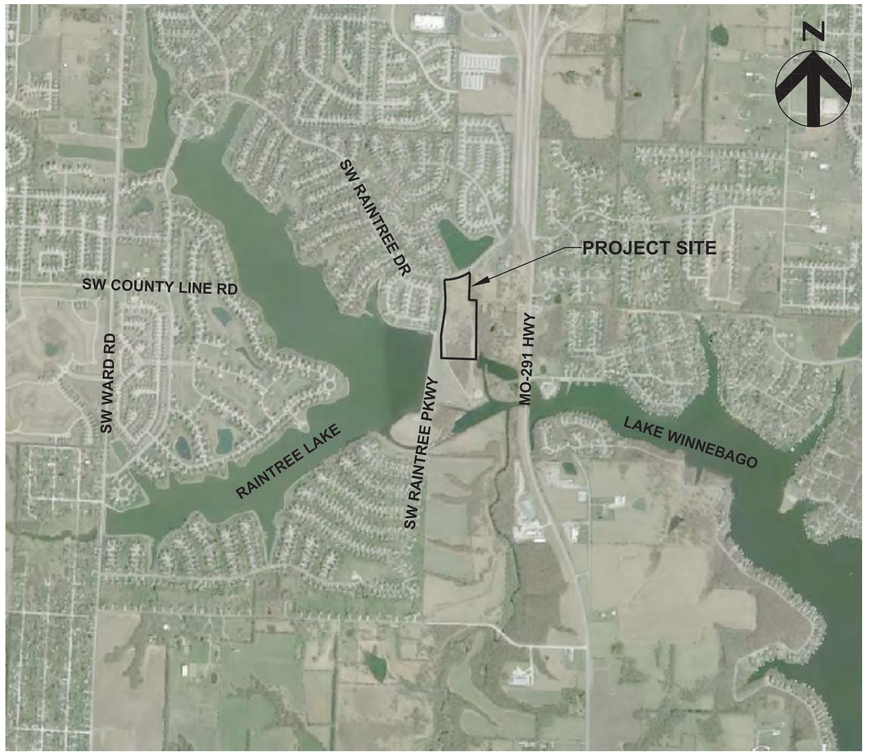


Permit Review Drawings For

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31 AND TRACTS A THRU F

STREET, STORM, MASS GRADING, & EROSION/SEDIMENT CONTROL PLANS

IN THE CITY OF LEE'S SUMMIT
JACKSON & CASS COUNTY, MISSOURI

SECTION 31, TOWNSHIP 47 N, RANGE 31 W
SECTION 32, TOWNSHIP 47 N, RANGE 31 W
SECTION 5, TOWNSHIP 46 N, RANGE 31 W

HDR Project No.
10028402-276408

Lee's Summit, MO
February 2017

PLAN SHEET INDEX

OWNER CONTACT
J.P. Roberts
Landrock Development, LLC
4335 McGee St
Kansas City, MO 64111
jp@landrocksignaturehomes.com
(816) 863-5588

CONSULTANT CONTACT
Simon Sun
HDR Engineering, Inc.
4435 Main St, Suite 1000
Kansas City, MO 64111
simon.sun@hdrinc.com
(816) 360-2756

UTILITIES

ELECTRIC: KCP&L	816-471-5275
GAS: LACLEDE GAS, MISSOURI GAS ENERGY DIVISION	816-756-5252
TELEPHONE: AT&T	816-325-5607
CABLE: TIME WARNER	816-358-8833
WATER: LEE'S SUMMIT WATER UTILITIES	816-969-1900
SEWER: LEE'S SUMMIT PUBLIC WORKS	816-969-1800
INTERCEPTOR SEWER: LITTLE BLUE VALLEY SEWER DISTRICT	816-796-7660

811 Know what's **below.** **Call** before you dig.

UTILITY NOTES:
VISUAL INDICATIONS OF UTILITIES ARE AS SHOWN. UNDERGROUND LOCATIONS SHOWN, AS FURNISHED BY THEIR LESSORS, ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD AT THE TIME OF CONSTRUCTION. FOR ACTUAL FIELD LOCATIONS OF UNDERGROUND UTILITIES IN MISSOURI, CALL 1-800-344-7483.

"AS-BUILT"
October 29, 2018

HDR
3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
B	04/14/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J. BRESETTE
NUMBER PE-2005009883
PROFESSIONAL ENGINEER
4/20/17

SHEET NAME

COVER SHEET

SCALE: NO SCALE

SHEET NUMBER

01C-CR-00

FILE NAME: 01C-CR-00.dwg

PERMIT REVIEW DRAWINGS

LEGEND AND SYMBOLS

W	EXISTING WATER LINE
SS	EXISTING SANITARY SEWER LINE
FM	EXISTING SANITARY SEWER FORCE MAIN
SD	EXISTING STORM SEWER LINE
G	EXISTING GAS LINE
UGT	EXISTING UNDERGROUND TELEPHONE
FO	EXISTING UNDERGROUND FIBER OPTIC
OHE	EXISTING OVERHEAD ELECTRIC
UGE	EXISTING UNDERGROUND ELECTRIC
	EXISTING CENTERLINE
	EXISTING BOTTOM OF DITCH
	EXISTING PROPERTY LINE
	EXISTING ROW
	EXISTING FENCE
	EXISTING VEGETATION/BRUSH LINE
	EXISTING TREE
	EXISTING SHRUB
	EXISTING SIGN
C	EXISTING CABLE T.V. PEDESTAL
T	EXISTING TELEPHONE PEDESTAL
	EXISTING POWER POLE
	EXISTING LIGHT POLE
G	EXISTING GAS METER
ST	EXISTING STORM DRAINAGE MANHOLE
S	EXISTING SANITARY MANHOLE
	EXISTING WATER VALVE
W	EXISTING WATER METER
	EXISTING FIRE HYDRANT
	EXISTING RIGHT OF WAY MARKER
	EXISTING DOWNGUY
EXIST	EXISTING
LF	LINEAR FEET

PROPOSED IMPROVEMENTS

	PROPOSED BOUNDARY LINE
	PROPOSED ROW
	PROPOSED LOT LINE
	PROPOSED STREET CENTERLINE
	PROPOSED CURB AND GUTTER
SS	PROPOSED SANITARY SEWER LINE
SD	PROPOSED STORM SEWER LINE
W	PROPOSED WATER LINE
	PROPOSED EASEMENT LINE
	PROPOSED BUILDING LINE
	PROPOSED FIRE HYDRANT ASSEMBLY
	PROPOSED WATER VALVE
	PROPOSED MANHOLE
	PROPOSED STORM INLET BOX
	PROPOSED STORM JUNCTION BOX
	PROJECT CONTROL POINT
	PROJECT BENCHMARK

ENGINEERING CONTROL GENERAL NOTE

PROJECT COORDINATES ARE BASED ON THE MISSOURI STATE PLANE COORDINATE SYSTEM, WEST ZONE, UTILIZING JACKSON, MISSOURI GEOGRAPHIC REFERENCE SYSTEM MONUMENTS JA–50 & JA–137 (2003 ADJUSTMENT) AND ARE MODIFIED FROM STATE PLANE TO GROUND COORDINATES BY APPLYING A GRID SCALE FACTOR OF 0.9999011 AT REFERENCE MONUMENT JA–50.

JA–50 – STANDARD KC METRO ALUMINUM GRS DISK SET IN CONCRETE AND FLUSH WITH THE GROUND, STAMPED "JA–50, 1988".
N=992086.045, E–2804352.667

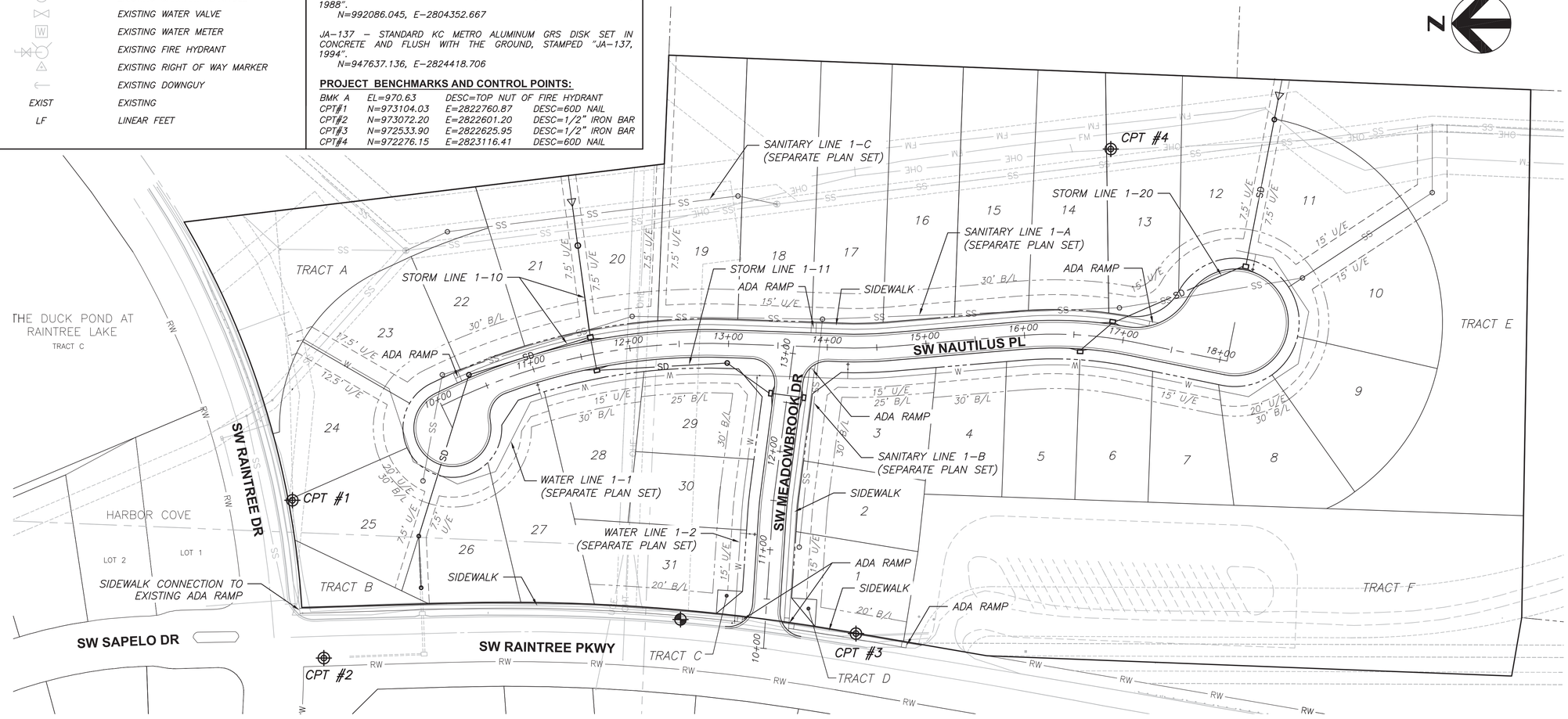
JA–137 – STANDARD KC METRO ALUMINUM GRS DISK SET IN CONCRETE AND FLUSH WITH THE GROUND, STAMPED "JA–137, 1994".
N=947637.136, E–2824418.706

PROJECT BENCHMARKS AND CONTROL POINTS:

BMK A	EL=970.63	DESC=TOP NUT OF FIRE HYDRANT	
CPT#1	N=973104.03	E=2822760.87	DESC=60D NAIL
CPT#2	N=973072.20	E=2822601.20	DESC=1/2" IRON BAR
CPT#3	N=972533.90	E=2822625.95	DESC=1/2" IRON BAR
CPT#4	N=972276.15	E=2823116.41	DESC=60D NAIL

GENERAL NOTES:

1. ALL CONSTRUCTION TO FOLLOW THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
2. ALL WORKMANSHIP AND MATERIALS SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF THE ENGINEERING DEPARTMENT OF THE CITY OF LEE'S SUMMIT, MISSOURI.
3. LINEAL FOOT MEASUREMENTS SHOWN ON THE PLANS ARE HORIZONTAL MEASUREMENTS, NOT SLOPE MEASUREMENTS.
4. NO RECENT GEOLOGICAL INVESTIGATION HAS BEEN PERFORMED ON THIS PROJECT.
5. THE UTILITY LOCATIONS SHOWN ON THESE PLANS ARE TAKEN FROM UTILITY COMPANY RECORDS AND APPARENT FIELD LOCATIONS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION.
6. THE CONTRACTOR SHALL ADHERE TO THE PROVISIONS OF THE SENATE BILL NUMBER 583, 78TH GENERAL ASSEMBLY OF THE STATE OF MISSOURI. THE BILL REQUIRES THAT ANY PERSON OR FIRM DOING EXCAVATION ON PUBLIC RIGHT–OF–WAY DO SO ONLY AFTER GIVING NOTICE TO, AND OBTAINING INFORMATION FROM, UTILITY COMPANIES. STATE LAW REQUIRES 72 HOURS ADVANCE NOTICE. THE CONTRACTOR MAY ALSO UTILIZE THE FOLLOWING TOLL FREE PHONE NUMBER PROVIDED BY "MISSOURI ONE CALL SYSTEM, INC.": 1–(800)–DIG RITE OR 811. THIS PHONE NUMBER IS APPLICABLE ANYWHERE WITHIN THE STATE OF MISSOURI. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL NOTIFY ALL THOSE COMPANIES WHICH HAVE FACILITIES IN THE NEAR VICINITY OF THE CONSTRUCTION TO BE PERFORMED.
7. PRIOR TO ORDERING PRECAST STRUCTURES, SHOP DRAWINGS SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR APPROVAL.
8. THE CONTRACTOR SHALL PROTECT ALL MAJOR TREES FROM DAMAGE, OUTSIDE OF THE GRADING LIMITS. NO TREE SHALL BE REMOVED WITHOUT PERMISSION OF THE OWNER, UNLESS SHOWN OTHERWISE.
9. CLEARING AND GRUBBING OPERATIONS AND DISPOSAL OF ALL DEBRIS THEREFROM SHALL BE PERFORMED BY THE CONTRACTOR IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND ORDINANCES.
10. ALL WASTE MATERIAL RESULTING FROM THE PROJECT SHALL BE DISPOSED OF OFF–SITE BY THE CONTRACTOR, OR AS DIRECTED BY THE OWNER.
11. ALL EXCAVATION SHALL BE UNCLASSIFIED.
12. THE CONTRACTOR SHALL CONTROL THE EROSION AND SILTATION DURING ALL PHASES OF CONSTRUCTION, AND SHALL KEEP THE STREETS CLEAN OF MUD AND DEBRIS.
13. ALL MANHOLES, CATCH BASINS, UTILITY VALVES AND METER PITS TO BE ADJUSTED OR REBUILT TO GRADE AS REQUIRED. ALL EXISTING UTILITIES SHALL BE ADJUSTED AS REQUIRED.
14. 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 WORKMEN OR MACHINERY ENGAGED IN SUBGRADE SURFACING, 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.
15. THE CONTRACTOR SHALL CONTACT PUBLIC WORKS INSPECTIONS AT 816–969–1800 TO OBTAIN A PUBLIC WORKS CONSTRUCTION PERMIT. A MINIMUM 48 HOUR NOTICE SHALL BE GIVEN PRIOR TO PERMIT ISSUANCE.
16. THE CONTRACTOR SHALL CONTACT THE CITY'S EROSION CONTROL SPECIALIST AT 816–969–1800 PRIOR TO ANY LAND DISTURBANCE.
17. THE CONTRACTOR SHALL CONTACT THE RIGHT–OF–WAY INSPECTOR AT 816–969–1800 PRIOR TO ANY LAND DISTURBANCE ACTIVITIES WITHIN THE RIGHT–OF–WAY. THESE ACTIVITIES MAY REQUIRE A PERMIT.
18. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL TRAFFIC HANDLING MEASURES NECESSARY TO ENSURE THAT THE GENERAL PUBLIC IS PROTECTED AT ALL TIMES. TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD – LATEST EDITION).



HDR
3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE LOTS 1 THRU 31 LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
B	04/14/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J. BRESETTE
NUMBER PE-2005009881
PROFESSIONAL ENGINEER
4/20/17

SHEET NAME

GENERAL LAYOUT AND NOTES

SCALE

1"=60'

0 60' 120'

SHEET NUMBER

01C-CR-01

FILE NAME 01C-CR-01.dwg

PERMIT REVIEW DRAWINGS

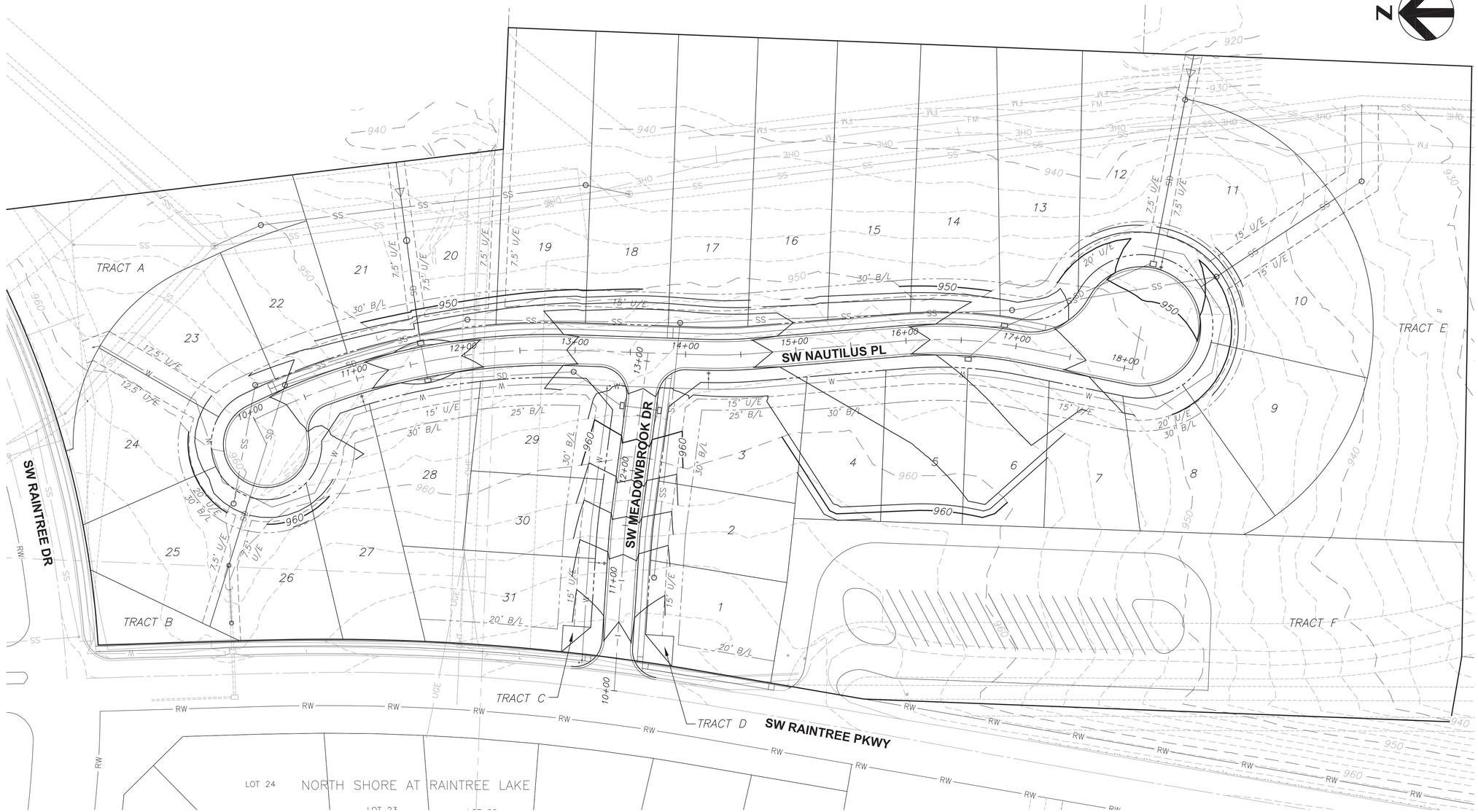
LEGEND

940 — MAJOR CONTOUR

MINOR CONTOUR

GRADING NOTES:

1. *SLOPES SHALL BE GRADED AS SHOWN ON THE PLANS WITH A MAXIMUM SLOPE OF 3:1 UNLESS NOTED OTHERWISE.*
2. *CONTOURS SHOWN ARE AT 2–FOOT INTERVALS.*
3. *DISTURBED AREAS SHALL HAVE SURFACES ROUGHENED PER CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AND KCAPWA SECTIONS 2102.3 AND 5106.4.*
4. *ALL PROPOSED GRADES ARE TO FINISH GRADE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ADJUSTMENTS FOR PAVEMENT THICKNESS, TOPSOIL REMOVAL/REPLACEMENT, ETC. INCLUDING TOP OF PAVEMENT.*
5. *EMBANKMENTS SHALL BE CONSTRUCTED TO 90% OF MAXIMUM DRY DENSITY OUTSIDE RIGHT OF WAY AND TO 95% WITHIN RIGHT OF WAY IN 8–INCH MAXIMUM LIFTS IN ACCORDANCE WITH APWA SECTION 2102.2 REQUIREMENTS.*
6. *REFER TO SHEET 01C–CR–08 FOR DETAILED MASTER DRAINAGE PLAN.*



HDR

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LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
B	04/14/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J. BRESETTE
NUMBER PE-2005009883
PROFESSIONAL ENGINEER
4/20/17

SHEET NAME

MASS GRADING PLAN

SCALE

1"=50'

0 50' 100'

SHEET NUMBER

01C-CR-02

FILE NAME 01C-CR-02.dwg

PERMIT REVIEW DRAWINGS

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL PUBLIC ROADWAYS ADJACENT TO THE CONSTRUCTION SITE FREE OF DIRT AND DEBRIS RESULTING FROM ACTIVITIES RELATED TO THE CONSTRUCTION OF THIS PROJECT.
2. CONTRACTOR SHALL UTILIZE TEMPORARY CONSTRUCTION ENTRANCE FOR ACCESS TO SITE.
3. MULCH BERMS SHALL BE AT LEAST 18–IN TALL AND 2–FT WIDE AT TOP OF BERM.
4. CONTRACTOR SHALL NOT STRIP ENTIRE SITE. LOCATE STOCKPILE/STORAGE AREAS AT TOP OF HILL. ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE PROVIDED AS REQUIRED SHOULD DISTURBED AREAS EXTEND BEYOND PLAN DEPICTED CONTROL MEASURES.
5. REFERENCE SHEET 01C–CR–07 FOR SEDIMENT TRAP DETAILS.

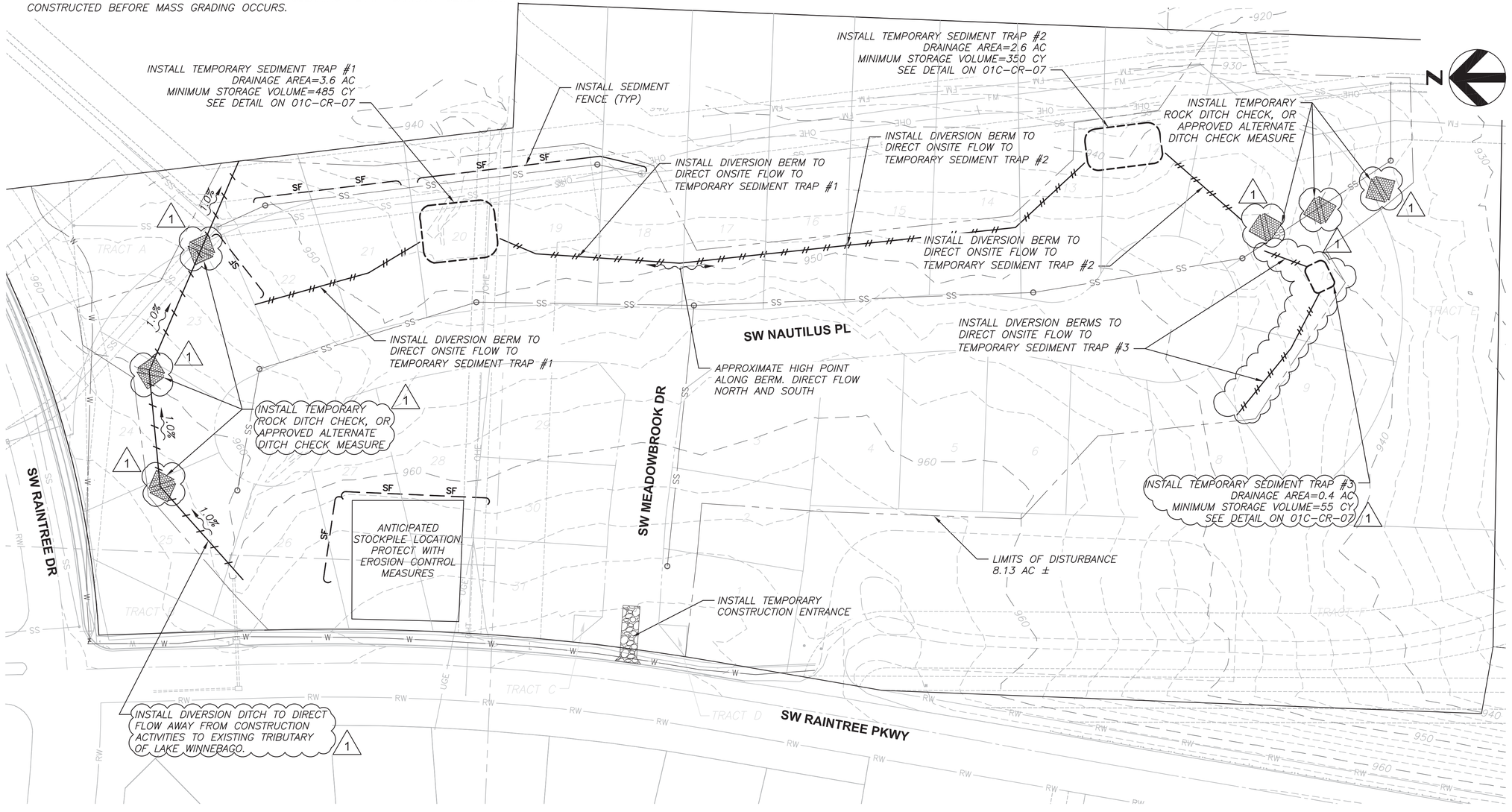
PRE–CLEARING EROSION AND SEDIMENT CONTROL SEQUENCING:

1. IMPLEMENT PRE–CLEARING PLAN: ALL STRUCTURAL BMPS SHOWN ON THE PRE–CLEARING PLAN MUST BE IN PLACE BEFORE GENERAL CLEARING OPERATIONS. CLEARING NECESSARY TO PLACE STRUCTURAL BMPS SHALL BE THE MINIMUM REQUIRED FOR INSTALLATION. COORDINATE CLEARING NECESSARY TO PLACE STRUCTURAL BMPS WITH LOCAL WEATHER FORECAST SO THAT CLEARING AND PLACEMENT MAY BE COMPLETED WITHIN A FORECAST DRY PERIOD. STABILIZE ALL DIVERSIONS DIKES, SEDIMENT BASINS, AND SEDIMENT TRAPS WITHIN 5 DAYS AFTER INSTALLATION.
2. EARLY WORK: CLEAR MINIMUM WORK ZONE AND CONSTRUCT ANY EARLY WORK ITEMS OF PERMANENT CONSTRUCTION THAT ARE SHOWN ON THE PRE–CLEARING PLAN. SANITARY SEWER MAY BE CONSTRUCTED BEFORE MASS GRADING OCCURS.

LEGEND

- SF — SEDIMENT FENCE*
- MB — MULCH BERM*
- DIVERSION BERM
- DIVERSION DITCH
- LIMITS OF DISTURBANCE
- SS — PROPOSED SANITARY SEWER LINE
- DRAINAGE ARROW
- INLET PROTECTION
- SEDIMENT TRAP
- TEMPORARY CONSTRUCTION ENTRANCE
- DITCH CHECK

* MULCH BERMS MAY BE SUBSTITUTED FOR SEDIMENT FENCE AT CONTRACTOR'S DISCRETION.



HDR

3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
C	07/07/2017	CITY RESUBMITTAL
B	05/01/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J. BRESETTE
NUMBER PE-2009009883
PROFESSIONAL ENGINEER
7/10/17

SHEET NAME

PRE-CLEARING EROSION AND SEDIMENT CONTROL PLAN

SCALE

1"=50'

0 50' 100'

SHEET NUMBER

01C-CR-03

FILE NAME 01C-CR-03.dwg

PERMIT REVIEW DRAWINGS

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL PUBLIC ROADWAYS ADJACENT TO THE CONSTRUCTION SITE FREE OF DIRT AND DEBRIS RESULTING FROM ACTIVITIES RELATED TO THE CONSTRUCTION OF THIS PROJECT.
2. CONTRACTOR SHALL UTILIZE TEMPORARY CONSTRUCTION ENTRANCE FOR ACCESS TO SITE.
3. MULCH BERMS SHALL BE AT LEAST 18–IN TALL AND 2–FT WIDE AT TOP OF BERM.
4. CONTRACTOR SHALL NOT STRIP ENTIRE SITE. LOCATE STOCKPILE/STORAGE AREAS AT TOP OF HILL. ADDITIONAL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE PROVIDED AS REQUIRED SHOULD DISTURBED AREAS EXTEND BEYOND PLAN DEPICTED CONTROL MEASURES.
5. REFERENCE SHEET 01C–CR–07 FOR SEDIMENT TRAP DETAILS.

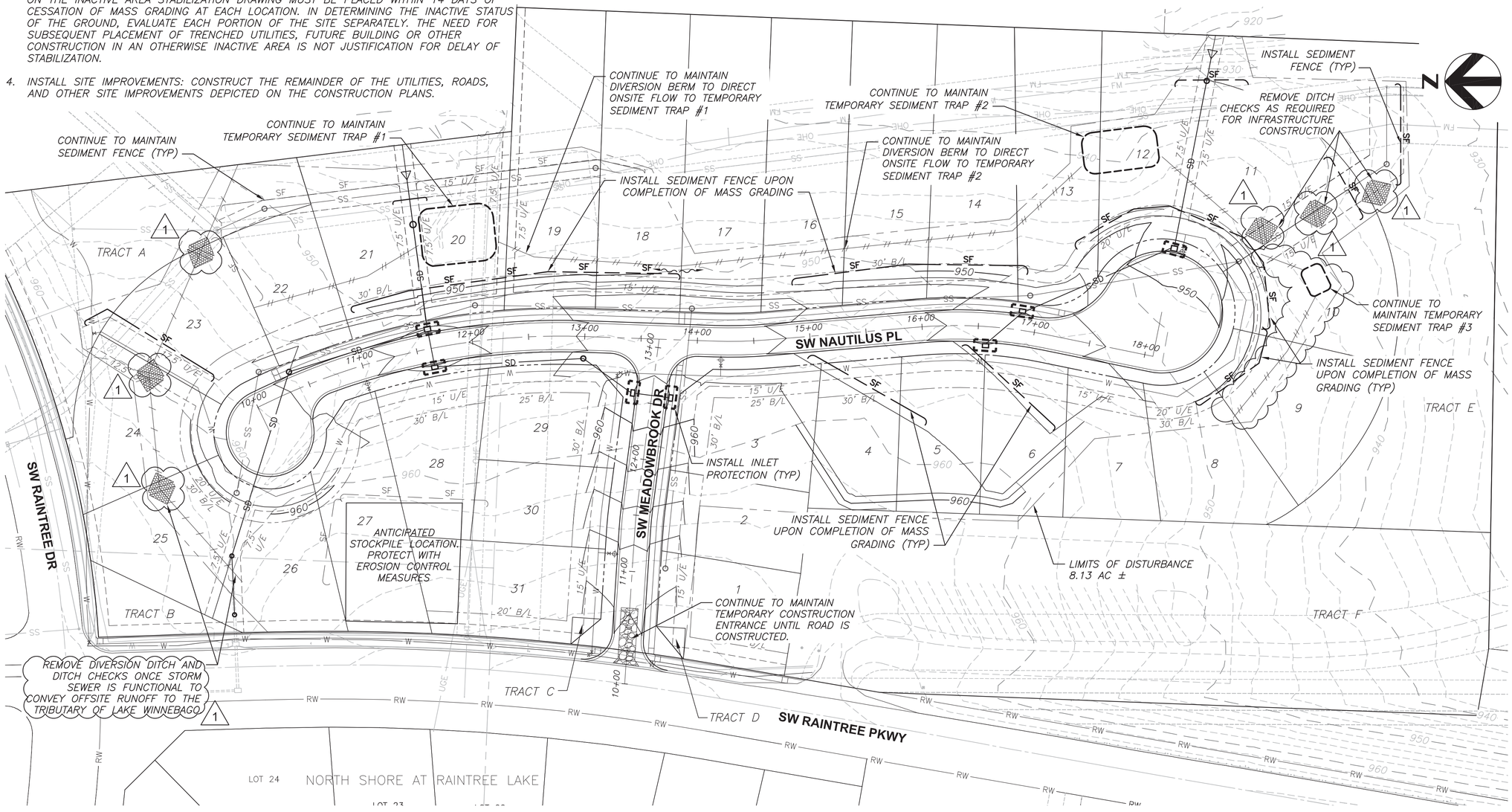
INACTIVE AREA STABILIZATION EROSION AND SEDIMENT CONTROL SEQUENCING:

1. GRADING: CLEAR SITE AND COMPLETE MASS GRADING.
2. IMPLEMENT STEEP SLOPE PROTECTION. DURING GRADING OPERATIONS, PLACE STEEP SLOPE PROTECTION SHOWN ON THE INACTIVE AREA STABILIZATION DRAWING AS SOON AS PRACTICABLE. THIS APPLIES TO SLOPES GREATER THAN 15%.
3. STABILIZE INACTIVE AREAS: THE GROUND COVER AND OTHER STRUCTURAL BMPS SHOWN ON THE INACTIVE AREA STABILIZATION DRAWING MUST BE PLACED WITHIN 14 DAYS OF CESSATION OF MASS GRADING AT EACH LOCATION. IN DETERMINING THE INACTIVE STATUS OF THE GROUND, EVALUATE EACH PORTION OF THE SITE SEPARATELY. THE NEED FOR SUBSEQUENT PLACEMENT OF TRENCHED UTILITIES, FUTURE BUILDING OR OTHER CONSTRUCTION IN AN OTHERWISE INACTIVE AREA IS NOT JUSTIFICATION FOR DELAY OF STABILIZATION.
4. INSTALL SITE IMPROVEMENTS: CONSTRUCT THE REMAINDER OF THE UTILITIES, ROADS, AND OTHER SITE IMPROVEMENTS DEPICTED ON THE CONSTRUCTION PLANS.

LEGEND

- SF — SEDIMENT FENCE*
- MB — MULCH BERM*
- DIVERSION BERM
- DIVERSION DITCH
- LIMITS OF DISTURBANCE
- SS — PROPOSED SANITARY SEWER LINE
- W — PROPOSED WATER SERVICE LINE
- SD — PROPOSED STORM DRAINAGE LINE
- INLET PROTECTION
- SEDIMENT TRAP
- TEMPORARY CONSTRUCTION ENTRANCE
- DITCH CHECK

* MULCH BERMS MAY BE SUBSTITUTED FOR SEDIMENT FENCE AT CONTRACTOR'S DISCRETION.



3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
C	07/07/2017	CITY RESUBMITTAL
B	05/01/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J GRESETTE
NUMBER PE-2009019853
PROFESSIONAL ENGINEER
7/10/17

SHEET NAME

INACTIVE AREA STABILIZATION EROSION AND SEDIMENT CONTROL PLAN

SCALE

1"=50'

0 50' 100'

SHEET NUMBER

01C-CR-04

FILE NAME 01C-CR-04.dwg

PERMIT REVIEW DRAWINGS

GENERAL NOTES:

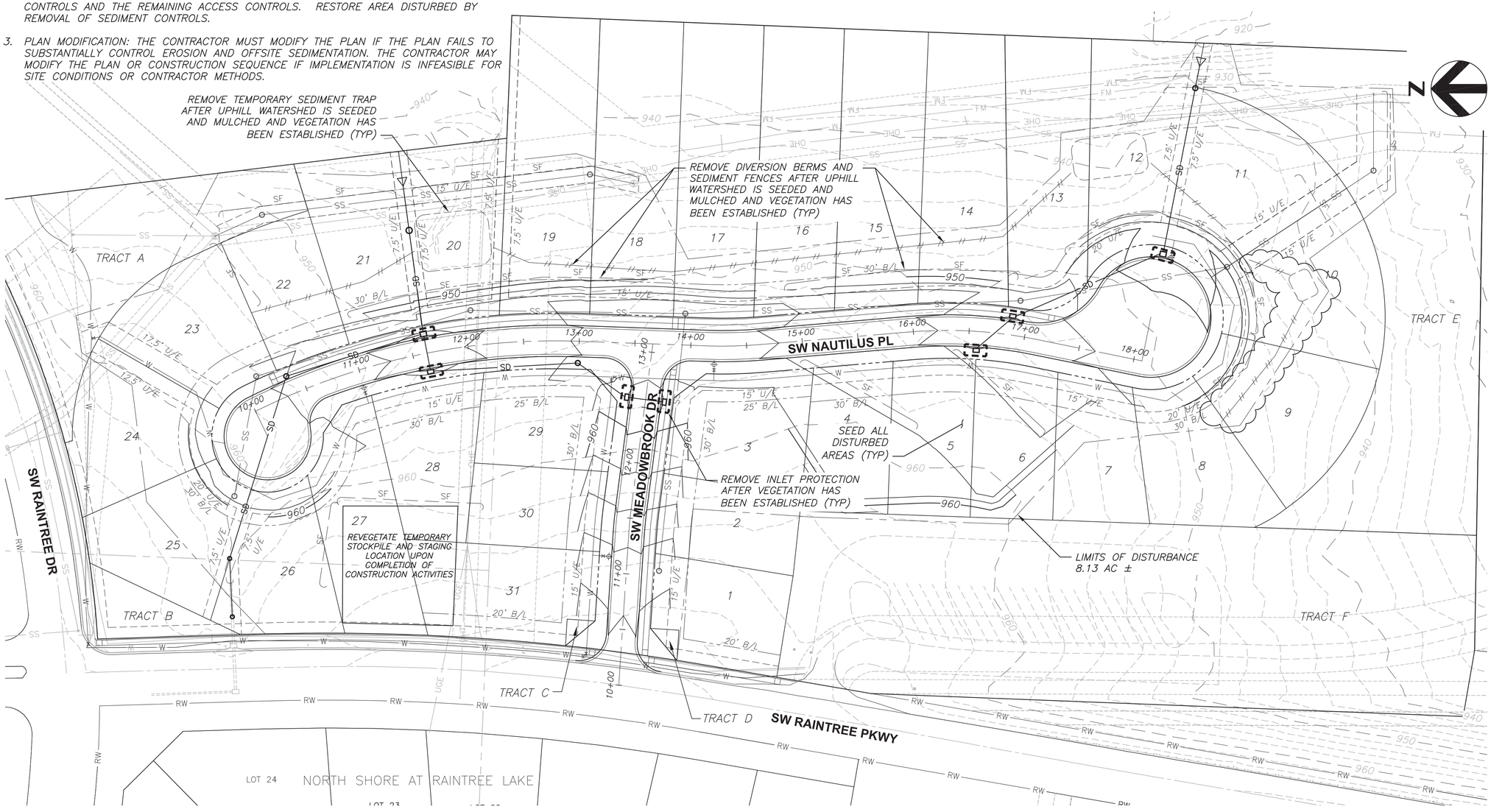
1. *CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL PUBLIC ROADWAYS ADJACENT TO THE CONSTRUCTION SITE FREE OF DIRT AND DEBRIS RESULTING FROM ACTIVITIES RELATED TO THE CONSTRUCTION OF THIS PROJECT.*
2. *DISTURBED AREAS SHALL HAVE SURFACES ROUGHENED IN ACCORDANCE WITH KCAPWA SECTION 2153.11.*
3. *ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED, INCLUDING AREAS PREVIOUSLY OCCUPIED BY TEMPORARY EROSION CONTROL DEVICES.*
4. *REFERENCE SHEET 01C–CR–07 FOR SEDIMENT TRAP DETAILS.*

FINAL RESTORATION EROSION AND SEDIMENT CONTROL SEQUENCING:

1. *IMPLEMENT FINAL STABILIZATION: COORDINATE REMOVAL OF CONSTRUCTION PHASE BMPS NECESSARY TO PLACE FINAL STABILIZATION WITH LOCAL WEATHER FORECAST SO THAT REMOVAL AND PLACEMENT MAY BE COMPLETED WITHIN A FORECAST DRY PERIOD. DOWN–SLOPE PERIMETER CONTROLS SHALL NOT BE REMOVED UNTIL FINAL STABILIZATION IS PLACED AND VEGETATIVE COVER IS ESTABLISHED OVER THE REMAINDER OF THE SITE.*
2. *ESTABLISHMENT AND FINAL CONSTRUCTION: ONCE THE REMAINDER OF THE SITE IS STABILIZED INCLUDING ESTABLISHMENT OF SEEDED COVER TYPES, REMOVE THE SEDIMENT CONTROLS AND THE REMAINING ACCESS CONTROLS. RESTORE AREA DISTURBED BY REMOVAL OF SEDIMENT CONTROLS.*
3. *PLAN MODIFICATION: THE CONTRACTOR MUST MODIFY THE PLAN IF THE PLAN FAILS TO SUBSTANTIALLY CONTROL EROSION AND OFFSITE SEDIMENTATION. THE CONTRACTOR MAY MODIFY THE PLAN OR CONSTRUCTION SEQUENCE IF IMPLEMENTATION IS INFEASIBLE FOR SITE CONDITIONS OR CONTRACTOR METHODS.*

LEGEND

- SF — SEDIMENT FENCE
- MB — MULCH BERM
- LIMITS OF DISTURBANCE
- SS — PROPOSED SANITARY SEWER LINE
- W — PROPOSED WATER SERVICE LINE
- SD — PROPOSED STORM DRAINAGE LINE
- DIVERSION DITCH
- INLET PROTECTION
- SEDIMENT TRAP



HDR

3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
C	07/07/2017	CITY RESUBMITTAL
B	05/01/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J. BRESETTE
NUMBER PE-2006939883
PROFESSIONAL ENGINEER
7/10/17

SHEET NAME

FINAL RESTORATION EROSION AND SEDIMENT CONTROL PLAN

SCALE

1"=50'

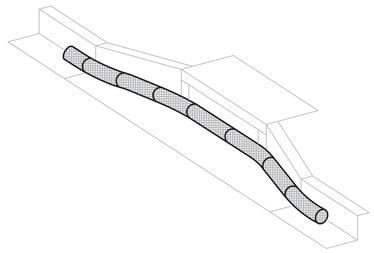
0 50' 100'

SHEET NUMBER

01C-CR-05

FILE NAME 01C-CR-05

PERMIT REVIEW DRAWINGS



NOTES:

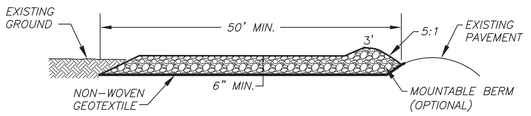
1. THE GUTTERBUDDY® OR APPROVED EQUAL SHALL BE A FILTER MANUFACTURED FROM RECYCLED SYNTHETIC FIBERS OR APPROVED ALTERNATIVE.
2. THE GUTTERBUDDY® WILL BE MANUFACTURED TO BE 9" IN DIAMETER AND SHALL HAVE A MINIMUM LENGTH OF 24" LONGER THAN THE CURB INLET OPENING. THIS WILL ALLOW FOR SUFFICIENT LENGTH TO COVER THE INLET WITH 12" BEYOND THE INLET ON BOTH ENDS.
3. THE GUTTERBUDDY® SHALL BE CLEANED IF A VISUAL INSPECTION SHOWS SILT AND DEBRIS BUILD UP AROUND THE GUTTERBUDDY®.
4. PONDING IS LIKELY IF SEDIMENT IS NOT REMOVED REGULARLY. INSPECTION OF GUTTERBUDDY® SHOULD BE ON A REGULAR BASIS AND IMMEDIATELY AFTER MAJOR RAIN EVENTS.

GUTTERBUDDY INLET PROTECTION

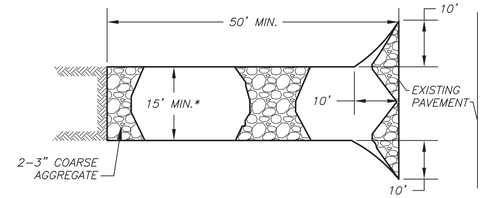
1

NOT TO SCALE

ALTERNATE INLET PROTECTION METHODS SUCH AS GRAVEL FILTER WITH 2"X4" BOARD AT INLET OPENING MAY BE UTILIZED AT CONTRACTOR'S DISCRETION.



SIDE ELEVATION



* MUST EXTEND FULL WIDTH OF INGRESS AND EGRESS OPERATION

PLAN VIEW

TEMPORARY CONSTRUCTION ENTRANCE PAD NOTES:

A) INSTALLATION:
1. REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE, AND CROWN FOR POSITIVE DRAINAGE.
2. 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 AWAY FROM IT.
3. PLACE STONE TO DIMENSIONS AND GRADE AS SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPED FOR DRAINAGE.
4. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE.

B) TROUBLESHOOTING:
1. INADEQUATE RUNOFF CONTROL TO THE EXTENT THAT SEDIMENT WASHES ONTO PUBLIC ROAD – INSTALL DIVERSIONS OR OTHER RUNOFF CONTROL MEASURES.
2. SMALL STONE, THIN PAD, OR DETERIORATION OF GEOTEXTILE FABRIC RESULTS IN RUTS AND MUDDY CONDITIONS AS STONE IS PRESSED INTO SOIL – INCREASE STONE SIZE OR PAD THICKNESS OR REPLACE GEOTEXTILE FABRIC.
3. PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC – EXTEND PAD BEYOND THE MINIMUM 50 FOOT LENGTH AS NECESSARY.

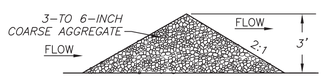
C) INSPECTION MAINTENANCE:
1. INSPECT STONE PAD AND SEDIMENT DISPOSAL AREA WEEKLY AND AFTER 1/2-INCH OR GREATER STORM EVENTS.
2. RESHAPE PAD AS NEEDED FOR PROPER DRAINAGE AND RUNOFF CONTROL.
3. TOP DRESS WITH CLEAN 2 AND 3 INCH STONE AS NEEDED.
4. IMMEDIATELY REMOVE MUD OR SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROAD. REPAIR ANY BROKEN ROAD PAVEMENT IMMEDIATELY.
5. REMOVE ALL TEMPORARY ROAD MATERIALS FROM AREAS WHERE PERMANENT VEGETATION WILL BE ESTABLISHED.

TEMPORARY CONSTRUCTION ENTRANCE

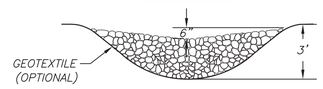
3

NOT TO SCALE

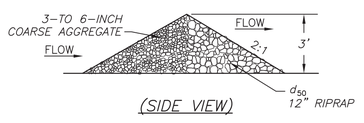
ROCK CHECK DAM
2 ACRES OR LESS OF DRAINAGE AREA



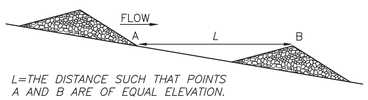
(SIDE VIEW)



ROCK DITCH CHECK
2-10 ACRES OF DRAINAGE AREA



(SIDE VIEW)



L=THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION.

SPACING BETWEEN DITCH CHECKS

ROCK DITCH CHECK (CHECK DAM) NOTES:

A) CONSTRUCTION SPECIFICATIONS & INSTALLATION:
1. THE DRAINAGE AREA OF THE DITCH OR SWALE BEING PROTECTED SHALL NOT EXCEED 2 ACRES WHEN A COARSE AGGREGATE IS USED ALONE AND SHALL NOT EXCEED 10 ACRES WHEN A COMBINATION OF CLASS I RIPRAP AND COARSE AGGREGATE IS USED. AN EFFORT SHOULD BE MADE TO EXTEND THE STONE TO THE TOP OF CHANNEL BANKS.
2. THE MAXIMUM HEIGHT OF THE DAM SHALL BE 3 FEET. THE CENTER OF THE CHECK DAM IS AT THE SAME ELEVATION AS THE TOP OF THE OUTER EDGES.
3. FOR ADDED STABILITY, THE BASE OF THE CHECK DAM CAN BE KEYED INTO THE SOIL APPROXIMATELY 6 INCHES.
4. THE MAXIMUM SPACING BETWEEN DAMS SHOULD BE SUCH THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE TOP OF THE DOWNSTREAM DAM.
5. STONE SHOULD BE PLACED ACCORDING TO THE CONFIGURATION TO THE LEFT. HAND OR MECHANICAL PLACEMENT WILL BE NECESSARY TO ACHIEVE COMPLETE COVERAGE OF THE DITCH OR SWALE AND TO INSURE THAT THE CENTER OF THE DAM IS LOWER THAN THE EDGES.
6. GEOTEXTILE MAY BE USED UNDER THE STONE TO PROVIDE A STABLE FOUNDATION AND TO FACILITATE REMOVAL OF THE STONE.

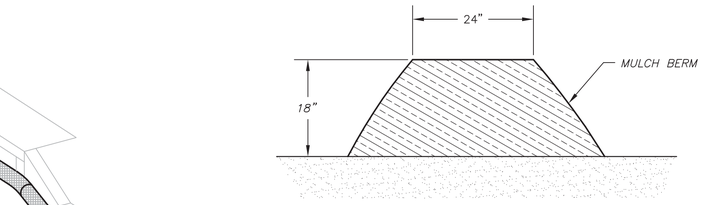
B) INSPECTION AND MAINTENANCE:
1. CHECK DAMS SHOULD BE CHECKED FOR SEDIMENT ACCUMULATION AFTER EACH STORM EVENT OF 1/2-INCH OR GREATER. SEDIMENT SHALL BE REMOVED WHEN IT REACHES ONE HALF OF THE ORIGINAL HEIGHT OF THE DAM.
2. REGULAR INSPECTIONS SHOULD BE MADE TO ENSURE THAT THE CENTER OF THE DAM IS LOWER THAN THE EDGES. EROSION CAUSED BY HIGH FLOWS AROUND THE EDGES OF THE DAM SHALL BE CORRECTED.

C) REMOVAL OF PRACTICE:
1. UNLESS THEY ARE TO BE PERMANENT, CHECK DAMS MUST BE REMOVED WHEN THEIR USEFUL LIFE HAS BEEN COMPLETED. IN TEMPORARY DITCHES AND SWALES, CHECK DAMS SHOULD BE REMOVED AND THE DITCH FILLED WHEN THEY ARE NO LONGER NEEDED. IN PERMANENT STRUCTURES, CHECK DAMS SHOULD BE REMOVED WHEN A PERMANENT LINING CAN BE INSTALLED. IN THE CASE OF GRASS-LINED DITCHES, CHECK DAMS SHOULD BE REMOVED WHEN THE GRASS HAS MATURED SUFFICIENTLY TO PROTECT THE DITCH OR SWALE. THE AREA BENEATH THE CHECK DAMS SHOULD BE SEEDED AND MULCHED IMMEDIATELY AFTER THEY ARE REMOVED. THE USE OF FILTER CLOTH UNDERNEATH THE STONE WILL MAKE REMOVAL OF THE STONE EASIER.

ROCK DITCH CHECK INSTALLATION

4

NOT TO SCALE



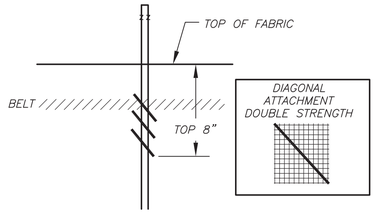
MULCH BERM NOTES:

1. THE EROSION CONTROL BERM SHALL BE PLACED, UNCOMPACTED, IN A WINDROW AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE INSPECTOR.
2. PARALLEL TO THE BASE OF THE SLOPE, OR AROUND THE PERIMETER OF OTHER AFFECTED AREAS, CONSTRUCT A MULCH BERM. FOR MAXIMUM WATER FILTRATION ABILITY OR FOR STEEP SLOPES, CONSTRUCT A TRAPEZOIDAL MULCH BERM. IN EXTREME CONDITIONS AND WHERE SPECIFIED BY THE ENGINEER, A SECOND BERM SHALL BE CONSTRUCTED AT THE TOP OF THE SLOPE.
3. DO NOT USE MULCH BERMS IN ANY RUNOFF CHANNELS.
4. PLACE BERMS ON DENUDED AREAS AS SOON AS POSSIBLE. MULCH/COMPOST AND/OR TEMPORARY OR PERMANENT VEGETATION SHALL BE APPLIED/ESTABLISHED ABOVE THE MULCH BERMS WHEN NECESSARY FOR ADDITIONAL EROSION CONTROL.
5. WHEN SEDIMENT FILLS THE AREA BEHIND THE MULCH BERM TO 1/2 THE HEIGHT OF THE BERM THE CONTRACTOR SHALL REMOVE THE SEDIMENT AND PLUGGED MULCH AND RESHAPE BERM WITH CLEAN MULCH AS NEEDED.

MULCH BERM

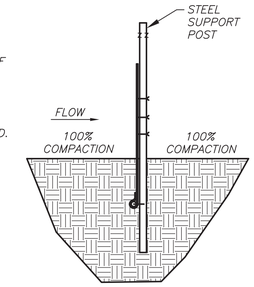
2

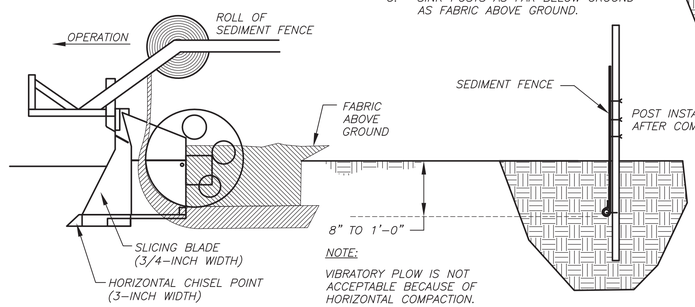
NOT TO SCALE



SEDIMENT FENCE INSTALLATION SLICING METHOD NOTES:

1. LIMIT PONDING HEIGHT TO 24".
2. ATTACH FABRIC TO UPSTREAM SIDE OF POST.
3. DRIVE OVER EACH SIDE OF SEDIMENT FENCE 2 TO 4 TIMES WITH DEVICE EXERTING 60 PSI OR GREATER AFTER MATERIAL IS SLICED INTO THE GROUND.
4. SPACE POSTS A MAX OF 7' ON OPEN RUNS AND 4' ON POOLING AREAS.
5. SINK POSTS AS FAR BELOW GROUND AS FABRIC ABOVE GROUND.





NOTE:

VIBRATORY PLOW IS NOT ACCEPTABLE BECAUSE OF HORIZONTAL COMPACTION.

SEDIMENT FENCE (AKA SILT FENCE) NOTES:

1. SEDIMENT FENCE MAY BE USED IN LIEU OF MULCH BERMS AT CONTRACTOR'S DISCRETION.
2. REFER TO APWA KANSAS CITY METROPOLITAN CHAPTER DETAIL ESC-12 FOR SUPER SEDIMENT FENCE CONSTRUCTION SPECIFICATIONS.
3. THE MAXIMUM SLOPE LENGTH ABOVE THE FENCE SHOULD BE LESS THAN 100 FEET.
4. NO DITCH OR DRAINAGE WAY WITH AN AREA GREATER THAN 5 ACRES SHALL BE ENCLOSED ABOVE A SILT FENCE.
5. NO SILT FENCE SHALL BE CONSTRUCTED IN A LIVE STREAM OR DRAINAGE WAY WITH EXPECTED FLOWS GREATER THAN 1 CFS.
6. THE FILTER FABRIC SHALL HAVE A MINIMUM FILTERING EFFICIENCY OF 75%. A MINIMUM TENSILE STRENGTH OF 30 LBS. PER LINEAR INCH AND A FLOW RATE OF 0.3 GALLONS PER SQUARE FOOT PER MINUTE. THE FILTER FABRIC SHALL ALSO HAVE ULTRAVIOLET RAY INHIBITORS TO ASSURE A LIFE USE EXPECTANCY OF 6 MONTHS AT 0 TO 100 DEGREES FAHRENHEIT.
7. THE FILTER FABRIC SHALL BE 36 INCHES OR LESS IN HEIGHT, WITH JOINTS AT EVERY POST AVOIDING OVERLAP IF POSSIBLE (6" MIN. OVERLAP IF NECESSARY) AND POSTS SPACED EVERY 10 FEET WITH WIRE MESH SUPPORT OR 6 FEET WITHOUT SUPPORT, MAKING SURE THAT A MIN. OF 8" OF FABRIC IS BURIED IN THE 4"X4" TRENCH.
8. THE SILT FENCE SHALL BE INSPECTED AFTER EVERY RAINFALL TO DETERMINE IF ANY PART OF THE FENCE NEEDS TO BE REPAIRED OR REPLACED. IF IT IS DETERMINED THAT THE FENCE NEEDS ANY REPAIR OR REPLACEMENT THIS SHALL BE DONE IMMEDIATELY.
9. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH RAINFALL OR BEFORE THEY ACCUMULATE TO 1/2 OF THE FENCE HEIGHT.

SEDIMENT FENCE DETAIL

5

NOT TO SCALE

HDR

3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
B	04/14/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J. BRESETTE
NUMBER PE-2005009883
PROFESSIONAL ENGINEER
4/20/17

SHEET NAME

EROSION AND SEDIMENT CONTROL DETAILS

SCALE: NO SCALE

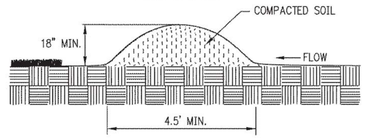
SHEET NUMBER

01C-CR-06

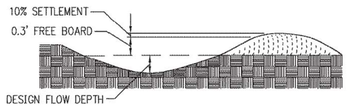
FILE NAME: 01C-CR-06.dwg

PERMIT REVIEW DRAWINGS

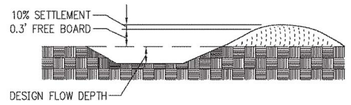
DIVERSIONS



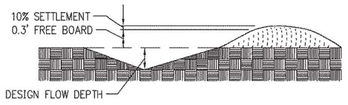
TEMPORARY DIVERSION DIKE
NOT TO SCALE



TYPICAL PARABOLIC DIVERSION



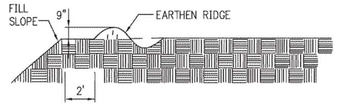
TYPICAL TRAPEZOIDAL DIVERSION



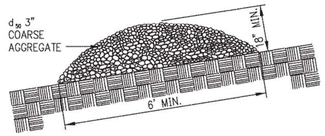
TYPICAL VEE-SHAPED DIVERSION

SOURCE: MODIFIED FROM VA. DCR, 1992

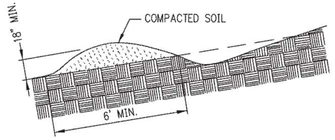
TEMPORARY RIGHT-OF-WAY DIVERSIONS



TEMPORARY FILL DIVERSION
NOT TO SCALE



TYPICAL GRAVEL STRUCTURE



TYPICAL EARTHEN STRUCTURE

TEMPORARY DIVERSION DIKE NOTES:

1. TEMPORARY DIVERSION DIKES MUST BE INSTALLED AS A FIRST STEP IN THE LAND-DISTURBING ACTIVITY AND MUST BE FUNCTIONAL PRIOR TO UPSLOPE LAND DISTURBANCE.
2. THE DIKE SHOULD BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
3. TEMPORARY OR PERMANENT SEEDING AND MULCH SHALL BE APPLIED TO THE DIKE IMMEDIATELY FOLLOWING ITS CONSTRUCTION.
4. THE DIKE SHOULD BE LOCATED TO MINIMIZE DAMAGES BY CONSTRUCTION OPERATIONS AND TRAFFIC.

TEMPORARY FILL DIVERSION NOTES:

1. THE DIVERSION SHALL BE CONSTRUCTED AT THE TOP OF THE FILL AT THE END OF EACH WORK DAY AS NEEDED.
2. THE DIVERSION SHALL BE LOCATED AT LEAST 2 FEET INSIDE THE TOP EDGE OF THE FILL.
3. THE SUPPORTING RIDGE SHALL BE CONSTRUCTED WITH A UNIFORM HEIGHT ALONG ITS ENTIRE LENGTH. WITHOUT UNIFORM HEIGHT, THE FILL DIVERSION MAY BE SUSCEPTIBLE TO BREACHING.

RIGHT-OF-WAY DIVERSION DETAIL NOTES:

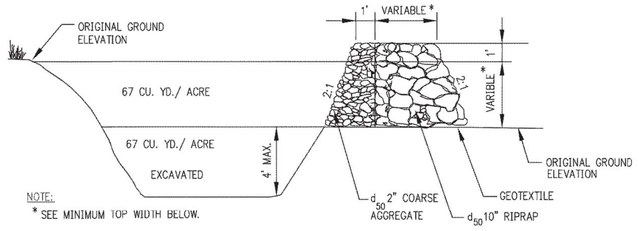
1. THE DIVERSION SHALL BE INSTALLED AS SOON AS THE RIGHT-OF-WAY HAS BEEN CLEARED AND/OR GRADED.
2. ALL EARTHEN DIVERSIONS SHALL BE MACHINE- OR HAND-COMPACTED IN 8-INCH LIFTS.
3. THE OUTLET OF THE DIVERSION SHALL BE LOCATED IN AN UNDISTURBED AND STABILIZED AREA WHEN AT ALL POSSIBLE. THE FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILIZE A STABILIZED OUTLET.
4. EARTHENED DIVERSIONS WHICH WILL NOT BE SUBJECT TO CONSTRUCTION TRAFFIC SHOULD BE STABLIIZED IN ACCORDANCE WITH TEMPORARY SEEDING.

DIVERSION DETAIL NOTES:

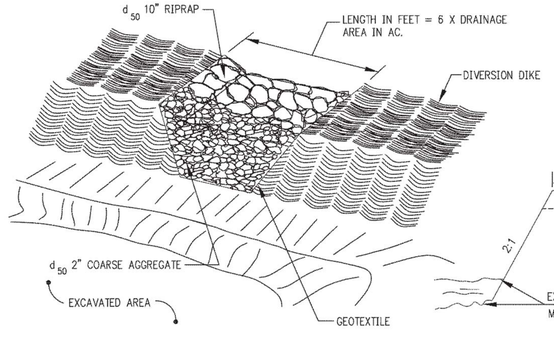
1. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE DIVERSION.
2. THE DIVERSION SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS-SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN, FREE OF IRREGULARITIES WHICH WILL IMPEDE FLOW.
3. FILLS SHALL BE COMPACTED AS NEEDED TO PREVENT UNEQUAL SETTLEMENT THAT WOULD CAUSE DAMAGE IN THE COMPLETED DIVERSION. FILL SHALL BE COMPOSED OF SOIL WHICH IS FREE FROM EXCESSIVE ORGANIC DEBRIS, ROCKS, OR OTHER OBJECTIONABLE MATERIA..S.
4. ALL EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DIVERSION.
5. PERMANENT STABILIZATION OF DISTURBED AREAS SHALL BE DONE IN ACCORDANCE WITH SECTION 2151.

AMERICAN PUBLIC WORKS ASSOCIATION	
APWA	KANSAS CITY METROPOLITAN CHAPTER
DIVERSIONS	STANDARD DRAWING NUMBER: ESC-29 ADOPTED:

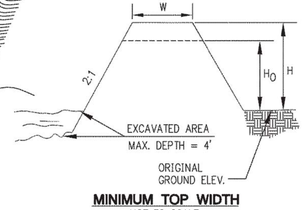
TEMPORARY SEDIMENT TRAP



CROSS SECTION OF OUTLET
NOT TO SCALE



OUTLET (PERSPECTIVE VIEW)



MINIMUM TOP WIDTH
NOT TO SCALE

H	H O	W
1.5	0.5	2.0
2.0	1.0	2.0
2.5	1.5	2.5
3.0	2.0	2.5
3.5	2.5	3.0
4.0	3.0	3.0
4.5	3.5	4.0
5.0	4.0	4.5

SOURCE: MODIFIED FROM VA. DCR, 1992

TEMPORARY SEDIMENT TRAP NOTES:

A) CONSTRUCTION SPECIFICATIONS:

1. THE AREA UNDER THE EMBANKMENT SHALL BE CLEARED, GRUBBED, AND STRIPPED OF ANY VEGETATION AND ROOT MAT.
2. FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHOULD BE COMPACTED IN 6-INCH LAYERS BY TRAVERSING WITH CONSTRUCTION EQUIPMENT.
3. THE EARTHEN EMBANKMENT SHALL BE SEEDED WITH TEMPORARY OR PERMANENT VEGETATION IMMEDIATELY AFTER INSTALLATION.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT TO MINIMIZE EROSION AND WATER POLLUTION.
5. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE UPSLOPE DRAINAGE AREA HAS BEEN STABILIZED.
6. ALL CUT AND FILL SLOPES SHALL BE 2H:1V OR FLATTER EXCEPT FOR EXCAVATED, WET STORAGE AREAS WHICH MAY BE AT A MAXIMUM 1H:1V GRADE.

B) INSPECTION AND MAINTENANCE:

1. INSPECT THE TEMPORARY SEDIMENT TRAP AFTER EACH STORM EVENT OF 1/2-INCH OR GREATER.
2. REMOVE AND PROPERLY DISPOSE OF SEDIMENT WHEN IT ACCUMULATES TO ONE-HALF THE DESIN VOLUME AS INDICATED BY THE CLEAN-OUT STAKE.
3. PERIODICALLY CHECK THE EMBANKMENT, SPILLWAY, AND OUTLET APRON FOR EROSION DAMAGE, SETTLING SEEPAGE, OR SLUMPING ALONG THE TOE AND REPAIR IMMEDIATELY.
4. REPLACE THE SPILLWAY GRAVEL FACING IF IT BECOMES CLOGGED.
5. INSPECT VEGETATION AND RESEED IF NECESSARY.
6. REPLACE ANY DISPLACED RIPRAP SO THAT NO REPLACEMENT ROCK IS ABOVE THE DESIGN GRADE.
7. REMOVE THE TEMPORARY SEDIMENT TRAP AFTER THE DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, INSPECTED, AND APPROVED. DO SO BY DRAINING ANY WATER, REMOVING THE SEDIMENT TO A DESIGNATED DISPOSAL AREA, AND GRADING THE SITE TO BLEND WITH THE SURROUNDING AREA; THEN STABILIZE.

AMERICAN PUBLIC WORKS ASSOCIATION	
APWA	KANSAS CITY METROPOLITAN CHAPTER
TEMPORARY SEDIMENT TRAP	STANDARD DRAWING NUMBER: ESC-33 ADOPTED:

HDR
3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
B	04/14/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J. BRESETTE
NUMBER PE-2009009883
PROFESSIONAL ENGINEER
4/20/17

SHEET NAME

EROSION AND SEDIMENT CONTROL DETAILS

SCALE: NO SCALE

SHEET NUMBER

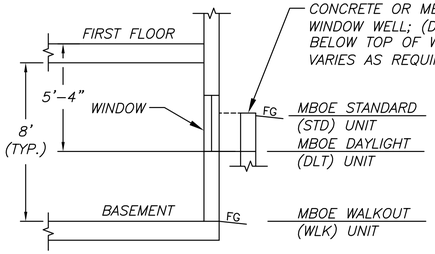
01C-CR-07

FILE NAME: 01C-CR-07.dwg

PERMIT REVIEW DRAWINGS

MASTER DRAINAGE PLAN NOTES:

1. *MINIMUM BUILDING OPENING ELEVATIONS (MBOE'S) SHOWN REPRESENT THE MINIMUM RECOMMENDED ELEVATIONS THAT WILL PROVIDE ADEQUATE POSITIVE STORM WATER DRAINAGE TO THE LOWEST POINT ON THE LOT FROM THE ANTICIPATED LOW SIDE OF THE BUILDING. THE HOME BUILDER SHALL BE RESPONSIBLE FOR ENSURING ADEQUATE POSITIVE DRAINAGE AWAY FROM ALL BUILDING OPENINGS TO PREVENT LOCALIZED STRUCTURE FLOODING.*
2. *A DAYLIGHT OR STANDARD UNIT MAY BE CONSTRUCTED ON WALKOUT LOT, AND A STANDARD UNIT MAY BE CONSTRUCTED ON A DAYLIGHT LOT.*
3. *A DAYLIGHT UNIT IS DEFINED AS A UNIT HAVING A WINDOW ON THE BASEMENT LEVEL WITH AT LEAST 5'–4" OF CLEARANCE FROM THE FINISHED FIRST FLOOR ELEVATION TO THE BOTTOM OF THE WINDOW. CLEARANCES LESS THAN 5'–4" ARE DEFINED AS STANDARD UNITS, WHETHER OR NOT A WINDOW WELL IS REQUIRED.*
4. *REFER TO SANITARY SEWER SHEETS FOR SEWER MAIN AND LATERAL ELEVATIONS. SOME LOT MBOE ELEVATIONS ARE HIGHER TO ACCOUNT FOR GRAVITY BASEMENT SEWER SERVICE.*
5. *ALL FRONT LOT ELEVATIONS ARE PROPOSED ELEVATIONS. REAR LOT ELEVATIONS ARE EXISTING ELEVATIONS UNLESS NOTED OTHERWISE WITH AN ELEVATION FOLLOWED BY (P).*
6. ***HOME BUILDERS SHALL MAINTAIN 2% GRADE, 1.5% ACROSS SIDEWALKS, WITHIN RIGHT–OF–WAY. AS–BUILT ELEVATIONS SHOWN AT RIGHT–OF–WAY ARE CALCULATED FROM AS–BUILT BACK OF CURB ELEVATIONS.***



TYPICAL UNIT SECTION
NOT TO SCALE

LEGEND:

STD	=	STANDARD UNIT
DLT	=	DAYLIGHT UNIT
WLK	=	WALKOUT UNIT
MBOE	=	MINIMUM BUILDING OPENING ELEVATION
( )	=	DIRECTION OF MBOE
~~	=	DRAINAGE PATH
FBD	=	FLAT BOTTOM DITCH
▨	=	1% STORM WSE

"AS-BUILT"

October 29, 2018

HDR

3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
C	10/29/2018	AS-BUILT
B	05/01/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

SHEET NAME

MASTER DRAINAGE PLAN

SCALE

1"=50'

0 50' 100'

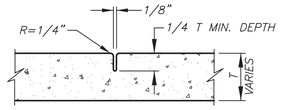
SHEET NUMBER

01C-CR-08

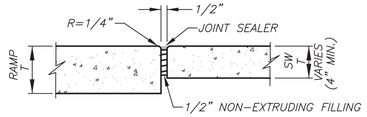
FILE NAME 01C-CR-08.dwg

PERMIT REVIEW DRAWINGS

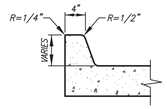
C:\ywworkingfolder\d2125311\As-built MDP.dwg, 01C-CR-08, 10/29/2018 10:49:20 AM, WNEDS



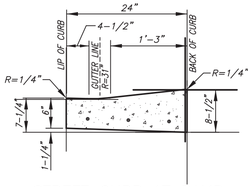
CONTRACTION JOINT



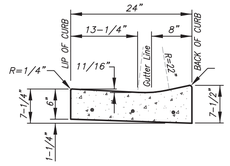
ISOLATION JOINT



RAMP CURB DETAIL



STREET CURB AT RAMP
USE WITH TYPE CG-2 CURB

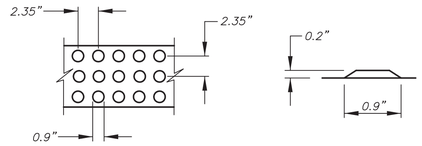


STREET CURB AT RAMP
USE WITH TYPE CG-1 CURB

ADA CURB DETAILS

2

NOT TO SCALE



DETECTABLE WARNING DOME SPACING AND SECTION

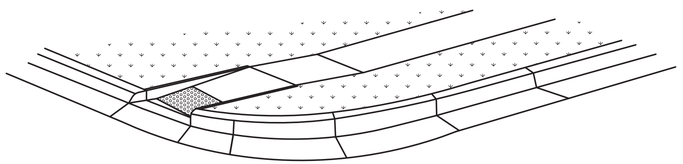
3

NOT TO SCALE

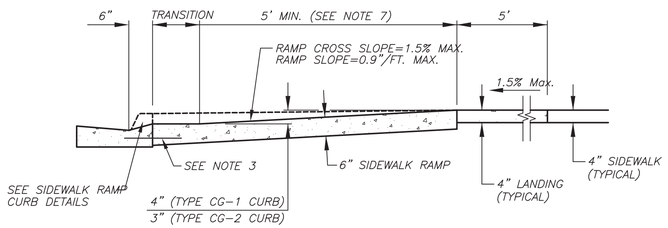
JOINT DETAILS

1

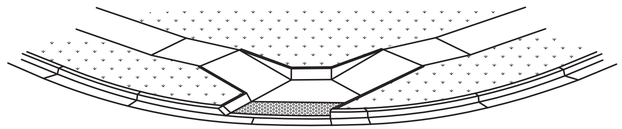
NOT TO SCALE



3-D VIEW TYPE A
SIDEWALK RAMP



SECTION A-A



3-D VIEW TYPE B
SIDEWALK RAMP

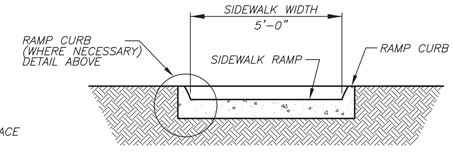
LEGEND:

R RAMP

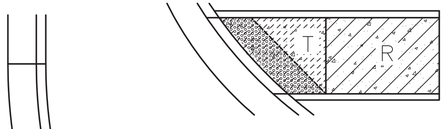
T TRANSITION

SURFACE

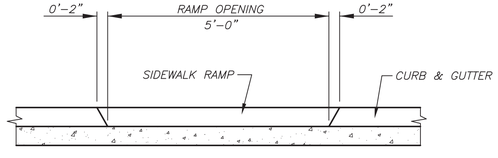
TS TURNING SPACE



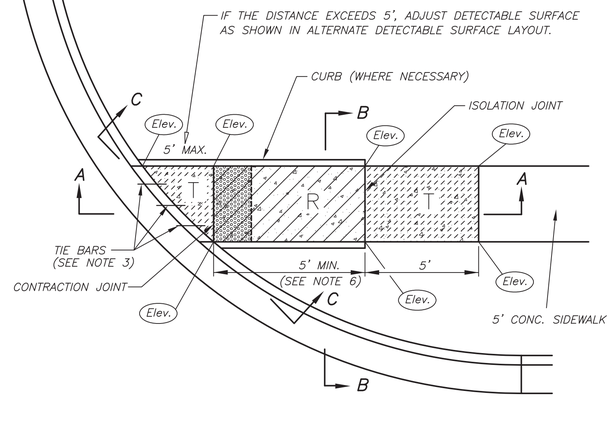
SECTION B-B



ALTERNATE DETECTABLE SURFACE LAYOUT



SECTION C-C



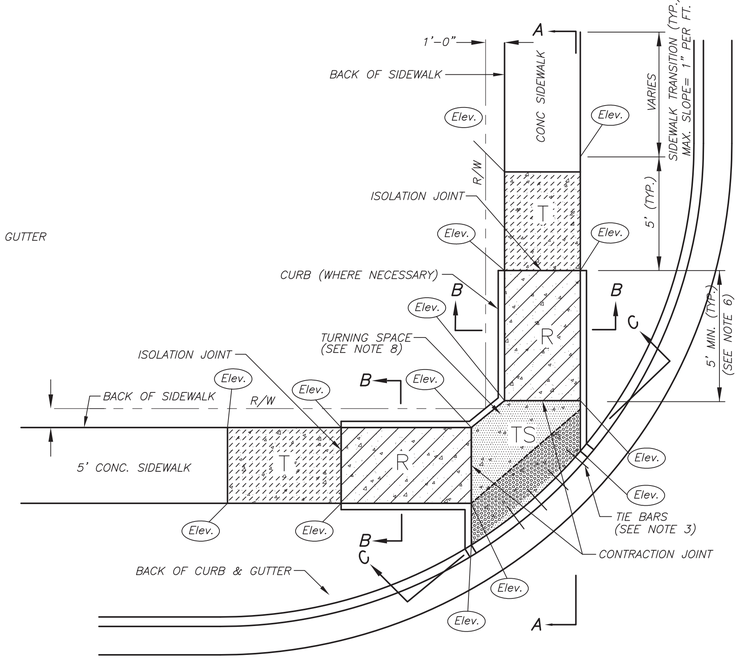
TYPE A SIDEWALK RAMP

4

NOT TO SCALE

SIDEWALK & SIDEWALK RAMP NOTES:

1. SIDEWALK RAMP LOCATION DETERMINED FROM THE INTERSECTION OF THE EXTENSION OF BACK OF SIDEWALK AND BACK OF CURB AND GUTTER.
2. PLAN DRAWINGS INCLUDE A TABLE OF ELEVATIONS FOR ALL POINTS.
3. KEY ALL CONSTRUCTION JOINTS OR USE TIE BARS #4 EPOXY COATED @ 12" O.C.
4. LONGITUDINAL JOINT SPACING TO MATCH WIDTH OF SIDEWALK.
5. ISOLATION JOINTS SHALL BE PLACED WHERE WALK ABUTS DRIVEWAYS AND SIMILAR STRUCTURES, AND 250' CENTERS MAX.
6. SIDEWALK RAMP SHALL BE LENGTHENED TO PROVIDE ADA COMPLIANCE SLOPE BUT NEED NOT EXCEED 15'.
7. ADA MAXIMUM RAMP SLOPE = 1"/FT.
   ADA MAXIMUM CROSS SLOPE = 2%.
8. TURNING SPACES SHALL BE 1.5%, ± 0.5%, SLOPE IN ANY DIRECTION. TURNING SPACES SHALL HAVE A MINIMUM 4'X4' TURNING AREA. TURNING SPACES, WITH A SIDEWALK CURB, SHALL HAVE A 5' TURNING AREA PERPENDICULAR TO THE SIDEWALK CURB.
9. ALL SIDEWALK AND RAMP CONSTRUCTION SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).



TYPE B SIDEWALK RAMP

5

NOT TO SCALE

HDR

3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
B	04/18/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017
PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J. BRESETTE
NUMBER PE-2005009881
PROFESSIONAL ENGINEER
4/20/17

SHEET NAME

TYPICAL ADA RAMP DETAILS

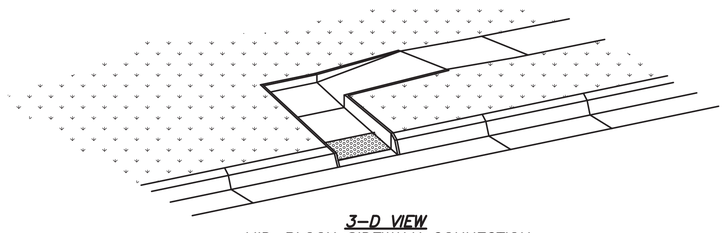
SCALE: NO SCALE

SHEET NUMBER

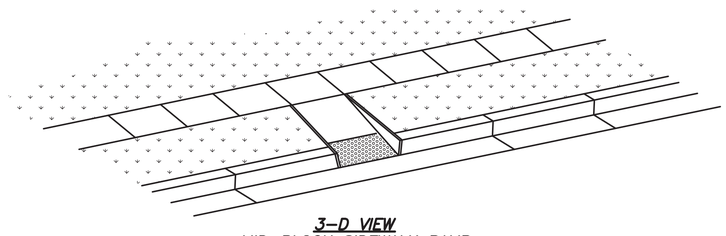
01C-CR-09

FILE NAME: 01C-CR-09.dwg

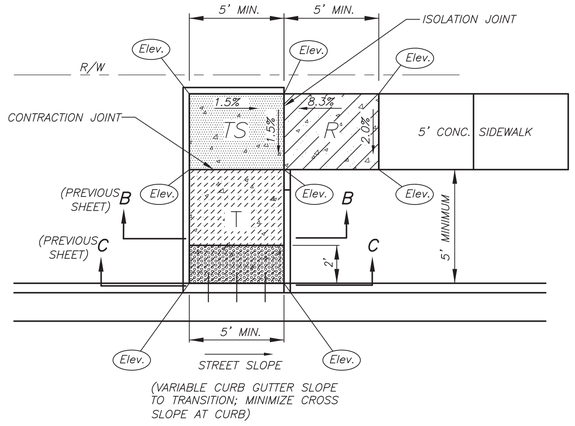
PERMIT REVIEW DRAWINGS



3-D VIEW
MID-BLOCK SIDEWALK CONNECTION

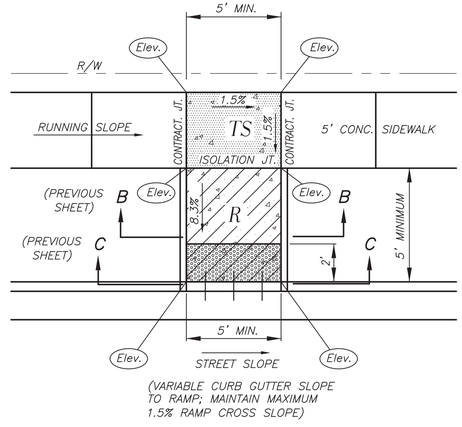


3-D VIEW
MID-BLOCK SIDEWALK RAMP



MODIFIED MID-BLOCK
SIDEWALK CONNECTION
NOT TO SCALE
1

1. REFERENCE SHEET 01C-CR-09 FOR ADDITIONAL ADA RAMP NOTES AND CROSS-SECTION INFORMATION.



MODIFIED MID-BLOCK
SIDEWALK RAMP
NOT TO SCALE
2

3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF
AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
B	04/18/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

SHEET NAME

TYPICAL ADA RAMP DETAILS

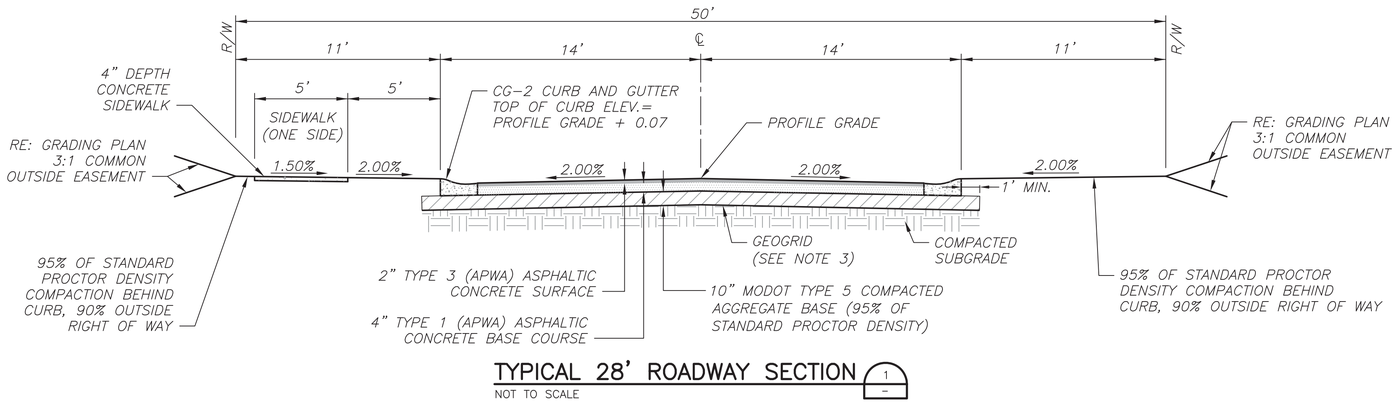
SCALE: NO SCALE

SHEET NUMBER

01C-CR-10

FILE NAME: 01C-CR-10.dwg

PERMIT REVIEW DRAWINGS

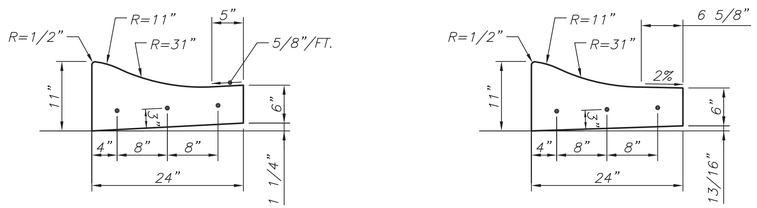


TYPICAL 28' ROADWAY SECTION (1 – –)

NOT TO SCALE

GENERAL NOTES:

1. CONCRETE FOR CURB AND GUTTER AND ANY CONCRETE STREET PAVEMENT SHALL CONFORM TO KCMMB 4K MIX.
2. CONCRETE PAVEMENT JOINTS AND JOINT LOCATIONS SHALL BE PER APWA DETAILS AND AS MODIFIED BY CITY OF LEE'S SUMMIT SPECIFICATIONS.
3. GEOGRID MUST MEET SPECIFICATIONS OF LEE'S SUMMIT SECTION 2200, TABLE 2201.6–1. ALTERNATE GEOGRID MUST BE SUBMITTED TO CITY FOR REVIEW AND APPROVAL.
4. MATERIAL DEPTHS PROVIDED ARE CITY'S ABSOLUTE MINIMUM ACCEPTABLE DEPTHS.
5. ALL SIDEWALK SHOWN ALONG TRACTS SHALL BE CONSTRUCTED DURING PUBLIC INFRASTRUCTURE CONSTRUCTION.



TYPE CG-2
ROLL BACK CURB & GUTTER

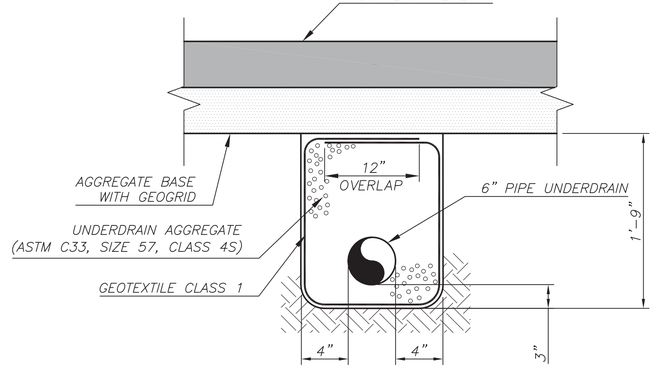
MODIFIED TYPE CG-2 DRY
ROLL BACK DRY CURB & GUTTER

GENERAL CURB NOTES:

1. 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.
2. 1" DEEP CONTRACTION JOINTS SHALL BE INSTALLED AT APPROXIMATELY 10' INTERVALS. THESE JOINTS SHALL PASS ACROSS THE ENTIRE CURB SECTION.
3. FIX DOWEL BARS WITH BAR SUPPORTS.
4. DEPTH OF CURB SHALL BE A MINIMUM OF 8" THROUGH THE HANICAP ACCESS RAMP.
5. CONCRETE SHALL CONFORM TO STANDARD SPECIFICATIONS SECTION 2208.2.B.

TYPICAL CURB & GUTTER DETAILS (2 – –)

NOT TO SCALE



UNDERDRAIN NOTES:

1. 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 INLETS AT ROADWAY SAG LOCATIONS AS INDICATED IN THE STREET PROFILE.
2. ALL UNDERDRAIN PIPES SHALL BE INSTALLED AT A MINIMUM SLOPE OF 1%. UNDERDRAIN PIPE SHALL BE INSTALLED WITH THE PERFORATIONS PLACED DOWN.
3. BLANKET UNDERDRAIN AGGREGATE, PIPE UNDERDRAIN AGGREGATE, PIPE UNDERDRAIN, EDGE UNDERDRAIN AND OUTLET PIPE SHALL CONFORM CITY OF LEE'S SUMMIT SPECIFICATIONS.

PIPE UNDERDRAIN LATERAL (3 – –)

NOT TO SCALE

HDR

3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
B	04/14/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J. BRESETTE
NUMBER PE-2005009883
PROFESSIONAL ENGINEER
4/20/17

SHEET NAME

TYPICAL ROAD SECTIONS AND DETAILS

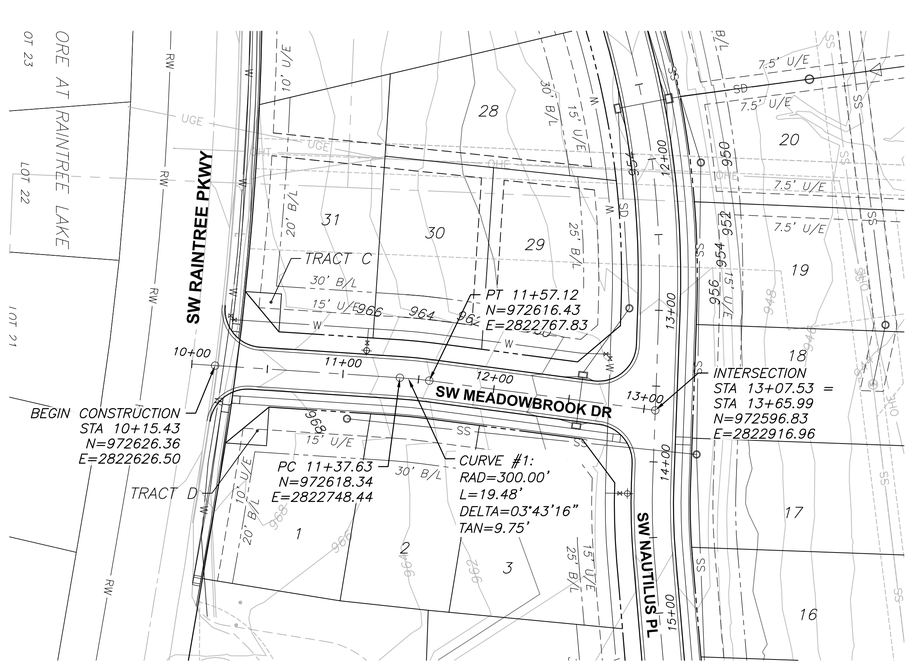
SCALE: NO SCALE

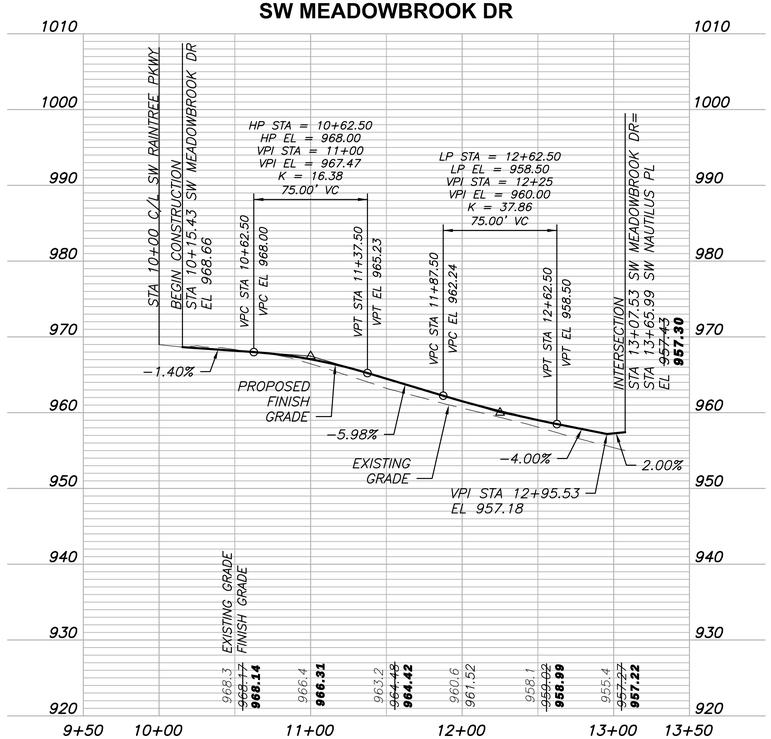
SHEET NUMBER

01C-CR-11

FILE NAME: 01C-CR-11.dwg

PERMIT REVIEW DRAWINGS





"AS-BUILT"
October 29, 2018

HDR
3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

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PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

SHEET NAME

STREET PLAN AND PROFILE

SW MEADOWBROOK DR

SCALE

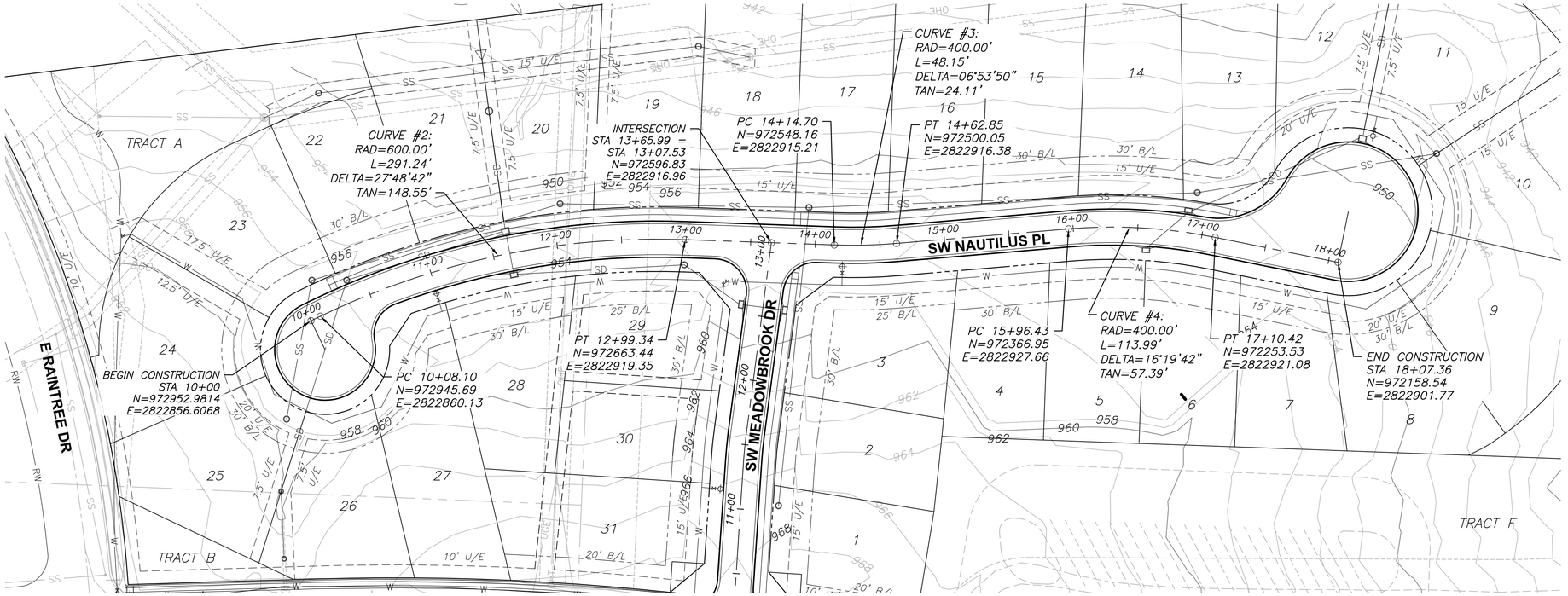
1"=50'
0 50' 100'
1"=10'
0 10' 20'

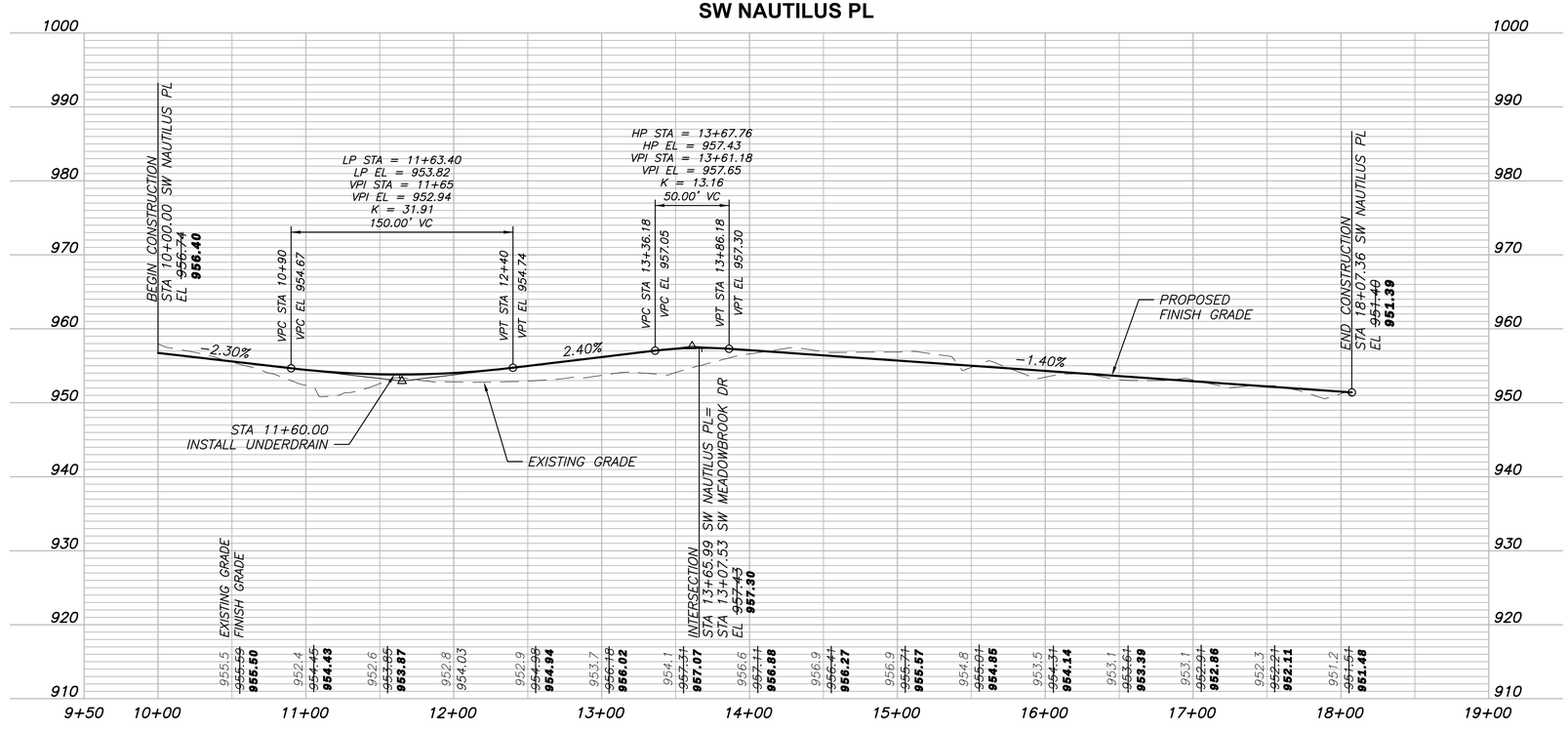
SHEET NUMBER

01C-CR-12

FILE NAME 01C-CR-13.dwg

PERMIT REVIEW DRAWINGS





"AS-BUILT"
October 29, 2018

3741 NE TROON DR
LEE'S SUMMIT, MO 64064
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PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

SHEET NAME

STREET PLAN AND PROFILE

SW NAUTILUS PL

SCALE

1"=50'
0 50' 100'
1"=10'
0 10' 20'

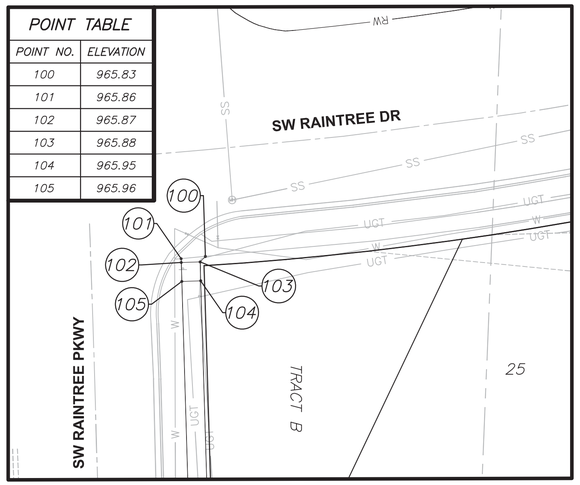
SHEET NUMBER

01C-CR-13

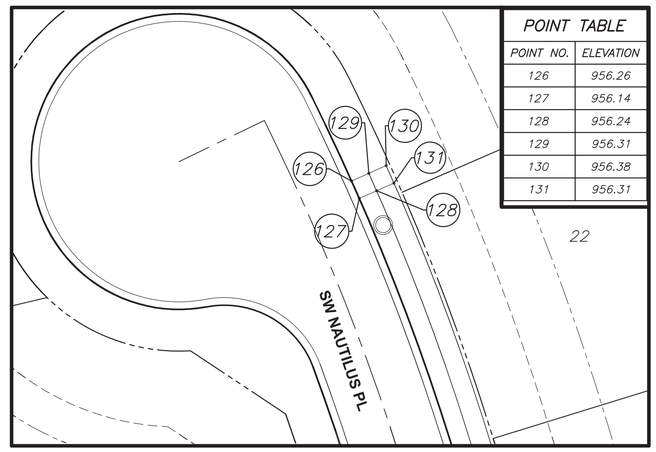
FILE NAME 01C-CR-14.dwg

PERMIT REVIEW DRAWINGS

POINT TABLE	
POINT NO.	ELEVATION
100	965.83
101	965.86
102	965.87
103	965.88
104	965.95
105	965.96



POINT TABLE	
POINT NO.	ELEVATION
126	956.26
127	956.14
128	956.24
129	956.31
130	956.38
131	956.31

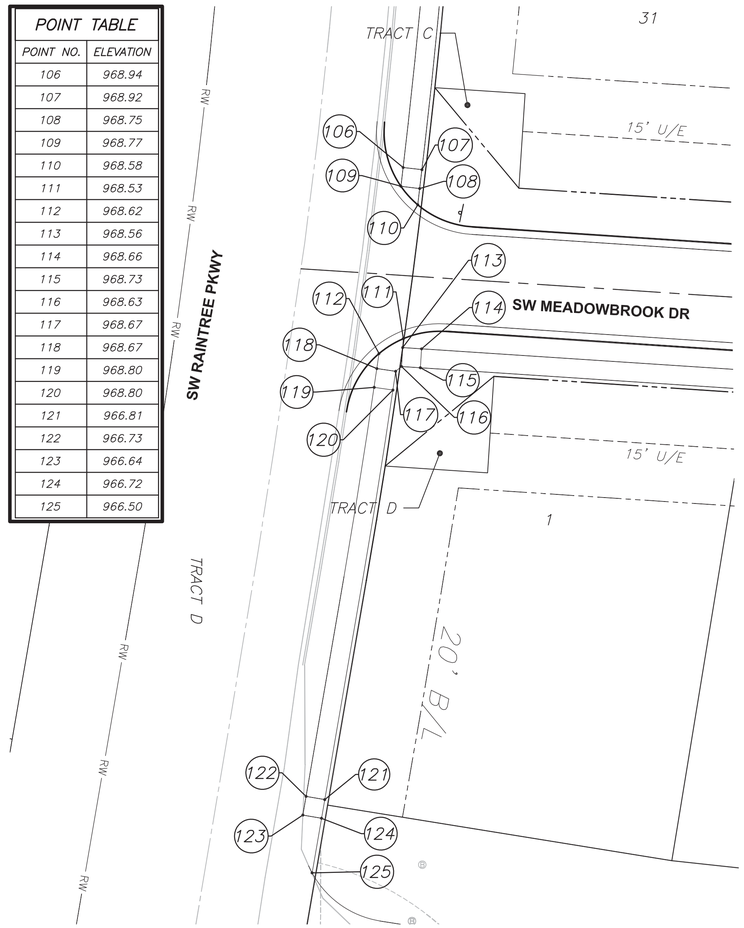


N

ADA RAMP NOTES:

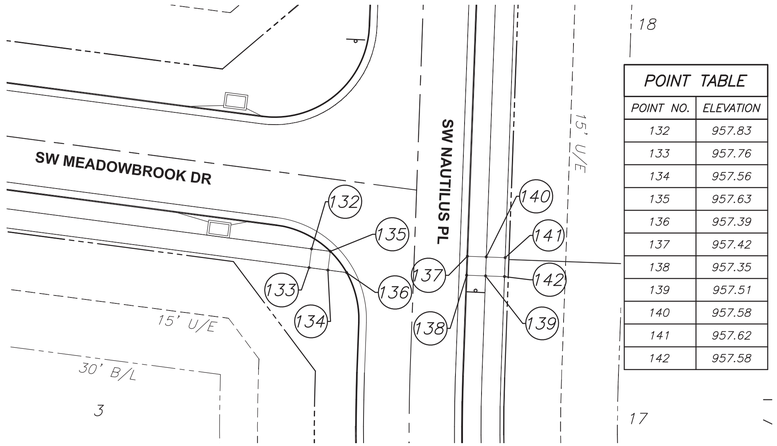
1. *REFER TO SHEET 01C-CR-09 AND 01C-CR-10 FOR TYPICAL ADA RAMP NOTES AND DETAILS.*

POINT TABLE	
POINT NO.	ELEVATION
106	968.94
107	968.92
108	968.75
109	968.77
110	968.58
111	968.53
112	968.62
113	968.56
114	968.66
115	968.73
116	968.63
117	968.67
118	968.67
119	968.80
120	968.80
121	966.81
122	966.73
123	966.64
124	966.72
125	966.50

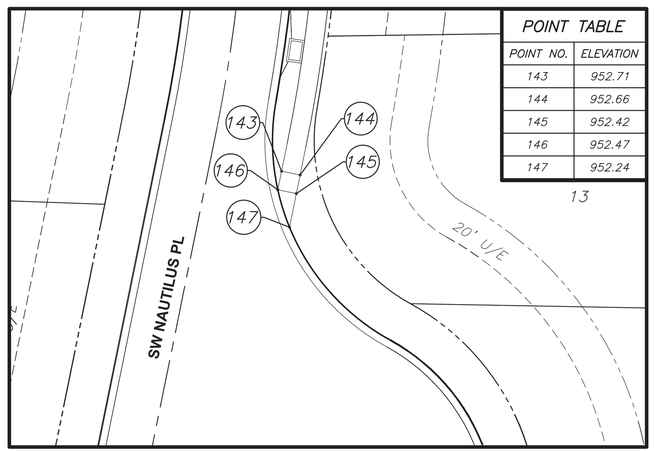


SW RAINTREE PKWY

POINT TABLE	
POINT NO.	ELEVATION
132	957.83
133	957.76
134	957.56
135	957.63
136	957.39
137	957.42
138	957.35
139	957.51
140	957.58
141	957.62
142	957.58



POINT TABLE	
POINT NO.	ELEVATION
143	952.71
144	952.66
145	952.42
146	952.47
147	952.24



SW NAUTILUS PL

3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

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LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
B	04/18/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J. PRESETTE
NUMBER PE-2005009883
PROFESSIONAL ENGINEER
4/20/17

SHEET NAME

ADA RAMP ELEVATIONS

SCALE 1"=20'

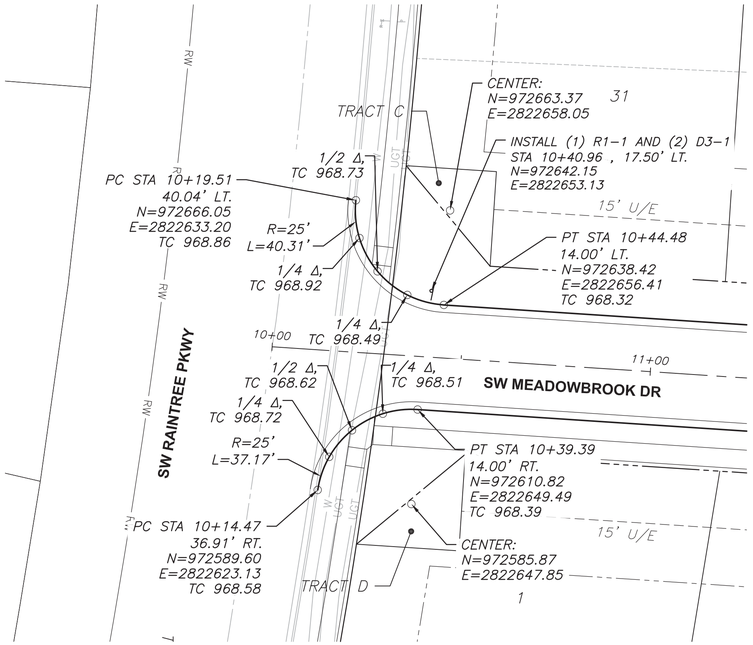
0 20' 40'

SHEET NUMBER

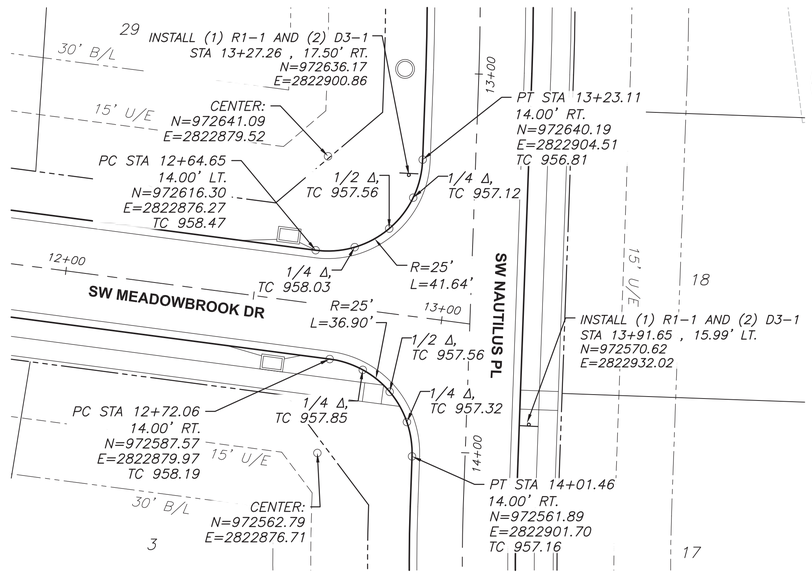
01C-CR-14

FILE NAME 01C-CR-14.dwg

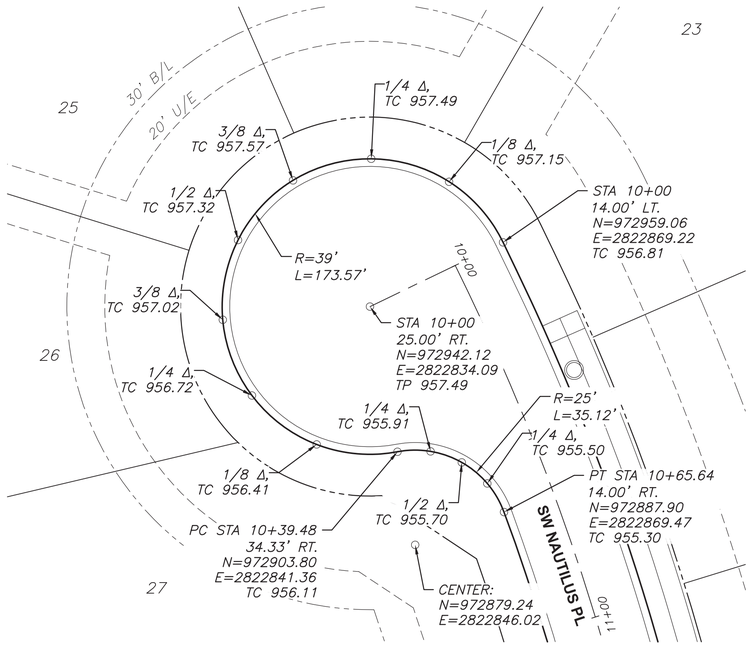
PERMIT REVIEW DRAWINGS



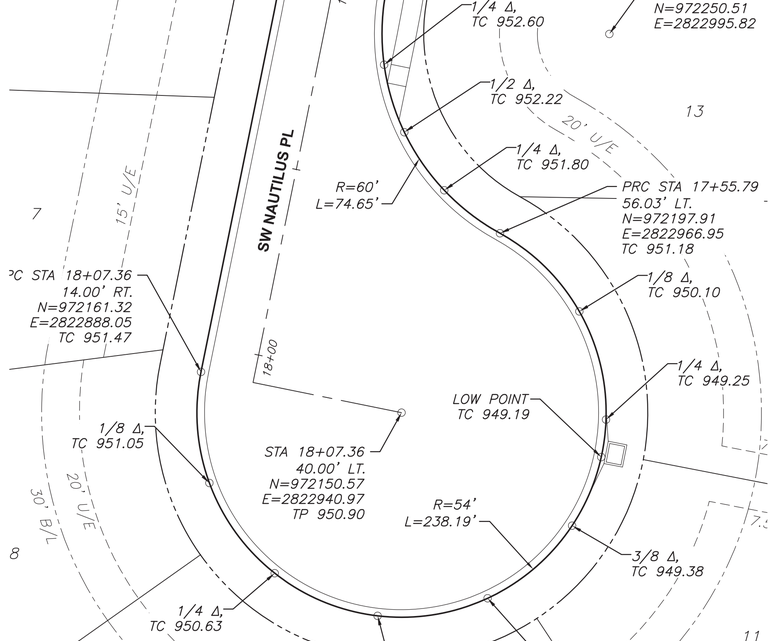
SW RAINTREE PKWY & SW MEADOWBROOK DR



SW MEADOWBROOK DR & SW NAUTILUS PL



SW NAUTILUS PL: NORTH CUL-DE-SAC



SW NAUTILUS PL: SOUTH CUL-DE-SAC

R1-1*

STREET SIGN

D3-1*

*RE: CITY STANDARD SIGN DETAILS FOR POSTS, SIGNS, STREET NAMES, AND INSTALLATION REQUIREMENTS

SIGNAGE NOTES:

1. ALL SIGNS SHALL BE IN ACCORDANCE WITH PART 3 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL. TWO SEPARATE SIGNS ARE REQUIRED FOR ONE STREET NAME INSTALLATION AT EACH POLE.

HDR

3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
B	04/18/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017
PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

SHEET NAME

INTERSECTION AND SIGNAGE DETAILS

SCALE

1"=20'

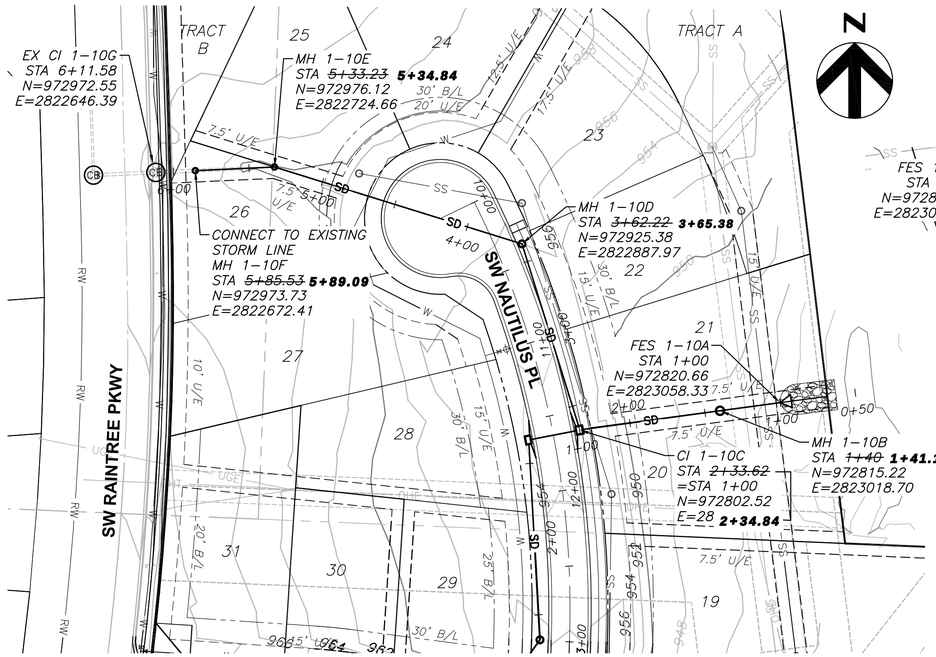
0 20' 40'

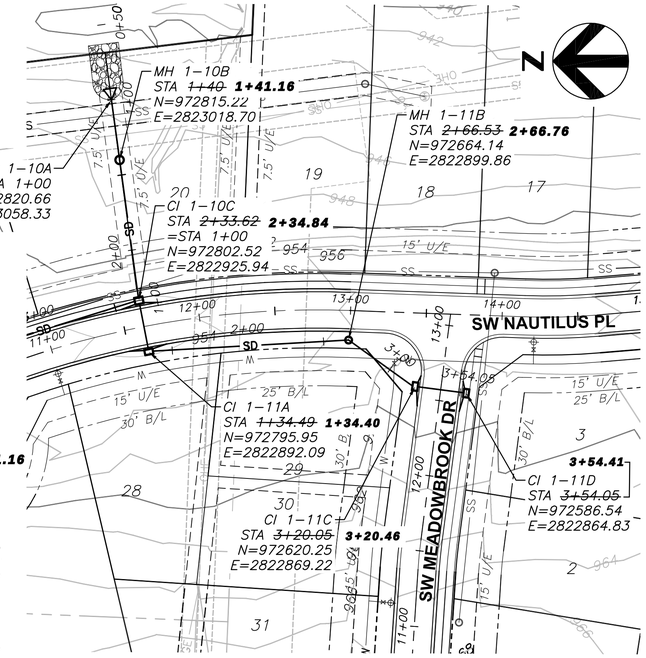
SHEET NUMBER

01C-CR-15

FILE NAME 01C-CR-15.dwg

PERMIT REVIEW DRAWINGS





STORM PIPE AND STRUCTURE MATERIAL NOTES:

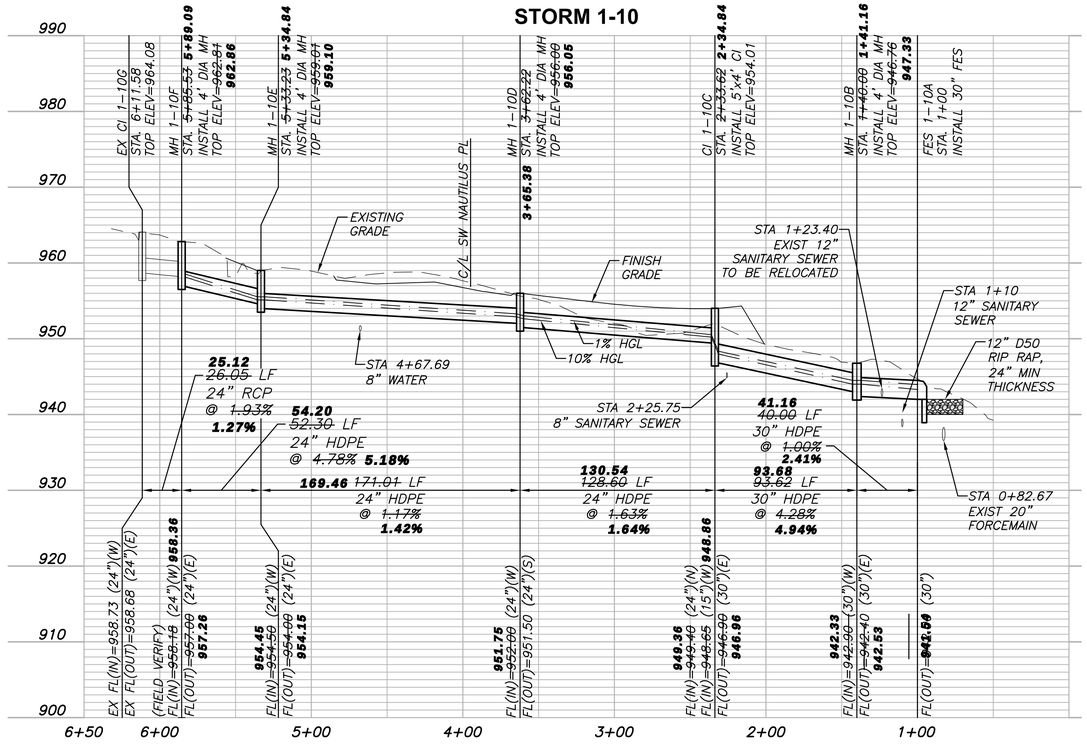
1. *HDPE PIPE SHALL CONFORM TO AASHTO M294, TYPE S.*
2. *CONCRETE PIPE OR ALUMINIZED CORRUGATED METAL PIPE MAY BE USED IN LIEU OF HDPE PIPE. MANNING'S N VALUE SHALL BE EQUAL TO OR LESS THAN 0.013. CONCRETE PIPE SHALL CONFORM TO ASTM C76, CLASS III, WALL TYPE B. ALUMINIZED (TYPE 2) CORRUGATED METAL PIPE SHALL CONFORM TO AASHTO M274. PIPE GAUGE SHALL BE 14 FOR 30" DIAMETER AND SMALLER PIPES.*
3. *PROPOSED CURB INLETS SHALL CONFORM TO APWA TYPE 2 (CI-2), MANHOLES SHALL CONFORM TO APWA TYPE MH-1, JUNCTION BOXES SHALL CONFORM TO APWA TYPE JB-1.*

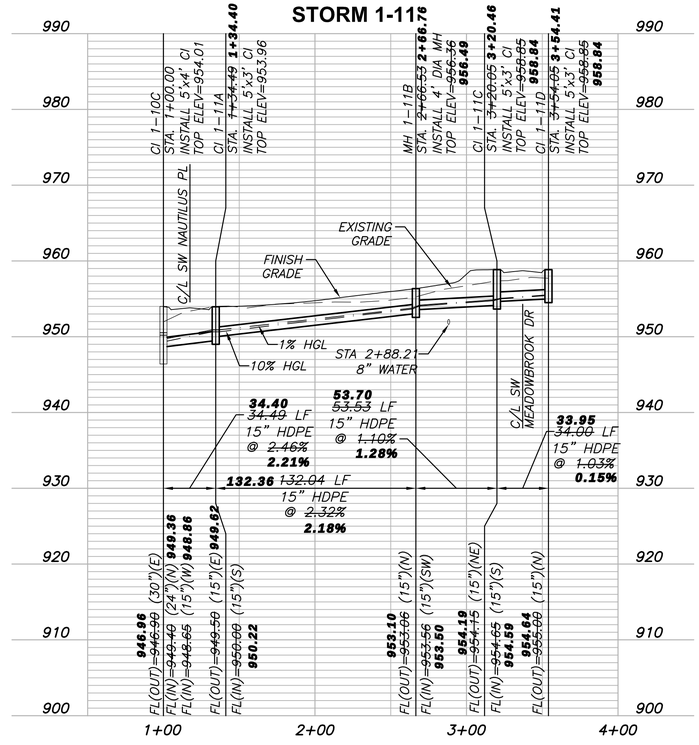
GENERAL NOTES:

1. *COORDINATES AND TOP ELEVATIONS SHOWN ARE LOCATED AT CENTER OF STRUCTURES. ROAD OFFSETS ARE AT INSIDE FACE OF CURB INLETS, AND AT CENTER OF MANHOLES AND JUNCTION BOXES.*
2. *PIPE LENGTHS INDICATED ARE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.*
3. *INSIDE FRONT FACE OF CURB INLETS SHALL BE LOCATED 1.5 FEET BEHIND BACK OF CURB. STRUCTURE SHALL BE PARALLEL WITH CURB ALIGNMENT.*
4. *WATER MAINS AND STORM SEWERS SHALL HAVE AT LEAST 10' OF CLEAR HORIZONTAL SEPARATION.*

STORM SEWER STRUCTURE TABLE

STRUCTURE	*STATION & OFFSET*	*STREET NAME*
FES 1-10A	*11+68.80, 150.96' LT*	*SW NAUTILUS PL*
MH 1-10B	*11+67.23, 111.00' LT*	*SW NAUTILUS PL*
CI 1-10C	*11+62.89, 15.50' LT*	*SW NAUTILUS PL*
MH 1-10D	*10+27.92, 17.11' LT*	*SW NAUTILUS PL*
MH 1-10E	*9+21.83, 108.79' RT*	*SW NAUTILUS PL*
MH 1-10F	*9+01.27, 156.88' RT*	*SW NAUTILUS PL*
CI 1-11A	*11+62.89, 15.50' RT*	*SW NAUTILUS PL*
MH 1-11B	*12+99.34, 19.50' RT*	*SW NAUTILUS PL*
CI 1-11C	*12+57.14, 15.50' LT*	*SW MEADOWBROOK DR*
CI 1-11D	*12+57.14, 15.50' RT*	*SW MEADOWBROOK DR*





"AS-BUILT"
October 29, 2018

HDR
3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
C	10/29/2018	AS-BUILT
B	05/01/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

SHEET NAME

STORM SEWER PLAN AND PROFILE

LINES 1-10 AND 1-11

SCALE

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

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

SHEET NUMBER

01C-CR-16

FILE NAME	01C-CR-17.dwg

PERMIT REVIEW DRAWINGS

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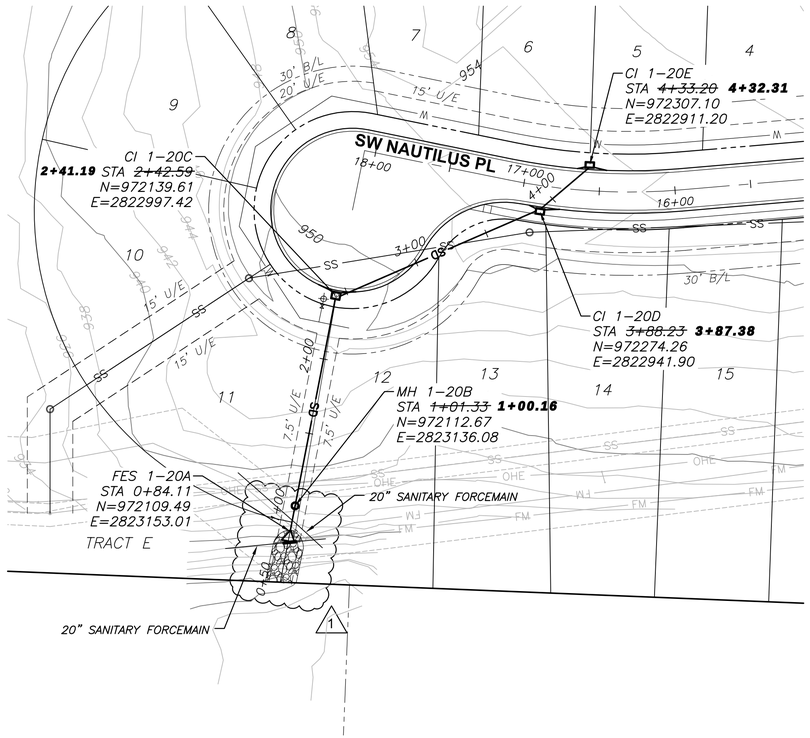

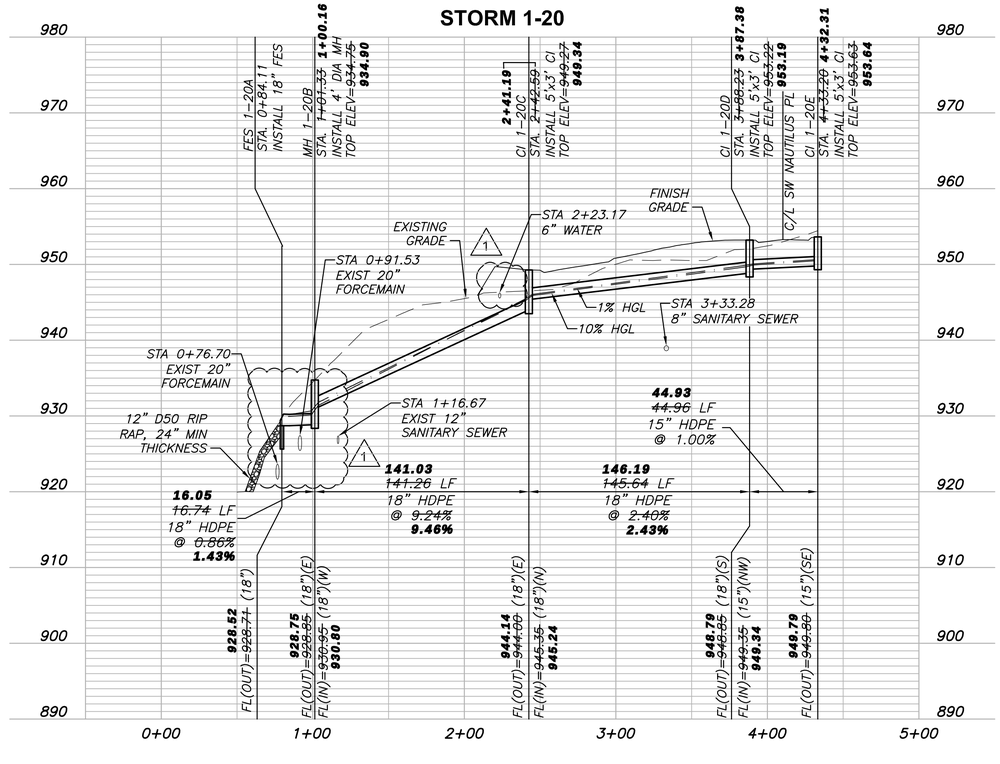

"AS-BUILT"
October 29, 2018

STORM PIPE AND STRUCTURE MATERIAL NOTES:

1. HDPE PIPE SHALL CONFORM TO AASHTO M294, TYPE S.
2. CONCRETE PIPE OR ALUMINIZED CORRUGATED METAL PIPE MAY BE USED IN LIEU OF HDPE PIPE. MANNING'S N VALUE SHALL BE EQUAL TO OR LESS THAN 0.013. CONCRETE PIPE SHALL CONFORM TO ASTM C76, CLASS III, WALL TYPE B. ALUMINIZED (TYPE 2) CORRUGATED METAL PIPE SHALL CONFORM TO AASHTO M274. PIPE GAUGE SHALL BE 14 FOR 30" DIAMETER AND SMALLER PIPES.
3. PROPOSED CURB INLETS SHALL CONFORM TO APWA TYPE 2 (CI–2), MANHOLES SHALL CONFORM TO APWA TYPE MH–1, JUNCTION BOXES SHALL CONFORM TO APWA TYPE JB–1.

GENERAL NOTES:

1. COORDINATES AND TOP ELEVATIONS SHOWN ARE LOCATED AT CENTER OF STRUCTURES. ROAD OFFSETS ARE AT INSIDE FACE OF CURB INLETS, AND AT CENTER OF MANHOLES AND JUNCTION BOXES.
2. PIPE LENGTHS INDICATED ARE FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
3. INSIDE FRONT FACE OF CURB INLETS SHALL BE LOCATED 1.5 FEET BEHIND BACK OF CURB. STRUCTURE SHALL BE PARALLEL WITH CURB ALIGNMENT.
4. WATER MAINS AND STORM SEWERS SHALL HAVE AT LEAST 10' OF CLEAR HORIZONTAL SEPARATION.

STORM SEWER STRUCTURE TABLE

STRUCTURE	STATION & OFFSET	STREET NAME
FES 1–20A	18+05.50, 254.94' LT	SW NAUTILUS PL
MH 1–20B	18+05.64, 238.75' LT	SW NAUTILUS PL
CI 1–20C	18+06.86, 97.50' LT	SW NAUTILUS PL
CI 1–20D	16+86.95, 15.50' LT	SW NAUTILUS PL
CI 1–20E	16+60.98, 15.50' RT	SW NAUTILUS PL

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PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
D	10/29/2018	AS-BUILT
C	07/28/2017	CITY RESUBMITTAL
B	05/01/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017
PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

SHEET NAME

STORM SEWER PLAN AND PROFILE

LINE 1-20

SCALE

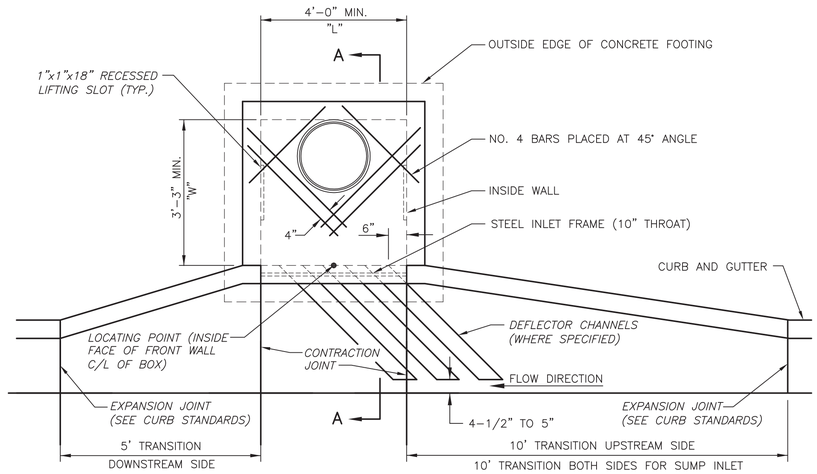
HORIZ: 1"=50'
0 50' 100'
VERT: 1"=10'
0 10' 20'

SHEET NUMBER

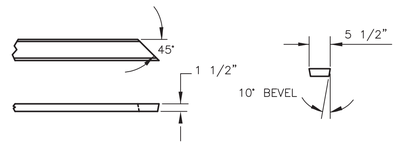
01C-CR-17

FILE NAME 01C-CR-18.dwg

PERMIT REVIEW DRAWINGS

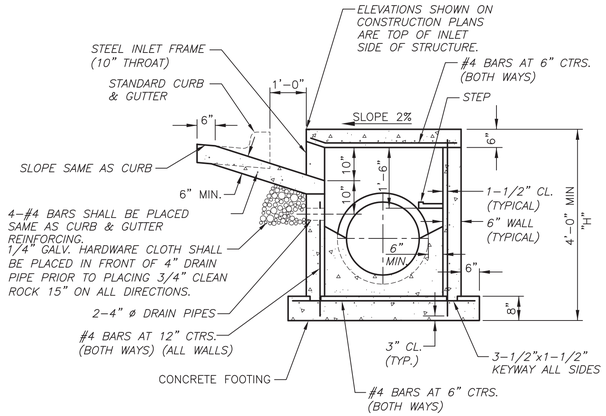


PLAN



DEFLECTOR CHANNEL FORM DETAIL

NOTE:
FORMS SHOULD BE WELL OILED AND HAND PLACED AT TIME OF POUR. AFTER INITIAL SET, REMOVE FORMS AND FINISH SURFACE OF CONCRETE.

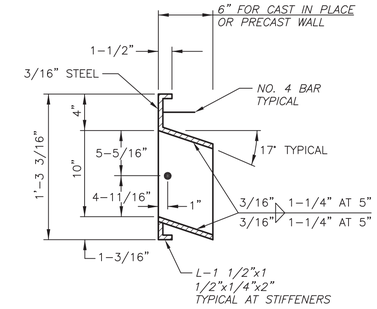


SECTION A–A

GENERAL CURB INLET NOTES:

1. *THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION. FL'S LISTED ON THE PROJECT PLANS ARE LISTED AT THE INSIDE FACE OF THE WALL.*
2. *FLOOR OF INLET SHALL BE SHAPED WITH INVERT TO PROVIDE SMOOTH FLOW.*
3. *LOCATE MH RING AND COVER OVER OUTLET.*
4. *STEPS SHALL BE SPACED AT 1'-4" O.C. VERTICALLY.*
5. *BEVEL ALL EXPOSED EDGES WITH 3/4" CHAMFER OR 1/2" TOOLED EDGE.*
6. *ON-GRADE INLETS SHALL CONFORM TO THE STREET GRADE AND SUMP INLETS SHALL BE LEVEL.*
7. *THE SUMS OF "L" & "W" SHALL NOT EXCEED 14' WITHOUT SPECIAL DESIGN (SEE PROJECT PLANS FOR DETAILS).*
8. *RING & COVER TO BE NEENAH R-1537, CLAY & BAILEY #2020, DEETER #2016 OR APPROVED EQUAL. (CASTING MAY VARY BY MUNICIPALITY, REFER TO PLANS & CONTRACT DOCUMENTS).*

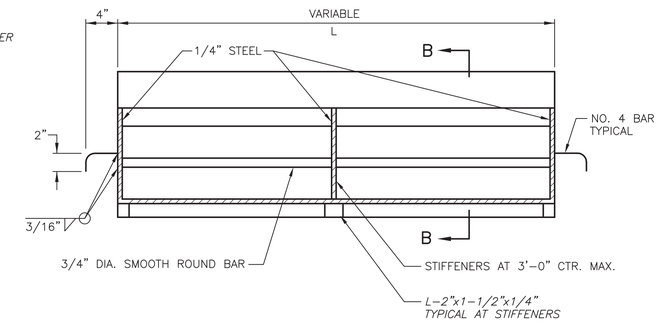
APWA CURB INLET – TYPE 2 (1 / –)



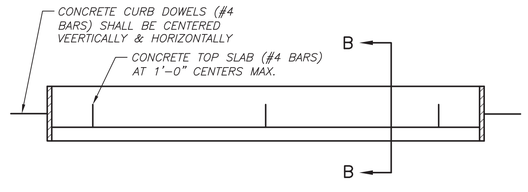
SECTION B–B

GENERAL STEEL INLET FRAME NOTES:

1. *ALL WELDS SHALL BE PREFORMED 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 #37-77 PRIMER (RED) OR EQUAL.*

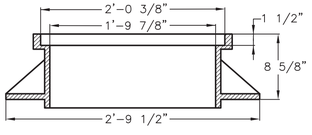


FRONT VIEW



TOP VIEW

10" STEEL INLET FRAME (4 / –)



STANDARD 24" MANHOLE FRAME
LEE'S SUMMIT PART NO.: LS101A
MINIMUM WEIGHT = 250 LB
MATCHING COVER: LS101B

NOTE:

REFER TO WATER UTILITIES LIST OF APPROVED MANUFACTURER'S.

24" MANHOLE FRAME (2 / –)
NOT TO SCALE

STANDARD 24" MANHOLE COVER
LEE'S SUMMIT PART NO.: LS101B
MINIMUM WEIGHT = 160 LB
MATCHING FRAME: LS101A
NOTE: PICK HOLES NOT SHOWN.

NOTE:

REFER TO WATER UTILITIES LIST OF APPROVED MANUFACTURER'S.

24" MANHOLE COVER (3 / –)
NOT TO SCALE

HDR
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LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
B	04/14/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J. BRESETTE
NUMBER PE-2005009883
PROFESSIONAL ENGINEER
4/20/17

SHEET NAME

STORM SEWER DETAILS

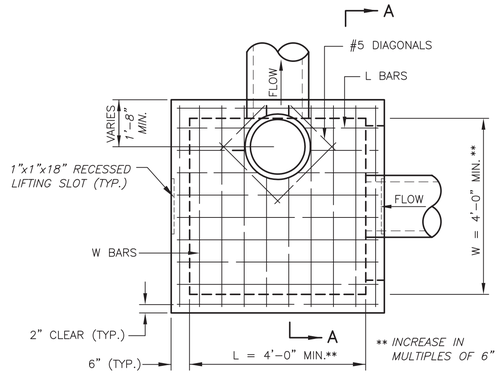
SCALE: NO SCALE

SHEET NUMBER

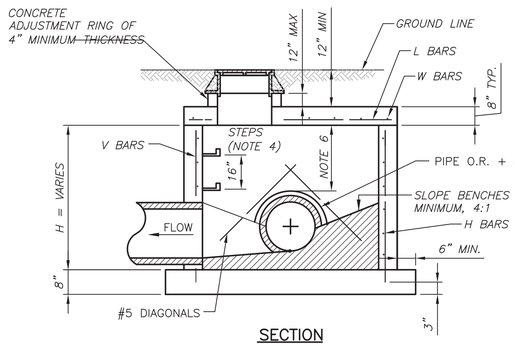
01C-CR-18

FILE NAME: 01C-CR-18.dwg

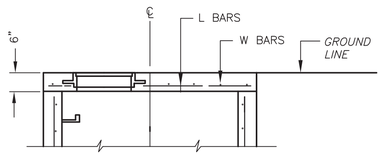
PERMIT REVIEW DRAWINGS



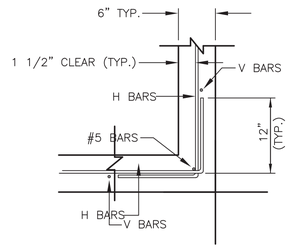
PLAN



SECTION



SLAB TOP ALTERNATE FOR JUNCTION BOX (SHALLOW)



CORNER DETAIL

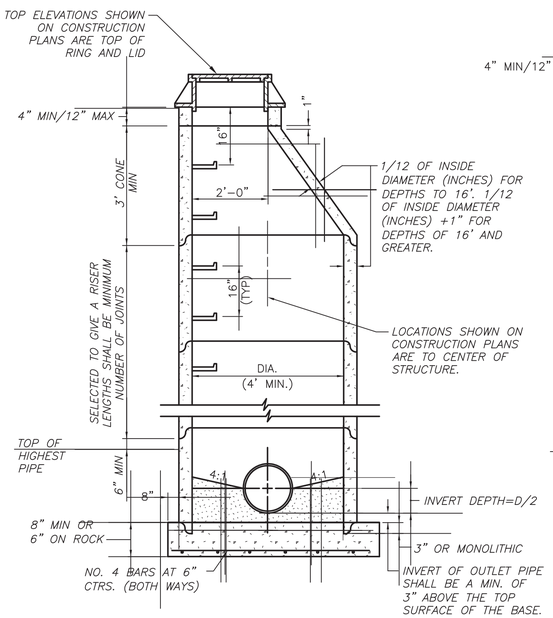
REINFORCING

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

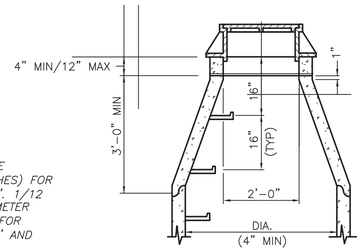
GENERAL NOTES:

1. LOCATE RING AND COVER OVER OUTLET.
2. ALL WORK AND MATERIALS SHALL CONFORM TO PROJECT SPECIFICATIONS SECTION 02515.
3. USE 3/4" CHAMFER STRIP OR 1/2" R EDGER TOOL ON ALL EXPOSED CONCRETE CORNERS.
4. STEPS REQUIRED AT 16" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 4'.
5. BOXOUTS WILL NOT BE ALLOWED TO PROJECT THROUGH THE CORNERS OF THE STRUCTURE AND THE MINIMUM DISTANCE BETWEEN BOXOUTS IS 6" WITH 1 CORNER BAR.
6. THE MINIMUM REINFORCING SHALL BE 1 H-BAR OVER A CAST-IN PLACE PIPE AND 2 H-BARS OVER A PRECAST BOXOUT.
7. O.R. = ONE HALF OUTSIDE PIPE DIAMETER (O.D.).
8. REINFORCING OF COVERS IN STREETS REQUIRE SPECIAL DESIGN.
9. RING & COVER SHALL BE NEENAH R-1736, CLAY & BAILEY #2008, DEETER #1315, EJ V1383 OR APPROVED EQUAL.

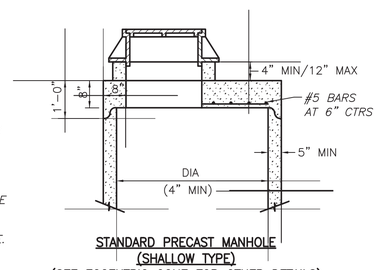
JUNCTION BOX DETAIL 1



STANDARD PRECAST MANHOLE (ECCENTRIC CONE)



STANDARD PRECAST MANHOLE (CONCENTRIC CONE)
(SEE ECCENTRIC CONE FOR OTHER DETAILS)



STANDARD PRECAST MANHOLE (SHALLOW TYPE)
(SEE ECCENTRIC CONE FOR OTHER DETAILS)

PRECAST MANHOLE DETAIL 2

GENERAL MANHOLE NOTES:

1. ALL MANHOLES ARE TO BE PRECAST CONCRETE AND OF ECCENTRIC CONE TYPE UNLESS OTHERWISE SPECIFIED.
2. MANHOLE TOP ADJUSTMENTS SHALL BE ACCOMPLISHED BY THE USE OF CONCRETE ADJUSTMENT RINGS.
3. TOP OF MANHOLE CASTING SHALL BE SET FLUSH AND ON SAME SLOPE AS FINISHED SURFACE OR AS DIRECTED BY THE ENGINEER.
4. REINFORCEMENT IN ALL SECTIONS SHALL EQUAL OR EXCEED A.S.T.M. C-478 SPECIFICATIONS.
5. THE ENGINEER SHALL DESIGNATE MODIFICATIONS FOR MANHOLES WITH SPECIAL DESIGNS.
6. THE INSIDE DIAMETER OF THE MANHOLE SHALL BE 4'-0" FOR PIPE DIAMETERS FROM 12" – 24", 5'-0" FOR PIPE DIAMETERS FROM 27" – 36", AND 6'-0" FOR PIPE DIAMETERS 42" – 48", UNLESS OTHERWISE NOTED ON THE DRAWINGS.
7. CLEARANCE TOLERANCE OF PIPE OPENINGS: THE MAXIMUM ALLOWABLE PIPE OPENING ON A HORIZONTAL AXIS SHALL BE THE OUTSIDE DIAMETER OF THE PIPE PLUS 12". THE MAXIMUM ALLOWABLE PIPE OPENING ON VERTICAL AXIS SHALL BE THE OUTSIDE DIAMETER PLUS 8". THE MINIMUM CLEARANCE BETWEEN THE OUTSIDE SURFACE OF AN INSTALLED PIPE AND THE CONCRETE OF THE MANHOLE SHALL BE 2".
8. INSTALLATION OF PIPE OPENINGS: ALL REQUIRED PIPE OPENINGS SHALL BE PLANT CAST IN MANHOLE UNITS. FIELD ALTERATIONS OF OPENINGS WILL BE PERMITTED PROVIDED WALLS ARE SCORED WITH A MASONRY SAW TO A DEPTH SUFFICIENT TO SEVER REINFORCING STEEL. A CHIPPING HAMMER MAY THEN BE USED TO REMOVE THE CONCRETE. MINIMUM DISTANCE BETWEEN ANY TWO ADJACENT PIPES SHALL BE 4".
9. NO DIRECT PAYMENT FOR SHAPING FLOOR OR CONNECTING PIPES AS SHOWN ON PLANS.
10. RING & COVER SHALL BE DEETER #1258, EAST JORDAN IRON WORKS #2420Z RING W/#2408A COVER OR APPROVED EQUAL.
11. SANITARY SEWERS SHALL BE COATED AND CONFORM TO CITY STANDARDS.

HDR
3741 NE TROON DR
LEE'S SUMMIT, MO 64064
816.347.1100

MO STATE CERTIFICATE OF AUTHORITY #000856

PROJECT FOR

LANDROCK DEVELOPMENT, LLC

CREEKSIDE AT RAINTREE
LOTS 1 THRU 31
LEE'S SUMMIT, MISSOURI

MARK	DATE	DESCRIPTION
B	04/14/2017	CITY RESUBMITTAL
A	03/08/2017	CITY SUBMITTAL

PROJECT NUMBER	10028825-276408
ORIGINAL ISSUE	MARCH 7, 2017

PROJECT MANAGER	SIMON SUN
PROJECT ENGINEER	WILL NEDS, E.I.T.

STATE OF MISSOURI
AARON J. BRESETTE
NUMBER
PE-2005009883
PROFESSIONAL ENGINEER
4/20/17

SHEET NAME

STORM SEWER DETAILS

SCALE: NO SCALE

SHEET NUMBER

01C-CR-19

FILE NAME: 01C-CR-19.dwg

PERMIT REVIEW DRAWINGS