



Arapahoe County Water & Wastewater Authority
13031 E Caley Ave, Centennial, CO 80111
303-790-4830 • acwwa.com

July 30, 2021

Ben Wade
Colorado Water Conservation Board
1313 Sherman Street, Room 721
Denver, CO 80203
Phone: 303-866-3441 x3238
Email: ben.wade@state.co.us

RE: WSRF Grant Final Report for Phase 1 of the Chambers Reservoir Rehabilitation Project

Dear Mr. Wade,

Below is the final summary report for Phase 1 of the Chambers Reservoir Rehabilitation Project. Please feel free to contact me with any further questions or needs. Thank you very much for your time and it has been a pleasure working with the CWCB on this project.

Phase 1 of the Chambers Reservoir Rehabilitation Project began in August 2019 with preliminary site permitting, mobilization, reservoir dewatering, and riprap removal. The earthwork within the reservoir which includes the cutting of current slope material, importing of new material to raise the bottom of the reservoir, and final regrading of the reservoir began in September 2019. The amount of needed import material was determined to be 107,000 cubic yards, and the amount of slope material to be cut was 189,000 cubic yards. The material importing and grading tasks represented a large portion of the overall project, accounting for roughly \$1.7M of the overall \$3.1M project costs.

Progress on these grading tasks was hindered by both weather delays in October and November 2019 and an inconsistent supply of acceptable import material. The shortage resulted in a multiple week shutdown until another source was identified. Initially, a nearby development project was going to be the sole source of import material. The amount of acceptable material at this site was overestimated and resulted in a multiple week shutdown while a new source was located. Another nearby project was found with acceptable material in December 2019 and importing was able to recommence.

The material importing and grading tasks were largely completed by May 2020, but the overall project continued well into Fall 2020 due to several miscellaneous tasks such as fence replacement, access road construction, erosion control, and addressing drainage issues around the reservoir. These final wrap-up tasks were delayed into the fall due to the decision to overlap Phase 1 and Phase 2 of the overall project. The contractor for Phase 1, Fiore & Sons Construction, was the successful bidder for the Phase 2 project which was the synthetic liner installation. The tasks mentioned above were delayed until much of Phase 2 was also completed. Final retainage was released for the Phase 1 project in November 2020.

I have enclosed photos taken throughout construction of Phase 1 and Phase 2, final as-builts, Notice of Substantial Completion, and the final pay application for Phase 1 of the project. Again, please do not hesitate to reach out for additional information.



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Regards,

Sandor Rebek

Water Resources Engineer

Arapahoe County Water and Wastewater Authority

Email: srebek@acwwa.com

Phone: 720-260-2887



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July 22, 2019



Arapahoe County Water & Wastewater Authority
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September 5, 2019



Arapahoe County Water & Wastewater Authority
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December 12, 2019



Arapahoe County Water & Wastewater Authority
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April 20, 2020



June 11, 2020



Arapahoe County Water & Wastewater Authority
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August 13, 2020



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August 21, 2020



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September 15, 2020



October 9, 2020



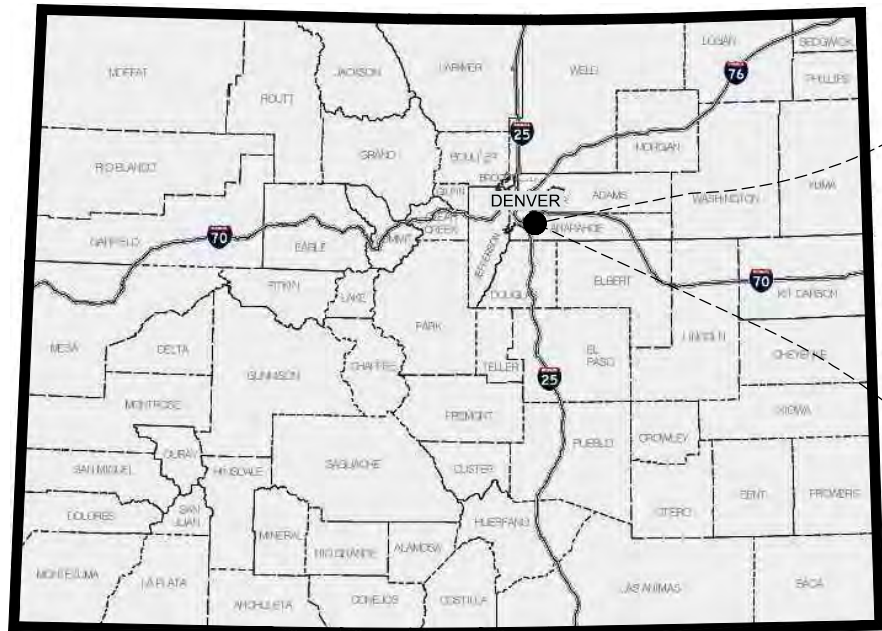
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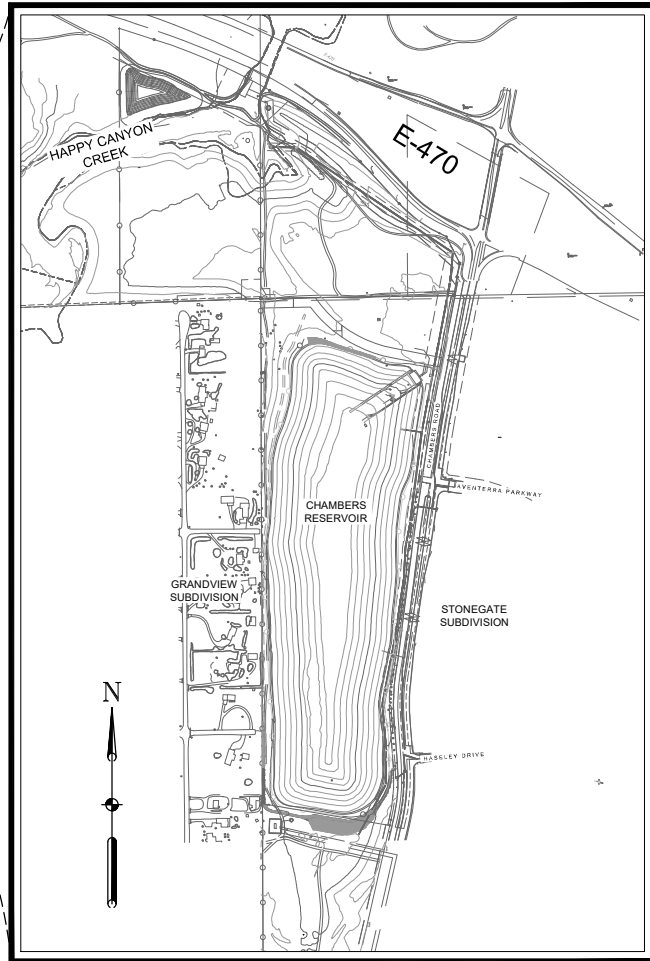
January 15, 2021

CHAMBERS RESERVOIR REMEDIATION DESIGN (PHASE I)

PREPARED FOR:
ARAPAHOE COUNTY WATER WASTEWATER ASSOCIATION (ACWWA)
ISSUED FOR CONSTRUCTION
JULY, 2019



COLORADO
STATE MAP
NOT TO SCALE



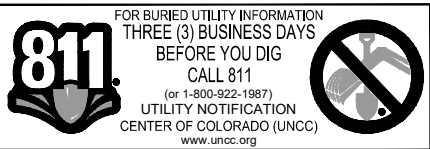
VICINITY MAP

500 0 500 1000
SCALE IN FEET

THE GRADING, EROSION AND SEDIMENT CONTROL (GESC) PLAN INCLUDED HEREIN HAS BEEN PLACED IN THE DOUGLAS COUNTY FILE FOR THIS PROJECT AND APPEARS TO FULFILL APPLICABLE DOUGLAS COUNTY GRADING, EROSION AND SEDIMENT CONTROL CRITERIA, AS AMENDED. ADDITIONAL GRADING, EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED OF THE PERMITTEE(S) DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED GESC PLAN DOES NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THIS GESC PLAN SHALL RUN WITH THE LAND AND BE THE OBLIGATION OF THE PERMITTEE(S) UNTIL SUCH TIME AS THE GESC PLAN IS PROPERLY COMPLETED, MODIFIED OR VOIDED.

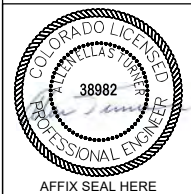
THE PROJECT IS LOCATED IN SECTION 8, TOWNSHIP 6 SOUTH, RANGE 66 WEST OF THE 6TH PRINCIPAL MERIDIAN.

BASIS OF BEARINGS: BEARINGS USED IN THE CALCULATIONS OF COORDINATES ARE BASED ON A GRID BEARING OF S20°40'06"E FROM CONTROL POINT 6902 A FOUND NUMBER 6 REBAR IN MONUMENT BOX AND CONTROL POINT 6915 A FOUND NUMBER 6 REBAR IN MONUMENT BOX. THE SURVEY DATA WAS OBTAINED FROM A GLOBAL POSITIONING SYSTEM (GPS) SURVEY BASED ON NAD-1983(2007) COLORADO CENTRAL ZONE (0502).



_____ ASSISTANT DIRECTOR OF DEVELOPMENT REVIEW
_____ DATE
THESE CONSTRUCTION DRAWINGS HAVE BEEN REVIEWED BY DOUGLAS COUNTY FOR GRADING EROSION AND SEDIMENT CONTROL IMPROVEMENTS.
_____ ENGINEERING DIVISION ACCEPTANCE BLOCK

THE GRADING, EROSION AND SEDIMENT CONTROL (GESC) PLAN INCLUDED HEREIN HAS BEEN PREPARED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE REQUIREMENTS OF THE GRADING, EROSION, AND SEDIMENT CONTROL (GESC) CRITERIA MANUAL OF DOUGLAS COUNTY, AS AMENDED.
_____ GESC DESIGN ENGINEER CO LICENSE 38982
_____ JULY 18, 2019
_____ DATE



LIST OF DRAWINGS	
SHEET NO.	SHEET TITLE
PHASE I: CIVIL	
C-01	COVER
C-02	EXISTING CONDITIONS
C-03	EXISTING SOILS MAP
C-04	DEMO PLAN
C-05	LAYDOWN PLAN
C-06	SITE PLAN
C-07	EMBANKMENT GRADING PLAN
C-08	REALIGNED PERIMETER ROAD PROFILES (EAST AND WEST BENCHES)
C-09	EAST EMBANKMENT SECTION POINTS
C-10	WEST EMBANKMENT SECTION POINTS AND ADDITIONAL EMBANKMENT POINTS
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C-13	DETAILED GRADING SECTIONS AND DETAILS
C-14	FINISHED GRADE POINTS TABLES
C-15	EAST ACCESS PLAN AND PROFILE
C-16	AVENTERRA INTERSECTION ACCESS PLAN
C-17	NORTH CONSTRUCTION ENTRANCE ACCESS PLAN
C-18	STORM DRAIN PLAN AND PROFILE
C-19	DOUGLAS COUNTY STORM DRAIN DETAILS SHEET 1 OF 3
C-20	DOUGLAS COUNTY STORM DRAIN DETAILS SHEET 2 OF 3
C-21	DOUGLAS COUNTY STORM DRAIN DETAILS SHEET 3 OF 3
C-22	DRAINAGE LAYOUT
C-23	DRAINAGE DETAILS
C-24	SECTIONS REFERENCE PLAN
C-25	SECTIONS STA 1+00 TO 4+00 SHEET 1 OF 7
C-26	SECTIONS STA 5+00 TO 7+00 SHEET 2 OF 7
C-27	SECTIONS STA 8+00 TO 10+00 SHEET 3 OF 7
C-28	SECTIONS STA 11+00 TO 13+00 SHEET 4 OF 7
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C-30	SECTIONS STA 17+00 TO 19+00 SHEET 6 OF 7
C-31	SECTIONS STA 20+00 TO 22+00 SHEET 7 OF 7
C-32	STORM WATER MANAGEMENT PLAN INITIAL DRAWING
C-33	STORMWATER MANAGEMENT PLAN INTERIM DRAWING
C-34	STORMWATER MANAGEMENT PLAN FINAL DRAWING
C-35	GRAVITY OUTLET DETAILS
GESC	SHEETS 1 TO 14 OF COUNTY GESC PLANS
PHASE I: STRUCTURAL	
S-01	PUMP STATION GENERAL NOTES
S-02	PUMP STATION DETAILS

ISSUED FOR
CONSTRUCTION



PROJECT

CHAMBERS RESERVOIR
REMEDATION DESIGN
(PHASE I)
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PARKER, CO 80134

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1	07/15/2019	ISSUED FOR CONSTRUCTION

KEY PLAN

PROJECT NUMBER

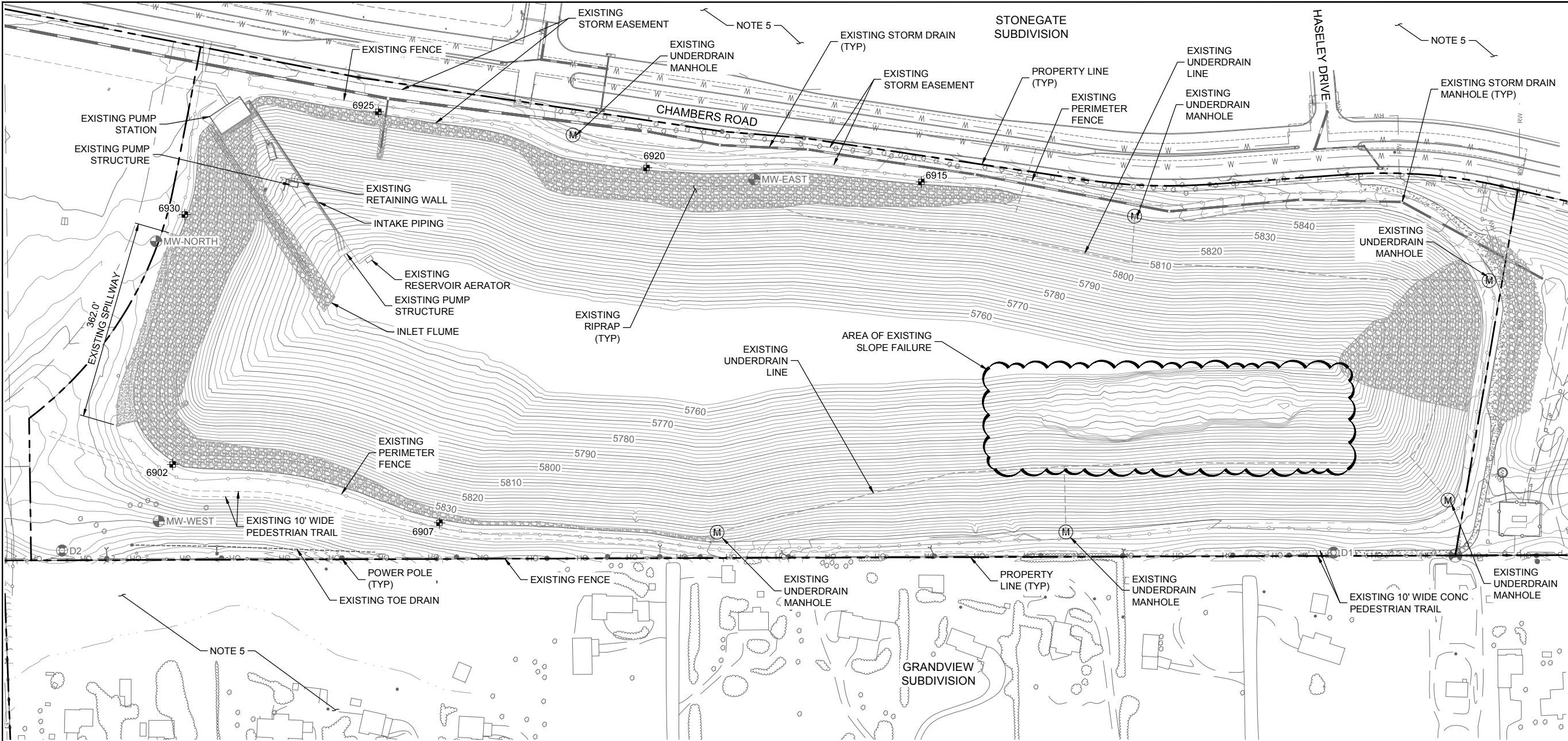
60567161

SHEET TITLE

COVER

SHEET NUMBER

C-01



LEGEND

- 5850 EXISTING MAJOR CONTOUR (10' INTERVAL)
- 5854 EXISTING MINOR CONTOUR (2' INTERVAL)
- PROPERTY LINE
- - - EXISTING FENCE
- W W EXISTING WATER LINE
- RW RW EXISTING RAW WATER LINE
- P P EXISTING UNDERGROUND POWER LINE
- OH OH EXISTING OVERHEAD POWER LINE
- EXISTING STORM DRAIN
- - - EXISTING EASEMENT AS NOTED
- - - EXISTING POWER POLE AND GUY WIRE
- - - EXISTING FOLIAGE
- ⊕ MW-EAST MONUMENT WELL OR MOVEMENT MARKER
- ⊙ D-1 TEST HOLE WITH PIEZOMETER
- ⊕ MOVEMENT MARKER / CONTROL POINT (CP)

EXISTING CONDITIONS



CONTOUR INTERVAL: MINOR 2 FOOT
MAJOR 10 FOOT



MOVEMENT MARKERS

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1632422.85	3177113.69	5893.42	CP (SEE NOTE 6)
2	1589490.83	3176001.46	6434.88	CP (SEE NOTE 6)
3	1631652.60	3201559.88	5734.04	CP (SEE NOTE 6)
6902	1626123.40	3194120.87	5838.33	MOVEMENT MARKER
6907	1625639.73	3194015.00	5838.20	MOVEMENT MARKER
6915	1624765.98	3194632.93	5838.17	MOVEMENT MARKER
6920	1625264.38	3194658.74	5838.24	MOVEMENT MARKER
6925	1625750.38	3194760.44	5838.18	MOVEMENT MARKER
6930	1626101.38	3194574.06	5838.00	MOVEMENT MARKER

GENERAL NOTES:

- PROJECT SURVEY DATA IS BASED ON THE STATE PLANE COORDINATE SYSTEM CENTRAL COLORADO ZONE (FIPS 502). THE DATUM IS NAD 83, U.S. FOOT.
- GENERAL AREA AND RESERVOIR EXISTING TOPOGRAPHY PROVIDED BY ACWWA BASED ON ORIGINAL DESIGN BY CIVIL RESOURCES, LLC. ADDITIONAL DETAILED RESERVOIR TOPOGRAPHY PROVIDED BY AECOM BASED ON A SURVEY PERFORMED AUGUST 9, 2017.
- PUMP STATION LOCATION BASED ON SURVEY PERFORMED ON AUGUST 9, 2017 BY AECOM AND ADDITIONAL INFORMATION GENERATED BY INFORMATION SHOWN ON RECORD DRAWINGS DATED JUNE, 2012 BY BURNS & MCDONELL
- FOR EXISTING SOILS TYPE AND LOCATION SEE SHEET C-03.
- OFFSITE TOPOGRAPHICAL CONTOURS OUTSIDE OF CHAMBERS RESERVOIR PROPERTY LINES ARE GENERATED FROM LIDAR DATA (CIRCA 2014) PROVIDED BY THE DENVER REGIONAL COUNCIL OF GOVERNMENTS (DRCOG). THE DATA WAS NOT VALIDATED BY USGS. THE DATA IS BASED ON UTM ZONE 13 NORTH, NAD 83 (METRIC) AND THE VERTICAL DATUM IS NAVD1988 (GEOD12A, METRIC). THIS TOPO IS FOR REFERENCE ONLY.
- POINTS 1, 2, AND 3 ARE NOT SHOWN ON THE PLAN. THEY ARE OFF SITE CONTROL POINTS.

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CHAMBERS RESERVOIR
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SHEET TITLE

EXISTING CONDITIONS

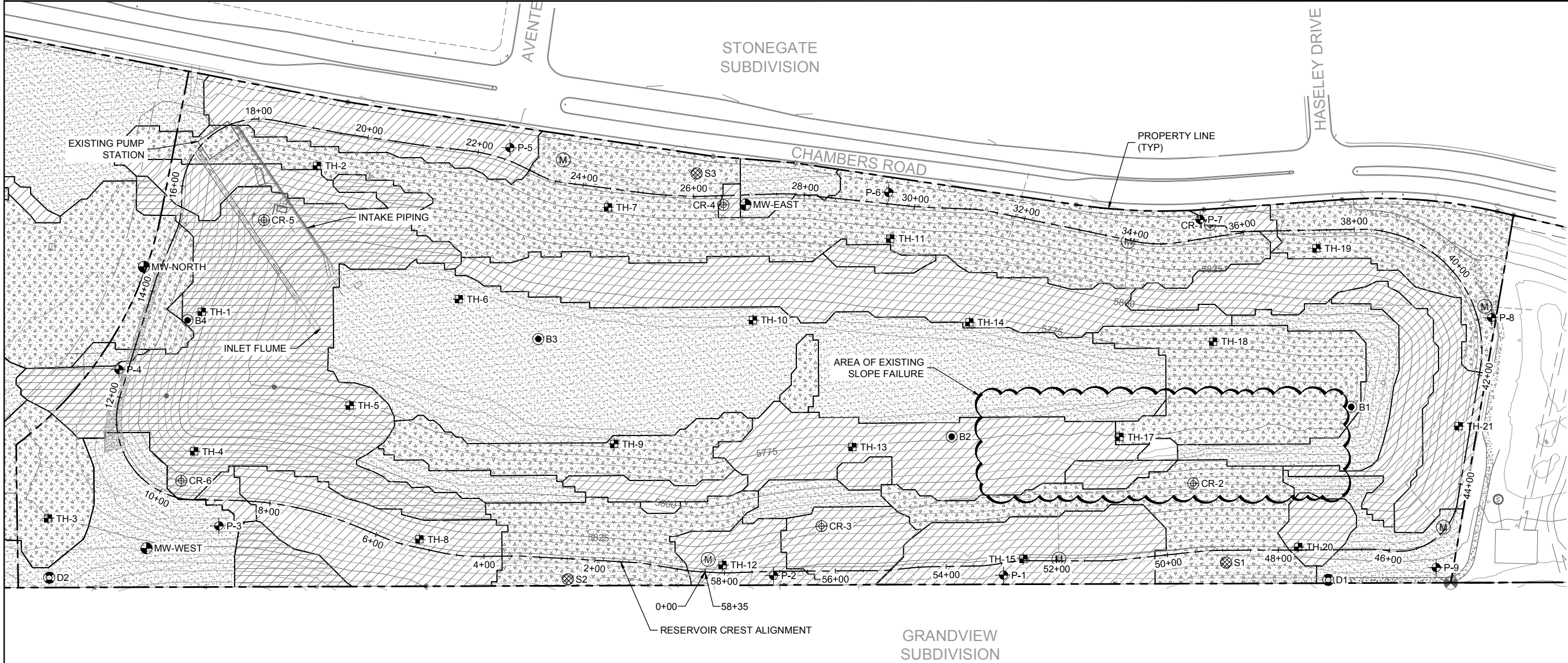
SHEET NUMBER

C-02

Project Management Initials: _____ Designer: _____ Checked: _____ Approved: _____
ANSI D 22" x 34"

Last saved by: PAUL_HUNTER(2019-07-12) Last Plotted: 2019-07-12
Filename: M:\DCS\PROJECTS\WTR\60567161_ACWWA_W071900_CAD_GIS\910_CAD\20-SHEETS\C-03 SOILS.DWG

Printed on _____ % Post-Consumer
Recycled Content Paper



EXISTING SOILS MAP



CONTOUR INTERVAL: MINOR 5 FOOT
MAJOR 25 FOOT



SOILS MAP NOTES:

1. THE BOUNDARIES OF SOIL TYPES WAS PREPARED FROM THE GEOLOGIC MODEL OF THE SITE CREATED BY URS (2014). THE GEOLOGIC MODEL WAS BASED ON AVAILABLE GEOLOGIC DATA AT THAT TIME AND INVOLVED MANY UNCERTAINTIES AND ASSUMPTIONS.

FIELD INVESTIGATION LEGEND

- MW-EAST MONUMENT WELL OR MOVEMENT MARKER
- TH-1 TEST HOLE
- BH-1 BORE HOLE
- ⊕ CR-1 TEST HOLE
- ⊖ D-1 TEST HOLE WITH PIEZOMETER
- ⊗ S-1 TEST HOLE WITH PIEZOMETER

SOILS LEGEND

- CLAY
- SAND AND CLAY
- SILTY SAND
- SAND AND GRAVEL
- CLAYSTONE

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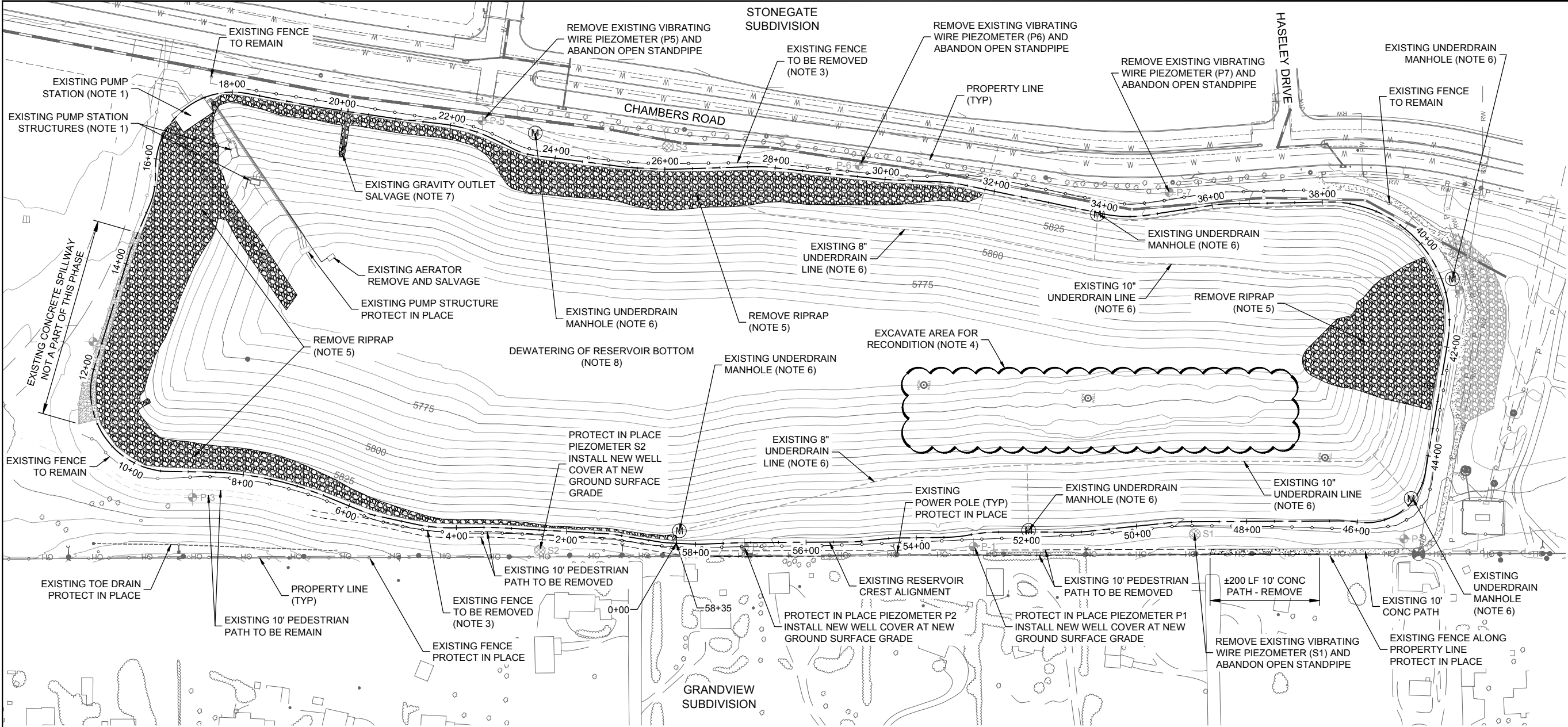
60567161

SHEET TITLE

EXISTING SOILS MAP

SHEET NUMBER

C-03



PHASE I DEMO NOTES:

1. PUMP STATION AND APPURTENANCES ARE TO BE PROTECTED IN PLACE OR REMOVED FOR RE-USE AS NOTED.
2. PROTECT IN PLACE ALL MONUMENTS, MOVEMENT MARKERS, AND MONITORING WELLS.
3. CONTRACTOR TO REMOVE AND SALVAGE EXISTING FENCE FOR REUSE PER DESIGN.
4. OVER-EXCAVATION TO REMOVE EXISTING CLAY LINER AND REPAIR FAILED SLOPE WILL BE REQUIRED IN THIS AREA. SEE SHEET C-07 FOR TOTAL AREA AND SECTION SHEETS C-25 THROUGH C-29 FOR CLAY REMOVAL.
5. RIPRAP TO BE REMOVED FROM RESERVOIR EMBANKMENT AND STORED ONSITE FOR RECONDITIONING AND RE-USE PER ENGINEER'S INSTRUCTIONS.
6. EXISTING UNDERDRAIN SYSTEM TO BE REMOVED OR ABANDONED IN PLACE. REMOVE EXISTING MANHOLES. SOME UNDERDRAIN LINES MAY BE ENCOUNTERED DURING EXCAVATION. ANY EXPOSED PIPE SHALL BE REMOVED. ANY PIPE THAT IS TO REMAIN SHALL BE LOCATED AND PLUGGED (ABANDONED IN PLACE). CONNECTED LINES ARE TO BE PLUGGED WITH GRAVITY FLOW GROUT IF THEY CANNOT BE REMOVED.
7. EXISTING GRAVITY OUTLET GATE AND CONTROL MECHANISM TO BE REMOVED (SALVAGED). SPINDLE IS TO BE DEMOLISHED AND EXISTING PIPE TO BE PROTECTED IN PLACE.
8. CONTRACTOR IS TO SUBMIT A DEWATERING PLAN TO THE ENGINEER FOR APPROVAL PRIOR TO COUNTY SUBMITTAL.

PHASE I DEMO PLAN



CONTOUR INTERVAL: MINOR 5 FOOT
MAJOR 25 FOOT

ASSISTANT DIRECTOR OF DEVELOPMENT REVIEW

DATE

THESE CONSTRUCTION DRAWINGS HAVE BEEN REVIEWED BY DOUGLAS COUNTY FOR GRADING EROSION AND SEDIMENT CONTROL IMPROVEMENTS.

ENGINEERING DIVISION ACCEPTANCE BLOCK

LEGEND

- 5850 EXISTING MAJOR CONTOUR (25' INTERVAL)
- 5850 EXISTING MINOR CONTOUR (5' INTERVAL)
- PROPERTY LINE
- EXISTING FENCE
- EXISTING WATER LINE
- EXISTING RAW WATER LINE
- EXISTING UNDERGROUND POWER LINE
- EXISTING OVERHEAD POWER LINE
- EXISTING STORM DRAIN
- EXISTING EASEMENT AS NOTED
- EXISTING POWER POLE AND GUY WIRE
- EXISTING FOLIAGE
- EXISTING MONUMENT WELL OR MOVEMENT MARKER
- EXISTING TEST HOLE WITH PIEZOMETER
- EXISTING TEST HOLE WITH PIEZOMETER
- EXISTING TEST HOLE WITH PIEZOMETER



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PROJECT NUMBER

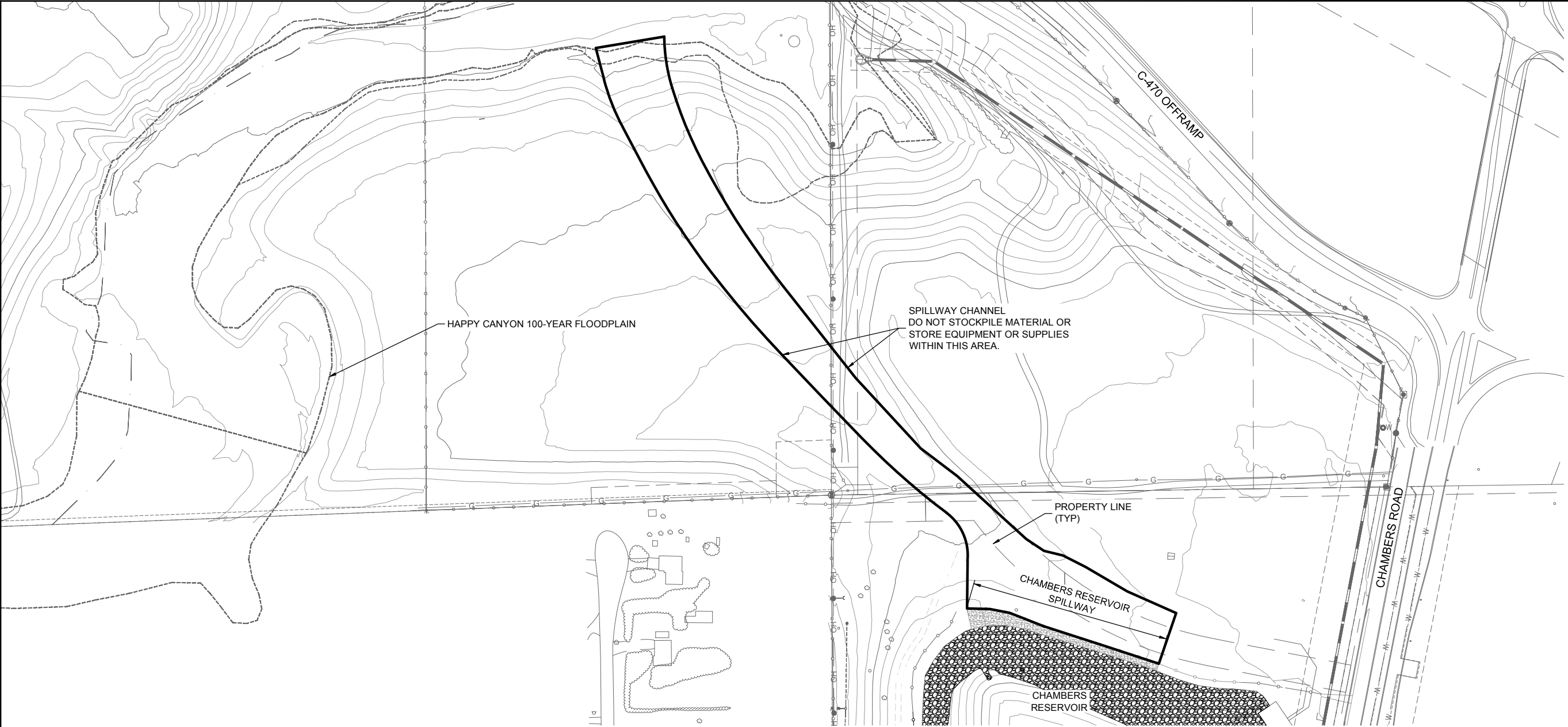
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SHEET TITLE

DEMO PLAN

SHEET NUMBER

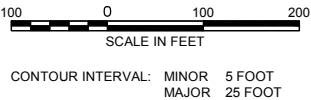
C-04



LEGEND

- | | |
|--|---|
| | EXISTING MAJOR CONTOUR (25' INTERVAL) |
| | EXISTING MINOR CONTOUR (5' INTERVAL) |
| | PROPERTY LINE |
| | EXISTING FENCE |
| | EXISTING WATER LINE |
| | EXISTING RAW WATER LINE |
| | EXISTING UNDERGROUND POWER LINE |
| | EXISTING OVERHEAD POWER LINE |
| | EXISTING STORM DRAIN |
| | EXISTING EASEMENT AS NOTED |
| | EXISTING POWER POLE AND GUY WIRE |
| | EXISTING FOLIAGE |
| | EXISTING MONUMENT WELL OR MOVEMENT MARKER |
| | EXISTING TEST HOLE WITH PIEZOMETER |
| | EXISTING TEST HOLE WITH PIEZOMETER |
| | EXISTING TEST HOLE WITH PIEZOMETER |

LAYDOWN PLAN



LAYDOWN NOTES:

- ALL MATERIAL STORAGE AND STOCKPILING IS TO BE KEPT AWAY FROM THE SPILLWAY AND SPILLWAY CHANNEL AT ALL TIMES.



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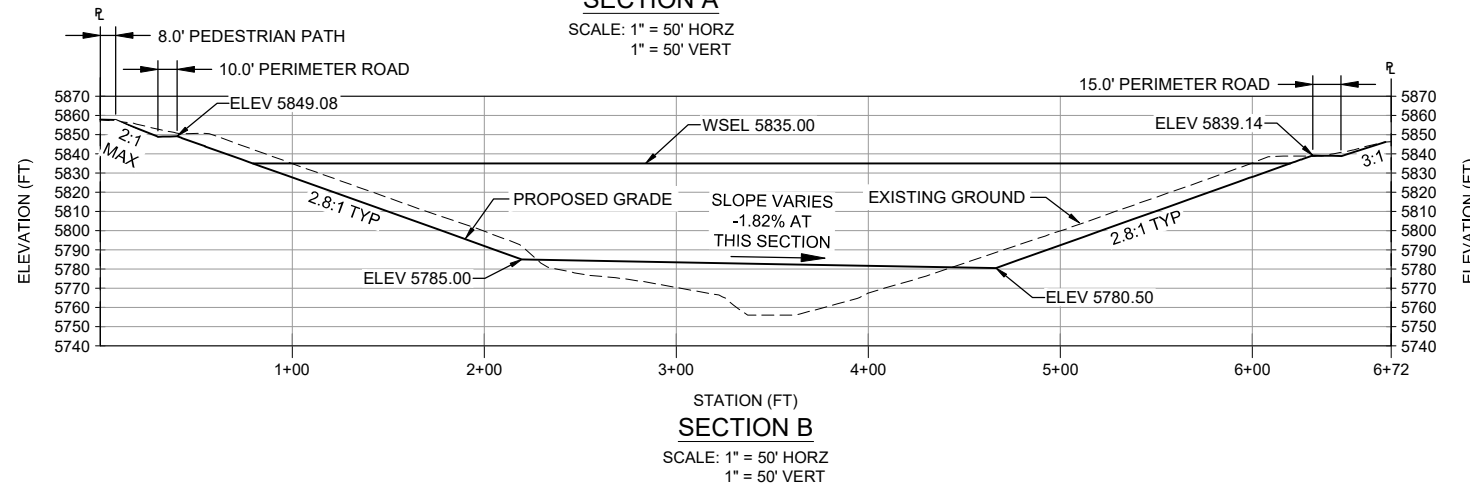
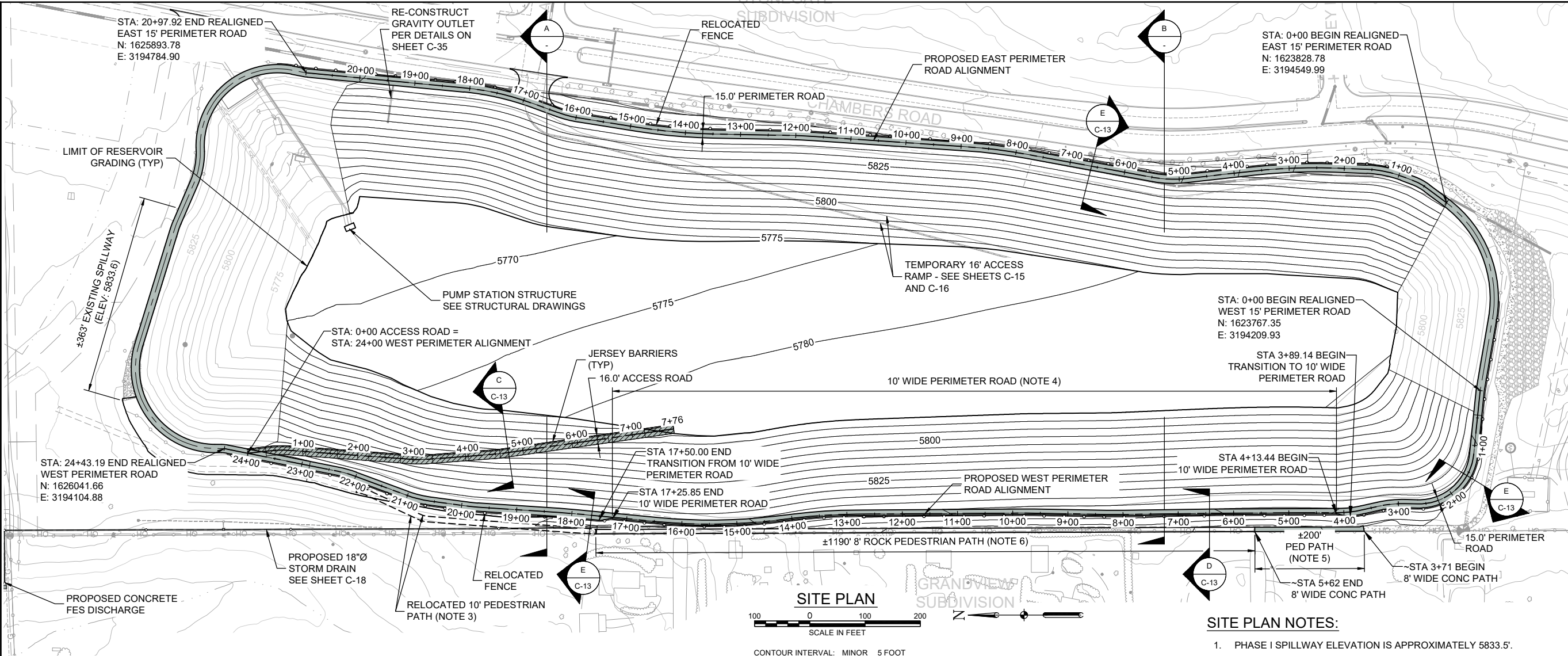
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SHEET TITLE

LAYDOWN PLAN

SHEET NUMBER

C-05



SITE PLAN NOTES:

1. PHASE I SPILLWAY ELEVATION IS APPROXIMATELY 5833.5'.
2. ALL RESERVOIR ELEVATIONS AND CONTOURS SHOWN ARE FINISHED GRADE FOR PHASE I.
3. CONTRACTOR TO FIELD FIT 10' PEDESTRIAN PATH PER ENGINEER'S DIRECTION. CONTRACTOR TO MATCH EXISTING ROCK PEDESTRIAN PATH.
4. PERIMETER ROAD IS TO BE NARROWED FROM STATIONS 3+89.14 THROUGH 17+50.00 PER THE WEST PERIMETER ROAD ALIGNMENT TO ACCOMMODATE MAXIMUM GRADING CONSTRAINTS. PERIMETER ROAD NARROWS FROM 15' TO 10'.
5. EXISTING CONCRETE PEDESTRIAN PATH IS TO BE NARROWED TO 8' WIDE FROM STATIONS ~3+71 THROUGH ~5+62 PER THE WEST PERIMETER ROAD ALIGNMENT TO ACCOMMODATE MAXIMUM GRADING CONSTRAINTS. CONTRACTOR TO MATCH EXISTING CONCRETE PATH.
6. EXISTING ROCK PEDESTRIAN PATH IS TO BE NARROWED TO 8' WIDE FROM STATIONS ~5+62 THROUGH ~17+50 PER THE WEST PERIMETER ROAD ALIGNMENT TO ACCOMMODATE MAXIMUM GRADING CONSTRAINTS. CONTRACTOR TO MATCH EXISTING ROCK PEDESTRIAN PATH.

LEGEND

- 5850 — EXISTING MAJOR CONTOUR (25' INTERVAL)
- 5850 — EXISTING MINOR CONTOUR (5' INTERVAL)
- 5850 — PROPOSED MAJOR CONTOUR (25' INTERVAL)
- 5850 — PROPOSED MINOR CONTOUR (5' INTERVAL)
- - - - - APPROXIMATE LIMIT OF RELOCATED PATH (NOTE 3)
- ▬ PROPOSED PERIMETER ROAD
- ▨ PROPOSED CONCRETE ACCESS ROAD

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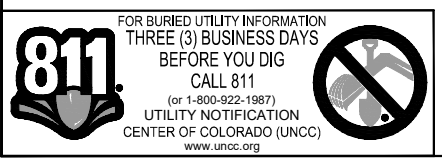
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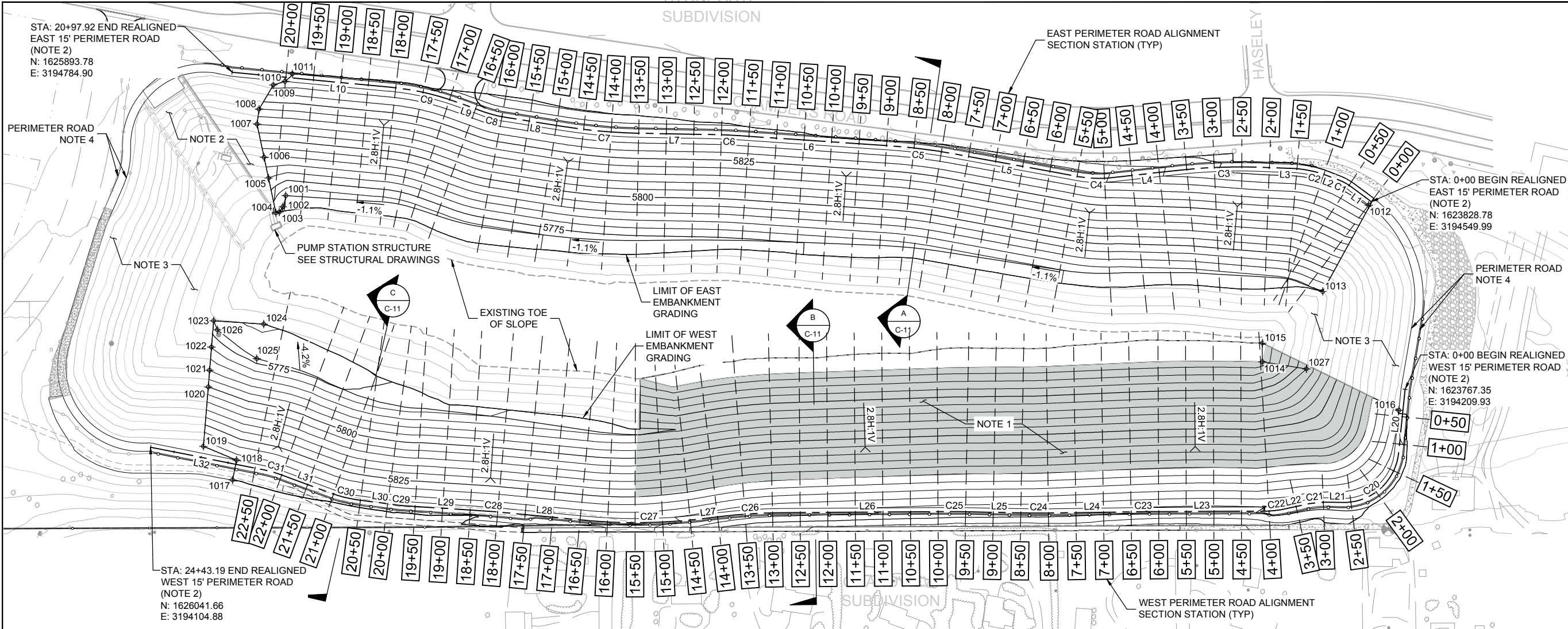
SHEET TITLE

SITE PLAN

SHEET NUMBER

C-06





LEGEND

- 5850 EXISTING MAJOR CONTOUR (25' INTERVAL)
- 5850 EXISTING MINOR CONTOUR (5' INTERVAL)
- 5850 PROPOSED MAJOR CONTOUR (25' INTERVAL)
- 5850 PROPOSED MINOR CONTOUR (5' INTERVAL)
- 1038 + FINISHED GRADE POINT (SEE SHEETS C-09 AND C-10)
- 1.0% FINISHED GRADE FLOW DIRECTION
- 3.0H:1V FINISHED GRADE SLOPE

WEST REALIGNMENT LINE TABLE		
LINE	LENGTH	BEARING
L20	116.00	N84°11'30"W
L21	22.59	N1°16'56"E
L22	30.78	N12°38'41"W
L23	213.15	N0°14'15"W
L24	164.66	N0°48'30"W
L25	130.60	N1°01'51"E
L26	297.45	N0°22'26"W
L27	34.15	N6°48'53"W
L28	146.94	N5°30'30"E
L29	148.12	N3°43'31"E
L30	73.24	N7°36'10"E
L31	100.10	N20°16'25"E
L32	210.08	N11°19'21"E

WEST REALIGNMENT CURVE TABLE								
CURVE	LENGTH	RADIUS	DELTA	TANGENT	CHORD	POINT OF CURVATURE	POINT OF TANGENT	
C20	149.18	100.00	85°28'25"	92.40	135.73	1+16.00	2+65.18	
C21	48.61	200.00	13°55'36"	24.43	48.49	2+87.77	3+36.39	
C22	43.31	200.00	12°24'25"	21.74	43.22	3+67.17	4+10.48	
C23	9.96	1000.00	0°34'15"	4.98	9.96	6+23.63	6+33.59	
C24	32.10	1000.00	1°50'21"	16.05	32.10	7+98.26	8+30.36	
C25	24.52	1000.00	1°24'17"	12.26	24.52	9+60.96	9+85.47	
C26	112.41	1000.00	6°26'27"	56.27	112.35	12+82.93	13+95.34	
C27	215.08	1000.00	12°19'24"	107.96	214.67	14+29.49	16+44.57	
C28	31.12	1000.00	1°46'59"	15.56	31.12	17+91.52	18+22.64	
C29	13.53	200.00	3°52'39"	6.77	13.53	19+70.76	19+84.30	
C30	44.23	200.00	12°40'15"	22.21	44.14	20+57.54	21+01.77	
C31	31.25	200.00	8°57'05"	15.65	31.21	22+01.87	22+33.12	

EMBANKMENT GRADING



GRADING NOTES:

- REMOVE EXISTING CLAY LINER IN THE SHADED AREA PER ENGINEER'S DIRECTION. OVER-EXCAVATION WILL BE REQUIRED. SEE SECTIONS ON SHEETS C-25 THROUGH C-29.
- ENDS OF PROPOSED REALIGNED PERIMETER ROADS ARE TO CONNECT TO THE EXISTING PERIMETER ROAD AND MATCH EXISTING CONSTRUCTION AND GRADES.
- AREAS OUTSIDE OF SHOWN PROPOSED GRADING LIMITS AND WITHIN THE RESERVOIR LIMITS ARE TO BE FINE GRADED TO ALLOW FOR PROPER LINER INSTALLATION. ALL SURFACE ROCKS GREATER THAN 3"Ø AND ALL ORGANICS SHALL BE REMOVED.
- ALL EXISTING PERIMETER ROADS ARE TO BE GRADED AT 2% AWAY FROM THE RESERVOIR CREST TO PROVIDE DRAINAGE AWAY FROM THE RESERVOIR PER THE ENGINEER'S DIRECTION. SEE DETAILS D AND E, SHEET C-13.
- FOR EMBANKMENT SECTION POINTS AND ADDITIONAL EMBANKMENT POINTS SEE SHEETS C-09 AND C-10.
- CONTRACTOR TO USE ADDITIONAL POINTS (SEE TABLE ON SHEET C-10) TO FINALIZE NORTH AND SOUTH EMBANKMENT GRADING FOR THE EAST AND WEST EMBANKMENTS. GRADING WILL BE FIELD FIT WITHIN THESE POINTS TO ACHIEVE 2.8:1 MINIMUM SLOPES PER DESIGN.

EAST REALIGNMENT LINE TABLE		
LINE	LENGTH	BEARING
L1	43.69	N36°52'02"E
L2	21.92	N20°44'53"E
L3	57.91	N2°08'50"E
L4	124.93	N6°17'39"W
L5	231.86	N10°22'12"E
L6	273.19	N3°50'46"E
L7	133.43	N1°03'09"E
L8	108.29	N9°01'23"E
L9	50.24	N19°55'00"E
L10	287.77	N5°26'07"E

EAST REALIGNMENT CURVE TABLE							
CURVE	LENGTH	RADIUS	DELTA	TANGENT	CHORD	POINT OF CURVATURE	POINT OF TANGENT
C1	28.13	100.00	16°07'09"	14.16	28.04	0+43.69	0+71.82
C2	64.93	200.00	18°36'02"	32.75	64.64	0+93.74	1+58.67
C3	147.33	1000.00	8°26'29"	73.80	147.20	2+16.58	3+63.91
C4	58.17	200.00	16°39'51"	29.29	57.96	4+88.84	5+47.00
C5	113.87	1000.00	6°31'26"	56.99	113.80	7+78.86	8+92.73
C6	48.76	1000.00	2°47'37"	24.38	48.75	11+65.92	12+14.67
C7	139.11	1000.00	7°58'14"	69.67	139.00	13+48.10	14+87.21
C8	38.03	200.00	10°53'37"	19.07	37.97	15+95.50	16+33.53
C9	126.38	500.00	14°28'54"	63.53	126.04	16+83.77	18+10.15

ISSUED FOR
CONSTRUCTION

AECOM

PROJECT

CHAMBERS RESERVOIR
REMEDATION DESIGN
(PHASE I)
9165 S. CHAMBERS ROAD,
PARKER, CO 80134

CLIENT

ACWWA
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CONSULTANT

AECOM
804 COLORADO AVE.
Suite 201
GLENWOOD SPRINGS, CO. 81601

www.aecom.com

CONSULTANTS

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	07/15/2019	ISSUED FOR CONSTRUCTION

KEY PLAN

PROJECT NUMBER

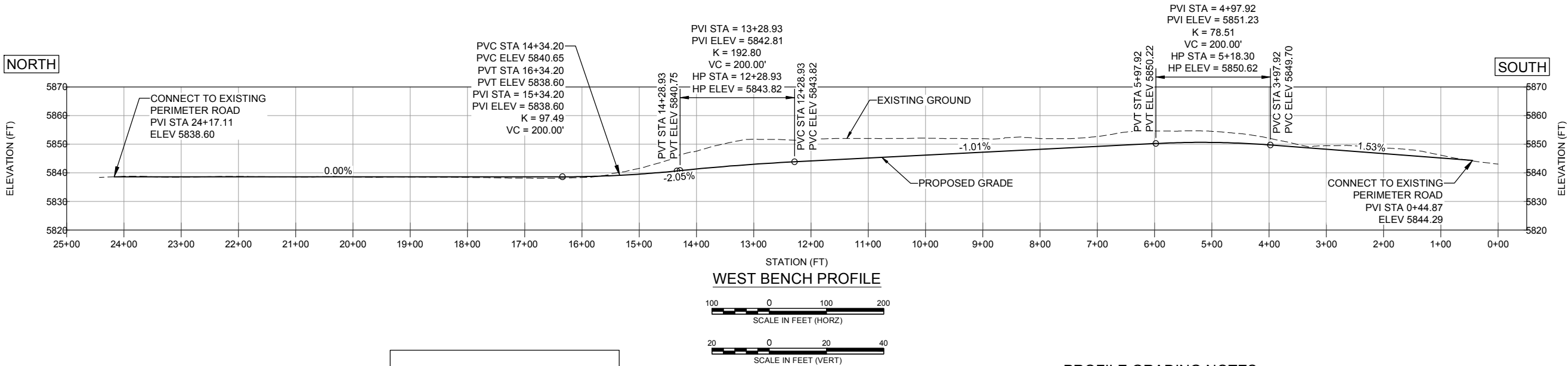
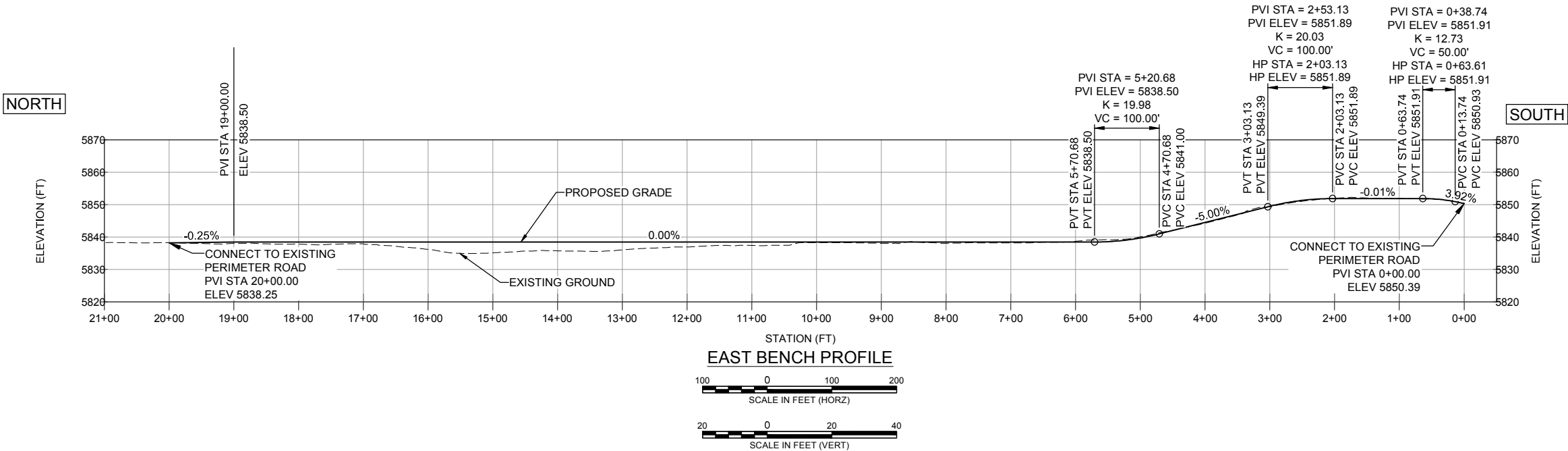
60567161

SHEET TITLE

EMBANKMENT GRADING
PLAN

SHEET NUMBER

C-07



ASSISTANT DIRECTOR OF DEVELOPMENT REVIEW
DATE
THESE CONSTRUCTION DRAWINGS HAVE BEEN REVIEWED BY DOUGLAS COUNTY FOR GRADING EROSION AND SEDIMENT CONTROL IMPROVEMENTS.
ENGINEERING DIVISION ACCEPTANCE BLOCK

- PROFILE GRADING NOTES:**
- PROFILE ELEVATIONS SHOWN ARE AT THE CENTERLINE OF THE REALIGNED PERIMETER ROAD.
 - ENDS OF PROPOSED REALIGNED PERIMETER ROADS ARE TO CONNECT TO THE EXISTING PERIMETER ROAD AND MATCH EXISTING CONSTRUCTION AND GRADES.

ISSUED FOR CONSTRUCTION

AECOM

PROJECT

CHAMBERS RESERVOIR
REMEDATION DESIGN
(PHASE I)
9165 S. CHAMBERS ROAD,
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CONSULTANT

AECOM
804 COLORADO AVE.
Suite 201
GLENWOOD SPRINGS, CO. 81601

www.aecom.com

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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	07/15/2019	ISSUED FOR CONSTRUCTION

KEY PLAN

PROJECT NUMBER

60567161

SHEET TITLE

REALIGNED PERIMETER ROAD
PROFILES (EAST AND WEST
BENCHES)

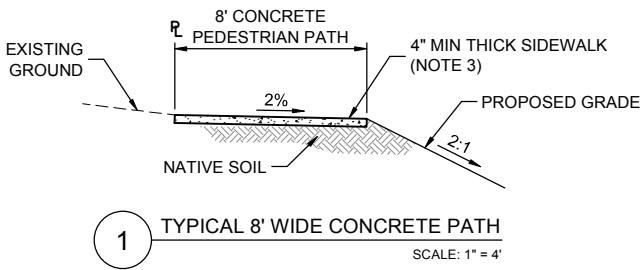
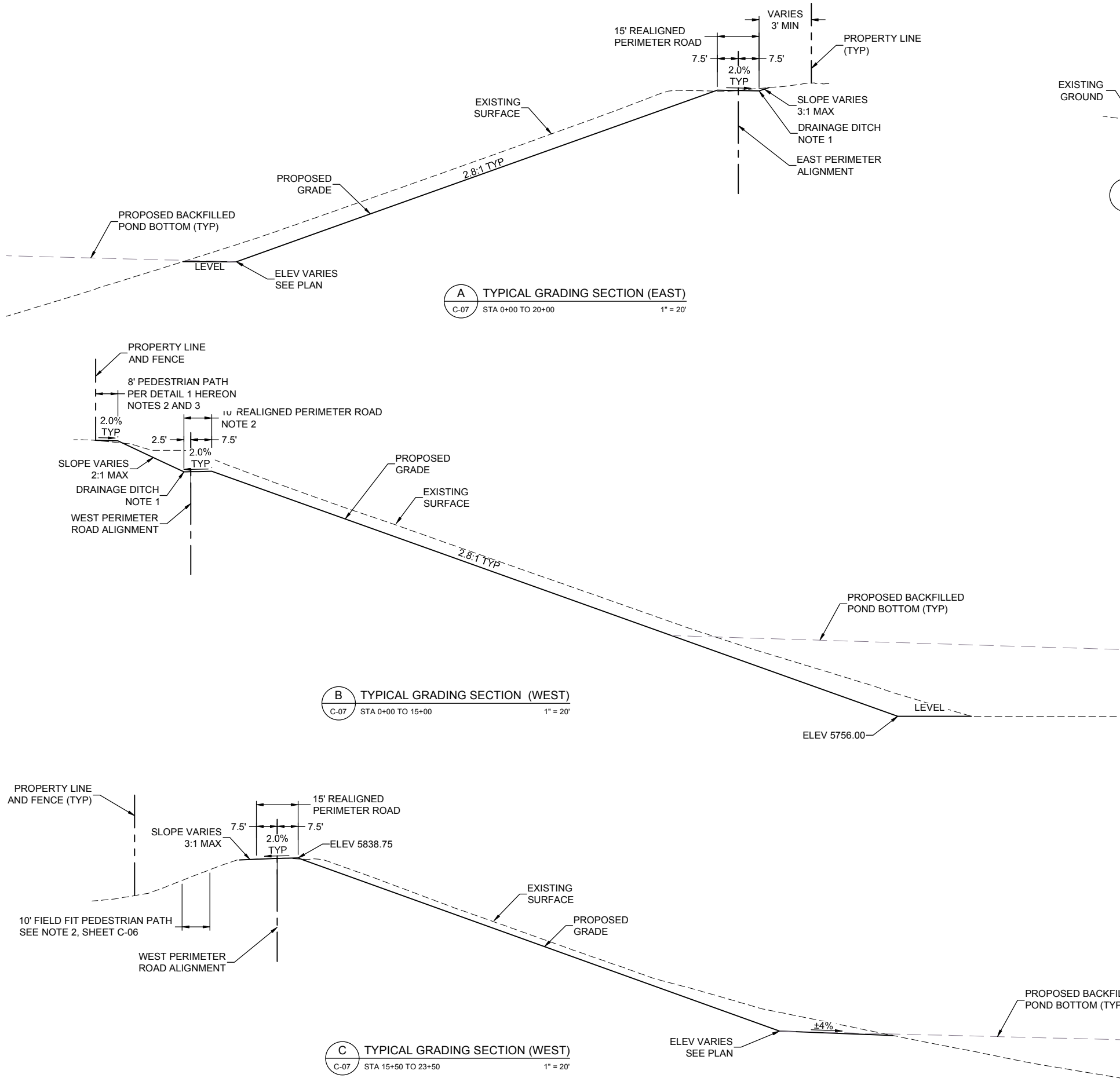
SHEET NUMBER

C-08

EAST EMBANKMENT SECTION POINTS				
STATION	NORTHING	EASTIN	ELEVATION	OFFSET
0+00	1,623,945.53	3,194,394.32	5,784.70	-194.59'
0+00	1,623,942.99	3,194,397.70	5,784.70	-190.35'
0+00	1,623,833.28	3,194,543.99	5,850.54	-7.50'
0+00	1,623,828.78	3,194,549.99	5,850.39	0.00'
0+00	1,623,824.28	3,194,555.99	5,850.24	7.50'
0+00	1,623,824.12	3,194,556.21	5,850.34	7.78'
0+50	1,623,990.47	3,194,394.43	5,784.29	-221.70'
0+50	1,623,980.31	3,194,409.92	5,784.29	-203.18'
0+50	1,623,873.01	3,194,573.56	5,851.98	-7.50'
0+50	1,623,868.90	3,194,579.83	5,851.83	0.00'
0+50	1,623,864.79	3,194,586.10	5,851.68	7.50'
0+50	1,623,864.76	3,194,586.14	5,851.67	7.55'
1+00	1,623,985.08	3,194,394.65	5,784.29	-216.71'
1+00	1,623,979.87	3,194,409.83	5,784.29	-200.66'
1+00	1,623,917.13	3,194,592.51	5,852.05	-7.50'
1+00	1,623,914.69	3,194,599.61	5,851.90	0.00'
1+00	1,623,912.25	3,194,606.70	5,851.75	7.50'
1+00	1,623,912.05	3,194,607.29	5,851.96	8.13'
1+50	1,623,980.92	3,194,394.80	5,784.29	-215.70'
1+50	1,623,979.71	3,194,409.80	5,784.29	-200.65'
1+50	1,623,964.11	3,194,602.32	5,852.05	-7.50'
1+50	1,623,963.51	3,194,609.80	5,851.90	0.00'
1+50	1,623,962.90	3,194,617.27	5,851.75	7.50'
1+50	1,623,962.70	3,194,619.77	5,852.58	10.00'
2+00	1,624,021.71	3,194,392.02	5,783.86	-219.99'
2+00	1,624,020.90	3,194,413.58	5,783.86	-198.42'
2+00	1,624,013.74	3,194,604.36	5,852.04	-7.50'
2+00	1,624,013.46	3,194,611.86	5,851.89	0.00'
2+00	1,624,013.18	3,194,619.35	5,851.74	7.50'
2+00	1,624,013.09	3,194,621.89	5,852.59	10.04'
2+50	1,624,064.34	3,194,391.83	5,783.40	-221.35'
2+50	1,624,064.24	3,194,416.04	5,783.40	-197.14'
2+50	1,624,063.47	3,194,605.67	5,851.49	-7.50'
2+50	1,624,063.44	3,194,613.17	5,851.34	0.00'
2+50	1,624,063.41	3,194,620.67	5,851.19	7.50'
2+50	1,624,063.41	3,194,622.06	5,851.65	8.88'
3+00	1,624,103.43	3,194,394.82	5,782.98	-217.54'
3+00	1,624,104.52	3,194,418.33	5,782.98	-194.01'
3+00	1,624,113.08	3,194,604.64	5,849.69	-7.50'
3+00	1,624,113.43	3,194,612.13	5,849.54	0.00'
3+00	1,624,113.77	3,194,619.62	5,849.39	7.50'
3+00	1,624,114.48	3,194,635.08	5,852.05	22.97'
3+50	1,624,143.04	3,194,398.12	5,782.55	-211.43'
3+50	1,624,145.22	3,194,420.75	5,782.55	-188.70'
3+50	1,624,162.58	3,194,601.12	5,847.19	-7.50'
3+50	1,624,163.30	3,194,608.58	5,847.04	0.00'
3+50	1,624,164.01	3,194,616.05	5,846.89	7.50'
3+50	1,624,165.49	3,194,631.41	5,850.19	22.93'
4+00	1,624,190.54	3,194,399.55	5,782.04	-204.88'
4+00	1,624,192.94	3,194,421.28	5,782.04	-183.02'
4+00	1,624,212.18	3,194,595.74	5,844.69	-7.50'
4+00	1,624,213.00	3,194,603.20	5,844.54	0.00'
4+00	1,624,213.83	3,194,610.65	5,844.39	7.50'
4+00	1,624,215.72	3,194,627.80	5,849.02	24.75'
4+50	1,624,240.63	3,194,397.62	5,781.51	-201.31'
4+50	1,624,243.24	3,194,421.28	5,781.51	-177.51'
4+50	1,624,261.88	3,194,590.26	5,842.19	-7.50'
4+50	1,624,262.70	3,194,597.72	5,842.04	0.00'
4+50	1,624,263.52	3,194,605.17	5,841.89	7.50'
4+50	1,624,265.65	3,194,624.47	5,848.37	26.91'
5+00	1,624,301.76	3,194,395.29	5,780.88	-197.54'
5+00	1,624,303.10	3,194,420.05	5,780.88	-172.74'
5+00	1,624,312.02	3,194,585.06	5,839.90	-7.50'
5+00	1,624,312.43	3,194,592.54	5,839.75	0.00'
5+00	1,624,312.83	3,194,600.03	5,839.60	7.50'
5+00	1,624,314.09	3,194,623.16	5,846.80	30.66'
5+50	1,624,397.55	3,194,402.76	5,779.93	-196.51'

EAST EMBANKMENT SECTION POINTS				
STATION	NORTHING	EASTIN	ELEVATION	OFFSET
5+50	1,624,393.20	3,194,426.52	5,779.93	-172.35'
5+50	1,624,363.53	3,194,588.68	5,838.76	-7.50'
5+50	1,624,362.18	3,194,596.06	5,838.61	0.00'
5+50	1,624,360.83	3,194,603.44	5,838.46	7.50'
5+50	1,624,357.09	3,194,623.86	5,845.43	28.26'
6+00	1,624,446.90	3,194,410.85	5,779.40	-197.43'
6+00	1,624,442.63	3,194,434.16	5,779.40	-173.73'
6+00	1,624,412.71	3,194,597.68	5,838.65	-7.50'
6+00	1,624,411.36	3,194,605.06	5,838.50	0.00'
6+00	1,624,410.01	3,194,612.44	5,838.35	7.50'
6+00	1,624,407.36	3,194,626.92	5,844.08	22.22'
6+50	1,624,496.21	3,194,419.13	5,778.87	-198.16'
6+50	1,624,492.07	3,194,441.80	5,778.87	-175.12'
6+50	1,624,461.89	3,194,606.68	5,838.65	-7.50'
6+50	1,624,460.54	3,194,614.06	5,838.50	0.00'
6+50	1,624,459.19	3,194,621.44	5,838.35	7.50'
6+50	1,624,457.20	3,194,632.34	5,842.76	18.59'
7+00	1,624,545.52	3,194,427.46	5,778.34	-198.85'
7+00	1,624,541.50	3,194,449.44	5,778.34	-176.50'
7+00	1,624,511.08	3,194,615.68	5,838.65	-7.50'
7+00	1,624,509.73	3,194,623.06	5,838.50	0.00'
7+00	1,624,508.38	3,194,630.44	5,838.35	7.50'
7+00	1,624,506.71	3,194,639.57	5,841.88	16.79'
7+50	1,624,594.68	3,194,436.58	5,777.82	-198.73'
7+50	1,624,590.93	3,194,457.08	5,777.82	-177.89'
7+50	1,624,560.26	3,194,624.68	5,838.65	-7.50'
7+50	1,624,558.91	3,194,632.06	5,838.50	0.00'
7+50	1,624,557.56	3,194,639.44	5,838.35	7.50'
7+50	1,624,556.19	3,194,646.93	5,840.97	15.12'
8+00	1,624,639.78	3,194,444.55	5,777.33	-198.82'
8+00	1,624,636.67	3,194,463.83	5,777.33	-179.29'
8+00	1,624,609.33	3,194,633.44	5,838.65	-7.50'
8+00	1,624,608.13	3,194,640.84	5,838.50	0.00'
8+00	1,624,606.94	3,194,648.24	5,838.35	7.50'
8+00	1,624,605.96	3,194,654.33	5,840.31	13.67'
8+50	1,624,679.60	3,194,448.78	5,776.89	-199.99'
8+50	1,624,677.47	3,194,468.11	5,776.89	-180.54'
8+50	1,624,658.50	3,194,640.11	5,838.65	-7.50'
8+50	1,624,657.67	3,194,647.56	5,838.50	0.00'
8+50	1,624,656.85	3,194,655.02	5,838.35	7.50'
8+50	1,624,656.46	3,194,658.58	5,839.55	11.09'
9+00	1,624,721.17	3,194,448.34	5,776.45	-203.94'
9+00	1,624,719.67	3,194,470.55	5,776.45	-181.69'
9+00	1,624,707.99	3,194,644.34	5,838.65	-7.50'
9+00	1,624,707.49	3,194,651.83	5,838.50	0.00'
9+00	1,624,706.98	3,194,659.31	5,838.35	7.50'
9+00	1,624,706.92	3,194,660.31	5,838.02	8.50'
9+50	1,624,771.21	3,194,449.41	5,775.92	-206.23'
9+50	1,624,769.66	3,194,472.43	5,775.92	-183.17'
9+50	1,624,757.88	3,194,647.70	5,838.65	-7.50'
9+50	1,624,757.37	3,194,655.18	5,838.50	0.00'
9+50	1,624,756.87	3,194,662.66	5,838.35	7.50'
9+50	1,624,756.83	3,194,663.22	5,838.16	8.06'
10+00	1,624,821.14	3,194,452.17	5,775.39	-206.83'
10+00	1,624,819.65	3,194,474.30	5,775.39	-184.65'
10+00	1,624,807.76	3,194,651.05	5,838.65	-7.50'
10+00	1,624,807.26	3,194,658.53	5,838.50	0.00'
10+00	1,624,806.76	3,194,666.02	5,838.35	7.50'
10+00	1,624,806.73	3,194,666.39	5,838.23	7.87'
10+50	1,624,871.02	3,194,455.56	5,774.87	-206.79'
10+50	1,624,869.63	3,194,476.18	5,774.87	-186.13'
10+50	1,624,857.65	3,194,654.40	5,838.65	-7.50'
10+50	1,624,857.15	3,194,661.89	5,838.50	0.00'
10+50	1,624,856.65	3,194,669.37	5,838.35	7.50'
10+50	1,624,856.27	3,194,674.99	5,836.47	13.13'
11+00	1,624,920.84	3,194,459.98	5,774.34	-205.73'
11+00	1,624,919.62	3,194,478.05	5,774.34	-187.61'

EAST EMBANKMENT SECTION POINTS				
STATION	NORTHING	EASTIN	ELEVATION	OFFSET
11+00	1,624,907.54	3,194,657.76	5,838.65	-7.50'
11+00	1,624,907.04	3,194,665.24	5,838.50	0.00'
11+00	1,624,906.53	3,194,672.72	5,838.35	7.50'
11+00	1,624,906.03	3,194,680.26	5,835.83	15.06'
11+50	1,624,970.73	3,194,463.21	5,773.81	-205.85'
11+50	1,624,969.61	3,194,479.91	5,773.81	-189.11'
11+50	1,624,957.43	3,194,661.11	5,838.65	-7.50'
11+50	1,624,956.92	3,194,668.59	5,838.50	0.00'
11+50	1,624,956.42	3,194,676.08	5,838.35	7.50'
11+50	1,624,955.80	3,194,685.33	5,835.26	16.77'
12+00	1,625,013.73	3,194,463.16	5,773.35	-208.32'
12+00	1,625,013.14	3,194,480.84	5,773.35	-190.64'
12+00	1,625,007.09	3,194,663.87	5,838.65	-7.50'
12+00	1,625,006.84	3,194,671.37	5,838.50	0.00'
12+00	1,625,006.60	3,194,678.86	5,838.35	7.50'
12+00	1,625,006.13	3,194,692.85	5,833.69	21.49'
12+50	1,625,060.73	3,194,460.41	5,772.85	-212.02'
12+50	1,625,060.36	3,194,480.65	5,772.85	-191.78'
12+50	1,625,056.97	3,194,664.90	5,838.65	-7.50'
12+50	1,625,056.83	3,194,672.39	5,838.50	0.00'
12+50	1,625,056.70	3,194,679.89	5,838.35	7.50'
12+50	1,625,056.42	3,194,694.90	5,833.35	22.51'
13+00	1,625,110.79	3,194,457.26	5,772.32	-216.09'
13+00	1,625,110.37	3,194,480.09	5,772.32	-193.25'
13+00	1,625,106.96	3,194,665.81	5,838.65	-7.50'
13+00	1,625,106.82	3,194,673.31	5,838.50	0.00'
13+00	1,625,106.69	3,194,680.81	5,838.35	7.50'
13+00	1,625,106.30	3,194,701.59	5,831.42	28.28'
13+50	1,625,161.27	3,194,454.63	5,771.79	-219.65'
13+50	1,625,160.76	3,194,479.58	5,771.79	-194.69'
13+50	1,625,156.97	3,194,666.74	5,838.65	-7.50'
13+50	1,625,156.82	3,194,674.23	5,838.50	0.00'
13+50	1,625,156.66	3,194,681.73	5,838.35	7.50'
13+50	1,625,156.18	3,194,705.51	5,830.42	31.28'
14+00	1,625,222.31	3,194,455.55	5,771.16	-221.49



SECTION GRADING NOTES:

- DRAINAGE DITCH TO BE CONSTRUCTED AT OUTER EDGE OF PERIMETER ROAD PER ENGINEER'S DIRECTION.
- PERIMETER ROAD AND EXISTING PEDESTRIAN PATH ARE TO BE NARROWED FROM STATIONS 3+89.14 THROUGH 17+50.00 OF THE WEST PERIMETER ROAD ALIGNMENT TO ACCOMMODATE MAXIMUM GRADING CONSTRAINTS. PERIMETER ROAD NARROWS FROM 15' TO 10' AND THE EXISTING PEDESTRIAN PATH NARROWS FROM 10' TO 8'.
- CONTRACTOR SHALL REPLACE THE EXISTING 10' CONCRETE PEDESTRIAN PATH WITH AN 8' WIDE CONCRETE PEDESTRIAN PATH AS NOTED ON SHEET C-06. THE NEW PATH SHALL BE CONSTRUCTED TO MATCH THE EXISTING CONCRETE PEDESTRIAN PATH THICKNESS AND GRADE.

ASSISTANT DIRECTOR OF DEVELOPMENT REVIEW

DATE

THESE CONSTRUCTION DRAWINGS HAVE BEEN REVIEWED BY DOUGLAS COUNTY FOR GRADING EROSION AND SEDIMENT CONTROL IMPROVEMENTS.

ENGINEERING DIVISION ACCEPTANCE BLOCK

ISSUED FOR
CONSTRUCTION

PROJECT

CHAMBERS RESERVOIR
REMEDATION DESIGN
(PHASE I)
9165 S. CHAMBERS ROAD,
PARKER, CO 80134

CLIENT

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REGISTRATION

ISSUE/REVISION

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I/R	DATE	DESCRIPTION

KEY PLAN

PROJECT NUMBER

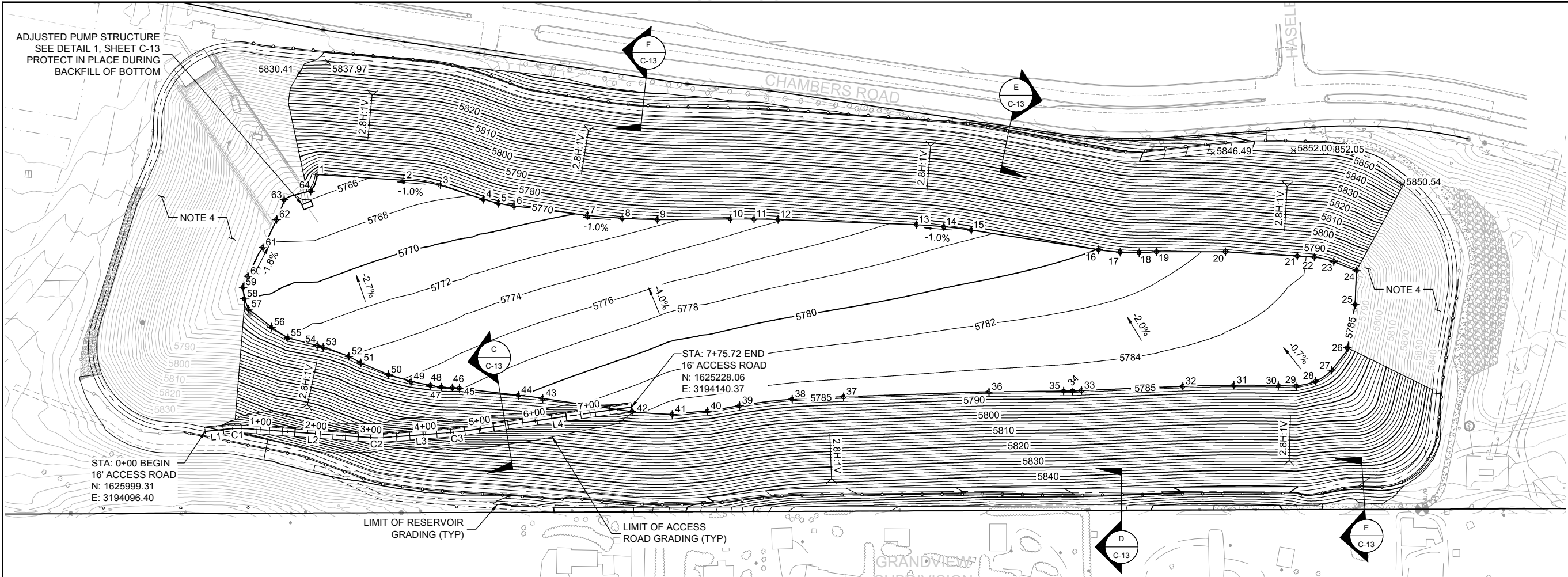
60567161

SHEET TITLE

TYPICAL EMBANKMENT
GRADING SECTIONS

SHEET NUMBER

C-11



ACCESS ROAD LINE TABLE		
LINE	LENGTH	BEARING
L1	40.74	S6°11'12"E
L2	219.59	S4°11'00"W
L3	122.10	S4°19'26"E
L4	314.20	S8°06'21"E

ACCESS ROAD CURVE TABLE					
CURVE	LENGTH	RADIUS	DELTA	TANGENT	CHORD
C1	36.20	200.00	10°22'12"	18.15	36.15
C2	29.70	200.00	8°30'26"	14.88	29.67
C3	13.20	200.00	3°46'55"	6.60	13.20

FINISHED GRADING PLAN



CONTOUR INTERVAL: MINOR 2 FOOT
MAJOR 10 FOOT



ASSISTANT DIRECTOR OF DEVELOPMENT REVIEW

DATE

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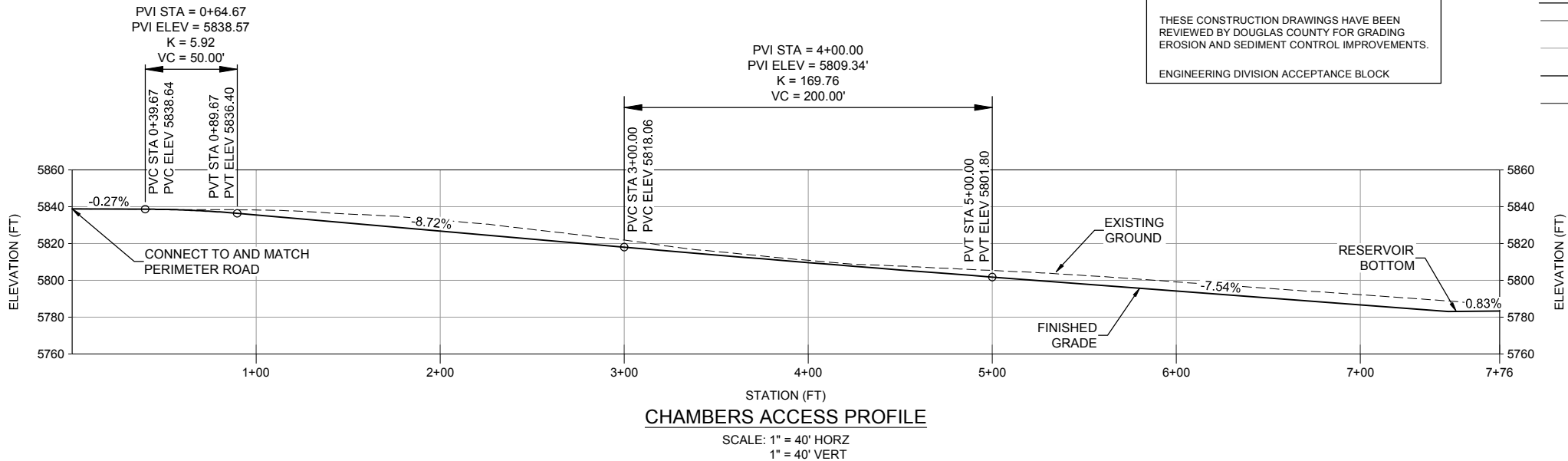
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FINISHED GRADING NOTES:

- PHASE I SPILLWAY ELEVATION IS APPROXIMATELY 5833.5'. THIS WILL BE ADJUSTED IN PHASE II TO 5835.0'.
- ALL ELEVATIONS AND CONTOURS SHOWN ARE FINISHED GRADE FOR PHASE I. FOR BOTTOM LINER FINISHED GRADE SEE PHASE II DRAWINGS.
- SEE TABLES ON SHEET C-14 FOR PHASE I BOTTOM FILL POINTS AND ACCESS ROAD SECTION POINTS.
- AREAS OUTSIDE OF SHOWN PROPOSED GRADING LIMITS AND WITHIN THE RESERVOIR LIMITS ARE TO BE FINE GRADED TO ALLOW FOR PROPER LINER INSTALLATION. ALL SURFACE ROCKS GREATER THAN 3"Ø AND ALL ORGANICS SHALL BE REMOVED.

LEGEND

- EXISTING MAJOR CONTOUR (25' INTERVAL)
- EXISTING MINOR CONTOUR (5' INTERVAL)
- PROPOSED MAJOR CONTOUR (25' INTERVAL)
- PROPOSED MINOR CONTOUR (5' INTERVAL)
- FINISHED GRADE POINT (SEE SHEET C-14)
- FINISHED GRADE FLOW DIRECTION
- FINISHED GRADE SLOPE



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CHAMBERS RESERVOIR
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KEY PLAN

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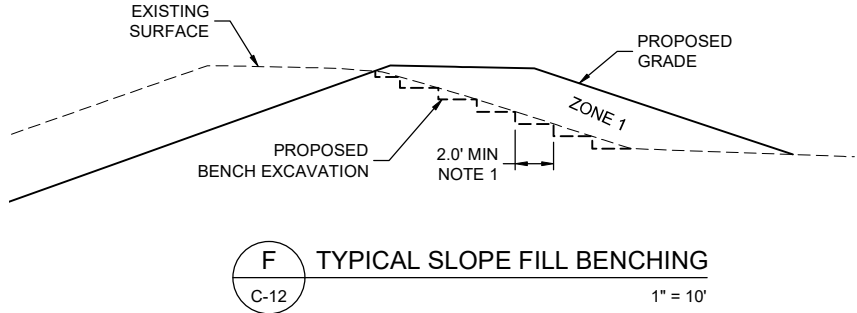
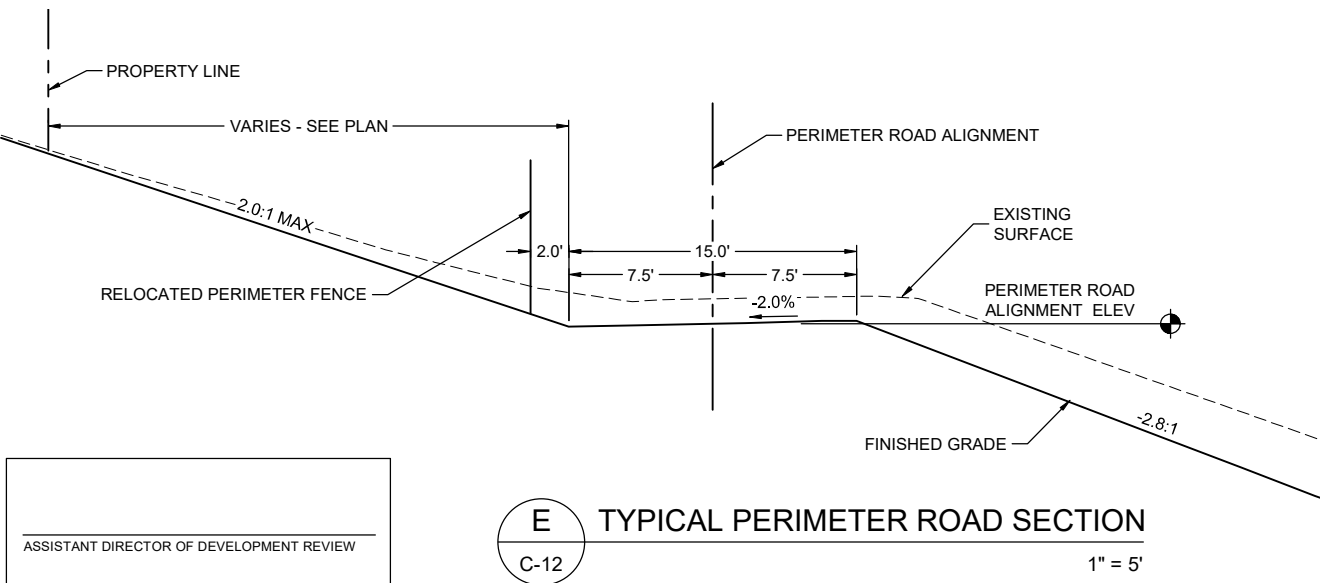
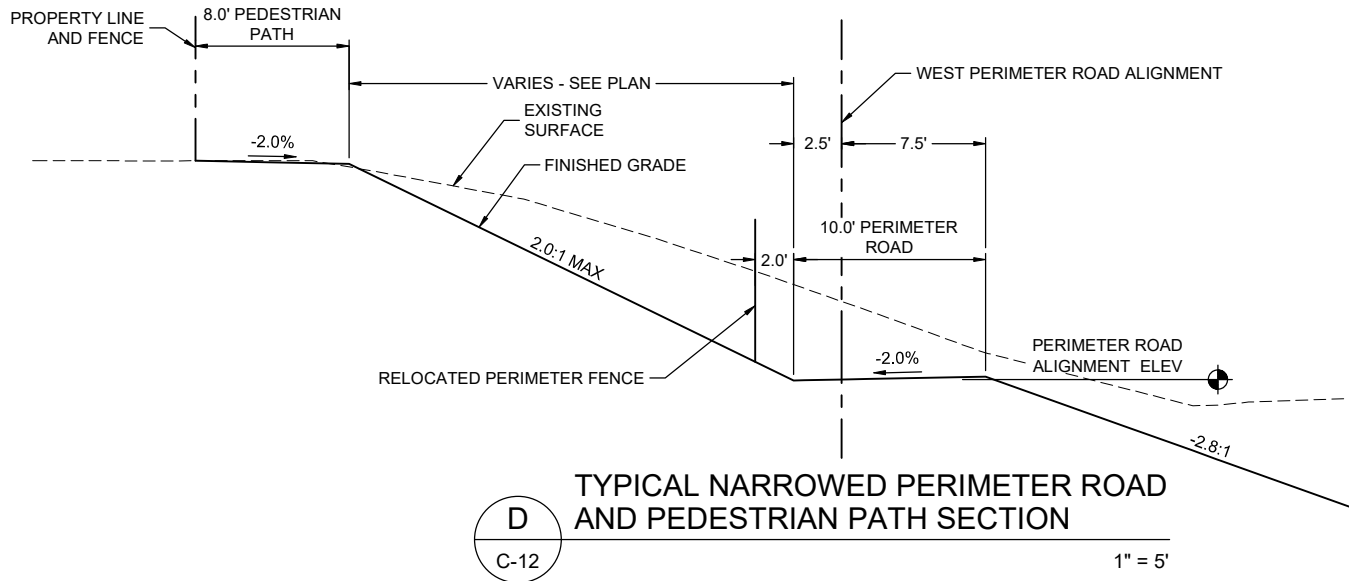
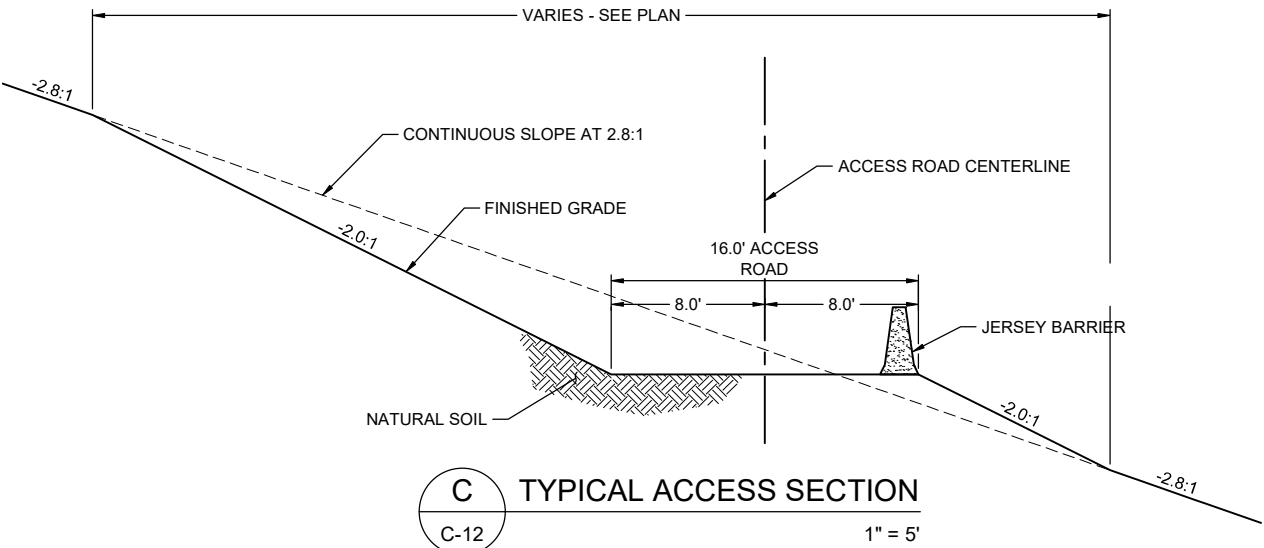
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SHEET TITLE

FINISHED GRADING PLAN

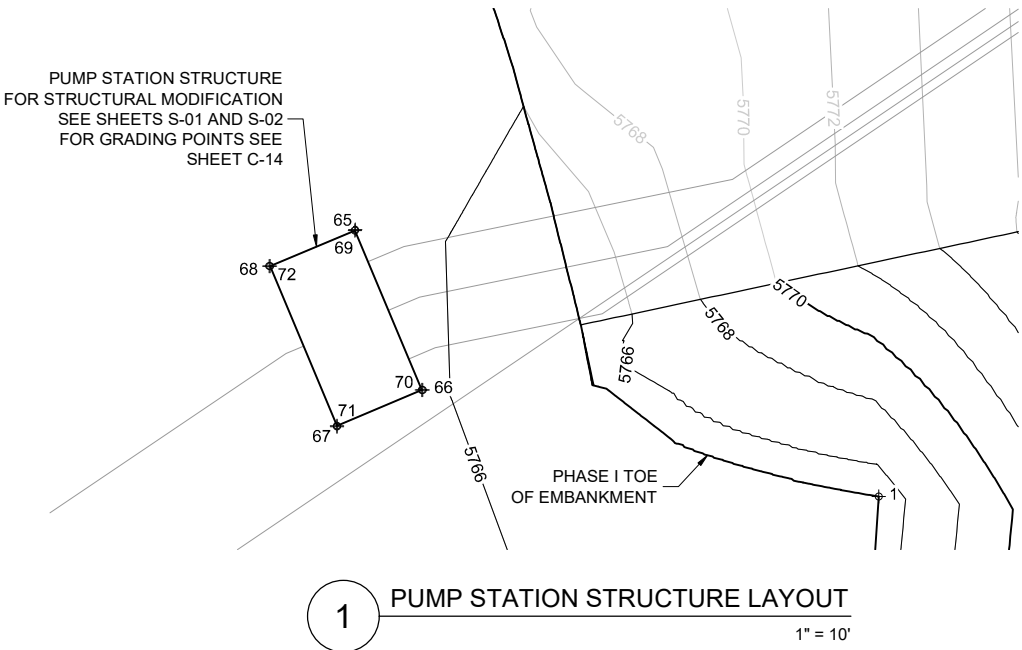
SHEET NUMBER

C-12



DETAILED GRADING NOTES:

1. DETAIL APPLIES TO ALL SLOPE FILL EMBANKMENT AREAS. BENCH A MINIMUM 2.0' INTO THE EXISTING EMBANKMENT TO ENSURE BONDING OF NEW EMBANKMENT MATERIAL.



ASSISTANT DIRECTOR OF DEVELOPMENT REVIEW
DATE
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KEY PLAN

PROJECT NUMBER
60567161
SHEET TITLE
DETAILED GRADING SECTIONS
AND DETAILS
SHEET NUMBER
C-13

BOTTOM FILL POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	1625796.63	3194560.95	5765.00	LOW POINT
2	1625639.98	3194550.72	5766.66	BOTTOM FG
3	1625573.81	3194541.66	5767.36	BOTTOM FG
4	1625495.83	3194516.32	5768.23	BOTTOM FG
5	1625468.45	3194509.08	5768.53	BOTTOM FG
6	1625440.53	3194504.25	5768.83	BOTTOM FG
7	1625307.62	3194487.20	5770.24	BOTTOM FG
8	1625244.45	3194481.95	5770.91	BOTTOM FG
9	1625181.09	3194479.68	5771.58	BOTTOM FG
10	1625049.36	3194480.77	5772.97	BOTTOM FG
11	1625006.17	3194480.70	5773.42	BOTTOM FG
12	1624963.00	3194479.68	5773.88	BOTTOM FG
13	1624712.40	3194470.28	5776.53	BOTTOM FG
14	1624662.77	3194466.78	5777.05	BOTTOM FG
15	1624613.41	3194460.55	5777.58	BOTTOM FG
16	1624382.94	3194424.94	5780.04	BOTTOM FG
17	1624343.94	3194420.66	5780.45	BOTTOM FG
18	1624309.73	3194419.89	5780.81	BOTTOM FG
19	1624278.12	3194421.27	5781.15	BOTTOM FG
20	1624153.42	3194421.29	5782.46	BOTTOM FG
21	1624023.69	3194413.73	5783.83	BOTTOM FG
22	1623992.70	3194411.70	5784.16	BOTTOM FG
23	1623957.73	3194403.56	5784.54	BOTTOM FG
24	1623916.68	3194387.25	5785.00	BOTTOM FG
25	1623919.02	3194325.72	5785.00	BOTTOM FG
26	1623933.02	3194247.87	5785.00	BOTTOM FG
27	1623961.52	3194207.39	5785.00	BOTTOM FG
28	1623990.81	3194187.30	5785.00	BOTTOM FG
29	1624025.44	3194178.40	5785.00	BOTTOM FG
30	1624058.04	3194179.32	5785.00	BOTTOM FG
31	1624138.08	3194180.00	5785.00	BOTTOM FG
32	1624230.63	3194177.98	5785.00	BOTTOM FG
33	1624413.77	3194170.39	5785.00	BOTTOM FG
34	1624430.13	3194169.73	5785.00	BOTTOM FG
35	1624446.37	3194169.42	5785.00	BOTTOM FG
36	1624581.22	3194168.02	5785.00	BOTTOM FG

BOTTOM FILL POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
37	1624844.17	3194159.08	5785.00	BOTTOM FG
38	1624937.21	3194154.71	5785.00	BOTTOM FG
39	1625032.68	3194143.08	5785.00	BOTTOM FG
40	1625090.18	3194133.22	5785.00	BOTTOM FG
41	1625154.20	3194127.26	5785.00	BOTTOM FG
42	1625226.97	3194132.14	5783.75	BOTTOM FG
43	1625388.47	3194156.23	5780.68	BOTTOM FG
44	1625432.46	3194161.95	5779.87	BOTTOM FG
45	1625539.40	3194174.52	5777.89	BOTTOM FG
46	1625552.00	3194175.30	5777.66	BOTTOM FG
47	1625571.96	3194176.50	5777.30	BOTTOM FG
48	1625591.69	3194179.80	5776.93	BOTTOM FG
49	1625627.05	3194186.76	5776.27	BOTTOM FG
50	1625667.67	3194199.01	5775.50	BOTTOM FG
51	1625717.44	3194220.38	5774.50	BOTTOM FG
52	1625739.16	3194232.15	5774.05	BOTTOM FG
53	1625785.45	3194248.92	5773.15	BOTTOM FG
54	1625796.64	3194251.86	5772.94	BOTTOM FG
55	1625849.26	3194265.41	5771.94	BOTTOM FG
56	1625879.38	3194285.04	5771.29	BOTTOM FG
57	1625920.56	3194317.63	5770.33	BOTTOM FG
58	1625928.36	3194336.38	5769.97	BOTTOM FG
59	1625930.67	3194357.26	5769.65	BOTTOM FG
60	1625922.00	3194377.15	5769.24	BOTTOM FG
61	1625894.59	3194428.97	5768.12	BOTTOM FG
62	1625869.83	3194479.87	5767.04	BOTTOM FG
63	1625856.31	3194515.61	5766.32	BOTTOM FG
64	1625808.25	3194531.13	5765.60	BOTTOM FG
65	1625824.44	3194506.40	5766.25	BOTTOM FG
66	1625807.74	3194513.46	5766.08	BOTTOM FG
67	1625803.93	3194504.52	5766.34	BOTTOM FG
68	1625820.66	3194497.46	5766.49	BOTTOM FG
69	1625824.34	3194506.39	5767.50	STRUCTURE TOW
70	1625807.74	3194513.36	5767.50	STRUCTURE TOW
71	1625804.03	3194504.53	5767.50	STRUCTURE TOW
72	1625820.63	3194497.56	5767.50	STRUCTURE TOW

ACCESS ROAD SECTION POINTS				
STATION	NORTHING	EASTING	ELEVATION	OFFSET
0+33	1625967.42	3194108.48	5838.37	-8.58'
0+33	1625967.36	3194107.91	5838.66	-8.00'
0+33	1625966.50	3194099.95	5838.66	0.00'
0+33	1625965.64	3194092.00	5838.66	8.00'
0+33	1625965.60	3194091.64	5838.84	8.36'
0+50	1625950.47	3194116.03	5835.28	-14.49'
0+50	1625950.07	3194109.55	5838.52	-8.00'
0+50	1625949.58	3194101.57	5838.52	0.00'
0+50	1625949.08	3194093.59	5838.52	8.00'
0+50	1625949.04	3194092.93	5838.85	8.66'
1+00	1625897.36	3194131.24	5823.70	-31.59'
1+00	1625899.08	3194107.71	5835.49	-8.00'
1+00	1625899.66	3194099.73	5835.49	0.00'
1+00	1625900.24	3194091.76	5835.49	8.00'
1+00	1625900.71	3194085.40	5838.68	14.38'
1+50	1625847.77	3194123.73	5821.28	-27.72'
1+50	1625849.21	3194104.07	5831.14	-8.00'
1+50	1625849.79	3194096.09	5831.14	0.00'
1+50	1625850.38	3194088.11	5831.14	8.00'
1+50	1625851.48	3194072.99	5838.72	23.16'
2+00	1625798.69	3194109.39	5822.28	-17.00'
2+00	1625799.34	3194100.42	5826.78	-8.00'
2+00	1625799.93	3194092.44	5826.78	0.00'
2+00	1625800.51	3194084.46	5826.78	8.00'
2+00	1625802.25	3194060.63	5838.72	31.89'
2+50	1625748.49	3194110.30	5815.63	-21.57'
2+50	1625749.48	3194096.77	5822.42	-8.00'
2+50	1625750.06	3194088.79	5822.42	0.00'
2+50	1625750.64	3194080.81	5822.42	8.00'
2+50	1625752.29	3194058.27	5833.72	30.61'
3+00	1625698.78	3194110.54	5809.36	-25.40'
3+00	1625699.75	3194093.16	5818.06	-8.00'
3+00	1625700.19	3194085.18	5818.06	0.00'
3+00	1625700.64	3194077.19	5818.06	8.00'
3+00	1625701.68	3194058.43	5827.45	26.78'
3+50	1625652.59	3194117.75	5802.47	-30.61'
3+50	1625650.88	3194095.20	5813.77	-8.00'
3+50	1625650.28	3194087.23	5813.77	0.00'
3+50	1625649.67	3194079.25	5813.77	8.00'
3+50	1625648.67	3194065.98	5820.43	21.31'

ACCESS ROAD SECTION POINTS				
STATION	NORTHING	EASTING	ELEVATION	OFFSET
4+00	1625602.73	3194121.60	5798.29	-30.69'
4+00	1625601.02	3194098.97	5809.64	-8.00'
4+00	1625600.42	3194091.00	5809.64	0.00'
4+00	1625599.82	3194083.02	5809.64	8.00'
4+00	1625598.63	3194067.36	5817.49	23.71'
4+50	1625552.41	3194116.73	5798.63	-22.03'
4+50	1625551.23	3194102.75	5805.65	-8.00'
4+50	1625550.56	3194094.77	5805.65	0.00'
4+50	1625549.89	3194086.80	5805.65	8.00'
4+50	1625547.79	3194061.83	5818.18	33.06'
5+00	1625503.66	3194120.01	5796.45	-18.70'
5+00	1625502.15	3194109.42	5801.80	-8.00'
5+00	1625501.02	3194101.50	5801.80	0.00'
5+00	1625499.89	3194093.58	5801.80	8.00'
5+00	1625496.19	3194067.56	5814.94	34.27'
5+50	1625454.06	3194126.36	5793.03	-18.00'
5+50	1625452.65	3194116.47	5798.03	-8.00'
5+50	1625451.52	3194108.55	5798.03	0.00'
5+50	1625450.39	3194100.63	5798.03	8.00'
5+50	1625446.59	3194073.90	5811.53	35.00'
6+00	1625404.54	3194133.27	5789.34	-17.85'
6+00	1625403.15	3194123.52	5794.26	-8.00'
6+00	1625402.02	3194115.60	5794.26	0.00'
6+00	1625400.89	3194107.68	5794.26	8.00'
6+00	1625397.14	3194081.34	5807.56	34.60'
6+50	1625355.40	3194142.88	5784.27	-20.44'
6+50	1625353.65	3194130.57	5790.49	-8.00'
6+50	1625352.52	3194122.65	5790.49	0.00'
6+50	1625351.39	3194114.73	5790.49	8.00'
6+50	1625348.04	3194091.21	5802.37	31.76'
7+00	1625305.45	3194146.75	5782.11	-17.23'
7+00	1625304.15	3194137.62	5786.72	-8.00'
7+00	1625303.02	3194129.70	5786.72	0.00'
7+00	1625301.89	3194121.78	5786.72	8.00'
7+00	1625298.95	3194101.10	5797.17	28.88'
7+50	1625254.74	3194145.31	5782.82	-8.65'
7+50	1625254.65	3194144.67	5783.15	-8.00'
7+50	1625253.52	3194136.75	5783.15	0.00'
7+50	1625252.39	3194128.83	5783.15	8.00'
7+50	1625250.04	3194112.29	5791.50	24.71'

ISSUED FOR
CONSTRUCTION



PROJECT

CHAMBERS RESERVOIR
REMEDATION DESIGN
(PHASE I)
9165 S. CHAMBERS ROAD,
PARKER, CO 80134

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KEY PLAN

PROJECT NUMBER

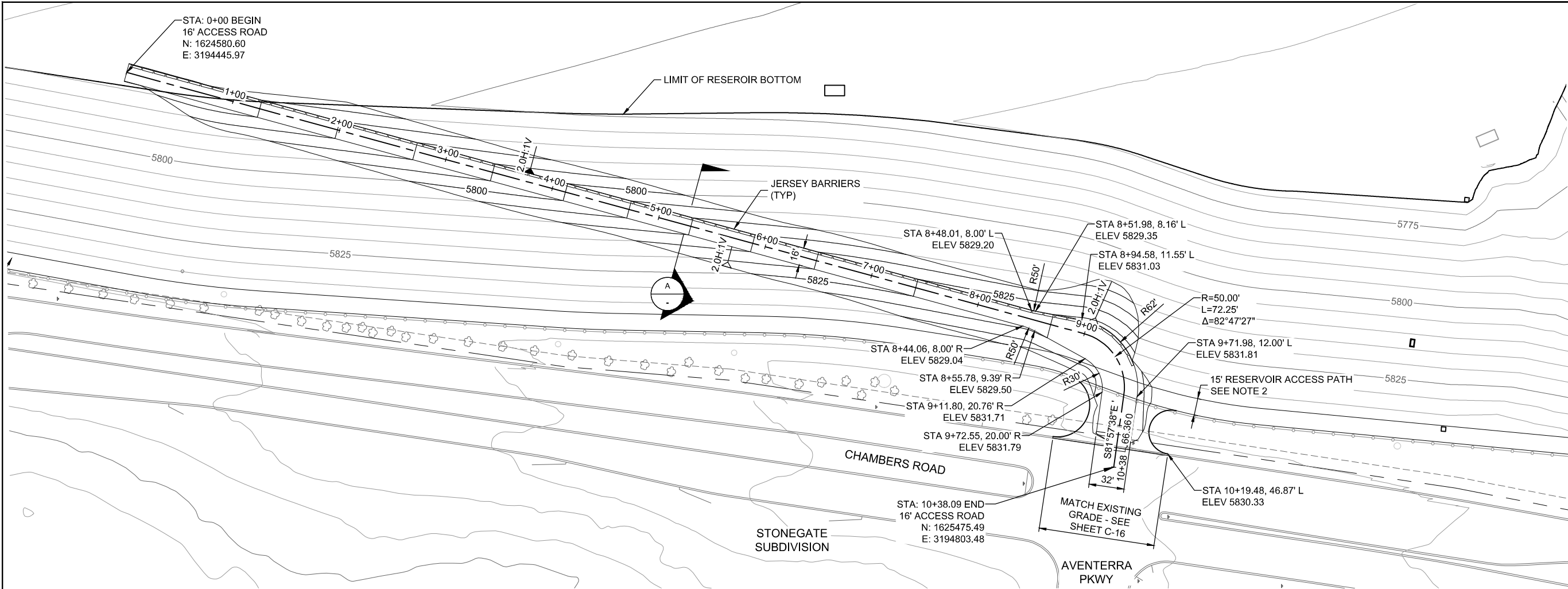
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SHEET TITLE

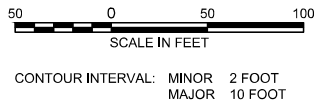
FINISHED GRADE
POINTS TABLES

SHEET NUMBER

C-14

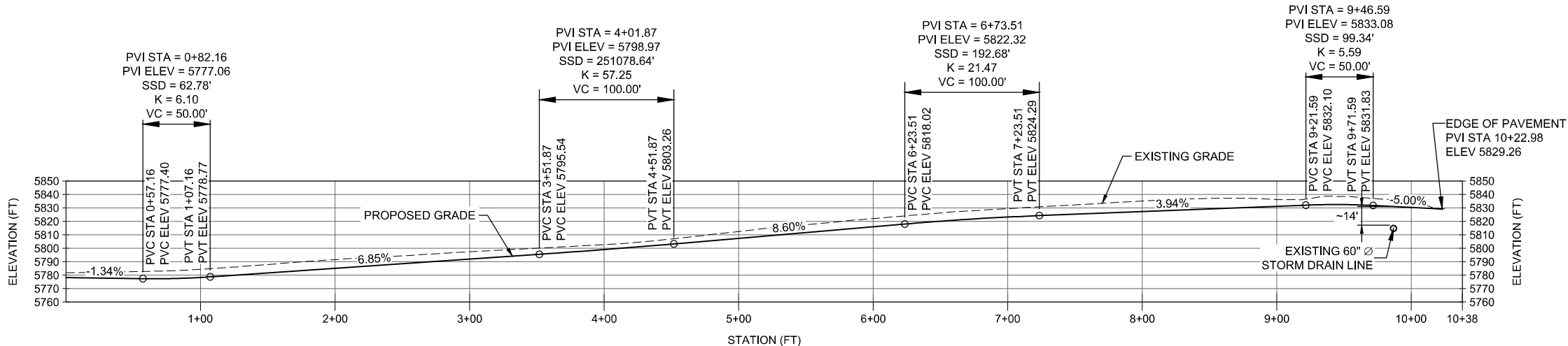
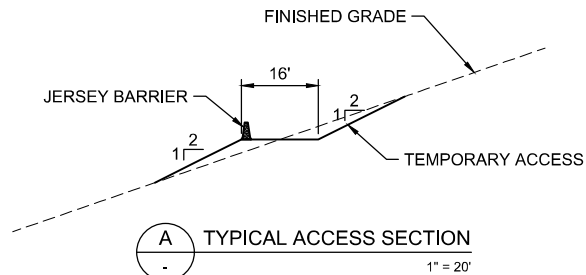


CHAMBERS ACCESS EAST PLAN



EAST ACCESS NOTES:

1. CHAMBERS EAST ACCESS (TEMPORARY) IS TO BE CONSTRUCTED AT THE BEGINNING OF THE CONSTRUCTION PROCESS AND IS TO REMAIN UNTIL THE INSTALLMENT OF THE LINER DURING PHASE II CONSTRUCTION. ONCE THE EAST ACCESS IS NO LONGER NEEDED IT IS TO BE GRADED TO MATCH THE FINAL GRADE PER SHEET C-12.
2. CONTRACTOR SHALL GRADE THE TEMPORARY EAST ACCESS ROAD TO THE 15' RESERVOIR ACCESS PATH IN SUCH A WAY THAT THE PATH REMAINS ACCESSIBLE .



CHAMBERS ACCESS EAST PROFILE

SCALE: 1" = 50' HORZ
1" = 50' VERT

ASSISTANT DIRECTOR OF DEVELOPMENT REVIEW	
DATE	
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ENGINEERING DIVISION ACCEPTANCE BLOCK	

ISSUED FOR
CONSTRUCTION

AECOM

PROJECT

CHAMBERS RESERVOIR
REMEDATION DESIGN
(PHASE II)

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ARAPAHOE COUNTY
Water and Wastewater Authority
13031 E Caley Ave
Centennial, Colorado 80111
Ph: (303) 790-4830 Fax: (303) 790-1718
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AECOM
804 COLORADO AVE.
Suite 201
GLENWOOD SPRINGS, CO. 81601

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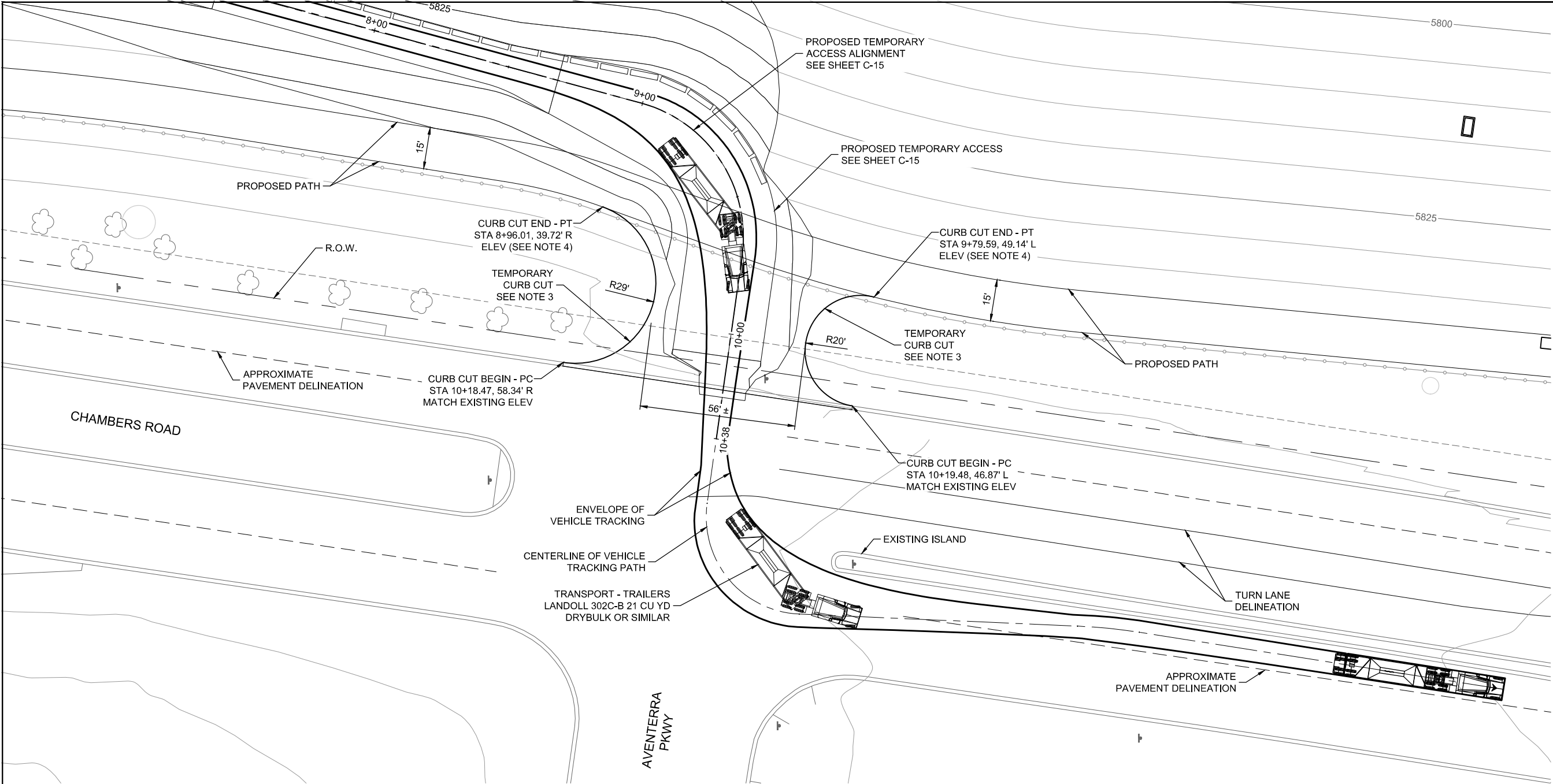
60567161

SHEET TITLE

EAST ACCESS PLAN
AND PROFILE

SHEET NUMBER

C-15



AVENTERRA INTERSECTION
ACCESS PLAN

20 0 20 40
SCALE IN FEET
CONTOUR INTERVAL: MINOR 5 FOOT
MAJOR 25 FOOT



AVENTERRA ACCESS NOTES:

1. VEHICLE TRACKING SHOWN GENERATED BY TRANSOFT AUTOTURN PRO VERSION 10.
2. VEHICLE USED FOR ANALYSIS IS A LANDOLL 302C-B 21 CUBIC YARD DRYBULK TRANSPORT. IT IS SIMILAR OR EQUIVALENT TO THE KENWORTH TRACTOR AND TRAILER USED BY FIORE FOR THIS PROJECT.
3. CHAMBERS EAST ACCESS (TEMPORARY) IS TO BE CONSTRUCTED AT THE BEGINNING OF THE CONSTRUCTION PROCESS AND IS TO REMAIN UNTIL THE INSTALLMENT OF THE LINER DURING PHASE II CONSTRUCTION. ONCE THE EAST ACCESS IS NO LONGER NEEDED THE CURB, GUTTER AND RIGHT OF WAY ARE TO BE RETURNED TO THE ORIGINAL CONDITION.
4. CONTRACTOR SHALL GRADE THE TEMPORARY EAST ACCESS ROAD TO THE 15' RESERVOIR ACCESS PATH IN SUCH A WAY THAT THE PATH REMAINS ACCESSIBLE .

ISSUED FOR
CONSTRUCTION



PROJECT

CHAMBERS RESERVOIR
REMEDATION DESIGN
(PHASE II)

CLIENT



13031 E Caley Ave
Centennial, Colorado 80111
Ph: (303) 790-4830 Fax: (303) 790-1718
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CONSULTANT

AECOM
804 COLORADO AVE.
Suite 201
GLENWOOD SPRINGS, CO. 81601

www.aecom.com

CONSULTANTS

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	07/15/2019	ISSUED FOR CONSTRUCTION

KEY PLAN

PROJECT NUMBER

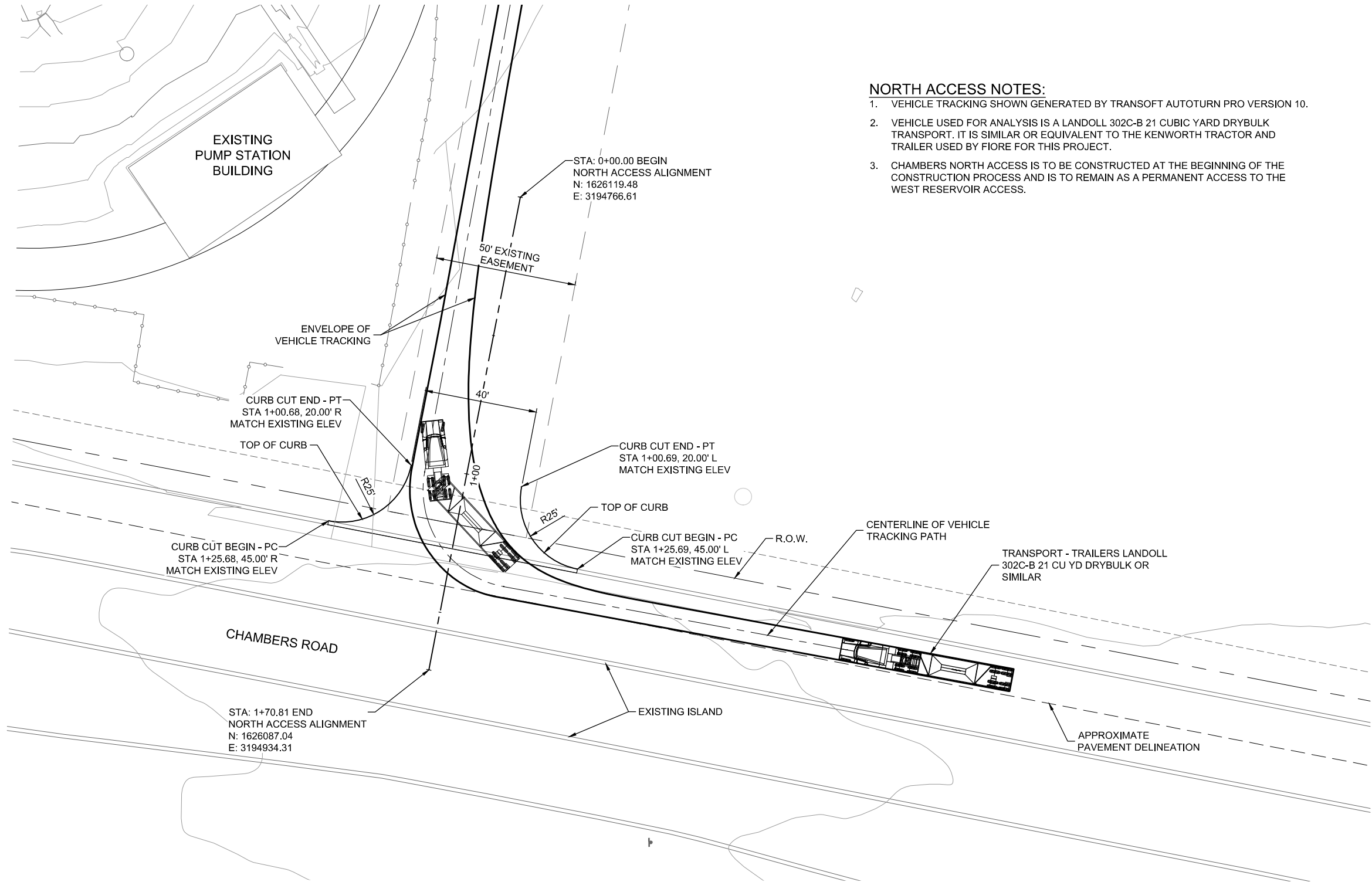
60567161

SHEET TITLE

AVENTERRA
INTERSECTION
ACCESS PLAN

SHEET NUMBER

C-16



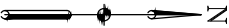
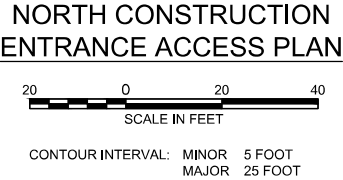
- NORTH ACCESS NOTES:**
1. VEHICLE TRACKING SHOWN GENERATED BY TRANSOFT AUTOTURN PRO VERSION 10.
 2. VEHICLE USED FOR ANALYSIS IS A LANDOLL 302C-B 21 CUBIC YARD DRYBULK TRANSPORT. IT IS SIMILAR OR EQUIVALENT TO THE KENWORTH TRACTOR AND TRAILER USED BY FIORE FOR THIS PROJECT.
 3. CHAMBERS NORTH ACCESS IS TO BE CONSTRUCTED AT THE BEGINNING OF THE CONSTRUCTION PROCESS AND IS TO REMAIN AS A PERMANENT ACCESS TO THE WEST RESERVOIR ACCESS.

ASSISTANT DIRECTOR OF DEVELOPMENT REVIEW

DATE

THESE CONSTRUCTION DRAWINGS HAVE BEEN REVIEWED BY DOUGLAS COUNTY FOR GRADING EROSION AND SEDIMENT CONTROL IMPROVEMENTS.

ENGINEERING DIVISION ACCEPTANCE BLOCK



ISSUED FOR CONSTRUCTION

AECOM

PROJECT

CHAMBERS RESERVOIR
REMEDATION DESIGN
(PHASE II)

CLIENT

ARAPAHOE COUNTY
Water and Wastewater Authority

13031 E Caley Ave
Centennial, Colorado 80111
Ph: (303) 790-4830 Fax: (303) 790-1718
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CONSULTANT

AECOM
804 COLORADO AVE.
Suite 201
GLENWOOD SPRINGS, CO. 81601

www.aecom.com

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KEY PLAN

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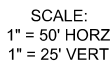
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SHEET TITLE

NORTH CONSTRUCTION
ENTRANCE ACCESS PLAN

SHEET NUMBER

C-17



ENGINEERING DIVISION ACCEPTANCE BLOCK

ISSUED FOR
CONSTRUCTION

C-18