7.35	1.00	3.30
C.I. 4-6	0.83	0.51	5.00	7.35	1.00	3.11
C.I. 4-7	0.64	0.51	5.00	7.35	1.00	2.40
C.I. 5-1	0.93	0.51	11.83	5.71	1.00	2.71
C.I. 6-1(L)	0.29	0.51	5.00	7.35	1.00	1.08
C.I. 6-1(R)	0.00	0.51	5.00	7.35	1.00	0.00
C.I. 6-1(B)	0.12	0.51	5.00	7.35	1.00	0.46
C.I. 6-1	0.41	0.51	5.00	7.35	1.00	1.54
C.I. 6-2(L)	0.00	0.51	5.00	7.35	1.00	0.00
C.I. 6-2(R)	0.47	0.51	5.00	7.35	1.00	1.77
C.I. 6-2(B)	0.66	0.51	7.00	6.78	1.00	2.28
C.I. 6-2	1.13	0.51	7.00	6.78	1.00	3.91
C.I. 7-1(L)	1.59	0.51	13.45	5.43	1.00	4.40
C.I. 7-1(R)	0.21	0.51	5.00	7.35	1.00	0.79
C.I. 7-1(B)	0.56	0.51	5.00	7.35	1.00	2.10
C.I. 7-1	2.36	0.51	13.45	5.43	1.00	6.53
C.I. 8-1	0.24	0.51	5.00	7.35	1.00	0.90
F.I. 9-1	0.36	0.51	5.00	7.35	1.00	1.35
F.I. 10-1	0.38	0.51	5.00	7.35	1.00	1.43
C.I. 10-3(L)	0.11	0.51	5.00	7.35	1.00	0.41
C.I. 10-3(R)	0.30	0.51	5.00	7.35	1.00	1.13
C.I. 10-3(B)	0.17	0.51	5.00	7.35	1.00	0.64
C.I. 10-3	0.58	0.51	5.00	7.35	1.00	2.18
C.I. 10-4	0.20	0.51	5.00	7.35	1.00	0.75
C.I. 10-5	1.62	0.51	8.83	6.33	1.00	5.23
C.I. 11-1(L)	0.73	0.51	5.00	7.35	1.00	2.75
C.I. 11-1(R)	0.20	0.51	5.00	7.35	1.00	0.73
C.I. 11-1(B)	0.70	0.51	7.00	6.78	1.00	2.42
C.I. 11-1	1.63	0.51	7.00	6.78	1.00	5.64

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. 1-1	GRADE	3.30	0.00	3.30	1.00	3.04	3.04	3.04	0.26	92.05%	0.21	9.66	...
C.I. 2-4(L)	SAG	2.56	0.00	2.56	...	...	...	...	...	...	0.19	8.70	...
C.I. 2-4(R)	SAG	0.18	0.00	0.18	...	...	...	...	...	...	0.07	3.21	...
C.I. 2-4	SAG	3.11	0.00	3.11	0.80	23.28	18.63	3.11	0.00	100.00%	...	...	...
C.I. 2-5(L)	SAG	0.74	0.39	1.12	...	...	...	...	...	...	0.14	6.35	...
C.I. 2-5(R)	SAG	2.46	0.79	3.25	...	...	...	...	...	...	0.21	9.52	...
C.I. 2-5	SAG	4.95	1.18	6.12	0.80	23.28	18.63	6.12	0.00	100.00%	...	...	...
C.I. 2-7	GRADE	2.21	0.16	2.37	1.00	2.28	2.28	2.28	0.09	96.21%	0.18	8.47	...
C.I. 2-8	GRADE	3.40	0.19	3.58	1.00	3.29	3.29	3.29	0.29	91.86%	0.21	9.89	...
C.I. 2-9	GRADE	0.94	0.00	0.94	1.00	0.93	0.93	0.93	0.01	99.42%	0.11	5.29	...
C.I. 2-11	GRADE	0.64	0.00	0.64	1.00	0.64	0.64	0.64	0.00	99.71%	0.11	4.96	...
C.I. 2-12	GRADE	0.75	0.00	0.75	1.00	0.75	0.75	0.75	0.00	99.97%	0.11	5.28	...
F.I. 3-2	SAG	4.65	...	4.65	0.80	18.67	14.93	4.65	0.00	100.00%	...	...	0.20
F.I. 3-3	SAG	1.88	...	1.88	0.80	18.67	14.93	1.88	0.00	100.00%	...	...	0.11
C.I. 4-1	GRADE	2.89	0.00	2.89	1.00	2.70	2.70	2.70	0.19	93.53%	0.20	9.12	...
C.I. 4-2	GRADE	0.79	0.00	0.79	1.00	0.79	0.79	0.79	0.00	99.90%	0.12	5.60	...
C.I. 4-4(L)	SAG	0.51	0.00	0.51	...	...	...	...	...	...	0.09	4.64	...
C.I. 4-4(R)	SAG	3.09	0.00	3.09	...	...	...	...	...	...	0.20	10.07	...
C.I. 4-4	SAG	4.39	0.00	4.39	0.80	19.40	15.52	4.39	0.00	100.00%	...	...	...
C.I. 4-5	GRADE	3.30	0.65	3.95	1.00	3.10	3.10	3.10	0.85	78.52%	0.22	11.16	...
C.I. 4-6	GRADE	3.11	0.32	3.44	1.00	2.79	2.79	2.79	0.65	81.07%	0.21	10.59	...
C.I. 4-7	GRADE	2.40	0.00	2.40	1.00	2.08	2.08	2.08	0.32	86.54%	0.19	9.26	...
C.I. 5-1	GRADE	2.71	0.00	2.71	1.00	2.55	2.55	2.55	0.16	94.26%	0.19	8.91	...
C.I. 6-1(L)	SAG	1.08	0.65	1.73	...	...	...	...	...	...	0.14	7.10	...
C.I. 6-1(R)	SAG	0.00	0.00	0.00	...	...	...	...	...	...	0.00	0.00	...
C.I. 6-1	SAG	1.54	0.65	2.19	0.80	19.40	15.52	2.19	0.00	100.00%	...	...	...
C.I. 6-2(L)	SAG	0.00	0.00	0.00	...	...	...	...	...	...	0.00	0.00	...
C.I. 6-2(R)	SAG	1.77	1.39	3.15	...	...	...	...	...	...	0.18	8.89	...
C.I. 6-2	SAG	3.91	1.39	5.30	0.80	19.40	15.52	5.30	0.00	100.00%	...	...	...
C.I. 7-1(L)	SAG	4.40	0.85	5.25	...	...	...	...	...	...	0.24	11.91	...
C.I. 7-1(R)	SAG	0.79	0.00	0.79	...	...	...	...	...	...	0.11	5.63	...
C.I. 7-1	SAG	6.53	0.85	7.38	0.80	19.40	15.52	7.38	0.00	100.00%	...	...	...
C.I. 8-1	GRADE	0.90	0.00	0.90	1.00	0.90	0.90	0.90	0.00	99.54%	0.11	5.21	...
F.I. 9-1	SAG	1.35	...	1.35	0.80	18.67	14.93	1.35	0.00	100.00%	...	...	0.09
F.I. 10-1	SAG	1.43	...	1.43	0.80	18.67	14.93	1.43	0.00	100.00%	...	...	0.09
C.I. 10-3(L)	SAG	0.41	0.00	0.41	...	...	...	...	...	...	0.09	4.26	...
C.I. 10-3(R)	SAG	1.13	0.04	1.16	...	...	...	...	...	...	0.13	6.62	...
C.I. 10-3	SAG	2.18	0.04	2.21	0.80	19.40	15.52	2.21	0.00	100.00%	...	...	...
C.I. 10-4	GRADE	0.75	0.00	0.75	1.00	0.71	0.71	0.71	0.04	95.06%	0.11	5.62	...
C.I. 10-5	GRADE	5.23	0.00	5.23	1.00	3.50	3.50	3.50	1.73	66.97%	0.23	11.64	...
C.I. 11-1(L)	SAG	2.75	1.73	4.48	...	...	...	...	...	...	0.22	10.98	...
C.I. 11-1(R)	SAG	0.73	0.00	0.73	...	...	...	...	...	...	0.11	5.29	...
C.I. 11-1	SAG	5.64	1.73	7.37	0.80	19.40	15.52	7.37	0.00	100.00%	...	...	...

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	Upstream Invert	Downstream Invert	Slope	Diameter	Manning's n	Total Flow	Velocity	Capacity	Flow Depth	Upstream Struct. HGL	Upstream Top Elev.
		(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(ft/s)	(cfs)	(ft)	(ft)	(ft)
C.I. 1-1	EX C.I. 10-1	231.96	1015.54	1010.90	2.00	15	0.012	3.30	2.71	9.89	0.73	1016.27	1021.44
M.H. 2-2	E.S 2-1	159.31	1007.00	1006.00	0.63	54	0.012	104.30	11.16	168.80	3.00	1010.00	1015.07
J.B. 2-3	M.H. 2-2	143.55	1008.46	1007.60	0.60	48	0.012	104.30	10.79	120.45	3.09	1011.55	1024.22
C.I. 2-4	J.B. 2-3	95.00	1009.77	1009.06	0.75	48	0.012	104.30	11.82	134.53	3.09	1012.86	1023.24
C.I. 2-5	C.I. 2-4	45.00	1010.71	1010.37	0.76	42	0.012	101.19	11.05	94.74	3.17	1013.88	1023.24
M.H. 2-6	C.I. 2-5	77.00	1011.93	1011.31	0.81	42	0.012	78.73	8.34	97.80	2.77	1014.70	1023.91
C.I. 2-7	M.H. 2-6	42.50	1012.87	1012.53	0.80	42	0.012	78.73	11.28	97.48	2.77	1015.64	1024.79
C.I. 2-8	C.I. 2-7	45.00	1013.83	1013.47	0.80	42	0.012	76.36	11.21	97.49	2.73	1016.56	1024.79
C.I. 2-9	C.I. 2-8	48.45	1017.46	1015.33	4.40	24	0.012	21.57	10.62	51.38	1.66	1019.12	1025.57
M.H. 2-10	C.I. 2-9	102.00	1020.64	1018.06	2.53	24	0.012	19.73	11.67	38.97	1.59	1022.24	1029.31
C.I. 2-11	M.H. 2-10	205.00	1028.46	1021.34	3.47	15	0.012	1.39	1.48	13.04	0.47	1028.93	1035.93
C.I. 2-12	C.I. 2-11	42.00	1030.00	1029.16	2.00	15	0.012	0.75	4.75	9.89	0.34	1030.34	1035.93
M.H. 3-1	C.I. 2-5	37.00	1012.95	1012.21	2.00	24	0.012	16.17	5.15	34.65	1.79	1014.74	1023.38
F.I. 3-2	M.H. 3-1	139.50	1020.17	1015.00	3.71	18	0.012	12.06	12.69	21.90	1.32	1021.49	1027.17
F.I. 3-3	F.I. 3-2	177.91	1024.57	1020.57	2.25	15	0.012	1.88	1.95	10.49	0.55	1025.12	1030.73
C.I. 4-1	C.I. 2-8	210.50	1016.43	1014.43	0.95	36	0.012	51.21	9.53	70.43	2.33	1018.76	1027.31
C.I. 4-2	C.I. 4-1	176.00	1018.60	1016.93	0.95	36	0.012	45.61	10.13	70.38	2.20	1020.80	1029.42
M.H. 4-3	C.I. 4-2	129.23	1020.13	1018.90	0.95	36	0.012	44.82	9.51	70.49	2.18	1022.31	1030.84
C.I. 4-4	M.H. 4-3	144.23	1022.17	1020.73	1.00	30	0.012	21.56	6.60	44.39	1.58	1023.75	1028.61
C.I. 4-5	C.I. 4-4	176.25	1024.53	1022.77	1.00	24	0.012	9.79	6.42	24.49	1.12	1025.65	1030.30
C.I. 4-6	C.I. 4-5	142.41	1026.55	1025.13	1.00	18	0.012	5.84	6.47	11.36	0.93	1027.48	1031.67
C.I. 4-7	C.I. 4-6	142.00	1028.24	1026.82	1.00	15	0.012	2.40	3.64	7.00	0.62	1028.86	1033.10
C.I. 5-1	C.I. 4-1	43.00	1021.13	1018.68	5.70	15	0.012	2.71	10.00	16.70	0.66	1021.79	1027.29
C.I. 6-1	M.H. 4-3	95.89	1023.13	1020.73	2.50	30	0.012	23.26	7.12	70.29	1.64	1024.77	1030.59
C.I. 6-2	C.I. 6-1	35.00	1024.26	1023.73	1.51	24	0.012	21.07	10.38	30.15	1.64	1025.90	1030.59
C.I. 7-1	C.I. 4-4	36.73	1023.14	1022.77	1.01	24	0.012	7.38	4.84	24.59	0.96	1024.10	1028.58
C.I. 8-1	C.I. 2-9	42.50	1019.44	1018.06	3.25	15	0.012	0.90	0.81	12.61	0.37	1019.81	1025.56
F.I. 9-1	M.H. 2-10	94.00	1023.22	1021.34	2.00	15	0.012	1.35	1.44	9.89	0.46	1023.68	1029.29
F.I. 10-1	M.H. 2-10	133.00	1022.67	1021.34	1.00	24	0.012	16.99	8.42	24.50	1.48	1024.15	1029.17
M.H. 10-2	F.I. 10-1	136.50	1024.74	1023.37	1.00	24	0.012	15.56	8.27	24.55	1.42	1026.16	1032.84
C.I. 10-3	M.H. 10-2	74.00	1026.18	1025.44	1.00	24	0.012	15.56	8.26	24.50	1.42	1027.60	1031.91
C.I. 10-4	C.I. 10-3	296.00	1029.54	1026.58	1.00	18	0.012	5.98	4.67	11.38	0.94	1030.48	1035.75
C.I. 10-5	C.I. 10-4	34.00	1030.58	1030.24	1.00	15	0.012	5.23	6.25	7.00	0.93	1031.51	1035.75
C.I. 11-1	C.I. 10-3	34.00	1027.12	1026.78	1.00	15	0.012	7.37	6.45	7.00	1.10	1028.22	1031.91

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. 1-1	0.88	0.51	5.00	8.53	1.10	4.21
C.I. 2-4(L)	0.68	0.51	5.00	8.53	1.10	3.26
C.I. 2-4(R)	0.05	0.51	5.00	8.53	1.10	0.23
C.I. 2-4(B)	0.17	0.51	7.00	7.87	1.10	0.75
C.I. 2-4	0.90	0.51	7.00	7.87	1.10	3.97
C.I. 2-5(L)	0.20	0.51	5.00	8.53	1.10	0.94
C.I. 2-5(R)	0.65	0.51	5.00	8.53	1.10	3.13
C.I. 2-5(B)	0.58	0.51	7.00	7.87	1.10	2.55
C.I. 2-5	1.43	0.51	7.00	7.87	1.10	6.31
C.I. 2-7	0.59	0.51	5.00	8.53	1.10	2.82
C.I. 2-8	1.13	0.51	10.88	6.84	1.10	4.34
C.I. 2-9	0.25	0.51	5.00	8.53	1.10	1.20
C.I. 2-11	0.17	0.51	5.00	8.53	1.10	0.81
C.I. 2-12	0.20	0.51	5.00	8.53	1.10	0.96
F.I. 3-2	1.24	0.51	5.00	8.53	1.10	5.93
F.I. 3-3	0.50	0.51	5.00	8.53	1.10	2.39
C.I. 4-1	0.77	0.51	5.00	8.53	1.10	3.68
C.I. 4-2	0.21	0.51	5.00	8.53	1.10	1.00
C.I. 4-4(L)	0.14	0.51	5.00	8.53	1.10	0.65
C.I. 4-4(R)	0.82	0.51	5.00	8.53	1.10	3.94
C.I. 4-4(B)	0.31	0.51	7.00	7.87	1.10	1.37
C.I. 4-4	1.27	0.51	7.00	7.87	1.10	5.61
C.I. 4-5	0.88	0.51	5.00	8.53	1.10	4.21
C.I. 4-6	0.83	0.51	5.00	8.53	1.10	3.97
C.I. 4-7	0.64	0.51	5.00	8.53	1.10	3.06
C.I. 5-1	0.93	0.51	11.83	6.63	1.10	3.46
C.I. 6-1(L)	0.29	0.51	5.00	8.53	1.10	1.38
C.I. 6-1(R)	0.00	0.51	5.00	8.53	1.10	0.00
C.I. 6-1(B)	0.12	0.51	5.00	8.53	1.10	0.59
C.I. 6-1	0.41	0.51	5.00	8.53	1.10	1.96
C.I. 6-2(L)	0.00	0.51	5.00	8.53	1.10	0.00
C.I. 6-2(R)	0.47	0.51	5.00	8.53	1.10	2.25
C.I. 6-2(B)	0.66	0.51	7.00	7.87	1.10	2.91
C.I. 6-2	1.13	0.51	7.00	7.87	1.10	4.99
C.I. 7-1(L)	1.59	0.51	13.45	6.29	1.10	5.61
C.I. 7-1(R)	0.21	0.51	5.00	8.53	1.10	1.00
C.I. 7-1(B)	0.56	0.51	5.00	8.53	1.10	2.68
C.I. 7-1	2.36	0.51	13.45	6.29	1.10	8.33
C.I. 8-1	0.24	0.51	5.00	8.53	1.10	1.15
F.I. 9-1	0.36	0.51	5.00	8.53	1.10	1.72
F.I. 10-1	0.38	0.51	5.00	8.53	1.10	1.82
C.I. 10-3(L)	0.11	0.51	5.00	8.53	1.10	0.53
C.I. 10-3(R)	0.30	0.51	5.00	8.53	1.10	1.44
C.I. 10-3(B)	0.17	0.51	5.00	8.53	1.10	0.81
C.I. 10-3	0.58	0.51	5.00	8.53	1.10	2.78
C.I. 10-4	0.20	0.51	5.00	8.53	1.10	0.96
C.I. 10-5	1.62	0.51	8.83	7.35	1.10	6.68
C.I. 11-1(L)	0.73	0.51	5.00	8.53	1.10	3.51
C.I. 11-1(R)	0.20	0.51	5.00	8.53	1.10	0.94
C.I. 11-1(B)	0.70	0.51	7.00	7.87	1.10	3.09
C.I. 11-1	1.63	0.51	7.00	7.87	1.10	7.19

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. 1-1	GRADE	4.21	0.02	4.23	1.00	3.74	3.74	3.74	0.49	88.37%	0.23	10.59	...
C.I. 2-4(L)	SAG	3.26	0.00	3.26	...	...	...	...	...	...	0.21	9.54	...
C.I. 2-4(R)	SAG	0.23	0.00	0.23	...	...	...	...	...	...	0.08	3.51	...
C.I. 2-4	SAG	3.97	0.00	3.97	0.80	23.28	18.63	3.97	0.00	100.00%	...	...	...
C.I. 2-5(L)	SAG	0.94	0.79	1.73	...	...	...	...	...	...	0.16	7.47	...
C.I. 2-5(R)	SAG	3.13	1.39	4.52	...	...	...	...	...	...	0.23	10.77	...
C.I. 2-5	SAG	6.31	2.18	8.47	0.80	23.28	18.63	8.47	0.00	100.00%	...	...	...
C.I. 2-7	GRADE	2.82	0.30	3.13	1.00	2.92	2.92	2.92	0.20	93.50%	0.20	9.40	...
C.I. 2-8	GRADE	4.34	0.36	4.69	1.00	4.13	4.13	4.13	0.57	87.93%	0.24	10.95	...
C.I. 2-9	GRADE	1.20	0.00	1.20	1.00	1.18	1.18	1.18	0.02	98.32%	0.13	5.80	...
C.I. 2-11	GRADE	0.81	0.00	0.81	1.00	0.81	0.81	0.81	0.00	100.00%	0.12	5.44	...
C.I. 2-12	GRADE	0.96	0.00	0.96	1.00	0.96	0.96	0.96	0.00	99.88%	0.13	5.78	...
F.I. 3-2	SAG	5.93	...	5.93	0.80	18.67	14.93	5.93	0.00	100.00%	...	...	0.23
F.I. 3-3	SAG	2.39	...	2.39	0.80	18.67	14.93	2.39	0.00	100.00%	...	...	0.13
C.I. 4-1	GRADE	3.68	0.00	3.68	1.00	3.33	3.33	3.33	0.36	90.27%	0.22	10.00	...
C.I. 4-2	GRADE	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	99.96%	0.13	6.14	...
C.I. 4-4(L)	SAG	0.65	0.00	0.65	...	...	...	...	...	...	0.10	5.09	...
C.I. 4-4(R)	SAG	3.94	0.00	3.94	...	...	...	...	...	...	0.22	11.03	...
C.I. 4-4	SAG	5.61	0.00	5.61	0.80	19.40	15.52	5.61	0.00	100.00%	...	...	...
C.I. 4-5	GRADE	4.21	1.08	5.29	1.00	3.83	3.83	3.83	1.46	72.40%	0.25	12.45	...
C.I. 4-6	GRADE	3.97	0.52	4.49	1.00	3.41	3.41	3.41	1.08	75.96%	0.23	11.71	...
C.I. 4-7	GRADE	3.06	0.00	3.06	1.00	2.54	2.54	2.54	0.52	82.98%	0.20	10.14	...
C.I. 5-1	GRADE	3.46	0.00	3.46	1.00	3.15	3.15	3.15	0.30	91.19%	0.21	9.76	...
C.I. 6-1(L)	SAG	1.38	1.05	2.42	...	...	...	...	...	...	0.16	8.05	...
C.I. 6-1(R)	SAG	0.00	0.00	0.00	...	...	...	...	...	...	0.00	0.00	...
C.I. 6-1	SAG	1.96	1.05	3.01	0.80	19.40	15.52	3.01	0.00	100.00%	...	...	...
C.I. 6-2(L)	SAG	0.00	0.00	0.00	...	...	...	...	...	...	0.00	0.00	...
C.I. 6-2(R)	SAG	2.25	2.59	4.84	...	...	...	...	...	...	0.21	10.43	...
C.I. 6-2	SAG	4.99	2.59	7.57	0.80	19.40	15.52	7.57	0.00	100.00%	...	...	...
C.I. 7-1(L)	SAG	5.61	1.46	7.07	...	...	...	...	...	...	0.27	13.32	...
C.I. 7-1(R)	SAG	1.00	0.00	1.00	...	...	...	...	...	...	0.12	6.17	...
C.I. 7-1	SAG	8.33	1.46	9.79	0.80	19.40	15.52	9.79	0.00	100.00%	...	...	...
C.I. 8-1	GRADE	1.15	0.00	1.15	1.00	1.13	1.13	1.13	0.02	98.55%	0.12	5.71	...
F.I. 9-1	SAG	1.72	...	1.72	0.80	18.67	14.93	1.72	0.00	100.00%	...	...	0.10
F.I. 10-1	SAG	1.82	...	1.82	0.80	18.67	14.93	1.82	0.00	100.00%	...	...	0.11
C.I. 10-3(L)	SAG	0.53	0.00	0.53	...	...	...	...	...	...	0.09	4.67	...
C.I. 10-3(R)	SAG	1.44	0.06	1.50	...	...	...	...	...	...	0.15	7.28	...
C.I. 10-3	SAG	2.78	0.06	2.84	0.80	19.40	15.52	2.84	0.00	100.00%	...	...	...
C.I. 10-4	GRADE	0.96	0.00	0.96	1.00	0.89	0.89	0.89	0.06	93.44%	0.12	6.16	...
C.I. 10-5	GRADE	6.68	0.00	6.68	1.00	4.03	4.03	4.03	2.64	60.42%	0.26	12.76	...
C.I. 11-1(L)	SAG	3.51	2.64	6.15	...	...	...	...	...	...	0.25	12.37	...
C.I. 11-1(R)	SAG	0.94	0.00	0.94	...	...	...	...	...	...	0.12	5.80	...
C.I. 11-1	SAG	7.19	2.64	9.84	0.80	19.40	15.52	9.84	0.00	100.00%

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. 1-1	0.88	0.51	5.00	10.32	1.25	5.79
C.I. 2-4(L)	0.68	0.51	5.00	10.32	1.25	4.49
C.I. 2-4(R)	0.05	0.51	5.00	10.32	1.25	0.32
C.I. 2-4(B)	0.17	0.51	7.00	9.55	1.25	1.03
C.I. 2-4	0.90	0.51	7.00	9.55	1.25	5.48
C.I. 2-5(L)	0.20	0.51	5.00	10.32	1.25	1.29
C.I. 2-5(R)	0.65	0.51	5.00	10.32	1.25	4.31
C.I. 2-5(B)	0.58	0.51	7.00	9.55	1.25	3.52
C.I. 2-5	1.43	0.51	7.00	9.55	1.25	8.71
C.I. 2-7	0.59	0.51	5.00	10.32	1.25	3.88
C.I. 2-8	1.13	0.51	10.88	8.34	1.25	6.01
C.I. 2-9	0.25	0.51	5.00	10.32	1.25	1.65
C.I. 2-11	0.17	0.51	5.00	10.32	1.25	1.12
C.I. 2-12	0.20	0.51	5.00	10.32	1.25	1.32
F.I. 3-2	1.24	0.51	5.00	10.32	1.25	8.16
F.I. 3-3	0.50	0.51	5.00	10.32	1.25	3.29
C.I. 4-1	0.77	0.51	5.00	10.32	1.25	5.07
C.I. 4-2	0.21	0.51	5.00	10.32	1.25	1.38
C.I. 4-4(L)	0.14	0.51	5.00	10.32	1.25	0.89
C.I. 4-4(R)	0.82	0.51	5.00	10.32	1.25	5.42
C.I. 4-4(B)	0.31	0.51	7.00	9.55	1.25	1.89
C.I. 4-4	1.27	0.51	7.00	9.55	1.25	7.73
C.I. 4-5	0.88	0.51	5.00	10.32	1.25	5.79
C.I. 4-6	0.83	0.51	5.00	10.32	1.25	5.46
C.I. 4-7	0.64	0.51	5.00	10.32	1.25	4.21
C.I. 5-1	0.93	0.51	11.83	8.09	1.25	4.80
C.I. 6-1(L)	0.29	0.51	5.00	10.32	1.25	1.89
C.I. 6-1(R)	0.00	0.51	5.00	10.32	1.25	0.00
C.I. 6-1(B)	0.12	0.51	5.00	10.32	1.25	0.81
C.I. 6-1	0.41	0.51	5.00	10.32	1.25	2.70
C.I. 6-2(L)	0.00	0.51	5.00	10.32	1.25	0.00
C.I. 6-2(R)	0.47	0.51	5.00	10.32	1.25	3.10
C.I. 6-2(B)	0.66	0.51	7.00	9.55	1.25	4.01
C.I. 6-2	1.13	0.51	7.00	9.55	1.25	6.88
C.I. 7-1(L)	1.59	0.51	13.45	7.70	1.25	7.80
C.I. 7-1(R)	0.21	0.51	5.00	10.32	1.25	1.38
C.I. 7-1(B)	0.56	0.51	5.00	10.32	1.25	3.69
C.I. 7-1	2.36	0.51	13.45	7.70	1.25	11.58
C.I. 8-1	0.24	0.51	5.00	10.32	1.25	1.58
F.I. 9-1	0.36	0.51	5.00	10.32	1.25	2.37
F.I. 10-1	0.38	0.51	5.00	10.32	1.25	2.50
C.I. 10-3(L)	0.11	0.51	5.00	10.32	1.25	0.72
C.I. 10-3(R)	0.30	0.51	5.00	10.32	1.25	1.97
C.I. 10-3(B)	0.17	0.51	5.00	10.32	1.25	1.12
C.I. 10-3	0.58	0.51	5.00	10.32	1.25	3.82
C.I. 10-4	0.20	0.51	5.00	10.32	1.25	1.32
C.I. 10-5	1.62	0.51	8.83	8.94	1.25	9.23
C.I. 11-1(L)	0.73	0.51	5.00	10.32	1.25	4.83
C.I. 11-1(R)	0.20	0.51	5.00	10.32	1.25	1.29
C.I. 11-1(B)	0.70	0.51	7.00	9.55	1.25	4.27
C.I. 11-1	1.63	0.51	7.00	9.55	1.25	9.92

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. 1-1	GRADE	5.79	0.06	5.85	1.00	4.81	4.81	4.81	1.04	82.22%	0.26	11.96	...
C.I. 2-4(L)	SAG	4.49	0.00	4.49	...	...	...	...	...	...	0.23	10.75	...
C.I. 2-4(R)	SAG	0.32	0.00	0.32	...	...	...	...	...	...	0.09	3.96	...
C.I. 2-4	SAG	5.48	0.00	5.48	0.80	23.28	18.63	5.48	0.00	100.00%	...	...	...
C.I. 2-5(L)	SAG	1.29	1.89	3.18	...	...	...	...	...	...	0.20	9.38	...
C.I. 2-5(R)	SAG	4.31	2.76	7.07	...	...	...	...	...	...	0.28	12.74	...
C.I. 2-5	SAG	8.71	4.64	13.28	0.80	23.28	18.63	13.28	0.00	100.00%	...	...	...
C.I. 2-7	GRADE	3.88	0.68	4.56	1.00	4.03	4.03	4.03	0.53	88.39%	0.23	10.83	...
C.I. 2-8	GRADE	6.01	0.77	6.78	1.00	5.49	5.49	5.49	1.29	80.98%	0.27	12.57	...
C.I. 2-9	GRADE	1.65	0.00	1.65	1.00	1.58	1.58	1.58	0.07	95.98%	0.14	6.53	...
C.I. 2-11	GRADE	1.12	0.00	1.12	1.00	1.11	1.11	1.11	0.01	99.54%	0.13	6.13	...
C.I. 2-12	GRADE	1.32	0.00	1.32	1.00	1.30	1.30	1.30	0.01	98.93%	0.14	6.52	...
F.I. 3-2	SAG	8.16	...	8.16	0.80	18.67	14.93	8.16	0.00	100.00%	...	...	0.29
F.I. 3-3	SAG	3.29	...	3.29	0.80	18.67	14.93	3.29	0.00	100.00%	...	...	0.16
C.I. 4-1	GRADE	5.07	0.01	5.08	1.00	4.30	4.30	4.30	0.77	84.75%	0.24	11.27	...
C.I. 4-2	GRADE	1.38	0.00	1.38	1.00	1.37	1.37	1.37	0.01	99.20%	0.15	6.92	...
C.I. 4-4(L)	SAG	0.89	0.00	0.89	...	...	...	...	...	...	0.11	5.73	...
C.I. 4-4(R)	SAG	5.42	0.00	5.42	...	...	...	...	...	...	0.25	12.43	...
C.I. 4-4	SAG	7.73	0.00	7.73	0.80	19.40	15.52	7.73	0.00	100.00%	...	...	...
C.I. 4-5	GRADE	5.79	2.07	7.86	1.00	4.91	4.91	4.91	2.95	62.43%	0.29	14.45	...
C.I. 4-6	GRADE	5.46	0.96	6.42	1.00	4.35	4.35	4.35	2.07	67.76%	0.27	13.39	...
C.I. 4-7	GRADE	4.21	0.00	4.21	1.00	3.25	3.25	3.25	0.96	77.27%	0.23	11.43	...
C.I. 5-1	GRADE	4.80	0.00	4.80	1.00	4.12	4.12	4.12	0.68	85.83%	0.24	11.04	...
C.I. 6-1(L)	SAG	1.89	1.91	3.80	...	...	...	...	...	...	0.19	9.53	...
C.I. 6-1(R)	SAG	0.00	0.00	0.00	...	...	...	...	...	...	0.00	0.00	...
C.I. 6-1	SAG	2.70	1.91	4.61	0.80	19.40	15.52	4.61	0.00	100.00%	...	...	...
C.I. 6-2(L)	SAG	0.00	0.00	0.00	...	...	...	...	...	...	0.00	0.00	...
C.I. 6-2(R)	SAG	3.10	5.45	8.54	...	...	...	...	...	...	0.26	12.91	...
C.I. 6-2	SAG	6.88	5.45	12.33	0.80	19.40	15.52	12.33	0.00	100.00%	...	...	...
C.I. 7-1(L)	SAG	7.80	2.95	10.76	...	...	...	...	...	...	0.31	15.58	...
C.I. 7-1(R)	SAG	1.38	0.00	1.38	...	...	...	...	...	...	0.14	6.95	...
C.I. 7-1	SAG	11.58	2.95	14.54	0.80	19.40	15.52	14.54	0.00	100.00%	...	...	...
C.I. 8-1	GRADE	1.58	0.00	1.58	1.00	1.52	1.52	1.52	0.06	96.34%	0.14	6.43	...
F.I. 9-1	SAG	2.37	...	2.37	0.80	18.67	14.93	2.37	0.00	100.00%	...	...	0.13
F.I. 10-1	SAG	2.50	...	2.50	0.80	18.67	14.93	2.50	0.00	100.00%	...	...	0.13
C.I. 10-3(L)	SAG	0.72	0.00	0.72	...	...	...	...	...	...	0.11	5.26	...
C.I. 10-3(R)	SAG	1.97	0.12	2.10	...	...	...	...	...	...	0.17	8.26	...
C.I. 10-3	SAG	3.82	0.12	3.94	0.80	19.40	15.52	3.94	0.00	100.00%	...	...	...
C.I. 10-4	GRADE	1.32	0.00	1.32	1.00	1.19	1.19	1.19	0.12	90.72%	0.14	6.94	...
C.I. 10-5	GRADE	9.23	0.00	9.23	1.00	4.70	4.70	4.70	4.53	50.95%	0.29	14.41	...
C.I. 11-1(L)	SAG	4.83	4.53	9.36	...	...	...	...	...	...	0.29	14.48	...
C.I. 11-1(R)	SAG	1.29	0.01	1.30	...	...	...	...	...	...	0.13	6.56	...
C.I. 11-1	SAG	9.92	4.54	14.47	0.80	19.40	15.52	14.47	0.00	100.00%	...	...	...

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

100 Year Return Frequency

Upstream Structure	Downstream Structure	Length	Upstream Invert	Downstream Invert	Slope	Diameter	Manning's n	Total Flow	Velocity	Capacity	Flow Depth	Upstream Struct. HGL	Upstream Top Elev.
		(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(ft/s)	(cfs)	(ft)	(ft)	(ft)
C.I. 1-1	EX C.I. 10-1	231.96	1015.54	1010.90	2.00	15	0.012	5.85	4.77	9.89	1.25	1031.28	1021.44
M.H. 2-2	E.S 2-1	159.31	1007.00	1006.00	0.63	54	0.012	199.14	12.52	168.80	4.50	1011.89	1015.07
J.B. 2-3	M.H. 2-2	143.55	1008.46	1007.60	0.60	48	0.012	199.14	15.85	120.45	4.00	1015.22	1024.22
C.I. 2-4	J.B. 2-3	95.00	1009.77	1009.06	0.75	48	0.012	199.14	15.85	134.53	4.00	1018.34	1023.24
C.I. 2-5	C.I. 2-4	45.00	1010.71	1010.37	0.76	42	0.012	193.66	20.13	94.74	3.50	1021.33	1023.24
M.H. 2-6	C.I. 2-5	77.00	1011.93	1011.31	0.81	42	0.012	150.97	15.69	97.80	3.50	1025.32	1023.91
C.I. 2-7	M.H. 2-6	42.50	1012.87	1012.53	0.80	42	0.012	150.97	15.69	97.48	3.50	1027.67	1024.79
C.I. 2-8	C.I. 2-7	45.00	1013.83	1013.47	0.80	42	0.012	146.41	15.22	97.49	3.50	1030.02	1024.79
C.I. 2-9	C.I. 2-8	48.45	1017.46	1015.33	4.40	24	0.012	39.50	12.58	51.38	2.00	1032.72	1025.57
M.H. 2-10	C.I. 2-9	102.00	1020.64	1018.06	2.53	24	0.012	36.27	11.55	38.97	2.00	1035.94	1029.31
C.I. 2-11	M.H. 2-10	205.00	1028.46	1021.34	3.47	15	0.012	2.44	1.99	13.04	1.25	1037.02	1035.93
C.I. 2-12	C.I. 2-11	42.00	1030.00	1029.16	2.00	15	0.012	1.32	1.08	9.89	1.25	1037.06	1035.93
M.H. 3-1	C.I. 2-5	37.00	1012.95	1012.21	2.00	24	0.012	28.85	9.18	34.65	2.00	1024.36	1023.38
F.I. 3-2	M.H. 3-1	139.50	1020.17	1015.00	3.71	18	0.012	21.19	11.99	21.90	1.50	1029.73	1027.17
F.I. 3-3	F.I. 3-2	177.91	1024.57	1020.57	2.25	15	0.012	3.29	2.68	10.49	1.25	1031.01	1030.73
C.I. 4-1	C.I. 2-8	210.50	1016.43	1014.43	0.95	36	0.012	100.13	14.17	70.43	3.00	1035.50	1027.31
C.I. 4-2	C.I. 4-1	176.00	1018.60	1016.93	0.95	36	0.012	90.25	12.77	70.38	3.00	1039.50	1029.42
M.H. 4-3	C.I. 4-2	129.23	1020.13	1018.90	0.95	36	0.012	88.87	12.57	70.49	3.00	1042.47	1030.84
C.I. 4-4	M.H. 4-3	144.23	1022.17	1020.73	1.00	30	0.012	40.76	8.31	44.39	2.50	1044.67	1028.61
C.I. 4-5	C.I. 4-4	176.25	1024.53	1022.77	1.00	24	0.012	18.49	5.89	24.49	2.00	1046.10	1030.30
C.I. 4-6	C.I. 4-5	142.41	1026.55	1025.13	1.00	18	0.012	10.63	6.02	11.36	1.50	1047.56	1031.67
C.I. 4-7	C.I. 4-6	142.00	1028.24	1026.82	1.00	15	0.012	4.21	3.43	7.00	1.25	1048.24	1033.10
C.I. 5-1	C.I. 4-1	43.00	1021.13	1018.68	5.70	15	0.012	4.80	3.91	16.70	1.25	1036.95	1027.29
C.I. 6-1	M.H. 4-3	95.89	1023.13	1020.73	2.50	30	0.012	48.11	9.80	70.29	2.50	1044.58	1030.59
C.I. 6-2	C.I. 6-1	35.00	1024.26	1023.73	1.51	24	0.012	43.50	13.85	30.15	2.00	1046.28	1030.59
C.I. 7-1	C.I. 4-4	36.73	1023.14	1022.77	1.01	24	0.012	14.54	4.63	24.59	2.00	1045.23	1028.58
C.I. 8-1	C.I. 2-9	42.50	1019.44	1018.06	3.25	15	0.012	1.58	1.29	12.61	1.25	1033.72	1025.56
F.I. 9-1	M.H. 2-10	94.00	1023.22	1021.34	2.00	15	0.012	2.37	1.93	9.89	1.25	1036.87	1029.29
F.I. 10-1	M.H. 2-10	133.00	1022.67	1021.34	1.00	24	0.012	31.46	10.02	24.50	2.00	1038.96	1029.17
M.H. 10-2	F.I. 10-1	136.50	1024.74	1023.37	1.00	24	0.012	28.96	9.22	24.55	2.00	1041.49	1032.84
C.I. 10-3	M.H. 10-2	74.00	1026.18	1025.44	1.00	24	0.012	28.96	9.22	24.50	2.00	1043.06	1031.91
C.I. 10-4	C.I. 10-3	296.00	1029.54	1026.58	1.00	18	0.012	10.55	5.97	11.38	1.50	1046.13	1035.75
C.I. 10-5	C.I. 10-4	34.00	1030.58	1030.24	1.00	15	0.012	9.23	7.52	7.00	1.25	1046.94	1035.75
C.I. 11-1	C.I. 10-3	34.00	1027.12	1026.78	1.00	15	0.012	14.47	11.79	7.00	1.25	1045.04	1031.91

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

olsson
OLSSON - CIVIL ENGINEERING
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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
8/15/19
PROFESSIONAL ENGINEER

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	STORM SEWER CALCULATIONS REVISED BASED ON NEW DRAINAGE AREAS TO C.I. 2-8 AND F.I. 9-1	

REVISIONS

DRAINAGE TABLES
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

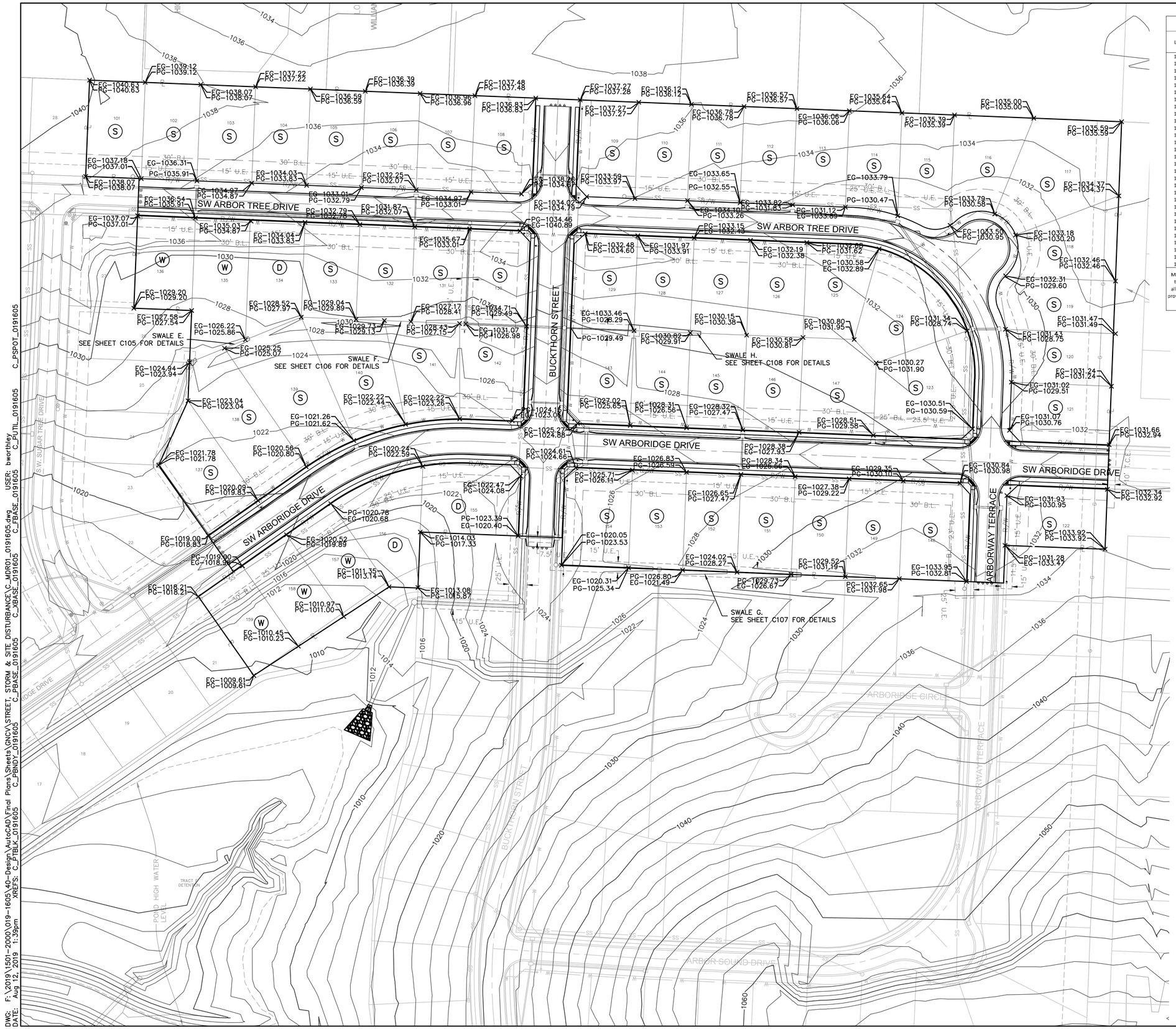
LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C140

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_TAB01_0191605.dwg
DATE: Aug 12, 2019 1:39pm USER: bworthley
XREFS: C_PTBLK_0191605



Hawthorn Ridge 2nd Plat Minimum Building Opening Elevation				
Lot	Rear Left MBOE	Rear Right MBOE	Front Left MBOE	Front Right MBOE
101	1040.63	1039.68	1038.51	1037.56
102	1039.68	1038.63	1037.56	1036.51
103	1038.63	1037.59	1036.51	1035.47
104	1037.59	1036.55	1035.47	1034.43
105	1036.55	1035.51	1034.43	1033.39
106	1035.51	1034.79	1033.39	1032.67
107	1034.79	1035.73	1032.67	1033.61
108	1035.73	1037.14	1033.61	1035.02
109	1037.30	1036.69	1035.18	1034.57
110	1036.69	1035.98	1034.57	1033.86
111	1035.98	1035.27	1033.86	1033.15
112	1035.27	1034.55	1033.15	1032.43
113	1034.55	1033.84	1032.43	1031.72
114	1033.84	1033.16	1031.72	1031.04
115	1033.16	1033.54	1031.04	1031.42
116	1033.54	1033.30	1031.42	1031.18
117	1033.30	1032.92	1031.18	1030.80
118	1032.92	1032.17	1030.80	1030.05
119	1032.17	1031.46	1030.05	1029.34
120	1031.46	1032.23	1029.34	1030.11
121	1032.23	1033.24	1030.11	1031.12
122	1033.60	1034.12	1031.36	1031.88
123	1033.24	1031.46	1031.12	1029.34
124	1031.46	1033.30	1029.34	1031.18
125	1033.30	1034.34	1031.18	1032.22
126	1032.06	1031.78	-	-
127	1031.78	1031.40	-	-
128	1031.40	1030.27	-	-
129	1030.27	1031.95	-	-
130	1031.95	1030.33	-	-

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.

Hawthorn Ridge 2nd Plat Minimum Building Opening Elevation				
Lot	Rear Left MBOE	Rear Right MBOE	Front Left MBOE	Front Right MBOE
131	1029.38	1030.81	-	-
132	1030.81	1032.29	-	-
133	1032.29	1030.37	-	-
134	1030.37	1028.26	-	-
135	1028.26	1026.34	-	-
136	1028.97	1030.15	-	-
137	1021.53	1022.65	1019.31	1020.43
138	1022.65	1023.62	1020.43	1021.40
139	1023.62	1024.44	1021.40	1022.22
140	1024.44	1025.26	1022.22	1023.04
141	1025.26	1026.08	1023.04	1023.86
142	1026.08	1026.89	1023.86	1024.67
143	1027.66	1028.47	1025.44	1026.25
144	1028.35	1029.26	1026.25	1027.16
145	1029.26	1030.17	1027.16	1028.07
146	1030.17	1031.08	1028.07	1028.98
147	1031.08	1032.28	1028.98	1030.18
148	1033.03	1033.90	-	-
149	1035.05	1033.59	-	-
150	1033.59	1032.13	-	-
151	1032.13	1030.67	-	-
152	1030.67	1029.20	-	-
153	1029.20	1027.74	-	-
154	1027.74	1026.53	-	-
155	1018.54	1024.20	-	-
156	1016.29	1013.29	-	-
157	1013.29	1012.18	-	-
158	1012.18	1011.61	-	-
159	1011.61	1011.06	-	-

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.

NOTES:

MBOE – MINIMUM BUILDING OPENING ELEVATION

NOTES:

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

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

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

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

5. REFER TO SHEET C105–C108 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

- (D) DAYLIGHT
- (W) WALKOUT
- (S) STANDARD

N

0' 30' 60' 120'
SCALE IN FEET

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
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04/17/2020

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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8-25-19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	08-12-2019	MLO ABBREVIATION CHANGED TO MBOE. EXISTING GRADE ELEVATIONS ADDED TO LOT CORNERS	

REVISIONS

MASTER DRAINAGE PLAN
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

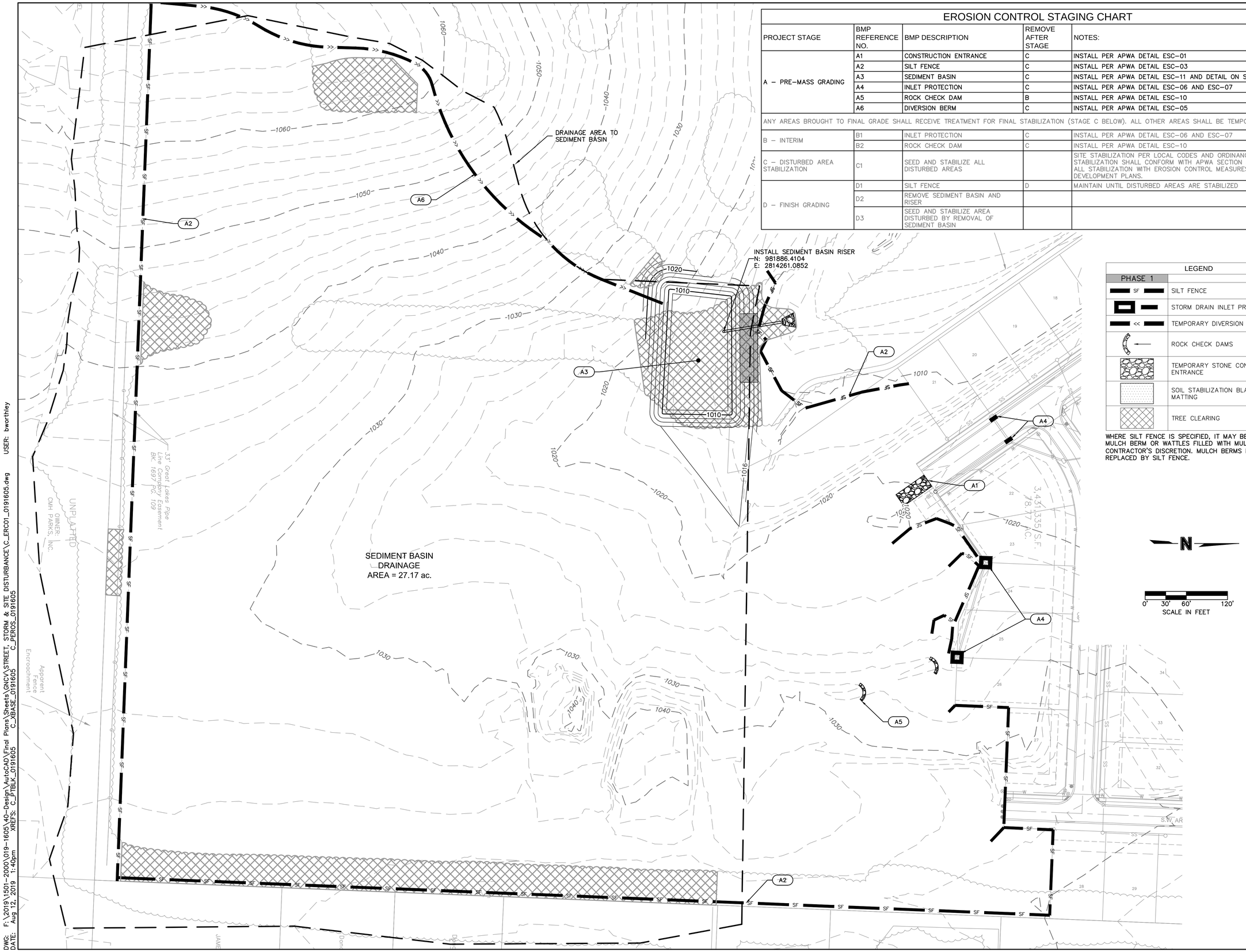
LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C141

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_MDR01_0191605.dwg
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USER: bworthley



EROSION CONTROL STAGING CHART

PROJECT STAGE	BMP REFERENCE NO.	BMP DESCRIPTION	REMOVE AFTER STAGE	NOTES:
A – PRE–MASS GRADING	A1	CONSTRUCTION ENTRANCE	C	INSTALL PER APWA DETAIL ESC–01
	A2	SILT FENCE	C	INSTALL PER APWA DETAIL ESC–03
	A3	SEDIMENT BASIN	C	INSTALL PER APWA DETAIL ESC–11 AND DETAIL ON SHEET C146
	A4	INLET PROTECTION	C	INSTALL PER APWA DETAIL ESC–06 AND ESC–07
	A5	ROCK CHECK DAM	B	INSTALL PER APWA DETAIL ESC–10
	A6	DIVERSION BERM	C	INSTALL PER APWA DETAIL ESC–05
ANY AREAS BROUGHT TO FINAL GRADE SHALL RECEIVE TREATMENT FOR FINAL STABILIZATION (STAGE C BELOW). ALL OTHER AREAS SHALL BE TEMPORARILY STABILIZED.				
B – INTERIM	B1	INLET PROTECTION	C	INSTALL PER APWA DETAIL ESC–06 AND ESC–07
	B2	ROCK CHECK DAM	C	INSTALL PER APWA DETAIL ESC–10
C – DISTURBED AREA STABILIZATION	C1	SEED AND STABILIZE ALL DISTURBED AREAS		SITE STABILIZATION PER LOCAL CODES AND ORDINANCES. AT A MINIMUM STABILIZATION SHALL CONFORM WITH APWA SECTION 2406. COORDINATE ALL STABILIZATION WITH EROSION CONTROL MEASURES INDICATED IN SITE DEVELOPMENT PLANS.
D – FINISH GRADING	D1	SILT FENCE	D	MAINTAIN UNTIL DISTURBED AREAS ARE STABILIZED
	D2	REMOVE SEDIMENT BASIN AND RISER		
	D3	SEED AND STABILIZE AREA DISTURBED BY REMOVAL OF SEDIMENT BASIN		

LEGEND	
PHASE 1	
SF	SILT FENCE
	STORM DRAIN INLET PROTECTION
<<	TEMPORARY DIVERSION BERM
	ROCK CHECK DAMS
	TEMPORARY STONE CONSTRUCTION ENTRANCE
	SOIL STABILIZATION BLANKETS & MATTING
	TREE CLEARING

WHERE SILT FENCE IS SPECIFIED, IT MAY BE REPLACED BY MULCH BERM OR WATTLES FILLED WITH MULCH AT THE CONTRACTOR'S DISCRETION. MULCH BERMS MAY NOT BE REPLACED BY SILT FENCE.

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8-25-19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

SITE DISTURBANCE PHASE 1
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C142

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_ERC01_0191605.dwg USER: bworthley
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RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

EROSION CONTROL STAGING CHART

PROJECT STAGE	BMP REFERENCE NO.	BMP DESCRIPTION	REMOVE AFTER STAGE	NOTES:
A – PRE–MASS GRADING	A1	CONSTRUCTION ENTRANCE	C	INSTALL PER APWA DETAIL ESC–01
	A2	SILT FENCE	C	INSTALL PER APWA DETAIL ESC–03
	A3	SEDIMENT BASIN	C	INSTALL PER APWA DETAIL ESC–11 AND DETAIL ON SHEET C146
	A4	INLET PROTECTION	C	INSTALL PER APWA DETAIL ESC–06 AND ESC–07
	A5	ROCK CHECK DAM	B	INSTALL PER APWA DETAIL ESC–10
	A6	DIVERSION BERM	C	INSTALL PER APWA DETAIL ESC–05
ANY AREAS BROUGHT TO FINAL GRADE SHALL RECEIVE TREATMENT FOR FINAL STABILIZATION (STAGE C BELOW). ALL OTHER AREAS SHALL BE TEMPORARILY STABILIZED.				
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	D3	SEED AND STABILIZE AREA DISTURBED BY REMOVAL OF SEDIMENT BASIN		

LEGEND		
PHASE 1	PHASE 2	
SF		SILT FENCE
		STORM DRAIN INLET PROTECTION
<<		TEMPORARY DIVERSION BERM
		ROCK CHECK DAMS
		TEMPORARY STONE CONSTRUCTION ENTRANCE
		SOIL STABILIZATION BLANKETS & MATTING

WHERE SILT FENCE IS SPECIFIED, IT MAY BE REPLACED BY MULCH BERM OR WATTLES FILLED WITH MULCH AT THE CONTRACTOR'S DISCRETION. MULCH BERMS MAY NOT BE REPLACED BY SILT FENCE.

N

0' 30' 60' 120'
SCALE IN FEET

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MELISSA G. DEGONIA
PE# 2011000892

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		REVISIONS	

SITE DISTURBANCE PHASE 2
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C143

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LEGEND

PHASE 1	PHASE 2	PHASE 3	
SF			SILT FENCE
			STORM DRAIN INLET PROTECTION
<<			TEMPORARY DIVERSION BERM
			ROCK CHECK DAMS
			TEMPORARY STONE CONSTRUCTION ENTRANCE
			SOIL STABILIZATION BLANKETS & MATTING
			TURF GRASS SEEDING

GENERAL NOTES:

CONTRACTOR TO PLACE AT LEAST 12" OF TOP SOIL CAPABLE OF SUPPORTING VEGETATION.

SEED & MULCH NOTES:
SEEDING SHALL BE DONE BEFORE THE PROPOSED SEEDBED BECOMES ERODED, CRUSTED OVER,OR DRIED OUT AND SHALL NOT BE DONE WHEN THE GROUND IS FROZEN, OR COVERED WITH SNOW. THE SEED SHALL COMPLY WITH THE REQUIREMENTS OF THE MISSOURI SEED LAW AND THE FEDERAL SEED ACT. ALSO, IT SHALL CONTAIN NO SEED OF ANY PLANT ON THE FEDERAL NOXIOUS WEED LIST. OTHER WEED SEED SHALL NOT EXCEED ONE PERCENT BY WEIGHT OF MIX.

SEED & FERTILIZER RATE:
MIX I – RYE GRASS / BLUE GRASS -----100 LBS. PER. ACRE
MIX II – TALL FESCUE / BLUE GRASS ----195 LBS. PER ACRE
FERTILIZER ----------800 TO 1200 LBS. PER ACRE
(25 LBS. PER 1000 SQ. FT.)

DURING THE DATES DECEMBER 15TH THROUGH MAY 31 ALL FERTILIZER, SEED, AND MULCH SHALL BE APPLIED TO FINISHED SLOPES OF DISTURBED AREAS. DURING THE MONTHS OF JUNE, JULY, OCTOBER, AND NOVEMBER 1ST THROUGH DECEMBER 15TH, FERTILIZER, SEED, AND MULCH SHALL BE APPLIED AT THE FOLLOWING RATES:
FERTILIZER – 75 % OF THE SPECIFIED QUANTITY
SEED – 50 % OF THE SPECIFIED QUANTITY
MULCH – 100 % OF THE SPECIFIED QUANTITY
MULCH SHALL BE VEGETATIVE TYPE, CEREAL STRAW FROM STALKS OF OATS, RYE, OR BARLEY, OR APPROVED EQUAL. THE STRAW SHALL BE FREE OF PROHIBITED WEED SEED AND RELATIVELY FREE OF ALL OTHER NOXIOUS AND UNDESIRABLE SEED. MULCH SHALL BE APPLIED AT THE RATE OF 2 TONS PER ACRE, (70 TO 90 LBS. PER 1000 SQ. FT.). MULCH SHALL BE EMBEDDED BY A MULCH ANCHORING TOOL OR DISK TYPE ROLLER HAVING FLAT SERRATED DISKS SPACED NOT MORE THAN 10 INCHES APART AND CLEANING SCRAPERS SHALL BE PROVIDED.

THE SITE DISTURBANCE PLANS INDICATES THE FINAL PLACEMENT OF EROSION CONTROL DEVICES. THE CONTRACTOR(S) MAY PROCEED WITH THE CONSTRUCTION PRIOR TO THE FINAL PLACEMENT OF THESE DEVICES BY PROVIDING ADDITIONAL DEVICES TO CONTROL EROSION ON THEIR ITEMS OF WORK. THESE DEVICES SHALL BE MAINTAINED UNTIL THE FINAL DEVICES ARE IN PLACE.

ALL DISTURBED AREAS SHALL BE PREPPED FOR SEEDING/SODDING PER KCMO/APWA 2406, APPLICATION OF SEED/SOD SHALL BE DONE IN ACCORDANCE WITH KCMO/APWA 2406.4. THE SITE DISTURBANCE PERMIT SHALL BE MAINTAINED IN AN "OPEN" STATUS UNTIL FINAL ACCEPTANCE PER KCMO/APWA 2407.

NATIVE SEED MIXES AND SLOPES OVER 5:1 TO BE INSTALLED WITH AN EROSION CONTROL BLANKET (NORTH AMERICAN GREEN SC10B OR APPROVED EQUAL) AND INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

N

0' 30' 60' 120'
SCALE IN FEET

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MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8-12-19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
		REVISIONS	

SITE DISTURBANCE PHASE 3
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.D
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C144

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RELEASE FOR CONSTRUCTION
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LEE'S SUMMIT, MISSOURI
04/17/2020

EROSION CONTROL STAGING CHART

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	D2	REMOVE SEDIMENT BASIN AND RISER		
	D3	SEED AND STABILIZE AREA DISTURBED BY REMOVAL OF SEDIMENT BASIN		

LEGEND			
PHASES 1&2	PHASE 3	PHASE 4	
SF			SILT FENCE
			STORM DRAIN INLET PROTECTION
<<			TEMPORARY DIVERSION BERM
			ROCK CHECK DAMS
			TEMPORARY STONE CONSTRUCTION ENTRANCE
			SOIL STABILIZATION BLANKETS & MATTING
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GENERAL NOTES:

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8/15/19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
		REVISIONS	

SITE DISTURBANCE PHASE 4
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

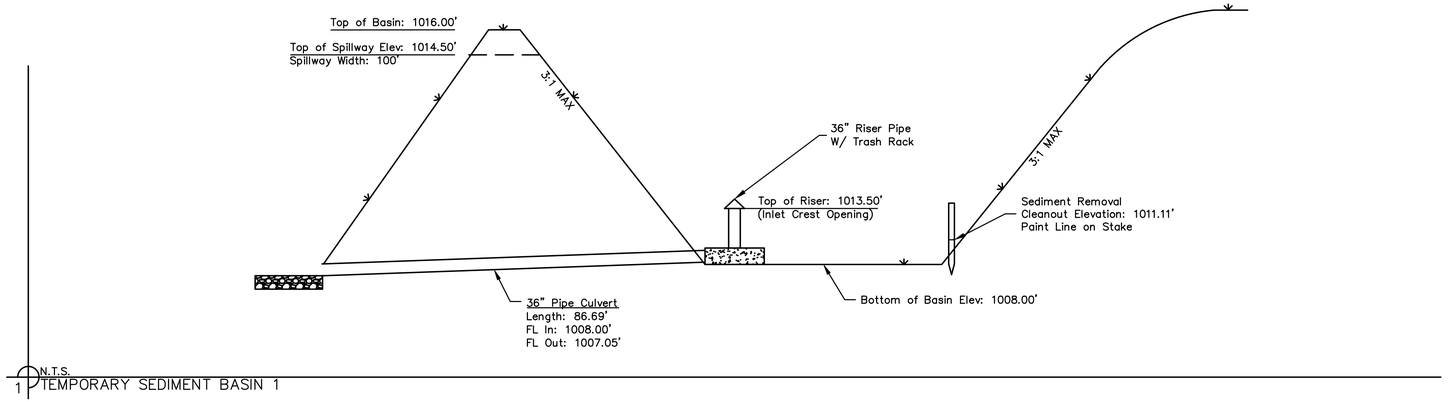
2019

drawn by: D.A.H.D
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
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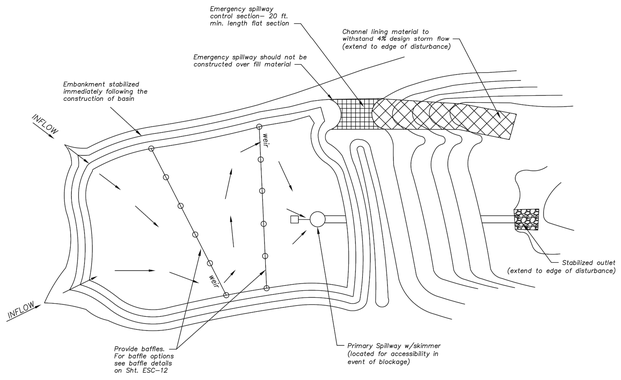
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LEE'S SUMMIT, MISSOURI
04/17/2020



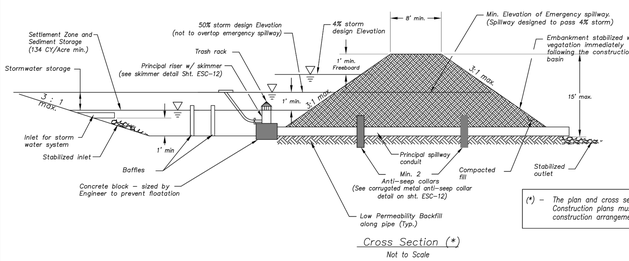
1 TEMPORARY SEDIMENT BASIN 1 N.T.S.

Sediment Basin #1 Design Summary

Design Item	Quantity	Units
Site Data		
Tributary Drainage Area To Pond	27.17	Acres
50% (2 YR) Design Flow	72.16	cfs
4% (25 YR) Design Flow	139.96	cfs
1% (100 YR) Design Flow	177.96	cfs
Pond Data		
Minimum Sediment Storage Volume	3641	cu yd
Provded Sediment Storage Volume	4216	cu yd
Bottom Elevation	1008.00	ft
Sediment Cleanout Elevation	1011.11	ft
Sediment Cleanout Volume	2711.63	cu yd
Top of Riser Elevation	1013.50	ft
Top of Dam Elevation	1016.00	ft
Basin Shape Data		
A = Area at Top of Riser	22954	sq ft
L = Length of Flow Path	180	ft
WE = Effective Width = A/L	128	ft
Principal Spillway Data		
Riser Pipe DIA	36	in
Barrel Pipe DIA	36	in
Barrel Invert In	1008.00	ft
Barrel Invert Out	1007.05	ft
Riser Perforations		
Number of Rows	4	
Perforation DIA.	1	in
Perforations per Row	36	
Lowest Row Elevation	1011.50	ft
Distance Between Rows	0.5	ft
Emergency Spillway Data		
Spillway Width	100.00	ft
Emergency Spillway Elevation	1014.50	ft
Water Surface Data		
2 year WSE	1014.40	ft
25 year WSE	1014.94	ft
100 year WSE	1015.06	ft
Discharge Data		
2 year	29.88	cfs
25 year	138.96	cfs
100 year	178.71	cfs



Plan View (*)
Not to Scale



Cross Section (*)
Not to Scale

(*) – The plan and cross section are schematic in nature. Construction plans must provide specific site construction arrangements.

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

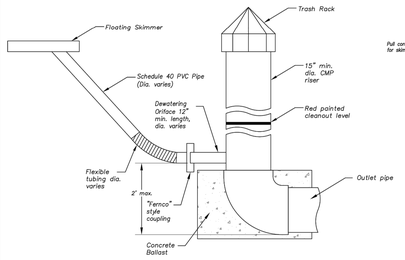
Sediment Basin Notes:

1. Interior baffles shall be provided to reduce short–circuiting of the basin. See Sht. ESC–12 for approved baffle options.
2. Emergency spillways to be located in a non–fill location when feasible and shall be lined with a non–erodible material such as Riprap or Turf Reinforcement Mat.
3. When directed, sediment basins shall be fenced using construction fence or other material for safety reasons and include warning signs, reading: "Danger – KEEP OUT".

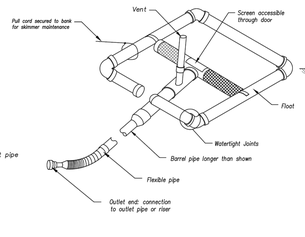
Maintenance:

1. Check temporary sediment basins after periods of significant runoff.
2. Remove sediment and restore the basin to its original dimensions when sediment accumulates to 20% of the storage capacity.
3. Immediately repair any erosion damage to the embankment and outlets.
4. Repair and/or replace baffles as necessary to maintain function and integrity of installation.
5. Keep outlet, skimmer and pool area free of all trash and other debris.

AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
SEDIMENT BASIN	STANDARD DRAWING NUMBER ESC–11 ADOPTED: 10/24/2016

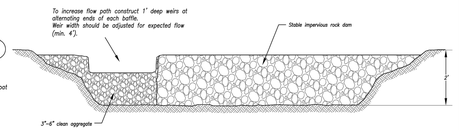


PRINCIPAL SPILLWAY DETAIL

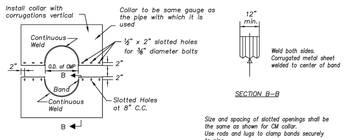


SKIMMER DETAIL (Typ.) *

* Designer to provide specific details per application (e.g. pipe sizes, screen sizes, perforation, etc.) as required.

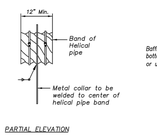


Option A – Rock with Weir

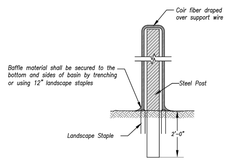


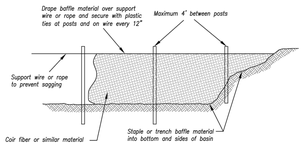
SECTION B–B

Size and spacing of slotted openings shall be the same as shown for CM collar. Use rods and lugs to clamp bands securely to pipe.



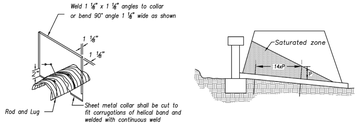
PARTIAL ELEVATION





Option B – Coir Fiber Material

BAFFLE DETAILS
Not to Scale



ISOMETRIC VIEW

ANTI–SEEPAGE COLLAR LOCATIONS

Anti–Seepage Collar Notes:

1. Connections between the anti–seepage collar and the barrel must be watertight.
2. P = projection distance. Sized as required to achieve at least a 10% increase in seepage length.
3. 14#P = Max. spacing between collars.
4. Collars shall generally be placed in the middle third of the embankment, and within the saturated zone.
5. All materials to be in accordance with construction material specifications.
6. When specified on the plans, coating of collars shall be in accordance with construction material specifications.
7. Unassembled collars shall be marked by painting or tagging to identify matching pairs.
8. The lap between the two half sections and between the pipe and connecting band shall be caulked with asphalt mastic at the time of installation.
9. Each collar shall be furnished with two (2) ½" diameter rods with standard tank lugs for connecting the collars to the pipe.
10. For bands and collars, modification of the details shown may be used providing equal water tightness is maintained and detailed drawings are Submitted and approved by the Engineer prior to delivery.
11. Two other types of anti–seep collars are:
    a. Corrugated metal, similar to above, except shop welded to a 4 ft. section of the pipe and connected to the pipe with connecting bands.
    b. Concrete, 6 inches thick, formed around the pipe with #3 rebar spaced 15".

CORRUGATED METAL ANTI–SEEPAGE COLLAR DETAIL
Not to Scale

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
SEDIMENT BASIN – DETAILS	STANDARD DRAWING NUMBER ESC–12 ADOPTED: 10/24/2016

OLSSON - CIVIL ENGINEERING
MO CERTIFICATE OF AUTHORITY #:001592
2301 MAIN STREET, SUITE 200
NORTH KANSAS CITY, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8/15/19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY

REVISIONS

SEDIMENT BASIN DETAIL
STREET & STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

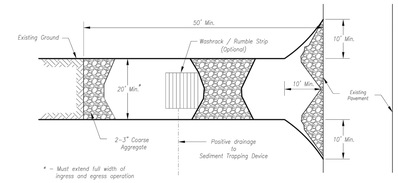
drawn by: D.A.H.O
checked by: M.G.D
designed by: R.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C146

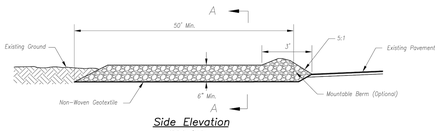
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USER: bworthley

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

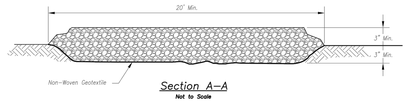
olsson
www.olsson.com
OLSSON - CIVIL ENGINEERING
MO CERTIFICATE OF AUTHORITY # 2003592
1301 BURLINGTON, SUITE 100
NORTH KANSAS CITY, MO 64116
TEL 816.361.1177



Plan View
Not to Scale



Side Elevation
Not to Scale



Section A–A
Not to Scale

Notes for Construction Entrance:

1. Avoid locating on steep slopes, at curves on public roads, or downhill of disturbed area.
2. Remove all vegetation and other unsuitable material from the foundation area, grade, and crown for positive drainage.
3. If slope towards the public road exceeds 2%, construct a 6– to 8–inch high ridge with 3H:1V side slopes across the foundation approximately 15 feet from the edge of the public road to divert runoff from it.
4. Install pipe under the entrance if needed to maintain drainage ditches along public roads.
5. Place stone to dimensions and grade as shown on plans. Leave surface sloped for drainage.
6. Divert all surface runoff and drainage from the entrance to a sediment control device.
7. If conditions warrant, place geotextile fabric on the graded foundation to improve stability.

Maintenance for Construction Entrance:

1. Reshape entrance as needed to maintain function and integrity of installation. Top dress with clean aggregate as needed.

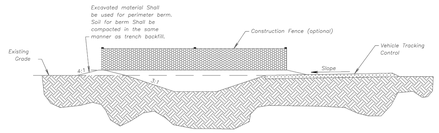
CONSTRUCTION ENTRANCE

Notes for Concrete Washout:

1. Concrete washout areas shall be installed prior to any concrete placement on site.
2. Concrete washout area shall include a flat subsurface pit sized relative to the amount of concrete to be placed on site. The slopes leading to the bottom of the concrete pit for the vehicle tracking pad shall be sloped towards the concrete washout area.
3. Vehicle tracking control is required at the access point to all concrete washout areas.
4. Signs shall be placed at the construction site entrance, washout area and elsewhere as necessary to clearly indicate the location(s) of the concrete washout area(s) to operators of concrete truck and pump rigs.
5. A one–piece impervious liner may be required along the bottom and sides of the subsurface pit in sandy or gravelly soils.

Maintenance for Concrete Washout:

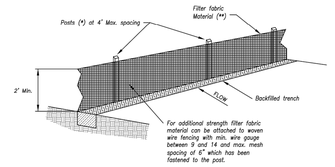
1. Concrete washout materials shall be removed once the materials have filled the washout to approximately 75% full.
2. Concrete washout areas shall be enlarged as necessary to maintain capacity for wasted concrete.
3. Concrete washout water, wasted pieces of concrete and all other debris in the subsurface pit shall be transported from the job site in a water–tight container and disposed of properly.
4. Concrete washout areas shall remain in place until all concrete for the project is placed.
5. When concrete washout areas are removed, excavations shall be filled with suitable compacted backfill and topsoil, any disturbed areas associated with the installation, maintenance, and/or removal of the concrete washout areas shall be stabilized.

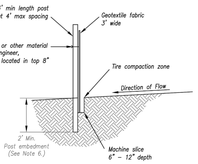


CONCRETE WASHOUT

Construction Entrance modified from 2015 Overland Park Standard Details for Erosion and Sediment Control; Concrete Washout modified from 2009 City of Great Bend Standard Drawings.

AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
CONSTRUCTION ENTRANCE AND CONCRETE WASHOUT	STANDARD DRAWING NUMBER ESC-01
	ADOPTED: 10/24/2016





(*) POSTS
- MIN. LENGTH 4'
- HARDWOOD 1 ¾" x 1 ¾"
- NO.2 SOUTHERN PINE 2 ⅜" x 2 ⅜"
- STEEL 1.33 LB/FT

(**) – Geotextile Fabric shall meet the requirements of AASHTO M288

SILT FENCE DETAILS
Not to Scale

Notes:

1. In order to contain water, the ends of the silt fence must be turned uphill (Figure A).
2. Long perimeter runs of silt fence must be limited to 100'. Runs should be broken up into several smaller segments to minimize water concentrations (Figure A).
3. Long slopes should be broken up with intermediate rows of silt fence to slow runoff velocities.
4. Attach fabric to upstream side of post.
5. Install posts a minimum of 2' into the ground.
6. Trenching will only be allowed for small or difficult installation, where slicing machine cannot be reasonably used.

Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches ½ the height of silt fence.
2. Repair as necessary to maintain function and structure.

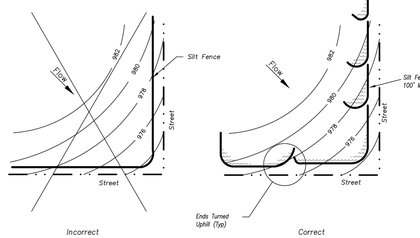
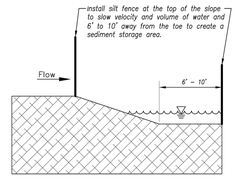
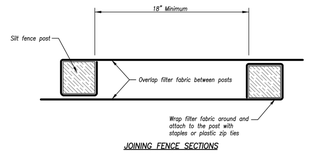


Figure A

SILT FENCE LAYOUT
Not to Scale

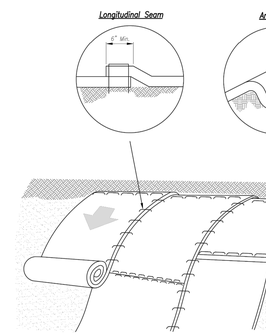




JOINING FENCE SECTIONS
Not to Scale

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
SILT FENCE	STANDARD DRAWING NUMBER ESC-03
	ADOPTED: 10/24/2016



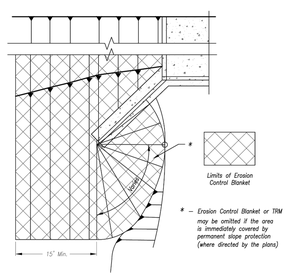
Installation on Slopes

General Notes:

1. APWA Specifications 2150 and Design Guidance 5100 shall be referenced to select type of blanket or mat to be used.
2. Typical anchors and pattern/spacing shall be installed according to the manufacturers instructions.
3. LONGITUDINAL SEAMS: The edges of the blanket or mat should overlap each other a minimum of 6 inches, with anchors catching the edges of both blankets.

Maintenance:

1. Torn or degraded product shall be repaired or replaced, unless such degradation is within the functional longevity specified by the manufacturer.
2. Edges or seams that are loose or frayed shall be secured.



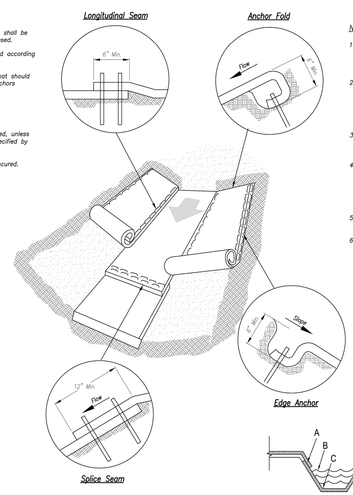
Partial Box Culvert Plan
Not to Scale

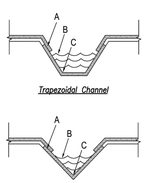
Notes for Installation on Slopes:

1. Erosion Control Blankets and TRMs shall be laid in the direction of the slope. In order for blanket to be in contact with the soil, lay blanket loosely, avoiding stretching.
2. ANCHOR SLOTS: The top of the blanket should be "slotted in" at the top of the slope and anchored in place with anchors 6 inches apart. The slots should be 6 inches wide x 6 inches deep with the blanket anchored in the bottom of the slot, then backfilled, tamped and seeded.
3. SPLICE SEAM: When splices are necessary, overlap end a minimum of 8 inches in direction of water flow. Stagger splice seams.
4. TERMINAL FOLD: The bottom edge of the blanket shall be turned under a minimum of 4 inches, then anchored in place with anchors 9 inches apart.

* – Erosion Control Blanket or TRM may be omitted if the area is immediately covered by permanent slope protection (where directed by the plans)

Installation Around Culvert Slope





Installation in Channels

Notes for Installation in Channels:

1. Erosion Control Blankets and TRMs shall be laid in the direction of the flow, with the first course at the centerline of channel, where applicable. In order for the mat to be in contact with the soil, lay the mat loosely, avoiding stretching.
2. ANCHOR FOLD: The top of the mat should be folded under, buried and secured with wood or other approved anchors placed 6 inches apart. The top edge of the mat should be buried in a slot 6 inches wide x 6 inches deep, anchored in the bottom of the slot, backfilled, and the mat folded over the top as shown in detail.
3. SPLICE SEAM: When splices are necessary, overlap end a minimum of 12 inches in direction of water flow. Stagger splice seams.
4. CHECK SLOTS: Establish check slots transverse to slope every 30 feet. The slots should be 6 inches wide x 6 inches deep. The mat shall be cut to a length 12 inches beyond the slot. The top of the downstream mat shall be slotted in, secured and buried similar to the edge anchor fold. The upstream mat shall then cover the slot and be anchored as shown.
5. EDGE ANCHORS: Lay outside edge of mat into trench at top of the slope and anchor.
6. TERMINUS: The bottom edge of the mat shall be anchored.

Critical Points:

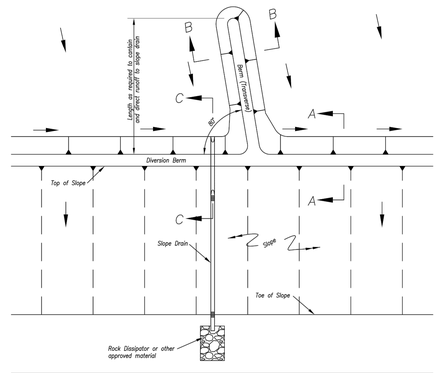
A – Overlaps and seams;

B – Projected water line;

C – Channel bottom / side slope vertices;

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
EROSION CONTROL BLANKETS AND TURF REINFORMENT MATS	STANDARD DRAWING NUMBER ESC-02
	ADOPTED: 10/24/2016



TYPICAL PLAN VIEW OF DIVERSION BERM AND SLOPE DRAIN

Notes for Diversion Berm:

1. Slope drains are optional, but may be required by the engineer if the berm is at the top of a steep slope.
2. Diversion berms must be installed as a first step in the land–disturbing activity and must be functional prior to upslope land disturbance.
3. The berm should be adequately compacted to prevent failure.
4. Temporary or permanent seeding and mulch shall be applied to the berm immediately following its construction.
5. Place the berm so to minimize damages by construction operations and traffic.
6. The berm must discharge to a temporary sediment trap or stabilized area.
7. All trees, brush, stumps, obstructions and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of diversion.
8. The diversion shall be excavated or shaped to line, grade and cross–section as required to meet the criteria specified herein, free of irregularities which will impede flow.
9. Fills shall be compacted as needed to prevent unequal settlement that would cause damage in the completed diversion. Fill shall be composed of soil which is free from excessive organic debris, rocks or other objectionable materials.

Maintenance:

1. Berm shall be reshaped, compacted, and stabilized as necessary to maintain its function.
2. Breaches in the berm shall be repaired immediately.

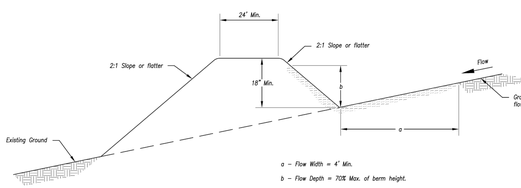
Notes for Slope Drain:

1. Slope Drain and Diversion Berm may be used on either project foreslopes or project backslopes.
2. Discharge of Slope Drains shall be into stabilized ditch or area, or into Sediment Basin.
3. Pipe shall be secured in place as approved by Engineer.

Maintenance:

1. Accumulation of any visible sediment at the inlet and outlet shall be removed promptly.
2. Outlet conditions shall be repaired if scour is observed. Leaking or damaged section of pipe shall be repaired immediately.
3. Barriers directing water to the inlet shall be monitored for continuity and effectiveness.

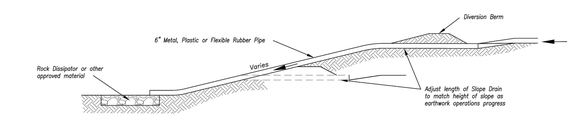
TYPICAL PROFILE OF DIVERSION BEAM
Not to Scale

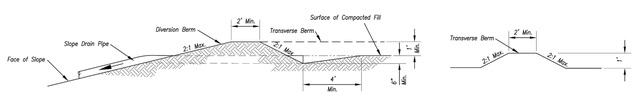


a – Flow Width = 4' Min.

b – Flow Depth = 70% Max. of berm height.

TYPICAL PROFILE OF DIVERSION BERM





TYPICAL PROFILE OF DIVERSION BERM WITH SLOPE DRAIN

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
DIVERSION BERMS AND SLOPE DRAINS	STANDARD DRAWING NUMBER ESC-05
	ADOPTED: 10/24/2016

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY

SITE DISTURBANCE DETAILS
STREET AND STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

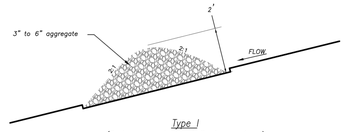
LEE'S SUMMIT, MISSOURI

2019

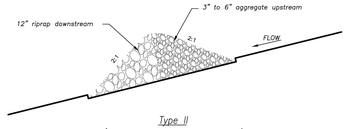
drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET C147

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USER: bworthley
XREFS: C_PTBLK_0191605



Type I
(2 Acres or less of Drainage Area)
Not to Scale



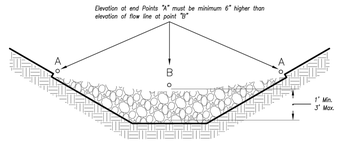
Type II
(2-10 Acres of Drainage Area)
Not to Scale

ROCK DITCH CHECK

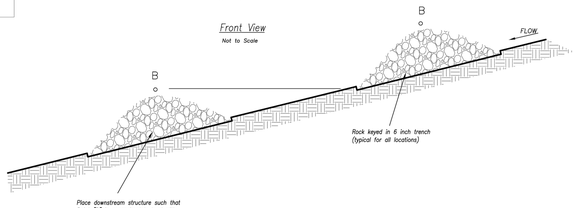
Temporary Rock Ditch Check Spacing

Ditch Centerline Slope (%)	Spacing Interval (Feet)
5.0	60
6.0	50
7.0	43
8.0	36
9.0	33
10.0	29

Note: Use this spacing only for Rock Ditch Checks.



Front View
Not to Scale



Spacing Between Check Dams (all types)
Not to Scale

Notes:

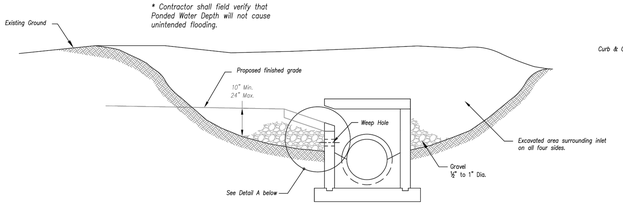
1. Rock check dams shall be used only for drainage areas less that 10 acres unless approved by the City Engineer.
2. Use rock checks only in situations where the ditch slope exceeds 6%.

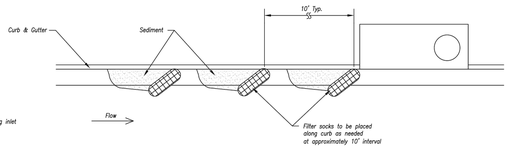
Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches ½ the height of the ditch check.
2. Replace and reshape as necessary to maintain function and integrity of installation.

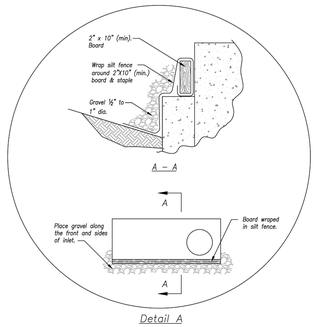
Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION
Kansas City Metro Chapter APWA
KANSAS CITY METRO CHAPTER
ROCK DITCH CHECKS
STANDARD DRAWING NUMBER ESC-10
ADOPTED: 10/24/2016





On Grade Curb Inlet Protection



Detail A

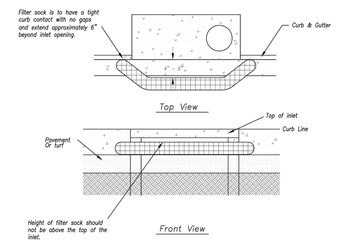
EARLY STAGE CURB INLET
(Open Box and Prior to Pouring Curb and Inlet Throat)

Notes:

1. Immediately following inlet construction and prior to construction of curb and inlet throat, protect inlet opening by installing 2" X 10" (min.) board wrapped in silt fence. Structures shall have excavated storage area on all four sides to allow settling of sediment (Early Stage Curb Inlet).
2. When inlet is completed and curb poured, filter socks or approved equal should be used (Late Stage Curb Inlet). Straw wattles are not approved for curb inlet use.
3. Contractor to field verify ponding water shall not create a traffic hazard.

Maintenance:

1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

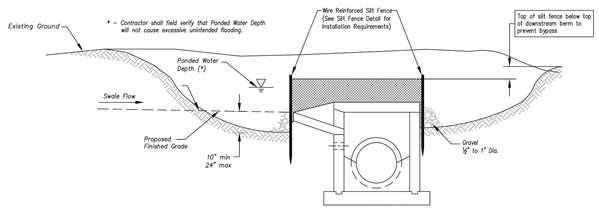


Sump Inlet Sediment Filter

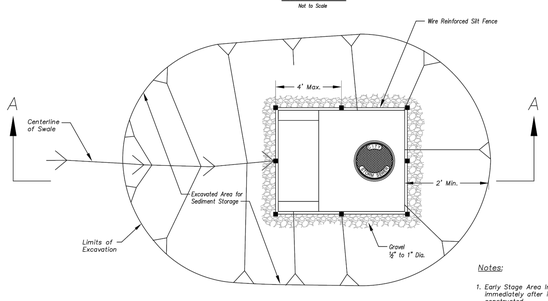
LATE STAGE CURB INLET
(After Pouring Curb and Inlet Throat)

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION
Kansas City Metro Chapter APWA
KANSAS CITY METRO CHAPTER
CURB INLET PROTECTION
STANDARD DRAWING NUMBER ESC-06
ADOPTED: 10/24/2016

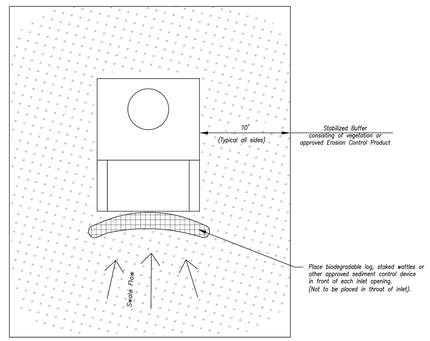


Section A–A
Not to Scale

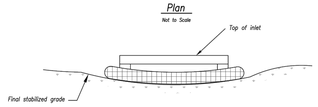


Plan
Not to Scale

EARLY STAGE AREA INLET
(All open boxes and inlets not at final grade)



Plan
Not to Scale



Front View

LATE STAGE AREA INLET
(Area inlets at final grade and existing inlets)

Notes:

1. Early Stage Area Inlet Sediment Barrier to be installed immediately after inlet or junction box is constructed.
2. Silt fence shall remain in place until excavated area is removed and Late Stage Area Inlet is being installed.
3. Backfill excavated area ONLY after final grading of the site. Stabilization of the site is to immediately follow.
4. Wire reinforced silt fence may be used in place of silt fence attached to wood frame.

Maintenance:

1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION
Kansas City Metro Chapter APWA
KANSAS CITY METRO CHAPTER
AREA INLET AND JUNCTION BOX PROTECTION
STANDARD DRAWING NUMBER ESC-07
ADOPTED: 10/24/2016

RELEASE FOR CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
LEE'S SUMMIT, MISSOURI
04/17/2020

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STATE OF MISSOURI
MELISSA G. DeGONIA
NUMBER PE-2011000892
PROFESSIONAL ENGINEER
8-12-19

MELISSA G. DEGONIA
PE# 2011000892

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
		REVISIONS	

SITE DISTURBANCE DETAILS
STREET AND STORM SEWER PLANS

HAWTHORN RIDGE
SECOND PLAT

LEE'S SUMMIT, MISSOURI

2019

drawn by: D.A.H.O
checked by: M.G.D
designed by: B.M.W
QA/QC by: N.D.H
project no.: 019-1605
date: 07-12-2019

SHEET
C148

DWG: F:\2019\1501-2000\019-1605\40-Design\AutoCAD\Final Plans\Sheets\GNCV\STREET, STORM & SITE DISTURBANCE\C_DTL01_0191605.dwg
DATE: Aug 12, 2019 1:43pm
USER: bworthley
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