WOODLAND OAKS

Lots 1 thru 42

STREET AND STORM SEWER CONSTRUCTION PLANS

Section 27, Township 48 North, Range 31 West

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

INDEX OF SHEETS:

CONSTRUCTION AND DESIGN NOTES:

STREET & STORM SEWERS:

1 ~ STREET PAVEMENT SHALL CONSIST OF TYPE CG-2 CURBS WITH PAVEMENT PER TABLE LS-2 OF THE LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL

RESIDENTIAL LOCAL STREET SEE BELOW FOR TYPICAL SECTION.
OPTION 1) 4" TYPE 5 ASPHALT BASE AND 2" TYPE 5 or 6 ASPHALT SURFACE OVER A 6" MoDOT TYPE 5 BASE AND A SUBGRADE MIXTURE OF 6" FLY ASH STABILIZED SUBGRADE IN ACCORDANCE WITH THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL.
OPTION 2) 4" TYPE 5 ASPHALT BASE AND 2" TYPE 5 or 6 ASPHALT SURFACE OVER 10" MoDOT TYPE 5 BASE OVERTOP A BIAXIAL GEOGRID MEETING THE REQUIREMENTS OF TABLE 2201.6-1

2 ~ STORM SEWER PIPE SHALL BE HIGH DENSITY POLYETHYLENE (HDPE) AS APPROVED BY CITY OF LEES SUMMIT DESIGN AND CONSTRUCTION MANUAL.

3 ~ JUNCTION BOXES SHALL BE PER CITY OF LEES SUMMIT STANDARD DRAWING NO. JB-1. FIELD INLETS SHALL BE PER CITY OF LEES SUMMIT STANDARD DRAWING FI-1. TOEWALLS SHALL BE PER CITY OF LEES SUMMIT DRAWING NO. SD-35. STORM MANHOLES SHALL BE PER CITY OF LEES SUMMIT DETAIL SD-27. ROCK LINING AND RIP RAP SHALL BE PER CITY OF LEES SUMMIT.

GENERAL NOTES:

1 ~ ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
2 ~ ALL REQUIRED EASEMENTS WITHIN THE BOUNDARY OF THIS PROJECT SHALL BE PROVIDED FOR ON THE FINAL PLAT.
3 ~ ANY REQUIRED EASEMENT LOCATED OUTSIDE OF THE BOUNDARY OF THIS PROJECT SHALL BE PROVIDED FOR BY SEPARATE INSTRUMENT PRIOR TO ISSUANCE OF CONSTRUCTION PERMITS.
4 ~ THE CONTRACTOR SHALL NOTIFY THE CITY OF LEE'S SUMMIT DEVELOPMENT ENGINEERING INSPECTION AT 816.969.1200 AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.
5 ~ THE CONTRACTOR SHALL NOTIFY ENGINEERING SOLUTIONS AT 816.623.9888 OF ANY CONFLICT WITH THE IMPROVEMENTS PROPOSED BY THESE PLANS AND SITE CONDITIONS.
6 ~ THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER AND OBTAIN THE APPROPRIATE BLASTING PERMITS FOR A REQUIRED BLASTING. IF BLASTING IS ALLOWED, ALL BLASTING SHALL CONFORM TO STATE REGULATIONS AND LOCAL ORDINANCES.

UTILITY COMPANIES:

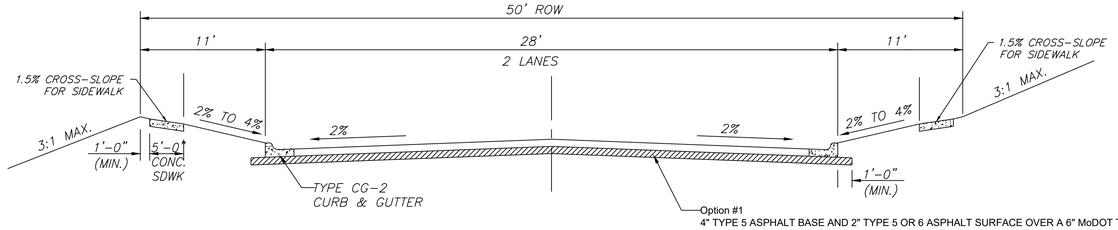
THE FOLLOWING LIST OF UTILITY COMPANIES IS PROVIDED FOR INFORMATION ONLY. WE DO NOT OFFER ANY GUARANTEE OR WARRANTY THAT THIS LIST IS COMPLETE OR ACCURATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES THAT MAY BE AFFECTED BY THE PROPOSED CONSTRUCTION AND VERIFYING THE ACTUAL LOCATION OF EACH UTILITY LINE. THE CONTRACTOR SHALL NOTIFY ENGINEERING SOLUTIONS AT 816.623.9888 OF ANY CONFLICT WITH PROPOSED IMPROVEMENTS.
EVERGY ~ 298-1196
MISSOURI GAS ENERGY ~ 756-5261
SOUTHWESTERN BELL TELEPHONE ~ 761-5011
COMCAST CABLE ~ 795-1100
WILLIAMS PIPELINE ~ 422-6300
CITY OF LEE'S SUMMIT PUBLIC WORKS ~ 969-1800
CITY OF LEE'S SUMMIT PUBLIC WORKS INSPECTIONS ~ 969-1800
CITY OF LEE'S SUMMIT WATER UTILITIES ~ 969-1900
MISSOURI ONE CALL (DIG RITE) ~ 1-800-344-7483

OIL - GAS WELLS
ACCORDING TO EDWARD ALTON MAY JR'S ENVIRONMENTAL IMPACT STUDY OF ABANDONED OIL AND GAS WELLS IN LEE'S SUMMIT, MISSOURI IN 1995, THERE ARE NOT OIL AND GAS WELLS WITHIN 185 FEET OF THE PROPERTY AS SURVEYED HEREON.

FLOOD INFORMATION:
THE SUBJECT PROPERTY SURVEYED LIES WITHIN A FLOOD ZONE DESIGNATED ZONE (X), AREAS LOCATED OUTSIDE THE 100 YEAR FLOOD PLAIN, PER F.E.M.A. MAP, COMMUNITY PANEL NO. 29095C0416G EFFECTIVE DATE: JANUARY 20, 2017.

SITE LOCATION MAP

LEGEND:
B/L – BUILDING SET-BACK
C/A – COMMON AREA
D/E – DRAINAGE EASEMENT
FND. – FOUND
L/E – LANDSCAPE EASEMENT
L.N.A. – LIMITS OF NO ACCESS
R/W – RIGHT OF WAY
SAN – SANITARY SEWER LINE
S/W – SIDEWALK
U/E – UTILITY EASEMENT
W – WATER LINE
ST – STORM SEWER LINE



TYPICAL SECTION
(RESIDENTIAL STREET)

Option #1
4" TYPE 5 ASPHALT BASE AND 2" TYPE 5 OR 6 ASPHALT SURFACE OVER A 6" MoDOT TYPE 5 BASE AND A SUBGRADE MIXTURE OF 6" FLY ASH STABILIZED SUBGRADE IN ACCORDANCE WITH THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL.

Option #2
4" TYPE 5 ASPHALT BASE AND 2" TYPE 5 OR 6 ASPHALT SURFACE OVER 10" MoDOT TYPE 5 BASE OVERTOP A BIAXIAL GEOGRID MEETING THE REQUIREMENTS OF TABLE 2201.6-1

Summary of Quantities:

ITEM AND DESCRIPTION	UNIT	ESTIMATED QUANTITY
ASPHALT PAVING	S.Y.	7,187.12
CURBING	FT	4643.65
MoDOT Type 5 Base	S.Y.	7,689.66
GEOGRID	S.Y.	7,689.66
CLEARING, GRADING & GRUBBING	LS	1.00
SILT FENCE	FT	1,300.00
INLET PROTECTION	UNIT	81.00
SEEDING / MULCHING/ FERTILIZING	AC	19.51
CONST. ENTRANCE	UNIT	1.00
RIP RAP W/ FABRIC	S.Y.	57.33
STORM		
15" HDPE	FT	1,946.42
18" HDPE	FT	473.79
24" HDPE	FT	239.74
15" HDPE END SECTION / TOE WALL	LS	4.00
24" HDPE END SECTION / TOE WALL	LS	4.00
30" HDPE END SECTION / TOE WALL	LS	1.00
4' x 4' STORM FIELD INLET	EA	10.00
5' x 5' JUNCTION BOX	EA	2.00
5' x 4' STORM CURB INLET	EA	14.00
5' x 5' CONTROL STRUCTURE	EA	1.00
5' x 4' CONTROL STRUCTURE	EA	1.00

ENGINEER'S CERTIFICATION:

I HEREBY CERTIFY THAT THIS PROJECT HAS BEEN DESIGNED AND THESE PLANS PREPARED IN ACCORDANCE WITH THE CURRENT DESIGN CRITERIA OF THE CITY OF LEE'S SUMMIT, MISSOURI AND THE STATE OF MISSOURI. I FURTHER CERTIFY THAT THESE PLANS WERE DESIGNED IN ACCORDANCE TO AASHTO STANDARDS.

Street, Stormwater, Master Drainage Plan, and Erosion and Sediment Control

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Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

Part of the Southeast 1/4
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2021

Street & Storm Cover Sheet

Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS

C.001

North

0 30' 60' 120'

PRE CLEARING PLAN

SCALE: 1" = 60'

NOTES: The Land Disturbance Plans indicates the Final placement of erosion control devices. The contractor(s) may proceed with construction prior to the final placement of these devices by providing additional devices to control erosion on their items of work. These devices shall be maintained until the final devices are in place.

SF-1 SILT FENCE PROTECTION TO BE MAINTAINED BY CONTRACTOR

LEGEND

PHASE 1 SILT FENCE	SF-1 SF-1
PHASE 2 SILT FENCE	SF-2 SF-2
INLET PROTECTION	

DURING ALL PHASES OF CONSTRUCTION, INACTIVE AREA STABILIZATION METHODS AS DESCRIBED IN APWA SECTION 5111.3 SHALL BE USED TO CONTROL EROSION AND SILTATION.

Perimeter Silt Fence Must Be Installed Prior to Any Land Disturbance Activities Per APWA Detail ESC-11. (Typ.)

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Temporary Construction Entrance Must Be Installed Prior to Any Land Disturbance Activities Per APWA Detail ESC-01.

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Part of the Southeast 1/4
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2020

ESC PHASE 1 - Pre Clearing Plan

Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
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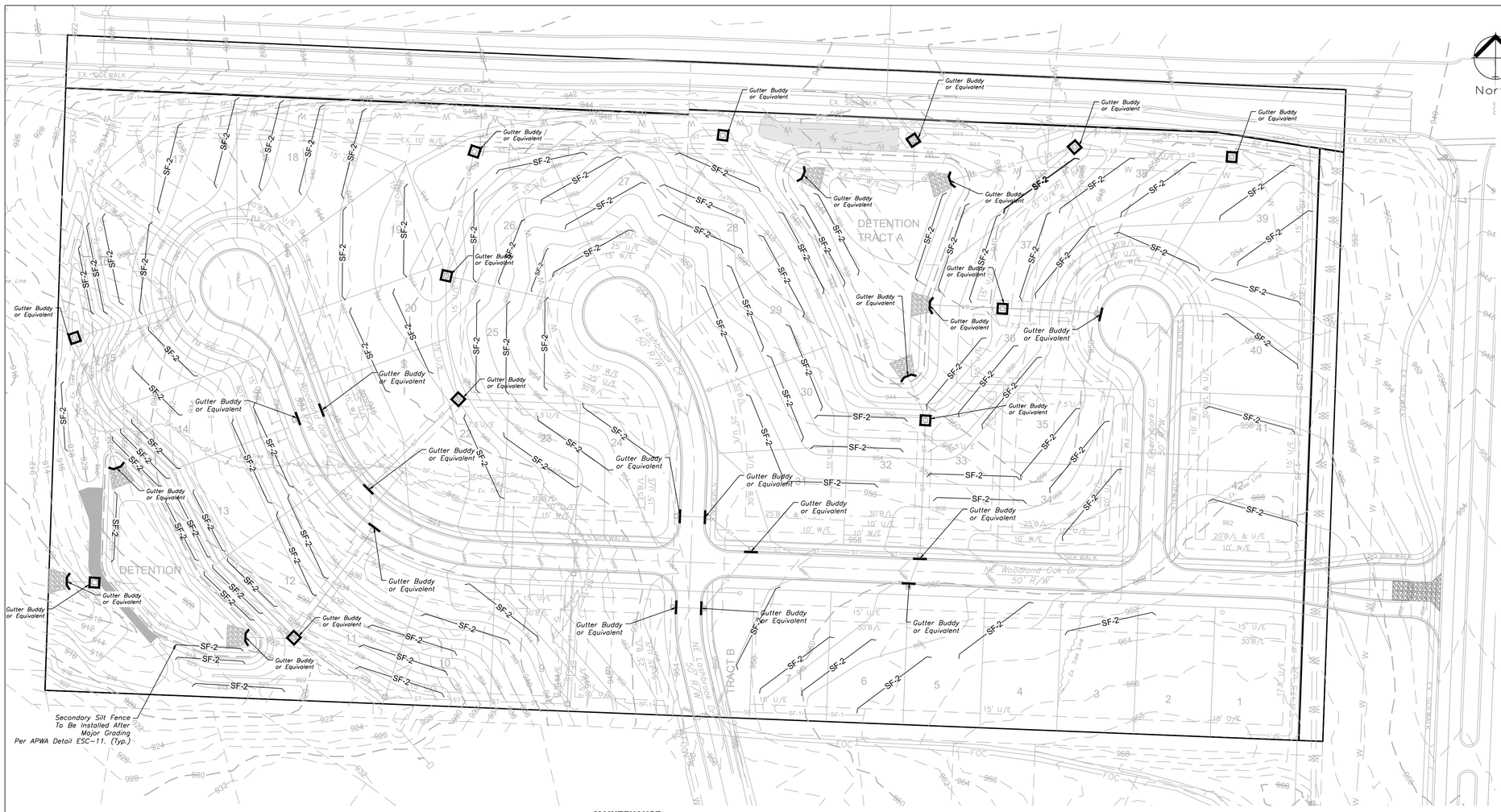
NE PE E-14335

REVISIONS



North

0 30' 60' 120'

INACTIVE AREA STABELIZATION PLAN

SCALE: 1" = 60'

NOTES: The Land Disturbance Plans indicates the Final placement of erosion control devices. The contractor(s) may proceed with construction prior to the final placement of these devices by providing additional devices to control erosion on their items of work. These devices shall be maintained until the final devices are in place.

SF-1

SILT FENCE PROTECTION TO BE MAINTAINED BY CONTRACTOR

LEGEND

PHASE 1 SILT FENCE ——SF-1——SF-1——

PHASE 2 SILT FENCE ——SF-2——SF-2——

INLET PROTECTION GUTTER BUDDY OR EQUIVALENT

DURING ALL PHASES OF CONSTRUCTION, INACTIVE AREA STABILIZATION METHODS AS DESCRIBED IN APWA SECTION 5111.3 SHALL BE USED TO CONTROL EROSION AND SILTATION.

MAINTENANCE:

TO MAINTAIN THE EROSION AND SEDIMENT CONTROLS, THE FOLLOWING PROCEDURES WILL BE PERFORMED:

SEDIMENT CAPTURE DEVICES: SEDIMENT WILL BE REMOVED FROM THE UPSTREAM OR UPSLOPE SIDE OF THE FILTER FABRIC FENCES, WHEN THE DEPTH OF ACCUMULATED SEDIMENT REACHES ABOUT ONE-THIRD THE HEIGHT OF THE STRUCTURE.

STORM SEWER INLETS: ANY SEDIMENT IN THE STORM SEWER INLETS WILL BE REMOVED AND DISPOSED OF PROPERLY.

TEMPORARY CONTROLS: ALL TEMPORARY CONTROLS WILL BE REMOVED AFTER THE DISTURBED AREAS HAVE BEEN STABILIZED.

INSPECTION PROCEDURES:

INSPECTIONS WILL BE DONE BY THE RESPONSIBLE PERSON(S) AT LEAST ONCE EVERY WEEK AND WITHIN 24 HOURS EACH STORM EVENT PRODUCING ANY AMOUNT OF RAINFALL. AREAS THAT HAVE BEEN RESEEDED WILL BE INSPECTED REGULARLY AFTER SEED GERMINATION TO ENSURE COMPLETE COVERAGE OF EXPOSED AREAS. DISTURBED AREAS THAT HAVE NOT BEEN FINALLY STABILIZED SHALL HAVE ALL POLLUTION CONTROL MEASURES INSPECTED FOR PROPER INSTALLATION, OPERATION AND MAINTENANCE. LOCATIONS WHERE STORM WATER LEAVES THE SITE SHALL BE INSPECTED FOR EVIDENCE OF EROSION OR SEDIMENT DEPOSITION. ANY DEFICIENCIES SHALL BE NOTED IN A REPORT OF THE INSPECTION AND CORRECTED WITHIN SEVEN CALENDAR DAYS OF THE INSPECTION. THE PERMITTEE SHALL PROMPTLY NOTIFY THE SITE CONTRACTORS RESPONSIBLE FOR OPERATION AND MAINTENANCE OF POLLUTION CONTROL DEVICES OF DEFICIENCIES.

IF THE EXISTING GROUND COVER IS NATURAL GRASS. DISTURBED AREAS SHALL BE TEMPORARILY SEEDED WITH WHEAT/RYE AT A RATE OF 1.5 POUNDS PER 1000 SQUARE FEET. PERMANENT SEEDING SHALL CONSIST OF 90% IN THREE EQUAL PARTS OF THIN BLADE, TURF-TYPE, TALL FESCUE AND 10% BLUEGRASS SEED AT A RATE OF 10 POUNDS PER 1000 SQUARE FEET. BOTH TEMPORARY AND PERMANENT SEEDED AREAS SHALL BE MULCHED AND WATERED TO MAINTAIN THE PROPER MOISTURE LEVEL OF THE SOIL TO ESTABLISH GRASS. NEW GRASS SHALL BE WATERED AND MAINTAINED UNTIL IT REACHES A HEIGHT OF 3 INCHES. ANY BARE AREAS SHALL BE RESEEDED.

ALL EROSION CONTROL DEVICES SHALL BE REMOVED BY GENERAL CONTRACTOR AFTER SITE STABILIZATION IS COMPLETE AND APPROVED BY ENGINEER.

THE DEVELOPER WILL DESIGNATE A QUALIFIED PERSON OR PERSONS TO PERFORM THE FOLLOWING INSPECTIONS:

STABILIZATION MEASURES: DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION WILL BE INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. AFTER A PORTION OF THE SITE IS FINALLY STABILIZED, INSPECTIONS WILL BE CONDUCTED AT LEAST ONCE EVERY MONTH THROUGHOUT THE LIFE OF THE PROJECT. CONTRACTOR CAN CONTACT ENGINEERING SOLUTIONS FOR COPIES OF THE INSPECTION FORM TO BE USED FOR STABILIZATION MEASURES.

STRUCTURAL CONTROLS: FILTER FABRIC FENCES AND ALL OTHER EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN WILL BE INSPECTED REGULARLY FOR PROPER POSITIONING, ANCHORING, AND EFFECTIVENESS IN TRAPPING SEDIMENTS. SEDIMENT WILL BE REMOVED FROM THE UPSTREAM OR UPSLOPE SIDE OF THE FILTER FABRIC. CONTRACTOR CAN CONTACT ENGINEERING SOLUTIONS FOR COPIES OF THE INSPECTION FORM TO BE USED FOR STABILIZATION MEASURES.

DISCHARGE POINTS: DISCHARGE POINTS OR LOCATIONS WILL BE INSPECTED TO DETERMINE WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT AMOUNTS OF POLLUTANTS FROM ENTERING RECEIVING WATERS.

CONSTRUCTION ENTRANCE: LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE WILL BE INSPECTED FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING.

A LOG OF EACH INSPECTION SHALL BE KEPT. THE INSPECTION REPORT IS TO INCLUDE THE FOLLOWING MINIMUM INFORMATION: INSPECTOR'S NAME, DATE OF INSPECTION, OBSERVATIONS RELATIVE TO THE EFFECTIVENESS OF THE POLLUTION CONTROL DEVICES, ACTIONS TAKEN OR NECESSARY TO CORRECT DEFICIENCIES, AND LISTING OF AREAS WHERE LAND DISTURBANCE OPERATIONS HAVE PERMANENTLY OR TEMPORARILY STOPPED. THE INSPECTION REPORT SHALL BE SIGNED BY THE PERMITTEE OR BY THE PERSON PERFORMING THE INSPECTION IF DULY AUTHORIZED TO DO SO.

EROSION CONTROL DESCRIPTION:

1.) SILT FENCE SHALL BE PLACE AT THE PERIMETER OF THE GRADING AND AT INTERMEDIATE AREAS THROUGHOUT THE SITE AS SHOWN ON THE PLAN. INLET SEDIMENT TRAPS SHALL BE PLACED SURROUNDING ALL STORM INLETS

2.) INSTALL TEMPORARY CONSTRUCTION ENTRANCE AS SHOWN ON PLAN

EROSION CONTROL PROCEDURE:

1.) SILT FENCE AND TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT THE PERIMETER OF THE GRADED AREAS PRIOR TO BEGINNING OF CLEARING OR DEMOLITION OPERATIONS. THE CONTRACTOR SHALL INSTALL SILT FENCE AS SHOWN ON PLANS AS GRADING PROGRESSES.

TEMPORARY CONSTRUCTION ENTRANCE NOTES:

A.) INSTALLATION

1.) AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC STREETS. IF POSSIBLE, LOCATE WHERE PERMANENT ROADS WILL EVENTUALLY BE CONSTRUCTED

2.) REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE AND CROWN FOR POSITIVE DRAINAGE.

3.) IF SLOPE TOWARDS THE PUBIC ROAD EXCEED 2% CONSTRUCT A 6 TO 8 INCH HIGH RIDGE WITH 3H : 1V SIDE SLOPES ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE EDGE OF THE PUBLIC ROAD TO DIVERT RUNOFF AWAY FROM IT.

4.) INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES ALONG PUBLIC ROADS

5.) PLACE STONE TO DIMENSIONS AND GRADES AS SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPED FOR DRAINAGE

6.) DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE

7.) IF WET CONDITIONS ARE ANTICIPATED PLACE GEOTEXTILE FABRIC ON THE GRADED FOUNDATION TO IMPROVE STABILITY

B.) TROUBLESHOOTING

1.) CONSULT WITH A QUALIFIED DESIGN PROFESSIONAL IF ANY OF THE FOLLOWING OCCUR:

-INADEQUATE RUNOFF CONTROLS TO THE EXTENT THAT SEDIMENT WASHES ONTO PUBLIC ROADS

- INSTALL DIVERSIONS OR OTHER RUNOFF CONTROL MEASURES

-SMALL STONE, THIN PAD, OR ABSENCE OF GEOTEXTILE FABRIC RESULTS IN RUTS AND MUDDY CONDITIONS AS STONE IS PRESSED INTO SOIL - INCREASE STONE SIZE OR PAD THICKNESS OR ADD GEOTEXTILE FABRIC

-PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC - EXTEND PAD BEYOND THE MINIMUM 50 FOOT LENGTH AS NECESSARY

C.) INSPECTION AND MAINTENANCE

1.) INSPECT STONE PAD AND SEDIMENT DISPOSAL AREA WEEKLY AND AFTER ANY RAIN EVENT

2.) RESHAPE PAD AS NEEDED FOR PROPER DRAINAGE AND RUNOFF CONTROL

3.) TOP DRESS WITH CLEAN 2 AND 3 INCH STONE AS NEEDED

4.) IMMEDIATELY REMOVE MUD OR SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADWAY. REPAIR ANY BROKEN ROAD PAVEMENT IMMEDIATELY

5.) REMOVE ALL TEMPORARY ROAD MATERIALS FROM AREAS WHERE PERMANENT VEGETATION WILL BE ESTABLISHED

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Part of the Southeast 1/4
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2020

ESC PHASE 2 - Inactive Area Stabilization Plan

Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS

C.051

North

0 30' 60' 120'

FINAL RESTORATION PLAN

SCALE: 1" = 60'

SF-1 SILT FENCE PROTECTION TO BE MAINTAINED BY CONTRACTOR

LEGEND

PHASE 1 SILT FENCE ——SF-1——SF-1——

PHASE 2 SILT FENCE ——SF-2——SF-2——

INLET PROTECTION GUTTER BUDDY OR EQUIVALENT

DURING ALL PHASES OF CONSTRUCTION, INACTIVE AREA STABILIZATION METHODS AS DESCRIBED IN APWA SECTION 5111.3 SHALL BE USED TO CONTROL EROSION AND SILTATION.

NOTES: The Land Disturbance Plans indicates the Final placement of erosion control devices. The contractor(s) may proceed with construction prior to the final placement of these devices by providing additional devices to control erosion on their items of work. These devices shall be maintained until the final devices are in place.

SEED AND MULCH NOTES:

All areas disturbed by construction activities shall be seeded and mulched. Seeding shall be done before the proposed seedbed becomes eroded, crusted over, or dried out and shall not be done when the ground is frozen, or covered with snow. The seed shall comply with the requirements of the Missouri Seed Law and the Federal Seed Act. Also, it shall contain no seed of any plant on the Federal Noxious Weed List. Other weed seeds shall not exceed one percent by weight of mix

Seed and Fertilizer Rate:
Mix I - Rye Grass / Blue Grass -------- 100 lbs. per Acre
Mix II - Tall Fescue / Blue Grass ------- 195 lbs. per Acre
Lime ----------2000 lbs per Acre (50 lbs. per 1000 sq. ft.)
Fertilizer ----------800 to 1200 lbs per Acre (25 lbs per 1000 sq. ft.)

During the dates December 15th through May 31 ALL lime fertilizer, seed and mulch shall be applied to finished slopes of disturbed areas. During the months of June, July, October and November 1st through December 15th, lime fertilizer, seed and mulch shall be applied at the following rates:
Lime - 100% of specified quantity
Fertilizer - 75% of the specified quantity
Seed - 50% of the specified quantity
Mulch - 100% of the specified quantity

Mulch shall be Vegetative type, cereal straw from stalks of oats, rye, or barley, or approved equal. The straw shall be free of prohibited weed seed and relatively free of all other noxious and undesirable seed. Mulch shall be applied at the rate of 2 tons per acre, (70 to 90 lbs per 1000 sq. ft.). Mulch shall be embedded by a mulch anchoring tool or disk type roller having flat serrated disks spaced not more than 10 inches apart and cleaning scrapers shall be provided

ONCE SITE IS 90% VEGETATED ALL ESC DEVICES SHALL BE REMOVED AND ANY DISTURBED AREAS SHALL BE RESTORED

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Part of the Southeast 1/4
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2020

ESC PHASE 3 - Final Restoration Plan

Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

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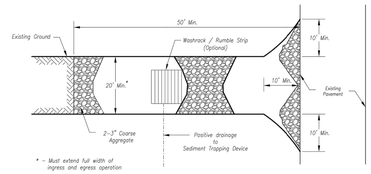
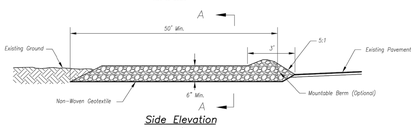
NE PE E-14335

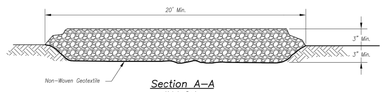
REVISIONS



Plan View
Not to Scale



Side Elevation
Not to Scale



Section A-A
Not to Scale

Notes for Construction Entrance:

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

Maintenance for Construction Entrance:

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

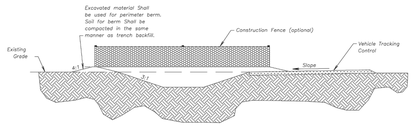
CONSTRUCTION ENTRANCE

Notes for Concrete Washout:

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

Maintenance for Concrete Washout:

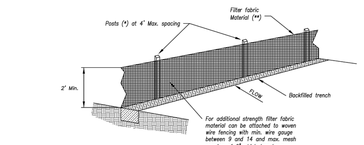
1. Concrete washout materials shall be removed once the materials have filled the washout to approximately 75% full.
2. Concrete washout areas shall be enlarged as necessary to maintain capacity for washed concrete.
3. Concrete washout water, wasted pieces of concrete and all other debris in the subsurface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

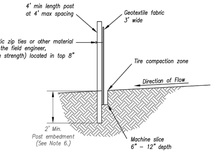


CONCRETE WASHOUT

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

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





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

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

Notes:

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

SILT FENCE DETAILS
Not to Scale

Maintenance:

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

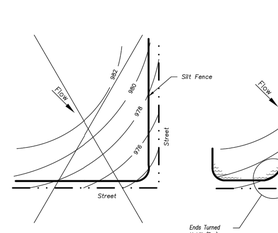
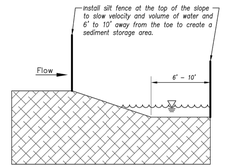
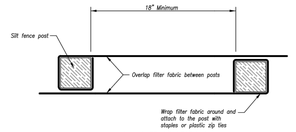


Figure A

SILT FENCE LAYOUT
Not to Scale

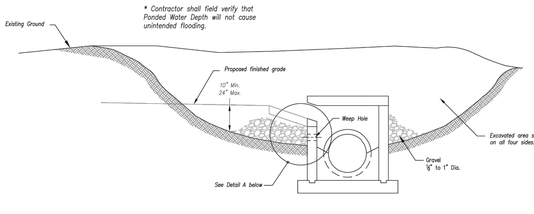


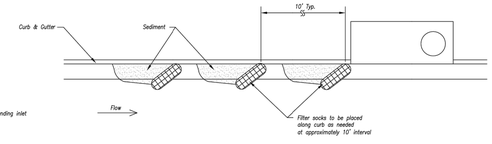


JOINING FENCE SECTIONS
Not to Scale

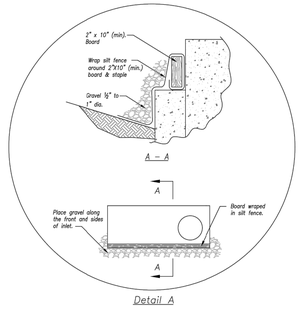
Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

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

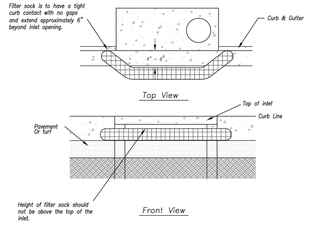




On Grade Curb Inlet Protection



Detail A



Sump Inlet Sediment Filter

Notes:

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

Maintenance:

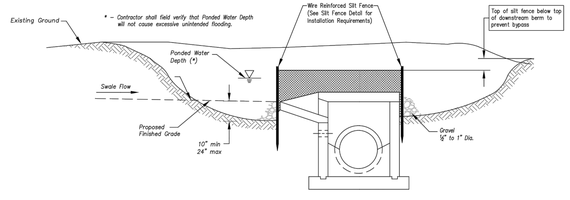
1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

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

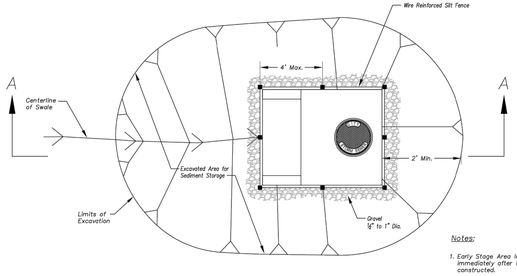
LATE STAGE CURB INLET
(After Pouring Curb and Inlet Throat)

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

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

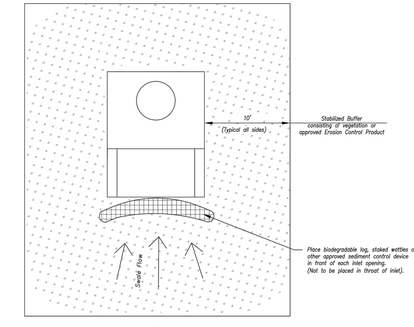


Section A-A
Not to Scale

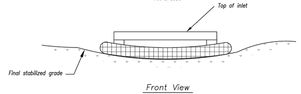


Plan
Not to Scale

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



Plan
Not to Scale



Front View

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

Notes:

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

Maintenance:

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

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

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

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Engineering 6254
Nebraska
Engineering CA2821

Part of the Southeast ¼
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

ESC - Standard Details
Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2020

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS

North

0 25' 50' 100'

SITE PLAN
SCALE: 1" = 50'

NE COLBERN RD

EX. SIDEWALK

Ex. Water

4'x4' Field Inlet
FI 5-2
Openings All Sides

EMERGENCY SPILLWAY
LENGTH=145'
ELEV.=942.00'

5'x5' Control Structure
CS 11-1

Flared End Section
w/ Toe Wall
FES 11-2

4'x4' Field Inlet
FI 10-2
Openings SE & SW

4'x4' Field Inlet
FI 10-3
Openings All Sides

Flared End Section
w/ Toe Wall
FES 5-1

Flared End Section
w/ Toe Wall
FES 10-1

DETENTION
TRACT A

4'x4' Field Inlet
FI 5-3
Openings All Sides

Proposed
Water Line

New
Fire Hydrant

CG-2 CURB & GUTTER (TYP.)
UNLESS OTHERWISE NOTED

Forcemain Line 1

4'x4' Field Inlet
FI 5-4
Openings All Sides

New Sanitary Manhole A-3

4'x4' Field Inlet
FI 1-2
Openings N & E

R=39.00'
R=50.00'

50.00'
28.00'

NE Lashbrook Ct
50' R/W

NE Woodland Oak Dr
50' R/W

5'x4' Curb Inlet
CI 2-5

4'x4' Field Inlet
FI 3-1
Openings NE

New Sanitary Manhole A-2

4'x4' Junction Box
JB 9-2

5'x4' Curb Inlet
CI 9-3

Flared End Section
w/ Toe Wall
FES 9-1

Flared End Section
w/ Toe Wall
FES 6-1

4'x4' Junction Box
JB 6-2

Forcemain Line 2

NE Cherrybark Ct
50' R/W

Flared End Section
w/ Toe Wall
FES 1-1

5'x4' Curb Inlet
CI 2-6

Sanitary Line A

5'x4' Curb Inlet
CI 2-4

5'x4' Curb Inlet
CI 7-2

5'x4' Curb Inlet
CI 4-4

5'x4' Curb Inlet
CI 7-1

5'x4' Curb Inlet
CI 6-4

5'x4' Curb Inlet
CI 6-3

5'x4' Control Structure
CS 12-2

EMERGENCY SPILLWAY
LENGTH=183'
ELEV.=915.00'

DETENTION

5'x4' Curb Inlet
CI 2-3

4'x4' Field Inlet
FI 2-2
Openings NE & SE

5'x4' Curb Inlet
CI 4-3

5'x4' Curb Inlet
CI 6-6

New Sanitary Manhole A-1

5'x4' Curb Inlet
CI 6GS2 CURB & GUTTER (TYP.)
UNLESS OTHERWISE NOTED

5'x4' Curb Inlet
CI 8-1

New Sanitary Manhole B-1

New Sanitary Manhole B-2

Flared End Section
w/ Toe Wall
FES 12-1

Flared End Section
w/ Toe Wall
FES 12-3

Flared End Section
w/ Toe Wall
FES 2-1

4'x4' Field Inlet
FI 4-1
Openings NE

4'x4' Field Inlet
FI 4-2
Openings N & E

Proposed
Water Line

New
Fire Hydrant

EX. SANITARY MANHOLE

Ex. Water

Ex. 8" San. line

TRACT B

NE LASHBROOK DR

NE WOODLAND SHORES LN

NE BLACKWELL PKWY

CONNECT TO EXISTING 8" WATER LINE
NEW WATER VALVE (W)
INSTALL NEW TEE

ISLAND SHALL BE
CG-1 CURB & GUTTER

17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42
16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

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Part of the Southeast 1/4
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2020

Site Plan

Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS

North

0 30' 60' 120'

GRADING PLAN

SCALE: 1" = 60'

EMERGENCY SPILLWAY
LENGTH=160'
ELEV.=942.00'

DETENTION
TRACT A

DETENTION

TRACT B

New Channel Converges into Existing Channel prior to west property line

New Channel Flowline

Existing Channel Flowline

Woodland Oak Dr 50' R/W

NE Gashook Ct 50' R/W

EX. SIDEWALK

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Part of the Southeast $\frac{1}{4}$
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

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Grading Plan

Construction Plans for:
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Lots 1 thru 42
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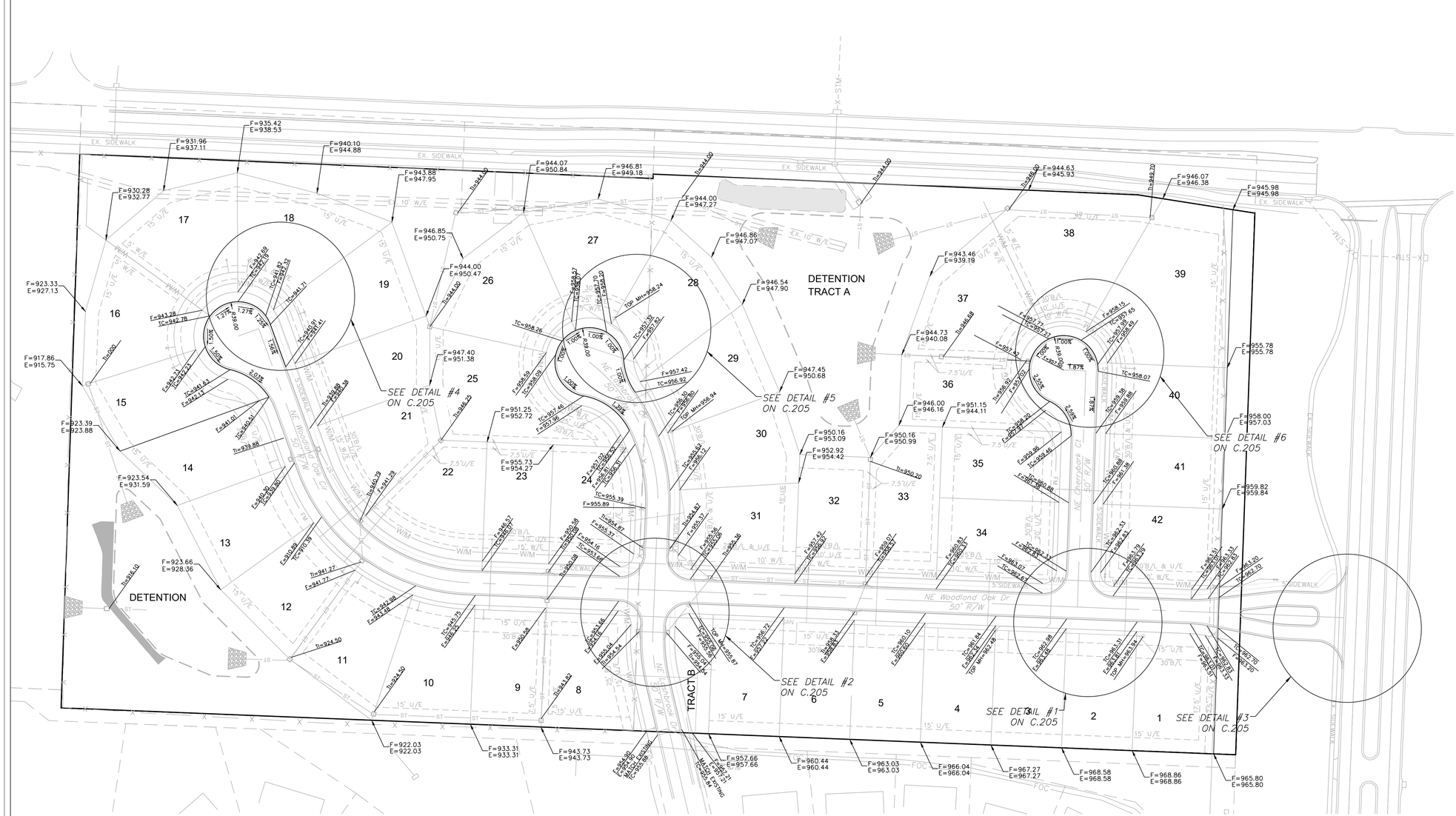
REVISIONS



Lot Number	Basement Type	MBOE
1	Standard	
2	Standard	
3	Standard	
4	Standard	
5	Standard	
6	Standard	
7	Standard	
8	Walkout	945.58
9	Walkout	945.58
10	Walkout	925.86
11	Walkout	925.65
12	Walkout	925.65
13	Walkout	917.4
14	Walkout	917.4
15	Walkout	919.77
16	Walkout	919.77
17	Daylight	
18	Standard	
19	Standard	945.15
20	Standard	945.14
21	Standard	947.42
22	Standard	947.42
23	Standard	
24	Standard	
25	Walkout	945.14
26	Walkout	945.15
27	Walkout	945.12
28	Walkout	943.49
29	Walkout	943.49
30	Daylight	943.49
31	Standard	
32	Walkout	943.49
33	Walkout	943.49
34	Daylight	
35	Daylight	
36	Walkout	943.49
37	Walkout	943.49
38	Daylight	947.17
39	Daylight	950.93
40	Daylight	
41	Daylight	
42	Standard	

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Project: WOODLAND OAKS LSMO
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Spot Elevations

Construction Plans for:
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Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS

DRAINAGE AREA MAP

SCALE: 1" = 60'

APWA STORM DRAINAGE "TC" COMPUTATIONS FOR : WOODLAND OAKS (COLBERN & BLACKWELL)

yellow areas are self computing overwrite if necessary

Surface types: Asph/Conc, Bus/Com, Dirt, Grass/Park, Lake, MultFam, SnglFam, Undev, Other

SURFACE CODES: A, B, D, G, L, M, S, U, Z

"C" Values: 0.90, 0.87, 0.60, 0.30, 0.90, 0.66, 0.51, 0.3

TOTAL WATERSHED

Overwrite Length - DnElev or Slope if necessary — OVERLAND FLOW - 100' MAX

SURFACE CODE: P=Paved, U=Unpaved — Overwrite Slope or Elevations if necessary — CHANNEL FLOW - FIRST REACH

TC COMPUTATION

AREA ID	TOTAL ACRES	WTRSHD LENGTH	UP ELEV	DN ELEV	SURFACE CODE	"C" VALUE	OVRLND LENGTH	UP ELEV	DN ELEV	SLOPE %	SURFACE or U	CHANNEL LENGTH	UP ELEV	DN ELEV	SLOPE %	VELOCITY F/S	Cal Overland Flow T(i)	Used Min 5 Max 15 T(i)	Cal Channel One T(T)	Cal Channel Two T(T)	Total T© 10	AREA ID
PROP.																						PROP.
1	0.77	495.00	944.00	918.00	S	0.51	100.0	944.0	940.60	3.4	U	395.0	940.6	918.0	5.72	3.9	7.1	7.1	1.7	0.0	8.8	1
2L	0.08	175.50	942.00	939.80	S	0.51	11.5	942.0	941.75	2.2	P	164.0	941.8	939.8	1.19	2.2	2.8	5.0	1.2	0.0	6.2	2L
2R	0.16	196.00	941.90	939.80	S	0.51	11.5	941.9	941.65	2.2	P	184.5	941.7	939.8	1.00	2.0	2.8	5.0	1.5	0.0	6.5	2R
3L	0.55	250.00	945.00	939.80	S	0.51	100.0	945.0	941.00	4.0	P	150.0	941.0	939.8	0.80	1.8	6.7	6.7	1.4	0.0	8.1	3L
3R	0.40	279.00	951.00	939.80	S	0.51	100.0	951.0	943.00	8.0	P	179.0	943.0	939.8	1.79	2.7	5.3	5.3	1.1	0.0	6.4	3R
4	0.60	274.00	956.00	941.48	S	0.51	100.0	956.0	947.70	8.3	U	174.0	947.7	941.5	3.57	3.1	5.2	5.2	1.0	0.0	6.2	4
5	0.19	206.00	955.80	946.00	S	0.51	100.0	955.8	953.80	2.0	U	106.0	953.8	946.0	7.36	4.4	8.4	8.4	0.4	0.0	8.8	5
6	0.12	226.50	950.00	942.00	S	0.51	11.5	950.0	949.75	2.2	P	215.0	949.8	942.0	3.60	3.9	2.8	5.0	0.9	0.0	5.9	6
7	0.28	190.00	943.00	924.00	S	0.51	100.0	943.0	931.00	12.0	U	90.0	931.0	924.0	7.78	4.5	4.6	5.0	0.3	0.0	5.3	7
8	0.54	285.00	950.00	924.00	S	0.51	100.0	950.0	945.00	5.0	U	185.0	945.0	924.0	11.35	5.4	6.2	6.2	0.6	0.0	6.8	8
9	0.32	165.00	954.00	944.00	S	0.51	100.0	954.0	951.00	3.0	U	65.0	951.0	944.0	10.77	5.3	7.4	7.4	0.2	0.0	7.6	9
10	0.08	140.50	955.00	950.00	S	0.51	11.5	955.0	954.75	2.2	P	129.0	954.8	950.0	3.68	3.9	2.8	5.0	0.6	0.0	5.6	10
11	0.37	187.00	955.80	950.00	S	0.51	100.0	955.8	951.30	4.5	P	87.0	951.3	950.0	1.49	2.5	6.4	6.4	0.6	0.0	7.0	11
12	0.50	214.00	957.00	943.00	S	0.51	100.0	957.0	951.00	6.0	U	114.0	951.0	943.0	7.02	4.3	5.8	5.8	0.4	0.0	6.3	12
13	0.61	223.00	957.00	943.00	S	0.51	100.0	957.0	951.00	6.0	U	123.0	951.0	943.0	6.50	4.1	5.8	5.8	0.5	0.0	6.3	13
14	0.40	170.00	957.00	943.00	S	0.51	100.0	957.0	951.00	6.0	U	70.0	951.0	943.0	11.43	5.5	5.8	5.8	0.2	0.0	6.1	14
15	0.19	292.50	957.00	954.00	S	0.51	11.5	957.0	956.77	2.0	P	281.0	956.8	954.0	0.99	2.0	2.9	5.0	2.3	0.0	7.3	15
16L	0.37	292.50	957.00	954.00	S	0.51	11.5	957.0	956.77	2.0	P	281.0	956.8	954.0	0.99	2.0	2.9	5.0	2.3	0.0	7.3	16L
16R	0.17	140.00	957.00	954.00	S	0.51	100.0	957.0	954.60	2.4	P	40.0	954.6	954.0	1.50	2.5	7.9	7.9	0.3	0.0	8.2	16R
17	0.07	121.50	954.50	953.00	S	0.51	11.5	954.5	954.25	2.2	P	110.0	954.3	953.0	1.14	2.2	2.8	5.0	0.8	0.0	5.8	17
18L	0.21	172.00	960.40	953.00	S	0.51	100.0	960.4	956.40	4.0	U	72.0	956.4	953.0	4.72	3.5	6.7	6.7	0.3	0.0	7.0	18L
18R	0.70	383.00	965.25	953.00	S	0.51	100.0	965.3	960.00	5.3	P	283.0	960.0	953.0	2.47	3.2	6.1	6.1	1.5	0.0	7.6	18R
19	0.10	185.50	958.25	954.80	S	0.51	11.5	958.3	958.00	2.2	P	174.0	958.0	954.8	1.84	2.8	2.8	5.0	1.1	0.0	6.1	19
20	0.13	229.50	962.00	958.40	S	0.51	11.5	962.0	961.75	2.2	P	218.0	961.8	958.4	1.54	2.5	2.8	5.0	1.4	0.0	6.4	20
21	0.97	414.00	968.65	958.10	S	0.51	100.0	968.7	965.00	3.6	P	314.0	965.0	958.1	2.20	3.0	6.9	6.9	1.7	0.0	8.6	21
22L	0.19	286.50	962.00	956.90	S	0.51	11.5	962.0	961.75	2.2	P	275.0	961.8	956.9	1.76	2.7	2.8	5.0	1.7	0.0	6.7	22L
22R	0.25	371.50	962.00	956.90	S	0.51	11.5	962.0	961.75	2.2	P	360.0	961.8	956.9	1.35	2.4	2.8	5.0	2.5	0.0	7.5	22R
23	1.26	396.00	961.25	949.50	S	0.51	100.0	961.3	958.90	2.4	U	296.0	958.9	949.5	3.18	2.9	8.0	8.0	1.7	0.0	9.7	23
24	0.35	242.00	957.00	945.00	S	0.51	100.0	957.0	950.00	7.0	U	142.0	950.0	945.0	3.52	3.0	5.6	5.6	0.8	0.0	6.3	24

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Part of the Southeast 1/4
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2020

Master Drainage Map 3 of 3:
Drainage Area Map
Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
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NE PE E-14335

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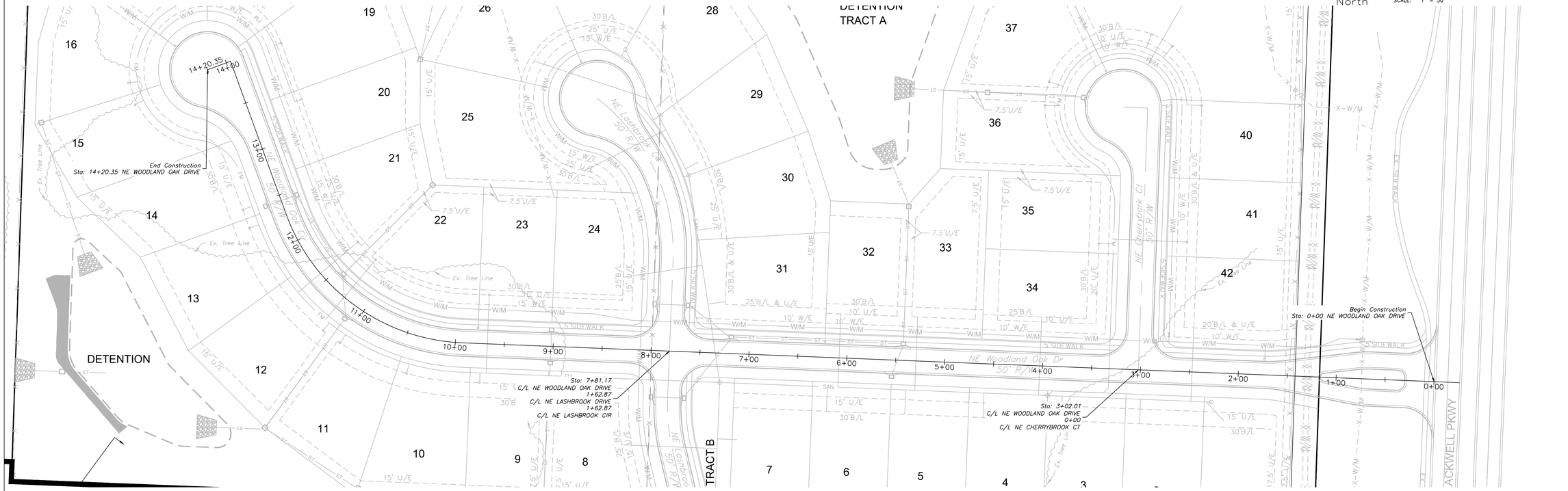

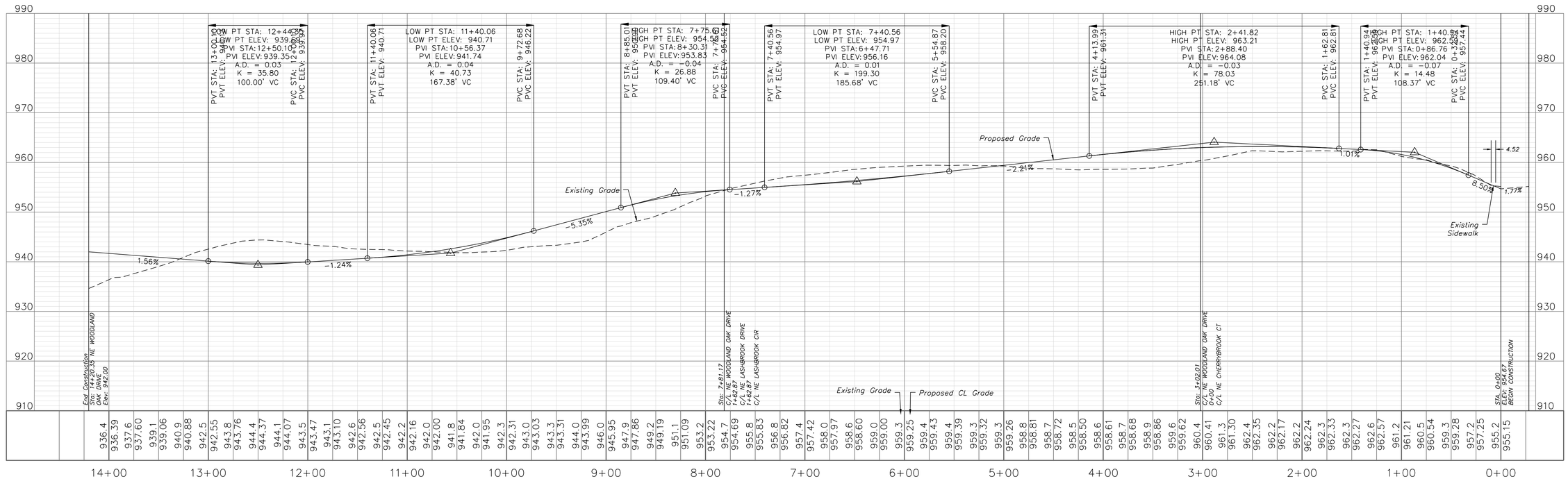

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Street Plan and Profile

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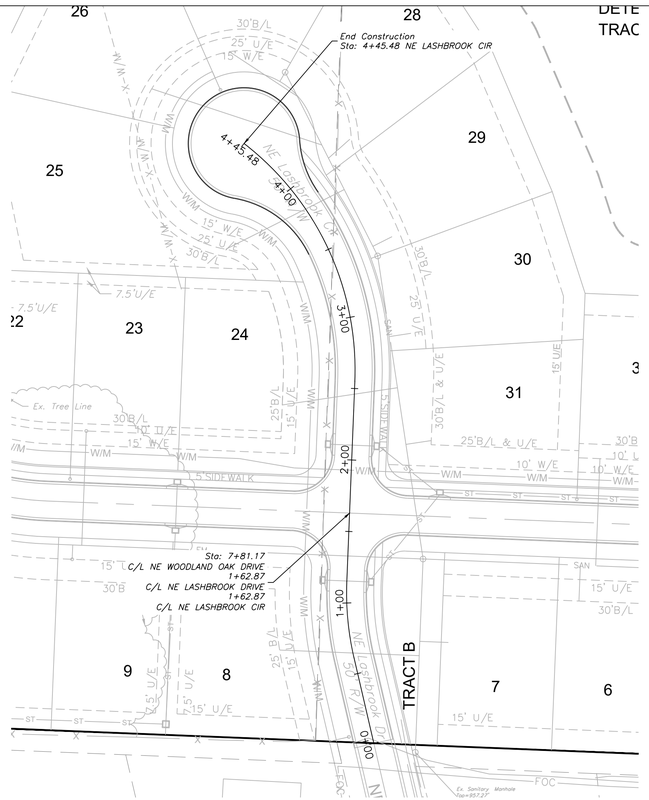


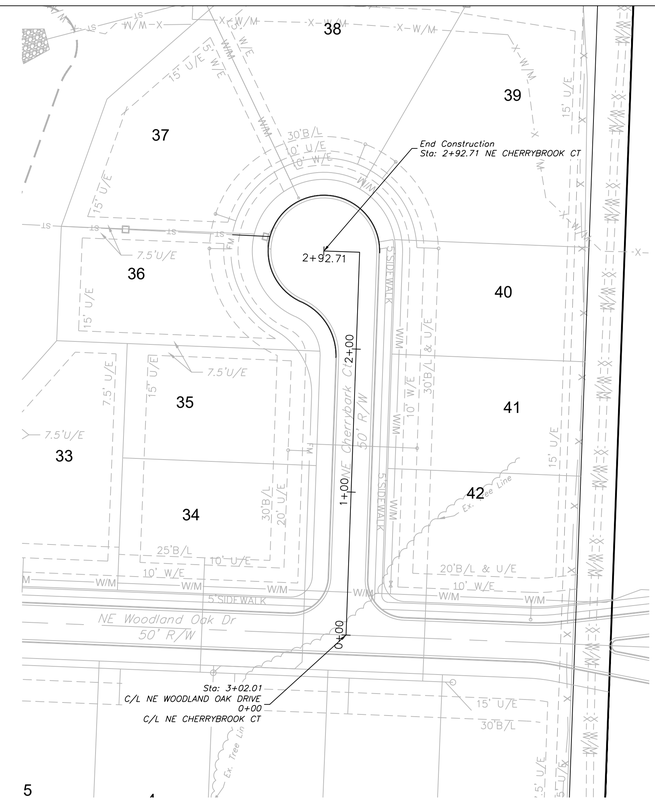
North

0 25' 50' 100'

STREET PLAN & PROFILE

SCALE: 1" = 50'

NE LASHBROOK DR



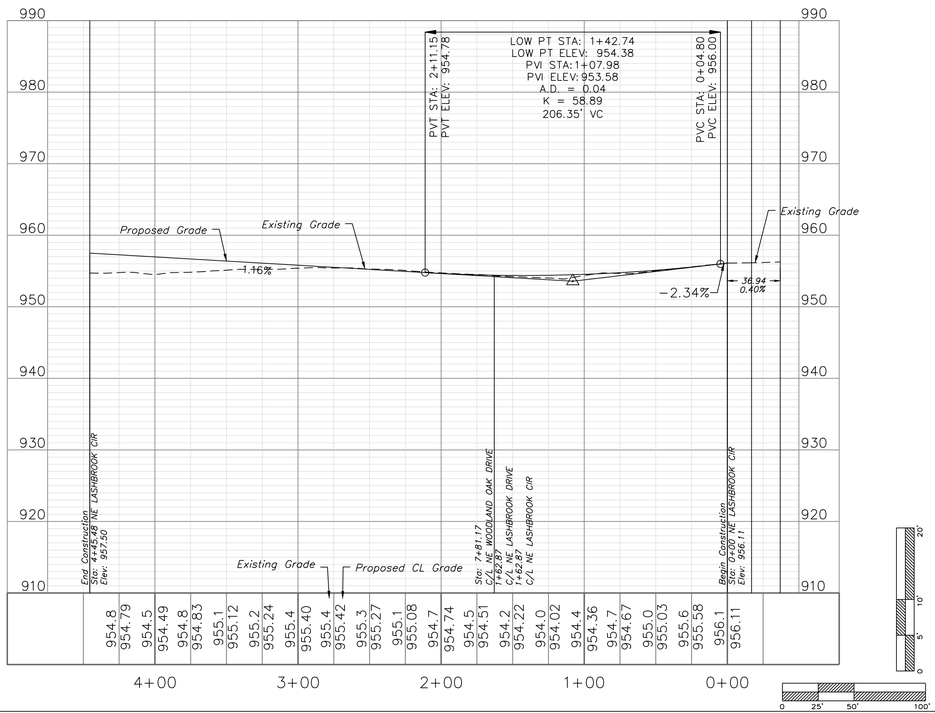
North

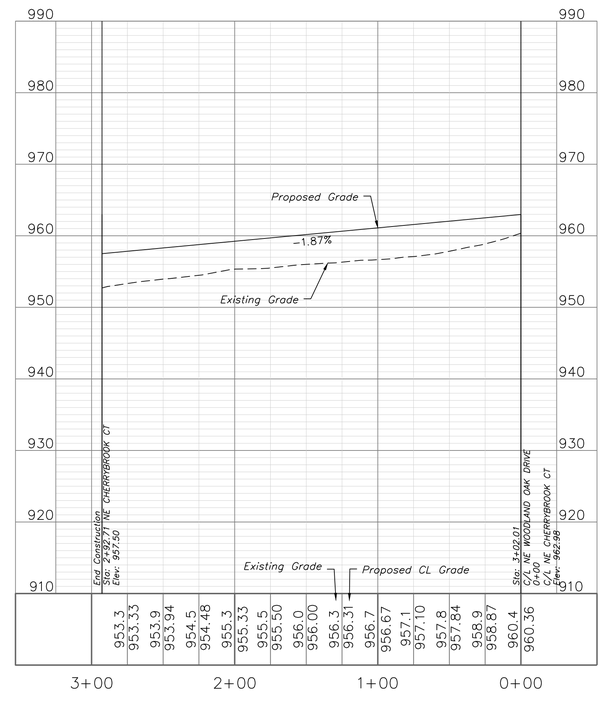
0 25' 50' 100'

STREET PLAN & PROFILE

SCALE: 1" = 50'

NE CHERRYBARK CT





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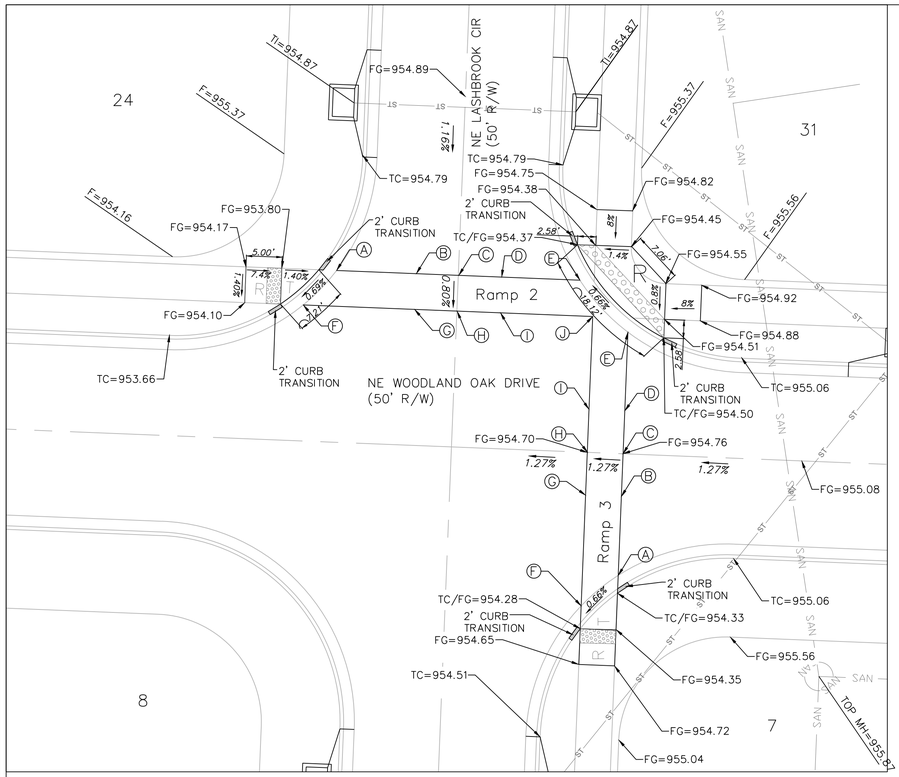

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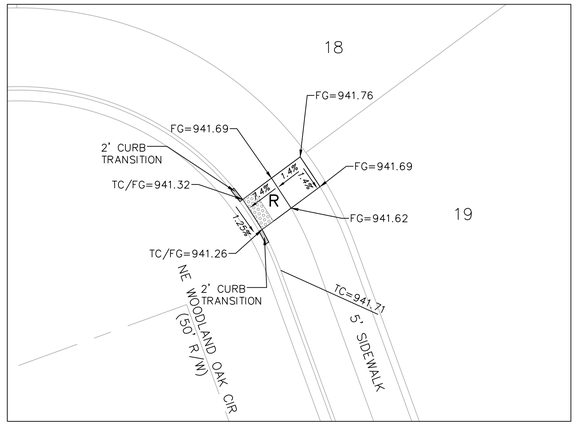

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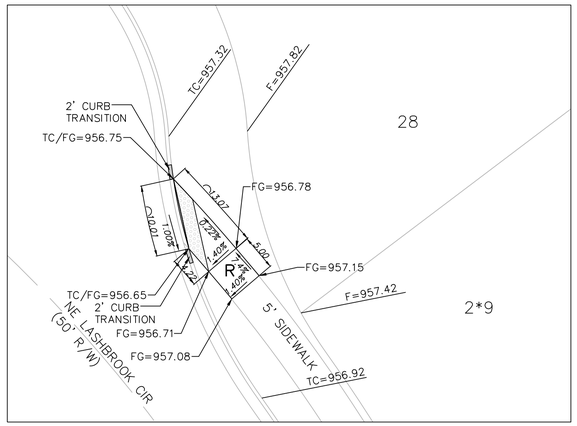

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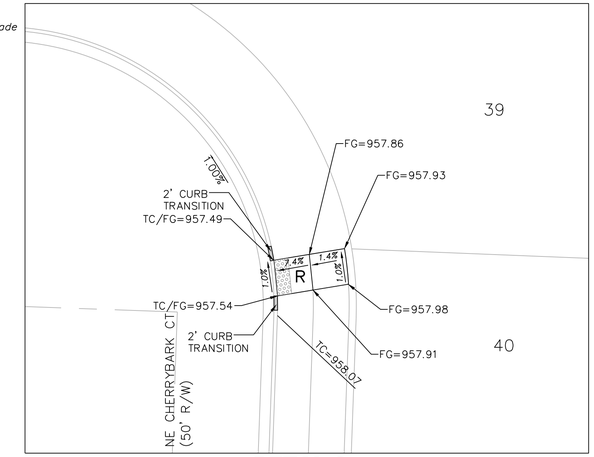

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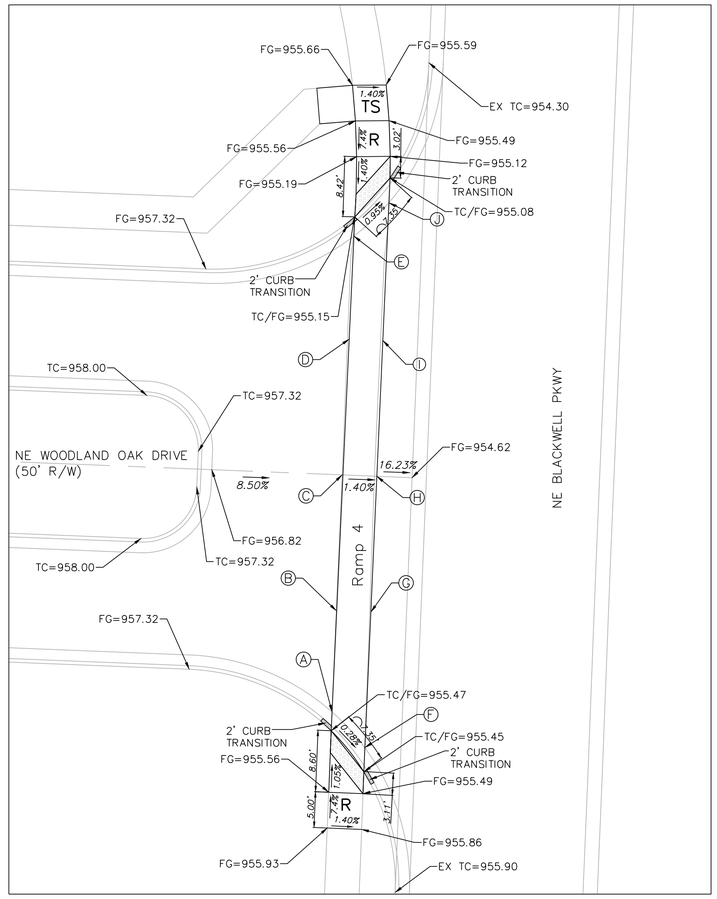

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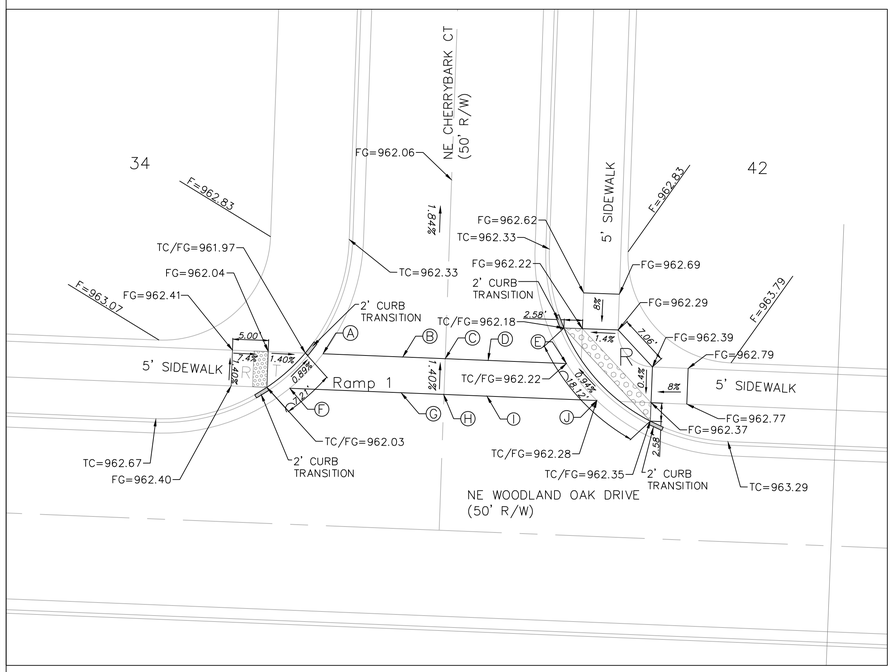

DETAIL 1

SPOT ELEVATION TABLE

	Ramp 1	Ramp 2	Ramp 3	Ramp 4
Spot	Elevation	Elevation	Elevation	Elevation
A	961.97	953.78	954.33	955.47
B	962.43	954.43	954.45	955.48
C	962.55	954.55	954.76	955.49
D	962.67	954.53	954.64	955.30
E	962.28	954.50	954.45	955.15
F	962.03	953.73	954.28	955.45
G	962.50	954.39	954.58	955.43
H	962.62	954.51	954.70	955.42
I	962.50	954.48	954.58	955.25
J	962.28	954.45	954.45	955.08

Legend:

EX TC = Existing Top of Curb

EX FG = Existing Finished Grade

FG = Finished Grade

TC = Top of Curb

TC/FG = Top of Curb/Finished Grade

Detectable Warning

North

GRAPHIC SCALE
0 10' 20' 40'

SIDEWALK AND INTERSECTION PLAN

SCALE: 1" = 20'

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Sidewalk and Intersection Plan
Construction Plans for:
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NE PE E-14335

REVISIONS

STORM SEWER GENERAL LAYOUT

SCALE: 1" = 50'

0 25' 50' 100'

North

NE COLBERN RD

EX. SIDEWALK

Ex. Water

EX. 10' W/E

4'x4' Field Inlet
FI 5-3
Openings All Sides

EMERGENCY SPILLWAY
LENGTH=145'
ELEV.=942.00'

5'x5' Control Structure
CS 11-1

Flared End Section
w/ Toe Wall
FES 11-2

4'x4' Field Inlet
FI 10-2
Openings SE & SW

4'x4' Field Inlet
FI 10-3
Openings All Sides

Flared End Section
w/ Toe Wall
FES 10-1

DETENTION
TRACT A

4'x4' Field Inlet
FI 5-4
Openings All Sides

Flared End Section
w/ Toe Wall
FES 5-1

4'x4' Junction Box
JB 9-2

5'x4' Curb Inlet
CI 9-3

Flared End Section
w/ Toe Wall
FES 9-1

4'x4' Field Inlet
FI 1-2
Openings N & E

5'x4' Curb Inlet
CI 2-5

4'x4' Field Inlet
FI 3-1
Openings NE

NE Woodland Oak Cir
50' R/W

NE Lashbrook Cir
50' R/W

Flared End Section
w/ Toe Wall
FES 6-1

4'x4' Junction Box
JB 6-2

NE Cherrypark Ct
50' R/W

Flared End Section
w/ Toe Wall
FES 1-1

5'x4' Curb Inlet
CI 2-6

5'x4' Curb Inlet
CI 2-4

5'x4' Curb Inlet
CI 7-2

5'x4' Curb Inlet
CI 7-1

5'x4' Curb Inlet
CI 4-4

5'x4' Curb Inlet
CI 6-4

5'x4' Curb Inlet
CI 6-3

5'x4' Curb Inlet
CI 2-3

5'x4' Control Structure
CS 12-2

EMERGENCY SPILLWAY
LENGTH=183'
ELEV.=915.00'

DETENTION

Flared End Section
w/ Toe Wall
FES 12-1

Flared End Section
w/ Toe Wall
FES 12-3

4'x4' Field Inlet
FI 2-2
Openings NE & SE

4'x4' Field Inlet
FI 4-1
Openings NE

Flared End Section
w/ Toe Wall
FES 2-1

5'x4' Curb Inlet
CI 4-3

5'x4' Curb Inlet
CI 6-6

5'x4' Curb Inlet
CI 6-5

5'x4' Curb Inlet
CI 8-1

4'x4' Field Inlet
FI 4-2
Openings N & E

NE Woodland Oak Dr
50' R/W

NE Lashbrook Dr
50' R/W

TRACT B

NE CHERRYPARK CT

NE BLACKWELL PKWY

EX. SANITARY MANHOLE

Ex. Water

Ex. 8" San. line

NE WOODLAND SHORES LN

FOC

17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

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Storm Sewer General Layout
Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

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NE PE E-14335

REVISIONS

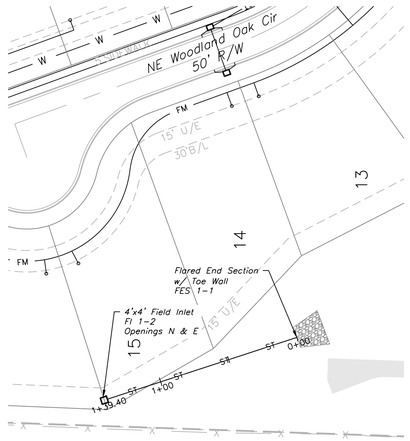
C.300

GRAPHIC SCALE
0 25' 50' 100'

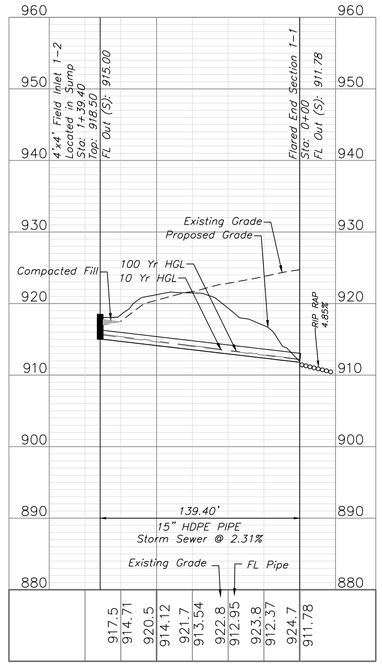
North

STORM SEWER PLAN & PROFILE

SCALE: 1" = 50'



STORM LINE 1



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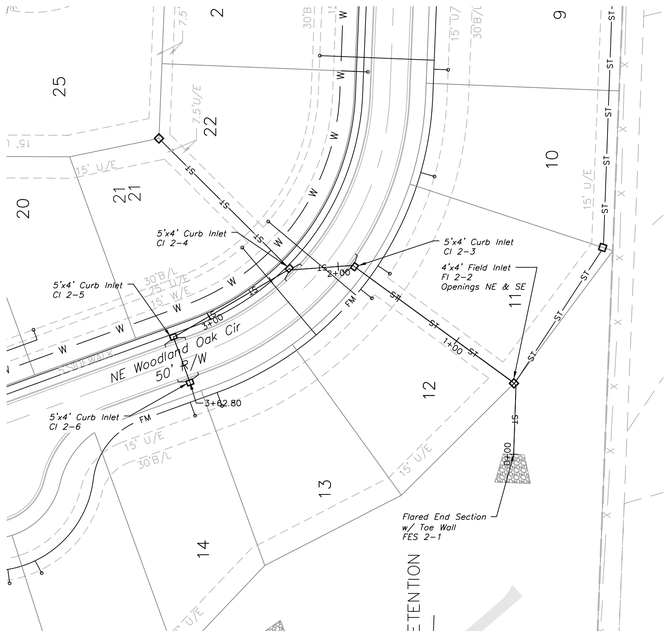

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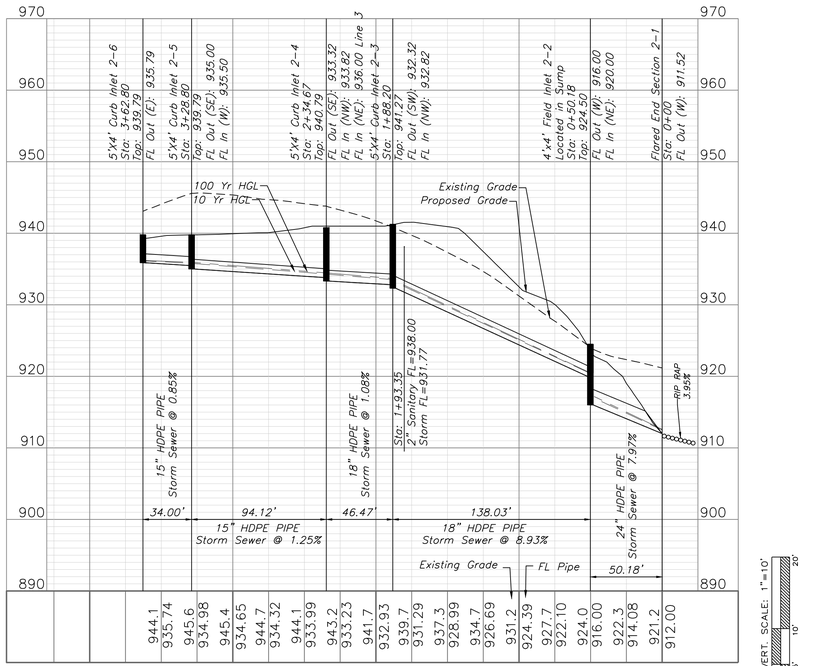

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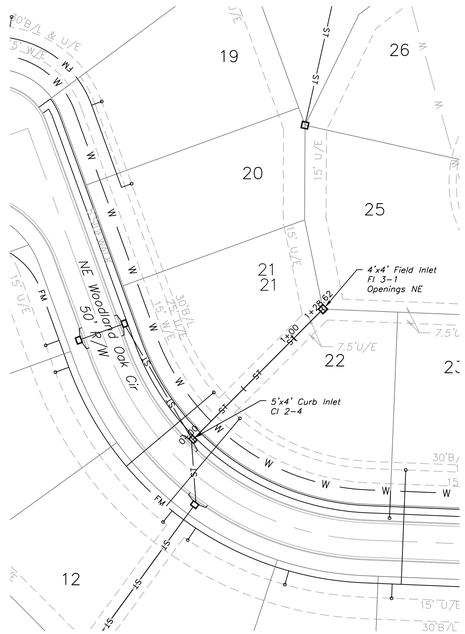
SCALE: 1" = 50'



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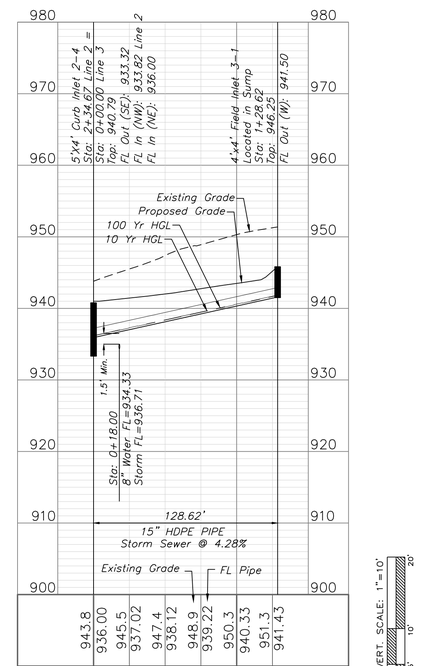

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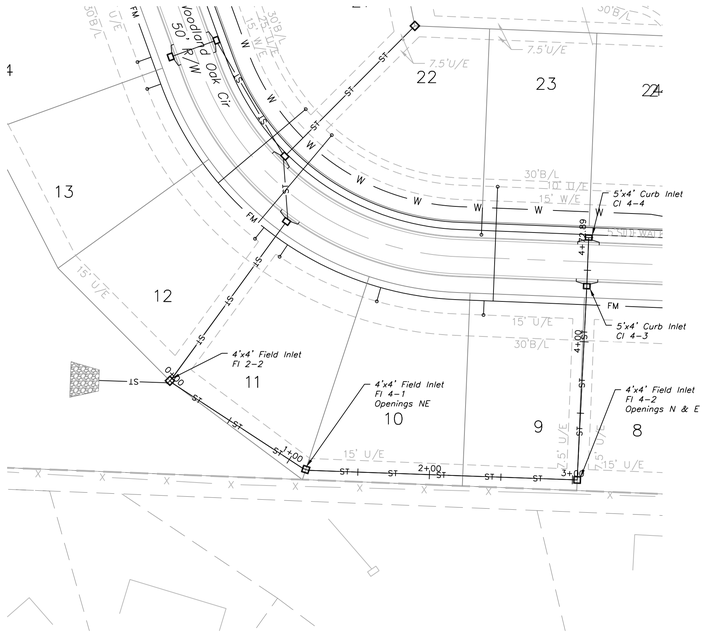

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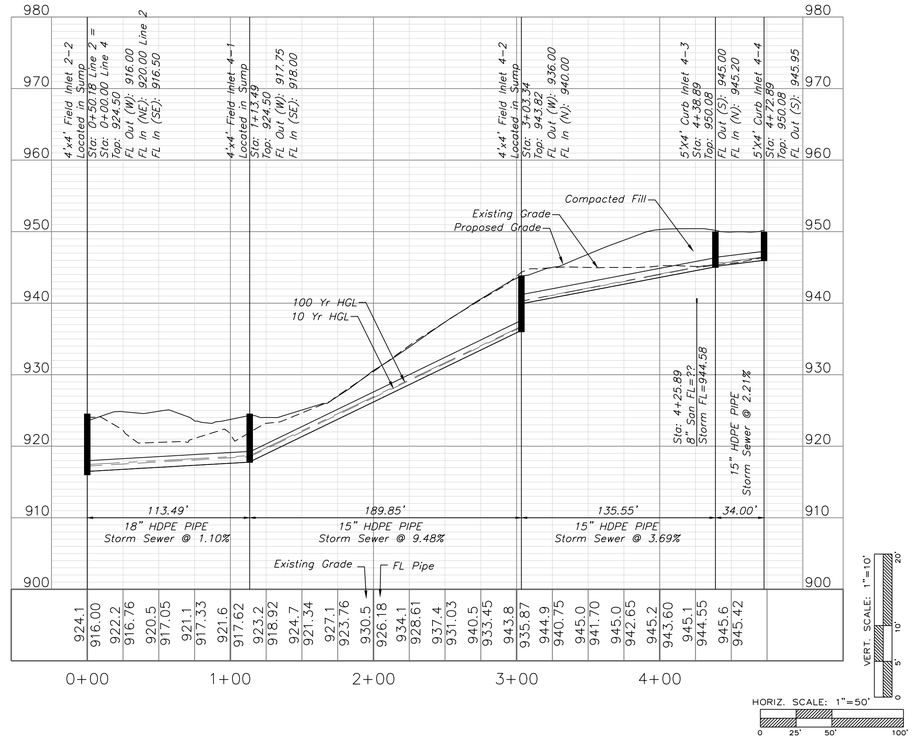

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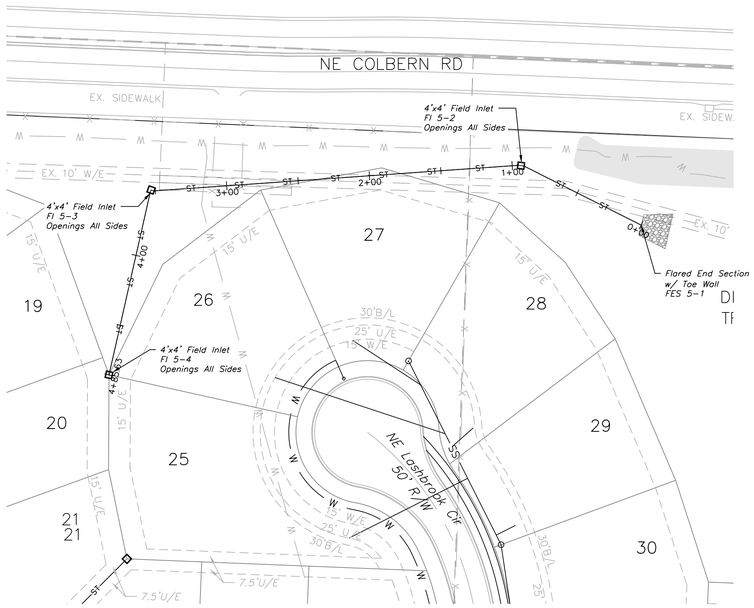

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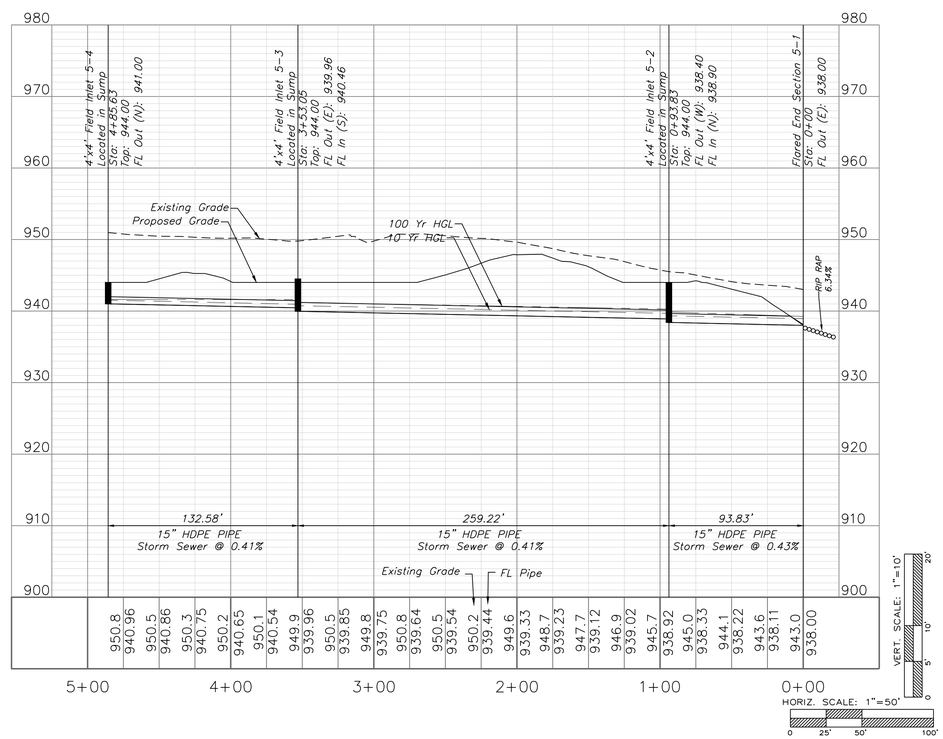

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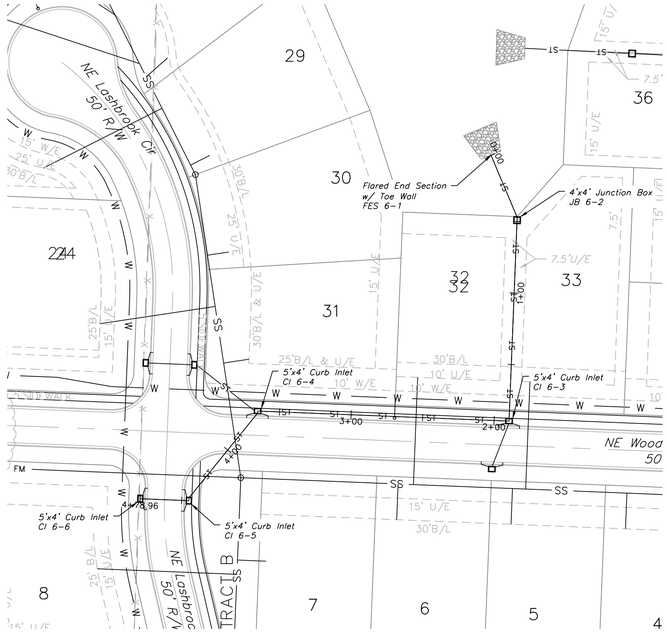

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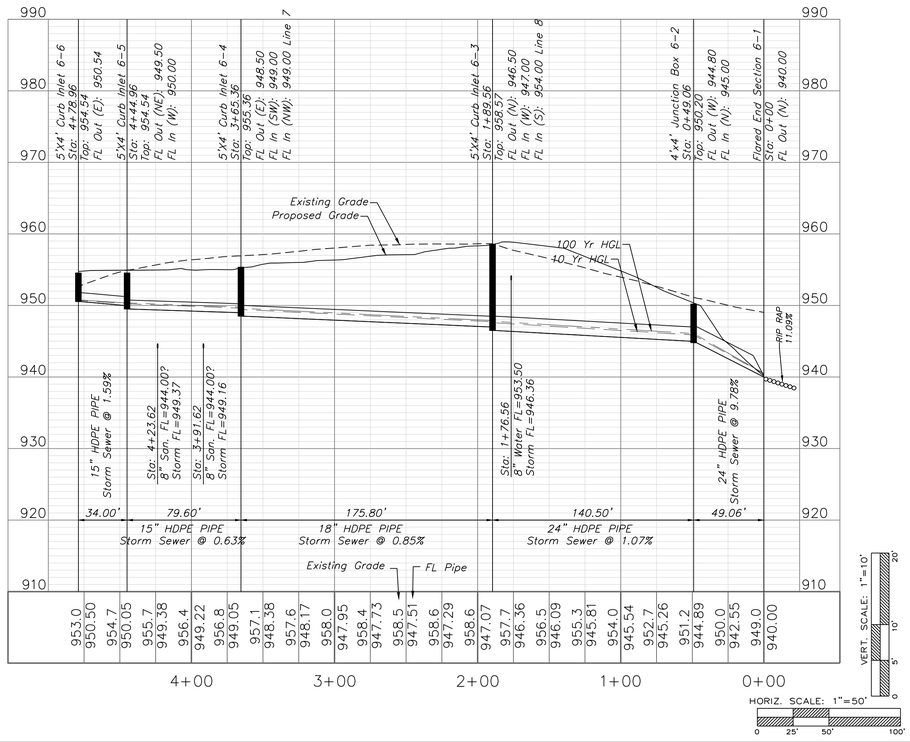

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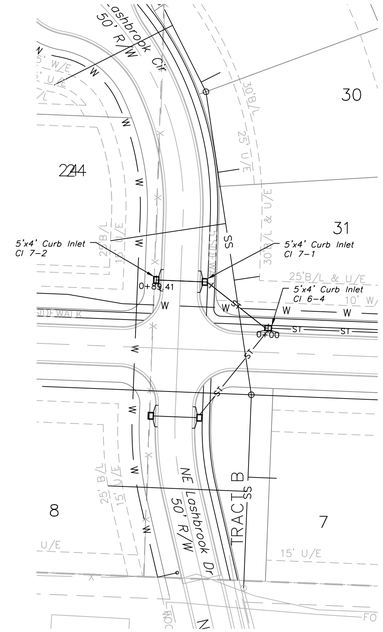

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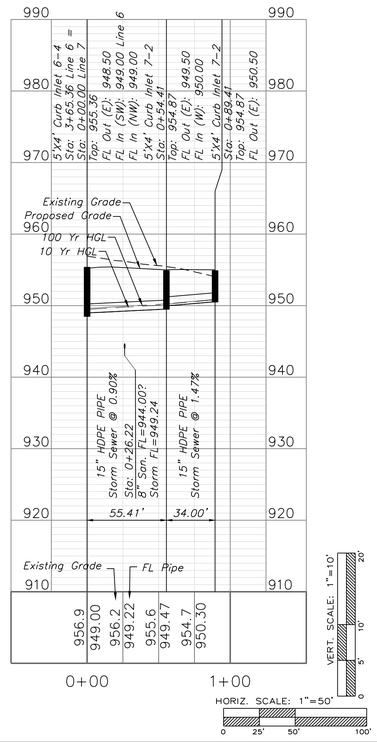

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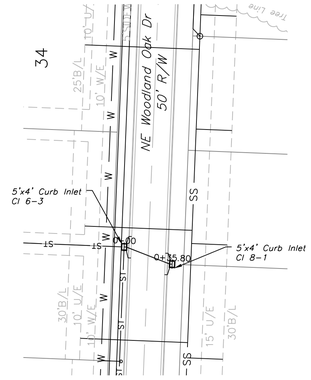
SCALE: 1" = 50'



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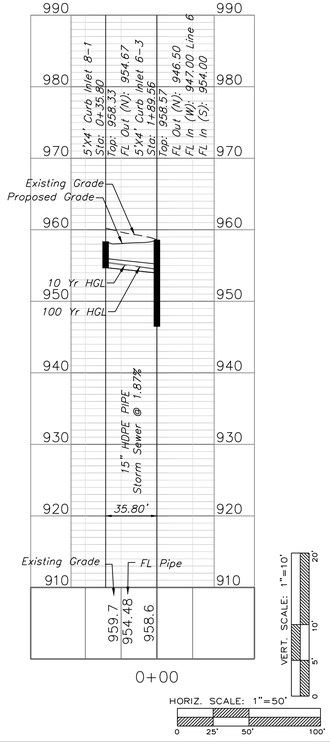

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Storm Sewer Plan & Profile
Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

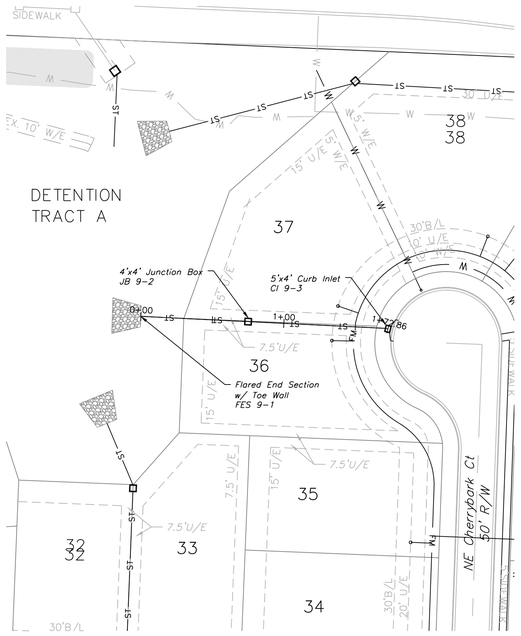
REVISIONS

GRAPHIC SCALE
0 25' 50' 100'

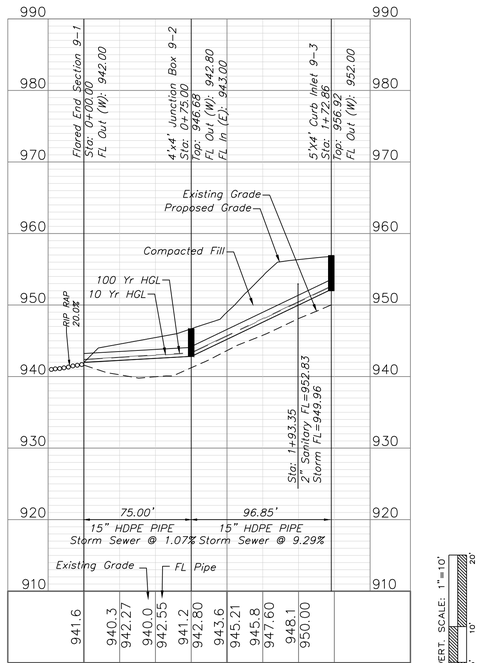
North

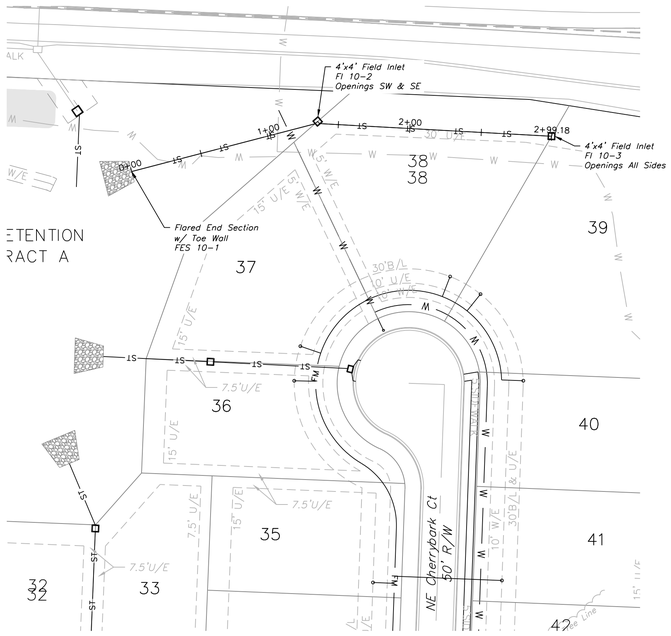
STORM SEWER PLAN & PROFILE

SCALE: 1" = 50'

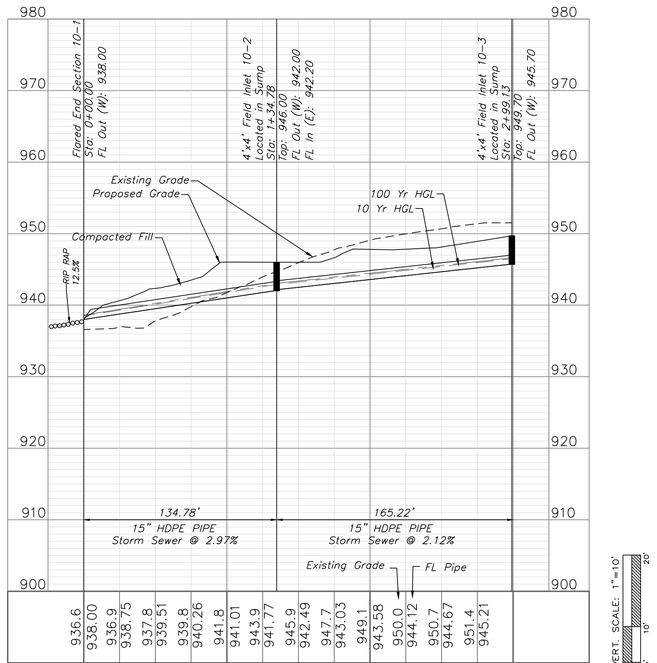


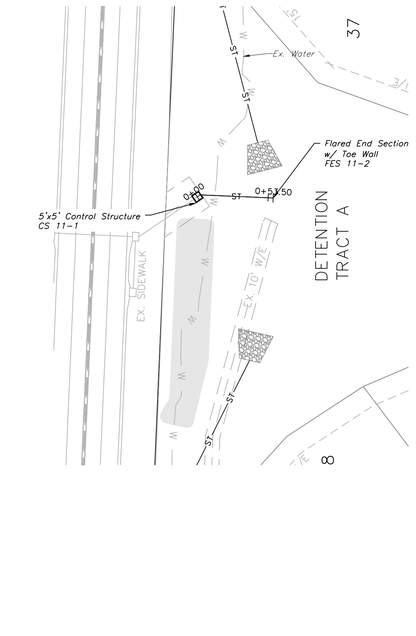
STORM LINE 9



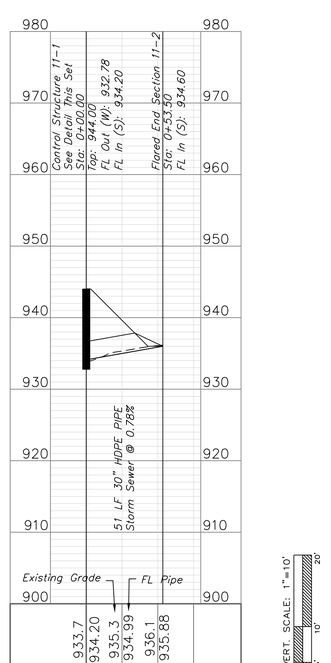


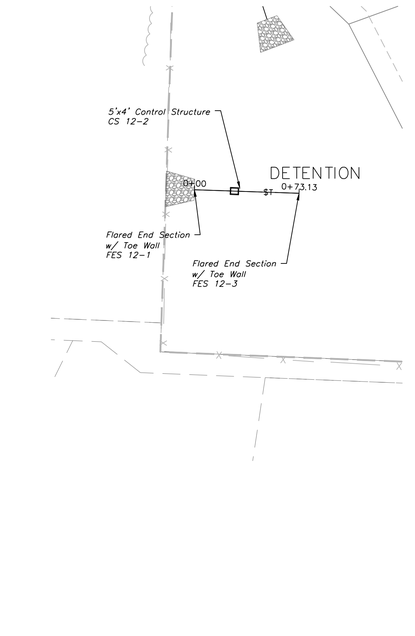
STORM LINE 10



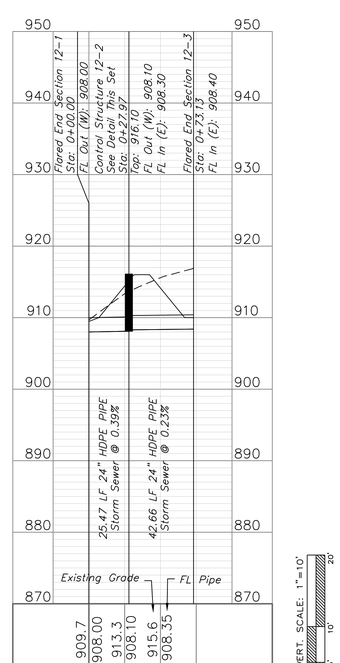


STORM LINE 11





STORM LINE 12



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Nebraska
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Part of the Southeast 1/4
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2020

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REVISIONS

10-YEAR INLET																						
D.S. Str.	Str. No.	Area	InletTime	Int.	RunoffCoeff.	Q =CIA	Q Carry-over	QCaptured	QBypassed	JunctType	CurbHeight	CurbLength	GutterSlope	GutterWidth	CrossSlope, Sw	CrossSlope, Sx	InletDepth	BypassDepth	BypassSpread	GutterDepth	GutterSpread	BypassLine No.
		(ac)	(min)	(in/hr)	(C)	(cfs)	(cfs)	(cfs)	(cfs)		(in)	(ft)	(ft/ft)	(ft)	(ft/ft)	(ft/ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1-1	1-2	0.77	8.80	6.29	0.51	2.47	0.00	2.47	0.00	Dp-Curb	6	8	Sag	....	0.02	0.02	0.22	n/a	n/a	0.22	10.97	Sag
2-1	2-2	0.28	5.30	7.15	0.51	1.02	0.00	1.02	0.00	Dp-Curb	6	8	Sag	....	0.02	0.02	0.12	n/a	n/a	0.12	6.09	Sag
2-2	2-3	0.12	5.90	6.99	0.51	0.43	0.12	0.30	0.25	Curb	10	5	0.038	2	0.05	0.02	0.12	0.09	1.75	0.12	2.83	2-6
2-3	2-4	0.60	6.20	6.91	0.51	2.11	1.87	0.88	3.10	Curb	10	5	0.038	2	0.05	0.02	0.22	0.21	7.29	0.22	8.13	2-5
2-4	2-5R	0.40	6.40	6.85	0.51	1.40	3.10	4.50	0.00	Curb	10	5	Sag	2	0.05	0.02	0.43	n/a	n/a	0.43	18.62	Sag
2-4	2-5L	0.55	8.10	6.44	0.51	1.81	0.00	1.81	0.00	Curb	10	5	Sag	2	0.05	0.02	0.26	n/a	n/a	0.26	10.13	Sag
2-5	2-6R	0.16	6.50	6.83	0.51	0.56	0.25	0.81	0.00	Curb	10	5	Sag	2	0.05	0.02	0.18	n/a	n/a	0.18	5.94	Sag
2-5	2-6L	0.08	6.20	6.91	0.51	0.28	0.00	0.28	0.00	Curb	10	5	Sag	2	0.05	0.02	0.12	n/a	n/a	0.12	2.93	Sag
2-4	3-1	0.19	8.80	6.29	0.51	0.61	0.00	0.61	0.00	Dp-Curb	6	4	Sag	....	0.02	0.02	0.14	n/a	n/a	0.14	6.85	Sag
2-2	4-1	0.54	6.80	6.75	0.51	1.86	0.00	1.86	0.00	Dp-Curb	6	4	Sag	....	0.02	0.02	0.29	n/a	n/a	0.29	14.41	Sag
4-1	4-2	0.32	7.60	6.56	0.51	1.07	0.00	1.07	0.00	Dp-Curb	6	4	Sag	....	0.02	0.02	0.2	n/a	n/a	0.2	9.97	Sag
4-2	4-3	0.08	5.60	7.07	0.51	0.29	0.02	0.19	0.12	Curb	10	5	0.05	2	0.05	0.02	0.09	0.06	1.26	0.09	1.80	2-3
4-3	4-4	0.37	7.00	6.70	0.51	1.26	1.26	0.65	1.87	Curb	10	5	0.05	2	0.05	0.02	0.18	0.17	5.39	0.18	6.23	2-4
5-1	5-2	0.40	6.10	6.93	0.51	1.41	0.00	1.41	0.00	Dp-Curb	6	16	Sag	....	0.02	0.02	0.1	n/a	n/a	0.1	4.76	Sag
5-2	5-3	0.61	6.30	6.88	0.51	2.14	0.00	2.14	0.00	Dp-Curb	6	16	Sag	....	0.02	0.02	0.13	n/a	n/a	0.13	6.28	Sag
5-3	5-4	0.50	6.30	6.88	0.51	1.75	0.00	1.75	0.00	Dp-Curb	6	16	Sag	....	0.02	0.02	0.11	n/a	n/a	0.11	5.50	Sag
6-1	6-2	0.00	0.00	0.00	0.51	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	Sag
6-2	6-3	0.13	6.40	6.85	0.51	0.45	0.00	0.30	0.15	Curb	10	5	0.02	2	0.05	0.02	0.12	0.08	1.63	0.12	3.11	6-4
6-3	6-4	0.10	6.10	6.93	0.51	0.35	0.15	0.32	0.18	Curb	10	5	0.02	2	0.05	0.02	0.13	0.09	1.74	0.13	3.34	4-4
6-4	6-5R	0.70	7.60	6.56	0.51	2.34	2.23	4.57	0.00	Curb	10	5	Sag	2	0.05	0.02	0.44	n/a	n/a	0.44	18.81	Sag
6-4	6-5L	0.21	7.00	6.70	0.51	0.72	0.00	0.72	0.00	Curb	10	5	Sag	2	0.05	0.02	0.17	n/a	n/a	0.17	5.47	Sag
6-5	6-6	0.07	5.80	7.01	0.51	0.25	0.00	0.23	0.02	Curb	10	5	0.01	2	0.05	0.02	0.11	0.05	0.94	0.11	2.59	4-3
6-4	7-1R	0.17	8.20	6.42	0.51	0.56	0.00	0.37	0.19	Curb	10	5	0.014	2	0.05	0.02	0.14	0.09	1.88	0.14	3.96	4-4
6-4	7-1L	0.37	7.30	6.63	0.51	1.25	0.00	0.60	0.65	Curb	10	5	0.014	2	0.05	0.02	0.18	0.15	4.34	0.18	6.04	4-4
7-1	7-2	0.19	7.30	6.63	0.51	0.64	0.00	0.40	0.24	Curb	10	5	0.014	2	0.05	0.02	0.15	0.1	2.15	0.15	4.30	4-4
6-3	8-1	0.97	8.60	6.33	0.51	3.13	0.00	0.91	2.23	Curb	10	5	0.02	2	0.05	0.02	0.23	0.21	7.25	0.23	8.41	6-5
9-1	9-2	0.00	0.00	0.00	0.51	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	Sag
9-2	9-3R	0.25	7.50	6.58	0.51	0.84	0.00	0.84	0.00	Curb	10	5	Sag	2	0.05	0.02	0.18	n/a	n/a	0.18	6.07	Sag
9-2	9-3L	0.19	6.70	6.78	0.51	0.66	0.00	0.66	0.00	Curb	10	5	Sag	2	0.05	0.02	0.16	n/a	n/a	0.16	5.16	Sag
10-1	10-2	0.35	6.30	6.88	0.51	1.23	0.00	1.23	0.00	Dp-Curb	6	8	Sag	....	0.02	0.02	0.14	n/a	n/a	0.14	6.88	Sag
10-2	10-3	1.26	9.70	6.10	0.51	3.92	0.00	3.92	0.00	Dp-Curb	6	16	Sag	....	0.02	0.02	0.19	n/a	n/a	0.19	9.40	Sag

10-YEAR PIPE																					
D.S. Str.	U.S. Str.	LineLength	Incr.Area	TotalArea	RunoffCoeff.	IncrC x A	TotalC x A	InletTime	TimeConc	RnfallInt	TotalRunoff	TotalFlow	CapacFull	Veloc	PipeSize	PipeSlope	Inv ElevDn	Inv ElevUp	HGLDn	HGLUp	Grnd/RimDn	Grnd/RimUp
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
1-1	1-2	139.4	0.77	0.77	0.51	0.39	0.39	8.8	8.8	6.3	2.47	2.47	12.76	6.02	15	2.31	911.78	915.00	912.15	915.63	0.00	918.50
2-1	2-2	50.18	0.28	3.69	0.51	0.14	1.88	5.3	9.6	6.1	11.52	11.52	83.02	12.16	24	7.97	912.00	916.00	912.50	917.22	0.00	924.50
2-2	2-3	138.03	0.12	2.10	0.51	0.06	1.07	5.9	9.4	6.2	6.60	6.60	40.78	11.13	18	8.93	920.00	932.32	920.41	933.31	924.50	941.27
2-3	2-4	46.47	0.60	1.98	0.51	0.31	1.01	6.2	9.3	6.2	6.25	6.25	14.16	6.48	18	1.08	932.82	933.32	933.52	934.29	941.27	940.79
2-4	2-5R	94.12	0.40	1.19	0.51	0.20	0.61	6.4	8.1	6.4	3.91	3.91	9.40	6.01	15	1.25	933.82	935.00	934.38	935.80	940.79	939.79
2-4	2-5L	1	0.55	0.55	0.51	0.28	0.28	8.1	8.1	6.4	1.81	1.81	26.54	2.90	15	10.00	935.00	935.10	935.80	935.63	939.79	939.79
2-5	2-6R	34	0.16	0.24	0.51	0.08	0.12	6.5	6.5	6.8	0.84	0.84	7.75	3.29	15	0.85	935.50	935.79	935.80	936.15	939.79	939.79
2-5	2-6L	1	0.08	0.08	0.51	0.04	0.04	6.2	6.2	6.9	0.28	0.28	26.55	1.56	15	10.00	935.79	935.89	936.15	936.10	939.79	939.79
2-4	3-1	128.62	0.19	0.19	0.51	0.10	0.10	8.8	8.8	6.3	0.61	0.61	17.36	4.63	15	4.28	936.00	941.50	936.16	941.80	940.79	946.25
2-2	4-1	113.49	0.54	1.31	0.51	0.28	0.67	6.8	8.3	6.4	4.27	4.27	14.33	4.82	18	1.10	916.50	917.75	917.22	918.54	924.50	924.50
4-1	4-2	189.85	0.32	0.77	0.51	0.16	0.39	7.6	7.6	6.6	2.57	2.57	25.85	4.55	15	9.48	918.00	936.00	918.54	936.64	924.50	944.33
4-2	4-3	135.55	0.08	0.45	0.51	0.04	0.23	5.6	7.1	6.7	1.53	1.53	16.12	5.85	15	3.69	940.00	945.00	940.26	945.49	944.33	950.08
4-3	4-4	34	0.37	0.37	0.51	0.19	0.19	7.0	7.0	6.7	1.26	1.26	12.47	4.56	15	2.21	945.20	945.95	945.49	946.39	950.08	950.08
5-1	5-2	93.83	0.40	1.51	0.51	0.20	0.77	6.1	7.8	6.5	5.01	5.01	5.48	5.06	15	0.43	938.00	938.40	938.94	939.34	0.00	944.00
5-2	5-3	259.22	0.61	1.11	0.51	0.31	0.57	6.3	6.9	6.7	3.81	3.81	5.37	4.69	15	0.41	938.90	939.96	939.68	940.75	944.00	944.00
5-3	5-4	132.58	0.50	0.50	0.51	0.26	0.26	6.3	6.3	6.9	1.75	1.75	5.36	3.74	15	0.41	940.46	941.00	940.95	941.53	944.00	944.00
6-1	6-2	49.06	0.00	2.91	0.51	0.00	1.48	0.0	9.2	6.2	9.20	9.20	91.97	12.00	24	9.78	940.00	944.80	940.43	945.88	0.00	950.20
6-2	6-3	140.5	0.13	2.91	0.51	0.07	1.48	6.4	8.9	6.3	9.31	9.31	30.38	6.15	24	1.07	945.00	946.50	945.88	947.59	950.20	958.57
6-3	6-4	175.8	0.10	1.81	0.51	0.05	0.92	6.1	8.4	6.4	5.89	5.89	12.61	6.05	18	0.85	947.00	948.50	947.72	949.44	958.57	955.36
6-4	6-5R	79.6	0.70	0.98	0.51	0.36	0.50	7.6	7.6	6.6	3.28	3.28	6.65	4.90	15	0.63	949.00	949.50	949.62	950.23	955.36	954.54
6-4	6-5L	1	0.21	0.21	0.51	0.11	0.11	7.0	7.0	6.7	0.72	0.72	26.54	1.86	15	10.00	949.50	949.60	950.23	949.93	954.54	954.54
6-5	6-6	34	0.07	0.07	0.51	0.04	0.04	5.8	5.8	7.0	0.25	0.25	10.58	1.85	15	1.59	950.00	950.54	950.23	950.73	954.54	954.54
6-4	7-1R	50	0.17	0.73	0.51	0.09	0.37	8.2	8.2	6.4	2.39	2.39	8.39	4.92	15	1.00	949.00	949.50	949.46	950.12	955.36	954.87
6-4	7-1L	1	0.37	0.56	0.51	0.19	0.29	7.3	7.5	6.6	1.88	1.88	26.54	3.39	15	10.00	949.50	949.60	950.12	950.15	954.87	954.87
7-1	7-2	34	0.19	0.19	0.51	0.10	0.10	7.3	7.3	6.6	0.64	0.64	10.18	3.65	15	1.47	950.00	950.50	950.21	950.81	954.87	954.87
6-3	8-1	35.8	0.97	0.97	0.51	0.49	0.49	8.6	8.6	6.3	3.13	3.13	11.48	6.15	15	1.87	954.00	954.67	954.45	955.38	958.57	958.33
9-1	9-2	75	0.00	0.44	0.51	0.00	0.22	0.0	7.8	6.5	1.46	1.46	8.67	4.32	15	1.07	942.00	942.80	942.35	943.28	0.00	950.86
9-2	9-3R	96.85	0.25	0.44	0.51	0.13	0.22	7.5	7.5	6.6	1.48	1.48	25.59	5.33	15	9.29	943.00	952.00	943.28	952.48	950.86	956.92
9-2	9-3L	1	0.19	0.19	0.51	0.10	0.10	6.7	6.7	6.8	0.66	0.66	26.54	2.10	15	10.00	952.00	952.10	952.48	952.42	956.92	956.92
10-1	10-2	134.78	0.35	1.61	0.51	0.18	0.82	6.3	10.2	6.0	4.92	4.92	14.46	7.93	15	2.97	938.00	942.00	938.50	942.90	0.00	946.00
10-2	10-3	165.22	1.26	1.26	0.51	0.64	0.64	9.7	9.7	6.1	3.92	3.92	12.22	5.14	15	2.12	942.20	945.70	942.90	946.50	946.00	949.70

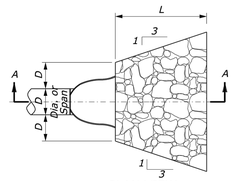
EX. RIPRAP APRON CALCULATIONS

Field End Section #	1-1		
Q =	3.4	cfs	D_{50} = riprap size, m(ft)
D =	1.25	ft	Q = design discharge, m^3/s (ft^3/s)
Tw =	0.5	ft	D = culvert diameter (circular), m(ft)
g =	32.2	ft/s^2	Tw = tailwater depth, m(ft), if unknown use 0.4*D
			g = acceleration due to gravity, 9.81 m/s^2 (32.2 ft/s^2)
D_{50} =	1.80	inches	Subcritical Flow
S =	0.0231	ft/ft	S = pipe slope, m/m(ft/ft)
n =	0.01		n = manning's roughness coefficient, unitless
Qcap =	12.71	ft^3/s	Qcap = full pipe capacity, m^3/s(ft^3/s)
Q/Qcap =	0.27		Q/Qcap = design discharge/full pipe capacity, unitless
d/D =	0.35		d/D = water depth/pipe diameter, unitless
d =	0.44	ft	d = depth of flow, m(ft)
Vcap =	10.36	ft^2/s	Velocity Full m^2/s(ft^2/s)
V/Vcap	0.8430		V/Vcap = design velocity/full pipe velocity, unitless
V =	8.73	ft/s	V = velocity of flow segment, m^2/s(ft^2/s)
Fr =	2.33		Fr > 1 Supercritical, Fr = 1 Critical, Fr < 1 Subcritical
Flow =	Supercritical		If flow is Supercritical adjust culvert diameter
D' =	0.84	ft	D' = culvert diameter adjustment, m(ft)
yn =	0.44	ft	yn = normal (supercritcal) depth in culvert, m(ft)
D_{50} =	3.04	inches	
Classify	3.04	inches	

Class 1	Use D_{50} = 5			
Apron Length =	4 * D	5.00 ft	Use	5.00 ft
Apron Depth =	3.5 * D_{50}	17.50 inches	Use	18.00 inches
Apron Width =	3*D+(2/3)L	7.08 ft	Use	8.00 ft

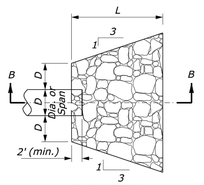
				RipRap Apron				
RipRap Apron	Area (ac.)	Q100 (cfs)	Dia. (ft)	Class	D_{50} (in)	Length (ft)	Depth (in)	Width (ft)
1-1	0.77	3.4	1.25	1	5	5	18	8
2-1	3.69	15.96	2	3	10	10	24	13
5-1	1.51	6.83	1.25	1	5	5	18	8
6-1	2.91	12.73	2	3	10	10	24	13
9-1	0.44	2.01	1.25	1	5	5	18	8
10-1	1.61	6.83	1.25	1	5	5	18	8
12-1	6.00	5.29	2	1	5	8	18	12

STANDARD RIPRAP APRON DETAIL



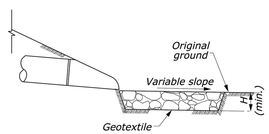
PLAN VIEW

CULVERT WITH STANDARD END SECTION

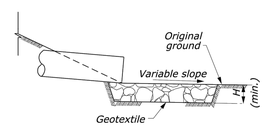


PLAN VIEW

CULVERT WITHOUT STANDARD END SECTION



SECTION A-A



SECTION B-B

NOTES:
1. ALL RIPRAP APRONS SHALL CONFORM TO THE STANDARD CONFIGURATION SHOWN IN THE STANDARD DETAIL ABOVE UNLESS OTHERWISE NOTED. PLAN VIEW DIMENSIONS SHOWN SHALL BE MET OR EXCEEDED INCLUDING AREAS OF LONGITUDINAL AND/OR TRANSVERSE SLOPE.
2. DIMENSIONS FOR EACH RIPRAP APRON AND ASSOCIATED RIPRAP ARE DETAILED IN THE TABLE ABOVE.
3. WIDTH REFERS TO DIMENSION OPPOSITE PIPE AND DEPTH IS DIMENSION H.
4. GEOTEXTILE SHALL BE "GEI WORKS 4 OUNCE" NON-WOVEN FILTER FABRIC DESIGNED FOR FILTRATION, STABILIZATION AND SEPARATION. WRAPPED CONTINUOUSLY ALONG THE SIDEWALLS AND BOTTOM OF THE PREPARED AREA OR SLOPE.
   - WATER FLOW = 120 GPM/SF
   - GRAB STRENGTH (MIN) = 400 N
   - PUNCTURE STRENGTH (MIN) = 178 N
   - TRAPEZOIDAL TEAR (MIN) = 133 N
   - ELONGATION (MIN) = 15%

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Professional Registration
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Surveying LS-218
Oklahoma
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Engineering CA2821

Part of the Southeast 1/4
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2020

Storm Sewer Tables - 10 Year

Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS

100-YEAR INLET																						
D.S. Str.	Str. No.	Area	InletTime	Int.	RunoffCoeff.	Q =CIA	Q Carry-over	QCaptured	QBypassed	JunctType	CurbHeight	CurbLength	GutterSlope	GutterWidth	CrossSlope, Sw	CrossSlope, Sx	InletDepth	BypassDepth	BypassSpread	GutterDepth	GutterSpread	BypassLine No.
		(ac)	(min)	(in/hr)	(C)	(cfs)	(cfs)	(cfs)	(cfs)		(in)	(ft)	(ft/ft)	(ft)	(ft/ft)	(ft/ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1-1	1-2	0.77	8.8	8.67	0.51	3.40	0.00	3.40	0.00	Dp-Curb	6	8	Sag	....	0.02	0.02	0.27	n/a	n/a	0.27	13.59	Sag
2-1	2-2	0.28	5.3	9.73	0.51	1.39	0.00	1.39	0.00	Dp-Curb	6	8	Sag	....	0.02	0.02	0.15	n/a	n/a	0.15	7.47	Sag
2-2	2-3	0.12	5.9	9.53	0.51	0.58	0.21	0.37	0.42	Curb	10	5	0.038	2	0.05	0.02	0.13	0.11	2.3	0.13	3.62	2-6
2-3	2-4	0.60	6.2	9.43	0.51	2.89	2.97	1.07	4.78	Curb	10	5	0.038	2	0.05	0.02	0.25	0.24	8.78	0.25	9.56	2-5
2-4	2-5R	0.40	6.4	9.36	0.51	1.91	4.78	6.69	0.00	Curb	10	5	Sag	2	0.05	0.02	0.55	n/a	n/a	0.55	24.26	Sag
2-4	2-5L	0.55	8.1	8.86	0.51	2.48	0.00	2.48	0.00	Curb	10	5	Sag	2	0.05	0.02	0.31	n/a	n/a	0.31	12.53	Sag
2-5	2-6R	0.16	6.5	9.33	0.51	0.76	0.42	1.18	0.00	Curb	10	5	Sag	2	0.05	0.02	0.21	n/a	n/a	0.21	7.64	Sag
2-5	2-6L	0.08	6.2	9.43	0.51	0.38	0.00	0.38	0.00	Curb	10	5	Sag	2	0.05	0.02	0.13	n/a	n/a	0.13	3.61	Sag
2-4	3-1	0.19	8.8	8.67	0.51	0.84	0.00	0.84	0.00	Dp-Curb	6	4	Sag	....	0.02	0.02	0.17	n/a	n/a	0.17	8.48	Sag
2-2	4-1	0.54	6.8	9.24	0.51	2.54	0.00	2.54	0.00	Dp-Curb	6	4	Sag	....	0.02	0.02	0.36	n/a	n/a	0.36	17.77	Sag
4-1	4-2	0.32	7.6	9.00	0.51	1.47	0.00	1.47	0.00	Dp-Curb	6	4	Sag	....	0.02	0.02	0.25	n/a	n/a	0.25	12.32	Sag
4-2	4-3	0.08	5.6	9.63	0.51	0.39	0.06	0.24	0.21	Curb	10	5	0.05	2	0.05	0.02	0.10	0.08	1.54	0.10	2.16	2-3
4-3	4-4	0.37	7.0	9.18	0.51	1.73	2.04	0.80	2.97	Curb	10	5	0.05	2	0.05	0.02	0.21	0.19	6.71	0.21	7.47	2-4
5-1	5-2	0.40	6.1	9.46	0.51	1.93	0.00	1.93	0.00	Dp-Curb	6	16	Sag	....	0.02	0.02	0.12	n/a	n/a	0.12	5.86	Sag
5-2	5-3	0.61	6.3	9.40	0.51	2.92	0.00	2.92	0.00	Dp-Curb	6	16	Sag	....	0.02	0.02	0.15	n/a	n/a	0.15	7.73	Sag
5-3	5-4	0.50	6.3	9.40	0.51	2.40	0.00	2.40	0.00	Dp-Curb	6	16	Sag	....	0.02	0.02	0.14	n/a	n/a	0.14	6.77	Sag
6-1	6-2	0.00	0.0	0.00	0.51	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	Sag
6-2	6-3	0.13	6.4	9.36	0.51	0.62	0.00	0.37	0.25	Curb	10	5	0.02	2	0.05	0.02	0.14	0.1	1.97	0.14	3.80	6-4
6-3	6-4	0.10	6.1	9.46	0.51	0.48	0.25	0.41	0.33	Curb	10	5	0.02	2	0.05	0.02	0.14	0.11	2.43	0.14	4.20	4-4
6-4	6-5R	0.70	7.6	9.00	0.51	3.21	3.24	6.46	0.00	Curb	10	5	Sag	2	0.05	0.02	0.53	n/a	n/a	0.53	23.70	Sag
6-4	6-5L	0.21	7.0	9.18	0.51	0.98	0.00	0.98	0.00	Curb	10	5	Sag	2	0.05	0.02	0.20	n/a	n/a	0.20	6.75	Sag
6-5	6-6	0.07	5.8	9.56	0.51	0.34	0.00	0.28	0.06	Curb	10	5	0.01	2	0.05	0.02	0.12	0.06	1.28	0.12	3.24	4-3
6-4	7-1R	0.17	8.2	8.83	0.51	0.77	0.00	0.45	0.32	Curb	10	5	0.014	2	0.05	0.02	0.15	0.11	2.72	0.15	4.73	4-4
6-4	7-1L	0.37	7.3	9.09	0.51	1.72	0.00	0.71	1.00	Curb	10	5	0.014	2	0.05	0.02	0.20	0.17	5.43	0.20	6.99	4-4
7-1	7-2	0.19	7.3	9.09	0.51	0.88	0.00	0.49	0.39	Curb	10	5	0.014	2	0.05	0.02	0.16	0.12	3.17	0.16	5.09	4-4
6-3	8-1	0.97	8.6	8.72	0.51	4.31	0.00	1.07	3.24	Curb	10	5	0.02	2	0.05	0.02	0.25	0.23	8.54	0.25	9.63	6-5
9-1	9-2	0.00	0.0	0.00	0.51	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	Sag
9-2	9-3R	0.25	7.5	9.03	0.51	1.15	0.00	1.15	0.00	Curb	10	5	Sag	2	0.05	0.02	0.21	n/a	n/a	0.21	7.50	Sag
9-2	9-3L	0.19	6.7	9.27	0.51	0.90	0.00	0.90	0.00	Curb	10	5	Sag	2	0.05	0.02	0.19	n/a	n/a	0.19	6.36	Sag
10-1	10-2	0.35	6.3	9.40	0.51	1.68	0.00	1.68	0.00	Dp-Curb	6	8	Sag	....	0.02	0.02	0.17	n/a	n/a	0.17	8.48	Sag
10-2	10-3	1.26	9.7	8.43	0.51	5.42	0.00	5.42	0.00	Dp-Curb	6	16	Sag	....	0.02	0.02	0.23	n/a	n/a	0.23	11.67	Sag

100-YEAR PIPE																						
D.S. Str.	U.S. Str.	LineLength	Incr.Area	TotalArea	RunoffCoeff.	IncrC x A	TotalC x A	InletTime	TimeConc	RnfallInt	TotalRunoff	TotalFlow	CapacFull	Veloc	PipeSize	PipeSlope	Inv ElevDn	Inv ElevUp	HGLDn	HGLUp	Grnd/RimDn	Grnd/RimUp
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
1-1	1-2	139.4	0.77	0.77	0.51	0.39	0.39	8.8	8.8	8.7	3.40	3.40	12.76	6.63	15	2.31	911.78	915.00	912.22	915.74	0.00	918.50
2-1	2-2	50.18	0.28	3.69	0.51	0.14	1.88	5.3	9.5	8.5	15.96	15.96	83.02	13.49	24	7.97	912.00	916.00	912.59	917.44	0.00	924.50
2-2	2-3	138.03	0.12	2.10	0.51	0.06	1.07	5.9	9.3	8.5	9.13	9.13	40.78	12.39	18	8.93	920.00	932.32	920.48	933.49	924.50	941.27
2-3	2-4	46.47	0.60	1.98	0.51	0.31	1.01	6.2	9.2	8.6	8.64	8.64	14.16	7.21	18	1.08	932.82	933.32	933.67	934.46	941.27	940.79
2-4	2-5R	94.12	0.40	1.19	0.51	0.20	0.61	6.4	8.1	8.9	5.38	5.38	9.40	6.68	15	1.25	933.82	935.00	934.50	935.94	940.79	939.79
2-4	2-5L	1	0.55	0.55	0.51	0.28	0.28	8.1	8.1	8.9	2.48	2.48	26.54	3.26	15	10.00	935.00	935.10	935.94	935.73	939.79	939.79
2-5	2-6R	34	0.16	0.24	0.51	0.08	0.12	6.5	6.5	9.3	1.14	1.14	7.75	3.06	15	0.85	935.50	935.79	935.94	936.21	939.79	939.79
2-5	2-6L	1	0.08	0.08	0.51	0.04	0.04	6.2	6.2	9.4	0.38	0.38	26.55	1.69	15	10.00	935.79	935.89	936.21	936.13	939.79	939.79
2-4	3-1	128.62	0.19	0.19	0.51	0.10	0.10	8.8	8.8	8.7	0.84	0.84	17.36	5.09	15	4.28	936.00	941.50	936.19	941.86	940.79	946.25
2-2	4-1	113.49	0.54	1.31	0.51	0.28	0.67	6.8	8.3	8.8	5.89	5.89	14.33	5.07	18	1.10	916.50	917.75	917.44	918.69	924.50	924.50
4-1	4-2	189.85	0.32	0.77	0.51	0.16	0.39	7.6	7.6	9.0	3.53	3.53	25.85	4.83	15	9.48	918.00	936.00	918.69	936.76	924.50	944.33
4-2	4-3	135.55	0.08	0.45	0.51	0.04	0.23	5.6	7.1	9.1	2.10	2.10	16.12	6.43	15	3.69	940.00	945.00	940.30	945.58	944.33	950.08
4-3	4-4	34	0.37	0.37	0.51	0.19	0.19	7.0	7.0	9.2	1.73	1.73	12.47	4.56	15	2.21	945.20	945.95	945.58	946.47	950.08	950.08
5-1	5-2	93.83	0.40	1.51	0.51	0.20	0.77	6.1	8.1	8.9	6.83	6.83	5.48	5.57	15	0.43	938.00	938.40	939.25	939.87	0.00	944.00
5-2	5-3	259.22	0.61	1.11	0.51	0.31	0.57	6.3	7.0	9.2	5.19	5.19	5.37	4.24	15	0.41	938.90	939.96	940.29	941.19	944.00	944.00
5-3	5-4	132.58	0.50	0.50	0.51	0.26	0.26	6.3	6.3	9.4	2.40	2.40	5.36	2.99	15	0.41	940.46	941.00	941.60	941.62	944.00	944.00
6-1	6-2	49.06	0.00	2.91	0.51	0.00	1.48	0.0	9.2	8.6	12.73	12.73	91.97	13.27	24	9.78	940.00	944.80	940.50	946.08	0.00	950.20
6-2	6-3	140.5	0.13	2.91	0.51	0.07	1.48	6.4	8.8	8.7	12.86	12.86	30.38	6.71	24	1.07	945.00	946.50	946.08	947.79	950.20	958.57
6-3	6-4	175.8	0.10	1.81	0.51	0.05	0.92	6.1	8.4	8.8	8.11	8.11	12.61	6.70	18	0.85	947.00	948.50	947.88	949.60	958.57	955.36
6-4	6-5R	79.6	0.70	0.98	0.51	0.36	0.50	7.6	7.6	9.0	4.50	4.50	6.65	5.41	15	0.63	949.00	949.50	949.75	950.36	955.36	954.54
6-4	6-5L	1	0.21	0.21	0.51	0.11	0.11	7.0	7.0	9.2	0.98	0.98	26.54	2.05	15	10.00	949.50	949.60	950.36	949.99	954.54	954.54
6-5	6-6	34	0.07	0.07	0.51	0.04	0.04	5.8	5.8	9.6	0.34	0.34	10.58	1.71	15	1.59	950.00	950.54	950.36	950.77	954.54	954.54
6-4	7-1R	50	0.17	0.73	0.51	0.09	0.37	8.2	8.2	8.8	3.29	3.29	8.39	5.02	15	1.00	949.00	949.50	949.60	950.23	955.36	954.87
6-4	7-1L	1	0.37	0.56	0.51	0.19	0.29	7.3	7.4	9.0	2.58	2.58	26.54	3.76	15	10.00	949.50	949.60	950.23	950.24	954.87	954.87
7-1	7-2	34	0.19	0.19	0.51	0.10	0.10	7.3	7.3	9.1	0.88	0.88	10.18	4.00	15	1.47	950.00	950.50	950.25	950.87	954.87	954.87
6-3	8-1	35.8	0.97	0.97	0.51	0.49	0.49	8.6	8.6	8.7	4.31	4.31	11.48	6.80	15	1.87	954.00	954.67	954.53	955.51	958.57	958.33
9-1	9-2	75	0.00	0.44	0.51	0.00	0.22	0.0	7.8	8.9	2.01	2.01	8.67	4.74	15	1.07	942.00	942.80	942.41	943.36	0.00	950.86
9-2	9-3R	96.85	0.25	0.44	0.51	0.13	0.22	7.5	7.5	9.0	2.03	2.03	25.59	5.28	15	9.29	943.00	952.00	943.36	952.57	950.86	956.92
9-2	9-3L	1	0.19	0.19	0.51	0.10	0.10	6.7	6.7	9.3	0.90	0.90	26.54	2.30	15	10.00	952.00	952.10	952.57	952.47	956.92	956.92
10-1	10-2	134.78	0.35	1.61	0.51	0.18	0.82	6.3	10.2	8.3	6.83	6.83	14.46	8.91	15	2.97	938.00	942.00	938.60	943.05	0.00	946.00
10-2	10-3	165.22	1.26	1.26	0.51	0.64	0.64	9.7	9.7	8.4	5.42	5.42	12.22	5.79	15	2.12	942.20	945.70	943.05	946.64	946.00	949.70

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Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

Part of the Southeast $\frac{1}{4}$
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

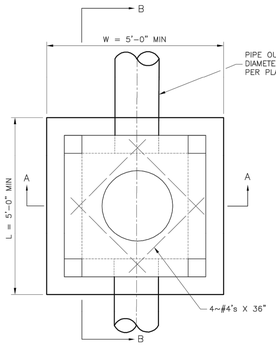
Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2020

Storm Sewer Tables - 100 Year

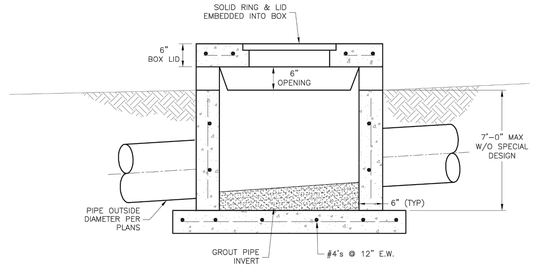
Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

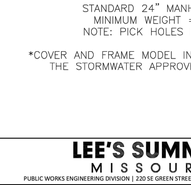
REVISIONS



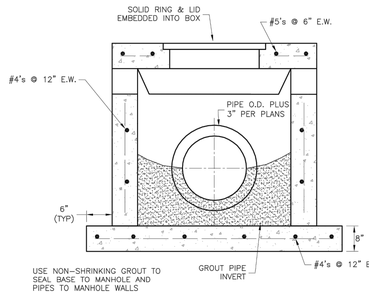
PLAN VIEW



SECTION B–B



WALL CORNER DETAIL



SECTION A–A

GENERAL NOTES:

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

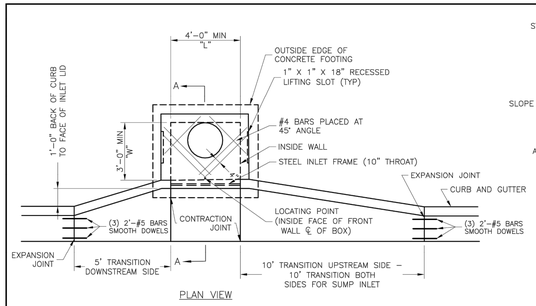
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

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

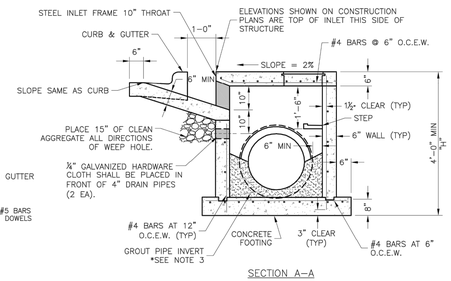
Project:
Street Name:

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

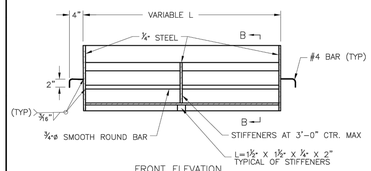
STM-2



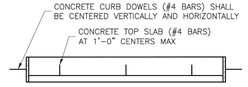
PLAN VIEW



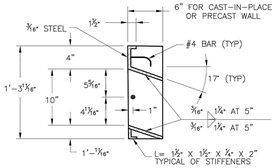
SECTION A–A



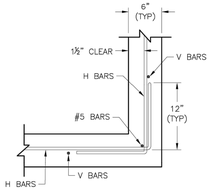
FRONT ELEVATION



PLAN VIEW



SECTION B–B



WALL CORNER DETAIL

STEEL FRAME NOTES:

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

GENERAL NOTES:

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

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

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

Project:
Street Name:

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

STM-1

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
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Engineering 2005002186-D
Surveying 2005000319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

Part of the Southeast ¼
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2020

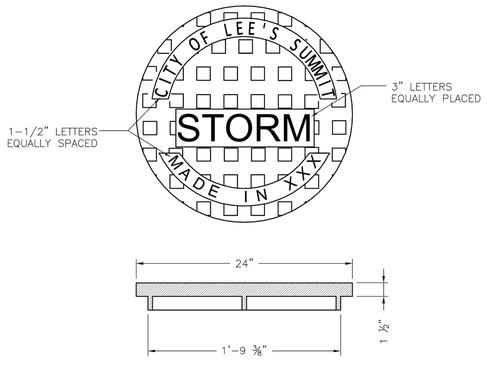
Construction Details

Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E–14335

REVISIONS

C.600



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

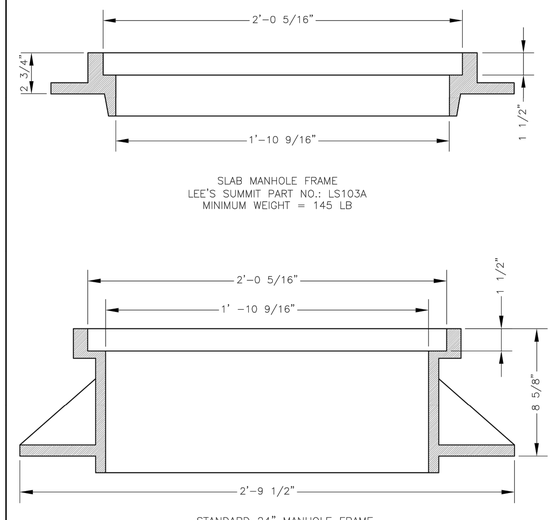
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCT LIST.

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

STORM MANHOLE COVER DETAIL

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

STM-6



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

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

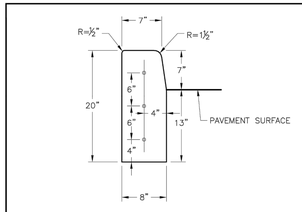
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCTS LIST.

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

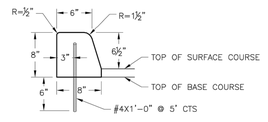
STORM MANHOLE FRAME DETAIL

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

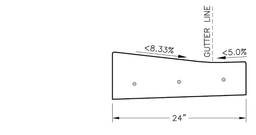
STM-7



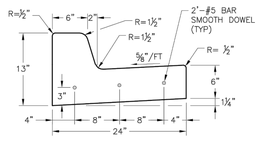
STRAIGHT CURB
(TYPE C–1)



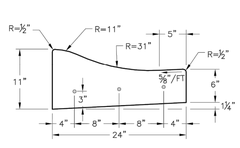
DOWELLED CURB
(TYPE DC)



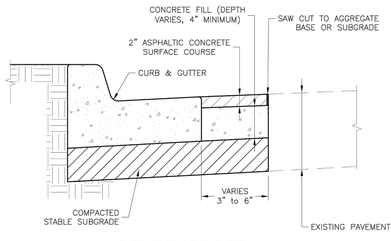
CURB & GUTTER DETAIL AT RAMP
(ADA SLOPE REQUIREMENTS)



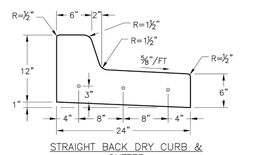
STRAIGHT BACK CURB & GUTTER
(TYPE CG–1)



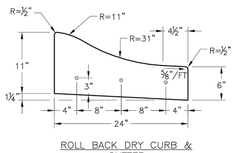
ROLL BACK CURB & GUTTER
(TYPE CG–2)



CURB REPLACEMENT DETAIL



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



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

GENERAL NOTES

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

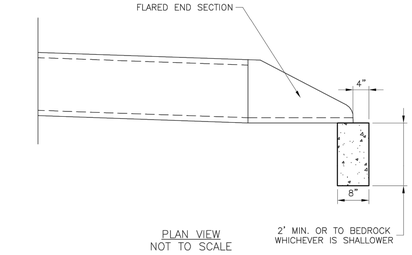
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

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

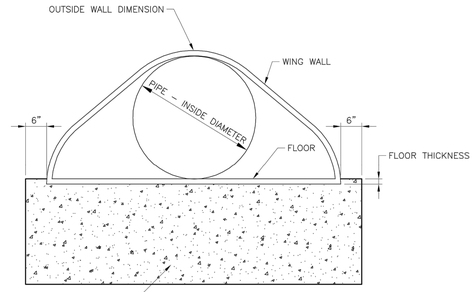
Project:
Street Name:

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

GEN-4



PLAN VIEW
NOT TO SCALE



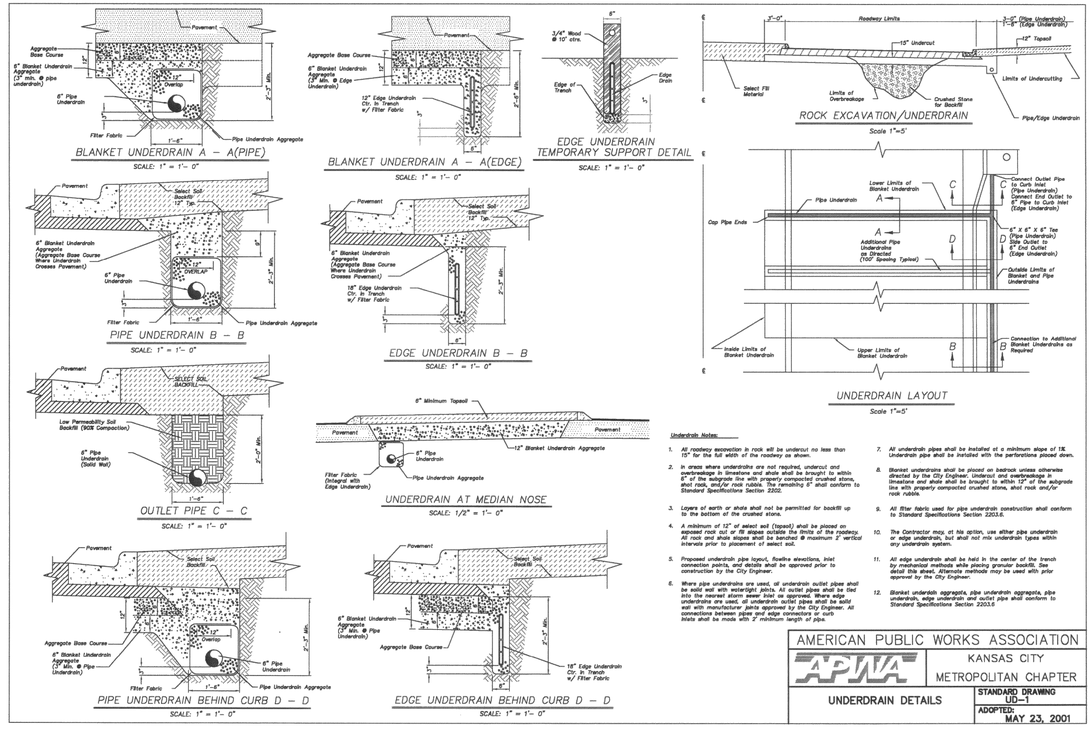
END VIEW
NOT TO SCALE

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

FLARED END SECTION SUPPORT DETAIL

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

STM-5



Underdrain Notes:

1. All roadway excavation in rock will be undercut no less than 15" for the full width of the roadway as shown.
2. 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 rubble. The remaining 6" shall conform to Standard Specifications Section 2202.
3. Layers of earth or shale shall not be permitted for backfill up to the bottom of the crushed stone.
4. 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.
5. Proposed underdrain pipe layout, flowline elevations, inlet connection points, and details shall be approved prior to construction by the City Engineer.
6. Where pipe underdrains are used, all underdrain outlet pipes shall be tied into the storm sewer system. 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.
7. All underdrain pipes shall be installed at a minimum slope of 1%. Underdrain pipe shall be installed with the perforations placed down.
8. 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.
9. All filter fabric used for pipe underdrain construction shall conform to Standard Specifications Section 2203.6.
10. The Contractor may, at his option, use either pipe underdrain or edge underdrain, but shall not mix underdrain types within any underdrain system.
11. 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.
12. 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
APWA
KANSAS CITY METROPOLITAN CHAPTER

UNDERDRAIN DETAILS

STANDARD DRAWING UD-1
ADOPTED: MAY 23, 2001

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
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Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005000319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

Part of the Southeast 1/4
Section 27, Township 48 North, Range 31 West
Lee's Summit, Jackson County, Missouri

Project: WOODLAND OAKS LSMO
Issue Date: February 25, 2020

Construction Details
Construction Plans for:
WOODLAND OAKS
Lots 1 thru 42
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 2226
NE PE E-14335

REVISIONS

C.601