LEGEND:

A/E	-	ACCESS EASEMENT
BC	-	BACK OF CURB
B/B	-	BACK TO BACK
BM	-	BENCHMARK
BL or B.L.	-	BUILDING LINE
CO	-	CLEANOUT
TJB	-	TELEPHONE JUNCTION BOX
C&G	-	CURB AND GUTTER
D/E	-	DRAINAGE EASEMENT
E/E	-	ELECTRICAL EASEMENT
EL	-	ELEVATION
FL	-	FLOW LINE
G/E	-	GAS LINE EASEMENT
HDPE	-	HIGH-DENSITY POLYETHYLENE
L/E	-	LANDSCAPE EASEMENT
MSFE	-	MINIMUM SERVICEABLE FLOOR ELEVATION
PVC	-	POLYVINYL CHLORIDE
P/L	-	PROPERTY LINE
PUB/E	-	PUBLIC EASEMENT
RCP	-	REINFORCED CONCRETE PIPE
ROW or R/W	-	RIGHT-OF-WAY
S/E	-	SANITARY SEWER EASEMENT
SL	-	SERVICE LINE
S/W	-	SIDEWALK
TE	-	TOP ELEVATION
U/E	-	UTILITY EASEMENT
WSE	-	WATER SURFACE ELEVATION
W/E	-	WATERLINE EASEMENT

ASPHALT PAVEMENT - EXISTING
ASPHALT PAVEMENT - PROPOSED
CONCRETE PAVEMENT - EXISTING
ASPHALT PAVEMENT - EXISTING
CONCRETE SIDEWALK - EXISTING
CONCRETE SIDEWALK - PROPOSED
CURB & GUTTER
CURB & GUTTER - EXISTING
TREELINE
EXISTING LOT AND R/W LINES
EXISTING PLAT LINES
P/L PROPERTY LINES
ROW RIGHT-OF-WAY
SANITARY SEWER MAIN
SANITARY SEWER MAIN - EXIST.
STO STORM SEWER
STORM SEWER - EXISTING
$CATV_X$ CABLE TV - EXISTING
FOC_X FIBER OPTIC CABLE - EXISTING
T_X TELEPHONE LINE - EXIST.
E_X ELECTRIC LINE - EXISTING
OHP_X OVERHEAD POWER LINE - EXIST.
UGE_X UNDERGROUND ELECTRIC - EX.
G_X GAS LINE - EXISTING
W_X WATERLINE - EXISTING
LIGHT - EXISTING
EXISTING MANHOLE
CO CLEANOUT
EXISTING SANITARY MANHOLE
PROPOSED SANITARY MANHOLE
AI EXISTING AREA INLET
CI EXISTING CURB INLET
GI EXISTING GRATE INLET
JB EXISTING JUNCTION BOX
D EXISTING STORM MANHOLE

UTILITY CONTACTS:

MISSOURI DEPARTMENT OF TRANSPORTATION (MODOT)
Steve Holloway
600 NE Colbern Road
Lee's Summit, MO 64086
(816) 607-2186

SPIRE
Brent Jones
3025 SE Clover Drive
Lee's Summit, MO 64082
(816) 399-0663
brent.jones@spireenergy.com

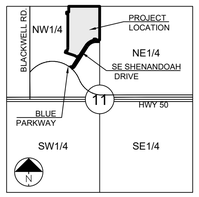
EVERGY
Philip Ingram
1300 SE Hamblin Road
Lee's Summit, MO 64081
Office: (816) 347-347-4339
philip.ingham@evergy.com

CITY OF LEES SUMMIT PUBLIC WORKS
Dena Mezger
220 SE Green Street
Lee's Summit, MO 64063
(816) 969-1800

AT&T
Mark Manion or Marty Loper
500 E. 8th Street, Room 370
Kansas City, MO 64106
(816) 275-2341 or (816) 275-1550

COMCAST CABLE
John Meadows
4700 Little Blue Parkway
Independence, MO 64057
(816) 795-2257

CITY OF LEE'S SUMMIT WATER UTILITIES
Mark Schaufler
1200 SE Hamblen Road
Lee's Summit, MO 64081
(816) 969-1900



SECTION 11-47-31

LOCATION MAP
SCALE 1" = 2000'

SUMMARY OF QUANTITIES

	ITEM	QUANTITY	UNITS
1	INSTALL 2" TYPE 5 OR 6 ASPHALT PAVEMENT	8,053	SY
2	INSTALL 4" TYPE 5 ASPHALT PAVEMENT	8,053	SY
3	INSTALL 6" TYPE 5 BASE	9,892	SY
4	INSTALL 9" SUBGRADE STABILIZATION	9,892	SY
5	INSTALL TYPE CG-1 CURB AND GUTTER	1,259	LF
6	INSTALL TYPE CG-2 CURB AND GUTTER	3,968	LF
7	INSTALL KCMMB4K VALLEY GUTTER	741	LF
8	INSTALL TYPE A SIDEWALK RAMPS	2	EA
9	INSTALL 15" HDPE	508	LF
10	INSTALL 18" HDPE	660	LF
11	INSTALL 24" HDPE	416	LF
12	INSTALL 30" HDPE	168	LF
13	INSTALL 36" HDPE	192	LF
14	INSTALL 42" HDPE	138	LF
15	INSTALL 4'x4' AREA INLET	2	EA
16	INSTALL 4'x4' GRATE INLET	1	EA
17	INSTALL 6'x4' CURB INELT	15	EA
18	INSTALL 5'x5' EWDB OUTLET STRUCTURE	2	EA
19	INSTALL 42" FLARED END SECTION W/ TOEWALL	1	EA
20	INSTALL RIPRAP	32	CY
21	INSTALL 8" PVC C900 DR18	2,086	LF
22	INSTALL 8" GATE VALVE	3	EA
23	INSTALL FIRE HYDRANT ASSEMBLY	5	EA
24	INSTALL BACKFLOW PREVENTER VAULT	3	EA
25	INSTALL 8" PVC SDR-26	2,209	LF
26	INSTALL 6" PVC SDR-26	713	LF
27	INSTALL STD. 4' DIA. MANHOLE	12	EA
28	EXTRA DEPTH IN MANHOLES	48	VF
29	POST-CONST. MANHOLE BARREL ADJUSTMENTS (EST.)	2	EA
30	POST-CONST. RING (3"-12") ADJUSTMENTS (EST.)	2	EA
31	TRENCHING UNDER FUTURE STREET	3,316	LF
32	EARTHWORK (FINAL GRADING)	1	LS
33	EROSION CONTROL (MAINTENANCE & REMOVAL)	1	LS
34	SEEDING & MULCH DISTRUBED AREAS	1	LS

MISSOURI ONE CALL SYSTEM
811 or
1-800-344-7483
mo1call.com

FEMA NOTE:

NO PART OF THE PROJECT LIES WITHIN THE 100 YEAR FLOOD PLAIN PER FEMA FLOOD INSURANCE RATE MAP NUMBERS 29095C0441G, 29095C0445G, 29095C0437G AND 29095C0439G DATED JANUARY 20TH, 2017.

OIL/GAS NOTE:

THERE ARE NOT OIL/GAS WELLS PRESENT ON THE PROJECT PER MISSOURI DEPARTMENT OF NATURAL RESOURCES - MISSOURI GEOLOGICAL SURVEY GeoSTRAT MAPPING.

GENERAL NOTES:

1. ALL CONSTRUCTION TO FOLLOW THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
2. ALL WORKMANSHIP AND MATERIALS SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF THE ENGINEERING DEPARTMENT OF THE CITY OF LEE'S SUMMIT, MISSOURI.
3. LINEAL FOOT MEASUREMENTS SHOWN ON THE PLANS ARE HORIZONTAL MEASUREMENTS, NOT SLOPE MEASUREMENTS. ALL PAYMENTS SHALL BE MADE ON HORIZONTAL MEASUREMENTS.
4. NO GEOLOGICAL INVESTIGATION HAS BEEN PERFORMED ON THE SITE.
5. THE UTILITY LOCATIONS SHOWN ON THESE PLANS ARE TAKEN FROM UTILITY COMPANY RECORDS AND APPARENT FIELD LOCATIONS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION.
6. THE CONTRACTOR SHALL ADHERE TO THE PROVISIONS OF THE SENATE BILL NUMBER 583, 78TH GENERAL ASSEMBLY OF THE STATE OF MISSOURI. THE BILL REQUIRES THAT ANY PERSON OR FIRM DOING EXCAVATION ON PUBLIC RIGHT OF WAY DO SO ONLY AFTER GIVING NOTICE TO, AND OBTAINING INFORMATION FROM, UTILITY COMPANIES. STATE LAW REQUIRES 48 HOURS ADVANCE NOTICE. THE CONTRACTOR MAY ALSO UTILIZE THE FOLLOWING TOLL FREE PHONE NUMBER PROVIDED BY "MISSOURI ONE CALL SYSTEM, INC.": 1-800-DIG-RITE. THIS PHONE NUMBER IS APPLICABLE ANYWHERE WITHIN THE STATE OF MISSOURI. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL NOTIFY ALL THOSE COMPANIES WHICH HAVE FACILITIES IN THE NEAR VICINITY OF THE CONSTRUCTION TO BE PERFORMED.
7. PRIOR TO ORDERING PRECAST STRUCTURES, SHOP DRAWING SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR APPROVAL.
8. THE CONTRACTOR SHALL PROTECT ALL MAJOR TREES FROM DAMAGE. NO TREE SHALL BE REMOVED WITHOUT PERMISSION OF THE OWNER, UNLESS SHOWN OTHERWISE.
9. CLEARING AND GRUBBING OPERATIONS AND DISPOSAL OF ALL DEBRIS THEREFROM SHALL BE PERFORMED BY THE CONTRACTOR IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND ORDINANCES.
10. ALL WASTE MATERIAL RESULTING FROM THE PROJECT SHALL BE DISPOSED OF OFF-SITE BY THE CONTRACTOR, OR AS DIRECTED BY THE OWNER AT NO ADDITIONAL COST.
11. ALL EXCAVATIONS SHALL BE UNCLASSIFIED. NO SEPARATE PAYMENT WILL BE MADE FOR ROCK EXCAVATION.
12. THE CONTRACTOR SHALL CONTROL THE EROSION AND SILTATION DURING ALL PHASED OF CONSTRUCTION AND SHALL KEEP THE STREETS CLEAN OF MUD AND DEBRIS.
13. THE CONTRACTOR SHALL CONTACT DEVELOPMENT SERVICES INSPECTIONS AT: 816-969-1800 TO OBTAIN A DEVELOPMENT SERVICES CONSTRUCTION PERMIT. A MINIMUM 48 HOUR NOTICE SHALL BE GIVEN PRIOR TO PERMIT ISSUANCE.
14. THE CONTRACTOR SHALL CONTACT THE RIGHT OF WAY INSPECTOR AT 816-969-1800 PRIOR TO ANY LAND DISTURBANCE ACTIVITIES WITHIN THE RIGHT OF WAY. THESE ACTIVITIES MAY REQUIRE A PERMIT.
15. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL TRAFFIC HANDLING MEASURES NECESSARY TO ENSURE THAT THE GENERAL PUBLIC IS PROTECTED AT ALL TIMES. TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD-LATEST EDITION).
16. ALL SANITARY SEWER LATERALS SHALL HAVE A TRENCH CHECK, CONSISTING OF FLOWABLE BACKFILL, INSTALLED DURING CONSTRUCTION. TRENCH CHECK SHALL EXTEND TO BOTTOM OF TRENCH, TO WIDTH OF TRENCH, TO 12 INCHES ABOVE PIPE, FOR A MINIMUM LENGTH OF 12 INCHES. TRENCH CHECK SHALL BE LOCATED AT LEAST 5 FEET FROM SANITARY MAIN.

EARTHWORK:

1. PRIOR TO EARTHWORK ACTIVITIES, PRE-DISTURBANCE EROSION AND SEDIMENT CONTROL DEVICES SHALL BE IN PLACE PER THE STORM WATER POLLUTION PREVENTION PLAN AND/OR THE EROSION AND SEDIMENT CONTROL PLAN PREPARED FOR THIS SITE.
2. ALL BACKFILL MATERIAL SHALL BE PLACED IN MAXIMUM 6-INCH LIFTS AND COMPACTED TO 95-PERCENT OF MAXIMUM DENSITY AS DEFINED USING A STANDARD PROCTOR TEST (AASHTO T99/ASTM 698).
3. BACKFILL MATERIALS SHALL NOT INCLUDE ORGANIC MATTER, DEBRIS OR TOPSOIL.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REDISTRIBUTING THE TOPSOIL OVER PROPOSED TURF AND LANDSCAPED AREAS TO A MINIMUM DEPTH OF 6-INCHES BELOW FINAL GRADE.
5. ALL AREAS SHALL BE GRADED FOR POSITIVE DRAINAGE. UNLESS NOTED OTHERWISE THE FOLLOWING GRADES SHALL APPLY:
   A. TURF AREAS – 2.5% MINIMUM, 4H:1V MAXIMUM
6. ALL DISTURBED AREAS SHALL BE FERTILIZED, SEEDED AND MULCHED IMMEDIATELY AFTER EXCAVATION ACTIVITIES HAVE CEASED. SEEDING SHALL BE PER THE EROSION AND SEDIMENT CONTROL PLAN AND/OR LANDSCAPE PLAN. IF NOT SPECIFIED SEEDING SHALL BE PER APWA SECTION 2400, LATEST EDITION. UNLESS OTHERWISE NOTED, SEEDING SHALL BE SUBSIDIARY TO THE CONTRACT PRICE FOR PIPE INSTALLATION.
7. CONTRACTOR SHALL ADHERE TO THE REPORTING REQUIREMENTS OUTLINED IN THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PREPARED FOR THIS PROJECT. EROSION AND SEDIMENT CONTROL DEVICES SHALL BE PROPERLY MAINTAINED AND KEPT CLEAN OF SILT AND DEBRIS AND IN GOOD WORKING ORDER. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AS REQUIRED.

UTILITIES:

1. EXISTING UTILITIES HAVE BEEN SHOWN TO THE GREATEST EXTENT POSSIBLE BASED UPON INFORMATION PROVIDED TO THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE RESPECTIVE UTILITY COMPANIES AND FIELD LOCATING UTILITIES PRIOR TO CONSTRUCTION AND IDENTIFYING ANY POTENTIAL CONFLICTS. ALL CONFLICTS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ANY REQUIRED UTILITY RELOCATIONS. UTILITIES DAMAGED THROUGH THE NEGLIGENCE OF THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
3. CONTRACTOR SHALL VERIFY FLOW-LINES AND STRUCTURE TOPS PRIOR TO CONSTRUCTION, AND SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES. PROVIDE SHOP DRAWINGS FOR ALL PRECAST AND MANUFACTURED UTILITY STRUCTURES FOR REVIEW BY THE ENGINEER PRIOR TO CONSTRUCTION OF THE STRUCTURES.
4. UTILITY SEPARATION: WATERLINES SHALL HAVE A MINIMUM OF 10 FEET HORIZONTAL AND 2 FEET (MINIMUM OF 1.5 FEET) VERTICAL SEPARATION FROM ALL SANITARY AND STORM SEWER LINES. IF MINIMUM SEPARATIONS CAN NOT BE OBTAINED, DUCTILE IRON PIPE, DIP, SHALL BE REQUIRED 10 FEET IN EACH DIRECTION OF THE CONFLICT ON THE WATER LINE.
5. PAYMENT FOR TRENCHING, BACKFILLING, PIPE EMBEDMENT, FLOWABLE FILL, BACKFILL MATERIALS, CLEAN UP, SEEDING, SODDING AND ANY OTHER ITEMS NECESSARY FOR THE CONSTRUCTION OF THE UTILITY LINE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE UTILITY INSTALLATION.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING RESPECTIVE UTILITY COMPANIES 48-HOURS IN ADVANCE FOR THE INSPECTION OF ANY PROPOSED UTILITY MAIN EXTENSION OR SERVICE LINE OR SERVICE CONNECTION TO ANY EXISTING MAIN.
7. TRENCH SPOILS SHALL BE NEATLY PLACED ONSITE ADJACENT TO THE TRENCH, AND COMPACTED TO PREVENT SATURATION AND EXCESS SEDIMENT RUNOFF. UNSUITABLE MATERIALS, ROCK AND SHALE, ASPHALT, CONCRETE, TREES, BRUSH ETC. SHALL BE PROPERLY DISPOSED OF OFFSITE. MATERIALS MAY BE WASTED ONSITE AT THE DIRECTION OF THE OWNER OR HIS APPOINTED REPRESENTATIVE.

MO GRS BENCHMARK:

STATION NAME - JA-90

KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988" LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.
N:1001052.8503, E:2845604.8272

ELEV. 997.045

PROJECT BENCHMARK:

"SQUARE" CUT IN TOP OF CONCRETE STORM MANHOLE
STORM MANHOLE IS LOCATED APPROX. 130 FEET EAST OF THE INTERSECTION OF SE JOEL AVE & BLUE PARKWAY AND 26 FEET SOUTH OF THE CENTERLINE OF BLUE PARKWAY.
N:996874.9690, E:2840937.1365

ELEV. 1005.719

OWNER/DEVELOPER:

GRIFFIN RILEY PROPERTY GROUP
JAKE LOVELESS, VICE PRESIDENT
21 SE 29TH TERRACE
LEE'S SUMMIT
p 816-366-7900
JAKE@GRIFFINRILEY.COM

DESCRIPTION:

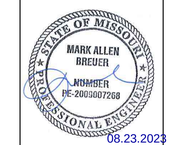
A tract of land lying in the Northwest One-Quarter of Section 11, Township 47 North, Range 31 West in the City of Lee's Summit, Jackson County, Missouri being more particularly described as follows:

Beginning at the Northeast Corner of said Northwest One-Quarter; thence along the East line of said Northwest One-Quarter, South 02 degrees 19 minutes 49 seconds West, a distance of 958.03 feet to the Northeast Corner of the Final Plat of Residences at Blackwell, a subdivision in the City of Lee's Summit, Jackson County, Missouri, said point being on Northerly right-of-way line of NE Shenandoah Drive; thence along the Northerly line of said Residences at Blackwell for the following twelve courses North 87 degrees 44 minutes 22 seconds West, a distance of 88.60 feet to a point of curvature; thence Northwesterly on a curve to the left being tangent to the previous course having a radius of 365.00 feet, a central angle of 01 degree 52 minutes 36 seconds and an arc length of 11.96 feet; thence North 44 degrees 03 minutes 48 seconds West, a distance 12.45 feet; thence North 02 degrees 11 minutes 34 seconds East, a distance of 18.39 feet; thence North 87 degrees 48 minutes 26 seconds West, a distance of 50.00 feet; thence South 02 degrees 11 minutes 34 seconds West, a distance of 28.89 feet; thence South 41 degrees 25 minutes 38 seconds West, a distance of 7.75 feet to a point of curvature; thence Southwesterly along a curve to the left having an initial tangent bearing of South 80 degrees 16 minutes 09 seconds West, a radius of 365.00 feet, a central angle of 45 degrees 16 minutes 22 seconds and an arc length of 288.41 feet; thence South 34 degrees 59 minutes 47 seconds West, a distance of 349.20 feet; thence South 79 degrees 59 minutes 47 seconds West, a distance of 7.20 feet; thence North 54 degrees 59 minutes 26 seconds West, a distance of 12.91 feet; thence South 35 degrees 00 minutes 34 seconds West, a distance of 50.00 feet; thence North 54 degrees 59 minutes 26 seconds West, a distance of 73.81 feet to a point of curvature; thence Northwesterly along a curve to the left being tangent to the previous course having a radius of 175.00 feet, a central angle of 14 degrees 43 minutes 33 seconds and an arc length of 44.98 feet; thence North 69 degrees 42 minutes 59 seconds West, a distance of 262.42 feet; thence North 20 degrees 16 minutes 04 seconds East, a distance of 50.00 feet; thence South 69 degrees 42 minutes 59 seconds East, a distance of 31.72 feet; thence North 65 degrees 17 minutes 01 second East, a distance of 6.06 feet; thence North 20 degrees 17 minutes 01 second East, a distance of 41.33 feet to a point of curvature; thence Northeasterly on a curve to the left being tangent to the previous course having a radius of 175.00 feet, a central angle of 17 degree 51 minutes 20 seconds and an arc length of 54.54 feet; thence North 02 degrees 25 minutes 41 seconds East, a distance of 964.02 feet; thence North 42 degrees 44 minutes 24 seconds West, a distance of 8.44 feet; thence North 87 degrees 53 minutes 59 seconds West, a distance of 29.47 feet; thence North 02 degrees 06 minutes 01 second East, a distance of 50.00 feet; thence South 87 degrees 53 minutes 59 seconds East, a distance of 60.75 feet; thence North 02 degrees 25 minutes 41 seconds East, a distance of 159.36 feet to a point on the North line of the said Northeast One-Quarter; thence along said North line, South 87 degrees 55 minutes 11 seconds East, a distance of 881.87 feet to the Point of Beginning and containing 24.906 acres more or less.

Sheet List Table	
Sheet Number	Sheet Title
C100	GENERAL NOTES
C101	GENERAL LAYOUT
C201	GRADING PLAN
C202	SPOT ELEVATIONS - PARKING
C203	SPOT ELEVATIONS - PARKING
C204	SPOT ELEVATIONS - PARKING
C205	SPOT ELEVATIONS - PARKING
C206	SPOT ELEVATIONS - PARKING
C207	SPOT ELEVATIONS - BUILDINGS
C208	SPOT ELEVATIONS - BUILDINGS
C209	SPOT ELEVATIONS - BUILDINGS
C210	NORTH SWALE PLAN
C300	PRE-CLEARING EROSION CONTROL PLAN
C301	CONSTRUCTION PHASE EROSION CONTROL PLAN
C302	FINAL STABILIZATION EROSION CONTROL PLAN
C303	EROSION CONTROL DETAILS
C304	EROSION CONTROL DETAILS
C305	OUTLET STRUCTURE 201
C306	OUTLET STRUCTURE 2401
C400	TYPICAL STREET SECTION
C401	SE BRADFREE STREET - PLAN & PROFILE
C402	SE GOLDEN LANE - PLAN & PROFILE
C403	SE 6TH STREET - PLAN & PROFILE
C404	INTERSECTION DETAILS
C405	STREET SIGN PLAN
C406	STREET SIGN DETAILS
C407	STREET DETAILS
C408	STREET DETAILS
C409	STORM DETAILS
C410	STORM DETAILS
C411	STORM DETAILS
C500	UTILITY PLAN
C601	OVERALL DRAINAGE MAP
C602	REUNION - DRAINAGE MAP
C603	STORM CALCS
C604	STORM CALCS
C605	STORM SEWER LINE 500
C606	STORM SEWER LINE 1700
C607	STORM SEWER LINES 1800 & 1900
C608	STORM SEWER LINES 2000 & 2100
C609	STORM SEWER LINES 2200 & 2300
C610	STORM DETAILS
C611	STORM DETAILS
C700	SANITARY SEWER LINE B
C701	SANITARY SEWER LINES D & E
C702	SANITARY SEWER LINES F & G
C703	SANITARY SEWER DETAILS
C800	WATER LINE C - PRIVATE
C801	WATER LINE D & E - PRIVATE
C802	WATER DETAILS
C803	WATER DETAILS
C900	GENERAL DETAILS
C901	GENERAL DETAILS
L100	OVERALL LANDSCAPE PLAN
L200	LANDSCAPE DETAIL PLAN
L201	LANDSCAPE DETAIL PLAN
L202	LANDSCAPE DETAIL PLAN
L203	LANDSCAPE DETAIL PLAN
L204	LANDSCAPE DETAIL PLAN
L205	UNDERSTORY LANDSCAPE PLAN
L206	UNDERSTORY LANDSCAPE PLAN
L300	LANDSCAPE DETAILS
L301	LANDSCAPE DETAILS

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PREPARED BY:



08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

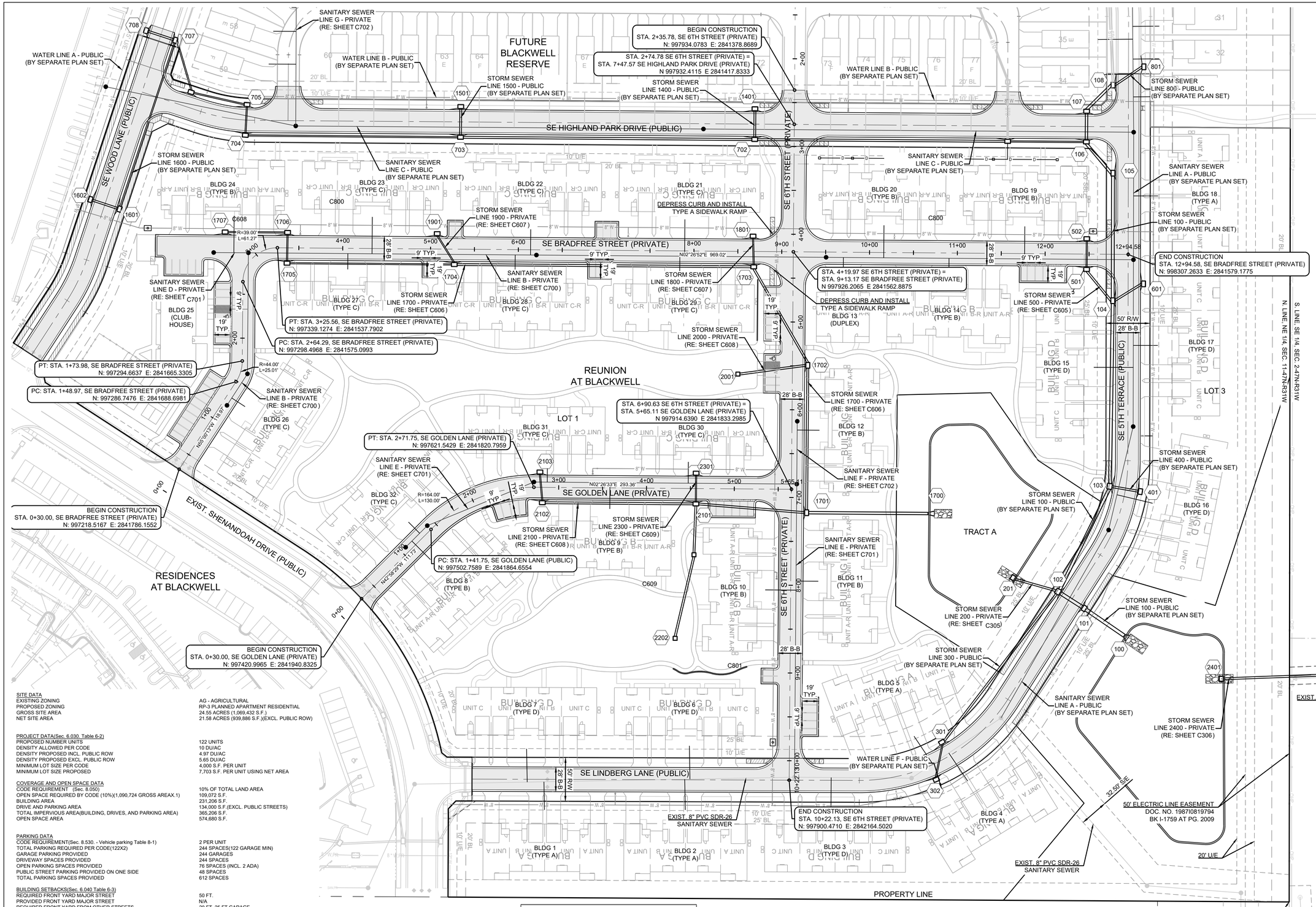
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-007

GENERAL NOTES

SHEET
C100



SITE DATA	
EXISTING ZONING	AG - AGRICULTURAL
PROPOSED ZONING	RP-3 PLANNED APARTMENT RESIDENTIAL
GROSS SITE AREA	24.55 ACRES (1,069,432 S.F.)
NET SITE AREA	21.58 ACRES (939,886 S.F.)(EXCL. PUBLIC ROW)

PROJECT DATA(Sec. 6.030, Table 6-2)	
PROPOSED NUMBER UNITS	122 UNITS
DENSITY ALLOWED PER CODE	10 DU/AC
DENSITY PROPOSED INCL. PUBLIC ROW	4.97 DU/AC
DENSITY PROPOSED EXCL. PUBLIC ROW	5.65 DU/AC
MINIMUM LOT SIZE PER CODE	4,000 S.F. PER UNIT
MINIMUM LOT SIZE PROPOSED	7,703 S.F. PER UNIT USING NET AREA

COVERAGE AND OPEN SPACE DATA	
CODE REQUIREMENT (Sec. 8.050)	10% OF TOTAL LAND AREA
OPEN SPACE REQUIRED BY CODE (10%)(1,090,724 GROSS AREAX.1)	109,072 S.F.
BUILDING AREA	231,206 S.F.
DRIVE AND PARKING AREA	134,000 S.F.(EXCL. PUBLIC STREETS)
TOTAL IMPERVIOUS AREA(BUILDING, DRIVES, AND PARKING AREA)	365,206 S.F.
OPEN SPACE AREA	574,680 S.F.

PARKING DATA	
CODE REQUIREMENT(Sec. 8.530. - Vehicle parking Table 8-1)	2 PER UNIT
TOTAL PARKING REQUIRED PER CODE(122X2)	244 SPACES(122 GARAGE MIN)
GARAGE PARKING PROVIDED	244 GARAGES
DRIVEWAY SPACES PROVIDED	244 SPACES
OPEN PARKING SPACES PROVIDED	76 SPACES (INCL. 2 ADA)
PUBLIC STREET PARKING PROVIDED ON ONE SIDE	48 SPACES
TOTAL PARKING SPACES PROVIDED	612 SPACES

BUILDING SETBACKS(Sec. 6.040 Table 6-3)	
REQUIRED FRONT YARD MAJOR STREET	50 FT.
PROVIDED FRONT YARD MAJOR STREET	N/A
REQUIRED FRONT YARD FROM OTHER STREETS	20 FT. 25 FT GARAGE
PROVIDED FRONT YARD FROM OTHER STREETS	20 FT. 25 FT. GARAGE
REQUIRED SIDE YARD SETBACK FROM LOT LINE	10 FT.
PROVIDED SIDE YARD SETACK FROM LOT LINE	10 FT.
REQUIRED SEPARATION BETWEEN BUILDINGS	20 FT.
PROVIDED SEPARATION BETWEEN BUILDINGS	20 FT. FOR CLOSEST
REQUIRED REAR YARD SETBACK	20 FT.
PROVIDED REAR YARD SETBACK	20 FT.

PARKING SETBACKS(Sec. 8.620)	
REQUIRED FROM PUBLIC RIGHT OF WAY	20 FT.
PROVIDED FROM PUBLIC RIGHT OF WAY	20 FT.
REQUIRED FROM RESIDENTIAL USE	20 FT.
PROVIDED FROM RESIDENTIAL USE	20 FT. (IN MOST AREAS MORE)
REQUIRED FROM SIDE AND REAR PROPERTY	20 FT.
PROVIDED FROM SIDE AND REAR PROPERTY	20 FT. (IN MOST AREAS MORE)

BUILDING TYPE	
TYPE	COUNT
A	5
B	9
C	10
D	6
DUPLEX	1

UNIT TYPE	
UNIT TYPE	UNIT COUNT
UNIT A	10
UNIT A-R	20
UNIT B	22
UNIT B-R	38
UNIT C	12
UNIT C-R	20

PUBLIC ROAD NOTE:
ROADS DENOTED AS "(PUBLIC)" WILL BE CONSTRUCTED UNDER A SEPARATE PLAN SET.

SIDEWALK NOTE:
SIDEWALKS ADJACENT TO BUILDINGS WILL BE INSTALLED BY OTHERS, UNLESS NOTED OTHERWISE.

SCALE: 1" = 50'

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08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

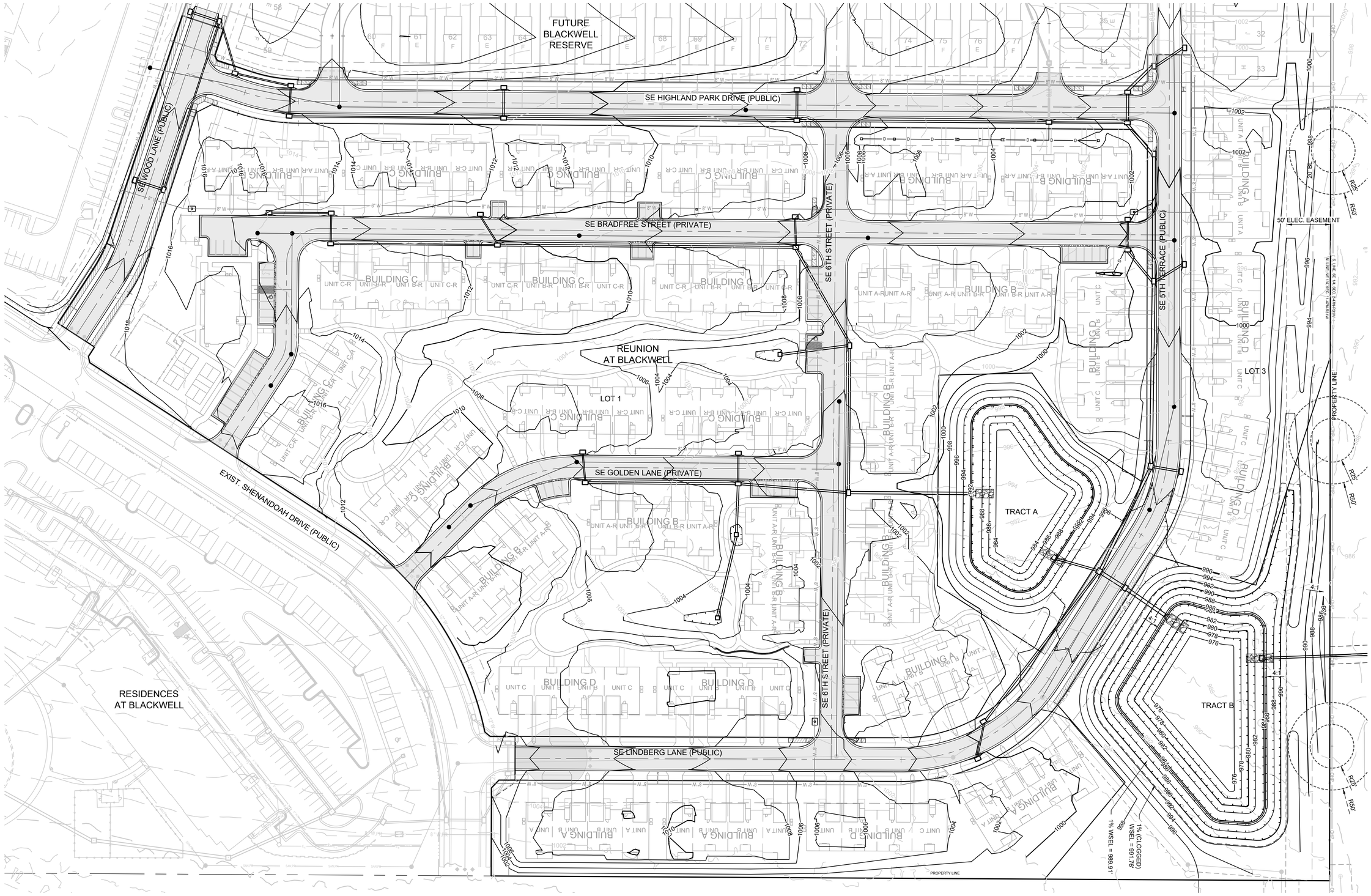
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-097

GENERAL LAYOUT

SHEET
C101



PUBLIC ROAD NOTE:
ROADS DENOTED AS "(PUBLIC)" WILL BE CONSTRUCTED UNDER A SEPARATE PLAN SET.

TRANSMISSION EASEMENT NOTES:

1. EXCAVATION NOT PERMITTED WITHIN 25 FEET OF TRANSMISSION POLES.
2. SOIL SHALL NOT COME INTO CONTACT WITH TRANSMISSION POLES.
3. OPERATION OF EQUIPMENT OVER 14 FEET IN HEIGHT WITHIN TRANSMISSION EASEMENT IS NOT PERMITTED.
4. CONSTRUCTION EQUIPMENT SHALL ALWAYS MAINTAIN A MINIMUM DISTANCE OF 20 FEET FROM ENERGIZED TRANSMISSION LINE CONDUCTORS.
5. ALL SPOILS ARE TO BE MAINTAINED OUTSIDE THE TRANSMISSION EASEMENT IMMEDIATELY AFTER EXCAVATION TO ASSURE PROPER CLEARANCES.
6. FOR ADDITIONAL TRANSMISSION EASEMENT ENCROACHMENT REQUIREMENTS SEE https://www.evergy.com/partner-with-us/transmission-projects/transmission-line-easements

MO GRS BENCHMARK:

STATION NAME - JA-90

KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988" LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.
N:1001052.8503, E:2845604.8272

ELEV. 997.045

PROJECT BENCHMARK:

"SQUARE" CUT IN TOP OF CONCRETE STORM MANHOLE
STORM MANHOLE IS LOCATED APPROX. 130 FEET EAST OF THE INTERSECTION OF SE JOEL AVE & BLUE PARKWAY AND 26 FEET SOUTH OF THE CENTERLINE OF BLUE PARKWAY.
N:996874.9690, E:2840937.1365

ELEV. 1005.719

SCALE: 1" = 50'

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PROFESSIONAL ENGINEER
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

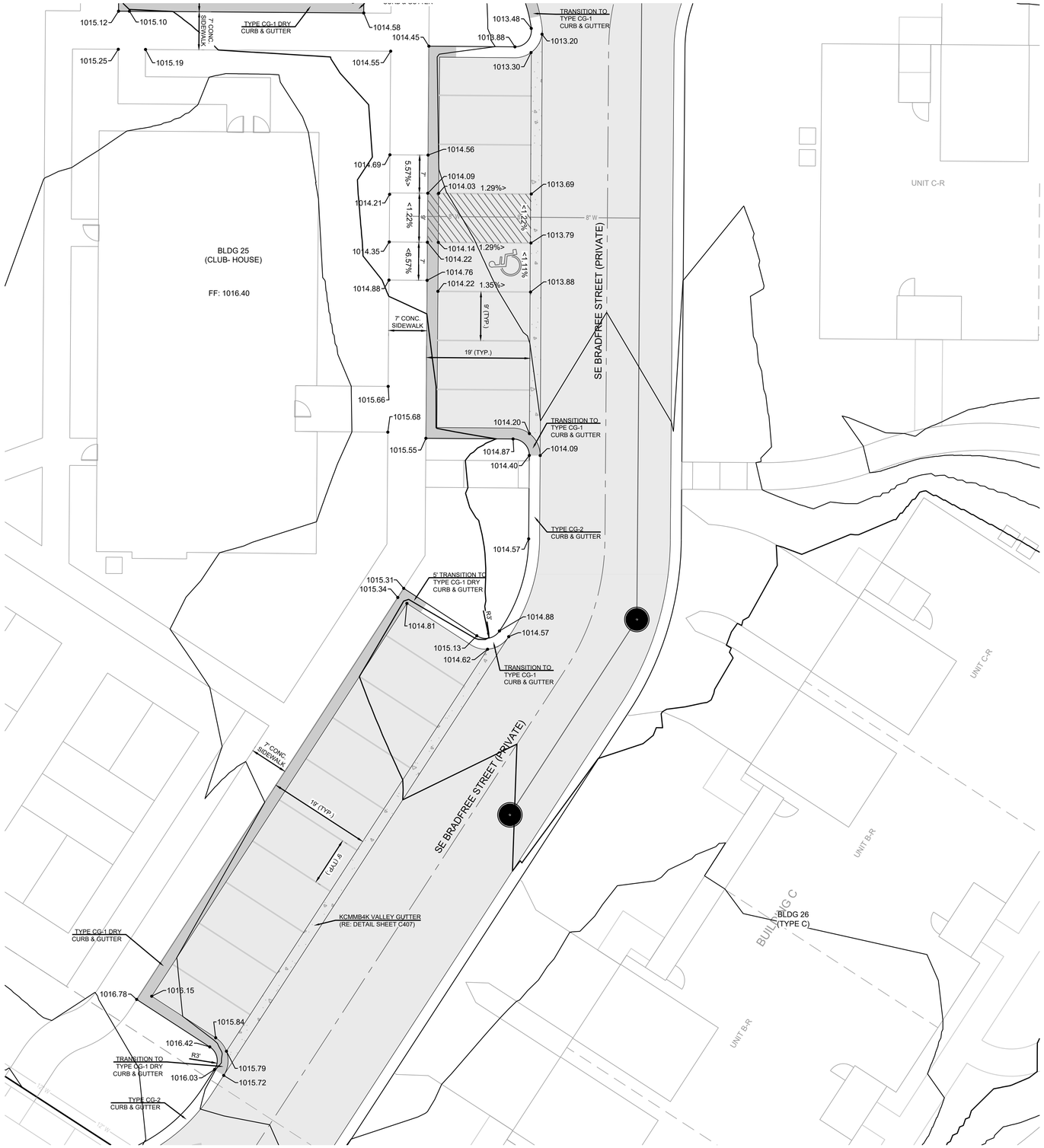
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

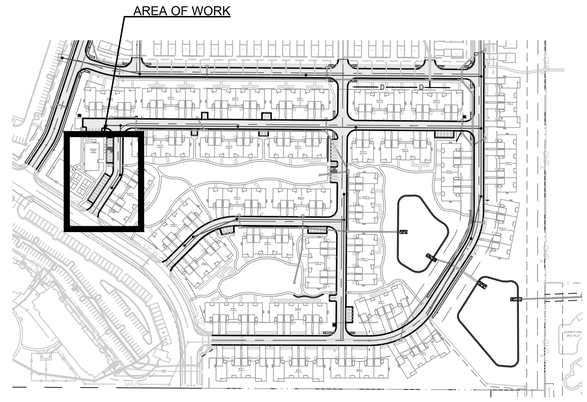
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06/07/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22-097

GRADING PLAN

SHEET
C201





KEY MAP
1" = 200'

0 10' 20'
SCALE: 1" = 10'

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#E2000030800-F #LA2001005237 #LS2000208859-F

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NUMBER PE-2009007208
STATE OF MISSOURI
PROFESSIONAL ENGINEER
08.23.2023

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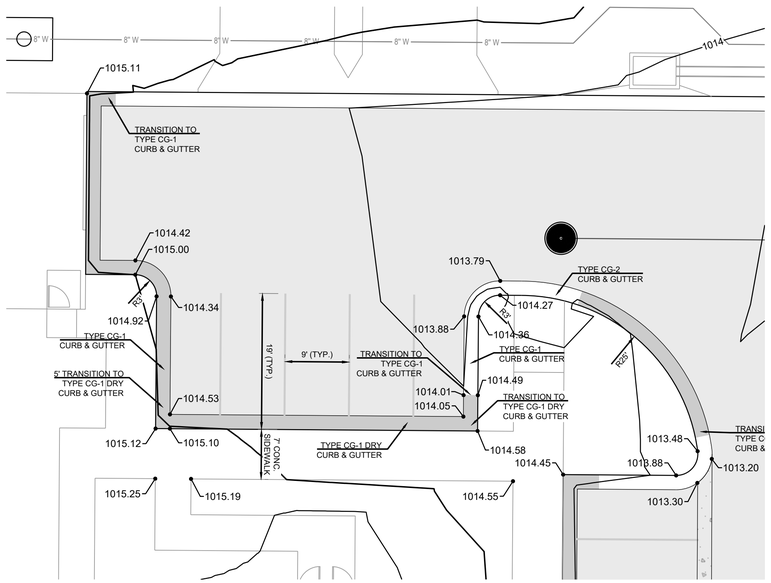
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

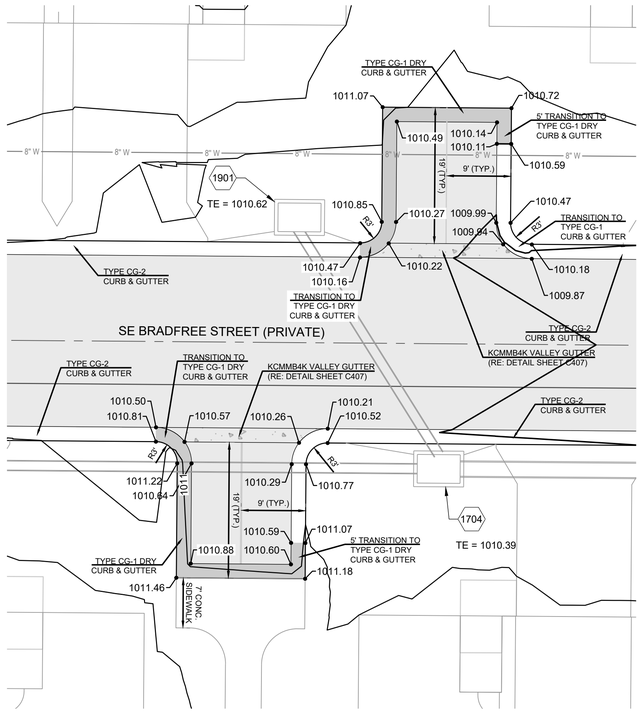
REVISION DATE	DESCRIPTION
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2 06/27/23	PER CITY COMMENTS
3 08/24/23	PER CITY COMMENTS
4	
5	
6	
7	
8	

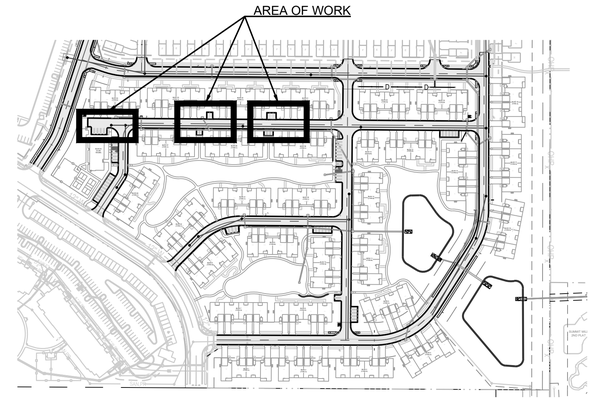
DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-097

SPOT ELEVATIONS - PARKING

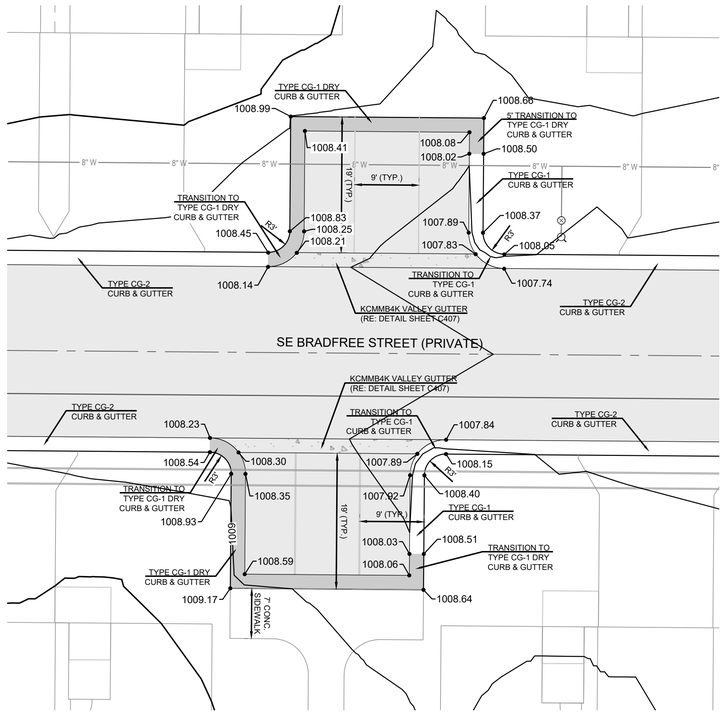
SHEET
C202

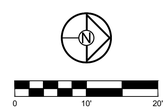






KEY MAP
1" = 200'





0 10' 20'

SCALE: 1" = 10'

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PREPARED BY:

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NUMBER PE-2009007268
STATE OF MISSOURI
PROFESSIONAL ENGINEER

08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

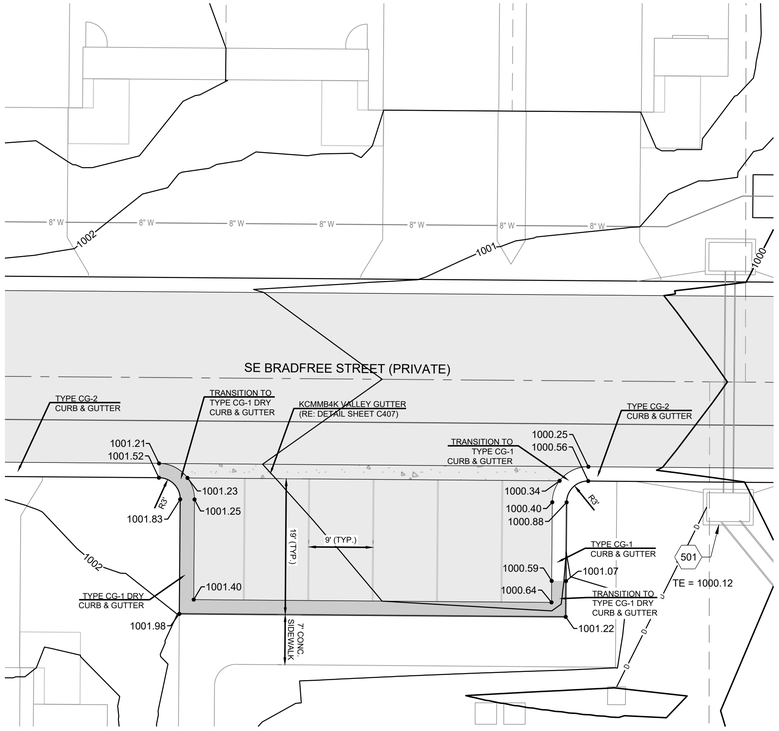
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

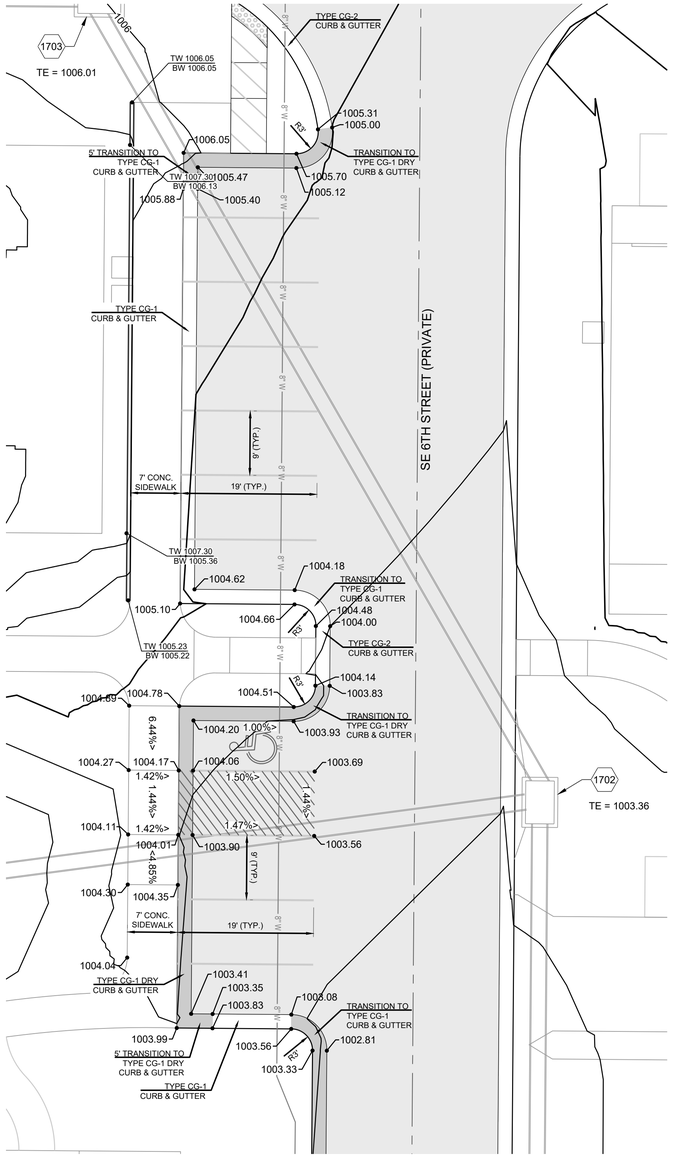
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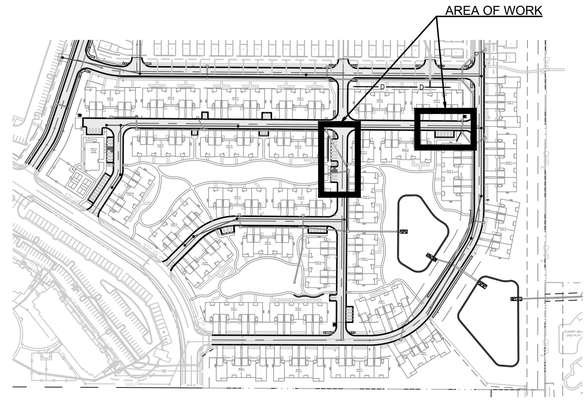
DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-067

SPOT ELEVATIONS - PARKING

SHEET
C203







KEY MAP
1" = 200'

0 10' 20'
SCALE: 1" = 10'

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PREPARED BY:



08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

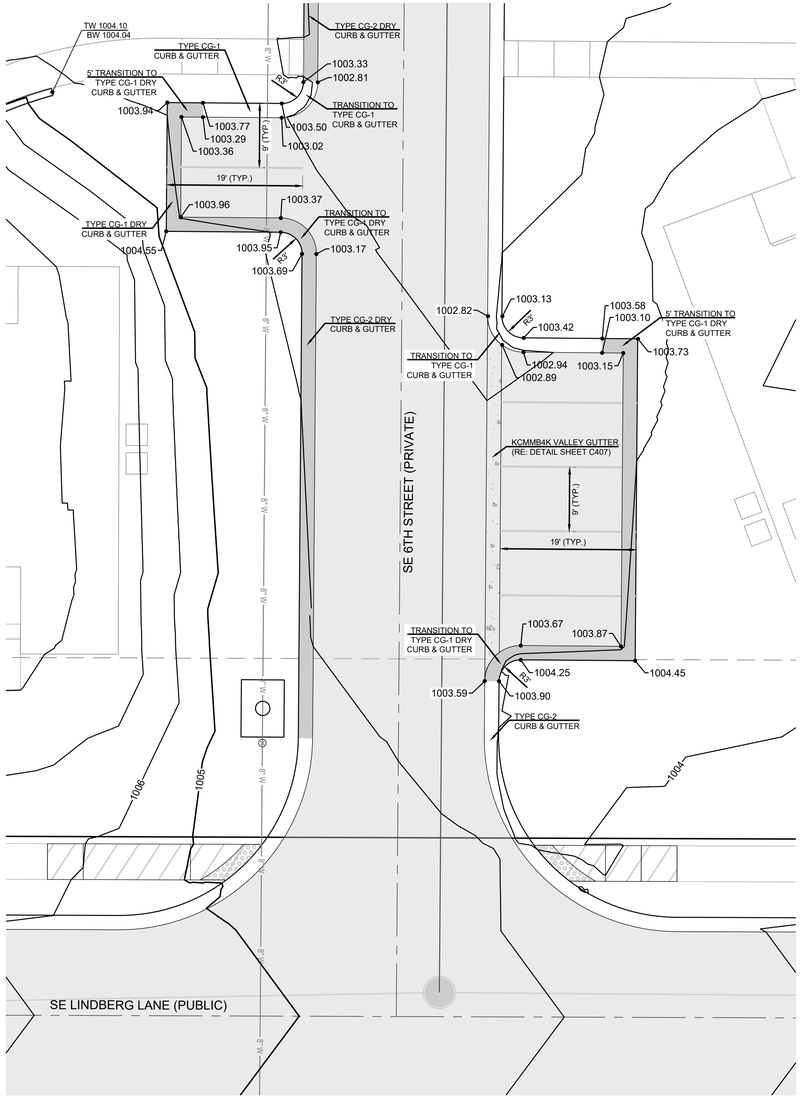
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

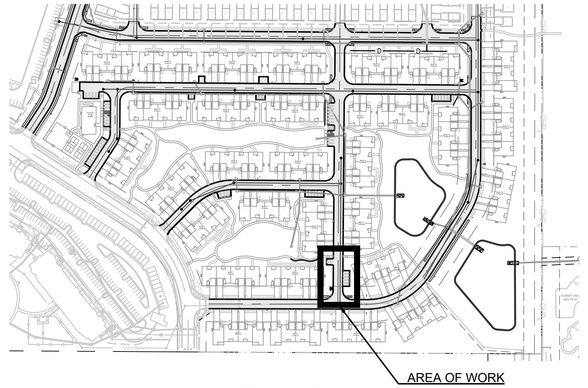
REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	CHECKED BY:	DATE PREPARED:	PROJ. NUMBER:
TRC	MAB	03/03/2023	22-007

SPOT ELEVATIONS - PARKING

SHEET
C204





KEY MAP
1" = 200'

0 10' 20'
SCALE: 1" = 10'

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#E2000030800-F #LA2001005237 #LS2002008859-F

PREPARED BY:

STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2003007268
PROFESSIONAL ENGINEER
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

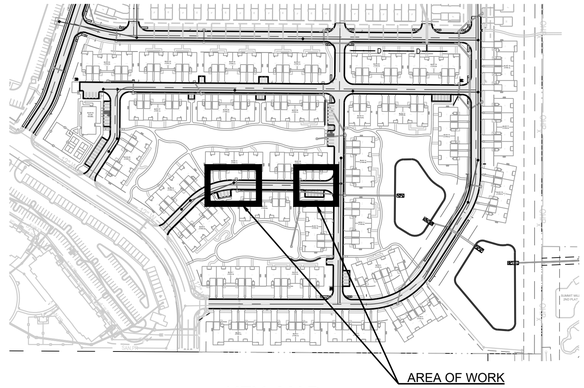
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FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
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08/24/23	PER CITY COMMENTS

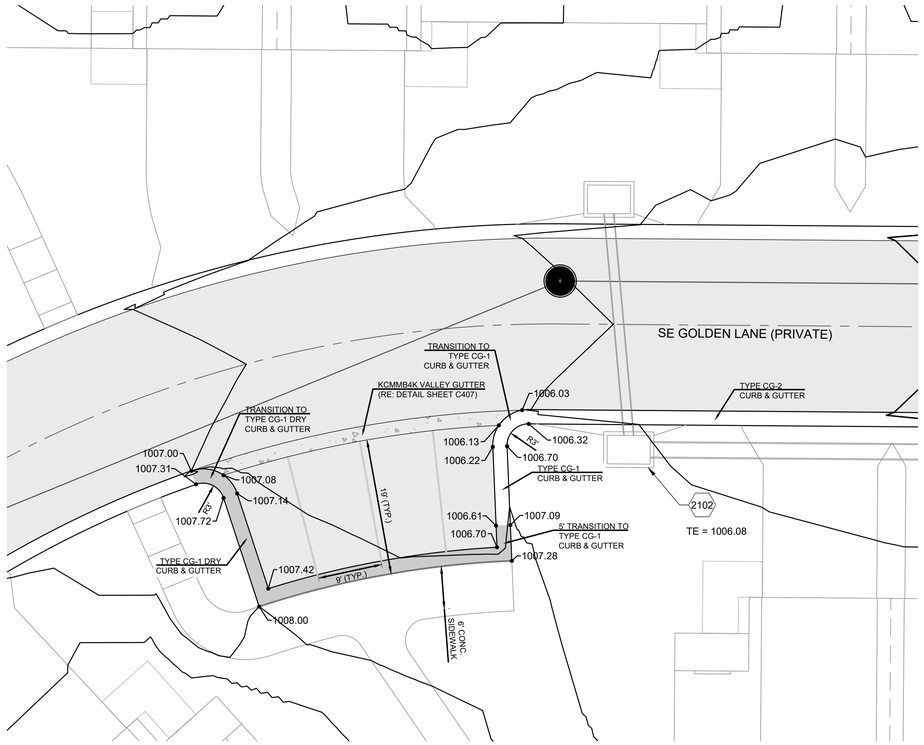
DRAWN BY:	CHECKED BY:	DATE PREPARED:	PROJ. NUMBER:
TRC	MAB	03/03/2023	22-067

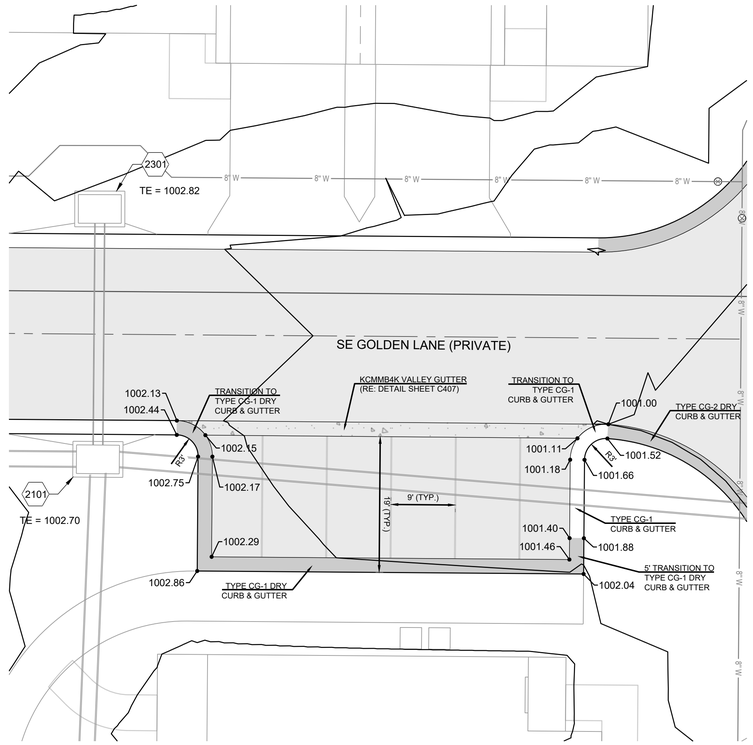
SPOT ELEVATIONS - PARKING

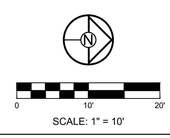
SHEET
C205



KEY MAP
1" = 200'







0 10' 20'
SCALE: 1" = 10'

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08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22-007

SPOT ELEVATIONS - PARKING

SHEET
C206

KEY MAP
1" = 200'

SCALE: 1" = 30'

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STATE OF MISSOURI

08.23.2023

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REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

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08/24/23	PER CITY COMMENTS

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CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-097

SPOT ELEVATIONS - BUILDINGS

SHEET
C207

SE HIGHLAND PARK DRIVE (PUBLIC)

RILEY STREET (PUBLIC)

SE 6TH STREET (PRIVATE)

SE BRADFREE STREET (PRIVATE)

EXIST. SHENANDOAH DRIVE (PUBLIC)

SE GOLDEN LANE (PRIVATE)

BLDG 24 (TYPE B) FF: 1016.20

BLDG 23 (TYPE C) FF: 1014.90 / FF: 1014.30

BLDG 22 (TYPE C) FF: 1013.30 / FF: 1012.20

BLDG 21 (TYPE C) FF: 1011.20 / FF: 1009.90

BLDG 25 (CLUB-HOUSE) FF: 1016.40

BLDG 27 (TYPE C) FF: 1013.80 / FF: 1012.80

BLDG 28 (TYPE C) FF: 1011.60 / FF: 1010.60

BLDG 29 (TYPE C) FF: 1009.20 / FF: 1008.20

BLDG 26 (TYPE C) FF: 1015.90 / FF: 1016.90

BLDG 31 (TYPE C) FF: 1008.30 / FF: 1007.30

BLDG 30 (TYPE C) FF: 1004.80 / FF: 1003.80

BLDG 32 (TYPE C) FF: 1011.50 / FF: 1010.50

BLDG 9 (TYPE B)

LOT 1

INSTALL 186 SFF RETAINING WALL

TW 1008.05 BW 1006.05

TW 1007.30 BW 1006.13

TW 1007.30 BW 1005.36

TW 1005.23 BW 1005.22

KEY MAP
1" = 200'

AREA OF WORK

SCALE: 1" = 30'

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PREPARED BY:

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08.23.2023

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REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

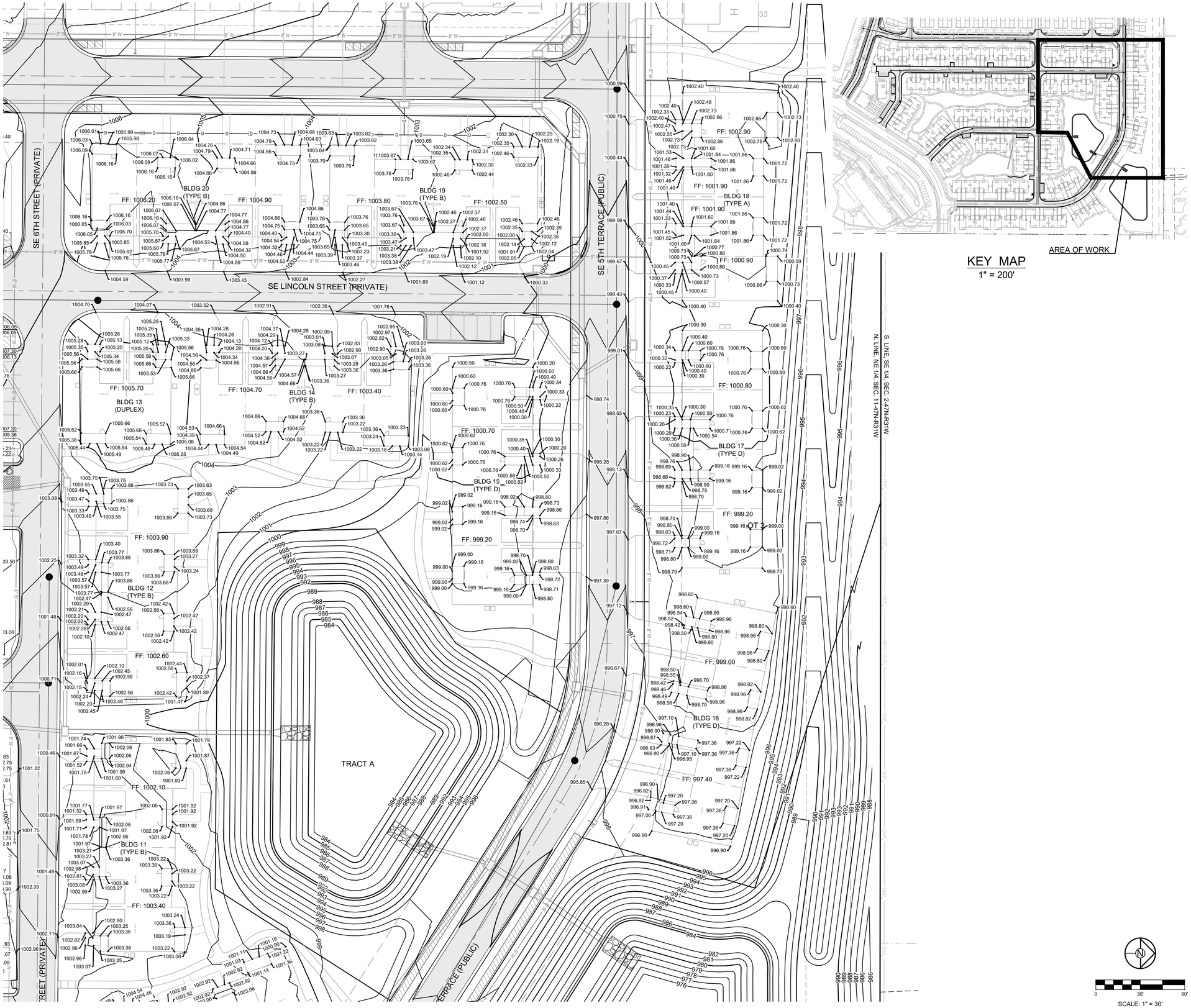
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

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PROJ. NUMBER:	22-097

SPOT ELEVATIONS - BUILDINGS

SHEET
C208



KEY MAP
1" = 200'

SCALE: 1" = 30'

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STATE OF MISSOURI
08.23.2023

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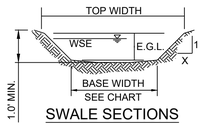
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PROJ. NUMBER	22-097

SPOT ELEVATIONS - BUILDINGS

SHEET
C209



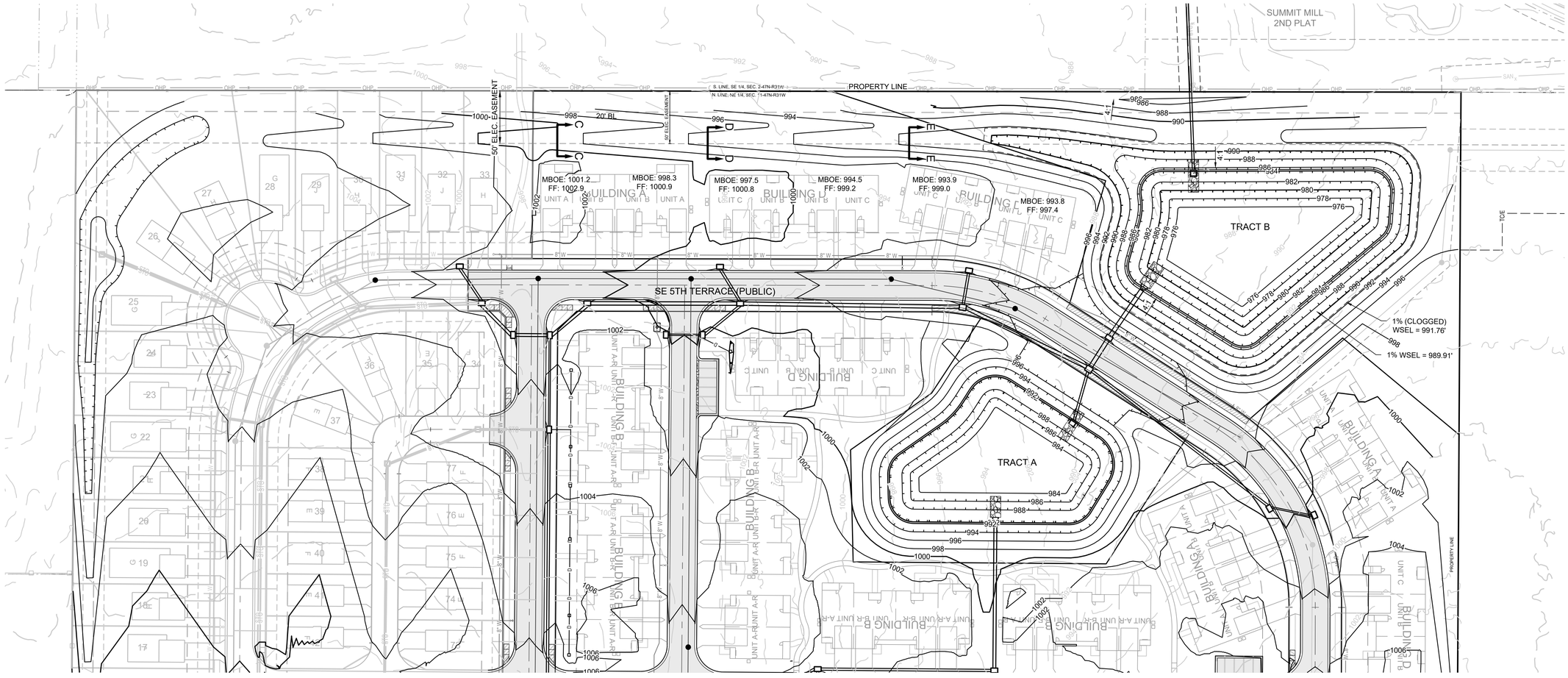
SWALE SECTIONS

RUNOFF CALCULATIONS:
Q = K * C * I * A
K_{100} = 1.25 K_{10} = 1.0 C = 0.51
I_{10} = 7.35 I_{100} = 10.32
VELOCITY HEAD = (VELOCITY)^2 / 64.4
EGL = DEPTH + VELOCITY HEAD

EXISTING CHANNEL															
SECTION	DRAINAGE AREA (AC.)	Q100 (CFS)	Q10 (CFS)	DESIGN OVERFLOW FORMULA	DESIGN OVERFLOW (CFS)	BED SLOPE (%)	SIDE SLOPE (X:1)	SIDE SLOPE (X:2)	BASE WIDTH (FT)	CROSS SECTION AREA (FT2)	TOP WIDTH (FT)	NOMINAL DEPTH (FT.)	AVERAGE VELOCITY (FPS)	VELOCITY HEAD (FT.)	EGL (FT.)
C	0.45	3.83	2.73	Q100(C)	3.83	2.00	4.00	4.00	10.00	2.62	11.92	0.17	2.07	0.07	0.24
D	0.69	5.87	4.18	Q100(C)	5.87	2.00	4.00	4.00	10.00	3.51	12.49	0.22	2.43	0.09	0.31
E	1.01	8.60	6.12	Q100(C)	8.60	2.00	4.00	4.00	10.00	4.65	13.21	0.28	2.79	0.12	0.40

NOTES:

1. MBOE = MINIMUM BUILDING OPENING ELEVATION FOR HOUSES ADJACENT TO ENGINEERED OVERFLOW SWALES SHALL BE A MINIMUM OF 2 FEET ABOVE THE WATER SURFACE ELEVATION FOR THE 1% CHANCE STORM EVENT. APPROVED INDIVIDUAL LOT PLOT PLANS MAY ALTER THE CONSTRUCTED SWALES IN ELEVATION (CONTOUR) FROM THE GRADING PLAN AS LONG AS THE MBOE IS ADJUSTED ACCORDING TO THE ABOVE CRITERIA.
2. EGL = ENERGY GRADE LINE (100 YR)
3. MWSE = MAXIMUM WATER SURFACE ELEVATION (100 YR)
4. MBOE'S ADJACENT TO SUMPED AREA INLETS SHALL BE A MINIMUM OF 1' ABOVE TOP OF ADJACENT BERM.



MO GRS BENCHMARK:

STATION NAME - JA-90

KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988" LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.
N:1001052.8503, E:2845604.8272

ELEV. 997.045

PROJECT BENCHMARK:

"SQUARE" CUT IN TOP OF CONCRETE STORM MANHOLE
STORM MANHOLE IS LOCATED APPROX. 130 FEET EAST OF THE INTERSECTION OF SE JOEL AVE & BLUE PARKWAY AND 26 FEET SOUTH OF THE CENTERLINE OF BLUE PARKWAY.
N:996874.9690, E:2840937.1365

ELEV. 1005.719

0 50' 100'
SCALE: 1" = 50'

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08.23.2023

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REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

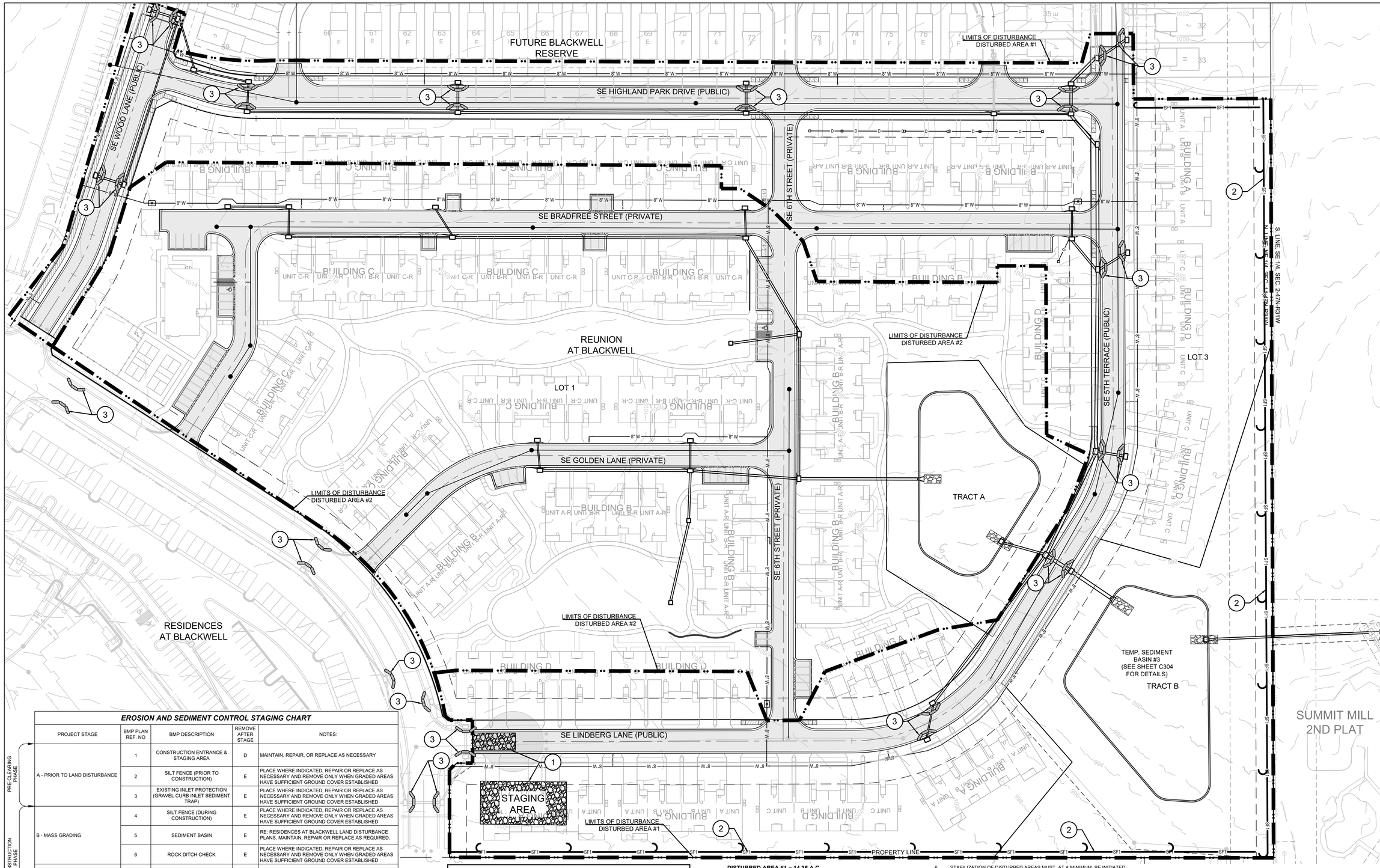
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION	DATE	DESCRIPTION
1	05/05/23	PER CITY COMMENTS
2	06/27/23	PER CITY COMMENTS
3	08/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-007

NORTH SWALE PLAN

SHEET
C210



EROSION AND SEDIMENT CONTROL STAGING CHART

	PROJECT STAGE	BMP PLAN REF. NO	BMP DESCRIPTION	REMOVE AFTER STAGE	NOTES:
PRE-CLEARING PHASE	A - PRIOR TO LAND DISTURBANCE	1	CONSTRUCTION ENTRANCE & STAGING AREA	D	MAINTAIN, REPAIR, OR REPLACE AS NECESSARY
		2	SILT FENCE (PRIOR TO CONSTRUCTION)	E	PLACE WHERE INDICATED, REPAIR OR REPLACE AS NECESSARY AND REMOVE ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
		3	EXISTING INLET PROTECTION (GRAVEL CURB INLET SEDIMENT TRAP)	E	PLACE WHERE INDICATED, REPAIR OR REPLACE AS NECESSARY AND REMOVE ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
CONSTRUCTION PHASE	B - MASS GRADING	4	SILT FENCE (DURING CONSTRUCTION)	E	PLACE WHERE INDICATED, REPAIR OR REPLACE AS NECESSARY AND REMOVE ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
		5	SEDIMENT BASIN	E	RE: RESIDENCES AT BLACKWELL LAND DISTURBANCE PLANS. MAINTAIN, REPAIR OR REPLACE AS REQUIRED.
		6	ROCK DITCH CHECK	E	PLACE WHERE INDICATED, REPAIR OR REPLACE AS NECESSARY AND REMOVE ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
	C - UTILITY CONSTRUCTION	7	CONCRETE WASHOUT AREA	E	MAINTAIN, REPAIR, OR REPLACE AS NECESSARY
		8	INLET PROTECTION (SILT FENCE)	D/E	PLACE SILT FENCE AROUND ALL STORM SEWER STRUCTURES / YARD AREA STORM STRUCTURES TO HAVE SILT FENCE REMOVED ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
FINAL STABILIZATION PHASE	D - AFTER PAVING OPERATIONS	9	INLET PROTECTION (GRAVEL FILTER BAGS)	E	BOARDS SHALL BE PLACED IN FRONT OF INLET OPENING FROM THE TIME SILT FENCE IS REMOVED UNTIL SUCH TIME THAT THE CURB / THROAT IS POURED. PLACE GRAVEL FILTER BAGS AT THE OPENING OF ALL CURB INLETS IMMEDIATELY AFTER THE INLET THROATS ARE POURED
		10	SEEDING AND MULCHING	E	ALL DISTURBED AREAS AFTER 14 DAYS OF CONSTRUCTION INACTIVITY
	E - UNTIL CLOSURE OF LAND DISTURBANCE PERMIT				ADDITIONAL SEDIMENT AND EROSION CONTROL MEASURES MAY BE REQUIRED ANY TIME CURRENT MEASURES ARE FOUND TO BE INEFFECTIVE.

LEGEND

- TEMP. CONST. ENTRANCE AND STAGING AREA
- CONCRETE WASHOUT AREA
- ROCK DITCH CHECK
- (1) BMP PLAN REF. NO.
- SILT FENCE FOR INLET PROTECTION PRIOR TO STRUCTURE TOP
- SF1 — SILT FENCE (PRIOR TO LAND DISTURBANCE)
- SF2 — SILT FENCE (DURING CONSTRUCTION)
- LIMITS OF DISTURBANCE
- 965 EXISTING CONTOURS
- 965 PROPOSED CONTOURS
- GRAVEL FILTER FOR STORM SEWER STRUCTURES ONLY

DISTURBED AREA #1 = 14.35 A.C.
DISTURBED AREA #2 = 12.00 A.C.

SITE SPECIFIC NOTES:

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9. AREAS WITHIN PUBLIC RIGHT-OF-WAY SHALL BE SODDED IMMEDIATELY AFTER CONSTRUCTION IS COMPLETE.

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N

0 100' 200'

SCALE: 1" = 100'

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#E2000030800-F #LA2001005237 #LS2000208859-F

PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2009007208
STATE OF MISSOURI
PROFESSIONAL ENGINEER

08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

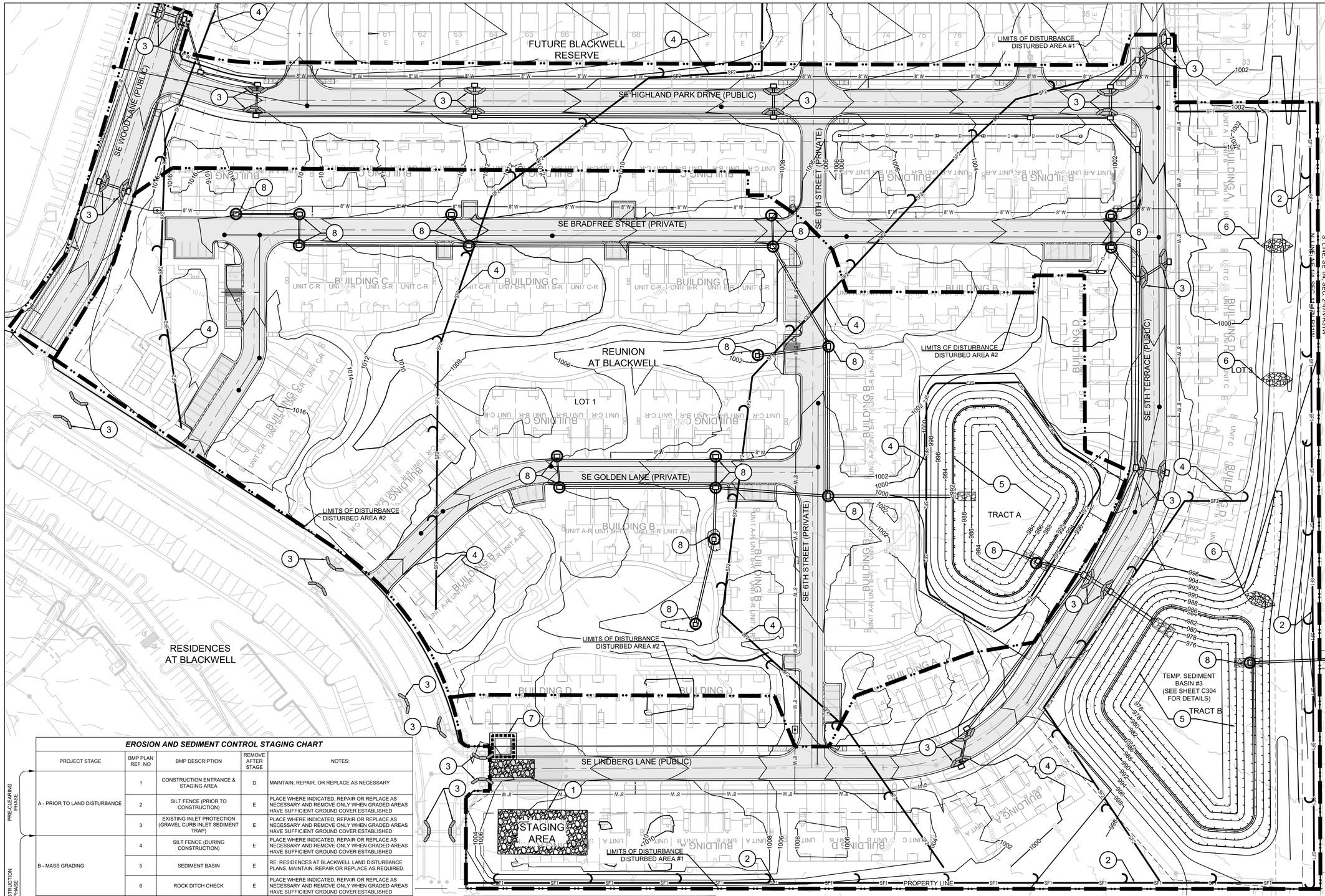
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REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

PRE-CLEARING EROSION CONTROL PLAN

SHEET
C300



EROSION AND SEDIMENT CONTROL STAGING CHART

	PROJECT STAGE	BMP PLAN REF. NO	BMP DESCRIPTION	REMOVE AFTER STAGE	NOTES:
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PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2003007208
PROFESSIONAL ENGINEER
STATE OF MISSOURI
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

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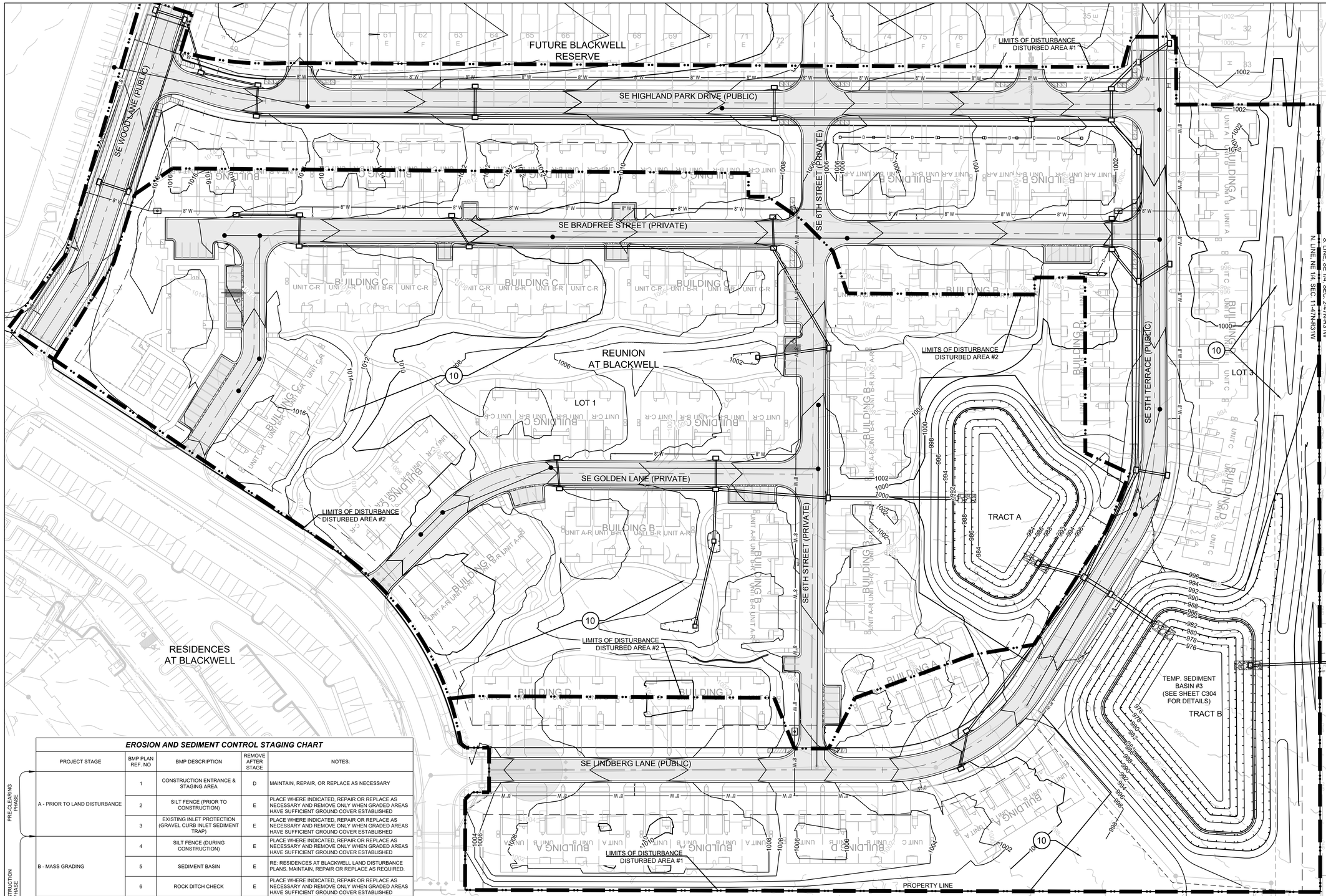
DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-007

REUNION AT BLACKWELL FINAL DEVELOPMENT PLAN

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

CONSTRUCTION PHASE EROSION CONTROL PLAN

SHEET C301



EROSION AND SEDIMENT CONTROL STAGING CHART

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PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2003007203
PROFESSIONAL ENGINEER
STATE OF MISSOURI
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

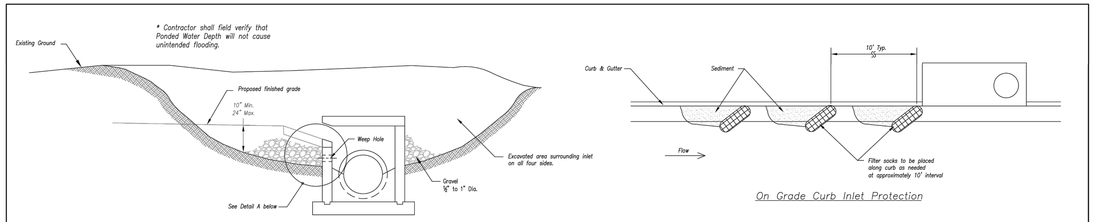
REUNION AT BLACKWELL
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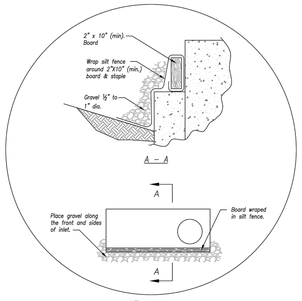
DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-097

FINAL STABILIZATION EROSION CONTROL PLAN

SHEET
C302

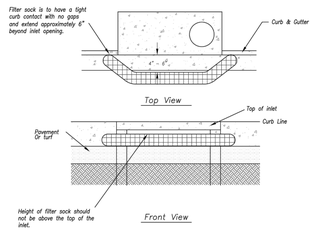


On Grade Curb Inlet Protection



Detail A

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



Sump Inlet Sediment Filter

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

Notes:

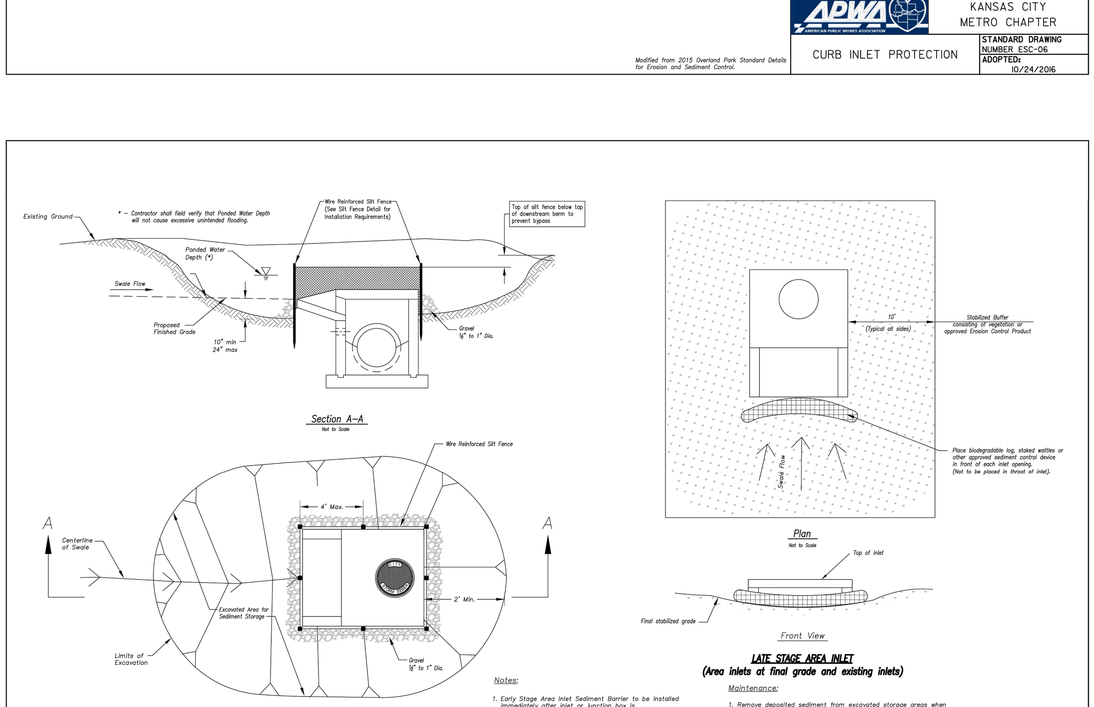
1. Immediately following inlet construction and prior to construction of curb and inlet throat, protect inlet opening by installing 2" x 10" (min.) board wrapped in silt fence. Structures shall have excavated storage area on all four sides to allow settling of sediment (Early Stage Curb Inlet).
2. When 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.

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

AMERICAN PUBLIC WORKS ASSOCIATION	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)

Maintenance:

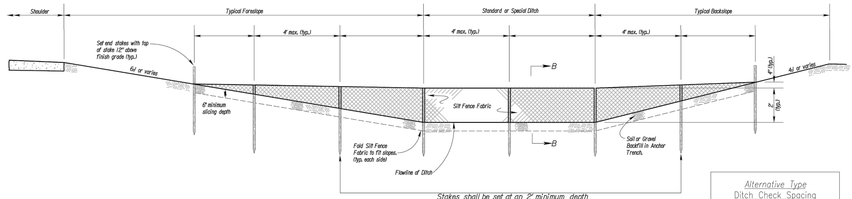
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3. Repair or replace as necessary to maintain function and integrity of installation.

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

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

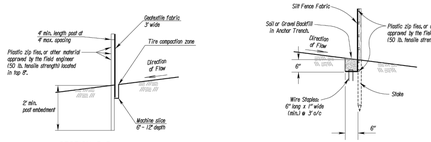
Notes for Silt Fence Ditch Check:

1. Stakes shall be 4" (min.) long and one of the following materials:
   a. Hardwood – 1 ¾" x 1 ¾";
   b. Southern Pine (No. 2) – 2 ⅜" x 2 ⅜";
   c. Steel U, T, L, or C Section – .95 lbs. per 1'-0";
   d. Synthetic – same strength as wood stakes.
2. Cross pieces shall be of same material as stakes.
3. Attach fence fabric securely on 6" centers (max.).
4. Use of high flow material is acceptable.
5. Refer to plan sheets to estimate the length of silt fence required.
6. Use support fencing when tributary area is greater than 2.4 acres or when ditch gradient is greater than 2 percent.
7. Silt fence sliced in to a 6" minimum depth.
8. Elevation at tie in points shall be a minimum of 4" higher than the center.



Stakes shall be set at an 2' minimum depth

TYPICAL ELEVATION

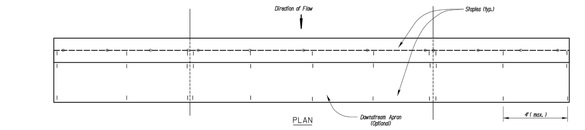


SECTION B-B

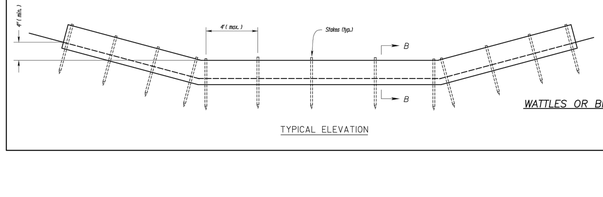
SILT FENCE DITCH CHECK
NO SCALE

Alternative Type Ditch Check Spacing	
Ditch Centerline Slope (%)	Spacing Interval (Feet)
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	33

Note: Use this spacing for all except Rock Ditch Checks.



PLAN



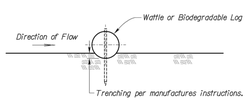
TYPICAL ELEVATION

WATTLES OR BIODEGRADABLE LOG DITCH CHECKS
OR Filter Sock Ditch Check
NO SCALE

Modified from Kansas Department of Transportation Standard Details for Erosion Control and Sediment Control.

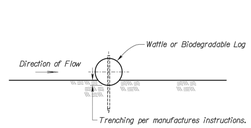
Notes for Wattles and Biodegradable Log Ditch Check:

1. Use as many biodegradable log sections as necessary to ensure water does not flow around end of ditch check.
2. Overlap sections a minimum of 18"
3. Stakes shall be per manufacturer's instructions. Length of stakes shall be a minimum of 2 times the diameter of the log or 24" minimum.
4. Use Erosion Control (Class 1) (Type C) as the downstream apron when directed by the Engineer.
5. Use 9" diameter logs when used with Erosion Control (Class 2) (Any Type) channel lining. Smaller diameter logs may be used with Erosion Control (Class 2) (Any Type) channel lining as directed by the Engineer.

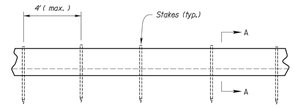


SECTION B - B

AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
SILT FENCE AND WATTLE/ BIODEGRADABLE LOG DITCH CHECKS	STANDARD DRAWING NUMBER ESC-09
	ADOPTED: 10/24/2016



Section A–A



Typical Elevation

WATTLES AND BIODEGRADABLE LOG

Notes for Wattles and Biodegradable Log Slope Protection:

1. The Slope barriers shall be placed along contour lines, with a short section turned upgrade at each end of the barrier. The maximum length of the slope barrier shall not exceed 250 feet, and the barrier ends need to be staggered.
2. Install wattles and biodegradable logs per manufacturer's instructions.
3. Spacing of stakes per manufacturer's instructions with 4' max. spacing. Length of stakes shall be a minimum of 2 times the diameter of the log with minimum of 24".

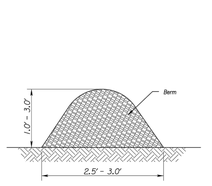


Figure 1
(Perimeter Control)

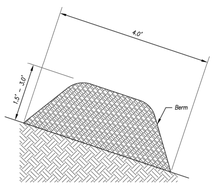


Figure 2
(Steep Slopes)

Notes for Mulch and Compost Filter Beam:

1. The sediment control berm shall be placed uncompacted in a window at locations shown on the plans or as directed by the engineer.
2. Parallel to the base of the slope, or around the perimeter of other affected areas, construct a 1 to 3 foot high by 2.5 to 3 foot wide berm (see Figure 1). For maximum water treatment ability or for steep slopes, construct a 1.5 to 3 foot high trapezoidal berm that is a minimum of 4 feet wide at the base (see Figure 2). In extreme conditions, or where specified by the engineer, a second berm shall be constructed at the top of the slope. Engineer will specify berm requirements.
3. If berm is to be left as permanent or part of the natural landscape, the compost berm may be seeded during application for permanent vegetation.
4. Do not use compost or wood mulch berms in any runoff channels or concentrated flow areas.
5. Wood mulch shall consist of tree and shrub debris resulting from clearing and grubbing and shall be ground by the mechanical means such as a chipper, hammermill, tub grinder or other approved method. Mulch sizing varies with a maximum width of 2" and a maximum length of 10".

Maintenance for Mulch and Compost Filter Beam:

1. Berm shall be restraped and material added as necessary to maintain function and dimensions.
2. Breaches in the berm shall be repaired promptly.

MULCH OR COMPOST FILTER BERMS

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

AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
WATTLES/BIODEGRADABLE LOG AND MULCH/COMPOST FILTER BERM	STANDARD DRAWING NUMBER ESC-04
	ADOPTED: 10/24/2016

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#E2000030800-F #LA2001005237 #LS2000208859-F

PREPARED BY:

STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2003007208
PROFESSIONAL ENGINEER
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

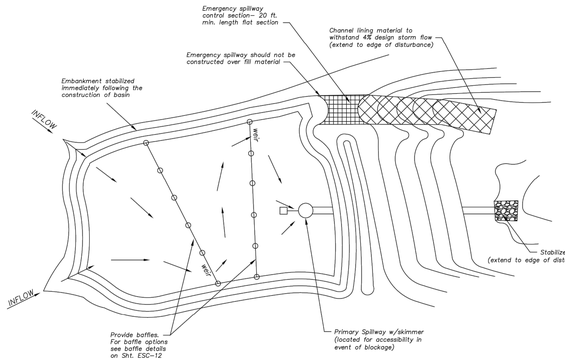
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

DESCRIPTION	REVISION DATE:
PER CITY COMMENTS	09/06/23
PER CITY COMMENTS	08/07/23
PER CITY COMMENTS	06/24/23

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22.007

EROSION CONTROL DETAILS

SHEET
C303

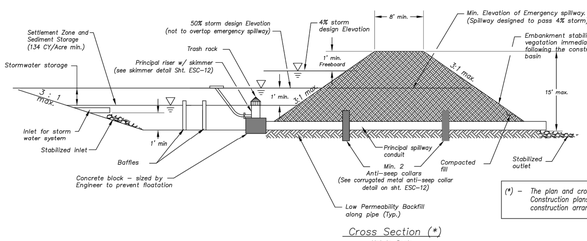


Plan View (*)
Not to Scale

Sediment Basin Design Summary (**)

Design Item	Basin #3	Basin #2	Units	Notes
Site Data:				
Tributary Drainage Area to Pond	35.79		Acres	
50% (2 yr) Design Flow	120.52		cfs	
4% (25 yr) Design Flow	254.44		cfs	
Pond Data:				
Minimum Sediment Storage Volume	4,796		cu yd	134 cy/acre required minimum
Provided Sediment Storage Volume	18,006		cu yd	
Bottom Elevation	979.0		Ft	
Sediment Cleanout Elevation	982.4		Ft	Elevation equal to 20% of original design volume
Top of Riser Elevation	988.0		Ft	Top of dry storage volume
Emergency Spillway Elevation	992.2		Ft	at or above Q-2 elevation. 1.0 ft min above principal spillway
Top of Dam Elevation	994.2		Ft	1.0 ft min above Q-25 elevation
Basin Shape Data:				
A = Area at Normal Pool	36,620		SF	
L = Length of Flow Path	120		Ft	
We = Effective Width = A/L	305.2		Ft	
Length to Width Ratio = L/We	0.4			
Principal Spillway Data:				
Riser Pipe dia	60x60		in	15" min. Size for 2 year flow minimum
Barrel Pipe dia	36		in	15" min. Size for 2 year flow minimum
Concrete Base size for Riser Pipe	N/A		CY	Size to prevent flotation. 1.25 safety factor required
Skimmer Size	8	in		Designer to provide specific details and calculations per application to dewater in 48 to 72 hours
Emergency Spillway Data:				
Design Depth in Spillway	0.8		ft	
Design Velocity in Spillway	3.0		ft/sec	
Lining Material				Designer to provide specific details and calculations per application
				TURF REINFORCEMENT MAT

(**) – Required on all Sediment Basin Plan Sheets



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.

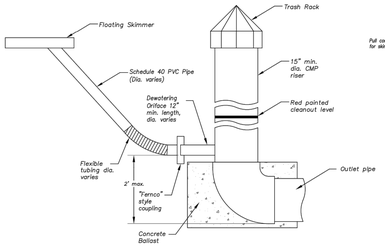
Sediment Basin Notes:

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".

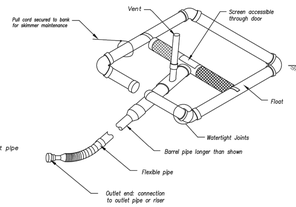
Maintenance:

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
KANSAS CITY METRO CHAPTER
SEDIMENT BASIN
STANDARD DRAWING NUMBER ESC-II
ADOPTED: 10/24/2016

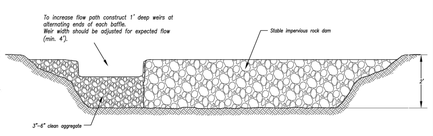


PRINCIPAL SPILLWAY DETAIL

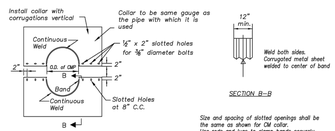


SKIMMER DETAIL (Typ.) *

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

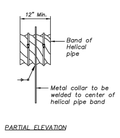


Option A – Rock with Weir

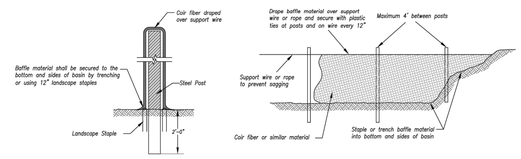


SECTION B–B

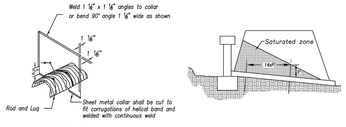
Size and spacing of slotted openings shall be the same as shown for CM collar. Use rods and lugs to clamp bands securely to pipe.



PARTIAL ELEVATION



Option B – Coir Fiber Material



ISOMETRIC VIEW

ANTI-SEEPAGE COLLAR LOCATIONS

BAFFLE DETAILS
Not to Scale

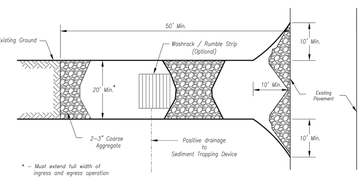
Anti-Seepage Collar Notes:

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. 14xP = 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) ⅝" 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".

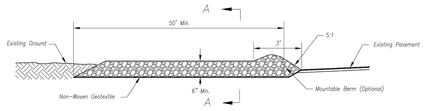
CORRUGATED METAL ANTI-SEEPAGE COLLAR DETAIL
Not to Scale

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

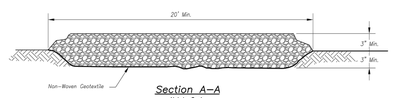
AMERICAN PUBLIC WORKS ASSOCIATION
Kansas City Metro Chapter
KANSAS CITY METRO CHAPTER
SEDIMENT BASIN - DETAILS
STANDARD DRAWING NUMBER ESC-12
ADOPTED: 10/24/2016



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

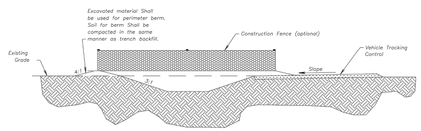
Construction Entrance modified from 2015 Overland Park Standard Details for Erosion and Sediment Control. Concrete Washout modified from 2009 City of Great Bend Standard Drawings.

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 adequately for the amount of concrete to be washed out. The slopes leading out of the subsurface pit shall be 3:1. 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, washed pieces of concrete and all other liquid and solid materials 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

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

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#E2000030800-F #LA2001005237 #LS2002008859-F

PREPARED BY:



08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

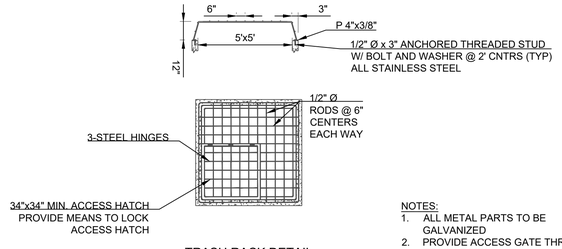
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
09/06/23	PER CITY COMMENTS
09/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22.407

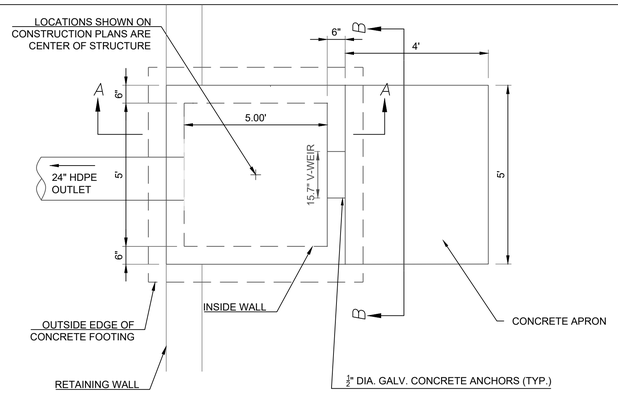
EROSION CONTROL DETAILS

SHEET
C304

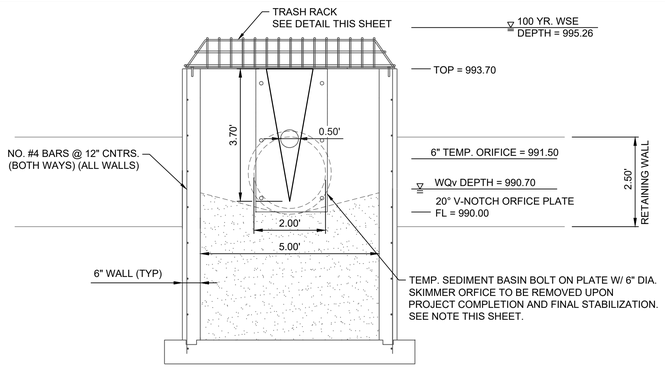


NOTES:
1. ALL METAL PARTS TO BE GALVANIZED
2. PROVIDE ACCESS GATE THRU TRASH RACK

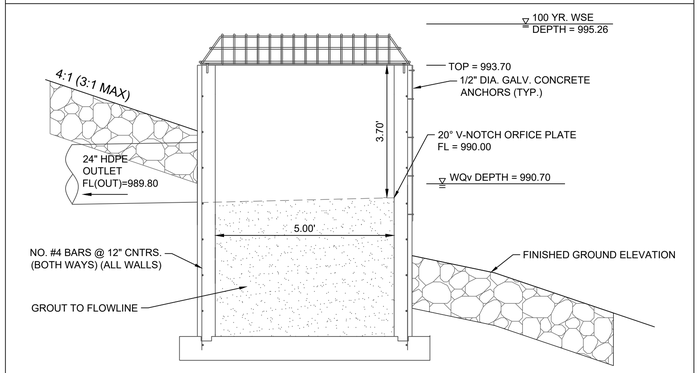
TRASH RACK DETAIL
NTS



STRUCTURE PLAN VIEW
NTS



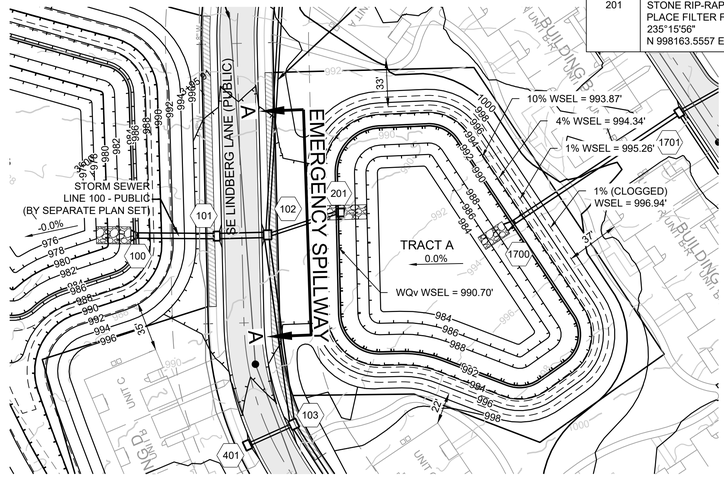
SECTION B-B
NTS

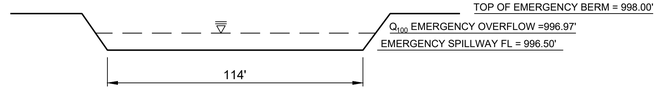


SECTION A-A
NTS

NOTE:
TEMPORARY SEDIMENT BASIN AND OUTLET STRUCTURE W/ SKIMMER AND PLATE SHALL BE CONSTRUCTED WITH THE FIRST PHASE OF THE EROSION CONTROL PLAN. UPON FINAL STABILIZATION THE SKIMMER, PLATE, AND SEDIMENT SHALL BE REMOVED AND FINAL CONVERSION TO DETENTION BASIN COMPLETED. AN AS-BUILT RECORD DRAWING ACCEPTED BY THE CITY SHALL BE REQUIRED PRIOR TO OCCUPANCY.

Storm Sewer Construction Notes	
Structure	Notes
102	STA 1+90.50, LINE 100 INSTALL 6 X 5 CURB INLET 145°25'35" N 998213.9579 E 2841960.4357
201	STA 1+53.30, LINE 200 INSTALL 5' X 5' BASIN OUTLET STRUCTURE W/ 10 CU. YD. (20'X10'X1.5') STONE RIP-RAP USING A MIN. 50# (D50=12") STONE. PLACE FILTER FABRIC PRIOR TO CONSTRUCTION 235°15'56" N 998163.5557 E 2841943.1005





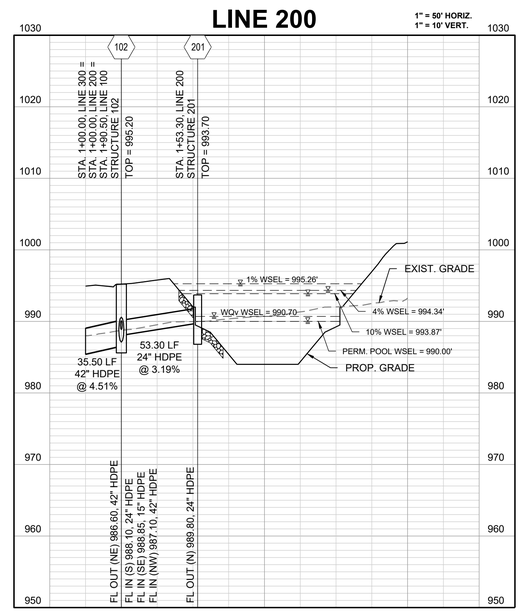
A-A
NTS

1% STORM STORAGE CAPACITY = 4.19 AC-FT
TOTAL BASIN CAPACITY = 6.02 AC-FT

EMERGENCY SPILLWAY DESIGN:
Q_{100} = 114 CFS, $Q = CLH^{(3/2)}$, C = 3.1, L = 114.00', H = 0.50'



SCALE: 1" = 50'



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Missouri State Certificate of Authority #LS2000200858-F
#E2000200380-F #LAC2001005237 #LS2000200858-F

PREPARED BY:



08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

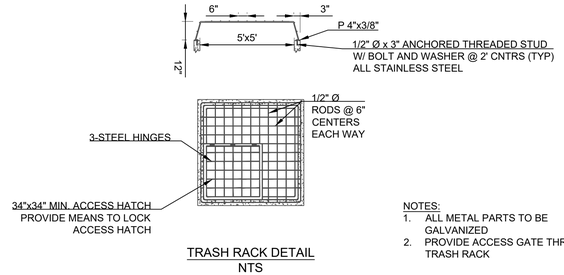
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22-067

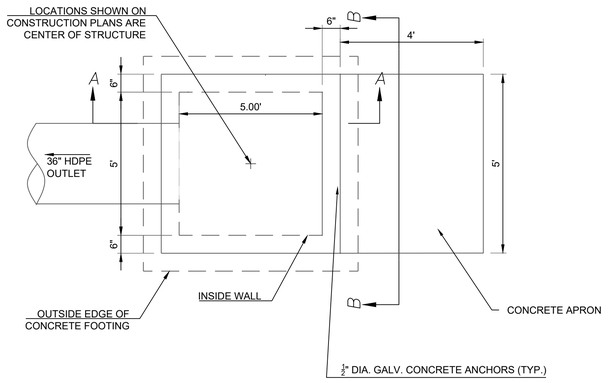
OUTLET
STRUCTURE 201

SHEET
C305

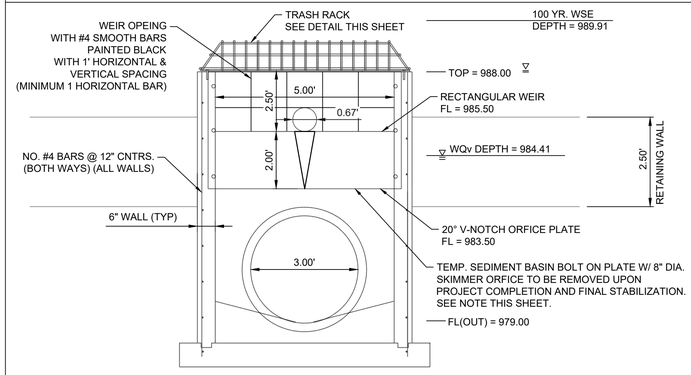


TRASH RACK DETAIL
NTS

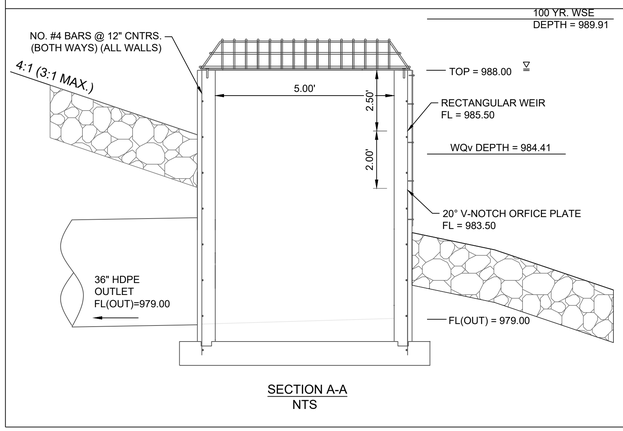
NOTES:
1. ALL METAL PARTS TO BE GALVANIZED
2. PROVIDE ACCESS GATE THRU TRASH RACK



STRUCTURE PLAN VIEW
NTS

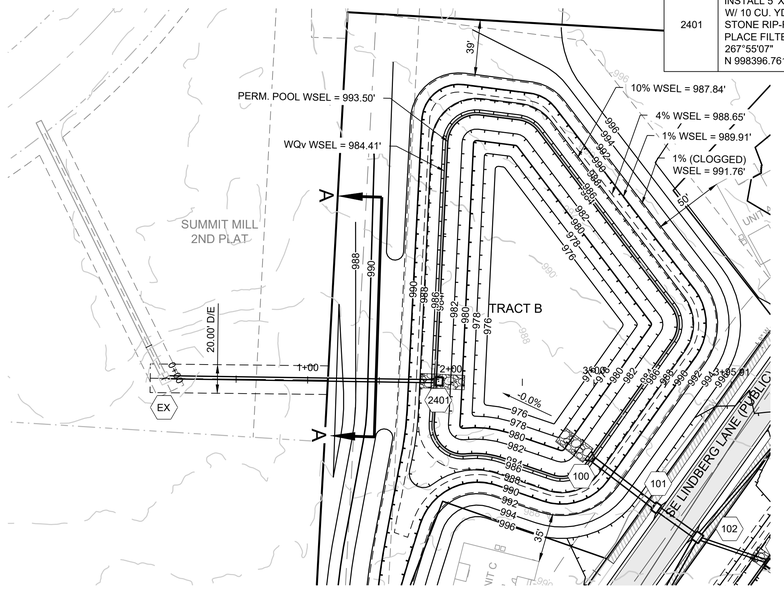


SECTION B-B
NTS

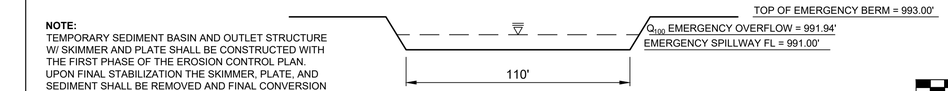


SECTION A-A
NTS

Storm Sewer Construction Notes	
Structure	Notes
2401	STA 1+91.49, LINE 2400 INSTALL 5' X 5' BASIN OUTLET STRUCTURE W/ 10 CU. YD. (20'X10'X1.5') STONE RIP-RAP USING A MIN. 50# (D50=12") STONE. PLACE FILTER FABRIC PRIOR TO CONSTRUCTION 267°55'07" N 998396.7613 E 2842066.2355



NOTE:
TEMPORARY SEDIMENT BASIN AND OUTLET STRUCTURE W/ SKIMMER AND PLATE SHALL BE CONSTRUCTED WITH THE FIRST PHASE OF THE EROSION CONTROL PLAN. UPON FINAL STABILIZATION THE SKIMMER, PLATE, AND SEDIMENT SHALL BE REMOVED AND FINAL CONVERSION TO DETENTION BASIN COMPLETED. AN AS-BUILT RECORD DRAWING ACCEPTED BY THE CITY SHALL BE REQUIRED PRIOR TO OCCUPANCY.

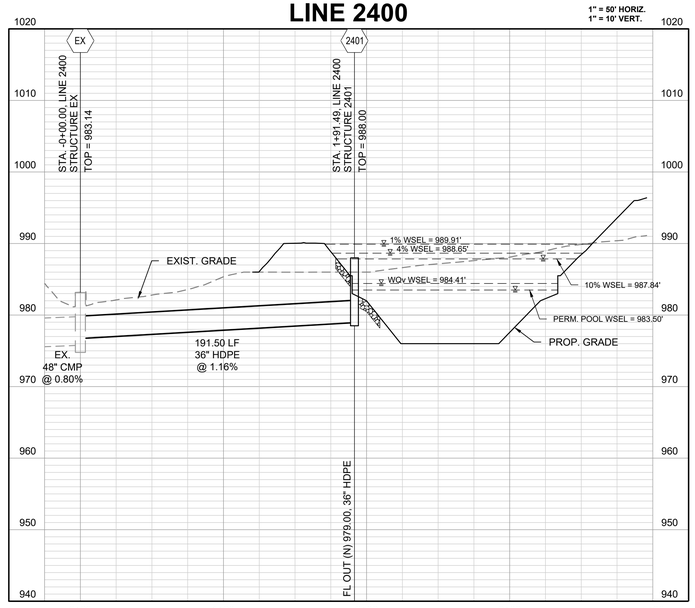


A-A
NTS

EMERGENCY SPILLWAY DESIGN:
Q_{100} = 309 CFS, $Q = CLH^{(3/2)}$, C = 3.1, L = 110.00', H = 0.94'



SCALE: 1" = 50'



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PREPARED BY:



08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
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08/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-097

OUTLET
STRUCTURE 2401

SHEET
C306

TABLE LS-2: MINIMUM ASPHALT PAVEMENT THICKNESSES

PUBLIC STREETS →

Street Classification	Pavement Option	AC Surface (in.)	AC Base (in.)	Aggregate Base (in.)	Chemical Subgrade Stabilization (in.)	Geogrid / Geotextile[1]
Residential Local/Access	A	2	4	6	6	--
	B	2	4	10	--	Geogrid / Geotextile
Residential Collector	A	2	5.5	6	9	--
	B	2	5.5	12	--	Geogrid / Geotextile
Commercial Industrial Local/Collector	A	2	7.5	6	9	--
	B	2	7.5	12	--	Geogrid / Geotextile

Notes:
(1) Geogrid shall be polypropylene material and Geotextile shall be woven, polypropylene as shown in the City's Approved Products List

Asphalt location	*Mix Type*	*Recycled Mix Allowed?*	*Upper PG Limit*	*Lower PG limit*
Industrial/Arterial surface	*5 or 6*	*no*	*70 or greater*	*-22 or less*
Base courses greater than 2 inches below the surface on industrial and arterial streets	*5*	*yes*	*64 or greater*	*-22 or less*
Local and Collector surface	*5 or 6*	*no*	*64 or greater*	*-22 or less*
Base courses greater than 2 inches below the surface on local and collector streets	*5*	*yes*	*64 or greater*	*-22 or less*

STREET NOTES:

1. ALL STREET CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL. ALL APPLICABLE AASHTO STANDARDS HAVE BEEN MET.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.
3. ALL INSPECTION OF STREET CONSTRUCTION TO BE PERFORMED BY THE CITY OF LEE'S SUMMIT DEVELOPMENT ENGINEERING.
4. CURB RETURN RADII SHALL BE 25' AT BACK OF CURB UNLESS OTHERWISE NOTED.
5. SUBGRADE TO BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
6. ASSUMED DESIGN SPEED = 25 MPH (RESIDENTIAL LOCAL).
7. MINIMUM STOPPING SIGHT DISTANCE = 155 FEET.
8. MINIMUM K, SAG CURVE = 26 (14 WITH LIGHTING), CREST CURVE = 12.
9. GRADE INTERSECTIONS TO DRAIN AS SHOWN.
10. SSD = STOPPING SIGHT DISTANCE.
11. ALL ADA SIDEWALK RAMPS SHALL BE CONSTRUCTED BY THE DEVELOPER WITH THE PUBLIC INFRASTRUCTURE.

MO GRS BENCHMARK:

STATION NAME - JA-90

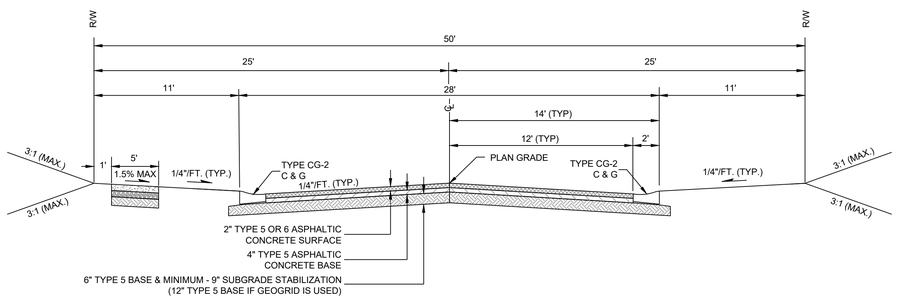
KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988" LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.
N:1001052.8503, E:2845604.8272

ELEV. 997.045

PROJECT BENCHMARK:

"SQUARE" CUT IN TOP OF CONCRETE STORM MANHOLE
STORM MANHOLE IS LOCATED APPROX. 130 FEET EAST OF THE INTERSECTION OF SE JOEL AVE & BLUE PARKWAY AND 26 FEET SOUTH OF THE CENTERLINE OF BLUE PARKWAY.
N:996874.9690, E:2840937.1365

ELEV. 1005.719



PRIVATE STREETS
RESIDENTIAL LOCAL
SE BRADFREE STREET STA. 0+30.00 TO STA. 12+55.57
SE GOLDEN LANE STA. 0+30.00 TO STA. 5+26.90
SE 6TH STREET STA. 2+35.78 TO STA. 9+83.13
(NTS)

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PREPARED BY:

STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2003007208
PROFESSIONAL ENGINEER
08.23.2023

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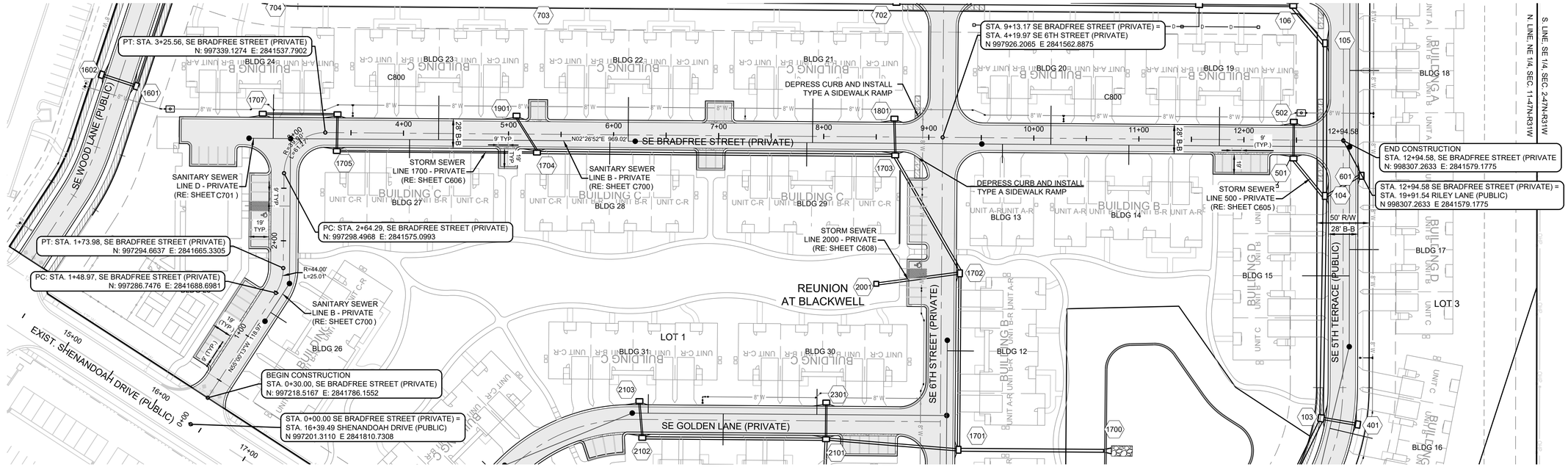
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
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2 06/27/23	PER CITY COMMENTS
3 08/24/23	PER CITY COMMENTS
4	
5	
6	
7	
8	

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-097

TYPICAL STREET SECTION

SHEET
C400



MO GRS BENCHMARK:

STATION NAME - JA-90

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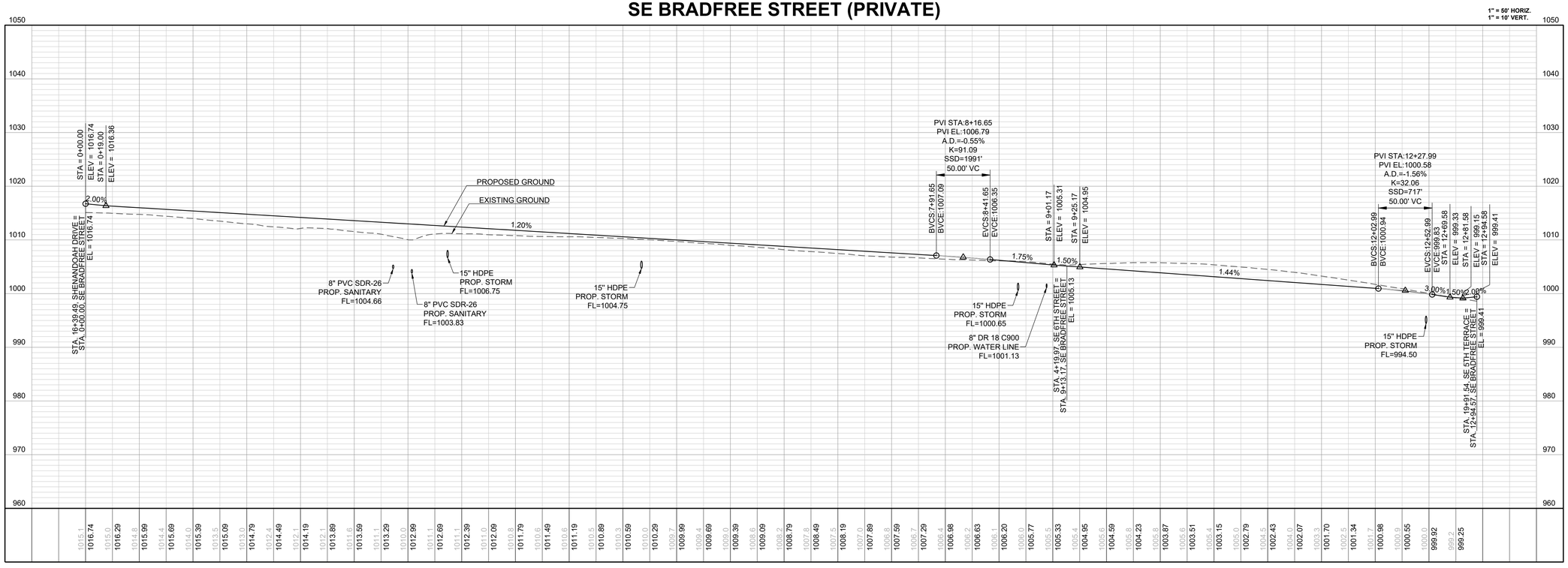
ELEV. 997.045

PROJECT BENCHMARK:

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STORM MANHOLE IS LOCATED APPROX. 130 FEET EAST OF THE INTERSECTION OF SE JOEL AVE & BLUE PARKWAY AND 26 FEET SOUTH OF THE CENTERLINE OF BLUE PARKWAY.
N:996874.9690, E:2840937.1365

ELEV. 1005.719

SIDEWALK NOTE:
SIDEWALKS ADJACENT TO BUILDINGS WILL BE INSTALLED BY OTHERS, UNLESS NOTED OTHERWISE.



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PROFESSIONAL ENGINEER
08.23.2023

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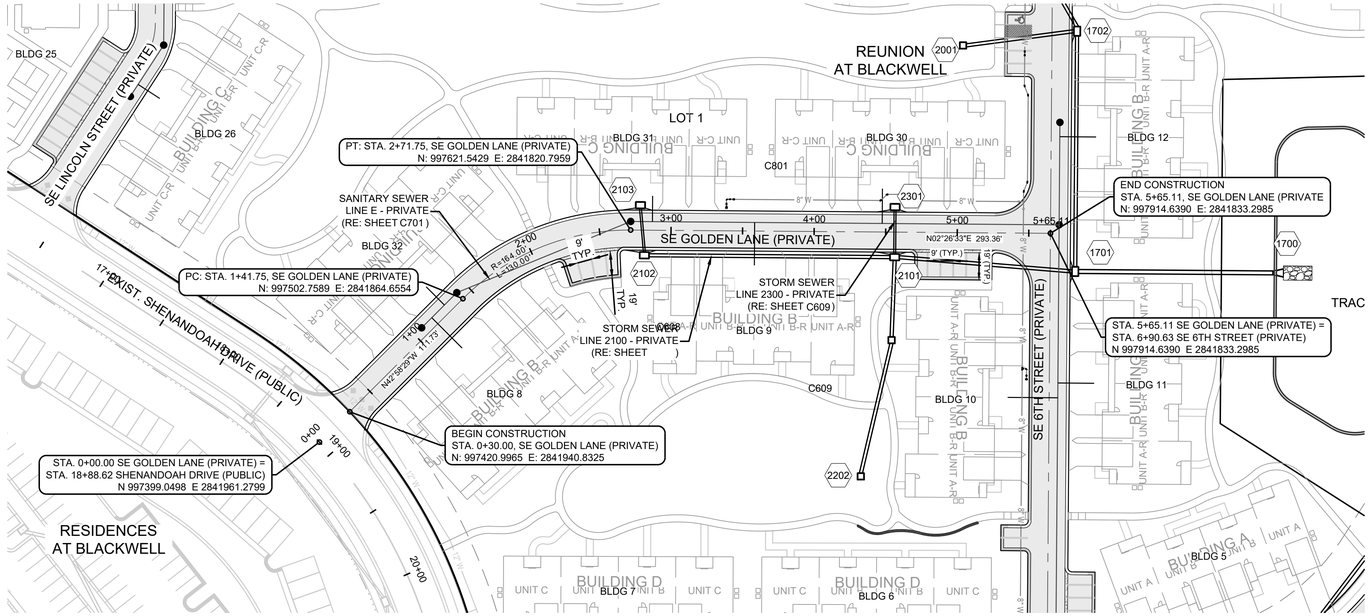
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

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CHECKED BY: MAB
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SE BRADFREE STREET - PLAN & PROFILE

SHEET
C401



MO GRS BENCHMARK:

STATION NAME - JA-90

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ELEV. 997.045

PROJECT BENCHMARK:

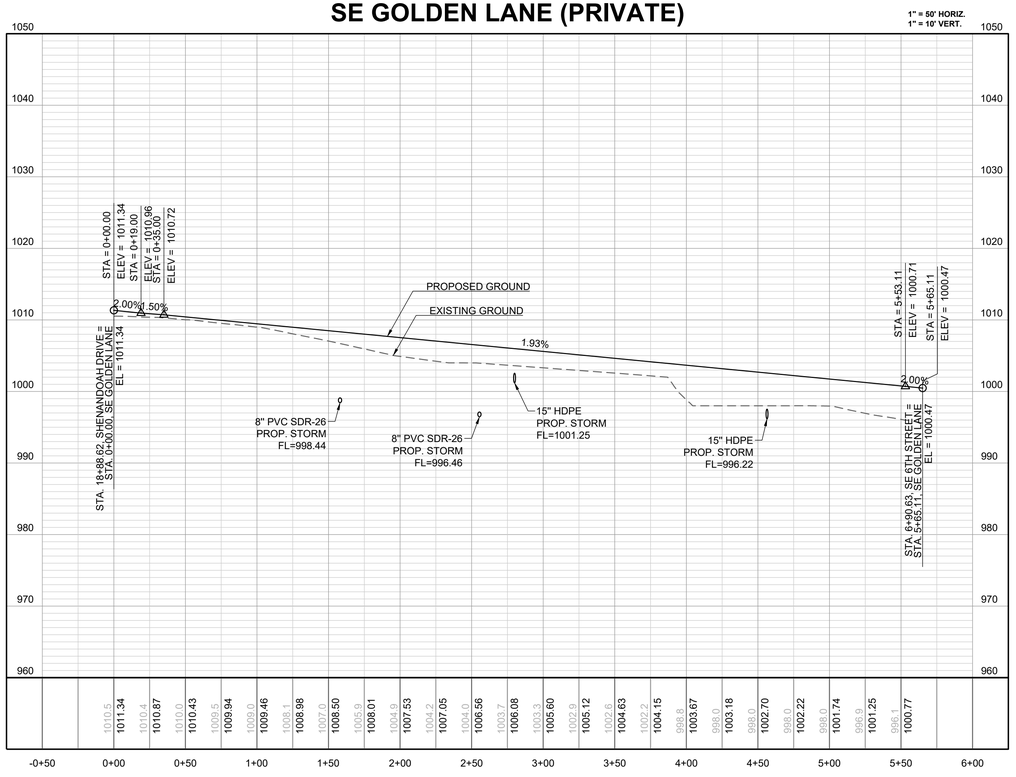
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N:996874.9690, E:2840937.1365

ELEV. 1005.719

SIDEWALK NOTE:
SIDEWALKS ADJACENT TO BUILDINGS WILL BE INSTALLED BY OTHERS, UNLESS NOTED OTHERWISE.

0 50' 100'
SCALE: 1" = 50'

SE GOLDEN LANE (PRIVATE)



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PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2003007268
STATE OF MISSOURI
PROFESSIONAL ENGINEER

08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

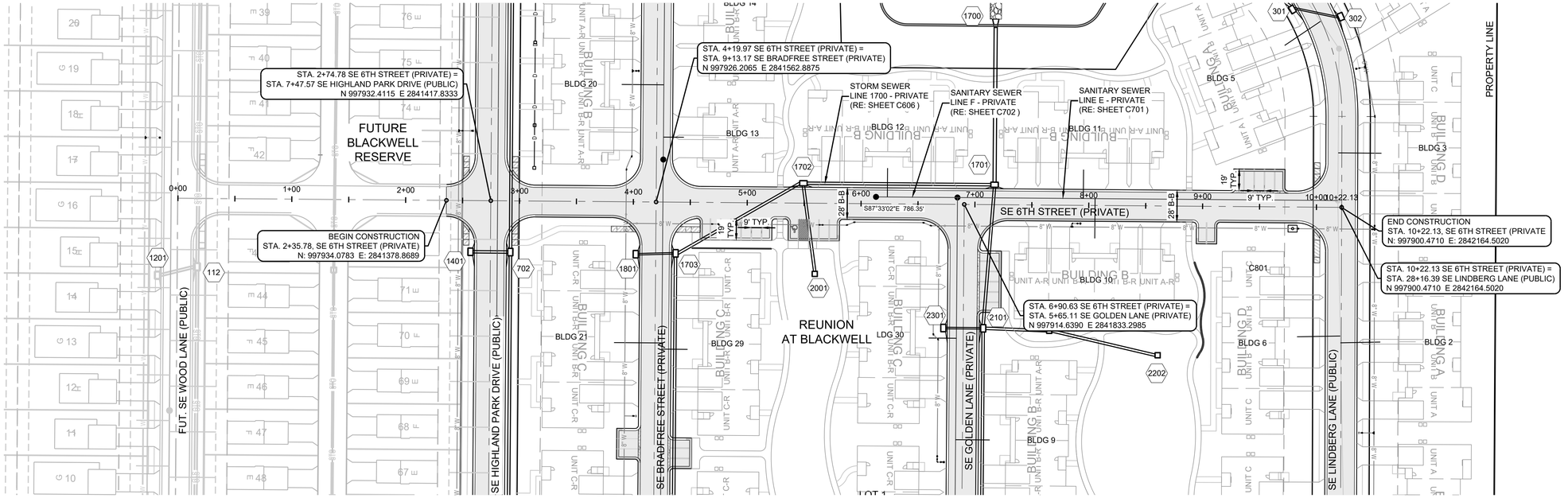
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

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05/05/23	PER CITY COMMENTS
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08/24/23	PER CITY COMMENTS

DRAWN BY:	DATE PREPARED:	PROJ. NUMBER:
TRC	03/03/2023	22.497
CHECKED BY:		
MAB		

SE GOLDEN LANE - PLAN & PROFILE

SHEET
C402



MO GRS BENCHMARK:

STATION NAME - JA-90

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ELEV. 997.045

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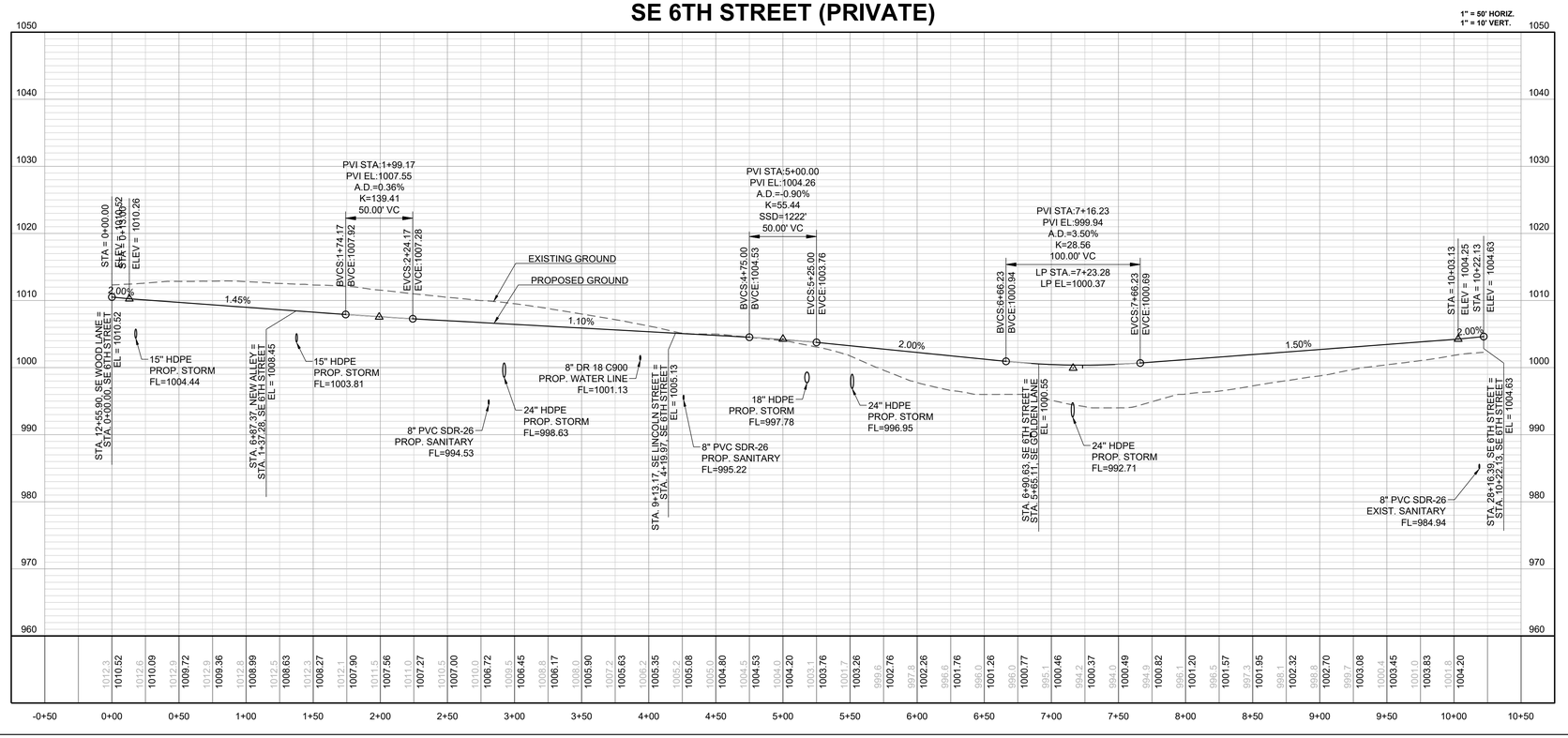
ELEV. 1005.719

SIDEWALK NOTE:
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0 50' 100'
SCALE: 1" = 50'

SE 6TH STREET (PRIVATE)

1" = 50' HORIZ.
1" = 10' VERT.



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STATE OF MISSOURI
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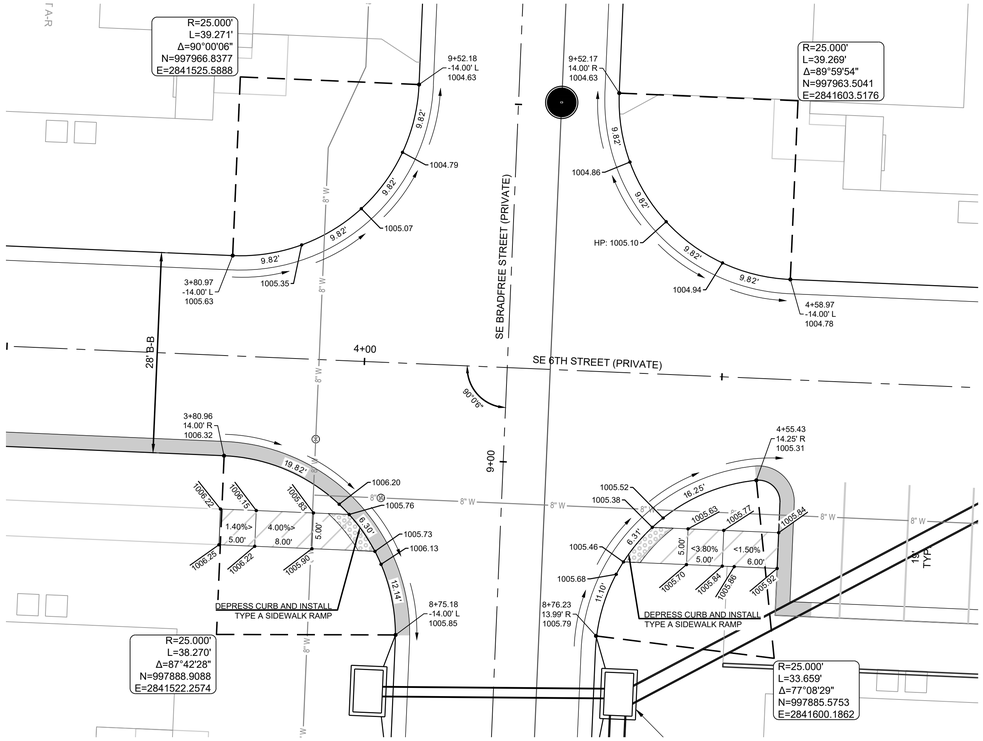
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

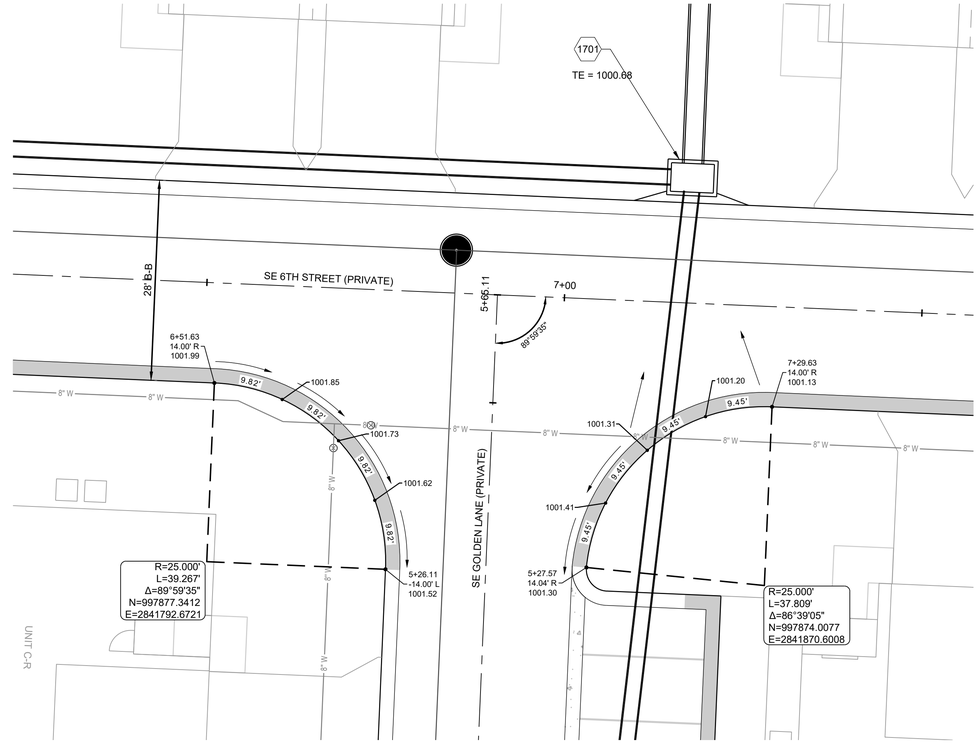
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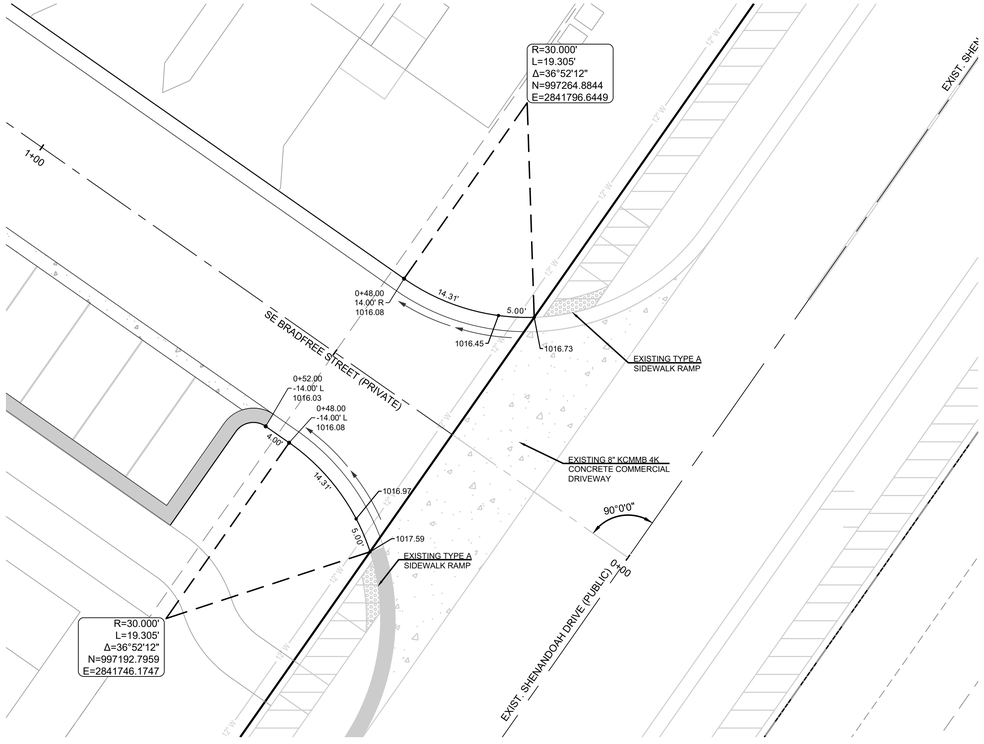
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DATE PREPARED: 03/03/2023
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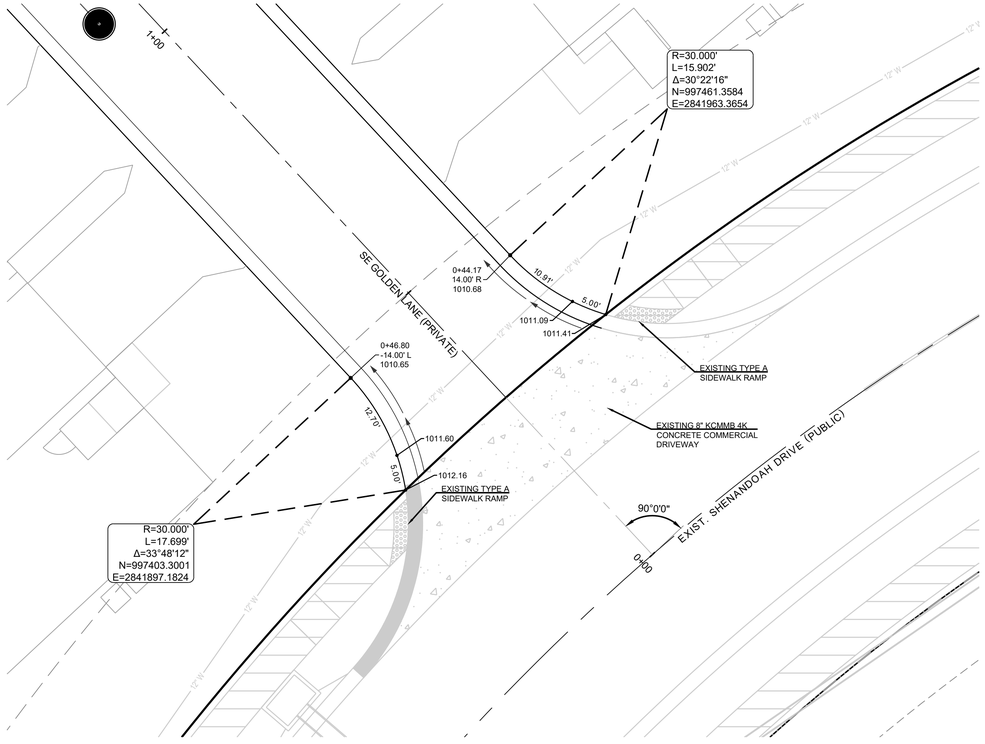
SE 6TH STREET - PLAN & PROFILE

SHEET
C403









0 10' 20'

SCALE: 1" = 10'

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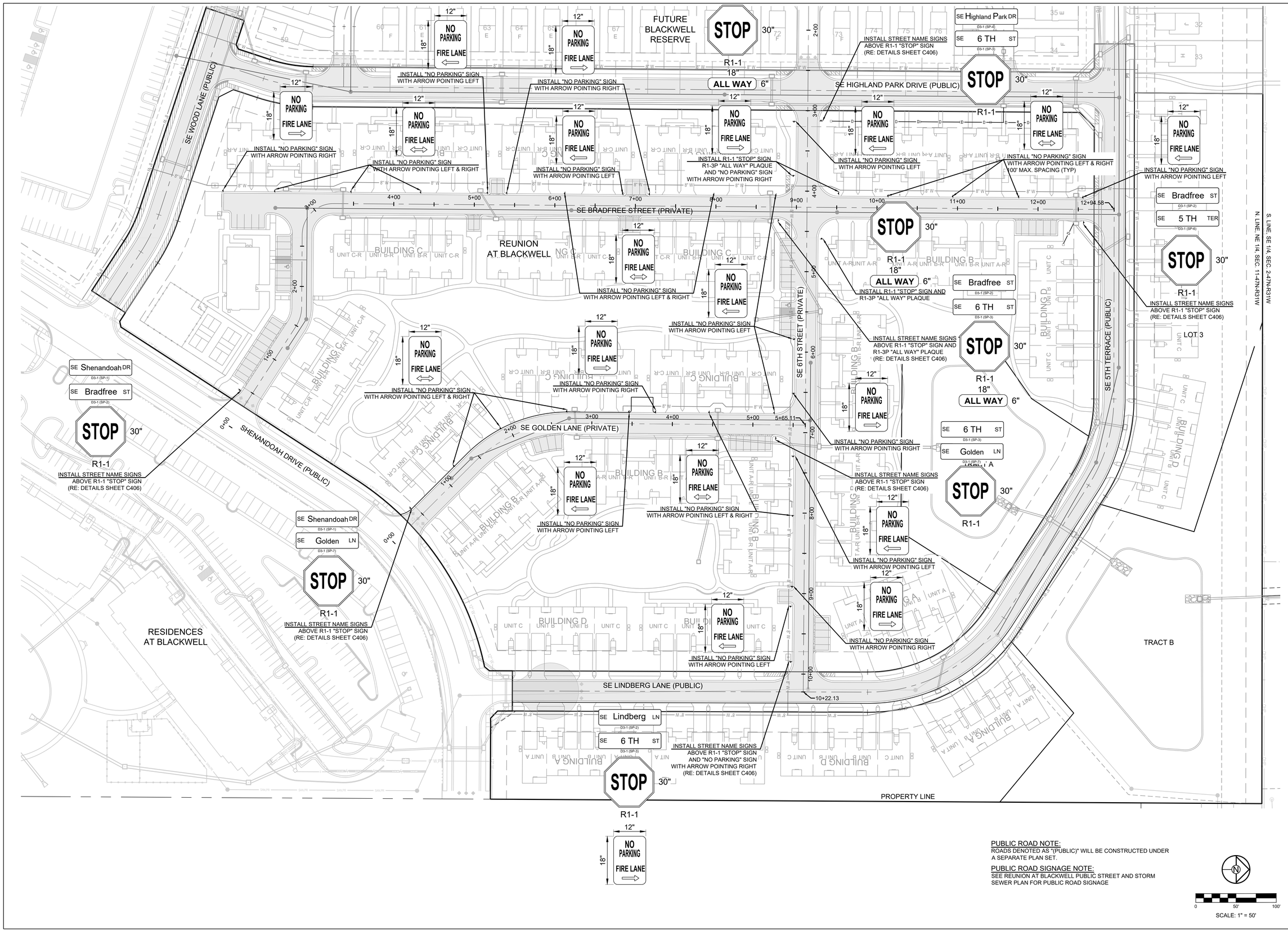
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DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22.497

INTERSECTION DETAILS

SHEET
C404



PUBLIC ROAD NOTE:
ROADS DENOTED AS "(PUBLIC)" WILL BE CONSTRUCTED UNDER A SEPARATE PLAN SET.

PUBLIC ROAD SIGNAGE NOTE:
SEE REUNION AT BLACKWELL PUBLIC STREET AND STORM SEWER PLAN FOR PUBLIC ROAD SIGNAGE

SCALE: 1" = 50'

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MARK ALLEN BREUER
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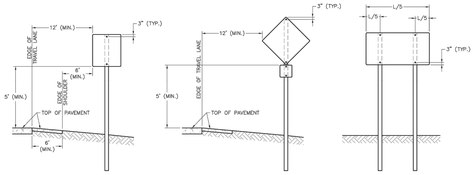
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SE SHENANDOAH DRIVE & SE LEE'S SUMMIT, MO

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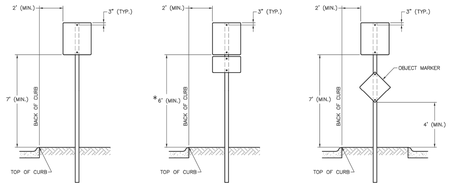
DRAWN BY: TRC
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STREET SIGN PLAN

SHEET
C405



SIGN INSTALLATION FOR NON-CURBED STREET | SIGN INSTALLATION WITH AUXILIARY SIGN FOR NON-CURBED STREET | SIGN INSTALLATION WITH TWO SIGN POSTS

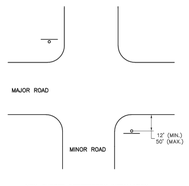


SIGN INSTALLATION FOR CURBED STREET | SIGN INSTALLATION WITH AUXILIARY SIGN FOR CURBED STREET | SIGN INSTALLATION FOR RAISED MEDIANS

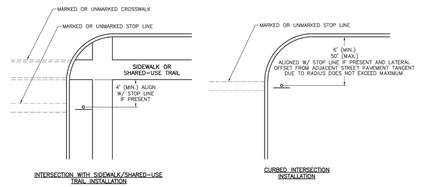
SIGN MOUNTING DETAILS

NOTES:

1. GENERALLY, THE SIGN MOUNTING HEIGHT SHOULD NOT BE MORE THAN 1' GREATER THAN THE MINIMUM MOUNTING HEIGHT.
2. *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.

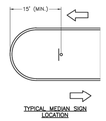


NON-CURBED INTERSECTION INSTALLATION



INTERSECTION WITH SIDEWALK/SHARED-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.

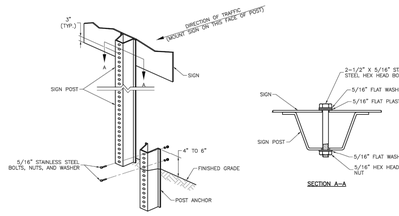
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

Sheet Name: SIGN MOUNTING DETAILS

Drawn By: BWC
Checked By: MP
Date: 01/2020
Proj. #:

SN-1



SECTION A-A

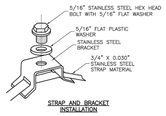
U-STEEL POST DETAILS

NOTES:

1. SPLICE SHALL BE POSITIONED ENTIRELY BETWEEN FINISHED GRADE LINE AND 18" 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.
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 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.

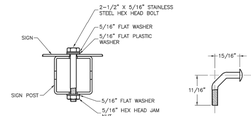


STRAP AND BRACKET INSTALLATION | ENDS OF STRAP CLAMPED IN SEAL

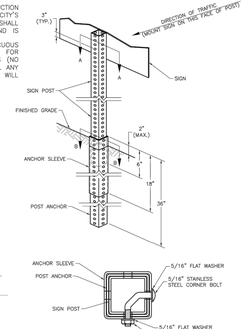
STRAP TYPE SIGN SUPPORT DETAILS

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.



SECTION A-A | CORNER BOLT



SECTION B-B

SQUARE STEEL POST DETAILS

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 ¾" X 2 ¾" X 36" SQUARE STEEL POST
   ANCHOR SLEEVE – 12 GA. 2 ¾" X 2 ¾" X 18" SQUARE STEEL POST
2. 14 GA. 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 OR EQUAL TO 48" (NOT INCLUDING 36" X 36" DIAMOND SHAPED SIGNS) WILL REQUIRE TWO POSTS.

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STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

Sheet Name: POST DETAILS

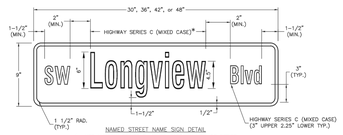
Drawn By: BWC
Checked By: MP
Date: 01/2020
Proj. #:

SN-2

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

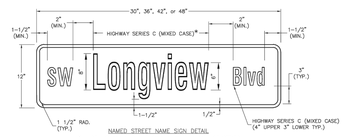


NAMED STREET NAME SIGN DETAIL

* USE HIGHWAY SERIES B (MIXED CASE) IN LIEU OF SERIES C IF NECESSARY TO FIT TEXT ON A 36" SIGN BLANK.

STREET NAME SIGN FACE DETAILS

POST MOUNTED 2-LANE ALL SPEEDS AND MULTI-LANE UNDER 40 MPH

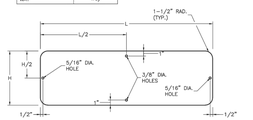


NAMED STREET NAME SIGN DETAIL

* USE HIGHWAY SERIES B (MIXED CASE) IN LIEU OF SERIES C IF NECESSARY TO FIT TEXT ON A 36" SIGN BLANK.

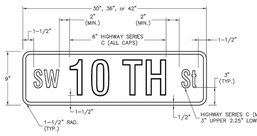
STREET NAME SIGN FACE DETAILS

POST MOUNTED MULTI-LANE GREATER THAN 40 MPH



STREET NAME SIGN BLANK DETAILS

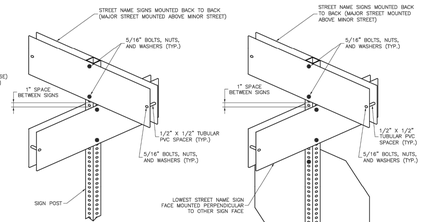
FOR MOUNTING ON SQUARE STEEL POSTS



NUMBERED STREET NAME SIGN DETAIL

STREET NAME SIGN FACE DETAILS

POST MOUNTED 2-LANE ALL SPEEDS AND MULTI-LANE UNDER 40 MPH



SQUARE STEEL POST MOUNTING DETAILS



ARROW DETAIL

PRIVATE STREET TAG DETAIL

NOTES:

1. FOR ALL STREET NAME SIGNS, THE LEGEND SHALL BE WHITE AND THE BACKGROUND SHALL BE GREEN.
2. ARROWS SHALL BE ADDED TO STREET NAME SIGNS WHERE THE NAME OF A STREET CHANGES AT AN INTERSECTION. STREET NAME SIGNS WITH ARROWS ARE TO BE INSTALLED ON EACH SIDE OF THE INTERSECTION TO INDICATE THE CHANGE IN NAMES. ARROWS SHALL BE WHITE.
3. THE "PRIVATE STREET" TAG SHOULD BE ADDED TO THE END OF STREET NAME SIGNS TO INDICATE WHERE A STREET THAT IS OUTSIDE THE RIGHT-OF-WAY INTERSECTS A PUBLIC STREET. THE BACKGROUND FOR THE "PRIVATE STREET" TAG SHALL BE YELLOW.
4. MULTI-LANE IS DEFINED AS HAVING 2 LANES OR MORE IN EACH DIRECTION, EXCLUDING TURN LANES.
5. OVERHEAD SIGN DETAILS MAY BE FOUND ON THE SIGNAL HEAD MOUNTING DETAIL.

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STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

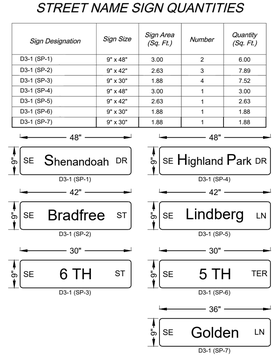
Sheet Name: STREET NAME SIGN DETAILS

Drawn By: BWC
Checked By: MP
Date: 01/2020
Proj. #:

SN-3

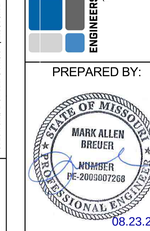
STREET NAME SIGN QUANTITIES

Sign Designation	Sign Size	Sign Area (Sq. Ft.)	Number	Quantity (Sq. Ft.)
D3-1 (SP-1)	9" x 48"	3.00	2	6.00
D3-1 (SP-2)	9" x 42"	2.63	3	7.89
D3-1 (SP-3)	9" x 39"	1.88	4	7.52
D3-1 (SP-4)	9" x 48"	3.00	1	3.00
D3-1 (SP-5)	9" x 42"	2.63	1	2.63
D3-1 (SP-6)	9" x 30"	1.88	1	1.88
D3-1 (SP-7)	9" x 30"	1.88	1	1.88



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WWW.SCHLAGEL.COM
Missouri State Certificate of Authority
#E2000030800-F #LA2000105237 #LS2000208859-F

PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

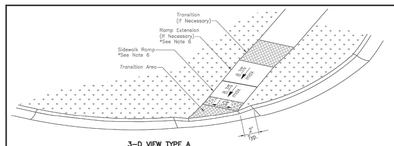
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

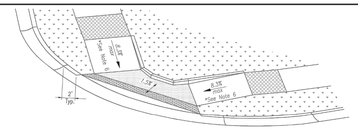
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CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-697

STREET SIGN DETAILS

SHEET
C406



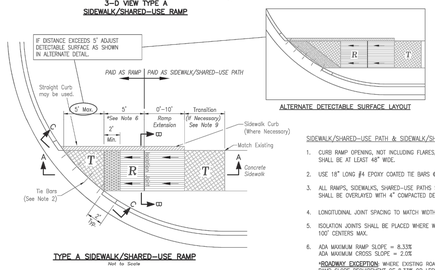
3-D VIEW TYPE A
SIDEWALK/SHARED-USE RAMP



3-D VIEW TYPE B
SIDEWALK/SHARED-USE RAMP

LEGEND

- R — SIDEWALK RAMP
- TS — TURNING SPACE
- DETECTABLE WARNING SURFACE
- T — TRANSITION

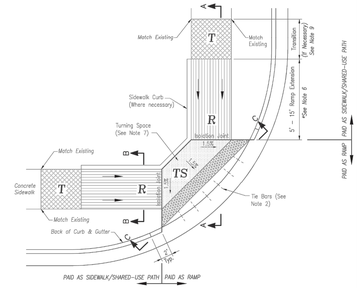


TYPE A SIDEWALK/SHARED-USE RAMP
Not to Scale

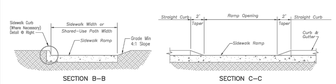
ALTERNATE DETECTABLE SURFACE LAYOUT

SIDEWALK/SHARED-USE PATH & SIDEWALK/SHARED-USE RAMP NOTES:

1. CURB RAMP OPENING, NOT INCLUDING FLARES, SHALL MATCH EXISTING SIDEWALK WIDTH AND OPENING SHALL BE AT LEAST 48" WIDE.
2. USE 18" LONG #4 EPOXY COATED TIE BARS @ 24" O.C. EMBED TIE BARS 9" IN EACH DIRECTION.
3. ALL RAMPS, SIDEWALKS, SHARED-USE PATHS SUBGRADE MUST BE OF STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
4. LONGITUDINAL JOINT SPACING TO MATCH WIDTH OF SIDEWALK.
5. ISOLATION JOINTS SHALL BE PLACED WHERE WALK ABUTS DRIVEWAYS AND SIMILAR STRUCTURES, AND 100' CENTERS MAX.
6. ADA MAXIMUM RAMP SLOPE = 8.33%
   ADA MAXIMUM CROSS SLOPE = 2.0%
   *ROADWAY EXCEPTION: WHERE EXISTING ROAD PROFILE GRADE DOES NOT ALLOW RAMP TO MEET RAMP SLOPE REQUIREMENT OF 8.33% OR LESS, THE RAMP SHALL BE EXTENDED TO A LENGTH OF 15 FEET TO MATCH EXISTING SIDEWALK. CROSS SLOPE OF RAMP SHALL BE 1.5%, ±0.5%.
7. TURNING SPACES SHALL BE 1.5%, ±0.5%, SLOPE IN ANY DIRECTION. TURNING SPACES SHALL HAVE A MINIMUM 4'x4' TURNING AREA. TURNING SPACES, WITH A SIDEWALK CURB, SHALL HAVE A 5' TURNING AREA PERPENDICULAR TO THE SIDEWALK CURB.
8. FOR RETROFIT WORK, SLOPES TO BE DETERMINED IN FIELD BY CONTRACTOR AND APPROVED BY CITY INSPECTOR
9. RAMP EXTENSION AREA SHALL NOT BE USED AS TRANSITION TO EXISTING SIDEWALK. ANY TRANSITIONS REQUIRED TO MATCH RAMPS TO EXISTING SIDEWALK SHALL REQUIRE REMOVAL AND REPLACEMENT OF ADDITIONAL SIDEWALK BEYOND THE RAMP AREA. SIDEWALK TRANSITION LENGTH SHALL BE EQUAL TO OR GREATER THAN THE WIDTH OF THE EXISTING SIDEWALK. RAMP EXTENSIONS SHALL BE A CONTINUOUS SLOPE.
10. ALL SIDEWALK AND RAMP CONSTRUCTION SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).



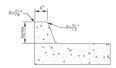
TYPE B SIDEWALK/SHARED-USE RAMP
Not to Scale



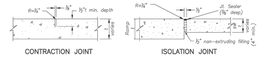
SECTION A-A

SECTION B-B SECTION C-C

TYPE A & B SIDEWALK RAMP
Not to Scale

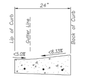


SIDEWALK CURB DETAIL
Not to Scale



CONTRACTION JOINT ISOLATION JOINT

JOINT DETAILS
Not to Scale



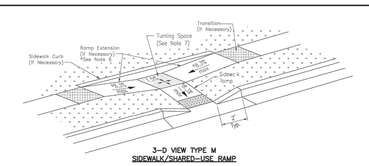
CURB & GUTTER DETAIL AT RAMP
Not to Scale

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

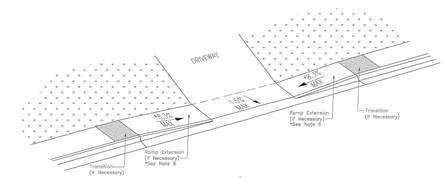
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Project
Sheet Name: ADA RAMP RETROFIT DETAIL

Drawn By: MJF
Checked By: DL
Date: 05/2021
Proj. #:

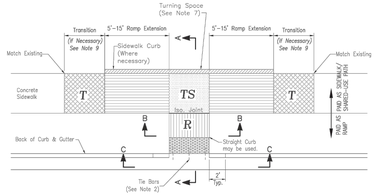
GEN-3A



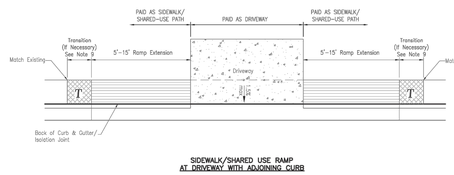
3-D VIEW TYPE M
SIDEWALK/SHARED-USE RAMP



3-D VIEW SIDEWALK/SHARED-USE RAMP
AT DRIVEWAY



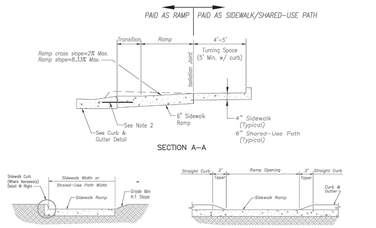
TYPE M SIDEWALK/SHARED-USE RAMP
Not to Scale



SIDEWALK/SHARED USE RAMP
AT DRIVEWAY WITH ADJOINING CURB

SIDEWALK/SHARED-USE PATH & SIDEWALK/SHARED-USE RAMP NOTES:

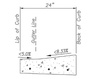
1. CURB RAMP OPENING, NOT INCLUDING FLARES, SHALL MATCH EXISTING SIDEWALK WIDTH AND OPENING SHALL BE AT LEAST 48" WIDE.
2. USE 18" LONG #4 EPOXY COATED TIE BARS @ 24" O.C. EMBED TIE BARS 9" IN EACH DIRECTION.
3. ALL RAMPS, SIDEWALKS, SHARED-USE PATHS SUBGRADE MUST BE OF STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
4. LONGITUDINAL JOINT SPACING TO MATCH WIDTH OF SIDEWALK.
5. ISOLATION JOINTS SHALL BE PLACED WHERE WALK ABUTS DRIVEWAYS AND SIMILAR STRUCTURES, AND 100' CENTERS MAX.
6. ADA MAXIMUM RAMP SLOPE = 8.33%
   ADA MAXIMUM CROSS SLOPE = 2.0%
   *ROADWAY EXCEPTION: WHERE EXISTING ROAD PROFILE GRADE DOES NOT ALLOW RAMP TO MEET RAMP SLOPE REQUIREMENT OF 8.33% OR LESS, THE RAMP SHALL BE EXTENDED TO A LENGTH OF 15 FEET TO MATCH EXISTING SIDEWALK. CROSS SLOPE OF RAMP SHALL BE 1.5%, ±0.5%.
7. TURNING SPACES SHALL BE 1.5%, ±0.5%, SLOPE IN ANY DIRECTION. TURNING SPACES SHALL HAVE A MINIMUM 4'x4' TURNING AREA. TURNING SPACES, WITH A SIDEWALK CURB, SHALL HAVE A 5' TURNING AREA PERPENDICULAR TO THE SIDEWALK CURB.
8. FOR RETROFIT WORK, SLOPES TO BE DETERMINED IN FIELD BY CONTRACTOR AND APPROVED BY CITY INSPECTOR
9. RAMP EXTENSION AREA SHALL NOT BE USED AS TRANSITION TO EXISTING SIDEWALK. ANY TRANSITIONS REQUIRED TO MATCH RAMPS TO EXISTING SIDEWALK SHALL REQUIRE REMOVAL AND REPLACEMENT OF ADDITIONAL SIDEWALK BEYOND THE RAMP AREA. SIDEWALK TRANSITION LENGTH SHALL BE EQUAL TO OR GREATER THAN THE WIDTH OF THE EXISTING SIDEWALK. RAMP EXTENSIONS SHALL BE A CONTINUOUS SLOPE.
10. ALL SIDEWALK AND RAMP CONSTRUCTION SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).



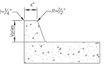
SECTION A-A

SECTION B-B SECTION C-C

TYPE M SIDEWALK RAMP
Not to Scale



CURB & GUTTER DETAIL AT RAMP
Not to Scale



SIDEWALK CURB DETAIL
Not to Scale

LEGEND

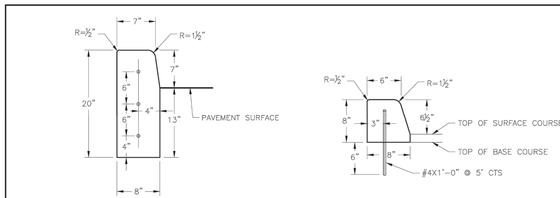
- R — SIDEWALK RAMP
- TS — TURNING SPACE
- DETECTABLE WARNING SURFACE
- T — TRANSITION

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

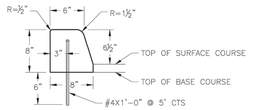
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Project
Sheet Name: ADA RAMP RETROFIT DETAIL

Drawn By: MJF
Checked By: DL
Date: 05/2021
Proj. #:

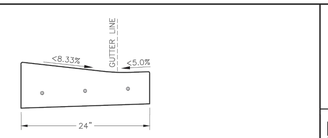
GEN-3B



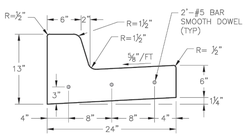
STRAIGHT CURB
(TYPE C-1)



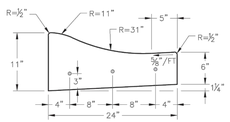
DOWELLED CURB
(TYPE DC)



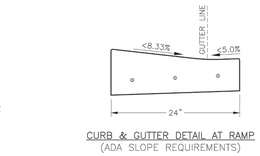
CURB & GUTTER DETAIL AT RAMP
(ADA SLOPE REQUIREMENTS)



STRAIGHT BACK CURB & GUTTER
(TYPE CG-1)



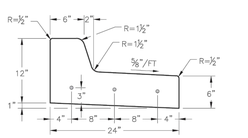
ROLL BACK CURB & GUTTER
(TYPE CG-2)



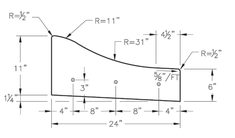
CURB REPLACEMENT DETAIL

GENERAL NOTES

1. 3/8" ISOLATION JOINTS WITH 3 (2"-#5 BAR) SMOOTH DOWELS SHALL BE PLACED AT RADIUS POINTS AND AT 150' INTERVALS. THESE DOWEL BARS SHALL BE GREASED AND WRAPPED ON ONE END WITH EXPANSION TUBES.
2. 3" DEEP CONTRACTION JOINTS SHALL BE INSTALLED AT APPROXIMATELY 10' INTERVALS. THESE JOINTS SHALL PASS ACROSS THE ENTIRE CURB SECTION.
3. CONCRETE FILL SHALL HAVE UNIFORM AND SMOOTH FINISH
4. KCMMB 4K CONCRETE SHALL BE USED FOR ALL CURB.
5. ASPHALTIC CONCRETE SURFACE COURSE SHALL CONFORM TO STANDARD SPECIFICATIONS SECTION 2205.2.
6. CURBS FOR NEW STREETS SHALL BE BUILT ON ASPHALT OR AGGREGATE BASE AS SHOWN IN TYPICAL SECTION DETAIL.
7. WHITE CURING COMPOUND MUST BE APPLIED UNIFORMLY TO THE CONCRETE SURFACE IMMEDIATELY AFTER FINAL FINISHING.
8. ALL DOWELS & TIE BARS SHALL BE EPOXY COATED.



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



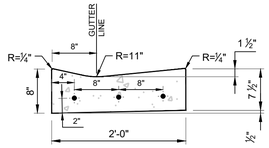
ROLL BACK DRY CURB & GUTTER
(TYPE CG-2 DRY)

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

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

Drawn By: MJF
Checked By: DL
Date: 05/2021
Proj. #:

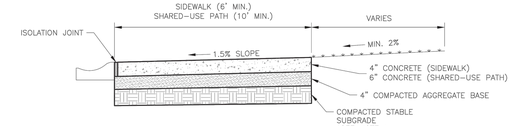
GEN-4



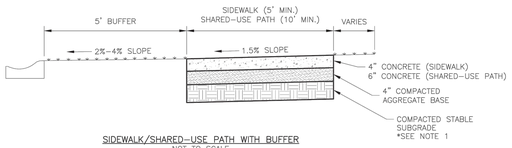
VALLEY GUTTER NOTES:

1. ALL WORK SHALL CONFORM TO THE CITY OF LEE'S SUMMIT TECHNICAL SPECIFICATIONS.
2. KCMMB4K SHALL BE USED THROUGHOUT.
3. ½" PREMOLDED EXPANSION JOINTS SHALL BE PLACED AT POINTS OF CURVATURE AND AT 250' CENTERS. CONTRACTION JOINTS SHALL BE 2" DEEP AND PLACED AT 15' INTERVALS EQUALLY SPACED BETWEEN EXPANSION JOINTS.
4. FOR HAND-FORMED CURB ALL REINFORCING STEEL SHALL BE SUPPORTED ON FABRICATED STEEL BAR SUPPORTS @ 3'-0" MAXIMUM SPACING OR AS DIRECTED BY THE CITY ENGINEER.

VALLEY GUTTER
NOT TO SCALE



SIDEWALK/SHARED-USE PATH WITHOUT BUFFER
NOT TO SCALE



SIDEWALK/SHARED-USE PATH WITH BUFFER
NOT TO SCALE

GENERAL NOTES:

1. SUBGRADE MUST BE OF STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
2. 1.5% CROSS SLOPE MUST BE MAINTAINED THROUGH DRIVEWAYS.
3. KCMMB 4K CONCRETE MIX SHALL BE REQUIRED FOR ALL SIDEWALKS/SHARED-USE PATHS.
4. ALL SIDEWALK/SHARED-USE PATHS SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).
5. AN ISOLATION JOINT SHALL BE PLACED AT A MAXIMUM OF 100 FT. CONSTRUCTION JOINTS SHALL BE PLACED THE SAME WIDTH OF SIDEWALK/SHARED-USE PATHS, BUT NO GREATER THAN 10 FT.
6. AN ISOLATION JOINT SHALL BE PLACED WHERE THE SIDEWALK/SHARED-USE PATHS MEETS A RESIDENTIAL DRIVEWAY.
7. SHARED-USE PATHS WIDTH SHALL BE 10 FT. WIDE.
8. SIDEWALK/SHARED-USE PATHS FINISHING SHALL BE FULL BROOM FINISH OR AS DIRECTED BY CITY INSPECTOR.
9. WHITE CURING COMPOUND MUST BE APPLIED UNIFORMLY TO THE CONCRETE SURFACE IMMEDIATELY AFTER FINAL FINISHING.

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

SIDEWALK/SHARED-USE PATH DETAIL

Date: 05/2021
Drawn By: MJF
Checked By: DL

GEN-2

SCHLAGEL
ENGINEERS PLANNERS SURVEYORS LANDSCAPE ARCHITECTS
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Missouri State Certificates of Authority
#E2000030800-F #LA2000105237 #LS2000208859-F

PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

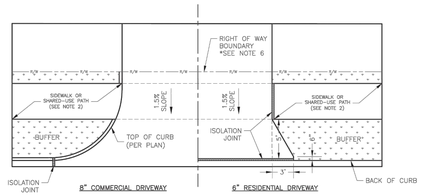
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
09/06/23	PER CITY COMMENTS
09/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22.407

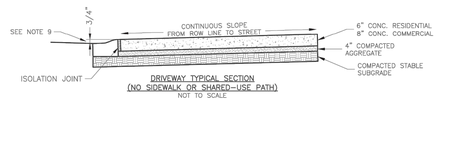
STREET DETAILS

SHEET
C407

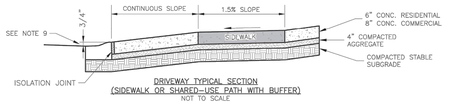


8" COMMERCIAL DRIVEWAY — 6" RESIDENTIAL DRIVEWAY

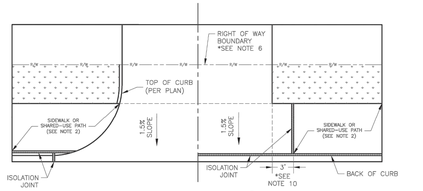
DRIVEWAY WITH BUFFER
NOT TO SCALE



DRIVEWAY TYPICAL SECTION
(NO SIDEWALK OR SHARED-USE PATH)
NOT TO SCALE

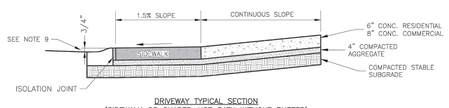


DRIVEWAY TYPICAL SECTION
(SIDEWALK OR SHARED-USE PATH WITH BUFFER)
NOT TO SCALE



8" COMMERCIAL DRIVEWAY — 6" RESIDENTIAL DRIVEWAY

DRIVEWAY WITHOUT BUFFER
NOT TO SCALE



DRIVEWAY TYPICAL SECTION
(SIDEWALK OR SHARED-USE PATH WITHOUT BUFFER)
NOT TO SCALE

GENERAL NOTES

1. SUBGRADE SHALL BE STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
2. ALL DRIVE APPROACHES SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG) FOR SLOPE REQUIREMENTS WHEN SIDEWALK IS REQUIRED (SEE ADA RAMP RETROFIT DETAIL GEN-3B, SIDEWALK/SHARED USE PATH RAMP AT DRIVEWAY DETAIL).
3. JOINT AT BACK OF CURB LINE SHALL BE AN ISOLATION JOINT FOR RESIDENTIAL DRIVEWAYS.
4. KCMMB 4K CONCRETE MIX IS REQUIRED FOR ALL CURBS.
5. COMMERCIAL DRIVEWAYS, IN THE PUBLIC RIGHT OF WAY, SHALL BE KCMMB 4K CONCRETE MIX.
6. RESIDENTIAL DRIVEWAYS, IN THE PUBLIC RIGHT OF WAY, KCMMB 4K CONCRETE MIX IS RECOMMENDED. OTHER CONCRETE MIXES NEED TO BE APPROVED BY CITY INSPECTOR.
7. A JOINT MUST BE INSTALLED AT THE RIGHT OF WAY BOUNDARY FOR PROPERTY DELINEATION.
8. WHITE CURING COMPOUND MUST BE APPLIED UNIFORMLY TO THE CONCRETE SURFACE IMMEDIATELY AFTER FINAL FINISHING.
9. ¾" FROM TOP OF CURB TO FLOWLINE AT DRIVEWAY (TYPE CC-1 CURB ONLY). MUST MAINTAIN ORIGINAL FLOWLINE OF CURB.
10. SIDEWALK ADJOINING CURB SHALL BE 6" THICK, EXTENDING 3' FROM THE DRIVEWAY.
11. THE MAXIMUM WIDTH OF A RESIDENTIAL DRIVEWAY IS 36 FEET WITHIN THE RIGHT OF WAY.

LEE'S SUMMIT MISSOURI
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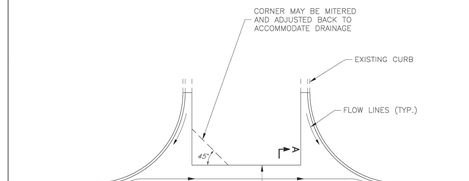
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

Depth:
Storm Name:

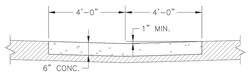
DRIVEWAY DETAIL

Drawn By: MJF
Checked By: DL
Date: 05/2021
Proj. #:

GEN-1



SECTION



SECTION
Scale: 1" = 1'-0"

VALLEY GUTTER DETAIL
Intersection of Two Public Streets

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

VALLEY GUTTER DETAIL

Date: 05/2021
Drawn By: MJF
Checked By: DL

GEN-7

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14920 W. 107th Street • Lenexa, Kansas 66215
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#E2000003800-F #LA2001005237 #LS2000008859-F

PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2009007208
STATE OF MISSOURI
PROFESSIONAL ENGINEER

08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

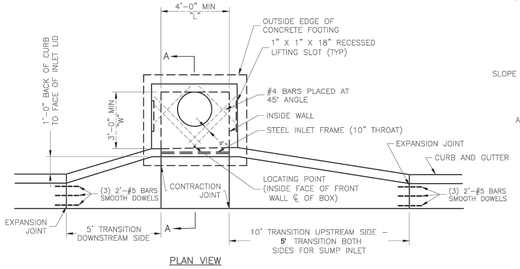
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

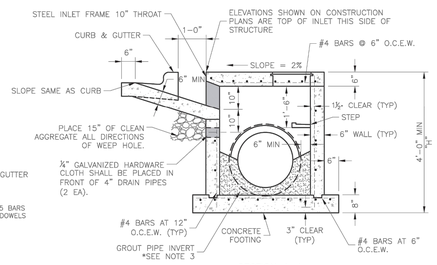
DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-097

STREET DETAILS

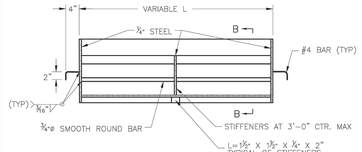
SHEET
C408



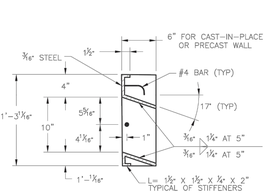
PLAN VIEW



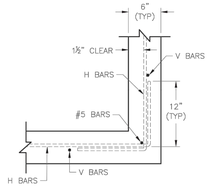
SECTION A–A



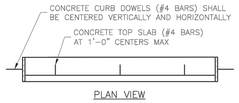
FRONT ELEVATION



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.

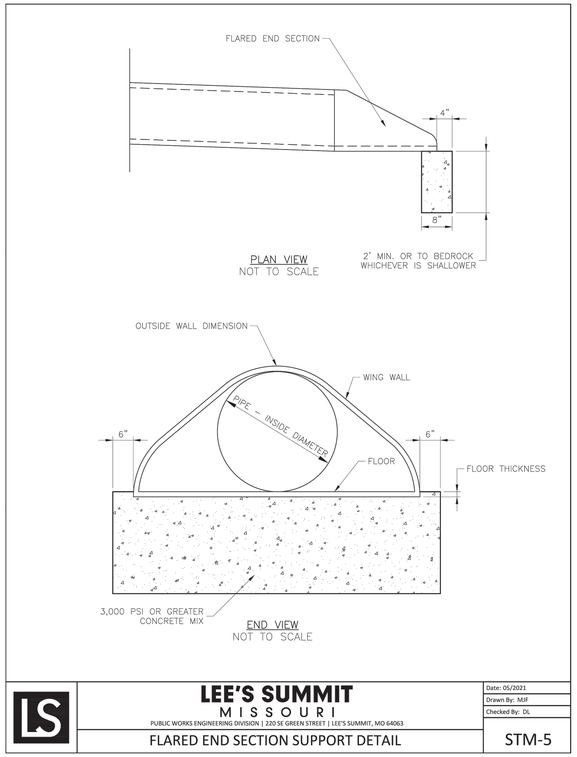
GENERAL NOTES:
1. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION.
2. FLOW LINES LISTED ON THE PROJECT PLANS ARE LISTED AT THE INSIDE FACE OF THE WALL.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
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.

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

Plan No.
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Sheet Name
CURB INLET DETAIL

Drawn By: MJF
Checked By: DL
Date: 05/2021
Proj. #:

STM-1

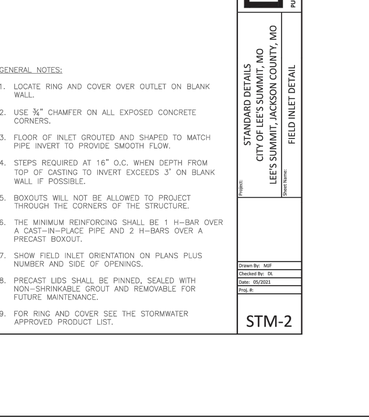


LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

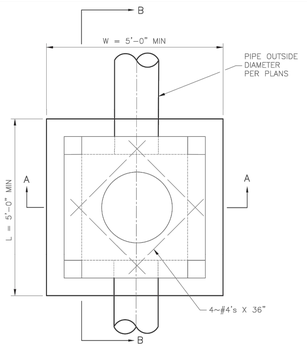
FLARED END SECTION SUPPORT DETAIL

Date: 05/2021
Drawn By: MJF
Checked By: DL

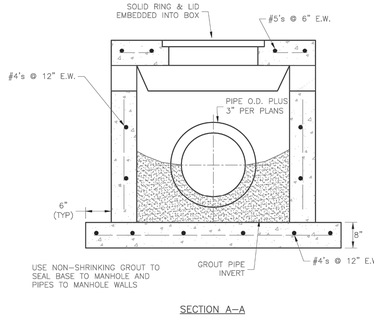
STM-5



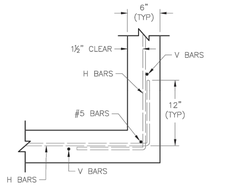
SECTION B–B



PLAN VIEW



SECTION A–A



WALL CORNER DETAIL

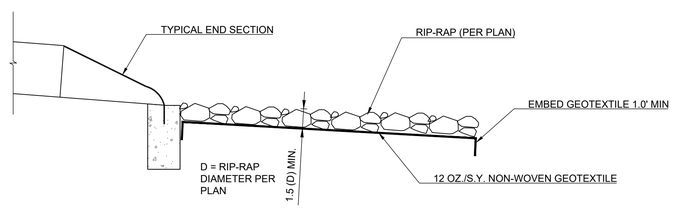
GENERAL NOTES:
1. LOCATE RING AND COVER OVER OUTLET ON BLANK WALL.
2. USE ¾" CHAMFER ON ALL EXPOSED CONCRETE CORNERS.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
4. STEPS REQUIRED AT 16" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 3' ON BLANK WALL IF POSSIBLE.
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.

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

Plan No.
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Sheet Name
FIELD INLET DETAIL

Drawn By: MJF
Checked By: DL
Date: 05/2021
Proj. #:

STM-2



RIP-RAP AT OUTLET
NOT TO SCALE

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Missouri State Certificate of Authority
#E2000030800-F #LA2001005237 #LS2000208859-F

PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2009007268
STATE OF MISSOURI
PROFESSIONAL ENGINEER
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

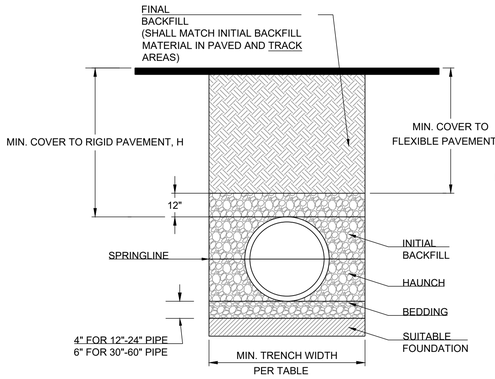
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
1 09/06/23	PER CITY COMMENTS
2 09/27/23	PER CITY COMMENTS
3 09/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22.407

STORM DETAILS

SHEET
C409



MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION	
	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

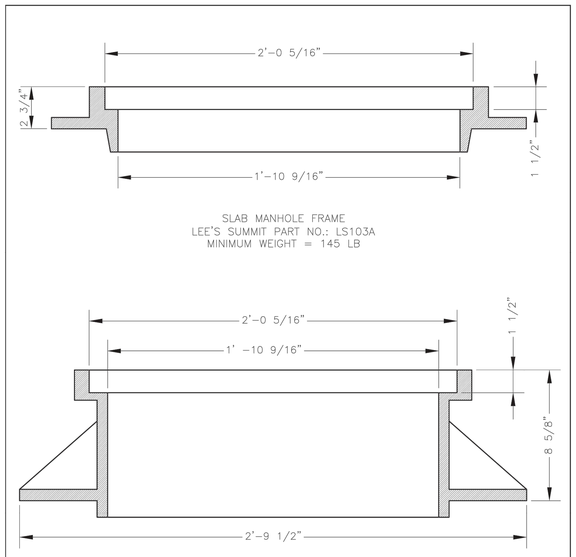
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

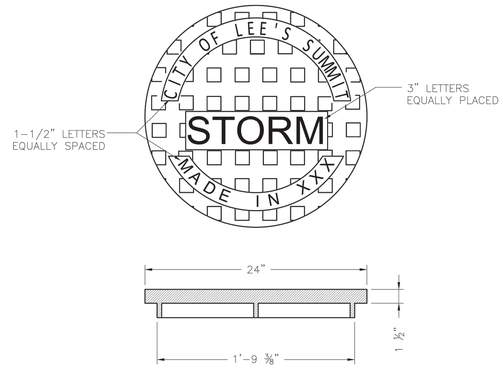
7. TESTING: CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL MATERIAL TESTING REQUIRED FOR THEIR WORK. THIS INCLUDES SCHEDULING OF TESTS, COORDINATING AND PROVIDING ACCESS TO SAMPLE LOCATIONS, AND SATISFYING ALL TEST RESULT REPORTING REQUIREMENTS.



*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: 05/2021
Drawn By: MJF
Checked By: DL
DWG-7



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: 05/2021
Drawn By: MJF
Checked By: DL
STM-6

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#E2002003800-F #LA2001005237 #LS2002008859-F

PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2003007208
STATE OF MISSOURI
PROFESSIONAL ENGINEER

08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION	DATE	DESCRIPTION
1	05/05/23	PER CITY COMMENTS
2	06/27/23	PER CITY COMMENTS
3	08/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-097

STORM DETAILS

SHEET
C410

Section 2722

Engineered Surface Drainage Products

GENERAL
PVC surface drainage inlets shall be of the inline drain type as indicated on the contract drawing and referenced within the contract specifications. The ductile iron grates for each of these fittings are to be considered an integral part of the surface drainage inlet and shall be furnished by the same manufacturer. The surface drainage inlets shall be as manufactured by Nyloplast a division of Advanced Drainage Systems, Inc., or prior approved equal.

MATERIALS
The inline drain required for this contract shall be manufactured from PVC pipe stock, utilizing a thermo-molding process to reform the pipe stock to the furnished configuration. The drainage pipe connection stubs shall be manufactured from PVC pipe stock and formed to provide a watertight connection with the specified pipe system. This joint tightness shall conform to ASTM D3212 for joints for drain and sewer plastic pipe using flexible elastomeric seals. The flexible elastomeric seals shall conform to ASTM F477. The pipe bell spigot shall be joined to the inline drain body by use of a **swage mechanical joint**. The raw material used to manufacture the pipe stock that is used to manufacture the inline drain body and pipe stubs of the surface drainage inlets shall conform to ASTM D1784 cell class 12454.

The grates furnished for all surface drainage inlets shall be ductile iron grates for sizes 8", 10", 12", 15", 18", 24" and 30" shall be made specifically for each fitting so as to provide a round bottom flange that closely matches the diameter of the surface drainage inlet. Grates for inline drains shall be capable of supporting H-20 wheel loading for traffic areas or H-10 loading for pedestrian areas. 12" and 15" square grates will be hinged to the frame using pins. Metal used in the manufacture of the castings shall conform to ASTM A536 grade 70-50-05 for ductile iron. Grates shall be provided painted black.

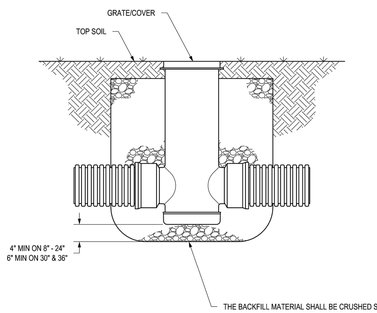
INSTALLATION
The specified PVC surface drainage inlet shall be installed using conventional flexible pipe backfill materials and procedures. The backfill material shall be crushed stone or other granular material meeting the requirements of class 1, class 2, or class 3 material as defined in ASTM D2321. Bedding and backfill for surface drainage inlets shall be well placed and compacted uniformly in accordance with ASTM D2321. The drain basin body will be cut at the time of the final grade. No brick, stone or concrete block will be required to set the grate to the final grade height. For H-20 load rated installations, a concrete ring will be poured under and around the grate and frame. The concrete slab must be designed taking into consideration local soil conditions, traffic loading, and other applicable design factors. For other installation considerations such as migration of fines, ground water, and soft foundations refer to ASTM D2321 guidelines.

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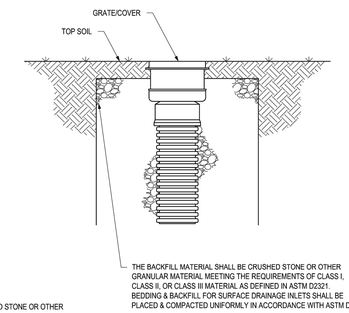
DRAWN BY CJA	MATERIAL	Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 03-10-00			
REVISED BY NMH	PROJECT NO./NAME	TITLE	8 IN - 30 IN INLINE DRAIN SPECIFICATIONS
DATE 03-15-16			
DWG SIZE A	SCALE 1:1 SHEET 1 OF 1	DWG NO. 7003-110-009	REV H

NON TRAFFIC INSTALLATION

DRAIN BASIN



INLINE DRAIN

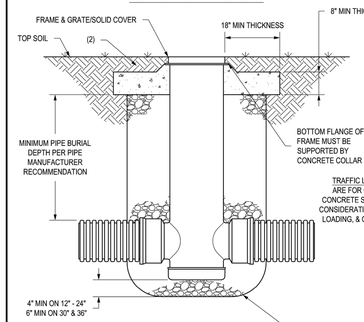


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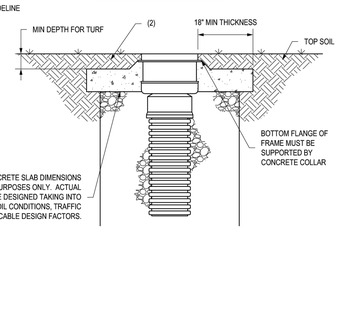
DRAWN BY CJA	MATERIAL	Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 9-30-09			
REVISED BY NMH	PROJECT NO./NAME	TITLE	DRAIN BASIN & INLINE DRAIN NON TRAFFIC INSTALLATION
DATE 03-11-16			
DWG SIZE A	SCALE 1:25 SHEET 1 OF 1	DWG NO. 7001-110-111	REV F

NYLOPLAST TURF TRAFFIC INSTALLATION

12" - 36" DRAIN BASIN



12" - 30" INLINE DRAIN

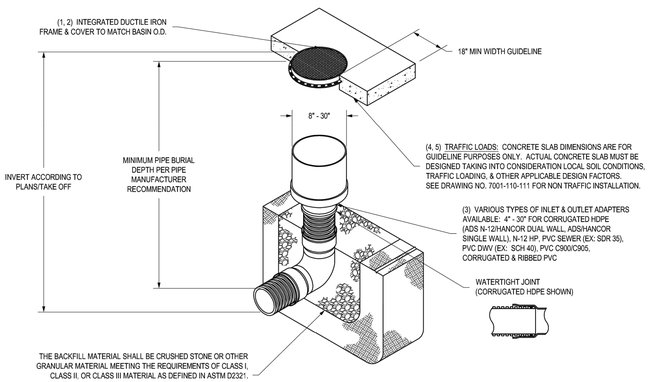


1. GRATES/SOLID COVERS SHALL MEET H-20 LOAD RATING FOR 30" PEDESTRIAN & 12" - 30" STANDARD & SOLID TURF TO GROW AND PREVENT EROSION AROUND GRATE SO THAT HAZARDS DO NOT FORM.

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DATE 01-05-09			
REVISED BY NMH	PROJECT NO./NAME	TITLE	DRAIN BASIN & INLINE DRAIN TURF TRAFFIC INSTALLATION
DATE 06-12-18			
DWG SIZE A	SCALE 1:25 SHEET 1 OF 1	DWG NO. 7001-110-340	REV G

NYLOPLAST INLINE DRAIN WITH SOLID COVER

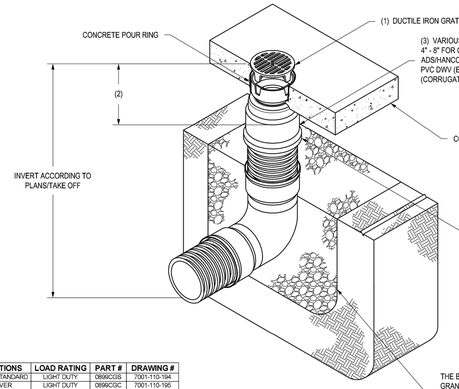


1 - 8" - 30" SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05. 8" & 10" SOLID COVERS FIT DIRECTLY ONTO INLINE DRAINS SEE DRAWING NO.7003-110-000 & 7003-110-001.
3 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 24").
4 - 12" - 30" SOLID COVERS SHALL MEET H-20 LOAD RATING.
5 - 8" & 10" SOLID COVERS ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY; NO CONCRETE COLLAR NEEDED FOR LIGHT DUTY RATING.

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DATE 03-22-10			
REVISED BY NMH	PROJECT NO./NAME	TITLE	INLINE DRAIN WITH SOLID COVER QUICK SPEC INSTALLATION DETAIL
DATE 03-15-16			
DWG SIZE A	SCALE 1:40 SHEET 1 OF 1	DWG NO. 7003-110-055	REV C

NYLOPLAST 8" INLINE DRAIN: 2708AG _ _ X



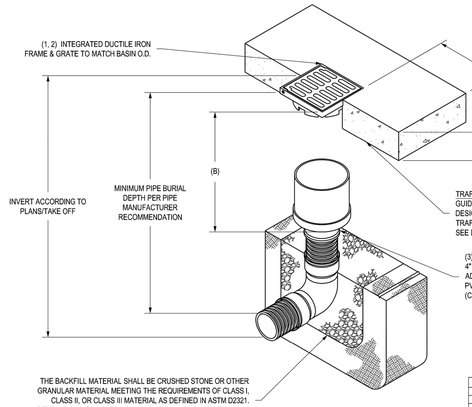
GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN/STANDARD	LIGHT DUTY	0899CGS	7001-110-194
SOLID COVER	LIGHT DUTY	0899CGC	7001-110-195
BRONZE	N/A	0899CGB	7001-110-196
DOME	N/A	0899CGD	7001-110-197

1 - GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05 WITH THE EXCEPTION OF THE BRONZE GRATE.
2 - FOR COMPLETE DESIGN DETAILS SEE DRAWING NO. 7003-110-000.
3 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), & PVC SEWER.

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DATE 11-15-06			
REVISED BY NMH	PROJECT NO./NAME	TITLE	8 IN INLINE DRAIN QUICK SPEC INSTALLATION DETAIL
DATE 03-15-16			
DWG SIZE A	SCALE 1:16 SHEET 1 OF 1	DWG NO. 7003-110-033	REV F

NYLOPLAST 12" INLINE DRAIN: 2712AG _ _ X



ADAPTER SIZE	B
4"	10.50
6"	11.50
8"	11.50
10"	11.25
12"	6.00

GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	1296CGP	7001-110-202
STANDARD	MEETS H-20	1296CGS	7001-110-203
SOLID COVER	MEETS H-20	1296CGC	7001-110-204
PEDESTRIAN BRONZE	N/A	1296CGPB	7001-110-205
DOME	N/A	1296CGD	7001-110-206
DROP IN GRATE	LIGHT DUTY	1201DI	7001-110-021

1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05, WITH THE EXCEPTION OF THE BRONZE GRATE.
2 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
3 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER.
4 - DIMENSIONS ARE FOR REFERENCE ONLY. ACTUAL DIMENSIONS MAY VARY.
5 - DIMENSIONS ARE IN INCHES
6 - SEE DRAWING NO. 7001-110-275 FOR ADS N-12 & HANCOR DUAL WALL BELL INFORMATION & DRAWING NO. 7001-110-364 FOR N-12 HP BELL INFORMATION.

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DRAWN BY EBC	MATERIAL	Nyloplast	3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com
DATE 04-03-06			
REVISED BY NMH	PROJECT NO./NAME	TITLE	12 IN INLINE DRAIN QUICK SPEC INSTALLATION DETAIL
DATE 03-15-16			
DWG SIZE A	SCALE 1:20 SHEET 1 OF 1	DWG NO. 7003-110-025	REV E

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PREPARED BY:

STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2003007268
PROFESSIONAL ENGINEER
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22-007

STORM DETAILS

SHEET
C411

FUTURE BLACKWELL RESERVE

SE HIGHLAND PARK DRIVE (PUBLIC)

SE WOOD LANE (PUBLIC)

SE BRADFREE STREET (PRIVATE)

SE 6TH STREET (PRIVATE)

SE 5TH TERRACE (PUBLIC)

SE GOLDEN LANE (PRIVATE)

SE LINDBERG LANE (PUBLIC)

EXIST. SHENANDOAH DRIVE (PUBLIC)

REUNION AT BLACKWELL

RESIDENCES AT BLACKWELL

SUMMIT MILL 2ND PLAT

TRACT A

TRACT B

LOT 1

LOT 3

BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
BLDG 7
BLDG 8
BLDG 9
BLDG 10
BLDG 11
BLDG 12
BLDG 13
BLDG 14
BLDG 15
BLDG 16
BLDG 17
BLDG 18
BLDG 19
BLDG 20
BLDG 21
BLDG 22
BLDG 23
BLDG 24
BLDG 25
BLDG 26
BLDG 27
BLDG 28
BLDG 29
BLDG 30
BLDG 31
BLDG 32

INSTALL NYLOPLAST DRAIN
TOP = 1004.1
FL = 1000.4

INSTALL NYLOPLAST DRAIN
TOP = 1002.7
FL = 999.4

INSTALL NYLOPLAST DRAIN
TOP = 1003.0
FL = 999.7

INSTALL 270 LF 6" HDPE YARD DRAIN

INSTALL NYLOPLAST DRAIN
TOP = 1005.4
FL = 1001.9

INSTALL 20 LF 6" HDPE YARD DRAIN CONNECT TO CURB INLET
FL = 998.0

INSTALL NYLOPLAST DRAIN
TOP = 1005.6
FL = 1002.7

INSTALL 6"x6" TEE
FL = 998.4

INSTALL NYLOPLAST DRAIN
TOP = 1001.7
FL = 999.5

INSTALL 31 LF 6" HDPE YARD DRAIN CONNECT TO CURB INLET
FL = 996.0

INSTALL NYLOPLAST DRAIN
TOP = 999.6
FL = 997.2

EXIST. 12" C900 DR 18 WATER LINE

EXIST. 8" PVC SDR-26 SANITARY SEWER

50' ELECTRIC LINE EASEMENT
DOC. NO. 198710819794
BK I-1759 AT PG. 2009

PROPERTY LINE

UTILITY REFERENCE NOTES:

1. 8" C900 DR18 WATER LINE MIN. 42" COVER W/TRACER WIRE (RE: SHEETS C800 & C801)
2. 2" TAP & 2" TYPE K COPPER SERVICE LINE TO METER.
3. 1.5" DISPLACEMENT WATER METER (RE: DETAIL SHEET C802)
4. 10' STUB OF 2" TYPE K COPPER FROM METER. CONNECT TO COPPER STUB W/ CTS FITTING & INSTALL 3" HDPE (DR 11) SERVICE TO BUILDING.
5. 6" FIRE HYDRANT ASSEMBLY (RE: DETAIL SHEET C802)
6. ELECTRIC TRANSFORMER (COORDINATE W/PROVIDER)
7. PRIMARY ELECTRIC LINE
8. ELECTRIC SERVICE (RE: MEP)
9. ELECTRIC METER BANK (RE: MEP)
10. 6" PVC SDR-26 SANITARY SEWER SERVICE LINE MIN. 1.3% SLOPE (RE: MEP)
11. FIBER OPTIC - 4" SCH 40 CONDUIT MIN. 36" COVER
12. STREET LIGHT (COORDINATE W/EVERGY)
13. VAULT FOR DOUBLE CHECK DETECTOR VALVE (RE: SHEET C803)
14. EXIST. 6" FIRE HYDRANT ASSEMBLY
15. EXIST. 6" PVC SDR-26 SANITARY SEWER SERVICE LINE

PUBLIC ROAD NOTE:
ROADS DENOTED AS "(PUBLIC)" WILL BE CONSTRUCTED UNDER A SEPARATE PLAN SET.

SIDEWALK NOTE:
SIDEWALKS AT BUILDINGS WILL BE INSTALLED BY OTHERS, UNLESS NOTED OTHERWISE.

0 50' 100'
SCALE: 1" = 50'

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14920 W. 107th Street • Lenexa, Kansas 66215
(913) 492-5158 • Fax (913) 492-8400
WWW.SCHLAGEL-ASSOCIATES.COM
Missouri State Certificate of Authority #E2000030800-F #LA2001005237 #LS2000208859-F

PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2009007268
STATE OF MISSOURI
PROFESSIONAL ENGINEER

08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

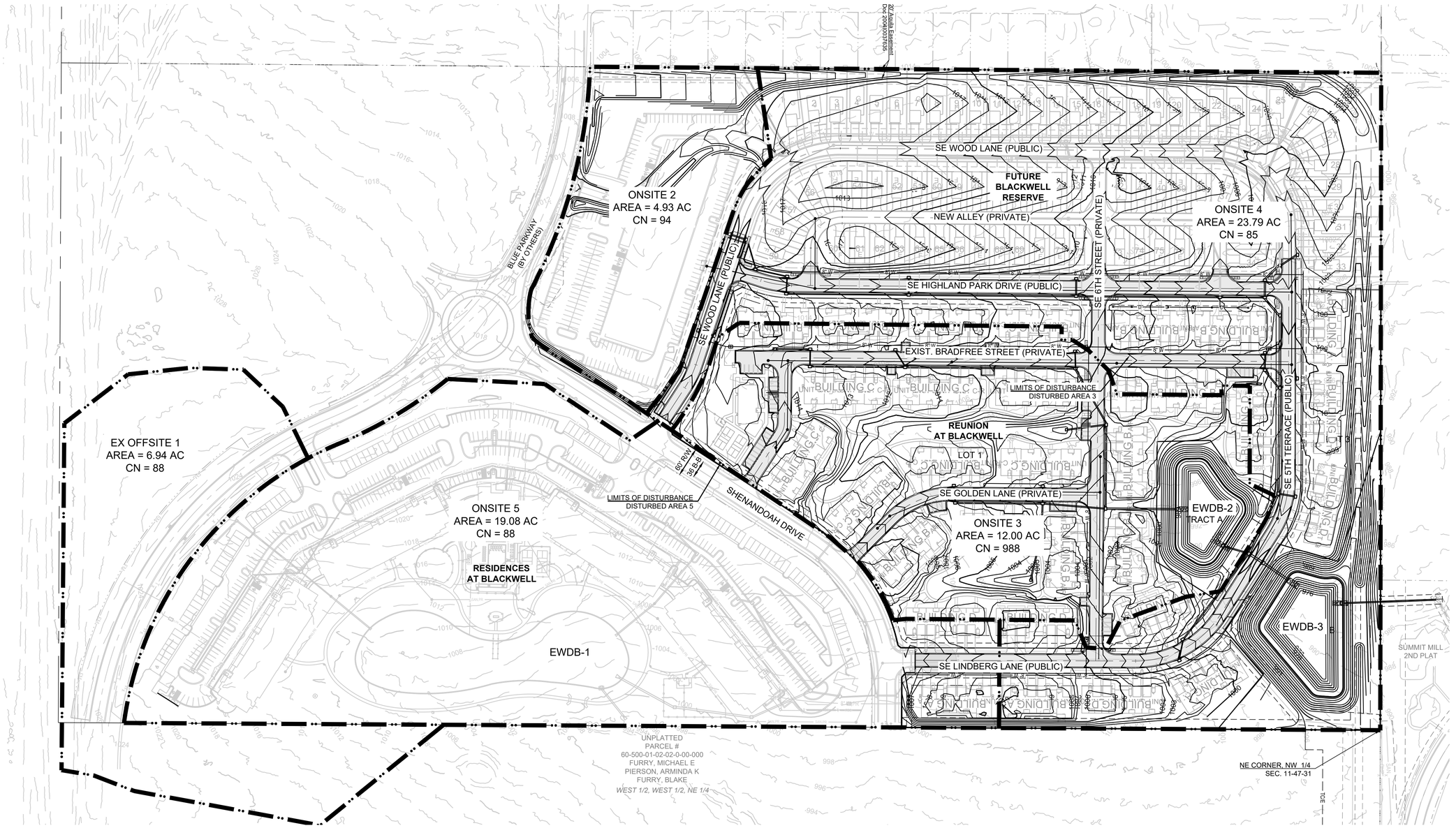
REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-007

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

UTILITY PLAN

SHEET
C500



GRADING LEGEND:

1000 — EXISTING CONTOUR

1000 — PROPOSED CONTOUR (FINISHED GRADE)

NOTES:

1. ALL CONSTRUCTION ON THIS PROJECT SHALL CONFORM TO THE CITY OF LEE'S SUMMIT TECHNICAL SPECIFICATIONS.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.

MO GRS BENCHMARK:

STATION NAME - JA-90

KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988" LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.
N:1001052.8503, E:2845604.8272

ELEV. 997.045

PROJECT BENCHMARK:

"SQUARE" CUT IN TOP OF CONCRETE STORM MANHOLE
STORM MANHOLE IS LOCATED APPROX. 130 FEET EAST OF THE INTERSECTION OF SE JOEL AVE & BLUE PARKWAY AND 26 FEET SOUTH OF THE CENTERLINE OF BLUE PARKWAY.
N:996874.9690, E:2840937.1365

ELEV. 1005.719

0 100' 200'

SCALE: 1" = 100'

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Missouri State Certificate of Authority
#E2000030800-F #LA2001005237 #LS2002008859-F

PREPARED BY:

STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2003007268
PROFESSIONAL ENGINEER

08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

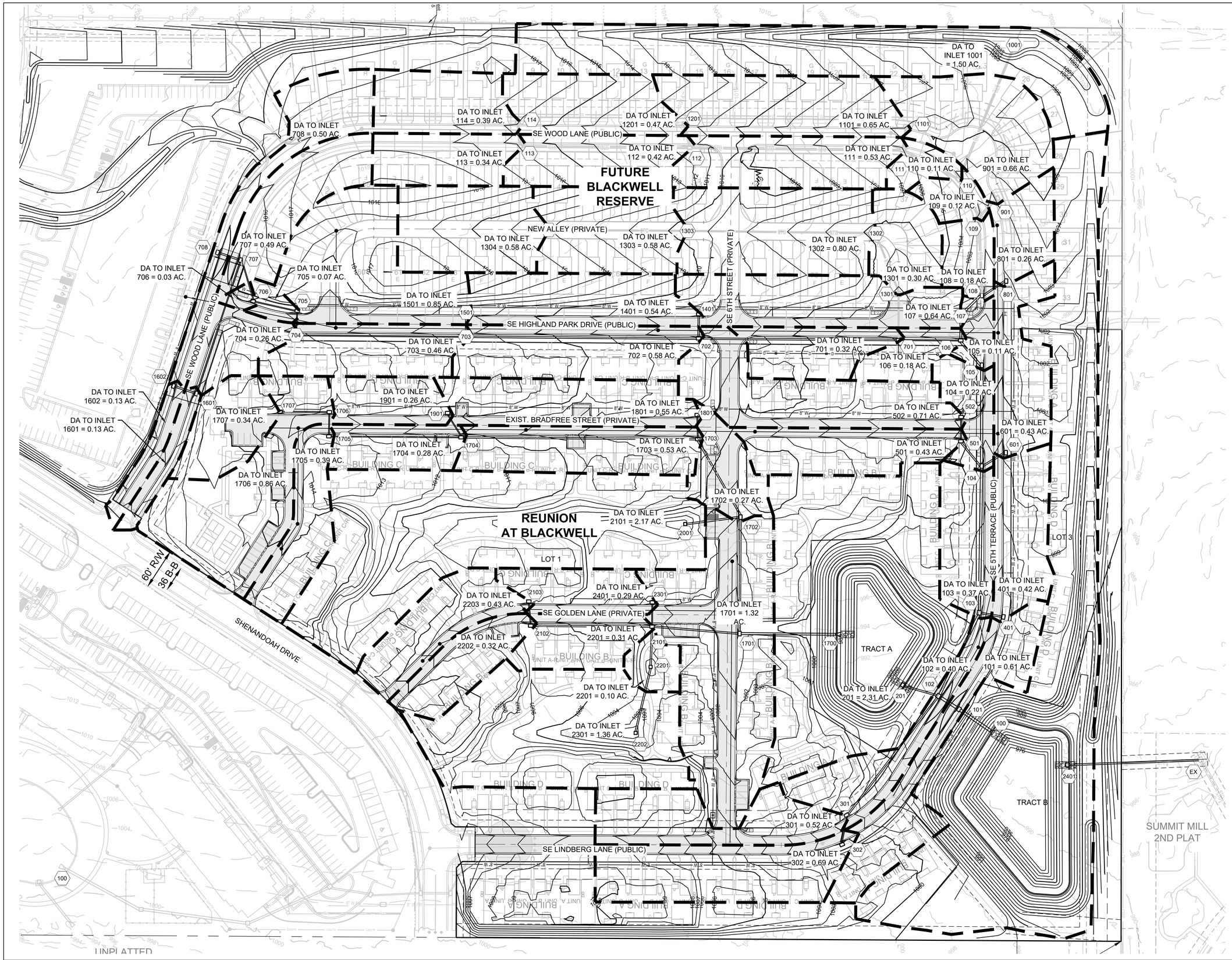
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
1 05/05/23	PER CITY COMMENTS
2 06/27/23	PER CITY COMMENTS
3 08/24/23	PER CITY COMMENTS

DRAWN BY:	CHECKED BY:	DATE PREPARED:	PROJ. NUMBER:
####	####	03/03/2023	22-097

OVERALL DRAINAGE MAP

SHEET
C601



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PREPARED BY:

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PROFESSIONAL ENGINEER
STATE OF MISSOURI

08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY: ####
CHECKED BY: ####
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-007

REUNION - DRAINAGE MAP

SHEET
C602

Design Storm: 10
"K" Value: 1.00
"F" Factor: 1.00

Runoff Calculations															Pipe Properties											
Inlet #	Area (acres)	"C" Value	Cumul. Area (acres)	Cumul. CxA	Tc	Intensity	Runoff To Inlet	Cumul. Runoff	Pipe Cap.	Pipe Vel.	Up Piped Inlet 1	Up Piped Inlet 2	Up Area (acres)	Up CxA	Up Inlet	Down Inlet	Pipe Type	"n" Value	Pipe Size	Pipe Length	Slope %	Drop In Inlet	FL Up	FL Down	Inlet Top	HGL Elev.
LINE 100																							DS TAILWATER @ STR #100			987.84
101	0.61	0.66	20.29	13.39	8.6	6.38	2.57	85.48	103.97	10.81			0.00	0.00	101	100	HDPE	0.012	42	55.00	0.91	0.50	984.50	984.00	995.20	988.79
102	0.40	0.66	19.68	12.99	8.6	6.39	1.69	82.98	231.47	24.06	201	301	3.52	2.32	102	101	HDPE	0.012	42	35.50	4.51	0.50	986.60	985.00	995.20	990.21
103	0.37	0.66	15.76	10.40	8.3	6.45	1.58	67.12	78.60	8.17	401		0.42	0.28	103	102	HDPE	0.012	42	133.63	0.52	0.50	987.80	987.10	996.61	990.98
104	0.22	0.66	14.97	9.88	7.9	6.55	0.95	64.74	82.29	8.55	501	601	1.57	1.04	104	103	HDPE	0.012	42	211.60	0.57	0.50	989.50	988.30	998.95	992.62
105	0.11	0.66	13.18	8.70	7.7	6.61	0.48	57.54	68.17	9.64			0.00	0.00	105	104	HDPE	0.012	36	145.31	0.89	0.50	991.30	990.00	1000.55	994.42
106	0.18	0.66	13.07	8.63	7.6	6.64	0.79	57.24	67.01	9.48	701		6.62	4.37	106	105	HDPE	0.012	36	46.74	0.86	0.50	992.20	991.80	1001.44	995.31
107	0.64	0.66	6.27	4.14	6.9	6.80	2.87	28.14	41.21	8.39			0.00	0.00	107	106	HDPE	0.012	30	35.00	0.86	0.50	993.00	992.70	1001.44	995.70
108	0.18	0.66	5.63	3.72	6.8	6.82	0.81	25.36	37.44	7.63	801		0.26	0.17	108	107	HDPE	0.012	30	42.40	0.71	0.50	993.80	993.50	1001.65	996.01
109	0.12	0.66	5.19	3.43	6.6	6.89	0.55	23.61	37.18	7.57	901		0.66	0.44	109	108	HDPE	0.012	30	113.76	0.70	0.50	995.10	994.30	1002.98	997.11
110	0.11	0.66	4.41	2.91	6.4	6.93	0.50	20.17	22.19	7.06	1001		1.50	0.99	110	109	HDPE	0.012	24	60.72	0.82	0.50	996.09	995.60	1044.14	998.14
111	0.53	0.66	2.80	1.85	6.3	6.97	2.44	12.87	20.70	11.72	1101		0.65	0.43	111	110	HDPE	0.012	18	90.66	3.31	0.50	999.59	996.59	1006.03	1001.40
112	0.42	0.66	1.62	1.07	5.6	7.16	1.98	7.65	9.28	7.57	1201		0.47	0.31	112	111	HDPE	0.012	15	306.71	1.76	0.50	1005.49	1000.09	1011.58	1006.94
113	0.34	0.66	0.73	0.48	5.1	7.33	1.64	3.53	8.96	7.30			0.00	0.00	113	112	HDPE	0.012	15	244.59	1.64	0.50	1010.00	1005.99	1015.97	1010.92
114	0.39	0.66	0.39	0.26	5.0	7.35	1.89	1.89	8.34	6.80			0.00	0.00	114	113	HDPE	0.012	15	35.14	1.42	N/A	1011.00	1010.50	1016.02	1011.66
LINE 200																				Drop in Inlet 102		1.50				
201	2.31	0.66	2.31	1.52	5.0	7.35	11.21	11.21	41.95	13.35			0.00	0.00	201	102	HDPE	0.012	24	58.00	2.93	N/A	989.80	988.10	993.70	991.25
LINE 300																				Drop in Inlet 102		2.25				
301	0.52	0.66	1.21	0.80	5.1	7.32	2.51	5.84	11.31	9.21			0.00	0.00	301	102	HDPE	0.012	15	216.69	2.61	0.50	994.51	988.85	999.68	995.74
302	0.69	0.66	0.69	0.46	5.0	7.35	3.35	3.35	7.54	6.14			0.00	0.00	302	301	HDPE	0.012	15	43.08	1.16	N/A	995.51	995.01	1000.36	996.40
LINE 400																				Drop in Inlet 103		2.25				
401	0.42	0.66	0.42	0.28	5.0	7.35	2.04	2.04	11.46	9.34			0.00	0.00	401	103	HDPE	0.012	15	34.98	2.68	N/A	990.98	990.05	996.59	991.66
LINE 500																				Drop in Inlet 104		2.25				
501	0.43	0.66	1.14	0.75	5.1	7.33	2.08	5.52	13.59	11.07			0.00	0.00	501	104	HDPE	0.012	15	46.43	3.77	0.50	993.50	991.75	1000.12	994.69
502	0.71	0.66	0.71	0.47	5.0	7.35	3.45	3.45	11.83	9.64			0.00	0.00	502	501	HDPE	0.012	15	35.00	2.86	N/A	995.00	994.00	1000.54	995.91
LINE 600																				Drop in Inlet 104		2.25				
601	0.43	0.66	0.43	0.28	5.0	7.35	2.09	2.09	12.38	10.09			0.00	0.00	601	104	HDPE	0.012	15	39.93	3.13	N/A	993.00	991.75	999.16	993.69
LINE 700																				Drop in Inlet 106		0.50				
701	0.32	0.66	6.62	4.37	7.6	6.64	1.40	28.99	39.24	7.99	1301		2.26	1.49	701	106	HDPE	0.012	30	89.67	0.78	0.50	993.40	992.70	1002.90	995.90
702	0.58	0.66	4.04	2.67	7.1	6.75	2.58	17.99	34.14	10.87	1401		0.54	0.36	702	701	HDPE	0.012	24	288.09	1.94	0.50	999.49	993.90	1007.44	1001.39
703	0.46	0.66	2.92	1.93	6.4	6.93	2.10	13.36	14.30	8.09	1501		0.85	0.56	703	702	HDPE	0.012	18	335.06	1.58	0.50	1005.28	999.99	1011.51	1007.13
704	0.26	0.66	1.61	1.06	5.7	7.16	1.23	7.60	9.17	5.19			0.00	0.00	704	703	HDPE	0.012	18	245.08	0.65	0.50	1007.37	1005.78	1014.19	1008.69
705	0.07	0.66	1.35	0.89	5.5	7.19	0.33	6.41	8.59	4.86			0.00	0.00	705	704	HDPE	0.012	18	35.04	0.57	0.50	1008.07	1007.87	1014.20	1009.27
706	0.03	0.66	1.28	0.84	5.3	7.25	0.14	6.13	6.71	5.47			0.00	0.00	706	705	HDPE	0.012	15	65.36	0.92	0.50	1009.17	1008.57	1014.96	1010.50
707	0.49	0.66	1.25	0.83	5.1	7.31	2.36	6.03	6.30	5.13	1601		0.26	0.17	707	706	HDPE	0.012	15	61.70	0.81	0.50	1010.17	1009.67	1015.18	1011.43
708	0.50	0.66	0.50	0.33	5.0	7.35	2.43	2.43	6.49	5.29			0.00	0.00	708	707	HDPE	0.012	15	35.00	0.86	N/A	1010.97	1010.67	1015.18	1011.72
LINE 800																				Drop in Inlet 108		1.25				
801	0.26	0.66	0.26	0.17	5.0	7.35	1.26	1.26	15.30	12.47			0.00	0.00	801	108	HDPE	0.012	15	40.76	4.78	N/A	997.00	995.05	1001.88	997.52
LINE 900																				Drop in Inlet 109		1.25				
901	0.66	0.66	0.66	0.44	5.0	7.35	3.20	3.20	15.73	12.81			0.00	0.00	901	109	HDPE	0.012	15	38.65	5.05	N/A	998.30	996.35	1003.20	999.17
LINE 1000																				Drop in Inlet 110		0.50				
1001	1.50	0.66	1.50	0.99	5.0	7.35	7.28	7.28	20.06	6.39			0.00	0.00	1001	110	HDPE	0.012	24	210.17	0.67	N/A	998.00	996.59	1002.00	999.15
LINE 1100																				Drop in Inlet 111		0.50				
1101	0.65	0.66	0.65	0.43	5.0	7.35	3.15	3.15	11.22	9.14			0.00	0.00	1101	111	HDPE	0.012	15	35.07	2.57	N/A	1001.00	1000.09	1006.02	1001.86
LINE 1200																				Drop in Inlet 112		0.50				
1201	0.47	0.66	0.47	0.31	5.0	7.35	2.28	2.28	11.69	9.53			0.00	0.00	1201	112	HDPE	0.012	15	35.84	2.79	N/A	1006.99	1005.99	1011.71	1007.71
LINE 1300																				Drop in Inlet 701		1.00				
1301	0.30	0.66	2.26	1.49	6.2	7.01	1.39	10.46	14.48	8.20			0.00	0.00	1301	701	HDPE	0.012	18	67.73	1.62	0.50	995.49	994.40	1002.83	997.08
1302	0.80	0.66	1.96	1.29	6.0	7.05	3.72	9.12	13.26	10.80			0.00	0.00	1302	1301	HDPE	0.012	15	92.02	3.59	0.50	999.30	995.99	1004.68	1000.92
1303	0.58	0.66	1.16	0.77	5.4	7.22	2.76	5.53	9.67	7.88			0.00	0.00	1303	1302	HDPE	0.012	15	271.61	1.91	0.50	1004.99	999.80	1009.51	1006.17
1304	0.58	0.66	0.58	0.38	5.0	7.35	2.81	2.81	9.26	7.54			0.00	0.00	1304	1303	HDPE	0.012	15	200.00	1.75	N/A	1008.99	1005.49	1013.05	1009.79
LINE 1400																				Drop in Inlet 702		0.75				
1401	0.54	0.66	0.54	0.36	5.0	7.35	2.62	2.62	16.94	13.80			0.00	0.00	1401	702	HDPE	0.012	15	35.00	5.86	N/A	1002.29	1000.24	1007.44	1003.07
LINE 1500																				Drop in Inlet 703		0.50				
1501	0.85	0.66	0.85	0.56	5.0	7.35	4.13	4.13	9.90	8.06			0.00	0.00	1501	703	HDPE	0.012	15	35.00	2.00	N/A	1006.48	1005.78	1011.51	1007.48
LINE 1600																				Drop in Inlet 707		0.50				
1601	0.13	0.66	0.26	0.17	5.1	7.31	0.63	1.25	6.02	4.91			0.00	0.00	1601	707	HDPE	0.012	15	202.61	0.74	0.50	1012.17	1010.67	1017.15	1012.69
1602	0.13	0.66	0.13	0.09	5.0	7.35	0.63	0.63	5.28	4.31			0.00	0.00	1602	1601	HDPE	0.012	15	35.00	0.57	N/A	1012.87	1012.67	1017.15	1013.23
LINE 1700																							DS TAILWATER @ STR #1700			993.87
1701	1.32	0.66	8.37	6.45	7.1	6.76	5.89	43.59	92.48	9.61	2101		1.41	1.85	1701	1700	HDPE	0.012	42	138.00	0.72	1.00	990.99	990.00	1000.50	994.21
1702	0.27	0.66	5.64	3.72	6.9	6.81	1.21	25.36	68.55	13.97	2001		2.17	1.43	1702	1701	HDPE	0.012	30	167.90	2.38	1.00	995.99	991.99	1003.40	998.09
1703	0.53	0.66	3.20	2.11	6.7	6.87	2.40	14.51	16.84	9.53	1801		0.55	0.36	1703	1702	HDPE	0.012	18	128.04	2.19	0.50	999.79	996.99	1006.01	1001.75
1704	0.28	0.66	2.12	1.40	5.8	7.11	1.31	9.95	11.83	6.69	1901		0.26	0.17	1704	1703	HDPE	0.012	18	341.08	1.08	0.50	1003.98	1000.29	1010.39	1005.52
1705	0.39	0.66	1.58	1.04	5.3	7.27	1.87	7.58	10.11	5.72			0.00	0.00	1705	1704	HDPE	0.012	18	190.50	0.79	0.50	1005.98	1004.48	1012.67	1007.30
1706	0.85	0.66	1.19	0.79	5.2	7.30	4.09	5.73	8.37	6.82			0.00	0.00	1706	1705	HDPE	0.012	15	35.01	1.43	0.50	1006.98	1006.48	1012.67	1008.20
1707	0.34	0.66	0.34	0.22	5.0	7.35	1.65	1.65	8.31	6.77			0.00	0.00	1707	1706	HDPE	0.012	15	71.15	1.41	N/A	1008.49	1007.48	1013.79	1009.09
LINE 1800																				Drop in Inlet 1703		0.50				
1801	0.55	0.66	0.55	0.36	5.0	7.35	2.67	2.67	9.90	8.06			0.00	0.00	1801	1703	HDPE	0.012	15	35.01	2.00	N/A	1000.99	1000.29	1006.03	1001.78
LINE 1900																				Drop in Inlet 1704		0.50				
1901	0.26	0.66	0.26	0.17	5.0	7.35	1.26	1.26	7.79	6.35			0.00	0.00	1901	1704	HDPE	0.012	15	40.17	1.24	N/A	1004.98	1004.48	1010.62	1005.50
LINE 2000																				Drop in Inlet 1702		0.80				
2001	2.17	0.66	2.17	1.43	5.0	7.35	10.53	10.53	22.86	7.28			0.00	0.00	2001	1702	HDPE	0.012	24	80.26	0.87	N/A	997.49	996.79	1001.70	998.89
LINE 2100																				Drop in Inlet 1701		1.50				
2101	0.31	0.66	1.41	1.85	5.4	7.24	1.48	13.43	26.73	8.51	2201	2301	0.35	1.16	2101	1701	HDPE	0.012	24	126.53	1.19	0.75	994.00	992.49	1002.70	995.61
2102	0.32	0.66	0.75	0.50	5.1	7.33	1.55	3.63	12.69	10.34			0.00	0.00	2102	2101	HDPE	0.012	15	174.89	3.29	0.50	1000.50	994.75	1006.08	1001.44
2103	0.43	0.66	0.43	0.28	5.0	7.35	2.09	2.09	8.34	6.80			0.00	0.00	2103	2102	HDPE	0.012	15	35.09	1.42	N/A	1001.50	1001.00	1006.14	1002.19
LINE 2200																				Drop in Inlet 2101		0.50				
2201	0.06	0.66	0.06	0.96	5.0	7.35	0.29	7.09	20.36	6.48			0.00	0.00	2201	2101	HDPE	0.012	24	58.00	0.69	0.50	994.90	994.50	1001.00	996.03
2202	1.40	0.66	1.40	0.92	5.0	7.35	6.79	6.79	19.14	6.09			0.00	0.00	2202	2102	HDPE	0.012	24	97.62	0.61	N/A	995.99	995.40	1001.50	997.10
LINE 2300																				Drop in Inlet 2101		0.75				
2301	0.29	0.66	0.29	0.19	5.0	7.35	1.41	1.41	20.32	16.56			0.00	0.00	2301	2101	HDPE	0.012	15	35.00	8.43	N/A	997.70	994.75	1002.70	998.25

Design Storm: 100
"K" Value: 1.25
"F" Factor: 1.00

Runoff Calculations															Pipe Properties											
Inlet #	Area (acres)	"C" Value	Cumul. Area (acres)	Cumul. CxA	Tc	Intensity	Runoff To Inlet	Cumul. Runoff	Pipe Cap.	Pipe Vel.	Up Piped Inlet 1	Up Piped Inlet 2	Up Area (acres)	Up CxA	Up Inlet	Down Inlet	Pipe Type	"n" Value	Pipe Size	Pipe Length	Slope %	Drop In Inlet	FL Up	FL Down	Inlet Top	HGL Elev.
LINE 100																							DS TAILWATER @ STR #100			987.84
101	0.61	0.66	20.29	13.39	8.6	9.01	4.53	150.80	103.97	10.81			0.00	0.00	101	100	HDPE	0.012	42	55.00	0.91	0.50	984.50	984.00	995.20	990.80
102	0.40	0.66	19.68	12.99	8.6	9.02	2.98	146.39	231.47	24.06	201	301	3.52	2.32	102	101	HDPE	0.012	42	35.50	4.51	0.50	986.60	985.00	995.20	993.24
103	0.37	0.66	15.76	10.40	8.3	9.10	2.78	118.37	78.60	8.17	401		0.42	0.28	103	102	HDPE	0.012	42	133.63	0.52	0.50	987.80	987.10	996.61	995.99
104	0.22	0.66	14.97	9.88	7.9	9.24	1.68	114.11	82.29	8.55	501	601	1.57	1.04	104	103	HDPE	0.012	42	211.60	0.57	0.50	989.50	988.30	998.95	999.40
105	0.11	0.66	13.18	8.70	7.7	9.32	0.85	101.39	68.17	9.64			0.00	0.00	105	104	HDPE	0.012	36	145.31	0.89	0.50	991.30	990.00	1000.55	1003.41
106	0.18	0.66	13.07	8.63	7.6	9.35	1.39	100.84	67.01	9.48	701		6.62	4.37	106	105	HDPE	0.012	36	46.74	0.86	0.50	992.20	991.80	1001.44	1003.04
107	0.64	0.66	6.27	4.14	6.9	9.58	5.06	49.53	41.21	8.39			0.00	0.00	107	106	HDPE	0.012	30	35.00	0.86	0.50	993.00	992.70	1001.44	1002.67
108	0.18	0.66	5.63	3.72	6.8	9.61	1.43	44.63	37.44	7.63	801		0.26	0.17	108	107	HDPE	0.012	30	42.40	0.71	0.50	993.80	993.50	1001.65	1002.51
109	0.12	0.66	5.19	3.43	6.6	9.70	0.96	41.53	37.18	7.57	901		0.66	0.44	109	108	HDPE	0.012	30	113.76	0.70	0.50	995.10	994.30	1002.98	1003.20
110	0.11	0.66	4.41	2.91	6.4	9.75	0.89	35.48	22.19	7.06	1001		1.50	0.99	110	109	HDPE	0.012	24	60.72	0.82	0.50	996.09	995.60	1044.14	1005.24
111	0.53	0.66	2.80	1.85	6.3	9.80	4.29	22.64	20.70	11.72	1101		0.65	0.43	111	110	HDPE	0.012	18	90.66	3.31	0.50	999.59	996.59	1006.03	1010.11
112	0.42	0.66	1.62	1.07	5.6	10.06	3.49	13.45	9.28	7.57	1201		0.47	0.31	112	111	HDPE	0.012	15	306.71	1.76	0.50	1005.49	1000.09	1011.58	1018.29
113	0.34	0.66	0.73	0.48	5.1	10.29	2.89	6.20	8.96	7.30			0.00	0.00	113	112	HDPE	0.012	15	244.59	1.64	0.50	1010.00	1005.99	1015.97	1013.70
114	0.39	0.66	0.39	0.26	5.0	10.32	3.32	3.32	8.34	6.80			0.00	0.00	114	113	HDPE	0.012	15	35.14	1.42	N/A	1011.00	1010.50	1016.02	1013.84
LINE 200																				Drop in Inlet 102		1.50				
201	2.31	0.66	2.31	1.52	5.0	10.32	19.67	19.67	41.95	13.35			0.00	0.00	201	102	HDPE	0.012	24	58.00	2.93	N/A	989.80	988.10	993.70	993.92
LINE 300																				Drop in Inlet 102		2.25				
301	0.52	0.66	1.21	0.80	5.1	10.27	4.41	10.26	11.31	9.21			0.00	0.00	301	102	HDPE	0.012	15	216.69	2.61	0.50	994.51	988.85	999.68	998.43
302	0.69	0.66	0.69	0.46	5.0	10.32	5.88	5.88	7.54	6.14			0.00	0.00	302	301	HDPE	0.012	15	43.08	1.16	N/A	995.51	995.01	1000.36	998.91
LINE 400																				Drop in Inlet 103		2.25				
401	0.42	0.66	0.42	0.28	5.0	10.32	3.58	3.58	11.46	9.34			0.00	0.00	401	103	HDPE	0.012	15	34.98	2.68	N/A	990.98	990.05	996.59	996.15
LINE 500																				Drop in Inlet 104		2.25				
501	0.43	0.66	1.14	0.75	5.1	10.30	3.65	9.68	13.59	11.07			0.00	0.00	501	104	HDPE	0.012	15	46.43	3.77	0.50	993.50	991.75	1000.12	1000.32
502	0.71	0.66	0.71	0.47	5.0	10.32	6.05	6.05	11.83	9.64			0.00	0.00	502	501	HDPE	0.012	15	35.00	2.86	N/A	995.00	994.00	1000.54	1000.57
LINE 600																				Drop in Inlet 104		2.25				
601	0.43	0.66	0.43	0.28	5.0	10.32	3.66	3.66	12.38	10.09			0.00	0.00	601	104	HDPE	0.012	15	39.93	3.13	N/A	993.00	991.75	999.16	999.13
LINE 700																				Drop in Inlet 106		0.50				
701	0.32	0.66	6.62	4.37	7.6	9.35	2.47	51.08	39.24	7.99	1301		2.26	1.49	701	106	HDPE	0.012	30	89.67	0.78	0.50	993.40	992.70	1002.90	1003.47
702	0.58	0.66	4.04	2.67	7.1	9.51	4.55	31.68	34.14	10.87	1401		0.54	0.36	702	701	HDPE	0.012	24	288.09	1.94	0.50	999.49	993.90	1007.44	1008.51
703	0.46	0.66	2.92	1.93	6.4	9.76	3.70	23.50	14.30	8.09	1501		0.85	0.56	703	702	HDPE	0.012	18	335.06	1.58	0.50	1005.28	999.99	1011.51	1023.11
704	0.26	0.66	1.61	1.06	5.7	10.06	2.16	13.36	9.17	5.19			0.00	0.00	704	703	HDPE	0.012	18	245.08	0.65	0.50	1007.37	1005.78	1014.19	1015.33
705	0.07	0.66	1.35	0.89	5.5	10.10	0.58	11.25	8.59	4.86			0.00	0.00	705	704	HDPE	0.012	18	35.04	0.57	0.50	1008.07	1007.87	1014.20	1014.85
706	0.03	0.66	1.28	0.84	5.3	10.18	0.25	10.75	6.71	5.47			0.00	0.00	706	705	HDPE	0.012	15	65.36	0.92	0.50	1009.17	1008.57	1014.96	1016.34
707	0.49	0.66	1.25	0.83	5.1	10.27	4.15	10.59	6.30	5.13	1601		0.26	0.17	707	706	HDPE	0.012	15	61.70	0.81	0.50	1010.17	1009.67	1015.18	1016.95
708	0.50	0.66	0.50	0.33	5.0	10.32	4.26	4.26	6.49	5.29			0.00	0.00	708	707	HDPE	0.012	15	35.00	0.86	N/A	1010.97	1010.67	1015.18	1015.40
LINE 800																				Drop in Inlet 108		1.25				
801	0.26	0.66	0.26	0.17	5.0	10.32	2.21	2.21	15.30	12.47			0.00	0.00	801	108	HDPE	0.012	15	40.76	4.78	N/A	997.00	995.05	1001.88	1001.72
LINE 900																				Drop in Inlet 109		1.25				
901	0.66	0.66	0.66	0.44	5.0	10.32	5.62	5.62	15.73	12.81			0.00	0.00	901	109	HDPE	0.012	15	38.65	5.05	N/A	998.30	996.35	1003.20	1003.39
LINE 1000																				Drop in Inlet 110		0.50				
1001	1.50	0.66	1.50	0.99	5.0	10.32	12.77	12.77	20.06	6.39			0.00	0.00	1001	110	HDPE	0.012	24	210.17	0.67	N/A	998.00	996.59	1002.00	1005.94
LINE 1100																				Drop in Inlet 111		0.50				
1101	0.65	0.66	0.65	0.43	5.0	10.32	5.54	5.54	11.22	9.14			0.00	0.00	1101	111	HDPE	0.012	15	35.07	2.57	N/A	1001.00	1000.09	1006.02	1006.41
LINE 1200											

RUNOFF CALCULATIONS												INLET DESIGN							GUTTER DESIGN			
INLET #	COMPOSITE "C"	AREA	INLET Tc	INTENSITY	RUNOFF	UPSTREAM INLET	UPSTREAM INLET	UPSTREAM INLET	UPSTREAM INLET	BYPASS FROM UPSTREAM INLET	TOTAL RUNOFF	STREET GRADE	STREET CROSS SLOPE	CURB TYPE	INLET LENGTH	EFFECTIVE LENGTH 80% CAP	INLET INTERCEPTION	BYPASS TO DOWNSTREAM INLET	STREET GRADE	STREET CROSS SLOPE	DEPTH AT CURB	SPREAD OF FLOW
LINE 1																						
101	0.66	0.61	5	7.35	2.96	302	401			1.31	4.27	SUMP	2.00	A	6	4.8	13.44	0.00	SUMP	2.00	< 0.21	**< 12**
102	0.66	0.40	5	7.35	1.94	103	301			0.82	2.76	SUMP	2.00	A	6	4.8	13.44	0.00	SUMP	2.00	< 0.21	**< 12**
103	0.66	0.37	5	7.35	1.79	104				0.23	2.03	1.20	2.00	A	6	6	1.81	0.22	1.20	2.00	0.18	**9.27**
104	0.66	0.22	5	7.35	1.07	501	502			1.02	2.08	1.20	2.00	A	6	6	1.85	0.23	1.20	2.00	0.18	**9.36**
105	0.66	0.11	5	7.35	0.53	106	107	108		0.86	1.39	1.20	2.00	A	6	6	1.29	0.10	1.20	2.00	0.15	**8.11**
106	0.66	0.18	5	7.35	0.87	701				0.12	1.00	1.20	2.00	A	6	6	0.95	0.05	1.20	2.00	0.13	**7.22**
107	0.66	0.64	5	7.35	3.10	1401				0.68	3.78	1.20	2.00	A	6	6	3.00	0.77	1.20	2.00	0.22	**11.57**
108	0.66	0.18	5	7.35	0.87	109				0.02	0.89	1.20	2.00	A	6	6	0.85	0.03	1.20	2.00	0.13	**6.93**
109	0.66	0.12	5	7.35	0.58	110				0.08	0.66	1.21	2.00	A	6	6	0.64	0.02	1.21	2.00	0.11	**6.25**
110	0.66	0.11	5	7.35	0.53	111				0.58	1.11	1.66	2.00	A	6	6	1.03	0.08	1.66	2.00	0.13	**7.08**
111	0.66	0.53	5	7.35	2.57	112				0.34	2.91	1.66	2.00	A	6	6	2.33	0.58	1.66	2.00	0.19	**9.94**
112	0.66	0.42	5	7.35	2.04	113				0.18	2.22	1.66	2.00	A	6	6	1.88	0.34	1.66	2.00	0.17	**9.03**
113	0.66	0.34	5	7.35	1.65					0.00	1.65	1.66	2.00	A	6	6	1.47	0.18	1.66	2.00	0.15	**8.13**
114	0.66	0.39	5	7.35	1.89					0.00	1.89	1.64	2.00	A	6	6	1.65	0.24	1.64	2.00	0.16	**8.55**
LINE 3																						
301	0.66	0.52	5	7.35	2.52					0.00	2.52	2.70	2.00	A	6	6	1.92	0.60	2.70	2.00	0.16	**8.67**
302	0.66	0.69	5	7.35	3.35					0.00	3.35	2.70	2.00	A	6	6	2.33	1.02	2.70	2.00	0.18	**9.59**
LINE 4																						
401	0.66	0.42	5	7.35	2.04	601				0.30	2.34	1.20	2.00	A	6	6	2.04	0.30	1.20	2.00	0.18	**9.75**
LINE 5																						
501	0.66	0.43	5	7.35	2.09					0.00	2.09	1.09	2.00	A	6	6	1.87	0.22	1.09	2.00	0.18	**9.52**
502	0.66	0.71	5	7.35	3.44	702				0.52	3.97	1.09	2.00	A	6	6	3.17	0.80	1.09	2.00	0.23	**11.98**
LINE 6																						
601	0.66	0.43	5	7.35	2.09	801				0.27	2.35	1.20	2.00	A	6	6	2.05	0.30	1.20	2.00	0.19	**9.77**
LINE 7																						
701	0.66	0.32	5	7.35	1.55					0.00	1.55	1.20	2.00	A	6	6	1.43	0.12	1.20	2.00	0.16	**8.43**
702	0.66	0.58	5	7.35	2.81	703				0.29	3.10	1.19	2.00	A	6	6	2.58	0.52	1.19	2.00	0.21	**10.80**
703	0.66	0.46	5	7.35	2.23	704				0.08	2.31	1.19	2.00	A	6	6	2.02	0.29	1.19	2.00	0.18	**9.72**
704	0.66	0.26	5	7.35	1.26	1601				0.02	1.28	1.19	2.00	A	6	6	1.20	0.08	1.19	2.00	0.15	**7.88**
705	0.66	0.07	5	7.35	0.34					0.00	0.34	1.19	2.00	A	6	6	0.34	0.00	1.19	2.00	0.09	**4.99**
706	0.66	0.03	5	7.35	0.15					0.00	0.15	1.19	2.00	A	6	6	0.15	0.00	1.19	2.00	0.07	**3.77**
707	0.66	0.49	5	7.35	2.38	1601				0.02	2.39	SUMP	2.00	A	6	4.8	13.44	0.00	SUMP	2.00	< 0.21	**< 12**
707	0.66	0.50	5	7.35	2.43					0.00	2.43	SUMP	2.00	A	6	4.8	13.44	0.00	SUMP	2.00	< 0.21	**< 12**
LINE 8																						
801	0.66	0.26	5	7.35	1.26	901				0.95	2.21	1.20	2.00	A	6	6	1.95	0.27	1.20	2.00	0.18	**9.56**
LINE 9																						
901	0.66	0.66	5	7.35	3.20	1101				0.86	4.07	1.33	2.00	A	6	6	3.11	0.95	1.33	2.00	0.22	**11.66**
LINE 11																						
1101	0.66	0.65	5	7.35	3.15	1201				0.44	3.59	1.66	2.00	A	6	6	2.73	0.86	1.66	2.00	0.20	**10.72**
LINE 12																						
1201	0.66	0.47	5	7.35	2.28	114				0.24	2.52	1.66	2.00	A	6	6	2.09	0.44	1.66	2.00	0.18	**9.45**
LINE 14																						
1401	0.66	0.54	5	7.35	2.62	1501				0.91	3.53	1.19	2.00	A	6	6	2.86	0.68	1.19	2.00	0.22	**11.31**
LINE 15																						
1501	0.66	0.85	5	7.35	4.12	705				0.00	4.13	1.19	2.00	A	6	6	3.21	0.91	1.19	2.00	0.23	**11.96**
LINE 16																						
1601	0.66	0.13	5	7.35	0.63					0.00	0.63	1.33	2.00	A	6	6	0.61	0.02	1.33	2.00	0.11	**6.05**
1602	0.66	0.13	5	7.35	0.63					0.00	0.63	1.33	2.00	A	7	7	0.62	0.01	1.33	2.00	0.11	**6.05**
LINE 17																						
1701	0.66	1.32	5	7.35	6.40	1702	2101	2301		0.03	6.43	SUMP	2.00	A	6	4.8	13.44	0.00	SUMP	2.00	< 0.21	**< 12**
1702	0.66	0.27	5	7.35	1.31	1703	1801			0.02	1.33	1.20	2.00	A	6	6	1.24	0.09	1.20	2.00	0.15	**7.98**
1703	0.66	0.53	5	7.35	2.57	1704				0.01	2.58	1.33	2.00	A	6	6	2.19	0.39	1.33	2.00	0.19	**9.91**
1704	0.66	0.28	5	7.35	1.36	1705				0.01	1.37	1.33	2.00	A	6	6	1.27	0.10	1.33	2.00	0.15	**7.92**
1705	0.66	0.39	5	7.35	1.89					0.00	1.89	1.33	2.00	A	6	6	1.69	0.21	1.33	2.00	0.17	**8.88**
1706	0.66	0.86	5	7.35	4.17	1707				0.01	4.18	1.25	2.00	A	6	6	3.22	0.97	1.25	2.00	0.23	**11.91**
1707	0.66	0.34	5	7.35	1.65					0.00	1.65	1.40	2.00	A	6	6	1.49	0.16	1.40	2.00	0.16	**8.38**
LINE 18																						
1801	0.66	0.55	5	7.35	2.67	1901				0.01	2.68	1.33	2.00	A	6	6	2.26	0.42	1.33	2.00	0.19	**10.04**
LINE 19																						
1901	0.66	0.26	5	7.35	1.26	1706				0.01	1.27	1.33	2.00	A	6	6	1.18	0.09	1.33	2.00	0.14	**7.72**
LINE 21																						
2101	0.66	0.31	5	7.35	1.50	2102				0.01	1.51	1.99	2.00	A	6	6	1.34	0.18	1.99	2.00	0.14	**7.64**
2102	0.66	0.32	5	7.35	1.55					0.00	1.55	1.99	2.00	A	6	6	1.37	0.19	1.99	2.00	0.14	**7.71**
2103	0.66	0.43	5	7.35	2.09					0.00	2.09	1.99	2.00	A	6	6	1.75	0.34	1.99	2.00	0.16	**8.56**
LINE 23																						
2301	0.66	0.29	5	7.35	1.41	2103				0.01	1.42	1.99	2.00	A	6	6	1.26	0.15	1.99	2.00	0.14	**7.47**

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STATE OF MISSOURI

08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

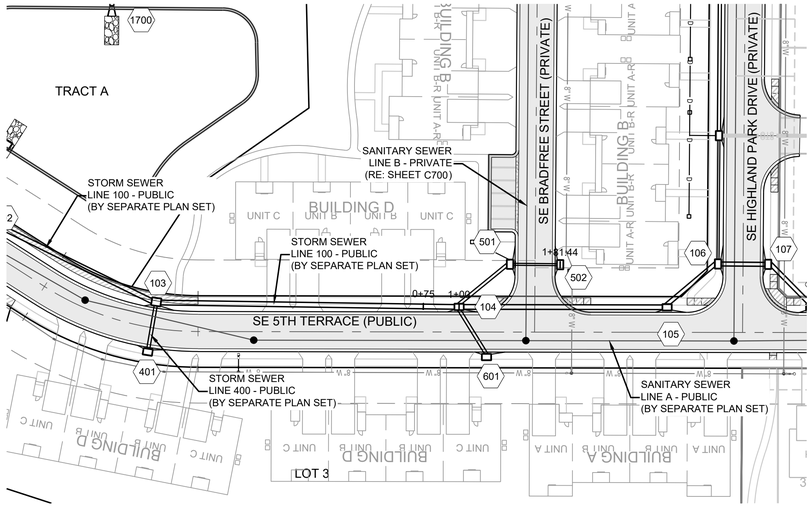
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
1 05/05/23	PER CITY COMMENTS
2 06/27/23	PER CITY COMMENTS
3 08/24/23	PER CITY COMMENTS
4	
5	
6	
7	
8	

DRAWN BY: ###
CHECKED BY: ###
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-097

STORM CALCS

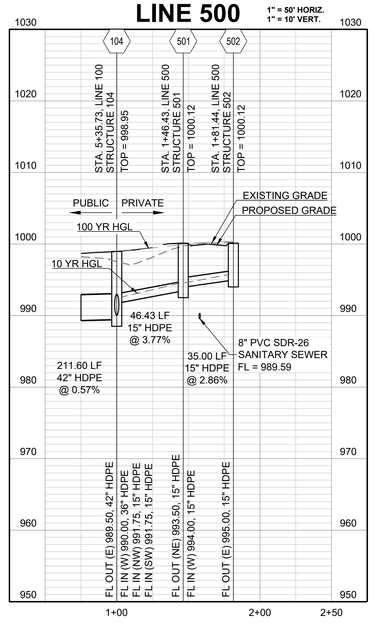
SHEET
C604



Storm Sewer Construction Notes	
Structure	Notes
501	STA 1+46.43, LINE 500 INSTALL 6 X 4 CURB INLET N 998259.2927 E 2841594.6459
502	STA 1+81.44, LINE 500 INSTALL 6 X 4 CURB INLET N 998260.8165 E 2841559.6759



SCALE: 1" = 50'



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PREPARED BY:



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REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

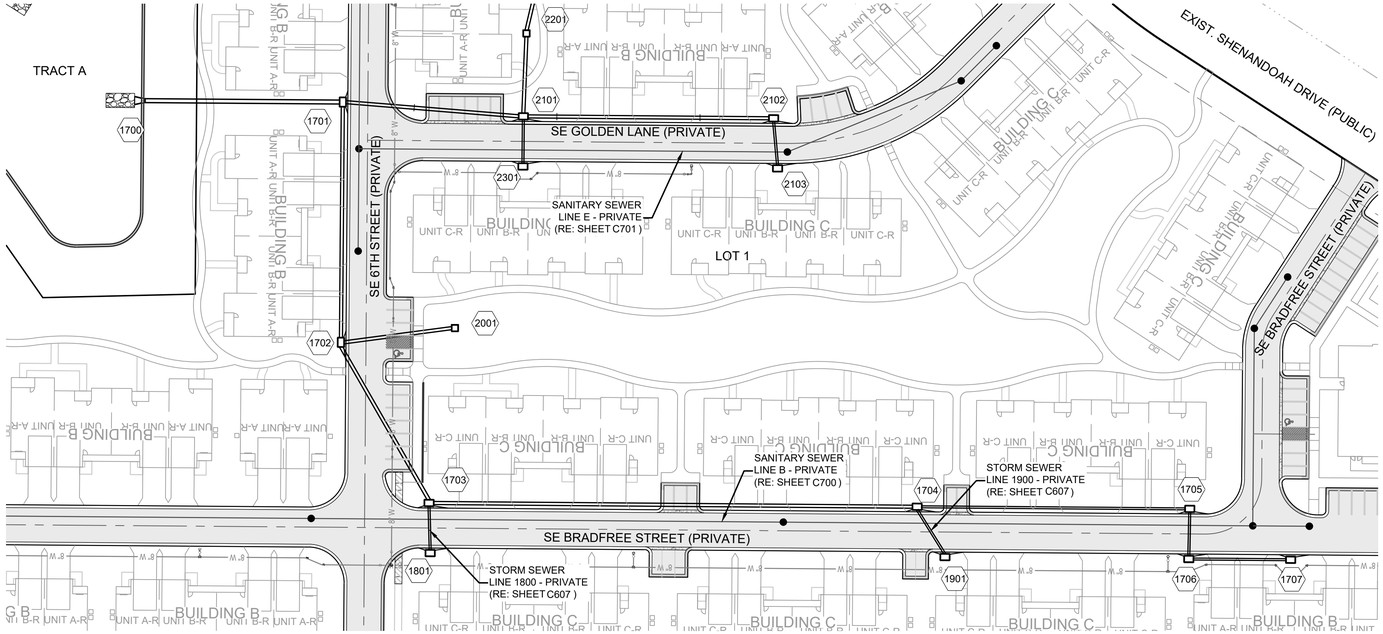
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

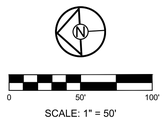
DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22.497

STORM SEWER
LINE 500

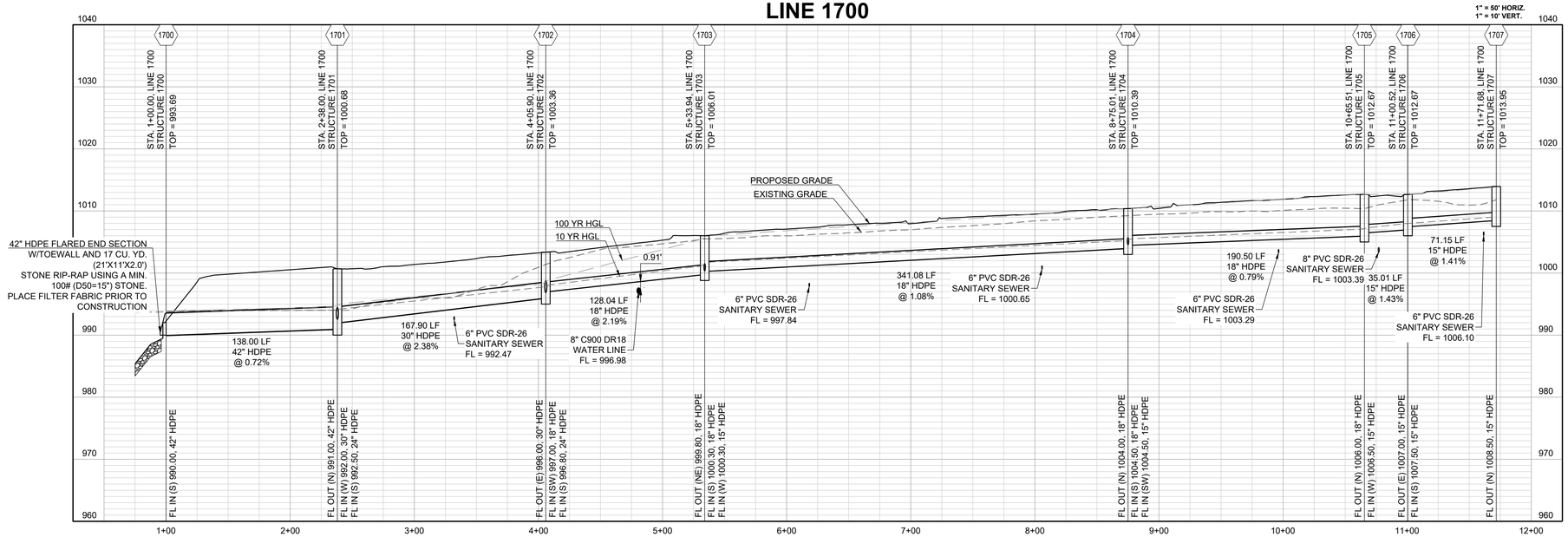
SHEET
C605



Storm Sewer Construction Notes	
Structure	Notes
1700	STA 1+00.00, LINE 1700 INSTALL 36" HDPE FLARED END SECTION W/TOEWALL AND 12 CU. YD. (18'X9'X2.0') STONE RIP-RAP USING A MIN. 100# (D50=15") STONE. PLACE FILTER FABRIC PRIOR TO CONSTRUCTION N 998068.8668 E 2841866.3623
1701	STA 2+38.00, LINE 1700 INSTALL 6 X 4 CURB INLET N 997930.9896 E 2841860.5416
1702	STA 4+05.90, LINE 1700 INSTALL 6 X 4 CURB INLET N 997938.1655 E 2841692.7917
1703	STA 5+33.94, LINE 1700 INSTALL 6 X 4 CURB INLET N 997880.5592 E 2841578.4476
1704	STA 8+75.01, LINE 1700 INSTALL 6 X 4 CURB INLET N 997539.7940 E 2841563.8845
1705	STA 10+65.51, LINE 1700 INSTALL 6 X 4 CURB INLET N 997349.4678 E 2841555.7482
1707	STA 11+71.68, LINE 1700 INSTALL 6 X 4 CURB INLET N 997280.2711 E 2841517.7952



SCALE: 1" = 50'



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STATE OF MISSOURI
PROFESSIONAL ENGINEER
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

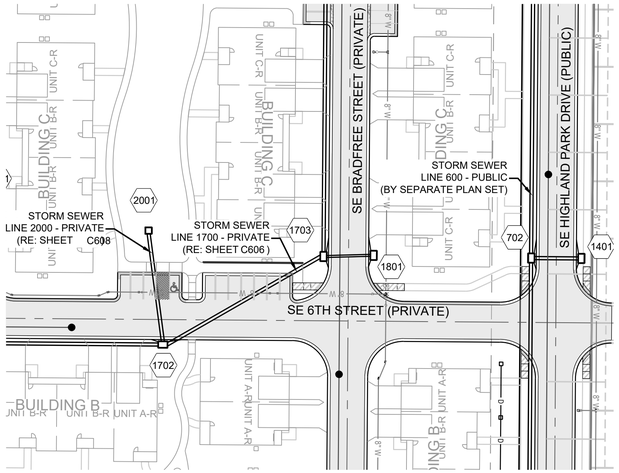
REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22.067

STORM SEWER LINE 1700

SHEET
C606

Storm Sewer Construction Notes	
Structure	Notes
1801	STA 1+35.01, LINE 1800 INSTALL 6 X 4 CURB INLET N 997880.9969 E 2841543.4388

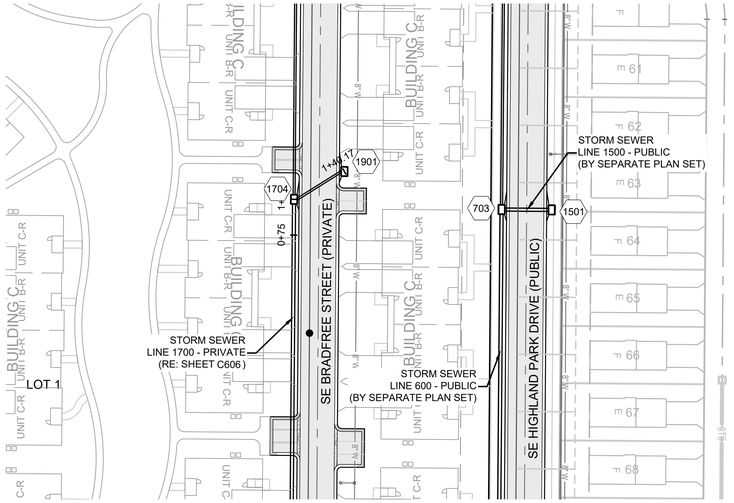




0 50' 100'

SCALE: 1" = 50'

Storm Sewer Construction Notes	
Structure	Notes
1901	STA 1+40.17, LINE 1900 INSTALL 6 X 4 CURB INLET N 997521.5799 E 2841528.0763



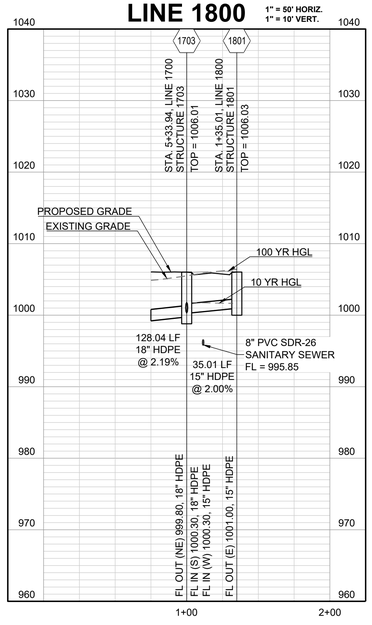


0 50' 100'

SCALE: 1" = 50'

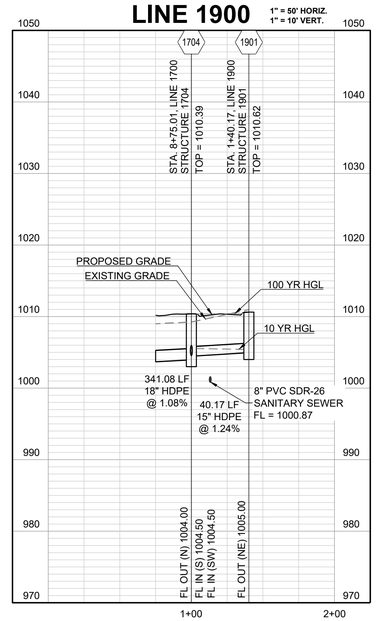
LINE 1800

1" = 50' HORIZ.
1" = 10' VERT.



LINE 1900

1" = 50' HORIZ.
1" = 10' VERT.



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08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

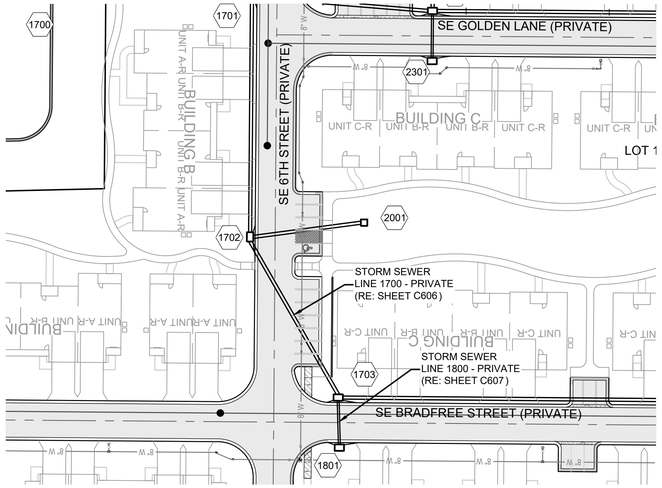
REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22.007

STORM SEWER
LINES 1800 & 1900

SHEET
C607

Storm Sewer Construction Notes	
Structure	Notes
2001	STA 1+80.26, LINE 2000 INSTALL 4 X 4 AREA INLET N 997858.2200 E 2841699.9436

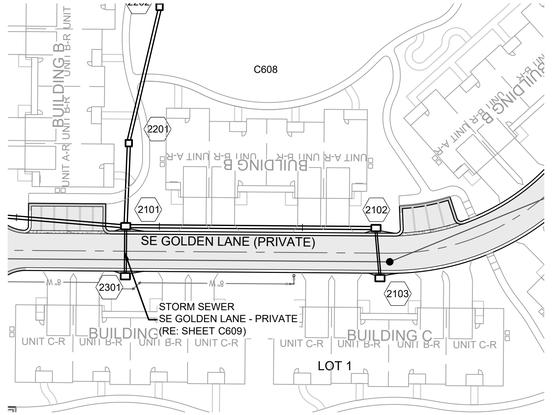




0 50' 100'

SCALE: 1" = 50'

Storm Sewer Construction Notes	
Structure	Notes
2101	STA 2+26.53, LINE 2100 INSTALL 6 X 4 CURB INLET N 997805.2762 E 2841846.1494
2102	STA 4+01.42, LINE 2100 INSTALL 6 X 4 CURB INLET N 997630.5469 E 2841838.6961
2103	STA 4+36.51, LINE 2100 INSTALL 6 X 4 CURB INLET N 997629.0117 E 2841803.6405



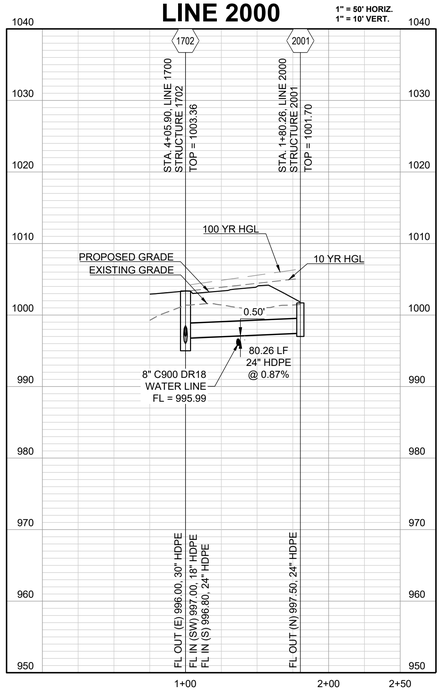


0 50' 100'

SCALE: 1" = 50'

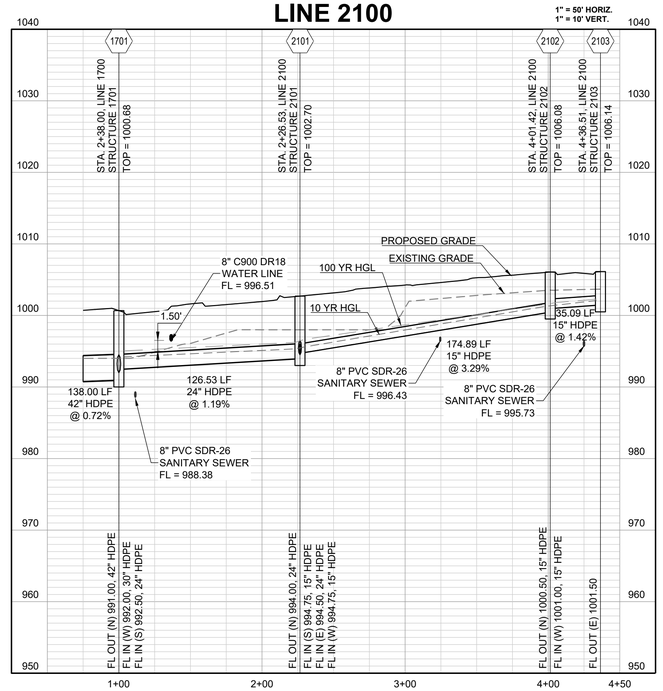
LINE 2000

1" = 50' HORIZ.
1" = 10' VERT.



LINE 2100

1" = 50' HORIZ.
1" = 10' VERT.



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REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

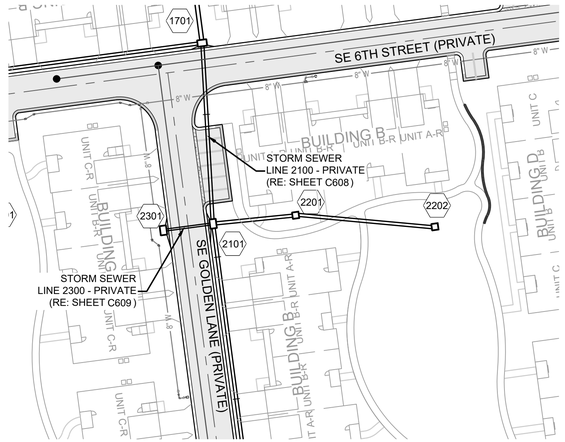
REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22.007

STORM SEWER
LINES 2000 & 2100

SHEET
C608

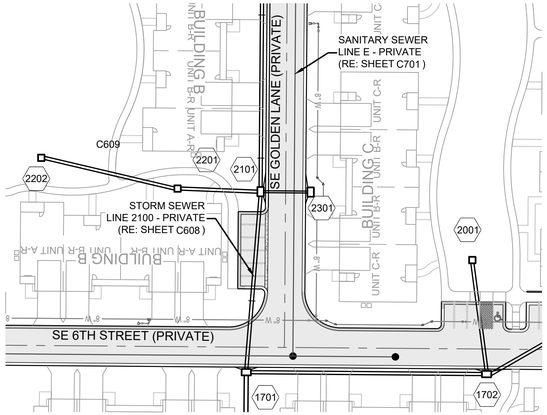
Storm Sewer Construction Notes	
Structure	Notes
2201	STA 1+58.00, LINE 2200 INSTALL 4 X 4 GRATE INLET N 997801.0920 E 2841903.9946
2202	STA 2+55.62, LINE 2200 INSTALL 4 X 4 AREA INLET N 997776.2979 E 2841998.4164





SCALE: 1" = 50'

Storm Sewer Construction Notes	
Structure	Notes
2301	STA 1+35.00, LINE 2300 INSTALL 6 X 4 CURB INLET N 997806.7672 E 2841811.1811

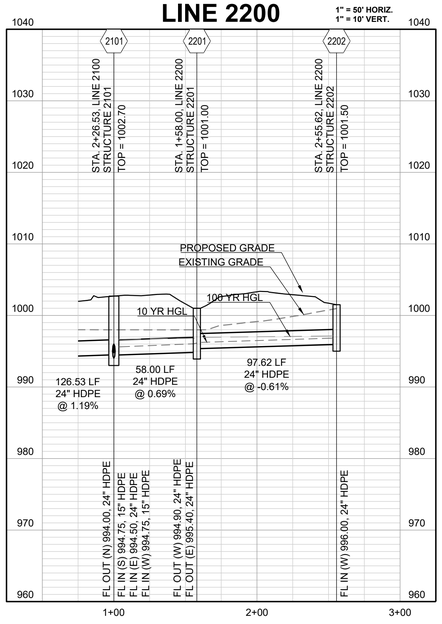




SCALE: 1" = 50'

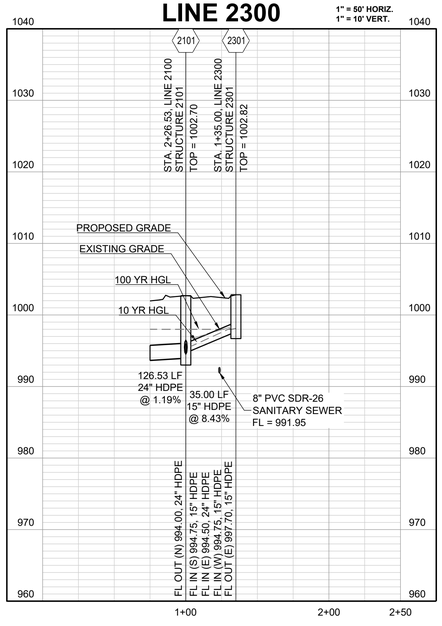
LINE 2200

1" = 50' HORIZ.
1" = 10' VERT.



LINE 2300

1" = 50' HORIZ.
1" = 10' VERT.



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REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

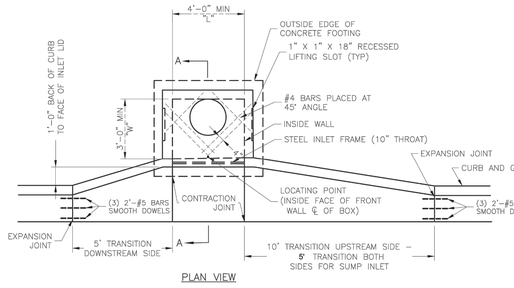
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

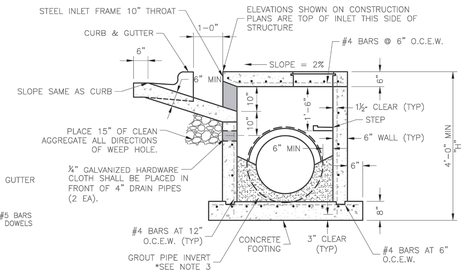
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CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22.007

STORM SEWER
LINES 2200 & 2300

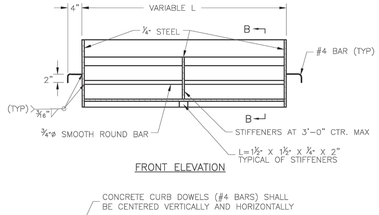
SHEET
C609



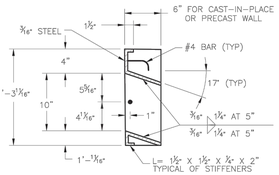
PLAN VIEW



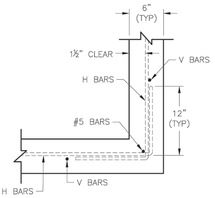
SECTION A–A



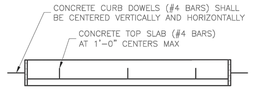
FRONT ELEVATION



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.

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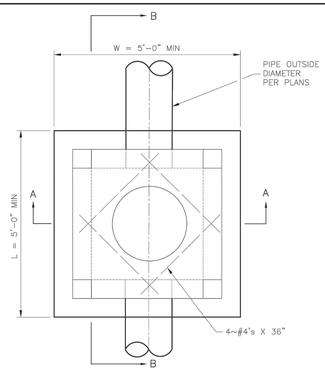
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

Project:
Client Name:

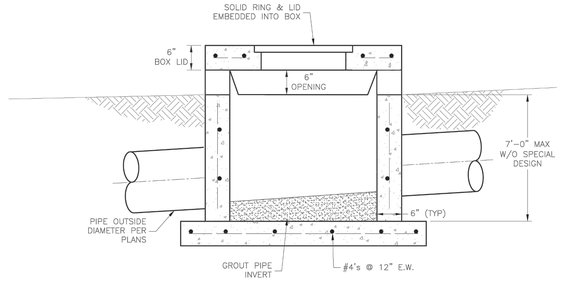
CURB INLET DETAIL

Drawn By: MJF
Checked By: DL
Date: 05/2021
Proj.#:

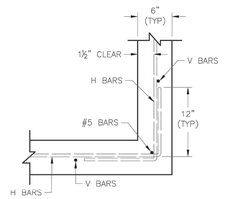
STM-1



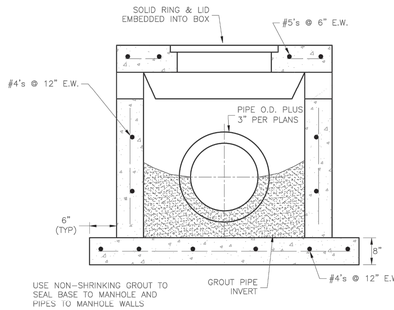
PLAN VIEW



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.

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

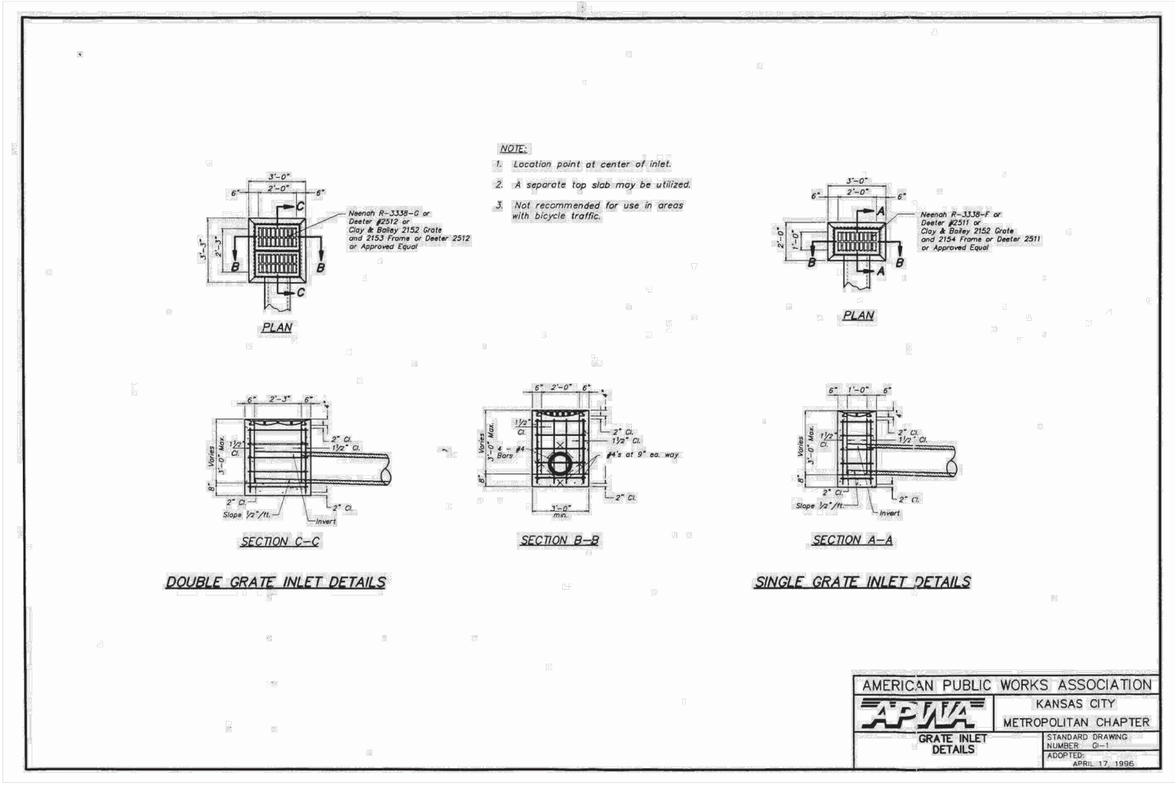
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

Project:
Client Name:

FIELD INLET DETAIL

Drawn By: MJF
Checked By: DL
Date: 05/2021
Proj. #:

STM-2



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WWW.SCHLAGEL-ASSOCIATES.COM
Missouri State Certificates of Authority
#E2000200800-F #LA2000105237 #LS2000208859-F

PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2009007268
PROFESSIONAL ENGINEER
STATE OF MISSOURI
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

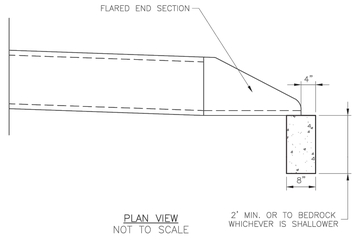
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE:	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22.007

STORM DETAILS

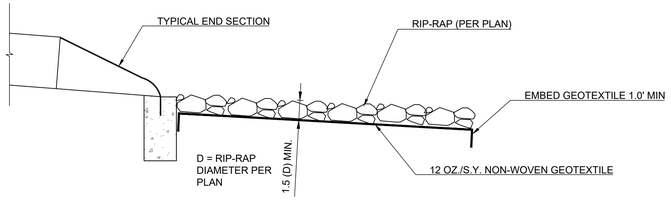
SHEET
C610



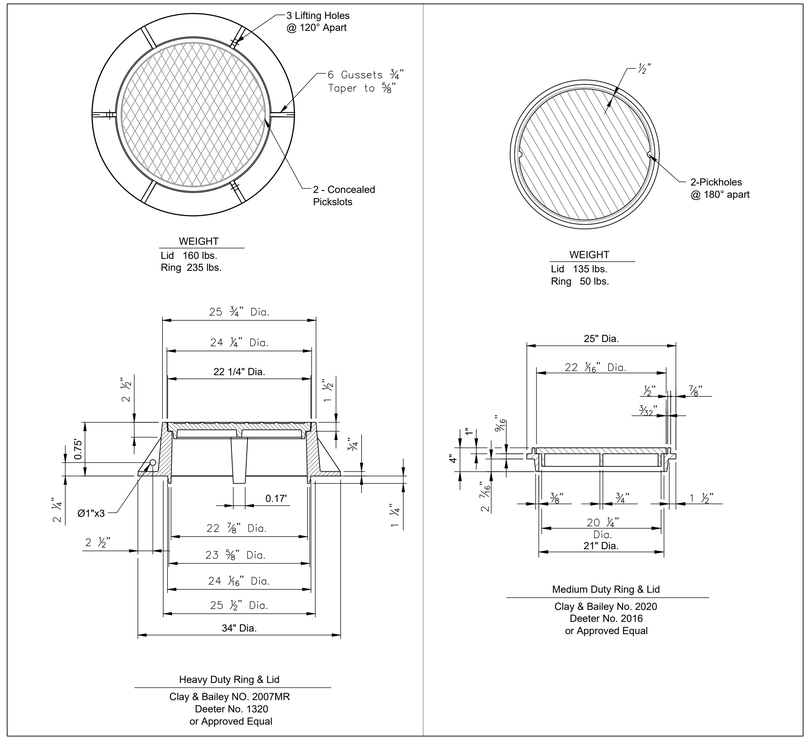
LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

Date: 05/2021
Drawn By: MJF
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FLARED END SECTION SUPPORT DETAIL — STM-5



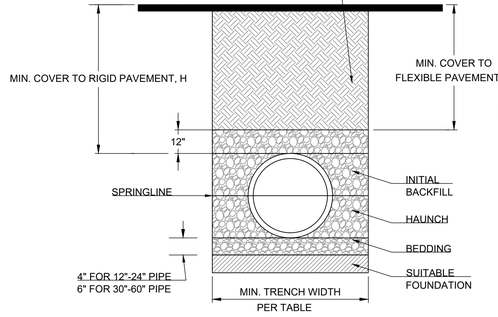
RIP-RAP AT OUTLET



Heavy Duty Ring & Lid
Clay & Bailey NO. 2007MR
Deeter No. 1320
or Approved Equal

Medium Duty Ring & Lid
Clay & Bailey No. 2020
Deeter No. 2016
or Approved Equal

MANHOLE RING AND COVER



RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

	SURFACE LIVE LOADING CONDITION	
PIPE DIAM.	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

7. TESTING: CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL MATERIAL TESTING REQUIRED FOR THEIR WORK. THIS INCLUDES SCHEDULING OF TESTS, COORDINATING AND PROVIDING ACCESS TO SAMPLE LOCATIONS, AND SATISFYING ALL TEST RESULT REPORTING REQUIREMENTS.

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Missouri State Certificates of Authority
#E2000030800-F #LA2001005237 #LS2002008859-F

PREPARED BY:



08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

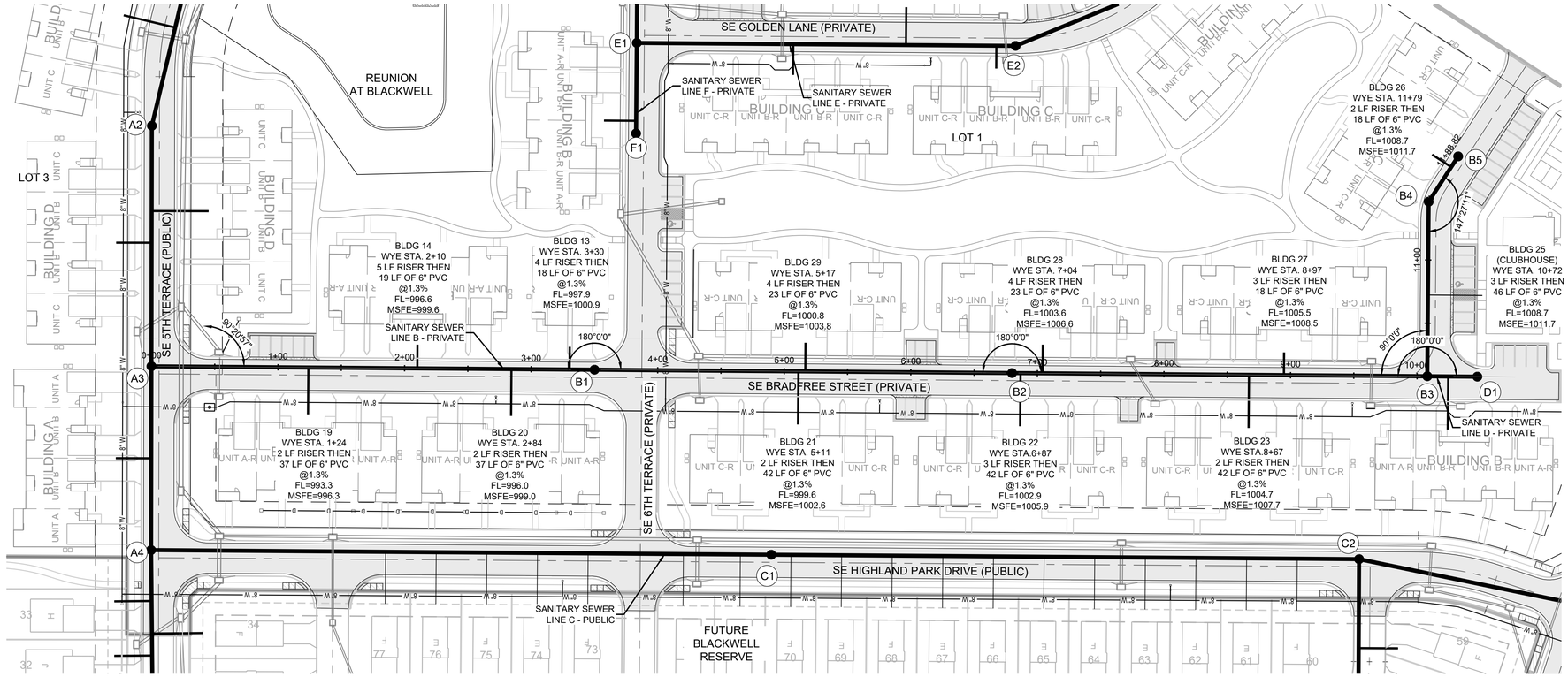
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
1 05/05/23	PER CITY COMMENTS
2 06/27/23	PER CITY COMMENTS
3 08/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-007

STORM DETAILS

SHEET
C611



MO GRS BENCHMARK:

STATION NAME - JA-90

KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988" LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.
N:1001052.8503, E:2845604.8272

ELEV. 997.045

PROJECT BENCHMARK:

"SQUARE" CUT IN TOP OF CONCRETE STORM MANHOLE
STORM MANHOLE IS LOCATED APPROX. 130 FEET EAST OF THE INTERSECTION OF SE JOEL AVE & BLUE PARKWAY AND 26 FEET SOUTH OF THE CENTERLINE OF BLUE PARKWAY.
N:996874.9690, E:2840937.1365

ELEV. 1005.719

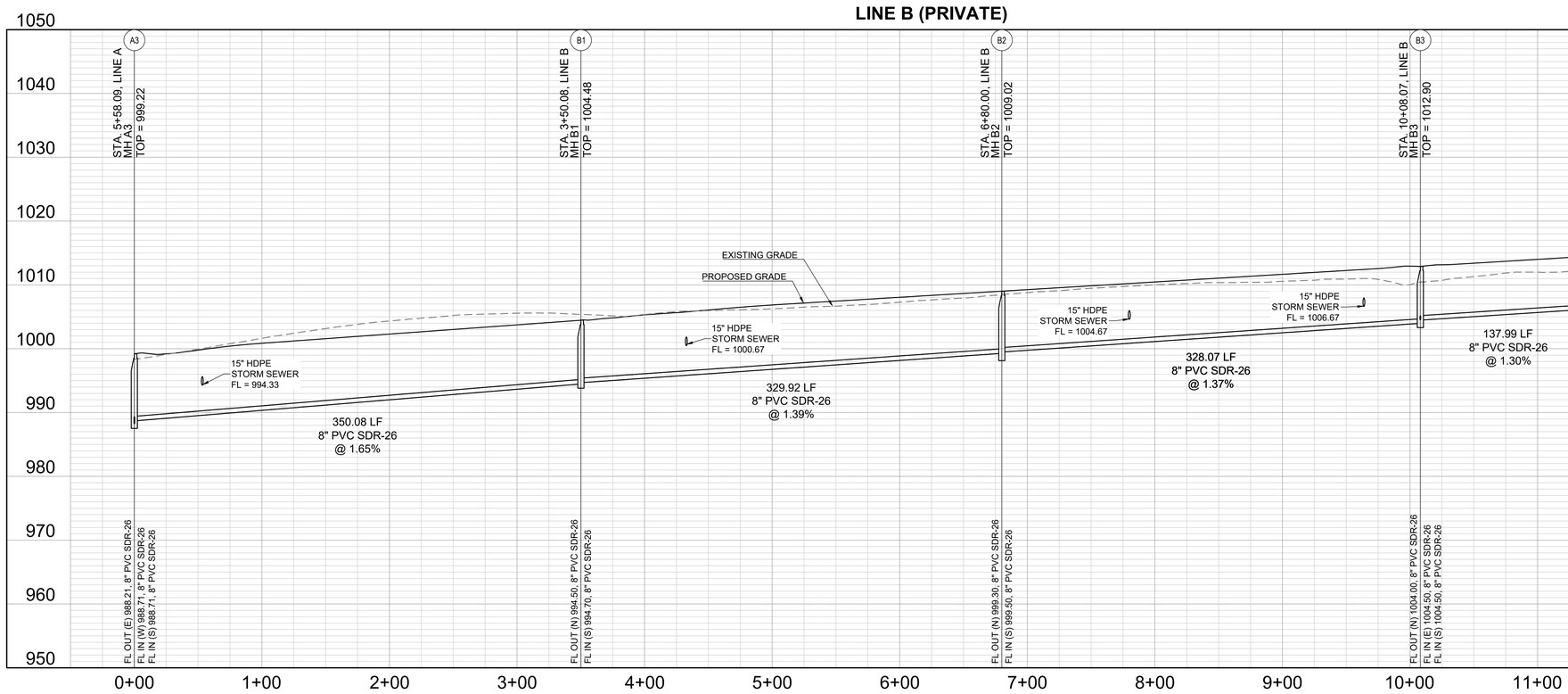
NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF LEE'S SUMMIT TECHNICAL SPECIFICATIONS.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.
3. ALL WYES ARE STATIONED USING MAIN LINE STATIONS.
4. ALL EXCAVATION IS CONSIDERED UNCLASSIFIED.
5. ALL SERVICE STUB LINES SHALL HAVE A MINIMUM PIPE STIFFNESS OF SDR-26.
6. ALL SANITARY SEWER MANHOLES ARE 4' DIAMETER UNLESS OTHERWISE NOTED.
7. ALL SERVICE STUBS SHALL BE 90° TO THE MAIN, UNLESS OTHERWISE NOTED.
8. REFERENCE SHEET 7 FOR "MANHOLE IN PAVED AREA" DETAIL FOR PROPOSED MANHOLES IN ASPHALT OR CONCRETE PAVEMENT. REINFORCED CONCRETE COLLARS SHALL BE INSTALLED SO THE CONCRETE COLLAR FORMS A DIAMOND-SHAPE WHEN VIEWED ALONG THE STREET.
9. PROPOSED GRADING IS FOR REFERENCE ONLY. CONTRACTOR IS TO GRADE WITHIN THE LIMITS OF DISTURBANCE AND PROVIDE SANITARY COVER AS REQUIRED BY THE CITY'S TECHNICAL SPECIFICATIONS.
10. MSFE = MINIMUM SERVICEABLE FLOOR ELEVATION.
11. SSNR = SEWER SERVICE NOT REQUIRED.
12. DDS = DISTANCE TO DOWNSTREAM MANHOLE.
13. ALL EXCAVATION IS CONSIDERED UNCLASSIFIED.
14. REFERENCE SHEET 7 FOR EXCAVATION BENEATH PROPOSED STREETS DETAIL.
15. EVERY STUB LINE SHALL BE MARKED AT THE END OF THE PIPE WITH A VERTICAL 2"x4" A MINIMUM OF SIX (6) FEET IN LENGTH.

Structure Table		
Structure Name	Structure Northing	Structure Easting
B1	997963.2724	2841570.4958
B2	997633.6584	2841556.3958
B3	997305.8924	2841542.3749
B4	997299.9950	2841680.2379
B5	997275.4687	2841715.2700



SCALE: 1" = 50'



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#E2000200800-F #LA2000105237 #LS2000208859-F

PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2003007203
PROFESSIONAL ENGINEER
STATE OF MISSOURI
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

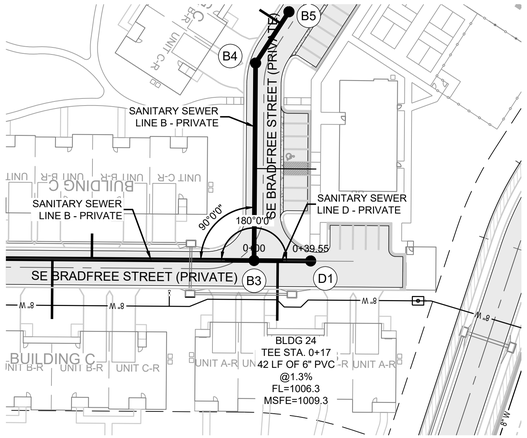
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22-067

SANITARY SEWER LINE B

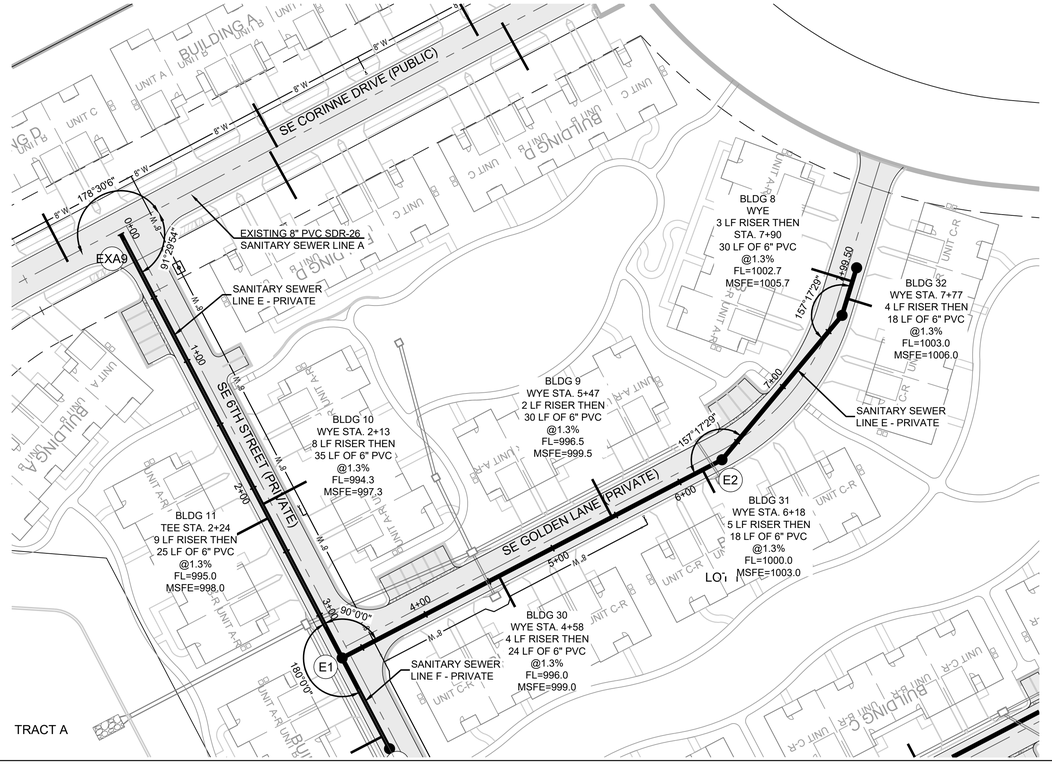
SHEET
C700



Structure Table		
Structure Name	Structure Northing	Structure Easting
D1	997266.3804	2841540.6847



SCALE: 1" = 50'



Structure Table		
Structure Name	Structure Northing	Structure Easting
E1	997920.8900	2841827.5597
E2	997621.7987	2841814.8014
E3	997498.6689	2841860.2655
E4	997473.2238	2841883.9724



SCALE: 1" = 50'

MO GRS BENCHMARK:

STATION NAME - JA-90

KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988" LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.
N:1001052.8503, E:2845604.8272

ELEV. 997.045

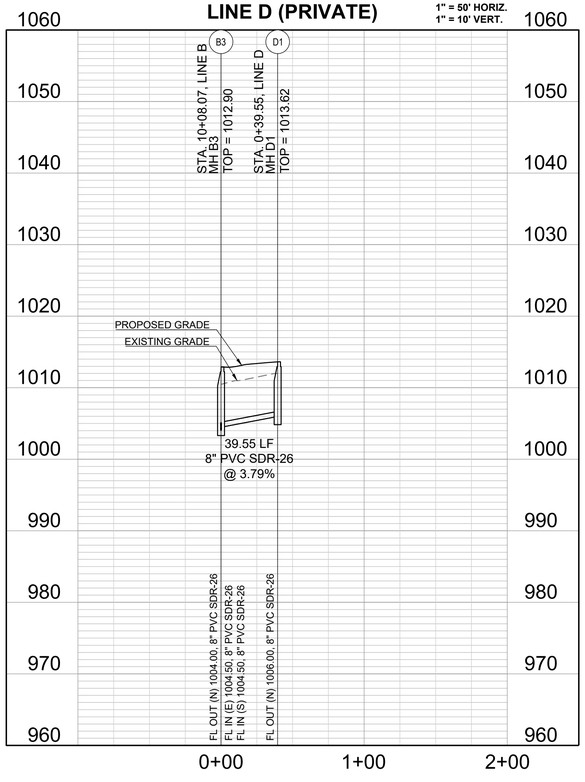
PROJECT BENCHMARK:

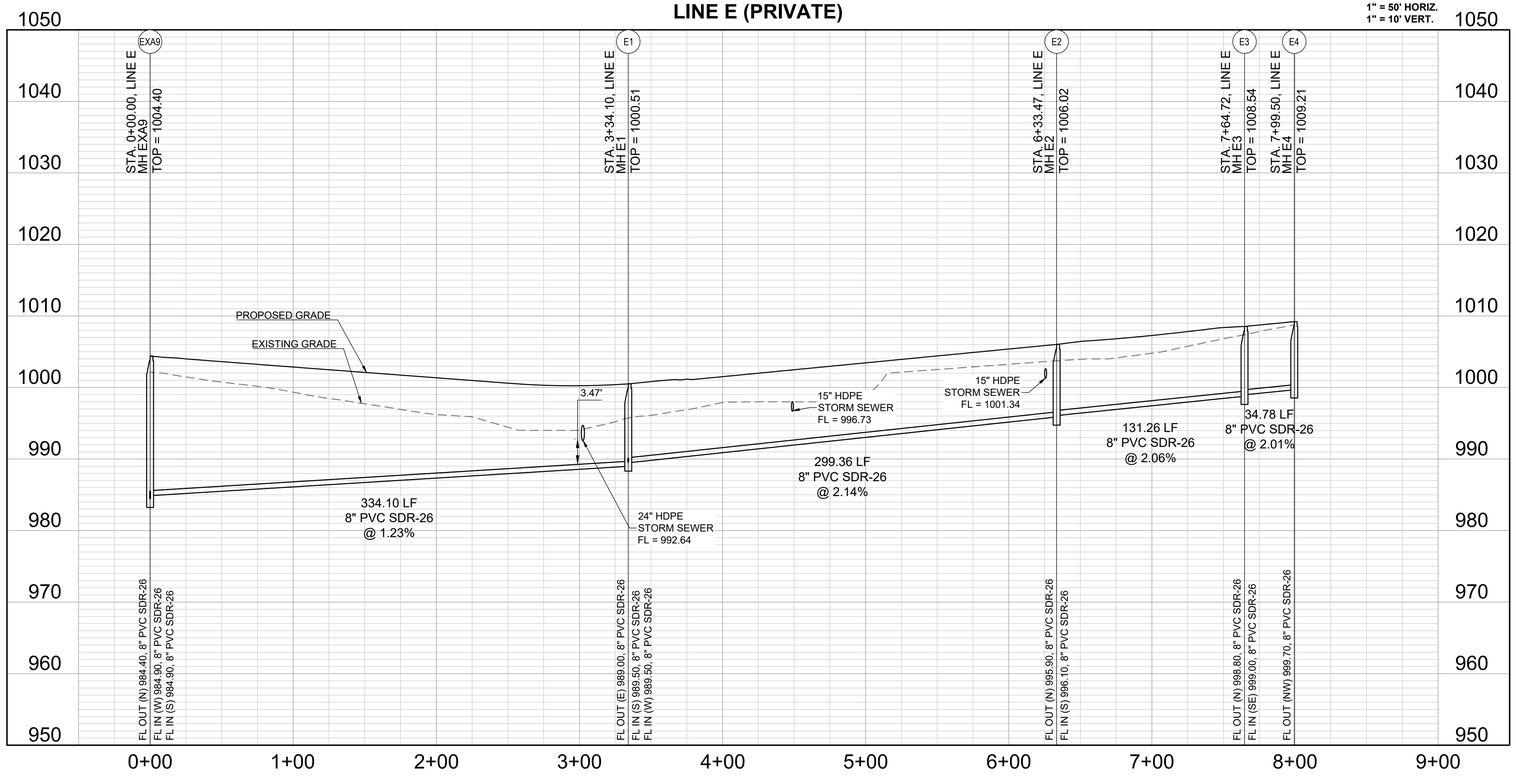
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STORM MANHOLE IS LOCATED APPROX. 130 FEET EAST OF THE INTERSECTION OF SE JOEL AVE & BLUE PARKWAY AND 26 FEET SOUTH OF THE CENTERLINE OF BLUE PARKWAY.
N:996874.9690, E:2840937.1365

ELEV. 1005.719

NOTES:

1. MSFE = MINIMUM SERVICEABLE FLOOR ELEVATION.
2. SSNR = SEWER SERVICE NOT REQUIRED.
3. DDS = DISTANCE TO DOWNSTREAM MANHOLE.
4. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF LEE'S SUMMIT TECHNICAL SPECIFICATIONS.
5. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.
6. ALL EXCAVATION IS CONSIDERED UNCLASSIFIED.
7. ALL EXCAVATION BENEATH PROPOSED STREETS SHALL BE BACKFILLED PER CITY STANDARD DETAIL 40-3 TO FOUR (4) FEET BACK OF CURB.
8. ALL TEES ARE STATIONED USING MAIN LINE STATIONS.
9. ALL SERVICE STUB LINES SHALL HAVE A MINIMUM PIPE STIFFNESS OF SDR 23.5.
10. EVERY STUB LINE SHALL BE MARKED AT THE END OF THE PIPE WITH A VERTICAL 2"x4" A MINIMUM OF SIX (6) FEET IN LENGTH.
11. PRE-BLAST SURVEY LIMITS TO STAY WITHIN THE TC/E.





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PREPARED BY:



SCHLAGEL & ASSOCIATES, P.A.

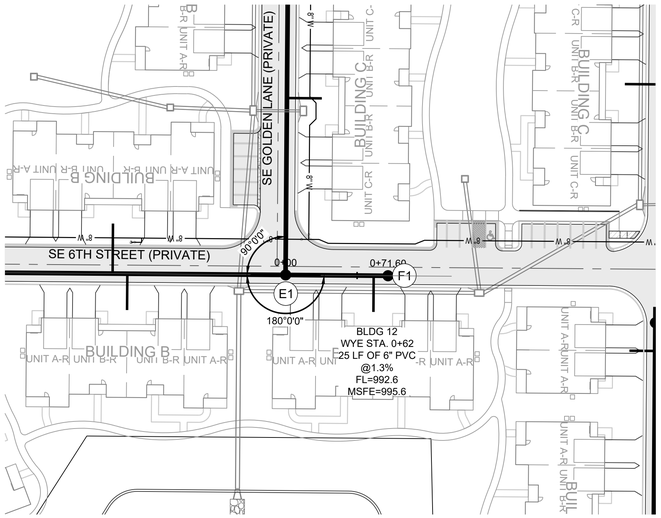
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
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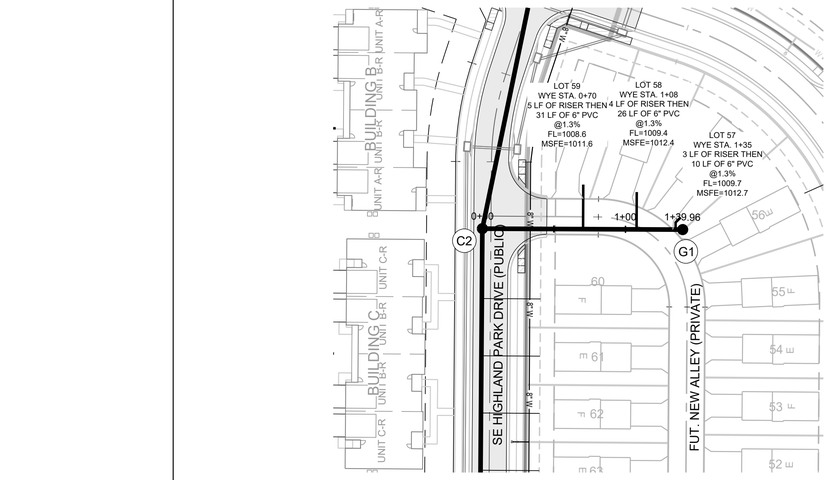
DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22.497

SANITARY SEWER LINES D & E

SHEET
C701



Structure Table		
Structure Name	Structure Northing	Structure Easting
F1	997923.9487	2841756.0575



Structure Table		
Structure Name	Structure Northing	Structure Easting
G1	997370.3667	2841259.9255

MO GRS BENCHMARK:

STATION NAME - JA-90

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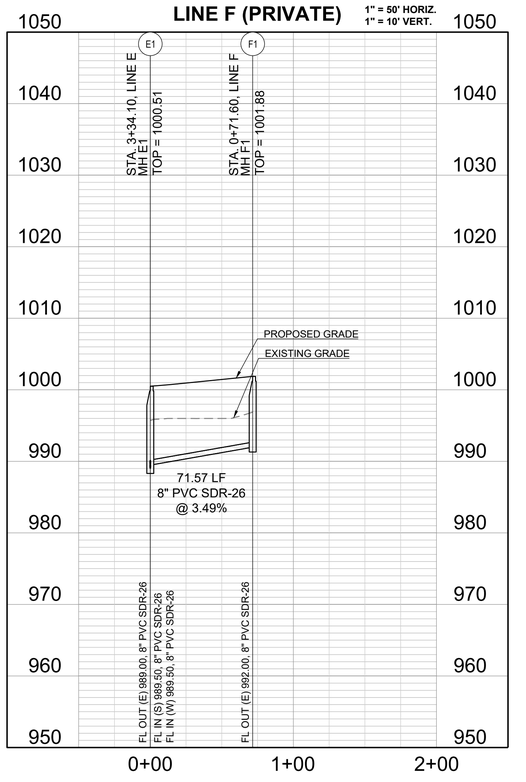
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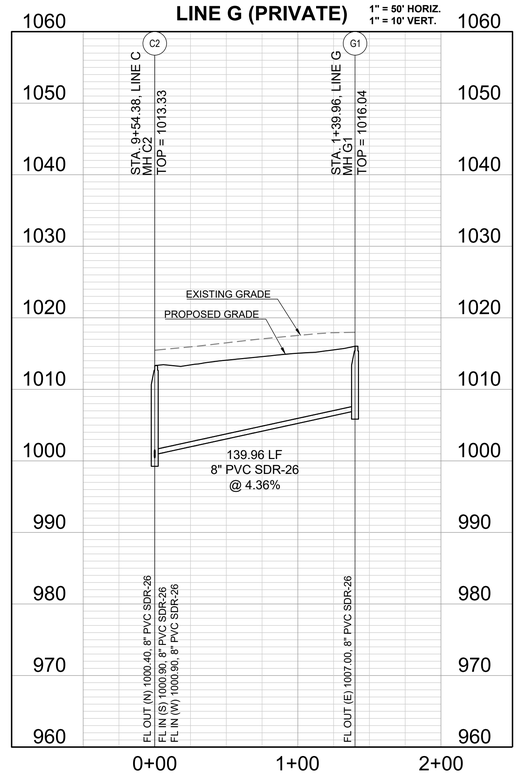


SCALE: 1" = 50'



SCALE: 1" = 50'





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PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2003007203
PROFESSIONAL ENGINEER
STATE OF MISSOURI

08.23.2023

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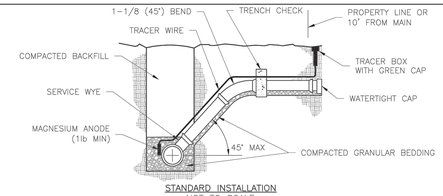
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

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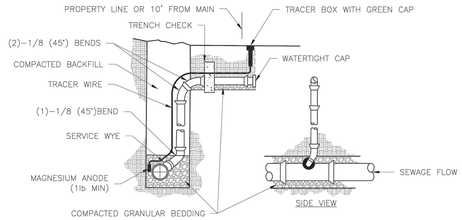
DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22.497

SANITARY SEWER LINES F & G

SHEET
C702



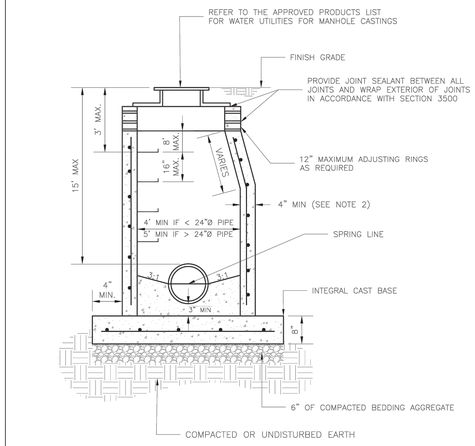
STANDARD INSTALLATION
NOT TO SCALE



VERTICAL RISER
NOT TO SCALE

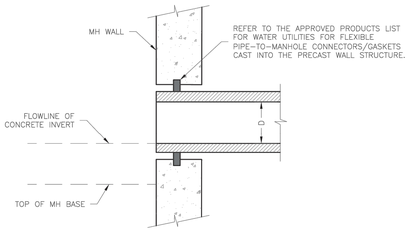
NOTES:
1. ALL SEWER STUBS SHALL BE CONSTRUCTED TO PROPERTY LINE OR 10' MINIMUM FROM THE MAIN, WHICHEVER IS GREATER. WHERE SIDEWALKS ARE PRESENT, CONTRACTOR SHALL EXTEND SERVICE LINE UNDER EXISTING SIDEWALK TO TWO FEET BEYOND.
2. IMPERVIOUS TRENCH CHECKS SHALL BE PLACED ON BUILDING SEWER STUBS (AT LEAST 5' AWAY FROM THE SANITARY SEWER MAIN).
3. TRENCH CHECKS ON THE BUILDING SEWER STUBS SHALL EXTEND 6" BELOW THE BOTTOM OF THE PIPE. LENGTH SHALL BE A MINIMUM OF 12". THE HEIGHT OF THE TRENCH CHECK SHALL EXTEND 12" ABOVE THE TOP OF THE PIPE. THE WIDTH OF THE TRENCH CHECK SHALL BE THE WIDTH OF THE TRENCH.
4. SEE SPECIFICATION SECTION 2100 FOR SEWER MAIN BEDDING AND BACKFILL.
5. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER.
6. FOR SERVICES, TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON LOCKABLE TOP. WIRE SHALL BE TAPED OR TIED TO THE PIPE AT 5' INTERVALS.
7. TRACER WIRE BOX SHALL BE INSTALLED WITHIN 1.0' OF PROPERTY LINE.
8. THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT CONNECTORS. WIRE NUTS SHALL NOT BE USED. A WATER–PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.

LEE'S SUMMIT MISSOURI	Date: 12/2015
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063	Drawn By: MJF
SANITARY SEWER STUB DETAIL	Checked By: DL
SAN-1	

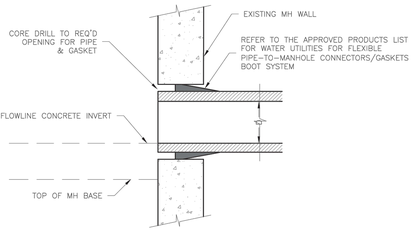


NOTES:
1. PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
2. A WALL THICKNESS NOT LESS THAN ONE–TWELFTH (D_M) OF THE INSIDE DIAMETER OR 4", WHICHEVER IS GREATER, SHALL BE USED WHEN THE MANHOLE DEPTH IS LESS THEN 15'.
3. WATERPROOFING SHALL BE REQUIRED ON THE OUTSIDE OF MANHOLES. THE WATERPROOFING SHALL CONSIST OF A TOTAL DRY FILM THICKNESS OF NOT LESS THAN 14 MILS OF BITUMINOUS COATING.
4. ONLY ECCENTRIC MANHOLE CONES WILL BE ALLOWED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
5. THE FILL CONCRETE FLOW CHANNEL FOR SIDE BRANCHES SHALL BE PLACED TO PROVIDE A SMOOTH TRANSITION INTO THE FLOW LINE.
6. REFER TO THE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR APPROVED MANHOLE GASKET MODELS.
7. REFER TO THE APPROVED PRODUCTS LIST FOR APPROVED STEPS.

LEE'S SUMMIT MISSOURI	Date: 12/2015
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063	Drawn By: SC
STANDARD SANITARY PRECAST MANHOLE	Checked By: DL
SAN-2	

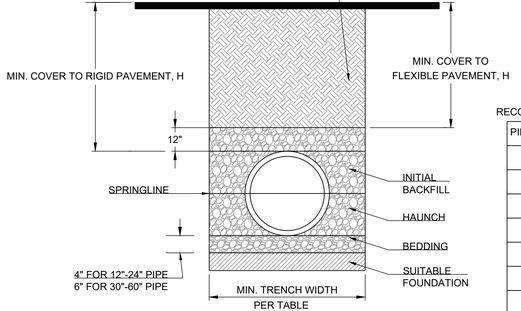


NEW MANHOLE



EXISTING MANHOLE

LEE'S SUMMIT MISSOURI	Date: 02/2013
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063	Drawn By: MJF
MANHOLE WALL CONNECTION	Checked By: DL
SAN-5	



RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

	SURFACE LIVE LOADING CONDITION	
PIPE DIAM.	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

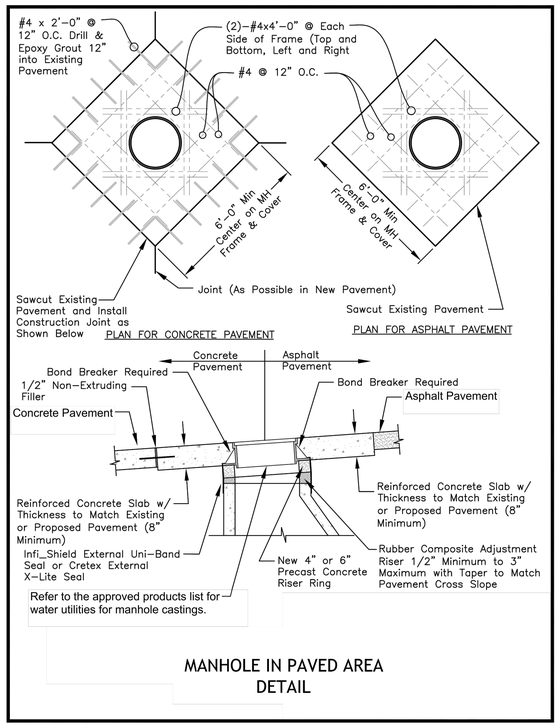
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).

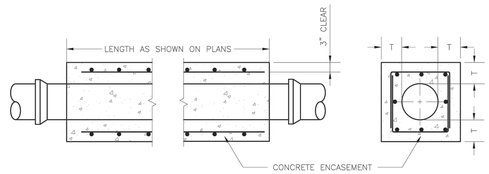
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

7. TESTING: CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL MATERIAL TESTING REQUIRED FOR THEIR WORK. THIS INCLUDES SCHEDULING OF TESTS, COORDINATING AND PROVIDING ACCESS TO SAMPLE LOCATIONS, AND SATISFYING ALL TEST RESULT REPORTING REQUIREMENTS.



MANHOLE IN PAVED AREA
DETAIL



NOTES:
1. FOR PIPES LESS THAN 15", T = 6" MIN.
2. FOR PIPES 15" THRU 36", T = 8" MIN.
3. INTERMEDIATE BELLS SHALL BE ENCASED.
4. REINFORCING STEEL SHALL BE #4 @ 12" O.C. EACH WAY WITH A MINIMUM REBAR LAP OF 12".

LEE'S SUMMIT MISSOURI	Date: 01/2016
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063	Drawn By: JN
PIPE ENCASEMENT DETAIL	Checked By: DL
SAN-7	

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WWW.SCHLAGEL-ASSOCIATES.COM
Missouri State Certificates of Authority
#E2002003800-F #LA2001005237 #LS2002008858-F

PREPARED BY:

STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2003007268
PROFESSIONAL ENGINEER
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

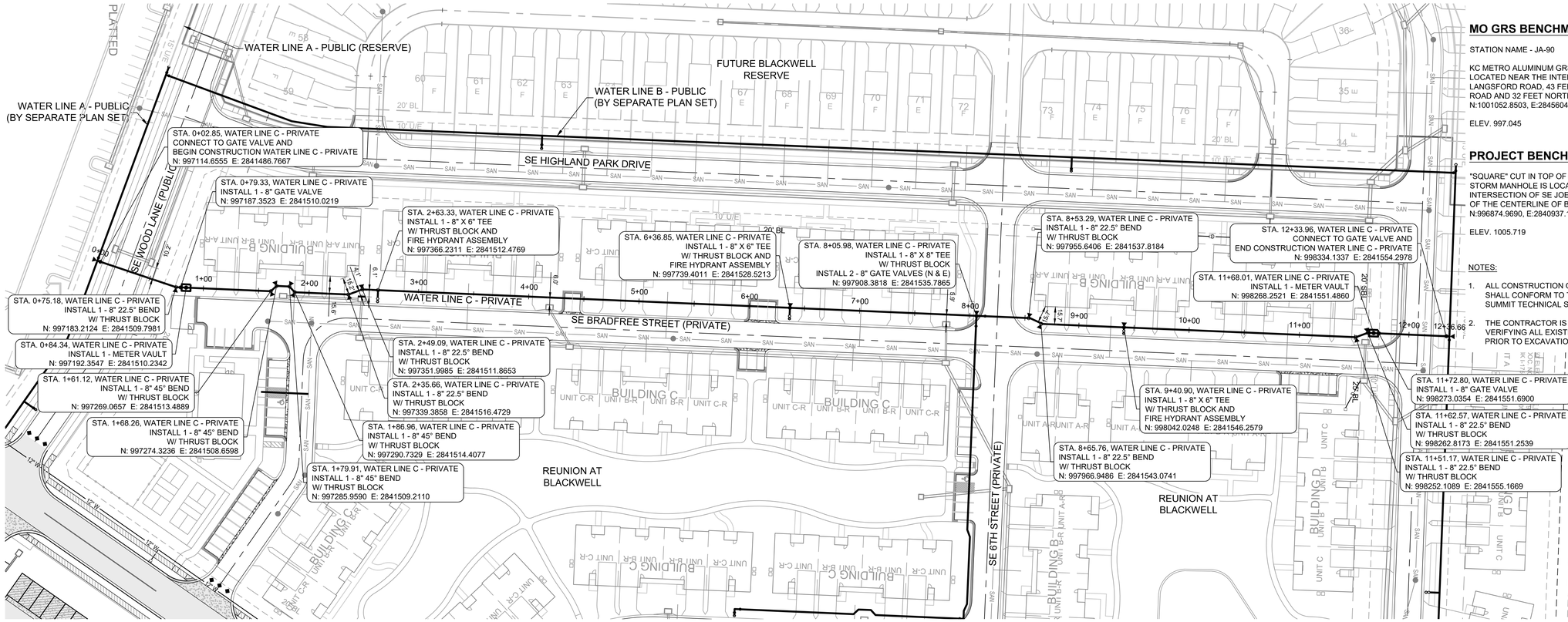
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ NUMBER: 22-067

SANITARY SEWER DETAILS

SHEET
C703



MO GRS BENCHMARK:

STATION NAME - JA-90

KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988" LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.
N:1001052.8503, E:2845604.8272

ELEV. 997.045

PROJECT BENCHMARK:

"SQUARE" CUT IN TOP OF CONCRETE STORM MANHOLE
STORM MANHOLE IS LOCATED APPROX. 130 FEET EAST OF THE INTERSECTION OF SE JOEL AVE & BLUE PARKWAY AND 26 FEET SOUTH OF THE CENTERLINE OF BLUE PARKWAY.
N:996874.9690, E:2840937.1365

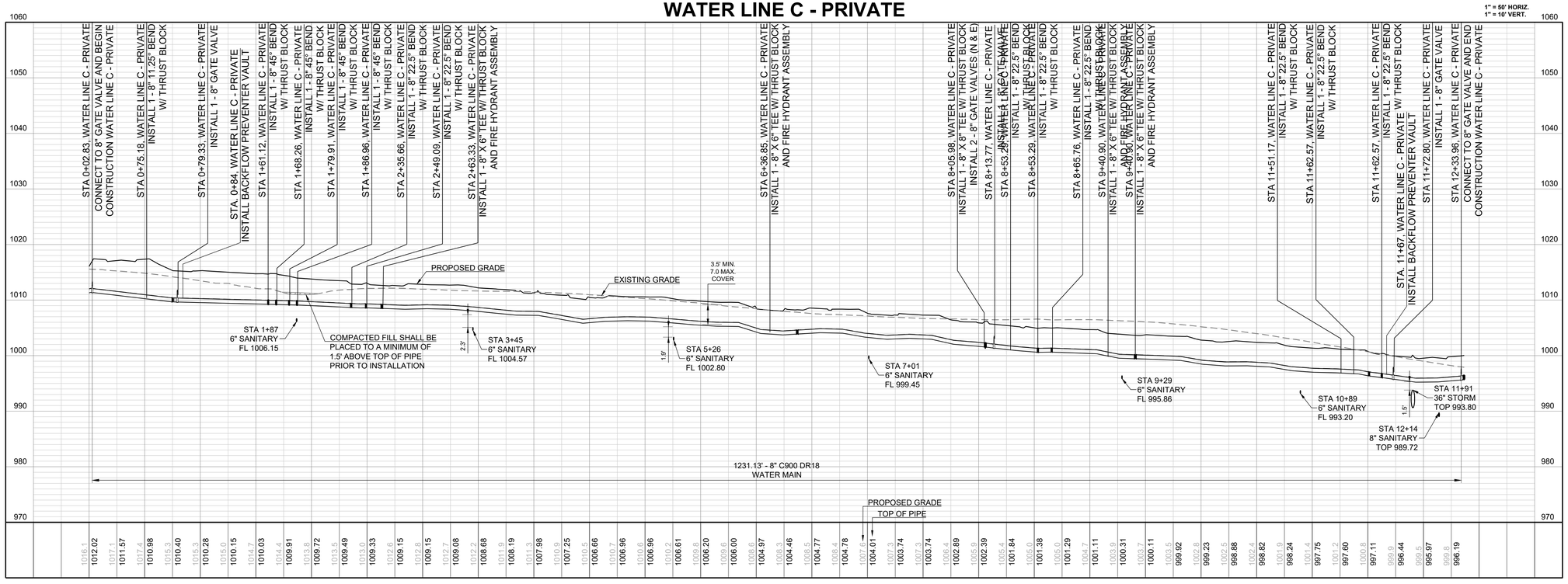
ELEV. 1005.719

NOTES:

1. ALL CONSTRUCTION ON THIS PROJECT SHALL CONFORM TO THE CITY OF LEE'S SUMMIT TECHNICAL SPECIFICATIONS.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.

WATER LINE C - PRIVATE

1" = 50' HORIZ.
1" = 10' VERT.



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(913) 492-6400 • Fax (913) 492-0400
WWW.SCHLAGEL.COM
Missouri State Certificates of Authority
#E2000030800-F #LA2001005237 #LS2002008859-F

PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2003007268
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

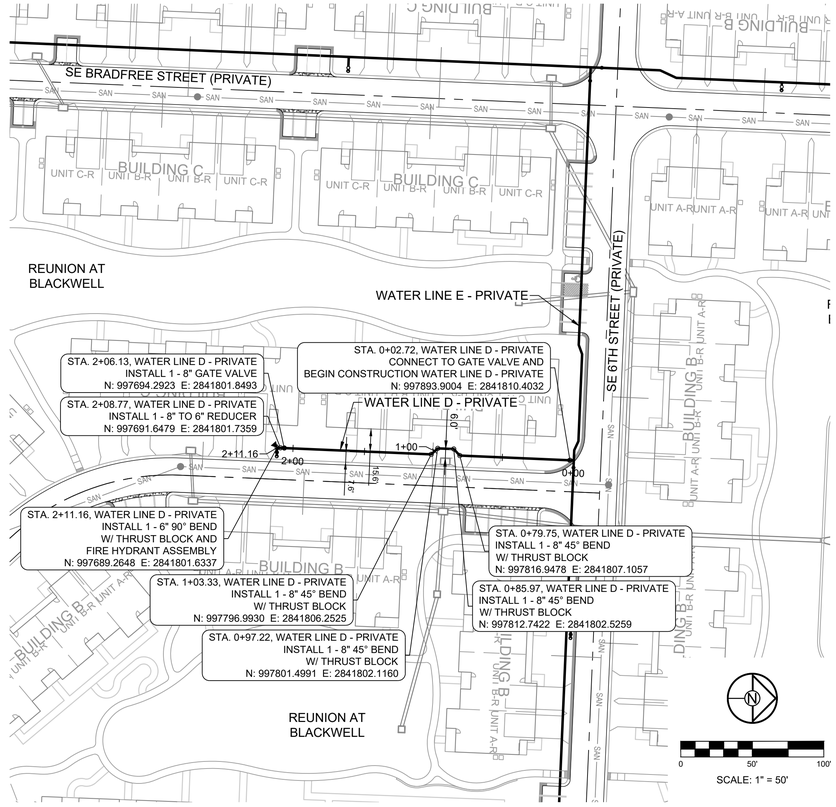
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

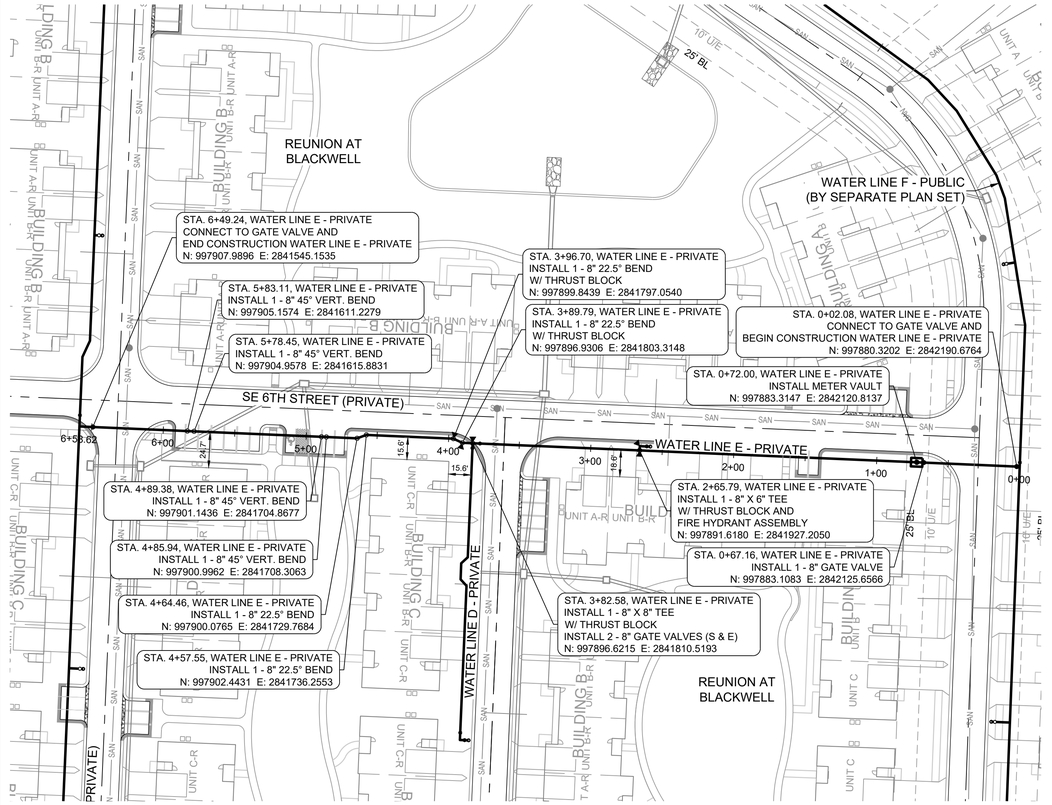
REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	JRJ
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22.497

WATER LINE C - PRIVATE

SHEET
C800





MO GRS BENCHMARK:

STATION NAME - JA-90

KC METRO ALUMINUM GRS DISK SET IN CONCRETE STAMPED "JA-90, 1988" LOCATED NEAR THE INTERSECTION OF LANGSFORD ROAD AND OLD LANGSFORD ROAD, 43 FEET SOUTHEAST OF THE CENTER OF LANGSFORD ROAD AND 32 FEET NORTH OF THE CENTER OF OLD LANGSFORD ROAD.
N:1001052.8503, E:2845604.8272

ELEV. 997.045

PROJECT BENCHMARK:

"SQUARE" CUT IN TOP OF CONCRETE STORM MANHOLE
STORM MANHOLE IS LOCATED APPROX. 130 FEET EAST OF THE INTERSECTION OF SE JOEL AVE & BLUE PARKWAY AND 26 FEET SOUTH OF THE CENTERLINE OF BLUE PARKWAY.
N:996874.9690, E:2840937.1365

ELEV. 1005.719

NOTES:

1. ALL CONSTRUCTION ON THIS PROJECT SHALL CONFORM TO THE CITY OF LEE'S SUMMIT TECHNICAL SPECIFICATIONS.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.

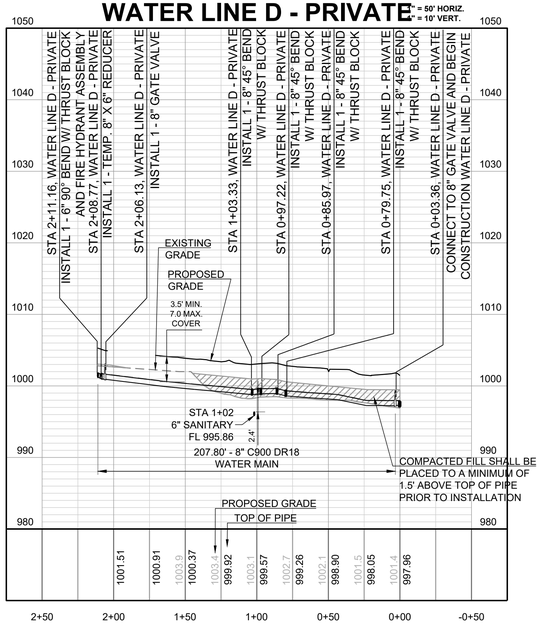
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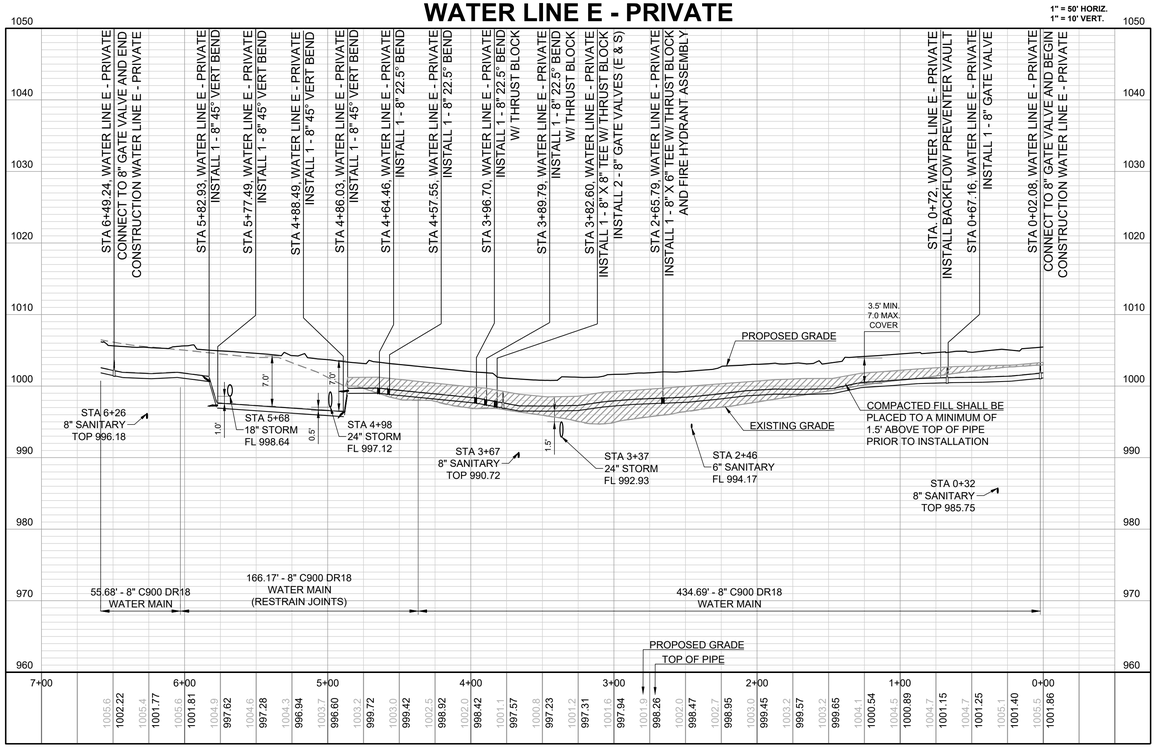
PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2003007268
PROFESSIONAL ENGINEER
STATE OF MISSOURI

08.23.2023

SCHLAGEL & ASSOCIATES, P.A.





REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION	DATE	DESCRIPTION
A	05/05/23	PER CITY COMMENTS
A	06/27/23	PER CITY COMMENTS
A	08/24/23	PER CITY COMMENTS
A		
A		
A		
A		

DRAWN BY: JRJ
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22.067

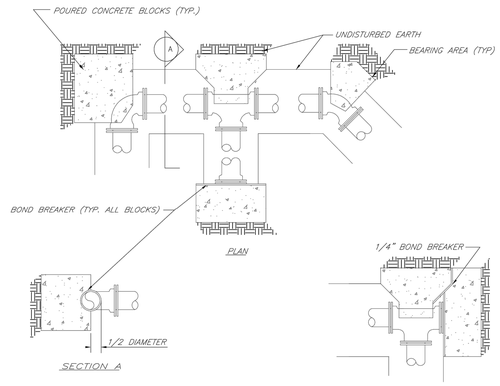
WATER LINE D & E - PRIVATE

SHEET
C801

REQUIRED CONCRETE BEARING AREA (SQUARE FEET – SF)

NOM. DIA. (INCHES)	180 TEE, PLUG	90 BEND	45 BEND	22.5 BEND	11.25 BEND
6	4.7	6.7	4.0	4.0	4.0
8	8.4	11.8	6.4	4.0	4.0
10	13.1	18.5	10.0	5.1	4.0
12	18.8	26.7	14.4	7.4	4.0
14	25.7	36.3	19.6	10.0	5.0
16	33.5	47.4	25.6	13.1	6.6
18	42.4	REST. JT.	32.5	16.5	8.3
20	REST. JT.	REST. JT.	40.1	20.4	10.3
24	REST. JT.	REST. JT.	REST. JT.	29.4	14.8

NOTES:
1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
3. BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.



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

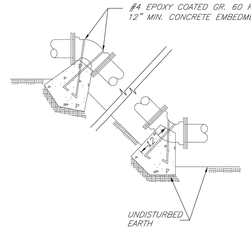
HORIZONTAL THRUST BLOCKS

Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: WAT-1 | Rev: 1/14 | Rev:

REQUIRED CONCRETE VOLUME (CUBIC FEET – CF)

NOM. DIA. (INCHES)	180 TEE, PLUG	90 BEND	45 BEND	22.5 BEND	11.25 BEND
6	50.5	71.4	38.6	19.7	9.9
8	89.8	126.9	68.7	35.0	17.6
10	140.2	198.3	107.3	54.7	27.5
12	202.0	REST. JT.	154.6	78.8	39.6
14	REST. JT.	REST. JT.	210.4	107.3	53.9
16	REST. JT.	REST. JT.	REST. JT.	140.1	70.4
18	REST. JT.	REST. JT.	REST. JT.	177.3	89.1
20	REST. JT.	REST. JT.	REST. JT.	REST. JT.	110.0
24	REST. JT.	REST. JT.	REST. JT.	REST. JT.	158.4

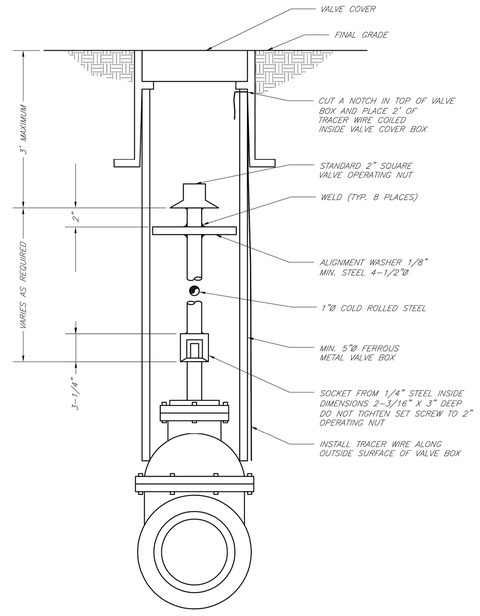
NOTES:
1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
3. BEARING MUST BE AGAINST UNDISTURBED SOIL.
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.



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

VERTICAL THRUST BLOCKS

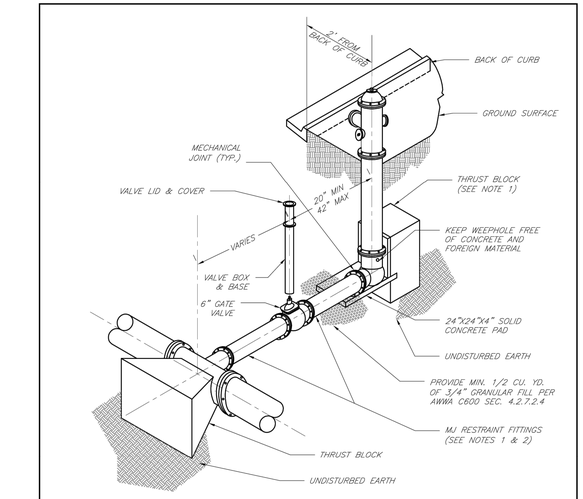
Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: WAT-2 | Rev: 1/14 | Rev:



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

VALVE STEM EXTENSION AND VALVE BOX

Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: WAT-9 | Rev: 1/14 | Rev:

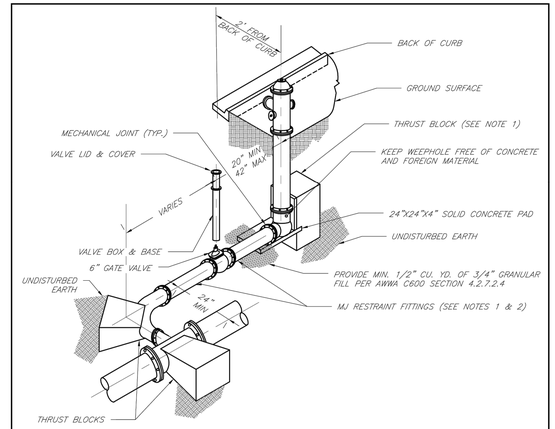


NOTES:
1. WHEN RETAINER GLANDS ARE USED IN LIEU OF MECHANICAL JOINT (MJ) RESTRAINT FITTINGS, HORIZONTAL THRUST BLOCKS ARE REQUIRED.
2. GATE VALVE MAY BE BOLTED DIRECTLY TO MJ RESTRAINT TEE.
3. SEE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR FIRE HYDRANT, VALVES, VALVE BOX LID, AND COVER.
4. BOTTOM HYDRANT FLANGE SHALL BE 2" TO 6" ABOVE FINISHED GRADE.
5. FOR STREETS WITHOUT CURBS FIRE HYDRANTS SHALL BE PLACED WITHIN 1 FOOT OF THE R/W LINE, BUT NOT MORE THAN 10' FROM EDGE OF PAVEMENT. FIRE HYDRANT SHALL NOT BE PLACED IN BOTTOM OF DITCH.
6. HYDRANT SHALL BE ROTATED AS DIRECTED BY INSPECTOR.

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

HYDRANT INSTALLATION – STRAIGHT SET

Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: WAT-7 | Rev: 1/14 | Rev:

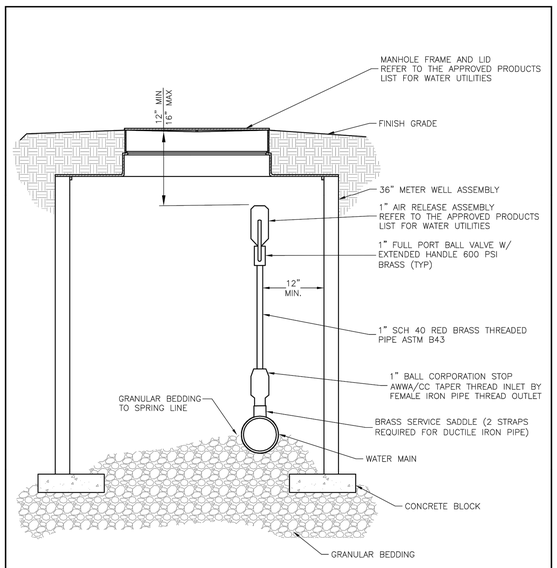


NOTES:
1. WHEN RETAINER GLANDS ARE USED IN LIEU OF MECHANICAL JOINT (MJ) RESTRAINT FITTINGS, HORIZONTAL THRUST BLOCKS ARE REQUIRED.
2. GATE VALVE MAY BE BOLTED DIRECTLY TO MJ RESTRAINT TEE.
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6. HYDRANT SHALL BE ROTATED AS DIRECTED BY INSPECTOR.

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

HYDRANT WITH 90 DEGREE BEND

Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: WAT-8 | Rev: 1/14 | Rev:



AIR RELEASE ASSEMBLY
NOT TO SCALE

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

AIR RELEASE ASSEMBLY

Date: 04/17 | Drawn By: MJF | Checked By: DL | WAT-10

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Missouri State Certificate of Authority #E2000030800-F #LA2001005237 #LS2000208859-F

PREPARED BY:

MARK ALLEN BREUER NUMBER PE-2003007208 STATE OF MISSOURI PROFESSIONAL ENGINEER
08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

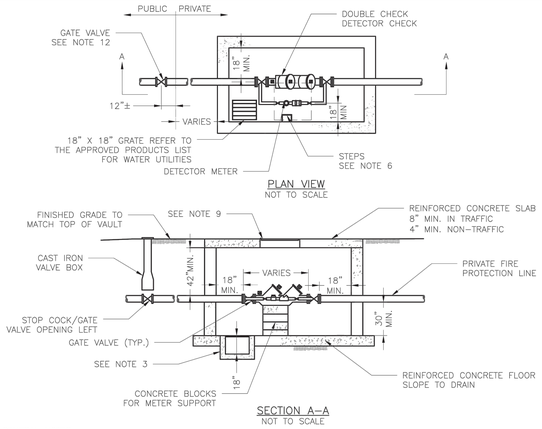
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
09/06/23	PER CITY COMMENTS
08/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22.407

WATER DETAILS

SHEET
C802



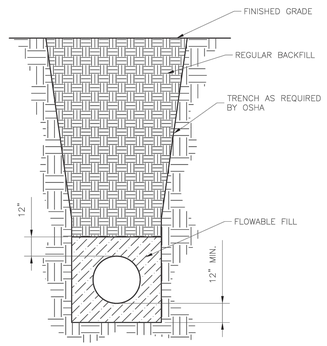
GENERAL NOTES:

1. METER VAULT WALLS TO BE POURED OR PRECAST CONCRETE.
2. METER VAULT ROOF TO BE REINFORCED CONCRETE OPENING CENTERED OVER DETECTOR METER.
3. METER VAULT TO BE LOCATED, WHEN POSSIBLE, OUTSIDE TRAFFIC AREA WHERE SURFACE WATER WILL NOT DRAIN INTO IT. VAULT MUST BE KEPT FREE OF WATER. PROVIDE CONCRETE SUMP AS A MINIMUM. WHERE PRACTICAL, PROVIDE A 2" PIPE DRAIN WITH AN ABOVE–GROUND DISCHARGE POINT. PROJECT OWNER MAY DESIRE A PERMANENTLY INSTALLED SUMP PUMP.
4. ALL PIPE SHALL BE DUCTILE IRON CLASS 50. ALL PIPE FITTINGS FROM THE CITY WATER MAIN THROUGH THE VAULT SHALL BE PROVIDED WITH RESTRAINED JOINT FITTINGS.
5. ALL FITTINGS TO BE BRASS.
6. STEPS SHALL BE IN ACCORDANCE WITH THE APPROVED PRODUCTS LIST FOR WATER UTILITIES AND SHALL BE ON 16" CENTERS.
7. A DEPARTMENT OF NATURAL RESOURCES APPROVED DOUBLE CHECK DETECTOR CHECK BACKFLOW PREVENTER MUST BE USED. FOR A COPY OF THE MISSOURI DEPARTMENT OF NATURAL RESOURCES APPROVED BACKFLOW PREVENTION ASSEMBLIES, CONTACT THE WATER UTILITIES OPERATIONS DIVISION AT 816–969–1940. AS OF JANUARY 1, 1987, THE DNR REQUIRES FIRE SPRINKLER SYSTEMS USING CHEMICALS TO HAVE A DNR APPROVED PRESSURE BACKFLOW PREVENTER INSTALLED, PRIOR TO THE MIXING POINT.
8. ALL VALVES SHALL HAVE RISING STEMS.
9. FOR MANHOLE COVERS, SELECT A MANHOLE FOUND ON THE APPROVED PRODUCTS LIST FOR WATER UTILITIES SUITABLE FOR EITHER TRAFFIC OR NON–TRAFFIC CONDITIONS.
10. A MINIMUM OF 18" CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING, VALVES, APPURTENANCES, ETC.
11. METER SHALL BE OWNED AND MAINTAINED BY THE WATER UTILITIES DEPARTMENT.
12. IF PUBLIC WATER IS LOCATED ON THE OPPOSITE SIDE OF THE STREET, THEN THE PUBLIC WATER MAIN RESPONSIBILITY OF THE WATER UTILITIES DEPARTMENT ENDS AT THE GATE VALVE NEAREST THE VAULT.

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

VAULT FOR DOUBLE CHECK DETECTOR CHECK

Date: 02/2016 | Drawn By: JN | Checked By: DL | WAT-12



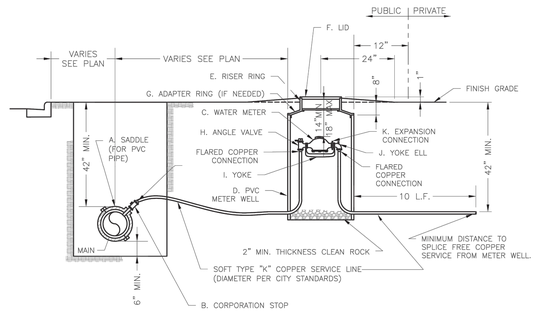
NOTES:

1. FLOWABLE FILL SHALL MEET THE REQUIREMENTS OF THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL.
2. REGULAR BACKFILL ABOVE THE TRENCH CHECK SHALL BE FREE OF DEBRIS, ORGANIC MATTER, AND STONES > 6" IN ANY DIMENSION.
3. TOP OF FLOWABLE BACKFILL SHALL EXTEND 12" ABOVE THE TOP OF THE PIPE.
4. LENGTH OF TRENCH CHECK SHALL BE A MINIMUM OF 12".

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

WATER TRENCH CHECK DETAIL

Date: 01/2016 | Drawn By: JN | Checked By: DL | WAT-6



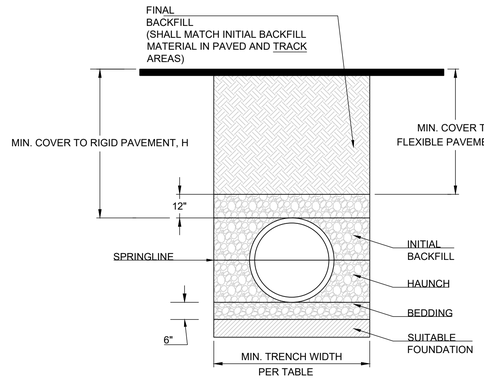
NOTES:

1. METER INSTALLATION SHALL NOT BE LOCATED IN AREAS SUBJECT TO VEHICULAR TRAFFIC OR IN CONCRETE PAVEMENT WITHOUT CITY APPROVAL.
2. IF METER IS TO BE LOCATED OTHER THAN IN FRONT OF PROPERTY LINE, CITY APPROVAL SHALL BE OBTAINED.
3. CITY TO FURNISH ITEMS A–K.
4. NO OTHER EQUIPMENT SHALL BE INSTALLED IN THIS PIT.
5. 42" MINIMUM BURY DEPTH FOR ALL SERVICE LINES.
6. EXCAVATION FOR TAP TO EXPOSE 4 LINEAR FEET OF MAIN.
7. NO SPLICES ALLOWED BETWEEN METER AND MAIN.
8. SERVICE CONNECTION TAP AT APPROXIMATELY 45 DEGREES.
9 LID AND RISER RING SHALL BE SET SO THAT GROUND WATER WILL DRAIN AWAY FROM THE WELL.
10. CONTACT WATER UTILITIES, 816–969–1900, FOR REQUIREMENTS OF A METER LARGER THAN 2"

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

SERVICE CONNECTION WITH METER WELL

Date: 06/2015 | Drawn By: JN | Checked By: DL | WAT-11



MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION	
	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 6" (100mm) .

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

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(913) 492-5158 • Fax (913) 492-8400
WWW.SCHLAGELASSOCIATES.COM
Missouri State Certificates of Authority
#E2000030800-F #LA2001005237 #LS2002008859-F

PREPARED BY:



08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

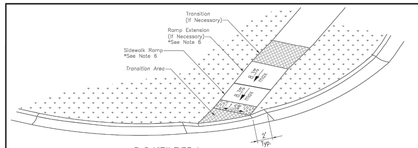
REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

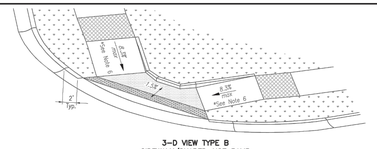
DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-007

WATER DETAILS

SHEET
C803



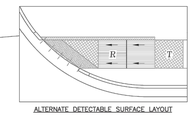
3-D VIEW TYPE A
SIDEWALK/SHARED-USE RAMP



3-D VIEW TYPE B
SIDEWALK/SHARED-USE RAMP



TYPE A SIDEWALK/SHARED-USE RAMP
Not to Scale



ALTERNATE DETECTABLE SURFACE LAYOUT

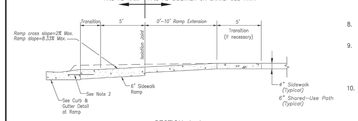
SIDEWALK/SHARED-USE PATH & SIDEWALK/SHARED-USE RAMP NOTES:

1. CURB RAMP OPENING, NOT INCLUDING FLARES, SHALL MATCH EXISTING SIDEWALK WIDTH AND OPENING SHALL BE AT LEAST 48" WIDE.
2. USE 18" LONG #4 EPOXY COATED TIE BARS @ 24" O.C. EMBED TIE BARS 9" IN EACH DIRECTION.
3. ALL RAMPS, SIDEWALKS, SHARED-USE PATHS SUBGRADE MUST BE OF STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
4. LONGITUDINAL JOINT SPACING TO MATCH WIDTH OF SIDEWALK.
5. ISOLATION JOINTS SHALL BE PLACED WHERE WALK ABUTS DRIVEWAYS AND SIMILAR STRUCTURES, AND 100' CENTERS MAX.
6. ADA MAXIMUM RAMP SLOPE = 8.33%
   ADA MAXIMUM CROSS SLOPE = 2.0%
   *ROADWAY EXCEPTION: WHERE EXISTING ROAD PROFILE GRADE DOES NOT ALLOW RAMP TO MEET RAMP SLOPE REQUIREMENT OF 8.33% OR LESS, THE RAMP SHALL BE EXTENDED TO A LENGTH OF 15 FEET TO MATCH EXISTING SIDEWALK. CROSS SLOPE OF RAMP SHALL BE 1.5%, ±0.5%.
7. TURNING SPACES SHALL BE 1.5%, ±0.5% SLOPE IN ANY DIRECTION. TURNING SPACES SHALL HAVE A MINIMUM 4'x4' TURNING AREA. TURNING SPACES, WITH A SIDEWALK CURB, SHALL HAVE A 5' TURNING AREA PERPENDICULAR TO THE SIDEWALK CURB.
8. FOR RETROFIT WORK, SLOPES TO BE DETERMINED IN FIELD BY CONTRACTOR AND APPROVED BY CITY INSPECTOR
9. RAMP EXTENSION AREA SHALL NOT BE USED AS TRANSITION TO EXISTING SIDEWALK. ANY TRANSITIONS REQUIRED TO MATCH RAMPS TO EXISTING SIDEWALK SHALL REQUIRE REMOVAL AND REPLACEMENT OF ADDITIONAL SIDEWALK BEYOND THE RAMP AREA. SIDEWALK TRANSITION LENGTH SHALL BE EQUAL TO OR GREATER THAN THE WIDTH OF THE EXISTING SIDEWALK. RAMP EXTENSIONS SHALL BE A CONTINUOUS SLOPE.
10. ALL SIDEWALK AND RAMP CONSTRUCTION SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).

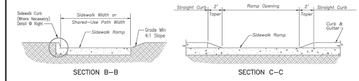
LEGEND

R	SIDEWALK RAMP
TS	TURNING SPACE
	DETECTABLE WARNING SURFACE
T	TRANSITION

TYPE B SIDEWALK/SHARED-USE RAMP
Not to Scale



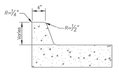
SECTION A-A



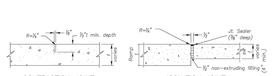
SECTION B-B

SECTION C-C

TYPE A & B SIDEWALK RAMP
Not to Scale

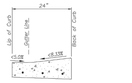


SIDEWALK CURB DETAIL
Not to Scale

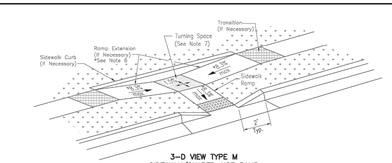


CONTRACTION JOINT ISOLATION JOINT

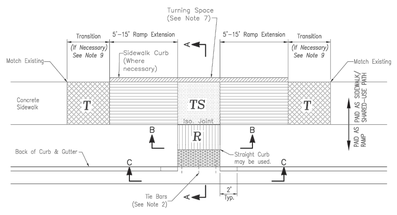
JOINT DETAILS
Not to Scale



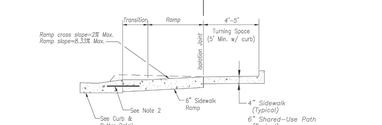
CURB & GUTTER DETAIL AT RAMP
Not to Scale



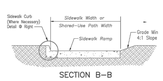
3-D VIEW TYPE M
SIDEWALK/SHARED-USE RAMP



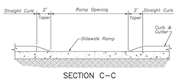
TYPE M SIDEWALK/SHARED-USE RAMP
Not to Scale



SECTION A-A



SECTION B-B

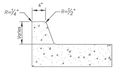


SECTION C-C

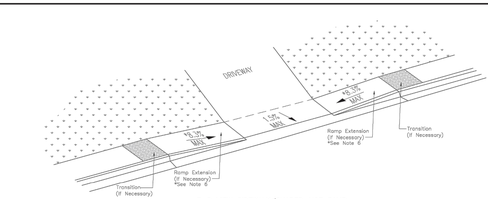
TYPE M SIDEWALK RAMP
Not to Scale



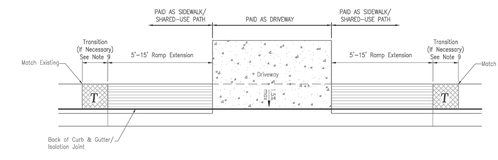
CURB & GUTTER DETAIL AT RAMP
Not to Scale



SIDEWALK CURB DETAIL
Not to Scale



3-D VIEW SIDEWALK/SHARED-USE RAMP
AT DRIVEWAY



SIDEWALK/SHARED USE RAMP
AT DRIVEWAY WITH ADJOINING CURB

SIDEWALK/SHARED-USE PATH & SIDEWALK/SHARED-USE RAMP NOTES:

1. CURB RAMP OPENING, NOT INCLUDING FLARES, SHALL MATCH EXISTING SIDEWALK WIDTH AND OPENING SHALL BE AT LEAST 48" WIDE.
2. USE 18" LONG #4 EPOXY COATED TIE BARS @ 24" O.C. EMBED TIE BARS 9" IN EACH DIRECTION.
3. ALL RAMPS, SIDEWALKS, SHARED-USE PATHS SUBGRADE MUST BE OF STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
4. LONGITUDINAL JOINT SPACING TO MATCH WIDTH OF SIDEWALK.
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7. TURNING SPACES SHALL BE 1.5%, ±0.5% SLOPE IN ANY DIRECTION. TURNING SPACES SHALL HAVE A MINIMUM 4'x4' TURNING AREA. TURNING SPACES, WITH A SIDEWALK CURB, SHALL HAVE A 5' TURNING AREA PERPENDICULAR TO THE SIDEWALK CURB.
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9. RAMP EXTENSION AREA SHALL NOT BE USED AS TRANSITION TO EXISTING SIDEWALK. ANY TRANSITIONS REQUIRED TO MATCH RAMPS TO EXISTING SIDEWALK SHALL REQUIRE REMOVAL AND REPLACEMENT OF ADDITIONAL SIDEWALK BEYOND THE RAMP AREA. SIDEWALK TRANSITION LENGTH SHALL BE EQUAL TO OR GREATER THAN THE WIDTH OF THE EXISTING SIDEWALK. RAMP EXTENSIONS SHALL BE A CONTINUOUS SLOPE.
10. ALL SIDEWALK AND RAMP CONSTRUCTION SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).

LEGEND

R	SIDEWALK RAMP
TS	TURNING SPACE
	DETECTABLE WARNING SURFACE
T	TRANSITION

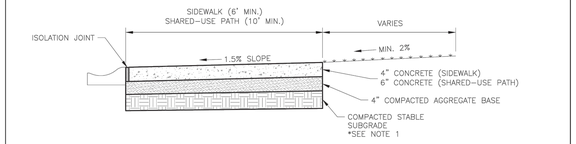
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

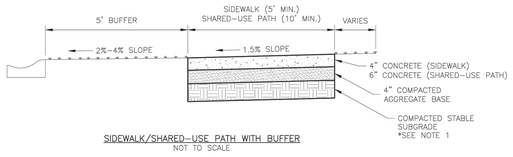
Project:
Sheet Name: ADA RAMP RETROFIT DETAIL

Drawn By: MJF
Checked By: DL
Date: 05/2023
Proj. #:

GEN-3A / GEN-3B



SIDEWALK/SHARED-USE PATH WITHOUT BUFFER
NOT TO SCALE



SIDEWALK/SHARED-USE PATH WITH BUFFER
NOT TO SCALE

GENERAL NOTES:

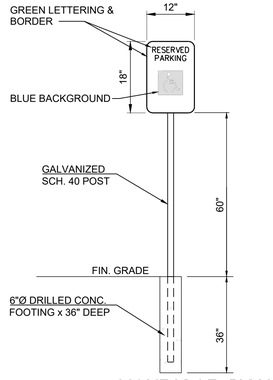
1. SUBGRADE MUST BE OF STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
2. 1.5% CROSS SLOPE MUST BE MAINTAINED THROUGH DRIVEWAYS.
3. KCMMB 4K CONCRETE MIX SHALL BE REQUIRED FOR ALL SIDEWALKS/SHARED-USE PATHS.
4. ALL SIDEWALK/SHARED-USE PATHS SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).
5. AN ISOLATION JOINT SHALL BE PLACED AT A MAXIMUM OF 100 FT. CONSTRUCTION JOINTS SHALL BE PLACED THE SAME WIDTH OF SIDEWALK/SHARED-USE PATHS, BUT NO GREATER THAN 10 FT.
6. AN ISOLATION JOINT SHALL BE PLACED WHERE THE SIDEWALK/SHARED-USE PATHS MEETS A RESIDENTIAL DRIVEWAY.
7. SHARED-USE PATHS WIDTH SHALL BE 10 FT. WIDE.
8. SIDEWALK/SHARED-USE PATHS FINISHING SHALL BE FULL BROOM FINISH OR AS DIRECTED BY CITY INSPECTOR.
9. WHITE CURING COMPOUND MUST BE APPLIED UNIFORMLY TO THE CONCRETE SURFACE IMMEDIATELY AFTER FINAL FINISHING.

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

SIDEWALK/SHARED-USE PATH DETAIL

Date: 05/2021
Drawn By: MJF
Checked By: DL

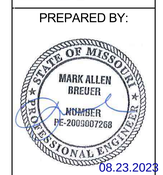
GEN-2



HANDICAP SIGN
(SEE PLAN FOR LOCATION)

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(913) 492-5158 • Fax (913) 492-8400
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Missouri State Certificates of Authority
#E2000030800-F #LAC2001005237 #LS2000208859-F

PREPARED BY:



08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

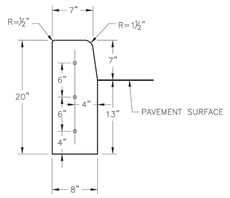
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

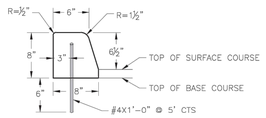
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CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22.497

GENERAL DETAILS

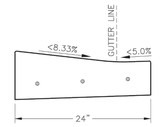
SHEET
C900



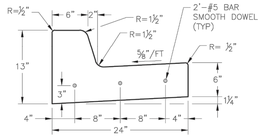
STRAIGHT CURB
(TYPE C-1)



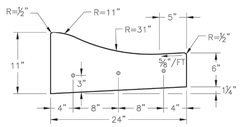
DOWELLED CURB
(TYPE DC)



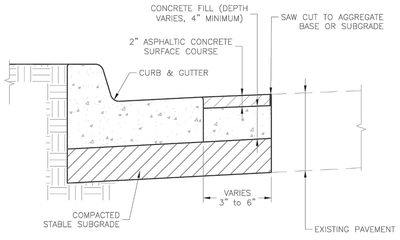
CURB & GUTTER DETAIL AT RAMP
(ADA SLOPE REQUIREMENTS)



STRAIGHT BACK CURB &
GUTTER
(TYPE CG-1)



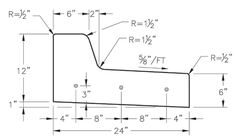
ROLL BACK CURB &
GUTTER
(TYPE CG-2)



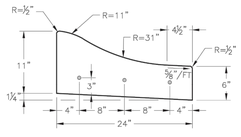
CURB REPLACEMENT DETAIL

GENERAL NOTES

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



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



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

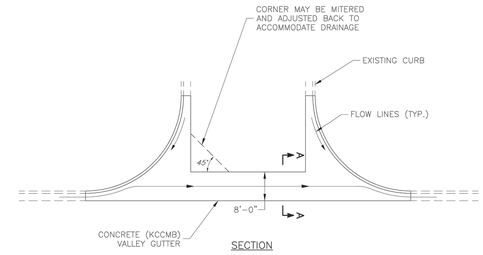
LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

Projects: STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

Sheet Name: CURB & GUTTER DETAIL

Drawn By: MJF
Checked By: DL
Date: 05/2021
Proj. #

GEN-4



SECTION

SECTION
Scale: 1" = 1'-0"

VALLEY GUTTER DETAIL
Intersection of Two Public Streets

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

VALLEY GUTTER DETAIL

Date: 05/2021
Drawn By: MJF
Checked By: DL

GEN-7

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PREPARED BY:

STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2009007208
PROFESSIONAL ENGINEER

08.23.2023

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

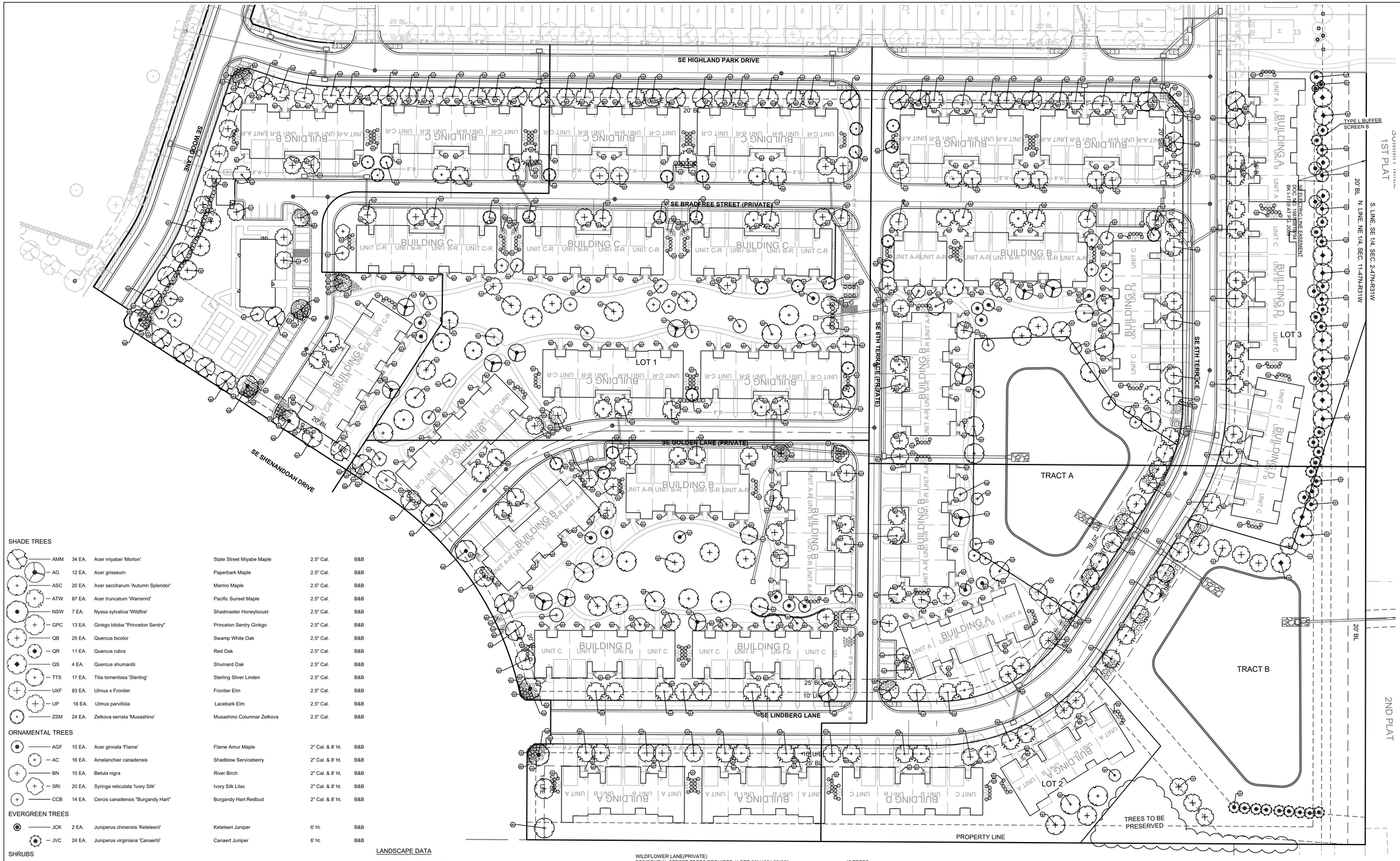
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
1 05/05/23	PER CITY COMMENTS
2 06/27/23	PER CITY COMMENTS
3 08/24/23	PER CITY COMMENTS
4	
5	
6	
7	
8	

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-007

GENERAL DETAILS

SHEET
C901



SHADE TREES

AMM	34 EA.	Acer miyabei 'Morton'	State Street Miyabe Maple	2.5" Cal.	B&B
AG	12 EA.	Acer grisseum	Paperbark Maple	2.5" Cal.	B&B
ASC	20 EA.	Acer saccharum 'Autumn Splendor'	Marmo Maple	2.5" Cal.	B&B
ATW	87 EA.	Acer truncatum 'Warrenrd'	Pacific Sunset Maple	2.5" Cal.	B&B
NSW	7 EA.	Nyssa sylvatica 'Wildfire'	Shadmaster Honeylocust	2.5" Cal.	B&B
GPC	13 EA.	Ginkgo biloba "Princeton Sentry"	Princeton Sentry Ginkgo	2.5" Cal.	B&B
QB	25 EA.	Quercus bicolor	Swamp White Oak	2.5" Cal.	B&B
QR	11 EA.	Quercus rubra	Red Oak	2.5" Cal.	B&B
QS	4 EA.	Quercus shumardii	Shumard Oak	2.5" Cal.	B&B
TTS	17 EA.	Tilia tomentosa 'Sterling'	Sterling Silver Linden	2.5" Cal.	B&B
UXF	83 EA.	Ulmus x Frontier	Frontier Elm	2.5" Cal.	B&B
UP	18 EA.	Ulmus parvifolia	Lacebark Elm	2.5" Cal.	B&B
ZSM	24 EA.	Zelkova serrata 'Musashino'	Musashino Columnar Zelkova	2.5" Cal.	B&B

ORNAMENTAL TREES

AGF	15 EA.	Acer ginnala 'Flame'	Flame Amur Maple	2" Cal. & 8' ht.	B&B
AC	16 EA.	Amelanchier canadensis	Shadblow Serviceberry	2" Cal. & 8' ht.	B&B
BN	10 EA.	Betula nigra	River Birch	2" Cal. & 8' ht.	B&B
SRI	20 EA.	Syringa reticulata 'Ivory Silk'	Ivory Silk Lilac	2" Cal. & 8' ht.	B&B
CCB	14 EA.	Cercis canadensis "Burgandy Hart"	Burgandy Hart Redbud	2" Cal. & 8' ht.	B&B

EVERGREEN TREES

JCK	2 EA.	Juniperus chinensis 'Keteleerii'	Keteleeri Juniper	6' ht.	B&B
JVC	24 EA.	Juniperus virginiana 'Canaertil'	Canaert Juniper	6' ht.	B&B

SHRUBS

BGV	966 EA.	Buxus x 'Green Velvet'	Green Velvet Boxwood	5 gal.	Cont.
BSW	141 EA.	Buxus sinica var. insularis 'Wintergreen'	Wintergreen Boxwood	5 gal.	Cont.
RAG	171 EA.	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant sumac	5 gal.	Cont.
SPM	30 EA.	Syringa patula 'Miss Kim'	Miss Kim Lilac	5 gal.	Cont.
SXP	27 EA.	Syringa x 'Penda'	Bloomerang Lilac	5 gal.	Cont.
VCK	44 EA.	Viburnum carlesii 'Korean Spice'	Koreanspice Viburnum	7 gal.	Cont.
VPS	26 EA.	Viburnum plicatum tomentosum 'Summer Snowflake'	Summer Snowflake Viburnum	7 gal.	Cont.
JHH	469 EA.	Juniperus horizontalis 'Hughes'	Hughes Juniper	5 gal.	Cont.
JVG	54 EA.	Juniperus virginana 'Grey Owl'	Grey Owl Juniper	5 gal.	Cont.

MODIFICATIONS REQUESTED:
1. REDUCE THE CALIPER OF THE SHADE TREES FROM 3 INCHES TO 2.5 INCHES FOR THE BUFFER SCREENING AREA.
2. REDUCE THE HEIGHT OF THE EVERGREEN TREES FROM 8 FEET TO 6 FEET.
3. REDUCE THE CALIPER OF THE ORNAMENTAL TREES FROM 3" TO 2".

LANDSCAPE DATA

STREET FRONTAGE LANDSCAPE(Sec. 8.790.A)

SE SHENANDOAH DRIVE(PUBLIC)
COLLECTOR PUBLIC TREES REQUIRED (1 PER 30')(792.68'/30') 26 TREES
COLLECTOR PUBLIC TREES PROVIDED 22 TREES*
COLLECTOR PUBLIC STREET SHRUBS REQUIRED (1 PER 20')(792.68'/20') 40 SHRUBS
COLLECTOR PUBLIC STREET SHRUBS PROVIDED 40 SHRUBS

SE GRIFFIN STREET(PUBLIC)
COLLECTOR PUBLIC TREES REQUIRED (1 PER 30')(1123.09'/30') 37 TREES
COLLECTOR PUBLIC TREES PROVIDED 37 TREES
COLLECTOR PUBLIC STREET SHRUBS REQUIRED (1 PER 20')(1123.09'/20') 56 SHRUBS
COLLECTOR PUBLIC STREET SHRUBS PROVIDED 56 SHRUBS

RILEY PLACE(PUBLIC)
RESIDENTIAL PUBLIC STREET TREES REQUIRED (1 PER 30')(1391.92'/30') 46 TREES
RESIDENTIAL PUBLIC STREET TREES PROVIDED 40 TREES*
RESIDENTIAL PUBLIC STREET SHRUBS REQUIRED (1 PER 20')(1391.92'/20') 70 SHRUBS
RESIDENTIAL PUBLIC STREET SHRUBS PROVIDED 70 SHRUBS

RILEY STREET(PUBLIC)
RESIDENTIAL PUBLIC STREET TREES REQUIRED (1 PER 30')(326.64'/30') 11 TREES
RESIDENTIAL PUBLIC STREET TREES PROVIDED 11 TREES
RESIDENTIAL PUBLIC STREET SHRUBS REQUIRED (1 PER 20')(326.64'/20') 16 SHRUBS
RESIDENTIAL PUBLIC STREET SHRUBS PROVIDED 16 SHRUBS

WILDFLOWER LANE(PRIVATE)
RESIDENTIAL STREET TREES REQUIRED (1 PER 30')(1264.58'/30') 42 TREES
RESIDENTIAL STREET TREES PROVIDED 23 TREES*
RESIDENTIAL STREET SHRUBS REQUIRED (1 PER 20')(1264.58'/20') 63 SHRUBS
RESIDENTIAL STREET SHRUBS PROVIDED 63 SHRUBS

WILDFLOWER TERRACE(PRIVATE)
RESIDENTIAL STREET TREES REQUIRED (1 PER 30')(535.09'/30') 18 TREES
RESIDENTIAL STREET TREES PROVIDED 10 TREES*
RESIDENTIAL STREET SHRUBS REQUIRED (1 PER 20')(535.09'/20') 27 SHRUBS
RESIDENTIAL STREET SHRUBS PROVIDED 27 SHRUBS

SE 6TH TERRACE(PRIVATE)
RESIDENTIAL STREET TREES REQUIRED (1 PER 30')(747.35'/30') 25 TREES
RESIDENTIAL STREET TREES PROVIDED 20 TREES*
RESIDENTIAL STREET SHRUBS REQUIRED (1 PER 20')(747.35'/20') 37 SHRUBS
RESIDENTIAL STREET SHRUBS PROVIDED 37 SHRUBS

OPEN YARD/SITE LANDSCAPE REQUIRED(Sec. 8.790.B)

LOT AREA 939,885.56 S.F.
BUILDING AREA 233,899.93 S.F.
TREES REQUIRED (1 PER 5,000 S.F. OF LOT AREA EXCL BLDG.)(705,985.63/5000) 141 TREES
TREES PROVIDED 188 TREES
(12 ADD FOR PRIVATE STREET TREES)

SHRUBS REQUIRED (2 PER 5,000 S.F. OF LOT AREA EXCL BLDG.)(705,985.63/5000X2) 282 SHRUBS
SHRUBS PROVIDED 282 SHRUBS
(INCL. PARKING LOT SCREEN)

PARKING LOT LANDSCAPE(Sec. 8.810)

LANDSCAPE AREA REQUIRED (5% OF PARKING AREA)(X.05) N/A
LANDSCAPE AREA PROVIDED N/A
TREES REQUIRED 1 PER ISLAND
TREES PROVIDED 1 ON EACH END
OF PARKING ROW
SCREENING REQUIRED (2.5 FT. HT
ALONG ENTIRE FRONTAGE ADJ. TO STREET)
SCREENING PROVIDED AS REQUIRED BY
CODE

BUFFER SCREENING & LANDSCAPE(Sec. 8.890 Table 8.890&Sec. 8.900)

MODIFICATION REQUESTED SINCE USES ARE WITHIN THE SAME PROJECT

*STREET INTERSECTIONS AND DRIVEWAYS PREVENT MEETING REQUIREMENT

0 50' 100'
SCALE: 1" = 50'

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PREPARED BY:

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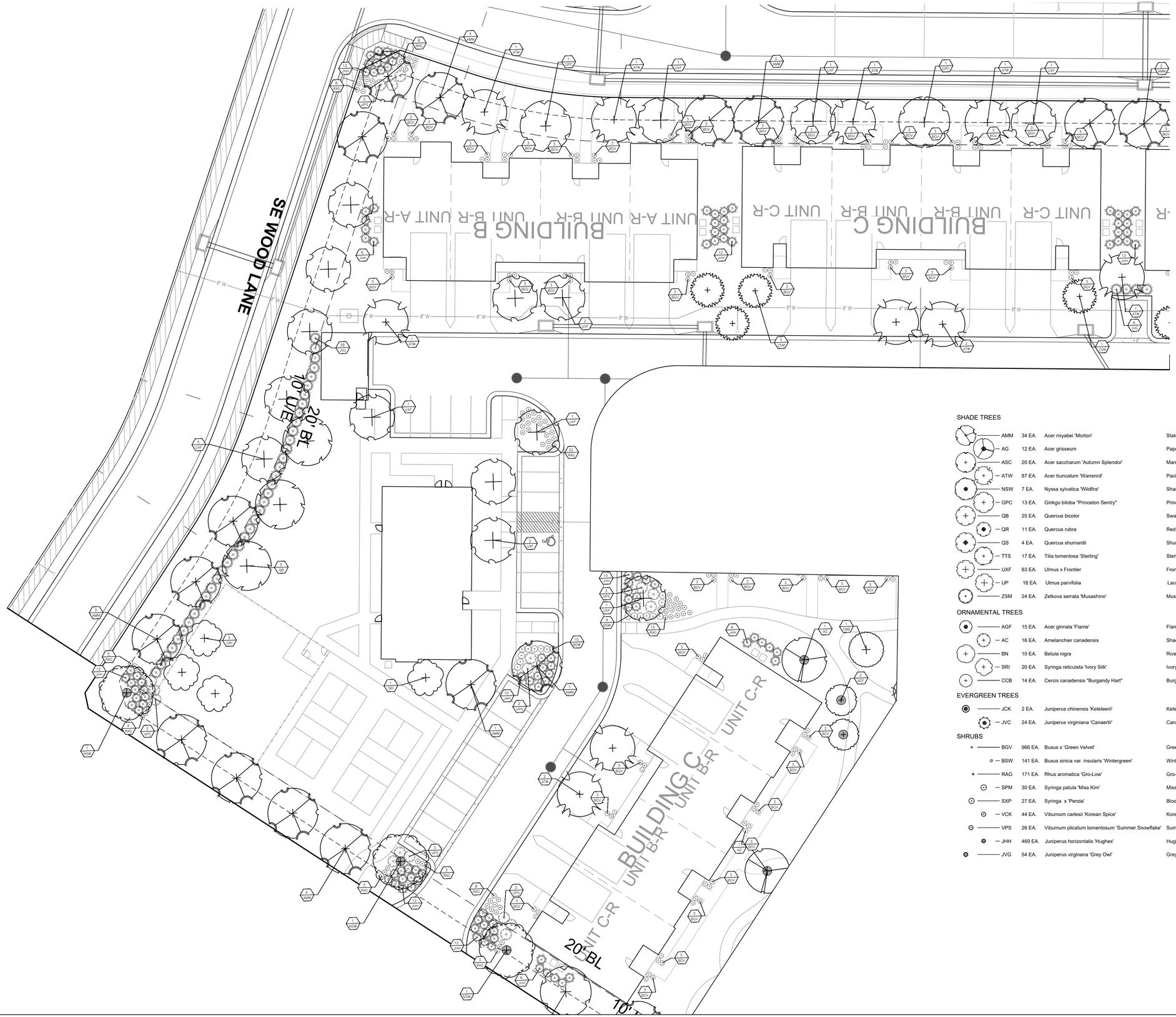
REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
06/07/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22-097

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

OVERALL LANDSCAPE PLAN

SHEET
L100



SHADE TREES

AMM	34 EA.	Acer miyabei 'Morton'	State Street Miyabe Maple	2.5" Cal.	B&B
AG	12 EA.	Acer grisseum	Paperbark Maple	2.5" Cal.	B&B
ASC	20 EA.	Acer saccharum 'Autumn Splendor'	Marmo Maple	2.5" Cal.	B&B
ATW	87 EA.	Acer truncatum 'Warrenrd'	Pacific Sunset Maple	2.5" Cal.	B&B
NSW	7 EA.	Nyssa sylvatica 'Wildfire'	Shadmaster Honeylocust	2.5" Cal.	B&B
GPC	13 EA.	Ginkgo biloba "Princeton Sentry"	Princeton Sentry Ginkgo	2.5" Cal.	B&B
QB	25 EA.	Quercus bicolor	Swamp White Oak	2.5" Cal.	B&B
QR	11 EA.	Quercus rubra	Red Oak	2.5" Cal.	B&B
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ORNAMENTAL TREES

AGF	15 EA.	Acer ginnala 'Flame'	Flame Amur Maple	2" Cal. & 8' ht.	B&B
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SRI	20 EA.	Syringa reticulata 'Ivory Silk'	Ivory Silk Lilac	2" Cal. & 8' ht.	B&B
CCB	14 EA.	Cercis canadensis "Burgandy Hart"	Burgandy Hart Redbud	2" Cal. & 8' ht.	B&B

EVERGREEN TREES

JCK	2 EA.	Juniperus chinensis 'Keteleerii'	Keteleeri Juniper	6' ht.	B&B
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SHRUBS

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JVG	54 EA.	Juniperus virginana 'Grey Owl'	Grey Owl Juniper	5 gal.	Cont.

0 20' 40'

SCALE: 1" = 20'

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PREPARED BY:

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
05/05/23	PER CITY COMMENTS
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08/24/23	PER CITY COMMENTS

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-007

LANDSCAPE DETAIL PLAN

SHEET
L200

SHADE TREES

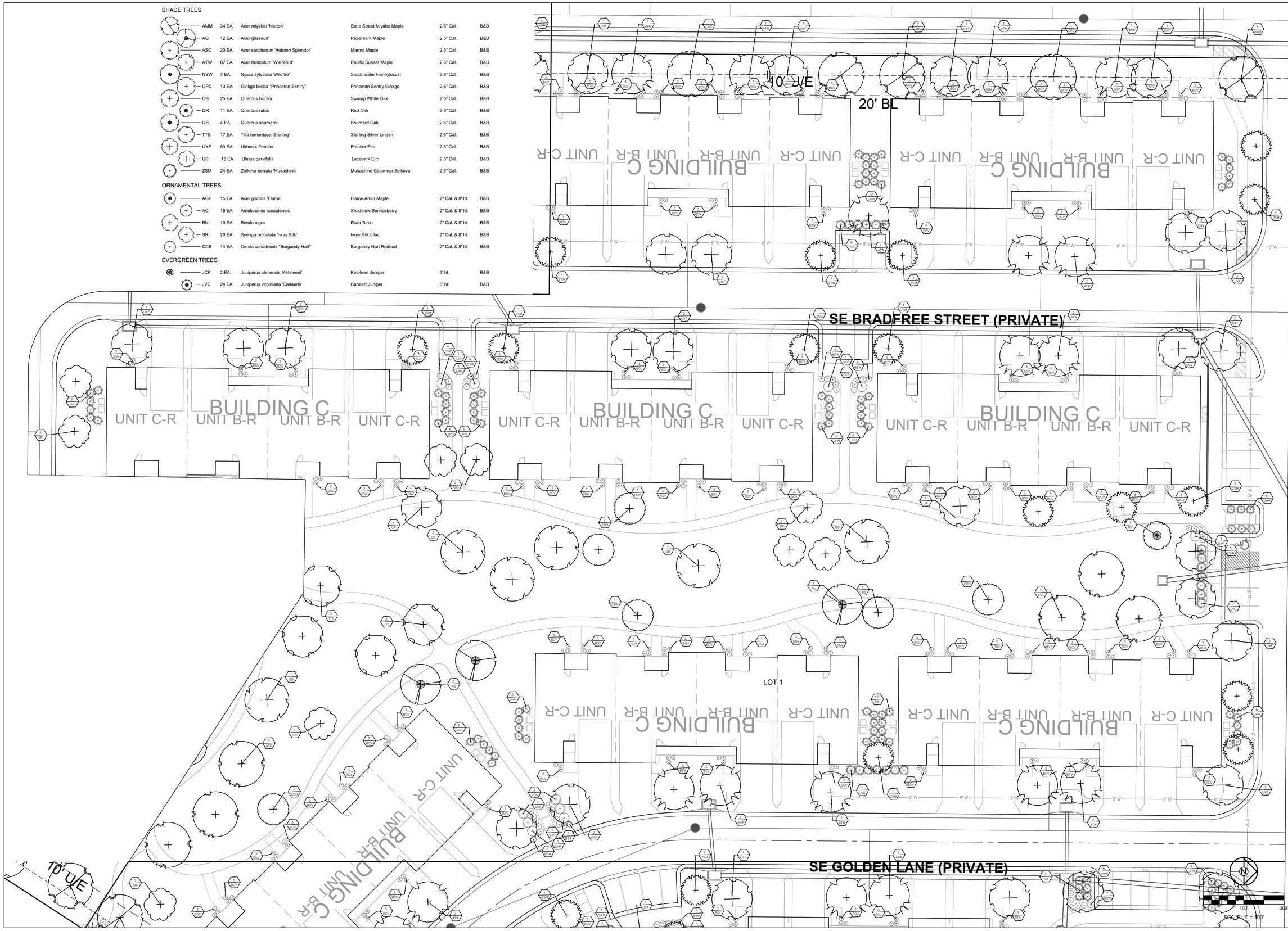
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REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
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LANDSCAPE DETAIL PLAN

SHEET
L201

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REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

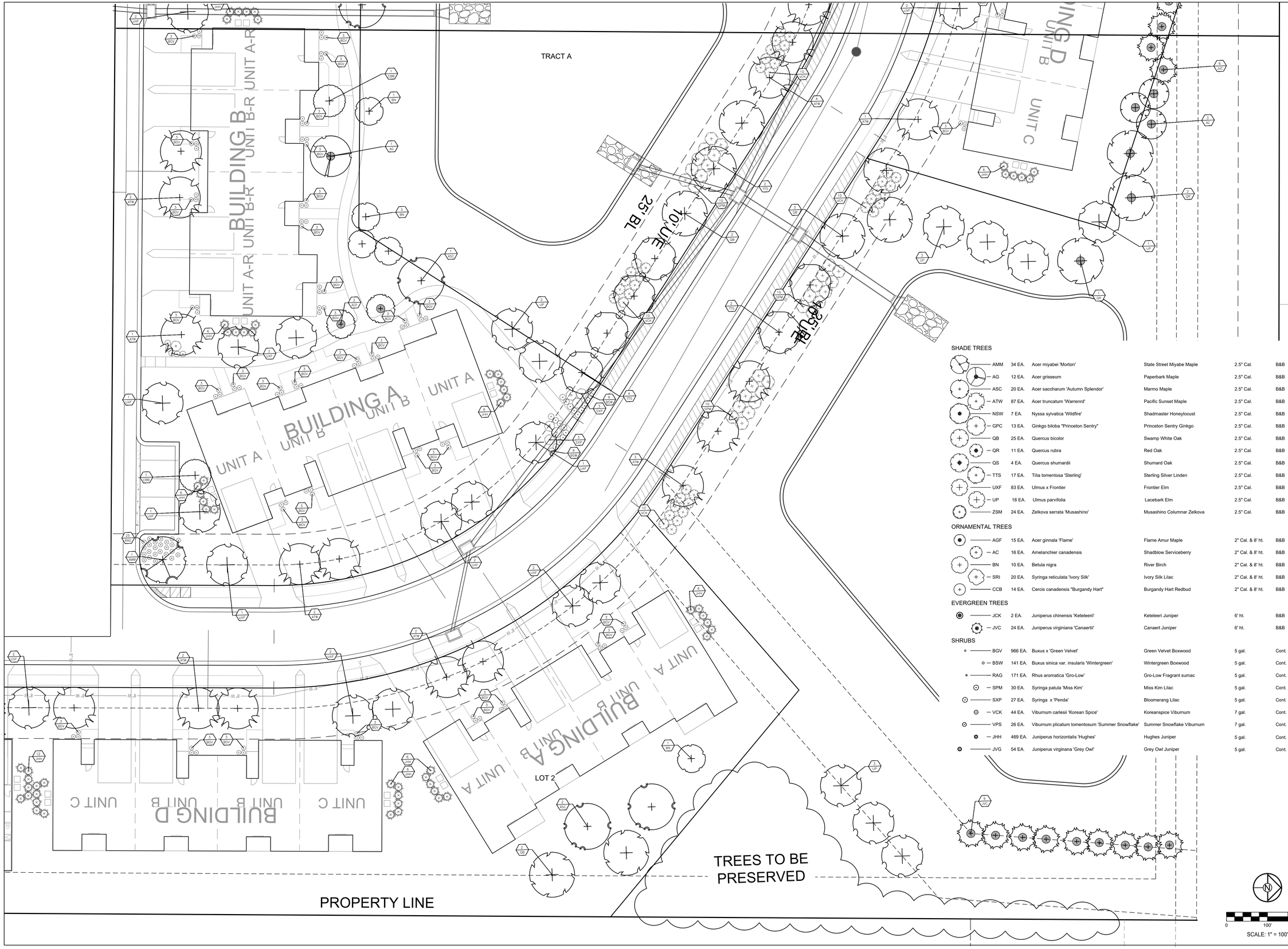
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

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LANDSCAPE DETAIL PLAN

SHEET
L202



SHADE TREES

AMM	34 EA.	Acer miyabei 'Morton'	State Street Miyabe Maple	2.5" Cal.	B&B
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ASC	20 EA.	Acer saccharum 'Autumn Splendor'	Marmo Maple	2.5" Cal.	B&B
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QR	11 EA.	Quercus rubra	Red Oak	2.5" Cal.	B&B
QS	4 EA.	Quercus shumardii	Shumard Oak	2.5" Cal.	B&B
TTS	17 EA.	Tilia tomentosa 'Sterling'	Sterling Silver Linden	2.5" Cal.	B&B
UXF	83 EA.	Ulmus x Frontier	Frontier Elm	2.5" Cal.	B&B
UP	18 EA.	Ulmus parvifolia	Lacebark Elm	2.5" Cal.	B&B
ZSM	24 EA.	Zelkova serrata 'Musashino'	Musashino Columnar Zelkova	2.5" Cal.	B&B

ORNAMENTAL TREES

AGF	15 EA.	Acer ginnala 'Flame'	Flame Amur Maple	2" Cal. & 8' ht.	B&B
AC	16 EA.	Amelanchier canadensis	Shadblow Serviceberry	2" Cal. & 8' ht.	B&B
BN	10 EA.	Betula nigra	River Birch	2" Cal. & 8' ht.	B&B
SRI	20 EA.	Syringa reticulata 'Ivory Silk'	Ivory Silk Lilac	2" Cal. & 8' ht.	B&B
CCB	14 EA.	Cercis canadensis "Burgandy Hart"	Burgandy Hart Redbud	2" Cal. & 8' ht.	B&B

EVERGREEN TREES

JCK	2 EA.	Juniperus chinensis 'Keteleerii'	Keteleeri Juniper	6' ht.	B&B
JVC	24 EA.	Juniperus virginiana 'Canaertii'	Canaert Juniper	6' ht.	B&B

SHRUBS

BGV	966 EA.	Buxus x 'Green Velvet'	Green Velvet Boxwood	5 gal.	Cont.
BSW	141 EA.	Buxus sinica var. insularis 'Wintergreen'	Wintergreen Boxwood	5 gal.	Cont.
RAG	171 EA.	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant sumac	5 gal.	Cont.
SPM	30 EA.	Syringa patula 'Miss Kim'	Miss Kim Lilac	5 gal.	Cont.
SXP	27 EA.	Syringa x 'Penda'	Bloomerang Lilac	5 gal.	Cont.
VCK	44 EA.	Viburnum carlesii 'Korean Spice'	Koreanspice Viburnum	7 gal.	Cont.
VPS	26 EA.	Viburnum plicatum tomentosum 'Summer Snowflake'	Summer Snowflake Viburnum	7 gal.	Cont.
JHH	469 EA.	Juniperus horizontalis 'Hughes'	Hughes Juniper	5 gal.	Cont.
JVG	54 EA.	Juniperus virginana 'Grey Owl'	Grey Owl Juniper	5 gal.	Cont.

0 100' 200'

SCALE: 1" = 100'

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PREPARED BY:

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

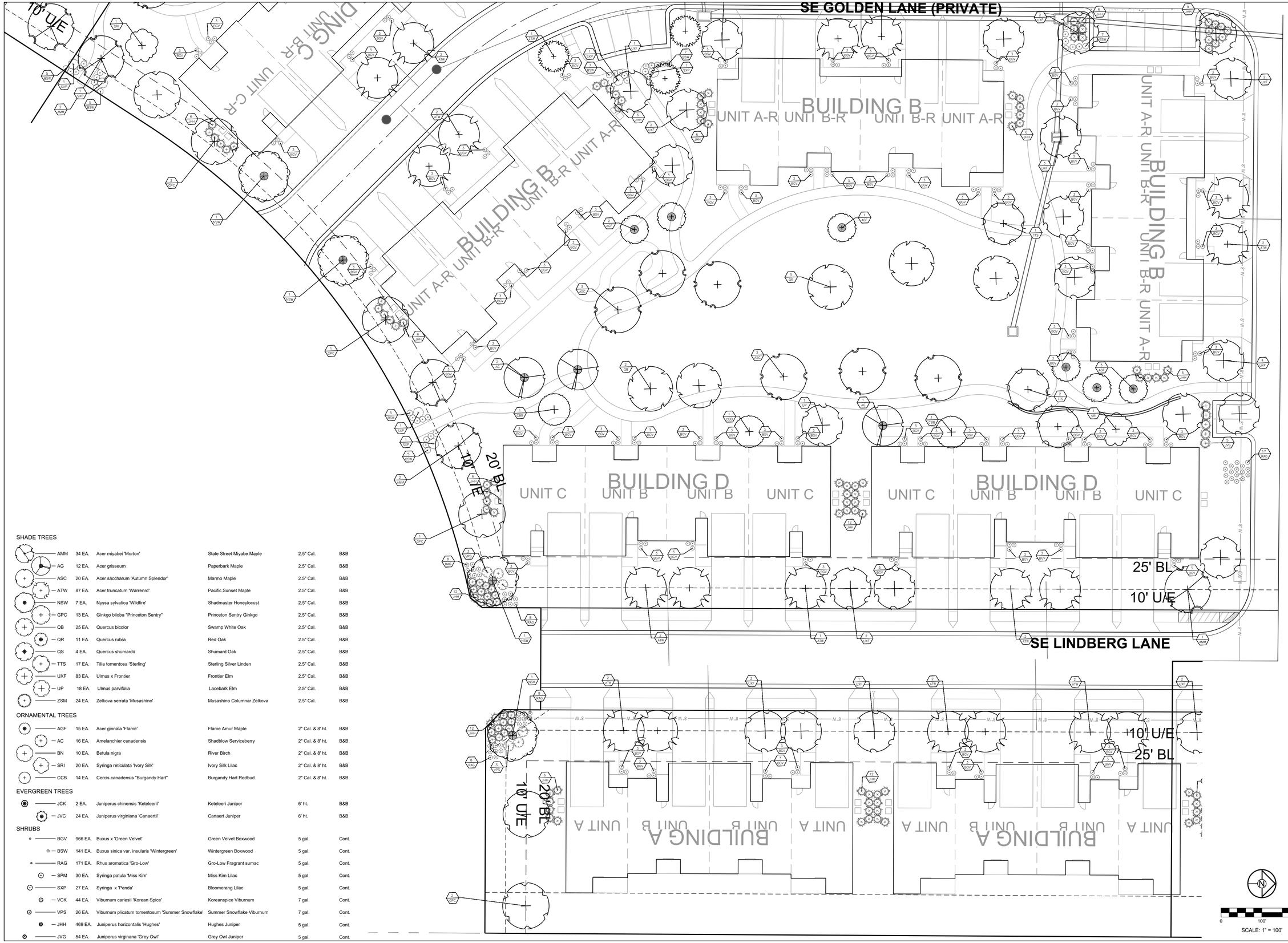
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
1 05/05/23	PER CITY COMMENTS
2 06/27/23	PER CITY COMMENTS
3 08/24/23	PER CITY COMMENTS
4	
5	
6	
7	

DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-007

LANDSCAPE DETAIL PLAN

SHEET
L203



SHADE TREES

AMM	34 EA.	Acer miyabei 'Morton'	State Street Miyabe Maple	2.5" Cal.	B&B
AG	12 EA.	Acer grisseum	Paperbark Maple	2.5" Cal.	B&B
ASC	20 EA.	Acer saccharum 'Autumn Splendor'	Marmo Maple	2.5" Cal.	B&B
ATW	87 EA.	Acer truncatum 'Warrenrd'	Pacific Sunset Maple	2.5" Cal.	B&B
NSW	7 EA.	Nyssa sylvatica 'Wildfire'	Shadmaster Honeylocust	2.5" Cal.	B&B
GPC	13 EA.	Ginkgo biloba "Princeton Sentry"	Princeton Sentry Ginkgo	2.5" Cal.	B&B
QB	25 EA.	Quercus bicolor	Swamp White Oak	2.5" Cal.	B&B
QR	11 EA.	Quercus rubra	Red Oak	2.5" Cal.	B&B
QS	4 EA.	Quercus shumardii	Shumard Oak	2.5" Cal.	B&B
TTS	17 EA.	Tilia tomentosa 'Sterling'	Sterling Silver Linden	2.5" Cal.	B&B
UXF	83 EA.	Ulmus x Frontier	Frontier Elm	2.5" Cal.	B&B
UP	18 EA.	Ulmus parvifolia	Lacebark Elm	2.5" Cal.	B&B
ZSM	24 EA.	Zelkova serrata 'Musashino'	Musashino Columnar Zelkova	2.5" Cal.	B&B

ORNAMENTAL TREES

AGF	15 EA.	Acer ginnala 'Flame'	Flame Amur Maple	2" Cal. & 8' ht.	B&B
AC	16 EA.	Amelanchier canadensis	Shadblow Serviceberry	2" Cal. & 8' ht.	B&B
BN	10 EA.	Betula nigra	River Birch	2" Cal. & 8' ht.	B&B
SRI	20 EA.	Syringa reticulata 'Ivory Silk'	Ivory Silk Lilac	2" Cal. & 8' ht.	B&B
CCB	14 EA.	Cercis canadensis "Burgandy Hart"	Burgandy Hart Redbud	2" Cal. & 8' ht.	B&B

EVERGREEN TREES

JCK	2 EA.	Juniperus chinensis 'Keteleerii'	Keteleeri Juniper	6' ht.	B&B
JVC	24 EA.	Juniperus virginiana 'Canaertii'	Canaert Juniper	6' ht.	B&B

SHRUBS

BGV	966 EA.	Buxus x 'Green Velvet'	Green Velvet Boxwood	5 gal.	Cont.
BSW	141 EA.	Buxus sinica var. insularis 'Wintergreen'	Wintergreen Boxwood	5 gal.	Cont.
RAG	171 EA.	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant sumac	5 gal.	Cont.
SPM	30 EA.	Syringa patula 'Miss Kim'	Miss Kim Lilac	5 gal.	Cont.
SXP	27 EA.	Syringa x 'Penda'	Bloomerang Lilac	5 gal.	Cont.
VCK	44 EA.	Viburnum carlesii 'Korean Spice'	Koreanspice Viburnum	7 gal.	Cont.
VPS	26 EA.	Viburnum plicatum tomentosum 'Summer Snowflake'	Summer Snowflake Viburnum	7 gal.	Cont.
JHH	469 EA.	Juniperus horizontalis 'Hughes'	Hughes Juniper	5 gal.	Cont.
JVG	54 EA.	Juniperus virginana 'Grey Owl'	Grey Owl Juniper	5 gal.	Cont.

0 100' 200'

SCALE: 1" = 100'

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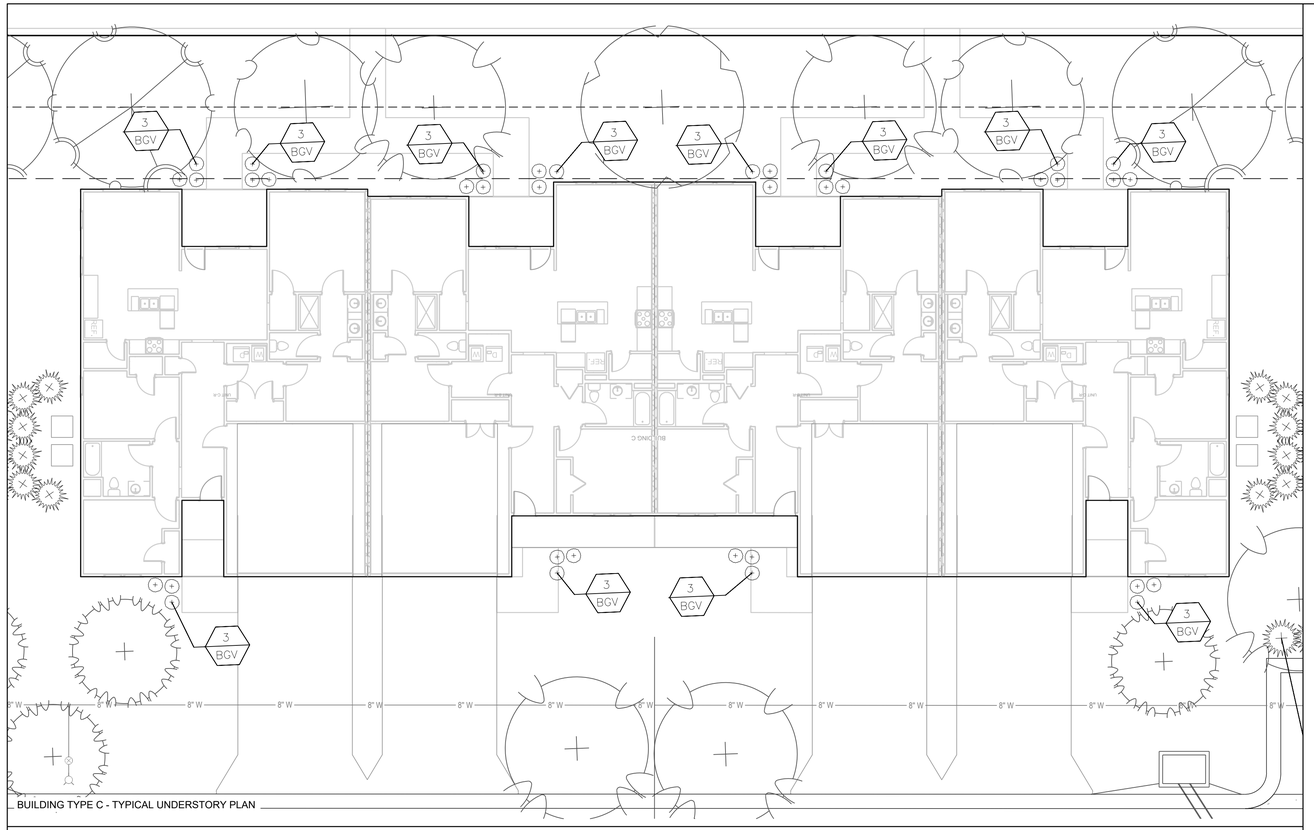
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
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06/07/23	PER CITY COMMENTS
08/04/23	PER CITY COMMENTS

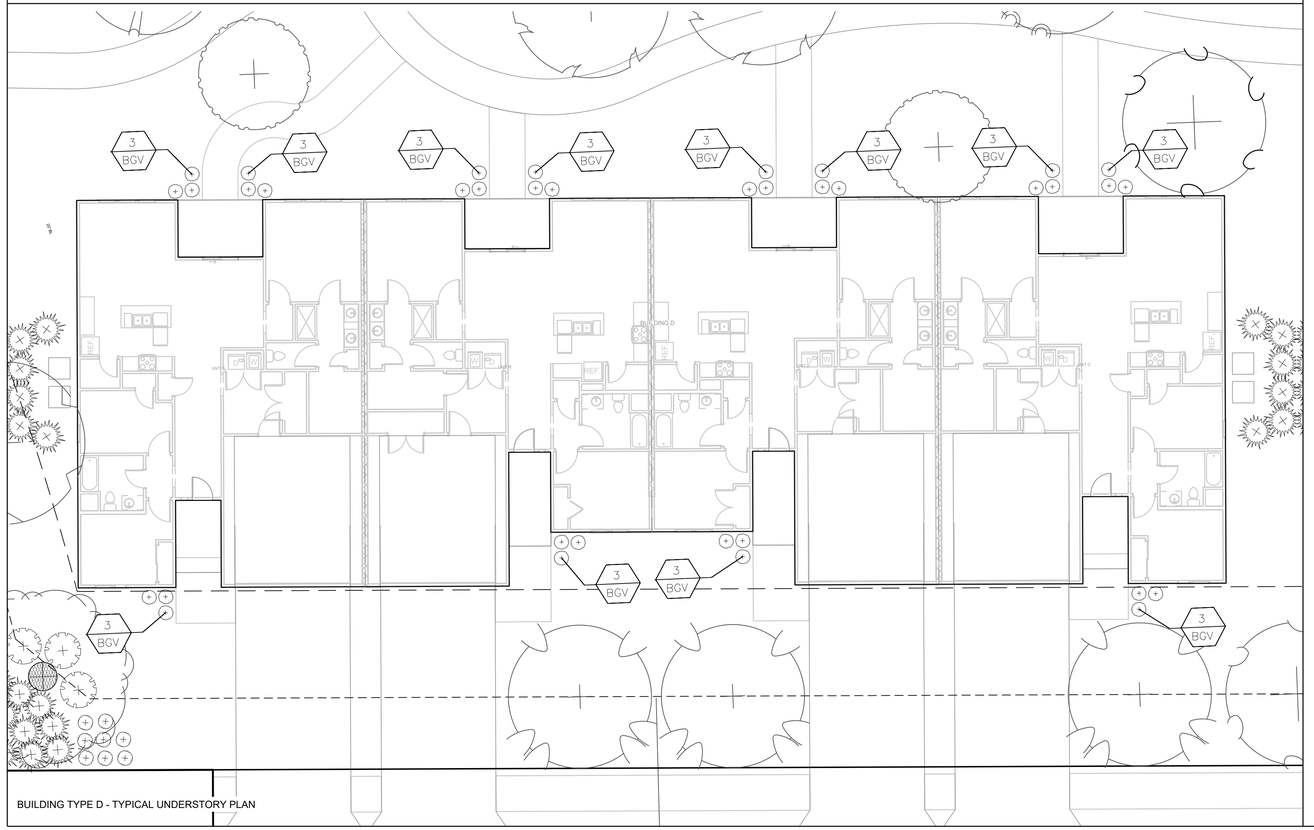
DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22J497

LANDSCAPE DETAIL PLAN

SHEET
L200



BUILDING TYPE C - TYPICAL UNDERSTORY PLAN



BUILDING TYPE D - TYPICAL UNDERSTORY PLAN

SCALE: 1" = 10'

SHADE TREES

AMM	34 EA.	Acer miyabei 'Morton'	State Street Miyabe Maple	2.5" Cal.	B&B
AG	12 EA.	Acer grisseum	Paperbark Maple	2.5" Cal.	B&B
ASC	20 EA.	Acer saccharum 'Autumn Splendor'	Marmo Maple	2.5" Cal.	B&B
ATW	87 EA.	Acer truncatum 'Warrenrd'	Pacific Sunset Maple	2.5" Cal.	B&B
NSW	7 EA.	Nyssa sylvatica 'Wildfire'	Shadmaster Honeylocust	2.5" Cal.	B&B
GPC	13 EA.	Ginkgo biloba "Princeton Sentry"	Princeton Sentry Ginkgo	2.5" Cal.	B&B
QB	25 EA.	Quercus bicolor	Swamp White Oak	2.5" Cal.	B&B
QR	11 EA.	Quercus rubra	Red Oak	2.5" Cal.	B&B
QS	4 EA.	Quercus shumardii	Shumard Oak	2.5" Cal.	B&B
TTS	17 EA.	Tilia tomentosa 'Sterling'	Sterling Silver Linden	2.5" Cal.	B&B
UXF	83 EA.	Ulmus x Frontier	Frontier Elm	2.5" Cal.	B&B
UP	18 EA.	Ulmus parvifolia	Lacebark Elm	2.5" Cal.	B&B
ZSM	24 EA.	Zelkova serrata 'Musashino'	Musashino Columnar Zelkova	2.5" Cal.	B&B

ORNAMENTAL TREES

AGF	15 EA.	Acer ginnala 'Flame'	Flame Amur Maple	2" Cal. & 8' ht.	B&B
AC	16 EA.	Amelanchier canadensis	Shadblow Serviceberry	2" Cal. & 8' ht.	B&B
BN	10 EA.	Betula nigra	River Birch	2" Cal. & 8' ht.	B&B
SRI	20 EA.	Syringa reticulata 'Ivory Silk'	Ivory Silk Lilac	2" Cal. & 8' ht.	B&B
CCB	14 EA.	Cercis canadensis "Burgandy Hart"	Burgandy Hart Redbud	2" Cal. & 8' ht.	B&B

EVERGREEN TREES

JCK	2 EA.	Juniperus chinensis 'Keteleerii'	Keteleeri Juniper	6' ht.	B&B
JVC	24 EA.	Juniperus virginiana 'Canaertii'	Canaert Juniper	6' ht.	B&B

SHRUBS

BGV	966 EA.	Buxus x 'Green Velvet'	Green Velvet Boxwood	5 gal.	Cont.
BSW	141 EA.	Buxus sinica var. insularis 'Wintergreen'	Wintergreen Boxwood	5 gal.	Cont.
RAG	171 EA.	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant sumac	5 gal.	Cont.
SPM	30 EA.	Syringa patula 'Miss Kim'	Miss Kim Lilac	5 gal.	Cont.
SXP	27 EA.	Syringa x 'Penda'	Bloomerang Lilac	5 gal.	Cont.
VCK	44 EA.	Viburnum carlesii 'Korean Spice'	Koreanspice Viburnum	7 gal.	Cont.
VPS	26 EA.	Viburnum plicatum tomentosum 'Summer Snowflake'	Summer Snowflake Viburnum	7 gal.	Cont.
JHH	469 EA.	Juniperus horizontalis 'Hughes'	Hughes Juniper	5 gal.	Cont.
JVG	54 EA.	Juniperus virginana 'Grey Owl'	Grey Owl Juniper	5 gal.	Cont.

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PREPARED BY:

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REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

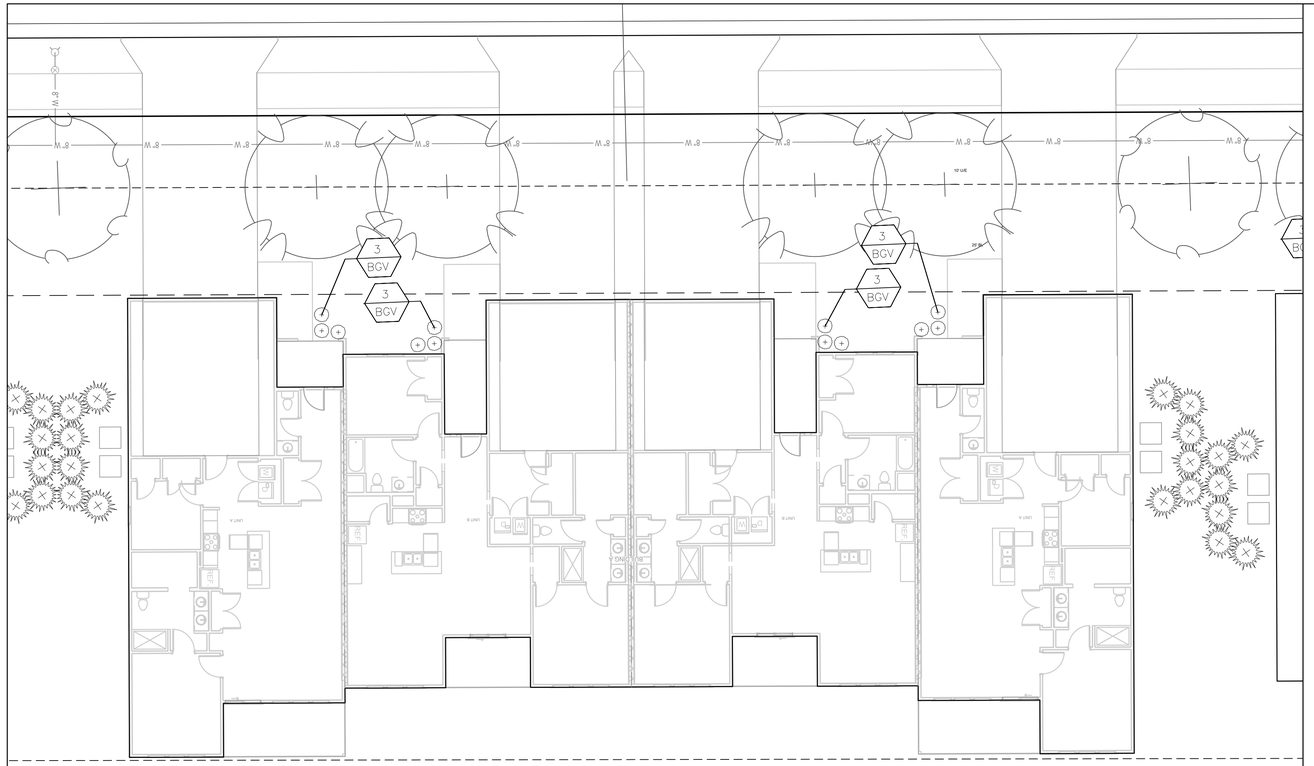
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

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08/24/23	PER CITY COMMENTS

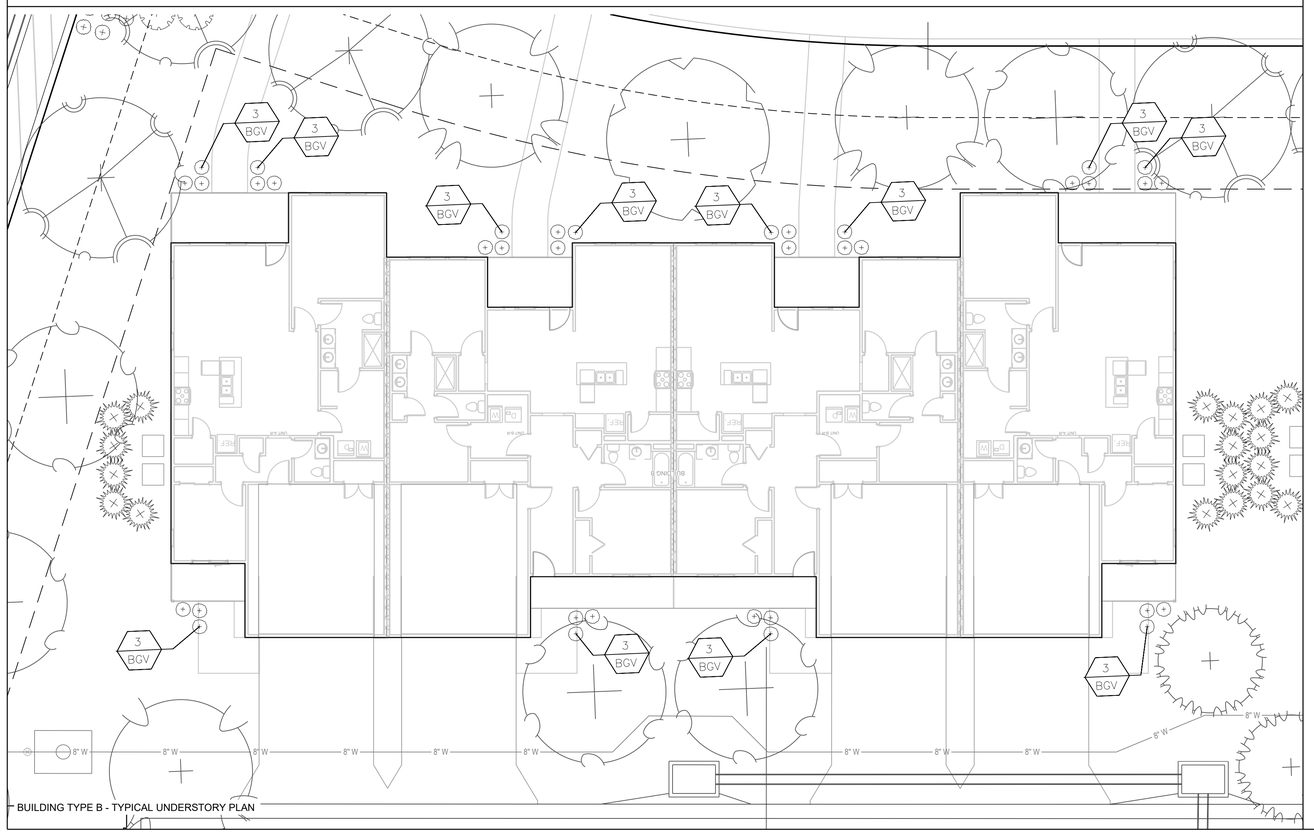
DRAWN BY: TRC
CHECKED BY: MAB
DATE PREPARED: 03/03/2023
PROJ. NUMBER: 22-007

UNDERSTORY LANDSCAPE PLAN

SHEET
L205



BUILDING TYPE A - TYPICAL UNDERSTORY PLAN



BUILDING TYPE B - TYPICAL UNDERSTORY PLAN

SHADE TREES

AMM	34 EA.	Acer miyabei 'Morton'	State Street Miyabe Maple	2.5" Cal.	B&B
AG	12 EA.	Acer grisseum	Paperbark Maple	2.5" Cal.	B&B
ASC	20 EA.	Acer saccharum 'Autumn Splendor'	Marmo Maple	2.5" Cal.	B&B
ATW	87 EA.	Acer truncatum 'Warrenrd'	Pacific Sunset Maple	2.5" Cal.	B&B
NSW	7 EA.	Nyssa sylvatica 'Wildfire'	Shadmaster Honeylocust	2.5" Cal.	B&B
GPC	13 EA.	Ginkgo biloba "Princeton Sentry"	Princeton Sentry Ginkgo	2.5" Cal.	B&B
QB	25 EA.	Quercus bicolor	Swamp White Oak	2.5" Cal.	B&B
QR	11 EA.	Quercus rubra	Red Oak	2.5" Cal.	B&B
QS	4 EA.	Quercus shumardii	Shumard Oak	2.5" Cal.	B&B
TTS	17 EA.	Tilia tomentosa 'Sterling'	Sterling Silver Linden	2.5" Cal.	B&B
UXF	83 EA.	Ulmus x Frontier	Frontier Elm	2.5" Cal.	B&B
UP	18 EA.	Ulmus parvifolia	Lacebark Elm	2.5" Cal.	B&B
ZSM	24 EA.	Zelkova serrata 'Musashino'	Musashino Columnar Zelkova	2.5" Cal.	B&B

ORNAMENTAL TREES

AGF	15 EA.	Acer ginnala 'Flame'	Flame Amur Maple	2" Cal. & 8' ht.	B&B
AC	16 EA.	Amelanchier canadensis	Shadblow Serviceberry	2" Cal. & 8' ht.	B&B
BN	10 EA.	Betula nigra	River Birch	2" Cal. & 8' ht.	B&B
SRI	20 EA.	Syringa reticulata 'Ivory Silk'	Ivory Silk Lilac	2" Cal. & 8' ht.	B&B
CCB	14 EA.	Cercis canadensis "Burgandy Hart"	Burgandy Hart Redbud	2" Cal. & 8' ht.	B&B

EVERGREEN TREES

JCK	2 EA.	Juniperus chinensis 'Keteleerii'	Keteleeri Juniper	6' ht.	B&B
JVC	24 EA.	Juniperus virginiana 'Canaertii'	Canaert Juniper	6' ht.	B&B

SHRUBS

BGV	966 EA.	Buxus x 'Green Velvet'	Green Velvet Boxwood	5 gal.	Cont.
BSW	141 EA.	Buxus sinica var. insularis 'Wintergreen'	Wintergreen Boxwood	5 gal.	Cont.
RAG	171 EA.	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant sumac	5 gal.	Cont.
SPM	30 EA.	Syringa patula 'Miss Kim'	Miss Kim Lilac	5 gal.	Cont.
SXP	27 EA.	Syringa x 'Penda'	Bloomerang Lilac	5 gal.	Cont.
VCK	44 EA.	Viburnum carlesii 'Korean Spice'	Koreanspice Viburnum	7 gal.	Cont.
VPS	26 EA.	Viburnum plicatum tomentosum 'Summer Snowflake'	Summer Snowflake Viburnum	7 gal.	Cont.
JHH	469 EA.	Juniperus horizontalis 'Hughes'	Hughes Juniper	5 gal.	Cont.
JVG	54 EA.	Juniperus virginana 'Grey Owl'	Grey Owl Juniper	5 gal.	Cont.

0 10' 20'

SCALE: 1" = 10'

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REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

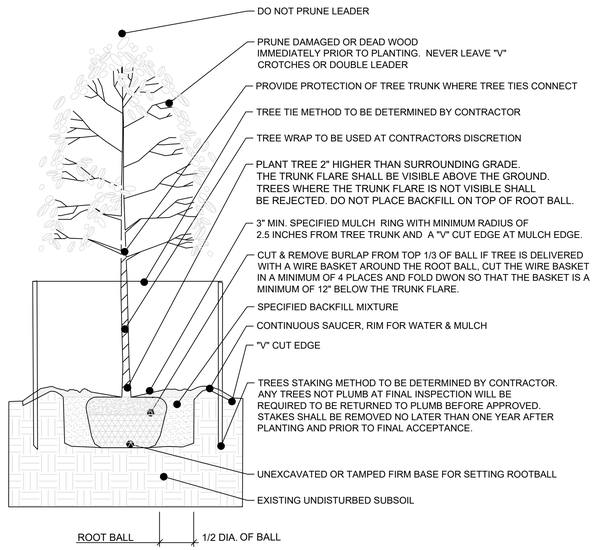
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

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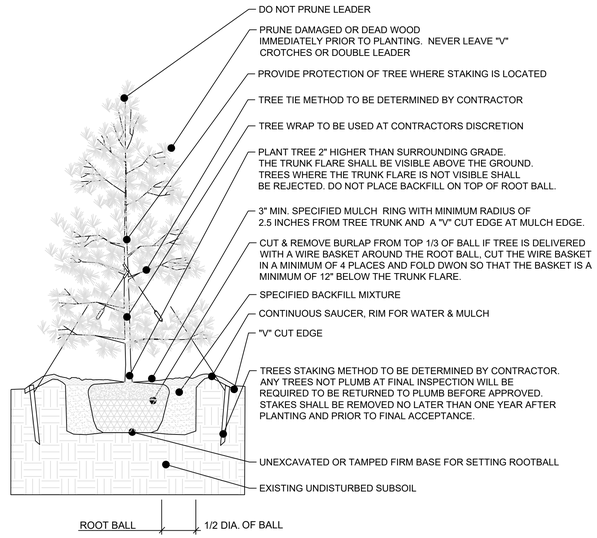
UNDERSTORY LANDSCAPE PLAN

SHEET
L205



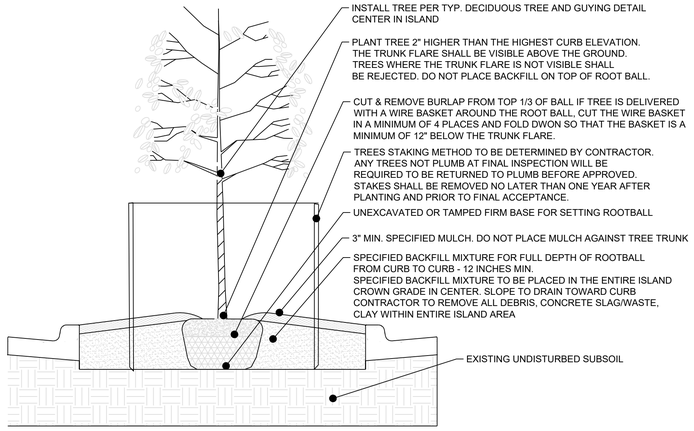
TYP. DECIDUOUS PLANTING & GUYING

NO SCALE



TYP. EVERGREEN PLANTING & GUYING

NO SCALE



TYP. PARKING LOT ISLAND PLANTING

NO SCALE

Shade trees that grow to be large shall have one relatively straight central leader (Figure 1). Heading the tree is acceptable provided the central leader is reestablished in the nursery.

Main branches (Figure 2) shall be well distributed along the central leader, not clustered together. They shall form a balanced crown appropriate for the cultivar or species.

The diameter of branches (Figure 3) that grow from the central leader, or trunk, shall be no larger than two-thirds (one-half is preferred) the diameter of the trunk measured just above the branch.

The largest branches shall be free of bark inclusions that extend into the branch union (Figure 4 A and B).

Small-diameter branches (Figure 5, left), particularly on trees less than 1 inch caliper, should be present along the lower trunk below the lowest main branch. These branches shall be no larger than 3/8 inch in diameter.

The trunk shall be free of wounds, sunburned areas, conks (fungal fruiting bodies), wood cracks, bleeding areas, signs of boring insects, cankers, or lesions. Properly made recent or closed pruning cuts are acceptable.

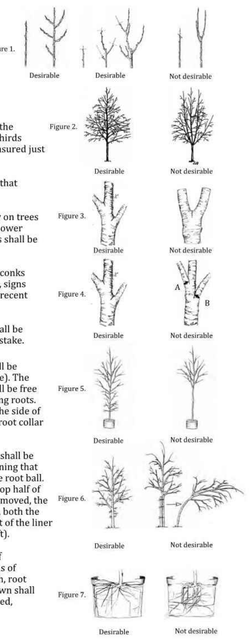
The trunk caliper (diameter) and taper (Figure 6) shall be sufficient so that the tree remains vertical without a stake.

The root collar (the uppermost roots) (Figure 7) shall be within the upper 2 inches of the soil media (substrate). The root collar and the inside portion of the root ball shall be free of defects, including circling, kinked, and stem-girdling roots. Roots at the surface should grow mostly straight to the side of the container. You may need to remove soil near the root collar to inspect for root defects.

The tree shall be well rooted in the soil media. Roots shall be uniformly distributed throughout the container, meaning that roots should not be concentrated at the bottom of the root ball. Some roots should contact the container wall in the top half of the root ball (Figure 7, left). When the container is removed, the root ball shall remain intact. When the trunk is lifted, both the trunk and root system shall move as one. The imprint of the liner or smaller container shall not be visible (Figure 7, left).

The root ball shall be moist throughout at the time of inspection and delivery. The roots shall show no signs of excess soil moisture as indicated by poor root growth, root discoloration, distortion, death, or foul odor. The crown shall show no signs of moisture stress as indicated by wilted, shriveled, or dead leaves or branch dieback.

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NOTES:

1. UTILITY INFORMATION SHOWN IS DESIGNED LOCATION OR LOCATIONS BASED ON UTILITY LOCATES. AS BUILT LOCATIONS MAY VARY. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES PRIOR TO COMMENCING LANDSCAPE INSTALLATION. NOTIFY THE LANDSCAPE ARCHITECT OF ANY CONFLICTS OR OBSTRUCTIONS.
2. QUANTITIES INDICATED ON THE PLAN ARE FOR CONVENIENCE ONLY. CONTRACTOR SHALL VERIFY ALL PLANT QUANTITIES PRIOR TO PLANTING. NOTIFY THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES. THE PLAN QUANTITIES AND NUMBER OF SYMBOLS SHALL SUPERSEDED QUANTITIES IN THE SCHEDULE
3. ALL PLANT MATERIAL SHALL COMPLY WITH CITY STANDARDS AND ANSI A60.1 THE AMERICAN STANDARD FOR NURSERY STOCK.
4. ALL TREES SHALL MEET THE SIZE REQUIREMENTS OF CITY ORDINANCE. ALL TREES SHALL BE CALLIPERED AND UNDERSIZED TREES SHALL BE REJECTED.
5. ALL SHRUBS TO BE UTILIZED FOR SCREENING SHALL BE 24" HEIGHT AT TIME OF PLANTING.
6. ALL PLANTING BEDS CONTAINING SHRUBS, GROUND COVER, PERENNIALS, ANNUALS SHALL BE IN A PLANTING BED WITH 3" MIN. DEPTH OF MULCH AND A "V-CUT" EDGE.
7. ALL TREES SHALL HAVE A MIN. 3 FT. DIA. AREA THAT HAS 3" MIN. DEPTH OF WOOD MULCH.
8. ALL AREAS BETWEEN THE APARTMENT BUILDING AND THE SIDE WALK FROM THE DIRVEWAY TO THE FRONT DOORS SHALL BE MULCHED.
9. THE SMALL ISLANDS BETWEEN THE APARTMENT BUILDING DRIVEWAYS SHALL CONTAIN 2" COBBLE ROCK.
10. ALL TURF AREAS SHALL BE SODDED UNLESS INDICATED ON THE PLANS.
11. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLAN SHALL REQUIRE WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT AND THE CITY, PRIOR TO INSTALLATION.
12. THE LANDSCAPE ARCHITECT AND OWNER SHALL APPROVE GRADES AND CONDITION OF SITE PRIOR TO SODDING OPERATIONS.
13. INSTALLATION AND MAINTENANCE OF LANDSCAPING SHALL COMPLY WITH THE CITY STANDARDS
14. ALL PLANT MATERIAL SHALL BE INSTALLED TO ALLOW A MINIMUM CLEARANCE BETWEEN PLANT AND ADJACENT PAVEMENT OF 1 FT. FOR PERENNIALS AND GROUNDCOVER AND 1.5 FT. FOR SHRUBS. A 2 FT. CLEARANCE(4 FEET FROM BACK OF CURB TO THE CENTER OF SHRUB)FOR CAR OVERHANG IS REQUIRED AT ALL PARKING ISLANDS AND PERIMETERS.
15. AFTER COMPLETE INSTALLATION OF ALL PLANT MATERIAL AND SOD THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT THAT THE WORK IS COMPLETE AND READY FOR REVIEW. THE LANDSCAPE ARCHITECT SHALL REVIEW THE LANDSCAPE INSTALLATION TO DETERMINE COMPLIANCE WITH THE APPROVED PLANS. WHEN THE LANDSCAPE INSTALLATION MEETS THE REQUIREMENTS OF THE APPROVED PLAN, THE LANDSCAPE ARCHITECT SHALL PROVIDE A SIGNED AND SEALED LETTER TO THE CITY STATING THAT ALL LANDSCAPE PLANTINGS HAVE BEEN INSTALLED PER THE APPROVED PLAN.
16. AN IRRIGATION SYSTEM OR HOSE BIBS MUST BE WITHIN 100 FEET OF ANY LANDSCAPE AREA IS REQUIRED BY CODE. CONTRACTOR TO PROVIDE IRRIGATION/WATERING PLAN AS DESIGN BUILD.
17. IN THE EVENT OF WORK IN OR ON THE SANITARY MAIN, ANY TREES OR PLANTINGS PLACED WITHIN THE SEWER EASEMENT MAY BE REMOVED WITHOUT REPLACEMENT OR COMPENSATION THERE-OF AND SHALL BE REPLACED BY THE PROPERTY OWNER AS REQUIRED BY THE CITY.
18. ALL LANDSCAPE PLANTINGS AND LAWN AREAS SHALL BE MAINTAINED AS REQUIRED BY CITY CODE. ALL LANDSCAPE PLANTING AND TURF AREAS WITHIN THE RIGHT OF WAY SHALL BE MAINTAINED BY THE ADJACENT OWNER AS REQUIRED BY THE CITY CODE.
19. LANDSCAPEING ADJACENT TO THE FIRE DEPARTMENT CONNECTION SHALL ALLOW FOR UNOBSTRUCTED ACCESS TO THE CONNECTION, WITH NO SHRUBS/TREES WITHIN A 3 FOOT RADIUS OF THE CONNECTION.

1. All trees shall comply with State and Federal regulations. Trees should be obtained from local sources but must meet the quaility quidelines herein. Trees transported from out of the region shall meet all State and Federal regulations and be certified to be disease and insect free.
2. Provide healthy stock, grown in a nursery and reasonably free of die-back, disease, insects, eggs, bores, and larvae. At the time of planting all plants shall have a root system, stem, and branch form that will not restrict normal growth, stability and health for the expected life of the plant.
3. All trees shall be nursery-grown.
4. Plants shall be healthy with the color, shape, size and distribution of trunk, stems, branches, buds and leaves normal to the plant type specified. Tree quality above the soil line shall comply with the following:
5. Crown: The form and density of the crown shall be typical for a young specimen of the species or cultivar pruned to a central and dominant leader.
6. Crown specifications do not apply to plants that have been specifically trained in the nursery as topiary, espalier, multi-stem, clump, or unique selections such as contorted or weeping cultivars.
7. Leaves: The size, color, and appearance of leaves shall be typical for the time of year and stage of growth of the species or cultivar. Trees shall not show signs of prolonged moisture stress or over watering as indicated by wilted, shriveled, or dead leaves.
8. Branches: Shoot growth (length and diameter) throughout the crown should be appropriate for the age and size of the species or cultivar. Trees shall not have dead, diseased, broken, distorted, or otherwise injured branches.
   a.) Main branches shall be distributed along the central leader not clustered together. Potential main branches shall be evenly spaced and have appropriate space between them. They shall form a balanced crown appropriate for the cultivar/species.
   b.) Branch diameter shall be no larger than two-thirds (one-half is preferred) the diameter of the central leader measured 1 inch above the branch union.
   c.) The attachment of the largest branches (scaffold branches) shall be free of included bark.
   d.) Branches shall be distributed radially around and vertically along the trunk, forming a generally symmetrical crown typical for the species.
   e.) The attachment of scaffold branches shall be free of included bark.
9. Branch structure: The better quality, large-maturing shade trees (lower extreme left) have all branches less than about two-thirds the trunk diameter. Poor quality shade trees (lower left center) have larger upright branches. Trees such as crape myrtle and other small-maturing trees can have several trunks. Trees with extensive defects in branches such as cracks and included bark (lower right) represent lesser quality than trees free of these potential problems. Included bark can be seen between the two arrows below. Branches with bark inclusions are weakly attached to the tree and can split easy.
10. Evergreen branch structure: The branch pattern should dense, symmetrical and the branch stems should be evenly spaced completely around the trunk. The branches shall extend to within 12 inches of the ground and be along the full length of the trunk. Trees which are not symmetrical or that have an "open area" will be rejected. For structural integrity on evergreen trees, all side branches should be less than half the diameter of the adjacent trunk (less than one-third is preferred).
11. Trunk: The tree trunk shall be relatively straight, vertical, and free of wounds that penetrate to the wood (properly made pruning cuts, closed or not, are acceptable and are not considered wounds), sunburned areas, conks (fungal fruiting bodies), wood cracks, sap leakage, signs of boring insects, galls, cankers, girdling ties, or lesions (mechanical injury).
12. Evergreen tree trunk: Evergreen trees shall have a single trunck that isstraight, vertical, and free of wounds that penetrate to the wood (properly made pruning cuts, closed or not, are acceptable and are not considered wounds), sunburned areas, conks (fungal fruiting bodies), wood cracks, sap leakage, signs of boring insects, galls, cankers, girdling ties, or lesions (mechanical injury). Codominant trunks (trunks of similar size) will not be accepted.
13. Temporary branches, unless otherwise specified, can be present along the lower trunk below the lowest main (scaffold) branch, particularly for trees less than 1 inch in caliper. These branches should be no greater than 3/8-inch diameter. Clear trunk should be no more than 40% of the total height of the tree.
14. Central Leader: **Trees shall have a single(one), relatively straight central leader** and tapered trunk, free of co-dominant stems and vigorous, upright branches that compete with the central leader. Preferably, the central leader should not have been headed. However, in cases where the original leader has been removed, an upright branch at least ½ (one-half) the diameter of the original leader just below the pruning point shall be present. All trees are assumed to have one central leader trees unless a different form is specified in the plant list or drawings. If the central leader is broken or damaged during delivery or installation the tree shall be rejected and removed from the site. If the central leader dies whin the warranty period the tree shall be replaced at the end of the warranty period.
15. All graft unions, where applicable, shall be completely closed without visible sign of graft rejection. All grafts shall be visible above the soil line.
16. Trunk caliper and taper shall be sufficient so that the lower five feet of the trunk remains vertical without a stake. Auxiliary stake may be used to maintain a straight leader in the upper half of the tree.
17. Plant roots shall be normal to the plant type specified. Root observations shall take place without impacting tree health. Root quality at or below the soil line shall comply with the project Root Acceptance details and the following:
18. The roots shall be reasonably free of scrapes, broken or split wood.
19. The root system shall be reasonably free of injury from biotic (e.g., insects and pathogens) and abiotic (e.g., herbicide toxicity and salt injury) agents. Wounds resulting from root pruning used to produce a high quality root system are not considered injuries.
20. A minimum of three structural roots reasonably distributed around the trunk (not clustered on one side) shall be found in each plant. Root distribution shall be uniform throughout the root ball, and growth shall be appropriate for the species.
21. Plants with structural roots on only one side of the trunk (J roots) shall be rejected.
22. The root collar shall be within the upper 1 inch of the substrate/soil. Two structural roots shall reach the side of the root ball near the top surface of the root ball. The grower may request a modification to this requirement for species with roots that rapidly descend, provided that the grower removes all stem girdling roots above the structural roots across the top of the root ball. Any excess soil shall be removed from the root ball so that the root flare is visible as indicated in the "Planting Depth Detail". The root collar shall be visible above the mulch layer.
23. The root system shall be free of stem girdling roots over the root collar or kinked roots from nursery production practices.
24. Plant Grower Certification: The final plant grower shall be responsible to have determined that the plants have been root pruned at each step in the plant production process to remove stem girdling roots and kinked roots, or that the previous production system used practices that produce a root system throughout the root ball that meets these specifications. Regardless of the work of previous growers, the plant's root system shall be modified at the final production stage, if needed, to produce the required plant root quality. The final grower shall certify in writing that all plants are reasonably free of stem girdling and kinked roots as defined in this specification, and that the tree has been grown and harvested to produce a plant that meets these specifications.
25. At time of observations and delivery, the root ball shall be moist throughout. Roots shall not show signs of excess soil moisture conditions as indicated by stunted, discolored, distorted, or dead roots.

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PREPARED BY:

SCHLAGEL & ASSOCIATES, P.A.

REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

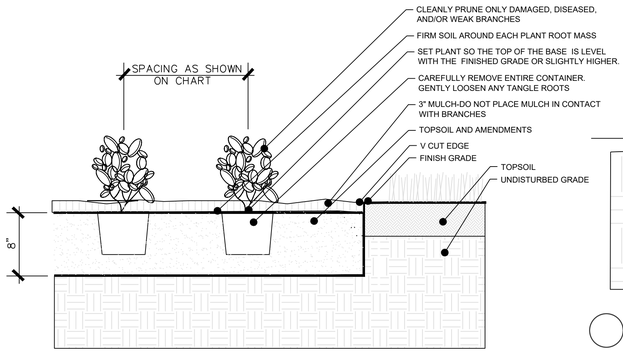
SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
09/06/23	PER CITY COMMENTS
08/27/23	PER CITY COMMENTS
08/24/23	PER CITY COMMENTS

DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22.497

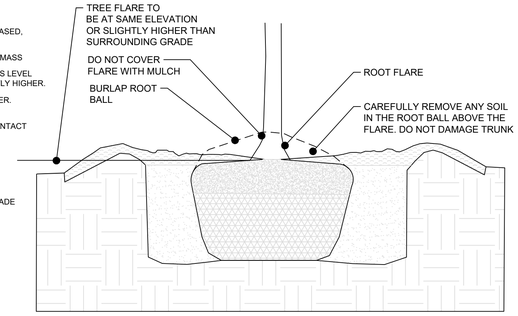
LANDSCAPE DETAILS

SHEET
L300



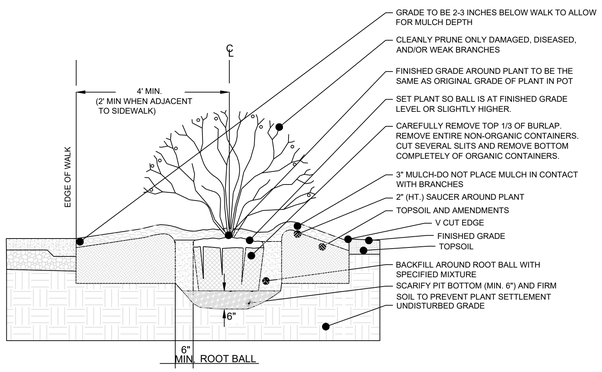
TYP. ANNUAL/PERENNIAL PLANTING

NO SCALE



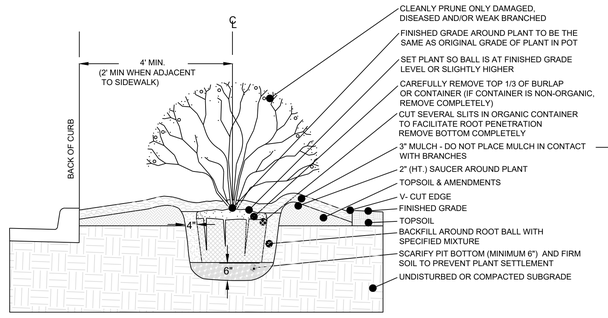
TYP. TREE PLANTING DEPTH

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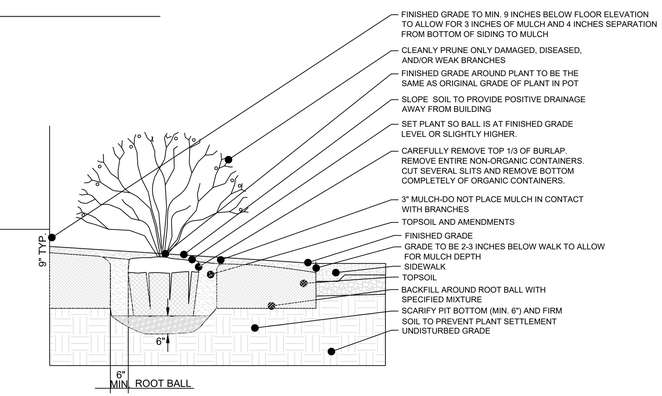
TYP. SHRUB PLANTING ADJACENT TO WALK

NO SCALE



TYP. SHRUB PLANTING ADJACENT TO CURB

NO SCALE



TYP. SHRUB PLANTING ADJACENT TO BUILDING

NO SCALE

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REUNION AT BLACKWELL
FINAL DEVELOPMENT PLAN

SE SHENANDOAH DRIVE LEE'S SUMMIT, MO

REVISION DATE	DESCRIPTION
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DRAWN BY:	TRC
CHECKED BY:	MAB
DATE PREPARED:	03/03/2023
PROJ. NUMBER:	22-067

LANDSCAPE DETAILS

SHEET
L301