

SECTION 23, TOWNSHIP 47 N, RANGE 32 W
IN LEE'S SUMMIT, JACKSON COUNTY, MO



☐	NOT FOR CONSTRUCTION
☐	REVIEWED FOR CONSTRUCTION



TRACT OF LAND IN THE SOUTHEAST QUARTER OF SECTION 23, TOWNSHIP 47 NORTH, RANGE 32 WEST OF THE 5TH PRINCIPAL MERIDIAN IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI BEING BOUNDED AND DESCRIBED BY OR UNDER THE DIRECT SUPERVISION OF JASON S. ROUBEUSH, P.L.S., 2002014092 AS FOLLOWS: COMMENCING AT THE SOUTHEAST CORNER OF SAID SOUTHEAST QUARTER; THENCE NORTH 87°58'53" WEST, ON THE SOUTH LINE OF SAID SOUTHEAST QUARTER, 2,651.35 FEET TO THE SOUTHEAST CORNER OF MONARCH VIEW 1ST PLAT, A SUBDIVISION OF LAND IN SAID LEE'S SUMMIT RECORDED AS INSTRUMENT NUMBER 98169637 IN BOOK 163 AT PAGE 62 IN JACKSON COUNTY RECORDER OF DEEDS OFFICE, ALSO BEING THE SOUTHWEST CORNER OF SAID SOUTHEAST QUARTER; THENCE NORTH 02°43'00" EAST, ON THE WEST LINE OF SAID SOUTHEAST QUARTER, ALSO BEING THE EAST LINE OF SAID MONARCH VIEW 1ST PLAT, 30.00 FEET TO THE NORTHWEST CORNER OF SW HOOK ROAD AS ESTABLISHED BY RIGHT-OF-WAY DEED RECORDED AS INSTRUMENT NUMBER 199910077639 IN SAID JACKSON COUNTY RECORDER OF DEEDS OFFICE, ALSO BEING THE POINT OF BEGINNING OF THE TRACT OF LAND TO BE HEREIN DESCRIBED; THENCE NORTH 02°43'00" EAST, ON SAID WEST AND EAST LINES, AND ALSO BEING EAST LINE OF MONARCH VIEW 2ND PLAT, A SUBDIVISION OF LAND IN SAID LEE'S SUMMIT, RECORDED AS INSTRUMENT NUMBER 200010047892 IN BOOK 167 AT PAGE 87 IN SAID JACKSON COUNTY RECORDER OF DEEDS OFFICE, 1,163.24 FEET; THENCE LEAVING SAID WEST AND EAST LINES, SOUTH 87°16'25" EAST, 25.54 FEET; THENCE SOUTH 73°15'30" EAST, 121.46 FEET; THENCE SOUTH 62°39'56" EAST, 102.90 FEET; THENCE SOUTH 52°04'22" EAST, 102.90 FEET; THENCE SOUTH 41°28'48" EAST, 102.90 FEET; THENCE SOUTH 33°05'07" EAST, 195.12 FEET; THENCE NORTH 90°00'00" EAST, 510.19 FEET TO A POINT ON THE WESTERLY LINE OF PROPOSED THE RETREAT AT HOOK FARMS; THENCE SOUTH 16°31'39" EAST, ALONG SAID WESTERLY LINE, 238.84 FEET; THENCE SOUTH 78°36'20" EAST, ALONG SAID WESTERLY LINE, 118.51 FEET; THENCE SOUTH 04°39'35" WEST, ALONG SAID WESTERLY LINE, 128.06 FEET; THENCE SOUTH 23°04'06" EAST, ALONG SAID WESTERLY LINE, 206.79 FEET; THENCE SOUTH 02°38'45" EAST, ALONG SAID WESTERLY LINE, 164.78 FEET; THENCE NORTH 87°58'48" WEST, ALONG SAID WESTERLY LINE, 45.85 FEET; THENCE SOUTH 01°54'56" WEST, ALONG SAID WESTERLY LINE, 76.13 FEET; THENCE NORTH 87°58'53" WEST, ALONG SAID WESTERLY LINE, 38.61 FEET TO A POINT ON THE EXISTING NORTHERLY RIGHT-OF-WAY LINE OF SW HOOK ROAD, AS ESTABLISHED BY RIGHT OF WAY DEED RECORDED AS INSTRUMENT NUMBER 2007E0016663 IN SAID JACKSON COUNTY RECORDER OF DEEDS OFFICE; THENCE LEAVING SAID WESTERLY LINE, CONTINUING NORTH 87°58'53" WEST, ALONG SAID EXISTING NORTHERLY RIGHT-OF-WAY LINE, 125.05 FEET; THENCE SOUTH 02°01'07" WEST, ALONG SAID EXISTING NORTHERLY RIGHT-OF-WAY LINE, 10.00 FEET; THENCE NORTH 87°58'53" WEST, ALONG SAID EXISTING NORTHERLY RIGHT-OF-WAY LINE, 853.20 FEET TO THE NORTHWEST CORNER OF SAID RIGHT-OF-WAY DEED, ALSO BEING THE NORTHEAST CORNER OF SW HOOK ROAD, AS ESTABLISHED BY SAID RIGHT-OF-WAY DEED INSTRUMENT NUMBER 199910077639; THENCE CONTINUING NORTH 87°58'53" WEST ALONG THE EXISTING NORTHERLY RIGHT-OF-WAY LINE OF SAID SW HOOK ROAD, 252.00 FEET TO THE POINT OF BEGINNING, CONTAINING 1,085,519 SQUARE FEET OR 24.92 ACRES, MORE OR LESS.

BENCHMARK

JA-74
ELEVATION: 1058.10
N: 9780461.2779
E: 2809447.9650
DESCRIPTION: KC METRO ALUMINUM GRS DISK SET IN CONCRETE. THE STATION IS STAMPED JA-74, 1988, AND PROJECTS ABOUT 1 INCH

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

Julie E. Sellers
 JULIE E. SELLERS, P.E.
 CIVIL ENGINEER
 MO # PE-2017000367

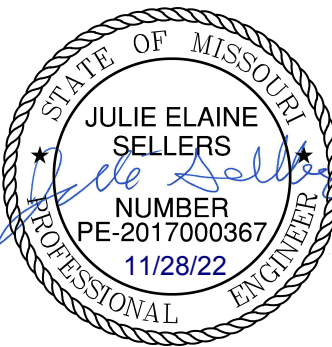
DATE

AS BUILT

DATE SURVEYED: 2022-06-17

I HEREBY CERTIFY THAT THE CONDITIONS SHOWN ARE
CORRECT AND THE SEWER ARE ACCEPTABLY LOCATED
WITHIN EXISTING EASEMENTS OR RIGHT OF WAYS.

olson



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FAX 816.361.1888
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	REV. NO.	DATE	REVISIONS DESCRIPTION	BY
	1	08-26-2021	REVISED PER CITY COMMENTS	
	2	10-29-2021	REVISED PER CITY COMMENTS	
2021			REVISIONS	

TITLE SHEET
STREET & STORM SEWER PLANS

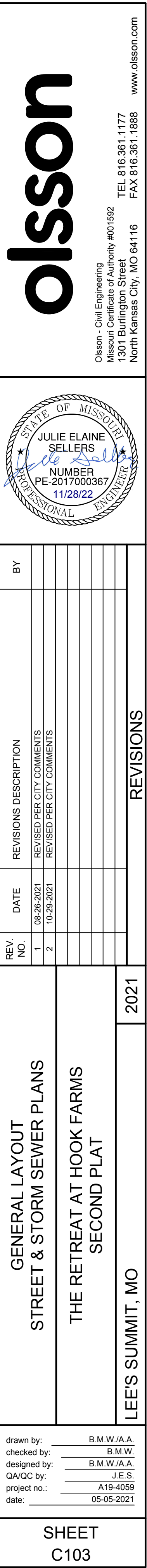
THE RETREAT AT HOOK FARMS
SECOND PLAT

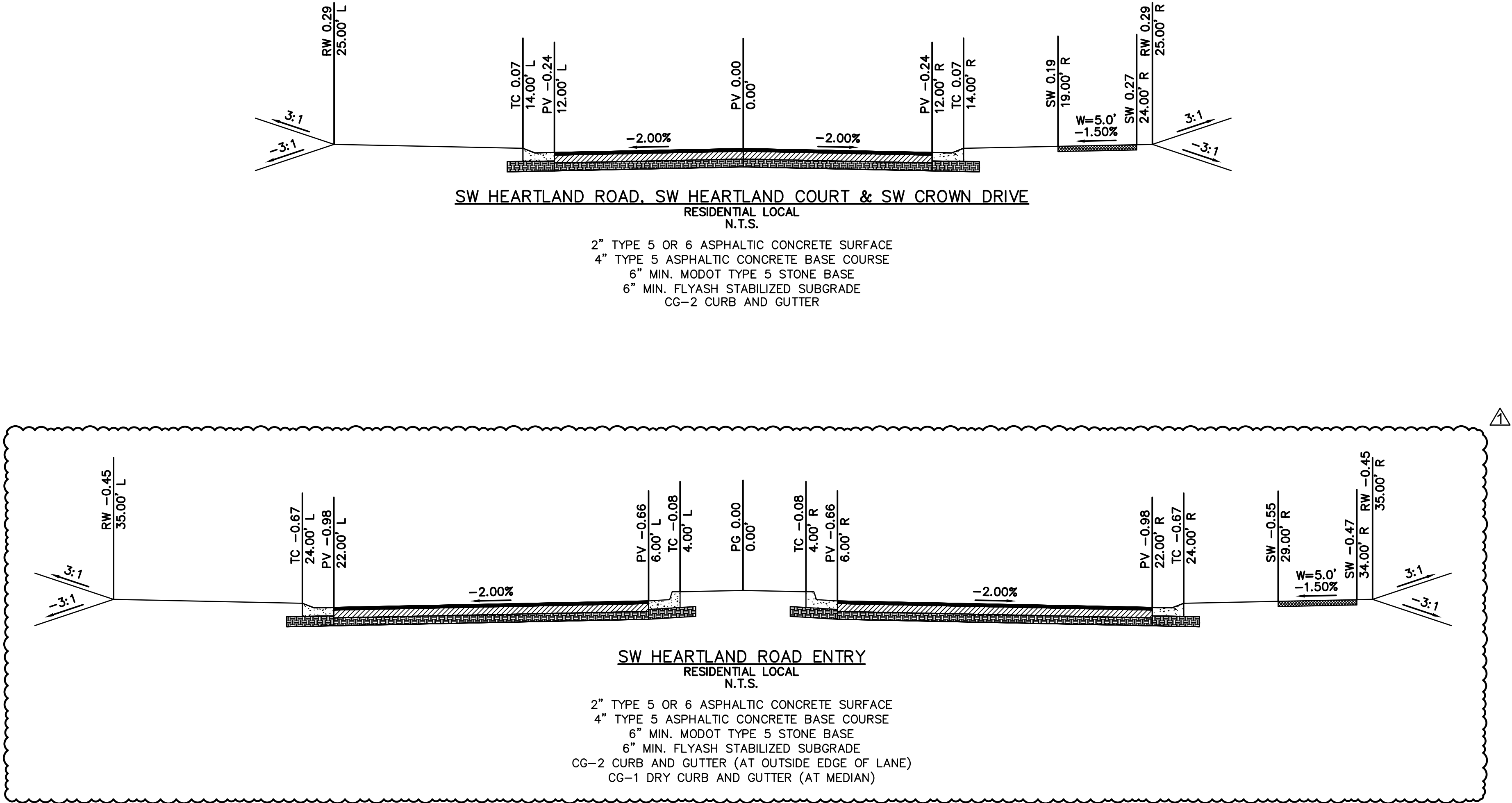
LEE'S SUMMIT MO

drawn by: B.M.W./A.A.
checked by: B.M.W.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4055
date: 05-05-2021

SHEET
C101

NOT AS BUILT





NOT AS BUILT

TYPICAL SECTIONS
STREET & STORM SEWER PLANS

THE RETREAT AT HOOK FARMS
SECOND PLAT

LEE'S SUMMIT, MO

2021

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checked by: B.M.W./A.A.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

SHEET
C104

STATE OF MISSOURI
JULIE ELAINE
SELLERS
NUMBER
PE-2017000367
11/28/22
PROFESSIONAL ENGINEER

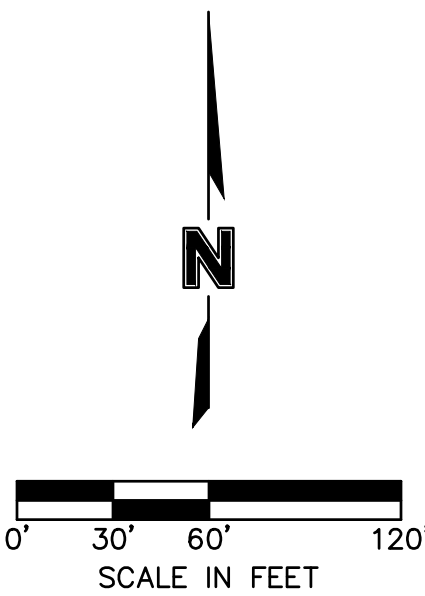
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DATE: Oct 04, 2022 11:39am XREFS: C_XBASE_B194061 C_PBASE_B194061 C_PUNDY_B194061 C_PUTIL_B194061 C_FBASE_B194061

GENERAL NOTES:

1. CONTRACTOR SHALL ADHERE TO THE "DESIGN AND CONSTRUCTION MANUAL" SECTION 2100 AS ADOPTED BY THE CITY OF LEE'S SUMMIT (LATEST EDITION), FOR EXCAVATION AND EMBANKMENT WORK WITHIN THE PROPOSED RIGHT-OF-WAY.
2. AREAS OF CONSTRUCTION SHALL BE STRIPPED OF ALL VEGETATION, ORGANIC MATTER AND TOPSOIL TO A DEPTH AS RECOMMENDED BY GEOTECHNICAL ENGINEER AND OR TESTING AGENCY. SOILS REMOVED DURING SITE STRIPPING SHOULD BE EVALUATED TO DETERMINE IF PORTIONS OF THE TOPSOIL STRATUM MAY BE UTILIZED AS STRUCTURAL FILL WITHIN PAVEMENT AREAS. ANY MATERIAL NOT DEEMED AS SUITABLE FILL MATERIAL BY THE GEOTECHNICAL ENGINEER AND OR TESTING AGENCY SHALL BE REMOVED FROM THE JOB SITE BY THE CONTRACTOR AT HIS EXPENSE.
3. ALL EMBANKMENT OUTSIDE OF RIGHT-OF-WAY SHOULD BE PLACED IN CONTROLLED LIFTS HAVING A MAXIMUM LOOSE LIFT THICKNESS OF 8". EMBANKMENT SHOULD BE COMPACTED TO A MINIMUM OF 95% OF THE MATERIALS MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698 (STANDARD PROCTOR COMPACTION). MOISTURE CONTENT OF THE FILL AT THE TIME OF COMPACTION SHALL BE WITHIN A RANGE OF -0 TO +4 PERCENT OF OPTIMUM MOISTURE CONTENT.
4. REFER TO HOOK FARMS 2ND PLAT PLANS FOR MORE DETAILS ABOUT EARTHWORK SHOWN ON THIS SHEET.

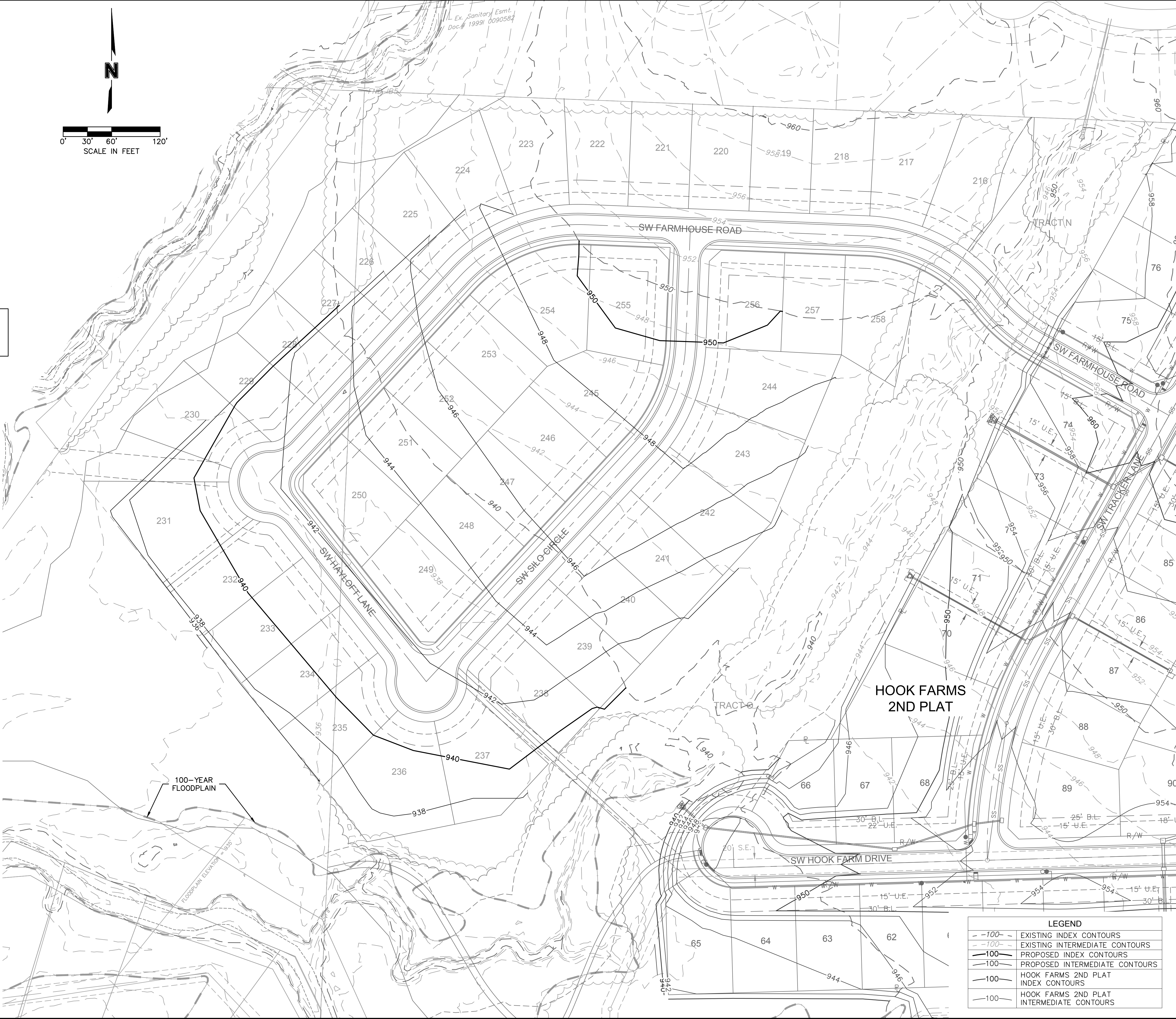


EARTHWORK QUANTITIES		
LOCATION	CUT (C.Y.)	FILL (C.Y.)
FUTURE PHASE	0	54,547

FUTURE PHASE EARTHWORK CONTRIBUTIONS	
LOCATION	FILL (C.Y.)
HOOK FARMS 2ND PLAT	42,194
RETREAT AT HOOK FARMS 2ND PLAT	9,872
EXCESS	2,481

- 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.

NOT AS BUILT
SURFACE.
REFER TO
MASTER
DRAINAGE
PLAN.



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STATE OF MISSOURI
JULIE ELAINE SELLERS
NUMBER PE-2017000367
11/28/22
PROFESSIONAL ENGINEER

BY

DATE

REV. NO.

REVISIONS DESCRIPTION

REVISED PER CITY COMMENTS

REVISED PER CITY COMMENTS

2021

08-26-2021

1

10-29-2021

2

GRADING PLAN (FOR REFERENCE)
STREET & STORM SEWER PLANS

THE RETREAT AT HOOK FARMS
SECOND PLAT

LEE'S SUMMIT, MO

drawn by: B.M.W./A.A.
checked by: B.M.W.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

SHEET
C106

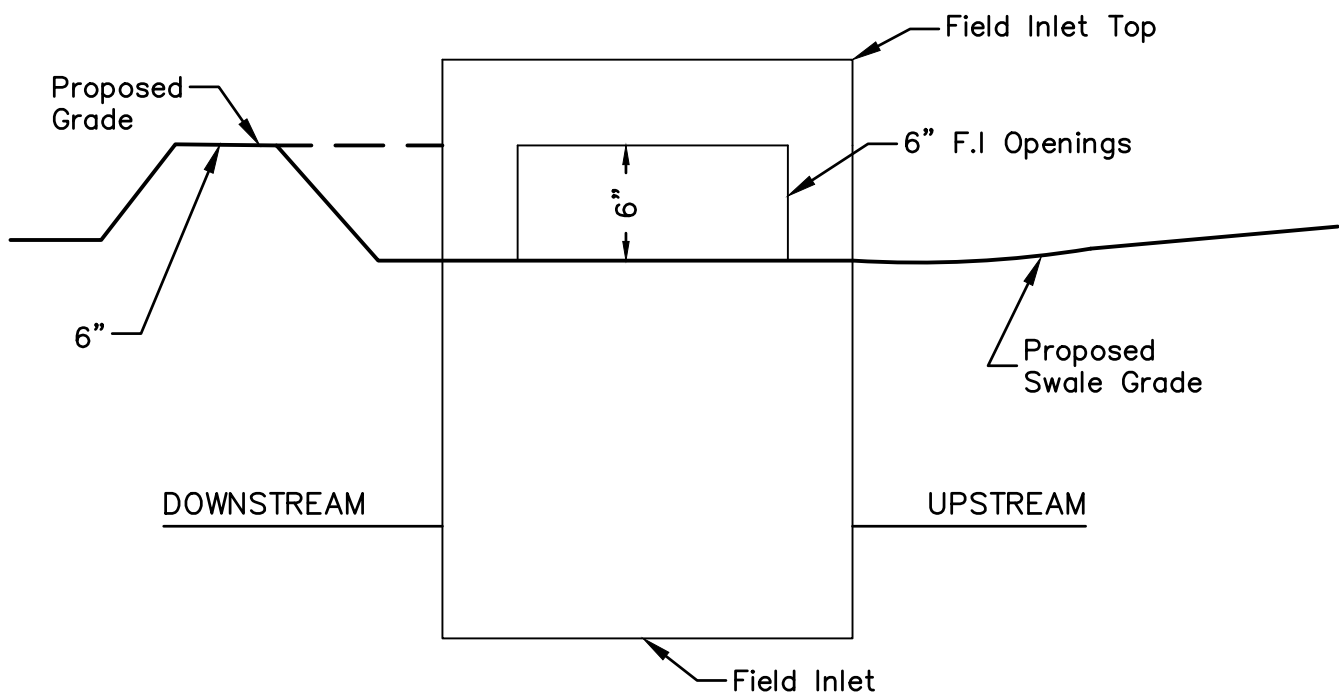
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USER: ssaylor

AS BUILT

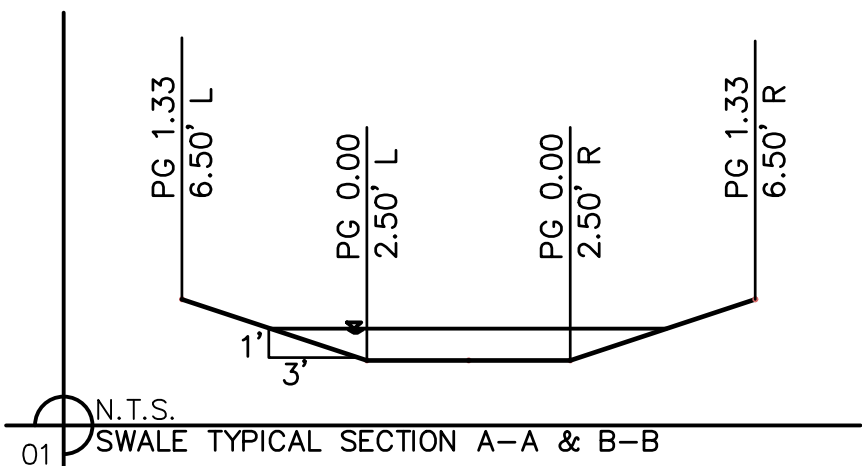
DATE SURVEYED: 2022-06-17

Swale Drainage Area Table (100 year Return Frequency)						
Section	Drainage Area (ac.)	C	Tc (min)	i (in/hr)	K	Peak Flow (cfs)
A-A	1.13	0.51	5	10.32	1.25	7.43
B-B	1.15	0.51	5	10.32	1.25	7.57

Swale Design Table (100 Year Return Frequency)													
Section Data							Flow Data						
SECTION	Mannings Coefficient	Channel Slope (%)	Swale Depth (ft)	Left Side Slope (H:V)	Right Side Slope (H:V)	Bottom Width (ft)	Discharge (cfs)	Water Depth (ft)	Flow Area (ft²)	Velocity (ft/sec)	Wetted Perimeter (ft)	Top Width (ft)	Specific Energy (ft)
A-A	0.03	2.10%	1.38	3:1	3:1	5.00	7.43	0.38	2.33	3.18	7.40	7.28	0.54
B-B	0.03	6.25%	1.28	3:1	3:1	5.00	7.57	0.28	1.64	4.63	6.77	6.68	0.61

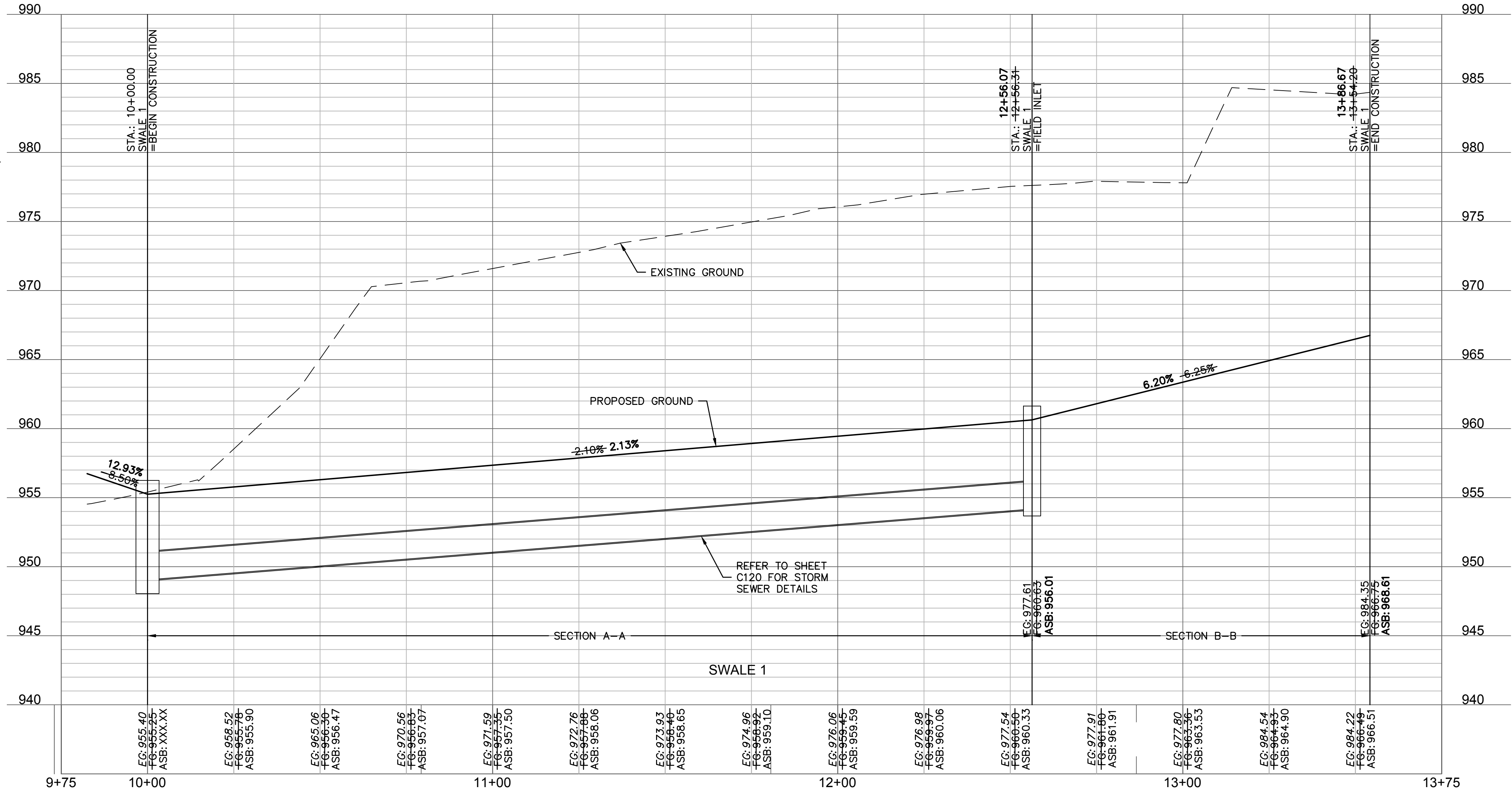


SUMP DETAIL
N.T.S.



SWALE GRADING NOTES:

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



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STATE OF MISSOURI
JULIE ELAINE SELLERS
PROFESSIONAL ENGINEER
NUMBER PE-2017000367
11/28/22

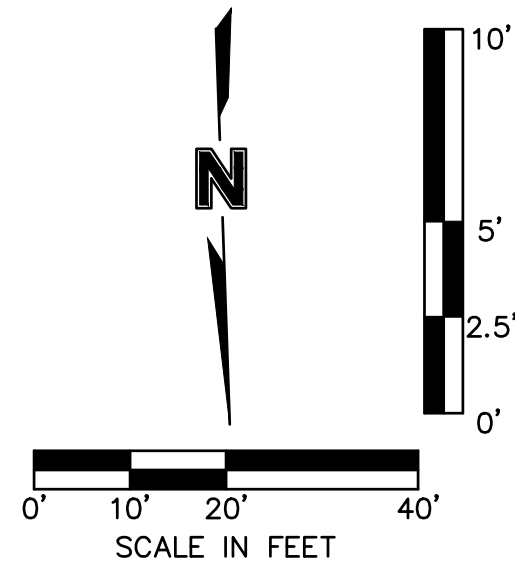
REV. NO.	DATE	REVISIONS DESCRIPTION
1	08-26-2021	REVISED PER CITY COMMENTS
2	10-29-2021	REVISED PER CITY COMMENTS

SWALE 1 PLAN & PROFILE
STREET & STORM SEWER PLANS
THE RETREAT AT HOOK FARMS
SECOND PLAT
LEE'S SUMMIT, MO

2021

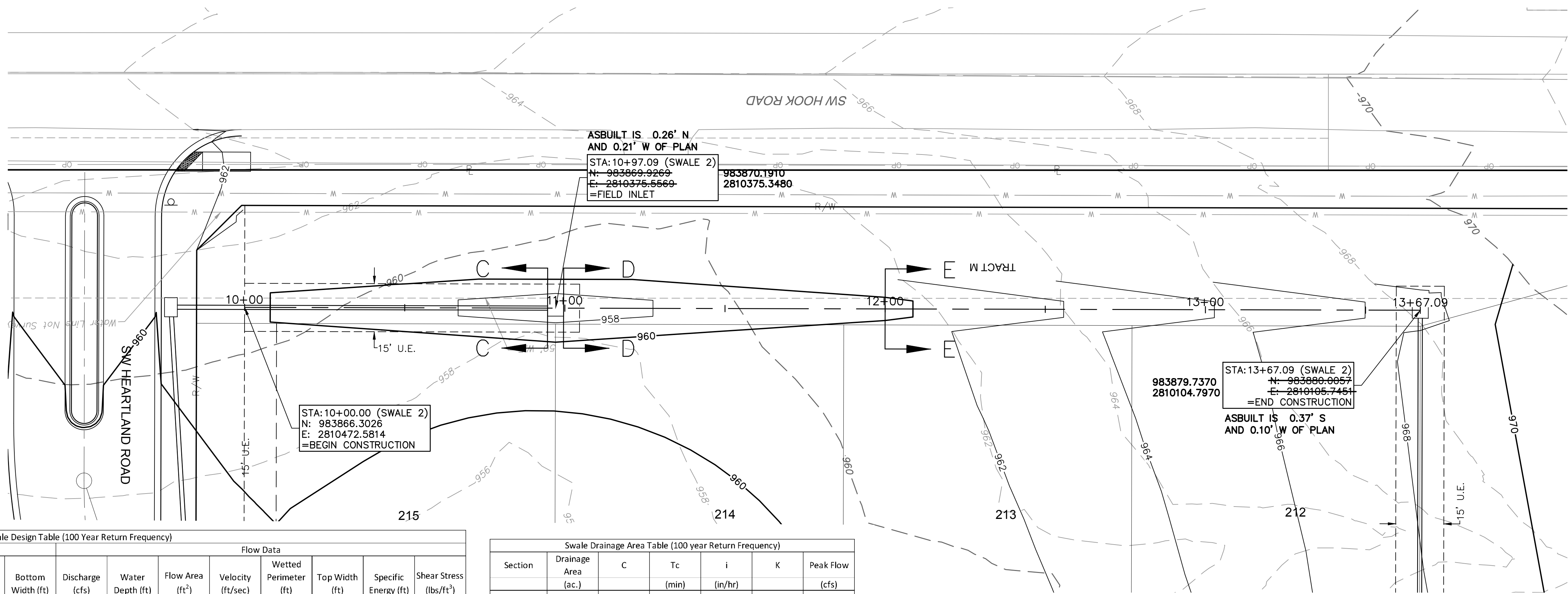
drawn by: B.M.W./A.A.
checked by: B.M.W./A.A.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

SHEET
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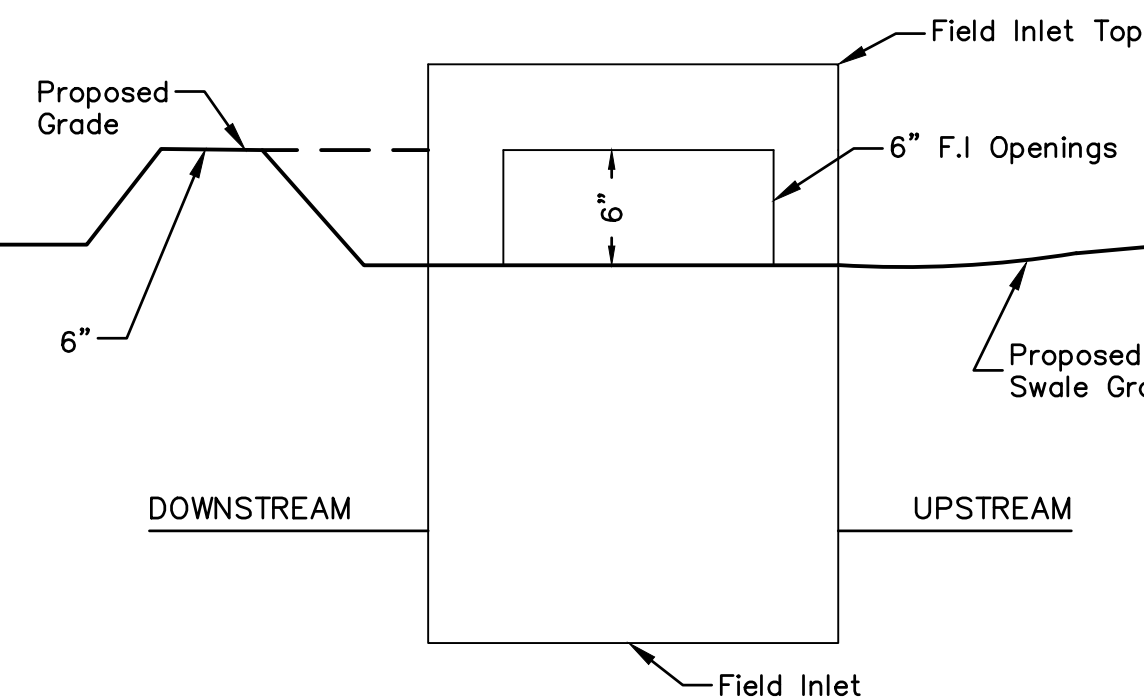
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DATE SURVEYED: 2022-06-17

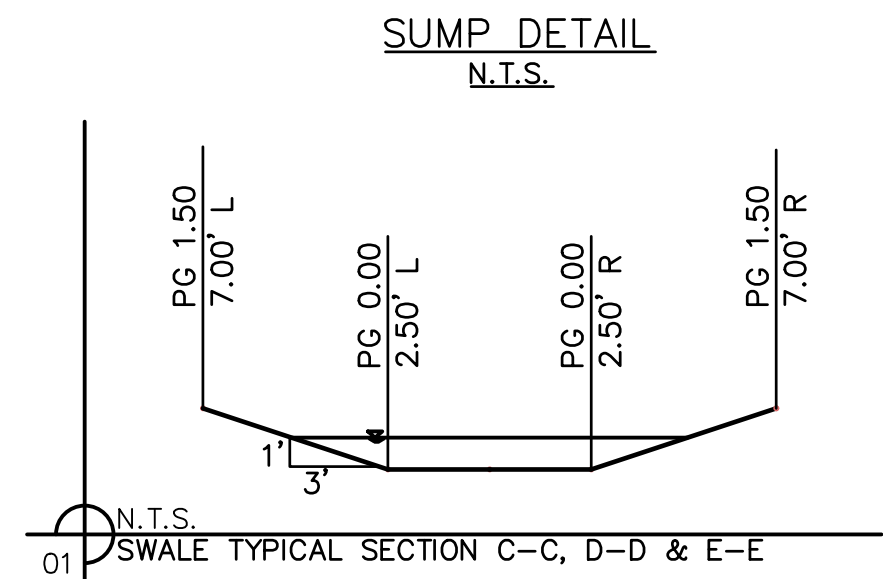


Swale Design Table (100 Year Return Frequency)														
Section Data							Flow Data							
SECTION	Mannings Coefficient	Channel Slope (%)	Swale Depth (ft)	Left Side Slope (H:V)	Right Side Slope (H:V)	Bottom Width (ft)	Discharge (cfs)	Water Depth (ft)	Flow Area (ft²)	Velocity (ft/sec)	Wetted Perimeter (ft)	Top Width (ft)	Specific Energy (ft)	Shear Stress (lbs/ft²)
C-C	0.03	2.25%	1.14	3:1	3:1	5.00	1.38	0.14	0.76	1.82	5.89	5.84	0.19	0.18
D-D	0.03	2.25%	1.24	3:1	3:1	5.00	3.62	0.24	1.39	2.60	6.67	6.60	0.35	0.29
E-E	0.03	4.25%	1.14	3:1	3:1	5.00	1.97	0.14	0.76	2.60	5.89	5.84	0.24	0.34

Swale Drainage Area Table (100 year Return Frequency)						
Section	Drainage Area (ac.)	C	Tc (min)	i (in/hr)	K	Peak Flow (cfs)
C-C	0.21	0.51	5	10.32	1.25	1.38
D-D	0.55	0.51	5	10.32	1.25	3.62
E-E	0.30	0.51	5	10.32	1.25	1.97

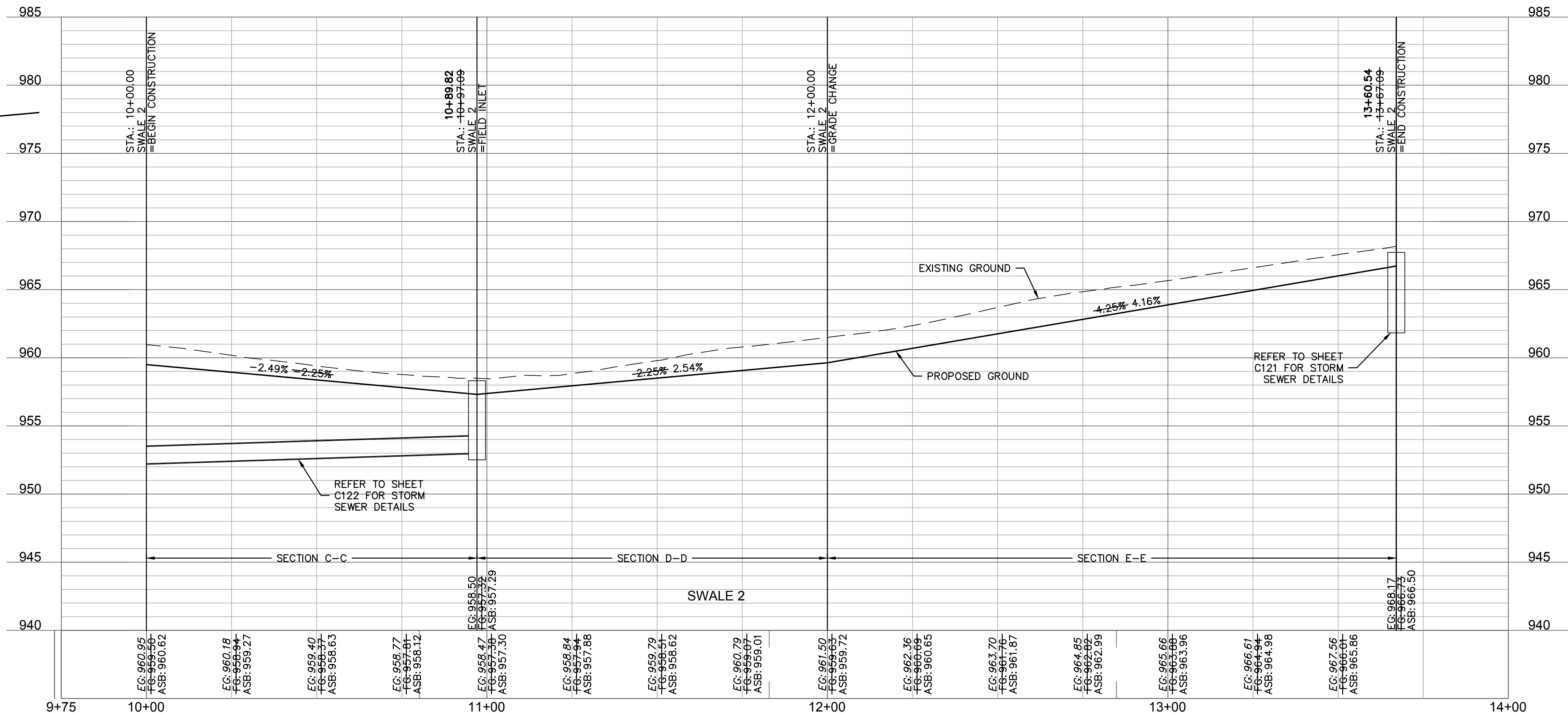


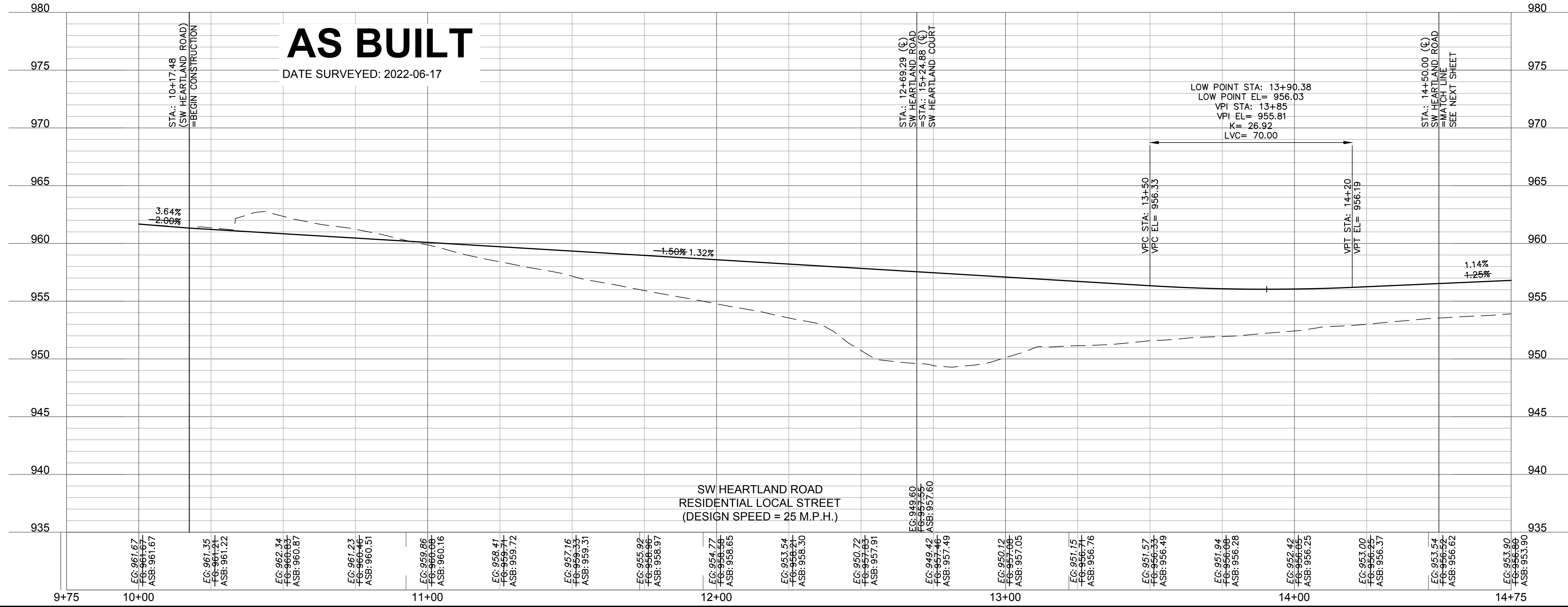
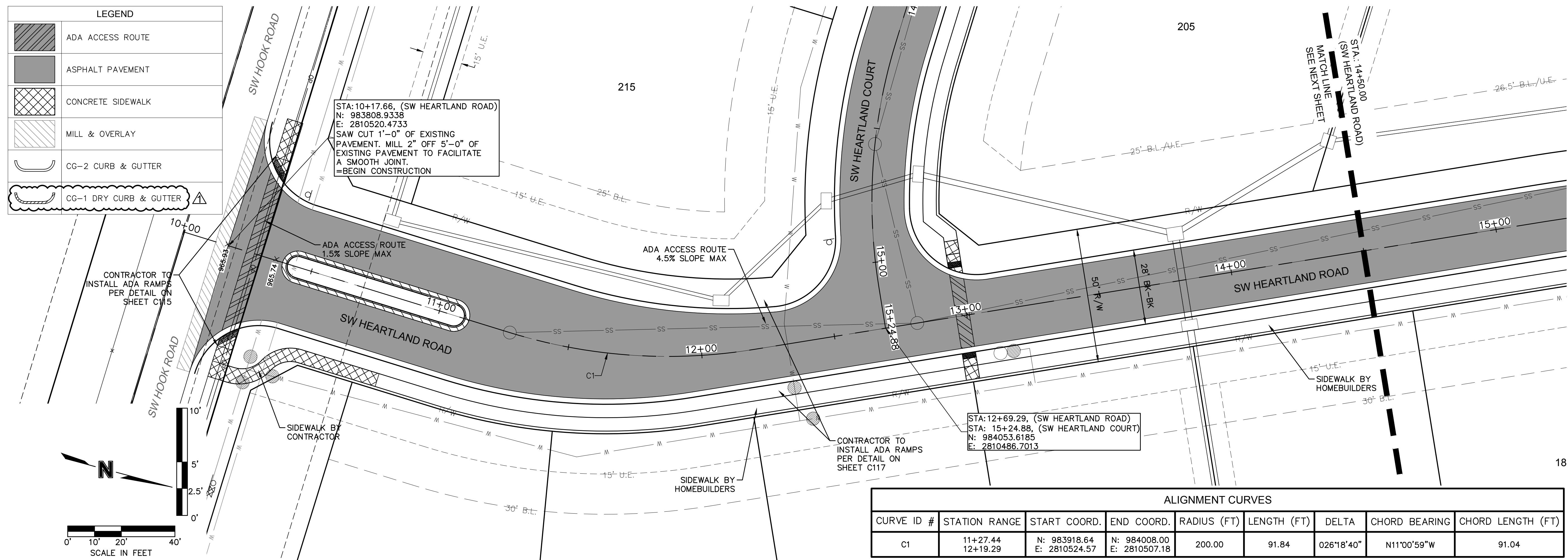
NOTE: INCLUDE SUMP PER ABOVE DETAIL WHERE
FIELD INLETS ARE LOCATED WITHIN SWALES.



SWALE GRADING NOTES:

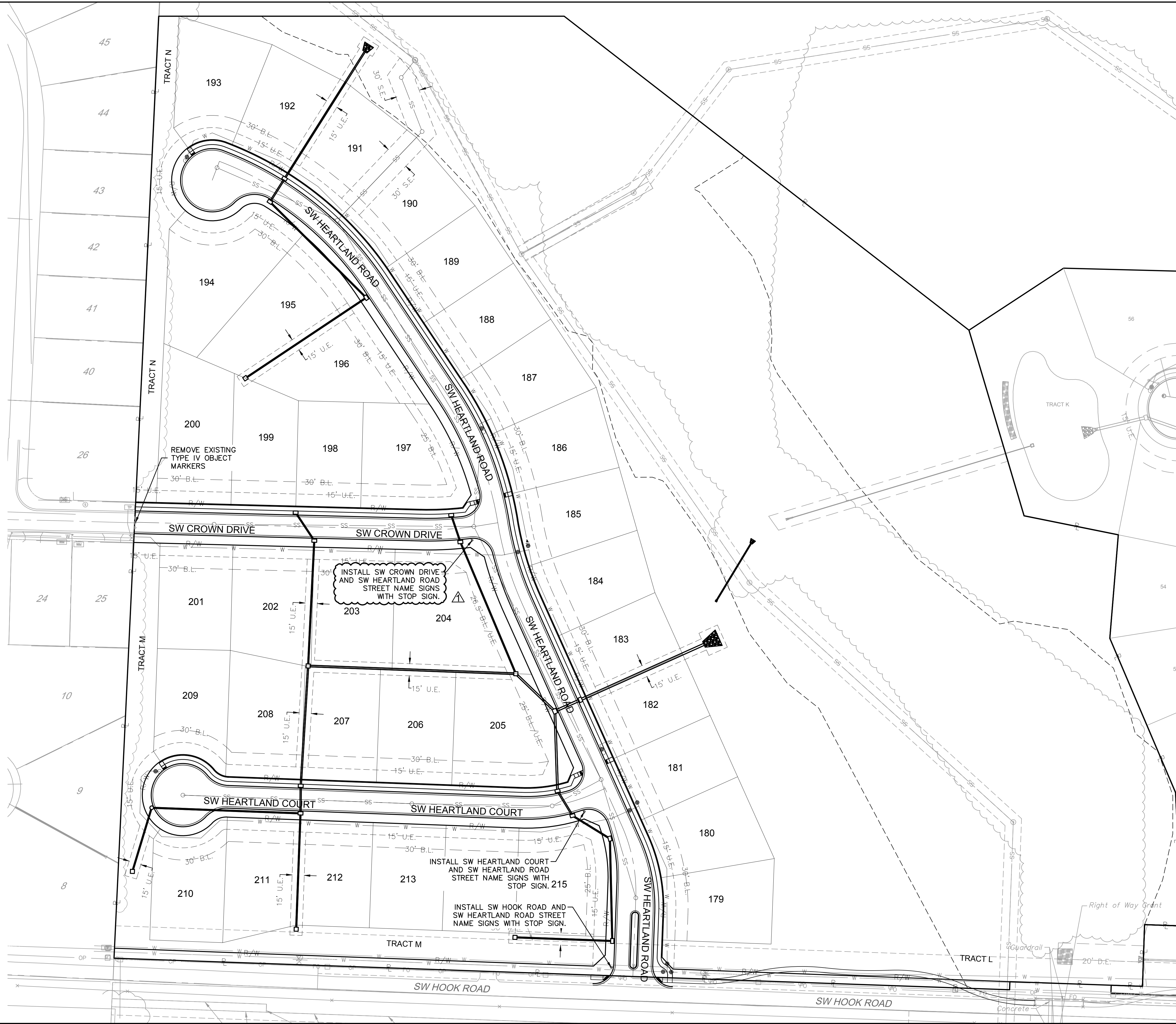
1. CONTRACTOR SHALL CONSTRUCT SWALES WITH MINIMUM SLOPE, WIDTH AND DEPTH AS SHOWN IN THE SWALE DESIGN TABLES.
2. AS-BUILT SURVEY IS REQUIRED/APPROVED BY CITY FOR ALL SWALES AND PRIOR TO APPROVAL FOR ANY BUILDING FOUNDATION PERMIT. CONTRACTOR SHALL BE REQUIRED TO REGRADE SWALES AT CONTRACTOR'S EXPENSE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



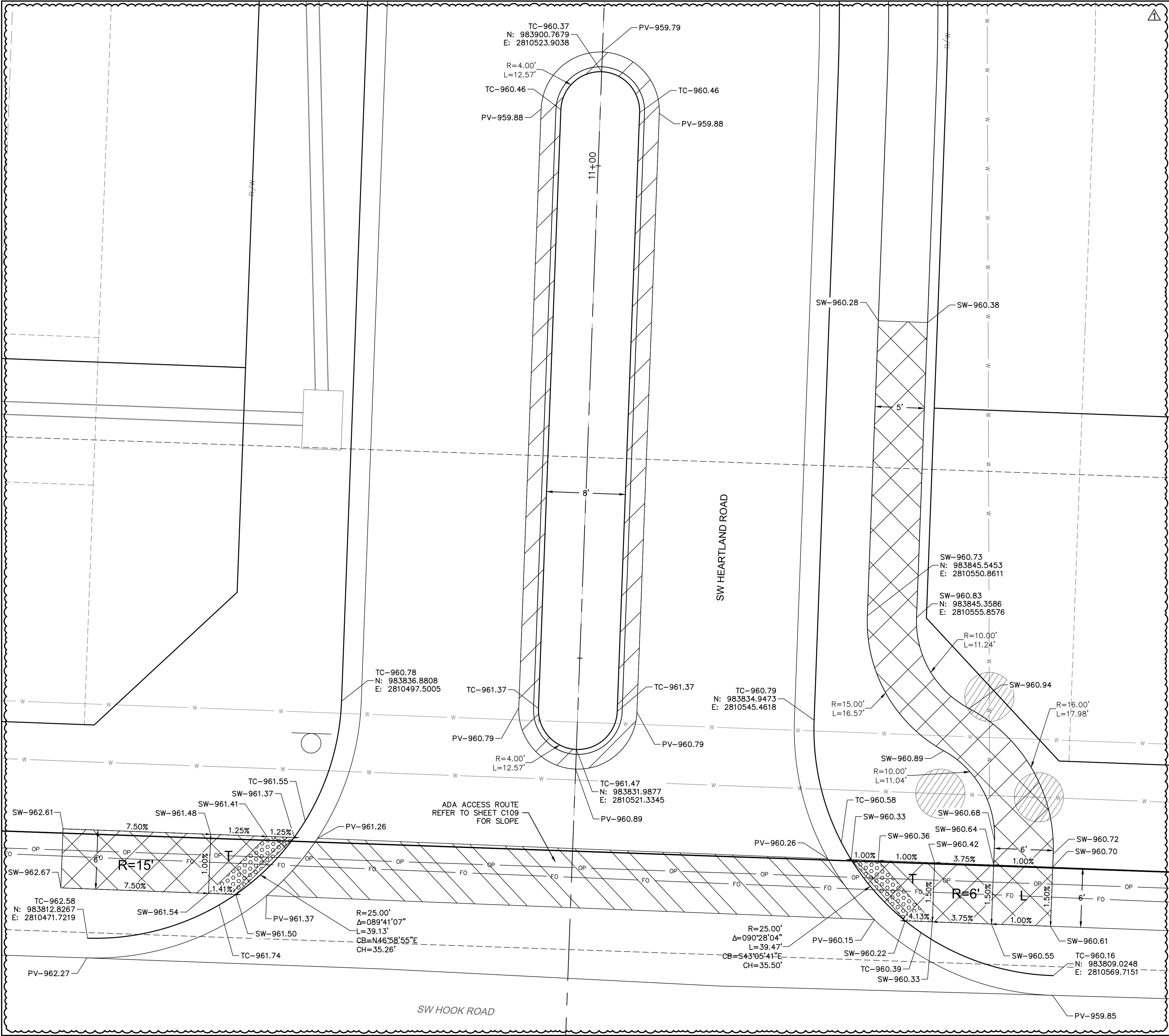


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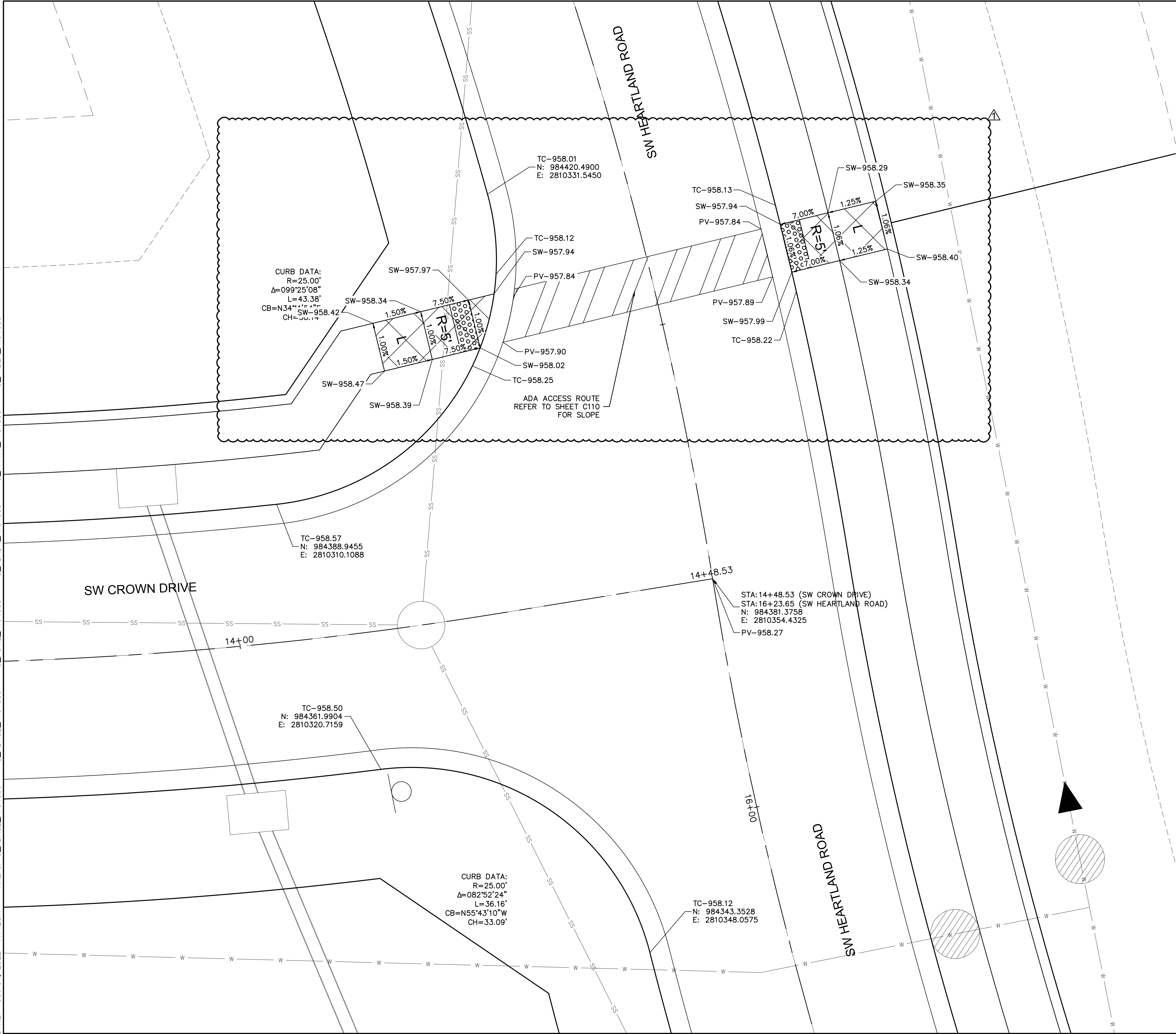
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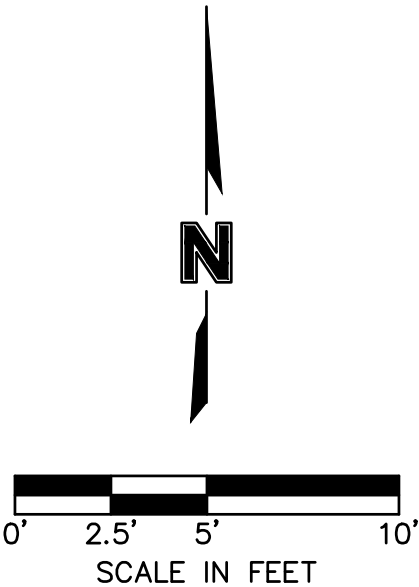
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- INTERSECTION AND ADA DETAIL NOTES:
1. ALL ADA CURB RAMPS SHALL BE BUILT PER CURRENT MUNICIPALITY ADOPTED ADA STANDARDS.
 2. CURB RAMP FLARES SHALL NOT BE STEEPER THAN 1:10 MAX SLOPES.
 3. LANDINGS SHALL BE PROVIDED WHERE INDICATED ON PLAN SHEET OR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

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

NOT AS BUILT



SW HEARTLAND ROAD & SW CROWN DRIVE DETAILS
STREET & STORM SEWER PLANS

THE RETREAT AT HOOK FARMS
SECOND PLAT

LEE'S SUMMIT, MO

2021

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION	BY
1	08-26-2021	REVISED PER CITY COMMENTS	
2	10-29-2021	REVISED PER CITY COMMENTS	

drawn by: B.M.W./A.A.

checked by: B.M.W./A.A.

designed by: J.E.S.

QA/QC by: J.E.S.

project no.: A19-4059

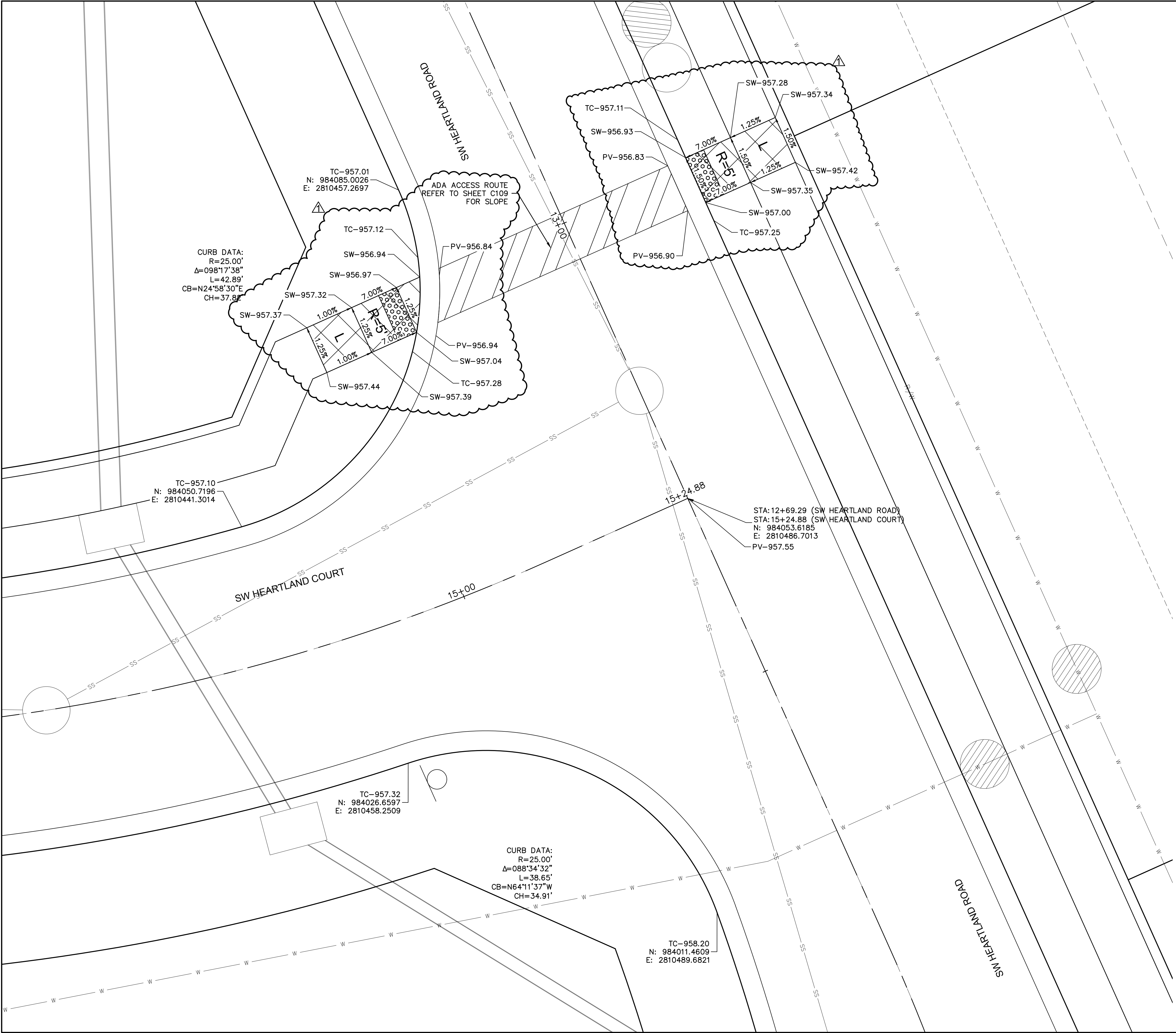
date: 05-05-2021

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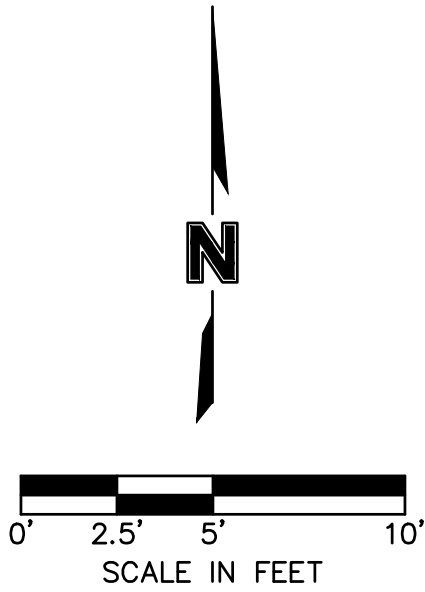
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USER: sso\lor C_PATT_A194059



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

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

NOT AS BUILT



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STATE OF MISSOURI
JULIE ELAINE
SELLERS
PROFESSIONAL ENGINEER
NUMBER
PE-2017000367
11/28/22

SW HEARTLAND ROAD & SW HEARTLAND COURT DETAILS
STREET & STORM SEWER PLANS
THE RETREAT AT HOOK FARMS
SECOND PLAT
LEE'S SUMMIT, MO

2021

drawn by: B.M.W./A.A.
checked by: B.M.W.
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QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

SHEET
C117

BY

REV. NO.

DATE

REVISIONS DESCRIPTION

1

08-26-2021

REVISED PER CITY COMMENTS

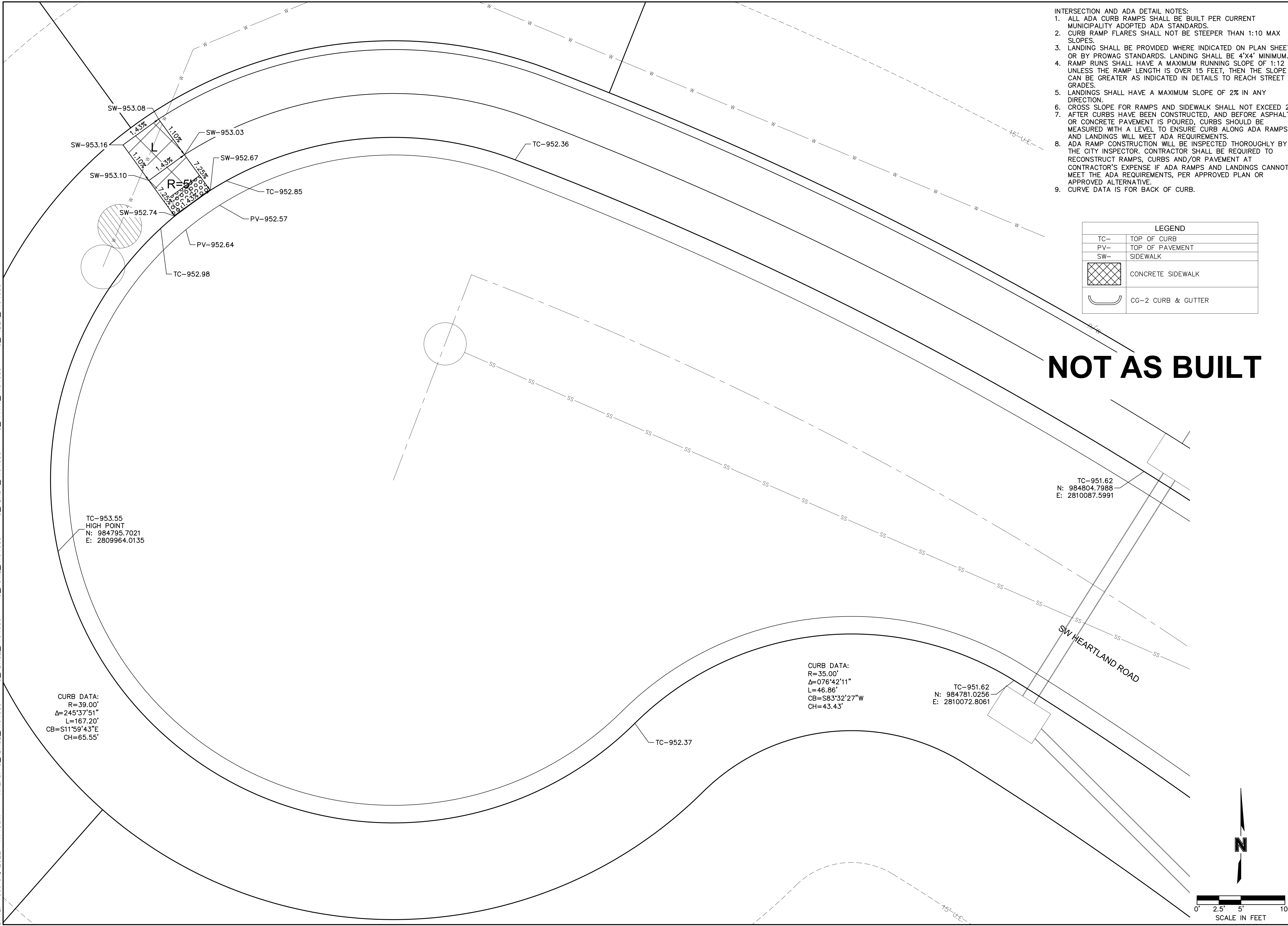
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10-29-2021

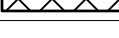
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REVISIONS

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

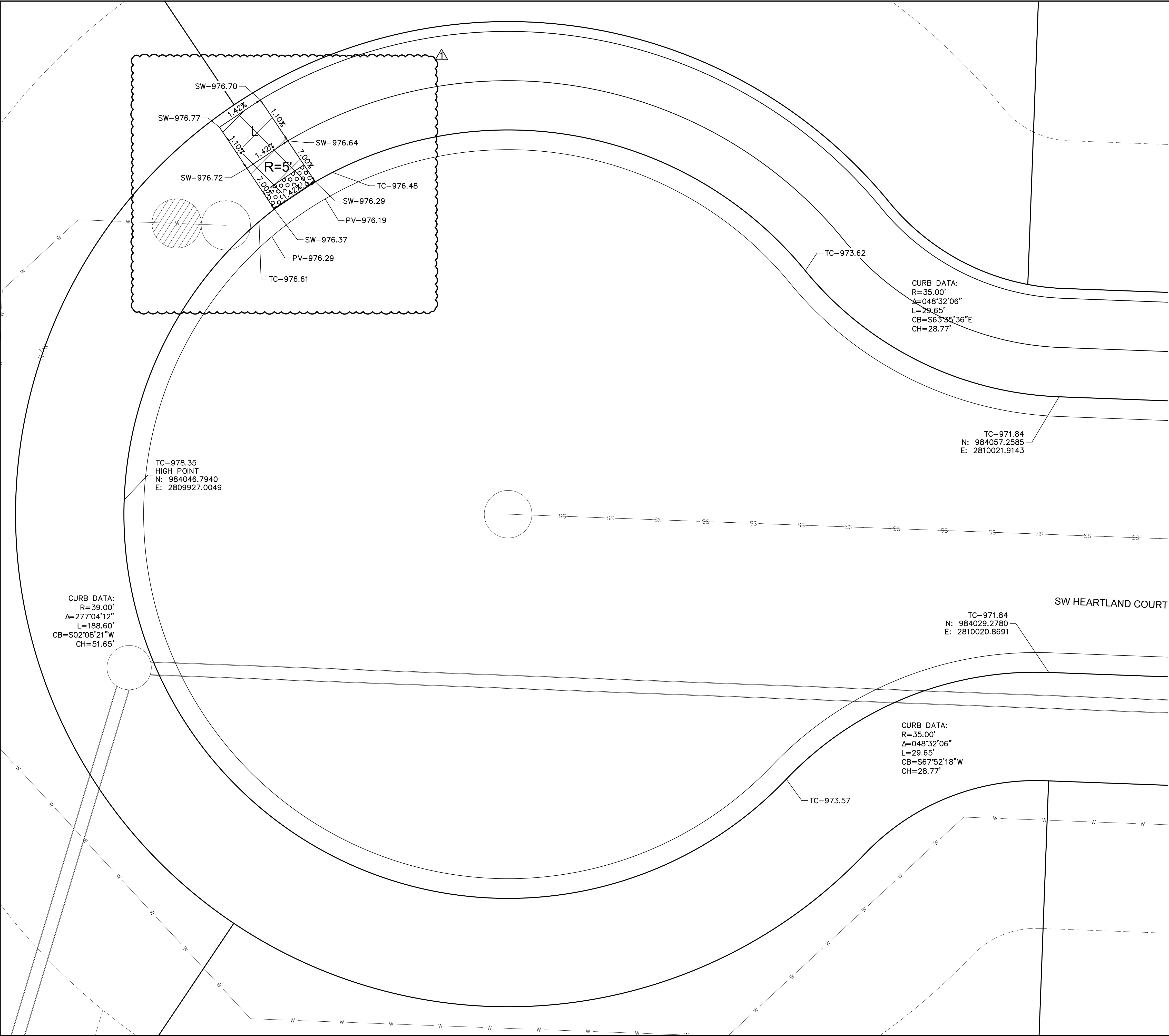
LEGEND	
TC-	TOP OF CURB
PV-	TOP OF PAVEMENT
SW-	SIDEWALK
	CONCRETE SIDEWALK
	CG-2 CURB & GUTTER

NOT AS BUILT

SW HEARTLAND ROAD CUL-DE-SAC DETAILS STREET & STORM SEWER PLANS		THE RETREAT AT HOOK FARMS SECOND PLAT		LEE'S SUMMIT, MO		2021
drawn by: _____ checked by: _____ designed by: _____ QA/QC by: _____ project no.: _____ date: _____		B.M.W./A.A. B.M.W. B.M.W./A.A. J.E.S. A19-4059 05-05-2021				
SHEET C118						

SHEET
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USER: ssaylor



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

LEGEND	
TC--	TOP OF CURB
PV--	TOP OF PAVEMENT
SW--	SIDEWALK
	CONCRETE SIDEWALK
	CG-2 CURB & GUTTER

NOT AS BUILT

SW HEARTLAND COURT CUL-DE-SAC DETAILS
STREET & STORM SEWER PLANS

THE RETREAT AT HOOK FARMS
SECOND PLAT

LEE'S SUMMIT, MO

2021

REVISIONS

BY

DATE

REV. NO.

REVISIONS DESCRIPTION

1

08-26-2021

1

REVISED PER CITY COMMENTS

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10-29-2021

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REVISED PER CITY COMMENTS

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Riprap Calculations						
End Section	Q ₁₀₀ (cfs)	Pipe Diameter (ft)	Class*	D50 [†] (in)	Apron Length (ft)	Apron Depth (ft)
E.S. 1-1	83.68	2.5	6	22	20	3.67
Area (SY)						
E.S. 1-1						31.5

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

E.S. 1-1
END SECTION (30" HDPE)
W/ CONCRETE TOE WALL
INSTALL RIPRAP PER DETAILS ON THIS SHEET
STA: 10+00.00 (STORM LINE 1)
N: 984231.313 984229.139
E: 2810608.550 2810602.977
ASBUILT IS 2.17° S
AND 5.57° W OF PLAN

C.I. 1-2
CURB INLET (5'X3' INSIDE)
STA: 11+66.93 (STORM LINE 1)
STA: 13+81.51, 17.00 RT
(SW HEARTLAND ROAD)
N: 984162.771 N: 984162.964
E: 2810456.595 E: 2810456.259
ASBUILT IS 0.19° S
AND 0.34° E OF PLAN

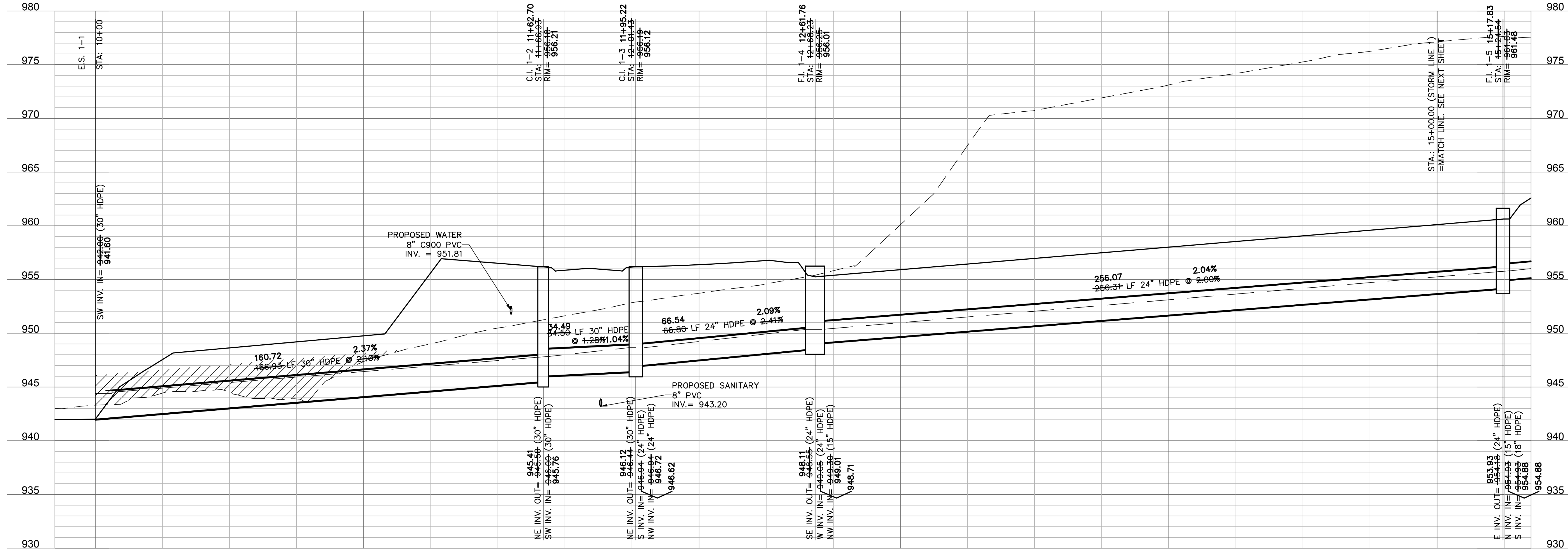
C.I. 1-3
CURB INLET (5'X4' INSIDE)
STA: 10+00.00 (STORM LINE 2)
STA: 42+01.43 (STORM LINE 1)
STA: 43+81.51, 17.50 LT
(SW HEARTLAND ROAD)
N: 984148.834 984149.101
E: 2810424.784 2810424.927
ASBUILT IS 0.27° N
AND 0.14° E OF PLAN

F.I. 1-4
FIELD INLET (4'X4' INSIDE)
STA: 42+68.23 (STORM LINE 1)
STA: 10+00.00 (STORM LINE 3)
STA: 44+43.46, 42.50 LT
(SW HEARTLAND ROAD)
N: 984195.114 984194.747
E: 2810376.610 2810376.513
ASBUILT IS 0.37° S
AND 0.10° W OF PLAN

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

AS BUILT

DATE SURVEYED: 2022-06-17



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JULIE ELAINE
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PROFESSIONAL ENGINEER
NUMBER
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11/28/22

REV.	NO.	DATE	REVISIONS DESCRIPTION
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2	10-29-2021	REVISED PER CITY COMMENTS	

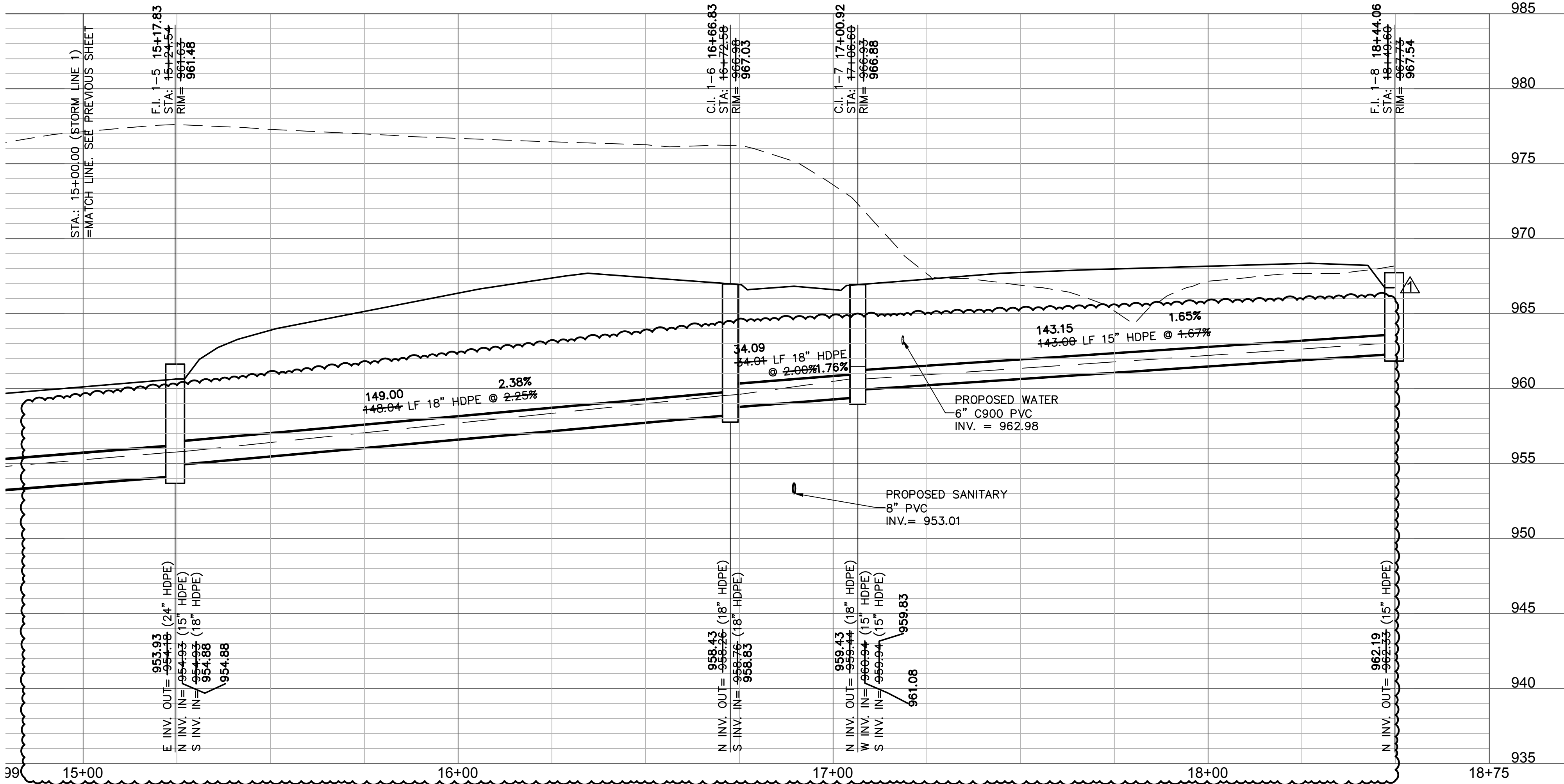
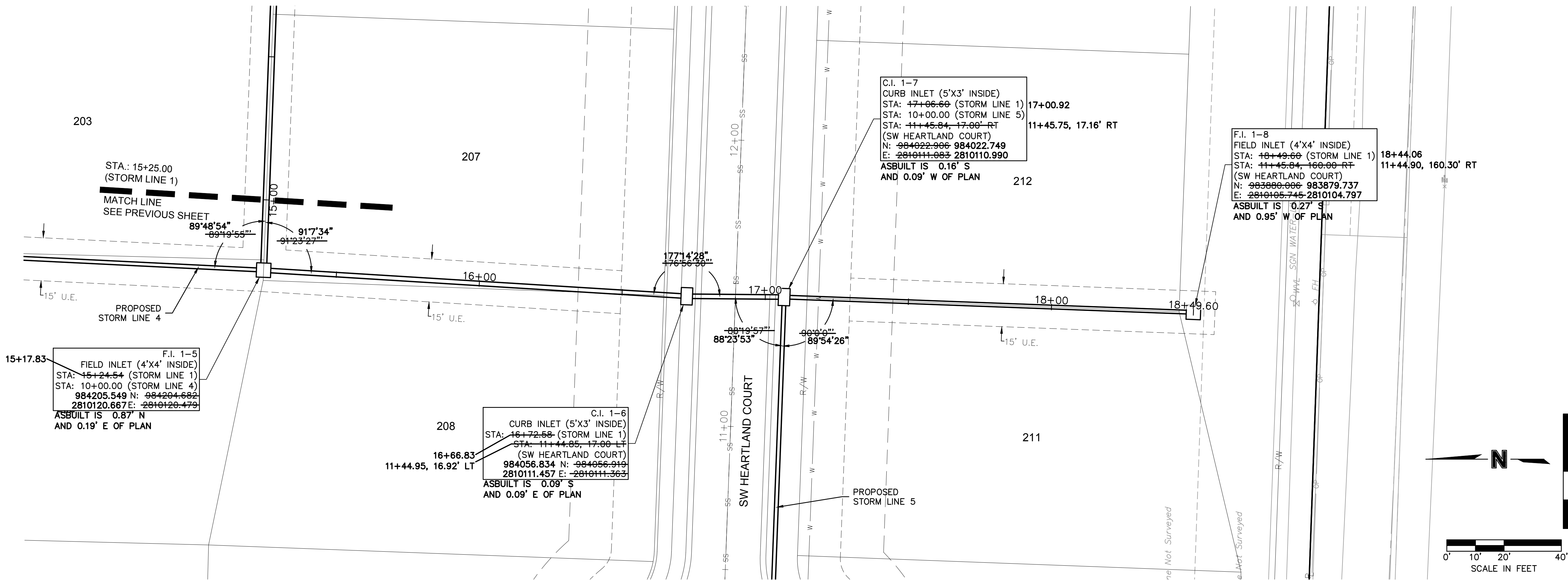
BY	DATE

STORM SEWER PLAN & PROFILE (LINE 1)
STREET & STORM SEWER PLANS
THE RETREAT AT HOOK FARMS
SECOND PLAT
LEE'S SUMMIT, MO

2021

drawn by: B.M.W./A.A.
checked by: B.M.W.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

SHEET
C120



AS BUILT

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11/28/22

STORM SEWER PLAN & PROFILE (LINE 1)
STREET & STORM SEWER PLANS
THE RETREAT AT HOOK FARMS
SECOND PLAT
LEE'S SUMMIT, MO

2021

drawn by: B.M.W./A.A.
checked by: B.M.W./A.A.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

SHEET
C121

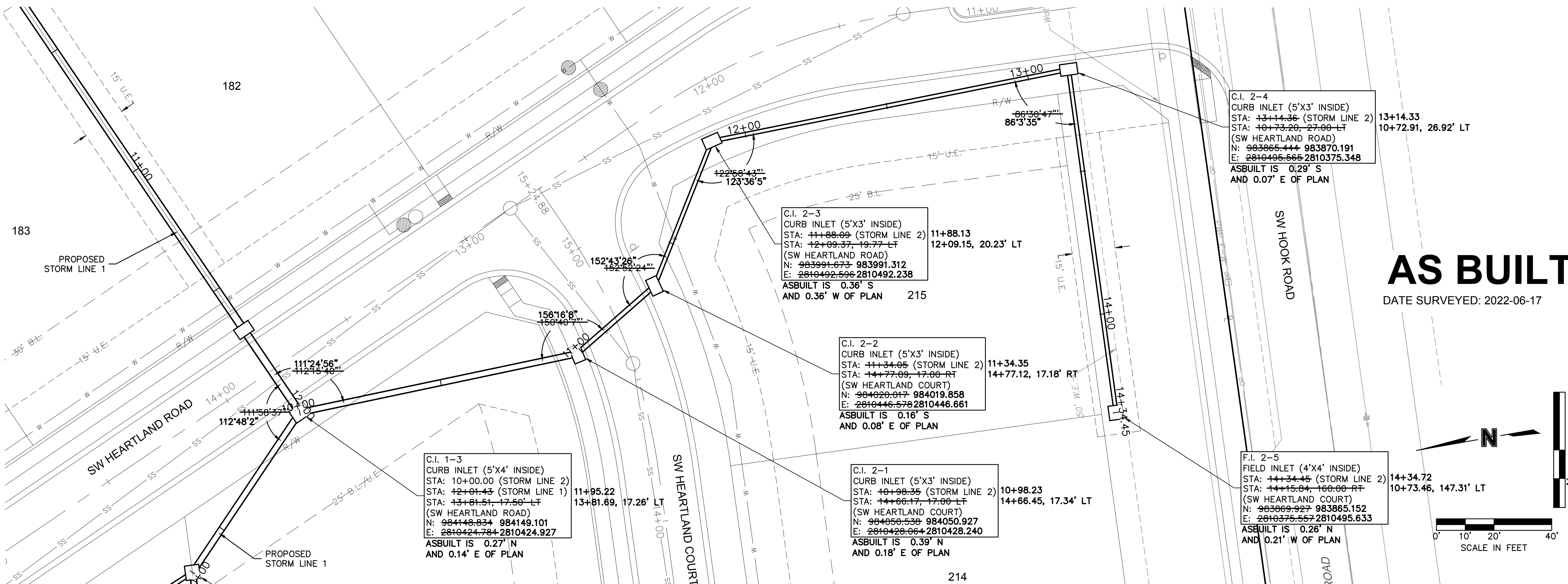
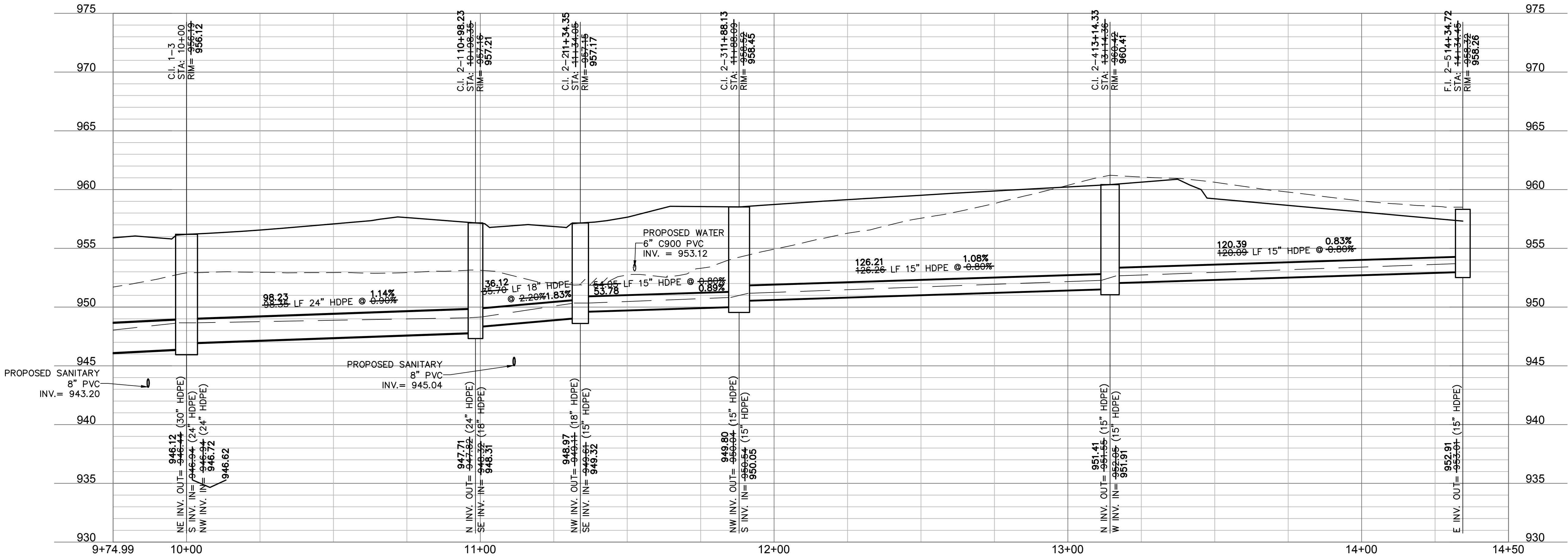
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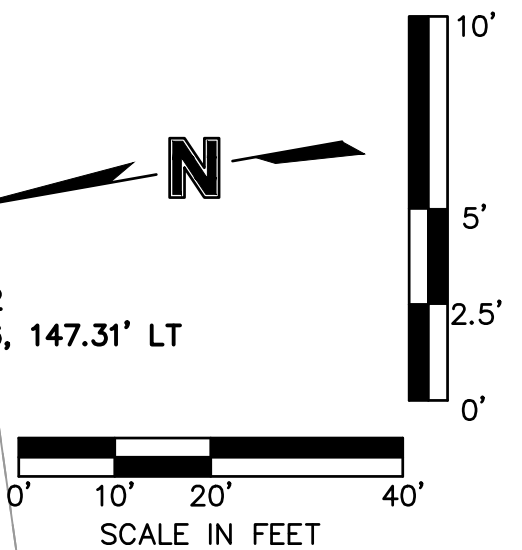
2 10-29-2021 REVISED PER CITY COMMENTS

REVISIONS

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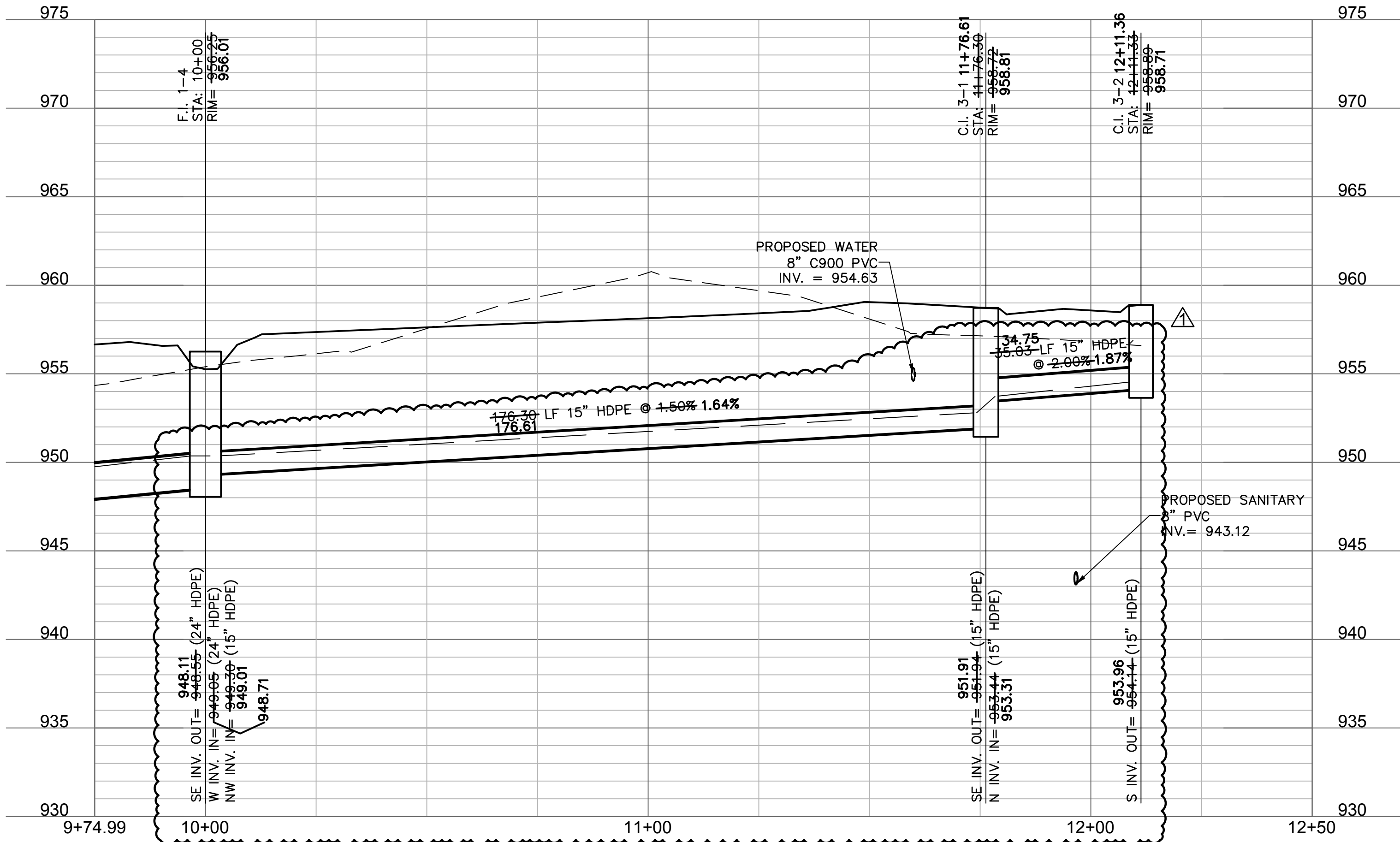
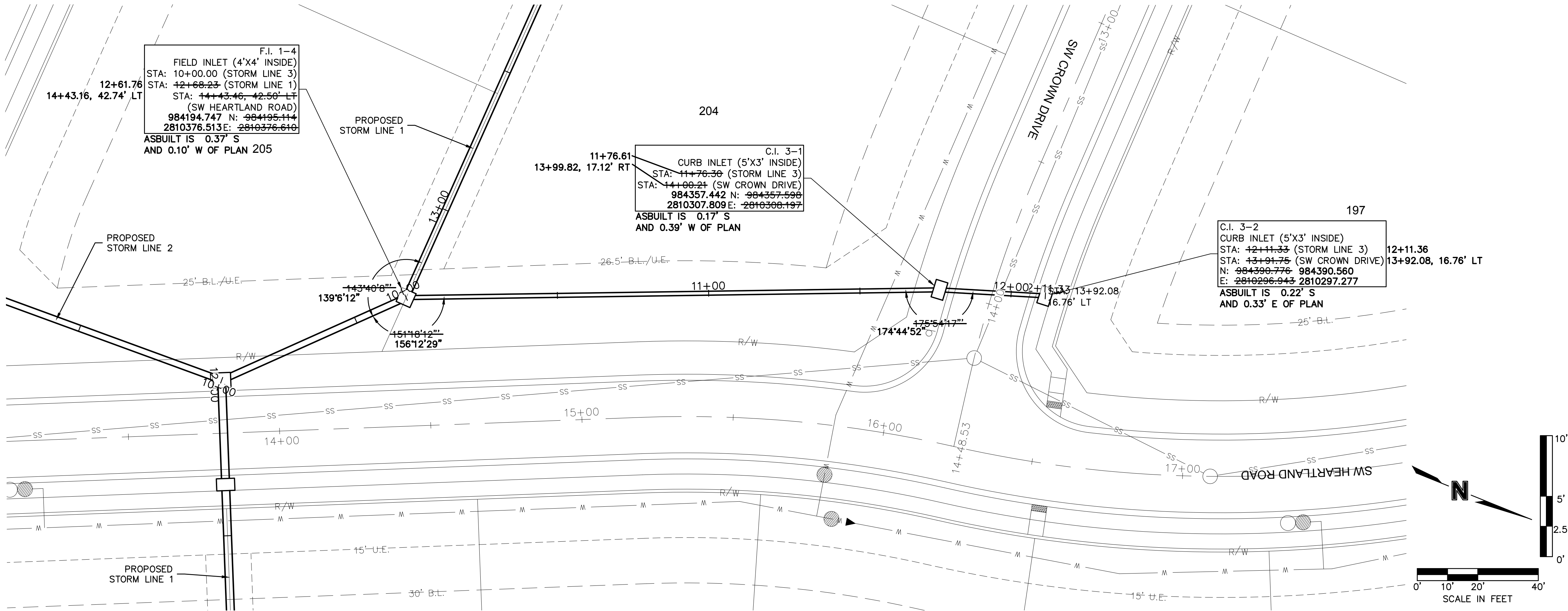
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REV. NO. DATE REVISIONS DESCRIPTION
1 08-26-2021
2 10-29-2021

STORM SEWER PLAN & PROFILE (LINE 2)
STREET & STORM SEWER PLANS
THE RETREAT AT HOOK FARMS
SECOND PLAT
LEE'S SUMMIT, MO
2021

drawn by: B.M.W./A.A.
checked by: B.M.W.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

SHEET
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AS BUILT
DATE SURVEYED: 2022-06-17

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

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08-26-2021

10-29-2021

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STORM SEWER PLAN & PROFILE (LINE 3)
STREET & STORM SEWER PLANS

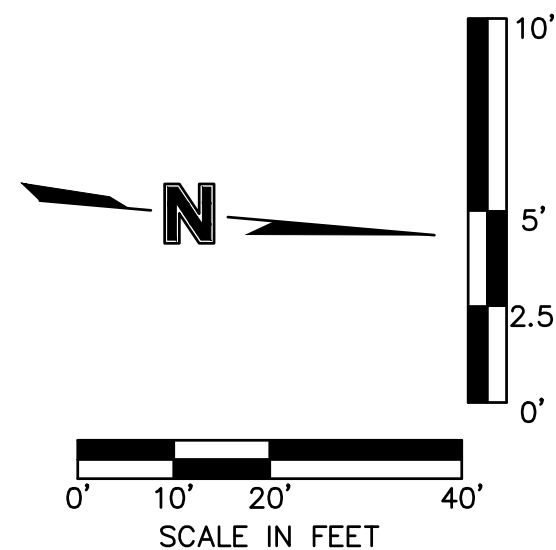
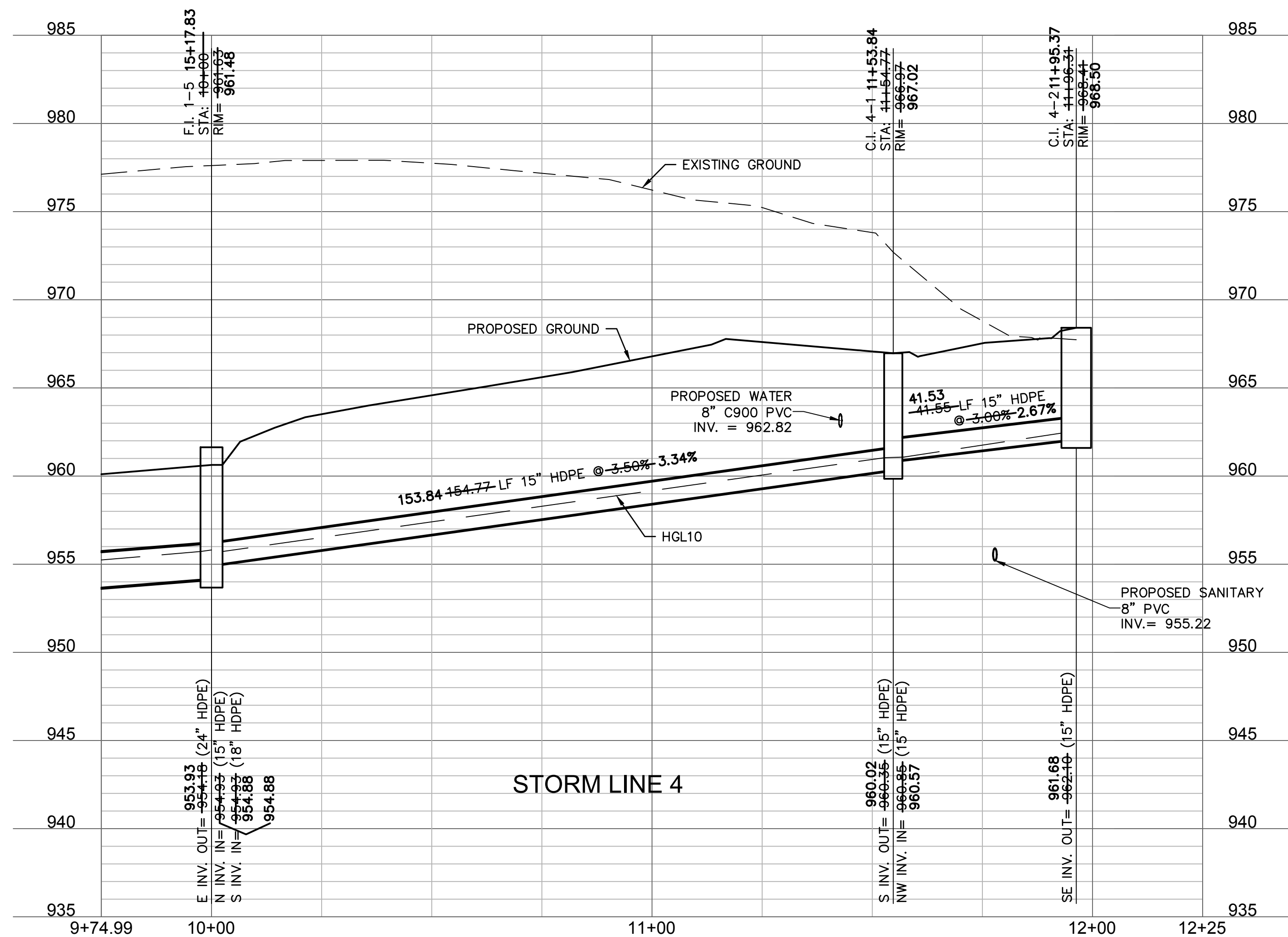
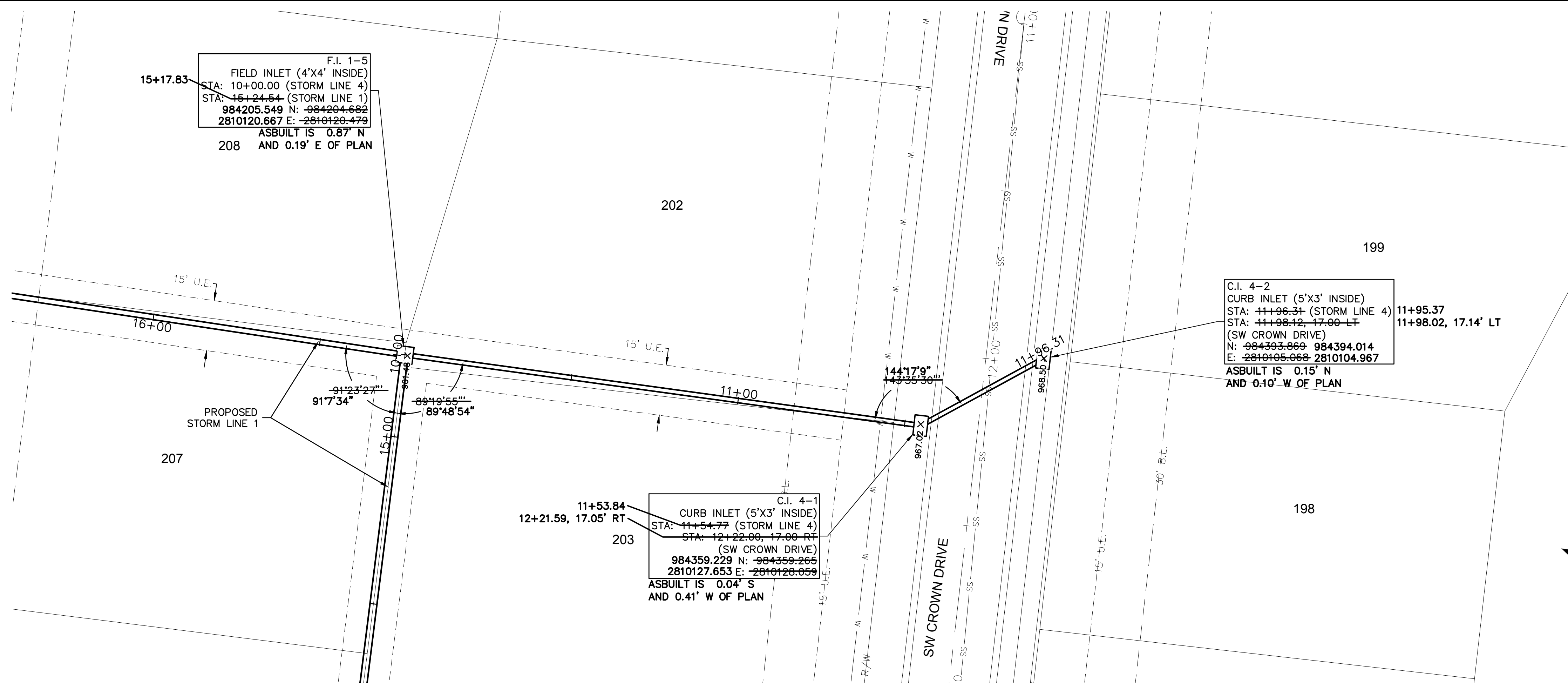
THE RETREAT AT HOOK FARMS
SECOND PLAT

2021

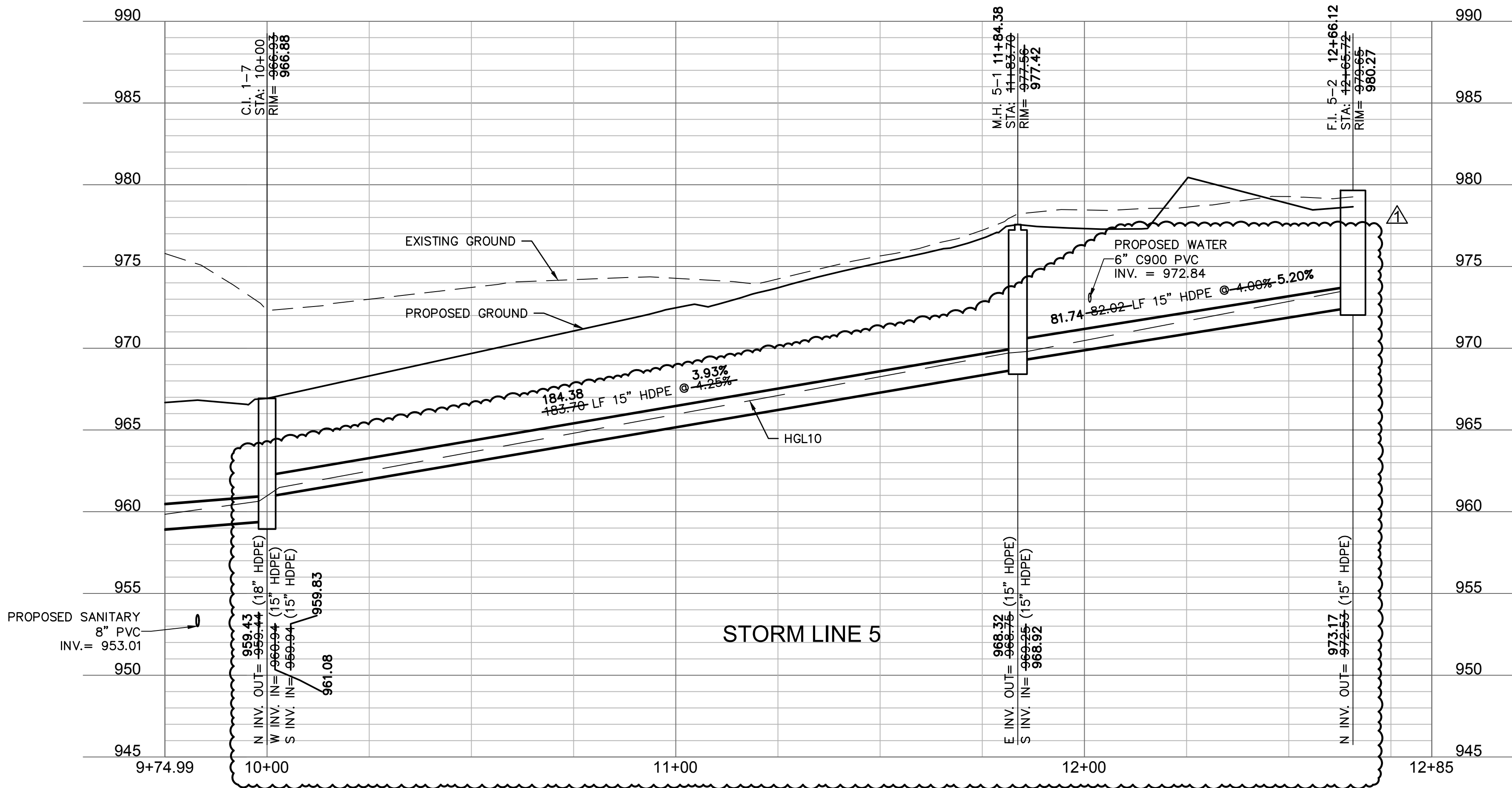
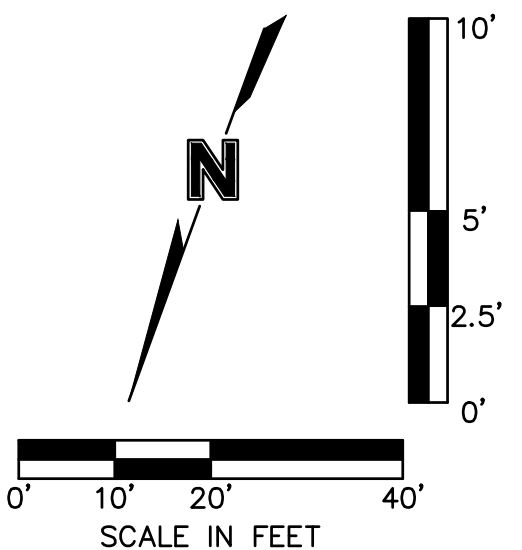
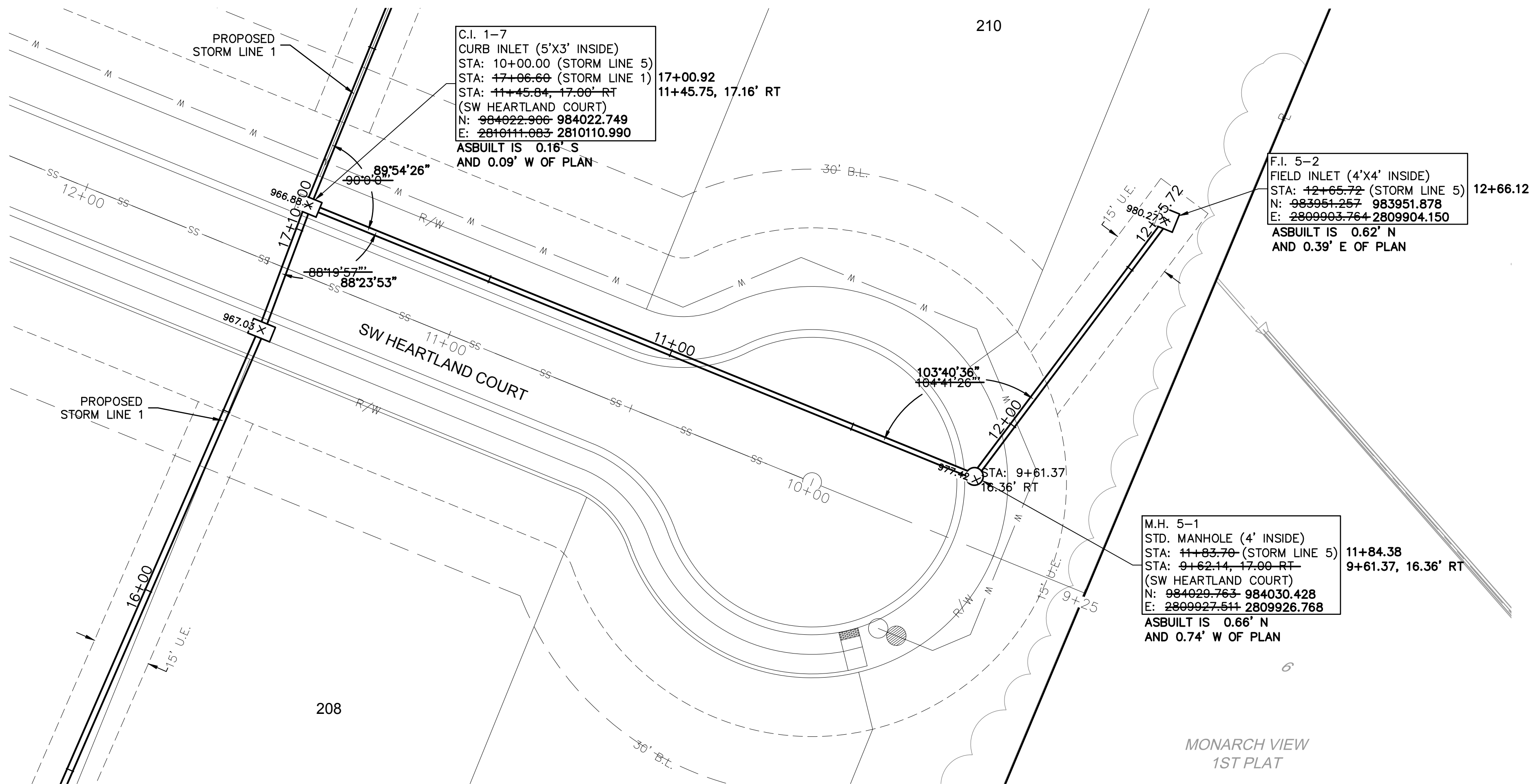
LEE'S SUMMIT, MO

drawn by: B.M.W./A.A.
checked by: B.M.W./A.A.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

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BY

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REVISIONS

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

THE RETREAT AT HOOK FARMS
SECOND PLAT

2021

LEE'S SUMMIT, MO

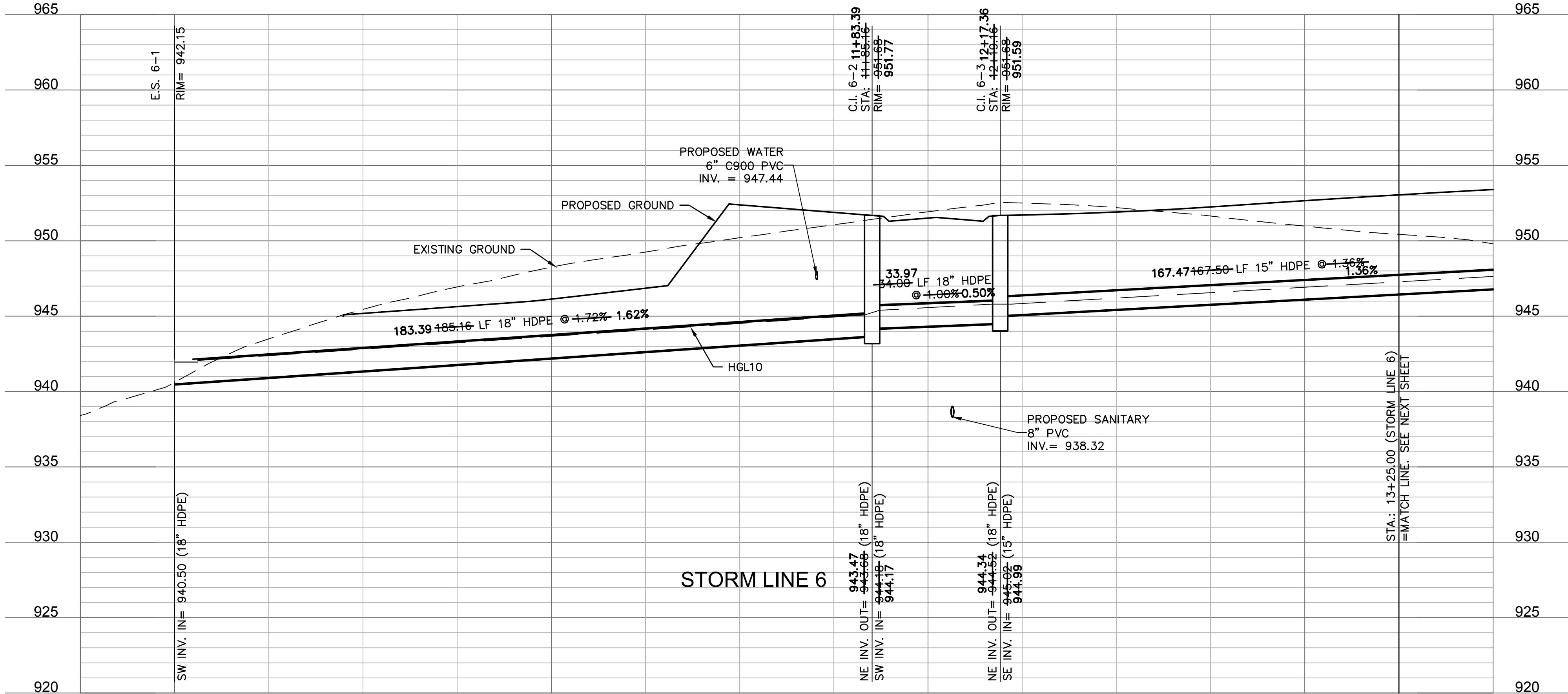
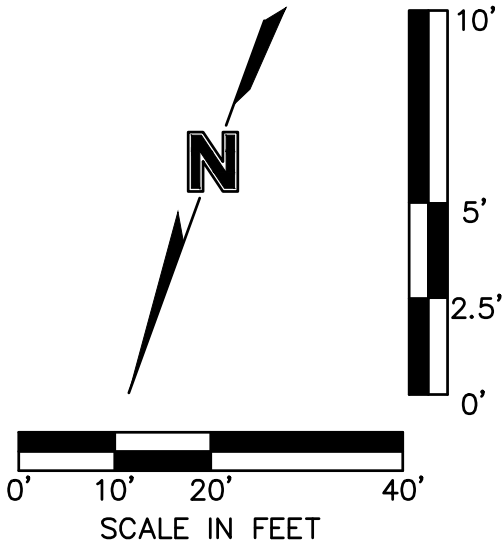
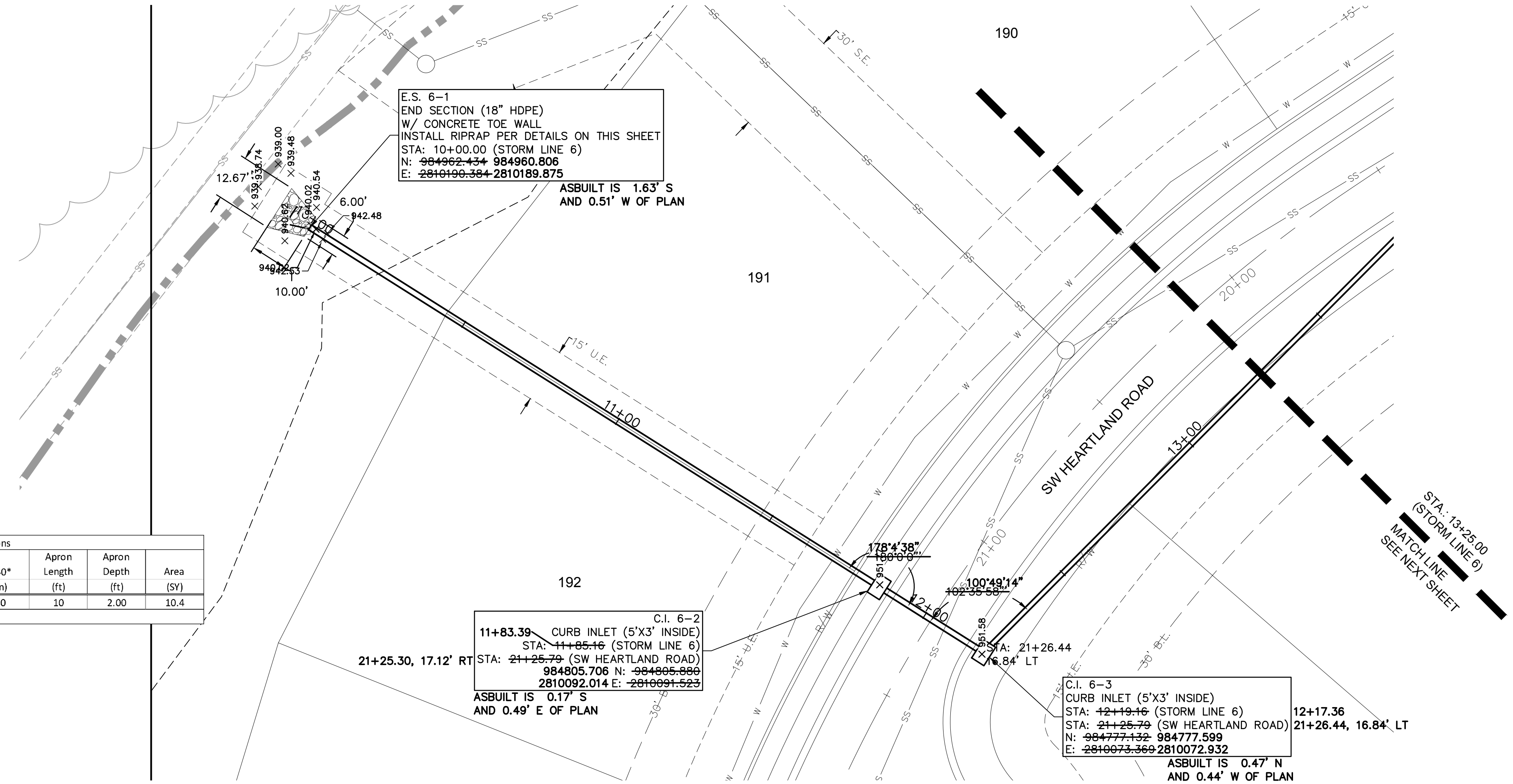
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checked by: B.M.W.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

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Riprap Calculations						
End Section	Q ₁₀₀ (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)
E.S. 6-1	25.96	2	3	10	10	2.00
						Area (SY)
						10.4

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



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REVISIONS

STORM SEWER PLAN & PROFILE (LINE 6)
STREET & STORM SEWER PLANS

THE RETREAT AT HOOK FARMS
SECOND PLAT

LEE'S SUMMIT, MO

drawn by: B.M.W./A.A.
checked by: B.M.W./A.A.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

SHEET
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REV. NO.

DATE

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05-26-2021

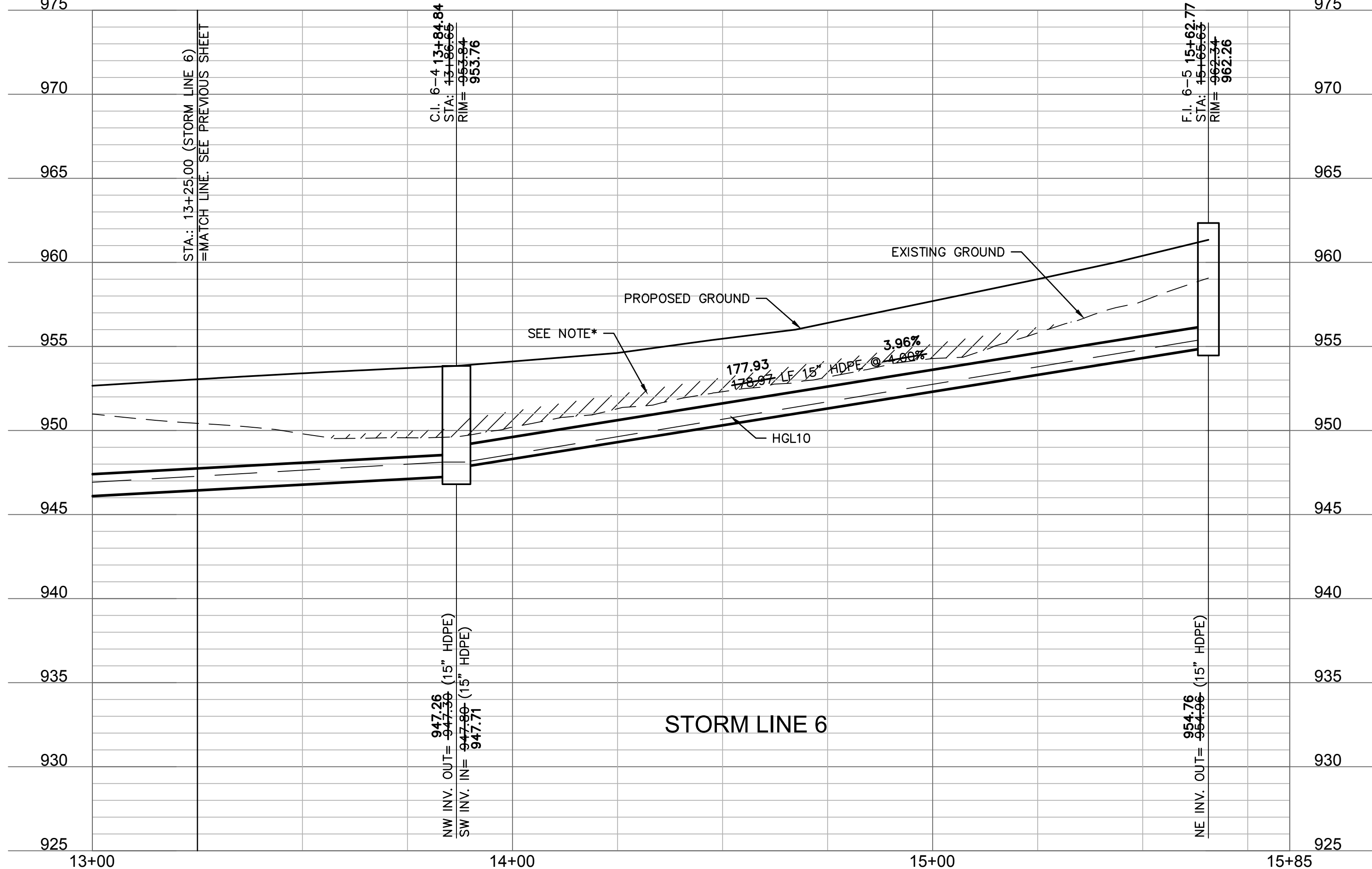
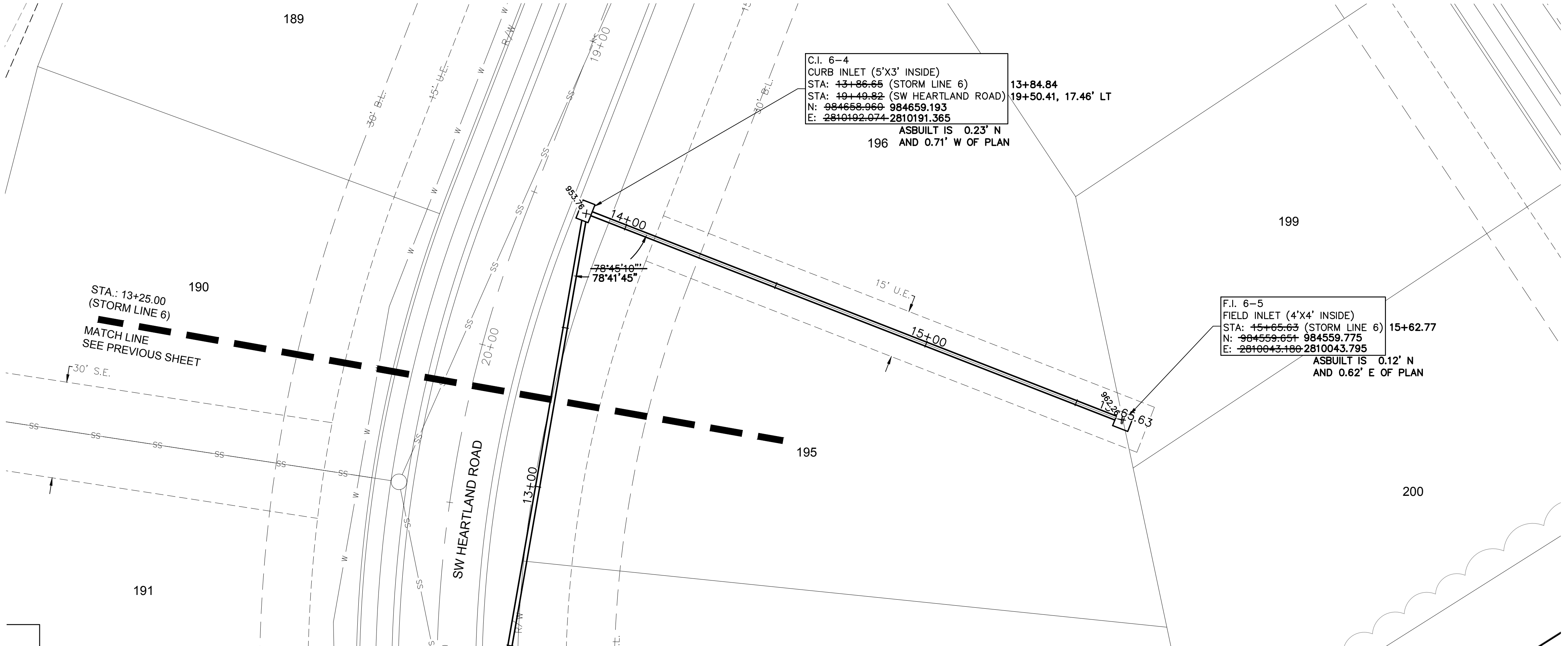
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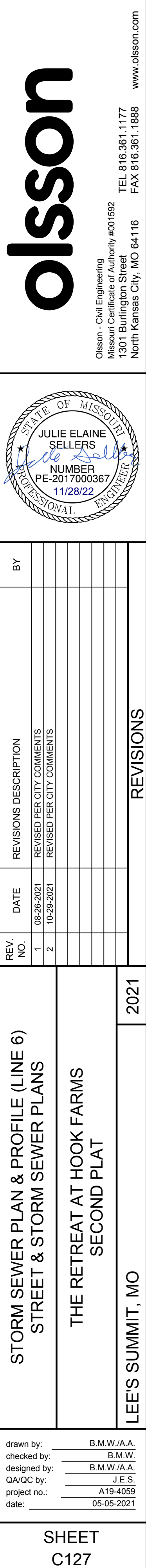
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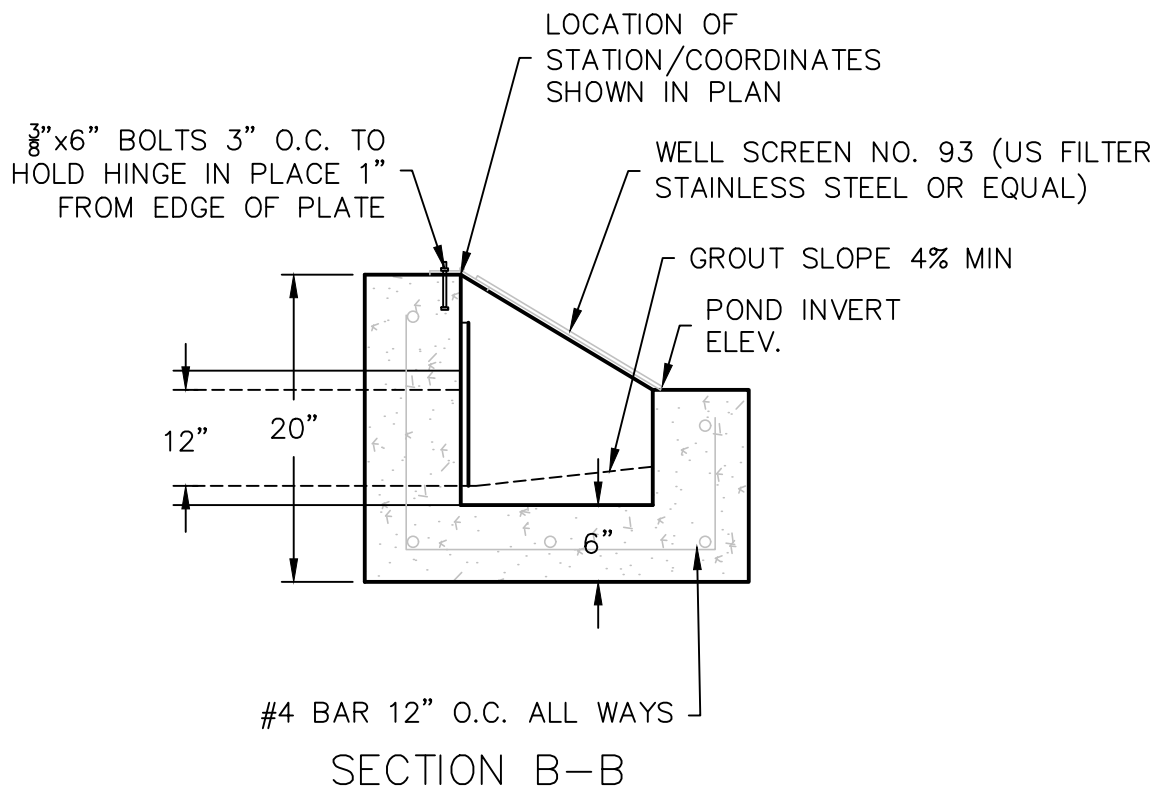
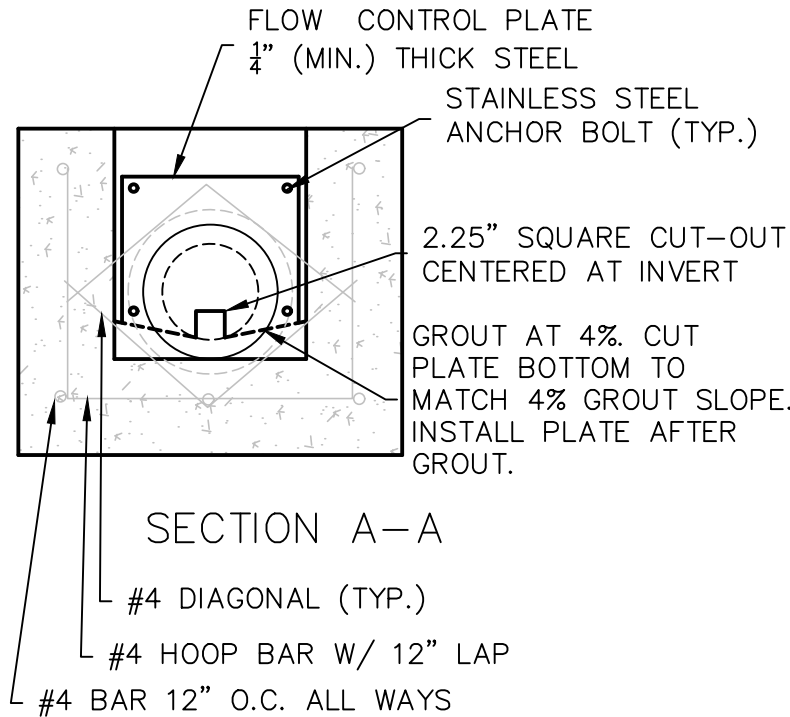
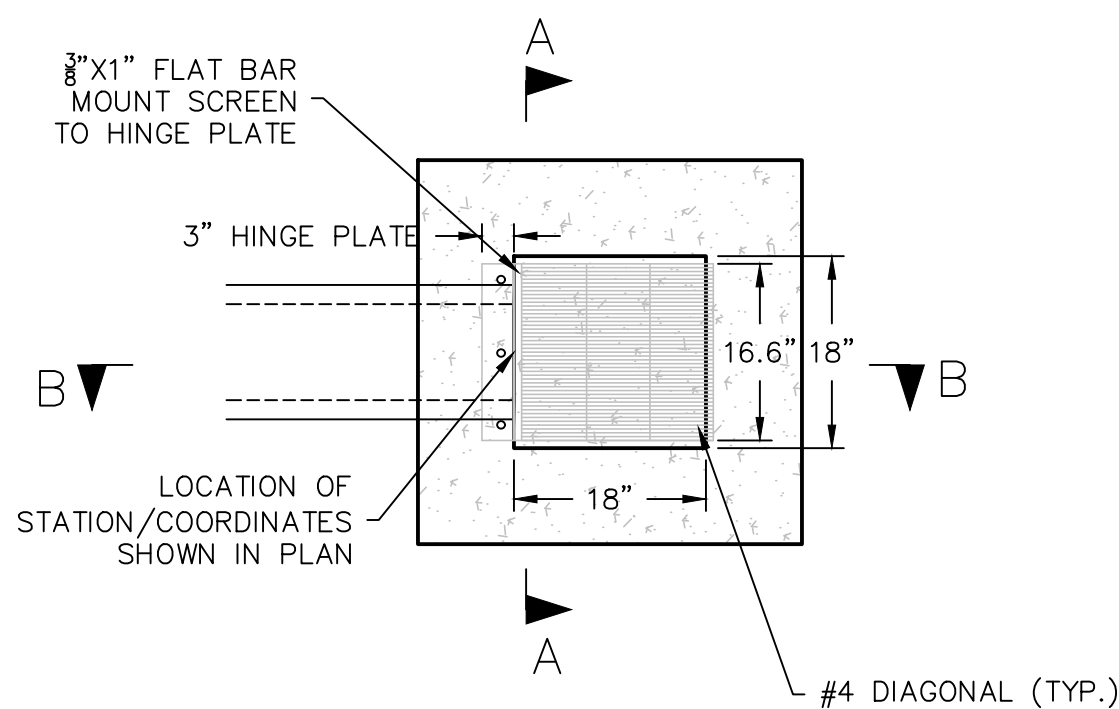


*NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE



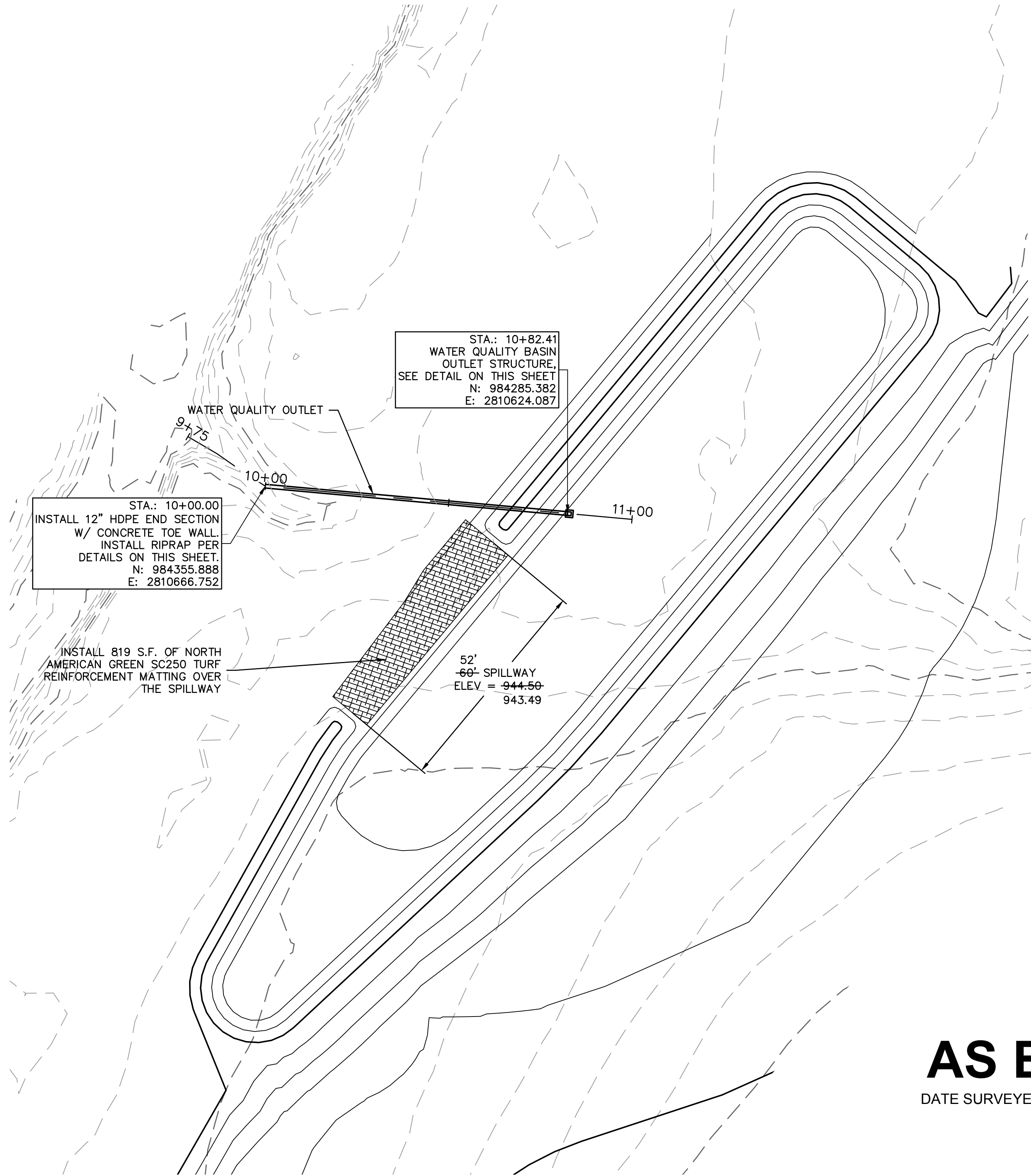
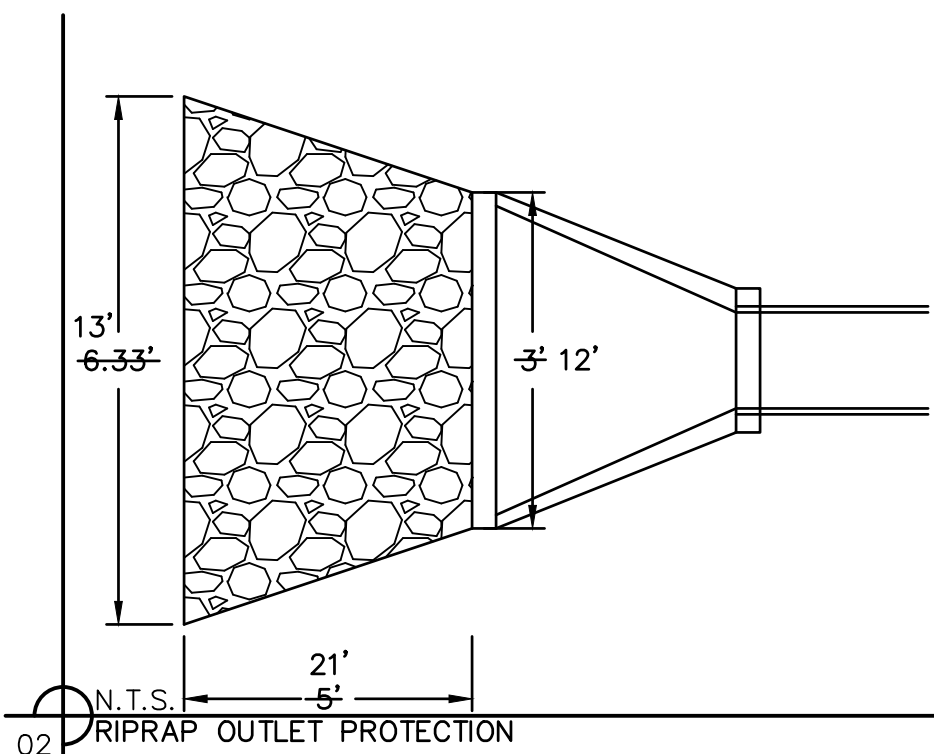
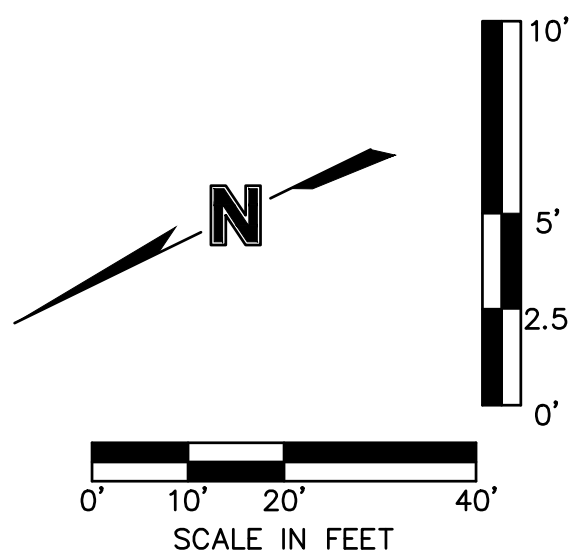
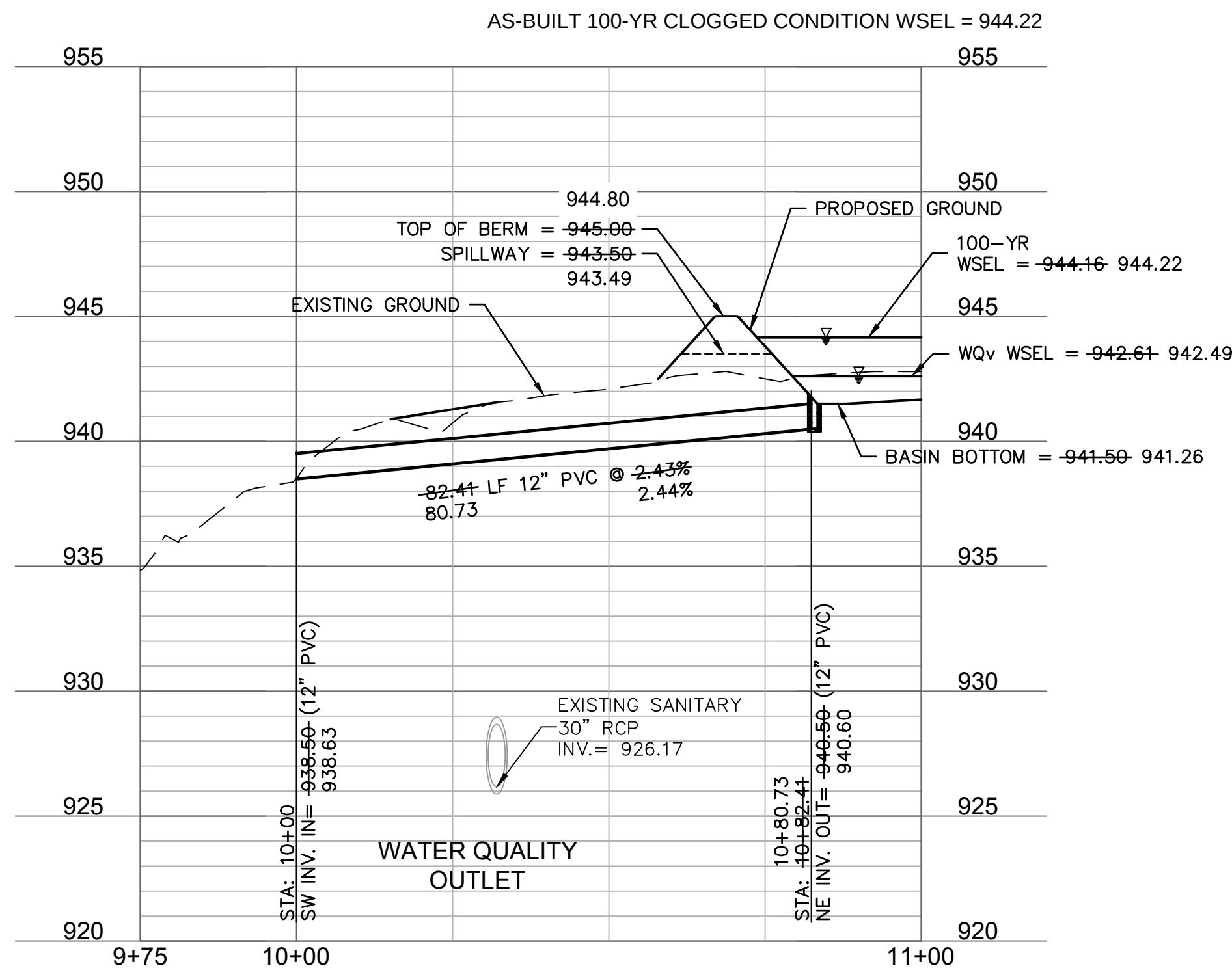
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01 N.T.S.
WATER QUALITY BASIN OULET STRUCTURE

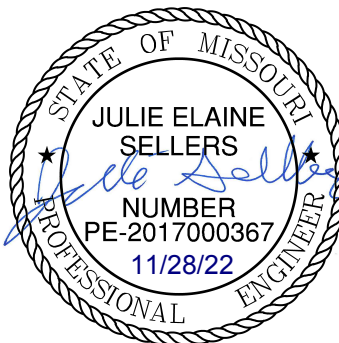


- GENERAL NOTES:
1. CONCRETE SHALL BE CLASS B
 2. REINFORCING BARS SHALL BE EPOXY COATED AND DEFORMED, AND SHALL HAVE MINIMUM 2" CLEARANCE.
 3. ALL MOUNTING HARDWARE TO BE STAINLESS STEEL AND PROVIDED WITH HINGES AND LOCKABLE OR BOLTABLE ACCESS.

3/8"x6" BOLTS 3" O.C. TO HOLD HINGE IN PLACE 1" FROM EDGE OF PLATE



AS BUILT
DATE SURVEYED: 2022-06-17



REV. NO.	DATE	REVISIONS DESCRIPTION	BY
1	08-26-2021	REVISED PER CITY COMMENTS	
2	10-29-2021	REVISED PER CITY COMMENTS	

WATER QUALITY BASIN PLAN STREET & STORM SEWER PLANS	2021
THE RETREAT AT HOOK FARMS SECOND PLAT	
LEE'S SUMMIT, MO	

drawn by: B.M.W./A.A.
checked by: B.M.W./A.A.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

SHEET
C128

olsson

Olsson - Civil Engineering
Missouri Certificate of Authority #001592
1301 Burlington Street
North Kansas City, MO 64116
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DWG: F:\2019\4001-4500\019-4059-A\40-Design\AutoCAD\Final Plans - Asbuilts\Sheets\GNCV\Street & Storm Sewer Plans\C_MDR01_A194059.dwg
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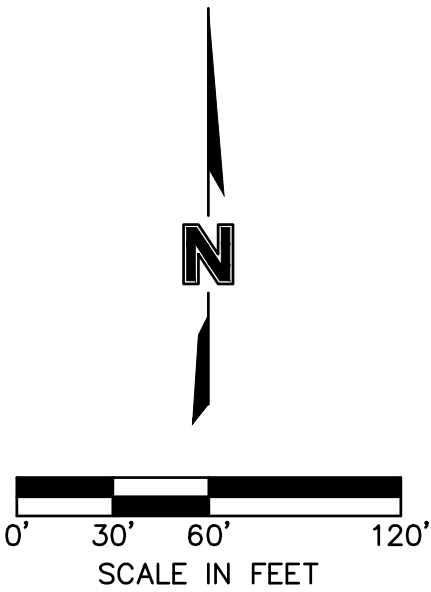
- NOTES:
1. INDIVIDUAL LOT OWNERS SHALL NOT CHANGE OR OBSTRUCT THE DRAINAGE FLOW LINES OR PATHS ON THE LOTS, AS SHOWN ON THE MATER DRAINAGE PLAN, UNLESS SPECIFIC APPLICATION IS MADE AND APPROVED BY THE CITY ENGINEER.
 2. PLAT IS LOCATION IN ZONE X, "AREAS OUTSIDE THE 1-PERCENT ANNUAL CHANCE FLOODPLAINS, 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. REQUIRED BUFFER ZONES FOR NATURAL STREAMS NOTED ON THIS PLAN SHEET.
 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 C107-C108 FOR SWALE GRADING DETAILS.
 6. DRAINAGE PATHS TO BE CONSTRUCTED BETWEEN EACH OF THE LOTS LABELED AS STANDARD LOTS.
 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.

NOTES:

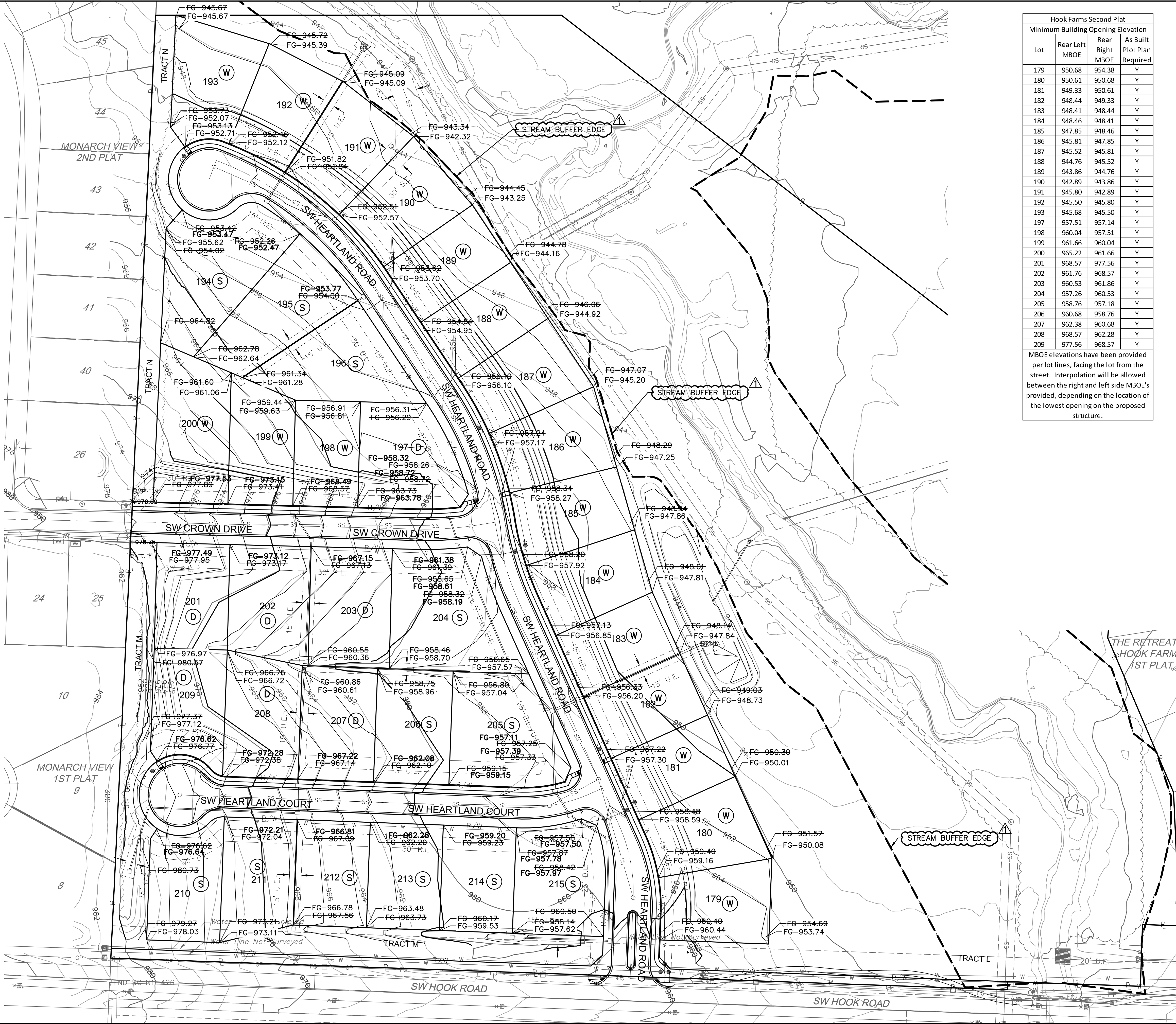
MBOE - MINIMUM BUILDING OPENING ELEVATION
FG - FINISHED GRADE

BASEMENT TYPES

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



LEGEND	
	FINISHED INDEX CONTOURS
	FINISHED INTERMEDIATE CONTOURS



Hook Farms Second Plat				
Minimum Building Opening Elevation		As Built Plot Plan		
Lot	Rear Left MBOE	Rear Right MBOE	Plot Plan	Required
179	950.68	954.38	Y	
180	950.61	950.68	Y	
181	949.33	950.61	Y	
182	948.44	949.33	Y	
183	948.41	948.44	Y	
184	948.46	948.41	Y	
185	947.85	948.46	Y	
186	945.81	947.85	Y	
187	945.52	945.81	Y	
188	944.76	945.52	Y	
189	943.86	944.76	Y	
190	942.89	943.86	Y	
191	945.80	942.89	Y	
192	945.50	945.80	Y	
193	945.68	945.50	Y	
197	957.51	957.14	Y	
198	960.04	957.51	Y	
199	961.66	960.04	Y	
200	965.22	961.66	Y	
201	968.57	977.56	Y	
202	961.76	968.57	Y	
203	960.53	961.86	Y	
204	957.26	960.53	Y	
205	958.76	957.18	Y	
206	960.68	958.76	Y	
207	962.38	960.68	Y	
208	968.57	962.28	Y	
209	977.56	968.57	Y	

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

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STATE OF MISSOURI
JULIE ELAINE SELLERS
NUMBER PE-2017000367
11/28/22
PROFESSIONAL ENGINEER

BY

REV.	NO.	DATE	REVISIONS DESCRIPTION
1	1	08-26-2021	REVISED PER CITY COMMENTS
2	2	10-29-2021	REVISED PER CITY COMMENTS

MASTER DRAINAGE PLAN
STREET & STORM SEWER PLANS

THE RETREAT AT HOOK FARMS
SECOND PLAT

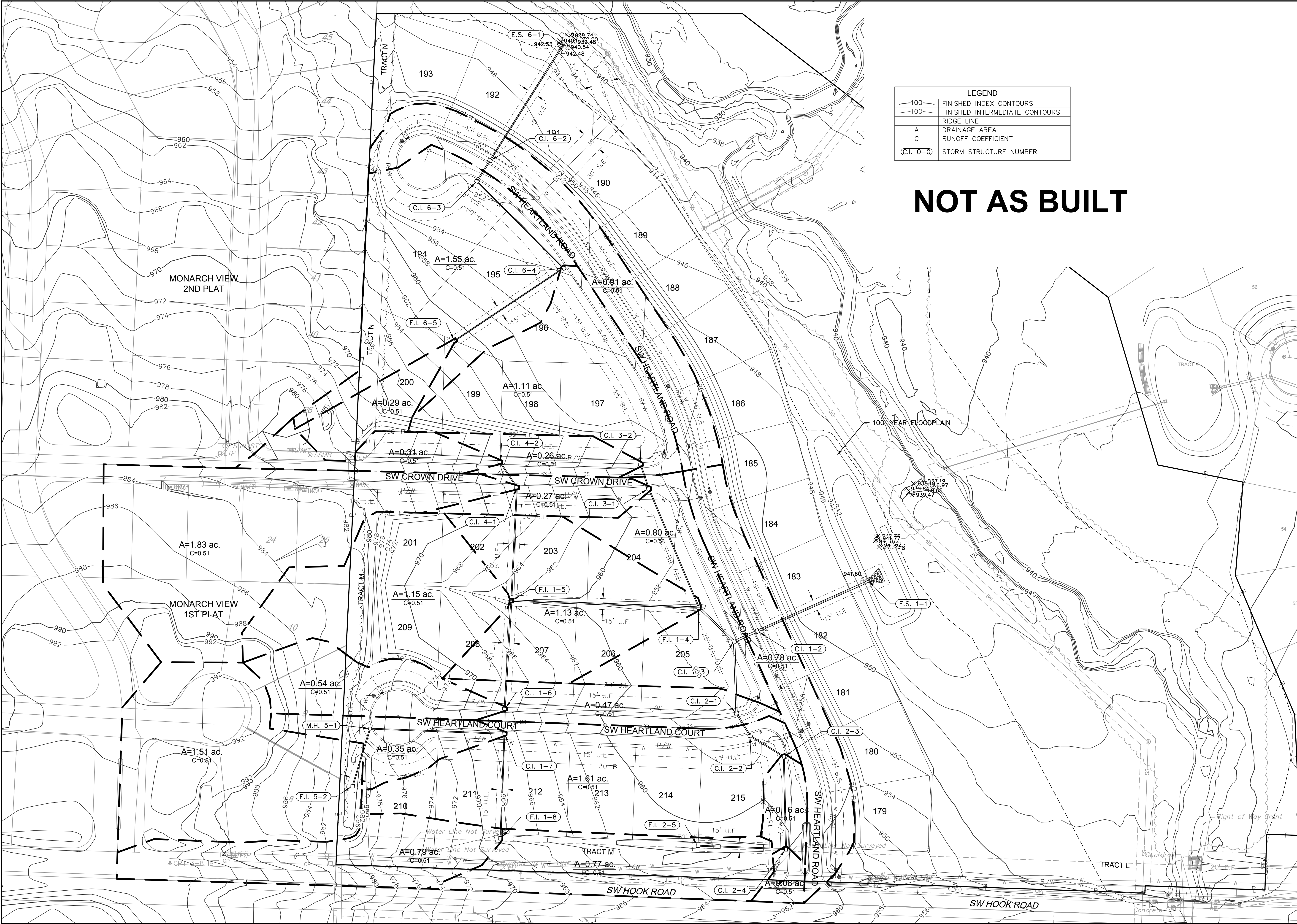
LEE'S SUMMIT, MO

drawn by: B.M.W./A.A.
checked by: B.M.W./A.A.
designed by: J.E.S.
QA/QC by: A19-4059
project no.:
date: 05-05-2021

2021

SHEET C129

DWG: F:\2019\4001-4500\019-4059-A\40-Design\AutoCAD\Final Plans - Asbuilts\Sheets\GNV\Street & Storm Sewer Plans\C_DRN01_A194059.dwg USER: ssaylor
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LEGEND	
	FINISHED INDEX CONTOURS
	FINISHED INTERMEDIATE CONTOURS
	RIDGE LINE
A	DRAINAGE AREA
C	RUNOFF COEFFICIENT
C.I. 0-0	STORM STRUCTURE NUMBER

NOT AS BUILT

olsson

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1301 Burlington Street
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STATE OF MISSOURI
JULIE ELAINE
SELLERS
Professional Engineer
NUMBER
PE-2017000367
11/28/22

BY

DATE

REV. NO.

REVISIONS DESCRIPTION

REVISED PER CITY COMMENTS

REVISED PER CITY COMMENTS

DRAINAGE PLAN
STREET & STORM SEWER PLANS
THE RETREAT AT HOOK FARMS
SECOND PLAT

LEE'S SUMMIT, MO

2021

drawn by: B.M.W./A.A.
checked by: B.M.W.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

SHEET
C130

USER: ssaylor

DWG: F:\2019\4001-4500\019-4059-A\40-Design\AutoCAD\Final Plans - Asbuilts\Sheets\GNCV\Street & Storm Sewer Plans\C_TAB01_A194059.dwg
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Inlet Design Table						
10 Year Return Frequency						
Inlet ID	Captured Flow	Bypass Flow	Inlet Efficiency (Note 2)	Gutter Depth	Gutter Spread	Ponding Depth
	(cfs)	(cfs)	(%)	(ft)	(ft)	(ft)
C.I. 1-2(L)	0.75	0.10	100.00%	0.12	5.88	...
C.I. 1-2(R)	1.58	0.14	100.00%	0.15	7.63	...
C.I. 1-2	2.93	1.40	100.00%	...	...	...
C.I. 1-3(L)	0.15	0.00	100.00%	0.06	3.16	...
C.I. 1-3(R)	3.73	0.00	100.00%	0.21	10.73	...
C.I. 1-3	5.35	0.00	100.00%	...	...	...
F.I. 1-4	4.24	0.00	100.00%	...	...	0.19
F.I. 1-5	4.31	0.00	100.00%	...	...	0.19
C.I. 1-6	1.35	0.67	66.75%	0.13	6.31	...
C.I. 1-7	1.01	0.31	76.72%	0.11	5.36	...
F.I. 1-8	2.96	0.00	100.00%	...	...	0.15
C.I. 2-1(L)	2.02	0.00	100.00%	0.16	8.05	...
C.I. 2-1(R)	0.00	0.00	...	...	...	...
C.I. 2-1	2.44	0.00	100.00%	...	...	...
C.I. 2-2(L)	0.06	0.00	100.00%	0.04	2.03	...
C.I. 2-2(R)	4.58	0.00	100.00%	0.22	11.03	...
C.I. 2-2	6.33	0.00	100.00%	...	...	...
C.I. 2-3	0.58	0.02	96.23%	0.10	5.19	...
C.I. 2-4	0.30	0.00	98.51%	0.08	3.93	...
F.I. 2-5	2.89	0.00	100.00%	...	...	0.14
C.I. 3-1	3.48	2.35	59.75%	0.23	11.61	...
C.I. 3-2	1.08	0.15	87.91%	0.12	6.21	...
C.I. 4-1	2.05	4.81	29.85%	0.20	9.80	...
C.I. 4-2	0.90	0.26	77.83%	0.10	5.04	...
F.I. 5-2	5.66	0.00	100.00%	...	...	0.23
C.I. 6-2(L)	0.64	0.00	100.00%	0.11	5.52	...
C.I. 6-2(R)	2.18	0.00	100.00%	0.17	8.68	...
C.I. 6-2	3.41	0.00	100.00%	...	...	...
C.I. 6-3(L)	3.26	0.00	100.00%	0.19	9.73	...
C.I. 6-3(R)	1.01	0.00	100.00%	0.13	6.56	...
C.I. 6-3	7.08	0.00	100.00%	...	...	...
C.I. 6-4	3.04	1.27	70.56%	0.21	10.69	...
F.I. 6-5	1.09	0.00	100.00%	...	...	0.08
Notes:						
1. Inlet capacity at sag location has been reduced by a clogging factor of 0.80, reducing theoretical Both theoretical capacity and reduced capacity are shown.						
2. Inlet efficiency shown in the tables is Captured Flow/Total Flow, denoting the actual percentage						

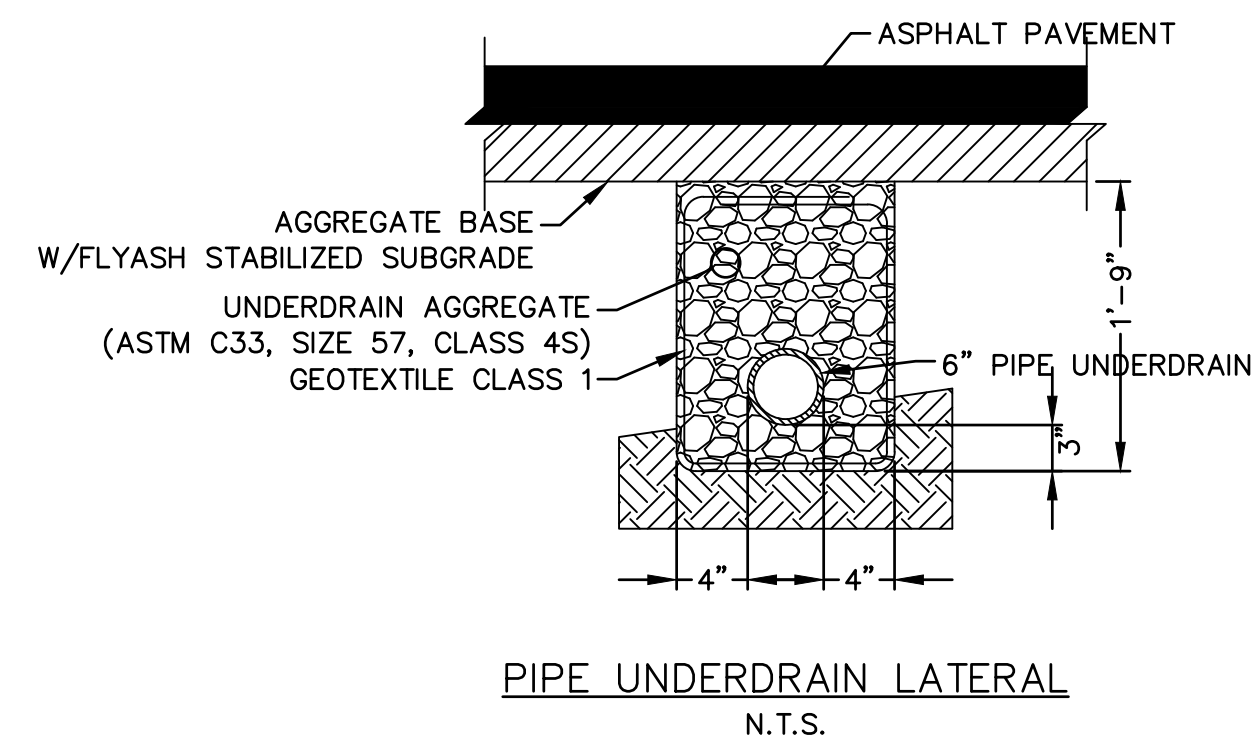
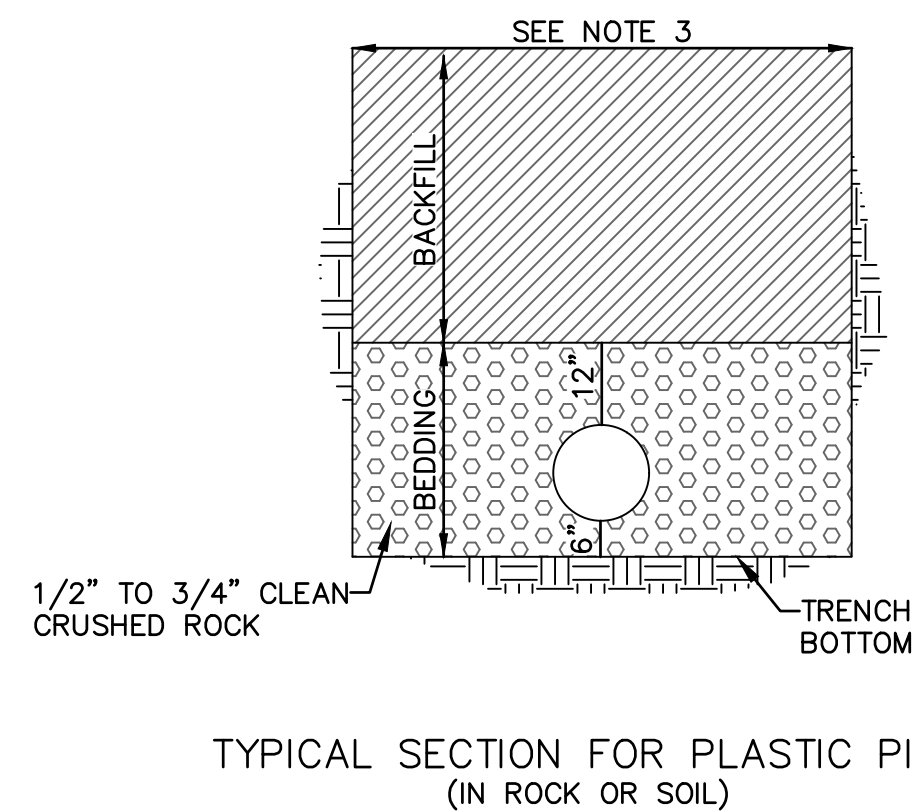
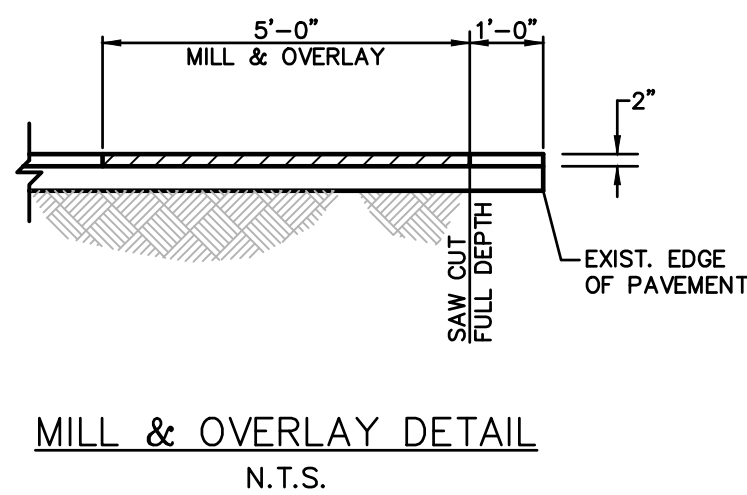
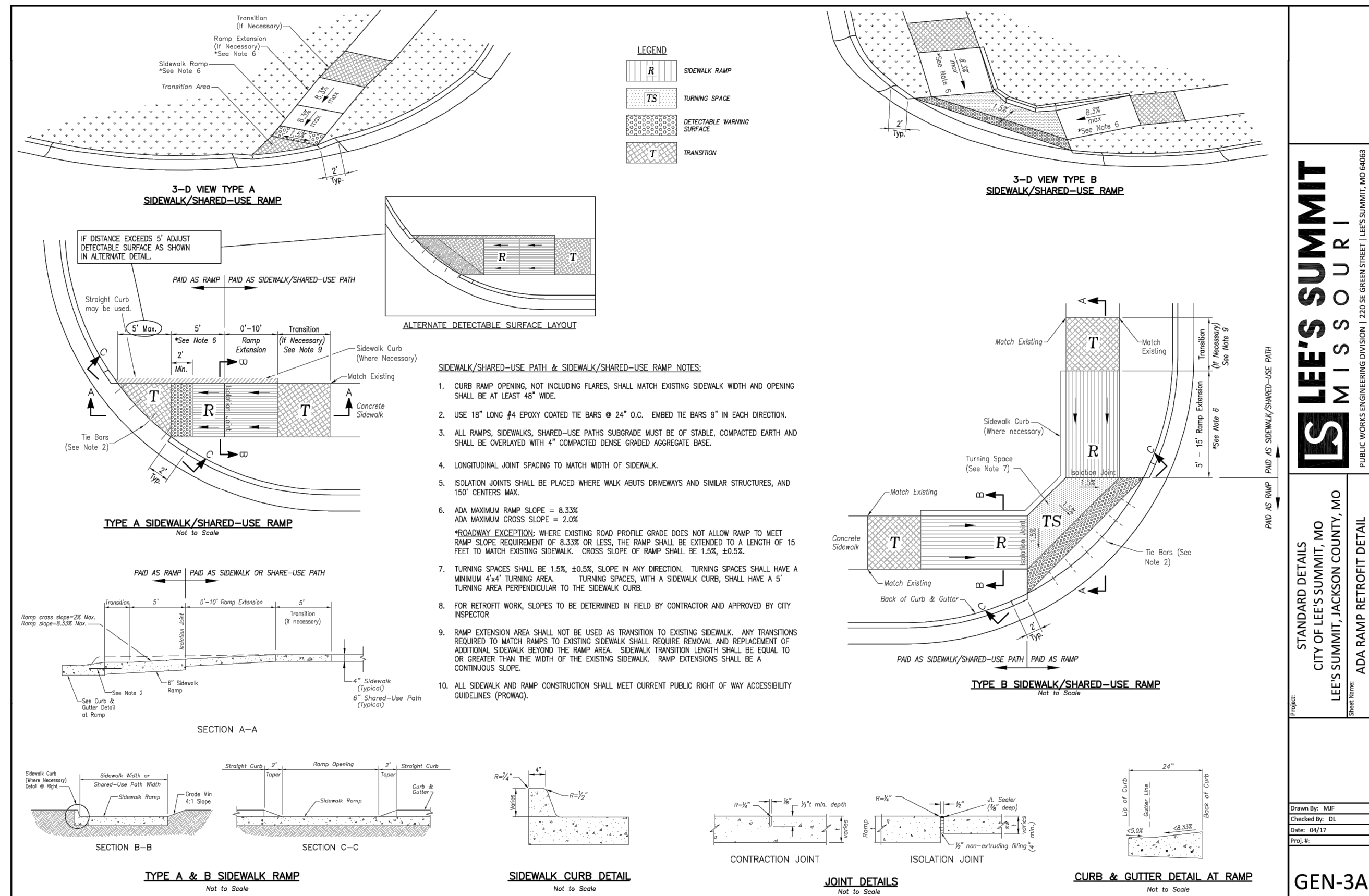
Inlet Design Table						
100 Year Return Frequency						
Inlet ID	Captured Flow	Bypass Flow	Inlet Efficiency (Note 2)	Gutter Depth	Gutter Spread	Ponding Depth
	(cfs)	(cfs)	(%)	(ft)	(ft)	(ft)
C.I. 1-2(L)	1.32	0.46	100.00%	0.15	7.26	...
C.I. 1-2(R)	2.76	0.70	100.00%	0.19	9.42	...
C.I. 1-2	5.13	3.62	100.00%	...	...	...
C.I. 1-3(L)	0.26	0.00	100.00%	0.08	3.90	...
C.I. 1-3(R)	9.56	0.00	100.00%	0.31	15.27	...
C.I. 1-3	12.39	0.00	100.00%	...	...	...
F.I. 1-4	7.44	0.00	100.00%	...	...	0.27
F.I. 1-5	7.57	0.00	100.00%	...	...	0.27
C.I. 1-6	1.81	1.75	50.86%	0.16	7.79	...
C.I. 1-7	1.46	0.84	63.36%	0.13	6.62	...
F.I. 1-8	5.20	0.00	100.00%	...	...	0.21
C.I. 2-1(L)	4.12	0.00	100.00%	0.21	10.50	...
C.I. 2-1(R)	0.00	0.00	...	...	...	...
C.I. 2-1	4.84	0.00	100.00%	...	...	...
C.I. 2-2(L)	0.14	0.00	100.00%	0.06	2.83	...
C.I. 2-2(R)	8.35	0.00	100.00%	0.28	13.82	...
C.I. 2-2	11.45	0.00	100.00%	...	...	...
C.I. 2-3	0.99	0.08	92.61%	0.13	6.43	...
C.I. 2-4	0.51	0.02	96.62%	0.10	4.86	...
F.I. 2-5	4.07	0.00	100.00%	...	...	0.21
C.I. 3-1	5.57	7.13	39.04%	0.30	15.08	...
C.I. 3-2	1.87	0.56	77.13%	0.16	8.01	...
C.I. 4-1	2.12	9.92	17.63%	0.24	12.10	...
C.I. 4-2	1.32	0.72	64.85%	0.12	6.22	...
F.I. 5-2	9.94	0.00	100.00%	...	...	0.33
C.I. 6-2(L)	1.12	0.00	100.00%	0.14	6.82	...
C.I. 6-2(R)	3.82	0.00	100.00%	0.21	10.71	...
C.I. 6-2	5.99	0.00	100.00%	...	...	...
C.I. 6-3(L)	7.08	0.00	100.00%	0.26	13.02	...
C.I. 6-3(R)	1.78	0.00	100.00%	0.16	8.10	...
C.I. 6-3	13.79	0.00	100.00%	...	...	...
C.I. 6-4	4.27	3.59	54.31%	0.27	13.39	...
F.I. 6-5	1.91	0.00	100.00%	...	...	0.11
Notes:						
1. Inlet capacity at sag location has been reduced by a clogging factor of 0.80, reducing theoretical Both theoretical capacity and reduced capacity are shown.						
2. Inlet efficiency shown in the tables is Captured Flow/Total Flow, denoting the actual percentage						

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. 1-2(L)	0.20	0.51	5.00	7.35	1.00	0.75
C.I. 1-2(R)	0.42	0.51	5.00	7.35	1.00	1.58
C.I. 1-2(B)	0.16	0.51	5.00	7.35	1.00	0.60
C.I. 1-2	0.78	0.51	5.00	7.35	1.00	2.93
C.I. 1-3(L)	0.04	0.51	5.00	7.35	1.00	0.15
C.I. 1-3(R)	0.37	0.51	5.00	7.35	1.00	1.39
C.I. 1-3(B)	0.39	0.51	5.00	7.35	1.00	1.46
C.I. 1-3	0.80	0.51	5.00	7.35	1.00	3.00
F.I. 1-4	1.13	0.51	5.00	7.35	1.00	4.24
F.I. 1-5	1.15	0.51	5.00	7.35	1.00	4.31
C.I. 1-6	0.54	0.51	5.00	7.35	1.00	2.03
C.I. 1-7	0.35	0.51	5.00	7.35	1.00	1.31
F.I. 1-8	0.79	0.51	5.00	7.35	1.00	2.96
C.I. 2-1(L)	0.36	0.51	5.00	7.35	1.00	1.35
C.I. 2-1(R)	0.00	0.51	5.00	7.35	1.00	0.00
C.I. 2-1(B)	0.11	0.51	5.00	7.35	1.00	0.41
C.I. 2-1	0.47	0.51	5.00	7.35	1.00	1.76
C.I. 2-2(L)	0.01	0.51	5.00	7.35	1.00	0.04
C.I. 2-2(R)	1.14	0.51	5.00	7.35	1.00	4.28
C.I. 2-2(B)	0.45	0.51	5.00	7.35	1.00	1.69
C.I. 2-2	1.60	0.51	5.00	7.35	1.00	6.00
C.I. 2-3	0.16	0.51	5.00	7.35	1.00	0.60
C.I. 2-4	0.08	0.51	5.00	7.35	1.00	0.30
F.I. 2-5	0.77	0.51	5.00	7.35	1.00	2.89
C.I. 3-1	0.27	0.51	5.00	7.35	1.00	1.01
C.I. 3-2	0.26	0.51	5.00	7.35	1.00	0.98
C.I. 4-1	1.83	0.51	5.00	7.35	1.00	6.86
C.I. 4-2	0.31	0.51	5.00	7.35	1.00	1.16
F.I. 5-2	1.51	0.51	5.00	7.35	1.00	5.66
C.I. 6-2(L)	0.17	0.51	5.00	7.35	1.00	0.64
C.I. 6-2(R)	0.58	0.51	5.00	7.35	1.00	2.18
C.I. 6-2(B)	0.16	0.51	5.00	7.35	1.00	0.60
C.I. 6-2	0.91	0.51	5.00	7.35	1.00	3.41
C.I. 6-3(L)	0.53	0.51	5.00	7.35	1.00	1.99
C.I. 6-3(R)	0.27	0.51	5.00	7.35	1.00	1.01
C.I. 6-3(B)	0.75	0.51	5.00	7.35	1.00	2.81
C.I. 6-3	1.55	0.51	5.00	7.35	1.00	5.81
C.I. 6-4	1.11	0.51	5.00	7.35	1.00	4.16
F.I. 6-5	0.29	0.51	5.00	7.35	1.00	1.09

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. 1-2(L)	0.20	0.51	5.00	10.32	1.25	1.32
C.I. 1-2(R)	0.42	0.51	5.00	10.32	1.25	2.76
C.I. 1-2(B)	0.16	0.51	5.00	10.32	1.25	1.05
C.I. 1-2	0.78	0.51	5.00	10.32	1.25	5.13
C.I. 1-3(L)	0.04	0.51	5.00	10.32	1.25	0.26
C.I. 1-3(R)	0.37	0.51	5.00	10.32	1.25	2.43
C.I. 1-3(B)	0.39	0.51	5.00	10.32	1.25	2.57
C.I. 1-3	0.80	0.51	5.00	10.32	1.25	5.26
F.I. 1-4	1.13	0.51	5.00	10.32	1.25	7.44
F.I. 1-5	1.15	0.51	5.00	10.32	1.25	7.57
C.I. 1-6	0.54	0.51	5.00	10.32	1.25	3.55
C.I. 1-7	0.35	0.51	5.00	10.32	1.25	2.30
F.I. 1-8	0.79	0.51	5.00	10.32	1.25	5.20
C.I. 2-1(L)	0.36	0.51	5.00	10.32	1.25	2.37
C.I. 2-1(R)	0.00	0.51	5.00	10.32	1.25	0.00
C.I. 2-1(B)	0.11	0.51	5.00	10.32	1.25	0.72
C.I. 2-1	0.47	0.51	5.00	10.32	1.25	3.09
C.I. 2-2(L)	0.01	0.51	5.00	10.32	1.25	0.07
C.I. 2-2(R)	1.14	0.51	5.00	10.32	1.25	7.50
C.I. 2-2(B)	0.45	0.51	5.00	10.32	1.25	2.96
C.I. 2-2	1.60	0.51	5.00	10.32	1.25	10.53
C.I. 2-3	0.16	0.51	5.00	10.32	1.25	1.05
C.I. 2-4	0.08	0.51	5.00	10.32	1.25	0.53
F.I. 2-5	0.77	0.51	5.00	10.32	1.25	5.07
C.I. 3-1	0.27	0.51	5.00	10.32	1.25	1.78
C.I. 3-2	0.26	0.51	5.00	10.32	1.25	1.71
C.I. 4-1	1.83	0.51	5.00	10.32	1.25	12.04
C.I. 4-2	0.31	0.51	5.00	10.32	1.25	2.04
F.I. 5-2	1.51	0.51	5.00	10.32	1.25	9.94
C.I. 6-2(L)	0.17	0.51	5.00	10.32	1.25	1.12
C.I. 6-2(R)	0.58	0.51	5.00	10.32	1.25	3.82
C.I. 6-2(B)	0.16	0.51	5.00	10.32	1.25	1.05
C.I. 6-2	0.91	0.51	5.00	10.32	1.25	5.99
C.I. 6-3(L)	0.53	0.51	5.00	10.32	1.25	3.49
C.I. 6-3(R)	0.27	0.51	5.00	10.32	1.25	1.78
C.I. 6-3(B)	0.75	0.51	5.00	10.32	1.25	4.94
C.I. 6-3	1.55	0.51	5.00	10.32	1.25	10.20
C.I. 6-4	1.11	0.51	5.00	10.32	1.25	7.30
F.I. 6-5	0.29	0.51	5.00	10.32	1.25	1.91

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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. 1-2	E.S. 1-1	166.93	945.50	942.00	2.10	30	0.012	47.90	10.08	64.33	2.27	947.77	956.18
C.I. 1-3	C.I. 1-2	34.50	946.44	946.00	1.28	30	0.012	44.97	10.65	50.18	2.22	948.66	956.19
F.I. 1-4	C.I. 1-3	66.80	948.55	946.94	2.41	24	0.012	27.04	9.22	38.04	1.81	950.36	956.25
F.I. 1-5	F.I. 1-4	256.31	954.18	949.05	2.00	24	0.012	18.24	7.71	34.66	1.54	955.72	961.63
C.I. 1-6	F.I. 1-5	148.04	958.26	954.93	2.25	18	0.012	10.98	8.57	17.06	1.27	959.53	966.98
C.I. 1-7	C.I. 1-6	34.01	959.44	958.76	2.00	18	0.012	9.63	7.94	16.09	1.20	960.64	966.93
C.I. 1-8	C.I. 1-7	143.00	962.33	959.94	1.67	15	0.012	2.96	4.23	9.04	0.69	963.02	967.73
C.I. 2-1	C.I. 1-3	98.35	947.82	946.94	0.89	24	0.012	12.58	5.16	23.18	1.27	949.94	957.16
C.I. 2-2	C.I. 1-1	35.70	949.11	948.32	2.21	18	0.012	10.14	8.28	16.92	1.23	950.39	957.15
C.I. 2-3	C.I. 2-2	54.05	950.04	949.61	0.80	15	0.012	3.77	4.88	6.24	0.78	950.82	958.52
C.I. 2-4	C.I. 2-3	126.26	951.55	950.54	0.80	15	0.012	3.19	4.74	6.26	0.72	952.27	960.42
F.I. 2-5	C.I. 2-4	120.09	953.01	952.05	0.80	15	0.012	2.89	4.61	6.25	0.68	953.69	958.32
C.I. 3-1	F.I. 1-4	176.30	951.94	949.30	1.50	15	0.012	4.56	4.58	8.56	0.86	952.80	958.72
C.I. 3-2	C.I. 3-1	35.03	954.14	953.44	2.00	15	0.012	1.08	4.19	9.89	0.41	954.55	958.89
C.I. 4-1	F.I. 1-5	154.77	960.35	954.93	3.50	15	0.012	2.95	3.94	13.09	0.69	961.04	966.97
C.I. 4-2	C.I. 4-1	41.55	962.10	960.85	3.01	15	0.012	0.90	4.36	12.13	0.37	962.47	968.41
M.H. 5-1	C.I. 1-7	183.70	968.75	960.94	4.25	15	0.012	5.66	8.31	14.42	0.96	969.71	977.56
F.I. 5-2	M.H. 5-1	82.02	972.53	969.25	4.00	15	0.012	5.66	8.19	13.99	0.96	973.49	979.65
C.I. 6-2	C.I. 6-1	185.16	943.68	940.50	1.72	18	0.012	14.62	8.45	14.91	1.40	945.08	951.68
C.I. 6-3	C.I. 6-2	34.00	944.52	944.18	1.00	18	0.012	11.21	7.16	11.38	1.28	945.80	951.68
C.I. 6-4	C.I. 6-3	167.50	947.30	945.02	1.36	15	0.012	4.13	4.98	8.16	0.82	948.12	953.84
F.I. 6-5	C.I. 6-4	178.97	954.96	947.80	4.00	15	0.012	1.09	3.73	13.99	0.41	955.37	962.34

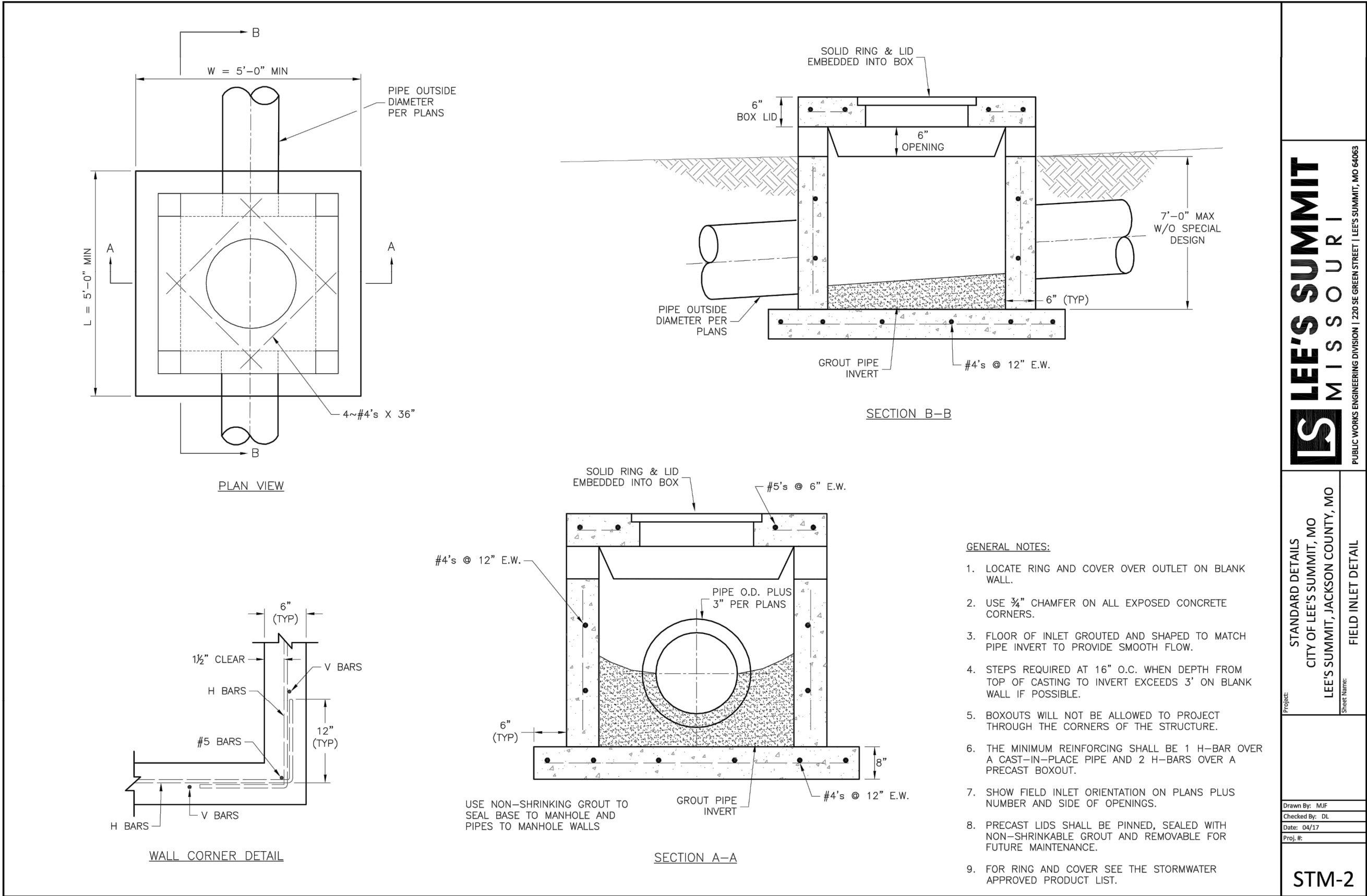
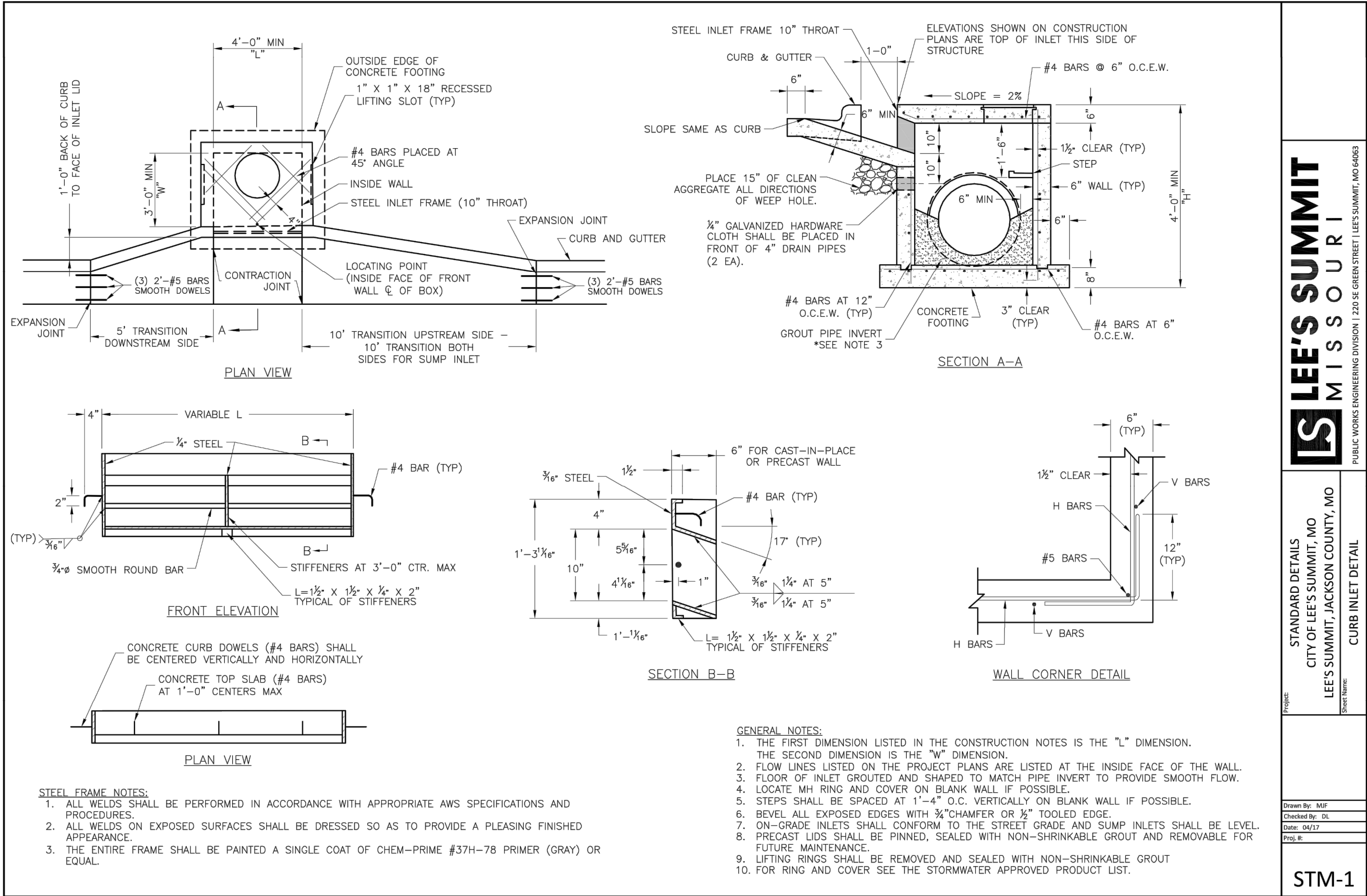


- NOTES:**
1. Where Pipe Underdrains are used, all Underdrain Outlet Pipes shall be solid wall with watertight joints. All Outlets Pipes shall be tied into the nearest storm sewer inlets at roadway sag locations as indicated in the street profile.
 2. All Underdrain Pipes shall be installed at a minimum slope of 1%.
 3. Underdrain Pipes 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".

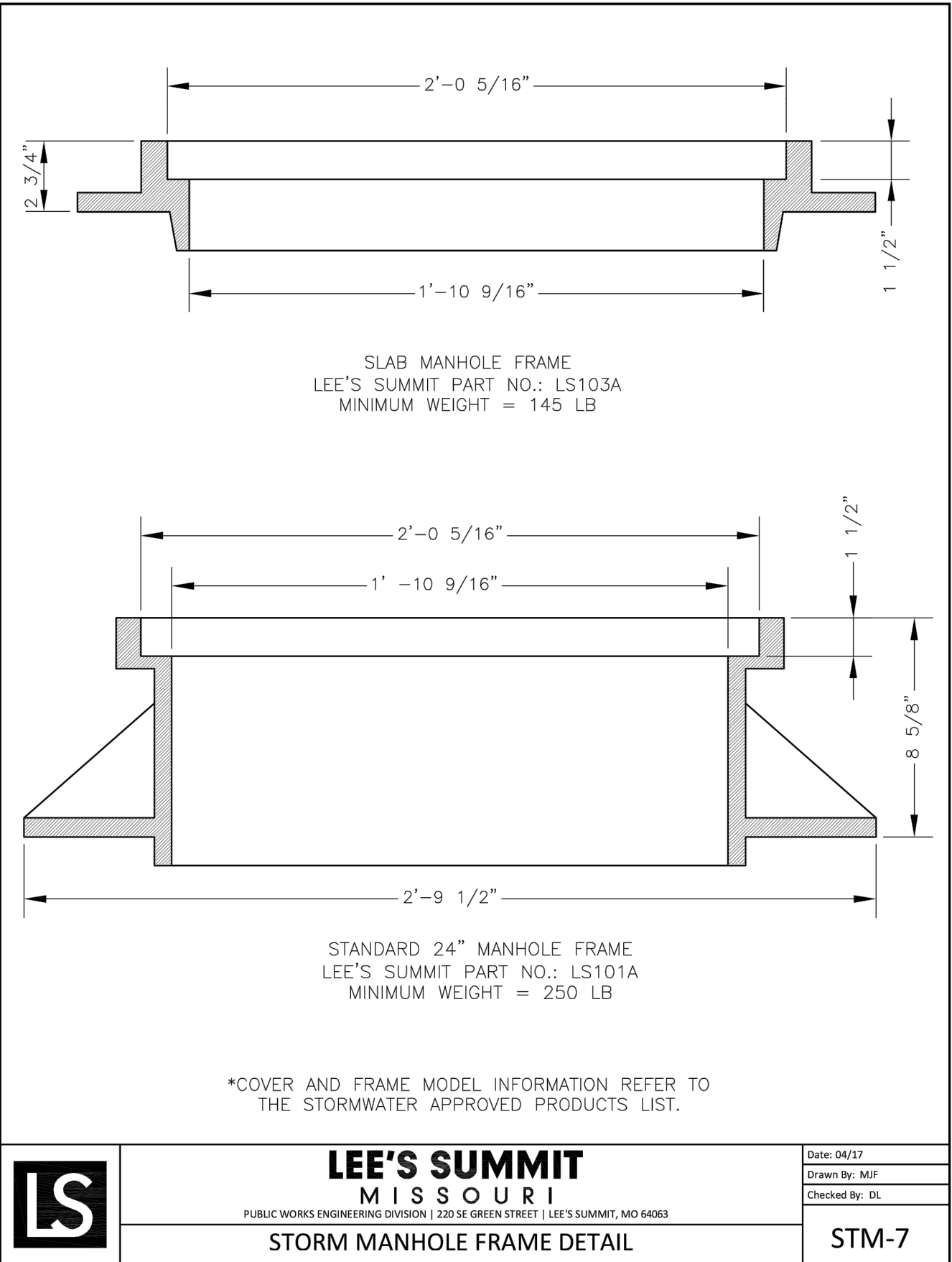
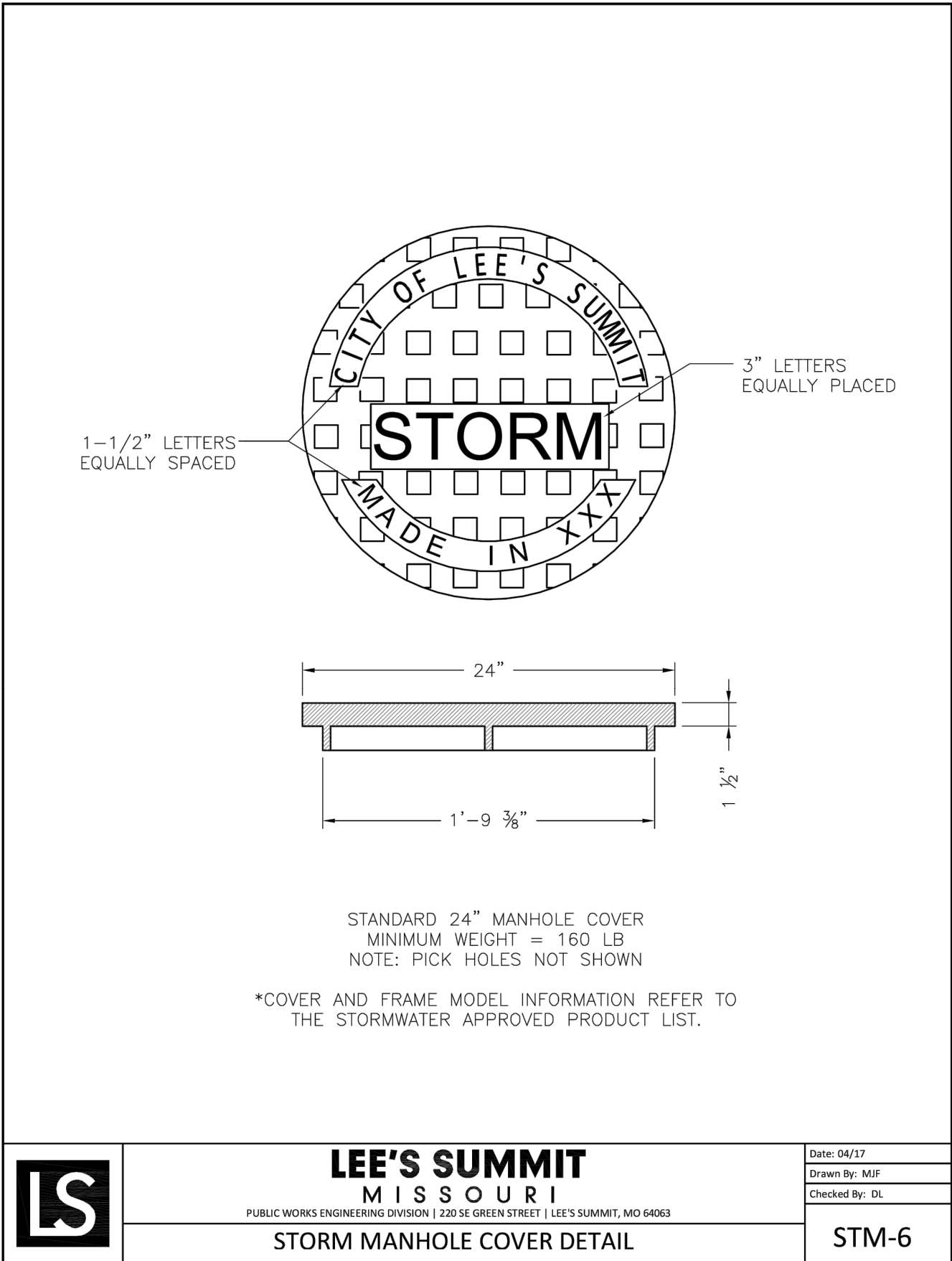
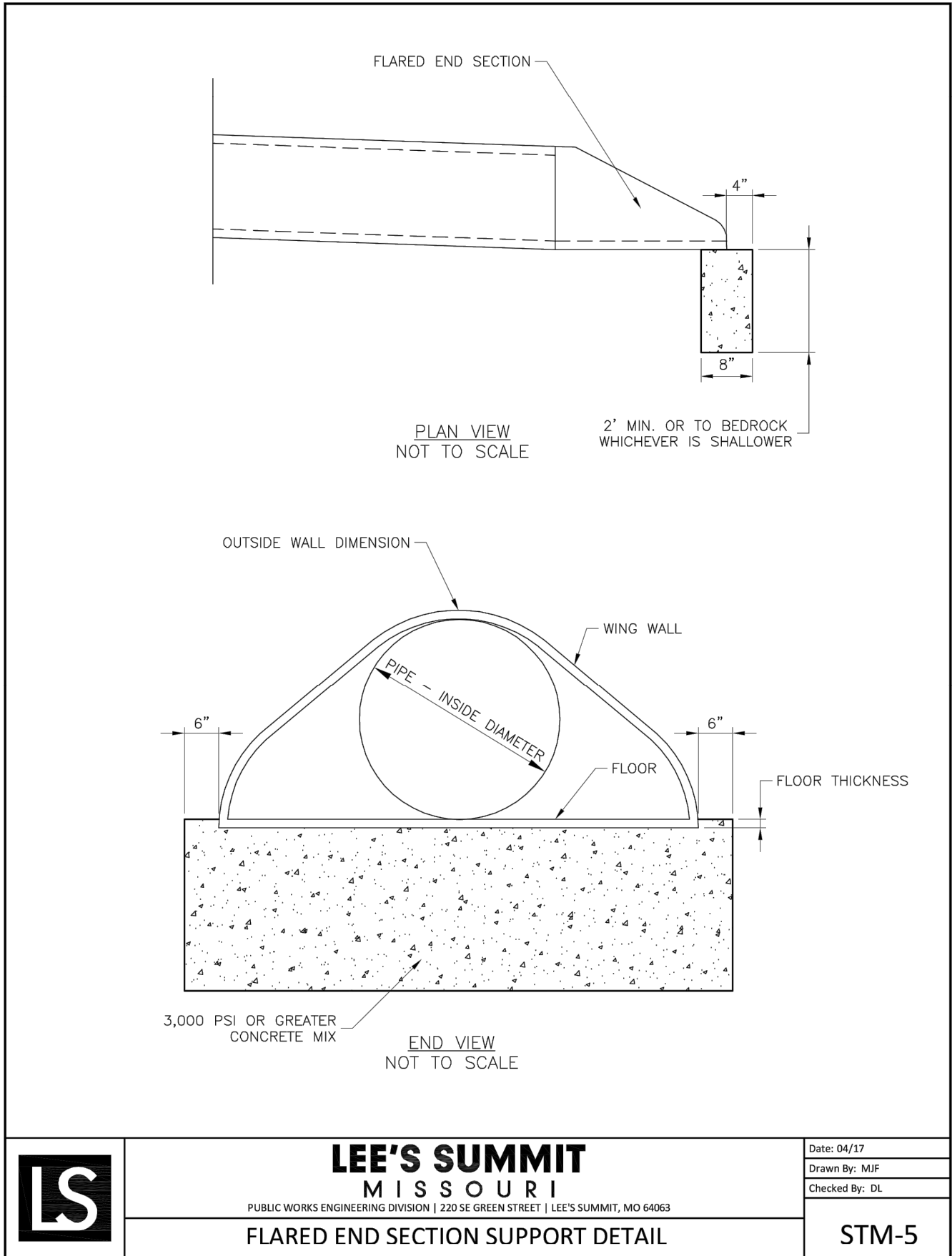
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USER: ssaylor

DWG: F:\2019\4001-4500\019-4059-A 40-Design\AutoCAD\Final Plans - Asbuilts\Sheets\GNCV\Street & Storm Sewer Plans\C_DTL01_A194059.dwg
DATE: Oct 04, 2022 11:46am XREFS: C_PTEBK_A194059



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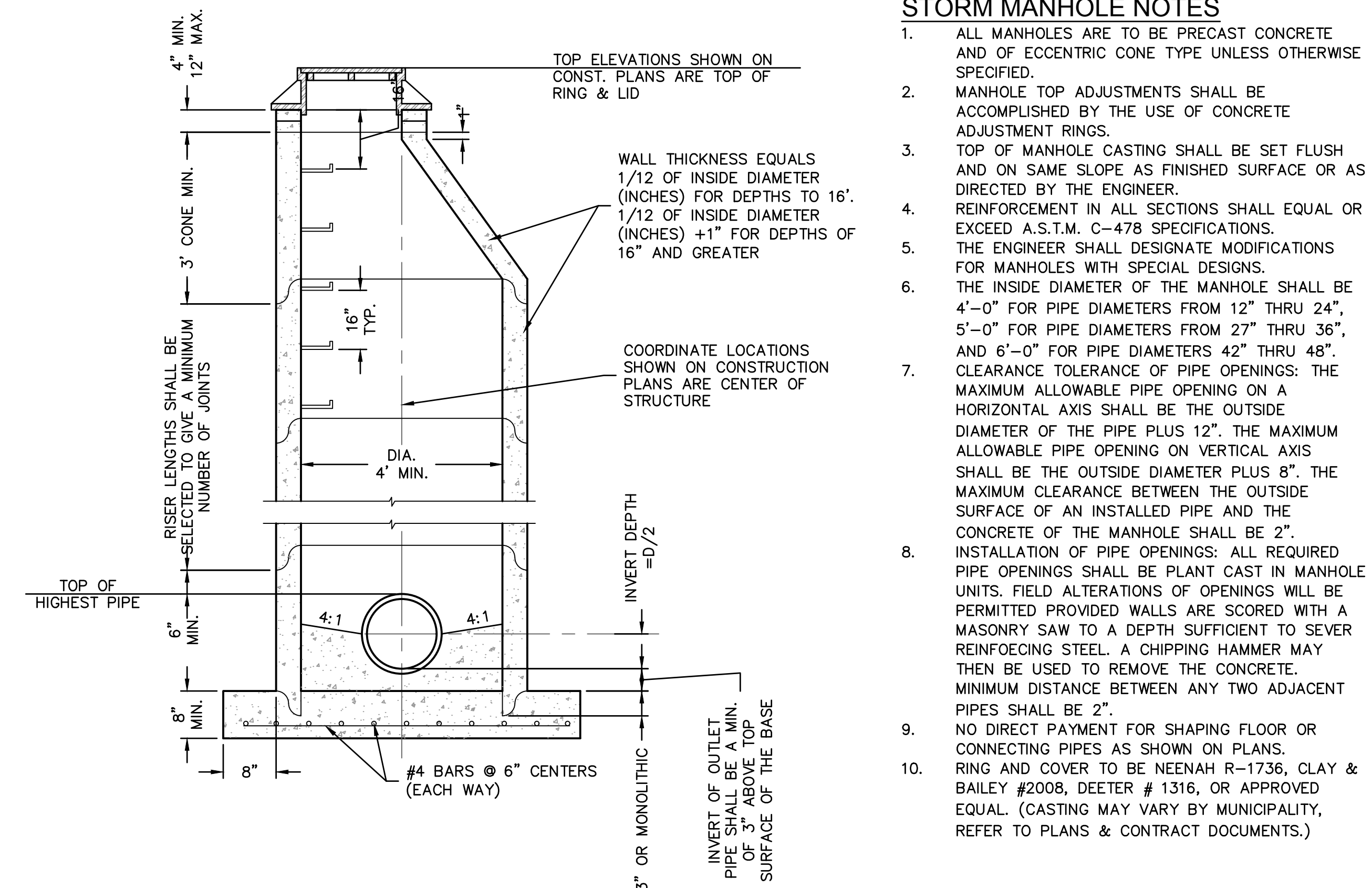
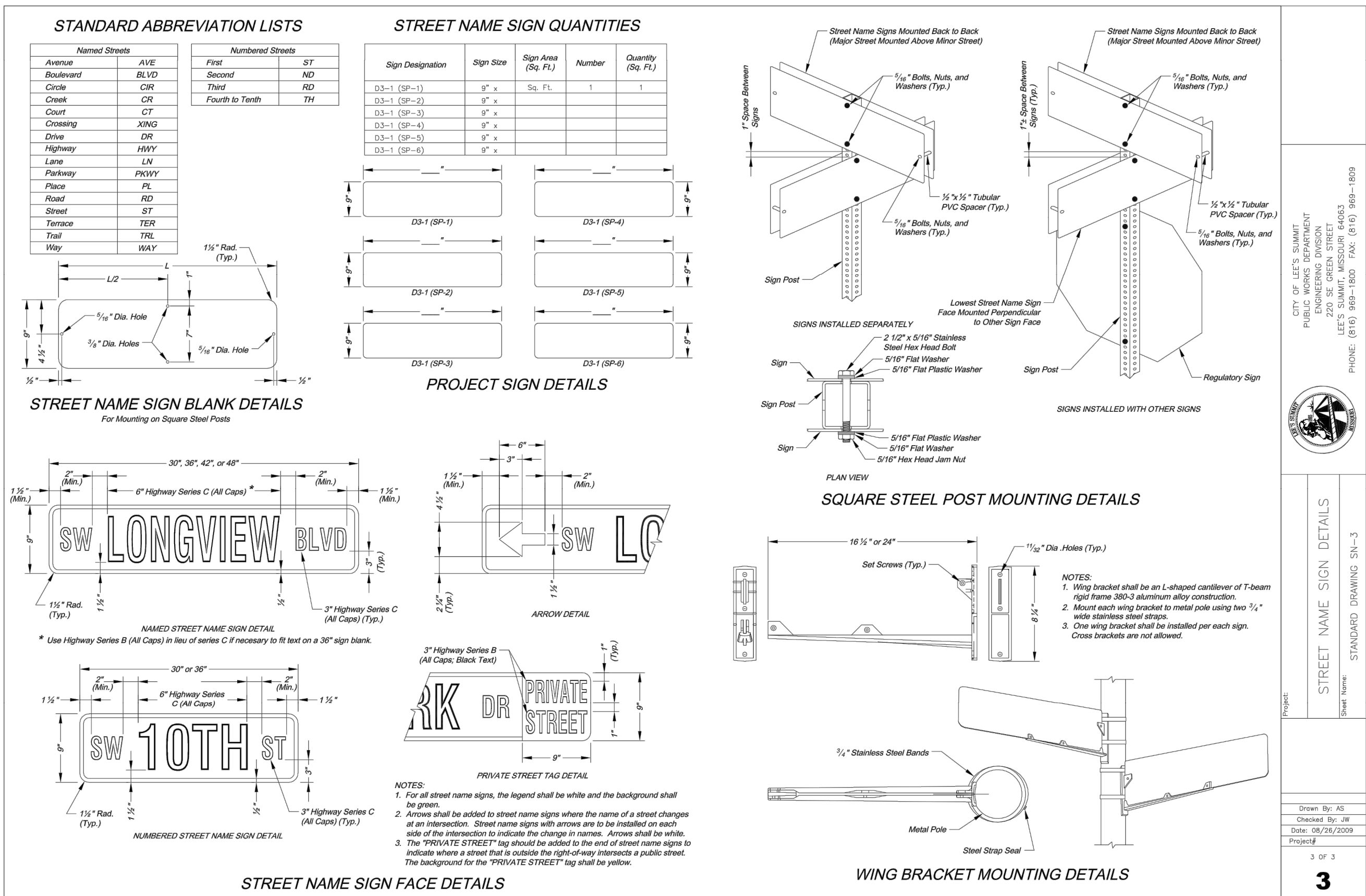
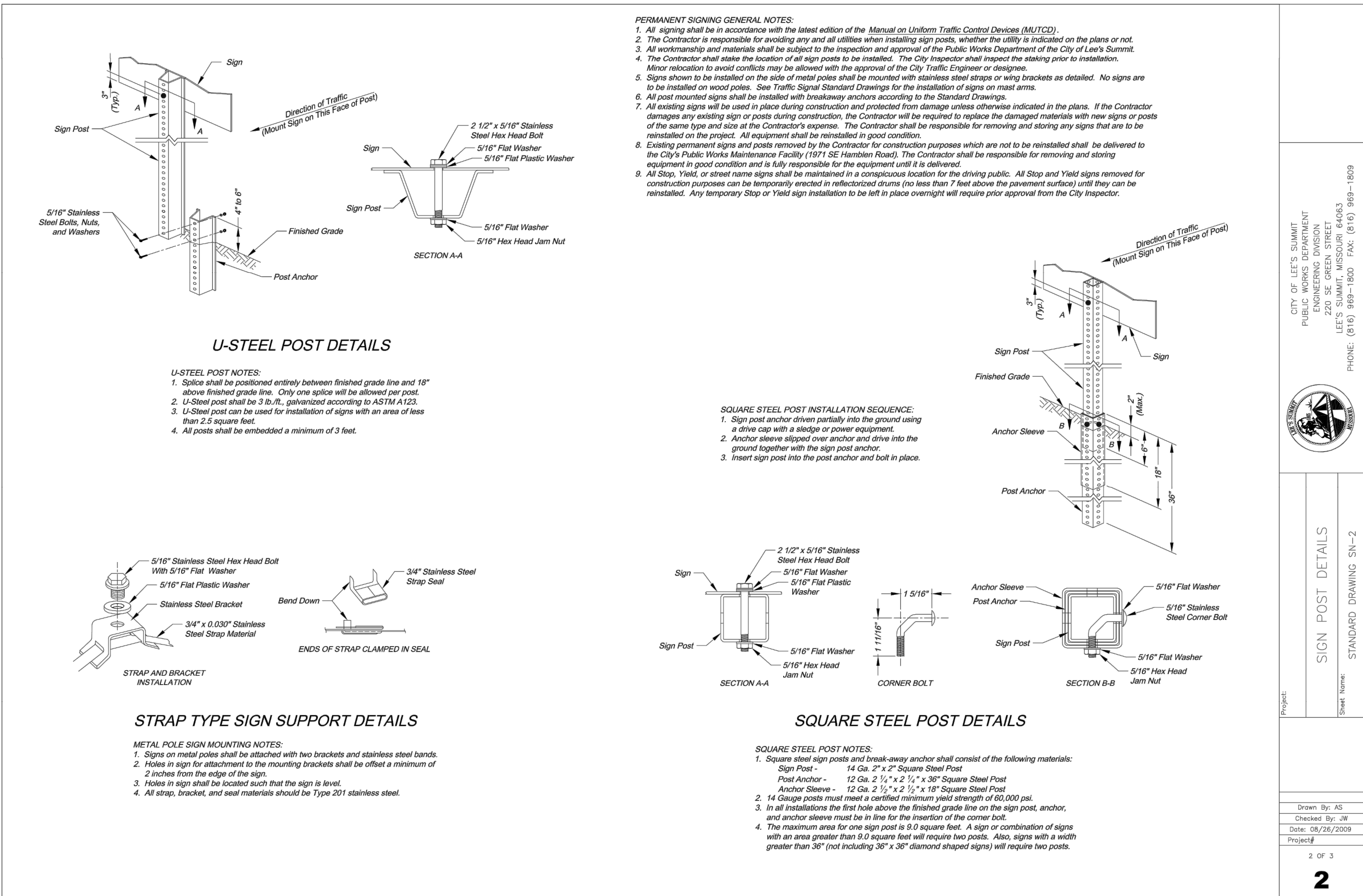
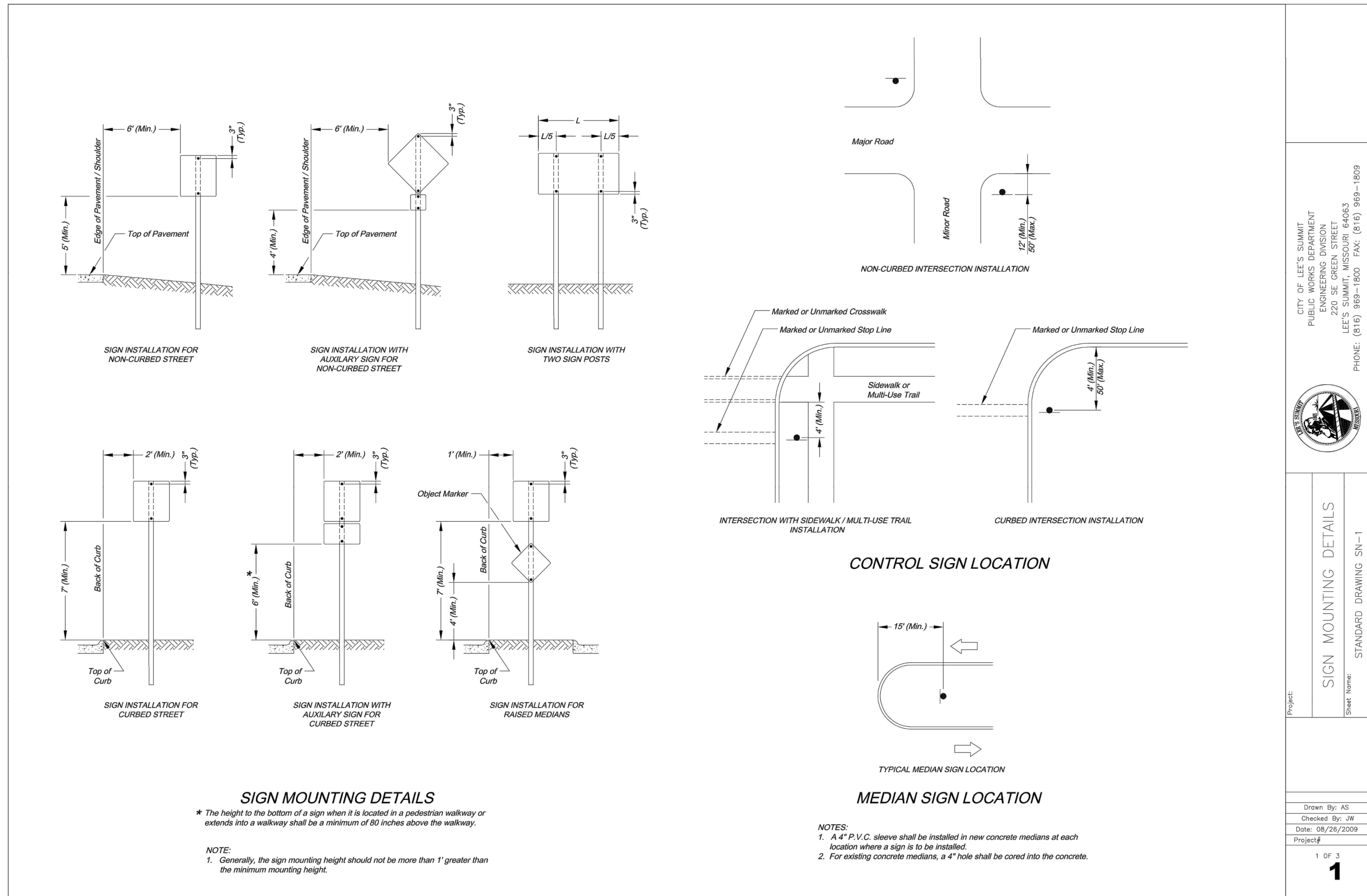
STATE OF MISSOURI
JULIE ELAINE SELLERS
NUMBER PE-2017000367
11/28/22
PROFESSIONAL ENGINEER

BY
REV. NO. 1
DATE 08-26-2021
REVISED PER CITY COMMENTS
2
DATE 10-29-2021
REVISED PER CITY COMMENTS

DETAIL SHEET
STREET & STORM SEWER PLANS
THE RETREAT AT HOOK FARMS
SECOND PLAT
2021
LEE'S SUMMIT, MO

drawn by: B.M.W./A.A.
checked by: B.M.W.
designed by: B.M.W./A.A.
QA/QC by: J.E.S.
project no.: A19-4059
date: 05-05-2021

SHEET C133



STANDARD PRECAST STORM SEWER MANHOLE
NOT TO SCALE