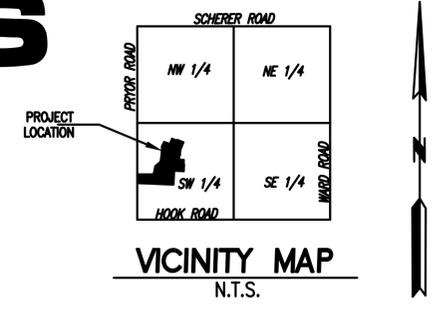


WHISPERING WOODS

LOTS 1 THRU 33

A SUBDIVISION IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI
PUBLIC IMPROVEMENTS & PRIVATE SCHOOL ENTRANCE

STREET, STORM, MASTER DRAINAGE, EROSION & SEDIMENT CONTROL, AND PRIVATE SCHOOL ENTRANCE PLANS



LEGAL DESCRIPTION

WHISPERING WOODS LOTS 1 THRU 33, TRACTS A, B, C & D
PART OF THE SW 1/4 SECTION 24, T 47 N, R 32 W OF THE 5TH P.M.
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

PROJECT BENCH MARK

ELEV. 1006.89 (NAVD 1988 DATUM)

MISSOURI DEPARTMENT OF NATURAL RESOURCES GRS ALUMINUM
DISK STAMPED "JA-47" LOCATED NEAR THE INTERSECTION OF HWY
150 WITH REGGATA DRIVE AND HWY 291

INDEX OF SHEETS

SHEET NUMBER	SHEET TITLE
1	COVER
2	GENERAL NOTES
3	TYPICAL SECTION
4	SITE LAYOUT
5	GRADING PLAN
6	MASTER DRAINAGE PLAN
7	ESC - PLAN
8	ESC DETAILS
9	ESC DETAILS
10	PRYOR LAYOUT
11	STRIPING PLAN
12	STRIPING PLAN DETAILS
13	TRAFFIC CONTROL PLAN
14	SCHOOL DEMO SHEET LAYOUT
15	SCHOOL LAYOUT
16	STREET PLAN & PROFILE
17	STREET PLAN & PROFILE
18	STREET PLAN & PROFILE
19	INTERSECTION DETAILS
20	ADA RAMP DETAILS
21	STORM PLAN & PROFILE
22	STORM PLAN & PROFILE
23	STORM PLAN & PROFILE
24	STORM PLAN & PROFILE
25	STORM PLAN & PROFILE
26	DETENTION POND DETAIL
27	POND OUTLET
28	DRAINAGE AREAS
29	DRAINAGE CALCS
30	STRUCTURE DETAILS
31	STREET & STORM DETAILS
32	VALLEY DRAIN DETAILS
33	MANHOLE DETAIL
34	UNDERDRAIN DETAILS

DEVELOPER:

WHISPERING WOODS LAND, L.L.C.
803 P.C.A. ROAD
WARRENSBURG, MO 64093
AGENT: RICK FRYE
PHONE: 816-564-2230
FAX: 660-429-1801

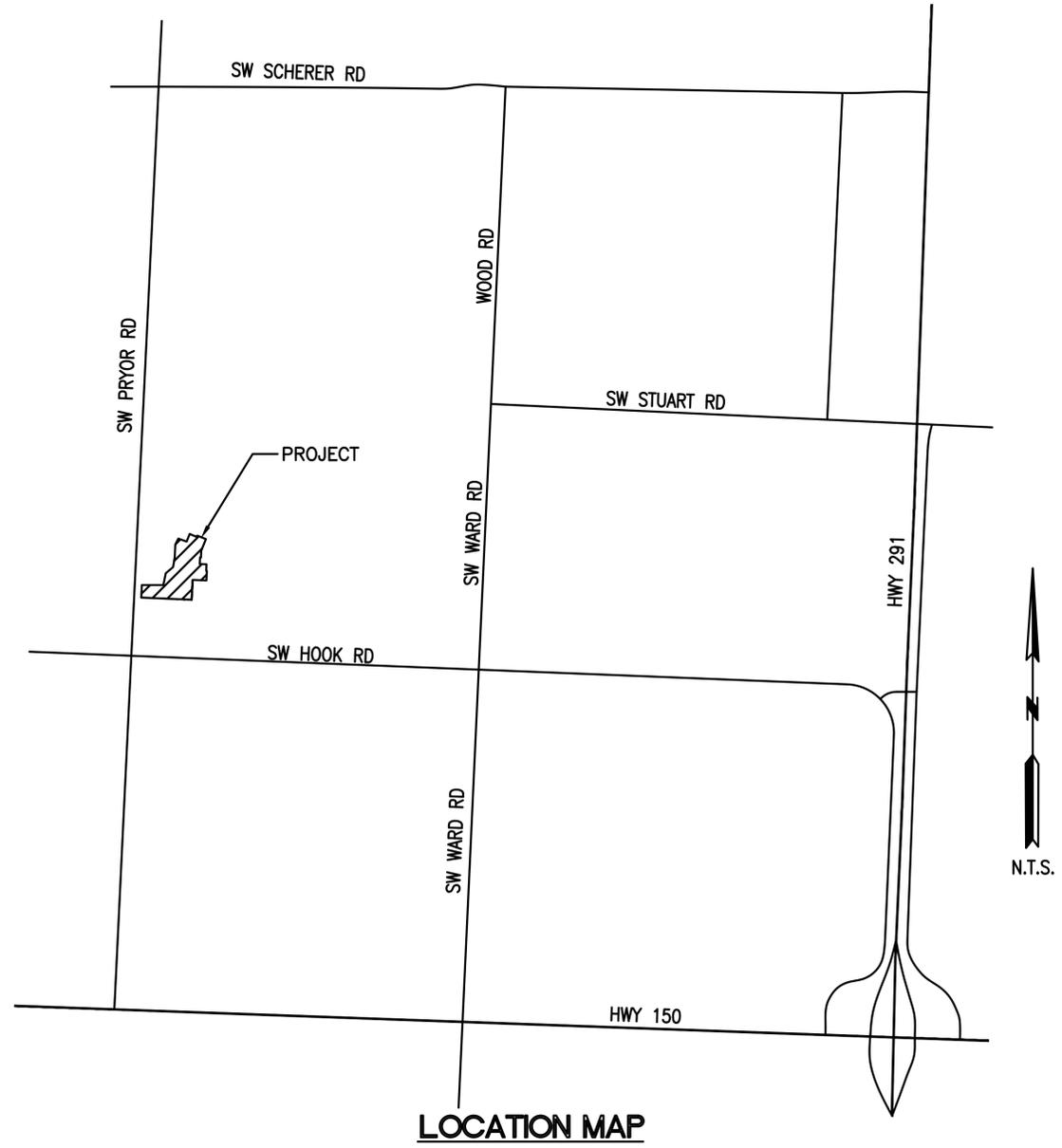
APPROVED _____

CITY ENGINEER

DATE _____

ESTIMATED QUANTITIES			
ITEM	UNITS	PLAN	AS-BUILT
Earthwork (21,800 CUT, 22,139 FILL)	CY	340 (F)	
6" Type 1 Asphaltic Concrete	SY	7549	
2" Type 3 Asphaltic Concrete	SY	7549	
CG-2 Curb	LF	4466	
CG-1 Curb	LF	235	
Curb Inlet (7' X 3')	EA	1	
Curb Inlet (6' X 3')	EA	1	
Curb Inlet (5' X 3')	EA	5	
Curb Inlet (6' X 5.5')	EA	2	
Curb Inlet (5.5' X 5')	EA	2	
Curb Inlet (5' X 4.5')	EA	1	
Curb Inlet (5' X 3.5')	EA	1	
Junction Box (5.5' X 6')	EA	1	
Junction Box (5' X 5')	EA	3	
Field Inlet (4' X 4')	EA	2	
18" RCP	LF	258	
24" RCP	LF	156	
18" HDPE	LF	128	
24" HDPE	LF	432	
36" HDPE	LF	444	
42" HDPE	LF	124	
48" HDPE	LF	442	
18" FES	EA	1	
42" FES	EA	1	
48" FES	EA	1	
SPECIAL END SECTION	EA	1	
8' X 6' Box Culvert	LF	86	
Detention Outlet Structure	EA	1	
ADA Curb Ramps	EA	9	
Inlet Protection	EA	17	
Silt Fence	LF	5724	
Erosion Control Mat	SY	9270	
Rock Check Dams	EA	1	
Temporary Construction Entrance	EA	2	
Rip-Rap	SY	210	
Temporary Cul-de-sac	EA	1	
R1-1 Stop Signs	EA	5	
Street Name Signs	EA	5	
CONCRETE MH COLLAR/ADJUSTMENT	EA	2	

PRIVATE SCHOOL ENTRANCE QUANTITIES		
ITEM	UNITS	PLAN
INSTALL CURB INTLET	EA	1
REMOVE CURB	LF	76
REMOVE CURB INLET	EA	2
REMOVE STORM PIPE	LF	133
INSTALL CURB	LF	85
REMOVE ASPHALT	SY	670
ASPHALT	SY	569



LOCATION MAP

UTILITY CONTACTS

SOUTHWESTERN BELL TELEPHONE	(816) 871-9900
MISSOURI ONE-CALL SYSTEM	(800) DIG-RITE
KPL GAS SERVICE COMPANY	(816) 221-2200
KANSAS CITY POWER & LIGHT	(816) 471-0080
PUBLIC WORKS	(816) 969-1800
AMERICAN CABLEVISION	(816) 231-1444
WATER POLLUTION CONTROL DEPT	(816) 513-0303
CITY PLANNING & DEVELOPMENT	(816) 969-1600
FIRE DEPARTMENT	(816) 969-1300



PHOENIX ENGINEERING & SURVEYING, LLC
3853 S. NORTHERN BLVD.
INDEPENDENCE, MO 64062
(816) 749-9000 FAX: (816) 743-9700
ENGINEERING CERTIFICATE NO: MO E-2000151302-D
SURVEYING CERTIFICATE NO: MO LS-2000151303-D

WHISPERING WOODS
LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
COVER

DESIGNED	BLG
DRAWN	JRT
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	1 OF 34

PROJECT NOTES

1. Grading Contractor shall be responsible for the control of erosion and siltation during all phases of construction.
2. Prior to Ordering Precast Structures: Shop drawings shall be submitted to the design engineer for approval. Upon approval these shall be sub-mitted to the City of Lee's Summit for review.
3. Manhole top elevations designated as "Field Verify" (F.V.) are located outside the street right-of-way or in areas of undetermined grading. Contractors ordering precast manholes shall be responsible for adjustment required in the field at no additional cost to the owner. The contractor shall field verify the top elevations prior to ordering precast manholes.
4. All water lines, sanitary sewer lines, and storm water drainage crossings shall be in place or a casing pipe provided for future installation prior to base and surface asphalt courses.
5. Sidewalks are shown for informational purposes only unless otherwise noted. However, the contractor shall be responsible for handicap ramp construction in curbs.

GENERAL NOTES

1. Refer to the current version of the City of Lee's Summit Design and Construction (D&C) Manual for construction of these plans.
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 these plans are horizontal measurements, not slope measurements. All payments shall be made on horizontal measurements.
4. No Geological Investigation was performed on this project.
5. The Utility locations shown on these plans are taken from Utility Company records and are approximate only. They do not constitute actual field locations. The Contractor shall verify the location and depth of all utilities prior to construction.
6. Clearing and Grubbing operations and disposal of all debris therefrom shall be performed by the contractor in strict accordance with all state and local codes and ordinances.
7. All waste material shall be disposed of at a location to be selected by the owner or his authorized representative, such location to be on the site.
8. The Contractor shall control the erosion and siltation during all phases of construction, he shall keep the streets clean of mud and debris and follow the erosion control plan prepared by the design engineer.
9. All existing manholes, catch basins, utility valves and meter pits to be adjusted or rebuilt to grade as required.
10. Subgrade soil for all concrete structures, regardless of the type or location, shall be firm, dense and thoroughly compacted and consolidated; shall be free from muck and mud; and shall be sufficiently stable to remain firm and intact under the feet of the workman or machinery engaged in subgrade, laying reinforcing steel, and depositing concrete thereon. In all cases where subsoil is mucky or works into mud or muck during such operation, a seal course of either concrete or rock shall be placed below subgrade to provide a firm base for working and for placing the floor slab.
11. A minimum horizontal distance of ten (10') shall be maintained between parallel water and sanitary sewer lines. At any point where sanitary sewer lines cross water main, the sanitary sewer shall be constructed of cast iron pipe or pipe encased in concrete for a distance of ten feet (10') in each direction from the crossing unless the water is a minimum of eighteen inches (18") above the top of the sanitary sewer line.
12. Contractor shall provide testing and inspection per SECTION 2200 – PAVING MAINS CITY OF LEE'S SUMMIT, MISSOURI STANDARD SPECIFICATIONS.
13. Development plans are approved initially for one (1) year, after which they automatically become void and must be updated and approved by the City Engineer before any construction will be permitted.
14. All sanitary sewer stubs shall be surveyed and staked on site before the construction of sanitary service stubs.

15. The City of Lee's Summit plan review is only for general conformance with the City of Lee's Summit Design Criteria and the City Code. The City is not responsible for the accuracy and adequacy of the design, or dimensions and elevations which shall be confirmed and correlated at the job site. The City of Lee's Summit through approval of this document assumes no responsibility other than as stated above for the completeness and/or accuracy of this document.

16. The Contractor shall have one (1) signed copy of the plans (approved by the City of Lee's Summit) and one (1) copy of the appropriate Construction Standards and Specifications at the job site at all times.

17. Construction of the improvements shown or implied by this set of drawings shall not be initiated or any part thereof undertaken until the City Engineer is notified of such intent and all required and properly executed bonds and permit fees are received and approved by the City Engineer.

18. All stub lines shall be laid on 2.00% minimum grade unless approved otherwise.

19. Contractor shall not be allowed to work on Saturdays, Sundays, or Holidays without prior approval of the City Engineer.

20. Relocation of any water line, sewer line or service line thereof required for the construction of this project shall be the responsibility of the contractor and shall be at his expense.

21. The Contractor shall install and properly maintain a mechanical plug at all connection points with existing lines until such time that the new line is tested and approved.

22. The Contractor shall construct manholes placing eccentric cone section in such a manner that manhole covers are adjacent to the proposed sidewalks. In locations where manholes are not near proposed sidewalks the manhole covers shall generally be placed on the upstream side of the manholes whenever possible.

23. Stub lines, locations, and minimum basement floor elevations are located in the table labeled "Table of Service Locations".

24. Construction permits will not be issued until the City of Lee's Summit receives a sewer extension permit from MDNR.

25. All areas where utilities are to be installed in fill shall be compacted to 95% to 18 inches above the line then excavated for construction of the line.

26. The Contractor will be responsible for testing of manholes and pipes to the City of Lee's Summit Design & Construction Manual requirements.

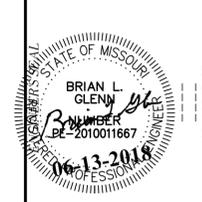
27. The Developer will be responsible for performing pressure testing on every section of the sanitary sewer lines, pressure testing on every manhole, and running a mandrel through every section of sanitary sewer line to test for alignment. Testing criteria will be in accordance with City of Lee's Summit Design & Construction Manual specifications.

28. All utility street crossings shall be backfilled with flowable fill, or AB-3. If contractor chooses to use other suitable materials, extensive soil testing requirements will be required.

DATE PLOTTED: 6/13/2018 3:09 PM ; LAST SAVE DATE: 6/13/2018 2:20 PM

H:\projects\2004\0407842 - Whispering Woods Phase 1\dwg\04078 - Street & Storm Plans - STORM SHEETsgood.dwg

REVISION

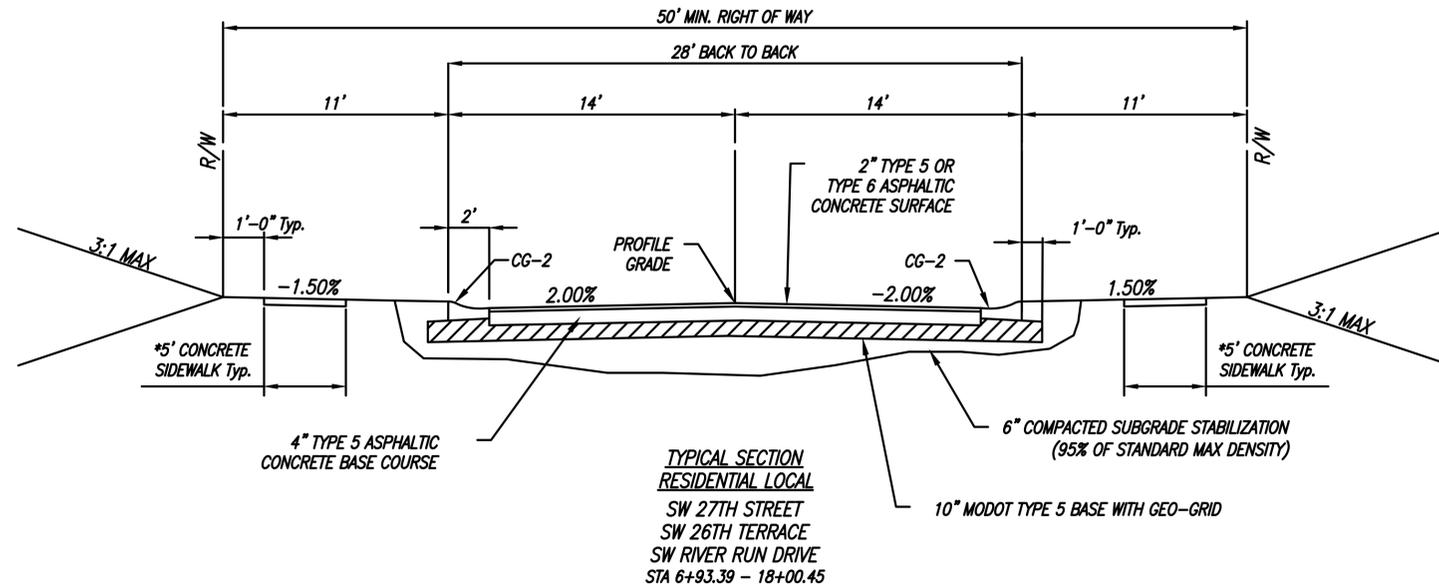


PHOENIX ENGINEERING & SURVEYING, LLC
 3655 S. NORTHERN BLVD.
 INDEPENDENCE, MO. 64062
 (816) 749-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO. MO E-2000151302-D
 SURVEYING CERTIFICATE NO. MO LS-2000151303-D
 KS: E-853
 KS: LS-158

WHISPERING WOODS
 †
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
GENERAL NOTES

DESIGNED
BLG
DRAWN
BLG
SCALE
Noted
DATE
09-01-2017
JOB NO.
04078
SHEET

© PHOENIX ENGINEERING & SURVEYING LLC - 2018

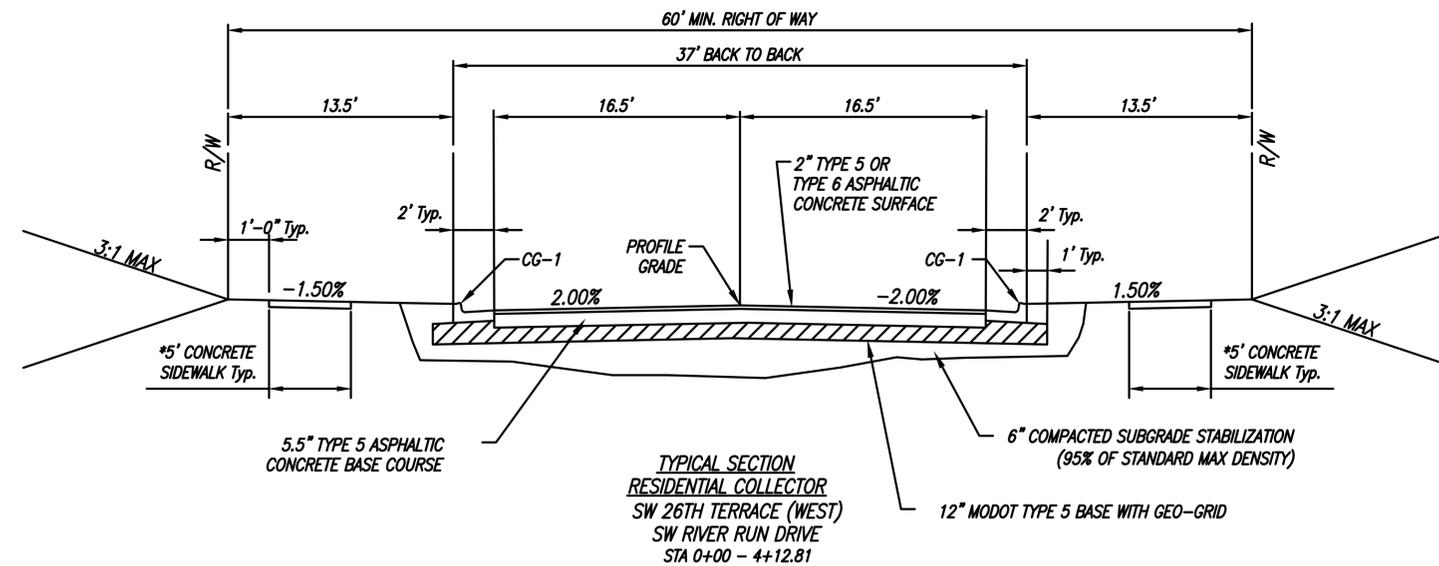


**TYPICAL SECTION
RESIDENTIAL LOCAL**
SW 27TH STREET
SW 26TH TERRACE
SW RIVER RUN DRIVE
STA 6+93.39 - 18+00.45

NOTE:
TRANSITION FROM RESIDENTIAL COLLECTOR TO LOCAL STREET SECTION BEGINS AT STA 4+12.81 AND ENDS AT STA 6+93.39.

TRANSITION FROM CG-1 TO CG-2 SHALL OCCUR AT STA 6+93.39.

NOTE:
*IN SOME INSTANCES SHOWN IN PLAN VIEW, SIDEWALK MAY NOT BE NECESSARY ON BOTH SIDES OF STREET



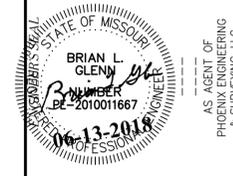
**TYPICAL SECTION
RESIDENTIAL COLLECTOR**
SW 26TH TERRACE (WEST)
SW RIVER RUN DRIVE
STA 0+00 - 4+12.81

NOTE:
CONTRACTOR SHALL SUBMIT TEST RESULTS TO THE CITY PRIOR TO INSTALLING CURB AND PAVEMENT. SUBGRADE MATERIAL NOT MEETING THESE LIMITS SHALL BE STABILIZED AS PER THE RECOMMENDATIONS OF A QUALIFIED GEOTECHNICAL LABORATORY AND APPROVED BY THE CITY. TESTING AND STABILIZATION WILL BE PAID FOR BY THE CONTRACTOR.

NOTE:
PROPOSED PRYOR ROAD IMPROVEMENTS PAVEMENT SHALL MATCH THE EXISTING PAVEMENT.

PAVEMENT SECTION
TEMPORARY CUL-DE-SAC PAVEMENT SECTION SHALL BE 6" ASPHALT BASE COURSE WITH A 2" ASPHALT SURFACE OVERLAY WITH A RADIUS OF 35'

REVISION

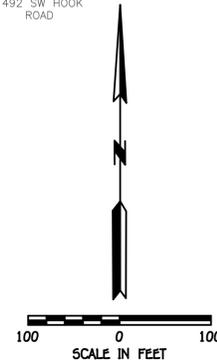
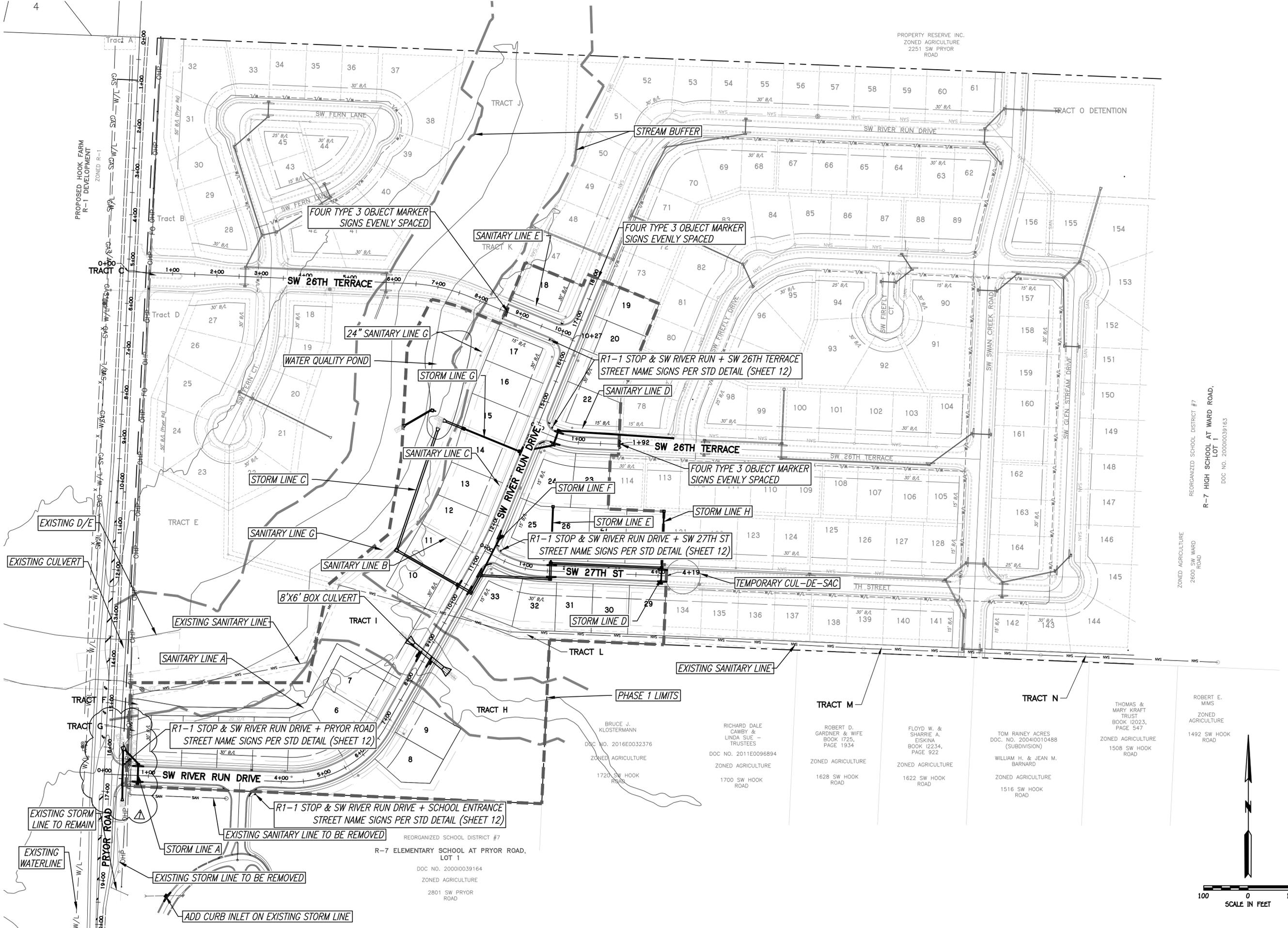


PHOENIX ENGINEERING & SURVEYING, LLC
3633 S. NORTHERN BLVD.
INDEPENDENCE, MO 64062
(816) 749-9000 FAX: (816) 743-9700
ENGINEERING CERTIFICATE NO.: MO E-2000151302-D
SURVEYING CERTIFICATE NO.: MO LS-2000151303-D
KS: E-853
KS: LS-158

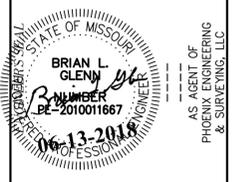
WHISPERING WOODS
LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
TYPICAL SECTION

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	34

THE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED. AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.
© PHOENIX ENGINEERING & SURVEYING, LLC - 2018



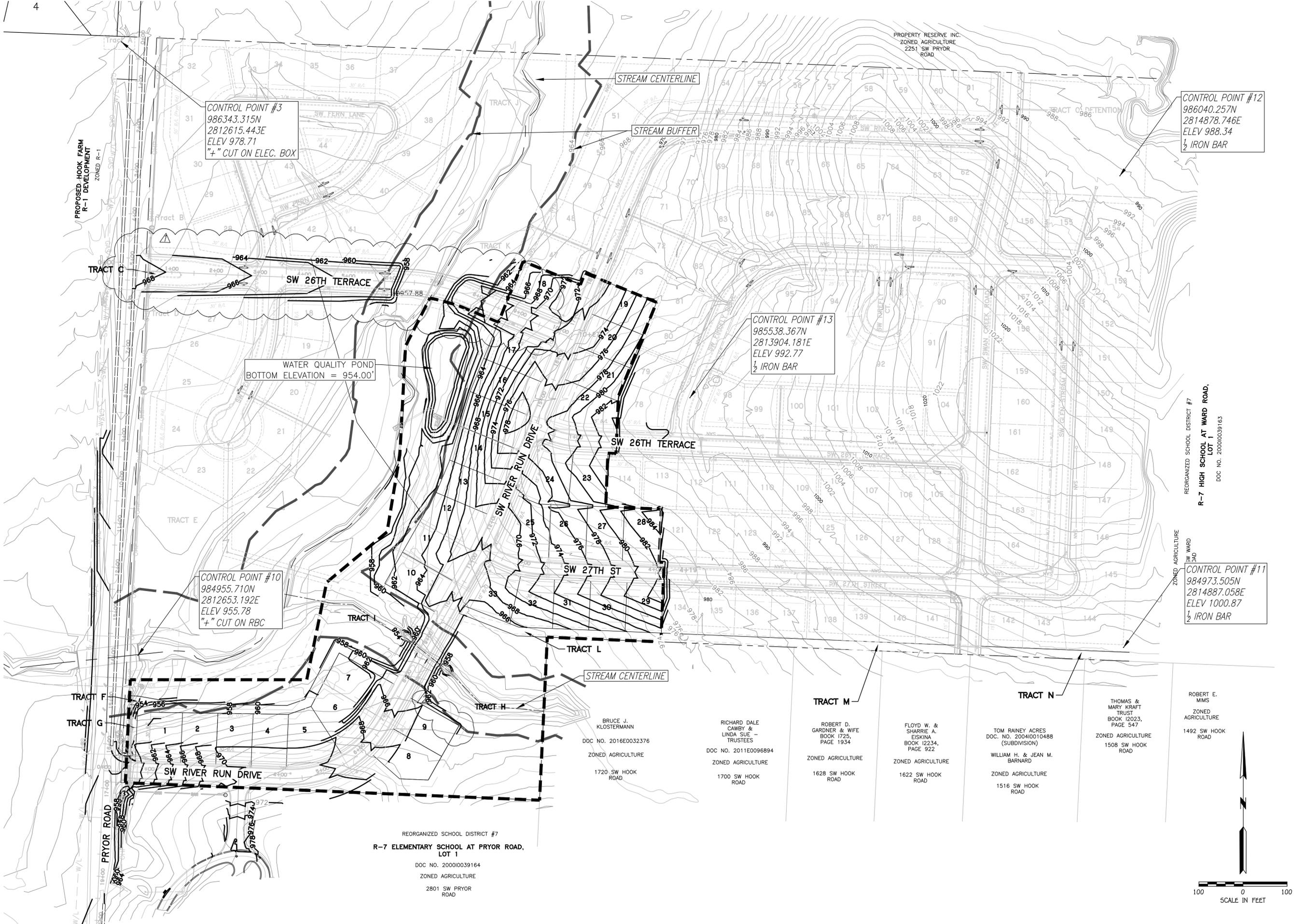
REVISION
 Δ REVISED ON 4-19-18: ADDED STORM LINE A1



PHOENIX ENGINEERING & SURVEYING, LLC
 3634 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 749-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO.: MO E-2000151302-D KS: E-853
 SURVEYING CERTIFICATE NO.: MO LS-2000151303-D KS: LS-158

WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
 SITE LAYOUT

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	4 OF 34



CONTROL POINT #3
 986343.315N
 2812615.443E
 ELEV 978.71
 "+" CUT ON ELEC. BOX

CONTROL POINT #10
 984955.710N
 2812653.192E
 ELEV 955.78
 "+" CUT ON RBC

CONTROL POINT #13
 985538.367N
 2813904.181E
 ELEV 992.77
 1/2 IRON BAR

CONTROL POINT #12
 986040.257N
 2814878.746E
 ELEV 988.34
 1/2 IRON BAR

CONTROL POINT #11
 984973.505N
 2814887.058E
 ELEV 1000.87
 1/2 IRON BAR

WATER QUALITY POND
 BOTTOM ELEVATION = 954.00'



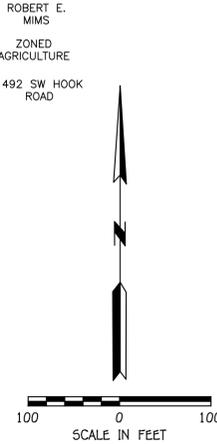
PHOENIX ENGINEERING & SURVEYING, LLC
 3825-4 NORTHERN BLVD.
 INDIANAPOLIS, IN 46202
 (816) 749-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO.: MO E-2000151302-D
 SURVEYING CERTIFICATE NO.: MO LS-2000151303-D
 KS: E-853
 KS: LS-158

WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
GRADING PLAN

DESIGNED: BLG
 DRAWN: BLG
 SCALE: Noted
 DATE: 09-01-2017
 JOB NO: 04078
 SHEET: 34

REVISION
 REVISOR: 4-19-18: ADDED GRADING CONTOUR LINES
 REVISOR: 06-11-18: GRADE CHANGES NEAR LOT 9

THE SEALS AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.



REORGANIZED SCHOOL DISTRICT #7
R-7 ELEMENTARY SCHOOL AT PRYOR ROAD, LOT 1
 DOC NO. 200010039164
 ZONED AGRICULTURE
 2801 SW PRYOR ROAD

BRUCE J. KLOSTERMANN
 DOC NO. 2016E0032376
 ZONED AGRICULTURE
 1720 SW HOOK ROAD

RICHARD DALE CAWBY & LINDA SUE - TRUSTEES
 DOC NO. 2011E0096894
 ZONED AGRICULTURE
 1700 SW HOOK ROAD

ROBERT D. GARDNER & WIFE
 BOOK 1725, PAGE 1934
 ZONED AGRICULTURE
 1628 SW HOOK ROAD

FLOYD W. & SHARRIE A. EISKINA
 BOOK 12234, PAGE 922
 ZONED AGRICULTURE
 1622 SW HOOK ROAD

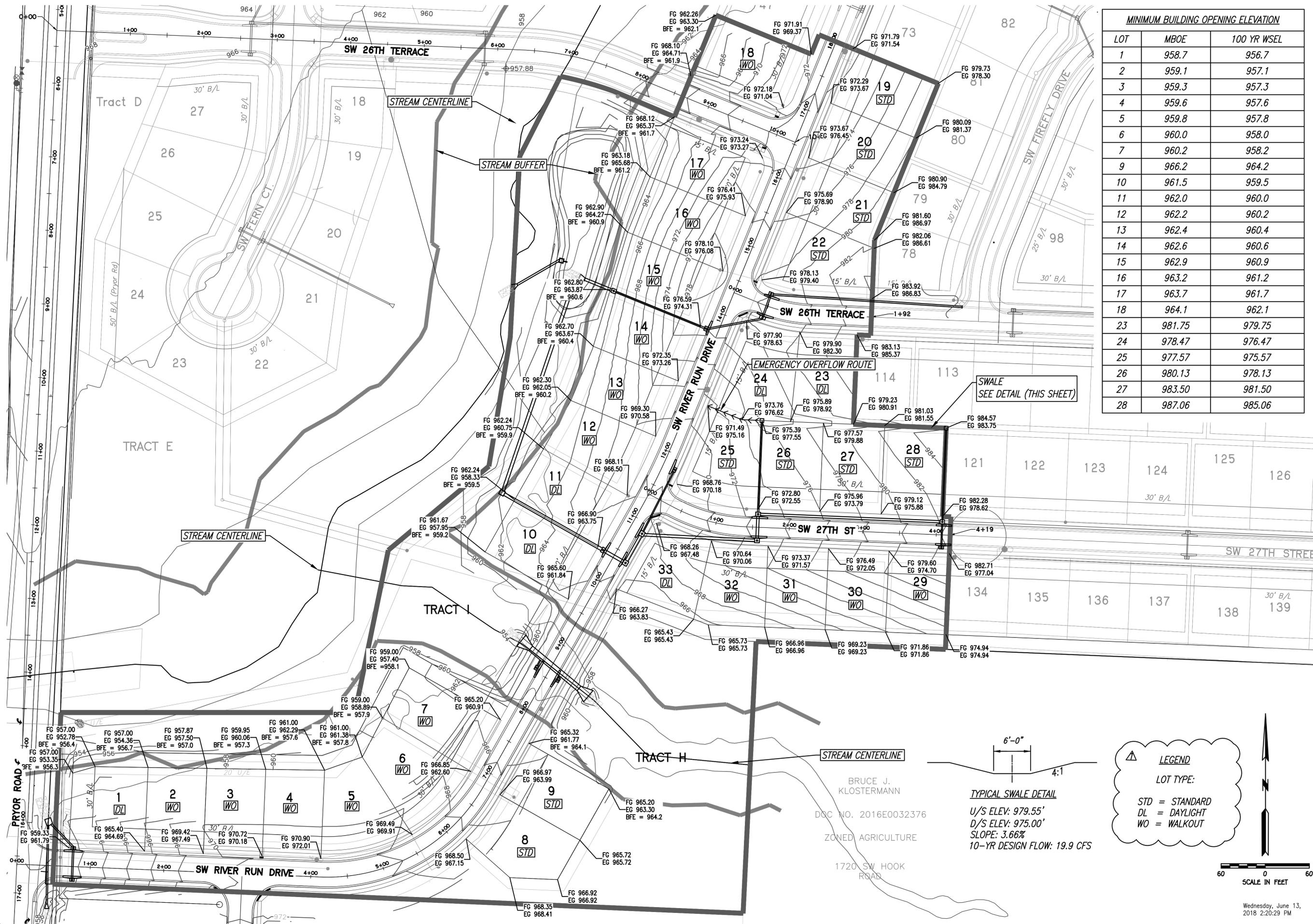
TOM RAINEY ACRES (SUBDIVISION)
 DOC. NO. 2004I0010488
 WILLIAM H. & JEAN M. BARNARD
 ZONED AGRICULTURE
 1516 SW HOOK ROAD

THOMAS & MARY KRAFT TRUST
 BOOK 12023, PAGE 547
 ZONED AGRICULTURE
 1508 SW HOOK ROAD

ROBERT E. MIMS
 ZONED AGRICULTURE
 1492 SW HOOK ROAD

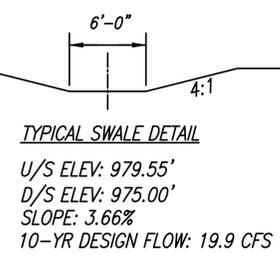
REORGANIZED SCHOOL DISTRICT #7
R-7 HIGH SCHOOL AT WARD ROAD, LOT 1
 DOC NO. 200010039163

PROPERTY RESERVE INC.
 ZONED AGRICULTURE
 2251 SW PRYOR ROAD



MINIMUM BUILDING OPENING ELEVATION

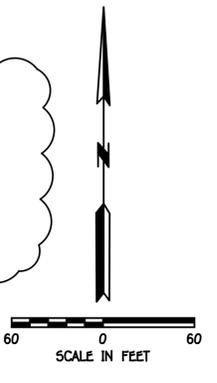
LOT	MBOE	100 YR WSEL
1	958.7	956.7
2	959.1	957.1
3	959.3	957.3
4	959.6	957.6
5	959.8	957.8
6	960.0	958.0
7	960.2	958.2
9	966.2	964.2
10	961.5	959.5
11	962.0	960.0
12	962.2	960.2
13	962.4	960.4
14	962.6	960.6
15	962.9	960.9
16	963.2	961.2
17	963.7	961.7
18	964.1	962.1
23	981.75	979.75
24	978.47	976.47
25	977.57	975.57
26	980.13	978.13
27	983.50	981.50
28	987.06	985.06



LEGEND

LOT TYPE:

STD = STANDARD
DL = DAYLIGHT
WO = WALKOUT



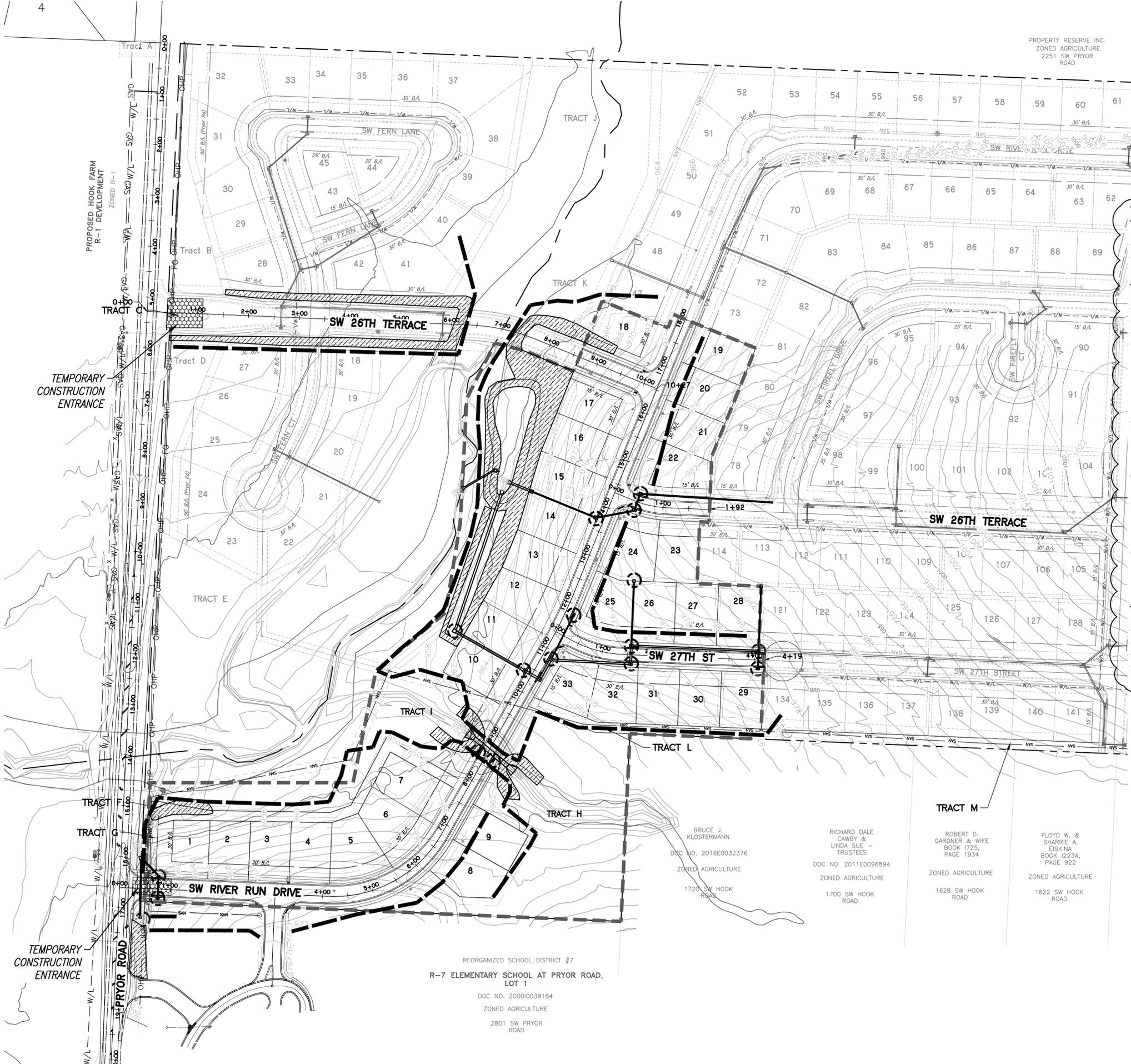
REVISION
 Δ REVISED ON 06-07-2018: ADDED LEGEND FOR LOT TYPE



PHOENIX ENGINEERING & SURVEYING, LLC
 3835 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 748-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO.: MO E-2000151302-D KS: E-853
 SURVEYING CERTIFICATE NO.: MO LS-2000151303-D KS: LS-138

WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
MASTER DRAINAGE PLAN

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	34



LEGEND

- CONSTRUCTION ENTRANCE
- USE 3"-6" ROCK
- SILT FENCE
- INLET PROTECTION
- EROSION CONTROL MAT

UPON COMPLETION CONTRACTOR SHALL SEED AND MULCH DISTURBED AREAS AND REMOVE ALL TRASH AND DEBRIS.

PHASE 1 WORK SCHEDULE

1. INSTALL PERIMETER SILT FENCE.
2. INSTALL CONSTRUCTION ENTRANCE.

PHASE 2 WORK SCHEDULE

1. INSTALL SILT BASIN AND STAND PIPE.
2. GRADE ENTIRE SITE AS SHOWN.
3. SEED AND MULCH AREAS THAT ARE COMPLETED WITHIN TWO WEEKS. METHODS AND MATERIALS TO CONTROL SEDIMENTATION AND EROSION ARE TO BE INCORPORATED INTO THE GRADING OPERATIONS AS SHOWN OR AT THE DIRECTION OF THE CITY ENGINEER. UPON COMPLETION OF GRADING OPERATIONS, SUCH FACILITIES TO PROVIDE FOR SAID EROSION AND SEDIMENTATION CONTROL ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED BY THE DEVELOPER UNTIL SUCH TIME AS SEEDED AREAS BECOME ESTABLISHED.
4. ALL AREAS TO BE SEEDED SHALL BE SPREAD WITH A MINIMUM 6-INCH DEPTH OF TOP SOIL. ALL SEEDING SHALL BE DONE IN COMPLIANCE WITH THE REQUIREMENTS SET FORTH IN THE CITY OF LEE'S SUMMIT SPECIFICATION AND DESIGN CRITERIA MANUAL.
5. ALL AREAS SEEDED ARE TO BE SPREAD WITH MULCH AT THE RATE OF 1 1/2 TON PER ACRE AND SHALL BE ANCHORED BY DISCING.
6. ALL AREAS DISTURBED BY GRADING OPERATIONS AUTHORIZED BY THIS PERMIT SHALL BE SEEDED WITHIN TWO WEEKS AFTER COMPLETION AND ACCEPTANCE OF SITE GRADING. THE ENTIRE AREA AFFECTED SHALL BE MAINTAINED BY THE DEVELOPER UNTIL SUCH TIME AS SEEDED AREAS HAVE BECOME ESTABLISHED.
7. ANY INCIDENTAL WORK NOT SPECIFICALLY PERMITTED DURING FINAL CLEANUP WILL BE COMPLETED BY THE CONTRACTOR.

PHASE 3 WORK SCHEDULE

1. STABILIZE SITE.
2. REMOVE TEMPORARY CONSTRUCTION ENTRANCES.
3. REMOVE SEDIMENT CONTROL DEVICES, AFTER VEGETATION IS ESTABLISHED.
4. SEDIMENT BASINS WILL BE CONVERTED TO DETENTION BASINS.

NOTE UPON FINAL STABILIZATION; SEDIMENT IN WATER QUALITY BASIN SHALL BE REMOVED AND SIDE SLOPES/BOTTOM RESTORED AS NECESSARY

NOTE INLET PROTECTION AND SILT FENCE SHALL BE REMOVED BY CONTRACTOR/OWNER AT SUCH ALL UPSTREAM DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.

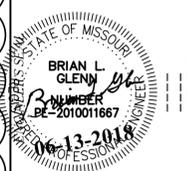
NOTE ALL SLOPES GREATER THAN 4:1 WILL BE EVALUATED FOR USE OF MATS/BLANKETS

NOTE EROSION CONTROL FEATURES NED TO BE INSTALLED PRIOR TO LAND DISTURBANCE AND MAINTAINED THROUGHOUT THE DURATION OF OPERATIONS. WE NEED TO CONTAIN THE SILT TO THIS SITE AND KEEP THE ADJACENT STREETS FREE OF MUD AND DEBRIS AT ALL TIMES (WHICH MAY INCLUDE ADDITIONAL EROSION CONTROL FEATURES NOT INCLUDED IN THIS PLAN IF IT IS DETERMINED THAT THE CURRENT PLAN IS INADEQUATE.

EROSION & SEDIMENT CONTROL MEASURES IN PLACE SHALL BE CHECKED & MAINTAINED WEEKLY OR WITHIN 24 HOURS FOLLOWING A RAIN MEASURING GREATER THAN 0.5 INCHES IN 24 HOURS AS RECORDED AT KCI AIRPORT.



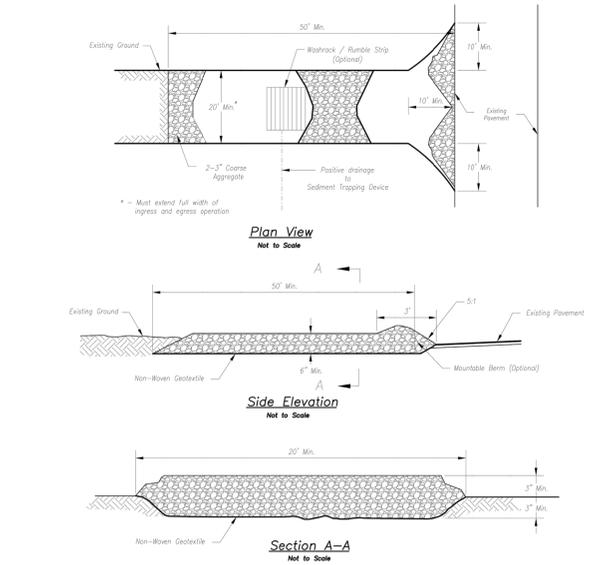
REVISION Δ REVISED ON 06-07-2018: ADDED WORK PHASE SCHEDULE



PHOENIX ENGINEERING & SURVEYING, LLC
 3634 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 749-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO.: MO E-2000151302-D
 SURVEYING CERTIFICATE NO.: MO LS-2000151303-D
 K.S. E-853
 K.S. LS-158

WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
 ESC - PLAN

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	34

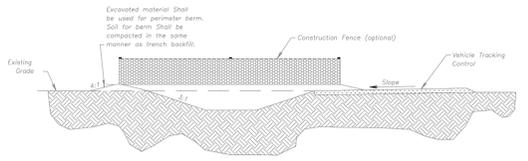


- Notes for Concrete Washout:**
- Concrete washout areas shall be installed prior to any concrete placement on site.
 - Concrete washout areas shall include a flat subsurface pit sized relative to the amount of concrete to be placed on site. The slopes leading out of the subsurface pit shall be 1:1. The vehicle tracking pad shall be sloped towards the concrete washout area.
 - Vehicle tracking control is required at the access point to all concrete washout areas.
 - 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 trucks.
 - A low-impact impervious liner may be required along the bottom and sides of the subsurface pit in sandy or gravelly soils.

- Maintenance for Concrete Washout:**
- Concrete washout materials shall be removed once the materials have filled the washout to approximately 75% full.
 - Concrete washout areas shall be enlarged as necessary to maintain capacity for washed concrete.
 - Concrete washout water, waste 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.
 - Concrete washout areas shall remain in place until all concrete for the project is placed.
 - When concrete washout areas are removed, excavations shall be filled with suitable compacted backfill and topped with a suitable surface associated with the installation, maintenance, and/or removal of the concrete washout areas shall be established.

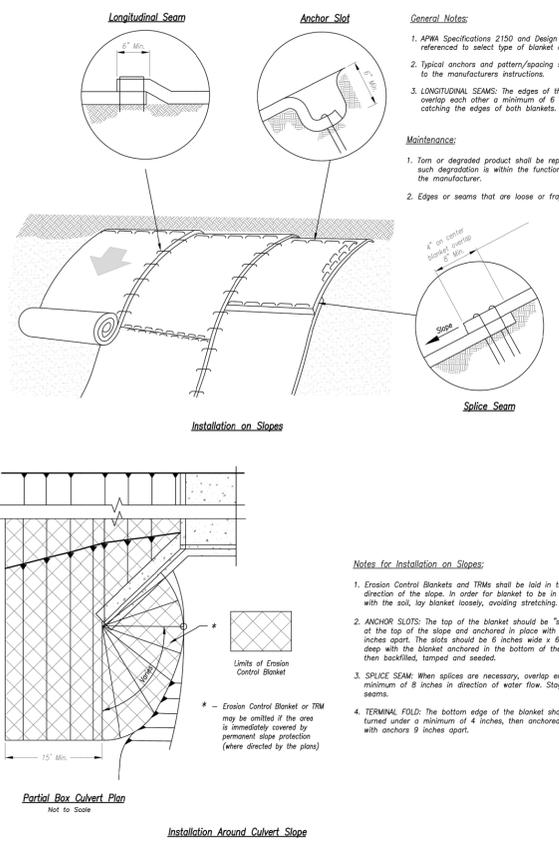
- Notes for Construction Entrance:**
- Avoid locating on steep slopes, at curves on public roads, or downdraft of disturbed areas.
 - Remove all vegetation and other unsuitable material from the foundation area, grade, and crown for positive drainage.
 - If slope towards the public road exceeds 2%, construct a 6" to 8" high ridge with 2:1 V side slopes across the foundation approximately 1.5 feet from the edge of the public road to divert runoff from it.
 - Install pipe under the entrance if needed to maintain drainage ditches along public roads.
 - Place stone to dimensions and grade as shown on plans. Leave surface sloped for drainage.
 - Divert all surface runoff and drainage from the entrance to a sediment control device.
 - If conditions warrant, place geotextile fabric on the graded foundation to improve stability.

- Maintenance for Construction Entrance:**
- Reshape entrance as needed to maintain function and integrity of installation. Top dress with clean aggregate as needed.

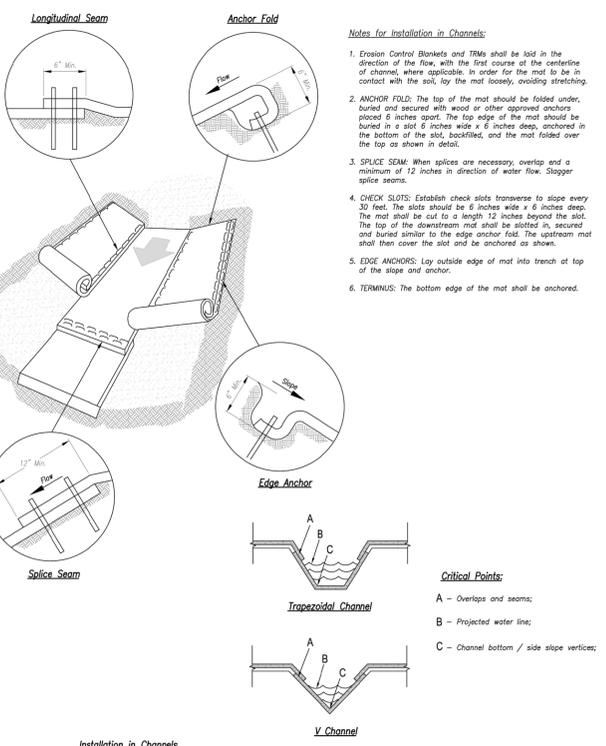


CONCRETE WASHOUT

AMERICAN PUBLIC WORKS ASSOCIATION
KANSAS CITY METRO CHAPTER
STANDARD DRAWING NUMBER ESC-01 ADOPTED 10/24/2016



- General Notes:**
- APWA Specifications 2150 and Design Guidance 5100 shall be referenced to select type of blanket or mat to be used.
 - Typical anchors and pattern/spacing shall be installed according to the manufacturer's instructions.
 - LONGITUDINAL SEAMS: The edges of the blanket or mat should overlap each other a minimum of 6 inches, with anchors catching the edges of both blankets.
- Maintenance:**
- Tom or degraded product shall be repaired or replaced, unless such degradation is within the functional longevity specified by the manufacturer.
 - Edges or seams that are loose or frayed shall be secured.



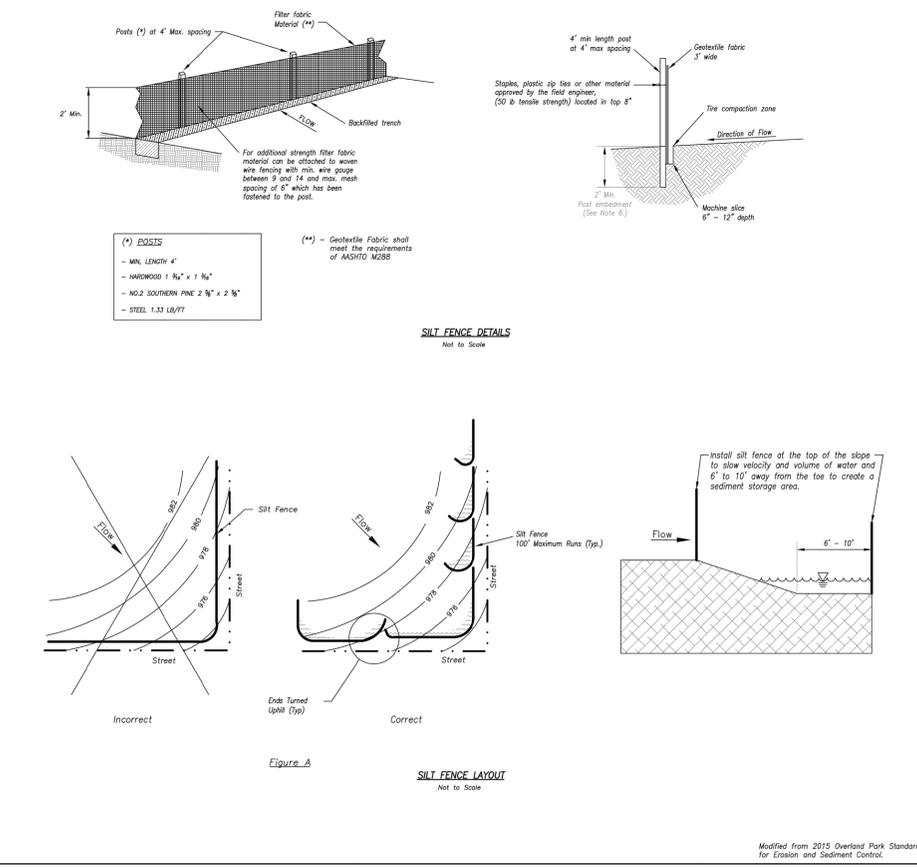
- Notes for Installation in Channels:**
- Erosion Control Blankets and TRMs shall be laid in the direction of the flow with the first course at the centerline of channel, where applicable. In order for the mat to be in contact with the soil, lay the mat loosely, avoiding stretching.
 - ANCHOR FOLDS: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

- Critical Points:**
- A - Overlaps and seams;
 - B - Projected water line;
 - C - Channel bottom / side slope vertices;

AMERICAN PUBLIC WORKS ASSOCIATION
KANSAS CITY METRO CHAPTER
STANDARD DRAWING NUMBER ESC-02 ADOPTED 10/24/2016



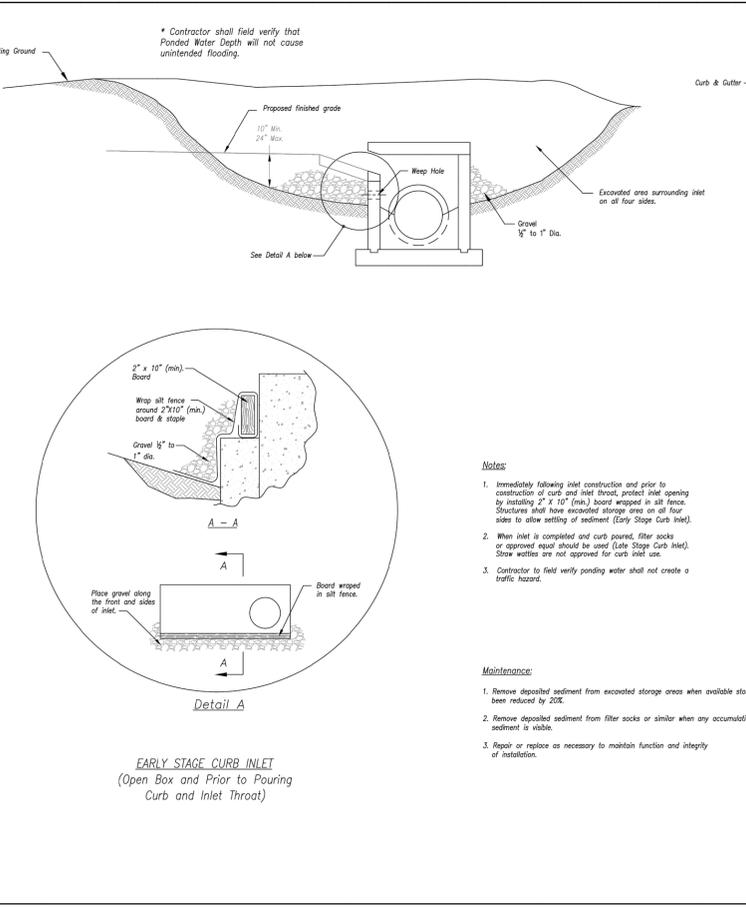
PHOENIX ENGINEERING & SURVEYING, LLC
3835 S. NORTHERN BLVD.
INDEPENDENCE, MO 64602
(816) 748-9000 FAX: (816) 743-9700
ENGINEERING CERTIFICATE NO.: MO E-2000151302-D
SURVEYING CERTIFICATE NO.: MO LS-2000151303-D KS: E-853 KS: LS-138



- Notes:**
- In order to contain water, the ends of the silt fence must be turned uphill (Figure A).
 - 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).
 - Long slopes should be broken up with intermediate rows of silt fence to slow runoff velocities.
 - Attach fabric to upstream side of post.
 - Install posts a minimum of 2' into the ground.
 - Trenching will only be allowed for small or difficult installation, where slicing machine cannot be reasonably used.

- Maintenance:**
- Remove and dispose of sediment deposits when the deposit approaches 1/3 the height of silt fence.
 - Repair as necessary to maintain function and structure.

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



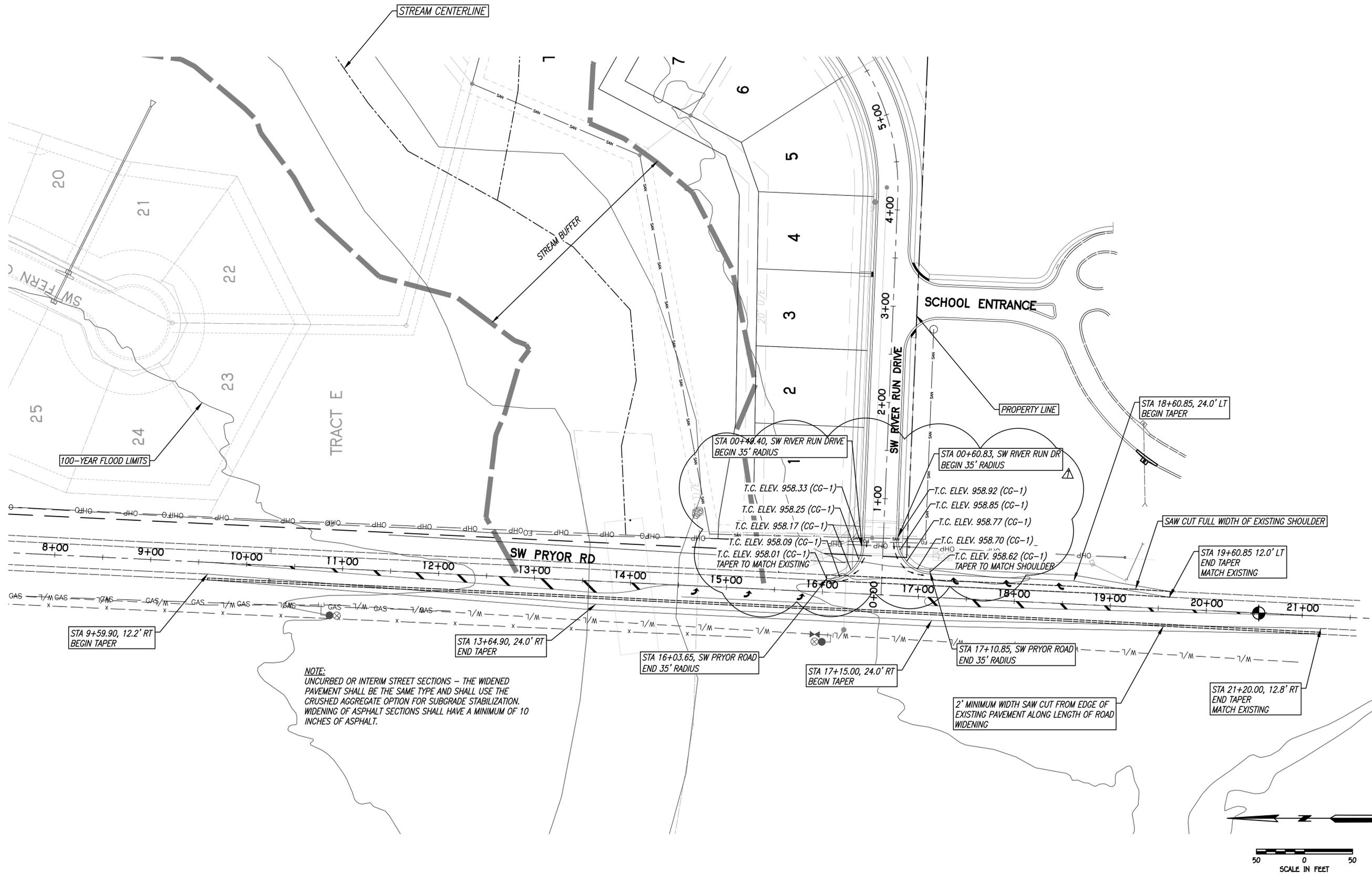
- Notes:**
- Immediately following inlet construction and prior to construction of curb and inlet throat, protect inlet opening by installing 2' x 10' (min.) board wrapped in silt fence. Structures shall have excavated storage areas on all four sides to allow settling of sediment (Early Stage Curb Inlet).
 - When inlet is completed and curb poured, filter socks or approved mat should be used (Late Stage Curb Inlet). Stone weirs are not approved for curb inlet use.
 - Contractor to field verify passing water shall not create a traffic hazard.

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

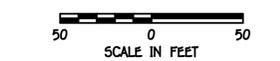
AMERICAN PUBLIC WORKS ASSOCIATION
KANSAS CITY METRO CHAPTER
STANDARD DRAWING NUMBER ESC-06 ADOPTED 10/24/2016

WHISPERING WOODS
LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
ESC DETAILS

DESIGNED: BLG
DRAWN: BLG
SCALE: Noted
DATE: 09-01-2017
JOB NO: 04078
SHEET: 8 OF 34



NOTE:
 UNCURBED OR INTERIM STREET SECTIONS - THE WIDENED PAVEMENT SHALL BE THE SAME TYPE AND SHALL USE THE CRUSHED AGGREGATE OPTION FOR SUBGRADE STABILIZATION. WIDENING OF ASPHALT SECTIONS SHALL HAVE A MINIMUM OF 10 INCHES OF ASPHALT.



PHOENIX ENGINEERING & SURVEYING, LLC
 3833 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 749-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO.: MO E-2000151302-D K.S. E-853
 SURVEYING CERTIFICATE NO.: MO LS-2000151303-D K.S. LS-158

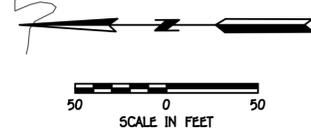
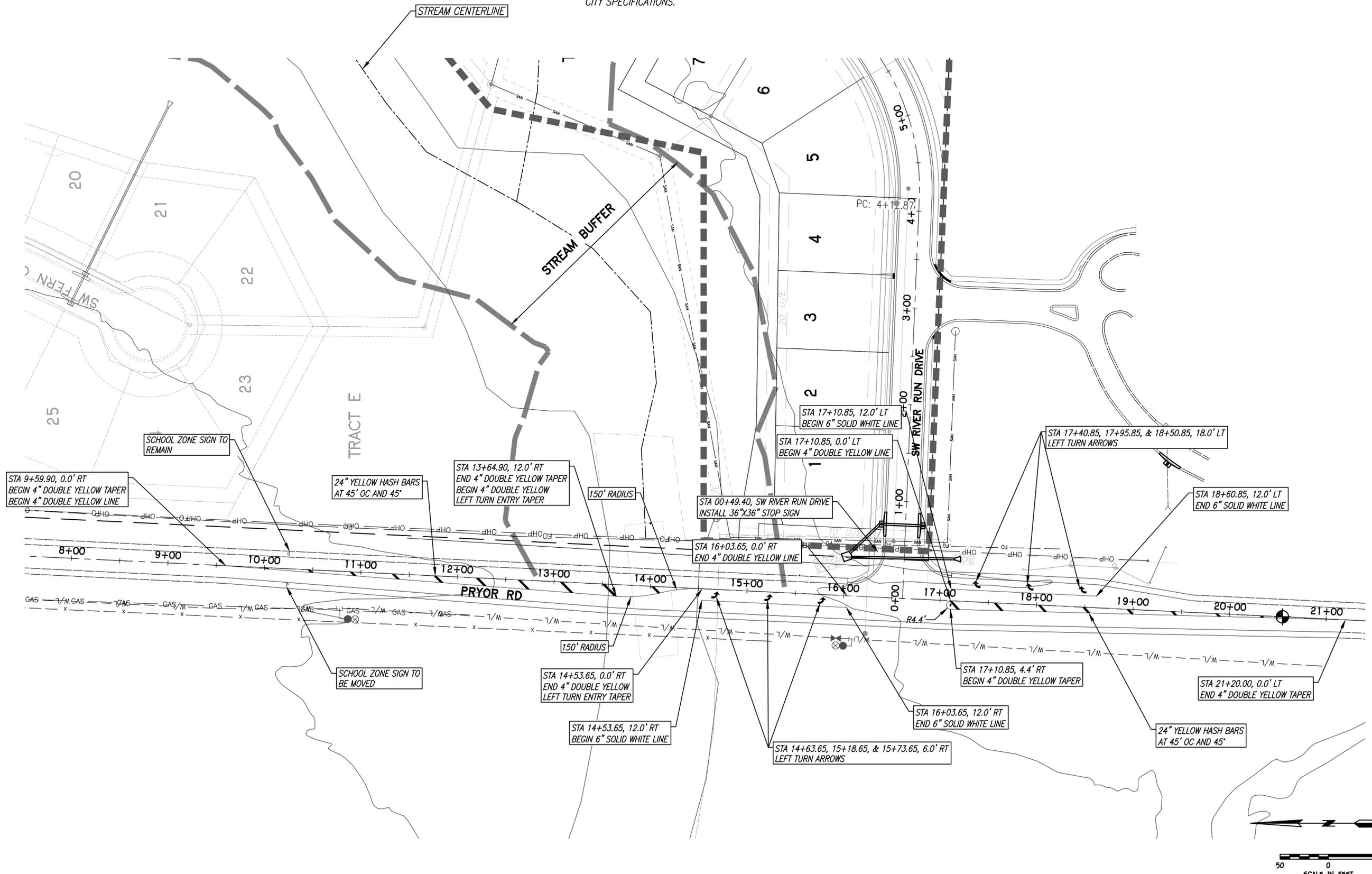
WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
 PRYOR LAYOUT

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	34

REVISION
 Δ REVISED ON 06-07-2018: FIXED CURB TYPE LABEL FROM CG-2 TO CG-1

THE SEALS AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

NOTE:
 ALL TURN ARROWS, DIAGONAL LINES, CROSSWALK LINES, AND STOP LINES SHALL BE PRE-FORMED THERMOPLASTIC IN CONFORMANCE WITH CITY SPECIFICATIONS.
 ALL LONGITUDINAL MARKINGS SHALL USE HIGH BUILD PAINT IN CONFORMANCE WITH CITY SPECIFICATIONS.



REVISION

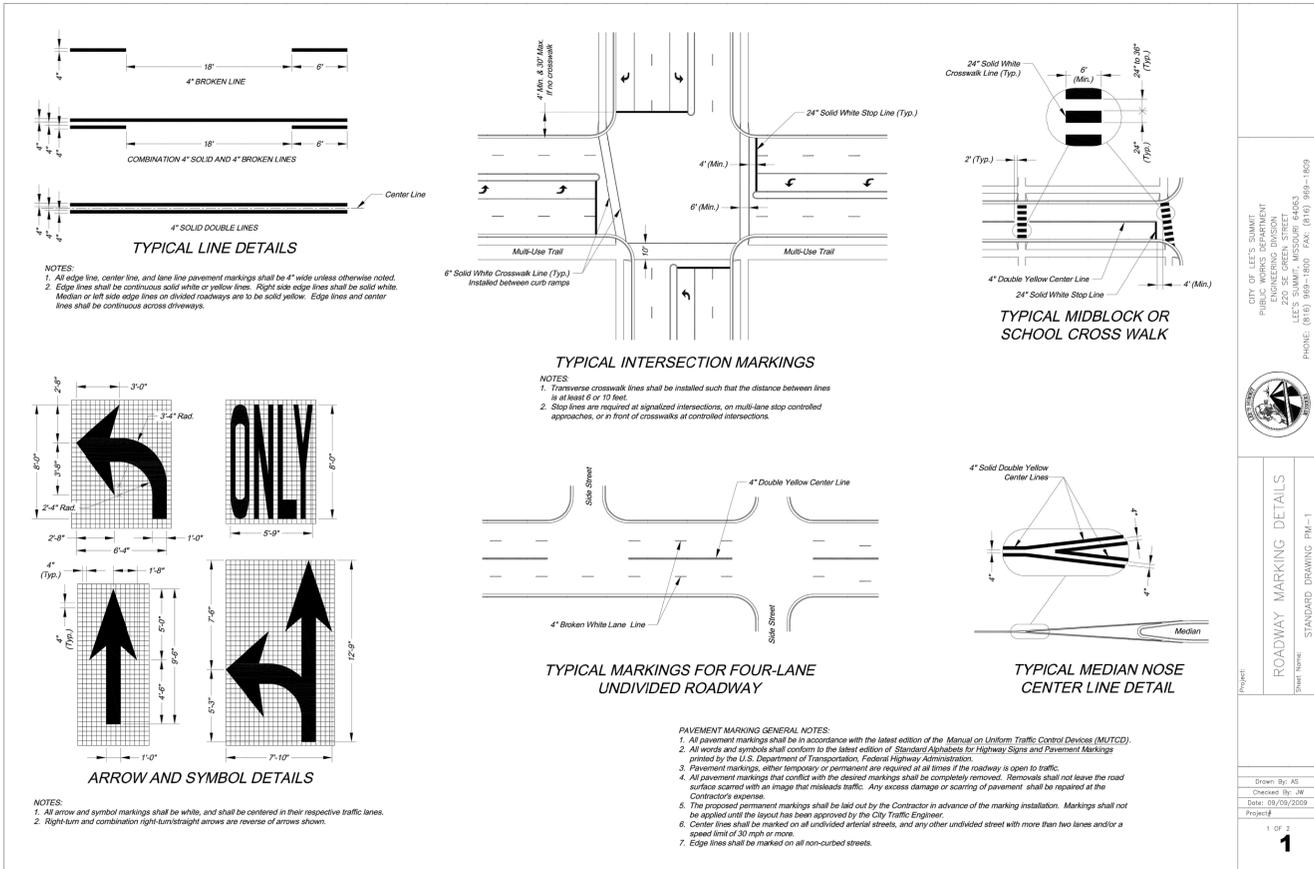


THE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

PHOENIX ENGINEERING & SURVEYING, LLC
 3639 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64062
 (816) 749-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO.: MO E-2000151302-D
 SURVEYING CERTIFICATE NO.: MO LS-2000151303-D
 KS: E-853
 KS: LS-158

WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
STRIPING PLAN

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	11 OF 34

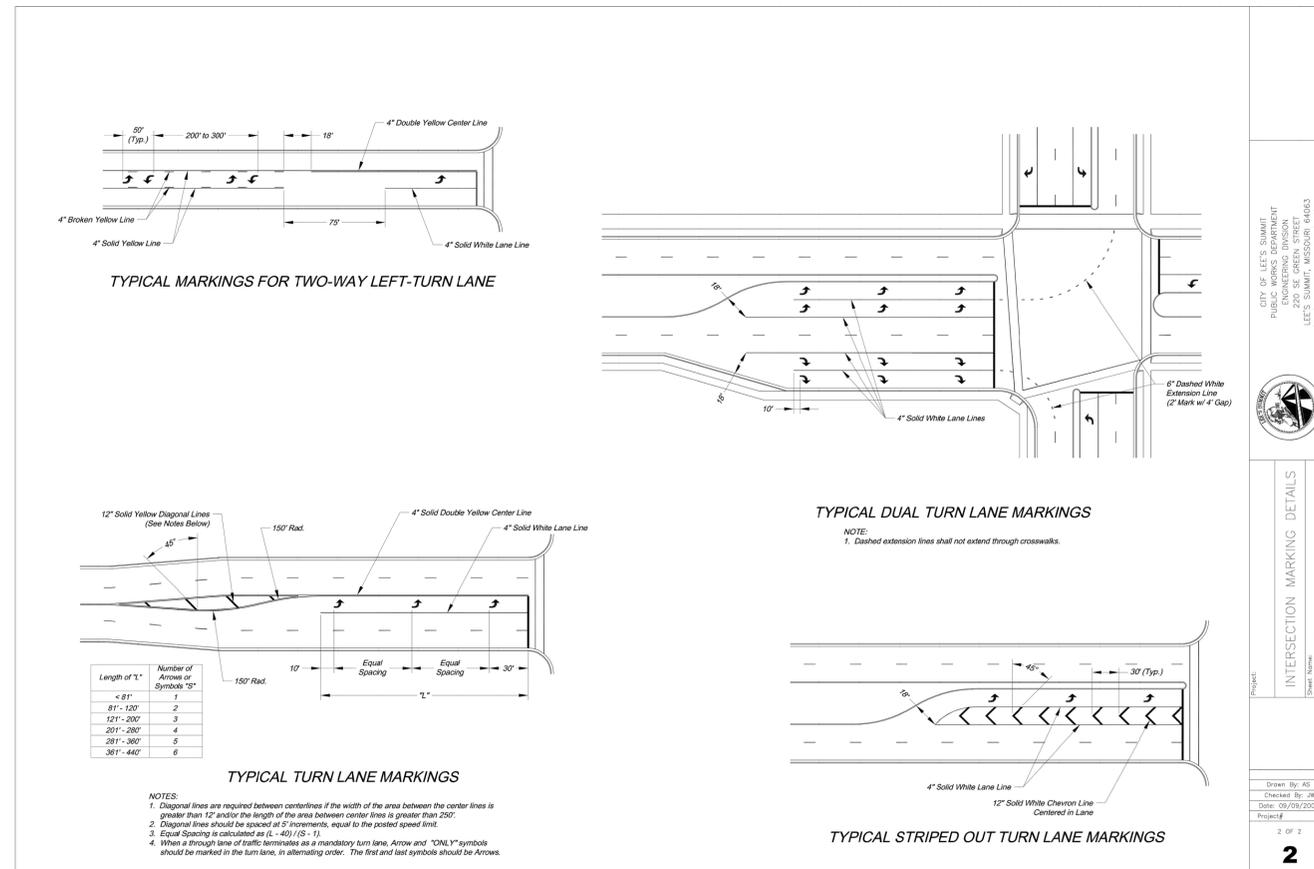


CITY OF LEE'S SUMMIT
 PUBLIC WORKS DEPARTMENT
 ENGINEERING DIVISION
 220 SE GREEN STREET
 LEE'S SUMMIT, MISSOURI 64603
 PHONE: (816) 999-1800 FAX: (816) 999-1809

PROJECT: ROADWAY MARKING DETAILS
 SHEET NAME: STANDARD DRAWING PM-1

Drawn By: AS
 Checked By: JW
 Date: 05/29/2009
 Project #:

1 OF 2

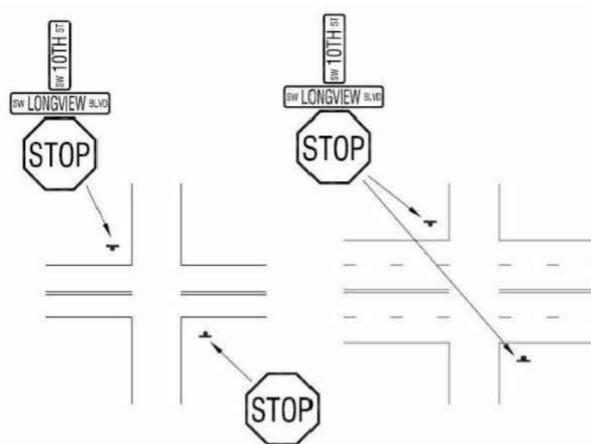
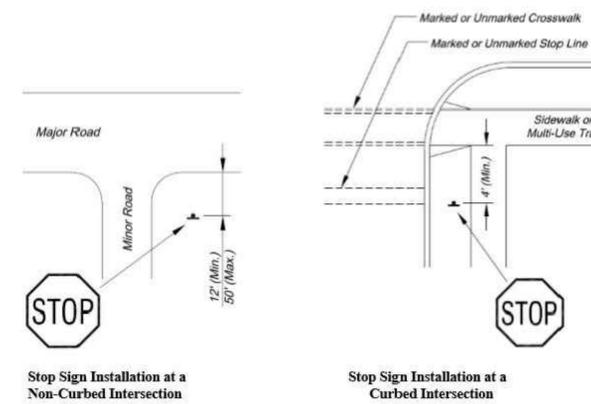


CITY OF LEE'S SUMMIT
 PUBLIC WORKS DEPARTMENT
 220 SE GREEN STREET
 LEE'S SUMMIT, MISSOURI 64603
 PHONE: (816) 999-1800 FAX: (816) 999-1809

PROJECT: INTERSECTION MARKING DETAILS
 SHEET NAME: STANDARD DRAWING PM-2

Drawn By: AS
 Checked By: JW
 Date: 05/29/2009
 Project #:

2 OF 2



REVISION



PHOENIX ENGINEERING & SURVEYING, LLC
 3835 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 748-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO: MO E-2000151302-D
 SURVEYING CERTIFICATE NO: MO LS-2000151303-D

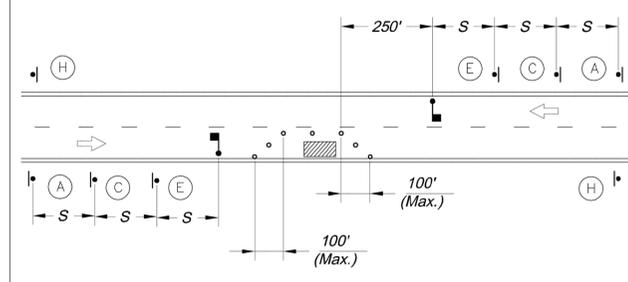
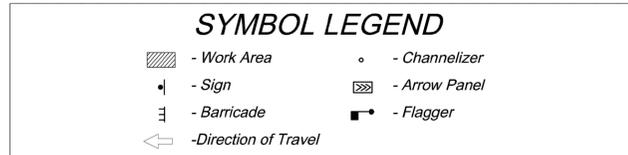
WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
 STREET & STORM SEWER PLANS
 STRIPING PLAN DETAILS

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	34

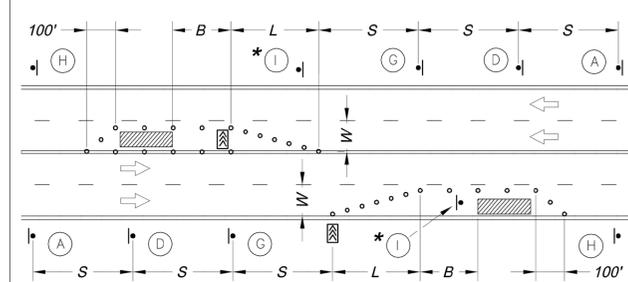
THE SEALS AND SIGNATURES APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED. AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

AS AGENT OF PHOENIX ENGINEERING & SURVEYING, LLC
 KS: E-853
 KS: LS-138

© PHOENIX ENGINEERING & SURVEYING, LLC - 2018

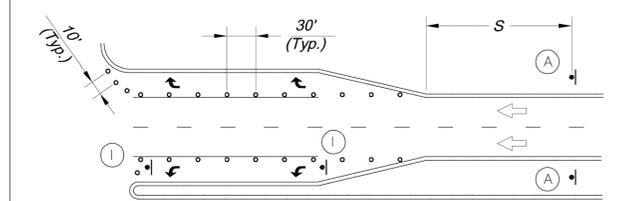


LANE CLOSURE - TWO LANE STREET



LANE CLOSURE - FOUR LANE STREET

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



TURN LANE CLOSURE

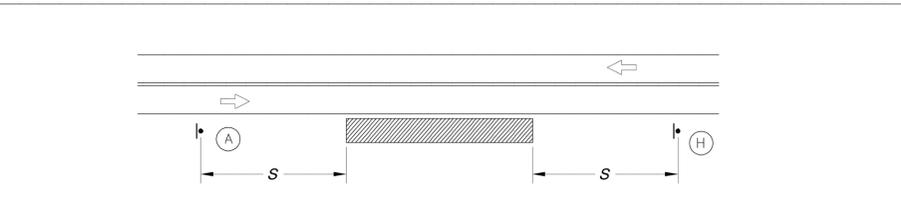
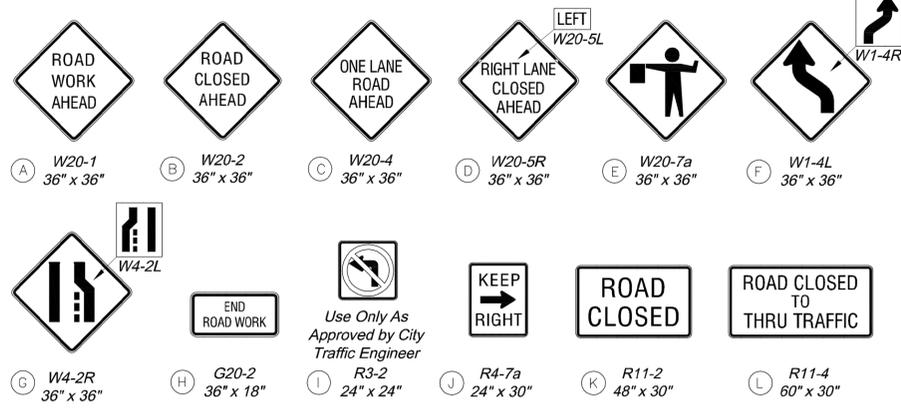
Sign Spacing "S"	
Speed Limit (mph)	Spacing (Feet)
25	100
30 - 35	250
≥ 40	350

Speed Limit (mph)	Taper Dimensions (Feet)			Minimum Number of Channelizers
	Minimum Taper Length "L", per Lane Width "W"	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

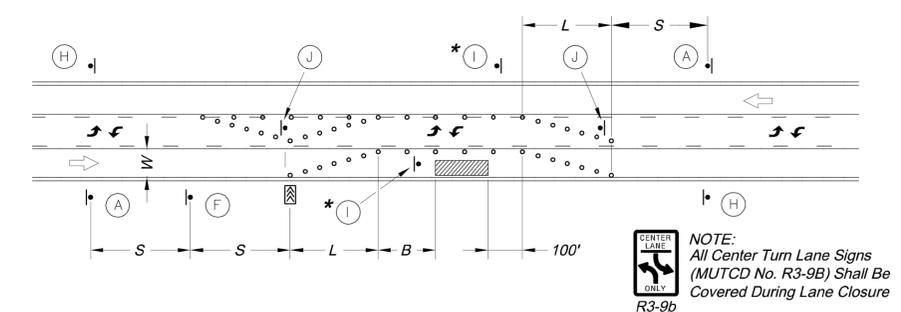
Guidelines for Length of Longitudinal Buffer Space "B"	
Speed Limit (mph)	Length (Feet)
25	35
30	55
35	85
40	120
45	170

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

SIGN LEGEND

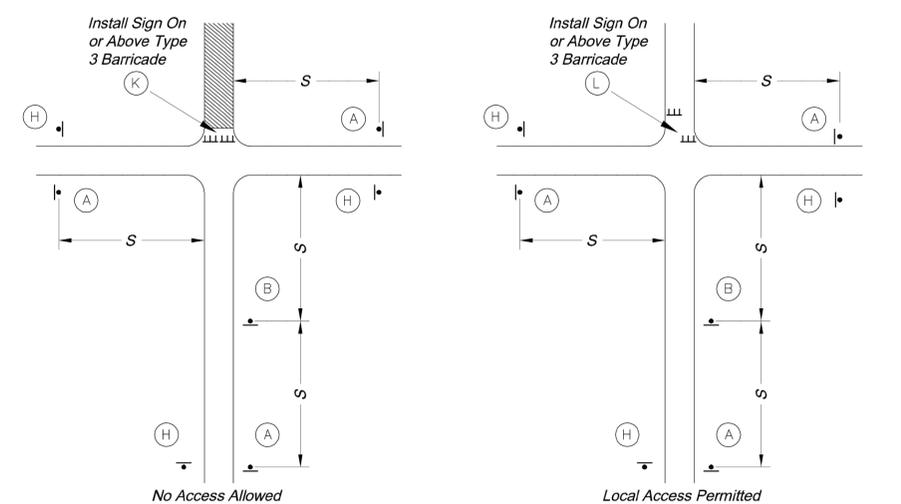


TYPICAL SIGNING FOR WORK ADJACENT TO THE STREET



LANE CLOSURE - THREE LANE STREET

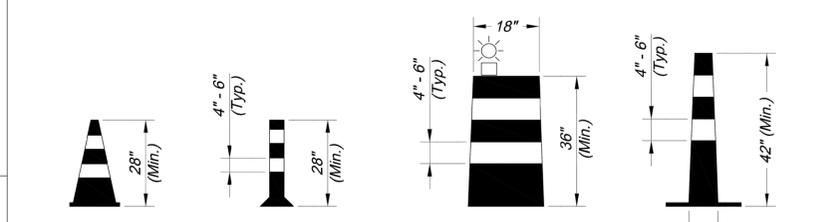
* Install Signs Every 200 Feet Throughout the Closed Lane or As Needed



TYPICAL STREET CLOSURE

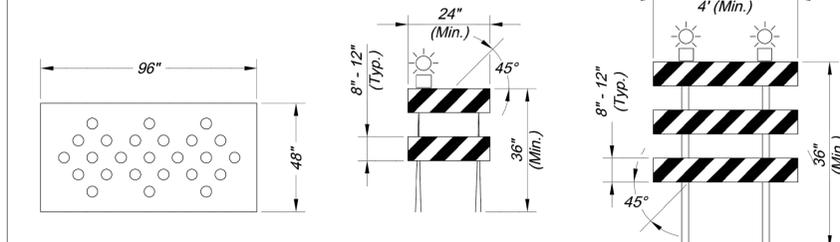
GENERAL NOTES:

- 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).
- 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.
- 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.
- 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.
- Trim-lines are the City's preferred channelizing device. Cones may not be used at nighttime.
- Traffic control devices not in use or not applicable shall be either covered or removed from the work area.
- 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.
- Access shall be maintained to all driveways and side streets unless noted otherwise on the plans.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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).
- 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.
- No traffic signal shall be altered or modified in any way without a plan approved by the City Traffic Engineer.
- 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.
- 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.
- 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:
 - Employ another agency to correct deficiencies in traffic control devices and deduct the cost from the Contractor's pay estimate.
 - Stop the work until deficiencies are corrected.
 - Suspend all pay estimates until deficiencies are corrected, or
 - Place the Contractor in default.



CHANNELIZERS

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



ARROW PANEL

TYPE 2

TYPE 3

BARRICADES

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

TRAFFIC CONTROL DETAILS
STANDARD DRAWING TC-1

Project: _____
Sheet Name: _____
Drawn By: JW
Checked By: MP
Date: 12-10-2008
Project No.: X
x OF x
X



PHOENIX ENGINEERING & SURVEYING, LLC
3636 S. NORTHERN BLVD.
INDIANAPOLIS, IN 46202
(816) 749-9000 FAX: (816) 743-9700
ENGINEERING CERTIFICATE NO.: MO E-2000151302-D
SURVEYING CERTIFICATE NO.: MO LS-2000151303-D
KS: E-853
KS: LS-158

WHISPERING WOODS
LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
TRAFFIC CONTROL PLAN

DESIGNED: BLG
DRAWN: BLG
SCALE:
NOTED:
DATE:
09-01-2017
JOB NO:
04078
SHEET

REVISION

THE SEALS AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED. AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.



NOTE:

DEMOLITION OF EXISTING SCHOOL ENTRANCE SHALL NOT COMMENCE UNTIL NEW SCHOOL ENTRANCE CONSTRUCTION IS COMPLETED.

NO CONSTRUCTION SHALL TAKE PLACE WHILE SCHOOL IS IN SESSION.

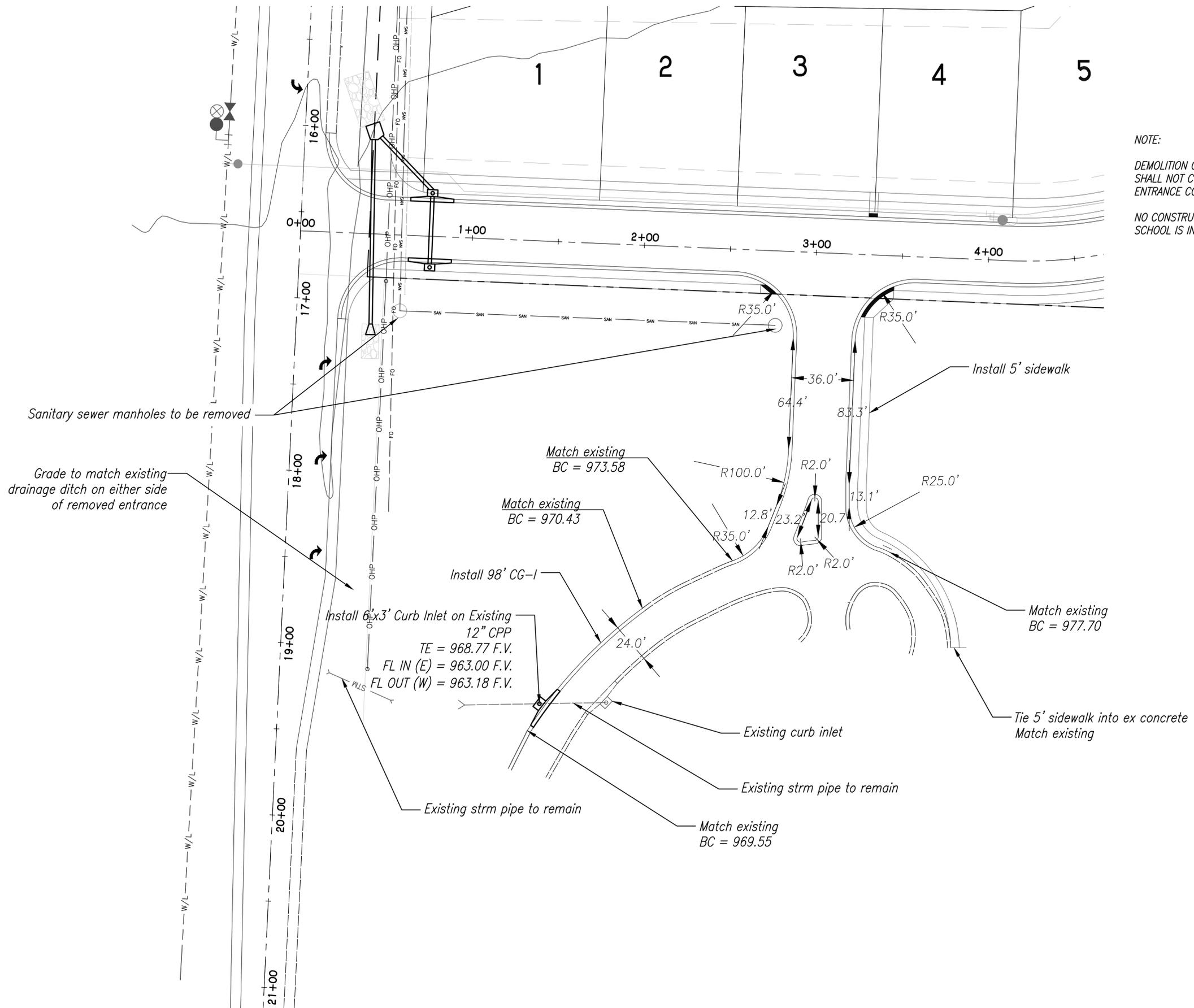
REVISION



PHOENIX ENGINEERING & SURVEYING, LLC
 3833 S NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 749-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO: MO E-2000151302-D KS: E-853
 SURVEYING CERTIFICATE NO: MO LS-2000151303-D KS: LS-158

WHISPERING WOODS
 †
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
SCHOOL DEMO SHEET LAYOUT

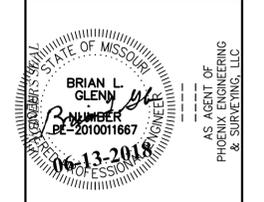
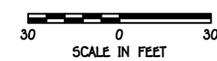
DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	



NOTE:

DEMOLITION OF EXISTING SCHOOL ENTRANCE SHALL NOT COMMENCE UNTIL NEW SCHOOL ENTRANCE CONSTRUCTION IS COMPLETED.

NO CONSTRUCTION SHALL TAKE PLACE WHILE SCHOOL IS IN SESSION.



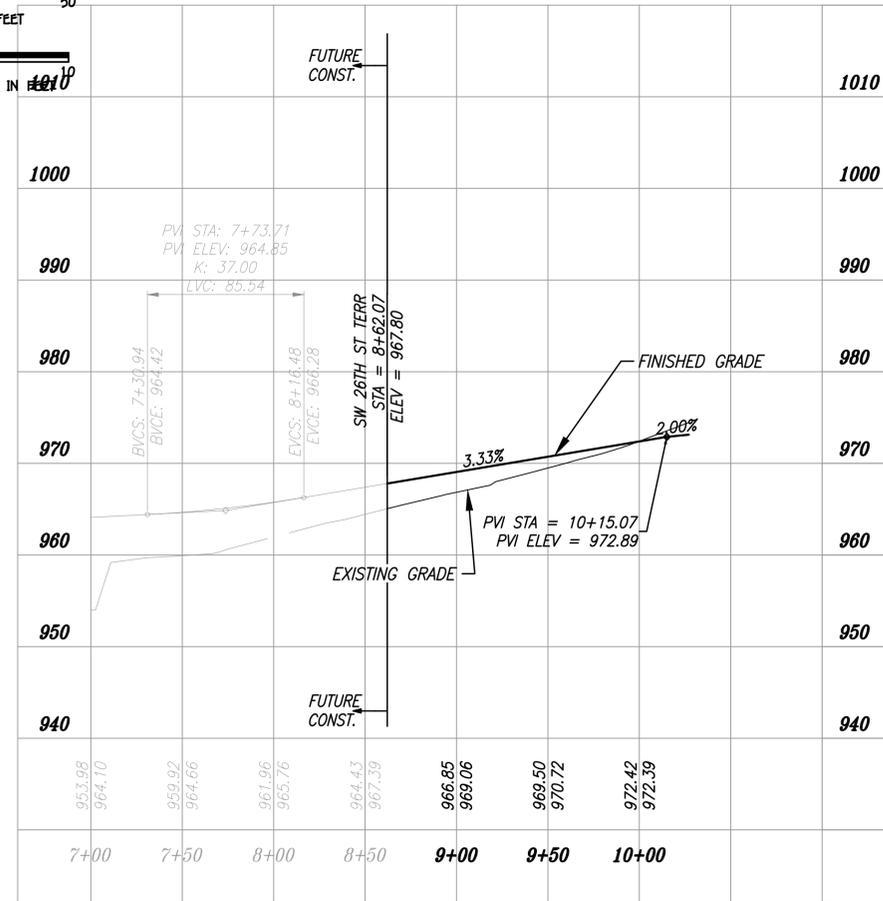
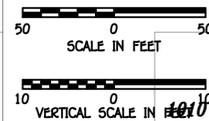
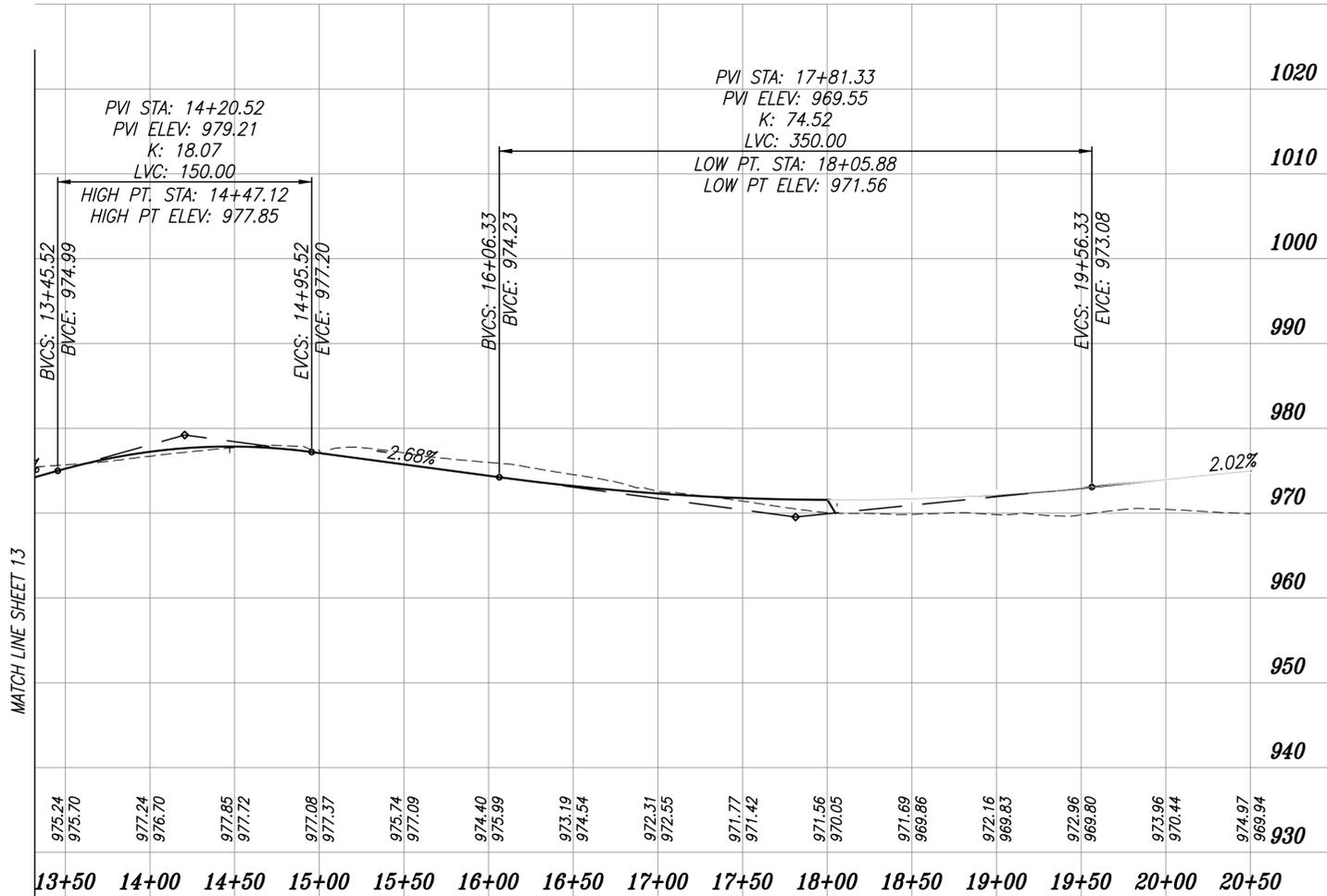
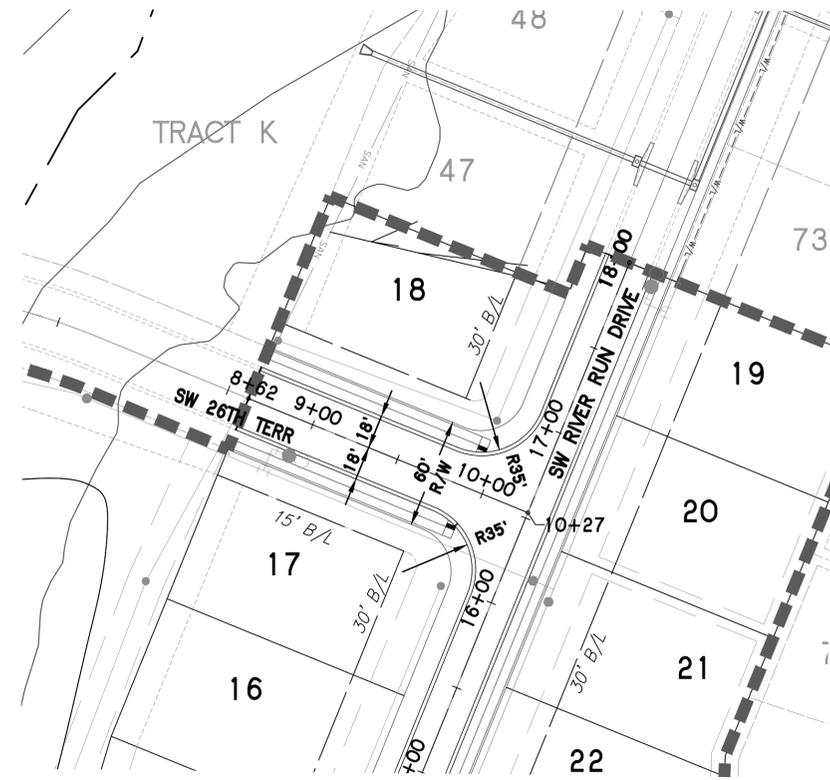
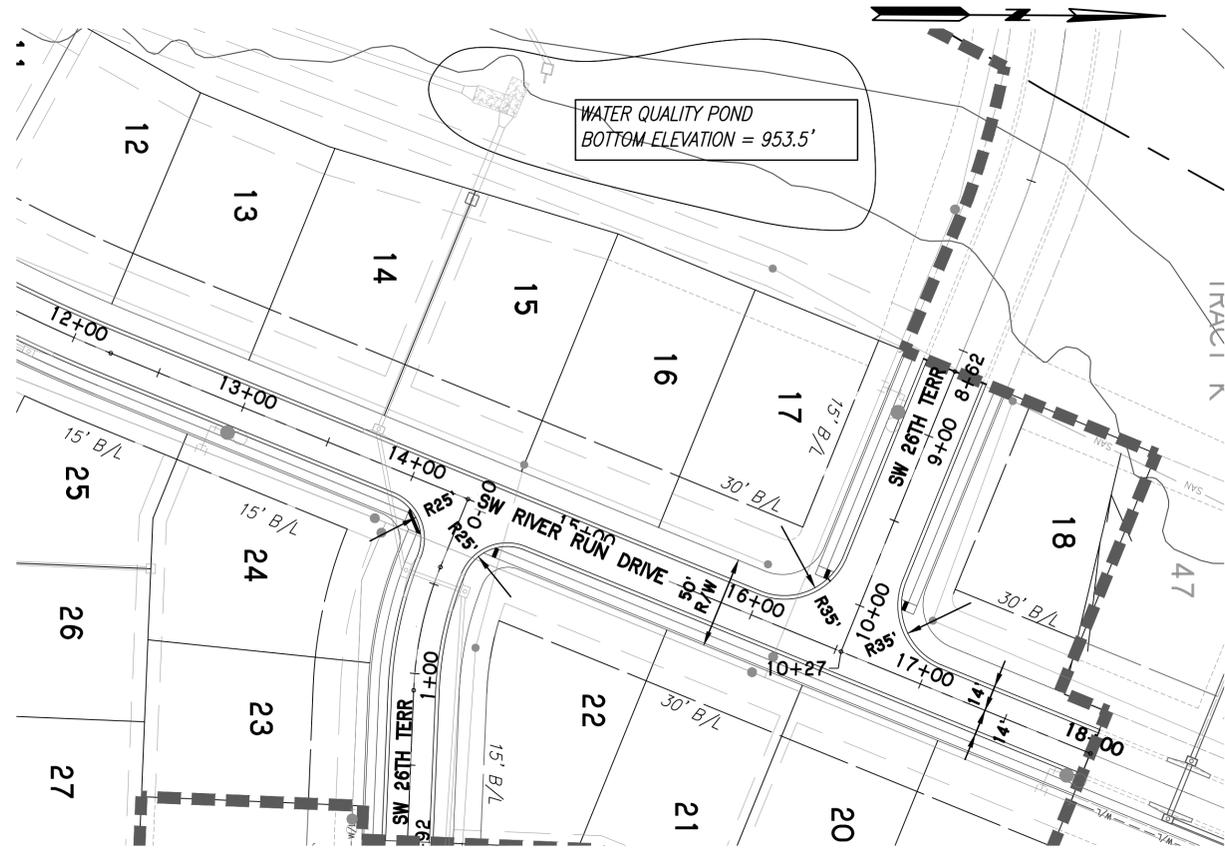
PHOENIX ENGINEERING & SURVEYING, LLC
 3633 S. NORTHERN BLVD.
 INDEPENDENCE, MO. 64602
 (816) 749-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO.: MO E-2000151302-D
 SURVEYING CERTIFICATE NO.: MO LS-2000151303-D
 KS: E-853
 KS: LS-158

WHISPERING WOODS
 †
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
 SCHOOL LAYOUT

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	15 OF 34

REVISION

THE SEALS AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.



REVISION



PHOENIX ENGINEERING & SURVEYING, LLC
 3835 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 748-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO: MO E-2000151302-D KS: E-853
 SURVEYING CERTIFICATE NO: MO LS-2000151303-D KS: LS-138

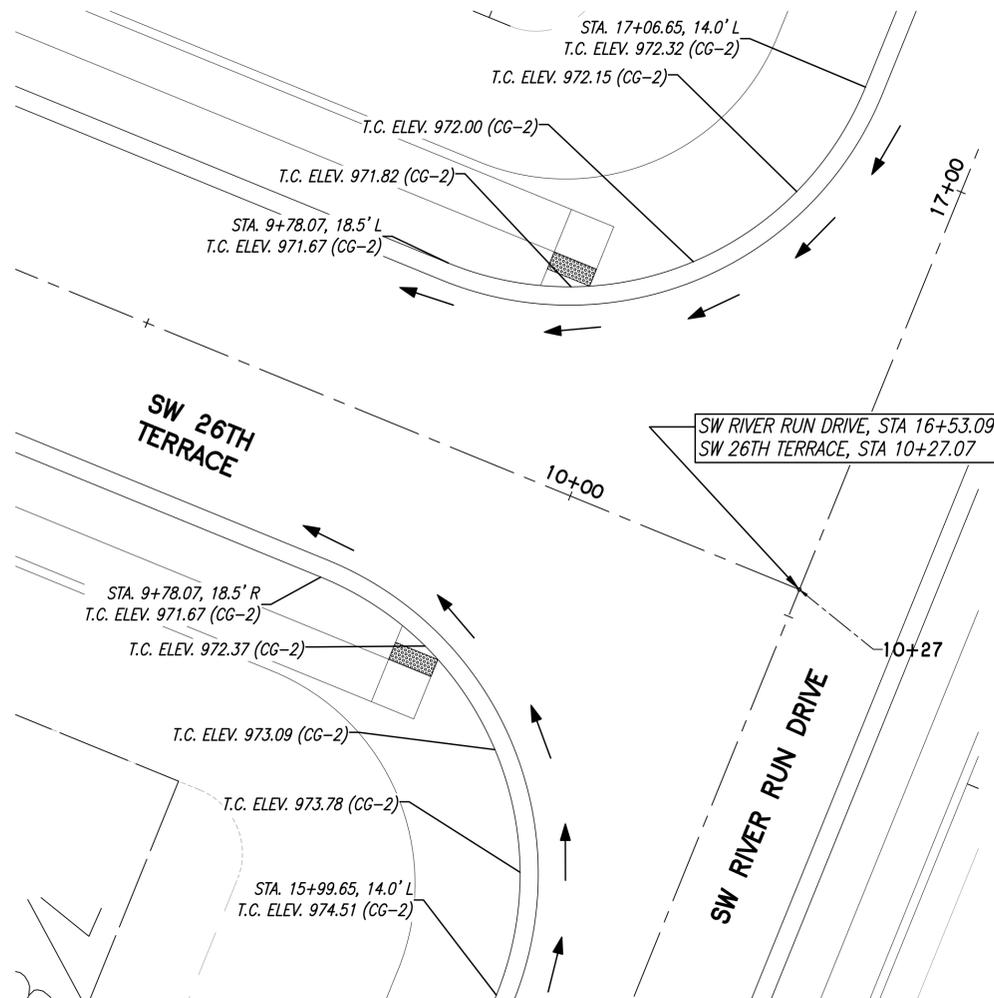
WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
 STREET & STORM SEWER PLANS
 STREET PLAN & PROFILE

DESIGNED: BLG
 DRAWN: BLG
 SCALE: Noted
 DATE: 09-01-2017
 JOB NO: 04078
 SHEET

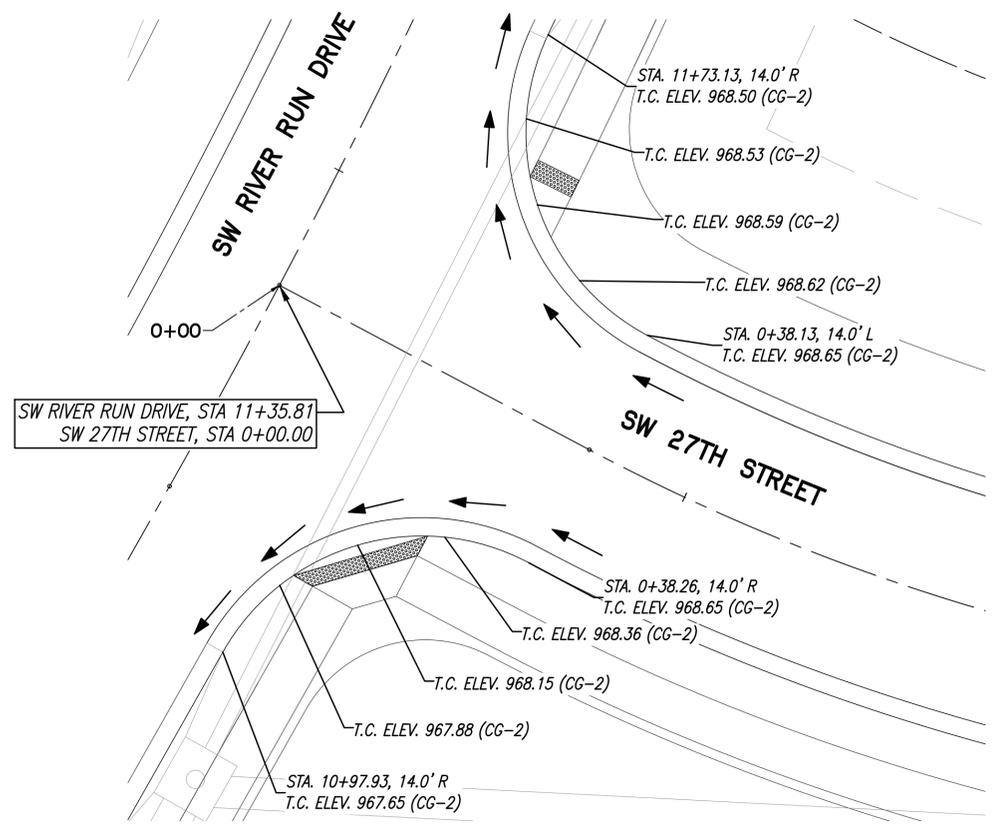
THE SEALS AND SIGNATURES APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED. AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

DATE PLOTTED: 6/13/2018 3:12 PM ; LAST SAVE DATE: 6/13/2018 2:36 PM

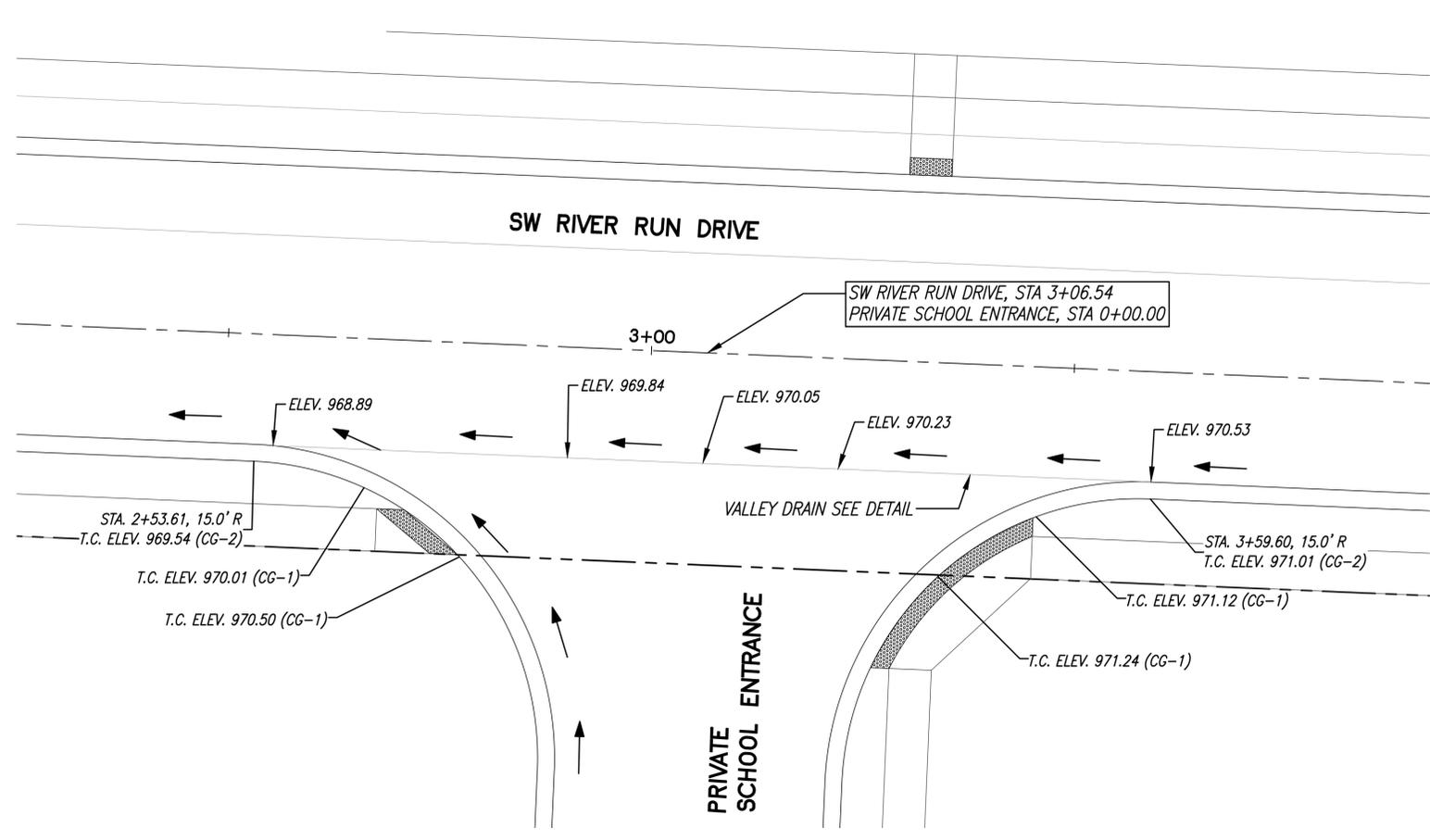
H:\projects\2004\040782 - Whispering Woods Phase 1\dwg\04078 - Street & Storm Plans.dwg



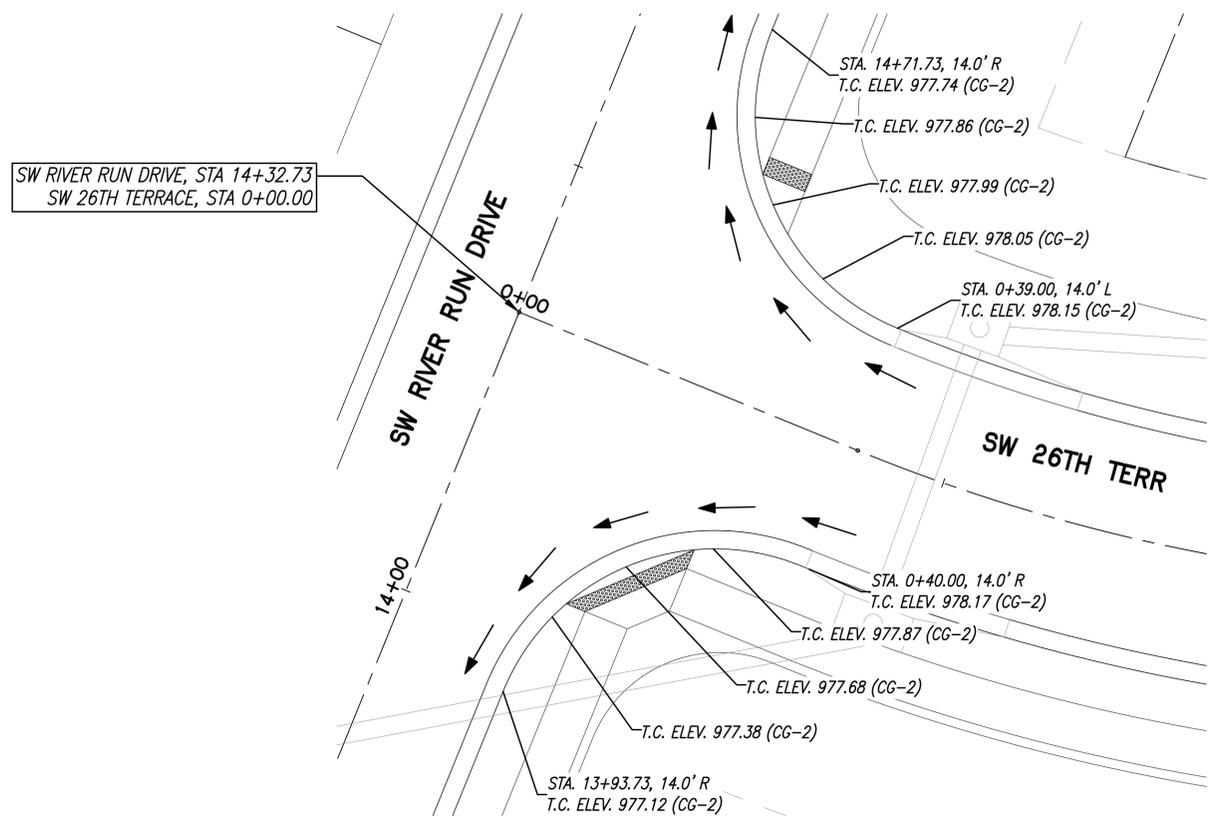
SW RIVER RUN DRIVE & SW 26TH ST DETAILS



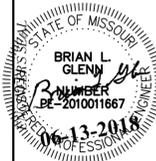
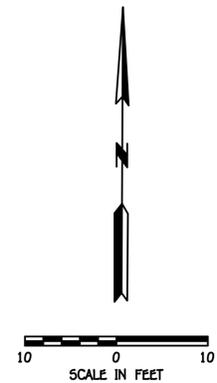
SW RIVER RUN DRIVE & SW 27TH ST DETAILS



SW RIVER RUN DRIVE & SCHOOL ENTRANCE DETAILS



SW RIVER RUN DRIVE & SW 26TH TERR DETAILS



PHOENIX ENGINEERING & SURVEYING, LLC
 3834 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 748-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO.: MO E-2000151302-D KS: E-853
 SURVEYING CERTIFICATE NO.: MO LS-2000151303-D KS: LS-138

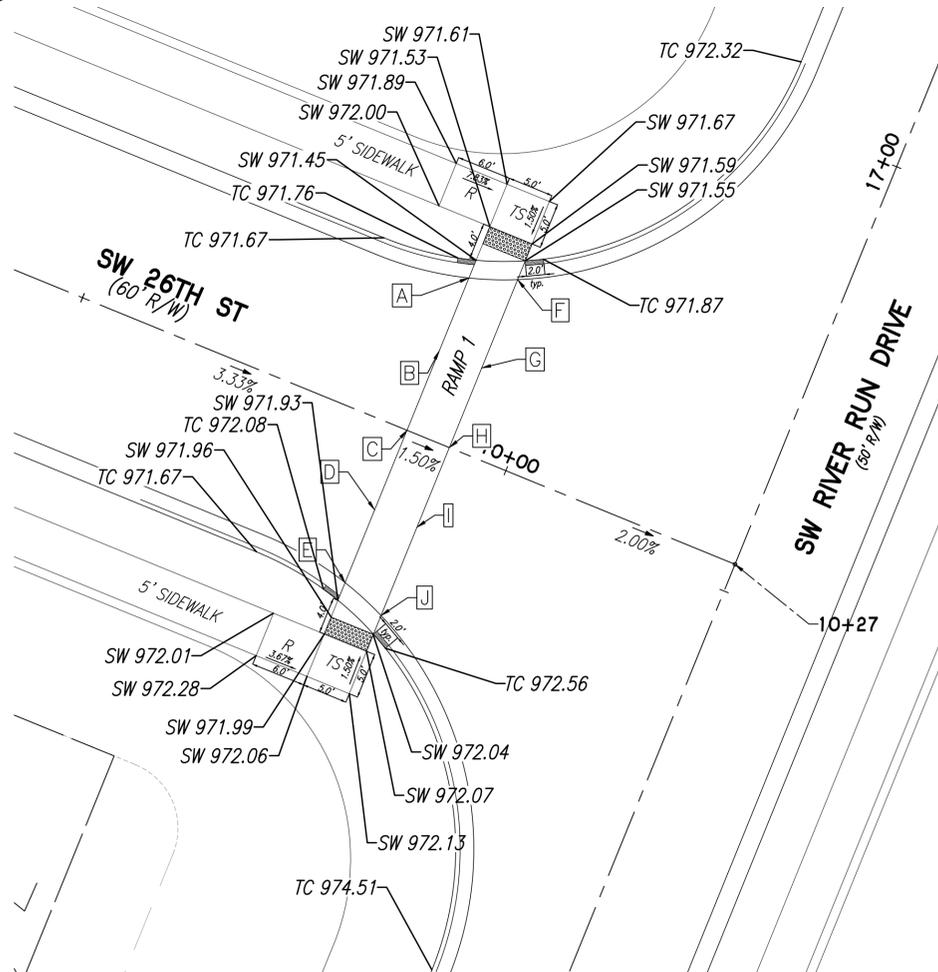
WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
 INTERSECTION DETAILS

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	19 OF 34

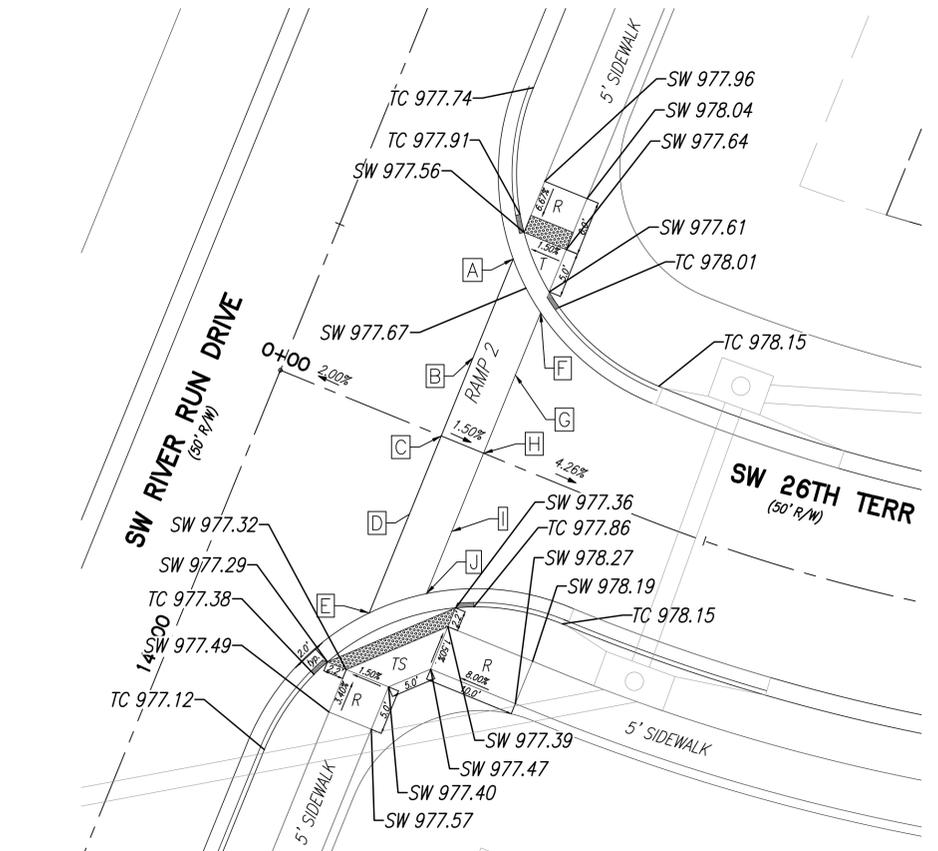
REVISION

THE SEALS AND SIGNATURES APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED.
 AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS,
 ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO
 BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

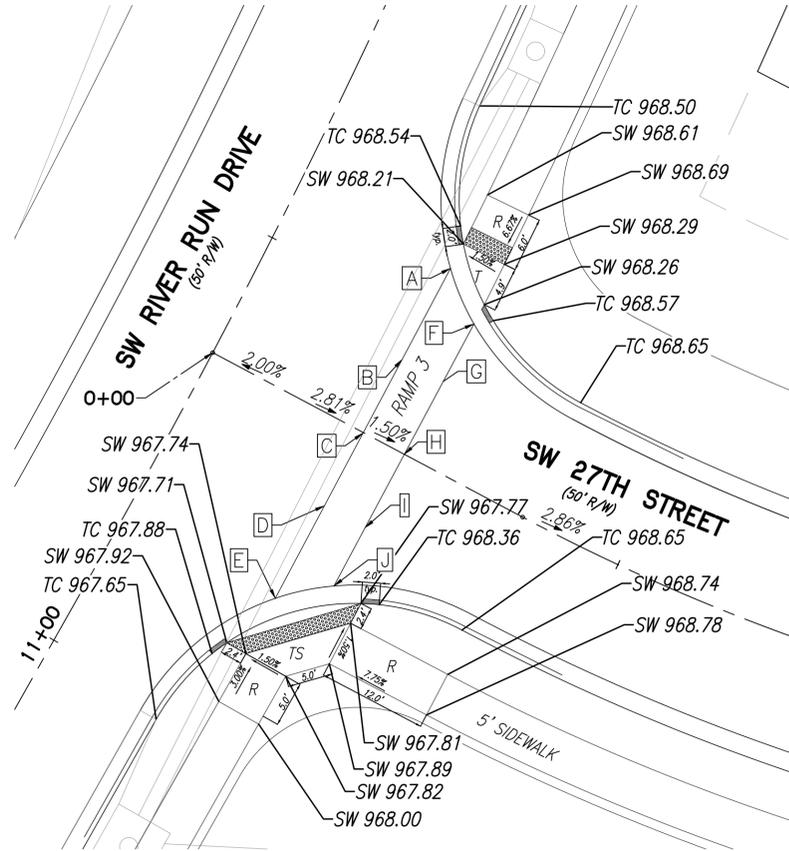
© PHOENIX ENGINEERING & SURVEYING, LLC - 2018



SW RIVER RUN DRIVE & SW 26TH ST ADA RAMP DETAILS



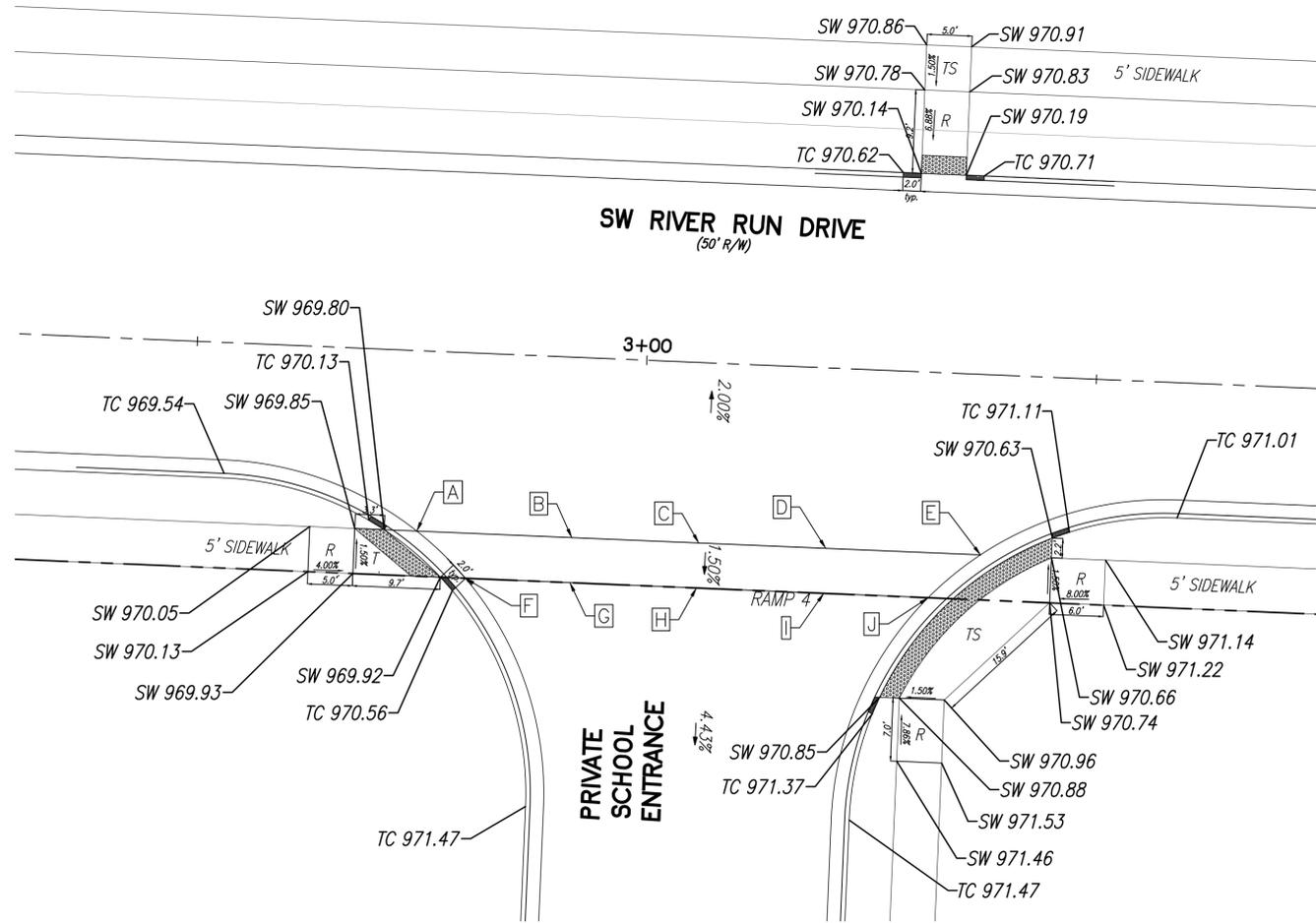
SW RIVER RUN DRIVE & SW 26TH TERR ADA RAMP DETAILS



SW RIVER RUN DRIVE & SW 27TH ST ADA RAMP DETAILS

SPOT ELEVATION TABLE

SPOT	RAMP 1 ELEVATION	RAMP 2 ELEVATION	RAMP 3 ELEVATION	RAMP 4 ELEVATION
A	971.43	977.64	968.22	969.80
B	971.74	977.65	968.08	970.10
C	972.04	977.70	968.02	970.21
D	971.97	977.53	967.91	970.43
E	971.93	977.34	967.76	970.70
F	971.51	977.69	968.29	970.90
G	971.82	977.73	968.16	970.18
H	972.12	977.78	968.10	970.29
I	972.48	977.61	967.99	970.51
J	972.01	977.44	967.80	970.75



SW RIVER RUN DRIVE & SCHOOL ENTRANCE ADA RAMP DETAILS

REVISION

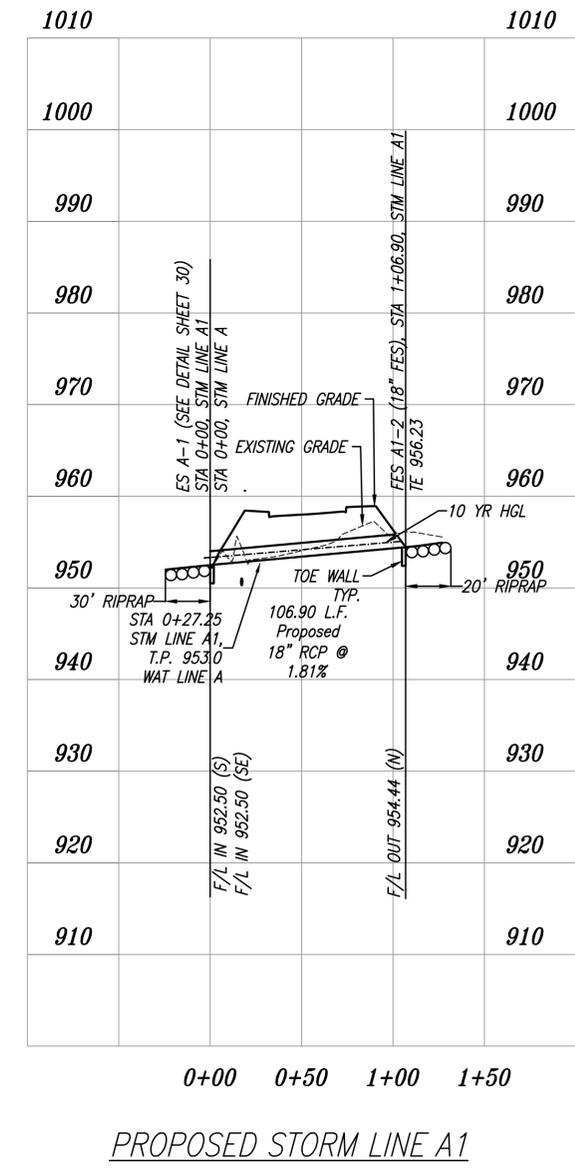
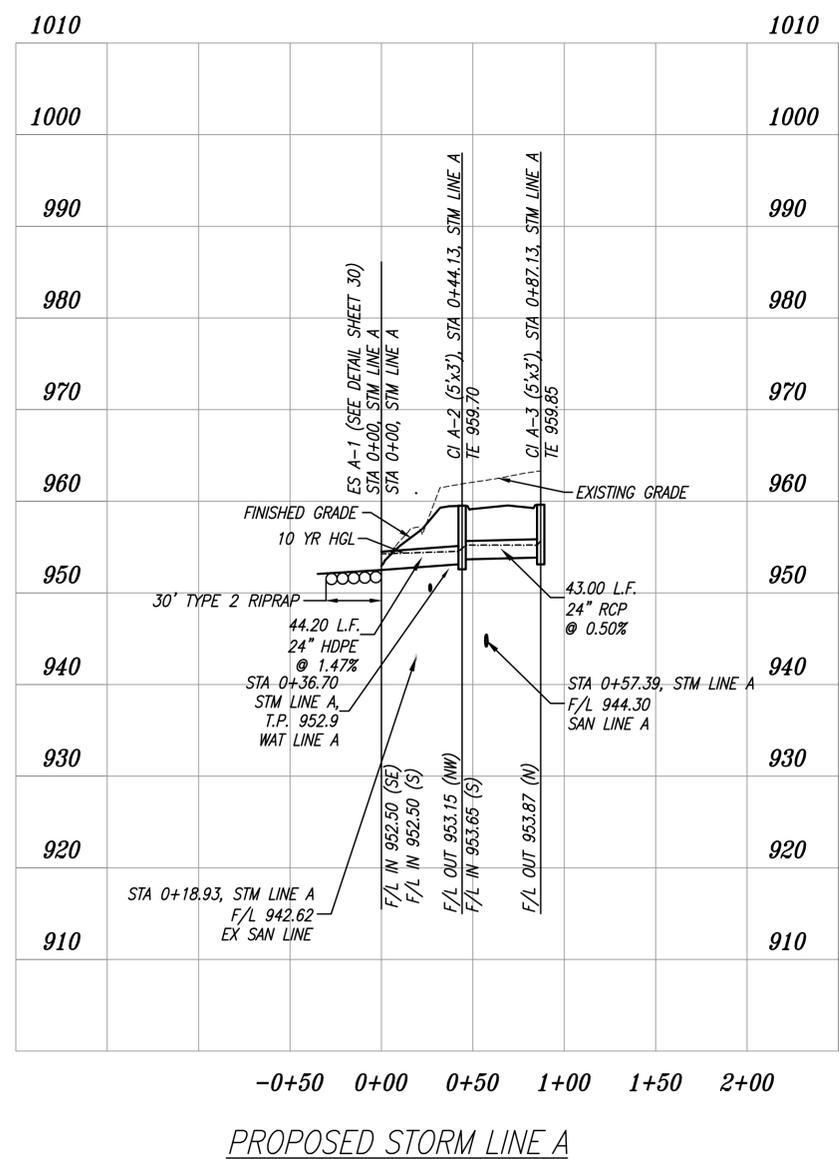
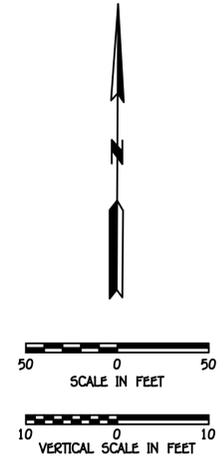
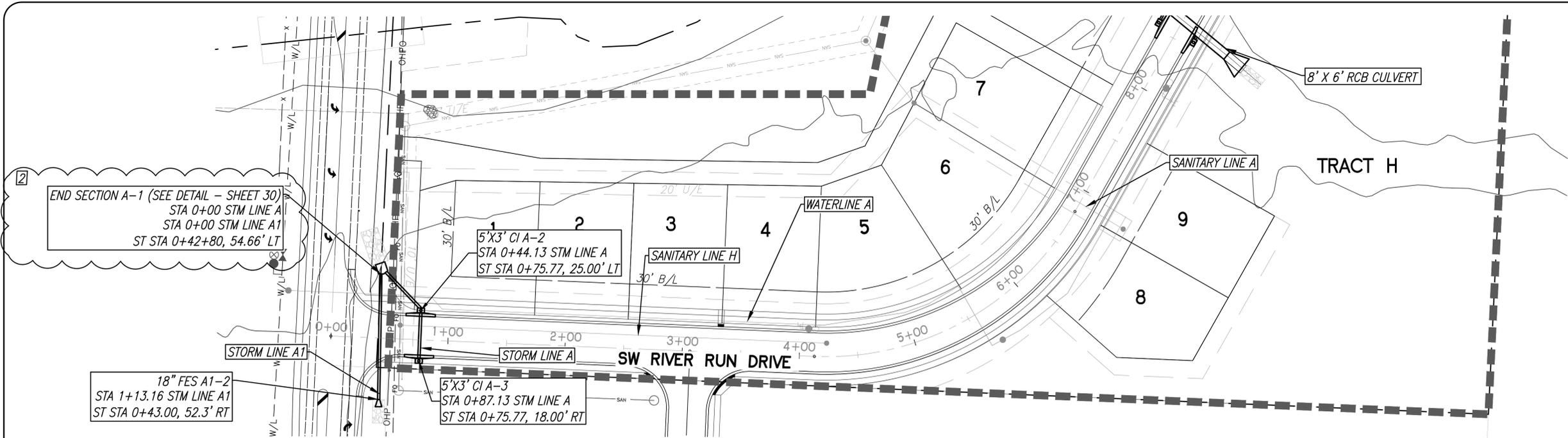


PHOENIX ENGINEERING & SURVEYING, LLC
 3835 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 748-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO: MO E-2000151302-D KS: E-853
 SURVEYING CERTIFICATE NO: MO LS-2000151303-D KS: LS-138

WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
 ADA RAMP DETAILS

DESIGNED: BLG
 DRAWN: BLG
 SCALE: Noted
 DATE: 09-01-2017
 JOB NO: 04078
 SHEET

THE SEALS AND SIGNATURES APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED. AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT. © PHOENIX ENGINEERING & SURVEYING, LLC - 2018



REVISION

REVISED ON 06-07-2018: ADDED FES LABEL (LINE A & A1)

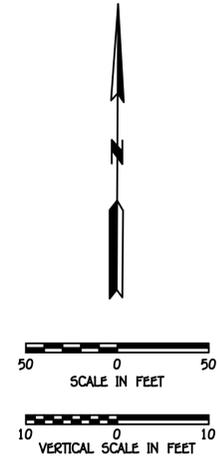
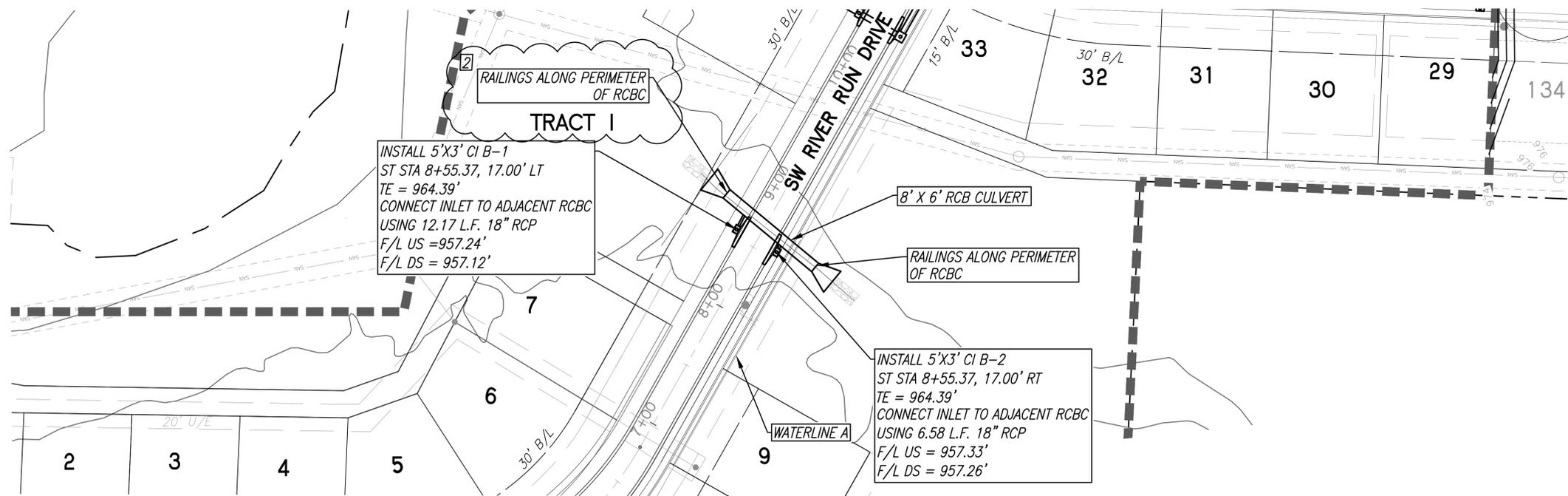


THE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

PHOENIX ENGINEERING & SURVEYING, LLC
 3835 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 748-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO: MO E-2000151302-D KS: E-853
 SURVEYING CERTIFICATE NO: MO LS-2000151303-D KS: LS-138

WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
STORM PLAN & PROFILE

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	34



REVISION

△ REVISED ON 06-07-2018: CULVERT DIMENSIONS EDITED DUE TO WING WALL ADJUSTMENT; ADDED NOTE STATING RCBC SHALL BE PRECAST

□ ALONG PERIMETER OF RCBC

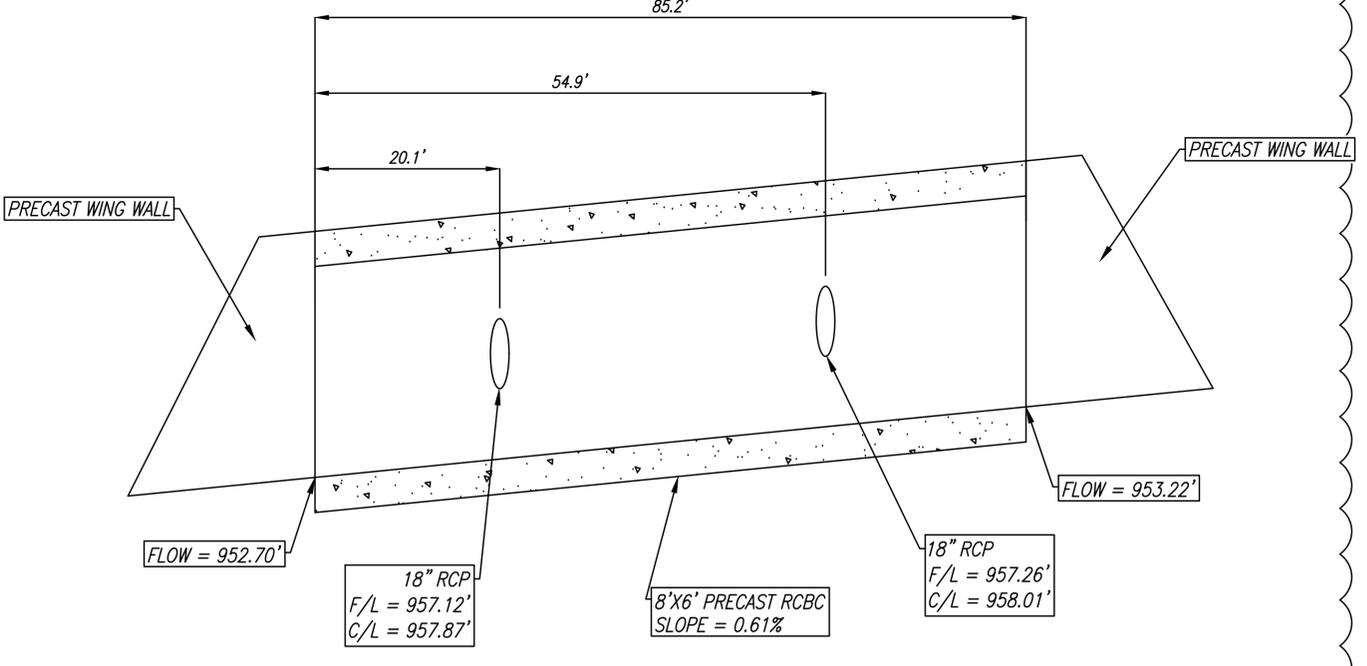
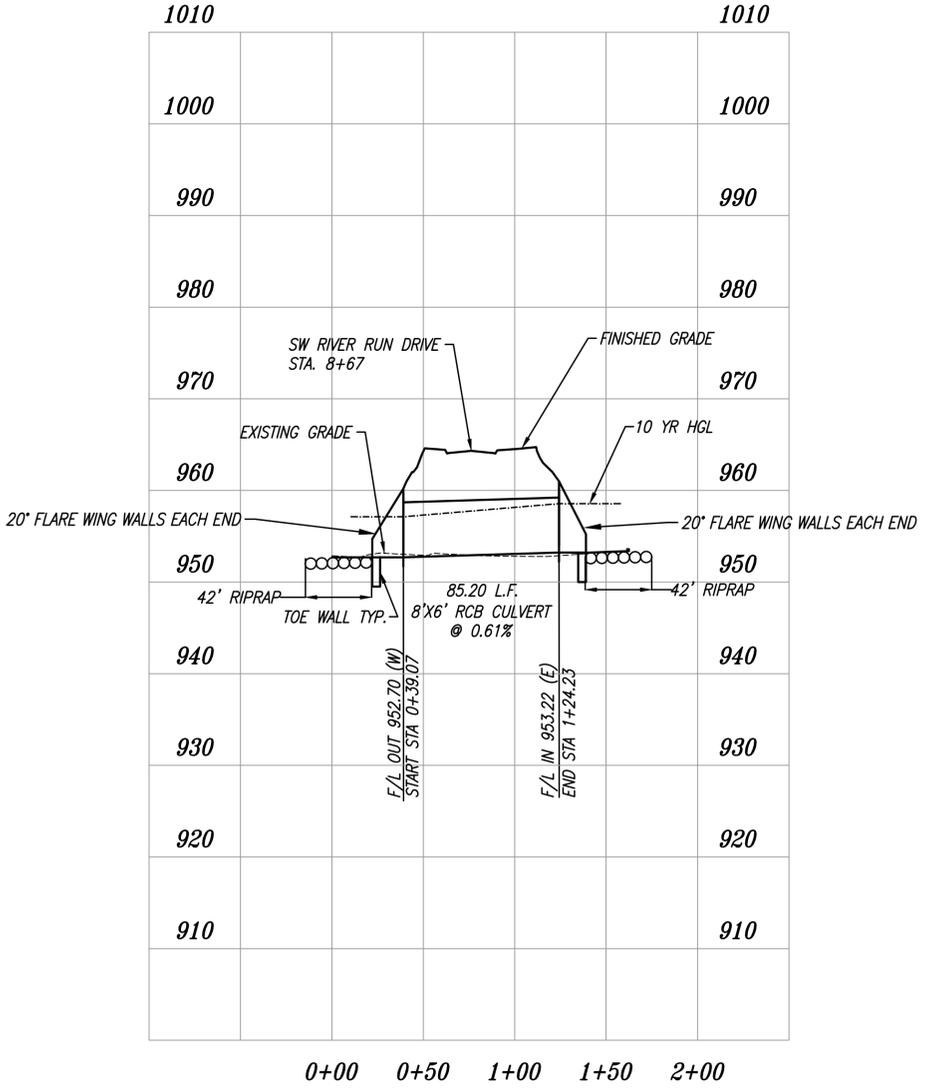
REVISION ON 06-07-2018: ADDED NOTE DETAILING RAILING

THE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED. AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

PHOENIX ENGINEERING & SURVEYING, LLC

3835 S. NORTHERN BLVD.
INDEPENDENCE, MO 64602
(816) 748-9000 FAX: (816) 743-9700
ENGINEERING CERTIFICATE NO: MO E-2000151302-D KS: E-853
SURVEYING CERTIFICATE NO: MO LS-2000151303-D KS: LS-138

WHISPERING WOODS
LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
STORM PLAN & PROFILE



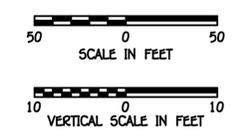
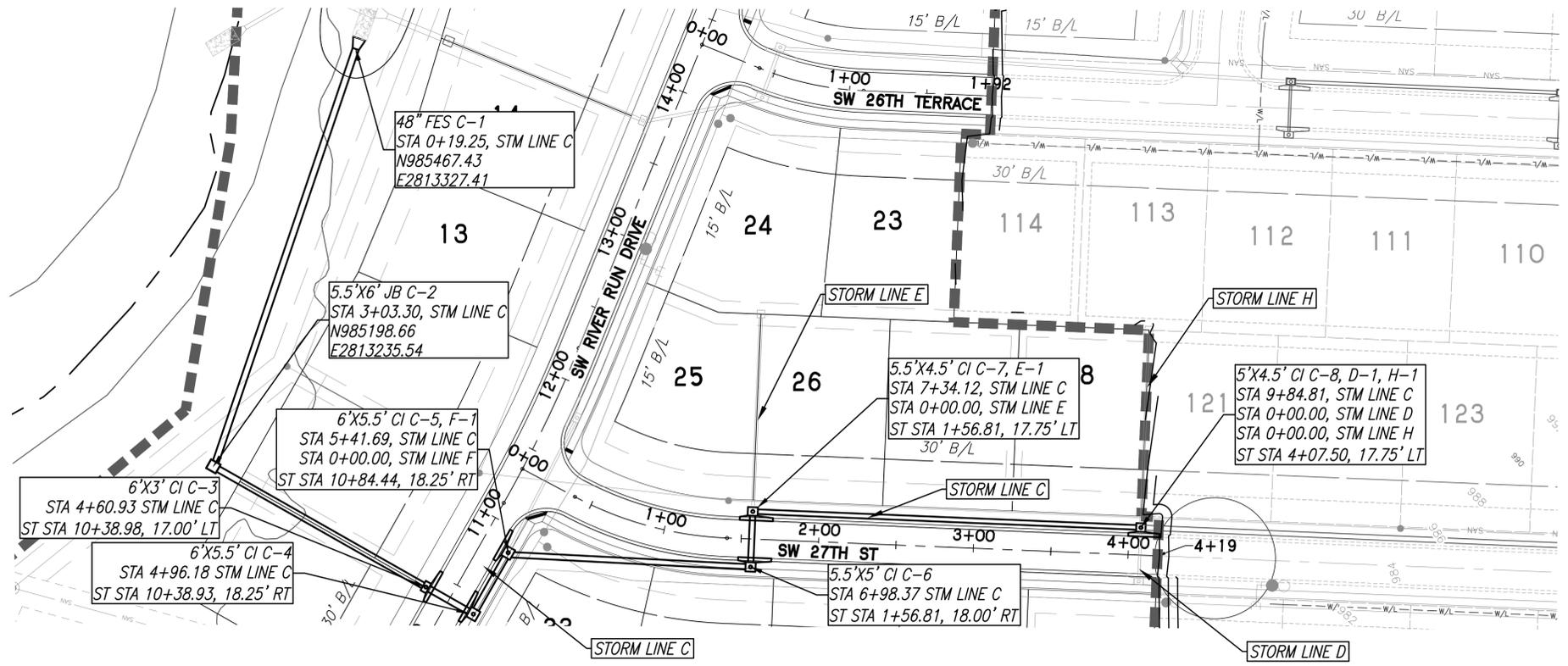
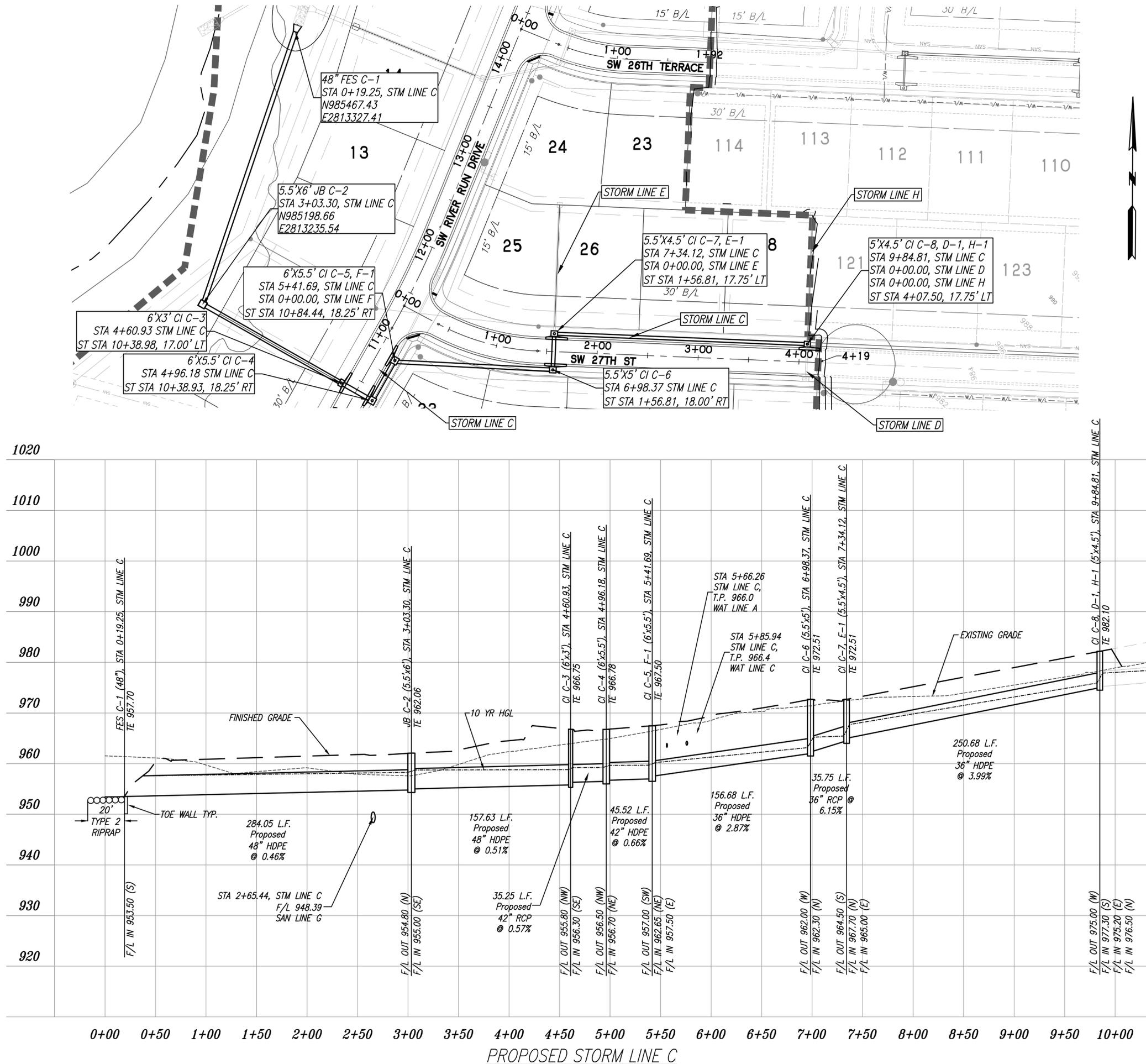
CULVERT DETAILS
N.T.S.

NOTE

RCBC AND WING WALL SHALL BE PRECAST. CONTRACTOR TO PROVIDE SHOP DRAWINGS. RCBC SHALL REQUIRE RAILINGS ON BOTH ENDS. SHOP DRAWINGS SHALL INCLUDE REQUIRED RAILINGS.

PROPOSED 8' X 6' RCB CULVERT

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	34



REVISION

THE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED. AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

BRIAN L. GLENN
REGISTERED PROFESSIONAL ENGINEER
STATE OF MISSOURI
NO. 00132018

AS AGENT OF
PHOENIX ENGINEERING & SURVEYING, LLC

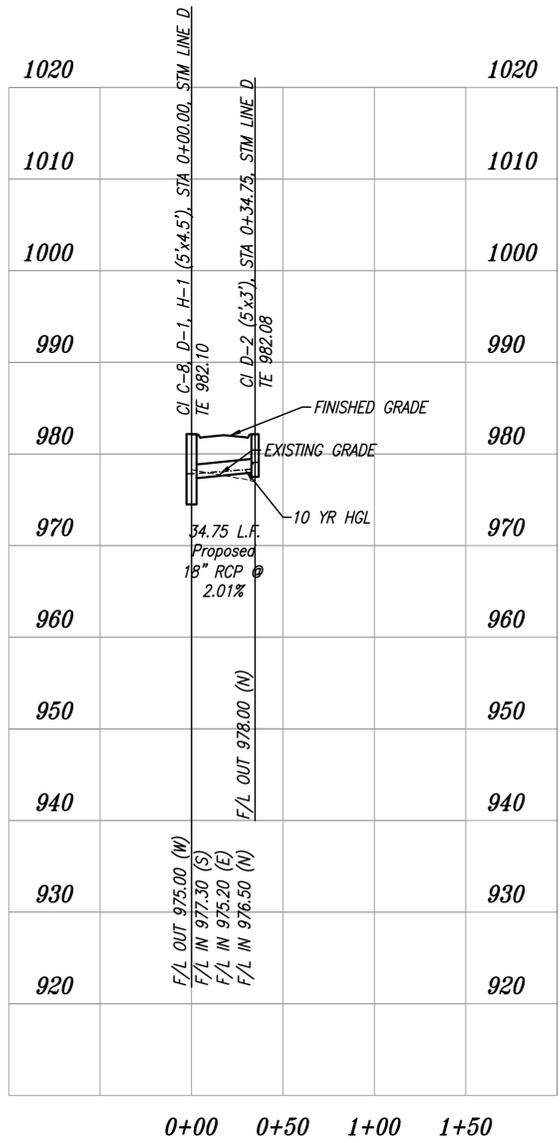
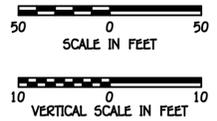
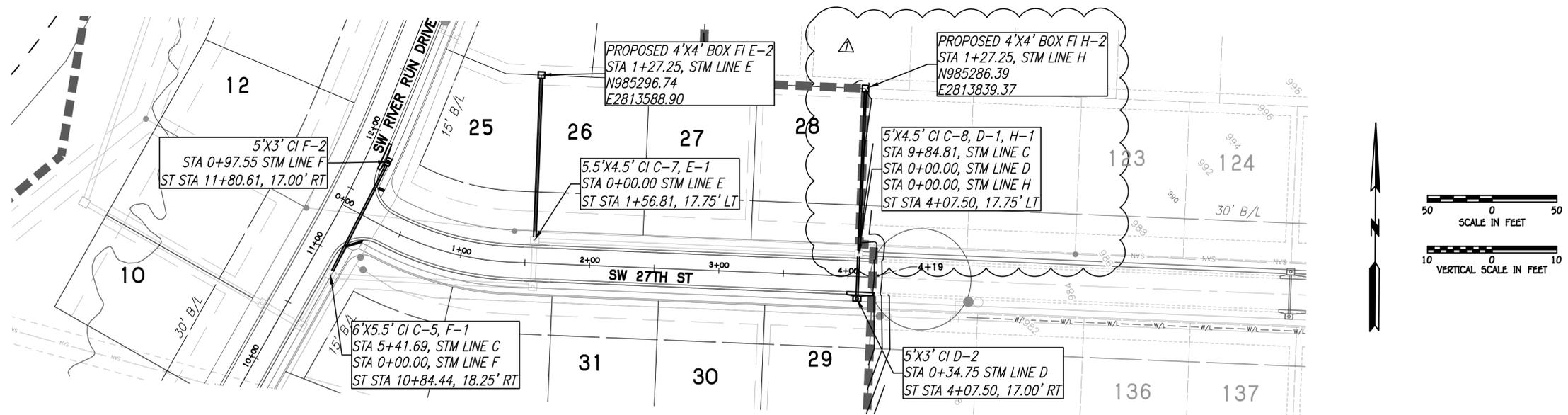
PHOENIX ENGINEERING & SURVEYING, LLC
3835 S. NORTHERN BLVD.
INDEPENDENCE, MO 64602
(816) 748-9000 FAX: (816) 743-9700
ENGINEERING CERTIFICATE NO.: MO E-2000151302-D KS: E-853
SURVEYING CERTIFICATE NO.: MO LS-2000151303-D KS: LS-138

WHISPERING WOODS
LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
STORM PLAN & PROFILE

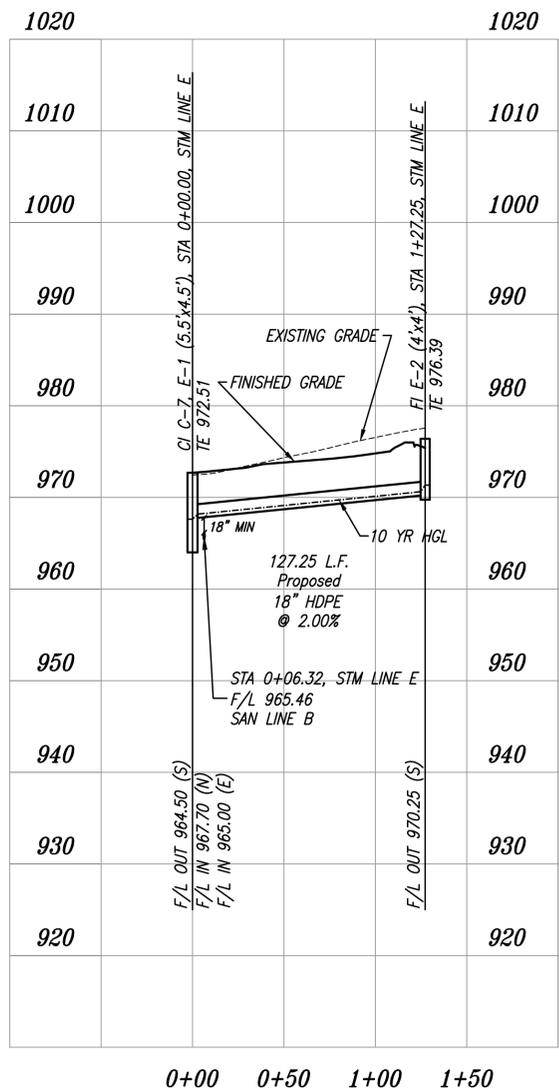
DESIGNED: BLG
DRAWN: BLG
SCALE: Noted
DATE: 09-01-2017
JOB NO: 04078
SHEET

23 OF 34

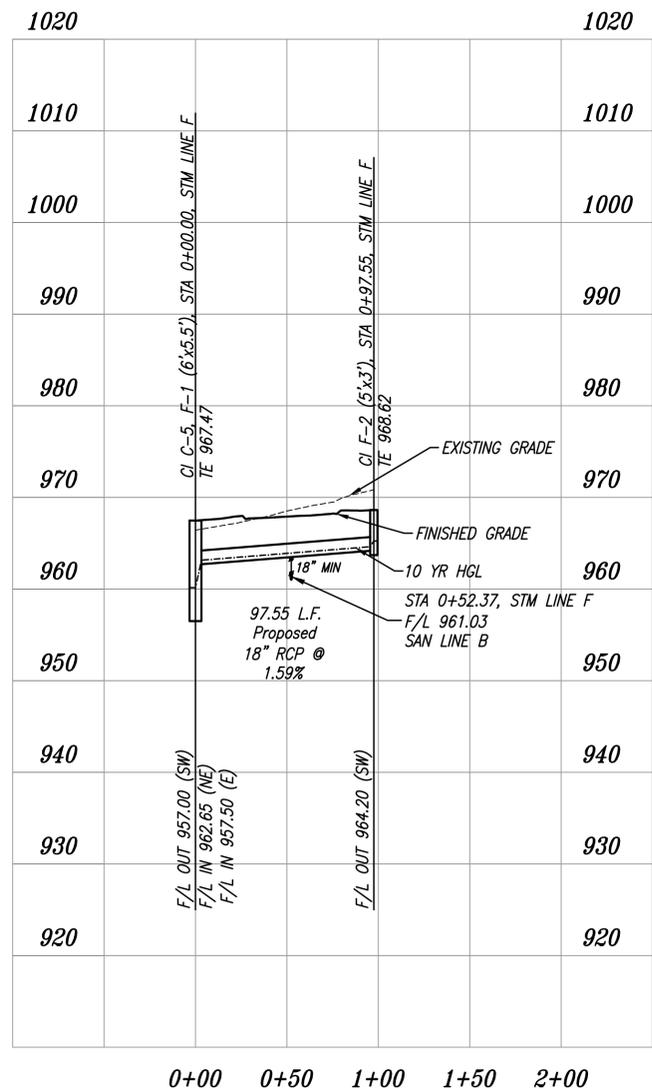
© PHOENIX ENGINEERING & SURVEYING, LLC - 2018



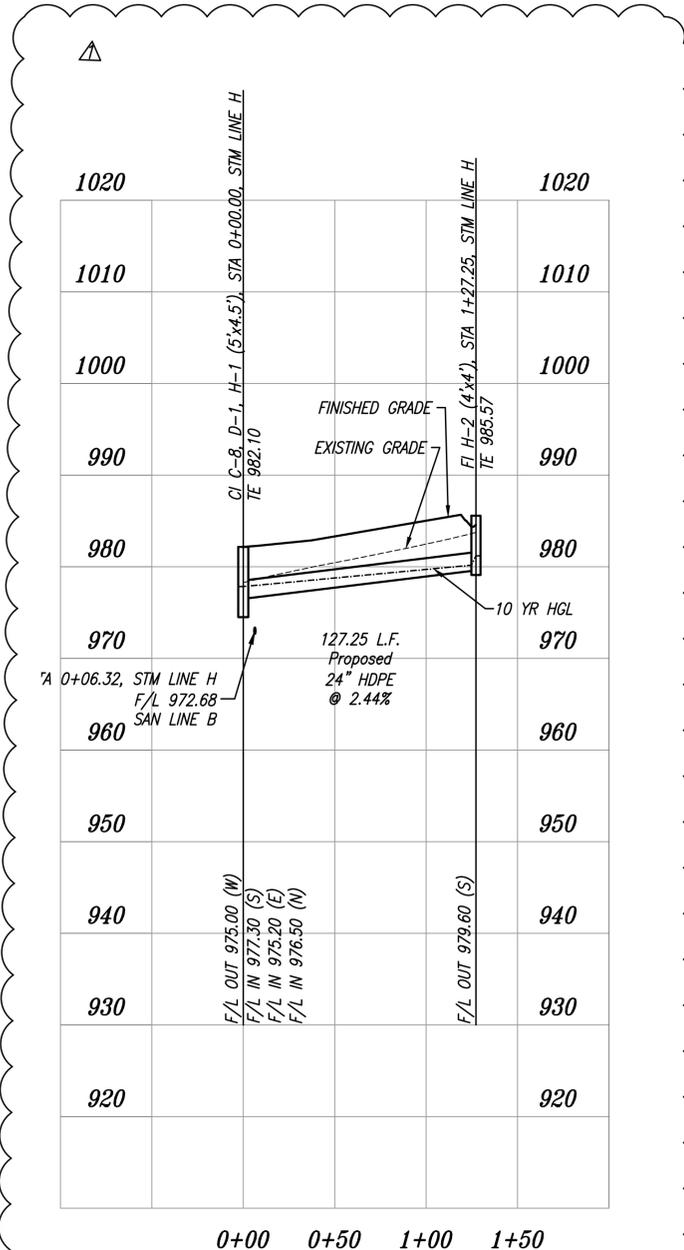
PROPOSED STORM LINE D



PROPOSED STORM LINE E



PROPOSED STORM LINE F



PROPOSED STORM LINE H



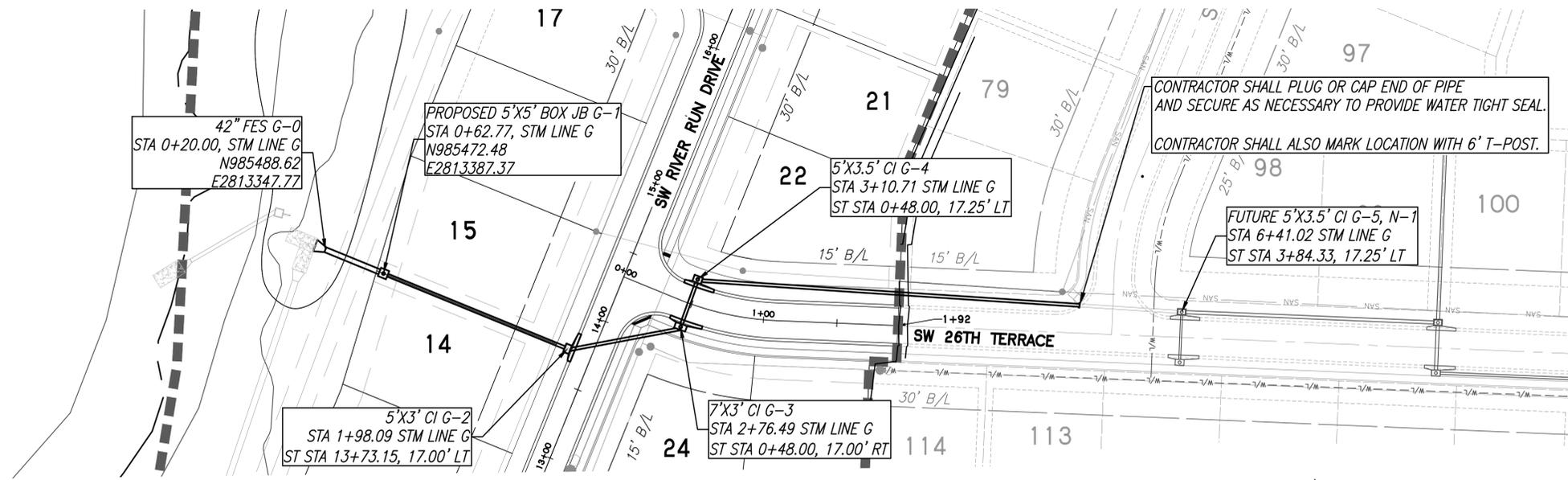
PHOENIX ENGINEERING & SURVEYING, LLC
 38354 NORTHERN BLVD.
 INDEPENDENCE, MO 64622
 (816) 748-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO: MO E-2000151302-D KS: E-853
 SURVEYING CERTIFICATE NO: MO LS-2000151303-D KS: LS-138

WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
STORM PLAN & PROFILE

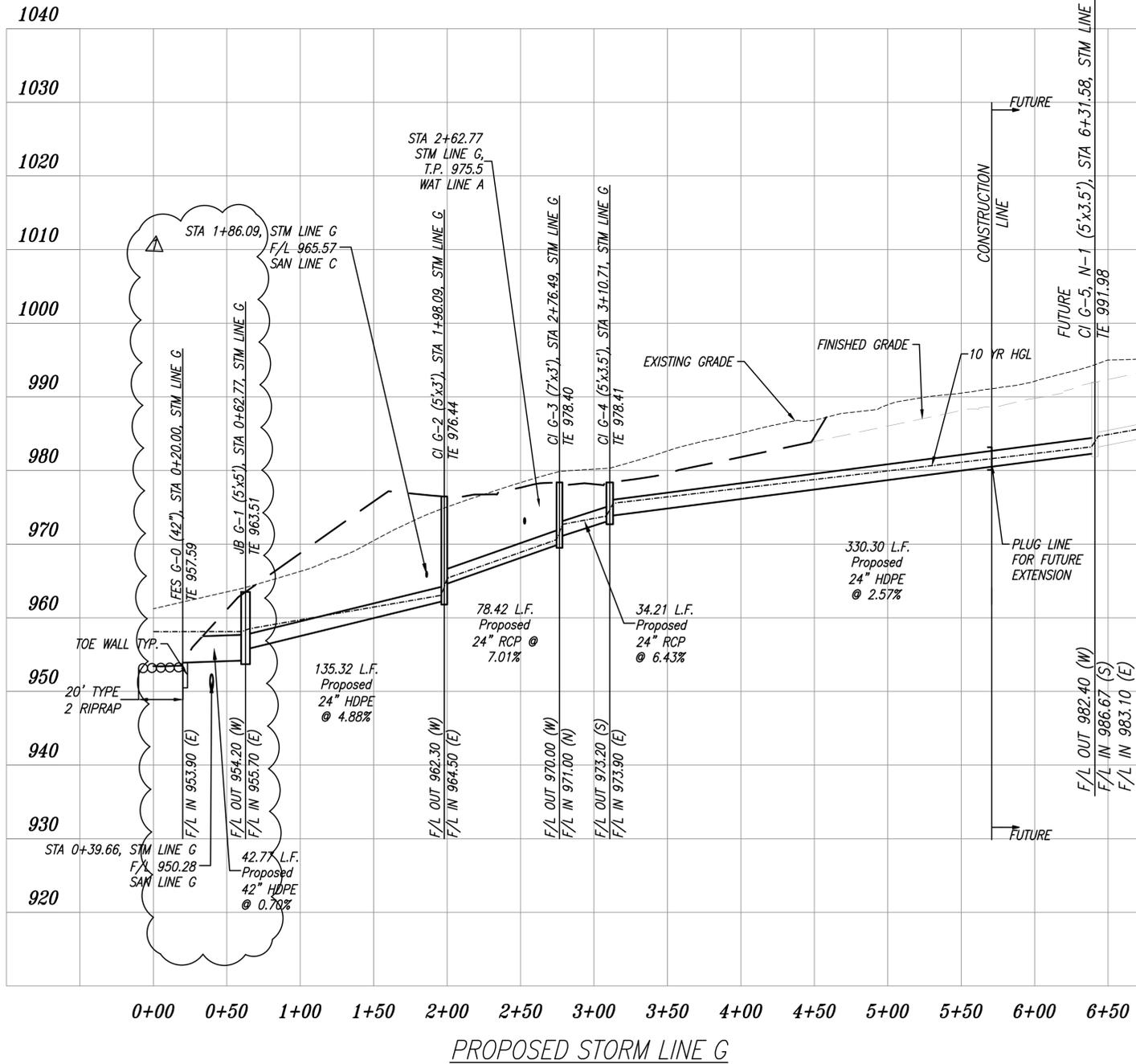
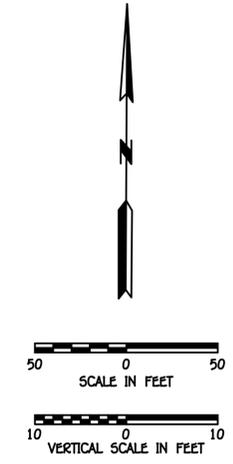
DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	

REVISION
 Δ REVISED ON 06-07-2018: ADDED FIELD INLET/STORM LINE H

THE SEALS AND SIGNATURES APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OF THE ENGINEERING OR SURVEYING PROJECT.



CONTRACTOR SHALL PLUG OR CAP END OF PIPE AND SECURE AS NECESSARY TO PROVIDE WATER TIGHT SEAL.
CONTRACTOR SHALL ALSO MARK LOCATION WITH 6' T-POST.

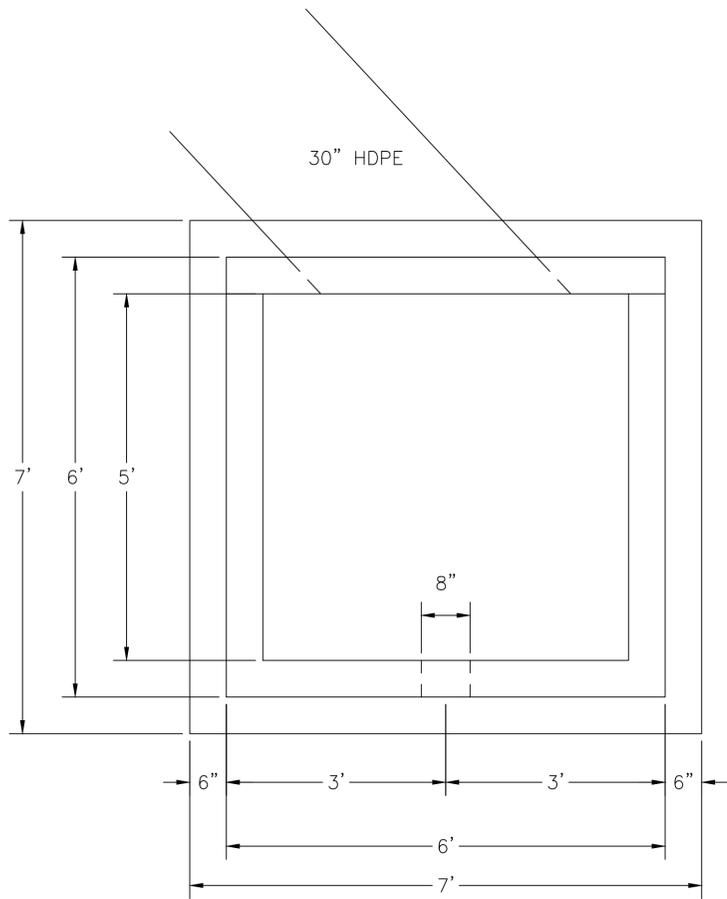


PHOENIX ENGINEERING & SURVEYING, LLC
3834 S. NORTHERN BLVD.
INDEPENDENCE, MO 64602
(816) 748-9000 FAX: (816) 743-9700
ENGINEERING CERTIFICATE NO: MO E-2000151302-D KS: E-853
SURVEYING CERTIFICATE NO: MO LS-2000151303-D KS: LS-138

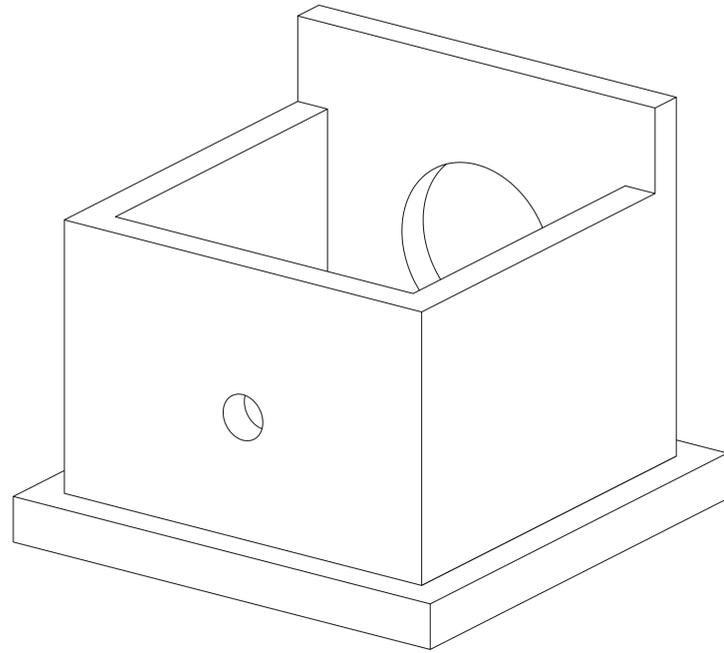
WHISPERING WOODS
LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
STORM PLAN & PROFILE

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	34

WATER QUALITY POND OUTFALL STRUCTURE DETAIL



TOP VIEW



ISOMETRIC VIEW

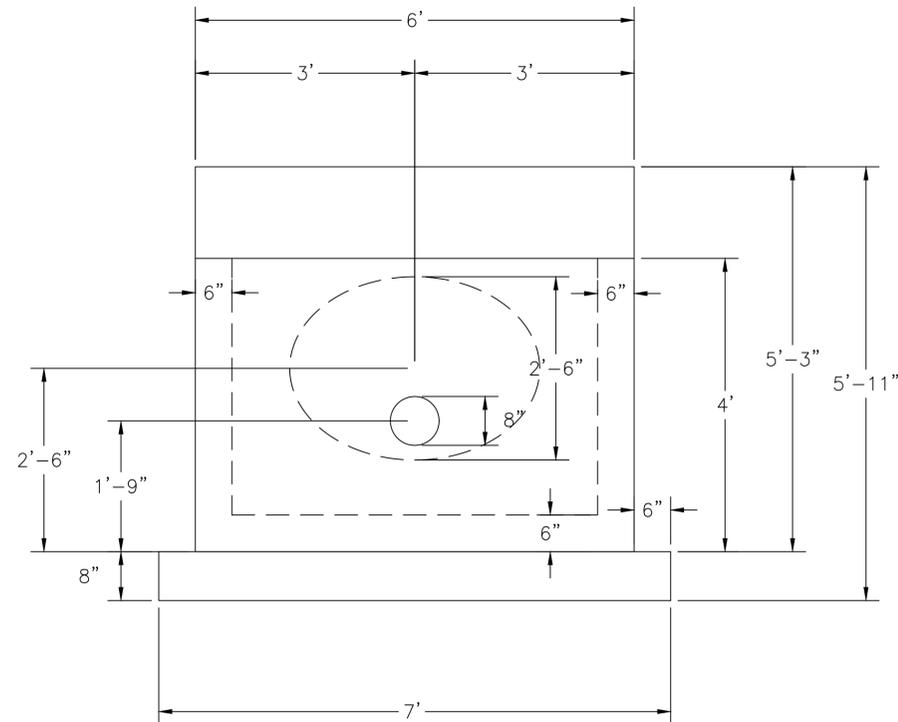
StormRax™ SLOPED ROOF STRUCTURE
PROVIDE ALL DIMENSIONS IN INCHES

Sloped Roof (SR)	66"	69"	15"	4"
	Length (A)	Width (B)	Height (C)	Height (D)

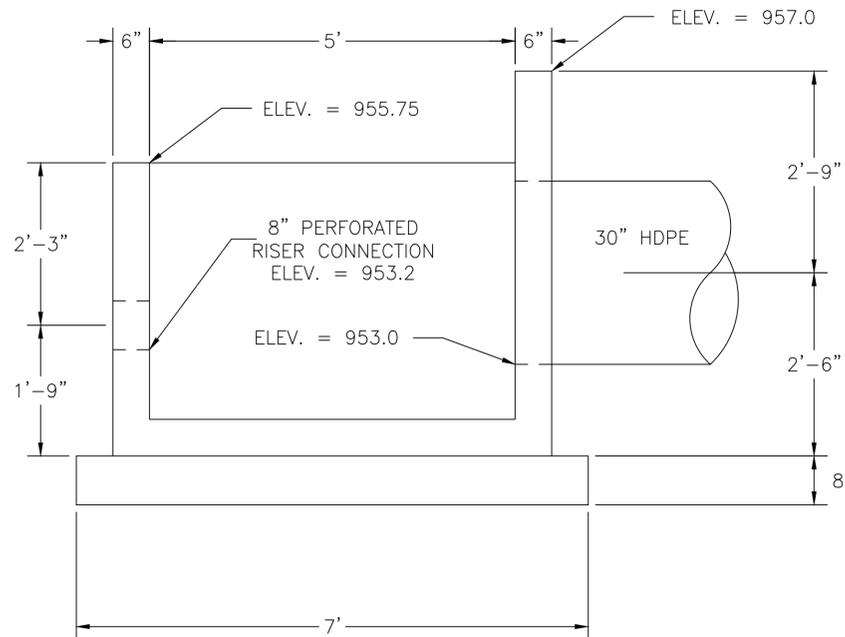
AVAILABLE OPTIONS
 "L" CHANNEL STEEL CROSS BRACING include
 REMOVABLE ACCESS HATCH include
 HDPE ANTI-VORTEX PLATE N/A

PLASTIC SOLUTIONS, INC.
 3835 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 748-9000 FAX: (816) 743-9700
 (572) 577-5727 phone
 (540) 722-2219 fax
 http://www.plastic-solution.com

CUSTOMER: _____ DATE: _____
 PROJECT: _____ DRAWN BY: _____
 APP'D BY: _____
 DETAIL: _____



FRONT VIEW



SIDE VIEW

NOTE

OUTLET STRUCTURE SHALL BE PRECAST IN NATURE. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR APPROVAL PRIOR TO MANUFACTURING.

REVISION

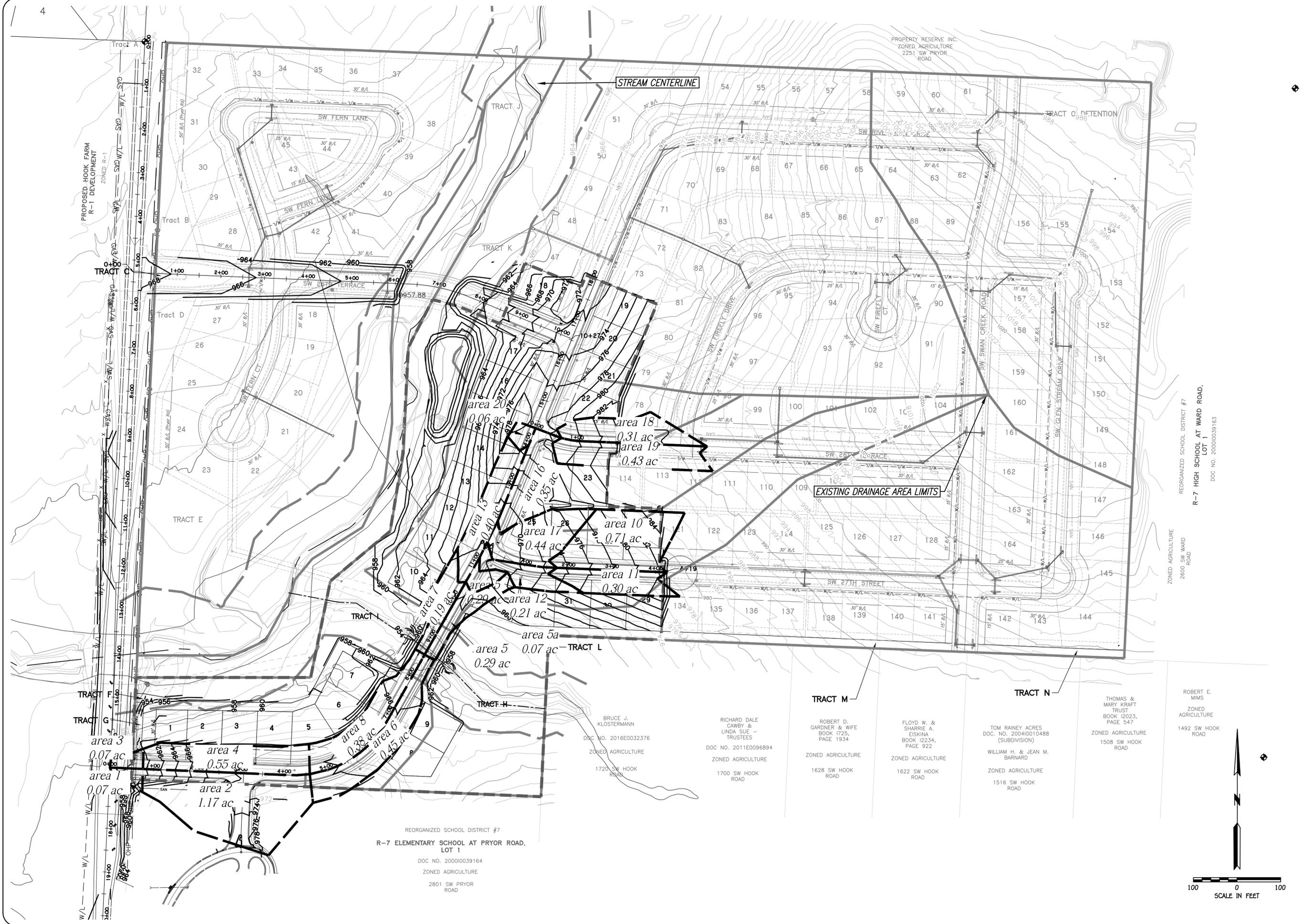
ENGINEER'S SEAL

PHOENIX ENGINEERING & SURVEYING, LLC

3835 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 748-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO: MO E-2000151302-D KS: E-853
 SURVEYING CERTIFICATE NO: MO LS-2000151303-D KS: LS-138

WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
 STREET & STORM SEWER PLANS
 POND OUTFLET DETAIL

DESIGNED: BLG
 DRAWN: BLG
 SCALE: Noted
 DATE: 09-01-2017
 JOB NO: 04078
 SHEET



REORGANIZED SCHOOL DISTRICT #7
R-7 ELEMENTARY SCHOOL AT PRYOR ROAD,
LOT 1
DOC NO. 200010039164
ZONED AGRICULTURE
2801 SW PRYOR ROAD

BRUCE J. KLOSTERMANN
DOC NO. 2016E0032376
ZONED AGRICULTURE
1720 SW HOOK ROAD

RICHARD DALE CAWBY & LINDA SUE - TRUSTEES
DOC NO. 2011E0096894
ZONED AGRICULTURE
1700 SW HOOK ROAD

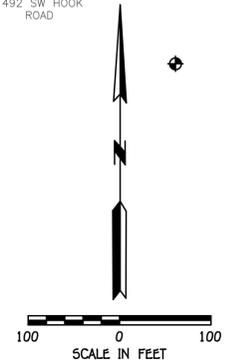
ROBERT D. GARDNER & WIFE
DOC NO. 2011E0096894
ZONED AGRICULTURE
1628 SW HOOK ROAD

FLOYD W. & SHARRIE A. EISKINA
DOC NO. 2004I0010488 (SUBDIVISION)
ZONED AGRICULTURE
1622 SW HOOK ROAD

TOM RAINEY ACRES
DOC NO. 2004I0010488 (SUBDIVISION)
ZONED AGRICULTURE
1516 SW HOOK ROAD

THOMAS & MARY KRAFT TRUST
BOOK 12023, PAGE 547
ZONED AGRICULTURE
1508 SW HOOK ROAD

ROBERT E. WIMS
ZONED AGRICULTURE
1492 SW HOOK ROAD



WHISPERING WOODS

LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
DRAINAGE AREAS



PHOENIX ENGINEERING & SURVEYING, LLC
3639 S. NORTHERN BLVD.
INDEPENDENCE, MO 64602
(816) 749-9000 FAX: (816) 743-9700
ENGINEERING CERTIFICATE NO.: MO E-2000151302-D
SURVEYING CERTIFICATE NO.: MO LS-2000151303-D

THE SEALS AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

REVISION

DESIGNED
DRAWN
BLG
SCALE
Noted
DATE
09-01-2017
JOB NO.
04078
SHEET

H:\projects\2004\040782 - Whispering Woods Phase 1\dwg\04078 - Street & Storm Plans - Storm SHEETSgood.dwg DATE PLOTTED: 6/13/2018 3:14 PM ; LAST SAVE DATE: 6/13/2018 2:20 PM

STRUCTURES		RUNOFF CALCULATIONS										PIPE DESIGN															Comments					
FROM	TO	DIRECT AREA (ACRES)	TOTAL AREA (ACRES)	C	KC (K=1.0)	Tc (MIN)	FLOW TIME (MIN)	INTENSITY (IN/HR)	DESIGN Q (CFS)	DESCRIPTION	PIPE LENGTH (L.F.)	PIPE SLOPE (%)	PIPE DIA (IN)	Q FULL (CFS)	PIPE AREA (SQ.FT.)	V FULL (F/S)	DESIGN V (F/S)	HwD	MH TOP ELEVATION	UPSTREAM FLOWLINE	DOWNSTREAM FLOWLINE	DOWNSTREAM WATER ELEVATION	FRICITION HEAD (H F)	ENTRY LOSS COEFFICIENT (K)	ACTUAL ENTRY LOSS (K)	ENTRY LOSS (H M)		h f + h m (FT)	HGL Pipe U/S	HW, INLET CONTROL	HW, OUTLET CONTROL	HYDRAULIC GRADE ELEV.
H-2	C-8, D-1, H-1	1.53	1.53	0.66	0.66	5.00	0.24	7.35	7.43	Field Inlet	127.25	2.44	24	46.06	3.14	14.66	8.91	0.80	984.57	979.6	976.50	977.84	0.08	0.40	1.00	1.23	1.32	980.22	981.19	979.60	981.19	983.07
D-2	C-8, D-1, H-1	0.42	0.42	0.66	0.66	5.00	0.10	7.35	2.04	Curb Inlet	34.75	2.01	18	19.43	1.77	11.00	5.92	0.72	981.96	978.00	977.30	977.84	0.01	0.40	1.00	0.54	0.55	978.37	979.09	978.39	979.09	980.46
E-2	C-7, E-1	0.53	0.53	0.66	0.66	5.00	0.34	7.35	2.57	Curb Inlet	127.25	2.00	18	19.39	1.77	10.97	6.32	0.73	975.39	970.25	967.70	968.12	0.05	0.40	1.00	0.62	0.67	970.67	971.34	970.25	971.34	973.89
F-2	C-5, F-1	0.35	0.35	0.66	0.66	5.00	0.43	7.35	1.70	Curb Inlet	97.55	1.59	18	17.27	1.77	9.77	3.80	0.69	968.62	964.20	962.65	963.10	0.02	0.40	1.00	0.22	0.24	964.65	965.24	964.20	965.24	967.12
C-8, D-1, H-1	C-7, E-1	1.12	7.21	0.66	0.66	5.00	0.27	7.35	5.44	Curb Inlet	250.68	3.99	36	173.67	7.07	24.57	15.52	0.95	982.09	975.00	965.00	967.62	0.35	0.40	0.40	1.50	1.84	976.00	977.84	975.00	977.84	980.59
C-7, E-1	C-6	0.71	8.45	0.66	0.66	7.05	0.03	6.77	3.22	36" RCP	35.75	6.15	36	215.61	7.07	30.50	18.91	1.04	972.61	964.50	962.30	965.20	0.07	0.40	0.40	2.22	2.29	965.47	967.62	967.49	967.62	971.11
C-6	C-5, F-1	0.30	8.75	0.66	0.66	7.31	0.18	6.77	3.85	36" RCP	156.68	2.87	36	147.29	7.07	20.84	14.48	1.07	972.62	962.00	957.50	960.14	0.31	0.40	0.40	1.30	1.62	963.21	965.20	962.00	965.20	971.12
C-5, F-1	C-4	0.21	9.31	0.66	0.66	7.53	0.09	6.65	1.02	Curb Inlet	45.52	0.66	42	106.54	9.62	11.07	8.49	0.88	967.49	957.00	956.70	959.64	0.04	0.40	0.40	0.45	0.49	959.69	960.06	960.14	960.14	965.99
C-4	C-3	0.40	9.71	0.66	0.66	5.00	0.07	6.65	1.94	Curb Inlet	35.25	0.57	42	99.01	9.62	10.29	8.12	0.89	966.75	956.50	956.30	959.20	0.04	0.40	0.40	0.41	0.45	959.23	959.63	959.64	959.64	965.25
C-3	C-2	0.40	10.11	0.66	0.66	7.02	0.33	6.62	1.94	Curb Inlet	157.63	0.51	48	133.72	12.57	10.64	7.86	0.79	966.75	955.80	955.00	958.72	0.09	0.40	0.40	0.38	0.47	958.81	958.97	959.20	959.20	965.25
C-2	C-1	0.00	10.11	0.66	0.66	5.00	0.63	6.54	0.00	Curb Inlet	284.05	0.46	48	126.87	12.57	10.10	7.56	0.79	962.07	954.80	953.50	958.12	0.16	0.50	0.50	0.44	0.60	958.28	957.97	958.72	958.72	960.57
G-5, N-1	G-4	0.36	3.14	0.66	0.66	5.00	0.51	7.35	1.75	Curb Inlet	330.30	2.57	24	47.30	3.14	15.06	10.88	1.08	991.97	982.40	973.90	975.50	0.79	0.40	0.40	0.73	1.53	983.27	984.57	982.40	984.57	990.47
G-4	G-3	0.31	3.45	0.66	0.66	5.00	0.04	6.78	14.34	24" HDPE	34.21	6.43	24	74.78	3.14	23.80	15.49	1.15	978.42	973.20	971.00	972.62	0.10	0.40	0.40	1.49	1.59	973.91	975.50	974.20	975.50	976.92
G-3	G-2	0.53	3.98	0.66	0.66	7.00	0.08	6.77	15.45	24" HDPE	78.42	7.01	24	78.07	3.14	24.85	16.63	1.31	978.40	970.00	964.50	965.25	0.29	0.40	0.40	1.72	2.01	970.75	972.62	970.00	972.62	976.90
G-2	G-1	0.06	4.04	0.66	0.66	5.00	0.15	6.75	18.01	24" RCP	135.32	4.88	24	65.12	3.14	20.73	14.61	1.32	976.43	962.30	955.70	958.43	0.51	0.40	0.40	1.33	1.84	963.13	964.95	962.30	964.95	974.93
G-1	G-0	0.00	4.04	0.66	0.66	5.00	0.10	6.71	18.01	Junction Box	42.50	0.70	42	109.84	9.62	11.42	6.97	0.71	976.43	954.20	953.90	958.12	0.01	0.40	0.40	0.30	0.31	958.13	956.68	958.43	958.43	974.93
A-3	A-2	1.24	1.86	0.66	0.66	5.00	0.15	7.35	6.02	Curb Inlet	43.00	0.50	24	20.85	3.14	6.64	4.73	0.74	959.64	953.30	953.09	954.31	0.02	0.40	1.00	0.35	0.37	954.33	954.79	954.68	954.79	958.14
A-2	A-1	0.62	1.86	0.66	0.66	5.00	0.13	7.31	8.97	24" HDPE	42.20	0.50	24	20.85	3.14	6.64	5.24	0.83	959.50	952.65	952.44	953.51	0.04	0.40	0.40	0.17	0.21	953.55	954.31	953.72	954.31	958.00
A1-2	A1-1	0.50	0.50	0.66	0.66	5.00	0.28	7.35	2.43	FES	106.90	2.08	18	19.75	1.77	11.17	6.28	0.72	956.45	954.66	952.44	953.38	0.03	0.40	1.00	0.61	0.65	955.07	955.74	954.66	955.74	954.95

Date: 06/13/2018

Slope #	Inlet	Area Number	Area (Acres)	Street Slope (ft/ft)	Max Gutter Flow	Gutter Flow, cfs (+bypass)		Cross Slope (%)	Gutter Spread (ft)		Inlet Length (ft)	Curb Type (A or B)	Inlet Intercept		Inlet Bypass	
						Q-10 yr	Q-100 yr		10 yr	100 yr			10-Year	100-Year	10-Year	100-Year
1	A-3 (W)	1	0.07	2.18	5.84	0.34	0.60	2	3.97	4.90	5	A	0.33	0.56	0.01	0.03
2	A-3 (E)	2	1.17	6.16	9.81	5.68	9.96	2	9.40	11.60	5	A	1.96	2.08	3.71	7.88
-	A-3 (low pt)	21	1.24	0	-	6.02	10.56	2	-	-	5	A	6.02	10.56	0.00	0.00
1	A-2 (W)	3	0.07	2.18	5.84	0.34	0.60	2	3.97	4.90	5	A	0.33	0.56	0.01	0.03
2	A-2 (E)	4	0.55	6.16	9.81	2.67	4.68	2	7.08	8.74	5	A	1.52	1.88	1.15	2.80
-	A-2 (low pt)	22	0.62	0	-	3.01	5.28	2	-	-	5	A	3.01	5.28	0.00	0.00
4	B-2 (N)	5	0.29	1.84	5.36	1.67	4.26	2	7.44	10.58	5	A	1.43	2.87	0.24	1.39
3	B-2 (S)	6	0.45	3.64	7.54	2.18	3.83	2	7.25	8.95	5	A	1.57	2.19	0.61	1.64
-	B-2 (low pt)	23	0.74	0	-	3.85	8.09	2	-	-	5	A	3.85	8.09	0.00	0.00
4	B-1 (N)	7	0.19	1.84	5.36	2.29	6.13	2	8.38	12.13	5	A	1.85	3.52	0.44	2.61
3	B-1 (S)	8	0.38	3.64	7.54	1.84	3.24	2	6.80	8.40	5	A	1.40	2.01	0.45	1.23
-	B-1 (low pt)	24	0.57	0	-	4.13	9.36	2	-	-	5	A	4.13	9.36	0.00	0.00
8	C-7, D-1	9	1.12	3.78	7.68	6.94	13.43	2	11.10	14.22	5	A	2.68	2.93	4.25	10.50
8	C-6, E-1	10	0.71	3.78	7.68	7.70	16.55	2	11.54	15.38	5	A	2.75	2.95	4.95	13.60
8	C-5	11	0.30	3.78	7.68	3.05	6.79	2	8.16	11.01	5	A	1.92	2.67	1.13	4.12
5	C-4, F-1	12	0.21	1	3.95	2.15	5.91	2	9.18	13.42	5	A	1.89	4.13	0.26	1.79
4	C-3	13	0.40	1.84	5.36	4.21	8.57	2	10.54	13.75	5	A	2.85	4.06	1.36	4.51
8	D-2	14	0.71	3.78	7.68	3.73	6.92	2	8.79	11.09	5	A	2.13	2.68	1.60	4.24
6	F-2 (N)	16	0.46	5.62	9.37	2.23	3.92	2	6.74	8.32	5	A	1.42	1.86	0.81	2.06
5	F-2 (S)	17	0.44	1	3.95	2.14	3.75	2	9.16	11.31	5	A	1.88	2.98	0.26	0.77
-	F-2 (low pt)	25	0.90	0	-	4.37	7.66	2	-	-	5	A	4.37	7.66	0.00	0.00
15	G-4	18	0.31	2	5.59	1.95	3.86	2	7.78	10.04	5	A	1.61	2.64	0.34	1.22
15	G-3	19	0.43	2	5.59	2.21	4.03	2	8.14	10.21	5	A	1.77	2.71	0.44	1.32
6	G-2	20	0.86	5.62	9.37	4.17	7.32	2	8.52	10.52	5	A	1.90	2.16	2.27	5.17

	Conduit Height ft	100-yr Flow cfs	Tailwater Depth ft	100-yr Velocity fps	Min D50 ft	Min D50 inch	Min Apron Length ft	Actual Apron Length ft
SW River Run RCBC	6	595.61	5.97	12.41	1.52	18.26	42	42
Storm Line C	4	62.3	0	8.43	0.48	5.76	16	20
Storm Line G	3.5	25.36	0	7.66	0.20	2.37	14	20
Storm Line A	2	12.6	0	6.15	0.29	3.45	8	30*
Storm Line A1	1.5	3.14	0	6.92	0.09	1.06	6	20**

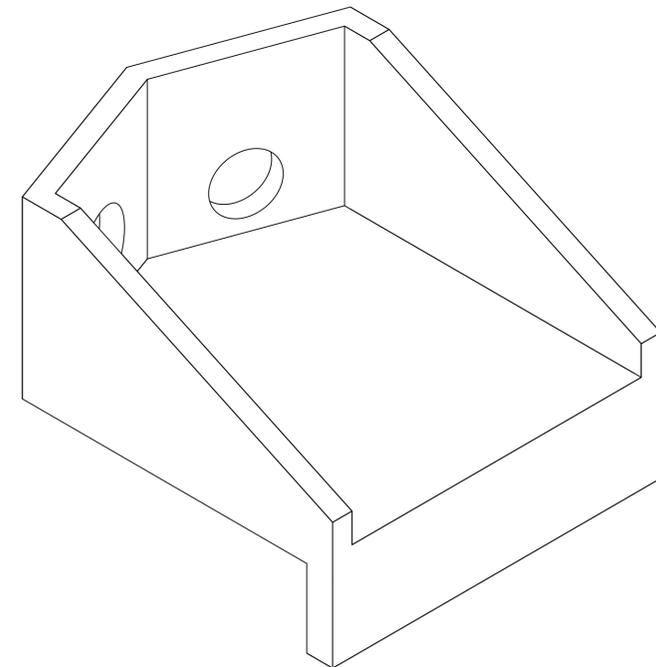
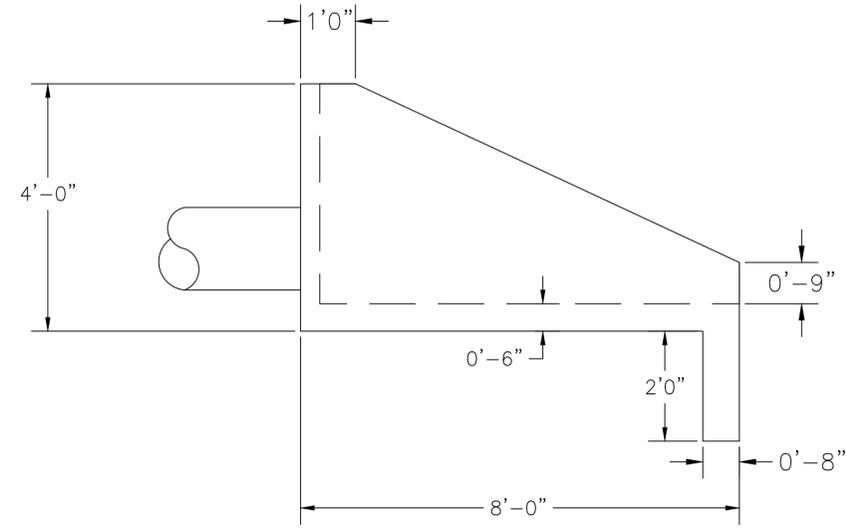
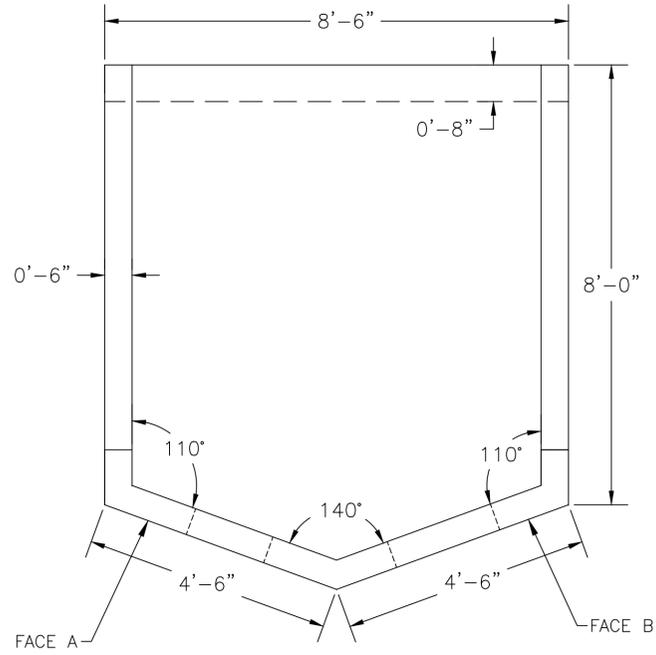
* 30 ft apron length at combined ES A-1

** 20 ft apron length at FES A1-2

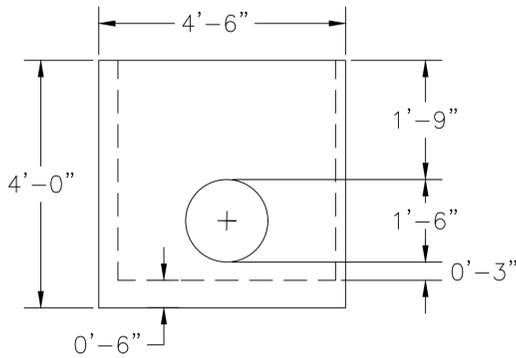
Rip Rap Sizing (Chapter 10 & Appendix D, HEC 14; Fletcher and Grace (1972))

$$D_{50} = 0.020D \$$

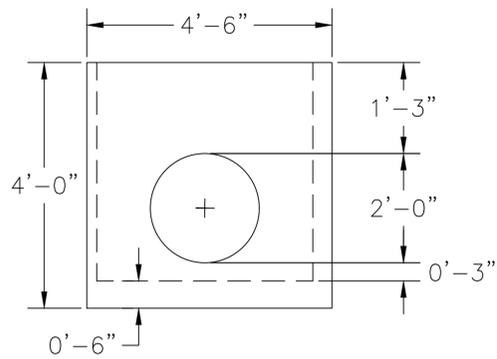
END SECTION DETAILS – STORM LINE A & STORM LINE A1



FACE A – 18" RCP (STM LINE A1)



FACE B – 24" HDPE (STM LINE A)



REVISION



THE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED. AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

AS AGENT OF
PHOENIX ENGINEERING
& SURVEYING, LLC

**PHOENIX ENGINEERING
& SURVEYING, LLC**

3835 S. NORTHERN BLVD.
INDEPENDENCE, MO 64602
(816) 748-9000 FAX: (816) 743-9700
ENGINEERING CERTIFICATE NO: MO E-2000151302-D KS: E-853
SURVEYING CERTIFICATE NO: MO LS-2000151303-D KS: LS-138

WHISPERING WOODS
LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
STRUCTURE DETAILS

DESIGNED
BLG
DRAWN
BLG
SCALE
Noted
DATE
09-01-2017
JOB NO.
04078
SHEET

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

FLARED END SECTION SUPPORT DETAIL

STM-5

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

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

STORM MANHOLE COVER DETAIL

STM-6

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

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

VALLEY GUTTER DETAIL

GEN-7

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

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

STORM MANHOLE FRAME DETAIL

STM-7

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

REVISION



PHOENIX ENGINEERING & SURVEYING, LLC
3835 S. NORTHERN BLVD.
INDEPENDENCE, MO 64602
(816) 748-9000 FAX: (816) 743-9700
ENGINEERING CERTIFICATE NO.: MO E-2000151302-D
SURVEYING CERTIFICATE NO.: MO LS-2000151303-D

WHISPERING WOODS
LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
STREET & STORM DETAILS

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	31 OF 34

THE SEALS AND SIGNATURES APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED. AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

AS AGENT OF
PHOENIX ENGINEERING & SURVEYING, LLC
KS: E-853
KS: LS-138

GENERAL NOTES:

- 3/4" Isolation Joints with 5/8" dia. x 2" 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.
- 1" deep Contraction Joints shall be installed at approximately 10' intervals. These joints shall pass across the entire curb section.
- Fix dowel bars with bar supports.
- Depth of curb shall be a minimum of 8" through the handicap access ramp.
- Concrete shall conform to Standard Specifications Section 2208.2.B.
- Asphaltic concrete surface course shall conform to Standard Specifications Section 2205.2.

CURB REPLACEMENT DETAIL

Aggregate leveling courses, if used, shall conform to Standard Specifications Section 2202. The top 6" of subgrade shall conform to Standard Specifications Section 2201.

2" Asphaltic Concrete Surface Course
Concrete Fill (Depth Varies, 6" Minimum)
Saw Cut to Rock Base or Subgrade
Existing Asphaltic Concrete
Varies 1'-0" to 2'-0"

AMERICAN PUBLIC WORKS ASSOCIATION
APWA KANSAS CITY METROPOLITAN CHAPTER
STANDARD DRAWING NUMBER C-1
ADOPTED MAY 23, 2001

GENERAL NOTES:

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

STEEL FRAME NOTES:

- ALL WELDS SHALL BE PERFORMED IN ACCORDANCE WITH APPROPRIATE AWS SPECIFICATIONS AND PROCEDURES.
- ALL WELDS ON EXPOSED SURFACES SHALL BE DRESSED SO AS TO PROVIDE A PLEASING FINISHED APPEARANCE.
- THE ENTIRE FRAME SHALL BE PAINTED A SINGLE COAT OF CHEM-PRIME #37H-7B PRIMER (GRAY) OR EQUAL.

GENERAL NOTES:

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

REINFORCING

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

GENERAL NOTES:

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

LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 2202 SE GREEN STREET | LEE'S SUMMIT, MO 64083

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

Drawn By: MJP
Checked By: DS
Date: 04/17
Proj. #

STM-2

LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 2202 SE GREEN STREET | LEE'S SUMMIT, MO 64083

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

Drawn By: MJP
Checked By: DS
Date: 04/17
Proj. #

STM-3

DESIGNED
BLG
DRAWN
BLG
SCALE
Noted
DATE
09-01-2017
JOB NO.
04078
SHEET

32 OF 34

PHOENIX ENGINEERING & SURVEYING, LLC
3835 S. NORTHERN BLVD.
INDEPENDENCE, MO 64602
(816) 748-9000 FAX: (816) 743-9700
ENGINEERING CERTIFICATE NO: MO E-2000151302-D
SURVEYING CERTIFICATE NO: MO LS-2000151303-D

BRIAN L. GLENN
Professional Engineer
No. 2010011667
06-13-2018

AS AGENT OF
PHOENIX ENGINEERING & SURVEYING, LLC

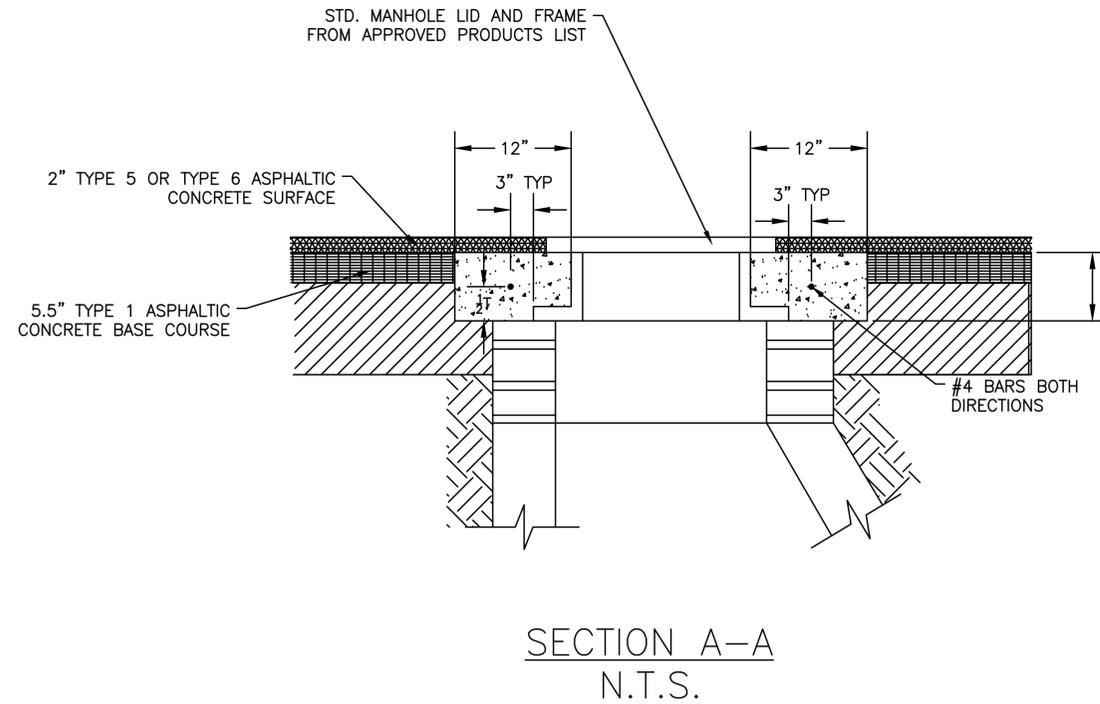
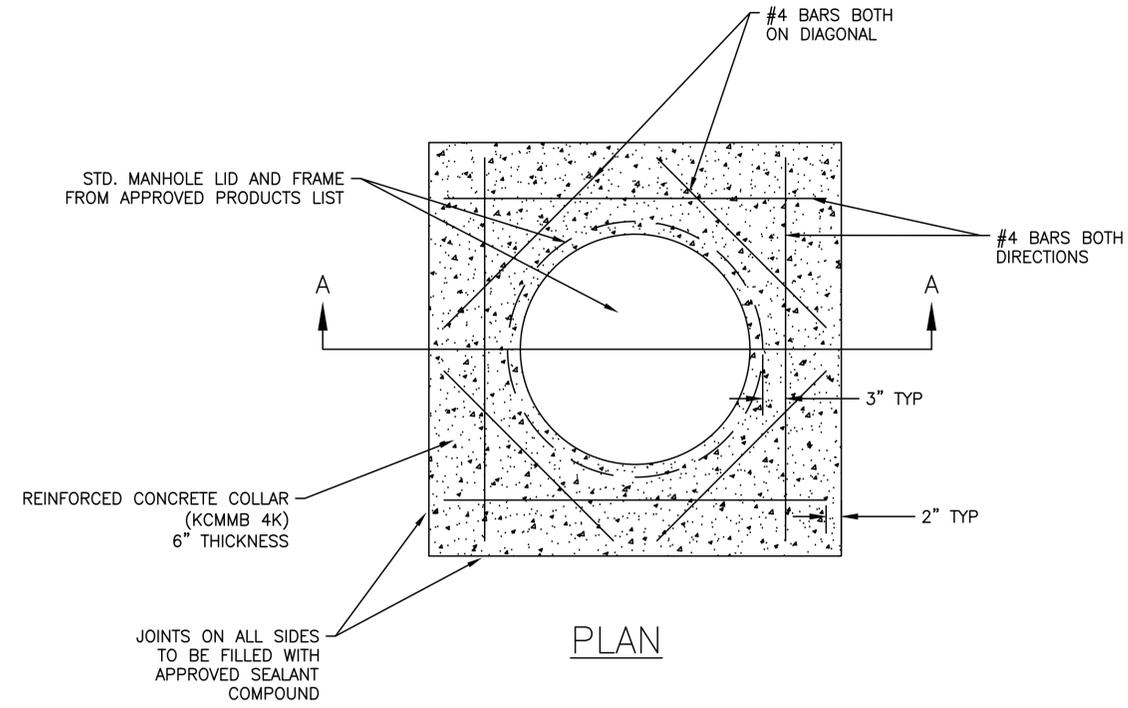
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 2202 SE GREEN STREET | LEE'S SUMMIT, MO 64083

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

Drawn By: MJP
Checked By: DS
Date: 04/17
Proj. #

STM-1

THE SEALS AND SIGNATURES APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED. ANY EXPRESS OR IMPLIED LIABILITY FOR ANY OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTERFERING WITH THIS PROJECT SHALL BE THE RESPONSIBILITY OF THE ENGINEER OR SURVEYING PROJECT.



CONCRETE MANHOLE COLLAR
FOR USE WITH MANHOLES WITHIN PAVEMENT

- GENERAL NOTES
1. ADJUST MANHOLE FRAME AND COVER TO FINISH GRADE AND SLOPE WITH CONNCRETE ADJUSTMENT RINGS AND LEVELING MORTAR AS NECESSARY
 2. THE ORIENTATION OF THE REINFORCED CONCRETE COLLAR SHALL BE DETERMINED BY THE ENGINEER OR INSPECTOR IN THE FIELD.

REVISION

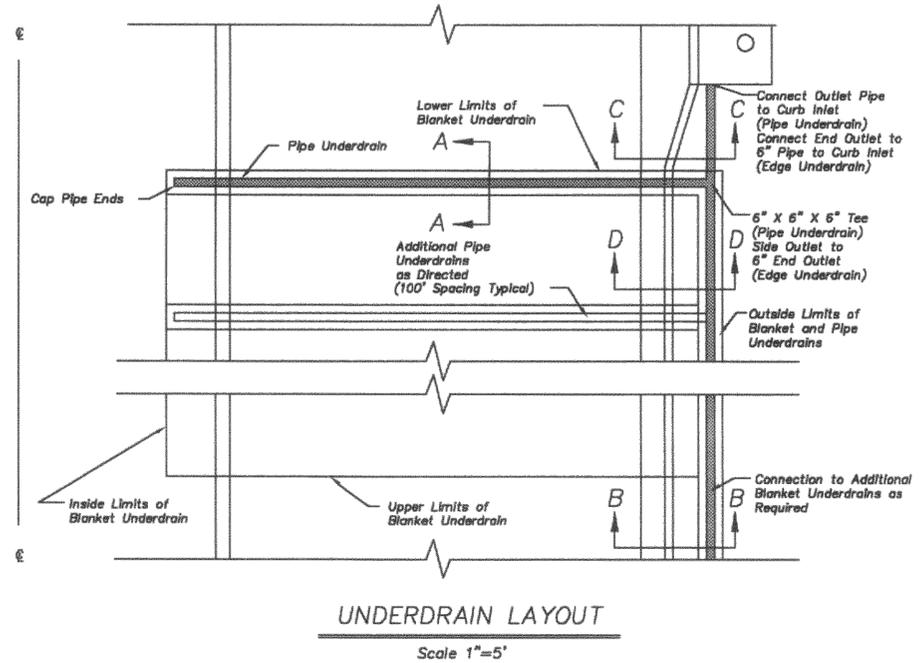
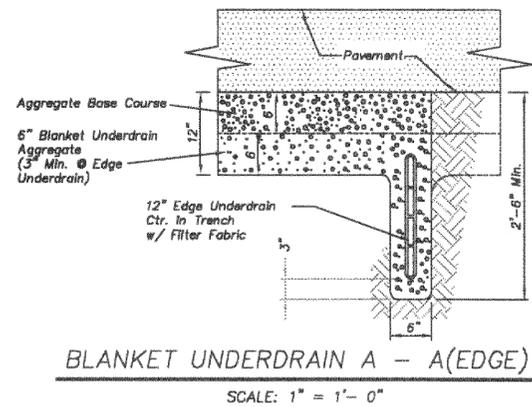
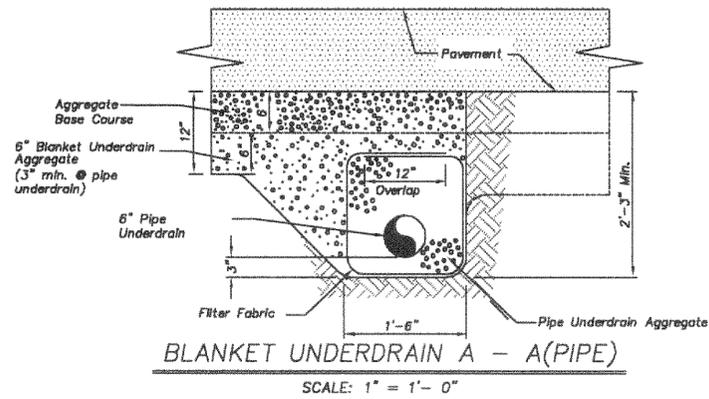


THE SEAL(S) AND SIGNATURE(S) APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

PHOENIX ENGINEERING & SURVEYING, LLC
 3834 S. NORTHERN BLVD.
 INDEPENDENCE, MO 64602
 (816) 748-9000 FAX: (816) 743-9700
 ENGINEERING CERTIFICATE NO: MO E-2000151302-D KS: E-853
 SURVEYING CERTIFICATE NO: MO LS-2000151303-D KS: LS-138

WHISPERING WOODS
 LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
MANHOLE DETAIL

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	



Underdrain Notes:

- All roadway excavation in rock will be undercut no less than 15" for the full width of the roadway as shown.
- In areas where underdrains are not required, undercut and overbreakage in limestone and shale shall be brought to within 6" of the subgrade line with properly compacted crushed stone, shot rock, and/or rock rubblis. The remaining 6" shall conform to Standard Specifications Section 2202.
- Layers of earth or shale shall not be permitted for backfill up to the bottom of the crushed stone.
- A minimum of 12" of select soil (topsoil) shall be placed on exposed rock cut or fill slopes outside the limits of the roadway. All rock and shale slopes shall be benched @ maximum 2' vertical intervals prior to placement of select soil.
- Proposed underdrain pipe layout, flowline elevations, inlet connection points, and details shall be approved prior to construction by the City Engineer.
- Where pipe underdrains are used, all underdrain outlet pipes shall be solid wall with watertight joints. All outlet pipes shall be tied into the nearest storm sewer inlet as approved. Where edge underdrains are used, all underdrain outlet pipes shall be solid wall with manufacturer joints approved by the City Engineer. All connections between pipes and edge connectors or curb inlets shall be made with 2' minimum length of pipe.
- All underdrain pipes shall be installed at a minimum slope of 1%. Underdrain pipe shall be installed with the perforations placed down.
- Blanket underdrains shall be placed on bedrock unless otherwise directed by the City Engineer. Undercut and overbreakage in limestone and shale shall be brought to within 12" of the subgrade line with properly compacted crushed stone, shot rock and/or rock rubble.
- All filter fabric used for pipe underdrain construction shall conform to Standard Specifications Section 2203.6.
- The Contractor may, at his option, use either pipe underdrain or edge underdrain, but shall not mix underdrain types within any underdrain system.
- All edge underdrain shall be held in the center of the trench by mechanical methods while placing granular backfill. See detail this sheet. Alternate methods may be used with prior approval by the City Engineer.
- Blanket underdrain aggregate, pipe underdrain aggregate, pipe underdrain, edge underdrain and outlet pipe shall conform to Standard Specifications Section 2203.6

AMERICAN PUBLIC WORKS ASSOCIATION	
	KANSAS CITY METROPOLITAN CHAPTER
UNDERDRAIN DETAILS	STANDARD DRAWING UD-1
	ADOPTED: MAY 23, 2001

WHISPERING WOODS
LEE'S SUMMIT, JACKSON COUNTY, MO
STREET & STORM SEWER PLANS
UNDERDRAIN DETAILS

DESIGNED	BLG
DRAWN	BLG
SCALE	Noted
DATE	09-01-2017
JOB NO.	04078
SHEET	34

REVISION



PHOENIX ENGINEERING & SURVEYING, LLC
3834 S. NORTHERN BLVD.
INDEPENDENCE, MO 64602
(816) 748-9000 FAX: (816) 748-9700
ENGINEERING CERTIFICATE NO: MO E-2000151302-D
SURVEYING CERTIFICATE NO: MO LS-2000151303-D

THE SEALS AND SIGNATURES APPLY ONLY TO THE DOCUMENT TO WHICH THEY ARE AFFIXED, AND EXPRESSLY DISCLAIM ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE ENGINEERING OR SURVEYING PROJECT.

BRIAN L. GLENN
REGISTERED PROFESSIONAL ENGINEER
AS AGENT OF
PHOENIX ENGINEERING & SURVEYING, LLC
KS: E-853
KS: LS-138