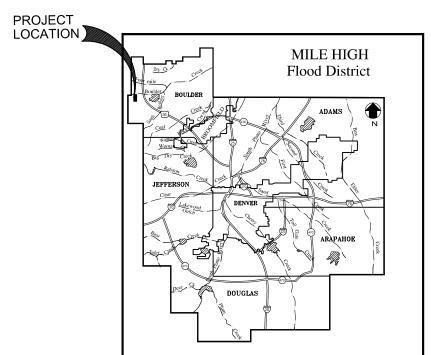
GREGORY CANYON CREEK FROM ARAPAHOE AVE TO PENNSYLVANIA AVE MHFD PROJECT NO. 107151 PRELIMINARY PLANS SEPTEMBER 2020



LOCATION MAP

KEN MACKENZIE, PE EXECUTIVE DIRECTOR	DATE
LAURA KROEGER, PE MANAGER STREAM SERVICES	DATE
JIM WATT, PE PROJECT MANAGER STREAM SERVICES	DATE

KATIE KNAPP, PE

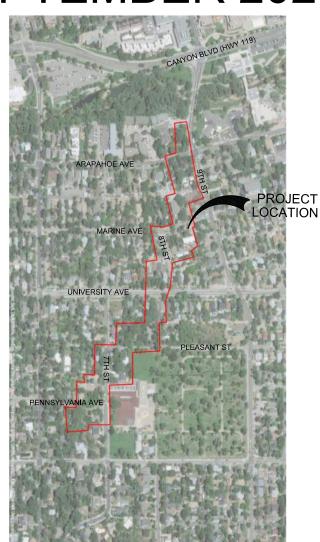
ENGINEERING PROJECT MANAGER

"I HEREBY AFFIRM THAT THESE CONSTRUCTION DRAWINGS FOR CITY OF BOULDER PROJECT WERE PREPARED BY ME (OR UNDER MY DIRECT SUPERVISION) IN ACCORDANCE WITH THE REQUIREMENTS OF THE INFRASTRUCTURE DESIGN AND CONSTRUCTION STANDADS"

NAME OF ENGINEER: AARON COOK PE NUMBER: 45916 NAME OF ENGINEERING FIRM: JACOBS

PREPARED BY: JACOBS 9191 S JAMAICA ST ENGLEWOOD, CO 80112 PHONE: (720) 286-0231 FAX: (720) 286-9366

PREPARED FOR: MILE HIGH FLOOD DISTRICT 2480 WEST 26TH AVENUE SUITE 156-B DENVER, CO 8021







SHEET INDEX

SHEET NO	DWG NO	DESCRIPTION
1	GCC-G-001	COVER SHEET
2 3	GCC-G-002 GCC-G-003	GENERAL NOTES GENERAL NOTES AND LEGEND
4	GCC-G-003 GCC-G-004	SURVEY CONTROL AND KEYMAP
5	GCC-G-005	CITY OF BOULDER WETLAND AND WETLAND BUFFER IMPACTS
6	GCC-G-006	CITY OF BOULDER WETLAND AND WETLAND BUFFER IMPACTS
7	GCC-D-1001	DEMO PLAN 1
8	GCC-D-1002	DEMO PLAN 2
9	GCC-D-1003	DEMO PLAN 3
10	GCC-D-1004	DEMO PLAN 4
11	GCC-D-1005	DEMO PLAN 5
12 13	GCC-RD-1601 GCC-RD-1602	DEMO PLAN ARAPAHOE AVE DEMO PLAN TURNER ALLEY
14	GCC-RD-1602 GCC-RD-1603	DEMO PLAN MARINE STREET
15	GCC-RD-1604	DEMO PLAN 8TH STREET
16	GCC-RD-1605	DEMO PLAN UNIVERSITY AVE
17	GCC-RD-1606	DEMO PLAN PLEASANT STREET
18	GCC-RD-1607	DEMO PLAN 7TH STREET
19	GCC-RD-1608	DEMO PLAN PENNSYLVANIA AVENUE
20 21	GCC-C-3001	PLAN AND PROFILE STA 1+00 TO STA 5+80 PLAN AND PROFILE STA 5+80 TO STA 10+20
22	GCC-C-3002 GCC-C-3003	PLAN AND PROFILE STA 3560 TO STA 10520 PLAN AND PROFILE STA 1050 TO STA 15540
23	GCC-C-3004	PLAN AND PROFILE STA 15+40 TO STA 20+40
24	GCC-C-3005	PLAN AND PROFILE STA 20+40 TO STA 23+45
25	GCC-C-3006	PLAN AND PROFILE ANDERSON DITCH AT 7TH STREET
26	GCC-C-3101	CHANNEL SECTIONS
27	GCC-C-3201	SANITARY SEWER STA SN 2+17.14 TO STA SN 5+01.07 PLAN AND PRO
28 29	GCC-C-3202 GCC-C-3203	SANITARY SEWER STA SS 4+37.33 TO STA SS 7+20 PLAN AND PROFIL SANITARY SEWER STA SS 7+20 TO STA SS 12+00 PLAN AND PROFILE
30	GCC-C-3203 GCC-C-3204	SANITARY SEWER STA SS 7+20 TO STA SS 12+00 FLAN AND PROFILE SANITARY SEWER STA SS 12+00 TO STA SS 13+37.12 PLAN AND PRO
31	GCC-C-3205	SANITARY SEWER PENNSYLVANIA AVE STA P 1+00 TO P 5+00
32	GCC-C-3206	SANITARY SEWER PENNSYLVANIA AVE STA P 5+00 TO POE P 8+05.67
33	GCC-C-5001	DETAILS CHANNEL ARMORING 1
34	GCC-C-5002	DETAILS CHANNEL ARMORING 2
35	GCC-C-5003	DETAILS
36	GCC-C-5004 GCC-C-5101	ANDERSON DITCH TURNOUT DETAILS STANDARD DETAILS
37 38	GCC-C-5101 GCC-C-5102	STANDARD DETAILS STANDARD DETAILS
39	GCC-C-5102	STANDARD DETAILS
40	GCC-ST-01	GENERAL NOTES
41	GCC-ST-02	PLAN AND PROFILE ARAPAHOE AVE
42	GCC-ST-03	PLAN AND PROFILE TURNER ALLEY
43	GCC-ST-04	PLAN AND PROFILE MARINE STREET
44 45	GCC-ST-05	PLAN AND PROFILE 8TH STREET PLAN AND PROFILE UNIVERSITY AVE
45 46	GCC-ST-06 GCC-ST-07	PLAN AND PROFILE UNIVERSITY AVE
47	GCC-ST-08	PLAN AND PROFILE 7TH STREET
48	GCC-ST-09	PLAN AND PROFILE PENNSYLVANIA AVENUE
49	GCC-ST-10	CBC DETAILS
50	GCC-RD-0600	ROADWAY NOTES
51 52	GCC-RD-2601	ROADWAY PLAN AND PROFILE ARAPAHOE AVENUE ROADWAY PLAN AND PROFILE TURNER ALLEY
52 53	GCC-RD-2602 GCC-RD-2603	ROADWAY PLAN AND PROFILE TORNER ALLEY ROADWAY PLAN AND PROFILE MARINE STREET
54	GCC-RD-2604	ROADWAY PLAN AND PROFILE 8TH STREET
55	GCC-RD-2605	ROADWAY PLAN AND PROFILE ALLEY
56	GCC-RD-2606	ROADWAY PLAN AND PROFILE UNIVERSITY AVENUE
57	GCC-RD-2607	ROADWAY PLAN AND PROFILE PLEASANT STREET
58	GCC-RD-2608	ROADWAY PLAN AND PROFILE 7TH STREET
59	GCC-RD-2609	ROADWAY PROFILES 7TH STREET ROADWAY PLAN AND PROFILE PENNSYLVANIA AVENUE
60 61	GCC-RD-2610 GCC-RD-5601	ROADWAY PLAN AND PROFILE PENNSYLVANIA AVENUE ROADWAY DETAILS
62	GCC-RD-5601 GCC-RD-5602	ROADWAY DETAILS ROADWAY DETAILS
63	GCC-L-0001	PLANTING PLAN
64	GCC-L-0002	PLANTING PLAN
65	GCC-L-0003	PLANTING PLAN
66	GCC-L-0004	PLANTING PLAN
67 68	GCC-L-0005	PLANTING PLAN LANDSCAPE NOTES & DETAILS
69	GCC-L-0006 GCC-L-0007	LANDSCAPE NOTES & DETAILS LANDSCAPE NOTES & DETAILS
00	200 2 0007	

ACOBS BAR IS ONE INCH ON GCC-G-00 1 of 69 PLOT TIME: 4:50:45 PM

FILENAME: GCC-G-001.dgn

GENERAL NOTES

- IT IS THE INTENT OF THESE PLANS TO SHOW ALL EXISTING UTILITIES, HOWEVER IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION, WHETHER SHOWN ON THESE PLANS OR NOT. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) AT 811, PRIOR TO DIGGING, THE ENGINEER SHALL BE NOTIFIED OF ANY POTENTIAL CONFLICTS.
- 2. ALL EXISTING UTILITIES SHALL BE PROTECTED IN PLACE BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
- EXISTING FACILITIES NOT INDICATED TO BE REMOVED SHALL BE PROTECTED IN PLACE BY THE CONTRACTOR. EXISTING FACILITIES DAMAGED FROM THE CONTRACTOR'S ACTIVITIES SHALL BE REMOVED AND REPLACED IN KIND AS APPROVED BY THE ENGINEER AT THE CONTRACTOR'S SOLE COST.
- ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY MHFD AND THE CITY OF BOULDER AND/OR ITS AUTHORIZED REPRESENTATIVES MHFD AND THE CITY OF BOULDER RESERVE THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DO NOT CONFORM TO ITS STANDARDS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL NOTIFY MHFD 48 HOURS PRIOR TO STARTING CONSTRUCTION.
- THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE PLANS (ACCEPTED BY MHFD AND CITY OF BOULDER), ALL CONSTRUCTION CONTRACT DOCUMENTS AS LISTED HEREIN, AND ONE (1) COPY OF ALL REQUIRED PERMITS AT THE JOB SITE AT ALL TIMES
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING STABLE EXCAVATIONS AND TEMPORARY SLOPES AND FOR SATISFYING ALL APPLICABLE FEDERAL STATE, AND LOCAL REGULATIONS. TEMPORARY EXCAVATIONS SHALL PROVIDE AT MINIMUM, THE TRENCH DIMENSIONS AND CLEARANCES SHOWN OR SPECIFIED. TEMPORARY CONSTRUCTION SLOPES SHALL BE SLOPED, SHORED, SHEETED, AND/OR BRACED IN ACCORDANCE WITH STABILITY REQUIREMENTS AND APPLICABLE REGULATIONS, AND SHALL BE NO STEEPER THAN THE MINIMUM SLOPES SHOWN OR SPECIFIED WITHOUT THE APPROVAL OF THE ENGINEER. ANY SUCH APPROVALS BY THE ENGINEER WILL NOT RELIEVE THE CONTRACTOR FROM SOLE RESPONSIBILITY FOR PROVIDING STABLE EXCAVATIONS AND TEMPORARY SLOPES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACCEPTANCE AND CONTROL OF DRAINAGE WATER INTO, OUT OF, AND ADJACENT TO THE PROJECT SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING METHODS BY WHICH CHANNEL FLOW, SURFACE RUNOFF, AND SUBSURFACE SEEPAGE WILL BE TEMPORARILY DIVERTED, DETAINED OR OTHERWISE CONTROLLED. WATER CONTROL SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS, AS WELL AS ALL APPLICABLE PERMIT CONDITIONS. TEMPORARY WATER CONTROL SYSTEMS SHALL NOT CAUSE INGREASED FLOODING OR AFFECT NORMAL FLOW CHARACTERISTICS DURING CONSTRUCTION. ANY DAMAGE TO THE WORK RESULTING FROM BASE FLOWS OR FLOOD FLOWS SHALL BE CORRECTED BY THE CONTRACTOR AT THE CONTRACTOR'S SOLE COST
- THE CONTRACTOR IS ADVISED THAT THE STOCKPILING AND USE OF MATERIAL AND/OR EQUIPMENT WITHIN THE PROJECT SITE CREATES POTENTIAL OBSTRUCTIONS TO THE FLOW OF THE STREAM. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT THE WORK IN A MANNER THAT MINIMIZES THE REDUCTION IN CHANNEL CAPACITY AT ALL TIMES. THE CONTRACTOR IS ADVISED THAT THE STORAGE OF FUELS, CHEMICALS, TRASH, DEBRIS, CONSTRUCTION MATERIAL, VEHICLES, AND EQUIPMENT SHALL BE PROHIBITED PROJECT STITE AT ALL TIMES EXCEPT AS IS ESSENTIAL. TO THE PROGRESS OF THE WORK. UNDER NO CIRCUMSTANCE SHALL ANY OF THE ABOVE MENTIONED MATERIALS BE STORED OVERNIGHT WITHIN
- CONTRACTOR SHALL PROVIDE PEDESTRIAN, AND VEHICULAR SIGNAGE THAT CLEARLY IDENTIFIES THE CONSTRUCTION ZONE THROUGHOUT PROJECT. CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY.
- ALL EXCESS EARTHEN MATERIAL SHALL BE HAULED OFF SITE. DISPOSAL LOCATION AND ALL APPLICABLE PERMITS ARE CONTRACTOR'S RESPONSIBILITY.
- 12. CONTRACTOR SHALL PROTECT ALL EXISTING CURB, GUTTER AND PAVEMENT AT ALL ACCESS POINTS FROM DAMAGE BY EQUIPMENT OR CONSTRUCTION OPERATIONS, ALL CURB, GUTTER AND PAVEMENT DAMAGED BY THE CONTRACTOR SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S COST
- 13. EMBANKMENT FILL SHALL BE PER THE SPECIFICATIONS.
- CONSTRUCTION STAKING, MATERIALS TESTING, AND SURVEY SHALL BE PROVIDED BY THE CONTRACTOR.
- CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FOR THIS PROJECT, EXCEPT FOR THE 404 PERMIT, FLOODPLAIN DEVELOPMENT PERMIT, CITY OF 15.
- CONTRACTOR TO REMOVE AND PROPERLY DISPOSE OF MISCELLANEOUS TRASH AND DEBRIS FROM PROJECT AREA PRIOR TO CONSTRUCTION. THIS SHALL BE PAID FOR IN THE CLEARING AND GRUBBING BID ITEM. CONTRACTOR IS RESPONSIBLE FOR TIMELY REMOVAL OF TRASH AND DEBRIS THROUGHOUT THE
- RIPRAP AND BOULDERS SHALL BE PER THE SPECIFICATIONS.

\$PWURL

- WATER CONTROL SHALL BE MAINTAINED SO THAT GROUNDWATER IS MIN 1' BELOW THE WORKING SURFACE. SEE GEOTECHNICAL REPORT TITLED GEOTECHNICAL INVESTIGATION REPORT GREGORY CANYON CREEK IMPROVEMENTS PROJECT DATED DECEMBER 2019
- IF ANY SUSPECTED CULTURAL OR HISTORIC FINDINGS ARE UNCOVERED DURING CONSTRUCTION. STOP CONSTRUCTION IMMEDIATELY AND NOTIFY MHFD.
- VISITS TO THE JOB SITE BY THE ENGINEER, MHFD, OR CITY OF BOULDER TO OBSERVE THE CONSTRUCTION DO NOT IN ANY WAY GUARANTEE THE CONTRACTOR'S WORK. NOR RESPONSIBILITY FOR THE COMPREHENSIVE OR SPECIAL INSPECTIONS. COORDINATION, SUPERVISION, NOR SAFETY AT THE JOB SITE
- CONTRACTOR SHALL COORDINATE A SITE MEETING WITH MHFD AND CITY OF BOULDER AFTER THE LIMITS OF CONSTRUCTION HAVE BEEN STAKED IN ORDER TO WALK THE SITE AND REVIEW TREES TO BE PROTECTED, AS CALLED OUT ON PLANS.
- CONTRACTOR SHALL COORDINATE UTILITY CROSSINGS WITH UTILITY COMPANY, ANY DOWN TIME AS A RESULT OF UTILITY PROTECTION OR RELOCATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND NOT MHFD, CITY OF BOULDER, OR THE ENGINEER.
- 23. CONTRACTOR SHALL BE LICENSED TO PERFORM WORK IN THE CITY OF BOULDER, CO AND BOULDER COUNTY, CO.
- NEW FILL SHOULD BE CONTINUOUSLY BENCHED INTO EXISTING SLOPES EXCEEDING 4 HORIZONTAL TO 1 VERTICAL. PROPER COMPACTION CAN BE DIFFICULT AT THE EDGES OF FILL SLOPES. FOR THIS REASON, OVERBUILD FILL SLOPE 1 TO 2 FEET AND CUT THE SLOPE SURFACE BACK TO GRADE SHOWN, SEE GEOTECHNICAL INVESTIGATION REPORT GREGORY CANYON CREEK IMPROVEMENTS PROJECT DATED DECEMBER 2019.
- 25. EROSION CONTROL FABRIC WITHIN THE BANKFULL CHANNEL SHALL BE NEDIA 900 OR APPROVED EQUAL WITH HAND SHAKEN STRAW, SHOWN IN THESE PLANS AS COIR BLANKET WITH HAND SHAKEN STRAW, EROSION CONTROL FABRIC OUTSIDE OF THE BANKFULL CHANNEL SHALL BE WESTERN EXCELSIOR EXCEL CS-3 OR APPROVED EQUAL SHOWN ON THESE PLANS AS STRAW/COCONUT BLANKET.
- NATIVE TOPSOIL SHALL BE STRIPPED. STOCKPILED, AND COMBINED WITH SOIL AMENDMENT AND IMPORTED TOPSOIL, THE TOPSOIL STOCKPILE SHALL BE THOROUGHLY MIXED PRIOR TO REPLACING TOPSOIL TO FINISHED GRADE.
- 27. DIGITAL TERRAIN MODEL, CONTOURS, AND LIMITS OF GRADING WILL BE PROVIDED TO THE CONTRACTOR IN ADDITION TO THE INFORMATION PRESENTED IN THESE PLANS

SITE ACCESS AND STAGING

- 1. SITE ACCESS AND STAGING SHALL BE PER THE CONTRACT STORMWATER MANAGEMENT PLAN DOCUMENTS, UNLESS ALTERNATIVE ACCESS
- 2. CONTRACTOR SHALL COORDINATE SITE ACCESS AND ANY STAGING EFFORTS WITH MHFD AND CITY OF BOULDER.
- 3. CONTRACTOR SHALL NOTIFY OWNER AT LEAST 10 DAYS PRIOR TO ACCESSING SITE FOR PROPERTY OWNER NOTIFICATION.
- 4. SEE STORMWATER MANAGEMENT PLAN DRAWINGS FOR ADDITIONAL INFORMATION REGARDING SITE ACCESS AND STAGING. NOT INCLUDED IN SET.

PROJECT CONTACTS

<u>ITEM</u>	AGENCY	NAME	PHONE
OWNER	MHFD	JIM WATT	303-455-6277
OWNER	CITY OF BOULDER	KATIE KNAPP	303-441-4077
ENGINEER	JACOBS	AARON COOK	720-286-2435

PROJECT PERMITS

PERMIT	AGENCY	RESPONSIBILITY
CDPHE STORMWATER PERMIT	CDPHE	CONTRACTOR
GROUND WATER DISCHARGE PERMIT	CDPHE	CONTRACTOR
SEDIMENT AND EROSION CONTROL PERMIT	BOULDER	CONTRACTOR
LAND DISTURBANCE	BOULDER	CONTRACTOR
ROW ACCESS PERMIT	BOULDER	CONTRACTOR
TRAFFIC CONTROL PLAN	CDOT / BOULDER	CONTRACTOR
FLOODPLAIN PERMIT	BOULDER	ENGINEER
404 PERMIT	USACE	ENGINEER
CLOMR	FEMA	ENGINEER
CITY OF BOULDER WETLAND PERMIT	BOULDER	ENGINEER

CITY OF BOULDER GENERAL NOTES:

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE "DESIGN AND CONSTRUCTION STANDARDS" OF THE CITY OF BOULDER, AND SHALL BE COMPLETED TO THE SATISFACTION OF THE DIRECTOR OF PUBLIC WORKS. IN THE EVENT THAT A DESIGN ELEMENT DOES NOT REFLECT CITY STANDARDS, THE MATTER MUST BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER AND THE DIRECTOR OF PUBLIC WORKS. THE ENGINEER SHALL BE RESPONSIBLE FOR RECOMMENDING A SOLUTION OR ALTERNATIVE SOLUTIONS TO THE CITY FOR REVIEW AND APPROVAL
- THE APPROVAL OF A CONSTRUCTION PLAN DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF CONSTRUCTING WORKABLE PUBLIC PROVEMENTS, ALL REVISIONS AND/OR CORRECTIONS REQUIRED WILL BE SOLELY THE CONTRACTOR'S RESPONSIBILITY, AND AT THEIR EXPENSE.
- THESE PLANS HAVE BEEN CHECKED BY THE CITY OF BOULDER ONLY FOR CONFORMANCE WITH THE "DESIGN AND CONSTRUCTION STANDARDS." COMPLIANCE WITH DEVELOPMENT AGREEMENT CONDITIONS, AND FOR GENERAL CONCEPTUAL APPROVAL OF PUBLIC IMPROVEMENTS AS SHOWN. THE CITY'S REVIEW DOES NOT VERIFY OR ENSURE THE ACCURACY OF EXISTING OR PROPOSED DIMENSIONS, LINES, COORDINATES, OR GRADES SHOWN, INCLUDING ALL EXISTING UTILITIES SHOWN OR NOT SHOWN.
- UTILITY LOCATIONS SHOWN REFLECT AVAILABLE RECORD DATA, THE CONTRACTOR SHALL TAKE PRECAUTIONARY MEASURES TO PROTECT ALL UTILITY LINES SHOWN AND OTHER UTILITY LINES OTHERWISE LOCATED. THE CONTRACTOR SHALL CONTACT THE "UTILITY NOTIFICATION CENTER OF COLORADO" AT 1-800-922-1987 OR 811 FOR UTILITY LOCATES 24 HOURS PRIOR TO BEGINNING CONSTRUCTION.
- THE CONTRACTOR SHALL OBTAIN AND MAINTAIN A COMPLETE AND APPROVED SET OF CONSTRUCTION PLANS. THESE DRAWINGS, AND ANY REQUIRED PERMITS, SHALL BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE TO CITY STAFF UPON REQUEST. IF CONSTRUCTION PLANS ARE NOT READILY AVAILABLE AT THE PROJECT SITE, THE DIRECTOR OF PUBLIC WORKS MAY ISSUE A STOP WORK ORDER AND HALT ALL
- THE CONTRACTOR AGREES TO COMPLY WITH THE PROVISIONS OF THE TRAFFIC CONTROL PLAN AND THE CURRENT EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," "TEMPORARY TRAFFIC CONTROL" SECTION, FOR CONSTRUCTION SIGNAGE AND TRAFFIC CONTROL
- ALL SURPLUS MATERIALS, TOOLS, AND TEMPORARY STRUCTURES, FURNISHED BY THE CONTRACTOR, SHALL BE REMOVED FROM THE PROJECT SITE BY THE CONTRACTOR, ALL DEBRIS AND RUBBISH CAUSED BY THE OPERATIONS OF THE CONTRACTOR SHALL BE REMOVED, AND THE AREA OCCUPIED DURING CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ITS ORIGINAL CONDITION, WITHIN 48 HOURS OF PROJECT COMPLETION, UNLESS OTHERWISE
- THE CONTRACTOR SHALL PROVIDE TREE AND LANDSCAPE PROTECTION AS SET FORTH IN CHAPTER 6-6. "PROTECTION OF TREES AND PLANTS." BOULDER REVISED CODE (B.R.C.) 1981 AND THE CITY OF BOULDER DESIGN AND CONSTRUCTION STANDARDS (DCS). ALL LANDSCAPING SHALL BE PROVIDED AND MAINTAINED IN COMPLIANCE WITH THE APPROVED LANDSCAPING PLAN, B.R.C. AND DCS.
- THE CONTRACTOR IS REQUIRED TO PROVIDE AND MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE MILE HIGH FLOOD DISTRICT "URBAN STORM DRAINAGE CRITERIA MANUAL VOLUME 3", THE M-STANDARD PLANS OF THE COLORADO DEPARTMENT OF TRANSPORTATION, AND THE APPROVED STORMWATER MANAGEMENT PLAN. THE DIRECTOR OF PUBLIC WORKS MAY REQUIRE THE CONTRACTOR TO PROVIDE ADDITIONAL EROSION CONTROL MEASURES DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE PLANS DO NOT FUNCTION AS INTENDED.
- THE CITY OF BOULDER REQUIRES THAT SIDEWALKS CONSTRUCTED HAVE A CROSS SLOPE OF LESS THAN 2%. SIDEWALKS SHALL BE DESIGNED AND CONSTRUCTED WITH CROSS SLOPES SUFFICIENTLY LESS THAN 2% TO ENSURE THAT THEY DO NOT EXCEED THE 2% MAXIMUM.

NOT FOR CONSTRUCTION PRELII NOT

DIS HIGH

ACOB ACOB

ENERAL NOTES

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. DATE SEPTEMBER 2020

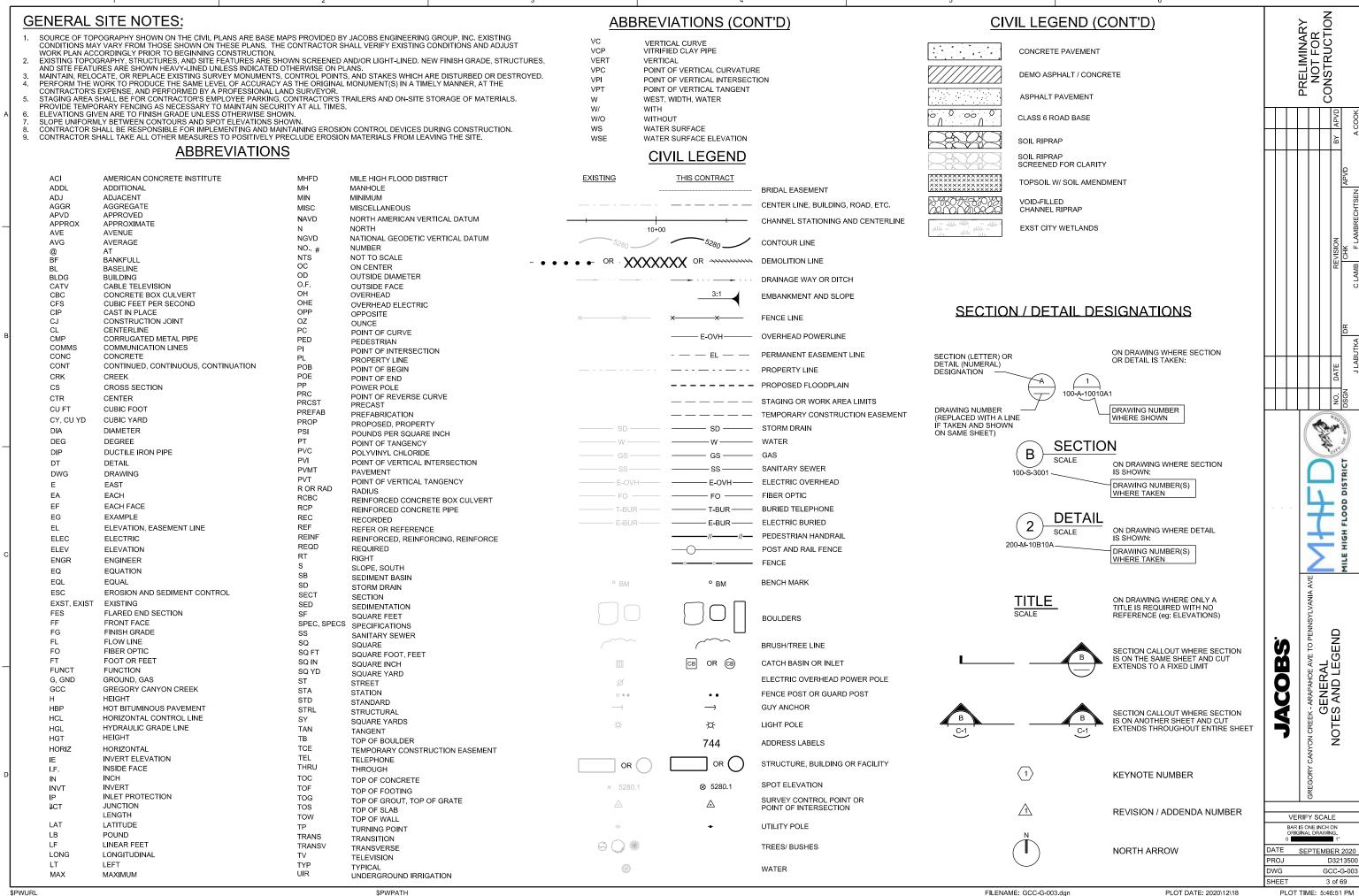
PROJ D321350 GCC-G-00 HEET 2 of 69

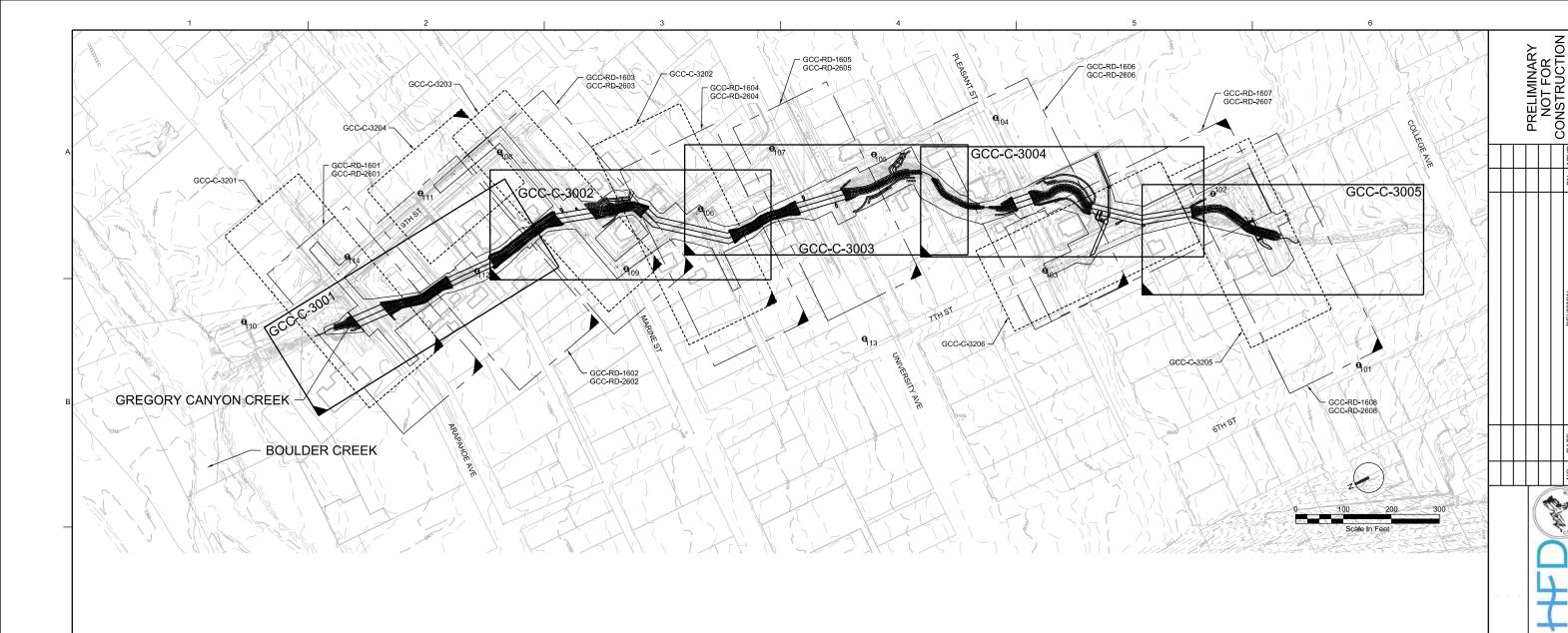
\$PWPATH

FILENAME: GCC-G-002.dgn

PLOT DATE: 2020\12\18

PLOT TIME: 5:39:44 PM





SURVEY CONTROL NOTES

HORIZONTAL POSITIONS:

COORDINATES ARE DERIVED FROM A MODIFIED NAD83 (2011) COLORADO STATE PLANE NORTH (501) ZONE.

THE COMBINED SCALE FACTOR USED TO MODIFY THE STATE PLANE COORDINATES IS 1.0002911515.

THE ORIGIN OF THE SCALE: NORTHING: 0.00 EASTING: 0.00

PROJECT ELEVATION: 5420.00 THE RESULTING SCALED COORDINATES ARE TRUNCATED BY 1,000,000 IN THE NORTHING AND 3,000,000 IN THE EASTING.

UNITS: US SURVEY FEET

VERTICAL POSITIONS:

VERTICAL ELEVATIONS WERE BASED ON THE FOLLOWING BENCHMARK:

NGS FIRST ORDER, CLASS II, VERTICAL BENCHMARK: L 440 (LL1142) STAINLESS STEEL ROD IN A MONUMENT BOX LOCATED AT THE INTERSECTION OF 7TH STREET AND COLLEGE AVENUE

ELLIPSOID HEGHTS FOR PROJECT CONTROL POINTS WERE DERIVED FROM GEOID 12B.

- DISTANCES ARE MARKED IN FEET AND DECIMAL PLACES THEREOF. NO DIMENSION SHALL BE ASSUMED BY SCALE MEASUREMENT HEREON.
- ANY PERSON WHO KNOWINGLY REMOVES ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND MONUMENT OR ACCESSORY, COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18-4-508, C.R.S.
- ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECTS IN THIS SURVEY WITHIN THREE (3) YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN (10) YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

POINT NO. NORTHING EASTING ELEVATION DESCRIPTION 101 246239.80 60474.85 5479.89 SET 2"ALUMINUM CAP STAMPED "101" 246355.64 60929.43 5460.43 SET 2"ALUMINUM CAP STAMPED "102" 103 246743 70 60937 31 5442.8 SET 2"ALUMINUM CAP STAMPED "103" SET 2"ALUMINUM CAP STAMPED "104" 104 246696.86 61269.27 5441.09 105 246957 35 61310 13 5425.54 SET 1.5" ALUMINUM WASHER AND PK NAIL STAMPED "105" 247334.15 61369.13 5408.25 SET 2" ALUMINUM CAP STAMPED "106" 107 247144.09 61414.89 5418.35 SET 2" ALUMINUM CAP STAMPED "107" SFT 2" ALUMINUM CAP STAMPED "108" 108 247658.21 61654.34 5398.25 SET 1.5" ALUMINUM WASHER AND PK NAIL STAMPED "109" 109 247525.82 61320.92 5400.11 110 248294.89 61568.59 5370.81 SET 2" ALUMINUM CAP STAMPED "110" 111 247843 00 61649 77 5385 06 SET 2" ALUMINUM CAP STAMPED "111" 247810.98 61453.52 5387.51 112 SET PK NAII SET 2" ALUMINUM CAP STAMPED "JACOBS 113" 113 247143.41 60974.21 5421.61

SET 2" ALUMINUM CAP STAMPED "114"

PROJECT COORDINATE TABLE

GENERAL NOTES:

DATE OF FIELD SURVEY: APRIL 2019-JUNE 2019.

THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY JACOBS ENGINEERING GROUP INC. OR THE SURVEYOR OF RECORD.

BAR IS ONE INCH ON ORIGINAL DRAWING. SEPTEMBER 2020 PROJ D3213500 DWG GCC-G-004 SHEET 4 of 69

VERIFY SCALE

DISTRICT

KEYMAP

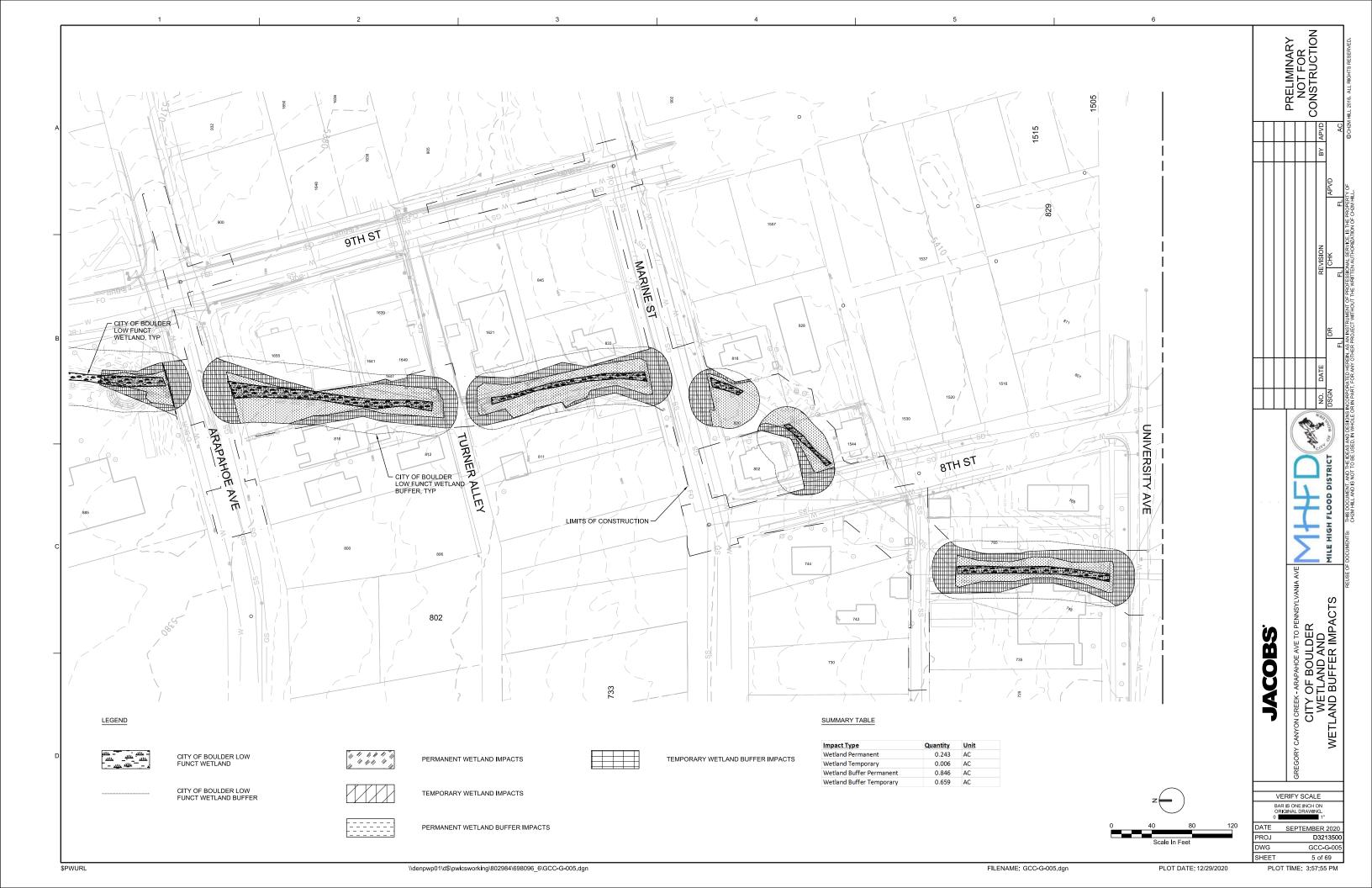
AND

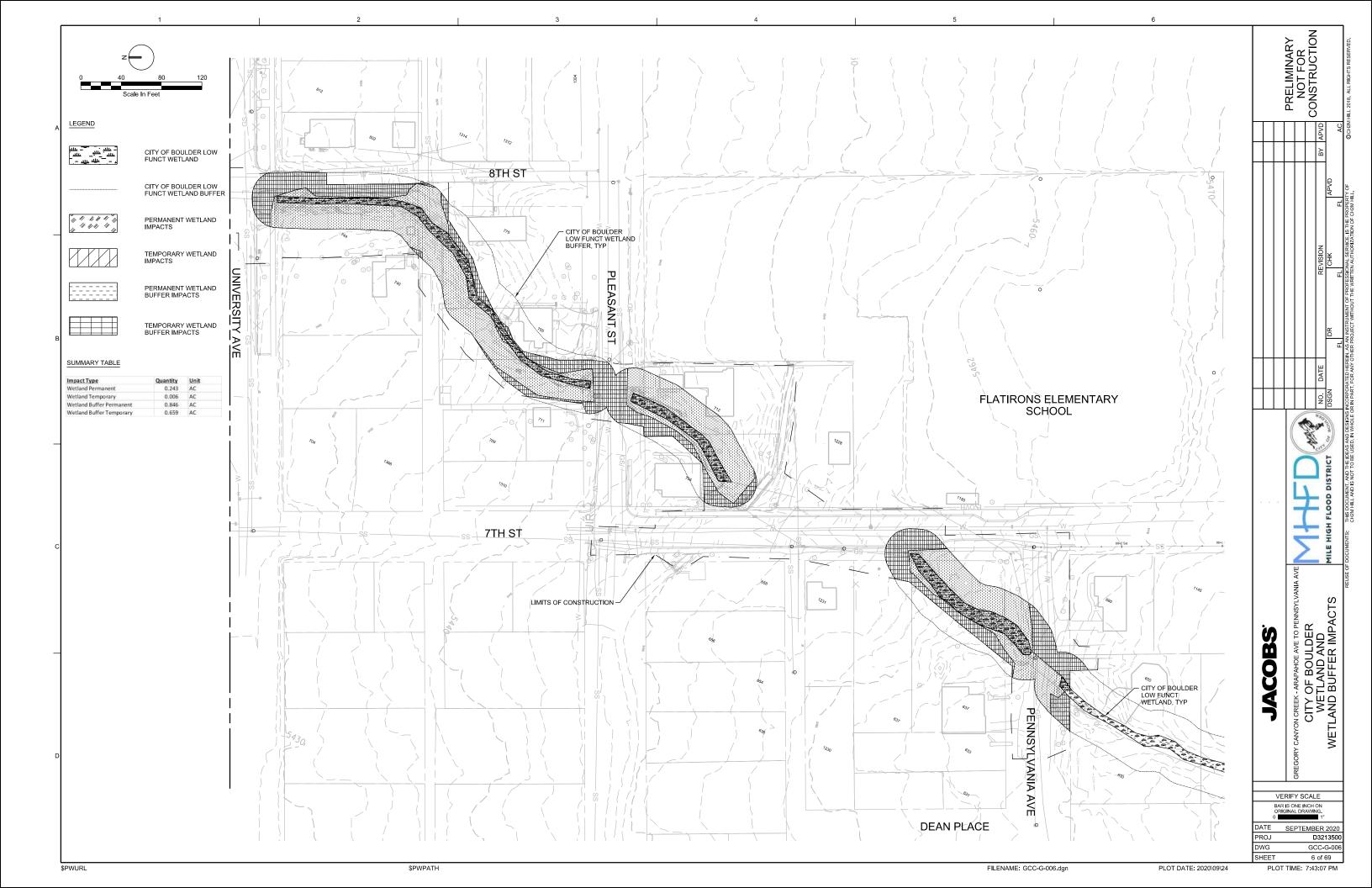
CONTROL

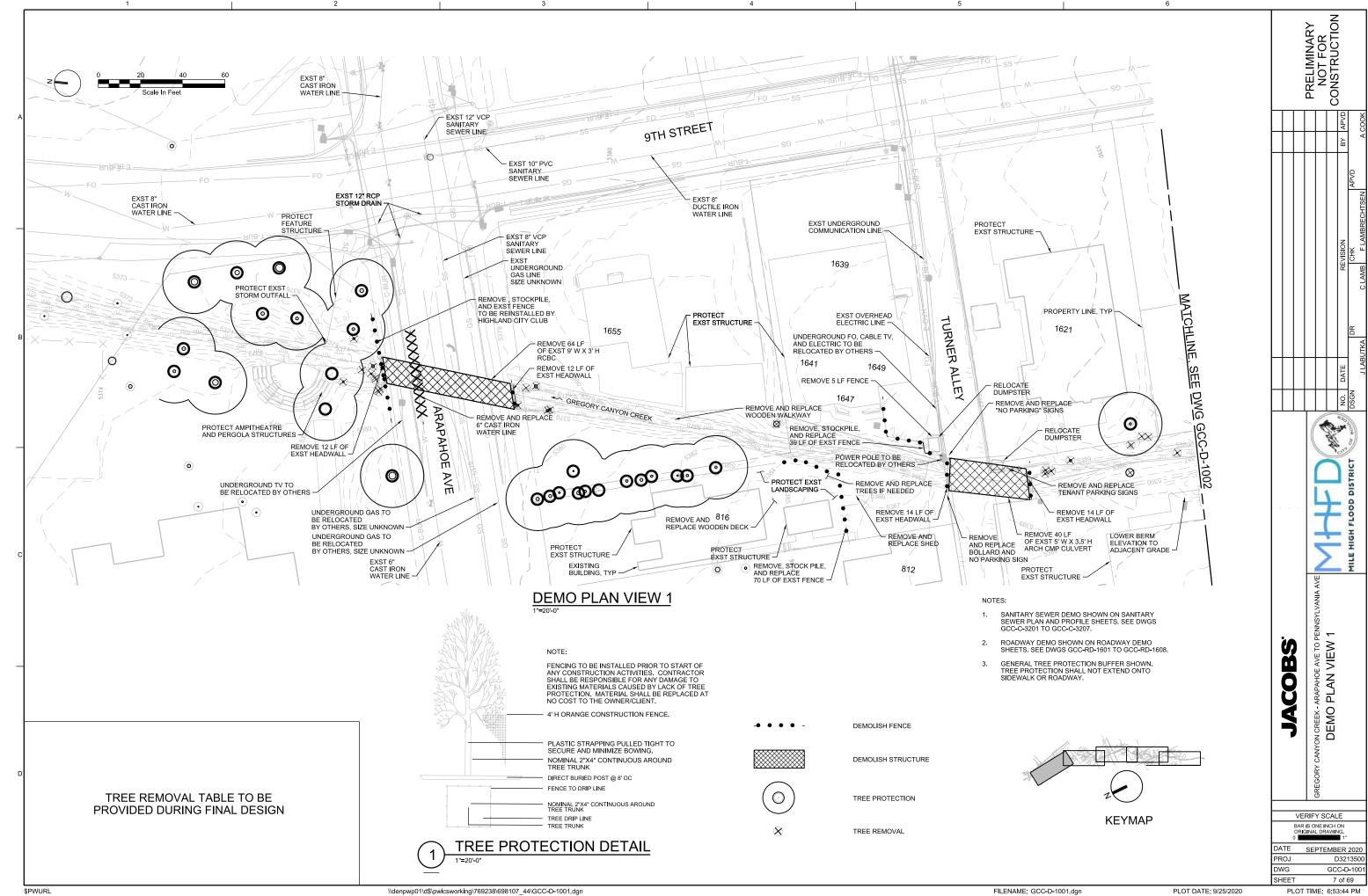
SURVEY

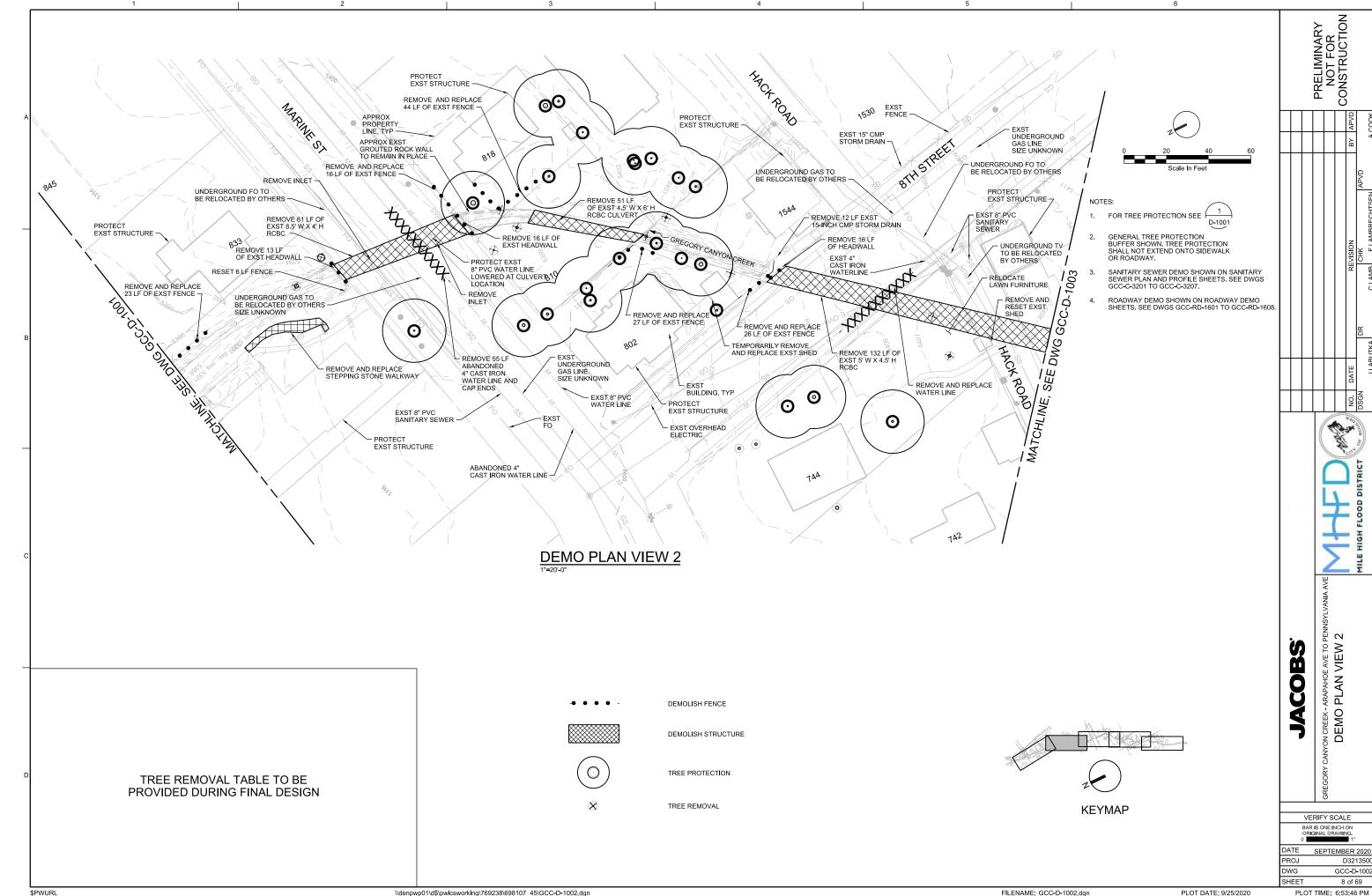
JACOBS

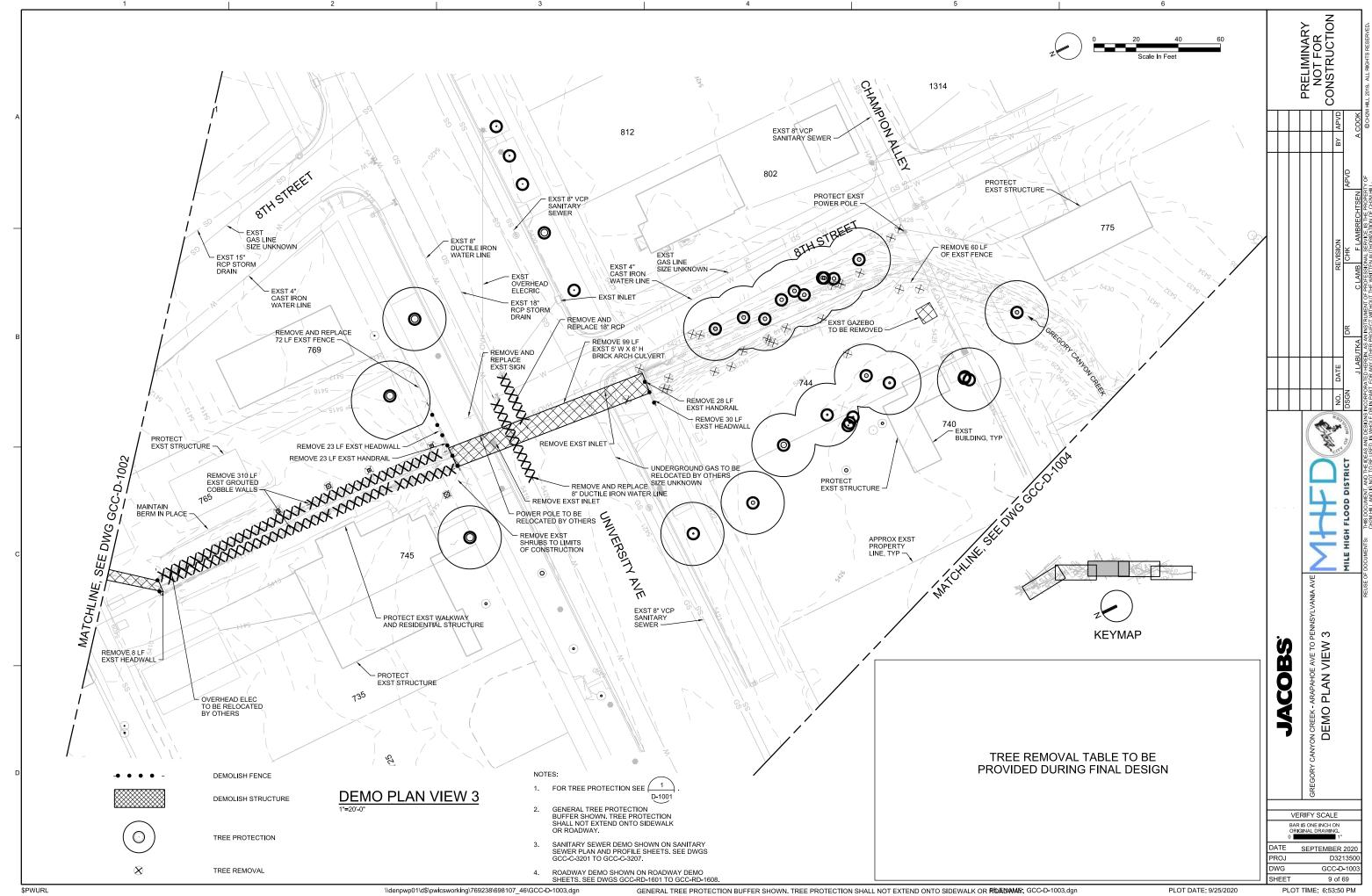
114 248041.55 61597.71 5378.72

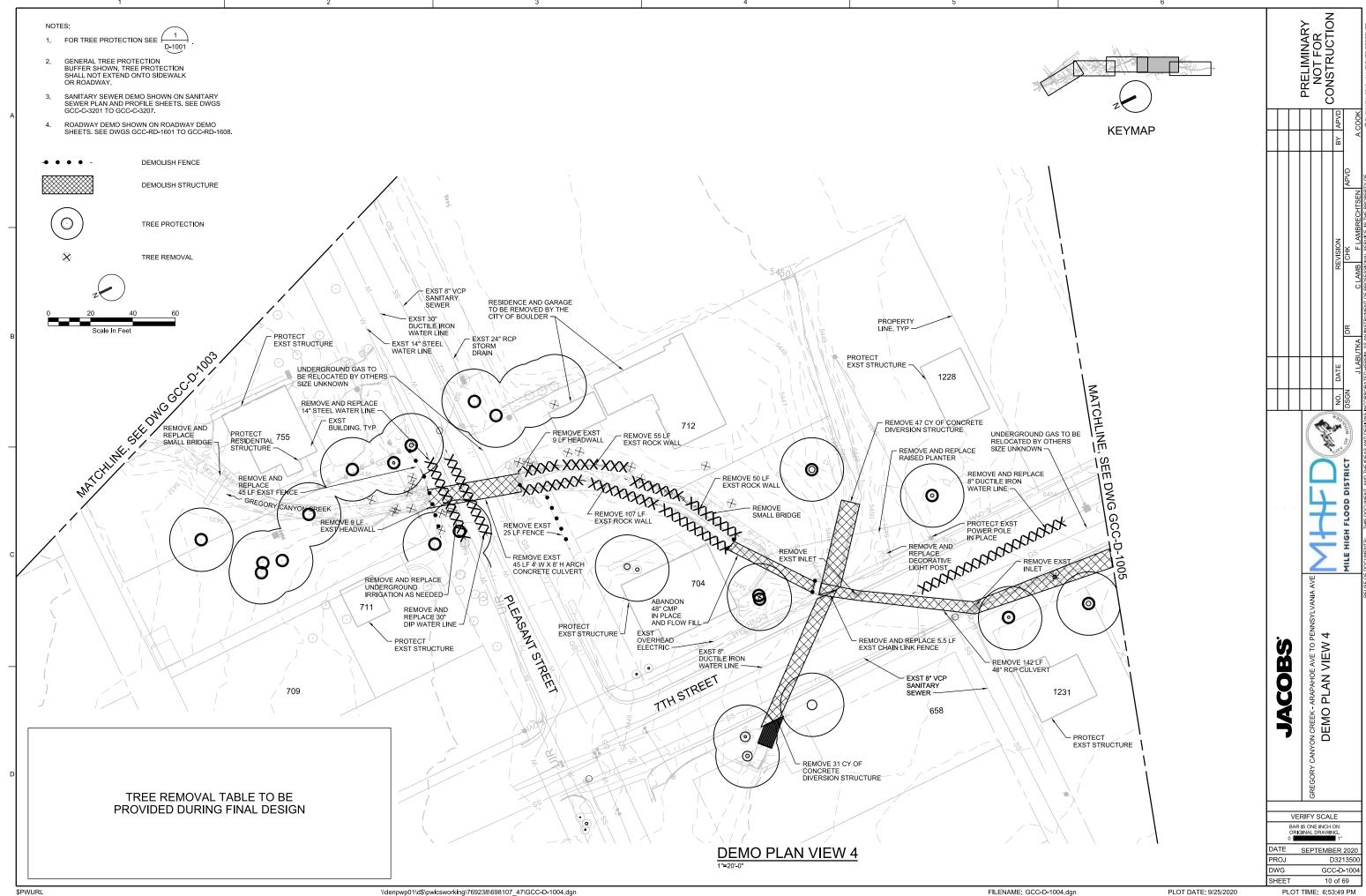


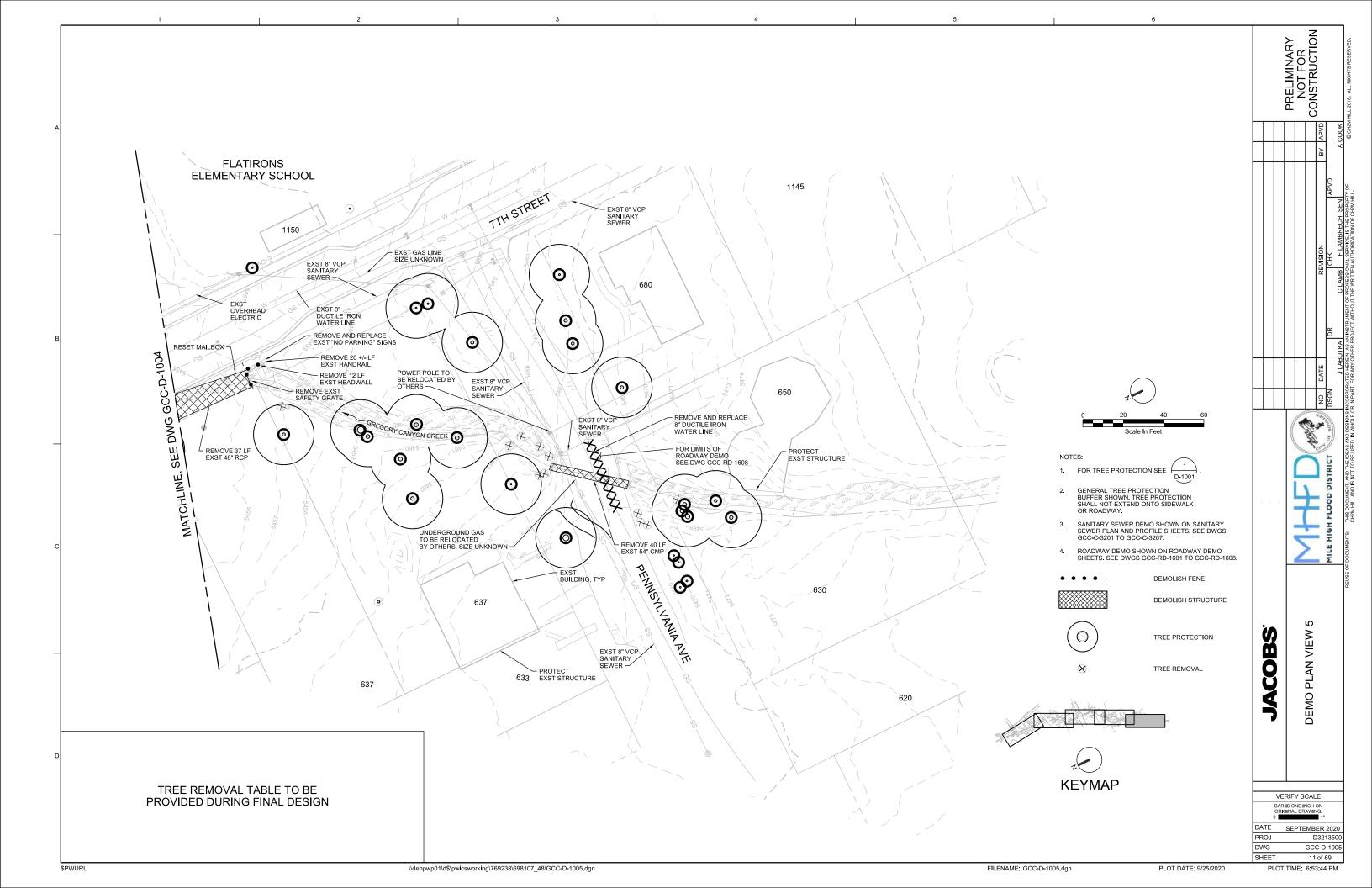


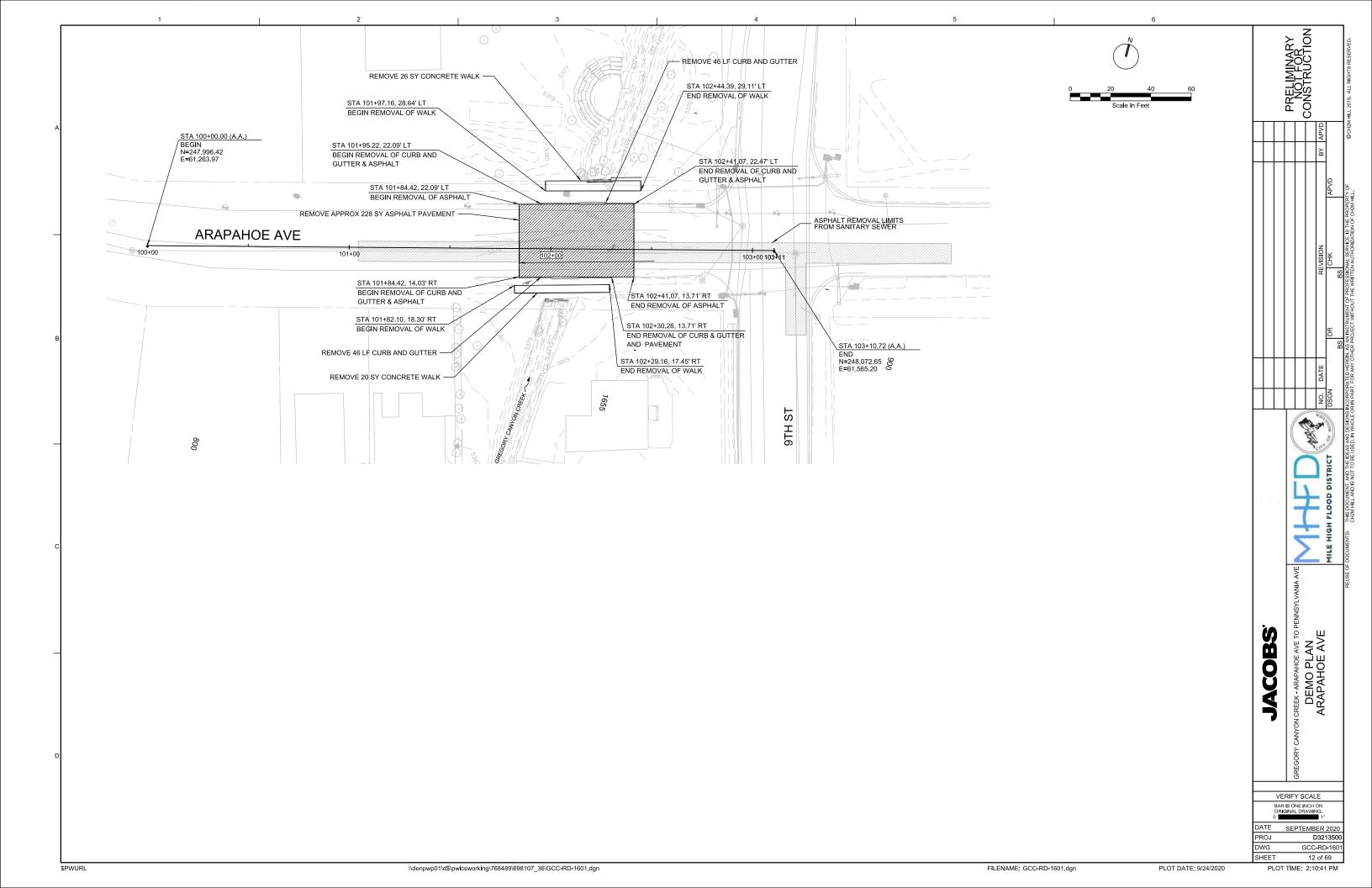


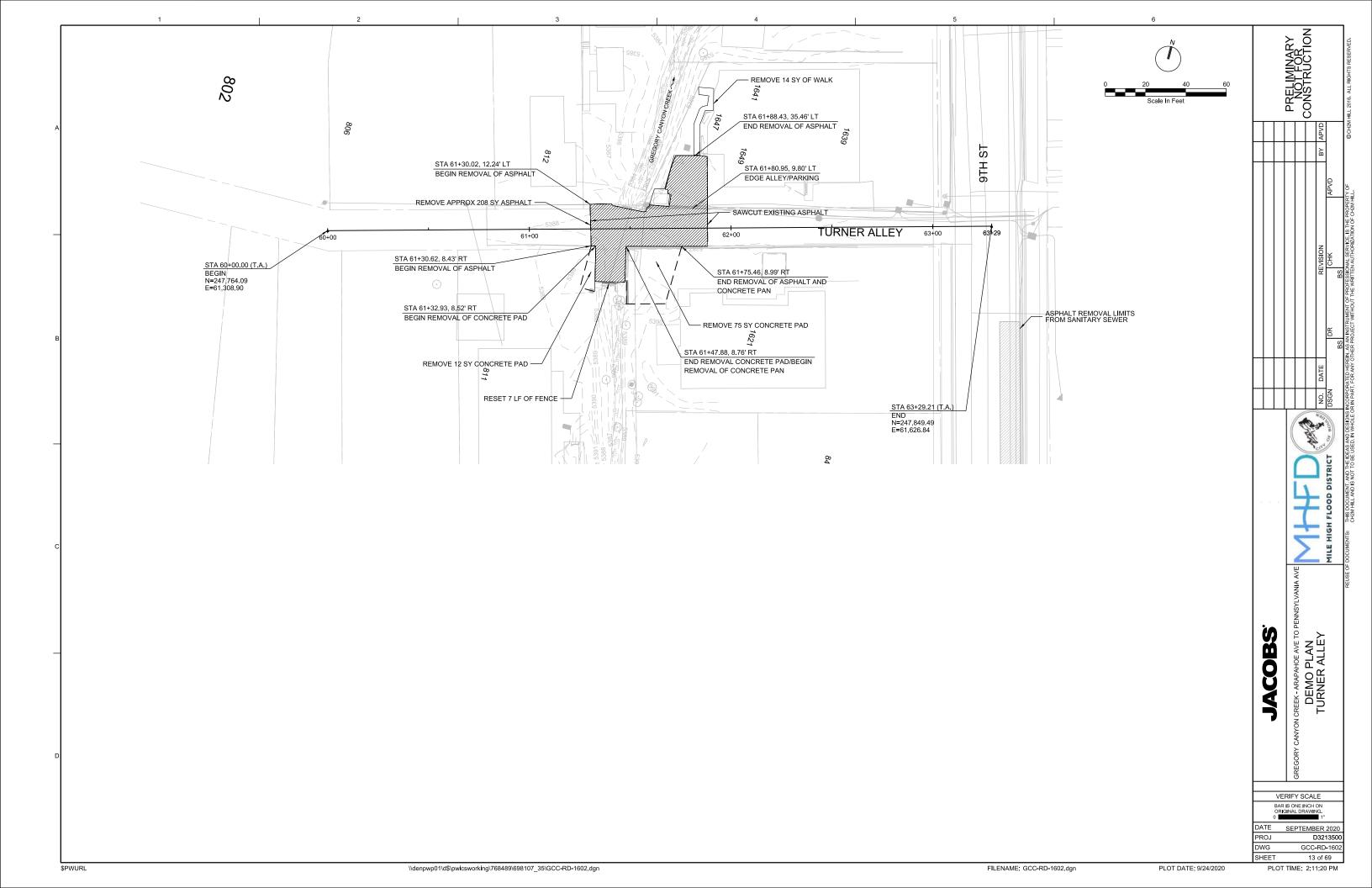


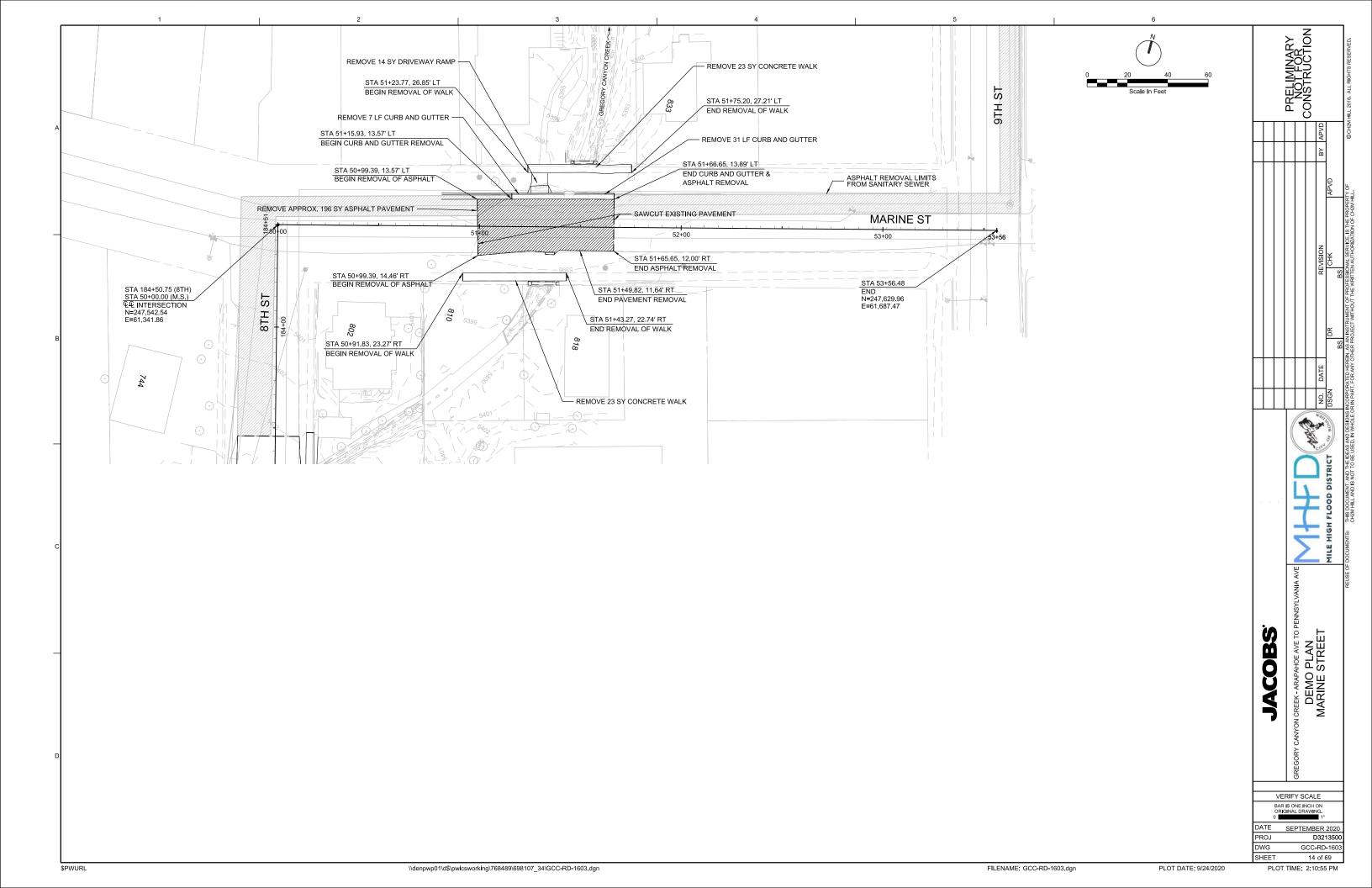


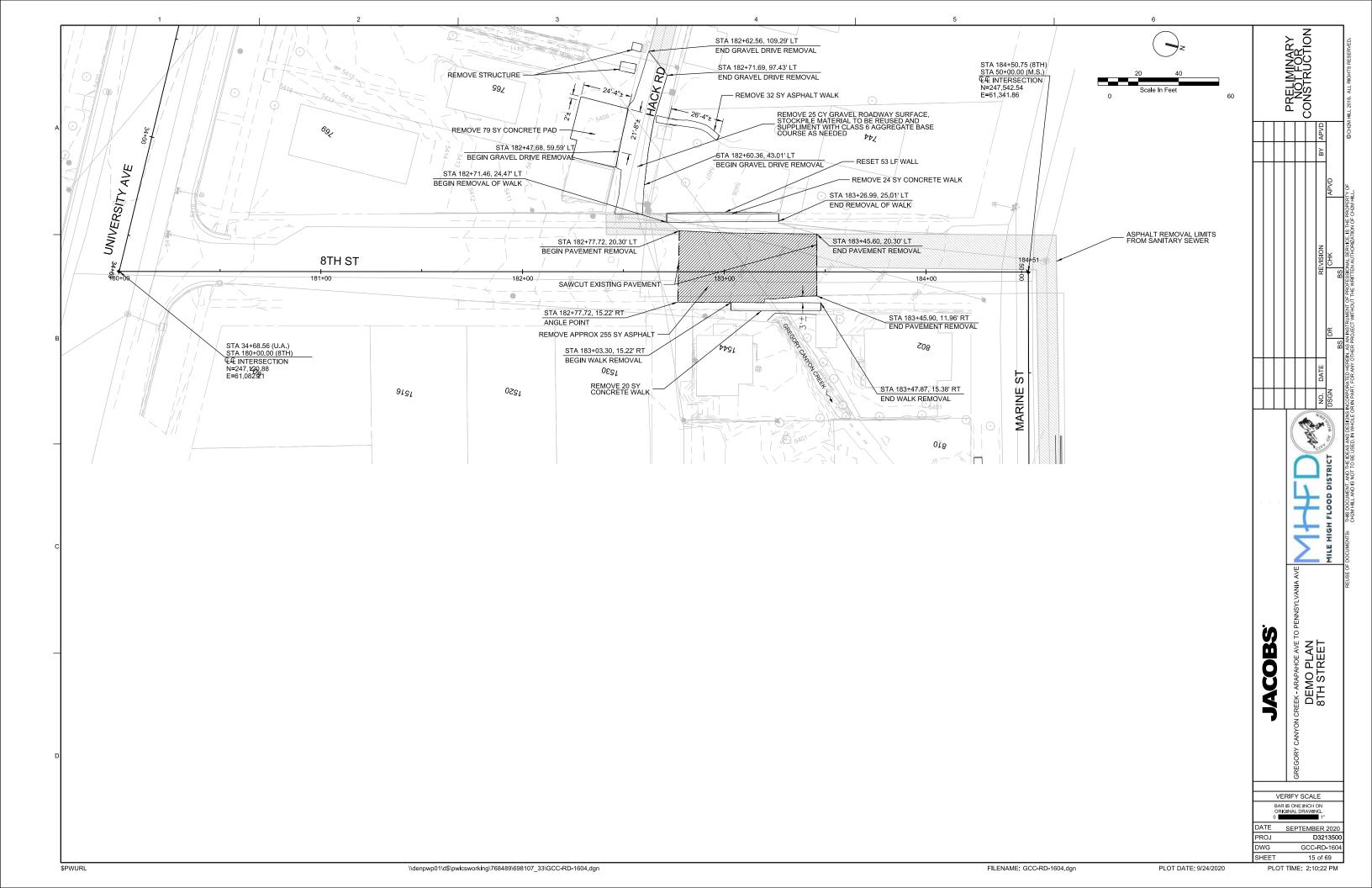


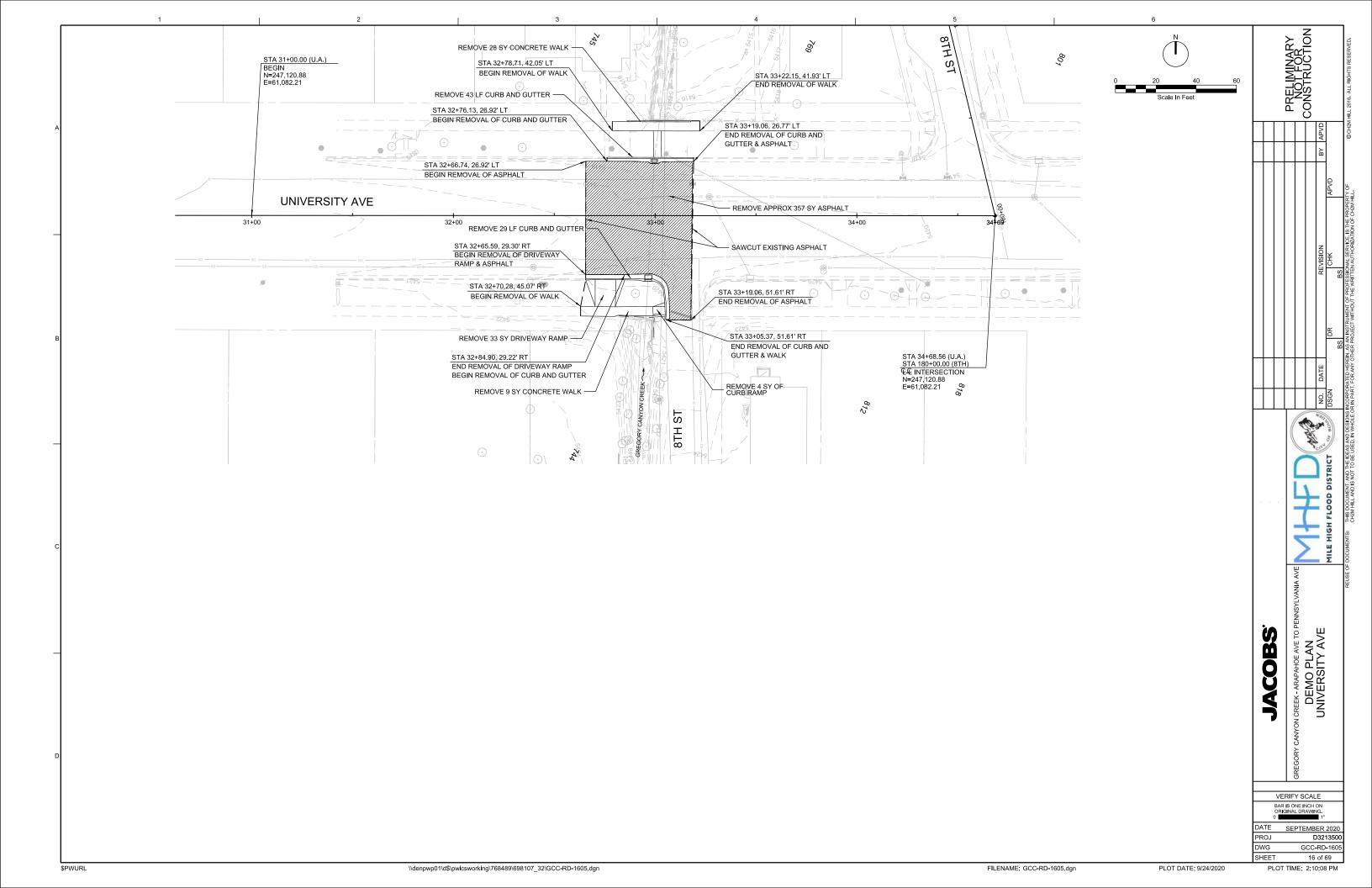


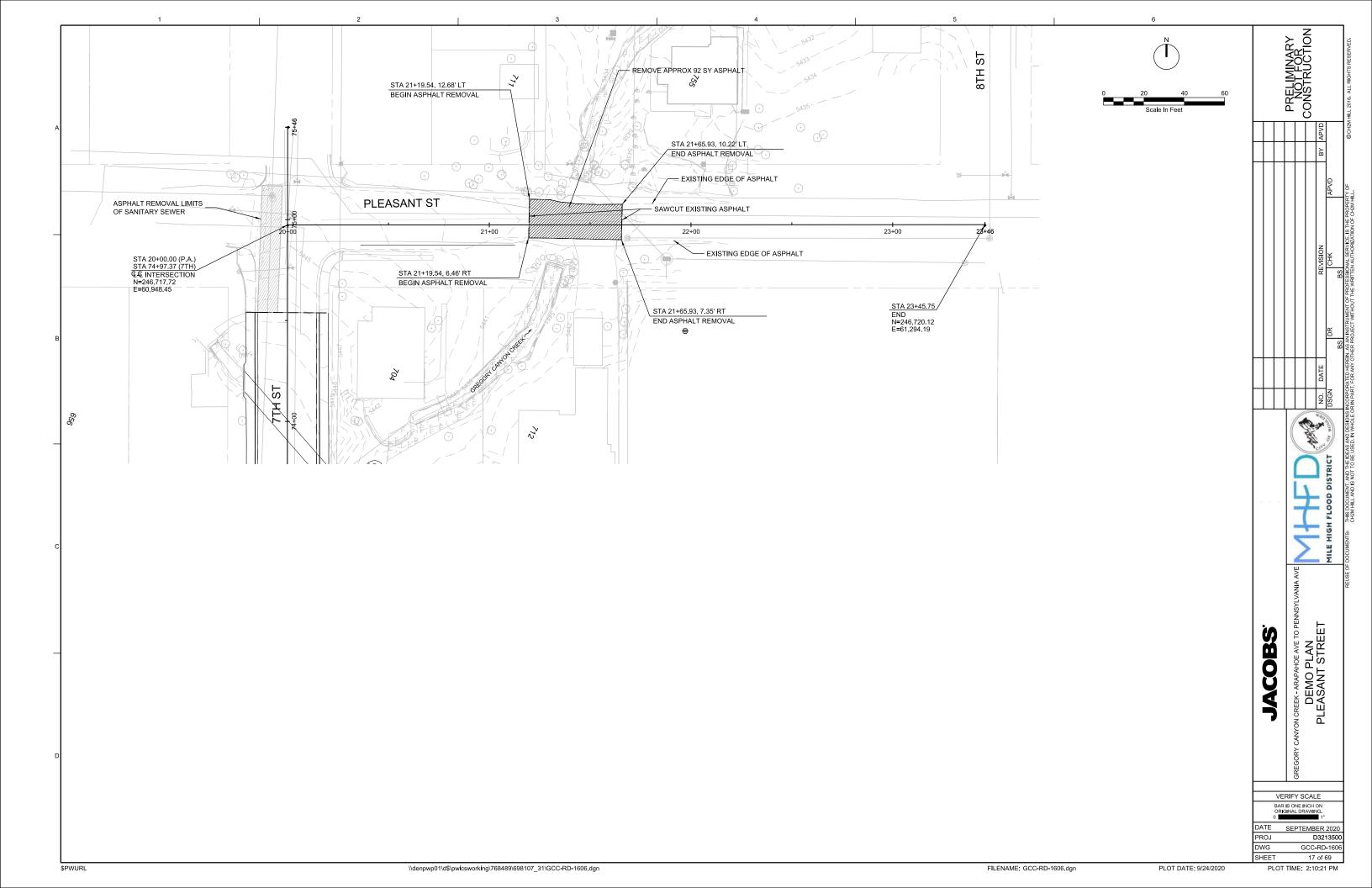


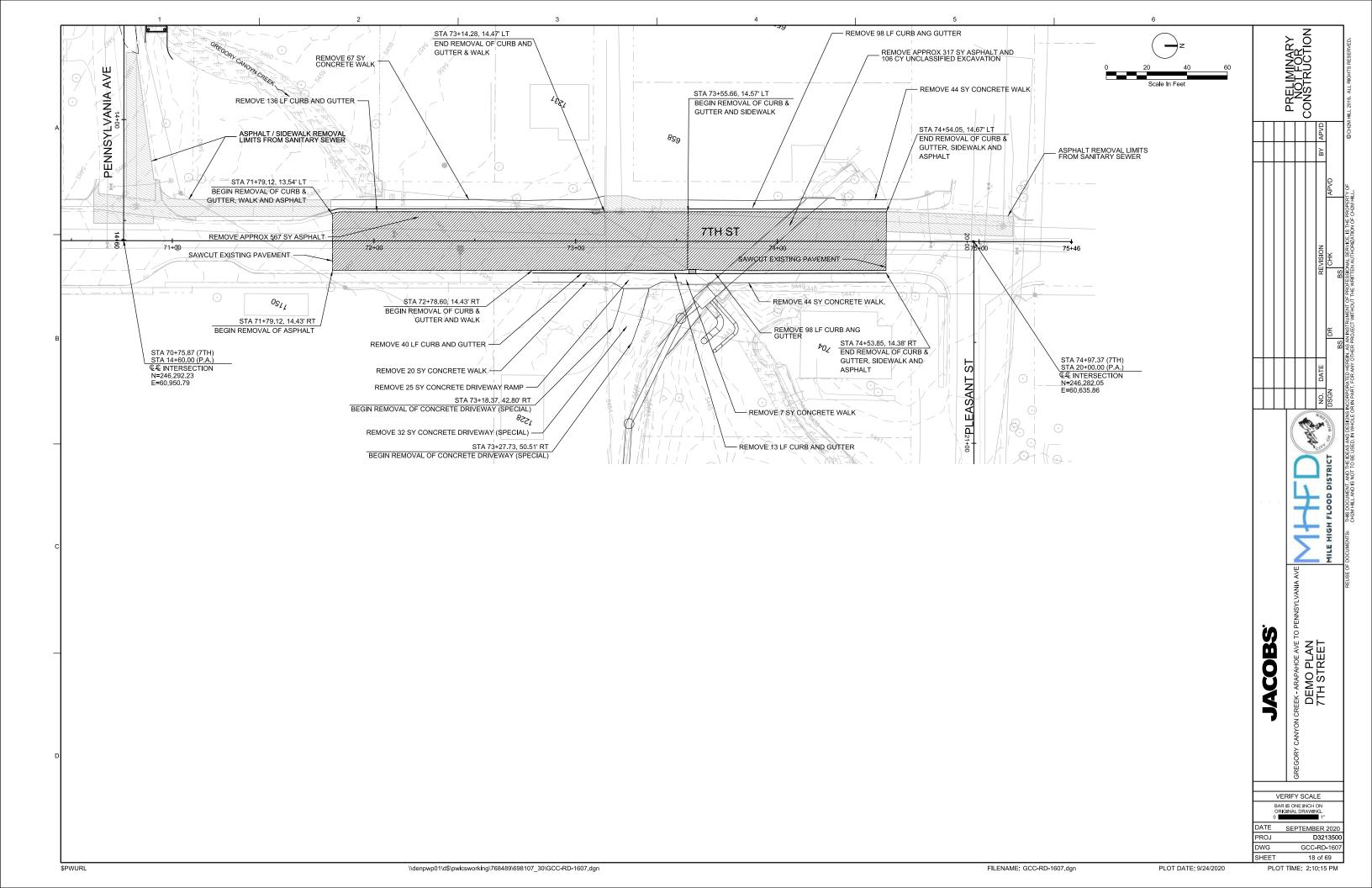


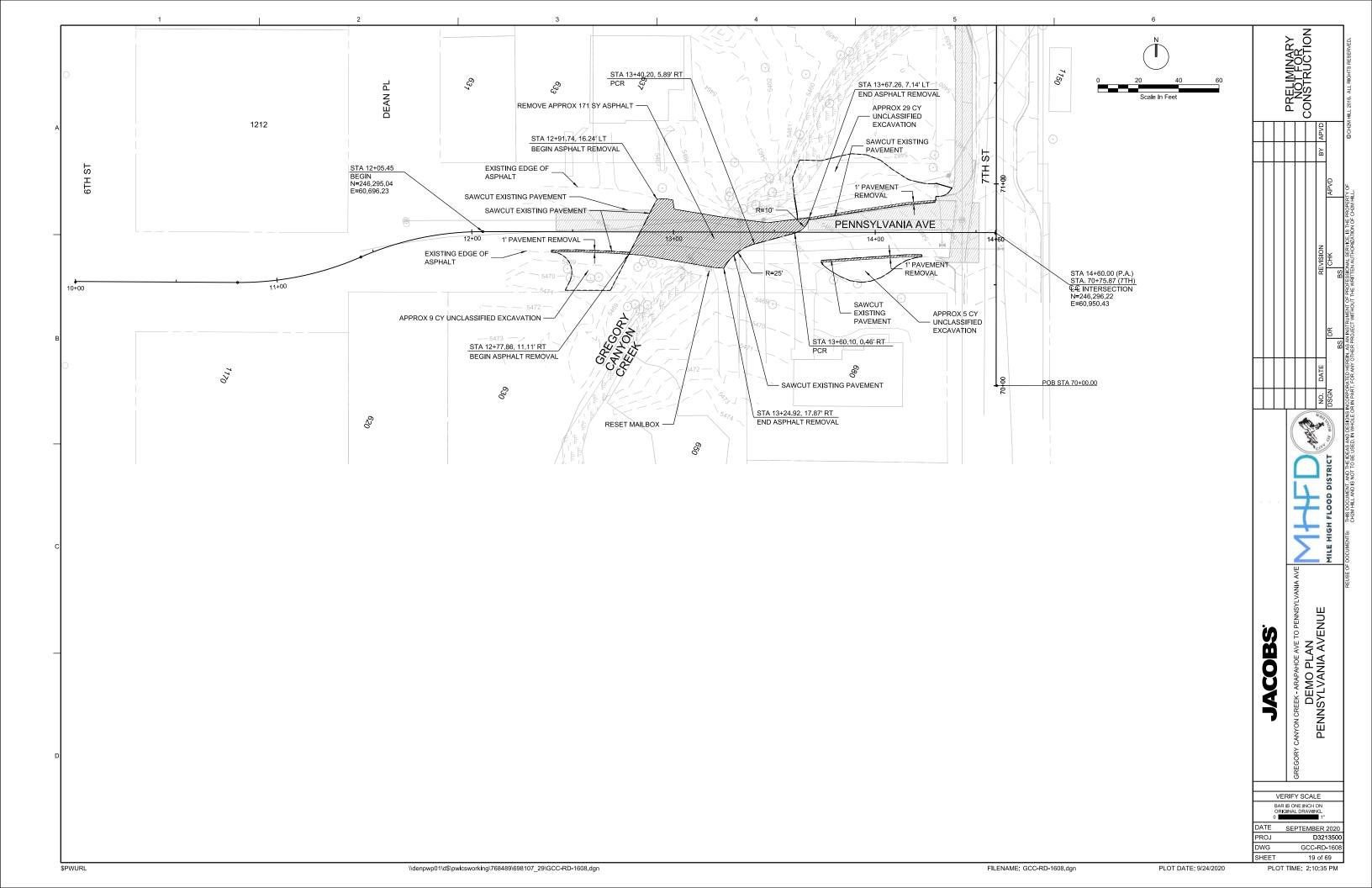


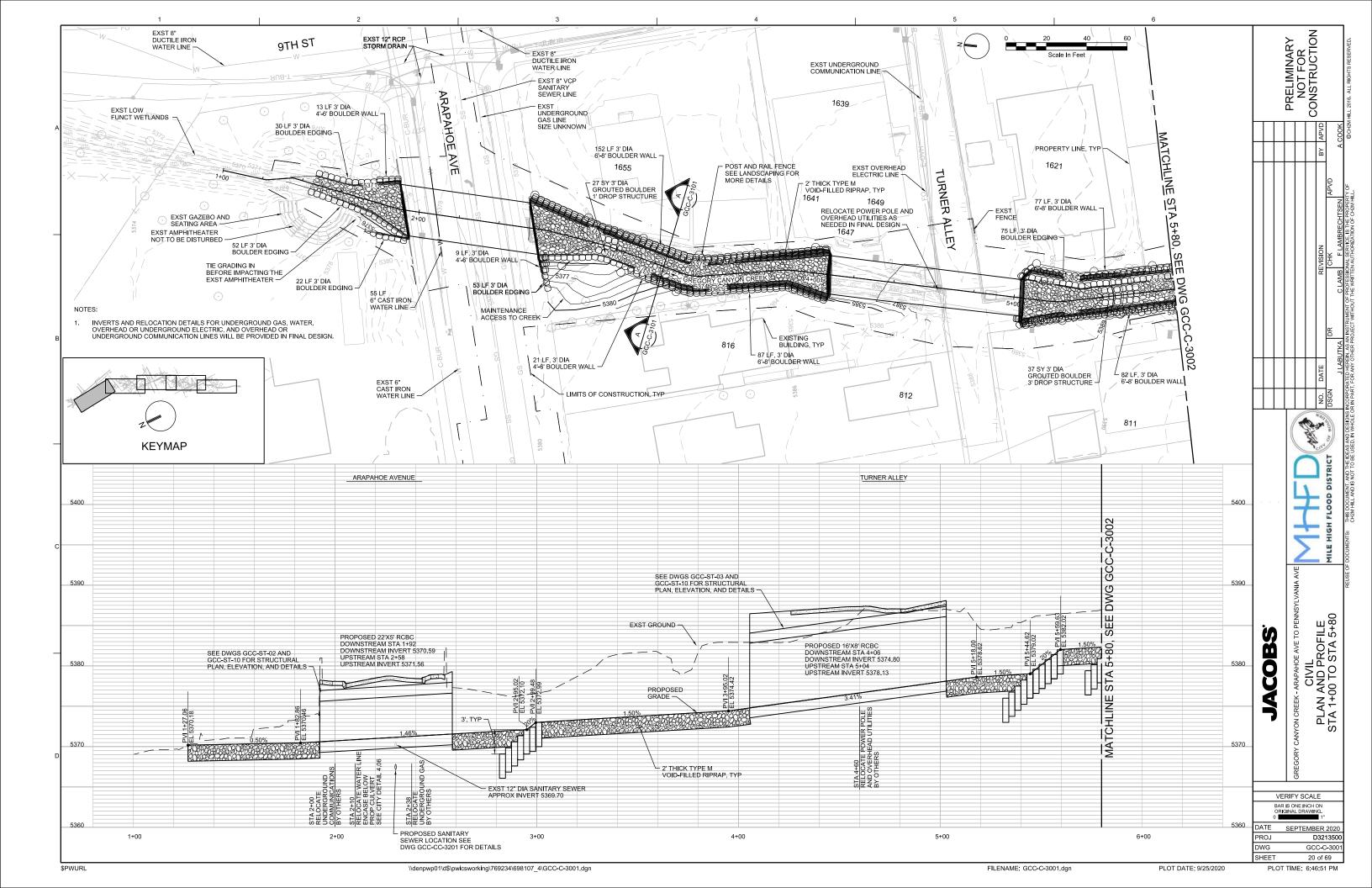


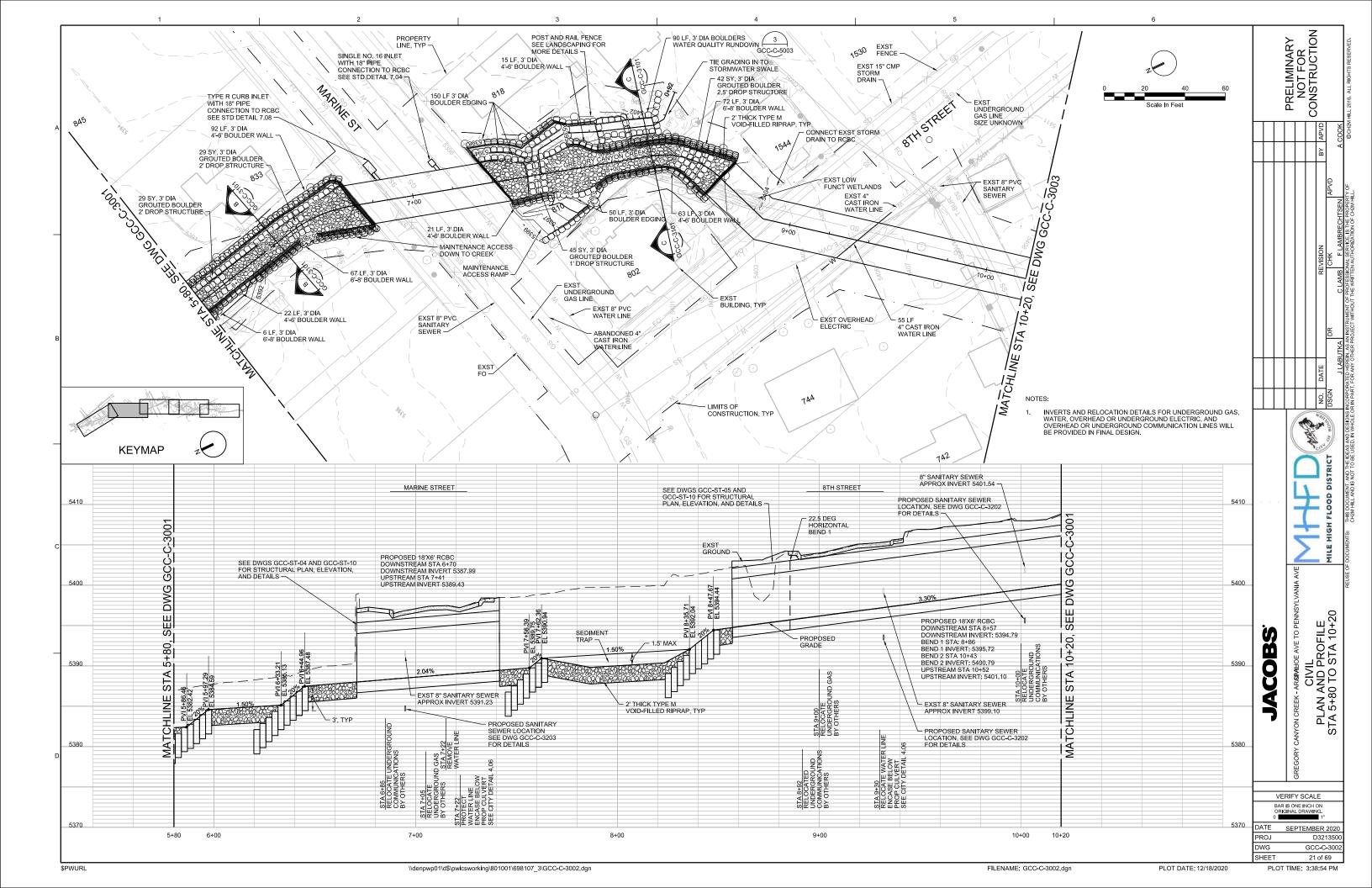


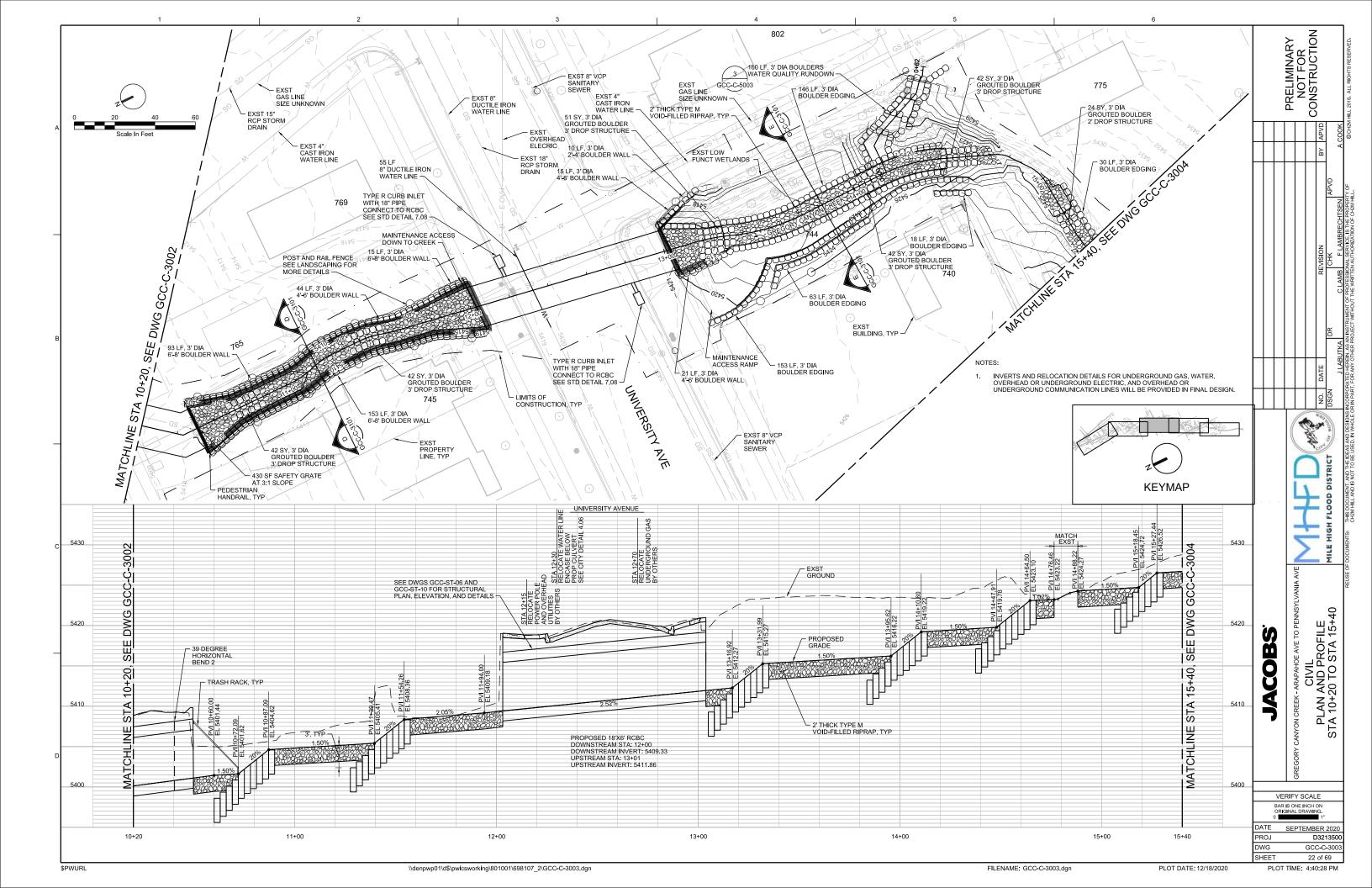


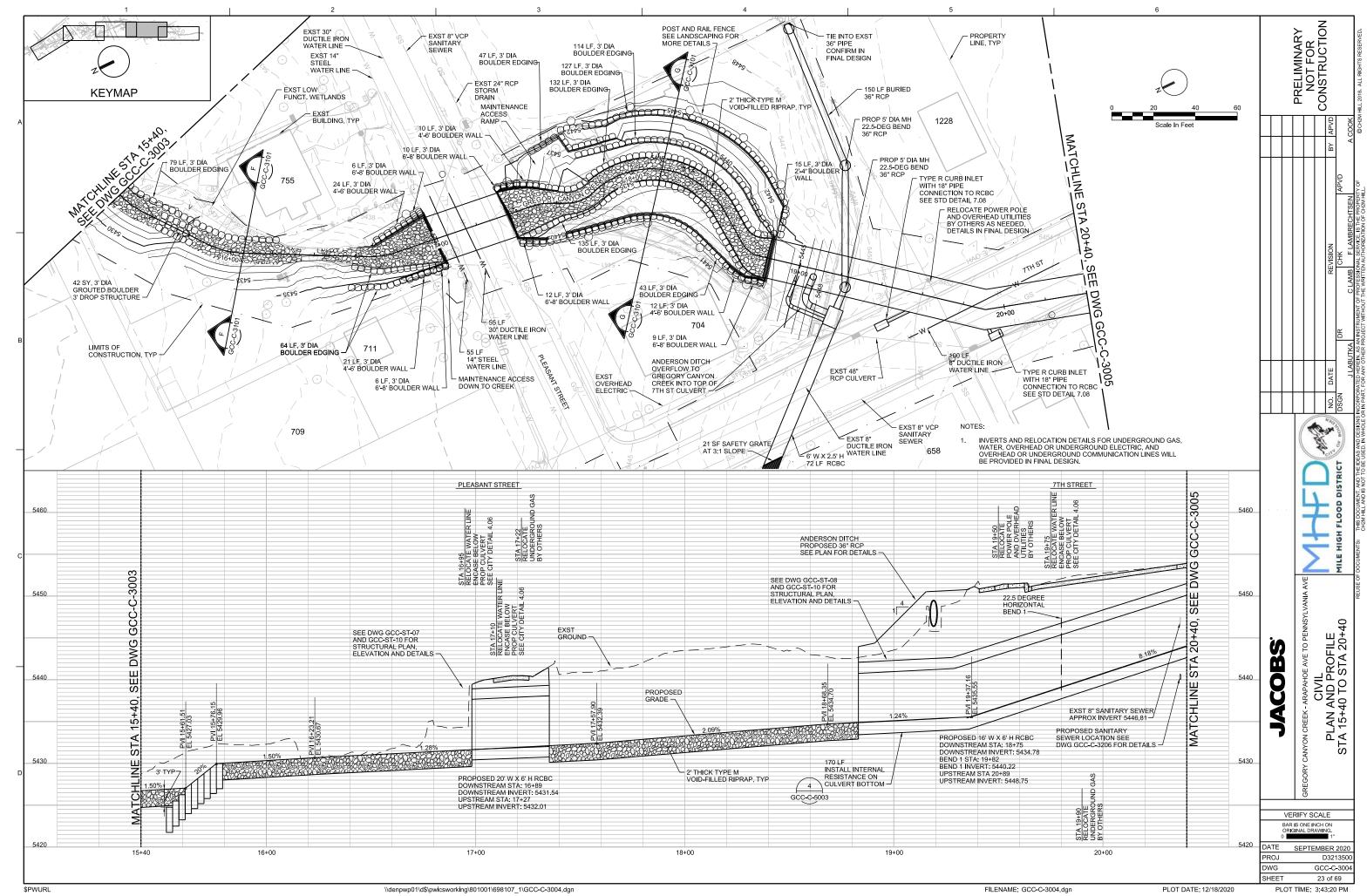


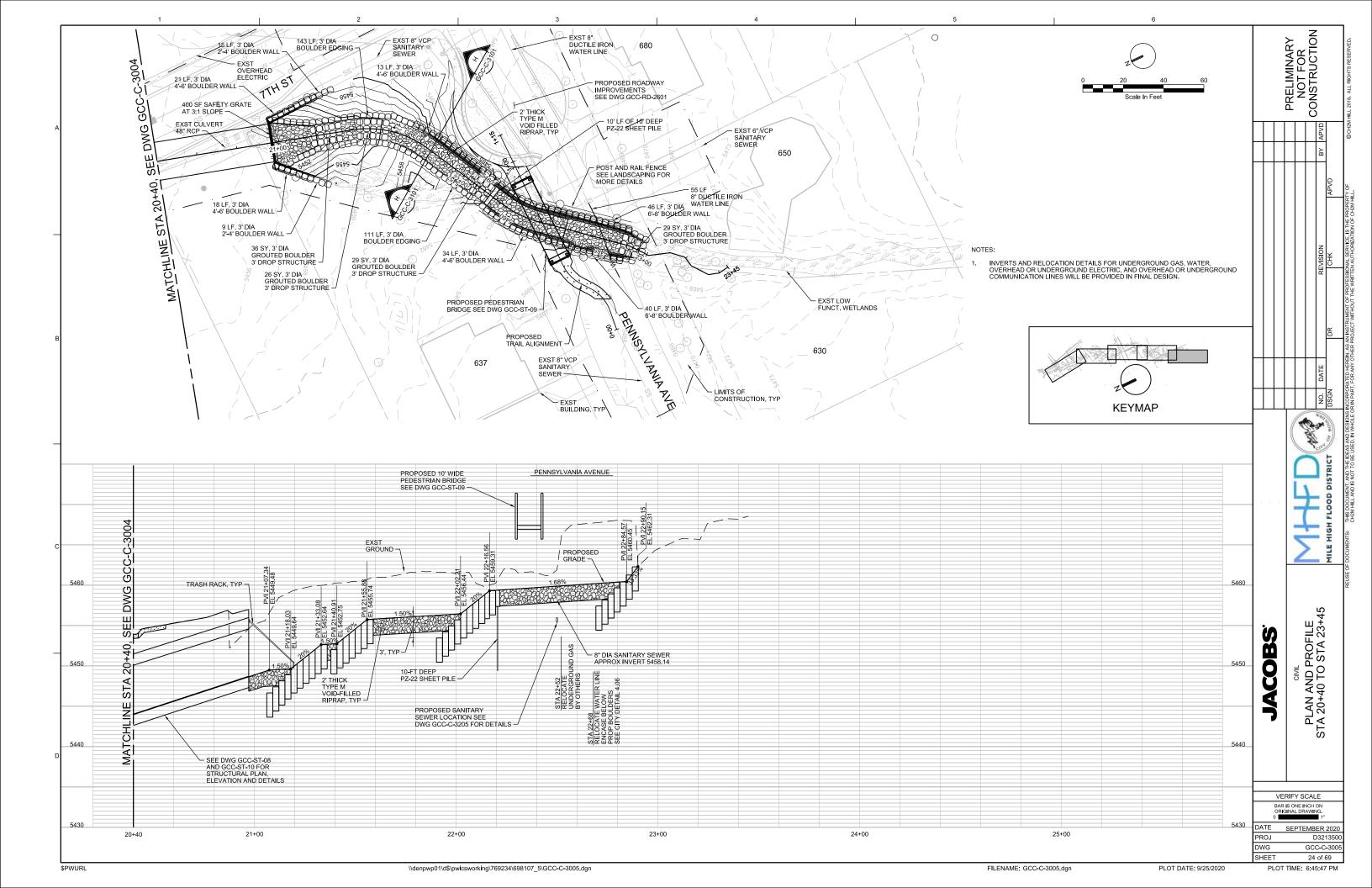


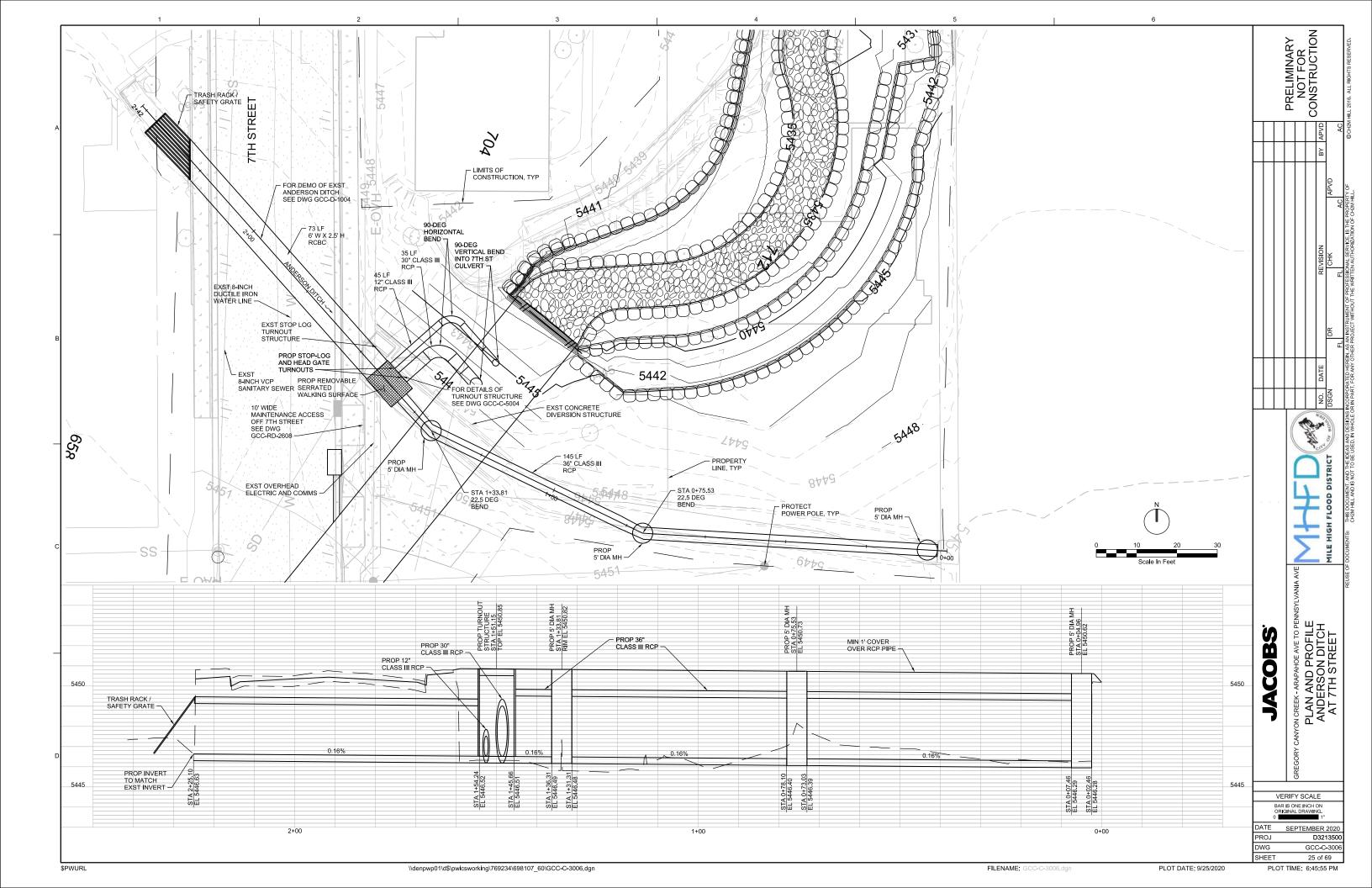






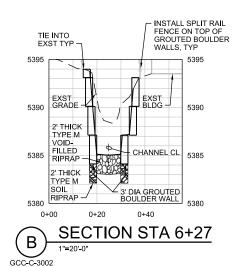


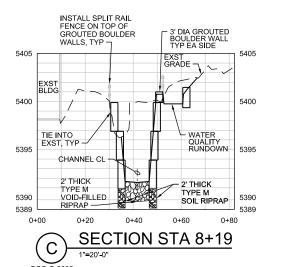


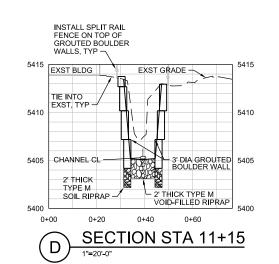


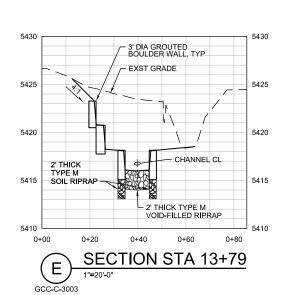
1 2 3 4 5 6

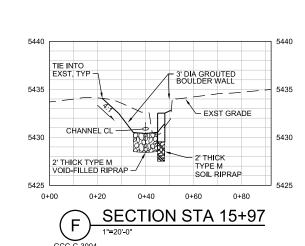
- INSTALL SPLIT RAIL FENCE ON TOP OF GROUTED BOULDER WALLS, TYP 5385 - EXST FENCE TIE INTO 5380 EXST GRADE 3' DIA GROUTED CHANNEL CL 5375 BOULDER WALL 5375 2' THICK TYPE M SOIL RIPRAP 2' THICK TYPE M VOID-FILLED RIPRAP 5370 5370 0+00 SECTION STA 3+24 (A)

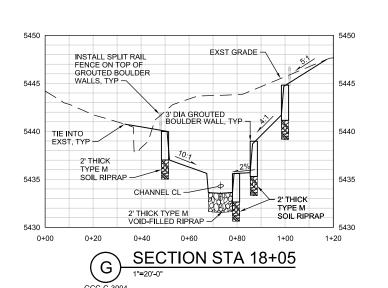


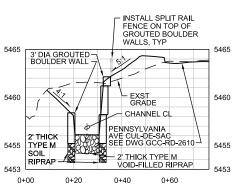












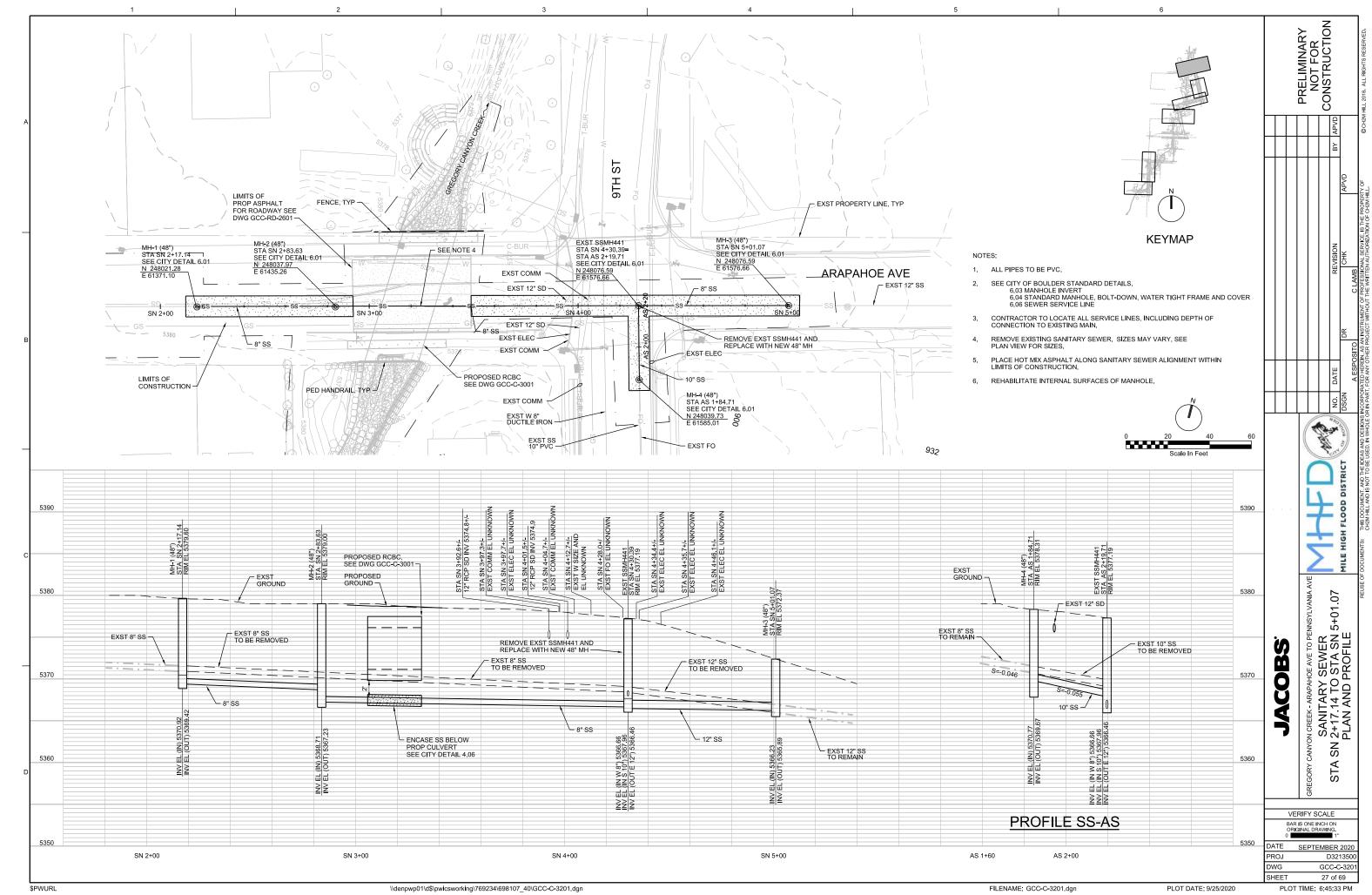
9453 0+00 0+20 0+40 0+60 SECTION STA 22+70 1"=20'-0"

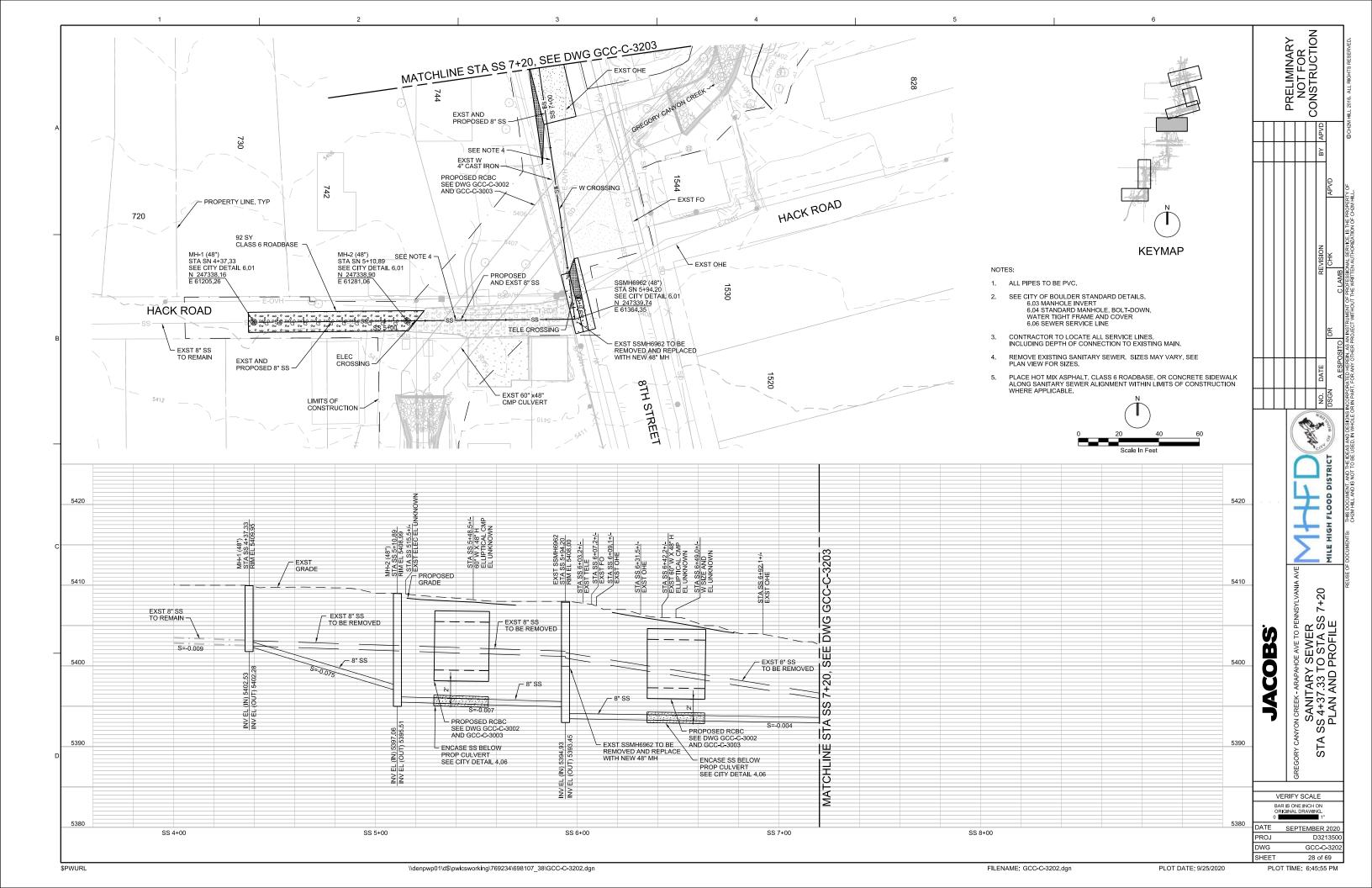
NOTES:

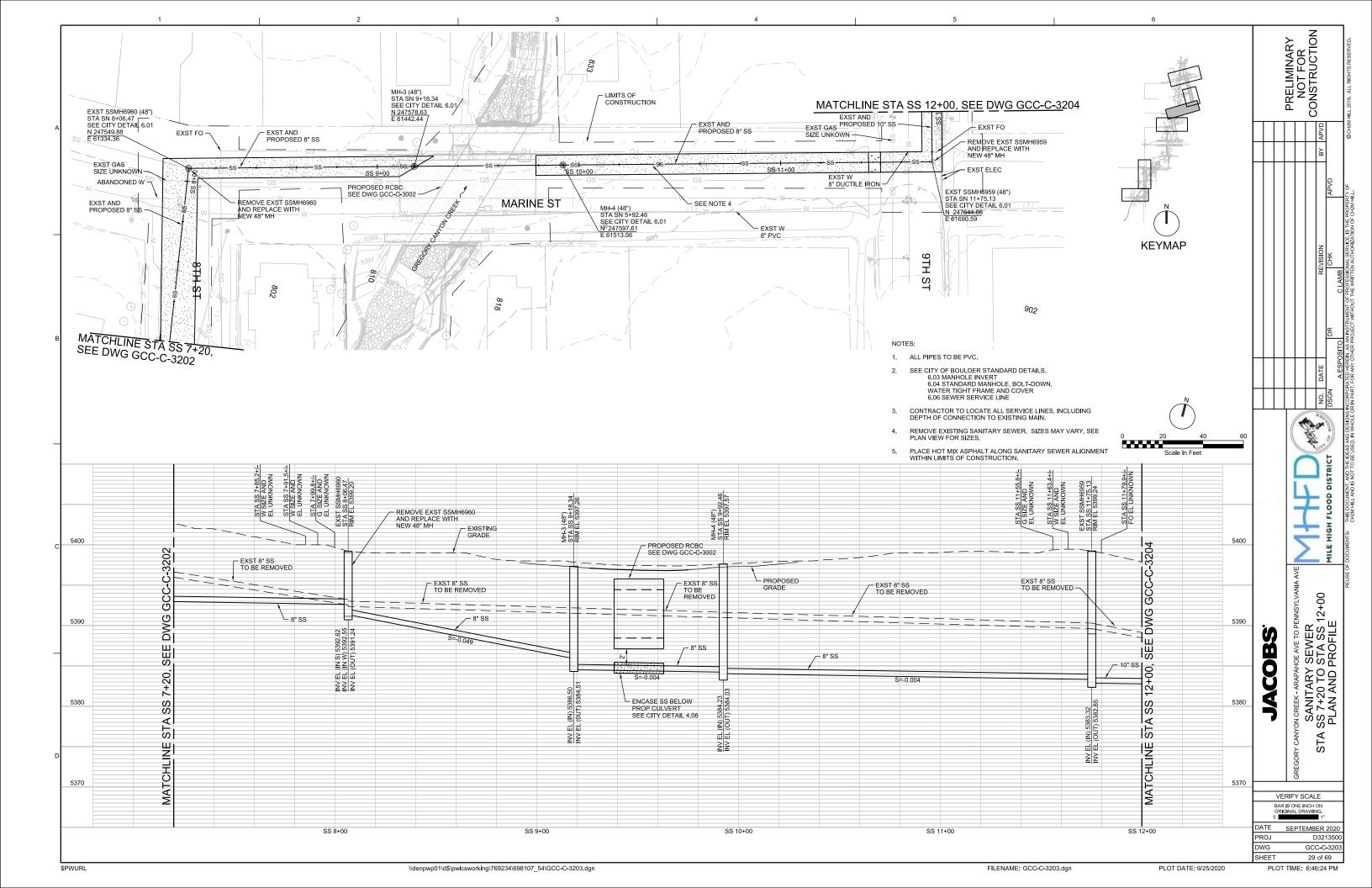
- 1. SEE DWG GCC-C-5001 FOR DETAILS ON THE VOID-FILLED RIPRAP
- 2. SEE DWG GCC-C-5002 FOR DETAILS ON THE BOULDER WALLS.

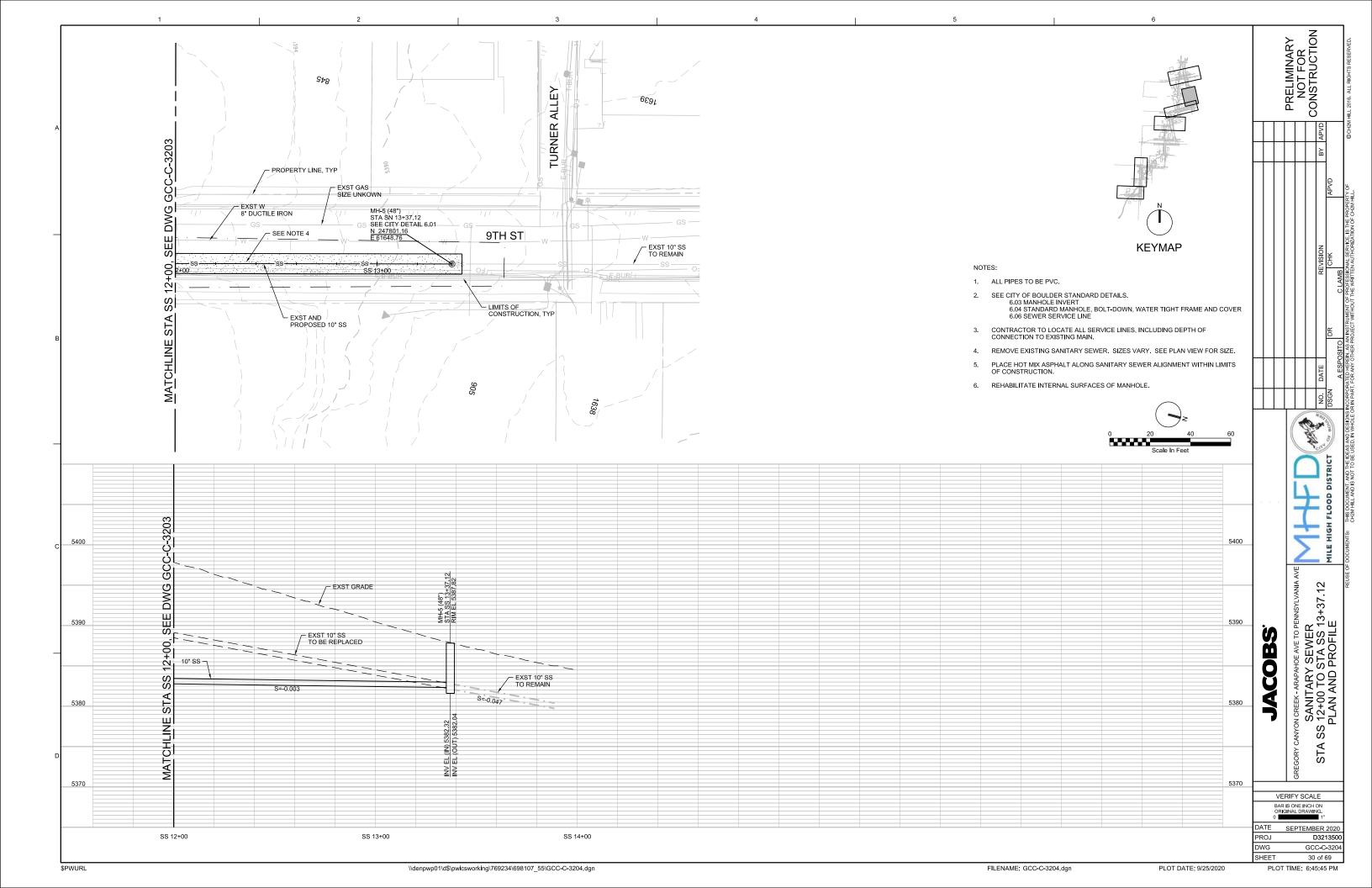
DISTRICT MILE HIGH FLOOD AHOE AVE TO PENNSYLVANIA CIVIL CHANNEL SECTIONS JACOBS BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1 SEPTEMBER 2020 PROJ D3213500 DWG GCC-C-310 SHEET 26 of 69

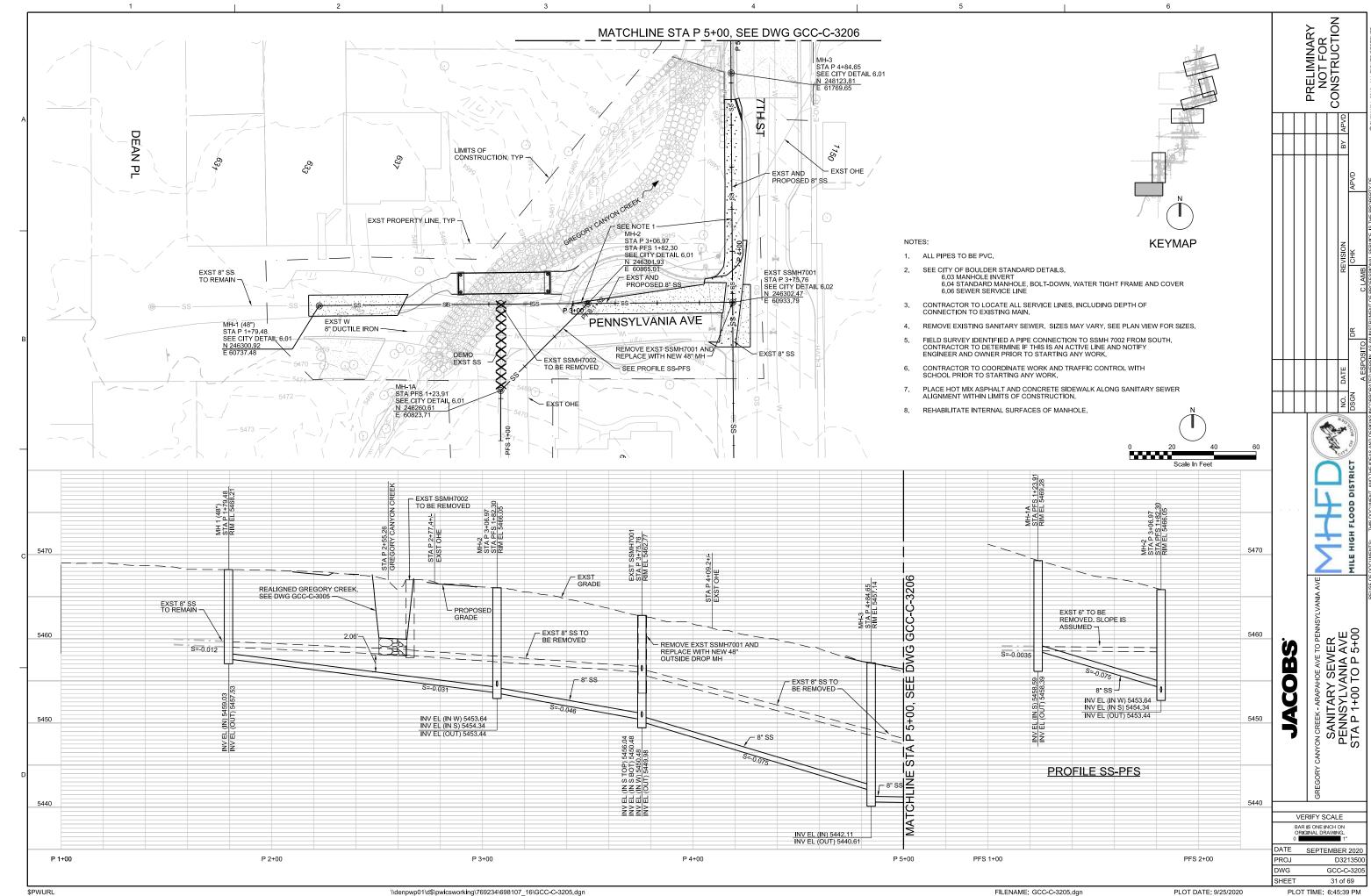
PRELIMINARY NOT FOR CONSTRUCTION

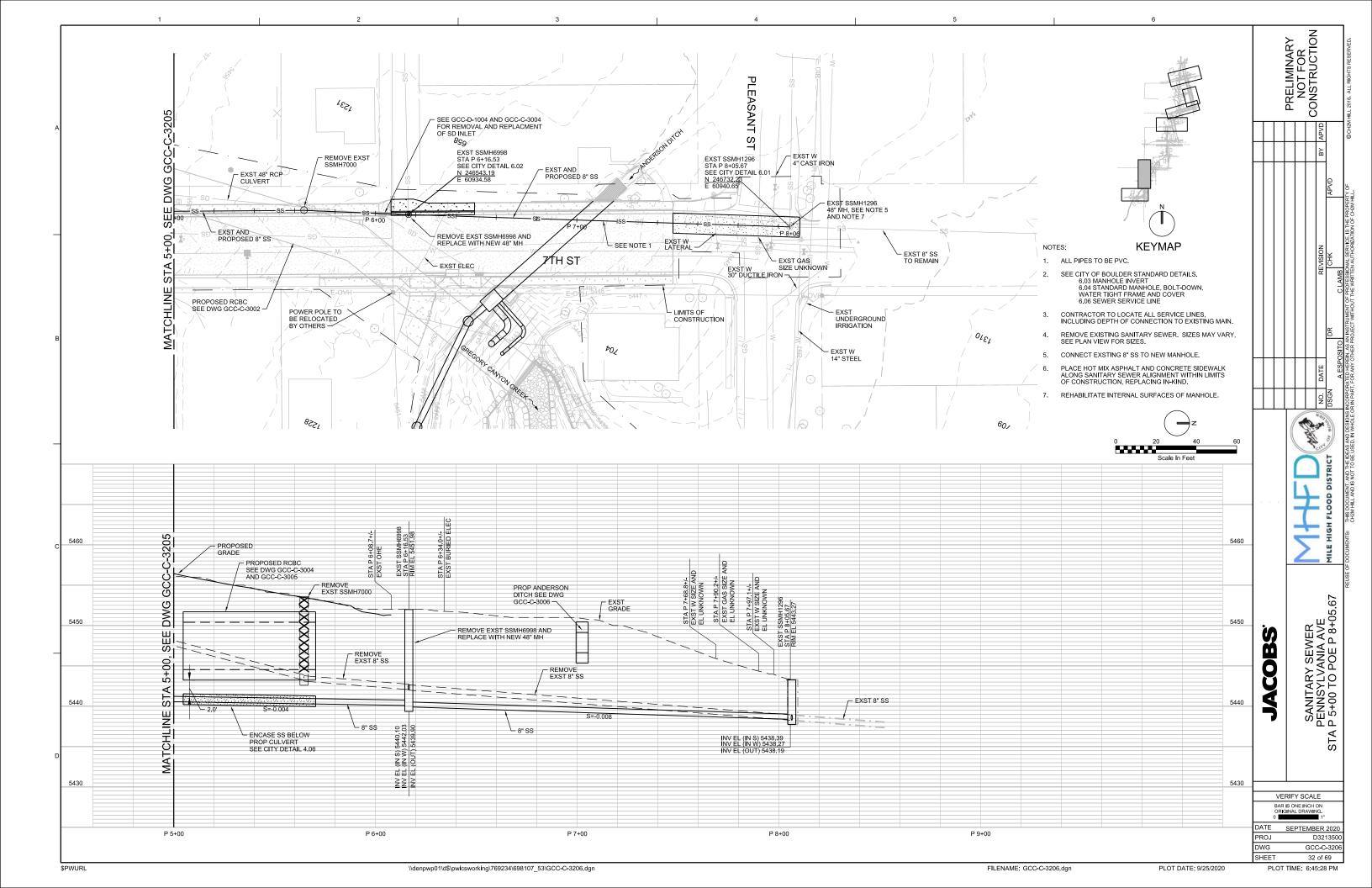












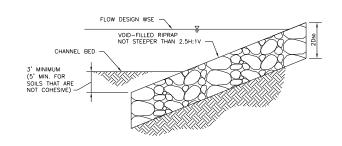


TABLE 1. MIX REC	UIREMENTS FOR	R TYPE VL AND L VOID-FILLED RIPRAP (D ₅₀ = 6 TO 9 INCH)	
APPROPRIATE PROPORTIONS (BY VOLUME)	MATERIAL TYPE	MATERIAL DESCRIPTION	
6 PARTS	RIPRAP	$D_{50} = 6$ INCH (TYPE VL) OR $D_{50} = 9$ INCH (TYPE L), SEE TABLE 3	
1 PART	VOID-FILL MATERIAL	VTC (VEHICLE TRACKING CONTROL) ROCK (CRUSHED ROCK WITH 100% PASSING 4-INCH SIEVE, 50-70% PASSING 3-INCH SIEVE, 0-10% PASSING 2-INCH SIEVE)	
1 PART	VOID-FILL MATERIAL 4-INCH MINUS PIT RUN SURGE (ROUND RIVER ROCK AND SAND, WELL GRADED, 90-100% PASSING 4-INCH SIEVE, 10-80% PASSING 11-INCH SIEVE, 40-60% PASSING 36-INCH SIEVE, 10-30% PASSING #16 SIEVE)		
1 PART	VOID-FILL MATERIAL	TYPE II BEDDING (CRUSHED ROCK WITH 100% PASSING 3-INCH SIEVE, 20-90% PASSING ¾-INCH SIEVE, 0-20% PASSING #4 SIEVE, 0-3% PASSING #200 SIEVE)	
½ TO 1 PART	VOID-FILL MATERIAL	NATIVE TOPSOIL	

VOID-FILLED RIPRAP PLACEMENT AND GRADATION

TABLE 2. MIX REQUIREMENTS FOR TYPE M AND H VOID-FILLED RIPRAP (D ₅₀ = 12 TO 18 INCH)			
APPROPRIATE PROPORTIONS (BY VOLUME)	MATERIAL TYPE	MATERIAL DESCRIPTION	
6 PARTS	RIPRAP	$D_{50} = 12 - INCH (TYPE M) OR D_{50} = 18 - INCH (TYPE H), SEE TABLE 3$	
2 PART	VOID-FILL MATERIAL	7-INCH MINUS CRUSHED ROCK SURGE (100% PASSING 7-INCH SIEVE, 80-100% PASSING 6-INCH SIEVE, 35-50% PASSING 3-INCH SIEVE, 10-20% PASSING 1½-INCH SIEVE)	
1 PART	VOID-FILL MATERIAL	VTC (VEHICLE TRACKING CONTROL) ROCK (CRUSHED ROCK WITH 100% PASSING 4-INCH SIEVE, 50-70% PASSING 3-INCH SIEVE, 0-10% PASSING 2-INCH SIEVE)	
1 PART	VOID-FILL MATERIAL	4-INCH MINUS PIT RUN SURGE (ROUND RIVER ROCK AND SAND, WELL GRADED, 90-100% PASSING 4-INCH SIEVE, 70-80% PASSING 14-INCH SIEVE, 40-60% PASSING 36-INCH SIEVE, 10-30% PASSING #16 SIEVE)	
1 PART	VOID-FILL MATERIAL	TYPE II BEDDING (CRUSHED ROCK WITH 100% PASSING 3-INCH SIEVE, 20-90% PASSING 3-INCH SIEVE, 0-20% PASSING 4200 SIEVE)	
½ TO 1 PART	VOID-FILL MATERIAL	NATIVE TOPSOIL	

TABLE 3. VOID-FILLED RIPRAP PLACEMENT AND GRADATION			
RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSION (INCHES)	D ₅₀ * (INCHES)
TYPE VL	70 - 100 50 - 70 35 - 50 2 - 10	12 9 6 2	6
TYPE L	70 - 100 50 - 70 35 - 50 2 - 10	15 12 9 3	9
TYPE M	70 - 100 50 - 70 35 - 50 2 - 10	21 18 12 4	12
TYPE H	70 - 100 50 - 70 35 - 50 2 - 10	30 24 18 6	18
*D ₅₀ = MEAN ROCK SIZE			

NOTE: MIX ON SITE AND PRIOR TO PLACEMENT

VOID-FILLED RIPRAP PLACEMENT AND GRADATION NOTES:

- WHERE "VOID-FILLED RIPRAP" IS DESIGNATED ON THE CONTRACT DRAWINGS, RIPRAP SHALL BE MIXED WITH THE MATERIALS AND ASSOCIATED PROPORTIONS LISTED IN TABLE 1 OR TABLE 2 TO FILL THE VOIDS OF THE RIPRAP.
- AND ARE SUBJECT TO ADJUSTMENT BY THE ENGINEER.

 3. THE RIPRAP AND VOID-FILLED MATERIALS SHALL BE STOCKPILED SEPERATELY AND THOROUGHLY MIXED PRIOR TO PLACEMENT AND SHALL BE INSTALLED AND COMPACTED SO THAT A DEBUSE, INTERLOCKED LAYER OF RIPRAP AND VOID-FILL MATERIALS. SHALL BE PLACED IN SHOULD LIFT OF SUFFICIENT BEIGHT SUGGEST AND SHALL SHALL BE PLACED IN SHOULD LIFT OF SUFFICIENT BEIGHT SUGGEST HAT FINAL GRADE WILL BE ACHEVED UPON COMPACTED. IF THE COMPACTED HATERIAL IS BELOW FINAL GRADE IS NOT PERMITTED. IN SUCH CASES IT IS NECESSARY TO ADD MORE STANDARD SIZED VOID-FILLED MATERIAL SHALL BE AVOIDED AND SIZED VOID-FILLED RIPRAP AND REMIX THE ENTIRE THICKNESS OF ROCK TO ACHIEVE THE DESIGN SECTION. SEGRECATION OF MATERIALS SHALL BE AVOIDED AND IN NO CASE SHALL THE COMBINED MATERIAL CONSIST PRIMARILY OF THE VOID-FILL MATERIALS. THE DENSITY AND METRIAL CONSIST PRIMARILY OF THE VOID-FILL MATERIALS. SHALL BE AVOIDED AND IN THE MIXED MATERIAL SHALL BE THE RIPRAP WAS PLACED WITHOUT FILLING THE VOIDS.
- 4. COMPACTION OF THE VOID-FILLED RIPRAP SHALL BE PERFORMED BY WHEEL ROLLING WITH HEAVY RUBBER-TIRED EQUIPMENT (E.G. FRONT END LOADER). THE MOISTURE CONTENT OF THE MIXTURE SHALL BE AT OPTIMUM CONDITIONS PRIOR TO COMPACTION AND WATER SHALL BE ADDED, AS NECESSARY, AT THE DIRECTION OF THE ENGINEER.
- 5. WHERE INDICATED ON THE DRAWINGS, A SURFACE LAYER OF MOIST TOPSOIL SHALL BE PLACED OVER THE VOID-FILLED RIPARP. THE TOPSOIL SUFFACE LAYER SHALL BE COMPACTED TO APPROXIMATELY 85% OF MAXIMUM DENSITY AND WITHIN TWO PERCENTACE POINTS OF OPTIMUM MOISTURE IN ACCORDANCE WITH ASTM DOBS. TOPSOIL SHALL BE ADDED TO ANY AREAS THAT SETTLE.
- ALL VOID-FILLED RIPRAP THAT IS BURIED WITH TOPSOIL SHALL BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO ANY TOPSOIL PLACEMENT.

VOID FILLED RIPRAP PLACEMENT

FLOW DESIGN WSE -RIPRAP OR SOIL RIPRAP NOT STEEPER THAN 2.5H:1V - GRANULAR
BEDDING, REQUIRED
FOR RIPRAP. ALSO
REQUIRED FOR
SOIL RIPRAP WHEN
SPECIFICIED

RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSION (INCHES)	D ₅₀ * (INCHES)
TYPE VL	70 - 100 50 - 70 35 - 50 2 - 10	12 9 6 2	6
TYPE L	70 - 100 50 - 70 35 - 50 2 - 10	15 12 9 3	9
TYPE M	70 - 100 50 - 70 35 - 50 2 - 10	21 18 12 4	12
TYPE H	70 - 100 50 - 70 35 - 50 2 - 10	30 24 18 6	18
*D ₅₀ = MEAN ROCK SIZE			

RIPRAP AND SOIL RIPRAP PLACEMENT AND GRADATION

SOIL RIPRAP NOTES:

- WHERE 'SOIL RIPRAP' IS DESIGNATED ON THE CONTRACT DRAWINGS, RIPRAP VOIDS ARE TO BE FILLED WITH NATIVE SOIL. THE RIPRAP SHALL BE PRE-MIXED WITH THE NATIVE SOIL AT THE FOLLOWING PROPORTIONS BY VOLUME: 65 PERCENT RIPRAP AND 35 PERCENT SOIL. THE SOIL USED FOR MIXING SHALL BE NATIVE TOPSOIL AND SHALL HAVE A MINIMUM FINES CONTENT OF 15 PERCENT. THE SOIL RIPRAP SHALL BE INSTALLED IN A MANNER THAT RESULTS IN A DENSE, INTERLOCKED LAYER OF RIPRAP WITH RIPRAP VOIDS FILLED COMPLETELY WITH SOIL. SEGREGATION OF MATERIALS SHALL BE AVOIDED AND IN OCASE SHALL THE COMBINED MATERIAL CONSIST PRIMARILY OF SOIL; THE DENSITY AND INTERLOCKING NATURE OF RIPRAP IN THE MIXED MATERIAL SHALL BE SENTIALLY BE SAME AS IF THE RIPRAP WAS PLACED WITHOUT SOIL.
- 3. WHERE SPECIFIED (TYPICALLY AS 'BURIED SOIL RIPRAP'), A SURFACE LAYER OF TOPSOIL SHALL BE PLACED OVER THE SOIL RIPRAP ACCORDING TO THE THICKNESS SPECIFIED ON THE CONTRACT DRAWINGS. THE TOPSOIL SURFACE LAYER SHALL BE COMPACTED TO APPROXIMATELY 85% OF MAXIMUM DENSITY AND WITHIN TWO PERCENTAGE POINTS OF OFFINIUM MOISTURE IN ACCORDANCE WITH ASTM D698. TOPSOIL SHALL BE ADDED TO ANY "AREAS THAT SETTILE."
- 4. ALL SOIL RIPRAP THAT IS BURIED WITH TOPSOIL SHALL BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO ANY TOPSOIL PLACEMENT.

	GRADATION FOR GRANULAR	R BEDDING	
	PERCENT PASSING BY WEIGHT		
U.S. STANDARD SIEVE SIZE	TYPE I CDOT SECT. 703.01	TYPE II CDOT SECT. 703.09 CLASS A	
3 INCHES	-	90 - 100	
1½ INCHES	-	-	
¾ INCHES	=	20 - 90	
% INCHES	100	-	
#4	95 - 100	0 - 20	
#16	45 - 80	-	
#50	10 - 30	=	
#100	2 - 10	=	
#200	0 - 2	0 - 3	

RIPRAP BEDDING

THICKNESS REQUIREMENTS FOR GRANULAR BEDDING			
	MININ	IUM BEDDING THICKNESS	(INCHES)
RIPRAP DESIGNATION	FINE - GRAINE	COARSE-GRAINED SOILS 2	
	TYPE I (LOWER LAYER)	TYPE II (UPPER LAYER)	TYPE II
$VL (D_{50} = 6 IN)$	4	4	6
$L (D_{50} = 9 IN)$	4	4	6
$M (D_{50} = 12 IN)$	4	4	6
$H (D_{50} = 18 IN)$	4	6	8
$VH (D_{50} = 24 IN)$	4	6	8

NOTES:

1. MAY SUBSTITUTE ONE 12-INCH LAYER OF TYPE II BEDDING. THE SUBSTITUTION OF ONE LAYER OF TYPE II BEDDING SHALL NOT BE PERMITTED AT DROP STRUCTURES. THE USE OF A COMBINATION OF FILTER FABRIC AND TYPE II BEDDING AT DROP STRUCTURES IS ACCEPTABLE.

2. FIFTY PERCENT OR MORE BY WEIGHT RETAINED ON THE #40 SIEVE.

RIPRAP AND SOIL RIPRAP PLACEMENT

PROJ D3213500 DWG GCC-C-500 SHEET 33 of 69 PLOT DATE: 9/24/2020 PLOT TIME: 2:08:55 PM

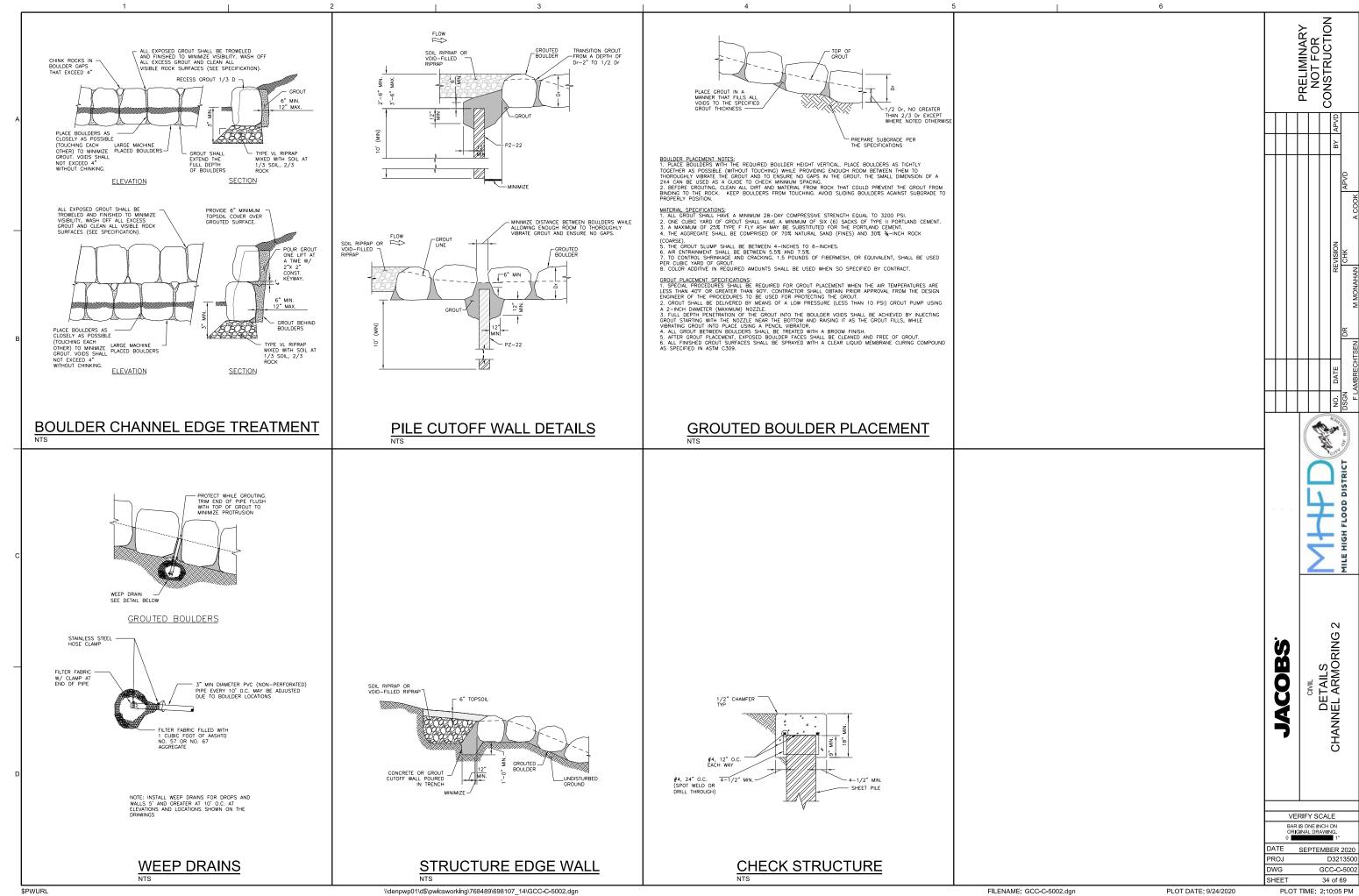
DISTRICT MILE HIGH FLOOD I

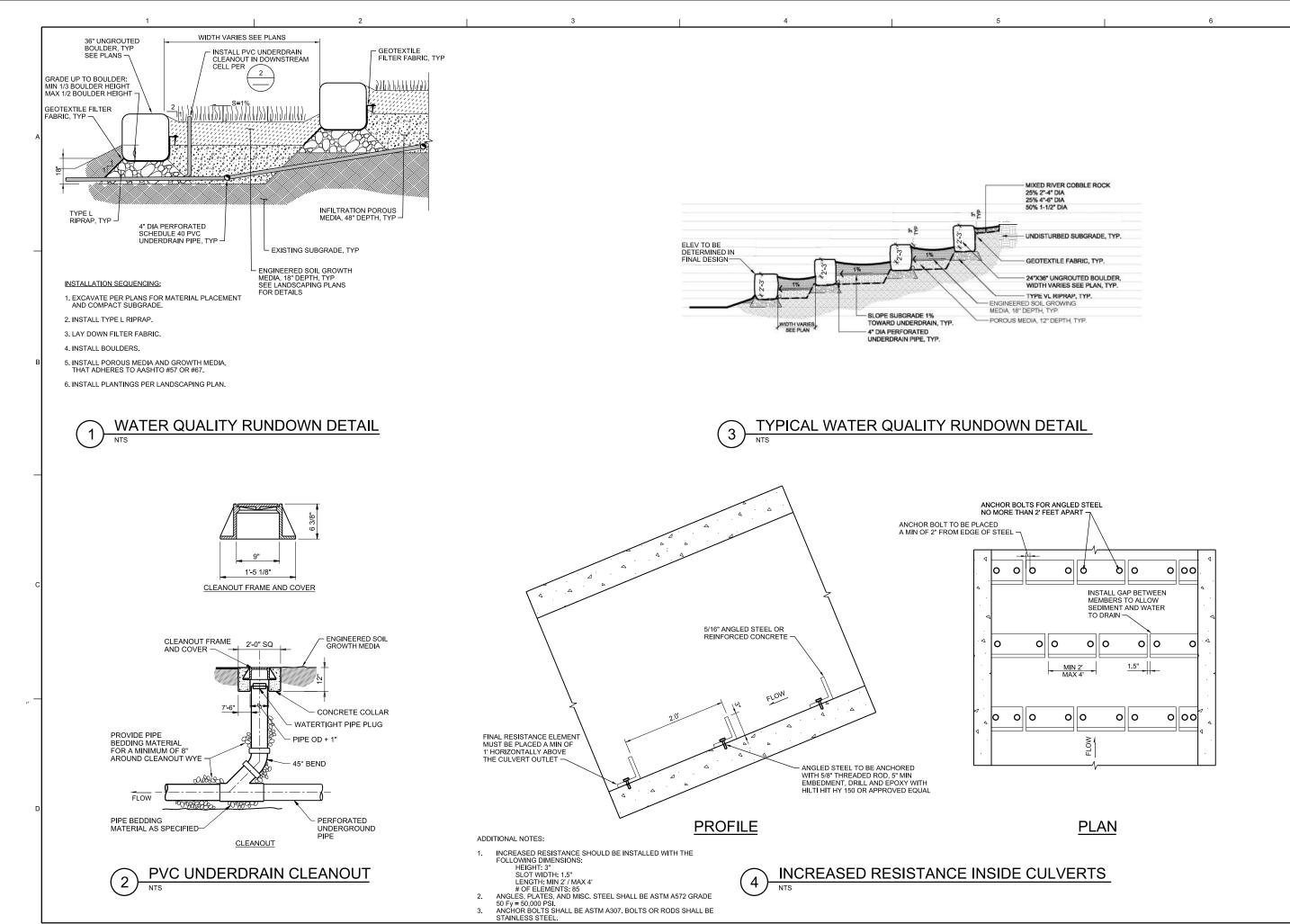
PRELIMINARY NOT FOR CONSTRUCTION

JACOBS

DETAILS CHANNEL ARMORING

VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1 DATE SEPTEMBER 2020





PRELIMINARY NOT FOR CONSTRUCTION

DISTRICT

MILE HIGH

JACOBS

PROJ

DWG

SHEET

DETAIL

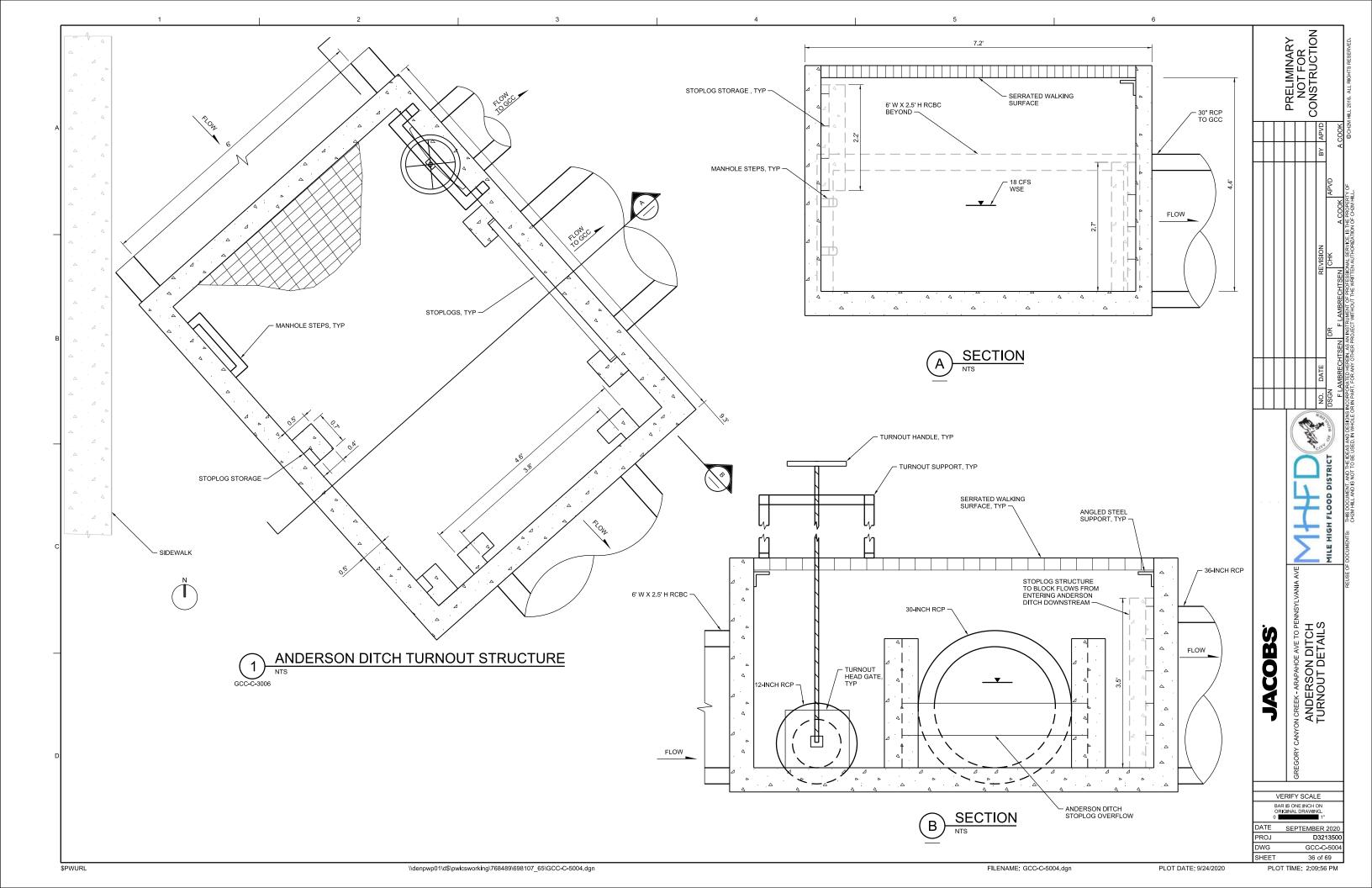
VERIFY SCALE

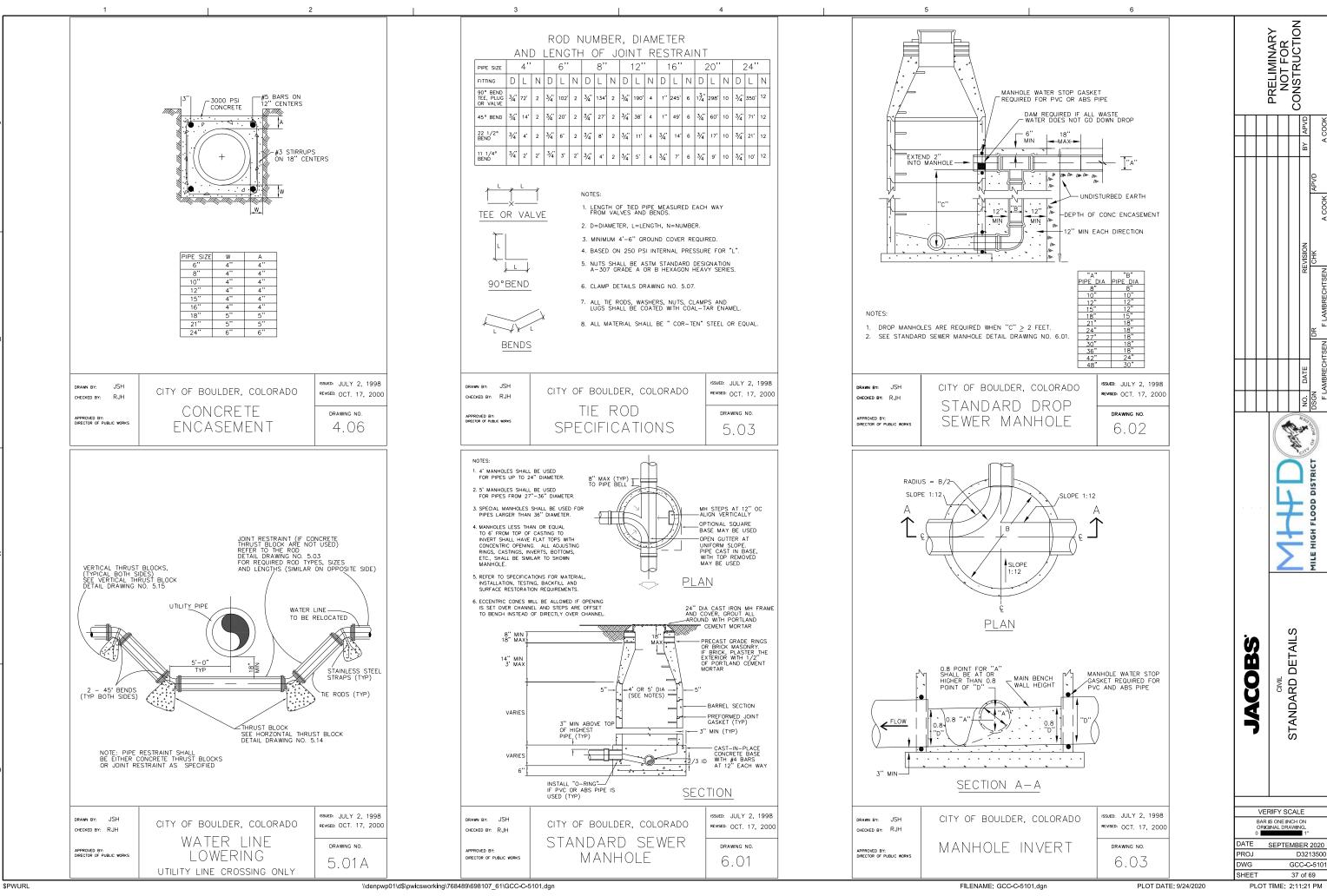
BAR IS ONE INCH ON ORIGINAL DRAWING.

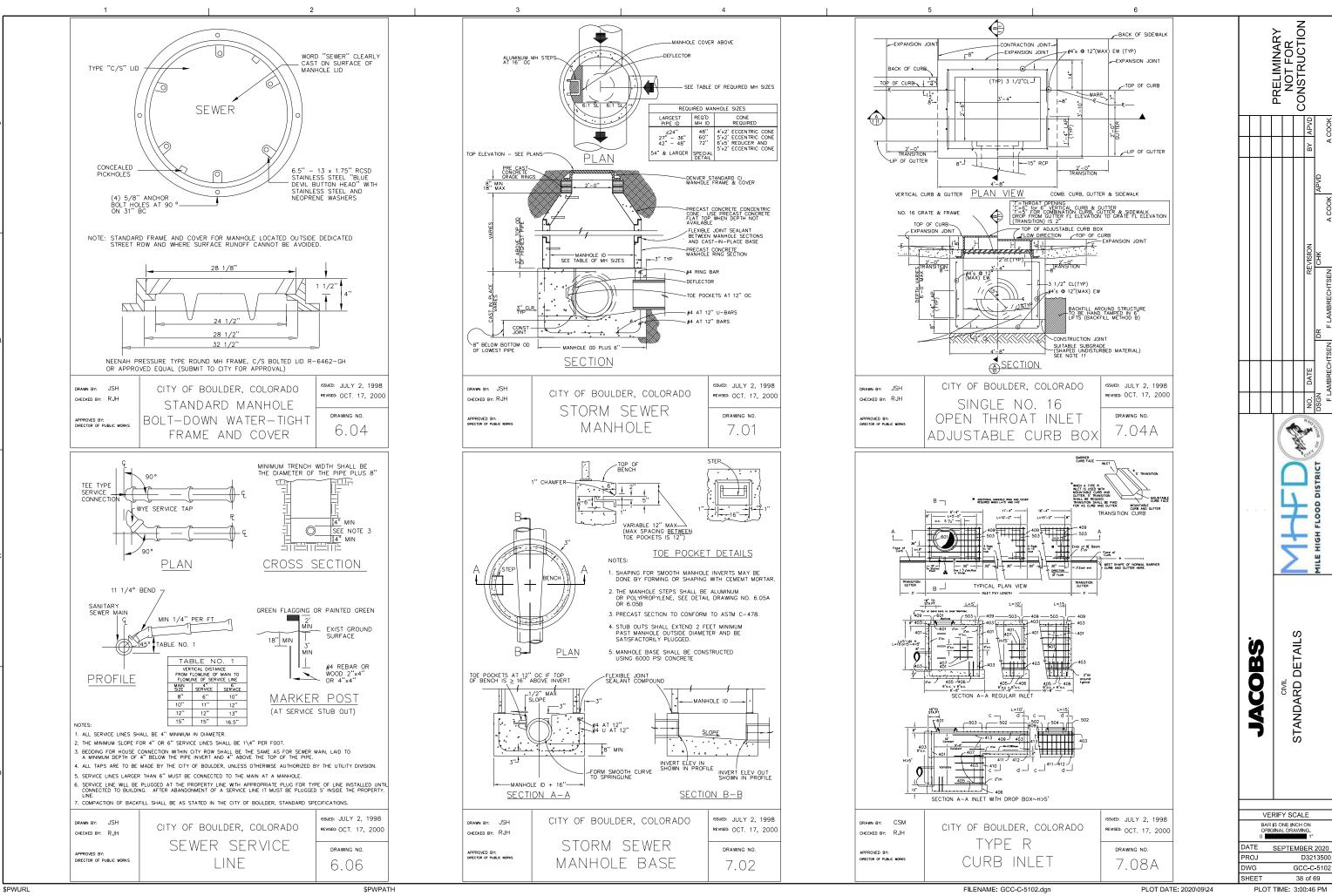
SEPTEMBER 2020

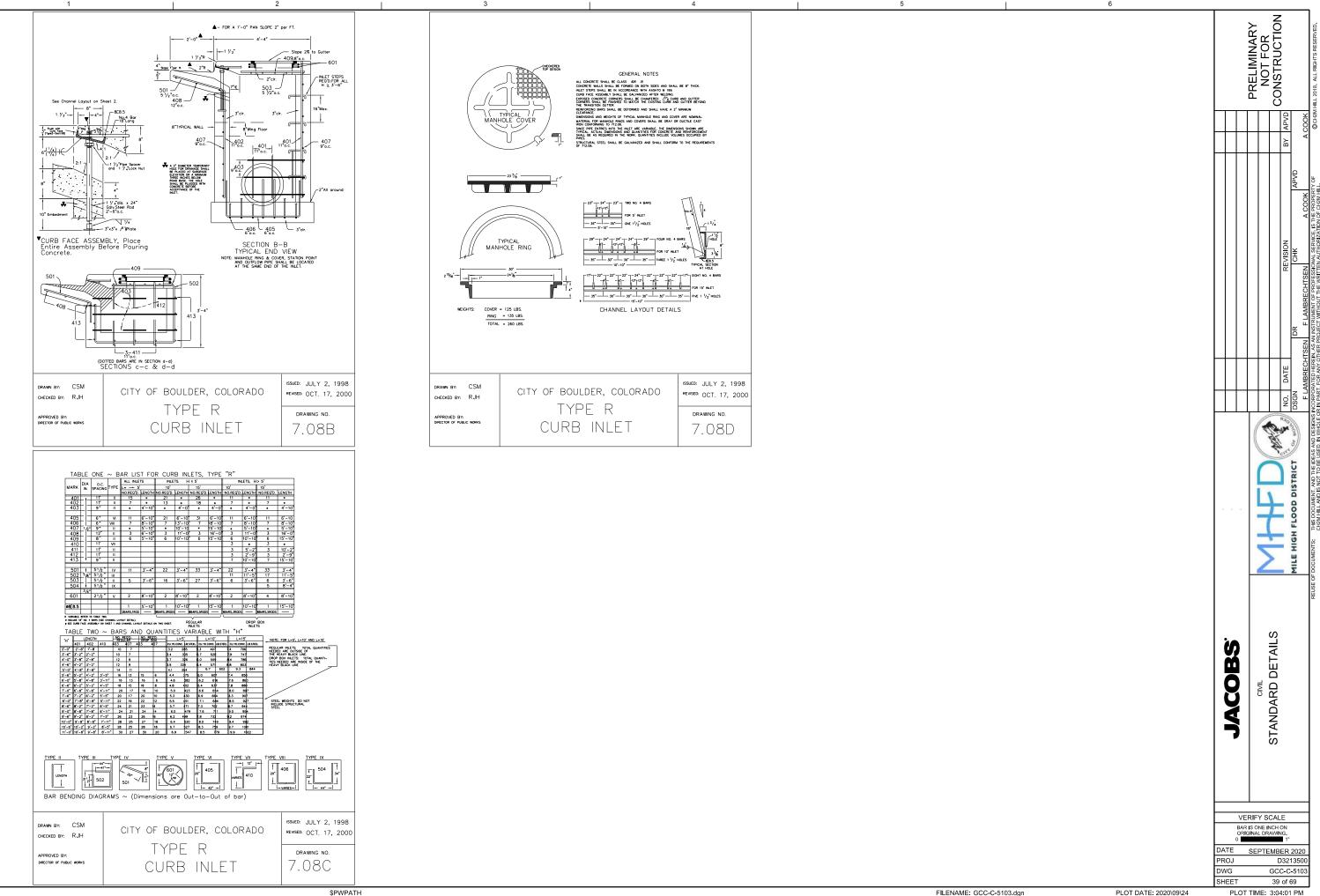
GCC-C-500:

35 of 69









PLOT DATE: 2020\09\24

PLOT TIME: 3:04:01 PM

\$PWPATH

\$PWURL

ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION 2019 STANDARD FOR ROADWAY AND BRIDGE CONSTRUCTION AND THE CONTRACT DOCUMENTS.

STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH CDOT STANDARD PLAN NO M-206-1

EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M213.

EXPOSED CONCRETE SURFACES SHALL RECEIVE A CLASS 1 FINAL FINISH TO ONE FOOT BELOW THE GROUND LINE.

GRADE 60 REINFORCING STEEL IS REQUIRED.

ALL REINFORCING STEEL SHALL BE NON-EPOXY COATED UNLESS OTHERWISE NOTED.

(E) DENOTES EPOXY COATED REINFORCING STEEL.

THE FOLLOWING TABLE GIVES THE MINIMUM STAGGERED LAP SPLICE LENGTH FOR EPOXY COATED REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT

#7 #8 #10 SPLICE LENGTH FOR CLASS D CONCRETE 1'-3" 1'-7" 2'-5" 2'-10" 3'-8" 4'-8" 5'-11"

THE FOLLOWING TABLE GIVES THE MINIMUM STAGGERED LAP SPLICE LENGTH FOR BLACK REINFORCING BARS PLACED IN ACCORDANCE WITH SUBSECTION 602.06. THESE SPLICE LENGTHS SHALL BE INCREASED BY 25% FOR BARS SPACED AT LESS THAN 6" ON CENTER OR LESS THAN 3" LATERAL COVER.

#7 SPLICE LENGTH FOR CLASS D CONCRETE 1'-1" 1'-4" 1'-7" 1'-11" 2'-6" 3'-1" 3'-11" 4'-10'

THE ABOVE SPLICE LENGTHS SHALL BE INCREASE BY 20 PERCENT FOR 3 BAR BUNDLES AND 33 PERCENT FOR 4 BAR BUNDLES.

SPLICES OF REINFORCING IN THE BOTTOM OF THE TOP SLAB AND TOP OF THE BOTTOM SLAB SHALL NOT OCCUR IN THE MIDDLE HALF OF THE

BACKFILL SHALL NOT BEGIN UNTIL TOP SLAB HAS REACHED DESIGN STRENGTH, F'C.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF THE NEW AND EXISTING STRUCTURES DURING CONSTRUCTION.

STATIONS, ELEVATIONS, AND DIMENSIONS CONTAINED IN THESE PLANS ARE CALCULATED FROM A RECENT FIELD SURVEY. THE CONTRACTOR SHALL VERIFY ALL DEPENDENT DIMENSIONS IN THE FIELD BEFORE ORDERING OR FABRICATING ANY MATERIAL.

ALL LONGITUDINAL AND TRANSVERSE DIMENSIONS ARE MEASURED HORIZONTALLY AND INCLUDED NO CORRECTION FOR GRADE.

THE INFORMATION SHOWN ON THESE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 (1-800-922-1987)
THREE BUSINESS DAYS (TWO FULL BUSINESS DAYS IN ADVANCE NOT INCLUDING THE DAY OF NOTIFICATION) PRIOR TO ANY EXCAVATION OR OTHER

THE FILL HEIGHT IS THE DISTANCE MEASURED FROM THE TOP OF THE TOP SLAB TO THE TOP OF PAVEMENT.

FOR FILL HEIGHTS LESS THEN 2FT. A WATERPROOFING MEMBRANE SHALL BE PROVIDED FOR THE TOP OF THE TOP SLAB AND 18 INCHES DOWN FROM THE TOP OF THE EXTERIOR WALLS.

PRECAST CONCRETE

CONTRACTOR HAS THE OPTION OF PROVIDING PRECAST BOX CULVERTS AS AN ALTERNATIVE TO CAST-IN-PLACE BOX CULVERTS.

DESIGN SHALL BE IN ACCORDANCE WITH CDOT STANDARD M-603-3, ASTM C 1577, AND AASHTO LRFD 8TH EDITION

AXIAL THRUST IN THE TOP AND BOTTOM SLABS SHALL BE IGNORED WHEN PROPORTIONING THE FLEXURAL STEEL IN THE TOP AND BOTTOM SLABS.

VENDOR SHALL PROVIDE RATING CALCULATIONS SHOWING A RATING FACTOR EXCEEDING 1.0 USING VIRTIS OR BRASS SOFTWARE.

GEOMETRY SHALL BE AS SHOWN IN THE PLANS

THE CONTRACTOR SHALL SUBMIT CALCULATIONS, SHOP DRAWINGS, AND LOAD RATING SIGNED AND SEALED BY AN ENGINEER REGISTERED IN THE STATE OF COLORADO, TO THE ENGINEER FOR REVIEW AND APPROVAL, PRIOR TO FABRICATION

PRE-FABRICATED BRIDGE

THE PRE-ENGINEERED BRIDGE SHALL BE PURCHASED BY AND DELIVERED TO THE SITE BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ERECTION AND PLACEMENT OF THE BRIDGE.

REFER TO THIS PLAN SET FOR BRIDGE DESIGN INFORMATION

ANCHOR BOLTS FOR THE BRIDGE SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR

CONCRETE DECKING SHALL BE INCLUDED AS PART OF THE PREFABRICATED BRIDGE.

COORDINATE DIMENSIONS AT ABUTMENTS WITH SHOP DRAWINGS FOR PREFABRICATED BRIDGE. ADJUST DIMENSIONS AS NEEDED TO ENSURE A PROPER FIT OF THE PROPOSED SUPERSTRUCTURE.

PREFABRICATED TRUSS LENGTH SHALL BE VERIFIED BY MANUFACTURER AND INCLUDED IN SHOP DRAWINGS. SHOP DRAWINGS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL.

ARREVIATIONS

ABBREVIATIONS								
AH.	_	AHEAD	MAX.	_	MAXIMUM			
B.F.	_	BACK FACE	MIN.	-	MINIMUM			
BK.	-	BACK	MISC.	-	MISCELLANEOUS			
BOT.	-	BOTTOM	MP	-	MILE POST			
BRG.	-	BEARING	MSE	-	MECHANICALLY STABILIZED EARTH			
CBC	-	CONCRETE BOX CULVERT	NB	-	NORTH BOUND			
¢	=	CENTER LINE	NO.	=	NUMBER			
Ç CLR.	-	CLEAR	NOM.	-	NOMINAL			
CONST.	-	CONSTRUCTION	PC	-	POINT OF CURVATURE			
CONT.	-	CONTINUOUS	PGL	-	PROFILE GRADE LINE			
CU.	-	CUBIC	PI	-	POINT OF INTERSECTION			
EB	-	EAST BOUND	PL	=	PLATE			
E.F.	-	EACH FACE	PLF	-	POUNDS PER LINEAR FOOT			
ELEV.	-	ELEVATION	PSF	-	POUNDS PER SQUARE FOOT			
EMBED.	-	EMBEDMENT	PSI	-	POUNDS PER SQUARE INCH			
EQ.	-	EQUALLY	PT	-	POINT OF TANGENCY			
EST.	-	ESTIMATED	PROJ.	-	PROJECTION			
EXIST.	=	EXISTING	RCP	=	REINFORCED CONCRETE PIPE			
EXP.	=	EXPANSION	ROW	=	RIGHT OF WAY			
FF	-	FRONT FACE	SB	-	SOUTH BOUND			
FT.	-	FOOT/FEET	SHLDR	-	SHOULDER			
GALV.	-	GALVANIZED	SMA	-	STONE MATRIX ASPHALT			
GR	-	GRADE	SPA.	-	SPACED			
HCL	=	HORIZONTAL CONTROL LINE	STA.	=	STATION			
HERCP	=	HORIZONTAL ELLIPTICAL	STD.	=	STANDARD			
RCP	=	REINFORCED CONCRETE PIPE	STR.	=	STRUCTURE			
JCT	-	JUCTION	TYP.	=	TYPICAL			

ENGINEERING GEOLOGY

THE FOUNDATION DESIGN IS BASED UPON THE GEOTECHINCAL INVESTIGATION REPORT PREPARED BY ROCKSOL, DATED 12/02/2019. ROCKSOL PROJECT NUMBER 565.01.

SITE PREPARATION AND GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL

DESIGN DATA

AASHTO, EIGHTH EDITION LRFD, WITH CURRENT INTERIMS.

DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN

HL-93 (DESIGN TRUCK OR TANDEM; LANE LOAD EXCLUDED PER AASHTO 3.6.1.3.3) LIVE LOAD:

H-10 (DESIGN TRUCK)(FOR PEDESTRIAN BRIDGE ONLY)

EARTH PRESSURES ARE DETERMINED ASSUMING HYDROSTATIC EQUIVALENT PRESSURES FOR THE AT-REST CONDITION

CDOT CLASS 1 STRUCTUF BACKFILL =130 KCF

CDOT CLASS 2 BACKFILL =125 KCF
EQUIVALENT FLUID WEIGHT=62.5 KCF (PER REFERENCED GEOTECHNICAL REPORT, TABLE 8.2)

LIVE LOAD SURCHARGE

SURCHARGE PRESSURES DUE TO LIVE LOADS ARE PER THE AASHTO LRFD CODE

MINIMUM BEARING RESISTANCE:

SEE GEOTECHNICAL ENGINEERING REPORT, TABLE 8.1.B

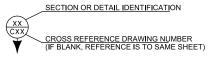
CLASS D CONCRETE: F'C =
REINFORCING STEEL: FY =
SULFATE EXPOSURE: CLASS 0 60,000 PSI

CAISSON CONCRETE: CLASS BZ CONCRETE: F'C = 4,500 PSI REINFORCING STEEL: FY = 60,000 PSI

BRIDGE CAMBER = 1% OF SPAN LENGTH

FOR ADDITIONAL DESIGN DATA, SEE DETAIL SHEETS.

LEGEND



1 DENOTES KEYNOTE REFERENCE

STRUCTURE DESCRIPTION

1-CELL (22'-0" X 5'-0" X 66'-0") CONCRETE BOX CUI VERT

1-CELL (16'-0" X 8'-0" X 98'-0") CONCRETE BOX CULVERT CARRYING TURNER ALLEY OVER GREGORY CANYON CREEK 74° 1' 16" SKEW

1-CELL (18'-0" X 6'-0" X 193'-0") CONCRETE BOX CULVERT CARRYING 8TH ST OVER GREGORY CANYON CREEK 52° 35' 54" SKEW

1-CELL (18'-0" X 6'-0" X 101'-0") CONCRETE BOX CULVERT CARRYING UNIVERSITY AVE OVER GREGORY CANYON CREEK 80° 20' 19" SKEW

1-CELL (20'-0" X 6'-0" X 38'-0") CONCRETE BOX CULVERT CARRYING PLEASANT ST OVER GREGORY CANYON CREEK 82° 31' 16" SKEW

1-CELL (16'-0" X 6'-0" X 214'-0") CONCRETE BOX CULVERT CARRYING 7TH ST OVER GREGORY CANYON CREEK

45'-5 1/4" PEDESTRIAN BRIDGE, 43'-0" PREFABRICATED WELDED SELF WEATHERING STEEL, H-TYPE TRUSS BRIDGE 8'-0" CLEAR WALKWAY TRUSS TO TRUSS, 90 SKEW.

CARRYING ARAPAHOE AVE OVER GREGORY CANYON CREEK 73° 34' 50" SKEW

1-CELL (18"-0" X 6"-0" X 71"-0") CONCRETE BOX CULVERT CARRYING MARINE ST OVER GREGORY CANYON CREEK 59° 27' 17" SKEW

39° 28' 31" SKEW

DIST FLOOD MILE ENERAL NOTES

PRELIMINARY NOT FOR CONSTRUCTION

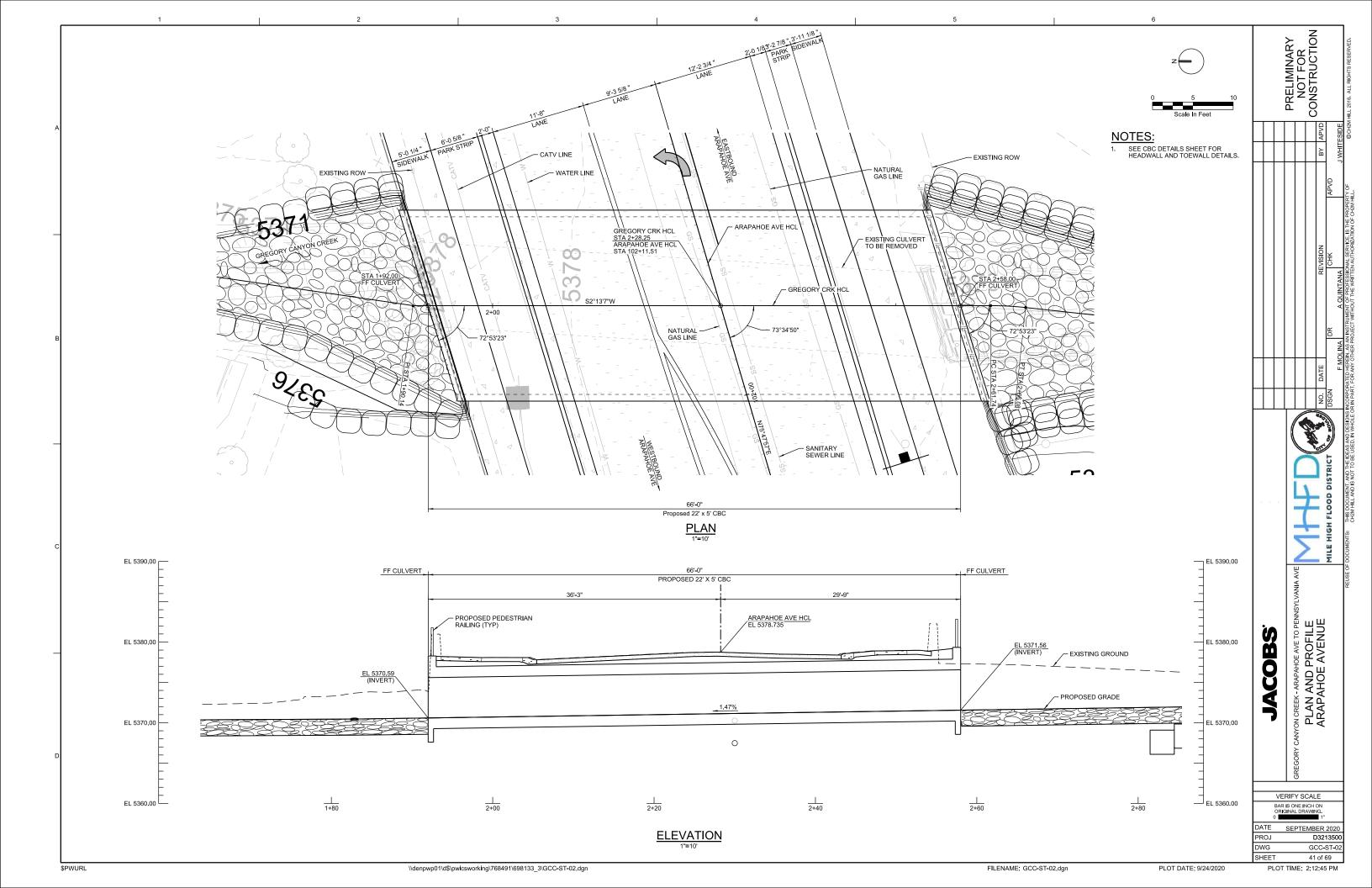
ACOB

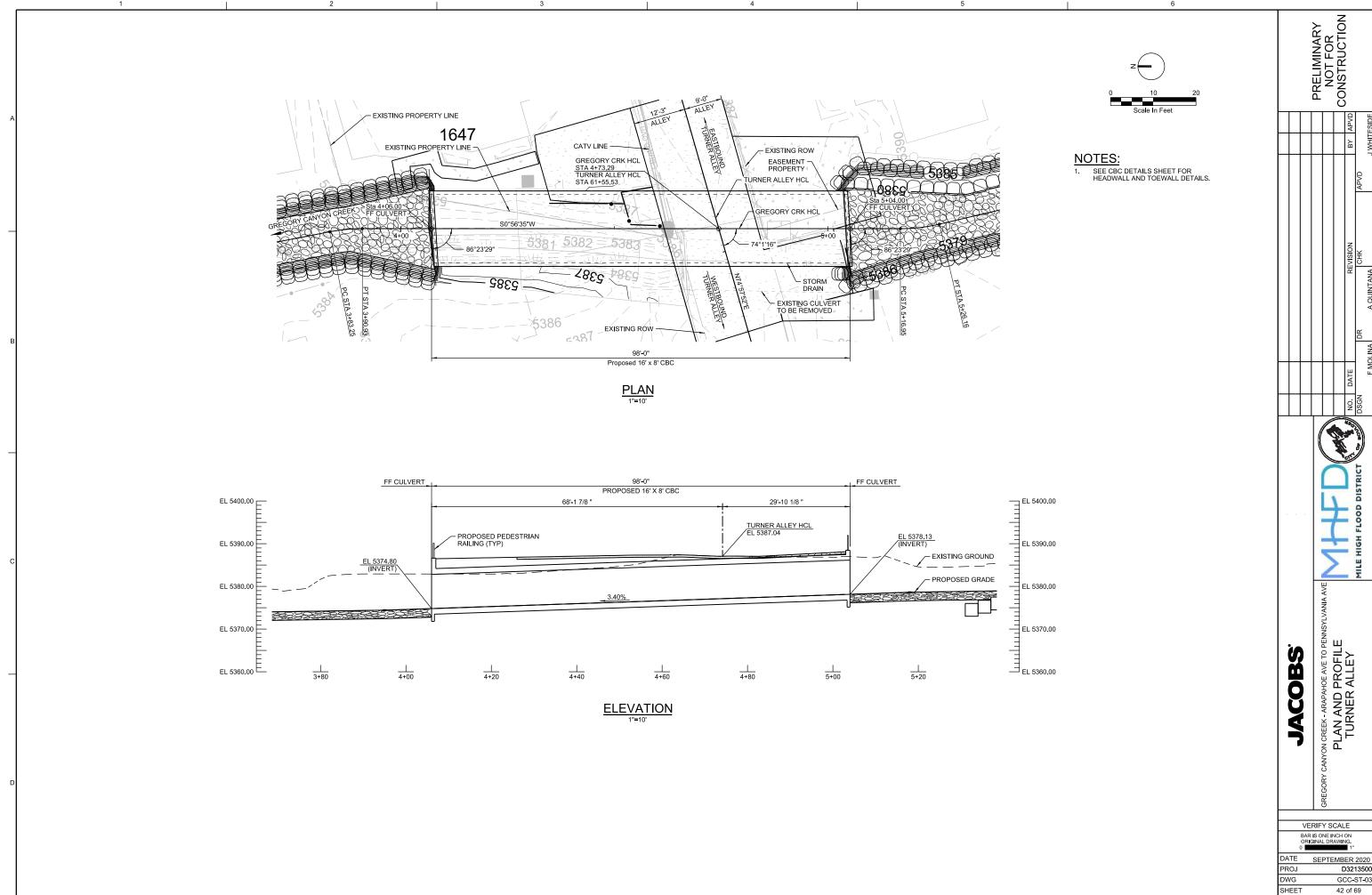
VERIFY SCALE BAR IS ONE INCH ON DATE SEPTEMBER 2020

PROJ D3213500 DWG GCC-ST-07 SHEET 40 of 69

VERTICAL POINT OF INTERSECTION

VPI

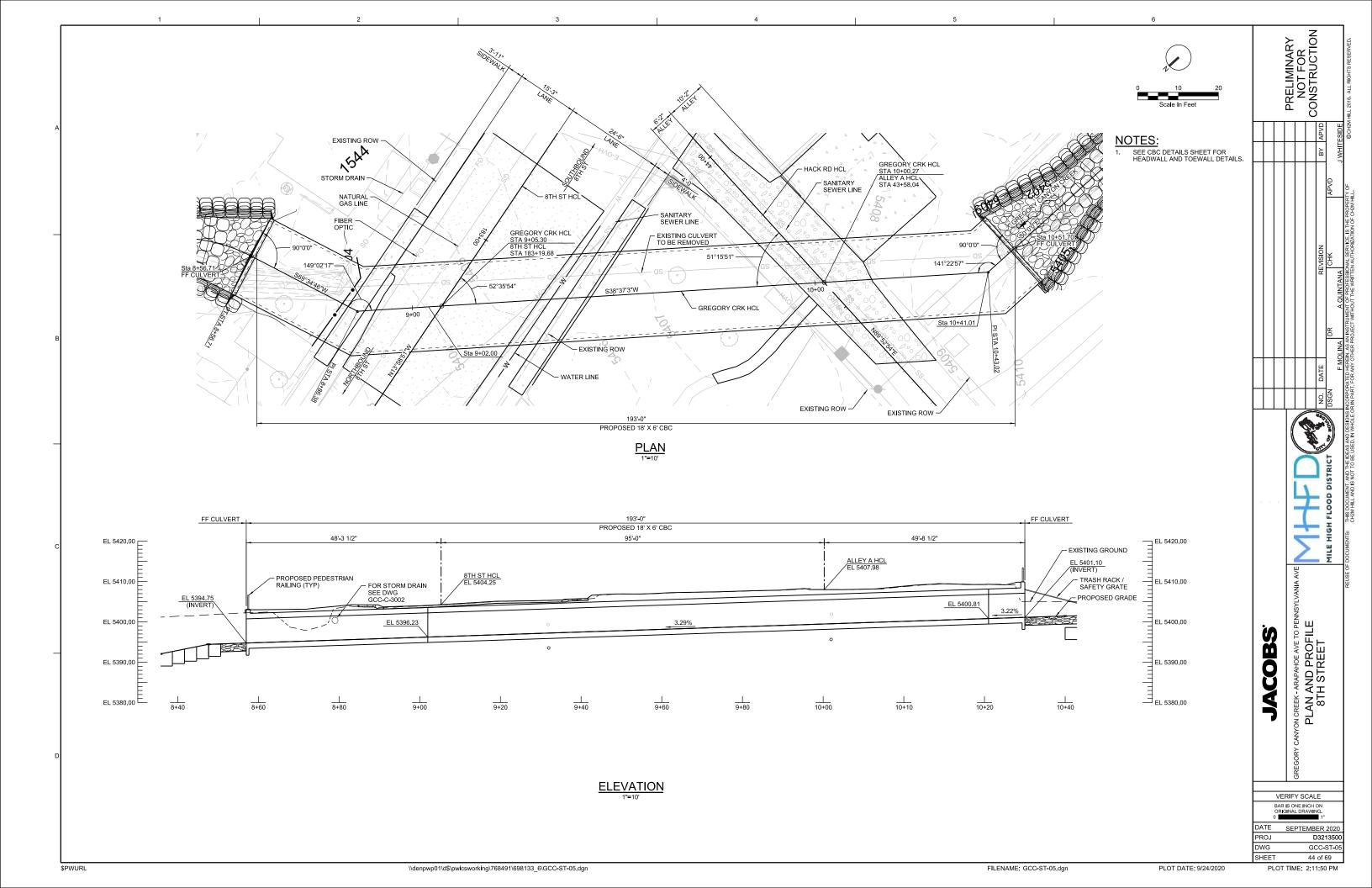


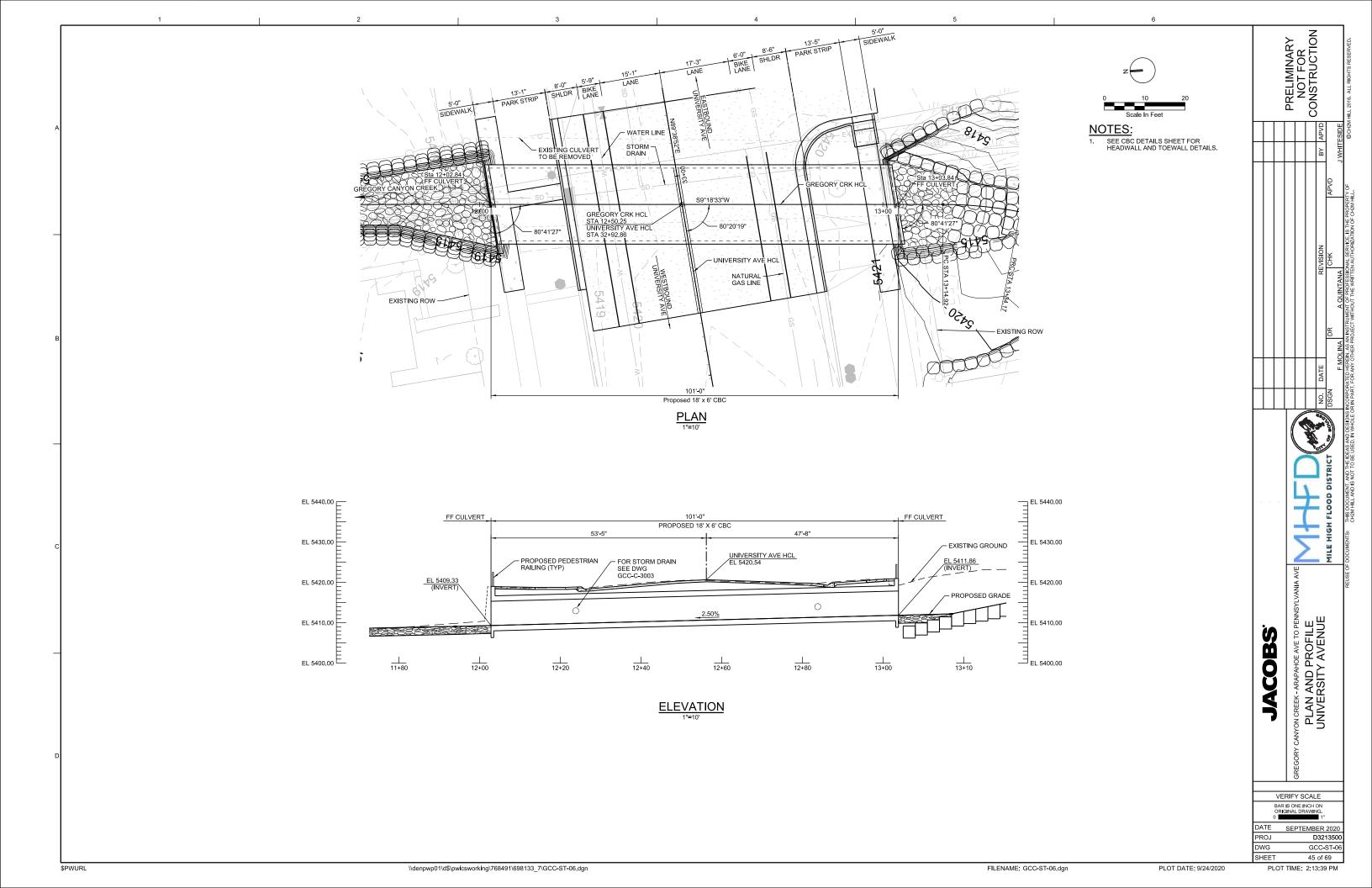


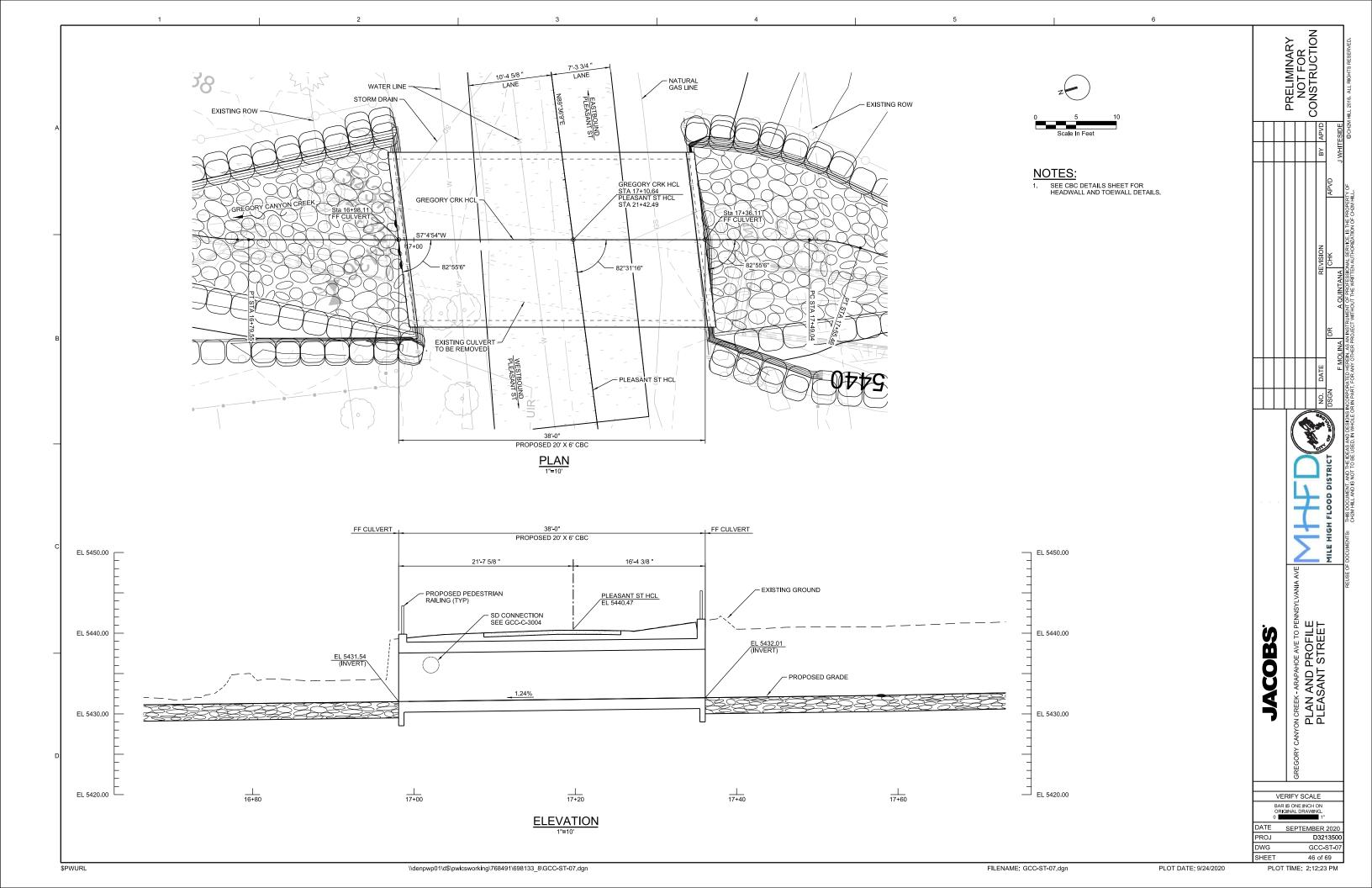
D3213500 GCC-ST-03

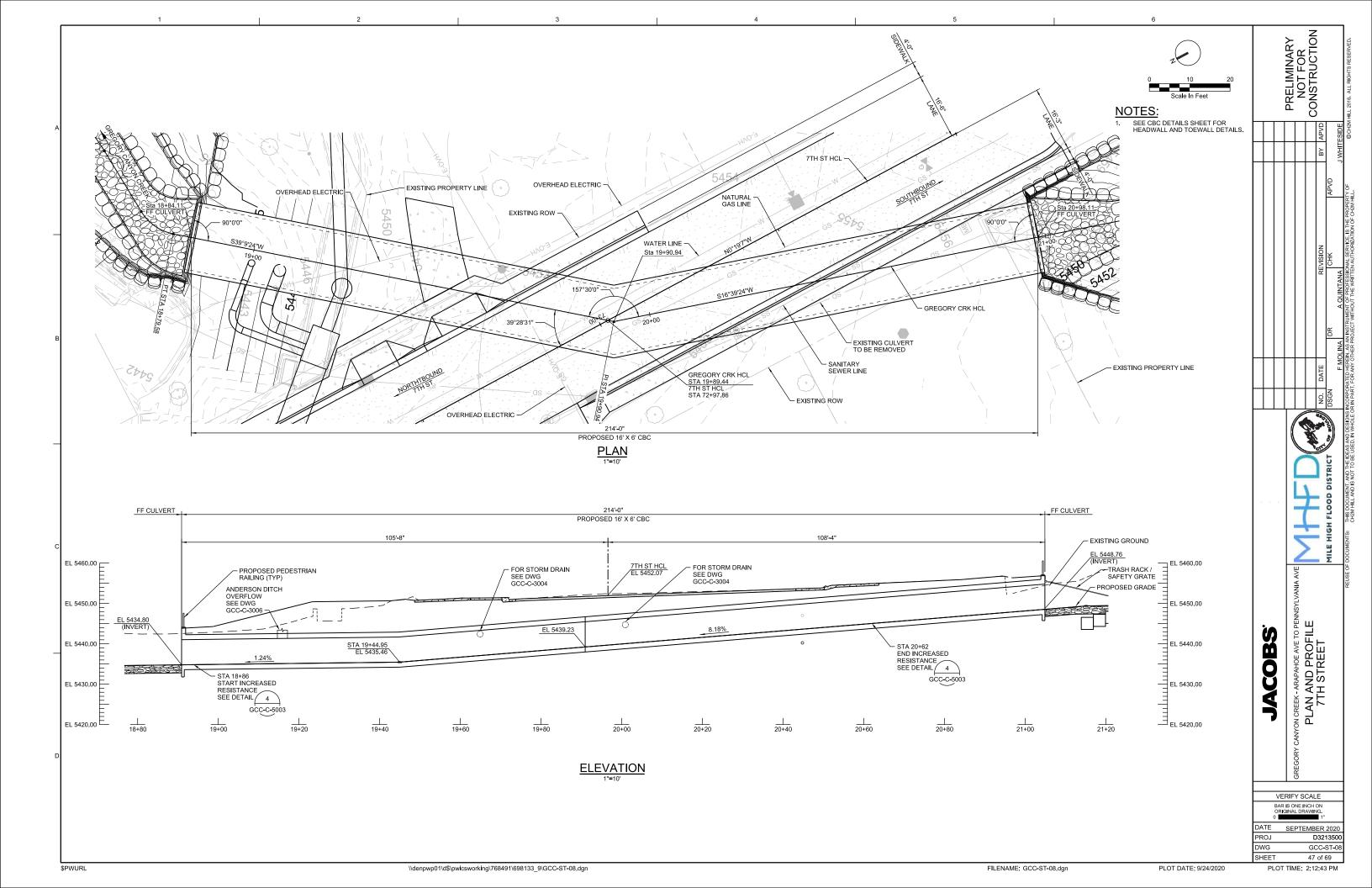
MILE HIGH FLOOD DISTRICI

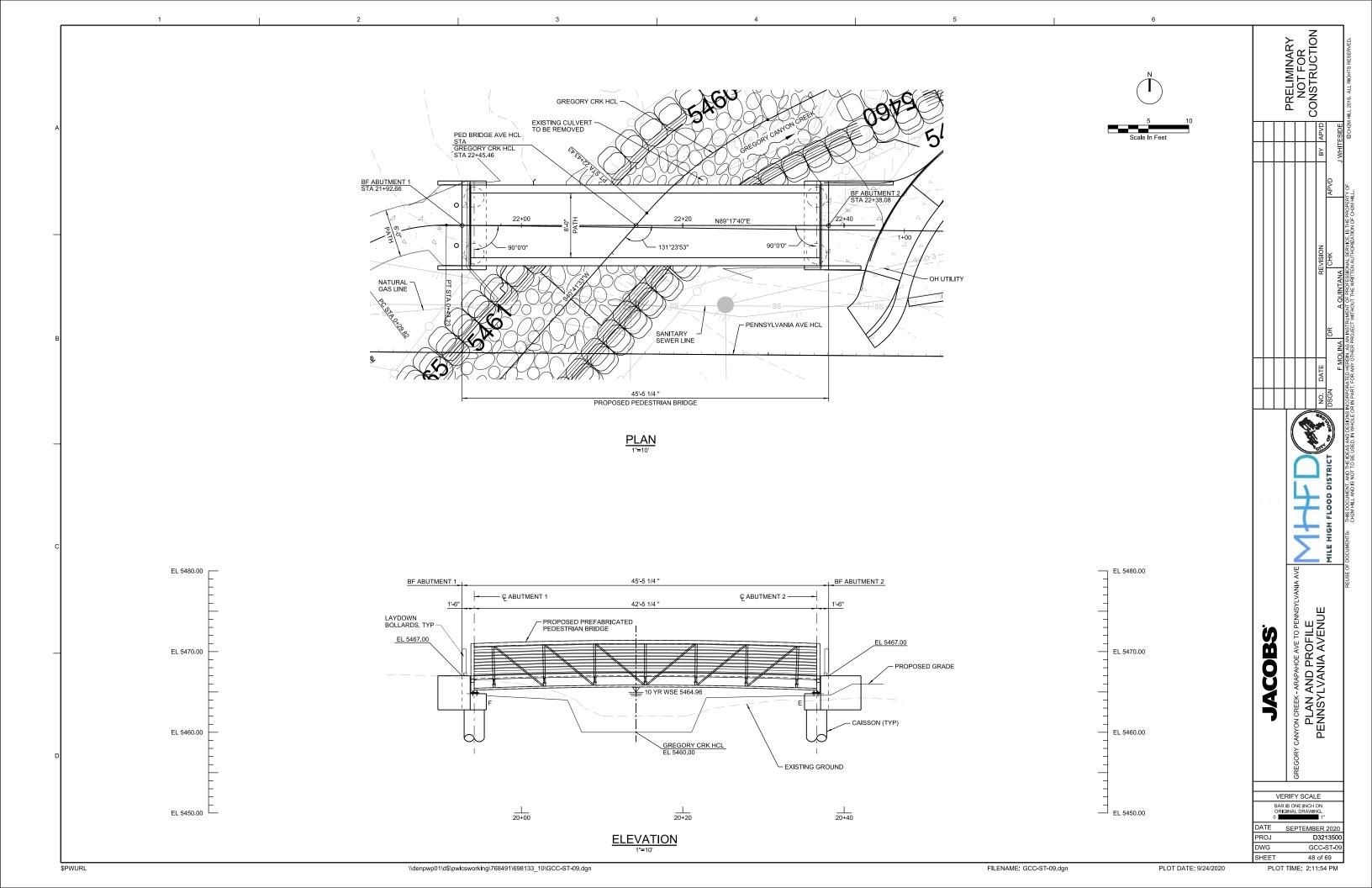










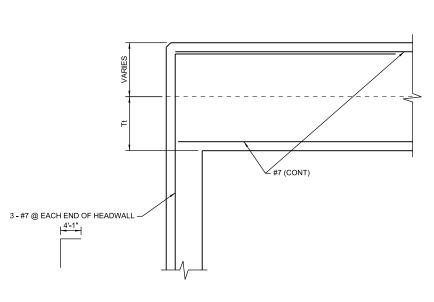


NOTES:

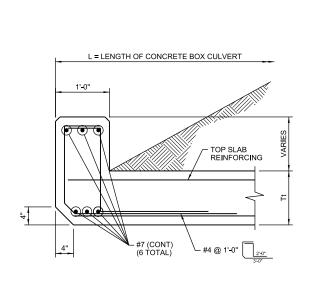
- 1. ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE FRESH CONCRETE IS PLACED.
- ALL CONSTRUCTION JOINTS NOT SHOWN ON THE PLANS SHALL BE CONSTRUCTED ONLY IF APPROVED BY THE ENGINEER.
- 3. ALL DIMENSIONS ARE PERPENDICULAR TO THE CENTERLINE OF THE BOX.
- . ALL TRANSVERSE REINFORCING SHALL BE NORMAL TO THE CENTERLINE OF THE BOX.
- THE FILL HEIGHT IS THE DISTANCE MEASURED FROM THE TOP OF THE TOP SLAB TO THE TOP OF PAVEMENT.
- 6. ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4".
- . A WATERPROOFING MEMBRANE SHALL BE PROVIDED FOR THE TOP OF THE TOP SLAB AND 18 INCHES DOWN FROM THE TOP OF THE EXTERIOR WALLS.

GEOMETRY TABLE

									_					
						SPACING @ 6"			1					
CBC LOCATION	S	R	Tt	Tb	TW	t1	b1	c1	c2	v1	h1	v2	h2	v3
ARAPAHOE AVE - C12	22'	5'	16"	16"	10"	#10	#10	#8	#8	6'-1"	8'-3"	5'-2"	4'-9"	2'-10"
TURNER ALLEY - C11	16'	8'	15"	15"	10"	#9	#9	#7	#7	8'-8"	8'-3"	4'-0"	3'-10"	2'-3"
MARINE ST - C10	18'	6'	16"	16"	10"	#10	#10	#8	#8	7'-1"	7'-3"	5'-1"	4'-3"	2'-3"
8TH ST - C9	18'	6'	16"	16"	10"	#10	#10	#8	#8	7'-1"	7'-3"	5'-1"	4'-3"	2'-3"
UNIVERSITY AVE - C8	18'	6'	16"	16"	10"	#10	#10	#8	#8	7'-1"	7'-3"	5'-1"	4'-3"	2'-3"
PLEASANT ST - C7	20'	6'	16"	16"	10"	#10	#10	#8	#8	7'-1"	7'-3"	5'-1"	4'-3"	2'-3"
7TH ST - C6	16'	6'	15"	14.5"	10"	#9	#9	#7	#7	7'-0"	6'-7"	4'-3"	3'-10"	2'-3"

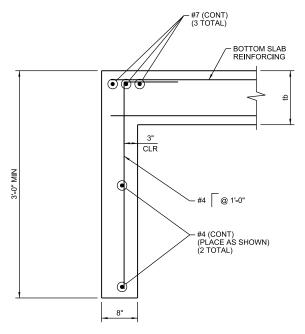


HEADWALL CORNER DETAIL





\$PWURL



TOEWALL DETAIL

PLOT DATE: 9/24/2020

DWG GCC-ST-10
SHEET 49 of 69
PLOT TIME: 2:18:48 PM

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1

ARAPAHOE AVE TO P.; DETAILS

JACOBS

PRELIMINARY NOT FOR CONSTRUCTION

ROADWAY NOTES:

- 1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE "DESIGN AND CONSTRUCTION STANDARDS" OF THE CITY OF BOULDER, AND SHALL BE COMPLETED TO THE SATISFACTION OF THE DIRECTOR OF PUBLIC WORKS. IN THE EVENT THAT A DESIGN ELEMENT DOES NOT REFLECT CITY STANDARDS, THE MATTER MUST BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER AND THE DIRECTOR OF PUBLIC WORKS. THE ENGINEER SHALL BE RESPONSIBLE FOR RECOMMENDING A SOLUTION OR ALTERNATIVE SOLUTIONS TO THE CITY FOR REVIEW AND APPROVAL.
- THE APPROVAL OF A CONSTRUCTION PLAN DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY
 OF CONSTRUCTING WORKABLE PUBLIC IMPROVEMENTS. ALL REVISIONS AND/OR CORRECTIONS REQUIRED
 WILL BE SOLELY THE CONTRACTOR'S RESPONSIBILITY, AND AT THEIR EXPENSE.
- 3. THESE PLANS HAVE BEEN CHECKED BY THE CITY OF BOULDER ONLY FOR CONFORMANCE WITH THE "DESIGN AND CONSTRUCTION STANDARDS," COMPLIANCE WITH DEVELOPMENT AGREEMENT CONDITIONS AND FOR GENERAL CONCEPTUAL APPROVAL OF PUBLIC IMPROVEMENTS AS SHOWN. THE CITY'S REVIEW DOES NOT VERIFY OR ENSURE THE ACCURACY OF EXISTING OR PROPOSED DIMENSIONS, LINES, COORDINATES, OR GRADES SHOWN, INCLUDING ALL EXISTING UTILITIES SHOWN OR NOT SHOWN.
- 4. UTILITY LOCATIONS SHOWN REFLECT AVAILABLE RECORD DATA. THE CONTRACTOR SHALL TAKE PRECAUTIONARY MEASURES TO PROTECT ALL UTILITY LINES SHOWN AND OTHER UTILITY LINES OTHERWISE LOCATED. THE CONTRACTOR SHALL CONTACT THE "UTILITY NOTIFICATION CENTER OF COLORADO"AT 1-800-922-1987 OR 811 FOR UTILITY LOCATES 24 HOURS PRIOR TO BEGINNING CONSTRUCTION.
- BEFORE WORK BEGINS, THE CONTRACTOR SHALL OBTAIN A PERMIT TO WORK IN THE RIGHT-OF-WAY FROM
 THE CITY AND MUST NOTIFY THE CITY RIGHT-OF-WAY INSPECTION STAFF AT LEAST 24 HOURS IN ADVANCE
 OF COMMENCING CONSTRUCTION ACTIVITIES.
- 6. THE CONTRACTOR SHALL OBTAIN AND MAINTAIN A COMPLETE AND APPROVED SET OF CONSTRUCTION PLANS. THESE DRAWINGS, AND ANY REQUIRED PERMITS, SHALL BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE TO CITY STAFF UPON REQUEST. IF CONSTRUCTION PLANS ARE NOT READILY AVAILABLE AT THE PROJECT SITE, THE DIRECTOR OF PUBLIC WORKS MAY ISSUE A STOP WORK ORDER AND HALT ALL CONSTRUCTION ACTIVITIES PENDING COMPLIANCE BY THE CONTRACTOR.
- THE CONTRACTOR AGREES TO COMPLY WITH THE PROVISIONS OF THE TRAFFIC ON UNIFORM TRAFFIC CONTROL DEVICES,""TEMPORARY TRAFFIC CONTROL" SECTION, FOR CONSTRUCTION SIGNAGE AND TRAFFIC CONTROL.
- 8. ALL SURPLUS MATERIALS, TOOLS, AND TEMPORARY STRUCTURES, FURNISHED BY THE CONTRACTOR, SHALL BE REMOVED FROM THE PROJECT SITE BY THE CONTRACTOR. ALL DEBRIS AND RUBBISH CAUSED BY THE OPERATIONS OF THE CONTRACTOR SHALL BE REMOVED, AND THE AREA OCCUPIED DURING CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ITS ORIGINAL CONDITION, WITHIN 48 HOURS OF PROJECT COMPLETION, UNLESS OTHERWISE DIRECTED BY THE DIRECTOR OF PUBLIC WORKS.
- 9. THE CONTRACTOR SHALL PROVIDE TREE AND LANDSCAPE PROTECTION AS SET BOULDER REVISED CODE (B.R.C.) 1981 AND THE CITY OF BOULDER DESIGN AND CONSTRUCTION STANDARDS (DCS). ALL LANDSCAPING SHALL BE PROTECTION LANDSCAPING PLAN, B.R.C. AND DCS.
- 10. THE CONTRACTOR IS REQUIRED TO PROVIDE AND MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE URBAN DRAINAGE AND MANUAL VOLUME 3", THE M-STANDARD PLANS OF THE COLORADO DEPARTMENT OF TRANSPORTATION, AND THE APPROVED STORMWATER MANAGEMENT PLAN. THE DIRECTOR OF PUBLIC WORKS MAY REQUIRE THE CONTRACTOR TO PROVIDE ADDITIONAL EROSION CONTROL MEASURES DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE PLANS DO NOT FUNCTION AS INTENDED.
- 11. THE CITY OF BOULDER REQUIRES THAT SIDEWALKS CONSTRUCTED HAVE A CROSS SLOPE OF LESS THAN 2%. SIDEWALKS SHALL BE DESIGNED AND CONSTRUCTED WITH CROSS SLOPES SUFFICIENTLY LESS THAN 2% TO ENSURE THAT THEY DO NOT EXCEED THE 2% MAXIMUM.
- 12. ANY REMOVAL OF CONCRETE CURB AND GUTTER OR SIDEWALK SHALL BE DONE BY SACUTTING THE CONCRETE AT THE CLOSEST JOINT PAST THE LIMITS OF THE REMOVAL SHOWN ON THE PLANS OR NOTED.
- 13. ALL BITUMINOUS PAVING MATERIALS, CONSTRUCTION METHODS AND PROCEDURES SHALL CONFORM TO CITY OF BOULDER AND CDOT STANDARDS AND SPECIFICATIONS.
- 14. FOR PRELIMINARY PLAN QUANTITIES OF BITUMINOUS MATERIAL, THE FOLLOWING RATED OF APPLICATION WERE USED:

DILUTED EMULSIFIED ASPHALT

(SLOW SETTING)
BITUMINOUS PAVEMENT

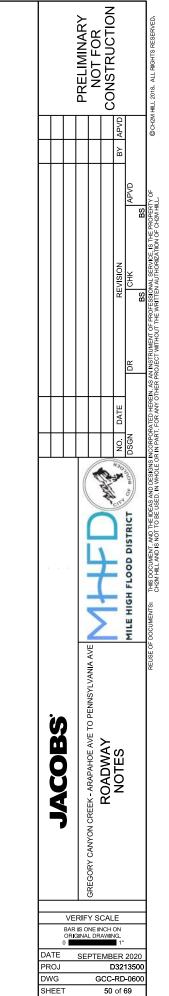
G) @ 0.10 GAL. PER SQ. YD. (DILUTED)
AVEMENT @ 110 LBS. PER SQ. YD. PER 1" THICK

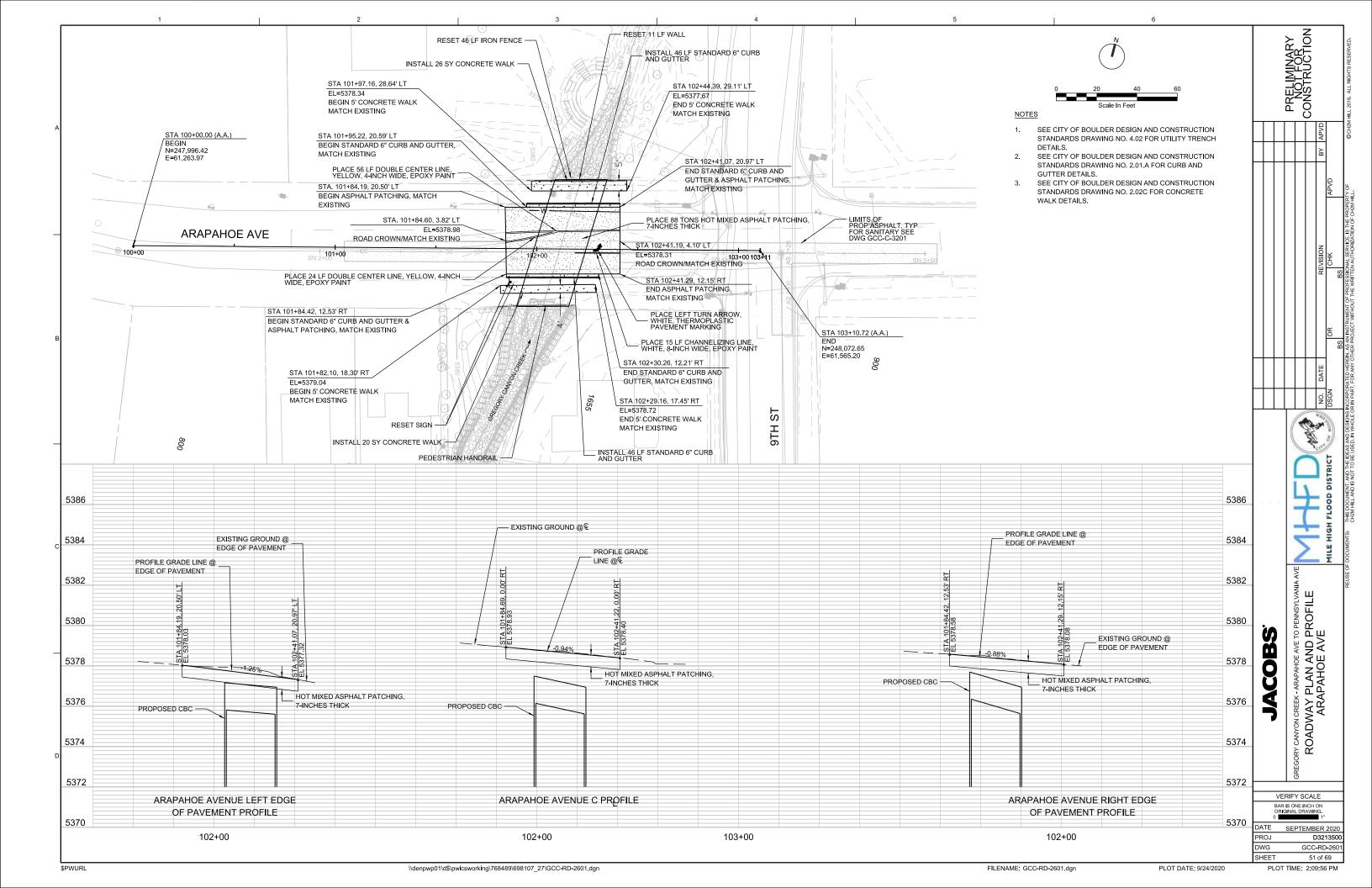
AGGREGATE BASE COURSE @ 134 LBS/CF

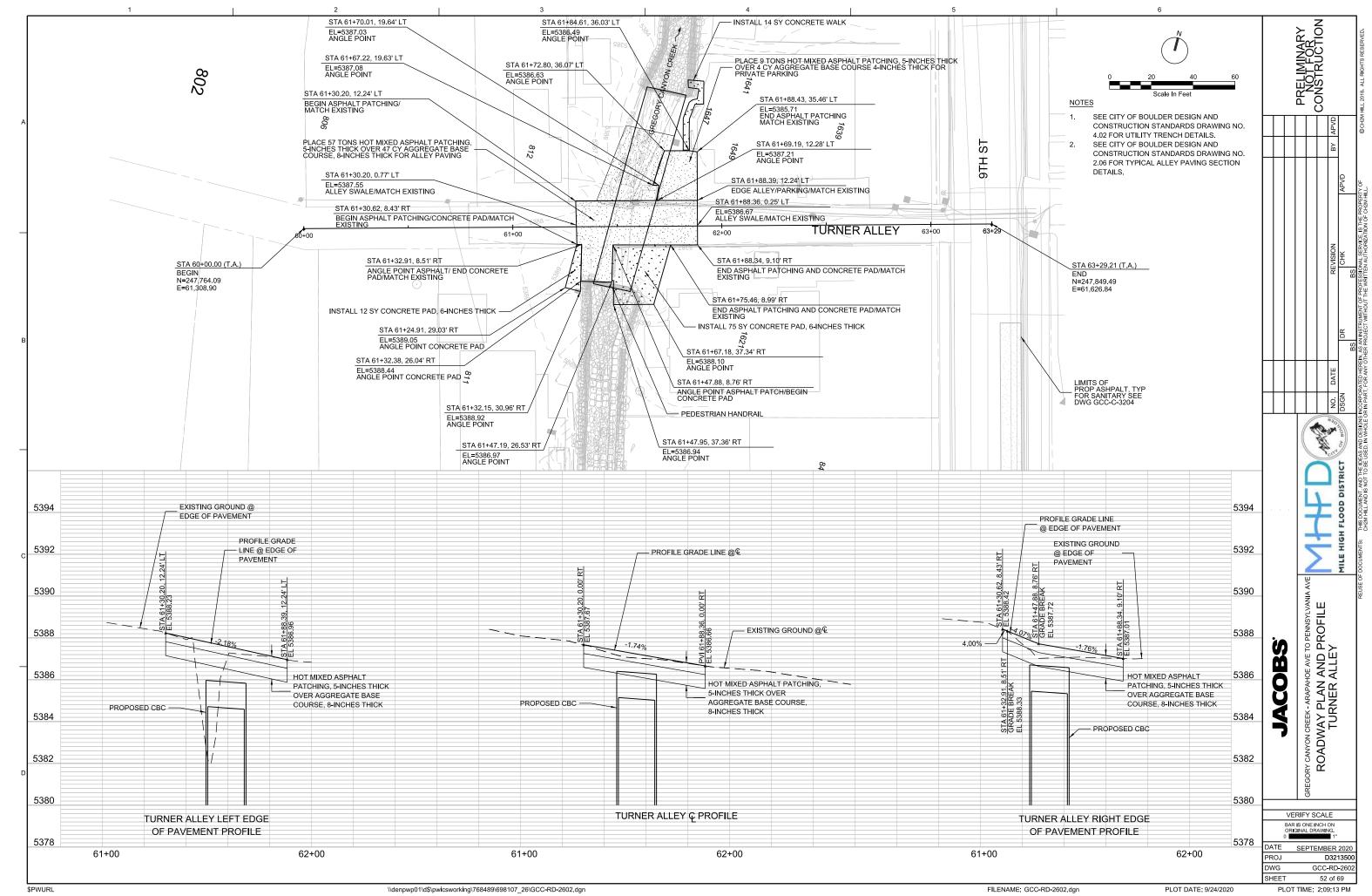
- 15. A TACK COAT OF EMULSIFIED ASPHALT (SLOW SETTING) IS TO BE APPLIED BETWEEN PAVEMENT COURSES TO IMPROVE THE BOND. DILUTED EMULSIFIED ASPHALT FOR TACK COAT SHALL CONSIST OF 1 PART EMULSIFIED ASPHALT AND 1 PART WATER.
- 16. AT LOCATIONS WHERE NEW ASPHALT IS TO ABUT EXISTING ASPHALT THE CONTRACTOR SHALL SAW CUT THE EXISTING PAVEMENT TO THE FULL DEPTH OF THE PAVEMENT A MINIMUM O 1 FOOT BACK FROM THE EXISTING EDGE UNLESS NOTED OTHERWISE ON THE PLAN SHEETS, OR AT SUCH LOCATION THAT AN ACCEPTABLE EXSITING CROSS SLOPE IS LCATED BY CITY OF BOULDER REPRESENTATIVE. THE SAW CUTTING SHALL BE DONE TO A NEAT VERTICAL LINE, A CUTTING WHEEL ATTACHED TO A BLADE WILL NOT BE ALLOWED. AFTER THE SAW CUTTING IS COMPLETED, THE CONTRACTOR SHALL REMOVE THE SECTION OF PAVEMENT BETWEEN THE EXISTING EDGE OF PAVEMENT AND THE SAW CUT. THE CONTRACTOR SHALL THEN PLACE A TACK COAT ON ALL THE EXPOSED ASPHALT EDGES PRIOR TO THE PLACEMENT OF THE NEW PAVEMENT.
- 17. WHEN MORE THAN ONE LIFT OF BITUMINOUS PAVEMENT IS BEING PLACED, LONGITUDINAL JOINTS SHALL BE OFFSET BY A MINIMUM OF 12" BETWEEN LIFTS.

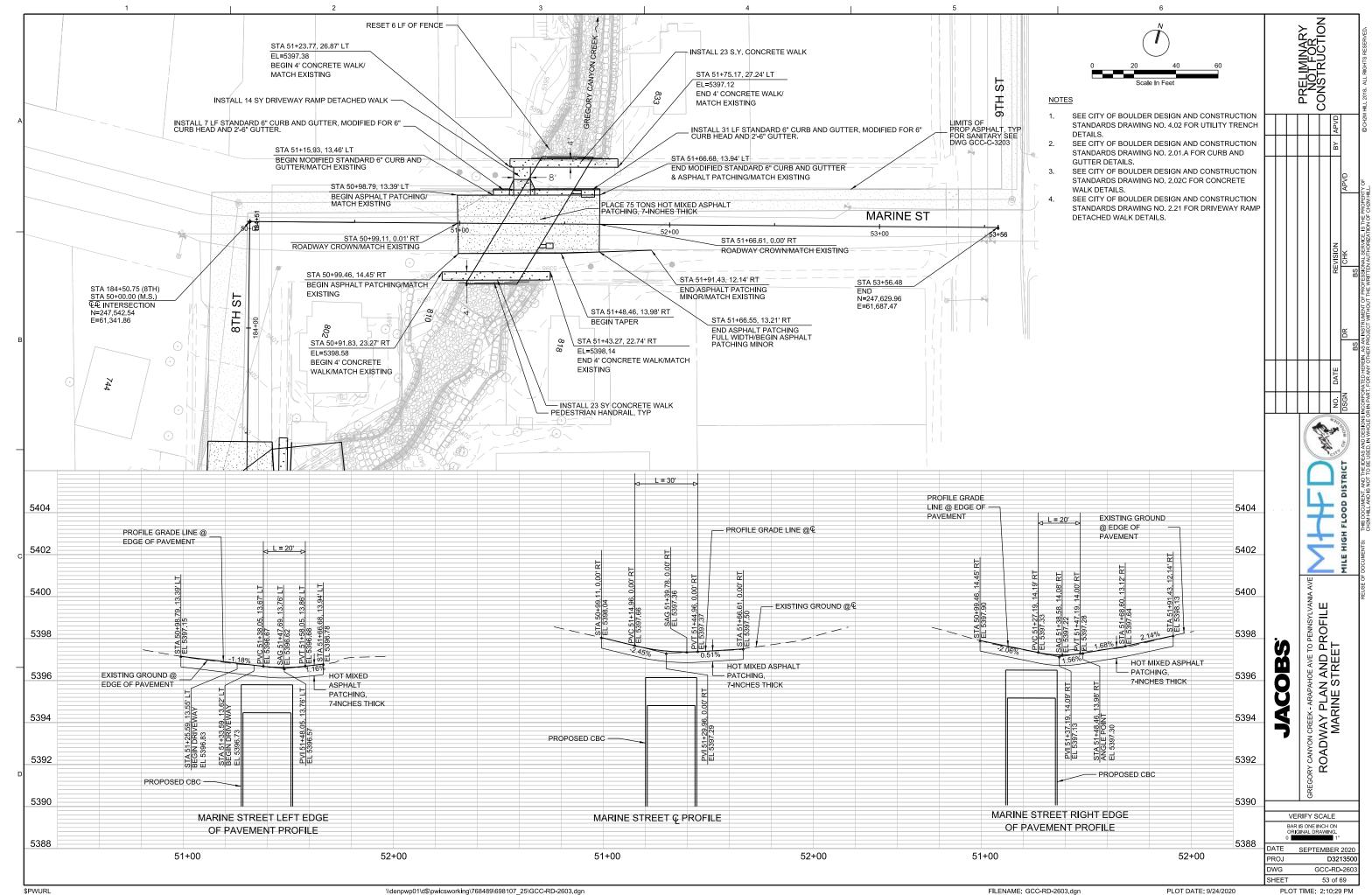
ROADWAY NOTES (CONT'D):

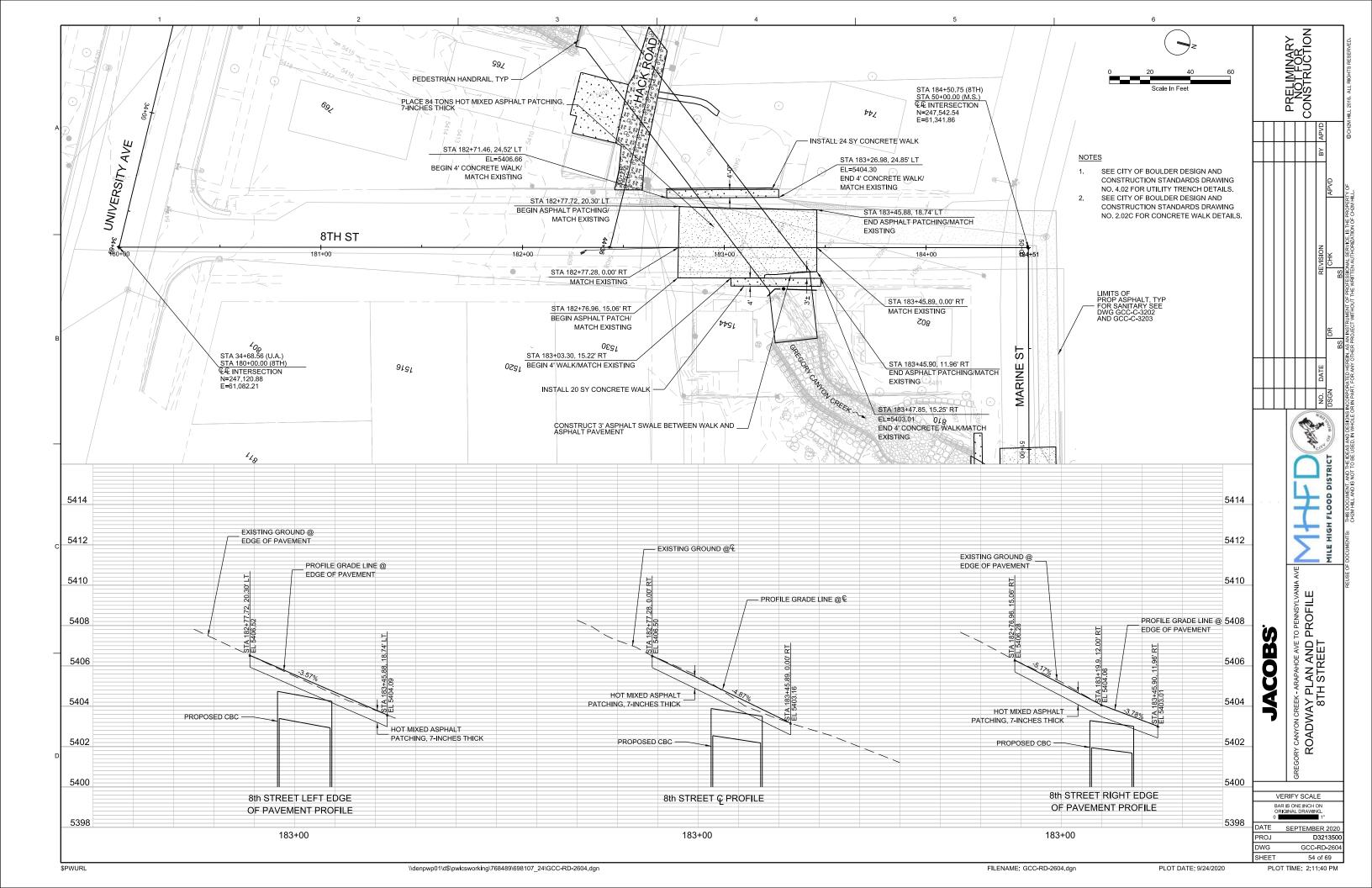
- 18. BEFORE PLACEEMNT OF THE TACK COAT, THE CONTRACTOR WHALL CLEAN THE ROADWAY AS DIRECTED. CLEANING WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCIDENTAL TO THE HBP.
- 19. ALL ASPHALT PAVEMENT REQUIRED TO BE REMOVED WITHIN THE PROJECT LIMITS SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS NOTED OTHERWISE. THE REMOVED ASPHALT PAVEMENT SHALL BE DISPOSED OF OFF-STIE.

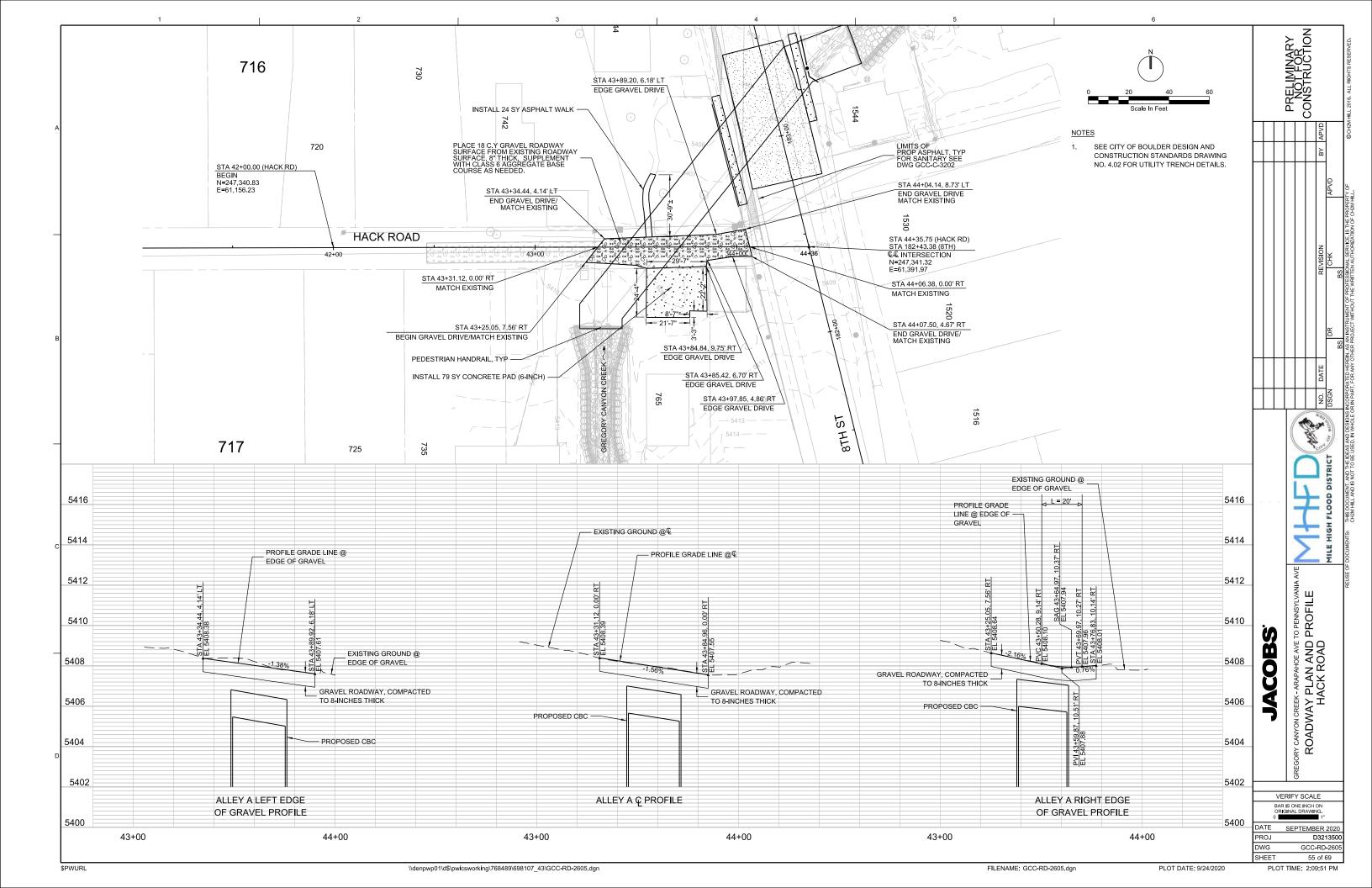


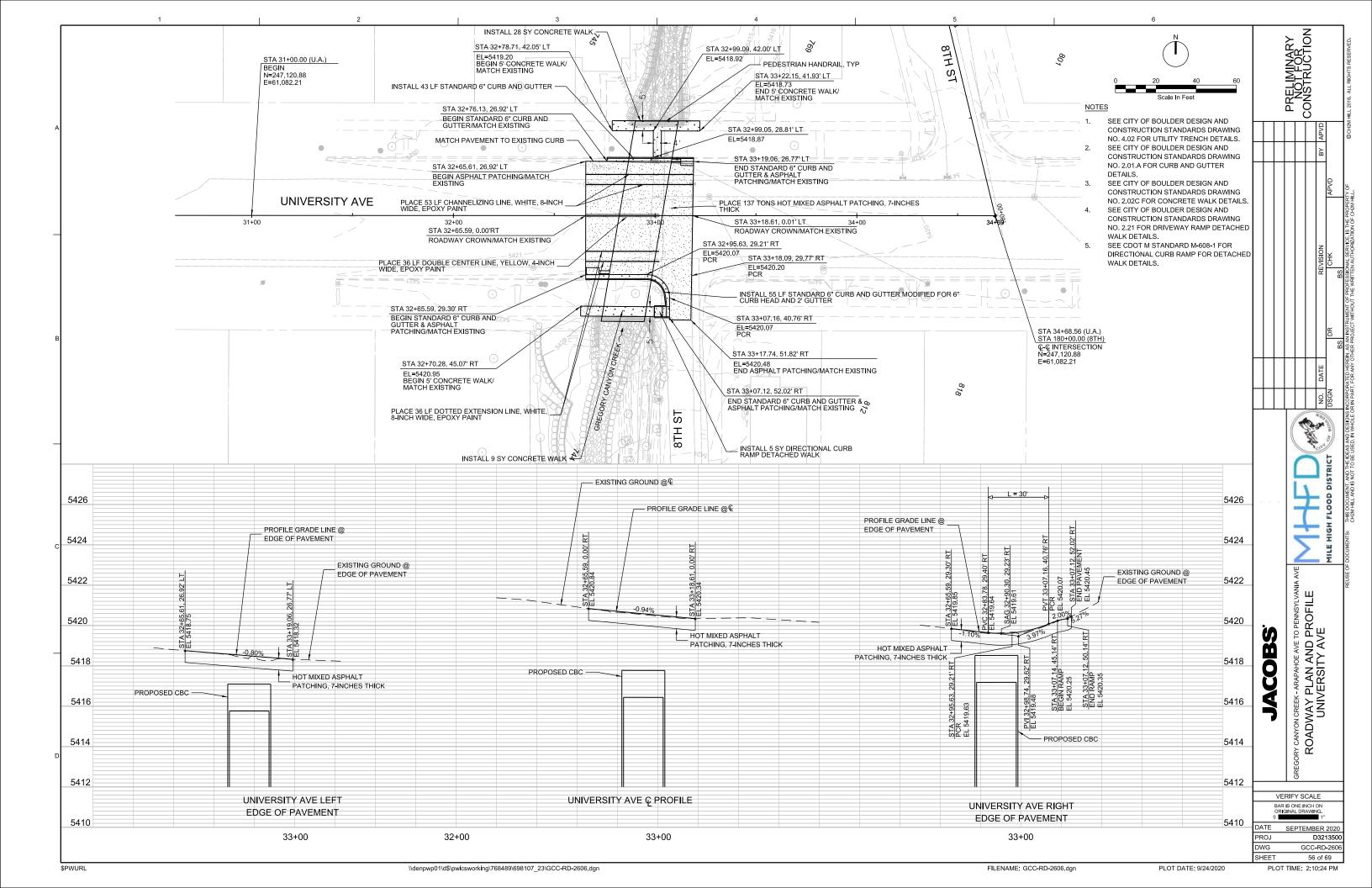


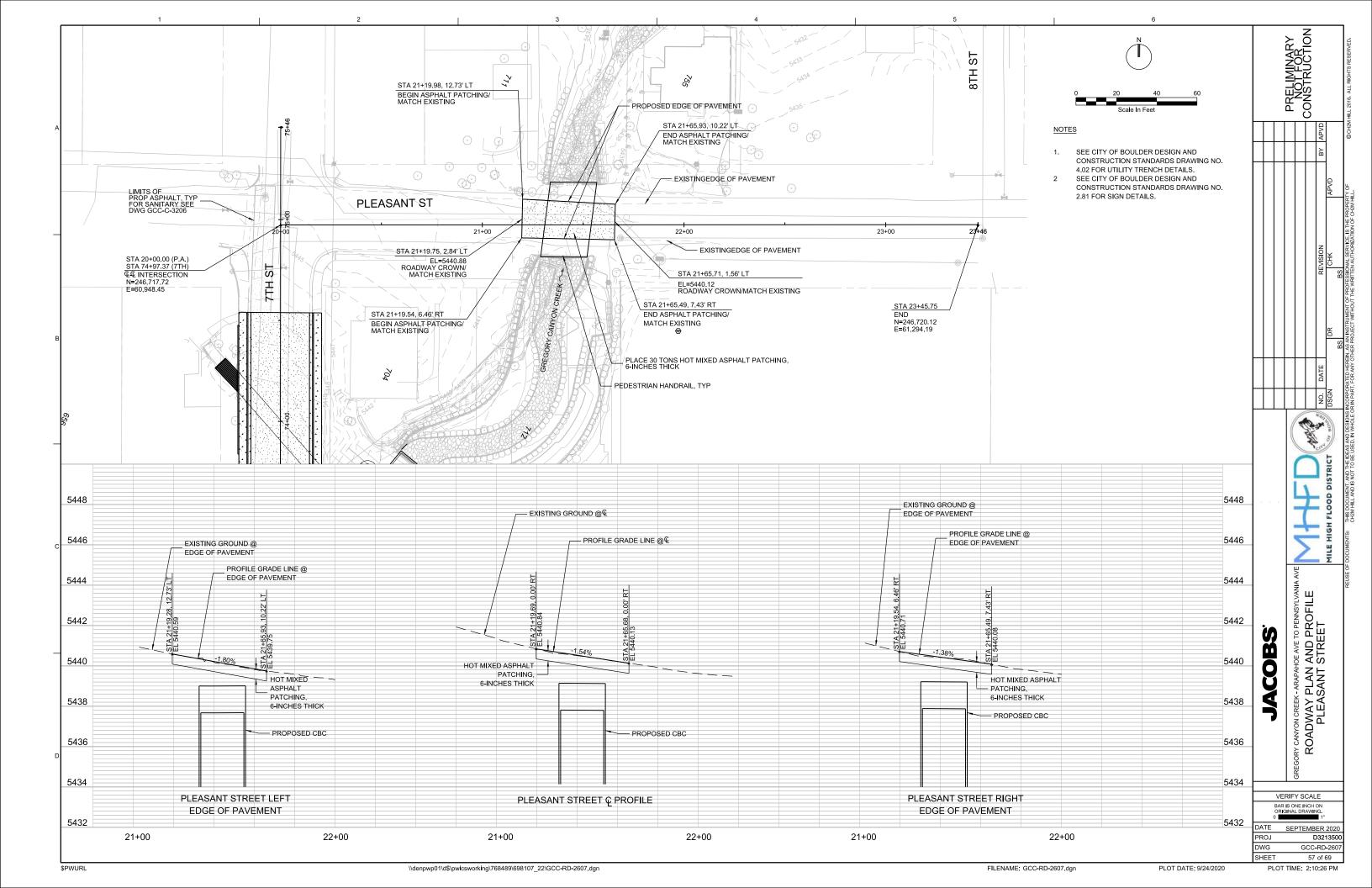


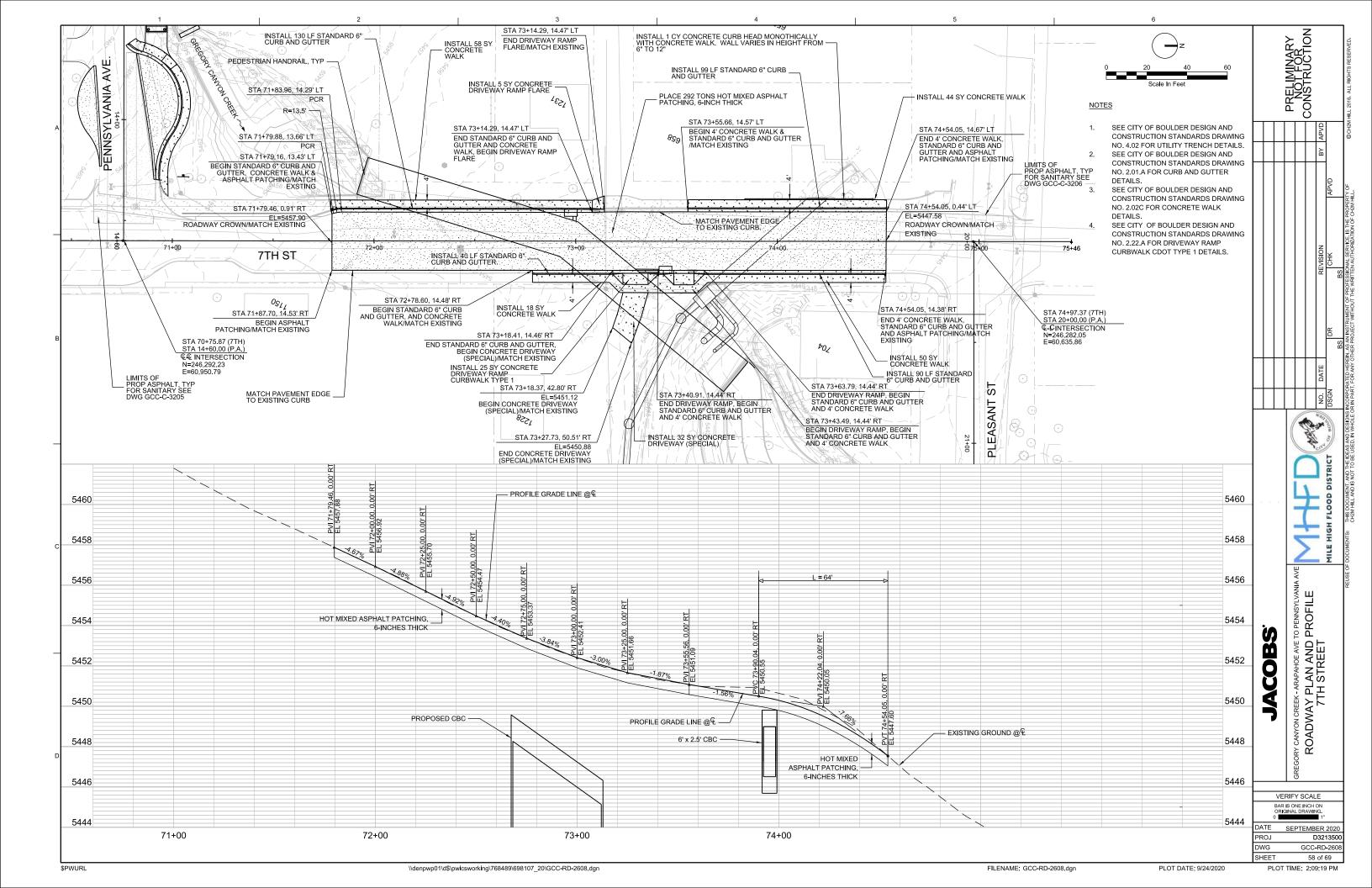


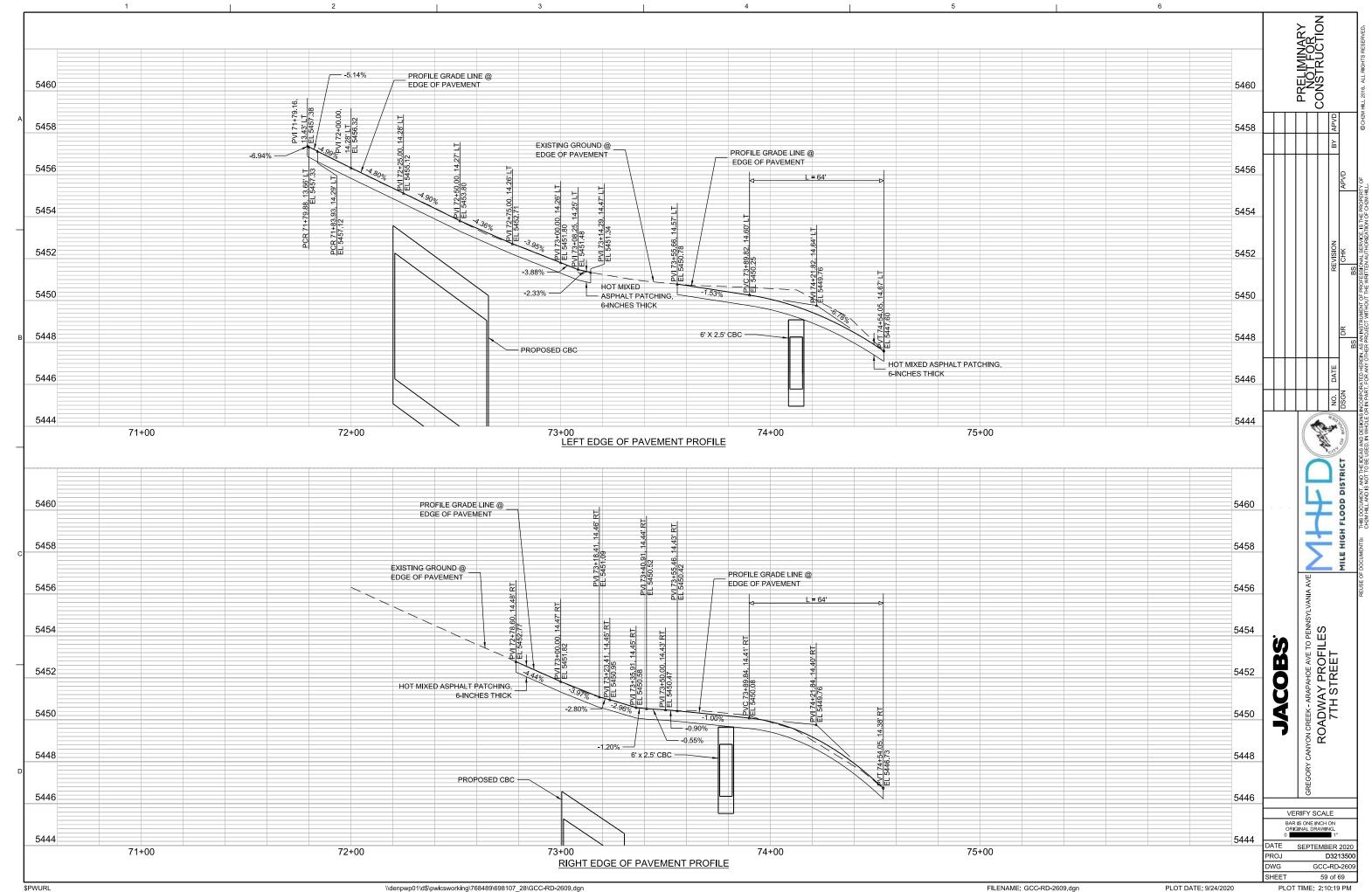


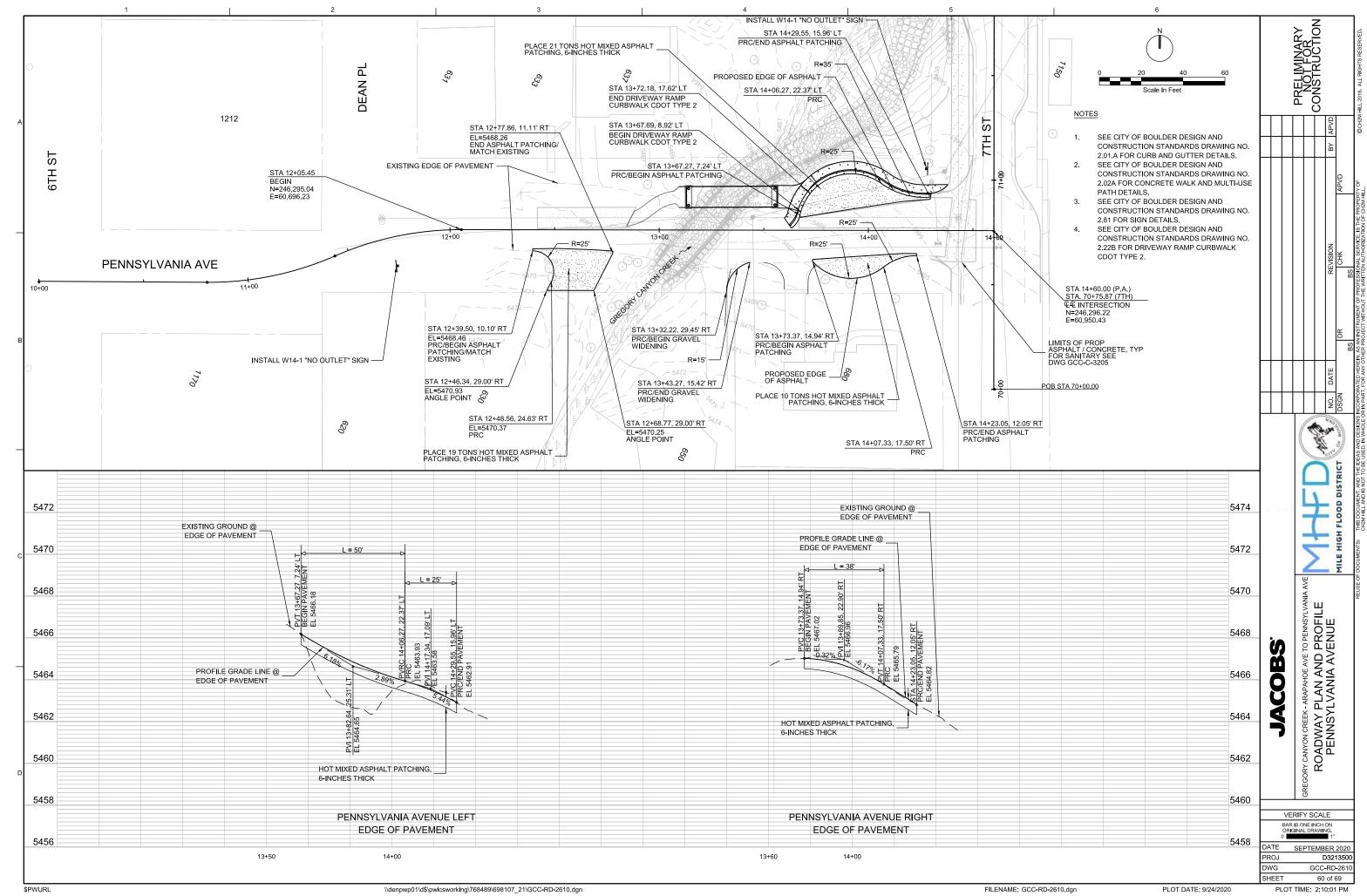


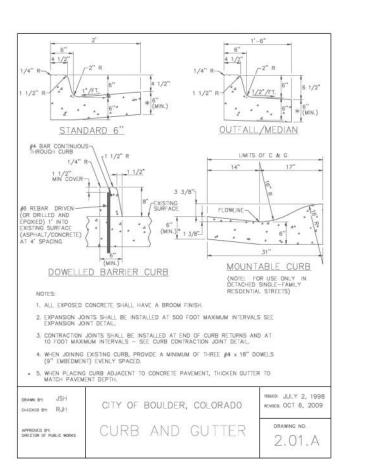


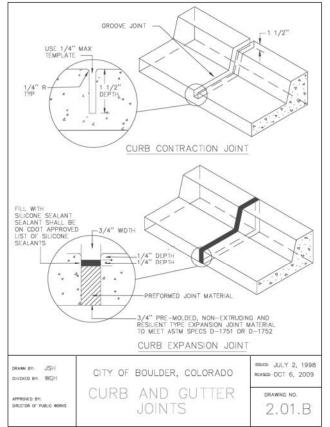


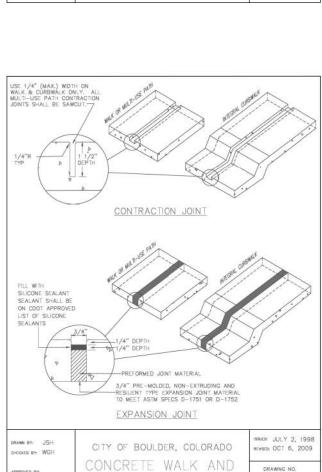


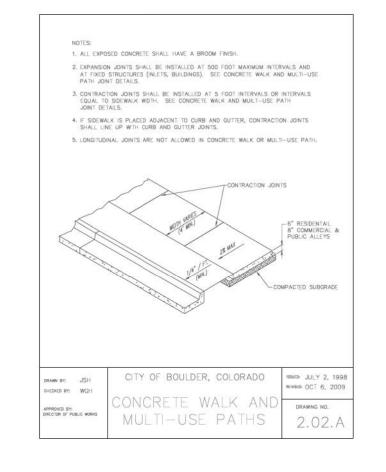


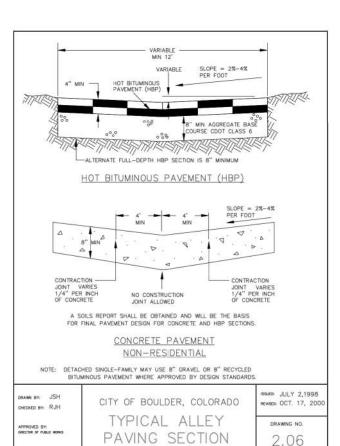


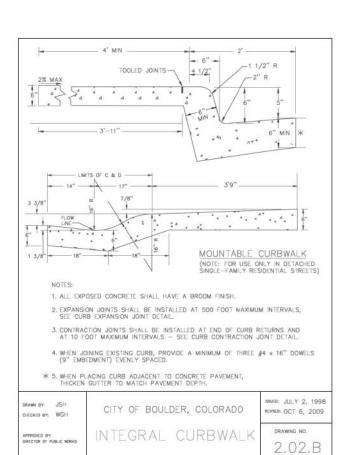


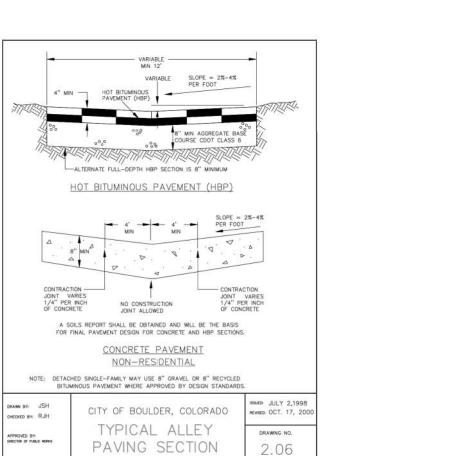












PRELIMINARY NOT FOR CONSTRUCTION

DISTRICT

HIGH MILE

HOE AVE TOP

ON CREEK - ARAPAH

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1

SEPTEMBER 2020

D3213500

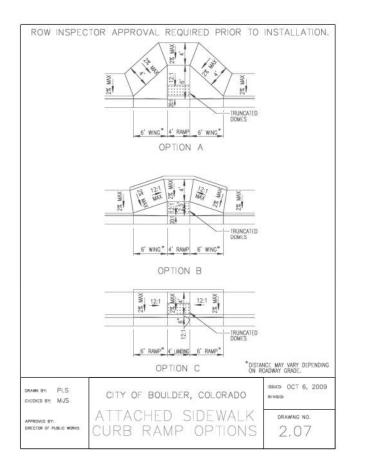
JACOBS

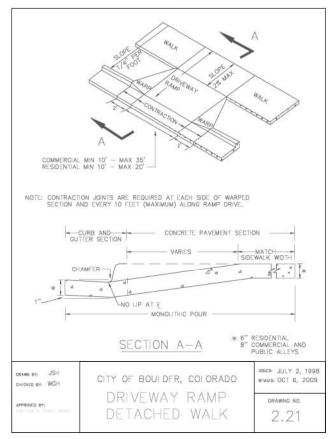
DATE

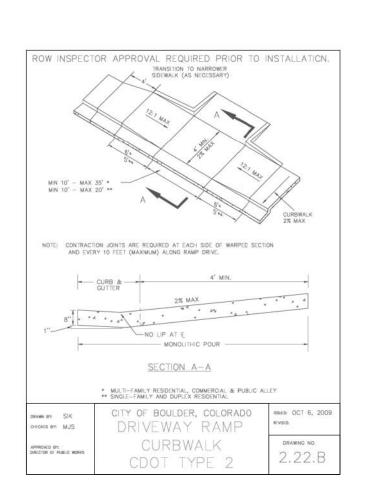
PROJ

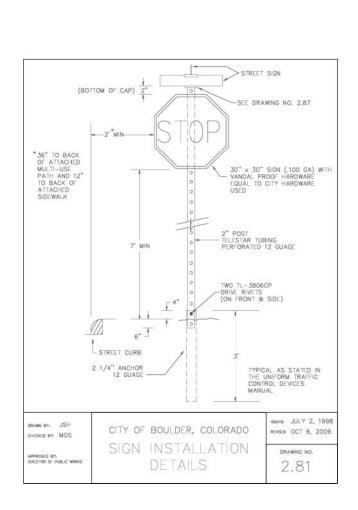
MULTI-USE PATH JOINT

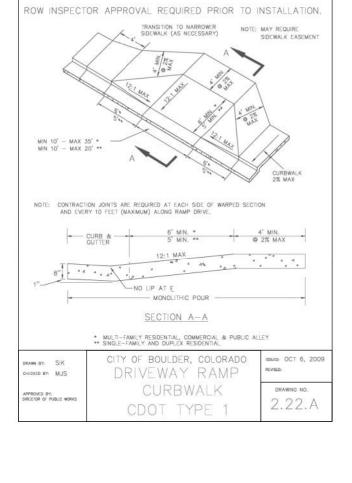
2.02.C

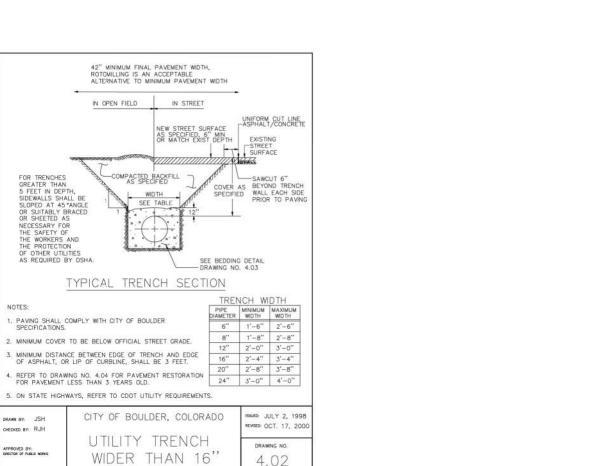




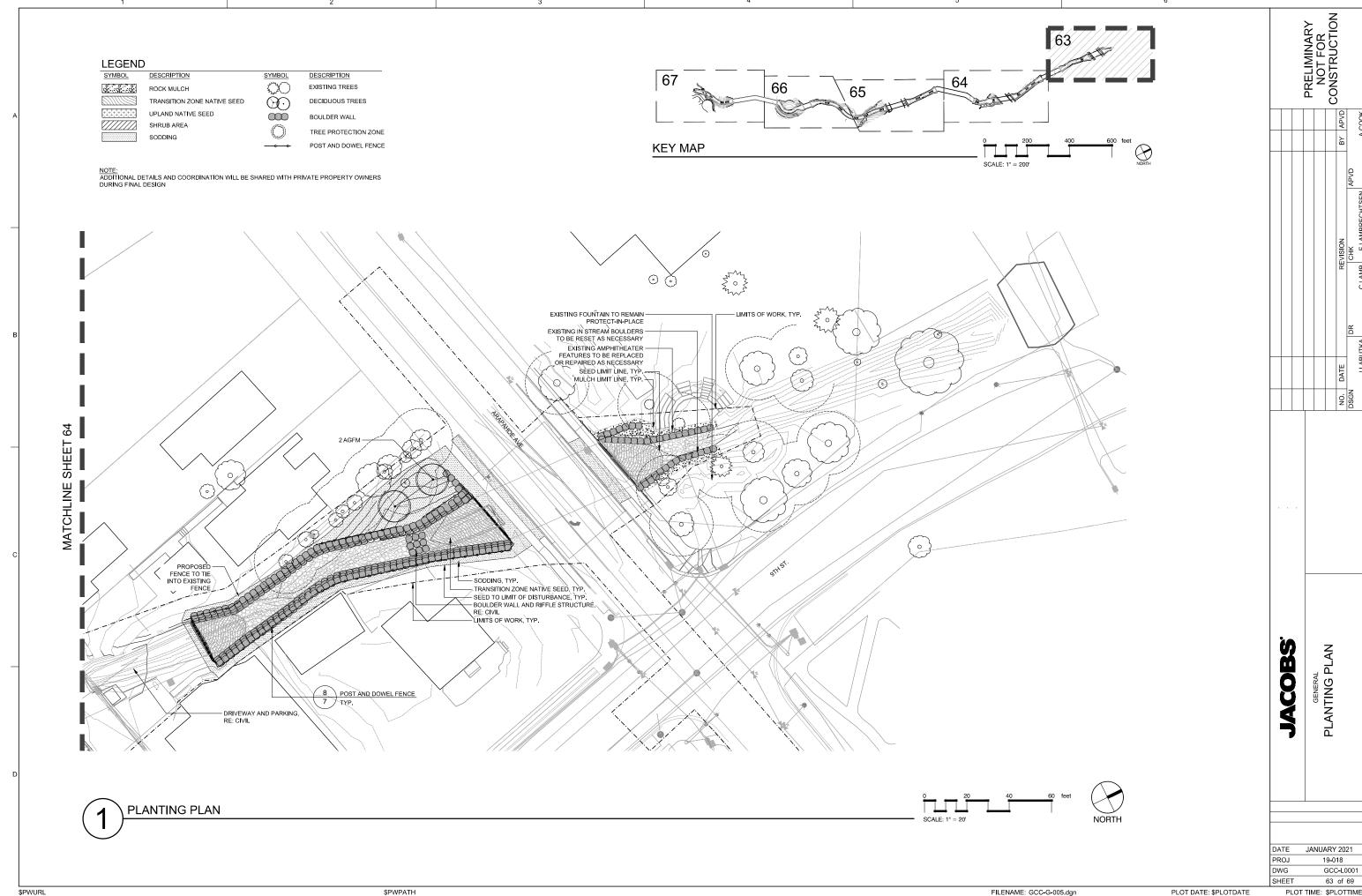


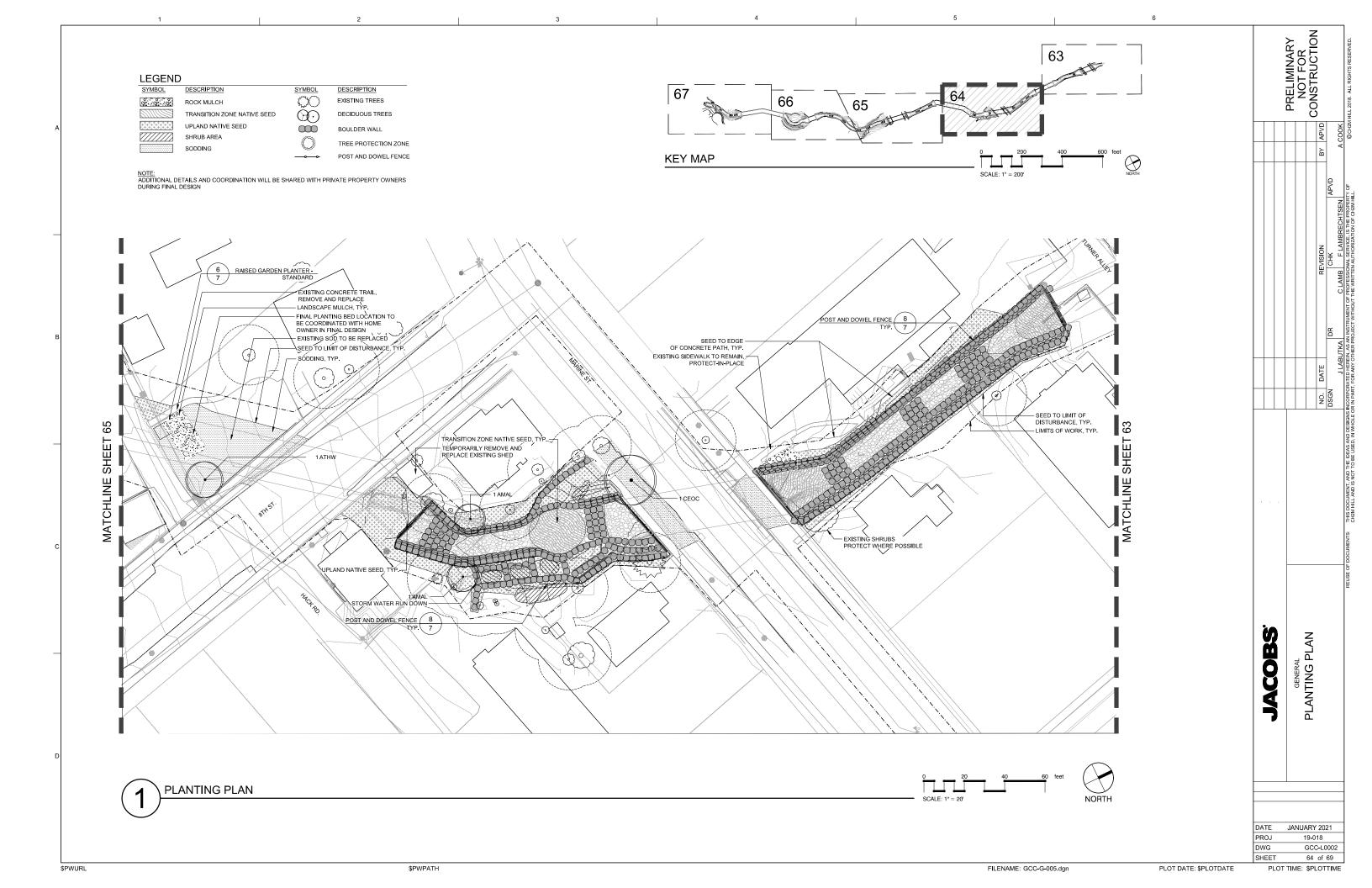


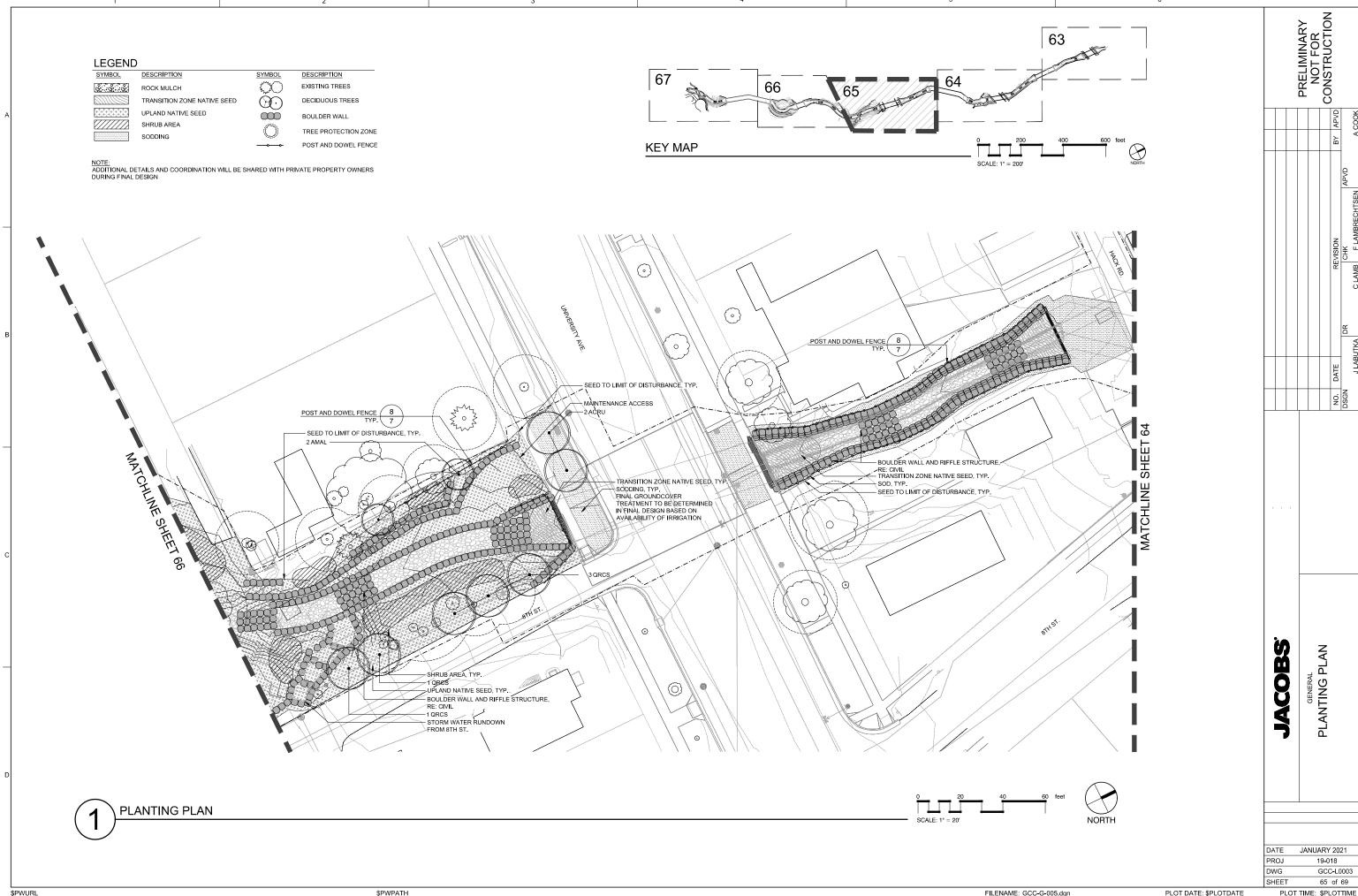




PRELIMINARY NOT FOR CONSTRUCTION





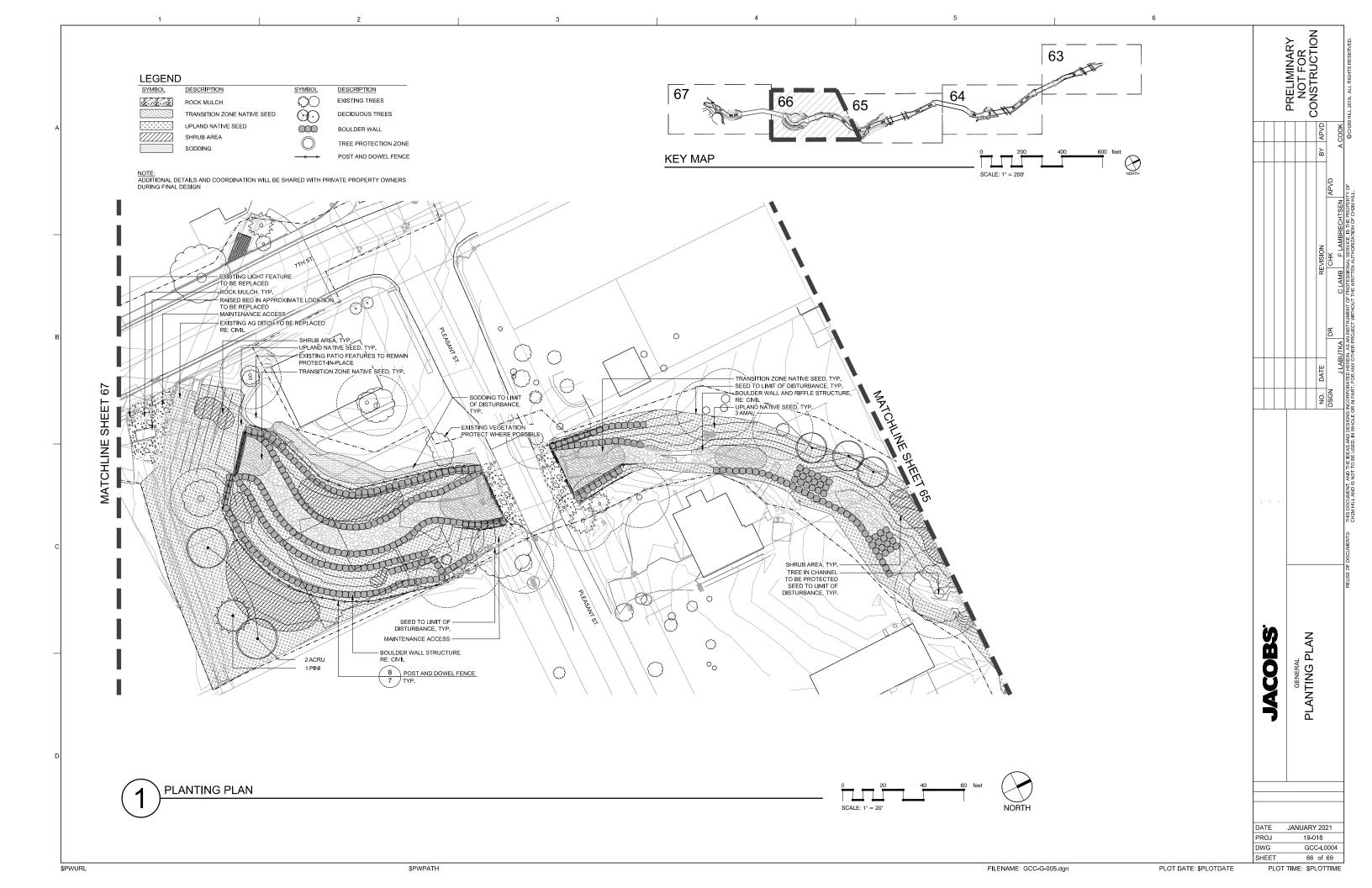


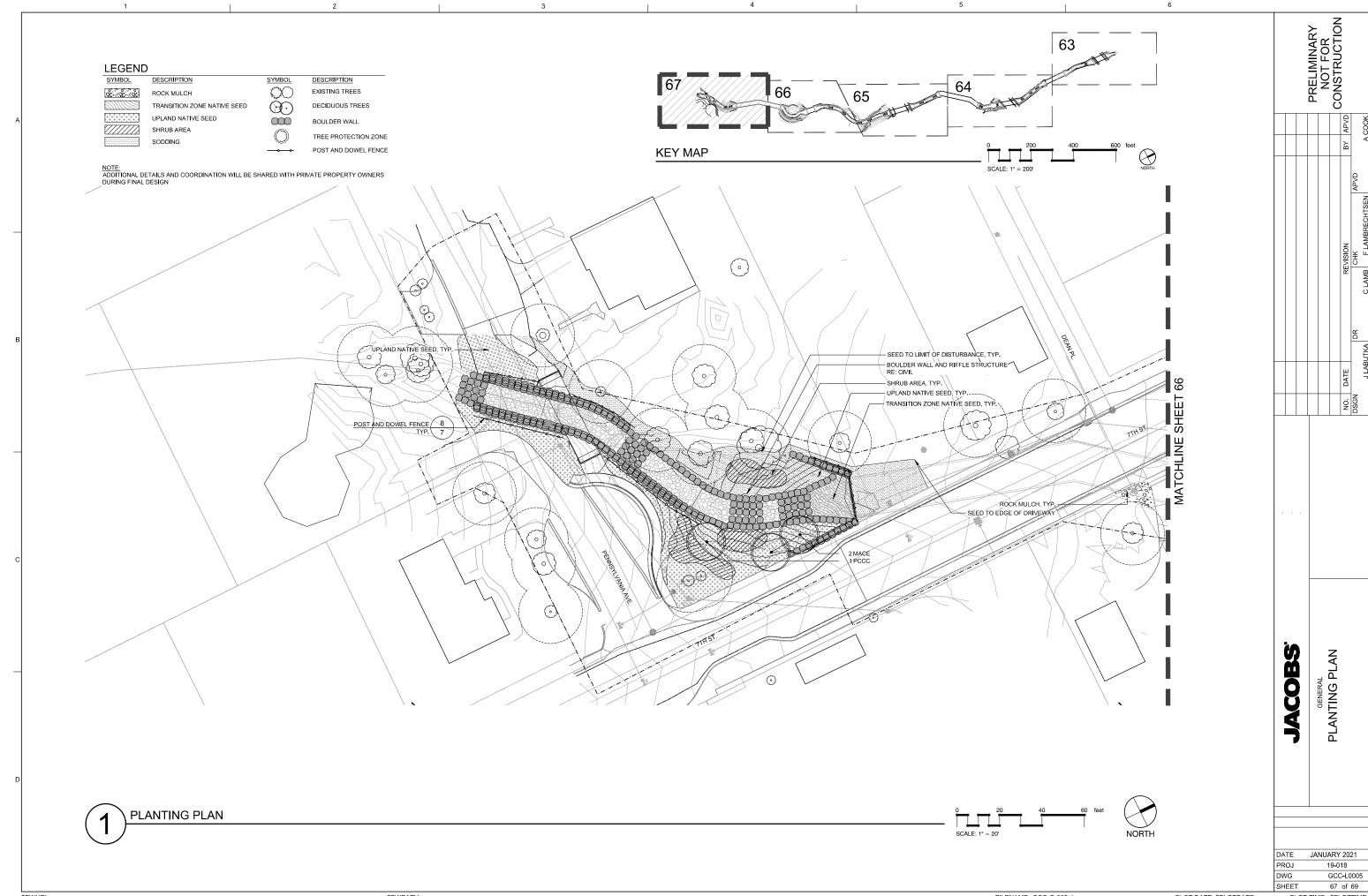
FILENAME: GCC-G-005.dgn

PLOT DATE: \$PLOTDATE

PLOT TIME: \$PLOTTIME

\$PWURL





\$PWURL

\$PWPATH

FILENAME: GCC-G-005.dgn

PLOT DATE: \$PLOTDATE

PLOT TIME: \$PLOTTIME

GENERAL NOTES:

- VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK. BE AWARE OF ANY UNDERGROUND UTILITIES. PROTECT ALL EXISTING SITE FEATURES TO REMAIN FROM POTENTIAL DAMAGE BY SITE CONSTRUCTION OPERATIONS AVOID ANY WORK BEYOND SCOPE OF PROJECT AREA
- COORDINATE ALL DISCIPLINES AND SITE CONSTRUCTION THAT WILL BE NEEDED TO COMPLETE THE PROJECT IN THE TIME FRAME GIVEN AND WITHIN BUDGET. ALL ACCESS TO SITE, USE OF UTILITIES, STORAGE, AND OTHER REQUIREMENTS SHALL BE COORDINATED PRIOR TO BEGINNING WORK.
- CONTRACTOR IS RESPONSIBLE TO INSPECT AND CONFIRM SITE CONDITIONS PRIOR TO BEGINNING WORK, COMMENCEMENT OF WORK SHALL SIGNIFY ALL CONDITIONS ARE ACCEPTABLE AND NO ALLOWANCE WILL BE MADE FOR UNRECOGNIZED CONDITIONS AFTER START OF WORK.
- NOTIFY OWNER/LANDSCAPE ARCHITECT IMMEDIATELY UPON DISCOVERY OF UNFORESEEN SITE CONDITIONS OR PLAN DISCREPANCIES. NO CHANGE TO SPECIFIED WORK SHALL BE COMPLETED WITHOUT VERIFICATION OF EXISTING CONDITIONS AND WRITTEN APPROVAL OF MODIFICATION BY THE LANDSCAPE ARCHITECT.

PLANTING NOTES:

- LANDSCAPE CONTRACTOR SHALL LOCATE ALL TREES, SHRUBS AND PLANTING BEDS ACCORDING TO LOCATIONS SHOWN ON DRAWINGS. ALL PLANTING LOCATIONS SHALL BE SUBJECT TO REVIEW AND APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO THE START OF PLANTING OPERATIONS. LANDSCAPE CONTRACTOR SHALL MAKE
- MODIFICATIONS IN LOCATIONS AS DIRECTED BY LANDSCAPE ARCHITECT.

 2. THE PLANT SCHEDULE IS FOR CONTRACTOR'S CONVENIENCE ONLY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXISTING CONDITIONS AND REPORTING IN WRITING TO THE LANDSCAPE ARCHITECT ANY CONFLICTS RELATIVE TO IMPLEMENTATION OF THE LANDSCAPE CONSTRUCTION DOCUMENTS. VALERIAN LLC. SHALL NOT ASSUME ANY ERRORS OR OMISSIONS IN THE PLANT SCHEDULE LISTED HEREIN. THE PLANT SYMBOLS SHOWN ON THE LANDSCAPE PLAN SHALL PREVAIL SHOULD THERE BE ANY DISCREPANCIES IN QUANTITIES BETWEEN THE PLAN AND PLANT SCHEDULE
- AND PLANT SCHEDULE.

 LANDSCAPE CONTRACTOR SHALL PROVIDE PLANT PROTECTION AND MAINTENANCE THROUGHOUT INSTALLATION AND UNTIL FINAL ACCEPTANCE OF LANDSCAPE INSTALLATION AS FOLLOWS:

 A) ALL PLANT MATERIAL SHALL BE PROTECTED, FROM TIME OF DIGGING TO TIME OF FINAL ACCEPTANCE, FROM
- INJURY, EXCESSIVE DRYING FROM WINDS, IMPROPER VENTILATION, OVER-WATERING, FREEZING, HIGH TEMPERATURES, OR ANY OTHER CONDITION DAMAGING TO PLANTS.
- B) PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY IF POSSIBLE. ALL PLANTS NOT PLANTED ON THE DAY OF DELIVERY SHALL BE PLACED IN A TEMPORARY NURSERY AND KEPT MOIST, SHADED, AND PROTECTED FROM THE SUN AND WIND. EACH ROOTBALL SHALL BE COVERED ENTIRELY WITH MULCH. ALL PLANT MATERIALS SHALL BE INSTALLED PER THE PLAN DRAWINGS AND SPECIFICATIONS.
- C) LANDSCAPE CONTRACTOR SHALL PROVIDE PLANT MATERIALS THAT COMPLY WITH THE REQUIREMENTS OF THE MOST RECENT ANSI Z 60.1 "STANDARDS FOR NURSERY STOCK" UNLESS OTHERWISE SPECIFIED. CALIPER OF B&B TREES SHALL BE TAKEN 6 INCHES ABOVE THE GROUND UP TO AND INCLUDING 4 INCH CALIPER SIZE, AND 12 INCHES ABOVE THE GROUND FOR LARGER SIZES.
- PLANTING MAINTENANCE SHALL INCLUDE WATERING, WEEDING, CULTIVATING, RESETTING PLANTS TO PROPER GRADES OR POSITION, REESTABLISHING SETTLED GRADES, HERBICIDE IS NOT RECOMMENDED FOR ONE YEAR FOLLOWING LANDSCAPE INSTALLATION.
- PLANT MAINTENANCE SHALL INCLUDE THOSE OPERATIONS NECESSARY TO PROPER GROWTH AND SURVIVAL OF ALL PLANT MATERIALS. CONTRACTOR SHALL PROVIDE THIS WORK IN ADDITION TO SPECIFIC WARRANTY/GUARANTEES.
- 4. CONTRACTOR SHALL VERIFY AND MAINTAIN ALL SETBACKS, CLEAR ZONES AND SIGHT TRIANGLES REQUIRED BY ALL
- CONTRACTOR SPALL VENITY AND MAINTAIN ALL SETBACKS, CLEAR ZONES AND SIGHT TRAINGLES REQUIRED BT ALL LOCAL AND MUNICIPAL CODES WHERE APPLICABLE.
 LANDSCAPE CONTRACTOR SHALL ENSURE THAT THE LANDSCAPE INSTALLATION IS COORDINATED WITH THE PLANS PREPARED BY OTHER CONSULTANTS SO THAT THE PROPOSED GRADING, STORM DRAINAGE OR OTHER PROPOSED CONSTRUCTION DOES NOT CONFLICT WITH NOR PRECLUDE INSTALLATION AND MAINTENANCE OF LANDSCAPE ELEMENTS AS DESIGNATED ON THIS PLAN.
- 6. ALL LANDSCAPE AREAS SHALL BE IRRIGATED BY AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. THE SYSTEM SHALL BE PROPERLY ZONED TO SEPARATE PLANT MATERIAL BY WATER REQUIREMENT. ALL SHRUB BEDS AND TREES IN NATIVE SEED AREAS SHALL BE IRRIGATED BY USING LOW WATER/DRIP TECHNIQUES. ALL TURF AREAS SHALL BE IRRIGATED BY OR ROTOR APPLICATION.
- ALL PLANTS SHALL BE "COLORADO GROWN," "COLORADO FIELDED," OR "NORTHERN GROWN" AS DESCRIBED BELOW, UNLESS OTHERWISE SPECIFIED IN THESE STANDARDS, EXCEPT FOR PLANTS OF THE GENUS JUNIPERUS.

 8. COLORADO GROWN: PLANTS GROWN IN COLORADO NURSERY FIELDS FOR THE MAJOR PORTION OF THEIR LIVES.
- COLORADO FIELDED: PLANTS SHIPPED IN OR COLLECTED THAT HAVE GROWN IN COLORADO NURSERY FIELDS FOR AT LEAST TWO FULL GROWING SEASONS PRIOR TO DELIVERY.
 NORTHERN GROWN: PLANTS GROWN IN NURSERIES FOR AT LEAST TWO FULL GROWING SEASONS LOCATED IN
- HARDINESS ZONES 1 THROUGH 5. AS SHOWN ON A UNITED STATES DEPARTMENT OF AGRICULTURE MAP
- ALL PLANTS SHALL BE OF SPECIES IDENTIFIED UNDER AND ALLOWED BY THESE STANDARDS AND SHALL CONFORM TO THE FOLLOWING:
- A) SELECTED TO MEET THE GOAL OF MAXIMUM WATER EFFICIENCY AND ZONED OR GROUPED ACCORDING TO THEIR WATER REQUIREMENTS
- B) INDIVIDUALLY IDENTIFIED ON LEGIBLE, WEATHERPROOF LABELS SECURELY ATTACHED TO THE PLANTS.

 C) LABELS SHALL BE DURABLE AND SHALL REMAIN LEGIBLE FOR AT LEAST 60 DAYS FROM SITE DELIVERY.

 D) LABELS SHALL INCLUDE THE CORRECT GENUS, SPECIES, VARIETY NAME AND ACCEPTED COMMON NAME OF THE
- PLANT AS WELL AS THE SIZE OR GRADE OF STOCK.

 E) LABELS SHALL REMAIN UNTIL AFTER CITY INSPECTION AND THEN SHALL BE REMOVED BY THE CONTRACTOR.

SEEDING/SODDING

\$PWURL

- SOD: BLUEGRASS SHALL BE COLORADO-GROWN, 100 PERCENT CERTIFIED KENTUCKY BLUEGRASS, 10-12 DESIGN AND CONSTRUCTION STANDARDS EFFECTIVE: NOVEMBER 16, 2000 OF THREE IMPROVED BLUEGRASS VARIETIES COMPLYING WITH APPLICABLE COLORADO AND FEDERAL REGULATIONS. NEWPORT, PARK, DELTA AND COMMON KENTUCKY BLUEGRASS ARE NOT ACCEPTABLE VARIETIES FOR THE SOD MIXTURE. THE SOD SHALL HAVE A VIGOROUS AND HEALTHY ROOT SYSTEM AND TOP GROWTH AND SHALL HAVE BEEN REGULARLY FERTILIZED, WATERED, MOWED, SPRAYED AND SHALL BE FREE FROM OBJECTIONABLE WEEDS AND/OR GRASSES. SOD STRIF SHALL HAVE FROM 5/8 INCH MINIMUM TO 1 INCH MAXIMUM THICKNESS OF SOIL ADHERING TO ROOT SYSTEM. CUT INTO STRIPS 18-INCH MAXIMUM WIDTH BY 4 FEET MINIMUM LENGTH, SOD THAT HAS DRIED OUT, OR SOD WITH ADHERING SOIL THAT BREAKS, TEARS OR CRUMBLES AWAY WILL NOT BE ACCEPTED. SOD CUT FOR MORE THAN 24 HOURS SHALL NOT BE ACCEPTED, SOD ROLLS SHALL BE KEPT MOIST, PROTECTED FROM SUN, HEAT OR WIND IN TRANSPORT AND AFTER DELIVERY. PRIOR TO CUTTING, THE SOD SHALL BE EVENLY MOWED FOR A BLADE LENGTH OF AT LEAST 1 INCH BUT NOT MORE THAN 2 INCHES.

 NATIVE SEED: NATIVE GRASS SEED SHALL BE PURCHASED FROM A REPUTABLE SEED DEALER, COMPLYING WITH
- REQUIREMENTS SPECIFIED. SEED MIXTURE SHALL BE "FOOTHILLS" MIX AS PROVIDED BY ARKANSAS VALLEY SEED COMPANY (303.320.7500), OR APPROVED EQUIVALENT, SEE BELOW FOR MIX.

 1. PLS SHALL NOT BE LESS THAN 80 PERCENT (AVERAGE FOR THE SEED MIX).
- QUANTITY OF BULK SEED REQUIRED TO PROVIDE THE SPECIFIED PLS SHALL BE CALCULATED FROM PURITY AND GERMINATION PERCENTAGE RATES LISTED ON THE LOT TAG OF SEED ACTUALLY PURCHASED, USING THE

\$PWPATH

PURITY PERCENTAGE X GERMINATION PERCENTAGE = PLS PERCENTAGE

LBS .PLS SPECIFIED PER 1000 SQUARE FEET = BULK LBS . REQUIRED PER PLS PERCENTAGE

PLANT SCHEDULE

DECIDUOUS TREES ACRU CEOC QRCS	<u>QTY</u> 4 1 5	BOTANICAL NAME ACER RUBRUM CELTIS OCCIDENTALIS QUERCUS ROBUR X ALBA `CRIMSON SPIRE`	COMMON NAME RED MAPLE COMMON HACKBERRY CRIMSON SPIRE OAK	CONT B & B B & B B & B	<u>CAL</u> 2.5"CAL 2.5"CAL 2.5"CAL	
EVERGREEN TREES PINI	QTY 1	BOTANICAL NAME PINUS NIGRA	COMMON NAME AUSTRIAN PINE	CONT B & B	CAL 6` HT	
ORNAMENTAL TREES AGFM ATHW AMAL MACE PCCC	QTY 2 1 7 2	BOTANICAL NAME ACER GINNALA 'FLAME' ACER TATARICUM 'GARANN' AMELANCHIER ALNIFOLIA MALUS X 'CENTURION' PYRUS CALLERYANA 'CHANTICLEER'	COMMON NAME FLAME AMUR MAPLE HOT WINGS TATARIAN MAPLE SASKATOON SERVICEBERRY CENTURION CRAB APPLE CHANTICLEER PEAR	CONT B&B B&B B&B B&B B&B B&B	CAL 2"CAL 2"CAL 6` CLUMP 2"CAL 2"CAL	
SHRUB AREAS	QTY	BOTANICAL NAME	COMMON NAME	CONT @		SPACING
	626	SHRUB	SHRUB AREA	5 GAL		36" o.c.
GROUND COVERS	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT @	
	SEED-1	38,411 SF	SEED	UPLAND NATIVE SEED MIX	SEED	
	SEED-2	5,238 SF	SEED	TRANSITION ZONE SEED MIX	SEED	
	SOD	14,174 SF	SOD	BLUEGRASS SOD	SOD	

PLANT PALETTE

DECIDUOUS TREES ACRU CEOC QUMU QURO QRCS	BOTANICAL NAME ACER RUBRUM CELTIS OCCIDENTALIS QUERCUS MUEHLENBERGII QUERCUS ROBUR QUERCUS ROBUR QUERCUS ROBUR X ALBA 'CRIMSON SPIRE'	COMMON NAME RED MAPLE COMMON HACKBERRY CHINKAPIN OAK ENCLISH OAK CRIMSON SPIRE OAK	CONT B & B B & B B & B B & B B & B	CAL 2.5"CAL 2.5"CAL 2.5"CAL 2.5"CAL 2.5"CAL
EVERGREEN TREES PIGL PIED PIFL PINI	BOTANICAL NAME PICEA GLAUCA 'DENSATA' PINUS EDULIS PINUS FLEXILIS PINUS NIGRA	COMMON NAME BLACK HILLS SPRUCE PINON PINE LIMBER PINE AUSTRIAN PINE	CONT B & B B & B B & B B & B	CAL 6` HT 6` HT 6` HT 6` HT
ORNAMENTAL TREES ACGL ATHW AMAL CRPU MACE PCCC	BOTANICAL NAME ACER GLABRUM ACER TATRICUM 'GARANN' AMELANCHIER ALNIFOLIA CRATAEGUS PUNCTATA 'OHIO PIONEER' MALUS X 'CENTURION' PYRUS CALLERYANA 'CHANTICLEER'	COMMON NAME ROCKY MOUNTAIN MAPLE HOT WINGS TATARIAN MAPLE SASKATOON SERVICEBERRY OHIO PIONEER HAWTHORN CENTURION CRAB APPLE CHANTICLEER PEAR	CONT B & B B & B B & B B & B B & B B & B	CAL 6' CLUMP 2"CAL 6' CLUMP 2"CAL 2"CAL 2"CAL
DECIDUOUS SHRUBS AMAR AMIB ATRI CCDK CEIN COSB ERNN LOIN PFGD PBPB PRVM QUGA RAGL RHTR RIAU ROWO RUDE	BOTANICAL NAME AMELANCHIER ALNIFOLIA 'REGENT' ARONIA MELANOCARPA 'IROQUOIS BEAUTY' ARTEMISIA TRIDENTATA CARYOPTERIS X CLANDONENSIS 'DARK KNIGHT' CERCOCARPUS INTRICATUS CORNUS SERICEA 'BAILEYI' ERICAMERIA NAUSEOSA NAUSEOSA LONICERA INVOLUCRATA POTENTILLA FRUTICOSA 'GOLD DROP' PRUNUS BESSEYI 'PAWNEE BUTTES' PRUNUS VIRGINIANA MELANOCARPA QUERCUS GAMBELII RHUS AROMATICA 'GRO-LOW'' RHUS TRILOBATA RIBES AUREUM ROSA WOODSII RUBUS DELICIOSUS	COMMON NAME SASKATOON SERVICEBERRY IRIQUOIS BEAUTY CHOKEBERRY TALL WESTERN SAGE DARK KNIGHT BLUE MIST SPIREA LITTLE LEAF MOUNTAIN MAHOGONY RED TWIG DOGWOOD DWARF BLUE RABBITBRUSH TWINBERRY HONEYSUCKLE GOLD DROP POTENTILLA PAWNEE BUTTES SAND CHERRY CHOKECHERRY GAMBEL OAK GRO LOW SUMAC SKUNKBUSH SUMAC GOLDEN CURRANT WOODS' ROSE BOULDER RASPBERRY	ONT 00 15 15 15 15 15 15 15 15 15 15 15 15 15	
EVERGREEN SHRUBS JUHH JUSS PSHC	BOTANICAL NAME JUNIPERUS HORIZONTALIS 'HUGHES' JUNIPERUS SABINA 'SCANDIA' PINUS SYLVESTRIS 'HILLSIDE CREEPER'	COMMON NAME HUGHES JUNIPER SCANDIA JUNIPER HILLSIDE CREEPER SCOTCH PINE	CONT #5 #5 #5	
ORNAMENTAL GRASSES ANGE BGBA MUCL MURU SCSO SPHE	BOTANICAL NAME ANDROPOGON GERARDII BOUTELOUA GRACILIS 'BLONDE AMBITION' MUHLENBERGIA CAPILLARIS 'LENCA' MUHLENBERGIA REVERCHONI 'UNDAUNTED' SCHIZACHYRIUM SCOPARIUM 'STANDING OVATION' SPOROBOLUS HETEROLEPIS	COMMON NAME BIG BILUE STEM BLUE GRAMA REGAL MIST PINK MUHLY UNDAUNTED RUBY MUHLY GRASS LITTLE BLUESTEM GRASS PRAIRIE DROPSEED	CONT #1 #1 #1 #1 #1	
PERENNIALS ARFR GAAR GERO MOBB PGPJ PMRR PEPI RACO SORF SOGB	BOTANICAL NAME ARTEMISIA FRIGIDA GAILLARDIA ARISTATA GERANIUM X 'ROZANNE' TM MONARDA X 'SPP. PENSTEMON GRANDIFLORUS 'PRAIRIE JEWEL' PENSTEMON MEXICALI 'RED ROCKS' PENSTEMON PINIFOLIUS RATIBIDA COLUMNIFERA SOLIDAGO RUGOSA 'FIREWORKS' SOLIDAGO X 'GOLDEN BABY'	COMMON NAME FRINGED SAGE BLANKET FLOWER ROZANNE GERANIUM BEE BALM SPECIES PRAIRIE JEWEL PENESTEMON RED ROCKS PENSTEMON PINELEAF PENSTEMON YELLOW PRAIRE CONEFLOWER FIREWORKS GOLDENROD GOLDEN BABY GOLDENROD	CONT #1 #1 #1 #1 #1 #1 #1 #1	

NOTE: SHRUB AREA SPECIES & SPECIFIC PLANT LOCATIONS TO BE DETERMINED AT LATER DESIGN PHASE. PLANT SPECIES ARE TO BE SELECTED

UPLAND NATIVE MIX SCHEDULE

UPLAND NATIVE MIX TO INCLUDE BOTH UPLAND SEED MIX AND WILDFLOWER MIX.

UPLAND SEED M	<u>IIX</u>	
PLS LB/AC	COMMON NAME	BOTANICAL NAME
2.00	BIG BLUESTEM	ANDROPOGON GERARDII
2.00	SIDEOATS GRAMA	BOUTELOUA CURTIPENDULA
0.75	BLUE GRAMA	BOUTELOUA GRACILIS
0.75	SUN SEDGE	CAREX PENSYLVANICA VAR. HELIOP
0.75	PARRY OATGRASS	DANTHONIA PARRYI
1.50	MOUNTAIN MUHLY	MUHLENBERGIA MONTANA
4.00	WESTERN WHEATGRASS	PASCOPYRUM SMITHII
3.00	LITTLE BLUESTEM	SCHIZACHYRIUM SCOPARIUM
0.75	POVERTY OATGRASS	DANTHONIA SPICATA
4.00	ARIZONA FESCUE	FESTUCA ARIZONICA
2.00	PRAIRIE JUNEGRASS	KOELERIA MACRANTHA
3.00	SPIKE FESCUE	LEUCOPOA KINGII
0.50	MUTTON BLUEGRASS	POA FENDLERIANA
0.50	SANDBERG BLUEGRASS	POA SECUNDA
25.5		
	PLS LB/AC 2,00 2,00 0,75 0,75 1,50 4,00 3,00 0,75 4,00 3,00 0,75 4,00 3,00 0,50 0,50	2,00 BIG BLUESTEM 2,00 SIDEOATS GRAMA 0,75 BLUE GRAMA 0,75 SUN SEDGE 0,75 PARRY OATGRASS 1,50 MOUNTAIN MUHLY 4,00 WESTERN WHEATGRASS 3,00 LITTLE BLUESTEM 0,75 POVERTY OATGRASS 4,00 ARIZONA FESCUE 2,00 PRAIRIE JUNEGRASS 3,00 SPIKE FESCUE 0,50 MUTTON BLUEGRASS 0,50 SANDBERG BLUEGRASS

WILD FLOWER S	SEED MIX	
PLS LBS/AC	COMMON NAME	BOTANICAL NAME
3.00	SHOWY MILKWEED	ASCLEPIAS SPECIOSA
0.75	PURPLE POPPY-MALLOW	CALLIRHOE INVOLUCRATA
2.00	ROCKY MOUNTAIN BEE PLANT	CLEOME SERRULATA
2.00	NARROW LEAF CONEFLOWER	ECHINACEA ANGUSTIFOLIA
1.50	SULPHUR-FLOWER BUCKWHEAT	ERIOGONUM UMBELLATUM
1.50	BLANKETFLOWER	GAILLARDIA ARISTA
2.00	NUTTALL'S SUNFLOWER	HELIANTHUS NUTTALLII
1.00	NARROW-LEAF PENSTEMON	PENSTEMON ANGUSTIFOLIUS
0.25	TALL GOLDENROD	SOLIDAGO ALTISSIMA
14.00		

TRANSITION ZONE SEED MIX SCHEDULE

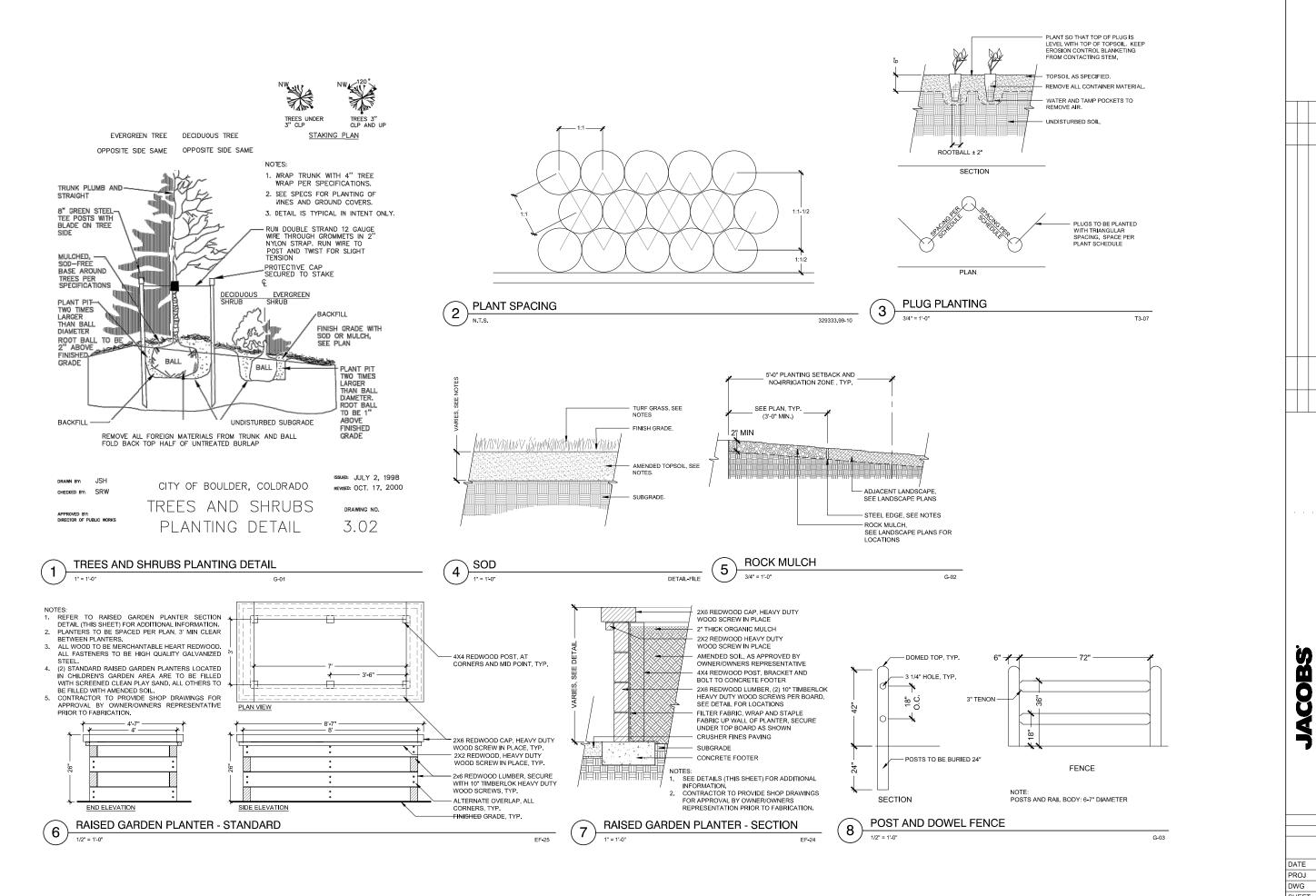
TRANSITION ZONE SEED MIX
MIX SHALL CONTAIN (OR APPROVED EQUAL)

PLS LBS/AC	COMMON NAME	BOTANICAL NAME
0.75	TUFTED HAIRGRASS	DESCHAMPSIA CESPITOSA
2.00	INLAND SALTGRASS	DISTICHLIS SPICATA
2.50	CREEPING SPIKERUSH	ELEOCHARIS PALUSTRIS
4.00	SLENDER WHEATGRASS	ELYMUS TRACHYCAULUS
0.50	FOWL BLUEGRASS	POA PALUSTRIS
0.75	ALKALI SACATON	SPOROBOLUS AIROIDES
4.00	SHOWY MILKWEED	ASCLEPIAS SPECIOSA
3.00	PRAIRIE SPIDERWORT	TRADESCANTIA OCCIDENTAL
17.50		

FILENAME: GCC-G-005.dan

NOTE: TRANSITION ZONE TO RECEIVE BOTH SEED & PLUGS. PLUGS TO BE EQUAL

PRELIMINARY NOT FOR CONSTRUCTION S S ACOBS LANDSCAPE NG & DETAILS DATE JANUARY 2021 PROJ 19-018 DWG GCC-L0006 SHEET 68 of 69



DATE JANUARY 2021
PROJ 19-018
DWG GCC-L0007
SHEET 69 of 69
PLOT DATE: \$PLOTTIME: \$PLOTTIME

PRELIMINARY NOT FOR CONSTRUCTION

DATE

NO.

GENERAL
LANDSCAPE NOTES
& DETAILS

\$PWURL

\$PWPATH