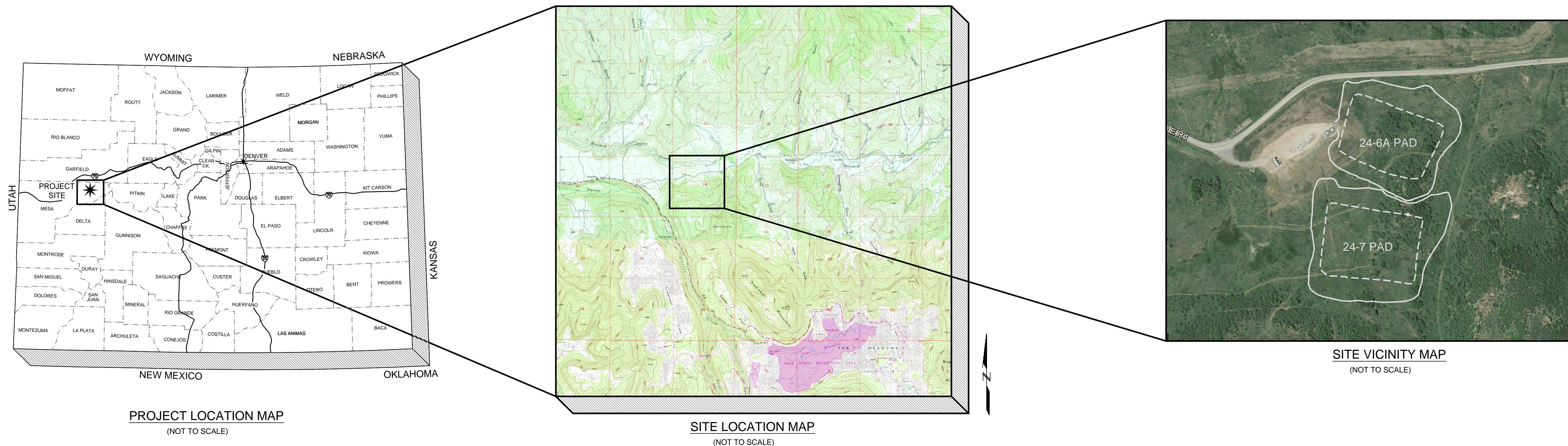


NICHOLS PAD 24-6A AND 24-7 STABILIZATION

SE 1/4, NW 1/4, SECTION 24, T9S, R94W, 6th P.M.
MESA COUNTY, COLORADO



GENERAL PROJECT INFORMATION

LARAMIE ENERGY, LLC
OWNER

CONTRACTOR
JEREMY D. DEUTO, P.E., P.G. GEI CONSULTANTS, INC.
ENGINEER

CONSTRUCTION STARTED

CONSTRUCTION COMPLETED

PREPARED FOR



Laramie Energy, LLC
1401 17th St., STE 1400
Denver, Colorado 80202

PREPARED BY



DENVER / FORT COLLINS
COLORADO



THIS DOCUMENT, AND THE IDEAS AND DESIGNS
INCORPORATED HEREIN, AS AN INSTRUMENT OF
PROFESSIONAL SERVICE, IS THE PROPERTY OF GEI
CONSULTANTS, INC. AND IS NOT TO BE USED, IN
WHOLE OR IN PART, FOR ANY OTHER PROJECT
WITHOUT THE WRITTEN AUTHORIZATION OF GEI
CONSULTANTS, INC.

DWG. NO.

1

SHEET NO.

1 of 9

GENERAL NOTES

EARTHWORK

Note: Contractor shall follow all Laramie Energy earthwork specifications, apart from those listed here.

1.1 PLACING FILL MATERIALS

The suitability of each part of the foundation for placing random fill materials thereon, and of all materials for use in random fill construction, will be determined and approved by the ENGINEER or OWNER.

No random fill material shall be placed in the slope when either the material or the foundation or random fill on which it would be placed is frozen.

In any separate portion being constructed, each layer shall be constructed continuously and approximately horizontal for the width and length of such portion at the elevation of the layer.

The CONTRACTOR shall maintain the slope in an approved manner, including maintaining working surfaces free of weeds and other organic matter until final completion and acceptance of all the work under the contract.

If, in the opinion of the ENGINEER, the surface of the prepared foundation or the compacted surface of any layer of earthfill is too dry or smooth to bond properly with the layer of material to be placed thereon, it shall be moistened and/or worked with harrow, scarifier, disc, or other suitable equipment, in an approved manner to a sufficient depth to provide a satisfactory bonding surface before the next succeeding layer of earthfill material is placed. If in the opinion of the ENGINEER, the compacted surface of any layer of the earthfill in-place is too wet for proper compaction of the layer of earthfill material to be placed thereon, it shall be removed, allowed to dry; or be worked with harrow, scarifier, disc, or other suitable equipment to reduce the moisture content to the required amount; and then it shall be recompacted before the next succeeding layer of earthfill material is placed.

The CONTRACTOR shall be permitted to reconstruct separate sections of random fill, subject to the approval of the ENGINEER. Construction of the random fill shall be subject to the following conditions:

- A. At any cross-section, the difference in elevation between adjacent zones of the embankment shall be not greater than 3 foot.
- B. Transverse bonding surfaces (surfaces perpendicular to the centerline crest of the embankment) shall not be steeper than 4:1(H:V).
- C. During construction of new earthfill, the CONTRACTOR shall adequately prepare the surface of previously constructed random fill or original slope liner or reclamation slope and transverse slopes by benching and/or scarifying in a manner acceptable to the ENGINEER to satisfactorily bond the new fill to the existing fill.
- D. The fill shall be placed in continuous horizontal layers not exceeding 9-inch to 12-inch (12 inch maximum) in loose thickness. To achieve sufficient blending, a disc will be required during placement of any fill. Where hand operated compaction equipment is used, the layers shall not exceed 6" in loose thickness. All lifts shall be keyed horizontally as shown on the plans.

1.2 FINE FILTER / DRAIN MATERIAL

Imported natural sand for Fine Filter/Drain Material shall conform to the following gradation limits and have a coefficient of uniformity less than or equal to 6. The fraction of the Fine Filter/Drain Material finer than the No. 40 sieve shall be classified as nonplastic based on Atterberg Limits (ASTM D4318). Fine Filter/Drain Material shall conform to the requirements of ASTM C33 for soundness and deleterious substances. Natural sand conforming to CDOT Standard Specifications, Section 703.01 – FINE AGGREGATE FOR CONCRETE that meets the above requirements and has less than 3 percent passing the No. 200 sieve shall be acceptable.

U.S. Standard Sieve Size	Percent Passing By Weight
0.375-inch	100
No. 4	95
No. 8	80-100
No. 16	50-85
No. 30	5-30
No. 100	0-10
No. 200	0-5

1.3 COARSE FILTER / DRAIN MATERIAL

Imported natural, hard, durable, angular gravel for Coarse Filter/Drain Material shall conform to the following gradation limits and have a coefficient of uniformity less than or equal to 4. The fraction of the Coarse Filter/Drain Material finer than the No. 16 sieve shall be classified as non-plastic based on Atterberg Limits (ASTM D4318). Coarse Filter/Drain Material shall conform to the requirements of ASTM C33 for soundness and deleterious substances.

U.S. Standard Sieve Size	Percent Passing By Weight
0.5-inch	100
0.375-inch	85-100
No. 4	10-30
No. 8	0-10
No. 16	0-5
No. 200	0-1.5

1.4 COMPACTION EQUIPMENT

- A. Smooth rollers will not be allowed for the compaction of fill. Compaction equipment for fill shall be a sheepsfoot roller or tamping roller or approved equal. The weight of each roller shall not be less than 4,000 pounds per foot of drum length. Compaction equipment for embankment fill shall be approved by the ENGINEER.
- B. Heavy compaction equipment shall not be operated within 3 feet of the Soldier Pile Wall. Smaller rollers will be required for special compaction adjacent to the Soldier Pile Wall and in tight, restricted, or steep areas not accessible by larger rollers. Smaller rollers shall be approved by the ENGINEER.

1.5 MOISTURE/DENSITY REQUIREMENTS

- A. Random Fill shall be compacted in place to at least 95 percent of the maximum dry density and within minus two (2) percent and plus two (2) percent of the optimum water content, when tested in accordance with ASTM D698-78.
- B. The ENGINEER will inform the CONTRACTOR when the placement moisture content and percent compaction do not meet the specifications, and the CONTRACTOR shall immediately make adjustments in procedures as necessary to obtain the specified results.
- C. Materials not meeting the specified moisture content and percent compaction shall be reworked until approved results are obtained. Reworking may include removal, rehandling, reconditioning, rerolling, or combinations of these procedures. The CONTRACTOR shall not be entitled to additional compensation above the schedule bid in the schedule by reason of any work required to achieve the placement moisture content and percent compaction in these specifications. The CONTRACTOR shall be allowed no additional allowance of the work required to achieve the proper moisture content and density specified in this section.
- D. The moisture content of the earthfill material prior to and during compaction shall be distributed uniformly throughout each layer of the material. As far as practicable, the materials shall be brought to the proper moisture content by adding supplementary water, if required, to the material by sprinkling on the earthfill and each layer of earthfill shall be conditioned so that the moisture is uniform throughout the layer.

1.6 STOCKPILING EXCAVATED MATERIAL

- A. Confine stockpiles to within approved work areas.
- B. Maintain a minimum 4-feet clearance between stockpiled excavated material and trenches and other excavations unless excavation sideslopes and excavation support systems are designed, constructed, and maintained for stockpile loads.
- C. Do not stockpile excavated materials near or over existing facilities, adjacent property, or completed Work.

1.7 QUALITY CONTROL

Testing for soil density and moisture content shall be conducted by the OWNER at an interval of 1 test per 9 to 12-inch lift of material placed per 100 linear feet. The cost of testing for passing tests shall be paid for by the OWNER. The cost for failing tests shall be paid for by the CONTRACTOR.

Concrete

1.8 CONCRETE MATERIALS

- A. Cement:
 - 1. ASTM C 150, Portland Type II, Type I/II, or approved equivalent.
 - 2. Gray color.
 - 3. Meet the optional chemical requirements for low-alkali cement specified in Table 2 of ASTM C 150.
 - 4. Meet the optional physical requirements for false-set limitation specified in Table 4 of ASTM C 150.
 - 5. Furnish from one source.

- B. Fly Ash
 - 1. Class F, meeting applicable requirements of ASTM C 618.
 - 2. Loss on ignition: Maximum 3 percent.

- C. Aggregates:
 - 1. Fine and coarse aggregates shall conform to applicable requirements of ASTM C 33 as modified by these Specifications.
 - 2. Fine and coarse aggregates shall not be potentially reactive as determined in accordance with the provisions of ASTM C 33 Appendix X1.
 - 3. Fine and coarse aggregates shall not be of a carbonate-based rock, unless its suitability and durability is proven by tests and approved by Engineer.
 - 4. Fine aggregate shall be composed of natural sands.
 - 5. Coarse aggregates shall be composed of natural gravel, crushed gravel, crushed stone, or combinations thereof.
 - 6. Coarse aggregates shall contain no more than 15 percent flat or elongated particles, with maximum-to-minimum dimensions of 5 to 1.
 - 7. Limit deleterious substances in coarse aggregate in accordance with the requirements for Class Designation 3S in Table 3 of ASTM C 33.
 - 8. Coarse aggregate gradations shall conform to the requirements of ASTM C33 Size No. 67, nominal maximum aggregate size 3/4-inch.

- D. Admixtures:
 - 1. Furnish each admixture from a single manufacturer.
 - 2. Air-Entraining Admixture:
 - a. ASTM C 260.
 - 3. Water-reducing Admixture:
 - a. ASTM C 494, Type A or Type D.
 - b. Products:
 - i. Pozzolith or Polyheed, Master Builders, Inc., Cleveland, OH.
 - ii. WRDA or HYCOL, W.R. Grace & Co., Cambridge, MA.
 - iii. Eucon WR-91, Euclid Chemical Co., Cleveland, OH.
 - 4. High Range Water Reducing Admixture (Superplasticizer):
 - a. ASTM C 494, Type F or Type G.
 - b. Products:
 - i. Rheobuild or Polyheed, Master Builders, Inc., Cleveland, OH.
 - ii. Daracem, W.R. Grace & Co., Cambridge, MA.
 - iii. Eucon 537, Euclid Chemical Co., Cleveland, OH.
 - 5. Retarding Admixture:
 - a. ASTM C 494, Type B or Type D.
 - b. Products:
 - i. Pozzolith 100XR, Master Builders, Inc., Cleveland, OH.
 - ii. Approved equal.

- E. Water:
 - 1. Conforming to applicable provisions of ASTM C 94.

1.9 CONCRETE MIX PROPORTIONS

A. Conform to the requirements of Table 1.

	Minimum Compressive Strength (psi)	Slump Range at Placement Site (inches)	Maximum Water-Cementitious Ratio	Minimum Cementitious Content (lbs per cubic yard)	Air Entrainment (%)
Structural	4,000 @ 28 days	6 - 9	0.45	600	4 – 7

1.10 CONCRETE TEMPERATURE

- A. Batch concrete as necessary to achieve placement temperatures between 50°F and 90°F.
- B. Use fritedfill as nonplastic necessary to achieve required placement temperatures; including, but not limited to, the following:
 - 1. Replace all or a part of the mixing water with chilled water.
 - 2. Replace all or a part of the mixing water with ice.
 - 3. Introduce liquid nitrogen into the concrete as it is batched.

1.11 BATCHING, MIXING, AND TRANSPORTING CONCRETE

A. Batch, mix and deliver to placement site in accordance with ASTM C94.

1.12 PLACING CONCRETE

- A. Place concrete in as nearly a continuous operation as practical.
- B. Use delivery and placement methods that do not cause segregation. The maximum free-fall drop height allowed for concrete placement shall be 40 feet.
- C. Do not break or interrupt successive placements such that cold joints occur.
- D. Prevent debris or other objectionable material from becoming embedded in the concrete.
- E. Pumping Concrete:
 - 1. Conform to ACI 304.2R.
 - 2. Maintain standby pumping equipment on site, such that any interruption in placement operations due to equipment failure will not result in the formation of a cold joint.
- F. Placement Time: Place concrete within 150 minutes after water is added to cement, using appropriate retarding admixtures as required to meet this requirement.

1.13 CONSOLIDATING CONCRETE

- A. Conform to ACI 309R.
- B. Use immersion-type power vibrators, suitable for the concrete mix proportions and placement conditions of the respective placement.
- C. Provide at least one standby vibrator prior to concrete placement.

1.14 COLD WEATHER PLACEMENT

- A. Follow approved cold weather placement plan when the ambient air temperature is less than 40°F, or if the ambient air temperature is approaching 40°F and falling.
- B. Develop cold weather placement plan in general conformance to ACI 306.1.
- C. Do not place concrete against frozen earth or ice, or against forms or reinforcement with frost or ice present.
- D. Maintain surface temperature of concrete above 40°F for minimum of 7 days after placement is completed.
- E. Do not locally heat or dry concrete when using heating units to meet Specification requirements.

1.15 HOT WEATHER PLACEMENT

- A. Follow approved hot weather placement plan.
- B. Provide shading, fog spraying, sprinkling, wet cover, or other means of maintaining concrete below the maximum specified temperatures.

1.16 QUALITY CONTROL

- a. concrete compressive strength requirements consist of a minimum strength which must be obtained before various loads or stresses are applied to the concrete and, for concrete designated by strength. A minimum strength of 4,000 psi at the age of 28 days.
- (1) Sampling and curing shall be in accordance with ASTM C-192, and testing shall be in accordance with ASTM C-39. Slump shall be between 6" and 9" when placed.
- b. Testing: Concrete testing shall be done by a qualified independent testing laboratory. Testing shall be conducted at a frequency of 1 test per 100 Cubic Yard of concrete placed, or once per day. Testing shall include slump, % air, unit weight, and temperature. 4 cylinders for compressive strength testing shall be obtained during each test.

PILES

Use OWNER supplied H12-74 piles.

Tolerances – 2% deviation in any direction at plan grade

CONTRACTOR shall establish monitoring points on the top of Piles 4, 15, 26, and 37. The monitoring points shall be surveyed according to the following schedule

- (minimum).
- Immediately upon completion of wall fill operations.
- 2 times per week for 6 weeks.
- 1 time per week for 6 weeks.
- 1 time per month for the remainder of year.

GEOGRID

Manufacturers:

- 1. Mirafi BXG 11 manufactured by Tencate Geosynthetics, Pendergrass, GA
- 2. Tensar BX-1100 manufactured by Tensar International Corporation, Atlanta, GA.
- 3. Approved equal.

GENERAL

A. New products designed and manufactured specifically for the purpose of this Work.

GEOGRID

- A. Composed of high molecular weight, high tenacity polyester multifilament yarns woven and finished with PVC coating or polypropylene.
- B. Inert to biological degradation and resistant to naturally encountered chemicals, alkalis, and acid.
- C. Conforming to the following minimum requirements:

Property	Test Method	Value
Tensile strength (at ultimate, lbs/ft)	ASTM D6637	
Machine Direction (MD)		800
Cross Direction (CD)		1200
Percent Open Area	COE CW-02215	70
Grid Aperture Size (MD, in)		1.0
Grid Aperture Size (CD, in)		1.0
UV Resistance after 500 hrs (% strength)	ASTM D4355	70

- D. Geotextiles will not be considered as an alternate to geogrid materials; no structural contribution will be attributed to geotextile materials.

PART 2 EXECUTION

2.1 STORAGE AND HANDLING

- A. Store and handle geosynthetics per manufacturer's recommendations. Cover geosynthetics with tarps or opaque plastic and shield geosynthetics from prolonged exposure to direct sunlight. Secure geosynthetics with sand bags or straps as necessary to prevent wind damage. Protect geosynthetics from petroleum-based solvents such as gasoline and diesel fuel.
- B. Verify quality assurance data displayed on the labels of materials. Label data must indicate compliance with submitted quality assurance documentation at time of material delivery.

2.2 GEOGRID JOINTS

A. Conform to geogrid manufacturers recommended overlap and connector materials.

2.3 PLACING PRODUCTS OVER GEOSYNTHETIC

- A. Before placing material over geogrid, notify ENGINEER. Do not cover installed geogrid until after ENGINEER provides authorization to proceed.
- B. If tears, punctures, or other damage occurs during placement of overlying products, remove overlying products as necessary to expose damaged geogrid and repair damage to geogrid.

2.4 REPAIRING GEOGRID

A. Repair or replace torn, punctured, flawed, deteriorated, or otherwise damaged geogrid in accordance with manufacturer's recommendations and provide minimum 18 inches overlap in all directions beyond damaged area.

2.5 COMPACTION AROUND GEOGRID

- A. Do not operate heavy vehicles or machinery directly on installed geosynthetics. Prevent tracked equipment from turning within 12 inches of buried geosynthetics.
- B. Use small compaction equipment and hand tools as necessary to avoid damage to geosynthetics.
- C. Minimum required cover depths for heavy equipment to operate above or near geogrid is 1.5 feet.

LEGEND

DETAIL TITLE. THE NUMBER "1" REFERS TO THE DETAIL DESIGNATION. THE NUMBER "G-3" REFERS TO THE DRAWING NUMBER WHERE THE DETAIL IS CALLED OUT.

SECTION TITLE. THE LETTER "A" REFERS TO THE SECTION DESIGNATION. THE NUMBER "G-3" REFERS TO THE DRAWING NUMBER WHERE THE SECTION IS CALLED OUT.

SECTION LOCATION. THE LETTER "A" REFERS TO THE SECTION DESIGNATION. THE NUMBER "G-3" REFERS TO THE DRAWING NUMBER WHERE THE SECTION IS SHOWN.

DETAIL LOCATION. THE NUMBER "1" REFERS TO THE

DETAIL DESIGNATION. THE NUMBER "G-3" REFERS TO THE DRAWING NUMBER WHERE THE DETAIL IS SHOWN.

MAIN TITLE

DRAWING SCALE
IN UNITS SPECIFIED

SOIL BORING STRATA - FILL

SOIL BORING STRATA - CLAY

SOIL TO EXCAVATE AND REMOVE

SOIL TO EXCAVATE AND RECOMPACT

ABBREVIATIONS

@	= AT
TOW	= TOP OF WALL
H-PILE	= SUPPLIED 12-74 PILE.
	= LENGTHS 30, 35 OR 40 FEET
APP	= APPROVED, APPROVAL
APPROX.	= APPROXIMATE
EL., ELEV	= ELEVATION
FT	= FEET OR FOOT
H, HORIZ	= HORIZONTAL
H-V	= HORIZONTAL:VERTICAL
INV	= INVERT
MAX	= MAXIMUM
MIN	= MINIMUM
NO, #	= NUMBER
NTS	= NOT TO SCALE
STA	= STATION
TYP	= TYPICAL
V, VERT	= VERTICAL
W/	= WITH

ESTIMATED MATERIAL QUANTITIES

TENSAR BX 1100:	4700 SY.
4" ADS PIPE:	330 LF.
C33 SAND:	275 CY.
CONCRETE:	90 CY.
GRAVEL:	19 CY.
SLOPE GRADING:	CUT: 11,185 CY. FILL: 15,525 CY.

DRAWING LIST

SHEET NO.	DWG. NO.	TITLE
1	1	COVER SHEET
2	2	DRAWING LIST, GENERAL NOTES, LEGEND, AND ABBREVIATIONS
3	3	PLAN OF EXISTING CONDITIONS
4	4	PLAN OF MODIFICATION
5	5	GRADING PLAN
6	6	CROSS-SECTIONS
7	7	SOLDIER PILE WALL PLAN VIEW
8	8	DETAILS
9	9	DETAILS

BASIS OF ELEVATIONS

THE BASIS OF ELEVATIONS IS A BENCH MARK (19RDS) LOCATED IN THE SE 1/4 OF SECTION 16, T9S, R93W, 6th P.M., TAKEN FROM THE SOUTH MAMM PEAK, QUADRANGLE, COLORADO, 7.5 MINUTE QUAD. (TOPOGRAPHIC MAP) PUBLISHED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY. SAID ELEVATION IS MARKED AS BEING 7252 FEET.

MONITORING POINTS

North	East	Elev	Point
48487.97	32788.41	7117.34	MP 1
48457.75	33095.86	7097.55	MP 2
48365.95	33299.41	7095.06	MP 3
48279.19	33235.68	7140.45	MP 4
48354.32	33038.97	7138.54	MP 5
48426.00	32837.07	7138.50	MP 6
48167.81	32751.57	7138.22	MP 7
48046.94	32967.81	7137.55	MP 8
48030.07	33139.37	7139.42	MP 9
47969.01	33260.73	7146.73	MP 10
47962.99	33182.46	7165.54	MP 11
47928.05	33111.83	7193.01	MP 12
47946.05	33013.15	7182.45	MP 13
47990.93	32914.20	7169.73	MP 14
48001.54	32840.50	7173.03	MP 15
48039.39	32739.02	7170.80	MP 16
48098.98	32713.78	7162.60	MP 17
48041.94	32674.14	7171.82	MP 18
48062.76	32556.96	7155.73	MP 19
47988.21	32614.75	7177.78	MP 20
47915.81	32712.28	7212.37	MP 21
47905.12	32810.28	7212.49	MP 22
47888.97	32903.49	7212.24	MP 23
47871.67	33012.84	7212.42	MP 24
47846.69	33139.95	7213.20	MP 25
47686.18	33189.38	7190.35	MP 26
47566.40	33102.28	7213.39	MP 27
47567.16	32867.45	7211.86	MP 28
47582.44	32662.55	7224.19	MP 29
47716.77	32628.09	7211.75	MP 30
47795.62	32152.99	7201.28	MP 31
47487.86	32652.09	7253.58	MP 32
47452.76	32861.87	7256.42	MP 33
47459.31	33078.42	7237.59	MP 34
48035.34	33008.55	7140.23	MPA1
48030.14	33027.22	7140.73	MPA2
47974.96	33024.13	7183.19	MPA3
47970.78	33038.42	7185.82	MPA4

NOTES:

- 1) DATA FOR MONITORING POINTS MP 1 THROUGH MP 34 FROM SURVEY ON 7-27-2017.
2) DATA FOR MONITORING POINTS MP A1 THROUGH MP A4 FROM SURVEY ON 8-1-2017.

LEGEND

- 7110 ——— EXISTING GROUND SURFACE CONTOUR
SB-101 ——— SOIL BORING LOCATION
MP 3 ——— MONITORING POINT LOCATION
——— TENSION CRACK

Attention:				
	2	9/14/17	ISSUED FOR CONSTRUCTION	JDD
	1	9/13/17	90% ISSUE TO CLIENT	JDD
	0	9/12/17	60% ISSUE TO CLIENT	JDD
	NO.	DATE	ISSUE/REVISION	APP

Designed:	J. DEUTO
Checked:	T. DAIGLE
Drawn:	K.CURTIN
Approved By:	J. NIEHOFF
Submittal Date:	9/14/2017



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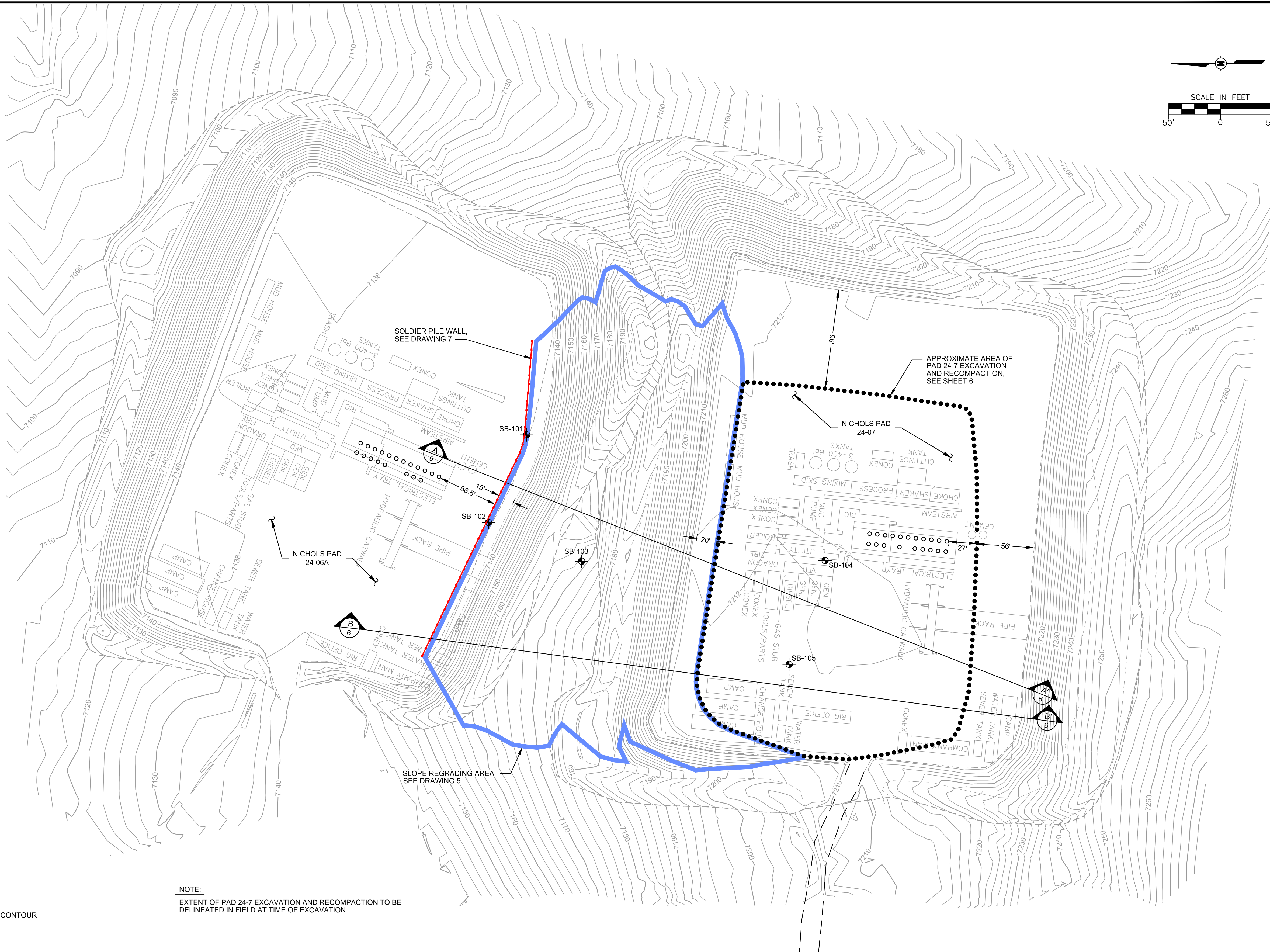
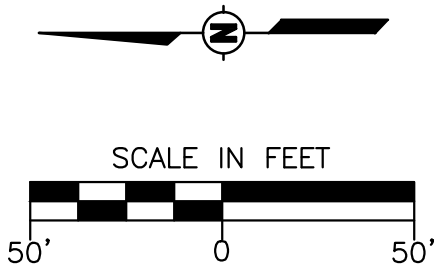
GEI Project 1703391

Nichols Pad 24-6A and 24-7
Stabilization

PLAN OF EXISTING
CONDITIONS

DWG. NO.
3

SHEET NO.
3 of 9



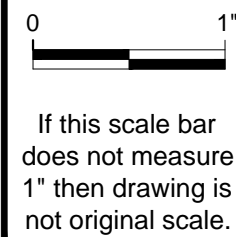
LEGEND

- 7110 ——— EXISTING GROUND SURFACE CONTOUR
- SB-101 ——— SOIL BORING LOCATION
- SOLDIER PILE WALL
- PAD 24-7 EXCAVATION AND RECOMPACTION AREA
- ENGINEERED STABILITY SLOPE AREA

NOTE:

EXTENT OF PAD 24-7 EXCAVATION AND RECOMPACTION TO BE DELINEATED IN FIELD AT TIME OF EXCAVATION.

Attention:				
	2	9/14/17	ISSUED FOR CONSTRUCTION	JDD
	1	9/13/17	90% ISSUE TO CLIENT	JDD
	0	9/12/17	60% ISSUE TO CLIENT	JDD
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Drawn:	K. CURTIN
Approved By:	J. NIEHOFF
Submittal Date:	9/14/2017



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GEI Project 1703391

Nichols Pad 24-6A and 24-7
Stabilization

PLAN OF MODIFICATION

DWG. NO.
4

SHEET NO.
4 of 9



- NOTES:
- 1) EXTENT OF PAD 24-7 EXCAVATION AND RECOMPACTION TO BE DELINEATED IN FIELD AT TIME OF EXCAVATION.
 - 2) SEE SHEET 6 FOR TYPICAL CUT / FILL CONFIGURATION.

- LEGEND
- 7180 EXISTING GROUND SURFACE CONTOUR
 - 7180 PROPOSED GRADE
 - PROPOSED SOLDIER PILE WALL
 - REGRADED SLOPE BREAKLINE
 - PAD 24-7 EXCAVATION AND RECOMPACTION AREA
 - TENSION CRACK

Attention:				
	2	9/14/17	ISSUED FOR CONSTRUCTION	JDD
	1	9/13/17	90% ISSUE TO CLIENT	JDD
	0	9/12/17	60% ISSUE TO CLIENT	JDD
NO.	DATE	ISSUE/REVISION	APP	

Designed: J. DEUTO
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Drawn: K. CURTIN
Approved By: J. NIEHOFF
Submittal Date: 9/14/2017



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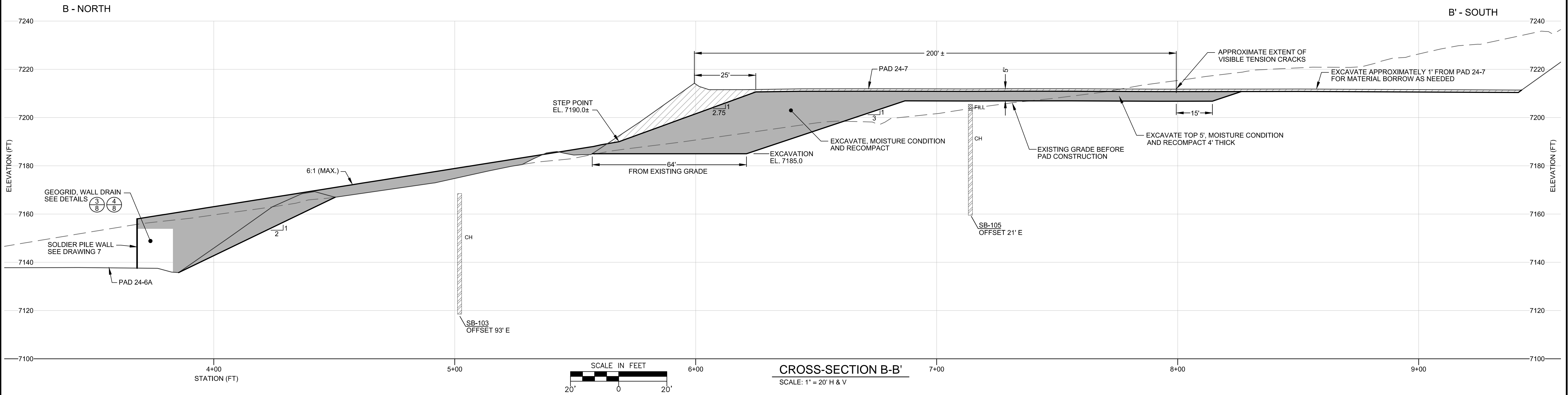
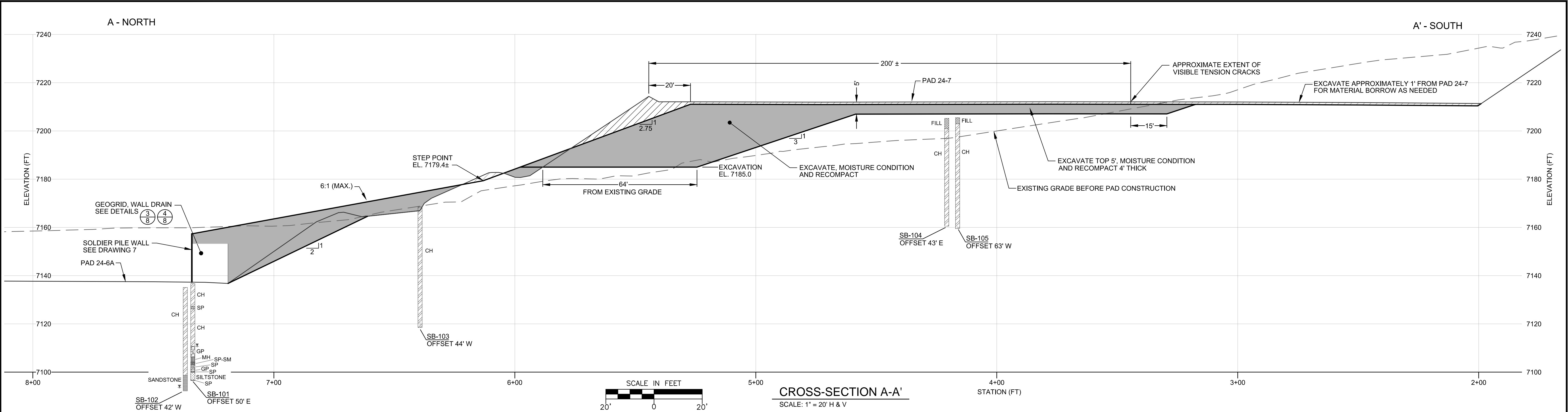
GEI Project 1703391

Nichols Pad 24-6A and 24-7
Stabilization

GRADING PLAN

DWG. NO.
5

SHEET NO.
5 of 9



NOTE:
PAD 24-7 AT NEW ELEVATION (POST BORROW) SHALL BE CONSTRUCTED 100% LEVEL.

Attention:				
	2	9/14/17	ISSUED FOR CONSTRUCTION	JDD
	1	9/13/17	90% ISSUE TO CLIENT	JDD
	0	9/12/17	60% ISSUE TO CLIENT	JDD
	NO.	DATE	ISSUE/REVISION	APP

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Approved By: J. NIEHOFF
Submittal Date: 9/14/2017



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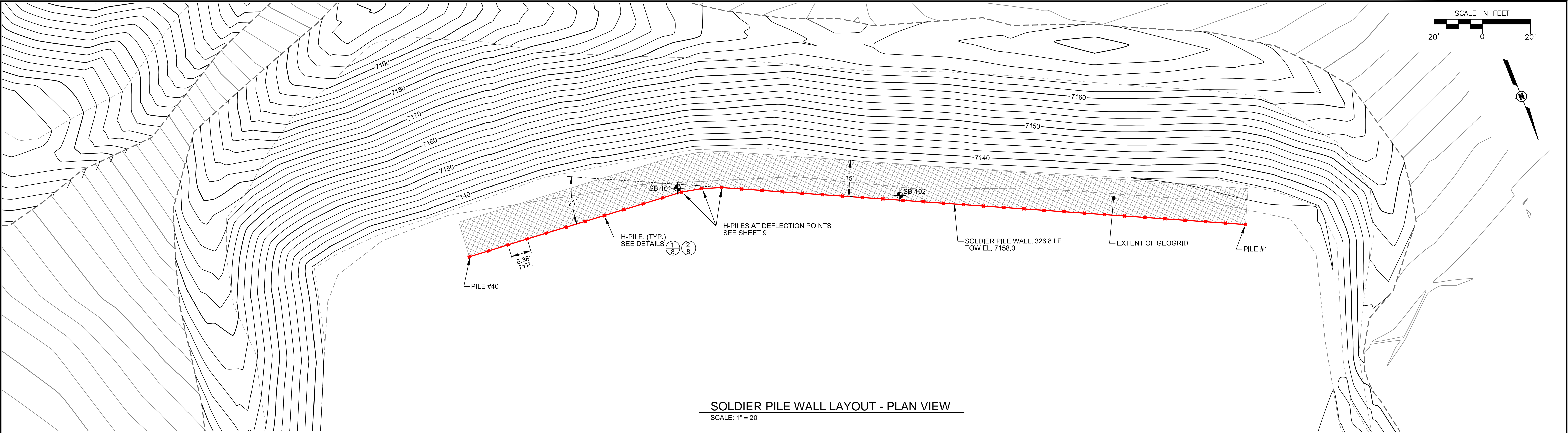
GEI Project 1703391

Nichols Pad 24-6A and 24-7
Stabilization

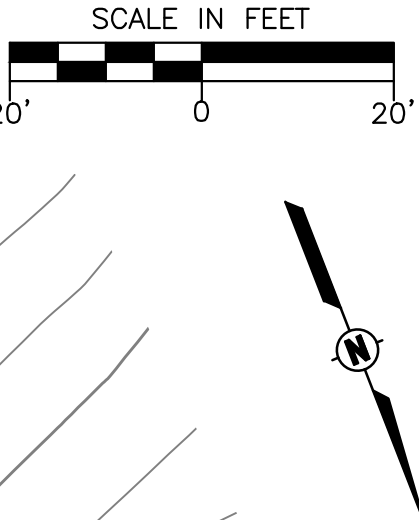
TYPICAL CROSS-SECTIONS

DWG. NO.
6

SHEET NO.
6 of 9



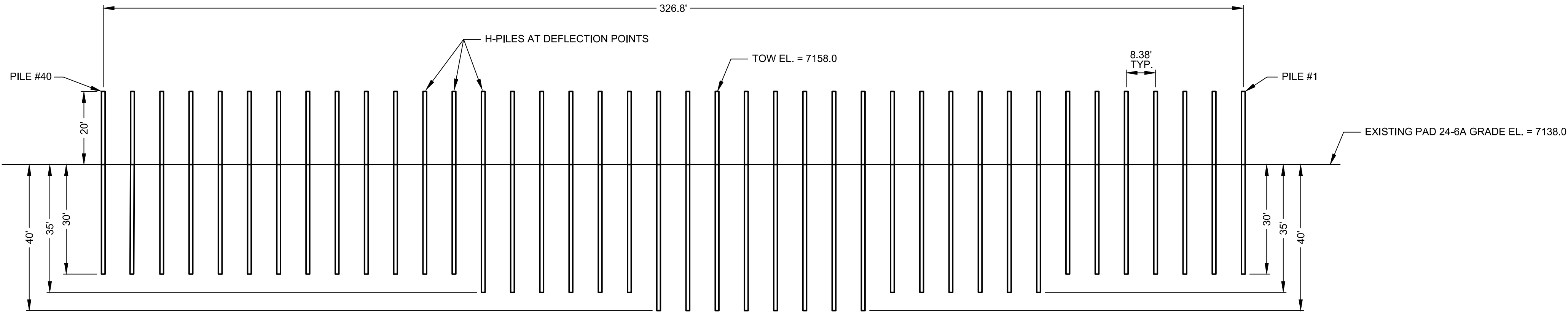
SOLDIER PILE WALL LAYOUT - PLAN VIEW
SCALE: 1" = 20'



H-PILE COORDINATES

H-Pile	North	East
1	48158.02	32772.84
2	48154.39	32780.39
3	48150.76	32787.95
4	48147.13	32795.51
5	48143.49	32803.06
6	48139.86	32810.62
7	48136.23	32818.18
8	48132.60	32825.73
9	48128.96	32833.29
10	48125.33	32840.84
11	48121.70	32848.40
12	48118.07	32855.96
13	48114.43	32863.51
14	48110.80	32871.07
15	48107.17	32878.62
16	48103.54	32886.18
17	48099.90	32893.74
18	48096.27	32901.29
19	48092.64	32908.85
20	48089.00	32916.41
21	48085.37	32923.96
22	48081.74	32931.52
23	48078.11	32939.07
24	48074.47	32946.63
25	48070.84	32954.19
26	48067.21	32961.74
27	48063.58	32969.30
28	48060.90	32977.21
29	48059.22	32985.37
30	48058.53	32993.68
31	48057.85	33002.04
32	48057.16	33010.40
33	48056.48	33018.75
34	48055.80	33027.11
35	48055.11	33035.46
36	48054.43	33043.82
37	48053.74	33052.18
38	48053.06	33060.53
39	48052.37	33068.89
40	48051.69	33077.24

- NOTES:
- 1) EXISTING TOPOGRAPHY SHOWN, SEE DRAWING 5 FOR GRADING PLAN.
 - 2) SOLDIER PILE WALL TOTAL LENGTH = 326.8 FEET.



SOLDIER PILE WALL LAYOUT - PROFILE
SCALE: 1" = 20'

Attention:				
0 1"				
If this scale bar does not measure 1" then drawing is not original scale.				
NO.	DATE	ISSUE/REVISION	APP	
2	9/14/17	ISSUED FOR CONSTRUCTION	JDD	
1	9/13/17	90% ISSUE TO CLIENT	JDD	
0	9/14/17	60% ISSUE FOR CLIENT	JDD	

Designed: J. DEUTO
Checked: T. DAIGLE
Drawn: K.CURTIN
Approved By: J. NIEHOFF
Submittal Date: 9/14/2017



Laramie Energy, LLC
1401 17th St., STE 1400
Denver, Colorado 80202

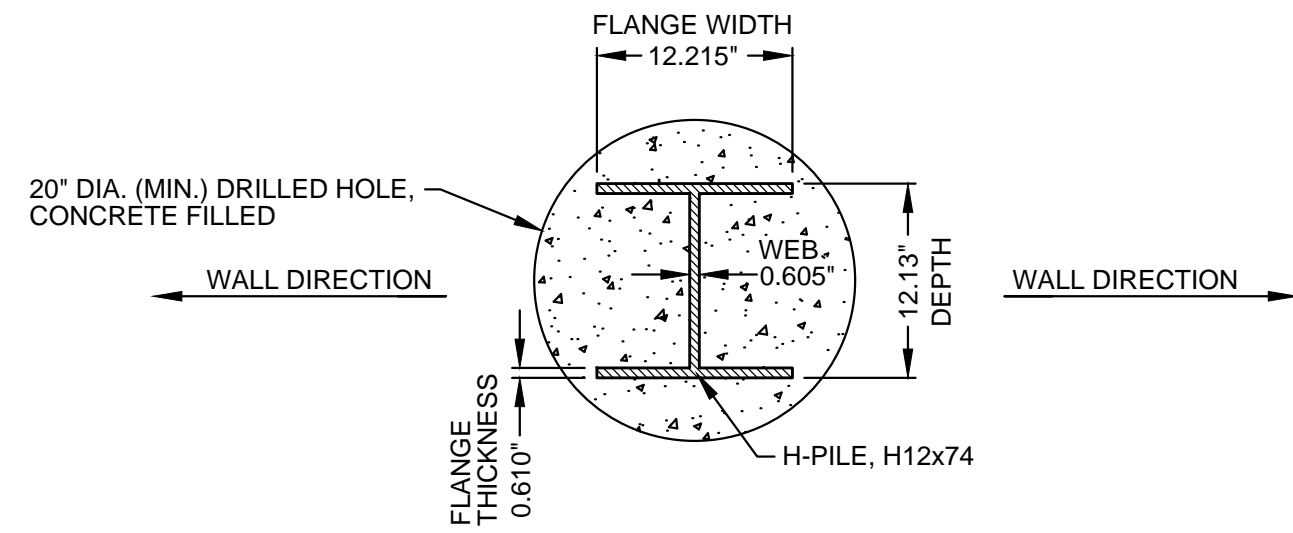
GEI Project 1703391

Nichols Pad 24-6A and 24-7
Stabilization

SOLDIER PILE WALL PLAN

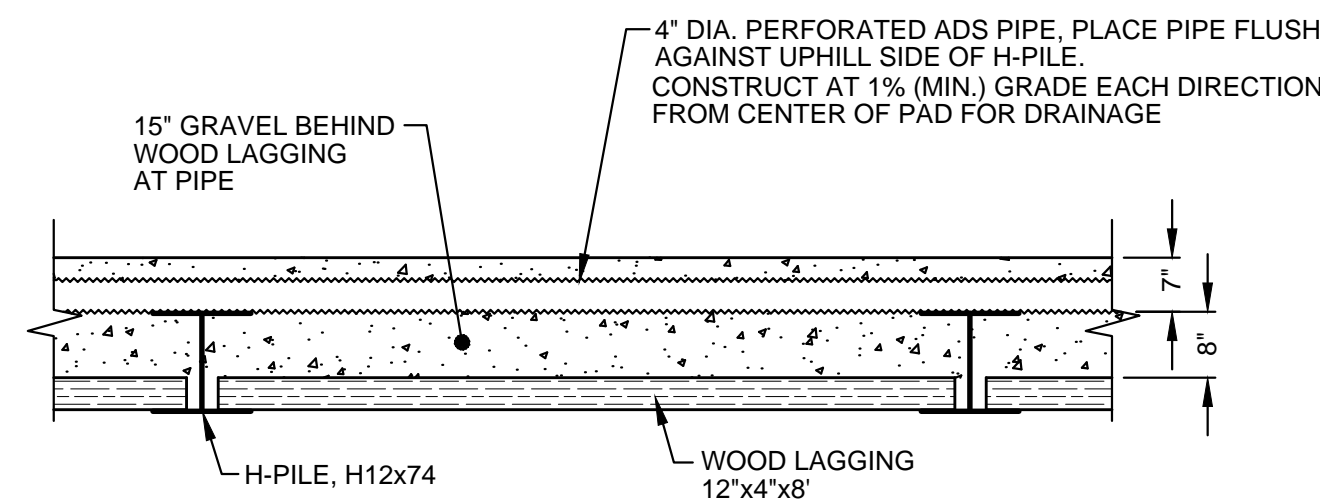
DWG. NO.
7

SHEET NO.
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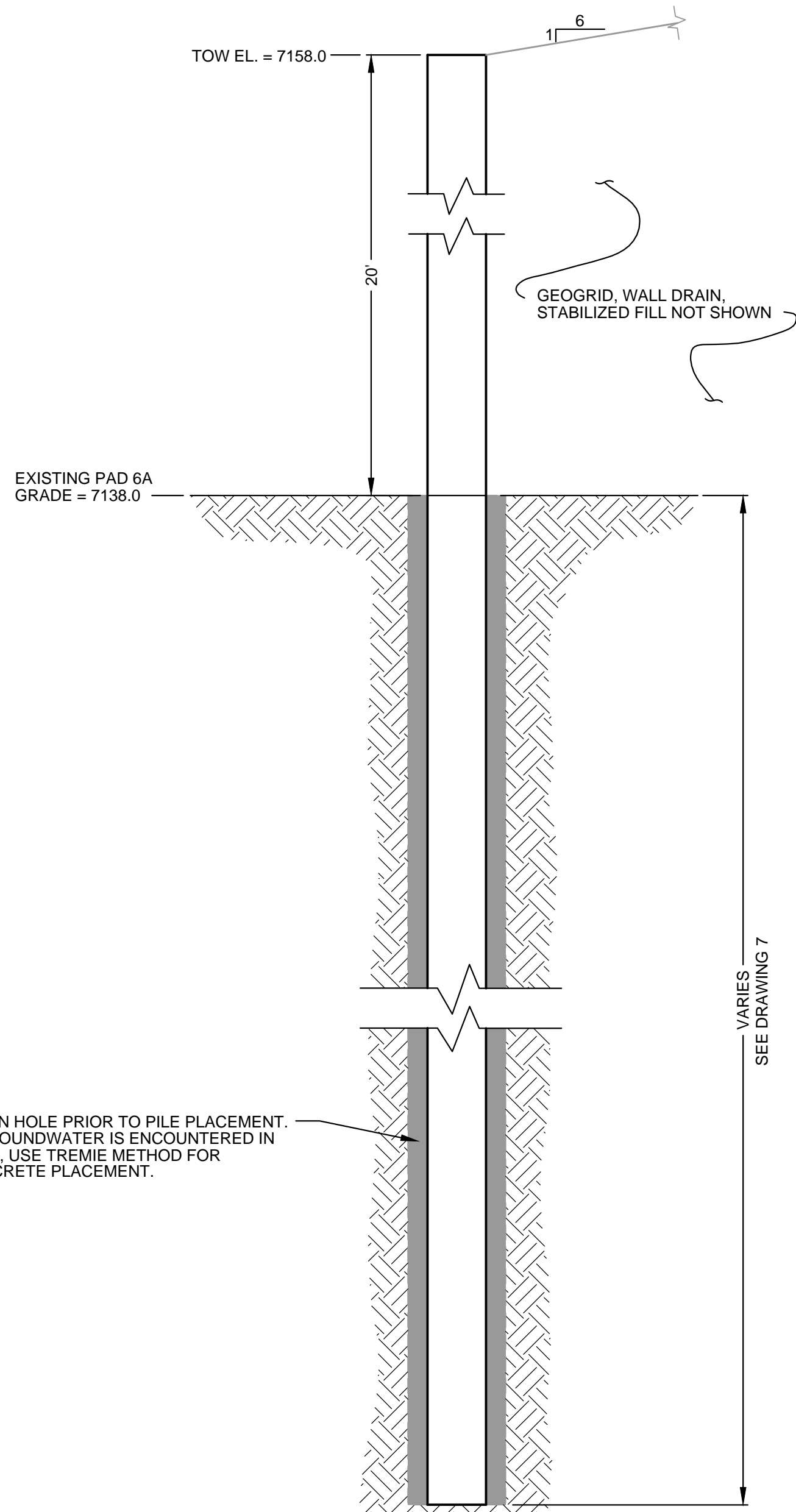


1
8

TYPICAL H-PILE DETAIL
SCALE: 1" = 1'

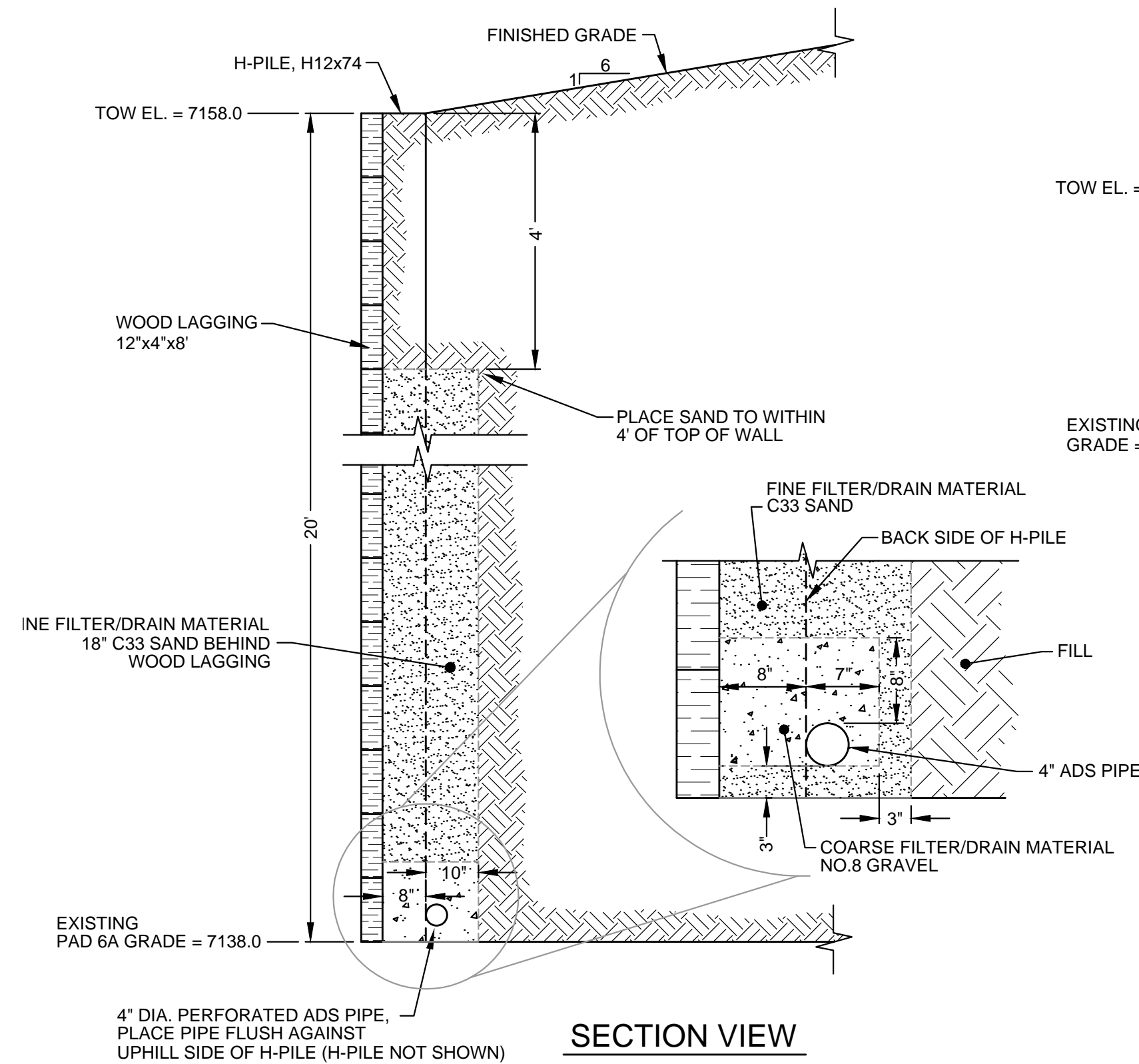


TOP VIEW



2
8

H-PILE DETAIL
SCALE: 1" = 2'

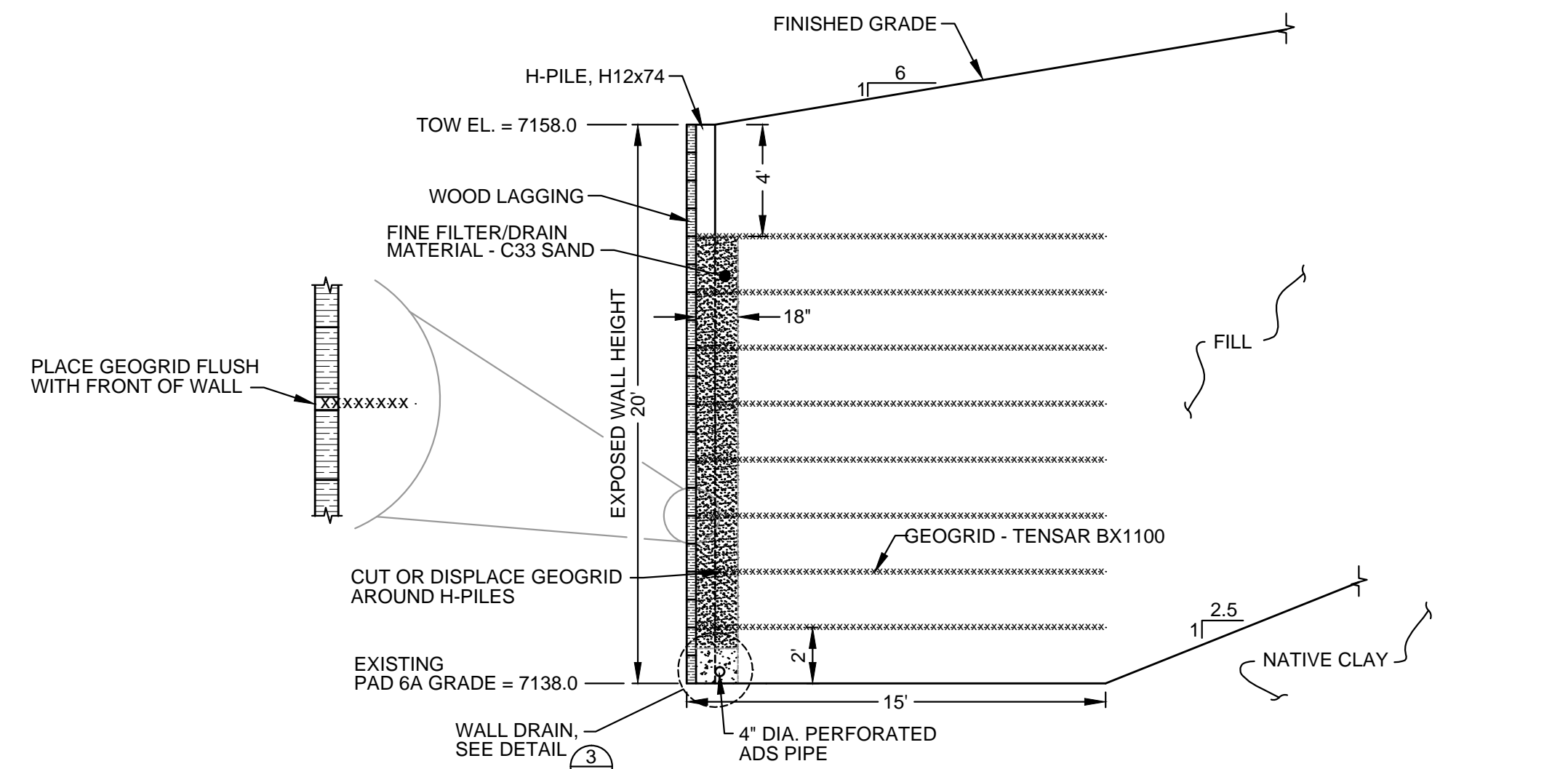


SECTION VIEW

NOTE:
ENDS OF ADS PIPE ARE TO BE LEFT OPEN AND EXPOSED AT EACH END OF WALL (DAYLIGHT) FOR CLEANOUT ACCESS

3
8

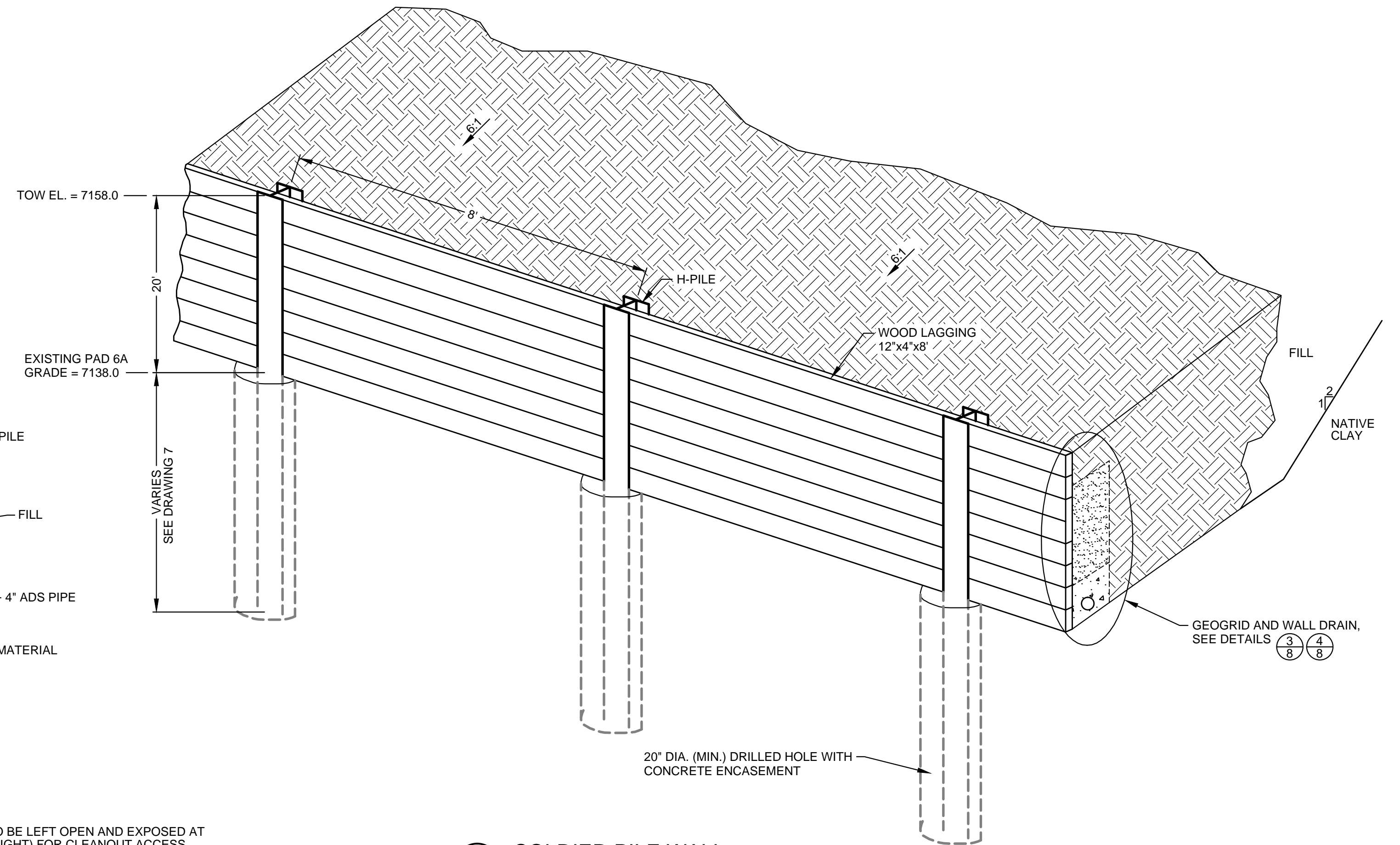
WALL DRAIN DETAILS
SCALE: 1" = 2'



4
8

GEOGRID LAYOUT
SCALE: 1" = 5'

NOTE:
GEOGRID STARTS 2' ABOVE PAD 24-6A GRADE



5
8

SOLDIER PILE WALL
NOT TO SCALE

Attention:				
0	1"			
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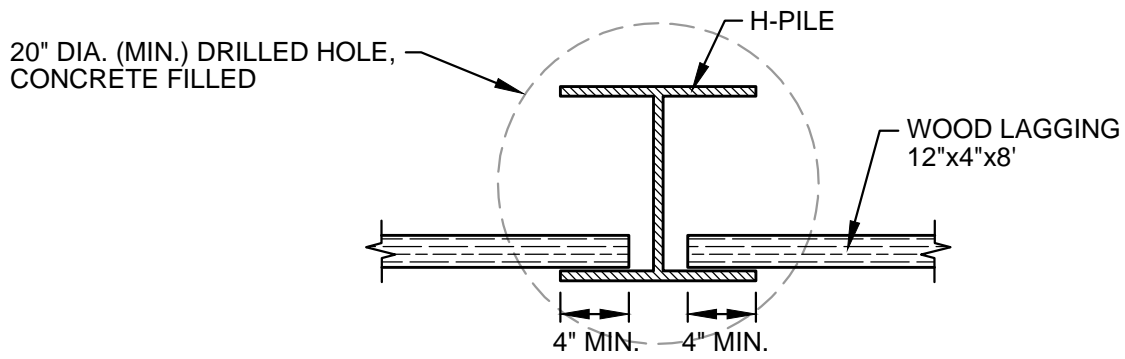
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Nichols Pad 24-6A and 24-7
Stabilization

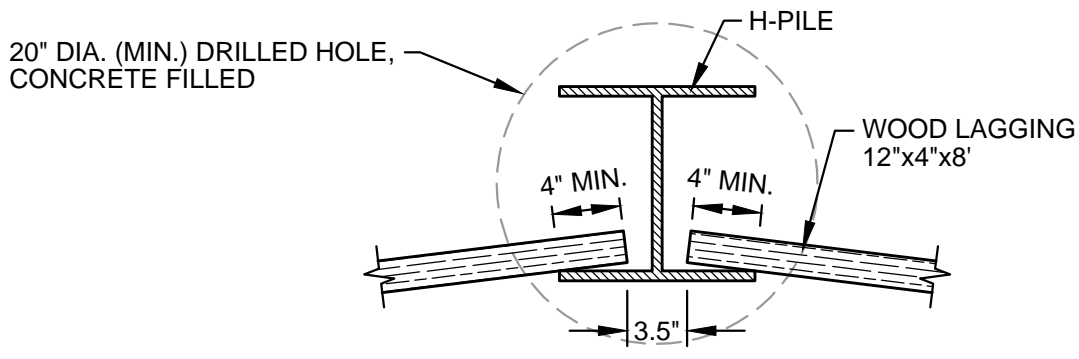
DETAILS

DWG. NO.
8

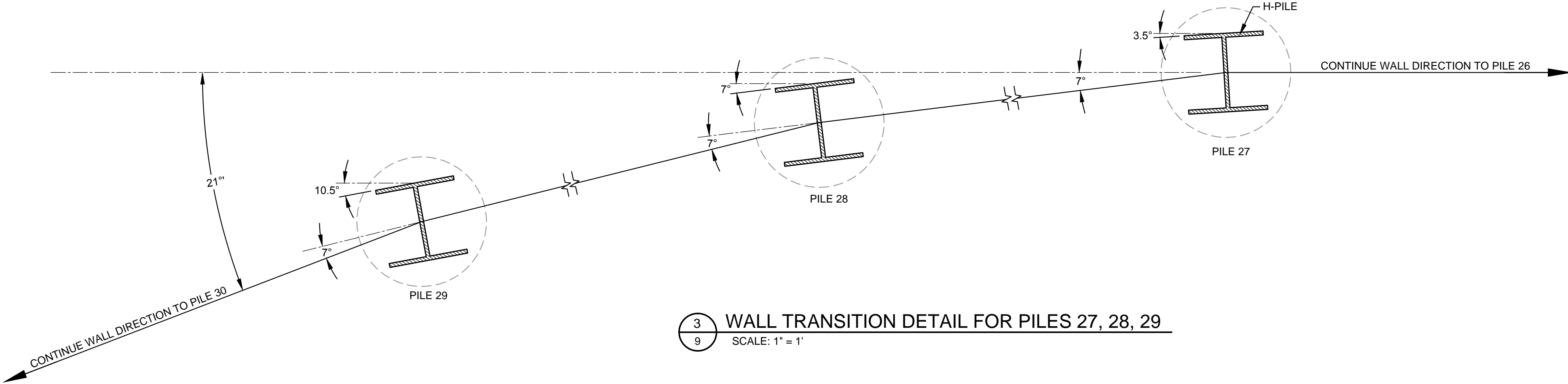
SHEET NO.
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1
9
TYPICAL H-PILE / LAGGING CONNECTION DETAIL
(STANDARD WALL - PILES 1-26, 30-40)
SCALE: 1" = 1'



2
9
TYPICAL H-PILE / LAGGING CONNECTION DETAIL
(WALL TRANSITION - PILES 27, 28, 29)
SCALE: 1" = 1'



3
9
WALL TRANSITION DETAIL FOR PILES 27, 28, 29
SCALE: 1" = 1'

Attention:				
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	1	9/13/17	90% ISSUE TO CLIENT	JDD
	0	9/12/17	60% ISSUE TO CLIENT	JDD
	NO.	DATE	ISSUE/REVISION	APP

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Denver, Colorado 80237
303-662-0100

Laramie Energy, LLC 1401 17th St., STE 1400 Denver, Colorado 80202	Nichols Pad 24-6A and 24-7 Stabilization	DWG. NO. 9
GEI Project 1703391	DETAILS	SHEET NO. 9 of 9