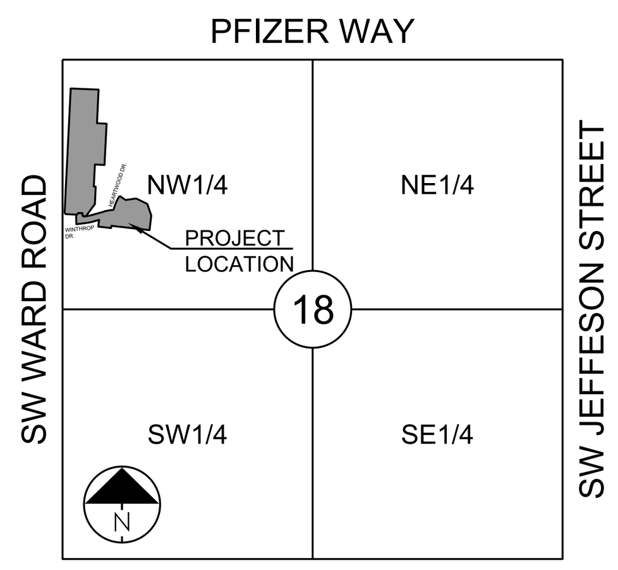
STREET, STORMWATER, MASTER DRAINAGE, AND EROSION CONTROL PLANS
FOR
WOODLAND GLEN 2ND PLAT
IN THE CITY OF LEE'S SUMMIT
JACKSON COUNTY, MISSOURI

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



SECTION 18-47N-31W

LOCATION MAP
SCALE 1" = 2000'

UTILITY CONTACTS:

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

MISSOURI GAS ENERGY (MGE)
Brent Jones
3025 SE Clover Drive
Lee's Summit, MO 64082
(816) 399-9633
brent.jones@spireenergy.com

KANSAS CITY POWER & LIGHT COMPANY (KCP&L)
Ron Dejarnette
1300 SE Hamblin Road
Lee's Summit, MO 64081
Office: (816) 347-4316
Cell: (816) 810-5234
ron.dejarnette@kcpl.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

PUBLIC WATER SUPPLY DISTRICT
Mark Schaufler
220 SE Green Street
Lee's Summit, MO 64063
(816) 969-1900

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. AFTER APPROVAL OF THE SHOP DRAWINGS, A COPY OF THE APPROVED AND SIGNED SHOP DRAWINGS SHALL BE PROVIDED TO THE CITY INSPECTOR UPON REQUEST.
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.
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. ALL MANHOLES, CATCH BASINS, UTILITY VALVES AND METER PITS TO BE ADJUSTED OR REBUILT TO GRADE AS REQUIRED.
14. THE CONTRACTOR SHALL CONTACT DEVELOPMENT SERVICES INSPECTOR AT: 816-969-1200 PRIOR TO OBTAIN A DEVELOPMENT SERVICES CONSTRUCTION PERMIT. A MINIMUM 48 HOUR NOTICE SHALL BE GIVEN PRIOR TO PERMIT ISSUANCE.
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).

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. ALL INSPECTION OF STREET CONSTRUCTION TO BE PERFORMED BY THE CITY OF LEE'S SUMMIT DEVELOPMENT SERVICES DEPARTMENT.
3. CURB RETURN RADII SHALL BE 25' AT BACK OF CURB UNLESS OTHERWISE NOTED.
4. SUBGRADE TO BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
5. ASSUMED DESIGN SPEED = 25 MPH (LOCAL).
6. MINIMUM STOPPING SIGHT DISTANCE = 155 FEET.
7. MINIMUM K, SAG CURVE = 26 (14 WITH LIGHTING), CREST CURVE = 12.
8. GRADE INTERSECTIONS TO DRAIN AS SHOWN.
9. SSD = STOPPING SIGHT DISTANCE.

EARTHWORK:

1. IT IS RECOMMENDED THAT A GEOTECHNICAL ENGINEER OBSERVE AND DOCUMENT ALL EARTHWORK ACTIVITIES.
2. CONTOURS HAVE BEEN SHOWN AT 1-FOOT OR 2-FOOT INTERVALS, AS INDICATED. GRADING SHALL CONSIST OF COMPLETING THE EARTHWORK REQUIRED TO BRING THE PHYSICAL GROUND ELEVATIONS OF THE EXISTING SITE TO THE FINISHED GRADE (OR SUB-GRADE) ELEVATIONS PROVIDED ON THE PLANS AS SPOT GRADES, CONTOURS OR OTHERS MEANS AS INDICATED ON THE PLANS.
3. THE EXISTING SITE TOPOGRAPHY DEPICTED ON THE PLANS BY CONTOURING HAS BEEN ESTABLISHED BY AERIAL PHOTOGRAPHY AND FIELD VERIFIED BY G.P.S. OBSERVATION NEAR JULY 18TH, 2016. THE CONTOUR ELEVATIONS PROVIDED MAY NOT BE EXACT GROUND ELEVATIONS, BUT RATHER INTERPRETATIONS OF SUCH. ACCURACY SHALL BE CONSIDERED TO BE SUCH THAT NOT MORE THAN 10 PERCENT OF SPOT ELEVATION CHECKS SHALL BE IN ERROR BY MORE THAN ONE-HALF THE CONTOUR INTERVAL PROVIDED, AS DEFINED BY THE NATIONAL MAP ACCURACY STANDARDS. ANY QUANTITIES PROVIDED FOR EARTHWORK VOLUMES ARE ESTABLISHED USING THIS TOPOGRAPHY CONTOUR ACCURACY, AND THEREFORE THE INHERENT ACCURACY OF ANY EARTHWORK QUANTITY IS ASSUMED FROM THE TOPOGRAPHY ACCURACY.
4. PROPOSED CONTOURS ARE TO APPROXIMATE FINISHED GRADE.
5. UNLESS OTHERWISE NOTED, PAYMENT FOR EARTHWORK SHALL INCLUDE BACKFILLING OF THE CURB AND GUTTER, SIDEWALK AND FURTHER MANIPULATION OF UTILITY TRENCH SPOILS. THE SITE SHALL BE LEFT IN A MOWABLE CONDITION AND POSITIVE DRAINAGE MAINTAINED THROUGHOUT.
6. UNLESS OTHERWISE NOTED, ALL EARTHWORK IS CONSIDERED UNCLASSIFIED. NO ADDITIONAL COMPENSATION WILL BE PROVIDED FOR ROCK OR SHALE EXCAVATION, UNLESS SPECIFICALLY STATED OTHERWISE.
7. 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.
8. ALL TOPSOIL SHALL BE STRIPPED FROM ALL AREAS TO BE GRADED AND STOCKPILED ADJACENT TO THE SITE AT AN AREA SPECIFIED BY THE PROJECT OWNER OR HIS APPOINTED REPRESENTATIVE. VEGETATION, TRASH, TREES, BRUSH, TREE ROOTS AND LIMBS, ROCK FRAGMENTS GREATER THEN 6-INCHES AND OTHER DELETERIOUS MATERIALS SHALL BE REMOVED AND PROPERLY DISPOSED OF OFFSITE OR AS DIRECTED BY THE OWNER OR HIS APPOINTED REPRESENTATIVE.
9. UNLESS OTHERWISE SPECIFIED IN THE GEOTECHNICAL REPORT, ALL FILLS 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).
10. FILL MATERIALS SHALL BE PER GEOTECHNICAL REPORT AND SHALL NOT INCLUDE ORGANIC MATTER, DEBRIS OR TOPSOIL. ALL FILLS PLACED ON SLOPES GREATER THAN 6:1 SHALL BE BENCHED.
11. 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.
12. 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
    B. PAVED AREAS – 1.2% MINIMUM, 5% MAXIMUM
13. ALL DISTURBED AREAS SHALL BE FERTILIZED, SEEDED AND MULCHED IMMEDIATELY AFTER EARTHWORK 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 EARTHWORK AND GRADING ACTIVITIES.
14. ALL DISTURBED AREAS IN THE RIGHT-OF-WAY SHALL BE SODDED.
15. UNDERDRAINS ARE RECOMMENDED FOR ALL PAVED AREAS ADJACENT TO IRRIGATED TURF AND LANDSCAPED BEDS.
16. 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.

SUMMARY OF QUANTITIES

	ITEM	QUANTITY	UNITS
1	CLEANING, GRUBBING, AND DISPOSAL	1	L.S.
2	GRADING	1	L.S.
3	FLY ASH STABILIZATION (OR APPROVED EQUIVALENT)	4891	S.Y.
4	6" ASPHALT	4267	S.Y.
5	TYPE CG-2 CURB AND GUTTER	2810	L.F.
6	5' SIDEWALK	352	L.F.
7	SIDEWALK RAMPS	4	EA.
8	15" HDPE	970	L.F.
9	18" HDPE	415	L.F. (rev. 9)
10	24" HDPE	70	L.F. (rev. 9)
11	30" HDPE	97	L.F. (rev. 10)
12	30" RCP	59	L.F.
13	36" HDPE	235	L.F.
14	36" RCP	25	L.F.
15	15" END SECTION	2	EA.
16	18" END SECTION	1	EA.
17	24" END SECTION	1	EA.
18	30" END SECTION	1	EA.
19	36" END SECTION	1	EA.
20	4'x4' GRATE INLET	6	EA.
21	6'x4' CURB INLET	11	EA.
22	4'x4' JUNCTION BOX	4	EA. (rev. 10)
23	OUTLET STRUCTURES	3	EA.
24	RETAINING WALL (FRONT FACE WALL)	6865	S.F.
25	UNDERDRAIN	35	L.F.
26	SILT FENCE	5870	L.F.
27	CONSTRUCTION ENTRANCE	1	EA.
28	CONCRETE WASHOUT	1	EA.
29	EX. & PROP. CURB & INLET PROTECTION	33	EA.
30	SILT FOAM DIKE	7	EA.
31	EROSION CONTROL BLANKET	1800	S.F.
32	SEEDING & MULCHING	9	AC.
33	SEDIMENT BASIN	3	EA.
34	BONDS	1	L.S.
35	STOP SIGNS WITH STREET NAMES	3	EA.
36	OM4-1 END OF ROAD MARKERS	3	EA.

VICINITY MAP
N.T.S.

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 VERTICAL SEPARATION FROM ALL STORM SEWER LINES. IF MINIMUM SEPARATIONS CAN NOT BE OBTAINED, CONCRETE ENCASEMENT OF THE STORM SEWER LINE SHALL BE REQUIRED 10 FEET IN EACH DIRECTION OF THE CONFLICT.
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, EXCESS 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.

Sheet List Table

APPROVED BY:

CITY ENGINEER — DATE
APPROVED FOR ONE YEAR FROM THIS DATE

OWNER/DEVELOPER:

ABP FUNDING, LLC
JOHN DUGGAN
9101 W. 110TH STREET, SUITE 200
OVERLAND PARK, KANSAS 66210
p 913-208-2283
e JDUGGAN@KC-DSDLAW.COM

MISSOURI ONE CALL SYSTEM, INC. 1-800-344-7483 STOP - CALL BEFORE YOU DIG!

PROJECT BENCHMARK:

SW. CORNER NW. ¼ SEC. 18-47N-31W, JACKSON COUNTY, MO.
3" DIAMETER ALUMINUM DISK IN MONUMENT BOX
M.D.N.R. DOC. NO. 600-65374

ELEV. 1036.41

SCHLAGEL
ENGINEERS PLANNERS SURVEYORS LANDSCAPE ARCHITECTS
14920 West 107th Street • Lenexa, Kansas 66215
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Missouri State Certificates of Authority
#E2002003800-F #LAC2001005237 #LS2002008859-F

STATE OF MISSOURI — MARK ALLEN BREUER — NUMBER PE-2009007268 — PROFESSIONAL ENGINEER
05.18.22

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE, AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

REVISION DATE		DESCRIPTION
1	04/24/2020	CITY COMMENTS
2	01/12/2021	SCHLAGEL QUANTITIES
3	04/09/2021	SCHLAGEL QUANTITIES
4	05/12/2021	CITY COMMENTS
5	06/15/2021	CITY COMMENTS
6	06/28/2021	CITY COMMENTS
7	09/28/2021	SCHLAGEL UPDATE
8	10/06/2021	CITY COMMENTS
9	01/20/2022	WATER LINE CONFLICT
10	05/16/2022	CITY EMAILED COMMENTS

DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

COVER

SHEET
1

LEGEND

Symbol	Description	Symbol	Description
	TEMPORARY STORAGE AREA FOR EXCESS MATERIAL	SF1	SILT FENCE (PRIOR TO LAND DISTURBANCE)
	TEMP. CONSTRUCTION ENTRANCE AND STAGING AREA	SF2	SILT FENCE (DURING CONSTRUCTION)
			SILT SOCK / ROCK SOCK / SOCK WATTLE
	CONCRETE WASHOUT AREA		LIMITS OF DISTURBANCE
		965	EXISTING CONTOURS
	SILT FOAM DIKE OR STRAW WATTLE - STAKED & INSTALL PER MFR'S RECOMMENDATIONS	965	PROPOSED CONTOURS
	ROCK DITCH CHECK		GRAVEL FILTER FOR STORM SEWER STRUCTURES ONLY
	STRAW WATTLE OR COIL LOG STAKED & INSTALL PER MFR'S RECOMMENDATIONS	1	BMP PLAN REF. NO.

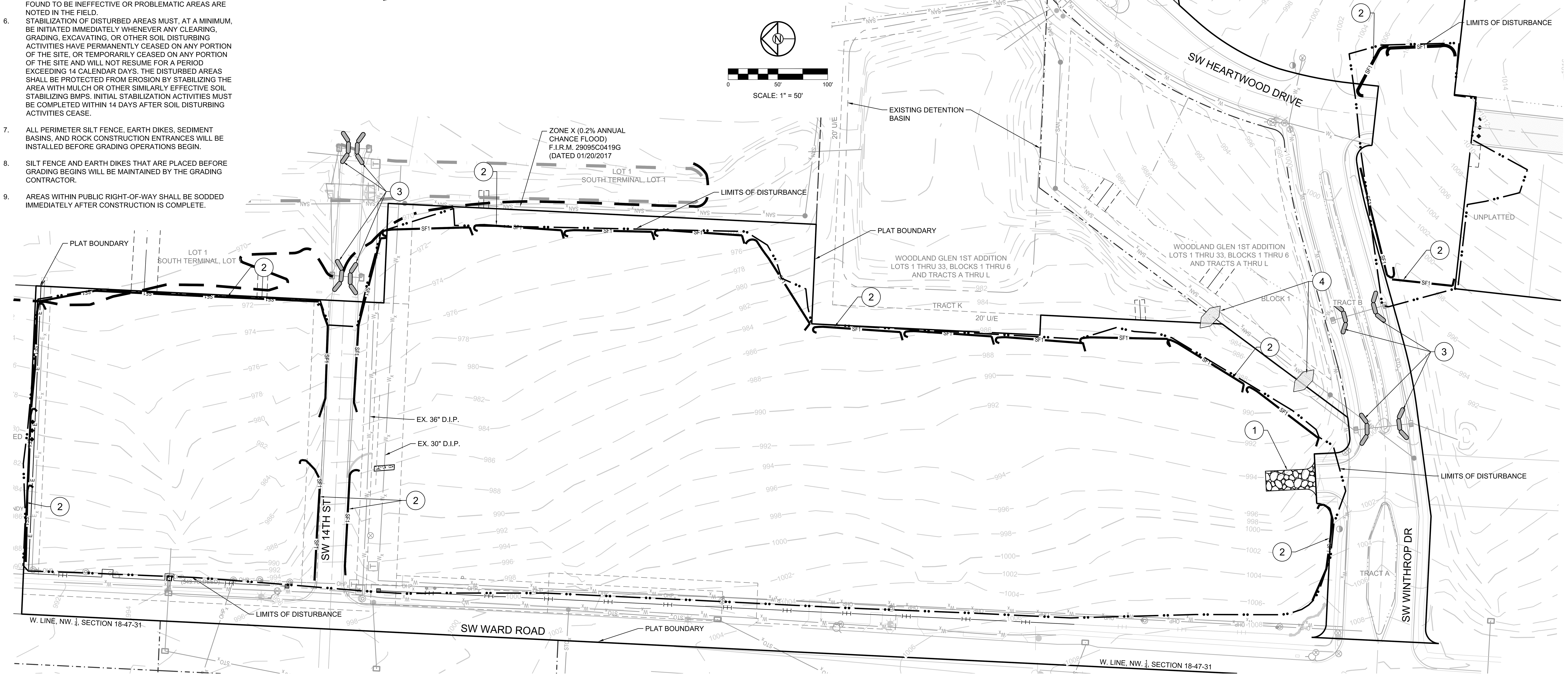
DISTURBED AREA = 9.74 A.C.

SITE SPECIFIC NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.
2. THERE ARE NO WETLANDS, NATURAL OR ARTIFICIAL WATER STORAGE DETENTION AREAS IN THE PROJECT AREA.
3. NO PART OF THE PROJECT LIES WITHIN THE 100 YEAR FLOOD PLAIN PER FEMA FLOOD INSURANCE RATE MAP NUMBER 29095C0419G DATED JANUARY 20, 2017.
4. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IMPLEMENTED ACCORDING TO THE BMP STAGING CHART.
5. ADDITIONAL EROSION CONTROL MAY BE REQUIRED BY THE CITY ENGINEER AT ANY TIME EXISTING MEASURES ARE FOUND TO BE INEFFECTIVE OR PROBLEMATIC AREAS ARE NOTED IN THE FIELD.
6. STABILIZATION OF DISTURBED AREAS MUST, AT A MINIMUM, BE INITIATED IMMEDIATELY WHENEVER ANY CLEARING, GRADING, EXCAVATING, OR OTHER SOIL DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED ON ANY PORTION OF THE SITE, OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS. THE DISTURBED AREAS SHALL BE PROTECTED FROM EROSION BY STABILIZING THE AREA WITH MULCH OR OTHER SIMILARLY EFFECTIVE SOIL STABILIZING BMPS. INITIAL STABILIZATION ACTIVITIES MUST BE COMPLETED WITHIN 14 DAYS AFTER SOIL DISTURBING ACTIVITIES CEASE.
7. ALL PERIMETER SILT FENCE, EARTH DIKES, SEDIMENT BASINS, AND ROCK CONSTRUCTION ENTRANCES WILL BE INSTALLED BEFORE GRADING OPERATIONS BEGIN.
8. SILT FENCE AND EARTH DIKES THAT ARE PLACED BEFORE GRADING BEGINS WILL BE MAINTAINED BY THE GRADING CONTRACTOR.
9. AREAS WITHIN PUBLIC RIGHT-OF-WAY SHALL BE SODDED IMMEDIATELY AFTER CONSTRUCTION IS COMPLETE.

EROSION AND SEDIMENT CONTROL STAGING CHART

PHASE	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 1 (PRIOR TO LAND DISTURBANCE)	E	PLACE WHERE INDICATED, REPAIR OR REPLACE AS NECESSARY AND REMOVE ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
		3	EXISTING INLET PROTECTION	E	PLACE WHERE INDICATED, REPAIR OR REPLACE AS NECESSARY AND REMOVE ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
		4	FOAM SILT DIKE OR ROCK DITCH CHECK	E	PLACE WHERE INDICATED AT EXISTING SWALES AND DRAINAGE COURSES
CONSTRUCTION PHASE	B - MASS GRADING	5	SEDIMENT BASINS (REF. DETAIL ON SHEET 6)	E	TO BE INSTALLED PRIOR TO DISTURBING ENTIRE SITE.
		6	SILT FENCE 2 (DURING CONSTRUCTION)	E	PLACE WHERE INDICATED, REPAIR OR REPLACE AS NECESSARY AND REMOVE ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
		7	FOAM SILT DIKE OR STRAW WATTLE/COIL LOG CHECK	E	PLACE WHERE INDICATED AS SOON AS SWALE IS ESTABLISHED, REPAIR OR REPLACE AS NECESSARY
	C - UTILITY CONSTRUCTION	8	CONCRETE WASHOUT AREA	E	MAINTAIN, REPAIR, OR REPLACE AS NECESSARY
		9	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	10	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
		11	SILT FENCE 2 (AFTER CURB CONSTRUCTION)	E	PLACE WHERE INDICATED, REPAIR OR REPLACE AS NECESSARY AND REMOVE ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
		12	SEEDING AND MULCHING	E	ALL DISTURBED AREAS PRIOR TO 14 DAYS OF CONSTRUCTION INACTIVITY
	E - UNTIL CLOSURE OF LAND DISTURBANCE PERMIT	13			ADDITIONAL SEDIMENT AND EROSION CONTROL MEASURES MAY BE REQUIRED ANY TIME CURRENT MEASURES ARE FOUND TO BE INEFFECTIVE.



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STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2005007268
PROFESSIONAL ENGINEER
05.18.22

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STREET, STORMWATER, MASTER DRAINAGE, AND EROSION CONTROL PLANS
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10	05/16/2022	CITY EMAILED COMMENTS

DRAWN BY:	CHECKED BY:	DATE PREPARED:	PROJ. NUMBER:
BAL	MAB	2-19-2020	18-017

PRE-CLEARING PLAN

SHEET

LEGEND

- TEMPORARY STORAGE AREA FOR EXCESS MATERIAL
- TEMP. CONSTRUCTION ENTRANCE AND STAGING AREA
- CONCRETE WASHOUT AREA
- SILT FOAM DIKE STAKED & INSTALL PER MFR'S RECOMMENDATIONS
- ROCK DITCH CHECK
- STRAW WATTLE OR COIL LOG STAKED & INSTALL PER MFR'S RECOMMENDATIONS
- SF1 — SILT FENCE (PRIOR TO LAND DISTURBANCE)
- SF2 — SILT FENCE (DURING CONSTRUCTION)
- SILT SOCK / ROCK SOCK / SOCK WATTLE
- LIMITS OF DISTURBANCE
- 965 — EXISTING CONTOURS
- 965 — PROPOSED CONTOURS
- GRAVEL FILTER FOR STORM SEWER STRUCTURES ONLY
- 1 — BMP PLAN REF. NO.

DISTURBED AREA = 9.74 A.C.

SITE SPECIFIC NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITY LOCATIONS PRIOR TO EXCAVATION.
2. THERE ARE NO WETLANDS, NATURAL OR ARTIFICIAL WATER STORAGE DETENTION AREAS IN THE PROJECT AREA.
3. NO PART OF THE PROJECT LIES WITHIN THE 100 YEAR FLOOD PLAIN PER FEMA FLOOD INSURANCE RATE MAP NUMBER 29095C0419G DATED JANUARY 20, 2017.
4. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IMPLEMENTED ACCORDING TO THE BMP STAGING CHART.
5. ADDITIONAL EROSION CONTROL MAY BE REQUIRED BY THE CITY ENGINEER AT ANY TIME EXISTING MEASURES ARE FOUND TO BE INEFFECTIVE OR PROBLEMATIC AREAS ARE NOTED IN THE FIELD.
6. STABILIZATION OF DISTURBED AREAS MUST, AT A MINIMUM, BE INITIATED IMMEDIATELY WHENEVER ANY CLEARING, GRADING, EXCAVATING, OR OTHER SOIL DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED ON ANY PORTION OF THE SITE, OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS. THE DISTURBED AREAS SHALL BE PROTECTED FROM EROSION BY STABILIZING THE AREA WITH MULCH OR OTHER SIMILARLY EFFECTIVE SOIL STABILIZING BMPS. INITIAL STABILIZATION ACTIVITIES MUST BE COMPLETED WITHIN 14 DAYS AFTER SOIL DISTURBING ACTIVITIES CEASE.
7. ALL PERIMETER SILT FENCE, EARTH DIKES, SEDIMENT BASINS, AND ROCK CONSTRUCTION ENTRANCES WILL BE INSTALLED BEFORE GRADING OPERATIONS BEGIN.
8. SILT FENCE AND EARTH DIKES THAT ARE PLACED BEFORE GRADING BEGINS WILL BE MAINTAINED BY THE GRADING CONTRACTOR.
9. AREAS WITHIN PUBLIC RIGHT-OF-WAY SHALL BE SODDED IMMEDIATELY AFTER CONSTRUCTION IS COMPLETE.

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 1 (PRIOR TO LAND DISTURBANCE)	E	PLACE WHERE INDICATED, REPAIR OR REPLACE AS NECESSARY AND REMOVE ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
		3	EXISTING INLET PROTECTION	E	PLACE WHERE INDICATED, REPAIR OR REPLACE AS NECESSARY AND REMOVE ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
		4	FOAM SILT DIKE OR ROCK DITCH CHECK	E	PLACE WHERE INDICATED AT EXISTING SWALES AND DRAINAGE COURSES
CONSTRUCTION PHASE	B - MASS GRADING	5	SEDIMENT BASIN (REF. DETAIL ON SHEET 6)	E	TO BE INSTALLED PRIOR TO DISTURBING ENTIRE SITE.
		6	SILT FENCE 2 (DURING CONSTRUCTION)	E	PLACE WHERE INDICATED, REPAIR OR REPLACE AS NECESSARY AND REMOVE ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
		7	FOAM SILT DIKE OR STRAW WATTLE/COIL LOG CHECK	E	PLACE WHERE INDICATED AS SOON AS SWALE IS ESTABLISHED, REPAIR OR REPLACE AS NECESSARY
	C - UTILITY CONSTRUCTION	8	CONCRETE WASHOUT AREA	E	MAINTAIN, REPAIR, OR REPLACE AS NECESSARY
		9	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	10	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
		11	SILT FENCE 2 (AFTER CURB CONSTRUCTION)	E	PLACE WHERE INDICATED, REPAIR OR REPLACE AS NECESSARY AND REMOVE ONLY WHEN GRADED AREAS HAVE SUFFICIENT GROUND COVER ESTABLISHED
		12	SEEDING AND MULCHING	E	ALL DISTURBED AREAS AFTER PRIOR TO 14 DAYS OF CONSTRUCTION INACTIVITY
	E - UNTIL CLOSURE OF LAND DISTURBANCE PERMIT	13			ADDITIONAL SEDIMENT AND EROSION CONTROL MEASURES MAY BE REQUIRED ANY TIME CURRENT MEASURES ARE FOUND TO BE INEFFECTIVE.

TOTAL DRAINAGE AREA TO TEMPORARY SEDIMENT BASIN
EDDB#1 AREA = 2.59 AC.
EDDB#2 AREA = 4.99 AC.
EDDB#3 AREA = 1.26 AC.

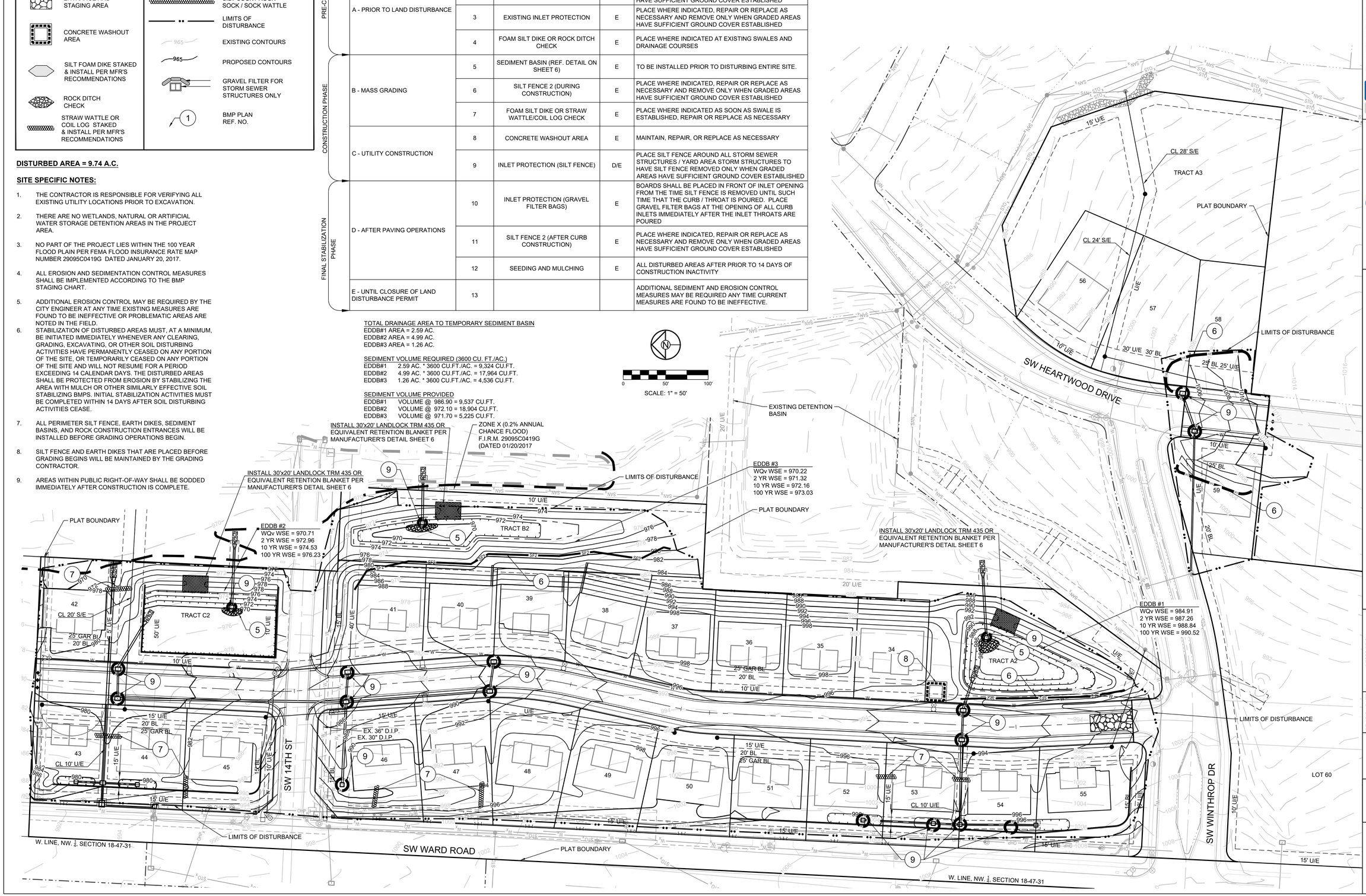
SEDIMENT VOLUME REQUIRED (3600 CU. FT./AC.)
EDDB#1 2.59 AC. * 3600 CU.FT./AC. = 9,324 CU.FT.
EDDB#2 4.99 AC. * 3600 CU.FT./AC. = 17,964 CU.FT.
EDDB#3 1.26 AC. * 3600 CU.FT./AC. = 4,536 CU.FT.

SEDIMENT VOLUME PROVIDED
EDDB#1 VOLUME @ 986.90 = 9,537 CU.FT.
EDDB#2 VOLUME @ 972.10 = 18,904 CU.FT.
EDDB#3 VOLUME @ 971.70 = 5,225 CU.FT.

N

0 50' 100'

SCALE: 1" = 50'



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#E2000030800-F #LA2001055237 #LS2000208859-F

MARK ALLEN BREUER NUMBER PE-2009007268 PROFESSIONAL ENGINEER STATE OF MISSOURI
05.18.22

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASS GRADING, MASTER DRAINAGE,
AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

REVISION DATE	DESCRIPTION
04/24/2020	CITY COMMENTS
01/12/2021	SCHLAGEL QUANTITIES
04/06/2021	SCHLAGEL QUANTITIES
05/12/2021	CITY COMMENTS
06/15/2021	CITY COMMENTS
06/28/2021	CITY COMMENTS
09/28/2021	SCHLAGEL UPDATE
10/06/2021	CITY COMMENTS
01/20/2022	WATERLINE CONFLICT
05/16/2022	CITY EMAILED COMMENTS

DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

ECP
CONSTRUCTION

SHEET
3

LEGEND

TEMPORARY STORAGE AREA FOR EXCESS MATERIAL	SILT FENCE (PRIOR TO LAND DISTURBANCE)
TEMP. CONSTRUCTION ENTRANCE AND STAGING AREA	SILT FENCE (DURING CONSTRUCTION)
CONCRETE WASHOUT AREA	SILT SOCK / ROCK SOCK / SOCK WATTLE
SILT FOAM DIKE OR STRAW WATTLE - STAKED & INSTALL PER MFR'S RECOMMENDATIONS	LIMITS OF DISTURBANCE
ROCK DITCH CHECK	EXISTING CONTOURS
STRAW WATTLE OR COIL LOG STAKED & INSTALL PER MFR'S RECOMMENDATIONS	PROPOSED CONTOURS
	GRAVEL FILTER FOR STORM SEWER STRUCTURES ONLY
	BMP PLAN REF. NO.

DISTURBED AREA = 9.74 A.C.

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EROSION AND SEDIMENT CONTROL STAGING CHART

PHASE	PROJECT STAGE	BMP PLAN REF. NO	BMP DESCRIPTION	REMOVE AFTER STAGE	NOTES:
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		4	FOAM SILT DIKE OR ROCK DITCH CHECK AND SEDIMENT TRAPS	E	PLACE WHERE INDICATED AT EXISTING SWALES AND DRAINAGE COURSES
CONSTRUCTION PHASE	B - MASS GRADING	5	SEDIMENT BASIN (REF. DETAIL ON SHEET 6)	E	TO BE INSTALLED PRIOR TO DISTURBING ENTIRE SITE.
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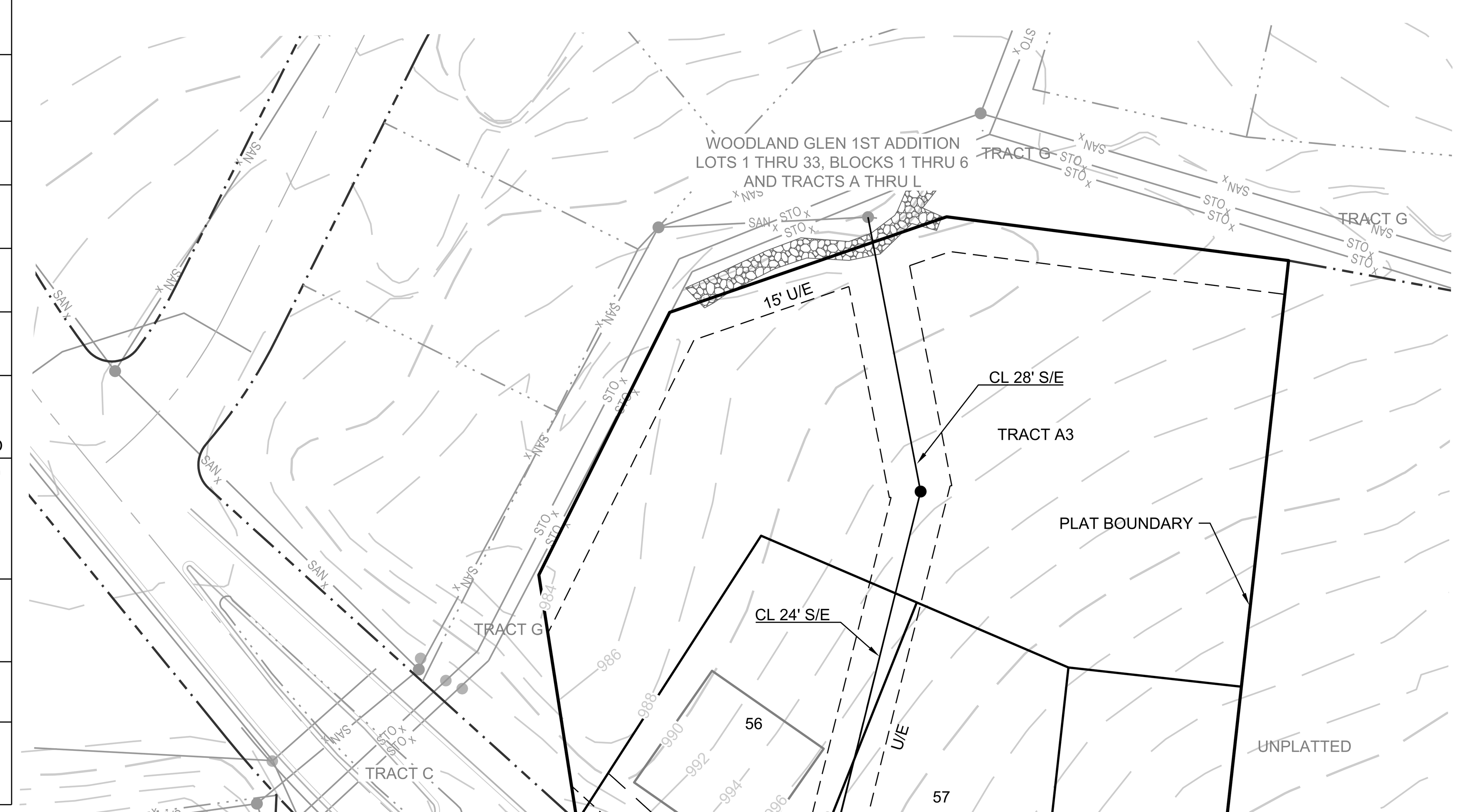

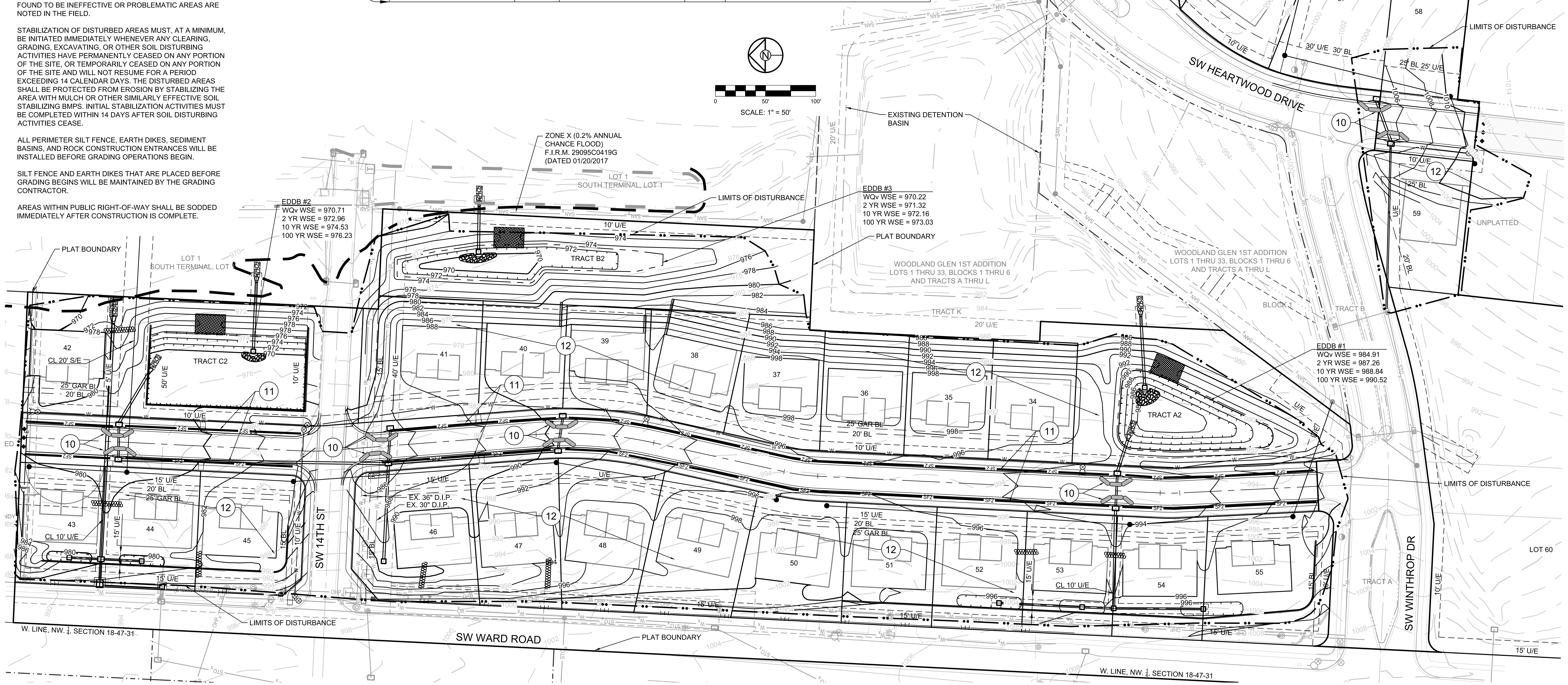

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STATE OF MISSOURI — MARK ALLEN BREUER — NUMBER PE-2005007268 — PROFESSIONAL ENGINEER — 05.18.22

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE, AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

DRAWN BY:	CHECKED BY:	DATE PREPARED:	PROJ. NUMBER:
BAL	MAB	2-19-2020	18-017

REVISION	REVISION DATE	DESCRIPTION
1	04/24/2020	CITY COMMENTS
2	01/12/2021	SCHLAGEL QUANTITIES
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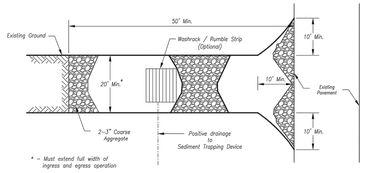
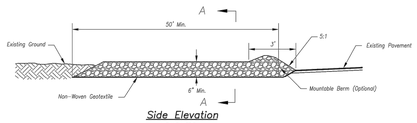
8	10/06/2021	CITY COMMENTS
9	01/20/2022	WATER LINE CONFLICT
10	05/16/2022	CITY EMAILED COMMENTS

ECP FINAL STABILIZATION

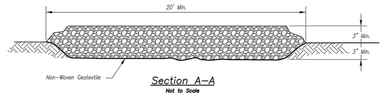
SHEET 4



Plan View
Not to Scale



Side Elevation
Not to Scale



Section A-A
Not to Scale

Notes for Construction Entrance:

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

Maintenance for Construction Entrance:

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

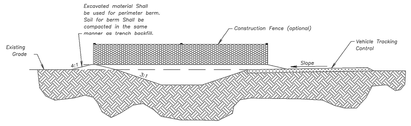
CONSTRUCTION ENTRANCE

Notes for Concrete Washout:

1. Concrete washout areas shall be installed prior to any concrete placement on site.
2. Concrete washout area shall include a flat subsurface pit sized relative to the amount of concrete placed on site. The slopes going 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:

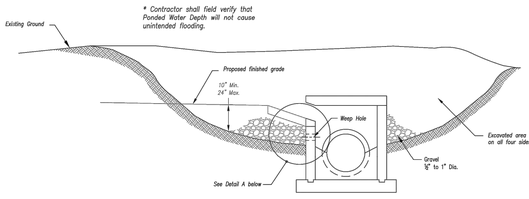
1. Concrete washout materials shall be removed once the materials have filled the washout to approximately 75% full.
2. Concrete washout areas shall be enlarged as necessary to maintain capacity for wasted concrete.
3. Concrete washout water, wasted pieces of concrete and all other debris in the subsurface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

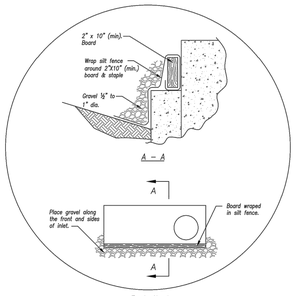


CONCRETE WASHOUT

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

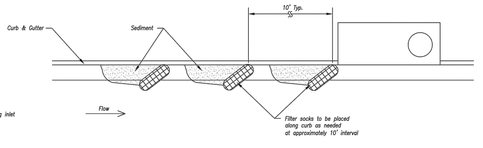
AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
CONSTRUCTION ENTRANCE AND CONCRETE WASHOUT	STANDARD DRAWING NUMBER ESC-01
	ADOPTED: 10/24/2016





Detail A

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



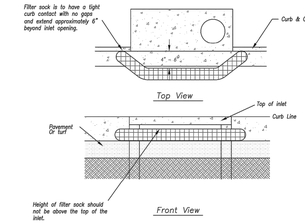
On Grade Curb Inlet Protection

Notes:

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

Maintenance:

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

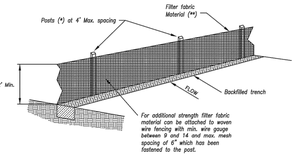


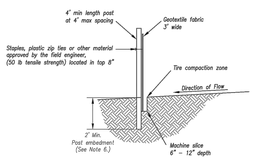
Sump Inlet Sediment Filter

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

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

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





(*) POSTS
– MIN. LENGTH 4'
– HARDWOOD 1 ½" x 1 ½"
– NO.2 SOUTHERN PINE 2 ½" x 2 ½"
– STEEL 1.33 LB/FT

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

Notes:

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

Maintenance:

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

SILT FENCE DETAILS
Not to Scale

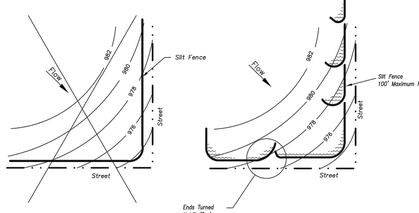
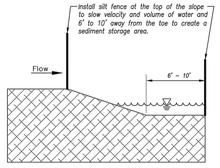
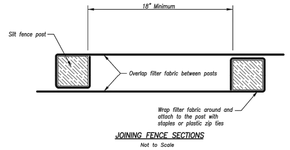


Figure A



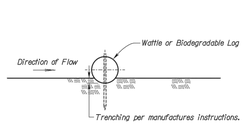


JOINING FENCE SECTIONS
Not to Scale

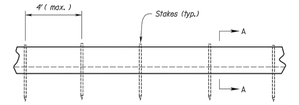
SILT FENCE LAYOUT
Not to Scale

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

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



Section A–A



Typical Elevation

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".

WATTLES AND BIODEGRADABLE LOG

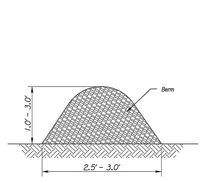


Figure 1
(Perimeter Control)

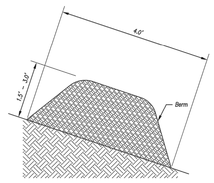


Figure 2
(Steep Slopes)

Notes for Mulch and Compost Filter Beam:

1. The sediment control berm shall be placed uncompacted in a windrow 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 reshaped 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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PREPARED BY:

STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2009007268
PROFESSIONAL ENGINEER
05.18.22

SCHLAGEL & ASSOCIATES, P.A.

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE,
AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

REVISION DATE	DESCRIPTION
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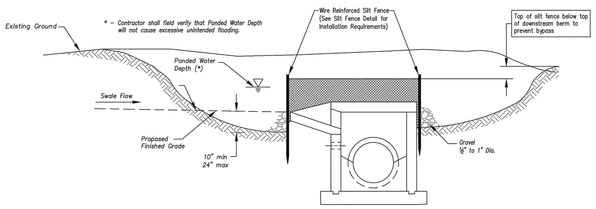
08/28/2021	CITY COMMENTS
09/28/2021	SCHLAGEL UPDATE
10/08/2021	CITY COMMENTS
01/20/2022	WATER LINE CONFLICT
05/16/2022	CITY EMAILED COMMENTS

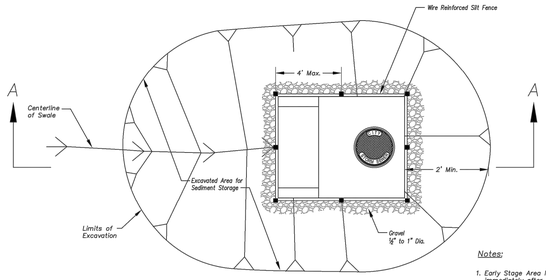
DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ NUMBER: 19-017

EROSION CONTROL DETAILS

SHEET
5

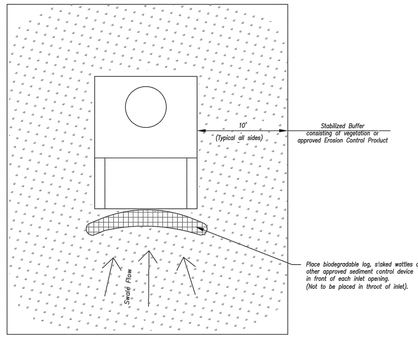


Section A–A
Not to Scale

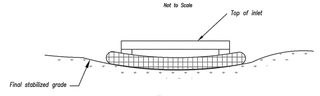


Plan
Not to Scale

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



Plan
Not to Scale



Front View

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

Notes:

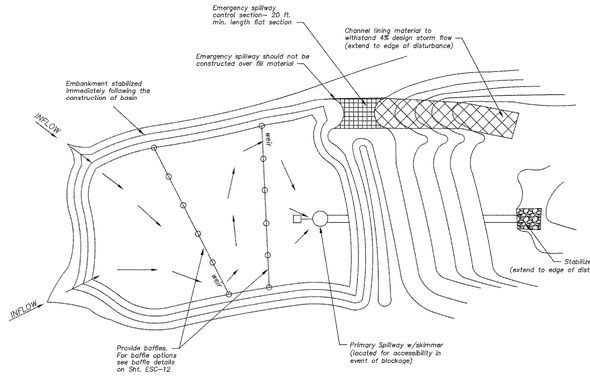
1. Early Stage Area Inlet Sediment Barrier to be installed immediately after inlet or junction box is constructed.
2. Silt fence shall remain in place until excavated area is removed and Late Stage Area Inlet is being installed.
3. Backfill excavated area ONLY after final grading of the site. Stabilization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

Maintenance:

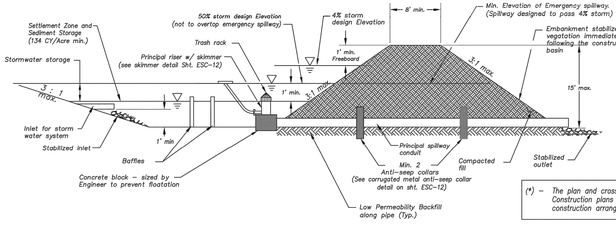
1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

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

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



Plan View (*)
Not to Scale



Cross Section (*)
Not to Scale

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

Sediment Basin Design Summary (**)				
Design Item	Basin #1	Basin #2	Units	Notes
Site Data:				
Tributary Drainage Area to Pond			Acres	
50% (2 yr) Design Flow			cfs	
4% (25 yr) Design Flow			cfs	
Pond Data:				
Minimum Sediment Storage Volume			cu yd	134 cy/acre required minimum
Provided Sediment Storage Volume			cu yd	
Bottom Elevation			Ft	
Sediment Cleanout Elevation			Ft	Elevation equal to 20% of original design volume
Top of Riser Elevation			Ft	Top of dry storage volume
Emergency Spillway Elevation			Ft	at or above Q–2 elevation. 1.0 ft min above principal spillway
Top of Dam Elevation			Ft	1.0 ft min above Q–25 elevation
Basin Shape Data:				
A = Area at Normal Pool			SF	
L = Length of Flow Path			Ft	
We = Effective Width = A/L			Ft	
Length to Width Ratio = L/We				
Principal Spillway Data:				
Riser Pipe dia			in	15" min. Size for 2 year flow minimum
Barrel Pipe dia			in	15" min. Size for 2 year flow minimum
Concrete Base size for Riser Pipe			CY	Size to prevent flotation. 1.25 safety factor required
Skimmer Size				Designer to provide specific details and calculations per application to dewater in 48 to 72 hours
Emergency Spillway Data:				
Design Depth in Spillway			ft	
Design Velocity in Spillway			ft/sec	
Lining Material				Designer to provide specific details and calculations per application
(**) – Required on all Sediment Basin Plan Sheets				

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:

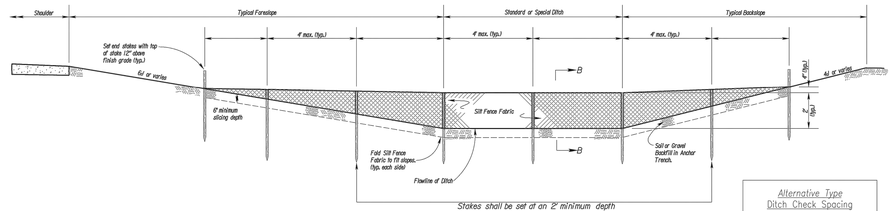
1. Check temporary sediment basins after periods of significant runoff.
2. Remove sediment and restore the basin to its original dimensions when sediment accumulates to 20% of the storage capacity.
3. Immediately repair any erosion damage to the embankment and outlets.
4. Repair and/or replace baffles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

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

AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
SEDIMENT BASIN	STANDARD DRAWING NUMBER ESC–11
	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 ¾" x 2 ¾";
   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.

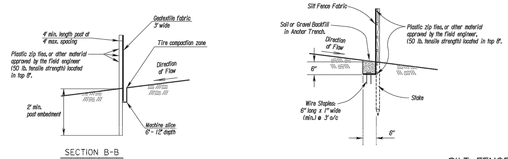


Stakes shall be set at an 2' minimum depth

TYPICAL ELEVATION

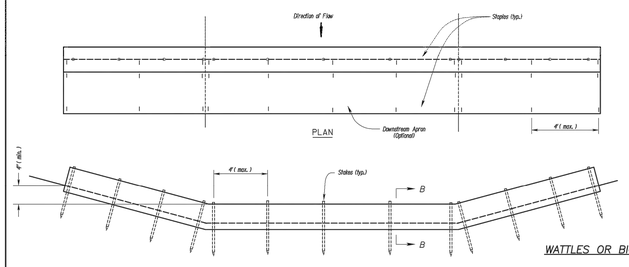
Alternative Type Ditch Check Spacing	
Ditch Centerline Slope ('%')	Spacing Interval (Feet)
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	33

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



SECTION B-B

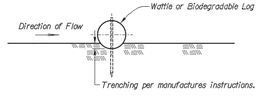
SILT FENCE DITCH CHECK
NO SCALE



TYPICAL ELEVATION

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.

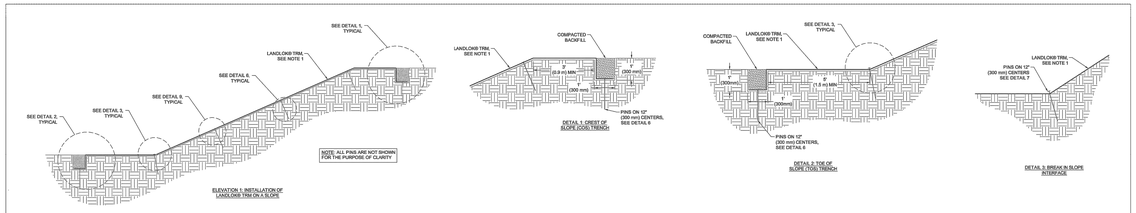


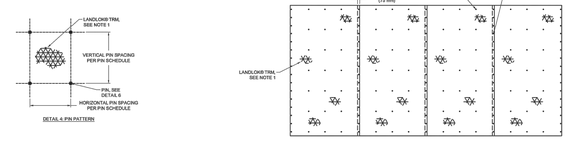
SECTION B - B

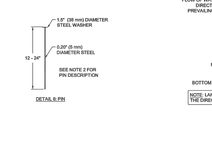
WATTLES OR BIODEGRADABLE LOG DITCH CHECKS
OR Filter Sock Ditch Check
NO SCALE

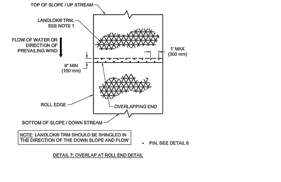
Modified from Kansas Department of Transportation Standard Details for Erosion Control and Sediment Control.

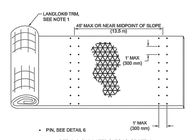
AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
SILT FENCE AND WATTLE/ BIODEGRADABLE LOG DITCH CHECKS	STANDARD DRAWING NUMBER ESC–09
	ADOPTED: 10/24/2016

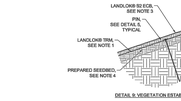












PIN SCHEDULE	
SECURING DEVICE	PIN
HORIZONTAL PIN SPACING	2' (0.60 m)
VERTICAL PIN SPACING	3.5' (0.75 m)
EMBEDMENT DEPTH	PER MANUFACTURES DESIGN

LANDLOK TRM ON A SLOPE FOR EROSION CONTROL GENERAL INSTALLATION GUIDELINES

GENERAL NOTES

1. The LANDLOK® TRM is a three-dimensional, lofty, stitch-bonded polypropylene geotextile which is specially designed for erosion control applications on steep slopes and vegetated waterways. The matrix is composed of a dense web of crimped,interlocking fibers featuring X3® technology positioned between two biaxially-oriented nets and mechanically bound together by parallel stitching with polypropylene thread. The material exhibits very high interlock and reinforcement capacity with both soil and root systems, demonstrates superior UV resistance, and enhances seeding emergence.
2. The 12", 18", and 24" Securing Pins are composed of a wire, mushroomed at the top. A washer is then placed on the wire and the wire is crimped or swedged about 3-1/2" below the top so the washer will not slide off. The end of the wire is cut at a 45 degree angle for easy penetration of the soil. These Pins with washers conform to industry standards for erosion control pins with washers.
3. Landlok® SI2 Enhanced Erosion Blankets consist of 100% wheat straw mechanically bound and covered on both sides by netting. The straw is homogeneously blended and evenly distributed throughout the blanket. The netting is photodegradable polypropylene with mesh openings of approximately 2/3 in by 3/8 in. (11 mm by 11 mm). The blanket is sewn on approximately 2 in. (51 mm) centers with photodegradable polypropylene thread. This product is NTPEP approved for AASHTO standards.

VEGETATION ESTABLISHMENT

4. Prepare seedbed by loosening 50 to 75 mm (2 to 3 in) of soil above final grade. Apply seed in an amount equivalent to 90% of the total mixture required to be installed on the soil surface, to scarified surface prior to installation of the LANDLOK® TRM. Select and apply soil amendments and fertilizer, to scarified surface prior to installation of the LANDLOK® TRM. A site specific soil test should be performed to help determine what soil amendments, such as lime and fertilizer, need to be incorporated into the soil to promote healthy vegetation.
5. Immediately LANDLOK® TRM shall be roll filled and seeded with the remaining 40% of the seed mixture. Do not place excessive soil above material. Once soil fill and additional seed is in place, surficial protection should be accomplished by installing LANDLOK® SI2 Erosion Control Blanket (ECB) atop the seed layer. LANDLOK® SI2 ECB is to be secured using 6" U-shaped staples with a frequency of 2.0 staples per square meter (1.7 staples per square yard).
6. Irrigate as necessary to establish and maintain vegetation until 75% of vegetation has established and has reached a height of 2 inches. Frequent, light irrigation will need to be applied to seeded areas if natural rain events have not occurred within two weeks of seeding.

BEFORE INSTALLATION BEGINS

7. Coordinate with a Propex Representative: A pre-construction meeting is suggested with the construction team and a representative from Propex. This meeting should be scheduled by the contractor with at least a two week notice.
8. Gather the Tools Needed: Tools that you will need to install the LANDLOK® TRM include a pair of industrial shears to cut the LANDLOK® TRM and tape measure.
9. Determine how to Establish Vegetation: The method of vegetation establishment should be determined prior to the start of installation. Different vegetation establishment methods require different orders of installation. Refer to Establish Vegetation for further guidance.
10. Please consult the Propex Website for the most up to date installation guidelines.

EROSION CONTROL INSTALLATION DETAILS	
Propex GEOSOLUTIONS	Please note that the information presented herein is general information only. It is for conceptual use only and not intended to be used for construction. While every effort has been made to ensure its accuracy, this information should not be used for a specific application without independent professional examination and verification of its suitability, applicability, and accuracy. This engineering drawing is protected by the Copyright Act, 17 U.S.C. §101 et seq. and may be used ONLY with the express written permission of Propex in connection with Propex products. Any copying, distributing, and/or creation of a derivative work without permission of Propex is prohibited and is subject of actual damages, statutory damages and attorney's fees under the Copyright Act.
© 2017 Propex Operating Company, LLC	TURF REINFORCEMENT MAT (TRM) LANDLOK® TRM INSTALLATION DETAILS FOR SLOPES
1 of 1	LANDLOK®
Rev.	Date: 10/19/2017 | Drawn By: JJHLL | Scale: NTS | *ALL DIMENSIONS ARE TO BE VERIFIED BY ENGINEER OF RECORD

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PREPARED BY:

STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2009007268
PROFESSIONAL ENGINEER
05.18.22

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WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE,
AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

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03/16/2022	CITY EMAILED COMMENTS

DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-417

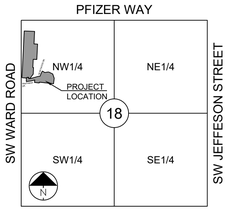
EROSION CONTROL DETAILS

SHEET 6

PROJECT BENCHMARK:

SW. CORNER NW. ¼ SEC. 18-47N-31W, JACKSON COUNTY, MO.
3" DIAMETER ALUMINUM DISK IN MONUMENT BOX
M.D.N.R. DOC. NO. 600-65374

ELEV. 1036.41



SECTION 18-47N-31W

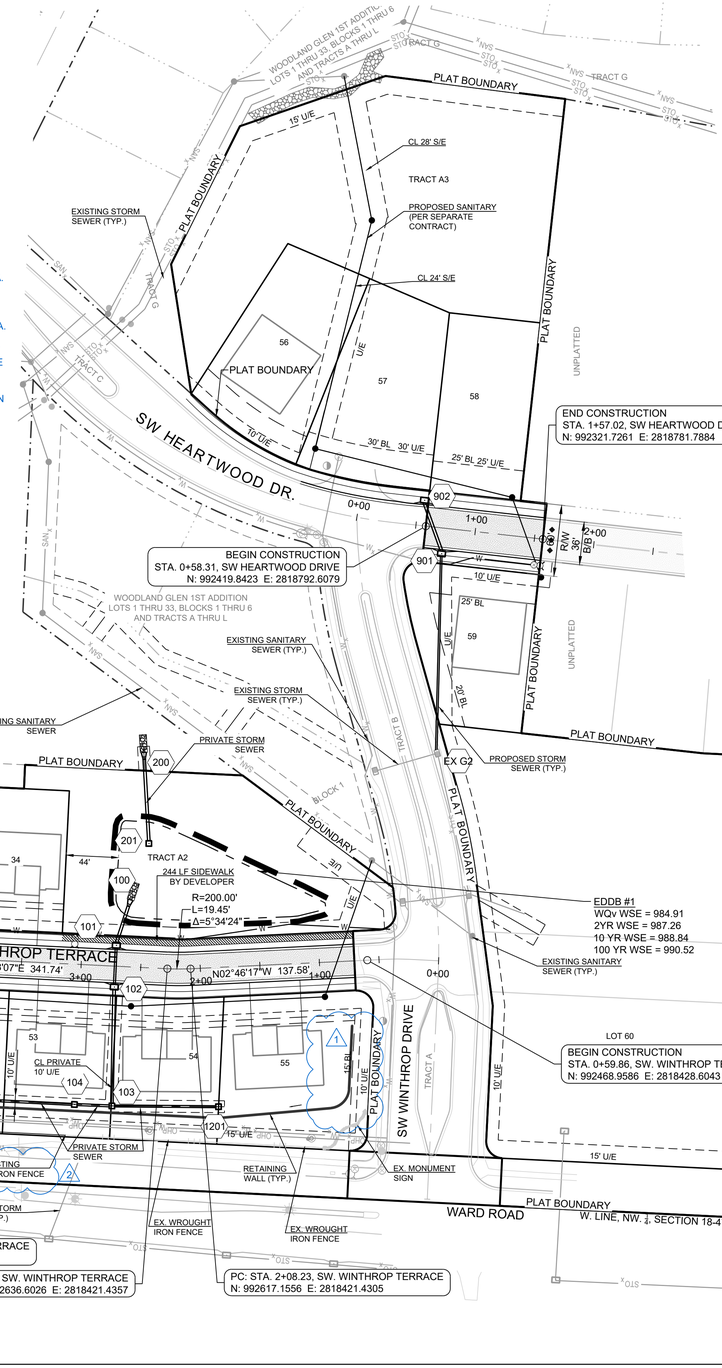
LOCATION MAP
SCALE 1" = 2000'

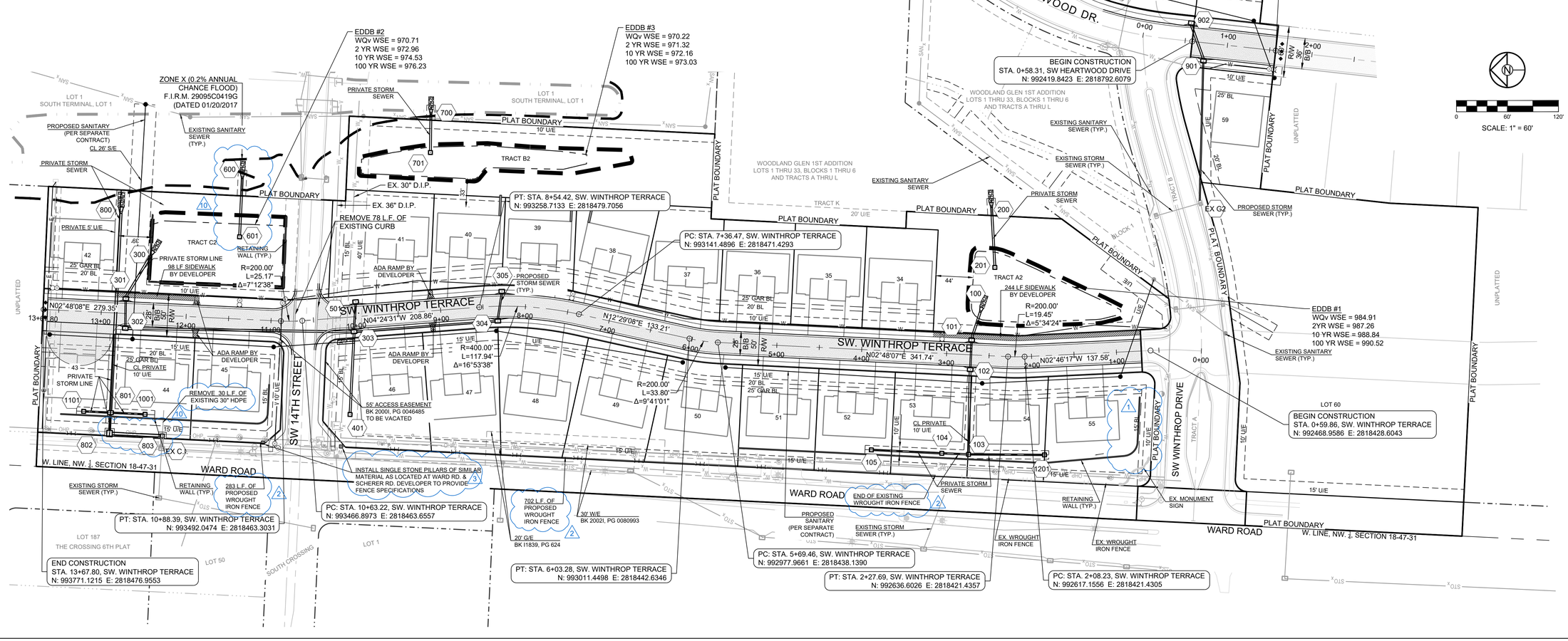
1 WALL UPDATED AND REQUIRED ADDITIONAL GOEGRID IN THIS AREA. RESULTING IN THE WALL MOVING NORTH ROUGHLY 2 FEET.

2 PROPOSED WROUGHT IRON FENCE CALLED OUT TO MATCH AND CONTINUE WITH THE EXISTING WROUGHT IRON FENCE IN THIS AREA.

3 ADDED STONE PILLARS AND DETAIL TO THE END OF THE WROUGHT IRON FENCE AS REQUESTED BY THE CITY. DEVELOPER TO PROVIDE WROUGHT FENCE SPECIFICATIONS FROM SUPPLIER.

10 MOVED THE LOCATION OF STORM LINE 600. ADDED A 4'x4' JUNCTION BOX (803) TO STORM LINE 800





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MARK ALLEN BREUER
NUMBER PE-2009007268
PROFESSIONAL ENGINEER
STATE OF MISSOURI
05.18.22

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WOODLAND GLEN 2ND PLAT STREET, STORMWATER, MASTER DRAINAGE, AND EROSION CONTROL PLANS

WARD ROAD & WINTHROP DRIVE LEE'S SUMMIT, MISSOURI

REVISION	DATE	DESCRIPTION
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3	04/09/2021	SCHLAGEL QUANTITIES
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DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

GENERAL LAYOUT

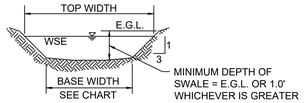
SHEET
7

NOTES:

1. MBOE = MINIMUM BUILDING OPENING ELEVATION FOR HOUSES ADJACENT TO ENGINEERED OVERFLOW SWALES SHALL BE MINIMUM 2 FEET ABOVE THE 100 YR WATER SURFACE ELEVATION.
2. EGL = ENERGY GRADE LINE (100 YR)
3. WSE = WATER SURFACE ELEVATION (100 YR)
4. ENGINEERED SWALES TO BE GRADED TO NORMAL DEPTH OF FLOW (WATER SURFACE ELEVATION) OR 1.0 FT, WHICHEVER IS GREATER. MINIMUM SLOPE OF ENGINEERED SWALES SHALL BE AS NOTED.
5. MBOE'S ADJACENT TO SUMPED INLETS SHALL BE A MINIMUM OF 1' ABOVE TOP OF ADJACENT BERM
6. SWALE SECTIONS EXTEND THE ENTIRE LENGTH BETWEEN UPSTREAM AND DOWNSTREAM STRUCTURES WITH THE EXCEPTION OF A TRANSITION AT EACH STRUCTURE.

RUNOFF CALCULATIONS:
Q = K * C * I * A
K_{10} = 1.0 K_{100} = 1.25 C = 0.51 I = INTENSITY
DESIGN OVERFLOW=$Q_{OVERFLOW} = Q_{100} - Q_{10}$
MANNINGS "n" = .030 FOR SWALES

A A — DENOTES OVERFLOW SWALE



MINIMUM DEPTH OF SWALE = E.G.L. OR 1.0' WHICHEVER IS GREATER

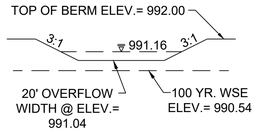
100 YR OVERFLOW SWALE SECTIONS
SECTION 1-2

100 YEAR OVERFLOW SWALES												
SECTION	DRAINAGE AREA (AC.)	Q100 (CFS)	Q10 (CFS)	DESIGN OVERFLOW (CFS)	BED SLOPE (%)	BASE WIDTH (FT.)	SIDE SLOPE	TOP WIDTH (FT.)	NORMAL DEPTH (FT.)	VELOCITY (FPS)	VELOCITY HEAD (FT.)	EGL (FT.)
A-A	0.32	2.11	-	2.11	2.52	5	3:1	6.02	0.17	2.26	0.08	0.25
B-B	3.54	23.29	-	23.29	7.93	5	3:1	7.91	0.49	7.44	0.86	1.35
C-C	0.93	6.12	-	6.12	6.50	5	3:1	6.44	0.24	4.46	0.31	0.55
D-D	2.65	17.44	-	17.44	5.93	5	3:1	7.69	0.45	6.13	0.58	1.03

DETENTION STORAGE EDDB #1:
100 YEAR, 24 HR. RAINFALL - MAXIMUM WSE = 990.54 (SEE FINAL STORMWATER MGMT. PLAN)

AUXILIARY SPILLWAY SET AT 0.5 FEET ABOVE MAX. WSE, SPILLWAY ELEV. = 991.04

AUXILIARY SPILLWAY DESIGN:
Q(100)=2.71 CFS, Q=CLH^(3/2), C=3.33, L=20 FT., 2.71 CFS = 3.33 * 20FT. * (H^(3/2)), H=0.12 FT.

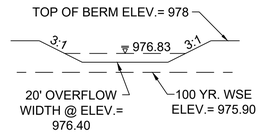


SECTION 1-1

DETENTION STORAGE EDDB #2:
100 YEAR, 24 HR. RAINFALL - MAXIMUM WSE = 975.90 (SEE FINAL STORMWATER MGMT. PLAN)

AUXILIARY SPILLWAY SET AT 0.5 FEET ABOVE MAX. WSE, SPILLWAY ELEV. = 976.40

AUXILIARY SPILLWAY DESIGN:
Q(100)=18.47 CFS, Q=CLH^(3/2), C=3.33, L=20 FT., 18.47 CFS = 3.33 * 20FT. * (H^(3/2)), H=0.43 FT.

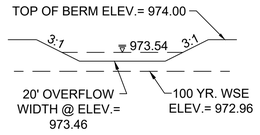


SECTION 2-2

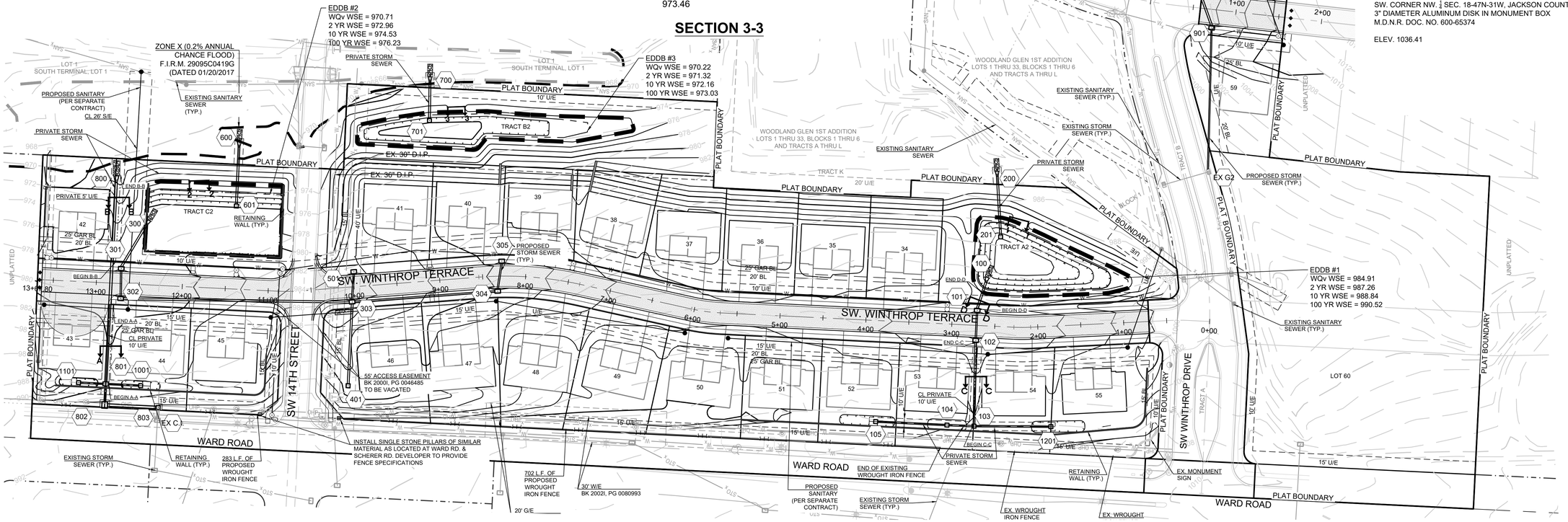
DETENTION STORAGE EDDB #3:
100 YEAR, 24 HR. RAINFALL - MAXIMUM WSE = 972.96 (SEE FINAL STORMWATER MGMT. PLAN)

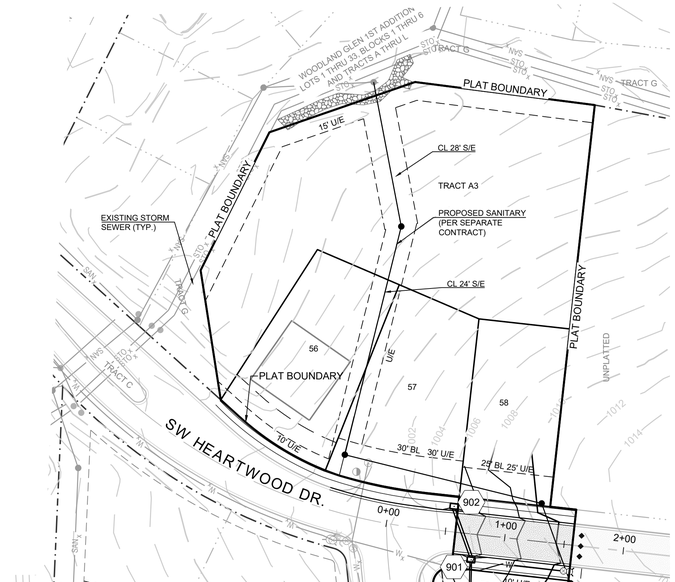
AUXILIARY SPILLWAY SET AT 0.5 FEET ABOVE MAX. WSE, SPILLWAY ELEV. = 973.46

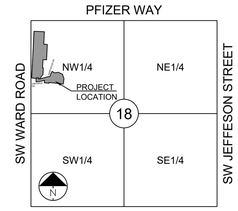
AUXILIARY SPILLWAY DESIGN:
Q(100)=1.43 CFS, Q=CLH^(3/2), C=3.33, L=20 FT., 1.43 CFS = 3.33 * 20FT. * (H^(3/2)), H=0.08 FT.



SECTION 3-3







SECTION 18-47N-31W

LOCATION MAP
SCALE 1" = 2000'

PROJECT BENCHMARK:

SW. CORNER NW. ¼ SEC. 18-47N-31W, JACKSON COUNTY, MO.
3" DIAMETER ALUMINUM DISK IN MONUMENT BOX
M.D.N.R. DOC. NO. 600-65374

ELEV. 1036.41

SCALE: 1" = 60'

SCHLAGEL
ENGINEERS PLANNERS SURVEYORS LANDSCAPE ARCHITECTS
14920 W. 107th Street • Lenexa, Kansas 66215
(913) 492-5158 • Fax (913) 492-8400
WWW.SCHLAGEL-ASSOCIATES.COM
Missouri State Certificates of Authority
#E2000030800-F #LA2000105237 #LS2000208859-F

MARK ALLEN BREUER
NUMBER PE-2009007268
05.18.22

MISSOURI ONE CALL SYSTEM, INC.
1-800-344-7483
STOP-CALL BEFORE YOU DIG!

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE,
AND EROSION CONTROL PLANS

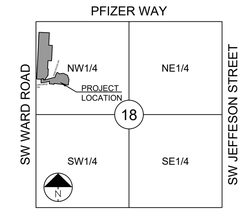
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

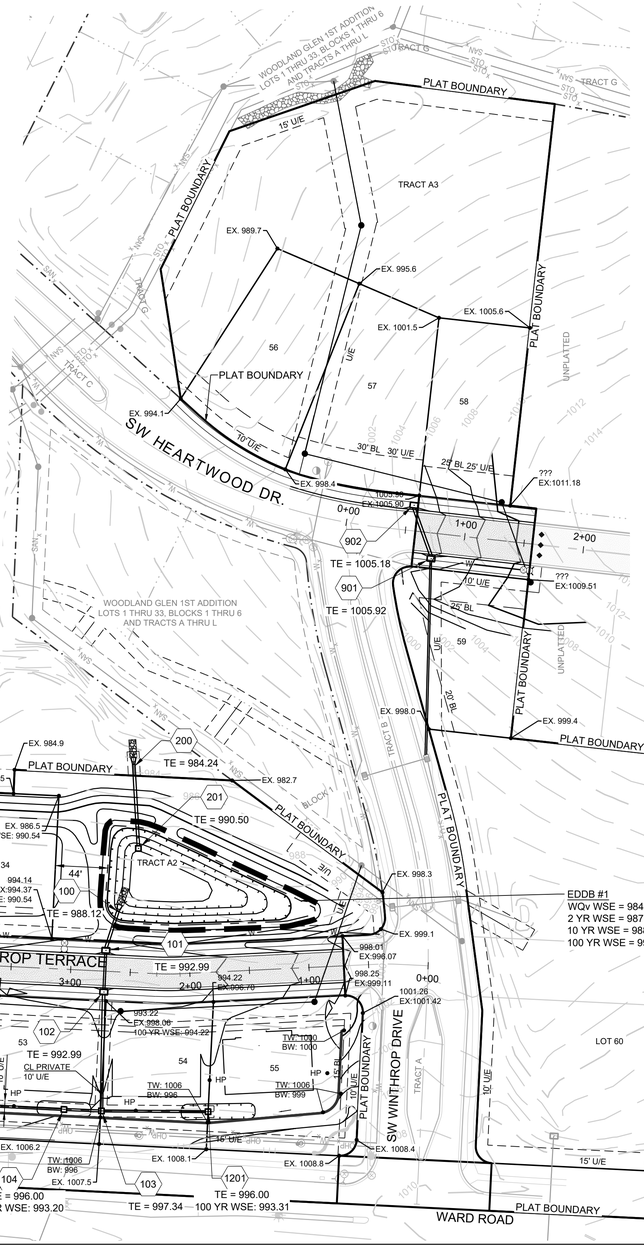
REVISION	DATE	DESCRIPTION
1	04/24/2020	CITY COMMENTS
2	01/12/2021	SCHLAGEL QUANTITIES
3	04/08/2021	SCHLAGEL QUANTITIES
4	05/12/2021	CITY COMMENTS
5	06/15/2021	CITY COMMENTS
6	08/26/2021	CITY COMMENTS
7	09/28/2021	SCHLAGEL UPDATE
8	10/06/2021	CITY COMMENTS
9	01/20/2022	WATER LINE CONFLICT
10	05/16/2022	CITY EMAILED COMMENTS

DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

MASTER DRAINAGE PLAN GRADING PLAN

SHEET
8





LOT TYPE TABLE		
LOT #	BASEMENT TYPE	MBOE
34	WALKOUT	992.5
35	WALKOUT	N/A
36	WALKOUT	N/A
37	WALKOUT	975.0
38	WALKOUT	975.0
39	WALKOUT	975.0
40	WALKOUT	975.0
41	WALKOUT	975.0
42	WALKOUT	971.5
43	STANDARD	981.0
44	STANDARD	981.0
45	STANDARD	N/A
46	STANDARD	982.8
47	STANDARD	N/A
48	STANDARD	N/A
49	STANDARD	N/A
50	STANDARD	N/A
51	STANDARD	N/A
52	STANDARD	996.0
53	STANDARD	996.0
54	STANDARD	996.0
55	STANDARD	996.0
56	WALKOUT	N/A
57	WALKOUT	N/A
58	WALKOUT	N/A
59	WALKOUT	N/A

NOTE:

1. DAYLIGHT BASED ON ADJACENT GRADE 4 FT BELOW TOP OF FOUNDATION WHILE MAINTAINING 2.5% (MIN) GRADE TO LOT CORNERS.
2. WALKOUT BASED ON ADJACENT GRADE AT BASEMENT FLOOR ELEVATION WHILE MAINTAINING 2.5% (MIN) GRADE TO LOT CORNERS.

NOTES:

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933.38 — DENOTES FINISHED GRADE ELEVATION
EX: 936.48 — DENOTES EXISTING GRADE ELEVATION

DENOTES CONCEPTUAL BUILDING FOOTPRINT

PROJECT BENCHMARK:

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ELEV. 1036.41

SECTION 18-47N-31W

LOCATION MAP
SCALE 1" = 2000'

SCHLAGEL
ENGINEERS PLANNERS SURVEYORS LANDSCAPE ARCHITECTS
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#E2002003800-F #LAC2001005237 #LS2002008859-F

STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2009007268
PROFESSIONAL ENGINEER
05.18.22

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE, AND EROSION CONTROL PLANS

WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

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CHECKED BY: MAB
DATE PREPARED: 2-19-2020
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MASTER DRAINAGE PLAN SPOT ELEVATIONS

SHEET
9

PROJECT BENCHMARK:

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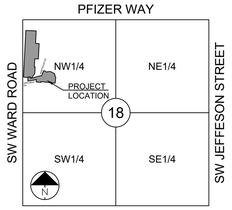

SECTION 18-47N-31W

LOCATION MAP
SCALE 1" = 2000'

MISSOURI ONE CALL SYSTEM, INC. 1-800-344-7483 STOP-CALL BEFORE YOU DIG!

ZONE X (0.2% ANNUAL CHANCE FLOOD)
F.I.R.M. 29095C0419G
(DATED 01/20/2017

EX-1
DA = 9.73 AC
PER FINAL
STORM WATER
REPORT

INLET 902
AREA = 0.74 AC.

INLET 901
AREA = 0.67 AC.

INLET 701
AREA = 1.13 AC.

INLET 501
AREA = 0.23 AC.

INLET 305
AREA = 0.39 AC.

INLET 301
AREA = 0.21 AC.

INLET 302
AREA = 0.72 AC.

INLET 303
AREA = 0.56 AC.

INLET 304
AREA = 0.81 AC.

INLET 101
AREA = 0.42 AC.

INLET 201
AREA = 0.36 AC.

INLET 102
AREA = 1.35 AC.

INLET 401
AREA = 0.44 AC.

INLET 105
AREA = 0.18 AC.

INLET 1201
AREA = 0.13 AC.

INLET 1001
AREA = 0.13 AC.

INLET 104
AREA = 0.06 AC.

INLET 1101
AREA = 0.06 AC.

EXISTING INLET
AREA = 10.33 AC.

0 60' 120'
SCALE: 1" = 60'

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CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

MASTER DRAINAGE PLAN DRAINAGE AREAS

SHEET
10

10 YR STORM SEWER DESIGN CALCULATIONS

	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
LINE 100																									DS TAILWA
101	0.42	0.60	2.14	1.28	5.6	7.17	1.81	9.21	17.50	5.57			0.00	0.00	101	100	HDPE	0.012	24	34.17	0.51	0.50	986.65	986.48	992.99
102	1.35	0.60	1.72	1.03	5.5	7.20	5.83	7.43	24.51	7.80			0.00	0.00	102	101	HDPE	0.012	24	35.00	1.00	0.75	987.50	987.15	992.99
103	0.00	0.60	0.37	0.22	5.4	7.24	0.00	1.61	13.09	10.67	1201		0.13	0.08	103	102	HDPE	0.012	15	99.73	3.50	0.50	991.74	988.25	999.50
104	0.06	0.60	0.24	0.14	5.3	7.27	0.26	1.05	7.07	5.76			0.00	0.00	104	103	HDPE	0.012	15	31.45	1.02	0.50	992.57	992.24	998.00
105	0.18	0.60	0.18	0.11	5.0	7.35	0.79	0.79	6.26	5.10			0.00	0.00	105	104	HDPE	0.012	15	82.96	0.80	N/A	993.73	993.07	998.00
LINE 200																									DS TAILWA
201	0.36	0.60	0.36	0.22	5.0	7.35	1.59	1.59	9.04	7.37			0.00	0.00	201	200	HDPE	0.012	15	68.80	1.67	N/A	984.00	982.85	990.50
*SEE FINAL STORMWATER REPORT FOR DETAILED POND CALCULATIONS																									
LINE 300																									DS TAILWA
301	0.21	0.60	3.36	2.02	6.0	7.06	0.89	14.24	29.00	5.91			0.00	0.00	301	300	RCP	0.013	30	58.76	0.50	0.50	970.29	970.00	978.76
302	0.72	0.60	3.15	1.89	5.9	7.09	3.06	13.40	31.42	6.40			0.00	0.00	302	301	HDPE	0.012	30	35.01	0.50	0.50	970.97	970.79	978.75
303	0.56	0.60	2.43	1.46	5.3	7.25	2.44	10.57	14.44	8.17	401	501	0.67	0.40	303	302	HDPE	0.012	18	269.14	1.61	2.44	975.80	971.47	985.52
304	0.81	0.60	1.20	0.72	5.1	7.34	3.57	5.28	12.28	10.01			0.00	0.00	304	303	HDPE	0.012	15	169.67	3.08	0.50	983.47	978.24	990.43
305	0.39	0.60	0.39	0.23	5.0	7.35	1.72	1.72	13.09	10.67			0.00	0.00	305	304	HDPE	0.012	15	35.39	3.50	N/A	985.21	983.97	990.58
LINE 400																			Drop in Inlet 303			4.00			
401	0.44	0.60	0.44	0.26	5.0	7.35	1.94	1.94	15.25	12.43			0.00	0.00	401	303	HDPE	0.012	15	97.58	4.75	N/A	984.44	979.80	988.88
LINE 500																			Drop in Inlet 303			4.00			
501	0.23	0.60	0.23	0.14	5.0	7.35	1.01	1.01	14.00	11.41			0.00	0.00	501	303	HDPE	0.012	15	35.31	4.00	N/A	981.21	979.80	985.65
LINE 600																									DS TAILWA
601	0.29	0.60	0.29	0.17	5.0	7.35	1.28	1.28	8.81	4.99			0.00	0.00	601	600	HDPE	0.012	18	73.11	0.60	N/A	970.44	970.00	975.50
*SEE FINAL STORMWATER REPORT FOR DETAILED POND CALCULATIONS																									
LINE 700																									DS TAILWA
701	1.13	0.60	1.13	0.68	5.0	7.35	4.99	4.99	6.64	5.41			0.00	0.00	701	603	HDPE	0.012	15	45.00	0.90	N/A	968.53	968.12	973.50
*SEE FINAL STORMWATER REPORT FOR DETAILED POND CALCULATIONS																									
LINE 800																									DS TAILWA
801	0.00	0.60	10.52	6.31	5.1	7.32	0.00	46.19	96.13	13.60	1001	1101	0.19	0.11	801	800	HDPE	0.012	36	234.80	1.77	0.50	974.21	970.05	981.50
802	0.00	0.60	10.33	6.20	5.1	7.33	0.00	45.41	94.33	13.34			0.00	0.00	802	801	RCP	0.013	36	24.52	2.00	7.00	975.20	974.71	992.37
803	0.00	0.60	10.33	6.20	5.0	7.35	0.00	45.54	72.61	14.79			0.00	0.00	803	802	HDPE	0.012	30	62.23	2.67	0.50	983.86	982.20	994.01
EX. C.I.	10.33	0.60	10.33	6.20	5.0	7.35	45.57	45.57	78.61	16.02			0.00	0.00	EX. C.I.	803	HDPE	0.012	30	14.92	3.13	0.50	984.82	984.36	994.02
LINE 900																									DS TAILWA
* 901	0.67	0.60	1.41	0.85	5.1	7.33	2.95	6.20	11.28	9.20			0.00	0.00	901	EX G2	HDPE	0.012	15	167.35	2.60	0.50	998.14	993.79	1005.92
* 902	0.74	0.60	0.74	0.44	5.0	7.35	3.26	3.26	11.06	9.02			0.00	0.00	902	901	HDPE	0.012	15	47.05	2.50	N/A	999.82	998.64	1005.18
LINE 1000																			Drop in Inlet 801			1.50			
1001	0.13	0.60	0.13	0.08	5.0	7.35	0.57	0.57	11.27	6.37			0.00	0.00	1001	801	HDPE	0.012	18	40.71	0.98	N/A	976.10	975.71	980.00
LINE 1100																			Drop in Inlet 801			1.50			
1101	0.06	0.60	0.06	0.04	5.0	7.35	0.26	0.26	11.38	6.44			0.00	0.00	1101	801	HDPE	0.012	18	31.59	1.00	N/A	976.02	975.71	980.00
LINE 1200																			Drop in Inlet 103			0.50			
1201	0.13	0.60	0.13	0.08	5.0	7.35	0.57	0.57	7.00	5.70			0.00	0.00	1201	103	HDPE	0.012	15	59.97	1.00	N/A	992.84	992.24	998.00

* FLOW CAPTURED FROM THESE LINES DRAIN TO THE EXISTING DETENTION BASIN. THE ADDED DRAINAGE DOES NOT EXCEED THE DESIGN OF THE EXISTING BASIN.

100 YR STORM SEWER DESIGN CALCULATIONS

	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
LINE 100																									DS TAILWA
101	0.42	0.60	2.14	1.28	5.6	10.08	3.18	16.18	17.50	5.57			0.00	0.00	101	100	HDPE	0.012	24	34.17	0.51	0.50	986.65	986.48	992.99
102	1.35	0.60	1.72	1.03	5.5	10.11	10.24	13.04	24.51	7.80			0.00	0.00	102	101	HDPE	0.012	24	35.00	1.00	0.75	987.50	987.15	992.99
103	0.00	0.60	0.37	0.22	5.4	10.17	0.00	2.82	13.09	10.67	1201		0.13	0.08	103	102	HDPE	0.012	15	99.73	3.50	0.50	991.74	988.25	999.50
104	0.06	0.60	0.24	0.14	5.3	10.21	0.46	1.84	7.07	5.76			0.00	0.00	104	103	HDPE	0.012	15	31.45	1.02	0.50	992.57	992.24	998.00
105	0.18	0.60	0.18	0.11	5.0	10.32	1.39	1.39	6.26	5.10			0.00	0.00	105	104	HDPE	0.012	15	82.96	0.80	N/A	993.73	993.07	998.00
LINE 200																									DS TAILWA
201	0.36	0.60	0.36	0.22	5.0	10.32	2.79	2.79	9.04	7.37			0.00	0.00	201	200	HDPE	0.012	15	68.80	1.67	N/A	984.00	982.85	990.50
*SEE FINAL STORMWATER REPORT FOR DETAILED POND CALCULATIONS																									
LINE 300																									DS TAILWA
301	0.21	0.60	3.36	2.02	6.0	9.93	1.56	25.03	29.00	5.91			0.00	0.00	301	300	RCP	0.013	30	58.76	0.50	0.50	970.29	970.00	978.76
302	0.72	0.60	3.15	1.89	5.9	9.97	5.38	23.55	31.42	6.40			0.00	0.00	302	301	HDPE	0.012	30	35.01	0.50	0.50	970.97	970.79	978.75
303	0.56	0.60	2.43	1.46	5.3	10.18	4.28	18.56	14.44	8.17	401	501	0.67	0.40	303	302	HDPE	0.012	18	269.14	1.61	2.44	975.80	971.47	985.52
304	0.81	0.60	1.20	0.72	5.1	10.30	6.26	9.27	12.28	10.01			0.00	0.00	304	303	HDPE	0.012	15	169.67	3.08	0.50	983.47	978.24	990.43
305	0.39	0.60	0.39	0.23	5.0	10.32	3.02	3.02	13.09	10.67			0.00	0.00	305	304	HDPE	0.012	15	35.39	3.50	N/A	985.21	983.97	990.58
LINE 400																			Drop in Inlet 303			4.00			
401	0.44	0.60	0.44	0.26	5.0	10.32	3.41	3.41	15.25	12.43			0.00	0.00	401	303	HDPE	0.012	15	97.58	4.75	N/A	984.44	979.80	988.88
LINE 500																			Drop in Inlet 303			4.00			
501	0.23	0.60	0.23	0.14	5.0	10.32	1.78	1.78	14.00	11.41			0.00	0.00	501	303	HDPE	0.012	15	35.31	4.00	N/A	981.21	979.80	985.65
LINE 600																									DS TAILWA
601	0.29	0.60	0.29	0.17	5.0	10.32	2.25	2.25	8.81	4.99			0.00	0.00	601	600	HDPE	0.012	18	73.11	0.60	N/A	970.44	970.00	975.50
*SEE FINAL STORMWATER REPORT FOR DETAILED POND CALCULATIONS																									
LINE 700																									DS TAILWA
701	1.13	0.60	1.13	0.68	5.0	10.32	8.75	8.75	6.64	5.41			0.00	0.00	701	603	HDPE	0.012	15	45.00	0.90	N/A	968.53	968.12	973.50
*SEE FINAL STORMWATER REPORT FOR DETAILED POND CALCULATIONS																									
LINE 800																									DS TAILWA
801	0.00	0.60	10.52	6.31	5.1	10.27	0.00	81.07	96.13	13.60	1001	1101	0.19	0.11	801	800	HDPE	0.012	36	234.80	1.77	0.50	974.21	970.05	981.50
802	0.00	0.60	10.33	6.20	5.1	10.29	0.00	79.70	94.33	13.34			0.00	0.00	802	801	RCP	0.013	36	24.52	2.00	7.00	975.20	974.71	992.37
803	0.00	0.60	10.33	6.20	5.0	10.32	0.00	79.92	72.61	14.79			0.00	0.00	803	802	HDPE	0.012	30	62.23	2.67	0.50	983.86	982.20	994.01
EX. C.I.	10.33	0.60	10.33	6.20	5.0	10.32	79.97	79.97	78.61	16.02			0.00	0.00	EX. C.I.	803	HDPE	0.012	30	14.92	3.13	0.50	984.82	984.36	994.02
LINE 900																									DS TAILWA
* 901	0.67	0.60	1.41	0.85	5.1	10.29	5.17	10.88	11.28	9.20			0.00	0.00	901	EX G2	HDPE	0.012	15	167.35	2.60	0.50	998.14	993.79	1005.92
* 902	0.74	0.60	0.74	0.44	5.0	10.32	5.73	5.73	11.06	9.02			0.00	0.00	902	901	HDPE	0.012	15	47.05	2.50	N/A	999.82	998.64	1005.18
LINE 1000																			Drop in Inlet 801			1.50			
1001	0.13	0.60	0.13	0.08	5.0	10.32	1.01	1.01	11.27	6.37			0.00	0.00	1001	801	HDPE	0.012	18	40.71	0.98	N/A	976.10	975.71	980.00
LINE 1100																			Drop in Inlet 801			1.50			
1101	0.06	0.60	0.06	0.04	5.0	10.32	0.46	0.46	11.38	6.44			0.00	0.00	1101	801	HDPE	0.012	18	31.59	1.00	N/A	976.02	975.71	980.00
LINE 1200																			Drop in Inlet 103			0.50			
1201	0.13	0.60	0.13	0.08	5.0	10.32	1.01	1.01	7.00	5.70			0.00	0.00	1201	103	HDPE	0.012	15	59.97	1.00	N/A	992.84	992.24	998.00

* FLOW CAPTURED FROM THESE LINES DRAIN TO THE EXISTING DETENTION BASIN. THE ADDED DRAINAGE DOES NOT EXCEED THE DESIGN OF THE EXISTING BASIN.

GUTTER SPREAD AND INLET CAPACITY CALCULATIONS - WOODLAND GLEN - 2ND PLAT

DESIGN STORM	10	CURB TYPE "A" = LAZY BACK
"K" FACTOR	1.00	CURB TYPE "B" = HIGH BACK

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 100																								
101	0.60	0.42	8.1	7.35	1.85					0.00	1.85	SUMP	2.08	A	6	4.8	16.80	0.00	SUMP	2.08	< 0.21	**< 10.50**
102	0.60	1.35	7.5	7.35	5.95					0.00	5.95	SUMP	2.08	A	6	4.8	16.80	0.00	SUMP	2.08	< 0.21	**< 10.50**
103	0.60	0.00	7.4	7.35	0.00					0.00	0.00	N/A	N/A	A	8	6.4	N/A	N/A	N/A	N/A	N/A	**N/A**
104	0.60	0.06	7.3	7.35	0.26					0.00	0.26	SUMP	2.08	A	16	12.8	44.80	0.00	SUMP	2.08	< 0.21	**< 10.50**
105	0.60	0.18	5.5	7.35	0.79					0.00	0.79	SUMP	2.08	A	16	12.8	44.80	0.00	SUMP	2.08	< 0.21	**< 10.50**
LINE 300																								
301	0.60	0.21	5.1	7.35	0.93					0.00	0.93	SUMP	2.08	A	6	4.8	16.80	0.00	SUMP	2.08	< 0.21	**< 10.50**
302	0.60	0.72	5.0	7.35	3.18					0.00	3.18	SUMP	2.08	A	6	4.8	16.80	0.00	SUMP	2.08	< 0.21	**< 10.50**
303	0.60	0.56	5.1	7.35	2.47					0.00	2.47	2.92	2.08	A	6	4.8	1.86	0.61	2.92	2.08	0.16	**8.18**
304	0.60	0.81	5.0	7.35	3.57					0.00	3.57	2.92	2.08	A	6	4.8	2.38	1.19	2.92	2.08	0.18	**9.32**
305	0.60	0.39	5.0	7.35	1.72					0.00	1.72	2.92	2.08	A	6	4.8	1.42	0.30	2.92	2.08	0.14	**7.21**
LINE 400																								
401	0.60	0.44	5.0	7.35	1.94					0.00	1.94	SUMP	2.08	A	8	6.4	22.40	0.00	SUMP	2.08	< 0.21	**< 10.50**
LINE 500																								
501	0.60	0.23	5.0	7.35	1.01					0.00	1.01	2.92	2.08	A	6	4.8	0.91	0.10	2.92	2.08	0.11	**6.00**
LINE 800																								
801	0.60	0.00	5.1	7.35	0.00					0.00	0.00	N/A	N/A	A	6	4.8	N/A	N/A	N/A	N/A	N/A	**N/A**
802	0.60	0.00	5.0	7.35	0.00					0.00	0.00	N/A	N/A	A	6	4.8	N/A	N/A	N/A	N/A	N/A	**N/A**
EX. C.I.	0.60	1.33	5.1	7.35	5.87					0.00	5.87	2.67	2.08	B	8	6.4	4.67	1.20	2.67	2.08	0.22	**11.30**
LINE 900																								
901	0.60	0.67	5.1	7.35	2.95					0.00	2.95	6.00	2.08	A	6	4.8	1.71	1.25	6.00	2.08	0.15	**7.68**
902	0.60	0.74	5.0	7.35	3.26					0.00	3.26	6.00	2.08	A	6	4.8	1.79	1.47	6.00	2.08	0.15	**7.95**
LINE 1000																								
1001	0.60	0.13	5.0	7.35	0.57					0.00	0.57	SUMP	2.08	A	16	12.8	44.80	0.00	SUMP	2.08	< 0.21	**< 10.50**
LINE 1100																								
1101	0.60	0.06	5.0	7.35	0.26					0.00	0.26	SUMP	2.08	A	16	12.8	44.80	0.00	SUMP	2.08	< 0.21	**< 10.50**
LINE 1200																								
1201	0.60	0.13	5.0	7.35	0.57					0.00	0.57	SUMP	2.08	A	16	12.8	44.80	0.00	SUMP	2.08	< 0.21	**< 10.50**

NOTES:
1. CAPACITY OF INLETS ON GRADE DETERMINED USING ROUTINE OUTLINED ON PGS 56-95 TO 56-97, SECTION 5600 APWA
2. CAPACITY OF SUMP INLETS CALCULATED USING FIGURE 5604-21, SECTION 5600 APWA
3. MANNINGS "n" VALUE FOR COMBINED ASPHALT PAVEMENT AND CONCRETE CURB - 0.014

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Missouri State Certificate of Authority #LA2001055237
#E2000030800-F #LA2001055237 #LS2000208859-F

MARK ALLEN BREUER
NUMBER PE-2003007268
PROFESSIONAL ENGINEER
STATE OF MISSOURI
05.18.22

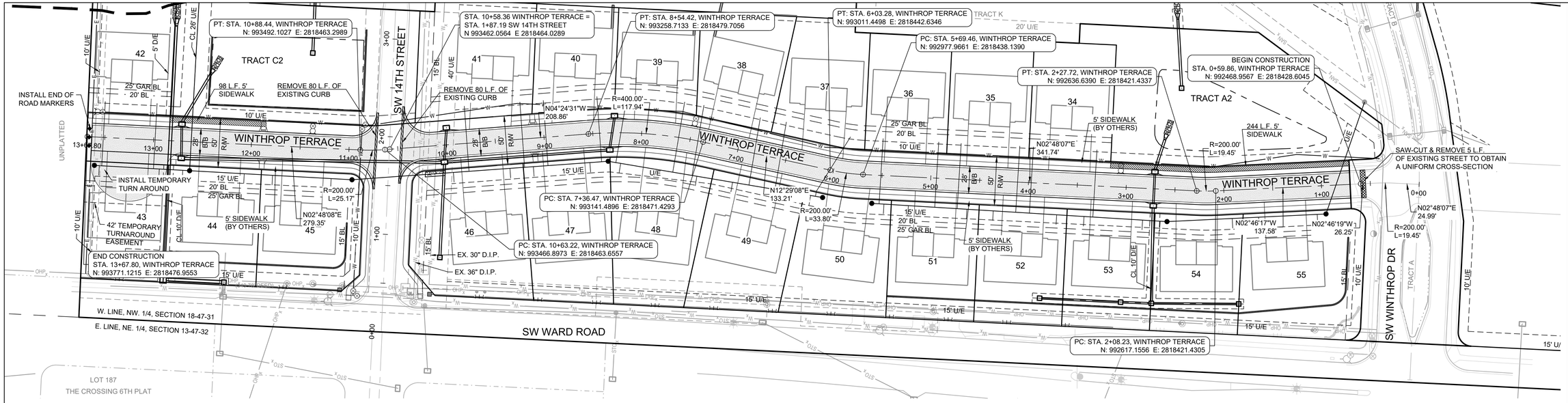
WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE,
AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

REVISION DATE	DESCRIPTION
04/24/2020	CITY COMMENTS
01/12/2021	SCHLAGEL QUANTITIES
04/09/2021	SCHLAGEL QUANTITIES
05/12/2021	CITY COMMENTS
06/15/2021	CITY COMMENTS
06/28/2021	CITY COMMENTS
09/28/2021	SCHLAGEL UPDATE
10/08/2021	CITY COMMENTS
01/20/2022	WATER LINE CONFLICT
05/16/2022	CITY EMAILED COMMENTS

DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-417

MASTER DRAINAGE PLAN
DRAINAGE CALCS

SHEET
11



PROJECT BENCHMARK:

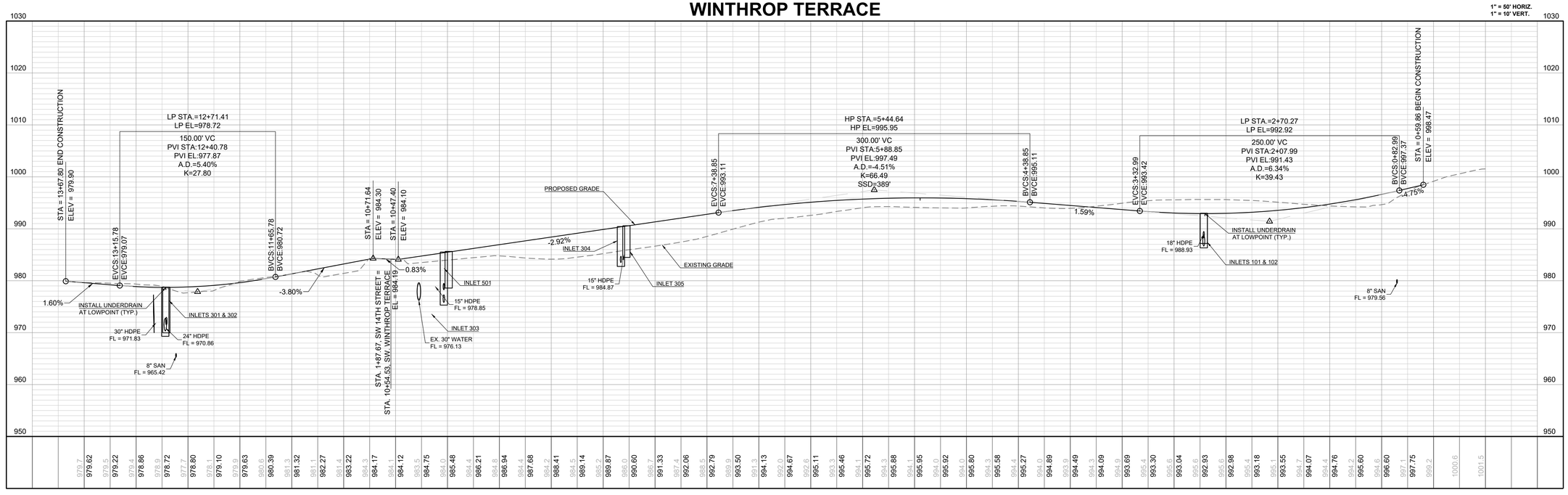
SW. CORNER NW. ¼ SEC. 18-47N-31W, JACKSON COUNTY, MO.
3" DIAMETER ALUMINUM DISK IN MONUMENT BOX
M.D.N.R. DOC. NO. 600-65374

ELEV. 1036.41

SCALE: 1" = 50'

WINTHROP TERRACE

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



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MARK ALLEN BREUER
NUMBER PE-2009007268
PROFESSIONAL ENGINEER
STATE OF MISSOURI
05.18.22

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE, AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

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DRAWN BY:	BAL
CHECKED BY:	MAB
DATE PREPARED:	2-19-2020
PROJ. NUMBER:	19-017

WINTHROP TERRACE PLAN & PROFILE

SHEET
12

PROJECT BENCHMARK:

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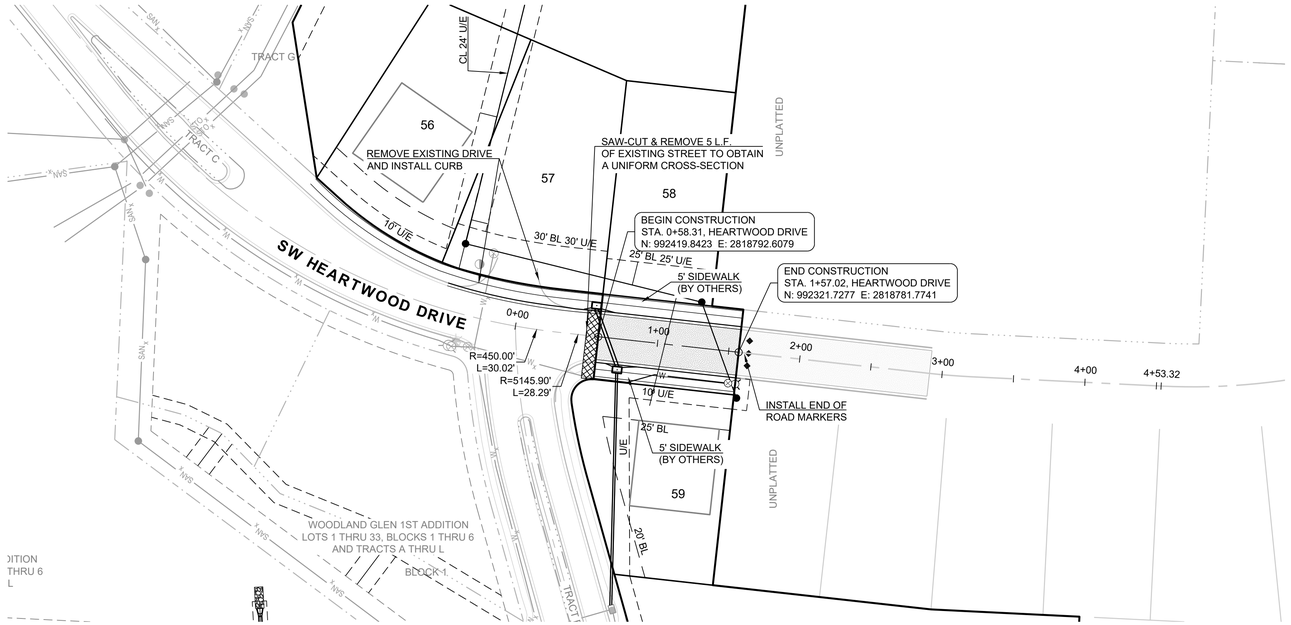
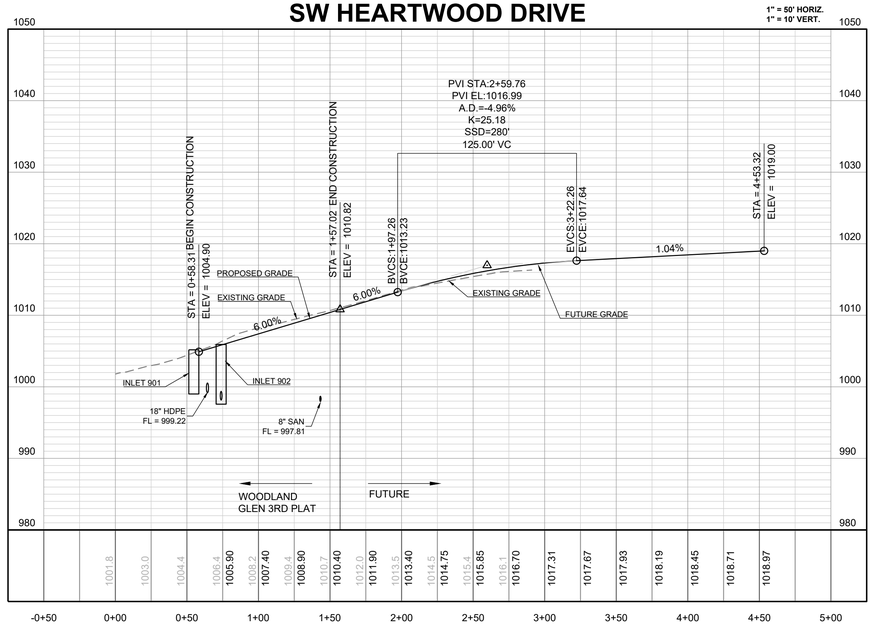
ELEV. 1036.41



SCALE: 1" = 50'

SW HEARTWOOD DRIVE

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



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05.18.22

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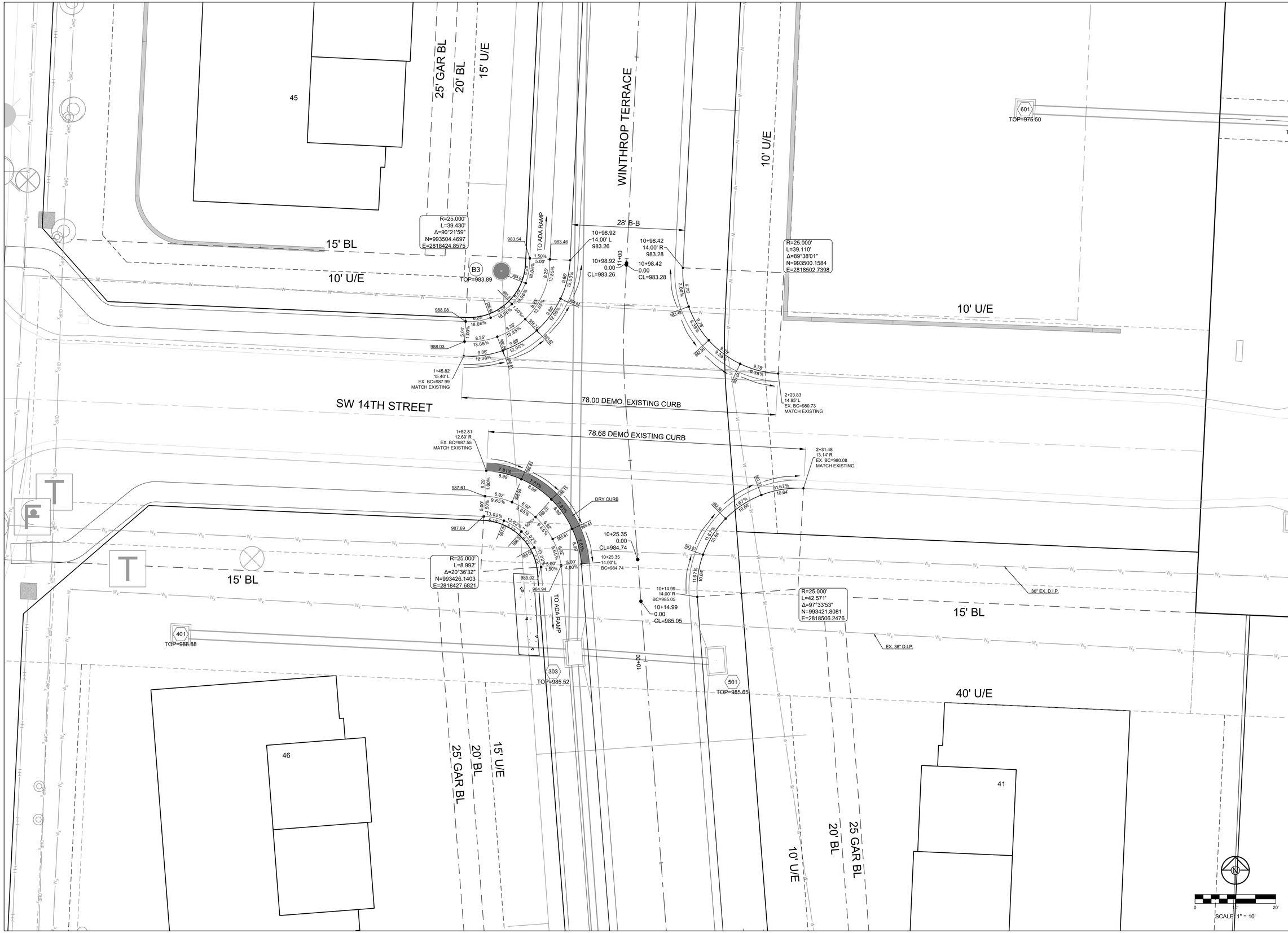
05/16/2022	CITY EMAILED COMMENTS

DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ NUMBER: 19-017

HEARTWOOD DRIVE PLAN & PROFILE

SHEET
13



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PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2003007268
STATE OF MISSOURI
PROFESSIONAL ENGINEER
05.18.22

SCHLAGEL & ASSOCIATES, P.A.

WOODLAND GLEN 2ND PLAT
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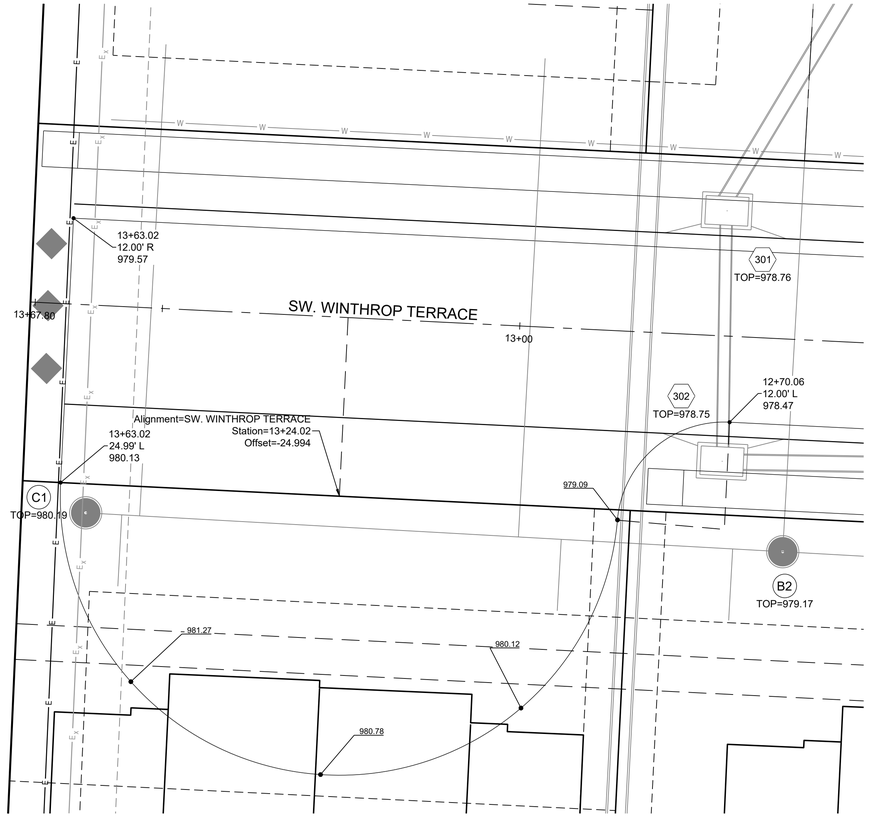
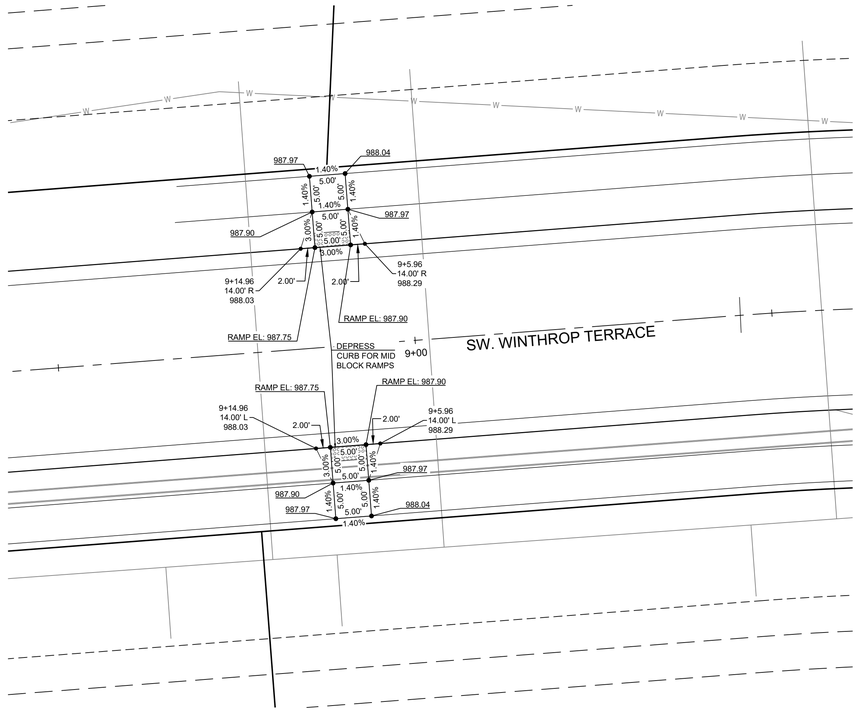
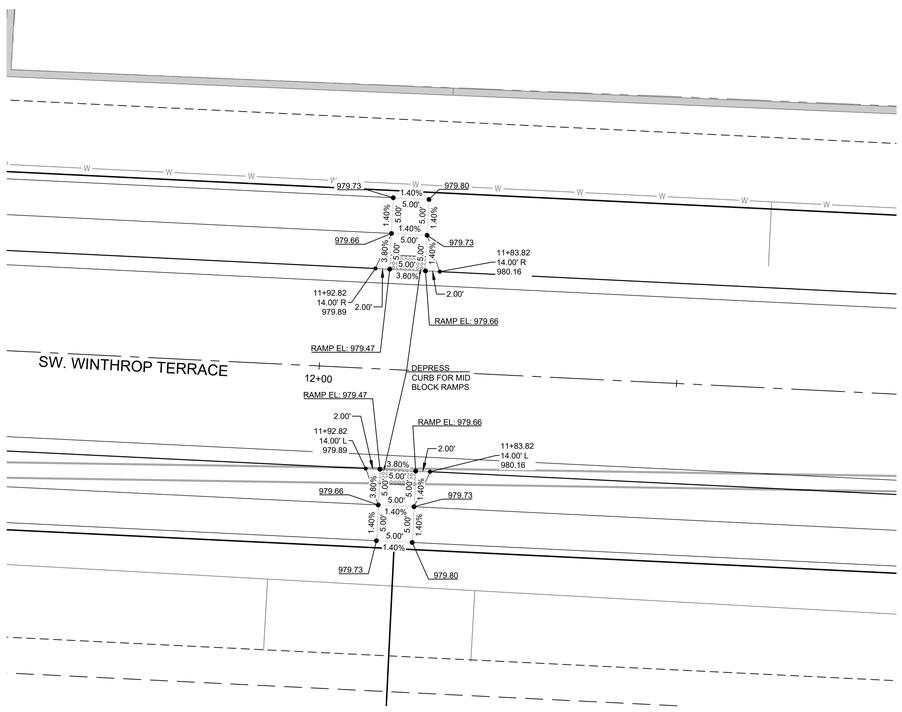
DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 19-017

INTERSECTION DETAIL

SHEET
14







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#E2000030800-F #LA2001005237 #LS2000208859-F

PREPARED BY:

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MARK ALLEN BREUER
NUMBER PE-2009007268
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05.18.22

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DRAWN BY:	BAL
CHECKED BY:	MAB
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PROJ NUMBER:	18-017

INTERSECTION DETAILS

SHEET
15

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

PROJECT BENCHMARK:

SW. CORNER NW. ¼ SEC. 18-47N-31W, JACKSON COUNTY, MO.
3" DIAMETER ALUMINUM DISK IN MONUMENT BOX
M.D.N.R. DOC. NO. 600-65374

ELEV. 1036.41

Storm Sewer Construction Notes	
Structure	Notes
100	STA 0+00.00, 100 INSTALL 24" END SECTION N 992669.2728 E 2818473.6957
101	STA 0+34.17, 100 INSTALL 6 X 4 CURB INLET N 992679.3667 E 2818441.0459
102	STA 0+69.17, 100 INSTALL 6 X 4 CURB INLET N 992681.0777 E 2818406.0877
103	STA 1+68.90, 100 INSTALL 4 X 4 JUNCTION BOX F.F.B. 358°53'41" N 992683.0605 E 2818306.3812
104	STA 2+00.35, 100 INSTALL 4 X 4 AREA INLET (OPENINGS N,E,S,W) F.F.B. 0°00'00" N 992714.4882 E 2818307.6069
105	STA 2+83.31, 100 INSTALL 4 X 4 AREA INLET (OPENINGS N,E,S,W) F.F.B. 86°30'58" N 992797.3500 E 2818311.6624
200	STA -0+00.04, 200 INSTALL 15" END SECTION N 992655.8760 E 2818595.2227
201	STA 0+68.76, 200 INSTALL OUTLET STRUCTURE F.F.B. 180°00'00" N 992652.0986 E 2818526.5222

Storm Sewer Construction Notes	
Structure	Notes
300	STA -0+00.00, 300 INSTALL 24" END SECTION N 993645.0883 E 2818540.6336
301	STA 0+58.76, 300 INSTALL 6 X 4 CURB INLET N 993674.4582 E 2818489.7451
302	STA 0+93.77, 300 INSTALL 6 X 4 CURB INLET N 993675.1476 E 2818454.7370
303	STA 3+62.91, 300 INSTALL 6 X 4 CURB INLET N 993406.0386 E 2818450.7956
304	STA 5+32.58, 300 INSTALL 6 X 4 CURB INLET N 993236.8248 E 2818463.2865
305	STA 5+67.98, 300 INSTALL 6 X 4 CURB INLET N 993232.1336 E 2818498.3682
401	STA 0+97.58, 400 INSTALL 4 X 4 AREA INLET (OPENINGS S,W) F.F.B. 357°17'49" N 993410.6806 E 2818353.3299
501	STA 0+35.31, 500 INSTALL 6 X 4 CURB INLET N 993404.0946 E 2818486.0494

Storm Sewer Construction Notes	
Structure	Notes
600	STA 0+04.52, 600 INSTALL 18" END SECTION N 993537.5200 E 2818630.9786
601	STA 0+73.07, 600 INSTALL OUTLET STRUCTURE F.F.B. 357°23'29" N 993540.6400 E 2818562.4994
700	STA 0+00.00, 700 INSTALL 15" END SECTION N 993315.5193 E 2818706.7724
701	STA 0+44.96, 700 INSTALL OUTLET STRUCTURE F.F.B. 0°00'00" N 993316.1131 E 2818661.8180
800	STA 0+00.85, 800 INSTALL 36" END SECTION N 993680.3317 E 2818589.9535
801	STA 2+35.65, 800 INSTALL 6 X 4 JUNCTION BOX F.F.B. 87°17'49" N 993692.4917 E 2818355.4726
802	STA 2+60.17, 800 INSTALL 7 X 6 JUNCTION BOX N 993693.6905 E 2818330.9777
803	STA 3+22.40, 800 INSTALL 4 X 4 JUNCTION BOX N 993631.5331 E 2818328.0430

Storm Sewer Construction Notes	
Structure	Notes
901	STA 1+67.35, 900 INSTALL 6 X 4 CURB INLET N 992406.7121 E 2818769.5220
902	STA 2+14.40, 900 INSTALL 6 X 4 CURB INLET N 992420.9665 E 2818814.3651
1001	STA 0+40.71, 1000 INSTALL 4 X 4 AREA INLET (OPENINGS N,E,S,W) F.F.B. 357°17'49" N 993651.8261 E 2818353.4824
1101	STA 0+31.59, 1100 INSTALL 4 X 4 AREA INLET (OPENINGS N,E,S,W) F.F.B. 357°17'49" N 993724.0390 E 2818357.0166
1201	STA 0+89.39, 1200 INSTALL 4 X 4 AREA INLET (OPENINGS N,E,S,W) F.F.B. 0°53'19" N 992593.6700 E 2818305.7533

SCALE: 1" = 50'

INSTALL 8 CY D50=15" STONE RIP RAP W/ GEOFABRIC (16' x 8' x 2.25')

INSTALL 8 CY D50=15" STONE RIP RAP W/ GEOFABRIC (15' x 6' x 2.25')

EDDB #2
WQv WSE = 970.71
2 YR WSE = 972.96
10 YR WSE = 974.53
100 YR WSE = 976.23

INSTALL 8 CY D50=15" STONE RIP RAP W/ GEOFABRIC (15' x 6' x 2.25')

EDDB #3
WQv WSE = 970.22
2 YR WSE = 971.32
10 YR WSE = 972.16
100 YR WSE = 973.03

INSTALL 8 CY D50=15" STONE RIP RAP W/ GEOFABRIC (15' x 6' x 2.25')

INSTALL 8 CY D50=15" STONE RIP RAP W/ GEOFABRIC (15' x 6' x 2.25')

INSTALL 8 CY D50=15" STONE RIP RAP W/ GEOFABRIC (15' x 6' x 2.25')

EDDB #1
WQv WSE = 984.91
2 YR WSE = 987.26
10 YR WSE = 988.84
100 YR WSE = 990.52

TRACT B2
TRACT C2
TRACT A2

SW. WINTHROP TERRACE
SW 14TH STREET
SW WARD ROAD
SW HEARTWOOD DR

PRIVATE STORM SEWER
PRIVATE CL 10' U/E
PRIVATE 5' U/E

EX. 30" D.I.P.
EX. 36" D.I.P.
EX G2

CONNECT TO EXISTING INLET
REMOVE AND REPLACE 5' SIDEWALK AS NEEDED

STA. 12+71.87, SW. WINTHROP TERRACE 17.50' RT
STA. 12+70.85, SW. WINTHROP TERRACE 17.50' LT
STA. 9+98.88, SW. WINTHROP TERRACE 17.50' RT
STA. 8+32.90, SW. WINTHROP TERRACE 17.50' LT
STA. 10+03.53, SW. WINTHROP TERRACE 17.50' LT
STA. 8+27.63, SW. WINTHROP TERRACE 17.50' RT
STA. 2+71.36, SW. WINTHROP TERRACE 17.50' RT
STA. 2+71.36, SW. WINTHROP TERRACE 17.50' LT
STA. 0+54.81, SW HEARTWOOD DRIVE 21.50' LT
STA. 0+73.90, SW HEARTWOOD DRIVE 21.50' RT

30' BL 30' U/E
25' BL 25' U/E
25' GAR BL
20' BL
15' BL
15' U/E
10' U/E
5' U/E
20' U/E
40' U/E

42 43 44 45 46 47 48 49 50 51 53 55 57 58 59 60

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#E2000030800-F #LA2001005237 #LS2002008859-F

STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2009007268
PROFESSIONAL ENGINEER
05.18.22

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE,
AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

REVISION DATE	DESCRIPTION
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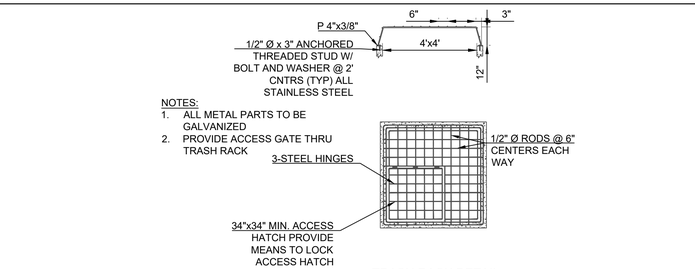
09/28/2021	SCHLAGEL UPDATE
10/06/2021	CITY COMMENTS
01/20/2022	WATER LINE CONFLICT
05/16/2022	CITY EMAILED COMMENTS

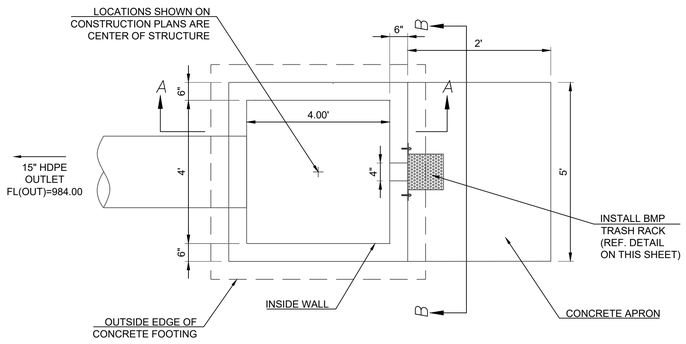
DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

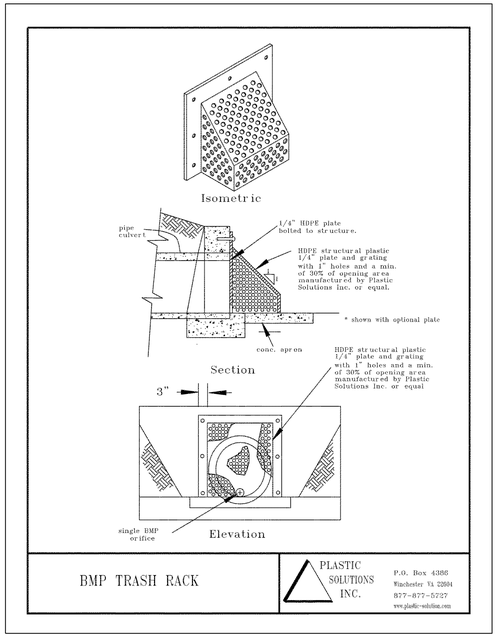
STORM PLAN

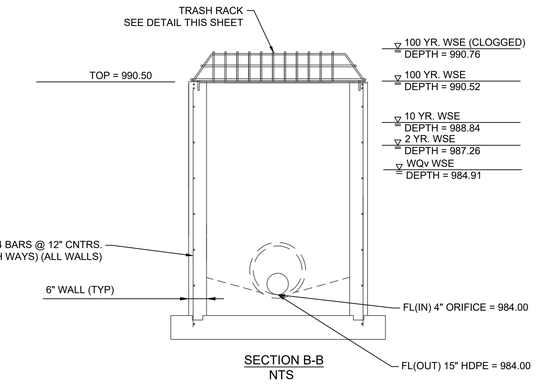
SHEET
16



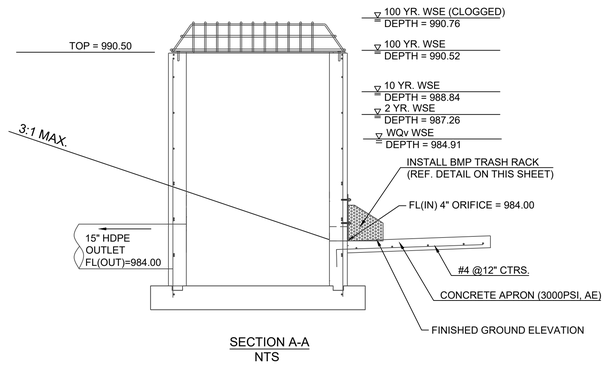
TRASH RACK DETAIL



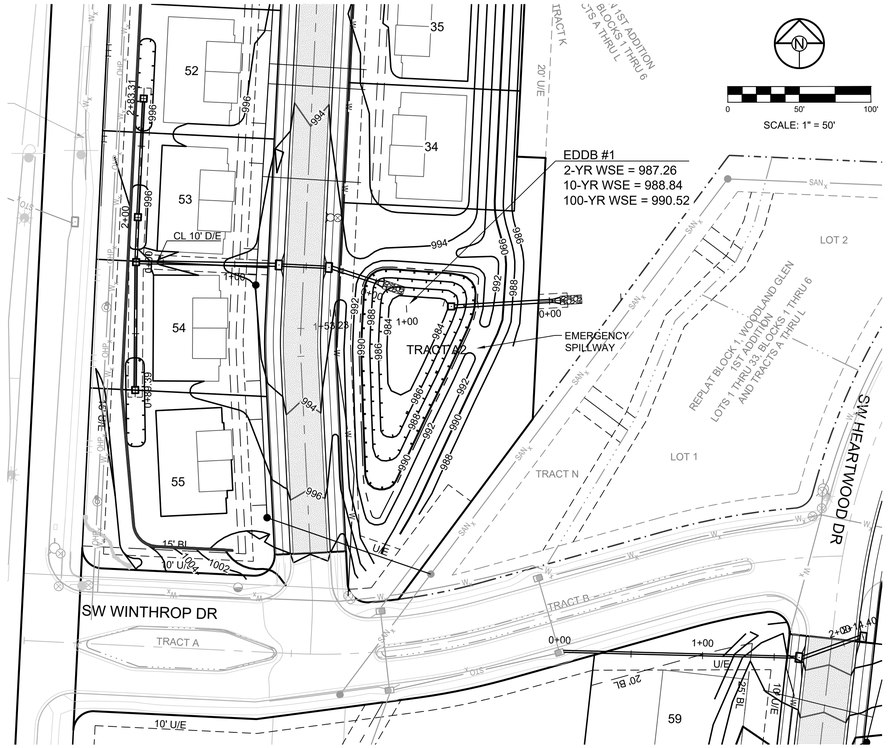


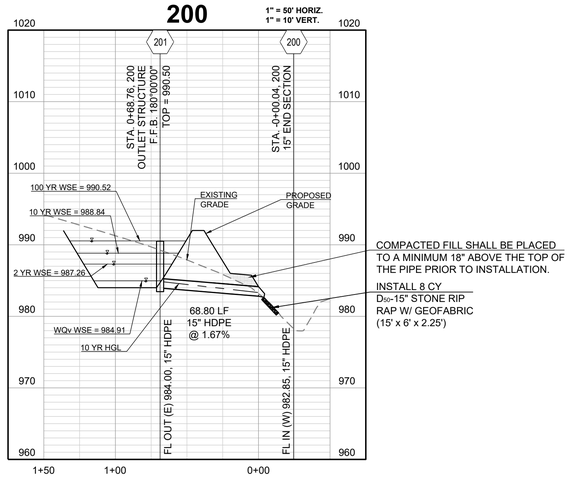


SECTION B-B
NTS



SECTION A-A
NTS

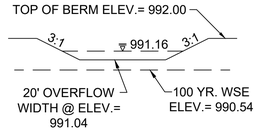




DETENTION STORAGE EDDB #1:
100 YEAR, 24 HR. RAINFALL - MAXIMUM WSE = 990.52 (SEE FINAL STORMWATER MGMT. PLAN)

AUXILIARY SPILLWAY SET AT 0.5 FEET ABOVE MAX. WSE, SPILLWAY ELEV. = 991.02

AUXILIARY SPILLWAY DESIGN:
Q(100)=2.71 CFS, Q=CLH^(3/2), C=3.33, L=20 FT., 2.71 CFS = 3.33 * 20FT. * (H^(3/2)), H=0.12 FT.



PROJECT BENCHMARK:

SW. CORNER NW. ¼ SEC. 18-47N-31W, JACKSON COUNTY, MO.
3" DIAMETER ALUMINUM DISK IN MONUMENT BOX
M.D.N.R. DOC. NO. 600-65374

ELEV. 1036.41

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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
05.18.22

SCHLAGEL & ASSOCIATES, P.A.

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE,
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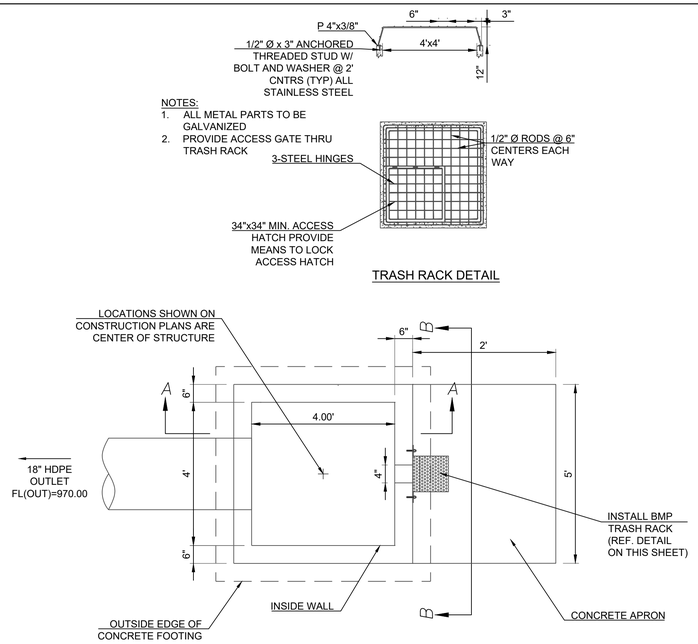
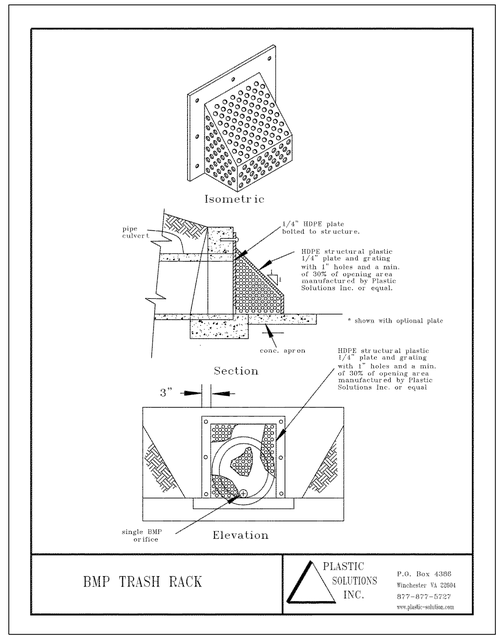
05/16/2022	CITY EMAILED COMMENTS

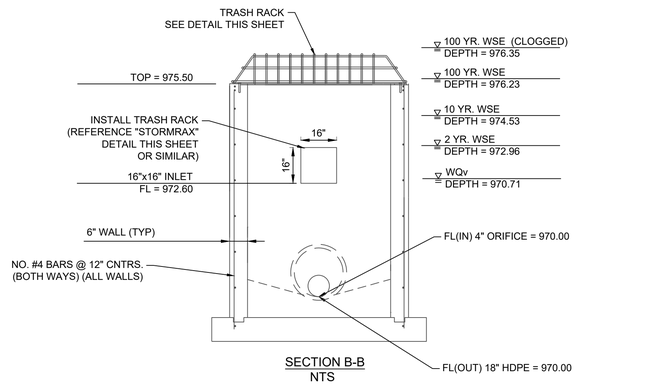
DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

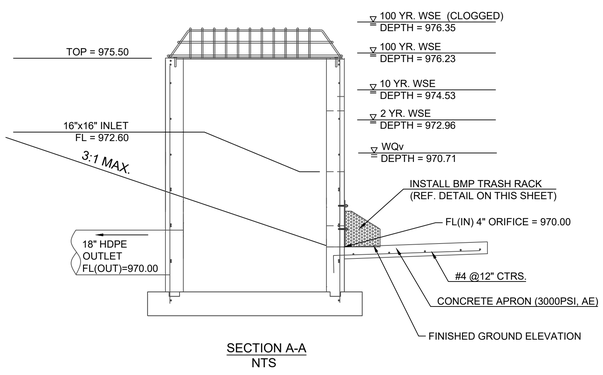
EDDB 1 OUTLET STRUCTURE

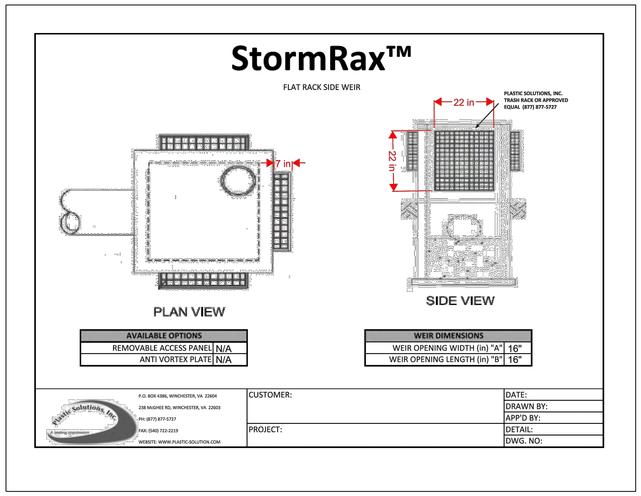
SHEET
17

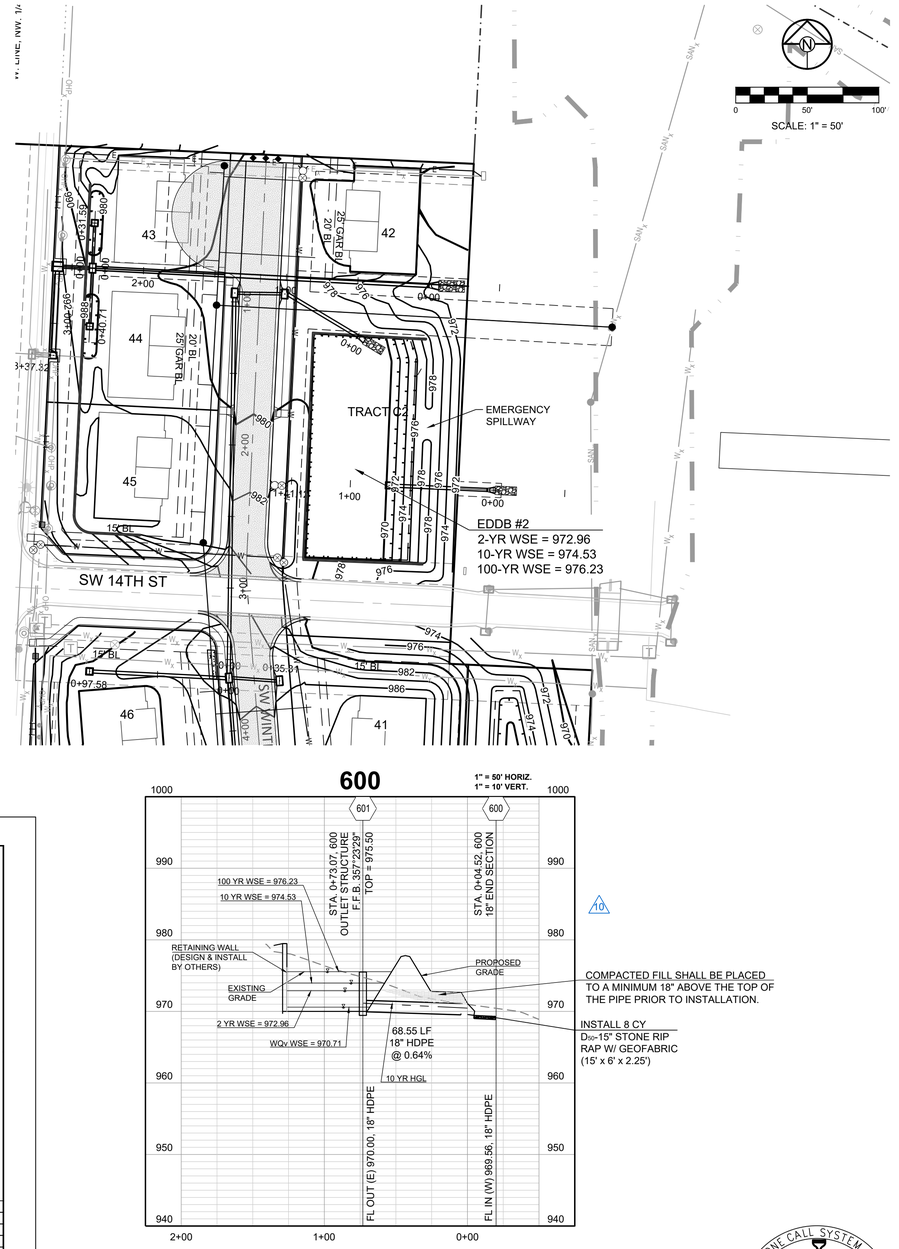








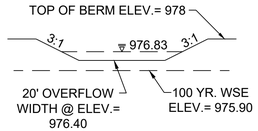




DETENTION STORAGE EDDB #2:
100 YEAR, 24 HR. RAINFALL - MAXIMUM WSE = 976.23 (SEE FINAL STORMWATER MGMT. PLAN)

AUXILIARY SPILLWAY SET AT 0.5 FEET ABOVE MAX. WSE, SPILLWAY ELEV. = 976.73

AUXILIARY SPILLWAY DESIGN:
Q(100)=18.47 CFS, Q=CLH^(3/2), C=3.33, L=20 FT., 18.47 CFS = 3.33 * 20FT. * (H^(3/2)), H=0.43 FT.



PROJECT BENCHMARK:

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PREPARED BY:

MARK ALLEN BREUER NUMBER PE-2009007268 STATE OF MISSOURI PROFESSIONAL ENGINEER
05.18.22

SCHLAGEL & ASSOCIATES, P.A.

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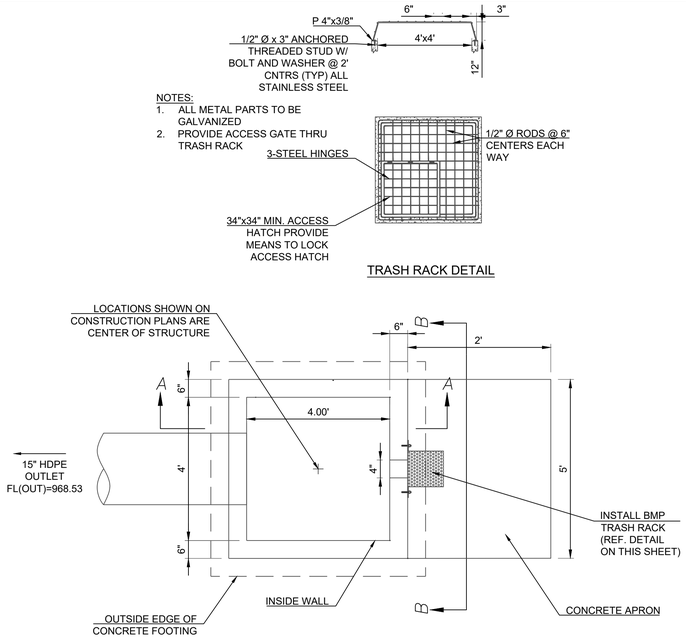
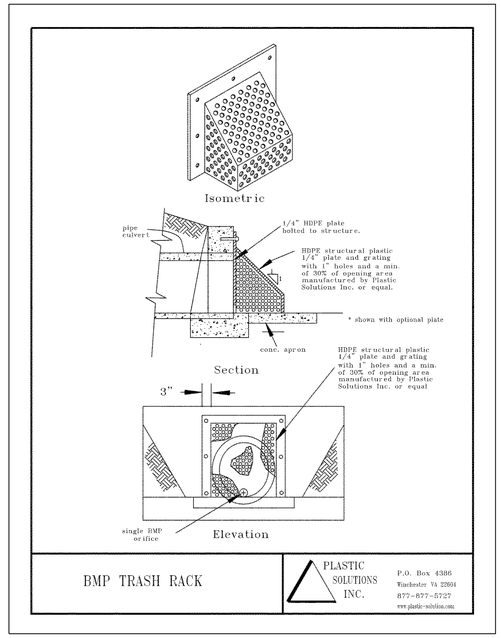
DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 19-017

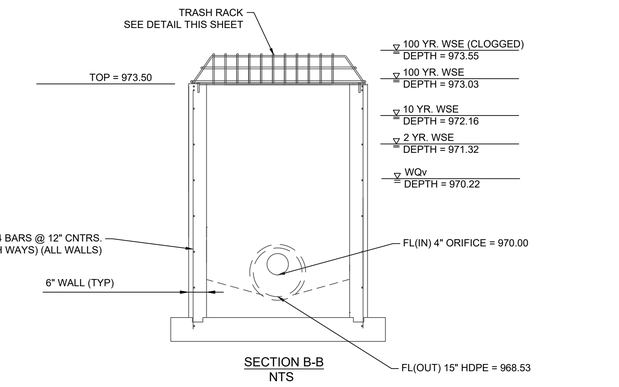
EDDB 2 OUTLET STRUCTURE

SHEET
18

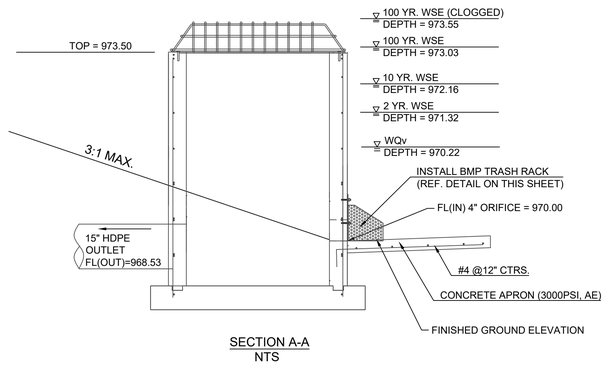


TRASH RACK DETAIL

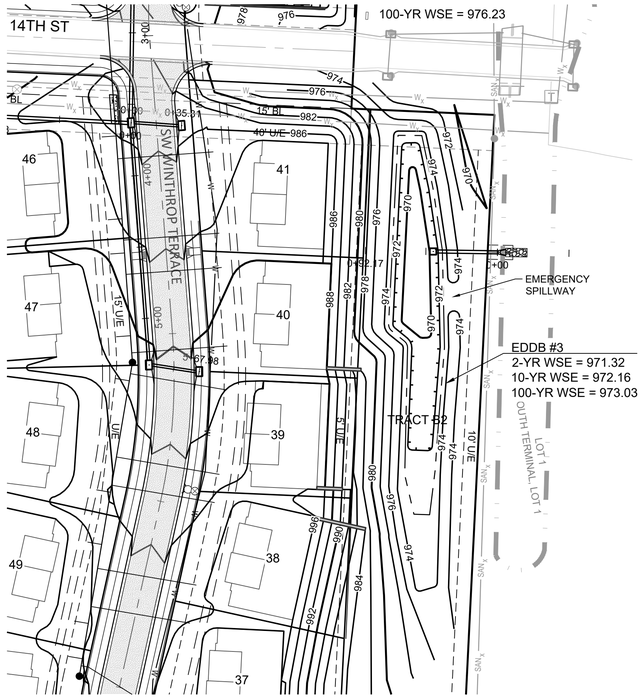


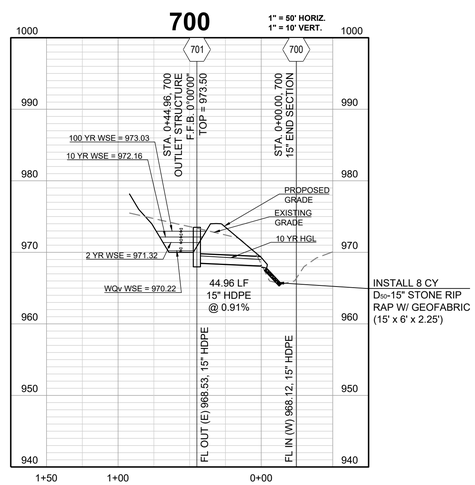


SECTION B-B
NTS



SECTION A-A
NTS

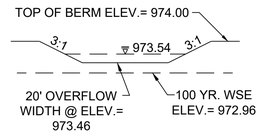




DETENTION STORAGE EDDB #3:
100 YEAR, 24 HR. RAINFALL - MAXIMUM WSE = 973.03 (SEE FINAL STORMWATER MGMT. PLAN)

AUXILIARY SPILLWAY SET AT 0.5 FEET ABOVE MAX. WSE, SPILLWAY ELEV. = 973.53

AUXILIARY SPILLWAY DESIGN:
Q(100)=1.43 CFS, Q=CLH^(3/2), C=3.33, L=20 FT., 1.43 CFS = 3.33 * 20FT. * (H^(3/2)), H=0.08 FT.



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PREPARED BY:

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NUMBER PE-2009007268
PROFESSIONAL ENGINEER
STATE OF MISSOURI
05.18.22

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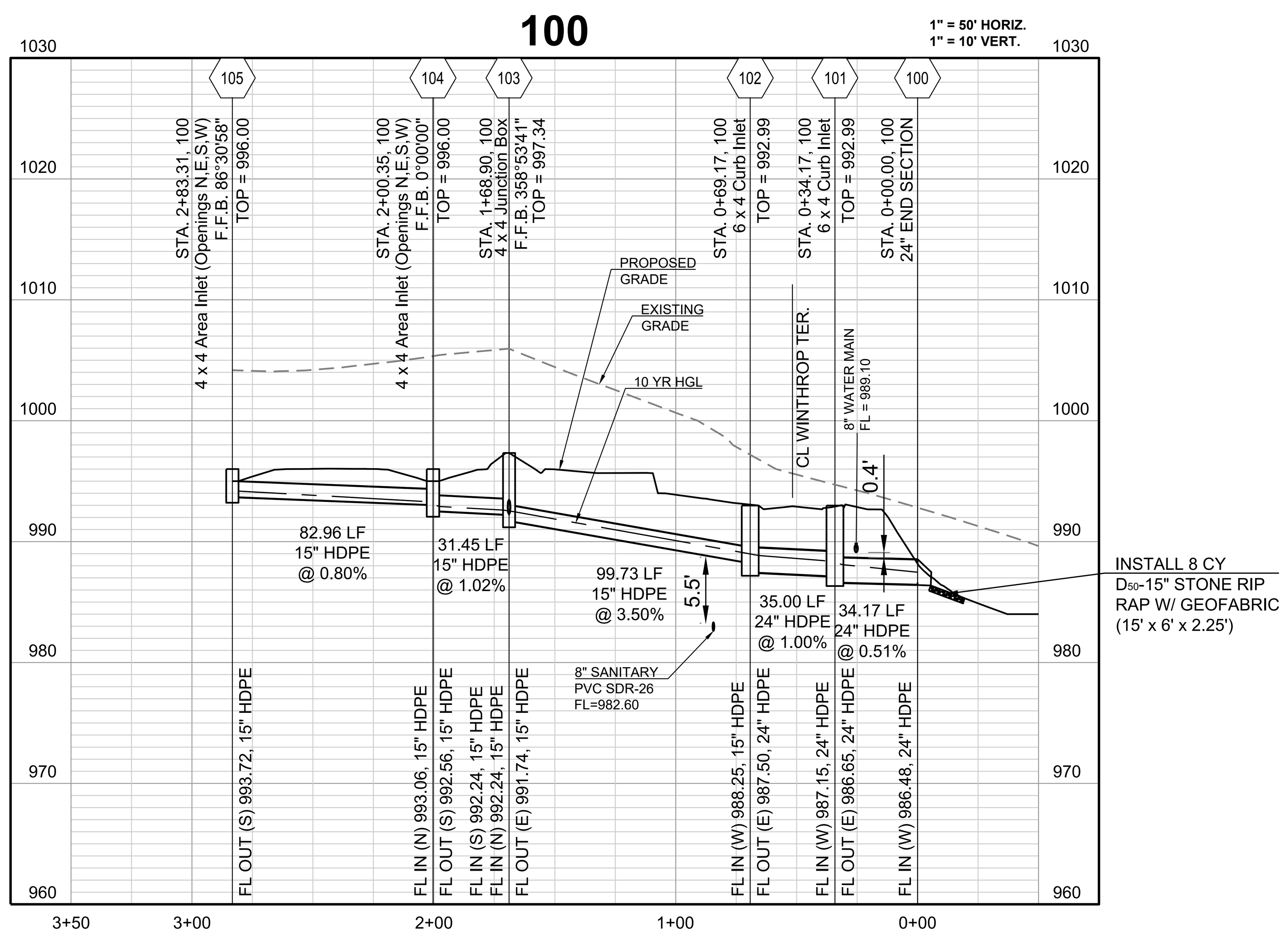
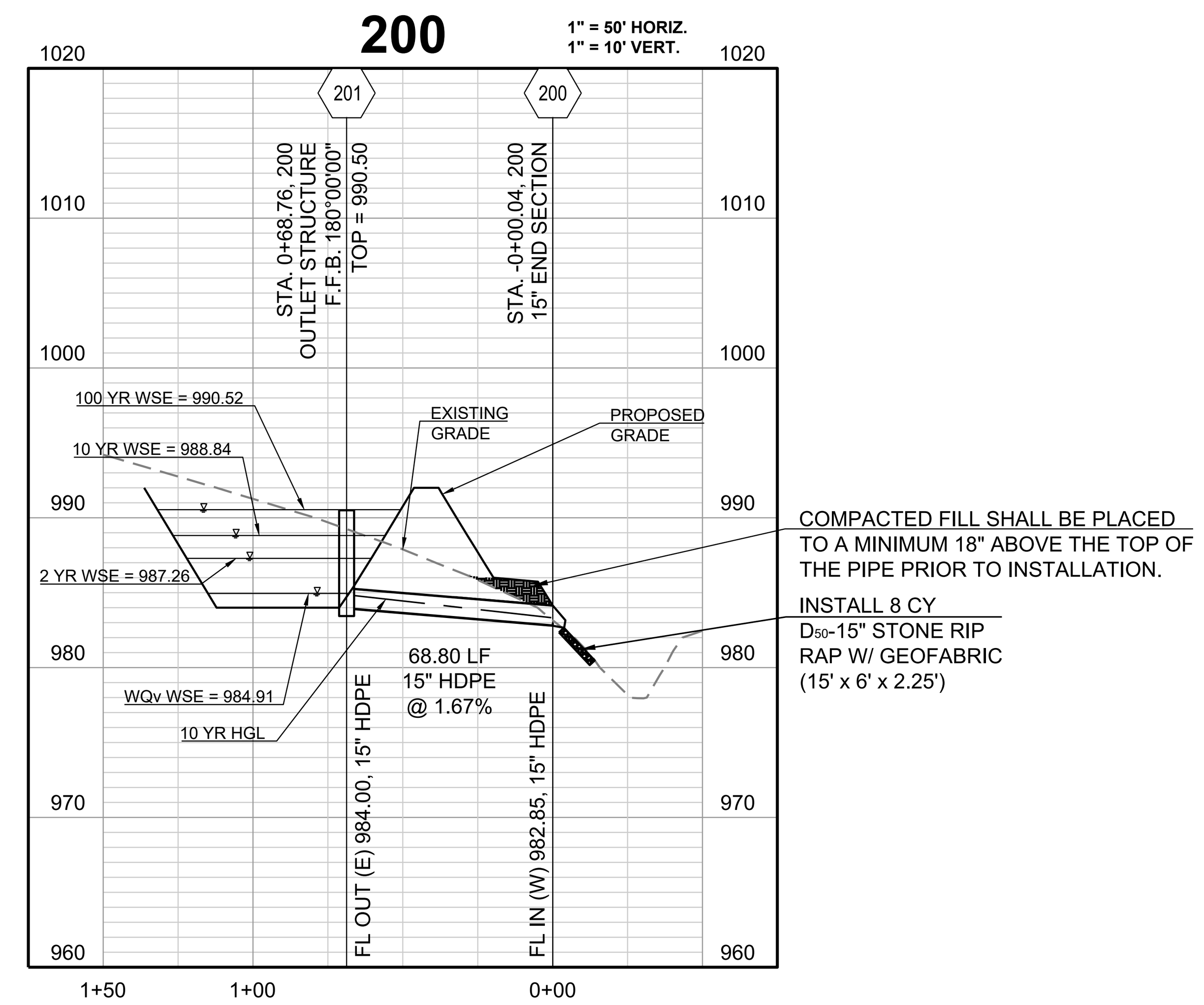
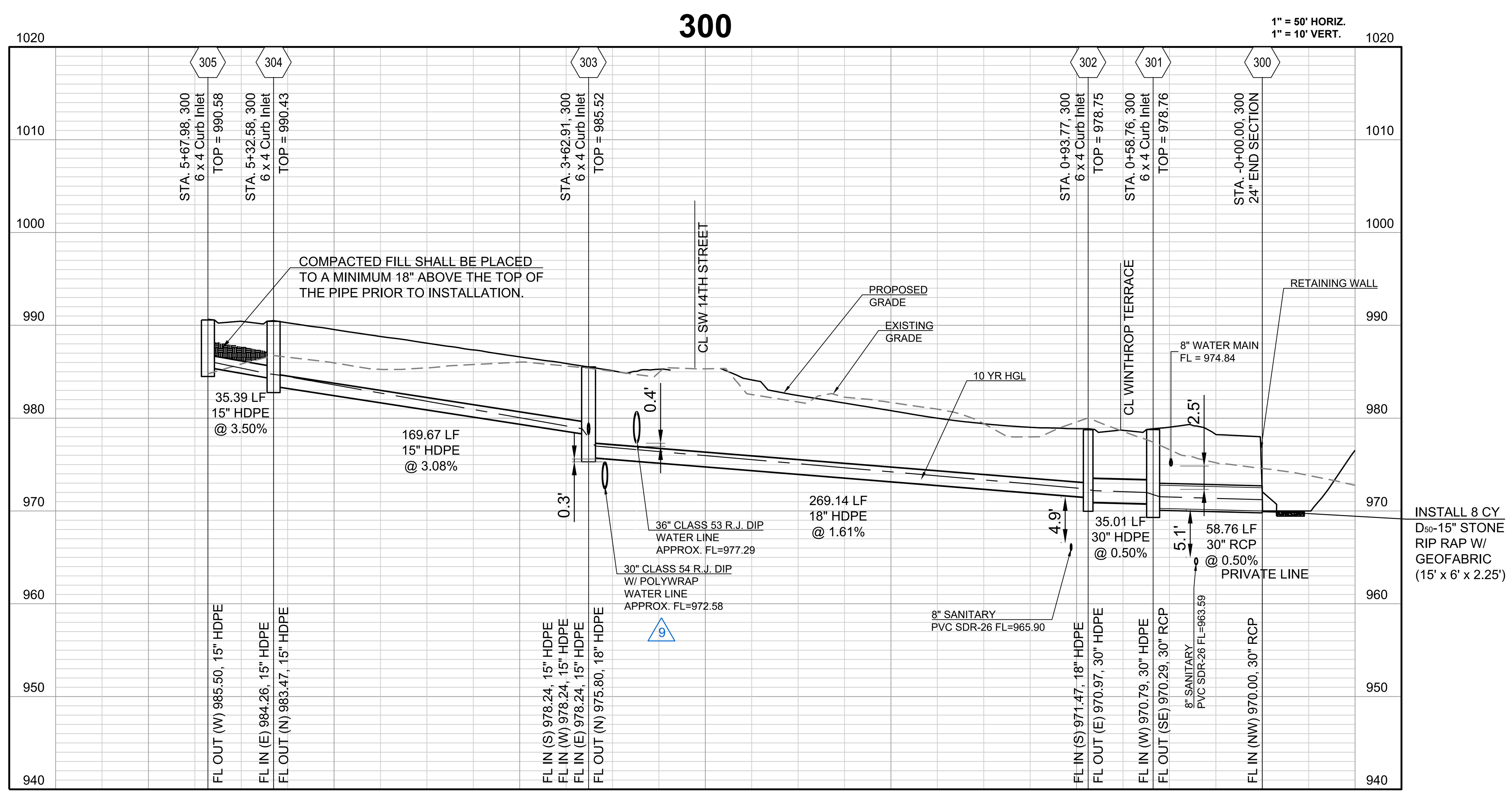
DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

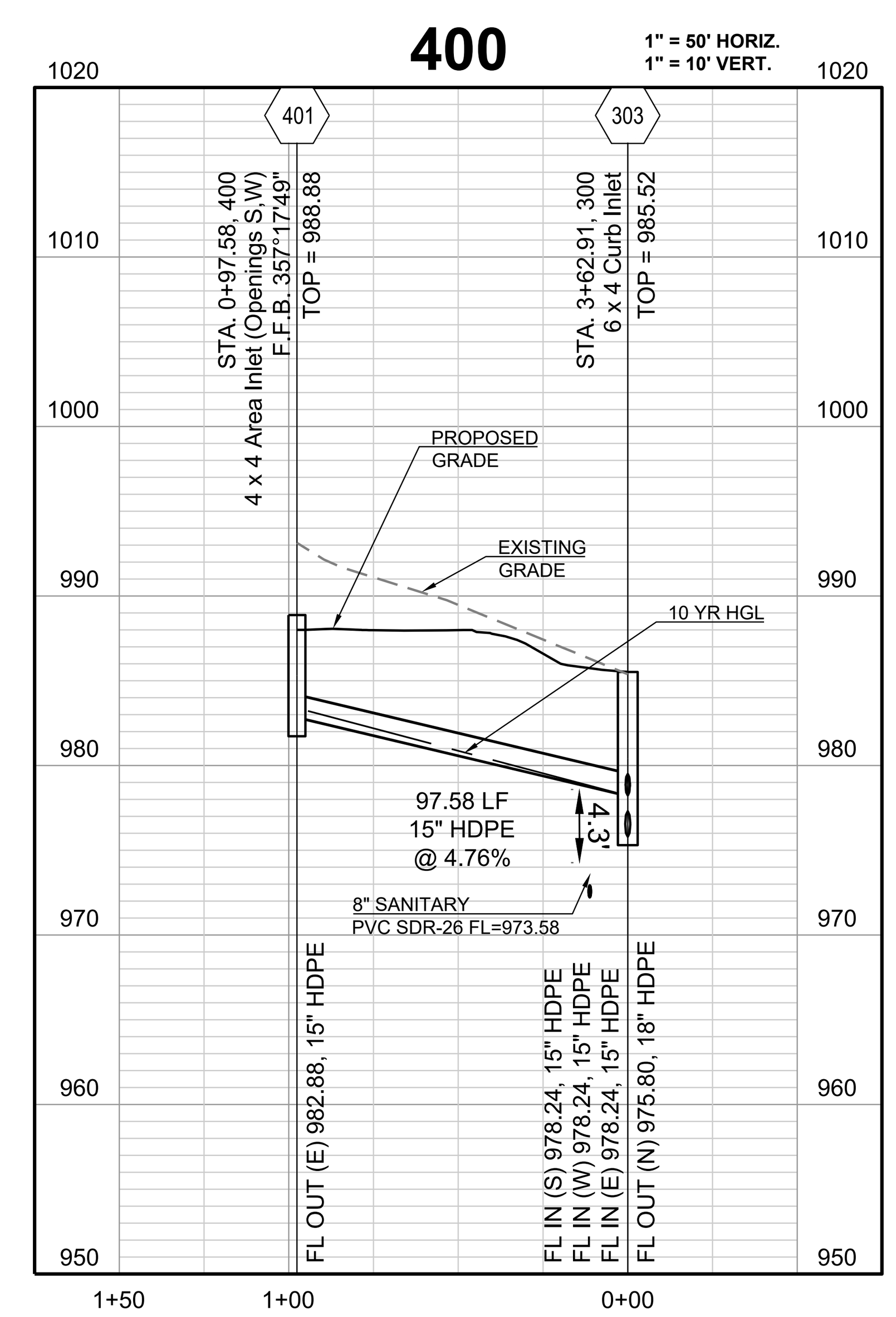
EDDB 3 OUTLET STRUCTURE

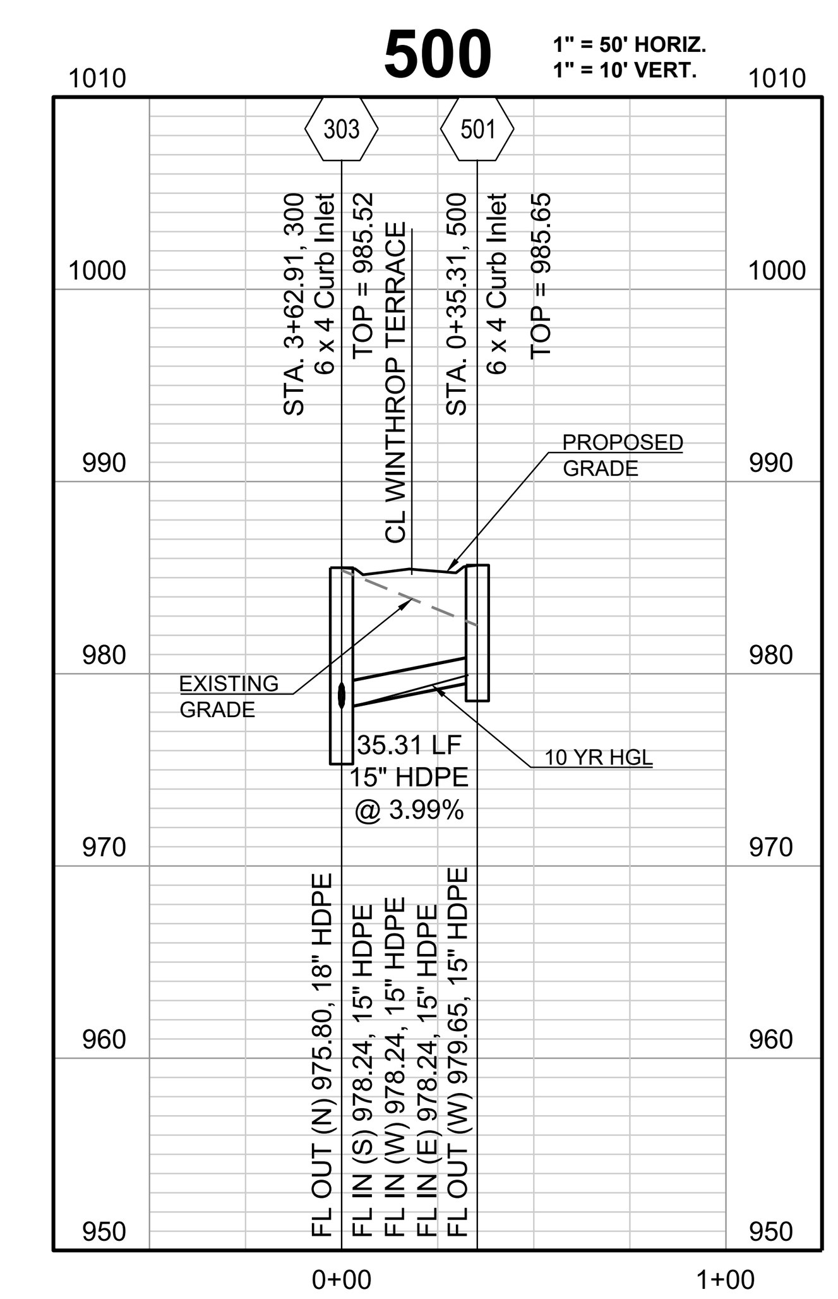
SHEET
19











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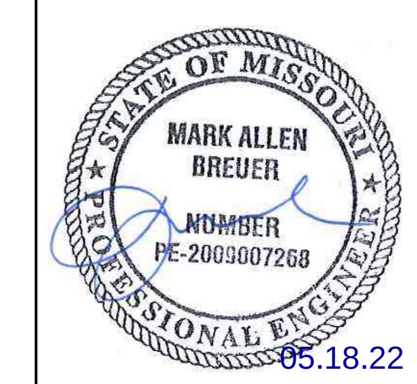

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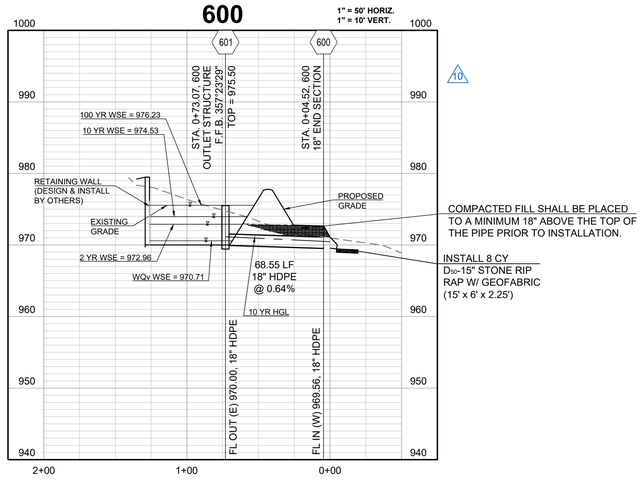
STREET, STORMWATER, MASTER DRAINAGE, AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

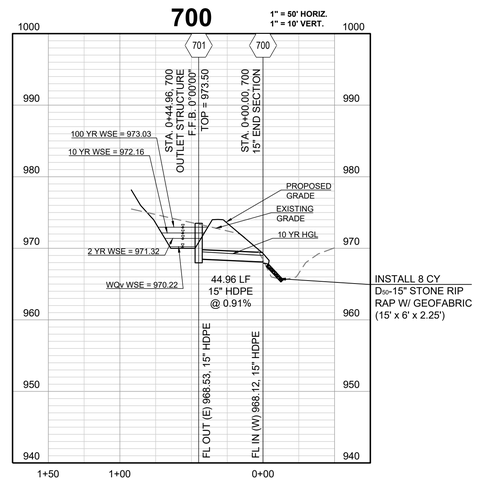
REVISION DATE	DESCRIPTION
1 04/24/2020	CITY COMMENTS
2 01/12/2021	SCHLAGEL QUANTITIES
3 04/09/2021	SCHLAGEL QUANTITIES
4 05/12/2021	CITY COMMENTS
5 06/15/2021	CITY COMMENTS
6 06/28/2021	CITY COMMENTS
7 09/28/2021	SCHLAGEL UPDATE
8 10/06/2021	CITY COMMENTS
9 01/20/2022	WATER LINE CONFLICT
10 05/16/2022	CITY EMAILED COMMENTS

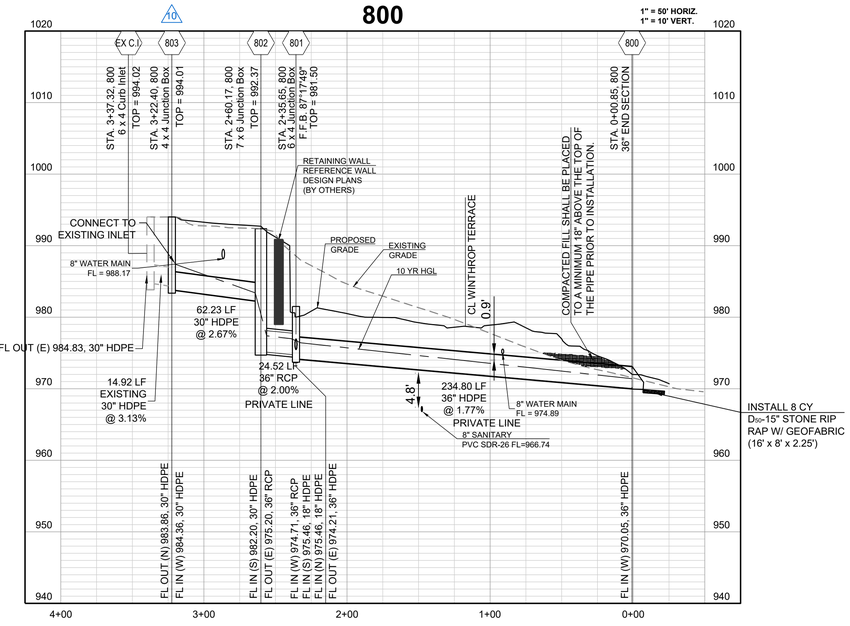
DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

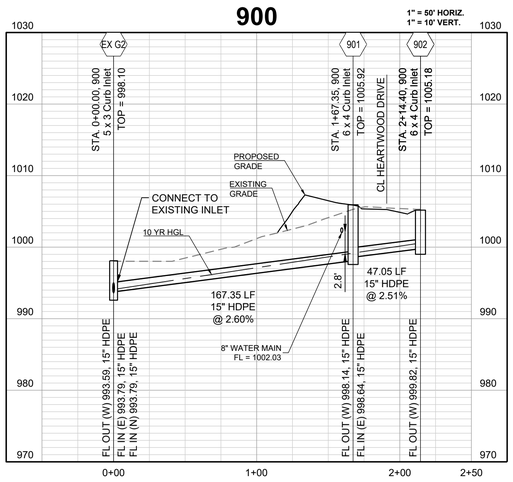
STORM PROFILE

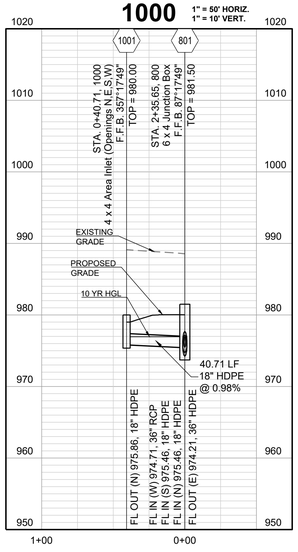
SHEET
20

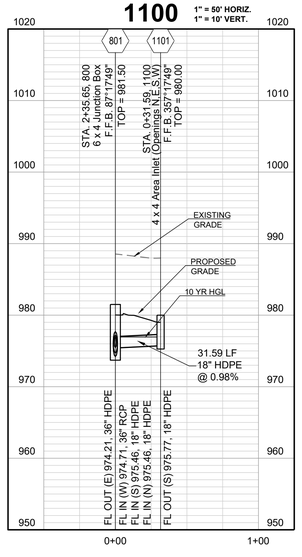


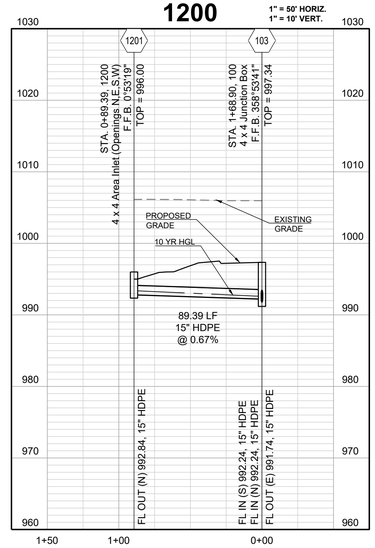












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#E2000030800-F #LA2001005237 #LS2002008859-F

MARK ALLEN BREUER
NUMBER PE-2003007268
05.18.22

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE,
AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

REVISION DATE	DESCRIPTION
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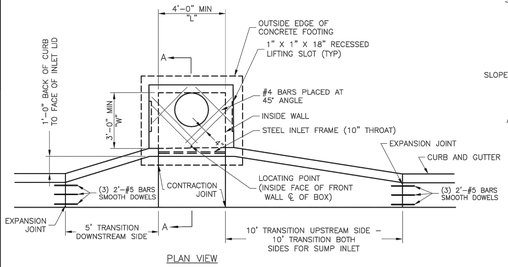
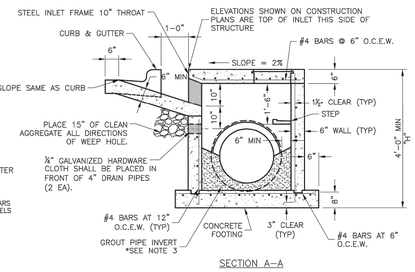
DRAWN BY:	CHECKED BY:	DATE PREPARED:	PROJ. NUMBER:
BAL	MAB	2-19-2020	18-017

STORM PROF
CONT

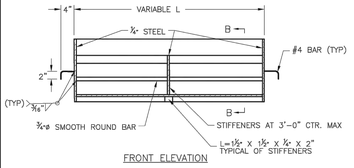
SHEET
21



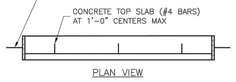
PLAN VIEW



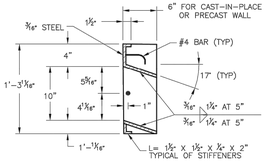
SECTION A–A



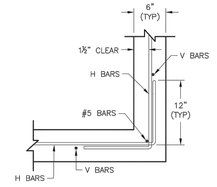
FRONT ELEVATION



PLAN VIEW



SECTION B–B



WALL CORNER DETAIL

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.

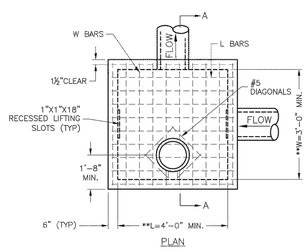
GENERAL NOTES:
1. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION.
2. FLOW LINES LISTED ON THE PROJECT PLANS ARE LISTED AT THE INSIDE FACE OF THE WALL.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.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

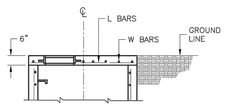
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Sheet Name: CURB INLET DETAIL

Drawn By: MJF
Checked By: DL
Date: 04/17
Proj.#:

STM-1



PLAN

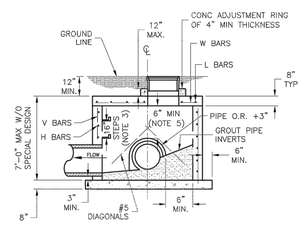


SLAB TOP ALTERNATE FOR JUNCTION BOX (SHALLOW)

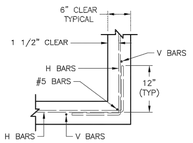
** INCREASE IN MULTIPLES OF 6" (7'–0") MAX WITHOUT SPECIAL DESIGN. (SEE PROJECT PLANS FOR DETAILS)

REINFORCING

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



SECTION A–A



WALL CORNER DETAIL

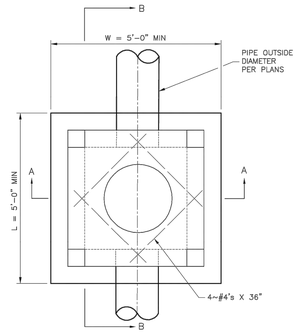
GENERAL NOTES:
1. LOCATE RING AND COVER ON BLANK WALL.
2. USE ¾" CHAMFER STRIP OR ½" R EDGER TOOL ON ALL EXPOSED CONCRETE CORNERS.
3. STEPS REQUIRED AT 16" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 4' ON BLANK WALL IF POSSIBLE.
4. BOXOUTS WILL NOT BE ALLOWED TO PROJECT THROUGH THE CORNERS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

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

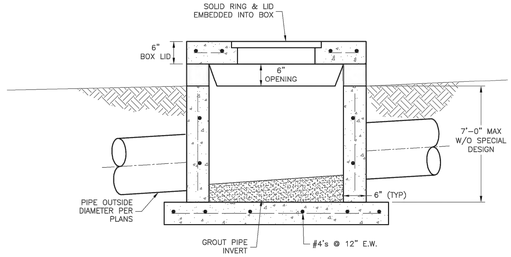
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Sheet Name: JUNCTION BOX DETAIL

Drawn By: MJF
Checked By: DL
Date: 04/17
Proj.#:

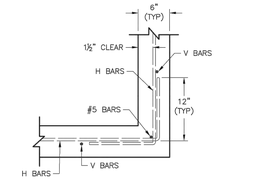
STM-3



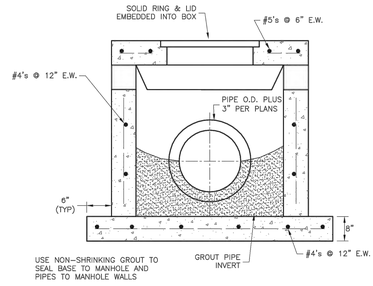
PLAN VIEW



SECTION B–B



WALL CORNER DETAIL



SECTION A–A

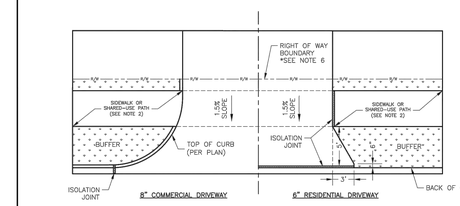
GENERAL NOTES:
1. LOCATE RING AND COVER OVER OUTLET ON BLANK WALL.
2. USE ¾" CHAMFER ON ALL EXPOSED CONCRETE CORNERS.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
4. STEPS REQUIRED AT 16" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 3' ON BLANK WALL IF POSSIBLE.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

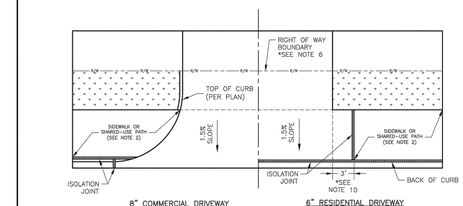
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Sheet Name: FIELD INLET DETAIL

Drawn By: MJF
Checked By: DL
Date: 04/17
Proj.#:

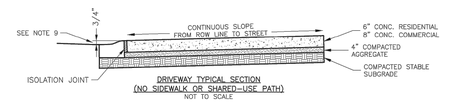
STM-2



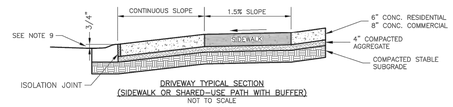
DRIVEWAY WITH BUFFER
NOT TO SCALE



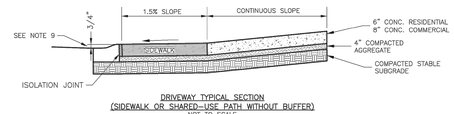
DRIVEWAY WITHOUT BUFFER
NOT TO SCALE



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



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 NEEDS 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 CG–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
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: DRIVEWAY DETAIL

Drawn By: MJF
Checked By: DL
Date: 04/17
Proj.#:

GEN-1

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MARK ALLEN BREUER
NUMBER PE-2009007268
PROFESSIONAL ENGINEER
STATE OF MISSOURI
05.18.22

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE, AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

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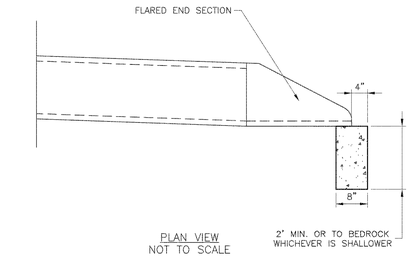
01/20/2022	WATER LINE CONFLICT
05/16/2022	CITY EMAILED COMMENTS

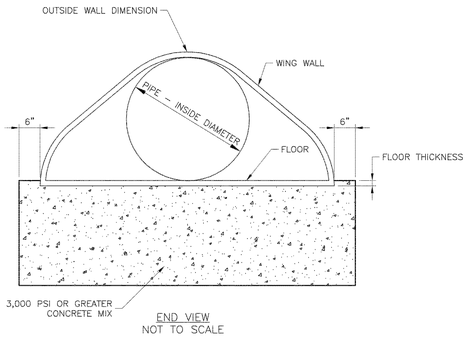
DRAWN BY: DGF
CHECKED BY: DGF
DATE PREPARED: 2-19-2020
PROJ NUMBER: 19-017

STREET AND STORM DETAILS

SHEET 22



PLAN VIEW
NOT TO SCALE



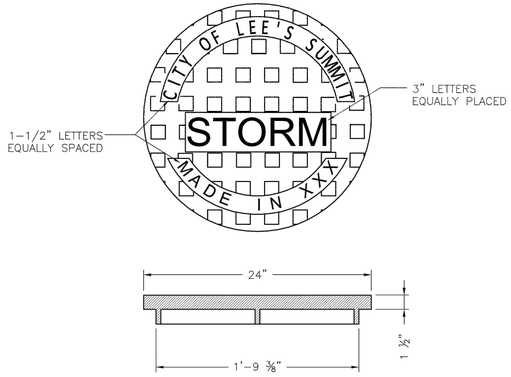
END VIEW
NOT TO SCALE

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

FLARED END SECTION SUPPORT DETAIL

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

STM-5



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

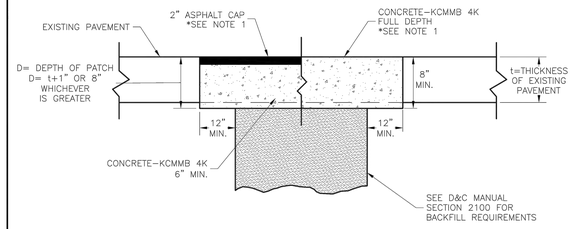
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCT LIST.

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

STORM MANHOLE COVER DETAIL

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

STM-6



TRENCHING/PATCHING DETAIL
NOT TO SCALE

NOTE:

1. ASPHALT CAP OR FULL DEPTH CONCRETE SHALL BE DETERMINED BY CITY INSPECTOR.

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

TRENCHING/PATCHING ROADWAYS DETAIL

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

GEN-5

SCHLAGEL
ENGINEERS PLANNERS SURVEYORS LANDSCAPE ARCHITECTS
14920 West 107th Street • Lenexa, Kansas 66215
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MARK ALLEN BREUER
NUMBER PE-2009007268
PROFESSIONAL ENGINEER
STATE OF MISSOURI
05.18.22

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE,
AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

REVISION	DATE	DESCRIPTION
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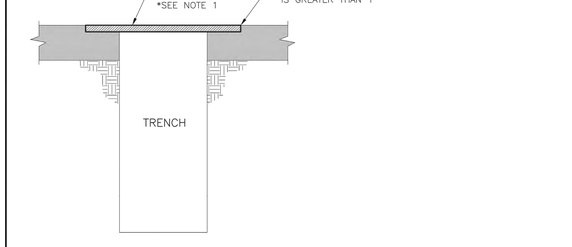
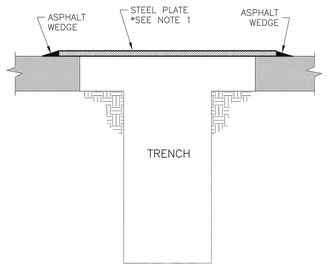
DRAWN BY: DGF
CHECKED BY: DGF
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-417

STREET AND STORM DETAILS

SHEET
23



TYPE "A" PLATING
NOT TO SCALE
(CITY POSTED SPEEDS OF 35 MPH AND GREATER)



TYPE "B" PLATING
NOT TO SCALE
(CITY POSTED SPEEDS OF 30 MPH OR LESS)

GENERAL NOTES:

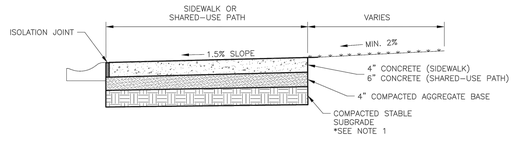
1. THE CONTRACTOR SHALL PROVIDE ADEQUATE OVERLAP OF PLATE ON ASPHALT TO ASSURE NO SLIPPAGE OF PLATE AND NO COLLAPSING OF TRENCH.
2. ALL PLATES SHALL BE ANCHORED SO PLATES DO NOT MOVE OR SHIFT UNDER TRAFFIC.

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

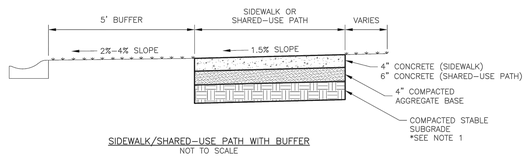
TRENCHING PLATE DETAIL

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

GEN-6



SIDEWALK/SHARED-USE PATH WITHOUT BUFFER
NOT TO SCALE



SIDEWALK/SHARED-USE PATH WITH BUFFER
NOT TO SCALE

GENERAL NOTES:

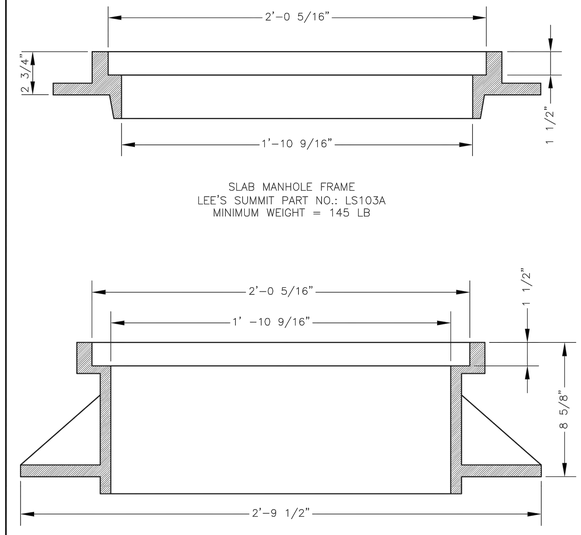
1. SUBGRADE MUST BE OF STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
2. 1.5% CROSS SLOPE MUST BE MAINTAINED THROUGH DRIVEWAYS.
3. KCMMB 4K CONCRETE MIX SHALL BE REQUIRED FOR ALL SIDEWALKS/SHARED-USE PATHS OR AS APPROVED BY THE CITY INSPECTOR.
4. ALL SIDEWALK/SHARED-USE PATHS SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).
5. AN ISOLATION JOINT SHALL BE PLACED AT A MAXIMUM OF 150 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: 04/17
Drawn By: MJF
Checked By: DL

GEN-2



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

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

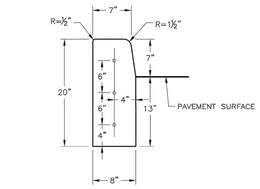
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCTS LIST.

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

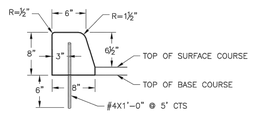
STORM MANHOLE FRAME DETAIL

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

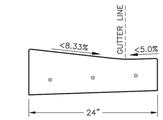
STM-7



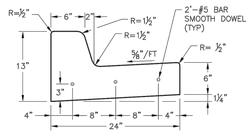
STRAIGHT CURB
(TYPE C-1)



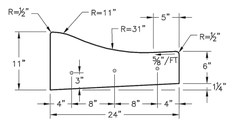
DOWELLED CURB
(TYPE DC)



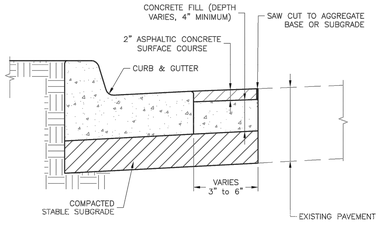
CURB & GUTTER DETAIL AT RAMP
(ADA SLOPE REQUIREMENTS)



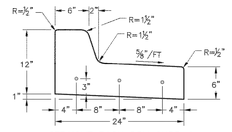
STRAIGHT BACK CURB &
GUTTER
(TYPE CG-1)



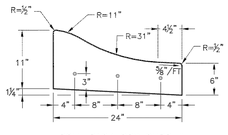
ROLL BACK CURB &
GUTTER
(TYPE CG-2)



CURB REPLACEMENT DETAIL



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



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

GENERAL NOTES

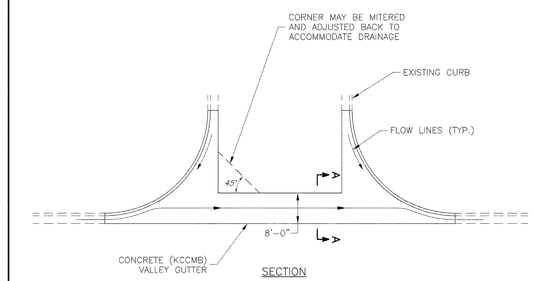
1. ¾" ISOLATION JOINTS WITH 3 (2'-#5 BAR) SMOOTH DOWELS SHALL BE PLACED AT RADIUS POINTS AND AT 150' INTERVALS. THESE DOWEL BARS SHALL BE GREASED AND WRAPPED ON ONE END WITH EXPANSION TUBES.
2. 3" DEEP CONTRACTION JOINTS SHALL BE INSTALLED AT APROXIMATELY 10' INTERVALS. THESE JOINTS SHALL PASS ACROSS 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.

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

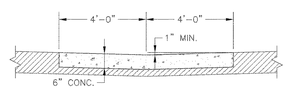
Project: STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Detail Name: CURB & GUTTER DETAIL

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

GEN-7

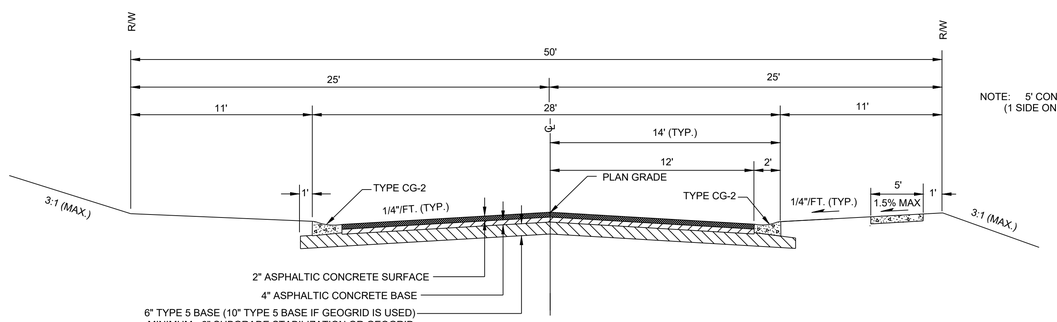
TABLE LS-2: MINIMUM ASPHALT PAVEMENT THICKNESSES

Street Classification	Pavement Option	AC Surface (in.)	AC Base (in.)	MoDOT Type 5 Base (in.)	Geogrid(1)	Chemical Subgrade Stabilization(2) (in.)
Residential Local/Access	A	2	4	6	--	6
	B	2	4	10	Geogrid	--
Residential Collector	A	2	5.5	6	--	9
	B	2	5.5	12	Geogrid	--
Commercial Industrial Local/Collector	A	2	7.5	6	--	9
	B	2	7.5	12	Geogrid	--

TABLE LS-3: MINIMUM PCC PAVEMENT THICKNESSES

Street Classification	PCC (in.)	Aggregate Base (in.)	Subgrade Stabilization(1) (in.)
Residential Local/Access	6	4	--
Residential Collector	6	4	6
Commercial Industrial Local/Collector	8	4	9

(1) Subgrade Stabilization and 4" aggregate base may be replaced by approved geogrid and 6" of aggregate base



RESIDENTIAL LOCAL/ACCESS
NW THOREAU DR STA. 1+35.24 TO STA. 4+25.27
THOREAU LN STA. 0+00 TO STA. 2+56
THOREAU PL STA. 0+00 TO STA. 1+65.97

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WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE,
AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

REVISION DATE	DESCRIPTION
04/24/2020	CITY COMMENTS
01/12/2021	SCHLAGEL QUANTITIES
04/06/2021	SCHLAGEL QUANTITIES
05/12/2021	CITY COMMENTS
06/15/2021	CITY COMMENTS
06/28/2021	CITY COMMENTS
08/26/2021	SCHLAGEL UPDATE
10/06/2021	CITY COMMENTS
01/20/2022	WATER LINE CONFLICT
05/16/2022	CITY EMAILED COMMENTS

DRAWN BY: DGF
CHECKED BY: DGF
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

STREET AND
STORM DETAILS

SHEET
24

SHEET	SIGNING PLAN
25	

DRAWN BY:	REVISION DATE	DESCRIPTION
BAL	04/24/2020	CITY COMMENTS
	01/12/2021	SCHLAGEL QUANTITIES
CHECKED BY:	04/09/2021	SCHLAGEL QUANTITIES
MAB	05/12/2021	CITY COMMENTS
DATE PREPARED:	06/15/2021	CITY COMMENTS
2-19-2020	06/28/2021	CITY COMMENTS
	09/28/2021	SCHLAGEL UPDATE
PROJ. NUMBER:	10/06/2021	CITY COMMENTS
18-017	01/20/2022	WATER LINE CONFLICT
	05/16/2022	CITY EMAILED COMMENTS

WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE, AND EROSION CONTROL PLANS

WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

SCHLAGEL & ASSOCIATES, P.A.

STATE OF MISSOURI
MARK ALLEN MEDSKER
NUMBER PE-2009030726
ENGINEER
05-18-22

PREPARED BY:

SCHLAGEL
ENGINEERS PLANNERS SURVEYORS LANDSCAPE ARCHITECTS
14920 West 107th Street • Lenexa, Kansas 66215
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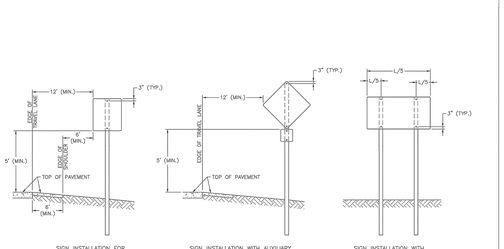
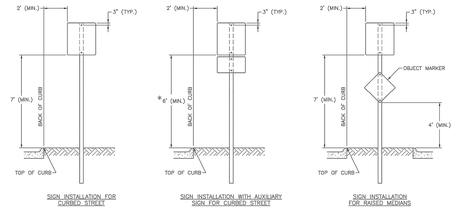


SIGN INSTALLATION FOR NON-CURBED STREET | SIGN INSTALLATION WITH AUXILIARY SIGN FOR NON-CURBED STREET | SIGN INSTALLATION WITH TWO SIGN POSTS

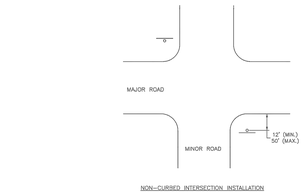


SIGN INSTALLATION FOR CURBED STREET | SIGN INSTALLATION WITH AUXILIARY SIGN FOR CURBED STREET | SIGN INSTALLATION FOR RAISED MEDIANS

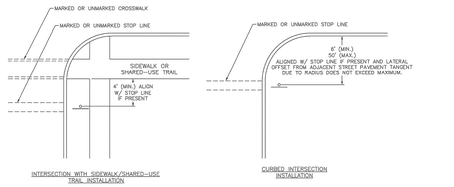
SIGN MOUNTING DETAILS

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.

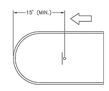


NON-CURBED INTERSECTION INSTALLATION



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.

DESCRIPTION	NO.	DATE

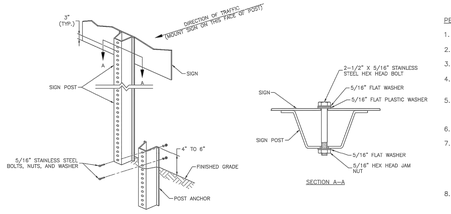
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

SIGNING STANDARD DETAILS — SIGN MOUNTING DETAILS

Project#: | Sheet Name:

Drawn By: BWC
Checked By: MKP
Date: 1/2020
Project# STD DETAILS
1 OF 3

SN-1



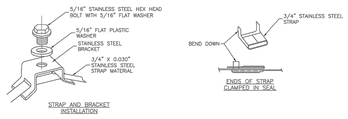
U-STEEL POST DETAILS

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 3' 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.

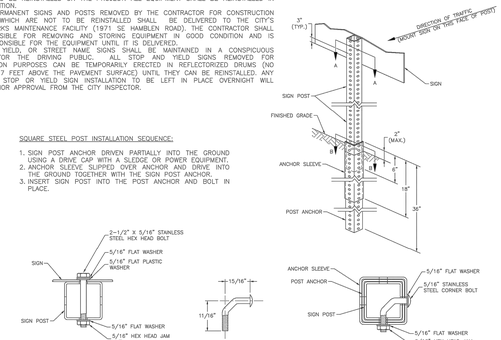


STRAP AND BRACKET INSTALLATION

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.



SQUARE STEEL POST DETAILS

SQUARE STEEL POST INSTALLATION SEQUENCE:

1. SIGN POST ANCHOR DRIVEN PARTIALLY INTO THE GROUND USING A DRIVE CAP WITH A SLEDGE OR POWER EQUIPMENT.
2. ANCHOR SLEEVE SLIPPED OVER ANCHOR AND DRIVE INTO THE GROUND TOGETHER WITH THE SIGN POST ANCHOR.
3. INSERT SIGN POST INTO THE POST ANCHOR AND BOLT IN PLACE.

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 ⅞" X 2 ⅞" 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.

DESCRIPTION	NO.	DATE

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

SIGNING STANDARD DETAILS — POSTS

Project#: | Sheet Name:

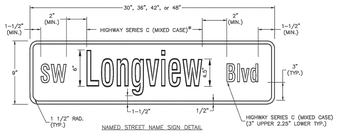
Drawn By: BWC
Checked By: MKP
Date: 1/2020
Project# STD DETAILS
2 OF 3

SN-2

STANDARD ABBREVIATION LISTS

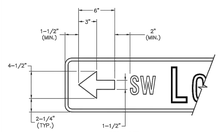
NAMED STREETS	
AVENUE	Ave
BOULEVARD	Blvd
CIRCLE	Cir
CREEK	Cr
COURT	Ct
CROSSING	Xing
DRIVE	Dr
HIGHWAY	Hwy
LANE	Ln
PARKWAY	Pkwy
PLACE	Pl
ROAD	Rd
STREET	St
TERRACE	Ter
TRAIL	Trl
WAY	Way

NUMBERED STREETS	
FIRST	ST
SECOND	ND
THIRD	RD
FOURTH TO TENTH	TH



STREET NAME SIGN BLANK DETAILS

FOR MOUNTING ON SQUARE STEEL POSTS



ARROW DETAIL

PRIVATE STREET TAG DETAIL

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

NUMBERED STREET NAME SIGN DETAIL

STREET NAME SIGN FACE DETAILS

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

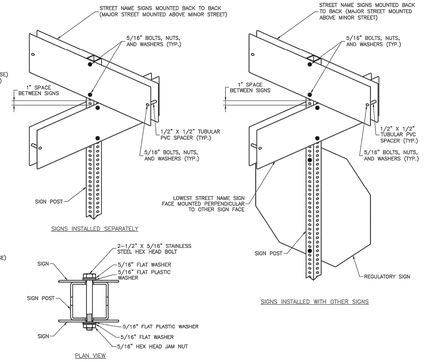
NUMBERED STREET NAME SIGN DETAIL

STREET NAME SIGN FACE DETAILS

POST MOUNTED MULTI-LANE GREATER THAN 40 MPH

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.



SQUARE STEEL POST MOUNTING DETAILS

DESCRIPTION	NO.	DATE
CONSTRUCTION PLANS	3	11/11/11

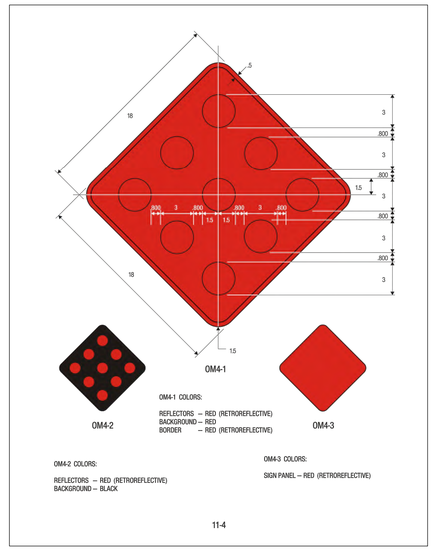
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

SIGNING STANDARD DETAILS — STREET NAME SIGNS

Project#: | Sheet Name:

Drawn By: BWC
Checked By: MKP
Date: 11/2019
Project# STD DETAILS
3 OF 3

SN-3

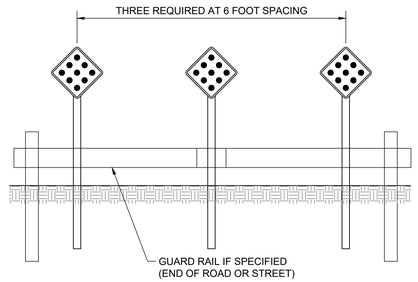


11-4

R1-1

STOP SIGN

NOTE:
THICKNESS OF FLAT SHEET FOR END OF ROAD MARKERS SHALL BE 0.0063". RED REFLECTORS ON RED BACKGROUND.



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

PREPARED BY:

STATE OF MISSOURI
MARK ALLEN BREUER
NUMBER PE-2009007268
PROFESSIONAL ENGINEER
05.18.22

SCHLAGEL & ASSOCIATES, P.A.

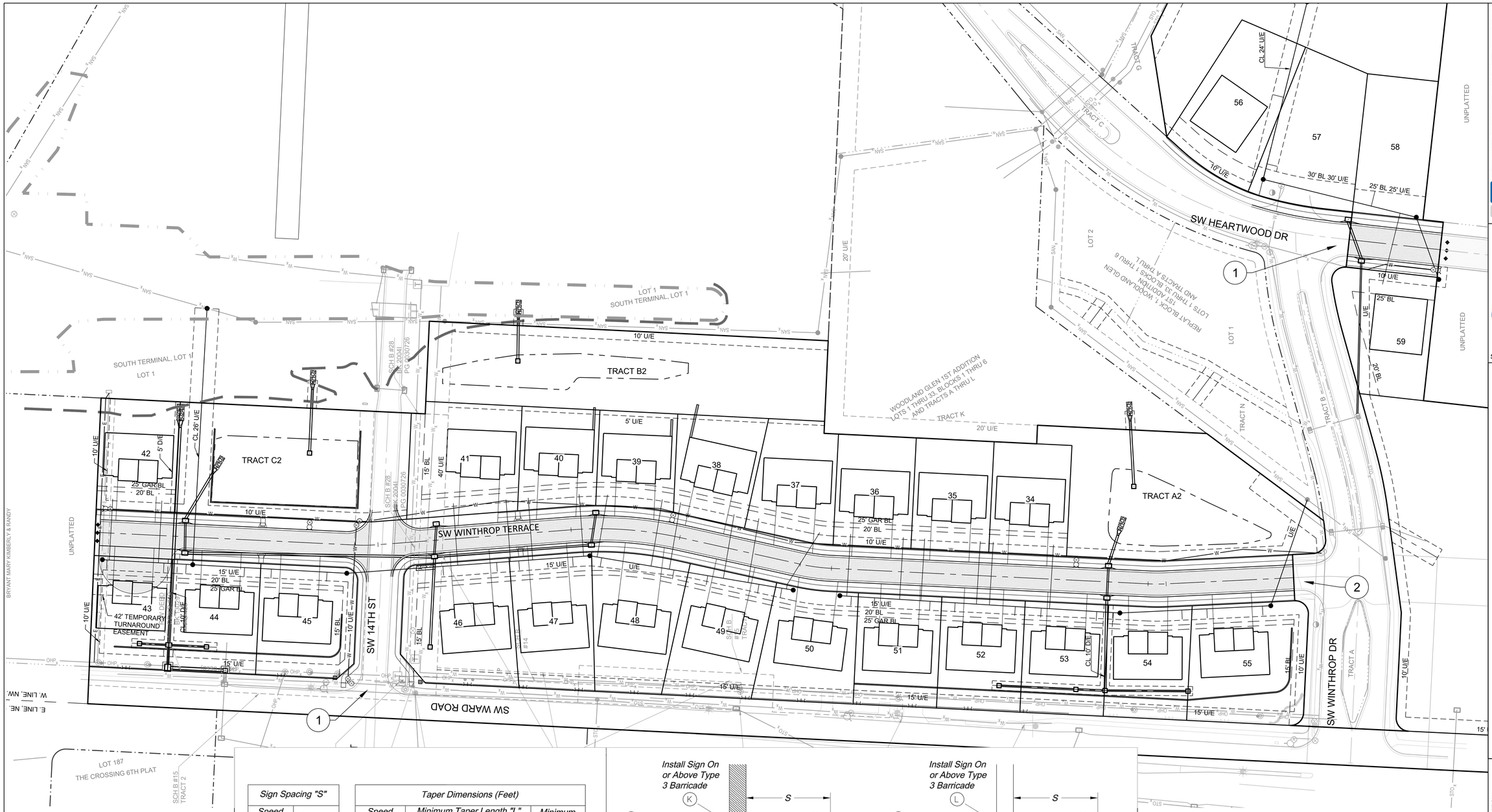
WOODLAND GLEN 2ND PLAT
STREET, STORMWATER, MASTER DRAINAGE,
AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

DESCRIPTION	REVISION DATE
CITY COMMENTS	04/24/2020
SCHLAGEL QUANTITIES	01/12/2021
SCHLAGEL QUANTITIES	04/09/2021
CITY COMMENTS	05/12/2021
CITY COMMENTS	06/15/2021
CITY COMMENTS	06/28/2021
SCHLAGEL UPDATE	09/28/2021
CITY COMMENTS	10/06/2021
WATER LINE CONFLICT	01/20/2022
CITY EMAILED COMMENTS	05/16/2022

DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

SIGN DETAILS

SHEET
26

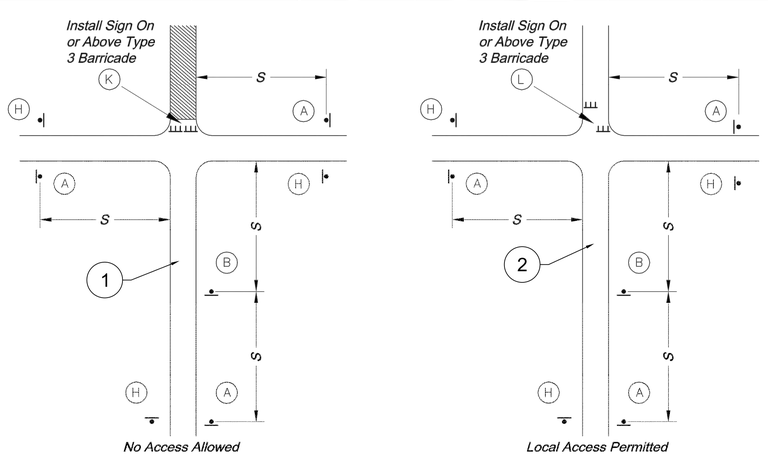


Sign Spacing "S"	
Speed Limit (mph)	Spacing (Feet)
25	100
30 - 35	250
≥ 40	350

Taper Dimensions (Feet)				
Speed Limit (mph)	Minimum Taper Length "L", per Lane Width "W"			Minimum Number of Channelizers
	10	11	12	
25	105	115	125	6
30	150	165	180	7
35	205	225	245	8
40	270	295	320	9
45	450	495	540	13

Guidelines for Length of Longitudinal Buffer Space "B"	
Speed Limit (mph)	Length (Feet)
25	35
30	55
35	85
40	120
45	170

Maximum Channelizer Spacing		
Speed Limit (mph)	Within Taper (Feet)	Outside Taper (Feet)
25	25	50
30	30	60
35	35	70
40	40	80
45	45	90



TYPICAL STREET CLOSURE

NOTE:
Reference the City of Lee's Summit "TRAFFIC CONTROL DETAILS" Standard Drawing TC-1 on Sheet 28 for sign types listed in the Typical Street Closure Diagrams.

SCALE: 1" = 50'

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PREPARED BY:

MARK ALLEN BREUER
NUMBER PE-2003007268
STATE OF MISSOURI
PROFESSIONAL ENGINEER
05.18.22

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STREET, STORMWATER, MASTER DRAINAGE, AND EROSION CONTROL PLANS
WARD ROAD & WINTHROP DRIVE
LEE'S SUMMIT, MISSOURI

REVISION DATE	DESCRIPTION
04/24/2020	CITY COMMENTS
01/12/2021	SCHLAGEL QUANTITIES
04/09/2021	SCHLAGEL QUANTITIES
05/12/2021	CITY COMMENTS
06/15/2021	CITY COMMENTS
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09/28/2021	SCHLAGEL UPDATE
10/06/2021	CITY COMMENTS
01/20/2022	WATER LINE CONFLICT
05/16/2022	CITY EMAILED COMMENTS

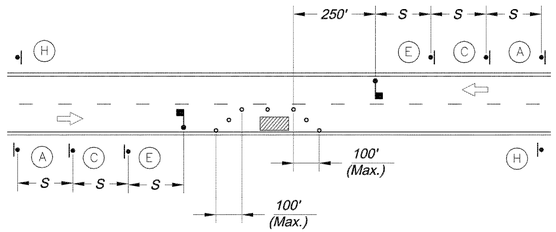
DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

TRAFIIC CONTROL PLAN

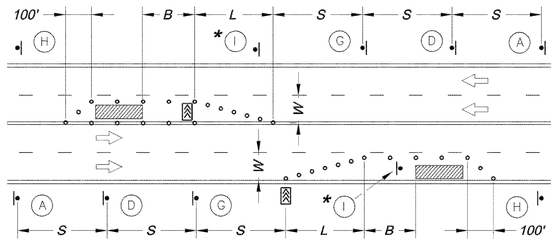
SHEET
27

SYMBOL LEGEND

- Work Area
- Sign
- Barricade
- Direction of Travel
- Channelizer
- Arrow Panel
- Flagger

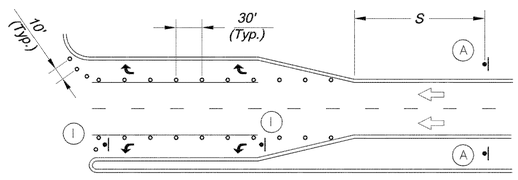


LANE CLOSURE - TWO LANE STREET



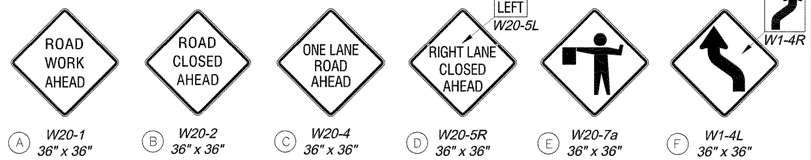
LANE CLOSURE - FOUR LANE STREET

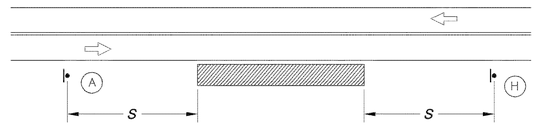
* Install Signs Every 200 Feet Throughout the Closed Lane or As Needed



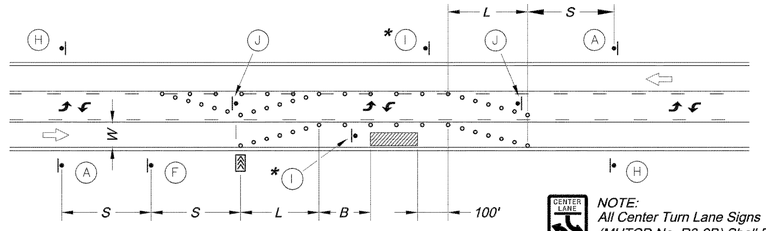
TURN LANE CLOSURE

SIGN LEGEND





TYPICAL SIGNING FOR WORK ADJACENT TO THE STREET



CENTER LANE ONLY
R3-9b

NOTE:
All Center Turn Lane Signs (MUTCD No. R3-9B) Shall Be Covered During Lane Closure

LANE CLOSURE - THREE LANE STREET

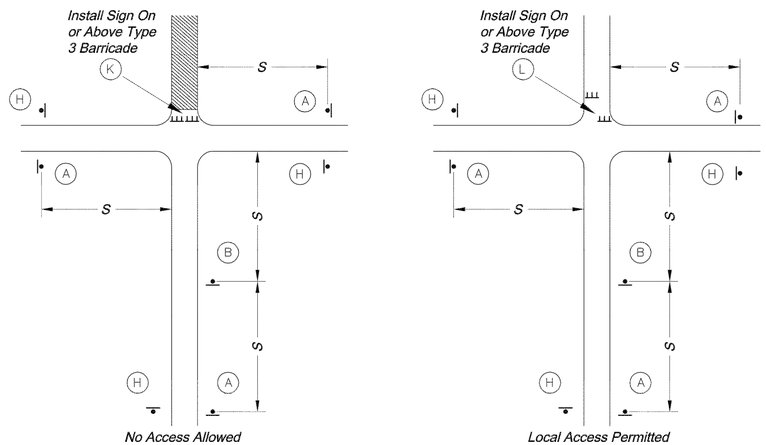
* Install Signs Every 200 Feet Throughout the Closed Lane or As Needed

Sign Spacing "S"	
Speed Limit (mph)	Spacing (Feet)
25	100
30 - 35	250
≥ 40	350

Taper Dimensions (Feet)				
Speed Limit (mph)	Minimum Taper Length "L", per Lane Width "W"			Minimum Number of Channelizers
	10	11	12	
25	105	115	125	6
30	150	165	180	7
35	205	225	245	8
40	270	295	320	9
45	450	495	540	13

Guidelines for Length of Longitudinal Buffer Space "B"	
Speed Limit (mph)	Length (Feet)
25	35
30	55
35	85
40	120
45	170

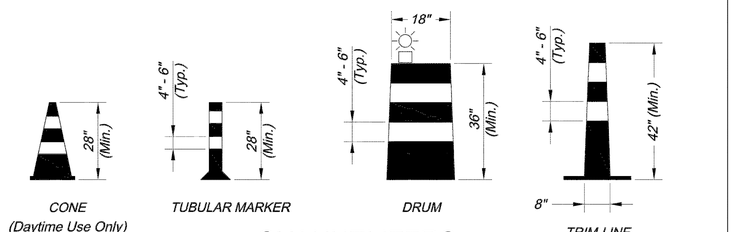
Maximum Channelizer Spacing		
Speed Limit (mph)	Within Taper (Feet)	Outside Taper (Feet)
25	25	50
30	30	60
35	35	70
40	40	80
45	45	90



TYPICAL STREET CLOSURE

GENERAL NOTES:

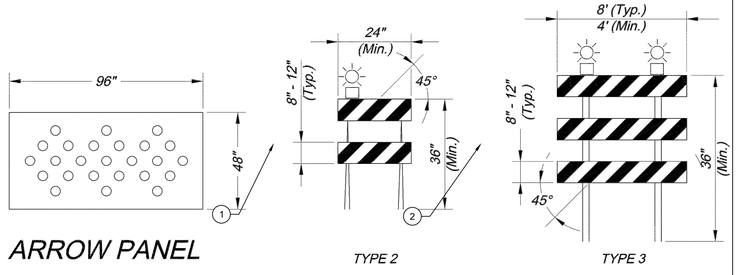
1. All signs, barricades, channelizers, markings and other traffic control devices shall conform to the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD).
2. All traffic control devices shall be standard in size, shape, color, and message, in good condition, and retro-reflectorized. All signs shall be securely mounted with height and lateral location as described in the MUTCD.
3. Warning lights shall be used on barricades in place at night and on warning signs which alert drivers about a change in alignment, traffic control, lane closure, or road closure.
4. Flaggers shall be used where indicated on the plans, where construction vehicles interact with normal traffic, or where construction activities impose a restriction on traffic, as directed by the City Traffic Engineer. Where flaggers are used, advance signing shall be erected as shown in the details or as specified in the MUTCD. Flaggers shall meet the requirements in the MUTCD in regard to character, training, attire, and behavior.
5. Trim-lines are the City's preferred channelizing device. Cones may not be used at nighttime.
6. Traffic control devices not in use or not applicable shall be either covered or removed from the work area.
7. The Contractor shall use barricades, street plates, or fencing as needed to effectively shield pedestrian and vehicular traffic from exposed objects, excavations, and construction activities.
8. Access shall be maintained to all driveways and side streets unless noted otherwise on the plans.
9. No street shall be closed without the approval of the City Traffic Engineer. The Contractor shall notify the City Traffic Engineer at least 7 days in advance of any street closure. If a detour route around the closure is to be provided, all detour signing shall be as shown on a plan approved by the City Traffic Engineer.
10. Construction vehicles parked along streets shall be located within the work area (traffic control) or where otherwise normally permitted. Construction materials, including traffic control and vehicles shall not restrict sight distance for vehicles exiting at streets or drives.
11. Construction materials shall be kept off of sidewalks, consolidated in one location within City right-of-way, and removed daily unless otherwise approved by the Inspector. Dirt, mud, and other construction debris on streets and sidewalks shall be removed immediately.
12. The Contractor shall not perform any work that will restrict vehicular traffic in any way between the hours of 7:00 a.m. and 9:00 a.m. or 4:00 p.m. and 6:00 p.m. Monday through Friday unless otherwise indicated in the specifications.
13. All travel lanes should be at least 11 feet wide unless otherwise authorized by the City Traffic Engineer. A "Narrow Lanes" sign shall be installed in advance of a lane width reduction to less than 11 feet.
14. All edge drop-offs of more than 2 inches and less than 4 inches should be protected by a wedge or barrier and all edge drop-offs greater than 4 inches shall have edge protection (see Traffic Control Specifications for edge treatment requirements).
15. The "Workers" symbolic sign (MUTCD No. W21-1a) may be used instead of the "Road Work Ahead" sign for work with a duration of 12 hours or less. The "End Road Work" sign is not required to be installed after the "Workers" sign.
16. No traffic signal shall be altered or modified in any way without a plan approved by the City Traffic Engineer.
17. The Contractor shall be responsible for maintaining all traffic control devices on an around-the-clock basis, whether or not work is actively being pursued and any deficiencies noted shall be corrected immediately.
18. The traffic control requirements shown on these plans are minimum requirements only and do not attempt to address in depth the variety of situations that may occur once construction has started. In no way do the requirements shown on these plans relieve the Contractor of his responsibility for selecting the proper traffic control devices and implementation procedures that will assure the safety of drivers, pedestrians, and workers at all times.
19. Should the contractor fail to enforce the traffic control plan or fail to clean, replace or otherwise maintain the traffic control devices when directed to do so by the City Traffic Engineer or representative, the City may take one or more of the following actions:
    - A) Employ another agency to correct deficiencies in traffic control devices and deduct the cost from the Contractor's pay estimate,
    - B) Stop the work until deficiencies are corrected,
    - C) Suspend all pay estimates until deficiencies are corrected, or
    - D) Place the Contractor in default.



CONE (Daytime Use Only) | TUBULAR MARKER | DRUM | TRIM-LINE

CHANNELIZERS

NOTE: White Bands On Barricades and Channelizers Shall Be Made From High Intensity Sheeting Material.



ARROW PANEL | TYPE 2 | TYPE 3

BARRICADES

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PREPARED BY:

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

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09/16/2022	CITY EMAILED COMMENTS

DRAWN BY: BAL
CHECKED BY: MAB
DATE PREPARED: 2-19-2020
PROJ. NUMBER: 18-017

TRAFIIC CONTROL DETAILS

SHEET 28