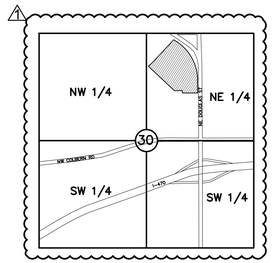
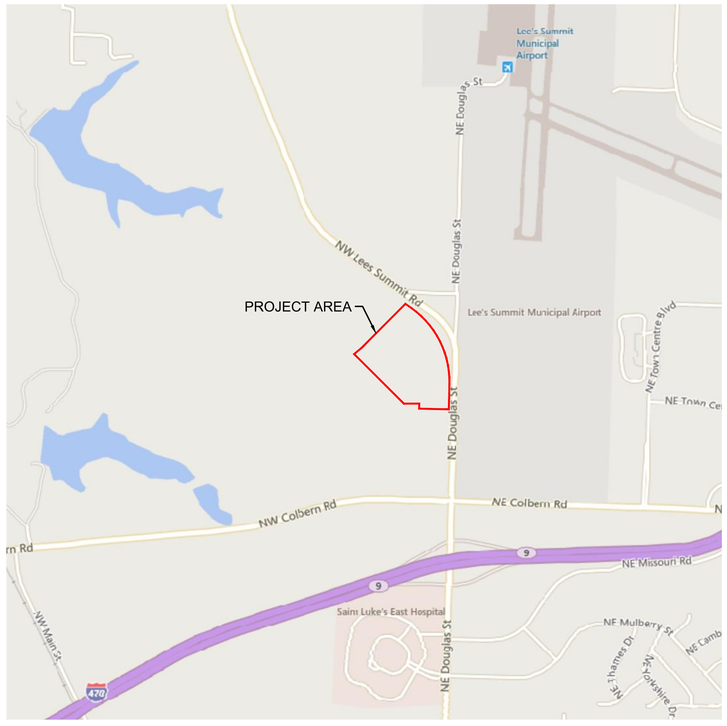
ARIA APARTMENTS
PHASE 1
SITE DEVELOPMENT PLANS

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



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 NAME: AT&T PHONE: 800-286-8313 NAME: EVERGY PHONE: 816-471-5275 NAME: SPECTRUM (TWC) PHONE: 877-772-2253 NAME: GOOGLE FIBER PHONE: 877-454-6959
DEVELOPER CENTRAL STATES CONSTRUCTION 4215 PHILIPS FARM RD. SUITE 109 COLUMBIA, MO 65201 CONTACT: BRIAN MAENNER PHONE: 573.449.9902 EMAIL: BPMAENEER@CENTRALSTATESCONST.COM	
ENGINEER OLSSON 1301 BURLINGTON, SUITE 100 NORTH KANSAS CITY, MO 64116 CONTACT: NICHOLAS HEISER PHONE: 816.361.1177 EMAIL: NHEISER@OLSSON.COM	
SURVEYOR OLSSON 1301 BURLINGTON, SUITE 100 NORTH KANSAS CITY, MO 64116 CONTACT: JASON ROUDEBUSH PHONE: 816.361.1177 EMAIL: JROUDEBUSH@OLSSON.COM	



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 I 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

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DEVELOPMENT DATA	
EXISTING ZONING	RP-4
GROSS AREA (AC.)	22.50
PROPOSED STREET R/W (AC.)	0.00
NET AREA (AC.)	22.50
IMPERVIOUS COVERAGE	60.10%
LAND USE (EXISTING/ PROPOSED)	UNDEVELOPED/ MULTI-FAMILY RESIDENTIAL
NUMBER OF FLOORS	4
FLOOR AREA (S.F.)	553,841
BUILDING COVERAGE (S.F.)	190,357
# OF UNITS	257 1-BR 216 2-BR 12 3-BR 485 TOTAL
F.A.R.	0.19
REQUIRED PARKING (RATIO)	1 PER STUDIO UNIT 1.5 PER 1 OR 2 BR UNIT 2 PER 3+ BR UNIT PLUS 0.5 PER UNIT
REQUIRED PARKING SPACES	976
PROVIDED PARKING SPACES	976

BUILDING UNIT BREAKDOWN			
	BUILDING TYPE A	BUILDING TYPE B	BUILDING TYPE C
1 BR. UNIT	20	19	24
ACC. 1 BR. UNIT	0	1	0
2 BR. UNIT	19	20	12
ACC. 2 BR. UNIT	1	0	0
3 BR. UNIT	0	0	3
ACC. 3 BR. UNIT	0	0	1

NOT FOR CONSTRUCTION

X REVIEWED FOR CONSTRUCTION

CALL BEFORE YOU DIG 1-800-DIG-RITE MISSOURI ONE CALL SYSTEM

olsson
OLSSON - CIVIL ENGINEERING
MO CERTIFICATE OF AUTHORITY #:001592
KS CERTIFICATE OF AUTHORITY #:E-2019
1301 BURLINGTON, SUITE 100
NORTH KANSAS CITY, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

TITLE SHEET
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

2020

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: 2020.08.27

SHEET
C101

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_TTL01_ B190012.dwg ~ Layout: TITLE SHEET ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

GENERAL NOTES:

1. ALL PAVING DIMENSIONS ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.

2. REFER TO DETAIL SHEET FOR INSTALLATION OF SIGNS.

3. CONTRACTOR SHALL MATCH EXISTING PAVEMENT IN GRADE AND ALIGNMENT TO PROVIDE SMOOTH SURFACE TRANSITIONS BETWEEN NEW ENTRANCE DRIVES AND EXISTING STREETS.

4. CONTRACTOR SHALL MATCH EXISTING CURB & GUTTER IN GRADE, SIZE, TYPE, AND ALIGNMENT AT CONNECTIONS TO EXISTING STREETS.

5. ALL WORK ON THIS PLAN SHALL BE DONE IN STRICT ACCORDANCE WITH THE OWNER'S SITE WORK SPECIFICATIONS.

6. ALL TRAFFIC CONTROL SIGNS SHALL BE FABRICATED AS SHOWN IN THE NATIONAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS.

7. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF VESTIBULE, SLOPED PAVING, EXIT PORCHES, RAMPS, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS, SIDEWALK AND SPECIFIC BUILDING AREA TREATMENTS AND IMPROVEMENTS. FOR EXACT BUILDING DIMENSIONS, SEE ARCHITECTURAL PLANS. CONTRACTOR TO STAKE AND CONSTRUCT FOUNDATIONS AND FOOTINGS FROM STRUCTURAL PLAN. BUILDING DIMENSIONS ON THIS PLAN ARE FOR REFERENCE ONLY.

8. ALL DIMENSIONS SHOWN ON BUILDING ARE TO OUTSIDE FACE OF BUILDING.

9. CONTRACTOR SHALL COORDINATE PROTECTION OF BUILDING CORNERS, TRANSFORMERS, AND ALL OTHER APPLICABLE STRUCTURES WITH GUARD POST BOLLARDS WITHIN 5' OF THE BUILDINGS TO BE INSTALLED BY GENERAL CONTRACTOR.

10. PARKING LOT STRIPING SHALL BE INCLUDED IN PAVING CONTRACTOR'S SCOPE OF WORK. ALL STRIPING IS TO BE TWO LAYERS, 4" STROKE, REFLECTIVE PAINT, INCLUDING ADA SYMBOL AND HATCHING. PAINT COLOR TO BE WHITE ON ASPHALT AND YELLOW ON CONCRETE.

11. ALL ACCESSIBLE PARKING SIGNAGE AND STRIPING SHALL BE IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS.

12. THE CONTRACTOR SHALL SUPPLY THE OWNER WITH A LIST OF ALL SUBCONTRACTORS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION.

13. ALL ASPHALT PAVING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF LEES SUMMIT DESIGN AND CONSTRUCTION MANUAL SECTION 2200.

14. THE GENERAL CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR, AND SHALL TAKE ALL PRECAUTIONS NECESSARY TO, AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGE TO ANY EXISTING IMPROVEMENTS DURING CONSTRUCTION, SUCH AS, BUT NOT LIMITED TO: DRAINAGE UTILITIES, PAVEMENT, STRIPING, CURB, ETC. ANY WORK IN CITY R.O.W. REPAIRS SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL PROPERTY CORNERS AND SURVEY MONUMENTS AND IS RESPONSIBLE FOR RE-ESTABLISHMENT OF ANY PROPERTY CORNERS OR SURVEY MONUMENTS IF DISTURBED BY CONSTRUCTION ACTIVITIES.

15. SAFETY NOTICE TO CONTRACTOR: IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. ANY CONSTRUCTION OBSERVATION BY THE ENGINEER OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES, IN, ON OR NEAR THE CONSTRUCTION SITE.

16. ALL CONSTRUCTION IN STATE HIGHWAY DEPARTMENT RIGHT-OF-WAY SHALL BE COORDINATED WITH THE HIGHWAY DEPARTMENT RESIDENT MAINTENANCE ENGINEER PRIOR TO START OF CONSTRUCTION. LATEST SPECIFICATIONS ADOPTED BY US DEPARTMENT OF TRANSPORTATION AND STATE HIGHWAY DEPARTMENT SHALL GOVERN ON THIS PROJECT.

17. ALL SITE WORK FOR THIS PROJECT SHALL MEET OR EXCEED THE SPECIFICATIONS OF THE RELEVANT UTILITY COMPANY OR REGULATORY AUTHORITY, AND THE SPECIFICATIONS FOR THE CONSTRUCTION OF THE EXISTING IMPROVEMENTS WHICH ARE BEING ALTERED OR REPLACED. CONTRACTOR SHALL CONTACT THE ENGINEER FOR SPECIFICATION SECTIONS FOR ITEMS SUCH AS LANDSCAPING AND IRRIGATION THAT ARE AFFECTED BY THE WORK BUT NOT COMPLETELY DETAILED OR SPECIFIED ON THESE PLANS.

18. ALL CONSTRUCTION WITHIN THE RIGHT-OF-WAY SHALL CONFORM TO THE CITY OF LEE'S SUMMIT, MISSOURI STANDARDS AND SPECIFICATIONS.

19. ALL CURB RETURN RADII ARE 4.0' UNLESS OTHERWISE NOTED.

20. SITE TOPOGRAPHY TAKEN FROM FIELD WORK BY OLSSON ASSOCATES ON THE SURVEY DATED 10-2016. CONTRACTOR TO VERIFY EXISTING CONDITIONS OF THE SITE THAT MAY NOT BE REPRESENTATIVE OF THE CONSTRUCTION PLANS.

WETLANDS NOTICE:

1. ANY DEVELOPMENT, EXCAVATION, CONSTRUCTION, OR FILLING IN A U.S. CORPS OF ENGINEERS DESIGNATED WETLAND IS SUBJECT TO LOCAL, STATE AND FEDERAL APPROVALS. THE CONTRACTOR SHALL COMPLY WITH ALL PERMIT REQUIREMENTS AND/OR RESTRICTIONS AND ANY VIOLATION WILL BE SUBJECT TO FEDERAL PENALTY. THE CONTRACTOR SHALL HOLD THE OWNER/DEVELOPER, THE ENGINEER AND THE LOCAL GOVERNING AGENCIES HARMLESS AGAINST SUCH VIOLATION.

WARRANTY/DISCLAIMER:

1. THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER THE ENGINEER NOR ITS PERSONNEL CAN OR DO WARRANT THESE DESIGNS OR PLANS AS CONSTRUCTED EXCEPT IN THE SPECIFIC CASES WHERE THE ENGINEER INSPECTS AND CONTROLS THE PHYSICAL CONSTRUCTION ON A TEMPORARY BASIS AT THE SITE.

FLOOD CERTIFICATION:

1. THE ENTIRE SITE IS LOCATED WITHIN ZONE X, "AREAS OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN" AS DEPICTED ON THE FEMA FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 290174 0412G, REVISION DATE JANUARY 20, 2017

OIL/GAS WELLS:

NO OIL OR GAS WELLS LOCATED WITHIN THE PROJECT LIMITS.

INFORMATION OBTAINED FROM THE MISSOURI DEPARTMENT OF NATURAL RESOURCES, GEOLOGICAL SURVEY GEOSCIENCES TECHNICAL RESOURCE ASSESSMENT TOOL (GEOSTRAT).

DEMOLITION NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR RAISING AND REMOVAL OF THE EXISTING STRUCTURES, RELATED UTILITIES, PAVING, AND ANY OTHER EXISTING IMPROVEMENTS AS NOTED.

2. CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL DEBRIS, RUBBISH AND OTHER MATERIALS RESULTING FROM PREVIOUS AND CURRENT DEMOLITION OPERATIONS. DISPOSAL WILL BE IN ACCORDANCE WITH ALL LOCAL, STATE AND/OR FEDERAL REGULATIONS GOVERNING SUCH OPERATIONS.

3. ALL DEMOLITION WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE OWNER'S SITE WORK SPECIFICATIONS.

4. CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGE AND ADJUSTMENTS DUE TO CONFLICTS OR GRADING TO ANY EXISTING STRUCTURES OR UNDERGROUND UTILITIES THAT ARE TO REMAIN IN PLACE.

5. ALL ITEMS DESIGNATED TO BE DEMOLISHED AND REMOVED FROM THE SITE SHALL BE DISPOSED OF IN AN APPROPRIATE LOCATION IN ACCORDANCE WITH STATE OR LOCAL GUIDELINES.

6. PUBLIC STREETS AND SIDEWALKS SHALL BE KEPT CLEAN AND CLEAR OF TRASH AND DEBRIS FROM DEMOLITION OPERATIONS AT ALL TIMES.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST AND EROSION CONTROL DURING DEMOLITION OPERATIONS.

8. THE CONTRACTOR SHALL COORDINATE WITH ALL APPLICABLE UTILITY COMPANIES PRIOR TO REMOVAL OR RELOCATION OF ANY UTILITIES AND TO SAFELY STOP SERVICES AND DISMANTLE SERVICE LINES PRIOR TO BEGINNING DEMOLITION OPERATIONS.

9. CONTRACTOR IS TO REMOVE AND RE-USE SEWER PIPES, POWER POLES AND GUY WIRES, WATER LINES AND METERS, VEGETATION, ASPHALT, AND OTHER UNSUITABLE DEBRIS OR MATERIAL. SHOWN OR NOT SHOWN WITHIN CONSTRUCTION LIMITS AND WHERE NECESSARY TO ALLOW FOR CONSTRUCTION ACTIVITY. ALL MATERIAL TO BE REMOVED AS UNCLASSIFIED EXCAVATION.

10. ALL CAVITIES CREATED BY REMOVAL OF EXISTING FACILITIES IN THE AREA OF PROPOSED CONSTRUCTION SHALL BE FILLED AND COMPACTED IN ACCORDANCE WITH THE SITE WORK SPECIFICATIONS TO SUBGRADE ELEVATION.

11. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN WORKING IN THE VICINITY OF EXISTING OVERHEAD ELECTRICAL POWER LINES.

12. EXISTING UTILITIES ARE SHOWN AS LOCATED AND IDENTIFIED IN THE FIELD BY UTILITY COMPANY REPRESENTATIVE. THE OWNER AND THE ENGINEER MAKE NO ASSURANCE OF THE ACTUAL LOCATION, DEPTH, SIZE OR TYPE OF UTILITY LINES SHOWN. THE OWNER AND THE ENGINEER MAKES NO ASSURANCE THAT ALL OF THE EXISTING UTILITY LINES ON THE SITE ARE SHOWN.

GRADING AND CLEARING NOTES:

1. EXISTING UTILITIES AS SHOWN ARE APPROXIMATE LOCATIONS ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO THE START OF ANY CONSTRUCTION WORK. ANY DAMAGE TO EXISTING STRUCTURES, UTILITIES, FENCES AND/OR INCIDENTALS NOT DESIGNATED FOR REMOVAL SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.

2. CONTRACTOR SHALL ADHERE TO THE "DESIGN AND CONSTRUCTION MANUAL" SECTION 2100 AS ADOPTED BY THE CITY OF LEES SUMMIT, MISSOURI (LATEST EDITION), FOR EXCAVATION AND EMBANKMENT WORK WITHIN THE PROPOSED DRIVE LANES.

3. CONTRACTOR SHALL PROVIDE A LEVEL BUILDING PAD BASED UPON PROPOSED FINISHED FLOOR ELEVATION TO ± 0.10' OR AS ESTABLISHED THROUGH ALTERNATIVE BID DOCUMENTS.

4. PRIOR TO FINAL ACCEPTANCE OF THE PROJECT, ALL SLOPES AND AREAS DISTURBED BY CONSTRUCTION SHALL BE GRADED SMOOTH A MINIMUM OF FOUR INCHES OF TOPSOIL APPLIED. IF ADEQUATE TOPSOIL IS NOT AVAILABLE ON SITE THE CONTRACTOR SHALL PROVIDE TOPSOIL, APPROVED BY THE OWNER, AS NEEDED. THE AREA SHALL THEN BE SEEDED, FERTILIZED, MULCHED, WATERED AND MAINTAINED UNTIL HARDY GRASS GROWTH IS ESTABLISHED IN ALL AREAS. ANY AREAS DISTURBED FOR ANY REASON PRIOR TO FINAL ACCEPTANCE OF THE PROJECT SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

5. 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.

6. 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.

7. ALL EMBANKMENT SHOULD BE PLACED IN CONTROLLED LIFTS HAVING A MAXIMUM LOOSE LIFT THICKNESS OF 9". EMBANKMENT PLACED WITHIN THE PAVEMENT AREAS SHOULD BE COMPACTED TO A MINIMUM OF 95% OF THE MATERIALS MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698 (STANDARD PROCTOR COMPACTION). EMBANKMENT PLACED WITHIN THE BUILDING AREAS 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 ABOVE OPTIMUM MOISTURE CONTENT AS DEFINED BY THE STANDARD PROCTOR COMPACTION PROCEDURE. ALL EMBANKMENT PLACED WITHIN 18" OF THE BUILDING SUBGRADE SHOULD HAVE A LIQUID LIMIT LESS THAN 60. THE GEOTECHNICAL REPORT SHALL SUPERSEDE RECOMMENDATIONS AS STATED IN THIS PLAN SET.

UTILITY CONSTRUCTION NOTES:

1. PRIOR TO INSTALLATION OF ANY PROPOSED UTILITY THE CONTRACTOR SHALL EXCAVATE, VERIFY, AND CALCULATE ALL CROSSINGS WITH EXISTING UTILITIES AND INFORM THE OWNER AND THE ENGINEER OF ANY CONFLICTS. THE ENGINEER WILL BE HELD HARMLESS IN THE EVENT THE ENGINEER IS NOT NOTIFIED OF CONFLICTS WITH EXISTING UTILITIES.

2. 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 COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT IS THE CONTRACTORS RESPONSIBILITY TO RELOCATE AND/OR ADJUST ALL EXISTING UTILITIES THAT CONFLICT WITH PROPOSED SITE IMPROVEMENTS.

3. UNLESS OTHERWISE SHOWN, CALLED OUT OR SPECIFIED HEREON OR WITHIN THE SPECIFICATIONS:
   ALL STORM DRAIN PIPE BEDDING SHALL BE INSTALLED PER CITY STANDARD DETAILS.
   ALL STORM DRAIN PIPES ARE MEASURED FROM CENTER OF STRUCTURES AND ENDS OF FLARED END SECTIONS.

4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTROL DOWNSTREAM EROSION AND SILTATION DURING ALL PHASES OF CONSTRUCTION. EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO CONSTRUCTION.

5. TELEPHONE CONDUIT SHALL HAVE A MINIMUM COVER OF 30". CONDUIT SHALL BE DUAL 4" SCHEDULE 40 PVC. CONTRACTOR SHALL COORDINATE LOCATION WITH THE UTILITY REPRESENTATIVE AND LOCATE PVC CROSSINGS AS NECESSARY. SEE ELEC. PLANS FOR ENTRANCE LOCATIONS.

6. FOR ALL SERVICE LINE ENTRANCE LOCATIONS WITHIN THE BUILDING, INCLUDING ROOF DRAIN CONNECTIONS, SEE ARCHITECTURAL PLANS AND DETAILS.

7. ALL WATER SERVICE LINES SHALL BE A MINIMUM OF 48" BELOW FINISHED GRADE.

8. ALL SANITARY SEWER LINES SHALL BE SDR-26 WITH 42" MIN. COVER.

9. CONTRACTOR SHALL COORDINATE ANY DISRUPTIONS TO EXISTING UTILITY SERVICES WITH ADJACENT PROPERTY OWNERS A MINIMUM OF 48 HOURS PRIOR TO DISRUPTION.

10. ALL ELECTRIC AND TELEPHONE, INCLUDING SERVICE LINES SHALL BE CONSTRUCTED TO THE APPROPRIATE UTILITY COMPANY SPECIFICATIONS. ALL UTILITY DISCONNECTION'S SHALL BE COORDINATED WITH THE DESIGNATED UTILITY COMPANIES.

11. PRIOR TO ORDERING PRECAST STRUCTURES, SHOP DRAWINGS SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR APPROVAL.

12. ALL PRIVATE INSTALLATIONS SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS AS ADOPTED BY THE CITY OF LEE'S SUMMMIT, MISSOURI.

13. EXTENSION OF BOTH DOMESTIC WATER SERVICE AND FIRE PROTECTION LINE MAY NOT BE PROVIDED UNTIL PUBLIC MAIN HAS BEEN TESTED AND ACCEPTED BY WRITTEN AUTHORIZATION FROM LEE'S SUMMIT WATER DEPARTMENT.

14. CONTRACTOR TO CONTACT LEE'S SUMMIT WATER SERVICES DEPARTMENT FOR MAIN LINE TAP AND METER SET A MINIMUM OF 48 HOURS PRIOR TO CONNECTION.

17. CONSTRUCTION SHALL NOT START ON ANY PUBLIC UTILITY SYSTEM UNTIL THE APPROPRIATE PERMITS HAVE BEEN PULLED FROM THE CITY OF LEE'S SUMMIT AND/OR JACKSON COUNTY AND CONTRACTOR HAS BEEN NOTIFIED BY THE ENGINEER.

18. ALL ELECTRICAL CONDUIT SHALL BE SCHEDULE 40 ELECTRICAL PVC, AS CALLED OUT AND HAVE AN AVERAGE OF 36" TO 42" COVER WITH A MINIMUM OF 30" CONFORMING TO THE CURRENT REGULATIONS SET FORTH BY MISSOURI PUBLIC SERVICE. SEE MECH. PLANS FOR ENTRANCE LOCATIONS.

19. CONTRACTOR SHALL MAKE APPLICATION WITH SPIRE ENERGY FOR PROPOSED METER.

LEGEND

	GENERAL
AC	ACU AIR CONDITIONING UNIT
	AST ARROW STRAIGHT
	ATL ARROW TURN LEFT
	ATR ARROW TURN RIGHT
	BLB BILLBOARD
	BOV BLOW OFF VALVE
	BSH BUSH
	COL COLUMN
	CTR CONIFEROUS TREE
	DRN DRAIN GRATE
	DTR DECIDUOUS TREE
	FLP FLAG POLE
	GDP GUARD POST
	GPL GUY POLE
	GTP GREASE TRAP
	GUY GUY WIRE
	HCP ACCESSABLE PARKING MARKER
	LST LIFT STATION
	MLB MAILBOX
	MP MILE POST MARKER
	MWL MONITORING WELL
	PIV POST INDICATOR VALVE
	PPT PROPANE TANK
	RAT RADIO TOWER
	SAD SATELLITE
	SCV SPRINKLER CONTROL VALVE
	SGN SIGN
	SLB STREET LIGHT BOX
SLC	SLC STREET LIGHT CABINET
S	SPB SPRINKLER BOX
	SPH SPRINKLER HEAD
	STP STUMP
	SVL SEWER VALVE
TC	TCB TRAFFIC CONTROL BOX
	TSA TRAFFIC SIGNAL WITH MAST ARM
TS	TSC TRAFFIC SIGNAL CABINET
TS	TSMH TRAFFIC SIGNAL MANHOLE
	TSP TRAFFIC SIGNAL POLE
	EXISTING TREELINE
	PROPOSED TREELINE
	EXISTING SIDEWALK
	PROPOSED SIDEWALK
	FUTURE SIDEWALK
	EXISTING BUILDINGS
	PROPOSED BUILDINGS
	FUTURE BUILDINGS
	EXISTING EDGE OF PAVEMENT
	PROPOSED EDGE OF PAVEMENT
	FUTURE EDGE OF PAVEMENT
	EXISTING ROADWAY CENTER LINE
	PROPOSED ROADWAY CENTER LINE
	FUTURE ROADWAY CENTER LINE
	EXISTING CURB & GUTTER
	PROPOSED CURB & GUTTER
	FUTURE CURB & GUTTER
R	RADIUS
L	ARC DISTANCE
D	DELTA / CENTRAL ANGLE
	EASEMENTS & SETBACKS
A.E.	ACCESS EASEMENT
B.M.P.	BEST MANAGEMENT PRACTICE EASEMENT
B.L.	BUILDING SETBACK
C.T.V.E.	CABLE TV EASEEMNT
C.E.	CONSERVATION EASEMENT
C.G.E.	CONSTRUCTION GRADING EASEMENT
F.P.E.	FLOOD PLAIN EASEMENT
F.O.E.	FIBER OPTIC EASEMENT
F.P.S.E.	FIRE PROTECTION SYSTEM EASEMENT
F.L.E.	FUEL LINE EASEMENT
L.S.E.	LANDSCAPE EASEMENT
G.E.	NATURAL GAS EASEMENT
T.E.	TELEPHONE EASEMENT
E.E.	POWER\ELECTRIC EASEMENT
P.S.	PARKING SETBACK
S.B.	STREAM BUFFER
S.D.E.	SURFACE DRAINAGE EASEMENT
SIGHT DIST. ESMT.	SIGHT DISTANCE EASEMENT
S.E.	SANITARY SEWER EASEMENT
S.L.E.	STEAM LINE EASEMENT
D.E.	STORM DRAINAGE EASEMENT
S.W.M.E.	STORM WATER MANAGEMENT EASEMENT
T.C.D.S.E.	TEMPORARY CUL-DE-SAC EASEMENT
TEMP. ESMT.	TEMPORARY EASEMENT
TRAIL ESMT.	TRAIL\PATH EASEMENT
U.E.	UTILITY EASEMENT
W.E.	WATER EASEMENT
F.Y.S	FRONT YARD SETBACK
R.Y.S.	REAR YARD SETBACK
S.Y.S.	SIDE YARD SETBACK
	CONTOURS
-100-	EXISTING INDEX CONTOURS
-100-	EXISTING INTERMEDIATE CONTOURS
100	PROPOSED INDEX CONTOURS
100	PROPOSED INTERMEDIATE CONTOURS

	SURVEY MARKERS
	BMK BENCHMARK
	CPT CONTROL POINT
	FND FOUND MONUMENT
ROW	ROW ROW MARKER
	SCR SECTION CORNER
	SET SET MONUMENT
	BOUNDARIES
	SECTION LINE
EP	EXISTING PROPERTY BOUNDARY
PL	PROPOSED PROPERTY BOUNDARY
	EXISTING LOT LINE
	PROPOSED LOT LINE
ER/W	EXISTING RIGHT-OF-WAY
R/W	PROPOSED RIGHT-OF-WAY
	UTILITIES
C	CAB CABLE BOX
CV	CAV CABLE VAULT
TVP	TVP TELEVISION PEDESTAL
C	TVR TELEVISION RISER
ECTVOH	EXISTING CABLE TV, OVERHEAD
ECTV	EXISTING CABLE TV, UNDERGROUND
CTVOH	PROPOSED CABLE TV, OVERHEAD
CTV	PROPOSED CABLE TV, UNDERGROUND
F	FOB FIBER OPTIC BOX
FO	FOM FIBER OPTIC MANHOLE
FO	FOP FIBER OPTIC PEDESTAL
FOV	FOV FIBER OPTIC VAULT
EFOOH	EXISTING FIBER OPTIC, OVERHEAD
EFO	EXISTING FIBER OPTIC, UNDERGROUND
FOOH	PROPOSED FIBER OPTIC, OVERHEAD
FO	PROPOSED FIBER OPTIC, UNDERGROUND
	FDC FIRE DEPT. CONNECTION
EFP	EXISTING FIRE PROTECTION SYSTEM LINE
FP	PROPOSED FIRE PROTECTION SYSTEM LINE
EFL	EXISTING FUEL LINE
FPL	PROPOSED FUEL LINE
	GAR GAS RISER
G	GMH GAS MANHOLE
	GMK GAS MARKER
GM	GMT GAS METER
	GRG GAS REGULATOR
	GVL GAS VALVE
EG	EXISTING NATURAL GAS LINE
G	PROPOSED NATURAL GAS LINE
TC	TEC TELEPHONE CABINET
TP	TEP TELEPHONE PEDESTAL
T	TER TELEPHONE RISER
TV	TEV TELEPHONE VAULT
T	TMH TELEPHONE MANHOLE
ETELOH	EXISTING TELEPHONE LINE, OVERHEAD
ETEL	EXISTING TELEPHONE LINE, UNDERGROUND
TELOH	PROPOSED TELEPHONE LINE, OVERHEAD
TEL	PROPOSED TELEPHONE LINE, UNDERGROUND
	GLT GROUND LIGHT
	LTP LIGHT POLE
	PWP POWER POLE
	TRF ELECTRIC TRANSFORMER
E	EBX ELECTRIC BOX
	ELC ELECTRIC CABINET
ER	ELR ELECTRIC RISER
E	EMH ELECTRIC MANHOLE
EM	EMT ELECTRIC METER
ES	ESC ELECTRIC SECTIONALIZER
EV	EVT ELECTRIC VAULT
	YDL YARD LIGHT
EEOH	EXISTING POWER\ELECTRIC LINE, OVERHEAD
EE	EXISTING POWER\ELECTRIC LINE, UNDERGROUND
	SCO SEWER CLEANOUT
S	SSMH SANITARY MANHOLE
ESS	EXISTING SANITARY SEWER
SS	PROPOSED SANITARY SEWER
FSS	FUTURE SANITARY SEWER
ESL	EXISTING STEAM LINE
SL	PROPOSED STEAM LINE
S	SDMH STORM SEWER MANHOLE
	FES FLARED END SECTION
	RDN ROOF DRAIN
EST	EXISTING STORM SEWER
ST	PROPOSED STORM SEWER
	FH FIRE HYDRANT
W	WMH WATER MANHOLE
	WMK WATER MARKER
WM	WMT WATER METER
	WVL WATER VALVE
EW	EXISTING WATER LINE
W	PROPOSED WATER LINE

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

GENERAL NOTES
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C102

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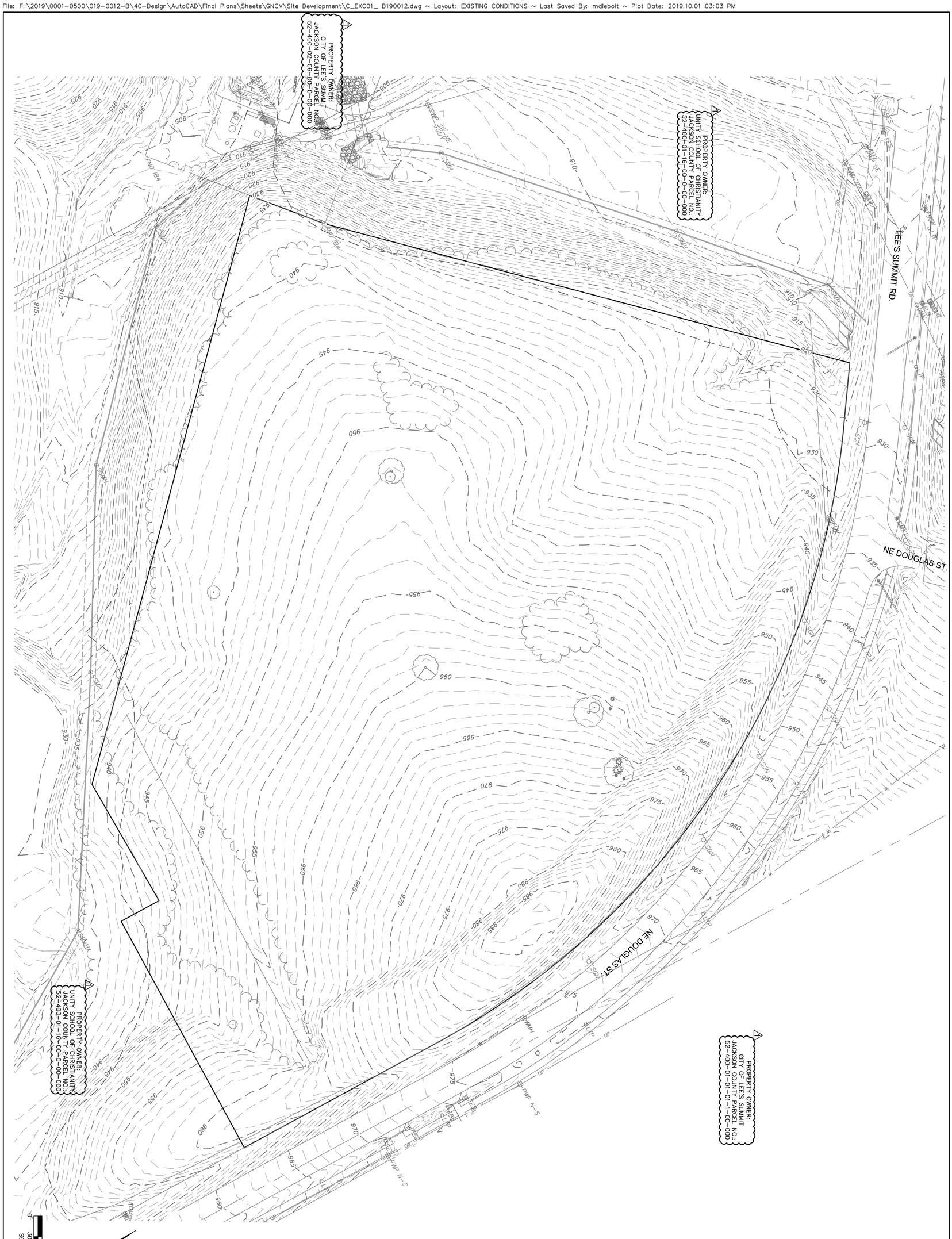

SHEET
C103

EXISTING CONDITIONS
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

drawn by: M.A.D.
checked by: N.J.H.
designed by: N.J.H.
QA/QC by: N.J.H.
project no.: B190012.B
date: 2020.08.27

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

STATE OF MISSOURI
NICHOLAS D. HEBERER
NUMBER PE-2010019997
02/04/2021
PROFESSIONAL ENGINEER

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LEE'S SUMMIT RD.

NE DOUGLAS ST.

NE DOUGLAS ST.

BLDG 13 (FUTURE)

BLDG 12 (FUTURE)

BLDG 11 (FUTURE)

BLDG 10 (FUTURE)

BLDG 9 (FUTURE)

BLDG 8 (FUTURE)

BLDG 7 (FUTURE)

BLDG 6

BLDG 5

BLDG 4

BLDG 3

BLDG 2

BLDG 1 CLUBHOUSE

MAINT. BLDG

10' U.E.

50' B.L.

15' D.E.

T.C.E.

L.S.E.

20' D.E.

0' 30' 60' 120'
SCALE IN FEET

N

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KS CERTIFICATE OF AUTHORITY #:E-1081
NORTH KANSAS CITY, MO 64116 TEL 816.361.1177
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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
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REVISIONS

GENERAL LAYOUT
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C104

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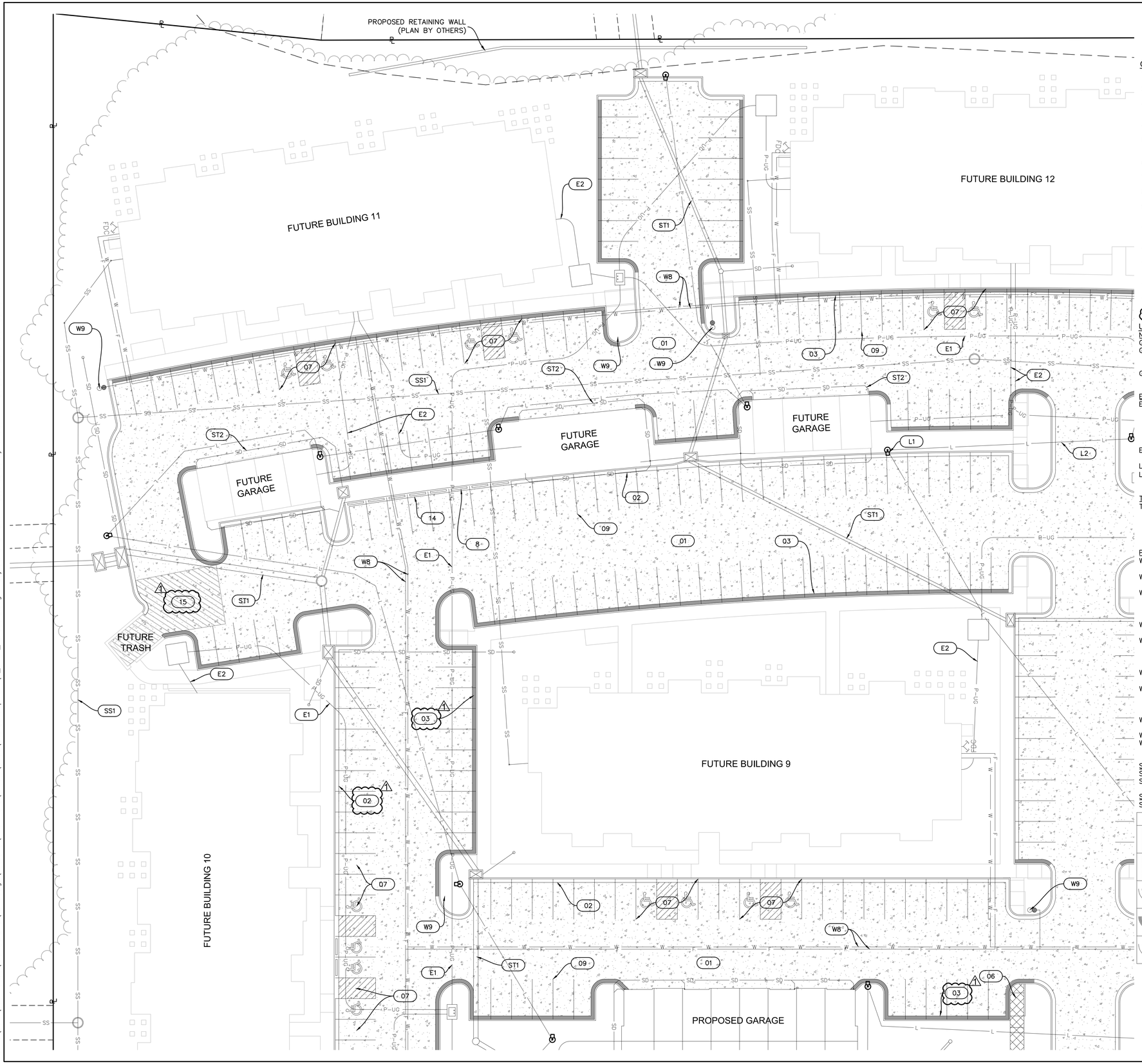

PROPERTY LEGEND	
R/W	PROPERTY / RIGHT-OF-WAY LINE
	EASEMENT LINE

CONSTRUCTION NOTES (##)

1. CONSTRUCT STANDARD CONCRETE PAVEMENT (SEE LEGEND)
2. CONSTRUCT TYPE CG-1 CONCRETE CURB AND GUTTER (TYP.) (SEE LEGEND)
3. CONSTRUCT TYPE CG-1 'DRY' CONCRETE CURB AND GUTTER (TYP.) (SEE LEGEND)
4. CONSTRUCT PRIVATE CONCRETE SIDEWALK
5. CONSTRUCT ACCESSIBLE PARALLEL SIDEWALK RAMP (SEE SPOT ELEVATION PLANS)
6. CONSTRUCT PERPENDICULAR SIDEWALK RAMP (SEE SPOT ELEVATION PLANS)
7. PROPOSED ACCESSIBLE PARKING STALLS WITH SIGNAGE AND STRIPING (TYP.)
8. INSTALL 7-FT CONCRETE WHEEL STOP. (SEE DETAIL SHEET)
9. PROPOSED 4" WHITE/YELLOW PAVEMENT STRIPING (TYP.). RE: SHEET C102 FOR STRIPING NOTES.
10. CONSTRUCT CONCRETE EXTERIOR STAIRS W/ HANDRAIL, RE: SPOT ELEVATION PLANS FOR DETAILS.
11. TRASH ENCLOSURE, RE: ARCH PLANS
12. CONSTRUCT CONCRETE PAD AND INSTALL BICYCLE RACKS PER MANUFACTURER SPECIFICATIONS.
13. PROPOSED MONUMENT SIGN. RE: LANDSCAPE PLANS.
14. CONSTRUCT RIBBON CURB (TYP.) (SEE LEGEND)
15. CONSTRUCT HEAVY DUTY CONCRETE PAVEMENT (SEE LEGEND) 1

UTILITY NOTES (##)

NATURAL GAS SERVICE

G1. COORDINATE WITH SPIRE ENERGY FOR GAS SERVICE LINE EXTENSION.
G2. CONTRACTOR TO MAKE APPLICATION WITH SPIRE ENERGY FOR METER SET AND COORDINATE WITH SPIRE AND ENGINEER FOR SIZE, LOCATION, AND ROUTING OF GAS SERVICE TO BUILDING.
G3. COORDINATE WITH ARCHITECT, MEP, OWNER, AND AMENITY DESIGNER TO PROVIDE GAS SERVICE TO AMENITY AREA.

ELECTRIC SERVICE

E1. COORDINATE WITH EVERGY FOR CONDUIT ROUTING FROM PRIMARY TO PROPOSED TRANSFORMERS. EASEMENT SHALL BE COORDINATED WITH ENGINEER AND EVERGY AFTER CONDUIT INSTALLATION. COORDINATE FOR EVERGY TO INSTALL TRANSFORMER, PRIMARY WIRE, AND MAKE CONNECTION. CONSTRUCT CONCRETE PAD FOR TRANSFORMER AND PROVIDE GRADING, AS NECESSARY, PER EVERGY STANDARDS.
E2. SEE MEP PLANS FOR SECONDARY CONDUITS AND WIRE, BUILDING CONNECTION, METERING, AND CONTINUATION.
L1. PRIVATE SITE LIGHTING (TYP.), RE: LIGHTING PLANS FOR DETAILS.
L2. PRIVATE SITE LIGHTING WIRING ROUTING (TYP.), RE: LIGHTING PLANS FOR DETAILS.

TELEPHONE/CABLE/DATA SERVICE

T1. ASSIST OWNER IN COORDINATING WITH UTILITIES FOR INSTALLATION OF CONDUITS, SERVICES, LOCATION OF PROPOSED PEDESTALS, ETC. ALL CONDUITS SHALL BE CAPPED AND ACCURATELY STAKED WITH HARDWOOD POSTS, OR STUBBED UP TO SURFACE AT ENDS AND BENDS. MAINTAIN STAKES OR STUBS THROUGHOUT CONSTRUCTION.

PRIVATE WATER MAIN

W1. COORDINATE WITH CITY TO CONNECT TO PROPOSED 12" PVC WATER MAIN AT GATE VALVE INSTALLED WITH PUBLIC WATER MAIN EXTENSION.
W2. INSTALL APPROX. 10 L.F. 4" C900 (48" MIN. COVER) TO PROPOSED WATER METER.
W3. INSTALL CITY-STANDARD METER VAULT. COORDINATE WITH CITY FOR REQUEST AND INSTALLATION OF 4" WATER METER WITHIN VAULT. VAULT SHALL BE INSTALLED ENTIRELY UNDERGROUND WITH RISER RINGS EXTENDING TO FINISH GRADE SURFACE.
W4. INSTALL 10 L.F. 4" PVC (C900) (48" MIN. COVER) AND REQUIRED FITTINGS TO EXTEND SERVICE LINE TO CITY-STANDARD BACKFLOW PREVENTER VAULT.
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W8. SEE SHEETS C801-C810 FOR PRIVATE WATER MAIN CONTINUATION AND SERVICE CONNECTIONS.
W9. PROPOSED PRIVATE FIRE HYDRANT.
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STORM SEWER

ST1. PROPOSED PRIVATE STORM SEWER. RE: SHEETS C505-C509.
ST2. PROPOSED BUILDING STORM SEWER. RE: SHEETS C521-C537.

SANITARY SEWER

SS1. PROPOSED 8" PRIVATE SANITARY SEWER MAIN. RE: SHEET C701-C706.

CONSTRUCTION LEGEND

- STD. DUTY CONCRETE PAVEMENT (See Detail Sheet)
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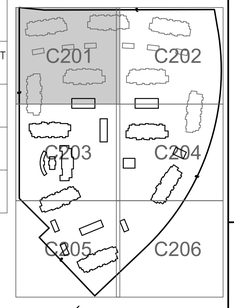
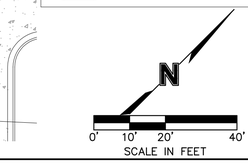
- RIBBON CURB (See Detail Sheet)



SITE PLAN
KEY MAP
NOT TO SCALE



SCALE IN FEET

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

SITE PLAN
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C201

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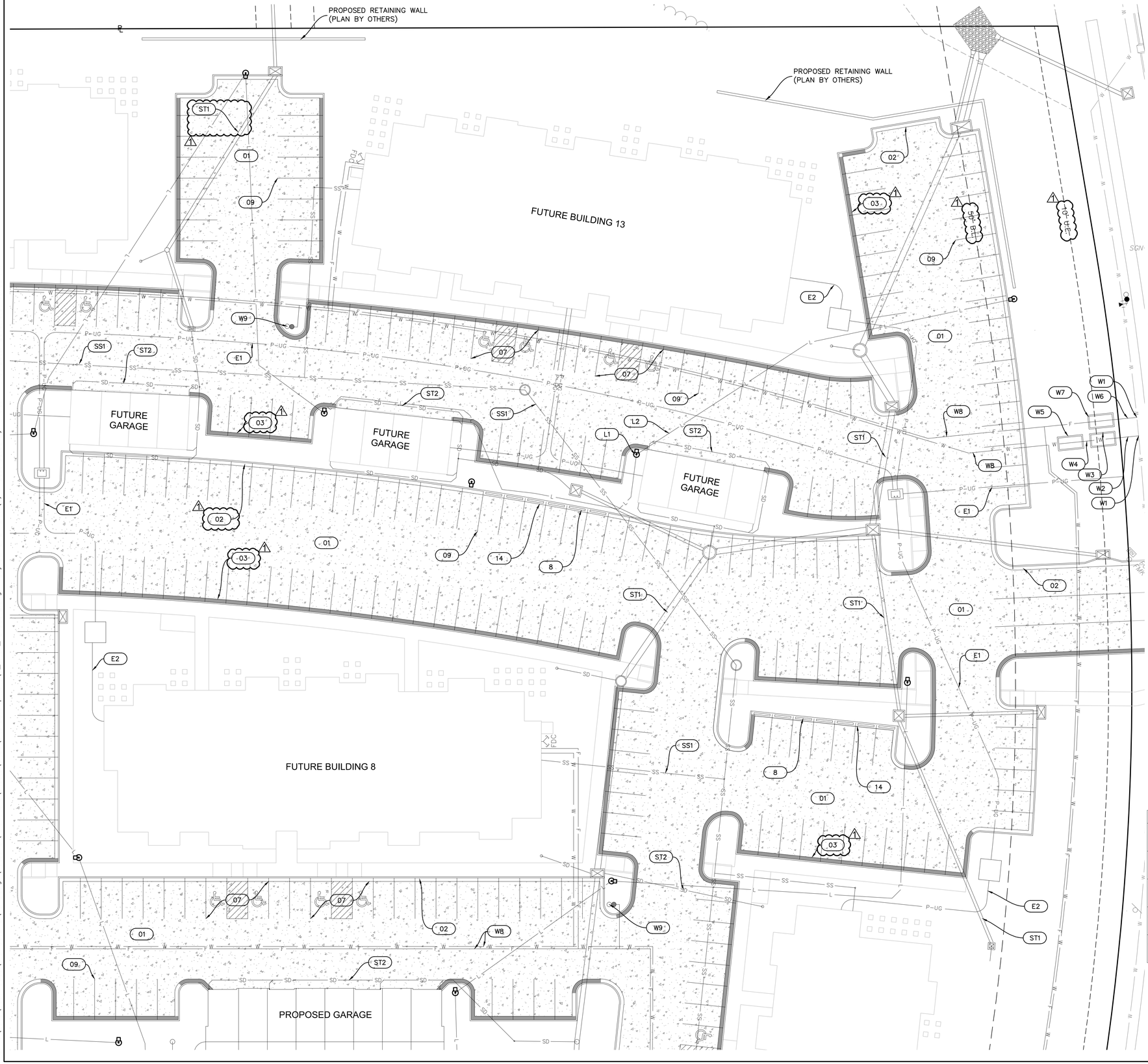

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R/W	PROPERTY / RIGHT-OF-WAY LINE
	EASEMENT LINE

CONSTRUCTION NOTES (##)

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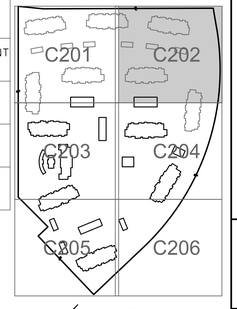

SITE PLAN KEY MAP
NOT TO SCALE

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

SITE PLAN
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C202

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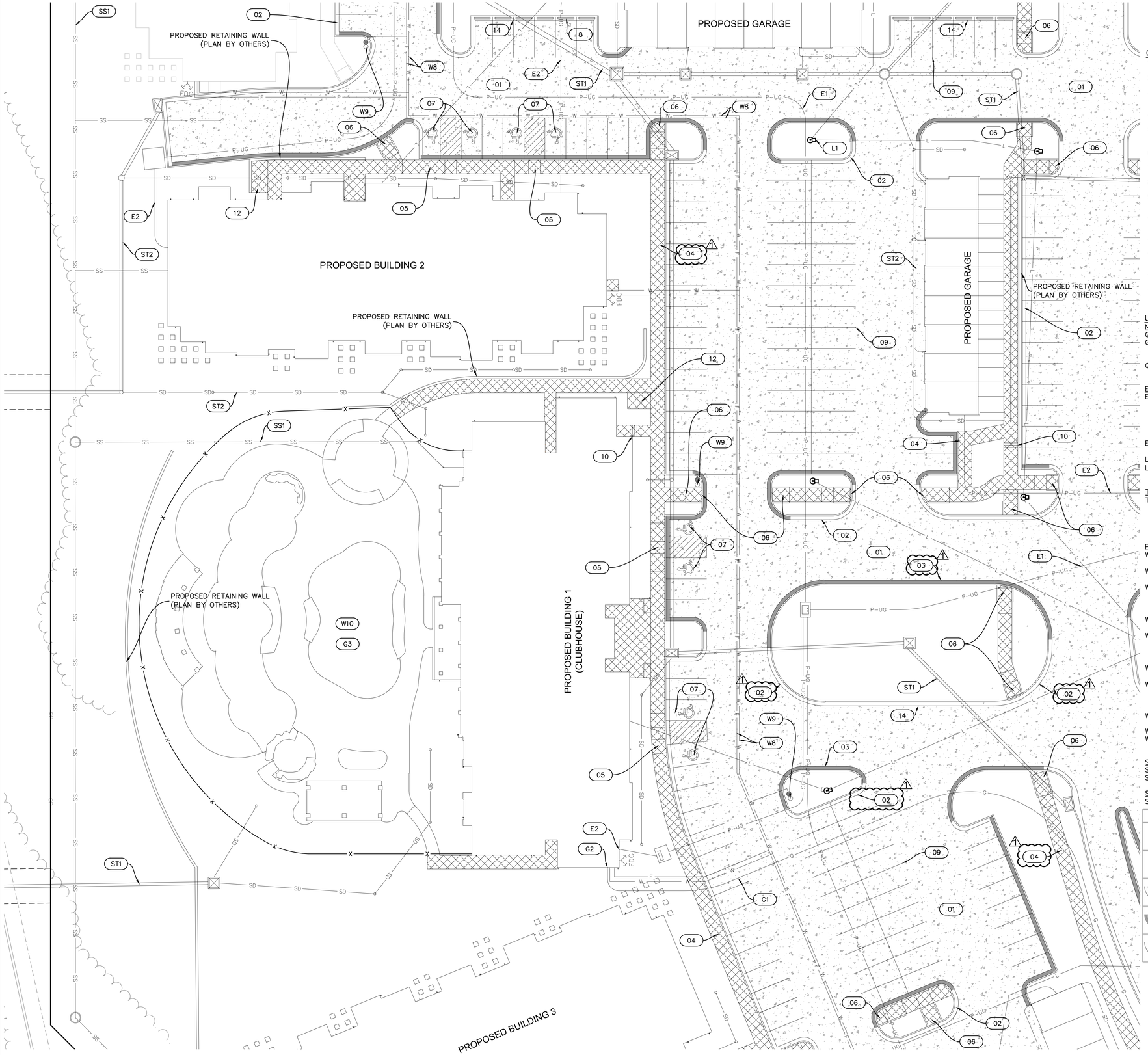

PROPERTY LEGEND	
R/W	PROPERTY / RIGHT-OF-WAY LINE
	EASEMENT LINE

CONSTRUCTION NOTES (##)

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8. INSTALL 7-FT CONCRETE WHEEL STOP. (SEE DETAIL SHEET)
9. PROPOSED 4" WHITE/YELLOW PAVEMENT STRIPING (TYP.). RE: SHEET C102 FOR STRIPING NOTES.
10. CONSTRUCT CONCRETE EXTERIOR STAIRS W/ HANDRAIL, RE: SPOT ELEVATION PLANS FOR DETAILS.
11. TRASH ENCLOSURE, RE: ARCH PLANS
12. CONSTRUCT CONCRETE PAD AND INSTALL BICYCLE RACKS PER MANUFACTURER SPECIFICATIONS.
13. PROPOSED MONUMENT SIGN. RE: LANDSCAPE PLANS.
14. CONSTRUCT RIBBON CURB (TYP.) (SEE LEGEND)
15. CONSTRUCT HEAVY DUTY CONCRETE PAVEMENT (SEE LEGEND)

UTILITY NOTES (##)

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G2. CONTRACTOR TO MAKE APPLICATION WITH SPIRE ENERGY FOR METER SET AND COORDINATE WITH SPIRE AND ENGINEER FOR SIZE, LOCATION, AND ROUTING OF GAS SERVICE TO BUILDING.
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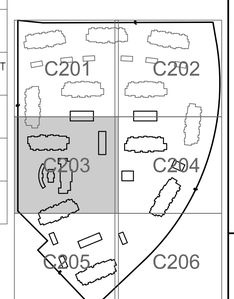
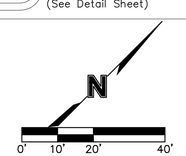


SITE PLAN KEY MAP
NOT TO SCALE



SCALE IN FEET

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TEL 816.361.1177
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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

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SITE DEVELOPMENT 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: 2020.08.27

SHEET
C203

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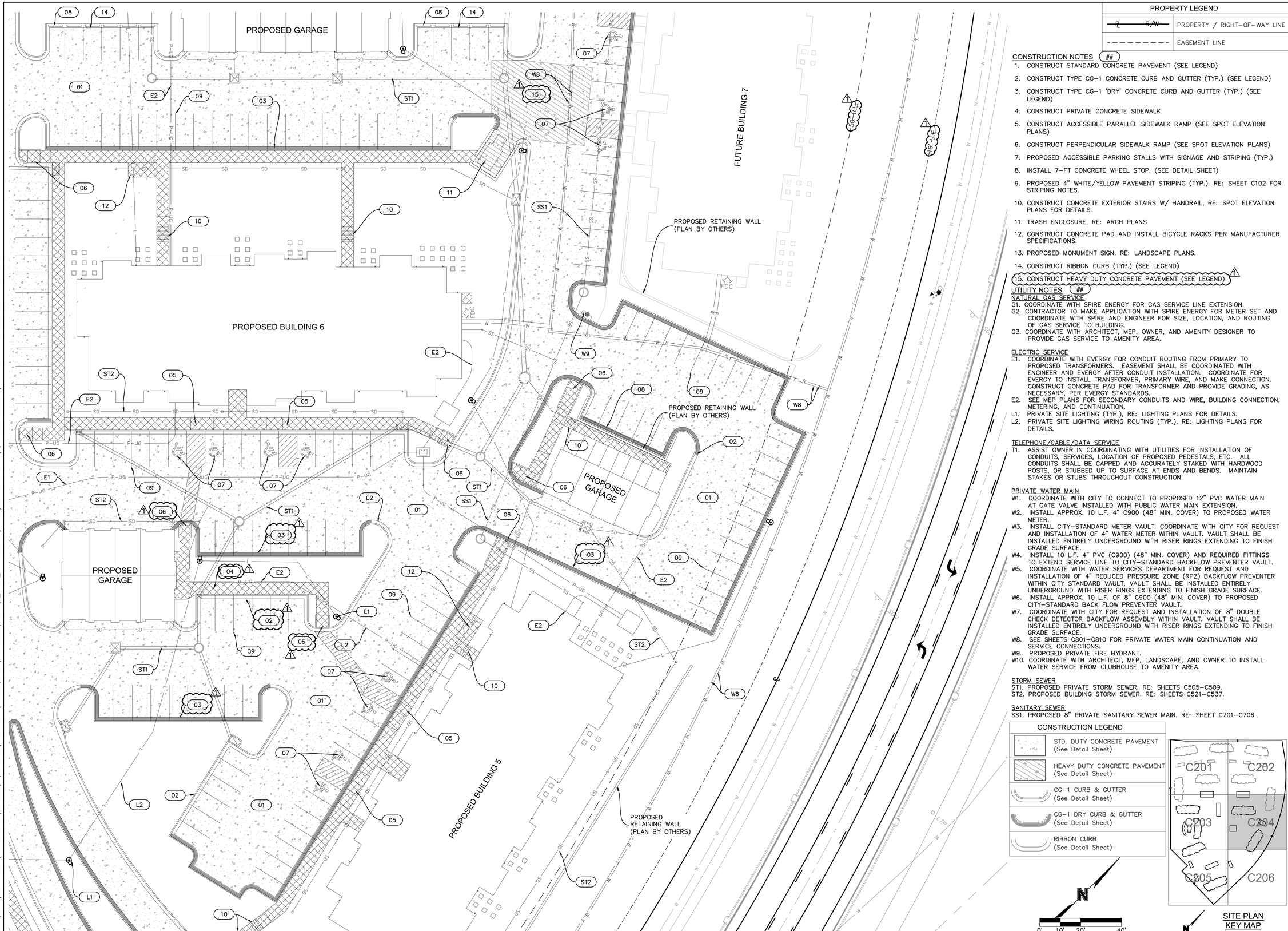

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SITE PLAN KEY MAP
NOT TO SCALE

olsson
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2020

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designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
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SHEET
C204

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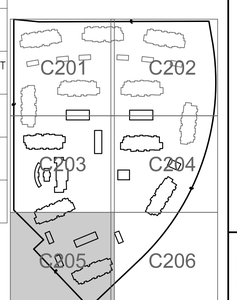
N

0' 10' 20' 40'
SCALE IN FEET



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2020

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SHEET
C205

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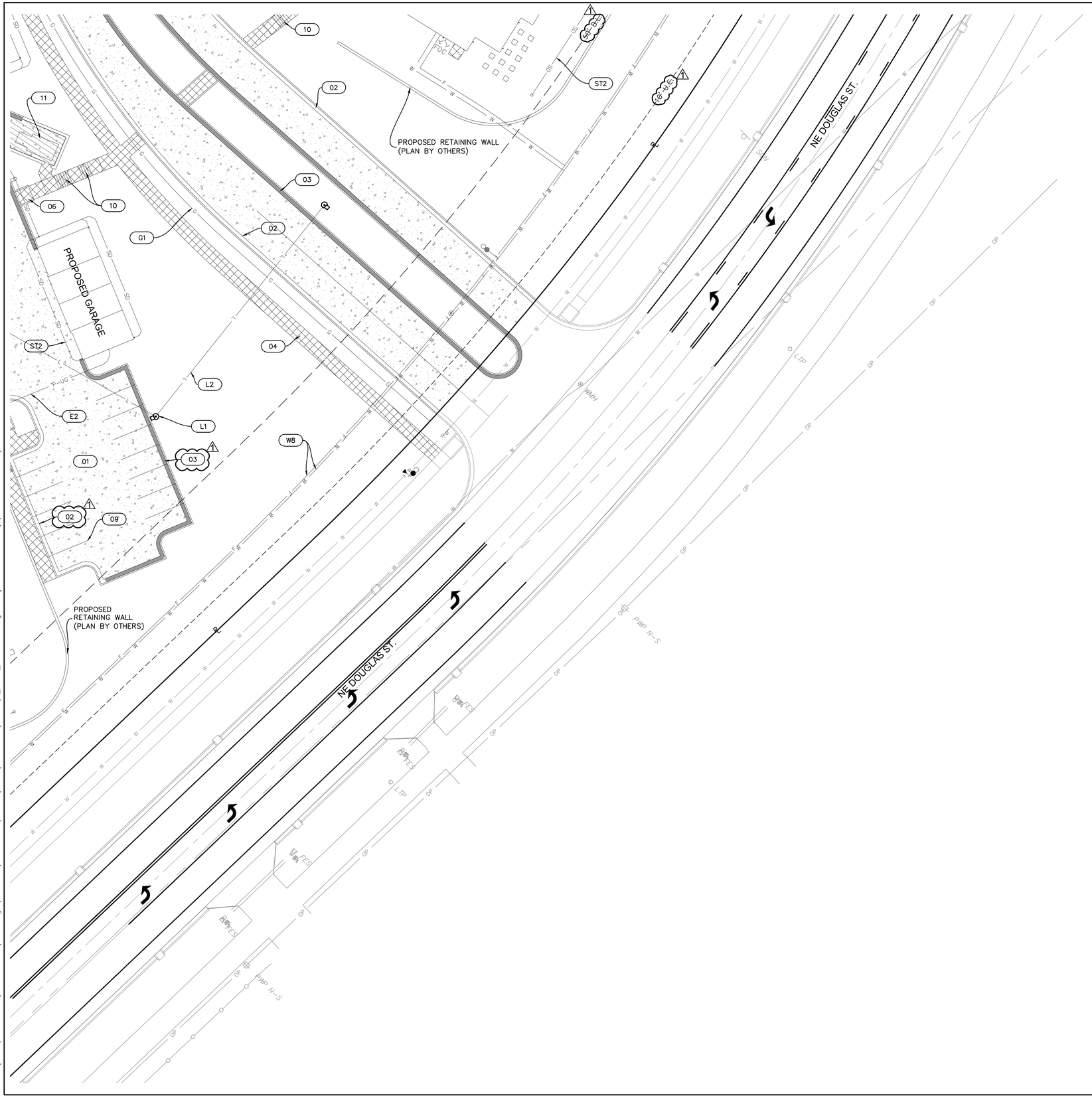

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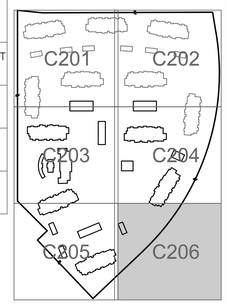
W8. SEE SHEETS C801-C810 FOR PRIVATE WATER MAIN CONTINUATION AND SERVICE CONNECTIONS.
W9. PROPOSED PRIVATE FIRE HYDRANT.
W10. COORDINATE WITH ARCHITECT, MEP, LANDSCAPE, AND OWNER TO INSTALL WATER SERVICE FROM CLUBHOUSE TO AMENITY AREA.

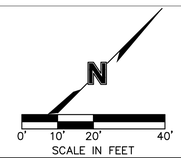
STORM SEWER
ST1. PROPOSED PRIVATE STORM SEWER. RE: SHEETS C505-C509.
ST2. PROPOSED BUILDING STORM SEWER. RE: SHEETS C521-C537.

SANITARY SEWER
SS1. PROPOSED 8" PRIVATE SANITARY SEWER MAIN. RE: SHEET C701-C706.

CONSTRUCTION LEGEND	
	STD. DUTY CONCRETE PAVEMENT (See Detail Sheet)
	HEAVY DUTY CONCRETE PAVEMENT (See Detail Sheet)
	CG-1 CURB & GUTTER (See Detail Sheet)
	CG-1 DRY CURB & GUTTER (See Detail Sheet)
	RIBBON CURB (See Detail Sheet)



SITE PLAN
KEY MAP
NOT TO SCALE



SCALE IN FEET

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1.	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

SITE PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

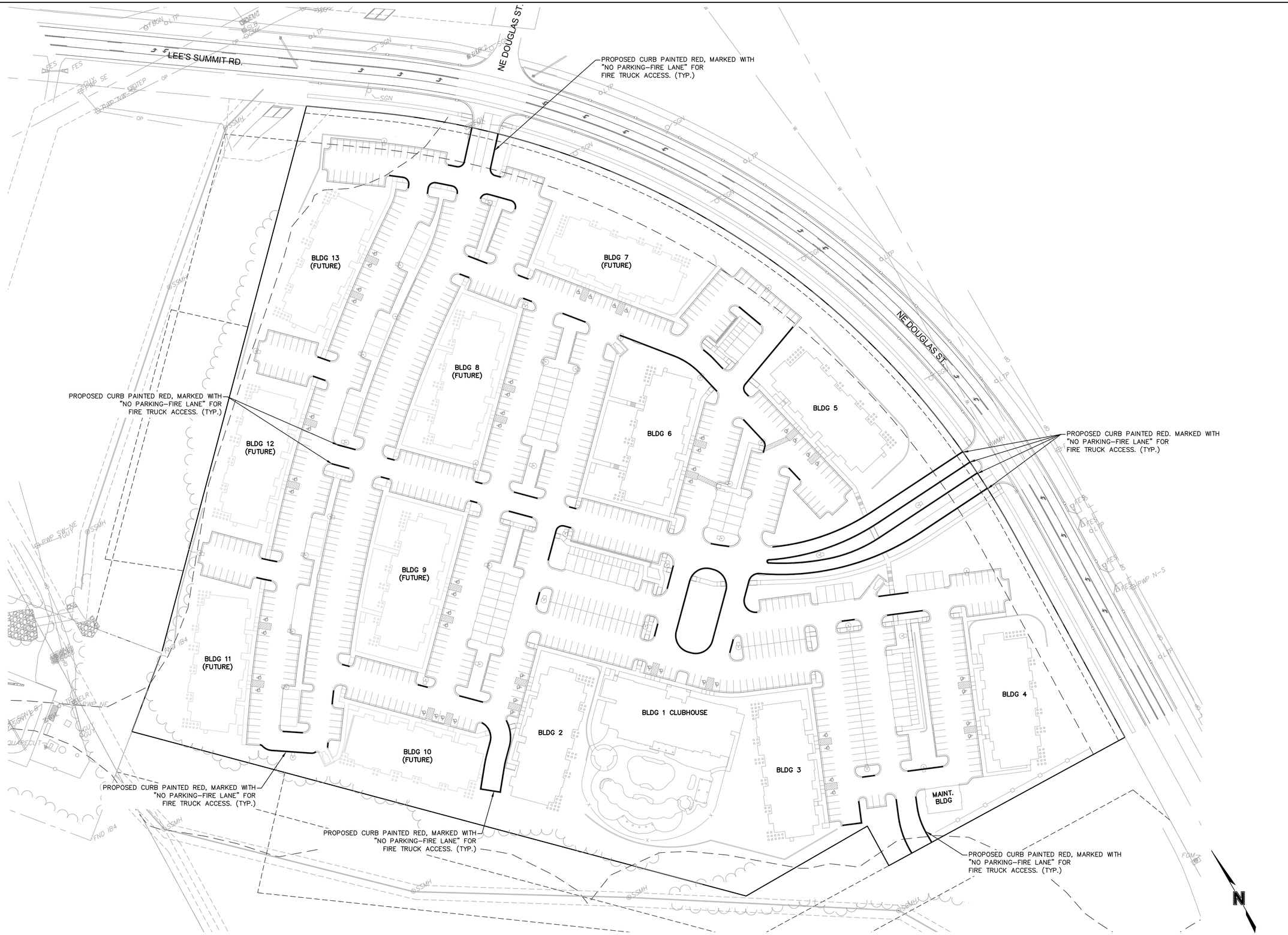
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C206

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_SIT01_ B190012.dwg ~ Layout: SITE PLAN (6) ~ Last Saved By: nheiser ~ Plot Date: 2019.10.01 03:03 PM



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MO# 2015000555

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REVISIONS

FIRE LANE STRIPING PLAN
SITE DEVELOPMENT PLANS

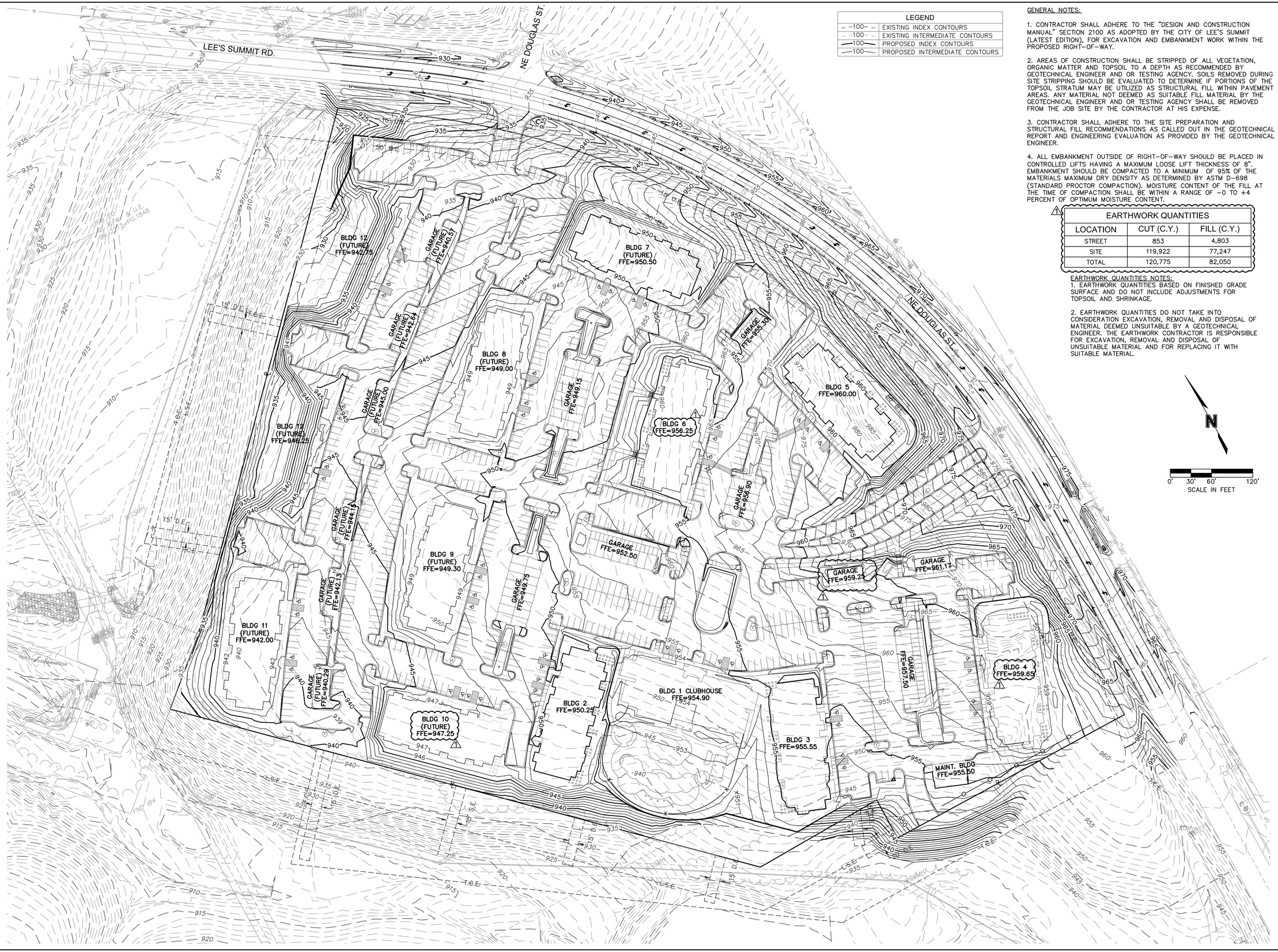
ARIA APARTMENTS
PHASE 1

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: 2020.08.27

SHEET
C207



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.

1

EARTHWORK QUANTITIES		
LOCATION	CUT (C.Y.)	FILL (C.Y.)
STREET	853	4,803
SITE	119,922	77,247
TOTAL	120,775	82,050

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.

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REVISIONS

GRADING PLAN
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C301

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_GRD01_ B190012.dwg ~ Layout: GRADING PLAN ~ Last Saved By: mdlebolt ~ Plot Date: 2019.10.01 03:03 PM

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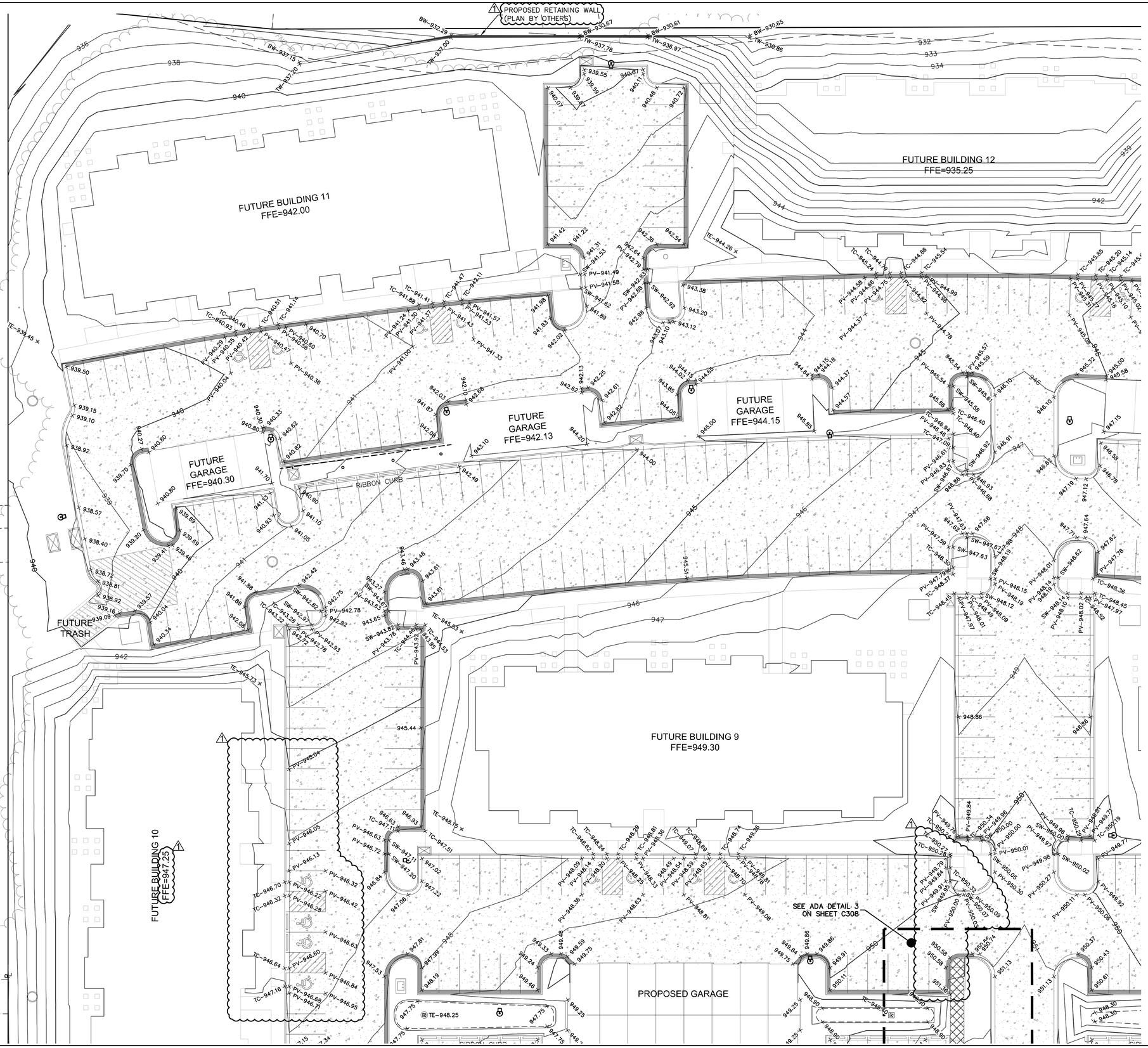


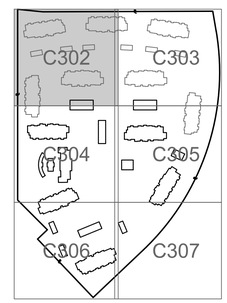
LEGEND	
TC–	TOP OF CURB
PV–	TOP OF PAVEMENT
SW–	SIDEWALK
TE–	TOP ELEVATION OF STRUCTURE
TS–	TOP OF STEPS
BS–	BOTTOM OF STEPS
TW–	PROPOSED GRADE AT TOP OF WALL
BW–	PROPOSED GRADE AT BOTTOM OF WALL

1 CONSTRUCTION LEGEND

- STD. DUTY CONCRETE PAVEMENT (See Detail Sheet)
- HEAVY DUTY CONCRETE PAVEMENT (See Detail Sheet)
- CG–1 CURB & GUTTER (See Detail Sheet)
- CG–1 DRY CURB & GUTTER (See Detail Sheet)
- RIBBON CURB (See Detail Sheet)

N

0' 10' 20' 40'
SCALE IN FEET



SPOT ELEVATION KEY MAP
NOT TO SCALE

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REVISIONS

SPOT ELEVATION PLAN
SITE DEVELOPMENT PLANS

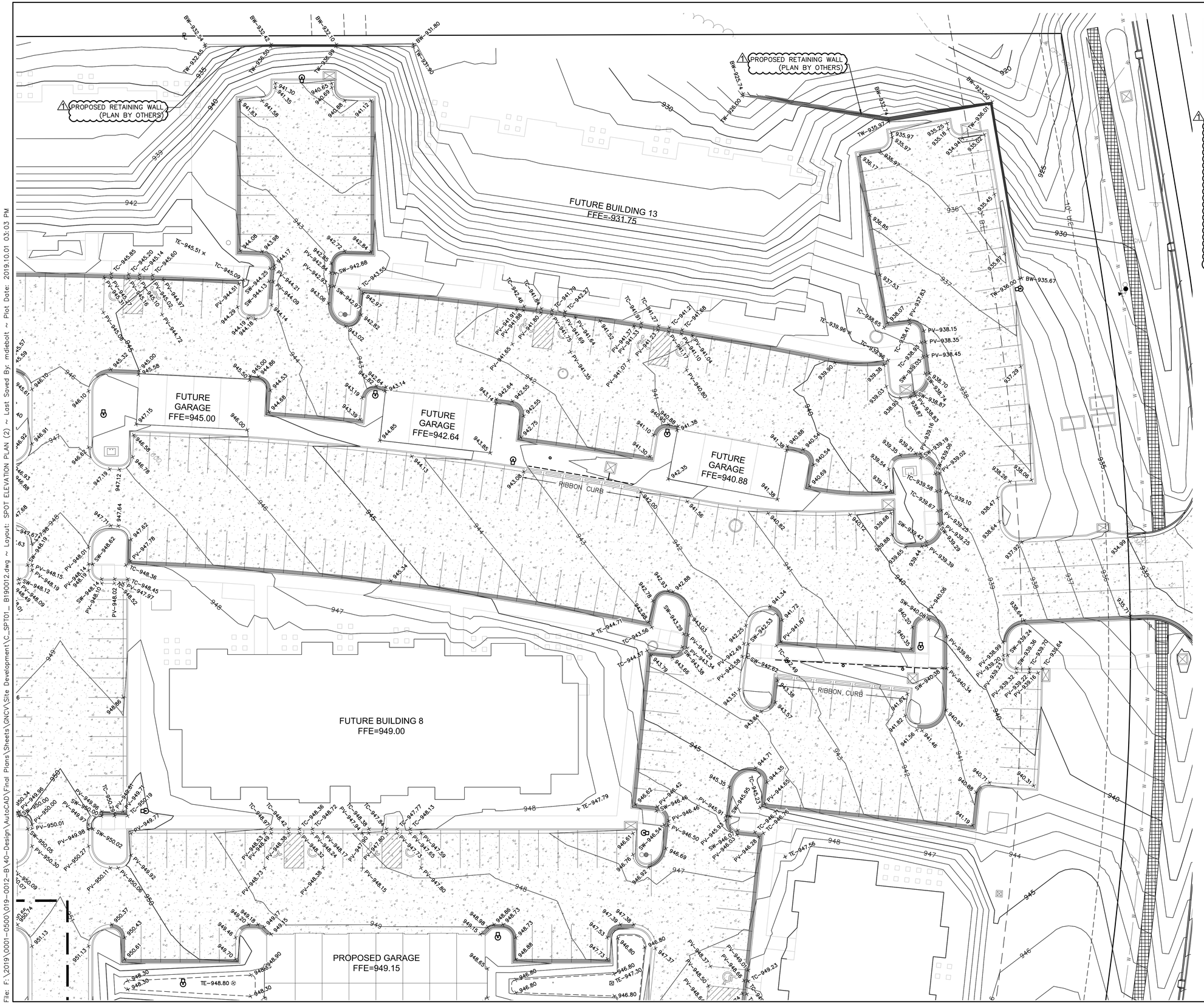
ARIA APARTMENTS
PHASE 1

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: 2020.08.27

SHEET
C302

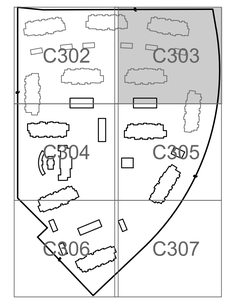


LEGEND	
TC–	TOP OF CURB
PV–	TOP OF PAVEMENT
SW–	SIDEWALK
TE–	TOP ELEVATION OF STRUCTURE
TS–	TOP OF STEPS
BS–	BOTTOM OF STEPS
TW–	PROPOSED GRADE AT TOP OF WALL
BW–	PROPOSED GRADE AT BOTTOM OF WALL

CONSTRUCTION LEGEND

- STD. DUTY CONCRETE PAVEMENT (See Detail Sheet)
- HEAVY DUTY CONCRETE PAVEMENT (See Detail Sheet)
- CG–1 CURB & GUTTER (See Detail Sheet)
- CG–1 DRY CURB & GUTTER (See Detail Sheet)
- RIBBON CURB (See Detail Sheet)

0' 10' 20' 40'
SCALE IN FEET



SPOT ELEVATION KEY MAP
NOT TO SCALE

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REVISIONS

SPOT ELEVATION PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C303

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PROPOSED GARAGE
FFE=949.75

PROPOSED BUILDING 2
FFE=950.25

PROPOSED GARAGE
FFE=952.50

PROPOSED BUILDING 1
(CLUBHOUSE)
FFE=954.90

PROPOSED BUILDING 3
FFE=955.55

PROPOSED GARAGE
FFE=958.25

COMMON AREA
FFE=953.40

RIBBON CURB

PROPOSED RETAINING WALL (PLAN BY OTHERS)

SEE ADA DETAIL 1 ON SHEET C308

SEE ADA DETAIL 2 ON SHEET C308

SEE ADA DETAIL 3 ON SHEET C308

SEE ADA DETAIL 6 ON SHEET C310

LEGEND	
TC–	TOP OF CURB
PV–	TOP OF PAVEMENT
SW–	SIDEWALK
TE–	TOP ELEVATION OF STRUCTURE
TS–	TOP OF STEPS
BS–	BOTTOM OF STEPS
TW–	PROPOSED GRADE AT TOP OF WALL
BW–	PROPOSED GRADE AT BOTTOM OF WALL

CONSTRUCTION LEGEND

1. STD. DUTY CONCRETE PAVEMENT (See Detail Sheet)
2. HEAVY DUTY CONCRETE PAVEMENT (See Detail Sheet)
3. CG–1 CURB & GUTTER (See Detail Sheet)
4. CG–1 DRY CURB & GUTTER (See Detail Sheet)
5. RIBBON CURB (See Detail Sheet)

0' 10' 20' 40'
SCALE IN FEET

C302 C303 C304 C305 C306 C307

SPOT ELEVATION KEY MAP
NOT TO SCALE

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MO# 2015000555

REVISIONS

NO. REV.	DATE	DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

SPOT ELEVATION PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

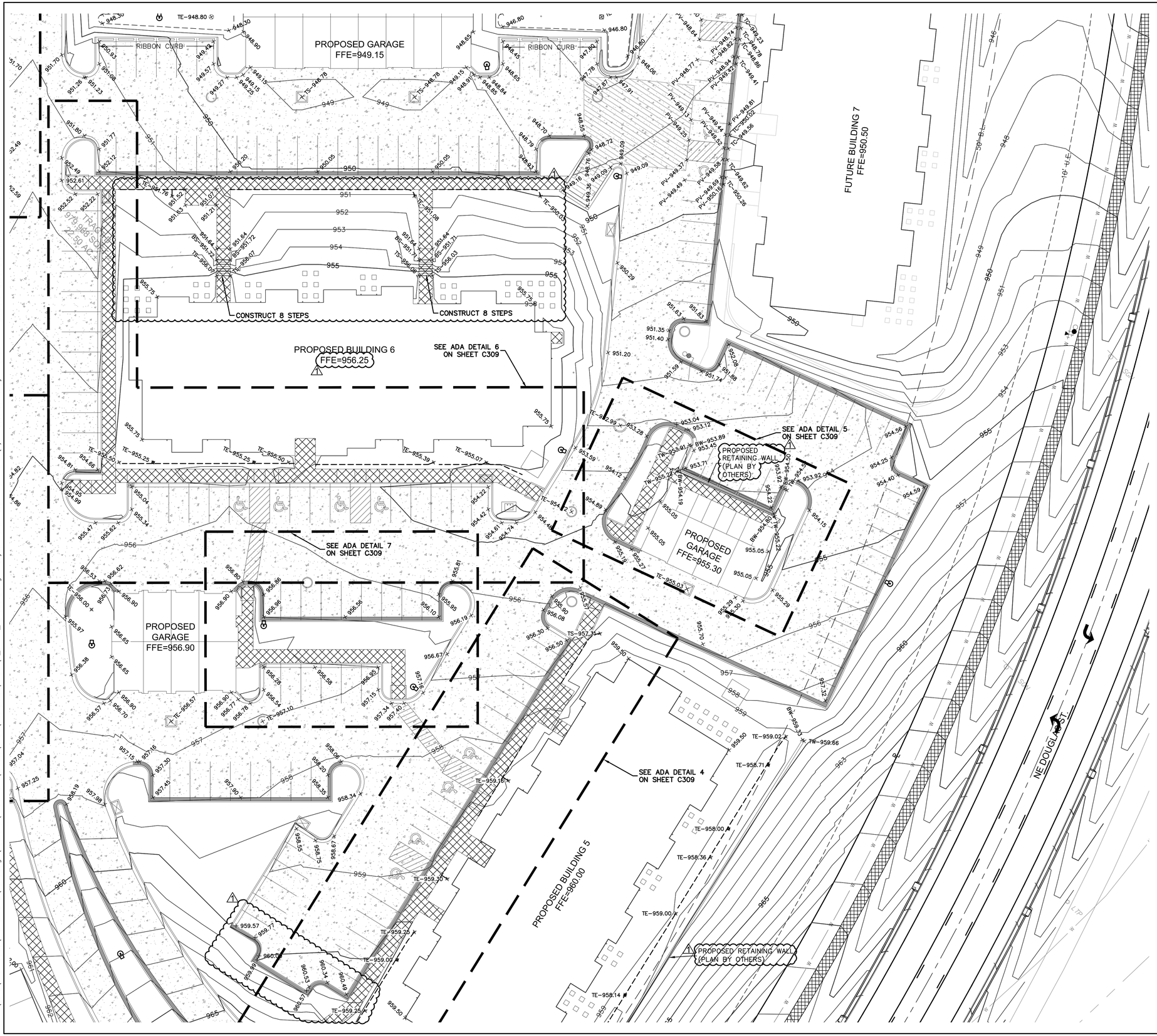
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C304

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_SPT01_ B190012.dwg ~ Layout: SPOT ELEVATION PLAN (3) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

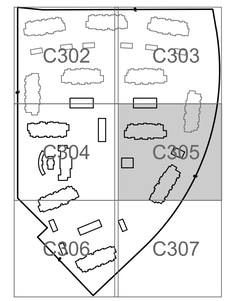


LEGEND	
TC–	TOP OF CURB
PV–	TOP OF PAVEMENT
SW–	SIDEWALK
TE–	TOP ELEVATION OF STRUCTURE
TS–	TOP OF STEPS
BS–	BOTTOM OF STEPS
TW–	PROPOSED GRADE AT TOP OF WALL
BW–	PROPOSED GRADE AT BOTTOM OF WALL

CONSTRUCTION LEGEND

- STD. DUTY CONCRETE PAVEMENT (See Detail Sheet)
- HEAVY DUTY CONCRETE PAVEMENT (See Detail Sheet)
- CG–1 CURB & GUTTER (See Detail Sheet)
- CG–1 DRY CURB & GUTTER (See Detail Sheet)
- RIBBON CURB (See Detail Sheet)

0' 10' 20' 40'
SCALE IN FEET



SPOT ELEVATION KEY MAP
NOT TO SCALE

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SPOT ELEVATION PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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QA/QC by: N.D.H.
project no.: 019-0012.B
date: 2020.08.27

SHEET
C305

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_SPT01_ B190012.dwg ~ Layout: SPOT ELEVATION PLAN (4) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

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PROPOSED BUILDING 3
FFE=955.55

SEE ADA DETAIL 8
ON SHEET C310

PROPOSED RETAINING WALL
(PLAN BY OTHERS)

SEE ADA DETAIL 10
ON SHEET C311

SEE ADA DETAIL 11
ON SHEET C311

PROPOSED GARAGE
FFE=969.25

PROPOSED GARAGE
FFE=957.50

PROPOSED GARAGE
FFE=961.17

PROPOSED RETAINING WALL
(PLAN BY OTHERS)

MAINTENANCE
BUILDING
FFE=955.50

RIBBON CURB

SEE ADA DETAIL 9
ON SHEET C310

PROPOSED BUILDING 4
FFE=959.65

PROPOSED RETAINING WALL
(PLAN BY OTHERS)

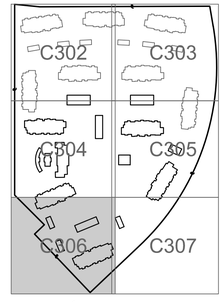
LEGEND	
TC–	TOP OF CURB
PV–	TOP OF PAVEMENT
SW–	SIDEWALK
TE–	TOP ELEVATION OF STRUCTURE
TS–	TOP OF STEPS
BS–	BOTTOM OF STEPS
TW–	PROPOSED GRADE AT TOP OF WALL
BW–	PROPOSED GRADE AT BOTTOM OF WALL

CONSTRUCTION LEGEND

- STD. DUTY CONCRETE PAVEMENT (See Detail Sheet)
- HEAVY DUTY CONCRETE PAVEMENT (See Detail Sheet)
- CG-1 CURB & GUTTER (See Detail Sheet)
- CG-1 DRY CURB & GUTTER (See Detail Sheet)
- RIBBON CURB (See Detail Sheet)

N

0' 10' 20' 40'
SCALE IN FEET



SPOT ELEVATION
KEY MAP
NOT TO SCALE

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02/04/2021
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MO# 2015000555

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

SPOT ELEVATION PLAN
SITE DEVELOPMENT PLANS

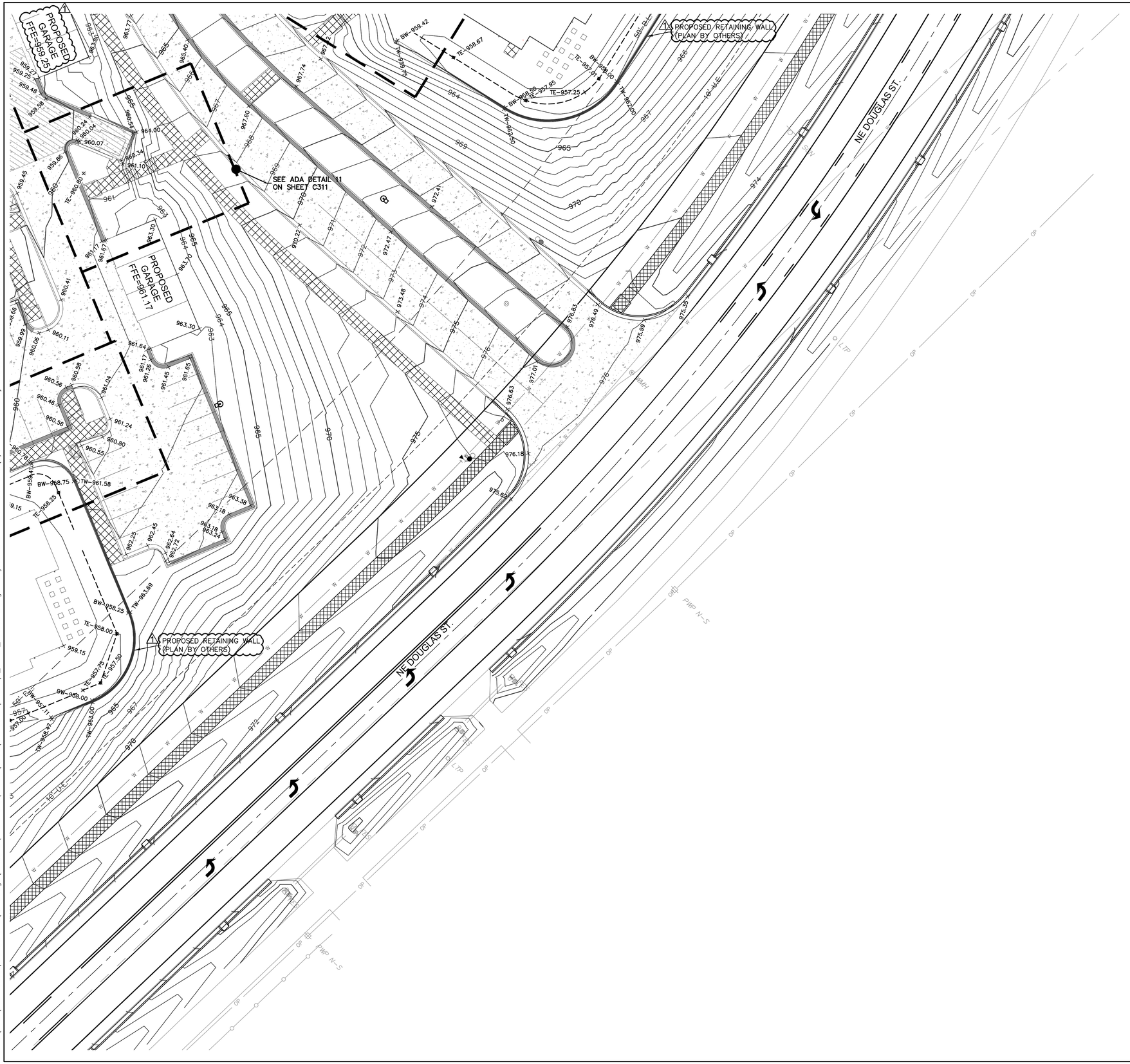
ARIA APARTMENTS
PHASE 1

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: 2020.08.27

SHEET
C306



LEGEND	
TC–	TOP OF CURB
PV–	TOP OF PAVEMENT
SW–	SIDEWALK
TE–	TOP ELEVATION OF STRUCTURE
TS–	TOP OF STEPS
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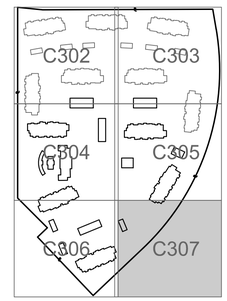
CONSTRUCTION LEGEND

- STD. DUTY CONCRETE PAVEMENT (See Detail Sheet)
- HEAVY DUTY CONCRETE PAVEMENT (See Detail Sheet)
- CG–1 CURB & GUTTER (See Detail Sheet)
- CG–1 DRY CURB & GUTTER (See Detail Sheet)
- RIBBON CURB (See Detail Sheet)

0' 10' 20' 40'
SCALE IN FEET



SPOT ELEVATION KEY MAP
NOT TO SCALE

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SPOT ELEVATION PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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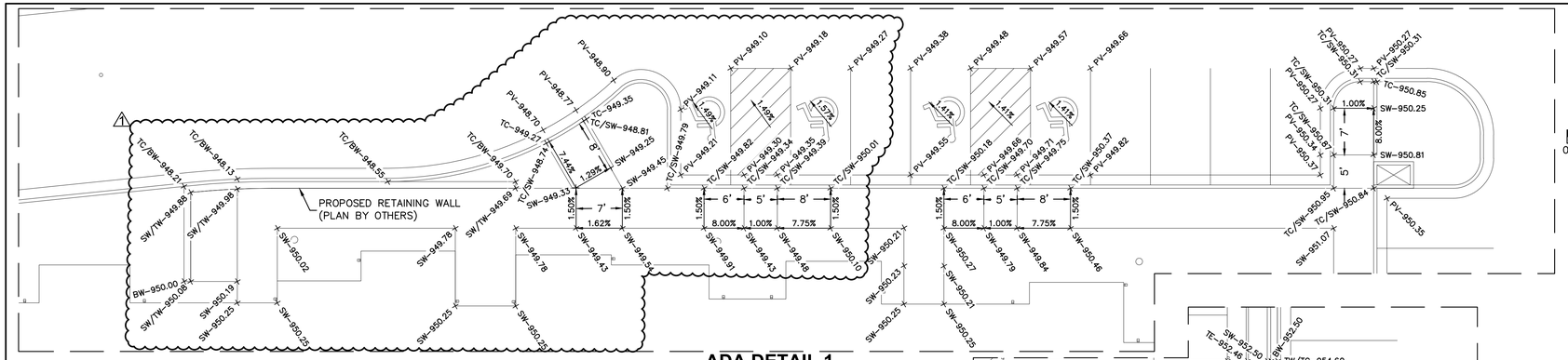
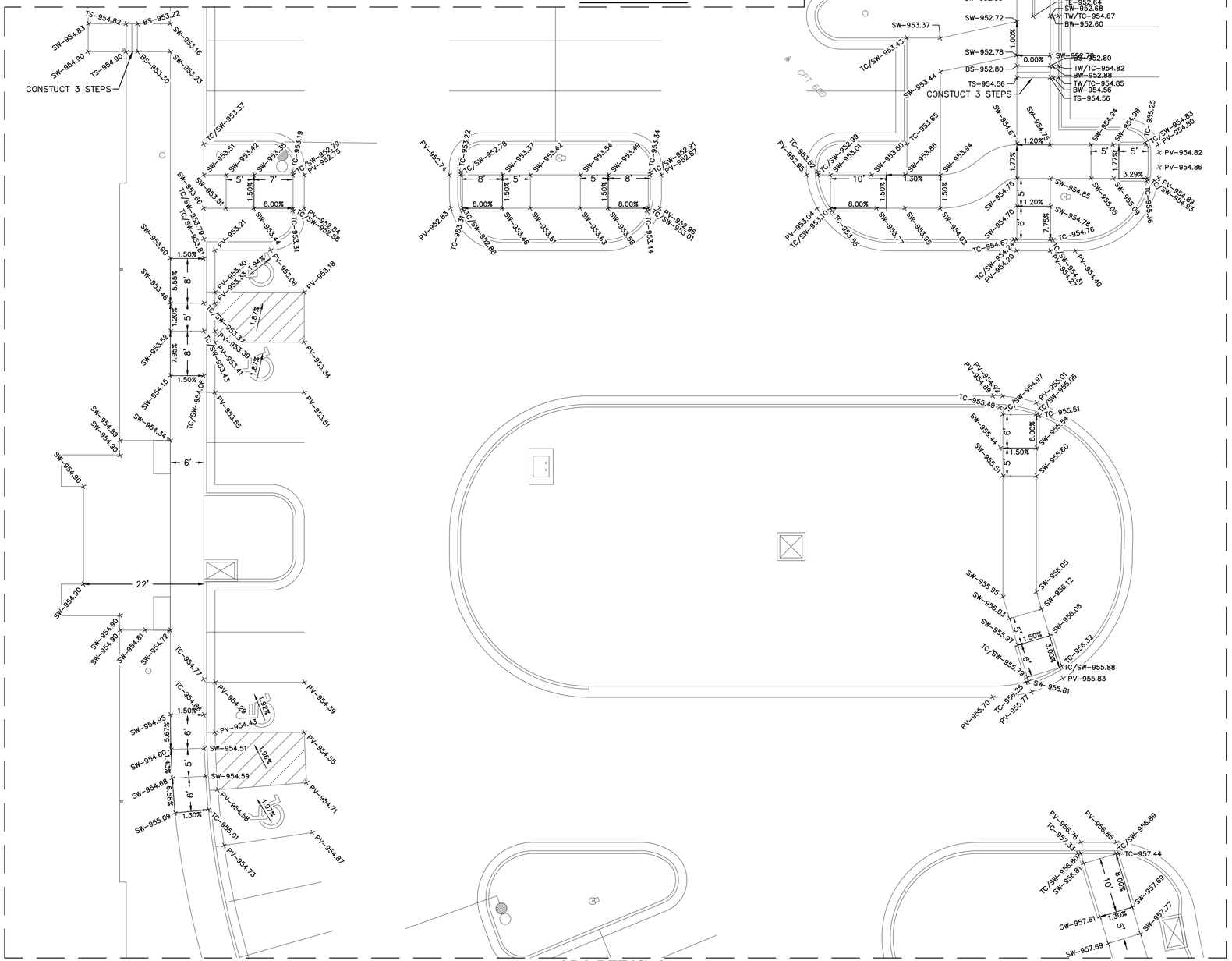
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C307

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_SP101_ B190012.dwg ~ Layout: SPOT ELEVATION PLAN (6) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



ADA DETAIL 1



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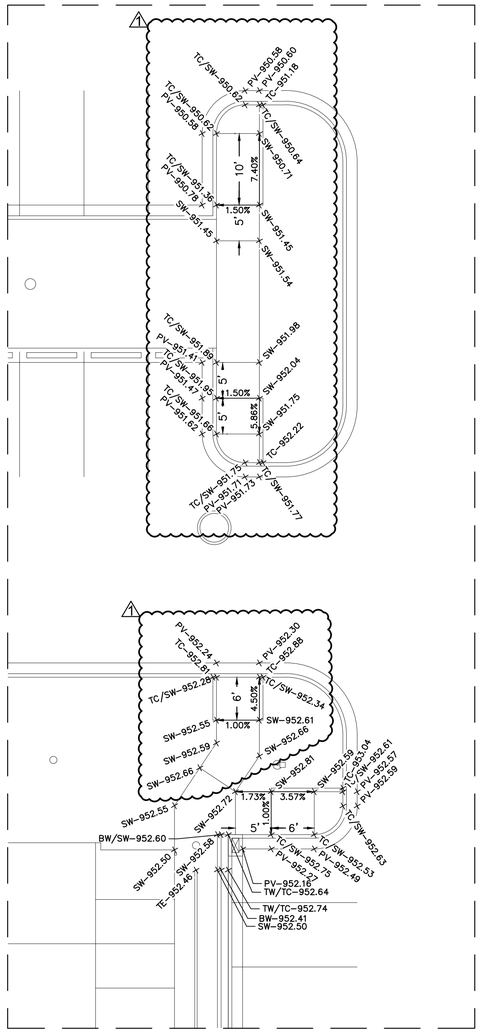

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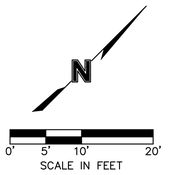

LEGEND	
TC–	TOP OF CURB
PV–	TOP OF PAVEMENT
SW–	SIDEWALK
TE–	TOP ELEVATION OF STRUCTURE
TS–	TOP OF STEPS
BS–	BOTTOM OF STEPS
TW–	PROPOSED GRADE AT TOP OF WALL
BW–	PROPOSED GRADE AT BOTTOM OF WALL

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STATE OF MISSOURI
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PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

ADA DETAILS
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C308

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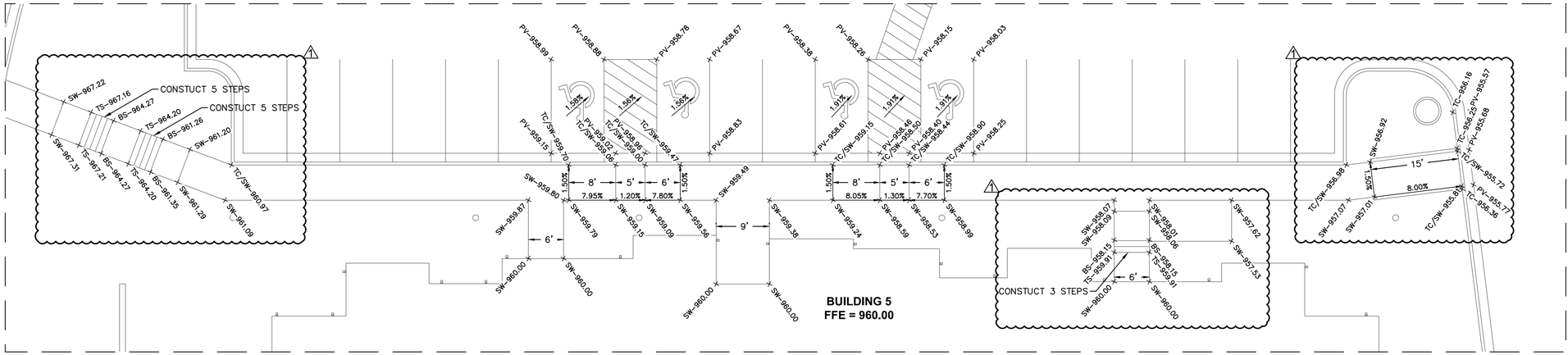
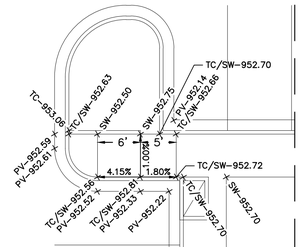
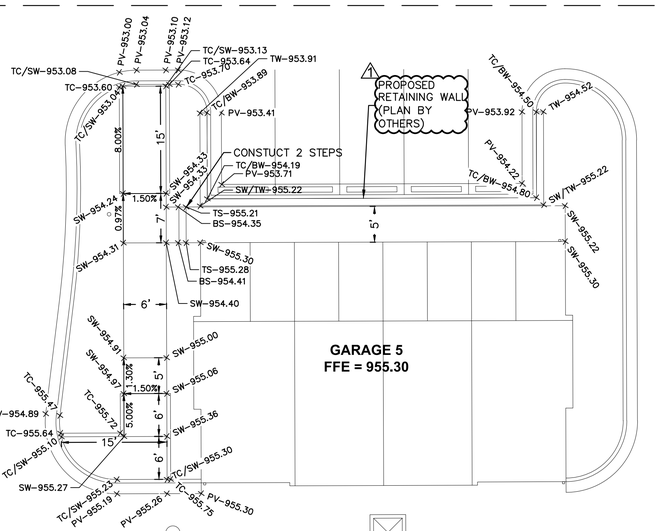
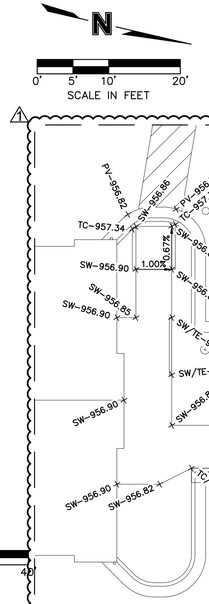


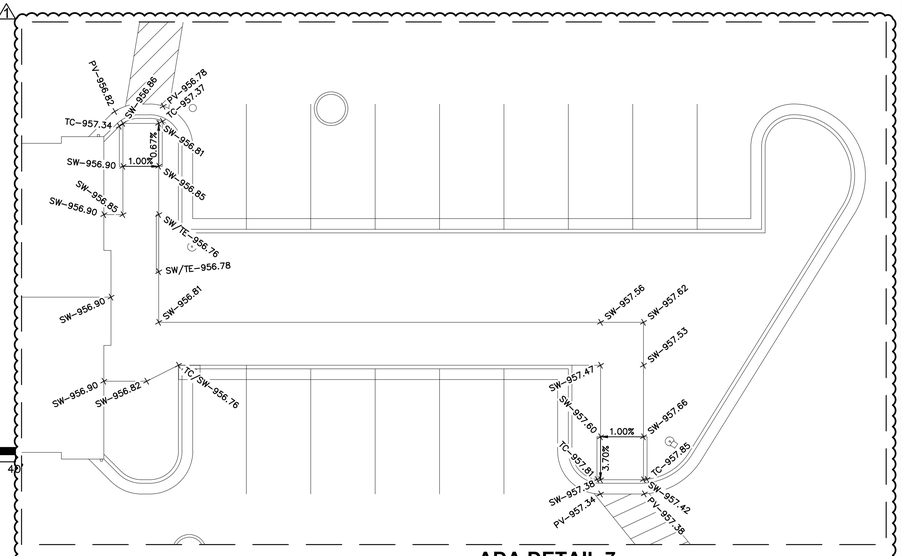
ADA DETAIL 4



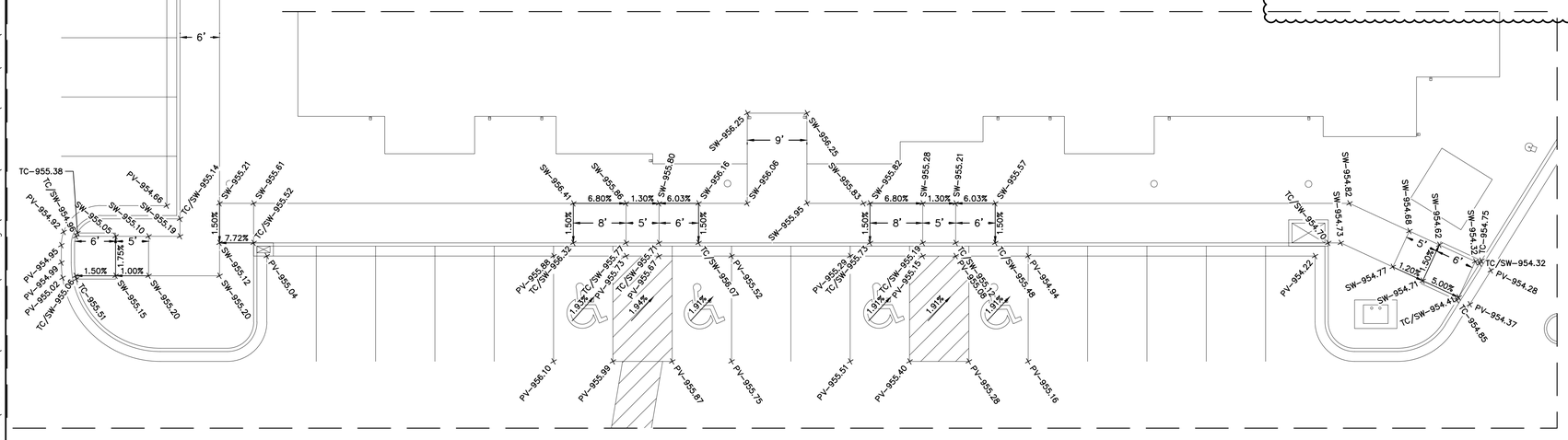


ADA DETAIL 5

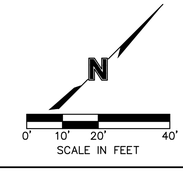




ADA DETAIL 7



ADA DETAIL 6



LEGEND	
TC–	TOP OF CURB
PV–	TOP OF PAVEMENT
SW–	SIDEWALK
TE–	TOP ELEVATION OF STRUCTURE
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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

REVISIONS

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

ADA DETAILS
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

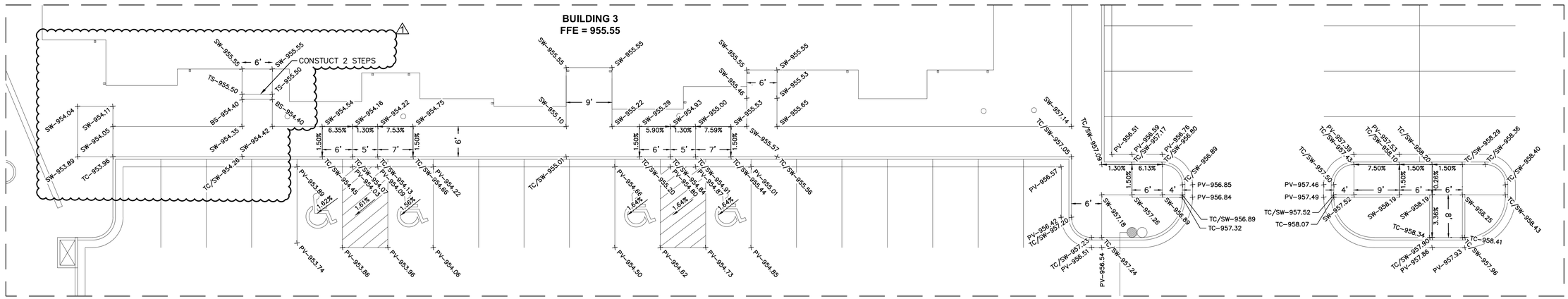
LEE'S SUMMIT, MO

2020

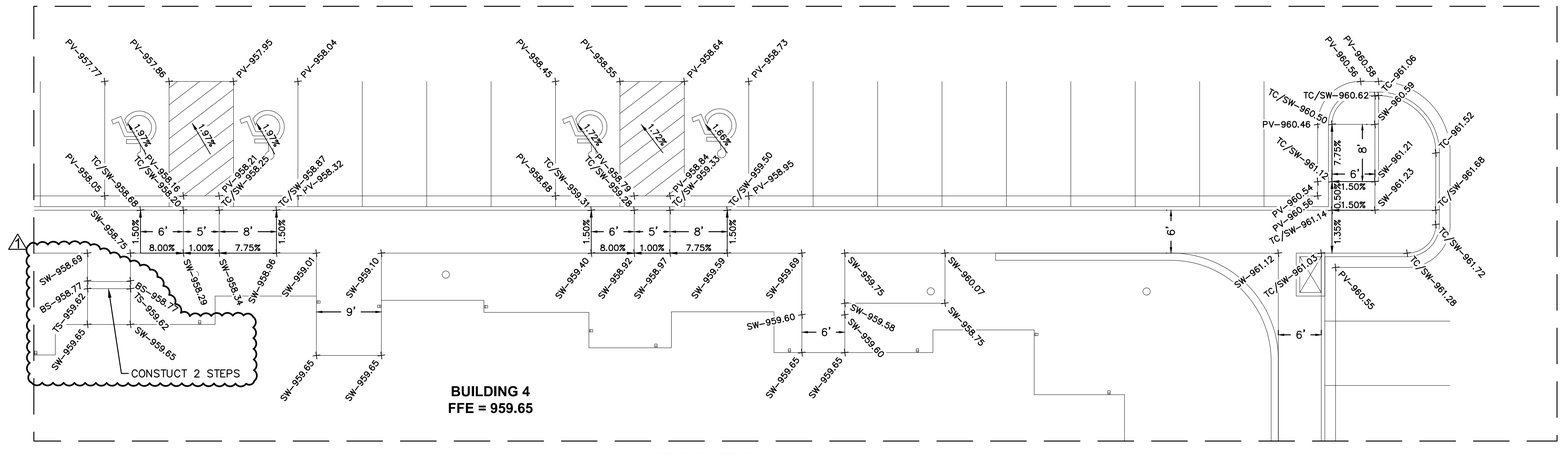
drawn by: M.J.D.
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C309

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_ADA01_ B190012.dwg ~ Layout: ADA DETAILS (2) ~ Last Saved By: mdeboit ~ Plot Date: 2019.10.01 03:03 PM



ADA DETAIL 8



ADA DETAIL 9

LEGEND	
TC–	TOP OF CURB
PV–	TOP OF PAVEMENT
SW–	SIDEWALK
TE–	TOP ELEVATION OF STRUCTURE
TS–	TOP OF STEPS
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MO# 2015000555

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REVISIONS

ADA DETAILS
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C310

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_ADA01_ B190012.dwg ~ Layout: ADA DETAILS (3) ~ Last Saved By: mdlebolt ~ Plot Date: 2019.10.01 03:03 PM

LEGEND	
TC–	TOP OF CURB
PV–	TOP OF PAVEMENT
SW–	SIDEWALK
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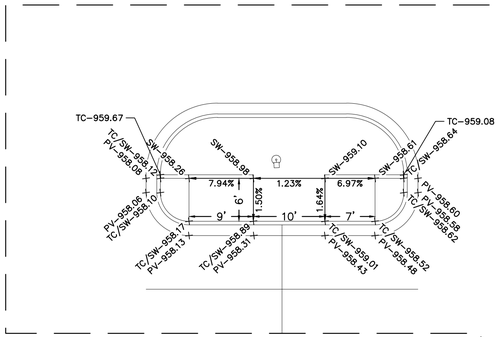

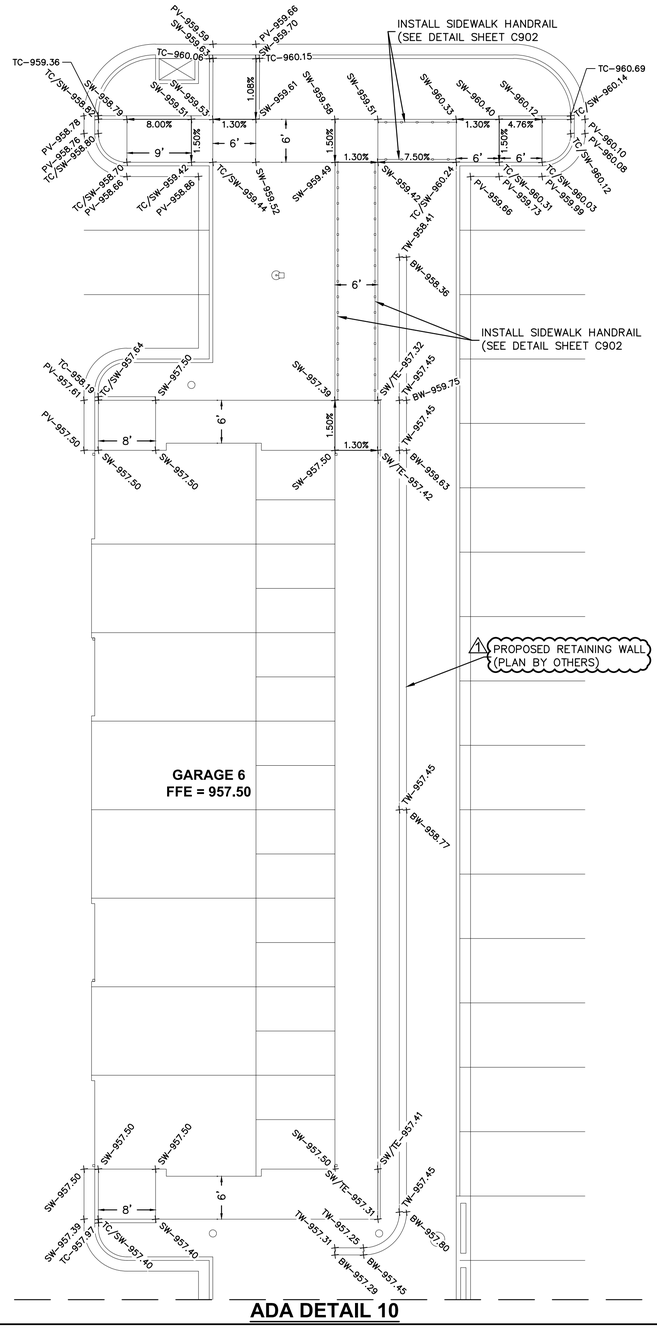

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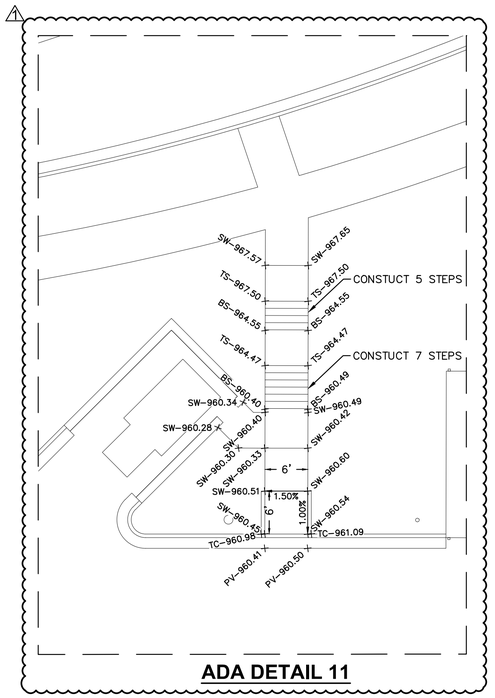
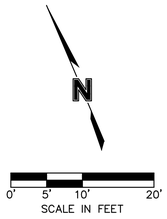


ADA DETAIL 11



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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

ADA DETAILS
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

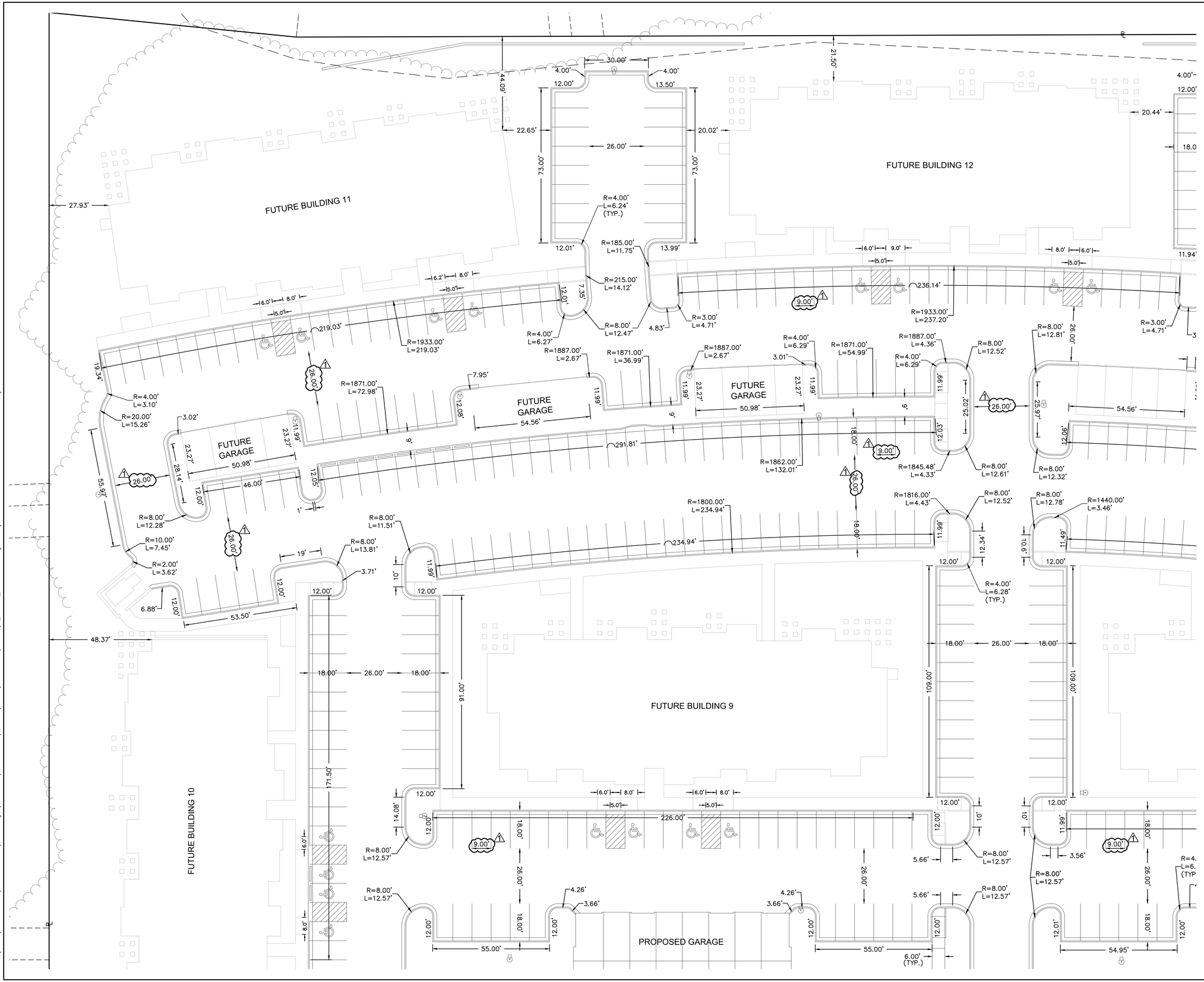
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C311

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_ADA01_ B190012.dwg ~ Layout: ADA DETAILS (4) ~ Last Saved By: mdlebolt ~ Plot Date: 2019.10.01 03:03 PM



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STATE OF MISSOURI
NICHOLAS D. HEISER
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NUMBER PE-2015000555
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NICHOLAS D. HEISER, P.E.
MO# 2015000555

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

GEOMETRIC PLAN
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C401

FUTURE BUILDING 13

FUTURE BUILDING 8

FUTURE GARAGE

FUTURE GARAGE

FUTURE GARAGE

PROPOSED GARAGE

REFER TO PUBLIC STREET & STORM PLANS FOR ENTRANCE CONSTRUCTION WITHIN PUBLIC R/W.

SCALE IN FEET

0' 10' 20' 40'

SITE GEOMETRY KEY MAP
NOT TO SCALE

C401 C402 C403 C404 C405 C406

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KS CERTIFICATE OF AUTHORITY #:E1070
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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

GEOMETRIC PLAN (2)
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

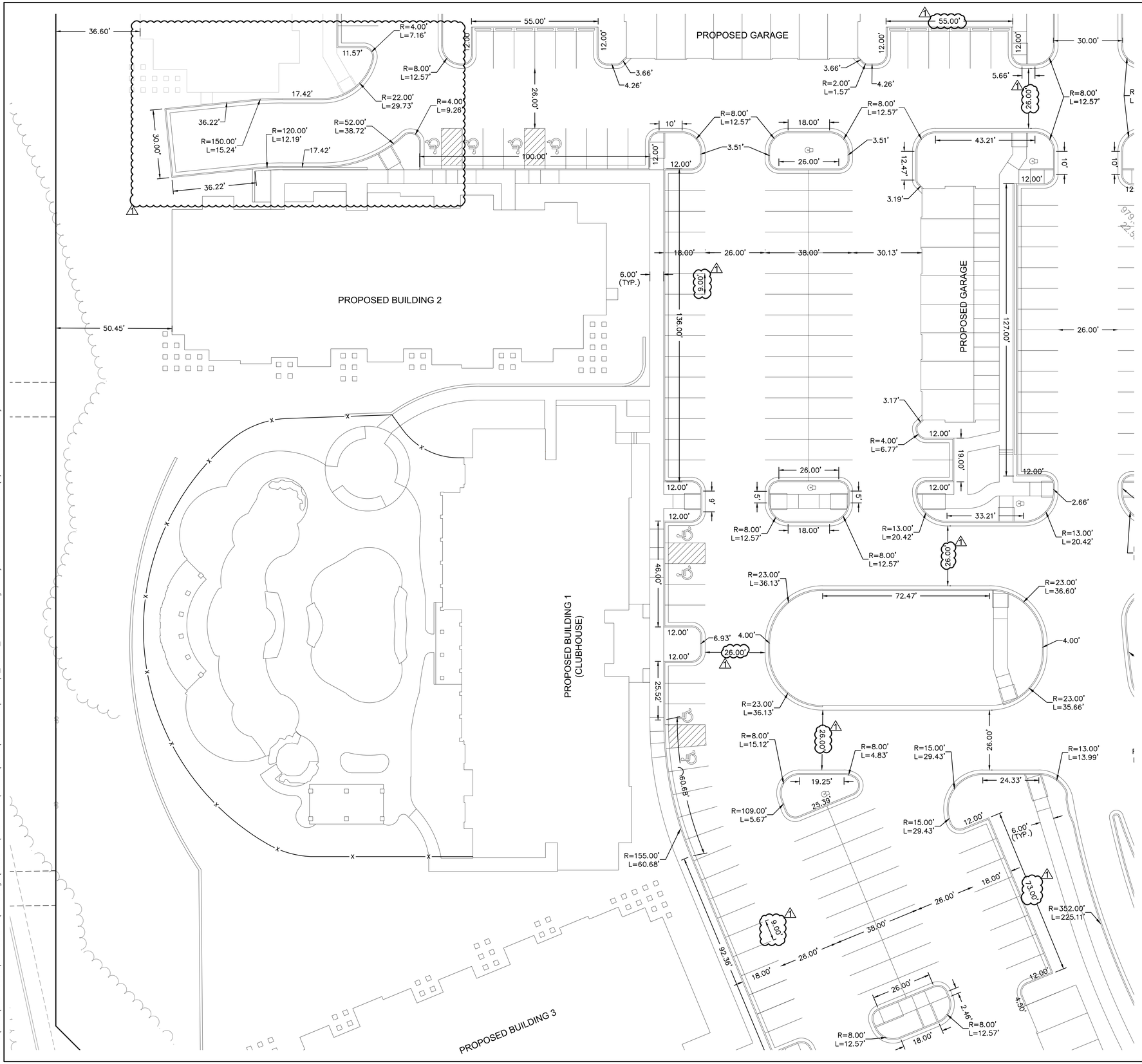
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C402

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_GE001_ B190012.dwg ~ Layout: GEOMETRIC PLAN (2) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



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KS CERTIFICATE OF AUTHORITY #:E-1005
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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

REVISIONS

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

GEOMETRIC PLAN (3)
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C403

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_GE001_ B190012.dwg ~ Layout: GEOMETRIC PLAN (3) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

PROPOSED GARAGE

PROPOSED BUILDING 6

TRACT B
979,988 SQFT +
22.50 AC +

FUTURE BUILDING 7

PROPOSED GARAGE

PROPOSED GARAGE

PROPOSED BUILDING 5

SCALE IN FEET
0' 10' 20' 40'

SITE GEOMETRY KEY MAP
NOT TO SCALE

C401 C402 C403 C404 C405 C406

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KS CERTIFICATE OF AUTHORITY #:E-2334
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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

REVISIONS

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

GEOMETRIC PLAN (4)
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

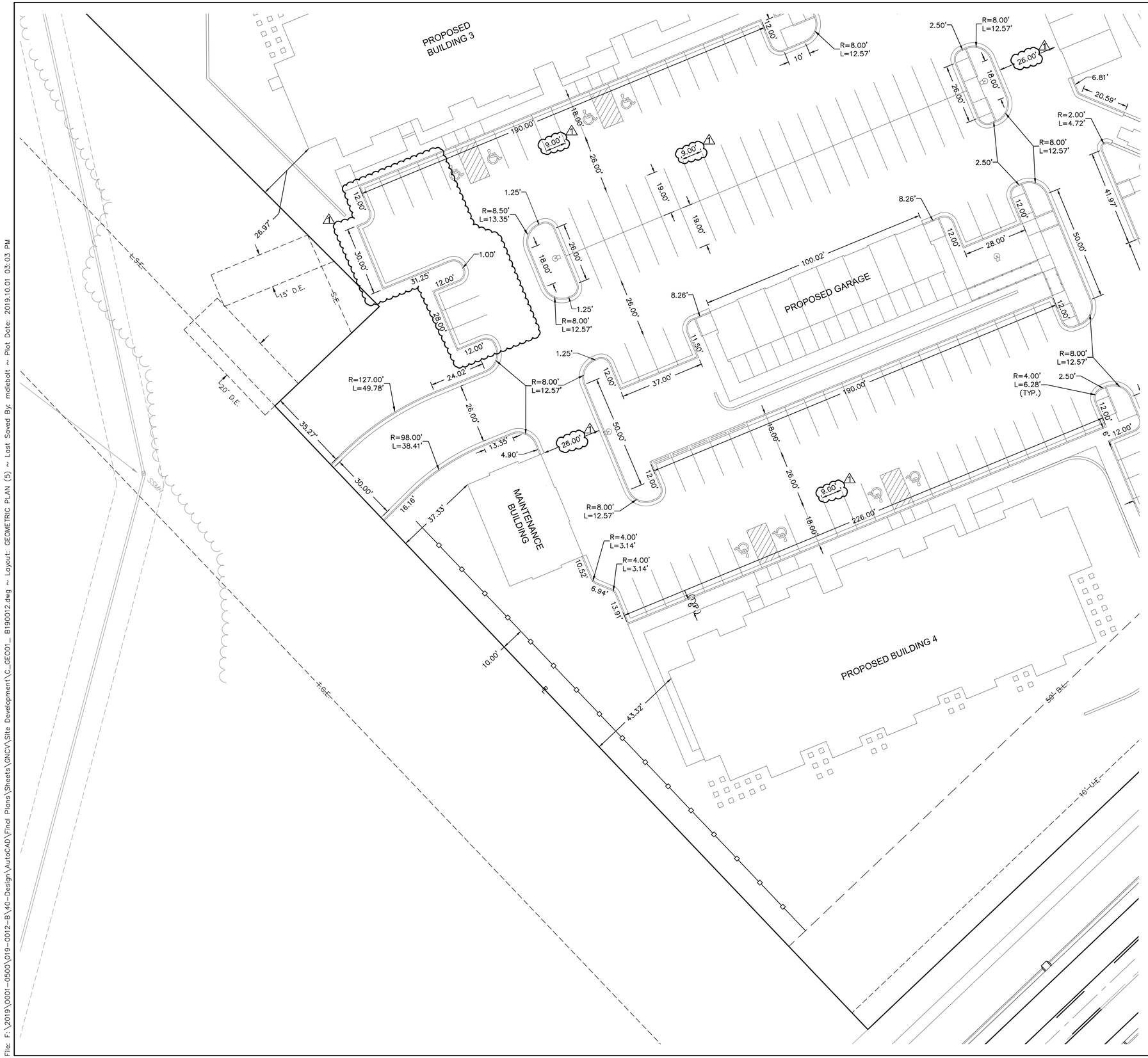
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C404

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_GE001_ B190012.dwg ~ Layout: GEOMETRIC PLAN (4) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



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KS CERTIFICATE OF AUTHORITY #:E-1015
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PROFESSIONAL ENGINEER

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MO# 2015000555

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

GEOMETRIC PLAN (5)
SITE DEVELOPMENT PLANS

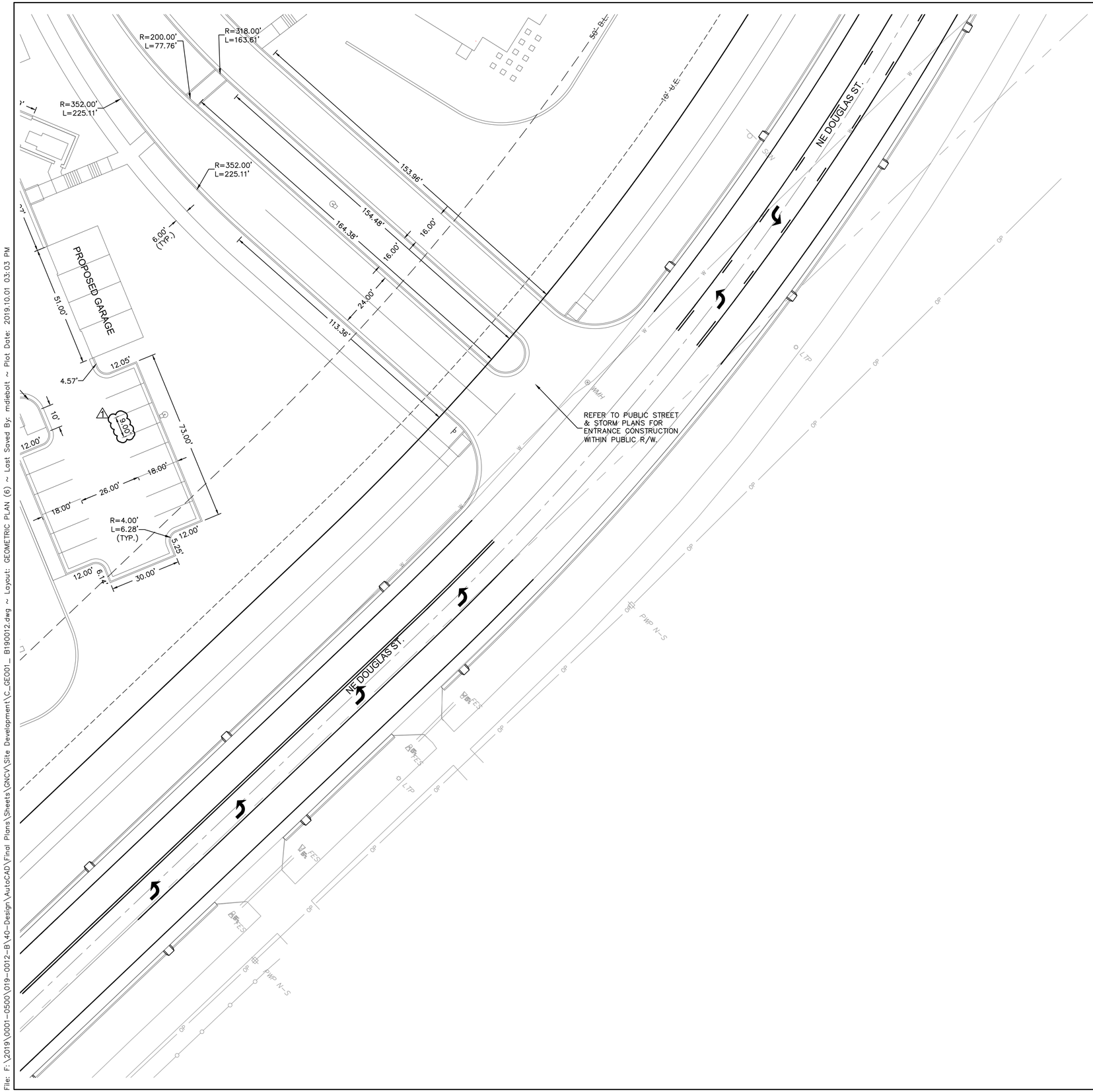
ARIA APARTMENTS
PHASE 1

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: 2020.08.27

SHEET
C405



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MO# 2015000555

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
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REVISIONS

GEOMETRIC PLAN (6)
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C406

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_GEN04_ B190012.dwg ~ Layout: STORMWATER MANAGEMENT PLAN ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

BMM5 SQ MEGELL

FND NE

FND #84

T.C.E.

T.S.E.

15' D.E.

15' S.E.

BLDG 11 (FUTURE)

BLDG 12 (FUTURE)

BLDG 13 (FUTURE)

BLDG 9 (FUTURE)

BLDG 8 (FUTURE)

BLDG 10 (FUTURE)

BLDG 7 (FUTURE)

BLDG 6

BLDG 2

9-4 A=0.23 ac. C=0.85

9-5 A=0.06 ac. C=0.90

8-4 A=0.06 ac. C=0.90

8-3 A=0.17 ac. C=0.88

1-3 A=0.12 ac. C=0.90

1-2 A=0.38 ac. C=0.82

10-3 A=0.85 ac. C=0.85

9-6 A=0.28 ac. C=0.85

8-5 A=0.18 ac. C=0.85

1-4 A=0.50 ac. C=0.80

1-6 A=0.03 ac. C=0.90

9-7 A=0.34 ac. C=0.83

11-1 A=0.56 ac. C=0.85

4-1 A=0.43 ac. C=0.82

1-5 A=0.56 ac. C=0.80

19-1 A=0.07 ac. C=0.88

9-8 A=0.09 ac. C=0.90

9-9 A=0.09 ac. C=0.90

3-1 A=0.23 ac. C=0.75

1-8 A=0.58 ac. C=0.85

10-5 A=0.58 ac. C=0.85

10-6 A=0.57 ac. C=0.85

2-1 A=0.41 ac. C=0.80

10-8 A=0.05 ac. C=0.90

12-1 A=0.08 ac. C=0.88

13-1 A=0.16 ac. C=0.60

5-4 A=0.12 ac. C=0.75

1-9 A=0.34 ac. C=0.85

2-2 A=0.58 ac. C=0.50

21-4 A=0.11 ac. C=0.85

12-2 A=0.16 ac. C=0.85

5-1 A=0.18 ac. C=0.70

21-3 A=0.18 ac. C=0.85

12-3 A=0.04 ac. C=0.90

5-2 A=0.35 ac. C=0.70

1-8 A=0.06 ac. C=0.60

12-5 A=0.15 ac. C=0.90

12-6 A=0.21 ac. C=0.88

21-2 A=0.66 ac. C=0.80

10-9 A=0.88 ac. C=0.82

20-1 A=0.06 ac. C=0.90

1-12 A=0.02 ac. C=0.90

1-14 A=0.82 ac. C=0.80

1-11 A=0.57 ac. C=0.84

1-15 A=0.03 ac. C=0.90

6-1 A=0.01 ac. C=0.90

0' 20' 40' 80'
SCALE IN FEET

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MO CERTIFICATE OF AUTHORITY # 001592
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NORTH KANSAS CITY, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

STORMWATER MANAGEMENT PLAN
SITE DEVELOPMENT 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
C501

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_GEN04_ B190012.dwg ~ Layout: STORMWATER MANAGEMENT PLAN (2) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

0' 20' 40' 80'
SCALE IN FEET

N

SHEET
C502

drawn by: M.A.D.
checked by: N.A.H.
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project no.: B190012.B
date: 2020.06.12

STORMWATER MANAGEMENT PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
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LEE'S SUMMIT, MO | 2020

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
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REVISIONS

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

STATE OF MISSOURI
NICHOLAS D. HEBERER
2015000555
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02/04/2021

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NORTH KANSAS CITY, MO 64116
TEL 816.361.1177
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Drainage Area Design Table

10 Year Return Frequency

Inlet ID	Drainage Area	C	Tc	i	K	Peak Flow
	(ac)		(min)	(in/hr)		(cfs)
1-2	0.38	0.82	5.00	7.35	1.00	2.29
1-3	0.12	0.90	5.00	7.35	1.00	0.79
1-4	0.50	0.80	5.00	7.35	1.00	2.94
1-5	0.47	0.80	5.00	7.35	1.00	2.76
1-6	0.03	0.90	5.00	7.35	1.00	0.20
1-8	0.64	0.85	5.00	7.35	1.00	4.00
1-9	0.34	0.85	5.00	7.35	1.00	2.13
1-11	0.57	0.84	5.00	7.35	1.00	3.52
1-12	0.02	0.90	5.00	7.35	1.00	0.13
1-14	0.82	0.80	5.00	7.35	1.00	4.82
1-15	0.03	0.90	5.00	7.35	1.00	0.20
1-16	0.14	0.88	5.00	7.35	1.00	0.91
1-18	0.10	0.75	5.00	7.35	1.00	0.55
2-1	0.41	0.80	5.00	7.35	1.00	2.41
2-2	0.58	0.50	5.00	7.35	1.00	2.13
3-1	0.23	0.75	5.00	7.35	1.00	1.27
4-1	0.43	0.82	5.00	7.35	1.00	2.59
5-1	0.18	0.70	5.00	7.35	1.00	0.93
5-2	0.35	0.70	5.00	7.35	1.00	1.80
5-4	0.12	0.75	5.00	7.35	1.00	0.66
6-1	0.01	0.90	5.00	7.35	1.00	0.07
6-2	0.88	0.50	5.00	7.35	1.00	3.24
7-1	0.22	0.70	5.00	7.35	1.00	1.13
7-2	0.24	0.60	5.00	7.35	1.00	1.06
8-3	0.17	0.88	5.00	7.35	1.00	1.10
8-4	0.06	0.90	5.00	7.35	1.00	0.40
8-5	0.18	0.85	5.00	7.35	1.00	1.13
9-4	0.23	0.85	5.00	7.35	1.00	1.44
9-5	0.06	0.90	5.00	7.35	1.00	0.40
9-6	0.28	0.85	5.00	7.35	1.00	1.75
9-7	0.34	0.83	5.00	7.35	1.00	2.08
9-8	0.09	0.90	5.00	7.35	1.00	0.60
9-9	0.09	0.90	5.00	7.35	1.00	0.60
10-3	0.89	0.85	5.00	7.35	1.00	5.56
10-5	0.58	0.85	5.00	7.35	1.00	3.63
10-6	0.57	0.85	5.00	7.35	1.00	3.56
10-7	0.12	0.75	5.00	7.35	1.00	0.66
10-8	0.05	0.90	5.00	7.35	1.00	0.33
10-9	0.88	0.82	5.00	7.35	1.00	5.31
10-11	0.50	0.85	5.00	7.35	1.00	3.13
10-12	0.22	0.75	5.00	7.35	1.00	1.21
10-13	0.30	0.85	5.00	7.35	1.00	1.88
11-1	0.56	0.85	5.00	7.35	1.00	3.50
12-1	0.08	0.88	5.00	7.35	1.00	0.52
12-2	0.16	0.85	5.00	7.35	1.00	1.00
12-3	0.04	0.90	5.00	7.35	1.00	0.26
12-5	0.15	0.90	5.00	7.35	1.00	0.99
12-6	0.21	0.88	5.00	7.35	1.00	1.36
13-1	0.16	0.60	5.00	7.35	1.00	0.71
14-2	0.82	0.75	5.00	7.35	1.00	4.52
15-2	0.09	0.82	5.00	7.35	1.00	0.54
15-4	0.57	0.85	5.00	7.35	1.00	3.56
15-5	0.10	0.90	5.00	7.35	1.00	0.66
15-7	0.12	0.60	5.00	7.35	1.00	0.53
15-8	0.05	0.90	5.00	7.35	1.00	0.40
16-2	0.98	0.85	5.00	7.35	1.00	6.13
17-1	0.25	0.80	5.00	7.35	1.00	1.47
17-2	0.67	0.60	5.00	7.35	1.00	2.96
18-1	0.22	0.60	5.00	7.35	1.00	0.97
19-1	0.07	0.88	5.00	7.35	1.00	0.45
20-1	0.06	0.90	5.00	7.35	1.00	0.40
21-2	0.66	0.80	5.00	7.35	1.00	3.88
21-3	0.18	0.85	5.00	7.35	1.00	1.13
21-4	0.11	0.85	5.00	7.35	1.00	0.69

Storm Sewer Design Calculation Table

10 Year Return Frequency

Upstream Structure	Downstream Structure	Length (ft)	Upstream Invert (ft)	Downstream Invert (ft)	Slope (%)	Diameter (in)	Manning's n	Total Flow (cfs)	Velocity (ft/s)	Capacity (cfs)	Flow Depth (ft)	Upstream Struct. HGL (ft)	Upstream Top Elev. (ft)
1-2	1-1	33.35	921.67	919.00	8.01	24	0.012	11.09	6.29	34.31	1.27	944.08	952.14
1-3	1-2	105.47	927.63	923.67	3.75	30	0.012	43.33	13.79	69.33	1.96	923.63	935.46
1-4	1-3	27.74	928.68	928.13	2.00	30	0.012	41.04	17.32	86.09	2.15	929.78	939.31
1-5	1-4	53.79	930.26	929.18	2.00	30	0.012	40.25	11.72	62.56	2.13	930.81	939.36
1-6	1-5	71.06	934.39	931.08	4.66	30	0.012	37.31	10.99	62.95	2.07	932.33	940.25
1-7	1-6	83.31	938.57	937.74	1.00	30	0.012	28.29	11.58	95.89	1.81	936.20	941.24
1-8	1-7	67.19	937.24	934.89	3.50	30	0.012	25.50	9.34	44.35	1.72	940.29	947.18
1-9	1-8	73.04	939.80	939.07	1.00	24	0.012	25.50	9.77	83.09	1.72	938.96	943.96
1-10	1-9	35.74	940.66	940.30	1.00	24	0.012	21.50	8.79	24.50	1.66	941.46	947.30
1-11	1-10	59.52	942.72	941.16	2.62	24	0.012	19.37	8.67	24.59	1.58	942.24	947.97
1-12	1-11	87.37	944.97	943.22	2.00	24	0.012	15.98	9.22	39.67	1.44	944.16	949.92
1-13	1-12	44.18	946.85	945.97	2.00	18	0.012	12.46	8.59	34.68	1.27	946.24	952.99
1-14	1-13	40.80	947.76	947.35	1.00	18	0.012	12.33	10.02	16.06	1.33	948.18	954.72
1-15	1-14	92.13	949.18	948.26	1.00	15	0.012	9.02	7.15	11.40	1.16	948.92	954.75
1-16	1-15	41.82	950.10	949.68	1.00	15	0.012	4.20	5.95	6.99	0.83	950.01	956.53
1-17	1-16	25.05	950.85	950.60	1.00	15	0.012	3.60	5.75	7.01	0.77	950.87	956.10
1-18	1-17	48.76	953.60	951.38	4.55	15	0.012	2.69	5.32	6.99	0.66	951.51	957.20
2-1	1-5	80.82	934.19	933.38	1.00	18	0.012	0.55	5.79	14.93	0.29	953.89	959.05
2-2	2-1	106.82	937.86	934.69	3.00	15	0.012	5.81	6.47	11.39	0.93	935.12	940.75
3-1	2-1	61.23	935.30	934.69	1.00	15	0.012	2.13	5.71	12.05	0.58	938.44	944.64
4-1	1-6	63.37	936.27	935.00	2.00	15	0.012	1.27	3.40	6.98	0.44	935.74	939.63
5-1	1-10	81.58	941.98	941.16	1.00	15	0.012	2.59	2.14	9.90	0.64	936.91	942.00
5-2	5-1	50.24	942.98	942.48	1.00	15	0.012	3.39	3.01	7.01	0.74	942.72	948.78
5-3	5-2	40.43	943.88	943.48	1.00	15	0.012	2.46	5.19	6.98	0.63	943.61	948.78
5-4	5-3	35.71	944.74	944.38	1.00	15	0.012	0.66	3.57	6.96	0.32	944.20	949.73
6-1	1-13	32.58	948.23	947.90	1.00	15	0.012	0.66	3.59	7.02	0.32	945.06	949.10
6-2	6-1	30.07	948.73	948.43	1.00	15	0.012	3.31	5.65	7.04	0.73	948.96	955.38
7-1	1-17	40.84	951.79	951.38	1.00	15	0.012	3.24	5.58	6.99	0.72	949.45	955.03
7-2	7-1	45.44	953.92	952.29	3.59	15	0.012	2.14	5.01	7.01	0.58	952.37	956.57
8-2	8-1	30.00	908.70	907.20	5.00	15	0.012	1.06	6.46	13.25	0.40	954.32	958.76
8-3	8-2	79.43	929.40	912.86	20.82	15	0.012	2.63	2.41	15.64	0.65	909.35	917.35
8-4	8-3	89.89	935.00	931.40	4.00	15	0.012	2.63	15.71	31.92	0.65	930.05	941.22
8-5	8-4	35.60	936.39	935.50	2.50	15	0.012	1.53	7.48	14.00	0.49	935.49	944.60
9-2	9-1	33.33	908.00	906.00	6.00	15	0.012	1.13	5.80	11.06	0.42	936.81	944.43
9-3	9-2	38.36	916.75	911.00	14.99	15	0.012	6.87	5.62	17.14	1.05	909.05	915.45
9-4	9-3	33.15	924.97	920.00	14.99	15	0.012	6.87	18.41	27.08	1.05	917.80	924.78
9-5	9-4	92.79	934.67	932.81	2.00	15	0.012	6.87	18.41	27.09	1.05	926.02	940.11
9-6	9-5	27.97	935.45	935.17	1.00	15	0.012	5.43	8.25	9.90	0.94	935.61	943.35
9-7	9-6	54.90	936.50	935.95	1.00	15	0.012	5.03	6.21	7.00	0.91	936.36	943.34
9-8	9-7	155.37	941.68	937.00	3.01	15	0.012	3.28	5.61	7.00	0.73	937.23	944.46
9-9	9-8	66.00	943.50	942.18	2.00	15	0.012	1.20	6.30	12.14	0.43	942.11	948.53
10-2	10-1	54.35	914.17	912.00	4.00	24	0.012	0.60	4.44	9.89	0.30	943.80	948.53
10-3A	10-2	107.56	927.29	919.21	7.51	24	0.012	33.57	10.69	48.96	1.91	916.08	924.98
10-3	10-3A	10.00	932.60	932.10	5.00	24	0.012	33.57	21.37	67.16	1.91	929.20	939.42
10-4	10-3	87.39	932.85	931.10	2.00	30	0.012	33.57	18.31	54.79	1.91	934.51	938.93
10-5	10-4	30.97	934.37	933.35	3.29	24	0.012	28.01	5.71	62.87	1.80	934.65	941.58
10-6	10-5	115.86	937.19	934.87	2.00	24	0.012	24.55	9.87	44.47	1.75	936.12	943.40
10-7	10-6	72.50	939.28	937.69	2.19	24	0.012	20.92	8.87	34.67	1.64	938.83	947.51
10-8	10-7	69.03	940.58	939.78	1.16	24	0.012	17.44	9.47	36.29	1.50	940.78	948.25
10-9	10-8	42.04	941.50	941.08	1.00	24	0.012	16.78	8.89	26.38	1.48	942.06	949.74
10-10	10-9	139.50	944.32	942.93	1.00	18	0.012	11.53	7.58	24.49	1.22	942.72	950.87
10-11	10-10	74.43	945.56	944.82	1.00	15	0.012	6.22	6.57	11.36	0.96	945.28	953.37
10-12	10-11	102.33	947.08	946.06	1.00	15	0.012	6.22	6.42	6.98	1.01	946.57	954.55
10-13	10-12	97.33	951.98	947.58	4.52	15	0.012	3.09	5.51	6.98	0.71	947.79	954.00
11-1	10-4	39.65	934.50	934.10	1.00	15	0.012	1.88	8.29	14.87	0.55	952.53	957.97
12-1	10-8	29.38	942.38	942.09	1.00	18	0.012	3.50	5.72	7.03	0.75	935.25	940.75
12-2	12-1	50.24	943.38	942.88	1.00	18	0.012	4.92	6.17	11.30	0.85	943.23	949.38
12-3	12-2	35.22	944.23	943.88	1.00	15	0.012	4.40	6.01	11.35	0.80	944.18	949.38
12-4	12-3	56.84	945.87	944.73	2.00	15	0.012	3.40	5.64	6.97	0.74	944.97	950.31
12-5	12-4	44.47	946.81	946.37	1.00	15	0.012	2.35	6.61	9.91	0.60	946.48	951.77
12-6	12-5	62.52	947.94	947.31	1.00	15	0.012	2.35	5.12	6.96	0.61	947.42	952.41
13-1	12-3	46.17	945.29	944.83	1.00	15	0.012	0.71	3.20	7.02	0.46	948.40	952.78
14-2	14-1	126.56	938.86	930.00	7.00	15	0.012	0.13	1.59	7.03	0.14	946.01	950.75
15-2	15-1	69.13	942.81	936.52	9.10	18	0.012	4.52	3.77	18.51	0.86	939.72	950.81
15-3	15-2	93.37	944.94	943.07	2.00	18	0.012	10.55	8.30	16.10	1.25	946.19	954.90
15-4	15-3	45.47	948.01	946.83	2.60	15	0.012	6.12	9.37	11.27	1.00	949.01	955.90
15-5	15-4	41.99	949.60	948.51	2.60	15	0.012	2.56	5.60	11.27	0.64	950.24	957.14
15-6	15-5	142.09	952.00	950.10	1.34	15	0.012	1.90	5.38	8.09	0.55	952.55	958.98
15-7	15-6	40.07	952.91	952.51	1.00	15	0.012	0.93	3.95	6.99	0.38	953.29	959.89
15-8	15-7	33.50	953.75	953.42	1.00	15	0.012	0.40	3.07	6.94	0.25	954.00	960.75
16-2	16-1	55.38	944.79	938.15	12.00	15	0.012	6.13	5.03	24.22	1.00	945.79	954.28
17-1	15-3	51.48	946.88	946.37	1.00	15	0.012	4.43	6.01	6.96	0.85	947.73	955.19
17-2	17-1	68.17	948.08	947.38	1.00	15	0.012	2.96	5.52	7.09	0.69	948.77	956.74
18-1	15-6	76.38	955.00	954.24	1.00	15	0.012	0.97	4.00	6.98	0.39	955.39	961.15
19-1	1-5	99.50	932.50	931.51	1.00	15	0.012	0.45	0.53	6.98	0.26	932.76	936.13
20-1	1-15	90.24	950.66	949.62	1.15	15	0.012	0.40	1.23	7.51	0.25	950.91	955.29
21-2	21-1	88.08	936.55	925.98	12.00	15	0.012	5.70	4.69	24.23	0.97	937.52	944.25
21-3	21-2	92.09	940.81	939.43	1.50	15	0.012	1.82	5.54	8.56	0.54	941.35	946.84
21-4	21-3	34.857	941.83	941.31	1.5	15	0.012	0.69	4.18	8.54	0.32	942.15	946.99

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

STORMWATER MANAGEMENT CALCULATIONS
SITE DEVELOPMENT 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
C503

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_GEN04_ B190012.dwg ~ Layout: STORMWATER MANAGEMENT CALCULATIONS ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

Drainage Area Design Table

100 Year Return Frequency

Inlet ID	Drainage Area (ac)	C	Tc (min)	i (in/hr)	K	Peak Flow (cfs)
1-2	0.38	0.82	5.00	10.32	1.25	3.92
1-3	0.12	0.90	5.00	10.32	1.25	1.24
1-4	0.50	0.80	5.00	10.32	1.25	5.16
1-5	0.47	0.80	5.00	10.32	1.25	4.85
1-6	0.03	0.90	5.00	10.32	1.25	0.31
1-8	0.64	0.85	5.00	10.32	1.25	6.61
1-9	0.34	0.85	5.00	10.32	1.25	3.51
1-11	0.57	0.84	5.00	10.32	1.25	5.88
1-12	0.02	0.90	5.00	10.32	1.25	0.21
1-14	0.82	0.80	5.00	10.32	1.25	8.46
1-15	0.03	0.90	5.00	10.32	1.25	0.31
1-16	0.14	0.88	5.00	10.32	1.25	1.45
1-18	0.10	0.75	5.00	10.32	1.25	0.97
2-1	0.41	0.80	5.00	10.32	1.25	4.23
2-2	0.58	0.50	5.00	10.32	1.25	3.74
3-1	0.23	0.75	5.00	10.32	1.25	2.23
4-1	0.43	0.82	5.00	10.32	1.25	4.44
5-1	0.18	0.70	5.00	10.32	1.25	1.63
5-2	0.35	0.70	5.00	10.32	1.25	3.16
5-4	0.12	0.75	5.00	10.32	1.25	1.16
6-1	0.01	0.90	5.00	10.32	1.25	0.10
6-2	0.88	0.50	5.00	10.32	1.25	5.68
7-1	0.22	0.70	5.00	10.32	1.25	1.99
7-2	0.24	0.60	5.00	10.32	1.25	1.86
8-3	0.17	0.88	5.00	10.32	1.25	1.75
8-4	0.06	0.90	5.00	10.32	1.25	0.62
8-5	0.18	0.85	5.00	10.32	1.25	1.86
9-4	0.23	0.85	5.00	10.32	1.25	2.37
9-5	0.06	0.90	5.00	10.32	1.25	0.62
9-6	0.28	0.85	5.00	10.32	1.25	2.89
9-7	0.34	0.83	5.00	10.32	1.25	3.51
9-8	0.09	0.90	5.00	10.32	1.25	0.93
9-9	0.09	0.90	5.00	10.32	1.25	0.93
10-3	0.89	0.85	5.00	10.32	1.25	9.19
10-5	0.58	0.85	5.00	10.32	1.25	5.99
10-6	0.57	0.85	5.00	10.32	1.25	5.88
10-7	0.12	0.75	5.00	10.32	1.25	1.16
10-8	0.05	0.90	5.00	10.32	1.25	0.52
10-9	0.88	0.82	5.00	10.32	1.25	9.08
10-11	0.50	0.85	5.00	10.32	1.25	5.16
10-12	0.22	0.75	5.00	10.32	1.25	2.13
10-13	0.30	0.85	5.00	10.32	1.25	3.10
11-1	0.56	0.85	5.00	10.32	1.25	5.78
12-1	0.08	0.88	5.00	10.32	1.25	0.83
12-2	0.16	0.85	5.00	10.32	1.25	1.65
12-3	0.04	0.90	5.00	10.32	1.25	0.41
12-5	0.15	0.90	5.00	10.32	1.25	1.55
12-6	0.21	0.88	5.00	10.32	1.25	2.17
13-1	0.16	0.60	5.00	10.32	1.25	1.24
14-2	0.82	0.75	5.00	10.32	1.25	7.94
15-2	0.09	0.82	5.00	10.32	1.25	0.93
15-4	0.57	0.85	5.00	10.32	1.25	5.88
15-5	0.10	0.90	5.00	10.32	1.25	1.03
15-7	0.12	0.60	5.00	10.32	1.25	0.93
15-8	0.06	0.90	5.00	10.32	1.25	0.62
16-2	0.98	0.85	5.00	10.32	1.25	10.12
17-1	0.25	0.80	5.00	10.32	1.25	2.58
17-2	0.67	0.60	5.00	10.32	1.25	5.19
18-1	0.22	0.60	5.00	10.32	1.25	1.70
19-1	0.07	0.88	5.00	10.32	1.25	0.72
20-1	0.06	0.90	5.00	10.32	1.25	0.62
21-2	0.66	0.80	5.00	10.32	1.25	6.81
21-3	0.18	0.85	5.00	10.32	1.25	1.86
21-4	0.11	0.85	5.00	10.32	1.25	1.14

Storm Sewer Design Calculation Table

100 Year Return Frequency

Upstream Structure	Downstream Structure	Length (ft)	Upstream Invert (ft)	Downstream Invert (ft)	Slope (%)	Diameter (in)	Manning's n	Total Flow (cfs)	Velocity (ft/s)	Capacity (cfs)	Flow Depth (ft)	Upstream Struct. HGL (ft)	Upstream Top Elev. (ft)
1-2	1-1	33.35	921.67	919.00	8.01	24	0.012	74.44	23.70	69.33	2.00	924.08	935.46
1-3	1-2	105.47	927.63	923.67	3.75	30	0.012	70.52	14.37	86.09	2.47	930.10	939.31
1-4	1-3	27.74	928.68	928.13	2.00	30	0.012	69.28	14.12	62.56	2.50	932.06	939.36
1-5	1-4	53.79	930.26	929.18	2.00	30	0.012	64.12	13.06	62.95	2.50	934.42	940.25
1-6	1-5	71.06	934.39	931.08	4.66	30	0.012	48.35	9.85	95.89	2.28	936.67	941.24
1-7	1-6	83.31	938.57	937.74	1.00	30	0.012	43.60	10.30	44.35	2.20	940.77	947.18
1-8	1-7	67.19	937.24	934.89	3.50	30	0.012	43.60	11.69	83.09	2.20	939.44	943.96
1-9	1-8	73.04	939.80	939.07	1.00	24	0.012	36.99	11.78	24.50	2.00	942.74	947.30
1-10	1-9	35.74	940.66	940.30	1.00	24	0.012	33.48	10.66	24.59	2.00	944.27	947.97
1-11	1-10	59.52	942.72	941.16	2.62	24	0.012	27.53	8.76	39.67	2.00	945.72	949.92
1-12	1-11	87.37	944.97	943.22	2.00	24	0.012	21.65	6.89	34.68	1.78	946.75	952.99
1-13	1-12	44.18	946.85	945.97	2.00	18	0.012	21.44	12.13	16.06	1.50	949.04	954.72
1-14	1-13	40.80	947.76	947.35	1.00	18	0.012	15.66	8.86	11.40	1.50	950.73	954.75
1-15	1-14	92.13	949.18	948.26	1.00	15	0.012	7.20	5.87	6.99	1.25	952.19	956.53
1-16	1-15	41.82	950.10	949.68	1.00	15	0.012	6.27	5.11	7.01	1.25	952.74	956.10
1-17	1-16	25.05	950.85	950.60	1.00	15	0.012	4.82	3.93	6.99	1.25	953.03	957.20
1-18	1-17	48.76	953.60	951.38	4.55	15	0.012	0.97	0.79	14.93	0.39	953.99	959.05
2-1	1-5	80.82	934.19	933.38	1.00	18	0.012	10.20	5.77	11.39	1.50	936.13	940.75
2-2	2-1	106.82	937.86	934.69	3.00	15	0.012	3.74	3.05	12.05	0.78	938.64	944.64
3-1	2-1	61.23	935.30	934.69	1.00	15	0.012	2.23	1.82	6.98	1.09	936.39	939.63
4-1	1-6	63.37	936.27	935.00	2.00	15	0.012	4.44	3.62	9.90	0.85	937.12	942.00
5-1	1-10	81.58	941.98	941.16	1.00	15	0.012	5.95	4.85	7.01	1.25	945.56	948.78
5-2	5-1	50.24	942.98	942.48	1.00	15	0.012	4.32	3.52	6.98	1.25	945.90	948.78
5-3	5-2	40.43	943.88	943.48	1.00	15	0.012	1.16	0.95	6.96	1.25	945.99	949.73
5-4	5-3	35.71	944.74	944.38	1.00	15	0.012	1.16	0.95	7.02	1.25	946.00	949.10
6-1	1-13	32.58	948.23	947.90	1.00	15	0.012	5.78	4.71	7.04	1.25	950.18	955.38
6-2	6-1	30.07	948.73	948.43	1.00	15	0.012	5.68	4.63	6.99	1.25	950.51	955.03
7-1	1-17	40.84	951.79	951.38	1.00	15	0.012	3.85	3.14	7.01	1.25	953.25	956.57
7-2	7-1	45.44	953.92	952.29	3.59	15	0.012	1.86	1.74	13.25	0.54	954.46	958.76
8-2	8-1	30.00	908.70	907.20	5.00	15	0.012	4.23	3.88	15.64	0.83	909.53	917.35
8-3	8-2	79.43	929.40	912.86	20.82	15	0.012	4.23	18.03	31.92	0.83	930.23	941.22
8-4	8-3	89.89	935.00	931.40	4.00	15	0.012	2.48	8.60	14.00	0.63	935.63	944.60
8-5	8-4	35.60	936.39	935.50	2.50	15	0.012	1.86	6.70	11.06	0.54	936.93	944.43
9-2	9-1	33.33	908.00	906.00	6.00	15	0.012	11.25	9.20	17.14	1.21	909.21	915.45
9-3	9-2	38.36	916.75	911.00	14.99	15	0.012	11.25	21.04	27.08	1.21	917.96	924.78
9-4	9-3	33.15	924.97	920.00	14.99	15	0.012	11.25	21.04	27.09	1.21	926.18	940.11
9-5	9-4	92.79	934.67	932.81	2.00	15	0.012	8.88	9.13	9.90	1.15	935.82	943.35
9-6	9-5	27.97	935.45	935.17	1.00	15	0.012	8.26	6.73	7.00	1.25	936.81	943.34
9-7	9-6	54.90	936.50	935.95	1.00	15	0.012	5.37	4.57	7.00	0.94	937.44	944.46
9-8	9-7	155.37	941.68	937.00	3.01	15	0.012	1.86	4.84	12.14	0.54	942.22	948.53
9-9	9-8	66.00	943.50	942.18	2.00	15	0.012	0.93	5.06	9.89	0.38	943.88	948.53
10-2	10-1	54.35	914.17	912.00	4.00	24	0.012	55.79	17.77	48.96	2.00	916.73	924.98
10-3A	10-2	107.56	927.29	919.21	7.51	24	0.012	55.79	23.90	67.16	1.99	929.28	939.42
10-3	10-3A	10.00	932.60	932.10	5.00	24	0.012	55.79	19.86	54.79	1.99	934.59	938.93
10-4	10-3	87.39	932.85	931.10	2.00	30	0.012	46.60	9.50	62.87	2.50	935.55	941.58
10-5	10-4	30.97	934.37	933.35	3.29	24	0.012	40.82	13.00	44.47	2.00	936.97	943.40
10-6	10-5	115.86	937.19	934.87	2.00	24	0.012	34.83	11.09	34.67	2.00	940.36	947.51
10-7	10-6	72.50	939.28	937.69	2.19	24	0.012	29.15	9.28	36.29	2.00	942.15	948.25
10-8	10-7	69.03	940.58	939.78	1.16	24	0.012	27.99	8.91	26.38	2.00	943.59	949.74
10-9	10-8	42.04	941.50	941.08	1.00	24	0.012	19.47	6.20	24.49	2.00	944.35	950.87
10-10	10-9	139.50	944.32	942.93	1.00	18	0.012	10.39	5.88	11.36	1.28	945.60	953.37
10-11	10-10	74.43	945.56	944.82	1.00	15	0.012	10.39	8.47	6.98	1.25	947.71	954.55
10-12	10-11	102.33	947.08	946.06	1.00	15	0.012	5.23	4.26	6.98	1.25	948.73	954.00
10-13	10-12	97.33	951.98	947.58	4.52	15	0.012	3.10	2.53	14.87	0.71	952.69	957.97
11-1	10-4	39.65	934.50	934.10	1.00	15	0.012	5.78	4.71	7.03	1.25	936.38	940.75
12-1	10-8	29.38	942.38	942.09	1.00	18	0.012	8.00	4.53	11.30	1.50	944.23	949.38
12-2	12-1	50.24	943.38	942.88	1.00	18	0.012	7.17	4.07	11.35	1.04	944.42	949.38
12-3	12-2	35.22	944.23	943.88	1.00	15	0.012	5.52	6.30	6.97	0.95	945.18	950.31
12-4	12-3	56.84	945.87	944.73	2.00	15	0.012	3.72	7.50	9.91	0.78	946.65	951.77
12-5	12-4	44.47	946.81	946.37	1.00	15	0.012	3.72	5.76	6.96	0.78	947.59	952.41
12-6	12-5	62.52	947.94	947.31	1.00	15	0.012	2.17	5.04	7.02	0.59	948.53	952.78
13-1	12-3	46.17	945.29	944.83	1.00	15	0.012	1.24	3.76	6.98	0.47	945.76	949.50
14-2	14-1	126.56	938.86	930.00	7.00	15	0.012	7.94	6.62	18.51	1.11	939.97	950.81
15-2	15-1	69.13	942.81	936.52	9.10	18	0.012	18.86	10.70	34.31	1.46	944.27	952.14
15-3	15-2	93.37	944.94	943.07	2.00	18	0.012	17.93	10.15	16.10	1.50	946.89	954.90
15-4	15-3	45.47	948.01	946.83	2.60	15	0.012	10.16	10.39	11.27	1.19	949.20	955.90
15-5	15-4	41.99	949.60	948.51	2.60	15	0.012	4.28	6.19	11.27	0.84	950.44	957.14
15-6	15-5	142.09	952.00	950.10	1.34	15	0.012	3.25	6.23	8.09	0.73	952.73	958.98
15-7	15-6	40.07	952.91	952.51	1.00	15	0.012	1.55	4.57	6.99	0.49	953.40	959.89
15-8	15-7	33.50	953.75	953.42	1.00	15	0.012	0.62	3.50	6.94	0.31	954.06	960.75
16-2	16-1	55.38	944.79	938.15	12.00	15	0.012	10.12	8.30	24.22	1.19	945.98	954.28
17-1	15-3	51.48	946.88	946.37	1.00	15	0.012	7.77	6.33	6.96	1.25	948.26	955.19
17-2	17-1	68.17	948.08	947.38	1.00	15	0.012	5.19	4.46	7.09	0.92	949.00	956.74
18-1	15-6	76.38	955.00	954.24	1.00	15	0.012	1.70	4.69	6.98	0.52	955.52	961.15
19-1	1-5	99.50	937.50	931.51	1.00	15	0.012	0.72	0.59	6.98	1.25	935.49	936.13
20-1	1-15	90.24	950.66	949.62	1.15	15	0.012	0.62	0.51	7.51	1.25	952.42	955.29
21-2	21-1	88.08	936.55	925.98	12.00	15	0.012	9.81	8.07	24.23	1.18	937.73	944.25
21-3	21-2	92.09	940.81	939.43	1.50	15	0.012	3.00	6.36	8.56	0.70	941.51	946.84
21-4	21-3	34.857	941.83	941.31	1.5	15	0.012	1.14	4.84	8.54	0.42	942.25	946.99

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

REVISIONS

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

STORMWATER MANAGEMENT CALCULATIONS
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

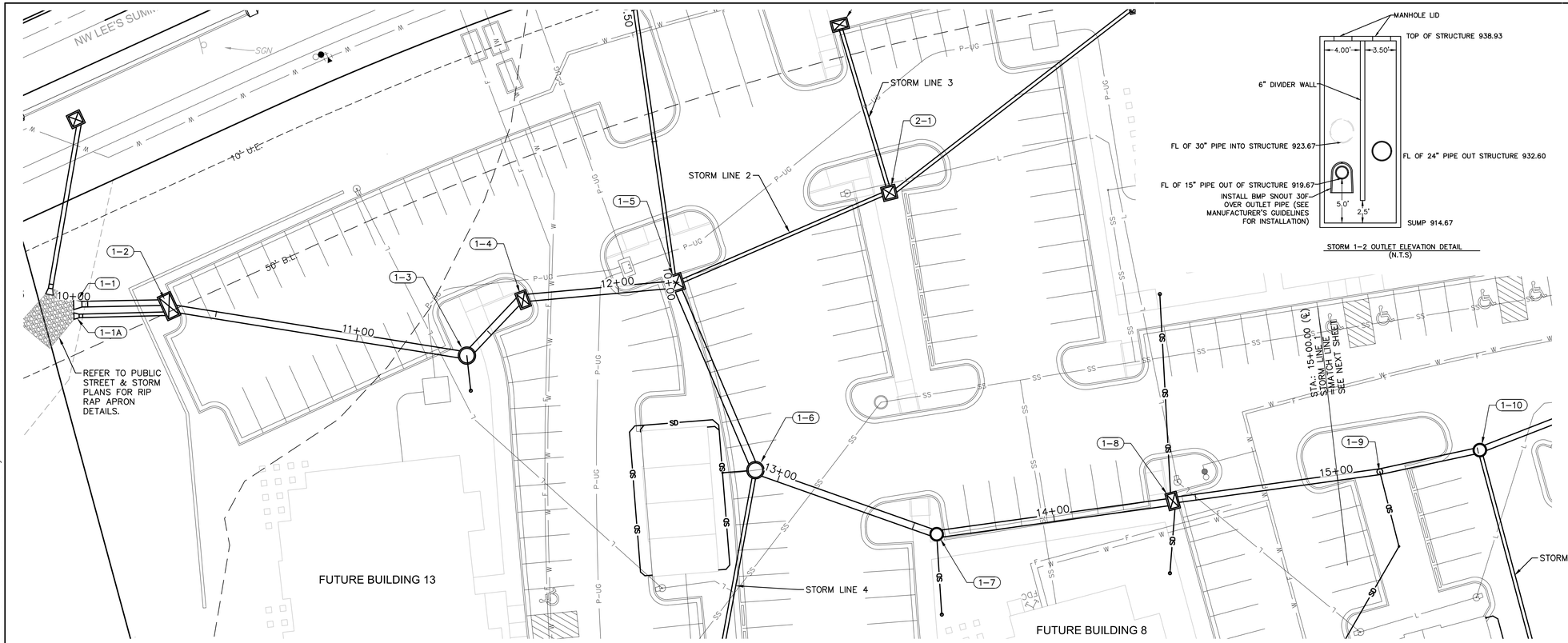
2020

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
C504

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_GEN04_ B190012.dwg ~ Layout: STORMWATER MANAGEMENT CALCULATIONS (2) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_STM01_ B190012.dwg ~ Layout: STORM SEWER PLAN & PROFILE ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

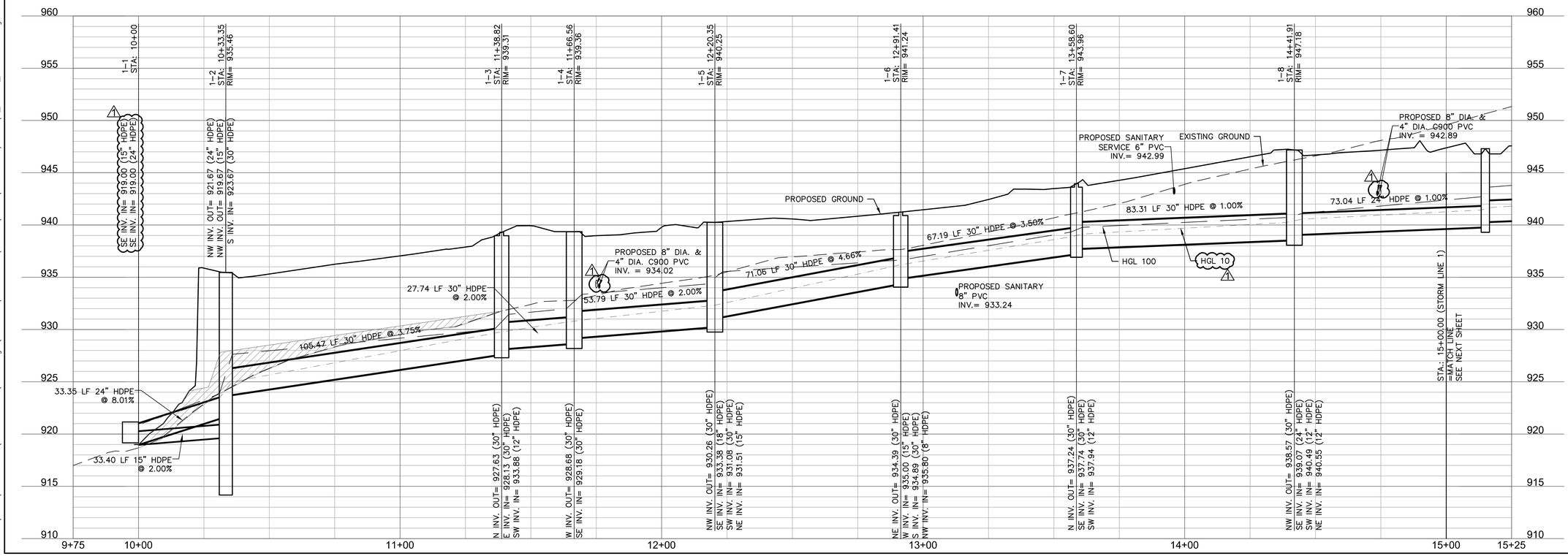


STORM 1-2 OUTLET ELEVATION DETAIL
(N.T.S)

NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

STRUCTURES	
ID	DESCRIPTION
1-1	10+00 STORM LINE 1 24" FES N: 1014723.073; E: 2822780.699
1-1A	10+00.26 STORM LINE 1 15" FES N: 1014720.702; E: 2822776.823
1-2	10+33.35 STORM LINE 1 8' X 4' CURB INLET (NON-SETBACK) (SEE DETAIL) N: 1014693.673; E: 2822796.441
1-3	11+38.82 STORM LINE 1 60" MH N: 1014594.917; E: 2822833.471
1-4	11+66.56 STORM LINE 1 5' X 3' CURB INLET (NON-SETBACK) N: 1014587.648; E: 2822860.241
1-5	12+20.35 STORM LINE 1 5' X 4' CURB INLET (NON-SETBACK) N: 1014544.291; E: 2822892.079
1-6	12+91.41 STORM LINE 1 60" MH N: 1014487.617; E: 2822849.210
1-7	13+58.60 STORM LINE 1 48" MH N: 1014421.553; E: 2822861.471
1-8	14+41.91 STORM LINE 1 5' X 3' CURB INLET (NON-SETBACK) N: 1014355.953; E: 2822912.816

STORM LINE 1 (9+75 - 15+25)



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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

REVISIONS

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

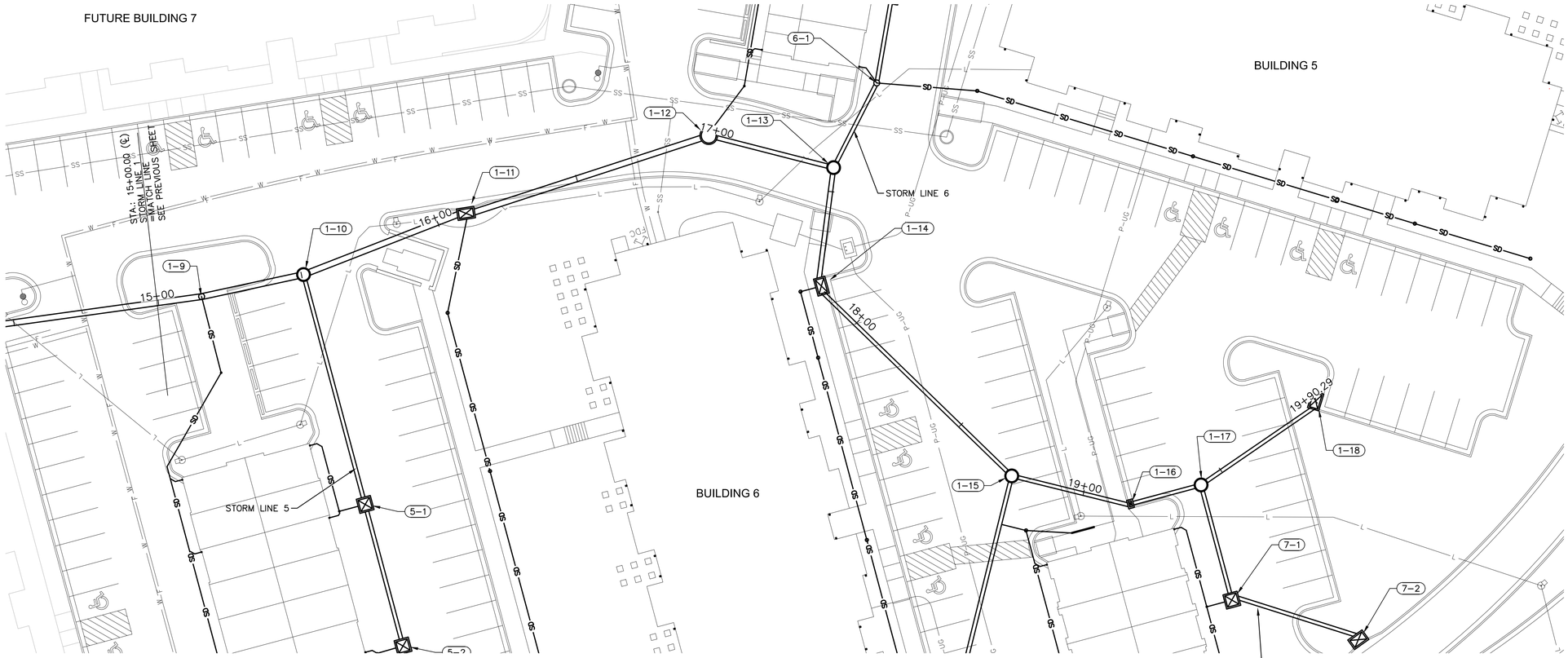
LEE'S SUMMIT, MO

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: 2020.08.27

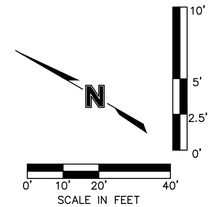
SHEET
C505

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_STM01_ B190012.dwg ~ Layout: STORM SEWER PLAN & PROFILE (2) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

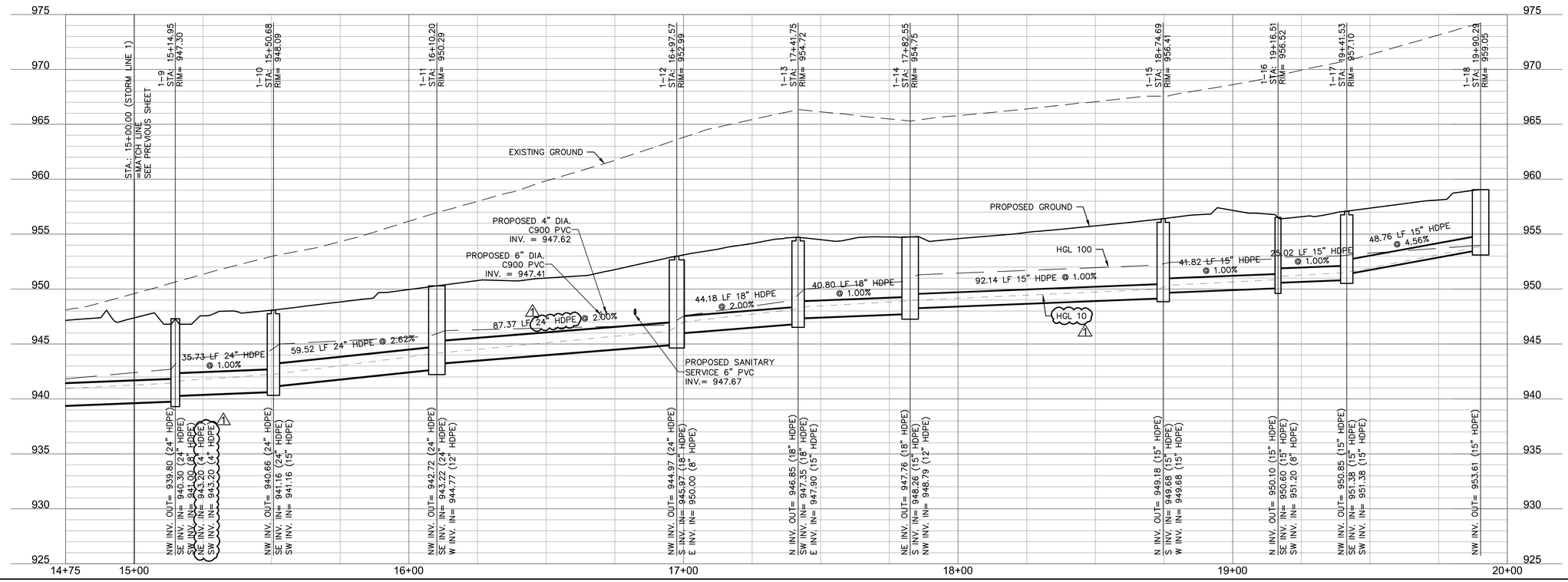


NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

STRUCTURES	
ID	DESCRIPTION
1-9	15+14.95 STORM LINE 1 30" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1014298.415; E: 2822957.809
1-10	15+50.68 STORM LINE 1 48" MH N: 1014271.938; E: 2822981.808
1-11	16+10.20 STORM LINE 1 5' X 3' CURB INLET (SETBACK) N: 1014234.207; E: 2823027.836
1-12	16+97.57 STORM LINE 1 60" MH N: 1014175.468; E: 2823092.511
1-13	17+41.75 STORM LINE 1 48" MH N: 1014132.919; E: 2823104.401
1-14	17+82.55 STORM LINE 1 5' X 3' CURB INLET (NON-SETBACK) N: 1014116.225; E: 2823067.168
1-15	18+74.69 STORM LINE 1 48" MH N: 1014027.198; E: 2823043.425 (1)
1-16	19+16.51 STORM LINE 1 NYLOPLAST CURB INLET (18" - 2X3') N: 1013987.149; E: 2823055.472 (1)
1-17	19+41.53 STORM LINE 1 48" MH N: 1013969.459; E: 2823073.162 (1)
1-18	19+90.29 STORM LINE 1 5' X 3' CURB INLET (NON-SETBACK) N: 1013949.833; E: 2823117.797



STORM LINE 1 (14+75 - 20+00)



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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
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NICHOLAS D. HEISER, P.E.
MO# 2015000555

REVISIONS

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

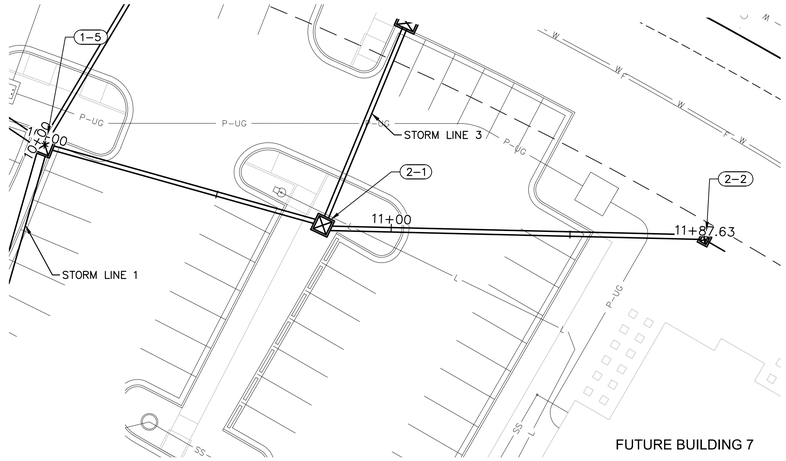
LEE'S SUMMIT, MO

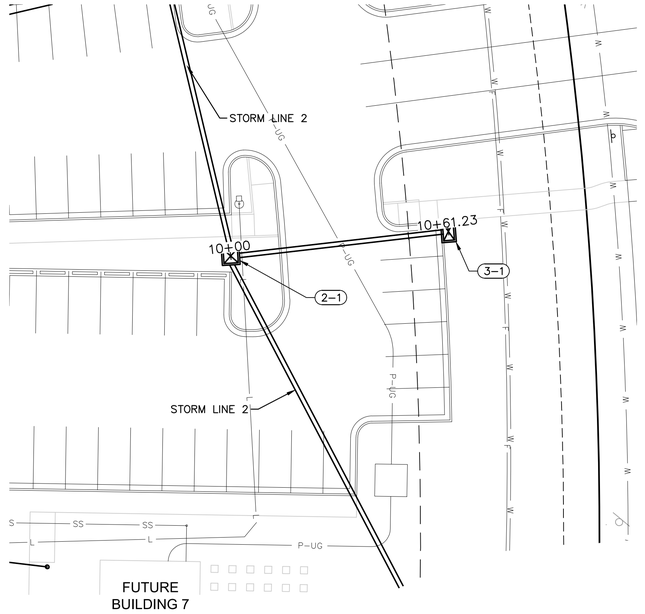
2020

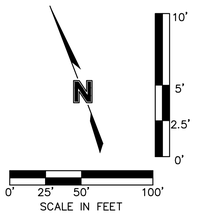
drawn by: M.J.D.
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C506

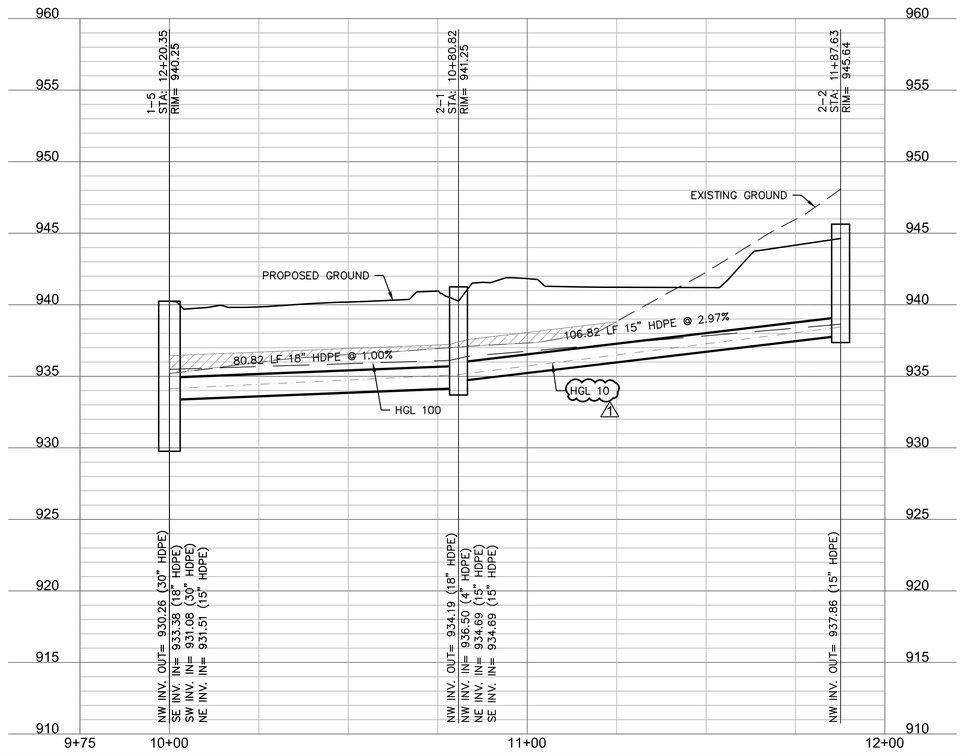
NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.





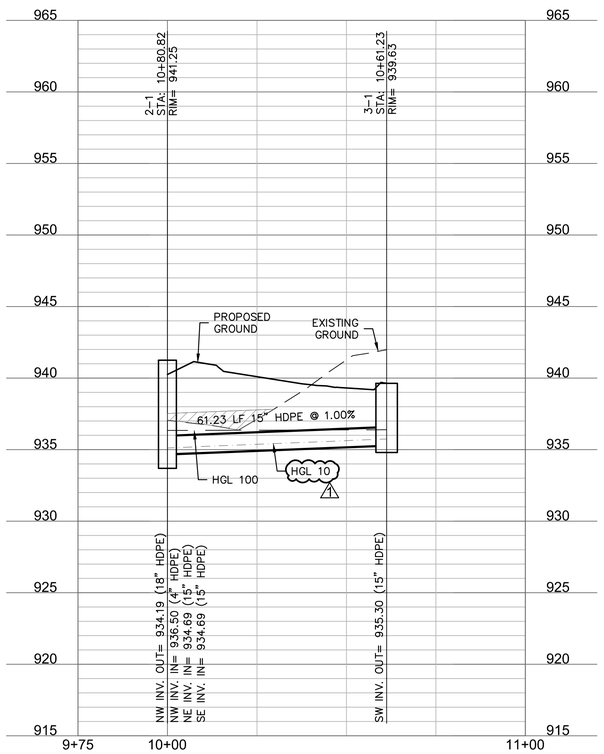


STORM LINE 2 (9+75 - 12+00)

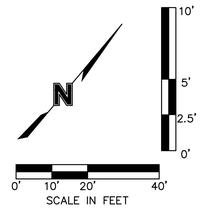


STRUCTURES	
ID	DESCRIPTION
2–1	10+80.82 STORM LINE 2 4' X 4' FIELD INLET (OPEN 2 SIDES–W,S) N: 1014495.562; E: 2822956.552
2–2	11+87.63 STORM LINE 2 4' X 4' FIELD INLET (OPEN 3 SIDE–S, E, W) N: 1014453.644; E: 2823054.799

STORM LINE 3 (9+75 - 11+00)



STRUCTURES	
ID	DESCRIPTION
3–1	10+61.23 STORM LINE 3 5' X 3' CURB INLET (NON–SETBACK) N: 1014539.914; E: 2822998.762



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1301 MCGEE STREET, SUITE 500
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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C507

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_STM01_ B190012.dwg ~ Layout: STORM SEWER PLAN & PROFILE (3) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

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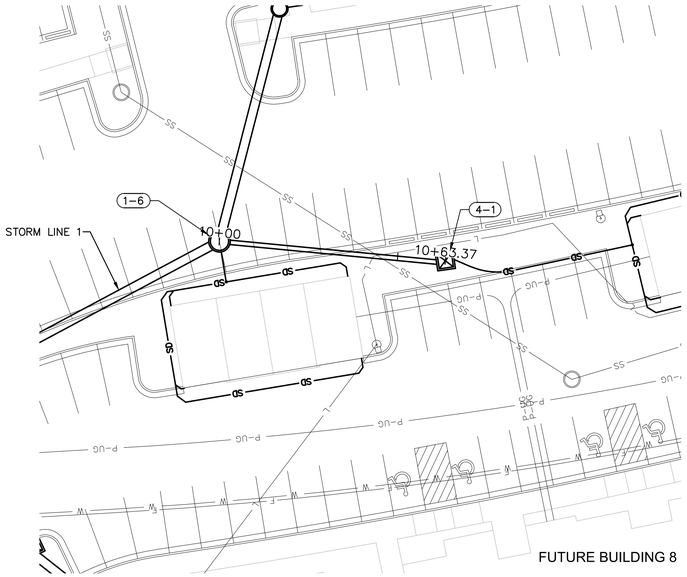
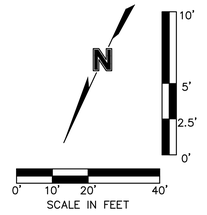
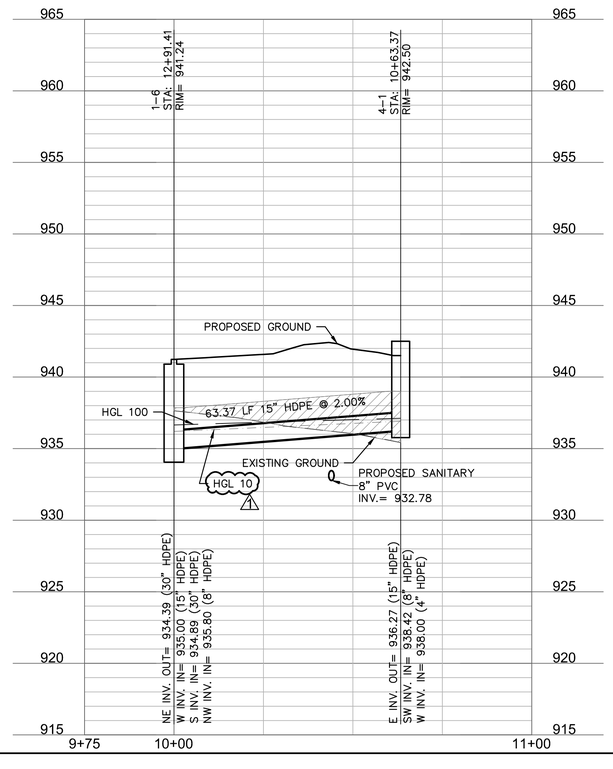
NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

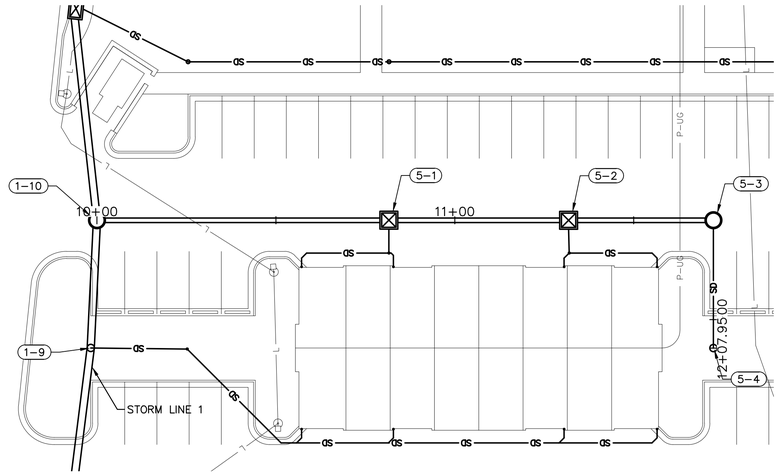


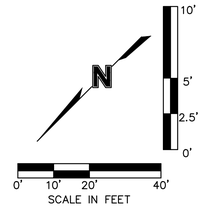
STRUCTURES	
ID	DESCRIPTION
4–1	10+63.37 STORM LINE 4 4' X 4' FIELD INLET (OPEN 4 SIDES) ⚠1 N: 1014465.854; E: 2822789.693



STORM LINE 4 (9+75 - 11+00)

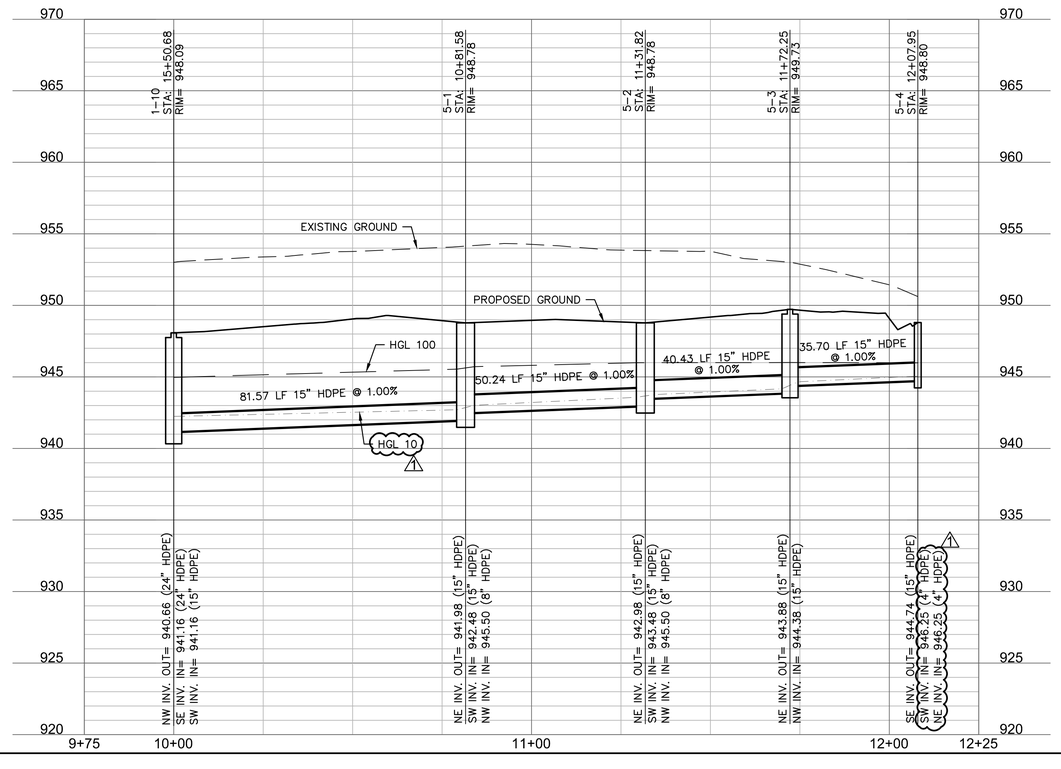






STRUCTURES	
ID	DESCRIPTION
5–1	10+81.58 STORM LINE 5 4' X 4' GRATE INLET N: 1014214.237; E: 2822924.146
5–2	11+31.82 STORM LINE 5 4' X 4' GRATE INLET N: 1014178.732; E: 2822888.601
5–3	11+72.25 STORM LINE 5 48" MH N: 1014150.141; E: 2822860.011
5–4	12+07.95 STORM LINE 5 15" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1014175.388; E: 2822834.763

STORM LINE 5 (9+75 - 12+25)



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KS CERTIFICATE OF AUTHORITY #:E-2066
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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

REVISIONS

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

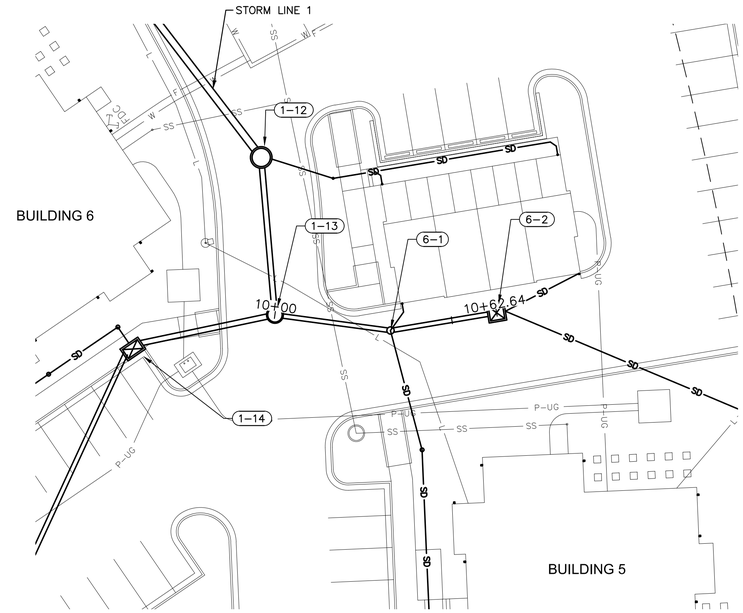
ARIA APARTMENTS
PHASE 1

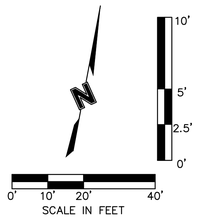
LEE'S SUMMIT, MO

2020

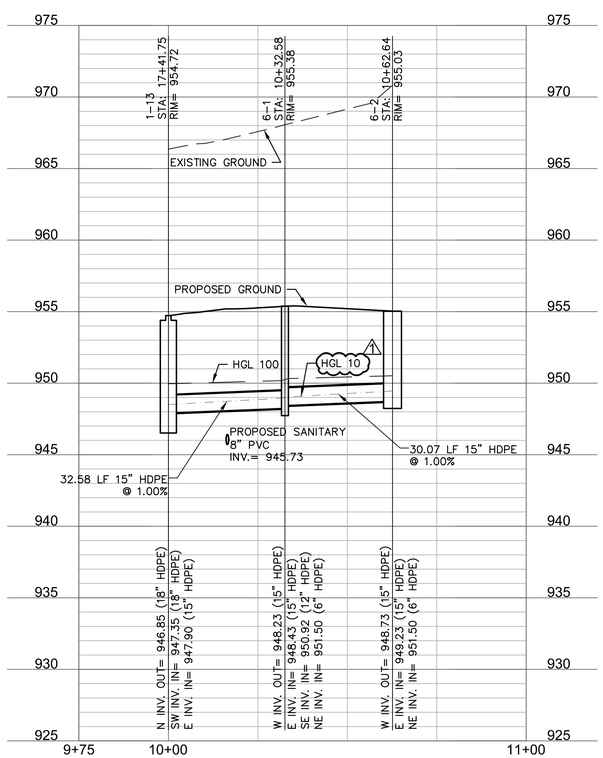
drawn by: M.J.D.
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C508



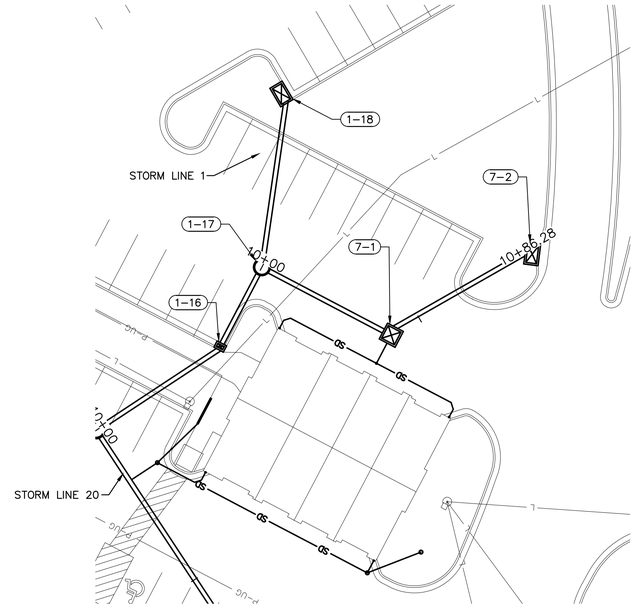


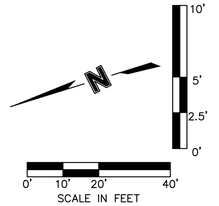
STORM LINE 6 (9+75 - 11+00)



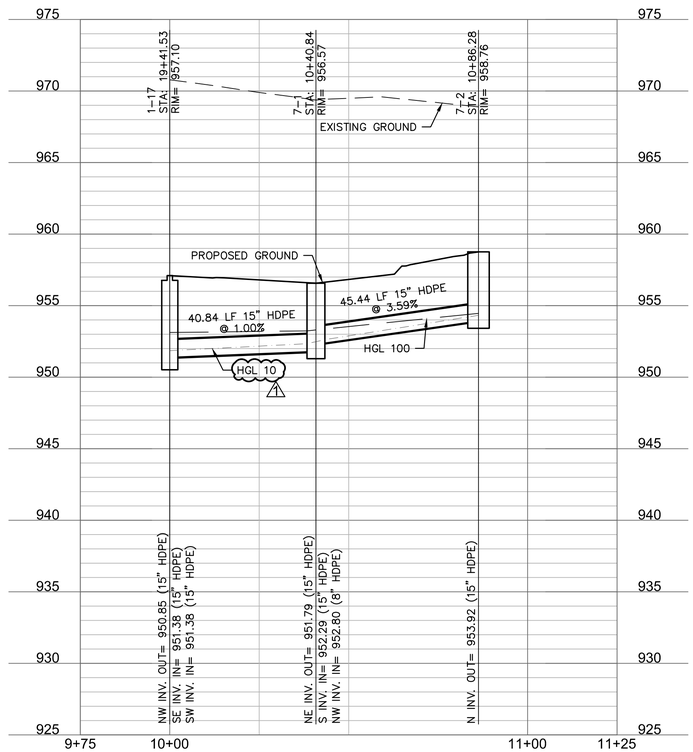
STRUCTURES	
ID	DESCRIPTION
6–1	10+32.58 STORM LINE 6 15" NYLOPLAST D.B. W/ SOLID TOP N: 1014134.610; E: 2823136.935
6–2	10+62.64 STORM LINE 6 4' X 4' GRATE INLET N: 1014144.983; E: 2823165.156

NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.





STORM LINE 7 (9+75 - 11+25)



STRUCTURES	
ID	DESCRIPTION
7–1	10+40.84 STORM LINE 7 4' X 4' GRATE INLET N: 1013940.578; E: 2823044.281
7–2	10+86.28 STORM LINE 7 5' X 3' CURB INLET (SETBACK) N: 1013896.234; E: 2823054.194

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

REVISIONS

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

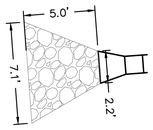
2020

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: 2020.08.27

SHEET
C509

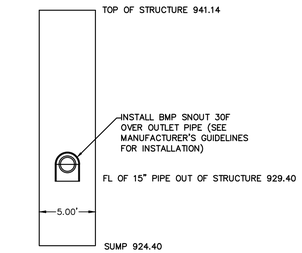
File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_STM01_ B190012.dwg ~ Layout: STORM SEWER PLAN & PROFILE (5) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

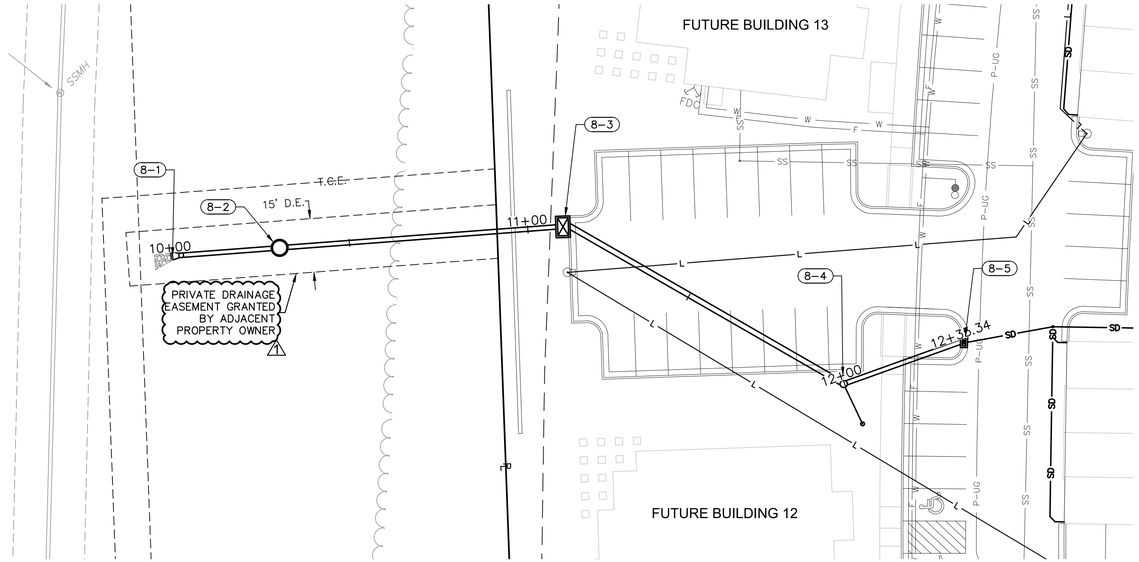


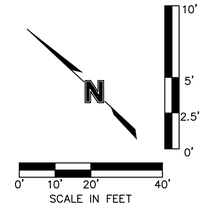
SCALE 1": 5'

Riprap Calculations							
End Section	Q_{100} (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)	Area (SY)
8-1	4.23	1.25	1	5	5	1.46	3.0
*Per Table 10.1 HEC 14-FHWA-Energy Dissipators Pg. 10-18							

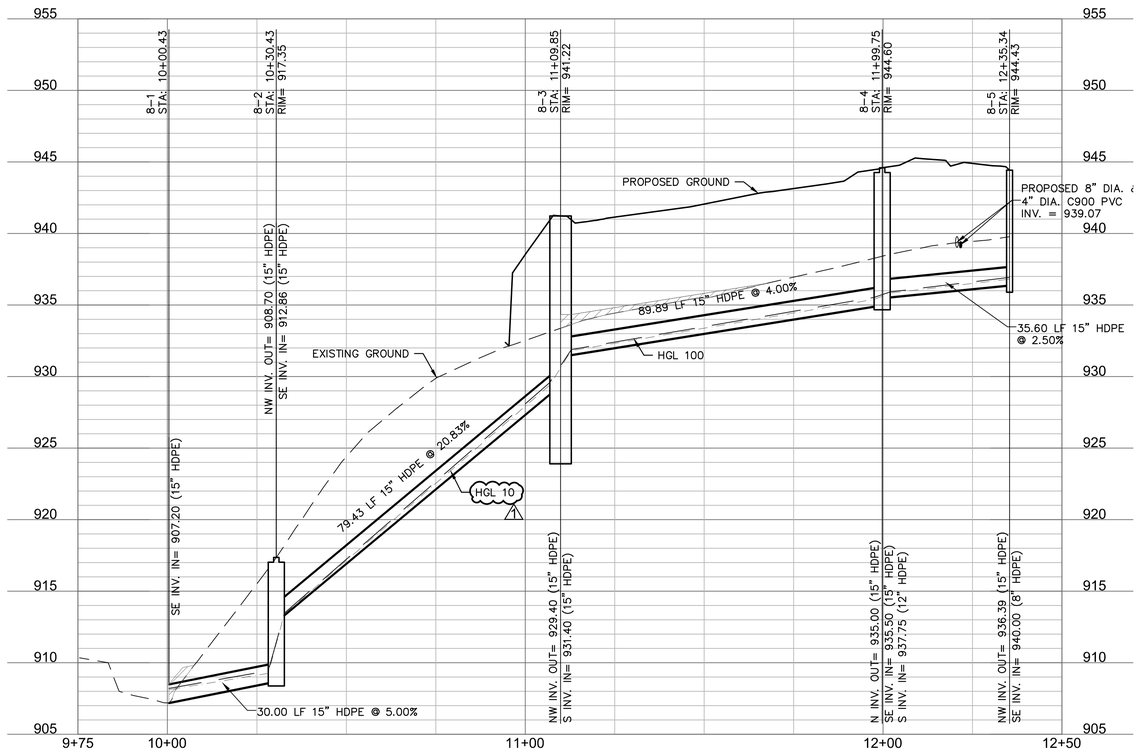


STORM 8-3 PIPE OUTLET ELEVATION DETAIL
(N.T.S)





STORM LINE 8 (9+75 - 12+50)



STRUCTURES	
ID	DESCRIPTION
8-1	10+00.43 STORM LINE 8 15" FES N: 1014576.203; E: 2822490.294
8-2	10+30.43 STORM LINE 8 48" MH N: 1014555.863; E: 2822512.346
8-3	11+09.85 STORM LINE 8 5' X 3' CURB INLET (NON-SETBACK) (SEE DETAIL) N: 1014502.013; E: 2822570.731
8-4	11+99.75 STORM LINE 8 48" MH N: 1014414.713; E: 2822592.155
8-5	12+35.34 STORM LINE 8 NYLOPLAST CURB INLET (18" – 2'X3') N: 1014398.103; E: 2822623.639

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

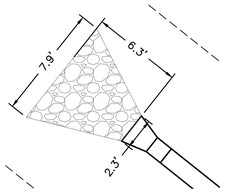
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C510

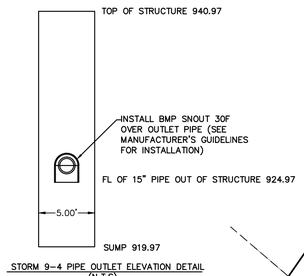
File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_STM02_ B190012.dwg ~ Layout: STORM SEWER PLAN & PROFILE (6) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



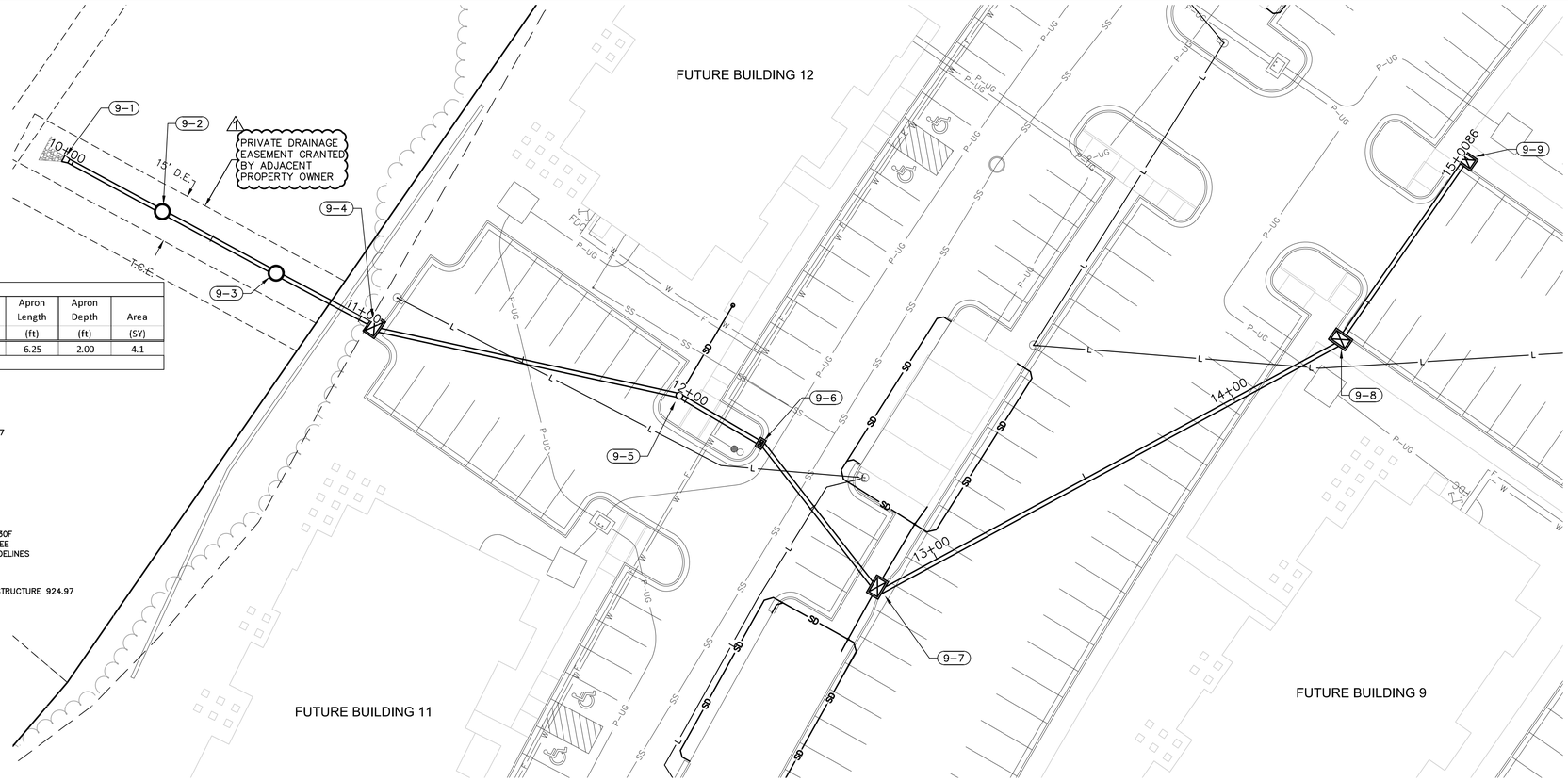
SCALE 1": 5'

Riprap Calculations								
End Section	Q_{100} (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)	Area (SY)
9-1	11.25	1.25	3	10	6.25	2.00	4.1

*Per Table 10.1 HEC 14-FHWA-Energy Dissipators Pg. 10-18

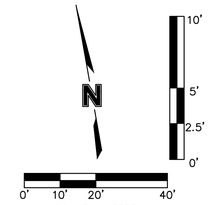


STORM 9-4 PIPE OUTLET ELEVATION DETAIL
(N.T.S)



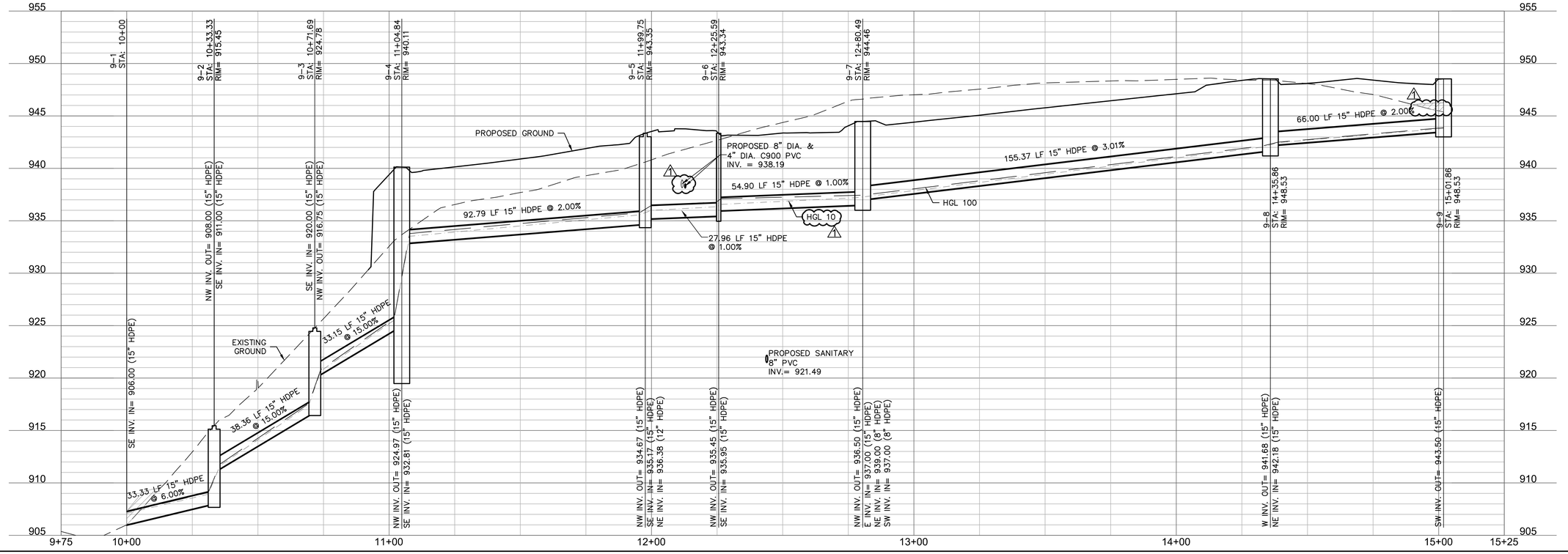
NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

STRUCTURES	
ID	DESCRIPTION
9-1	10+00 STORM LINE 9 15" FES N: 1014345.160; E: 2822262.670
9-2	10+33.33 STORM LINE 9 48" MH N: 1014324.373; E: 2822288.723
9-3	10+71.69 STORM LINE 9 48" MH N: 1014300.448; E: 2822318.707
9-4	11+04.84 STORM LINE 9 5' X 3' CURB INLET (NON-SETBACK) (SEE DETAIL) N: 1014279.774; E: 2822344.617
9-5	11+99.75 STORM LINE 8 48" MH N: 1014243.618; E: 2822430.074
9-6	12+25.59 STORM LINE 9 NYLOPLAST CURB INLET (18" – 2'X3') N: 1014225.407; E: 2822451.297
9-7	12+80.49 STORM LINE 9 5' X 3' CURB INLET (SETBACK) N: 1014177.363; E: 2822477.866
9-8	14+35.86 STORM LINE 9 5' X 3' CURB INLET (NON-SETBACK) N: 1014225.119; E: 2822625.712
9-9	15+01.86 STORM LINE 9 5' X 3' CURB INLET (NON-SETBACK) N: 1014271.788; E: 2822672.381



SCALE IN FEET

STORM LINE 9 (9+75 - 15+25)



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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	BY	REVISIONS DESCRIPTION
1	07 JAN 2021		PERMIT SET / CITY COMMENT REVISIONS

REVISIONS

STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

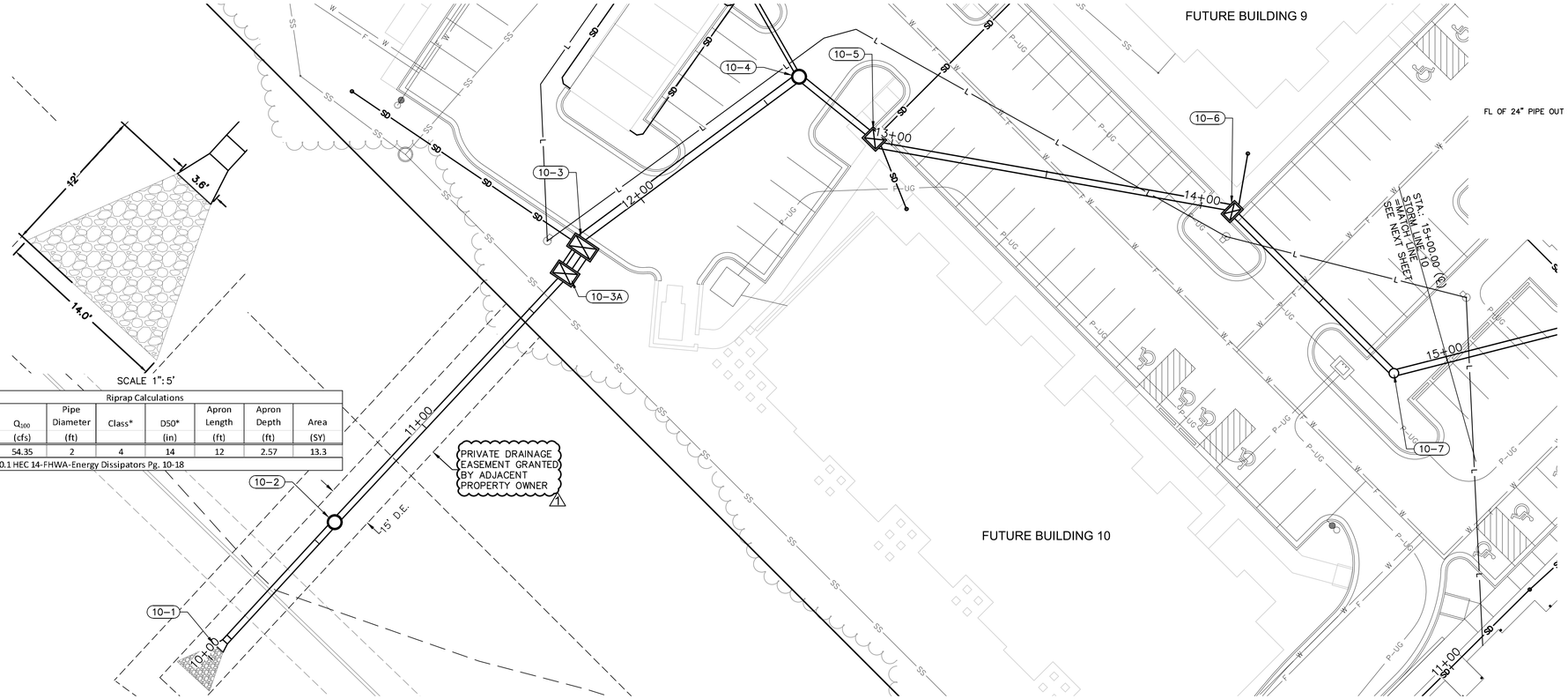
LEE'S SUMMIT, MO

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: 2020.08.27

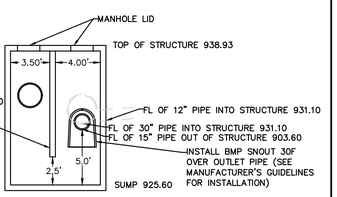
SHEET
C511

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_STM02_ B190012.dwg ~ Layout: STORM SEWER PLAN & PROFILE (7) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



Riprap Calculations								
End Section	Q_{100} (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)	Area (SY)
10-1	54.35	2	4	14	12	2.57	13.3

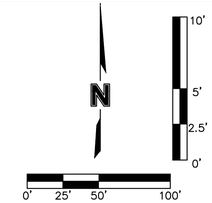
*Per Table 10.1 HEC 14-FHWA-Energy Dissipators Pg. 10-18



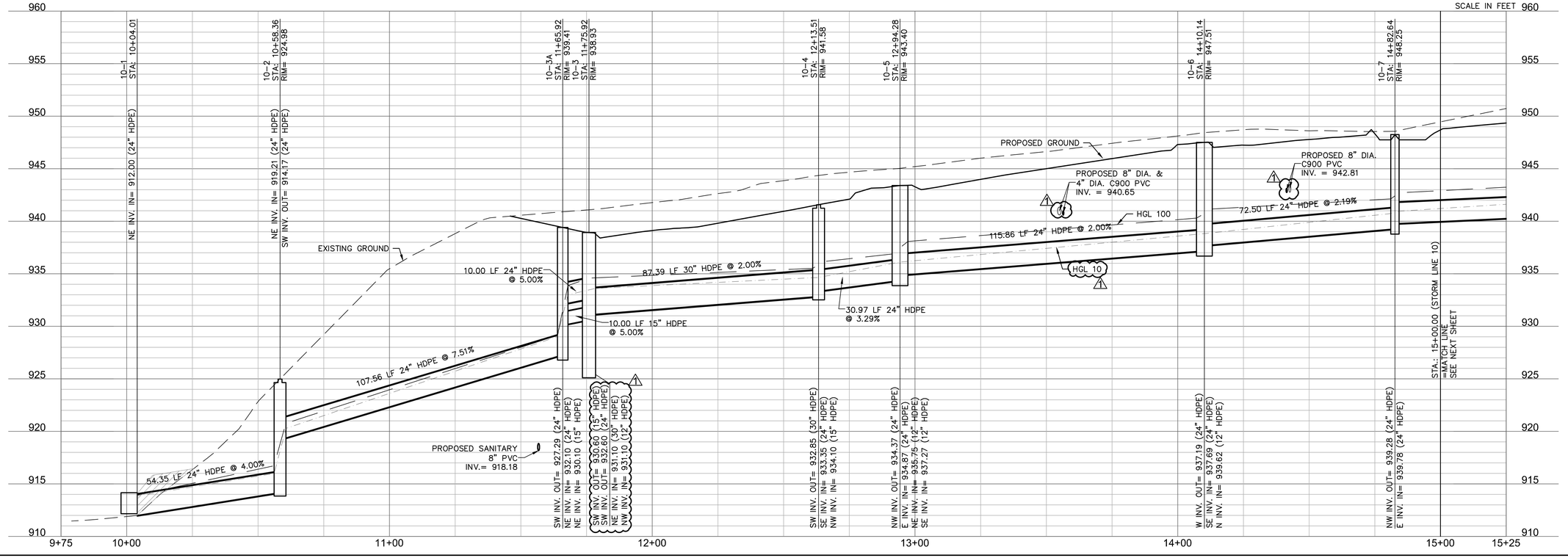
STORM 10-3 OUTLET ELEVATION DETAIL
(N.T.S)

ID	DESCRIPTION
10-1	10+04.01 STORM LINE 10 24" FES N: 1013844.614; E: 2822218.514
10-2	10+58.36 STORM LINE 10 48" MH N: 1013884.665; E: 2822255.256
10-3A	11+65.92 STORM LINE 10 7' X 4' JUNCTION BOX N: 1013963.537; E: 2822328.383
10-3	11+75.92 STORM LINE 10 8' X 4' CURB INLET (NON-SETBACK) (SEE DETAIL) N: 1013971.825; E: 2822333.979
10-4	12+13.51 STORM LINE 8 48" MH N: 1014025.927; E: 2822402.604
10-5	12+94.28 STORM LINE 10 5' X 4' CURB INLET (NON-SETBACK) N: 1014006.213; E: 2822426.490
10-6	14+10.14 STORM LINE 10 5' X 3' CURB INLET (NON-SETBACK) N: 1013983.175; E: 2822540.038
10-7	14+82.64 STORM LINE 10 30" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013931.909; E: 2822591.303

NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.



STORM LINE 10 (9+75 - 15+25)



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PHASE 1

LEE'S SUMMIT, MO

2020

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designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C512

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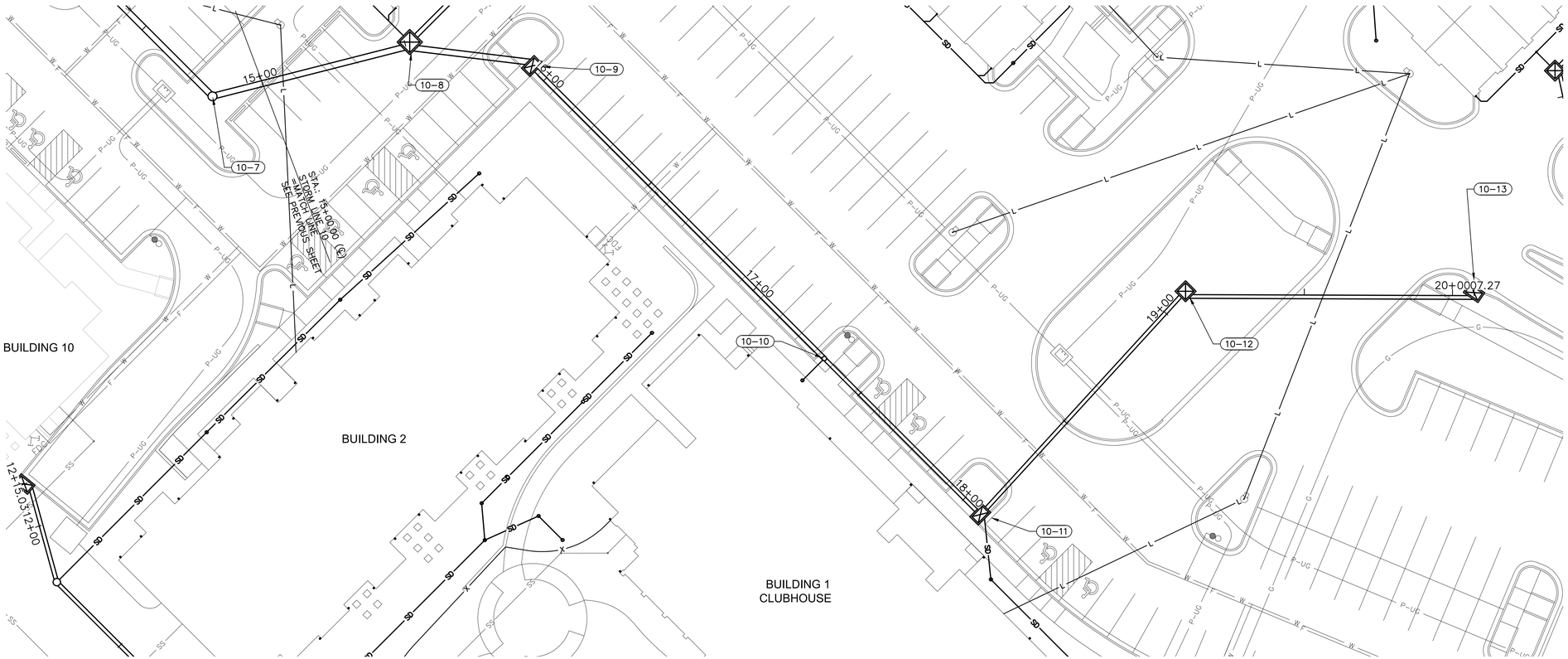


NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

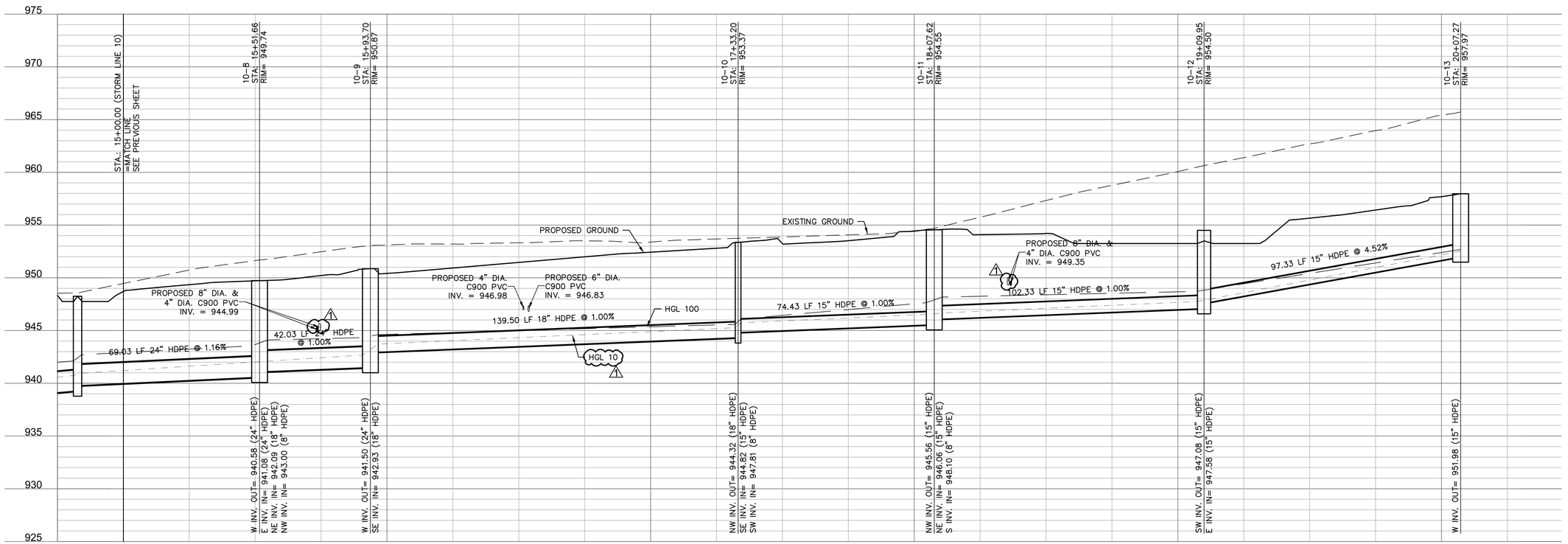
STRUCTURES	
ID	DESCRIPTION
10–8	15+51.66 STORM LINE 10 5' X 5' – JUNCTION BOX N: 1013950.205; E: 2822657.860
10–9	15+93.70 STORM LINE 10 5' X 3' CURB INLET (NON–SETBACK) N: 1013942.117; E: 2822699.109
10–10	17+33.20 STORM LINE 10 18" NYLOPLAST D.B. W/ SOLID TOP N: 1013843.476; E: 2822797.751
10–11	18+07.62 STORM LINE 10 5' X 3' CURB INLET (NON–SETBACK) N: 1013790.849; E: 2822850.377
10–12	19+09.95 STORM LINE 10 4' X 4' FIELD INLET (OPEN 4 SIDES) N: 1013866.168; E: 2822919.641
10–13	20+07.27 STORM LINE 10 5' X 3' CURB INLET (SETBACK) N: 1013865.704; E: 2823016.966

N

10' 5' 2.5' 0'

0' 10' 20' 40'
SCALE IN FEET

STORM LINE 10 (14+75 - 20+50)



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date: 2020.08.27

SHEET
C513

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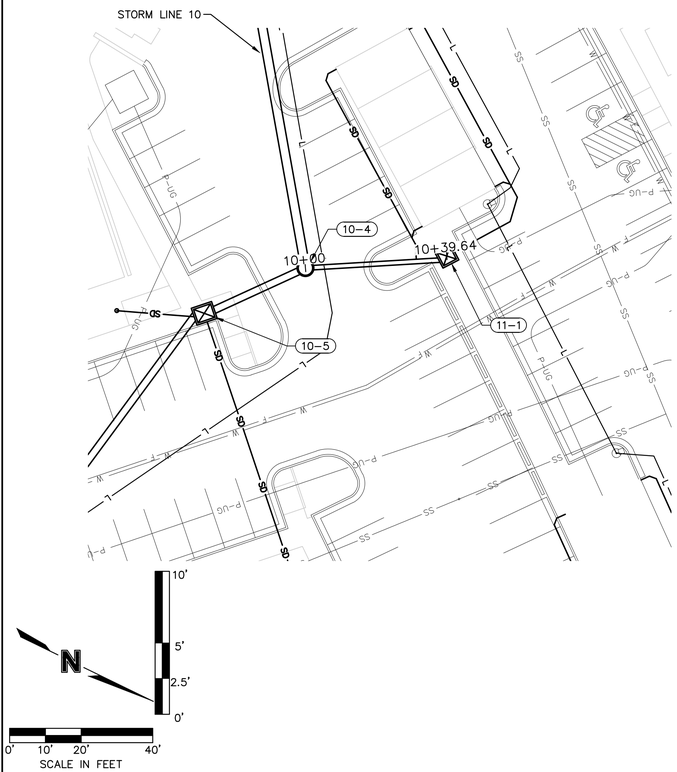
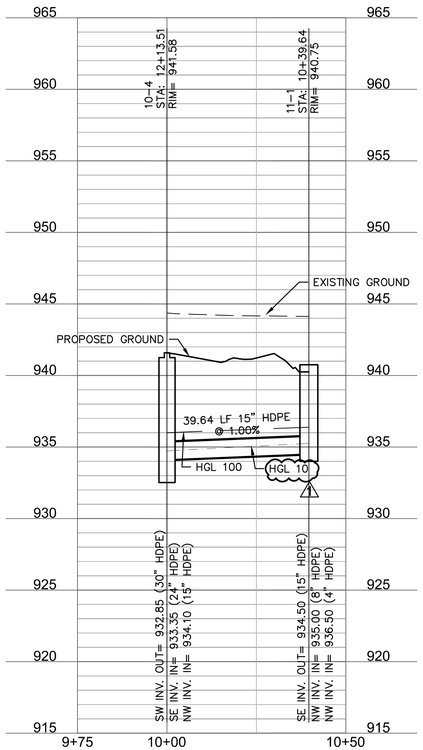
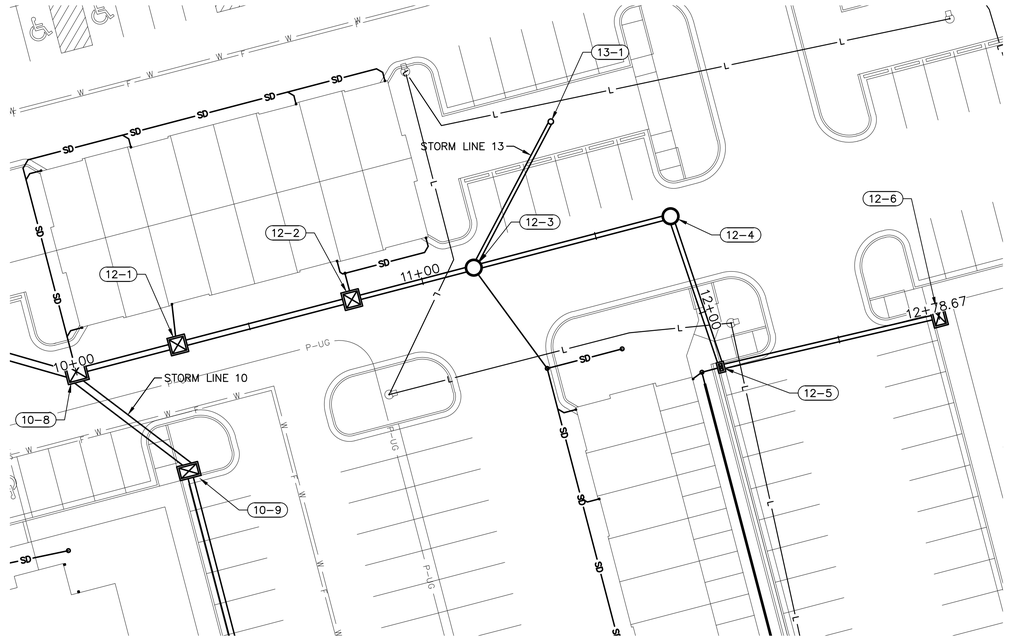


STORM LINE 11 (9+75 - 10+50)

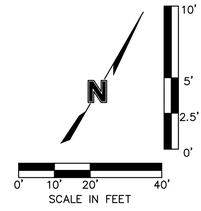


STRUCTURES	
ID	DESCRIPTION
11–1	10+39.64 STORM LINE 11 4' X 4' FIELD INLET (OPEN 4 SIDES) N: 1014059.816; E: 2822382.031

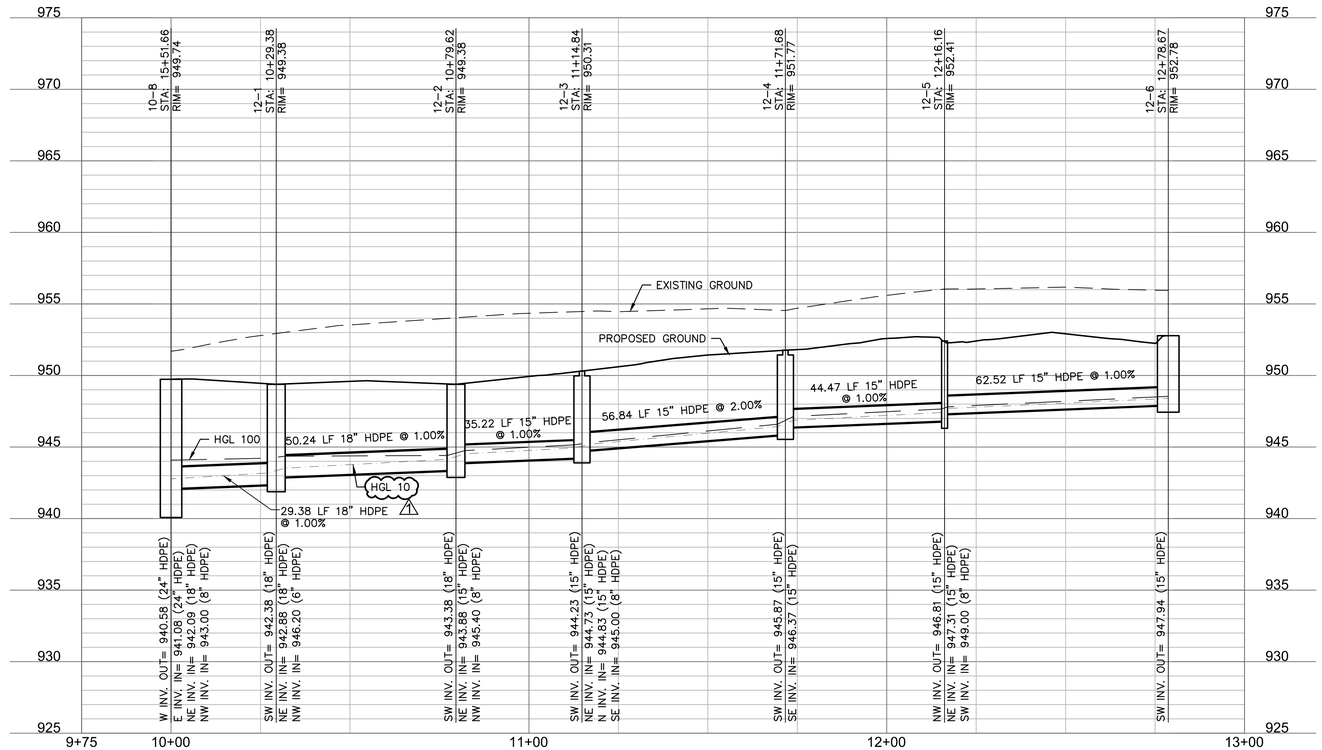


NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

STRUCTURES	
ID	DESCRIPTION
12–1	10+29.38 STORM LINE 12 4' X 4' GRATE INLET N: 1013970.980; E: 2822678.635
12–2	10+79.62 STORM LINE 12 4' X 4' GRATE INLET N: 1014006.505; E: 2822714.160
12–3	11+14.84 STORM LINE 12 48" MH N: 1014031.409; E: 2822739.064
12–4	11+71.68 STORM LINE 12 48" MH N: 1014071.602; E: 2822779.258
12–5	12+16.16 STORM LINE 12 NYLOPLAST CURB INLET (18" – 2'X3') N: 1014042.332; E: 2822812.742
12–6	12+78.67 STORM LINE 12 5' X 3' CURB INLET (NON-SETBACK) N: 1014085.465; E: 2822857.997



STORM LINE 12 (9+75 - 13+00)



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NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

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ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C514

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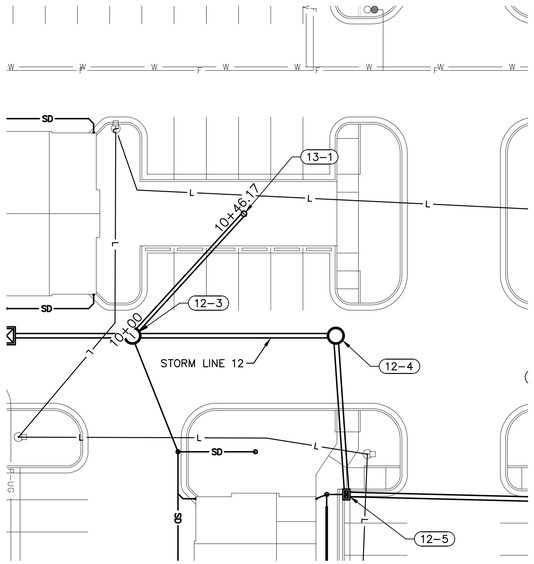
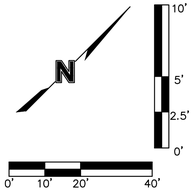
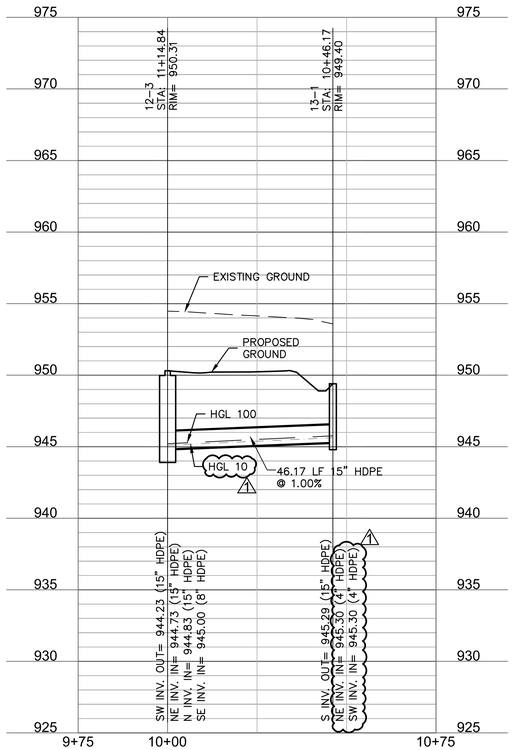


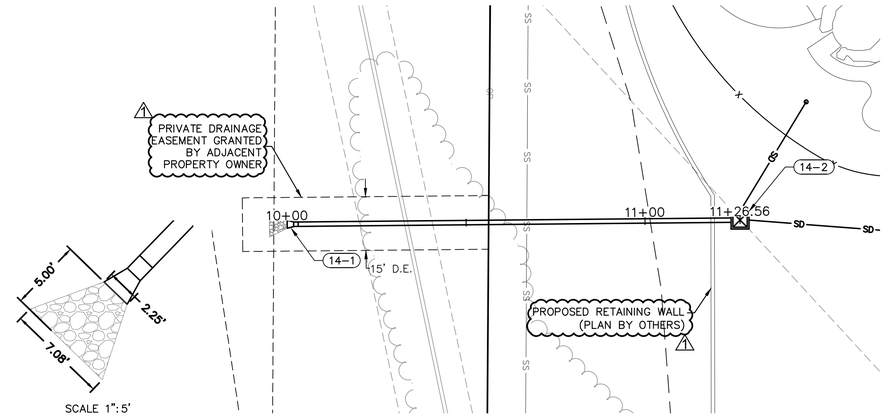


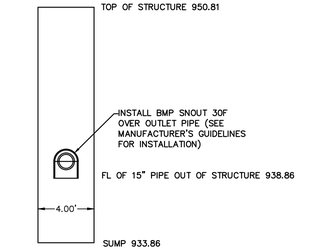
STORM LINE 13 (9+75 - 10+75)



STRUCTURES	
ID	DESCRIPTION
13–1	10+46.17 STORM LINE 13 8" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1014077.537; E: 2822737.002

NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

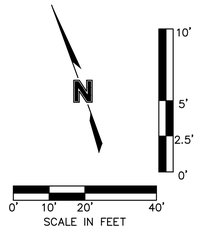




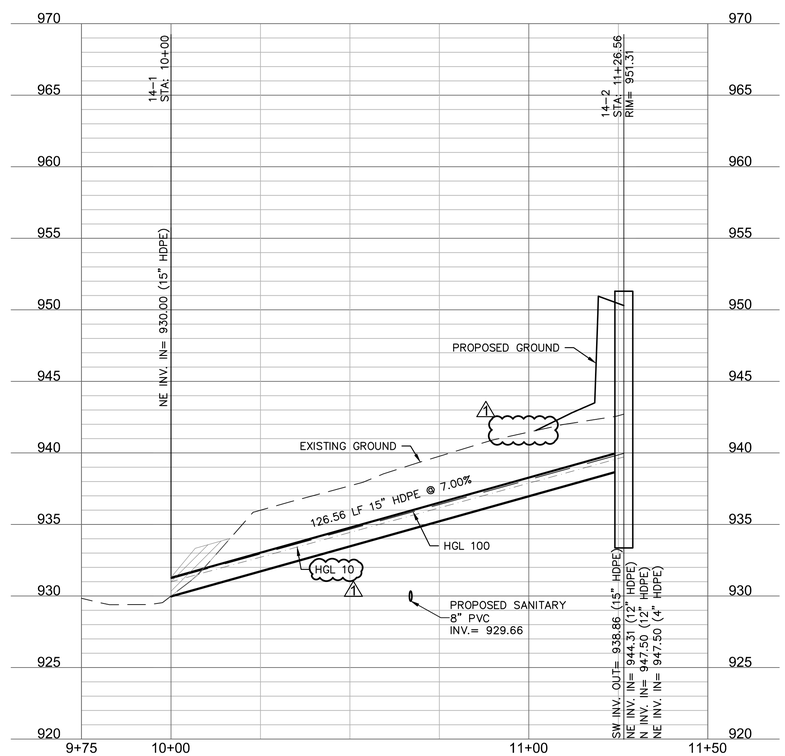
STORM 14–2 PIPE OUTLET ELEVATION DETAIL
(N.T.S)

Riprap Calculations							
End Section	Q_{100} (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)	Area (SY)
14-1	7.94	1.25	2	6	5	1.65	3.0

*Per Table 10.1 HEC 14-FHWA-Energy Dissipators Pg. 10-18



STORM LINE 14 (9+75 - 11+50)



STRUCTURES	
ID	DESCRIPTION
14–1	10+00 STORM LINE 14 15" FES N: 1013490.977; E: 2822693.191
14–2	11+26.56 STORM LINE 14 4' X 4' FIELD INLET (OPEN 3 SIDES–N,S,E) (SEE DETAIL) N: 1013581.886; E: 2822781.243

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MO# 2015000555

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LEE'S SUMMIT, MO

2020

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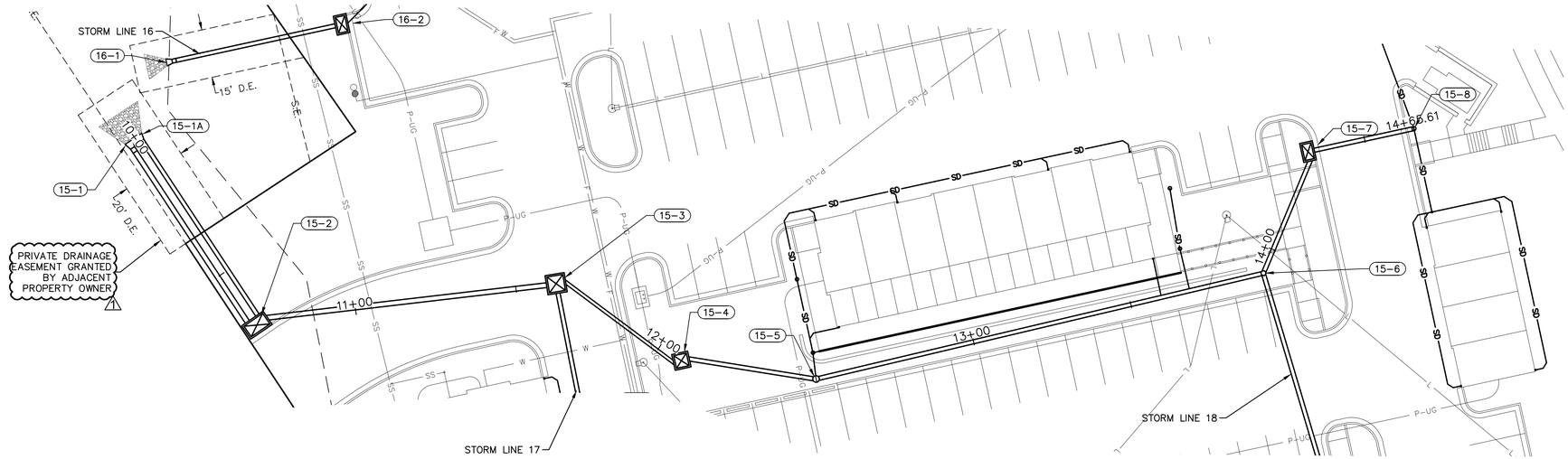
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

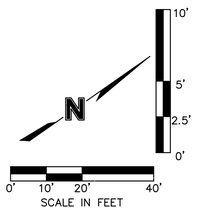
SHEET
C515

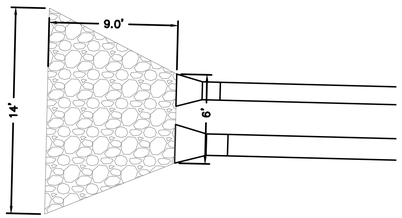
File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_STM02_ B190012.dwg ~ Layout: STORM SEWER PLAN & PROFILE (11) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

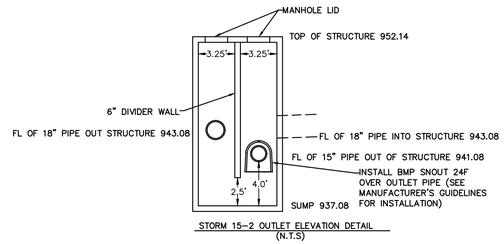
STRUCTURES	
ID	DESCRIPTION
15-1	10+00 STORM LINE 15 18" FES N: 1013429.663; E: 2822932.913
15-1A	10+00.10 STORM LINE 15 15" FES N: 1013433.411; E: 2822933.009
15-2	10+69.13 STORM LINE 15 7' X 4' CURB INLET (NON-SETBACK) (SEE DETAIL) N: 1013429.821; E: 2823002.048
15-3	11+62.50 STORM LINE 15 5' X 5' - JUNCTION BOX N: 1013513.040; E: 2823044.379
15-4	12+07.97 STORM LINE 15 4' X 4' FIELD INLET (OPEN 4 SIDES) N: 1013531.201; E: 2823086.059
15-5	12+49.95 STORM LINE 15 24" NYLOPLAST D.B. W/ SOLID TOP N: 1013562.104; E: 2823114.484
15-6	13+92.04 STORM LINE 15 18" NYLOPLAST D.B. W/ SOLID TOP N: 1013694.272; E: 2823166.637
15-7	14+32.11 STORM LINE 15 5' X 3' CURB INLET (NON-SETBACK) N: 1013727.098; E: 2823143.654
15-8	14+65.61 STORM LINE 15 15" NYLOPLAST D.B. W/ SOLID TOP N: 1013758.033; E: 2823156.511





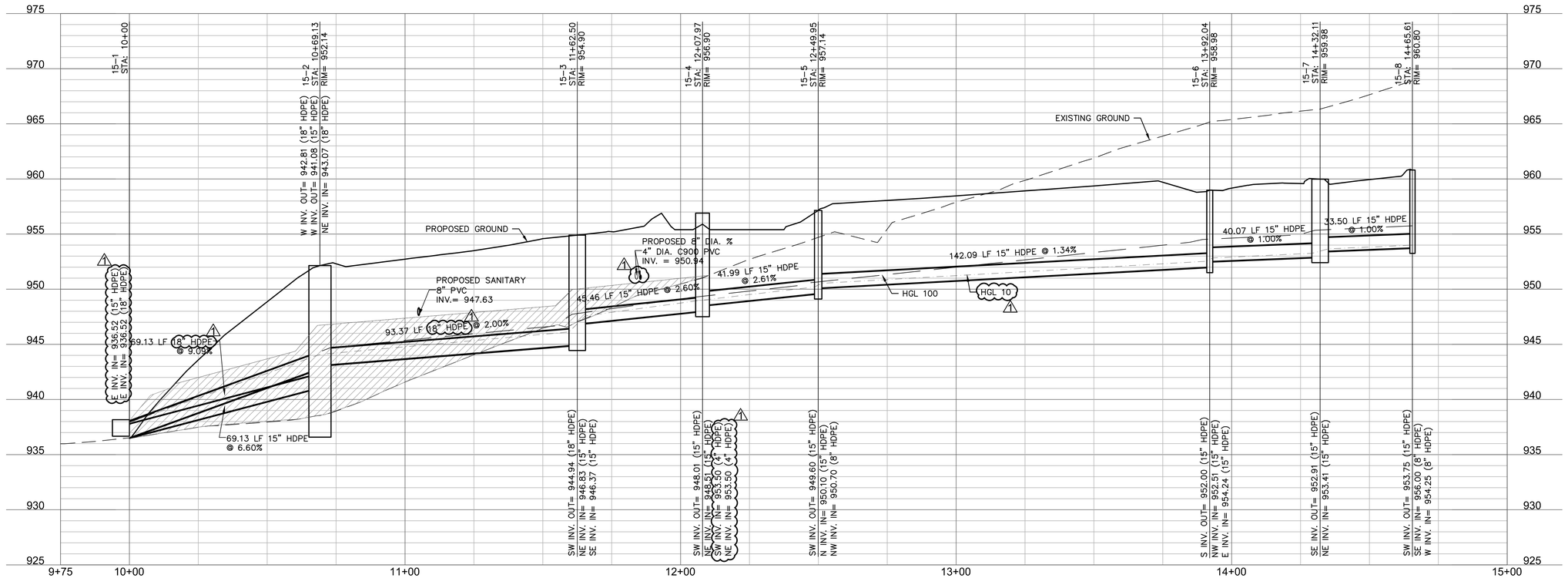
SCALE 1":5'

Riprap Calculations							
End Section	Q_{100} (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)	Area (SY)
15-1	18.86	1.5	4	14	9	2.57	13.3
*Per Table 10.1 HEC 14-FHWA-Energy Dissipators Pg. 10-18							



STORM 15-2 OUTLET ELEVATION DETAIL
(N.T.S)

STORM LINE 15 (9+75 - 15+00)



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SHEET
C516

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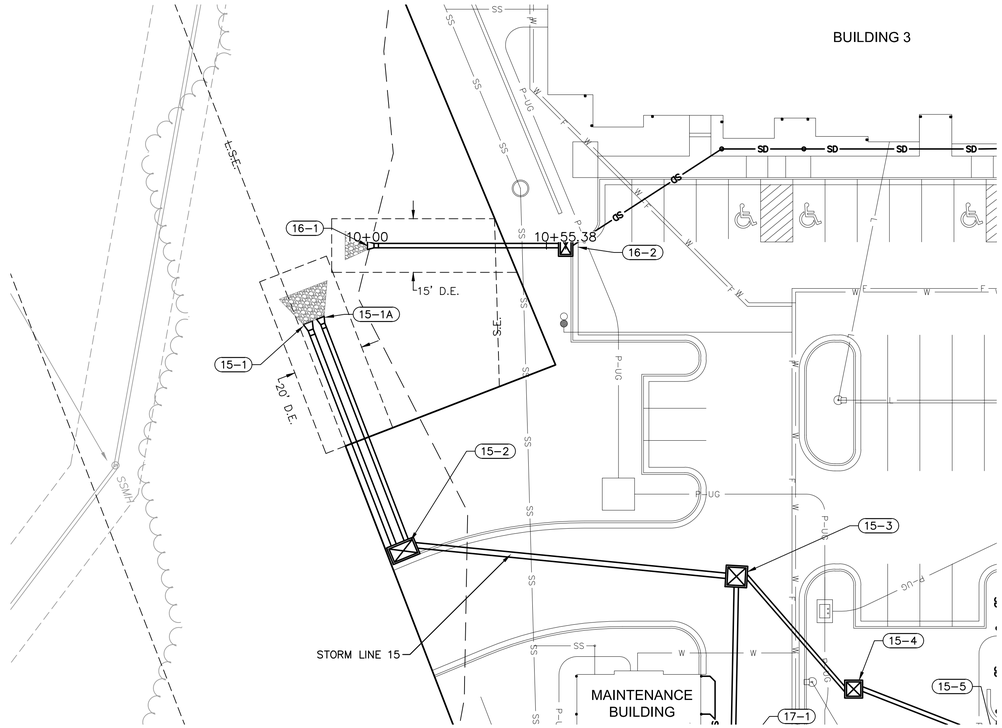
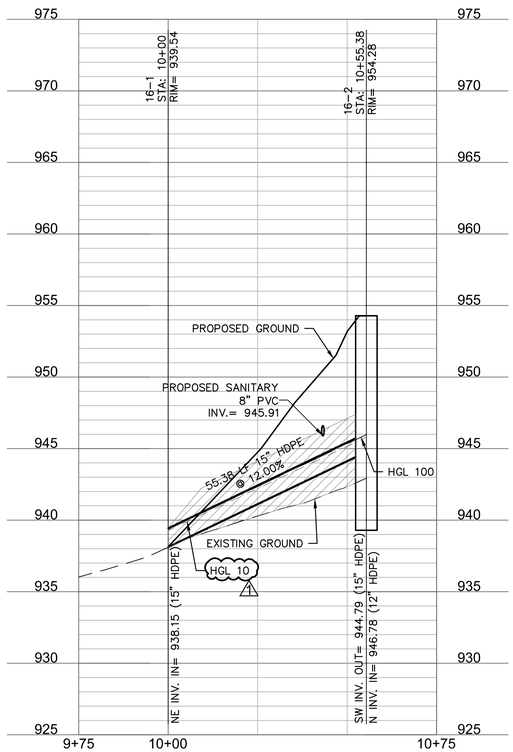
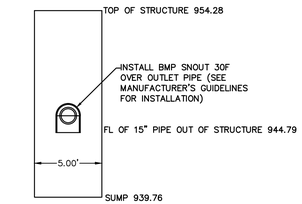
NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.



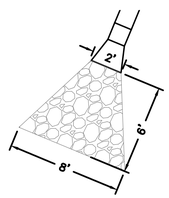
SCALE IN FEET
0' 10' 20' 40'
10' 5' 2.5' 0'

STORM LINE 16 (9+75 - 10+75)





STORM 16–2 PIPE OUTLET ELEVATION DETAIL
(N.T.S)



SCALE 1": 5'

End Section	Q_{100} (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)	Area (SY)
16-1	10.12	1.25	3	10	6.25	2.00	4.1

*Per Table 10.1 HEC 14-FHWA-Energy Dissipators Pg. 10-18

STRUCTURES	
ID	DESCRIPTION
16–1	10+00 STORM LINE 16 15" FES N: 1013453.320; E: 2822919.406
16–2	10+55.38 STORM LINE 16 5' X 3' CURB INLET (NON–SETBACK) N: 1013504.456; E: 2822940.659

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

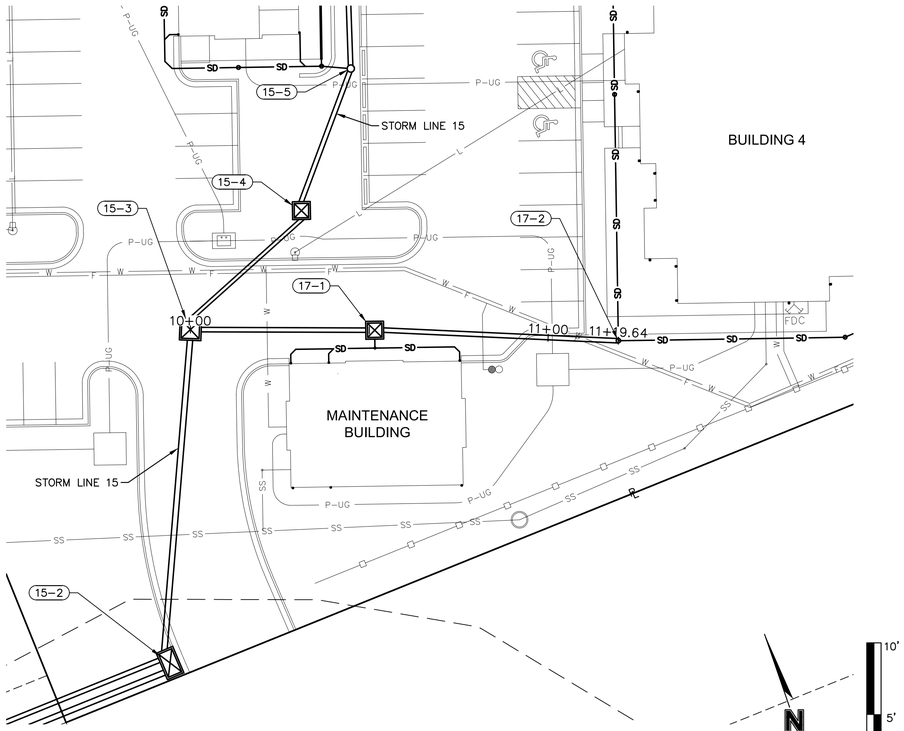
LEE'S SUMMIT, MO

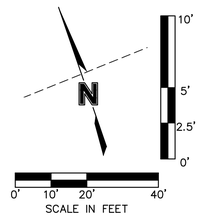
2020

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: 2020.08.27

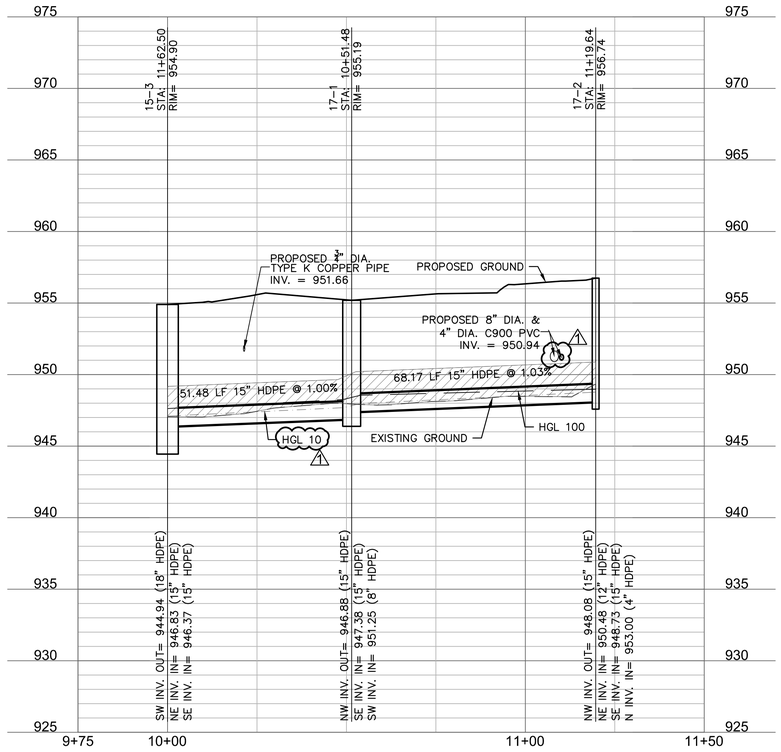
SHEET
C517

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_STM03_ B190012.dwg ~ Layout: STORM SEWER PLAN & PROFILE (13) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



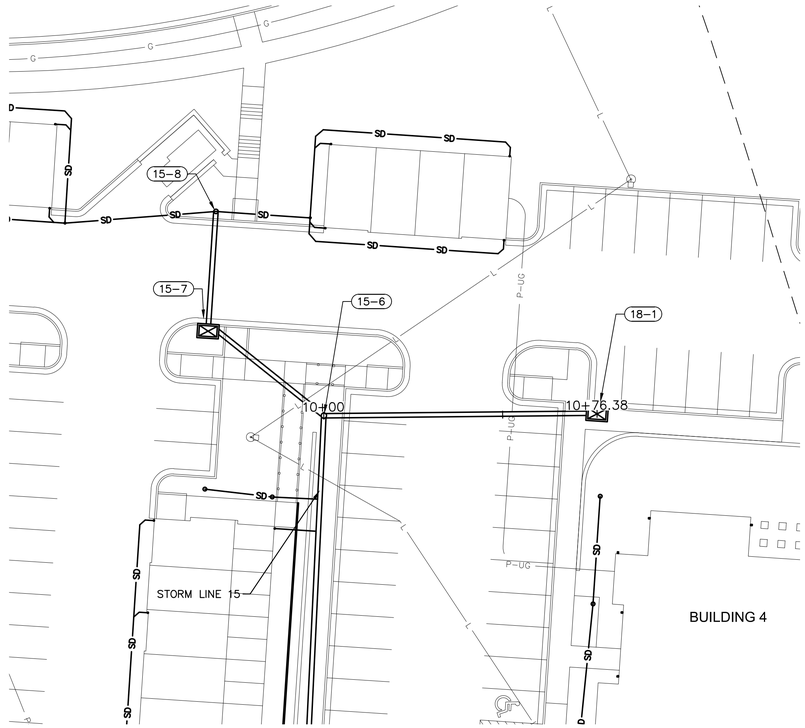


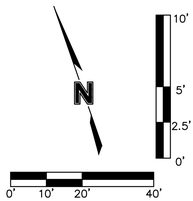
STORM LINE 17 (9+75 - 11+50)



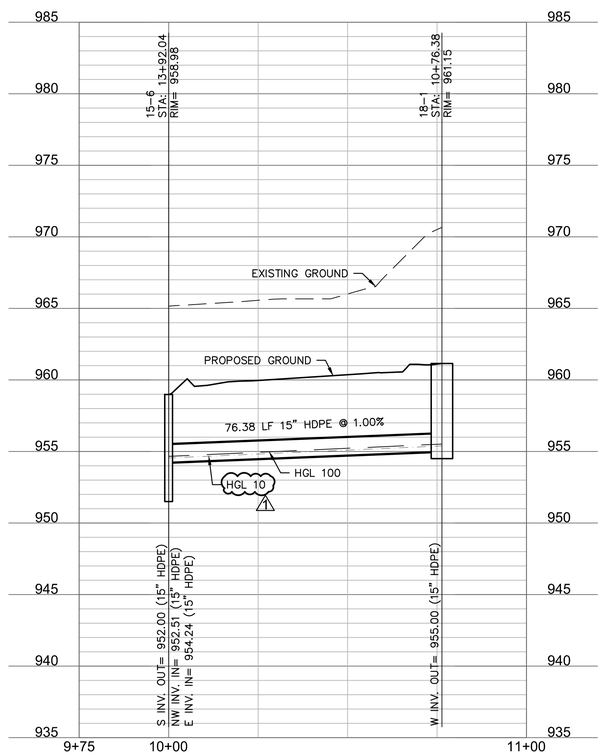
STRUCTURES	
ID	DESCRIPTION
17–1	10+51.48 STORM LINE 17 4' X 4' GRATE INLET N: 1013492.378; E: 2823091.527
17–2	11+19.64 STORM LINE 17 15" NYLOPLAST D.B. W/ SOLID TOP N: 1013462.567; E: 2823152.831

NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.





STORM LINE 18 (9+75 - 11+00)



STRUCTURES	
ID	DESCRIPTION
18–1	10+76.38 STORM LINE 18 5' X 3' CURB INLET (NON–SETBACK) N: 1013670.106; E: 2823239.090

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ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C518

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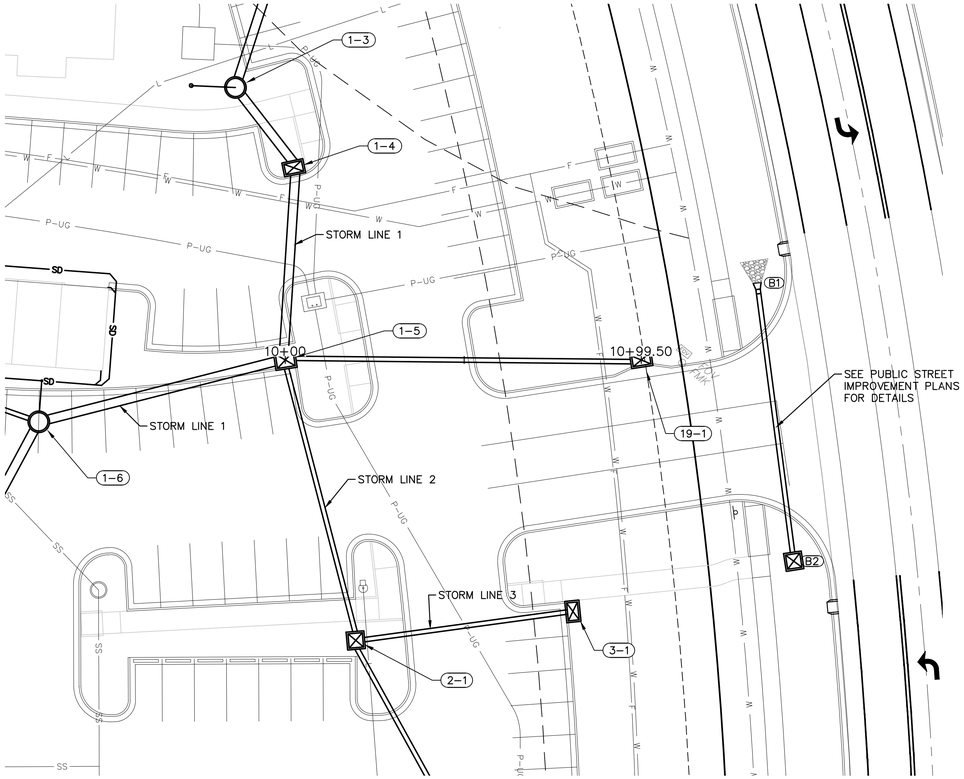
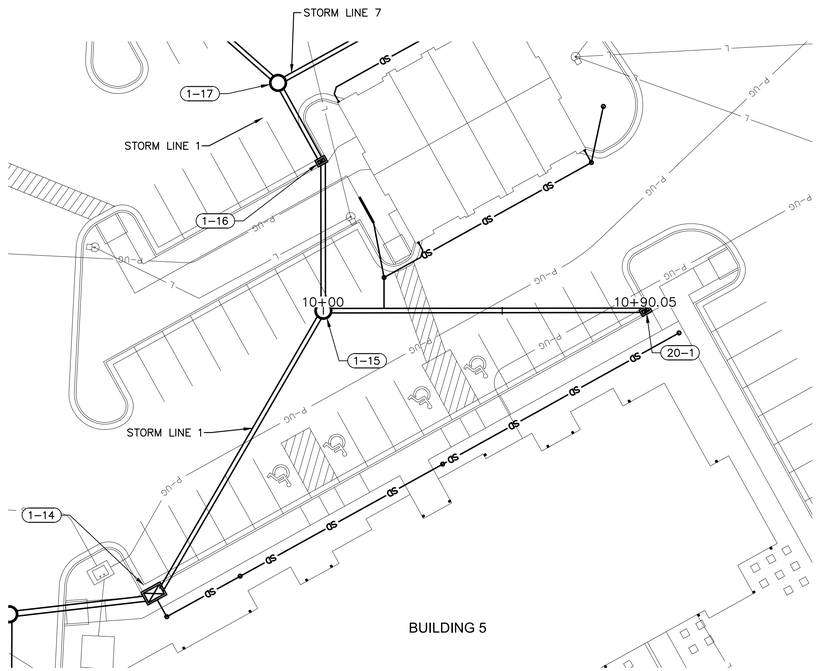
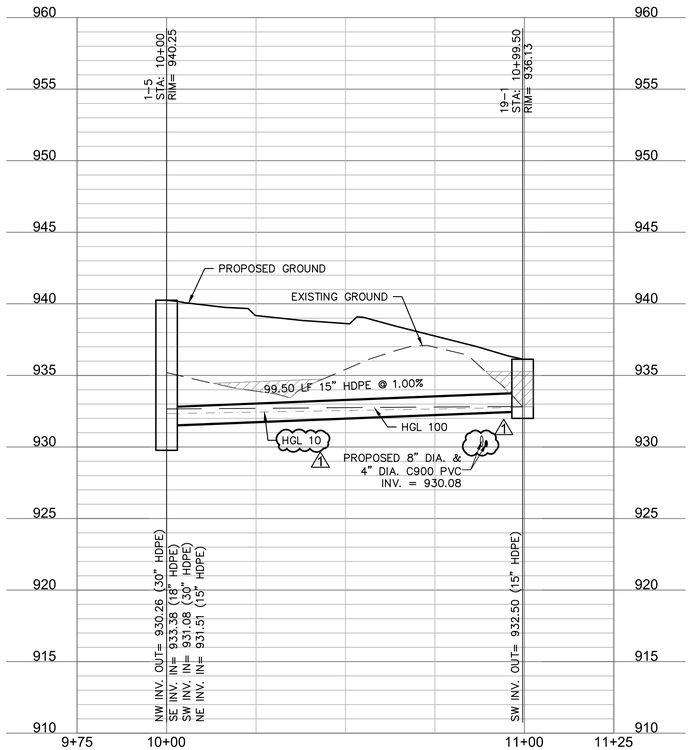
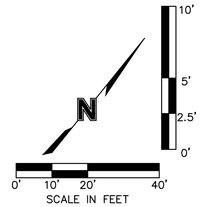


NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.



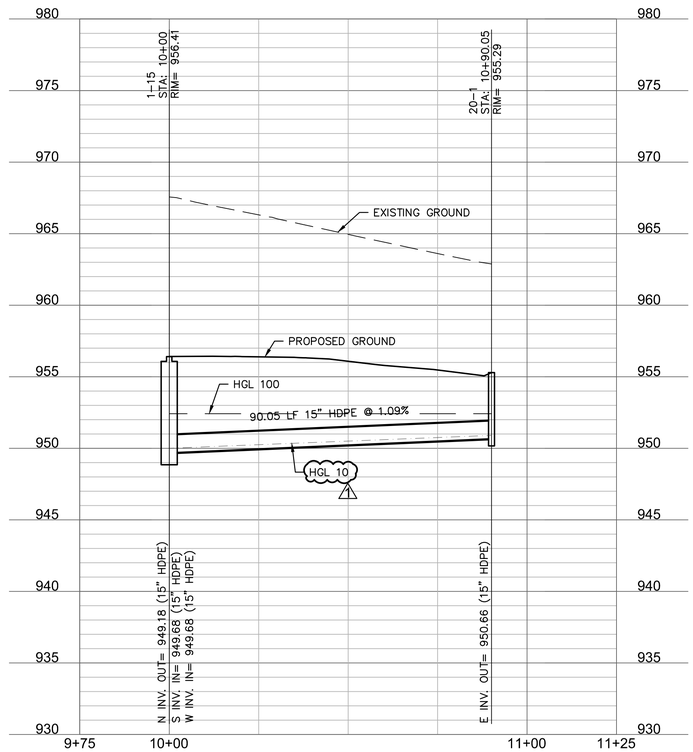
STORM LINE 19 (9+75 - 11+25)

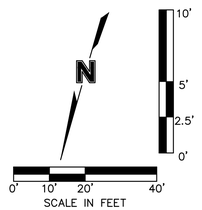




STRUCTURES	
ID	DESCRIPTION
19–1	10+99.50 STORM LINE 19 5' X 3' CURB INLET (SETBACK) N: 1014606.651; E: 2822969.610

STORM LINE 20 (9+75 - 11+25)





STRUCTURES	
ID	DESCRIPTION
20–1	10+90.05 STORM LINE 20 NYLOPLAST CURB INLET (18" – 2'X3') N: 1014002.381; E: 2822956.859

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KS CERTIFICATE OF AUTHORITY # E-2011
NORTH KANSAS CITY, MO 64116
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STATE OF MISSOURI
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02/04/2021
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PROFESSIONAL ENGINEER

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MO# 2015000555

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REVISIONS

STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C519

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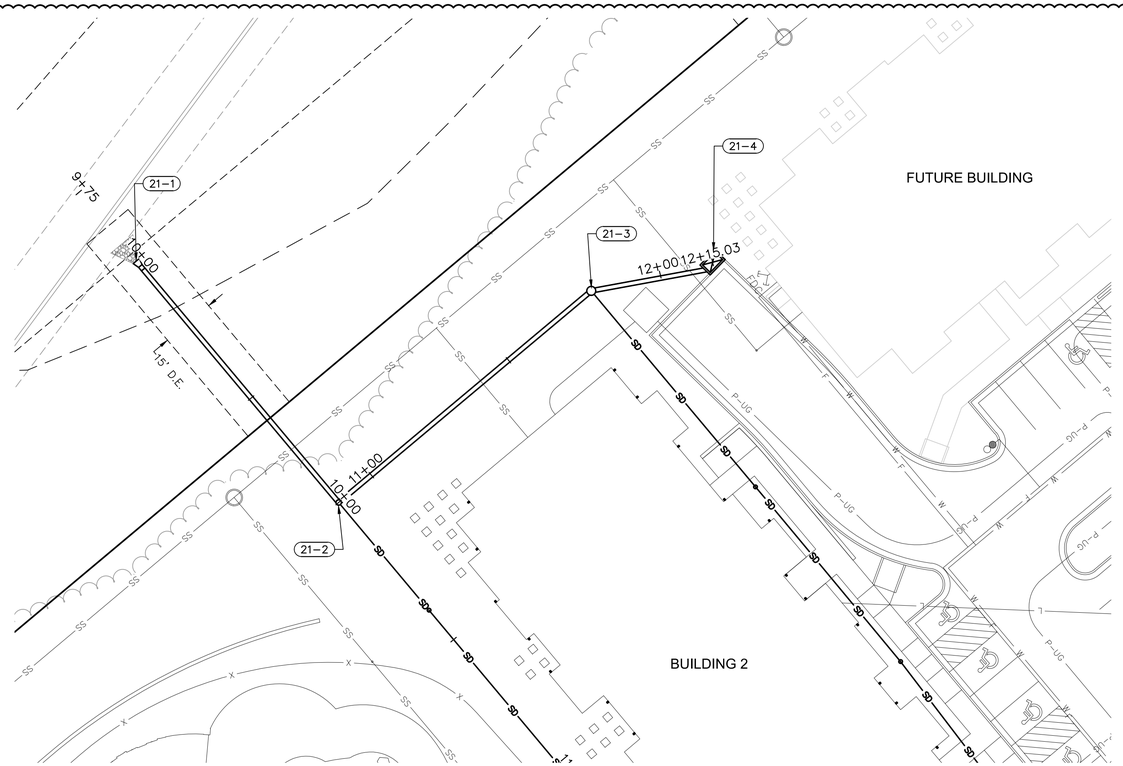
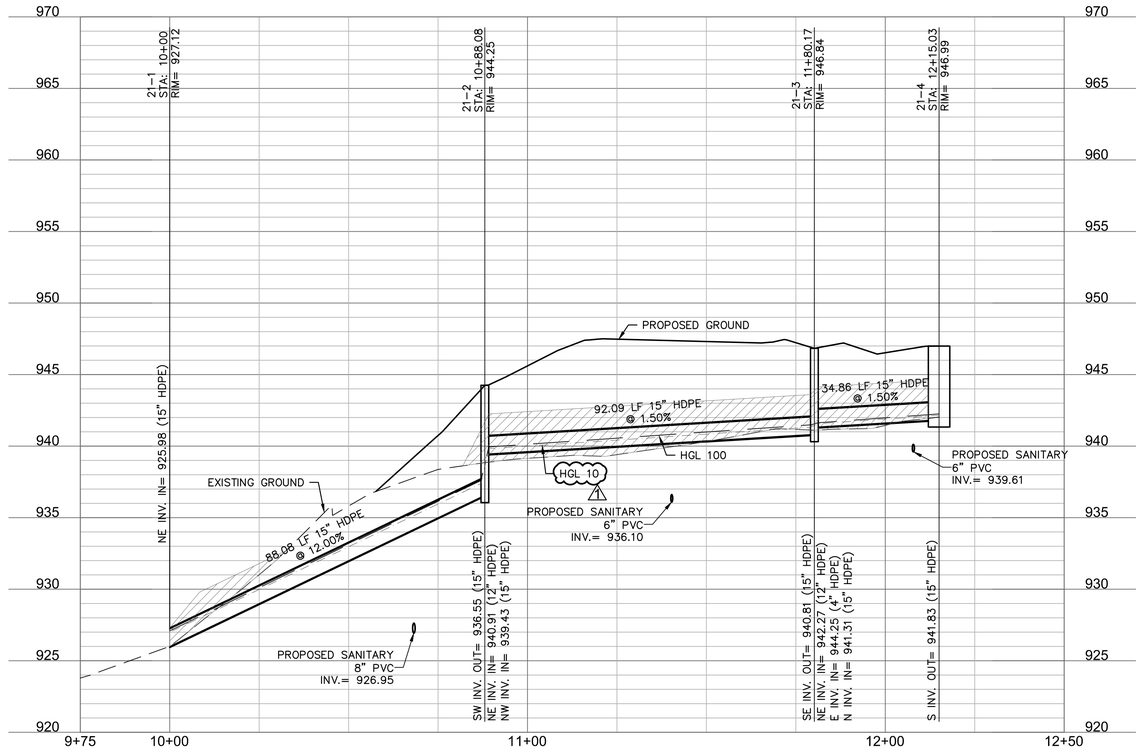
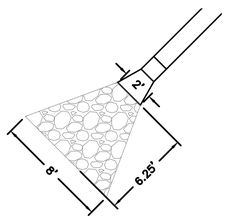


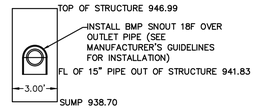
STORM LINE 21 (9+75 - 12+50)





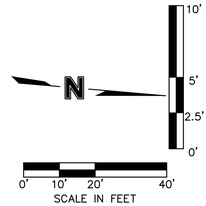
SCALE 1": 5'

Riprap Calculations							
End Section	Q_{100} (cfs)	Pipe Diameter (ft)	Class*	D50* (in)	Apron Length (ft)	Apron Depth (ft)	Area (SY)
21-1	9.81	1.25	3	10	6.25	2.00	4.1
*Per Table 10.1 HEC 14-FHWA-Energy Dissipators Pg. 10-18							



STORM 21-4 PIPE OUTLET ELEVATION DETAIL (N.T.S)

STRUCTURES	
ID	DESCRIPTION
21-1	10+00 STORM LINE 21 15" FES N: 1013640.646; E: 2822541.605
21-2	10+88.08 STORM LINE 21 18" NYLOPLAST D.B. W/ SOLID TOP N: 1013702.925; E: 2822603.884
21-3	11+80.17 STORM LINE 21 30" NYLOPLAST D.B. W/ SOLID TOP N: 1013768.044; E: 2822538.765
21-4	12+15.03 STORM LINE 21 5' X 3' CURB INLET (NON-SETBACK) N: 1013801.141; E: 2822527.827



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02/04/2021
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PROFESSIONAL ENGINEER

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

REVISIONS

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STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

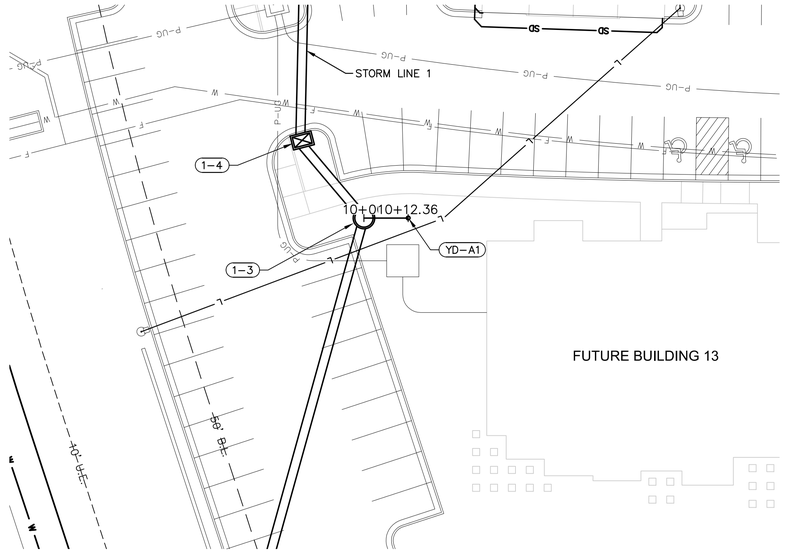
LEE'S SUMMIT, MO

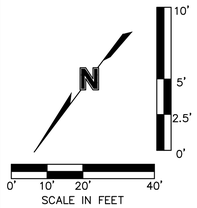
2020

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: 2020.08.27

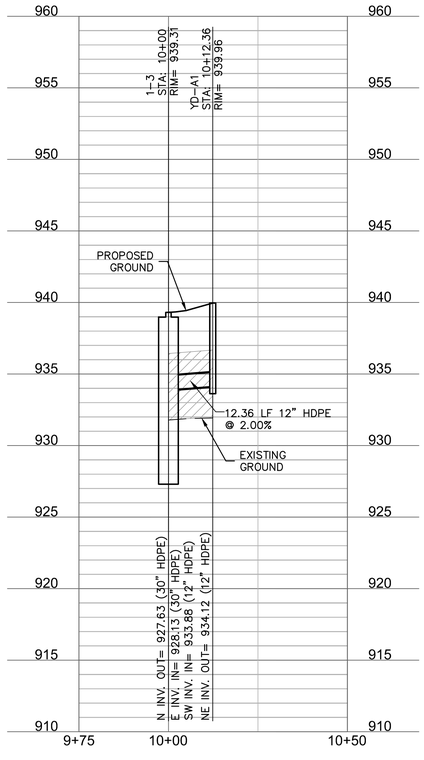
SHEET
C520

NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

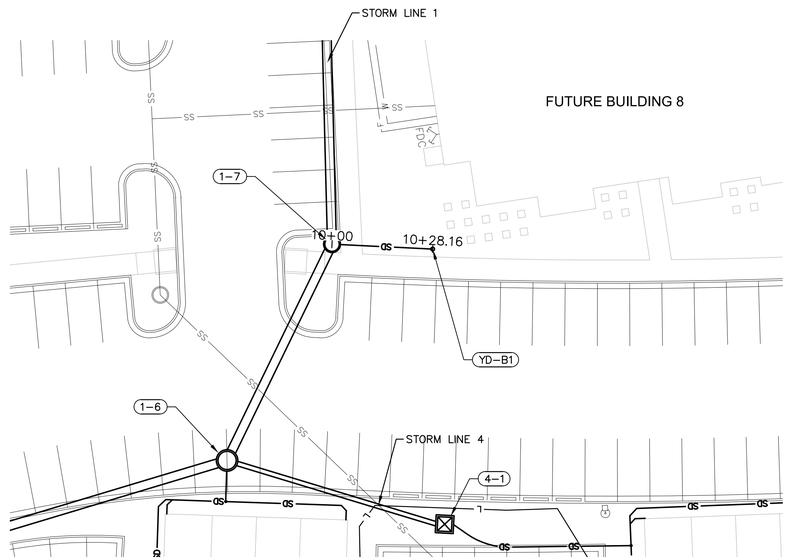


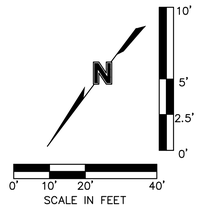


BUILDING STORM LINE A (9+75 - 10+50)

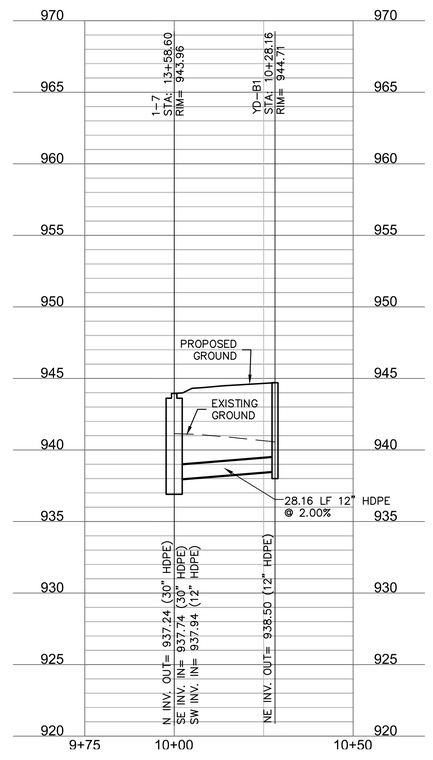


STRUCTURES	
ID	DESCRIPTION
YD–A1	10+12.36 BUILDING STORM LINE A 12" NYLOPLAST D.B. W/ SOLID TOP N: 1014587.580; E: 2822823.521





BUILDING STORM LINE B (9+75 - 10+50)



STRUCTURES	
ID	DESCRIPTION
YD–B1	10+28.16 BUILDING STORM LINE B 12" NYLOPLAST D.B. W/ SOLID TOP N: 1014405.960; E: 2822838.028

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REVISIONS

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SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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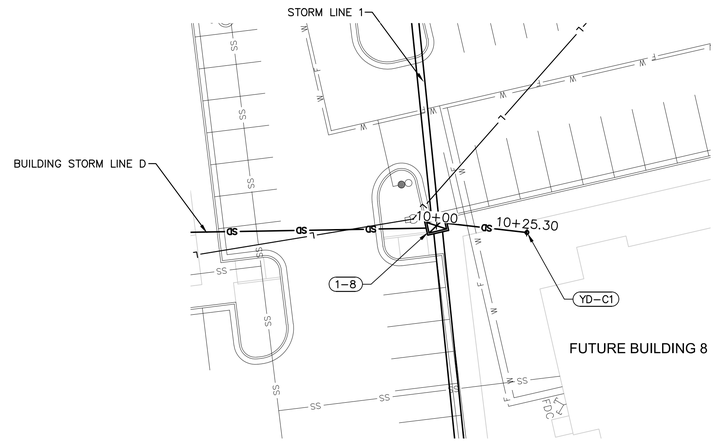
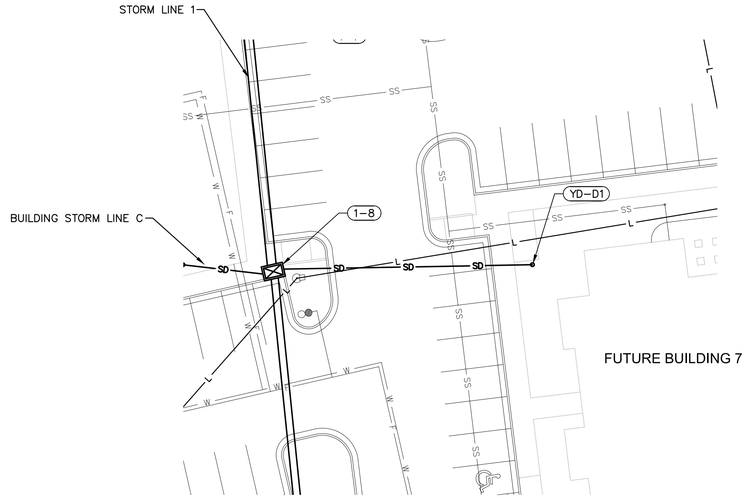
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

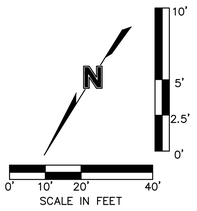
SHEET
C521

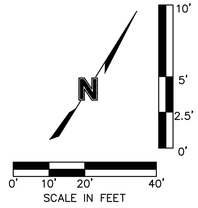
File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP01_ B190012.dwg ~ Layout: ROOF DRAIN PLAN & PROFILE ~ Last Saved By: mdieboit ~ Plot Date: 2019.10.01 03:03 PM

NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

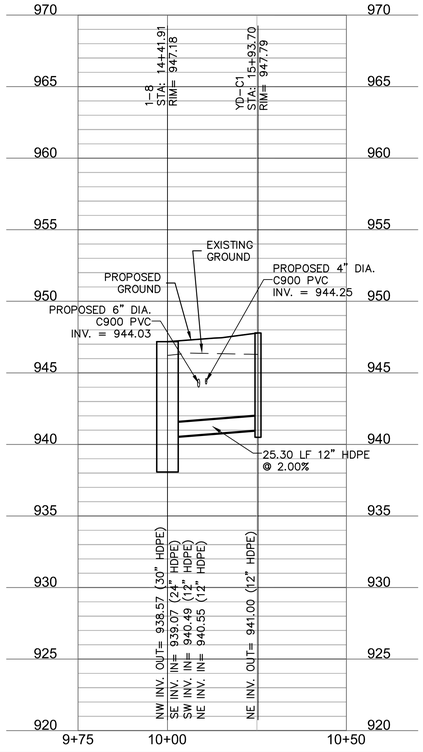






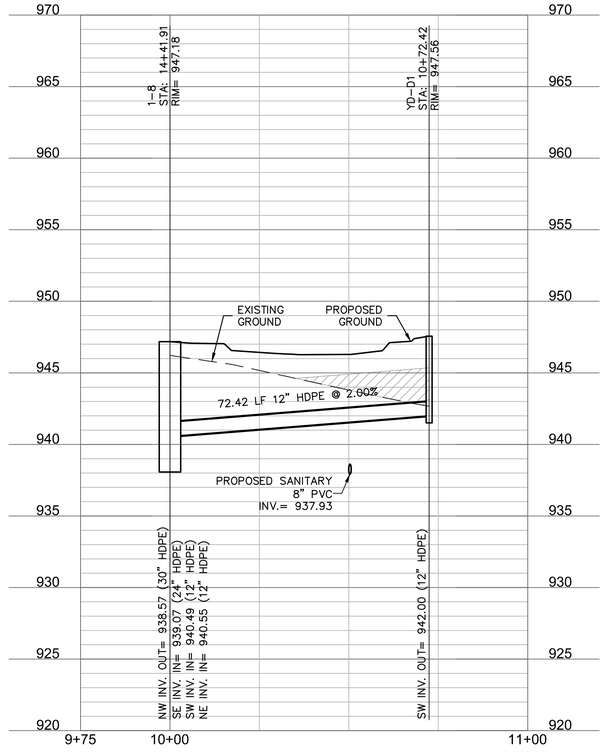


BUILDING STORM LINE C (9+75 - 10+50)



STRUCTURES	
ID	DESCRIPTION
YD–C1	15+93.70 STORM LINE 10 12" NYLOPLAST D.B. W/ SOLID TOP N: 1014344.168; E: 2822890.425

BUILDING STORM LINE D (9+75 - 11+00)



STRUCTURES	
ID	DESCRIPTION
YD–D1	10+72.42 BUILDING STORM LINE D 12" NYLOPLAST D.B. W/ SOLID TOP N: 1014396.001; E: 2822973.150

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NORTH KANSAS CITY, MO 64116
www.olsson.com

STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

REVISIONS

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

BUILDING STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

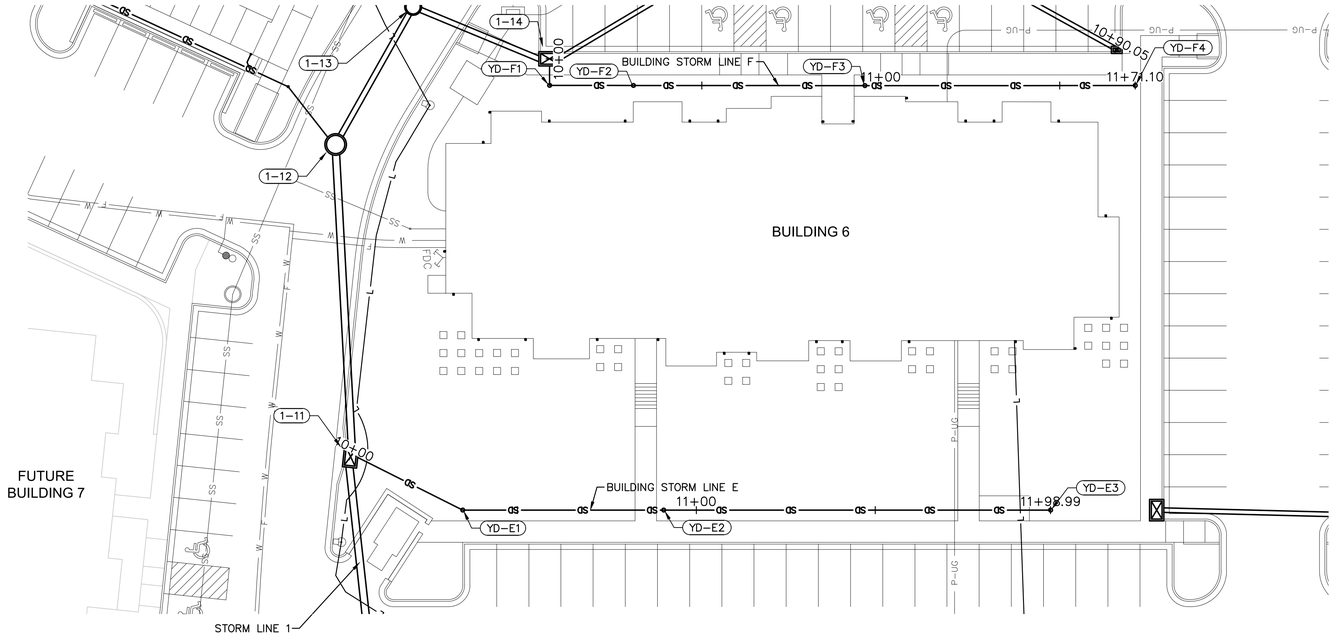
2020

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: 2020.08.27

SHEET
C522

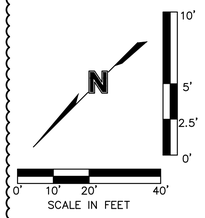
File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP01_ B190012.dwg ~ Layout: ROOF DRAIN PLAN & PROFILE (2) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

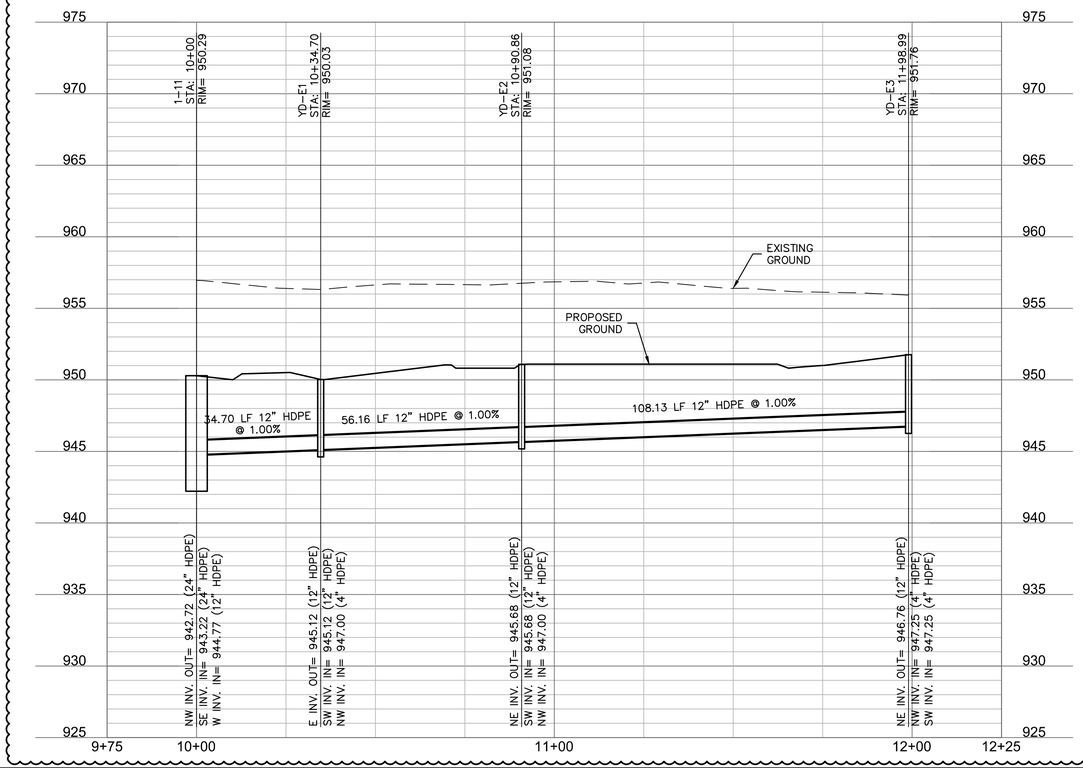


STRUCTURES	
ID	DESCRIPTION
YD–E1	10+34.70 BUILDING STORM LINE E 12" NYLOPLAST D.B. W/ SOLID TOP N: 1014222.608; E: 2822995.132
YD–E2	10+90.86 BUILDING STORM LINE E 12" NYLOPLAST D.B. W/ SOLID TOP N: 1014182.894; E: 2822955.420
YD–E3	11+98.99 BUILDING STORM LINE E 12" NYLOPLAST D.B. W/ SOLID TOP N: 1014106.434; E: 2822878.965

STRUCTURES	
ID	DESCRIPTION
YD–F1	10+07.43 BUILDING STORM LINE F 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1014121.486; E: 2823061.917
YD–F2	10+30.82 BUILDING STORM LINE F 12" INLINE DRAIN W/ DOME GRATE TOP N: 1014104.977; E: 2823045.351
YD–F3	10+95.56 BUILDING STORM LINE F 12" INLINE DRAIN W/ DOME GRATE TOP N: 1014059.223; E: 2822999.556
YD–F4	11+71.10 BUILDING STORM LINE F 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1014005.779; E: 2822946.164



BUILDING STORM LINE E (9+75 - 12+25)



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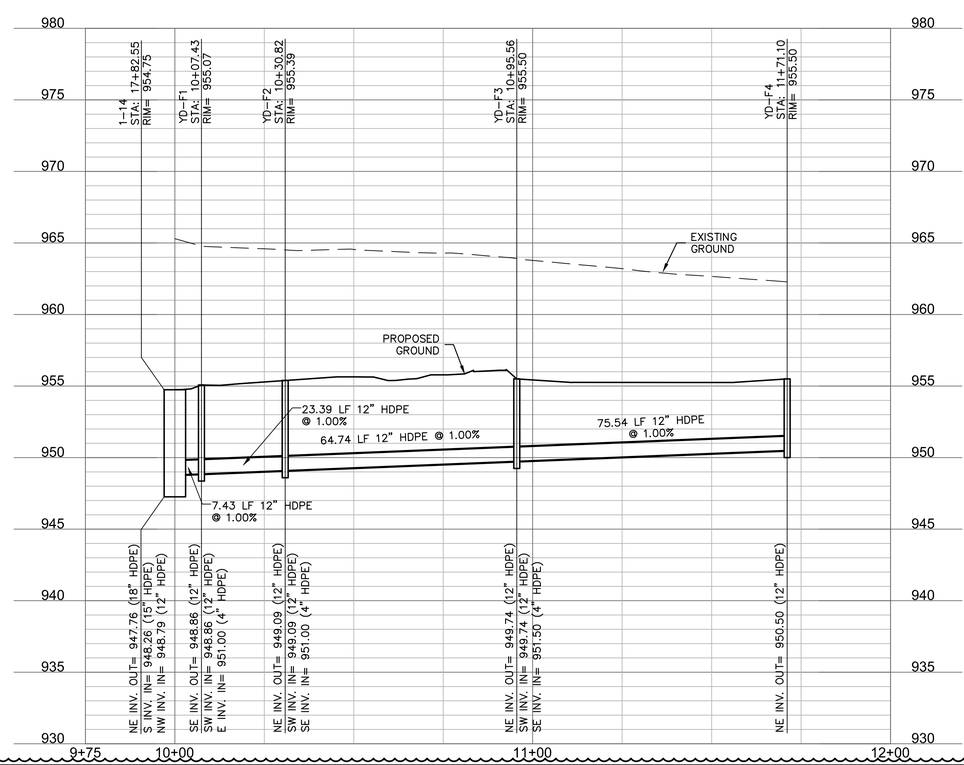

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MO CERTIFICATE OF AUTHORITY #:001592
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REVISIONS

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SITE DEVELOPMENT 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: 2020.08.27

SHEET
C523

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP01_ B190012.dwg ~ Layout: ROOF DRAIN PLAN & PROFILE (3) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

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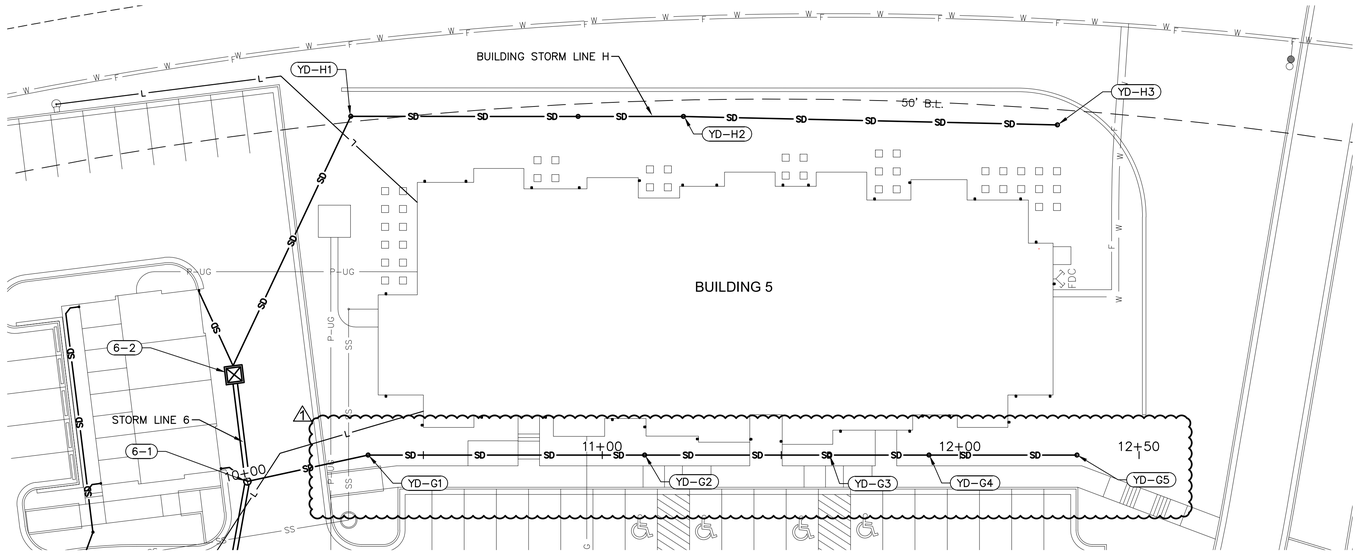

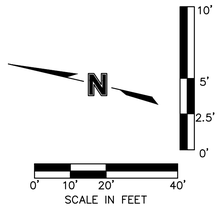

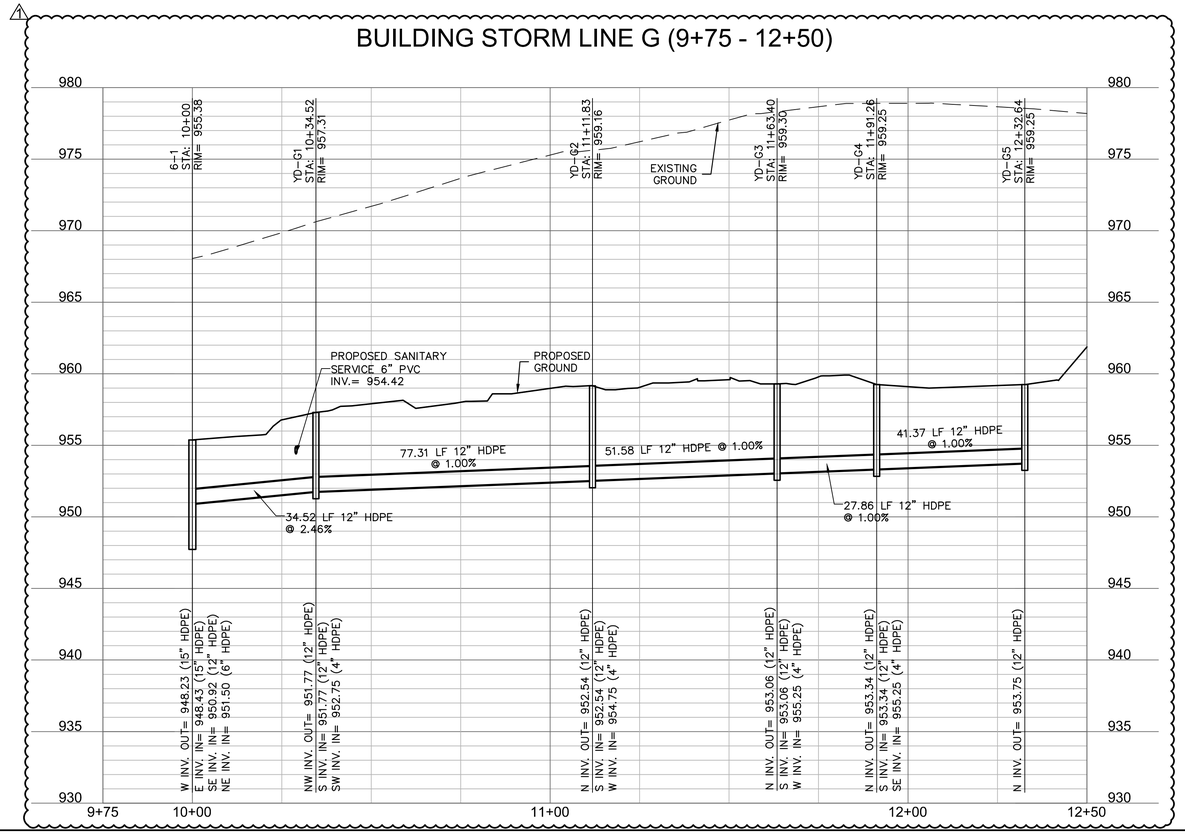

1

STRUCTURES	
ID	DESCRIPTION
YD-G1	10+34.52 BUILDING STORM LINE G 12" NYLOPLAST D.B. W/ SOLID TOP N: 1014103.448; E: 2823151.785
YD-G2	11+11.83 BUILDING STORM LINE G 12" NYLOPLAST D.B. W/ SOLID TOP N: 1014028.162; E: 2823169.349
YD-G3	11+63.40 BUILDING STORM LINE G 12" NYLOPLAST D.B. W/ SOLID TOP N: 1013977.935; E: 2823181.067
YD-G4	11+91.26 BUILDING STORM LINE G 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013950.802; E: 2823187.397
YD-G5	12+32.64 BUILDING STORM LINE G 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013910.512; E: 2823196.797

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2020

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designed by: M.J.D.
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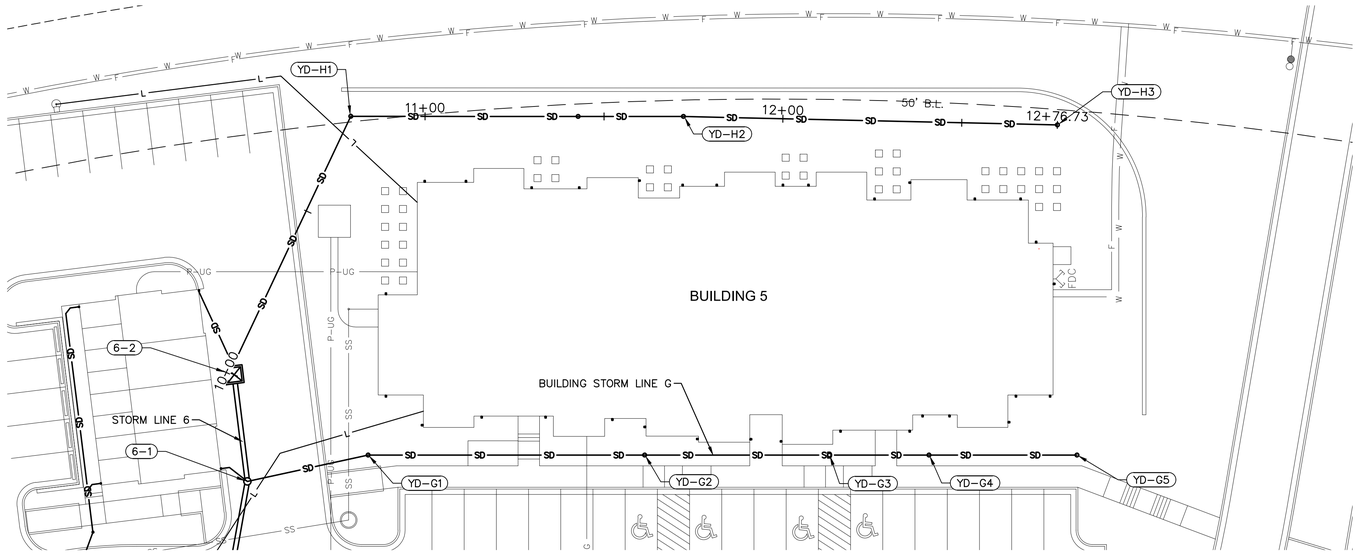
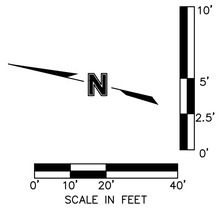
project no.: 019-0012-B
date: 2020.08.27

SHEET
C524

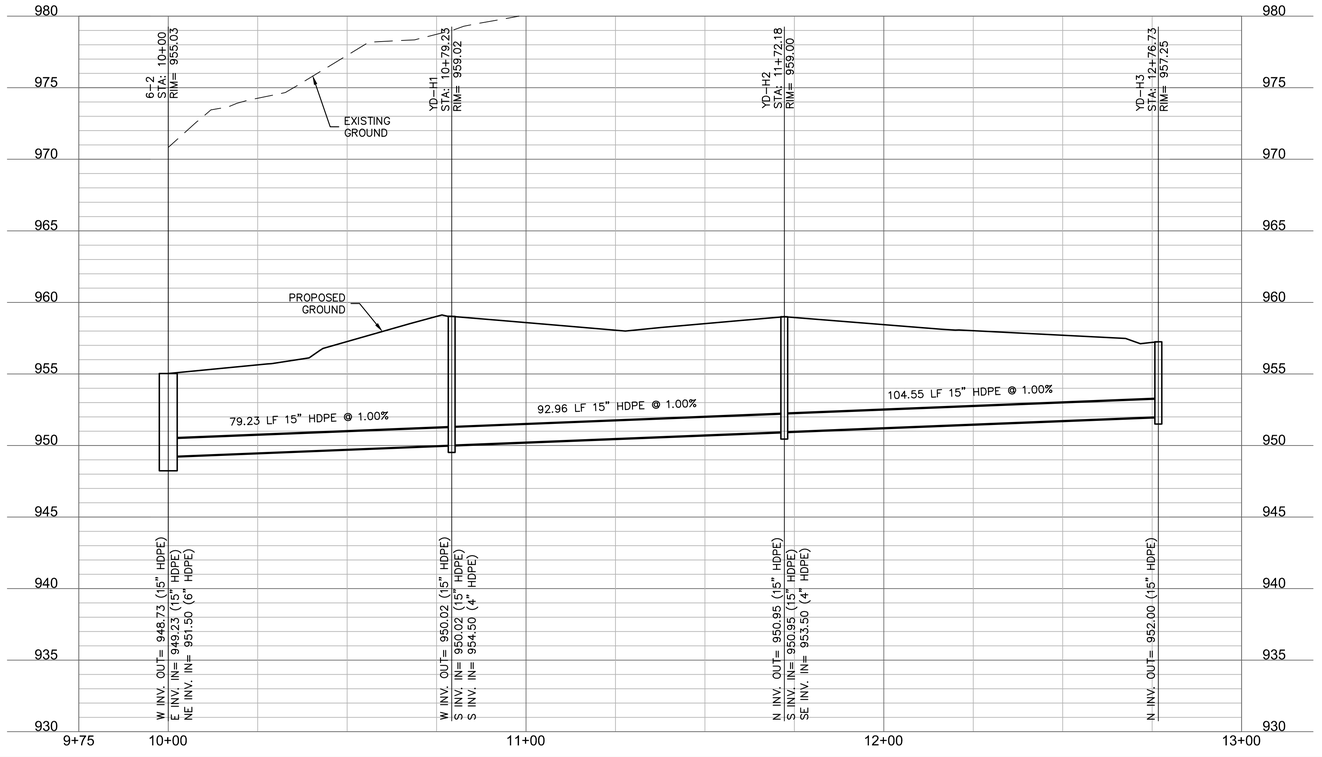
File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP01_ B190012.dwg ~ Layout: ROOF DRAIN PLAN & PROFILE (4) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.





BUILDING STORM LINE H (9+75 - 13+00)



STRUCTURES	
ID	DESCRIPTION
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YD-H2	11+72.18 BUILDING STORM LINE H 15" INLINE DRAIN W/ DOME GRATE TOP N: 1014039.119; E: 2823263.975
YD-H3	12+76.73 BUILDING STORM LINE H 15" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013936.796; E: 2823285.438

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KS CERTIFICATE OF AUTHORITY # E-1081
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REVISIONS

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SITE DEVELOPMENT 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: 2020.08.27

SHEET
C525

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP01_ B190012.dwg ~ Layout: ROOF DRAIN PLAN & PROFILE (5) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

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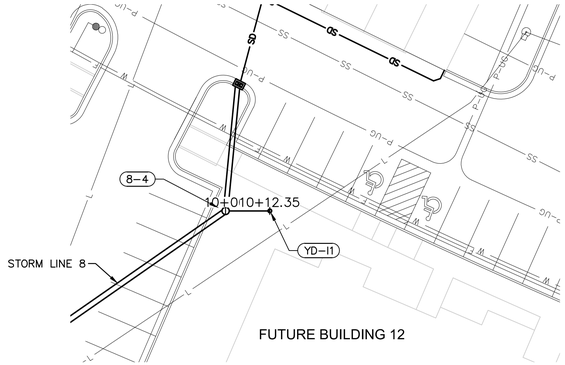
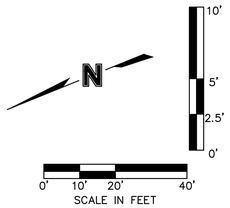
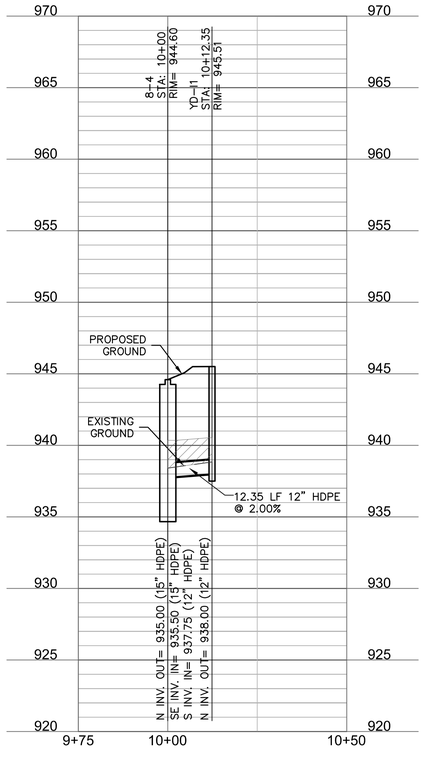




BUILDING STORM LINE I (9+75 - 10+50)



STRUCTURES	
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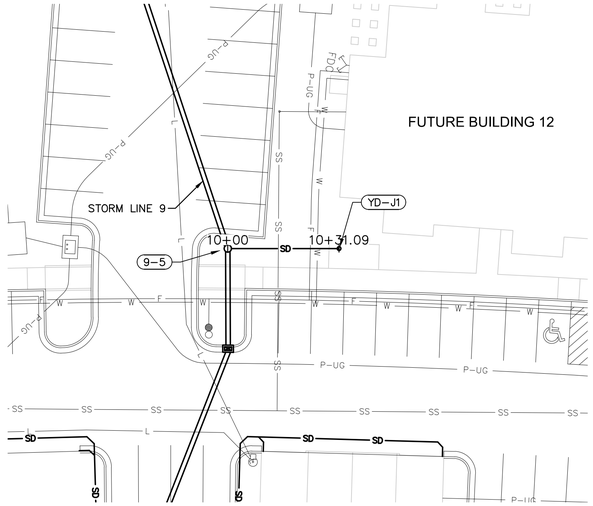
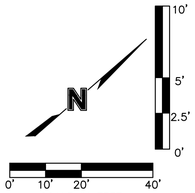
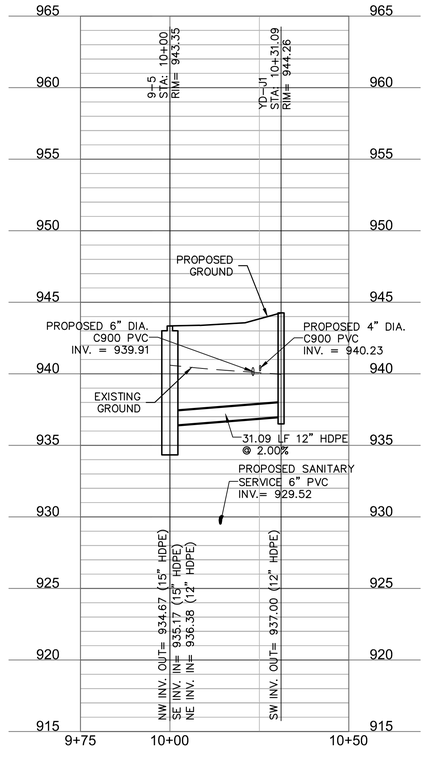




BUILDING STORM LINE J (9+75 - 10+50)



STRUCTURES	
ID	DESCRIPTION
YD–J1	10+31.09 BUILDING STORM LINE J 12" NYLOPLAST D.B. W/ SOLID TOP N: 1014267.141; E: 2822450.395

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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MO# 2015000555

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REVISIONS

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ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

drawn by: M.J.D.
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QA/QC by: N.D.H.
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SHEET
C526

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP02_ B190012.dwg ~ Layout: ROOF DRAIN PLAN & PROFILE (6) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

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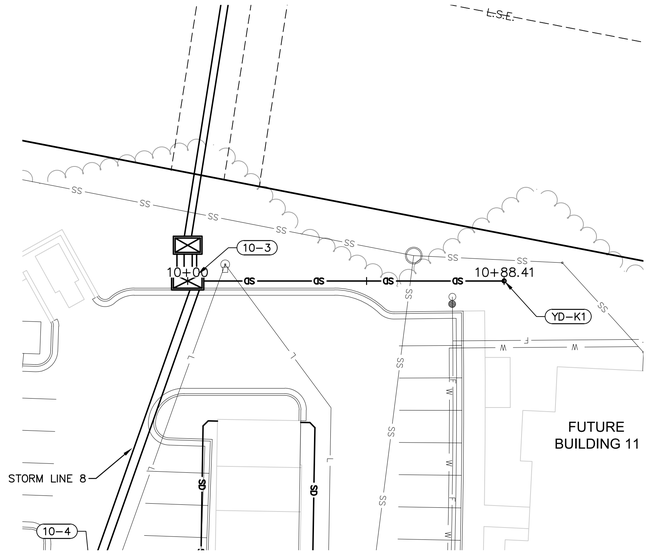
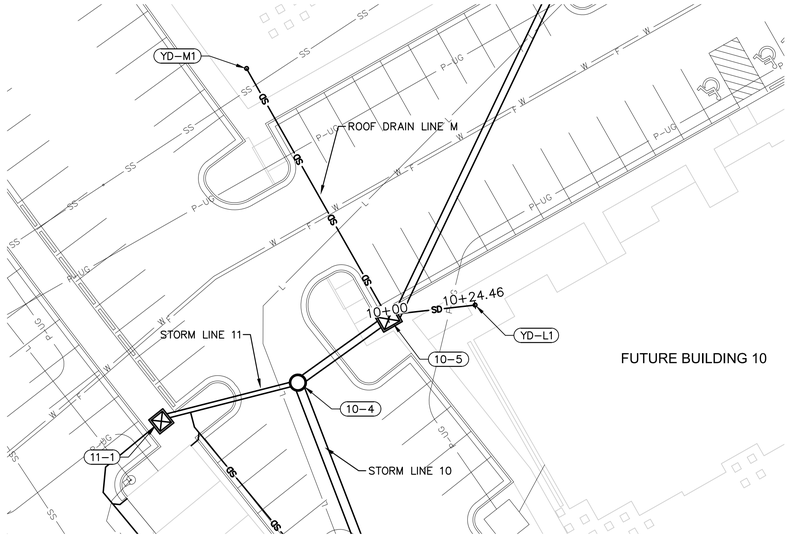
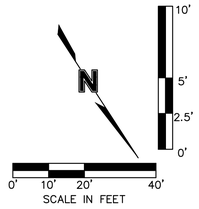
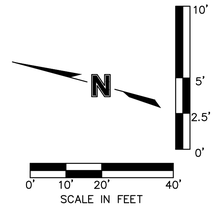
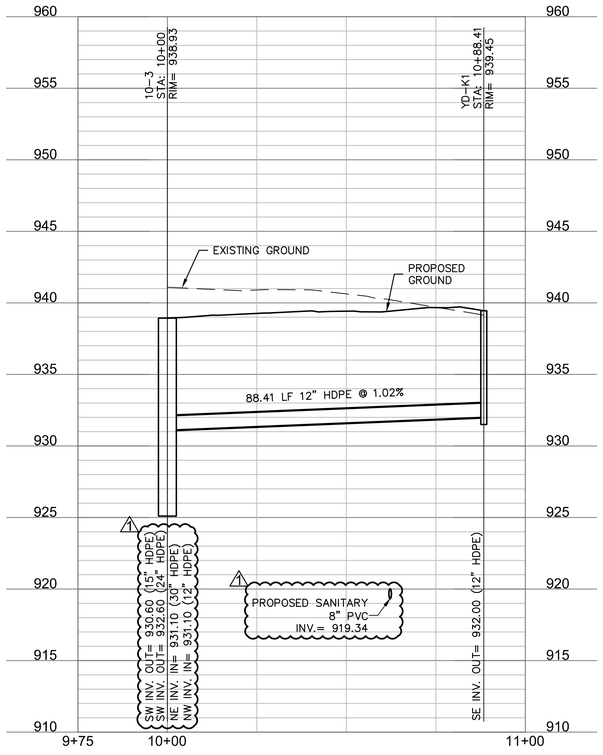






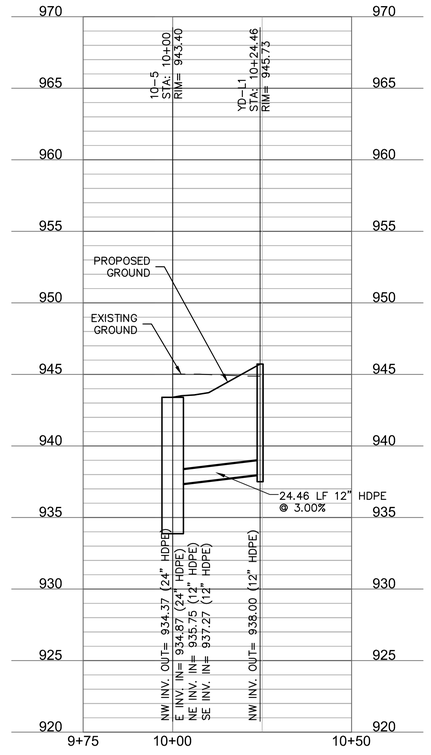


BUILDING STORM LINE K (9+75 - 11+00)



STRUCTURES	
ID	DESCRIPTION
YD-K1	10+88.41 BUILDING STORM LINE K 12" NYLOPLAST D.B. W/ SOLID TOP N: 1014021.298; E: 2822260.711

BUILDING STORM LINE L (9+75 - 10+50)



STRUCTURES	
ID	DESCRIPTION
YD-L1	10+24.46 BUILDING STORM LINE L 12" NYLOPLAST D.B. W/ SOLID TOP N: 1013983.988; E: 2822436.694

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PHASE 1

LEE'S SUMMIT, MO

2020

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SHEET
C527

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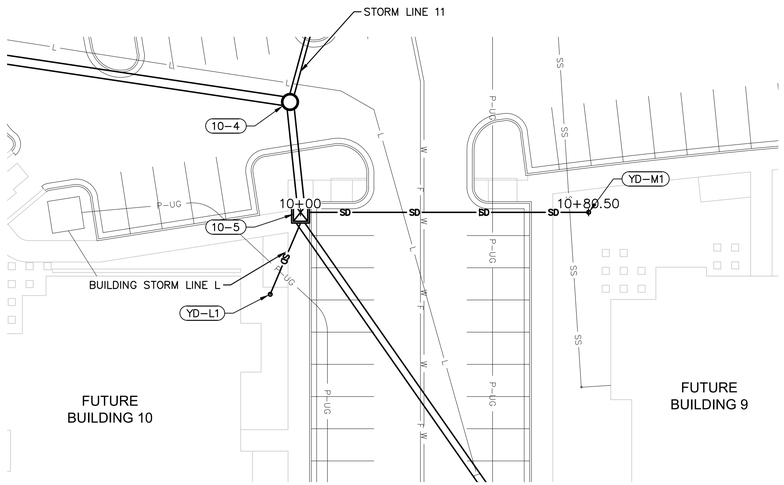
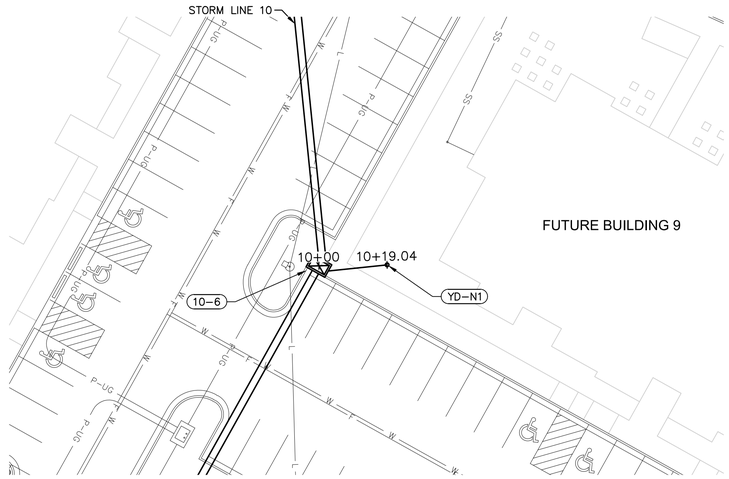
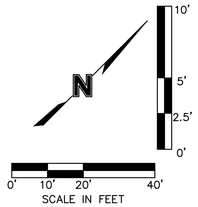
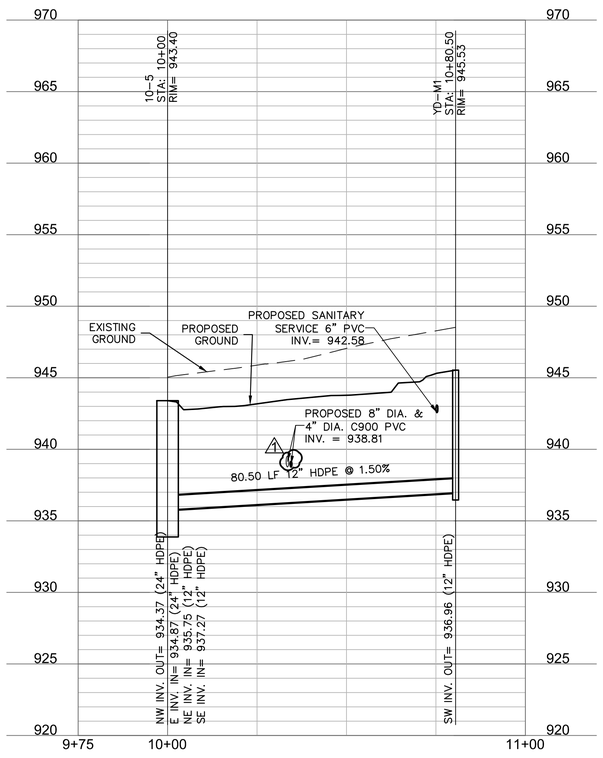






BUILDING STORM LINE M (9+75 - 11+00)



STRUCTURES	
ID	DESCRIPTION
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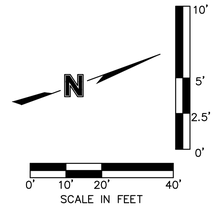
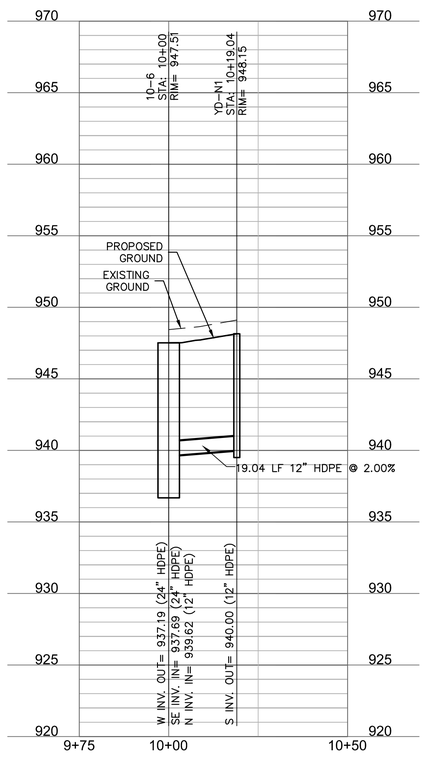


BUILDING STORM LINE N (9+75 - 10+50)



STRUCTURES	
ID	DESCRIPTION
YD–N1	10+19.04 BUILDING STORM LINE N 12" NYLOPLAST D.B. W/ SOLID TOP N: 1014001.559; E: 2822544.988

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MO CERTIFICATE OF AUTHORITY #:001592
KS CERTIFICATE OF AUTHORITY #:E-1055
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SHEET
C528

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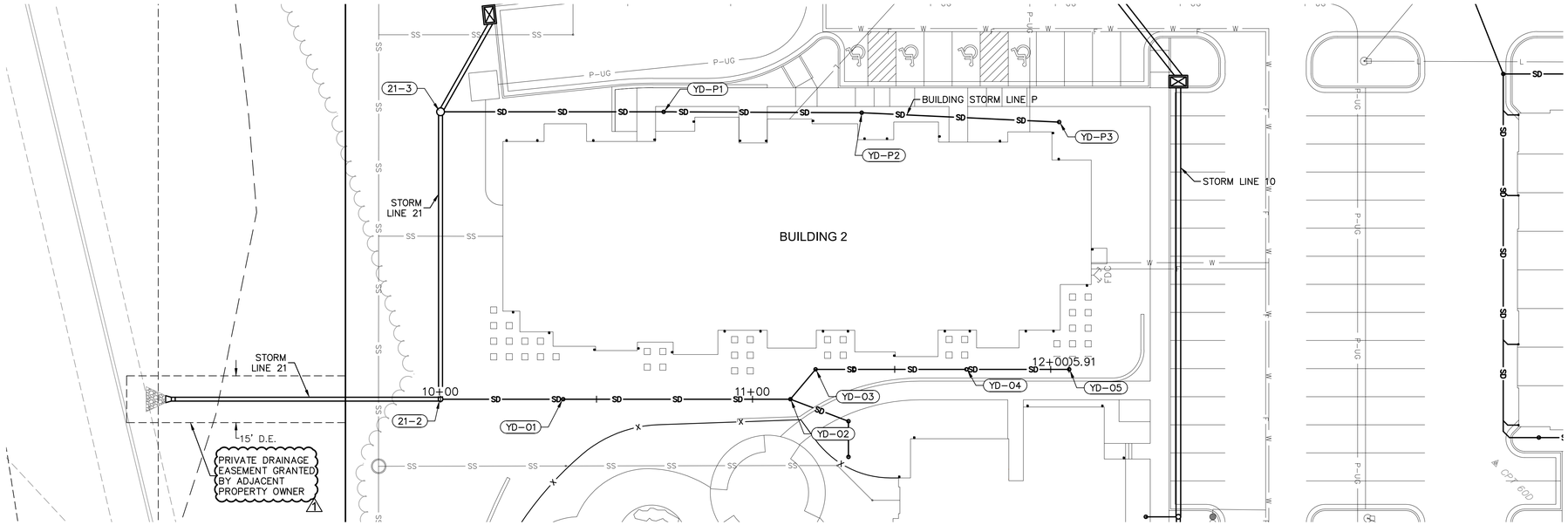
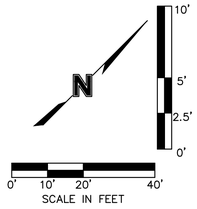
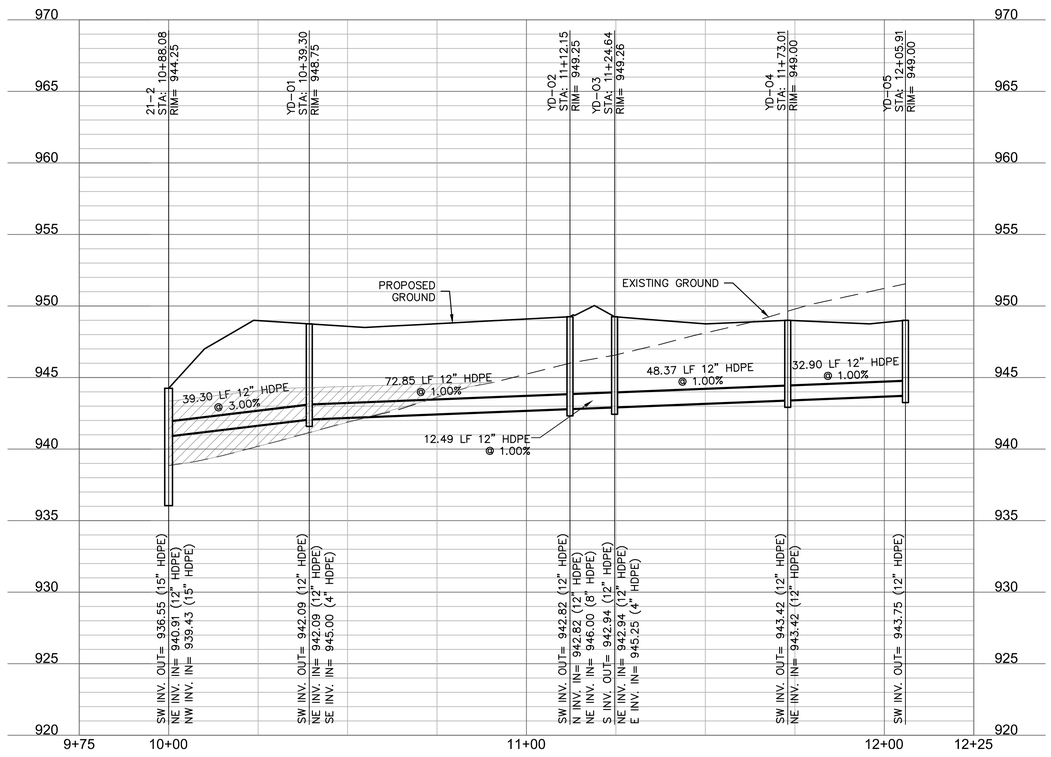


NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.



BUILDING STORM LINE O (9+75 - 12+25)



STRUCTURES	
ID	DESCRIPTION
YD-01	10+39.30 BUILDING STORM LINE O 12" INLINE DRAIN W/ DOME GRATE TOP N: 1013730.712; E: 2822631.671
YD-02	11+12.15 BUILDING STORM LINE O 12" NYLOPLAST D.B. W/ SOLID TOP N: 1013782.224; E: 2822683.183
YD-03	11+24.64 BUILDING STORM LINE O 12" INLINE DRAIN W/ DOME GRATE TOP N: 1013794.672; E: 2822682.122
YD-04	11+73.01 BUILDING STORM LINE O 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013828.878; E: 2822716.328
YD-05	12+05.91 BUILDING STORM LINE O 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013852.143; E: 2822739.593

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

BUILDING STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

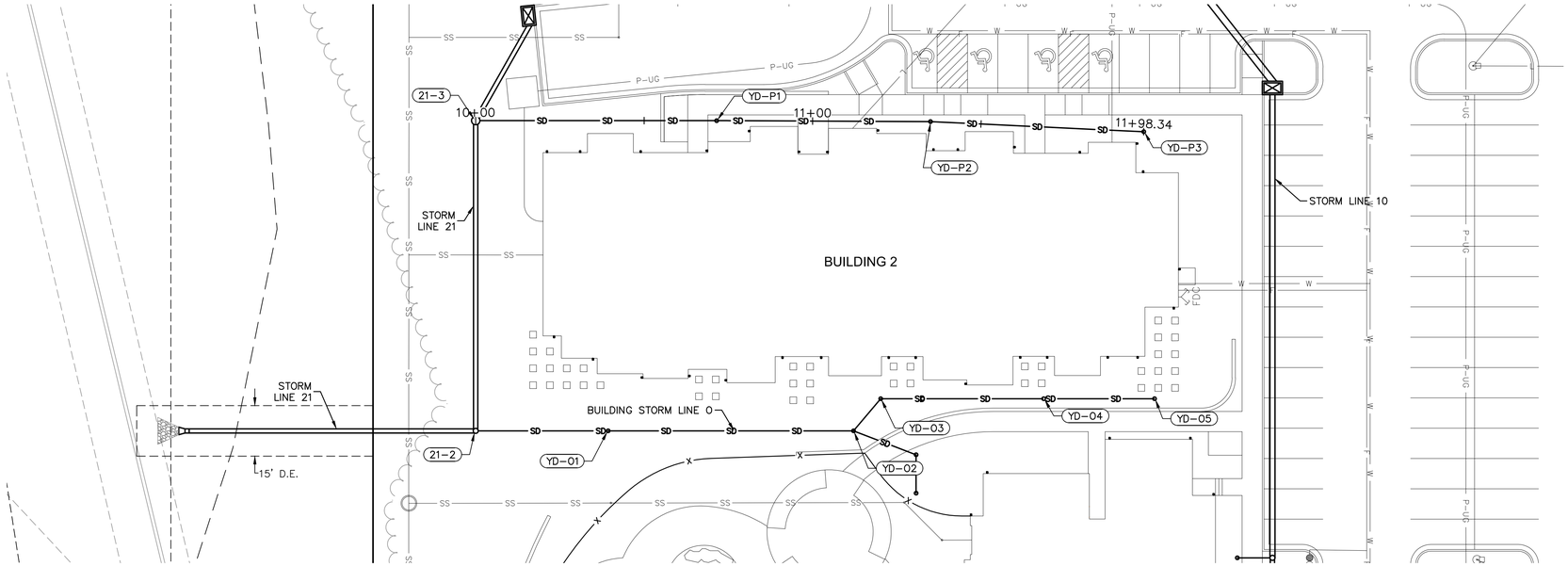
2020

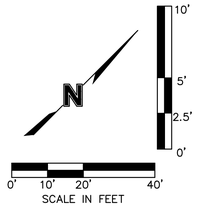
drawn by: M.J.D.
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C529

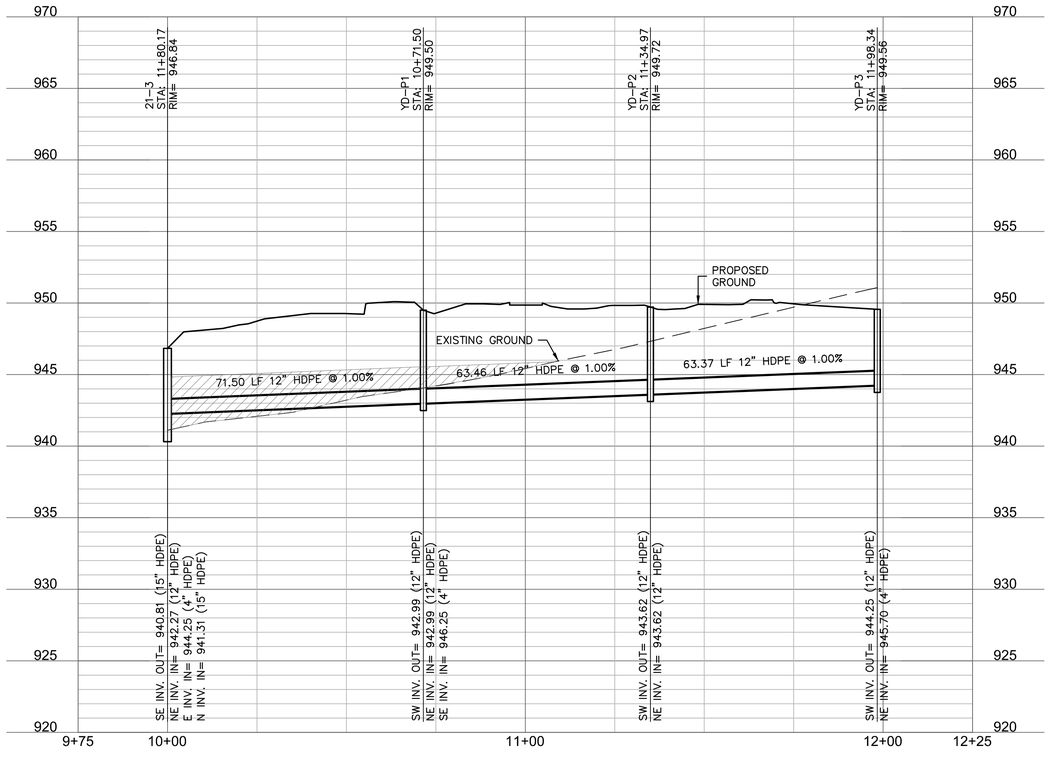
File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP02_ B190012.dwg ~ Layout: ROOF DRAIN PLAN & PROFILE (9) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.





BUILDING STORM LINE P (9+75 - 12+25)



STRUCTURES	
ID	DESCRIPTION
YD-P1	10+71.50 BUILDING STORM LINE P 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013818.606; E: 2822589.326
YD-P2	11+34.97 BUILDING STORM LINE P 12" NYLOPLAST D.B. W/ SOLID TOP N: 1013863.283; E: 2822634.400
YD-P3	11+98.34 BUILDING STORM LINE P 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013905.909; E: 2822681.292

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ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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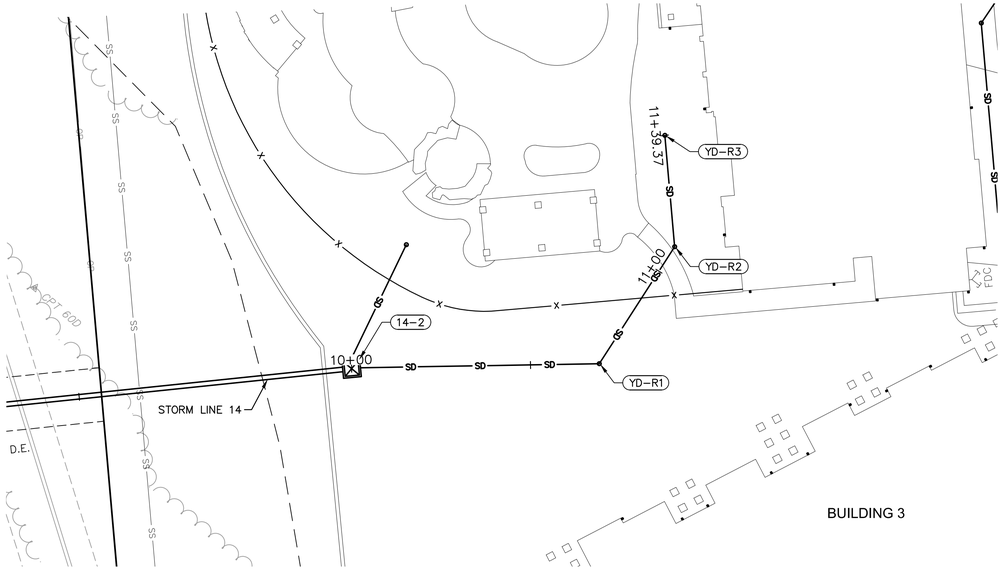
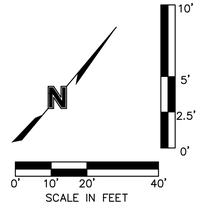
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C530

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP02_ B190012.dwg ~ Layout: ROOF DRAIN PLAN & PROFILE (10) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

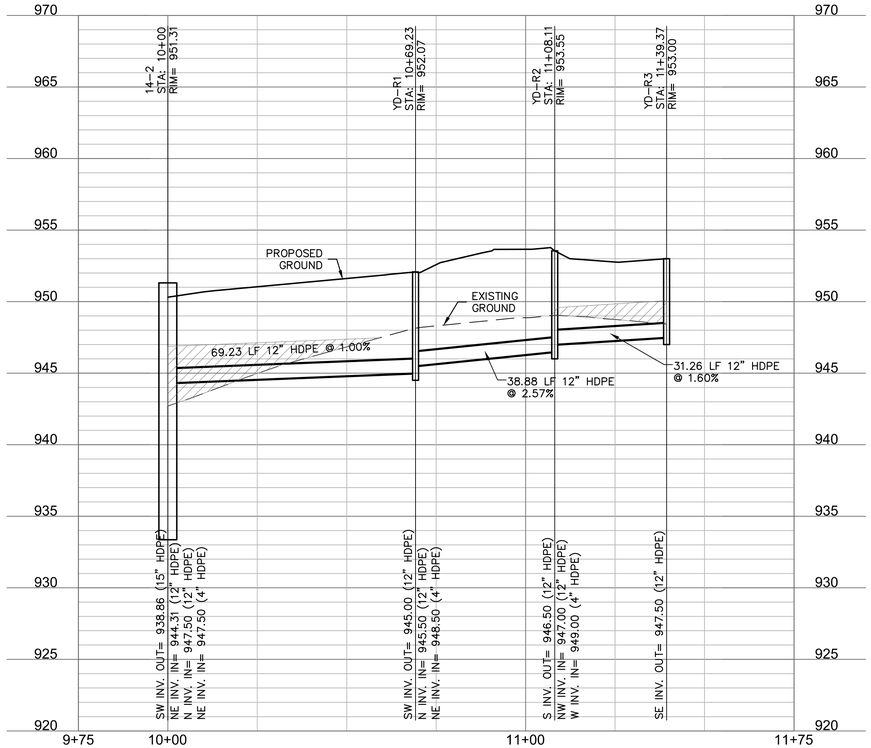
NOTE: CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.





STRUCTURES	
ID	DESCRIPTION
YD–R1	10+69.23 BUILDING STORM LINE R 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013627.421; E: 2822833.391
YD–R2	11+08.11 BUILDING STORM LINE R 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013665.992; E: 2822828.507
YD–R3	11+39.37 BUILDING STORM LINE R 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013688.097; E: 2822806.402

BUILDING STORM LINE R (9+75 - 11+75)



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ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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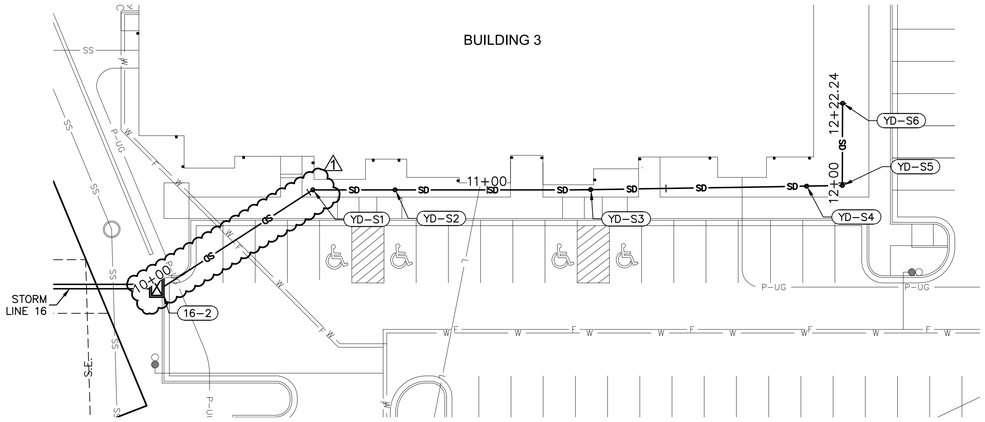
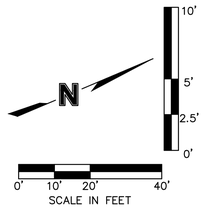
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C531

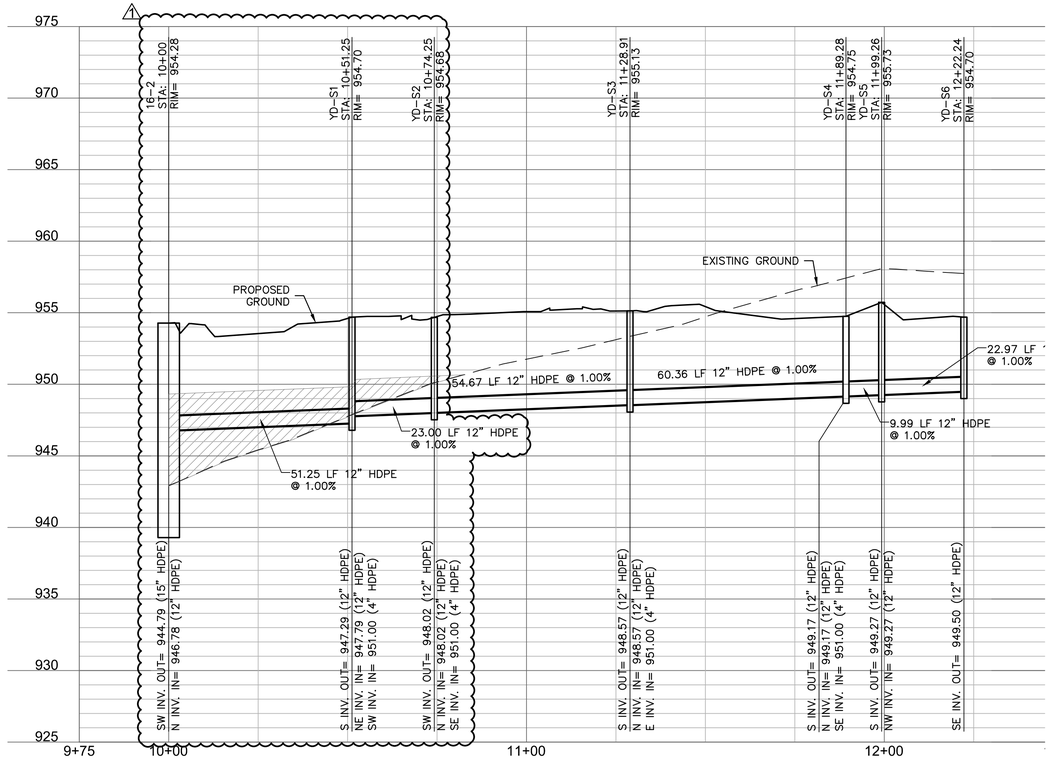
File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP03_ B190012.dwg ~ Layout: ROOF DRAIN PLAN & PROFILE (11) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



STRUCTURES	
ID	DESCRIPTION
YD-S1	10+51.25 BUILDING STORM LINE S 12" NYLOPLAST D.B. W/ SOLID TOP N: 1013555.045; E: 2822932.446
YD-S2	10+74.25 BUILDING STORM LINE S 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013576.281; E: 2822941.272
YD-S3	11+28.91 BUILDING STORM LINE S 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013626.793; E: 2822962.175
YD-S4	11+89.28 BUILDING STORM LINE S 12" INLINE DRAIN W/ DOME GRATE TOP N: 1013682.903; E: 2822984.432
YD-S5	11+99.26 BUILDING STORM LINE S 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013692.187; E: 2822988.108
YD-S6	12+22.24 BUILDING STORM LINE S 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013701.079; E: 2822966.927



BUILDING STORM LINE S (9+75 - 12+50)



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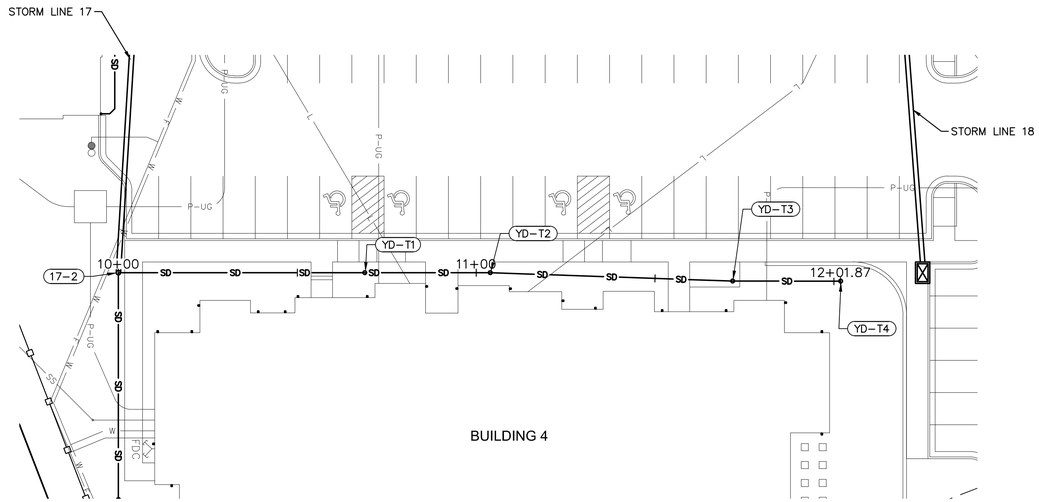
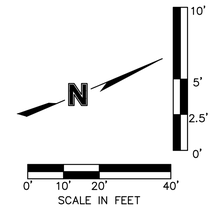
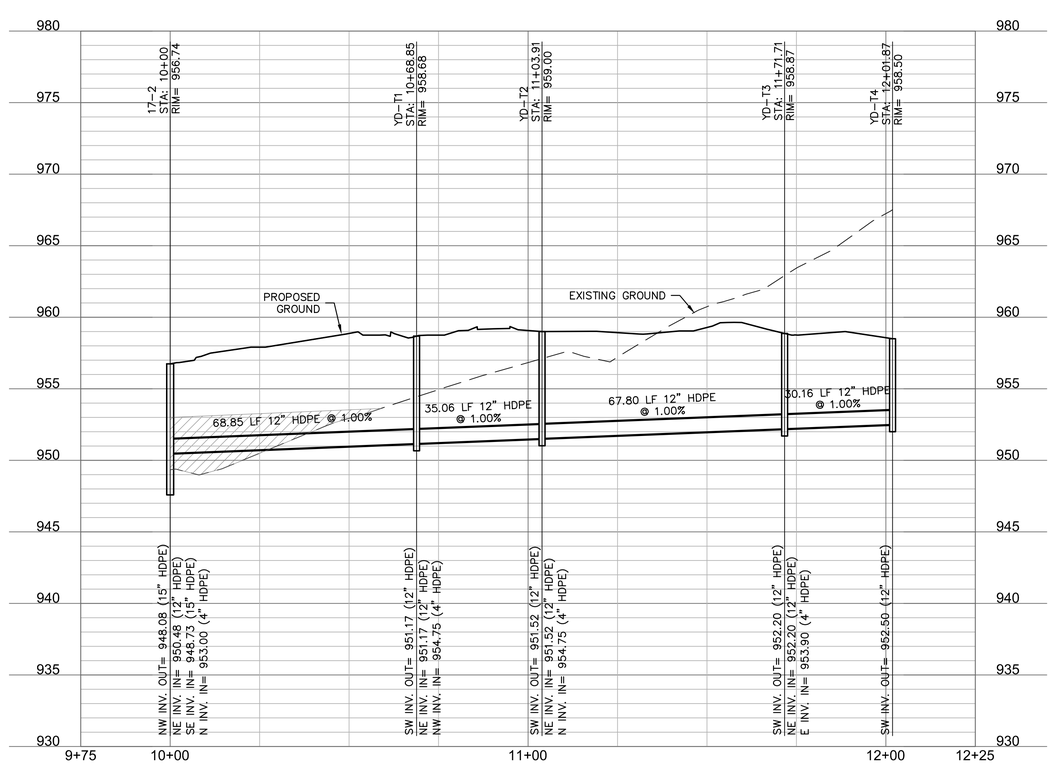


STRUCTURES	
ID	DESCRIPTION
YD-T1	10+68.85 BUILDING STORM LINE T 12" NYLOPLAST D.B. W/ SOLID TOP N: 1013526.146; E: 2823179.256
YD-T2	11+03.91 BUILDING STORM LINE T 12" NYLOPLAST D.B. W SOLID TOP N: 1013558.519; E: 2823192.711
YD-T3	11+71.71 BUILDING STORM LINE T 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013620.188; E: 2823220.890
YD-T4	12+01.87 BUILDING STORM LINE T 12" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013648.036; E: 2823232.473



BUILDING STORM LINE T (9+75 - 12+25)



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REVISIONS

BUILDING STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

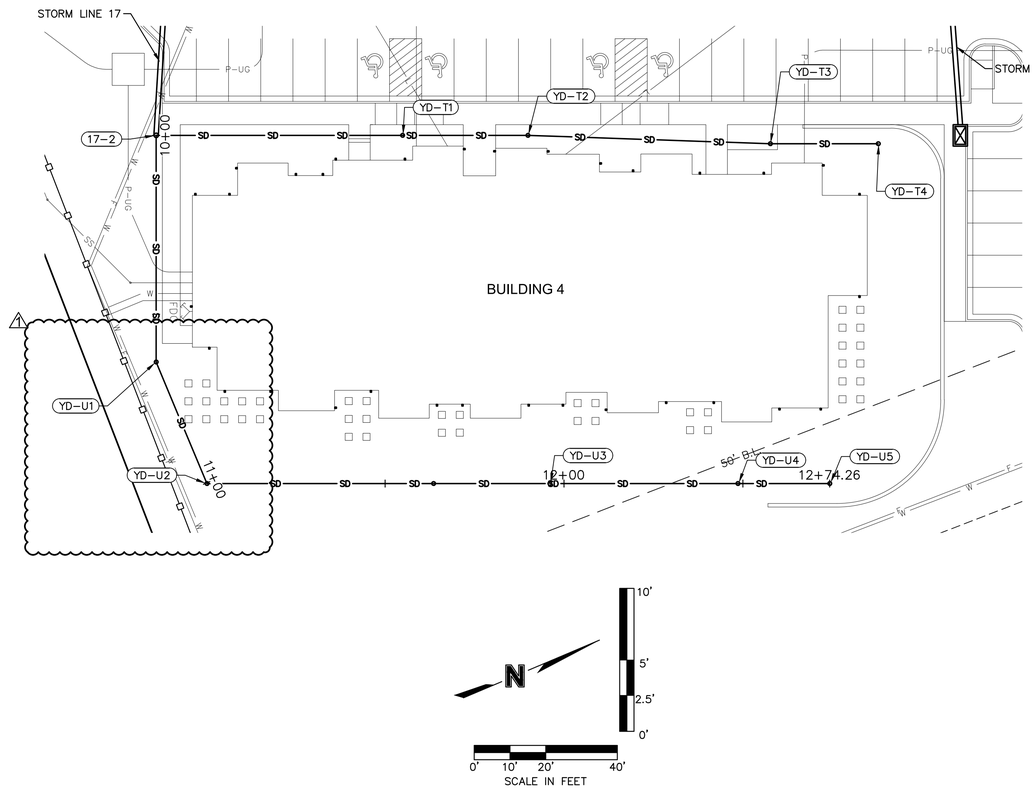
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C532

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP03_ B190012.dwg ~ Layout: ROOF DRAIN PLAN & PROFILE (12) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



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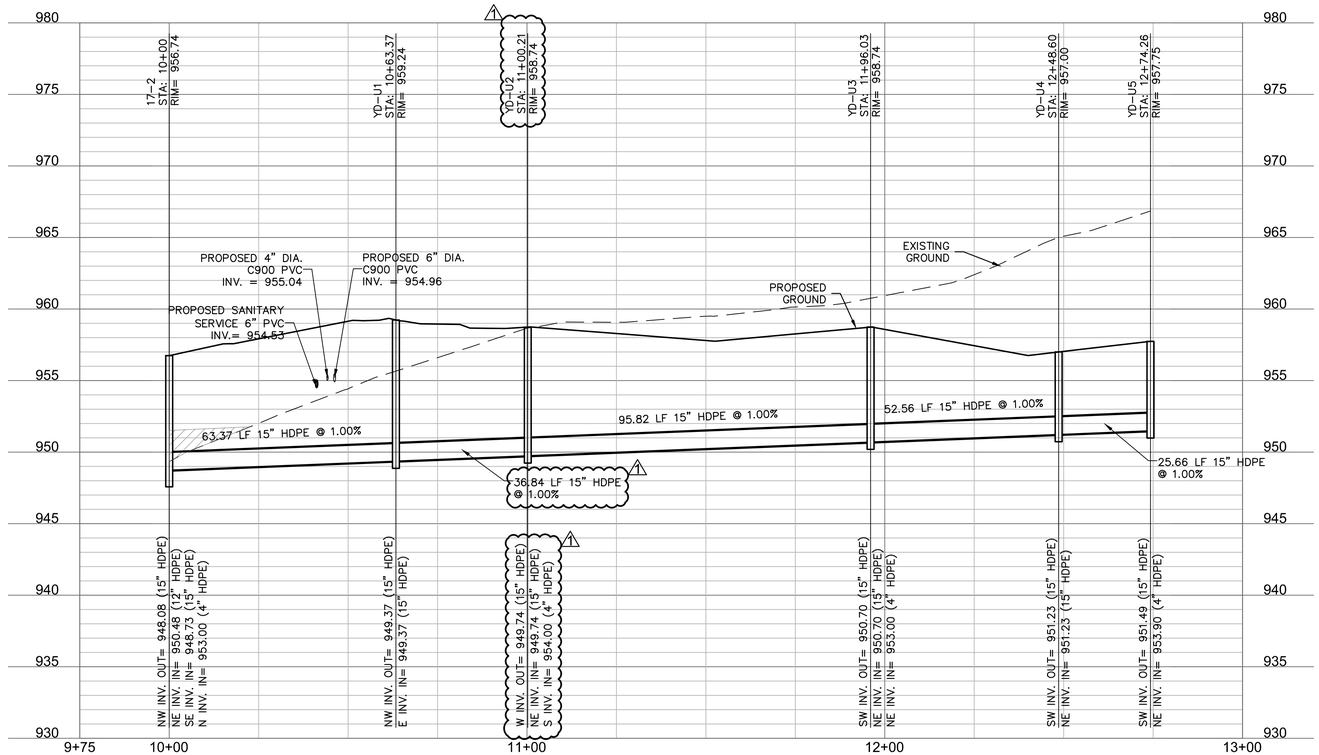
BUILDING STORM LINE U (9+75 - 13+00)



STRUCTURES	
ID	DESCRIPTION
YD-U1	10+63.37 BUILDING STORM LINE U 15" NYLOPLAST D.B. W/ SOLID TOP N: 1013438.246; E: 2823211.347
YD-U2	11+00.21 BUILDING STORM LINE U 15" NYLOPLAST D.B. W/ SOLID TOP N: 1013438.315; E: 2823248.188
YD-U3	11+96.03 BUILDING STORM LINE U 15" INLINE DRAIN W/ DOME GRATE TOP N: 1013526.801; E: 2823284.964
YD-U4	12+48.60 BUILDING STORM LINE U 15" INLINE DRAIN W/ DOME GRATE TOP N: 1013575.337; E: 2823305.136
YD-U5	12+74.26 BUILDING STORM LINE U 15" NYLOPLAST D.B. W/ DOME GRATE TOP N: 1013599.035; E: 2823314.985

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BUILDING STORM SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
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SHEET
C533

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP03_ B190012.dwg ~ Layout: ROOF DRAIN PLAN & PROFILE (13) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

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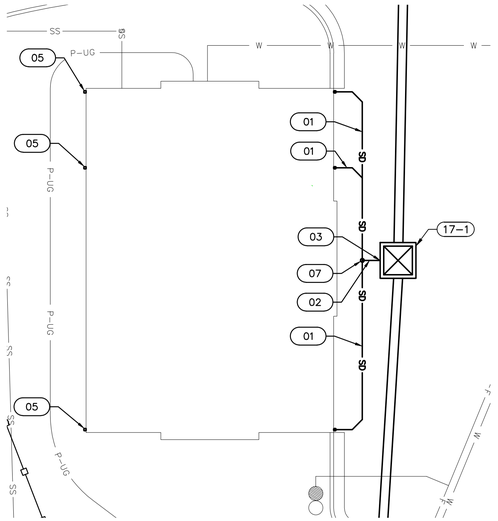
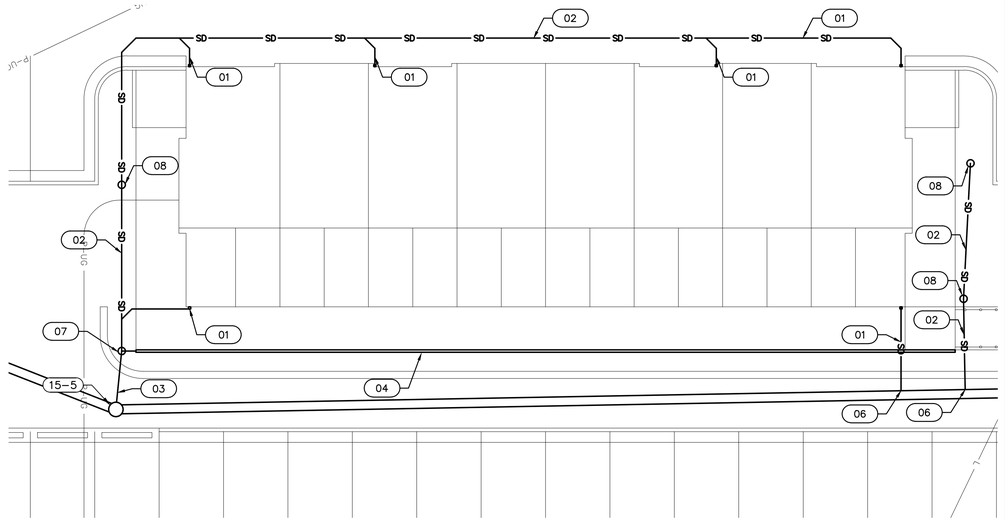


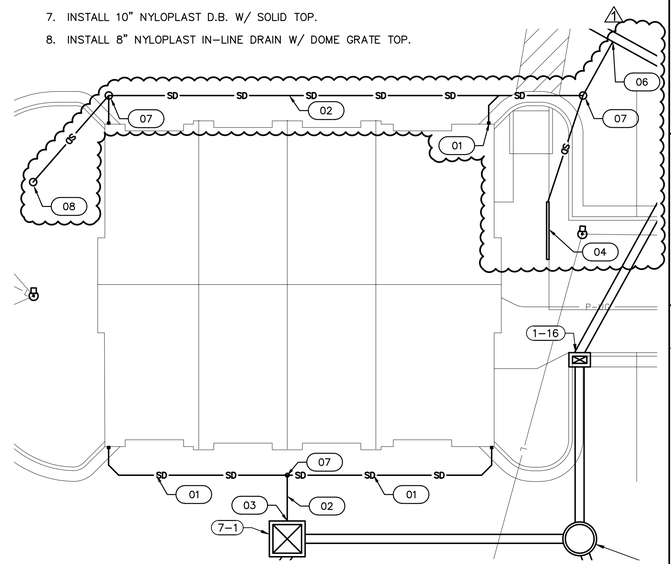
ROOF DRAINS @ MAINTENANCE BUILDING



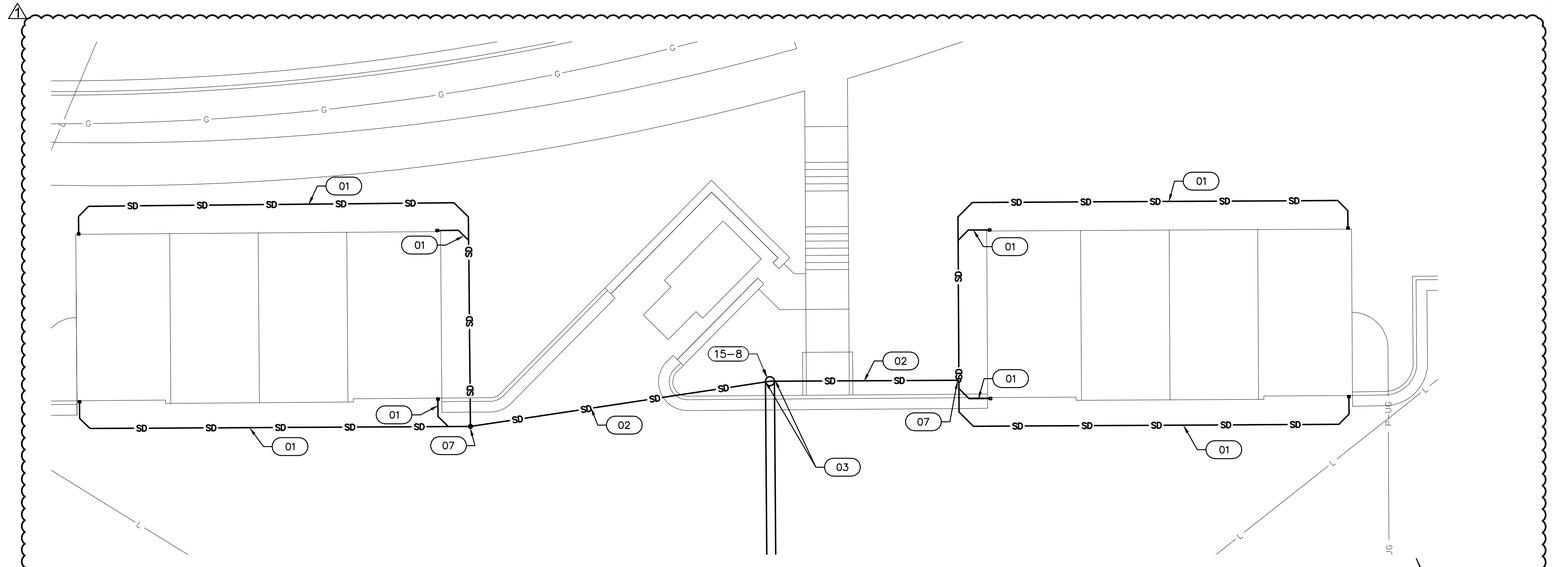
ROOF DRAINS @ GARAGE #2

ROOF DRAIN LINE NOTES ##

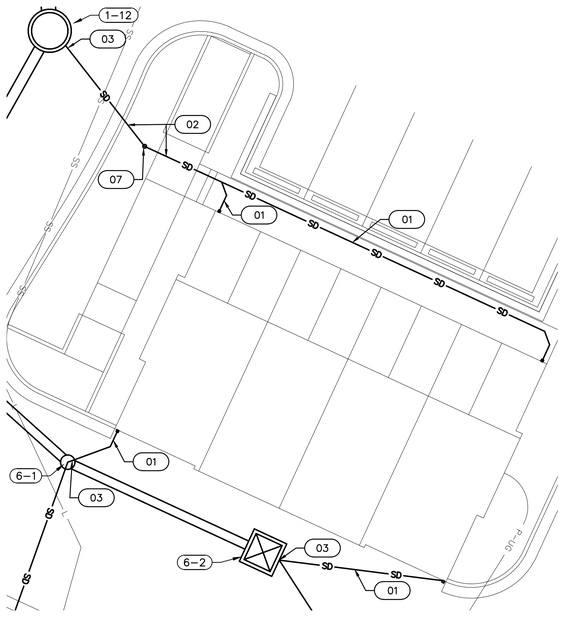
1. INSTALL 6" HDPE PIPE FROM DOWNSTREAM FITTING/STRUCTURE @ 2.0% MIN. SLOPE TO BUILDING ROOF DRAIN CONNECTION, INLCUDING ALL BENDS, FITTINGS, AND CONNECTIONS. FL @ BUILDING TO BE 3' MINUS BUILDING FFE.
2. INSTALL 8" HDPE PIPE @ 2.0% MIN. SLOPE INCLUDING ALL NECESSARY BENDS, FITTINGS, AND CLEANOUTS.
3. CONNECT ROOF DRAIN LINE TO PROPOSED STORM SEWER STRUCTURES. REFER TO STORM SEWER PLAN & PROFILE SHEETS (C505-C518) FOR ROOF DRAIN CONNECTION FL'S AT STORM STRUCTURES.
4. INSTALL ACO K100 TRENCH DRAIN (OR APPROVED EQUAL) W/ PEDESTRIAN HEEL PROOF GRATE AND INLINE CATCH BASIN. REFER TO DETAIL SHEETS FOR MANUFACTURER AND PRODUCT INFORMATION AND SPOT ELEVATION SHEETS FOR TOP OF TRENCH GRATE ELEVATIONS.
5. BUILDING DOWNSPOUT TO DISCHARGE AT GRADE.
6. CONNECT ROOF DRAIN LINE TO 15" HDPE STORM SEWER WITH ADS INSERTA TEE.
7. INSTALL 10" NYLOPLAST D.B. W/ SOLID TOP.
8. INSTALL 8" NYLOPLAST IN-LINE DRAIN W/ DOME GRATE TOP.



ROOF DRAINS @GARAGE #4



ROOF DRAINS @ GARAGE #1 & #3



ROOF DRAINS @ GARAGE #5

0' 5' 10' 20'
SCALE IN FEET

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ROOF DRAIN PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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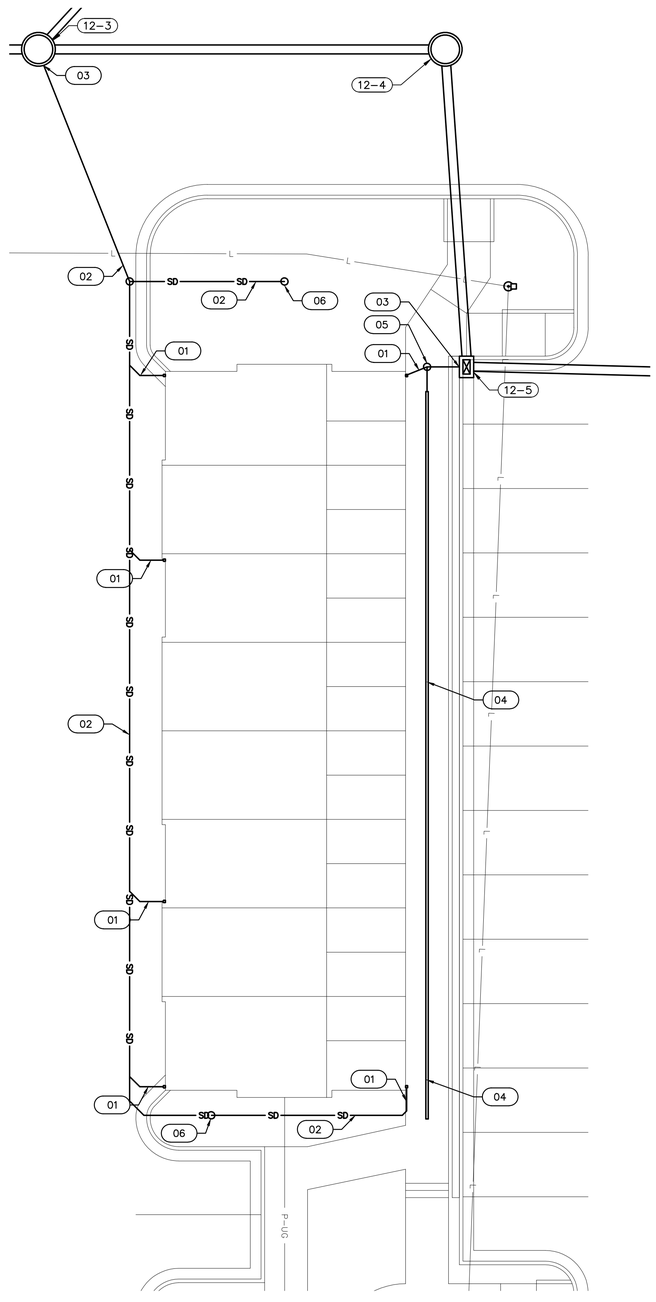
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

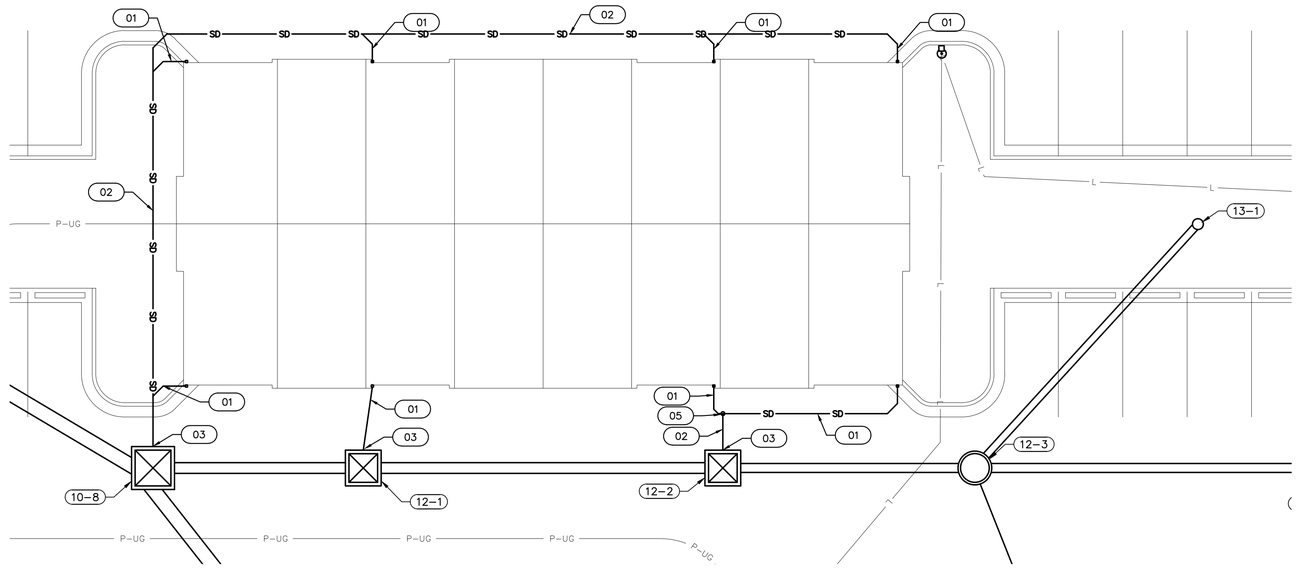
SHEET
C534

ROOF DRAIN LINE NOTES (##)

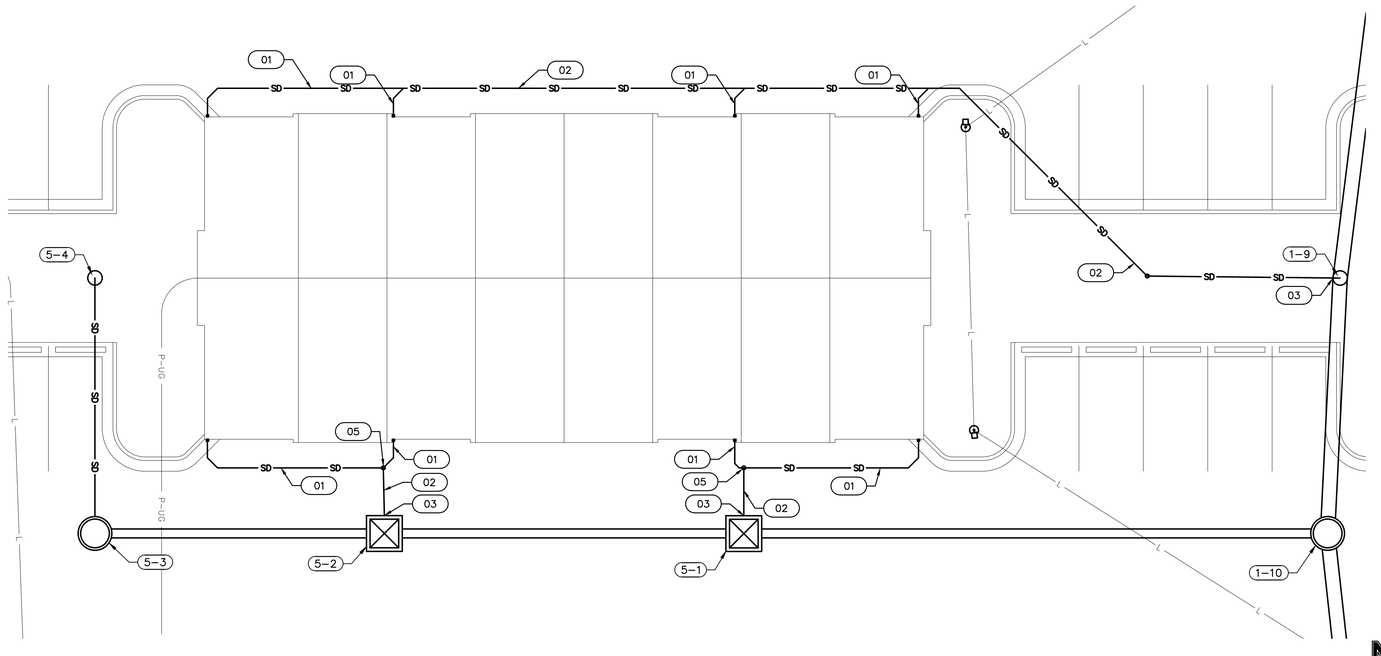
1. INSTALL 6" HDPE PIPE FROM DOWNSTREAM FITTING/STRUCTURE @ 2.0% MIN. SLOPE TO BUILDING ROOF DRAIN CONNECTION, INLCUDING ALL BENDS, FITTINGS, AND CONNECTIONS. FL @ BUILDING TO BE 3' MINUS BUILDING FFE.
2. INSTALL 8" HDPE PIPE @ 2.0% MIN. SLOPE INCLUDING ALL NECESSARY BENDS, FITTINGS, AND CLEANOUTS.
3. CONNECT ROOF DRAIN LINE TO PROPOSED STORM SEWER STRUCTURES. REFER TO STORM SEWER PLAN & PROFILE SHEETS (C505–C518) FOR ROOF DRAIN CONNECTION FL'S AT STORM STRUCTURES.
4. INSTALL ACO K100 TRENCH DRAIN (OR APPROVED EQUAL) W/ PEDESTRIAN HEEL PROOF GRATE AND INLINE CATCH BASIN. REFER TO DETAIL SHEETS FOR MANUFACTURER AND PRODUCT INFORMATION AND SPOT ELEVATION SHEETS FOR TOP OF TRENCH GRATE ELEVATIONS.
5. INSTALL 10" NYLOPLAST D.B. W/ SOLID TOP.
6. INSTALL 8" NYLOPLAST IN–LINE DRAIN W/ DOME GRATE TOP.



ROOF DRAINS @ GARAGE #6



ROOF DRAINS @ GARAGE #7



ROOF DRAINS @ GARAGE #8

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STATE OF MISSOURI
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NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

ROOF DRAIN PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

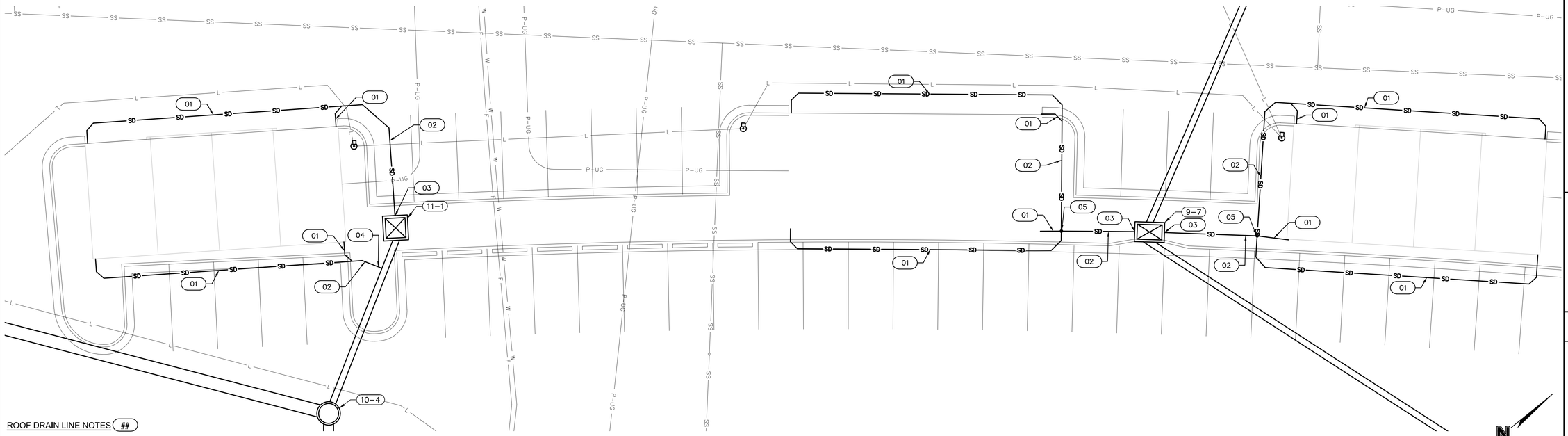
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C535

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP04_ B190012.dwg ~ Layout: ROOF DRAIN PLAN (2) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



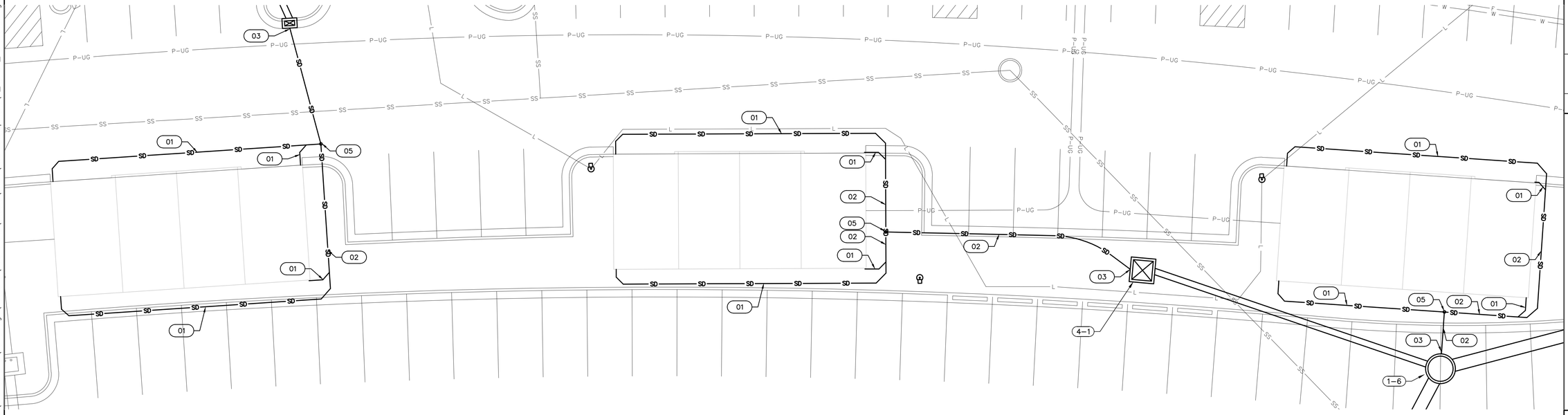
ROOF DRAIN LINE NOTES ##

1. INSTALL 6" HDPE PIPE FROM DOWNSTREAM FITTING/STRUCTURE @ 2.0% MIN. SLOPE TO BUILDING ROOF DRAIN CONNECTION, INLCUDING ALL BENDS, FITTINGS, AND CONNECTIONS. FL @ BUILDING TO BE 3' MINUS BUILDING FFE.
2. INSTALL 8" HDPE PIPE @ 2.0% MIN. SLOPE INCLUDING ALL NECESSARY BENDS, FITTINGS, AND CLEANOUTS.
3. CONNECT ROOF DRAIN LINE TO PROPOSED STORM SEWER STRUCTURES. REFER TO STORM SEWER PLAN & PROFILE SHEETS (C505–C518) FOR ROOF DRAIN CONNECTION FL'S AT STORM STRUCTURES
4. CONNECT ROOF DRAIN LINE TO PROPOSED STORM SEWER W/ INSERT–A–TEE.
5. INSTALL 10" NYLOPLAST D.B. W/ SOLID TOP.

ROOF DRAINS @ GARAGES #9,10, & 11

N

0' 5' 10' 20'
SCALE IN FEET



ROOF DRAINS @ GARAGES #12,13, & 14

N

0' 5' 10' 20'
SCALE IN FEET

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REVISIONS

ROOF DRAIN PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C536

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_RDP04_ B190012.dwg ~ Layout: ROOF DRAIN PLAN (3) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

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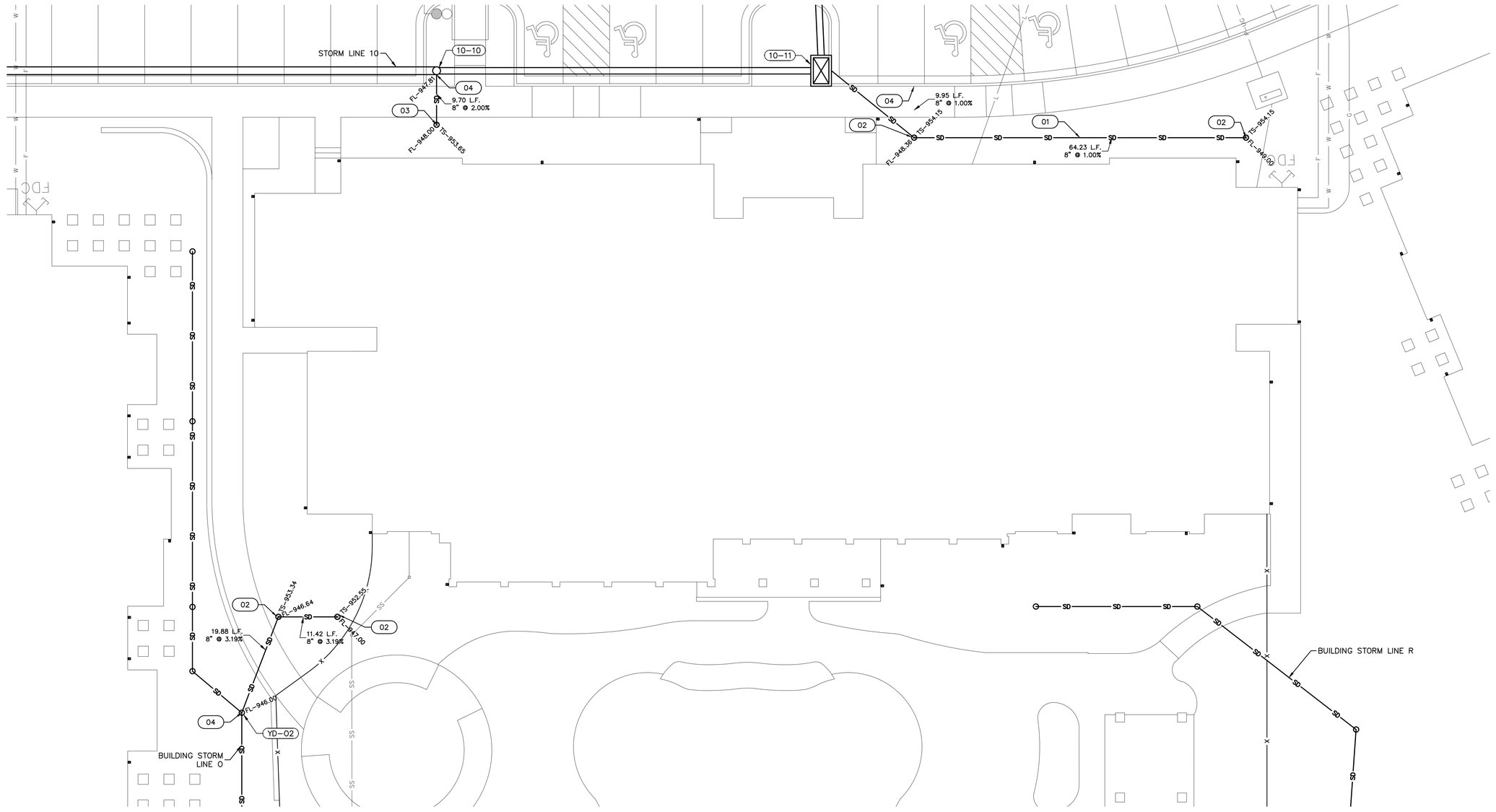
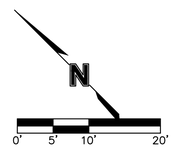
ROOF DRAIN LINE NOTES (##)

1. INSTALL 8" HDPE PIPE @ 1.0% MIN. SLOPE INCLUDING ALL NECESSARY BENDS, FITTINGS, AND CLEANOUTS.
2. INSTALL 12" NYLOPLAST DRAIN BASIN W/ DOME GRATE TOP.
3. INSTALL 12" NYLOPLAST DRAIN BASIN W/ SOLID LID.
4. CONNECT BUILDING STORM LINE TO PROPOSED STORM SEWER STRUCTURES. REFER TO STORM SEWER PLAN & PROFILE SHEETS (C505–C518) FOR ROOF DRAIN CONNECTION FL'S AT STORM STRUCTURES.



ROOF DRAINS @ CLUBHOUSE (BLDG 1)



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REVISIONS

ROOF DRAIN PLAN
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C537

NOTE:
FILTRATION TRENCHES AROUND FUTURE BUILDINGS (BUIILDINGS 7–13) TO BE INSTALLED IN THE FUTURE, AT THE TIME OF BUILDING CONSTRUCTION.

LEE'S SUMMIT RD.

NE DOUGLAS ST.

S54°34'12"E
1,258.30'

BLDG 13 (FUTURE)

BLDG 12 (FUTURE)

BLDG 11 (FUTURE)

BLDG 10 (FUTURE)

BLDG 9 (FUTURE)

BLDG 8 (FUTURE)

BLDG 7 (FUTURE)

BLDG 6

BLDG 5

BLDG 4

BLDG 3

BLDG 2

BLDG 1 CLUBHOUSE

MAINT. BLDG

SEE SHEET C608

SEE SHEET C609

SEE SHEET C610

SEE SHEET C607

SEE SHEET C606

SEE SHEET C611

SEE SHEET C605

SEE SHEET C604

SEE SHEET C603

SEE SHEET C602

10' U.E.

50' B.L.

15' D.E.

T.C.E.

L.S.E.

S.S.E.

20' D.E.

SSMH

FND IB4

0' 30' 60' 120'
SCALE IN FEET

N

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REVISIONS

FILTRATION TRENCH LAYOUT
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C601

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_BMP01_ B190012.dwg ~ Layout: INFILTRATION TRENCH GENERAL LAYOUT ~ Last Saved By: mdlebolt ~ Plot Date: 2019.10.01 03:03 PM

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953.11 PG
949.50 SG

N: 1013864.14
E: 2822768.53
952.94 PG
949.50 SG

N: 1013850.92
E: 2822778.99
953.21 PG
949.50 SG

N: 1013801.69
E: 2822828.23
954.33 PG
949.50 SG

N: 1013774.62
E: 2822852.53
954.60 PG
951.00 SG

N: 1013725.68
E: 2822901.47
954.50 PG
951.00 SG

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E: 2822763.62
953.14 PG
949.50 SG

N: 1013847.46
E: 2822775.52
953.28 PG
949.50 SG

N: 1013798.21
E: 2822824.76
954.58 PG
949.50 SG

N: 1013771.08
E: 2822849.00
954.63 PG
951.00 SG

N: 1013722.11
E: 2822897.97
954.25 PG
951.00 SG

N: 1013850.93
E: 2822771.92
953.20 PG
949.50 SG

TRENCH 1D

AREA 1C

AREA 1D

BUILDING 1
CLUBHOUSE

BUILDING 3

N: 1013693.80
E: 2822893.66
954.02 PG
949.00 SG

N: 1013691.94
E: 2822896.44
954.54 PG
949.00 SG

N: 1013825.82
E: 2822733.96
954.13 PG
949.20 SG

N: 1013822.99
E: 2822736.79
954.15 PG
949.20 SG

AREA 1A

AREA 1B

AREA 3A

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953.35 PG
949.00 SG

N: 1013656.78
E: 2822860.90
953.42 PG
949.00 SG

N: 1013790.35
E: 2822704.15
953.35 PG
949.20 SG

N: 1013739.08
E: 2822755.42
953.20 PG
949.20 SG

N: 1013710.40
E: 2822789.05
953.19 PG
949.50 SG

TRENCH 1B

N: 1013670.75
E: 2822828.70
953.34 PG
949.50 SG

N: 1013790.70
E: 2822699.55
953.42 PG
949.20 SG

N: 1013737.08
E: 2822753.43
953.21 PG
949.20 SG

N: 1013705.45
E: 2822784.10
953.15 PG
949.50 SG

N: 1013665.80
E: 2822823.75
953.61 PG
949.50 SG

N: 1013626.78
E: 2822837.41
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949.00 SG

N: 1013632.68
E: 2822831.98
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949.00 SG

N: 1013630.18
E: 2822827.22
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947.00 SG

N: 1013622.74
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952.31 PG
947.00 SG

AREA 3B

N: 1013585.24
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950.61 PG
947.00 SG

N: 1013578.54
E: 2822784.25
950.55 PG
947.00 SG

CONSTRUCTION NOTES (##)

1. INSTALL NYLOPLAST 12" GRATE INLET (REFER TO FILTRATION TRENCH DETAILS)
2. NYLOPLAST DRAIN BASIN (REFER TO STORM SEWER PLAN & PROFILE SHEETS)
3. 4" PERFORATED HDPE UNDERDRAIN (REFER TO FILTRATION TRENCH DETAILS)
4. CONNECT UNDERDRAIN TO PROPOSED STORM DRAINAGE BASIN

1

Water Quality Volume Storage

Trench	Drainage Area	Impervious	Rv	WqV	Infiltration Area	Storage Volume
#	S.F.	%		C.F.	S.F.	C.F. (30" Depth @ 40% Voids)
1A	6197	70	0.68	481	485	485
1B	4758	75	0.725	394	394	394
1C	4519	80	0.77	397	423	423
1D	3898	80	0.77	343	346	346
3A	10337	45	0.455	537	590	590
3B	10788	45	0.455	560	600	600

N

0' 5' 10' 20'
SCALE IN FEET

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

REVISIONS

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

FILTRATION TRENCH PLAN
SITE DEVELOPMENT PLANS

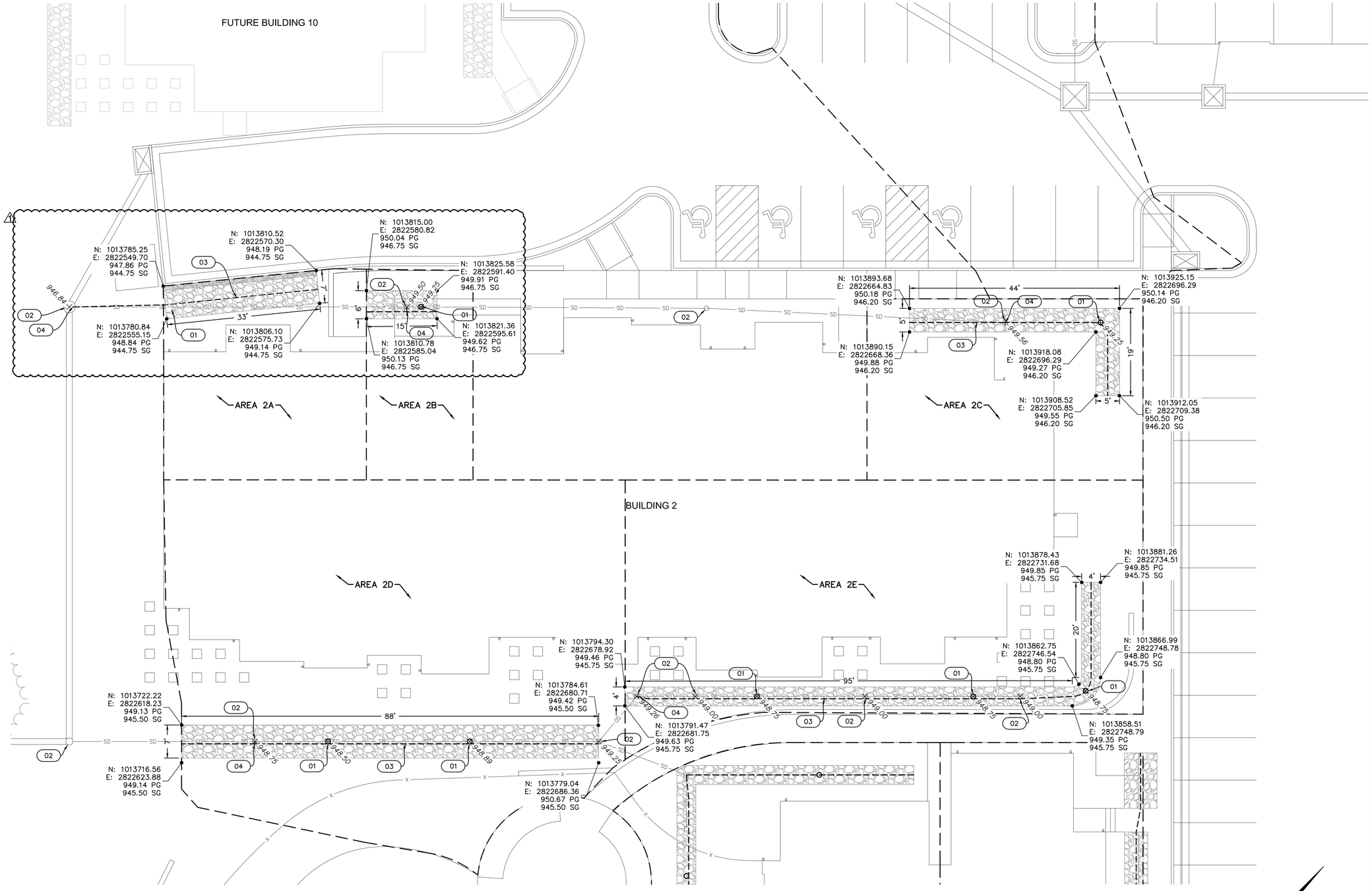
ARIA APARTMENTS
PHASE 1

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: 2020.08.27

SHEET
C602



1

Water Quality Volume Storage						
Trench #	Drainage Area S.F.	Impervious %	Rv	WqV C.F.	Infiltration Area S.F.	Storage Volume C.F. (30" Depth @ 40% Voids)
2A	1855	80	0.77	163	228	228
2B	1005	80	0.77	88	89	89
2C	2246	60	0.59	151	290	290
2C	6977	70	0.68	542	618	618
2E	5524	65	0.635	400	485	485

CONSTRUCTION NOTES (##)

1. INSTALL NYLOPLAST 12" GRATE INLET (REFER TO FILTRATION TRENCH DETAILS)
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3. 4" PERFORATED HDPE UNDERDRAIN (REFER TO FILTRATION TRENCH DETAILS)
4. CONNECT UNDERDRAIN TO PROPOSED STORM DRAINAGE BASIN

N

0' 5' 10' 20'
SCALE IN FEET

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FILTRATION TRENCH PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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designed by: M.J.D.
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SHEET
C603

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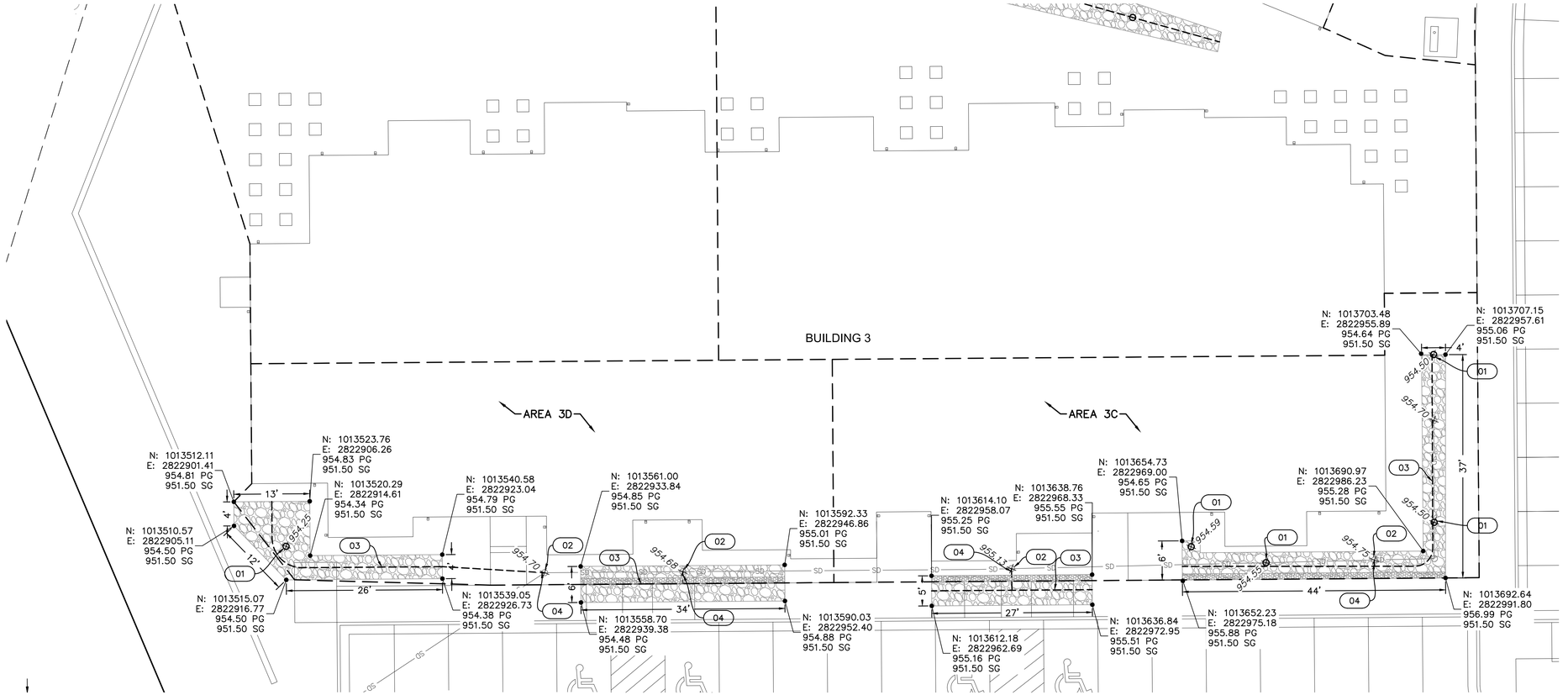

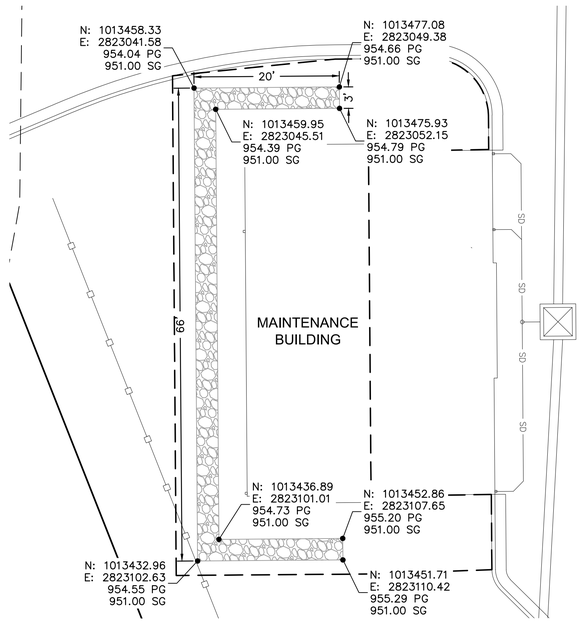

Water Quality Volume Storage						
Trench	Drainage Area	Impervious	Rv	WqV	Infiltration Area	Storage Volume
#	S.F.	%		C.F.	S.F.	C.F. (30" Depth @ 40% Voids)
3C	4142	85	0.815	385	461	461
3D	3789	90	0.86	372	417	417
Maint.	2310	50	0.5	132	302	302

CONSTRUCTION NOTES (##)

1. INSTALL NYLOPLAST 12" GRATE INLET (REFER TO FILTRATION TRENCH DETAILS)
2. NYLOPLAST DRAIN BASIN (REFER TO STORM SEWER PLAN & PROFILE SHEETS)
3. 4" PERFORATED HDPE UNDERDRAIN (REFER TO FILTRATION TRENCH DETAILS)
4. CONNECT UNDERDRAIN TO PROPOSED STORM DRAINAGE BASIN

N

0' 5' 10' 20'
SCALE IN FEET

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FILTRATION TRENCH PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

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2020

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designed by: M.J.D.
QA/QC by: N.D.H.
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date: 2020.08.27

SHEET
C604

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_BMP01_ B190012.dwg ~ Layout: INFILTRATION TRENCH PLAN (3) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

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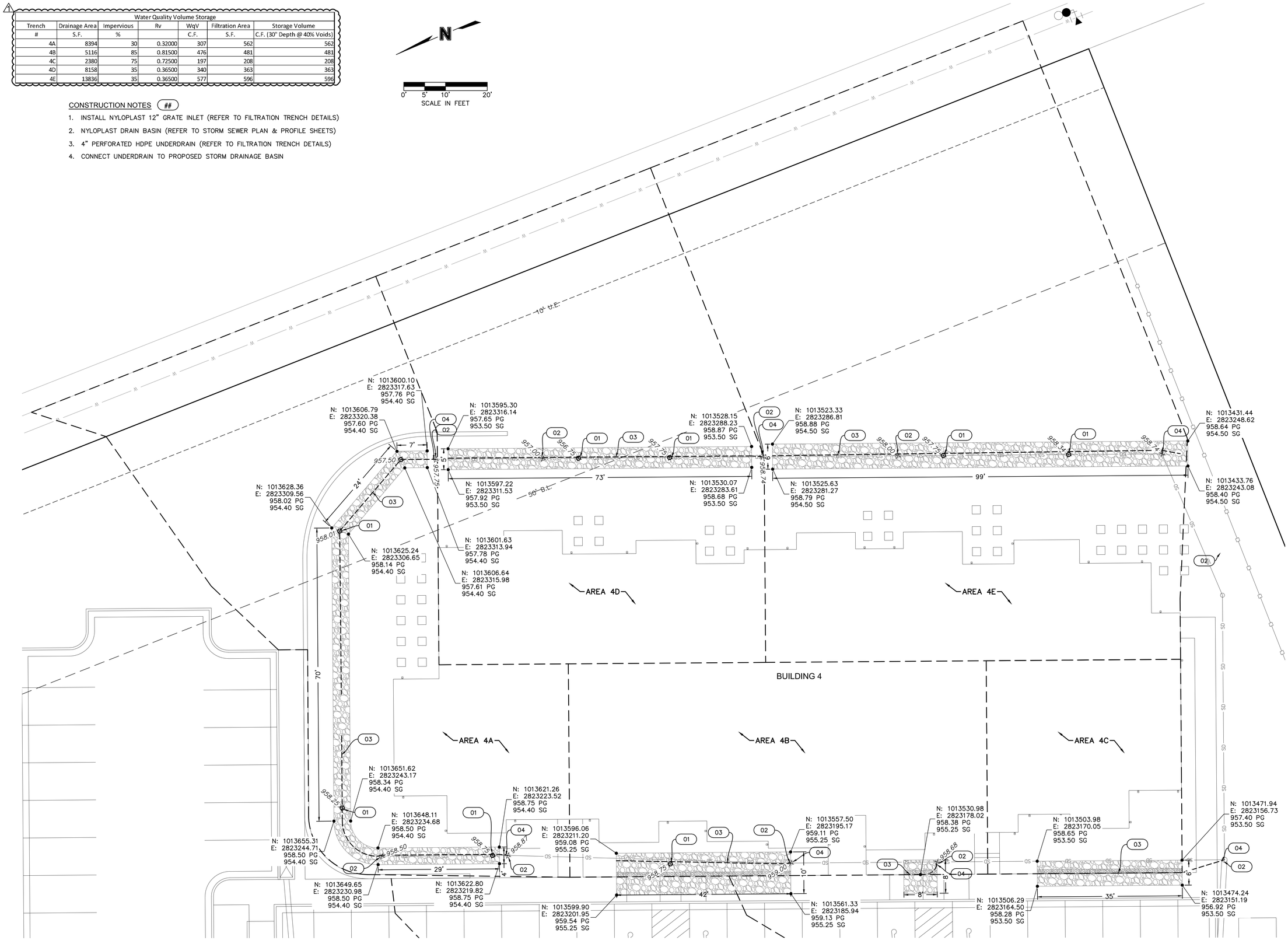
Water Quality Volume Storage						
Trench	Drainage Area	Impervious	Rv	WqV	Filtration Area	Storage Volume
#	S.F.	%		C.F.	S.F.	C.F. (30" Depth @ 40% Voids)
4A	8394	30	0.32000	307	562	562
4B	5116	85	0.81500	476	481	481
4C	2380	75	0.72500	197	208	208
4D	8158	35	0.36500	340	363	363
4E	13836	35	0.36500	577	596	596

N

0' 5' 10' 20'
SCALE IN FEET

CONSTRUCTION NOTES (##)

1. INSTALL NYLOPLAST 12" GRATE INLET (REFER TO FILTRATION TRENCH DETAILS)
2. NYLOPLAST DRAIN BASIN (REFER TO STORM SEWER PLAN & PROFILE SHEETS)
3. 4" PERFORATED HDPE UNDERDRAIN (REFER TO FILTRATION TRENCH DETAILS)
4. CONNECT UNDERDRAIN TO PROPOSED STORM DRAINAGE BASIN



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FILTRATION TRENCH PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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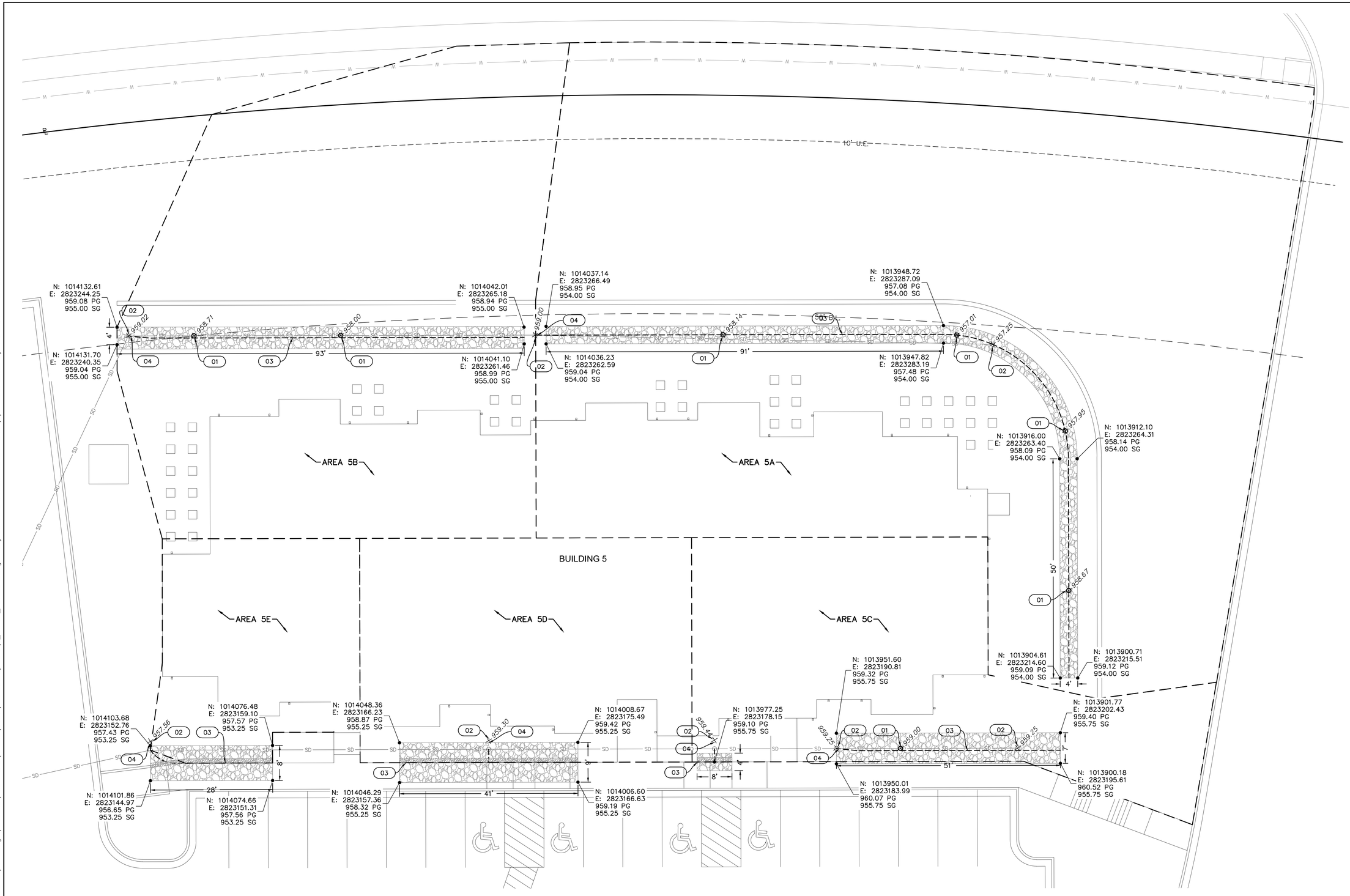
SHEET
C605



Water Quality Volume Storage						
Trench	Drainage Area	Impervious	Rv	WqV	Infiltration Area	Storage Volume
#	S.F.	%		C.F.	S.F.	C.F. (30" Depth @ 40% Voids)
5A	20453	25	0.275	642	742	742
5B	9479	33	0.347	376	465	465
5C	4605	70	0.68	358	358	358
5D	3888	80	0.77	342	371	371
5E	2135	80	0.77	188	223	223

CONSTRUCTION NOTES (##)

1. INSTALL NYLOPLAST 12" GRATE INLET (REFER TO FILTRATION TRENCH DETAILS)
2. NYLOPLAST DRAIN BASIN (REFER TO STORM SEWER PLAN & PROFILE SHEETS)
3. 4" PERFORATED HDPE UNDERDRAIN (REFER TO FILTRATION TRENCH DETAILS)
4. CONNECT UNDERDRAIN TO PROPOSED STORM DRAINAGE BASIN

N

0' 5' 10' 20'
SCALE IN FEET

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

FILTRATION TRENCH PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

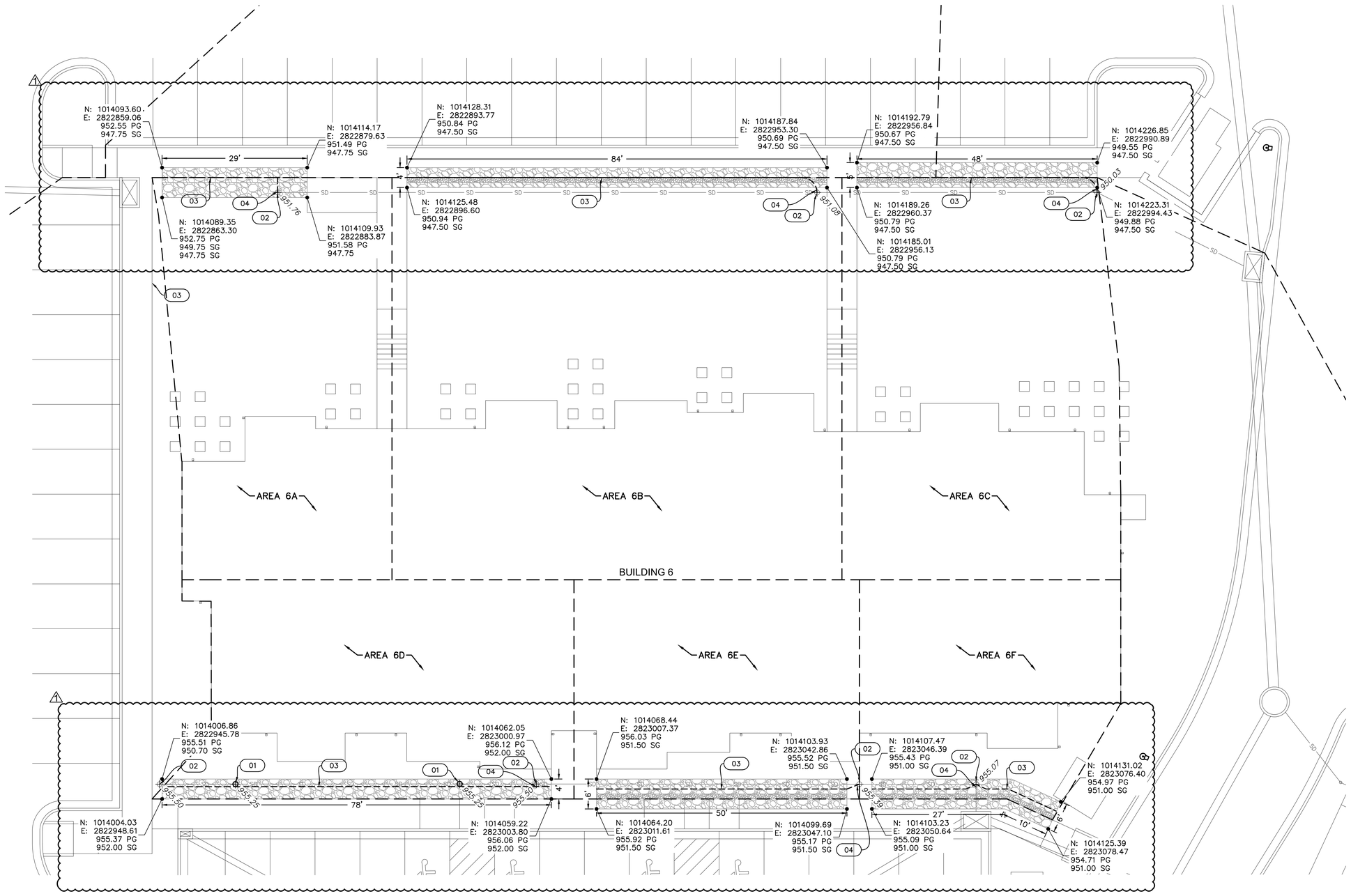
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C606

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_BMP01_ B190012.dwg ~ Layout: INFILTRATION TRENCH PLAN (5) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



Water Quality Volume Storage						
Trench	Drainage Area	Impervious	Rv	WqV	Infiltration Area	Storage Volume
#	S.F.	%		C.F.	S.F.	C.F. (30" Depth @ 40% Voids)
6A	3553	40	0.41	166	174	174
6B	7275	38	0.392	326	336	336
6C	4408	38	0.392	197	240	240
6D	3301	75	0.725	273	312	312
6E	2516	80	0.77	221	301	301
6F	2220	72	0.698	177	225	225

CONSTRUCTION NOTES (##)

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SITE DEVELOPMENT PLANS

ARIA APARTMENTS
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2020

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checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C607

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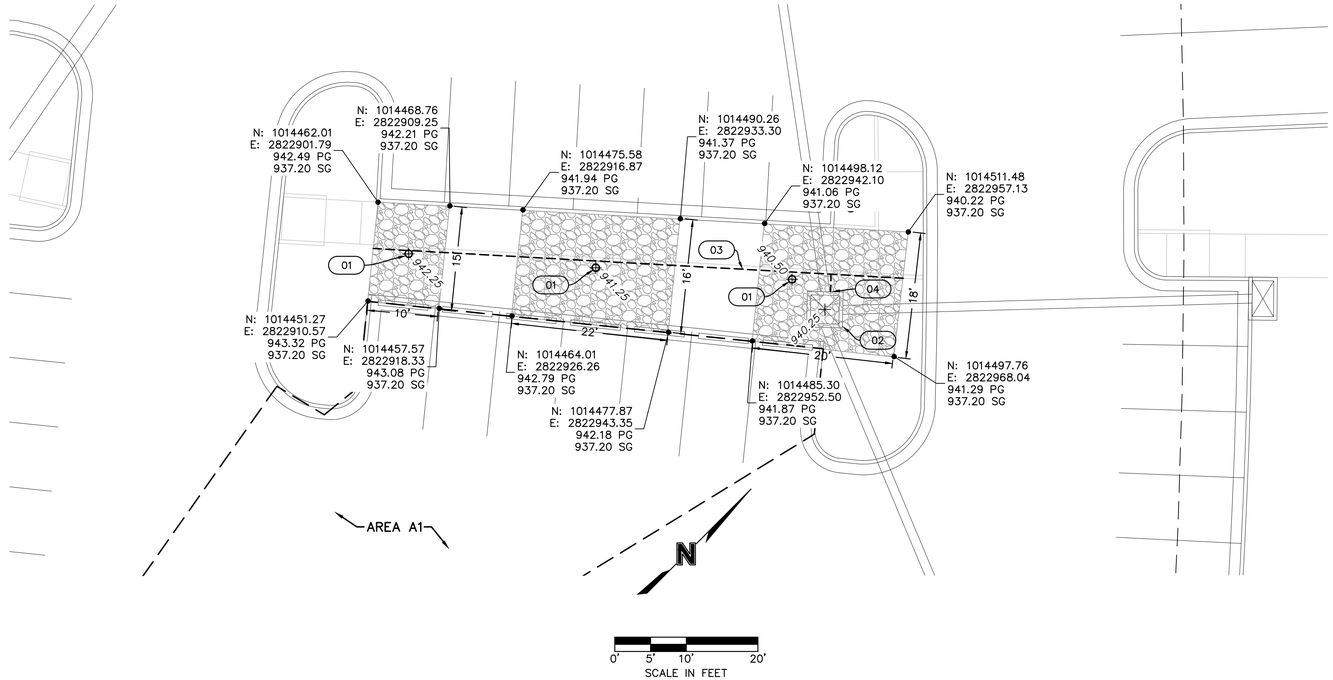

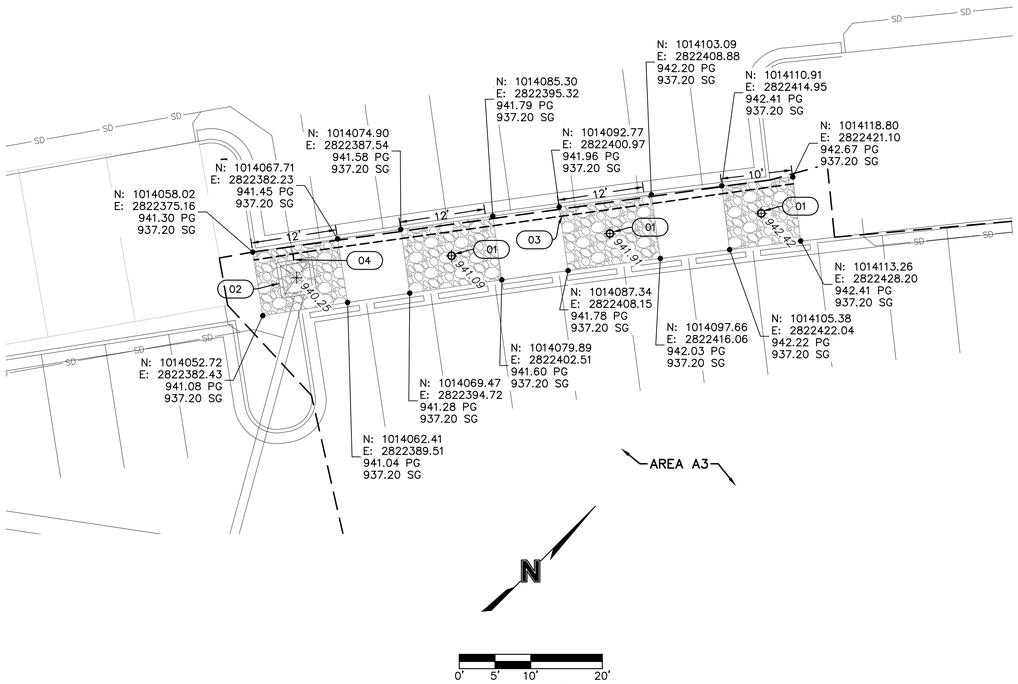

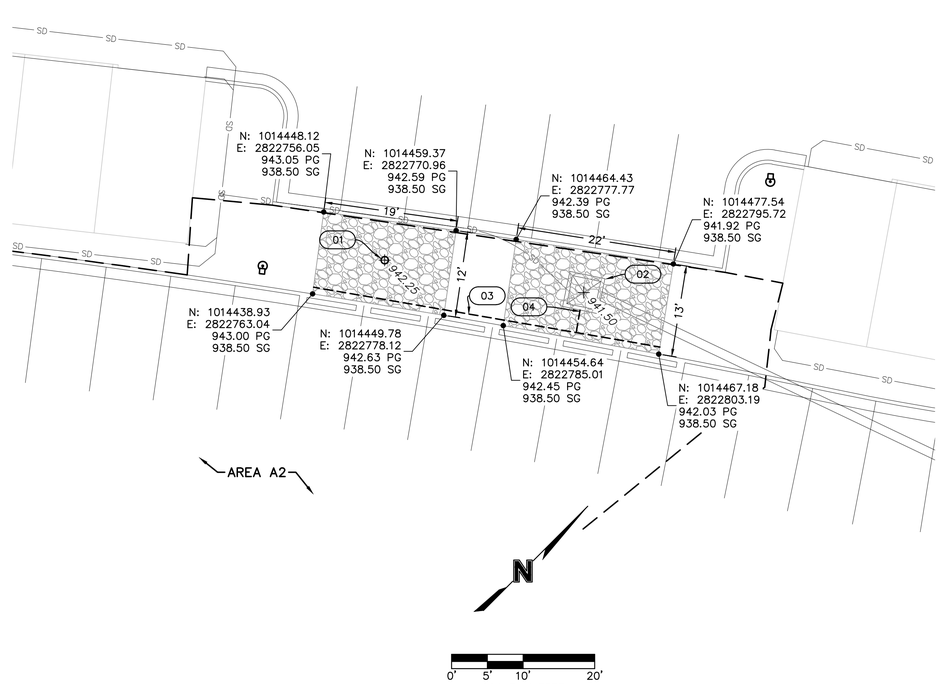

Water Quality Volume Storage						
Trench #	Drainage Area S.F.	Impervious %	Rv	WqV C.F.	Infiltration Area S.F.	Storage Volume C.F. (30" Depth @ 40% Voids)
A1	9990	85	0.815	930	822	822
A2	18511	85	0.815	1722	495	495
A3	19403	85	0.815	1805	431	431

CONSTRUCTION NOTES (##)

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FILTRATION TRENCH PLAN
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C608

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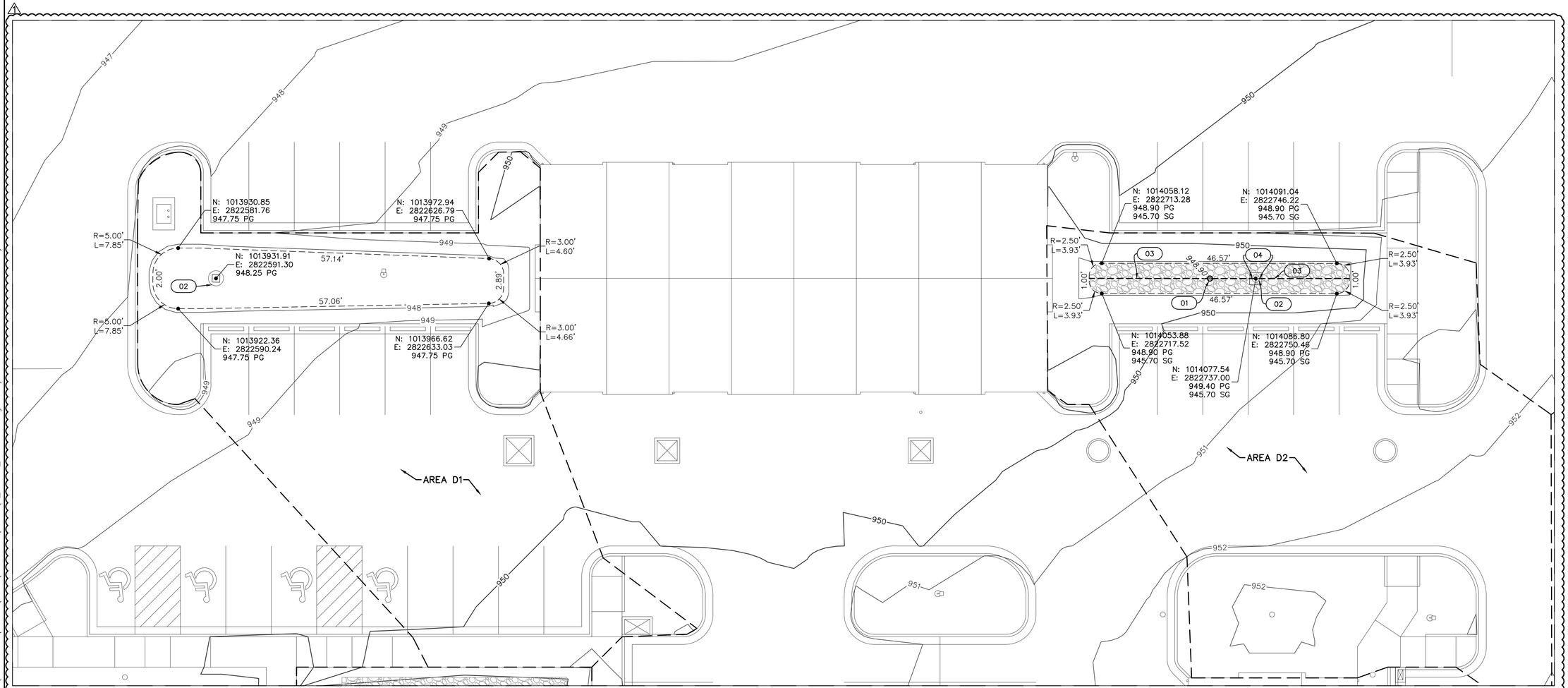

Water Quality Volume Storage - Depressed Areas								
	Drainage Area	Impervious	Rv	WqV	Surface Area	Ponding Depth	Provided Depth	Provided Vol
ID	S.F.	%		C.F.	S.F.	in	in.	C.F.
D1	5968	60	0.59	402	812	5.94	6.00	406

Water Quality Volume Storage - Depressed Areas w/ Filtration											
	Drainage Area	Impervious	Rv	WqV	Surface Area	Ponding Depth	Provided Ponding Vol	Filtration Area	Trench Depth	Trench Storage Volume	Total Storage Volume
ID	S.F.	%		C.F.	S.F.	in	C.F.	S.F.	in.	C.F. (@ 40% Voids)	C.F.
D2	7124	60	0.59	480	310	6.00	155	310	32	331	486

CONSTRUCTION NOTES (##)

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FILTRATION TRENCH PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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QA/QC by: N.D.H.
project no.: 019-0012-B
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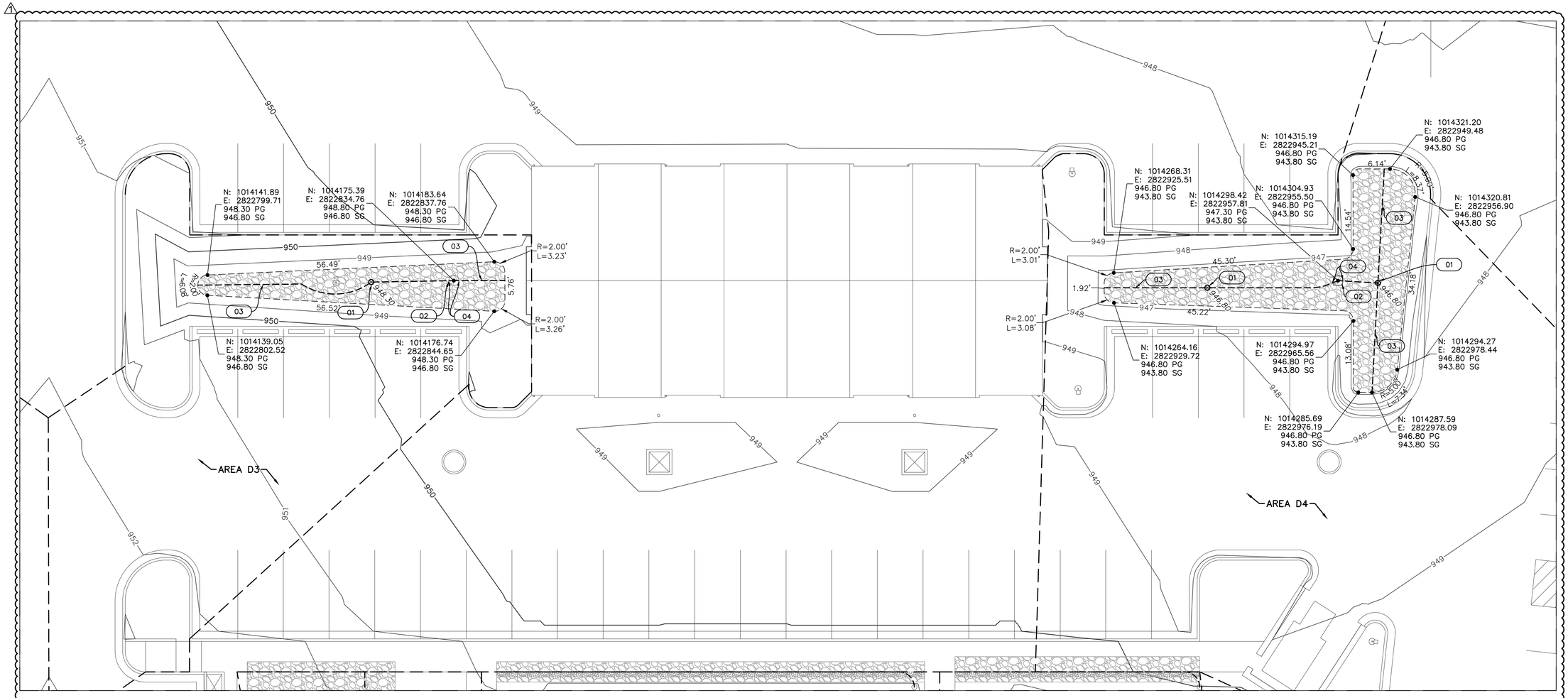
SHEET
C609

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_BMP03_ B190012.dwg ~ Layout: BMP PLAN ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



Water Quality Volume Storage - Depressed Areas w/ Filtration											
Drainage Area ID	Drainage Area	Impervious	Rv	WqV	Surface Area	Ponding Depth	Provided Ponding Vol	Filtration Area	Trench Depth	Trench Storage Volume	Total Storage Volume
ID	S.F.	%		C.F.	S.F.	in	C.F.	S.F.	in.	C.F. (@ 40% Voids)	C.F.
D3	6173	65	0.635	413	500	6.00	250	500	12	200	450
D4	13691	75	0.725	1133	843	6.00	422	843	30	843	1265

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FILTRATION TRENCH PLAN
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ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C610

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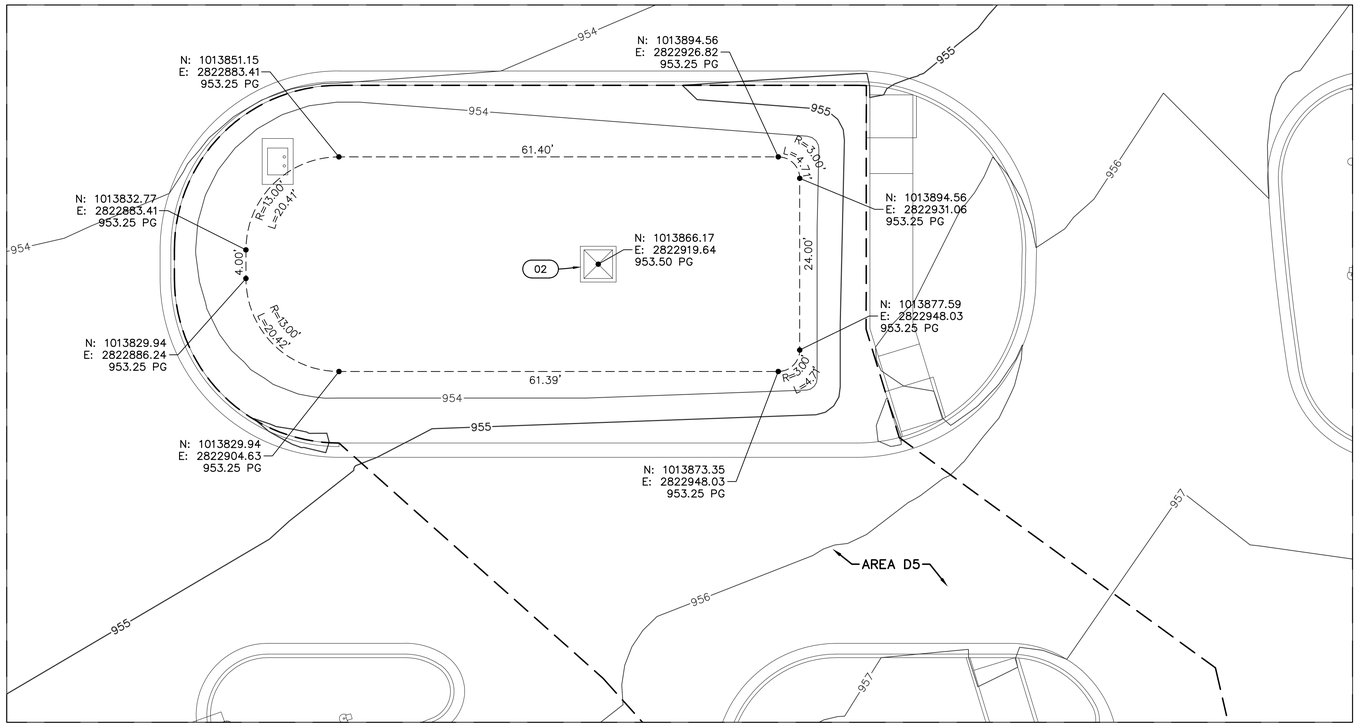

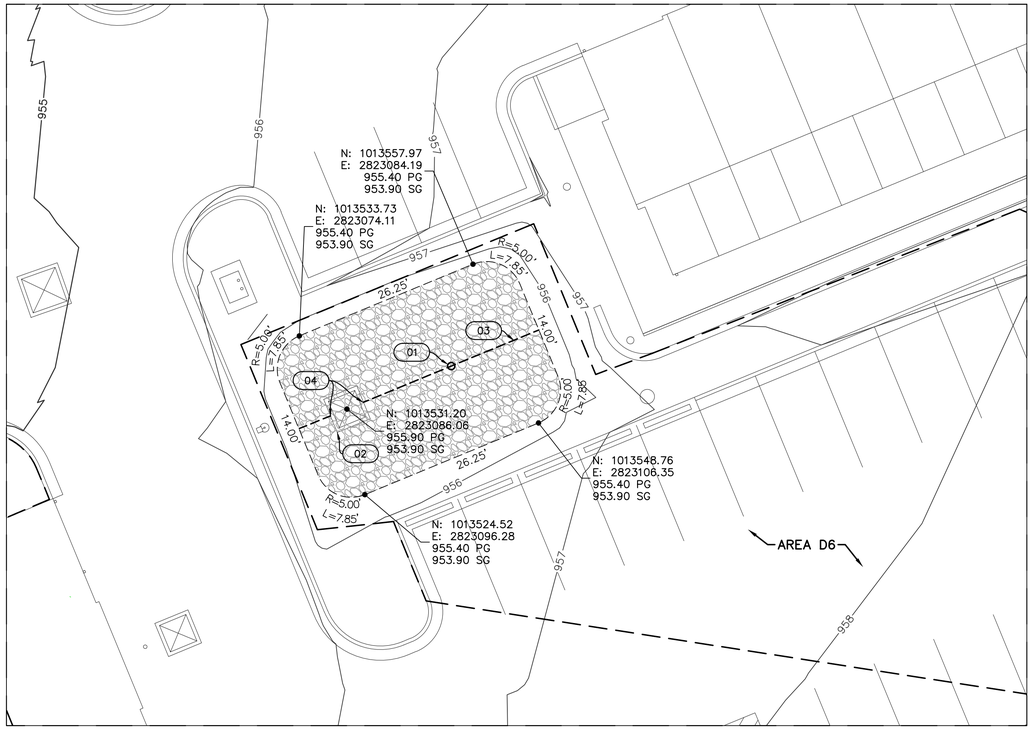

Water Quality Volume Storage - Depressed Areas								
Drainage Area ID	Drainage Area	Impervious	Rv	WqV	Surface Area	Required Depth	Provided Depth	Provided Vol
ID	S.F.	%		C.F.	S.F.	in	in.	C.F.
D5	9700	36	0.374	414	2245	2.21	3.00	561

Water Quality Volume Storage - Depressed Areas w/ Filtration											
Drainage Area ID	Drainage Area	Impervious	Rv	WqV	Surface Area	Ponding Depth	Provided Ponding Vol	Filtration Area	Trench Depth	Trench Storage Volume	Total Storage Volume
ID	S.F.	%		C.F.	S.F.	in	C.F.	S.F.	in.	C.F. (@ 40% Voids)	C.F.
D6	8582	62	0.608	596	848	6.00	424	848	12	339	763

CONSTRUCTION NOTES (##)

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SCALE IN FEET

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MO# 2015000555

REVISIONS

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1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

FILTRATION TRENCH PLAN
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C611

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_BMP03_ B190012.dwg ~ Layout: BMP PLAN (3) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM

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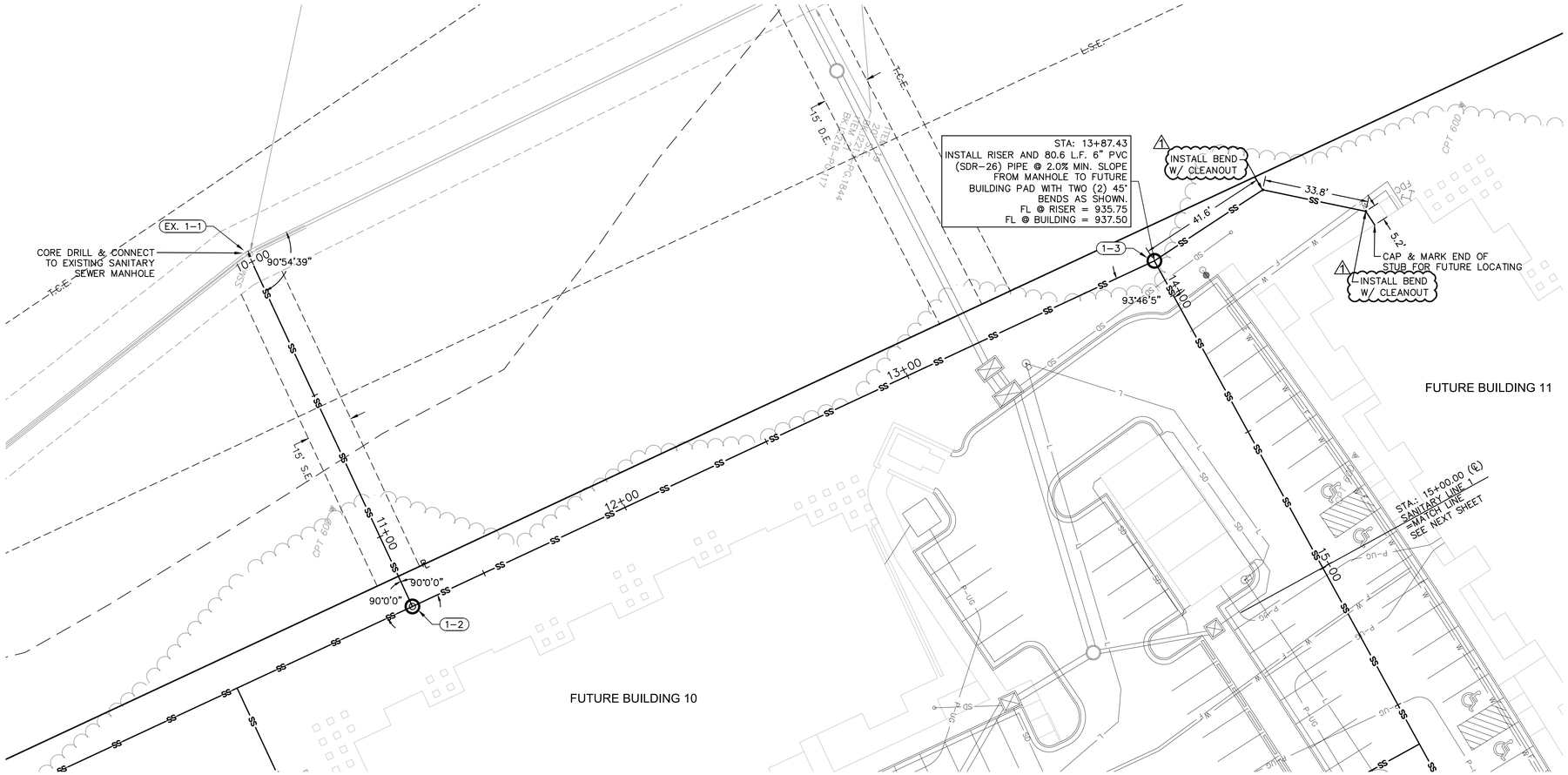
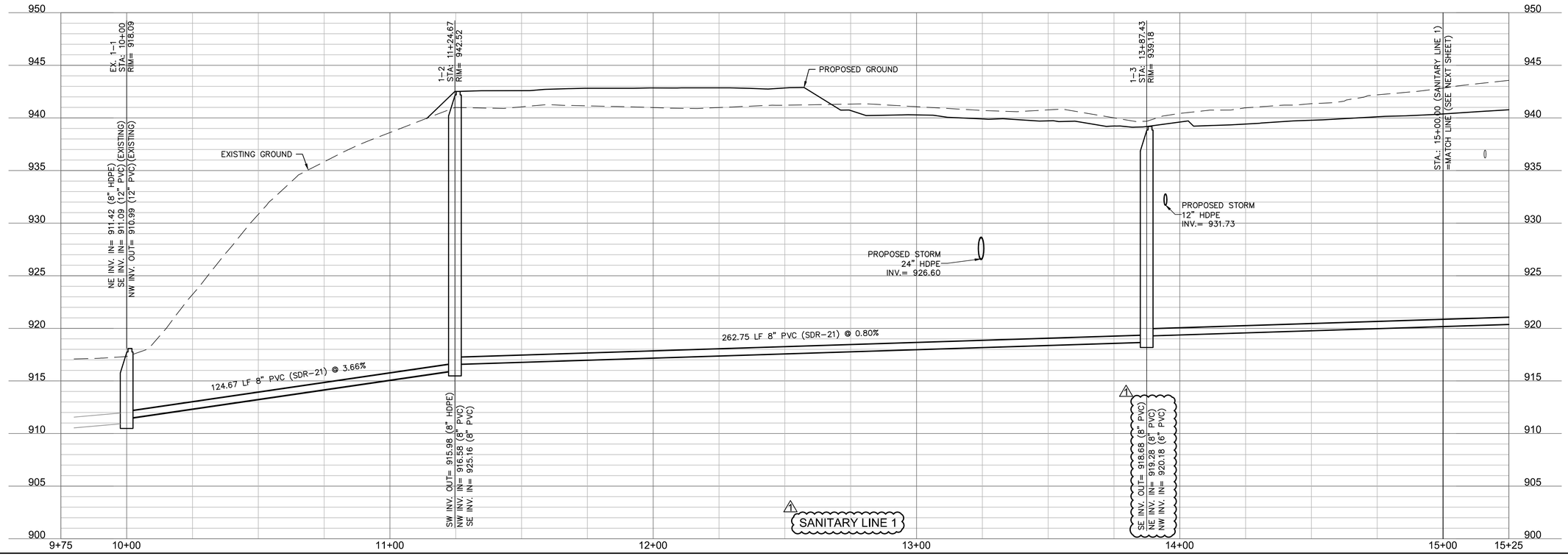


STRUCTURES	
ID	DESCRIPTION
EX. 1–1	10+00 SANITARY LINE 1 48" MH N: 1013727.564; E: 2822374.980
1–2	11+24.67 SANITARY LINE 1 48" MH W/ OUTSIDE DROP N: 1013815.438; E: 2822463.422
1–3	13+87.43 SANITARY LINE 1 48" MH N: 1014001.301; E: 2822277.693



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SANITARY SEWER PLAN & PROFILE
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ARIA APARTMENTS
PHASE 1

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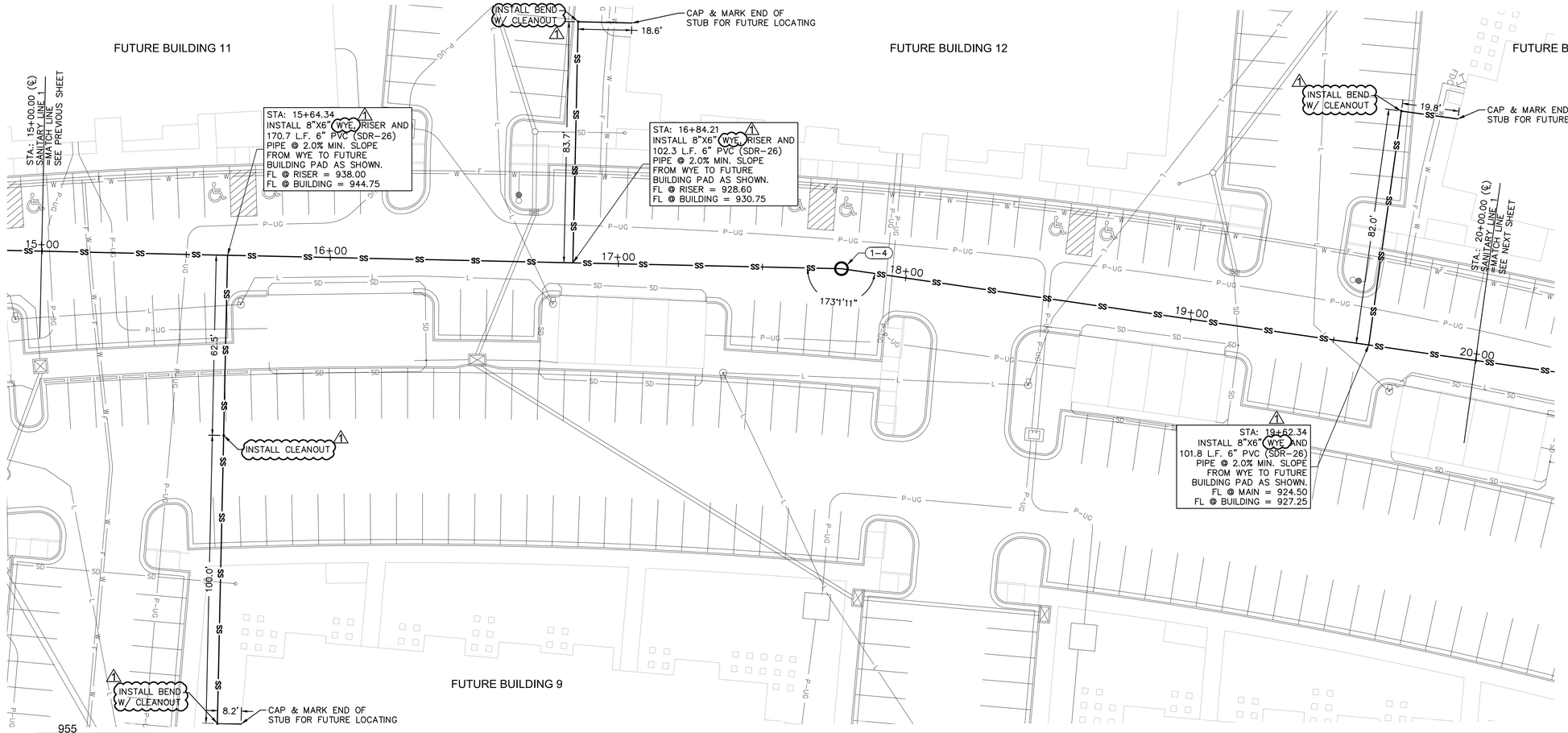
SHEET
C701



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SANITARY SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

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2020

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SHEET
C702

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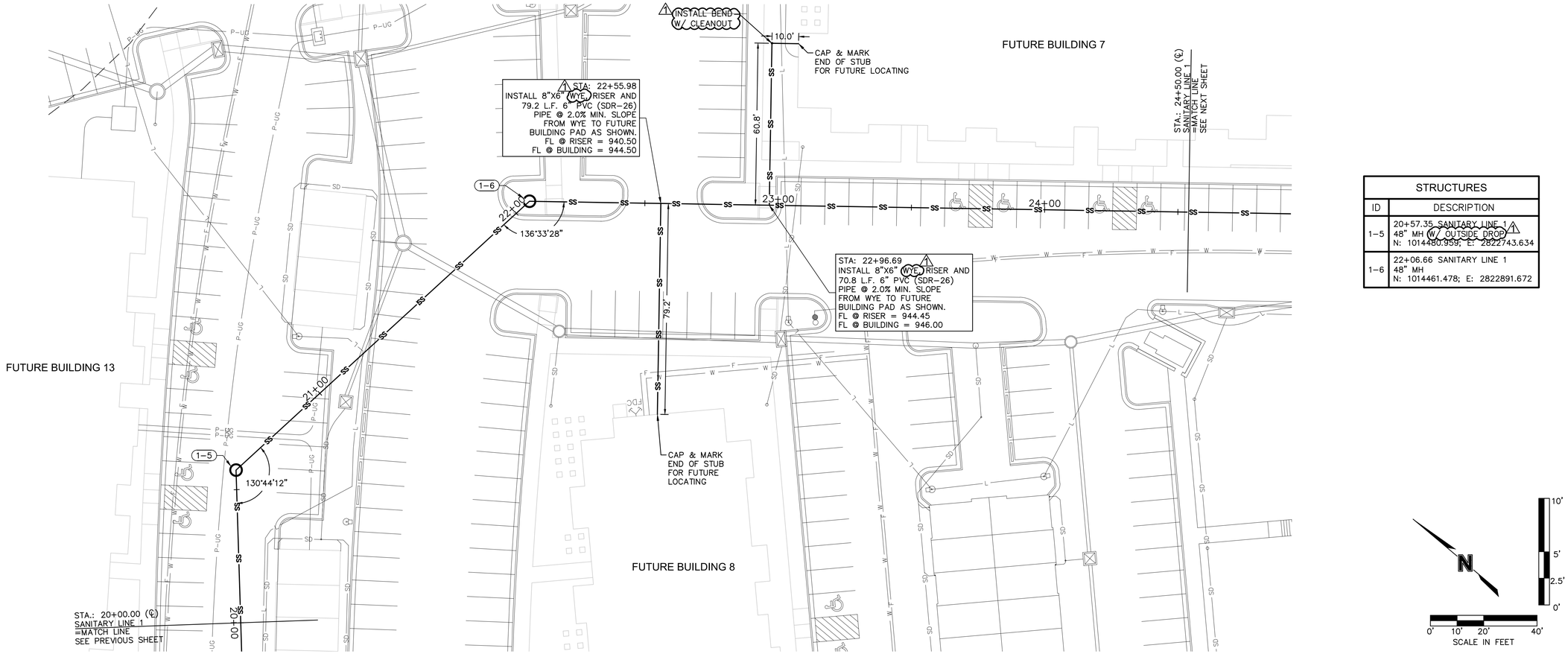
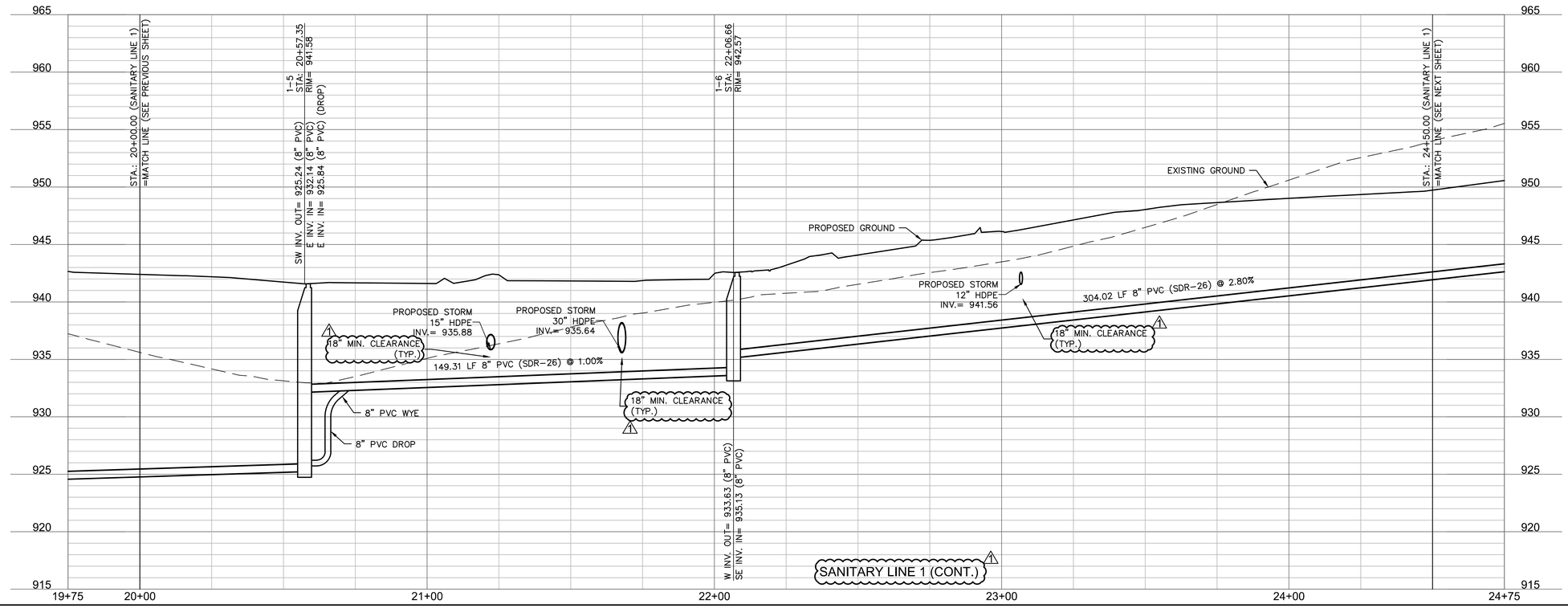


STRUCTURES	
ID	DESCRIPTION
1-5	20+57.35 SANITARY LINE 1 48" MH (W/ OUTSIDE DROP) (1) N: 1014480.959; E: 2822743.634
1-6	22+06.66 SANITARY LINE 1 48" MH N: 1014461.478; E: 2822891.672



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SHEET
C703

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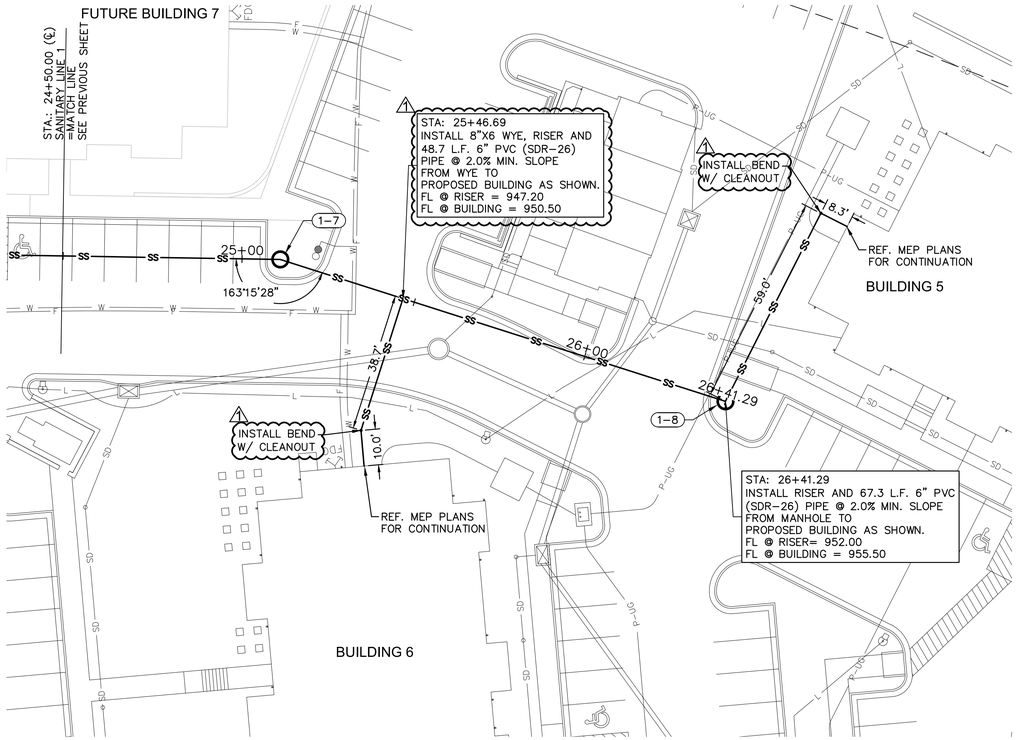
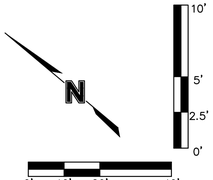
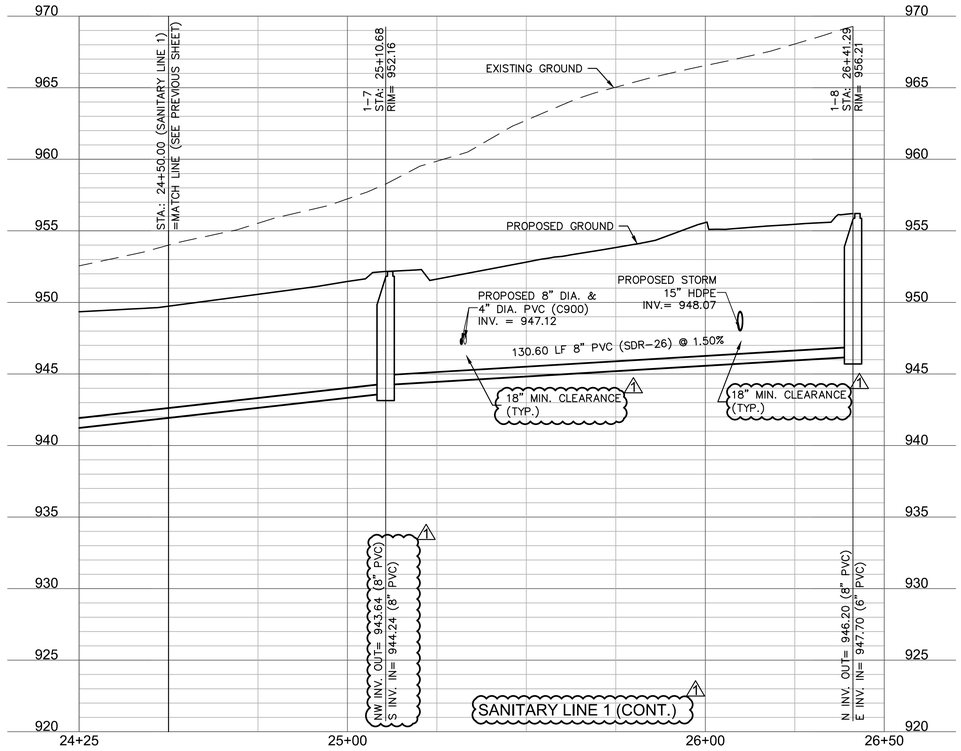


STRUCTURES	
ID	DESCRIPTION
1-7	25+10.68 SANITARY LINE 1 48" MH N: 1014225.414; E: 2823083.250
1-8	26+41.29 SANITARY LINE 1 48" MH N: 1014104.595; E: 2823132.848





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SHEET
C704

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BUILDING 1 CLUBHOUSE

BUILDING 2

BUILDING 3

FUTURE BUILDING 10

INSTALL BEND W/ CLEANOUT

INSTALL CLEANOUT

INSTALL BEND W/ CLEANOUT

STA: 10+62.07
INSTALL 8"X6" WYE, RISER AND 79.0 L.F. 6" PVC (SDR-26) PIPE @ 2.0% MIN. SLOPE FROM WYE TO PROPOSED BUILDING AS SHOWN
FL @ RISER = 937.50
FL @ BUILDING = 942.75

STA: 11+26.63
INSTALL 8"X6" (WYE) RISER AND 39.8 L.F. 6" PVC (SDR-26) PIPE @ 2.0% MIN. SLOPE FROM WYE TO PROPOSED BUILDING AS SHOWN
FL @ RISER = 937.50
FL @ BUILDING = 945.75

STA: 12+00.38
INSTALL RISER AND 171.7 L.F. 4" PVC (SDR-26) PIPE @ 2.0% MIN. SLOPE FROM MANHOLE TO PROPOSED BUILDING AS SHOWN
FL @ RISER = 946.50
FL @ BUILDING = 950.25

STA.: 15+00.00 (℄ SANITARY LINE 2)
=MATCH LINE (SEE NEXT SHEET)

NOTES:
CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 36" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.

STRUCTURES	
ID	DESCRIPTION
2-1	12+00.38 SANITARY LINE 2 48" MH N: 1013673.699; E: 2822605.057
2-2	14+47.73 SANITARY LINE 2 48" MH N: 1013498.863; E: 2822780.036

SCALE IN FEET

PROPOSED GROUND
EXISTING GROUND
PROPOSED STORM 15" HDPE INV.= 934.17
PROPOSED STORM 15" HDPE INV.= 934.69
200.38 LF 8" PVC (SDR-26) @ 1.00%
247.36 LF 8" PVC (SDR-26) @ 1.00%
141.03 LF 8" PVC (SDR-26) @ 8.00%
8" PVC WYE
8" PVC DROP

1-2 STA: 11+24.67 RIM= 942.52
2-1 STA: 12+00.38 RIM= 939.00
2-2 STA: 14+47.73 RIM= 939.27

SW INV. OUT= 915.98 (8" HDPE)
NW INV. IN= 916.58 (8" PVC)
SE INV. IN= 925.16 (8" PVC)
SE INV. IN= 916.58 (8" PVC) (DROP)
NW INV. OUT= 927.16 (8" PVC)
SE INV. IN= 927.76 (8" PVC)
NE INV. IN= 928.81 (4" PVC)
NW INV. OUT= 930.23 (8" PVC)
E INV. IN= 930.83 (8" PVC)

SANITARY LINE 2

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

SANITARY SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

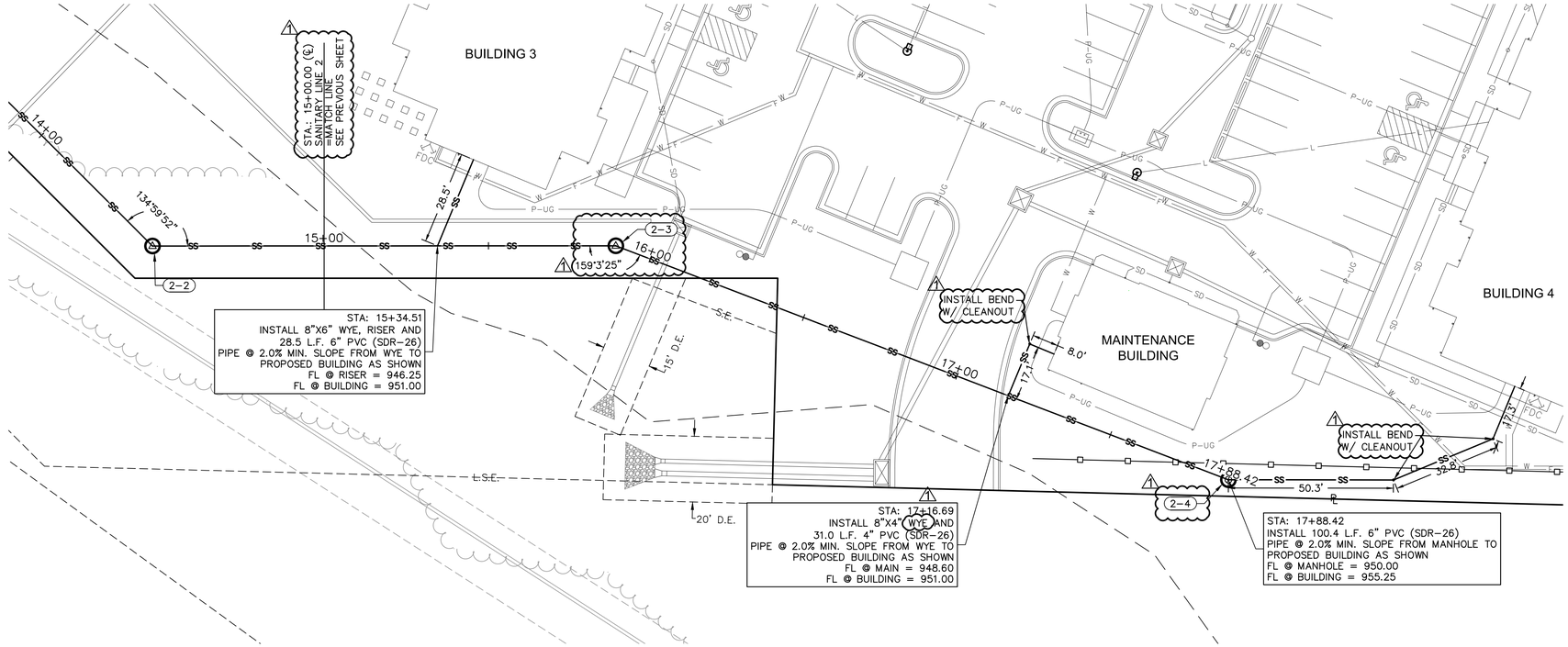
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C705

NOTES:
CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 36" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.



STRUCTURES	
ID	DESCRIPTION
2-3	15+88.77 SANITARY LINE 2 (1) 48" MH W/ OUTSIDE DROP N: 1013498.933; E: 2822921.069
2-4	17+88.42 SANITARY LINE 2 48" MH N: 1013427.662; E: 2823107.565

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SANITARY SEWER PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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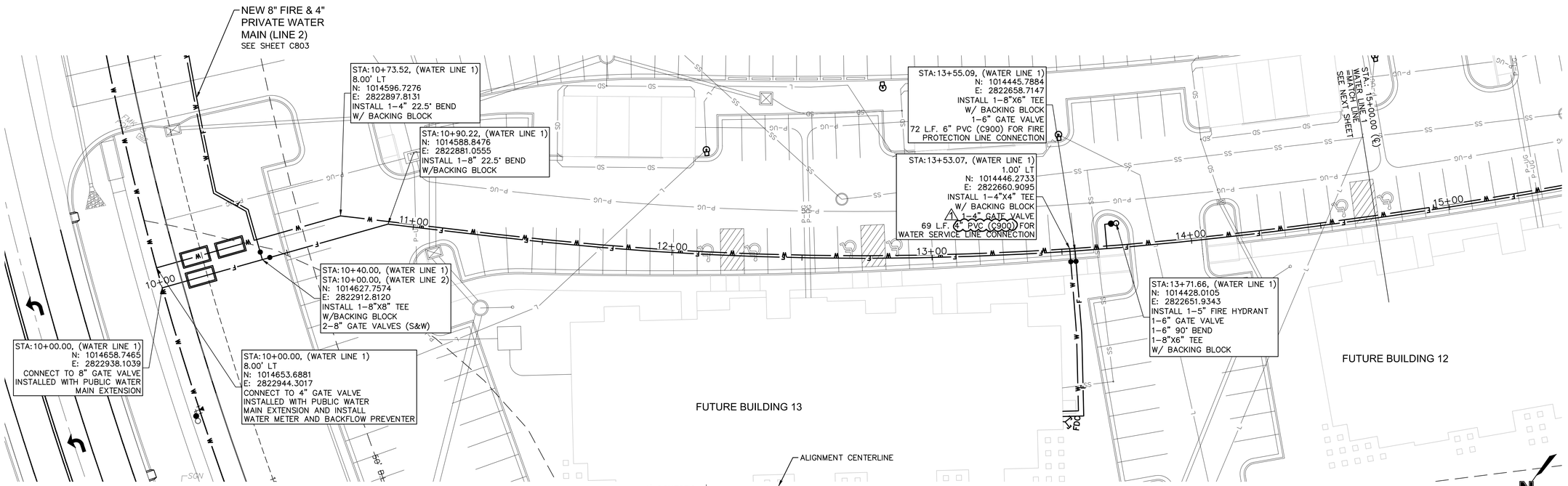
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C706

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_SAN02_ B190012.dwg ~ Layout: SANITARY SEWER PLAN & PROFILE (2) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



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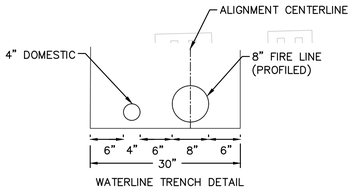
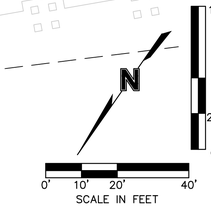
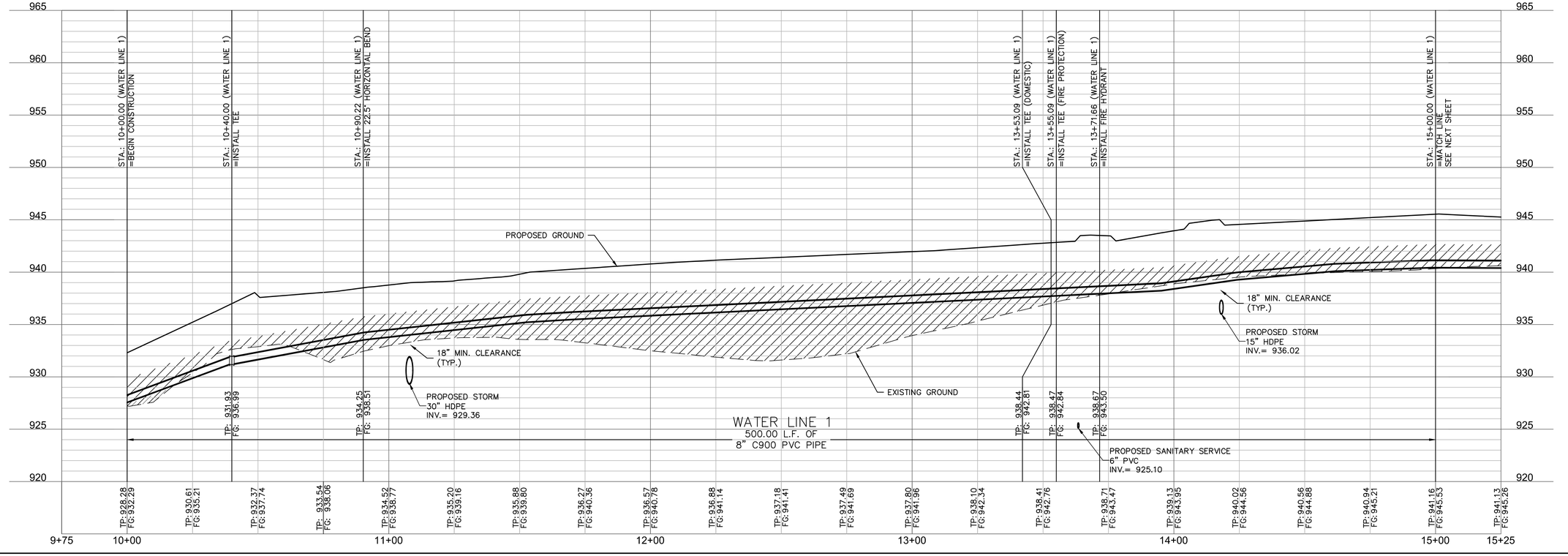


WATERLINE TRENCH DETAIL



SCALE IN FEET



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WATER MAIN PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

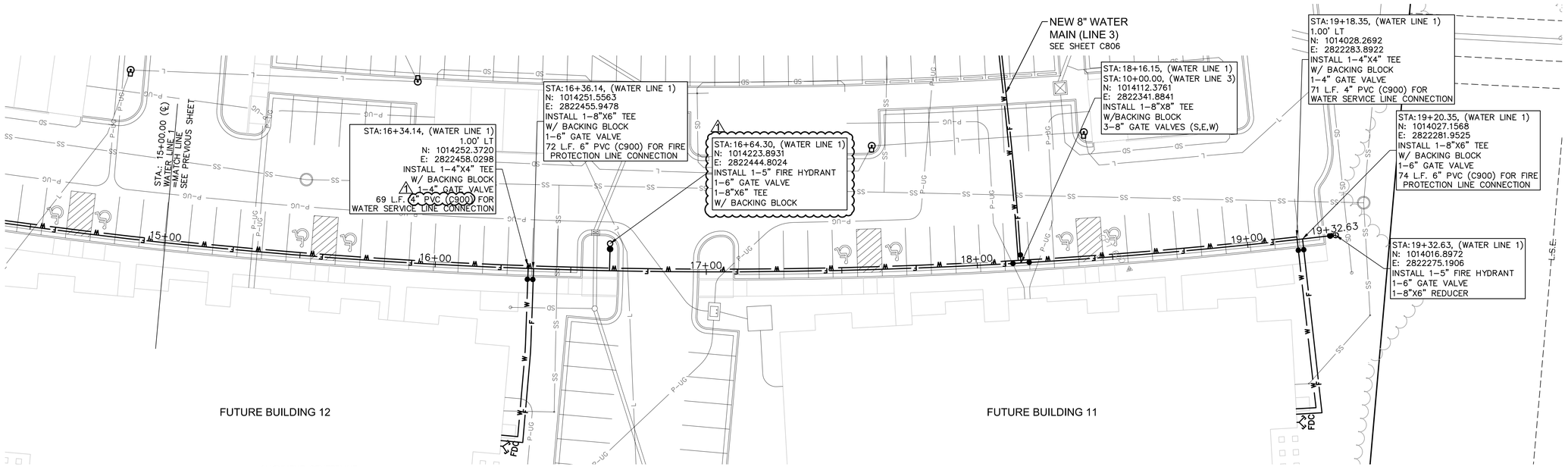
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C801

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_WAT01_ B190012.dwg ~ Layout: WATER MAIN PLAN & PROFILE ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



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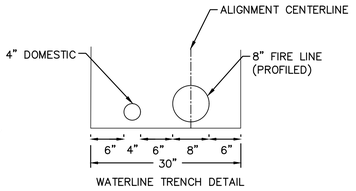
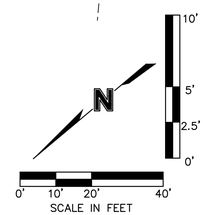
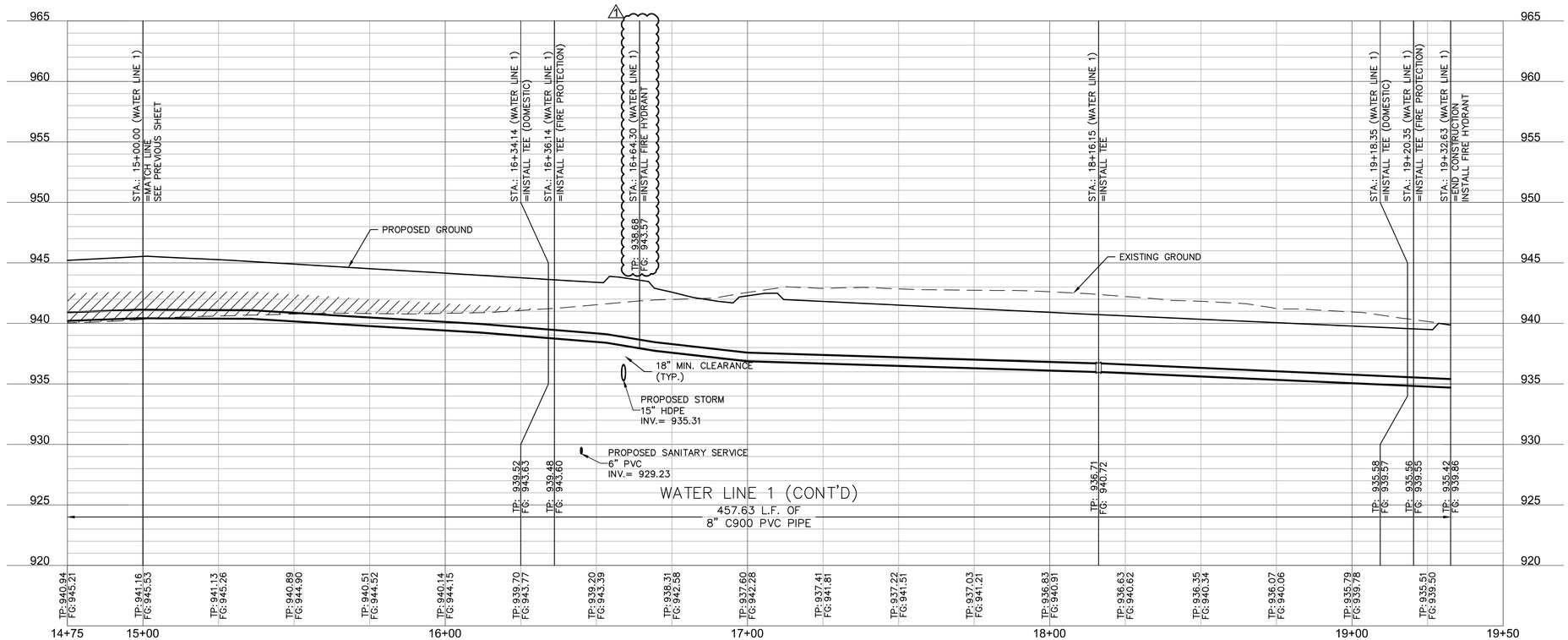


WATERLINE TRENCH DETAIL



SCALE IN FEET



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MO# 2015000555

REVISIONS

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1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

WATER MAIN PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

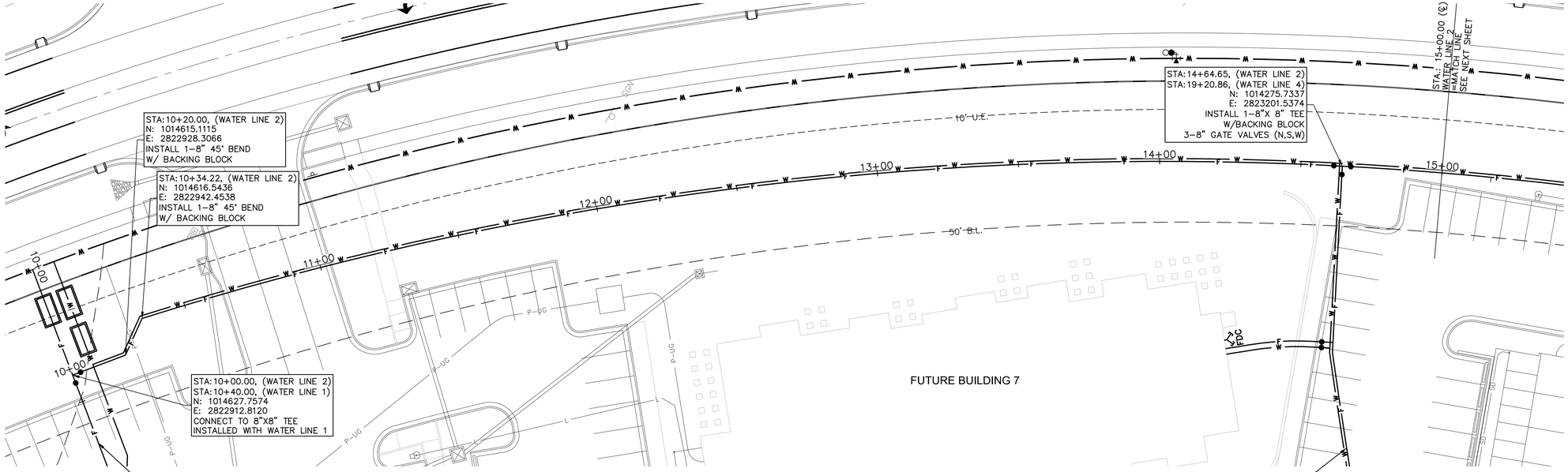
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C802

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_WAT01_ B190012.dwg ~ Layout: WATER MAIN PLAN & PROFILE (2) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



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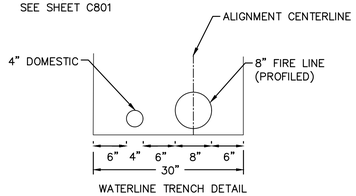
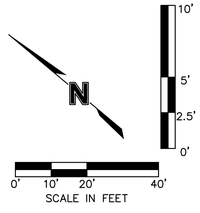
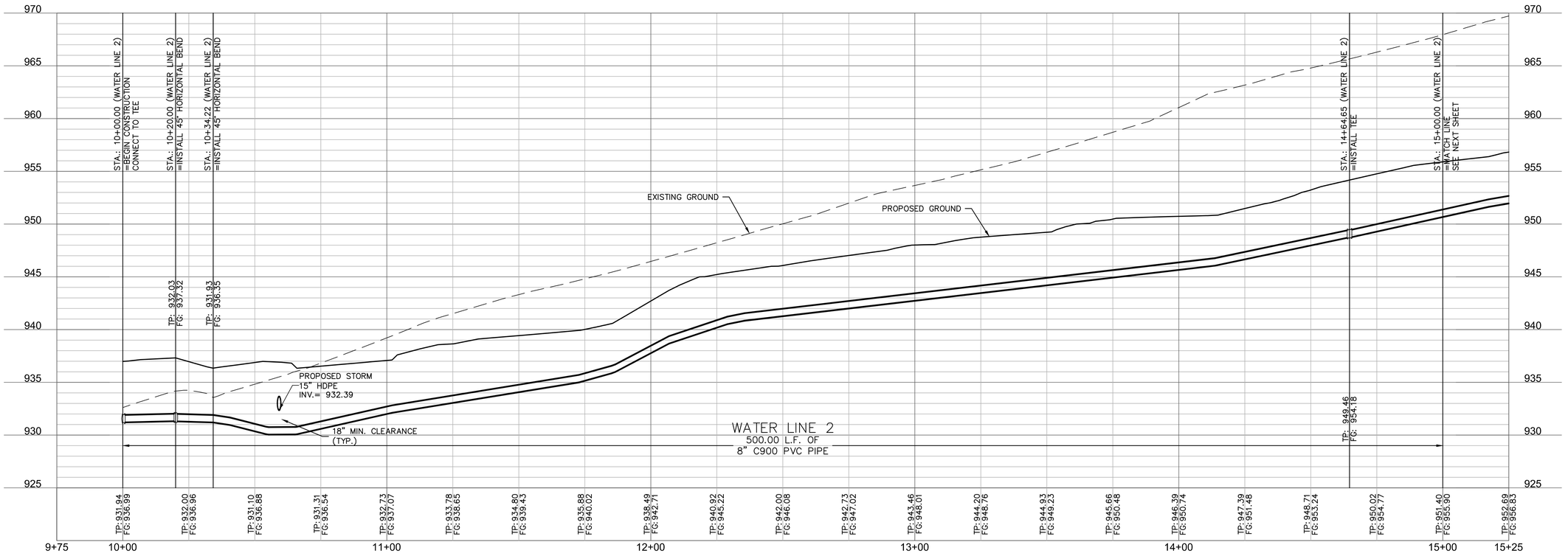


WATERLINE TRENCH DETAIL



SCALE IN FEET



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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
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NICHOLAS D. HEISER, P.E.
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NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1.	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

WATER MAIN PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

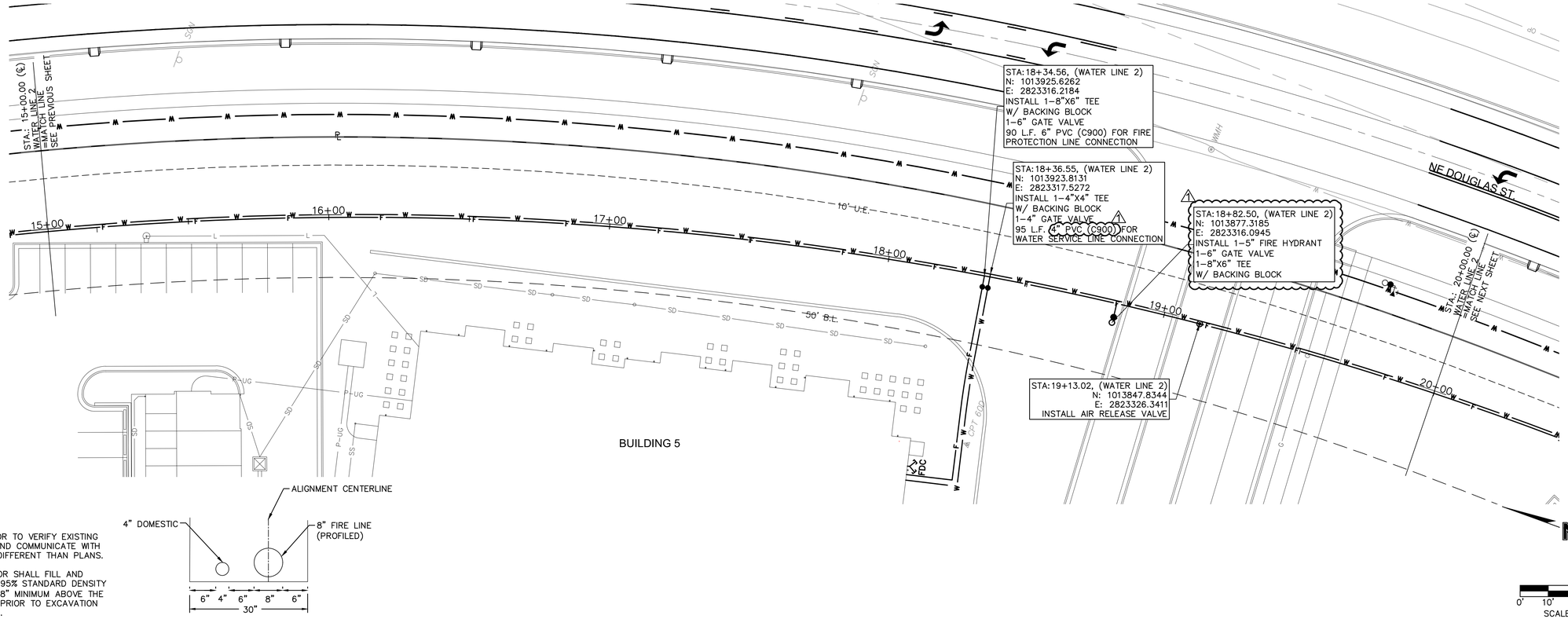
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
C803

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_WAT02_ B190012.dwg ~ Layout: WATER MAIN PLAN & PROFILE ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



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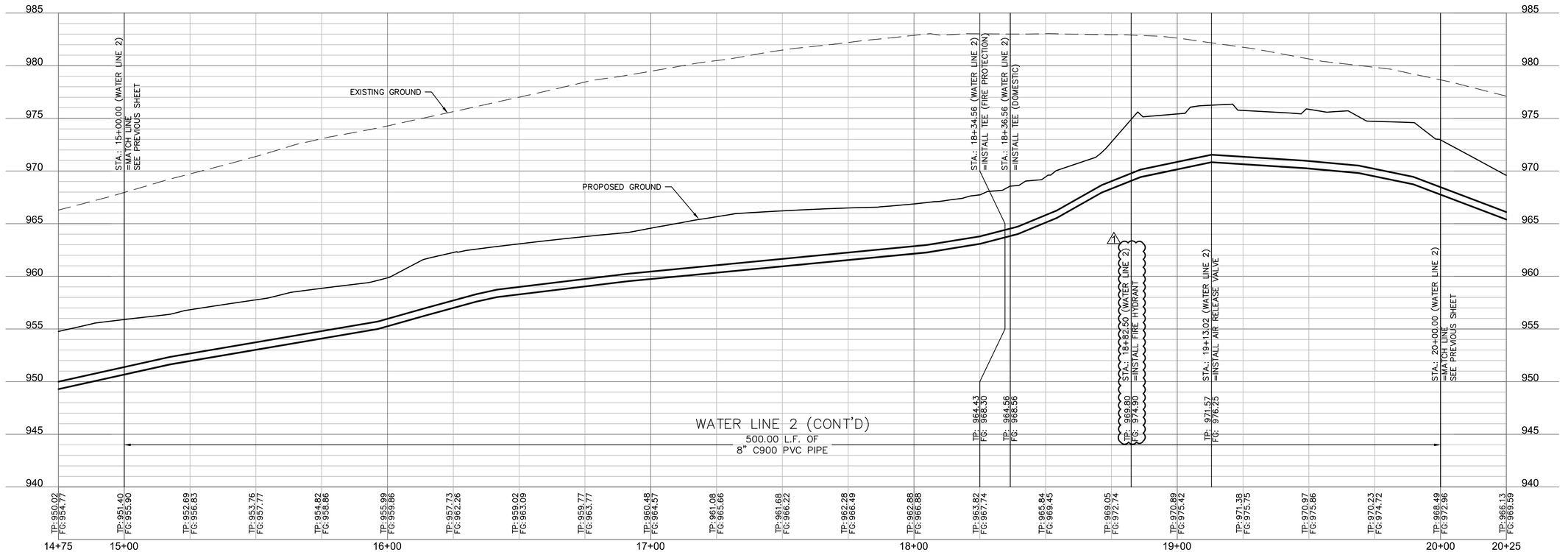
WATERLINE TRENCH DETAIL



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NO. REV.	DATE	REVISIONS DESCRIPTION	BY
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REVISIONS

WATER MAIN PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012.B
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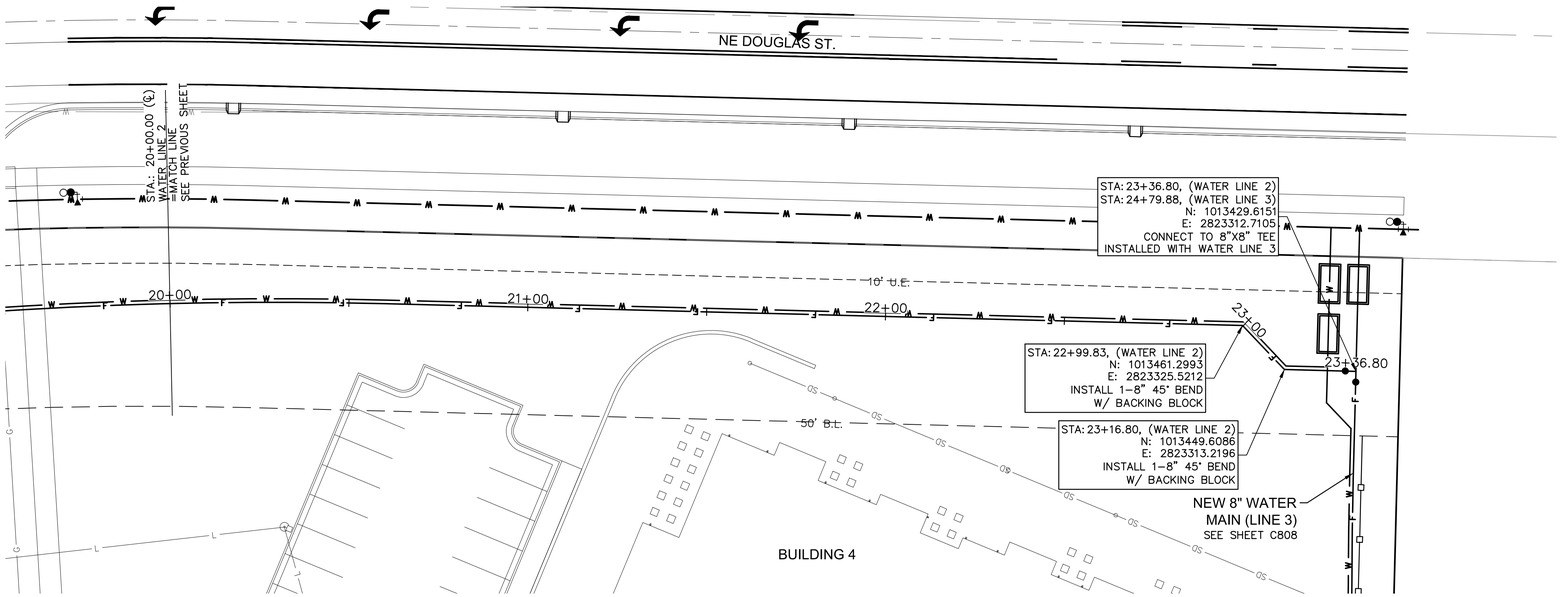
SHEET
C804

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_WAT02_ B190012.dwg ~ Layout: WATER MAIN PLAN & PROFILE (2) ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



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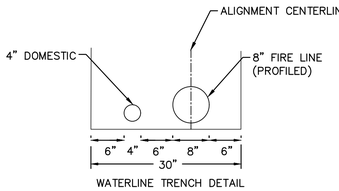
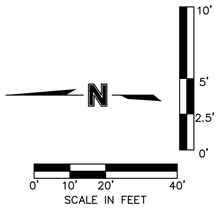
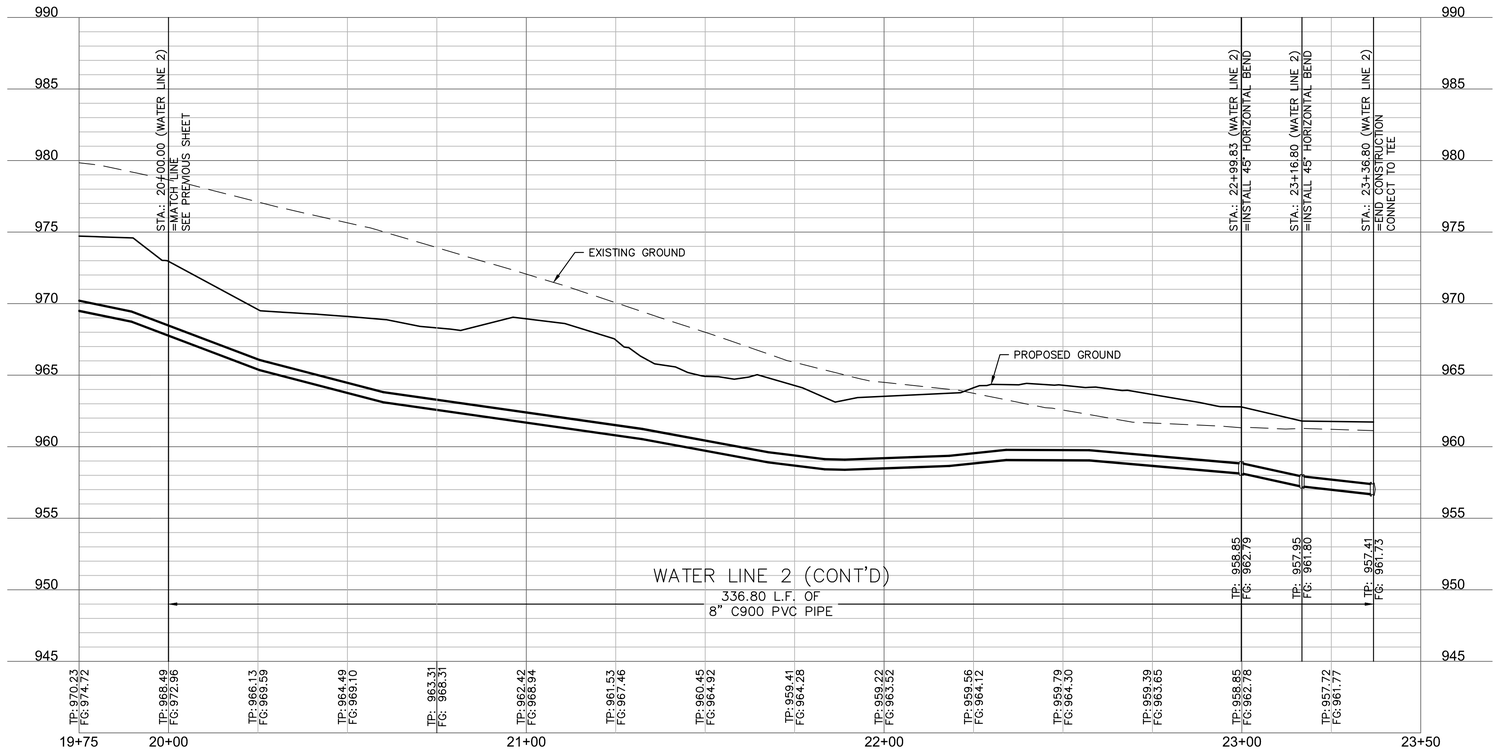


WATERLINE TRENCH DETAIL



SCALE IN FEET



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MO CERTIFICATE OF AUTHORITY #:001592
KS CERTIFICATE OF AUTHORITY #:E-1081
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STATE OF MISSOURI
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NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

WATER MAIN PLAN & PROFILE
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C805

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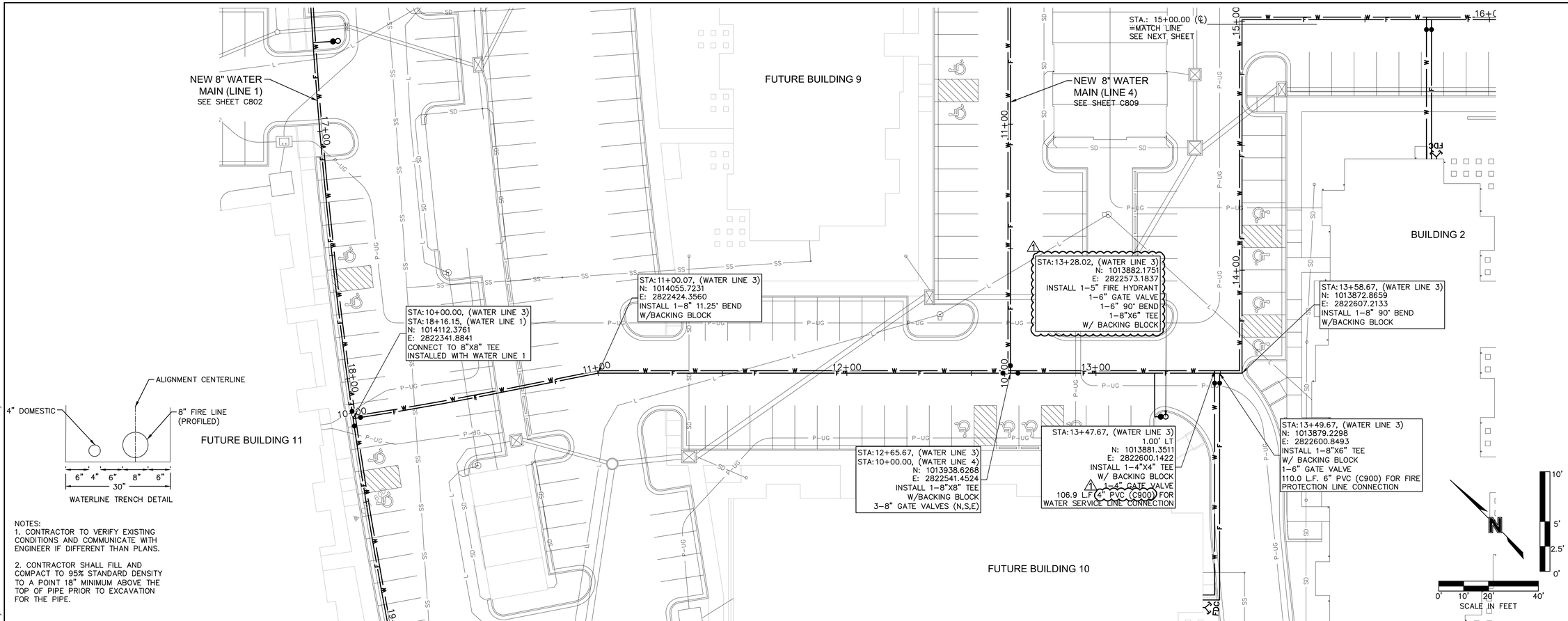

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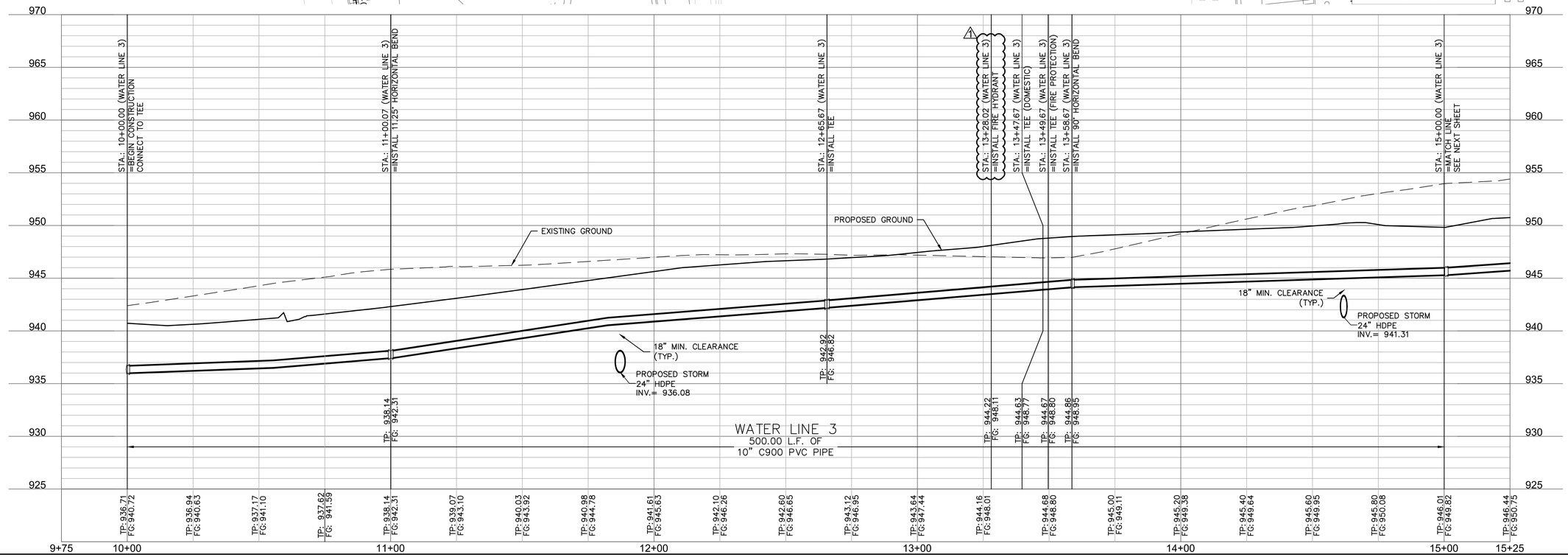

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KS CERTIFICATE OF AUTHORITY # E-2046
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WATER MAIN PLAN & PROFILE
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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project no.: 019-0012.B
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SHEET
C806

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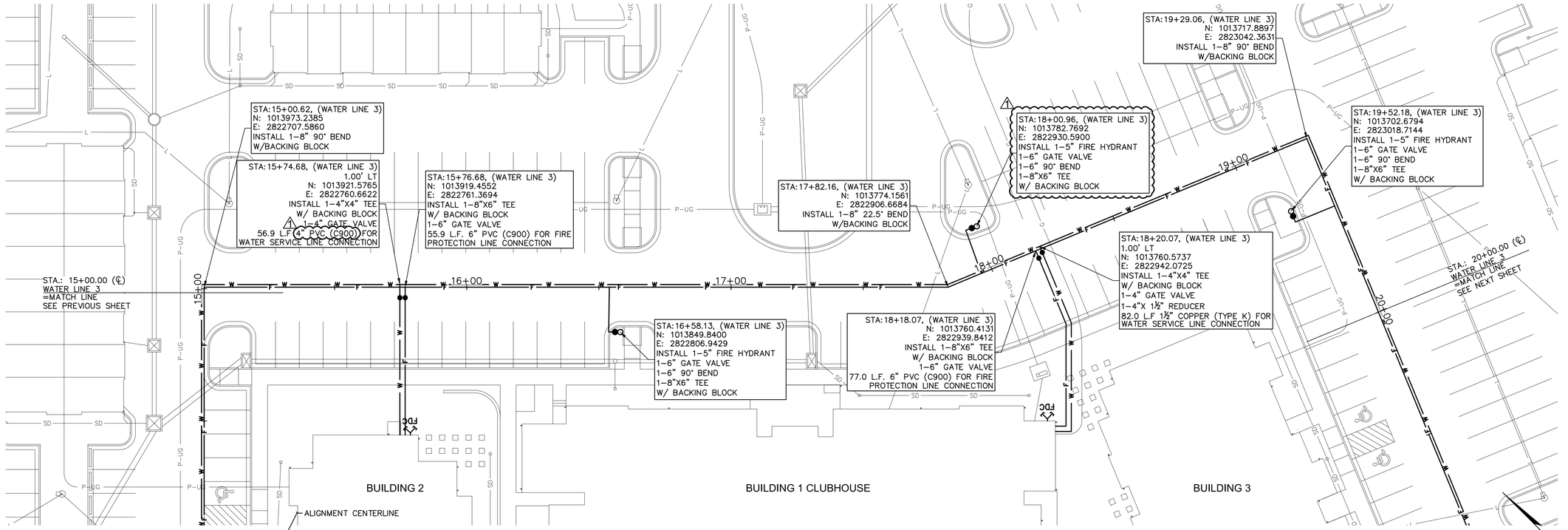

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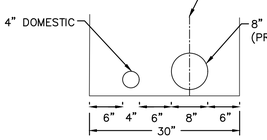
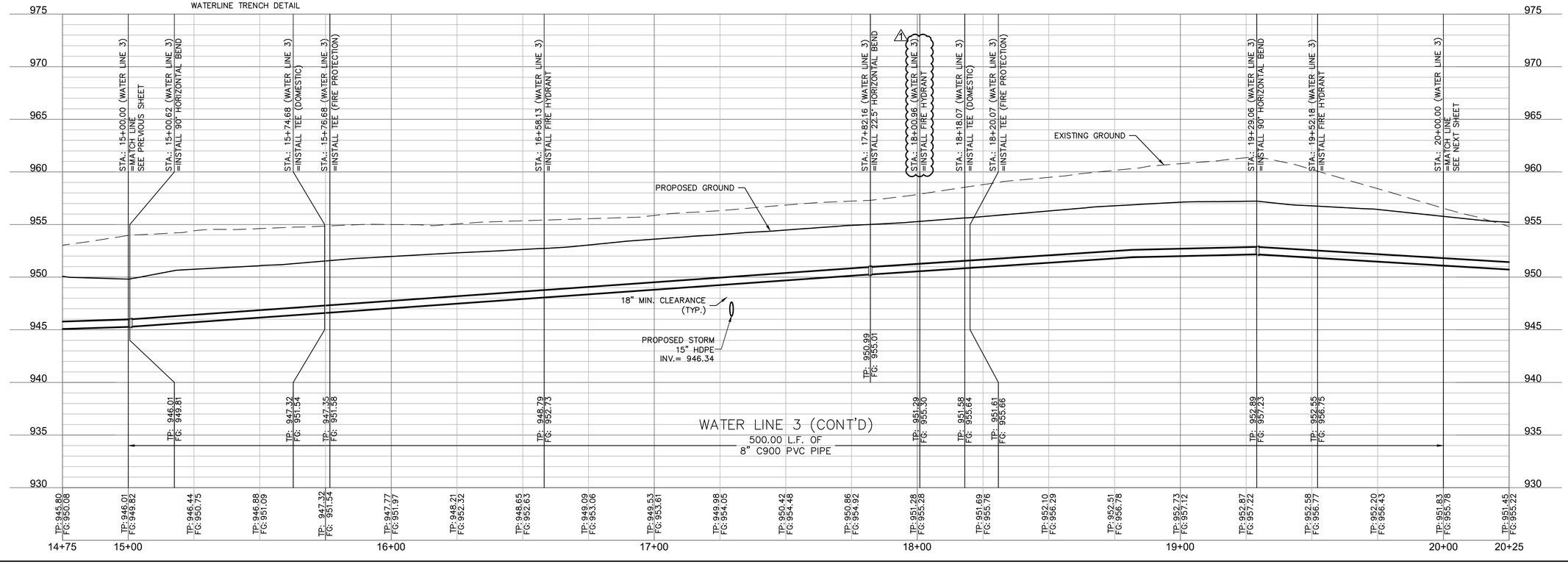


WATERLINE TRENCH DETAIL



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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

REVISIONS

NO. REV.	DATE	BY	REVISIONS DESCRIPTION
1	07 JAN 2021		PERMIT SET / CITY COMMENT REVISIONS

WATER MAIN PLAN & PROFILE
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C807

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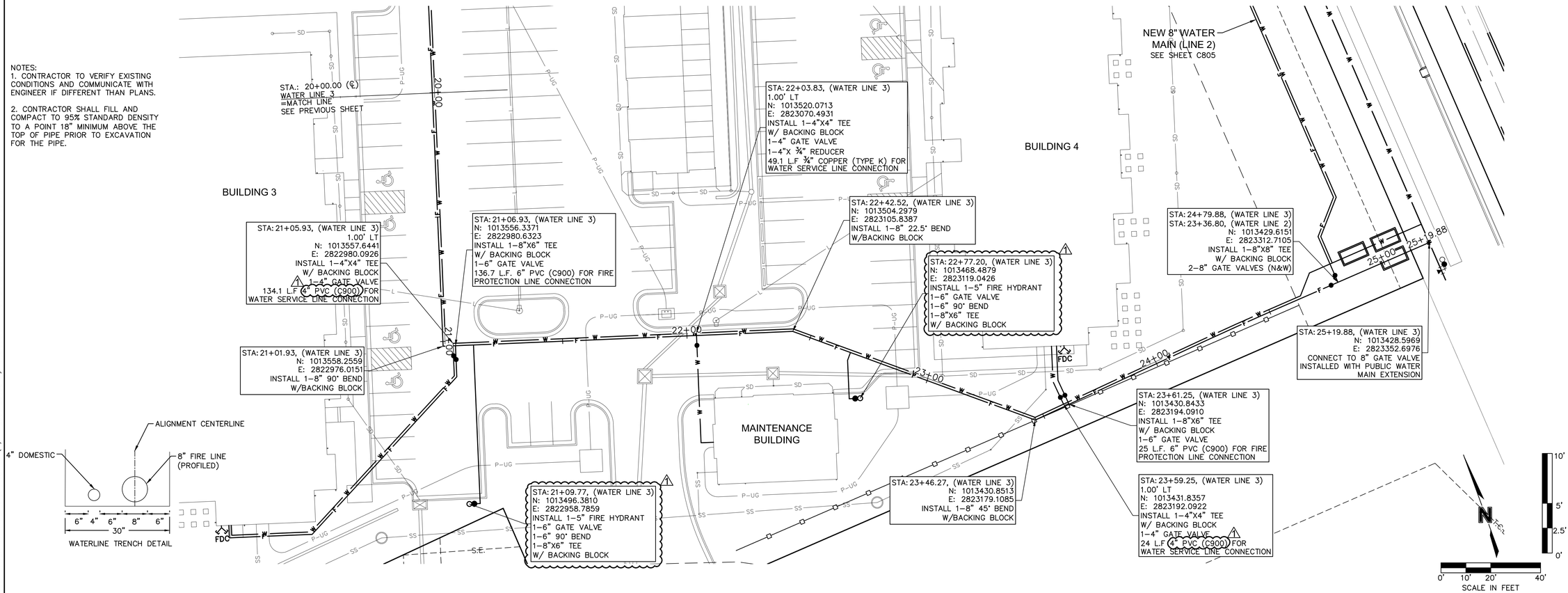
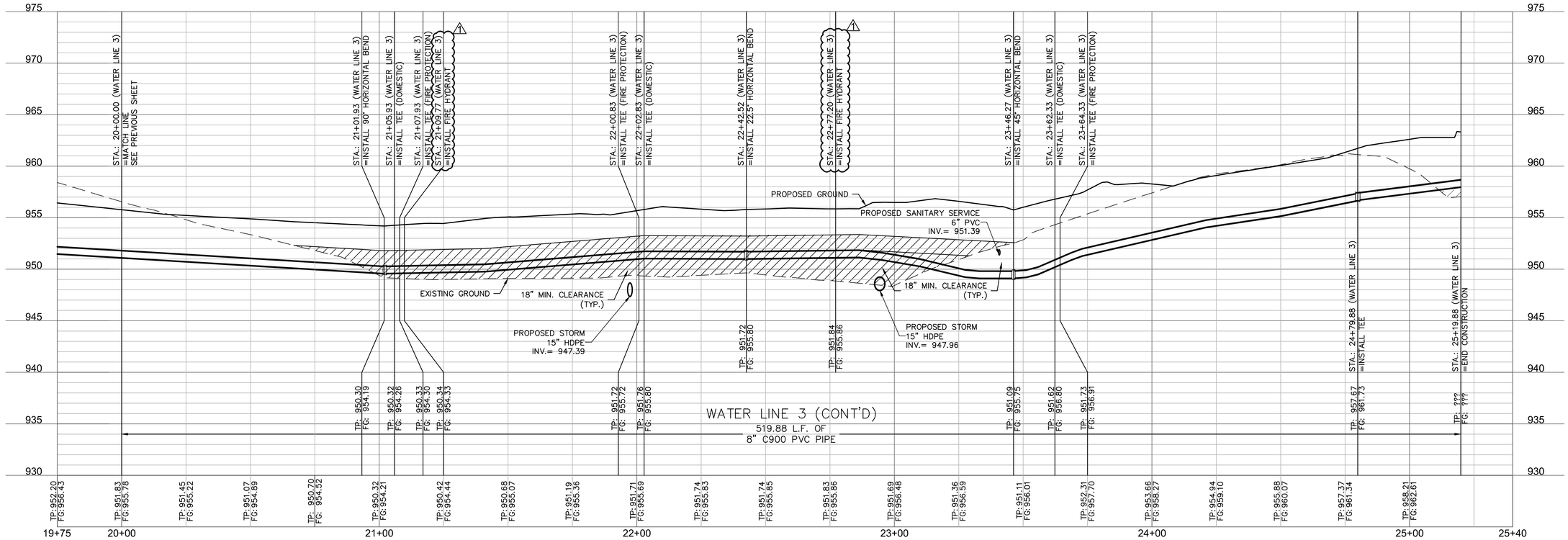
NOTES:
1. CONTRACTOR TO VERIFY EXISTING CONDITIONS AND COMMUNICATE WITH ENGINEER IF DIFFERENT THAN PLANS.

2. CONTRACTOR SHALL FILL AND COMPACT TO 95% STANDARD DENSITY TO A POINT 18" MINIMUM ABOVE THE TOP OF PIPE PRIOR TO EXCAVATION FOR THE PIPE.





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SHEET
C808

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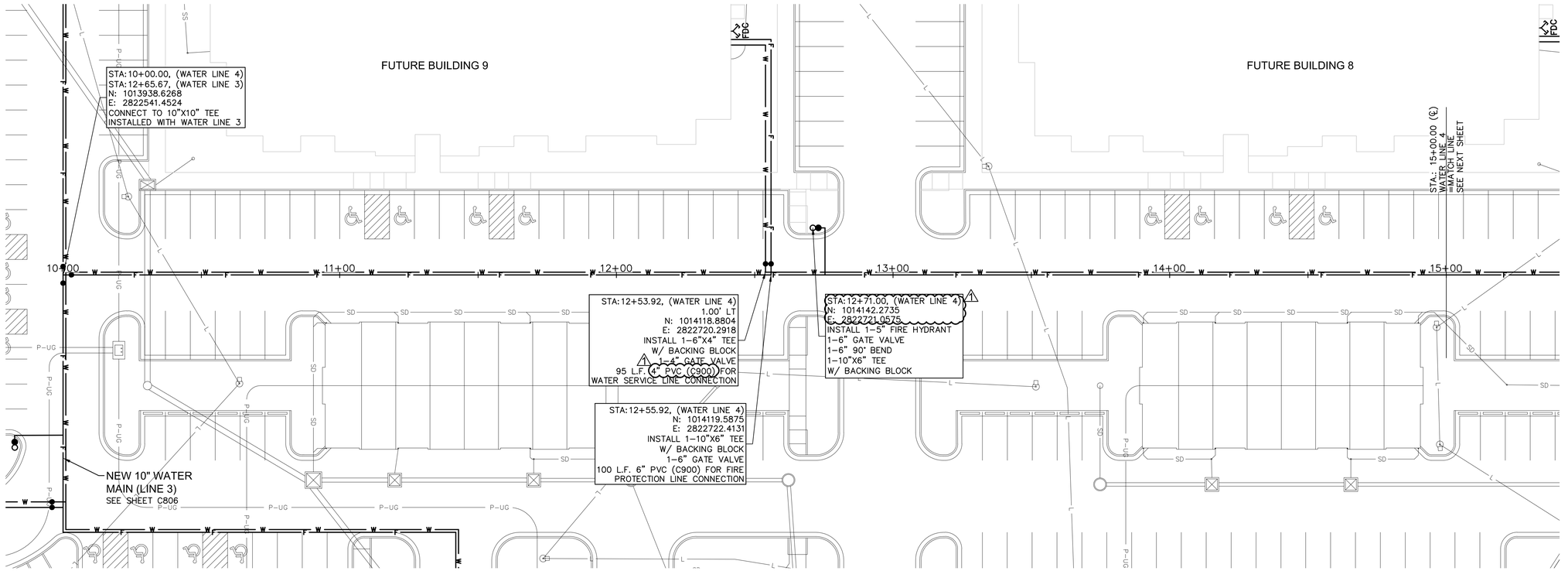

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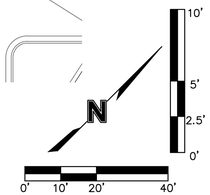

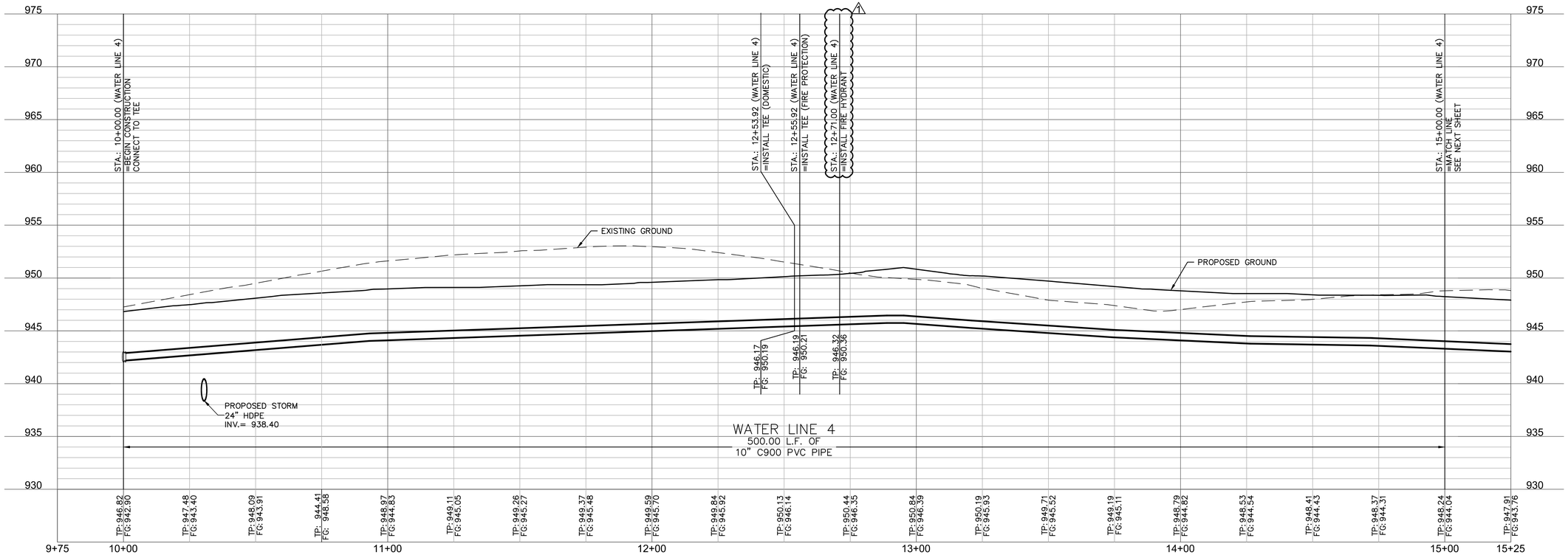

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MO# 2015000555

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SHEET
C809

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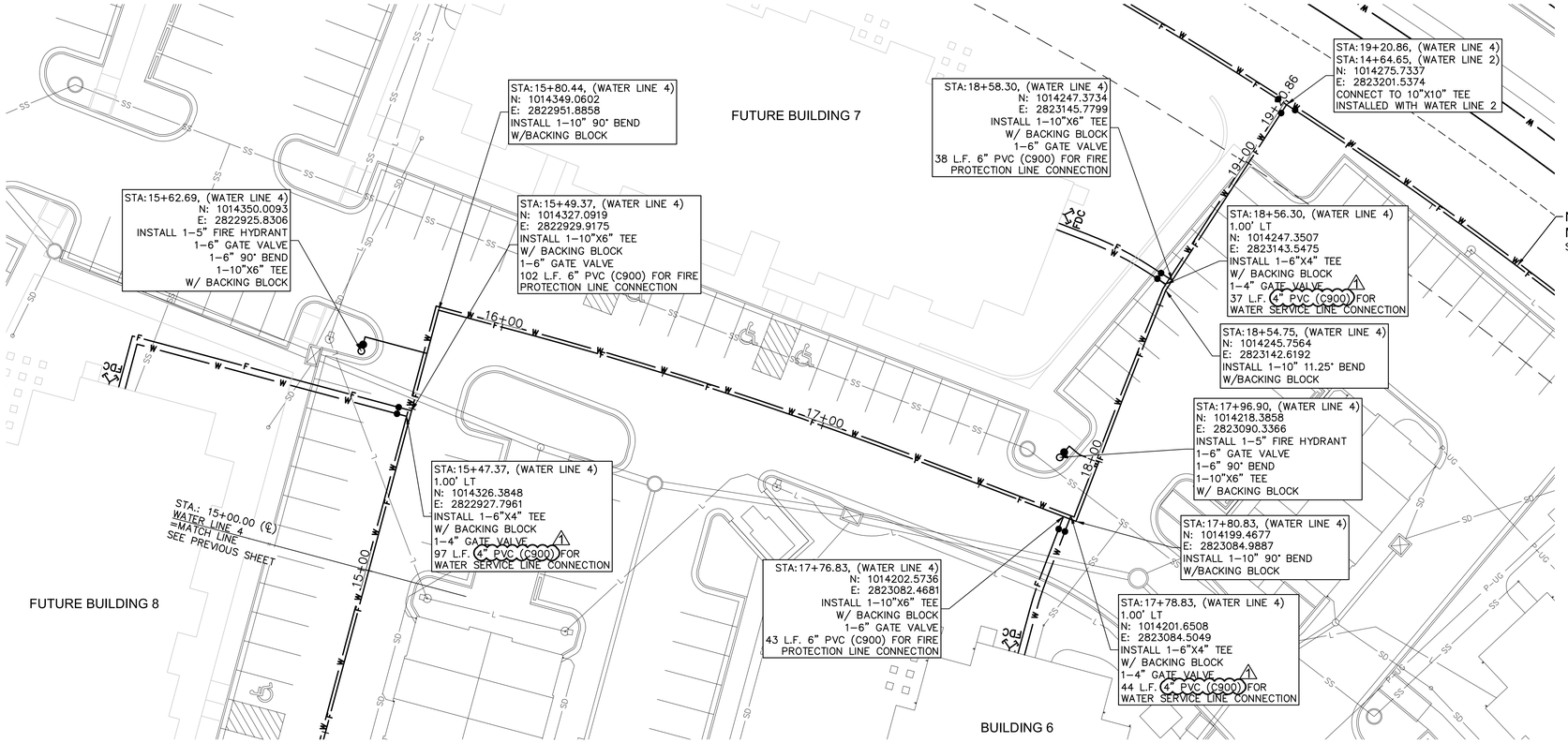

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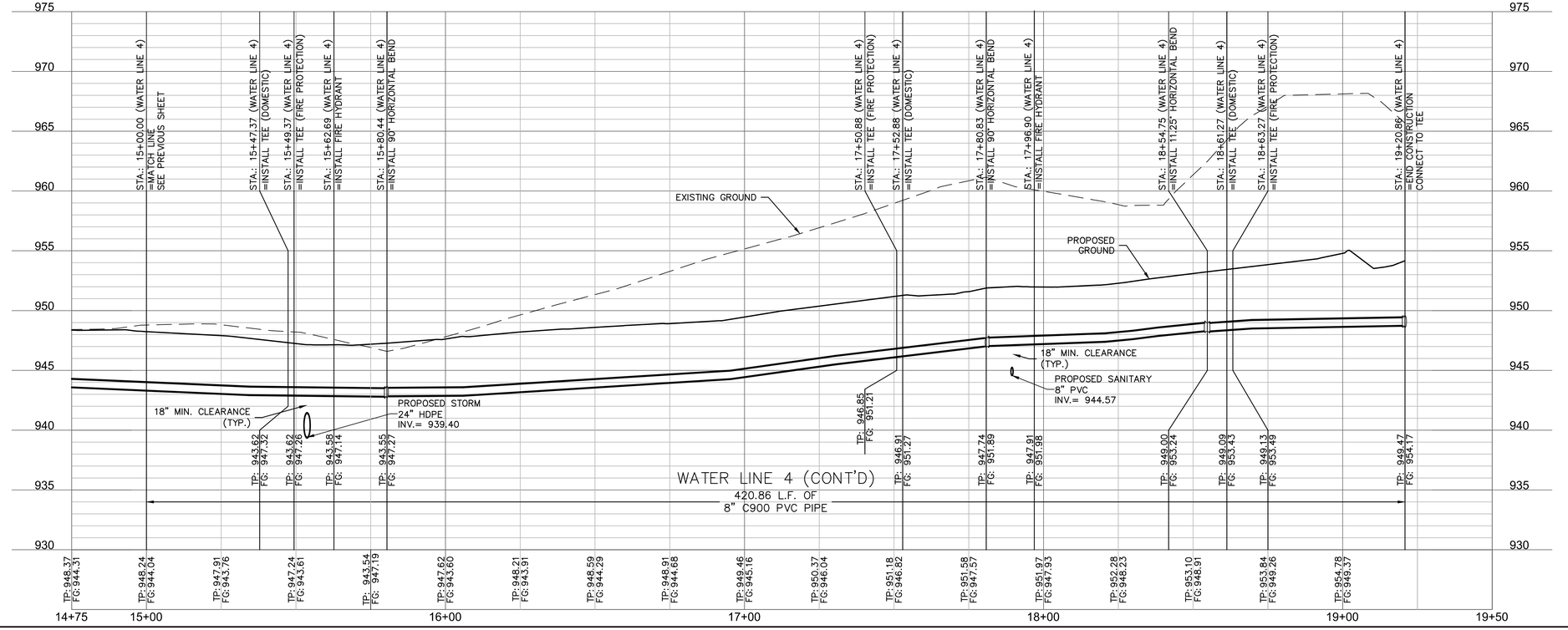

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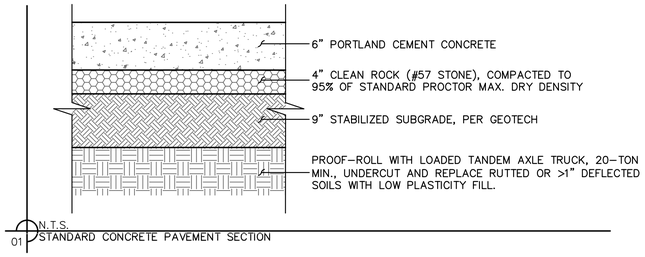
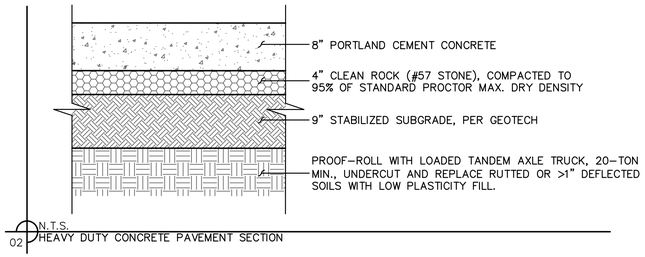
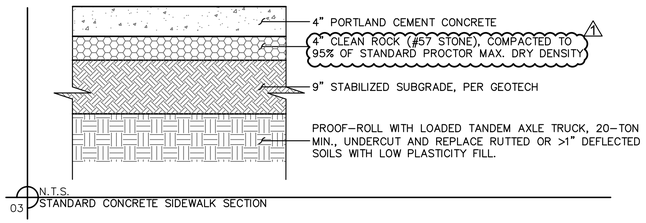


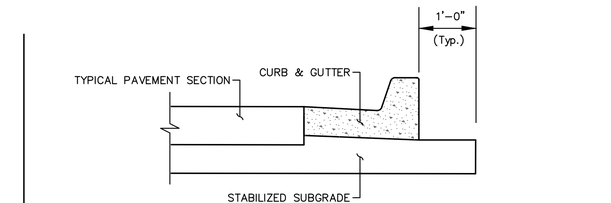
N.T.S.
01 STANDARD CONCRETE PAVEMENT SECTION



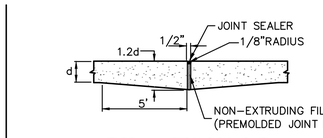
N.T.S.
02 HEAVY DUTY CONCRETE PAVEMENT SECTION



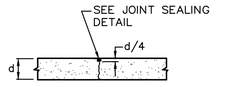
N.T.S.
03 STANDARD CONCRETE SIDEWALK SECTION



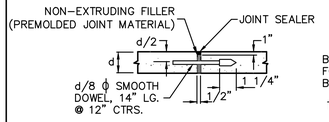
N.T.S.
04 PAVING DETAIL



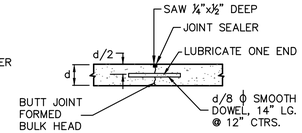
TYPE A – EXPANSION JOINT



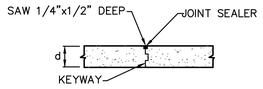
TYPE D – SAWED LONGITUDINAL OR TRANSVERSE



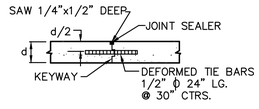
TYPE A – ALTERNATE EXPANSION JOINT



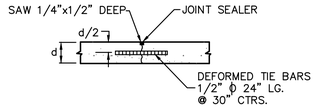
TYPE E – PLANNED TRANSVERSE CONSTRUCTION JOINT (USED AT NORMAL JOINT SPACING)



TYPE B – LONGITUDINAL CONSTRUCTION JOINT



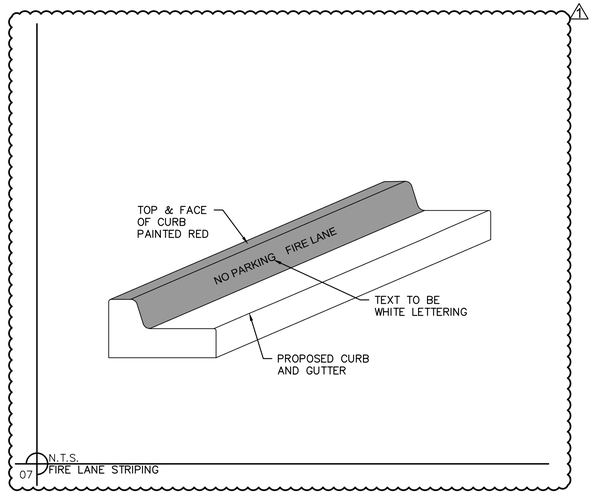
TYPE F – EMERGENCY TIED TRANSVERSE CONSTRUCTION JOINT (USED AT MIDDLE THIRD NORMAL JOINT SPACING)



TYPE C – TIED BUTT LONGITUDINAL CONSTRUCTION JOINT

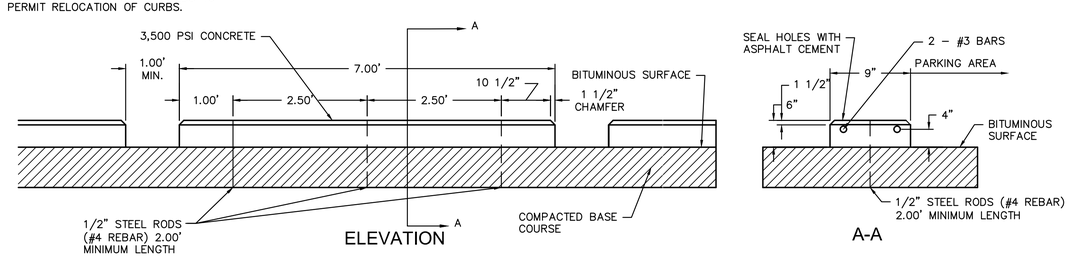
KEYWAYS FOR TYPE B AND F CONSTRUCTION JOINT

N.T.S.
06 CONCRETE PAVEMENT JOINTING DETAILS

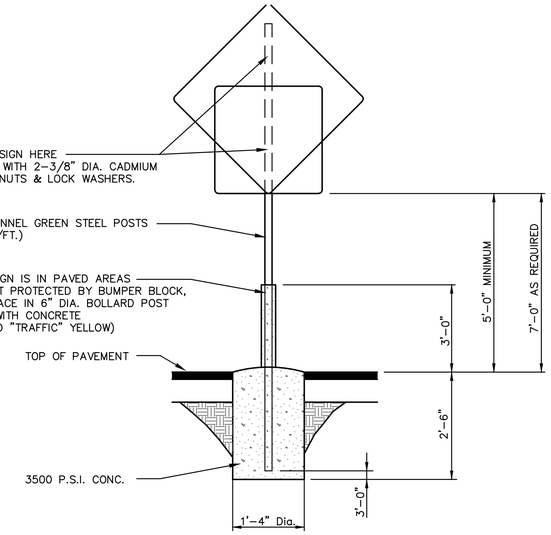


N.T.S.
07 FIRE LANE STRIPING

NOTE:
ANCHOR RODS TO BE SLEEVED OF GREASED THRU CONCRETE CURBS TO PERMIT RELOCATION OF CURBS.

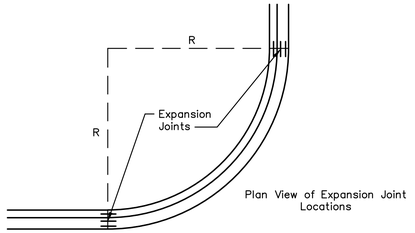


N.T.S.
05 WHEEL STOP DETAIL



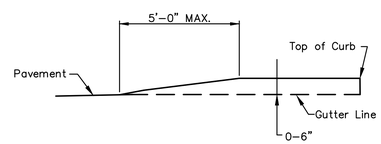
1. ALL SIGNS SHOULD COMPLY WITH U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION'S "UNIFORM TRAFFIC CONTROL DEVICES", AND LOCAL CODES AS SPECIFIED. MOUNT SIGNS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. IF ANY SIGN PROTRUDES MORE THAN 1'-0" PAST THE CENTER LINE OF THE POST IT IS MOUNTED TO THE BOTTOM OF THE SIGN SHALL BE SET AT 7'-0" INSTEAD OF 5'-0".
3. ALL SIGNS MAY NOT BE APPLICABLE TO THIS PROJECT. USE SIGNS SPECIFIED ON PLOT PLAN.
4. SIGNS SHALL BE LOCATED 2'-6" BEHIND CURB WHERE THERE IS CURB & GUTTER.

N.T.S.
08 SIGN BASE



NOTES:
1. 3/4" EXPANSION JOINTS WITH 2' DOWELS TO BE PLACED AT RADIUS POINTS AND AT 150' INTERVALS. THESES DOWELS SHALL BE GREASED AND WRAPPED ON ONE END WITH EXPANSION TUBES.
2. 2" DEEP CONTRACTION JOINTS SHALL BE INSTALLED AT APPROXIMATELY 10' INTERVALS.
3. FIX DOWELS WITH BAR CHAIRS OR EQUAL.

N.T.S.
09 EXPANSION JOINT PLACEMENT DETAIL



N.T.S.
10 CURB TERMINUS DETAIL

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KS CERTIFICATE OF AUTHORITY # E-2014
1301 WILLOW ROAD, SUITE A
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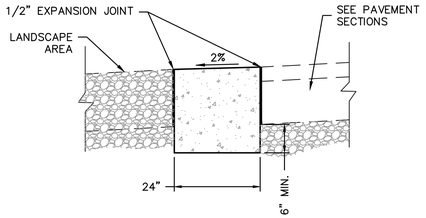
SHEET
C901

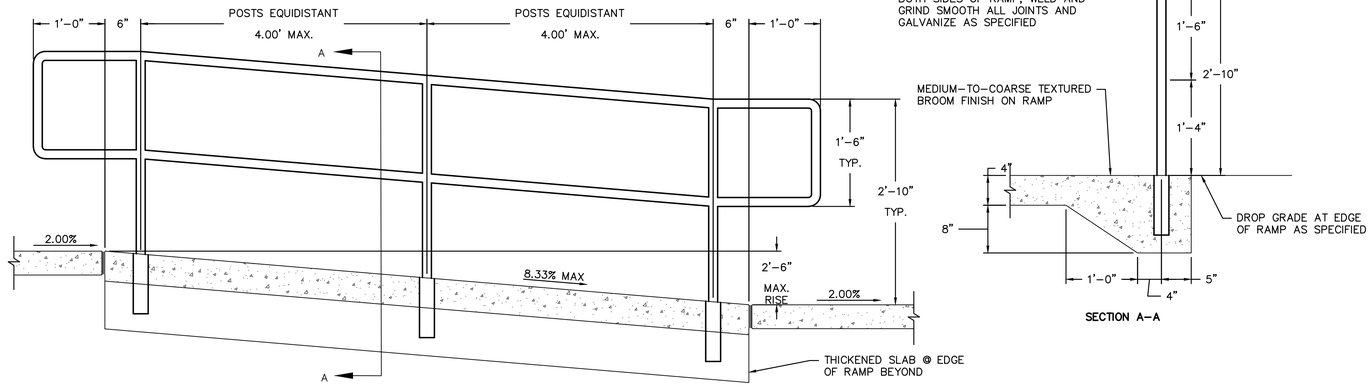
File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_DTL01_ B190012.dwg ~ Layout: DETAIL SHEET ~ Last Saved By: mdiebolt ~ Plot Date: 2019.10.01 03:03 PM



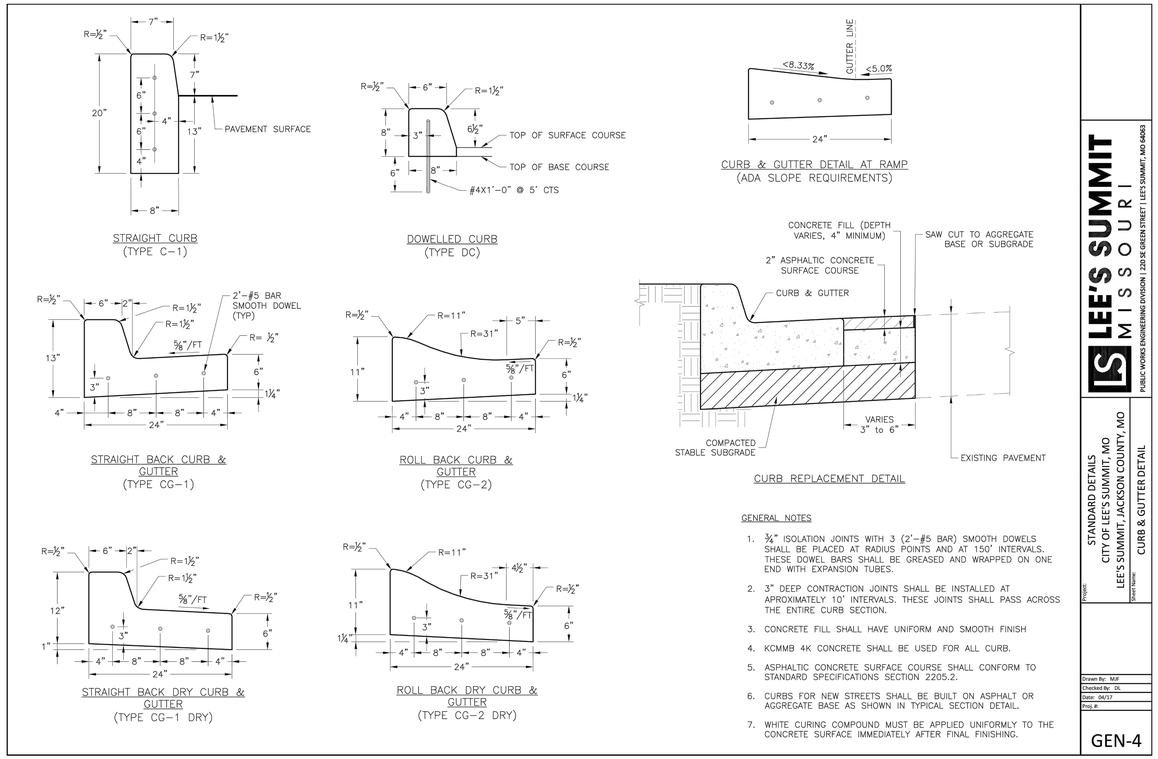
GENERAL NOTES:

1. 3/4" ISOLATION JOINTS WITH 5/8" DIA. X 2' SMOOTH DOWELS SHALL BE PLACED AT RADIUS POINTS AND AT 150' INTERVALS. THESE DOWEL BARS SHALL BE GREASED AND WRAPPED ON ONE END WITH EXPANSION TUBES.
2. 1" DEEP CONTRACTION JOINTS SHALL BE INSTALLED AT APPROXIMATELY 10' INTERVALS. THESE JOINTS SHALL PASS ACROSS THE ENTIRE CURB SECTION.
3. FIX DOWEL BARS WITH BAR SUPPORTS.

01 N.T.S.
RIBBON CURB DETAIL



02 N.T.S.
SIDEWALK WITH HANDRAIL



GENERAL NOTES

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

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

Project: STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

Sheet Name: CURB & GUTTER DETAIL

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

GEN-4

NOTES:
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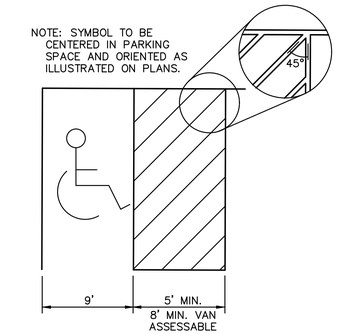
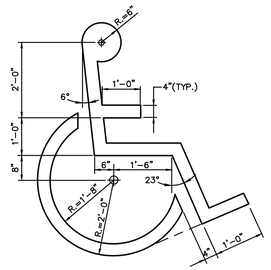
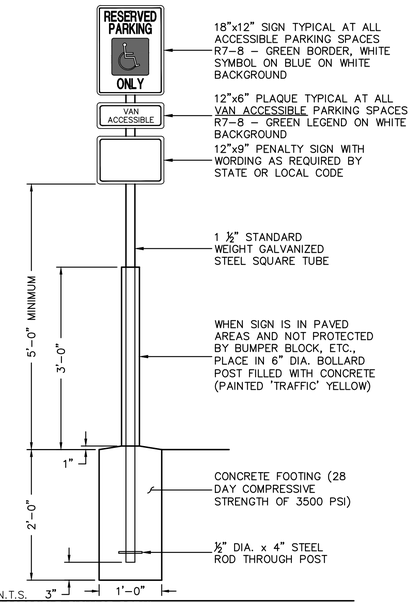
2. GALVANIZED SQUARE TUBE:
POST TUBES – 2"X2"X3/16" 12GA.
POST TUBE SHALL MEET ASTM A1011 GRADE 50.
POST TUBE GALVANIZED AS PER ASTM A653 GRADE 90.
ANCHOR TUBE – 2-3/4"x2-3/4"x3/16" 12GA.
HEAVY DUTY ANCHOR TUBE SHALL MEET ASTM A500 GRADE B.
STRUCTURAL TUBE AND STEEL SHALL BE HOT DIP GALVANIZED PER ASTM A123

THE UPPER SIGN POST SHALL TELESCOPE INSIDE THE ANCHOR TUBE A MINIMUM OF 12". THE ANCHOR TUBE SHALL BE A MINIMUM 27" DEEP WITH 3" MIN., 4" MAX. EXPOSED ABOVE FINISH GRADE.





04 N.T.S.
ACCESSIBLE STRIPING DETAIL



05 N.T.S.
ACCESSIBLE SIGNAGE DETAIL

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1301 BURLINGTON, SUITE 100
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1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

DETAIL SHEET
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

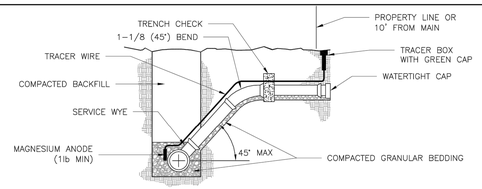
LEE'S SUMMIT, MO

2020

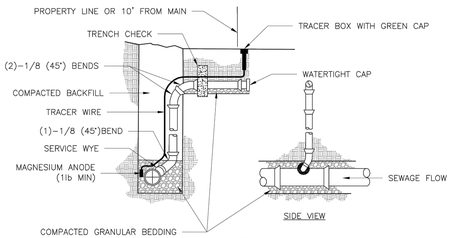
drawn by: M.J.D.
checked by: N.D.H.
designed by: M.J.D.
QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
C902

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_DTL01_ B190012.dwg ~ Layout: DETAIL SHEET (1) ~ Last Saved By: mdlebolt ~ Plot Date: 2019.10.01 03:03 PM



STANDARD INSTALLATION
NOT TO SCALE



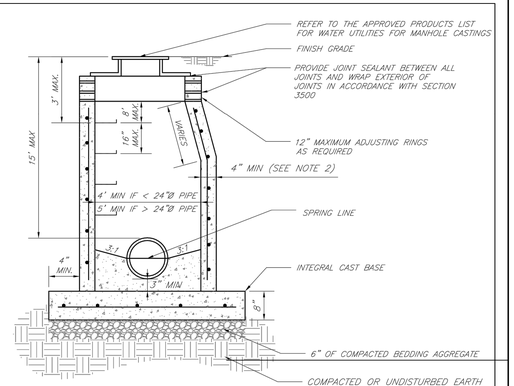
VERTICAL RISER
NOT TO SCALE

NOTES:
1. ALL SEWER STUBS SHALL BE CONSTRUCTED TO PROPERTY LINE OR 10' MINIMUM FROM THE MAIN. WHERE SIDEWALKS ARE PRESENT, CONTRACTOR SHALL EXTEND SERVICE LINE UNDER EXISTING SIDEWALK TO TWO FEET BEYOND.
2. ALL NEW CONSTRUCTION OFF SEWER STUBS SHALL BE TEMPORARILY MARKED WITH A MARKING STAKE, 36" ABOVE GROUND AND PAINTED GREEN.
3. IMPERVIOUS TRENCH CHECKS SHALL BE PLACED ON BUILDING SEWER STUBS (AT LEAST 5' AWAY FROM THE SANITARY SEWER MAIN).
4. TRENCH CHECKS ON THE BUILDING SEWER STUBS SHALL EXTEND 6" BELOW THE BOTTOM OF THE PIPE. LENGTH SHALL BE A MINIMUM OF 12", THE HEIGHT OF THE TRENCH CHECK SHALL EXTEND 12" ABOVE THE TOP OF THE PIPE. THE WIDTH OF THE TRENCH CHECK SHALL BE THE WIDTH OF THE TRENCH.
5. SEE SPECIFICATION SECTION 2100 FOR SEWER MAIN BEDDING AND BACKFILL.
6. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER.
7. FOR SERVICES, TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON LOCKABLE TOP. WIRE SHALL BE TAPED OR TIED TO THE PIPE AT 5' INTERVALS.
8. TRACER WIRE BOX SHALL BE INSTALLED WITHIN 1.0' OF PROPERTY LINE.
9. THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT CONNECTORS. WIRE NUTS SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.

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

BUILDING SEWER STUB AND RISER

Date: 04/17 | Drawn By: MJF | Checked By: DL | SAN-1

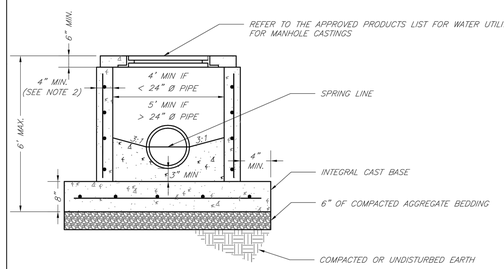


NOTES:
1. PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
2. A WALL THICKNESS NOT LESS THAN ONE-TWELFTH ($t_{1/12}$) OF THE INSIDE DIAMETER OR 4", WHICHEVER IS GREATER, SHALL BE USED WHEN THE MANHOLE DEPTH IS LESS THEN 15'.
3. WATERPROOFING SHALL BE REQUIRED ON THE OUTSIDE OF MANHOLES. THE WATERPROOFING SHALL CONSIST OF A TOTAL DRY FILM THICKNESS OF NOT LESS THAN 14 MILS OF BITUMINOUS COATING.
4. ONLY ECCENTRIC MANHOLE CONES WILL BE ALLOWED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
5. THE FILL CONCRETE FLOW CHANNEL FOR SIDE BRANCHES SHALL BE PLACED TO PROVIDE A SMOOTH TRANSITION INTO THE FLOW LINE.
6. REFER TO THE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR APPROVED MANHOLE GASKET MODELS.
7. REFER TO THE APPROVED PRODUCTS LIST FOR APPROVED STEPS.

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

STANDARD PRECAST MANHOLE – SANITARY SEWER

Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: SAN-2 | Rev: 1/14 | Rev:



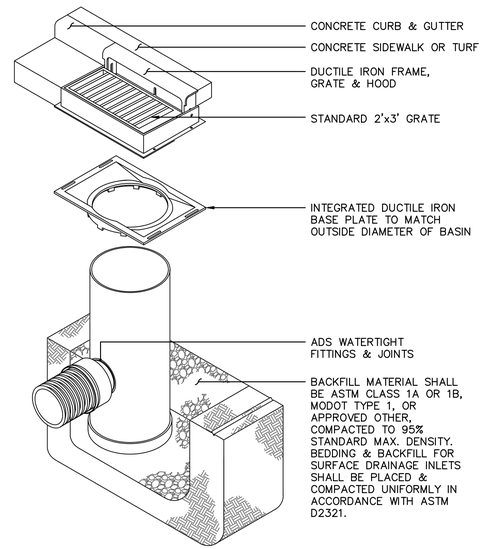
ELEVATION

NOTES:
1. PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
2. A WALL THICKNESS NOT LESS THAN ONE-TWELFTH (1/12) OF THE INSIDE DIAMETER OR 4", WHICHEVER IS GREATER SHALL BE USED.
3. WATERPROOFING SHALL BE REQUIRED ON THE OUTSIDE OF MANHOLES. THE WATERPROOFING SHALL CONSIST OF A TOTAL DRY FILM THICKNESS OF NOT LESS THEN 14 MILS OF BITUMINOUS COATING.
4. THE FILL CONCRETE FLOW CHANNEL FOR SIDE BRANCHES SHALL BE PLACED TO PROVIDE A SMOOTH TRANSITION INTO THE FLOW LINE.
5. REFER TO THE APPROVED PRODUCTS LIST FOR WATER UTILITIES FOR MANHOLE GASKET MODELS.
6. PROVIDE STEPS AS SHOWN ON THE APPROVED PRODUCTS LIST FOR MANHOLE DEPTHS GREATER THAN 4'.

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

SHALLOW PRECAST MANHOLE – SANITARY SEWER

Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: SAN-3 | Rev: 1/14 | Rev:



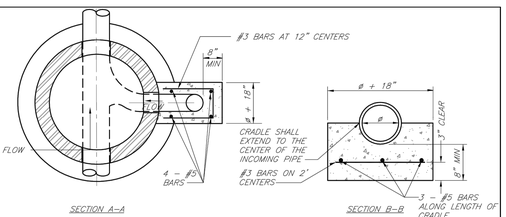
DRAIN BASIN NOTES:

1. BOTH DRAIN BASINS AND CURB INLETS USE STANDARD BASIN ASSEMBLY.
2. UNLESS OTHERWISE COORDINATED WITH ENGINEER, NO SUBSTITUTION FOR ADS NYLOPLAST STRUCTURES, INCLUDING ALL PARTS. ALL CONSTRUCTION SHALL BE PER MANUFACTURER'S STANDARDS AND RECOMMENDATIONS.

DOME COVER

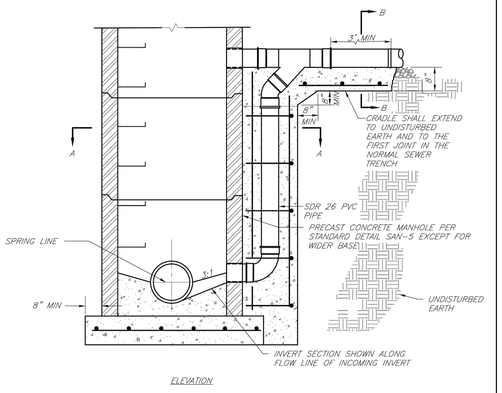
SOLID COVER

02 N.T.S.
ADS NYLOPLAST STRUCTURES



SECTION A-A SECTION B-B

3 - #5 BARS ALONG LENGTH OF CRADLE



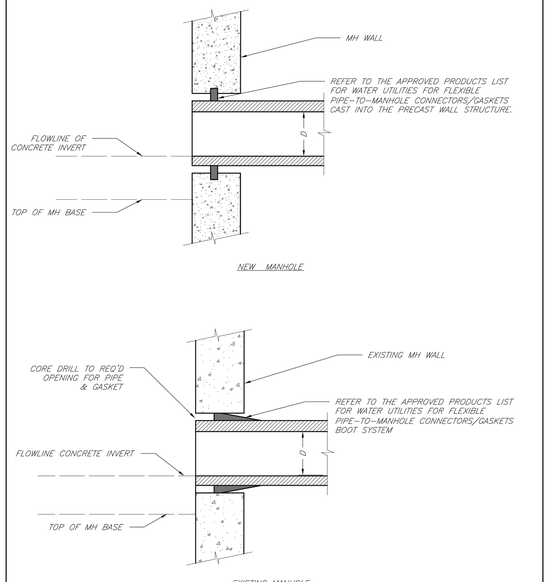
ELEVATION

NOTE:
REFER TO DRAWING SAN-2 FOR MANHOLE DETAILS NOT SHOWN.

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

DROP SANITARY SEWER MANHOLE

Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: SAN-4 | Rev: 1/14 | Rev:



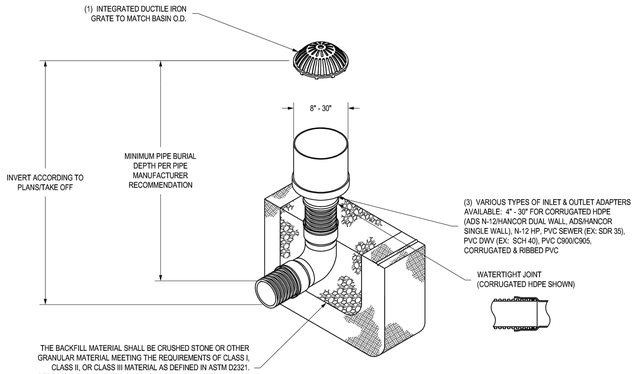
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

MANHOLE WALL CONNECTIONS

Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: SAN-5 | Rev: 1/14 | Rev:

1

NYLOPLAST INLINE DRAIN WITH DOME GRATE



1 - 8" - 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 24").
3 - 8" - 30" DOME GRATES HAVE NO LOAD RATING

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DRAWN BY	EBC	MATERIAL	
DATE	03-25-10		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	03-15-16		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

Nyloplast
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

TITLE
INLINE DRAIN WITH DOME GRATE
QUICK SPEC INSTALLATION DETAIL

DWG NO. 7003-110-657 REV D

olsson
www.olsson.com
OLSSON - CIVIL ENGINEERING
MO CERTIFICATE OF AUTHORITY #:001592
KS CERTIFICATE OF AUTHORITY #:E-1045
NORTH KANSAS CITY, MO 64116
TEL 816.361.1177

STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

REVISIONS

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

DETAIL SHEET
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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SHEET
C903

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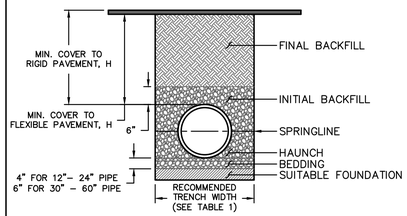


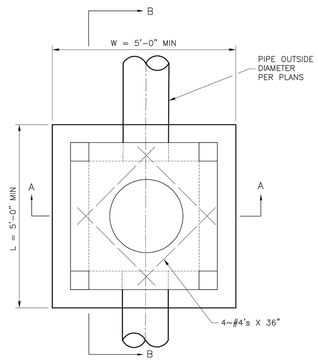
PIPE DIA.	MIN. TRENCH WIDTH*
<4"	O.D.+15"
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

*TRENCH CENTERED ON PIPE

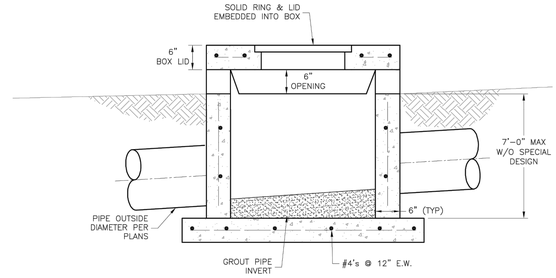
NOTES:

1. ALL HDPE AND PVC PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.
2. IF TRENCH IS EXCAVATED IN ROCK OR HIGH–BEARING STRENGTH SOILS, TRENCH WIDTHS FOR 24" – 60" DIA. MAY BE REDUCED, FROM VALUES IN TABLE 1, TO THE PIPE OD PLUS 12".
3. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
4. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE GEOTECHNICAL ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE GEOTECHNICAL ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
5. BEDDING: SUITABLE MATERIAL SHALL BE ASTM CLASS 1A OR 1B, MODOT TYPE 1, OR APPROVED OTHER, COMPACTED TO 95% STANDARD MAX. DENSITY.. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR PIPE 24" DIAMETER AND LESS; 6" FOR 30"–60" DIAMETER PIPE.
6. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE ASTM CLASS 1A OR 1B, MODOT TYPE 1, OR APPROVED OTHER, COMPACTED TO 95% STANDARD MAX. DENSITY IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. INSTALL AND COMPACT IN 6" MAXIMUM LIFTS.
7. FINAL BACKFILL: EXCEPT WHERE SUPERCEDED BY CITY REQUIREMENTS FOR RIGHT–OF–WAY CONSTRUCTION, GEOTECHNICAL REQUIREMENTS FOR UTILITY TRENCH BACKFILL, AND OTHER CONSIDERATIONS, SUITABLE MATERIAL MAY BE SITE SOILS COMPACTED TO 95% STANDARD MAX. DENSITY TO WITHIN 12" OF THE PAVEMENT SUBGRADE, AND TO SUBGRADE ELEVATION FOR NON–PAVED AREAS.
8. MINIMUM COVER: MINIMUM COVER, H, IN NON–TRAFFIC RATED APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED PER CITY AND/OR UTILITY STANDARDS AND/OR TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" FOR UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR UP TO 60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE OR TO TOP OF RIGID PAVEMENT.

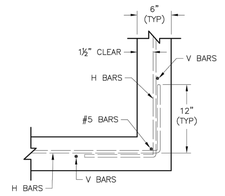
N.T.S.
01 PIPE TRENCHING & BEDDING



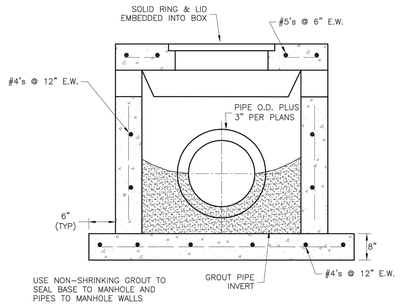
PLAN VIEW



SECTION B–B



WALL CORNER DETAIL



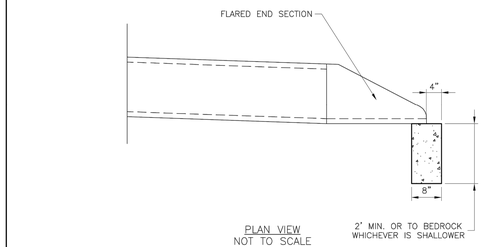
SECTION A–A

GENERAL NOTES:

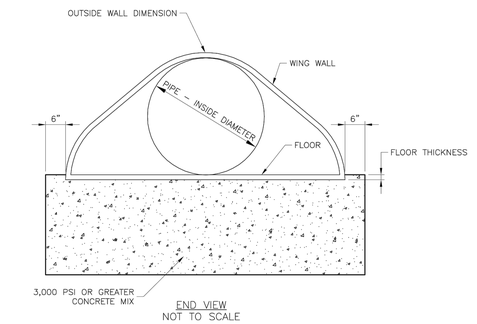
1. LOCATE RING AND COVER OVER OUTLET ON BLANK WALL.
2. USE ¾" CHAMFER ON ALL EXPOSED CONCRETE CORNERS.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
4. STEPS REQUIRED AT 16" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 3' ON BLANK WALL IF POSSIBLE.
5. BOXOUTS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

1

STRUCTURAL DESIGN FOR FIELD INLETS >7 FT DEEP							
WIDTH X DEPTH (FT, MAX)	HEIGHT (FT, MAX)	WALL THICKNESS (IN.)	BASE SLAB THICKNESS (IN.)	VERTICAL WALL REINFORCEMENT (INSIDE FACE)	HORIZONTAL WALL REINFORCEMENT (INSIDE FACE)	VERTICAL WALL REINFORCEMENT (OUTSIDE FACE)	BASE SLAB REINFORCEMENT (BOTH WAYS)
4 X 4	12	6	8	#5 @ 6" O.C.	#5 @ 10" O.C.	N/A	#4 @ 6"
4 X 4	18	8	8	#5 @ 6" O.C.	#5 @ 10" O.C.	N/A	#4 @ 6"



PLAN VIEW
NOT TO SCALE

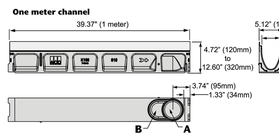


END VIEW
NOT TO SCALE

ACO DRAIN

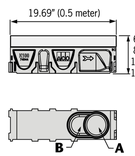
KlassikDrain - K100 Galvanized steel edge rail channel system

One meter channel

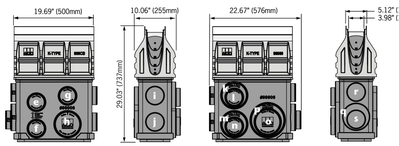


Knock-outs included on every 5th channel

Half meter channel



Type K901G In-line catch basin

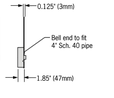


Total capacity = 10.49 gallons

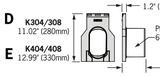
Outlet flow rates

Outlet	Product	Outlet size (Sch. 40)	Invert Depth	GPM	CFS
a	Bottom outlet - K00	4" round	3.94"	108	0.24
a	Bottom outlet - K40	4" round	11.81"	187	0.42
b	Bottom outlet - K00	6" oval	3.94"	177	0.39
b	Bottom outlet - K40	6" oval	11.81"	306	0.68
c	End outlet - K20	4" round	7.87"	132	0.29
c	End outlet - K40	4" round	11.81"	171	0.38
d	K1-3086 6" outlet cap	6" oval	9.84"	233	0.52
e	K1-4086 6" outlet cap	6" oval	11.81"	264	0.59
f	Type K1-901G	4" round	19.30"	226	0.50
g	Type K1-901G	4" round	25.67"	265	0.59
h	Type K1-901G	4" round	25.30"	263	0.59
i	Type K1-901G	4" round	18.56"	222	0.49
j	Type K1-901G	6" round	25.85"	586	1.30
k	Type K1-901G	4" round	26.43"	269	0.60
l	Type K1-901G	4" round	19.36"	227	0.51
m	Type K1-901G	6" round	27.30"	604	1.35
n	Type K1-901G	6" round	19.99"	505	1.12
o	Type K1-901G	6" round	26.43"	593	1.32
p	Type K1-901G	8" round	27.30"	1,051	2.34
q	Type K1-901G	4" round	27.17"	273	0.61
r	Type K1-901G	4" round	20.68"	235	0.52
s	Type K1-901G	6" round	18.99"	224	0.50
t	Type K1-901G	6" round	27.17"	602	1.34

End Cap



6" Oval inlet cap



6" Oval outlet cap

Note: These are the pipe flow rates at the specified outlet, **NOT** channel flow rates. Catch basin flow rates are without trash bucket - using trash bucket reduces flow.

April 2018

www.ACODrain.us

ACO Specification Information

ACO DRAIN

KlassikDrain - K100 Galvanized steel edge rail channel system

Description	Part No.	Invert Inches²	Invert mm²	Weight Lbs.
K1-00 Neutral channel - 39.37" (1m)²	**74041**	**3.94**	**100**	**28.1**
K1-1 Sloped channel - 39.37" (1m)	**74001**	4.13	105	28.1
K1-2 Sloped channel - 39.37" (1m)	**74002**	4.33	110	28.9
K1-3 Sloped channel - 39.37" (1m)	**74003**	4.53	115	29.7
K1-4 Sloped channel - 39.37" (1m)	**74004**	4.72	120	30.5
K1-5 Sloped channel - 39.37" (1m)²	**74005**	4.92	125	31.3
K1-6 Sloped channel - 39.37" (1m)	**74006**	5.12	130	32.1
K1-7 Sloped channel - 39.37" (1m)	**74007**	5.31	135	32.9
K1-8 Sloped channel - 39.37" (1m)	**74008**	5.51	140	33.7
K1-9 Sloped channel - 39.37" (1m)	**74009**	5.71	145	34.5
K1-10 Sloped channel - 39.37" (1m)²	**74010**	5.91	150	35.3
K1-010 Neutral channel - 39.37" (1m)²	**74043**	**5.91**	**150**	**35.3**
K1-0103 Neutral channel - 19.69" (0.5m)²	**74044**	**5.91**	**150**	**17.0**
K1-11 Sloped channel - 39.37" (1m)	**74011**	6.10	155	36.1
K1-12 Sloped channel - 39.37" (1m)	**74012**	6.30	160	36.9
K1-13 Sloped channel - 39.37" (1m)	**74013**	6.50	165	37.7
K1-14 Sloped channel - 39.37" (1m)	**74014**	6.69	170	38.5
K1-15 Sloped channel - 39.37" (1m)²	**74015**	6.89	175	39.3
K1-16 Sloped channel - 39.37" (1m)	**74016**	7.09	180	40.1
K1-17 Sloped channel - 39.37" (1m)	**74017**	7.28	185	40.9
K1-18 Sloped channel - 39.37" (1m)	**74018**	7.48	190	41.7
K1-19 Sloped channel - 39.37" (1m)	**74019**	7.68	195	42.5
K1-20 Sloped channel - 39.37" (1m)²	**74020**	7.87	200	43.4
K1-020 Neutral channel - 39.37" (1m)²	**74045**	**7.87**	**200**	**43.4**
K1-0203 Neutral channel - 19.69" (0.5m)²	**74046**	**7.87**	**200**	**20.5**
K1-21 Sloped channel - 39.37" (1m)	**74021**	8.07	205	44.2
K1-22 Sloped channel - 39.37" (1m)	**74022**	8.27	210	45.0
K1-23 Sloped channel - 39.37" (1m)	**74023**	8.46	215	45.8
K1-24 Sloped channel - 39.37" (1m)	**74024**	8.66	220	46.6
K1-25 Sloped channel - 39.37" (1m)²	**74025**	8.86	225	47.4
K1-26 Sloped channel - 39.37" (1m)	**74026**	9.06	230	48.2
K1-27 Sloped channel - 39.37" (1m)	**74027**	9.25	235	49.0
K1-28 Sloped channel - 39.37" (1m)	**74028**	9.45	240	49.8
K1-29 Sloped channel - 39.37" (1m)	**74029**	9.65	245	50.6
K1-30 Sloped channel - 39.37" (1m)²	**74030**	9.84	250	51.4
K1-030 Neutral channel - 39.37" (1m)²	**74047**	**9.84**	**250**	**51.4**
K1-0303 Neutral channel - 19.69" (0.5m)²	**74048**	**9.84**	**250**	**24.0**
K1-31 Sloped channel - 39.37" (1m)	**74031**	10.04	255	52.2
K1-32 Sloped channel - 39.37" (1m)	**74032**	10.24	260	53.0
K1-33 Sloped channel - 39.37" (1m)	**74033**	10.43	265	53.8
K1-34 Sloped channel - 39.37" (1m)	**74034**	10.63	270	54.6
K1-35 Sloped channel - 39.37" (1m)²	**74035**	10.83	275	55.4
K1-36 Sloped channel - 39.37" (1m)	**74036**	11.02	280	56.2
K1-37 Sloped channel - 39.37" (1m)	**74037**	11.22	285	57.0
K1-38 Sloped channel - 39.37" (1m)	**74038**	11.42	290	57.9
K1-39 Sloped channel - 39.37" (1m)	**74039**	11.61	295	58.7
K1-40 Sloped channel - 39.37" (1m)²	**74040**	11.81	300	59.5
K1-040 Neutral channel - 39.37" (1m)²	**74049**	**11.81**	**300**	**59.5**
K1-0403 Neutral channel - 19.69" (0.5m)²	**74050**	**11.81**	**300**	**27.5**
K1-901G Inline catch basin - 19.69" (0.5m)²	**94608**	28.81	701.9	52.6
K1-621G catch basin - 19.69" (0.5m)²	**94617**	28.84	732.5	55.8
K1-631G catch basin - 19.69" (0.5m)²	**94631**	40.84	1037.4	65.8
K1-Series 600 Optional plastic riser	**99902**	-	-	10.0
Foul air trap - fits both 900 & 600 series basins	**90854**	-	-	1.2
K1-3046 6" Inlet Cap	**96839**	9.84	250	5.2
K1-3086 6" Outlet Cap	**96840**	9.84	250	5.0
K1-4046 6" Inlet Cap	**96834**	11.81	300	6.0
K1-4086 6" Outlet Cap	**96836**	11.81	300	5.8
Universal end cap	**96822**	11.81	300	0.4
Debris strainer for 4" bottom knockout	**93488**	-	-	0.2
4" Oval to 6" round outlet adapter	**95140**	-	-	1.1
K1-Installation device	**97477**	-	-	2.8
Grate removal tool	**01318**	-	-	0.3
K1-QuickLok locking bar	**02899**	-	-	0.1

Notes:
1. This channel offers a bottom knockout feature; 4" round/6" oval.
2. Inverts shown are for the male end; for female invert depth subtract 5mm (–0.2") from the male invert (except for neutral channels, where it will be same as male invert). To calculate the overall channel depth add 20mm (+0.8") to invert depth.
3. This catch basin kit includes a polymer concrete top, removable Quicklok locking bar, trash bucket and plastic base. Select an appropriate grate.
4. This catch basin kit includes a polymer concrete top, removable Quicklok locking bar, deep trash bucket, plastic riser and plastic base. Select an appropriate grate.

Specifications

General
The surface drainage system shall be ACO Drain K100 complete with gratings secured with 'QuickLok' locking as manufactured by ACO, Inc. or approved equal.

Materials
The trench system bodies shall be manufactured from polyester polymer concrete with the minimum properties as follows:

Compressive strength:	14,000 psi
Flexural strength:	4,000 psi
Water absorption	0.07%
Frost proof	YES
Salt proof	YES
Dilute acid and alkali resistant	YES

The nominal clear opening shall be 4" (100mm) with overall width of 5.12" (130mm). Precast units shall be manufactured with either an invert slope of 0.5% or with neutral invert and have a wall thickness of at least 0.50" (13mm). Each unit will feature a partial radius in the trench bottom and a male to female interconnecting end profile. Units shall have horizontal cast in anchoring keys on the outside wall to ensure maximum mechanical bond to the surrounding bedding material and pavement surface. The galvanized steel edge rail will be integrally cast in by the manufacturer to ensure maximum homogeneity between polymer concrete body and edge rail. Each edge rail shall be at least 3/32" (2.5mm) thick.

Grates
Grates shall be specified. See separate ACO Spec Info grate sheets for details. After removal of grates and 'QuickLok' bar there shall be uninterrupted access to the trench to aid maintenance.

Installation
The trench drain system shall be installed in accordance with the manufacturer's installation instructions and recommendations.

ACO, Inc.
Northeast Sales Office
9470 Pinecrest Drive
Mentor, OH 44060
Tel: (440) 639-7230
Toll free: (800) 543-4764
Fax: (440) 639-7235

West Sales Office
825 W. Beechcraft St.
Casa Grande, AZ 85122
Tel: (520) 421-9988
Toll Free: (888) 490-9552
Fax: (520) 421-9899

Southeast Sales Office
4211 Pleasant Road
Fort Mill, SC 29708
Toll free: (800) 543-4764
Fax: (803) 802-1063

Electronic Contact:
info@ACODrain.us
www.ACODrain.us

© April 2018 ACO, Inc. This information is believed to be accurate but it is not guaranteed to be so. We cannot assume liability for results that buyer obtains with our product since conditions of use are beyond the control of the company. It is the customer's responsibility to evaluate suitability and safety of product for his own use. ACO, Inc. reserves the right to change the product and specifications without notice. v1.0

April 2018

www.ACODrain.us

ACO Specification Information

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

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

Sheet Name: FIELD INLET DETAIL

Project:

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

STM-2

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

FLARED END SECTION SUPPORT DETAIL

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

STM-5

olsson
OLSSON - CIVIL ENGINEERING
MO CERTIFICATE OF AUTHORITY # 001592
1301 BURLINGTON, SUITE 100
NORTH KANSAS CITY, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

DETAIL SHEET
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C904

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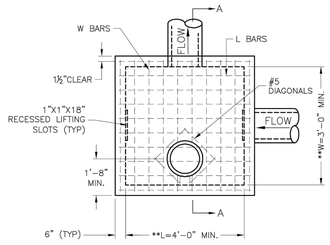
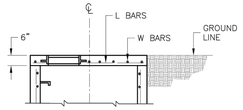


PLAN

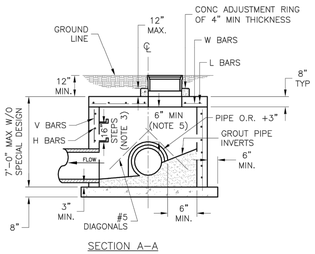


SLAB TOP ALTERNATE FOR
JUNCTION BOX (SHALLOW)

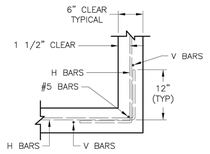
** INCREASE IN MULTIPLES OF 6"
(7'-0") MAX WITHOUT SPECIAL DESIGN.
(SEE PROJECT PLANS FOR DETAILS)

REINFORCING

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



SECTION A-A



WALL CORNER DETAIL

GENERAL NOTES:
1. LOCATE RING AND COVER ON BLANK WALL.
2. USE ¾" CHAMFER STRIP OR ½" R EDGER TOOL ON ALL EXPOSED CONCRETE CORNERS.
3. STEPS REQUIRED AT 16" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 4' ON BLANK WALL IF POSSIBLE.
4. BOXOUTS WILL NOT BE ALLOWED TO PROJECT THROUGH THE CORNERS OF THE STRUCTURE AND THE MINIMUM DISTANCE BETWEEN BOXOUTS IS 6".
5. THE MINIMUM REINFORCING SHALL BE 1 H-BAR OVER A CAST-IN-PLACE PIPE AND 2 H-BARS OVER A PRECAST BOXOUT.
8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON-SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
9. REINFORCING OF COVERS IN STREETS REQUIRE SPECIAL DESIGN.
10. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.

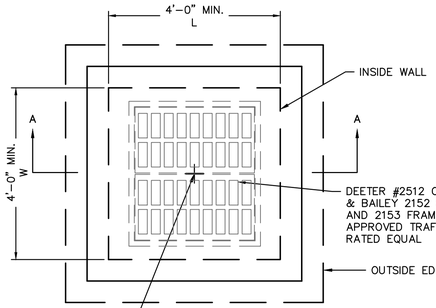
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

Issues:
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Sheet Name:
JUNCTION BOX DETAIL

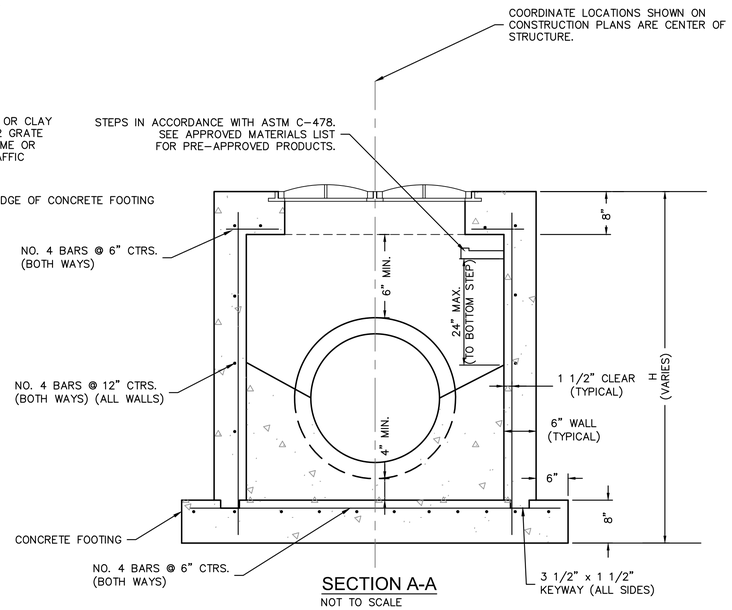
Drawn By: MJF
Checked By: DL
Date: 04/17
Proj. #:

STM-3

STRUCTURAL DESIGN FOR JUNCTION BOXES >7 FT DEEP							
WIDTH X DEPTH (FT, MAX)	HEIGHT (FT, MAX)	WALL THICKNESS (IN.)	BASE SLAB THICKNESS (IN.)	VERTICAL WALL REINFORCEMENT (INSIDE FACE)	HORIZONTAL WALL REINFORCEMENT (INSIDE FACE)	VERTICAL WALL REINFORCEMENT (OUTSIDE FACE)	BASE SLAB REINFORCEMENT (BOTH WAYS)
7 X 5	12	6	8	#5 @ 6" O.C.	#5 @ 10" O.C.	N/A	#4 @ 6"
7 X 5	18	8	8	#5 @ 6" O.C.	#5 @ 10" O.C.	N/A	#4 @ 6"



PLAN VIEW
NOT TO SCALE



SECTION A-A
NOT TO SCALE

NOTES

GENERAL

1. ALL STORM SEWER STRUCTURES SHALL BE PRECAST. PRECAST SHOP DRAWINGS SHALL BE APPROVED BY THE DESIGN ENGINEER.
2. PRE-CAST SHOP DRAWINGS ARE TO BE APPROVED BY THE CITY ENGINEER FOR PUBLICLY FINANCED OR ADMINISTERED PROJECTS. PRE-CAST SHOP DRAWINGS FOR PRIVATELY FINANCED PROJECTS ARE TO BE SUBMITTED TO THE ENGINEERING SERVICES DIVISION OF THE PLANNING AND DEVELOPMENT SERVICES DEPARTMENT.
3. DO NOT SCALE THESE DRAWINGS FOR DIMENSIONS OR CLEARANCES. ANY QUESTIONS REGARDING DIMENSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE CITY ENGINEER PRIOR TO CONSTRUCTION.
4. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION. THE CONCRETE THICKNESS AND REINFORCEMENT SHOWN IS FOR BOXES WITH ("L"+"H") AND ("W"+"H") LESS THEN OR EQUAL TO 20. FOR BOXES WITH EITHER OF THESE CALCULATIONS GREATER THAN 20, A SPECIAL DESIGN IS REQUIRED. CONCRETE
5. CONCRETE USED IN THIS WORK SHALL BE KCMMB4K, AS APPROVED BY THE KANSAS CITY METROPOLITAN MATERIALS BOARD, AND SHALL MEET THE REQUIREMENTS OF THE CITY MUNICIPAL CODE.
6. CONCRETE CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF STANDARD SPECIFICATIONS FOR STATE ROAD AND BRIDGE CONSTRUCTION, MISSOURI DEPARTMENT OF TRANSPORTATION, LATEST EDITION, EXCEPT AS MODIFIED IN THE CITY MUNICIPAL CODE.
7. INLET FLOORS SHALL BE SHAPED WITH NON-REINFORCED CONCRETE INVERTS TO PROVIDE SMOOTH FLOW.
8. BEVEL ALL EXPOSED EDGES WITH 3/4" TRIANGULAR MOLDING. REINFORCING STEEL
9. REINFORCING STEEL SHALL BE NEW BILLET, MINIMUM GRADE 60 AS PER ASTM A615, AND SHALL BE BENT COLD.
10. ALL DIMENSIONS RELATIVE TO REINFORCING STEEL ARE TO CENTERLINE OF BARS. 2" CLEARANCE SHALL BE PROVIDED THROUGHOUT UNLESS NOTED OTHERWISE. TOLERANCE OF +/- 1/8" SHALL BE PERMITTED.
11. ALL LAP SPLICES NOT SHOWN SHALL BE A MINIMUM OF 40 BAR DIAMETERS IN LENGTH.
12. ALL REINFORCING STEEL SHALL BE SUPPORTED ON FABRICATED STEEL BAR SUPPORTS @ 3'-0" MAXIMUM SPACING.
13. ALL DOWELS SHALL BE ACCURATELY PLACED AND SECURELY TIED IN PLACE PRIOR TO PLACEMENT OF BOTTOM SLAB CONCRETE. STICKING OF DOWELS INTO FRESH OR PARTIALLY HARDENED CONCRETE WILL NOT BE ACCEPTABLE. CONSTRUCTION
14. THE BOTTOM SLAB SHALL BE AT LEAST 24 HOURS OLD BEFORE PLACING SIDEWALL CONCRETE. ALL SIDEWALL FORMS SHALL REMAIN IN PLACE A MINIMUM OF 24 HOURS AFTER SIDEWALLS ARE POURED BEFORE REMOVAL, AND AFTER REMOVAL SHALL BE IMMEDIATELY TREATED WITH MEMBRANE CURING COMPOUND.
15. PIPE CONNECTIONS TO PRE-CAST STRUCTURES SHALL HAVE A MINIMUM OF 6" OF CONCRETE AROUND THE ENTIRE PIPE WITHIN 2' OF THE STRUCTURE.
16. MATERIAL SELECTION AND COMPACTION REQUIREMENTS FOR BACKFILL AROUND STRUCTURES SHALL BE AS SPECIFIED IN THE MANUAL OF INFRASTRUCTURE STANDARDS, AS PROMULGATED BY THE CITY ENGINEER.

STRUCTURAL DESIGN FOR GRATE INLETS >7 FT DEEP							
WIDTH X DEPTH (FT, MAX)	HEIGHT (FT, MAX)	WALL THICKNESS (IN.)	BASE SLAB THICKNESS (IN.)	VERTICAL WALL REINFORCEMENT (INSIDE FACE)	HORIZONTAL WALL REINFORCEMENT (INSIDE FACE)	VERTICAL WALL REINFORCEMENT (OUTSIDE FACE)	BASE SLAB REINFORCEMENT (BOTH WAYS)
4 X 4	12	6	8	#5 @ 6" O.C.	#5 @ 10" O.C.	N/A	#4 @ 6"

01 N.T.S.
GRATE INLET DETAIL

olsson
OLSSON - CIVIL ENGINEERING
MO CERTIFICATE OF AUTHORITY #:001592
KS CERTIFICATE OF AUTHORITY #:E-1253
NORTH KANSAS CITY, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

DETAIL SHEET
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C905

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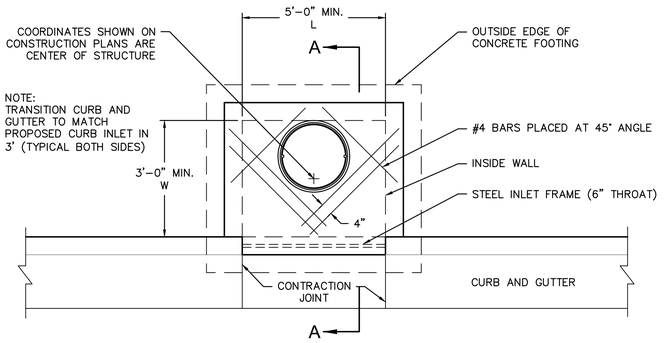
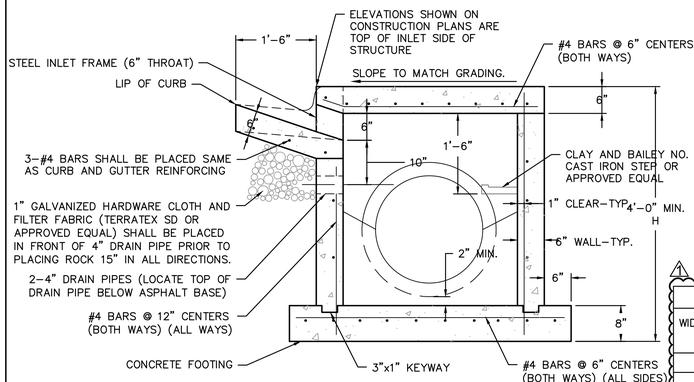


PLAN



SECTION A-A

NON-SETBACK CURB INLET

04 N.T.S. CURB INLETS

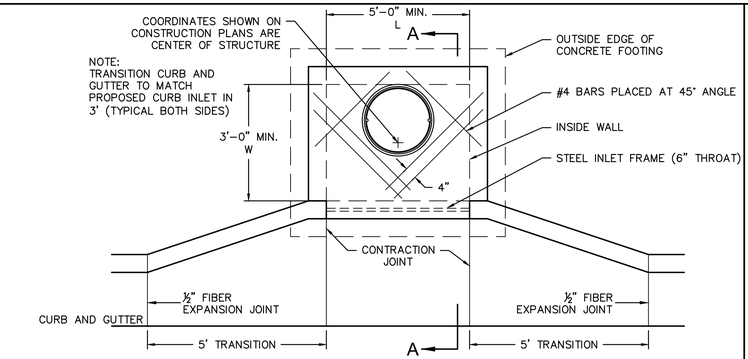
NOTES:

1. ALL STORM SEWER STRUCTURES SHALL BE PRECAST. PRECAST SHOP DRAWINGS SHALL BE APPROVED BY THE DESIGN ENGINEER.
2. PRECAST SHOP DRAWINGS ARE TO BE APPROVED BY THE CITY ENGINEER FOR PUBLICLY FINANCED OR ADMINISTERED PROJECTS. PRECAST SHOP DRAWINGS FOR PRIVATELY FINANCED PROJECTS ARE TO BE SUBMITTED TO THE ENGINEERING SERVICES DIVISION OF THE PLANNING AND DEVELOPMENT SERVICES DEPARTMENT.
3. DO NOT SCALE THESE DRAWINGS FOR DIMENSIONS OR CLEARANCES. ANY QUESTIONS REGARDING DIMENSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE CITY ENGINEER PRIOR TO CONSTRUCTION.
4. RING & COVER TO BE NEENAH R-1537, CLAY & BAILEY #2020, DEETER #2016, OR APPROVED EQUAL.
5. ON-GRADE INLETS SHALL CONFORM TO THE STREET GRADE AND SUMP INLETS SHALL BE LEVEL.
6. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION. THE CONCRETE THICKNESS AND REINFORCEMENT SHOWN IS FOR BOXES WITH ("L"+"H") AND ("W"+"H") LESS THEN OR EQUAL TO 20. FOR BOXES WITH EITHER OF THESE CALCULATIONS GREATER THAN 20, A SPECIAL DESIGN IS REQUIRED.
7. CONCRETE USED IN THIS WORK SHALL BE APPROVED BY THE CITY, AND SHALL MEET THE REQUIREMENTS OF THE CITY MUNICIPAL CODE.
8. CONCRETE CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF STANDARD SPECIFICATIONS FOR STATE ROAD AND BRIDGE CONSTRUCTION, DEPARTMENT OF TRANSPORTATION, LATEST EDITION, EXCEPT AS MODIFIED IN THE CITY MUNICIPAL CODE.
9. INLET FLOORS SHALL BE SHAPED WITH NON-REINFORCED CONCRETE INVERTS TO PROVIDE SMOOTH FLOW.
10. BEVEL ALL EXPOSED EDGES WITH 3/4" TRIANGULAR MOLDING.
11. REINFORCING STEEL SHALL BE NEW BILLET, MINIMUM GRADE 60 AS PER ASTM A615M, AND SHALL BE BENT COLD.
12. ALL DIMENSIONS RELATIVE TO REINFORCING STEEL ARE TO CENTERLINE OF BARS. 2" CLEARANCE SHALL BE PROVIDED THROUGHOUT UNLESS NOTED OTHERWISE. TOLERANCE OF +/- 1/8"SHALL BE PERMITTED.
13. ALL LAP SPLICES NOT SHOWN SHALL BE A MINIMUM OF 40 BAR DIAMETERS IN LENGTH.
14. ALL REINFORCING STEEL SHALL BE SUPPORTED ON FABRICATED STEEL BAR SUPPORTS @ 3'-0" MAXIMUM SPACING.
15. ALL DOWELS SHALL BE ACCURATELY PLACED AND SECURELY TIED IN PLACE PRIOR TO PLACEMENT OF BOTTOM SLAB CONCRETE. STICKING OF DOWELS INTO FRESH OR PARTIALLY HARDENED CONCRETE WILL NOT BE ACCEPTABLE.
16. PIPE CONNECTIONS TO PRE-CAST STRUCTURES SHALL HAVE A MINIMUM OF 6" OF CONCRETE AROUND THE ENTIRE PIPE WITHIN 2' OF THE STRUCTURE.
17. MATERIAL SELECTION AND COMPACTION REQUIREMENTS FOR BACKFILL AROUND STRUCTURES SHALL BE AS SPECIFIED IN THE GEOTECHNICAL REPORT.

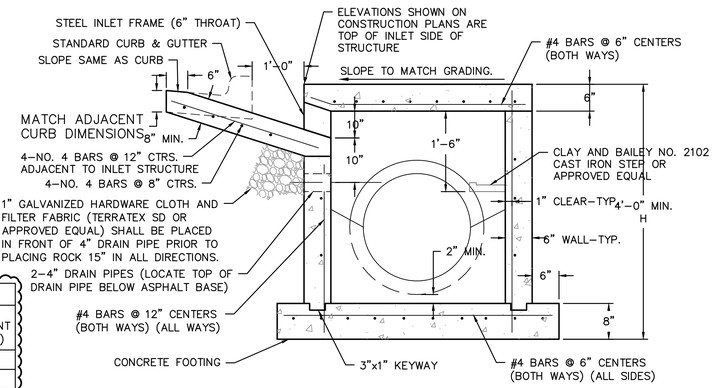
1

STRUCTURAL DESIGN FOR CURB INLETS >7 FT DEEP

WIDTH X DEPTH (FT, MAX)	HEIGHT (FT, MAX)	WALL THICKNESS (IN.)	BASE SLAB THICKNESS (IN.)	VERTICAL WALL REINFORCEMENT (INSIDE FACE)	HORIZONTAL WALL REINFORCEMENT (INSIDE FACE)	VERTICAL WALL REINFORCEMENT (OUTSIDE FACE)	BASE SLAB REINFORCEMENT (BOTH WAYS)
8 X 4	12	6	8	#5 @ 6" O.C.	#5 @ 10" O.C.	N/A	#4 @ 6"
8 X 4	18	8	8	#5 @ 6" O.C.	#5 @ 10" O.C.	N/A	#4 @ 6"
8 X 4	22	10	10	#5 @ 12" O.C.	#5 @ 12" O.C.	#5 @ 12" O.C.	#5 @ 6"

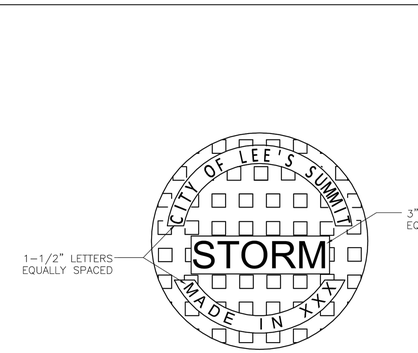


PLAN



SECTION A-A

SETBACK CURB INLET



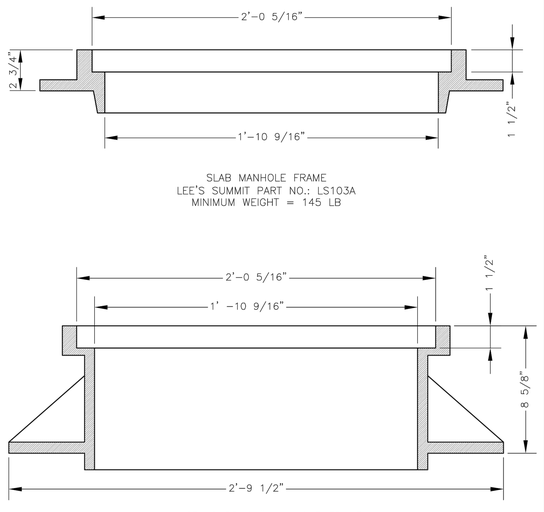
STANDARD 24" MANHOLE COVER
MINIMUM WEIGHT = 160 LB
NOTE: PICK HOLES NOT SHOWN

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

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

STORM MANHOLE COVER DETAIL

Date: 04/17 | Drawn By: MJF | Checked By: DL | STM-6



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

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

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

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

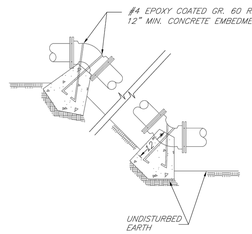
STORM MANHOLE FRAME DETAIL

Date: 04/17 | Drawn By: MJF | Checked By: DL | STM-7

REQUIRED CONCRETE VOLUME (CUBIC FEET – CF)

NOM. DIA. (INCHES)	180 TEE, PLUG	90 BEND	45 BEND	22.5 BEND	11.25 BEND
6	50.5	71.4	38.6	19.7	9.9
8	89.8	126.9	68.7	35.0	17.6
10	140.2	198.3	107.3	54.7	27.5
12	202.0	REST. JT.	154.6	78.8	39.6
14	REST. JT.	REST. JT.	210.4	107.3	53.9
16	REST. JT.	REST. JT.	REST. JT.	140.1	70.4
18	REST. JT.	REST. JT.	REST. JT.	177.3	89.1
20	REST. JT.	REST. JT.	REST. JT.	REST. JT.	110.0
24	REST. JT.	REST. JT.	REST. JT.	REST. JT.	158.4

NOTES:
1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
3. BEARING MUST BE AGAINST UNDISTURBED SOIL.
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.



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

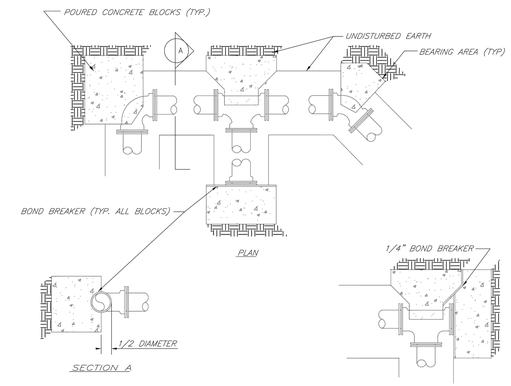
VERTICAL THRUST BLOCKS

Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: WAT-2 | Rev: 1/14 | Rev:

REQUIRED CONCRETE BEARING AREA (SQUARE FEET – SF)

NOM. DIA. (INCHES)	180 TEE, PLUG	90 BEND	45 BEND	22.5 BEND	11.25 BEND
6	4.7	6.7	4.0	4.0	4.0
8	8.4	11.8	6.4	4.0	4.0
10	13.1	18.5	10.0	5.1	4.0
12	18.8	26.7	14.4	7.4	4.0
14	25.7	36.3	19.6	10.0	5.0
16	33.5	47.4	25.6	13.1	6.6
18	42.4	REST. JT.	32.5	16.5	8.3
20	REST. JT.	REST. JT.	40.1	20.4	10.3
24	REST. JT.	REST. JT.	REST. JT.	29.4	14.8

NOTES:
1. ALL BENDS WITHOUT RESTRAINED JOINTS SHALL HAVE CONCRETE THRUST BLOCKS INSTALLED FOR RESTRAINT.
2. MEGA LUGS MAY BE USED ONLY IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.
3. BEARING AREA MUST BE AGAINST UNDISTURBED SOIL.
4. DO NOT COVER JOINTS OR BOLTS (WHERE APPLICABLE) WITH CONCRETE.



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

HORIZONTAL THRUST BLOCKS

Date: 02/13 | Drawn By: JN | Checked By: DL | FILE: WAT-1 | Rev: 1/14 | Rev:

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STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

DETAIL SHEET
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

drawn by: MJD
checked by: NDH
designed by: MJD
QA/QC by: NDH
project no.: 019-0012-B
date: 2020.08.27

SHEET
C906

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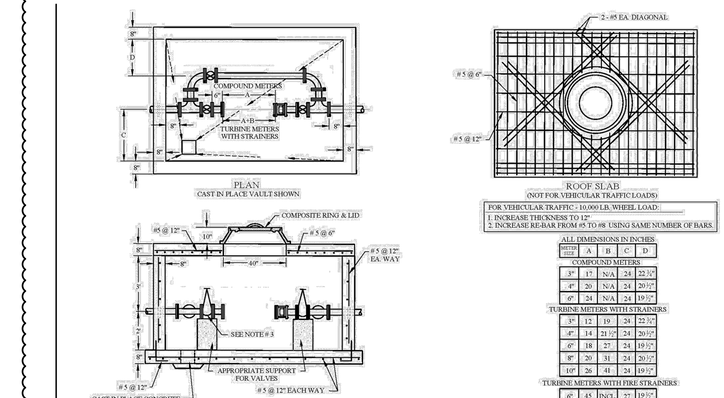

NOTE:
1. POUR FOOTING ON FIRM UNDISTURBED EARTH
2. ALL PIPING IN METER PIT SHALL BE D.I.P.
3. VALVES SHALL BE GATE TYPE. BY-PASS VALVE SHALL BE O.S. & Y.
4. WALLS TO BE DOUBLE FORMED.
5. ALL RE-BAR TO HAVE 3/4" COVER.
6. CONCRETE SHALL BE M.C.I.D. 500-4-4.
7. ALLOW 1/16" PER GASKET IN FLANGE FITTINGS
8. RING & LID TO BE CENTERED DIRECTLY ABOVE METER.

N.T.S.
01 WATER METER VAULT

ROOF SLAB
(NOT FOR VEHICULAR TRAFFIC LOADS)

FOR VEHICULAR TRAFFIC - 10,000 LB. WHEEL LOAD:
1. INCREASE THICKNESS TO 12"
2. INCREASE RE-BAR FROM #5 TO #8 USING SAME NUMBER OF BARS.

ALL DIMENSIONS IN INCHES

METER SIZE	A	B	C	D
COMPOUND METERS				
3"	17	N/A	24	22 1/2"
4"	20	N/A	24	20 1/2"
6"	24	N/A	24	19 1/2"
TURBINE METERS WITH STRAINERS				
3"	12	19	24	22 1/2"
4"	14	21 1/2"	24	20 1/2"
6"	18	27	24	19 1/2"
8"	20	31	24	20 1/2"
10"	26	41	24	19 1/2"
TURBINE METERS WITH FIRE STRAINERS				
6"	45	INCL	27	19 1/2"
8"	53	INCL	29	20"
10"	68	INCL	34	22 1/2"

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10 SE MCDONALD DRIVE, SUITE 100
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www.olsson.com

STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

DETAIL SHEET
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C907

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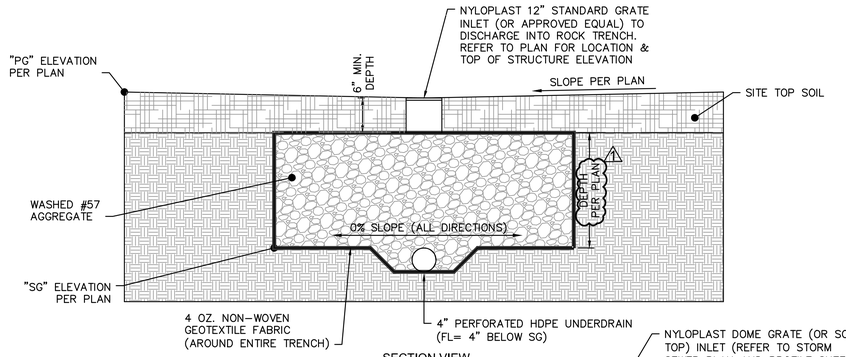
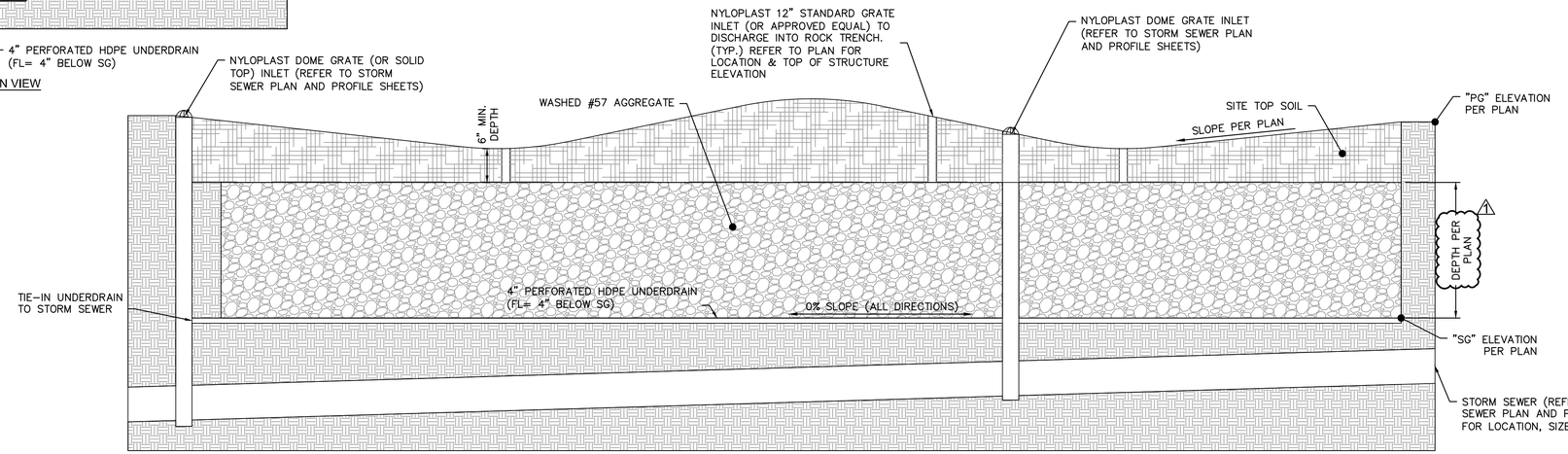
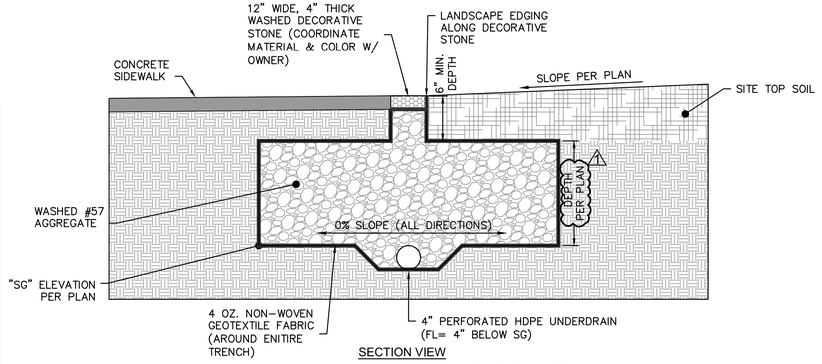


SECTION VIEW

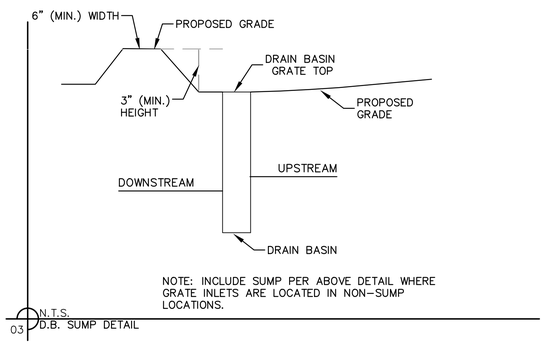


PROFILE VIEW

01 N.T.S.
FILTRATION TRENCH DETAIL A

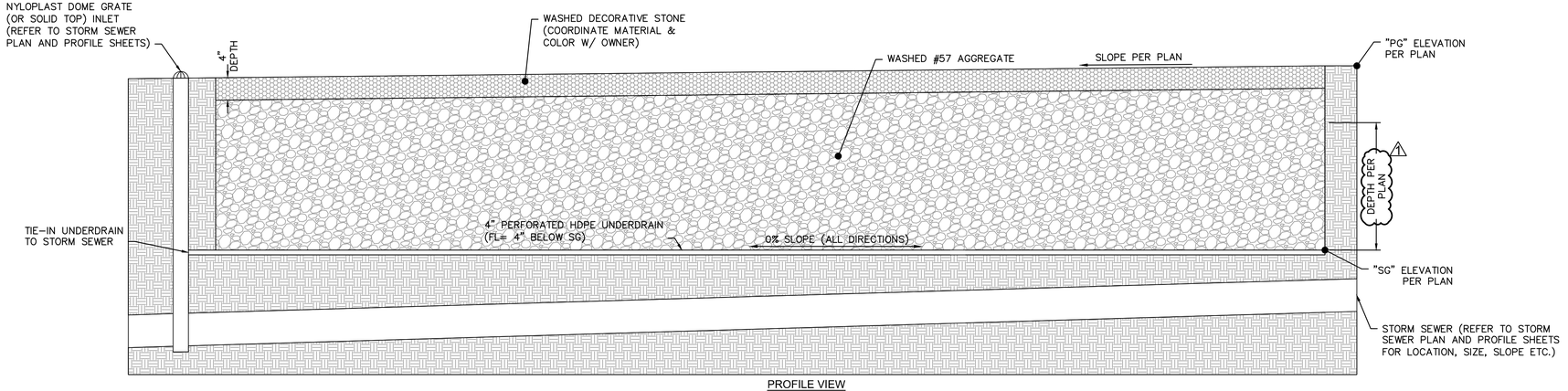


SECTION VIEW



NOTE: INCLUDE SUMP PER ABOVE DETAIL WHERE GRATE INLETS ARE LOCATED IN NON-SUMP LOCATIONS.

03 N.T.S.
D.B. SUMP DETAIL



PROFILE VIEW

02 N.T.S.
FILTRATION TRENCH DETAIL B

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www.olsson.com

STATE OF MISSOURI
NICHOLAS D. HEISER
02/04/2021
NUMBER PE-2015000555
PROFESSIONAL ENGINEER

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

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
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REVISIONS

DETAIL SHEET
SITE DEVELOPMENT 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: 2020.08.27

SHEET
C908

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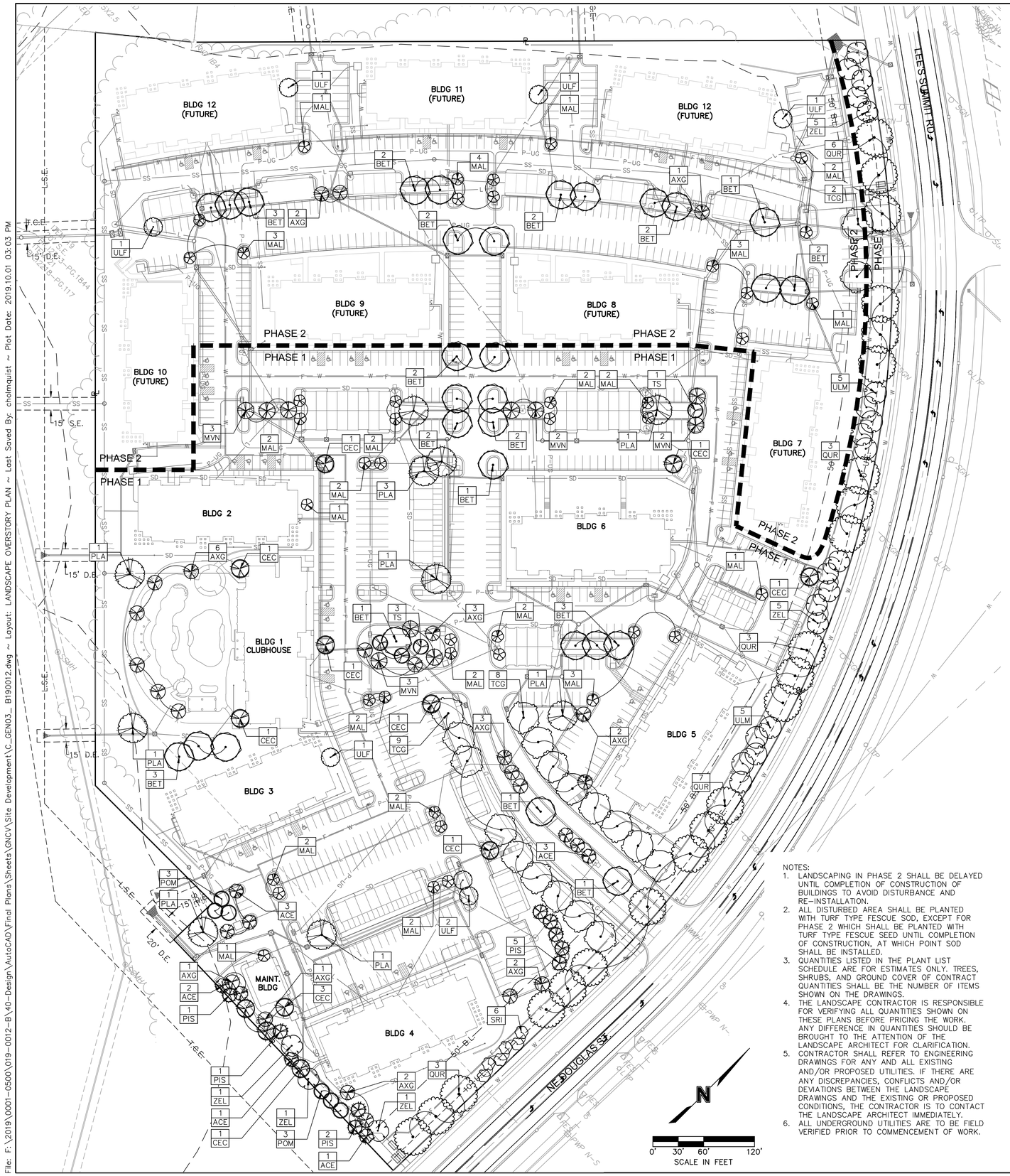

NOTES:
1. LANDSCAPING IN PHASE 2 SHALL BE DELAYED UNTIL COMPLETION OF CONSTRUCTION OF BUILDINGS TO AVOID DISTURBANCE AND RE-INSTALLATION.
2. ALL DISTURBED AREA SHALL BE PLANTED WITH TURF TYPE FESCUE SOD, EXCEPT FOR PHASE 2 WHICH SHALL BE PLANTED WITH TURF TYPE FESCUE SEED UNTIL COMPLETION OF CONSTRUCTION, AT WHICH POINT SOD SHALL BE INSTALLED.
3. QUANTITIES LISTED IN THE PLANT LIST SCHEDULE ARE FOR ESTIMATES ONLY. TREES, SHRUBS, AND GROUND COVER OF CONTRACT QUANTITIES SHALL BE THE NUMBER OF ITEMS SHOWN ON THE DRAWINGS.
4. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON THESE PLANS BEFORE PRICING THE WORK. ANY DIFFERENCE IN QUANTITIES SHOULD BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION.
5. CONTRACTOR SHALL REFER TO ENGINEERING DRAWINGS FOR ANY AND ALL EXISTING AND/OR PROPOSED UTILITIES. IF THERE ARE ANY DISCREPANCIES, CONFLICTS AND/OR DEVIATIONS BETWEEN THE LANDSCAPE DRAWINGS AND THE EXISTING OR PROPOSED CONDITIONS, THE CONTRACTOR IS TO CONTACT THE LANDSCAPE ARCHITECT IMMEDIATELY.
6. ALL UNDERGROUND UTILITIES ARE TO BE FIELD VERIFIED PRIOR TO COMMENCEMENT OF WORK.

PLANT SCHEDULE OVERALL

DECIDUOUS TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION
	ACE	10	ACER GRISEUM	PAPERBARK MAPLE	3" CAL.	B&B
	BET	30	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	3" CAL.	B&B
	PLA	10	PLATANUS X ACERIFOLIA 'EXCLAMATION' TM	EXCLAMATION LONDON PLANE TREE	3" CAL.	B&B
	QUR	22	QUERCUS RUBRA	RED OAK	3" CAL.	B&B
	TS	4	TAXODIUM DISTICHUM 'SHAWNEE BRAVE' TM	BALD CYPRESS	3" CAL.	B&B
	TCG	19	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	3" CAL.	B&B
	ULF	7	ULMUS X 'FRONTIER'	AMERICAN ELM	3" CAL.	B&B
	ULM	10	ULMUS X 'PATRIOT'	ELM	3" CAL.	B&B
	ZEL	13	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE SAWLEAF ZELKOVA	3" CAL.	B&B
EVERGREEN TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION
	POM	6	PICEA OMORIKA	SERBIAN SPRUCE	8' HT	B&B
	PIS	9	PINUS STROBUS	WHITE PINE	8' HT	B&B
ORNAMENTAL TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION
	AXG	23	AMELANCHIER X GRANDIFLORA	APPLE SERVICEBERRY	3" CAL.	B&B
	CEC	12	CERCIS CANADENSIS	EASTERN REDBUD	3" CAL.	B&B
	MVN	10	MAGNOLIA VIRGINIANA 'NORTHERN BELLE'	NORTHERN BELLE SWEET BAY MAGNOLIA	3" CAL.	B&B
	MAL	43	MALUS X 'ROYAL RAINDROPS'	ROYAL RAINDROPS CRABAPPLE	3" CAL.	B&B
	SRI	6	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK JAPANESE TREE LILAC	3" CAL.	B&B

PLANT SCHEDULE PHASE 1

DECIDUOUS TREES	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	CONDITION
	ACE	10	ACER GRISEUM / PAPERBARK MAPLE	3" CAL.	B&B
	BET	13	BETULA NIGRA 'HERITAGE' / HERITAGE RIVER BIRCH	3" CAL.	B&B
	PLA	10	PLATANUS X ACERIFOLIA 'EXCLAMATION' TM / EXCLAMATION LONDON PLANE TREE	3" CAL.	B&B
	QUR	5	QUERCUS RUBRA / RED OAK	3" CAL.	B&B
	TS	4	TAXODIUM DISTICHUM 'SHAWNEE BRAVE' TM / BALD CYPRESS	3" CAL.	B&B
	TCG	16	TILIA CORDATA 'GREENSPIRE' / GREENSPIRE LITTLELEAF LINDEN	3" CAL.	B&B
	ULF	3	ULMUS X 'FRONTIER' / AMERICAN ELM	3" CAL.	B&B
	ZEL	8	ZELKOVA SERRATA 'GREEN VASE' / GREEN VASE SAWLEAF ZELKOVA	3" CAL.	B&B
EVERGREEN TREES	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	CONDITION
	POM	6	PICEA OMORIKA / SERBIAN SPRUCE	8' HT	B&B
	PIS	9	PINUS STROBUS / WHITE PINE	8' HT	B&B
ORNAMENTAL TREES	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	CONDITION
	AXG	20	AMELANCHIER X GRANDIFLORA / APPLE SERVICEBERRY	3" CAL.	B&B
	CEC	11	CERCIS CANADENSIS / EASTERN REDBUD	3" CAL.	B&B
	MVN	10	MAGNOLIA VIRGINIANA 'NORTHERN BELLE' / NORTHERN BELLE SWEET BAY MAGNOLIA	3" CAL.	B&B
	MAL	27	MALUS X 'ROYAL RAINDROPS' / ROYAL RAINDROPS CRABAPPLE	3" CAL.	B&B
	SRI	6	SYRINGA RETICULATA 'IVORY SILK' / IVORY SILK JAPANESE TREE LILAC	3" CAL.	B&B

PLANT SCHEDULE PHASE 2

DECIDUOUS TREES	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	CONDITION
	BET	16	BETULA NIGRA 'HERITAGE' / HERITAGE RIVER BIRCH	3" CAL.	B&B
	TCG	2	TILIA CORDATA 'GREENSPIRE' / GREENSPIRE LITTLELEAF LINDEN	3" CAL.	B&B
	ULF	4	ULMUS X 'FRONTIER' / AMERICAN ELM	3" CAL.	B&B
ORNAMENTAL TREES	CODE	QTY	BOTANICAL / COMMON NAME	SIZE	CONDITION
	AXG	3	AMELANCHIER X GRANDIFLORA / APPLE SERVICEBERRY	3" CAL.	B&B
	MAL	15	MALUS X 'ROYAL RAINDROPS' / ROYAL RAINDROPS CRABAPPLE	3" CAL.	B&B

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NORTH KANSAS CITY, MO 64116
TEL 816.361.1177
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STATE OF MISSOURI — CHRISTOPHER HOLMQUIST — NUMBER PLA-2019026430 — 2020.12.31 — REGISTERED PROFESSIONAL LANDSCAPE ARCHITECT

CHRIS HOLMQUIST, P.L.A.
MO# 2019026430

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

LANDSCAPE OVERSTORY PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

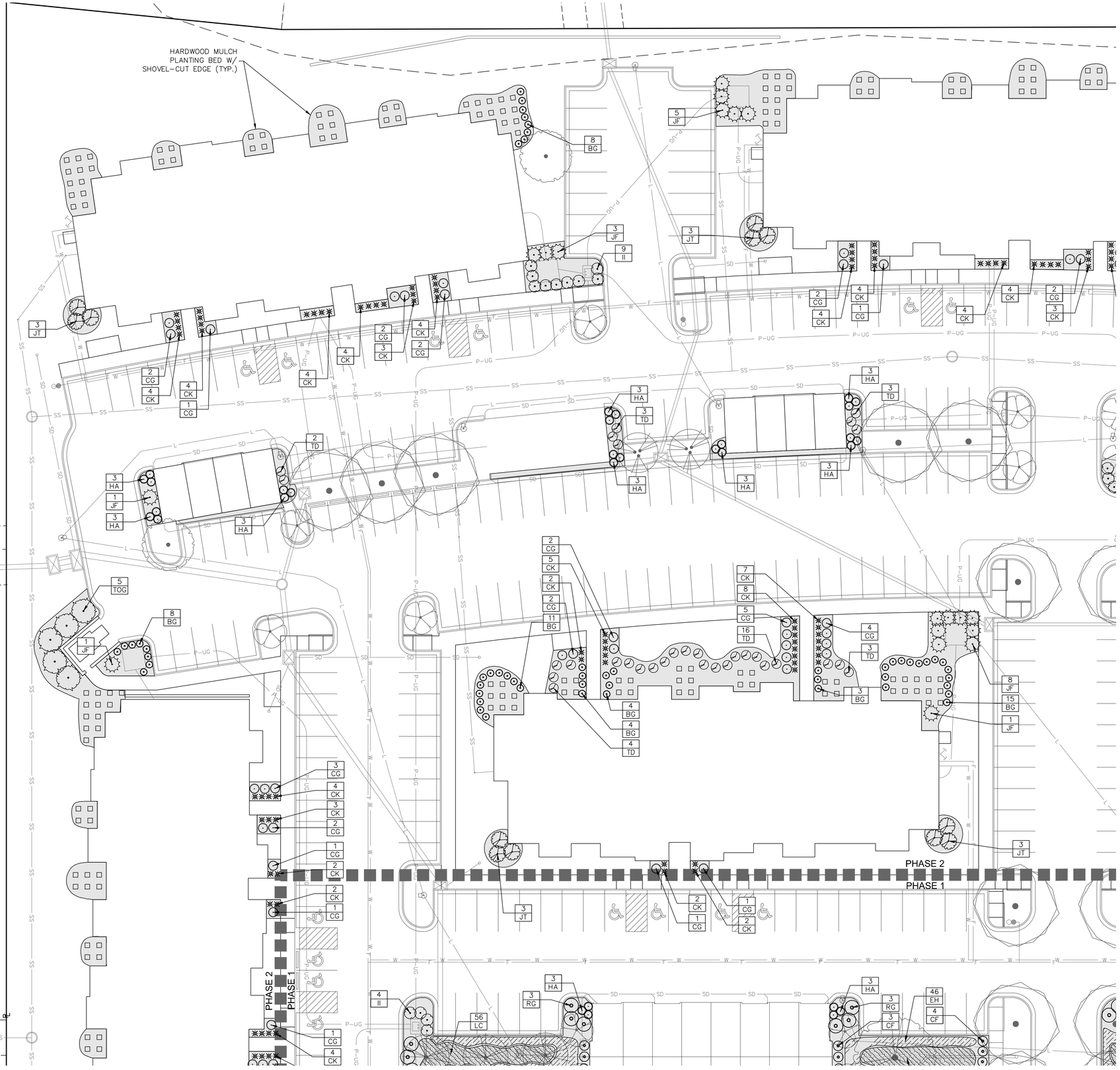
LEE'S SUMMIT, MO

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: 2020.08.27

SHEET
L301

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_GEN03_ B190012.dwg ~ Layout: LANDSCAPE OVERSTORY PLAN ~ Last Saved By: cholmquist ~ Plot Date: 2019.10.01 03:03 PM



PLANT SCHEDULE - OVERALL

DECIDUOUS SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	SIZE
	CF	120	CORNUS SERICEA 'FARROW' / ARCTIC FIRE RED TWIG DOGWOOD	3 GAL
	HR	11	HYDRANGEA QUERCIFOLIA 'RUBY SLIPPERS' / RUBY SLIPPERS HYDRANGEA	5 GAL
	RG	94	RHUS AROMATICA 'GRO-LOW' / GRO-LOW FRAGRANT SUMAC	3 GAL
EVERGREEN SHRUBS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**
	BG	370	BUXUS X 'GREEN MOUNTAIN' / GREEN MOUNTAIN BOXWOOD	5 GAL
	CG	111	CHAMAECYPARIS PISIFERA 'GOLDEN MOP' / GOLDEN MOP THREADLEAF FALSE CYPRESS	5 GAL
	II	43	ILEX GLABRA 'COMPACTA' / COMPACT INKBERRY	5 GAL
	JF	171	JUNIPERUS CHINENSIS 'SEA GREEN' / SEA GREEN JUNIPER	5 GAL
	JT	58	JUNIPERUS VIRGINIANA 'TORULOSA' / TORULOSA JUNIPER	5 GAL
	TD	167	TAXUS X MEDIA 'DENSIFORMIS' / DENSE YEW	5 GAL
	TOG	9	THUJA OCCIDENTALIS 'GREEN GIANT' / GREEN GIANT ARBORVITAE	6'-8' HT.
	HA	112	THUJA OCCIDENTALIS 'HOLMSTRUP' / HOLMSTRUP CEDAR	3 GAL
ORNAMENTAL GRASSES	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**
	BB	45	BOUTELOUA GRACILIS 'BLONDE AMBITION' / BLONDE AMBITION BLUE GRAMA	3 GAL
	CK	284	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' / KARL FOERSTER FEATHER REED GRASS	1 GAL
	ST	62	SPOROBOLUS HETEROLEPIS 'TARA' / TARA PRAIRIE DROPSEED	1 GAL
GROUND COVERS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**CONT**
	EH	434	EQUISETUM HYEMALE / HORSETAIL REED	1 GAL
	LC	360	LOBELIA CARDINALIS / CARDINAL FLOWER	1 GAL

PLANT SCHEDULE PHASE 1

DECIDUOUS SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	SIZE
	CF	120	CORNUS SERICEA 'FARROW' / ARCTIC FIRE RED TWIG DOGWOOD	3 GAL
	HR	11	HYDRANGEA QUERCIFOLIA 'RUBY SLIPPERS' / RUBY SLIPPERS HYDRANGEA	5 GAL
	RG	94	RHUS AROMATICA 'GRO-LOW' / GRO-LOW FRAGRANT SUMAC	3 GAL
EVERGREEN SHRUBS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**
	BG	186	BUXUS X 'GREEN MOUNTAIN' / GREEN MOUNTAIN BOXWOOD	5 GAL
	CG	42	CHAMAECYPARIS PISIFERA 'GOLDEN MOP' / GOLDEN MOP THREADLEAF FALSE CYPRESS	5 GAL
	II	20	ILEX GLABRA 'COMPACTA' / COMPACT INKBERRY	5 GAL
	JF	76	JUNIPERUS CHINENSIS 'SEA GREEN' / SEA GREEN JUNIPER	5 GAL
	JT	27	JUNIPERUS VIRGINIANA 'TORULOSA' / TORULOSA JUNIPER	5 GAL
	TD	94	TAXUS X MEDIA 'DENSIFORMIS' / DENSE YEW	5 GAL
	TOG	4	THUJA OCCIDENTALIS 'GREEN GIANT' / GREEN GIANT ARBORVITAE	6'-8' HT.
	HA	58	THUJA OCCIDENTALIS 'HOLMSTRUP' / HOLMSTRUP CEDAR	3 GAL
ORNAMENTAL GRASSES	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**
	BB	45	BOUTELOUA GRACILIS 'BLONDE AMBITION' / BLONDE AMBITION BLUE GRAMA	3 GAL
	CK	134	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' / KARL FOERSTER FEATHER REED GRASS	1 GAL
	ST	62	SPOROBOLUS HETEROLEPIS 'TARA' / TARA PRAIRIE DROPSEED	1 GAL
GROUND COVERS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**CONT**
	EH	434	EQUISETUM HYEMALE / HORSETAIL REED	1 GAL
	LC	360	LOBELIA CARDINALIS / CARDINAL FLOWER	1 GAL

PLANT SCHEDULE PHASE 2

EVERGREEN SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	SIZE
	BG	212	BUXUS X 'GREEN MOUNTAIN' / GREEN MOUNTAIN BOXWOOD	5 GAL
	CG	69	CHAMAECYPARIS PISIFERA 'GOLDEN MOP' / GOLDEN MOP THREADLEAF FALSE CYPRESS	5 GAL
	II	23	ILEX GLABRA 'COMPACTA' / COMPACT INKBERRY	5 GAL
	JF	45	JUNIPERUS CHINENSIS 'SEA GREEN' / SEA GREEN JUNIPER	5 GAL
	JT	33	JUNIPERUS VIRGINIANA 'TORULOSA' / TORULOSA JUNIPER	5 GAL
	TD	73	TAXUS X MEDIA 'DENSIFORMIS' / DENSE YEW	5 GAL
	TOG	5	THUJA OCCIDENTALIS 'GREEN GIANT' / GREEN GIANT ARBORVITAE	6'-8' HT.
	HA	48	THUJA OCCIDENTALIS 'HOLMSTRUP' / HOLMSTRUP CEDAR	3 GAL
ORNAMENTAL GRASSES	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**
	CK	150	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' / KARL FOERSTER FEATHER REED GRASS	1 GAL

NOTES:
1. LANDSCAPING IN PHASE 2 SHALL BE DELAYED UNTIL COMPLETION OF CONSTRUCTION OF BUILDINGS TO AVOID DISTURBANCE AND RE-INSTALLATION.
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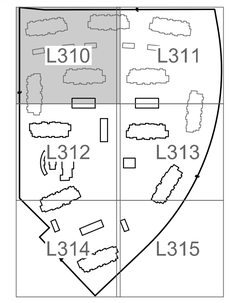

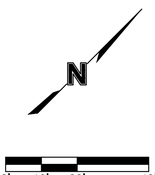

SITE PLAN
KEY MAP
NOT TO SCALE

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MO CERTIFICATE OF AUTHORITY #:001592
1301 BURLINGTON, SUITE 105
NORTH KANSAS CITY, MO 64116
TEL 816.361.1177

STATE OF MISSOURI
CHRISTOPHER HOLMQUIST
NUMBER PLA-2019026430
2020.12.31
PROFESSIONAL LANDSCAPE ARCHITECT
CHRIS HOLMQUIST, P.L.A.
MO# 2019026430

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
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REVISIONS

LANDSCAPE UNDERSTORY PLAN
SITE DEVELOPMENT 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: 2020.08.27

SHEET
L310

File: F:\2019\0001-0500\019-0012-B\40-Design\AutoCAD\Final Plans\Sheets\GNCV\Site Development\C_LSP01_ B190012.dwg ~ Layout: LANDSCAPE UNDERSTORY PLAN ~ Last Saved By: cholmquist ~ Plot Date: 2019.10.01 03:03 PM

HARDWOOD MULCH PLANTING BED W/ SHOVEL-CUT EDGE (TYP.)

PHASE 1
PHASE 2
56' B-T-L
10' B-T-L

PHASE 2
PHASE 1

PLANT SCHEDULE - OVERALL

DECIDUOUS SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	SIZE
	CF	120	CORNUS SERICEA 'FARROW' / ARCTIC FIRE RED TWIG DOGWOOD	3 GAL
	HR	11	HYDRANGEA QUERCIFOLIA 'RUBY SLIPPERS' / RUBY SLIPPERS HYDRANGEA	5 GAL
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EVERGREEN SHRUBS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**
	BG	370	BUXUS X 'GREEN MOUNTAIN' / GREEN MOUNTAIN BOXWOOD	5 GAL
	CG	111	CHAMAECYPARIS PISIFERA 'GOLDEN MOP' / GOLDEN MOP THREADLEAF FALSE CYPRESS	5 GAL
	II	43	ILEX GLABRA 'COMPACTA' / COMPACT INKBERRY	5 GAL
	JF	171	JUNIPERUS CHINENSIS 'SEA GREEN' / SEA GREEN JUNIPER	5 GAL
	JT	58	JUNIPERUS VIRGINIANA 'TORULOSA' / TORULOSA JUNIPER	5 GAL
	TD	167	TAXUS X MEDIA 'DENSIFORMIS' / DENSE YEW	5 GAL
	TOG	9	THUJA OCCIDENTALIS 'GREEN GIANT' / GREEN GIANT ARBORVITAE	6'-8' HT.
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	BB	45	BOUTELOUA GRACILIS 'BLONDE AMBITION' / BLONDE AMBITION BLUE GRAMA	3 GAL
	CK	284	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' / KARL FOERSTER FEATHER REED GRASS	1 GAL
	ST	62	SPOROBOLUS HETEROLEPIS 'TARA' / TARA PRAIRIE DROPSEED	1 GAL
GROUND COVERS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**CONT**
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PLANT SCHEDULE PHASE 1

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EVERGREEN SHRUBS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**
	BG	186	BUXUS X 'GREEN MOUNTAIN' / GREEN MOUNTAIN BOXWOOD	5 GAL
	CG	42	CHAMAECYPARIS PISIFERA 'GOLDEN MOP' / GOLDEN MOP THREADLEAF FALSE CYPRESS	5 GAL
	II	20	ILEX GLABRA 'COMPACTA' / COMPACT INKBERRY	5 GAL
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PLANT SCHEDULE PHASE 2

EVERGREEN SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	SIZE
	BG	212	BUXUS X 'GREEN MOUNTAIN' / GREEN MOUNTAIN BOXWOOD	5 GAL
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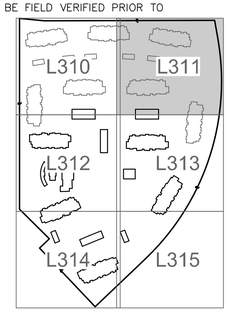

SITE PLAN KEY MAP
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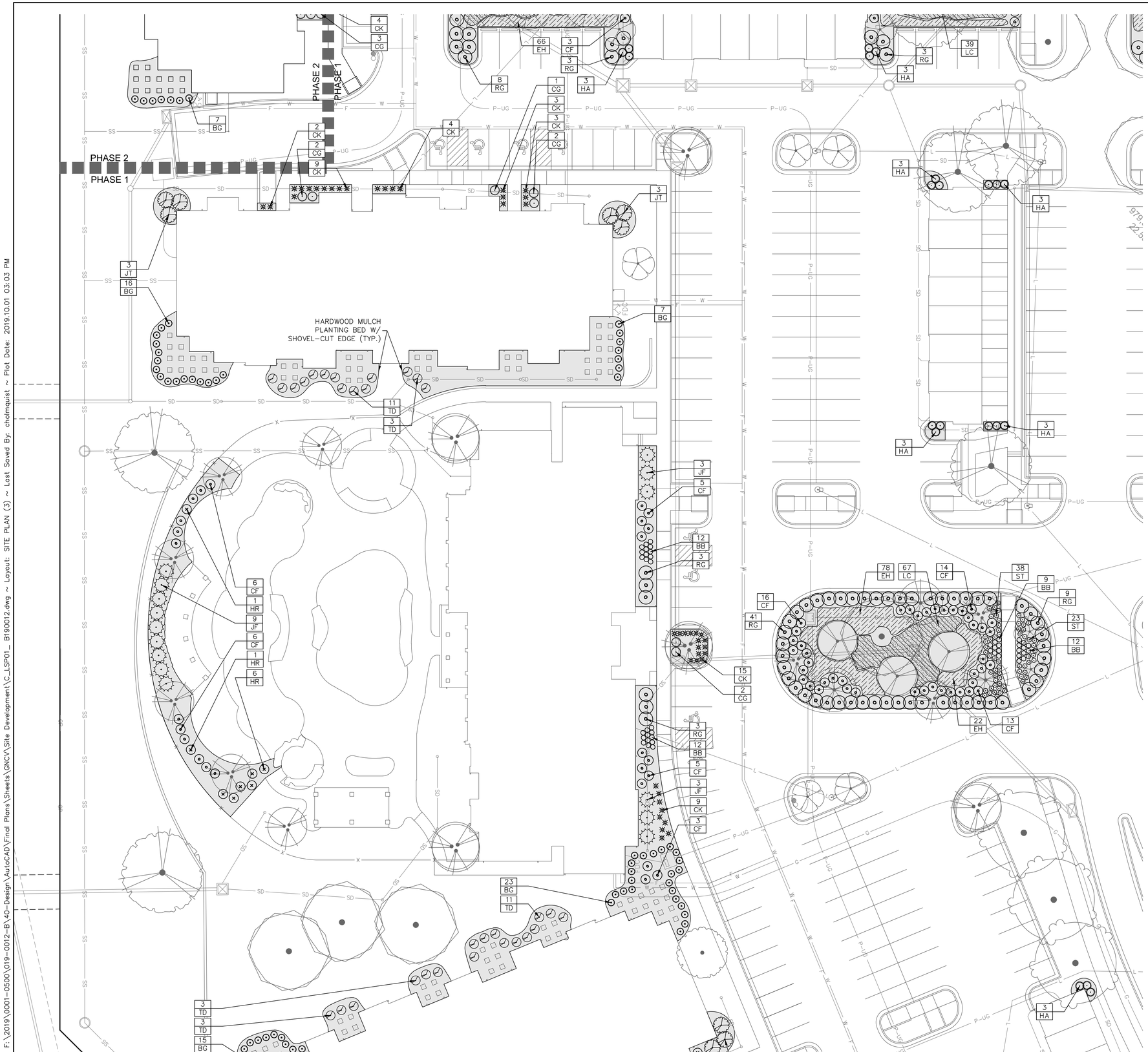
PHASE 1
PHASE 2
HARDWOOD MULCH
PLANTING BED W/
SHOVEL-CUT EDGE (TYP.)
4 CK
3 CG
7 BG
2 CK
2 CG
9 CK
3 JT
16 BG
11 TD
3 TD
6 CF
1 HR
9 JF
6 CF
1 HR
6 HR
66 EH
3 CF
3 RG
8 RG
1 CG
3 CK
3 CK
2 CG
3 HA
39 LC
3 JF
5 CF
12 BB
3 RG
78 EH
67 LC
14 CF
38 ST
16 CF
41 RG
9 BB
9 RG
23 ST
12 BB
22 EH
13 CF
15 CK
2 CG
3 RG
12 BB
5 CF
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3 CF
23 BG
11 TD
3 TD
3 TD
15 BG
3 HA
3 HA
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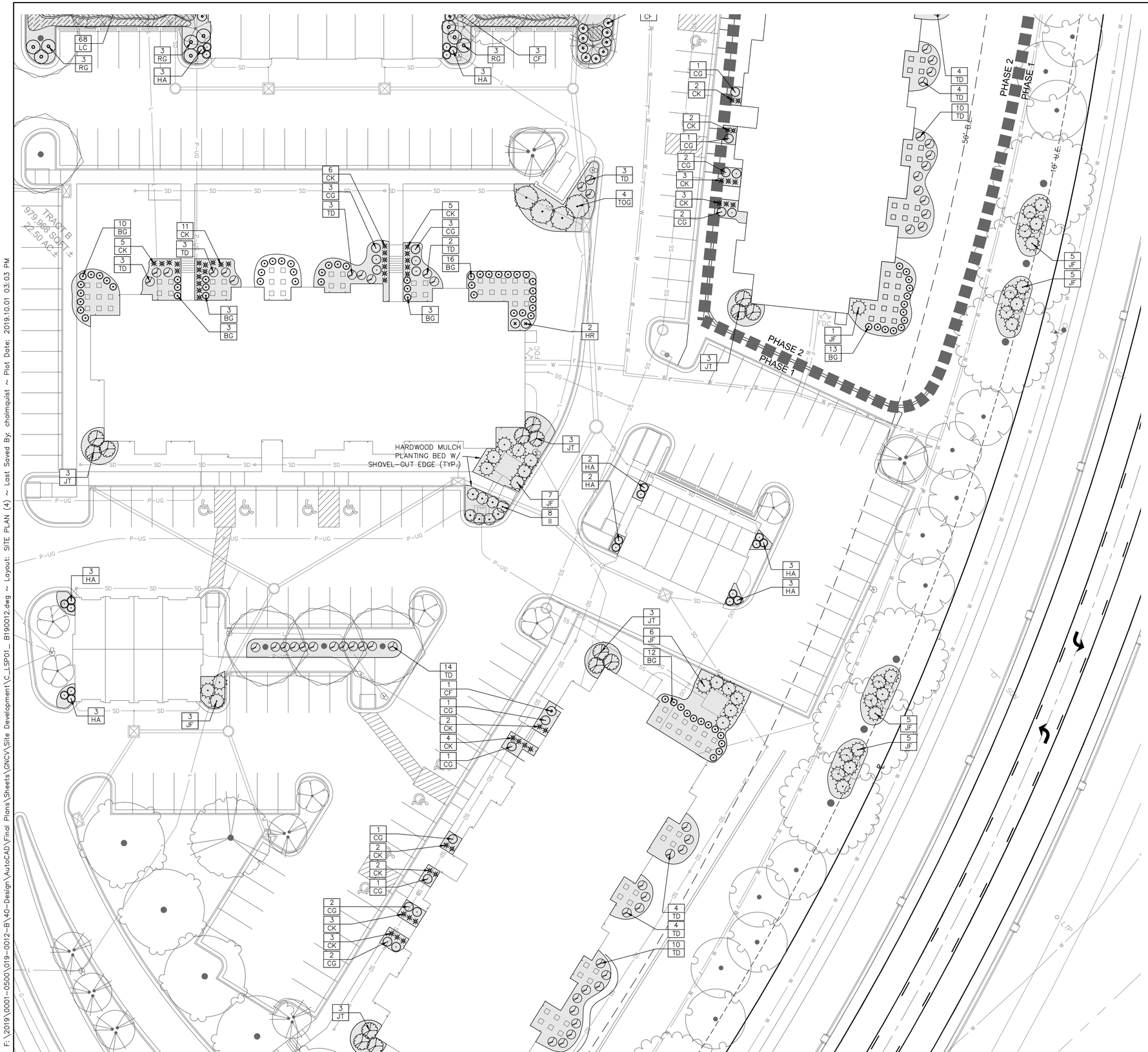

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PLANT SCHEDULE PHASE 2

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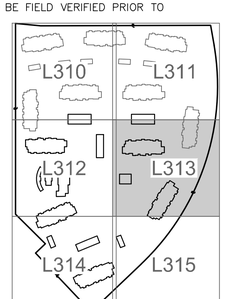

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QA/QC by: N.D.H.
project no.: 019-0012-B
date: 2020.08.27

SHEET
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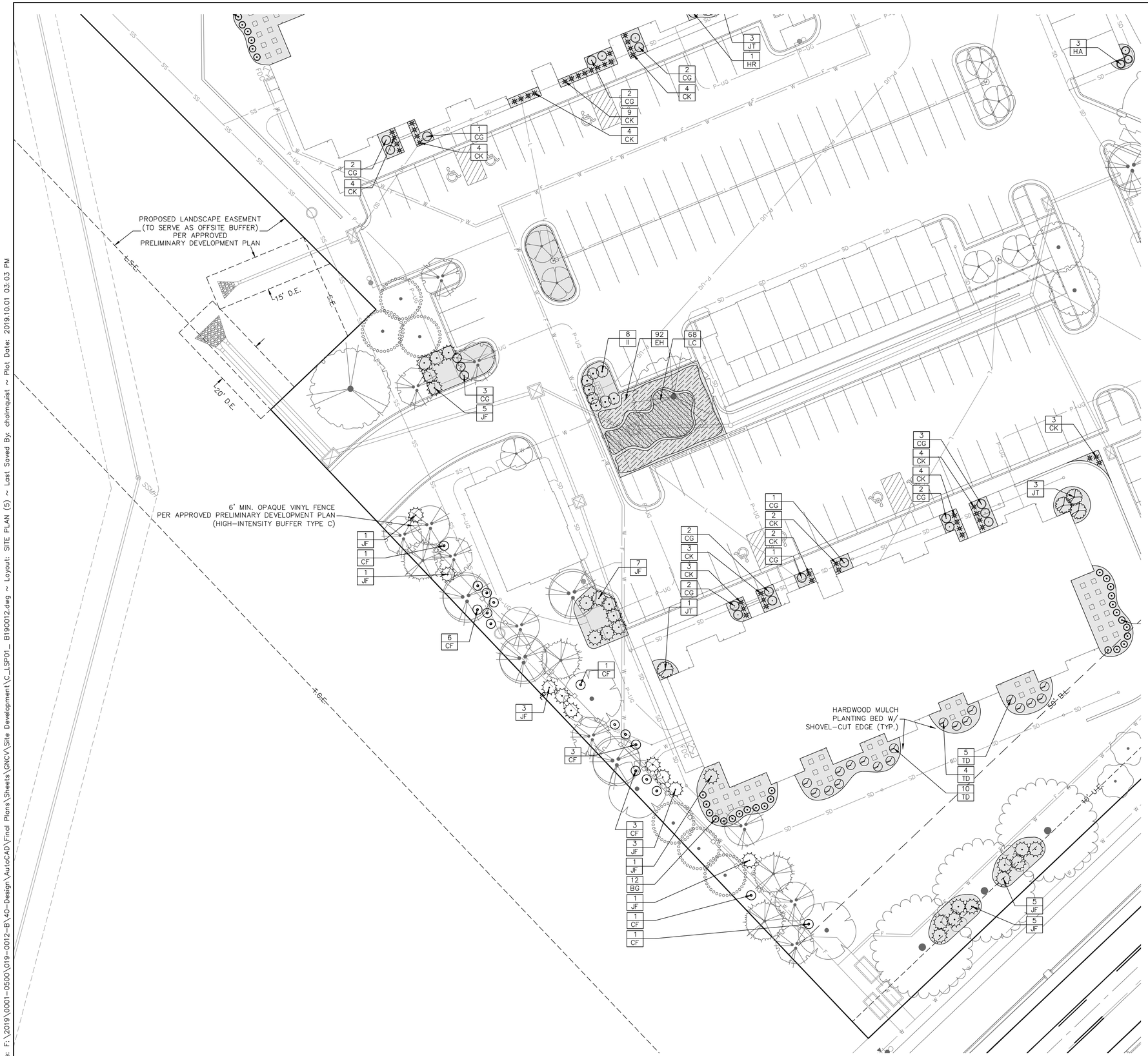

PLANT SCHEDULE - OVERALL

DECIDUOUS SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	SIZE
	CF	120	CORNUS SERICEA 'FARROW' / ARCTIC FIRE RED TWIG DOGWOOD	3 GAL
	HR	11	HYDRANGEA QUERCIFOLIA 'RUBY SLIPPERS' / RUBY SLIPPERS HYDRANGEA	5 GAL
	RG	94	RHUS AROMATICA 'GRO-LOW' / GRO-LOW FRAGRANT SUMAC	3 GAL
EVERGREEN SHRUBS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**
	BG	370	BUXUS X 'GREEN MOUNTAIN' / GREEN MOUNTAIN BOXWOOD	5 GAL
	CG	111	CHAMAECYPARIS PISIFERA 'GOLDEN MOP' / GOLDEN MOP THREADLEAF FALSE CYPRESS	5 GAL
	II	43	ILEX GLABRA 'COMPACTA' / COMPACT INKBERRY	5 GAL
	JF	171	JUNIPERUS CHINENSIS 'SEA GREEN' / SEA GREEN JUNIPER	5 GAL
	JT	58	JUNIPERUS VIRGINIANA 'TORULOSA' / TORULOSA JUNIPER	5 GAL
	TD	167	TAXUS X MEDIA 'DENSIFORMIS' / DENSE YEW	5 GAL
	TDG	9	THUJA OCCIDENTALIS 'GREEN GIANT' / GREEN GIANT ARBORVITAE	6'-8' HT.
	HA	112	THUJA OCCIDENTALIS 'HOLMSTRUP' / HOLMSTRUP CEDAR	3 GAL
ORNAMENTAL GRASSES	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**
	BB	45	BOUTELOUA GRACILIS 'BLONDE AMBITION' / BLONDE AMBITION BLUE GRAMA	3 GAL
	CK	284	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' / KARL FOERSTER FEATHER REED GRASS	1 GAL
	ST	62	SPOROBOLUS HETEROLEPIS 'TARA' / TARA PRAIRIE DROPSEED	1 GAL
GROUND COVERS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**CONT**
	EH	434	EQUISETUM HYEMALE / HORSETAIL REED	1 GAL
	LC	360	LOBELIA CARDINALIS / CARDINAL FLOWER	1 GAL

PLANT SCHEDULE PHASE 1

DECIDUOUS SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	SIZE
	CF	120	CORNUS SERICEA 'FARROW' / ARCTIC FIRE RED TWIG DOGWOOD	3 GAL
	HR	11	HYDRANGEA QUERCIFOLIA 'RUBY SLIPPERS' / RUBY SLIPPERS HYDRANGEA	5 GAL
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EVERGREEN SHRUBS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**
	BG	186	BUXUS X 'GREEN MOUNTAIN' / GREEN MOUNTAIN BOXWOOD	5 GAL
	CG	42	CHAMAECYPARIS PISIFERA 'GOLDEN MOP' / GOLDEN MOP THREADLEAF FALSE CYPRESS	5 GAL
	II	20	ILEX GLABRA 'COMPACTA' / COMPACT INKBERRY	5 GAL
	JF	76	JUNIPERUS CHINENSIS 'SEA GREEN' / SEA GREEN JUNIPER	5 GAL
	JT	27	JUNIPERUS VIRGINIANA 'TORULOSA' / TORULOSA JUNIPER	5 GAL
	TD	94	TAXUS X MEDIA 'DENSIFORMIS' / DENSE YEW	5 GAL
	TDG	4	THUJA OCCIDENTALIS 'GREEN GIANT' / GREEN GIANT ARBORVITAE	6'-8' HT.
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	CK	134	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' / KARL FOERSTER FEATHER REED GRASS	1 GAL
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GROUND COVERS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**CONT**
	EH	434	EQUISETUM HYEMALE / HORSETAIL REED	1 GAL
	LC	360	LOBELIA CARDINALIS / CARDINAL FLOWER	1 GAL

PLANT SCHEDULE PHASE 2

EVERGREEN SHRUBS	CODE	QTY	BOTANICAL / COMMON NAME	SIZE
	BG	212	BUXUS X 'GREEN MOUNTAIN' / GREEN MOUNTAIN BOXWOOD	5 GAL
	CG	69	CHAMAECYPARIS PISIFERA 'GOLDEN MOP' / GOLDEN MOP THREADLEAF FALSE CYPRESS	5 GAL
	II	23	ILEX GLABRA 'COMPACTA' / COMPACT INKBERRY	5 GAL
	JF	45	JUNIPERUS CHINENSIS 'SEA GREEN' / SEA GREEN JUNIPER	5 GAL
	JT	33	JUNIPERUS VIRGINIANA 'TORULOSA' / TORULOSA JUNIPER	5 GAL
	TD	73	TAXUS X MEDIA 'DENSIFORMIS' / DENSE YEW	5 GAL
	TDG	5	THUJA OCCIDENTALIS 'GREEN GIANT' / GREEN GIANT ARBORVITAE	6'-8' HT.
	HA	48	THUJA OCCIDENTALIS 'HOLMSTRUP' / HOLMSTRUP CEDAR	3 GAL
ORNAMENTAL GRASSES	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**
	CK	150	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' / KARL FOERSTER FEATHER REED GRASS	1 GAL

NOTES:
1. LANDSCAPING IN PHASE 2 SHALL BE DELAYED UNTIL COMPLETION OF CONSTRUCTION OF BUILDINGS TO AVOID DISTURBANCE AND RE-INSTALLATION.
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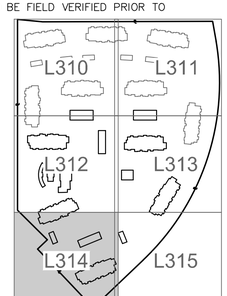

SITE PLAN
KEY MAP
NOT TO SCALE

0' 10' 20' 40'
SCALE IN FEET

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MO CERTIFICATE OF AUTHORITY #L001592
1301 BURLINGTON, SUITE 100
NORTH KANSAS CITY, MO 64116
TEL 816.361.1177
www.olsson.com

STATE OF MISSOURI
CHRISTOPHER HOLMQUIST
NUMBER PLA-2019026430
2020.12.31
PROFESSIONAL LANDSCAPE ARCHITECT

CHRIS HOLMQUIST, P.L.A.
MO# 2019026430

NO. REV.	DATE	REVISIONS DESCRIPTION	BY
1	07 JAN 2021	PERMIT SET / CITY COMMENT REVISIONS	

REVISIONS

LANDSCAPE UNDERSTORY PLAN
SITE DEVELOPMENT 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: 2020.08.27

SHEET
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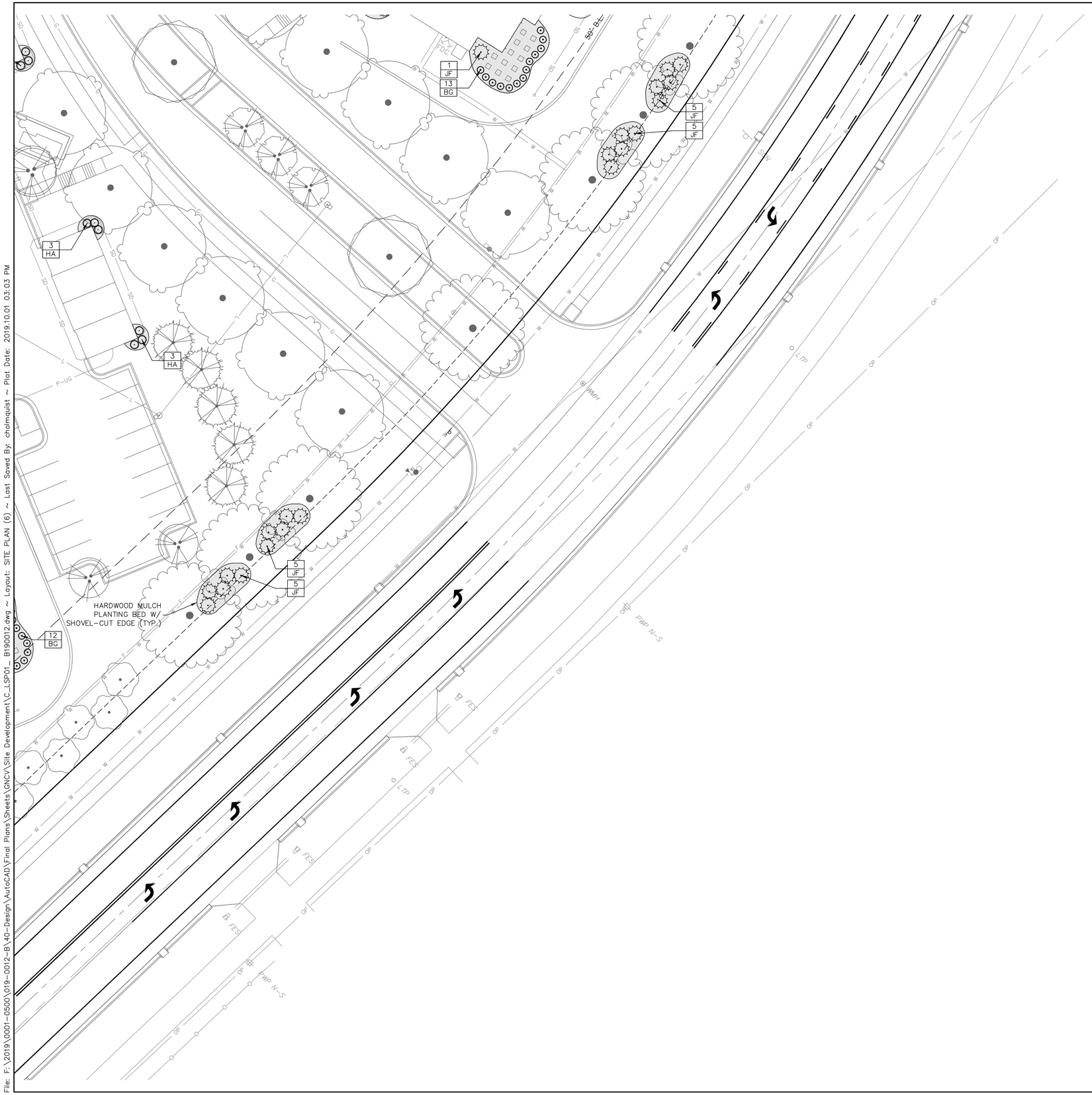

PLANT SCHEDULE - OVERALL

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PLANT SCHEDULE PHASE 2

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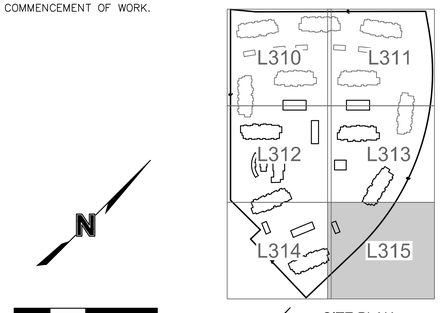

0' 10' 20' 40'
SCALE IN FEET

SITE PLAN
KEY MAP
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LANDSCAPE UNDERSTORY PLAN
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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checked by: N.D.H.
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SHEET
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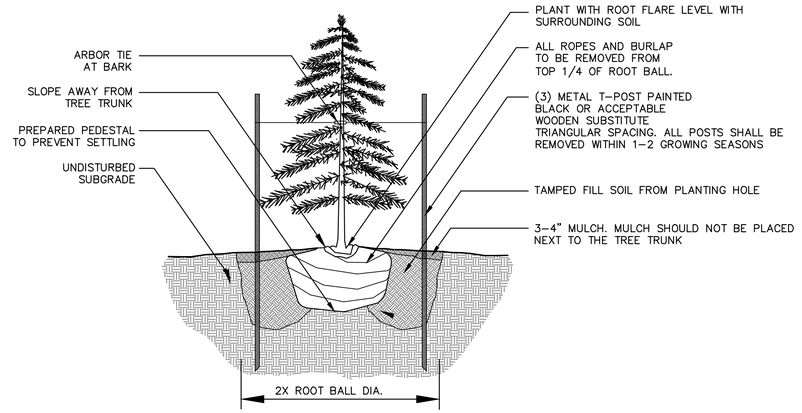
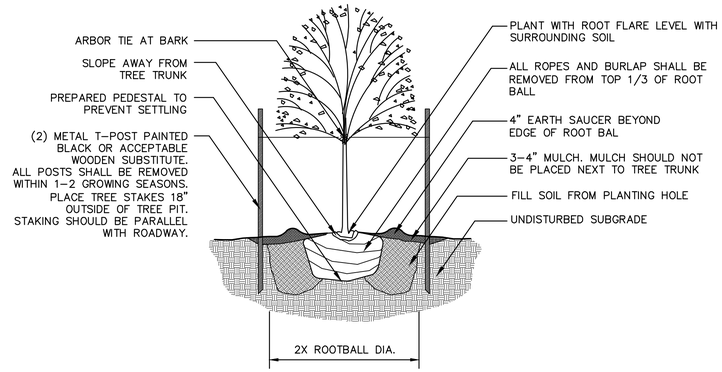


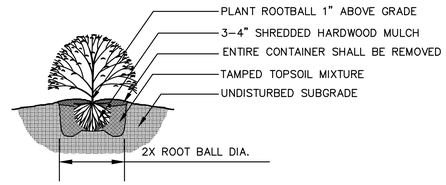
NOTES:
1. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2. IN AREAS OF TURF, SURROUND BED WITH 6' DIAMETER OF MULCH

1 Evergreen Tree Planting Detail
not to scale



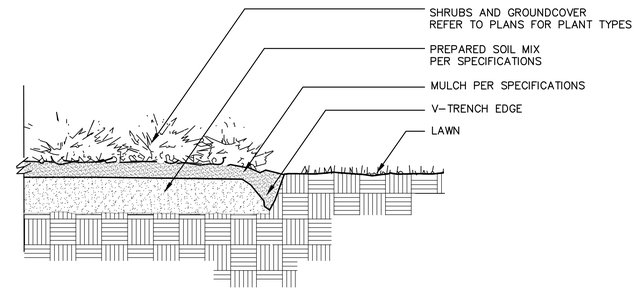
NOTES:
1. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2. IN AREAS OF TURF, SURROUND BED WITH 6' DIAMETER OF MULCH. ENSURE TREE STAKES ARE WITHIN MULCH AREA PLACED IN UNDISTURBED SUBGRADE.

2 Deciduous Tree Planting Detail
not to scale



NOTES:
1. MINIMUM ROOT SPREAD TO BE IN ACCORDANCE WITH ANLA STANDARDS
2. PRUNE DAMAGED LIMBS OR ROOTS AFTER INSTALLATION
3. MAKE SURE ROOTS DO NOT DRY OUT DURING INSTALLATION
4. SOAK GENEROUSLY TO COMPACT AND SETTLE

3 Shrub Planting Detail
not to scale



4 V-Trench Edging Detail
not to scale

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LANDSCAPE DETAILS
SITE DEVELOPMENT PLANS

ARIA APARTMENTS
PHASE 1

LEE'S SUMMIT, MO

2020

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PART 1 - GENERAL

1.1 PROJECT CONDITIONS

A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

B. Site Examination: Contractor shall verify all conditions, dimensions, and elevations in the field before starting work, and notify the project engineer or Landscape Architect immediately of any discrepancies between drawings and field conditions if encountered.

C. Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary services or utilities according to requirements indicated:
1. Notify Landscape Architect no fewer than seven (7) days in advance of proposed interruption of each service or utility.
2. Do not proceed with interruption of services or utilities without Landscape Architect's written permission.

D. Site Conditions:
1. Contractor shall keep the premises clean and free from rubbish and all debris associated with the work at all times. All unused materials and debris shall be removed from the site.
2. Contractor is responsible for repairs or damage to any existing improvements during construction such as but not limited to: drainage utilities, pavement, striping, curb, etc. Any repair work in the city R.O.W. shall be equal to or better than existing conditions.
3. Contractor shall comply with specifications prior to commencement of any type of work.
4. All disturbed areas outside of the project limits as shown on the plans are to be restored back to the original conditions with turf-type, tall fescue seed.
5. Contractor shall not commence with work until the site is free of debris caused by ongoing construction operations. Removal of debris shall be the responsibility of the General Contractor.
6. Contractor shall coordinate all work with other Contractors on site throughout the construction.

E. Safety:
1. Neither the Owner nor the Landscape Architect will enforce safety measures or regulations. The Contractor shall design, construct and maintain all safety devices, and shall be solely responsible for conforming to all local, state and federal safety and health standards, laws and regulations.

F. Utilities:
1. Contractor shall take all necessary precautions and responsibility to locate and protect any and all public and private underground or concealed conduit, plumbing or other utilities where new work is being performed. Contractor is responsible for repairing any and all damage to utilities, structures, site appurtenances, etc., which occur as a result of the landscape construction. Contractor shall maintain stakes set by others until all parties concerned mutually agree upon removal. In no case shall landscape material be planted in a way which will interfere with or cause damage to overhead or underground utilities.
2. Missouri one call system: 1-800-344-7483

G. Requirements:
1. All work shall conform to all federal, state, and local requirements for installation and maintenance.
2. The final, approved landscape plan must be available for onsite inspection at all times.

H. Clearzone:
1. The clearzone shall be maintained at all intersections that ingress and egress to the site. It is the Owner's responsibility to maintain the plant material at a height of not over thirty (30) inches above pavement and provide unobstructed sight distance for drivers in vehicles approaching the intersection.
2. Vertical clearance of at least eighty (80) inches must be provided above walks at all times. It is the Owner's responsibility to maintain trees and other overhanging objects to provide adequate headroom to comply with ADA guidelines.

I. Conflicts:
1. Should a conflict arise between specifications, codes, standards, ordinances and plans, the most stringent requirements shall apply.
2. Where no construction details are shown or noted for any part of the work, such details shall be the same as for similar work shown on the drawing and shall meet with Manufacturer's specifications.

J. Measurements:
1. Before commencing work or ordering any materials, the Contractor shall verify all measurements and shall be responsible for their accuracy. Any discrepancies shall be reported to the project Landscape Architect. The Contractor shall be responsible for the differences between actual dimensions and measurements indicated.
2. Written dimensions shall prevail. In no case shall working dimensions be scaled from plans, sections or details on the drawing.
3. Landscape Contractor shall supply bid to Olsson Associates for review. Bid shall include unit costs for all materials.

K. Plan Changes:
1. All drawings, specifications, and other work products developed by Olsson Associates are instruments of service for this project only and shall remain the property of Olsson Associates. Instruments of service may not be used, reproduced or changed in any form without the prior written permission of Olsson Associates.
2. In the event any changes are made to the plans and specifications by Owner or persons other than Olsson Associates, any liability arising out of such changes is waived against Olsson Associates. Owner assumes full responsibility for such changes unless Owner has given Olsson Associates prior notice and has received written consent for such changes.

L. Substitutions:
1. Any changes or deviations from these plans must be approved in writing by Owner, Olsson Associates and the Local Municipal Agencies. Changes shall possess the same characteristics as indicated on the plans and specifications.

M. Delegated design irrigation system:
1. If an irrigation system is not provided with the Landscape Plans, the Contractor is to design a 100 percent coverage irrigation system, including comprehensive engineering analysis by a qualified Professional Engineer, using performance requirements and design criteria indicated per Owner's direction.
2. Irrigation Contractor to design and install irrigation system and shall include all required components including, but not limited to, rain shut off sensor, controller, taps, backflow preventers, all approvals, and all fees required by city.
3. Irrigation Contractor shall submit a copy of plan to Owner's Representative or Project Landscape Architect for review prior to installation of system.
4. Irrigation Contractor shall conduct a training session with the owner (or representatives) demonstrating the operation of the system and the controller. As part of this training, Contractor shall provide one spring start-up and one fall shut-down of the system.
5. Landscape Contractor to provide cost estimates for irrigation system for all plant material indicated on plans.
6. Irrigation system shall be tested and approved by Owner's Representative or Landscape Architect prior to backfilling trenches. Irrigation system shall be fully operational prior to the installation of any plant materials.
7. All planting beds shall be watered by the irrigation system.
8. General Contractor to supply all power required to operate irrigation system.
9. Irrigation Contractor shall notify Owner's Representative or Project Landscape Architect of any changes to irrigation conduit locations or sizes.
10. It is the Landscape Contractor's responsibility to determine water application rates and timer cycling. The Irrigation Contractor will instruct the Owner on the operation and programming of the controller.
11. All zones and main lines will be pressure-tested at the time of installation and again prior to building turnover. Results shall be submitted in writing to Project Landscape Architect and Owner or Owner's Representative.
12. Irrigation shall not spray on building, sidewalks, and drives.
13. Irrigation controller location shall be coordinated with other wall-mounted service panels per Owner's approval.
14. Landscape Contractor shall hand-water all trees, turf grass areas, and native seed mix areas until substantial completion.
15. Treegator bags (or approved equal) shall be used for all proposed trees on site.

1.2 SUBMITTALS

A. Qualification Data for qualified Landscape Installers: Include list of similar projects completed by Landscape Contractor demonstrating Landscape Contractor's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of Owners' contact persons.

B. Samples shall be approved by Landscape Architect prior to installation on project.

C. Product Data: Provide for each type of product indicated, including soils.
1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
2. Pesticides and Herbicides: Include product label and Manufacturer's application instructions specific to the Project.
3. Plant Photographs: Include color photographs in digital format of each required species and size of plant material as it will be furnished to the Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than 20 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.

D. Samples for Verification: Provide as listed for each of the following:
1. Trees and Shrubs: Three samples of each variety and size must be delivered to the site for review. Maintain approved samples on-site as a standard for comparison.
2. Hardwood Mulch, Leaf Compost Mulch, & Rock Mulch: 1-quart volume of each organic mulch, in sealed plastic bags labeled with composition of materials by percentage weight and source of mulch, is required. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.
3. Weed Control Barrier: 12 by 12 inches.

E. Product Certificates: Each type of manufactured product, from Manufacturer, shall comply with the following:
1. Manufacturer's certified analysis of standard products.
2. All plant material inspection certificates required by federal, state or other governing authorities will accompany each shipment and be turned over to the Owner's Representative upon delivery.
3. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
4. Invoice:
   a. Vendor or Grower's invoice for each shipment of plants shall show sizes, quantities, and root treatment of plants, i.e. containerized, balled and burlapped, or plug.
   b. Invoice for each shipment of soil amendments and seed mixtures.
5. Label data substantiating that plants, trees, shrubs, perennials, seed and planting materials comply with specifications.
6. Seed Vendor's certified statement for each seed mixture required stating botanical and common name, percentages by weight, and percentages of purity, germination, and weed seed for each seed mixture.

F. Material Test Reports: For standardized ASTM D5268 topsoil, existing native surface topsoil, existing in-place surface soil and imported or manufactured topsoil.

G. Maintenance Instructions: Recommended typewritten instructions and procedures to be established by the Owner for maintenance of plants during a calendar year. Submit before start of required maintenance periods and prior to final acceptance of landscape material.

H. Warranty: Sample of special warranty.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful establishment of plants.
1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
2. Experience: A minimum of five (5) years experience on projects similar in characteristics and size. Contractor shall be a company specializing in landscape installation.
3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on project site when work is in progress.
4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the Professional Landcare Network:
   a. Certified Landscape Technician - Exterior, with designated CLT-Exterior.
   b. Certified Ornamental Landscape Professional, designated COLP.
5. Pesticide Applicator: State licensed, commercial.

B. Soil Testing
1. Laboratory Qualifications: An independent or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in the types of tests to be performed.
2. The Contractor shall be responsible for having both the topsoil and existing soil tested for proposed plant material locations. Topsoil shall be tested by an independent soil testing agency. The Contractor shall furnish one (1) copy of the soil analysis plus recommended amendments prepared to meet the desired pH and nutritional and organic levels determined to be adequate for the area by the County Extension Agent or approved independent soil testing agency to the Landscape Architect prior to application of any amendments or fertilizer.

C. Soil Analysis: For each unamended soil type, furnish soil analysis and a written report by a qualified soil testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of the soil.
1. Testing methods and written recommendations shall comply with USDA's Handbook No. 60.
2. The soil testing laboratory shall oversee soil sampling with depth, location, and number of samples to be taken per instructions from Landscape Architect. A minimum of three representative samples shall be taken from varied locations for each soil to be used or amended for planting purposes.
3. Report suitability of tested soil for plant growth.
   a. Based upon the test results, state the recommendations for soil treatments and soil amendments to be incorporated. State recommendations in weight per 1000 sq. ft, or volume per cubic yard for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
   b. Report presence of problem salts, minerals, or heavy metals including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional recommendations for corrective action.

D. Measurements: Measure according to ANSI Z60.1 - *American Standard for Nursery Stock*. Do not prune to obtain required sizes.
1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container-grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for larger sizes.
2. Other Plants: Measure with stems, petioles, and foliage in their normal position.

E. Quality and Size:
1. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1 - American Standard for Nursery Stock.
2. Required plant materials shall conform to type stated on the plant list. Sizes shall be the minimum stated on the plant list or larger. All installation and measurements shall be in accordance with the latest editions of the American Standard for Nursery Stock (ANSI Z60.1) and with the general planting specifications as set forth by the local municipal agency's landscape ordinance.
3. Landscape plant material shall satisfy AAN American Standards, be State Department of Agriculture inspected, and no. 1 grade with straight, unscarred trunk and well developed uniform crown (park grade trees will not be accepted).
4. The plant material shall be nursery grown and inspected by the Owner's Representative before planting.
5. Plants designated "B&B" shall be balled and burlapped, with firm balls of earth.
6. All installed plant materials shall be certified by the State to be disease-free and pest-free and not of a species known to carry or be host to destructive pathogens or pests. Plants shall be healthy, vigorous stock, grown in a recognized nursery in accordance with good horticultural practices, free of disease, insects, eggs, larvae and defects such as knots, sun-scald, injuries, abrasions or disfigurement.
7. All trees shall have a central leader and a radial branching structure.
8. Plant materials delivered to site and not planted within 24 hours of delivery shall be "heeled" and watered in a shaded area, protected from weather, mechanical damage and dehydration prior to planting.
9. Each tree and shrub shall be securely labeled with a waterproof tag indicating the botanical name, common name, and size for delivery to site.
10. Provide healthy, vigorous stock, grown in a recognized nursery in accordance with good horticultural practices, free of disease, insects, eggs, larvae and defects such as knots, sun-scald, injuries, abrasions or disfigurement. Place all plants in shaded area, protected from weather, mechanical damage and dehydration prior to planting.
11. All plant surfaces shall receive emulsion type, film-forming anti-desiccant agent designed to permit transpiration, but retard excessive loss of moisture from plants. Anti-desiccant to be delivered in Manufacturer's fully identified containers and mixed in accordance with Manufacturer's specifications.

F. Plant Material Observation: Landscape Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Landscape Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from project site.
1. Notify Landscape Architect of sources of planting materials seven (7) days in advance of delivery to site.
2. Inspections and Testing:
   a. The Landscape Architect reserves the right to inspect and/or tag plants at place of growth with Landscape Contractor.
   b. All plants must be inspected and approved by the Landscape Architect before they are planted. Inspection and approval by the Landscape Architect at place of growth or upon delivery shall be for quality, size, and variety only and shall not in any way impair the right of rejection for failure to meet other requirements during progress of work. Plants damaged during delivery or at job site shall be rejected.
3. All site work, including plant locations, shall be staked by the Landscape Contractor and shall be approved by the Landscape Architect prior to installation. Any walks, walls or edging shall be installed in a manner consistent with the plants as shown, and shall be installed free of kinks, bends or abrupt curves.
4. All dead plant materials shall be removed and replaced as required in order to maintain an attractive landscape at all times.

G. Quantities:
1. Contractor is responsible for verifying all quantities shown on these plans before pricing the work. Any difference in quantities should be brought to the attention of the Landscape Architect for clarification.
2. Quantities listed in the plant list schedule are for estimates only. Trees, shrubs, and groundcover of contract quantities shall be the number of items shown on the drawings. Contractor shall supply the quantities necessary to complete the work as shown on the drawings. Quantities listed on the plant list are approximate only. Any difference in quantities should be brought to the attention of the Project Landscape Architect for clarification.
3. Contractor shall provide trees, shrubs, and plants of quantity, size, genus, species and variety shown and scheduled for landscape work.

H. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
1. Spring Planting: April 1st to June 15th
2. Fall Planting: August 15th to November 1st

I. Weather Limitations: Proceed with plant material installation and sodding only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to Manufacturer's written instructions and warranty requirements.

J. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.
1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of Manufacturer, and indication of conformance with state and federal laws if applicable.

B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.

C. Deliver bare-root stock plants freshly dug. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.

D. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

E. Handle planting stock by root ball.

F. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.
1. Heel-in bare-root stock. Soak roots that are in dry condition in water for two hours. Reject dried-out plants.
2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
3. Do not remove container-grown stock from containers before time of planting.
4. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly-wet condition.

G. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod in time for planting within 24 hours of harvesting. Protect sod from breakage and drying.

1.5 WARRANTY

A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
1. Failures include, but are not limited to, the following:
   a. Death, unhealthy condition, plant material with more than 25% die back and unsatisfactory growth as determined by the Owner's Representative, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control.
   b. Structural failures including plantings falling or blowing over.
   c. Faulty performance of tree stabilization.
2. Warranty Periods from Date of Substantial Completion:
   a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
   b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.
   c. Annuals: Two months.
3. Include the following remedial actions as a minimum:
   a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
   b. Replace plants that are not in good condition or in an unhealthy condition as judged by the Owner's Representative prior to Substantial Completion and at end of the warranty period at no additional cost to the Owner.
   c. A limit of one replacement of each plant will be required except for losses or replacements due to failure to comply with requirements.
   d. Provide extended warranty for period equal to original warranty period for replaced plant material.

1.6 MAINTENANCE SERVICE

A. Installation Maintenance:
1. Maintenance shall begin immediately after installation of each plant, sod or turf. All plant material, sod and/or shall be maintained in a vigorous, thriving condition until all planting is completed and accepted.
2. Maintain turf, material and plants until Substantial Completion or until Owner accepts landscape installation.
3. Maintenance activities of turf or sod shall include watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading and replanting as required to establish a smooth sodded surface, free of eroded or bare areas, free of weeds and acceptable by Owner.
4. Maintenance activities of plant material - trees, shrubs, ornamental grasses, perennials, annuals, and groundcover - include watering, weeding, cultivating, mulching, adjusting of stakes, removal of dead materials, resetting plants to proper grades or upright positions, restoration of the planting saucer, and any other procedures consistent with good horticultural practices necessary to insure normal, vigorous, and healthy growth.

B. Initial Maintenance Service for Trees and Shrubs: Provide maintenance by skilled employees of Landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established but for not less than the maintenance period below.
1. Maintenance Period: Twelve (12) months from date of Substantial Completion.

C. Initial Maintenance Service for Ground Cover and Other Plants: Provide maintenance by skilled employees of Landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established but for not less than the maintenance period below.
1. Maintenance Period: Twelve (12) months from date of Substantial Completion.

D. Initial Maintenance Service for Turf: Provide full maintenance by skilled employees of Landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than the following periods:
1. Sodded Turf: Twelve (12) months from date of Substantial Completion.

E. Continuing Maintenance Proposal: From Installer to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant Schedule or Plant Legend shown on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots will be rejected.
2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated. Park Grade material is not acceptable.

B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.

C. Root Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

D. Labeling: Label each plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant as shown on Drawings.

E. If formal arrangements or consecutive order of plants is shown on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

F. Perennials: Provide healthy, disease-free plants of species and variety shown or listed, with well-established root systems reaching to sides of the container to maintain a firm ball, but not with excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery.

2.2 NATIVE SEED

A. All disturbed areas, fills and embankments shall be seeded and fertilized as specified on the plans.

B. Native seed shall be obtained from sources specified on plans or approved alternate source.

2.3 TURF SEED

A. All disturbed areas, fills and embankments shall be seeded and fertilized as specified on the plans.

B. Grass seed shall have a rating of 6.0 or better in the Kansas State Turf Grass Test, with the following characteristics: Purity - 98%, and Inert - 1.75%

2.4 TURF SOD

A. Sod shall be grown from a seed with a rating of 6.0 or better in the Kansas State Turf Grass Test.

B. Sod shall be composed of fescue blend free from insects, disease, weeds and other grasses, cut in uniform strips consisting of 1 square yard per strip or approved equal.

2.5 PLANTING SOILS

A. Soil Testing:
1. Landscape Contractor to test soil on site and provide results to the Owner and Landscape Architect prior to commencement of work.
2. Landscape Contractor to verify and guarantee that the onsite topsoil will support turf grass seed, sod, and plant material.
3. Landscape Contractor to recommend soil amendments if soil test is not acceptable.

B. Planting Soil:
1. Existing, in-place surface soil. Verify suitability of existing surface soil to produce viable planting soil. Remove stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.
2. ASTM D5268 topsoil, with pH range of 5.5 to 7, a minimum of five (5) percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth. Soil shall be free from clay lumps, coarse sand, plant roots, sticks and other foreign materials. Mix ASTM D5268 topsoil with the following soil amendments and fertilizers as recommended by soil analysis.
3. Topsoil shall be fertile, friable, natural topsoil, typical of the locality, obtained from well-drained areas possessing characteristics of soils in the vicinity that produce heavy growth or grasses and other vegetative material. Stockpiled topsoil may be used. It shall be without admixture of subsoil or slag and shall be free of subsoil, stones, lumps, sticks, plants or their roots, toxic substances or other extraneous matter that may be harmful to plant growth.

2.6 MULCHES

A. Hardwood Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of the following:
1. Type: Double-shredded hardwood
2. Size Range: 1 inch minimum to 3 inches maximum
3. Color: Dark brown

B. Leaf Compost Mulch: Free from deleterious materials and suitable as a top dressing for ornamental grasses, perennials, and groundcovers.

C. Mineral Mulch: Hard, durable stone, washed free of loam, sand, clay, and other foreign substances, of following type, size, range, and color:
1. Type: Washed Cobble
2. Size Range: 8-inch maximum, 4-inch minimum
3. Color: Uniform tan-beige color range acceptable to Landscape Architect

2.4 WEED-CONTROL BARRIERS

A. Nonwoven Geotextile Filter Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. minimum, composed of fibers formed into a stable network so that fibers retain their relative position. Fabric shall be inert to biological degradation and resist naturally-encountered chemicals, alkalis, and acids.

2.5 PESTICIDES

A. General: Pesticide registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by Manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction. Do not apply herbicide when weather conditions are unfavorable, such as during drought or high winds.

B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer. Pre-emergence application of "treflan 5% granules" or equivalent applied according to manufacturer's recommendations and incorporated into soil as specified.

C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated. Post-emergent application of "Roundup" or equivalent, applied as specified by manufacturer. Spray with extreme caution to avoid contact with landscape plantings.

2.8 MISCELLANEOUS PRODUCTS

A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to Manufacturer's written instructions.

B. Burlap: Non-synthetic, biodegradable.

C. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per lb of vesicular-arbuscular mycorrhizal fungi and 95 million spores per lb of ectomycorrhizal fungi. 33 percent hydrogel, and a maximum of 5.5 percent inert material.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants for compliance with requirements and conditions affecting installation and performance.
1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in planting area soil, remove the soil and contamination as directed by Owner's Representative and replace with new planting soil.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Landscape Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.

D. Lay out plants at locations directed by Landscape Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

E. Owner's Representative shall inspect all plant material prior to commencing with planting work. No plant excavations shall be undertaken by the Contractor prior to the approval of the Owner's Representative.

F. Power-spray antidesiccant to trees and shrubs to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

G. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.

3.3 PLANTING AREA ESTABLISHMENT

A. Loosen subgrade of planting areas to a minimum depth of 12 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
1. Apply fertilizer directly to subgrade before loosening.
2. Thoroughly blend planting soil off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil.
   a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
   b. Mix lime with dry soil before mixing fertilizer.
3. Spread planting soil to a depth of 4 inches but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
   a. Spread approximately one-half the thickness of planting soil over loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil.

B. Underground utility lines must be taken into account in the excavation of the planting areas.

C. Finish Grading:
1. Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.
2. Finished grades shall provide positive drainage, free of depressions and any irregularities, after thorough settlement and compaction of sod, and will be uniform in slope between grading controls and the elevations indicated.

D. Before planting, obtain Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 NATIVE SEED ESTABLISHMENT

A. Prepare the area to be seeded with native plantings by removing existing vegetation. Begin herbicide application in September with additional applications as necessary to achieve a total kill of all vegetation. Ensure that herbicides will not be harmful to native plantings, and follow manufactures application recommendations.

B. Remove thatch, by burning, mowing, raking, and/or dragging with a harrow. Approximately 80% of soil should be exposed. Obtain all required permits if burning.

C. Place a 2" compacted layer of topsoil over all areas to be established with native plantings. The topsoil layer shall bring all native planting areas to finish grade. Prepare planting area by fine grading the surface to a smooth surface, remove all rocks, sticks, dirt clumps, and trash.

D. A cover crop shall be added to seed mixes to stabilize swale slopes until native seed is established.

E. Winter wheat shall be used as a cover crop if planting is to take place during winter months. Spring oats shall be used for spring planting.

F. Sow seeds with a drill to a depth of $\frac{1}{4}$" in rows.

G. Seadling operations must be completed by end of April.

H. Lightly mulch slopes with weed-free wheat or oat straw.

I. Provide water to keep seeds from drying out completely. Continual watering is not needed.

J. Do not fertilize.

K. Do not spray with herbicides.

3.5 TURF AREA PREPARATION

A. Limit turf subgrade preparation to areas to be planted.

B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 8 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
1. Apply fertilizer directly to subgrade before loosening.
2. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil.
   a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
   b. Mix lime with dry soil before mixing fertilizer.
3. Spread planting soil to a depth of 2 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
   a. Spread approximately 1/2 the thickness of planting soil over loosened subgrade. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil.
   b. Reduce elevation of planting soil to allow for soil thickness of sod.

C. Unchanged Subgrades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
1. Remove existing grass, vegetation, and turf. Do not mix surface soil.
2. Loosen surface soil to a depth of at least 8 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches of soil. Till soil to a homogeneous mixture of fine texture.
3. Remove stones larger than 1 inch in any dimension and sticks, roots, trash, and extraneous matter.
4. Legally dispose of waste material, including grass, vegetation, and turf off Owner's property.

D. Finish Grading:
1. Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.
2. Finished grades shall provide positive drainage, free of depressions and any irregularities, after thorough settlement and compaction of sod, and will be uniform in slope between grading controls and the elevations indicated.

E. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

F. Before planting, obtain Landscape Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.6 HYDROSEEDING NEW TURF LAWNS

A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
1. Mix slurry with nonasphaltic tackifier.
2. Apply slurry uniformly to all areas to be seeded in a 1-step process. Apply mulch at the minimum rate of 1500 lb per acre dry weight but not less than the rate required to obtain specified seed-sowing rate.

3.7 SODDING NEW TURF LAWNS

A. All areas specified as "sod" shall be sodded per direction of the Project Landscape Architect; Landscape Contractor shall verify quantities in field prior to installation.

B. Lay sod within 24 hours of stripping. Do not lay sod if dormant or if ground is frozen.

C. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade. eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

D. Lay sod across angle of slopes exceeding 1:3.

E. Anchor sod on slopes exceeding 1:6 with wood pegs spaced as recommended by sod Manufacturer but not less than 2 anchors per sod strip to prevent slippage.

F. Saturate sod with fine water spray within 2 hours of planting. During first week, water daily or more frequently as needed to maintain moist soil to a minimum depth of 1-1/2 inches (38 mm) below the sod.

G. After two weeks following sod installation, apply fertilizer at the Manufacturer's recommended rate for newly established lawns. Maintain turf during warranty period by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading and replanting as required to establish a smooth sodded surface, free of eroded or bare areas, free of weeds and acceptable by Owner.

3.8 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
1. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bal

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 SYNTEEN 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: NCMA 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

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PARTIAL SITE PLAN	RW2
RETAINING WALL PROFILE	RW3-RW10
DETAILS	RW11

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PHASE 1-PERMIT	02/04/2021

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

STATE OF MISSOURI
GREGORY L LINNEMAN
NUMBER PE-2005001013

GREGORY L. LINNEMAN - PE
MO LICENSE - 2005001013

STRUCTURAL ENGINEER:
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Crockett Engineering Consultants, LLC
Missouri Certificate of Authority
#2006015501

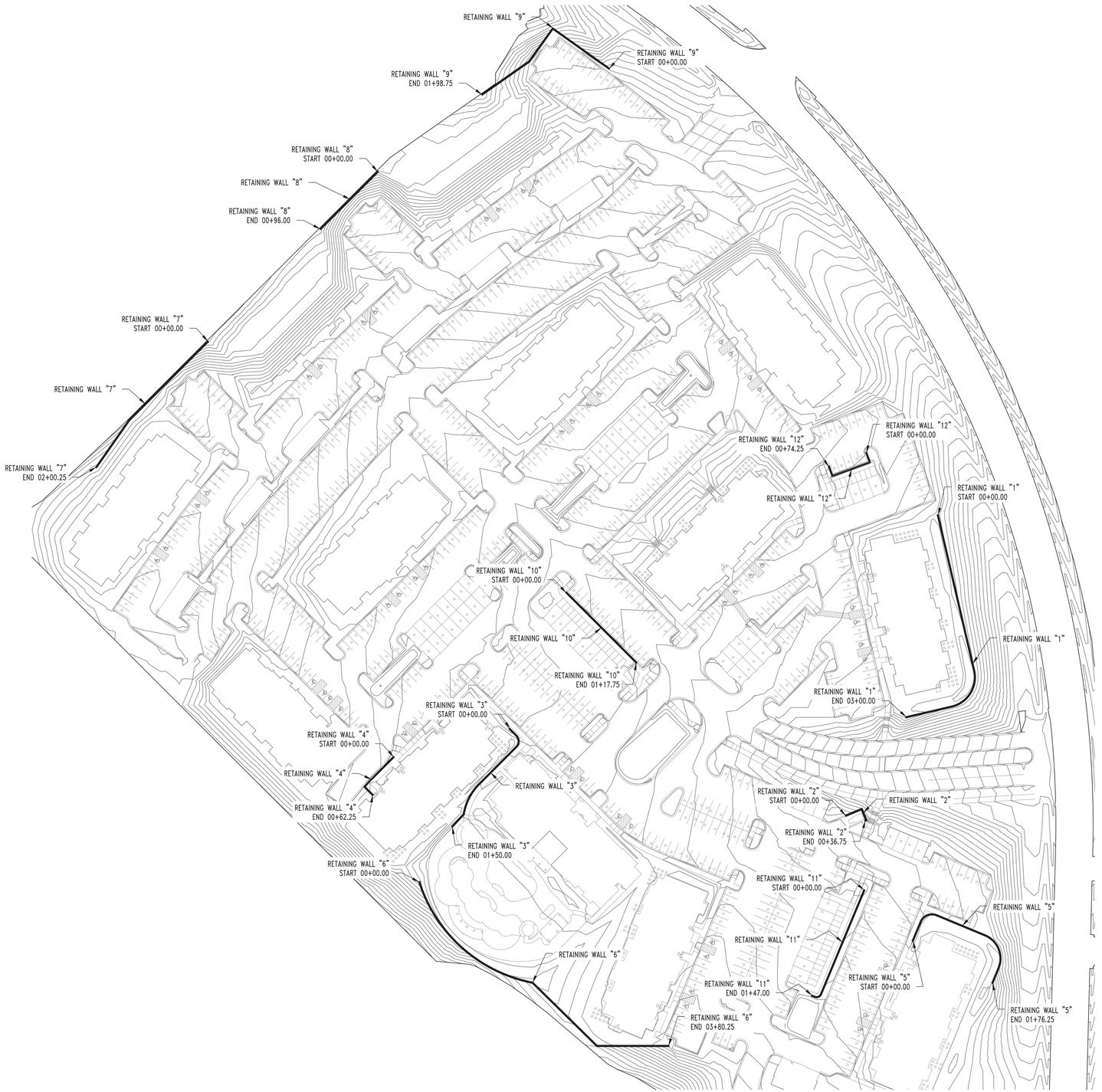
CLIENT:
CENTRAL STATES CONSTRUCTION
4215 PHILIPS FARM RD
COLUMBIA, MISSOURI

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

N PLAN NORTH

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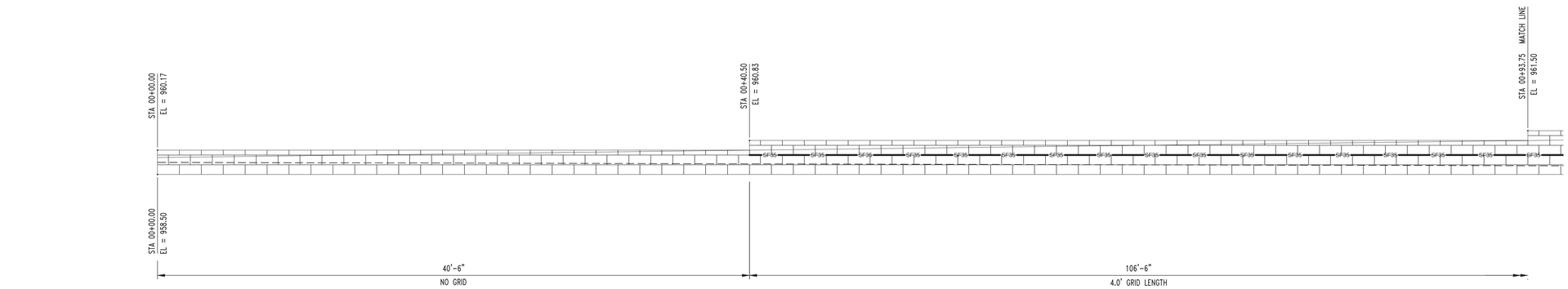
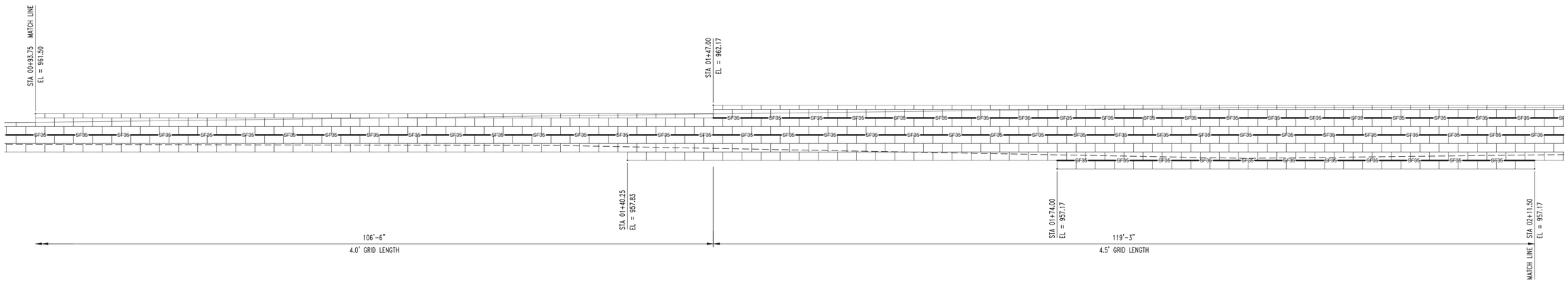


1 RW3 RETAINING WALL 1 (AREA 880 SQ. FT.)

SCALE: ¼" = 1'-0"



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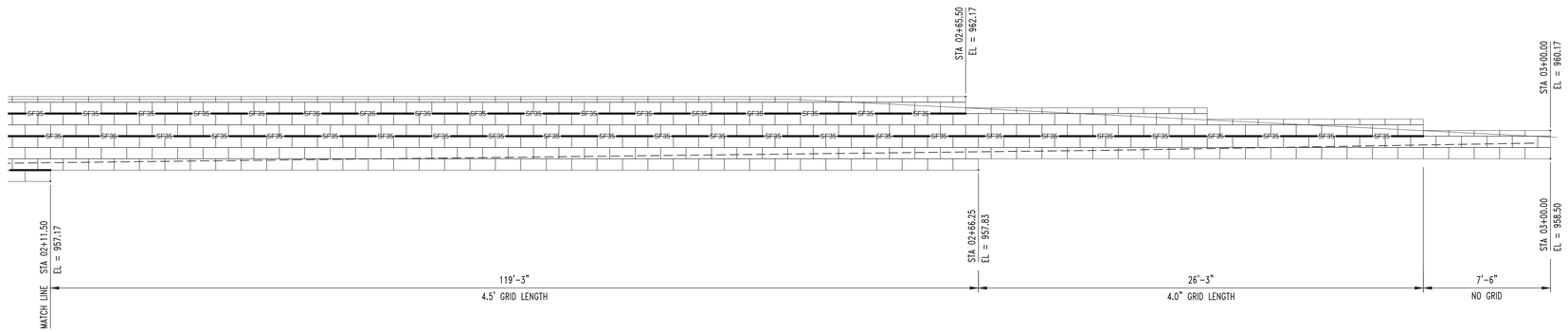

3 RW3 RETAINING WALL 1 (AREA 880 SQ. FT.)

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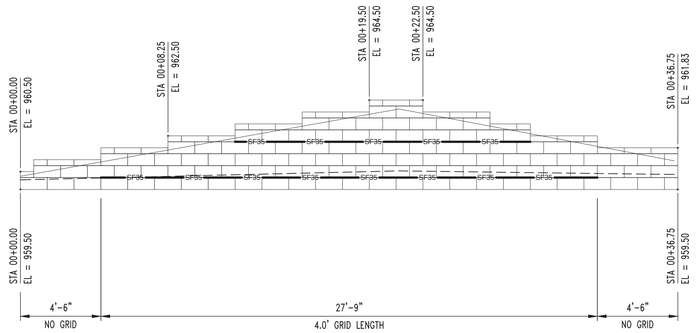
RW3



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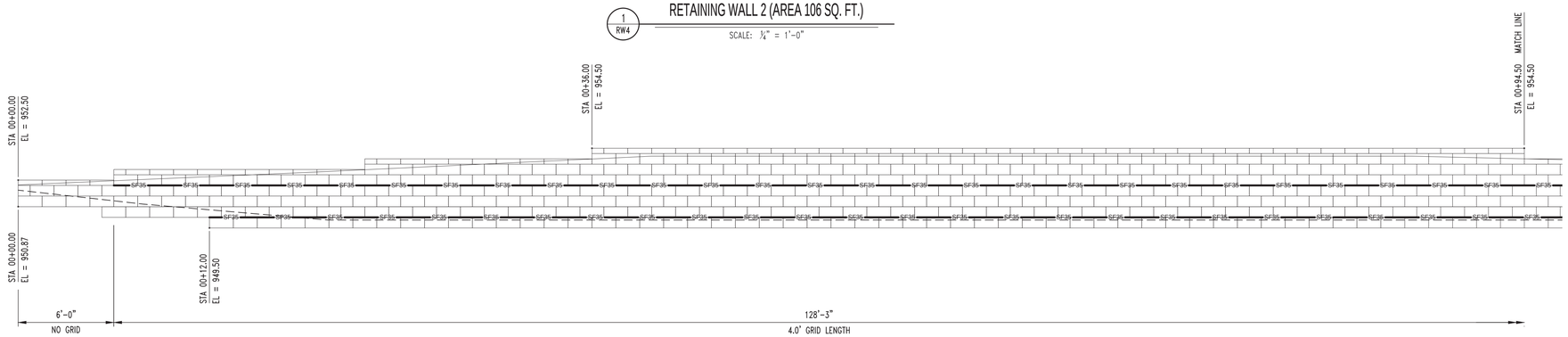

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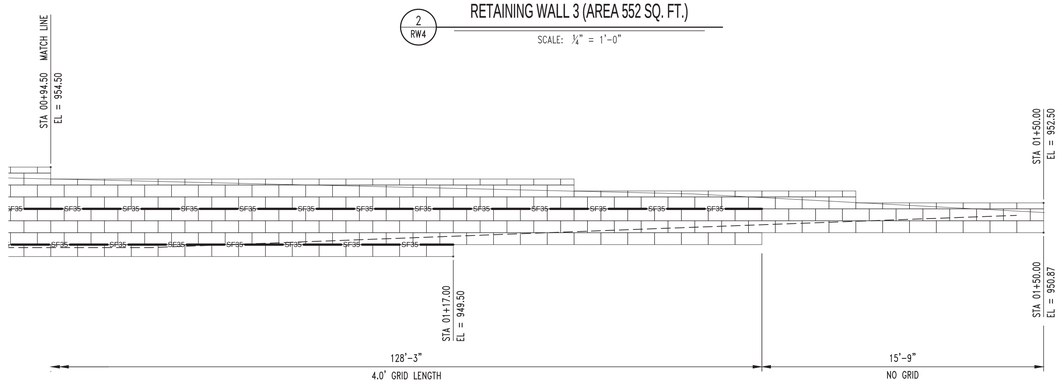

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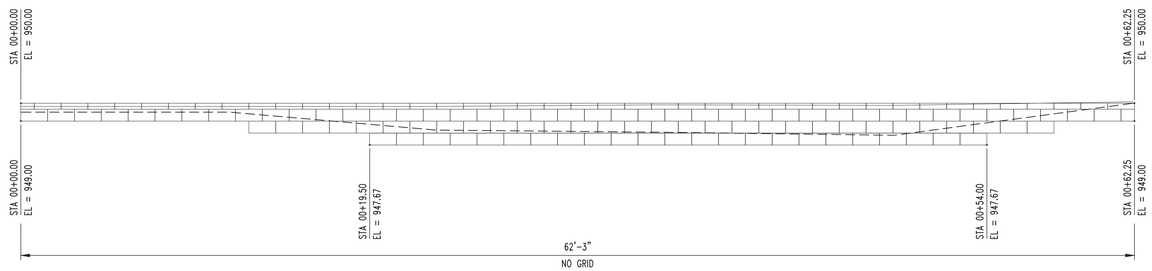

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SCALE: ¼" = 1'-0"

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PROJECT NO.:	190299

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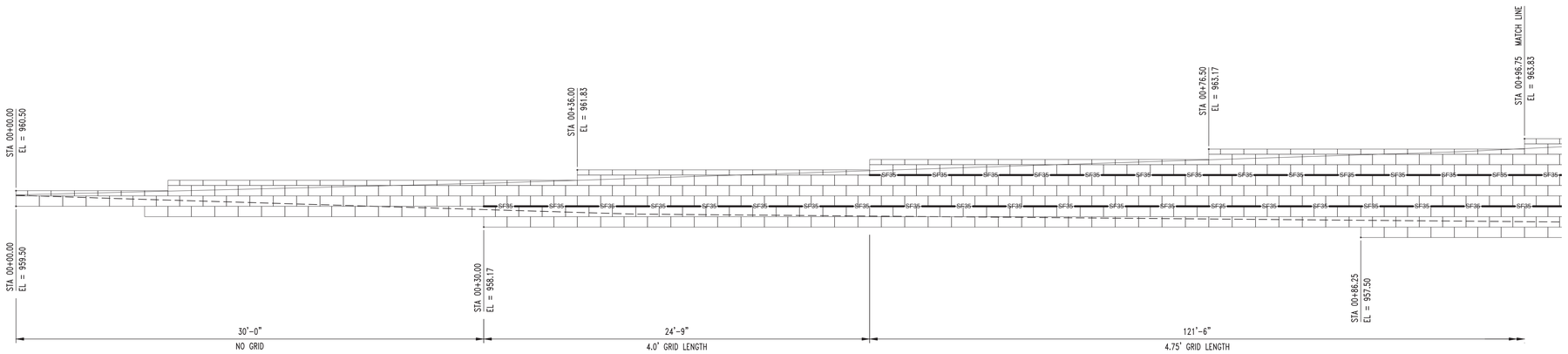

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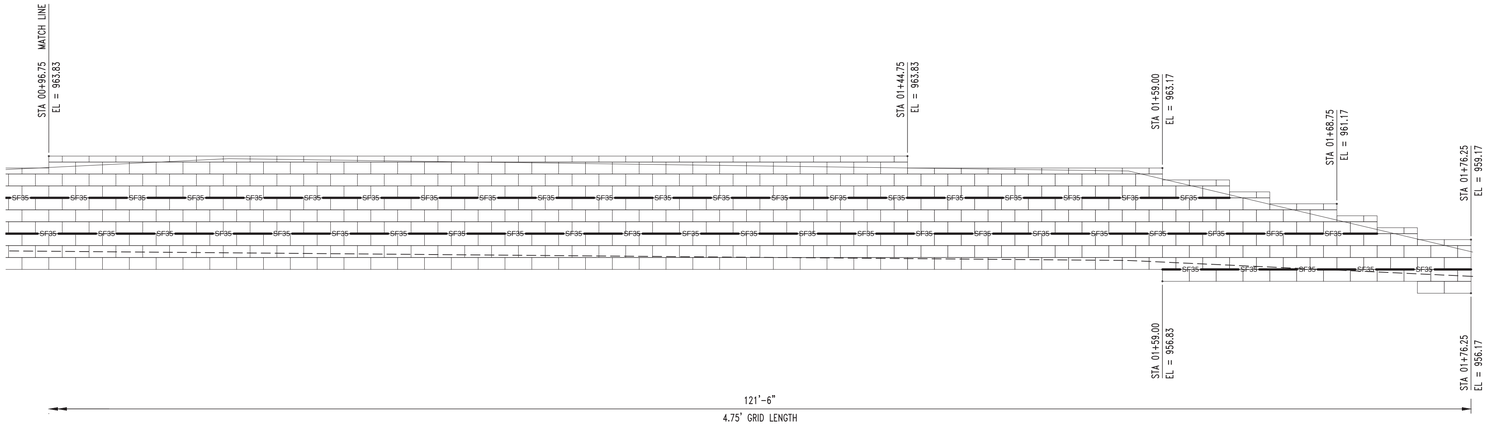

2 RW5 RETAINING WALL 5 (AREA 746 SQ. FT.)

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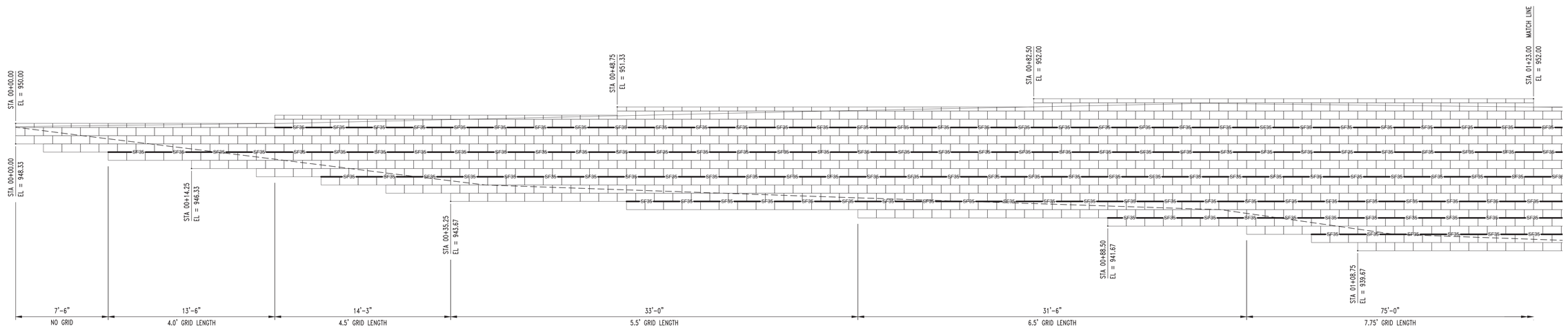

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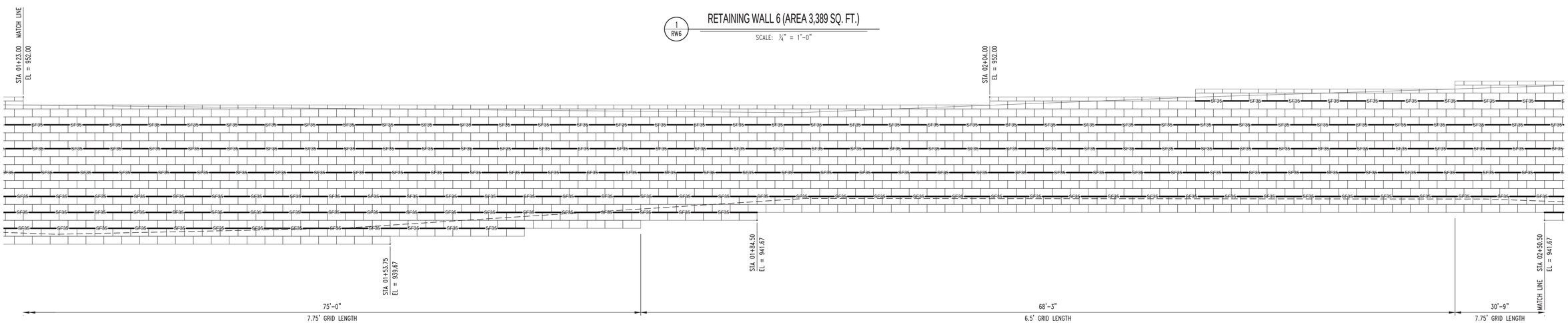
SCALE: ¼" = 1'-0"



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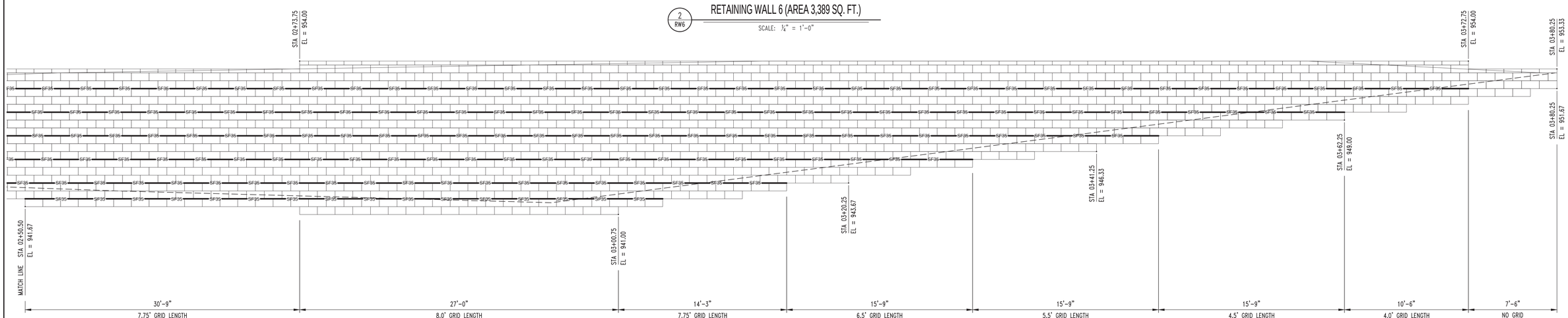

3 RW6 RETAINING WALL 6 (AREA 3,389 SQ. FT.)

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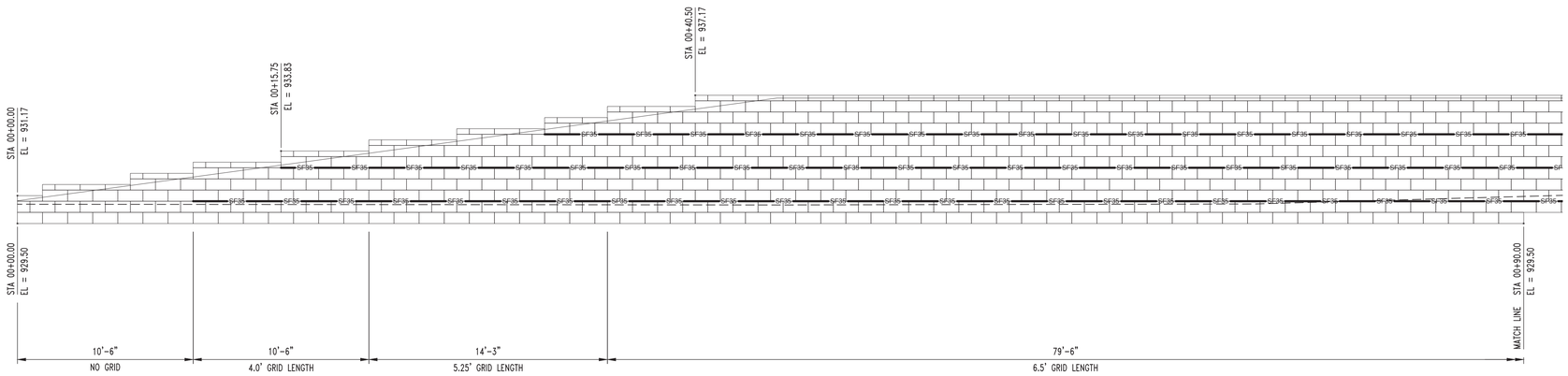

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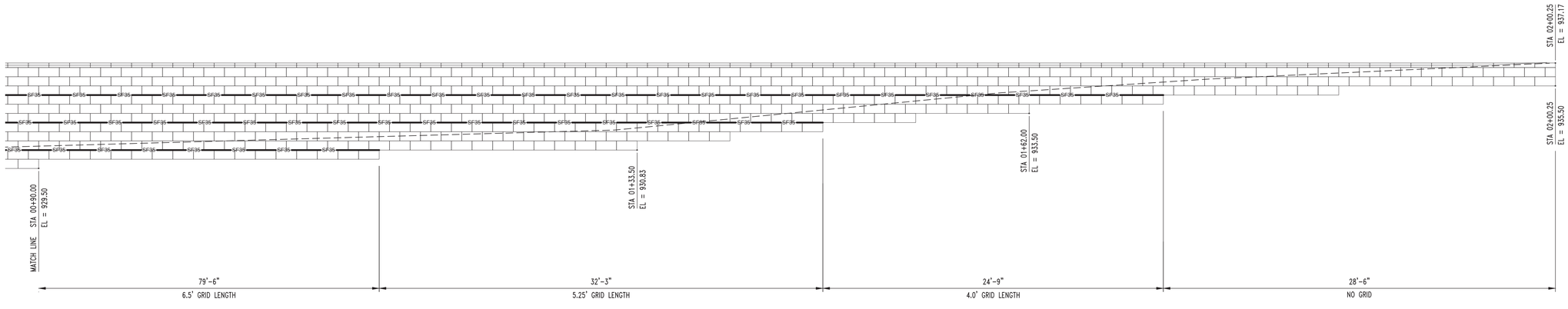
SCALE: 1/4" = 1'-0"



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ENGINEERING CONSULTANTS
1000 West Nifong, Building I
Columbia, Missouri 65203
(573) 447-0292
www.crockettengineering.com
Crockett Engineering Consultants, LLC
Missouri Certificate of Authority
#2006015061

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

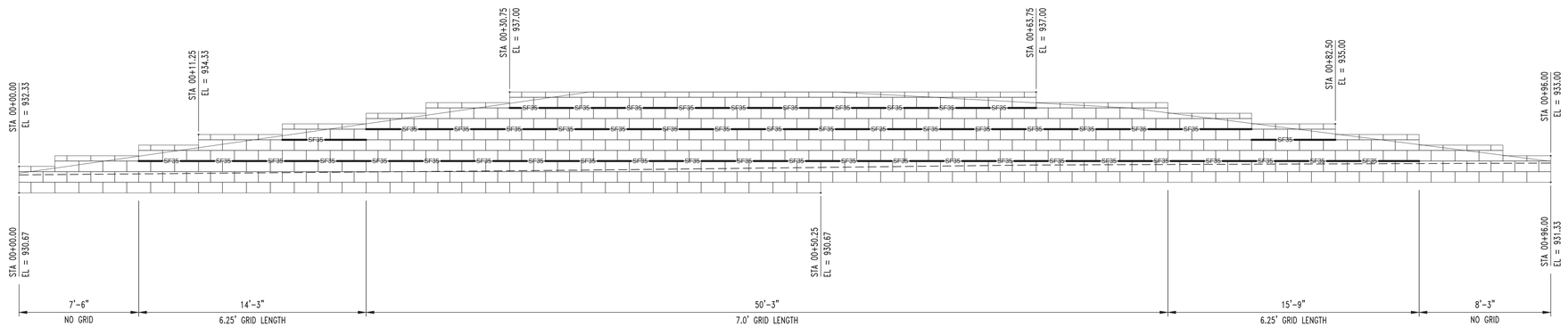
ARIA LEE'S SUMMIT APARTMENTS

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DRAWING INCLUDES:
RETAINING WALL PROFILE

DESIGNED:	JWV
DRAWN:	SEH
PROJECT NO.:	190299

SHEET:
RW7



1 RW8 RETAINING WALL 8 (AREA 402 SQ. FT.)

SCALE: ¼" = 1'-0"

REVISIONS:

No.	Date
PHASE 1-PERMIT	02/04/2021

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

STATE OF MISSOURI
GREGORY L LINNEMAN
NUMBER PE-2005001013

GREGORY L. LINNEMAN - PE
MO LICENSE - 2005001013

STRUCTURAL ENGINEER:
CROCKETT
ENGINEERING CONSULTANTS
1000 West Nifong Blvd. Bldg. 1
Columbia, Missouri 65203
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Missouri Certificate of Authority
#2006015501

CLIENT:
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4215 PHILIPS FARM RD
COLUMBIA, MISSOURI

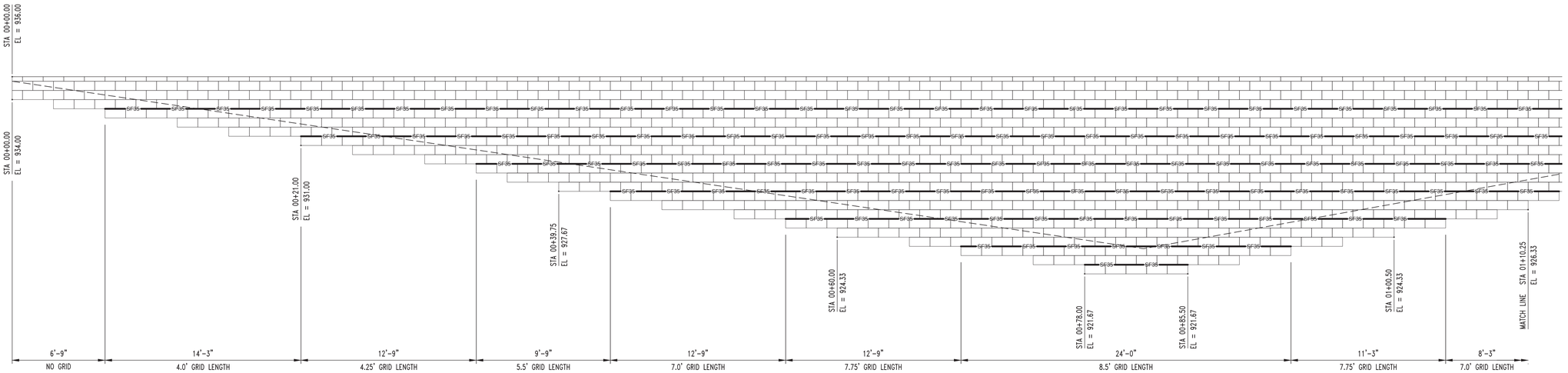
ARIA LEE'S SUMMIT APARTMENTS

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DRAWING INCLUDES:

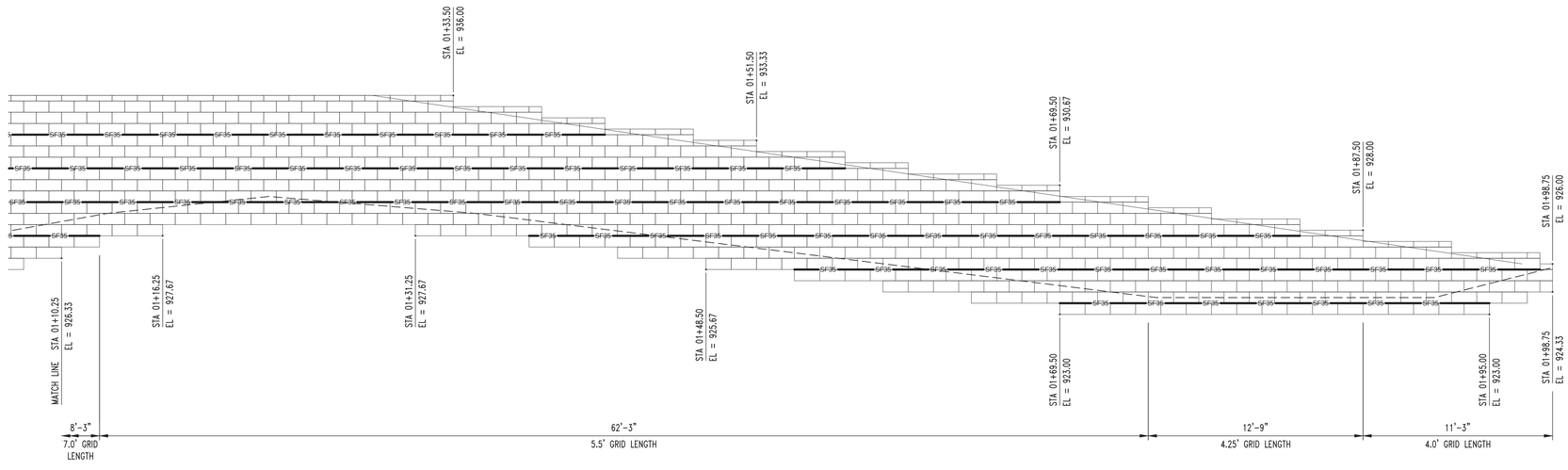
RETAINING WALL PROFILE

DESIGNED:	JWV
DRAWN:	SEH
PROJECT NO.:	190299
SHEET:	RW8



1 RW9 RETAINING WALL 9 (AREA 1,541 SQ. FT.)

SCALE: ¼" = 1'-0"



2 RW9 RETAINING WALL 9 (AREA 1,541 SQ. FT.)

SCALE: ¼" = 1'-0"

REVISIONS:

No.	Date
PHASE 1-PERMIT	02/04/2021

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STATE OF MISSOURI
GREGORY L. LINNEMAN
NUMBER PE-2005001013

GREGORY L. LINNEMAN - PE
MO LICENSE - 2005001013

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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

1 RW10 RETAINING WALL 10 (AREA 253 SQ. FT.)

SCALE: ¼" = 1'-0"

2 RW10 RETAINING WALL 11 (AREA 276 SQ. FT.)

SCALE: ¼" = 1'-0"

3 RW10 RETAINING WALL 11 (AREA 276 SQ. FT.)

SCALE: ¼" = 1'-0"

4 RW10 RETAINING WALL 12 (AREA 107 SQ. FT.)

SCALE: ¼" = 1'-0"

REVISIONS:

No.	Date
PHASE 1-PERMIT	02/04/2021

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STATE OF MISSOURI
GREGORY L LINNEMAN
NUMBER PE-2005001013

GREGORY L. LINNEMAN - PE
MO LICENSE - 2005001013

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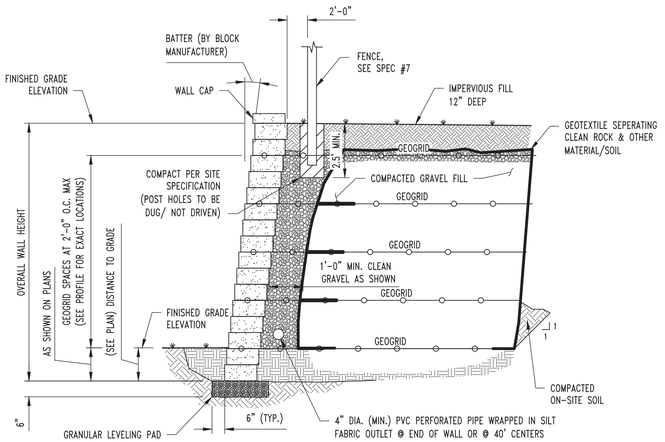
ARIA LEE'S SUMMIT APARTMENTS

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DRAWING INCLUDES:

RETAINING WALL PROFILE

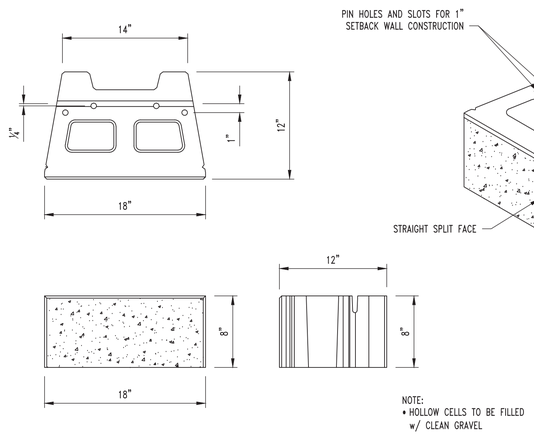
DESIGNED:	JWV
DRAWN:	SEH
PROJECT NO.:	190299
SHEET:	RW10



REINFORCED RETAINING WALL

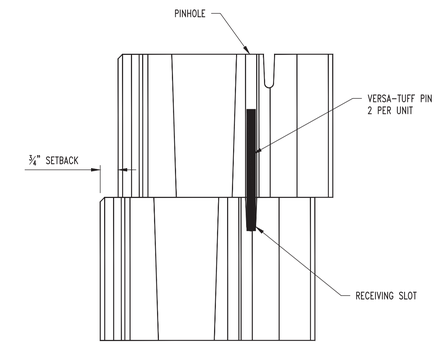
SCALE: NONE

NOTE:
THIS WALL SECTION IS GENERIC IN NATURE & REPRESENTS BASIC WALL CONSTRUCTION & COMPONENTS ONLY. ACTUAL DESIGN IS BASED ON ACTUAL PROJECT PARAMETERS, WHICH MAY NOT BE REPRESENTED IN THIS SECTION. REFER TO CIVIL DRAWINGS FOR ACTUAL SITE SPECIFIC SECTIONS & REQUIREMENTS.



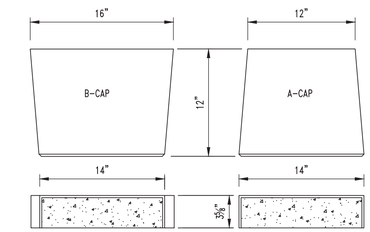
VERSA-LOK SQUARE FOOT UNIT

SCALE: NONE



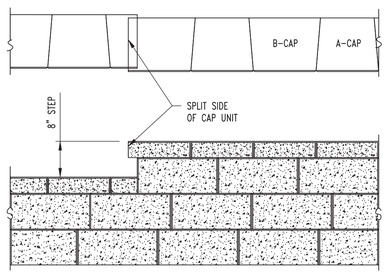
PINNING DETAIL

SCALE: NONE



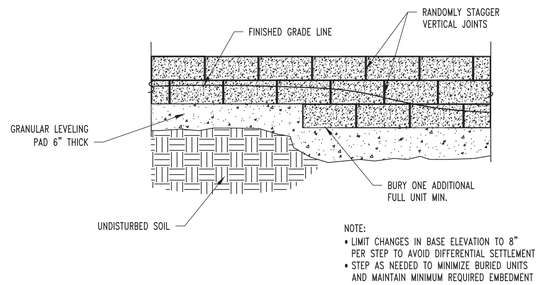
VERSA-LOK CAP UNITS

SCALE: NONE



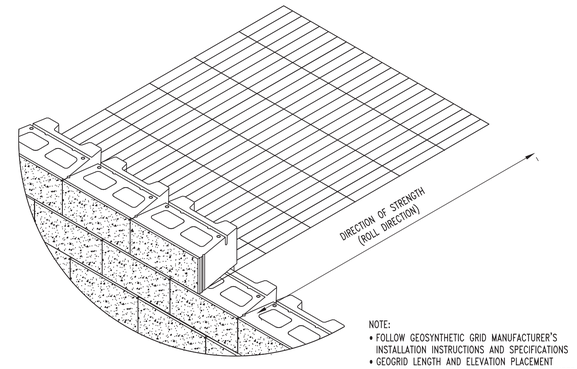
CAPPING DETAIL-PROFILE

SCALE: NONE



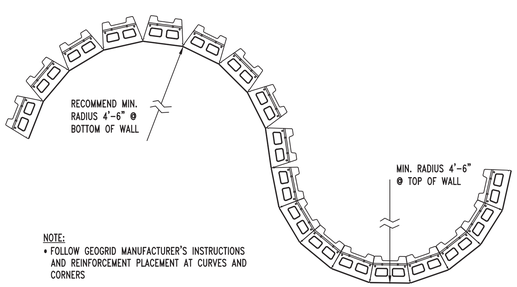
STEPPING BASE DETAIL

SCALE: NONE



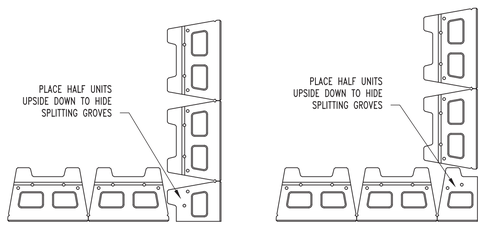
GEOSYNTHETIC INSTALLATION DETAIL

SCALE: NONE



CURVE DETAIL

SCALE: NONE



CORNER DETAIL

SCALE: NONE

REVISIONS:

No.	Date
PHASE 1-PERMIT	02/04/2021

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STATE OF MISSOURI
GREGORY L. LINNEMAN
NUMBER PE-2005001013

GREGORY L. LINNEMAN - PE
MO LICENSE - 2005001013

STRUCTURAL ENGINEER:
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COLUMBIA, MISSOURI

ARIA LEE'S SUMMIT APARTMENTS

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DRAWING INCLUDES:
RETAINING WALL DETAILS

DESIGNED: JWV
DRAWN: SEH
PROJECT NO.: 190299

SHEET:
RW11

SITE LIGHTING PLAN SYMBOL LEGEND

CIRCUIT WIRING

X1 — "X1" INDICATES FIXTURE TYPE (REFER TO SCHEDULE)

POLE LIGHT

ARROW INDICATES FORWARD AIMING DIRECTION

PX-XX — CIRCUIT TAG

1.1 — PHOTOMETRIC CALCULATIONS (IN FOOT-CANDLES)

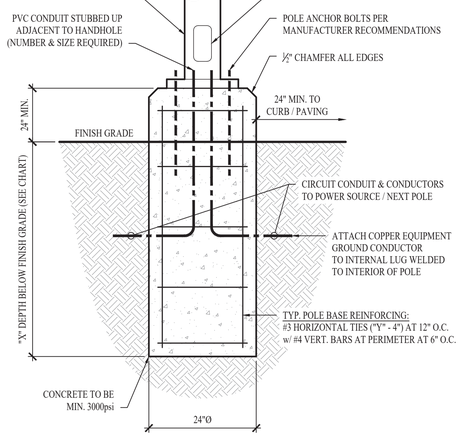
SITE LIGHTING PLAN GENERAL NOTES:

1. REFER TO E500 SERIES SHEETS FOR ELECTRICAL SCHEDULES, SPECIFICATIONS, ADDITIONAL REQUIREMENTS, ETC.
2. SITE PHOTOMETRIC VALUES SHOWN HAVE BEEN CALCULATED PER SPECIFIED FIXTURES AT INDICATED MOUNTING HEIGHTS. ANY CHANGES OR ALTERATIONS TO LIGHTING LAYOUT SHOWN WILL REQUIRE RECALCULATING SITE PHOTOMETRICS AND WILL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR / EQUIPMENT SUPPLIER.
3. PHOTOMETRIC CALCULATIONS SHOWN DO NOT INCLUDE EXISTING LIGHT FIXTURES, ONLY NEW POLE LIGHTS SHOWN.
4. REFER TO CIVIL PLANS FOR SITE PHASING AND BUILDING CONSTRUCTION.

SITE LIGHTING PLAN KEY NOTES:

1. 1 ½" PVC CONDUIT WITH (2) #3 CU. & (1) #8 CU. EQ. GRD.
2. 1 ½" PVC CONDUIT WITH (2) #4 CU. & (1) #8 CU. EQ. GRD.
3. 1" PVC CONDUIT WITH (2) #6 CU. & (1) #10 CU. EQ. GRD.
4. 1" PVC CONDUIT WITH (2) #8 CU. & (1) #10 CU. EQ. GRD.
5. 1" PVC CONDUIT WITH (2) #10 CU. & (1) #10 CU. EQ. GRD.
6. WIRE THRU 'LCP1' (CLUBHOUSE) RELAYS #6 & #7.
7. WIRE THRU 'LCPB' RELAYS #2 & #3.
8. WIRE THRU 'LCPC' RELAYS #2 & #3.
9. WIRE THRU 'LCPA' RELAYS #2 & #3.

POLE HEIGHT	"X" DEPTH
10ft - 14ft	4'-6"
15ft - 20ft	6'-0"
21ft - 25ft	7'-0"



TYP. LIGHT POLE DETAIL - 1

SITE LIGHTING PLAN

SCALE: 1" = 60'

SITE LIGHTING FIXTURE SCHEDULE

TAG	MANUFACTURER (OR EQUAL)	MODEL NUMBER (OR EQUAL)	DESCRIPTION	MOUNTING	LUMEN OUTPUT	CCT (°K)	CRI	VOLTS	WATTS	NOTES
PL1	MCGRAW-EDISON	GLEON-AF-08-LED-E1-5WQ-MS/DIM-L40	LED POLE LIGHT	26' POLE ON 2' BASE	33,106	4000	70	208	257	VALMONT 'SSS' POLE
PL2	MCGRAW-EDISON	GLEON-AF-04-LED-E1-SL3-MS/DIM-L40	LED POLE LIGHT	26' POLE ON 2' BASE	15,821	4000	70	208	129	VALMONT 'SSS' POLE
PL3	MCGRAW-EDISON	GLEON-AF-04-LED-E1-SL4-MS/DIM-L40	LED POLE LIGHT	26' POLE ON 2' BASE	15,033	4000	70	208	129	VALMONT 'SSS' POLE
PL4	MCGRAW-EDISON	GLEON-AF-04-LED-E1-T3-MS/DIM-L40	LED POLE LIGHT	26' POLE ON 2' BASE	15,824	4000	70	208	129	VALMONT 'SSS' POLE
PL5	MCGRAW-EDISON	GLEON-AF-04-LED-E1-T4FT-04-MS/DIM-L40	LED POLE LIGHT	26' POLE ON 2' BASE	15,915	4000	70	208	129	VALMONT 'SSS' POLE

NOTES:
1. VERIFY LIGHT FIXTURE FINISHES WITH OWNER / ARCHITECT PRIOR TO INSTALLATION

STATE OF MISSOURI — JAMES P. WATSON — NUMBER PE-2015017071 — PROFESSIONAL ENGINEER

James Watson, P.E. January 7, 2021
PE-2015017071
MO Certificate of Authority # 2018029680

J-SQUARED ENGINEERING
2401 Bernadette Drive, Suite 201
Columbia, Missouri 65203
573 - 234 - 4492 phone
www.j-squaredeng.com

J2 PROJECT No: J20055
J2 DESIGN: ACW

ISSUE TITLE	DATE
PHASE I - PERMIT SET	01 - 07 - 2021

Mechanical - Electrical - Plumbing Design Drawings for

Aria Apartments - Lee's Summit

Northeast Douglas Road & Lee's Summit Road
Lee's Summit, Jackson County, Missouri

SHEET TITLE

SITE LIGHTING PLAN

SHEET NUMBER

MEP3

NOTE: INSTALL HANDRAILS @ ACCESSIBLE ROUTES AND WHERE OTHERWISE NOTED EXCEEDING 5% BUT LESS THAN 8.33%. 5'-0" LANDING REQUIRED AT TOP AND BOTTOM OF RAMP.

ACCESSIBILITY NOTES

1. SIDEWALK ON THE ACCESSIBLE ROUTE SHALL NOT EXCEED 5% (1'-0" IN 20'--0") RUNNING SLOPE WITH A 2% (1'-0" IN 50'-0") CROSS-SLOPE AND SHALL BE 4' WIDE MIN. EXCEPT AS NOTED ON SITE PLAN. PROVIDE STAIRS, RAMPS, CURBS, ETC., AS NOTED AND DETAILED.

2. PARKING AREAS AND ACCESSIBLE SPACES AND ACCESS AISLES SHALL NOT EXCEED A 2% (1'-0" IN 50'-0" SLOPE IN EACH DIRECTION. OTHER PORTIONS OF THE ACCESSIBLE ROUTE SHALL NOT EXCEED A 5% (1'-0" IN 20'-0") LONGITUDINAL SLOPE NOR A 2% (1'-0" IN 50'-0") CROSS-SLOPE.

NOTE: SEE CIVIL PLANS FOR ADDITIONAL INFORMATION

1 AS1.0M ARCHITECTURAL SITE PLAN
SCALE: 1" = 80'-0"

N

ARCHITECTURAL SITE PLAN

PERMIT SET

STATE OF MISSOURI
M. RANDALL PORTER
A-2012006244
ARCHITECT

04 FEB 2021
M. RANDALL PORTER
A-2012006244

ARIA APARTMENTS LEE'S SUMMIT

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Wallace ARCHITECTS L.L.C.
Columbia, MO
P 573-256-7200

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2		
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4		
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SHEET NO.
AS1.0M

JOB NO.
3984

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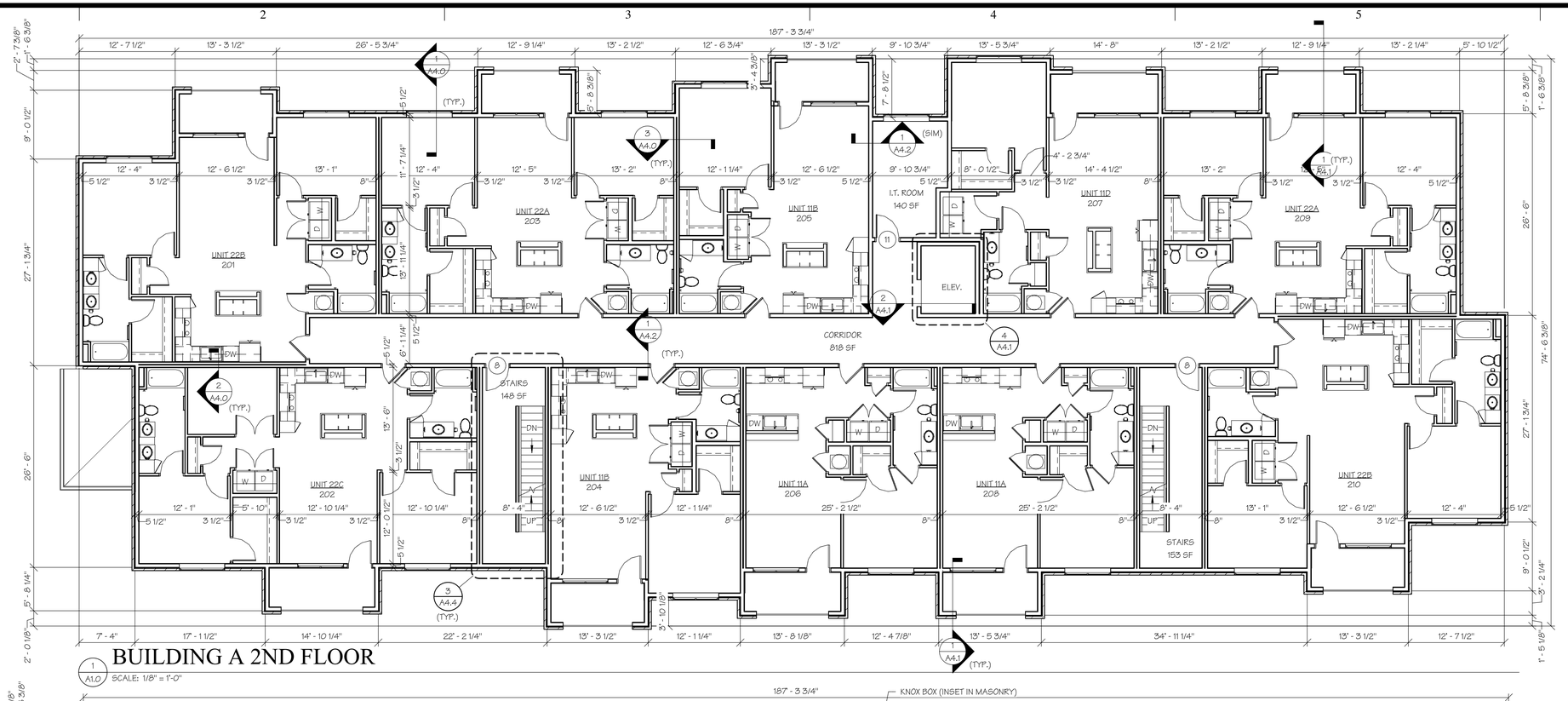
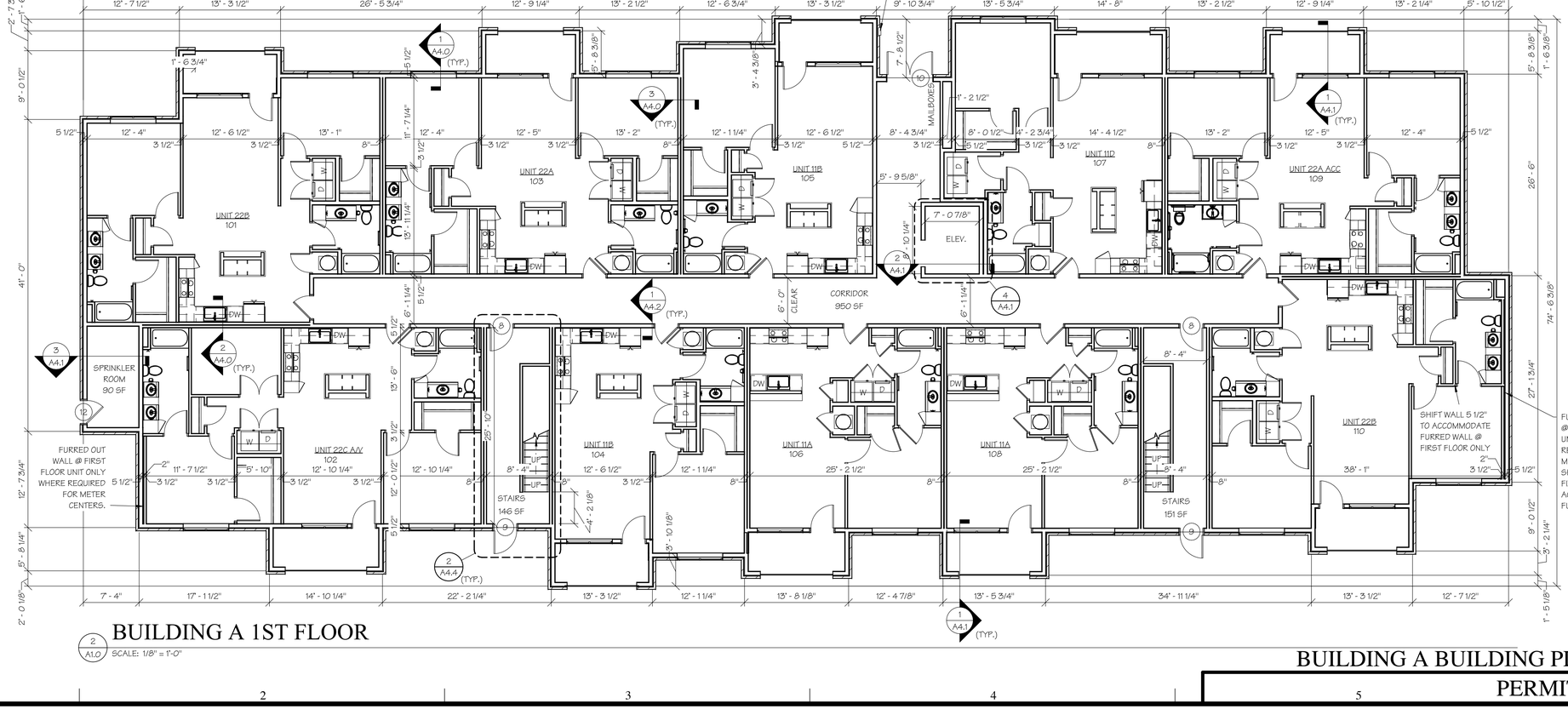


1 A1.0 SCALE: 1/8" = 1'-0"

BUILDING A 2ND FLOOR



2 A1.0 SCALE: 1/8" = 1'-0"

BUILDING A 1ST FLOOR

M. RANDALL PORTER
2012006244
ARCHITECT
STATE OF MISSOURI
04 FEB 2021
M. RANDALL PORTER
A-2012006244

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

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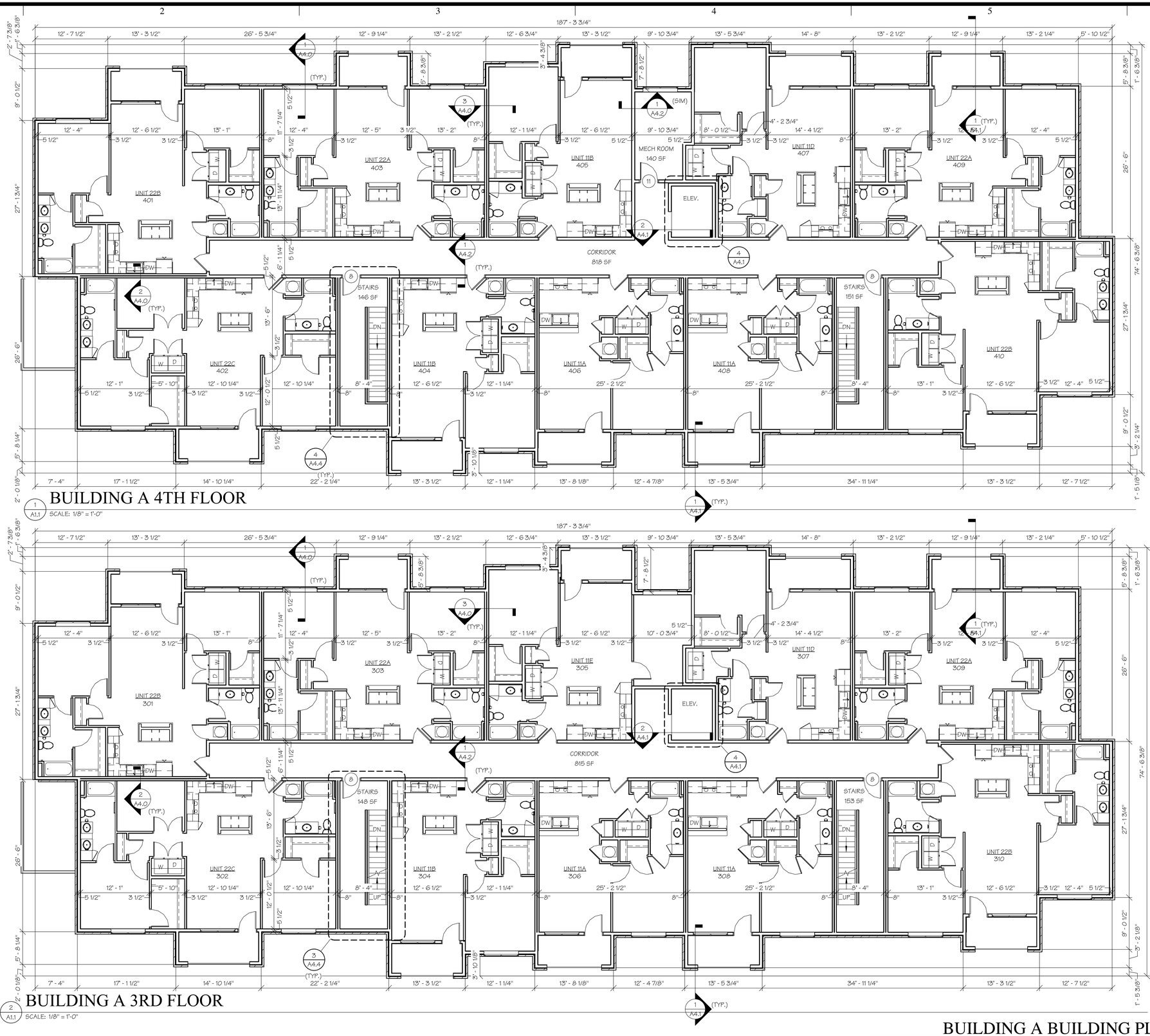
BUILDING A BUILDING PLANS
PERMIT SET



1 A1.1 SCALE: 1/8" = 1'-0"

BUILDING A 4TH FLOOR

2 A1.1 SCALE: 1/8" = 1'-0"

BUILDING A 3RD FLOOR

STATE OF MISSOURI
M. RANDALL PORTER
2012006244
ARCHITECT
04 FEB 2021
M. RANDALL PORTER
A-2012006244

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

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BUILDING A BUILDING PLANS
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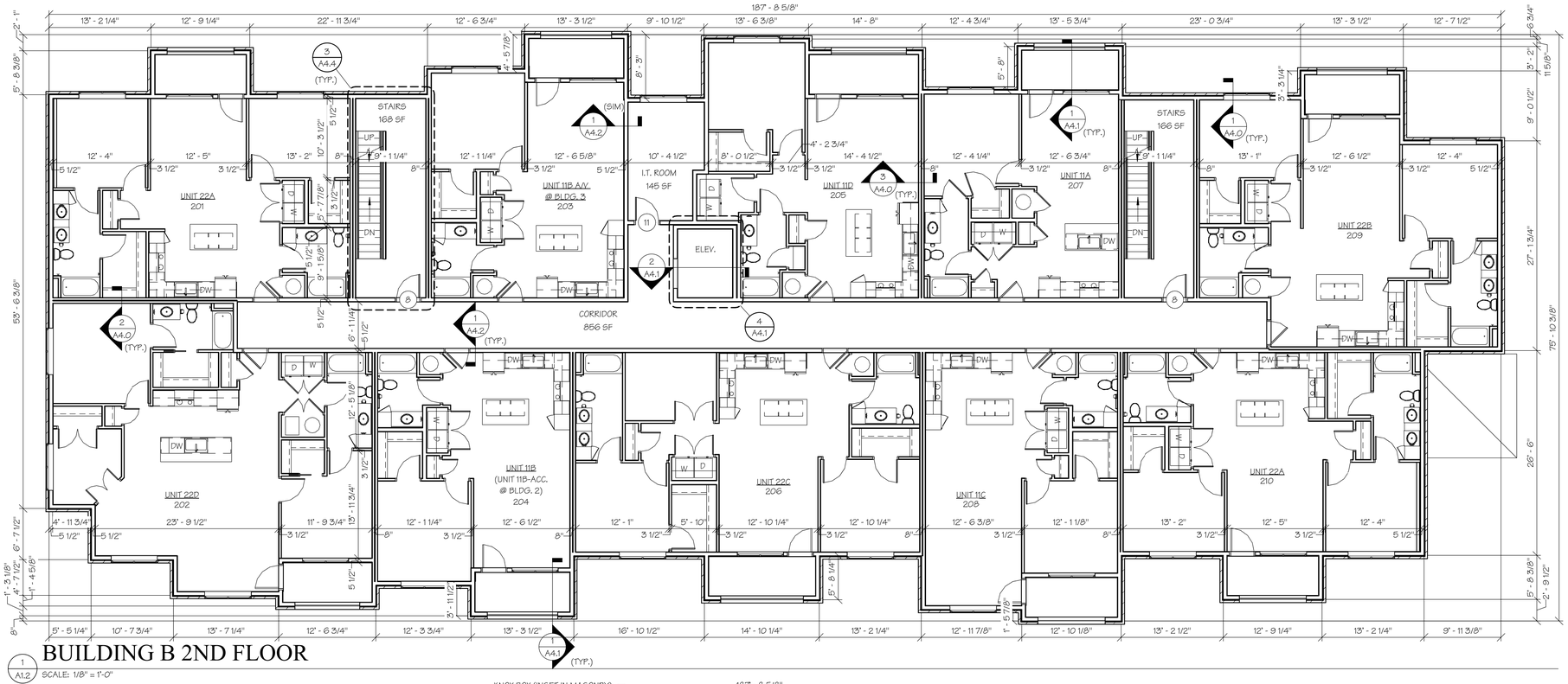

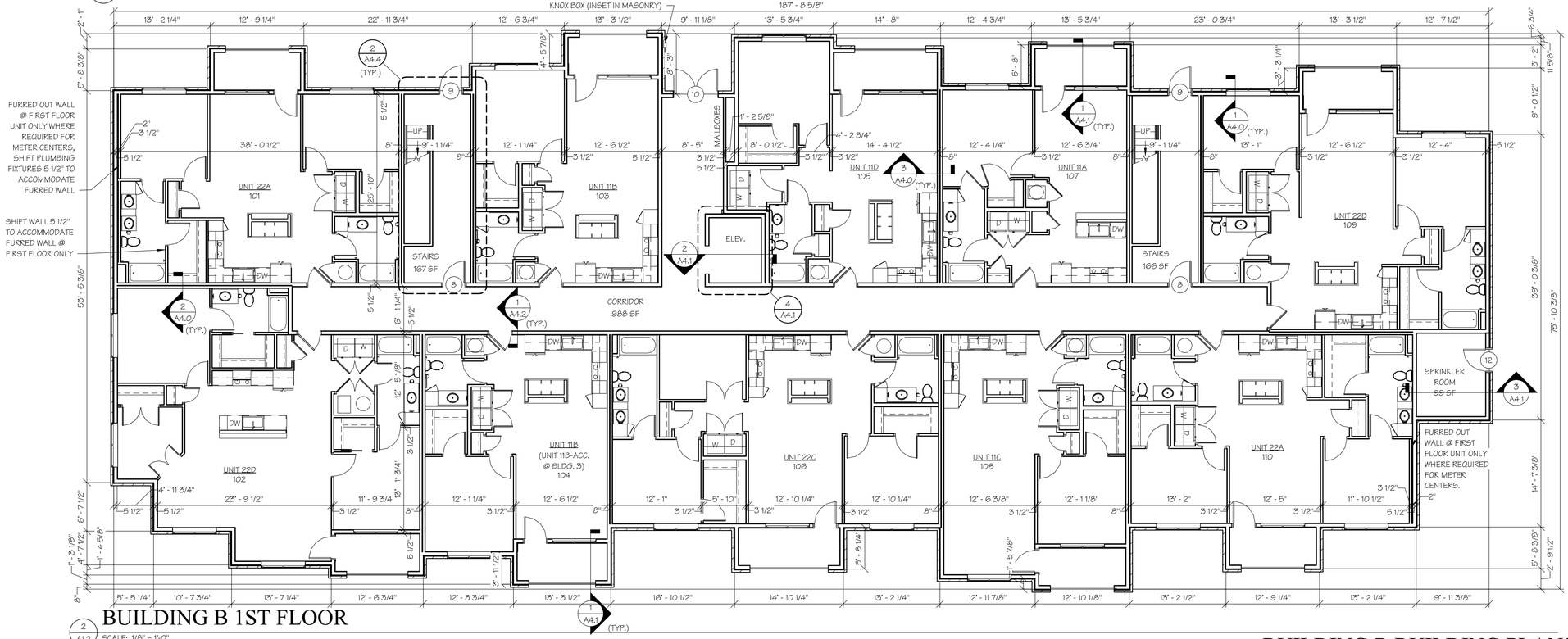

ARIA APARTMENTS LEE'S SUMMIT

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

M. RANDALL PORTER
2012006244
ARCHITECT
STATE OF MISSOURI
04 FEB 2021
M. RANDALL PORTER
A-2012006244

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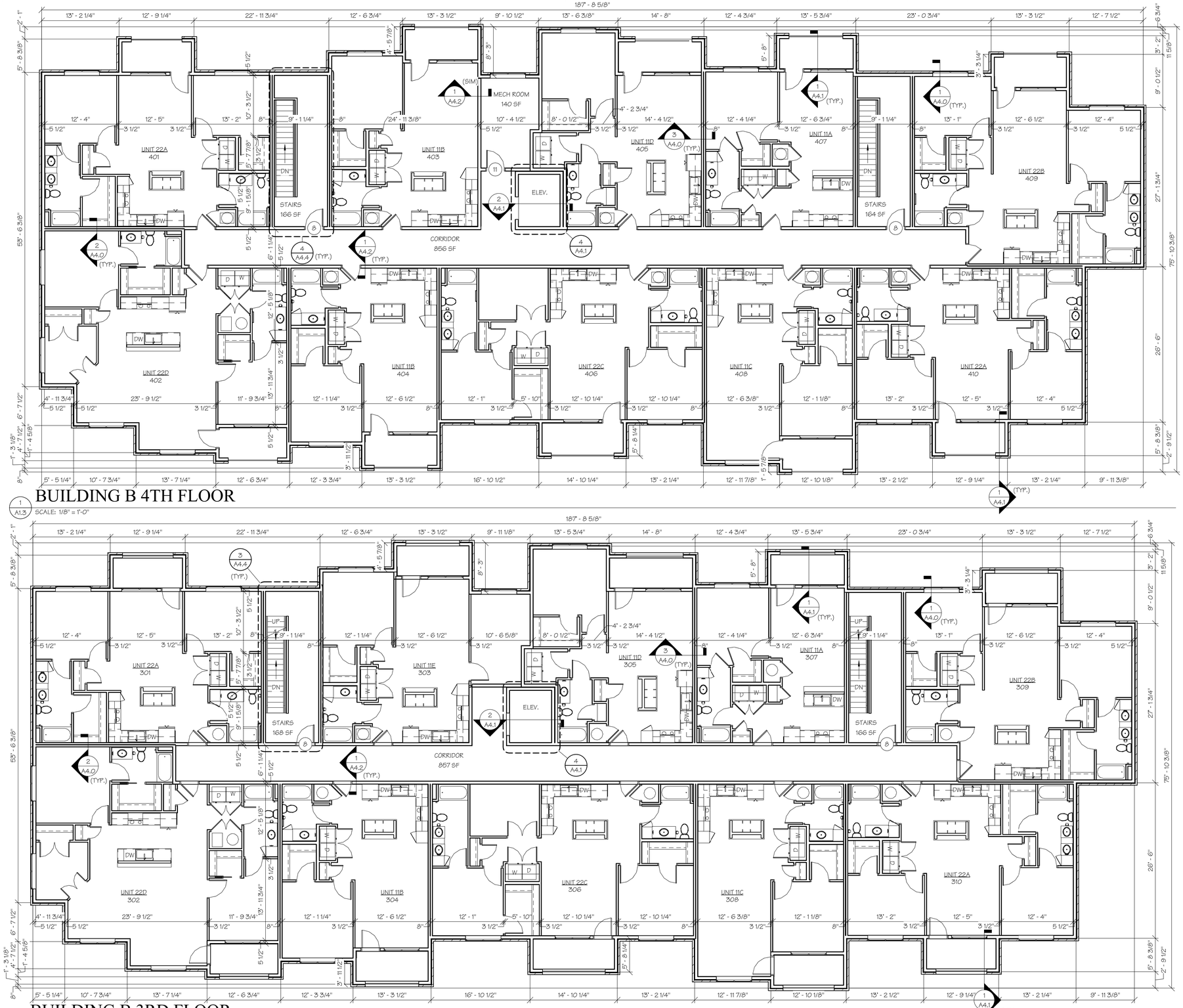
BUILDING B BUILDING PLANS
PERMIT SET



1 A1.3 BUILDING B 4TH FLOOR
SCALE: 1/8" = 1'-0"

2 A1.3 BUILDING B 3RD FLOOR
SCALE: 1/8" = 1'-0"

M. RANDALL PORTER
2012006244
ARCHITECT
04 FEB 2021
M. RANDALL PORTER
A-2012006244

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

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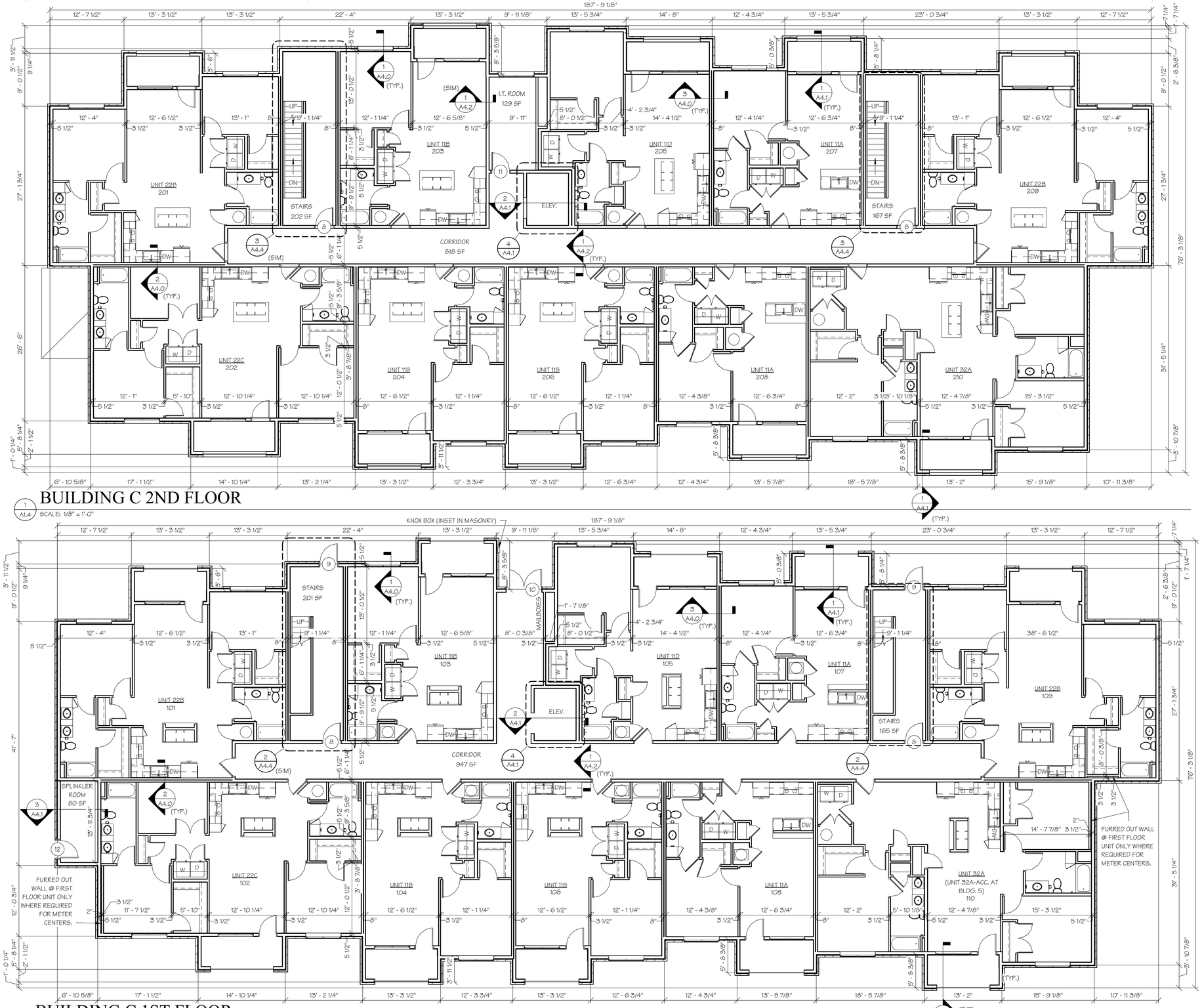
BUILDING B BUILDING PLANS

PERMIT SET



1 A1.4 SCALE: 1/8" = 1'-0"

BUILDING C 2ND FLOOR

2 A1.4 SCALE: 1/8" = 1'-0"

BUILDING C 1ST FLOOR

M. RANDALL PORTER
2012006244
ARCHITECT
STATE OF MISSOURI
04 FEB 2021
M. RANDALL PORTER
A-2012006244

ARIA APARTMENTS LEE'S SUMMIT

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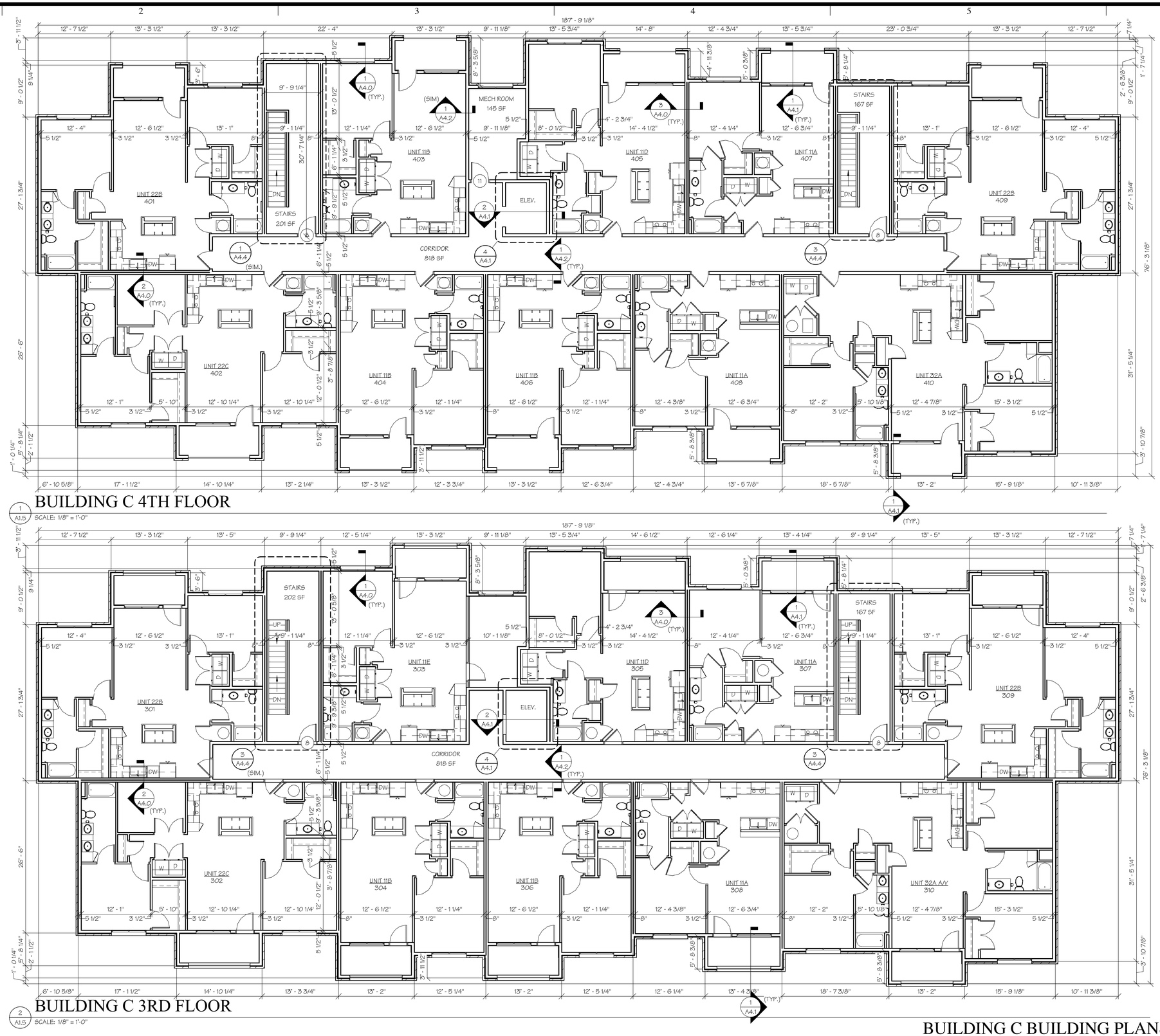
BUILDING C BUILDING PLANS

PERMIT SET



1 A1.5 BUILDING C 4TH FLOOR
SCALE: 1/8" = 1'-0"

2 A1.5 BUILDING C 3RD FLOOR
SCALE: 1/8" = 1'-0"

STATE OF MISSOURI
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2012006244
ARCHITECT
04 FEB 2021
M. RANDALL PORTER
A-2012006244

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

Wallace ARCHITECTS L.L.C.
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BUILDING C BUILDING PLANS

PERMIT SET

WINDOW SCHEDULE TYPE MARK

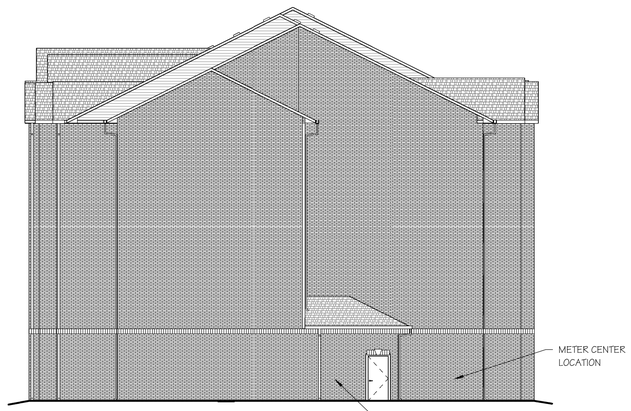
TYPE MARK	SIZE	HARDWARE	GLAZING	COMMENTS
1	PR. 3'-0" x 6'-0"	STANDARD	INSUL. LOW "E"	SINGLE HUNG W/SCREENS

WINDOW NOTES

1)	CONTRACTOR SHALL CERTIFY THAT BEDROOM WINDOWS INSTALLED PROVIDE EGRESS OPENING OF 5.7 SQ. FT. (MIN.) WITH MIN. CLEAR HEIGHT OF 24" AND MIN. CLEAR WIDTH OF 20".
2)	GLAZING WITHIN 24" OF DOORS SHALL BE SAFETY GLASS.
3)	INSTALL OPENING CONTROL DEVICES AT ALL WINDOWS, 2ND FLOOR AND ABOVE.
4)	ALL WINDOWS - MIN. U-FACTOR = 0.32 & SHGC = 0.40

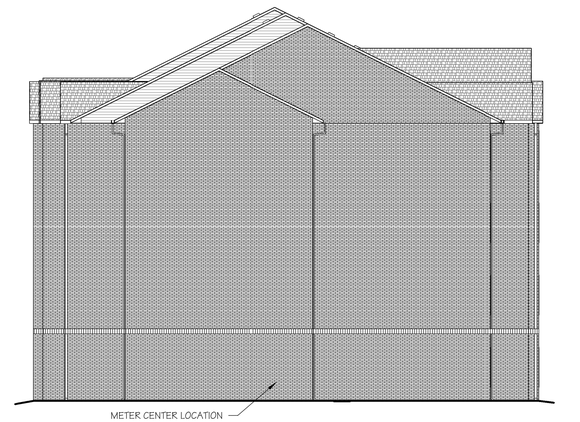
1 A3.0 SCALE: 3/32" = 1'-0"

BUILDING A REAR ELEVATION



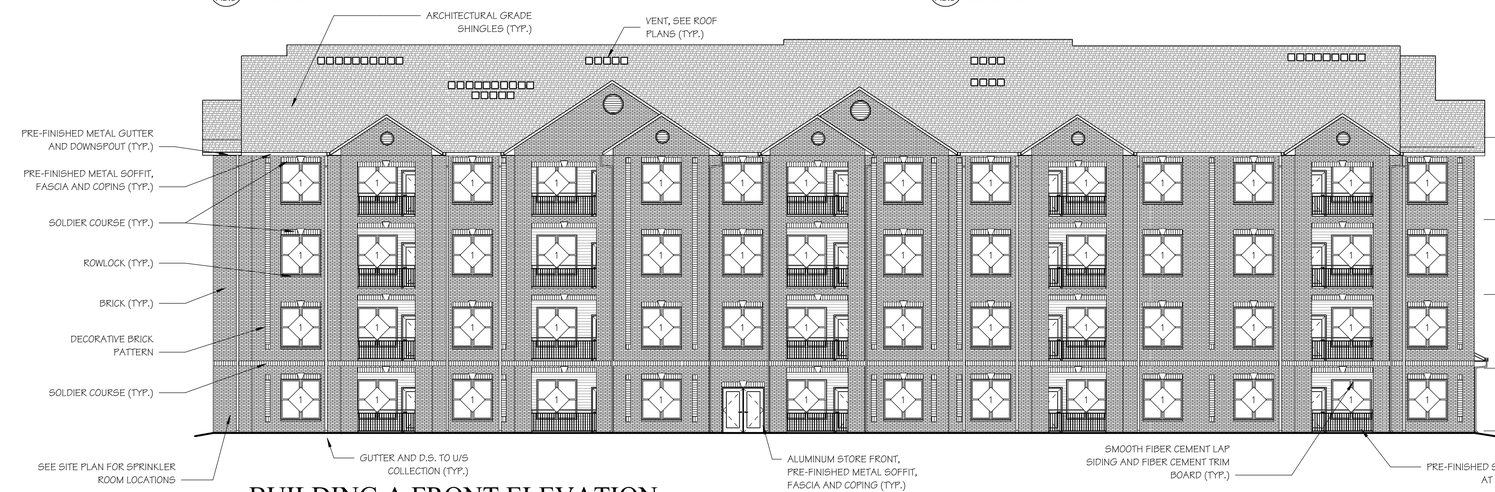
2 A3.0 SCALE: 3/32" = 1'-0"

BUILDING A LEFT SIDE ELEVATION



3 A3.0 SCALE: 3/32" = 1'-0"

BUILDING A RIGHT SIDE ELEVATION



4 A3.0 SCALE: 3/32" = 1'-0"

BUILDING A FRONT ELEVATION

BUILDING A EXTERIOR ELEVATIONS

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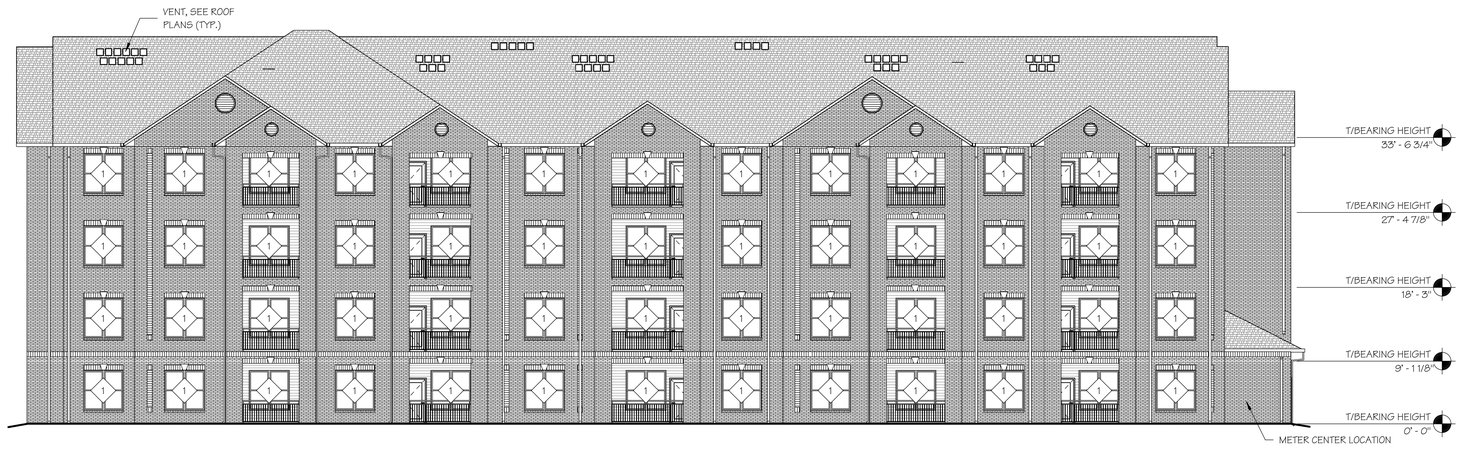
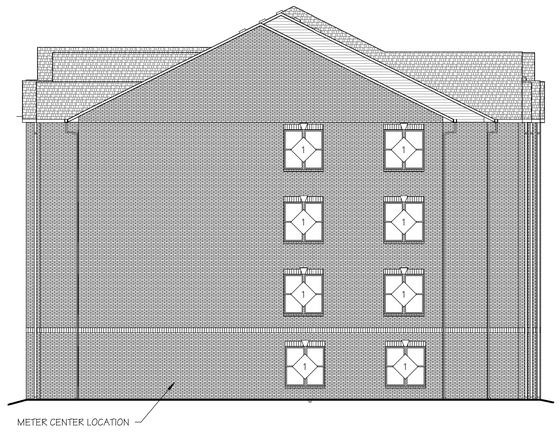


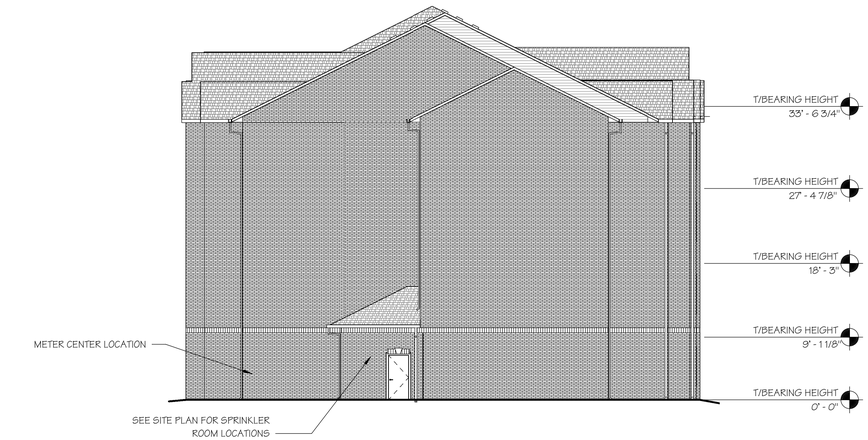
BUILDING B REAR ELEVATION

1 / A3.1 SCALE: 3/32" = 1'-0"



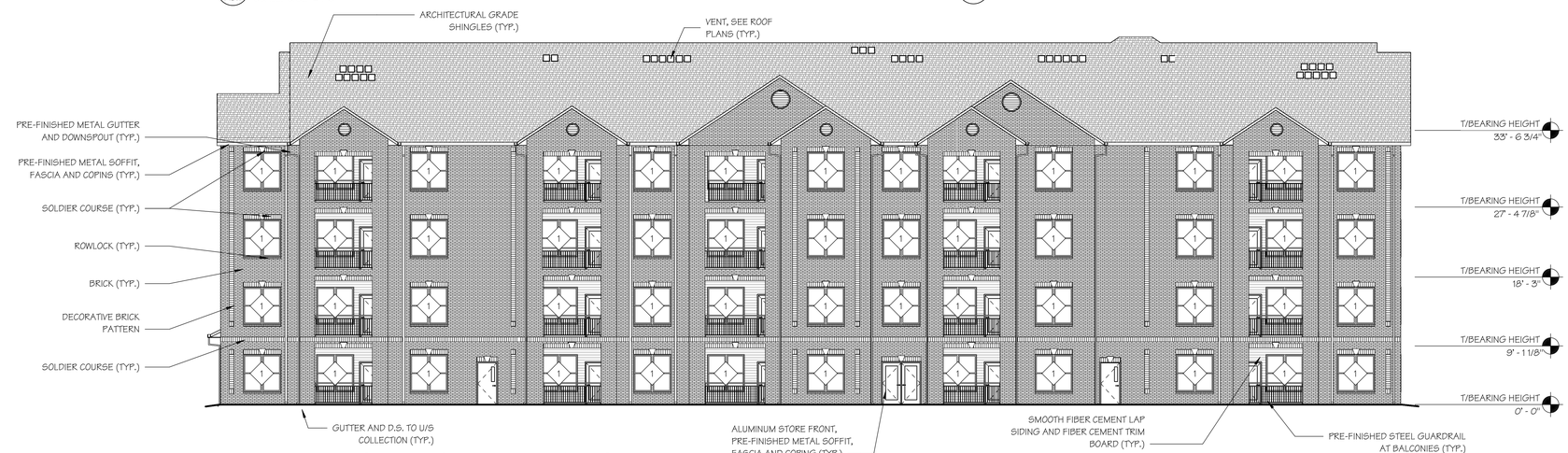
BUILDING B LEFT SIDE ELEVATION

2 / A3.1 SCALE: 3/32" = 1'-0"



BUILDING B RIGHT SIDE ELEVATION

3 / A3.1 SCALE: 3/32" = 1'-0"



BUILDING B FRONT ELEVATION

4 / A3.1 SCALE: 3/32" = 1'-0"

BUILDING B EXTERIOR ELEVATIONS

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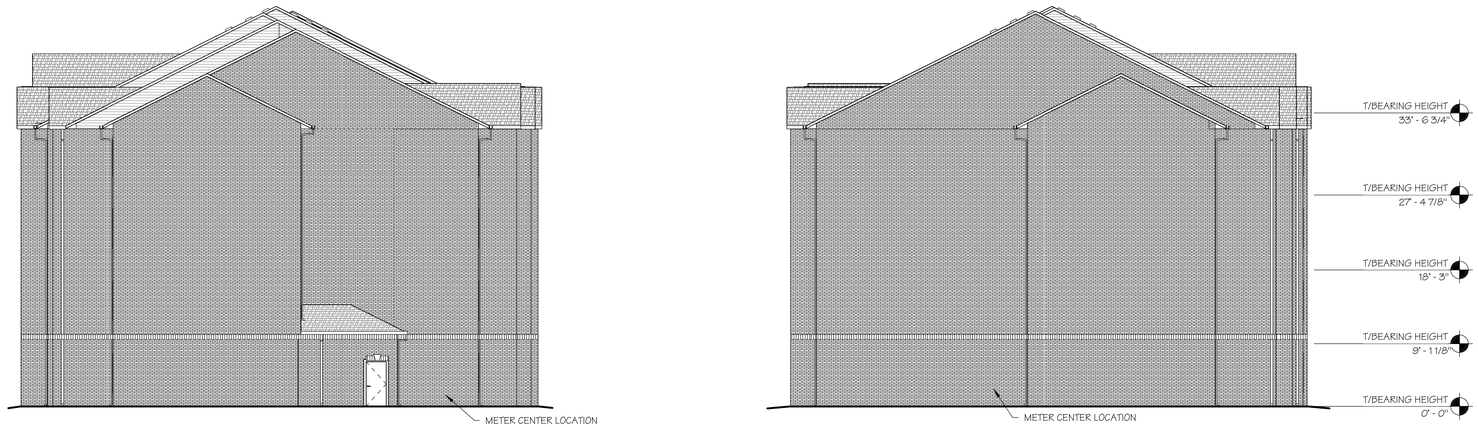
1 / A3.2 BUILDING C REAR ELEVATION

SCALE: 3/32" = 1'-0"

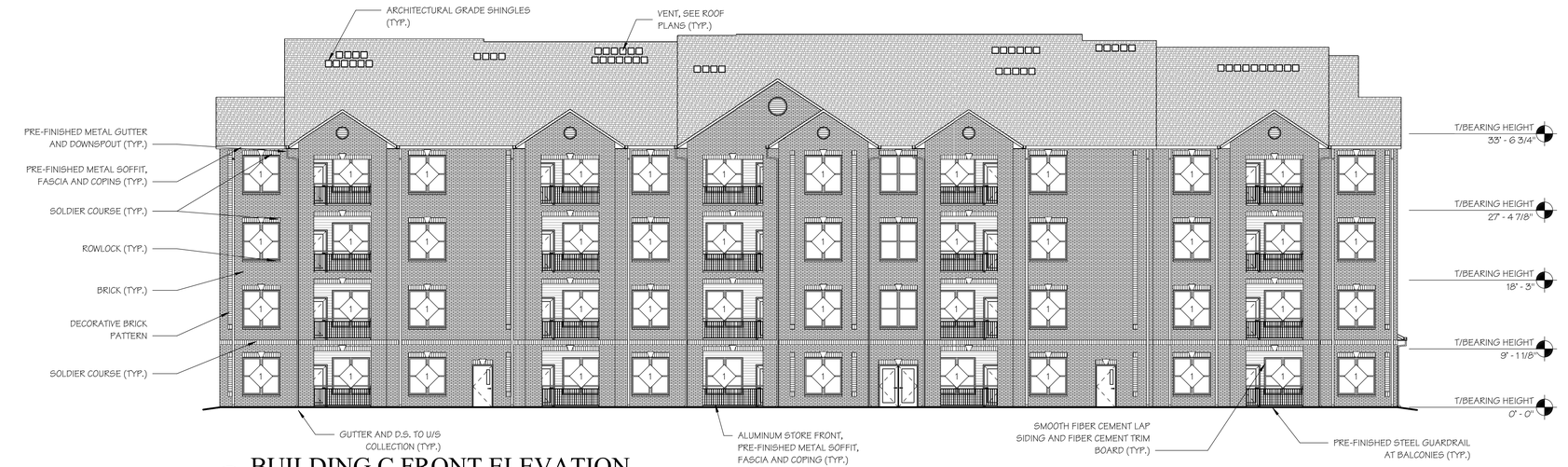


2 / A3.2 BUILDING C LEFT SIDE ELEVATION

SCALE: 3/32" = 1'-0"

4 / A3.2 BUILDING C RIGHT SIDE ELEVATION

SCALE: 3/32" = 1'-0"



3 / A3.2 BUILDING C FRONT ELEVATION

SCALE: 3/32" = 1'-0"

BUILDING C EXTERIOR ELEVATIONS

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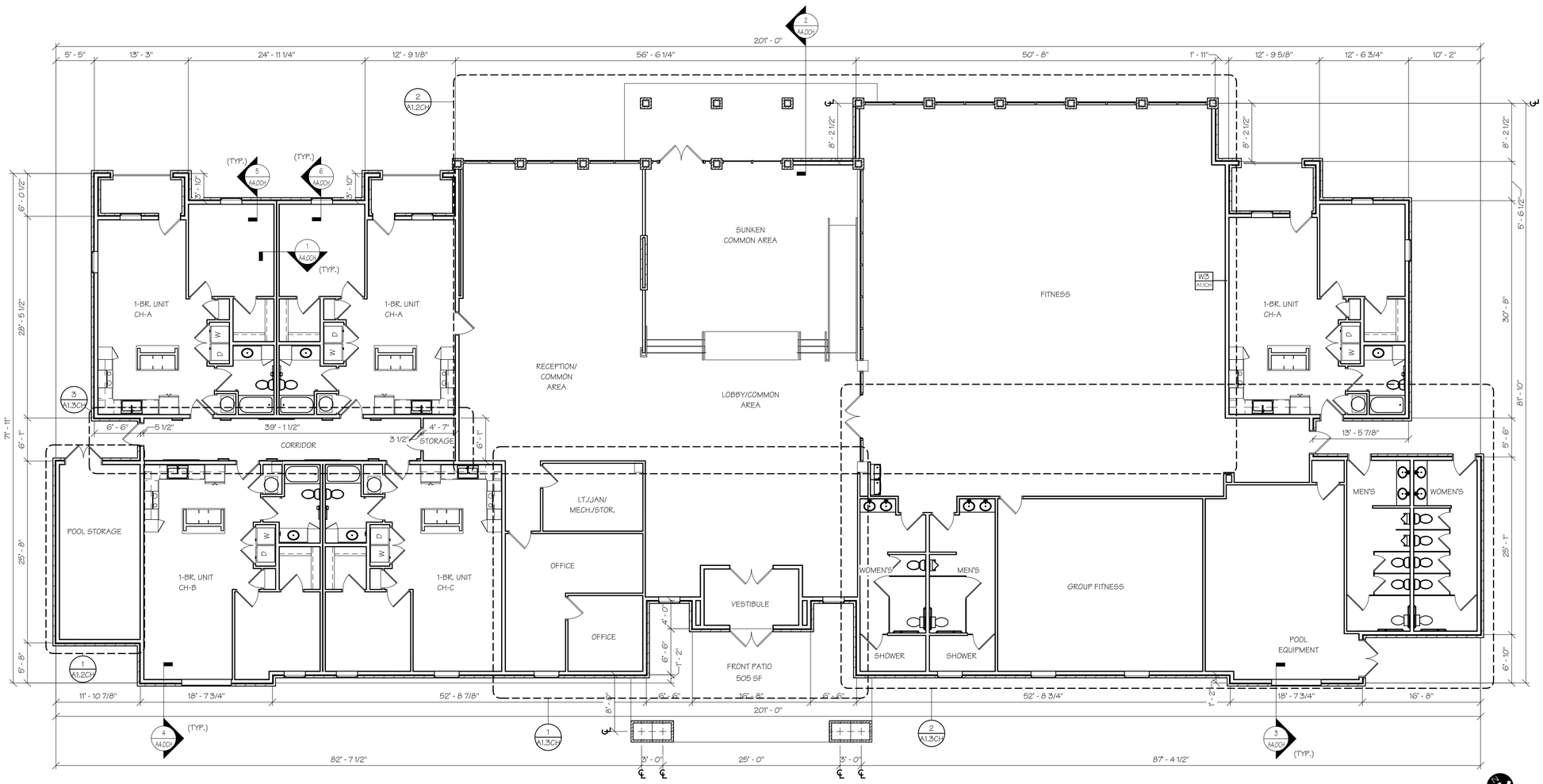

1 A1.0CH SCALE: 1/8" = 1'-0"

CLUBHOUSE FLOOR PLAN

BUILDING PLAN

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WINDOW SCHEDULE

TYPE MARK	SIZE	HARDWARE	GLAZING	COMMENTS
1	3'-0" x 5'-0"	STANDARD	INSUL. LOW "E" W/MUTINS	SINGLE-HUNG W/SCREENS
2	3'-0" x 7'-0"	STANDARD	INSUL. LOW "E" W/MUTINS	SINGLE-HUNG
3	3'-6" x 10'-3"	STANDARD	INSUL. LOW "E" W/MUTINS	SINGLE-HUNG
4	P.R. 3'-6" x 6'-0"	STANDARD	INSUL. LOW "E" W/MUTINS	CASEMENT
5	7'-0" x 11'-7"	STANDARD	INSUL. LOW "E" W/MUTINS	ARCH-TOP

1 A3.0CH CLUBHOUSE FRONT ELEVATION
SCALE: 3/32" = 1'-0"

2 A3.0CH CLUBHOUSE LEFT ELEVATION
SCALE: 1/8" = 1'-0"

3 A3.0CH CLUBHOUSE RIGHT ELEVATION
SCALE: 1/8" = 1'-0"

4 A3.0CH CLUBHOUSE REAR ELEVATION
SCALE: 3/32" = 1'-0"

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EXTERIOR ELEVATIONS

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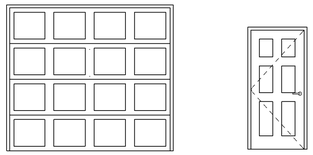
FINISH SCHEDULE

ROOM NAME	Finish			
	FLOOR	BASE	WALL	CEILING
ACCESSIBLE GARAGE				
GARAGE	SEALED CONCRETE	NONE OR NO ADDITIONAL FINISH	PAINTED GYP BD.	PAINTED GYP BD.
STORAGE	SEALED CONCRETE	NONE OR NO ADDITIONAL FINISH	PAINTED GYP BD.	PAINTED GYP BD.

DOOR SCHEDULE

TYPE MARK	SIZE	ELEV.	PANEL MATL.	DESCRIPTION
1	8'-0" x 8'-0" x 1 3/4"	A	STEEL	DECORATIVE MULTI-PANEL METAL
2	3'-0" x 6'-8" x 1 3/4"	B	STEEL	6 PANEL, CATCH CHAIN CLOSER, SECURITY HINGES

DOOR ELEVATIONS



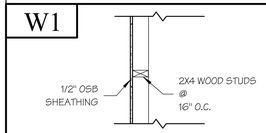
GENERAL NOTES

1)	DIMENSIONS SHOWN ARE FACE OF STUD TO FACE OF STUD
2)	SEAL CONCRETE FLOOR TO REDUCE MOISTURE PENETRATION.

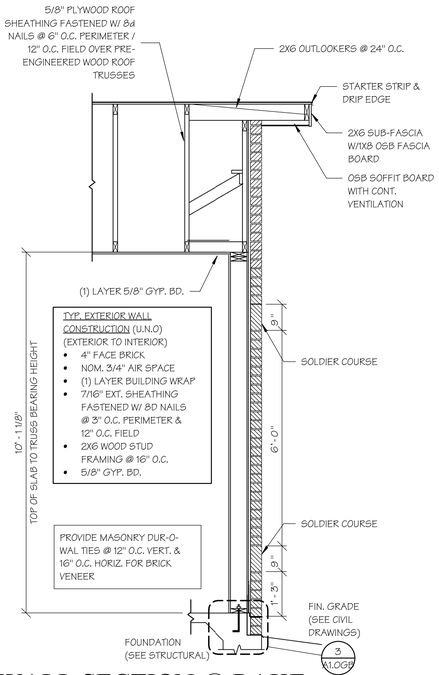
SPECIAL INSTRUCTION:
STRUCTURAL DRAWINGS AND SPECIFICATIONS TAKE PRECEDENCE OVER ANY DRAWING, DETAIL OR NOTE SHOWN ON THIS SHEET. CONTRACTORS, SUBCONTRACTORS, AND SUPPLIERS MUST REFERENCE STRUCTURAL DRAWINGS AND/ OR SPECIFICATIONS BEFORE CONSTRUCTING, OR SUPPLYING ANY LOAD-BEARING, OR LOAD-RESISTING ELEMENT SHOWN ON THIS SHEET.

WALL TYPE SCHEDULE

W1

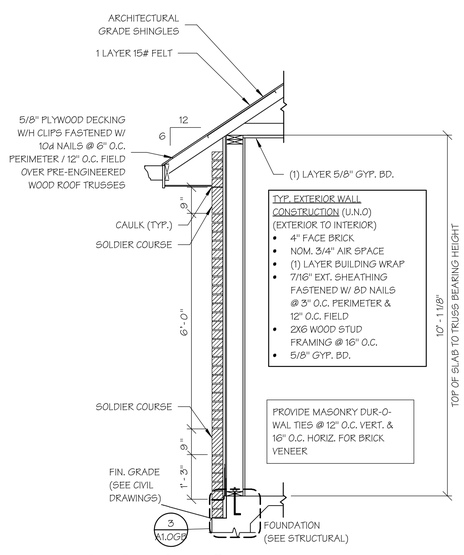


4-1/2" WALL
(NOT RATED)



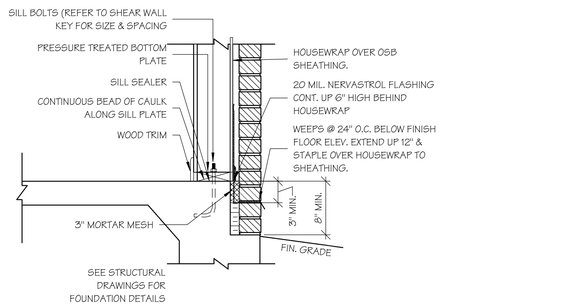
WALL SECTION @ RAKE

1 A1.0GB SCALE: 1/2" = 1'-0"



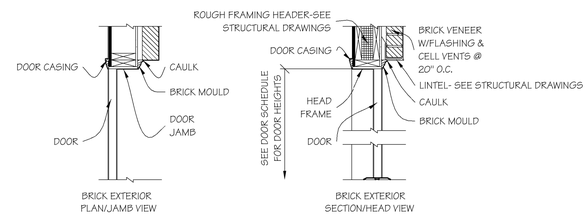
WALL SECTION @ EAVE

2 A1.0GB SCALE: 1/2" = 1'-0"



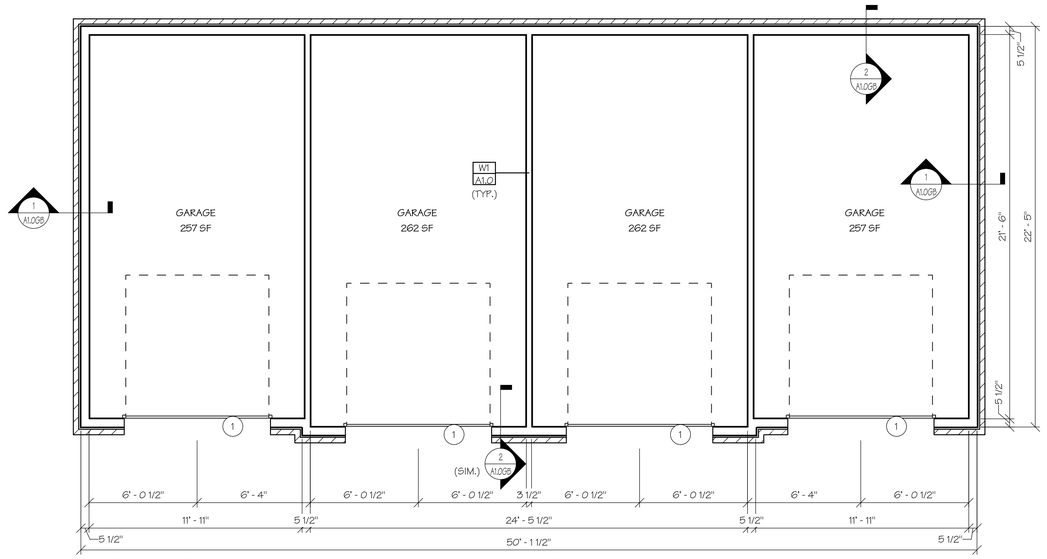
TYP. FOUNDATION FLASHING DETAIL

3 A1.0GB SCALE: 1" = 1'-0"



WALL SECTIONS AND DETAILS @ EXTERIOR DOORS

4 A1.0GB SCALE: 3/4" = 1'-0"



GARAGE TYPE "A" BUILIDNG PLAN/FINISH PLAN

5 A1.0GB SCALE: 1/4" = 1'-0"

GARAGE TYPE "A" BUILDING PLAN/FINISH PLAN

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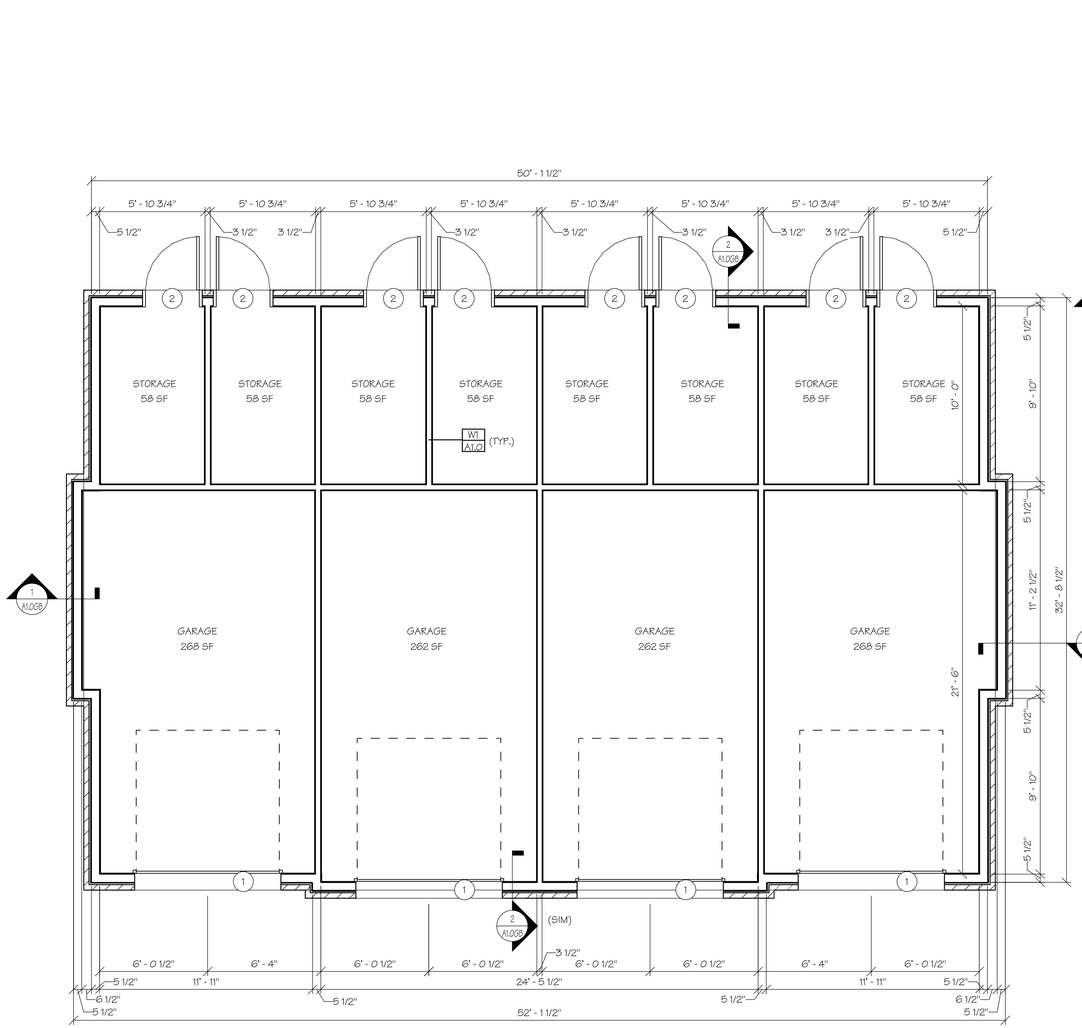
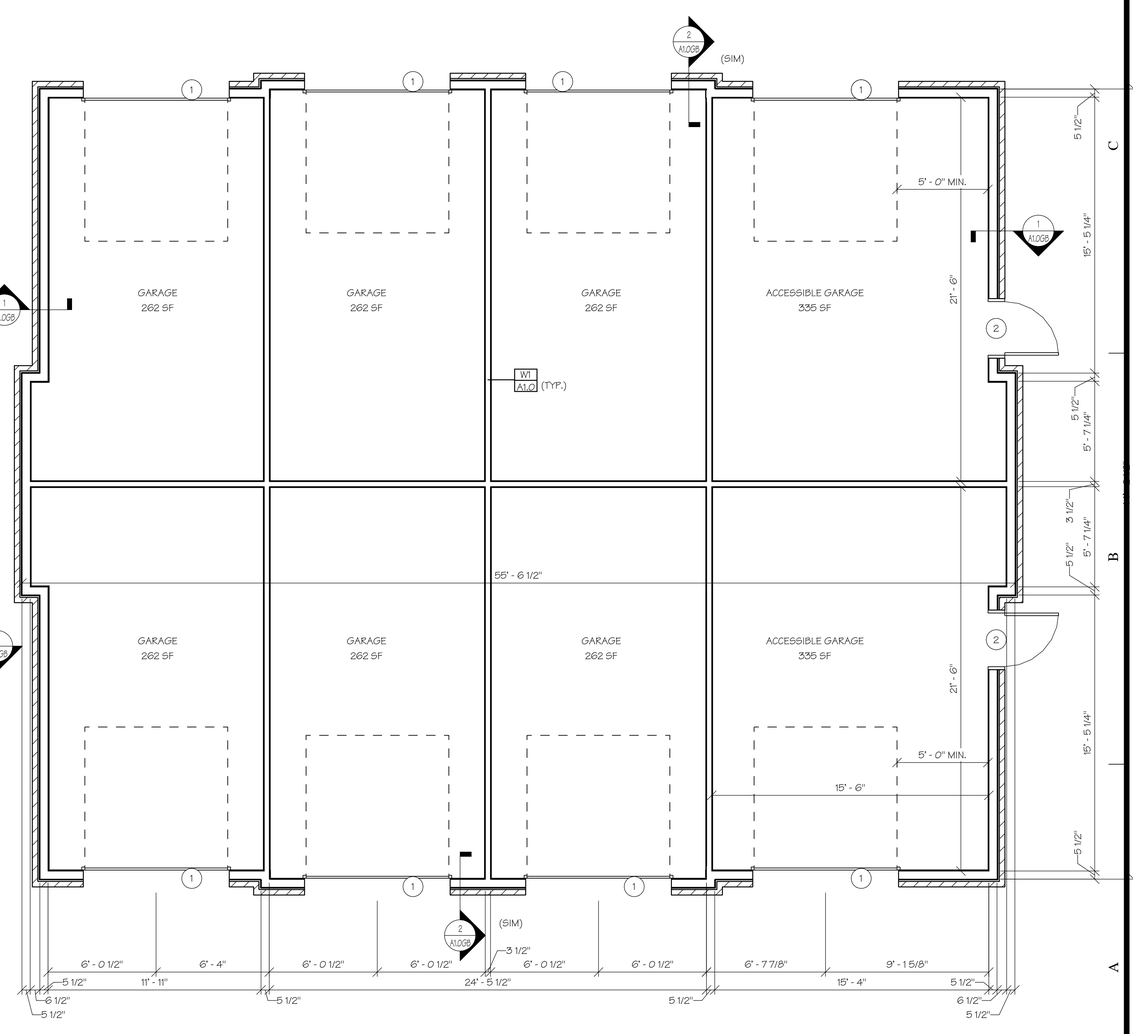


1 A1.0GB SCALE: 1/4" = 1'-0"

GARAGE TYPE "B" BUILDING PLAN/FINISH PLAN



2 A1.0GB SCALE: 1/4" = 1'-0"

GARAGE TYPE "C" BUILIDNG PLAN/FINISH PLAN

GARAGE TYPE "B" & "C" BUILDING PLANS/FINISH PLANS

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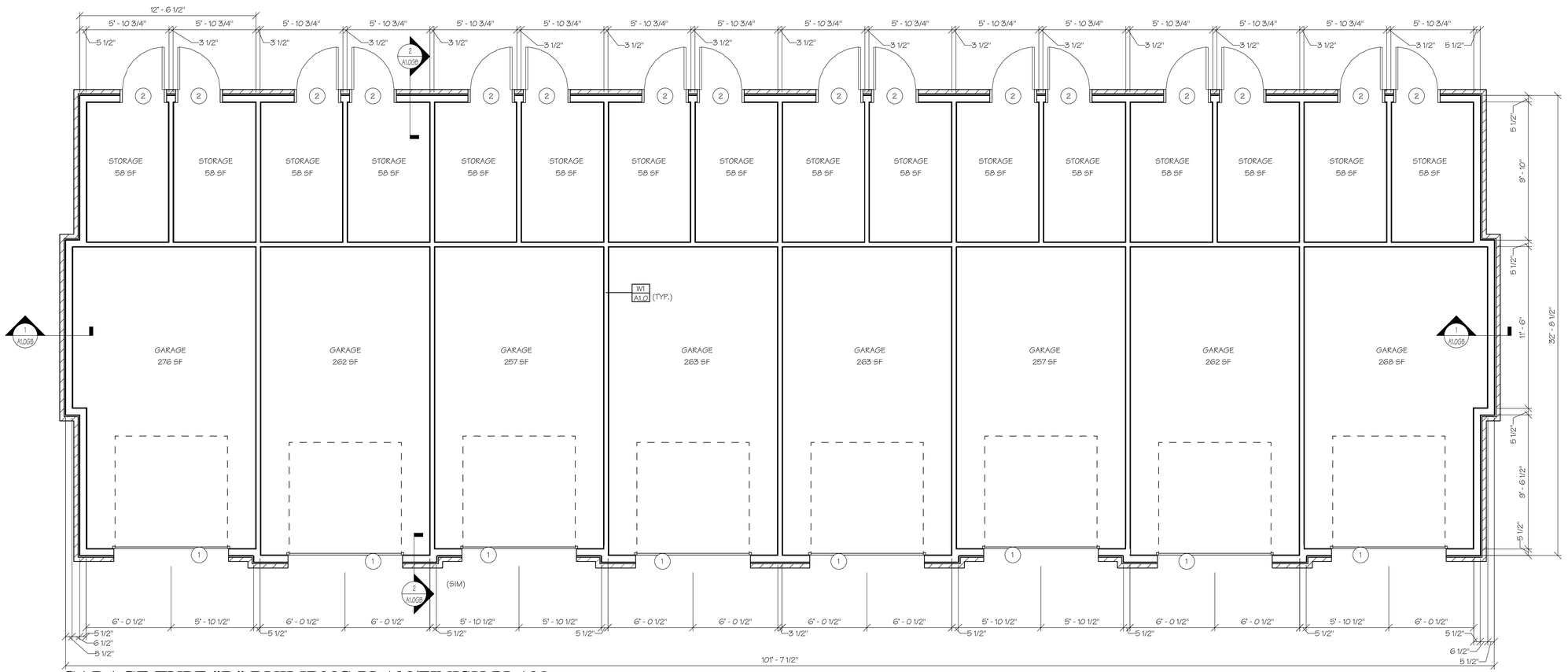

1 A1.2GB GARAGE TYPE "D" BUILIDNG PLAN/FINISH PLAN

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

GARAGE TYPE "D" BUILDINGN PLAN/FINISH PLAN

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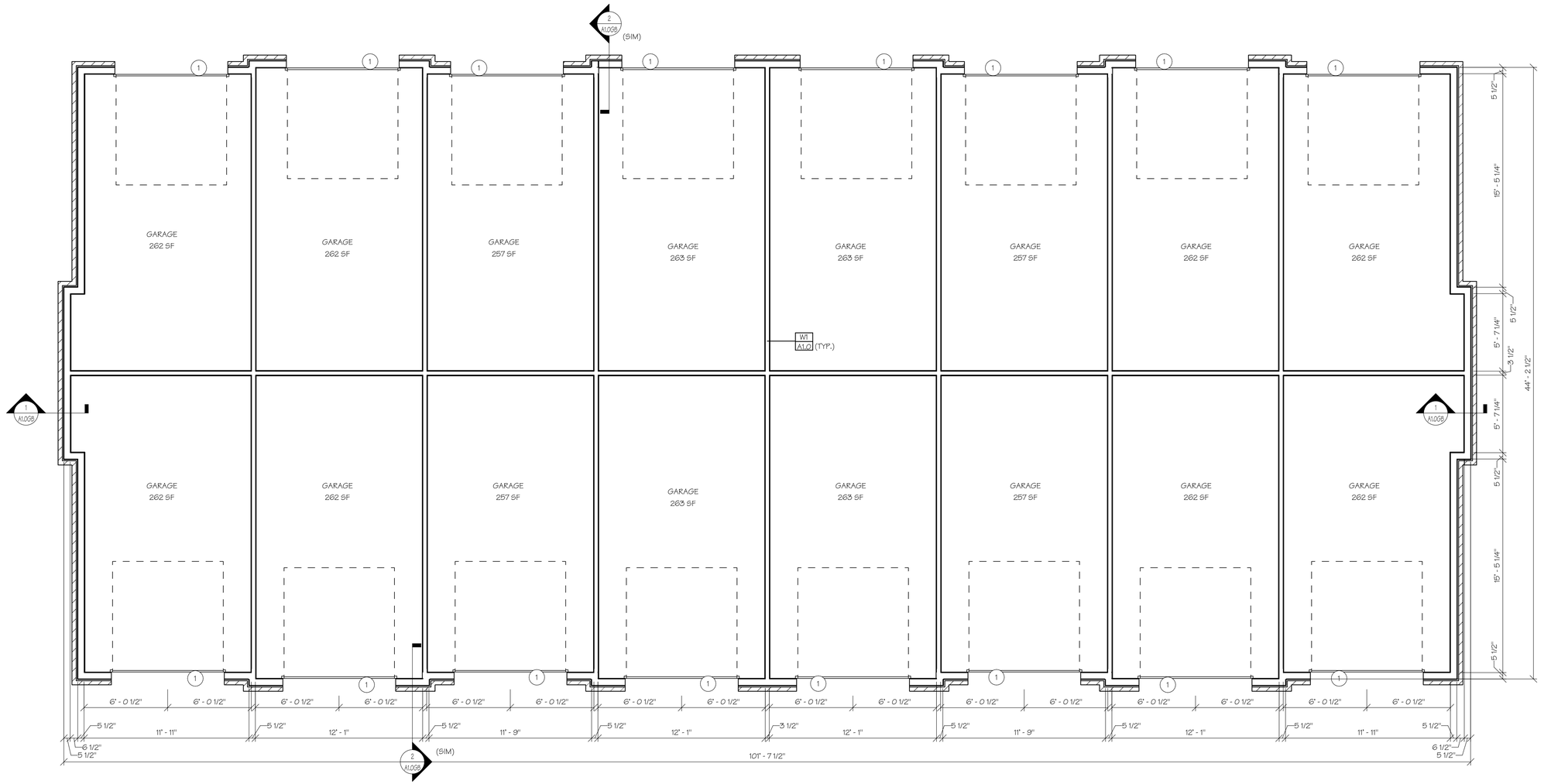

GARAGE TYPE "E" BUILDING PLAN/FINISH PLAN

1 / A1.3GB SCALE: 1/4" = 1'-0"

GARAGE TYPE "E" BUILDNG PLAN/FINISH PLAN

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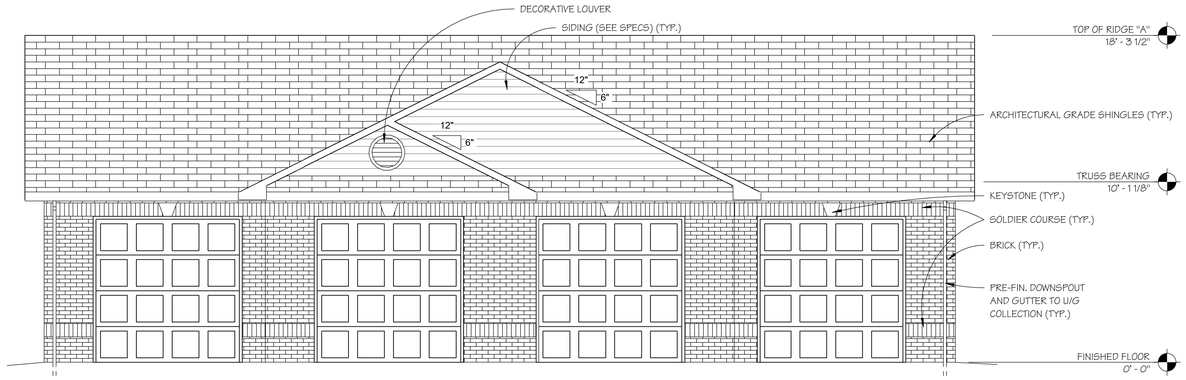
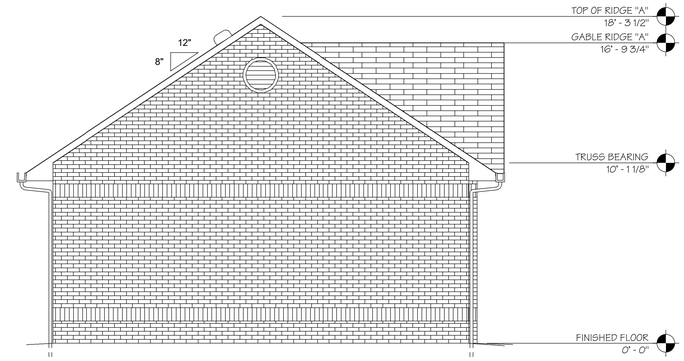


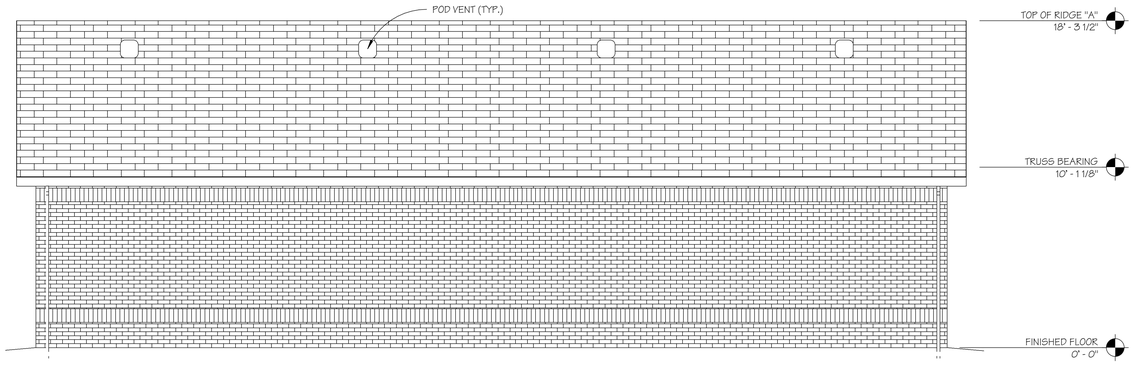
1 A3.0GB GARAGE "A" FRONT ELEVATION

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



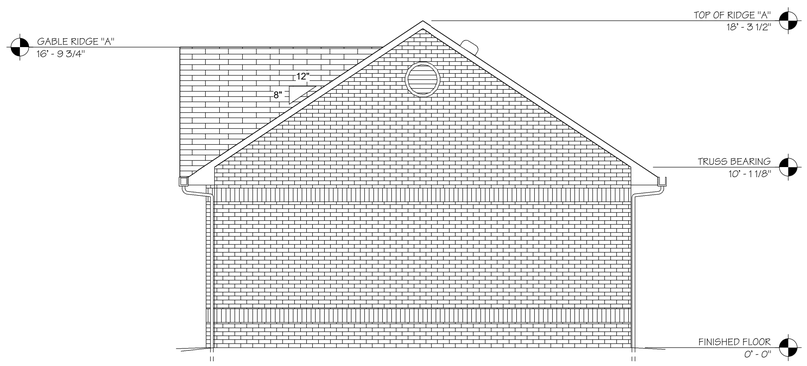
2 A3.0GB GARAGE "A" LEFT ELEVATION

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



3 A3.0GB GARAGE "A" REAR ELEVATION

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



4 A3.0GB GARAGE "A" RIGHT ELEVATION

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

EXTERIOR ELEVATIONS

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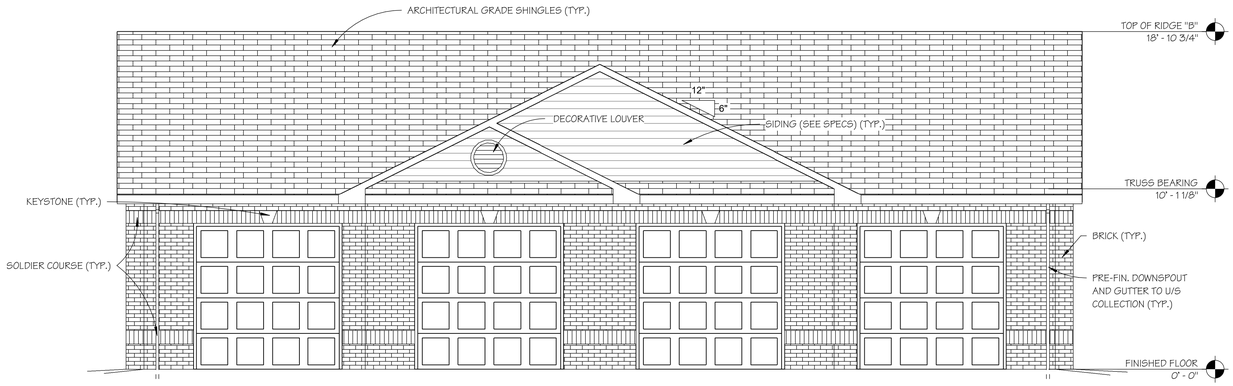
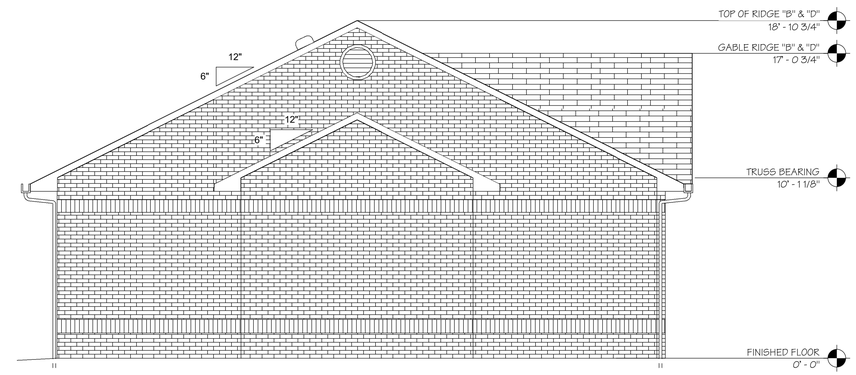


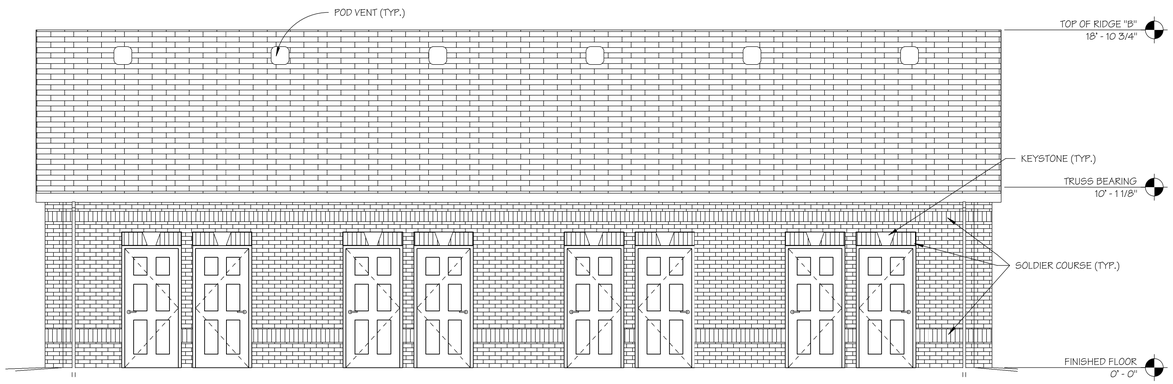
2 A3.1GB SCALE: 1/4" = 1'-0"

GARAGE "B" FRONT ELEVATION



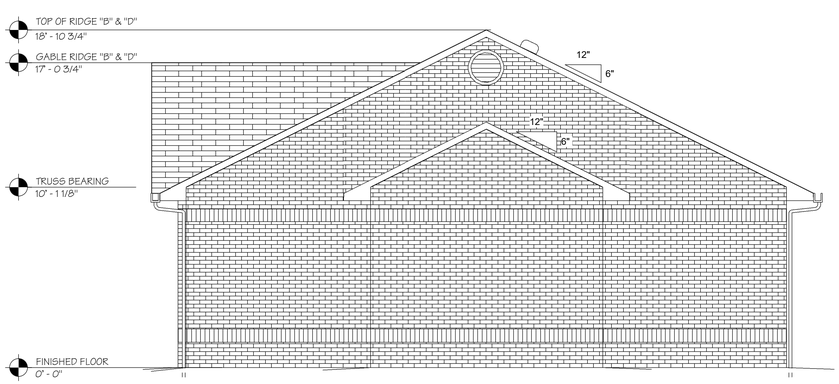
3 A3.1GB SCALE: 1/4" = 1'-0"

GARAGE "B" & "D" LEFT ELEVATIONS



4 A3.1GB SCALE: 1/4" = 1'-0"

GARAGE "B" REAR ELEVATION



5 A3.1GB SCALE: 1/4" = 1'-0"

GARAGE "B" & "D" RIGHT ELEVATION

EXTERIOR ELEVATIONS

PERMIT SET

M. RANDALL PORTER
2012006244
ARCHITECT
STATE OF MISSOURI
04 FEB 2021

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

Wallace ARCHITECTS L.L.C.
Columbia, MO
P 573-256-7200

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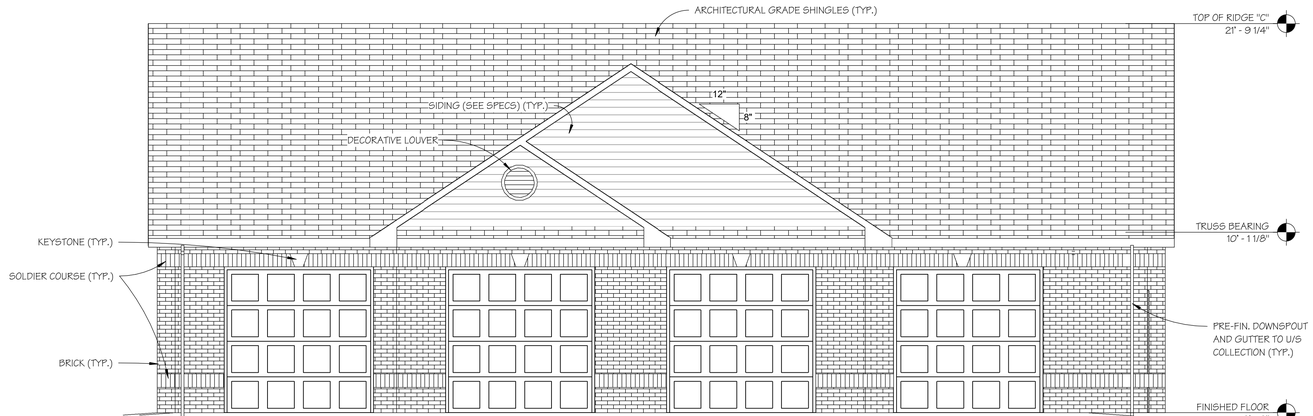
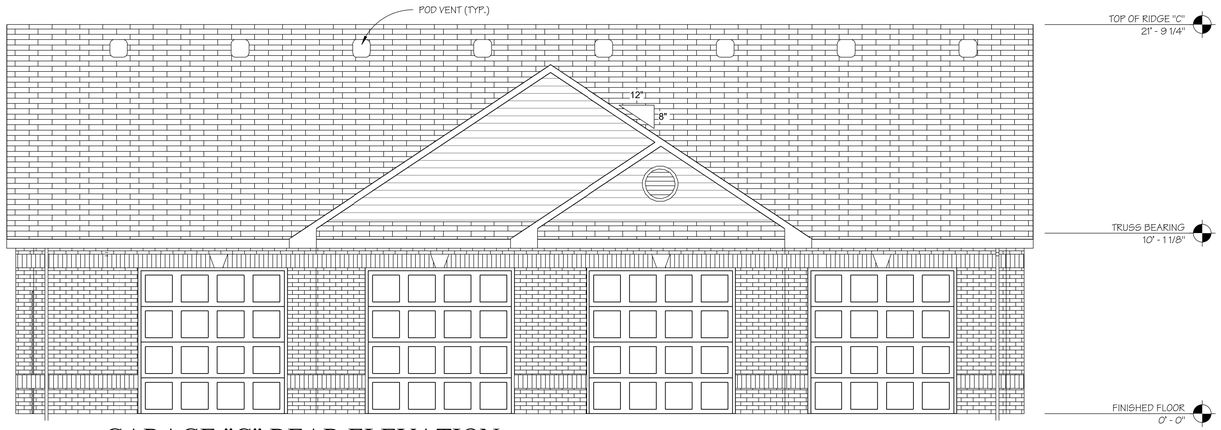


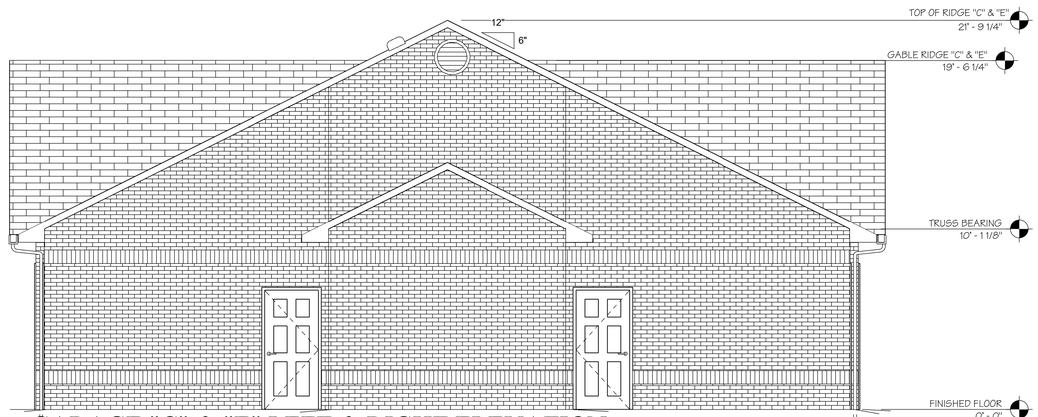
1 / A3.2GB GARAGE "C" FRONT ELEVATION

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



2 / A3.2GB GARAGE "C" REAR ELEVATION

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



3 / A3.2GB GARAGE "C" & "E" LEFT & RIGHT ELEVATION

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

EXTERIOR ELEVATIONS

PERMIT SET

STATE OF MISSOURI
M. RANDALL PORTER
2012006244
ARCHITECT
04 FEB 2021

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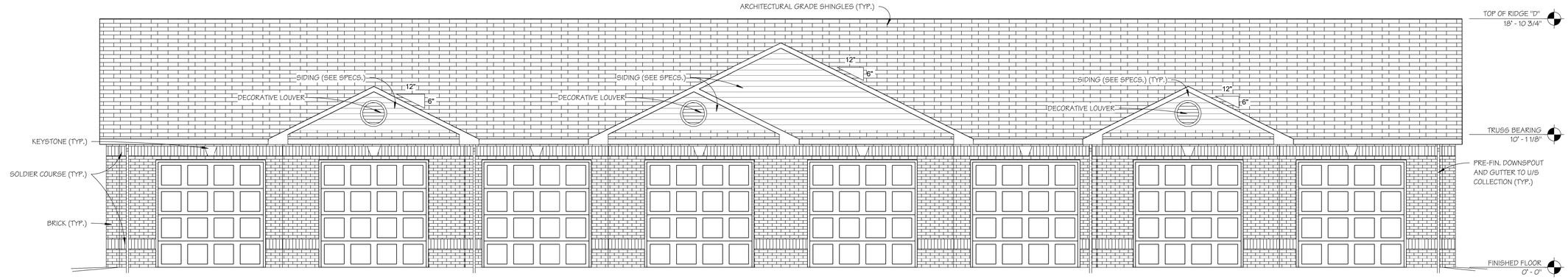
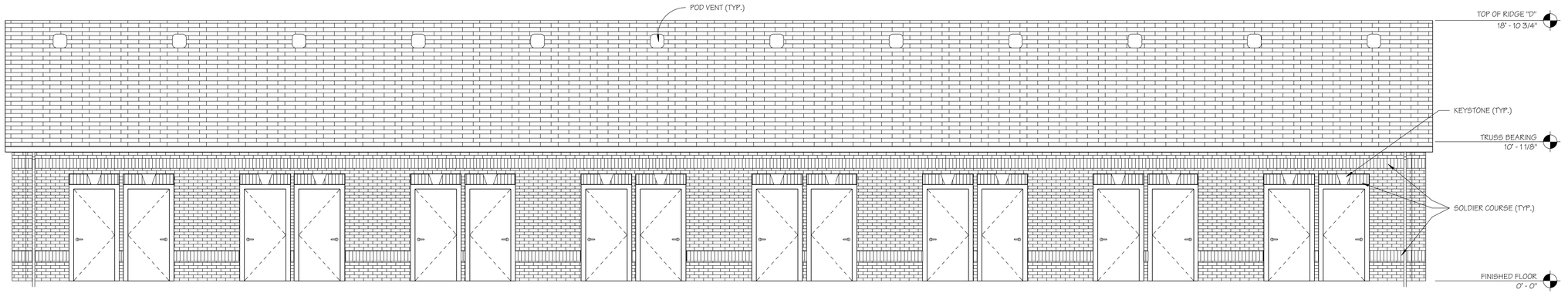


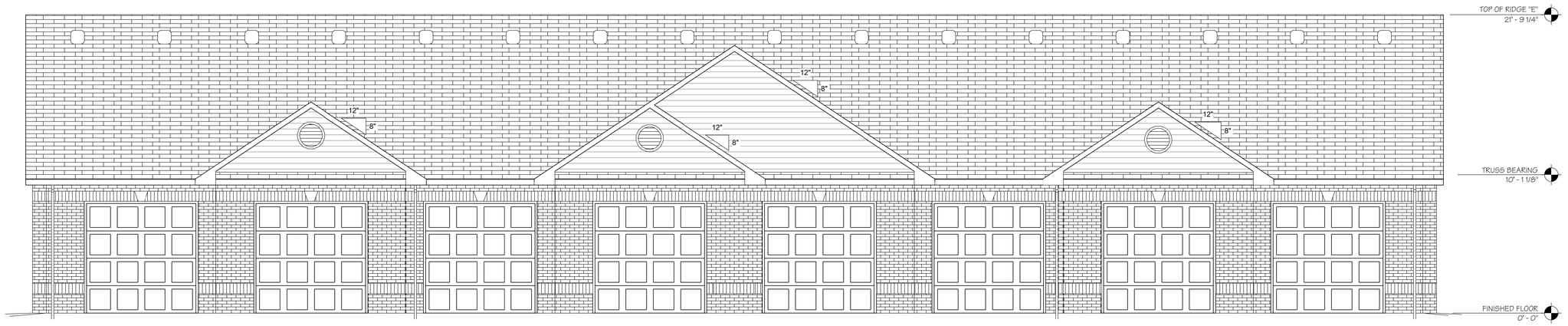
1 / A3.3GB SCALE: 1/4" = 1'-0"

GARAGE "D" FRONT ELEVATION



2 / A3.3GB SCALE: 1/4" = 1'-0"

GARAGE "D" REAR ELEVATION



GARAGE "E" FRONT ELEVATION SIMILAR

3 / A3.3GB SCALE: 1/4" = 1'-0"

GARAGE "E" REAR ELEVATION

EXTERIOR ELEVATIONS

PERMIT SET

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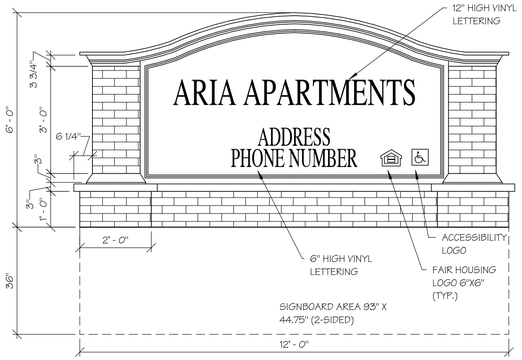
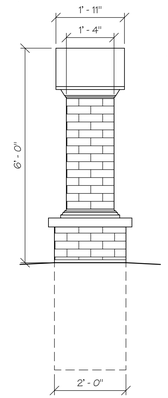
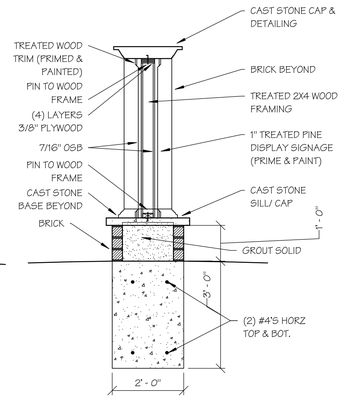


NOTES:
1) SIGN TO BE LIGHTED. COORDINATE WITH POWER CO. AND/OR ELECTRICAL CONTRACTOR.
2) REQUIRES OWNER APPROVAL PRIOR TO ORDERING.
3) SIGN TO BE TWO SIDED.



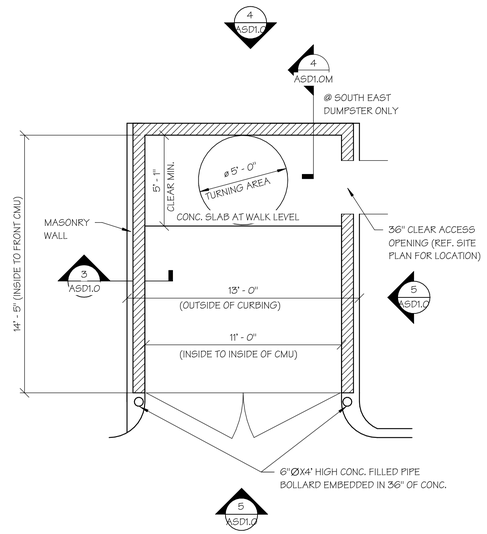
END ELEVATION



SECTION AA:

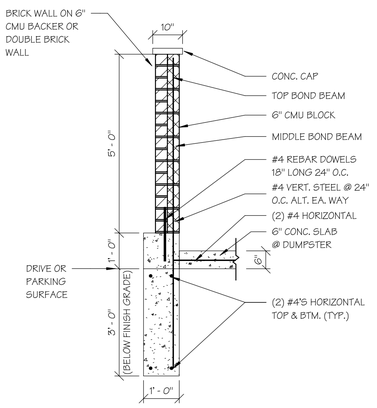
PROJECT MONUMENT SIGN

1 / A5D1.0M — SCALE: 1/2" = 1'-0"



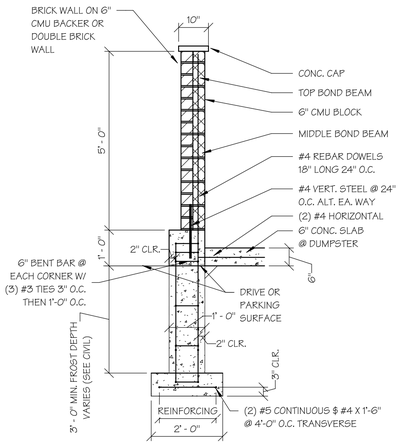
DUMPSTER ENCLOSURE

2 / A5D1.0M — SCALE: 1/4" = 1'-0"



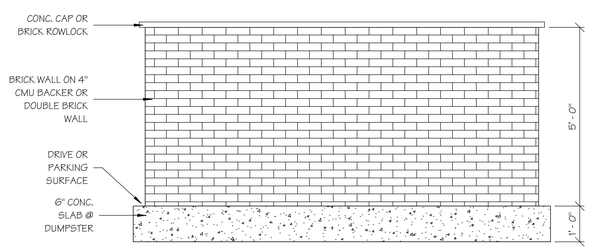
DUMPSTER ENCLOSURE WALL SECTION

3 / A5D1.0M — SCALE: 1/2" = 1'-0"

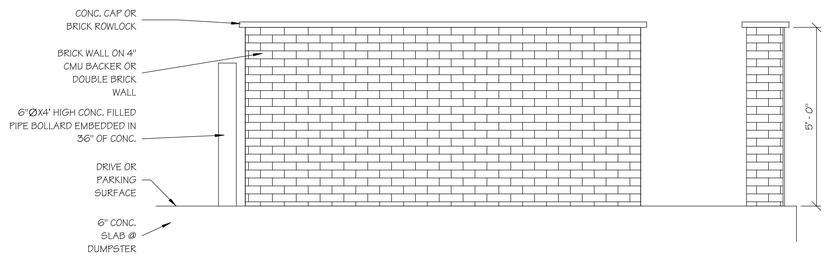


SOUTH EAST DUMPSTER ENCLOSURE REAR STEM WALL SECTION

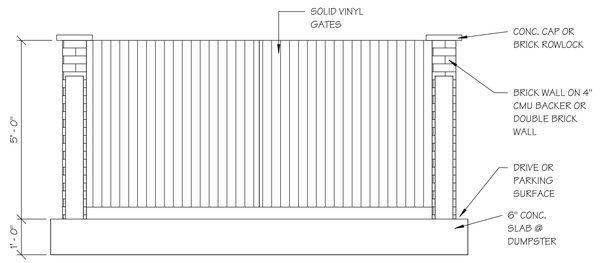
4 / A5D1.0M — SCALE: 1/2" = 1'-0"



REAR



TYP. SIDE



FRONT

DUMPSTER ENCLOSURE ELEVATIONS

5 / A5D1.0M — SCALE: 1/2" = 1'-0"

SITE DETAILS

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