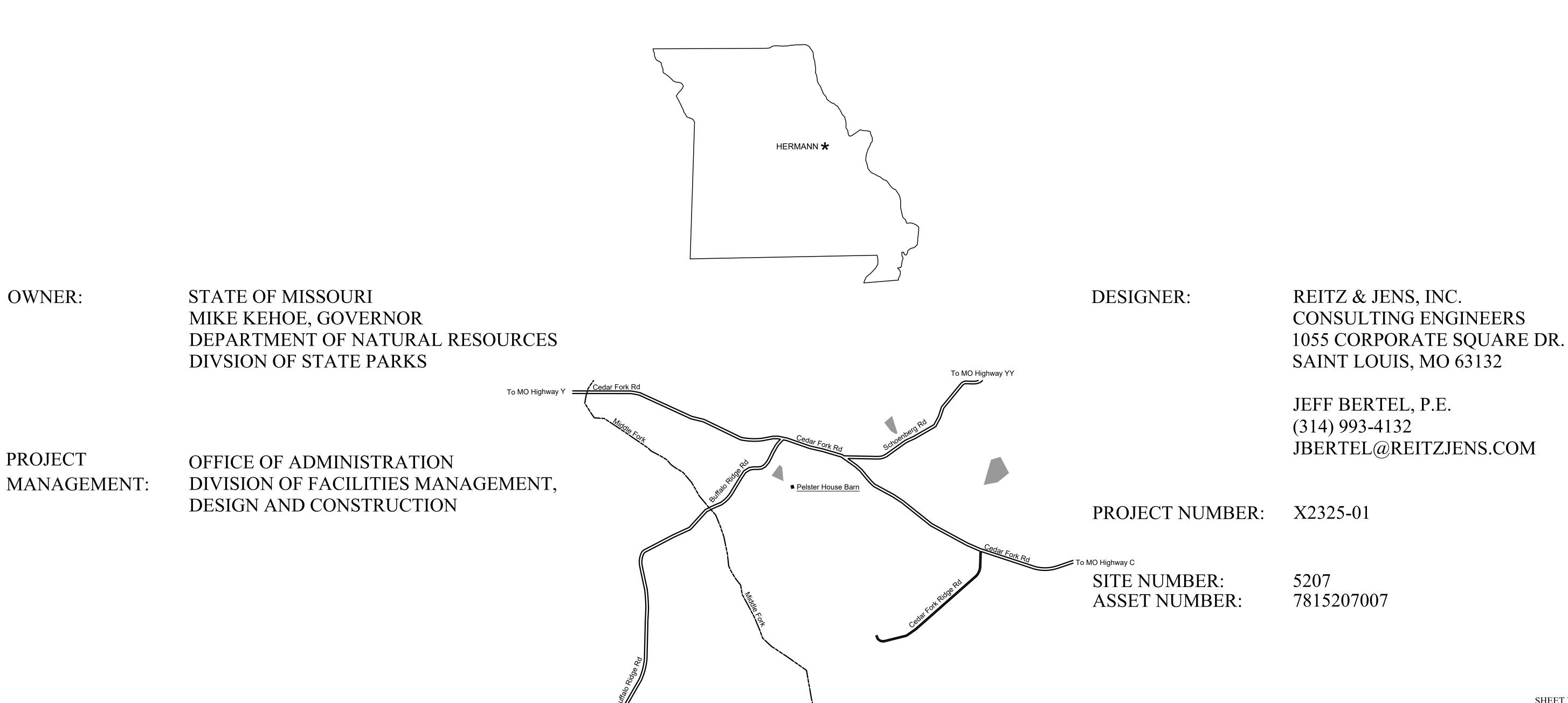
Design & Construct Roadway and Parking Lot Deutschheim State Historic Site Pelster House Barn Hermann, Missouri

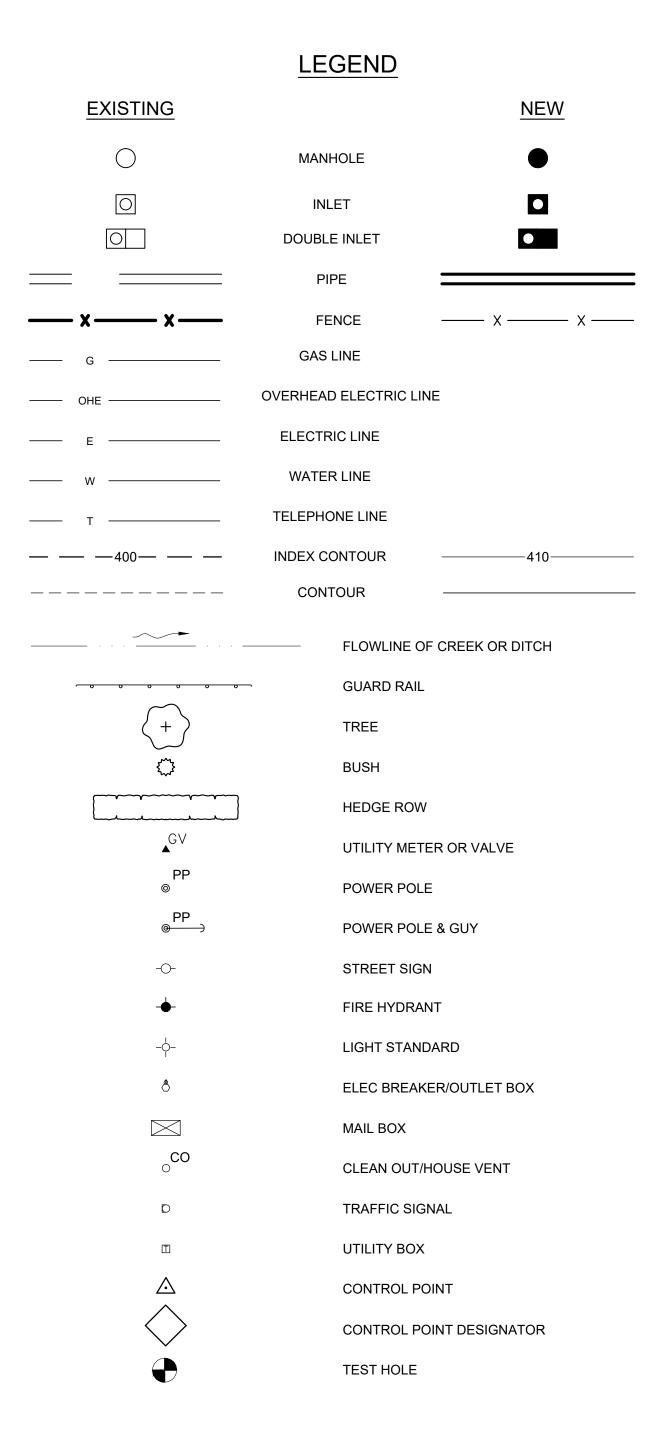


To Bald Hill Rd

SHEET NUMBER:

G-001

1 OF 10 SHEETS
OCTOBER 27, 2025



ABBREVIATIONS AGGREGATE TEST HOLE - SOIL BORING BASELINE OF CONSTRUCTION BENCH MARK CENTERLINE CORRUGATED METAL PIPE **ELEVATION ELEV EXISTING** FLARED END SECTION FLOWLINE MAXIMUM MAX MINIMUM SANITARY STM STORM (TBR) TO BE REMOVED TO BE REMOVED AND REPLACED (TBRR) TCE TEMPORARY CONSTRUCTION EASEMENT (TYP) USE IN PLACE

PROPERTY LINE

PAVEMENT

WIDTH

117	969635.9549	599567.7264	VAULT
118	969619.0218	599567.8623	VAULT
119	969664.2472	599521.5079	KIOSK CONC PAD
120	969664.087	599501.5548	KIOSK CONC PAD
121	969654.0873	599501.6351	KIOSK CONC PAD
122	969654.2476	599521.5882	KIOSK CONC PAD
123	969677.5171	599513.0297	CL STA 4+67.12, PC, RADIUS=98'
124	969648.6565	599444.3604	CL STA 5+43.53, PT, RADIUS=98'
125	969497.1788	599347.8046	CL STA 7+19.01, FES
126	969531.3453	599313.48	CL STA 7+19.01, FES
127	969429.8161	599226.528	CL STA 8+52.31, PC, RADIUS=50'
128	969419.856	599218.8462	CL STA 8+64.92, PT, RADIUS=50'
129	969363.179	599185.573	CL STA 9+30.64 = 12+63.44, PT, RADI
130	969317.7749	599177.5879	CL STA 12+16.34, PC, RADIUS=66'
131	969328.7613	599165.3674	CL STA 9+70.55, PC, RADIUS=56'
132	969314.5681	599153.4884	CL STA 9+89.14, PT, RADIUS=56'
133	969270.0527	599186.4043	CL STA 11+67.81, PT, RADIUS=34.5'
134	969298.0892	599135.4615	CL STA 10+13.57, PC, RADIUS=60'
135	969277.2889	599120.731	CL STA 10+39.25, PT=PC, RADIUS=34

Control i onit #	Northing	Lasting	Description
100	969691.5756	599978.638	CL STA 0+00
101	969686.5691	599964.4392	CL STA 0+15.06, PC, RADIUS=100'
102	969680.8814	599931.9887	CL STA 0+48.15, PT, RADIUS=100'
103	969712.1825	599929.1758	CL STA 0+50.17, TURN OUT APRON
104	969678.9803	600001.2355	CL STA 0+00, TURN OUT APRON
105	969665.3995	599851.288	CL STA 1+28.97, CUT-OFF WALL
106	969695.2692	599855.6849	CL STA 1+24.34, FES
107	969664.3927	599746.6597	CL STA 2+33.61 CUT-OFF WALL
108	969696.0094	599745.2464	CL STA 2+34.77, AI
109	969668.3982	599871.8686	CL STA 1+08.37, BACK OF MBW
110	969667.1015	599708.7254	CL STA 2+71.52, BACK OF MBW
111	969666.7822	599670.621	CL STA 3+09.62, BEGIN PARKING AREA
112	969689.6572	599530.4328	CL STA 4+49.62, END PARKING AREA
113	969670.6578	599530.5854	CL STA 4+19.62, BEGIN ACCESSIBLE PARKING CONC PAD
114	969645.6586	599530.7861	CL STA 4+49.62, END ACCESSIBLE PARKING CONC PAD
115	969635.745	599541.5835	VAULT
116	969618.8119	599541.7195	VAULT
117	969635.9549	599567.7264	VAULT
118	969619.0218	599567.8623	VAULT
119	969664.2472	599521.5079	KIOSK CONC PAD
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134	969298.0892	599135.4615	CL STA 10+13.57, PC, RADIUS=60'
135	969277.2889	599120.731	CL STA 10+39.25, PT=PC, RADIUS=34.5'

Control Point Table

Description

Control Point # Northing Easting

LIST OF DRAWINGS

<u>LIST OF DIVAVINGS</u>						
Cover Sheet		G-00				
Notes		G-00				
Plan and Profile:	Sta 0+00 to 2+56.13	C-10				
Plan and Profile:	Sta 2+56.13 to 8+72.91	C-10				
Plan and Profile:	Sta 8+72.91 to 12+63.44	C-10				
Typical Cross Sections						
Storm Profiles						
Modular Block Wall Profile and Details						
Details		C-50				
Details						

STATE OF MISSOURI MIKE KEHOE, **GOVERNOR**



DATE: 10/27/2025 Jeff Bertel

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CONSULTING ENGINEERS

1055 Corporate Square Drive St. Louis, Missouri 63132 314.993.4132 Missouri Professional Engineering Corporation License No. 000215

OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

STATE OF MISSOURI **DEPARTMENT OF** NATURAL RESOURCES DIVISION OF STATE PARKS

Design & Construct Roadway and Parking Lot

Deutschheim State Historic Site Pelster House Barn Lat: 38.492590 Long: -91.272857 Hermann, MO 63068

PROJECT # X2325-01 SITE# 5207 FACILITY # 7815207007

REVISION: DATE: **REVISION:** DATE: **REVISION:** DATE: ISSUE DATE: 10/27/2025

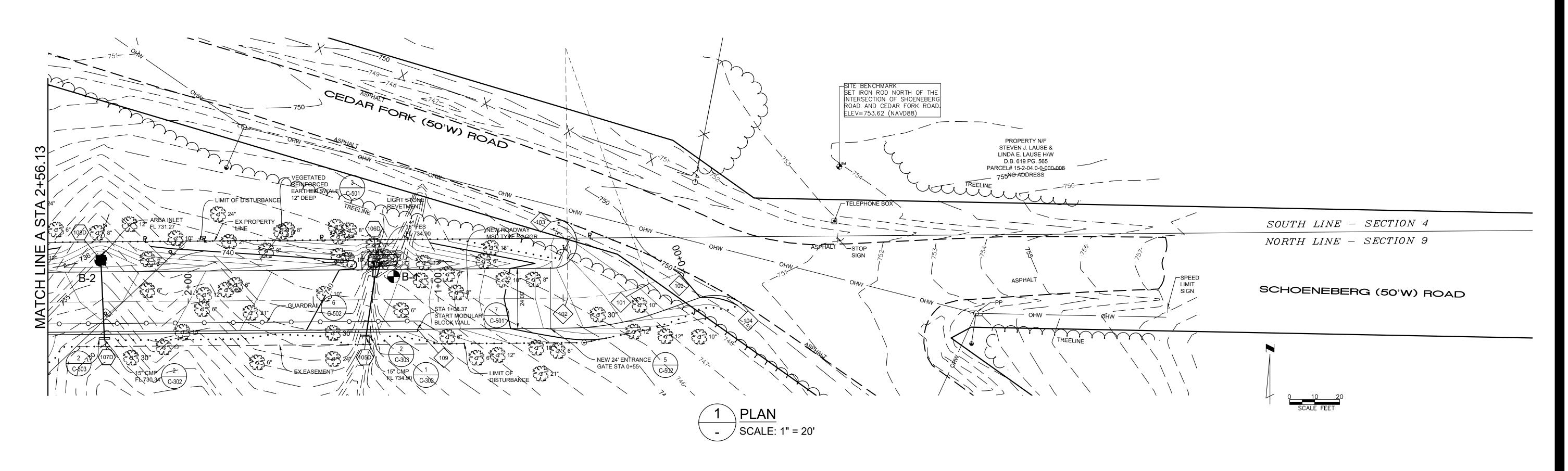
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DRAWN BY: mgb
CHECKED BY: jdb

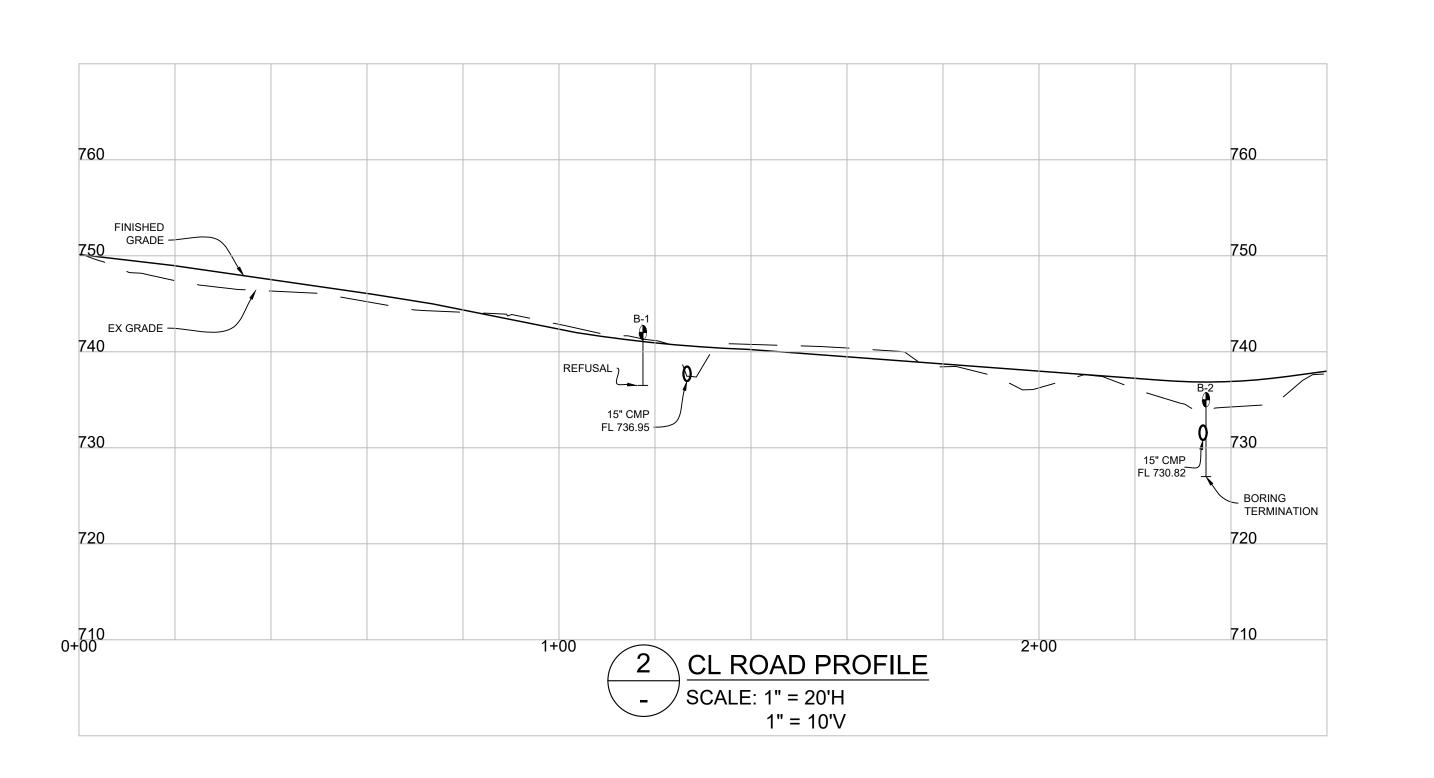
DESIGNED BY: <u>lwl</u>

SHEET TITLE:

NOTES

SHEET NUMBER:





NOTE:

1. Areas disturbed outside of the limits of the vegetated reinforced earthen swales, and not paved, shall be seeded and protected with a revegetation blanket.

STATE OF MISSOURI MIKE KEHOE, GOVERNOR



Jeff Bertle Professional Engineer

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REVISION:
DATE:
REVISION:
DATE:
DATE:

ISSUE DATE: 10/27/2025

CAD DWG FILE:C-101

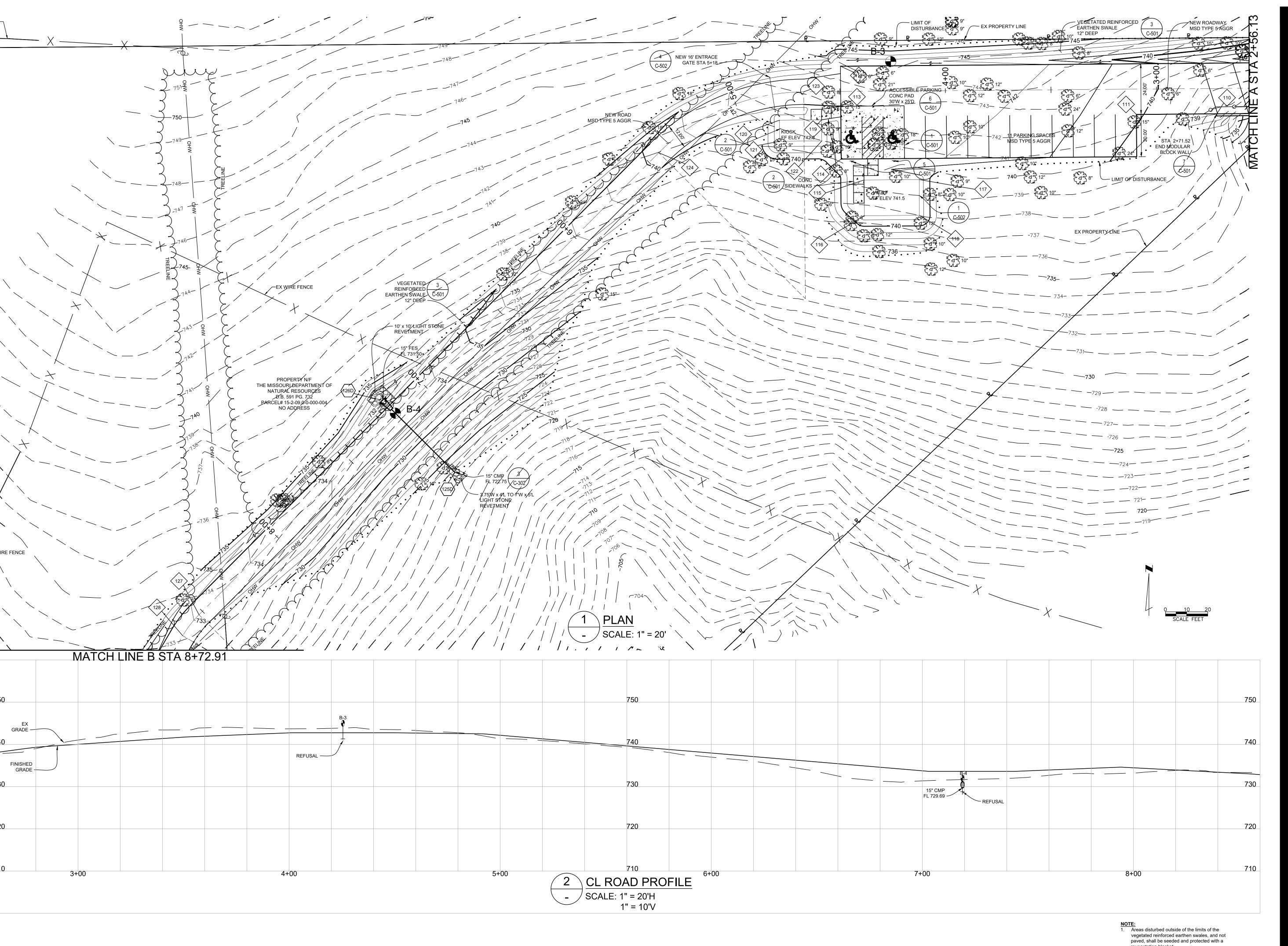
CAD DWG FILE:C-101
DRAWN BY: mgb
CHECKED BY: jdb
DESIGNED BY: lwl

SHEET TITLE:

PLAN AND PROFILE STA 0+00 TO 2+56.13

SHEET NUMBER:

C-10





Jeff Bertel
Professional Engineer

License No.: PE-2010025265

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Deutschheim State Historic Site Pelster House Barn Lat: 38.492590 Long: -91.272857 Hermann, MO 63068

PROJECT # X2325-01 SITE # 5207 FACILITY # 7815207007

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REVISION:
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DATE:

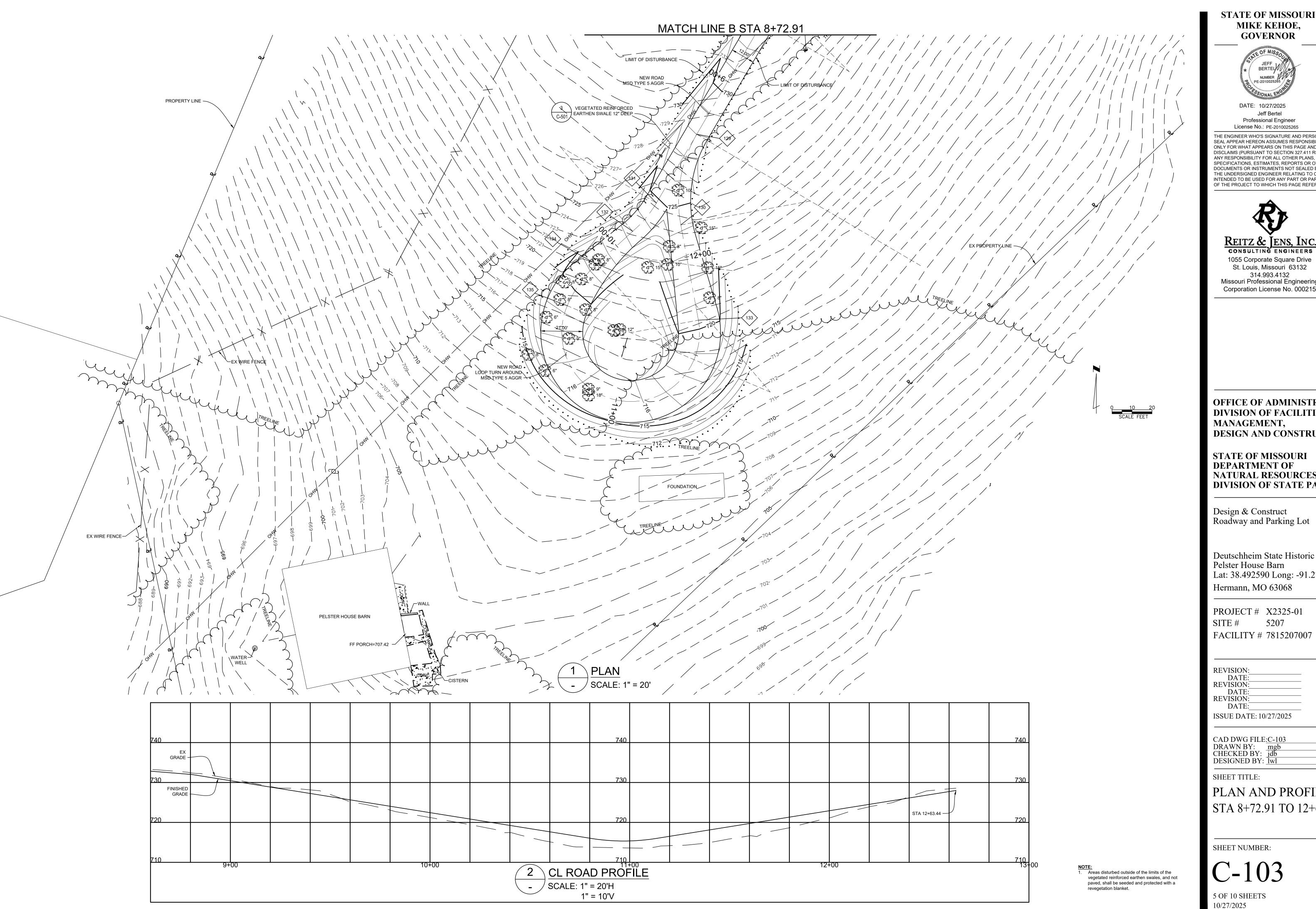
CAD DWG FILE:C-102
DRAWN BY: mgb
CHECKED BY: jdb
DESIGNED BY: lwl

SHEET TITLE:

PLAN AND PROFILE STA 2+56.13 TO 8+72.91

SHEET NUMBER:

C-102





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Design & Construct Roadway and Parking Lot

Deutschheim State Historic Site Pelster House Barn Lat: 38.492590 Long: -91.272857 Hermann, MO 63068

PROJECT # X2325-01 5207

DATE:_ REVISION:_ DATE: REVISION: DATE:

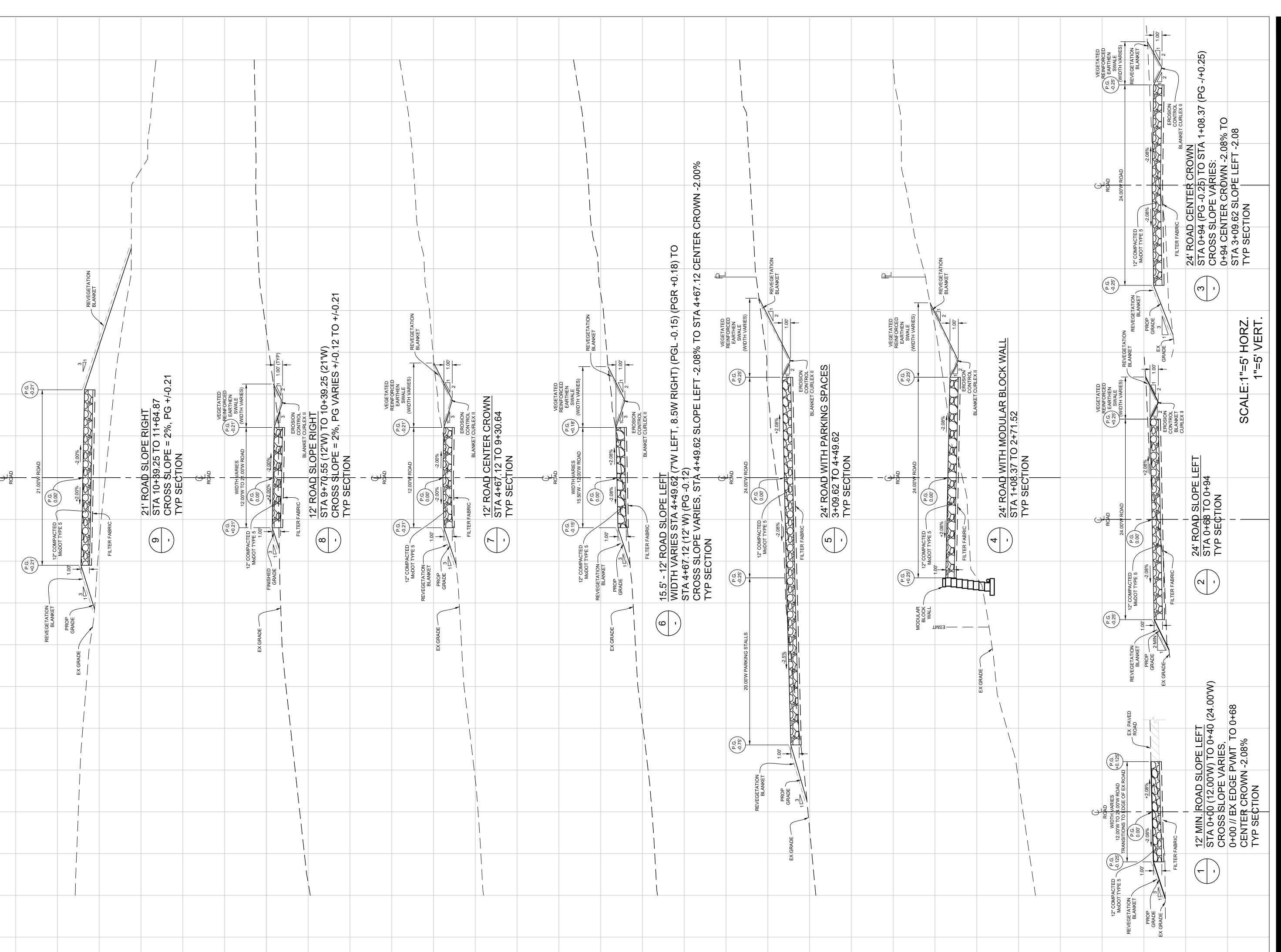
ISSUE DATE: 10/27/2025

CAD DWG FILE:C-103
DRAWN BY: mgb
CHECKED BY: jdb
DESIGNED BY: lwl

SHEET TITLE:

PLAN AND PROFILE STA 8+72.91 TO 12+63.44

SHEET NUMBER:





Jeff Bertel Professional Engineer

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Design & Construct
Roadway and Parking Lot

Deutschheim State Historic Site Pelster House Barn Lat: 38.492590 Long: -91.272857 Hermann, MO 63068

PROJECT # X2325-01 FACILITY # 7815207007

DATE: **REVISION:** DATE: REVISION: DATE:

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DRAWN BY: mgb
CHECKED BY: jdb
DESIGNED BY: lwl

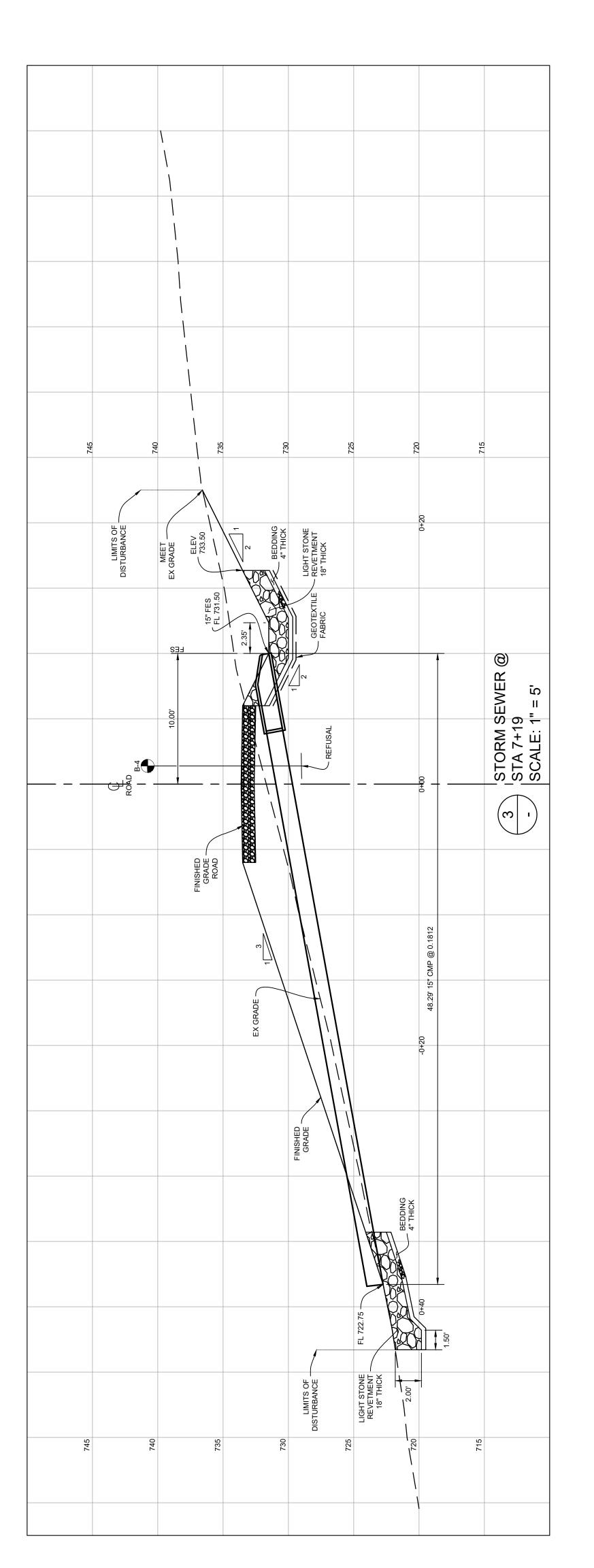
ISSUE DATE: 10/27/2025

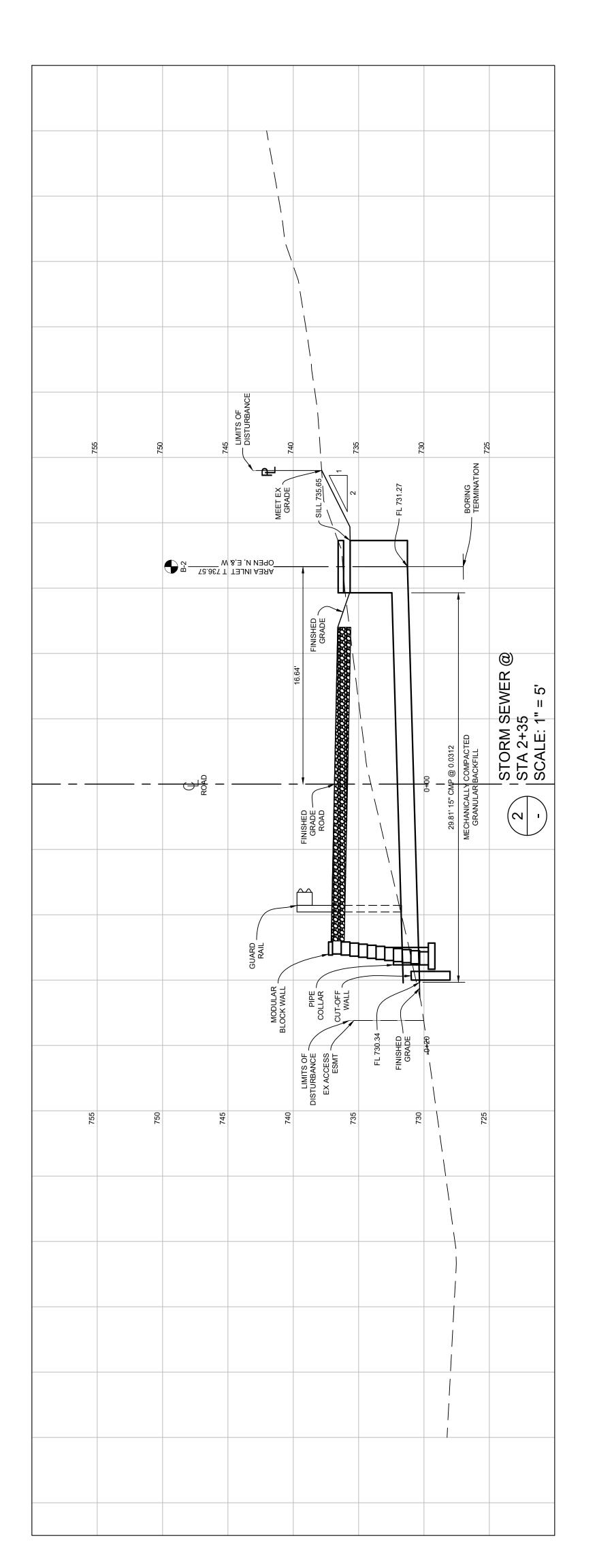
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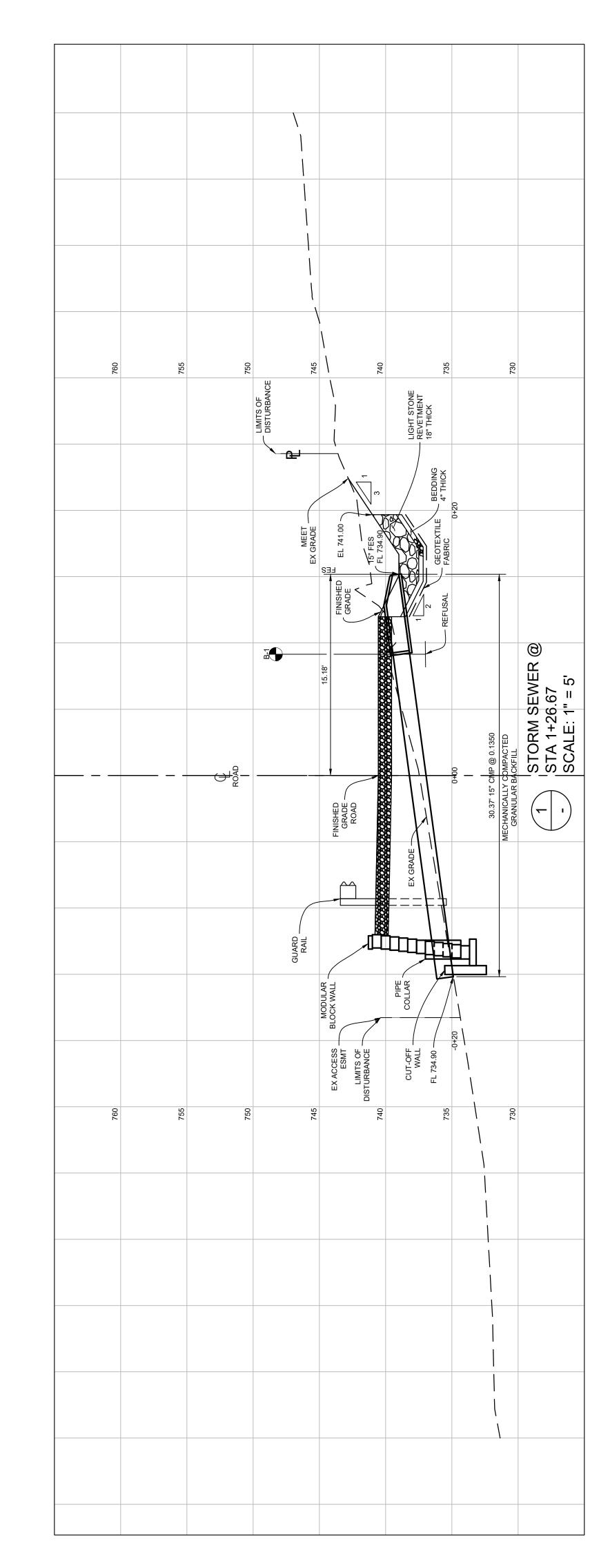
TYPICAL CROSS SECTIONS

SHEET NUMBER:

6 OF 10 SHEETS









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PROJECT # X2325-01 SITE # 5207

FACILITY # 7815207007

REVISION:
DATE:
REVISION:
DATE:
REVISION:

DATE: ISSUE DATE: 10/27/2025

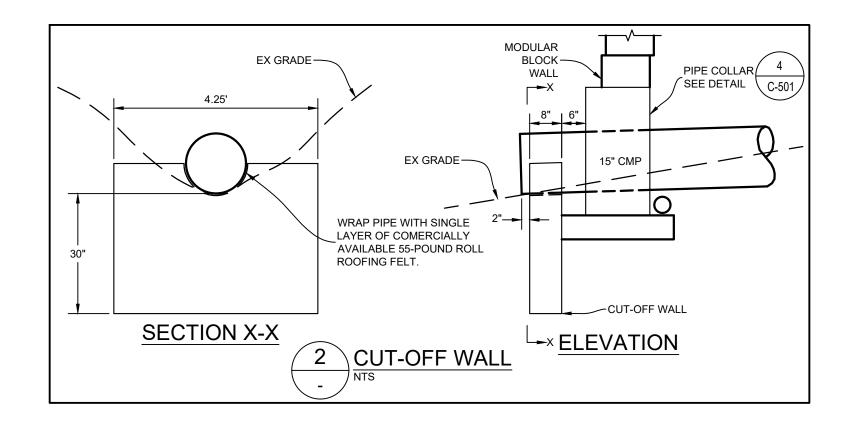
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DESIGNED BY: lwl

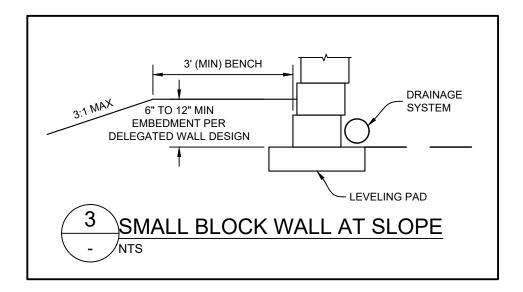
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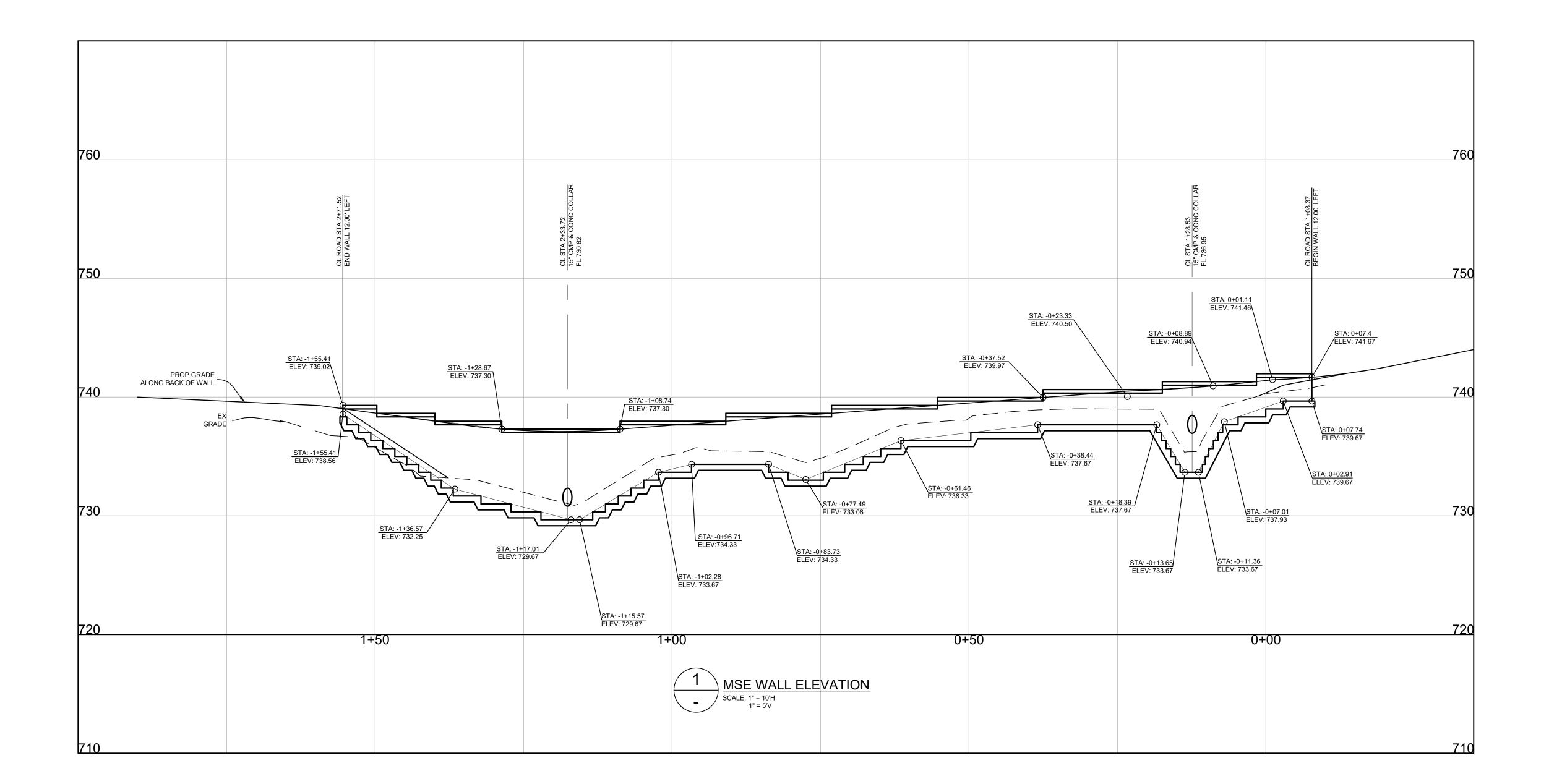
STORM PROFILES

SHEET NUMBER:

C-302









DATE: 10/27/2025 Jeff Bertel

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Design & Construct Roadway and Parking Lot

Deutschheim State Historic Site Pelster House Barn Lat: 38.492590 Long: -91.272857 Hermann, MO 63068

PROJECT # X2325-01 SITE # 5207 FACILITY # 7815207007

REVISION:
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ISSUE DATE: 10/27/2025

CAD DWG FILE:C-501
DRAWN BY: mgb
CHECKED BY: jdb
DESIGNED BY: lwl

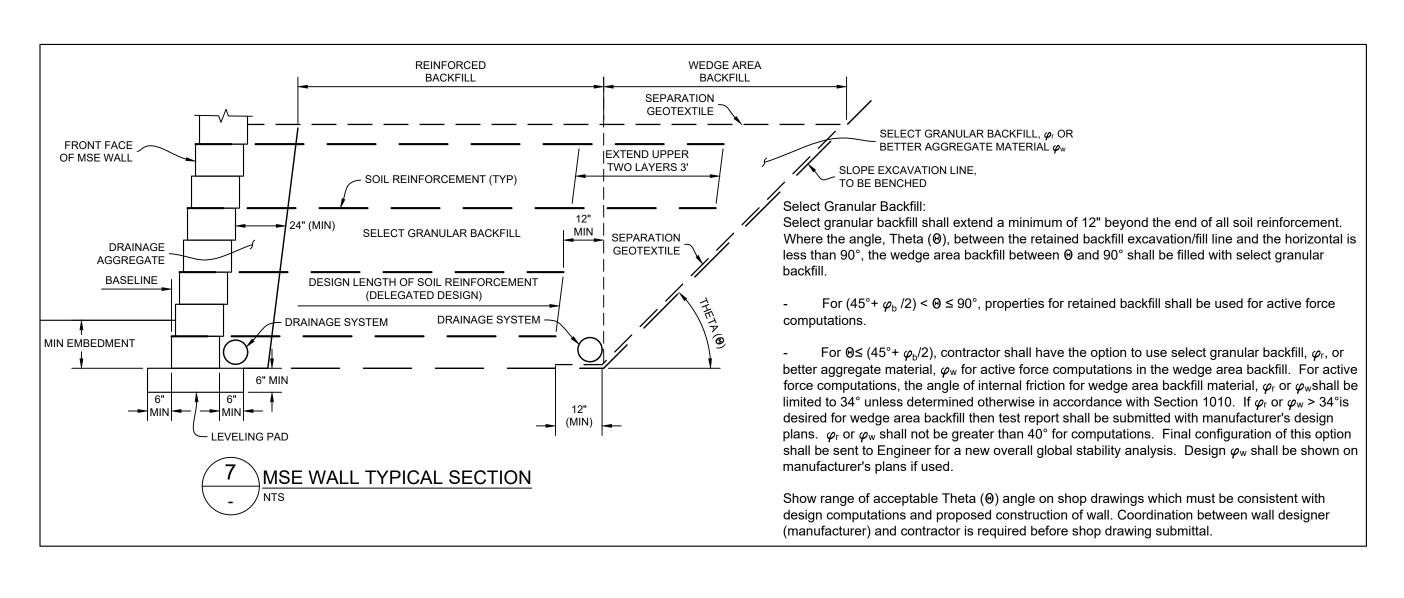
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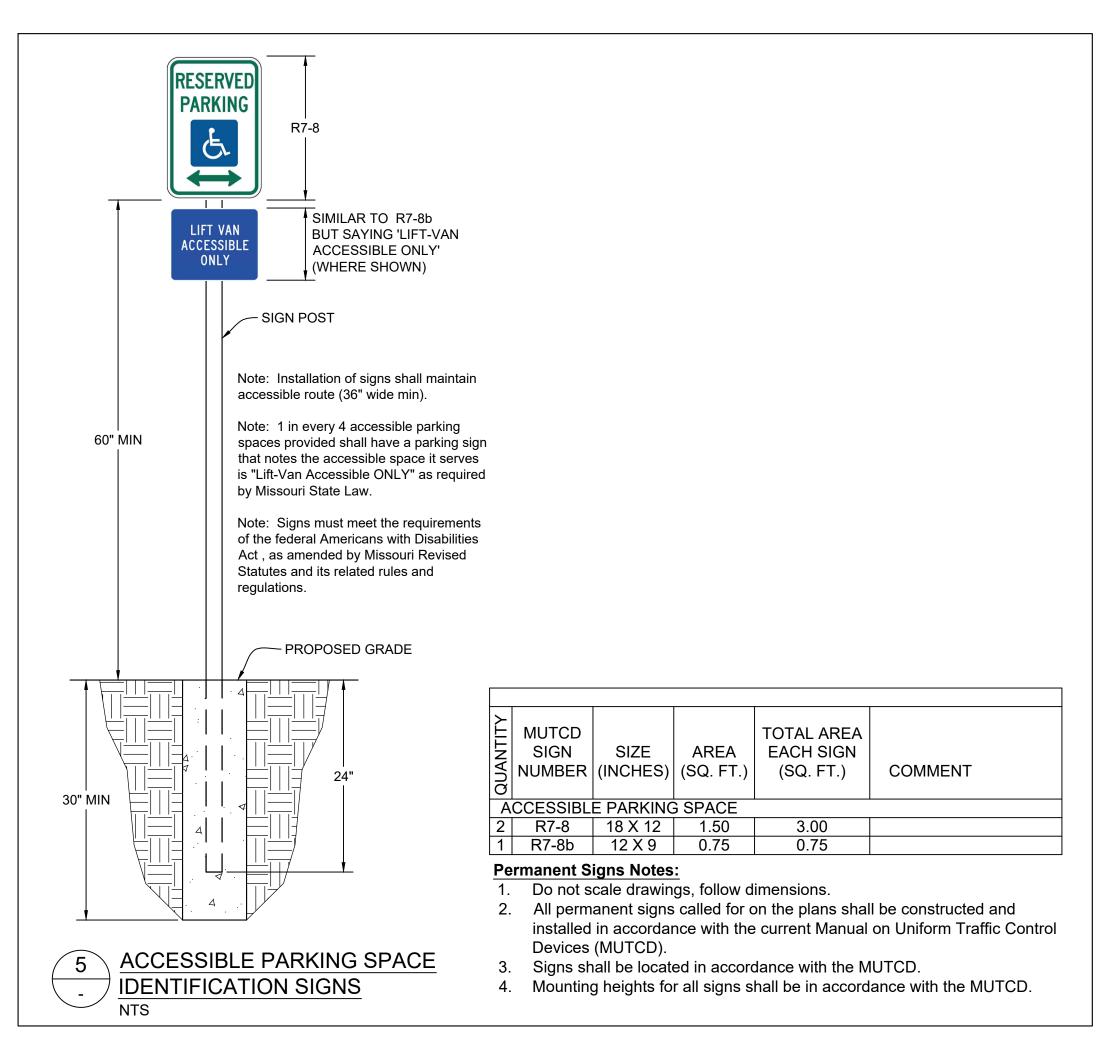
MODULAR BLOCK WALL PROFILE & DETAILS

SHEET NUMBER:

C - 30

8 OF 10 SHEETS





PREPARED SUBGRADE

SEE SPECIFICATION SECTION 31 2200 EARTWORK FOR SUBGRADE

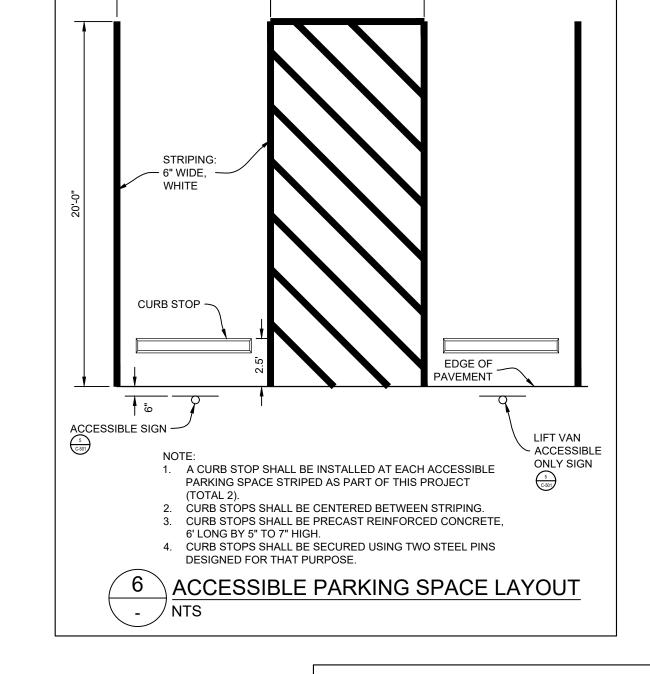
PREPARATION AND BASE COURSE COMPACTION REQUIREMENTS

CONCRETE PAVEMENT CONSTRUCTION SHALL CONFORM TO

STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

(LATEST EDITION)



FLOW

MECHANCALLY STABILIZED EARTH (MSE) WALLS GENERAL NOTES:

8"x18"x12", spilt-face block, natural color, as approved by the Owner.

the MSE system

on approved shop drawings.

5) Ground Improvement at MSE walls:

Engineer in the State of Missouri.

ACCESS AISLE

before placement of the Separation Geotextile.

c) All pipe outlets shall have rodent screens installed.

Mechanically stabilized earth (MSE) wall work shall consist of furnishing materials, labor, equipment, and supervision to install a MSE wall system in

2) MSE wall systems shall be built in accordance with Section 720 of the St. Louis County Standard Specifications for Road and Bridge Construction and

a) MSE walls are to be VERSA-LOK Square Foot wall system, Tensar Mesa Retaining wall system, or Rockwood Rretaining Wall Classic 8 system,

c) Material for leveling pad shall consist of compacted sand, gravel, or combination thereof (USCS soil types GP, GW, SP, & SW) and shall be a

crushed limestone. Rapidly draining backfill shall meet the requirements for Aggregate for Drainage per Section 1009.

accordance with the plans and specifications (Section 323216) and in reasonably close conformity with the lines, grades, design, and dimensions shown

these plans. In the case of a discrepancy between these documents, the issue shall be immediately brought to the attention of the Owner for resolution.

b) Select granular backfill shall meet the requirements of Section 1010 with an angle of internal friction no less than 34 degrees. Laboratory shear testing

of material will not be required whenever 80 percent of the particle sizes are greater than 3/4 inch or whenever backfill material consists entirely of

minimum of 6 inches in depth. Lean concrete with a strength of 200-300 psi and 3 inches thick maximum may also be used as a leveling pad material

if approved by the Owner. The leveling pad should extend laterally at least a distance of 6 inches from the toe and heel of the lowermost SRW unit.

d) Soil reinforcement shall be part of the MSE wall structural system developed and tested by the manufacturer. The soil reinforcement length shall be

length shall be as a minimum approximately 70% of the wall height (as measured from the top of the leveling pad to the top of the wall). The soil

e) Separation geotextile, meeting the requirements of Section 1011, shall be placed between the select granular backfill and the backfill being retained by

f) Topmost layer of soil reinforcement shall be fully covered with a minimum of 3-inches of select granular backfill, as approved by the wall manufacturer,

retained backfill as detailed on the approved shop drawings. Drainage system shall include non-perforated lateral drain pipe outlets spaced at 40-ft

b) Drainage system pipe minimum 4" diameter perforated PVC or PE pipe. All pipe shall be sloped to drain, 1% minimum slope unless shown otherwise

d) Drainage system shall be discharged to daylight. Discharge shall be to the face of the curb, a minimum of 12-inches from the exposed front of the

f) Where drainage system cannot drain to the bottom of the wall and reinforced backfill due to adjacent grades, Delegated Design shall provide for

material may be used as backfill below elevated drainage system pipes, if approved by the Owner and include in the Delegated Design.

b) The Ground Improvement shall extend laterally in all directions beyond the footing and reinforced backfill a distance equal to the depth of the

Improvement as required by the Delegated Design of the MSE Walls or these plans. The completed Ground Improvement shall provide a net

6) The Contractor shall provide MSE wall designs (Delegated Design) and shop drawings for each wall, signed and sealed by a Registered Professional

a) Delegated Design of MSE walls shall coordinate with abutting improvements including walls, buildings, and stairwells. Construction efforts shall

b) The intersection of numbered MSE walls shall be made by interlocking courses in accordance with the manufacturer's recommendations. Course

c) Delegated Design of MSE walls shall coordinate with all embedded improvements within the reinforced backfill and additional zone of influence behind

e) Contractor shall modify the drain details as shown if it will improve flow as may be the case for stepped leveling pad and for an uneven ground line, if

maximum positive drainage of backfill and shall account for induced hydrostatic loads and affects on bearing capacity. Low permeability granular

a) This work shall consist of replacing the insitu soil below the MSE Walls as required by the Delegated Design of the MSE Walls or these plans. The soil

4) Drainage System shall be in accordance with Sections 720 and 1013 of the St. Louis County Standard Specifications for Road and Bridge Construction

a) Drainage system shall include perforated pipes located at the base of the wall and at the basal interface between the reinforced backfill and the

maximum along the length of the wall. Drainage system shall include non-perforated pipe outlets at the low points of the system.

MSE wall with no curb, or beyond the sloped embedment, unless approved otherwise by the Owner.

shall be removed and replaced with well graded, MoDOT Type 5 Aggregate (See Specification Section 32 1123).

allowable bearing pressure or factored net bearing resistance as required by the Delegated Design of the MSE Walls.

ensure loss of soil or backfill is prevented. Shop drawings shall include sufficient details to show proper coordination.

the wall. These improvements include rail/fence, guardrail, barriers, foundations, light standards, utility boxes, etc.

d) No construction work shall commence prior to written approval of Delegated Designs and shop drawings by the Owner.

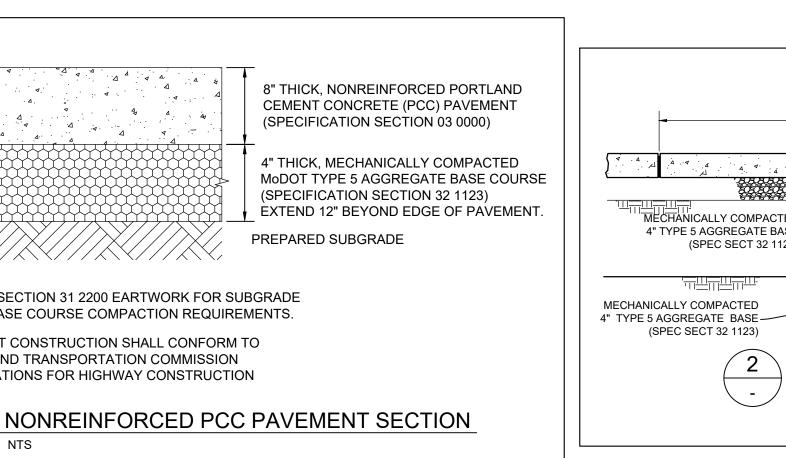
e) No separate payment will be made for Delegated Designs and shop drawings but shall be considered incidental to the MSE wall costs.

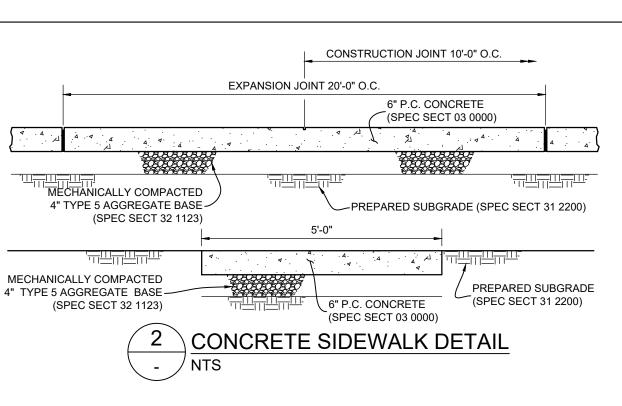
g) Storm pipe systems shall be kept separate from MSE wall drainage system.

elevations shall be coordinated between intersecting MSE walls.

calculated based on external and internal stability considerations accounting for all special load conditions and all design criteria. Soil reinforcement

reinforcement length shall be uniform throughout the entire height of the wall. The upper two layers of soil reinforcement shall be extended 3-ft beyond





STAPLE (TYP) STAPLE CHECK (DOUBLE ROW OF STAPLES SLOT SEE STAPLE CHECK SLOT) ECB TYPE A SEAM NTS **TERMINAL ANCHOR TOP ANCHOR** 3 RECP-ECB STANDARD DETAILS (SPEC SECT 02485)

MECHANCALLY STABILIZED EARTH (MSE) WALLS GENERAL NOTES (cont'd.):

- The Contractor shall show the following items on the design drawings and/or on the shop drawings. a) The leveling pad shall be horizontal. Leveling pad length and step elevations shall be based on the wall manufacturer's recommendation. Top of leveling pad elevations shall not be higher than theoretical top of leveling pad elevations shown
- b) Soil reinforcement material, length, and elevation.
- c) Range of acceptable slope excavation line angles.
- d) Drainage system details including pipe elevation, discharge locations, and discharge details.
- e) Details for railing/fence foundations at MSE walls.
- 8) Measurement of mechanically stabilized earth wall systems will be made to the nearest square foot. The quantity to be paid will be measured from the wall outline as shown on the plans as listed with each wall elevation. No adjustments in the measured quantity will be permitted for additional wall area required to meet the minimum wall elevations shown on the plans. Final measurement will not be made except for authorized changes during construction or where appreciable errors are found in the contract quantity. The revision or correction will be computed and added to or deducted from the contract
- 9) Payment for MSE walls shall include all materials, labor, equipment, supervision, and Delegated Design necessary to install the MSE walls complete. The following shall be considered incidental to the MSE wall construction and no direct payment shall be made: excavation behind the face of the wall including for the leveling pad and ground improvement, ground improvement, leveling pad, wall units, cap units or capstones, drainage system (to discharge), drainage aggregate, select granular backfill, better aggregate material, MoDOT Type 5 aggregate backfill (where specified), soil reinforcement, separation geotextile, pipe collars, grade beams, etc.
- Mechanically Stabilized Earth (MSE) Walls Design Notes:
- 1) Design Specifications: 2002 AASHTO LFD (17th Ed.) Standard Specifications (Section 5, ASD Design)
- 2) The factors of safety for external stability shall be 2.0 for overturning and 1.5 for sliding. For seismic design the factors of safety shall be 1.5 for overturning and 1.1 for sliding. 3) Select Granular Backfill:
- a) Actual φ_r≥ 34° for the select granular backfill (reinforced backfill and wedge area backfill).
- b) Design φ_r = 34° for the select granular backfill (reinforced backfill). 4) Special Load Considerations:
- a) Delegated Design of the walls shall account for traffic loads. Traffic loads shall be treated as uniform surcharge loads. The live load surcharge pressure shall be equal to not less than 2 feet of earth.
- b) Guardrails located within the reinforced backfill of a MSE wall shall be placed a minimum distance of 3.3 feet from the wall face and embedded a minimum of 5 feet below grade. Delegated Design of the wall shall account for partially or fully severed reinforcement layers by designing the surrounding reinforcement layers to carry the additional load which would have been carried by the severed reinforcements. The upper two rows of reinforcement shall be designed for an additional horizontal load of 300 pounds per linear foot of wall. Two rows of reinforcement (minimum) are required in the
- c) Delegated Design of the walls shall account for rail/fence height, embedment, and location. Rail loads shall be per building code. Fence loads shall account for fence material and wind loads. If directly mounted to the wall the upper 24-inches of the wall, at minimum, shall be engaged and additional mass may be required to satisfy structural design requirements. Offset installations shall be 3-ft minimum behind the face of the wall and shall engage at least one soil reinforcement within the upper 2-ft of the wall. Engineered post anchoring systems may be submitted for approval.
- d) Delegated Design of walls at the bioretention basin shall account for hydrostatic pressures. A minimum differential hydrostatic pressure equal to 3.3 feet of water shall be considered for design. This load shall be applied at the high-water level using the 100-year low flow blocked maximum computed water surface elevation. If rapidly draining backfill is not provided, Delegated Design shall account for possible rapid drawdown conditions.

STATE OF MISSOURI MIKE KEHOE, **GOVERNOR**



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CONSULTING ENGINEERS 1055 Corporate Square Drive St. Louis, Missouri 63132 314.993.4132 Missouri Professional Engineering

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OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, **DESIGN AND CONSTRUCTION**

STATE OF MISSOURI **DEPARTMENT OF** NATURAL RESOUCES **DIVISION OF STATE PARKS**

Design & Construct Roadway and Parking Lot

Deutschheim State Historic Site Pelster House Barn Lat: 38.492590 Long: -91.272857 Hermann, MO 63068

PROJECT # X2325-01 5207 SITE#

FACILITY # 7815207007

REVISION: DATE: REVISION: DATE: REVISION: DATE:

ISSUE DATE: 10/27/2025 CAD DWG FILE:C-501 DRAWN BY:

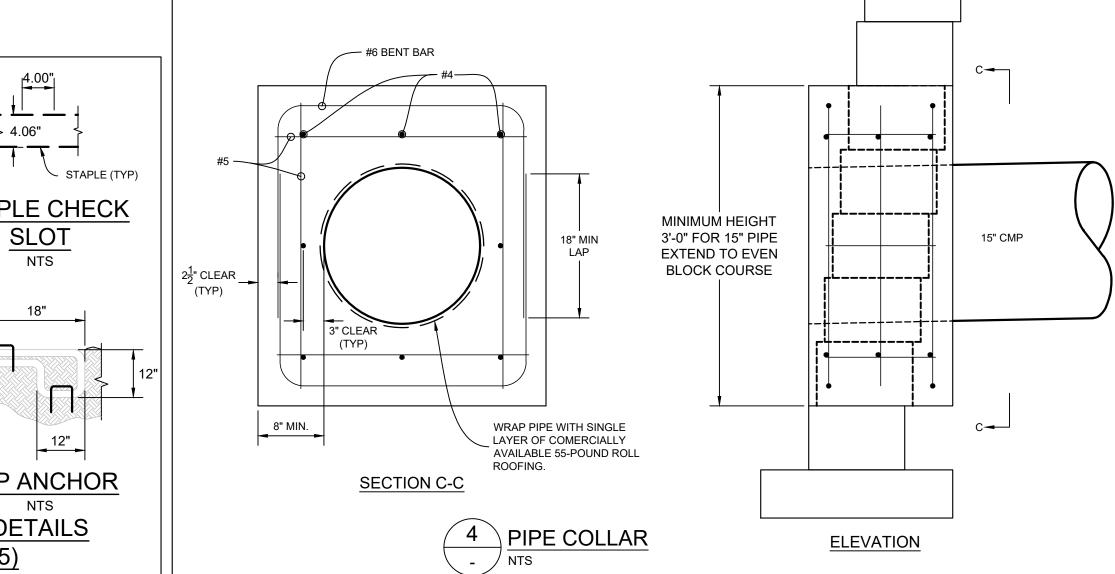
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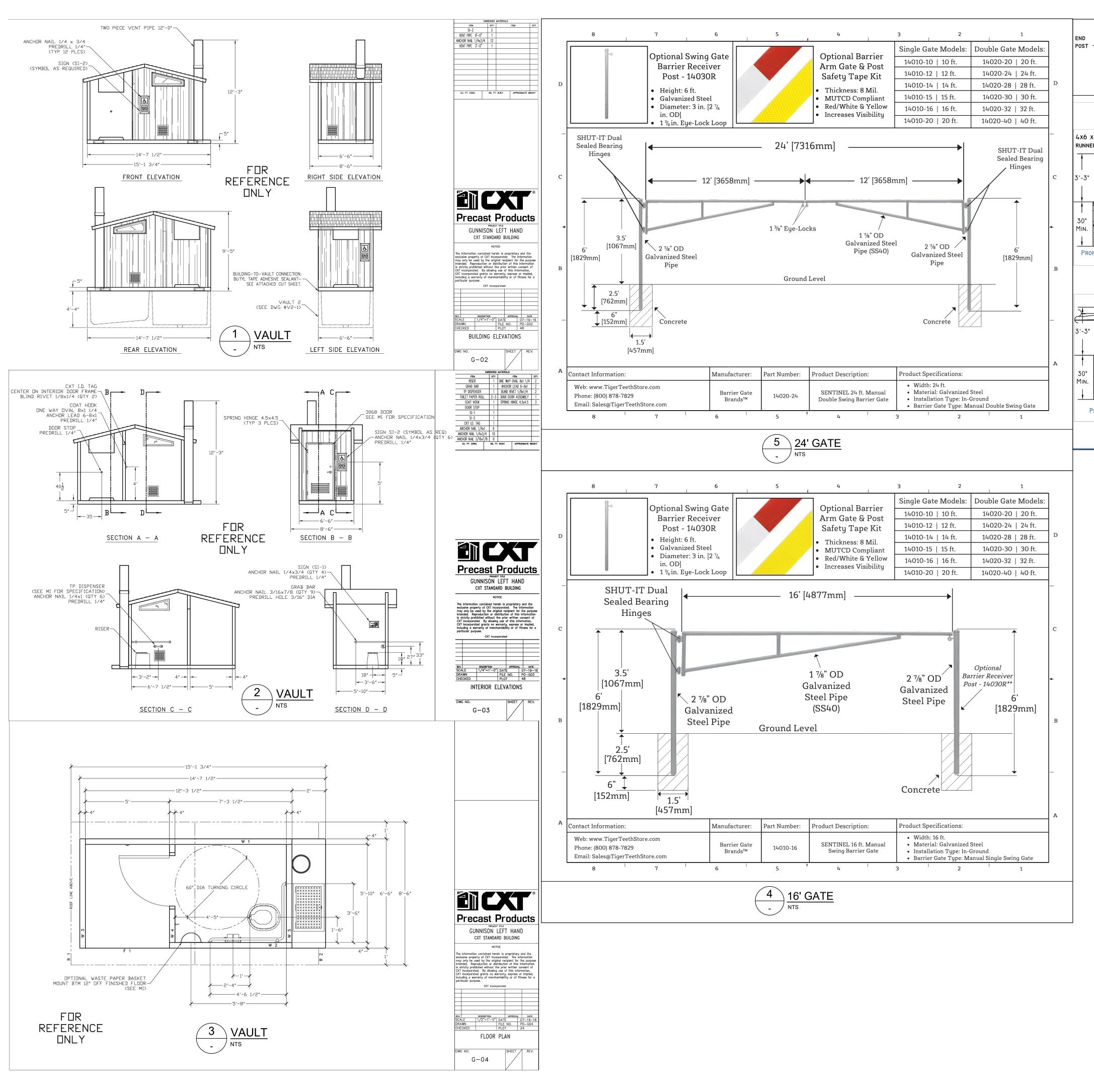
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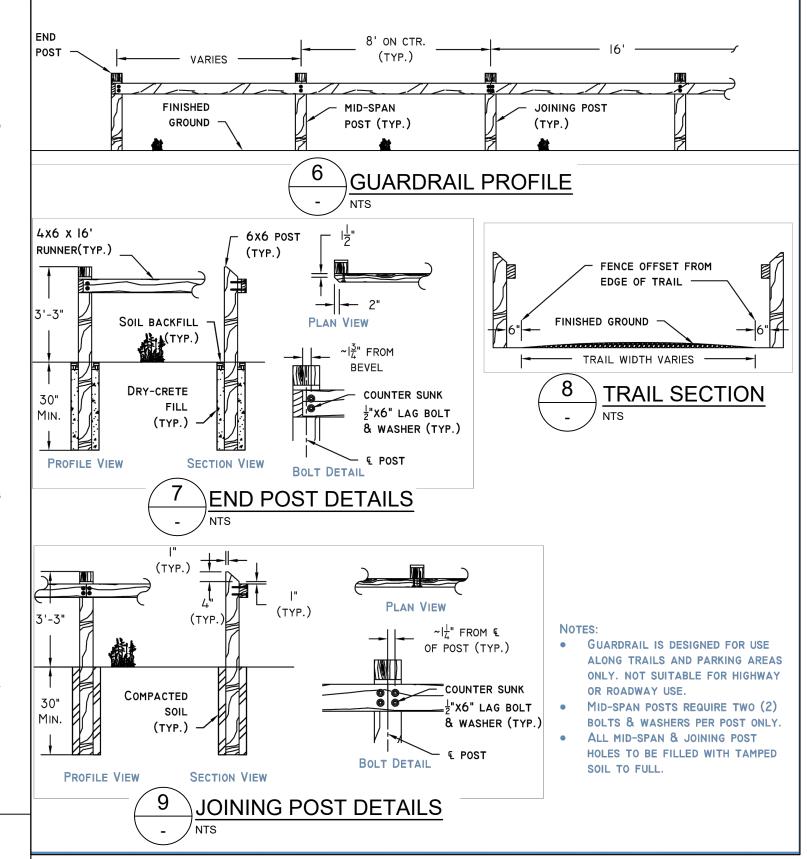
DETAILS

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9 OF 10 SHEETS









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St. Louis, Missouri 63132
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ISSUE DATE: 10/27/2025

CAD DWG FILE:C-502 DRAWN BY: mgb

DRAWN BY: mgb
CHECKED BY: jdb
DESIGNED BY: lwl

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DETAILS

SHEET NUMBER:

C-502