CONVERSE COUNTY COMMISSION MEETING

January 7, 2026 - 8:00 a.m. to 3:00 p.m.

107 N. 5TH STREET, SUITE 114, DOUGLAS, WY 82633
Commission Chambers are OPEN to the public.

1. 8:00 A.M. RECONVENE COMMISSION MEETING
   CONVERSE COUNTY COMMISSIONERS:
   James H. Willox, Chairman
   Richard C. Grant, Vice Chairman
   Robert G. Short, Board Member
   Trent Kaufman, Board Member
   Donald Blackburn, Board Member

2. 9:00 A.M. COUNTY BUSINESS REVIEW - COUNTY DEPARTMENTS
   All County Departments

3. 10:30 A.M. WYDOT 2026 STIP PRESENTATION

   - 2026 State Transportation Improvement Program
   - Link: STIP PROJECT LISTING

4. 11:30 A.M. UPDATES - ANIMAL SHELTER EXPANSION PROJET, GLENROCK OFFICE RENOVATION PROJECT

   Jessie Dykehouse, FDL Consulting, LLC

5. 12:00 P.M. RECESS: LUNCH MEETING WITH MHCC LEADERSHIP

6. 1:30 P.M. BOARD INTERVIEWS/APPOINTMENTS

   Converse County Airport Board

7. 1:45 P.M. UPDATES - CONVERSE COUNTY SHOOTING COMPLEX IMPROVEMENTS PROJECT

   Mike Jennings, Relic Services LLC

   - Shooting Range Drainage

   Documents:

   STAMPED CONVERSE COUNTY SHOOTING RANGE DRAINAGE.PDF
   CONVERSE COUNTY SHOOTING RANGE - RUNNOFF LETTER WITH APPENDICES.PDF

8. GENERAL COUNTY BUSINESS & ACTION ITEMS

Meeting Minutes, Monthly Warrants, Monthly Reports, Tax Refunds & Cancellations, Void Warrants, Resolutions, Agreements/Amendments, etc.

- Commission Minutes, December 16, 2025
- CMAQ 2025 Final Acceptance Certificate
- Bore Permits, Vyve Broadband, CR2-Anderson Dairy Road
- Douglas Trap Club Lease Extension

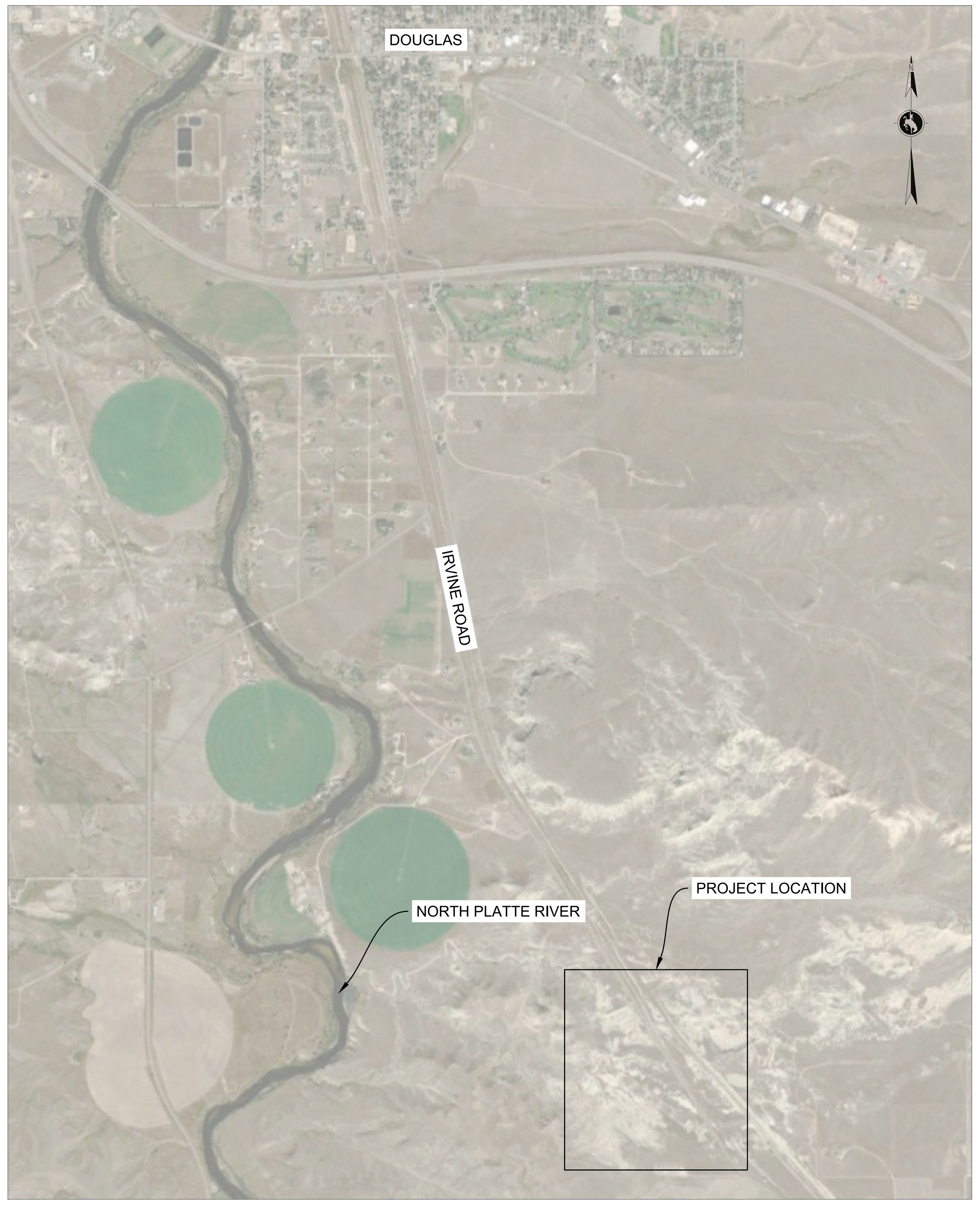
Documents:

12.16.2025 OFFICIAL.PDF
CM25202 FY25 CMAQ FINAL ACCEPTANCE CERTIFICATE- UNSIGNED.PDF
BORE PERMIT 1 VYVE CR2-ANDERSON DAIRY RD COAX LINE.PDF
BORE PERMIT 2 VYVE CR2-ANDERSON DAIRY RD, COAX LINE.PDF
LEASE EXTENSION LETTER.PDF

9. OTHER UPCOMING EVENTS

- Jan 1, All Day - CLOSED, New Year's Day Holiday
- Jan 6-7, 8a-5p – Commissioner Meeting (1st Tues/Wed of each month)
- Jan 7, 7-8a – Municipal/County Joint Powers Board Meeting
- Jan 7, 3p - Board of Public Health Meeting
- Jan 15, 9a- CCJJC Joint Powers Board Meeting
- Jan 19, All Day – CLOSED, Equality Day Holiday
- Jan 20, 8a-5p – Commissioner Meeting (3rd Tuesday of each month)

This agenda is subject to change at any time without notice. The Board may recess into Executive Session, if necessary, at any time. Previous versions of this agenda are available on this website at all times. A regular meeting will be held on Tuesday, January 20, 2026, at 8:00 a.m. unless otherwise posted. at the Converse County Courthouse within Commission Chambers, 107 N. 5th Street, Douglas, Wyoming. The public is invited to attend any Commissioner meeting. To get on the agenda, contact the County Clerk via email or by calling 307-358-2244 by the Thursday prior to the meeting. Per W.S. §18-3-516(f), access to county information can be obtained at the County's official website, www.conversecountywy.gov or by calling the County Clerk's Office 307-358-2244.



VICINITY MAP
CONVERSE COUNTY
1" = 2000'

CONVERSE COUNTY SHOOTING RANGE
DRAINAGE IMPROVEMENTS

SHEET INDEX

ECS ENGINEERS

PROFESSIONAL ENGINEER SHAWN J. GUSTAFSON 6936 CIVIL WYOMING Date 11/20/25

FOR: **RELIC SERVICES, LLC**
P.O. Box 716,
Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENVIRONMENTAL & CIVIL SOLUTIONS, LLC
1607 CY Ave, Suite 104
Casper, WY 82601 • 307.337.2883

Date Drawn: 11.20.2025 | Scale: SEE DRAWING
Project No. 250046 | File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
TITLE SHEET

REV	DATE	REVISIONS	BY	CHK

TS

SYMBOLS

- TREE
- ECS CONTROL POINT
- ELECTRICAL VAULT
- FIBER OPTIC PEDESTAL
- FIRE HYDRANT
- PROFILE FIRE HYDRANT
- FLARED END SECTION
- GAS METER
- CATCH BASIN
- GUY WIRE ANCHOR
- POWER POLE
- SANITARY SEWER MANHOLE
- SANITARY SEWER CLEAN OUT
- IRRIGATION VALVE BOX
- SANITARY SEWER BACKFLOW PREVENTER
- STORM SEWER MANHOLE
- STREET LAMP
- TELEPHONE MANHOLE
- TELEPHONE PEDESTAL
- BORE HOLE LOCATION
- WATER TEE
- WATER CROSS
- WATER VALVE
- CURB STOP
- ELECTRICAL METER CABINET
- SINGLE SIGN POST
- BOLLARD
- RECOVERED BRASS CAP
- RECOVERED ALUMINUM CAP
- RECOVERED REBAR
- RECOVERED ALUMINUM CAP

LEGEND

- RIGHT OF WAY
- PROPERTY LINES
- EXISTING CENTERLINE
- PROPOSED CENTERLINE
- EDGE EXISTING ASPHALT
- EDGE EXISTING GRAVEL
- EXISTING WOOD FENCE
- PROPOSED CHAINLINK FENCE
- EXISTING GAS LINE
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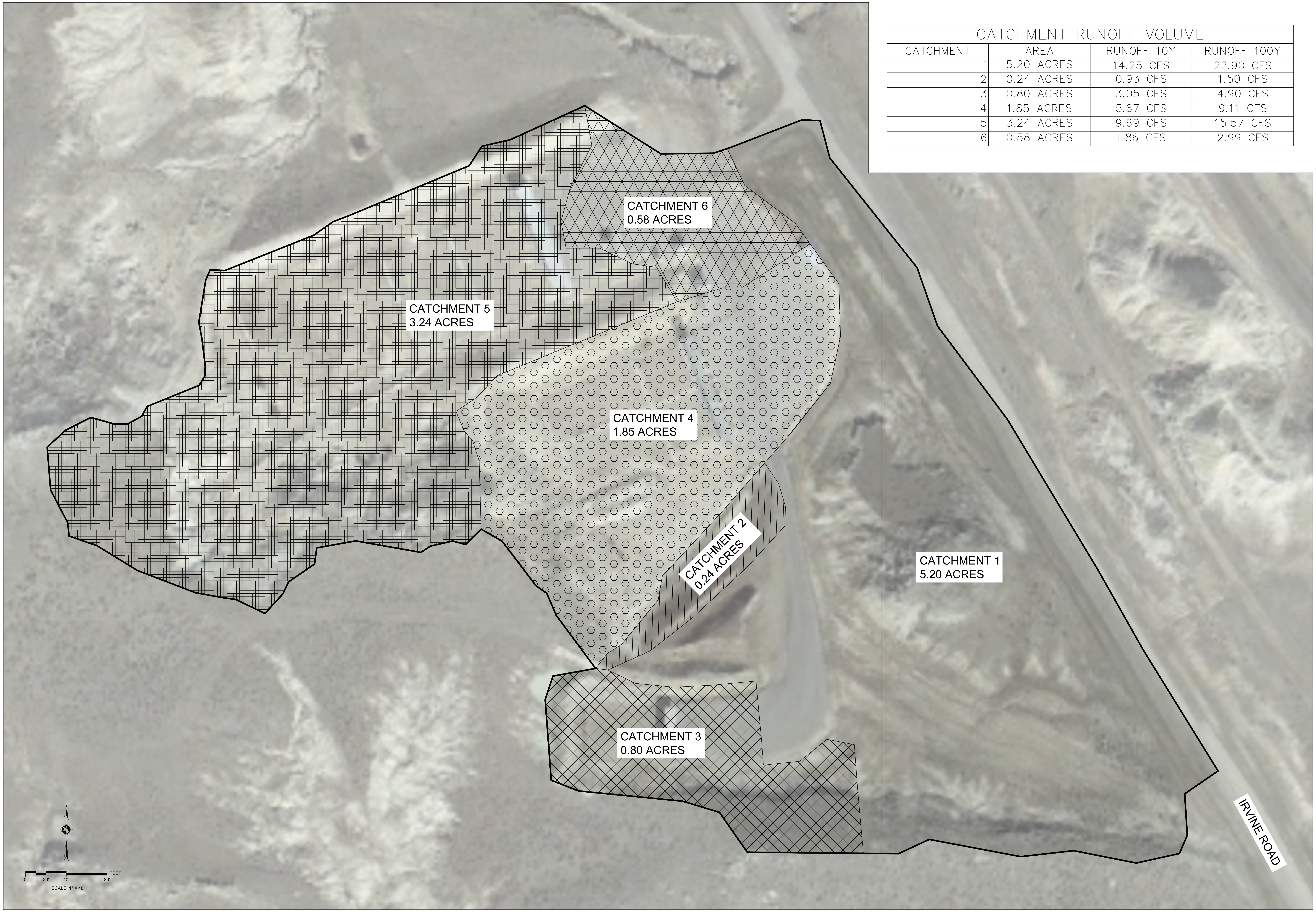
CONVERSE COUNTY SHOOTING RANGE
EXISTING CONDITIONS -NORTH-

REV	DATE	REVISIONS	BY	CHK

EX1.0

CATCHMENT RUNOFF VOLUME

CATCHMENT	AREA	RUNOFF 10Y	RUNOFF 100Y
1	5.20 ACRES	14.25 CFS	22.90 CFS
2	0.24 ACRES	0.93 CFS	1.50 CFS
3	0.80 ACRES	3.05 CFS	4.90 CFS
4	1.85 ACRES	5.67 CFS	9.11 CFS
5	3.24 ACRES	9.69 CFS	15.57 CFS
6	0.58 ACRES	1.86 CFS	2.99 CFS



ECS ENGINEERS

PROFESSIONAL ENGINEER (CIVIL)
SHAWN J. GUSTAFSON
6936
Date 11/20/25
WYOMING

FOR: **RELIC SERVICES, LLC**
P.O. Box 716,
Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENVIRONMENTAL & CIVIL SOLUTIONS, LLC
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CONVERSE COUNTY SHOOTING RANGE
CATCHMENTS
-NORTH-

REV	DATE	REVISIONS	BY	CHK

EC1.0

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE WYOMING PUBLIC WORKS SPECIFICATIONS (2023 EDITION) UNLESS OTHERWISE STATED IN THESE PLANS AND SPECIFICATIONS.
2. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF UNDERGROUND PUBLIC AND PRIVATE UTILITIES PRIOR TO CONSTRUCTION AND COORDINATE WITH THOSE UTILITIES DURING CONSTRUCTION.
3. THE LOCATION OF THE EXISTING UTILITIES IN THE PLANS ARE APPROXIMATE. THE ENGINEER AND OWNER SHALL NOT BE HELD ACCOUNTABLE FOR THE COMPLETENESS OR ACCURACY OF THE UTILITY LOCATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL MEASURES NECESSARY TO COMPLY WITH FEDERAL, STATE, COUNTY, AND CITY REGULATIONS INCLUDING WYPDES THAT PROHIBIT DISCHARGE OF POLLUTANTS, INCLUDING SEDIMENTS RESULTING FROM EROSION OR OTHER CONSTRUCTION ACTIVITIES.
5. THE CONTRACTOR SHALL PROVIDE DUST CONTROL AND SHALL CONDUCT WORK SO THAT SEDIMENT IS NOT TRANSFERRED ONTO ROADWAY OR ADJACENT PROPERTY.
6. CONTRACTOR TO CHECK, CONFIRM AND COORDINATE ALL DIMENSIONS AND DETAILS, TAKE FIELD MEASUREMENTS, VERIFY FIELD CONDITIONS AND COORDINATE WORK WITH THAT OF OTHER CONTRACTORS FOR THE PROJECT AND THE ENGINEER. ANY DISCREPANCIES OR CONCERNS REGARDING PLANS, NOTATIONS OR ELEVATIONS SHALL BE DIRECTED TO THE ENGINEER FOR CLARIFICATION.
7. ALL DRAINAGE TRENCHES ARE TO BE VEGETATED WITH NATIVE SEEDS TO PREVENT EROSION.

SYMBOLS

- TREE
- ECS CONTROL POINT
- ELECTRICAL VAULT
- FIBER OPTIC PEDESTAL
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ENGINEERS

PROFESSIONAL ENGINEER SHAWN J. GUSTAFSON 6936 CIVIL Date 11/20/25 WYOMING

FOR: **RELIC SERVICES, LLC**
P.O. Box 716,
Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENVIRONMENTAL & CIVIL SOLUTIONS, LLC
1607 CY Ave, Suite 104
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CONVERSE COUNTY SHOOTING RANGE
DRAINAGE PLAN -NORTH-

REV	DATE	REVISIONS	BY	CHK

DR1.0

Point Table

Point #	Elevation	Northing	Easting	Description
8	4836.24	802130.02	602478.78	TOP EDGE OF DITCH
9	4834.38	802127.91	602473.97	TOP EDGE OF DITCH
10	4833.90	801995.29	602538.06	TOP EDGE OF DITCH
11	4833.90	801987.38	602534.98	TOP EDGE OF DITCH
12	4833.00	802065.55	602702.66	TOP EDGE OF DITCH
13	4831.99	802145.67	602890.22	TOP EDGE OF DITCH
14	4831.95	802140.31	602892.92	TOP EDGE OF DITCH
15	4832.98	802060.03	602705.04	TOP EDGE OF DITCH
16	4833.20	802245.15	602741.27	FG
17	4834.50	802075.54	602919.65	TOP EDGE OF DITCH
18	4834.88	802069.74	602921.29	TOP EDGE OF DITCH
19	4835.26	802041.41	602851.04	TOP EDGE OF DITCH
20	4835.26	802045.98	602846.34	TOP EDGE OF DITCH
21	4835.65	802016.40	602772.99	TOP EDGE OF DITCH
22	4835.65	802013.08	602780.80	TOP EDGE OF DITCH
23	4836.17	801917.55	602819.32	TOP EDGE OF DITCH
24	4836.18	801915.30	602813.76	TOP EDGE OF DITCH
25	4836.72	801824.20	602877.30	TOP EDGE OF DITCH
26	4836.72	801827.63	602882.22	TOP EDGE OF DITCH
27	4835.40	801975.06	602961.94	FG
28	4835.05	801953.81	603004.73	TOP EDGE OF DITCH
29	4835.05	801950.12	603009.46	TOP EDGE OF DITCH
30	4836.80	801827.61	602906.39	TOP EDGE OF DITCH
31	4836.80	801823.92	602911.12	TOP EDGE OF DITCH
32	4845.93	801709.37	602834.45	TOP EDGE OF DITCH
33	4845.98	801709.41	602828.45	TOP EDGE OF DITCH
34	4845.56	801654.06	602828.02	TOP EDGE OF DITCH
35	4845.56	801660.02	602834.06	TOP EDGE OF DITCH
36	4844.81	801659.46	602934.55	TOP EDGE OF DITCH
37	4844.76	801653.46	602934.52	TOP EDGE OF DITCH
38	4844.00	801652.89	603035.43	TOP EDGE OF DITCH
39	4844.06	801658.89	603035.04	TOP EDGE OF DITCH
40	4841.22	801682.84	603074.11	TOP EDGE OF DITCH
41	4841.22	801681.93	603080.77	TOP EDGE OF DITCH
42	4841.07	801713.36	603077.04	TOP EDGE OF DITCH
43	4841.07	801713.18	603083.04	TOP EDGE OF DITCH
44	4839.33	801781.81	603073.98	TOP EDGE OF DITCH
45	4839.31	801782.70	603079.93	TOP EDGE OF DITCH
46	4836.95	801872.98	603052.64	TOP EDGE OF DITCH
47	4836.89	801876.12	603058.07	TOP EDGE OF DITCH
48	4834.56	801964.30	603031.27	TOP EDGE OF DITCH
49	4834.46	801969.56	603036.20	TOP EDGE OF DITCH
50	4834.52	801961.06	603028.23	TOP EDGE OF DITCH
51	4834.52	801975.39	603023.25	TOP EDGE OF DITCH
52	4834.10	802027.91	603074.49	TOP EDGE OF DITCH
53	4834.08	802020.75	603084.23	TOP EDGE OF DITCH
54	4833.08	802189.42	603047.55	TOP EDGE OF DITCH
55	4833.05	802198.15	603055.79	TOP EDGE OF DITCH
56	4832.60	802248.29	602988.20	TOP EDGE OF DITCH
57	4832.60	802256.81	602996.65	TOP EDGE OF DITCH
58	4830.99	802284.61	602965.94	TOP EDGE OF DITCH
59	4830.99	802288.89	602974.98	TOP EDGE OF DITCH
60	4829.50	802329.89	602944.52	TOP EDGE OF DITCH
61	4829.50	802334.17	602953.56	TOP EDGE OF DITCH
62	4844.96	801708.60	602931.37	FG
63	4844.32	801715.74	602995.13	FG
96	4833.57	802113.40	603089.39	TOP EDGE OF DITCH
97	4833.69	802114.48	603101.37	TOP EDGE OF DITCH

ECS ENGINEERS

FOR: RELIC SERVICES, LLC
P.O. Box 716,
Glenrock, WY 82637

BY: ECS ENGINEERS
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1607 CY Ave, Suite 104
Casper, WY 82601 • 307.337.2883

CONVERSE COUNTY SHOOTING RANGE
GRADING PLAN -NORTH-

GR1.0

ECS ENGINEERS

PROFESSIONAL ENGINEER
6936
CIVIL
Date 11/20/25
WYOMING

FOR: **RELIC SERVICES, LLC**
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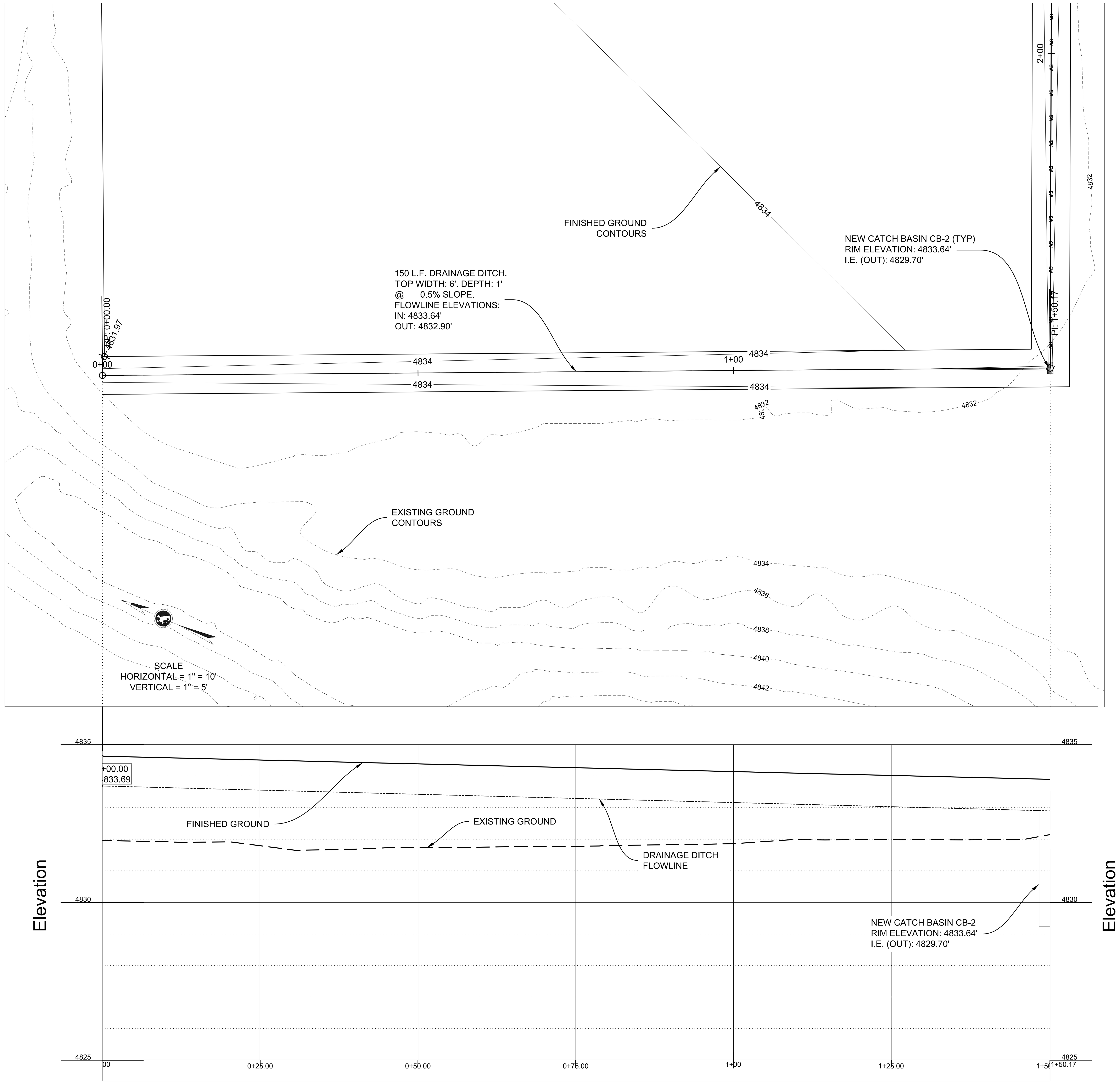
CONVERSE COUNTY SHOOTING RANGE
STORM SEWER OVERVIEW - NORTH -

REV	DATE	REVISIONS	BY	CHK

SO1.0



ECS ENGINEERS

Date 11/20/25
WYOMING
6936

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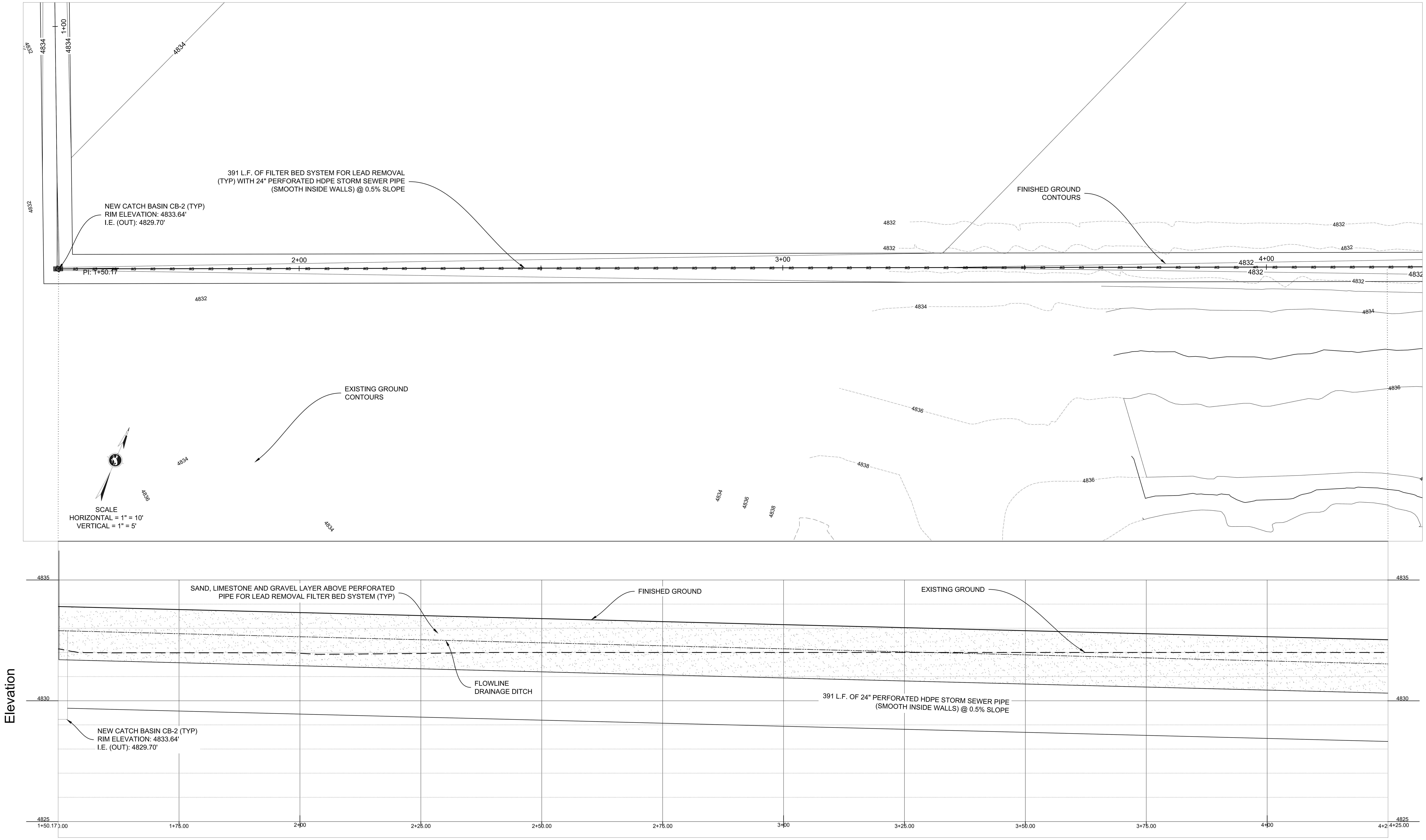
CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
-STORM 1 - STA. 00+00.00 TO 01+50.17 -

REV	DATE	REVISIONS	BY	CHK

PP1.0



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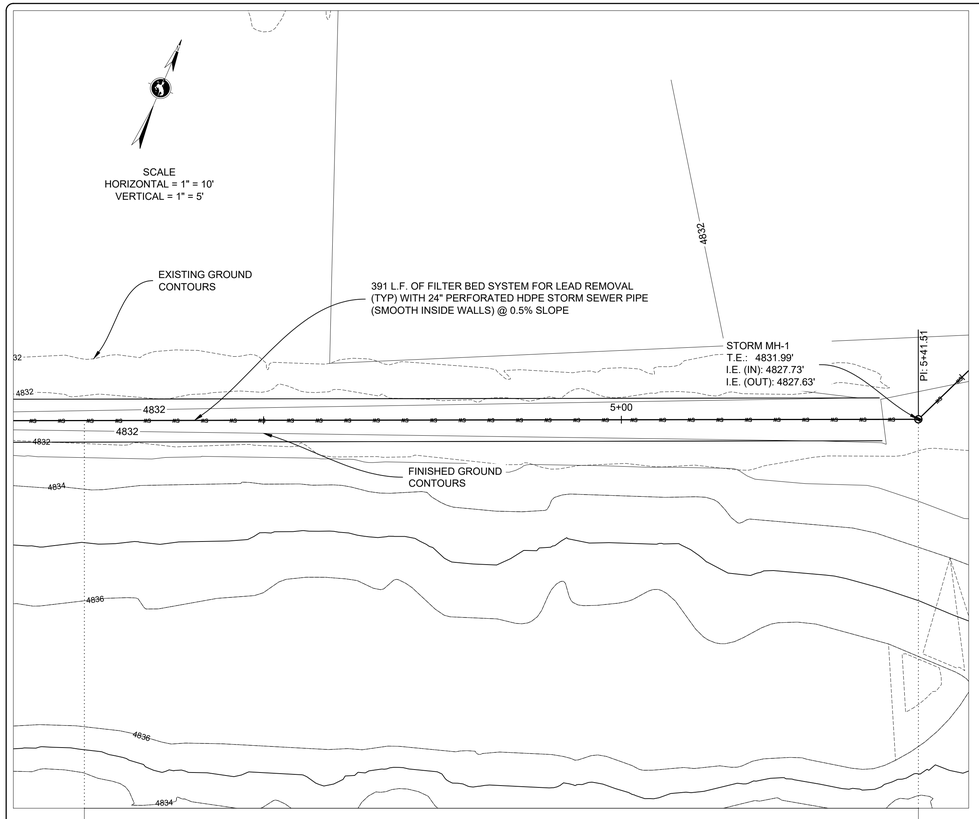
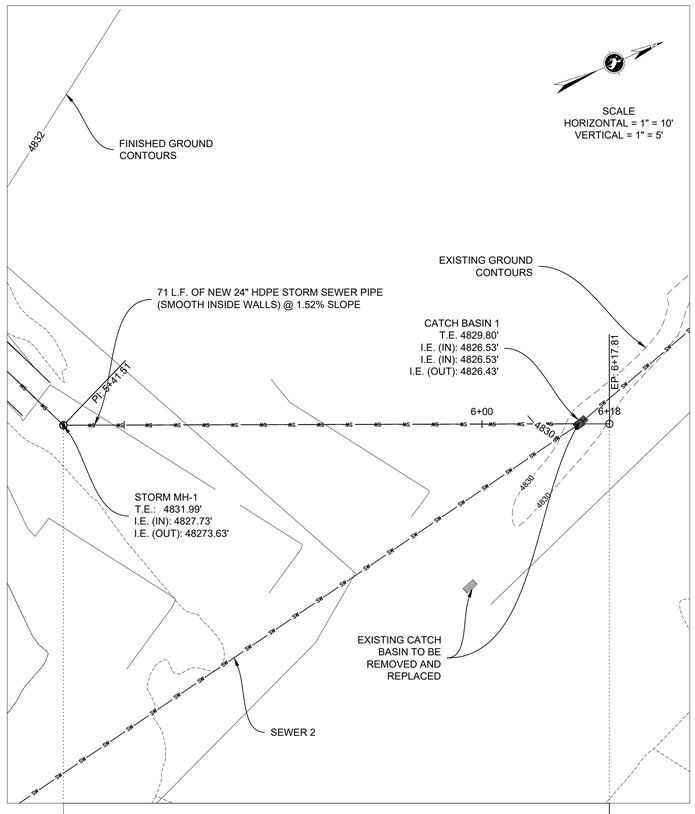
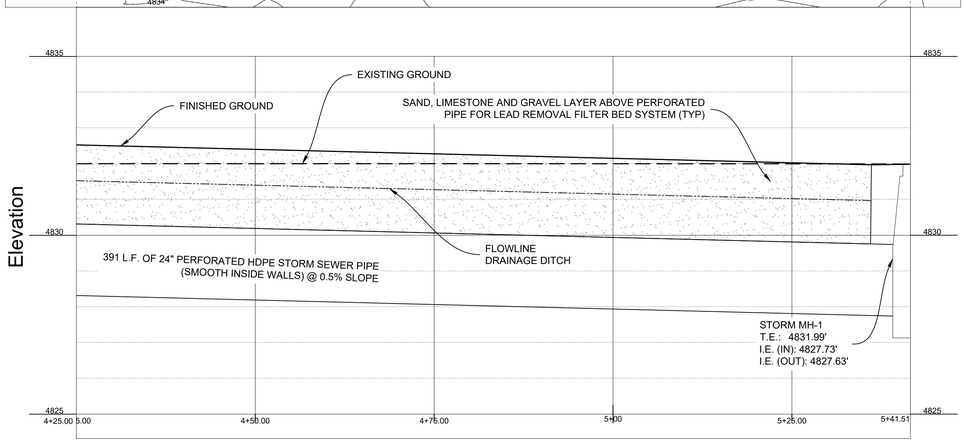
CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
-STORM 1 - STA. 01+50.17 TO 04+25.00 -

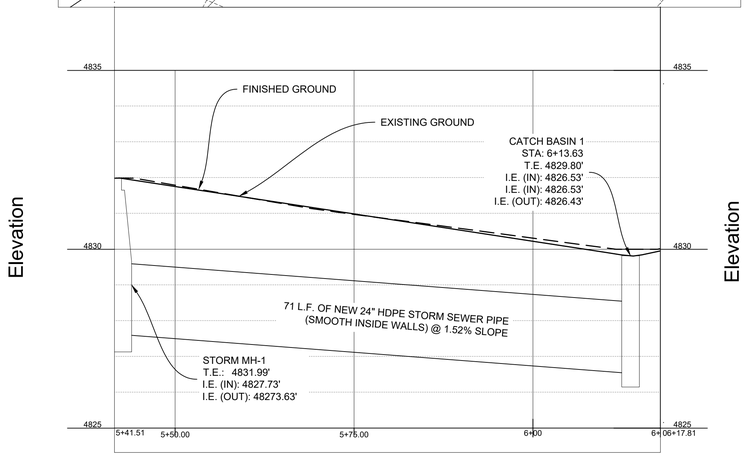
REV	DATE	REVISIONS	BY	CHK

PP1.1









ENGINEERS

PROFESSIONAL ENGINEER
SHAWN J. GUSTAFSON
6938
WYOMING
11.20.25

FOR: **RELIC SERVICES, LLC**
P.O. Box 716
Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENGINEERING & LAND SOLUTIONS, LLC
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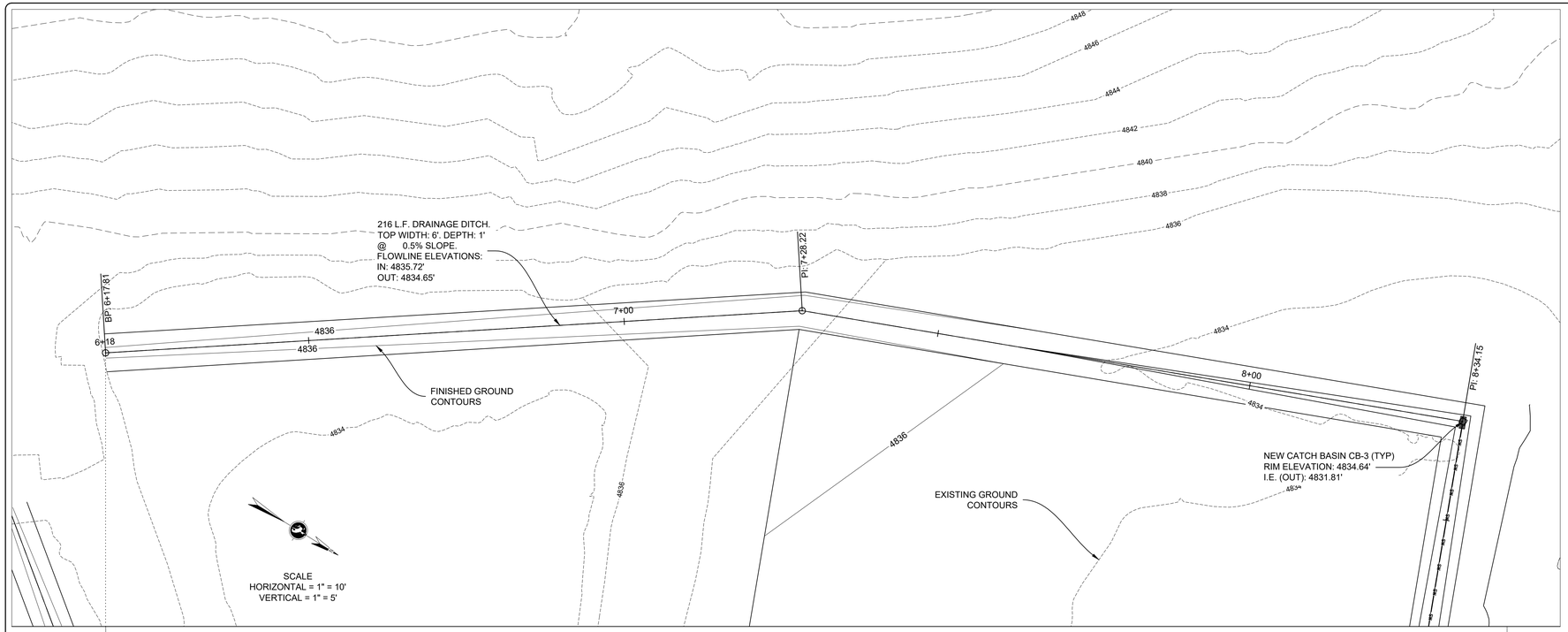
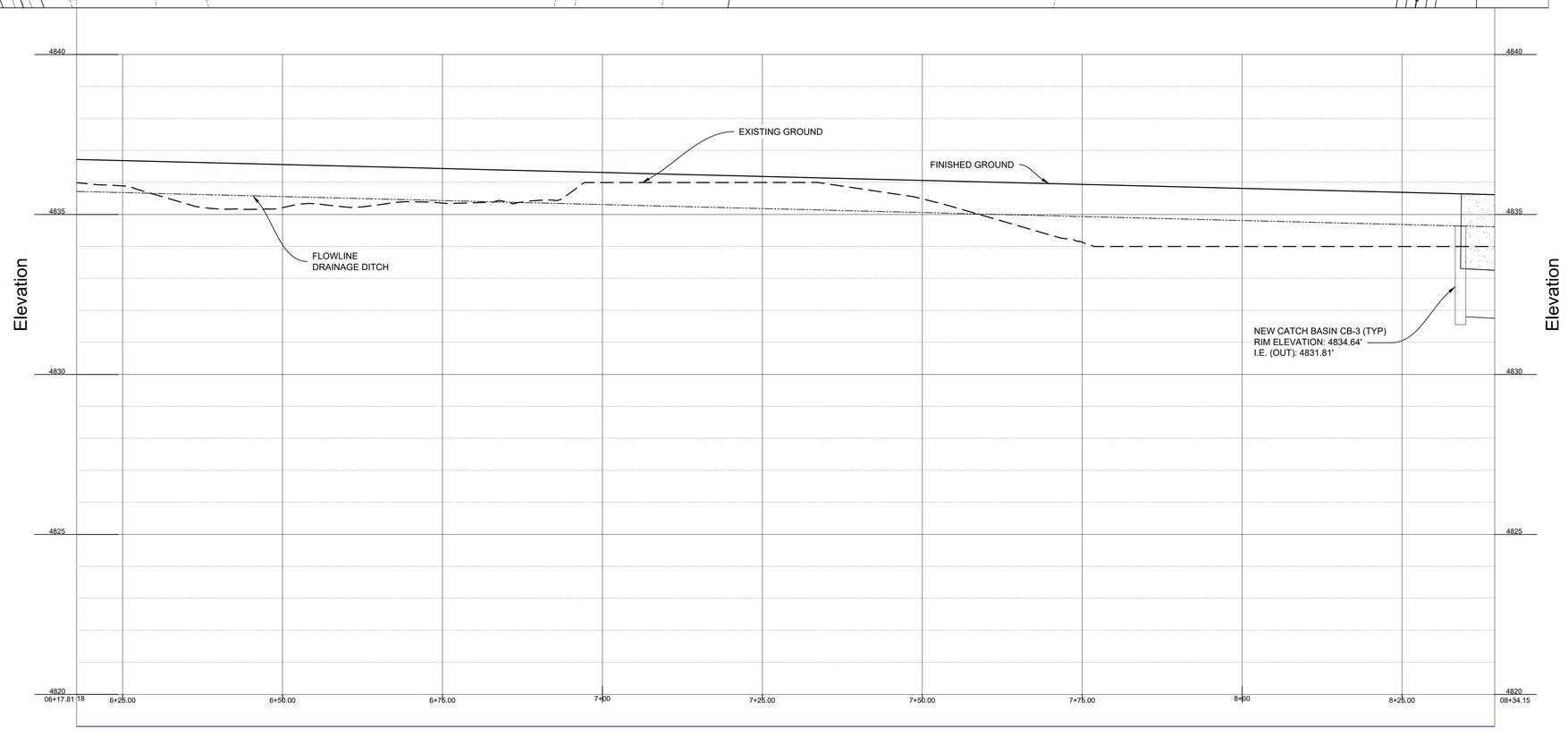
CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
-STORM 1 - STA. 04+25.00 TO 06+17.81 -

REV	DATE	REVISIONS	BY	CHK

PP1.2





ECS ENGINEERS

PROFESSIONAL ENGINEER
SHAWN J. GUSTAFSON
6938
Date 12/2025
WYOMING

FOR: **RELIC SERVICES, LLC**
P.O. Box 716
Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENVIRONMENTAL CIVIL SOLUTIONS, LLC
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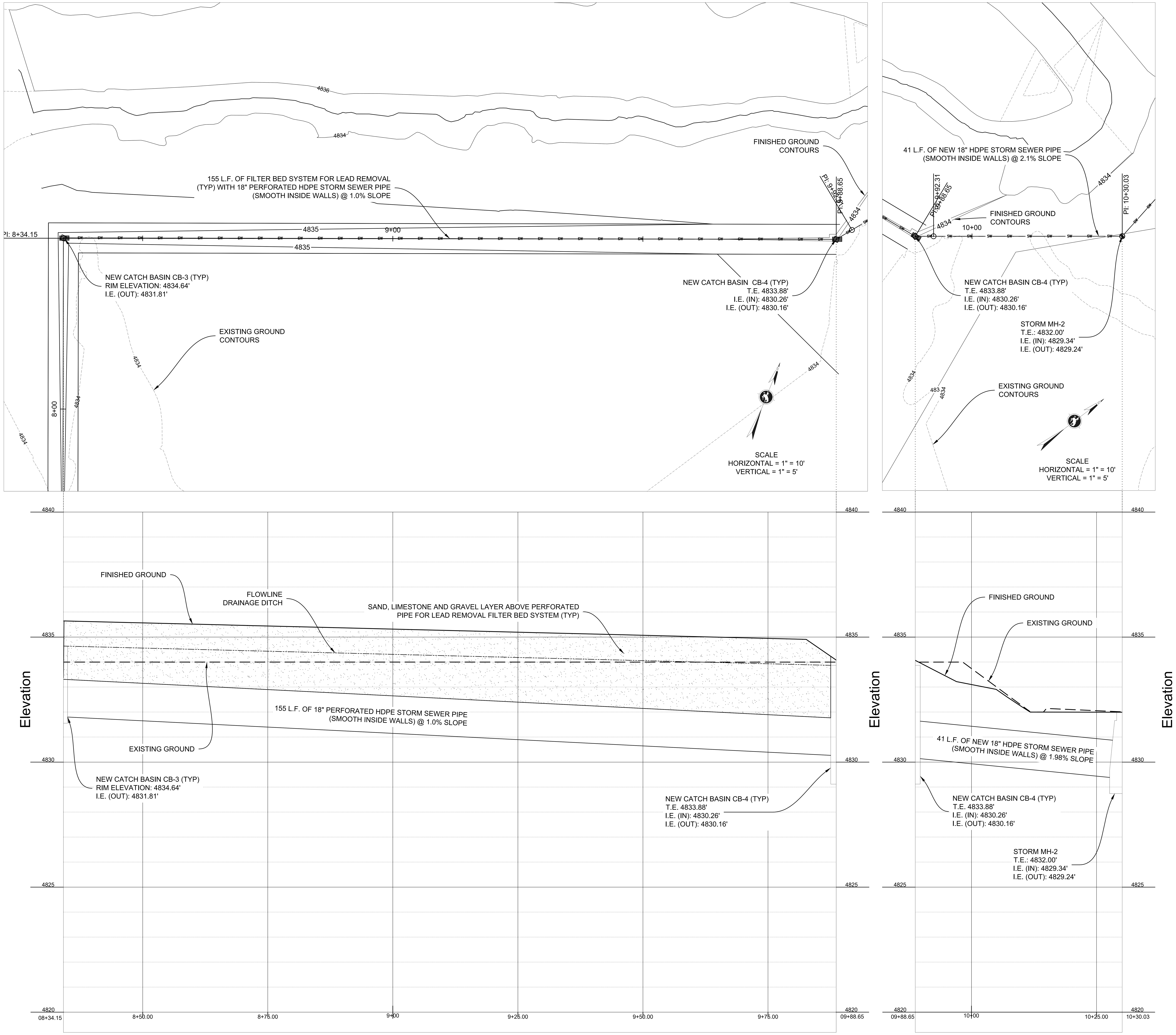
CONVERSE COUNTY
SHOOTING RANGE
PLAN & PROFILE
-STORM 2 - STA. 06+17.81 TO 08+34.15

REV	DATE	REVISIONS	BY	CHK

PP2.0



ECS ENGINEERS

CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
-STORM 2 - STA. 08+34.15 TO 10+30.03 -

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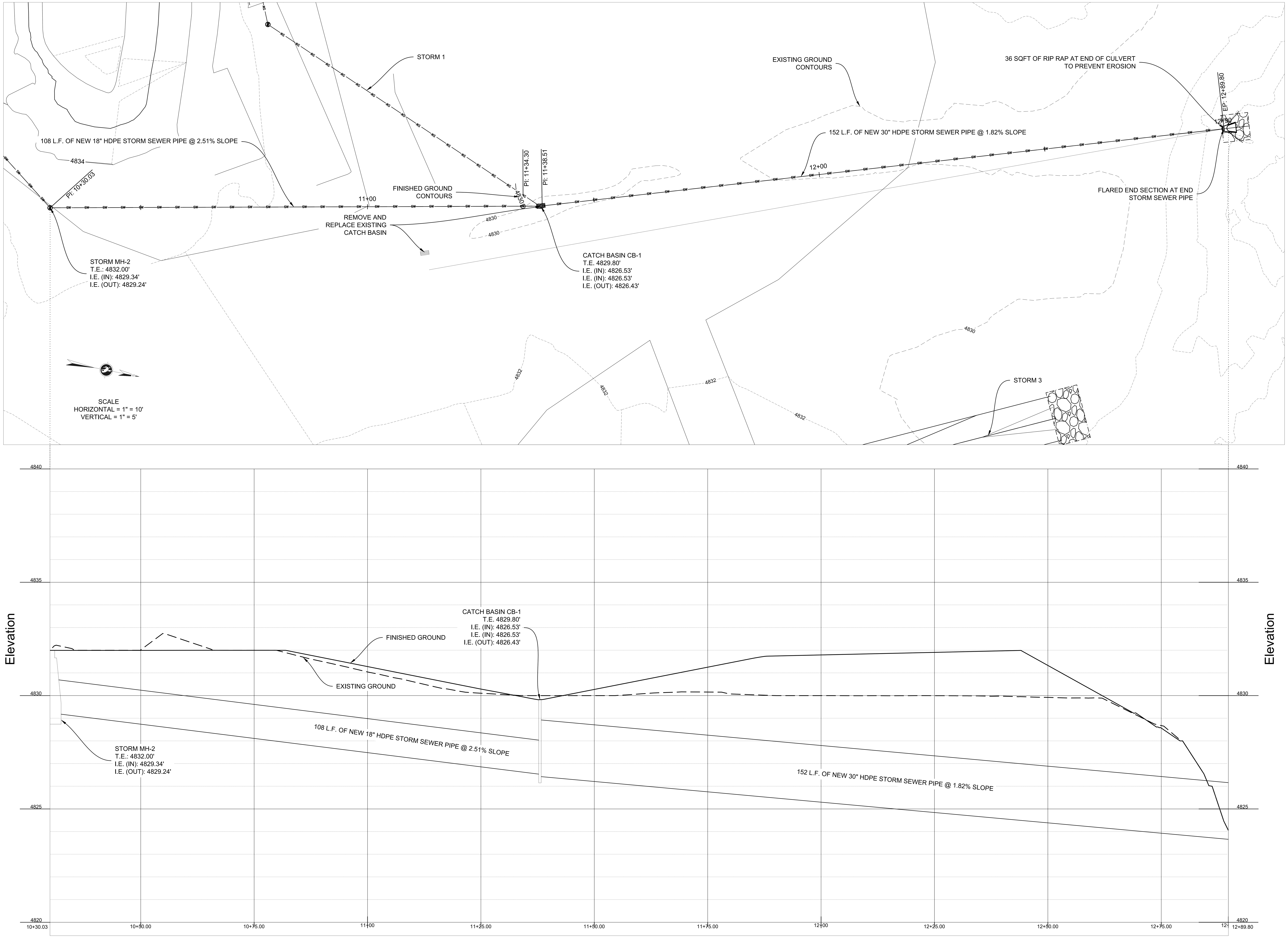
PP2.1



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Project No. 250046 | File Name: Converse County Shooting Range Drainage.dwg

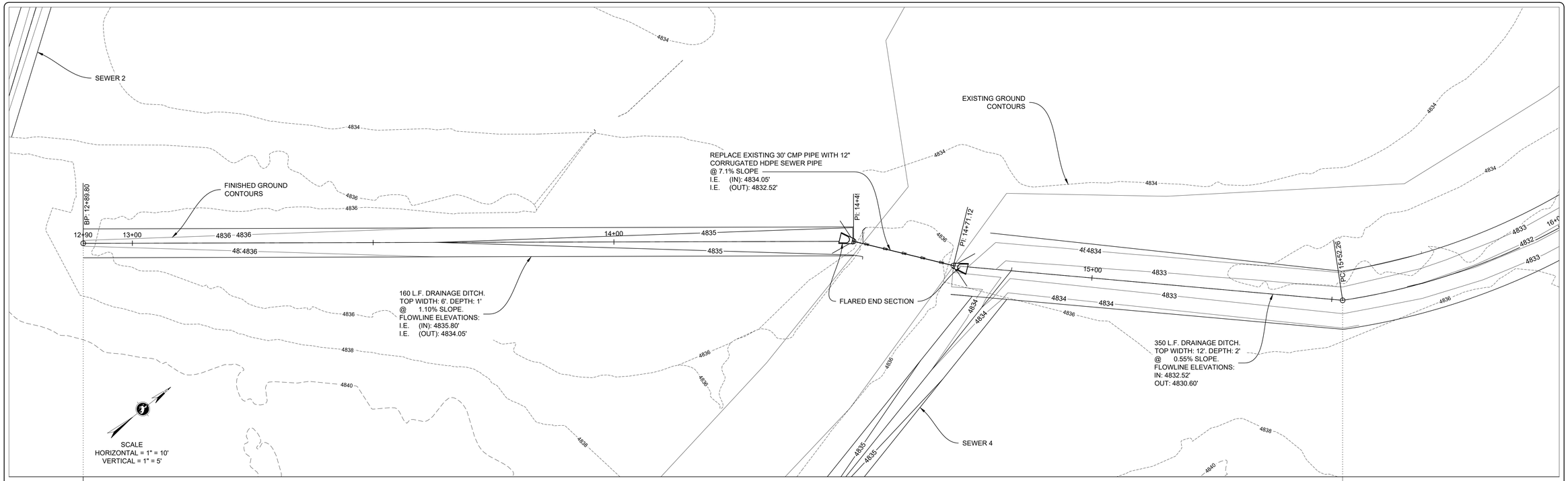
CONVERSE COUNTY SHOOTING RANGE

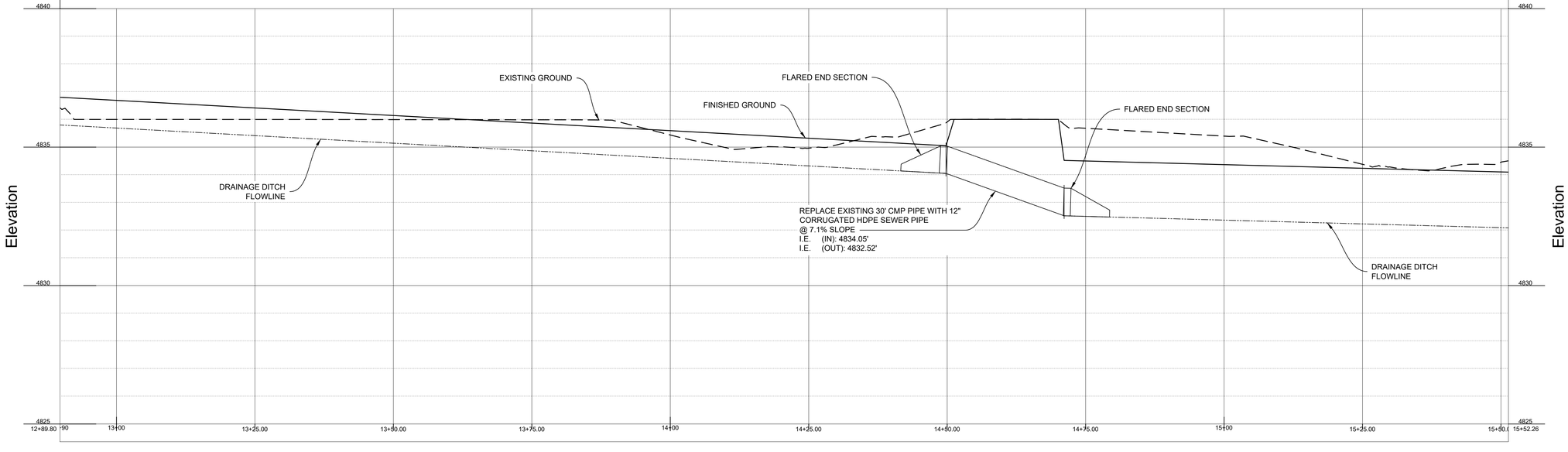
PLAN & PROFILE

- STORM 2 - STA. 10+30.03 TO 12+89.80 -

REV	DATE	REVISIONS	BY	CHK

PP2.2





ENGINEERS

PROFESSIONAL ENGINEER
SHAWN J. GUSTAFSON
6938
WYOMING
11/20/25

FOR: **RELIC SERVICES, LLC**
P.O. Box 716
Glenrock, WY 82637

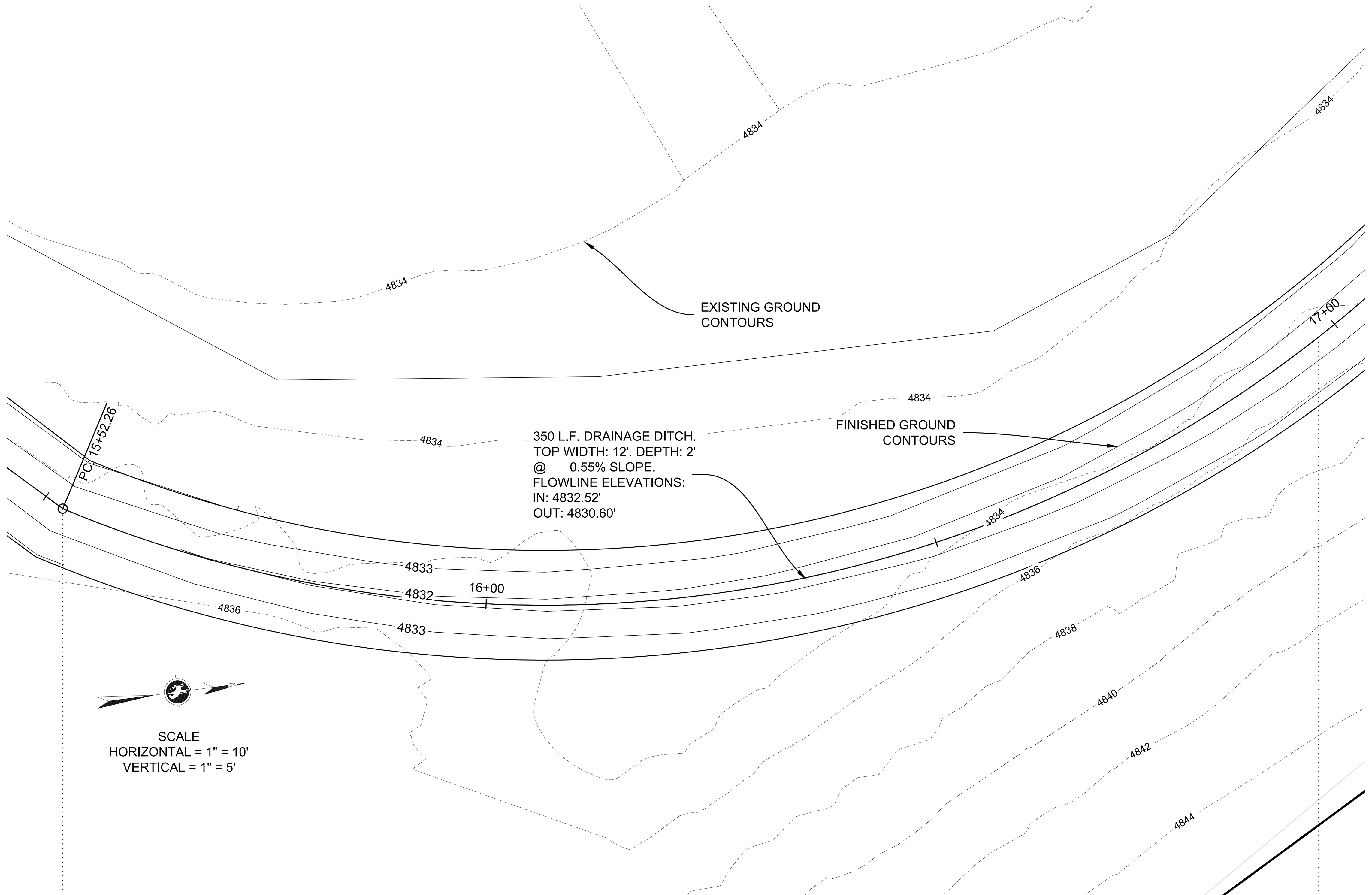
BY: **ECS ENGINEERS**
ENGINEERING & CIVIL SOLUTIONS, LLC
1607 CY Ave, Suite 104
Casper, WY 82601 - 307.337.2883

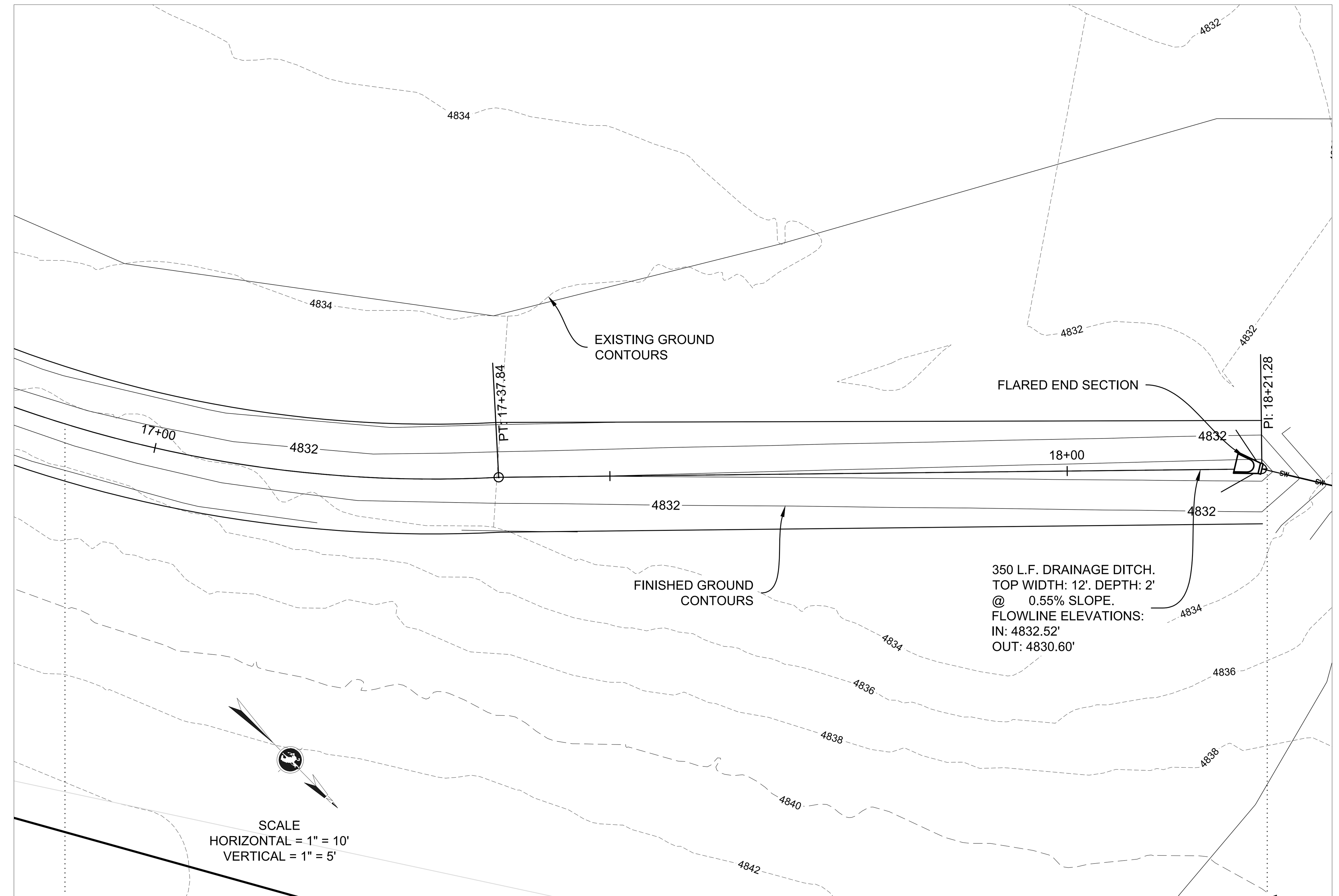
Date Drawn: 11.20.2025
Project No. 250046
Scale: SEE Drawing
File Name: Converse County Shooting Range Drainage.dwg

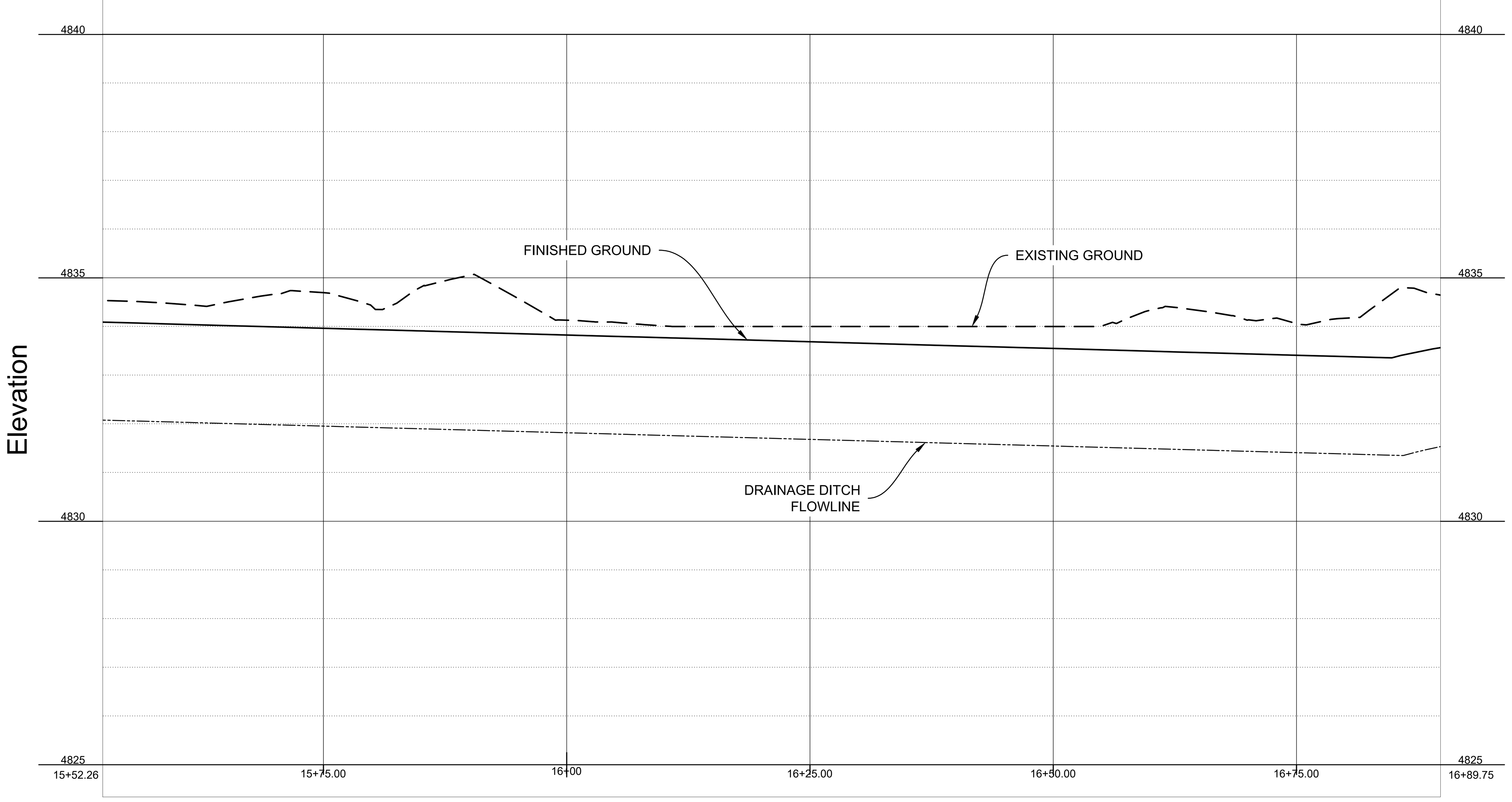
CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
- STORM 3 - STA. 12+89.80 TO 15+52.26

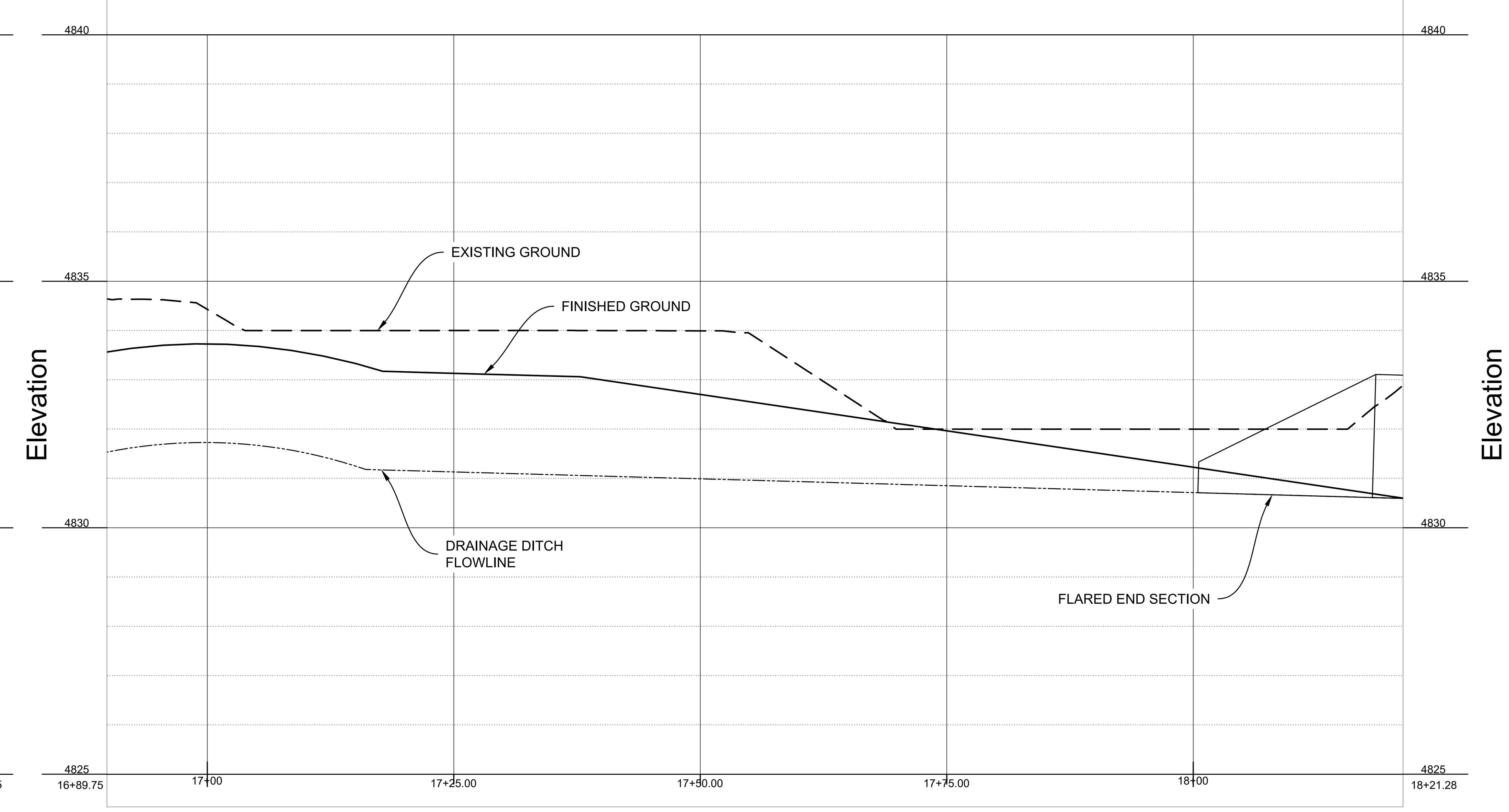
REV	DATE	REVISIONS	BY	CHK

PP3.0









ECS ENGINEERS

PROFESSIONAL ENGINEER
6936
Date 11/20/25
WYOMING

FOR: **RELIC SERVICES, LLC**
P.O. Box 716,
Glenrock, WY 82637

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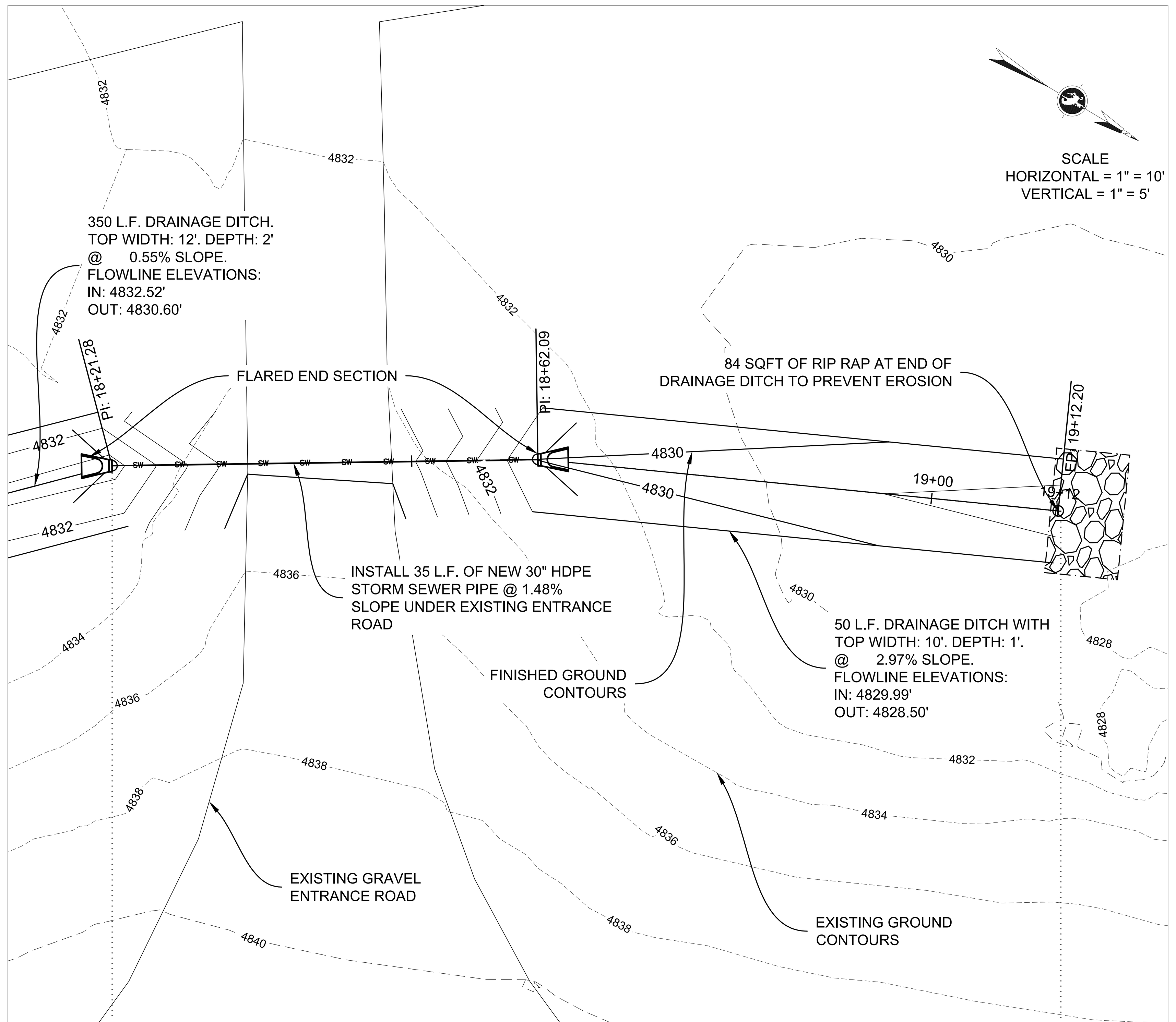
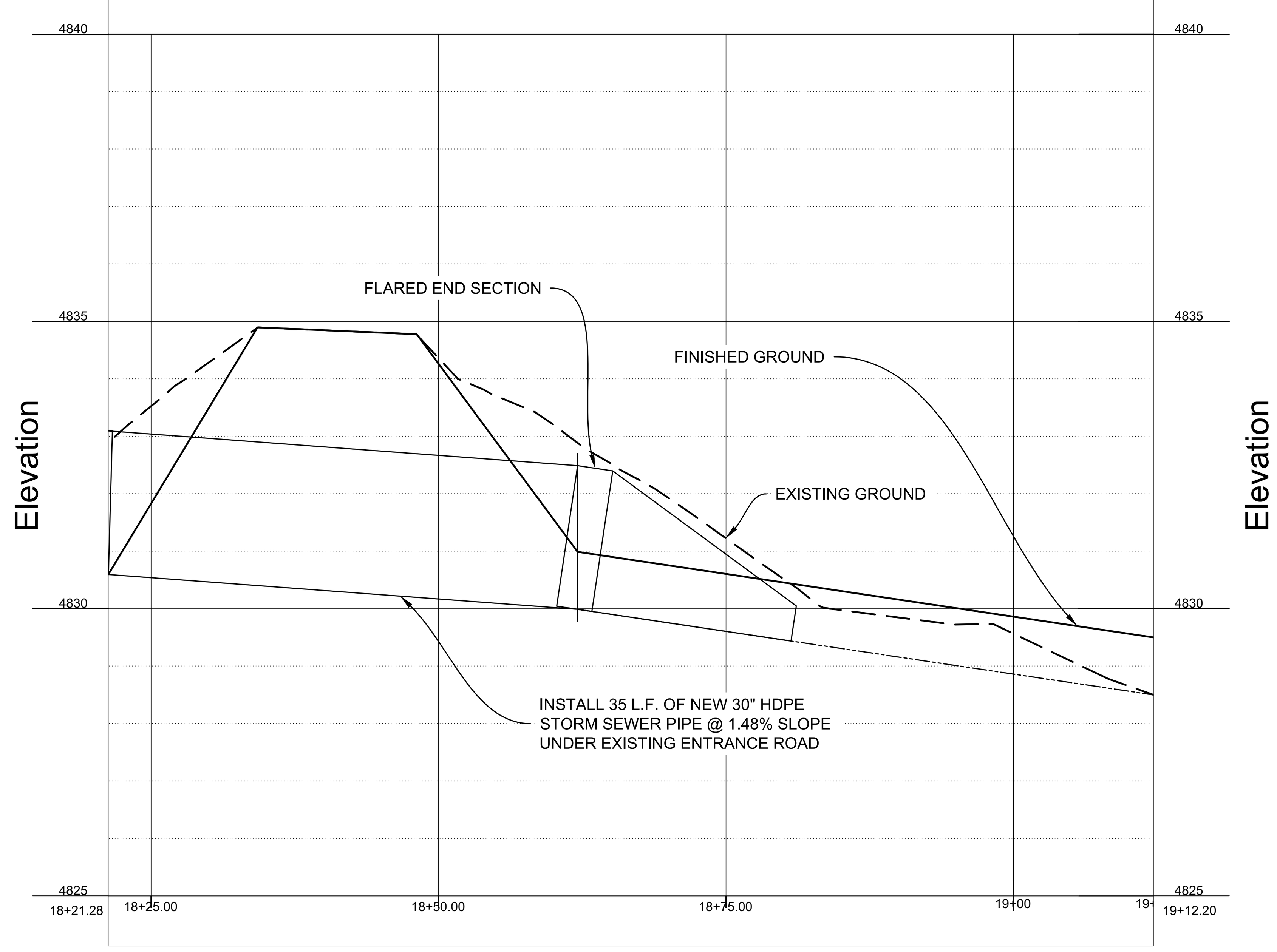
Date Drawn: 11.20.2025 | Scale: SEE DRAWING
Project No. 250046 | File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
- STORM 3 - STA. 15+52.26 TO 18+21.28 -

REV	DATE	REVISIONS	BY	CHK

PP3.1





ECS ENGINEERS

FOR: **RELIC SERVICES, LLC**
P.O. Box 716,
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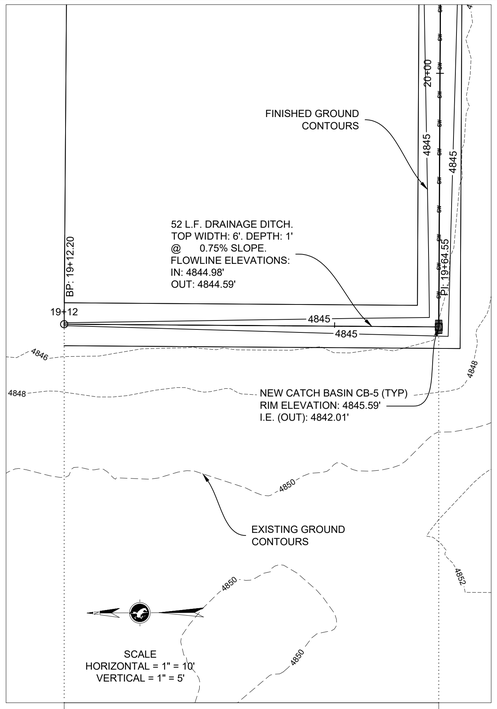
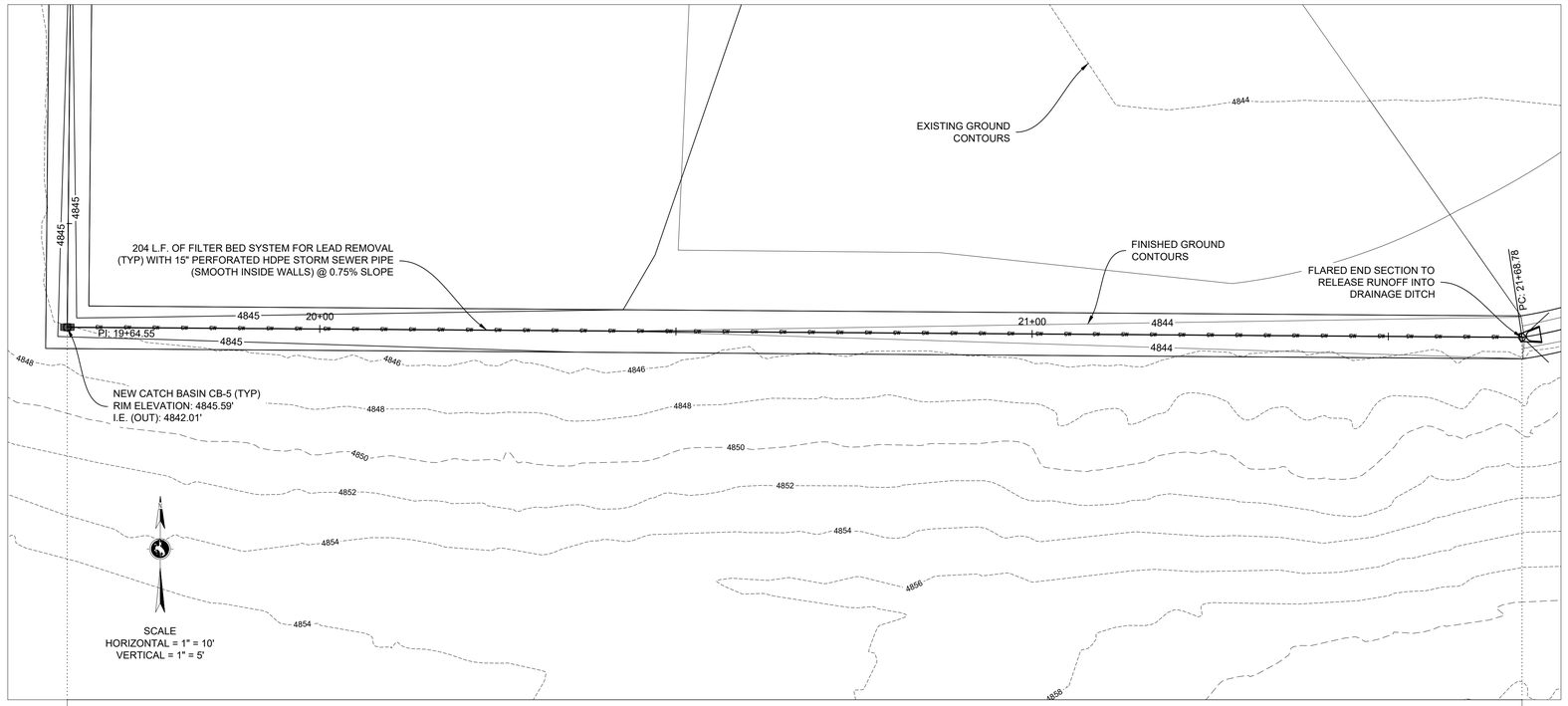
Date Drawn: 11.20.2025 | Scale: SEE DRAWING
Project No. 250046 | File Name: Converse County Shooting Range Drainage.dwg

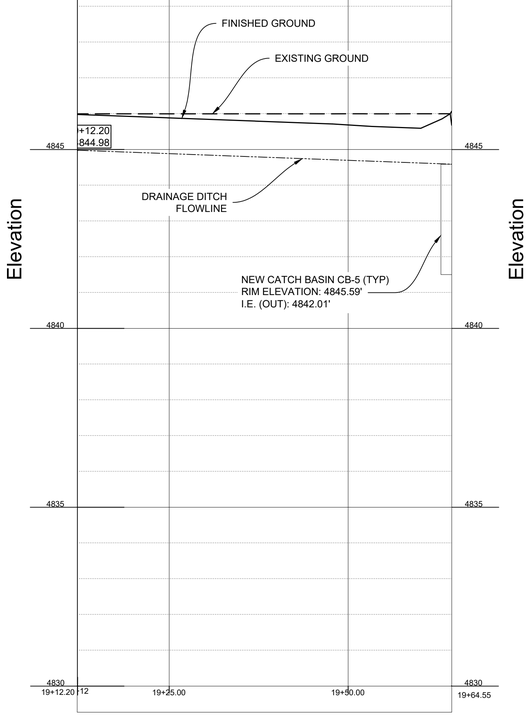
CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
- STORM 3 - STA. 18+21.28 TO 19+12.20 -

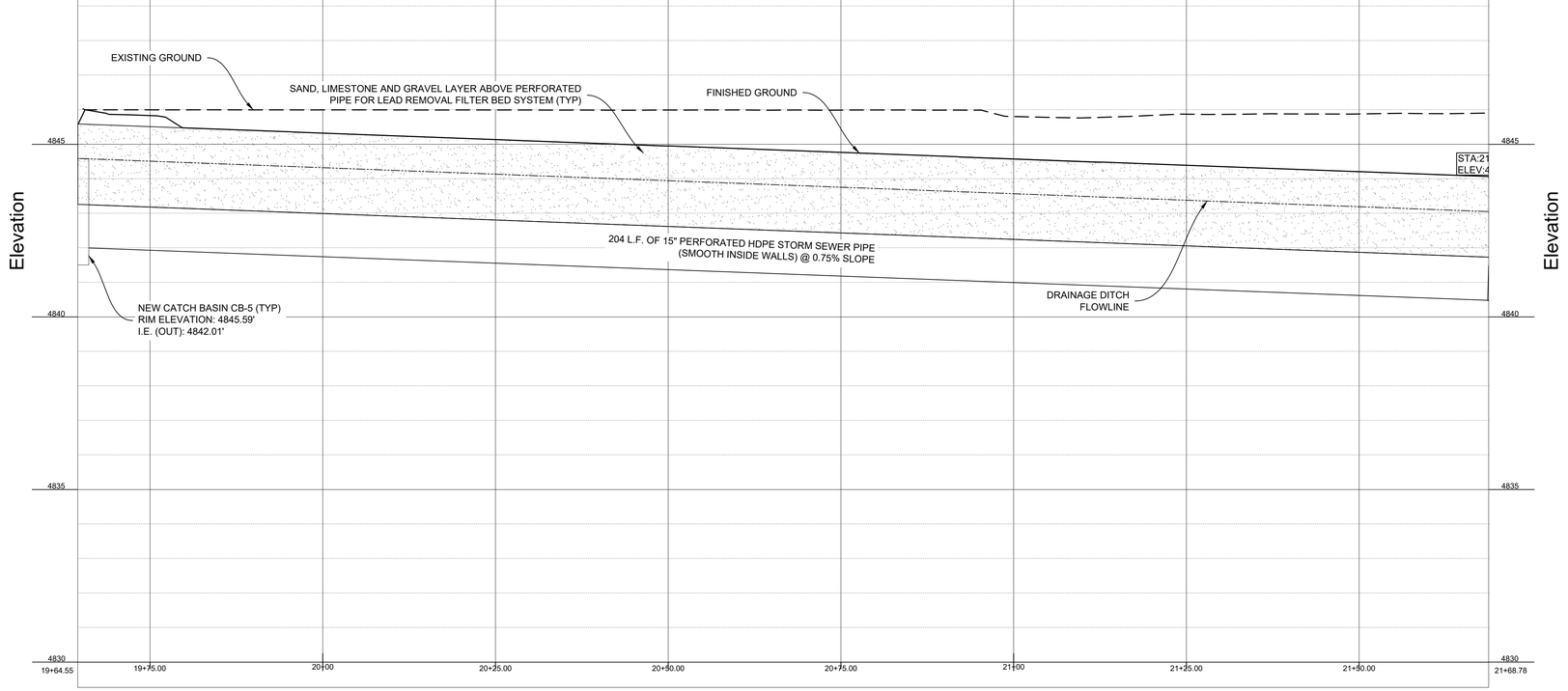
REV	DATE	REVISIONS	BY	CHK

PP3.2









ENGINEERS

PROFESSIONAL ENGINEER
SHAWN J. GUSTAFSON
6938
DIRECTOR
WYOMING
12/2/25

FOR: **RELIC SERVICES, LLC**
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BY: **ECS ENGINEERS**
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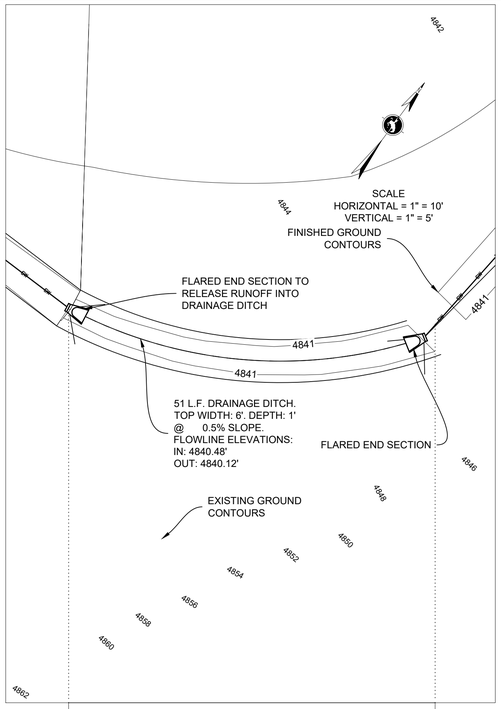
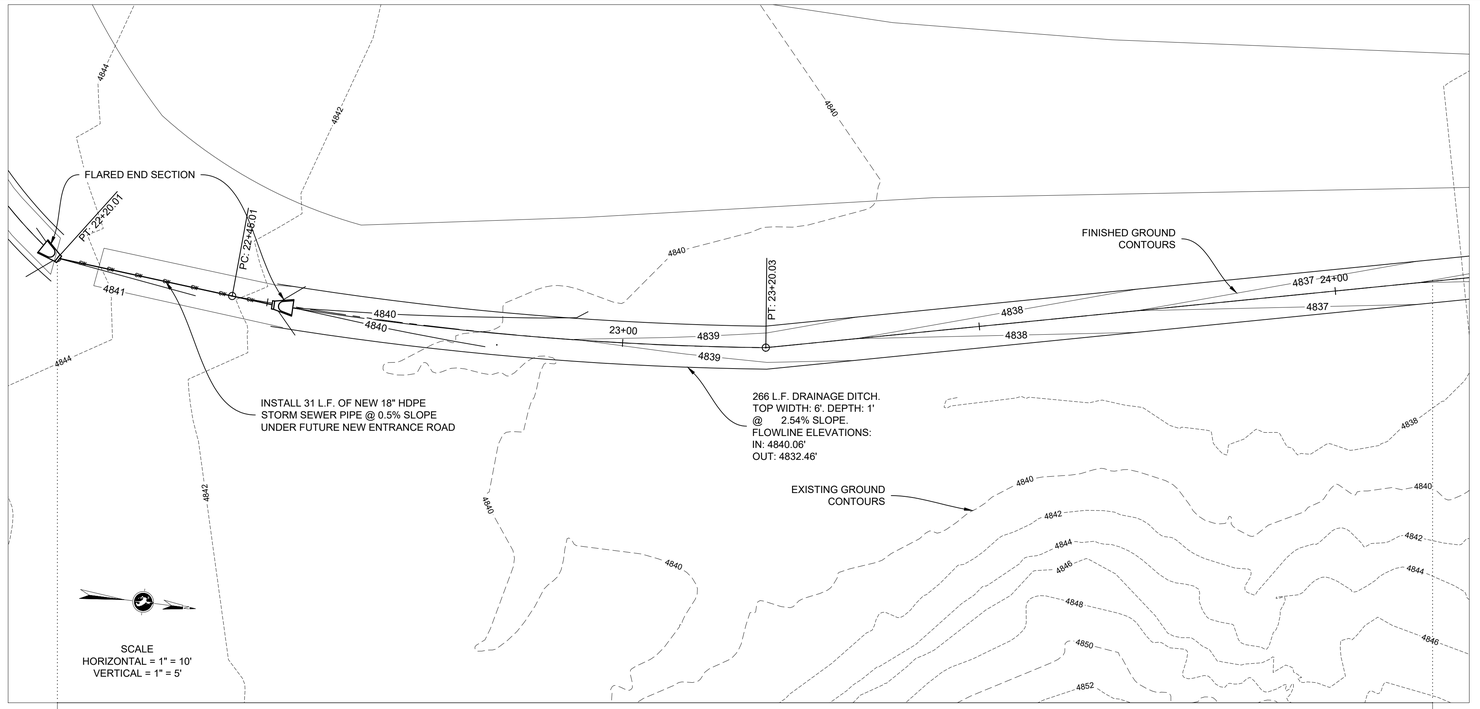
Date Drawn: 11.20.2025 | Scale: SEE plan(s)
Project No. 250046 | File Name: Converse County Shooting Range Drainage.dwg

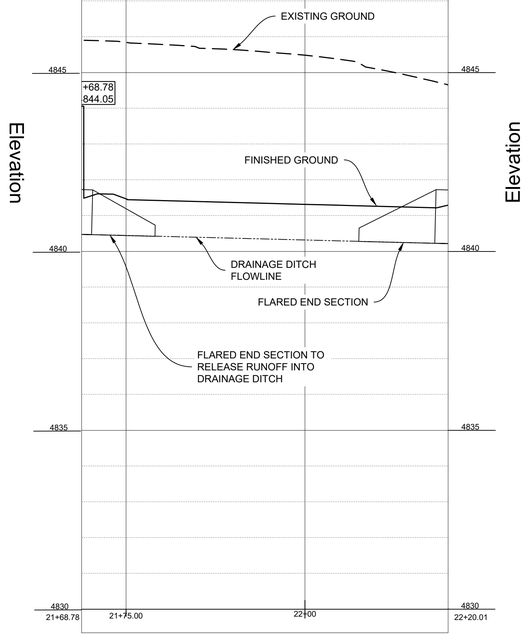
CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
- STORM 4 - STA. 19+12.20 TO 21+68.78

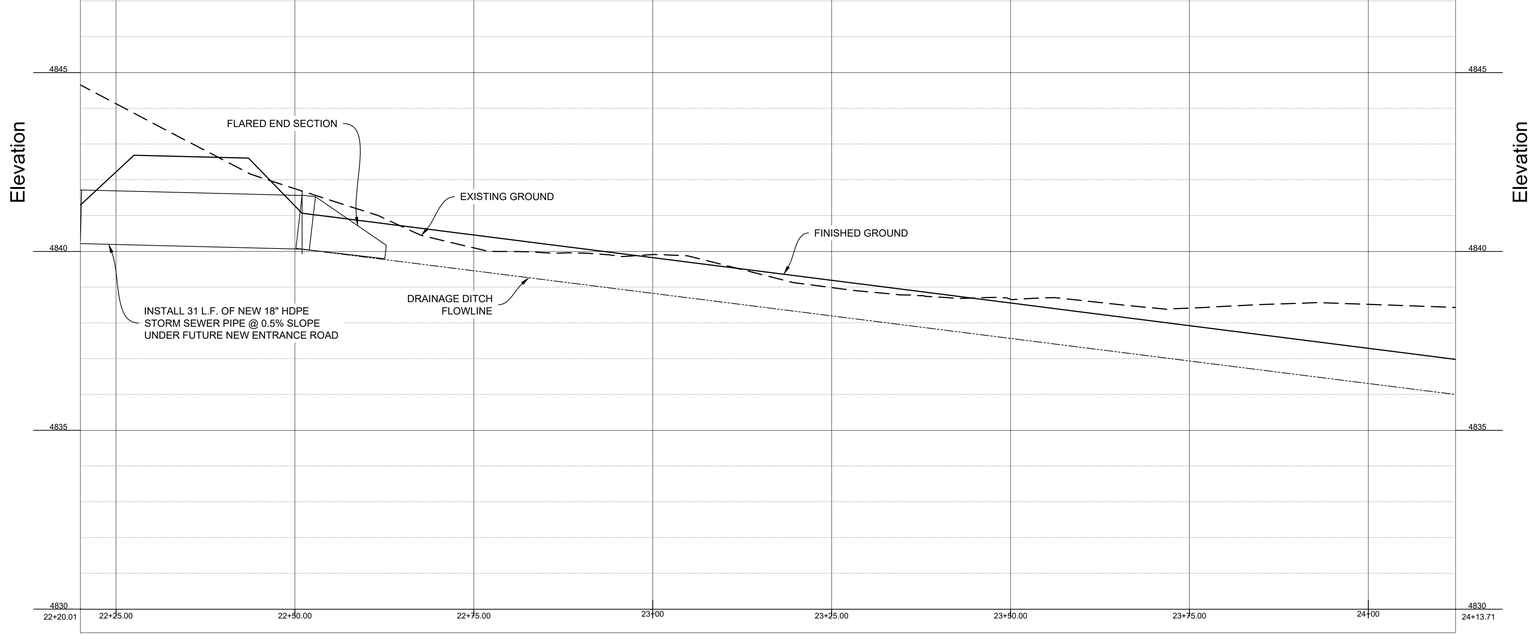
REV	DATE	REVISIONS	BY	CHK

PP4.0









ENGINEERS

PROFESSIONAL ENGINEER
SHAWN J. GUSTAFSON
6938
Date 11/20/25
WYOMING

FOR: **RELIC SERVICES, LLC**
P.O. Box 716
Glenrock, WY 82637

BY: **ECS ENGINEERS**
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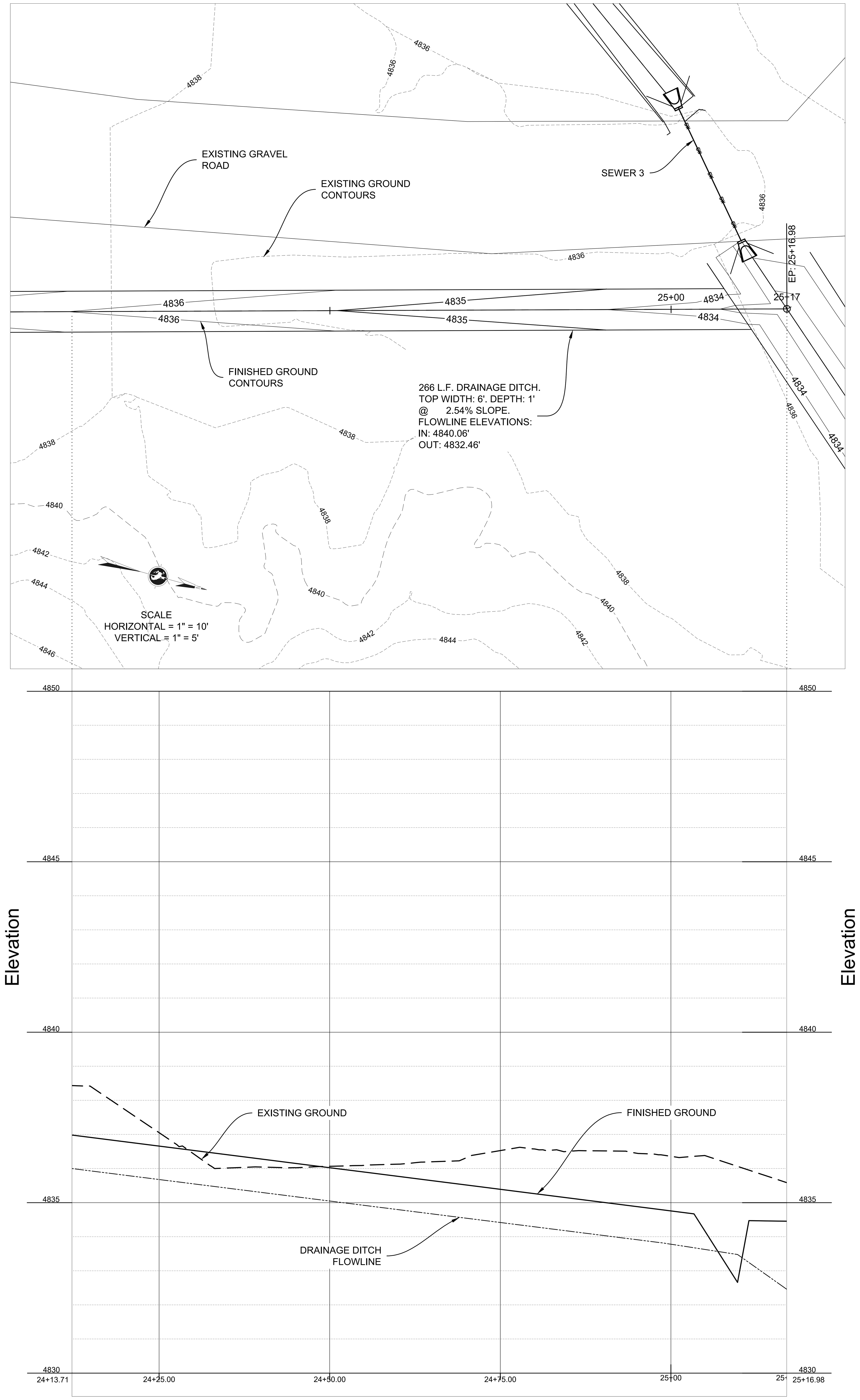
Project No. 250046

CONVERSE COUNTY
SHOOTING RANGE
PLAN & PROFILE
-STORM 4 - STA. 21+68.78 TO 24+13.71

REV	DATE	REVISIONS	BY	CHK

PP4.1



ECS ENGINEERS

FOR: RELIC SERVICES, LLC
P.O. Box 716,
Glenrock, WY 82637

BY: ECS ENGINEERS
ENVIRONMENTAL & CIVIL SOLUTIONS, LLC
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CONVERSE COUNTY SHOOTING RANGE

PLAN & PROFILE

- STORM 4 - STA. 24+13.71 TO 25+16.98 -

REV	DATE	REVISIONS	BY	CHK

PP4.2

GENERAL NOTES

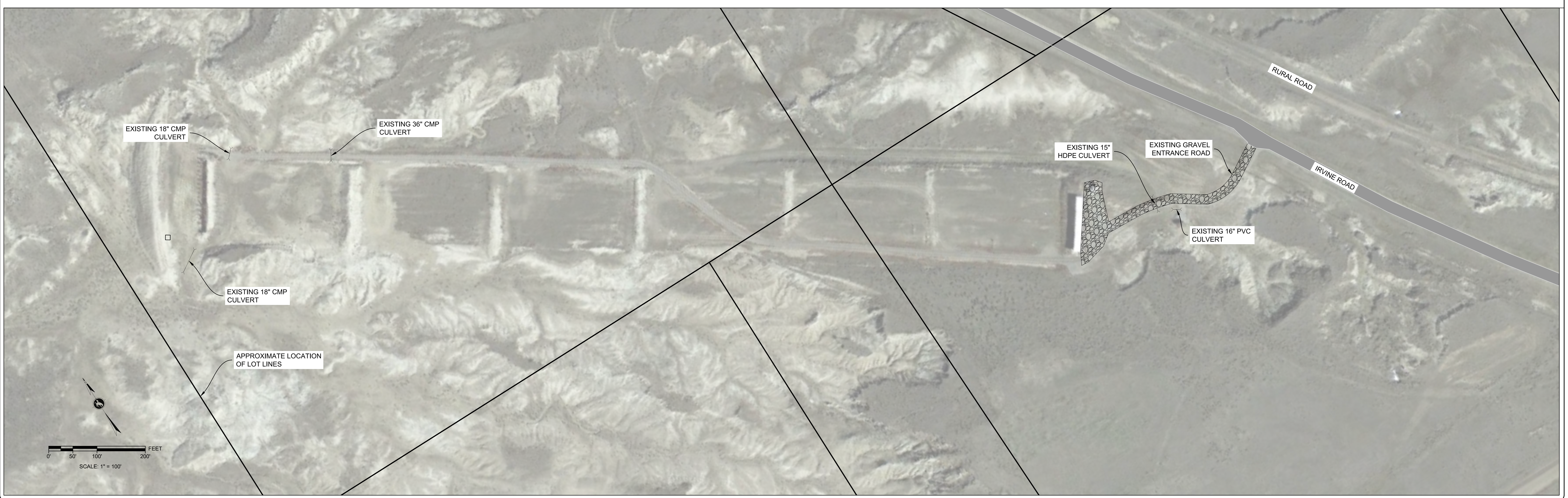
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE WYOMING PUBLIC WORKS SPECIFICATIONS (2023 EDITION) UNLESS OTHERWISE STATED IN THESE PLANS AND SPECIFICATIONS.
2. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF UNDERGROUND PUBLIC AND PRIVATE UTILITIES PRIOR TO CONSTRUCTION AND COORDINATE WITH THOSE UTILITIES DURING CONSTRUCTION.
3. THE LOCATION OF THE EXISTING UTILITIES IN THE PLANS ARE APPROXIMATE. THE ENGINEER AND OWNER SHALL NOT BE HELD ACCOUNTABLE FOR THE COMPLETENESS OR ACCURACY OF THE UTILITY LOCATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL MEASURES NECESSARY TO COMPLY WITH FEDERAL, STATE, COUNTY, AND CITY REGULATIONS INCLUDING WYPDES THAT PROHIBIT DISCHARGE OF POLLUTANTS, INCLUDING SEDIMENTS RESULTING FROM EROSION OR OTHER CONSTRUCTION ACTIVITIES.
5. THE CONTRACTOR SHALL PROVIDE DUST CONTROL AND SHALL CONDUCT WORK SO THAT SEDIMENT IS NOT TRANSFERRED ONTO ROADWAY OR ADJACENT PROPERTY.
6. CONTRACTOR TO CHECK, CONFIRM AND COORDINATE ALL DIMENSIONS AND DETAILS, TAKE FIELD MEASUREMENTS, VERIFY FIELD CONDITIONS AND COORDINATE WORK WITH THAT OF OTHER CONTRACTORS FOR THE PROJECT AND THE ENGINEER. ANY DISCREPANCIES OR CONCERNS REGARDING PLANS, NOTATIONS OR ELEVATIONS SHALL BE DIRECTED TO THE ENGINEER FOR CLARIFICATION.
7. ALL DRAINAGE TRENCHES ARE TO BE VEGETATED WITH NATIVE SEEDS TO PREVENT EROSION.

LEGEND

RIGHT OF WAY
PROPERTY LINES
EXISTING CENTERLINE
PROPOSED CENTERLINE
EDGE EXISTING ASPHALT
EDGE EXISTING GRAVEL
EXISTING WOOD FENCE
PROPOSED CHAINLINK FENCE
EXISTING GAS LINE
PROPOSED CRUDE MAIN
EXISTING WATER MAIN
PROPOSED WATER MAIN
EXISTING SANITARY MAIN
PROPOSED SANITARY MAIN
EXISTING STORM MAIN
PROPOSED STORM MAIN
OVERHEAD POWER LINE
TELEPHONE LINE
UNDERGROUND POWER
EXISTING FIBEROPTIC LINE
PROPOSED MAJOR CONTOUR
PROPOSED MINOR CONTOUR
EXISTING MAJOR CONTOURS
EXISTING MINOR COUNTOURS
EXISTING CONCRETE SURFACING
PROPOSED CONCRETE SURFACING
EXISTING LANDSCAPING
PROPOSED LANDSCAPING
EXISTING GRAVEL SURFACING
PROPOSED GRAVEL SURFACING
EXISTING ASPHALT SURFACING
PROPOSED ASPHALT SURFACING

SYMBOLS

TREE
ECS CONTROL POINT
ELECTRICAL VAULT
FIBER OPTIC PEDESTAL
FIRE HYDRANT
PROFILE FIRE HYDRANT
FLARED END SECTION
GAS METER
CATCH BASIN
GUY WIRE ANCHOR
POWER POLE
SANITARY SEWER MANHOLE
SANITARY SEWER CLEAN OUT
IRRIGATION VALVE BOX
SANITARY SEWER BACKFLOW PREVENTER
STORM SEWER MANHOLE
STREET LAMP
TELEPHONE MANHOLE
TELEPHONE PEDESTAL
BORE HOLE LOCATION
WATER TEE
WATER CROSS
WATER VALVE
CURB STOP
ELECTRICAL METER CABINET
SINGLE SIGN POST
BOLLARD
RECOVERED BRASS CAP
RECOVERED ALUMINUM CAP
RECOVERED REBAR
RECOVERED ALUMINUM CAP



ECS ENGINEERS

PROFESSIONAL ENGINEER 6936 WYOMING Date 11/20/25

FOR: **RELIC SERVICES, LLC**
P.O. Box 716,
Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENVIRONMENTAL & CIVIL SOLUTIONS, LLC
1607 CY Ave, Suite 104
Casper, WY 82601 • 307.337.2883

Date Drawn: 11.20.2025
Scale: SEE DRAWING
Project No. 250046
File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
EXISTING CONDITIONS -SOUTH-

REV	DATE	REVISIONS	BY	CHK

EX2.0

CATCHMENT RUNOFF VOLUME

CATCHMENT	AREA	RUNOFF 10Y	RUNOFF 100Y
7	5.26 ACRES	17.98 CFS	28.9 CFS
8	17.47 ACRES	38.84 CFS	62.42 CFS
9	16.53 ACRES	30.81 CFS	49.53 CFS
10	4.40 ACRES	8.36 CFS	13.43 CFS

ECS ENGINEERS

FOR: **RELIC SERVICES, LLC**
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Date Drawn: 11.20.2025 | Scale: SEE DRAWING
Project No. 250046 | File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
EXISTING CATCHMENTS -SOUTH-

REV	DATE	REVISIONS	BY	CHK

EC2.0

CATCHMENT RUNOFF VOLUME			
CATCHMENT	AREA	RUNOFF 10Y	RUNOFF 100Y
7 (REMAINS)	5.26 ACRES	17.98 CFS	28.9 CFS
11	12.21 ACRES	27.14 CFS	43.63 CFS
12	16.85 ACRES	31.41 CFS	50.49 CFS
13	9.34 ACRES	16.24 CFS	26.10 CFS

ECS ENGINEERS

FOR: **RELIC SERVICES, LLC**
P.O. Box 716,
Glenrock, WY 82637

BY: **ECS ENGINEERS**
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Date Drawn: 11.20.2025 | Scale: SEE DRAWING
Project No. 250046 | File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
DESIGNED CATCHMENTS -SOUTH-

REV | DATE | REVISIONS | BY | CHK

PC1.0

PROFESSIONAL ENGINEER
SHAWN J. GUSTAFSON
6938
WYOMING
Date 11/20/2025

ECS ENGINEERS

FOR: **RELIC SERVICES, LLC**
P.O. Box 716
Glenrock, WY 82637

BY: **ECS ENGINEERS**
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Date Drawn: 11.20.2025 | Scale: See Scales
Project No. 250046 | File Name: Converse County Shooting Range Drainage.dwg

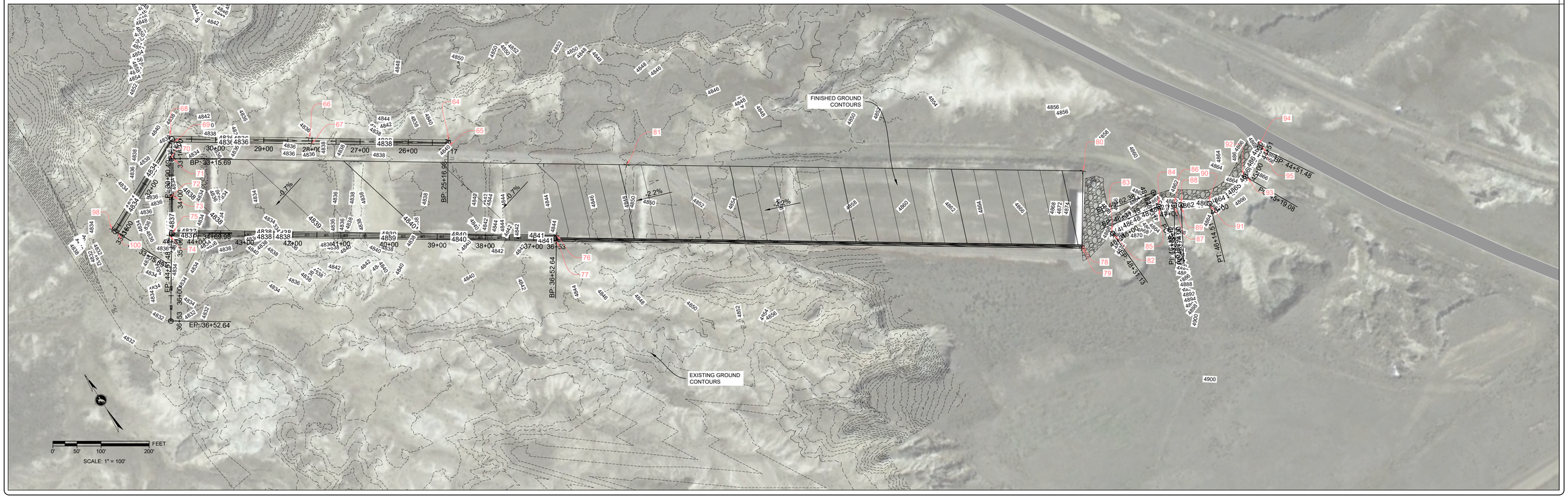
CONVERSE COUNTY SHOOTING RANGE
DRAINAGE PLAN
-SOUTH-

REV	DATE	REVISIONS	BY	CHK

DR2.0

Point Table				
Point #	Elevation	Northing	Easting	Description
64	4839.91	801064.46	602922.40	TOP EDGE OF DITCH
65	4839.91	801054.41	602915.84	TOP EDGE OF DITCH
66	4838.24	801222.63	602680.13	TOP EDGE OF DITCH
67	4837.74	801209.76	602677.89	TOP EDGE OF DITCH
68	4835.56	801380.80	602437.86	TOP EDGE OF DITCH
69	4835.56	801365.12	602439.94	TOP EDGE OF DITCH
70	4838.20	801340.36	602413.94	TOP EDGE OF DITCH
71	4838.23	801337.07	602418.99	TOP EDGE OF DITCH
72	4837.80	801273.04	602370.39	TOP EDGE OF DITCH
73	4837.78	801272.39	602377.09	TOP EDGE OF DITCH
74	4837.40	801205.80	602326.89	TOP EDGE OF DITCH
75	4836.41	801207.55	602335.19	TOP EDGE OF DITCH
76	4841.40	800777.22	603006.44	TOP EDGE OF DITCH
77	4841.40	800767.16	602999.88	TOP EDGE OF DITCH
78	4865.17	800176.18	603917.58	TOP EDGE OF DITCH
79	4872.37	800171.15	603914.32	TOP EDGE OF DITCH
80	4873.15	800305.41	604001.84	FG
81	4834.87	800822.94	603207.92	FG
82	4867.83	800158.36	603985.07	TOP EDGE OF DITCH
83	4867.83	800167.35	603984.59	TOP EDGE OF DITCH

Point Table				
Point #	Elevation	Northing	Easting	Description
84	4862.46	800163.11	604097.06	TOP EDGE OF DITCH
85	4862.34	800154.39	604094.34	TOP EDGE OF DITCH
86	4862.50	800148.09	604126.12	TOP EDGE OF DITCH
87	4862.50	800140.09	604121.99	TOP EDGE OF DITCH
88	4862.72	800140.67	604138.33	TOP EDGE OF DITCH
89	4862.72	800132.83	604133.90	TOP EDGE OF DITCH
90	4864.27	800111.62	604189.72	TOP EDGE OF DITCH
91	4864.27	800103.34	604186.08	TOP EDGE OF DITCH
92	4866.75	800119.11	604278.32	TOP EDGE OF DITCH
93	4866.75	800111.28	604282.78	TOP EDGE OF DITCH
94	4867.71	800156.97	604339.09	TOP EDGE OF DITCH
95	4868.41	800149.33	604343.85	TOP EDGE OF DITCH
98	4834.98	801280.73	602233.31	TOP EDGE OF TRENCH
100	4834.98	801267.26	602239.90	TOP EDGE OF TRENCH



ENGINEERS

PROFESSIONAL ENGINEER
SHAWN J. GUSTAFSON
6938
WYOMING
12/23/25

FOR: **RELIC SERVICES, LLC**
P.O. Box 716
Glenrock, WY 82637

BY: **ECS ENGINEERS**
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Date Drawn: 11.20.2025
Project No.: 250046
Scale: SEE Scales
File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
GRADING PLAN
-SOUTH-

REV	DATE	REVISIONS	BY	CHK

GR2.0

ENGINEERS

PROFESSIONAL ENGINEER
6936
WYOMING

FOR: **RELIC SERVICES, LLC**
P.O. Box 716,
Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENVIRONMENTAL & CIVIL SOLUTIONS, LLC
1607 CY Ave, Suite 104
Casper, WY 82601 • 307.337.2883

Date Drawn: 11.20.2025
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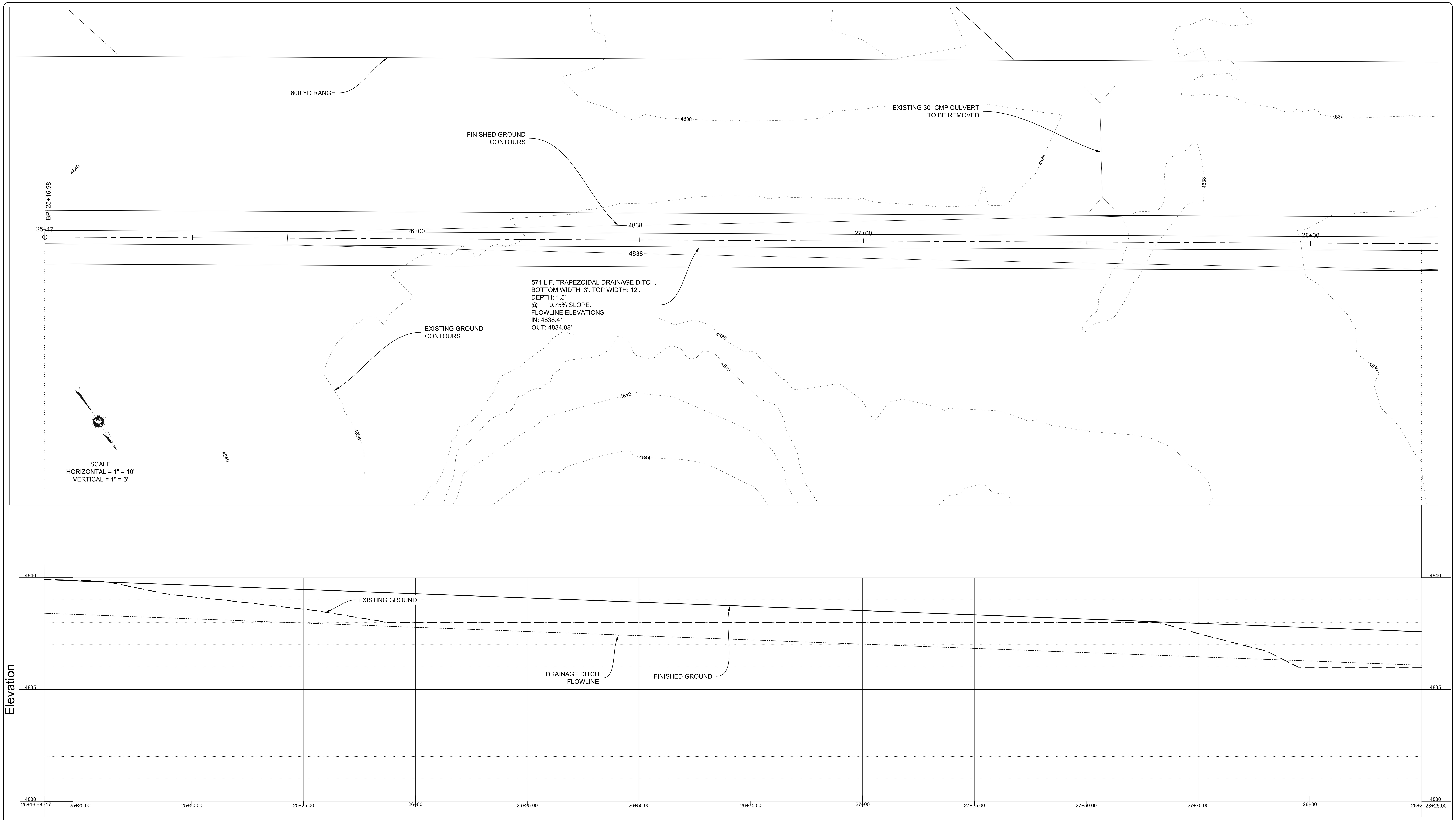
File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
STORM SEWER OVERVIEW
- SOUTH -

REV	DATE	REVISIONS	BY	CHK

S02.0



ECS ENGINEERS

Shawn J. Gustafson, Professional Engineer, Civil, 6936, Wyoming
Date 11/20/25

FOR: **RELIC SERVICES, LLC**
P.O. Box 716,
Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENVIRONMENTAL & CIVIL SOLUTIONS, LLC
1607 CY Ave, Suite 104
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Date Drawn: 11.20.2025 | Scale: SEE DRAWING
Project No. 250046 | File Name: Converse County Shooting Range Drainage.dwg

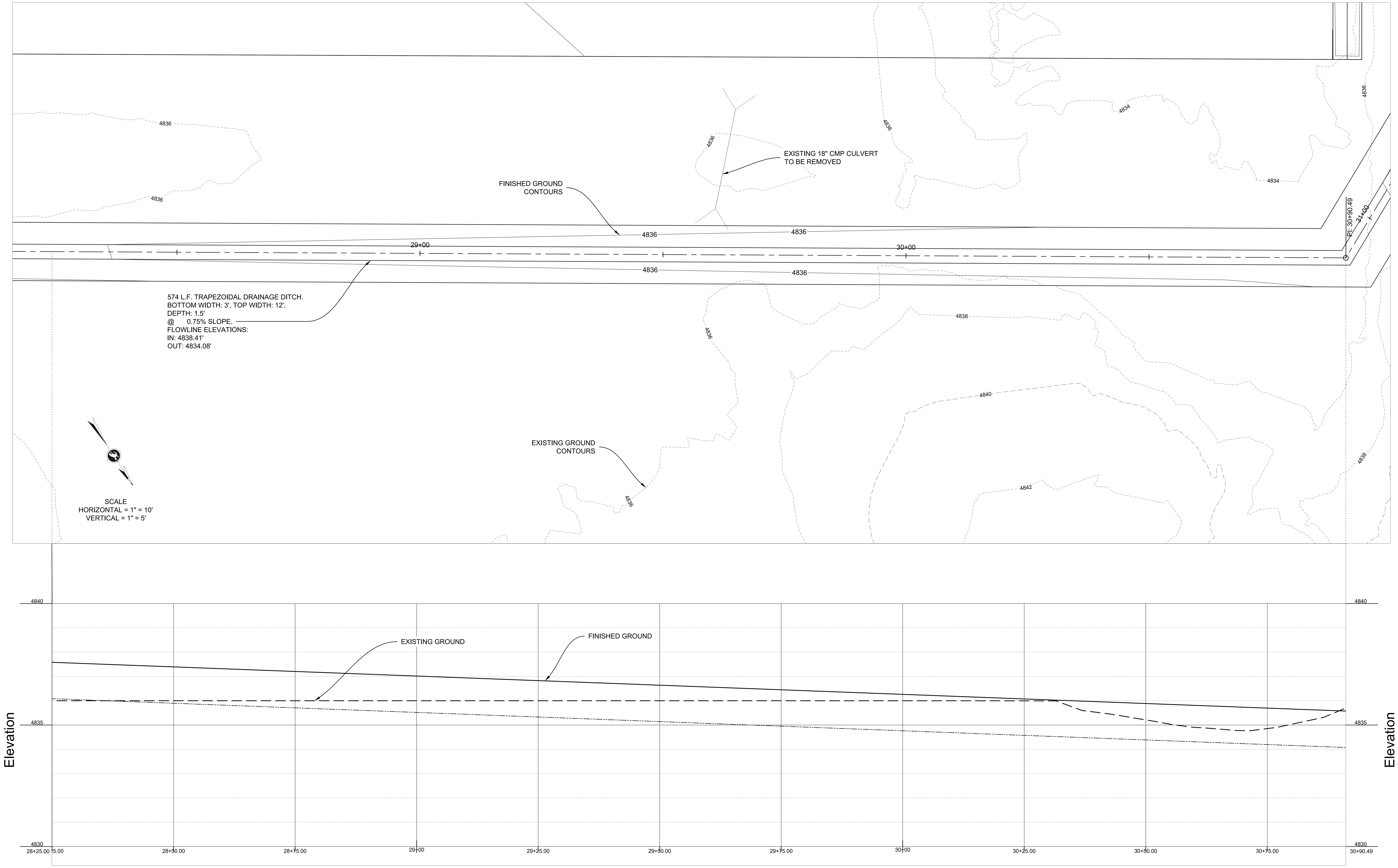
CONVERSE COUNTY SHOOTING RANGE

PLAN & PROFILE

- STORM 5 - STA. 25+16.98 TO 28+25.00 -

REV	DATE	REVISIONS	BY	CHK

PP5.0



ECS ENGINEERS

PROFESSIONAL ENGINEER (CIVIL)
SHAWN J. GUSTAFSON
6936
Date 11/20/25
WYOMING

FOR: **RELIC SERVICES, LLC**
P.O. Box 716,
Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENVIRONMENTAL & CIVIL SOLUTIONS, LLC
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Project No. 250046	File Name: Converse County Shooting Range Drainage.dwg

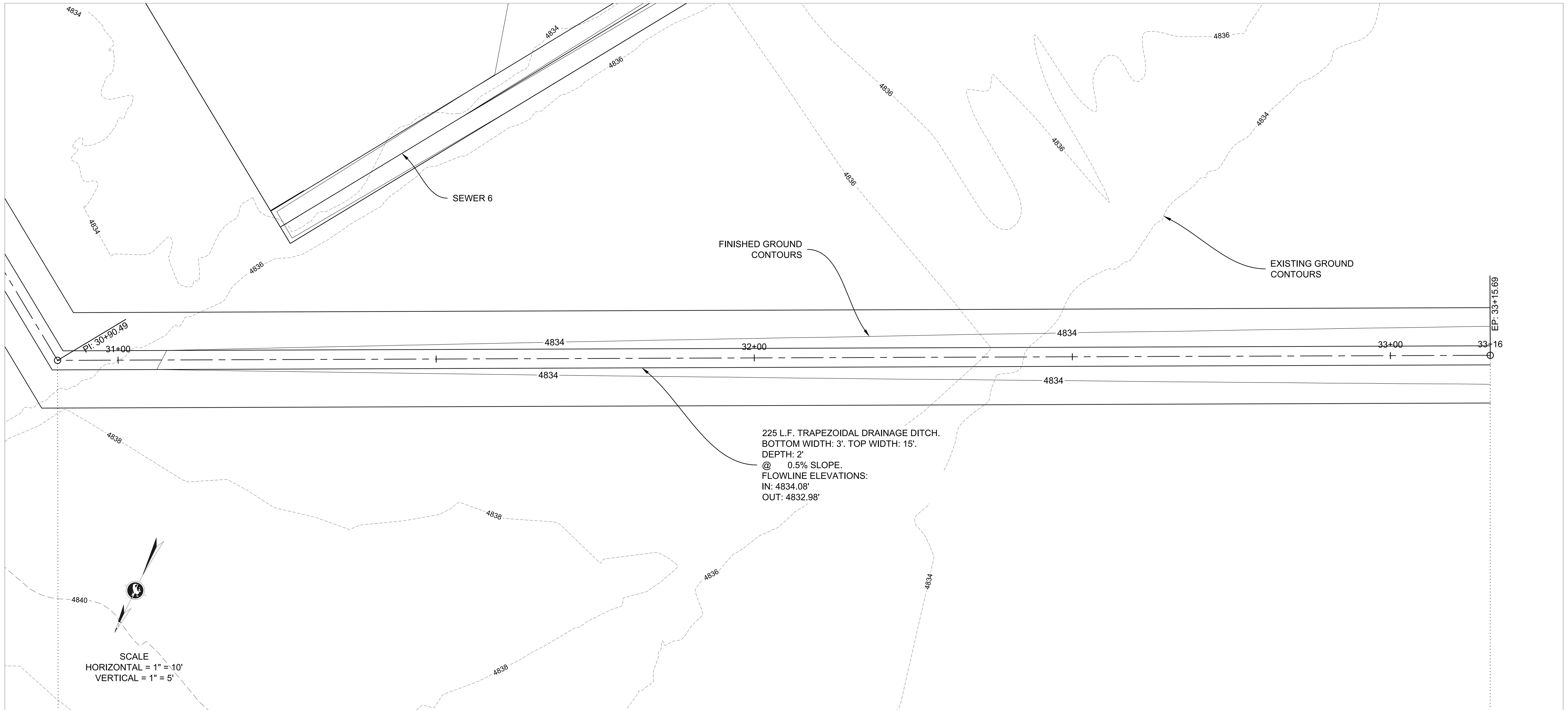
CONVERSE COUNTY SHOOTING RANGE

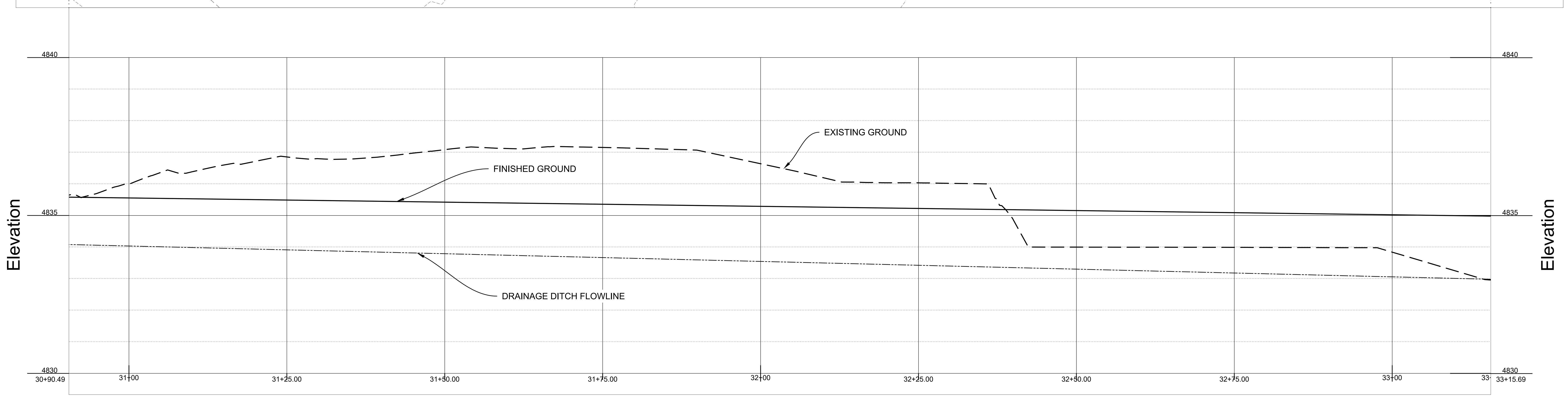
PLAN & PROFILE

- STORM 5 - STA. 28+25.00 TO 30+90.49 -

REV	DATE	REVISIONS	BY	CHK

PP5.1





ECS ENGINEERS

PROFESSIONAL ENGINEER SHAWN J. GUSTAFSON 6936 CIVIL WYOMING Date 11/20/25

FOR: **RELIC SERVICES, LLC**
P.O. Box 716,
Glenrock, WY 82637

BY: **ECS ENGINEERS**
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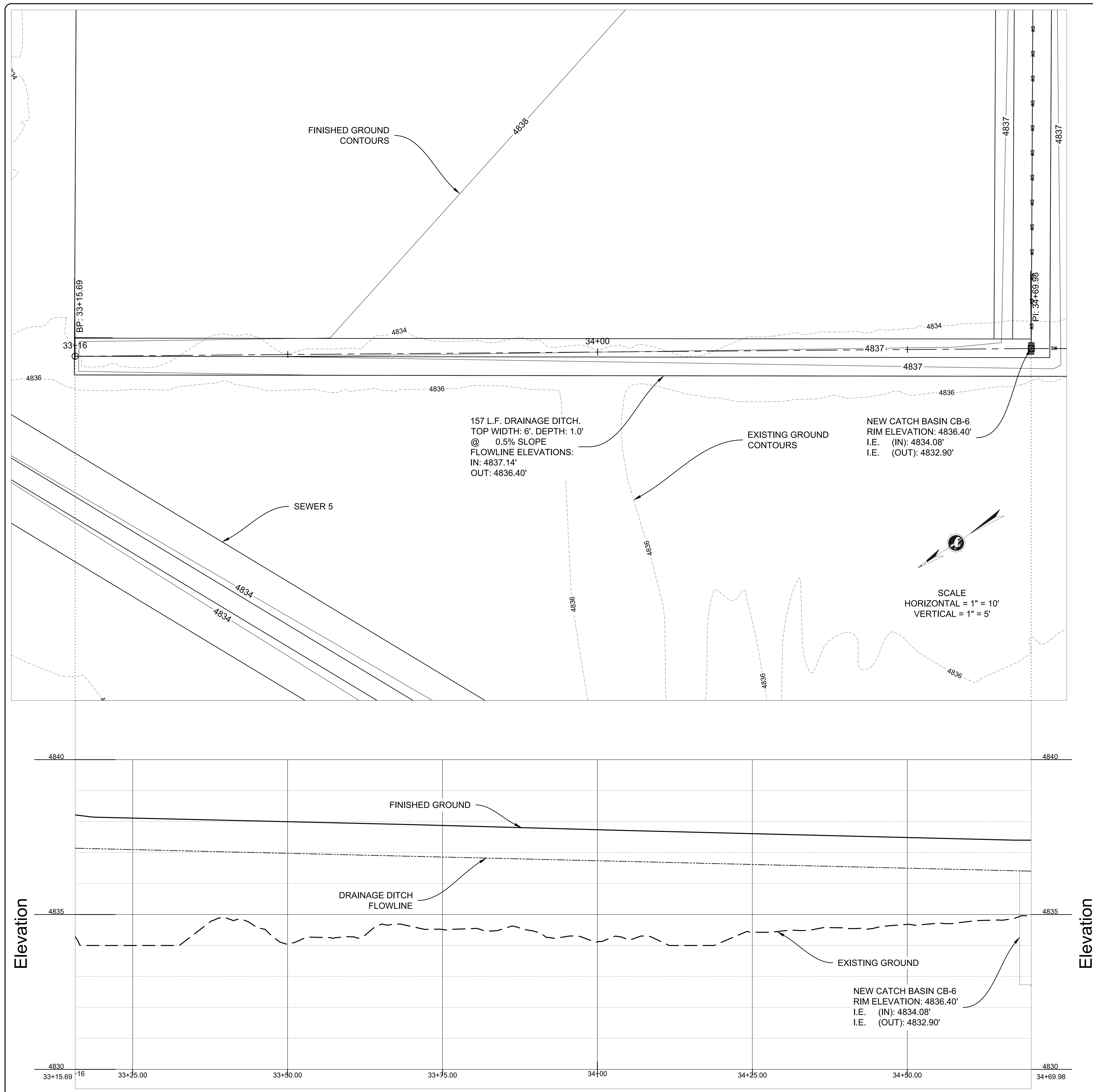
CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
- STORM 5 - STA. 30+90.49 TO 33+15.69 -

REV	DATE	REVISIONS	BY	CHK

PP5.2



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Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENVIRONMENTAL & CIVIL SOLUTIONS, LLC
1607 CY Ave, Suite 104
Casper, WY 82601 • 307.337.2883

Date Drawn: 11.20.2025
Scale: SEE DRAWING
Project No. 250046
File Name: Converse County Shooting Range Drainage.dwg

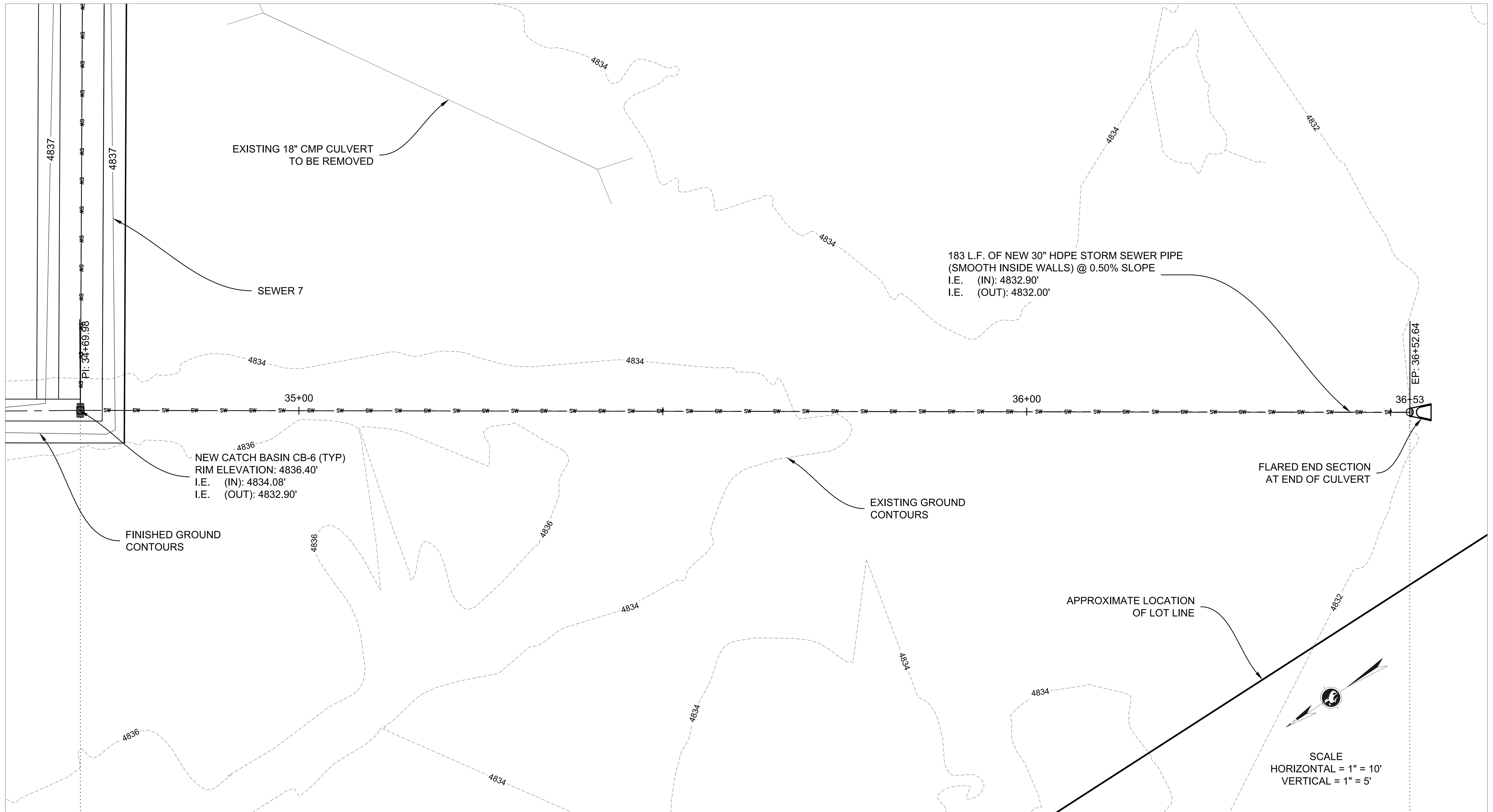
CONVERSE COUNTY SHOOTING RANGE

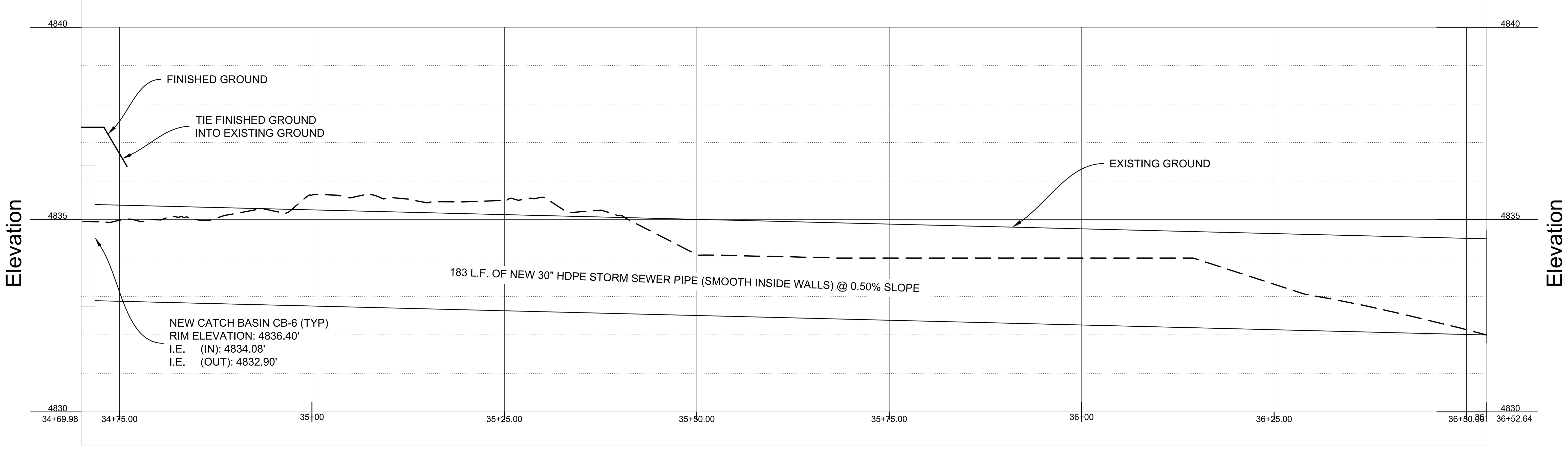
PLAN & PROFILE

- STORM 6 - STA. 33+15.69 TO 34+69.98 -

REV	DATE	REVISIONS	BY	CHK

PP6.0





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Date: 11.20.2025
Project No. 250046

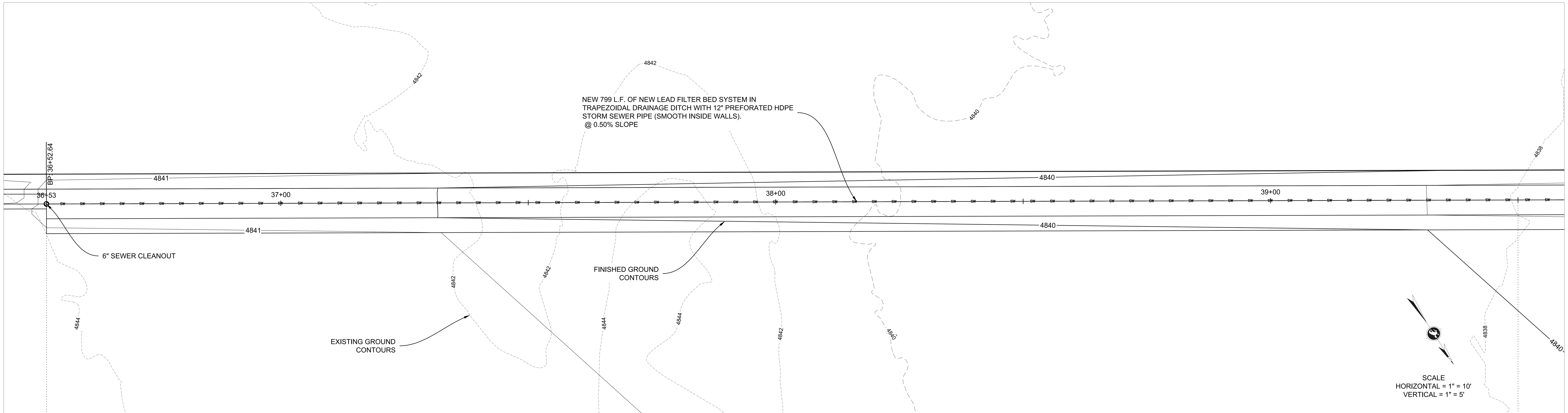
CONVERSE COUNTY SHOOTING RANGE

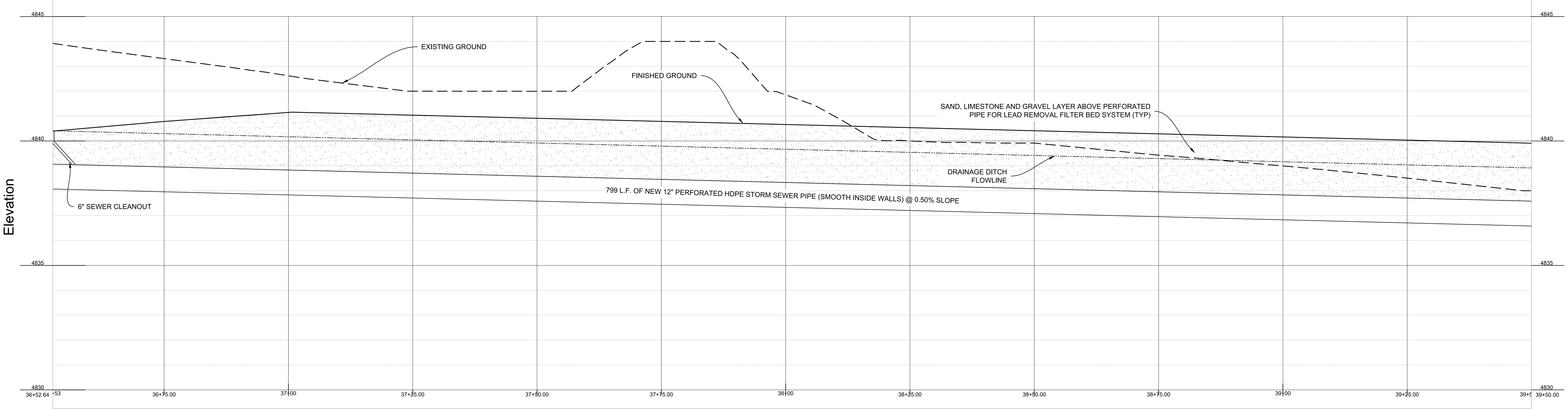
PLAN & PROFILE

- STORM 6 - STA. 34+69.98 TO 36+52.64 -

REV	DATE	REVISIONS	BY	CHK

PP6.1





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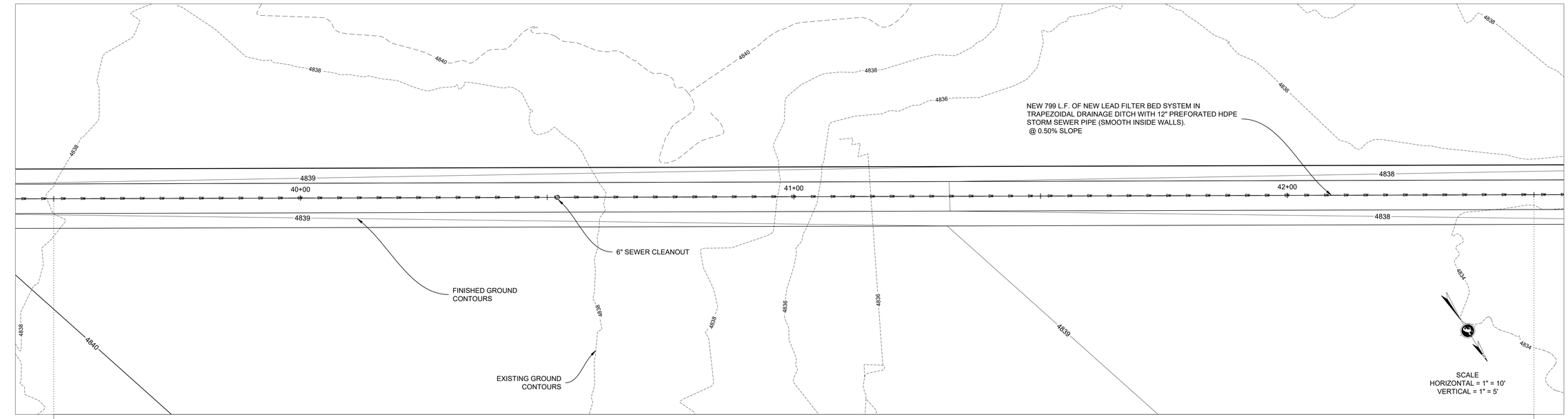
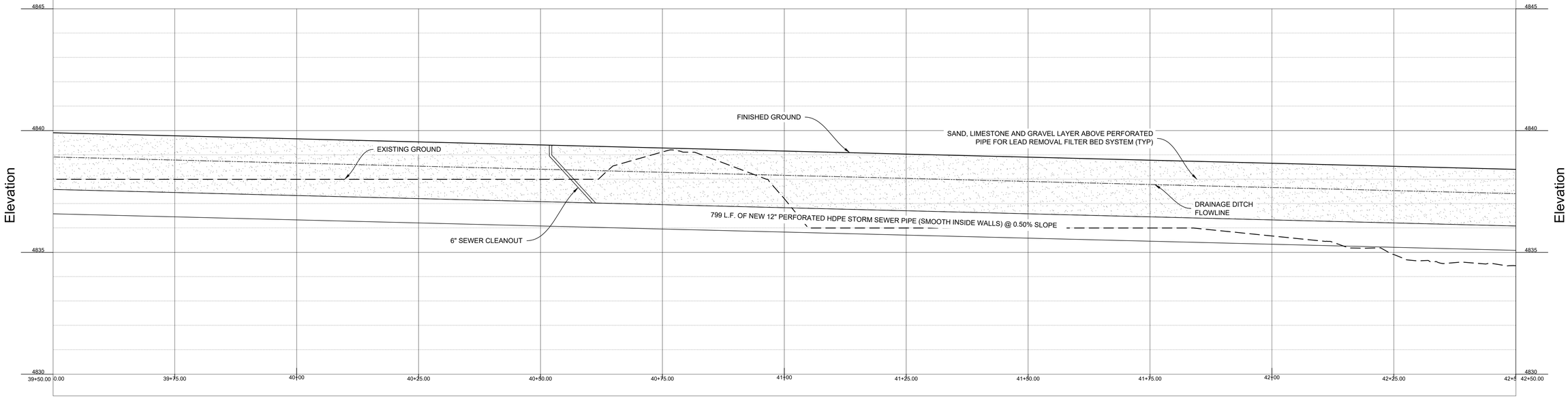
File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
- STORM 7 - STA. 36+52.64 TO 39+50.00 -

REV	DATE	REVISIONS	BY	CHK

PP7.0





ENGINEERS

PROFESSIONAL ENGINEER
SHAWN J. GUSTAFSON
6938
WYOMING
Dec 11, 2025

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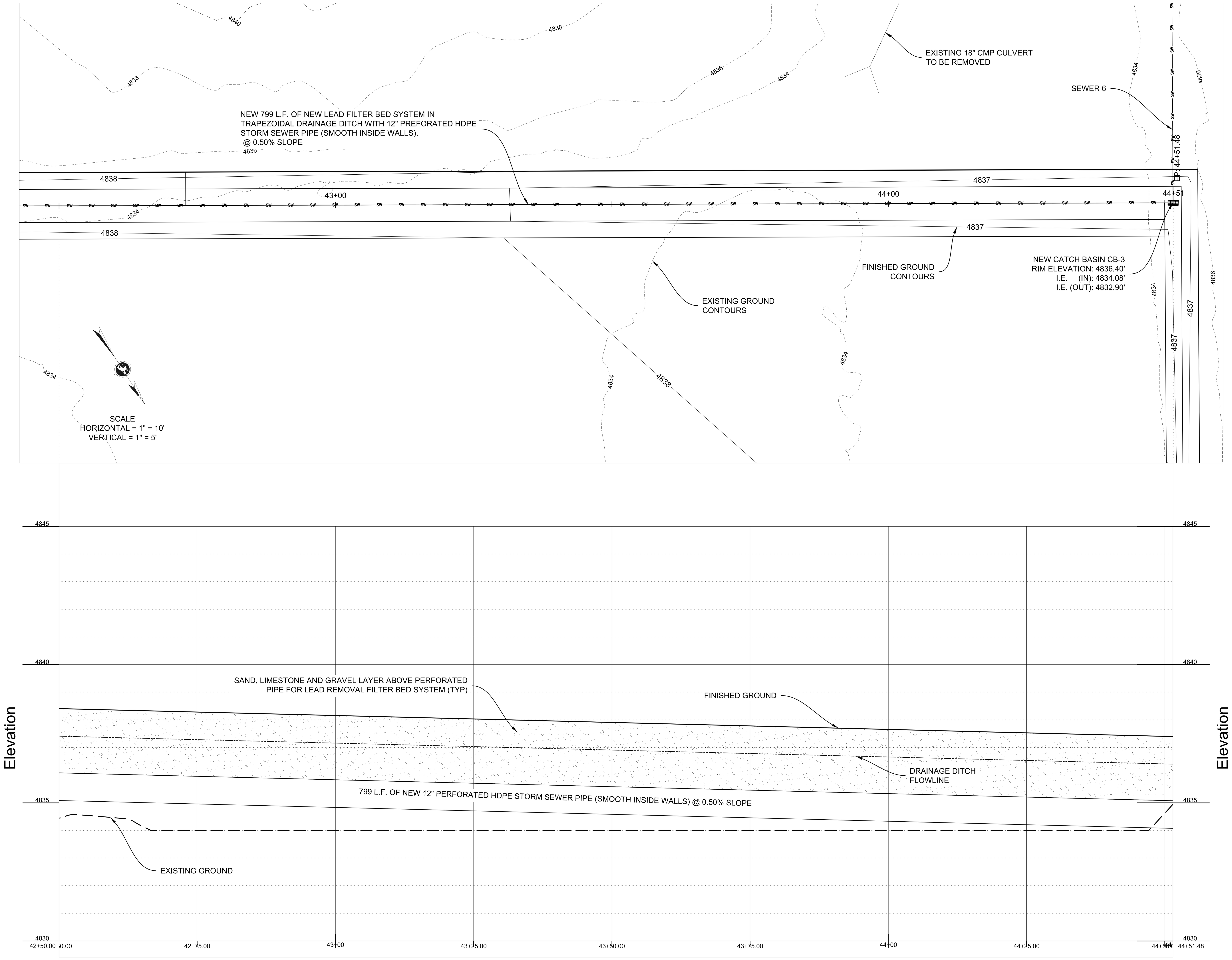
Date Drawn: 11.20.2025
Project No: 250046
Scale: SEE Labels
File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
-STORM 7 - STA. 39+50.00 TO 42+50.00 -

REV	DATE	REVISIONS	BY	CHK

PP7.1



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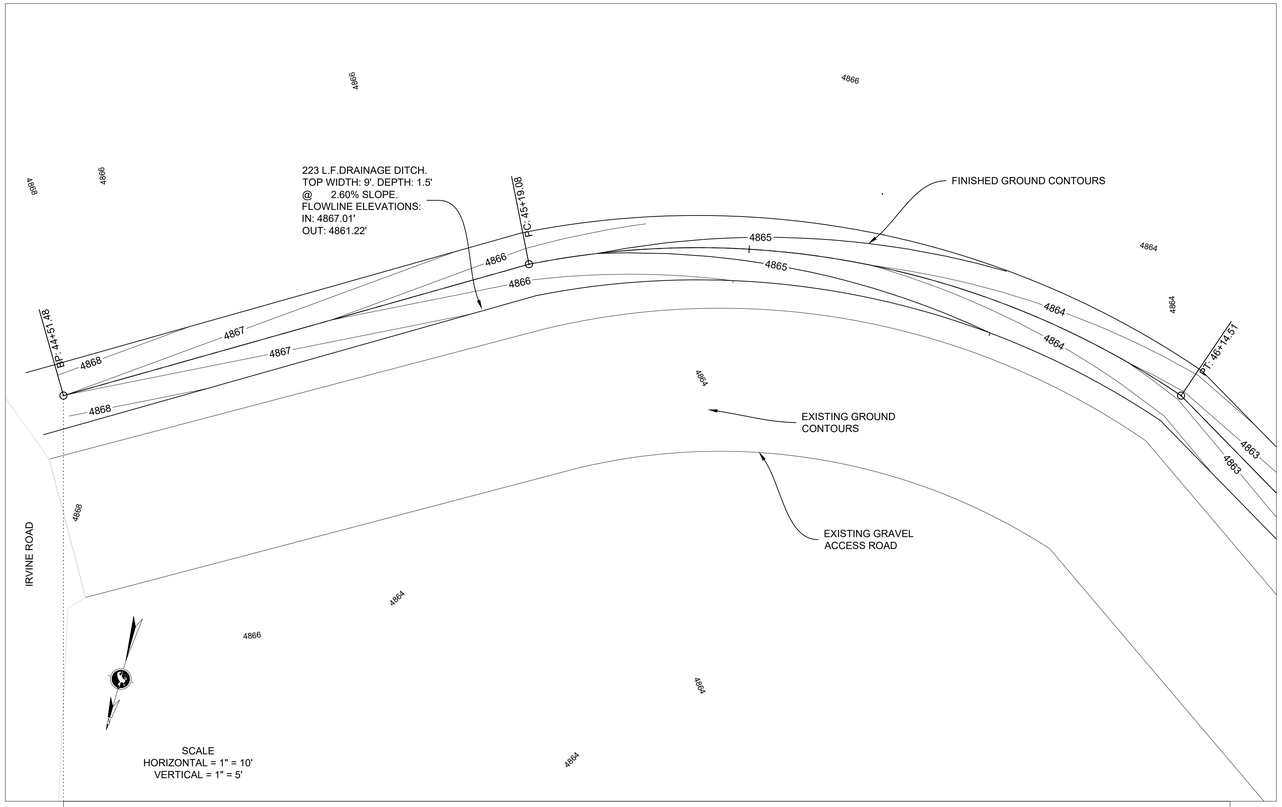
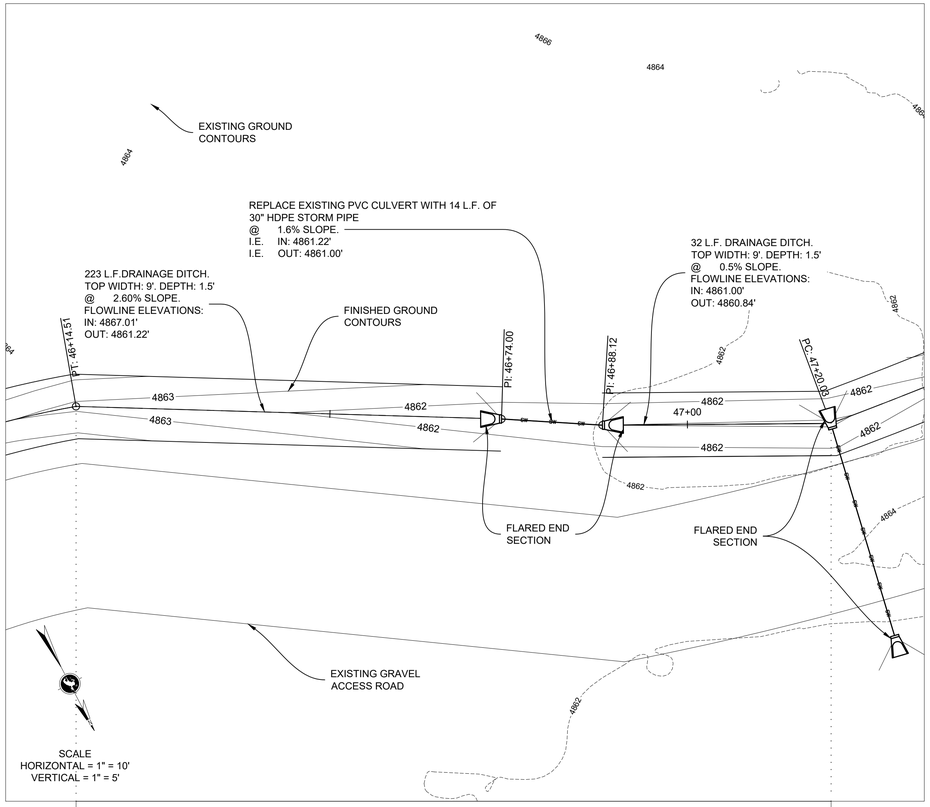
Date Drawn: 11.20.2025
Project No.: 250046

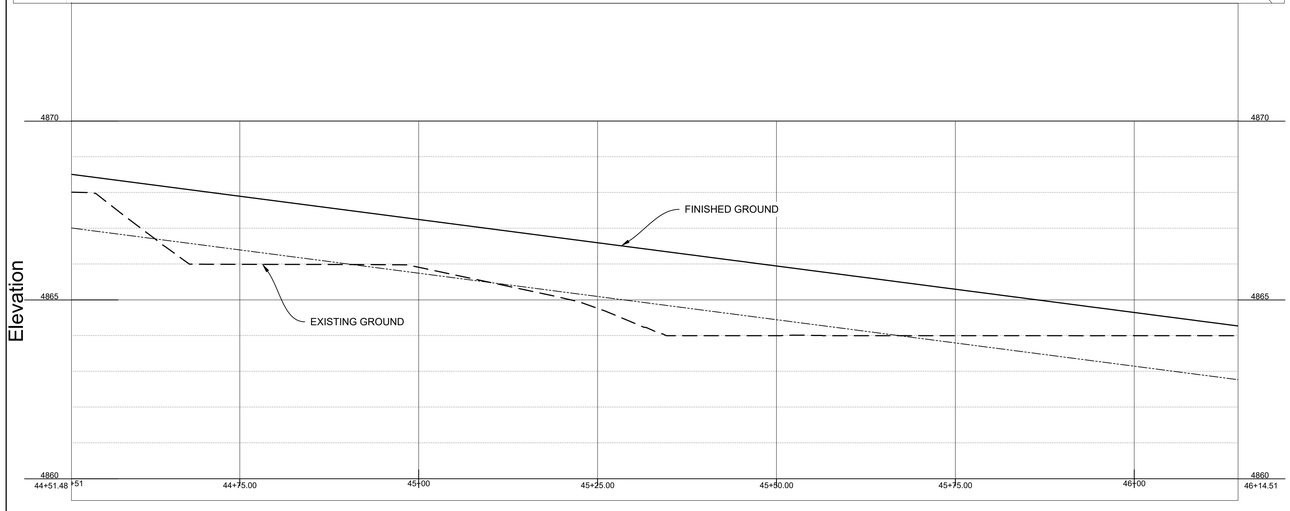
CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
-STORM 7 - STA. 42+50.00 TO 44+51.48 -

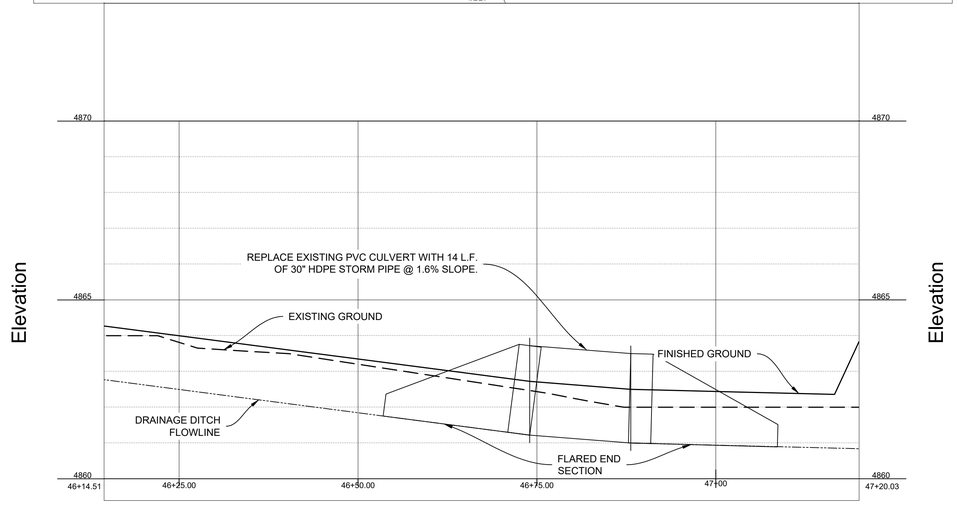
REV	DATE	REVISIONS	BY	CHK

PP7.2









ENGINEERS

PROFESSIONAL ENGINEER
SHAWN J. GUSTAFSON
6938
Date: 12/23/25
WYOMING

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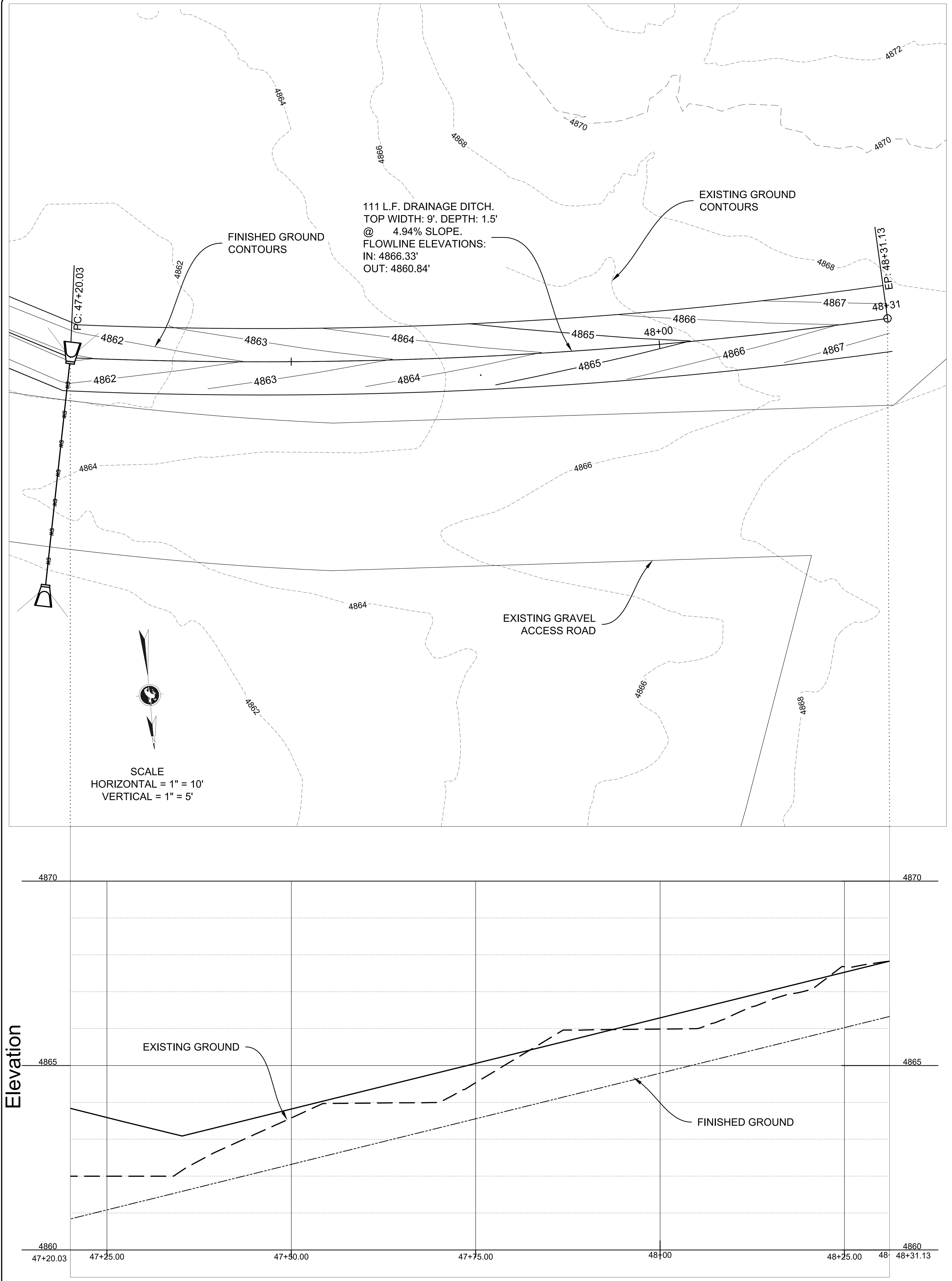
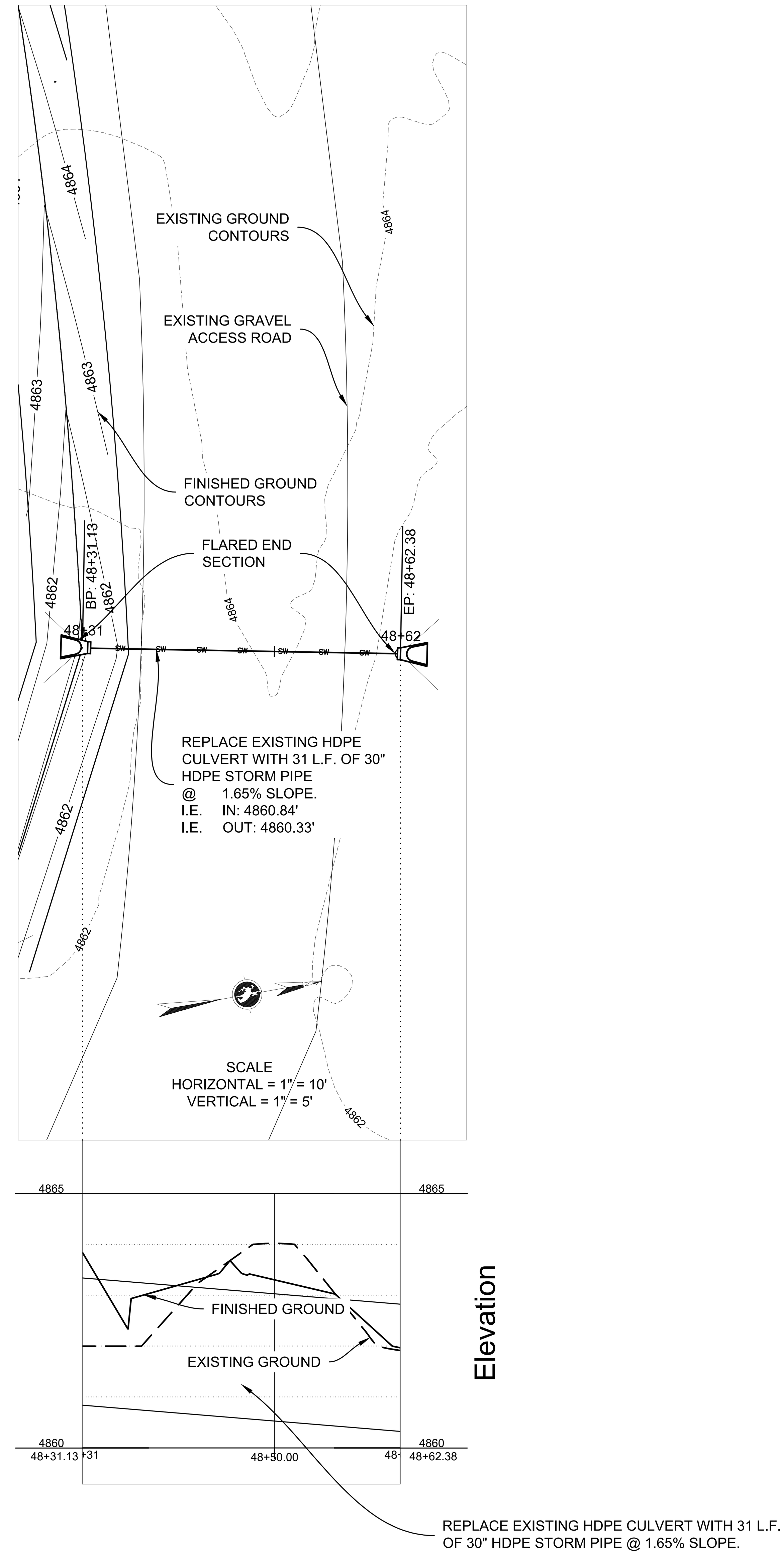
Date Drawn: 11.20.2025
Project No. 250046
Scale: SEE Detailed
File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
- STORM 8 - STA. 44+51.48 TO 47+20.03 -

REV	DATE	REVISIONS	BY	CHK

PP8.0





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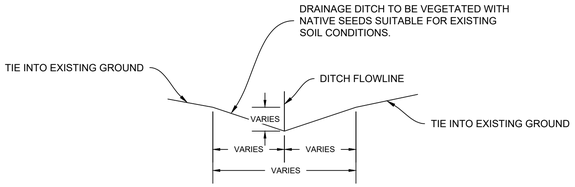
Date Drawn: 11.20.2025
Scale: SEE DRAWING
Project No. 250046
File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
PLAN & PROFILE
- STORM 8 - STA. 48+20.03 TO 48+62.38 -

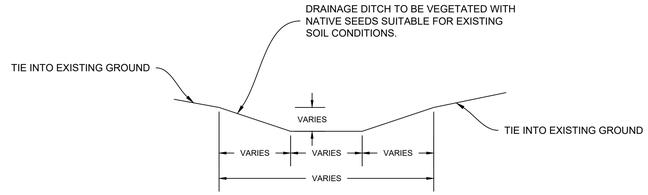
REV	DATE	REVISIONS	BY	CHK

PP8.1

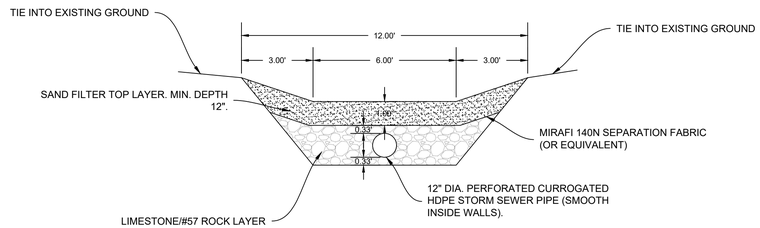
TRIANGULAR DRAINAGE DITCH DETAIL
- NTS -



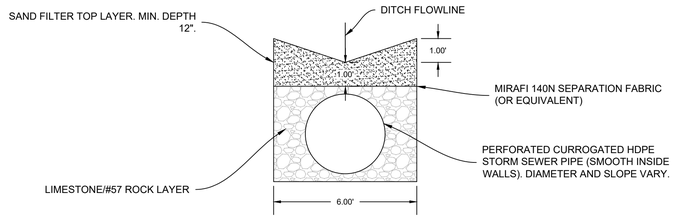
TRAPEZOIDAL DRAINAGE DITCH DETAIL
- NTS -

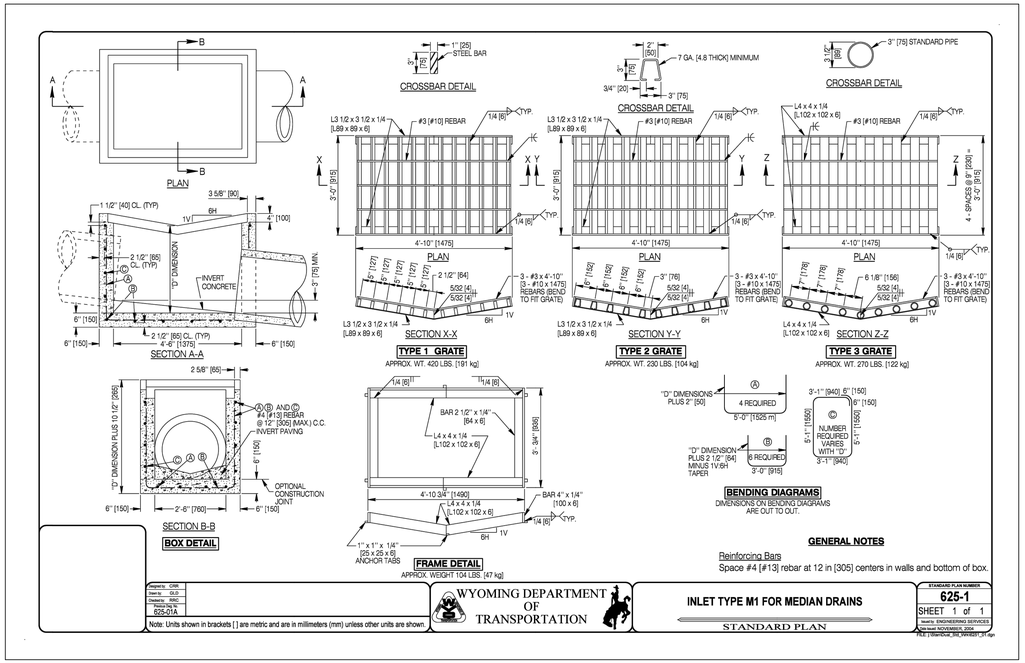


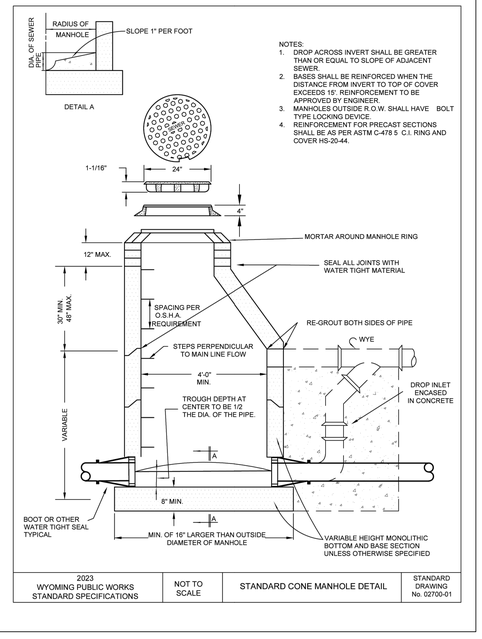
TRAPEZOIDAL DRAINAGE DITCH WITH LEAD FILTER BED FOR 600 YARD RANGE DETAIL
- NTS -



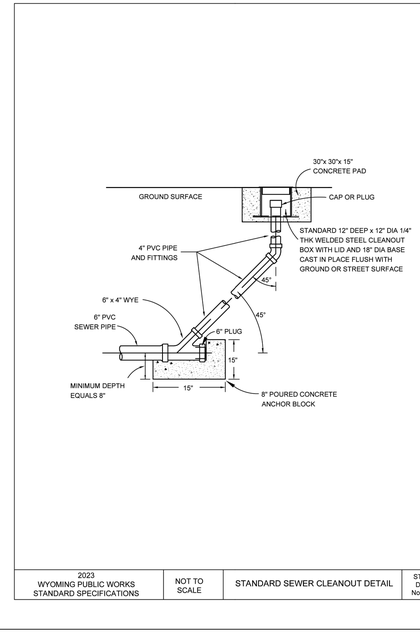
FILTER BED FOR LEAD REMOVAL DETAIL
- NTS -







2023 WYOMING PUBLIC WORKS STANDARD SPECIFICATIONS	NOT TO SCALE	STANDARD CONE MANHOLE DETAIL	STANDARD DRAWING No. 02700-01



2023 WYOMING PUBLIC WORKS STANDARD SPECIFICATIONS	NOT TO SCALE	STANDARD SEWER CLEANOUT DETAIL	STANDARD DRAWING No. 02700-06

ENGINEERS

PROFESSIONAL ENGINEER — SHAWN J. GUSTAFSON — 6938 — WYOMING — Date 11/20/25

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Date Drawn: 11.20.2025 | Scale: SEE Detail(s)
Project No.: 250046 | File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
DETAILS

REV	DATE	REVISIONS	BY	CHK

D1.0

ENGINEERS

Relic Services LLC
Mike Jennings
P.O. Box 716
Glenrock, WY, 82637

RE: Converse County Shooting Range – Drainage & Runoff

The Converse County Shooting Range is an existing shooting range maintained by the Fort Fetterman Sportsman Association. It is located on the southwest side of Irvine Road, approximately 3 miles south of Douglas, Wyoming. ECS Engineers has conducted a drainage study and designed drainage improvements for the site.

Existing Conditions and Drainage

The project location currently features a total of four different ranges with different distances, split into two separate areas with access roads off Irvine Road. Three short distance ranges are located in the northern part of the project site, while the long distance range occupies the southern section.
All ranges, as well as the access roads and parking areas, have gravel surfacing. Safety berms are located along the sides of the ranges and the naturally existing hills function as safety berms at the back of the ranges. Besides the gravel surfacing and the artificial safety berms the remainder of the site is covered by native vegetation, hardy grass and short shrubs. Due to rainwater runoff moderate to severe erosion has occurred along the existing slopes around the ranges and outfalls of existing drainage structures.

The total project site area is 116 acres, which is spread over several lots owned by Converse County. Slopes vary widely across the site and range between natural and artificial flat areas (approximately 0%-5%) and natural hill sides with slopes up to and exceeding 50%. The general drainage direction of the existing site runoff is towards the North Platte River (0.85 miles distance) to the west. Existing site conditions and storm water management structures, such as culverts and a catch basin, and can be reviewed in Appendix A.

10 existing catchments have been delineated across the project area. The delineation for the north and south area can be reviewed in Appendix B.

Existing catchments 1-6 are located in the northern section of the project site, while catchment 7-10 are located in the southern section. The analysis of the existing and post-development drainage conditions at the project site has been conducted utilizing the Hydraflow Express Extension for Autodesk Civil 3D by Autodesk, Inc. and the Rational Method. This method takes site conditions into account, such as surface area and permeability, surface slope, precipitation data, as well as runoff coefficients, which represent the runoff characteristics of different surfacing types, to calculate extreme event peak rainfall and runoff intensities.
The results of these calculations, existing drainage patterns and routes, as well as storm water management structures are discussed in the following section and the hydrographs can be reviewed in Appendix C:

North Section:

Catchment 1:

Catchment 1 encompasses a total area of 5.20 acres along the west side of Irvine Road and is thereby the largest catchment in the northern section of the range. It is terminated by the existing gravel access road in the north, the east edge of the existing parking area, hill crests in the south and berms in the west. Runoff from this area flows along the existing gravel road and eventually accumulates in a depression south of the existing access road.
The estimated 10-year runoff is 14.25 cfs and the 100-year runoff is 22.90 cfs.

Catchment 2:

This small catchment has a total area of 0.24 acres and consists of a depression on the west side of the gravel road leading to the most southern short distance range. An existing 30" CMP culvert has been placed underneath the gravel road to drain stormwater out of this catchment into catchment 1, but this culvert is currently not functioning as intended. Sediment has accumulated in the culvert and prevents runoff from leaving catchment 2. The bottom elevation of the depression is also lower than the invert elevation of the culvert due to erosion and thereby preventing runoff to follow the desired flowpath.
The estimated 10-year runoff is 0.93 cfs and the 100-year runoff is 1.50 cfs.

Catchment 3:

Catchment 3's total area of 0.80 acres is located at the south end of the northern section of the shooting range and includes the shortest of the short distance ranges and the hill sides surrounding and draining onto it in the north, west and south.
The estimated 10-year runoff is 3.05 cfs and the 100-year runoff is 4.90 cfs.

Catchment 4:

With a total area of 1.85 acres this catchment is located in the center of the northern section. It includes the medium distance range in this section and the area located behind a short safety berm to the south of the range, as well as the adjacent gravel parking area. Hill sides to the west are also included, as their runoff drains onto the range.
The estimated 10-year runoff is 5.67 cfs and the 100-year runoff is 9.11 cfs.

Catchment 5:

The range with the longest distance in the northern section of the range, as well as the steep hill sides adjacent to the west and southwest, are located in this catchment with a total area of 3.24 acres. Runoff from the hillsides drains onto the range and caused erosion in the past. An existing 10" HDPE culvert is installed in the north side safety berm to drain runoff from a flat spot on the northern edge of the range in northern direction to the other side of the berm. Existing site grading and erosion have caused a depression at the opening of the culvert and partially prevent the runoff from leaving the range. Severe erosion at the outfall of the culvert on the north side of the berm have created deep pooling of the runoff, before naturally continuing to flow in northern direction.
The estimated 10-year runoff is 9.69 cfs and the 100-year runoff is 15.57 cfs.

Catchment 6:

Catchment 6 has a total area of 0.58 acres, which consists of the gravel entrance area of the range between the access gate to the northeast, the most northern range to the west and the majority of the parking area to the south.
The catchment slopes are relatively flat, with a maximum of approximately 6% in the southeast of the catchment and the majority sloping at 2-3%. An existing catch basin is located centrally in the catchment, with an HDPE culvert draining to the north. The outfall of this culvert is located north of the safety berm surrounding the range and drains into an existing stream leading to the Nort Platte River to the west. The area surrounding the outfall shows signs of severe erosion. Two main deep drainage pathways have formed and caused the existing ground to cave in in several areas.

The area around the existing catch basin shows signs of standing water. According to Mike Jennings, project Manager at Relic Services LLC, only approximately 70-80% of the runoff in this catchment eventually drains into the catch basin, caused by improper site grading, with the remaining water standing in the surrounding area causing wet spots and mud. This catchment also has the highest vehicle traffic volume as it serves as the entrance area to the north section of the range.
The south part of this catchment shows signs of erosion along the west edge of the gravel road as well.
The estimated 10-year runoff is 1.86 cfs and the 100-year runoff is 2.99 cfs.

The combined estimated existing runoff for the entire north section of the site is 35.45 cfs for the 10-year event and 56.97 cfs for the 100-year event.

South Section:

Catchment 7:

The entrance area of the southern section of the project site on the west side of the centerline of the gravel entrance road, as well as the hill sides to the south, define catchment 7. Drainage from the hillsides runs downslope towards the entrance road and has caused erosion and wet areas due to insufficient drainage pathways. Two existing culverts have been previously installed to manage the runoff. A 16" PVC culvert has been placed under a short turnoff from the gravel entrance road leading to an existing outhouse. The purpose of this culvert is to drain runoff from south to north along the entrance road. The second culvert, a 10" corrugated HDPE drain pipe, is located underneath the entrance road north of the PVC culvert and intended to drain runoff from the west to the east side of the gravel entrance road. This culvert is partially filled with sediment.
The total catchments area is 5.28 acres.
The estimated 10-year runoff is 17.98 cfs and the 100-year runoff is 28.9 cfs.

Catchment 8:

Catchment 8 has a total area of 17.47 acres and is located north of the entrance area, includes the east side of the entrance road, approximately half of the area north of the 600-yard range and 2/5 of the range itself, as well as a small portion of the hillsides west of the range. Runoff drains from the existing HDPE culvert underneath the entrance, as well as from the range and the hillside west of the range and Irvine road. All runoff accumulates in a natural low spot in the north of the catchment and slowly dissipates into the ground.
The estimated 10-year runoff is 38.84 cfs and the 100-year runoff is 62.42 cfs.

Catchment 9:

The total catchment area of 16.43 acres stretches in north to north-east direction on the northern half of the east side of the 600-yeard range all the way to Irvine Road. Runoff from the road drains in west direction towards the east edge of the range, combining with runoff from the northern part of the catchment. A berm with a vehicle access road along the east edge of the range serves as a barrier for the runoff. Two existing culvert are installed in the berm. An 18" CMP culvert is located at the far north end of the berm and a 36" CMP culvert is located approximately 210' to the south. Both culvert drain runoff from the east side of the berm to the west side onto the range.
The estimated 10-year runoff is 30.81 cfs and the 100-year runoff is 49.53 cfs.

Catchment 10:

Catchment 10's total area of 4.40 acres consists of the north-western half of the 600-yard range. Runoff drains in southeast to northwest direction, following the natural downslope of the range and accumule at the northeast end of the range. A berm with a vehicle access road is surrounding the range on the northeast, northwest and southwest side. Besides the two formerly described existing culverts located in the northeast berm a third culvert (18" CMP) has been installed in the southwest berm to convey runoff from the range to the southwest where it follows a natural drainage path eventually leading into the North Platte River.
The estimated 10-year runoff is 8.36 cfs and the 100-year runoff is 13.43 cfs.

The combined estimated existing runoff for the entire south section of the site is 95.99 cfs for the 10-year event and 154.28 cfs for the 100-year event.

Proposed Conditions

The proposed development solely focuses on drainage improvements, not changes to the actual site structures, with the exception of some adjustments to the 600-yard range. The catchments in the northern sections will thereby remain unchanged in size. Drainage paths will be adjusted and improved and drainage structures installed or existing structures removed or changed, as needed. Site slopes in the northern section will remain very close to the existing conditions, thereby estimated runoffs will remain unchanged and simply being redirected by the designed improvements to avoid wet spots, erosion and drainage issues in the future. All drainage ditches are designed to be vegetated with native vegetation to reduce erosion.

As the site is used as a shooting range lead fragments and contamination of soil and runoff is to be expected. To reduce contamination of runoff in the future treatment measures have

been incorporated into the site improvements. All runoff from the different ranges in the north and south section will be conveyed through a filter bed system, consisting of a top sand layer with a minimum depth of 12" in the drainage ditch and an underlying limestone/#57 rock layer, encasing a perforated corrugated HDPE drainage pipe with smooth inside walls conveying the runoff. Bullets or fragments accumulating on the surface will have to be manually removed in appropriate intervals. A detail drawing for the filter bed system can be reviewed on the detail sheet D1.0 in Appendix D.

According to Mike Jennings, an additional step to avoid further site contamination will be the construction of barrier walls, most likely constructed of stacked wooden railroad sleepers, along the entire back of each range. These will block bullets from contaminating the hill sides at the back of the ranges and retain all fragments on the range. Manual removal will be required. As these walls block most of the site runoff towards the back of the range the treatment bed trenches will be installed along the sides of the ranges to ensure all potentially contaminated runoff will be treated.

North Section:

The following describes the proposed improvements and changes to the drainage paths and structures on site for the north section of the project site, which can be reviewed on the drainage plan in Appendix E.
Pipe and drainage ditch capacity calculations can be reviewed in Appendix F.

Catchment 1:

A new drainage ditch with a triangular cross section will be constructed along the east side of the existing gravel road from the most southern range to the existing gravel entrance road to the site. The drainage ditch will run from the most southern range to the parking area and have a depth of 1' and 6' top width with a 2.53% slope, which results in a runoff capacity of 16.58 cfs, sufficient for this section of the catchment.
After the drainage improvements, runoff from catchment 3 will be conveyed into this drainage ditch as well.
Mike Jennings has informed ECS a new 16' wide site entrance road from Irvine Road is planned in this area in the future. To accommodate this and to avoid future drainage issues due to this obstruction a new 31' long 18" HDPE sewer pipe (smooth inside walls) will be installed at the approximate crossing of the new entrance road and the drainage ditch. A 0.5" slope results in a maximum flow capacity of 8.07 cfs, which is sufficient to convey the 100-year event runoff from catchment 3 of 4.90 cfs at 60.7% of full flow capacity.
At the beginning of the parking area an existing culvert currently conveys the runoff from catchment 2 into catchment 1. This 30" CMP culvert will be replaced by a new 12" HDPE

sewer pipe with a 7.17% slope. The flow capacity of this new pipe is 5.78 cfs. The estimated 100-year runoff from catchment 2 is 1.5 cfs, which equals 26.0% of full flow capacity of the culvert.
The runoff from catchment 2 and the formerly described drainage ditch conveying runoff from catchment 3 and the south section of catchment 1 combine at this point and change direction to run northeast around the gravel parking area. The dimensions of the drainage ditch will be increased to a 12' top width at 2' depth. The slope will be decreased to 0.55%, thereby offering a total flow capacity of 49.11 cfs. The combined total runoff of catchment 1, 2 and 3 is 29.3 cfs for the 100-year event, equaling 59.7% of the total capacity of the drainage ditch. The drainage ditch follow the curvature of the east edge of the gravel parking lot and terminates at a new culvert being installed under the existing site entrance road. This will prevent pooling of water on the south side of the entrance road in the future. A 41' long 30" HDPE culvert with a 1.5% slope conveys the runoff underneath the road and into a subsequent drainage ditch. The culvert has a total capacity of 29.30 cfs, thereby capable of conveying the entire combined 100-year runoff for catchment 1, 2 and 3.

The drainage ditch downstream of the culvert underneath the existing entrance road has a total length of 50 L.F., a top width of 10' and a depth of 1'. A slope of 2.97% results in a total capacity of 30.61 cfs. The outfall of the drainage ditch conveys the runoff into an existing stream running in east direction towards the North Platte River. 84 sqft of rip rap will be placed at the end of the culvert to prevent erosion.

Catchment 2:

To re-establish proper drainage a defined drainage ditch with a total length of 160 L.F., a top width of 6' and a depth of 1' will convey runoff in southwest to northeast direction through the entire catchment. It terminates at the top end of the new 12" HDPE culvert underneath the existing gravel road, which will drain into the drainage ditch in catchment 1 and combine the runoff streams as previously discussed. A slope of 1.10% results in a maximum runoff capacity of 10.93 cfs, which exceeds the 100-year runoff for catchment 2 by 9.43 cfs.

Catchment 3:

The runoff direction of catchment 3 will be adjusted to accommodate the required lead contamination treatment and runoff management. A 52 L.F. long drainage ditch will be installed at the back of the range to convey all runoff from the hillside to the west. At a 0.75% slope a top width of 6' and a depth of 1' result in a total runoff capacity of 9.03 cfs. The drainage ditch conveys the runoff onto a new lead filter bed system along the south edge of the range. The 204' L.F. long perforated corrugated HDPE pipe with smooth inside walls installed in the filter bed system has a diameter of 15" and runs at a 0.75% slope along the

entire length of the range and beyond until it daylights into a 51 L.F. long drainage ditch. The pipe has a flow capacity of 6.08 cfs, thereby exceeding the estimated 100-year event runoff of 4.90 cfs by 1.18 cfs.
The drainage ditch has a top width of 6', a depth of 1' and a slope of 0.5%. It conveys a maximum runoff of 7.37 cfs into the culvert located under the new entrance road.
The northern edge of the range will be slightly raised to ensure proper drainage across the range and onto the filter bed system.

Catchment 4:

Catchment 4 will receive the addition of a new drainage ditch along the entire length of the west edge of the catchment, which will collect drainage from the area between the central shooting range in the northern section and catchment 2, as well as part of the hillside at the back of the range. This runoff will be conveyed in northern direction to the northwest corner of the range and into a new catch basin (CB-3), before turning to the east and transitioning into a filter bed running along the north side of the range to the northeast corner of the range. The drainage ditch has a total length of 216 L.F., a top width of 6' and a depth of 1' with a slope of 0.5%. This results in a flow capacity of 7.37 cfs. The south edge along the range will be adjusted to ensure proper drainage across the range in south to north direction onto the filter bed system. 155 L.F. of perforated 18" corrugated HDPE sewer pipe with smooth inside walls at a 1.0% slope convey the runoff from CB-3 through the filter bed system into a new catch basin (CB-4) located at the northeast corner of the range. The pipe has a maximum flow capacity of 11.41 cfs. The estimated total runoff for the 100-year event of catchment 4 is 9.11 cfs, which equals 79.8% of the pipe capacity.

The new catch basin CB-4 serves as an area drain as well, collecting the runoff from the east section of catchment 4, which consists of the existing gravel parking lot.
143 L.F. of new 18" HDPE sewer pipe with smooth inside walls at a 1.98% slope convey the combined runoff from the new catch basin (CB-4) to a new storm manhole (MH-2), where it changes direction. 108 L.F. of 18" HDPE sewer pipe with smooth inside walls will convey the runoff into the existing catch basin (CB-1) in the entrance area of the northern section. This catch basin will be removed and replaced at a new location approximately 10' to the north, which will be described in more detail in catchment 6. The sewer pipes connecting both catch basins have a maximum flow capacity of 16.06 cfs (CB-4 to MH-2) and 18.08 cfs (MH-2 to CB-1). The estimated 100-year runoff for catchment 4 thereby equals 56.70% and 50.40% of the maximum pipe flow capacity, respectively.

Catchment 5:

The drainage management of this catchment will be changed in comparison to the existing conditions. The culvert located in the northern safety berm will be removed to prevent the development of future depressions and pooling as it has been observed under existing conditions. The north edge of the range will be raised by 1.2'-2.66' to achieve a 0.5% slope in north-south and west-east direction. All runoff will thereby be directed into a new drainage ditch with lead filter bed system along the south edge of the range. Runoff from the hill side in the back of the range will be directed through 150 L.F. of a new drainage ditch with 6' top width and 1' depth and into the drainage ditch along the south edge.
391 L.F. of 24" perforated HDPE sewer pipe with smooth inside walls at a 0.5% slope convey the runoff through the filter bed system and into a new storm manhole (MH-1) with a maximum flow capacity of 17.38 cfs. The 100-year runoff for catchment 5 of 15.57 cfs equals 89.6% of the full flow capacity. A second storm sewer pipe with 71 L.F. length of new 24" HDPE sewer pipe with smooth inside walls at 1.52% slope conveys the runoff from MH-1 to the existing and relocated catch basin CB-1. The maximum flow capacity of this pipe is 30.30 cfs. The 100-year runoff of catchment 5 equals 51.4% of the maximum flow capacity.

Catchment 6:

The existing catch basin (CB-1) located in catchment 6 will be removed and replaced approximately 10' north of the current location. The rim elevation will also be lowered by 0.4' to increase surface slopes in this area and to provide adequate drainage post-improvement.
As previously described, sewer pipes conveying the runoff from catchment 4 and 5 will tie into CB-1. The existing 17" HDPE sewer pipe draining out of the catch basin will be removed and replaced by 147 L.F. of new 30" HDPE sewer pipe. The increase in size is necessary to accommodate the increased total runoff volume. A 1.9% slope will result in maximum flow capacity of 34.28 cfs. The combined 100-year runoff for catchment 4, 5 and 6 is 26.67 cfs, equaling 77.8% of the full flow capacity.
The outfall location of the new 30" sewer pipe conveying runoff from CB-1 remains the same as of the removed existing culvert. The severely eroded area around the outfall requires remediation. To prevent erosion in the future approximately 36 sqft of rip rap will be placed around the outfall of the drainage pipe.

South Section:

The following describes the proposed improvements and changes to the drainage paths and structures on site for the south section of the project site, which can be reviewed on the drainage plan in Appendix E.
Pipe and drainage ditch capacity calculations can be reviewed in Appendix F.

Catchment 7:

The area and slopes within catchment 7 will not be altered, besides implementation of drainage features. Estimated runoff volumes for the 10-year event and 100-year events remain thereby the same as under existing conditions.
The insufficient existing drainage ditches will be regraded, extended and the slopes adjusted to accommodate the estimated runoff volumes and avoid future pooling of rainwater and erosion along the south edge of the existing entrance road.
The existing culverts will be replaced as well.
All new drainage ditches in this catchment will have a top width of 9' and a depth of 1.5'.
The first new drainage ditch will run from the fence line along Irvine Road following the south edge of the gravel entrance road to the intersection with the access road to the outhouse and the top end of the culvert conveying runoff underneath. The slope of 2.6% results in a total maximum flow capacity of 49.57 cfs. The estimated 100y-event runoff is 28.9 cfs, which equals 58.3% of the maximum capacity of this drainage ditch.
The second and third drainage ditch convey runoff from the east and south, respectively, along the south side of the entrance road to the top end of the culvert placed underneath the entrance road with slopes of 0.5% and 4.94%.
These slopes result in a combined maximum runoff capacity of 90.07 cfs. The 100-year runoff for catchment 7 equals 32.1% of the full flow capacity.

Both existing culvert in catchment 7 will be replaced, as previously mentioned.
The 16" PVC culvert underneath the outhouse access road will be replaced with a 30" HDPE storm sewer pipe with a slope of 1.6%. This results in a maximum flow capacity of 31.46 cfs. The 100y-event of 28.9 cfs equals 91.9% of full flow capacity.
The existing 15" HDPE culvert underneath the gravel entrance road will be replaced with a 30" HDPE storm sewer pipe with a slope of 1.65%. The 100y-event equals 90.5% of the maximum flow capacity of the pipe of 31.94 cfs.
The runoff will continue to drain in north/northwest direction, towards designed catchment 11, as observed under existing conditions.

Catchment 11:

Designed catchment 11 is part of the existing catchment 8 after the planned drainage improvements. The total catchment area is reduced from 17.47 acres to 12.21 acres. The east section of the 600 yard range was previously part of catchment 8. After the improvements the range itself will be its own catchment, thereby being excluded from the catchment area.
The 10-year runoff of designed catchment 11 is 27.14 cfs and the 100-year runoff is 43.63 cfs. Nevertheless, the runoff pattern in this catchment remains unchanged and the runoff continues to accumulate in a natural low spot in the north of the catchment. No further improvements or changes are necessary in this catchment.

Catchment 12:

Designed Catchment 12 experiences a minor change in total catchment area as well. A small section along the north edge of the 600 yard, previously part of existing catchment 9, is included in catchment 12 after the drainage improvements.
The total catchment area increases by 0.32 acres from 16.53 acres to 16.85 acres.
The estimated 10-year runoff for catchment 12 is 31.41 cfs and the estimated 100-year runoff is 50.49 cfs, which represents an increase of 0.6 cfs (or 2%) for the 10-year event and 0.96 cfs (or 1.9%) for the 100-year event.
To avoid runoff from this catchment to enter the 600 yard range a 1.5' deep trapezoidal drainage ditch with a total length of 574 L.F., a top width of 12', bottom width of 3' and a 0.75% slope, will be constructed along the north edge of the range. Runoff will be conveyed through this ditch to the north, where it changes direction towards the west. The ditch increases in size to a top width of 15' and a depth of 2', while the slope is reduced to 0.5%.
This results in a maximum flow capacity increase from 51.94 cfs to 79.86 cfs. The 100-year runoff equals 97.2% and 63.2% of the full flow capacity of the ditch, respectively.
All conveyed runoff will be released into a natural flow path at the end of the drainage ditch, which will eventually drain into the North Platte River to the west.

Catchment 13:

The catchment area of the designed catchment 13 of 9.34 acres includes the entire 600 yard range, as well as the section of the hillside to the south at the south end of the range. This area is part of existing catchment 8. As the drainage is intercepted by the site improvements the runoff remains on the 600 yard range.
The estimated 10-year runoff for designed catchment 13 is 16.24 cfs and 26.10 cfs for the 100-year event. According to Mike Jennings future site improvements will include the removal of the existing target berms on the range, as well as the berm at the south end of the

range holding the shooting benches. The range slopes will consequently follow the natural grades closely. This was taken into account during the drainage improvement design.
The natural slopes of the range are slightly steeper in the southern half of the range in comparison to the northern, downgrade section.

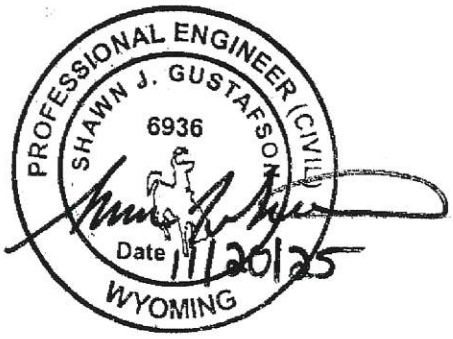
The drainage improvements for this catchment include a berm and a drainage ditch along the west edge of the range. All surface runoff across the 600 yard range is directed in an east to west direction towards berm and drainage ditch.
The berm has a total length of 1092', beginning at the southwest corner of the range, and a height of 12" with 1:3 side slopes. The downgrade slope along the flowline of the berm is 2.17%. It conveys the runoff at the downgrade end into a trapezoidal drainage ditch with a total length of 799 L.F.. The top width is 12'. The drainage ditch serves as a lead treatment filter bed as well and differs in its cross section from the remaining filter bed systems on the site. Total depth of the drainage ditch is 2.67' with a bottom width of 6'. A 12" perforated HDPE sewer pipe with smooth inside walls is embedded in a limestome/#57 rock layer with 4" depth above and below the pipe. Mirafi 140N separation fabric (or equivalent) is placed on top of the limestone/rock layer, followed by a 12" sand layer. A cross section detail can be reviewed in Appendix D. The slope of the drainage ditch and the pipe is 0.5%.

A second drainage ditch with 6' top width, 1' depth and 0.5% slope conveys any runoff accumulating behind the new wooden barrier wall at the downgrade end of the range in west direction. Both drainage ditches convey runoff into a new catch basin (CB-6) in the northwest corner of the range with the 12" sewer pipe in the lead treatment bed tying directly into it. The combines runoff from the entire catchment is conveyed through a 30" HDPE pipe with smooth inside walls from the catch basin in west direction into a natural drainage path leading towards the North Platte River to the west. The sewer pipe has a total capacity of 31.51 cfs. The 100-year storm event has an estimated total runoff of 26.10 cfs, which equals 82.8% of the full flow capacity of the pipe.

Conclusion

Drainage improvements have been designed across the entire project site to improve runoff management and to minimize future erosion. Lead treatment measures have been implemented as well to treat contamination of the range runoff and prevent seeping into the natural soils and waterways on and downstream of the site.

Sincerely:
Environmental & Civil Solutions LLC.



Prepared by:

Simone Whitley, EIT

Reviewed by:

Shawn J. Gustafson P.E.
Principal

APPENDIX A

EXISTING CONDITIONS

SYMBOLS

- TREE
- ECS CONTROL POINT
- ELECTRICAL VAULT
- FIBER OPTIC PEDESTAL
- FIRE HYDRANT
- PROFILE FIRE HYDRANT
- FLARED END SECTION
- GAS METER
- CATCH BASIN
- GUY WIRE ANCHOR
- POWER POLE
- SANITARY SEWER MANHOLE
- SANITARY SEWER CLEAN OUT
- IRRIGATION VALVE BOX
- SANITARY SEWER BACKFLOW PREVENTER
- STORM SEWER MANHOLE
- STREET LAMP
- TELEPHONE MANHOLE
- TELEPHONE PEDESTAL
- BORE HOLE LOCATION
- WATER TEE
- WATER CROSS
- WATER VALVE
- CURB STOP
- ELECTRICAL METER CABINET
- SINGLE SIGN POST
- BOLLARD
- RECOVERED BRASS CAP
- RECOVERED ALUMINUM CAP
- RECOVERED REBAR
- RECOVERED ALUMINUM CAP

LEGEND

- RIGHT OF WAY
- PROPERTY LINES
- EXISTING CENTERLINE
- PROPOSED CENTERLINE
- EDGE EXISTING ASPHALT
- EDGE EXISTING GRAVEL
- EXISTING WOOD FENCE
- PROPOSED CHAINLINK FENCE
- EXISTING GAS LINE
- PROPOSED CRUDE MAIN
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING SANITARY MAIN
- PROPOSED SANITARY MAIN
- EXISTING STORM MAIN
- PROPOSED STORM MAIN
- OVERHEAD POWER LINE
- TELEPHONE LINE
- UNDERGROUND POWER
- EXISTING FIBEROPTIC LINE
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOURS
- EXISTING MINOR COUNTOURS
- EXISTING CONCRETE SURFACING
- PROPOSED CONCRETE SURFACING
- EXISTING LANDSCAPING
- PROPOSED LANDSCAPING
- EXISTING GRAVEL SURFACING
- PROPOSED GRAVEL SURFACING
- EXISTING ASPHALT SURFACING
- PROPOSED ASPHALT SURFACING

ECS ENGINEERS

PROFESSIONAL ENGINEER (CIVIL) SHAWN J. GUSTAFSON 6936 Date 11/20/25 WYOMING

FOR: **RELIC SERVICES, LLC**
P.O. Box 716,
Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENVIRONMENTAL & CIVIL SOLUTIONS, LLC
1607 CY Ave, Suite 104
Casper, WY 82601 • 307.337.2883

Date Drawn: 11.20.2025 | Scale: SEE DRAWING
Project No. 250046 | File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
EXISTING CONDITIONS -NORTH-

REV	DATE	REVISIONS	BY	CHK

EX1.0

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE WYOMING PUBLIC WORKS SPECIFICATIONS (2023 EDITION) UNLESS OTHERWISE STATED IN THESE PLANS AND SPECIFICATIONS.
2. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF UNDERGROUND PUBLIC AND PRIVATE UTILITIES PRIOR TO CONSTRUCTION AND COORDINATE WITH THOSE UTILITIES DURING CONSTRUCTION.
3. THE LOCATION OF THE EXISTING UTILITIES IN THE PLANS ARE APPROXIMATE. THE ENGINEER AND OWNER SHALL NOT BE HELD ACCOUNTABLE FOR THE COMPLETENESS OR ACCURACY OF THE UTILITY LOCATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL MEASURES NECESSARY TO COMPLY WITH FEDERAL, STATE, COUNTY, AND CITY REGULATIONS INCLUDING WYPDES THAT PROHIBIT DISCHARGE OF POLLUTANTS, INCLUDING SEDIMENTS RESULTING FROM EROSION OR OTHER CONSTRUCTION ACTIVITIES.
5. THE CONTRACTOR SHALL PROVIDE DUST CONTROL AND SHALL CONDUCT WORK SO THAT SEDIMENT IS NOT TRANSFERRED ONTO ROADWAY OR ADJACENT PROPERTY.
6. CONTRACTOR TO CHECK, CONFIRM AND COORDINATE ALL DIMENSIONS AND DETAILS, TAKE FIELD MEASUREMENTS, VERIFY FIELD CONDITIONS AND COORDINATE WORK WITH THAT OF OTHER CONTRACTORS FOR THE PROJECT AND THE ENGINEER. ANY DISCREPANCIES OR CONCERNS REGARDING PLANS, NOTATIONS OR ELEVATIONS SHALL BE DIRECTED TO THE ENGINEER FOR CLARIFICATION.
7. ALL DRAINAGE TRENCHES ARE TO BE VEGETATED WITH NATIVE SEEDS TO PREVENT EROSION.

SYMBOLS

- TREE
- ECS CONTROL POINT
- ELECTRICAL VAULT
- FIBER OPTIC PEDESTAL
- FIRE HYDRANT
- PROFILE FIRE HYDRANT
- FLARED END SECTION
- GAS METER
- CATCH BASIN
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- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING SANITARY MAIN
- PROPOSED SANITARY MAIN
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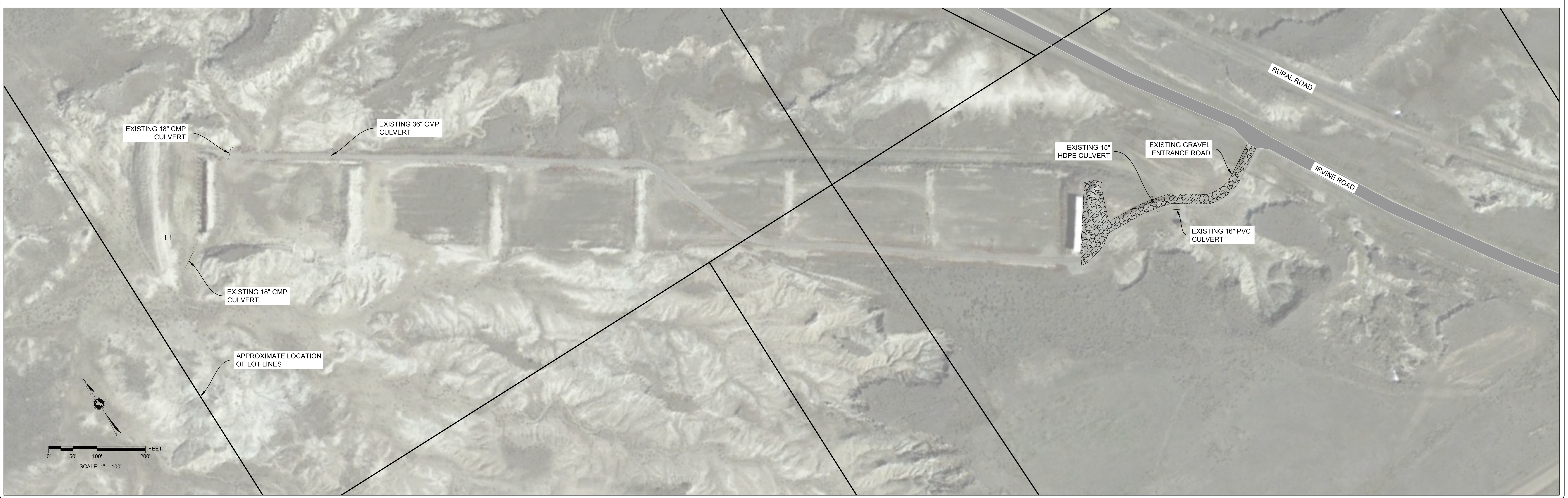
- EXISTING GRAVEL SURFACING
- PROPOSED GRAVEL SURFACING
- EXISTING ASPHALT SURFACING
- PROPOSED ASPHALT SURFACING



ECS ENGINEERS

PROFESSIONAL ENGINEER 6936 WYOMING Date 11/20/25

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Date Drawn: 11.20.2025
Scale: SEE DRAWING
Project No. 250046
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CONVERSE COUNTY SHOOTING RANGE
EXISTING CONDITIONS -SOUTH-

REV	DATE	REVISIONS	BY	CHK

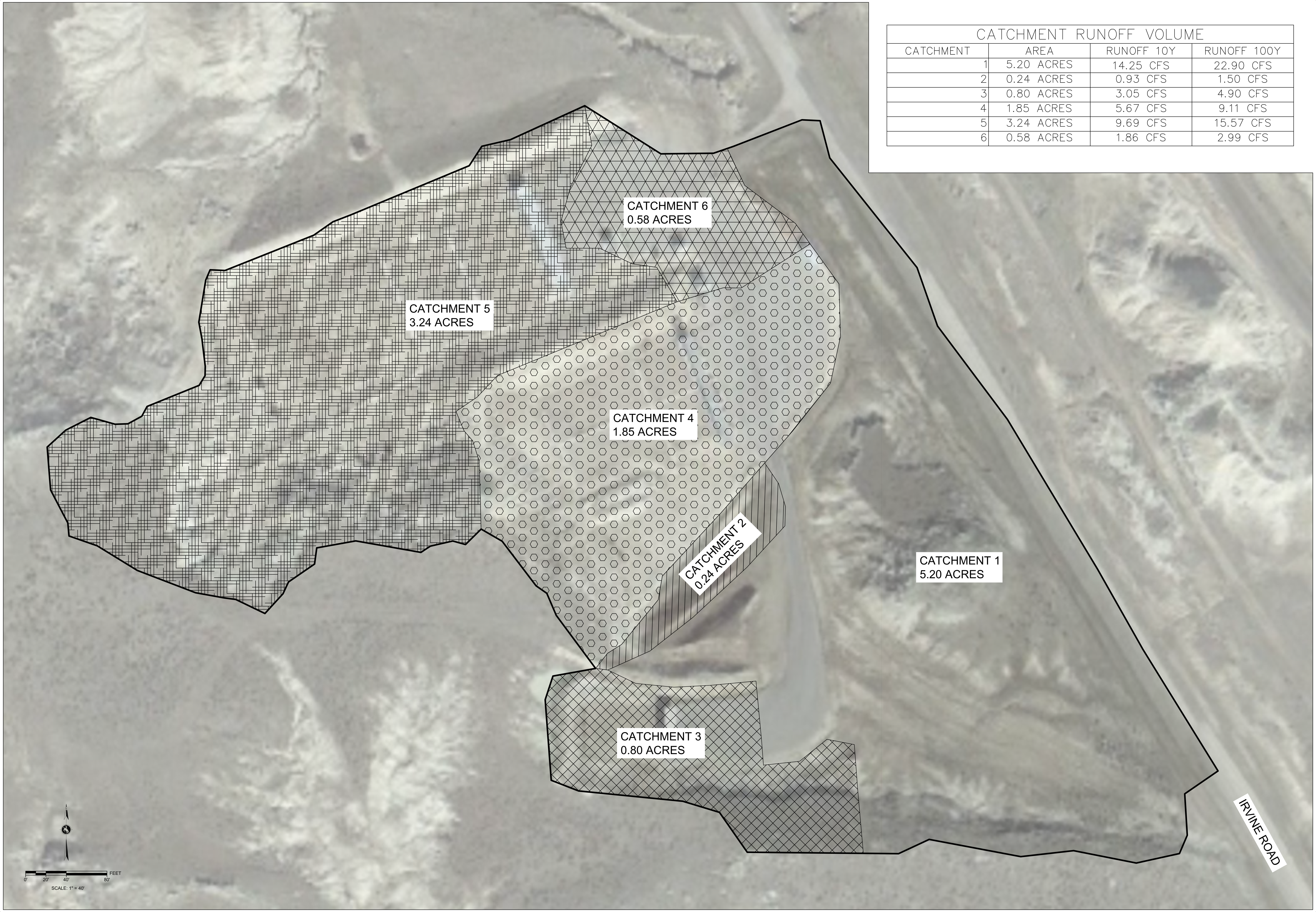
EX2.0

APPENDIX B

CATCHMENT DELINEATION

CATCHMENT RUNOFF VOLUME

CATCHMENT	AREA	RUNOFF 10Y	RUNOFF 100Y
1	5.20 ACRES	14.25 CFS	22.90 CFS
2	0.24 ACRES	0.93 CFS	1.50 CFS
3	0.80 ACRES	3.05 CFS	4.90 CFS
4	1.85 ACRES	5.67 CFS	9.11 CFS
5	3.24 ACRES	9.69 CFS	15.57 CFS
6	0.58 ACRES	1.86 CFS	2.99 CFS



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CONVERSE COUNTY SHOOTING RANGE
CATCHMENTS
-NORTH-

REV	DATE	REVISIONS	BY	CHK

EC1.0

CATCHMENT RUNOFF VOLUME

CATCHMENT	AREA	RUNOFF 10Y	RUNOFF 100Y
7	5.26 ACRES	17.98 CFS	28.9 CFS
8	17.47 ACRES	38.84 CFS	62.42 CFS
9	16.53 ACRES	30.81 CFS	49.53 CFS
10	4.40 ACRES	8.36 CFS	13.43 CFS

ECS ENGINEERS

PROFESSIONAL ENGINEER 6936 WYOMING Date 11/20/25

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CONVERSE COUNTY SHOOTING RANGE
EXISTING CATCHMENTS
-SOUTH-

REV | DATE | REVISIONS | BY | CHK

EC2.0

CATCHMENT RUNOFF VOLUME

CATCHMENT	AREA	RUNOFF 10Y	RUNOFF 100Y
7 (REMAINS)	5.26 ACRES	17.98 CFS	28.9 CFS
11	12.21 ACRES	27.14 CFS	43.63 CFS
12	16.85 ACRES	31.41 CFS	50.49 CFS
13	9.34 ACRES	16.24 CFS	26.10 CFS

ECS ENGINEERS

PROFESSIONAL ENGINEER
6936
Date 11/20/25
WYOMING

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CONVERSE COUNTY SHOOTING RANGE
DESIGNED CATCHMENTS -SOUTH-

REV	DATE	REVISIONS	BY	CHK

PC1.0

APPENDIX C

HYDROGRAPHS

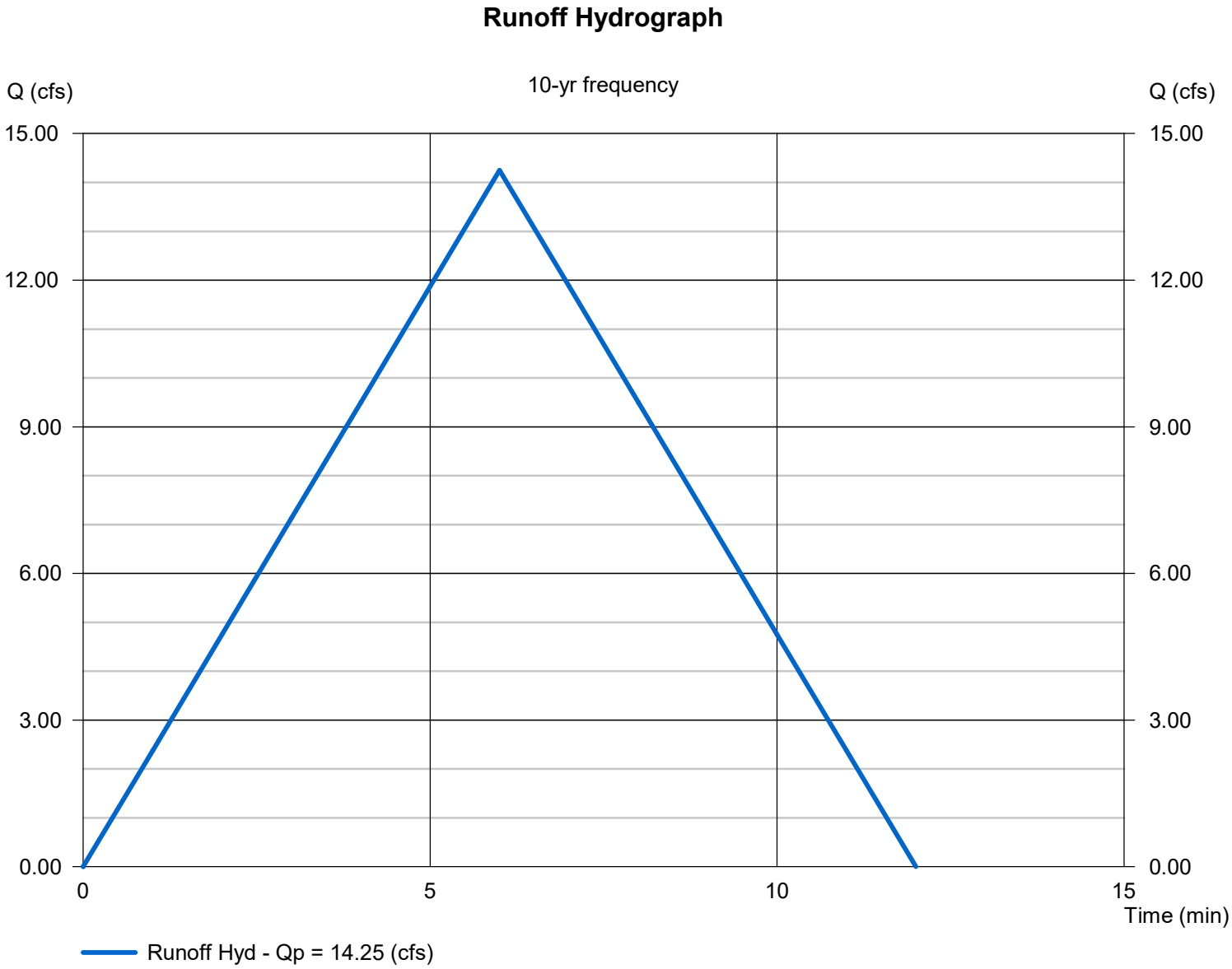
Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Oct 20 2025

Converse County Shooting Range_Catchment 1_10y

Hydrograph type	= Rational	Peak discharge (cfs)	= 14.25
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 5.200	Runoff coeff. (C)	= 0.55
Rainfall Inten (in/hr)	= 4.982	Tc by User (min)	= 6
IDF Curve	= IDF Shooting Range Converse Co.idf	Rain IDF factor	= 1.00

Hydrograph Volume = 5,130 (cuft); 0.118 (acft)



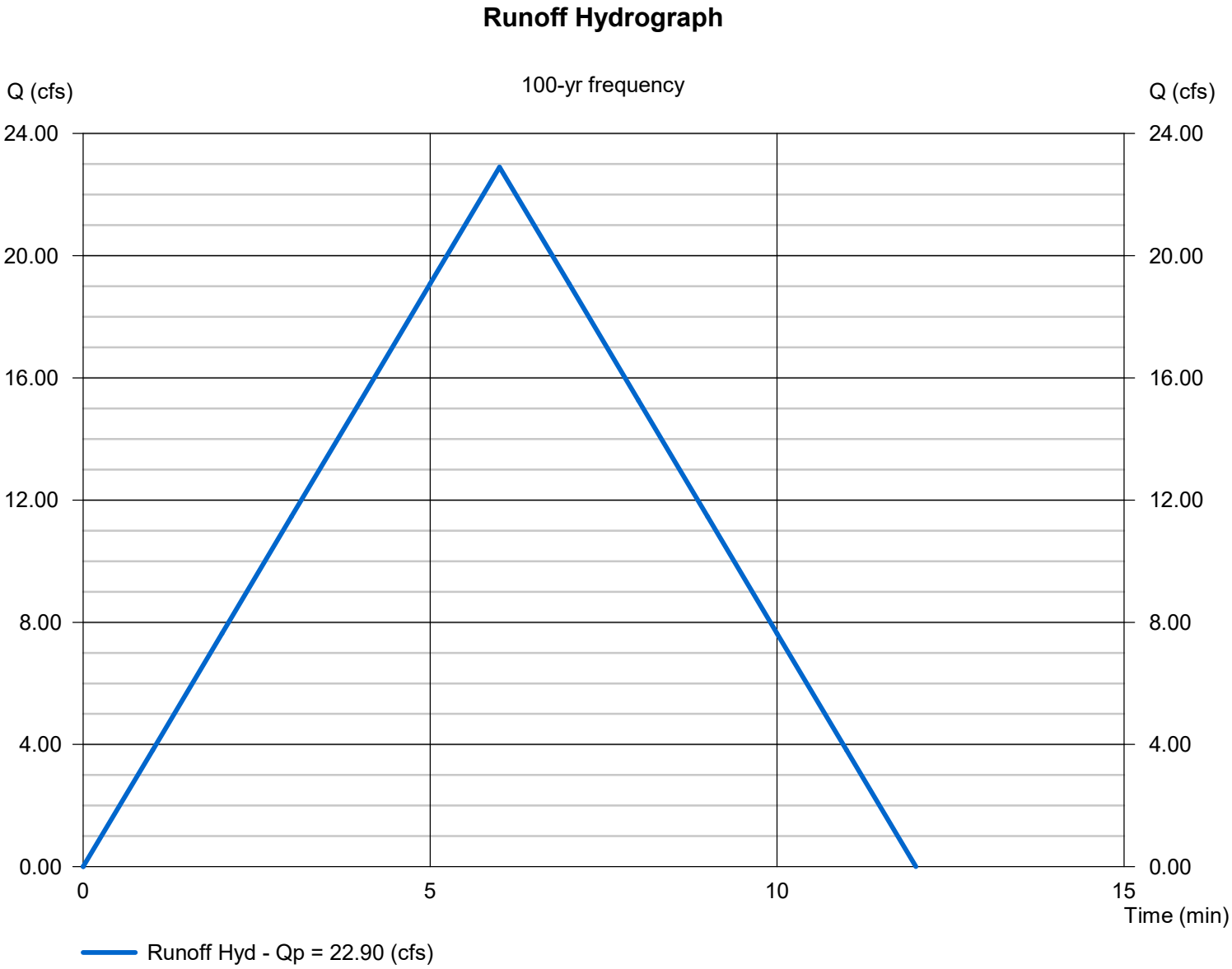
Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 22 2025

Converse County Shooting Range_Catchment 1_100 year

Hydrograph type	=	Rational	Peak discharge (cfs)	=	22.90
Storm frequency (yrs)	=	100	Time interval (min)	=	1
Drainage area (ac)	=	5.200	Runoff coeff. (C)	=	0.55
Rainfall Inten (in/hr)	=	8.008	Tc by User (min)	=	6
IDF Curve	=	IDF Shooting Range Converse Co.idf	Rain IDF factor	=	1.00

Hydrograph Volume = 8,245 (cuft); 0.189 (acft)



Hydrology Report

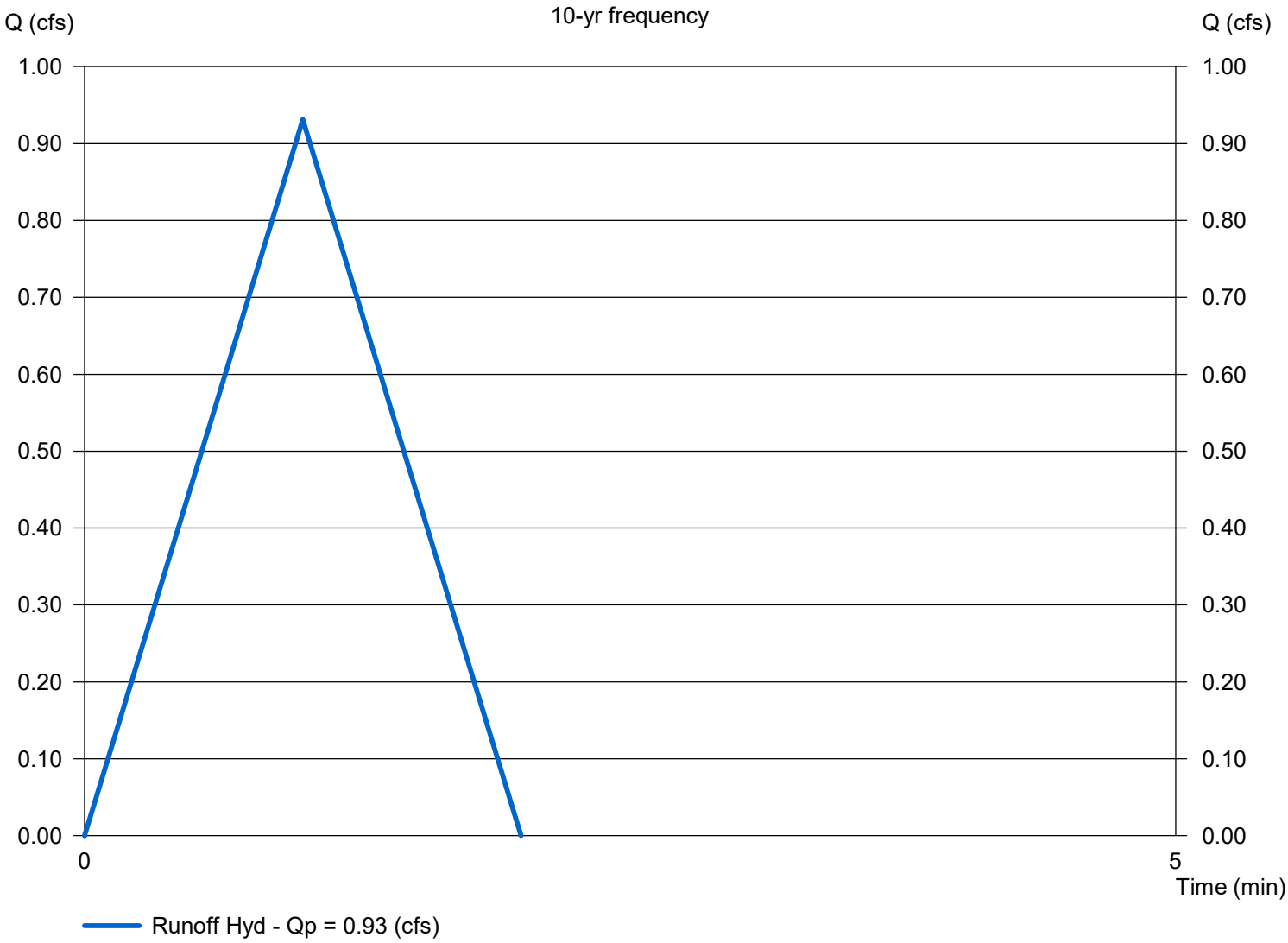
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 22 2025

Converse County Shooting Range_Catchment 2_10 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 0.931
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 0.240	Runoff coeff. (C)	= 0.58
Rainfall Inten (in/hr)	= 6.690	Tc by User (min)	= 1
IDF Curve	= IDF Shooting Range Converse Co.idf	Rain IDF factor	= 1.00

Hydrograph Volume = 56 (cuft); 0.001 (acft)

Runoff Hydrograph



Hydrology Report

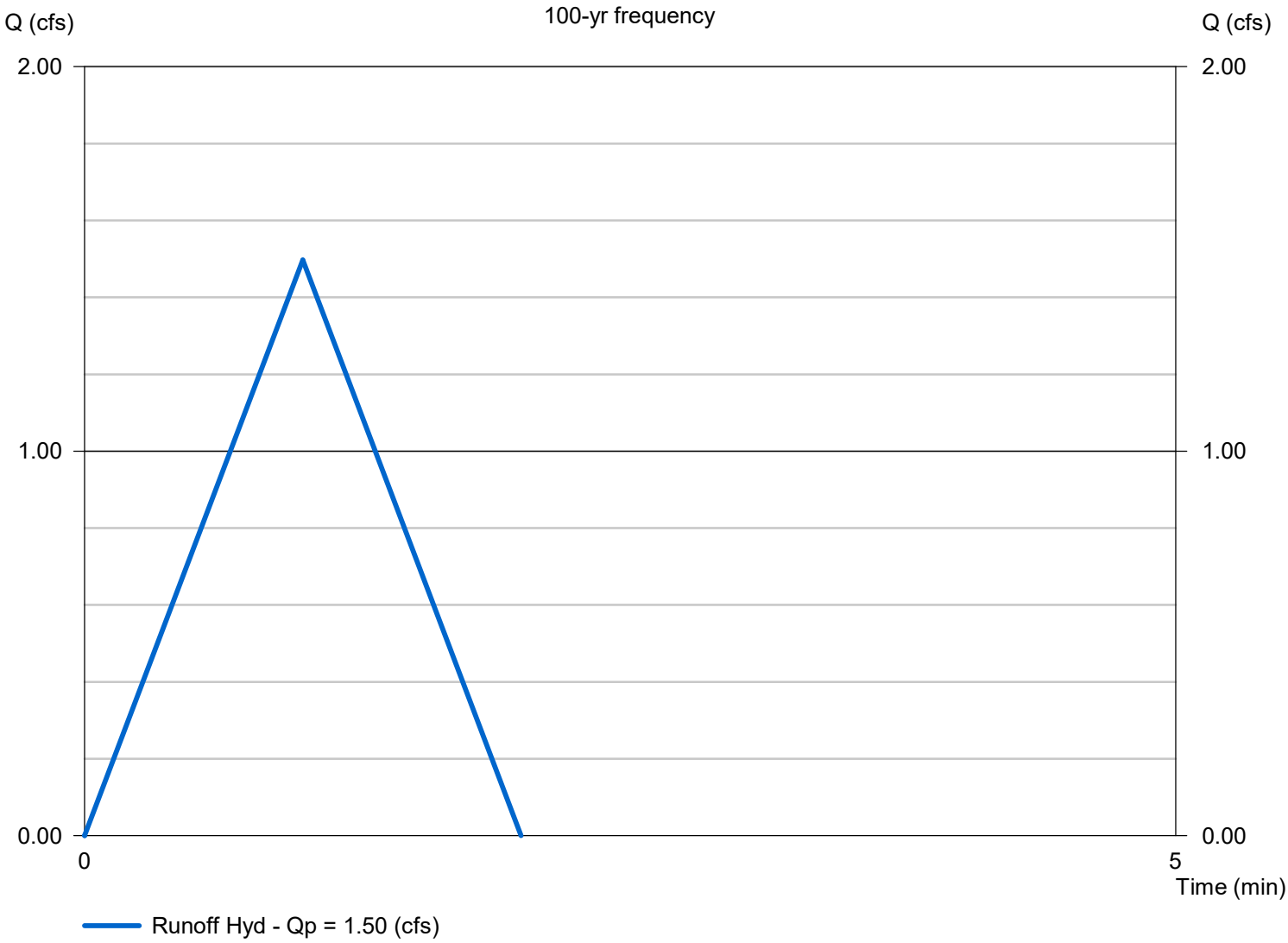
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 22 2025

Converse County Shooting Range_Catchment 2_100 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 1.497
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 0.240	Runoff coeff. (C)	= 0.58
Rainfall Inten (in/hr)	= 10.753	Tc by User (min)	= 1
IDF Curve	= IDF Shooting Range Converse Co.idf	Rain IDF factor	= 1.00

Hydrograph Volume = 90 (cuft); 0.002 (acft)

Runoff Hydrograph



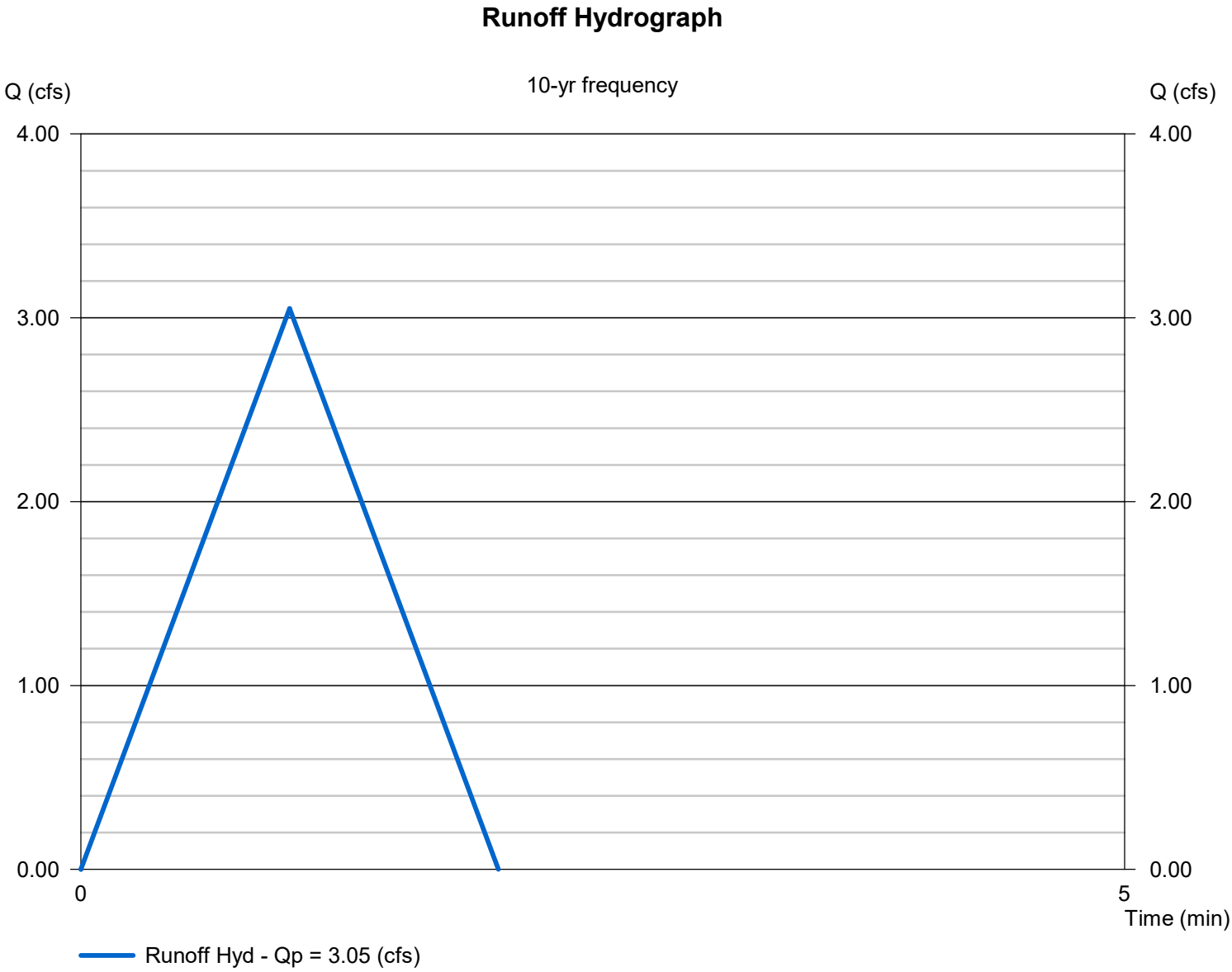
Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Oct 21 2025

Converse County Shooting Range_Catchment 3_10 year

Hydrograph type	=	Rational	Peak discharge (cfs)	=	3.051
Storm frequency (yrs)	=	10	Time interval (min)	=	1
Drainage area (ac)	=	0.800	Runoff coeff. (C)	=	0.57
Rainfall Inten (in/hr)	=	6.690	Tc by User (min)	=	1
IDF Curve	=	IDF Shooting Range Converse Co.idf	Rain IDF factor	=	1.00

Hydrograph Volume = 183 (cuft); 0.004 (acft)



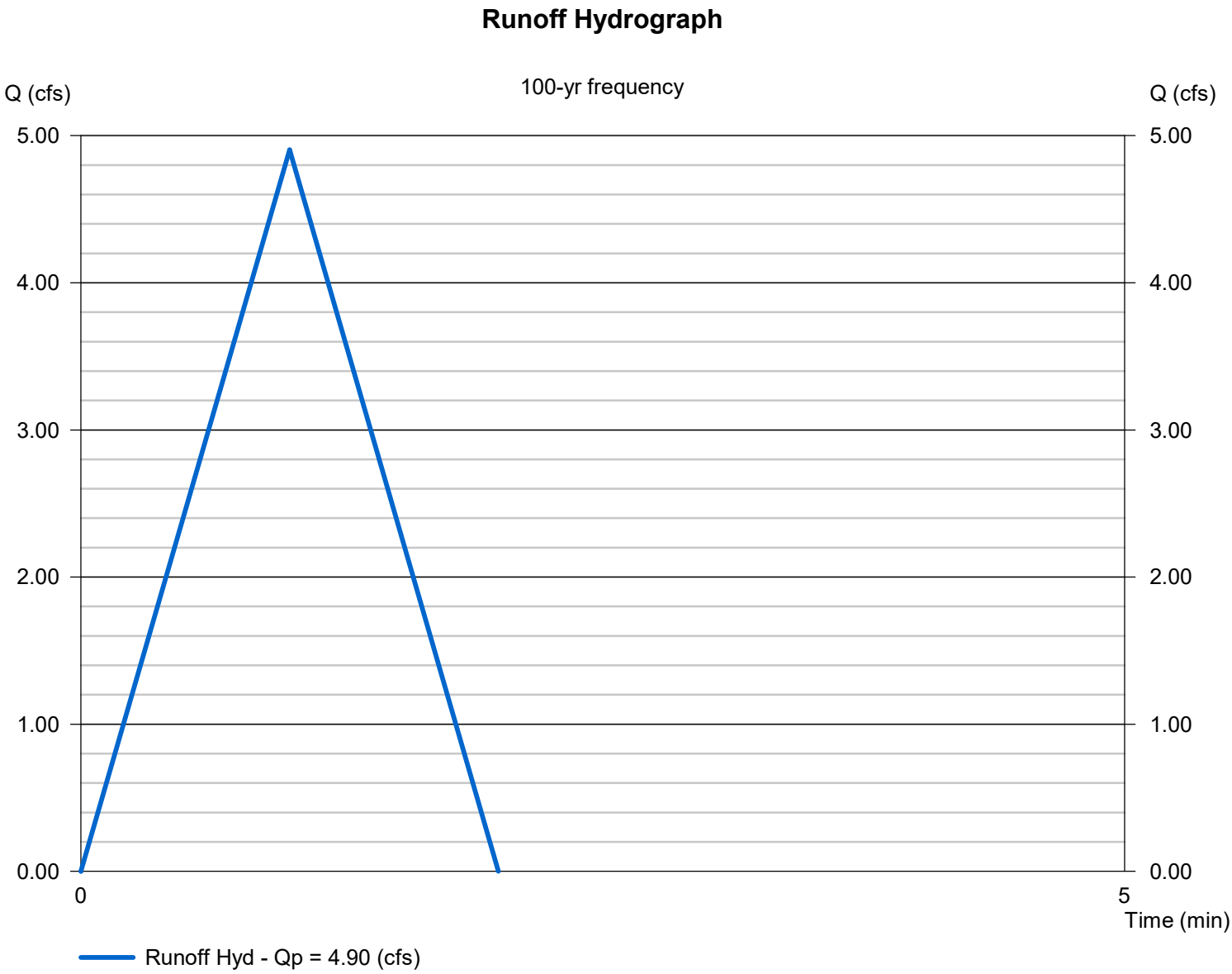
Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Oct 21 2025

Converse County Shooting Range_Catchment 3_100 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 4.904
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 0.800	Runoff coeff. (C)	= 0.57
Rainfall Inten (in/hr)	= 10.753	Tc by User (min)	= 1
IDF Curve	= IDF Shooting Range Converse Co.idf	Rainfall factor	= 1.00

Hydrograph Volume = 294 (cuft); 0.007 (acft)



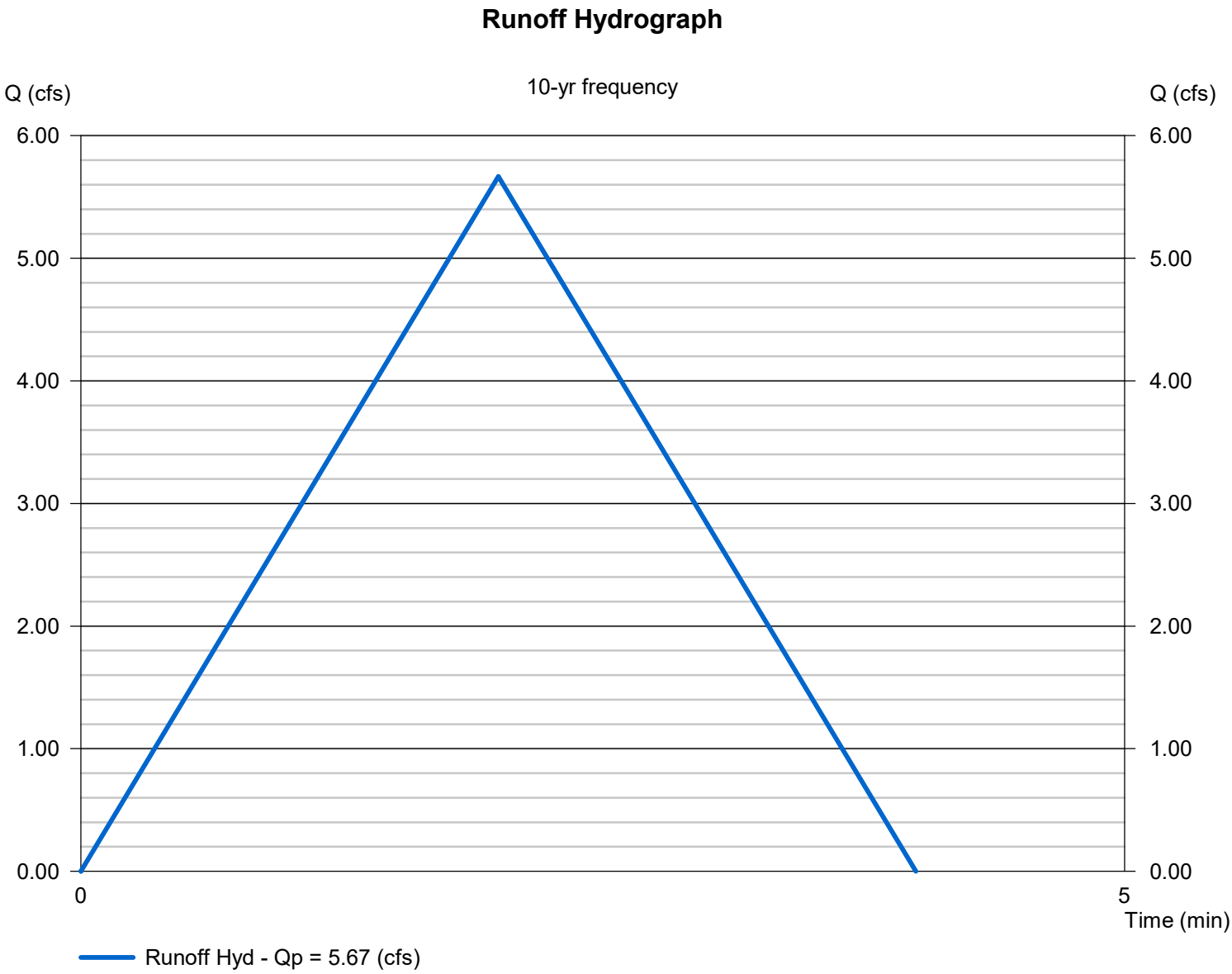
Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 22 2025

Converse County Shooting Range_Catchment 4_10 year

Hydrograph type	=	Rational	Peak discharge (cfs)	=	5.666
Storm frequency (yrs)	=	10	Time interval (min)	=	1
Drainage area (ac)	=	1.850	Runoff coeff. (C)	=	0.49
Rainfall Inten (in/hr)	=	6.251	Tc by User (min)	=	2
IDF Curve	=	IDF Shooting Range Converse Co.idf	Rainfall factor	=	1.00

Hydrograph Volume = 680 (cuft); 0.016 (acft)



Hydrology Report

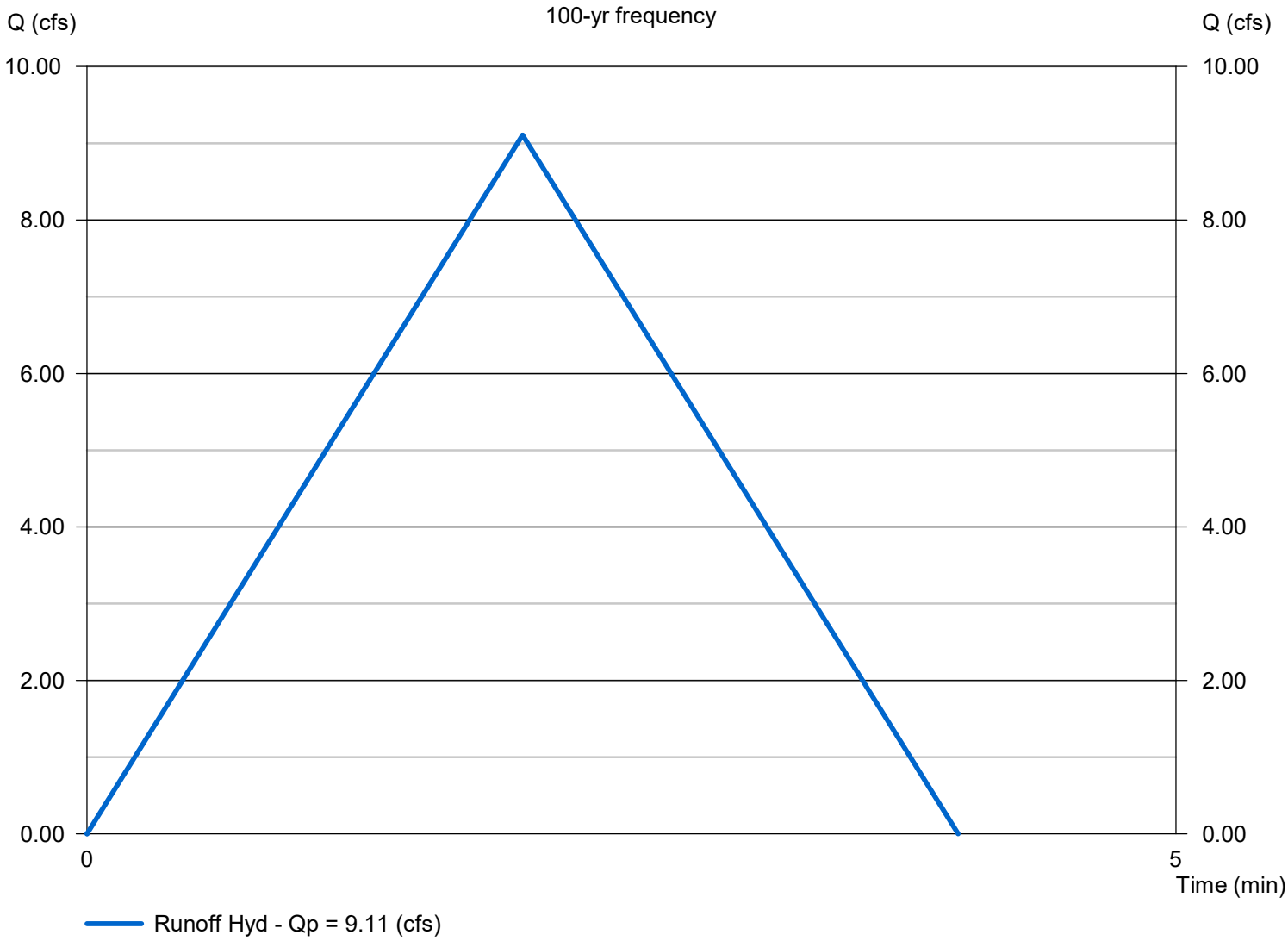
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 22 2025

Converse County Shooting Range_Catchment 4_100 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 9.108
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 1.850	Runoff coeff. (C)	= 0.49
Rainfall Inten (in/hr)	= 10.047	Tc by User (min)	= 2
IDF Curve	= IDF Shooting Range Converse Co.idf	Rain IDF factor	= 1.00

Hydrograph Volume = 1,093 (cuft); 0.025 (acft)

Runoff Hydrograph



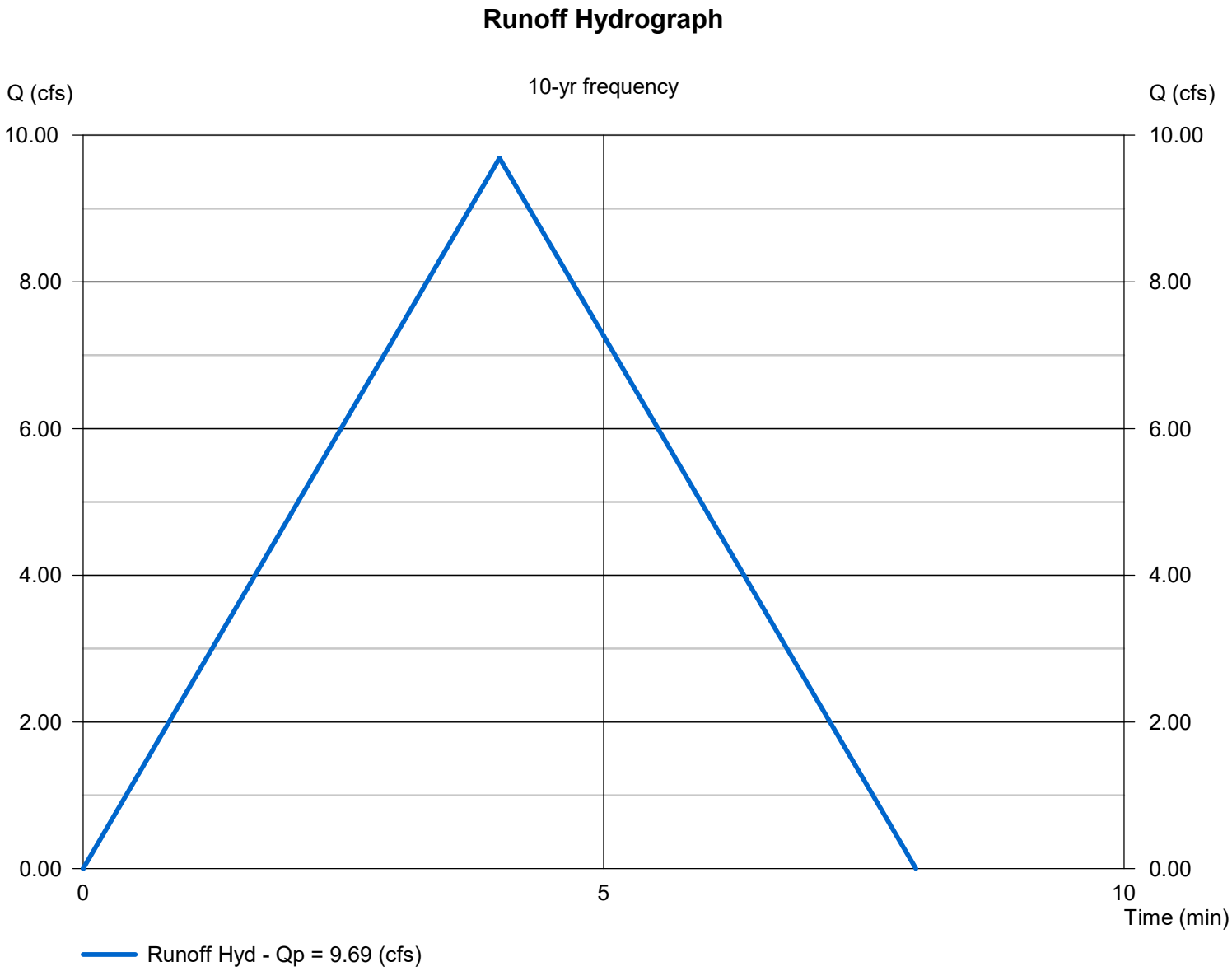
Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 22 2025

Converse County Shooting Range_Catchment 5_10 year

Hydrograph type	=	Rational	Peak discharge (cfs)	=	9.689
Storm frequency (yrs)	=	10	Time interval (min)	=	1
Drainage area (ac)	=	3.240	Runoff coeff. (C)	=	0.54
Rainfall Inten (in/hr)	=	5.538	Tc by User (min)	=	4
IDF Curve	=	IDF Shooting Range Converse Co.idf	Rainfall factor	=	1.00

Hydrograph Volume = 2,325 (cuft); 0.053 (acft)



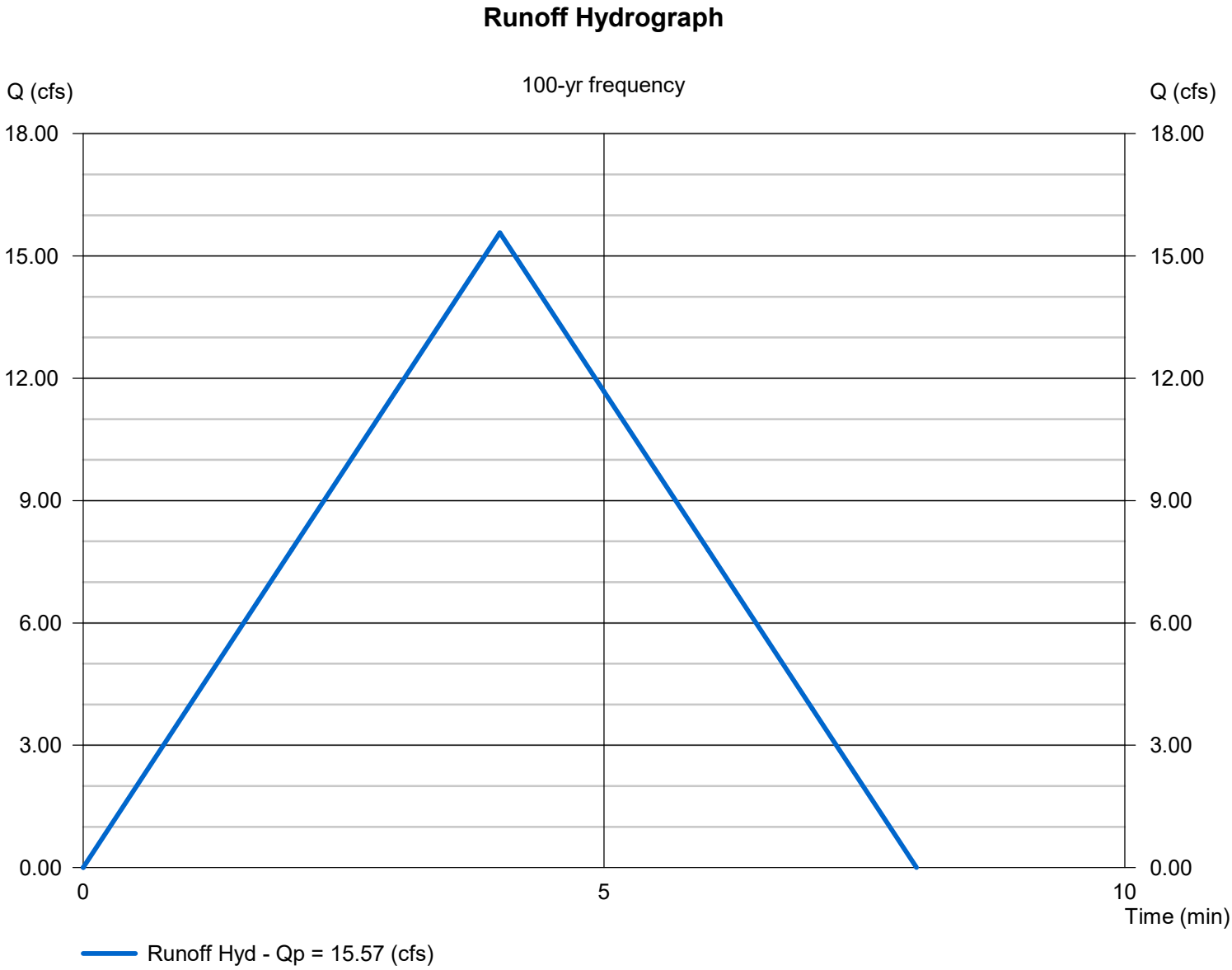
Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 22 2025

Converse County Shooting Range_Catchment 5_100 year

Hydrograph type	=	Rational	Peak discharge (cfs)	=	15.57
Storm frequency (yrs)	=	100	Time interval (min)	=	1
Drainage area (ac)	=	3.240	Runoff coeff. (C)	=	0.54
Rainfall Inten (in/hr)	=	8.901	Tc by User (min)	=	4
IDF Curve	=	IDF Shooting Range Converse Co.idf	Rain IDF factor	=	1.00

Hydrograph Volume = 3,738 (cuft); 0.086 (acft)



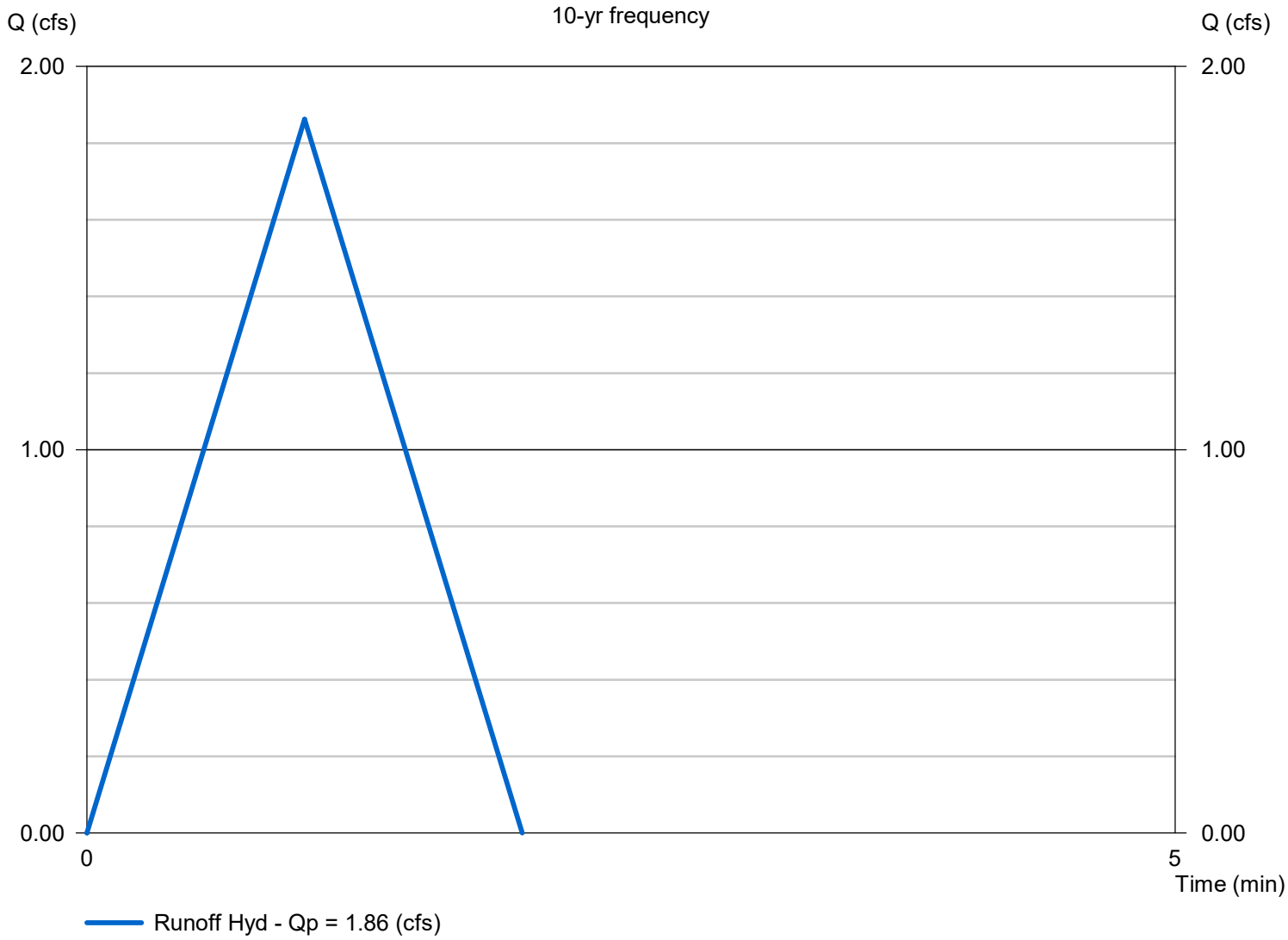
Hydrology Report

Converse County Shooting Range_Catchment 6_10 year

Hydrograph type	=	Rational	Peak discharge (cfs)	=	1.863
Storm frequency (yrs)	=	10	Time interval (min)	=	1
Drainage area (ac)	=	0.580	Runoff coeff. (C)	=	0.48
Rainfall Inten (in/hr)	=	6.690	Tc by User (min)	=	1
IDF Curve	=	IDF Shooting Range Converse Co.idf	Rainfall factor	=	1.00

Hydrograph Volume = 112 (cuft); 0.003 (acft)

Runoff Hydrograph



Hydrology Report

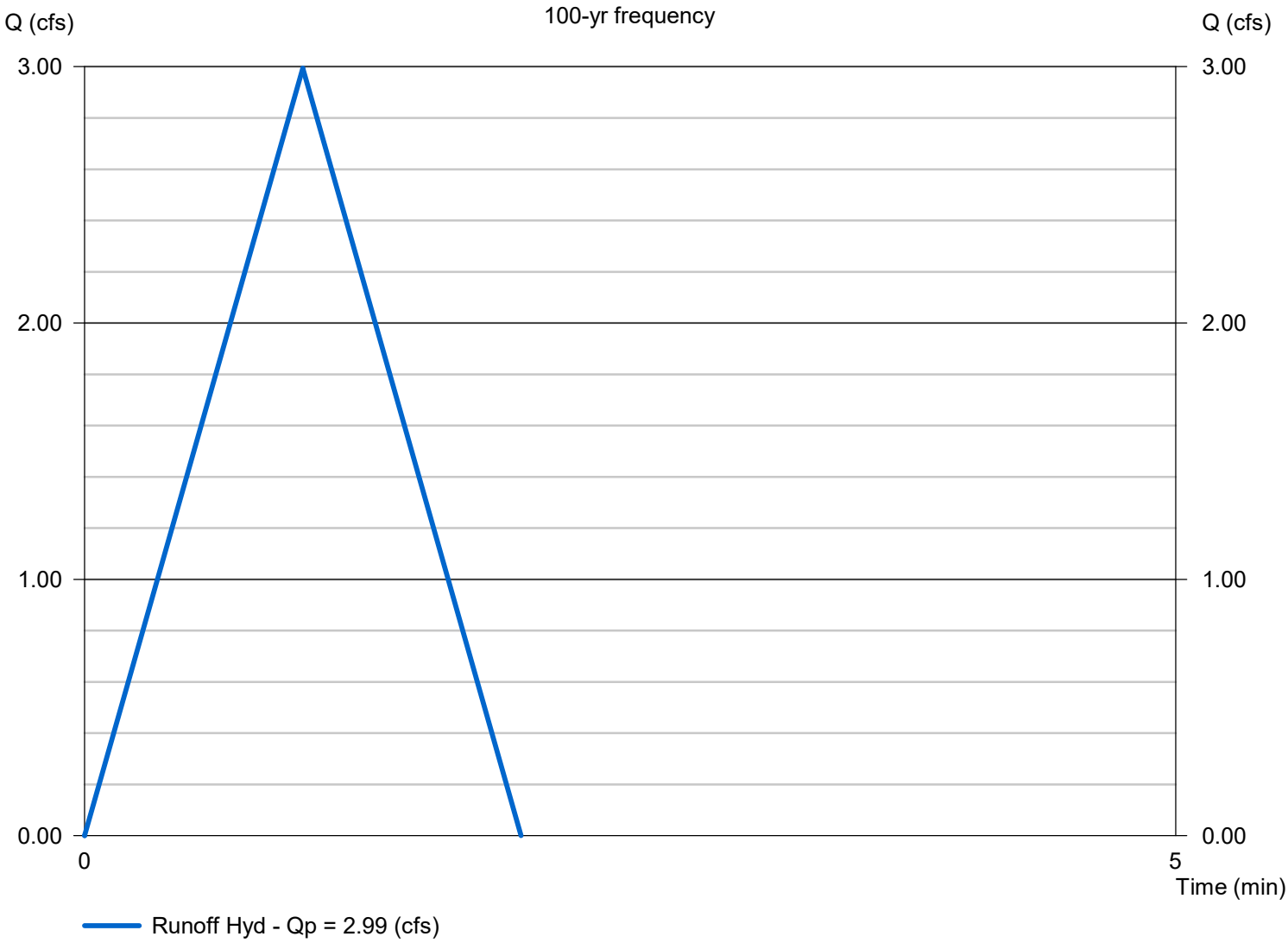
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 22 2025

Converse County Shooting Range_Catchment 6_100 year

Hydrograph type	=	Rational	Peak discharge (cfs)	=	2.994
Storm frequency (yrs)	=	100	Time interval (min)	=	1
Drainage area (ac)	=	0.580	Runoff coeff. (C)	=	0.48
Rainfall Inten (in/hr)	=	10.753	Tc by User (min)	=	1
IDF Curve	=	IDF Shooting Range Converse Co.idf	Rainfall factor	=	1.00

Hydrograph Volume = 180 (cuft); 0.004 (acft)

Runoff Hydrograph



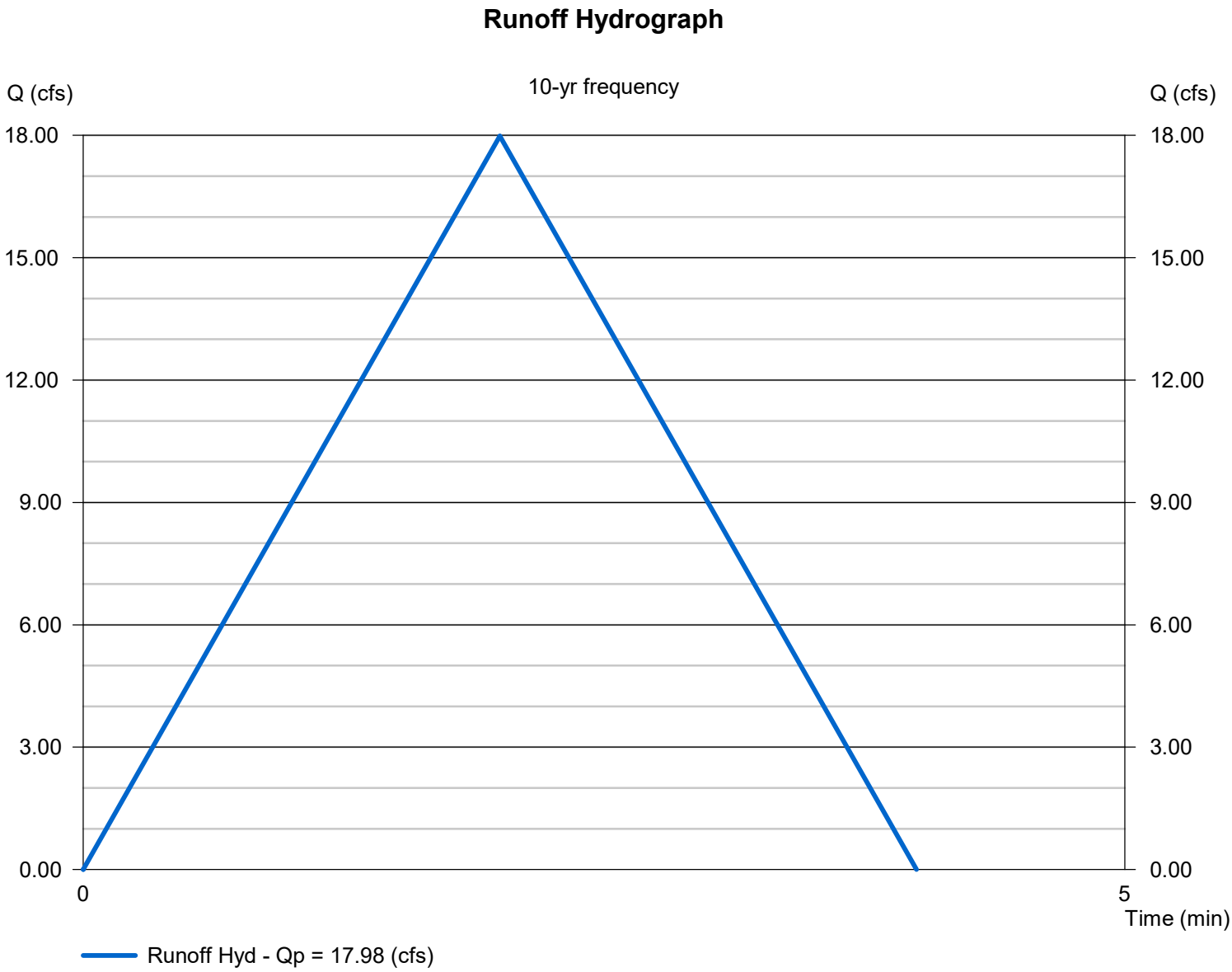
Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Nov 5 2025

Converse County Shooting Range_Catchment 7 (Existing)_10 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 17.98
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 4.960	Runoff coeff. (C)	= 0.58
Rainfall Inten (in/hr)	= 6.251	Tc by User (min)	= 2
IDF Curve	= IDF Shooting Range Converse Co.idf	Rainfall factor	= 1.00

Hydrograph Volume = 2,158 (cuft); 0.050 (acft)



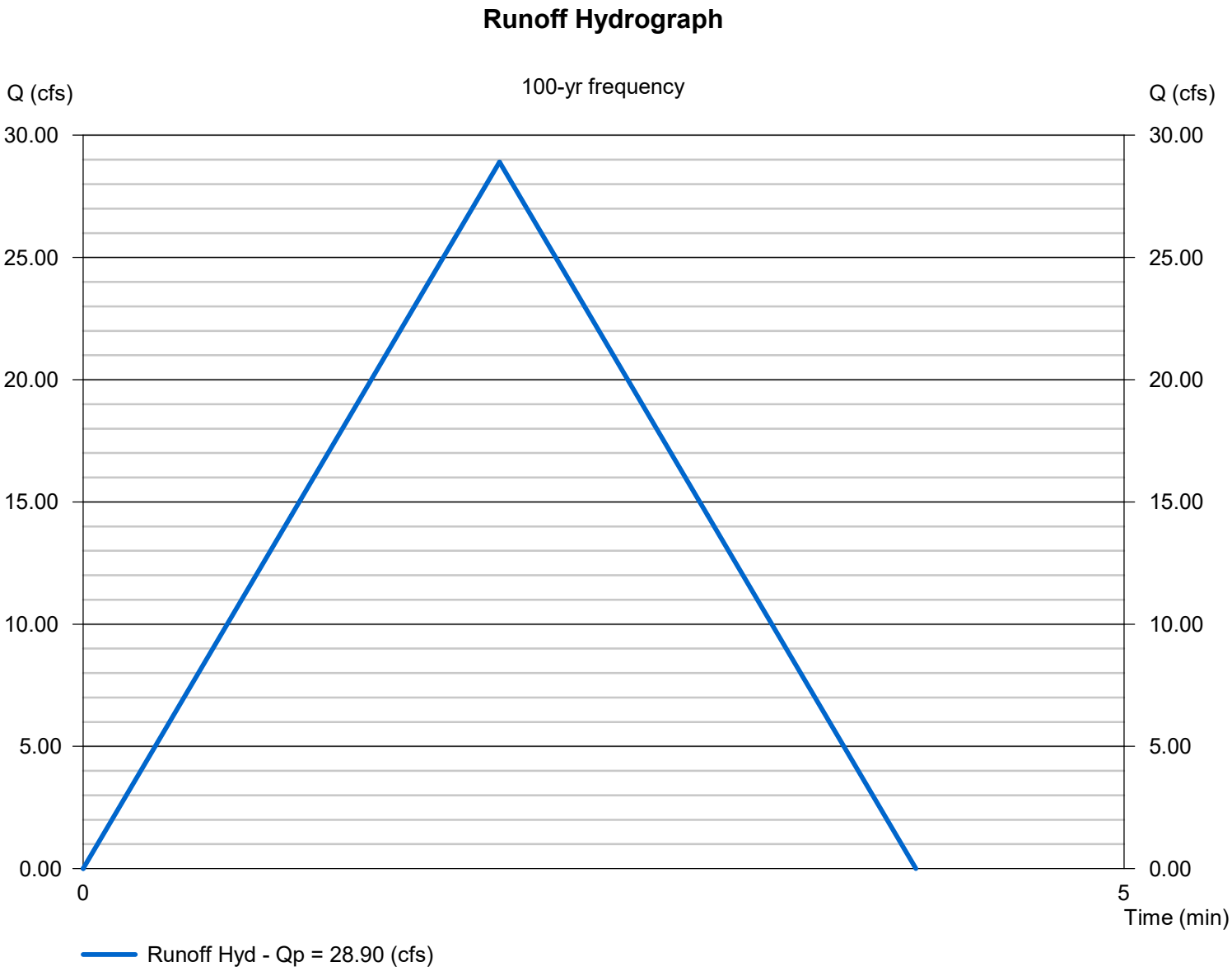
Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Nov 5 2025

Converse County Shooting Range_Catchment 7 (Existing)_100 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 28.90
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 4.960	Runoff coeff. (C)	= 0.58
Rainfall Inten (in/hr)	= 10.047	Tc by User (min)	= 2
IDF Curve	= IDF Shooting Range Converse Co.idf	Rainfall factor	= 1.00

Hydrograph Volume = 3,468 (cuft); 0.080 (acft)



Hydrology Report

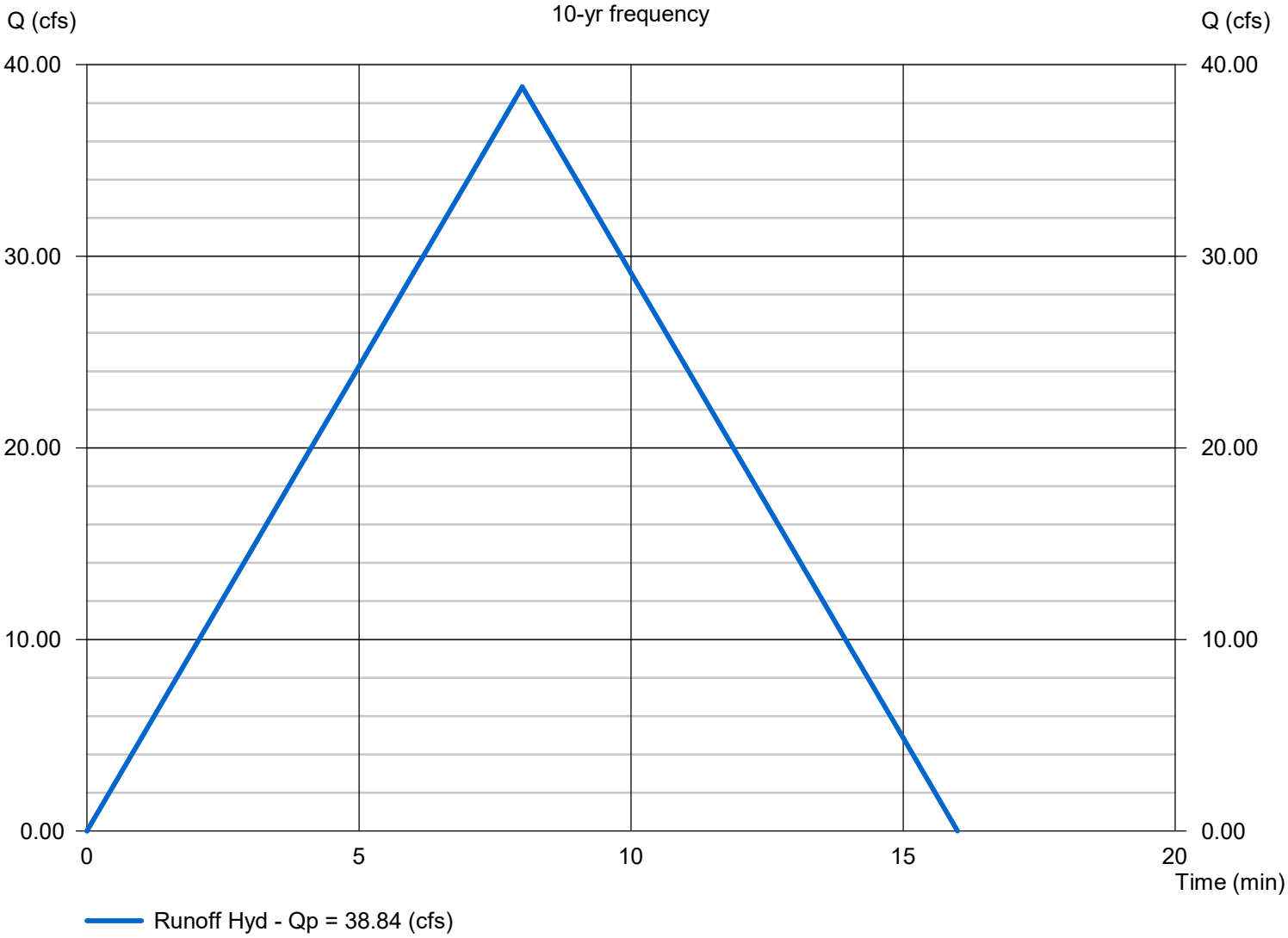
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Nov 5 2025

Converse County Shooting Range_Catchment 8 (Existing)_10 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 38.84
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 17.470	Runoff coeff. (C)	= 0.49
Rainfall Inten (in/hr)	= 4.537	Tc by User (min)	= 8
IDF Curve	= IDF Shooting Range Converse Co.idf	Rainfall factor	= 1.00

Hydrograph Volume = 18,641 (cuft); 0.428 (acft)

Runoff Hydrograph



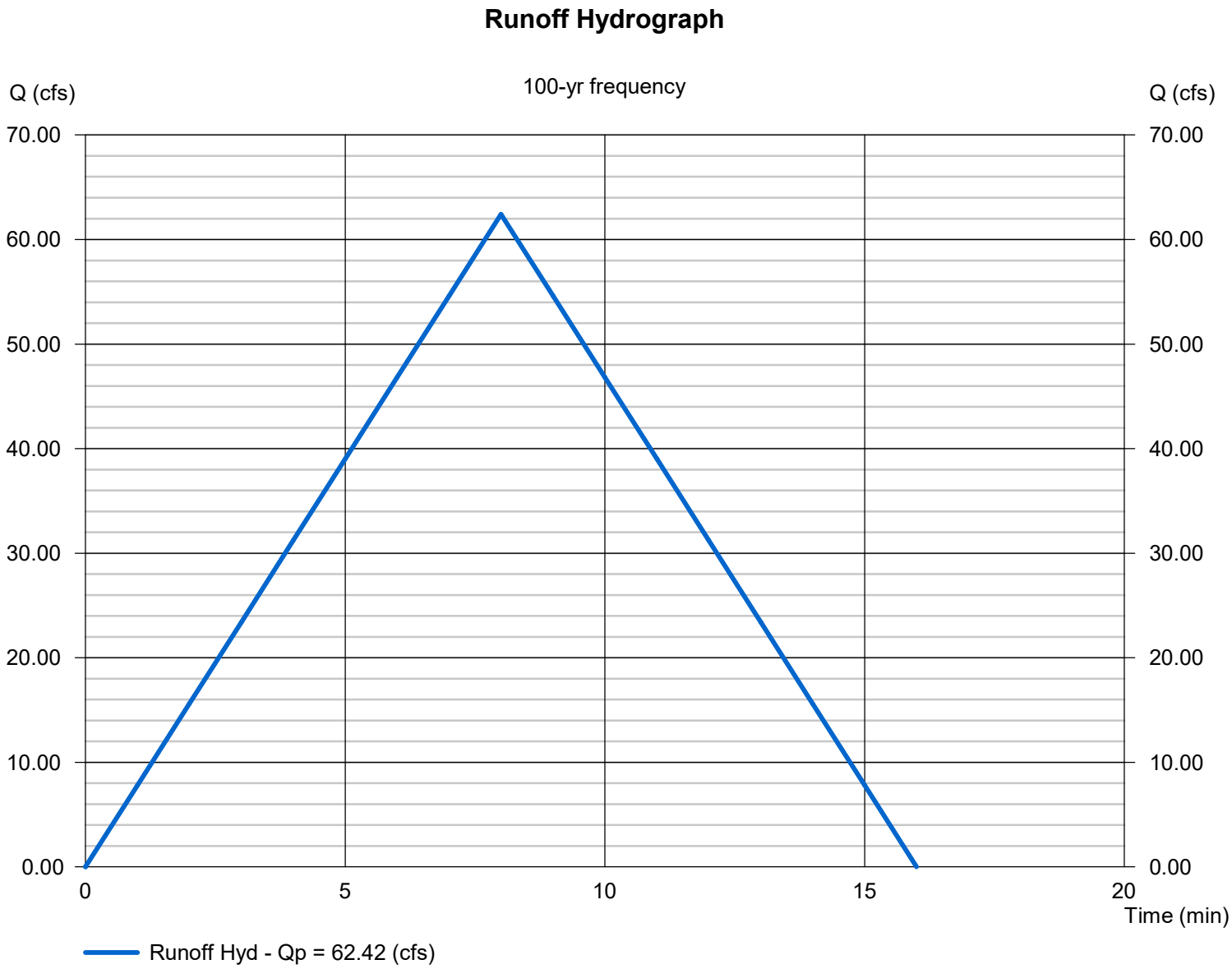
Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Nov 5 2025

Converse County Shooting Range_Catchment 8 (Existing)_100 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 62.42
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 17.470	Runoff coeff. (C)	= 0.49
Rainfall Inten (in/hr)	= 7.292	Tc by User (min)	= 8
IDF Curve	= IDF Shooting Range Converse Co.idf	Rainfall factor	= 1.00

Hydrograph Volume = 29,963 (cuft); 0.688 (acft)



Hydrology Report

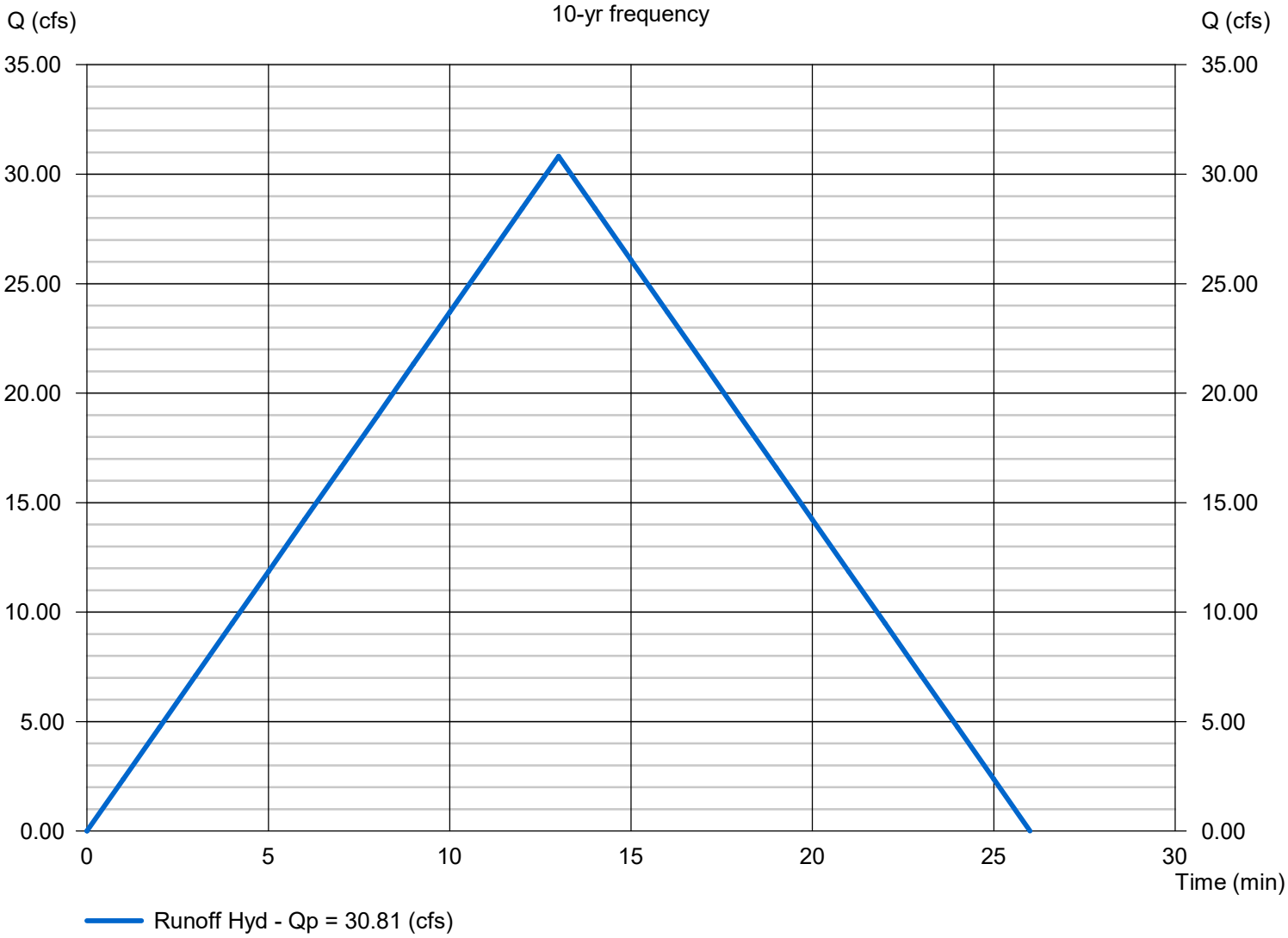
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Oct 23 2025

Converse County Shooting Range_Catchment 9_10 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 30.81
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 16.530	Runoff coeff. (C)	= 0.5
Rainfall Inten (in/hr)	= 3.728	Tc by User (min)	= 13
IDF Curve	= IDF Shooting Range Converse Co.idf	Rainfall factor	= 1.00

Hydrograph Volume = 24,035 (cuft); 0.552 (acft)

Runoff Hydrograph



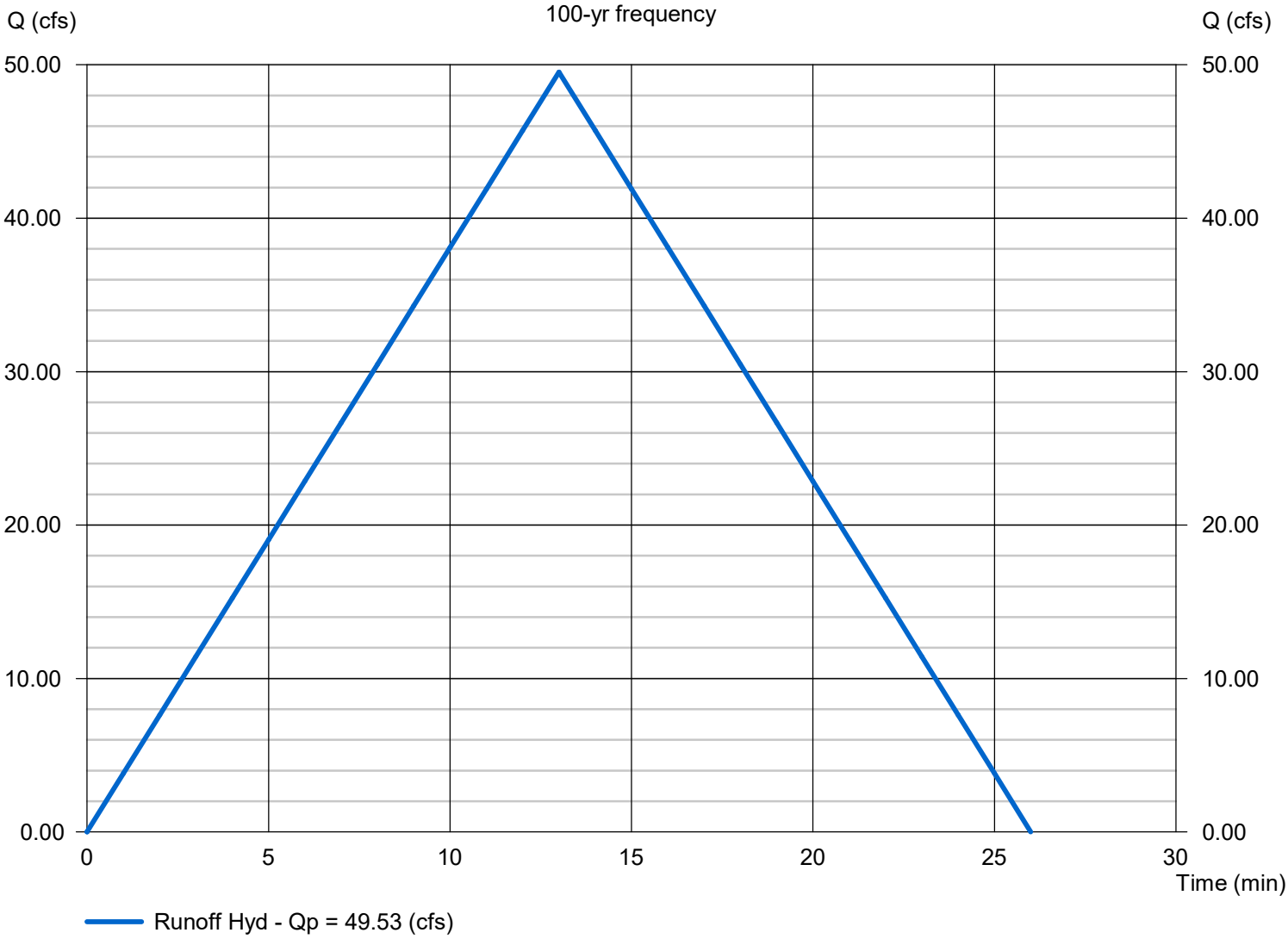
Hydrology Report

Converse County Shooting Range_Catchment 9_100 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 49.53
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 16.530	Runoff coeff. (C)	= 0.5
Rainfall Inten (in/hr)	= 5.993	Tc by User (min)	= 13
IDF Curve	= IDF Shooting Range Converse Co.idf	Rainfall factor	= 1.00

Hydrograph Volume = 38,632 (cuft); 0.887 (acft)

Runoff Hydrograph



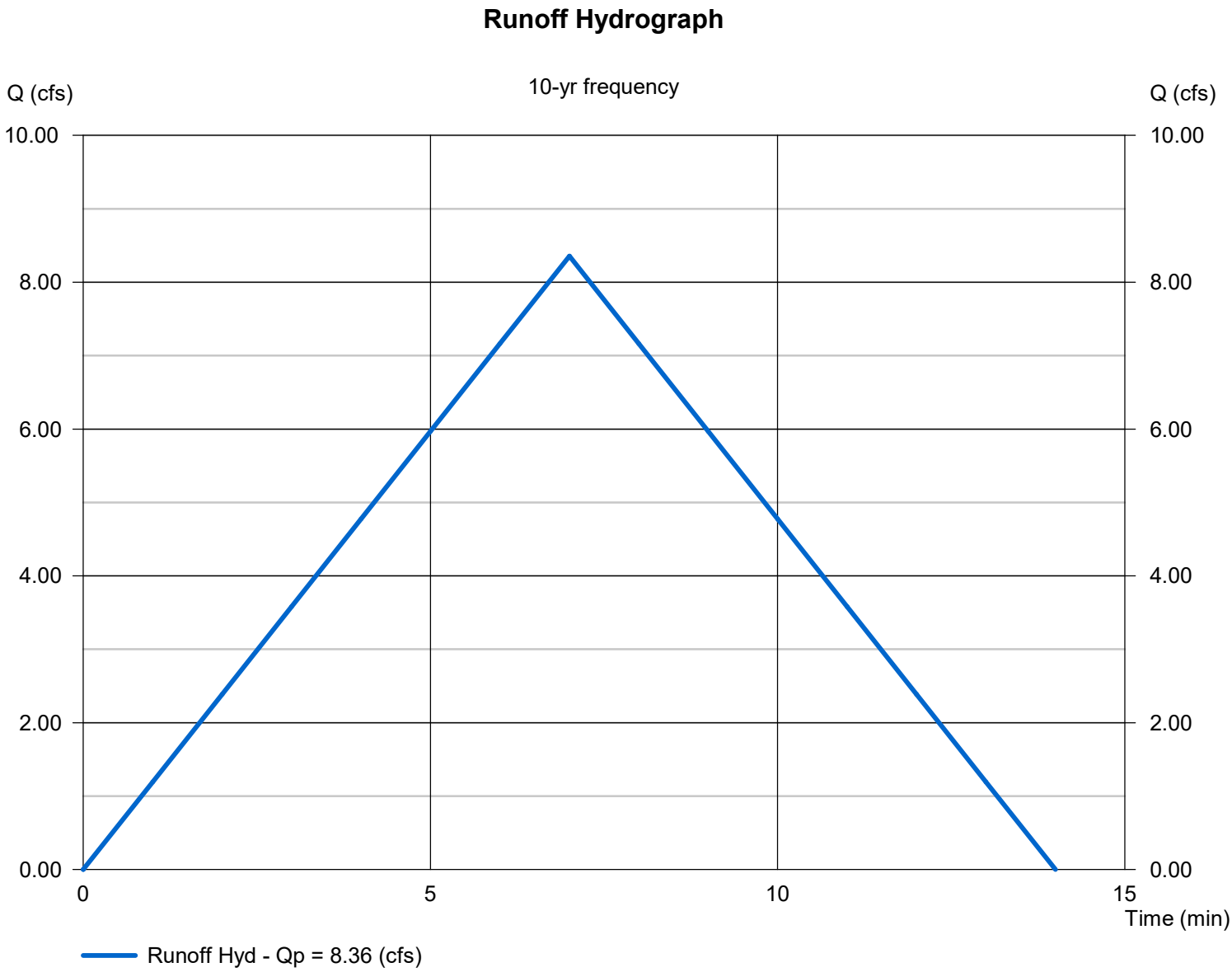
Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Nov 5 2025

Converse County Shooting Range_Catchment 10 (Existing)_10 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 8.357
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 4.400	Runoff coeff. (C)	= 0.4
Rainfall Inten (in/hr)	= 4.748	Tc by User (min)	= 7
IDF Curve	= IDF Shooting Range Converse Co.idf	Asmptd IDF factor	= 1.00

Hydrograph Volume = 3,510 (cuft); 0.081 (acft)



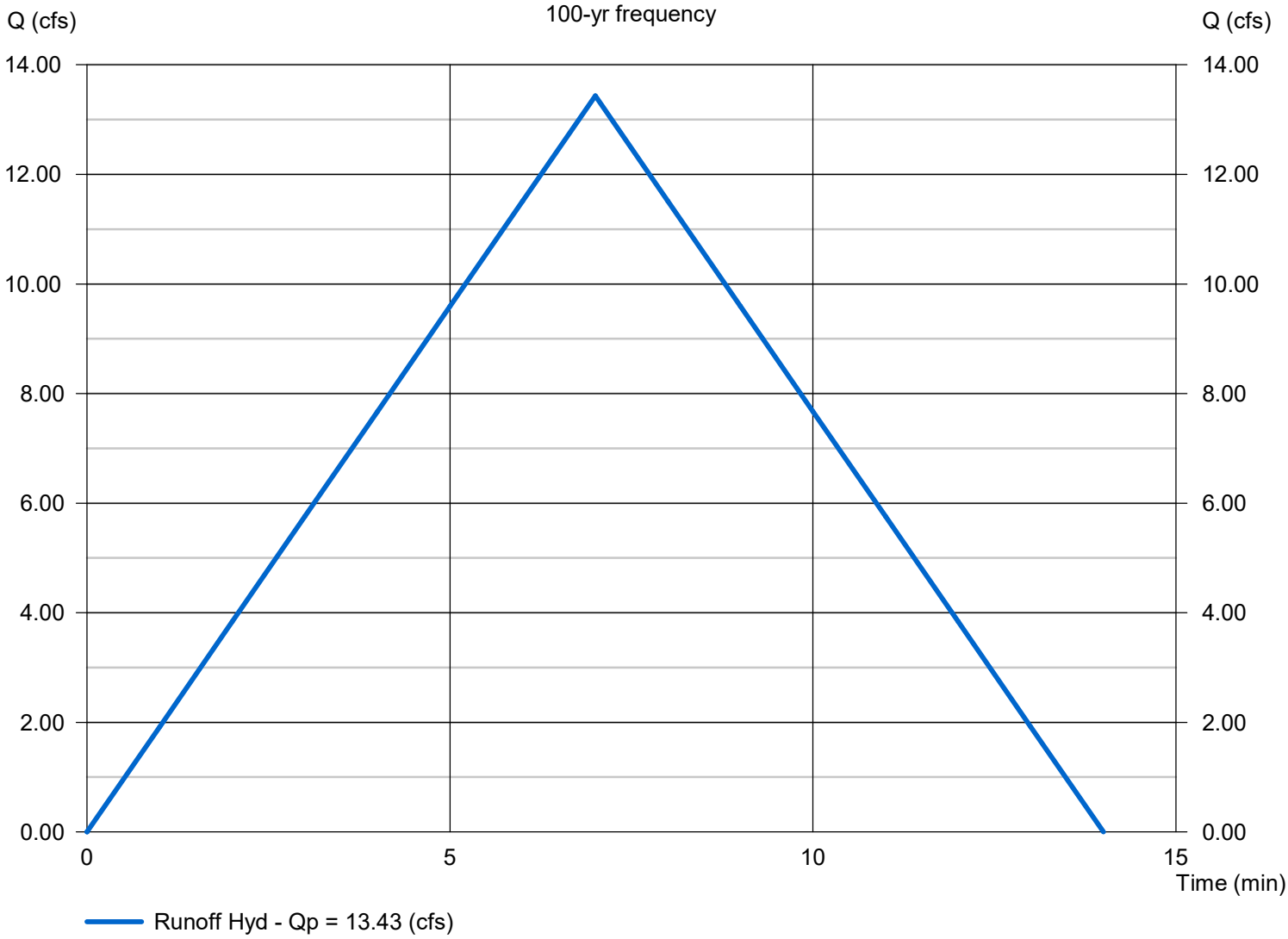
Hydrology Report

Converse County Shooting Range_Catchment 10 (Existing)_100 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 13.43
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 4.400	Runoff coeff. (C)	= 0.4
Rainfall Inten (in/hr)	= 7.632	Tc by User (min)	= 7
IDF Curve	= IDF Shooting Range Converse Co.idf	Rainfall factor	= 1.00

Hydrograph Volume = 5,641 (cuft); 0.130 (acft)

Runoff Hydrograph

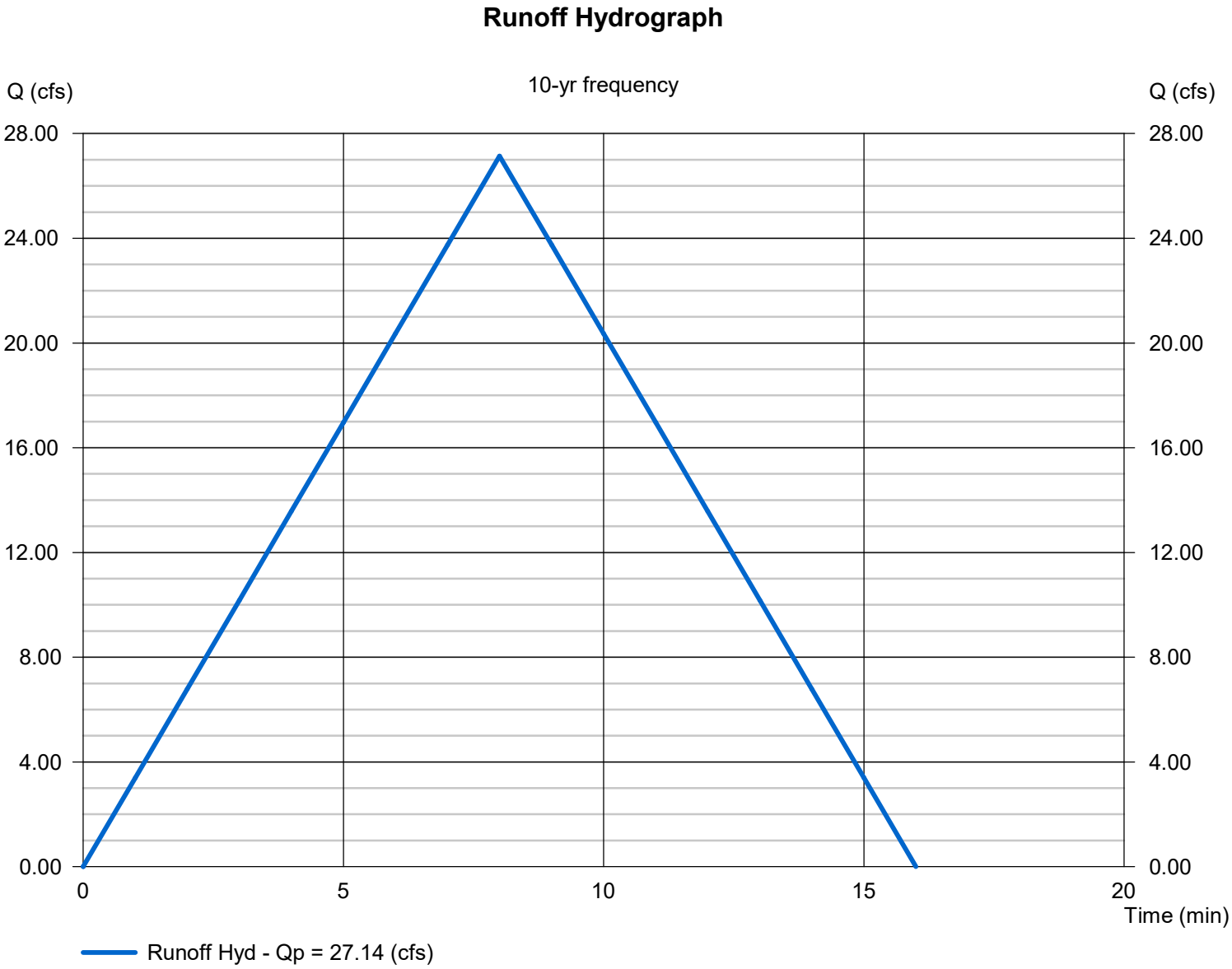


Hydrology Report

Converse County Shooting Range_Catchment 11 (Designed)_10 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 27.14
Storm frequency (yrs)	= 10	Time interval (min)	= 1
Drainage area (ac)	= 12.210	Runoff coeff. (C)	= 0.49
Rainfall Inten (in/hr)	= 4.537	Tc by User (min)	= 8
IDF Curve	= IDF Shooting Range Converse Co.idf	Rainfall factor	= 1.00

Hydrograph Volume = 13,029 (cuft); 0.299 (acft)



Hydrology Report

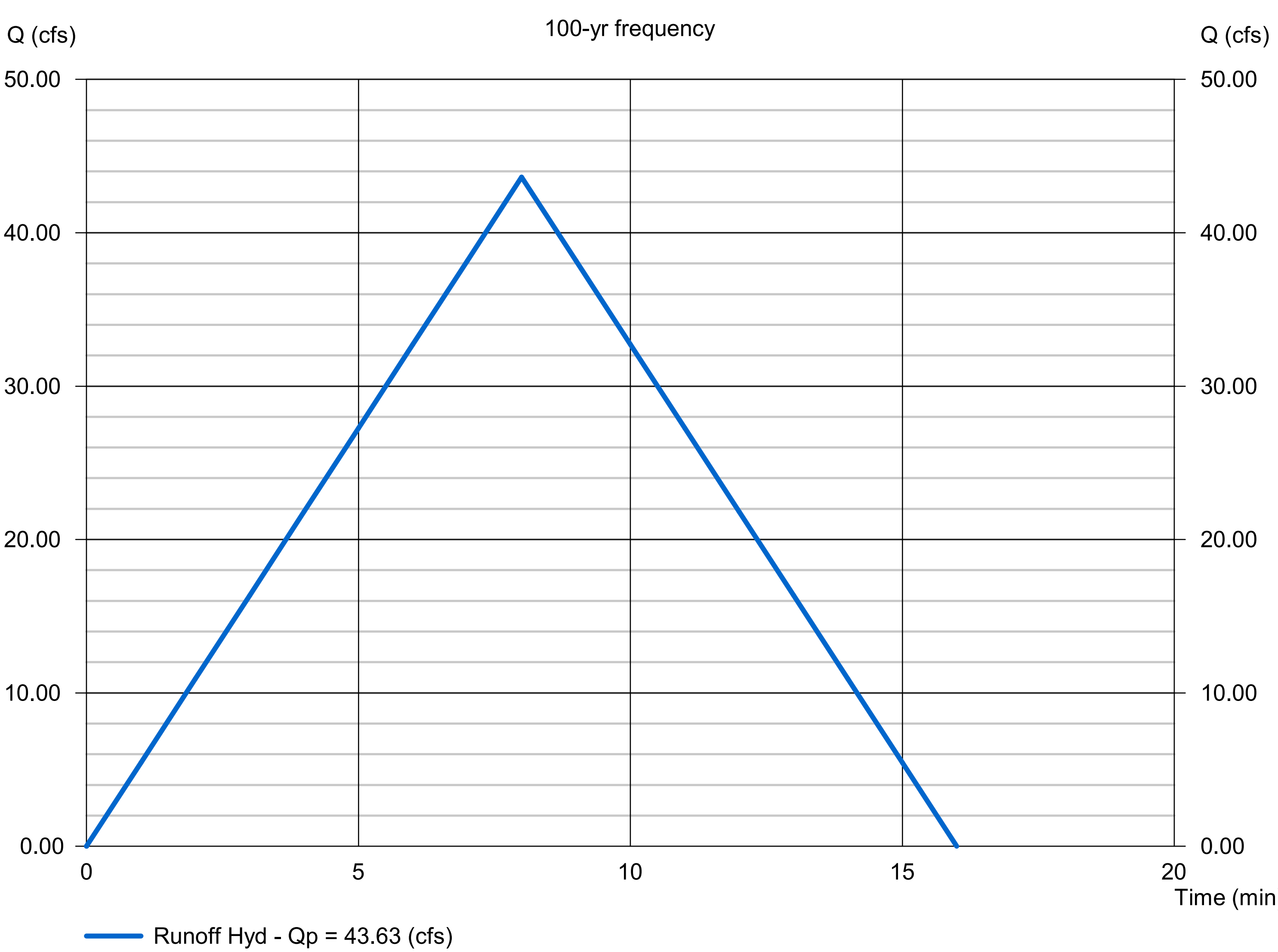
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 21 2025

Converse County Shooting Range_Catchment 11 (Designed)_100 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 43.63
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 12.210	Runoff coeff. (C)	= 0.49
Rainfall Inten (in/hr)	= 7.292	Tc by User (min)	= 8
IDF Curve	= IDF Shooting Range Converse County.IDF	Rec limb factor	= 1.00

Hydrograph Volume = 20,941 (cuft); 0.481 (acft)

Runoff Hydrograph



Hydrology Report

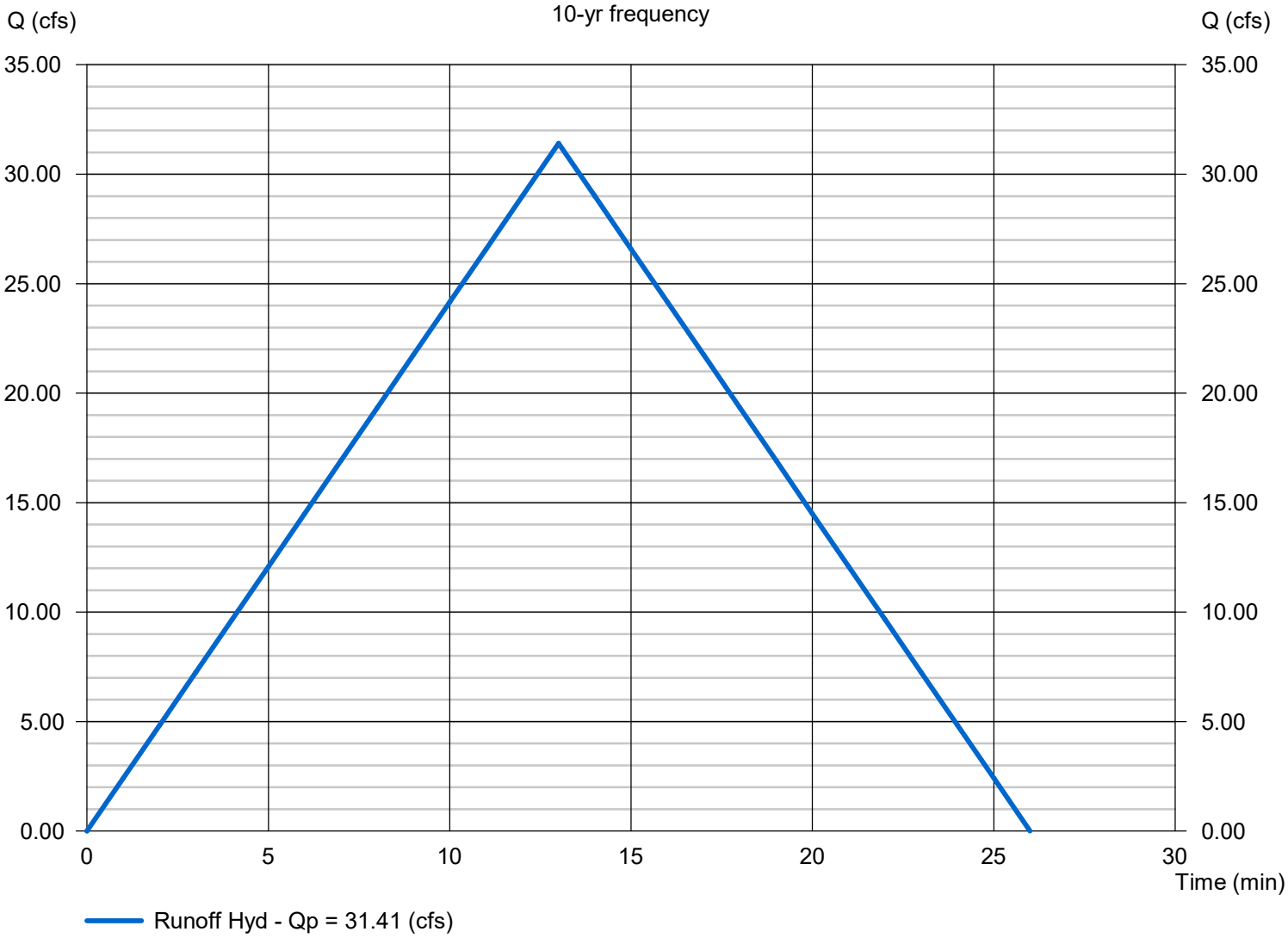
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 21 2025

Converse County Shooting Range_Catchment 12 (Designed)_10 year

Hydrograph type	=	Rational	Peak discharge (cfs)	=	31.41
Storm frequency (yrs)	=	10	Time interval (min)	=	1
Drainage area (ac)	=	16.850	Runoff coeff. (C)	=	0.5
Rainfall Inten (in/hr)	=	3.728	Tc by User (min)	=	13
IDF Curve	=	IDF Shooting Range Converse Co.idf	Rain IDF factor	=	1.00

Hydrograph Volume = 24,500 (cuft); 0.562 (acft)

Runoff Hydrograph



Hydrology Report

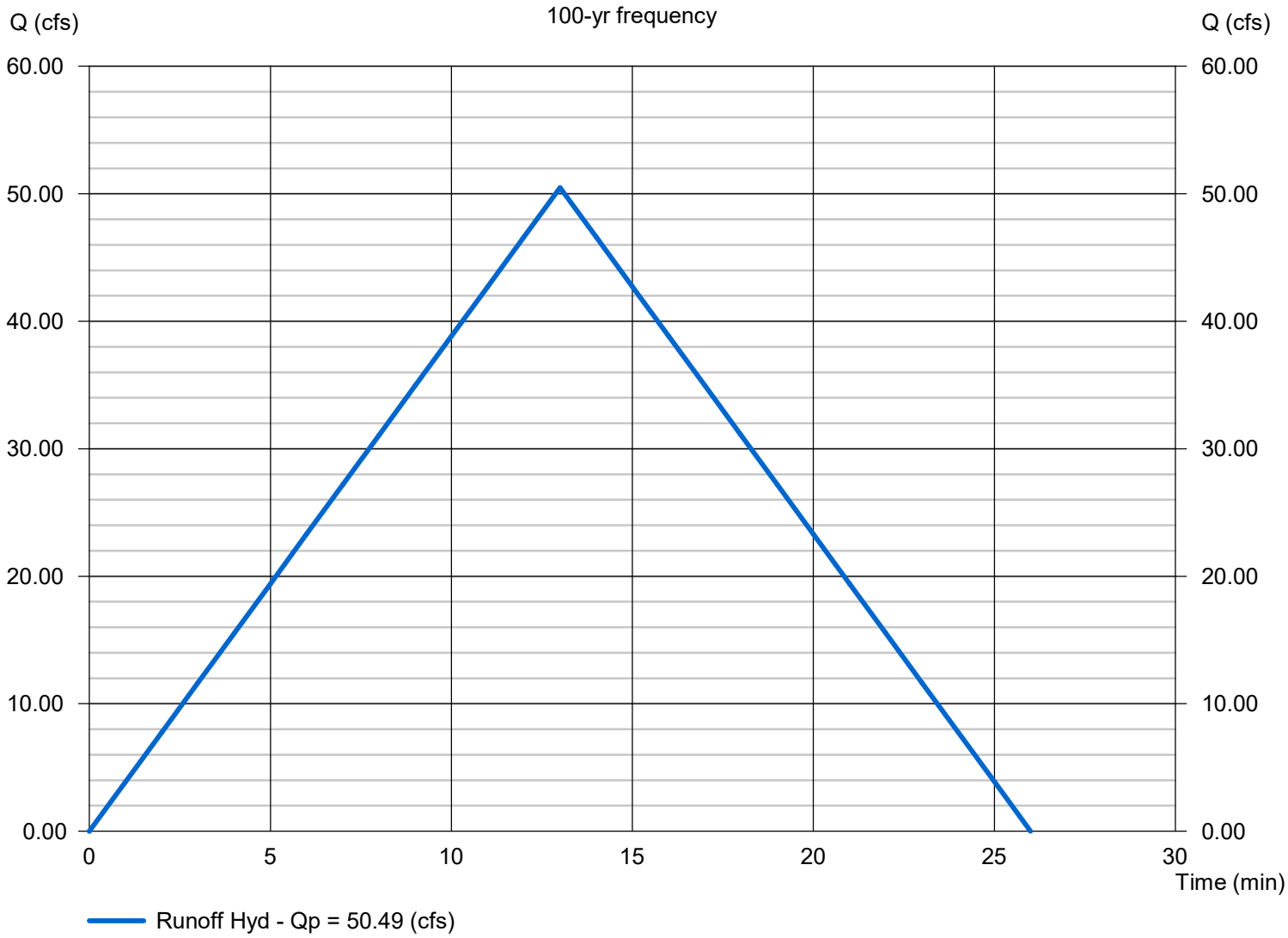
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 21 2025

Converse County Shooting Range_Catchment 12 (Designed)_100 year

Hydrograph type	=	Rational	Peak discharge (cfs)	=	50.49
Storm frequency (yrs)	=	100	Time interval (min)	=	1
Drainage area (ac)	=	16.850	Runoff coeff. (C)	=	0.5
Rainfall Inten (in/hr)	=	5.993	Tc by User (min)	=	13
IDF Curve	=	IDF Shooting Range Converse Co.idf	Rain IDF factor	=	1.00

Hydrograph Volume = 39,380 (cuft); 0.904 (acft)

Runoff Hydrograph



Hydrology Report

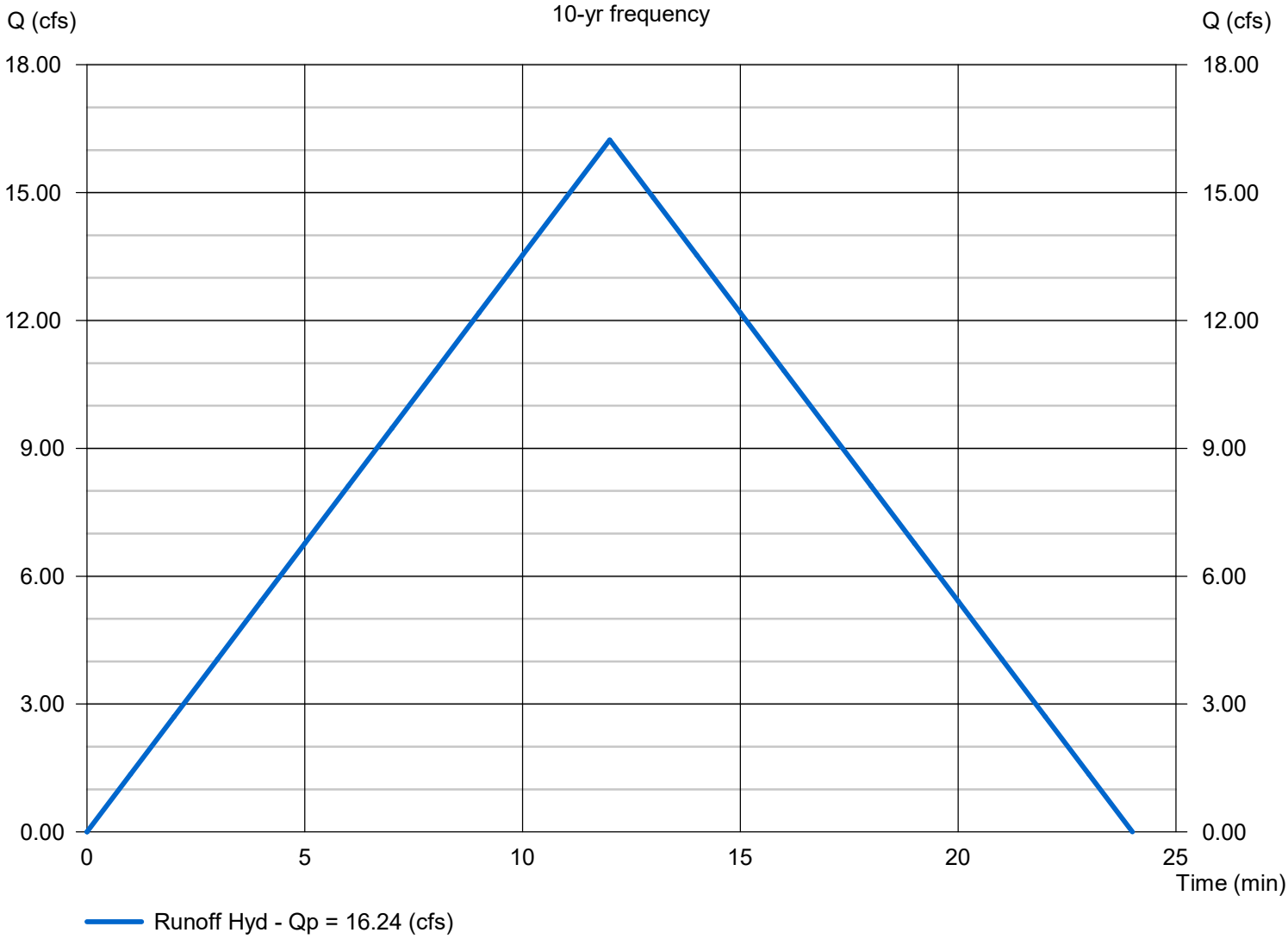
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 21 2025

Converse County Shooting Range_Catchment 13 (Designed)_10 year

Hydrograph type	=	Rational	Peak discharge (cfs)	=	16.24
Storm frequency (yrs)	=	10	Time interval (min)	=	1
Drainage area (ac)	=	9.340	Runoff coeff. (C)	=	0.45
Rainfall Inten (in/hr)	=	3.864	Tc by User (min)	=	12
IDF Curve	=	IDF Shooting Range Converse Co.idf	Rainfall factor	=	1.00

Hydrograph Volume = 11,692 (cuft); 0.268 (acft)

Runoff Hydrograph



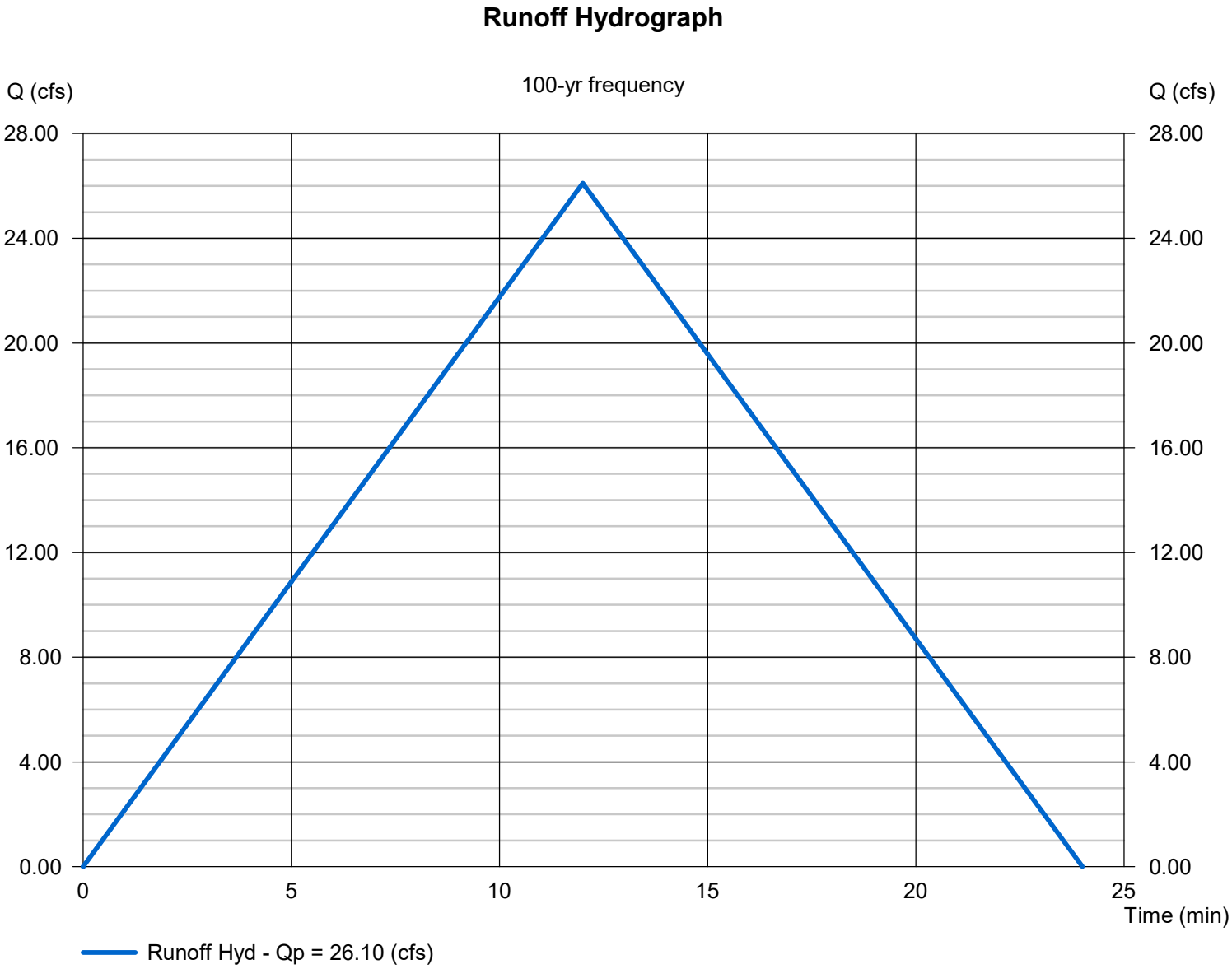
Hydrology Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 21 2025

Converse County Shooting Range_Catchment 13 (Designed)_100 year

Hydrograph type	= Rational	Peak discharge (cfs)	= 26.10
Storm frequency (yrs)	= 100	Time interval (min)	= 1
Drainage area (ac)	= 9.340	Runoff coeff. (C)	= 0.45
Rainfall Inten (in/hr)	= 6.210	Tc by User (min)	= 12
IDF Curve	= IDF Shooting Range Converse Co.idf	Rainfall factor	= 1.00

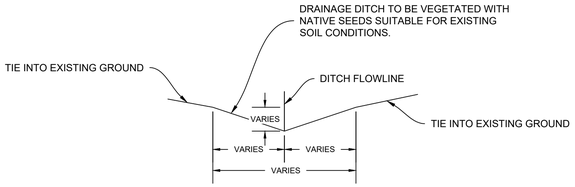
Hydrograph Volume = 18,794 (cuft); 0.431 (acft)



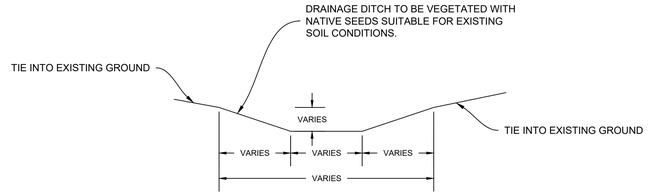
APPENDIX D

DETAIL SHEET

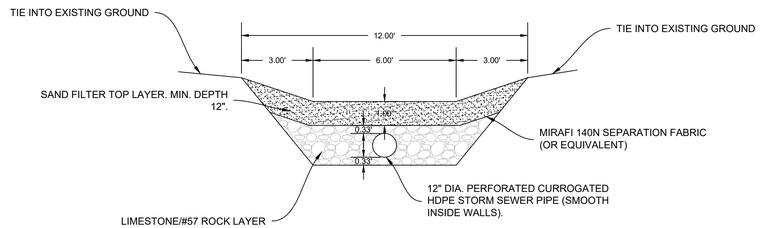
TRIANGULAR DRAINAGE DITCH DETAIL
- NTS -



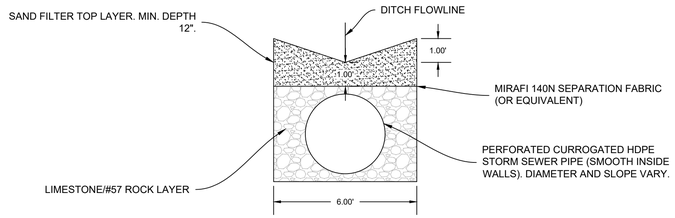
TRAPEZOIDAL DRAINAGE DITCH DETAIL
- NTS -

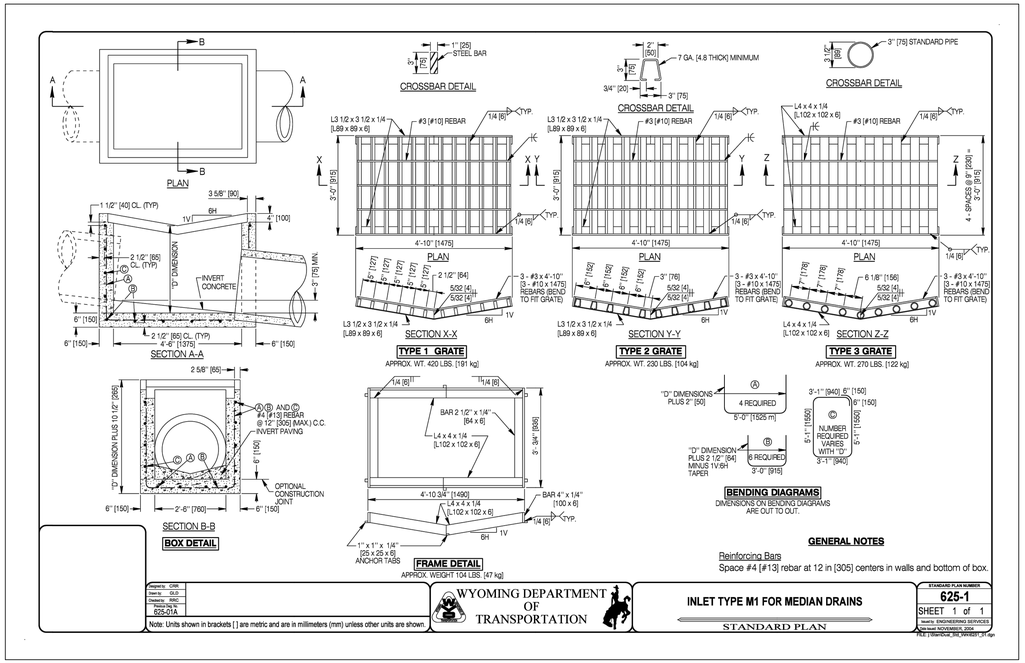


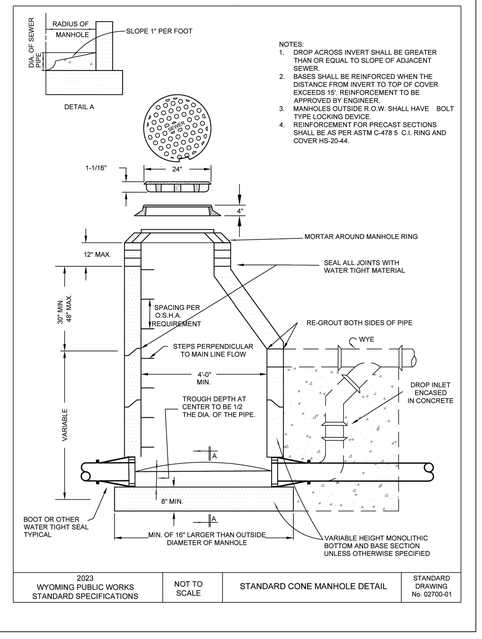
TRAPEZOIDAL DRAINAGE DITCH WITH LEAD FILTER BED FOR 600 YARD RANGE DETAIL
- NTS -



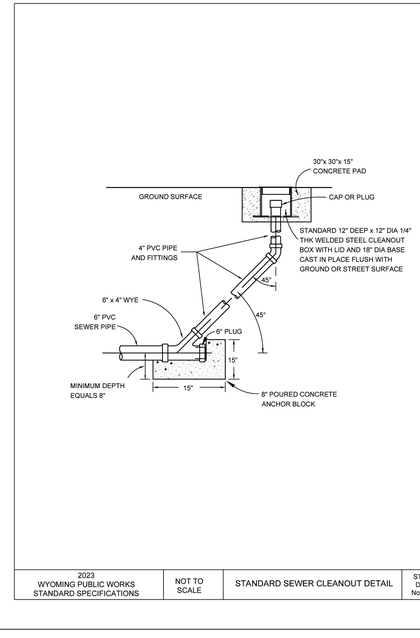
FILTER BED FOR LEAD REMOVAL DETAIL
- NTS -







2023 WYOMING PUBLIC WORKS STANDARD SPECIFICATIONS	NOT TO SCALE	STANDARD CONE MANHOLE DETAIL	STANDARD DRAWING No. 02700-01



2023 WYOMING PUBLIC WORKS STANDARD SPECIFICATIONS	NOT TO SCALE	STANDARD SEWER CLEANOUT DETAIL	STANDARD DRAWING No. 02700-06

ENGINEERS

PROFESSIONAL ENGINEER — SHAWN J. GUSTAFSON — 6938 — WYOMING — Date 11/20/25

FOR: **RELIC SERVICES, LLC**
P.O. Box 716
Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENGINEERING & ENVIRONMENTAL SOLUTIONS, LLC
1607 CY Ave, Suite 104
Casper, WY 82601 • 307.337.2683

Date Drawn: 11.20.2025 | Scale: SEE Detail(s)
Project No.: 250046 | File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
DETAILS

REV	DATE	REVISIONS	BY	CHK

D1.0

APPENDIX E

DRAINAGE PLANS

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE WYOMING PUBLIC WORKS SPECIFICATIONS (2023 EDITION) UNLESS OTHERWISE STATED IN THESE PLANS AND SPECIFICATIONS.
2. CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS OF UNDERGROUND PUBLIC AND PRIVATE UTILITIES PRIOR TO CONSTRUCTION AND COORDINATE WITH THOSE UTILITIES DURING CONSTRUCTION.
3. THE LOCATION OF THE EXISTING UTILITIES IN THE PLANS ARE APPROXIMATE. THE ENGINEER AND OWNER SHALL NOT BE HELD ACCOUNTABLE FOR THE COMPLETENESS OR ACCURACY OF THE UTILITY LOCATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL MEASURES NECESSARY TO COMPLY WITH FEDERAL, STATE, COUNTY, AND CITY REGULATIONS INCLUDING WYPDES THAT PROHIBIT DISCHARGE OF POLLUTANTS, INCLUDING SEDIMENTS RESULTING FROM EROSION OR OTHER CONSTRUCTION ACTIVITIES.
5. THE CONTRACTOR SHALL PROVIDE DUST CONTROL AND SHALL CONDUCT WORK SO THAT SEDIMENT IS NOT TRANSFERRED ONTO ROADWAY OR ADJACENT PROPERTY.
6. CONTRACTOR TO CHECK, CONFIRM AND COORDINATE ALL DIMENSIONS AND DETAILS, TAKE FIELD MEASUREMENTS, VERIFY FIELD CONDITIONS AND COORDINATE WORK WITH THAT OF OTHER CONTRACTORS FOR THE PROJECT AND THE ENGINEER. ANY DISCREPANCIES OR CONCERNS REGARDING PLANS, NOTATIONS OR ELEVATIONS SHALL BE DIRECTED TO THE ENGINEER FOR CLARIFICATION.
7. ALL DRAINAGE TRENCHES ARE TO BE VEGETATED WITH NATIVE SEEDS TO PREVENT EROSION.

SYMBOLS

- TREE
- ECS CONTROL POINT
- ELECTRICAL VAULT
- FIBER OPTIC PEDESTAL
- FIRE HYDRANT
- PROFILE FIRE HYDRANT
- FLARED END SECTION
- GAS METER
- CATCH BASIN
- GUY WIRE ANCHOR
- POWER POLE
- SANITARY SEWER MANHOLE
- SANITARY SEWER CLEAN OUT
- IRRIGATION VALVE BOX
- SANITARY SEWER BACKFLOW PREVENTER
- STORM SEWER MANHOLE
- STREET LAMP
- TELEPHONE MANHOLE
- TELEPHONE PEDESTAL
- BORE HOLE LOCATION
- WATER TEE
- WATER CROSS
- WATER VALVE
- CURB STOP
- ELECTRICAL METER CABINET
- SINGLE SIGN POST
- BOLLARD
- RECOVERED BRASS CAP
- RECOVERED ALUMINUM CAP
- RECOVERED REBAR
- RECOVERED ALUMINUM CAP

LEGEND

- RIGHT OF WAY
- PROPERTY LINES
- EXISTING CENTERLINE
- PROPOSED CENTERLINE
- EDGE EXISTING ASPHALT
- EDGE EXISTING GRAVEL
- EXISTING WOOD FENCE
- PROPOSED CHAINLINK FENCE
- EXISTING GAS LINE
- PROPOSED CRUDE MAIN
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING SANITARY MAIN
- PROPOSED SANITARY MAIN
- EXISTING STORM MAIN
- PROPOSED STORM MAIN
- OVERHEAD POWER LINE
- TELEPHONE LINE
- UNDERGROUND POWER
- EXISTING FIBEROPTIC LINE
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOURS
- EXISTING MINOR COUNTOURS
- EXISTING CONCRETE SURFACING
- PROPOSED CONCRETE SURFACING
- EXISTING LANDSCAPING
- PROPOSED LANDSCAPING
- EXISTING GRAVEL SURFACING
- PROPOSED GRAVEL SURFACING
- EXISTING ASPHALT SURFACING
- PROPOSED ASPHALT SURFACING

ENGINEERS

PROFESSIONAL ENGINEER 6936 WYOMING

FOR: RELIC SERVICES, LLC
P.O. Box 716,
Glenrock, WY 82637

BY: ECS ENGINEERS
ENVIRONMENTAL & CIVIL SOLUTIONS, LLC
1607 CY Ave, Suite 104
Casper, WY 82601 • 307.337.2883

Date Drawn: 11.20.2025

CONVERSE COUNTY SHOOTING RANGE

DRAINAGE PLAN -NORTH-

REV	DATE	REVISIONS	BY	CHK

DR1.0

PROFESSIONAL ENGINEER
SHAWN J. GUSTAFSON
6938
WYOMING
Date 11/20/2025

ECS ENGINEERS

FOR: **RELIC SERVICES, LLC**
P.O. Box 716
Glenrock, WY 82637

BY: **ECS ENGINEERS**
ENGINEERING & CIVIL SOLUTIONS, LLC
1607 CY Ave, Suite 104
Casper, WY 82601 • 307.337.2883

Date Drawn: 11.20.2025 | Scale: See Scales
Project No. 250046 | File Name: Converse County Shooting Range Drainage.dwg

CONVERSE COUNTY SHOOTING RANGE
DRAINAGE PLAN
-SOUTH-

REV	DATE	REVISIONS	BY	CHK

DR2.0

APPENDIX F

DRAINAGE DITCH & PIPE CAPACITIES

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 21 2025

Converse County Shooting Range_Drainage Ditch 1 Catchment 1

Triangular

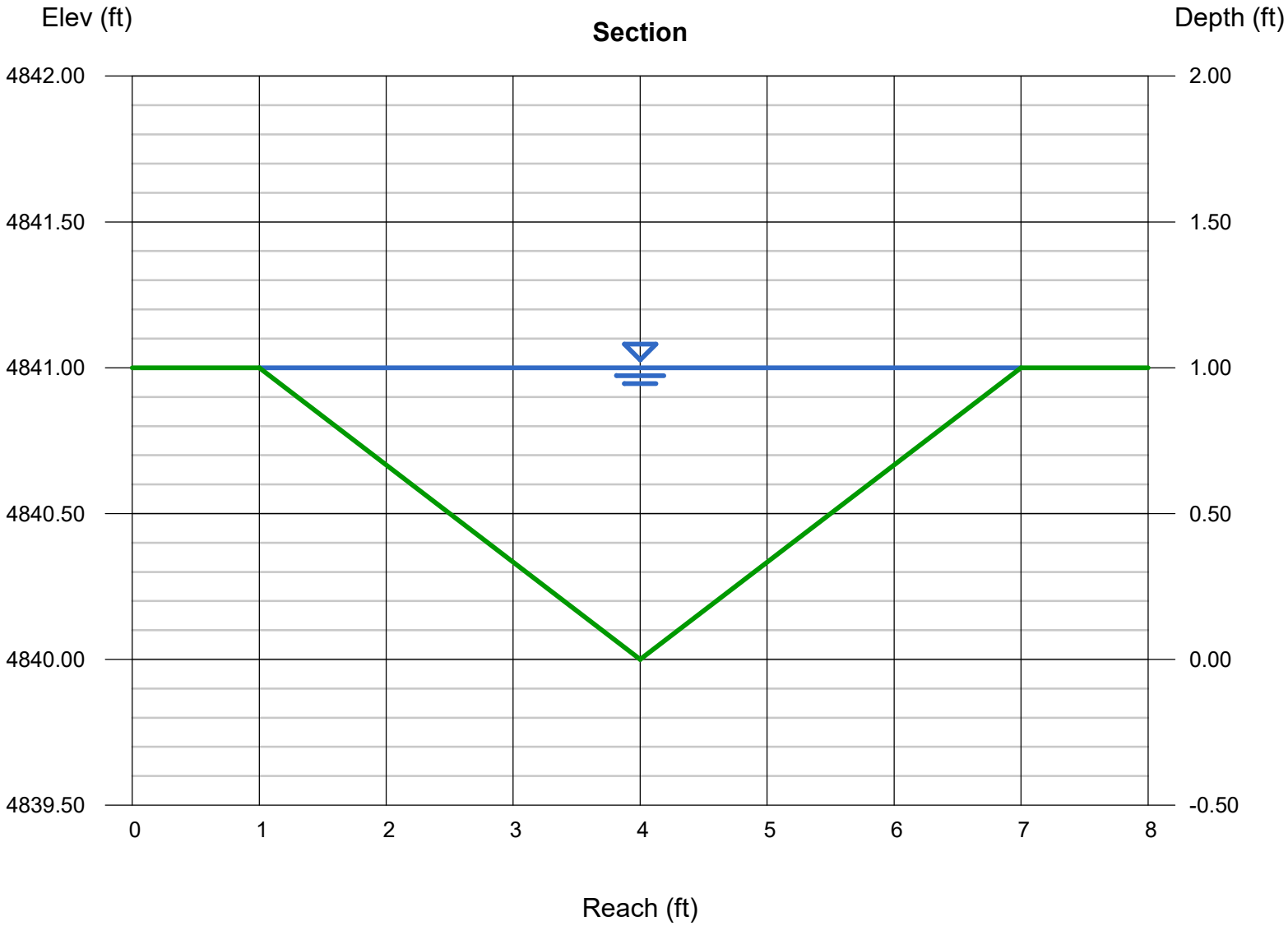
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 4840.00
Slope (%)	= 2.53
N-Value	= 0.026

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.00

Highlighted

Depth (ft)	= 1.00
Q (cfs)	= 16.58
Area (sqft)	= 3.00
Velocity (ft/s)	= 5.53
Wetted Perim (ft)	= 6.32
Crit Depth, Yc (ft)	= 1.00
Top Width (ft)	= 6.00
EGL (ft)	= 1.48



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 21 2025

Converse County Shooting Range_Drainage Ditch 2 Catchment 1

Triangular

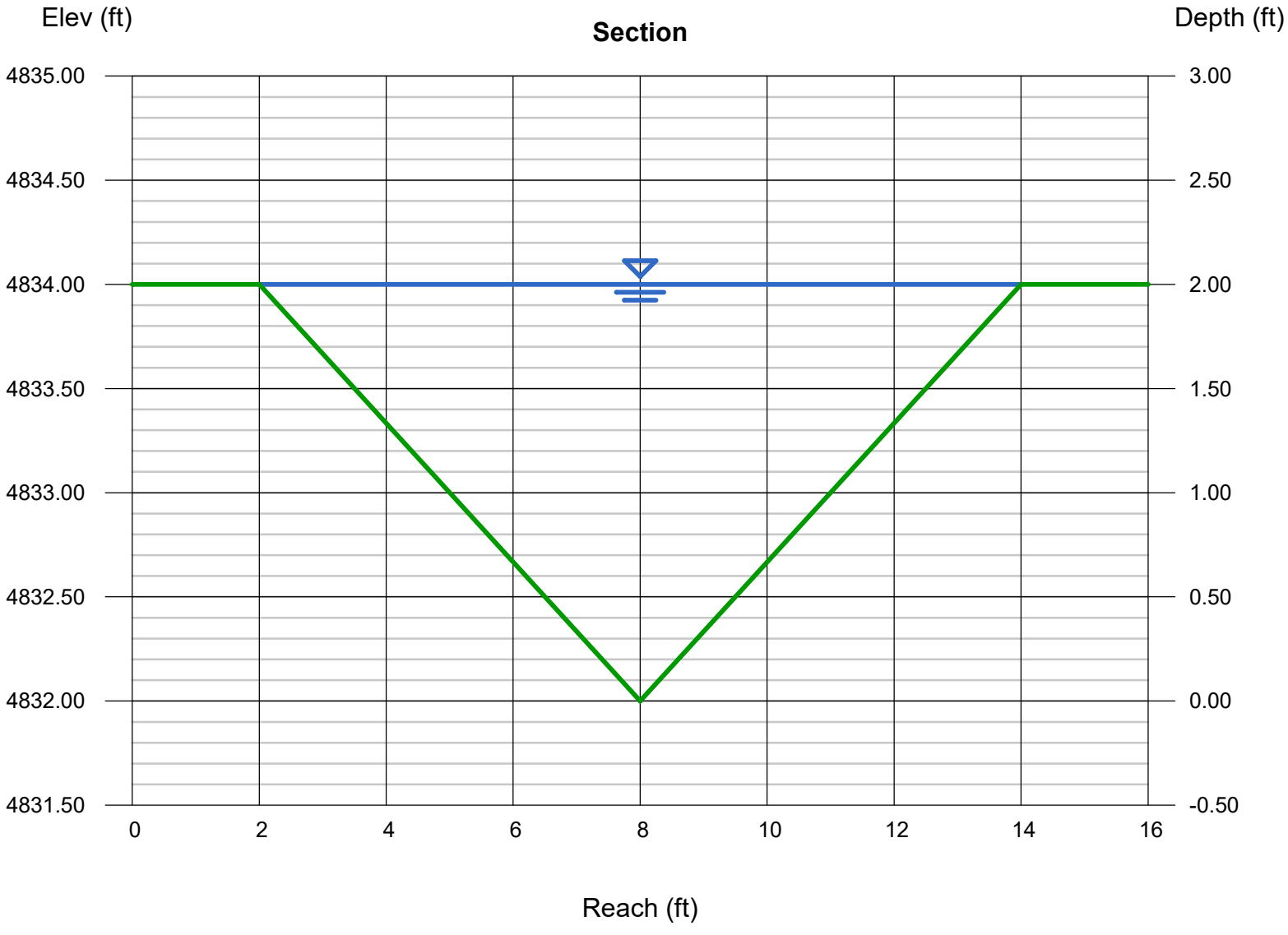
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 4832.00
Slope (%)	= 0.55
N-Value	= 0.026

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 2.00

Highlighted

Depth (ft)	= 2.00
Q (cfs)	= 49.11
Area (sqft)	= 12.00
Velocity (ft/s)	= 4.09
Wetted Perim (ft)	= 12.65
Crit Depth, Yc (ft)	= 1.76
Top Width (ft)	= 12.00
EGL (ft)	= 2.26



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 21 2025

Converse County Shooting Range_Drainage Ditch 3 Catchment 1

Triangular

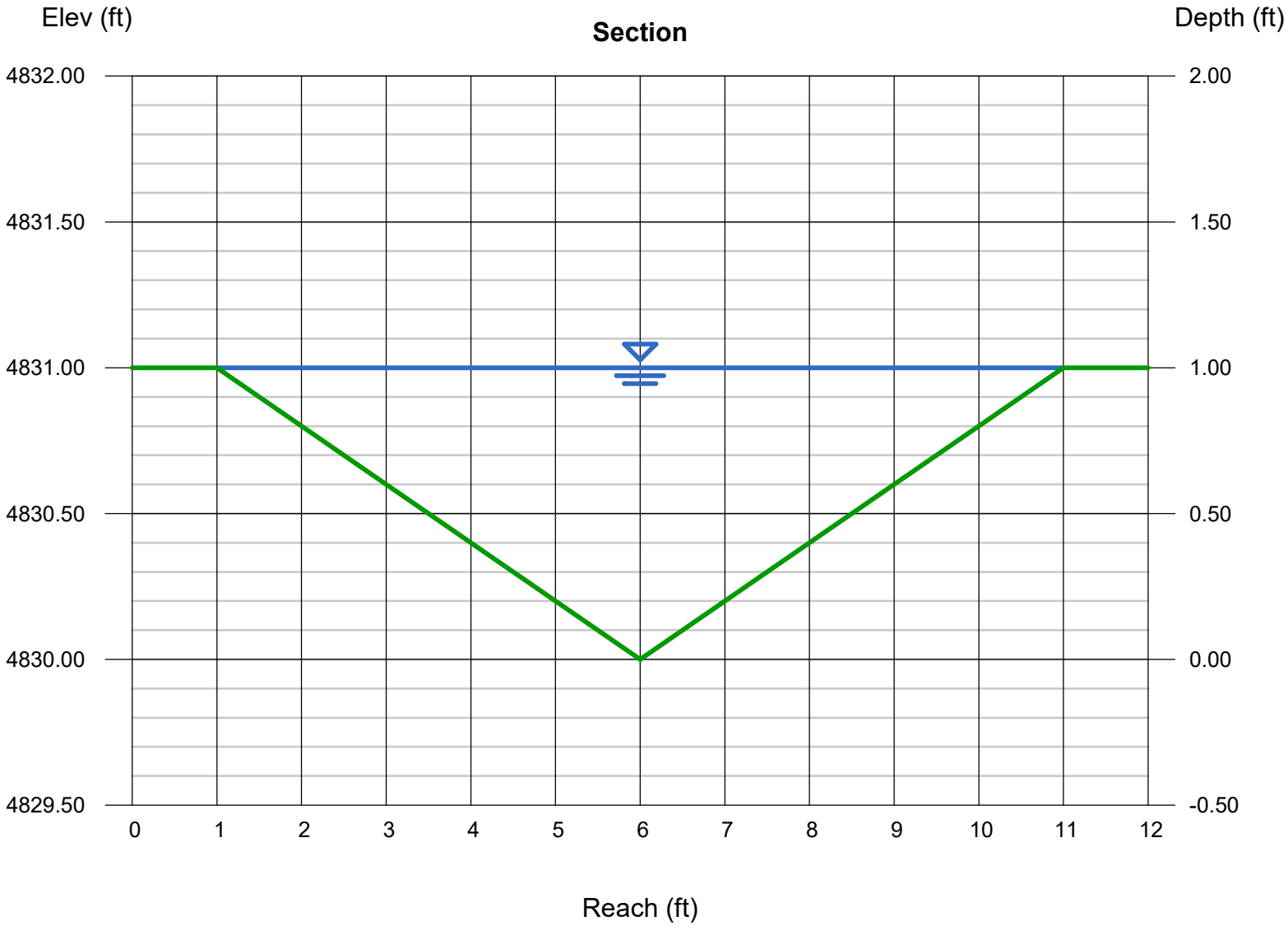
Side Slopes (z:1)	= 5.00, 5.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 4830.00
Slope (%)	= 2.97
N-Value	= 0.026

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.00

Highlighted

Depth (ft)	= 1.00
Q (cfs)	= 30.61
Area (sqft)	= 5.00
Velocity (ft/s)	= 6.12
Wetted Perim (ft)	= 10.20
Crit Depth, Yc (ft)	= 1.00
Top Width (ft)	= 10.00
EGL (ft)	= 1.58



Channel Report

Converse County Shooting Range_Drainage Ditch 1 Catchment 2

Triangular

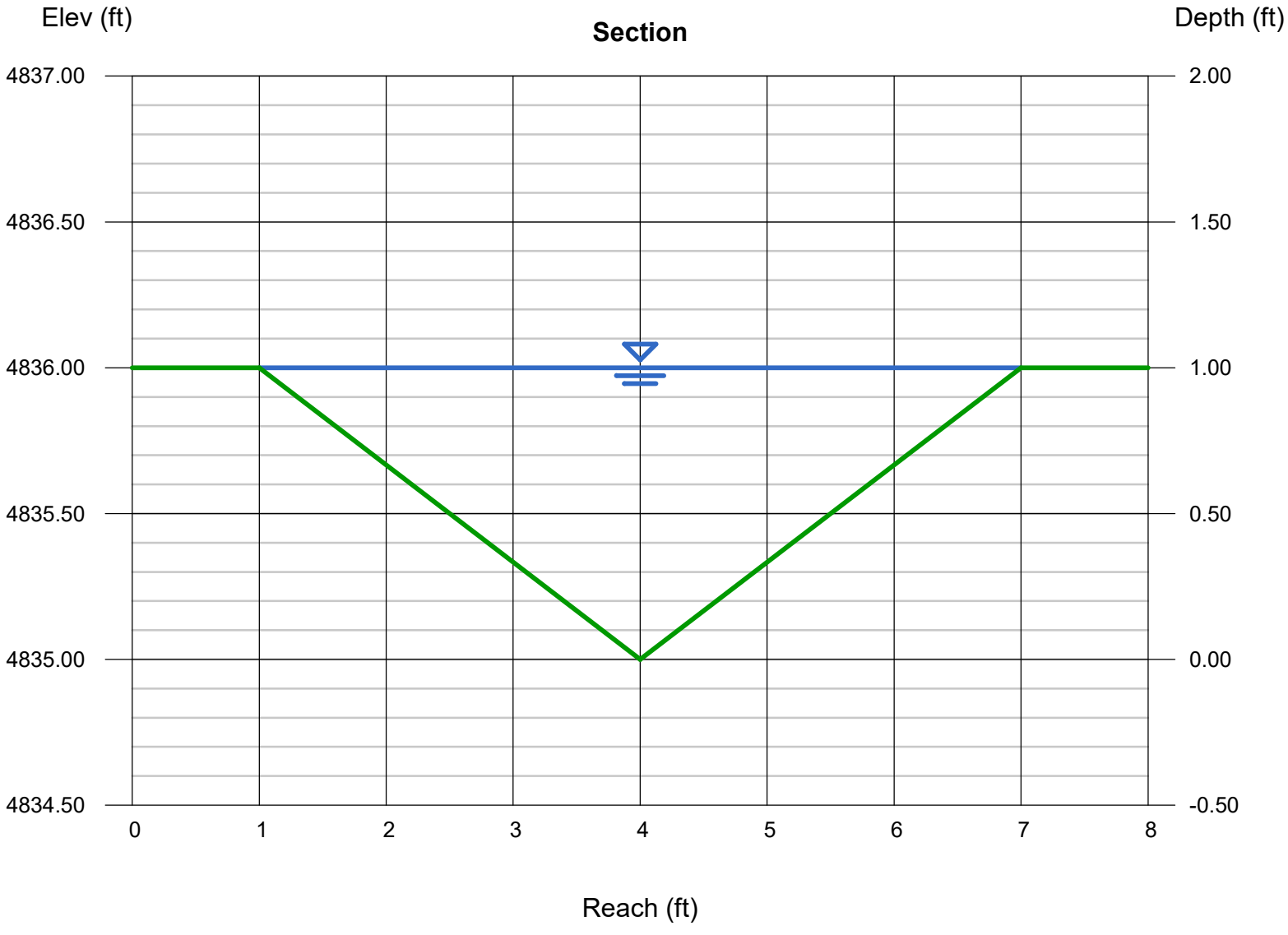
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 4835.00
Slope (%)	= 1.10
N-Value	= 0.026

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.00

Highlighted

Depth (ft)	= 1.00
Q (cfs)	= 10.93
Area (sqft)	= 3.00
Velocity (ft/s)	= 3.64
Wetted Perim (ft)	= 6.32
Crit Depth, Yc (ft)	= 0.97
Top Width (ft)	= 6.00
EGL (ft)	= 1.21



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 21 2025

Converse County Shooting Range_Drainage Ditch 1 Catchment 3

Triangular

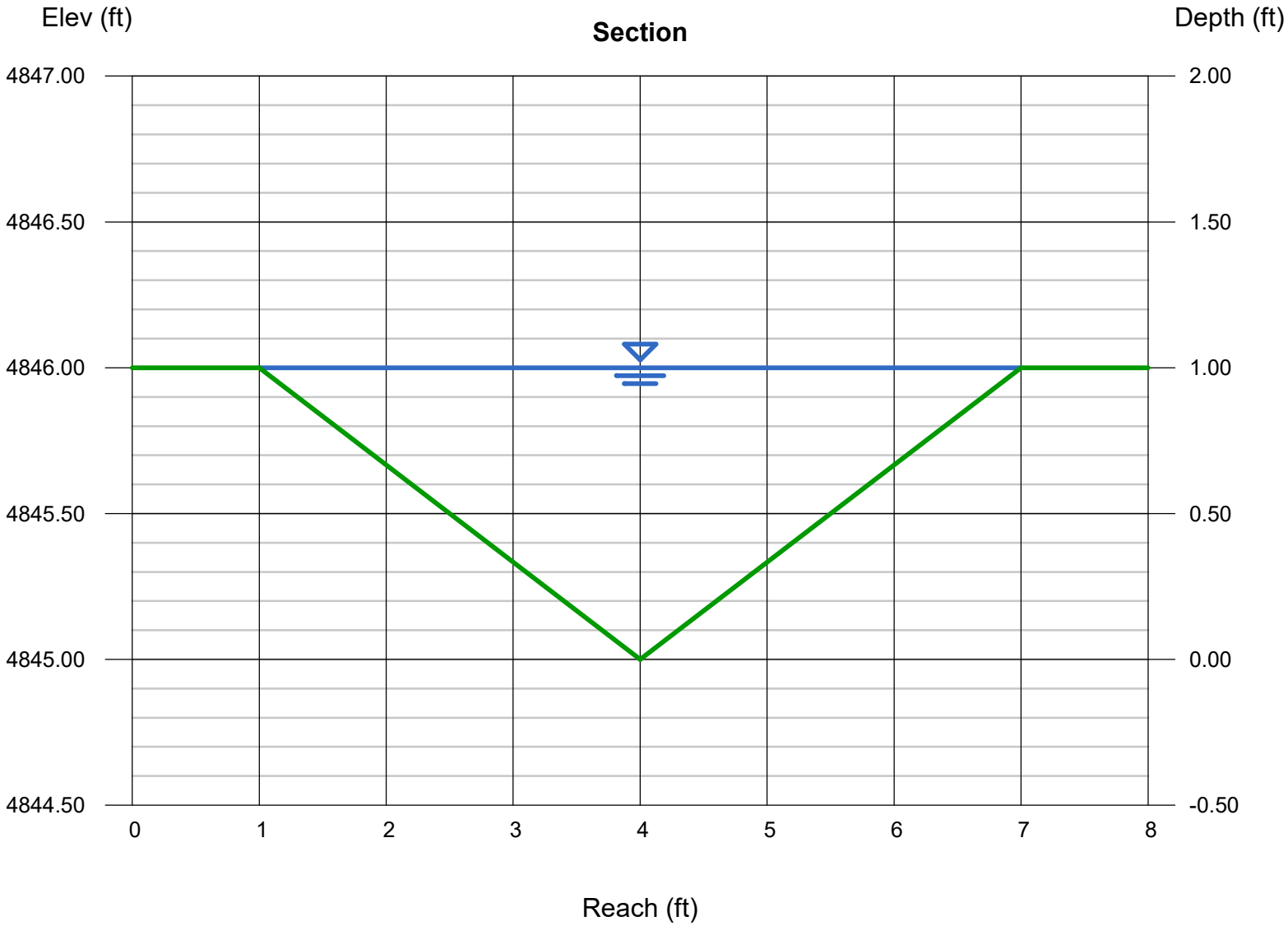
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 4845.00
Slope (%)	= 0.75
N-Value	= 0.026

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.00

Highlighted

Depth (ft)	= 1.00
Q (cfs)	= 9.029
Area (sqft)	= 3.00
Velocity (ft/s)	= 3.01
Wetted Perim (ft)	= 6.32
Crit Depth, Yc (ft)	= 0.90
Top Width (ft)	= 6.00
EGL (ft)	= 1.14



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 21 2025

Converse County Shooting Range_Drainage Ditch 2 Catchment 3

Triangular

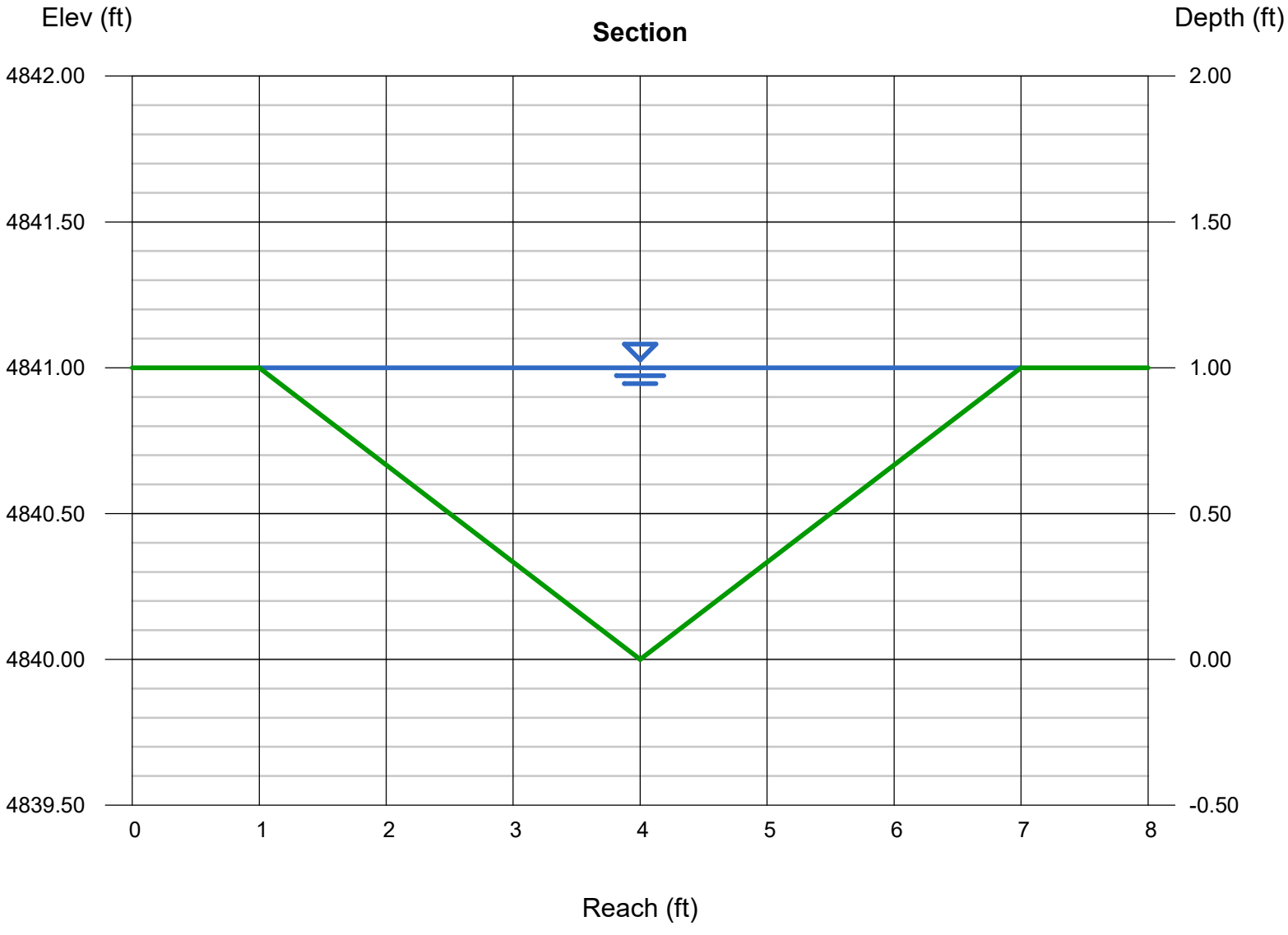
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 4840.00
Slope (%)	= 0.50
N-Value	= 0.026

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.00

Highlighted

Depth (ft)	= 1.00
Q (cfs)	= 7.372
Area (sqft)	= 3.00
Velocity (ft/s)	= 2.46
Wetted Perim (ft)	= 6.32
Crit Depth, Yc (ft)	= 0.83
Top Width (ft)	= 6.00
EGL (ft)	= 1.09



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Friday, Nov 21 2025

Converse County Shooting Range_Drainage Ditch 1 Catchment 4

Triangular

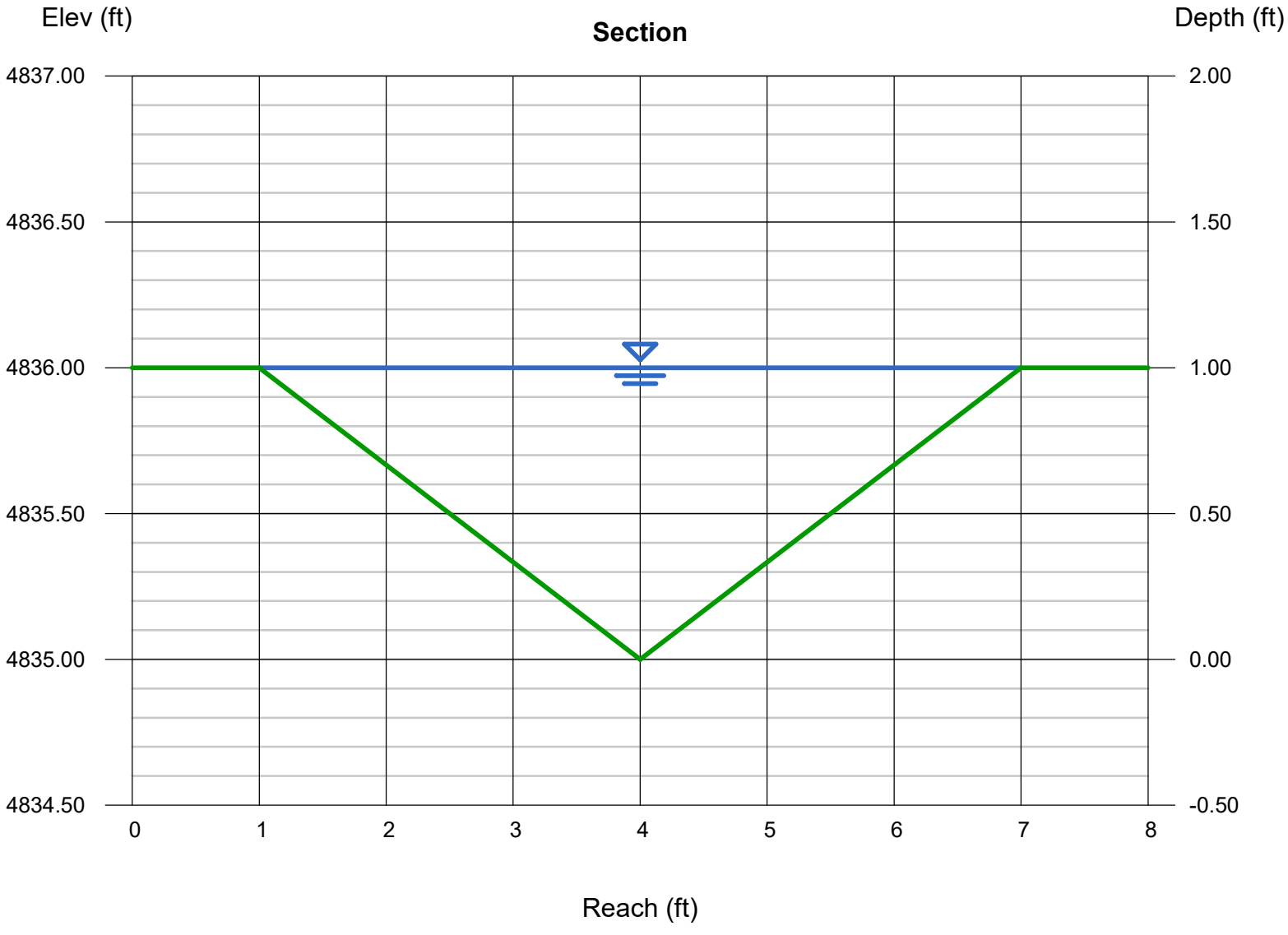
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 4835.00
Slope (%)	= 0.50
N-Value	= 0.026

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.00

Highlighted

Depth (ft)	= 1.00
Q (cfs)	= 7.372
Area (sqft)	= 3.00
Velocity (ft/s)	= 2.46
Wetted Perim (ft)	= 6.32
Crit Depth, Yc (ft)	= 0.83
Top Width (ft)	= 6.00
EGL (ft)	= 1.09



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Nov 20 2025

Converse County Shooting Range_Drainage Ditch 1 Catchment 7

Triangular

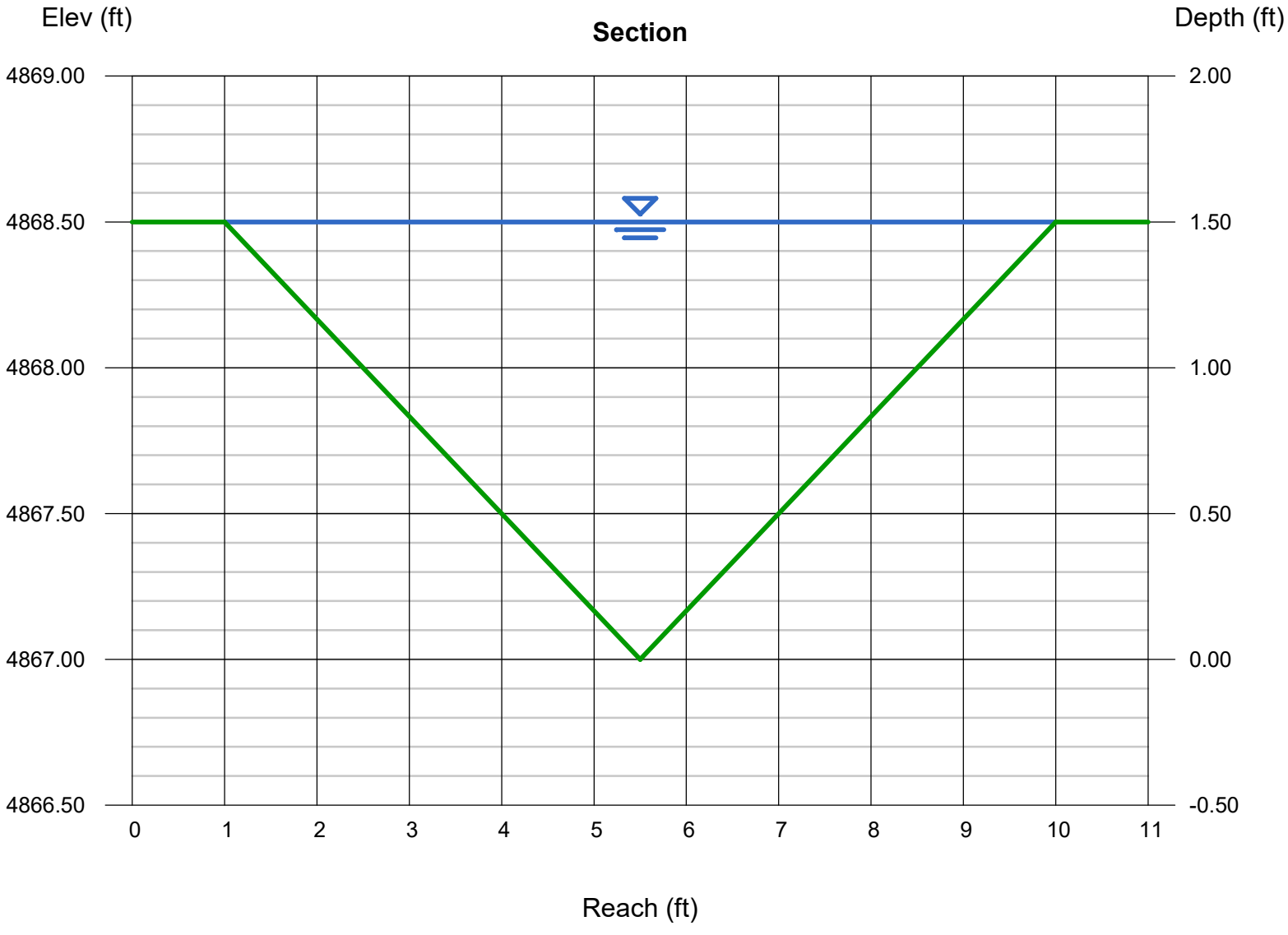
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 4867.00
Slope (%)	= 2.60
N-Value	= 0.026

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.50

Highlighted

Depth (ft)	= 1.50
Q (cfs)	= 49.57
Area (sqft)	= 6.75
Velocity (ft/s)	= 7.34
Wetted Perim (ft)	= 9.49
Crit Depth, Yc (ft)	= 1.50
Top Width (ft)	= 9.00
EGL (ft)	= 2.34



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Nov 20 2025

Converse County Shooting Range_Drainage Ditch 2 Catchment 7

Triangular

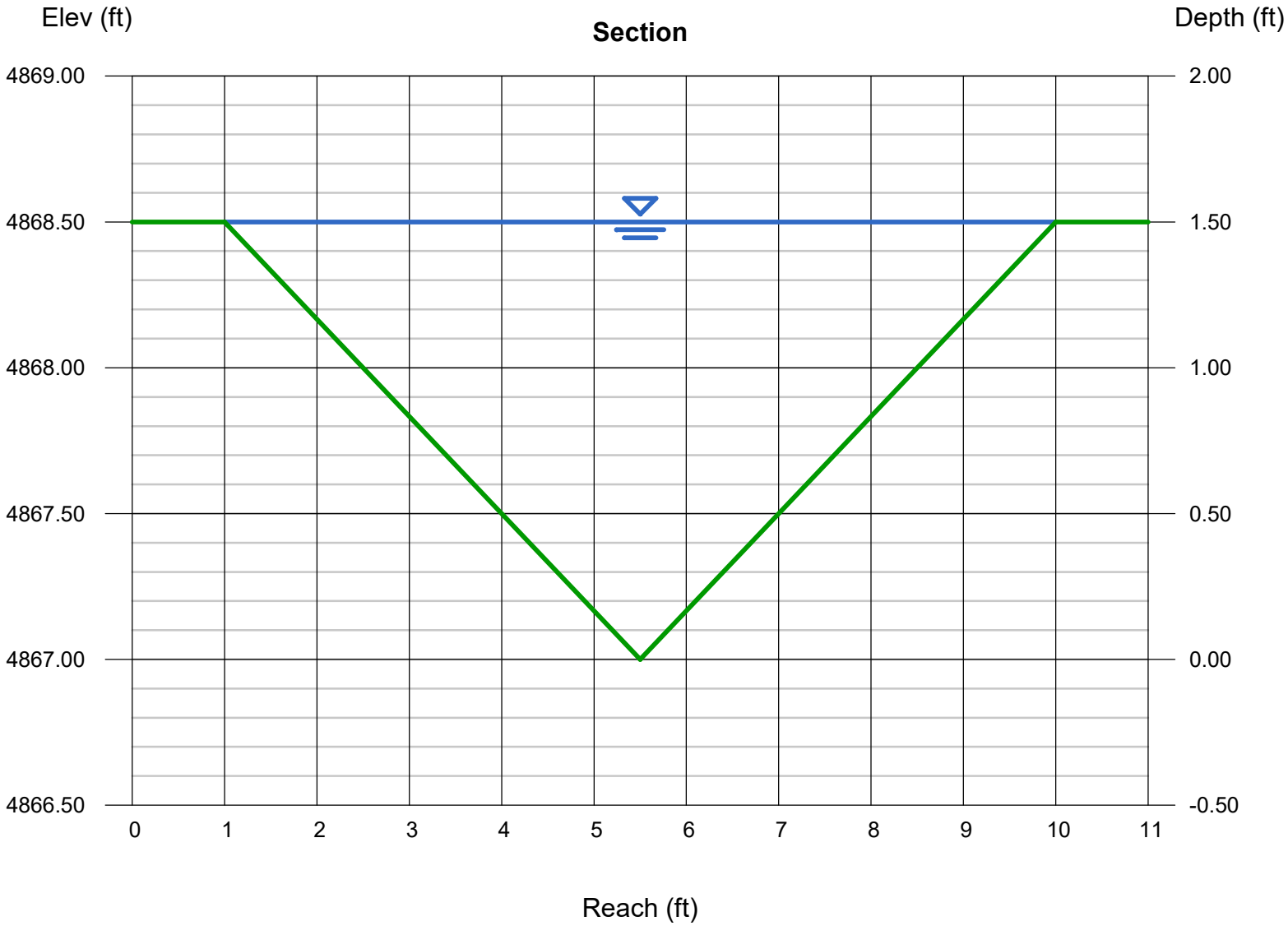
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 4867.00
Slope (%)	= 0.50
N-Value	= 0.026

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.50

Highlighted

Depth (ft)	= 1.50
Q (cfs)	= 21.74
Area (sqft)	= 6.75
Velocity (ft/s)	= 3.22
Wetted Perim (ft)	= 9.49
Crit Depth, Yc (ft)	= 1.27
Top Width (ft)	= 9.00
EGL (ft)	= 1.66



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Nov 20 2025

Converse County Shooting Range_Drainage Ditch 3 Catchment 7

Triangular

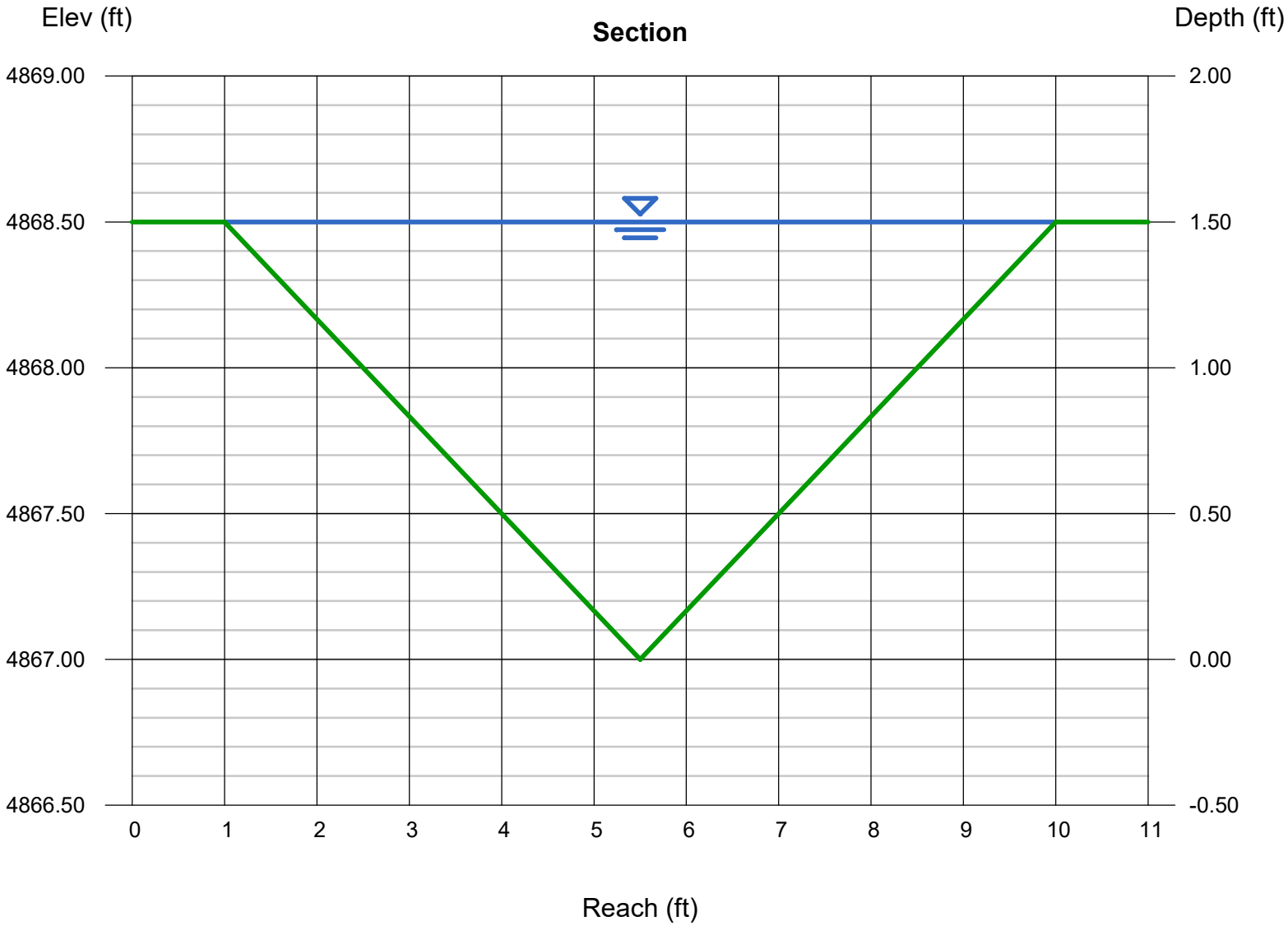
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 4867.00
Slope (%)	= 4.94
N-Value	= 0.026

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.50

Highlighted

Depth (ft)	= 1.50
Q (cfs)	= 68.33
Area (sqft)	= 6.75
Velocity (ft/s)	= 10.12
Wetted Perim (ft)	= 9.49
Crit Depth, Yc (ft)	= 1.50
Top Width (ft)	= 9.00
EGL (ft)	= 3.09



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Nov 20 2025

Converse County Shooting Range_Drainage Ditch 1 Catchment 12

Trapezoidal

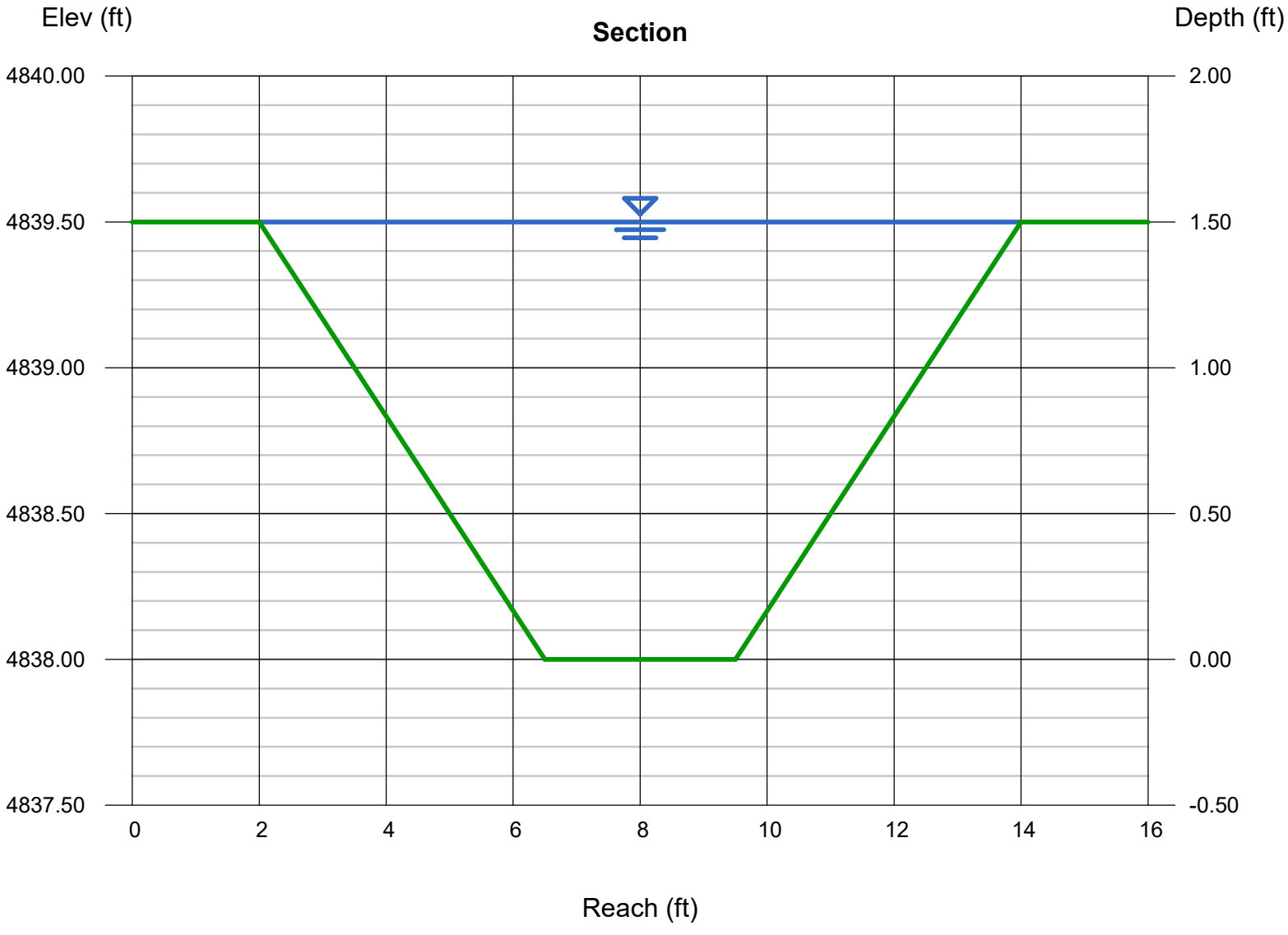
Bottom Width (ft)	= 3.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 4838.00
Slope (%)	= 0.75
N-Value	= 0.026

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 1.50

Highlighted

Depth (ft)	= 1.50
Q (cfs)	= 51.94
Area (sqft)	= 11.25
Velocity (ft/s)	= 4.62
Wetted Perim (ft)	= 12.49
Crit Depth, Yc (ft)	= 1.38
Top Width (ft)	= 12.00
EGL (ft)	= 1.83



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Nov 20 2025

Converse County Shooting Range_Drainage Ditch 2 Catchment 12

Trapezoidal

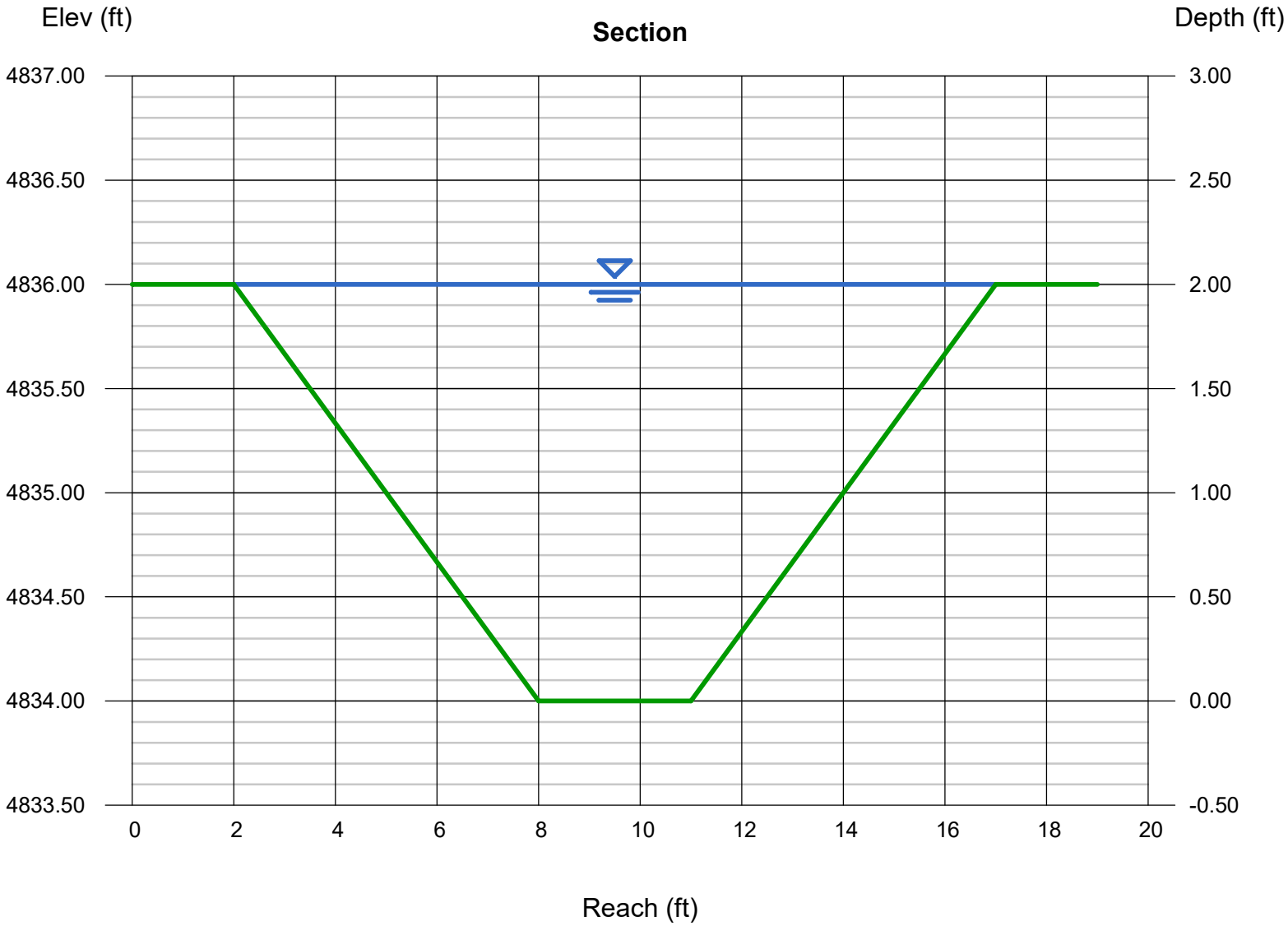
Bottom Width (ft)	= 3.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 4834.00
Slope (%)	= 0.50
N-Value	= 0.026

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 2.00

Highlighted

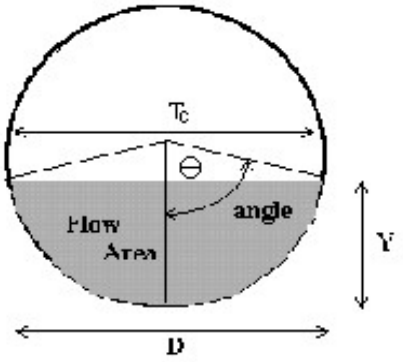
Depth (ft)	= 2.00
Q (cfs)	= 79.86
Area (sqft)	= 18.00
Velocity (ft/s)	= 4.44
Wetted Perim (ft)	= 15.65
Crit Depth, Yc (ft)	= 1.71
Top Width (ft)	= 15.00
EGL (ft)	= 2.31



CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range

Pipe ID: 18" HDPE (smooth inside walls), 0.5% slope under new entrance road



Design Information (Input)			
Pipe Invert Slope	So =	0.0050	ft/ft
Pipe Manning's n-value	n =	0.0120	
Pipe Diameter	D =	18.00	inches
Design discharge	**Q =**	**4.90**	**cfs**

Full-flow Capacity (Calculated)			
Full-flow area	Af =	1.77	sq ft
Full-flow wetted perimeter	Pf =	4.71	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	8.07	cfs

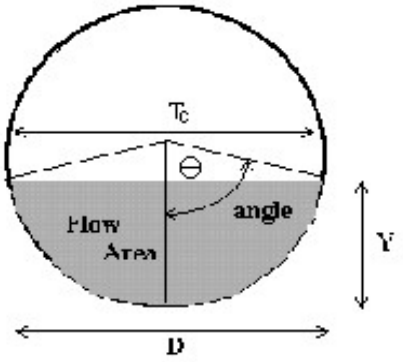
Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.70	radians
Flow area	An =	1.02	sq ft
Top width	Tn =	1.49	ft
Wetted perimeter	Pn =	2.54	ft
Flow depth	Yn =	0.84	ft
Flow velocity	Vn =	4.79	fps
Discharge	Qn =	4.90	cfs
Percent Full Flow	Flow =	60.7%	of full flow
Normal Depth Froude Number	Fr_n =	1.02	supercritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	1.71	radians
Critical flow area	Ac =	1.03	sq ft
Critical top width	Tc =	1.49	ft
Critical flow depth	Yc =	0.85	ft
Critical flow velocity	Vc =	4.73	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range

Pipe ID: 12" HDPE, under existing road draining catchment 2 into catchment 1



Design Information (Input)			
Pipe Invert Slope	So =	0.0717	ft/ft
Pipe Manning's n-value	n =	0.0215	
Pipe Diameter	D =	12.00	inches
Design discharge	**Q =**	**1.50**	**cfs**

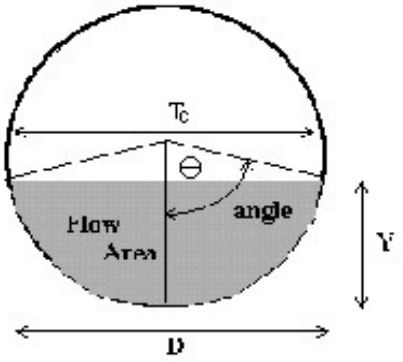
Full-flow Capacity (Calculated)			
Full-flow area	Af =	0.79	sq ft
Full-flow wetted perimeter	Pf =	3.14	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	5.78	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.26	radians
Flow area	An =	0.24	sq ft
Top width	Tn =	0.95	ft
Wetted perimeter	Pn =	1.26	ft
Flow depth	Yn =	0.35	ft
Flow velocity	Vn =	6.18	fps
Discharge	Qn =	1.50	cfs
Percent Full Flow	Flow =	26.0%	of full flow
Normal Depth Froude Number	Fr_n =	2.16	supercritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	1.61	radians
Critical flow area	Ac =	0.41	sq ft
Critical top width	Tc =	1.00	ft
Critical flow depth	Yc =	0.52	ft
Critical flow velocity	Vc =	3.64	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range
Pipe ID: 30" HDPE, 1.5% slope under existing entrance road



Design Information (Input)			
Pipe Invert Slope	So =	0.0150	ft/ft
Pipe Manning's n-value	n =	0.0215	
Pipe Diameter	D =	30.00	inches
Design discharge	**Q =**	**29.30**	**cfs**

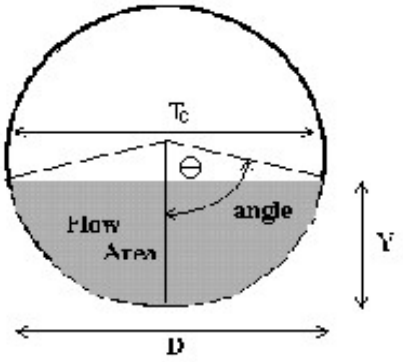
Full-flow Capacity (Calculated)			
Full-flow area	Af =	4.91	sq ft
Full-flow wetted perimeter	Pf =	7.85	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	30.46	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	2.18	radians
Flow area	An =	4.15	sq ft
Top width	Tn =	2.05	ft
Wetted perimeter	Pn =	5.46	ft
Flow depth	Yn =	1.97	ft
Flow velocity	Vn =	7.07	fps
Discharge	Qn =	29.30	cfs
Percent Full Flow	Flow =	96.2%	of full flow
Normal Depth Froude Number	Fr_n =	0.87	subcritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.07	radians
Critical flow area	Ac =	3.88	sq ft
Critical top width	Tc =	2.20	ft
Critical flow depth	Yc =	1.85	ft
Critical flow velocity	Vc =	7.54	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range
Pipe ID: 15" HDPE (smooth inside walls) in filter bed system, catchment 3



Design Information (Input)			
Pipe Invert Slope	So =	0.0075	ft/ft
Pipe Manning's n-value	n =	0.0120	
Pipe Diameter	D =	15.00	inches
Design discharge	**Q =**	**4.90**	**cfs**

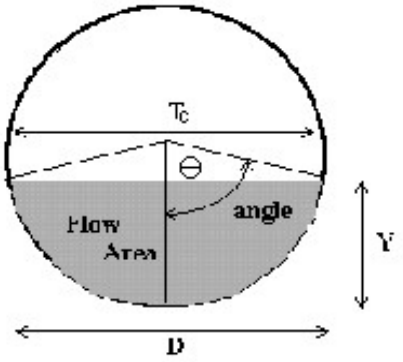
Full-flow Capacity (Calculated)			
Full-flow area	Af =	1.23	sq ft
Full-flow wetted perimeter	Pf =	3.93	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	6.08	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.94	radians
Flow area	An =	0.89	sq ft
Top width	Tn =	1.17	ft
Wetted perimeter	Pn =	2.43	ft
Flow depth	Yn =	0.85	ft
Flow velocity	Vn =	5.51	fps
Discharge	Qn =	4.90	cfs
Percent Full Flow	Flow =	80.6%	of full flow
Normal Depth Froude Number	Fr_n =	1.11	supercritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.02	radians
Critical flow area	Ac =	0.94	sq ft
Critical top width	Tc =	1.12	ft
Critical flow depth	Yc =	0.90	ft
Critical flow velocity	Vc =	5.20	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range
Pipe ID: 18" HDPE (smooth inside walls) in filter bed system, catchment 4



Design Information (Input)			
Pipe Invert Slope	So =	0.0100	ft/ft
Pipe Manning's n-value	n =	0.0120	
Pipe Diameter	D =	18.00	inches
Design discharge	**Q =**	**9.11**	**cfs**

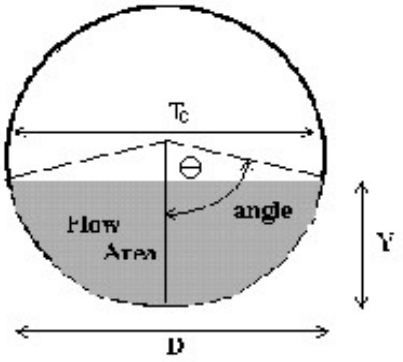
Full-flow Capacity (Calculated)			
Full-flow area	Af =	1.77	sq ft
Full-flow wetted perimeter	Pf =	4.71	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	11.41	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.93	radians
Flow area	An =	1.27	sq ft
Top width	Tn =	1.40	ft
Wetted perimeter	Pn =	2.89	ft
Flow depth	Yn =	1.01	ft
Flow velocity	Vn =	7.17	fps
Discharge	Qn =	9.11	cfs
Percent Full Flow	Flow =	79.8%	of full flow
Normal Depth Froude Number	Fr_n =	1.33	supercritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.16	radians
Critical flow area	Ac =	1.48	sq ft
Critical top width	Tc =	1.25	ft
Critical flow depth	Yc =	1.17	ft
Critical flow velocity	Vc =	6.17	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range
Pipe ID: 18" HDPE (smooth inside walls) CB-4 to MH-2, catchment 4



Design Information (Input)			
Pipe Invert Slope	So =	0.0198	ft/ft
Pipe Manning's n-value	n =	0.0120	
Pipe Diameter	D =	18.00	inches
Design discharge	**Q =**	**9.11**	**cfs**

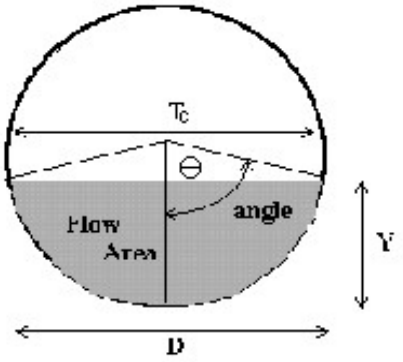
Full-flow Capacity (Calculated)			
Full-flow area	Af =	1.77	sq ft
Full-flow wetted perimeter	Pf =	4.71	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	16.06	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.65	radians
Flow area	An =	0.97	sq ft
Top width	Tn =	1.50	ft
Wetted perimeter	Pn =	2.47	ft
Flow depth	Yn =	0.81	ft
Flow velocity	Vn =	9.37	fps
Discharge	Qn =	9.11	cfs
Percent Full Flow	Flow =	56.7%	of full flow
Normal Depth Froude Number	Fr_n =	2.05	supercritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.16	radians
Critical flow area	Ac =	1.48	sq ft
Critical top width	Tc =	1.25	ft
Critical flow depth	Yc =	1.17	ft
Critical flow velocity	Vc =	6.17	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range
Pipe ID: 18" HDPE (smooth inside walls) MH-2 to CB-1, catchment 4



Design Information (Input)			
Pipe Invert Slope	So =	0.0251	ft/ft
Pipe Manning's n-value	n =	0.0120	
Pipe Diameter	D =	18.00	inches
Design discharge	**Q =**	**9.11**	**cfs**

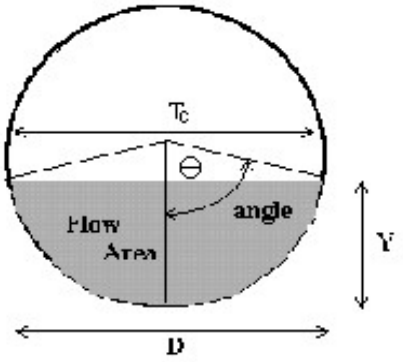
Full-flow Capacity (Calculated)			
Full-flow area	Af =	1.77	sq ft
Full-flow wetted perimeter	Pf =	4.71	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	18.08	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.58	radians
Flow area	An =	0.89	sq ft
Top width	Tn =	1.50	ft
Wetted perimeter	Pn =	2.36	ft
Flow depth	Yn =	0.75	ft
Flow velocity	Vn =	10.25	fps
Discharge	Qn =	9.11	cfs
Percent Full Flow	Flow =	50.4%	of full flow
Normal Depth Froude Number	Fr_n =	2.35	supercritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.16	radians
Critical flow area	Ac =	1.48	sq ft
Critical top width	Tc =	1.25	ft
Critical flow depth	Yc =	1.17	ft
Critical flow velocity	Vc =	6.17	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range
Pipe ID: 24" HDPE (smooth inside walls) in filter bed system, catchment 5



Design Information (Input)			
Pipe Invert Slope	So =	0.0050	ft/ft
Pipe Manning's n-value	n =	0.0120	
Pipe Diameter	D =	24.00	inches
Design discharge	**Q =**	**15.57**	**cfs**

Full-flow Capacity (Calculated)			
Full-flow area	Af =	3.14	sq ft
Full-flow wetted perimeter	Pf =	6.28	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	17.38	cfs

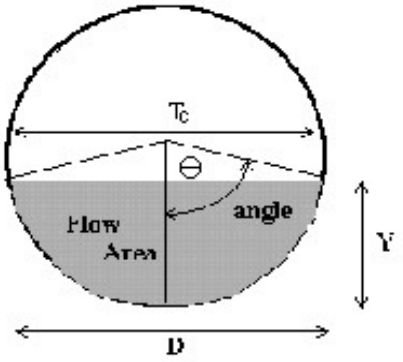
Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	2.07	radians
Flow area	An =	2.49	sq ft
Top width	Tn =	1.76	ft
Wetted perimeter	Pn =	4.14	ft
Flow depth	Yn =	1.48	ft
Flow velocity	Vn =	6.26	fps
Discharge	Qn =	15.57	cfs
Percent Full Flow	Flow =	89.6%	of full flow
Normal Depth Froude Number	Fr_n =	0.93	subcritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.01	radians
Critical flow area	Ac =	2.39	sq ft
Critical top width	Tc =	1.81	ft
Critical flow depth	Yc =	1.42	ft
Critical flow velocity	Vc =	6.52	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range

Pipe ID: 24" HDPE (smooth inside walls) from filter bed system to CB-1, catchment 5



Design Information (Input)			
Pipe Invert Slope	So =	0.0152	ft/ft
Pipe Manning's n-value	n =	0.0120	
Pipe Diameter	D =	24.00	inches
Design discharge	**Q =**	**15.57**	**cfs**

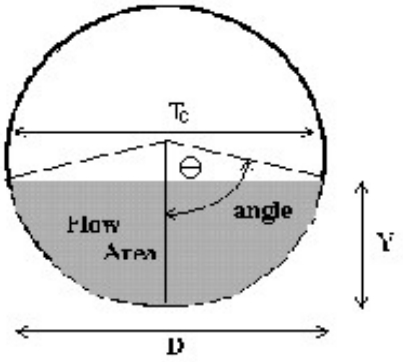
Full-flow Capacity (Calculated)			
Full-flow area	Af =	3.14	sq ft
Full-flow wetted perimeter	Pf =	6.28	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	30.30	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.59	radians
Flow area	An =	1.60	sq ft
Top width	Tn =	2.00	ft
Wetted perimeter	Pn =	3.17	ft
Flow depth	Yn =	1.02	ft
Flow velocity	Vn =	9.71	fps
Discharge	Qn =	15.57	cfs
Percent Full Flow	Flow =	51.4%	of full flow
Normal Depth Froude Number	Fr_n =	1.91	supercritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.01	radians
Critical flow area	Ac =	2.39	sq ft
Critical top width	Tc =	1.81	ft
Critical flow depth	Yc =	1.42	ft
Critical flow velocity	Vc =	6.52	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range
Pipe ID: 30" HDPE CB-1 to outfall, catchment 6



Design Information (Input)			
Pipe Invert Slope	So =	0.0190	ft/ft
Pipe Manning's n-value	n =	0.0215	
Pipe Diameter	D =	30.00	inches
Design discharge	**Q =**	**26.67**	**cfs**

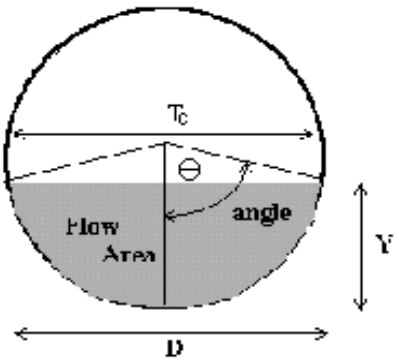
Full-flow Capacity (Calculated)			
Full-flow area	Af =	4.91	sq ft
Full-flow wetted perimeter	Pf =	7.85	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	34.28	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.90	radians
Flow area	An =	3.46	sq ft
Top width	Tn =	2.36	ft
Wetted perimeter	Pn =	4.76	ft
Flow depth	Yn =	1.66	ft
Flow velocity	Vn =	7.72	fps
Discharge	Qn =	26.67	cfs
Percent Full Flow	Flow =	77.8%	of full flow
Normal Depth Froude Number	Fr_n =	1.12	supercritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	1.99	radians
Critical flow area	Ac =	3.69	sq ft
Critical top width	Tc =	2.28	ft
Critical flow depth	Yc =	1.76	ft
Critical flow velocity	Vc =	7.22	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range
Pipe ID: 30" HDPE outhouse access road, catchment 7



Design Information (Input)			
Pipe Invert Slope	So =	0.0160	ft/ft
Pipe Manning's n-value	n =	0.0215	
Pipe Diameter	D =	30.00	inches
Design discharge	**Q =**	**28.90**	**cfs**

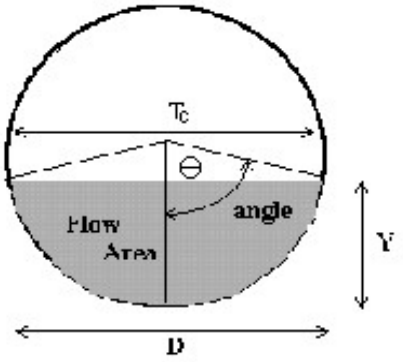
Full-flow Capacity (Calculated)			
Full-flow area	Af =	4.91	sq ft
Full-flow wetted perimeter	Pf =	7.85	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	31.46	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	2.11	radians
Flow area	An =	3.98	sq ft
Top width	Tn =	2.15	ft
Wetted perimeter	Pn =	5.26	ft
Flow depth	Yn =	1.89	ft
Flow velocity	Vn =	7.27	fps
Discharge	Qn =	28.90	cfs
Percent Full Flow	Flow =	91.9%	of full flow
Normal Depth Froude Number	Fr_n =	0.94	subcritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.06	radians
Critical flow area	Ac =	3.86	sq ft
Critical top width	Tc =	2.21	ft
Critical flow depth	Yc =	1.83	ft
Critical flow velocity	Vc =	7.49	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range
Pipe ID: 30" HDPE existing access road, catchment 7



Design Information (Input)			
Pipe Invert Slope	So =	0.0165	ft/ft
Pipe Manning's n-value	n =	0.0215	
Pipe Diameter	D =	30.00	inches
Design discharge	**Q =**	**28.90**	**cfs**

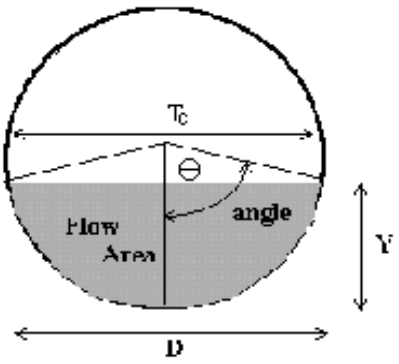
Full-flow Capacity (Calculated)			
Full-flow area	Af =	4.91	sq ft
Full-flow wetted perimeter	Pf =	7.85	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	31.94	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	2.08	radians
Flow area	An =	3.92	sq ft
Top width	Tn =	2.18	ft
Wetted perimeter	Pn =	5.21	ft
Flow depth	Yn =	1.86	ft
Flow velocity	Vn =	7.37	fps
Discharge	Qn =	28.90	cfs
Percent Full Flow	Flow =	90.5%	of full flow
Normal Depth Froude Number	Fr_n =	0.97	subcritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	2.06	radians
Critical flow area	Ac =	3.86	sq ft
Critical top width	Tc =	2.21	ft
Critical flow depth	Yc =	1.83	ft
Critical flow velocity	Vc =	7.49	fps
Critical Depth Froude Number	Fr_c =	1.00	

CIRCULAR CONDUIT FLOW (Normal & Critical Depth Computation)

Project: Converse County Shooting Range
Pipe ID: 30" HDPE, catchment 13



Design Information (Input)			
Pipe Invert Slope	So =	0.0050	ft/ft
Pipe Manning's n-value	n =	0.0120	
Pipe Diameter	D =	30.00	inches
Design discharge	**Q =**	**26.10**	**cfs**

Full-flow Capacity (Calculated)			
Full-flow area	Af =	4.91	sq ft
Full-flow wetted perimeter	Pf =	7.85	ft
Half Central Angle	Theta =	3.14	radians
Full-flow capacity	Qf =	31.51	cfs

Calculation of Normal Flow Condition			
Half Central Angle (0<Theta<3.14)	Theta =	1.97	radians
Flow area	An =	3.64	sq ft
Top width	Tn =	2.30	ft
Wetted perimeter	Pn =	4.93	ft
Flow depth	Yn =	1.74	ft
Flow velocity	Vn =	7.17	fps
Discharge	Qn =	26.10	cfs
Percent Full Flow	Flow =	82.8%	of full flow
Normal Depth Froude Number	Fr_n =	1.01	supercritical

Calculation of Critical Flow Condition			
Half Central Angle (0<Theta-c<3.14)	Theta-c =	1.97	radians
Critical flow area	Ac =	3.65	sq ft
Critical top width	Tc =	2.30	ft
Critical flow depth	Yc =	1.74	ft
Critical flow velocity	Vc =	7.15	fps
Critical Depth Froude Number	Fr_c =	1.00	

Unapproved Minutes
Board of Commissioners of Converse County
December 16, 2025

The regular meeting was called to order at 8:10 a.m. on December 16, 2025. Present in person were Commission Chairman Jim Willox; Vice Chairman Rick Grant; Commissioners Robert Short, Trent Kaufman, and Donald Blackburn; and County Clerk Karen Rimmer.

Mr. Jason Wilkinson, Road & Bridge Superintendent; Mr. John Shephard, Foreman; and Mr. Todd Mattson and Mr. Kenny Sisson, HDR Engineering, provided updates on major road construction projects including Chalk Buttes Road/Ridgewater Road Reconstruction Project. Following discussion, Mr. Grant moved to approve the Notice of Acceptability of Work for the Chalk Buttes Road/Ridgewater Road Reconstruction Project as presented by HDR Engineering; Mr. Kaufman seconded; motion carried.

Mr. Short moved to recess in Executive Session pursuant to W.S. 16-4-405(a)(vii) to consider the selection of a site or the purchase of real estate when the publicity regarding the consideration would cause a likelihood of an increase in price; Mr. Grant seconded. The meeting recessed at 8:15 a.m. and reconvened at 8:38 a.m.; no action was taken.

Road & Bridge Department updates continued with the Jenne Trail Phase 3 Reconstruction Project. The Commissioners directed the project to move forward with the understanding that the BLM may cause delays in specific sections. Following discussion, Mr. Short moved to authorize Road & Bridge to cooperate with Converse County School District No. 1 for the application of magnesium chloride onto Logston Lane for the purposes of dust suppression; Mr. Kaufman seconded; motion carried. Other departmental updates included an overview of conversations with WYDEQ regarding dust suppression on certain county and private roads; associated air quality attainment; and ongoing tasks and projects. No further action was taken.

Ms. Kristin Watson, HR Director, provided updates on current and upcoming job posting; new employees; open positions; health insurance fund status; strategy meetings with the County's health insurance consultant, IMA; upcoming Employee Appreciation Party and years of service dinner; Wellness; ongoing management training seminars; audit items; and multiple ongoing and upcoming tasks and training. No action was taken.

Mr. Short moved to recess into Executive Session pursuant to W.S. 16-4-405(a)(ii) to consider the appointment, employment, right to practice or dismissal of a public officer, professional person or employee; Mr. Kaufman seconded. The regular meeting recessed at 9:47 a.m. and reconvened at 10:13 a.m.; no action was taken.

Mr. Joel Schell, County Treasurer, and Ms. Tiffany Henson, Financial Analyst, provided an update on the Promissory Note between the State of Wyoming and Converse County, executed in April 2022 following legislative changes impacting how ad valorum payments are made to counties. The subsequent Promissory Note between Converse County and the Glenrock Cemetery District was also discussed, as well as payments made in 2023 and 2024. Following lengthy discussion of the ideal process and procedure moving forward, the Commissioners authorized the immediate expenditure of $76,800 to the State of Wyoming pursuant to the terms of the

Promissory Note. This annual payment will be included in the budget for subsequent fiscal years to include a transfer from the 100 General Fund to the 850 Loans Fund.

Mr. Artie Schubert, County Surveyor, and Mr. Chris Caskey, Technical Services Director, provided updates on the Wyoming DEQ Delegation Agreement relating to the permitting and inspection of septic systems within the county. Following an overview of the agreement and the County's Rules & Regulations and processes, Mr. Kaufman moved to approve the Delegation Agreement between the Wyoming Department of Environmental Quality and Converse County, Wyoming, through the Board of County Commissioners thereby appointing Mr. Artie Schubert, County Surveyor, as the County's Delegated Official; Mr. Short seconded; motion carried. Mr. Short moved to replace Table 1 of the County Rules and Regulations for septic systems with an updated Table 1 as presented; Mr. Grant seconded; motion carried.

Mr. Grant moved to approve and adopt:

Resolution No. 20-25

Authorizing the Converse County Delegated Official for the Wyoming Department of Environmental Quality

WHEREAS, pursuant to the Delegation Agreement Between the Wyoming Department of Environmental Quality and Converse County, Wyoming, the County is required to designate a qualified individual to act as the "Designated Local Official"; and

WHEREAS, the Designated Local Official shall be authorized to enforce and administer the review and permitting program as stated within the Delegation Agreement; and

WHEREAS, the Board of Converse County Commissioners adopted Resolution 09-16 on October 4, 2016, thereby designating the County Surveyor as the Designated Local Official; and

WHEREAS, there is now a need to update both the name and title of the Designated Local Official due to changes in personnel with the County.

THEREFORE, BE IT RESOLVED by the Board of County Commissioners, Converse County, Wyoming, that Mr. Arthur F. "Artie" Schubert, County Surveyor, is hereby designated as the "Delegated Local Official" and is therefore authorized to enforce and administer the review and permitting program per the Agreement Between the Wyoming Department of Environmental Quality and Converse County, Wyoming.

BE IT FURTHER RESOLVED that this Resolution as adopted shall constitute Attachment B to the approved and adopted Delegation Agreement between Converse County, Wyoming and the Wyoming Department of Environmental Quality.

APPROVED, PASSED AND ADOPTED this 16th day of December, 2025.

FOR THE BOARD OF COMMISSIONERS
CONVERSE COUNTY, WYOMING

ATTEST: /s/ James H. Willox, Chairman

/s/ Karen Rimmer, County Clerk

Mr. Short seconded; motion carried.

The minutes of the December 2 and 3, 2025 regular meeting were approved and ordered filed.

Mr. Short moved to approve November monthly reports: Public Health $29,168.21: Road & Bridge $34,311.95; VOID Warrant 17825/Payroll E. Herrmann, calculation error: Mr. Grant seconded; motion carried.

Mr. Short moved to approve Amendment One to the Cooperative Agreement for Responsibilities Between the Wyoming Department of Family Services, Child Support Program, and Converse County Clerk of District Court to add federally required provisions, specifically Exhibit 7, which is now incorporated into the agreement, term date June 30, 2026; Mr. Blackburn seconded; motion carried.

Mr. Kaufman moved to approve the Time & Attendance Supervisor Actions and the Time & Attendance Employee Actions guideline documents as presented; Mr. Blackburn seconded; motion carried.

Mr. Kaufman moved to approve two bore permits under CR32/Highland Loop contingent upon payment: Anadarko E&P Onshore LLC for a 24" HDPE fresh water pipe, and ONEOK for a 12" steel natural gas pipeline; Mr. Short seconded; motion carried.

Notification was received from the Office of the Wyoming State Public Defender of the pending appointments of Ms. Brittany Thorpe and Ms. Donna Domonkos as part-time Assistant Appellate Counsel within our judicial district; the Commissioners can object to the appointments by dates as specified for each candidate. There were no objections.

The Commissioners discussed other upcoming topics and potential actions for subsequent meetings; no action was taken.

Mr. Grant moved to reappoint Mr. Robert Short and Mr. Donald Blackburn to the Converse County Joint Justice Center Joint Powers Board, each for a three-year term from February 1, 2026 to January 31, 2029; Mr. Kaufman seconded; motion carried.

Mr. Blackburn moved to reappoint Mr. Jim Willox and Mr. Rick Grant and appoint Mr. Trent Kaufman to the Municipal/County Joint Powers Board for a one-year term from January 1, 2026 to December 31, 2026; Mr. Short seconded; motion carried.

Mr. Blackburn moved to accept the letter of resignation from Ms. Tia Agent from the Converse County Fair Board, effective immediately; Mr. Short seconded; motion carried.

Mr. Short moved to appoint Mr. Michael Henson to the Converse County Fair Board for an unexpired three-year term from December 16, 2025 to September 30, 2026; Mr. Kaufman seconded; motion carried.

Ms. Clara Chaffin, Ms. Heidi McCullough, and others provided an update on the recently formed "Itty Bitty 250 Committee" and it's work for the Wyoming Semiquenticential. The Committee is focused on interpretive signage projects for historical sites in Converse County, including several outside municipalities such as the mammoth dig site; Coal Creek derailment site; Fort Fetterman historical site; and Ayres Natural Bridge. No action was taken.

Ms. Jessie Dykehouse, FDL Consulting LLC, provided updates on the Glenrock Office Renovation Project and a request from the structural engineering firm to perform work to determine the foundation type and identify potential issues. Following discussion, Mr. Grant moved to authorize up to $12,000 for Pope Construction to perform exploratory digs on site as needed to identify the type of foundation and footing for the structure; Mr. Short seconded; motion

carried. Updates were also provided on the Animal Shelter Expansion Project. Following discussion, Mr. Blackburn moved to approve the Notice of Additional Services between Converse County and FDL Consulting, LLC for construction special inspections to be performed by a third party, Western Heritage Consulting and Engineering, for a total cost not to exceed $16,280, for a new total contract price of $592,007; Mr. Kaufman seconded; motion carried.

Ms. Dru Palmer, DRU Consulting, provided natural resource updates, including that the Senate and House passed the President signing H.J. Res. 130, which nullifies a Bureau of Land Management (BLM) Rule relating to "Buffalo Field Office Record of Decision and Approved Resources Management Plan Amendment"; now only Congress can over turn this directive. Comments for ESA and EPA WOTUS (Waters of the United States) are forthcoming to be submitted in December and January. Other updates included BLM Sage grouse EIS and Sage-grouse Implementation Team; Thunder Basin National Grasslands Working Group regarding prairie dogs; Wyoming BLM oil and gas lease sales; Endangered and Threatened Wildlife and Plants – Regulations for Designating Critical Habitat; and NACo, WCCA, and legislative updates and upcoming meetings. No action was taken.

Mr. Short moved to appoint Mr. John Wolfe to the Converse County Predator Management Board for a three-year term from December 2025 to December 2028, contingent upon verification of a satisfactory background check; Mr. Kaufman seconded; motion carried.

Mr. Short moved to recess in Executive Session pursuant to W.S. 16-4-405(a)(vii) to consider the selection of a site or the purchase of real estate when the publicity regarding the consideration would cause a likelihood of an increase in price; Mr. Blackburn seconded. The meeting recessed at 12:01 p.m. and reconvened at 12:21 p.m..; no action was taken.

The regular meeting adjourned at 12:21 p.m.

The next regular Commission meeting will be January 6 and 7, 2025, at 8:00 a.m., unless otherwise posted, and will be held at the Converse County Courthouse within Commission Chambers, located at 107 N. 5th Street, Douglas, Wyoming. The public are invited to attend. To be a part of the agenda, call the Clerk's Office by the Thursday before the meeting. Per W.S. §18-3-516(f), access to county information can be obtained at www.conversecountywy.gov or by calling the County Clerk's Office at (307) 358-2244.

_____

James H. Willox, Chairman

_____

Karen Rimmer, County Clerk

Publish: December 24, 2025, Douglas Budget & Glenrock Independent

Final Acceptance Certificate

Project Information

Project Number:	CM25202	**Project Name:**	FY25 Dust Suppression
Project Sponsor:	Converse County	**Contact Name:**	Dave Shaw
Telephone Number:	307-358-3602	**Email Address:**	dave.shaw@conversecountywy.gov

Instructions

Local Public Agencies (LPAs) are required to submit a certification of project completion to WYDOT prior to reimbursement of the final 10% of project funds. To do so, the LPA must provide the following attachment and information:

******Failure to attach the required documents may result in a delay of project.******

Required Attachments

**Affidavit for publication for final settlement and project completion.*

Please fill-in the sections highlighted in gray

The aforementioned project has been completed in accordance with the plans and specifications dated:

Converse County and agrees to accept full maintenance thereof, this

6th day of January 2026 .

Chairman of governing body, Signature

Attest Signature

The aforementioned project has been designed and constructed according to accepted engineering and architectural standards.

Signature

n/a
Name of Architectural or Engineering Firm

n/a
License Number (if applicable)

n/a
Printed Name

The aforementioned project is accepted as complete as certified above by the sponsoring entity and its professional consulting engineer and is hereby approved for final payment.

WYDOT

Once completed, email a copy of this signed document along with the supporting documentation to your WYDOT LGC Contact.

ORIGINAL

For Administrative Use Only
Permit # ROW02123022025011
Check # _____ Date 12-30-25
Inspections _____

Converse County
Public Utilities Parallel Right-of-Way Permit

CONVERSE COUNTY, acting by and through its Board of Commissioners, hereinafter referred to as the "Board", hereby evidences its permission that Lyve Broadband (Tim Cowell) (applicant) of Lyve Broadband (company), State of WY, may conduct the following activities within the right-of-way easement granted heretofore to Converse County for a county highway, to wit: bury 1.25" HDPE for Coax Line (Trench) 30" back of ROW (this is Done); that the location of such activity shall be limited to that portion of Converse County Road Number CR 2, commonly referred to as the Anderson Dairy Road, located in: PT. NW4 S28 T32 R71 (Township, Range, and Section), mile marker 1 on CR 2, with Latitude 42.72383 and Longitude W 105.38227 (please use decimal degree format to four (4) digits right of the decimal) at center line of road.

The Permittee hereby acknowledges and agrees to as follows:

1. That the permit hereby allowed is conditional to the extent that the right-of-way granted to Converse County may have been given for the limited and expressed purposes of laying out, constructing and maintaining a county highway and that the Permittees may be in conflict therewith, and therefore, subject to objection by the grant of the right-of-way or his heirs, executors administrators, successors or assigns, in which event it may be necessary and required that the Permittee remove his activity and facilities from the right-of-way, in the alternative, to make appropriate agreements with the grantor of the right-of-way, or his heirs, executors administrators, successors or assigns for the additional use.

2. That the Permittee shall forever indemnify the County of Converse, its Board and its officers, agents and employees and otherwise hold them harmless from all liability or expense for damage to the property of others or for injury to or death of any person arising wholly or in part or in connection with the construction, maintenance, or use of such facility by the Permittee.

3. That the permit herein given is exclusive and shall not be assigned, modified, or otherwise transferred without the prior written consent of the Board.

4. That the facility of the Permittee shall be placed in such a manner as will conform with recognized standards and applicable federal, state or local laws and ordinances and as otherwise directed by the Board.

5. That public utilities including but not limited to; utility line poles, cables, and all buried public utilities will be as far as possible from the center line of the road, and in no case will the poles be closer than twenty-eight (28) feet from the center line of the road without the expressed written consent of the Board.

6. That utility lines and cables be buried at a minimum depth of seventy-two (72) inches. All other utilities shall be buried at the depth required by federal, state, and local laws. All bores within the right-of-way must be a minimum of ten (10) feet below the lowest point of the right-of-way.

7. Approval of this agreement for use of the right-of-way requires the public utility to move or adjust its equipment at its expense when determined by the Board that such is necessary.

8. The facilities of the Permittee shall in no way interfere with, or encroach upon, the use of the county road by the public; provided however, that in instances whereby it becomes necessary for the Permittee to traverse the roadway, notice of such intent shall be given to the Road & Bridge Department, not less than five (5) days prior to commencing work. Such activity shall be subject to the supervision and inspection by the Board or its representatives, and Permittee shall place and maintain permanent type markers on each side of the road, at places designated by the Road & Bridge Department, noting the location, direction, and phone contact information of said traversing facility.

9. During all times of construction, maintenance and/or repair, the Permittee shall be responsible for the placement of proper advisory signs on either side of the work area, as regulated in the latest edition of the MUTCD for streets and highways, or additionally as the Board or its representatives may direct, for the purpose of cautioning travelers upon county roads of construction activities and that danger exists; and, otherwise to take all reasonable measures to prevent injury to persons and/or property.

10. The Permittee agrees to repair, to the satisfaction of the Board or its representatives, any portion of the county highway or right-of-way to a condition equal to or better than its condition prior to the commencement of the Permittee's operations.

11. The facilities of the Permittee shall not be installed under any circumstances without prior written permission of the Superintendent of the Road & Bridge Department within ten (10) feet of the traveled portion of the county road.

12. Any alteration or modification of the facility, located within the right-of-way, requested or directed by the Board or its representatives shall be commenced and completed without delay by the Permittee at its sole expense.

13. That by its signature and seal affixed hereto does hereby accept and confirm all of the conditions and terms hereby imposed upon the Permittee and agrees to its binding effect.

14. Permittee is responsible for all damages caused by activities outside of the scope of this permit.

15. That the Permittee agrees to the following fee schedule as applicable:

FEE SCHEDULE

$25 Parallel Right-of-Way Fee up to five (5) miles
$25 Fee per each additional five (5) miles
$100 Inspection Fee for locations within twenty (20) air mile radius of Road & Bridge Office
$150 Inspection Fee for locations greater than twenty (20) air mile radius of Road & Bridge Office

16. The Road & Bridge Headquarters is 44 Twin Bridges Road, Douglas, WY 82633, with a mailing address of P.O. Box 770, Douglas, WY 82633, and Latitude of 42.7697° and Longitude of -105.3837°.

17. UTILITY ADJUSTMENTS: It will be the responsibility of the applicant to notify all utilities before construction work begins. Failure to do so may result in personal injury and very costly repair of the utility at the expense of the applicant. (There are many underground utilities located within Converse County right-of-ways.) If utility adjustments are required, the applicant will be responsible for all associated costs.

18. All approaches will be bored unless prior Converse County Road & Bridge Superintendent approval is received.

19. **This permit does not grant ANY access to and from the County roadway. If a temporary access is needed please initial on this line and apply for a temporary access _____.**

All checks must be addressed to Converse County Road & Bridge and accompany each permit application prior to action by the County.

IN WITNESS WHEREOF, the Permittee and the Board of County Commissioners have set their respective hands and seals this _____ day of _____, _____.

Board of Commissioners
Converse County, Wyoming

_____
Chairman

_____
Attest:

Received and Approved By:

_____
Road & Bridge Foreman

Permittee

Tony Carroll
Printed Name of Permittee

234 N Wind River dr
Address of Permittee

Douglas Wy 82633
City, State, and Zip Code

308 940 1555
Contact Phone Number

tony.carroll@vyvebb.com
Email Address of Permittee

Construction Coordinator
Signature and Title

Converse County
Public Utilities Parallel Right-of-Way Permit

Land Owner Permission

I, the undersigned property owner, acknowledge that,

Company: Uyve Broadband

Address: 234 N windriver dr

City: Douglas

State: Wy

Phone: 308 940 1555

Email: tony.carroll@uywebb.com

The above company has my permission to bore from my land located:

Road Number _____ Mile Marker _____

Township _____ Range _____ Section _____

Latitude _____, Longitude _____ at center line of road
(please use decimal degree format to 4 digits right of the decimal)

By signing below, I acknowledge that I have an agreement with the above company.

Signature: _____ Date: _____
Landowner

Signature: Tony Carroll Date: 09-18-25
Company Representative

Printed Name: Tony Carroll

ORIGINAL

For Administrative Use Only
Permit # B02126802025156
Check # _____ Date 12-30-25
Inspections _____

Converse County
Bore Permit

CONVERSE COUNTY, acting by and through its Board of Commissioners, hereinafter referred to as the "Board", hereby evidences its permission that Tony Carroll (applicant) of Vyve Broadband (company), State of WY, may conduct the following activities within the right-of-way easement granted heretofore to Converse County for a county highway, to wit:

Bore Anderson Dairy Rd CR2 with 1.25" HDPE duct for coax Line;

that the location of such activity shall be limited to that portion of Converse County Road Number CR2, commonly referred to as the Anderson Dairy Road, located in: S28 T32 R71 (Township, Range, and Section), mile marker 1 on CR 2, with Latitude 42.72081 and Longitude W 105.38928 (please use decimal degree format to four (4) digits right of the decimal) at center line of road.

The Permittee hereby acknowledges and agrees to as follows:

1. That the permit hereby allowed is conditional to the extent that the right-of-way granted to Converse County may have been given for the limited and expressed purposes of laying out, constructing and maintaining a county highway and that the Permittees may be in conflict therewith, and therefore, subject to objection by the grant of the right-of-way or his heirs, executors administrators, successors or assigns, in which event it may be necessary and required that the Permittee remove his activity and facilities from the right-of-way, in the alternative, to make appropriate agreements with the grantor of the right-of-way, or his heirs, executors administrators, successors or assigns for the additional use.

2. That the Permittee shall forever indemnify the County of Converse, its Board and its officers, agents and employees and otherwise hold them harmless from all liability or expense for damage to the property of others or for injury to or death of any person arising wholly or in part or in connection with the construction, maintenance, or use of such facility by the Permittee.

3. That the permit herein given is exclusive and shall not be assigned, modified, or otherwise transferred without the prior written consent of the Board.

4. That the facility of the Permittee shall be placed in such a manner as will conform with recognized standards and applicable federal, state or local laws and ordinances and as otherwise directed by the Board.

5. That public utilities including but not limited to; utility line poles, cables, and all buried public utilities will be as far as possible from the center line of the road, and in no case will the poles be closer than twenty-eight (28) feet from the center line of the road without the expressed written consent of the Board.

6. That utility lines and cables be buried at a minimum depth of seventy-two (72) inches. All other utilities shall be buried at the depth required by federal, state, and local laws. All bores within the right-of-way must be a minimum of ten (10) feet below the lowest point of the right-of-way.

7. Approval of this agreement for use of the right-of-way requires the public utility to move or adjust its equipment at its expense when determined by the Board that such is necessary.

8. The facilities of the Permittee shall in no way interfere with, or encroach upon, the use of the county road by the public; provided however, that in instances whereby it becomes necessary for the Permittee to traverse the roadway, notice of such intent shall be given to the Road & Bridge Department, not less than five (5) days prior to commencing work. Such activity shall be subject to the supervision and inspection by the Board or its representatives, and Permittee shall place and maintain permanent type markers on each side of the road, at places designated by the Road & Bridge Department, noting the location, direction, and phone contact information of said traversing facility.

9. During all times of construction, maintenance and/or repair, the Permittee shall be responsible for the placement of proper advisory signs on either side of the work area, as regulated in the latest edition of the MUTCD for streets and highways, or additionally as the Board or its representatives may direct, for the purpose of cautioning travelers upon county roads of construction activities and that danger exists; and, otherwise to take all reasonable measures to prevent injury to persons and/or property.

10. All equipment used during construction, maintenance, and/or repair is properly registered, including, but not limited to Wyoming Mobile Machinery Stickers & Vehicle Registrations.

11. The Permittee agrees to repair, to the satisfaction of the Board or its representatives, any portion of the county highway or right-of-way to a condition equal to or better than its condition prior to the commencement of the Permittee's operations.

12. The facilities of the Permittee shall not be installed under any circumstances without prior written permission of the Superintendent of the Road & Bridge Department within ten (10) feet of the traveled portion of the county road.

13. Any alteration or modification of the facility, located within the right-of-way, requested or directed by the Board or its representatives shall be commenced and completed without delay by the Permittee at its sole expense.

14. That by its signature and seal affixed hereto does hereby accept and confirm all of the conditions and terms hereby imposed upon the Permittee and agrees to its binding effect.

15. Permittee is responsible for all damages caused by activities outside of the scope of this permit.

16. That the Permittee agrees to the following fee schedule as applicable:

FEE SCHEDULE

$125 Bore Fee per hole
$100 Inspection Fee for locations within twenty (20) air mile radius of Road & Bridge Office
$150 Inspection Fee for locations greater than twenty (20) air mile radius of Road & Bridge Office

17. The Road & Bridge Headquarters is 44 Twin Bridges Road, Douglas, WY 82633, with a mailing address of P.O. Box 770, Douglas, WY 82633, and Latitude of 42.7697° and Longitude of -105.3837°.

18. UTILITY ADJUSTMENTS: It will be the responsibility of the applicant to notify all utilities before construction work begins. Failure to do so may result in personal injury and very costly repair of the utility at the expense of the applicant. (There are many underground utilities located within Converse County right-of-ways.) If utility adjustments are required, the applicant will be responsible for all associated costs.

19. **This permit does not grant ANY access to and from the County roadway. If a temporary access is needed please initial on this line and apply for a temporary access _____.**

All checks must be addressed to Converse County Road & Bridge and accompany each permit application prior to action by the County.

IN WITNESS WHEREOF, the Permittee and the Board of County Commissioners have set their respective hands and seals this _____ day of _____, _____.

Board of Commissioners
Converse County, Wyoming

_____
Chairman

_____
Attest:

Received and Approved By:

_____
Road & Bridge Foreman

Permittee

Tony Carroll
Printed Name of Permittee

234 N Windriver Dr
Address of Permittee

Douglas WY 82633
City, State, and Zip Code

308 940 1555
Contact Phone Number

tony.carroll@vyvebb.com
Email Address of Permittee

Tony C construction coordinator
Signature and Title

Converse County
Bore Permit

Land Owner Permission

I, the undersigned property owner, acknowledge that,

Company: Vyve Broadband

Address: 234 N windriver Dr

City: Douglas

State: Wy

Phone: 308 940 1555

Email: tony.Carroll@vyvebb.com

The above company has my permission to bore from my land located:

Road Number _____ Mile Marker _____

Township _____ Range _____ Section _____

Latitude _____, Longitude _____ at center line of road
(please use decimal degree format to 4 digits right of the decimal)

By signing below, I acknowledge that I have an agreement with the above company.

Signature: _____ Date: _____
Landowner

Signature: _____ Date: 12-18-25
Company Representative

Printed Name: Tony Carroll

Douglas Trap Club

12/18/25

To the Converse County Commissioners,

The Douglas Trap Club is requesting an extension for our lease through to November 3, 2027. Thank you.

The Douglas Trap Club Board

Pres

288 Irvine Rd
Douglas, WY 82633

307-351-0343
douglastrapclub@gmail.com