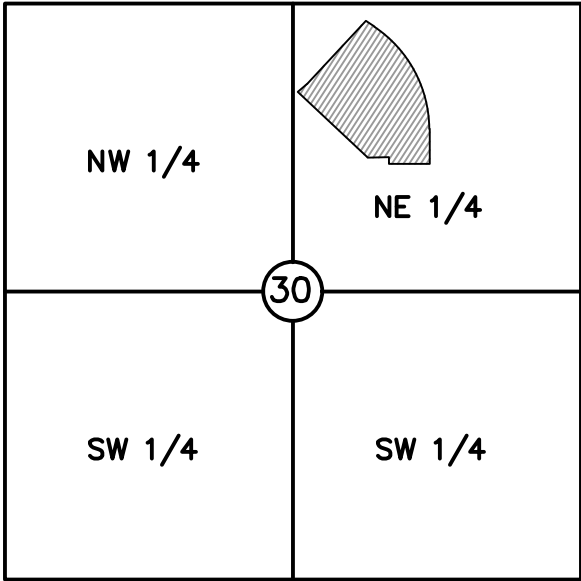


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VICINITY MAP
S30, T48N, R31W
N.T.S.

PROJECT TEAM & UTILITY CONTACT LIST	
OWNER ARIA LS, LLC 4220 PHILIPS FARM RD. COLUMBIA, MO 65201 CONTACT: BRIAN MAENNER PHONE: 573.449.9902 EMAIL: BPMAENEER@CENTRALSTATESCONST.COM	UTILITY SERVICE NUMBERS NAME: LEE'S SUMMIT PUBLIC WORKS PHONE: 816-969-1800 NAME: LEE'S SUMMIT WATER & SERVICES DEPARTMENT PHONE: 816-969-1940 NAME: SPIRE (MGE) PHONE: 314-342-0500
DEVELOPER CENTRAL STATES CONSTRUCTION 4215 PHILIPS FARM RD. SUITE 109 COLUMBIA, MO 65201 CONTACT: BRIAN MAENNER PHONE: 573.449.9902 EMAIL: BPMAENEER@CENTRALSTATESCONST.COM	NAME: AT&T PHONE: 800-286-8313 NAME: EVERGY PHONE: 816-471-5275 NAME: SPECTRUM (TWC) PHONE: 877-772-2253
ENGINEER OLSSON 1301 BURLINGTON, SUITE 100 NORTH KANSAS CITY, MO 64116 CONTACT: NICHOLAS HEISER PHONE: 816.361.1177 EMAIL: NHEISER@OLSSON.COM	NAME: GOOGLE FIBER PHONE: 877-454-6959
SURVEYOR OLSSON 1301 BURLINGTON, SUITE 100 NORTH KANSAS CITY, MO 64116 CONTACT: JASON ROUDEBUSH PHONE: 816.361.1177 EMAIL: JROUDEBUSH@OLSSON.COM	

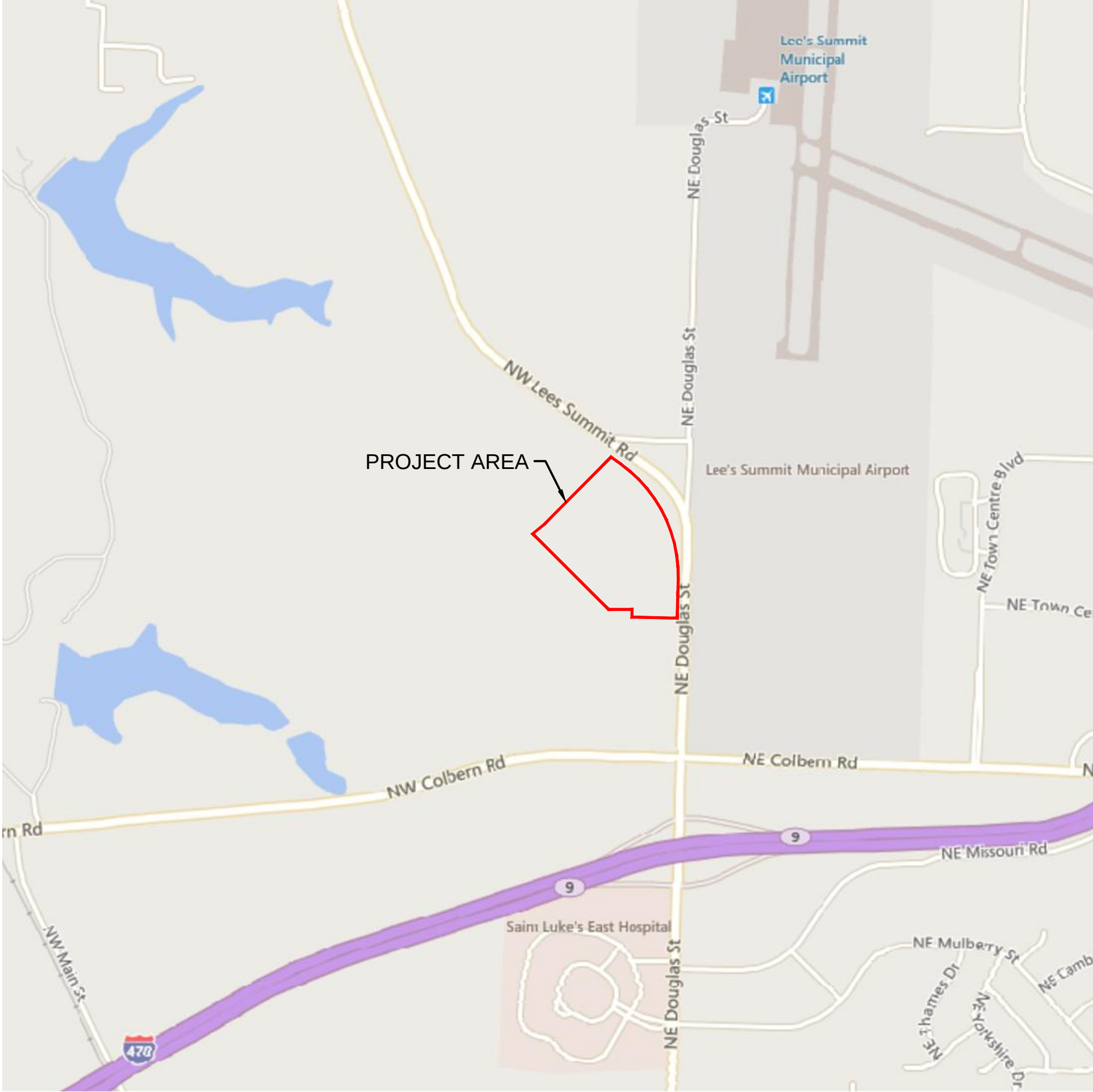
☐ NOT FOR CONSTRUCTION

☒ REVIEWED FOR CONSTRUCTION



ARIA APARTMENTS PHASE 1 SITE GRADING & SITE DISTURBANCE PLANS

SECTION 30, TOWNSHIP 48N, RANGE 31W
IN LEE'S SUMMIT, JACKSON COUNTY, MO



PROPERTY DESCRIPTION:

AS PROVIDED BY STEWART TITLE GUARANTY COMPANY:
TRACT OF LAND IN THE NORTHEAST QUARTER OF SECTION 30 TOWNSHIP 48 NORTH, RANGE 31 WEST OF THE 5TH PRINCIPAL MERIDIAN IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI BEING BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTHWEST CORNER OF SAID NORTHEAST QUARTER SECTION; THENCE SOUTH 01 DEGREES 37 MINUTES 50 SECONDS WEST, ON THE WEST LINE OF SAID QUARTER SECTION, 853.75 FEET TO A POINT ON THE SOUTHEAST LOT LINE OF LOT 1, LEE'S SUMMIT ROAD PUMP STATION, A SUBDIVISION RECORDED IN BOOK 1 51 AT PAGE 90 IN THE JACKSON COUNTY RECORDER OF DEEDS OFFICE; THENCE NORTH 50 DEGREES 41 MINUTES 15 SECONDS EAST, ON SAID SOUTHEAST LOT LINE, 59.22 FEET; TO THE POINT OF BEGINNING OF THE TRACT OF LAND TO BE HEREIN DESCRIBED; THENCE CONTINUING NORTH 50 DEGREES 41 MINUTES 15 SECONDS EAST ALONG SAID LINE, 116.89 FEET; THENCE NORTH 44 DEGREES 49 MINUTES 51 SECONDS EAST, 792.38 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF NW LEE'S SUMMIT ROAD AS ESTABLISHED BY DOCUMENT NUMBER 2015E0017982 IN THE JACKSON COUNTY RECORDER OF DEEDS OFFICE; THENCE ON SAID WESTERLY RIGHT-OF-WAY LINE, SOUTH 54 DEGREES 34 MINUTES 12 SECONDS EAST, 95.69 FEET; THENCE SOUTHEASTERLY ALONG A CURVE TO THE RIGHT BEING TANGENT TO THE LAST DESCRIBED COURSE WITH A RADIUS OF 1,142.00 FEET, A CENTRAL ANGLE OF 56 DEGREES 01 MINUTES 43 SECONDS AND AN ARC DISTANCE OF 1,116.74 FEET; THENCE SOUTH 01 DEGREES 27 MINUTES 31 SECONDS WEST, 322.27 FEET; THENCE LEAVING SAID RIGHT-OF-WAY LINE, NORTH 88 DEGREES 32 MINUTES 29 SECONDS WEST, 375.74 FEET; THENCE NORTH 01 DEGREES 27 MINUTES 27 SECONDS EAST, 62.94 FEET; THENCE SOUTH 90 DEGREES 00 MINUTES 00 SECONDS WEST, 195.68 FEET; THENCE NORTH 45 DEGREES 00 MINUTES 00 SECONDS WEST, 889.18 FEET TO THE POINT OF BEGINNING, SUBJECT TO THAT PART, IF ANY, IN STREETS, ROADWAYS, HIGHWAYS OR OTHER PUBLIC RIGHT-OF-WAYS.

BENCHMARK

BMK 1
LOCATED NEAR SE CORNER OF COLBERN RD. & DOUGLAS ST. INTERSECTION.
N: 1012195.53
E: 282382.89
EL: 982.46

BMK 2
LOCATED ON LIGHTPOLE BASE AT NE CORNER OF LEE'S SUMMIT RD. & DOUGLAS ST INTERSECTION.
N: 1014699.72
E: 2823025.86
EL: 932.31

BMK 5
N: 1014159.31
E: 2822030.75
EL: 908.88

INDEX OF SHEETS	
Sheet Title	Sheet Number
TITLE SHEET	C100
GENERAL NOTES	C101
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EROSION CONTROL PLAN - PHASE 1 DETAILS	C105
EROSION CONTROL PLAN - PHASE 2	C106
EROSION CONTROL PLAN - PHASE 2 DETAILS	C107
EROSION CONTROL PLAN - PHASE 3	C108
EROSION CONTROL PLAN - PHASE 4	C109
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DETAIL SHEET	C111
DETAIL SHEET	C112

OIL/GAS WELLS:

NO OIL OR GAS WELLS ARE LOCATED WITHIN PROJECT LIMITS.
INFORMATION OBTAINED FROM THE MISSOURI DEPARTMENT OF NATURAL RESOURCES,
GEOLOGICAL SURVEY GEOSCIENCES TECHNICAL RESOURCE ASSESSMENT TOOL (GEOSTRAT).

FLOOD CERTIFICATION:

THE ENTIRE SITE IS LOCATED WITHIN ZONE X, "AREAS OF 0.2% ANNUAL CHANCE FLOOD;
AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR
WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES
FROM THE 1% ANNUAL CHANCE FLOOD" AS DEPICTED ON THE FEMA FLOOD INSURANCE
RATE MAP (FIRM) MAP NUMBER 29095C0409G, REVISION DATE JANUARY 20, 2017.

OLSSON - CIVIL ENGINEERING
NO. CERTIFICATE OF AUTHORITY #001592
NORTH KANSAS CITY, MO 64116
TEL. 816.361.1177
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NICHOLAS D. HEISER, P.E.
MO# 2015000555

TITLE SHEET		2020	
SITE GRADING & SITE DISTURBANCE PLANS		ARIA APARTMENTS PHASE 1	
		LEE'S SUMMIT, MO	

drawn by: _____ M.J.D.
checked by: _____ N.D.H.
designed by: _____ M.J.D.
QA/QC by: _____ N.D.H.
project no.: 019-0012-B
date: 2020.06.12

SHEET
C100

REVISIONS	
NO. REV.	DATE
1	2020.07.22
2	2020.08.27
REVISIONS DESCRIPTION	
REVISIONS PER CITY COMMENTS	
REVISED GRADING PER CITY COMMENTS	

GENERAL NOTES:

1. THE INTENT OF THIS LAND DISTURBANCE PLAN IS TO ASSIST THE DEVELOPER IN HIS RESPONSIBILITY TO PROVIDE ALL MATERIALS, TOOLS, EQUIPMENT AND LABOR NECESSARY TO CONTROL EROSION, SILTATION AND DISCHARGES OF SOIL MATERIAL (SEDIMENT) INTO DOWNSTREAM SYSTEMS OR RECEIVING CHANNELS. THIS SHALL BE REQUIRED DURING ALL PHASES OF CONSTRUCTION AND UNTIL SUITABLE GROUND COVER IS ESTABLISHED FOR ALL DISTURBED AREAS. IF ANY METHOD OF CONTROL FAILS, THE DEVELOPER SHALL NOTIFY THE OWNER IMMEDIATELY, SO THAT THE OWNER OR HIS AGENT CAN REVIEW THE DEVELOPER'S PROPOSED METHOD OF REPAIR.

THIS PLAN INDICATES THE CRITICAL AREA(S) OF CONCERN AND THESE AREA(S) WILL BE CONTROLLED AS A MINIMUM. THE CONTROL MAY CONSIST OF TEMPORARY CONTROL MEASURES AS SHOWN ON THE PLANS OR ORDERED BY THE OWNER DURING THE DURATION OF THE CONTRACT TO CONTROL EROSION OR WATER POLLUTION, INCLUDING, BUT NOT LIMITED TO, BERM, DIKE, DRAIN, DIVERSION, GRASSING, RIDGE, SLOPE, SWALES, GRAVEL, MULCHES, GRASSES, SLOPE DRAINS, DIMENSIONAL SWALES OR OTHER EROSION CONTROL DEVICES OR METHODS. THE OWNER HAS THE AUTHORITY TO LIMIT THE SURFACE AREA OF ERODIBLE MATERIAL EXPOSED BY THE CONSTRUCTION OPERATIONS AND TO DIRECT THE DEVELOPER TO PROVIDE IMMEDIATE EROSION OR POLLUTION CONTROL MEASURES TO PREVENT CONTAMINATION OF ADJACENT STREAMS OR OTHER WATER COURSES, LAKES, PONDS, OR OTHER AREAS OF WATER IMPOUNDMENT OR CONVEYANCES.

THE TEMPORARY POLLUTION CONTROL PROVISIONS CONTAINED HEREIN SHALL BE COORDINATED WITH ANY PERMANENT EROSION CONTROL FEATURES SPECIFIED ELSEWHERE IN THE CONTRACT TO THE EXTENT PRACTICAL TO ASSURE ECONOMICAL, EFFECTIVE AND CONTINUOUS EROSION CONTROL THROUGHOUT THE CONSTRUCTION AND POST CONSTRUCTION PERIOD.

2. THIS SEDIMENTATION CONTROL PLAN MAKES USE OF THE FOLLOWING APPLICATIONS:

- ___PRESERVATION OF EXISTING VEGETATION
- X_SEDIMENT BARRIERS
- X_SEDIMENT TRAPS
- X_INLET PROTECTION
- ___OUTLET PROTECTION
- ___SOIL RETAINING SYSTEMS
- ___SLOPE DRAINS
- ___SUBSURFACE DRAINS

PHYSICAL DESCRIPTION OF EACH SPECIFIC SEDIMENT CONTROL DEVICE TO BE UTILIZED IS CALLED OUT ON THE PLANS WITH INSTALLATION PROCEDURES, CONSTRUCTION SPECIFICATIONS AND MAINTENANCE ARRANGEMENT AS CALLED FOR ON THE DETAIL SHEET. IN ADDITION TO THE MEASURES SPECIFIED, THE FOLLOWING GENERAL PRACTICES SHALL BE ADHERED TO WHEN APPLICABLE.

A CLEARING AND GRUBBING WITHIN 50' OF A DEFINED DRAINAGE COURSE SHOULD BE AVOIDED WHEN POSSIBLE. WHERE CHANGES TO A DEFINED DRAINAGE COURSE OCCUR, WORK SHOULD BE DELAYED UNTIL ALL MATERIALS AND EQUIPMENT NECESSARY TO PROTECT AND COMPLETE THE DRAINAGE CHANGE ARE ON SITE. CHANGES SHALL BE COMPLETED AS QUICKLY AS POSSIBLE ONCE THE WORK HAS BEEN INITIATED. THE AREA IMPACTED BY THE CONSTRUCTION ACTIVITIES SHALL BE REVEGETATED OR PROTECTED FROM EROSION AS SOON AS POSSIBLE. AREAS WITHIN 50' OF A DEFINED DRAINAGE WAYS SHOULD BE RECONTOURED AS NEEDED OR OTHERWISE PROTECTED WITHIN FIVE (5) WORKING DAYS AFTER GRADING HAS CEASED.

B) WHERE SOIL DISTURBING ACTIVITIES CEASE IN AN AREA FOR MORE THAN 14 DAYS, THE DISTURBED AREAS SHALL BE PROTECTED FROM EROSION BY STABILIZING THE AREA WITH MULCH OR OTHER SIMILARLY EFFECTIVE EROSION CONTROL MEASURES, IF THE SLOPE OF THE AREA IS GREATER THAN 3:1 OR IF THE SLOPE IS GREATER THAN 3% AND GREATER THAN 150 FEET IN LENGTH, THEN THE DISTURBED AREAS SHALL BE PROTECTED FROM EROSION BY STABILIZING THE AREA WITH MULCH OR OTHER SIMILARLY EFFECTIVE EROSION CONTROL MEASURES IF ACTIVITIES CEASE FOR MORE THAN SEVEN (7) DAYS.

C) EXISTING VEGETATION SHALL BE PRESERVED TO THE EXTENT AND WHERE PRACTICAL. IN NO CASE SHALL DISTURBED AREAS REMAIN WITHOUT VEGETATIVE GROUND COVER FOR A PERIOD IN EXCESS OF 60 DAYS.

D) ADDITIONAL SITE MANAGEMENT PRACTICES WHICH SHALL BE ADHERED TO DURING THE CONSTRUCTION PROCESS SHALL INCLUDE:

SOLID AND HAZARDOUS WASTE MANAGEMENT INCLUDING PROVIDING TRASH CONTAINERS AND REGULAR SITE CLEAN UP FOR PROPER DISPOSAL OF SOLID WASTE SUCH AS BUILDING MATERIAL, PRODUCT/MATERIAL SHIPPING WASTE, FOOD CONTAINERS AND CUPS, AND PROVIDING CONTAINERS FOR THE PROPER DISPOSAL OF WASTE PAINTS SOLVENTS, AND CLEANING COMPOUNDS.

PROVISIONS OF PORTABLE TOILETS FOR PROPER DISPOSAL OF SANITARY SEWAGE.

STORAGE OF CONSTRUCTION MATERIALS AWAY FROM DRAINAGE COURSES AND LOW AREAS.

INSTALLATION OF CONTAINMENT BERMS AND USE OF DRIP PANS AT PETROLEUM PRODUCT AND LIQUID STORAGE TANKS AND CONTAINERS.

3. ALL DISTURBED AREAS SHALL BE SEEDED, FERTILIZED AND MULCHED, OR SODDED, IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS ADOPTED BY THE CITY OF LEE'S SUMMIT AND GOOD ENGINEERING PRACTICES. THIS SHALL BE COMPLETED WITHIN FOURTEEN (14) DAYS AFTER COMPLETING THE WORK, IN ANY AREA. IF THIS IS OUTSIDE OF THE SEEDING PERIOD, SILT BARRIERS OR OTHER SIMILARLY EFFECTIVE MEASURES SHALL BE PROVIDED UNTIL SUCH TIME THAT THE AREAS CAN BE SEEDED.

4. THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO ALL CURRENT STANDARDS AND SPECIFICATIONS ADOPTED BY THE CITY OF LEE'S SUMMIT. THE DEVELOPER WILL BE RESPONSIBLE FOR DETERMINING ALL ADDITIONAL STANDARDS, SPECIFICATIONS OR REQUIREMENTS WHICH ARE REQUIRED BY GOVERNING AGENCIES (INCLUDING LOCAL, STATE AND FEDERAL AUTHORITIES) HAVING JURISDICTION OVER THE WORK PROPOSED BY THESE CONSTRUCTION DRAWINGS.

5. ALL EROSION CONTROL MEASURES, TEMPORARY OR PERMANENT, REQUIRE MAINTENANCE TO PRESERVE THEIR EFFECTIVENESS. ALL EROSION CONTROL DEVICES SHALL BE INSPECTED IMMEDIATELY AFTER EACH HEAVY RAINSTORM AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHOULD BE MADE IMMEDIATELY. ALL COSTS ASSOCIATED WITH THE REPAIR WORK INCLUDING RELATED INCIDENTALS WILL BE THE DEVELOPER'S RESPONSIBILITY AND SHALL BE INCLUDED IN THE DEVELOPER'S BID FOR THE PROPOSED WORK.

6. ALL EROSION CONTROL MEASURES TO BE PER APWA KANSAS CITY METRO CHAPTER STANDARD DETAILS.

7. THE DEVELOPER MUST REMOVE AT HIS COST ANY BAD SUBSURFACE SOIL WHICH WOULD NOT BE ABLE TO SUPPORT ANY PROPOSED PUBLIC IMPROVEMENT. BACKFILL SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL SECTIONS 2100 AND 2201 ENTITLED "GRADING AND SITE PREPARATION" AND "SUBGRADE PREPARATION".

8. THE CONTRACTOR SHALL CONTACT THE CITY'S DEVELOPMENT SERVICES ENGINEERING INSPECTORS 48 HOURS PRIOR TO ANY LAND DISTURBANCE WORK AT (816) 969-1200

9. TREE CLEARING TO HAPPEN BETWEEN NOVEMBER 1 AND MARCH 31. TREES CLEARED BETWEEN APRIL 1 AND OCTOBER 31 MUST BE TREES GREATER THAN 1,000 FEET FROM FORESTED OR WOODED AREAS OR TREES LESS THAN 3 INCHES IN DIAMETER, AT BREAST HEIGHT, AND NOT MIXED WITH LARGER TREES. IF LARGER TREES NEED TO BE CLEARED, A SURVEY OF THE TREES MUST BE CONDUCTED TO MAKE SURE THERE ARE NO BAT ROOSTS IN THE TREES.

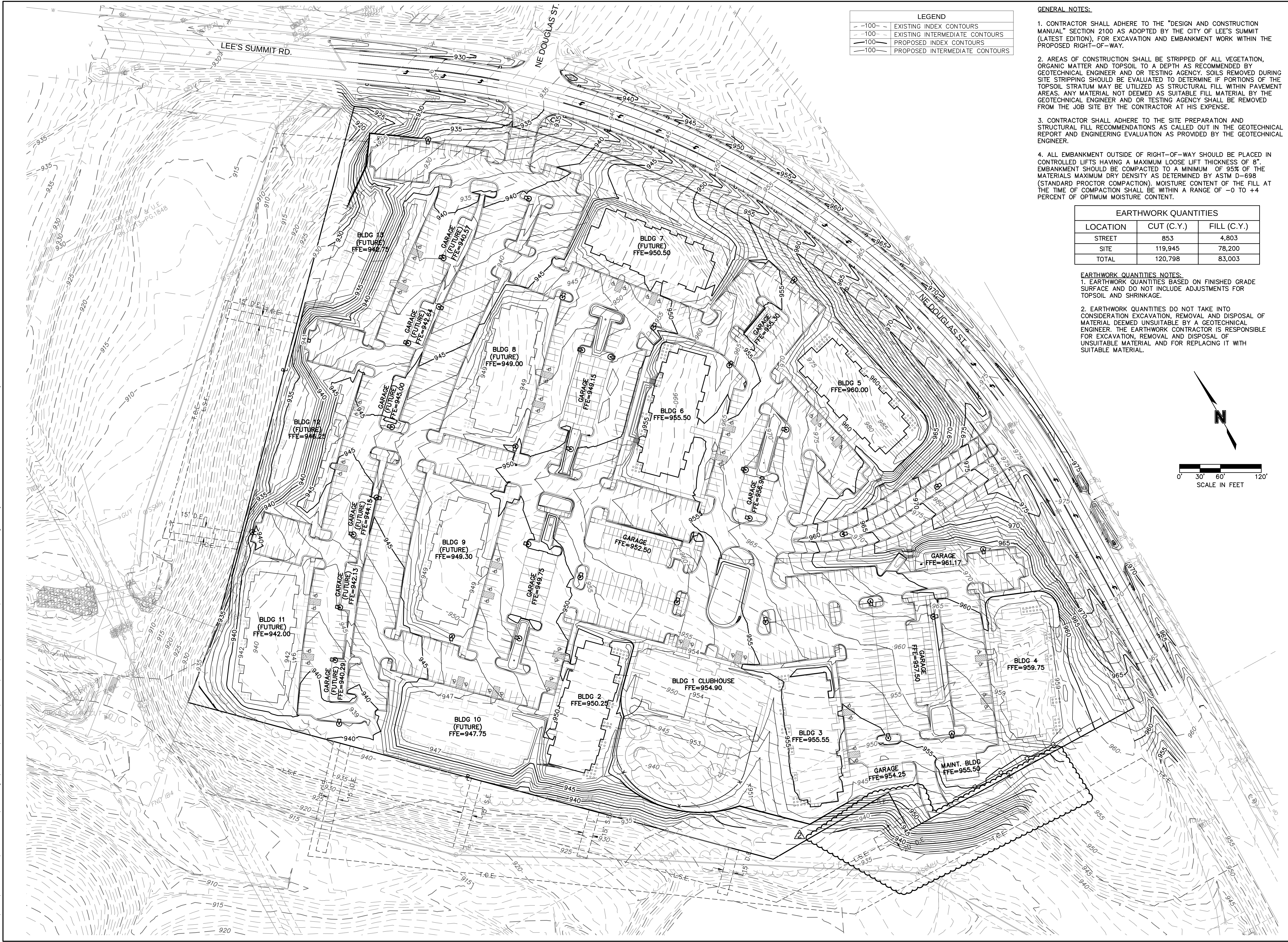
TREE CLEARING TO BE CONDUCTED BY CUTTING DOWN AND MULCHING OR BY PUSHING OVER AND MULCHING. TREES SHALL NOT BE BURNED DOWN.

ESTIMATE OF QUANTITIES				
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	AS-BUILT
PRIVATE GRADING				
1	EXCAVATION	C.Y.	119,945	
2	EMBANKMENT	C.Y.	78,200	
PUBLIC GRADING				
3	EXCAVATION	C.Y.	853	
4	EMBANKMENT	C.Y.	4,803	
SITE DISTURBANCE				
5	INLET PROTECTION	EA.	85	
6	SILT FENCE	L.F.	2,463	
7	DIVERSION BERM	L.F.	2,991	
8	VEHICLE TRACKING CONTROL	EA.	2	
9	CONCRETE WASHOUT	EA.	2	
10	ROCK DITCH CHECK	EA.	74	
11	SEDIMENT TRAP	EA.	7	
12	SOIL STABILIZATION BLANKET	S.Y.	10,010	
13	SEED & MULCH	AC.	12.79	
14	DISTURBED AREA	AC.	24.55	
15	TREE CLEARING	AC.	1.60	

SUMMARY OF QUANTITIES AS INDICATED ABOVE AND ANY QUANTITIES AS SHOWN WITHIN THE PLANS HAVE BEEN PROVIDED FOR PERMITTING PURPOSES ONLY AND ARE NOT INTENDED FOR USE IN PREPARATION OF CONTRACT DOCUMENTS. QUANTITIES INTENDED FOR, BUT NOT LIMITED TO, THE PREPARATION OF PROPOSALS AND BID DOCUMENTS SHALL BE INDEPENDENTLY EVALUATED BY THE ESTIMATING PARTY BASED UPON THE CONTENTS OF THESE PLANS.



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LEGEND	
-100-	EXISTING INDEX CONTOURS
100	EXISTING INTERMEDIATE CONTOURS
-100-	PROPOSED INDEX CONTOURS
100	PROPOSED INTERMEDIATE CONTOURS

GENERAL NOTES:

1. CONTRACTOR SHALL ADHERE TO THE "DESIGN AND CONSTRUCTION MANUAL" SECTION 2100 AS ADOPTED BY THE CITY OF LEE'S SUMMIT (LATEST EDITION), FOR EXCAVATION AND EMBANKMENT WORK WITHIN THE PROPOSED RIGHT-OF-WAY.
2. AREAS OF CONSTRUCTION SHALL BE STRIPPED OF ALL VEGETATION, ORGANIC MATTER AND TOPSOIL TO A DEPTH AS RECOMMENDED BY GEOTECHNICAL ENGINEER AND OR TESTING AGENCY. SOILS REMOVED DURING SITE STRIPPING SHOULD BE EVALUATED TO DETERMINE IF PORTIONS OF THE TOPSOIL STRATUM MAY BE UTILIZED AS STRUCTURAL FILL WITHIN PAVEMENT AREAS. ANY MATERIAL NOT DEEMED AS SUITABLE FILL MATERIAL BY THE GEOTECHNICAL ENGINEER AND OR TESTING AGENCY SHALL BE REMOVED FROM THE JOB SITE BY THE CONTRACTOR AT HIS EXPENSE.
3. CONTRACTOR SHALL ADHERE TO THE SITE PREPARATION AND STRUCTURAL FILL RECOMMENDATIONS AS CALLED OUT IN THE GEOTECHNICAL REPORT AND ENGINEERING EVALUATION AS PROVIDED BY THE GEOTECHNICAL ENGINEER.
4. ALL EMBANKMENT OUTSIDE OF RIGHT-OF-WAY SHOULD BE PLACED IN CONTROLLED LIFTS HAVING A MAXIMUM LOOSE LIFT THICKNESS OF 8". EMBANKMENT SHOULD BE COMPACTED TO A MINIMUM OF 95% OF THE MATERIALS MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698 (STANDARD PROCTOR COMPACTION). MOISTURE CONTENT OF THE FILL AT THE TIME OF COMPACTION SHALL BE WITHIN A RANGE OF -0 TO +4 PERCENT OF OPTIMUM MOISTURE CONTENT.

EARTHWORK QUANTITIES		
LOCATION	CUT (C.Y.)	FILL (C.Y.)
STREET	853	4,803
SITE	119,945	78,200
TOTAL	120,798	83,003

EARTHWORK QUANTITIES NOTES:

1. EARTHWORK QUANTITIES BASED ON FINISHED GRADE SURFACE AND DO NOT INCLUDE ADJUSTMENTS FOR TOPSOIL AND SHRINKAGE.
2. EARTHWORK QUANTITIES DO NOT TAKE INTO CONSIDERATION EXCAVATION, REMOVAL AND DISPOSAL OF MATERIAL DEEMED UNSUITABLE BY A GEOTECHNICAL ENGINEER. THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR EXCAVATION, REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL AND FOR REPLACING IT WITH SUITABLE MATERIAL.

olsson

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STATE OF MISSOURI
NICHOLAS D. HEISER
D. HEISER
08/28/2020
NUMBER
PE-2015000555
PROFESSIONAL ENGINEER

NICHOLAS D. HEISER, P.E.
MO# 2015000555

NO. REV.		DATE	REVISIONS DESCRIPTION
1		2020.07.22	REVISIONS PER CITY COMMENTS
2		2020.08.27	REVISED GRADING PER CITY COMMENTS

GRADING PLAN
SITE GRADING & SITE DISTURBANCE PLANS

ARIA APARTMENTS
PHASE 1

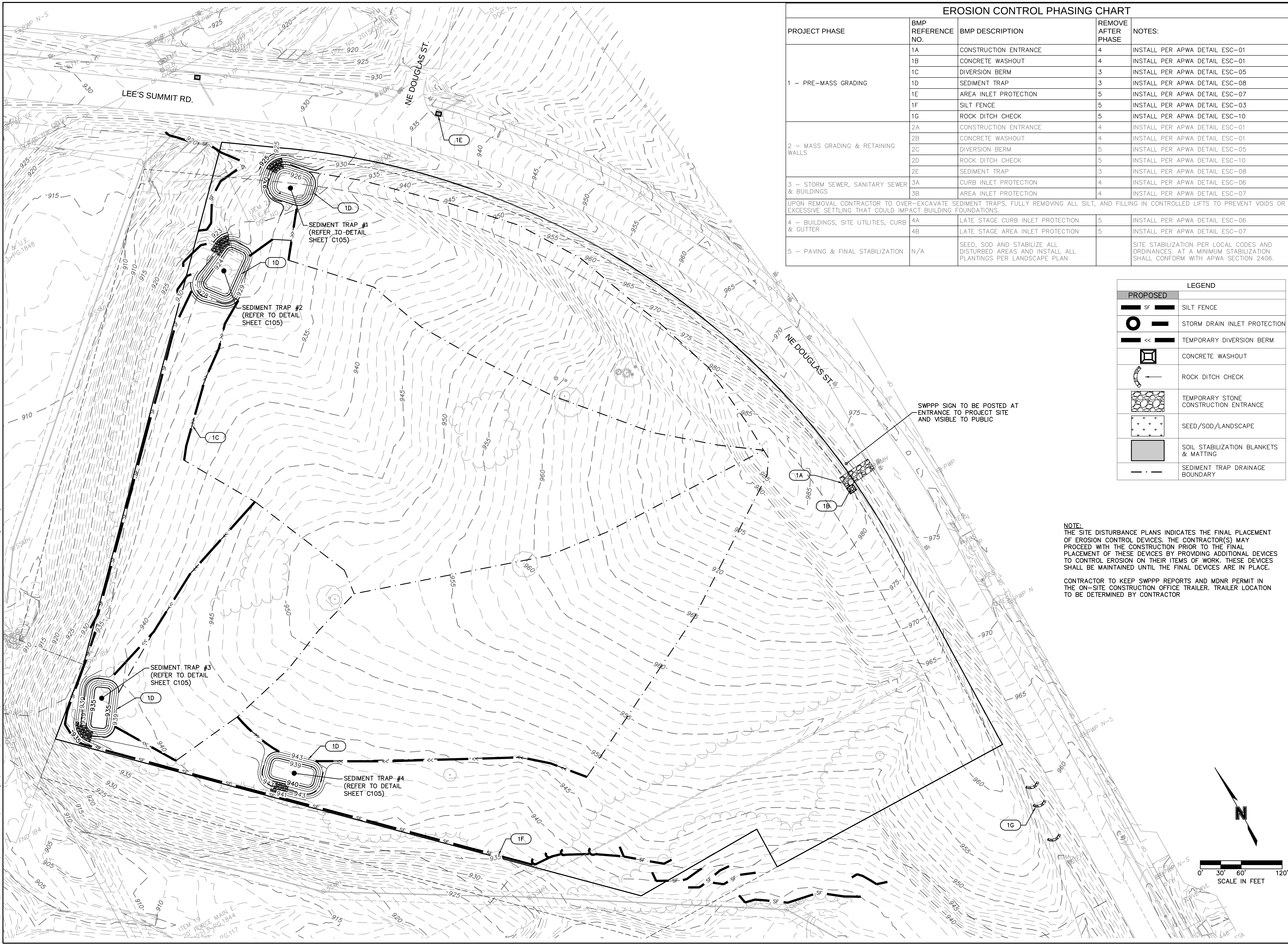
LEE'S SUMMIT, MO

2020

drawn by: M.J.D.
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.06.12

SHEET
C103

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erosion control plan - phase 1
site grading & site disturbance plans

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

NO. REV. 1

DATE 2020.07.22

REVISIONS DESCRIPTION

REVISIONS PER CITY COMMENTS

BY

NICHOLAS D. HEISER, P.E.
MO# 2015000555

REVISIONS

drawn by: M.J.D.
checked by: N.D.H.
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QA/QC by: N.D.H.
project no.: 019-0012-B
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SHEET
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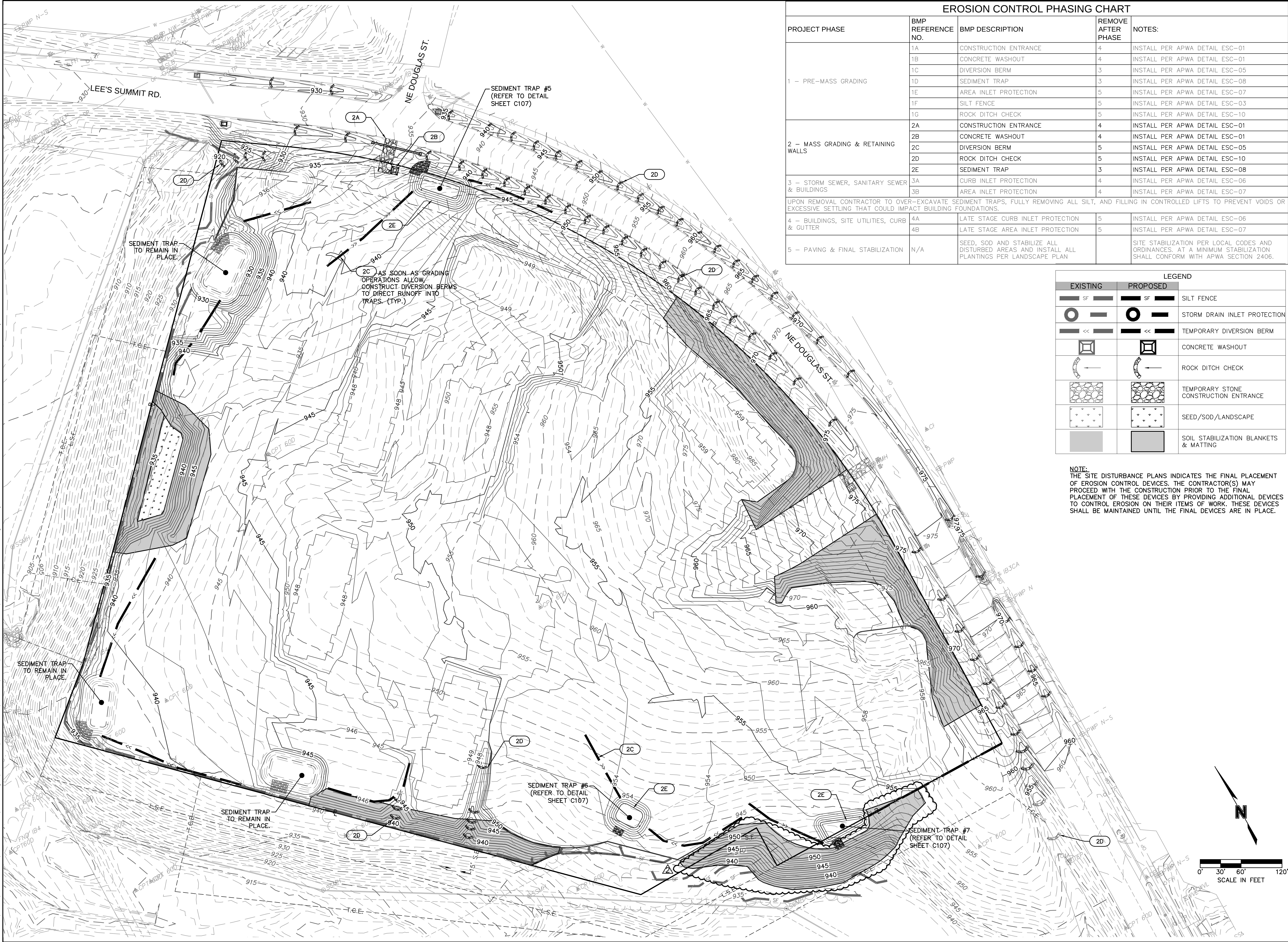
olsson

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STATE OF MISSOURI
NICHOLAS D. HEISER
D. HEISER
08/28/2020
NUMBER
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PROFESSIONAL ENGINEER

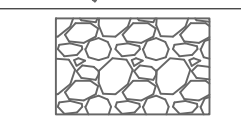
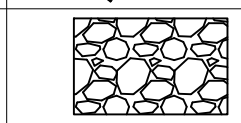


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EROSION CONTROL PHASING CHART

PROJECT PHASE	BMP REFERENCE NO.	BMP DESCRIPTION	REMOVE AFTER PHASE	NOTES:
1 - PRE-MASS GRADING	1A	CONSTRUCTION ENTRANCE	4	INSTALL PER APWA DETAIL ESC-01
	1B	CONCRETE WASHOUT	4	INSTALL PER APWA DETAIL ESC-01
	1C	DIVERSION BERM	3	INSTALL PER APWA DETAIL ESC-05
	1D	SEDIMENT TRAP	3	INSTALL PER APWA DETAIL ESC-08
	1E	AREA INLET PROTECTION	5	INSTALL PER APWA DETAIL ESC-07
	1F	SILT FENCE	5	INSTALL PER APWA DETAIL ESC-03
	1G	ROCK DITCH CHECK	5	INSTALL PER APWA DETAIL ESC-10
2 - MASS GRADING & RETAINING WALLS	2A	CONSTRUCTION ENTRANCE	4	INSTALL PER APWA DETAIL ESC-01
	2B	CONCRETE WASHOUT	4	INSTALL PER APWA DETAIL ESC-01
	2C	DIVERSION BERM	5	INSTALL PER APWA DETAIL ESC-05
	2D	ROCK DITCH CHECK	5	INSTALL PER APWA DETAIL ESC-10
	2E	SEDIMENT TRAP	3	INSTALL PER APWA DETAIL ESC-08
3 - STORM SEWER, SANITARY SEWER & BUILDINGS	3A	CURB INLET PROTECTION	4	INSTALL PER APWA DETAIL ESC-06
	3B	AREA INLET PROTECTION	4	INSTALL PER APWA DETAIL ESC-07
UPON REMOVAL CONTRACTOR TO OVER-EXCAVATE SEDIMENT TRAPS, FULLY REMOVING ALL SILT, AND FILLING IN CONTROLLED LIFTS TO PREVENT VOIDS OR EXCESSIVE SETTLING THAT COULD IMPACT BUILDING FOUNDATIONS.				
4 - BUILDINGS, SITE UTILITIES, CURB & GUTTER	4A	LATE STAGE CURB INLET PROTECTION	5	INSTALL PER APWA DETAIL ESC-06
	4B	LATE STAGE AREA INLET PROTECTION	5	INSTALL PER APWA DETAIL ESC-07
5 - PAVING & FINAL STABILIZATION	N/A	SEED, SOD AND STABILIZE ALL DISTURBED AREAS AND INSTALL ALL PLANTINGS PER LANDSCAPE PLAN		SITE STABILIZATION PER LOCAL CODES AND ORDINANCES. AT A MINIMUM STABILIZATION SHALL CONFORM WITH APWA SECTION 2406.

LEGEND		
EXISTING	PROPOSED	
 SF	 SF	SILT FENCE
		STORM DRAIN INLET PROTECTION
		TEMPORARY DIVERSION BERM
		CONCRETE WASHOUT
		ROCK DITCH CHECK
		TEMPORARY STONE CONSTRUCTION ENTRANCE
		SEED/SOD/LANDSCAPE
		SOIL STABILIZATION BLANKETS & MATTING

NOTE:
THE SITE DISTURBANCE PLANS INDICATES THE FINAL PLACEMENT OF EROSION CONTROL DEVICES. THE CONTRACTOR(S) MAY PROCEED WITH THE CONSTRUCTION PRIOR TO THE FINAL PLACEMENT OF THESE DEVICES BY PROVIDING ADDITIONAL DEVICES TO CONTROL EROSION ON THEIR ITEMS OF WORK. THESE DEVICES SHALL BE MAINTAINED UNTIL THE FINAL DEVICES ARE IN PLACE.

erosion control plan - PHASE 2
SITE GRADING & SITE DISTURBANCE PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

NO. REV.

DATE

REVISIONS DESCRIPTION

1 2020.07.22 REVISIONS PER CITY COMMENTS

2 2020.08.27 REVISED GRADING PER CITY COMMENTS

drawn by: M.J.D.

checked by: N.D.H.

designed by: M.J.D.

QA/QC by: N.D.H.

project no.: 019-0012-B

date: 2020.06.12

SHEET
C106

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STATE OF MISSOURI
NICHOLAS D. HEISER
08/28/2020
NUMBER
PE-2015000555
PROFESSIONAL ENGINEER

NICHOLAS D. HEISER, P.E.
MO# 2015000555

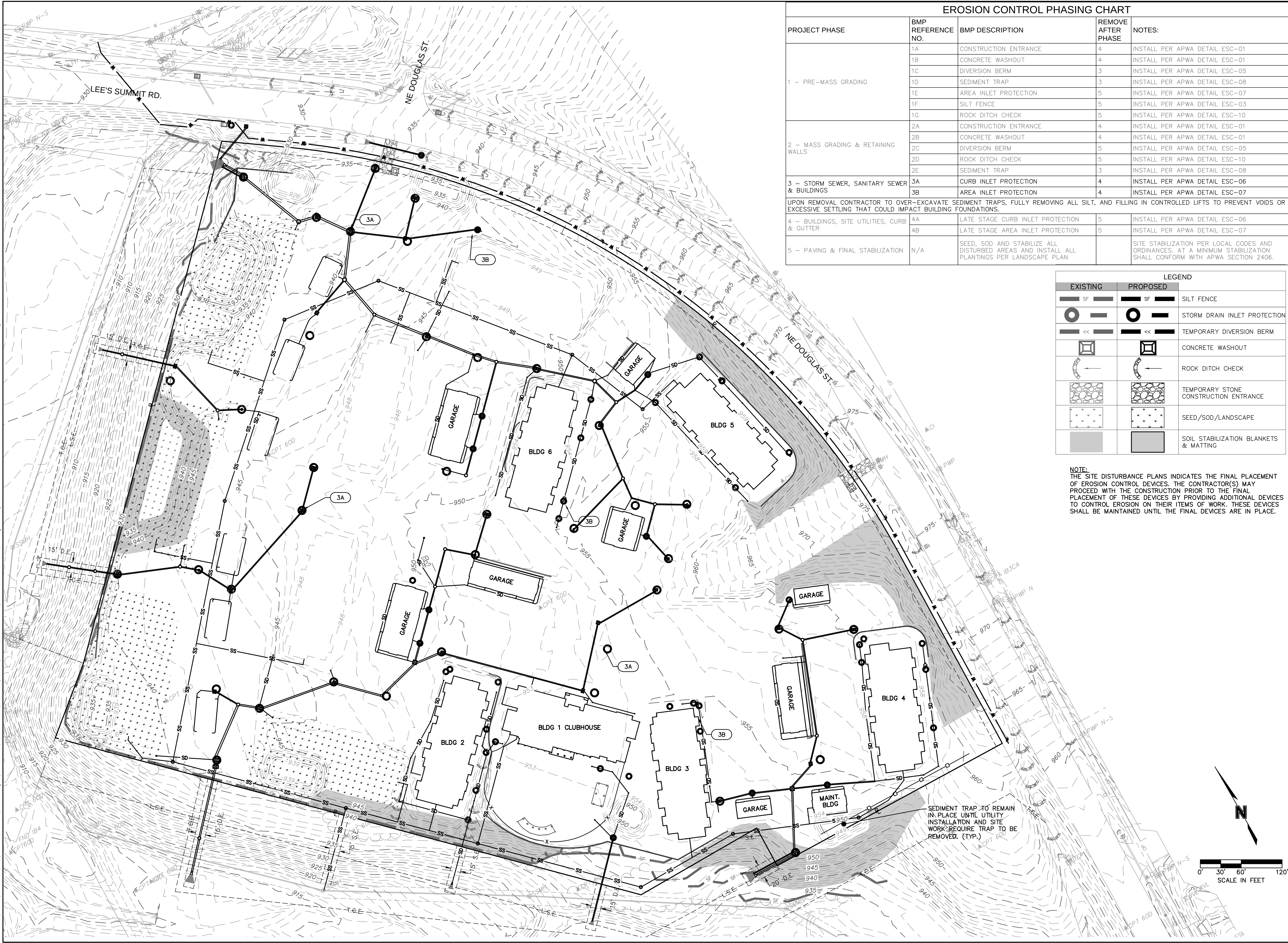
BY

REVISIONS

2020

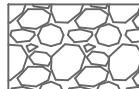
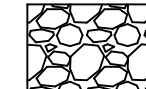
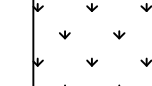
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EROSION CONTROL PHASING CHART

PROJECT PHASE	BMP REFERENCE NO.	BMP DESCRIPTION	REMOVE AFTER PHASE	NOTES:
1 - PRE-MASS GRADING	1A	CONSTRUCTION ENTRANCE	4	INSTALL PER APWA DETAIL ESC-01
	1B	CONCRETE WASHOUT	4	INSTALL PER APWA DETAIL ESC-01
	1C	DIVERSION BERM	3	INSTALL PER APWA DETAIL ESC-05
	1D	SEDIMENT TRAP	3	INSTALL PER APWA DETAIL ESC-08
	1E	AREA INLET PROTECTION	5	INSTALL PER APWA DETAIL ESC-07
	1F	SILT FENCE	5	INSTALL PER APWA DETAIL ESC-03
	1G	ROCK DITCH CHECK	5	INSTALL PER APWA DETAIL ESC-10
2 - MASS GRADING & RETAINING WALLS	2A	CONSTRUCTION ENTRANCE	4	INSTALL PER APWA DETAIL ESC-01
	2B	CONCRETE WASHOUT	4	INSTALL PER APWA DETAIL ESC-01
	2C	DIVERSION BERM	5	INSTALL PER APWA DETAIL ESC-05
	2D	ROCK DITCH CHECK	5	INSTALL PER APWA DETAIL ESC-10
	2E	SEDIMENT TRAP	3	INSTALL PER APWA DETAIL ESC-08
3 - STORM SEWER, SANITARY SEWER & BUILDINGS	3A	CURB INLET PROTECTION	4	INSTALL PER APWA DETAIL ESC-06
	3B	AREA INLET PROTECTION	4	INSTALL PER APWA DETAIL ESC-07
UPON REMOVAL CONTRACTOR TO OVER-EXCAVATE SEDIMENT TRAPS, FULLY REMOVING ALL SILT, AND FILLING IN CONTROLLED LIFTS TO PREVENT VOIDS OR EXCESSIVE SETTLING THAT COULD IMPACT BUILDING FOUNDATIONS.				
4 - BUILDINGS, SITE UTILITIES, CURB & GUTTER	4A	LATE STAGE CURB INLET PROTECTION	5	INSTALL PER APWA DETAIL ESC-06
	4B	LATE STAGE AREA INLET PROTECTION	5	INSTALL PER APWA DETAIL ESC-07
5 - PAVING & FINAL STABILIZATION	N/A	SEED, SOD AND STABILIZE ALL DISTURBED AREAS AND INSTALL ALL PLANTINGS PER LANDSCAPE PLAN		SITE STABILIZATION PER LOCAL CODES AND ORDINANCES. AT A MINIMUM STABILIZATION SHALL CONFORM WITH APWA SECTION 2406.

LEGEND		
EXISTING	PROPOSED	
		SILT FENCE
		STORM DRAIN INLET PROTECTION
		TEMPORARY DIVERSION BERM
		CONCRETE WASHOUT
		ROCK DITCH CHECK
		TEMPORARY STONE CONSTRUCTION ENTRANCE
		SEED/SOD/LANDSCAPE
		SOIL STABILIZATION BLANKETS & MATTING

NOTE:
THE SITE DISTURBANCE PLANS INDICATES THE FINAL PLACEMENT OF EROSION CONTROL DEVICES. THE CONTRACTOR(S) MAY PROCEED WITH THE CONSTRUCTION PRIOR TO THE FINAL PLACEMENT OF THESE DEVICES BY PROVIDING ADDITIONAL DEVICES TO CONTROL EROSION ON THEIR ITEMS OF WORK. THESE DEVICES SHALL BE MAINTAINED UNTIL THE FINAL DEVICES ARE IN PLACE.

erosion control plan - phase 3
site grading & site disturbance plans

aria apartments
phase 1

lee's summit, mo

drawn by: M.J.D.
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.06.12

SHEET
C108

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NO. REV.

DATE

REVISIONS DESCRIPTION

REVISIONS PER CITY COMMENTS

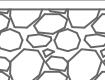
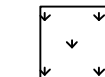
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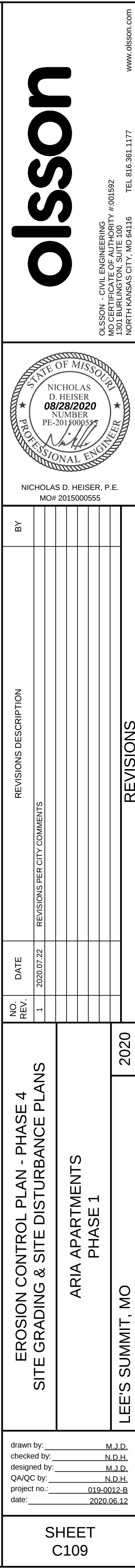
BY

REVISIONS

2020

LEGEND		
EXISTING	PROPOSED	
		SILT FENCE
		STORM DRAIN INLET PROTECTION
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NOTE:
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GENERAL NOTES:

SEED & MULCH NOTES:
SEEDING SHALL BE DONE BEFORE THE PROPOSED SEEDBED BECOMES ERODED, CRUSTED OVER, OR DRIED OUT AND SHALL NOT BE DONE WHEN THE GROUND IS FROZEN, OR COVERED WITH SNOW. THE SEED SHALL COMPLY WITH THE REQUIREMENTS OF THE MISSOURI SEED LAW AND THE FEDERAL SEED ACT. ALSO, IT SHALL CONTAIN NO SEED OF ANY PLANT ON THE FEDERAL NOXIOUS WEED LIST. OTHER WEED SEED SHALL NOT EXCEED ONE PERCENT BY WEIGHT OF MIX.

SEED & FERTILIZER RATE:
MIX I - RYE GRASS / BLUE GRASS -----100 LBS. PER. ACRE
MIX II - TALL FESCUE / BLUE GRASS -----195 LBS. PER ACRE
LIME -----2000 LBS. PER ACRE (50 LBS. PER 1000 SQ. FT.)
FERTILIZER -----800 TO 1200 LBS. PER ACRE (25 LBS. PER 1000 SQ. FT.)

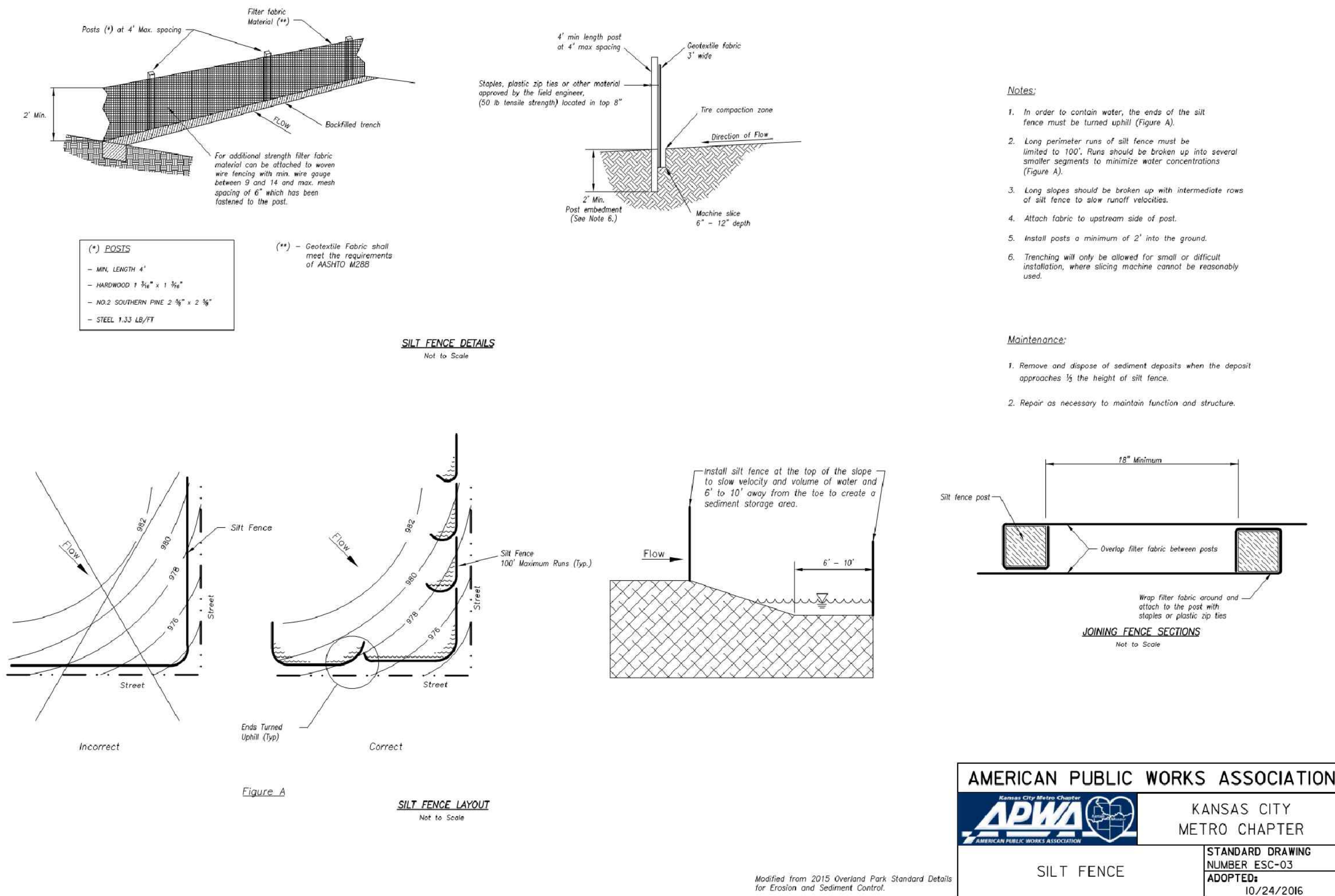
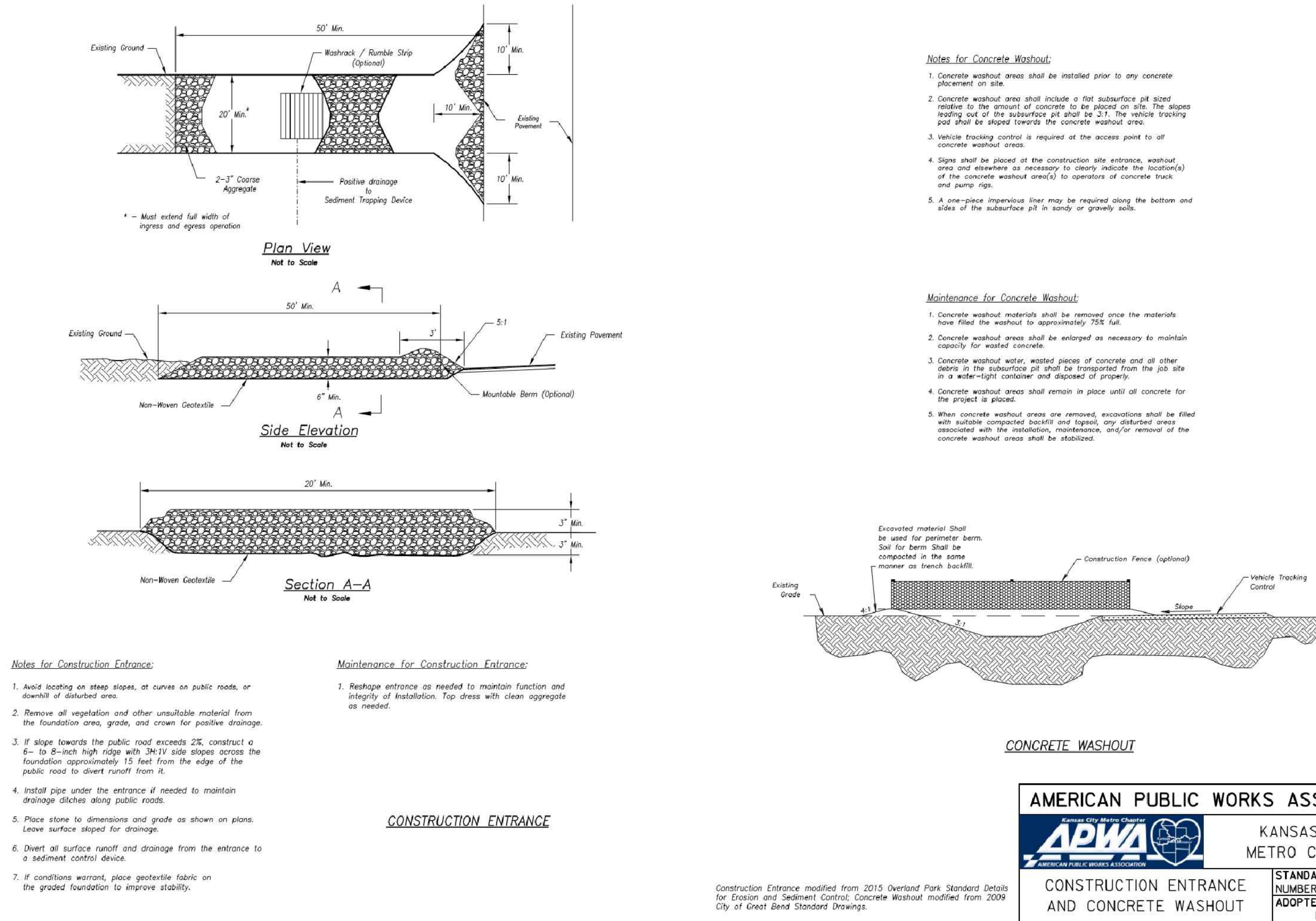
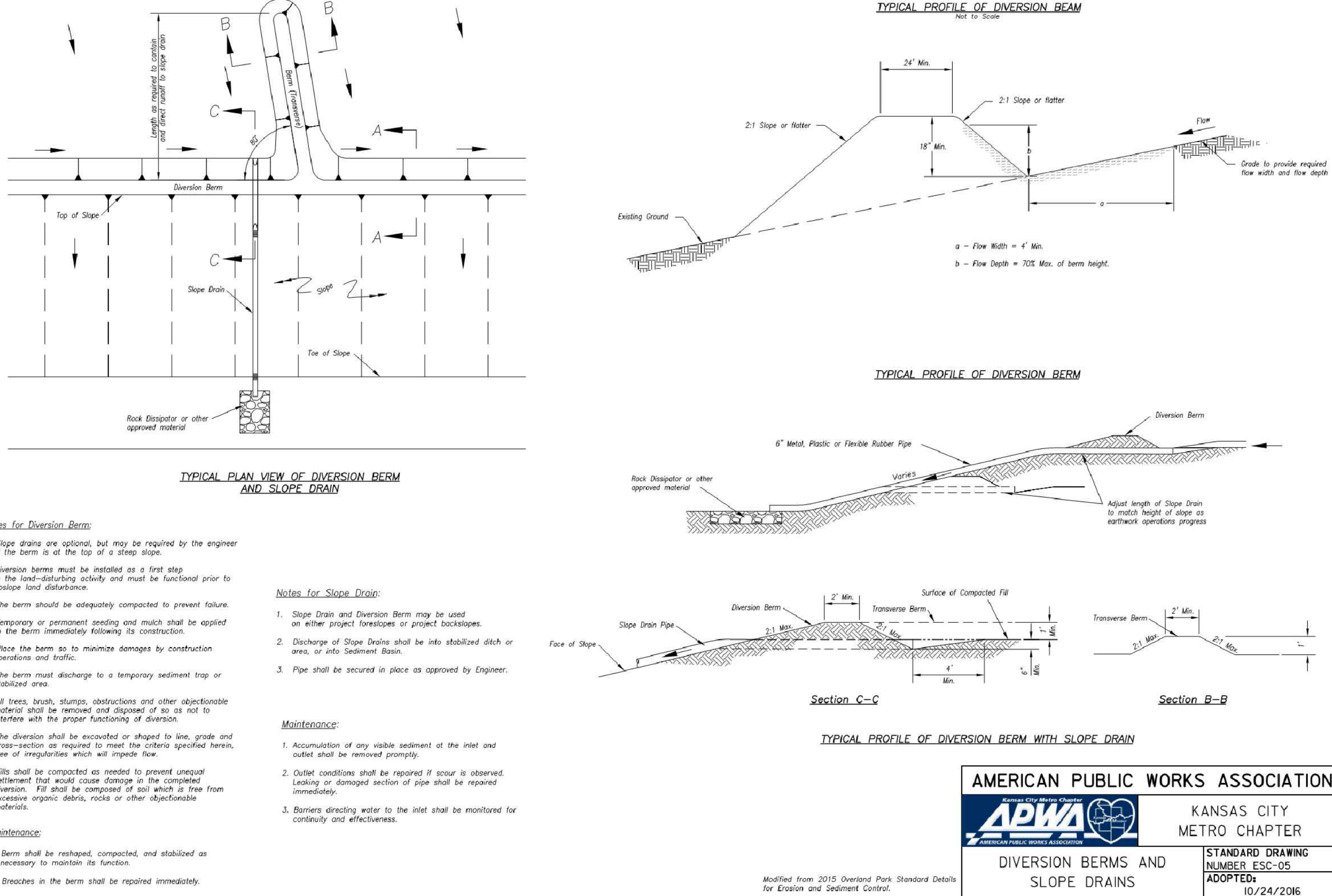
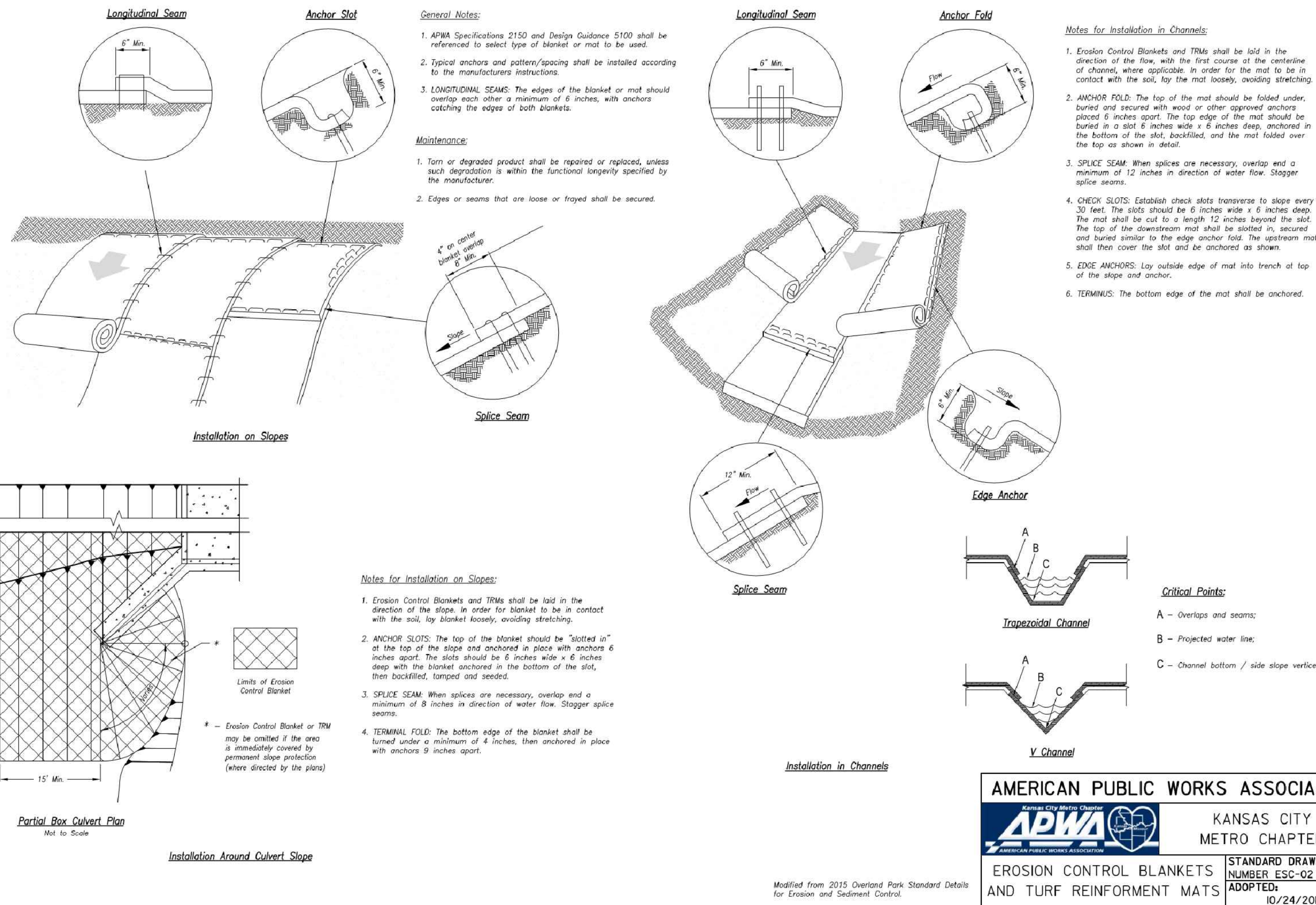
DURING THE DATES DECEMBER 15TH THROUGH MAY 31 ALL LIME, FERTILIZER, SEED, AND MULCH SHALL BE APPLIED TO FINISHED SLOPES OF DISTURBED AREAS. DURING THE MONTHS OF JUNE, JULY, OCTOBER, AND NOVEMBER 1ST THROUGH DECEMBER 15TH, LIME, FERTILIZER, SEED, AND MULCH SHALL BE APPLIED AT THE FOLLOWING RATES:

LIME - 100 % OF SPECIFIED QUANTITY
FERTILIZER - 75 % OF THE SPECIFIED QUANTITY
SEED - 50 % OF THE SPECIFIED QUANTITY
MULCH - 100 % OF THE SPECIFIED QUANTITY

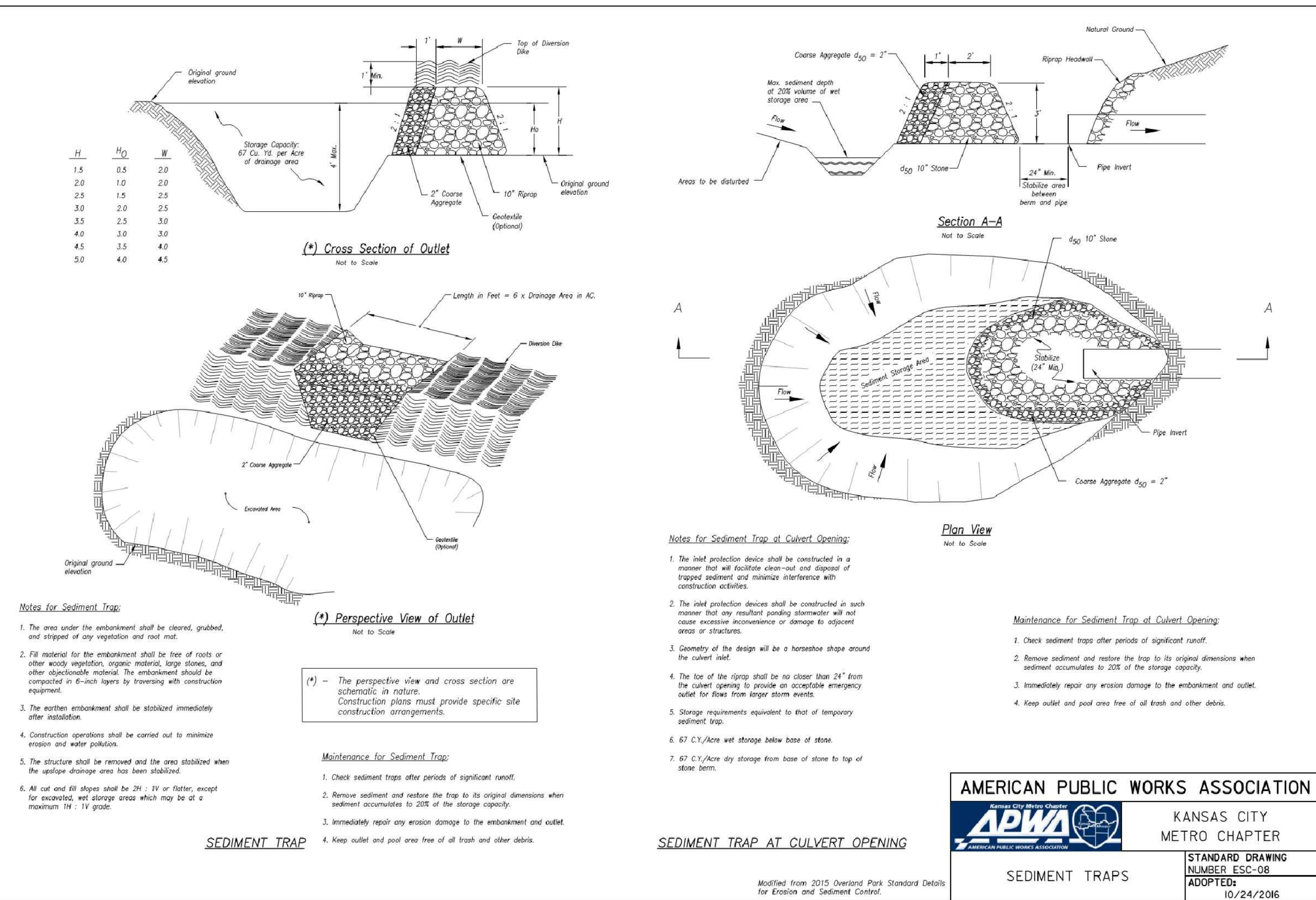
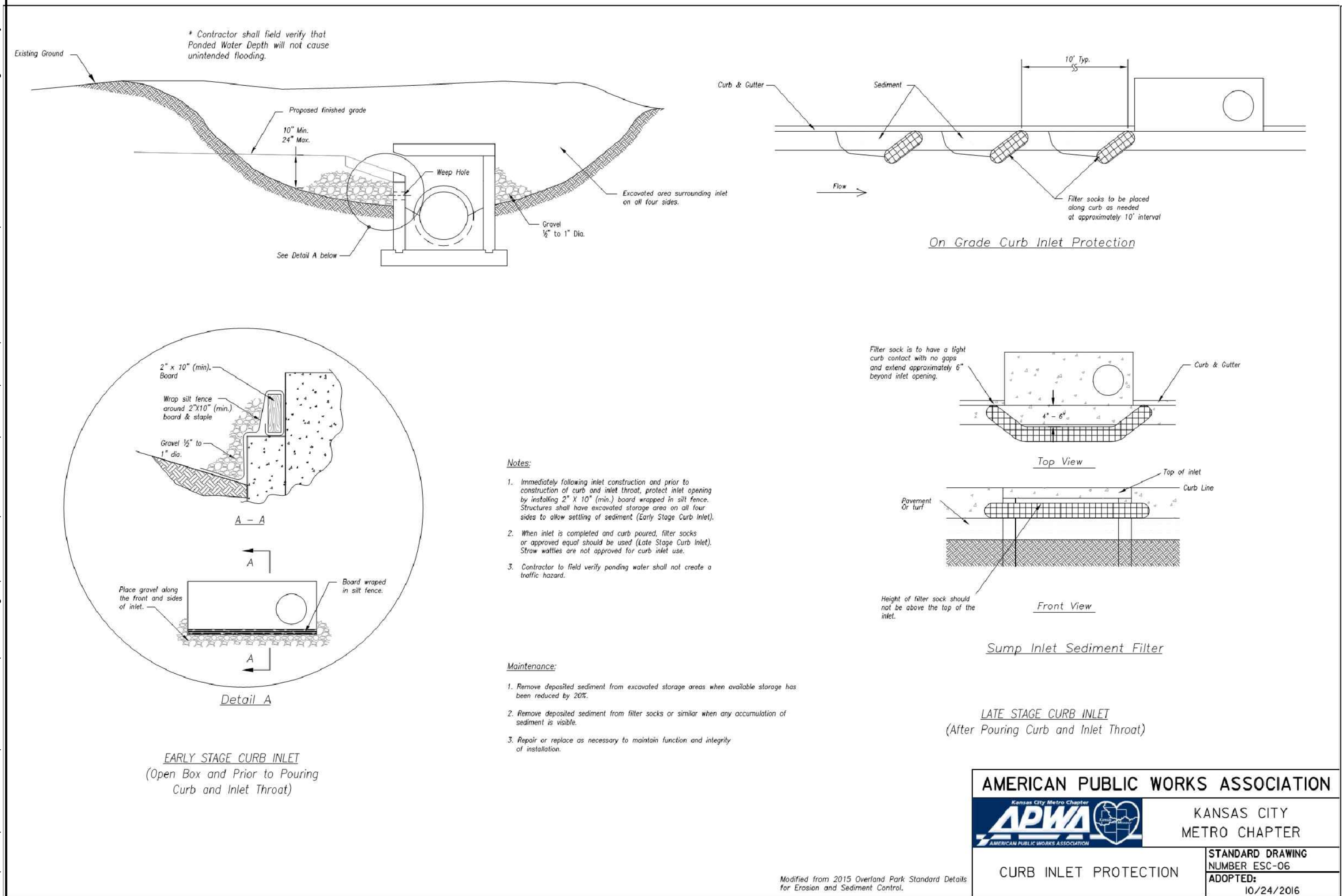
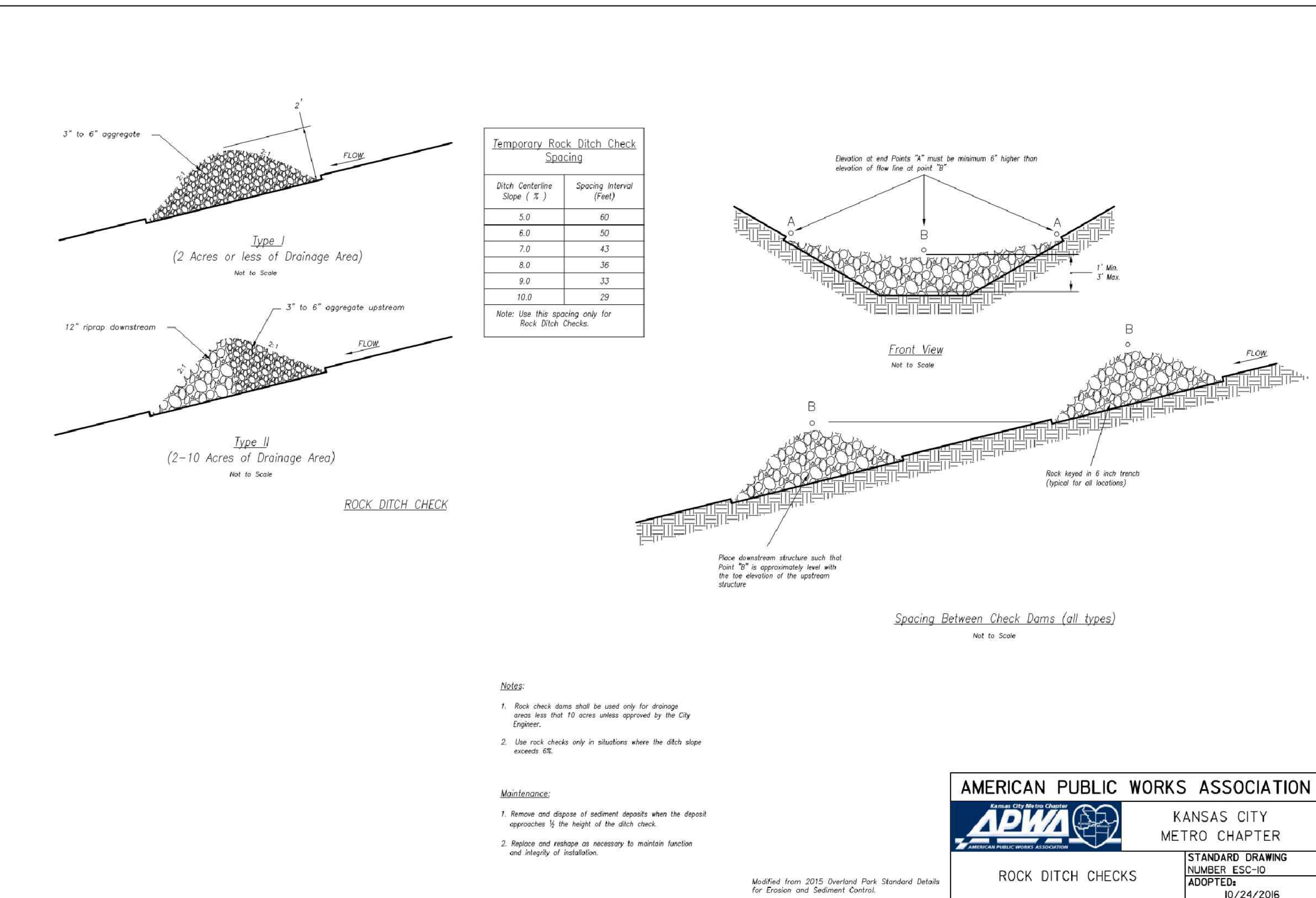
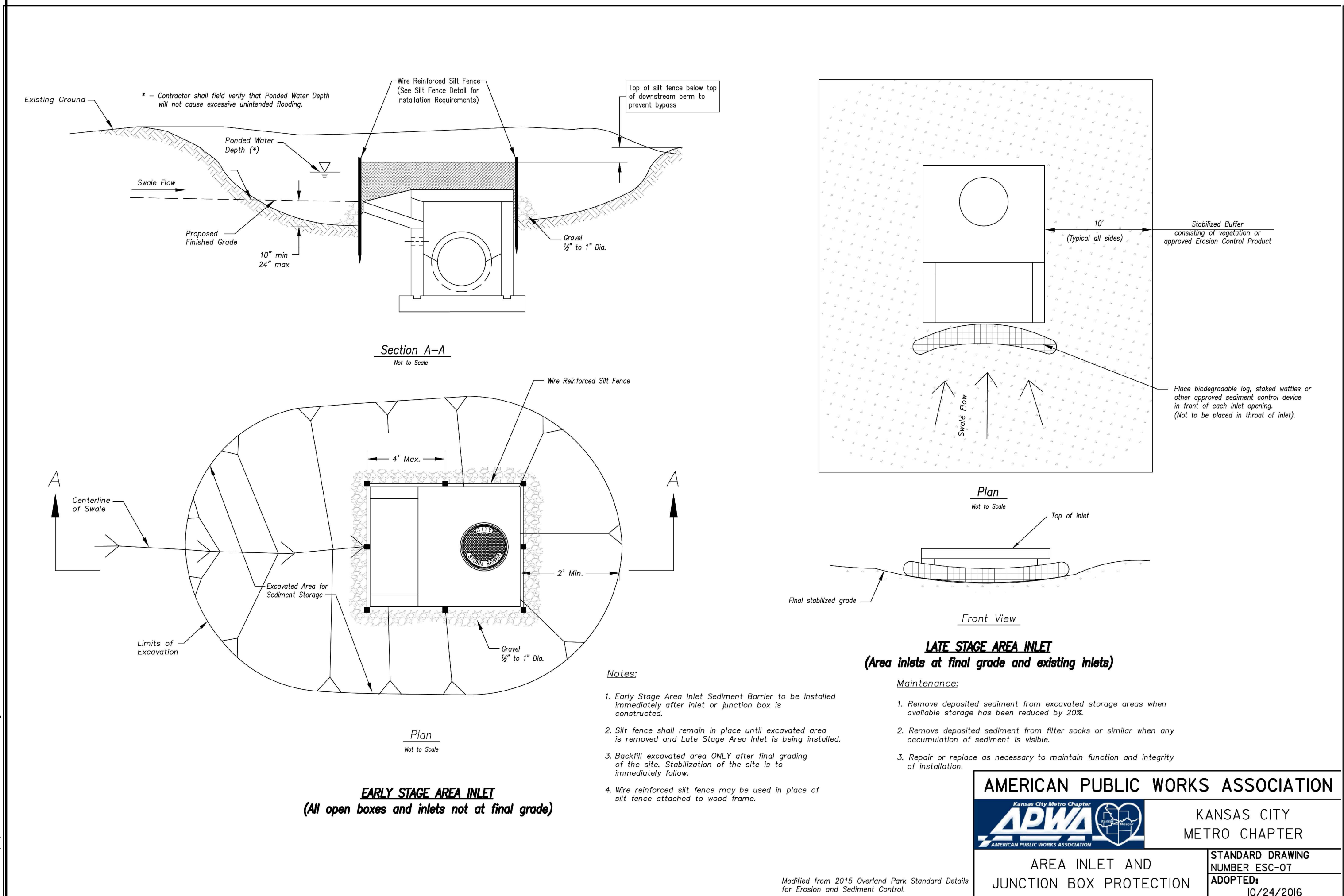
MULCH SHALL BE VEGETATIVE TYPE, CEREAL STRAW FROM STALKS OF OATS, RYE, OR BARLEY, OR APPROVED EQUAL. MULCH SHALL BE FREE OF PROHIBITED WEED SEED AND RELATIVELY FREE OF ALL OTHER SEEDS AND UNDESIRABLE MATERIALS. MULCH SHALL BE APPLIED AT THE RATE OF THIS PER ACRE (70 TO 90 LBS. PER 1,000 SQ. FT.). MULCH SHALL BE EMBEDDED BY A MULCH ANCHORING TOOL OR DISK TYPE ROLLER HAVING FLAT SERRATED DISKS SPACED NOT MORE THAN 10 INCHES APART AND CLEANING SCRAPERS SHALL BE PROVIDED.

THE SITE DISTURBANCE PLANS INDICATES THE FINAL PLACEMENT OF EROSION CONTROL DEVICES. THE CONTRACTOR(S) MAY PROCEED WITH THE CONSTRUCTION PRIOR TO THE FINAL PLACEMENT OF THESE DEVICES BY PROVIDING ADDITIONAL DEVICES TO CONTROL EROSION ON THEIR ITEMS OF WORK. THESE DEVICES SHALL BE MAINTAINED UNTIL THE FINAL DEVICES ARE IN PLACE.

LEGEND		
EXISTING	PROPOSED	
 SF	 SF	SILT FENCE
 	 	STORM DRAIN INLET PROTECTION
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		CONCRETE WASHOUT
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		TEMPORARY STONE CONSTRUCTION ENTRANCE
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		SOIL STABILIZATION BLANKETS & MATTING



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BY

NO. REV.

DATE

REVISIONS DESCRIPTION

REVISIONS PER CITY COMMENTS

1

2020.07.22

DETAIL SHEET
SITE GRADING & SITE DISTURBANCE PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

drawn by: M.J.D.
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.06.12

SHEET
C112

Aria Lee's Summit Retaining Walls

Lee's Summit, Jackson County, Missouri

1. MATERIALS

A. BACKFILL SOILS

- a. REINFORCED STRUCTURAL BACKFILL MATERIALS SHALL BE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE AND SHALL MEET THE STRENGTH REQUIREMENTS AS DEFINED IN SECTION 5.0. THE REINFORCED BACKFILL MATERIAL SHALL BE:
MODOT TYPE 1, TYPE 5, OR 1" CLEAN.

- b. FURTHERMORE, REINFORCED BACKFILL AND RETAINED SOIL/FILL MATERIALS SHALL BE FREE OF EXCESS MOISTURE, ROOTS, MUCK, SOD, SNOW, FROZEN LUMPS, ORGANIC MATTER OR OTHER DELETERIOUS MATERIALS. ALL ROCK PARTICLES AND HARD EARTH CLODS SHALL BE LESS THAN THREE INCHES IN THE LONGEST DIMENSION. REINFORCED BACKFILL MATERIALS WHICH DO NOT MEET THIS CRITERION SHALL BE CONSIDERED UNSUITABLE AND SHALL BE REMOVED.

- c. DRAINAGE FILL BEHIND BASKET FACE SHALL CONSIST OF CLEAN CRUSHED STONE OR CRUSHED GRAVEL (1" CLEAN).

- B. GEOGRID REINFORCING SHALL BE SYNTEN GEOGRIDS AS SHOWN OR APPROVED EQUAL

2. TECHNICAL REQUIREMENTS

- A. PRIOR TO CONSTRUCTION OF THE WALLS, THE GRADING CONTRACTOR SHALL CLEAR AND GRUB THE REINFORCED BACKFILL ZONE AREA, REMOVING TOP SOILS, BRUSH, SOD OR OTHER ORGANIC MATERIALS. ANY UNSUITABLE SOILS SHALL BE OVER-EXCAVATED, REPLACED AND COMPACTED WITH REINFORCED BACKFILL MATERIAL TO PROTECT SPECIFICATIONS OR OTHERWISE DIRECTED BY THE OWNER'S GEOTECHNICAL ENGINEER.

- B. THE GEOTECHNICAL ENGINEER SHALL CONFIRM THAT THE SITE HAS BEEN PROPERLY PREPARED AND THE DESIGN PARAMETERS IN SECTION 5 ARE APPROPRIATE PRIOR TO FILL PLACEMENT. A WRITTEN CONFIRMATION SHALL BE PROVIDED TO CROCKETT ENGINEERING PRIOR TO FILL PLACEMENT.

- C. FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 10 INCHES IN UNCOMPACTED THICKNESS FOR HEAVY COMPACTION EQUIPMENT. FOR ZONES WHERE COMPACTION IS ACCOMPLISHED WITH HAND OPERATED EQUIPMENT, FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 6 INCHES IN UNCOMPACTED THICKNESS. ONLY HAND-OPERATED EQUIPMENT SHALL BE ALLOWED WITHIN THREE FEET OF THE BACK FACE WALL.

- D. FILL MATERIALS SHALL BE PLACED FROM THE BACK OF THE FACING UNITS TOWARDS THE ENDS OF THE GEOGRID TO ENSURE FURTHER TENSIONING.

- E. FILL SHALL BE COMPACTED AS SPECIFIED BY PROJECT SPECIFICATIONS OR TO A MINIMUM 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D-698.

- F. TESTING METHODS, FREQUENCY, VERIFICATION OF MATERIAL SPECIFICATIONS, AND COMPACTION SHALL BE THE RESPONSIBILITY OF THE OWNER'S GEOTECHNICAL ENGINEER. A COPY OF THE REPORT SHALL BE PROVIDED TO CROCKETT ENGINEERING.

- G. CAP UNITS SHALL BE PERMANENTLY SECURED TO THE BLOCK UNITS USING AN OUTDOOR CONSTRUCTION ADHESIVE.

3. GEOGRID PLACEMENT

- A. GEOGRID SHALL BE PLACED AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE DRAWINGS. REINFORCED FILL ZONE LENGTH IS MEASURED FROM THE BACK FACE OF THE WALL UNITS, EXTENDING TO THE END OF THE GEOGRID.

- B. GEOGRID REINFORCEMENT SHALL BE CONTINUOUS THROUGHOUT THEIR EMBEDMENT LENGTH(S).

- C. PRIOR TO PLACING FILL, THE GEOGRID MATERIALS SHALL BE PLACED IN BETWEEN BLOCK COURSES, THE SLACK REMOVED AND ANCHORED.

- D. CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOGRID. A MINIMUM FILL THICKNESS OF SIX INCHES IS REQUIRED FOR OPERATION OF TRACKED VEHICLES OVER THE GEOGRID. TURNING OF TRACKED VEHICLES SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS FROM DISPLACING THE FILL AND/OR THE GEOGRID.

- E. GEOGRID SHALL BE ROLLED OUT WITH THE LONG AXIS OF THE APERTURES (MACHINE DIRECTION) PERPENDICULAR TO THE WALL FACE.

- F. A MINIMUM OF 3 INCHES OF FILL MATERIAL SHALL BE REQUIRED BETWEEN OVERLAPPING LAYERS OF GEOGRID AND FILTER FABRIC, UNLESS OTHERWISE SHOWN.

4. DRAINAGE

- A. AT THE END OF EACH WORK DAY, BACKFILL SURFACE SHALL BE COMPACTED WITH A SMOOTH PLATE COMPACTOR TO MINIMIZE PONDING OF WATER AND SATURATION OF THE BACKFILL.

- B. PERMANENT SURFACE WATER DIVERSION SHALL BE AS REQUIRED AND PROVIDED BY THE OWNER OR OWNER'S REPRESENTATIVE.

5. DESIGN PARAMETERS

- A. DESIGN OF THE REINFORCED SOIL STRUCTURE IS BASED ON THE FOLLOWING PARAMETERS BASED ON SITE EXPOSED ROCK ENTIRE WALL SURFACE:

	EFFECTIVE FRICTION ANGLE	EFFECTIVE COHESION	MOIST UNIT WT
REINFORCED FILL	34	0	125
RETAINED SOILS	23	0	120
FOUNDATION SOILS	23	0	120

MINIMUM BEARING CAPACITY 2,500 PSF

- B. DESIGN METHODOLOGY: NCMR GUIDELINES

C. FACTOR OF SAFETY:

INTERNAL STABILITY: STATIC

MINIMUM FACTOR OF SAFETY (FOS) FOR UNCERTAINTIES = 1.5

MINIMUM FOS FOR GEOGRID PULLOUT = 1.5

MINIMUM FOS FOR CONNECTION = 1.5

MINIMUM FOS FOR FACING STABILITY = 1.5

MINIMUM FOS FOR SLIDING AT LOWEST GEOGRID = 1.5

SOIL - GEOGRID INTERACTION COEFFICIENT = 0.8

PERCENT COVERAGE OF GEOGRID = 100%

D. EXTERNAL STABILITY

MINIMUM FACTOR OF SAFETY FOR OVERTURNING = 1.5

MINIMUM FACTOR OF SAFETY FOR SLIDING = 1.5

E. SURCHARGE LOADING

100 PSF SIDEWALKS/PARKING LOTS

6. SPECIAL PROVISIONS

- A. THE DESIGN PRESENTED HEREIN IS BASED ON SOIL PARAMETERS, FOUNDATION CONDITIONS, GROUNDWATER CONDITIONS, AND LOADINGS STATED IN SECTION 5.

- B. WALL ELEVATION VIEWS AND LOCATIONS AND GEOMETRY OF EXISTING STRUCTURES AND GRADE ABOVE AND BELOW WALLS MUST BE VERIFIED BY THE CONTRACTOR, TO MATCH ELEVATIONS SHOWN IN THE CONTRACT DOCUMENTS, PRIOR TO CONSTRUCTION.

- C. THE ENGINEER OF RECORD IS RESPONSIBLE FOR THE SEGMENTED RETAINING WALL & REINFORCED SOIL IN ITS FINAL CONDITION ONLY. GLOBAL STABILITY, BEARING CAPACITY, AND SETTLEMENT ANALYSIS IS THE RESPONSIBILITY OF THE OWNER'S GEOTECHNICAL ENGINEER. ANY CHANGES TO THE WALL REQUIRED BASED ON THE GEOTECHNICAL ANALYSIS SHOULD BE COORDINATED BY THE GEOTECHNICAL ENGINEER PRIOR TO WALL CONSTRUCTION.

- D. REFER TO BLOCK MANUFACTURE'S WRITTEN INSTALLATION INSTRUCTIONS FOR SEGMENTED RETAINING WALL INSTALLATION, SPECIFICALLY REGARDING CONNECTIONS FROM BLOCK TO BLOCK AND GEOGRID INSTALLATION.

- E. THE SOIL DESIGN PARAMETERS STATED IN SECTION 5.0 SHALL BE VERIFIED BY THE PROJECT GEOTECHNICAL ENGINEER. WRITTEN VERIFICATION OF DESIGN PARAMETERS SHALL BE SUBMITTED TO CROCKETT ENGINEERING AND PRIOR TO COMMENCING WITH CONSTRUCTION.

- F. ANY REVISIONS TO DESIGN PARAMETERS STATED IN SECTION 5.0 OR STRUCTURE GEOMETRY SHALL REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

7. GUARDRAIL SPEC

- A. SHALL BE 42" TALL ABOVE ADJACENT WALKING SURFACE.

- B. SHALL NOT HAVE OPENINGS LARGE ENOUGH TO PASS A 4" SPHERE.

- C. MAIN RAILS SHALL RESIST 50 POUND PER LINEAL FOOT LATERALLY AT THE TOP RAIL OR 200 POUNDS CONCENTRATED LOAD LATERALLY.

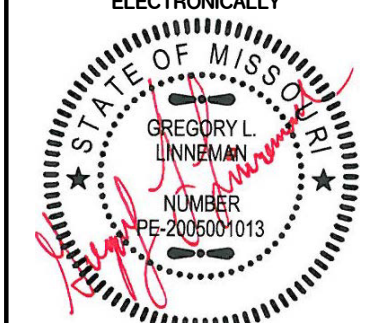
- D. INTERMEDIATE RAILS SHALL RESIST A CONCENTRATED LOAD OF 50 POUNDS LATERALLY.

INDEX OF SHEETS	
GENERAL DATA	RW1
PARTIAL SITE PLAN	RW2
RETAINING WALL PROFILE	RW3-RW9
DETAILS	RW10

REVISIONS:

No.	Date
PERMIT SET	12/20/2019

THIS SHEET HAS BEEN SIGNED,
SEALED AND DATED
ELECTRONICALLY



GREGORY L. LINNEMAN - PE
MO LICENSE - 2005001013

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www.crockettengineering.com
Crockett Engineering Consultants, LLC
Missouri Engineering Authority
200500101

CLIENT:
**CENTRAL STATES
CONSTRUCTION**
4215 PHILLIPS AVE. RD
COLUMBIA, MISSOURI

ARIA LEE'S SUMMIT APARTMENTS

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DRAWING INCLUDES:

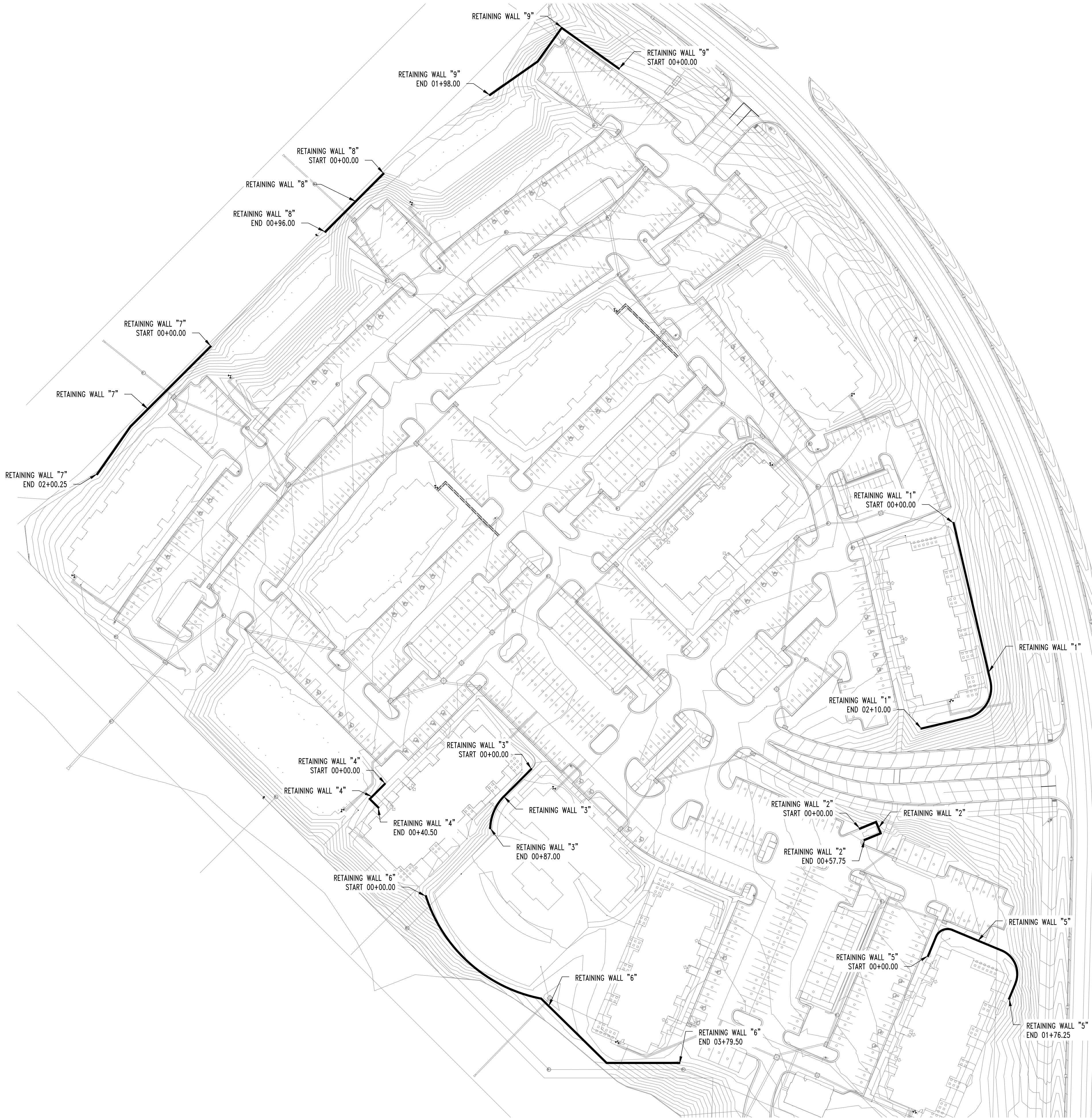
GENERAL STRUCTURAL DATA

DESIGNED: JWV

DRAWN: SEH

PROJECT NO.: 190299

SHEET:
RW1



1
RW2
RETAINING WALL PLAN
NOT TO SCALE
PLAN NORTH

REVISIONS:	
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PE
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MO LICENSE - 2005001013

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4215 PHILIPS FARM RD
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LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

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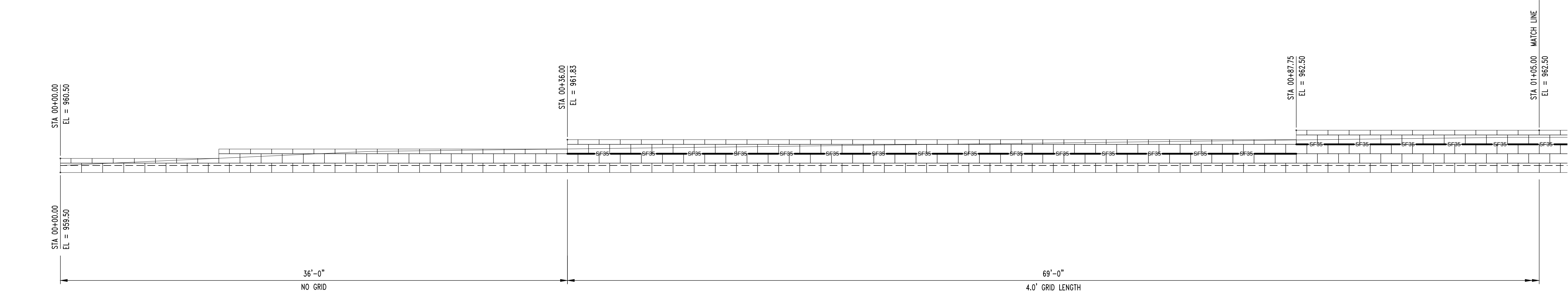
PARTIAL SITE
PLAN

DESIGNED: JWV

DRAWN: SEH

PROJECT NO.: 190299

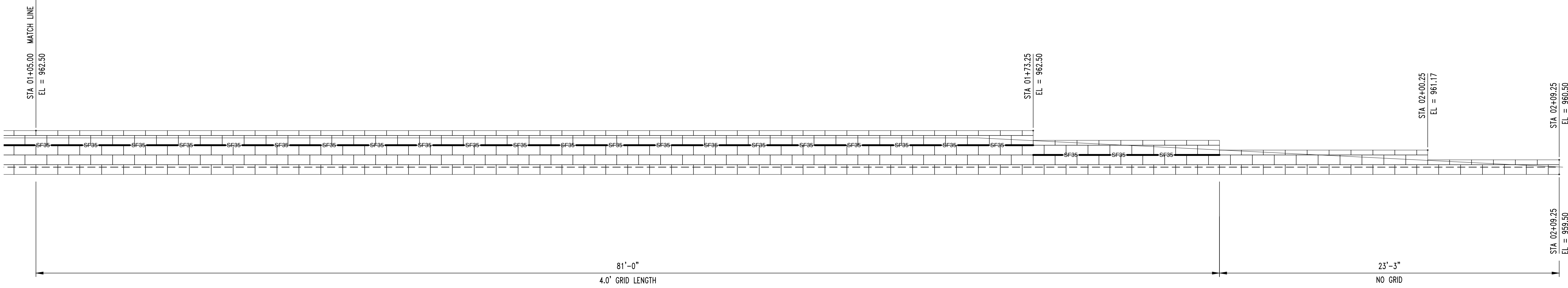
SHEET:
RW2



1
RW3

RETAINING WALL 1 (AREA 492 SQ. FT.)

SCALE: $\frac{1}{4}" = 1'-0"$



1
RW3

RETAINING WALL 1 (AREA 492 SQ. FT.)

SCALE: $\frac{1}{4}" = 1'-0"$

REVISIONS:

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STATE OF MISSOURI

GREGORY L LINNEMAN

PE

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DRAWING INCLUDES:

RETAINING WALL
PROFILE

DESIGNED: JWV

DRAWN: SEH

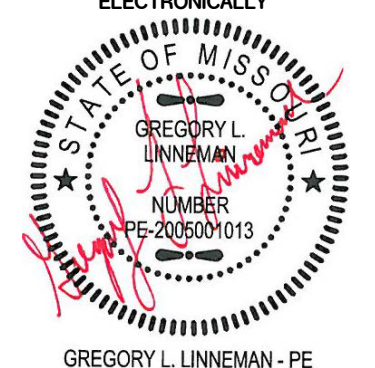
PROJECT NO.: 190299

SHEET: RW3

REVISIONS:

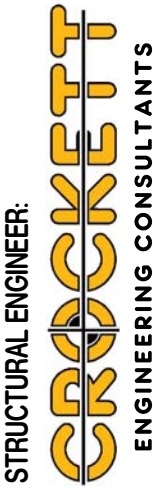
No.	Date
PERMIT SET	12/20/2019

THIS SHEET HAS BEEN SIGNED,
SEALED AND DATED
ELECTRONICALLY



GREGORY L LINNEMAN - PE
MO LICENSE - 2005001013

STRUCTURAL ENGINEER:



ENGINEERING CONSULTANTS
1000 W. N. Highway 44
Columbia, Missouri 65203
(314) 447-0292
www.crockettengineering.com
Crockett Engineering Consultants, LLC
Missouri Certificate No. 2005001013

CLIENT:

CENTRAL STATES
CONSTRUCTION
4215 PHILLIPS FARM RD
COLUMBIA, MISSOURI

ARIA LEE'S SUMMIT APARTMENTS

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DRAWING INCLUDES:

RETAINING WALL
PROFILE

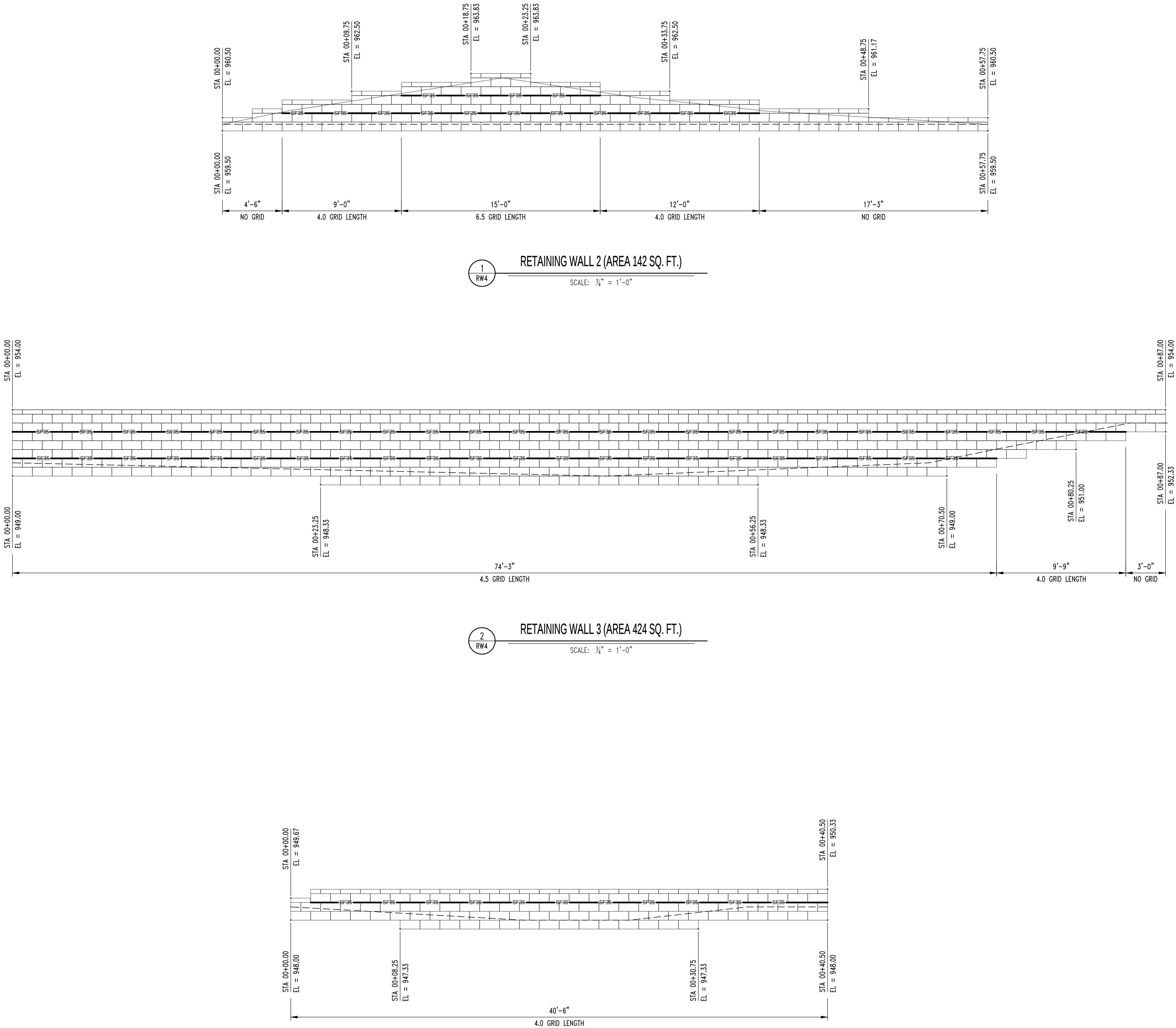
DESIGNED: JWV

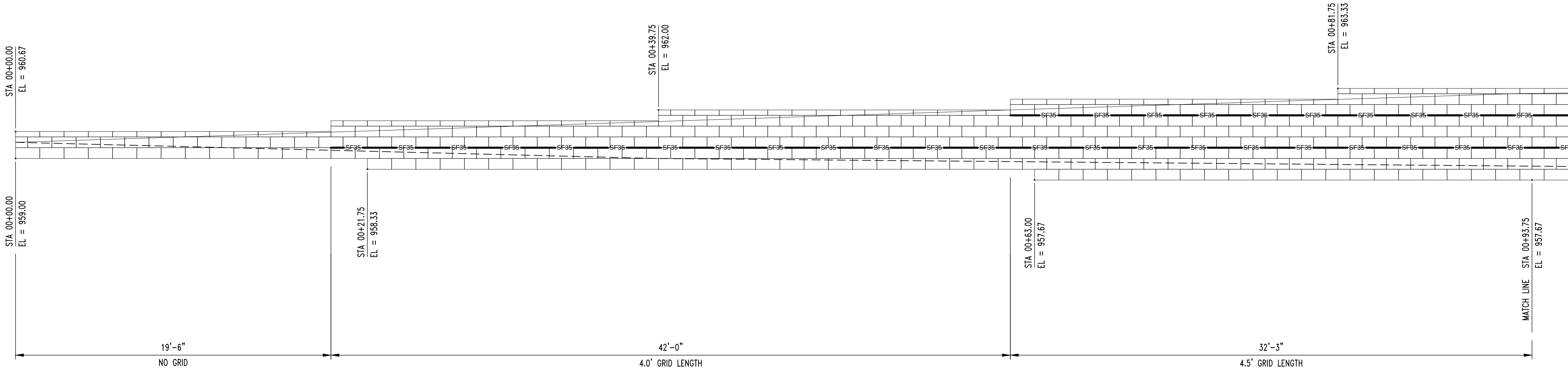
DRAWN: SEH

PROJECT NO.: 190299

SHEET:

RW4

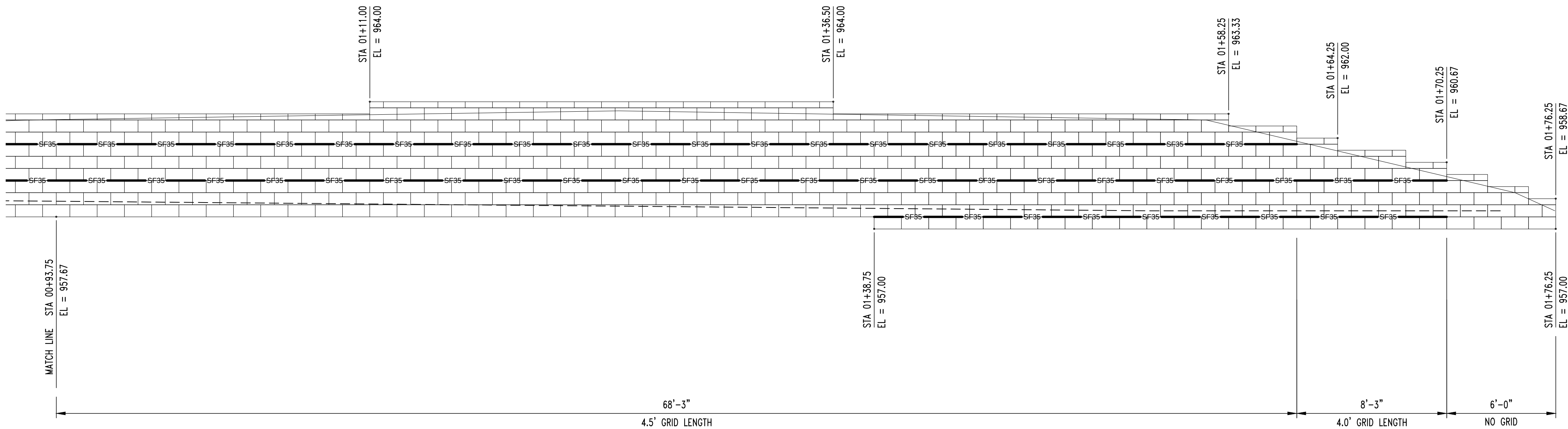




1
RWS

RETAINING WALL 5 (AREA 807 SQ. FT.)

SCALE: 1/4" = 1'-0"



1
RWS

RETAINING WALL 5 (AREA 807 SQ. FT.)

SCALE: 1/4" = 1'-0"

REVISIONS:	
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STATE OF MISSOURI

GREGORY L. LINNEMAN

NUMBER 2005001013

GREGORY L. LINNEMAN - PE
MO LICENSE - 2005001013

STRUCTURAL ENGINEER:

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ENGINEERS & ARCHITECTS

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CLIENT:

**CENTRAL STATES
CONSTRUCTION**

4215 PHILLIPS FARM RD
COLUMBIA, MISSOURI

ARIA LEE'S SUMMIT APARTMENTS

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DRAWING INCLUDES:

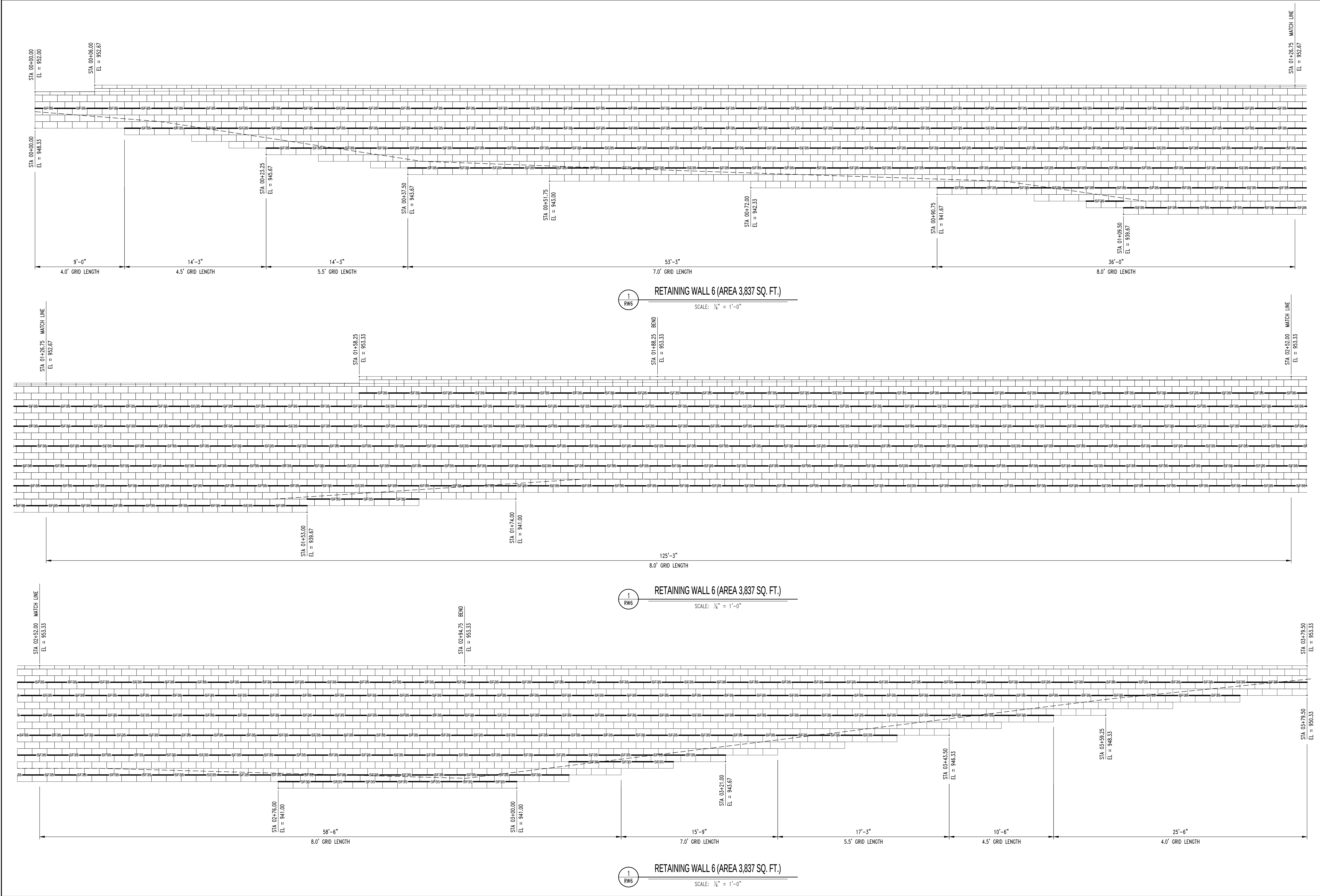
RETAINING WALL
PROFILE

DESIGNED: JWV

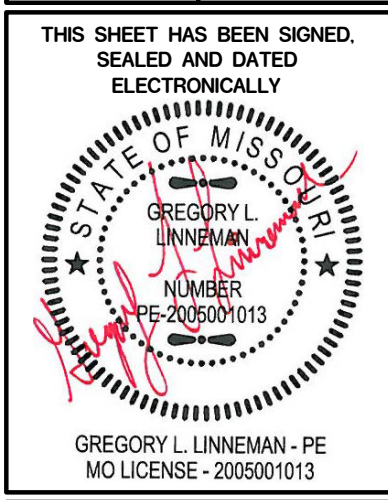
DRAWN: SEH

PROJECT NO.: 190299

SHEET: RW5



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No.	Date
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Missouri License 001013

CLIENT:
**CENTRAL STATES
CONSTRUCTION**
4215 PHILIPS FARM RD
COLUMBIA, MISSOURI

ARIA LEE'S SUMMIT APARTMENTS
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DRAWING INCLUDES:

RETAINING WALL
PROFILE

DESIGNED: JWV

DRAWN: SEH

PROJECT NO.: 190299

SHEET:
RW6

REVISIONS:

No.	Date
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STATE OF MISSOURI

GREGORY L LINNEMAN

NUMBER 2005001013

MISSOURI PROFESSIONAL ENGINEER

2005001013

GREGORY L LINNEMAN - PE
MO LICENSE - 2005001013

STRUCTURAL ENGINEER:

CROCKETT

ENGINEERING CONSULTANTS

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Crockett Engineering Consultants, LLC

Missouri Professional Engineer Authority

2005001013

CLIENT:

CENTRAL STATES CONSTRUCTION

4215 PHILLIPS FARM RD

COLUMBIA, MISSOURI

ARIA LEE'S SUMMIT APARTMENTS

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DRAWING INCLUDES:

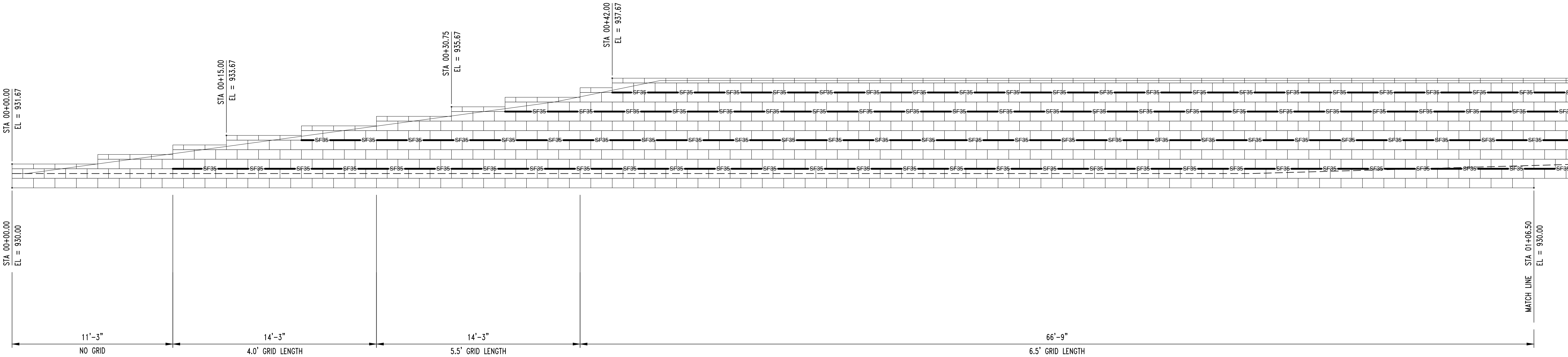
RETAINING WALL PROFILE

DESIGNED: JWW

DRAWN: SEH

PROJECT NO.: 190299

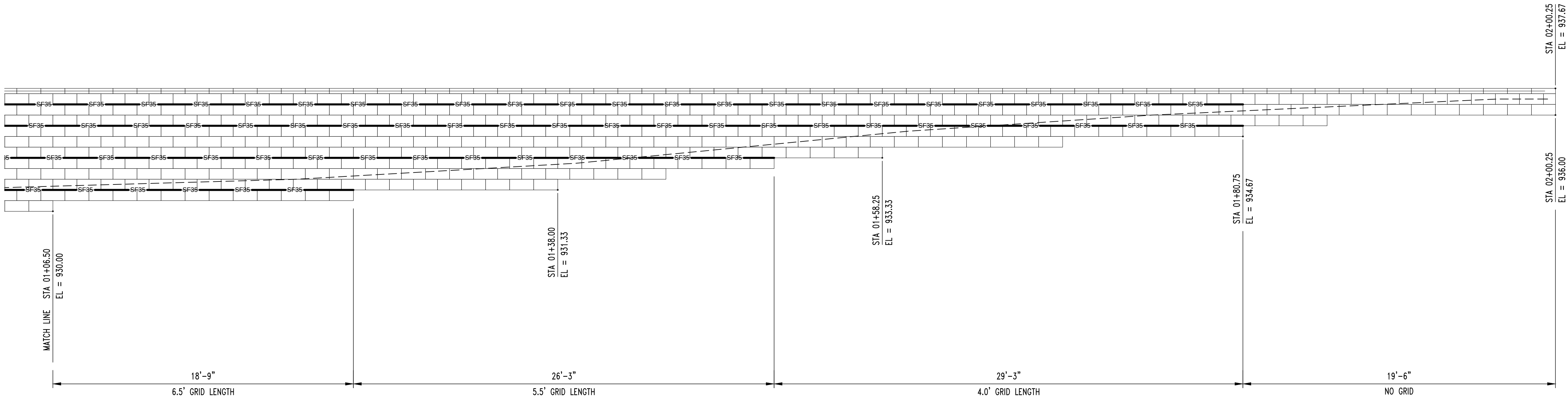
SHEET: RW7



1
RW7

RETAINING WALL 7 (AREA 1,097 SQ. FT.)

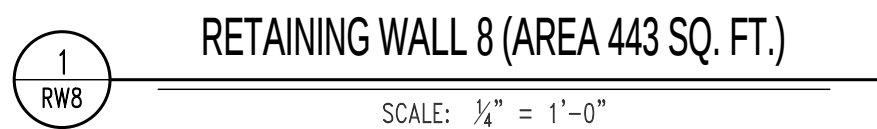
SCALE: 1/4" = 1'-0"

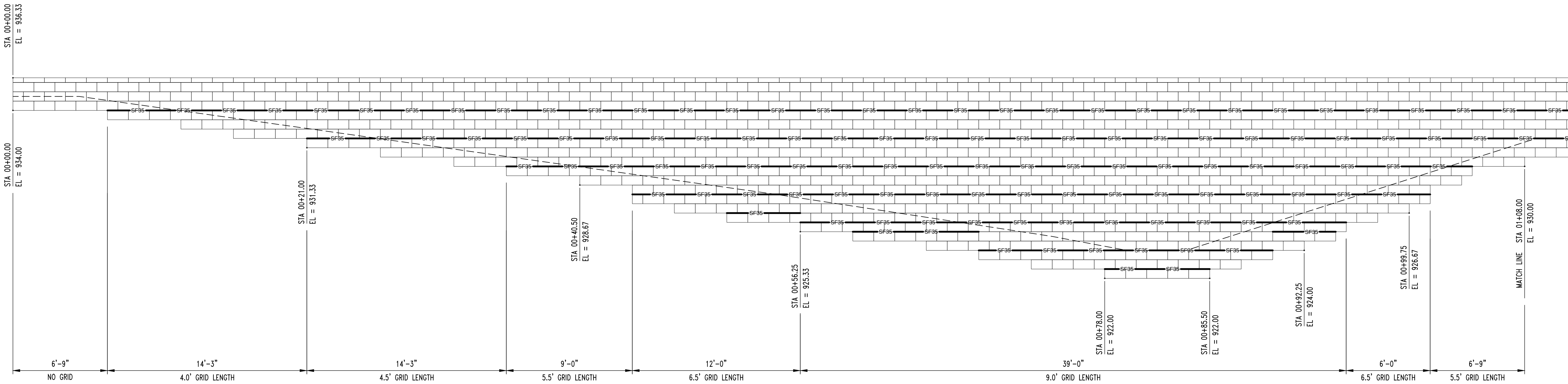


1
RW7

RETAINING WALL 7 (AREA 1,097 SQ. FT.)

SCALE: 1/4" = 1'-0"

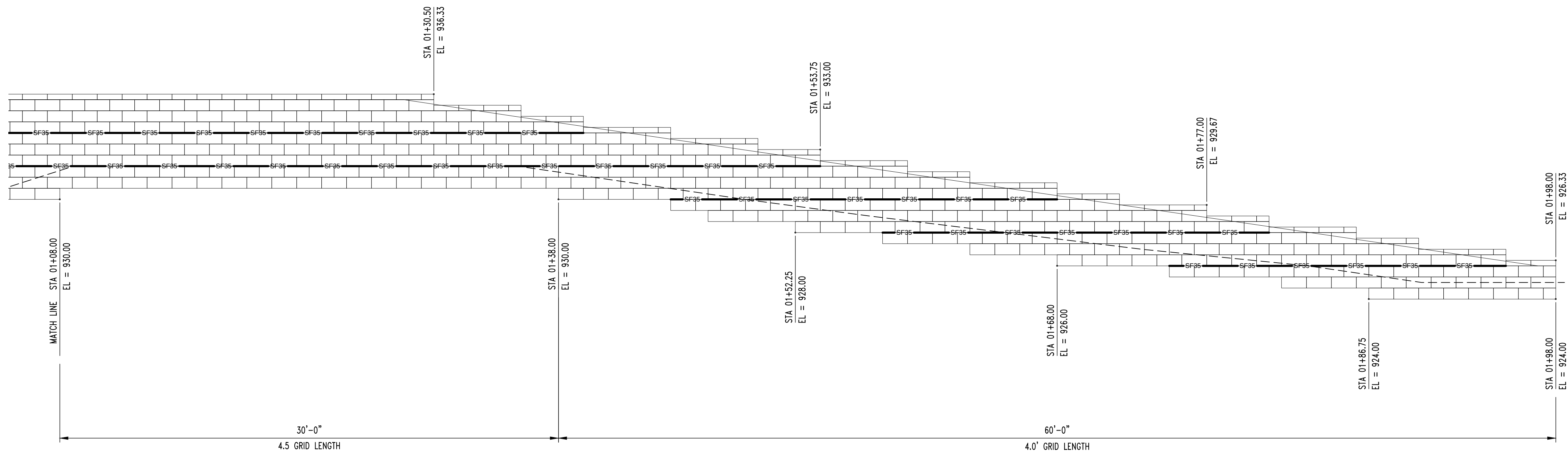
RW8



1
RW9

RETAINING WALL 9 (AREA 1,288 SQ. FT.)

SCALE: $\frac{1}{4}" = 1'-0"$

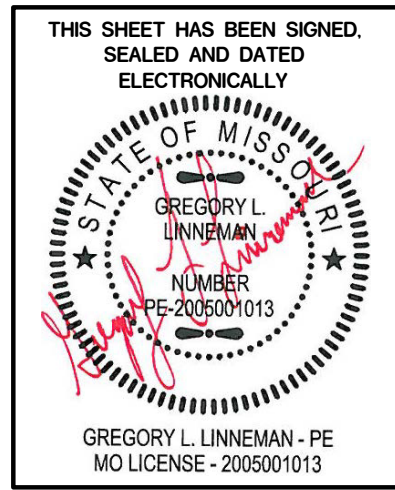


1
RW9

RETAINING WALL 9 (AREA 1,288 SQ. FT.)

SCALE: $\frac{1}{4}" = 1'-0"$

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CLIENT:

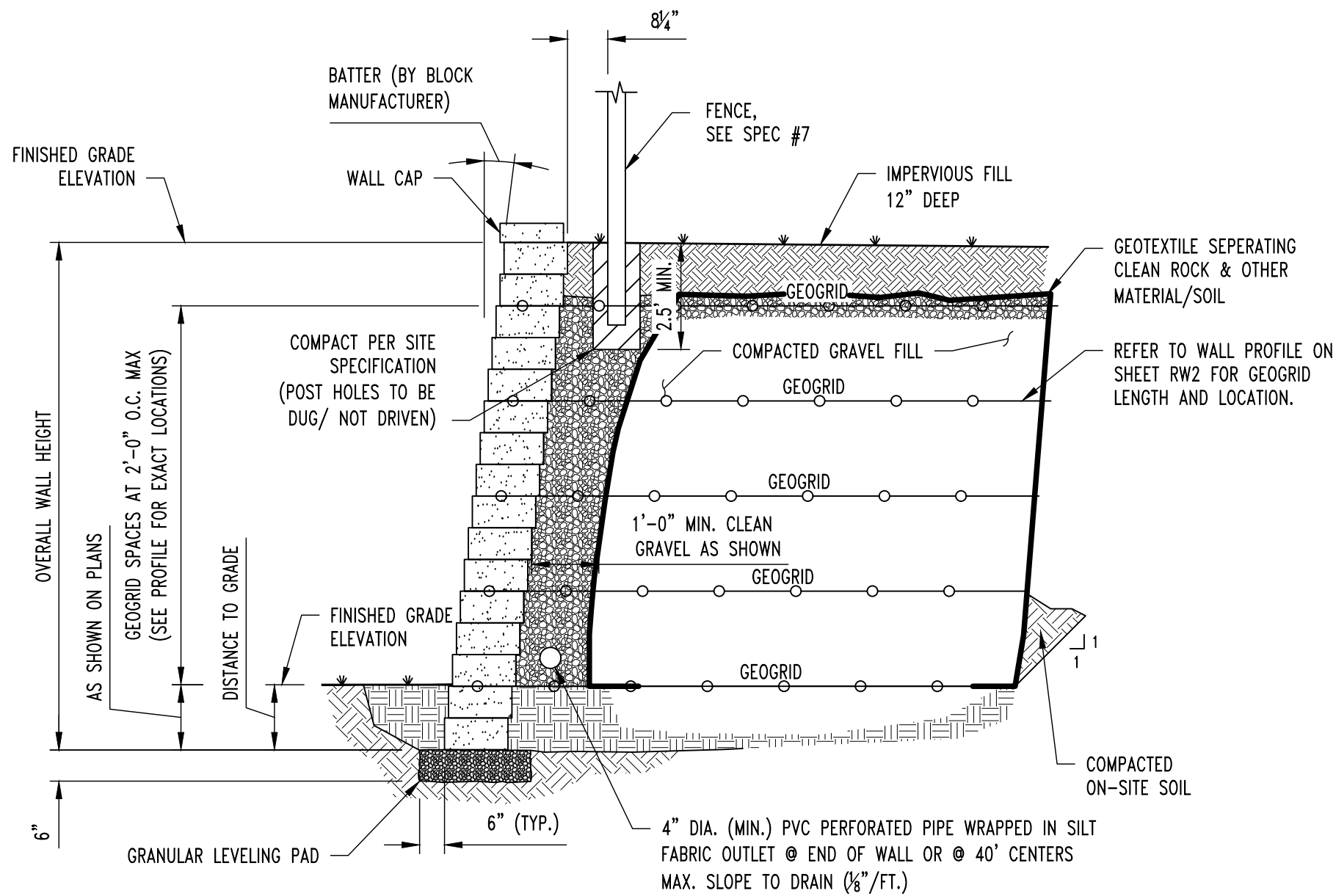
**CENTRAL STATES
CONSTRUCTION**

4215 PHILLIPS FARM RD
COLUMBIA, MISSOURI

ARIA LEE'S SUMMIT APARTMENTS

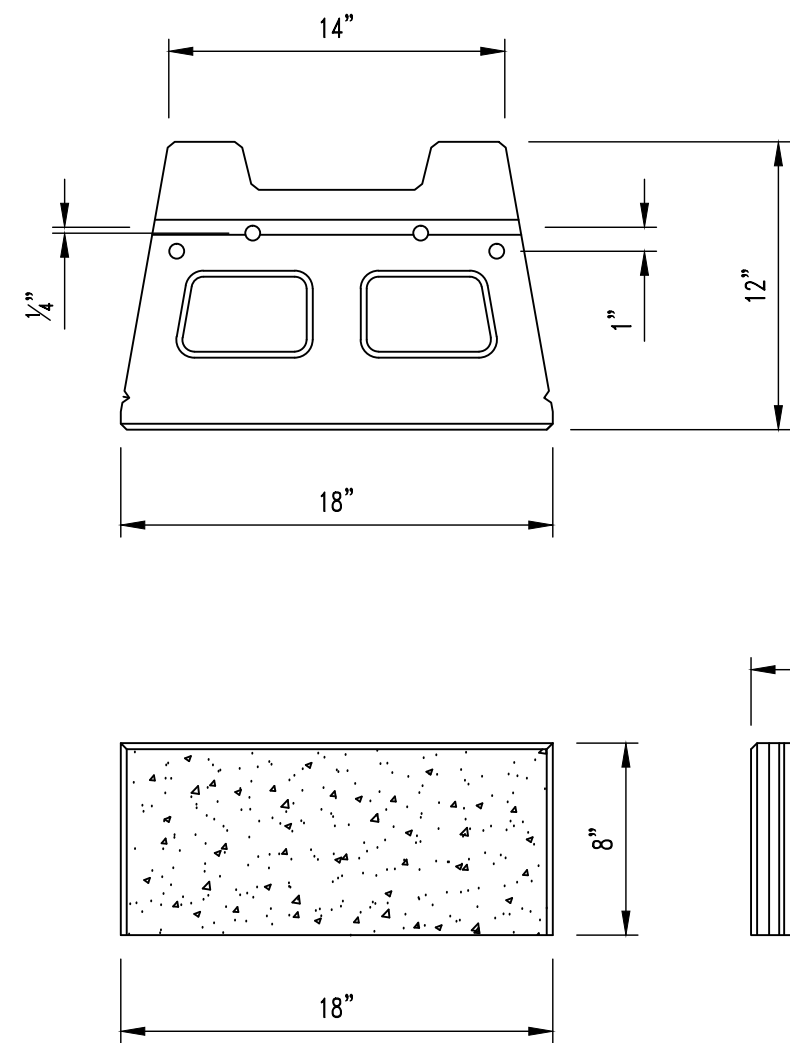
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DRAWING INCLUDES:	
RETAINING WALL PROFILE	
DESIGNED:	JWV
DRAWN:	SEH
PROJECT NO.:	190299
SHEET:	RW9



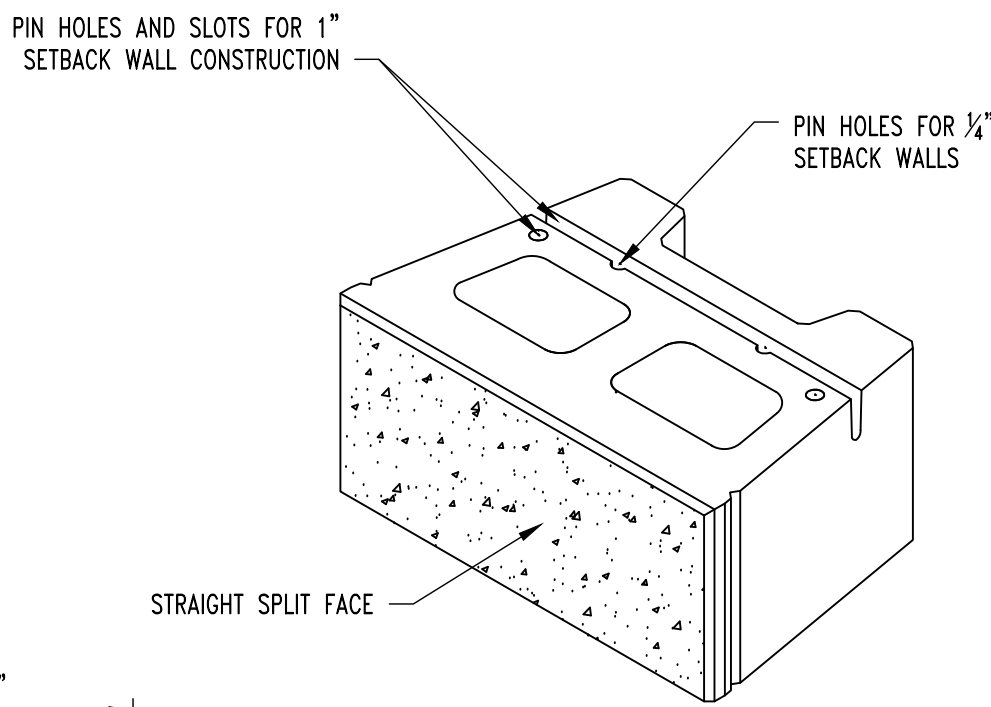
REINFORCED RETAINING WALL

SCALE: NONE



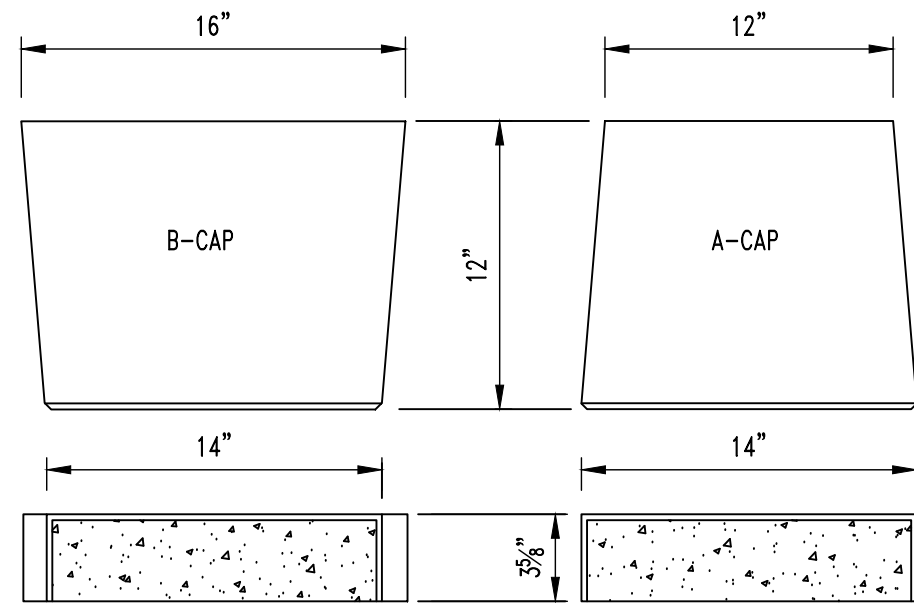
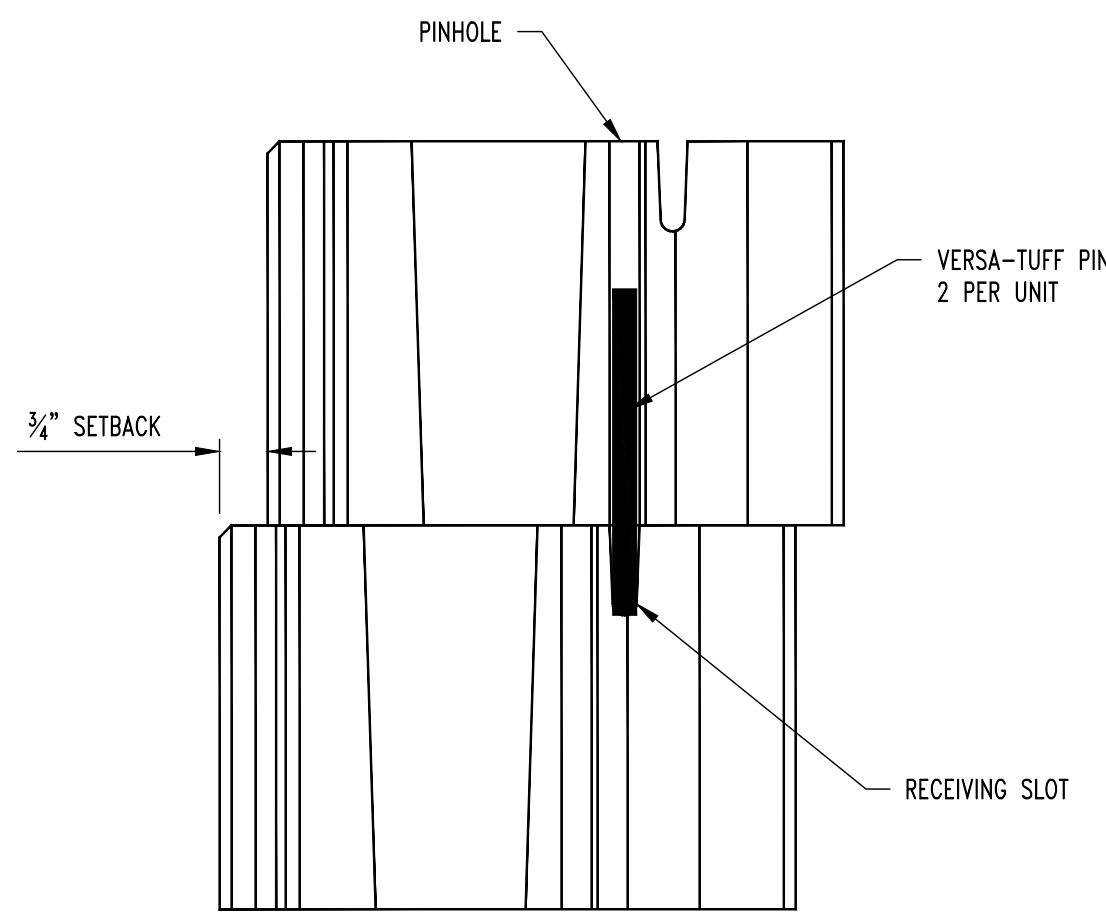
VERSA-LOK SQUARE FOOT UNIT

SCALE: NONE



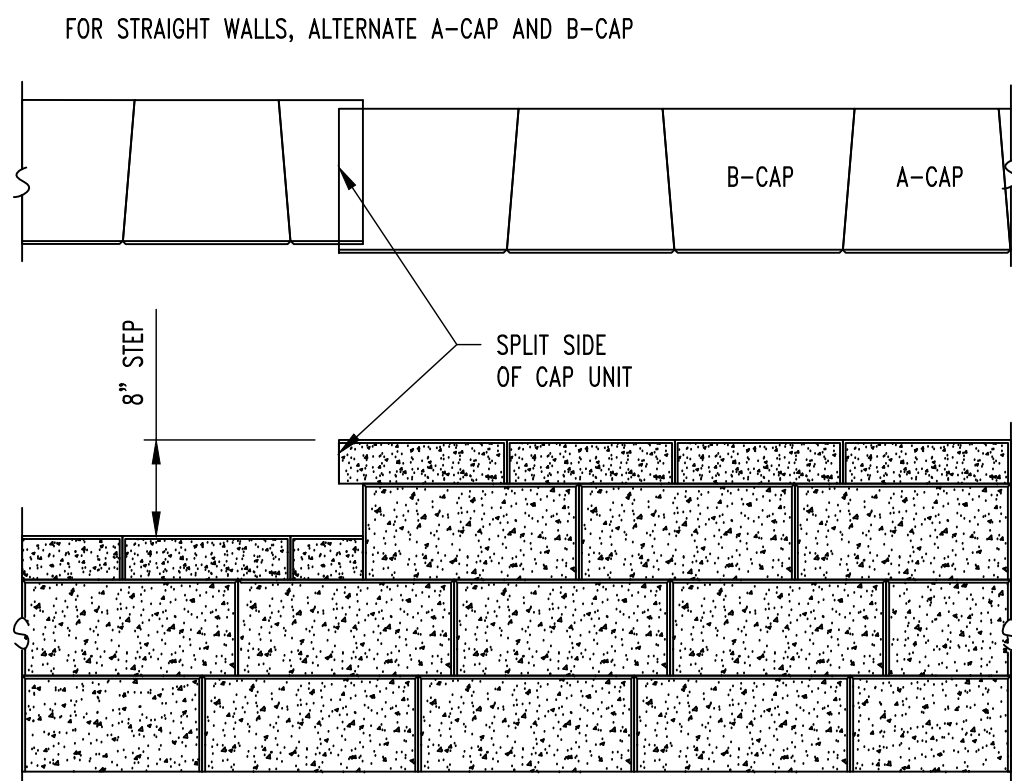
PINNING DETAIL

SCALE: NONE



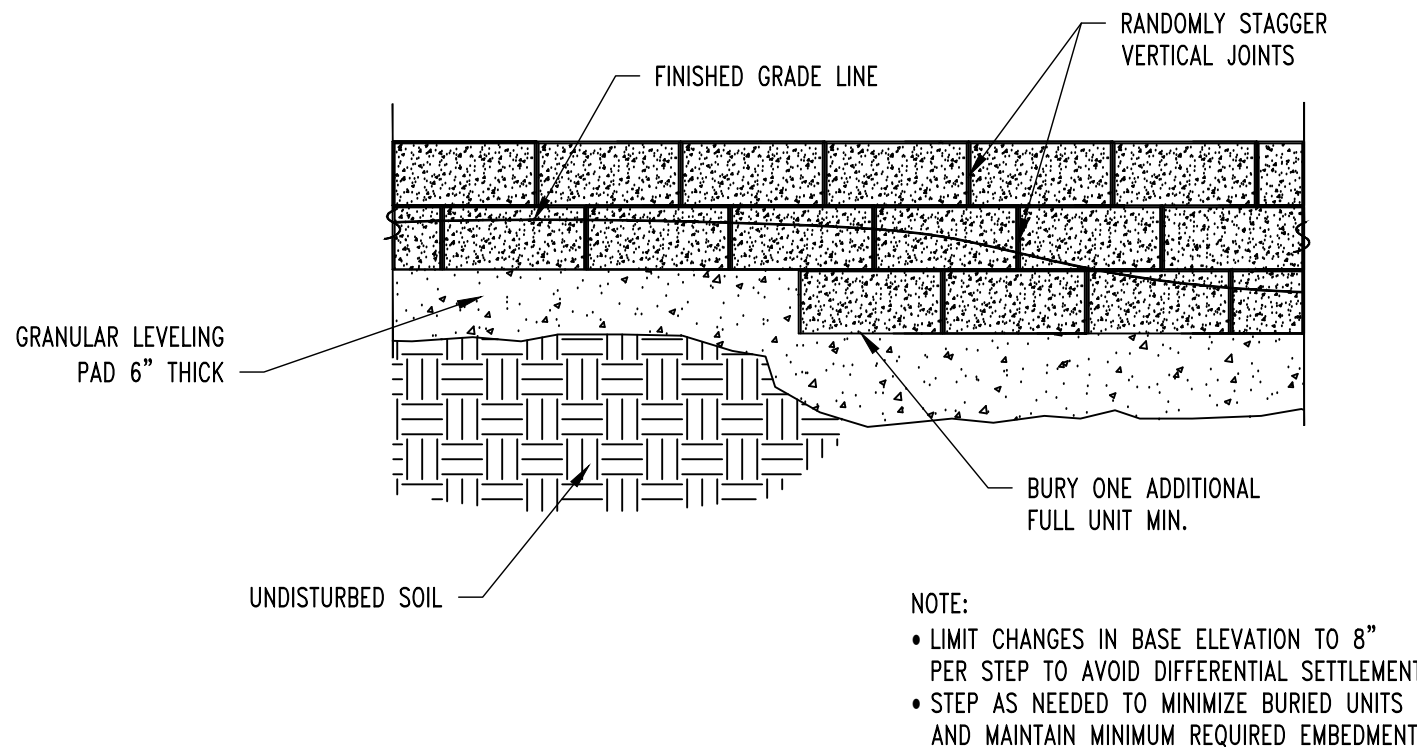
VERSA-LOK CAP UNITS

SCALE: NONE



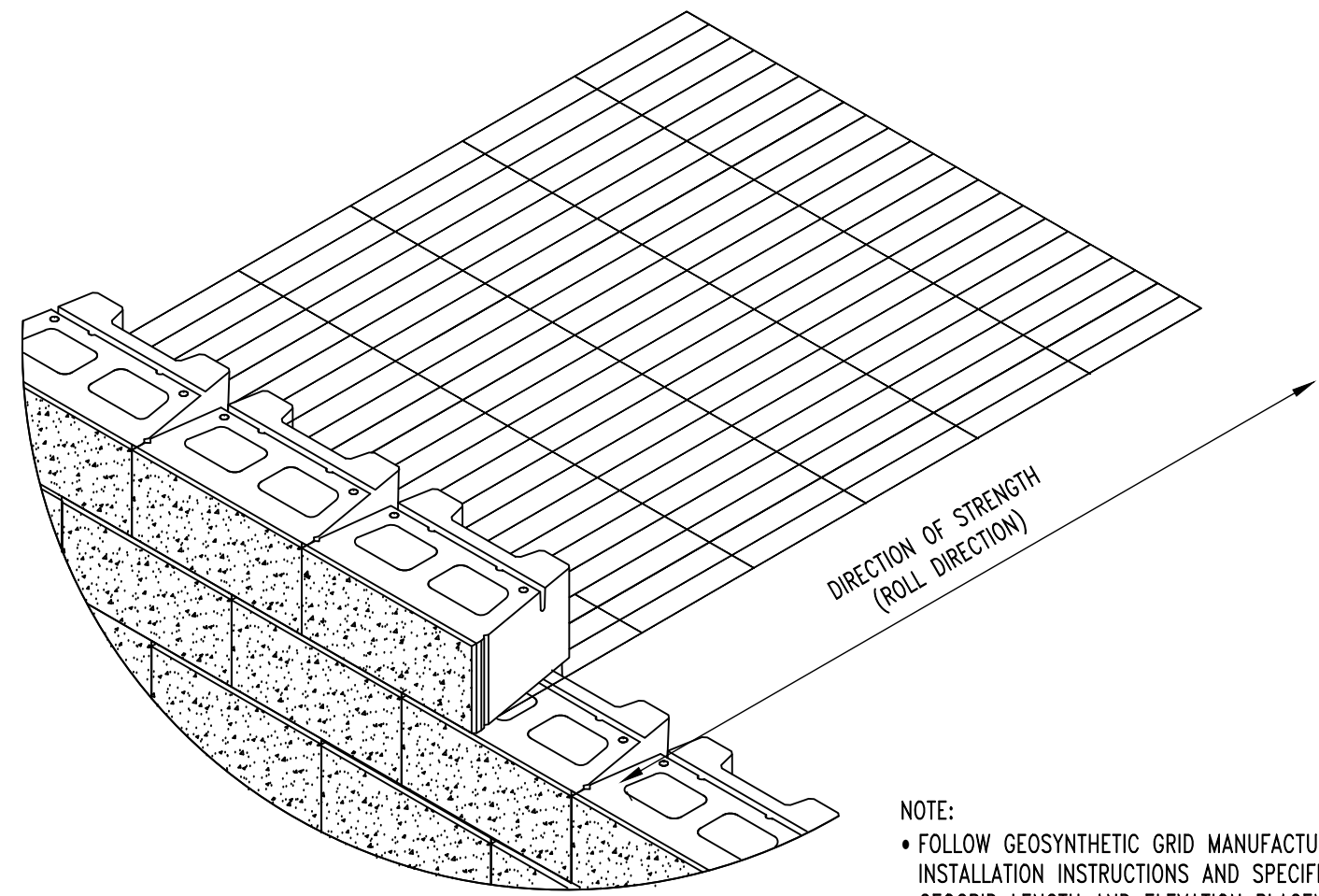
CAPPING DETAIL-PROFILE

SCALE: NONE



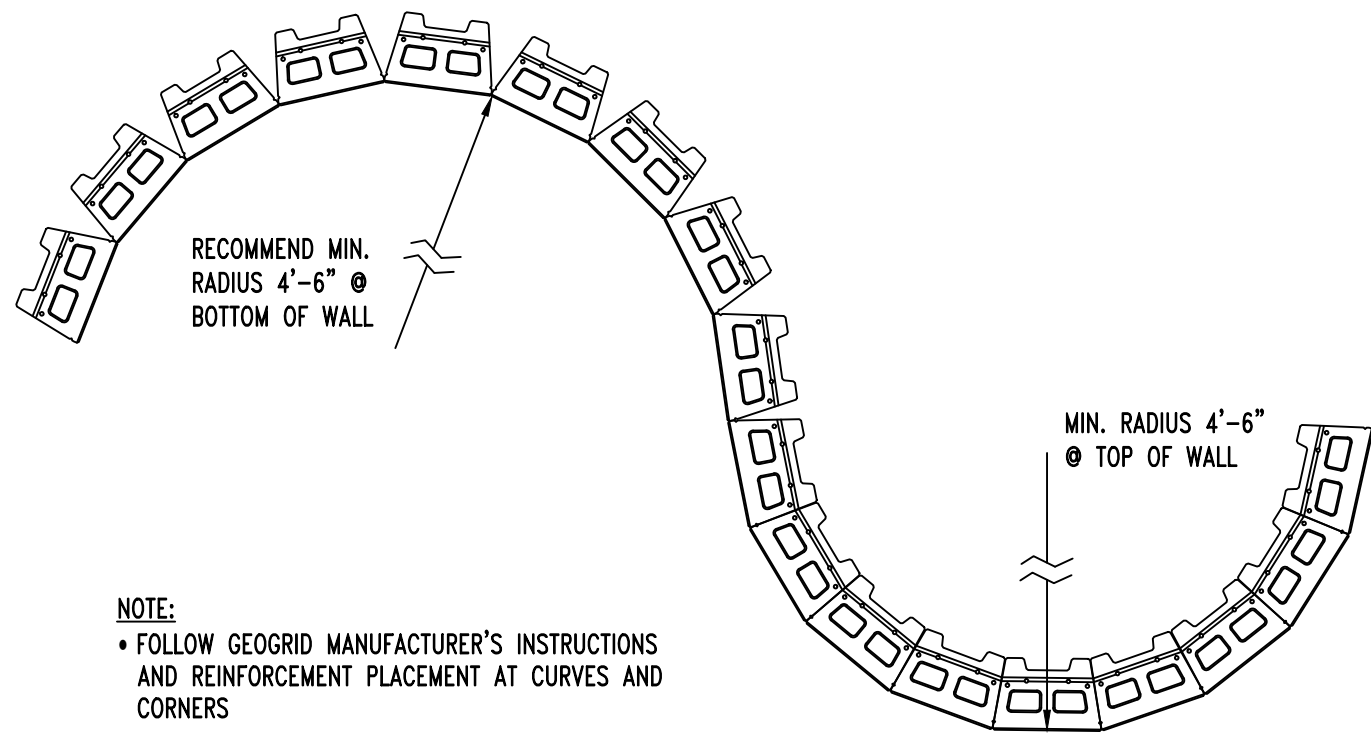
STEPPING BASE DETAIL

SCALE: NONE



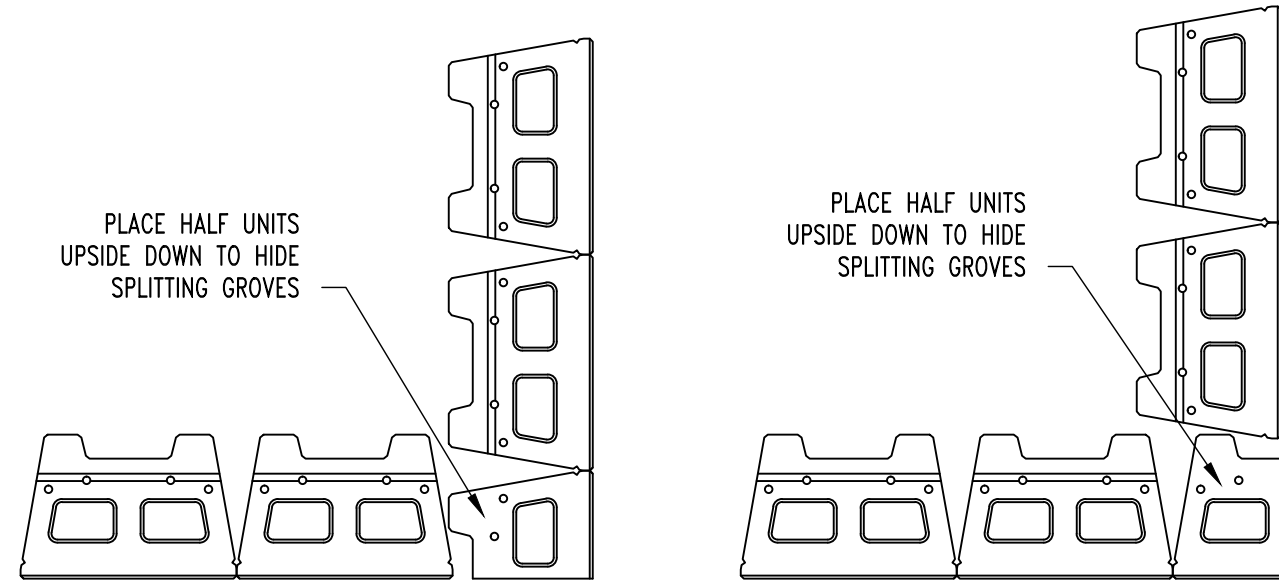
GEOSYNTHETIC INSTALLATION DETAIL

SCALE: NONE



CURVE DETAIL

SCALE: NONE

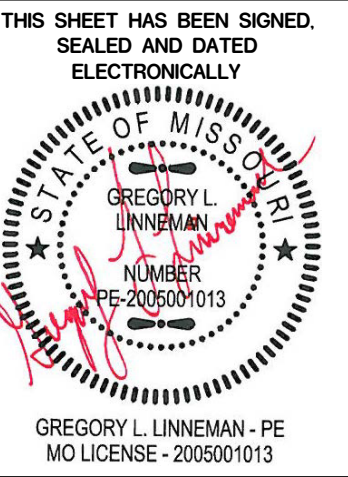


CORNER DETAIL

SCALE: NONE

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LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DRAWING INCLUDES:

RETAINING WALL
DETAILS

DESIGNED: JWV

DRAWN: SEH

PROJECT NO.: 190299

SHEET:

RW10