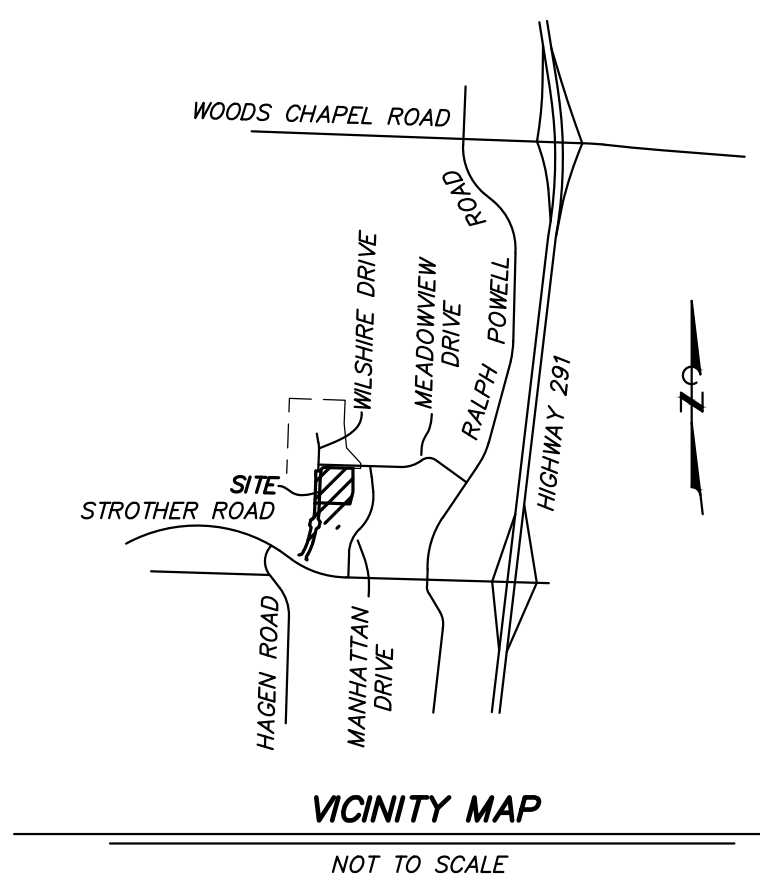


WILSHIRE HILLS - 4TH PLAT
MASS GRADING & EROSION CONTROL PLAN

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

JUNE 27, 2023

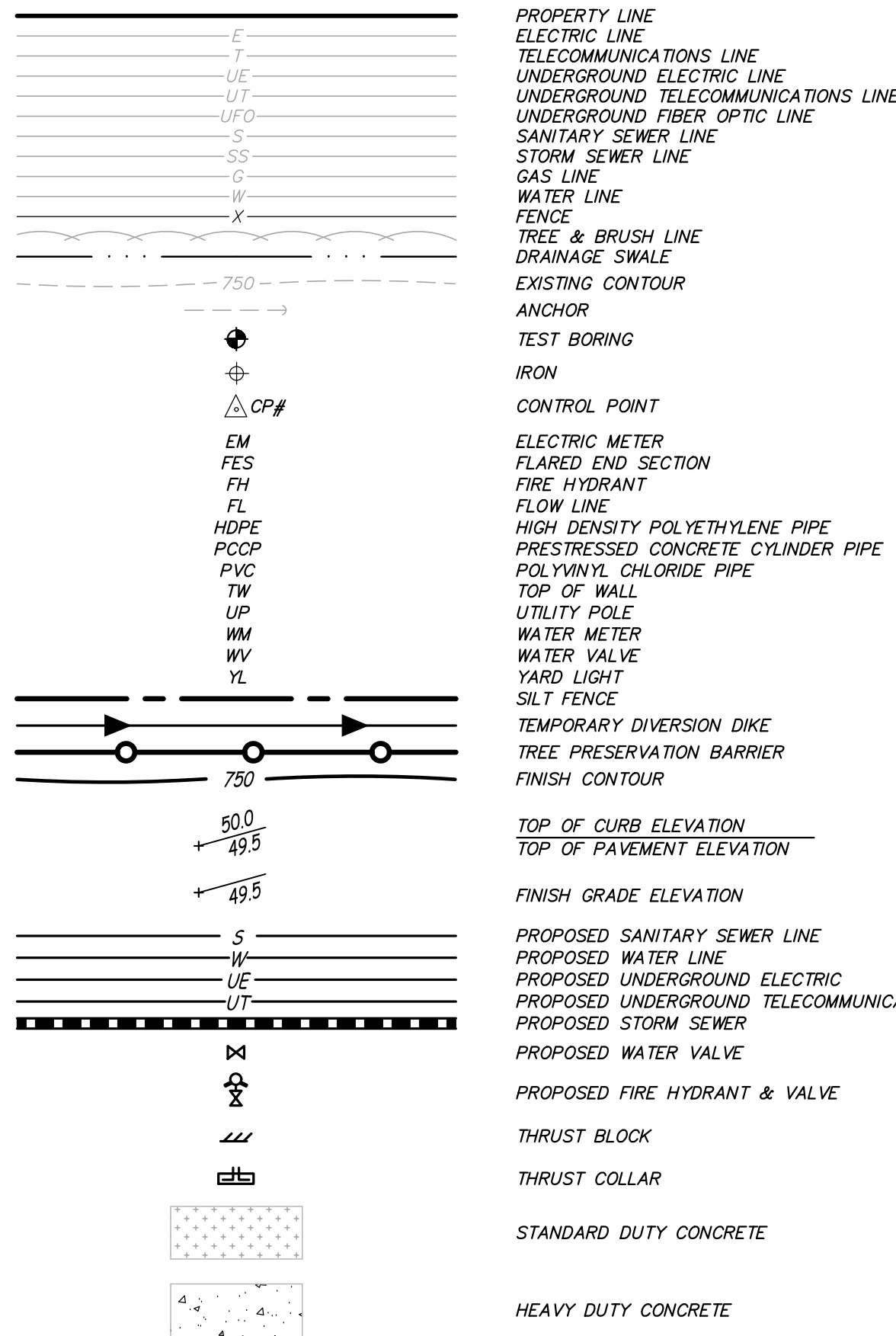
REVISED: MARCH 27, 2024



VICINITY MAP

NOT TO SCALE

LEGEND



SEQUENCE OF EVENTS

PHASE I - CLEARING

- 1. PROVIDE PRE-CONSTRUCTION MEETING FOR SWPPP TRAINING PRIOR TO ANY CONSTRUCTION. POST ES&PC SIGN AND PERMIT BOX.
- 2. CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE AT EXISTING ENTRANCE.
- 3. MAINTAIN EXISTING SEDIMENT TRAPS.
- 4. INSTALL ALL PERIMETER EROSION CONTROL, INCLUDING SILT FENCE AND DIVERSION DIKES.
- 5. INSTALL LAY DOWN AREA, CONSTRUCTION TRAILER AND PORTABLE TOILET.
- 6. INSTALL EXTENDED DRY DETENTION BASIN WITH SKIMMER, UTILIZE AS SEDIMENT TRAP. MAINTAIN EXISTING SEDIMENT TRAPS AS LONG AS PRACTICAL AND UNTIL RUNOFF IS DIVERTED TO NEW BASIN.
- 7. BEGIN CLEARING OPERATIONS. ADHERE TO NOTES REGARDING CLEARING ON THE INITIAL EROSION AND SEDIMENT CONTROL PLAN. CLEARING SHALL ONLY BE DONE IN AREAS WHERE EARTHWORK SHALL BE PERFORMED WITHIN 14 DAYS AFTER CLEARING AND GRUBBING.
- 8. STRIP TOPSOIL IN AREAS OF PROPOSED CONSTRUCTION. STOCKPILE AN ADEQUATE AMOUNT OF TOPSOIL FOR USE IN LANDSCAPED AREAS AFTER COMPLETION OF CONSTRUCTION.

PHASE II - SITE GRADING

- 1. COMMENCE SITE GRADING.
- 2. INSTALL STORM SEWERS AND DITCHES AS SOON AS PRACTICAL TO IMPROVE SITE DRAINAGE AND MINIMIZE SOIL EXPOSED TO CONCENTRATED RUNOFF. INSTALL INLET PROTECTION, EROSION CONTROL BLANKET, AND DITCH CHECKS IMMEDIATELY UPON COMPLETION.
- 3. ROUGH GRADE ROAD BED.
- 4. COMMENCE INSTALLATION OF ALL SITE UTILITIES.
- 5. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY SEEDED AND WATERED.
- 6. ALL DISTURBED AREAS SHALL BE HYDROSEEDDED ONCE FINAL GRADE HAS BEEN ACHIEVED AND TOPSOIL HAS BEEN PLACED.

PHASE III - ROAD CONSTRUCTION AND FINAL STABILIZATION

- 1. FINALIZE PAVEMENT SUBGRADE PREPARATION.
- 2. CONSTRUCT ALL CURB AND GUTTER AS SHOWN ON THE PLANS. INLET PROTECTION MAY BE REMOVED TEMPORARILY FOR THIS CONSTRUCTION.
- 3. TEMPORARILY REMOVE INLET PROTECTION AROUND INLETS NO MORE THAN 48 HOURS PRIOR TO PLACING STABILIZED BASE COURSE.
- 4. INSTALL BASE MATERIAL AS REQUIRED FOR PAVEMENT AND PLACE PAVEMENT PER PLANS AND SPECIFICATIONS.
- 5. REMOVE TEMPORARY CONSTRUCTION EXITS ONLY PRIOR TO PAVEMENT CONSTRUCTION IN THESE AREAS.
- 6. PERFORM FINAL GRADING, SEEDING, SODDING AND LANDSCAPE INSTALLATION.
- 7. REMOVE SEDIMENT FROM SEDIMENT TRAPS, CONVERT TO PERMANENT DETENTION BASIN. HYDROSEED ALL DISTURBED AREAS.
- 8. GRADE TO MATCH PLANS.
- 9. EROSION CONTROL MEASURES SHALL ONLY BE PERMANENTLY REMOVED AFTER ALL PAVING IS COMPLETE, EXPOSED SURFACES ARE STABILIZED, AND FINAL SITE INSPECTION IS PERFORMED BY A CERTIFIED EROSION CONTROL PROFESSIONAL DESIGNATED BY THIS ENGINEERING FIRM.
- 10. REMOVE ALL SEDIMENT FROM STORM SEWER SYSTEM.

STORM WATER POLLUTION PREVENTION PLAN NOTES

- 1. CONTRACTOR SHALL FOLLOW THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ADHERE TO ALL TERMS & CONDITIONS AS OUTLINED IN THE GENERAL N.P.D.E.S. PERMIT FOR STORM WATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES. A COPY OF THIS PLAN, SWPPP, AND ALL PERMITS SHALL REMAIN ON SITE THROUGHOUT CONSTRUCTION.
- 2. CONTRACTORS ARE REQUIRED TO SUBMIT TO CITY INSPECTION STAFF COPIES OF THEIR INSPECTION REPORTS REQUIRED BY THE SWPPP ON A MONTHLY BASIS.
- 3. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED AND APPROVAL HAS BEEN RECEIVED FROM ALL GOVERNING AUTHORITIES.
- 4. IMMEDIATELY UPON COMPLETION OF FINISH GRADING IN EACH AREA, ALL LANDSCAPING AREAS SHALL BE STABILIZED PER PLANS AND/OR SPECIFICATIONS.
- 5. SHOULD CONSTRUCTION STOP FOR LONGER THAN 14 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED IN THE SWPPP.
- 6. SITE INSPECTION SHOULD OCCUR ON A REGULAR SCHEDULE AND WITHIN 24 HOURS OF A STORM EVENT OF 0.25 INCHES OR GREATER. REGULARLY SCHEDULED INSPECTION SHALL BE A MINIMUM OF ONCE EVERY 7 CALENDAR DAYS. ANY DEFICIENCIES SHALL BE NOTED IN A WEEKLY REPORT OF THE INSPECTION AND CORRECTED WITHIN SEVEN CALENDAR DAYS OF THE REPORT.
- 7. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SOIL SEDIMENT FROM LEAVING THE SITE.
- 8. CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY.
- 9. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ON SITE INSPECTION.
- 10. CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
- 11. ALL SLOPES GREATER THAN 3:1 SHALL BE REINFORCED BY NORTH AMERICAN GREEN P300 PERMANENT TURF REINFORCEMENT MAT OR APPROVED EQUAL.
- 12. ALL ROLLED EROSION CONTROL MATS, BIONETS, BLANKETS, ETC. SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS. INSTALLATION SHALL RESULT IN A PRODUCT THAT IS TIGHTLY SECURED TO THE GROUND THAT FORCES RUNOFF TO DRAIN OVER, NOT UNDER, THE PRODUCT. GRASS SHALL BE PLANTED PRIOR TO PRODUCT PLACEMENT SO IT WILL GROW THRU THE BLANKET. ALL ASPECTS OF THE PRODUCT SHALL BE FIRMLY SECURED TO THE GROUND SO IT CAN BE MOWED OVER WITHOUT GETTING TANGLED IN THE MOWER.
- 13. CONTRACTOR SHALL REMOVE ALL TRASH, DEBRIS, TREES & BRUSH AND OTHER MATERIAL CREATED AS A RESULT OF THE CONSTRUCTION WORK AND THE SITE SHALL BE RETURNED TO ITS ORIGINAL CONDITION.
- 14. ALL PERIMETER LANDSCAPED AREAS SHALL BE GRASS COVERED.
- 15. IN ORDER TO TERMINATE A MISSOURI DEPARTMENT OF NATURAL RESOURCES (MDNR) STATE OPERATING PERMIT, THE CONTRACTOR SHALL SUBMIT A REQUEST FOR TERMINATION OF OPERATING PERMIT FORM TO MDNR. A PERMIT IS ELIGIBLE FOR TERMINATION WHEN EITHER PERENNIAL VEGETATION, PAVEMENT, BUILDINGS, OR STRUCTURES USING PERMANENT MATERIALS COVER ALL AREAS THAT HAVE BEEN DISTURBED. VEGETATIVE COVER SHOULD BE AT LEAST 70% OF FULLY ESTABLISHED PLANT DENSITY OVER 100% OF THE DISTURBED AREA. A COPY OF THE REQUEST FOR TERMINATION OF OPERATING PERMIT FORM SHALL BE SUBMITTED TO THE CITY OF LEE'S SUMMIT AT WHICH TIME THE CITY WILL REMOVE THE PROJECT FROM ITS INSPECTION SCHEDULE.
- 16. THE SITE CONTRACTOR SHALL INCLUDE MAINTENANCE OF ALL BMP'S AS PART OF THEIR CONTRACT AND SHALL BE RESPONSIBLE FOR THE PROJECT UNTIL THE NPDES PERMIT IS TERMINATED.

CONSTRUCTION NOTES

- 1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
- 2. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.
- 3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL IDENTIFIED PROPERTY CORNERS, LAND SURVEY CORNERS, AND ACCESSORIES. THE CONTRACTOR SHALL CAUSE THE CORNERS AND ACCESSORIES TO BE REFERENCED BY A LICENSED LAND SURVEYOR, AND ANY SUCH CORNER OR ACCESSORIES DISTURBED OR DESTROYED DURING CONSTRUCTION SHALL BE RESET BY THE SURVEYOR AT THE ORIGINAL LOCATION, AND FILE THE RESTORATIONS AND MONUMENT DOCUMENTS AS THE LAW REQUIRES.
- 4. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEERING SURVEYS AND SERVICES FOR REVIEW AND APPROVAL FOR ALL MATERIALS BEFORE ORDERING.
- 5. ALL DIMENSIONS ARE TO BACK OF CURB, FACE OF SIDEWALK, OR EDGE OF PAVEMENT, UNLESS OTHERWISE NOTED.
- 6. ALL TRAFFIC CONTROL SHALL BE PER CURRENT MUTCD REQUIREMENTS AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. A TRAFFIC CONTROL PLAN WILL BE REQUIRED FOR ANY WORK WITHIN THE RIGHT-OF-WAY.
- 7. IF A CONFLICT EXISTS BETWEEN THE CIVIL PLANS AND CIVIL SPECIFICATIONS, THE CIVIL PLANS SHALL GOVERN.
- 8. ALL INCIDENTAL ITEMS INCLUDING BUT NOT LIMITED TO SIGNS, PAVEMENT MARKING, PAVEMENT, CURBS, TRUNCATED DOMES, FENCING, LANDSCAPING, IRRIGATION, ETC. EITHER DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE RETURNED TO ORIGINAL CONDITIONS BY THE CONTRACTOR.
- 9. ALL NEW UTILITY TRENCHES SHOULD BE BACKFILLED IN ACCORDANCE WITH APPROPRIATE CONTROLLED ENGINEERED FILL SPECIFICATIONS.
- 10. IMPORTED SOILS PROPOSED FOR USE AS FILL OR BACKFILL SHOULD BE REVIEWED AND ANALYZED BY THE GEOTECHNICAL ENGINEER PRIOR TO USE ON SITE. SOIL CLASSIFIED AS MH, OH, OL, OR PT (HIGH PLASTICITY SOILS AND ORGANIC SOILS) BY THE UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487) SHOULD NOT BE IMPORTED FOR USE AS ENGINEERED FILL. SUITABLE IMPORTED MATERIALS FOR GENERAL SITE FILL ARE THOSE THAT CLASSIFY AS GW, GM, GC, SC, AND CL IN ACCORDANCE WITH ASTM D 2487. MATERIALS CLASSIFIED AS CH SHOULD BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO THEIR IMPORTATION AND ONLY USED OUTSIDE THE BUILDING PAD AT DEPTHS BELOW THE UPPER 2 FEET OF SUBGRADE. SUBJECT TO FINAL DESIGN REQUIREMENTS FOR WALL BACKFILL, SUITABLE IMPORTED MATERIALS FOR WALL AND TRENCH BACKFILL ARE THOSE THAT CLASSIFY AS GW, GP, GM, GC, SM, SW, SP, SC, AND CL IN ACCORDANCE WITH ASTM D2487.
- 11. FILLS PLACED IN AREAS WHERE THE NATURAL SLOPE IS GREATER THAN 5H:1V (HORIZONTAL TO VERTICAL) SHOULD BE REDUCED INTO THE EXISTING GRADE TO REDUCE THE POTENTIAL FOR SURFACE EROSION. SLOPES AND ENGINEERED FILL BENCHES SHOULD BE LEVEL AND WIDE ENOUGH TO ACCOMMODATE COMPACTION AND EARTH MOVING EQUIPMENT.
- 12. FILL AND SUBGRADE CONSTRUCTION SHOULD NOT BE STARTED ON FOUNDATION SOIL, PARTIALLY COMPLETED FILL, OR SUBGRADES THAT CONTAIN FROST OR ICE. FILL SHOULD NOT BE CONSTRUCTED USING FROZEN SOIL. FROZEN SOIL SHOULD BE REMOVED PRIOR TO PLACING FILL MATERIAL.
- 13. AFTER STRIPPING AND GRUBBING OPERATIONS ARE COMPLETED AND PRIOR TO FILL PLACEMENT, AREAS TO BE FILLED SHALL BE PROOF ROLLED USING A LOADED TANDEM AXLE DUMP TRUCK TO IDENTIFY SOFT AND UNSUITABLE AREAS. SOFT MATERIAL MAY BE MOISTURE CONDITIONED AND REUSED AS ENGINEERED FILL. UNSUITABLE AND DELETERIOUS MATERIAL SHALL BE REMOVED FROM SITE.
- 14. BUILDING PAD AND PARKING AREAS SHALL BE PROOF-ROLLED WITH A FULLY LOADED TANDEM AXLE DUMP TRUCK TO IDENTIFY ANY SOFT OR UNSUITABLE AREAS, PRIOR TO BASE ROCK PLACEMENT. THE PROOF-ROLL SHALL BE OBSERVED BY THE PROJECT GEOTECHNICAL ENGINEER. AREAS IDENTIFIED AS UNSUITABLE SHALL BE OVER EXCAVATED AND RECONSTRUCTED WITH ENGINEERED FILL.
- 15. CONTRACTOR SHALL PLACE STOCKPILED TOPSOIL FROM SITE IN ALL LANDSCAPE AREAS TO A MINIMUM DEPTH OF 6". UNLESS NOTED OTHERWISE IN PROJECT SPECIFICATIONS, ANY EXCESS TOPSOIL SHALL BE DISPOSED OF ON-SITE PER OWNER.

HAZARDOUS SUBSTANCE NOTE

- 1. SUBSTANCES REGULATED BY FEDERAL LAW UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) OR THE COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA) WHICH ARE TRANSPORTED, STORED OR USED FOR MAINTENANCE, CLEANING OR REPAIRS SHALL BE MANAGED ACCORDING TO THE PROVISIONS OF RCRA AND CERCLA.
- 2. ALL PAINTS, SOLVENTS, PETROLEUM PRODUCTS AND PETROLEUM WASTE PRODUCTS (EXCEPT FUELS) AND STORAGE CONTAINERS (SUCH AS DRUMS, CANS OR CARTONS) SHALL BE STORED SUCH THAT THESE MATERIALS ARE NOT EXPOSED TO STORM WATER. SUFFICIENT PRACTICES OF SPILL PREVENTION, CONTROL AND/OR MANAGEMENT SHALL BE PROVIDED TO PREVENT ANY SPILLS OF THESE POLLUTANTS FROM ENTERING A WATER OF THE STATE. ANY CONTAINMENT SYSTEM USED TO IMPLEMENT THIS REQUIREMENT SHALL BE CONSTRUCTED OF MATERIALS COMPATIBLE WITH THE SUBSTANCES CONTAINED AND SHALL ALSO PREVENT THE CONTAMINATION OF GROUNDWATER.
- 3. THE APPLICANT SHALL NOTIFY BY TELEPHONE AND IN WRITING THE DEPARTMENT OF NATURAL RESOURCES, WATER POLLUTION CONTROL PROGRAM, POST OFFICE BOX 176, JEFFERSON CITY, MO 65102, 1-800-361-4827, OF ANY OIL SPILLS OR IF HAZARDOUS SUBSTANCES ARE FOUND DURING THE PROSECUTION OF WORK UNDER THIS PERMIT.

RELEASED FOR CONSTRUCTION
As Noted on Plan Review

Development Services Department
Lee's Summit, Missouri

05/03/2024

FLOODPLAIN NOTE

THIS PROPERTY IS LOCATED IN ZONE X "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD" AS SHOWN BY FIRM COMMUNITY PANEL NUMBER 29095C0430Q, DATED JANUARY 20, 2017.

ZONING NOTE

THIS PROPERTY IS ZONED "P-MIX" PLANNED MIXED USE DISTRICT

BENCH MARK

BM - MISSOURI DEPARTMENT OF TRANSPORTATION VRS NETWORK.

PROPERTY OWNER

JEFFREY E. SMITH INVESTMENT CO, LLC
206 PEACH WAY
COLUMBIA, MISSOURI 65203

UTILITY NOTES

THE LOCATIONS, SIZES, AND MATERIAL TYPES OF UNDERGROUND UTILITIES INDICATED ON THE PLAT, NOT VISIBLE OR APPARENT FROM THE SURFACE, ARE SHOWN IN THEIR APPROXIMATE LOCATIONS FROM A MISSOURI ONE CALL SYSTEM LOCATE, OR UTILITY COMPANY RECORDS AND WERE NOT VERIFIED IN THE FIELD.

WATER

JACKSON COUNTY PWSD #14
CITY OF LEE'S SUMMIT
220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
CONTACT: PUBLIC WORKS DEPARTMENT 816-969-1800
12" DI ALONG THE NORTH SIDE OF MEADOWVIEW DRIVE.
30" PCCP ALONG THE WEST PROPERTY LINE.

SANITARY SEWER

CITY OF LEE'S SUMMIT
220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
CONTACT: WES OWEN 816-969-1955
AS SHOWN

STORM SEWER

CITY OF LEE'S SUMMIT
220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
CONTACT: SHAWN GRAFF 816-969-1800
AS SHOWN

ELECTRIC

EVERGY
1300 SE HAMLEN ROAD
LEE'S SUMMIT, MISSOURI 64081
CONTACT: 888-471-5275

FIBER OPTIC

GOOGLE FIBER
2812 WEST 47TH STREET
KANSAS CITY, KS 66103
CONTACT: CRAIG YOUNG 870-219-5630

GAS

MISSOURI GAS ENERGY
3026 SE CLOVER ROAD
LEE'S SUMMIT, MISSOURI 64081
CONTACT: BECCA ORR 816-969-2230

TELECOM

COMCAST CABLE COMMUNICATIONS
3409 NW DUNCAN ROAD
BLUE SPRINGS, MO 64015
CONTACT: BARBARA BROWN 816-795-2255
AS SHOWN

TIME WARNER CABLE

CONTACT: ROY BELLIS 913-643-1914
AS SHOWN



Call BEFORE you DIG
TOLL FREE
1-800-DIG-RITE
MISSOURI ONE-CALL SYSTEM, INC.

NOTE

IT IS IMPORTANT TO NOTE THAT THIS PLAN IS A PART OF A LARGER PUBLIC IMPROVEMENT PLAN CONSTRUCTION DOCUMENT. ALL EROSION AND SEDIMENT CONTROL REQUIREMENTS ARE STILL APPLICABLE FOR ANY ONSITE CONSTRUCTION. PLEASE REFERENCE:

- ROAD & STORM SEWER PLAN COVER
- UTILITY EXTENSION PLAN COVER
- SANITARY SEWER EXTENSION PLAN COVER
- MASS GRADING & EROSION CONTROL PLAN COVER

SHEET INDEX

C5.01	MASS GRADING & EROSION CONTROL PLAN COVER
C5.02-C5.04	GRADING PLAN
C5.05	EROSION CONTROL PLAN
C5.06-C5.09	EROSION CONTROL DETAILS

WILSHIRE HILLS - 4TH PLAT
MASS GRADING & EROSION CONTROL PLAN

ESS Engineering Surveys & Services
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1113 Fay Street, Columbia, MO 65201
973-449-2646
802 El Dorado Drive, Jefferson City, MO 65101
873-636-3303
1775 West Main Street, Sedalia, MO 65301
660-826-8618
www.ess-inc.com
MO Engineering Corp. # 2004005018

PUBLIC IMPROVEMENTS FOR
WILSHIRE HILLS - 4TH PLAT
NE WILSHIRE DRIVE
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

3/27/2024
STATE OF MISSOURI
MATTHEW AARON KRIETE
PROFESSIONAL ENGINEER
NUMBER PE-2007002811
MATTHEW A. KRIETE
PROFESSIONAL ENGINEER
PE-2007002811
IF ORIGINAL SIGNATURE OR DIGITAL AUTHENTICATION IS NOT PRESENT THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT

Date	JUNE 27, 2023
Revised	
1	JULY 26, 2023
2	OCTOBER 12, 2023
3	NOVEMBER 28, 2023
4	FEBRUARY 16, 2024
5	MARCH 27, 2024

Design: ST Drawn: MJS

MASS GRADING & EROSION CONTROL PLAN COVER

Sheet

C5.01

ES&S PROJECT NO. 15925





LEE'S SUMMIT, JACKSON COUNTY, MISSOURI



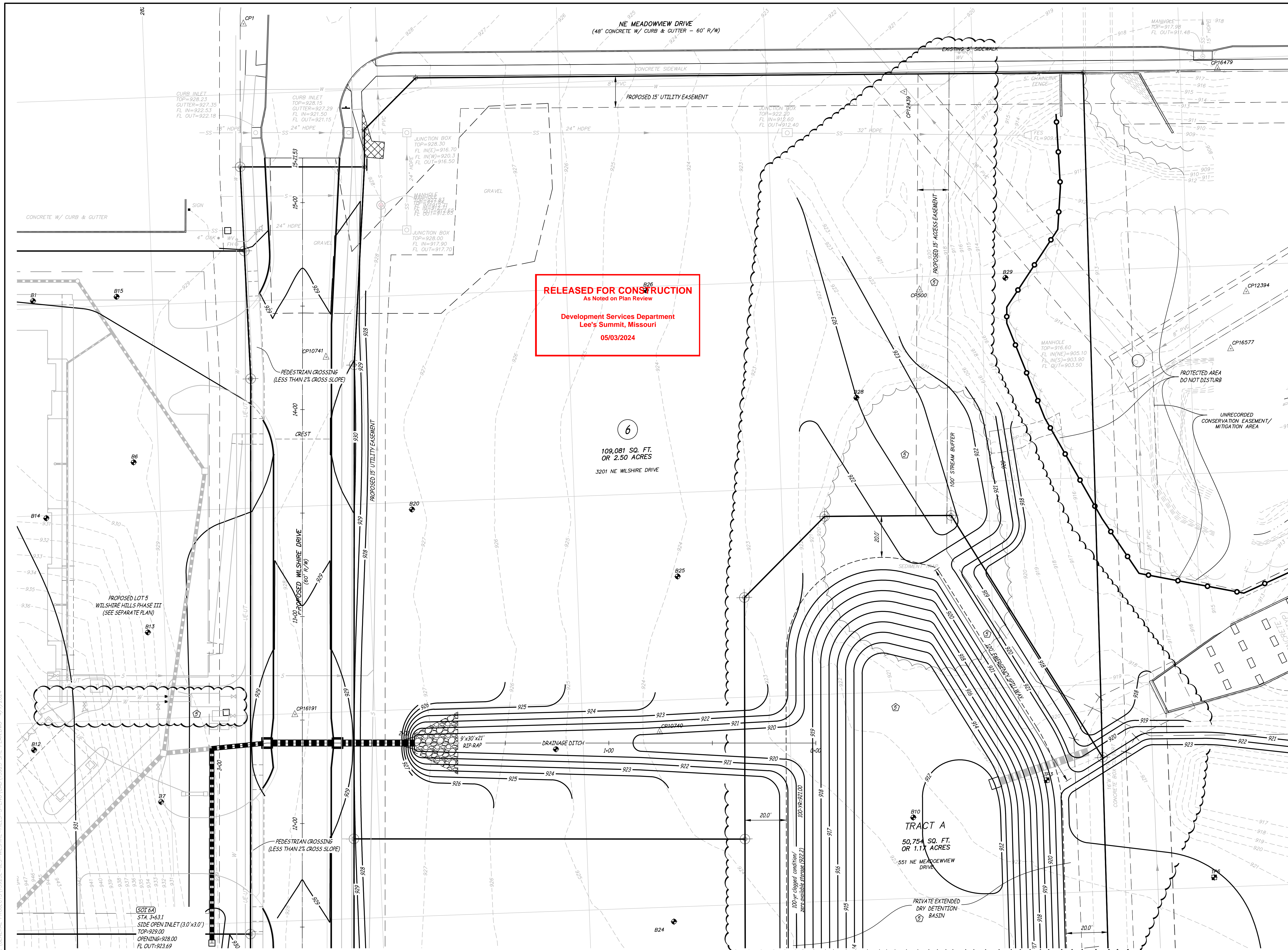
Date  
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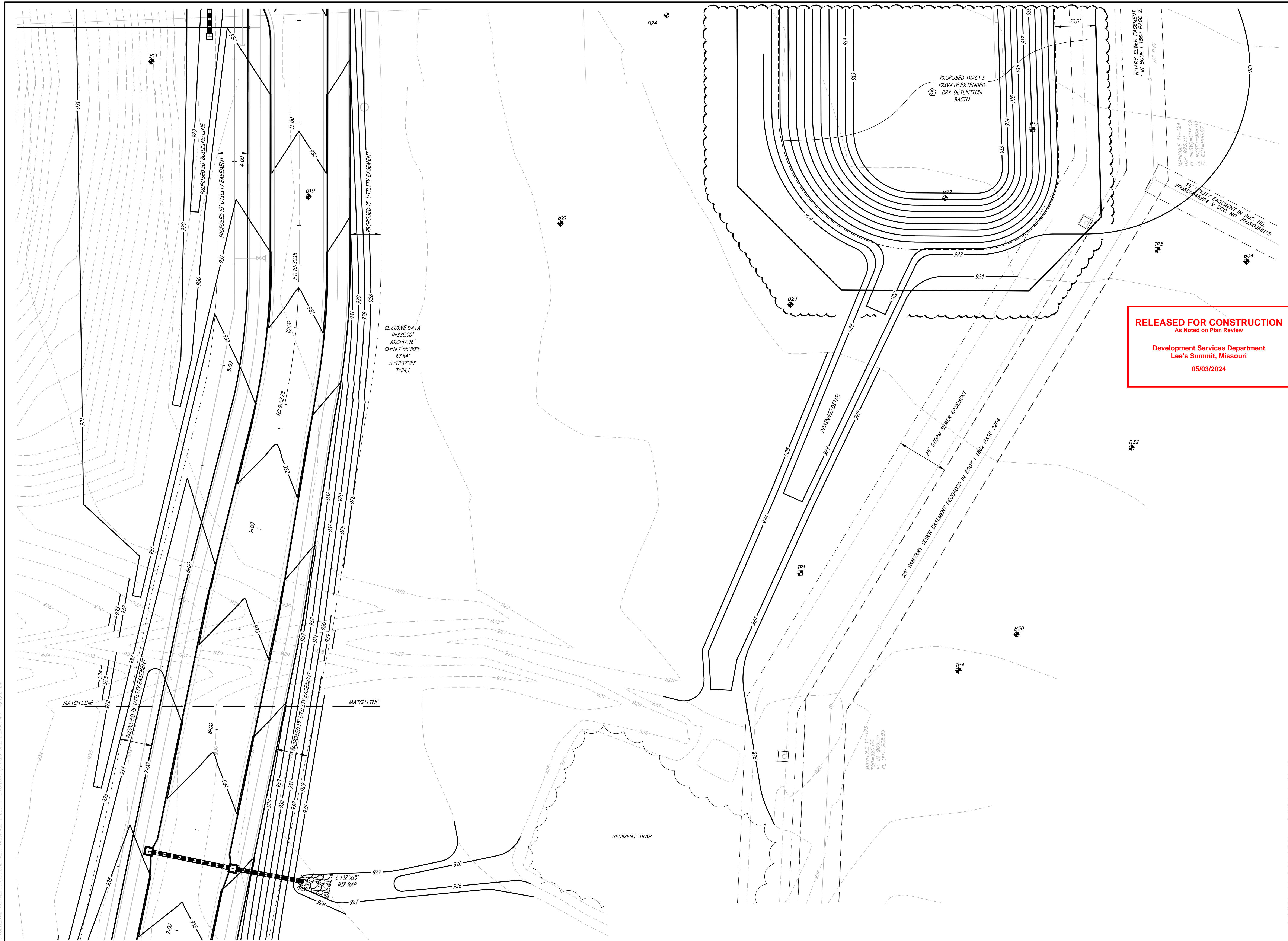
## GRADING PLAN

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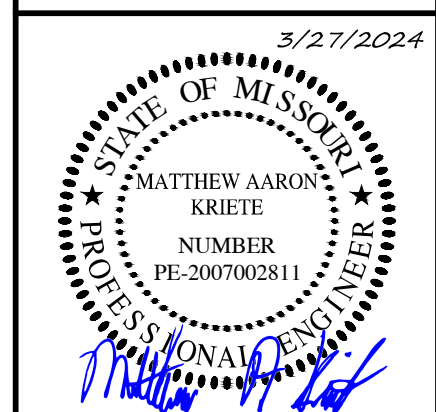
ES&S PROJECT NO. 15925







**PUBLIC IMPROVEMENTS FOR  
WILSHIRE HILLS PHASE III**  
NE WILSHIRE DRIVE  
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI



MATTHEW A. KRIETE  
PROFESSIONAL ENGINEER  
PE-2007002811

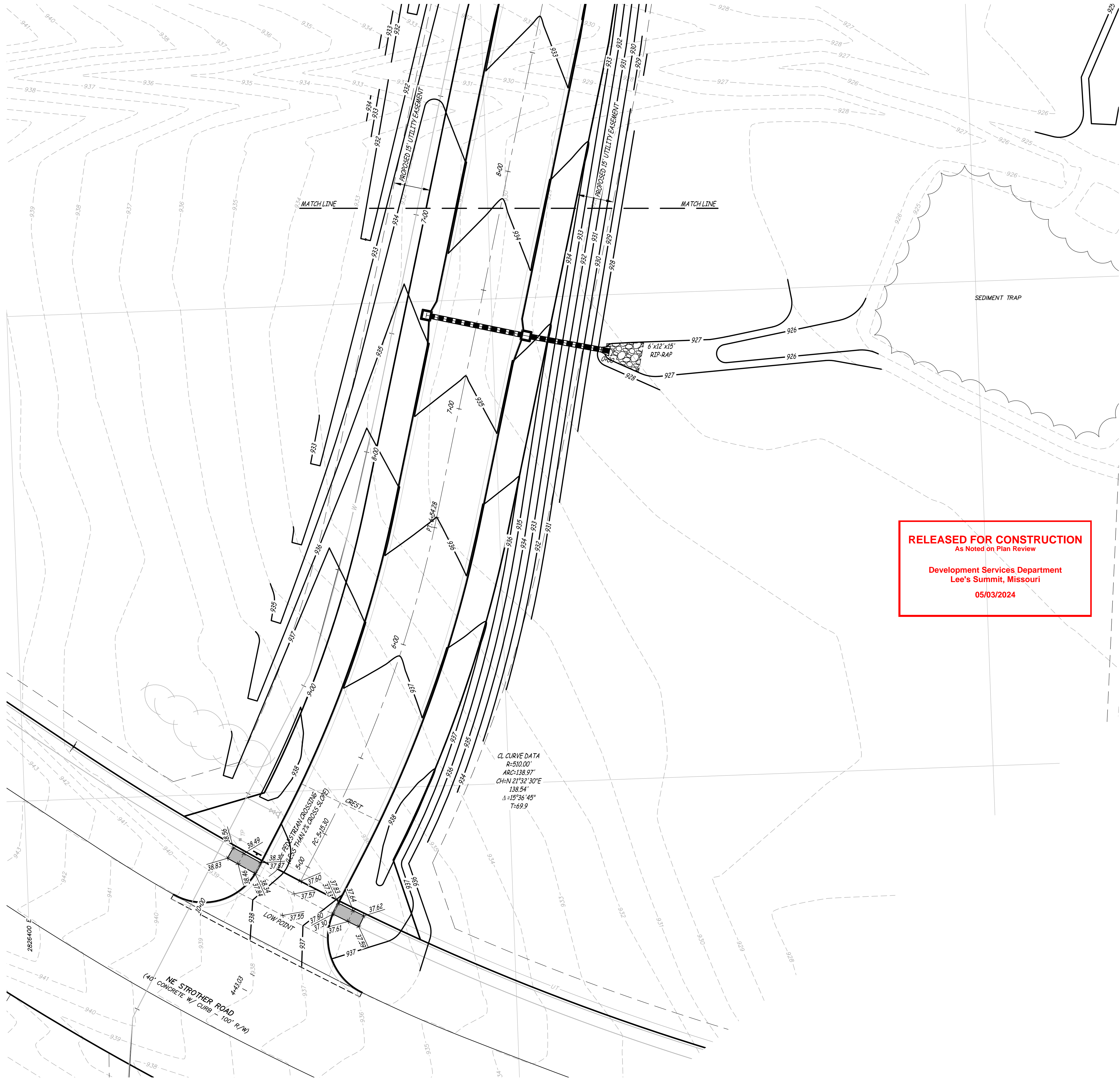
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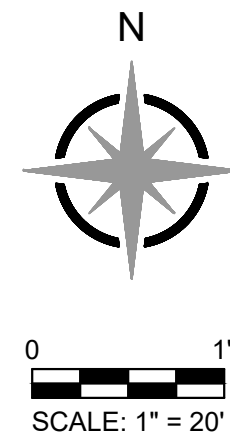
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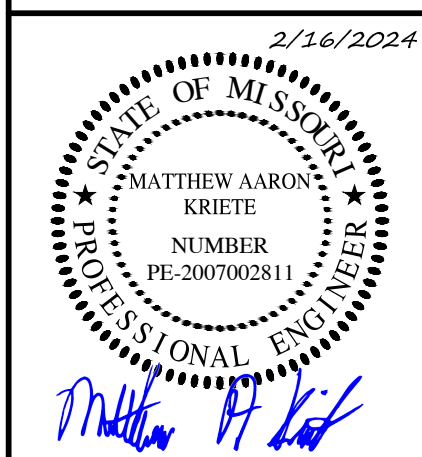
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Lee's Summit, Missouri

05/03/2024



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GRADING PLAN

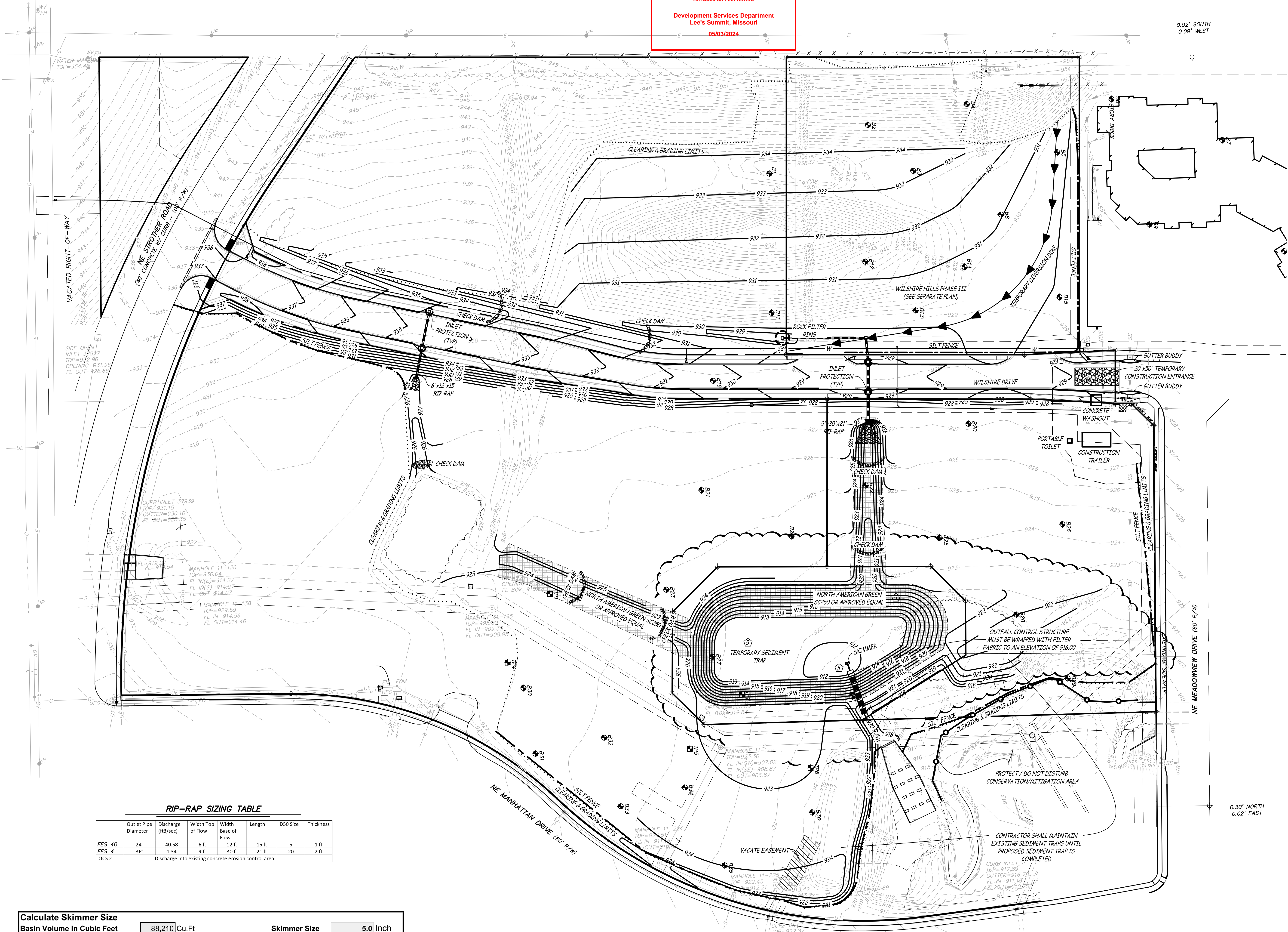
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CONSTRUCTION DOCUMENTS

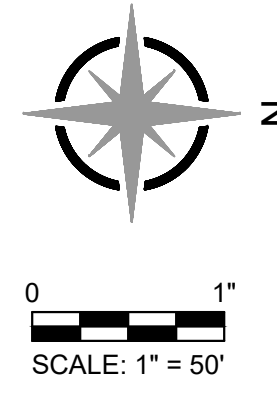


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EROSION CONTROL PLAN

Sheet  
**C5.05**

ES&S PROJECT NO. 15925

**RIP-RAP SIZING TABLE**

	Outlet Pipe Diameter	Discharge (ft <sup>3</sup> /sec)	Width Top of Flow	Width Base of Flow	Length	D50 Size	Thickness
FES 40	24"	40.58	6 ft	12 ft	15 ft	5	1 ft
FES 4	36"	1.34	9 ft	30 ft	21 ft	20	2 ft
OCS 2	Discharge into existing concrete erosion control area						

**Calculate Skimmer Size**

Basin Volume in Cubic Feet

88,210 Cu.Ft

Days to Drain\*

3 Days

Skimmer Size

5.0 Inch

Orifice Radius

2.4 Inch[es]

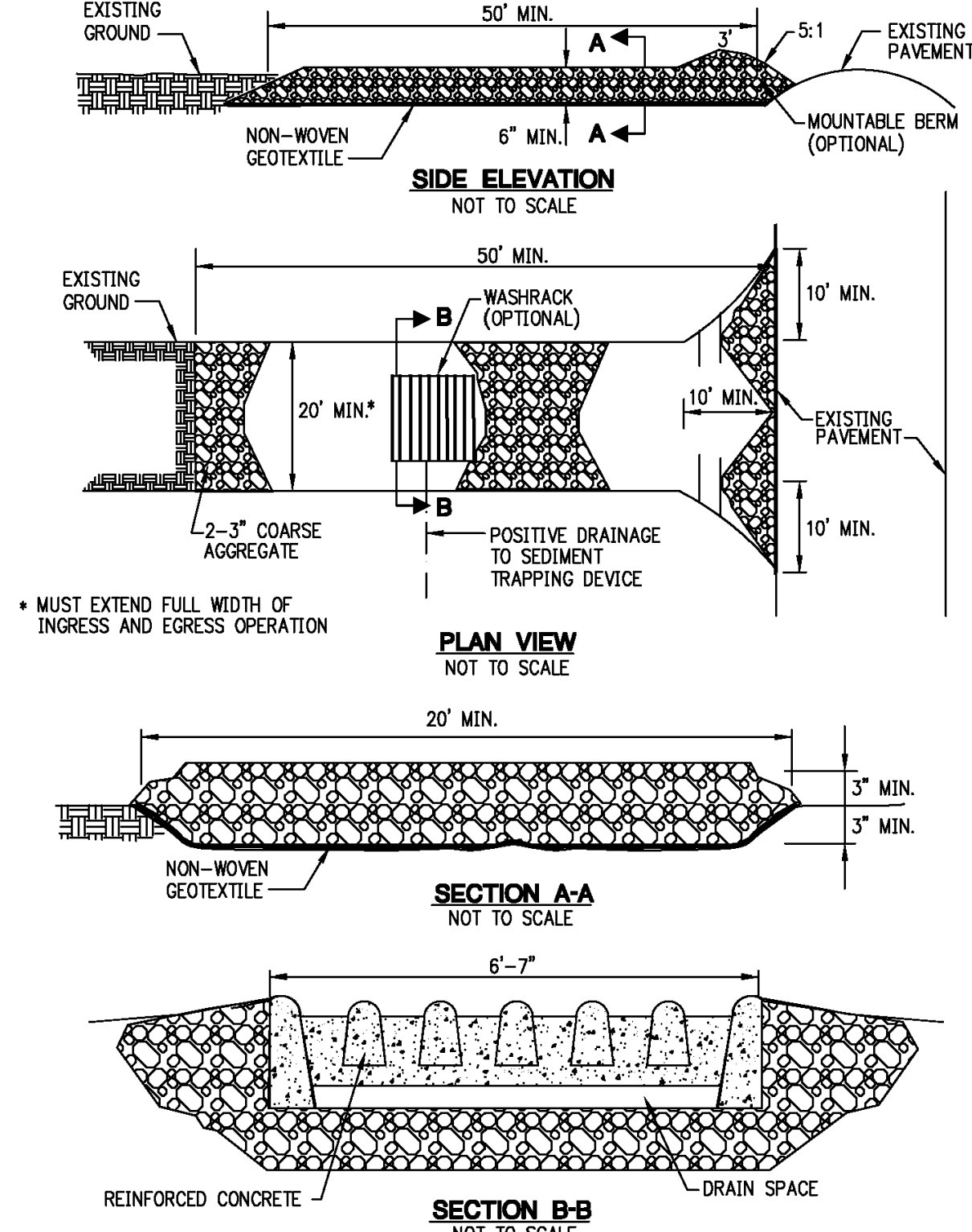
Orifice Diameter

4.8 Inch[es]

\*In NC assume 3 days to drain



## TEMPORARY CONSTRUCTION ENTRANCE



## TEMPORARY CONSTRUCTION ENTRANCE PAD NOTES:

## A) INSTALLATION:


1. AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS. 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 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.
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 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:

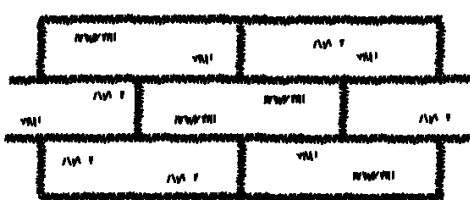
1. CONSULT WITH A QUALIFIED DESIGN PROFESSIONAL IF ANY OF THE FOLLOWING OCCUR:
  - a. INADEQUATE RUNOFF CONTROL TO THE EXTENT THAT SEDIMENT WASHES ONTO PUBLIC ROAD - INSTALL DIVERSIONS OR OTHER RUNOFF CONTROL MEASURES.
  - b. SMALL STONE, THIN PAD, OR ABSENCE OF GEOTEXTILE FABRIC RESULTS IN RUTS AND MUDDY CONDITIONS AS STONE IS PRESSED INTO SOIL - INCREASE STONE SIZE OR PAD THICKNESS OR ADD GEOTEXTILE FABRIC.
  - c. PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC - EXTEND PAD BEYOND THE MINIMUM 50-FOOT LENGTH AS NECESSARY.

## C) INSPECTION AND MAINTENANCE:

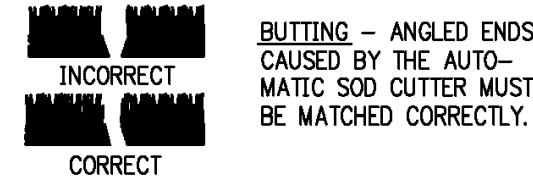
1. INSPECT STONE PAD AND SEDIMENT DISPOSAL AREA WEEKLY AND AFTER 1/2-INCH OR GREATER STORM EVENTS.
2. RESHAPE PAD AS NEEDED FOR PROPER DRAINAGE AND RUNOFF CONTROL.
3. TOPRESS WITH CLEAN 2-AND 3-INCH STONE AS NEEDED.
4. IMMEDIATELY REMOVE MUD OR SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROAD. REPAIR ANY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

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TEMPORARY CONSTRUCTION ENTRANCE	STANDARD DRAWING NUMBER ESC-01 ADOPTED

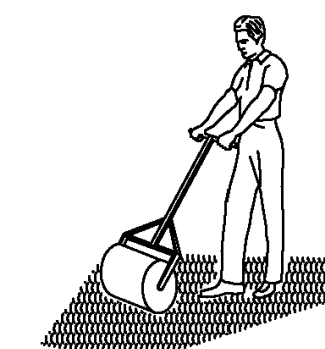
## SODDING



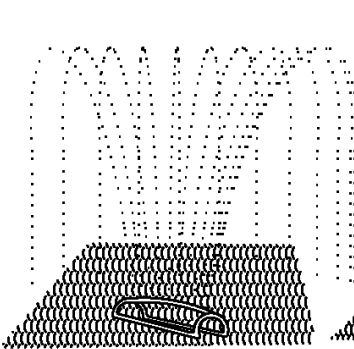
LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.



BUTTING - ANGLED ENDS CAUSED BY THE AUTO-MATIC SOD CUTTER MUST BE MATCHED CORRECTLY.



ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

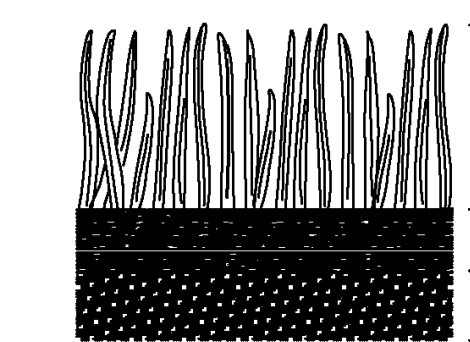


WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.



MOW WHEN THE SOD IS ESTABLISHED, TYPICALLY IN 2-3 WEEKS. SET THE MOWER AT 2 TO 3 INCHES HIGH.

## APPEARANCE OF GOOD SOD



SHOOTS - GRASS BLADES SHOULD BE GREEN AND HEALTHY, MOWED AT A 2"-3" CUTTING HEIGHT.

THATCH - GRASS CLIPPINGS AND DEAD LEAVES, UP TO 1/2" THICK.

ROOT ZONE - SOIL AND ROOTS SHOULD BE 1/2"-3/4" THICK, WITH DENSE ROOT MAT FOR STRENGTH.

## SODDING NOTES:

## A) SODDING:


1. THE SOD SHALL BE DENSELY ROOTED, NURSERY GROWN, AND A PERENNIAL GRASS. THE SOD SHALL CONTAIN A GROWTH OF NOT MORE THAN 10 PERCENT OF OTHER GRASSES, SHALL BE FREE FROM ALL PROHIBITED AND NOXIOUS WEEDS, AND SHALL BE CUT IN STRIPS OF UNIFORM THICKNESS. THE RANGE OF ACCEPTABLE THICKNESS SHALL BE 1/2 TO 1 1/2 INCH, WITH EACH STRIP CONTAINING AT LEAST ONE (1) SQUARE YARD. SOD SHALL BE CUT IN STRIPS NOT LESS THAN 12 INCHES WIDE.
2. FERTILIZER SHALL BE INORGANIC 12-12-12 OR 13-13-13 GRADE, UNIFORM IN COMPOSITION, FREE FLOWING, SUITABLE FOR APPLICATION WITH APPROVED EQUIPMENT, AND DELIVERED TO THE SITE IN CONVENIENT CONTAINERS, EACH FULLY LABELED. LABELS SHALL CONFORM TO APPLICABLE STATE FERTILIZER LAWS AND BEARING THE NAME, TRADE NAME OR TRADEMARK, AND WARRANTY OF THE PRODUCER.
3. BEFORE TILLING OPERATIONS, FERTILIZER SHALL BE SPREAD UNIFORMLY AT THE RATE OF 300 POUNDS PER ACRE. FERTILIZING RATE IS EQUIVALENT TO 3.5 POUND PER 500 SQUARE FEET.
4. THE SOD BED SHALL HAVE A UNIFORM SURFACE FREE FROM WASHES AND DEPRESSIONS. IT SHALL CONFORM TO THE FINISHED GRADE PROFILE AND CROSS SECTION SHOWN ON THE PLANS. THE SOIL, EXCEPT WHERE FRESH TOP SOIL HAS BEEN APPLIED AND COMPACTED, SHALL BE THOROUGHLY TILLED TO A DEPTH OF 2 INCHES.
5. FRESHLY GRADED AREAS WHICH HAVE SET LONG ENOUGH TO BECOME DRY AND CRUSTED OVER SHALL BE TILLED, AS SPECIFIED ABOVE, BEFORE PLACING THE SOD.
6. SOD SHALL NOT BE PLACED DURING A DROUGHT NOR ON FROZEN GROUND UNLESS AUTHORIZED BY THE ENGINEER.
7. SOD SHALL BE MOIST WHEN IT IS PLACED. SOD STRIPS SHALL BE LAID ALONG CONTOUR LINES, COMMENCING AT THE LOWEST POINT OF THE AREA AND WORKING UPWARD. THE TRANSVERSE JOINTS OF SOD STRIPS SHALL BE STAGGERED AND THE SOD CAREFULLY PLACED TO PRODUCE TIGHT JOINTS. THE SOD SHALL BE FIRMED AND WATERED IMMEDIATELY AFTER IT IS PLACED. THE FIRMING SHALL BE ACCOMPLISHED BY APPLICATION OF A ROLLER WEIGHING BETWEEN 60 AND 90 POUNDS PER LINEAL FOOT OF ROLLER.
8. ON 2H:1V SLOPES OR STEEPER THE SOD SHALL BE ANCHORED WITH 1/2-INCH SQUARE BY 8-INCH LONG WOODEN PEGS DRIVEN INTO THE GROUND, 3 PEGS TO THE SQUARE YARD OR OTHER APPROVED CONFIGURATION. PEGGING SHALL BE DONE IMMEDIATELY AFTER SOD IS FIRMED. THE AREA SHALL THEN BE CLEARED OF LOOSE SOD, EXCESS OR BROKEN ANCHORS, EXCESSIVE SOIL, AND OTHER FOREIGN MATERIALS.

## B) TROUBLESHOOTING:

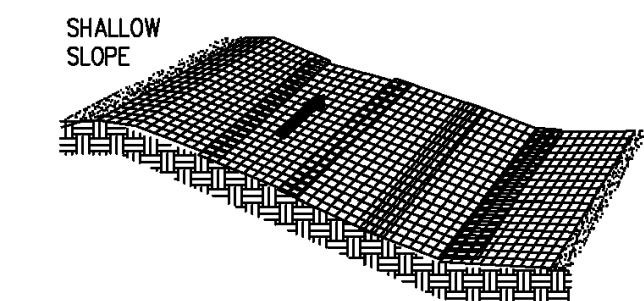
1. CONSULT WITH A QUALIFIED DESIGN PROFESSIONAL IF ANY OF THE FOLLOWING OCCUR:
  - a. VARIATION IN TOPOGRAPHY ON SITE. INDICATE THE SODDING MATERIALS WILL NOT FUNCTION AS INTENDED; CHANGES IN PLAN MAY BE NEEDED.
  - b. DESIGN SPECIFICATIONS FOR SOD VARIETY CANNOT BE MET OR IRRIGATION IS NOT POSSIBLE; SUBSTITUTION OR SEEDING MAY BE REQUIRED. UNAPPROVED SUBSTITUTIONS COULD RESULT IN EROSION OR SODDING FAILURE.
2. COMMON PROBLEMS:
  - a. SOD LAID ON POORLY PREPARED SOIL OR UNSUITABLE SURFACE DIES BECAUSE IT IS UNABLE TO ROOT - REMOVE DEAD SOD, PREPARE SURFACE, AND RESED.
  - b. SOD NOT ADEQUATELY IRRIGATED AFTER INSTALLATION CAUSES ROOT DIEBACK. GRASS TO NOT ROOT RAPIDLY, AND DRYING OUT - IRRIGATE SOD AND UNDERLYING SOIL TO THE DEPTH OF 4 INCHES AND KEEP MOIST UNTIL ROOTS ARE ESTABLISHED.
  - c. SOD NOT ANCHORED PROPERLY IS LOOSENED BY RUNOFF - REPLACE DAMAGED AREAS AND ANCHOR SOD.
  - d. SLOW GROWTH DUE TO LACK OF NITROGEN CAUSES YELLOWING OF LEAF BLADES - REFERTILIZE SOD, BUT AVOID FERTILIZING COOL SEASON GRASSES FROM LATE MAY THROUGH JULY.

## C) MAINTENANCE AND INSPECTION:

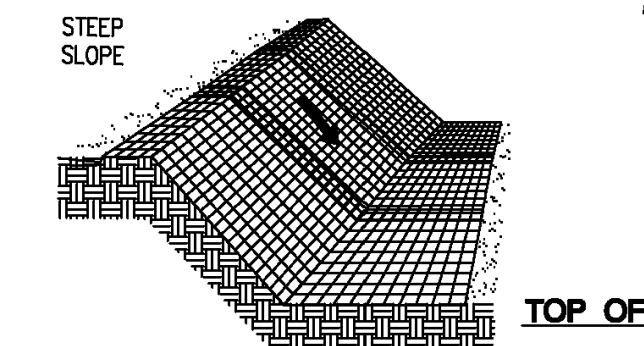
1. THE SODDED AREA SHALL BE THOROUGHLY WATERED DAILY FOR A PERIOD OF FIFTEEN DAYS AFTER PLACING EXCEPT WHEN THOROUGHLY WETTED BY RAIN. ANY PORTION OF THE SOD THAT IS NOT IN GOOD GROWING CONDITION FOLLOWING THE FIRST FULL GROWING SEASON (SPRING TO FALL), SHALL BE REPLACED WITH FRESH LIVE SOD.

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	KANSAS CITY METROPOLITAN CHAPTER
SODDING	STANDARD DRAWING NUMBER ESC-02 ADOPTED

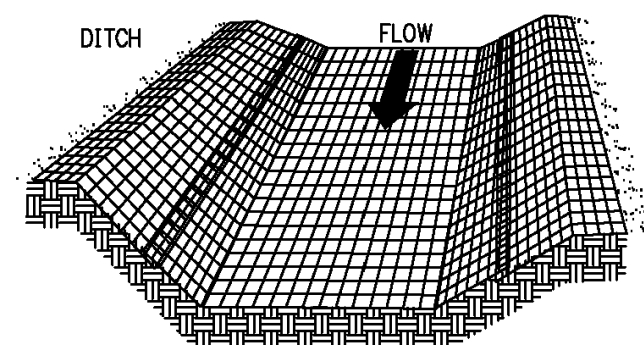
## EROSION CONTROL BLANKET



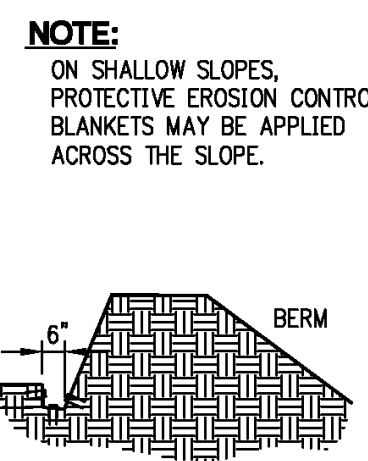
NOTE:  
ON SHALLOW SLOPES, PROTECTIVE EROSION CONTROL BLANKETS MAY BE APPLIED ACROSS THE SLOPE.



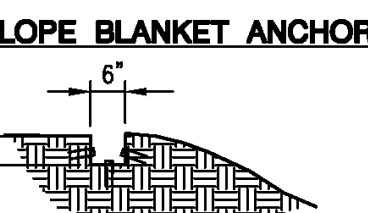
NOTE:  
WHERE THERE IS A BERM AT THE TOP OF THE SLOPE, BRING THE MATERIAL OVER THE BERM AND ANCHOR IT BEHIND THE BERM.



NOTE:  
BRING MATERIAL DOWN TO A LEVEL AREA BEFORE TERMINATING THE INSTALLATION.



NOTE:  
ON STEEP SLOPES, APPLY PROTECTIVE BLANKET PERPENDICULAR TO THE DIRECTION OF FLOW AND ANCHOR SECURELY.



NOTE:  
IN DITCHES, APPLY PROTECTIVE COVERING PARALLEL TO THE DIRECTION OF FLOW. USE CHECK SLOTS AT THE CENTER OF THE DITCH IF AT ALL POSSIBLE. FOLLOW BLANKET MANUFACTURER'S RECOMMENDATIONS FOR ALLOWABLE VELOCITY AND SHEAR STRESS.

## EROSION CONTROL BLANKET NOTES (1 OF 2):

## A) SITE PREPARATION:

AFTER SITE HAS BEEN SHAPED AND GRADED, PREPARE A FRIABLE SEEDBED RELATIVELY FREE FROM CLODS AND ROCKS MORE THAN 1 1/2 INCHES IN DIAMETER AND ANY FOREIGN MATERIAL THAT WILL PREVENT UNIFORM CONTACT OF THE PROTECTIVE COVERING WITH THE SOIL SURFACE.

## B) PLANTING:

LIME, FERTILIZE, AND SEED IN ACCORDANCE WITH SEEDING OR PLANTING PLAN. WHEN USING JUTE MESH ON A SEEDBED, APPLY APPROXIMATELY ONE HALF THE SEED AFTER LAYING THE MAT. THE PROTECTIVE COVERING CAN BE LAID OVER SPRIGGED AREAS WHERE SMALL GRASS PLANTS HAVE BEEN INSERTED INTO THE SOIL. WHERE GROUND COVERS ARE TO BE PLANTED, LAY THE PROTECTIVE COVERING FIRST AND THEN PLANT THROUGH THE MATERIAL AS PER PLANTING PLAN.

## C) LAYING AND STAPLING:

IF INSTRUCTIONS HAVE BEEN FOLLOWED, ALL NEEDED CHECK SLOTS WILL HAVE BEEN INSTALLED, AND THE PROTECTIVE COVERING WILL BE LAID ON A FRIABLE SEEDBED FREE FROM CLODS, ROCKS, ROOTS, ETC. THAT MIGHT IMPEDE GOOD CONTACT.

1. START LAYING THE PROTECTIVE COVERING FROM THE TOP OF THE CHANNEL OR SLOPE AND UNROLL DOWN-GRADE. ALLOW TO LAY LOOSELY ON SOIL; DO NOT STRETCH.
2. UPSLOPE ENDS OF THE BLANKET SHOULD BE BURIED IN AN ANCHOR SLOT NO LESS THAN 6-INCHES DEEP. TAMP EARTH FIRMLY OVER THE MATERIAL. WHEN TOP IS RELATIVELY FLAT, EXTEND BLANKET ABOUT 40 INCHES AWAY FROM SLOPE. STAPLE THE MATERIAL AT A MINIMUM OF EVERY 12 INCHES ACROSS THE TOP END.
3. EDGES OF THE MATERIAL SHALL BE STAPLED EVERY 3 FEET. WHERE MULTIPLE WIDTHS ARE LAID SIDE BY SIDE, THE ADJACENT EDGES SHALL BE OVERLAPPED A MINIMUM OF 6 INCHES AND STAPLED TOGETHER.
5. STAPLES SHALL BE PLACED DOWN THE CENTER, STAGGERED WITH THE EDGES AT 3-FOOT INTERVALS.


## D) TROUBLESHOOTING:

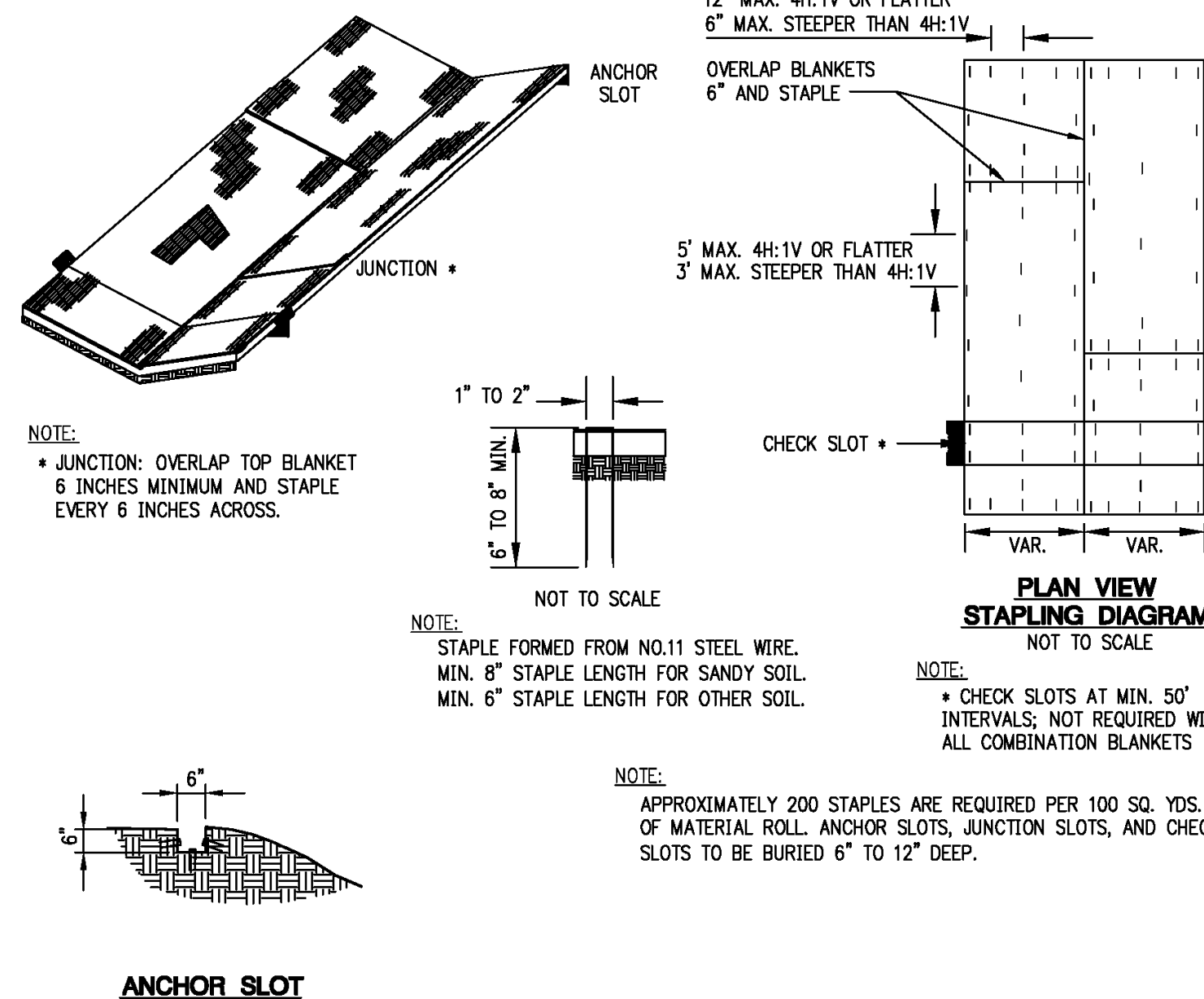
CONSULT WITH A QUALIFIED DESIGN PROFESSIONAL, IF ANY OF THE FOLLOWING OCCUR:

1. MOVEMENT OF THE BLANKET OR EROSION UNDER THE BLANKET IS OBSERVED.
2. VARIATIONS IN TOPOGRAPHY ON SITE. INDICATE EROSION CONTROL MAT WILL NOT FUNCTION AS INTENDED; CHANGES IN PLAN MAY BE NEEDED, OR A BLANKET WITH A SHORTER OR LONGER LIFE MAY BE NEEDED.
3. DESIGN SPECIFICATIONS FOR SEED VARIETY, SEEDING DATES, OR EROSION CONTROL MATERIALS CANNOT BE MET; SUBSTITUTION MAY BE REQUIRED. UNAPPROVED SUBSTITUTIONS COULD RESULT IN FAILURE TO ESTABLISH VEGETATION.

## E) MAINTENANCE &amp; INSPECTION

INSPECT CONTROLS AFTER EACH RAIN EVENT OF 1/2 INCH OR GREATER, AND EVERY 7 DAYS UNTIL VEGETATION IS ESTABLISHED, FOR EROSION OR UNDERMINING BENEATH THE NETTING, BLANKETS, OR MATS. IF ANY AREA SHOWS EROSION, PULL BACK THAT PORTION OF THE MATERIAL, ADD SOIL, TAMP DOWN, AND RESEED; RESECURE THE MATERIAL IN PLACE. IF NETTING, BLANKETS OR MATS BECOME DISLOCATED OR DAMAGED, REPAIR OR REPLACE AND RESECURE IMMEDIATELY.

AMERICAN PUBLIC WORKS ASSOCIATION	
	KANSAS CITY METROPOLITAN CHAPTER
EROSION CONTROL BLANKET SHEET 1 OF 2	STANDARD DRAWING NUMBER ESC-04 ADOPTED

EROSION CONTROL BLANKET  
INSTALLATION FOR CHANNELS

## EROSION CONTROL BLANKET NOTES (2 OF 2):

## F) STAPLES:

STAPLES FOR ANCHORING BLANKET SHALL BE NO. 11-GAUGE WIRE OR HEAVIER. THEIR LENGTH SHALL BE A MINIMUM OF 6 INCHES. A LARGER STAPLE WITH A LENGTH OF UP TO 12 INCHES SHALL BE USED ON LOOSE, SANDY, OR UNSTABLE SOILS.

## G) JOINING PROTECTIVE COVERINGS:

OVERLAP THE END OF THE PREVIOUS ROLL A MINIMUM OF 6 INCHES AND STAPLE. STAPLE ACROSS THE END OF THE ROLL JUST BELOW THE ANCHOR SLOT AND ACROSS THE MATERIAL EVERY 6 INCHES.


## H) TERMINAL END:

AT THE POINT AT WHICH THE MATERIAL IS DISCONTINUED, OR WHERE THE PROTECTIVE COVERING MEETS A STRUCTURE OF SOME TYPE, STAPLE A MINIMUM OF EVERY 12 INCHES.

## I) FINAL CHECK:

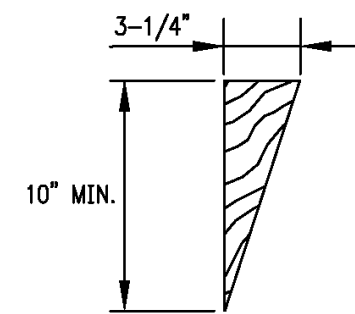
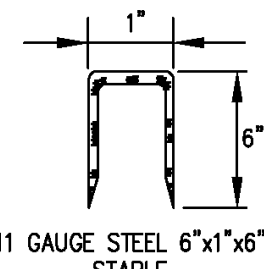
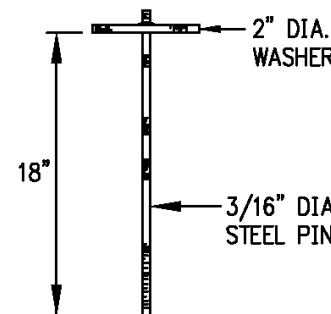
THESE INSTALLATION CRITERIA MUST BE ADHERED TO:

1. ALL DISTURBED AREAS ARE SEED.
2. PROTECTIVE BLANKET IS IN UNIFORM CONTACT WITH THE SOIL.
3. ALL LAP JOINTS ARE SECURE.
4. ALL STAPLES ARE DRIVEN FLUSH WITH THE GROUND.

AMERICAN PUBLIC WORKS ASSOCIATION	
	KANSAS CITY METROPOLITAN CHAPTER
EROSION CONTROL BLANKET SHEET 2 OF 2	STANDARD DRAWING NUMBER ESC-05 ADOPTED



## STAKES, STAPLES, AND PINS

1. STAKE  
SEE NOTE 12. STAPLE  
SEE NOTE 23. PIN  
SEE NOTE 3STAKES, STAPLES, AND PINS  
FOR INSTALLATION OF  
ROLLED EROSION CONTROL PRODUCTS  
NOT TO SCALE

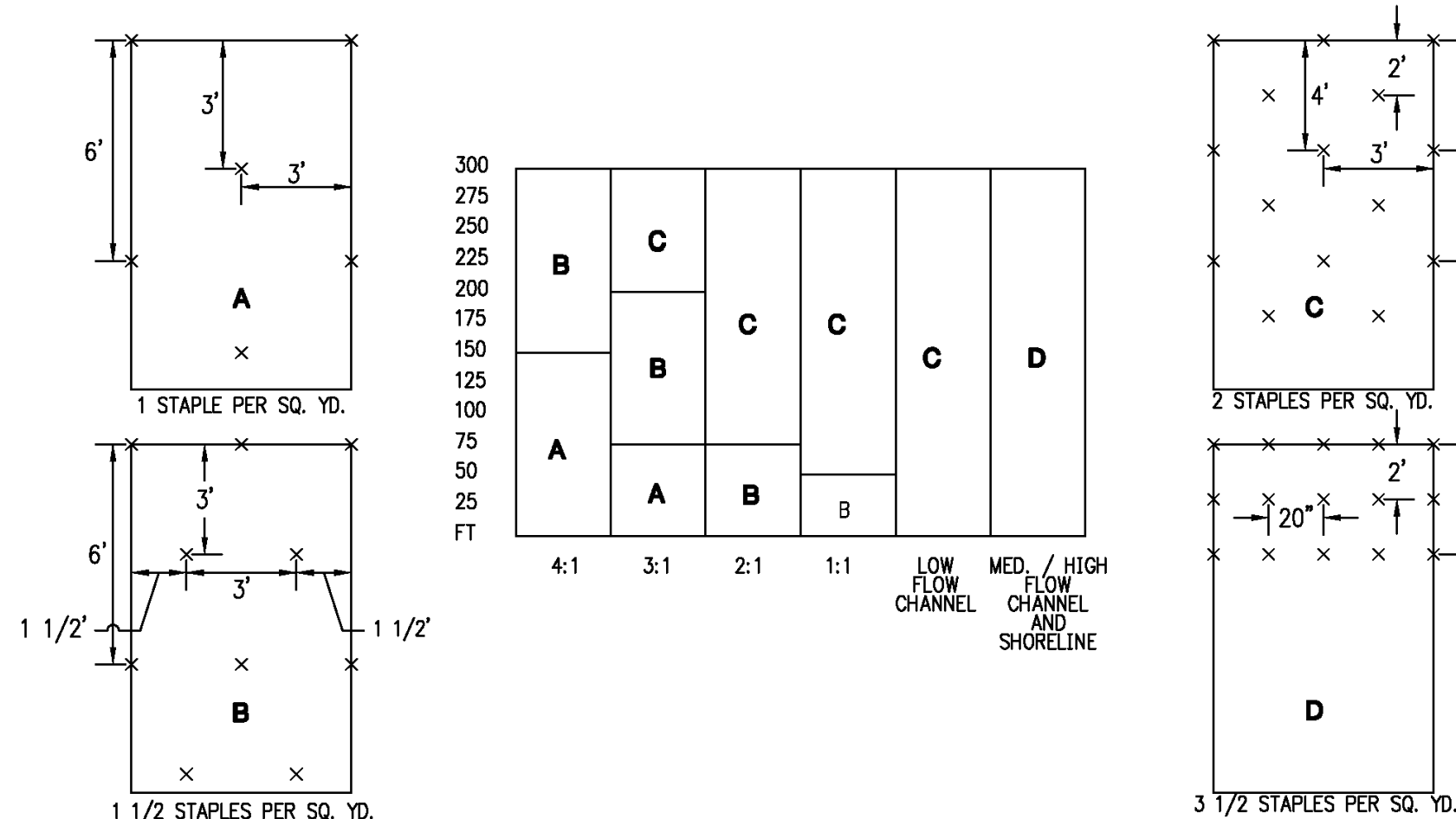
## STAKES, STAPLES, AND PINS NOTES:

## GENERAL NOTES:

- STAKES SHALL BE 1x4 TRIANGULAR SURVEY STAKES A MINIMUM OF 10" IN LONG.
- STAPLES SHALL BE 11 GAUGE STEEL A MINIMUM OF 1" WIDE BY 6" IN LONG. A 2"x6" STAPLE MAY BE REQUIRED IN CERTAIN SOIL CONDITIONS.
- STEEL PINS SHALL BE 3/16 DIAMETER BY 18" IN LONG WITH A 2" DIAMETER WASHER ON TOP. (SEE ILLUSTRATION.)
- ANCHORING METHODS AND RECOMMENDATIONS VARY BY MANUFACTURERS. THE EXPECTATION OF HIGH VELOCITIES SHOULD DICTATE THE USE OF MORE SUBSTANTIAL ANCHORING.

AMERICAN PUBLIC WORKS ASSOCIATION	
<b>APWA</b>	KANSAS CITY METROPOLITAN CHAPTER
STAKES, STAPLES, AND PINS	STANDARD DRAWING NUMBER: ESC-09 ADOPTED:

## STAPLE PATTERNS FOR ROLLED EROSION CONTROL PRODUCTS

GENERAL STAPLE PATTERN  
GUIDE AND RECOMMENDATIONS  
FOR ROLLED EROSION CONTROL PRODUCTS  
NOT TO SCALE

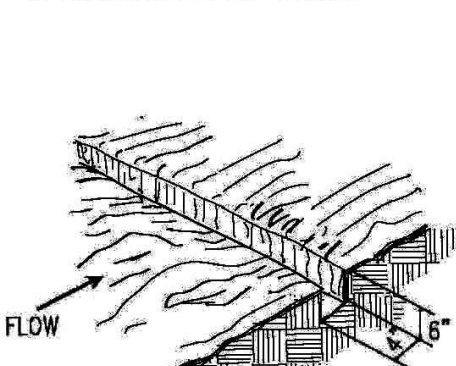
## NOTE:

FOR OPTIMUM RESULTS, THESE RECOMMENDED STAPLE PATTERN GUIDES MUST BE FOLLOWED UNLESS OTHERWISE DICTATED BY THE MANUFACTURER. SUGGESTED ANCHORING METHODS VARY BY MANUFACTURER. THIS CHART SHOWS HOW SLOPE LENGTHS AND GRADIENTS AFFECT STAPLING PATTERNS.

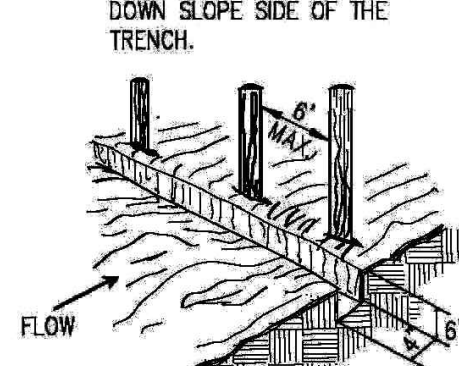
AMERICAN PUBLIC WORKS ASSOCIATION	
<b>APWA</b>	KANSAS CITY METROPOLITAN CHAPTER
STAPLE PATTERNS FOR ROLLED EROSION CONTROL PRODUCTS	STANDARD DRAWING NUMBER: ESC-09 ADOPTED:

## SEDIMENT FENCE

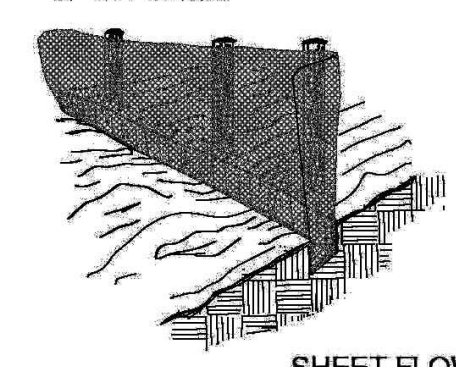
- EXCAVATE A 6"x4" TRENCH.



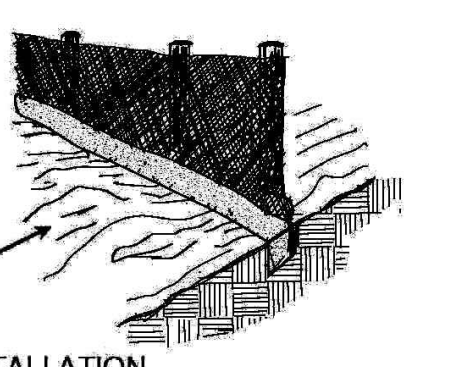
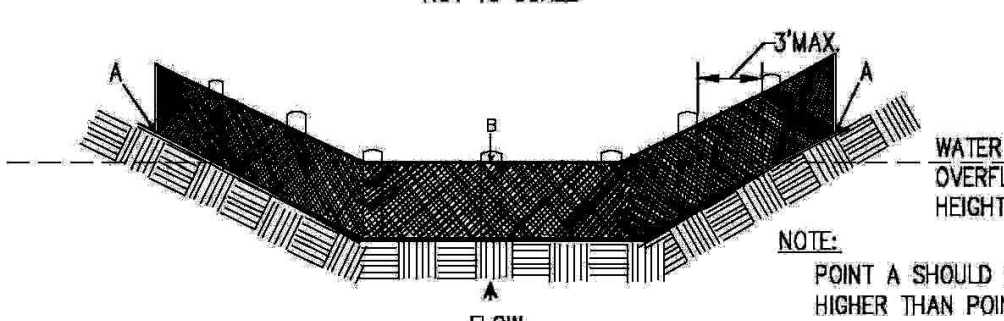
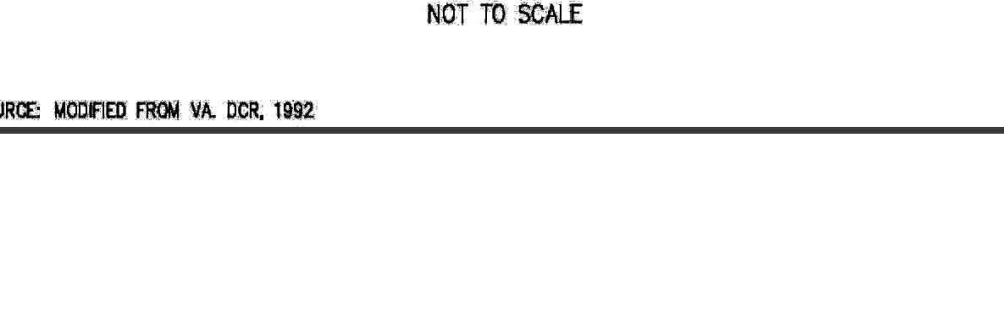
- SET THE STAKES ALONG THE DOWNSLOPE SIDE OF THE TRENCH.



- STAPLE GEOTEXTILE MATERIAL TO STAKES AND EXTEND IT INTO AND AROUND THE BOTTOM OF THE TRENCH.



- BACKFILL AND COMPACT THE EXCAVATED SOIL OVER THE GEOTEXTILE IN THE TRENCH.

SHEET FLOW INSTALLATION  
(PERSPECTIVE VIEW)  
NOT TO SCALEDRAINAGEWAY INSTALLATION  
(FRONT ELEVATION)  
NOT TO SCALE

## SEDIMENT FENCE NOTES:

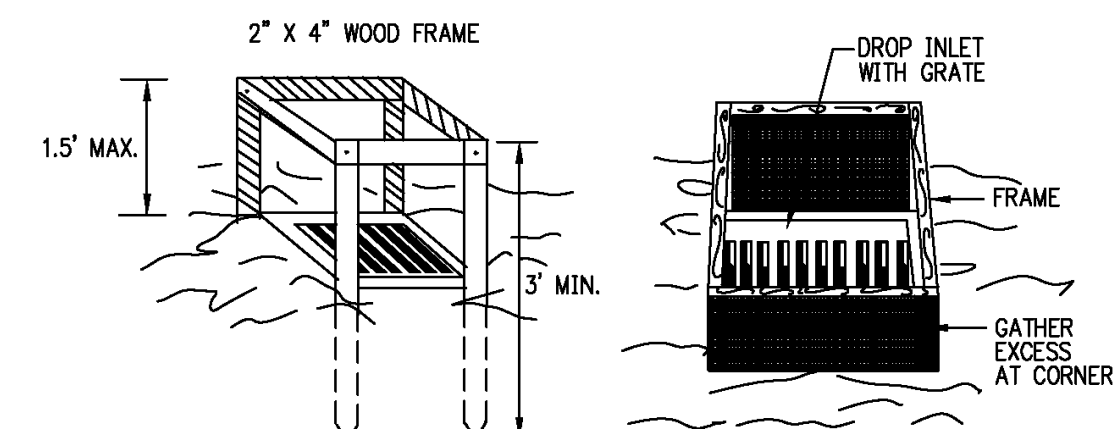
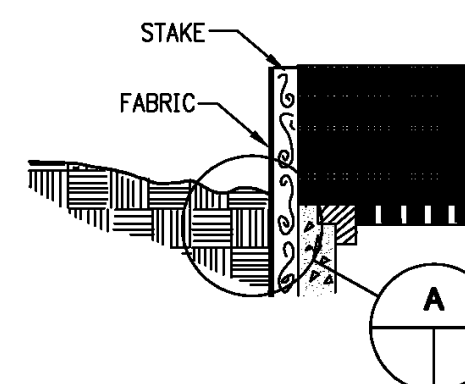
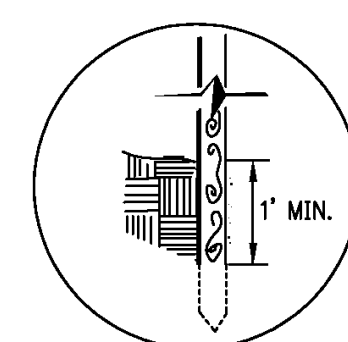
## A) INSTALLATION:

- THE HEIGHT OF SEDIMENT FENCE SHALL BE A MINIMUM OF 16 INCHES ABOVE THE ORIGINAL GROUND SURFACE AND SHALL NOT EXCEED 34 INCHES ABOVE THE GROUND SURFACE.
- THE FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE UNAVOIDABLE, FILTER CLOTH SHALL BE SECURELY SPLICED TOGETHER ONLY AT SUPPORT POSTS, WITH A MAX 6-INCH OVERLAP.
- DIG A TRENCH AT LEAST 6 INCHES DEEP AND 4 INCHES WIDE ALONG THE FENCE ALIGNMENT.
- DRIVE POSTS AT LEAST 24 INCHES INTO THE GROUND ON THE DOWNSLOPE SIDE OF THE TRENCH. SPACE POSTS A MAXIMUM OF 6 FEET APART.
- EXTRA-STRENGTH SEDIMENT FENCE FABRIC SHALL BE USED. POSTS FOR THIS TYPE OF FABRIC SHALL BE PLACED A MAXIMUM OF 6 FEET APART. THE SEDIMENT FABRIC SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING A MINIMUM OF ONE INCH LONG, HEAVY-DUTY WIRE STAPLES OR TIE-WIRES, AND EIGHT INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.
- PLACE THE BOTTOM 1 FOOT OF FABRIC IN THE MINIMUM-OF-6-INCH DEEP TRENCH, LAPPING TOWARD THE UPSLOPE SIDE. BACKFILL WITH COMPACTED EARTH OR GRAVEL.
- IF A SEDIMENT FENCE IS TO BE CONSTRUCTED ACROSS A DITCH LINE OR SWALE, IT MUST BE OF SUFFICIENT LENGTH TO ELIMINATE ENDFLOW, AND THE PLAN CONFIGURATION SHALL RESEMBLE AN ARC OR HORSESHOE, PLACED ON A CONTOUR, WITH THE ENDS ORIENTED UPSLOPE. EXTRA-STRENGTH SEDIMENT FABRIC SHALL BE USED WITH A MAXIMUM 3-FOOT SPACING OF POSTS.
- TO REDUCE MAINTENANCE, EXCAVATE A SHALLOW SEDIMENT STORAGE AREA IN THE UPSLOPE SIDE OF THE FENCE. PROVIDE GOOD ACCESS IN AREAS OF HEAVY SEDIMENTATION FOR CLEAN OUT AND MAINTENANCE.
- SEDIMENT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.

## B) TROUBLESHOOTING:

- DETERMINE THE EXACT LOCATION OF UNDERGROUND UTILITIES, BEFORE FENCE INSTALLATION SO UTILITIES ARE NOT DISTURBED.
- GRADE ALIGNMENT OF FENCE AS NEEDED TO PROVIDE A BROAD, NEARLY LEVEL AREA UPSTREAM OF FENCE TO ALLOW SEDIMENT COLLECTION AREA.
- INSPECTION MAINTENANCE:
  - INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
  - SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE, OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
  - REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. AVOID DAMAGING OR UNDERMINING THE FENCE DURING CLEANOUT. SEDIMENT ACCUMULATION SHOULD NOT EXCEED 1/2 THE HEIGHT OF THE FENCE.
  - REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS, AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY AND COMPLETELY STABILIZED.

AMERICAN PUBLIC WORKS ASSOCIATION	
<b>APWA</b>	KANSAS CITY METROPOLITAN CHAPTER
SEDIMENT FENCE	STANDARD DRAWING NUMBER: ESC-10 ADOPTED:

SEDIMENT FENCE DROP INLET  
PROTECTIONPERSPECTIVE VIEWS  
NOT TO SCALEELEVATION OF STAKE AND  
FABRIC ORIENTATIONDETAIL A  
NOT TO SCALE

## SEDIMENT FENCE DROP INLET PROTECTION NOTES:

## A) CONSTRUCTION SPECIFICATIONS:

- SEDIMENT FENCE SHALL CONFORM TO THE CONSTRUCTION SPECIFICATIONS FOR EXTRA STRENGTH FOUND IN THE TABLE BELOW AND SHALL BE CUT FROM A CONTINUOUS ROLL TO AVOID JOINTS.

## PHYSICAL PROPERTIES OF FABRIC IN SEDIMENT FENCE:

PHYSICAL PROPERTY	TEST	REQUIREMENTS
FILTERING EFFICIENCY	ASTM 5141	75%
TENSILE STRENGTH AT 20% (MAX.) ELONGATION**	ASTM 4632 AASHTO M288-96	EXTRA STRENGTH -- 50 LBS./LINEAR INCH
FLOW RATE	ASTM 5141	0.2 GAL./SQ.FT./ MINUTE**
ULTRAVIOLET RADIATION STABILITY %	ASTM D 4355	90%

\* REQUIREMENTS REDUCED BY 50% AFTER SIX MONTHS OF INSTALLATION.

\*\* HIGH POROSITY FABRIC MADE BY BETTER SUITED FOR THIS DEVICE.

- FOR STAKES, USE 2X4 WOOD OR EQUIVALENT METAL WITH A MINIMUM LENGTH OF 3 FEET.
- SPACE STAKES EVENLY AROUND THE PERIMETER OF THE INLET A MAXIMUM OF 3 FEET APART, AND SECURELY DRIVE THEM INTO THE GROUND, APPROXIMATELY 18 INCHES DEEP.
- TO PROVIDE NEEDED STABILITY TO THE INSTALLATION, FRAME WITH 2X4 WOOD STRIPS AROUND THE CREST OF THE OVERFLOW AREA AT A MAXIMUM OF 1.5 FEET ABOVE THE DROP INLET CREST.
- PLACE THE BOTTOM 12 INCHES OF THE FABRIC IN A TRENCH AND BACKFILL THE TRENCH WITH 12-INCHES OF COMPACTED SOIL.
- FASTEN FABRIC SECURELY BY STAPLES, OR WIRE IT TO THE STAKES AND FRAME. JOINTS MUST BE OVERLAPPED TO THE NEXT STAKE.
- IT MAY BE NECESSARY TO BUILD A TEMPORARY DIKE ON THE DOWNSLOPE SIDE OF THE STRUCTURE TO PREVENT BYPASS FLOW.

## B) INSPECTION AND MAINTENANCE:

- THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN EVENT OF 1/2 INCH OR GREATER AND REPAIRS MADE AS NEEDED.
- SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE HALF THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
- STRUCTURES SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

AMERICAN PUBLIC WORKS ASSOCIATION	
<b>APWA</b>	KANSAS CITY METROPOLITAN CHAPTER
SEDIMENT FENCE DROP INLET PROTECTION	STANDARD DRAWING NUMBER: ESC-10 ADOPTED:



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 DESIGN 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	
<b>APWA</b>	KANSAS CITY METROPOLITAN CHAPTER
TEMPORARY SEDIMENT TRAP	STANDARD DRAWING NUMBER ESC-33 ADOPTED

RELEASED FOR CONSTRUCTION  
As Noted on Plan Review

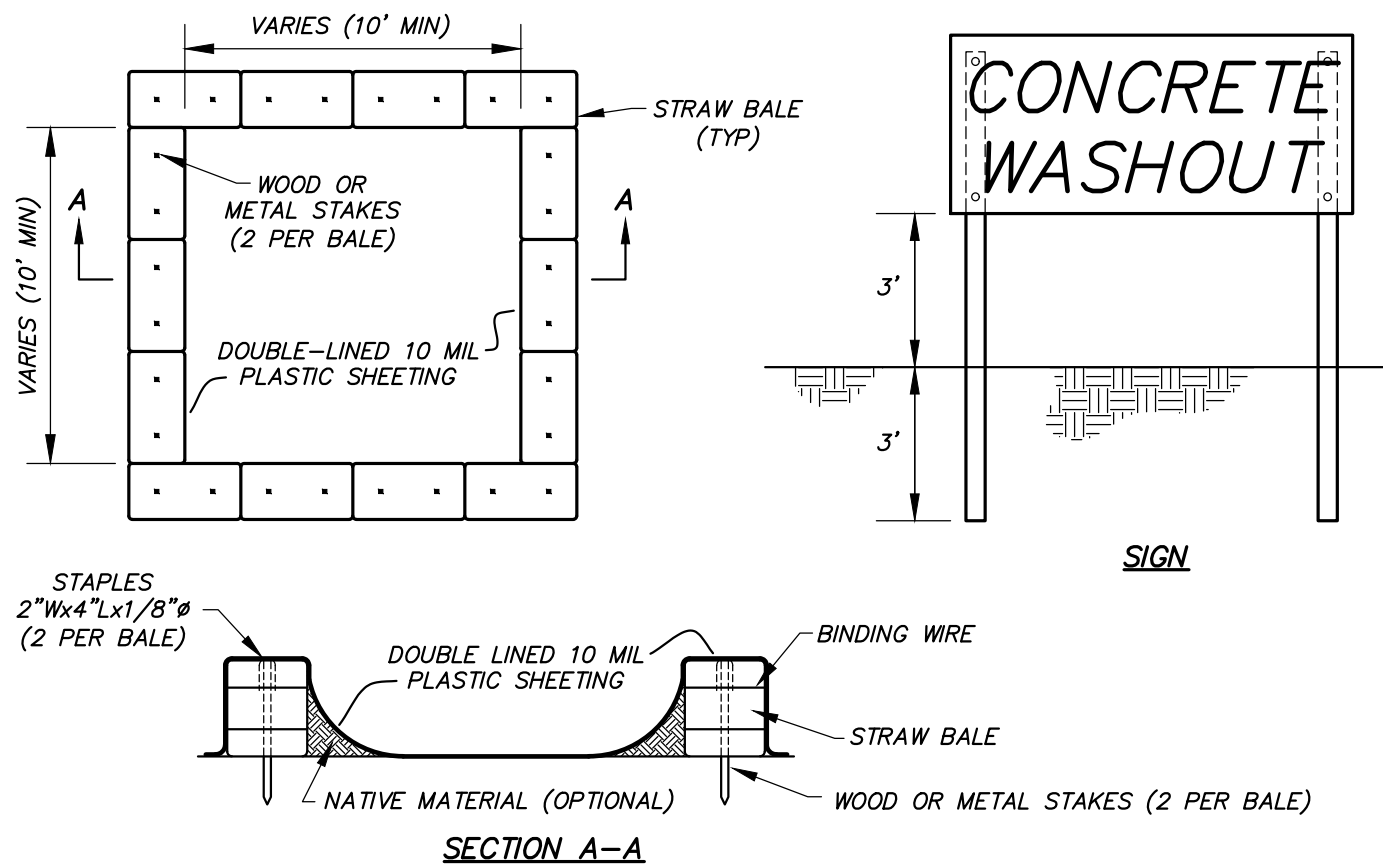
Development Services Department  
Lee's Summit, Missouri  
05/03/2024

	Outlet Pipe Diameter	Discharge (ft <sup>3</sup> /sec)	Width Top of Flow	Width Base of Flow	Length	D50 Size	Thickness
FES 40	24"	40.58	6 ft	12 ft	15 ft	5	1 ft
FES 4	36"	1.34	9 ft	30 ft	21 ft	20	2 ft
OCS 2							

Discharge into existing concrete erosion control area

RIP-RAP SIZING TABLE

NOT TO SCALE

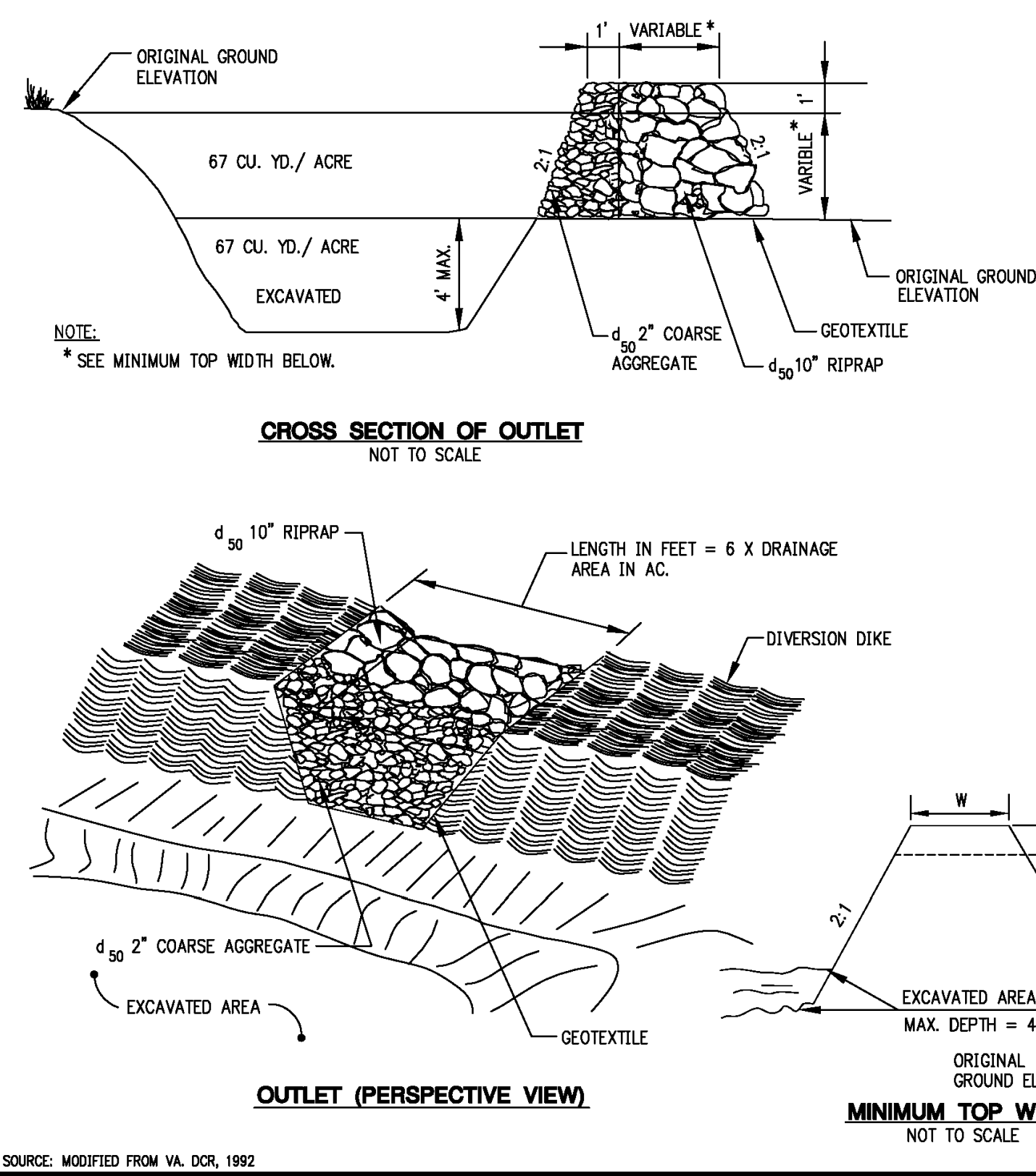


- NOTES:
1. ALL CONCRETE WASTE MATERIAL, INCLUDING WASHOUT WATER, SHALL BE TOTALLY CONTAINED.
  2. SEE SWPPP FOR MORE DETAILS.
  3. UPON PROJECT COMPLETION CONTRACTOR SHALL REMOVE, AND DISPOSE OF ALL CONCRETE WASTE FROM THE OWNER'S PROPERTY PER ALL APPLICABLE SOLID WASTE REGULATIONS.
  4. CONSTRUCT SIGN OF WEATHER PROOF MATERIALS OF A SIZE EASILY READABLE BY CONCRETE TRUCK DRIVERS. PLACE SIGN WITHIN 10' OF WASHOUT.
  5. CONTRACTOR SHALL CONTAIN WASHOUT WATERS AT ALL TIMES.

CONCRETE WASHOUT AREA

NOT TO SCALE

TEMPORARY SEDIMENT TRAP



OUTLET (PERSPECTIVE VIEW)

SOURCE: MODIFIED FROM VA. DCR, 1992

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:

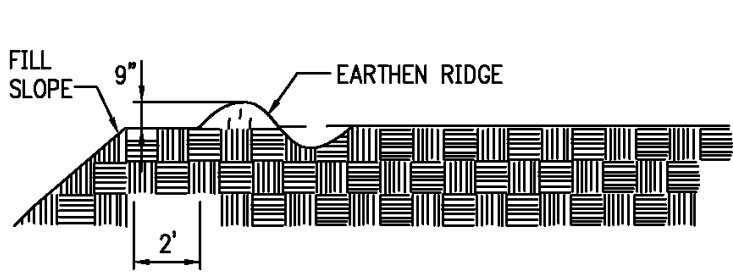
1. THE DIVERSION SHALL BE INSTALLED AS SOON AS THE RIGHT-OF-WAY HAS BEEN CLEARED AND/OR GRADED.
2. ALL EARTHEN DIVERSIONS SHALL BE MACHINE- OR HAND-COMPACTED IN 8-INCH LIFTS.
3. THE OUTLET OF THE DIVERSION SHALL BE LOCATED IN AN UNDISTURBED AND STABILIZED AREA WHEN AT ALL POSSIBLE. THE FIELD LOCATION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

DIVERSION DETAIL NOTES:

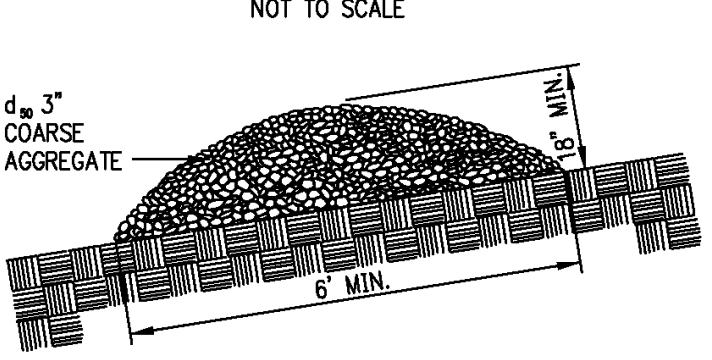
1. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE DIVERSION.
2. THE DIVERSION SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS-SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED 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 MATERIALS.
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.

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<b>APWA</b>	KANSAS CITY METROPOLITAN CHAPTER
DIVERSIONS	STANDARD DRAWING NUMBER ESC-29 ADOPTED

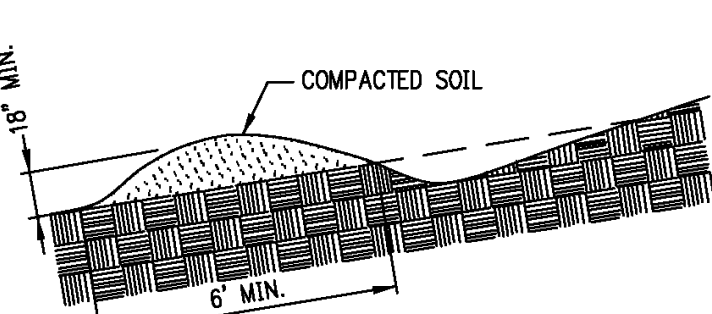
TEMPORARY RIGHT-OF-WAY DIVERSIONS



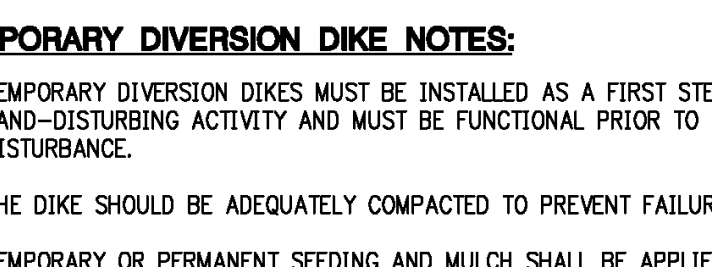
TEMPORARY FILL DIVERSION



TYPICAL GRAVEL STRUCTURE



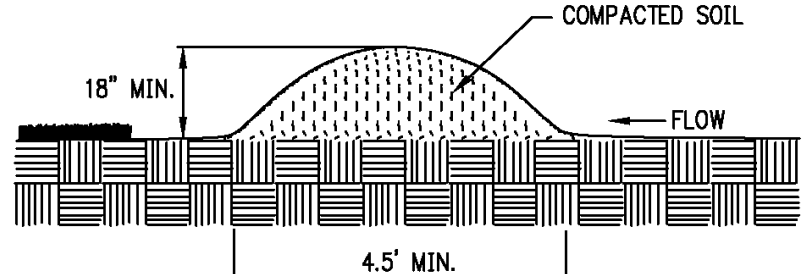
TYPICAL EARTHEN STRUCTURE



TEMPORARY DIVERSION DIKE NOTES:

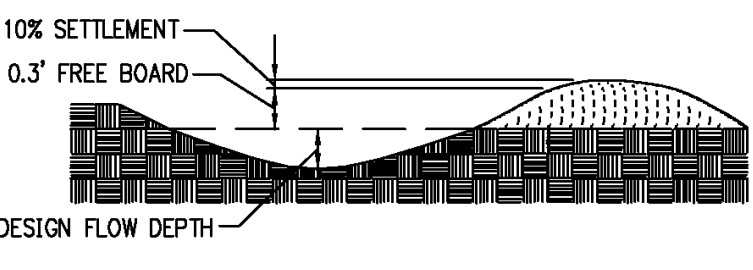
1. TEMPORARY DIVERSION DIKES MUST BE INSTALLED AS A FIRST STEP IN THE LAND-DISTURBING ACTIVITY AND MUST BE FUNCTIONAL PRIOR TO UPSLOPE LAND DISTURBANCE.
2. THE DIKE SHOULD BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
3. TEMPORARY OR PERMANENT SEEDING AND MULCH SHALL BE APPLIED TO THE DIKE IMMEDIATELY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

DIVERSIONS

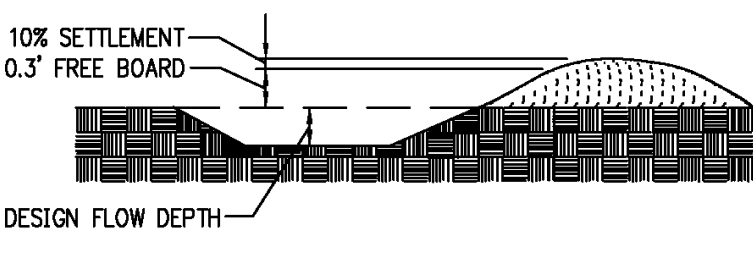


TEMPORARY DIVERSION DIKE

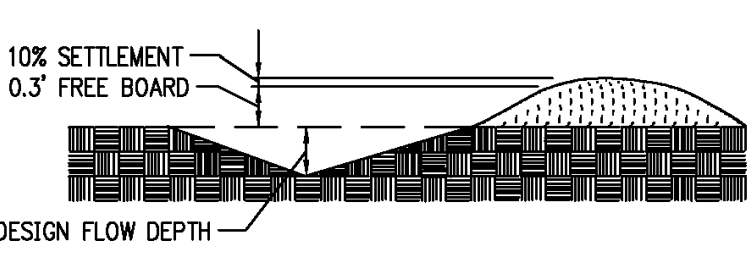
NOT TO SCALE



TYPICAL PARABOLIC DIVERSION

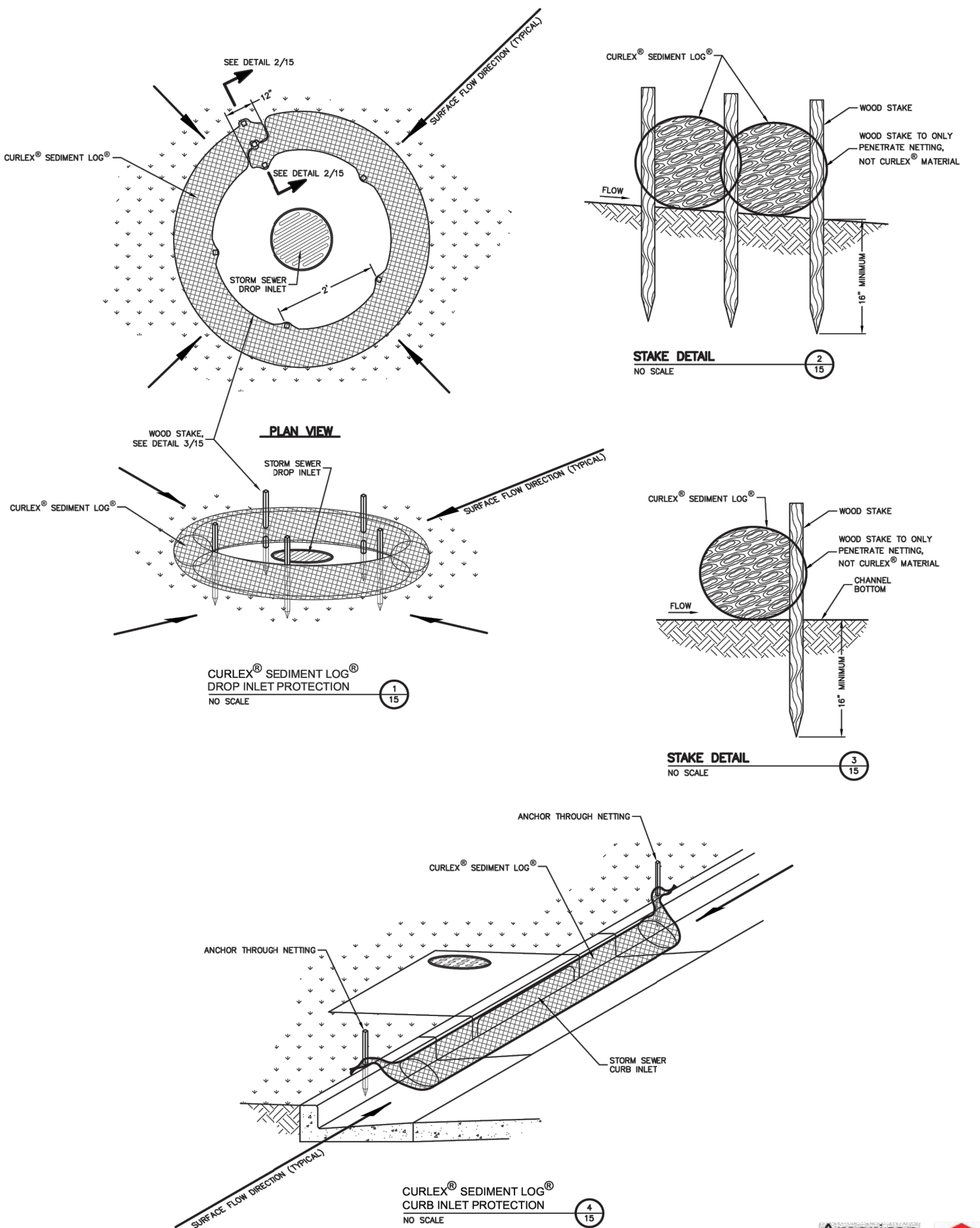


TYPICAL TRAPEZOIDAL DIVERSION

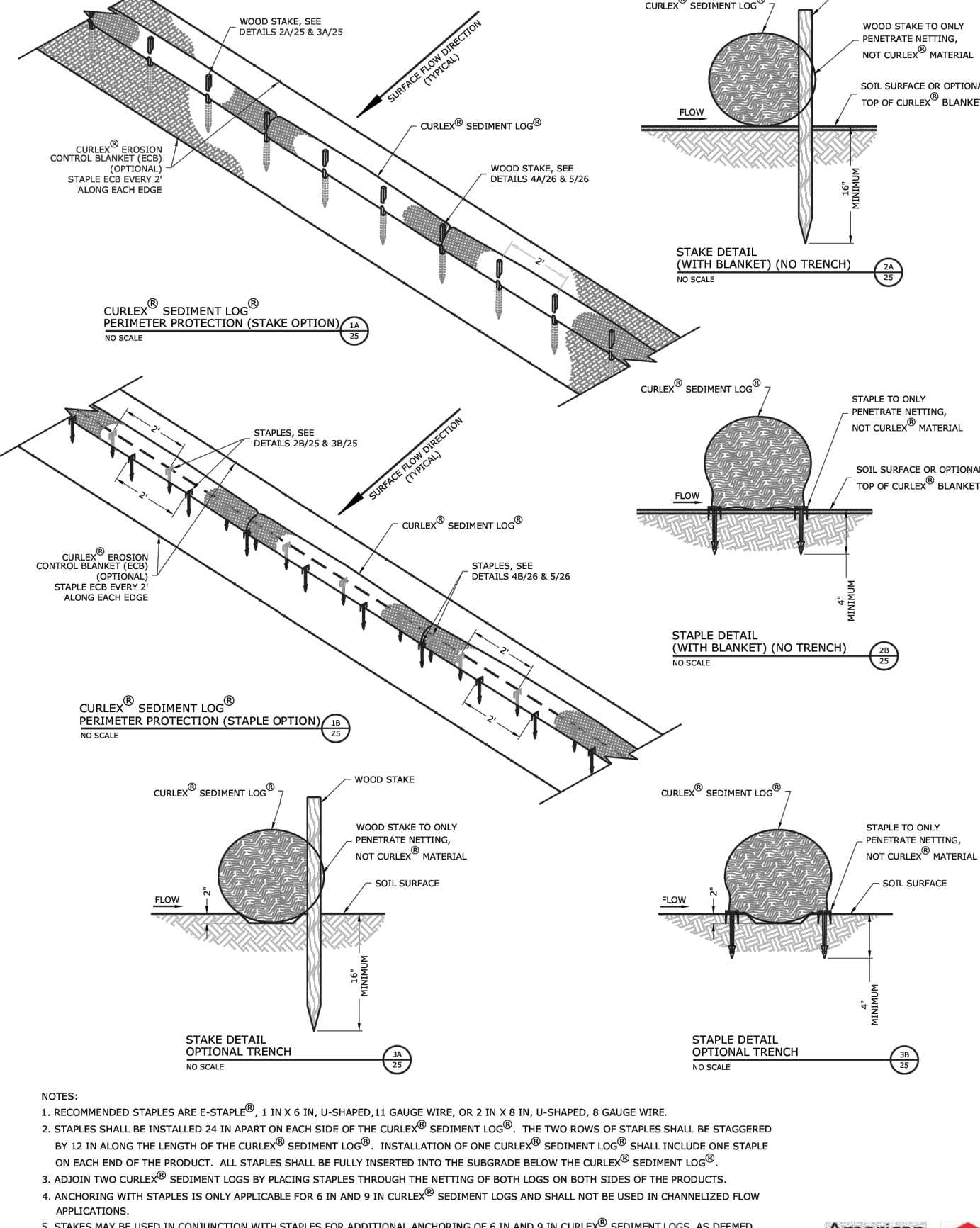


TYPICAL VEE-SHAPED DIVERSION

SOURCE: MODIFIED FROM VA. DCR, 1992



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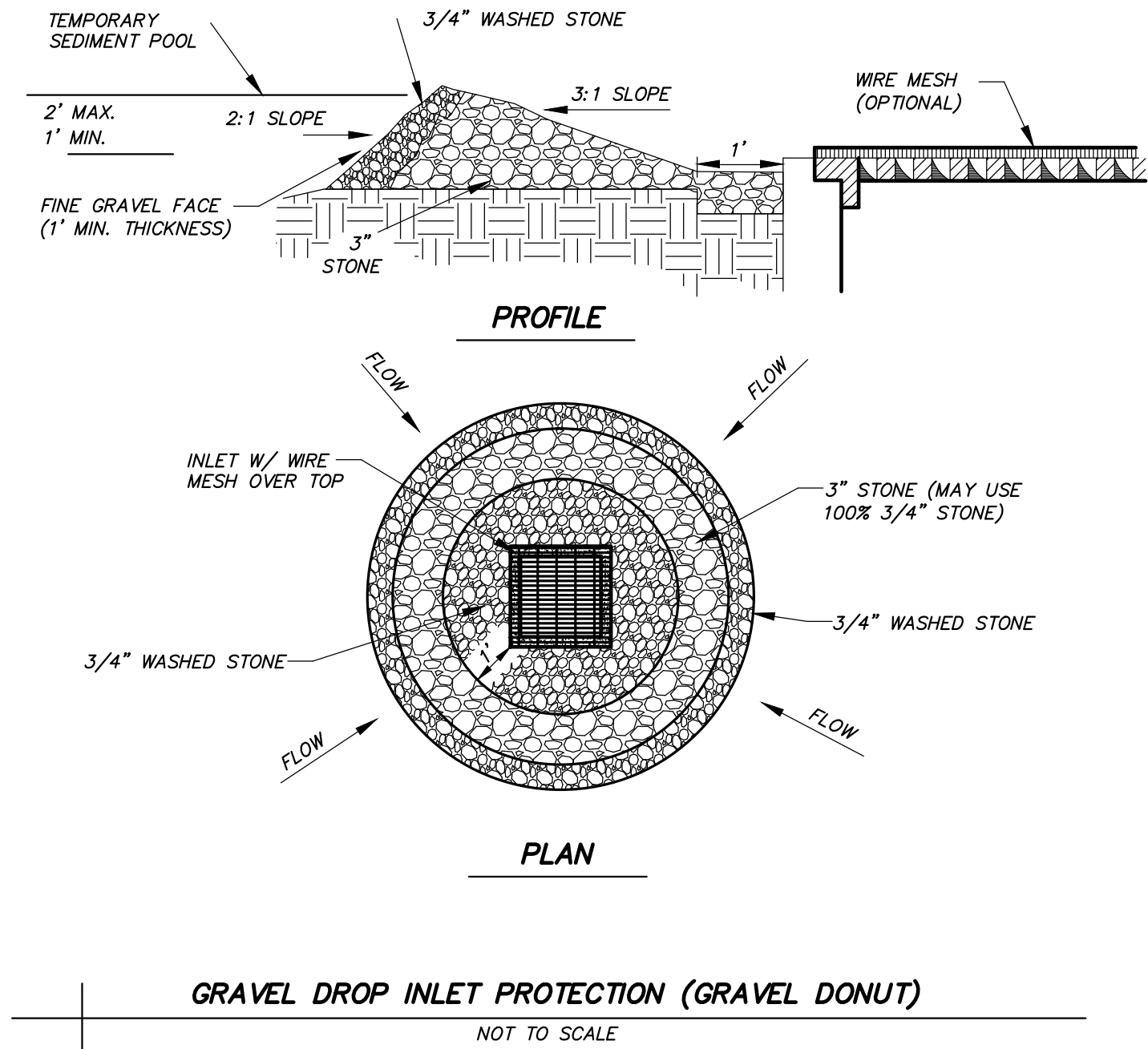
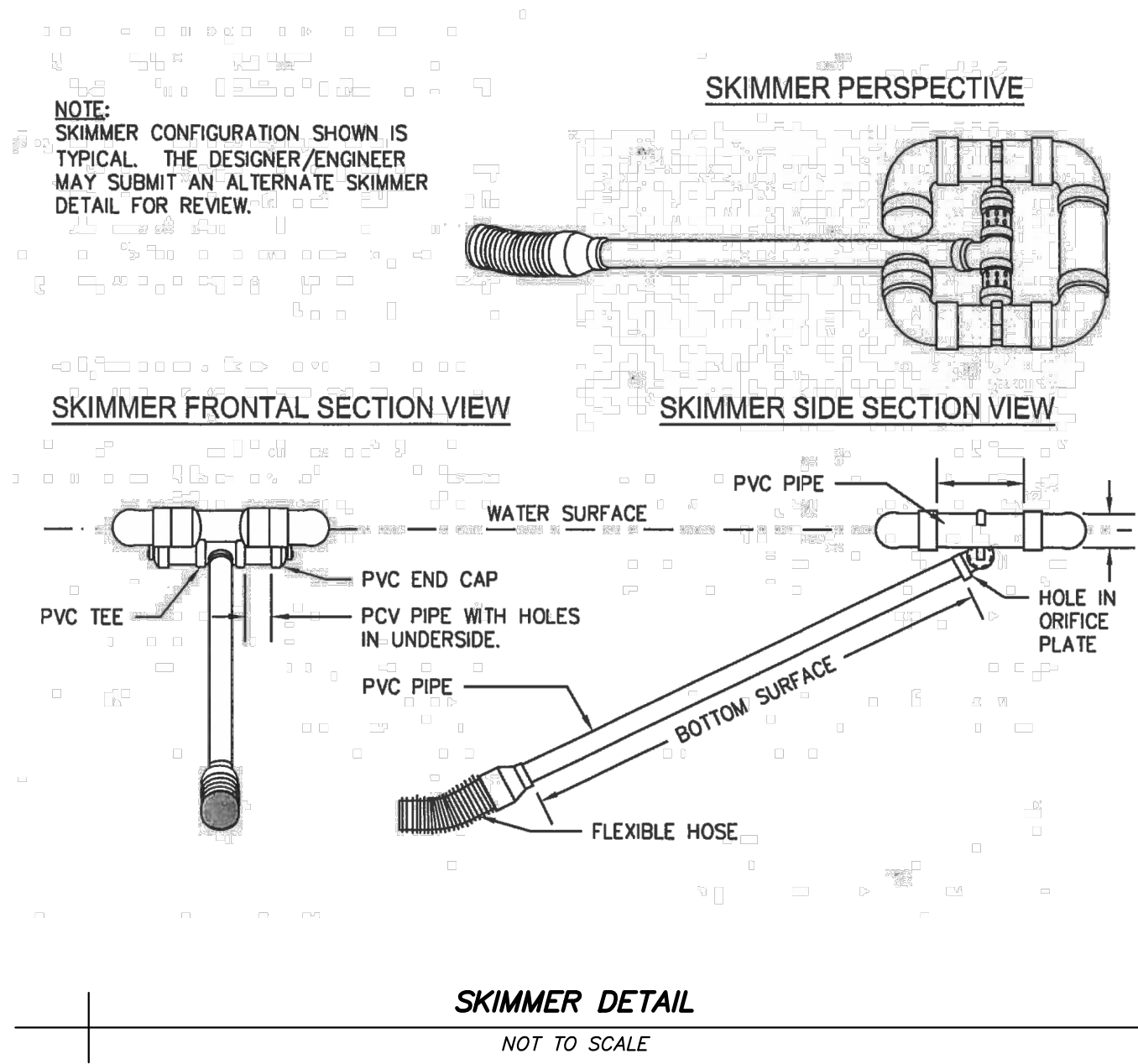


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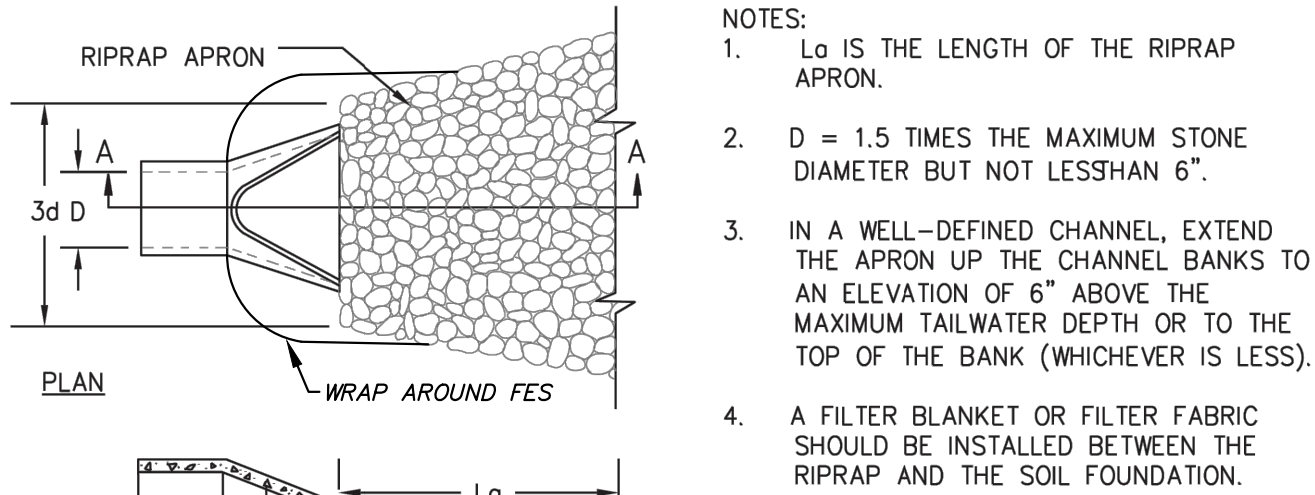


\\192.168.0.99\PROJECTS\GENERAL PROJECTS\15925E-JES-WILSHIRE-HILLS-3-ENC\CAD\15925 COVER & DETAILS.DWG 2/16/2024

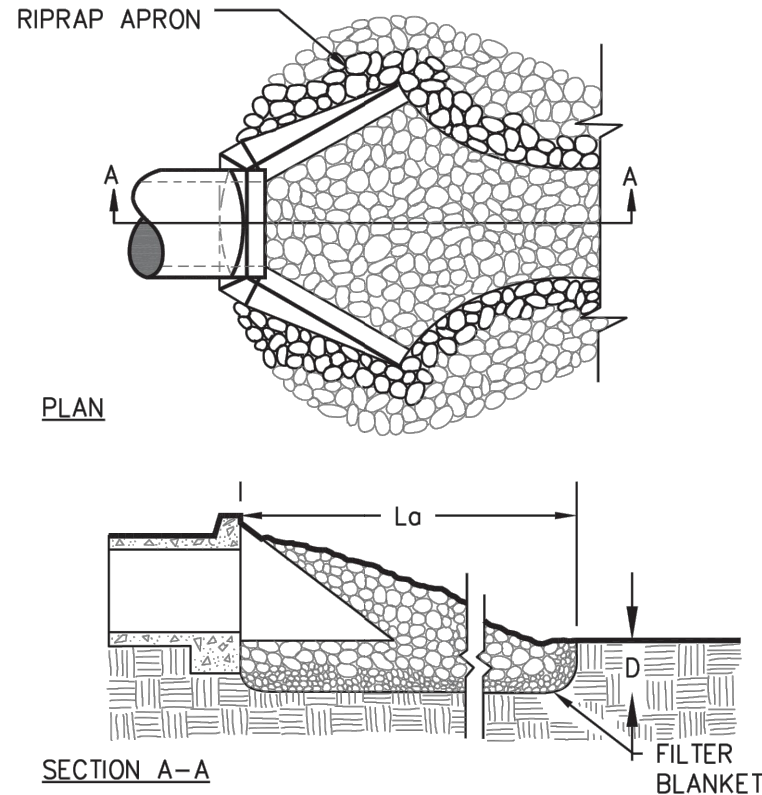
Calculate Skimmer Size			
Basin Volume in Cubic Feet	88,210	Cu.Ft	
Days to Drain*	3	Days	
*In NC assume 3 days to drain			
		Skimmer Size	5.0 Inch
		Orifice Radius	2.4 Inch[es]
		Orifice Diameter	4.8 Inch[es]



PIPE OUTLET TO FLAT AREA -- NO WELL DEFINED CHANNEL



PIPE OUTLET TO WELL DEFINED CHANNEL



RIPPRAP OUTLET PROTECTION

NOT TO SCALE

51

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As Noted on Plan Review

Development Services Department  
Lee's Summit, Missouri

05/03/2024



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MATTHEW A. KRIETE  
PROFESSIONAL ENGINEER  
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Date

OCTOBER 12, 2023

Revised

4 FEBRUARY 16, 2024

Design: ST Drawn: MJS

EROSION CONTROL DETAILS

Sheet

C5.09

ES&S PROJECT NO. 15925

CONSTRUCTION DOCUMENTS