

Y:\Project Files\13268\DWG\13268B-CMPA.dwg 5/23/2024 3:35:05 PM

REFERENCE:

1. PLAT BY SHUPE SURVEY COMPANY, P.C., TITLED 'LEASE PARCEL SURVEY: EAST RIVER TERMINAL AND BWC TERMINAL', DATED 09/20/23.

NOTES:

1. BEARINGS AND COORDINATES SHOWN ON THIS SURVEY ARE BASED ON THE GEORGIA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NAD83 AND WERE ESTABLISHED USING RTK GPS WITH A VRS NETWORK.
2. FIELD EQUIPMENT USED FOR THIS SURVEY: CARLSON BRX7 RTK GPS WITH VRS NETWORK (eGPS SOLUTIONS)
3. THIS SURVEY AND ALL SUBSEQUENT REVISIONS ARE BASED SOLELY ON FIELD WORK THAT WAS COMPLETED ON 05/17/2024 (UNLESS OTHERWISE NOTED). SHUPE SURVEYING COMPANY, P.C. IS NOT RESPONSIBLE FOR ANY CHANGES TO SITE CONDITIONS AFTER THIS DATE.
4. THE ADJOINING PROPERTY INFORMATION WAS TAKEN FROM THE GLYNN COUNTY GIS WEBSITE (WWW.GLYNNCOUNTY.ORG) AND COURTHOUSE RESEARCH.
5. FRESHWATER WETLANDS AND SALT MARSHES MAY BE UNDER THE JURISDICTION OF THE CORPS OF ENGINEERS AND/OR THE DEPARTMENT OF NATURAL RESOURCES. LOT OWNERS AND THE DEVELOPER MAY BE SUBJECT TO PENALTY BY LAW FOR DISTURBANCE TO THESE PROTECTED AREAS WITHOUT PROPER PERMIT APPLICATIONS AND APPROVAL. FRESHWATER WETLANDS WERE NOT SURVEYED AS PART OF THIS PROJECT.
7. COASTAL MARSHLANDS PROTECTION ACT (CMPA) JURISDICTION LINE WAS DELINEATED BY THE GEORGIA DEPARTMENT OF NATURAL RESOURCES. THE CMPA LINE IS MARKED WITH PVC PIPE.
8. THIS PROPERTY MAY BE SUBJECT TO THE 25' CMPA BUFFER.
9. THE TERM "CERTIFICATION" AS USED IN BOARD RULE 180-6-.09(2) AND (3) AND RELATING TO PROFESSIONAL SURVEYING SERVICES AS DEFINED IN O.C.G.A. 43-15-2(6) AND (11) SHALL MEAN A SIGNED STATEMENT BASED UPON FACTS AND KNOWLEDGE KNOWN TO THE REGISTRANT AND IS NOT A GUARANTEE OR WARRANTY, EITHER EXPRESSED OR IMPLIED.

LINE	BEARING	DISTANCE
L1	S 54°18'53" E	62.16'
L2	S 60°40'06" E	14.53'
L3	S 61°00'39" E	82.96'
L4	S 31°29'00" W	15.65'
L5	N 73°28'22" W	45.29'
L6	N 55°07'42" W	27.62'
L7	N 59°22'53" W	79.55'
L8	N 80°33'28" W	26.87'
L9	N 79°45'04" W	41.62'
L10	N 42°25'04" W	12.16'
L11	S 75°52'56" W	16.66'
L12	N 75°38'04" W	62.60'
L13	S 88°21'51" W	22.25'
L14	S 23°30'50" W	4.73'
L15	S 26°40'52" E	6.28'
L16	S 28°46'22" W	10.55'
L17	S 39°39'10" W	28.52'
L18	S 42°07'40" W	32.63'
L19	S 46°04'41" W	22.90'
L20	S 45°36'21" W	35.68'
L21	S 41°18'07" W	44.87'
L22	S 41°42'32" W	31.13'
L23	S 42°50'12" W	48.09'
L24	S 34°08'57" W	7.93'

LINE	BEARING	DISTANCE
L25	S 33°45'23" W	17.95'
L26	S 38°05'56" E	21.89'
L27	S 56°57'34" E	36.96'
L28	N 44°30'01" W	41.44'
L29	N 15°27'47" E	9.21'
L30	N 58°14'17" E	22.16'
L31	N 42°07'20" E	32.29'
L32	N 45°16'12" E	28.86'
L33	N 44°36'34" E	46.86'
L34	N 42°22'42" E	63.20'
L35	N 43°49'31" E	43.50'
L36	N 39°52'26" E	35.22'
L37	S 74°49'12" E	11.72'
L38	S 73°55'19" E	19.71'
L39	S 78°03'16" E	33.85'
L40	S 80°09'57" E	34.02'
L41	S 71°32'04" E	20.76'
L42	S 73°43'59" E	19.02'
L43	N 83°54'16" E	16.82'
L44	N 02°45'02" W	10.83'
L45	N 52°29'25" E	24.43'
L46	N 14°08'58" E	28.61'
L47	S 01°04'57" E	24.30'
L48	S 87°00'51" E	12.69'

NEWCASTLE STREET  
(90' R/W)

FIFTH AVENUE  
(90' R/W)

LANIER BLVD.  
(90' R/W)

PARCEL B-1

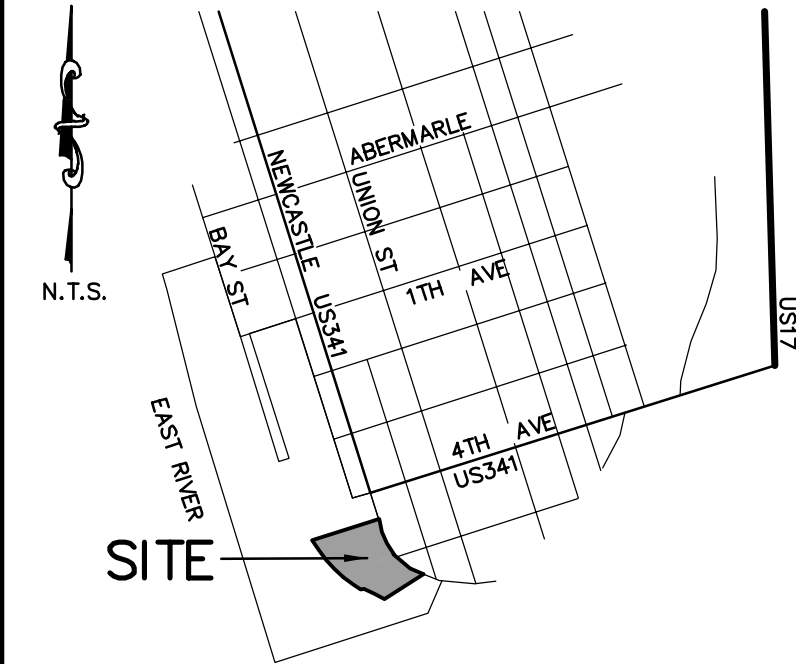
PARCEL 'D'

PARCEL 'E'

PARCEL E-1

PARCEL D-1

(SEE NOTE 1)



VICINITY MAP (NOT TO SCALE)

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LEGEND:

- PVC SET
- IRF 1/2" IRON REBAR FOUND
- PNS POINT NOT SET

■ SALT MARSH



C. TEEPLE HILL, GA PLS #3081

NO. REVISION BY DATE

A CMPA JURISDICTION LINE SURVEY OF:

**BWC TERMINALS**

26TH G.M.D.,  
CITY OF BRUNSWICK,  
GLYNN COUNTY, GEORGIA

PREPARED FOR:  
BWC TERMINALS, LLC



SHUPE SURVEYING COMPANY, P.C.

3837 DARIEN HIGHWAY  
BRUNSWICK, GA 31525  
912-265-0562

CERTIFICATE OF AUTHORIZATION: LSF317



SCALE 1" = 40' DRAWING DATE 05/23/2024

FILE 13268B DRAWN BY AJ

DRAWING 13268B-CMPA CREW CHIEF TJ

SHEET 1 OF 1



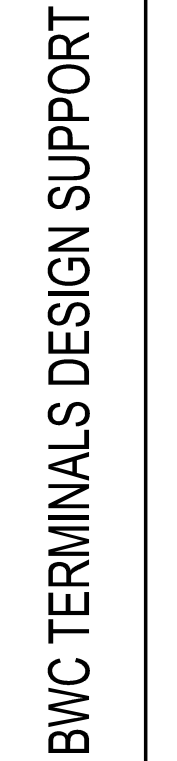
C



A

**PRELIMINARY**  
NOT TO BE USED FOR CONSTRUCTION

ISSUE DATE: 03-25-2024	SOLICITATION NO.:
DRAWN BY: CCW	CHECKED BY: JPB
FILE NAME: 23-1023 COVER.DWG	CATEGORY CODE:
SIZE: ANSI D	SUBMITTED BY: CCW
	CONTRACT NO.:
	23-1023



SHEET ID  
G001



## GENERAL NOTES

3. ALL WORK SHALL CONFORM WITH THESE DRAWINGS, PROJECT SPECIFICATIONS AND WITH ALL CURRENT APPLICABLE CODES AND THE LATEST REVISIONS OF THE FOLLOWING REFERENCE DOCUMENTS:
  - A. AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY ASSOCIATION'S 2020 MANUAL FOR RAILWAY ENGINEERING, AND
  - B. CSX'S STANDARD SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PRIVATE SIDETRACKS.
2. THE CONTRACTOR SHALL OBTAIN ALL APPLICABLE PERMITS AND LICENSES AND KEEP COPIES OF THE SAME ON SITE DURING CONSTRUCTION.
3. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS. ANY DISCREPANCIES FOUND SHALL BE CALLED TO THE ATTENTION OF THE OWNER AND BE RESOLVED BEFORE PROCEEDING WITH THE WORK.
4. ALL INFORMATION SHOWN ON THESE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST PRESENT KNOWLEDGE, BUT WITHOUT GUARANTEE OF ACCURACY. THE CONTRACTOR SHALL REPORT IMMEDIATELY TO THE OWNER ANY CONDITIONS CONFLICTING WITH THE DRAWINGS. FIELD MODIFICATIONS TO THE DRAWINGS SHALL NOT BE MADE WITHOUT THE CONSENT OF THE OWNER.
5. THE CONTRACTOR SHALL, ON A DAILY BASIS, REMOVE DEBRIS FROM THE SITE. DISPOSAL OF ALL MATERIALS IS THE CONTRACTOR'S RESPONSIBILITY, EXCEPT AS OTHERWISE NOTED.
6. THE CONTRACTOR SHALL ABIDE BY ALL APPLICABLE LOCAL AND STATE ENVIRONMENTAL PROTECTION STANDARDS, LAWS AND REGULATIONS.
7. ITEMS INDICATED TO BE REMOVED AND REINSTALLED SHALL BE REMOVED BY THE CONTRACTOR, STORED AND REINSTALLED WITHOUT DAMAGE. DAMAGED ITEMS SHALL BE REPLACED AT NO COST TO THE OWNER.
8. ALL APPLICABLE SAFETY REGULATIONS SHALL BE STRICTLY FOLLOWED. METHODS OF DEMOLITION, CONSTRUCTION, AND ERECTION OF STRUCTURAL MATERIAL IS THE CONTRACTOR'S RESPONSIBILITY.
9. THE CONTRACTOR SHALL SUBMIT A WRITTEN CONSTRUCTION PHASING PLAN TO THE OWNER FOR THEIR APPROVAL PRIOR TO ANY ON SITE CONSTRUCTION ACTIVITY. DO NOT BLOCK ACCESS TO THE OFFICE PARK DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE DEMOLITION AND INSTALLATION OF ALL WORK WITH THE OWNER.
10. CONTRACTOR SHALL VERIFY ALL DIMENSIONS SHOWN ON THE PLANS WITH THE EXISTING CONDITIONS IN THE FIELD PRIOR TO COMMENCING DEMOLITION, FABRICATION, AND CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER OF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THE CONTRACT DOCUMENTS.
11. ALL ELEVATIONS SHOWN ON THE DRAWINGS ARE REFERENCED TO NAVD 88.
12. THE CONTRACTOR SHALL KEEP AND MAINTAIN A SET OF PROJECT PLANS AND SPECIFICATIONS ON THE SITE AT ALL TIMES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING WITH MATCHING MATERIALS ANY PAVEMENT, DRIVEWAYS, WALKS, CURBS, PAVEMENT MARKINGS, ETC. THAT MUST BE CUT OR REMOVED, OR THAT ARE DAMAGED DURING CONSTRUCTION.
14. CONTRACTOR SHALL STOP WORK AND NOTIFY ENGINEER IF ANYTHING OF HISTORIC OR ARCHEOLOGICAL SIGNIFICANCE IS ENCOUNTERED.

## UTILITIES

1. PRIOR TO CONSTRUCTION OR EXCAVATION, THE CONTRACTOR SHALL ASSUME THE RESPONSIBILITY OF LOCATING ANY AND ALL UNDERGROUND UTILITIES (PUBLIC OR PRIVATE) THAT MAY EXIST OR CROSS THROUGH THE AREA OF CONSTRUCTION WHETHER OR NOT THEY ARE SHOWN ON THESE PLANS. BEFORE DIGGING, TO AVOID THE UTILITIES, THE CONTRACTOR SHALL CALL THE "UTILITIES PROTECTION CENTER" AT 1-800-282-7411. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING, AT HIS SOLE EXPENSE, ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.
2. THIS PLAN DOES NOT GUARANTEE THE EXISTENCE, NONEXISTENCE, SIZE, TYPE, LOCATION, ALIGNMENT OR DEPTH OF ANY OR ALL UNDERGROUND UTILITIES OR OTHER FACILITIES, WHERE SURFACE FEATURES (MANHOLES, CATCH BASINS, VALVES, ETC.) ARE UNAVAILABLE OR INCONCLUSIVE, INFORMATION SHOWN MAY BE FROM UTILITY OWNER'S RECORDS AND/OR ELECTRONIC LINE TRACING. THE RELIABILITY OF WHICH IS UNCERTAIN. THE CONTRACTOR SHALL PERFORM WHATEVER TEST EXCAVATION OR OTHER REINVESTIGATION AS NECESSARY TO VERIFY LOCATIONS AND CLEARANCES.
3. UNLESS OTHERWISE NOTED, UTILITIES ARE TO BE ADJUSTED BY THE RESPECTIVE OWNER.
4. STATE LAW MANDATES THE NOTIFICATION OF UTILITY OWNERS 48 HOURS IN ADVANCE OF EXCAVATION. FOR LOCATION OF UTILITIES CALL THE "UTILITY PROTECTION CENTER" AT 1-800-282-7411, 48 HOURS PRIOR TO LAND DISTURBANCE ACTIVITY.
5. CONTRACTOR SHALL CONFORM TO THE "GEORGIA HIGH VOLTAGE SAFETY ACT" AND SHALL CONTACT THE NECESSARY AUTHORITIES PRIOR TO START OF CONSTRUCTION.

## COORDINATION

1. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH OWNER.
2. THE CONTRACTOR SHALL SUBMIT A SCHEDULE FOR CONSTRUCTION TO OWNER, IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
3. IMMEDIATELY PRIOR TO THE BEGINNING OF CONSTRUCTION, THE CONTRACTOR SHALL ARRANGE A MEETING WITH OWNER TO DISCUSS COORDINATION OF CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL BE SUBJECT TO AND COMPLY WITH COORDINATION REQUIREMENTS OF OWNER.

## DEMOLITION

1. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES TO REMAIN IN PLACE.
2. ALL MATERIALS REMOVED UNDER DEMOLITION, NOT TO BE RELOCATED OR TO BE TURNED OVER TO THE OWNER, SHALL BE REMOVED FROM THE SITE.

## CONSTRUCTION

1. SUBMITTALS ON MATERIALS FOR THIS PROJECT SHALL BE PROVIDED TO THE OWNER FOR APPROVAL PRIOR

TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION.

2. ALL CONSTRUCTION ACTIVITIES SHALL ONLY TAKE PLACE WITHIN CLEARING LIMITS, UNLESS OTHERWISE NOTED.
3. ALL CLEARING, GRUBBING, AND GRADING SHALL BE PERFORMED IN ACCORDANCE WITH SPECIFICATIONS AND STANDARDS.
4. EXISTING VEGETATION SURROUNDING THE CONSTRUCTION AREA SHALL REMAIN IN A NATURAL STATE.
5. THE CONTRACTOR SHALL STRIP TOPSOIL AND ANY ORGANIC LADEN SOIL AND STORE FOR USE IN BACKFILLING AND LANDSCAPING FOR SITE RESTORATION. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ANY EXCESS SOIL AFTER RESTORATION OF THE SITE.
6. WHEN MATERIALS WHICH ARE UNSUITABLE FOR FOUNDATIONS, SUBGRADES, OR PURPOSE OCCUR WITHIN THE LIMITS OF CONSTRUCTION, THE CONTRACTOR SHALL BE REQUIRED TO EXCAVATE SUCH MATERIAL BELOW THE GRADE SHOWN ON THE PLANS. THE AREAS TO BE EXCAVATED SHALL BE BACKFILLED WITH APPROVED SUITABLE OR SELECT FILL MATERIAL.
7. ANY NECESSARY FILL SHALL BE PLACED IN 6" LIFTS. ALL FILL SHALL BE COMPACTED TO 95% MODIFIED STANDARD PROCTOR. SUBGRADE SHALL BE PROOF-ROLLED PER THE DIRECTION OF THE OWNER. AREAS WHICH RUT EXCESSIVELY SHALL BE UNDERCUT AND REPLACED WITH CONTROLLED FILL.
8. FINISHED SLOPES SHALL BE GRADED TO ENSURE POSITIVE DRAINAGE AWAY FROM ALL WORK AND TO EXISTING DITCHES.
9. CONTRACTOR SHALL REMAIN WITHIN PROJECT LIMITS DURING ALL CONSTRUCTION ACTIVITIES.

## SURVEY NOTES

1. VERTICAL DATUM - ELEVATIONS SHOWN ARE IN FEET AND ARE BASED ON NAVD 88 DATUM.
2. HORIZONTAL DATUM - GEORGIA STATE PLANE COORDINATE SYSTEM, NAD 83.
3. THESE DRAWINGS ARE BASED ON A FIELD SURVEY PREPARED BY SHUPE SURVEYING, DATED JUNE 2023
4. FOR EXISTING CONDITIONS, SEE SHEET C101.
5. FOR PROPOSED PLAN & PROFILE, SEE SHEET C102.

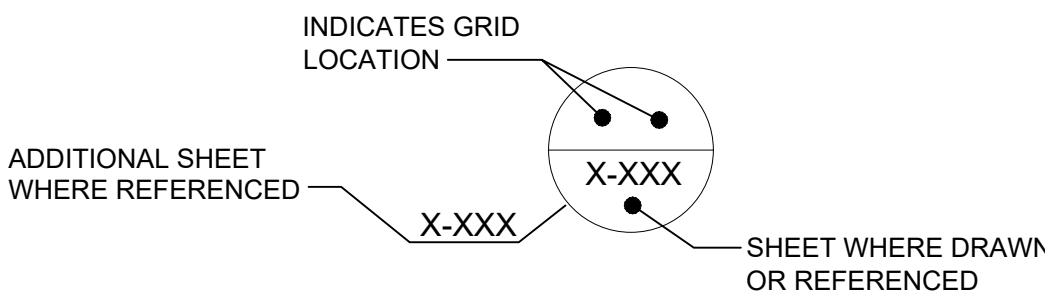
## LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
ADJACENT PROPERTY LINE		
CHANNEL/DITCH TOP OF BANK		
CHANNEL/DITCH TOE OF BANK		
CHANNEL/DITCH CENTER		
TREE LINE		
CONTOURS		
UNDERGROUND POWER		
OVERHEAD POWER		
POWER POLE		
UNDERGROUND COMMUNICATION		
WATER PIPE		
WATER MANHOLE		
WATER LATERAL STUBOUT		
WATER VALVE		
FIRE HYDRANT		
SEWER PIPE		
SEWER MANHOLE		
STORM PIPE		
STORM MANHOLE		
WETLAND		

**ABBREVIATIONS:**

APPROX = APPROXIMATE  
ASTM = AMERICAN SOCIETY FOR TESTING AND MATERIALS  
BLDG = BUILDING  
CLR = CLEAR  
CMF = CONCRETE MONUMENT FOUND  
CMP = CORRUGATED METAL PIPE  
CONC = CONCRETE  
DB = DEED BOOK  
DEMO = DEMOLITION  
DIM = DIMENSION  
DWG = DRAWING  
E = EAST  
EA = EACH  
EL = ELEVATION  
ELEV = ELEVATION  
EPD = ENVIRONMENTAL PROTECTION DIVISION  
ETC = ET CETERA  
EXIST = EXISTING  
FG = FINISHED GRADE  
FPS = FEET PER SECOND  
FT = FEET  
GDOT = GEORGIA DEPARTMENT OF TRANSPORTATION  
HWY = HIGHWAY  
IAW = IN ACCORDANCE WITH  
IN = INCHES  
INC = INCORPORATED  
INV = INVERT  
IRF = IRON ROD FOUND  
IRS = IRON ROD SET  
LB = POUND  
LF = LINEAR FEET  
LH = LEFT HAND  
MAX = MAXIMUM  
MDD = MAXIMUM DRY DENSITY  
MIN = MINIMUM  
MISC = MISCELLANEOUS  
N = NORTH  
N/F = NOW OR FORMERLY  
NAD = NORTH AMERICAN DATUM  
NAVD = NORTH AMERICAN VERTICAL DATUM  
NIC = NOT IN CONTRACT  
No. = NUMBER  
NTS = NOT TO SCALE  
OC = ON CENTER  
OHPL = OVERHEAD POWER LINE  
PG = PAGE  
PKF = P.K. NAIL FOUND  
PP = POWER POLE  
RW = RIGHT OF WAY  
RCP = REINFORCED CONCRETE RCP  
REQ'D = REQUIRED  
RH = RIGHT HAND  
S = SOUTH  
SCH = SCHEDULE  
SF = SQUARE FEET  
SR = STATE ROAD  
ST = STREET  
STA = STATION  
STD = STANDARD  
SY = SQUARE YARD  
TP = TOP OF PAVEMENT  
T/R = TOP OF RAIL  
TW = TOP OF WALK (SIDEWALK)  
TYP = TYPICAL  
UON = UNLESS OTHERWISE NOTED  
W = WEST  
W/ = WITH  
WP = WORK POINT  
# = NUMBER OR POUNDS  
& = AND  
@ = AT  
¢ = CENTERLINE  
Ø = DIAMETER  
¢ = PLATE  
" = SECONDS OR INCH  
' = MINUTES OR FEET  
± = PLUS OR MINUS  
° = DEGREES  
% = PERCENT

### SECTION AND DETAIL SYMBOL



**BALL MARITIME GROUP**  
 4 Cedar View Court | Savannah, Georgia | 31410 | 912.662.2914  
[www.ballmaritime.com](http://www.ballmaritime.com)  
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## BWC TERMINALS DESIGN SUPPORT

## GENERAL NOTES

SHEET ID  
G002

**PRELIMINARY**  
NOT TO BE USED FOR CONSTRUCTION

























Disturbed Area Stabilization  
(With Temporary Seeding)

DS2



DEFINITION

The establishment of temporary vegetative cover with fast growing seedlings for seasonal protection on disturbed or denuded areas.

PURPOSE

- To reduce runoff and sediment damage of down stream resources
- To protect the soil surface from erosion
- To improve wildlife habitat
- To improve aesthetics
- To improve lith, infiltration and aeration as well as organic matter for permanent plantings

REQUIREMENT FOR REGULATORY COMPLIANCE

Mulch or temporary grassing shall be applied to all exposed areas within 14 days of disturbance. Temporary grassing, instead of mulch, can be applied to rough graded areas that will be exposed for less than six months. If an area is expected to be undisturbed for longer than six months, permanent perennial vegetation shall be used. If optimum planting conditions for temporary grassing is lacking, mulch can be used as a singular erosion control device for up to six months but it shall be applied at the appropriate depth, anchored, and have a continuous 90% cover or greater of the soil surface. Refer to specification Ds1-Disturbed Area Stabilization (With Temporary Seeding).

CONDITIONS

Temporary vegetative measures should be coordinated with permanent measures to assure economical and effective stabilization. Most types of temporary vegetation are ideal to use as companion crops until the permanent vegetation is established. Note: Some species of temporary vegetation are not appropriate for companion crop plantings because of their potential to out-compete the desired species (e.g. annual ryegrass). Contact NRCS or the local SWCD for more information.

Table 6-4.1 - Temporary Cover or Companion Cover Crops

PLANT, PLANTING RATE, AND PLANTING DATE FOR TEMPORARY COVER OR COMPANION CROPS\*

Species	Broadcast Rates	Resource Area <sup>1</sup>	Planting Dates by Resource Area <sup>2</sup>	Remarks
	Pure Live Seed (PLS) Per 1000 sq ft		Solid lines indicate optimum dates; dotted lines indicate permissible but marginal dates	
	Rate Per Acre <sup>3</sup>		J F M A M J J A S O N D	
BARLEY <i>Hordeum vulgare</i>				
alone	3 bu. (144 lbs)	M-L		
in mixture	1/2 bu. (24 lbs)	P		4,000 seed per pound. Winter hardy. Use on productive soils.
LESPEDeza ANNUAL <i>Unspiculated alba</i>				
alone	40 lbs	M-L		
in mixture	10 lbs	P		200,000 seed per pound. May volunteer for several years. Use in wetland EL.
LOVEGRASS, WEEPING <i>Elymus caput-medusae</i>				
alone	4 bu. (192 lbs)	M-L		
in mixture	2 bu. (96 lbs)	P		1,300,000 seed per pound. May test for several years. Use with Southern lespedeza.
MILLET, BROWNTOP <i>Pennisetum polystachyon</i>				
alone	40 lbs	M-L		
in mixture	10 lbs	P		137,000 seed per pound. Quick dense cover. Will provide extensive competition in mixtures if seeded at high rate.

Species	Broadcast Rates	Resource Area <sup>1</sup>	Planting Dates by Resource Area <sup>2</sup>	Remarks
	Pure Live Seed (PLS) Per 1000 sq ft		Solid lines indicate optimum dates; dotted lines indicate permissible but marginal dates	
	Rate Per Acre <sup>3</sup>		J F M A M J J A S O N D	
MILLET PEARL <i>Pennisetum glaucum</i>				
alone	50 lbs	M-L		
		P		88,000 seed per pound. Quick dense cover. May reach 5 feet in height. Not recommended for mixtures.
OATS <i>Avena sativa</i>				
alone	4 bu. (192 lbs)	M-L		
in mixture	1 bu. (32 lbs)	P		13,000 seed per pound. Use on productive soils. Not as winter hardy as rye or barley.
RYE <i>Sectia cereale</i>				
alone	3 bu. (168 lbs)	M-L		
in mixture	1/2 bu. (24 lbs)	P		18,000 seed per pound. Quick cover. Drought tolerant and winter hardy.
RYEGRASS, ANNUAL <i>Lolium temulentum</i>				
alone	40 lbs	M-L		
		P		227,000 seed per pound. Dense cover. Very competitive and is not to be used in mixtures.
SUDANGRASS <i>Sorghum sudanense</i>				
alone	50 lbs	M-L		
		P		55,000 seed per pound. Good on droughty sites. Not recommended for mixtures.

SPECIFICATIONS  
Grading and Shaping

Excessive water run-off shall be reduced by properly designed and installed erosion control practices such as closed drains, ditches, dikes, diversions, sediment barriers and others.

No shaping or grading is required if slopes can be stabilized by hand-seeded vegetation or if hydraulic seeding equipment is to be used.

Seedbed Preparation

When a hydraulic seeder is used, seedbed preparation is not required. When using conventional or hand-seeding, seedbed preparation is not required if the soil material is loose and not sealed by rainfall.

When soil has been sealed by rainfall or consists of smooth cut slopes, the soil shall be pitted, trenched or otherwise scarified to provide a place for seed to lodge and germinate.

Lime and Fertilizer

Agricultural lime is required unless soil tests indicate otherwise. Apply agricultural lime at a rate determined by soil test for pH. Quick acting lime should be incorporated to modify pH during the germination period. Bio stimulants should also be considered when there is less than 3% organic matter in the soil. Graded areas require lime application. Soils must be tested to determine required amounts of fertilizer and amendments. Fertilizer should be applied before land preparation and incorporated with a disk, ripper, or chisel. On slopes too steep for, or inaccessible to equipment, fertilizer shall be hydraulically applied, preferably in the first pass with seed and some hydraulic mulch, then topped with the remaining required application rate.

Seeding

Select a grass or grass-legume mixture suitable to the area and season of the year. Seed shall be applied uniformly by hand, cyclone seeder, drill, culti-packer-seeder, or hydraulic seeder (slurry including seed and fertilizer). Drill or cultipacker seeders should normally place seed one-quarter to one-half inch deep. Appropriate depth of planting is ten times the seed diameter. Soil should be "raked" lightly to cover seed with soil if seeded by hand. See Table 6-4.1

Mulching

Temporary vegetation can, in most cases, be established without the use of mulch, provided there is little to no erosion potential. However, the use of mulch can often accelerate and enhance germination and vegetation establishment. Mulch without seeding should be considered for short term protection. Refer to Ds1-Disturbed Area Stabilization (With Mulching Only).

Irrigation

During times of drought, water shall be applied at a rate not causing runoff and erosion. The soil shall be thoroughly wetted to a depth that will insure germination of the seed. Subsequent applications should be made when needed.

STORM DRAIN OUTLET PROTECTION

St



DEFINITION

Paved and/or riprapped channel sections, placed below storm drain outlets.

PURPOSE

To reduce velocity of flow before entering receiving channels below storm drain outlets.

CONDITIONS

This standard applies to all storm drain outlets, road culverts, paved channel outlets, etc., discharging into natural or constructed channels. Analysis and/or treatment will extend from the end of the conduit, channel or structure to the point of entry into an existing stream or publicly maintained drainage system.

DESIGN CRITERIA

Structurally lined aprons at the outlets of pipes and paved channel sections shall be designed according to the following criteria:

Capacity

Peak stormflow from the 25-year, 24-hour frequency storm or the storm specified in Title 12-7-1 of the Official Code of Georgia Annotated or the design discharge of the water conveyance structure, whichever is greater.

Tailwater Depth

The depth of tailwater immediately below the pipe outlet must be determined for the design capacity of the pipe. Manning's Equation may be used to determine tailwater depth. If the tailwater depth is less than half the diameter of the outlet pipe, it shall be classified as a Minimum Tailwater Condition. If the tailwater depth is greater than half the pipe diameter, it shall be classified as a Maximum Tailwater Condition. Pipes that outlet onto flat areas with no defined channel may be assumed to have a Minimum Tailwater Condition.

Apron Length and Thickness

The apron length and d50, stone median size, shall be determined from the curves according to tailwater conditions. Minimum Tailwater- Use Figure 6-34.1 Maximum Tailwater- Use Figure 6-34.2 Maximum Stone Size = 1.5 x d50 Apron Thickness = 1.5 x dmax

Apron Width

If the pipe discharges directly into a well-defined channel, the apron shall extend across the channel bottom and up the channel banks to an elevation one foot above the maximum tailwater depth or to the top of the bank (whichever is less). If the pipe discharges onto a flat area with

no defined channel, the width of the apron shall be determined as follows:

- The upstream end of the apron, adjacent to the pipe, shall have a width three times the diameter of the outlet pipe.
- For a Minimum Tailwater Condition, the downstream end of the apron shall have a width equal to the pipe diameter plus the length of the apron. Refer to Figure 6-34.1. For a Maximum Tailwater Condition, the downstream end shall have a width equal to the pipe diameter plus 0.4 times the length of the apron. Refer to Figure 6-34.2.

Bottom Grade

The apron shall be constructed with no slope along its length (0.0% grade). The invert elevation of the downstream end of the apron shall be equal to the elevation of the invert of the receiving channel. There shall be no overfall at the end of the apron.

Side Slope

If the pipe discharges into a well-defined channel, the side slopes of the channel shall not be steeper than 2:1.

Alignment

The apron shall be located so that there are no bends in the horizontal alignment.

Geotextile

Geotextiles should be used as a separator between the graded stone, the soil base, and the abutments. The geotextile will prevent the migration of soil particles from the subgrade into the graded stone. The geotextile shall be specified in accordance with AASHTO M288-90 Section 7.5, Permanent Erosion Control Recommendations. The geotextile should be placed immediately adjacent to the subgrade without any voids.

Materials

The apron may be lined with riprap, grouted riprap, or concrete. The median sized stone for riprap, d50, shall be determined from the curves, Figures 6-24.1 and 6-24.2, according to the tailwater condition. The gradation, quality and placement of riprap shall conform to Appendix C.

Refer to Figure 6-24.4, for alternative structures to achieving energy dissipation at an outlet. For information regarding the selection and design of these alternative energy dissipators, refer to:

FHWA Standard (REF. Hydraulic Design of Energy Dissipators for Culverts and Channels; HEC No. 14, FHWA, Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

CONSTRUCTION SPECIFICATIONS

- Ensure that the subgrade for the filter and riprap follows the required lines and grades shown in the plan. Compact any fill required in the subgrade to the density of the surrounding undisturbed material. Low areas in the subgrade on undisturbed soil may also be filled by increasing the riprap thickness.
- The riprap and gravel filter must conform to the specified grading limits shown on the plans.

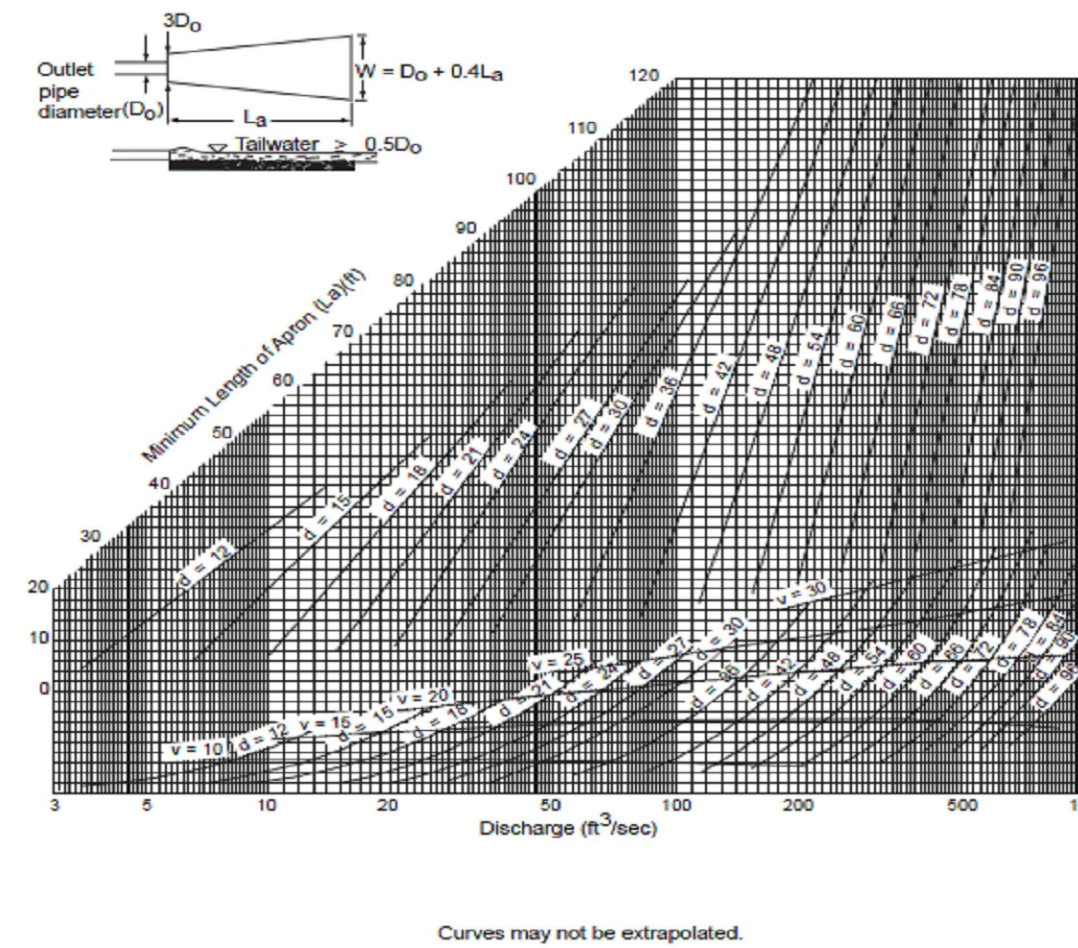
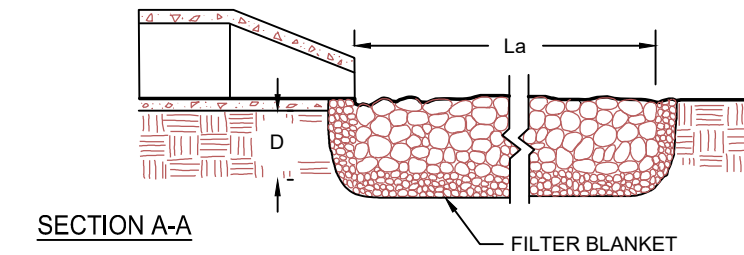
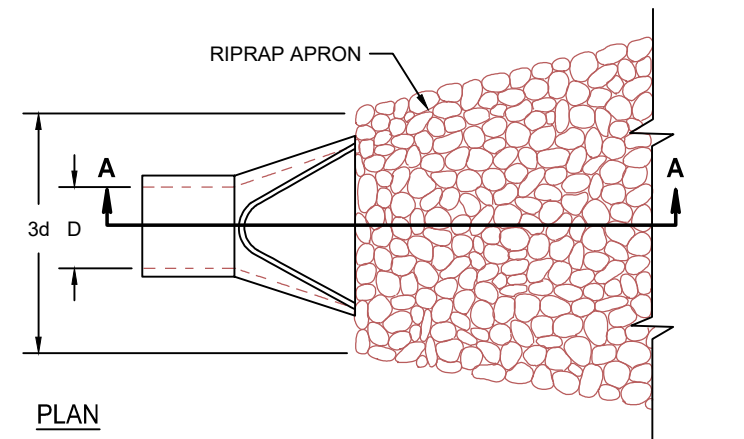


Figure 6-34.2 - Design of Outlet Protection From a Round Pipe Flowing Full, Maximum Tailwater Condition (Tw > 0.5 Diameter)

RIPRAP OUTLET PROTECTION

PIPE OUTLET TO FLAT AREA -- NO WELL DEFINED CHANNEL



PIPE OUTLET TO WELL DEFINED CHANNEL

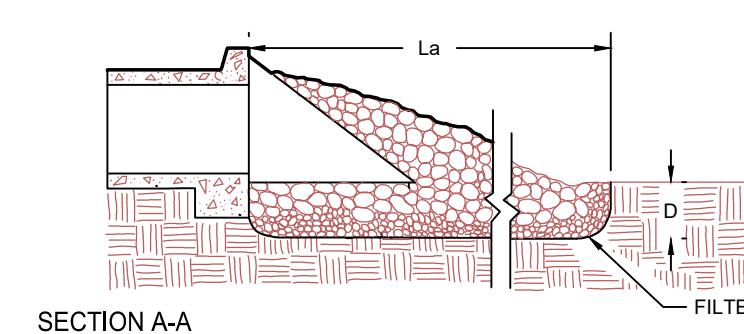
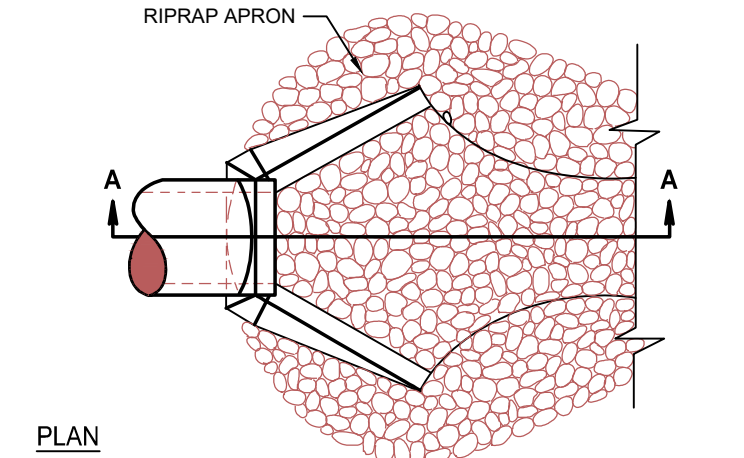


FIGURE 6-34.3 - RIPRAP OUTLET PROTECTION (MODIFIED FROM VA SWCC)

NOTES:

- La IS THE LENGTH OF THE RIPRAP APRON.
- D = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".
- IN A WELL-DEFINED CHANNEL, EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK (WHICHEVER IS LESS).
- A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND THE SOIL FOUNDATION.

OUTLET PROTECTION DESIGN CRITERIA
OUTLET OPENING : (4) 18"
FLOW RATE (CFS) : 13.1 CFS/EA
TAILWATER CONDITION : >0.50 D
(MIN. or MAX.)
d50 RIPRAP SIZE : 0.50'
dmax RIPRAP SIZE : 0.75'
MIN. RIPRAP THICKNESS(D) : 1.2'
La : 11'
W1 : 4.5'
W2 : 22.5'

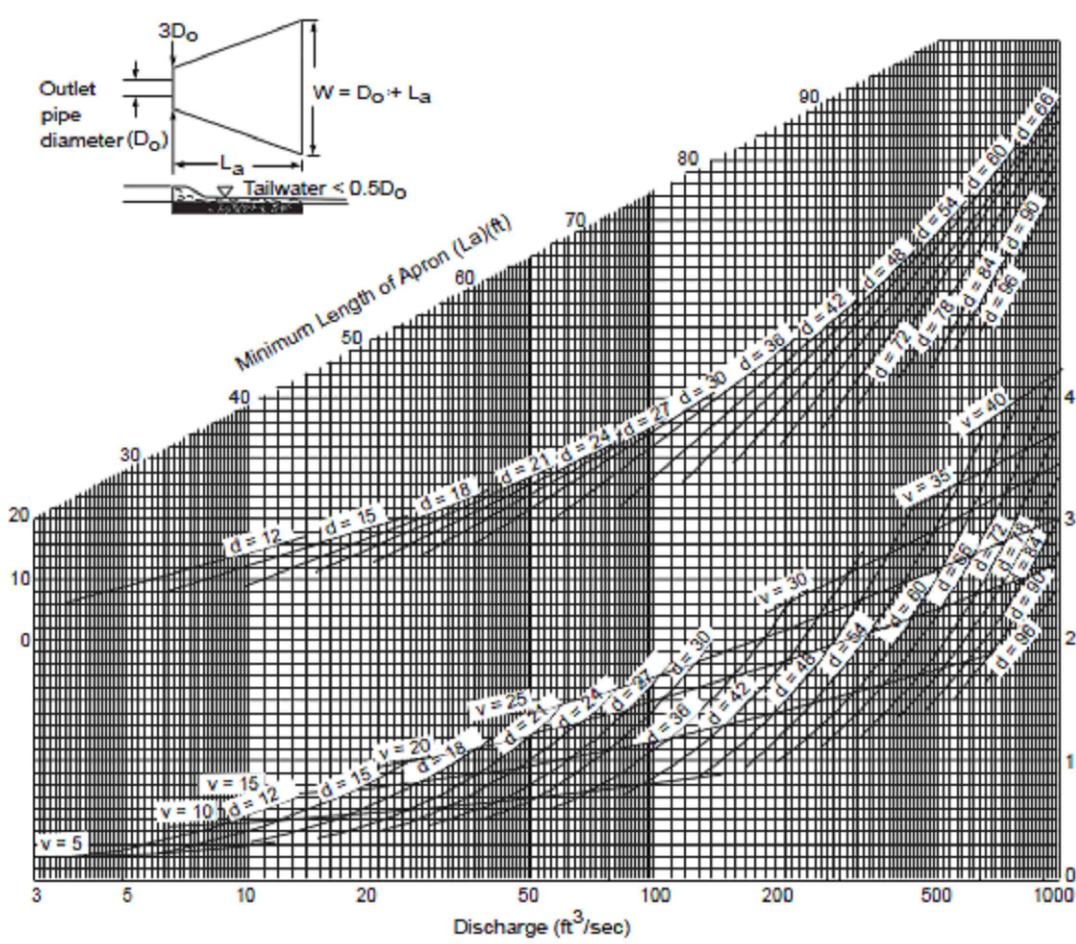


Figure 6-34.1 - Design of Outlet Protection From a Round Pipe Flowing Full, Minimum Tailwater Condition (Tw < 0.5 Diameter)

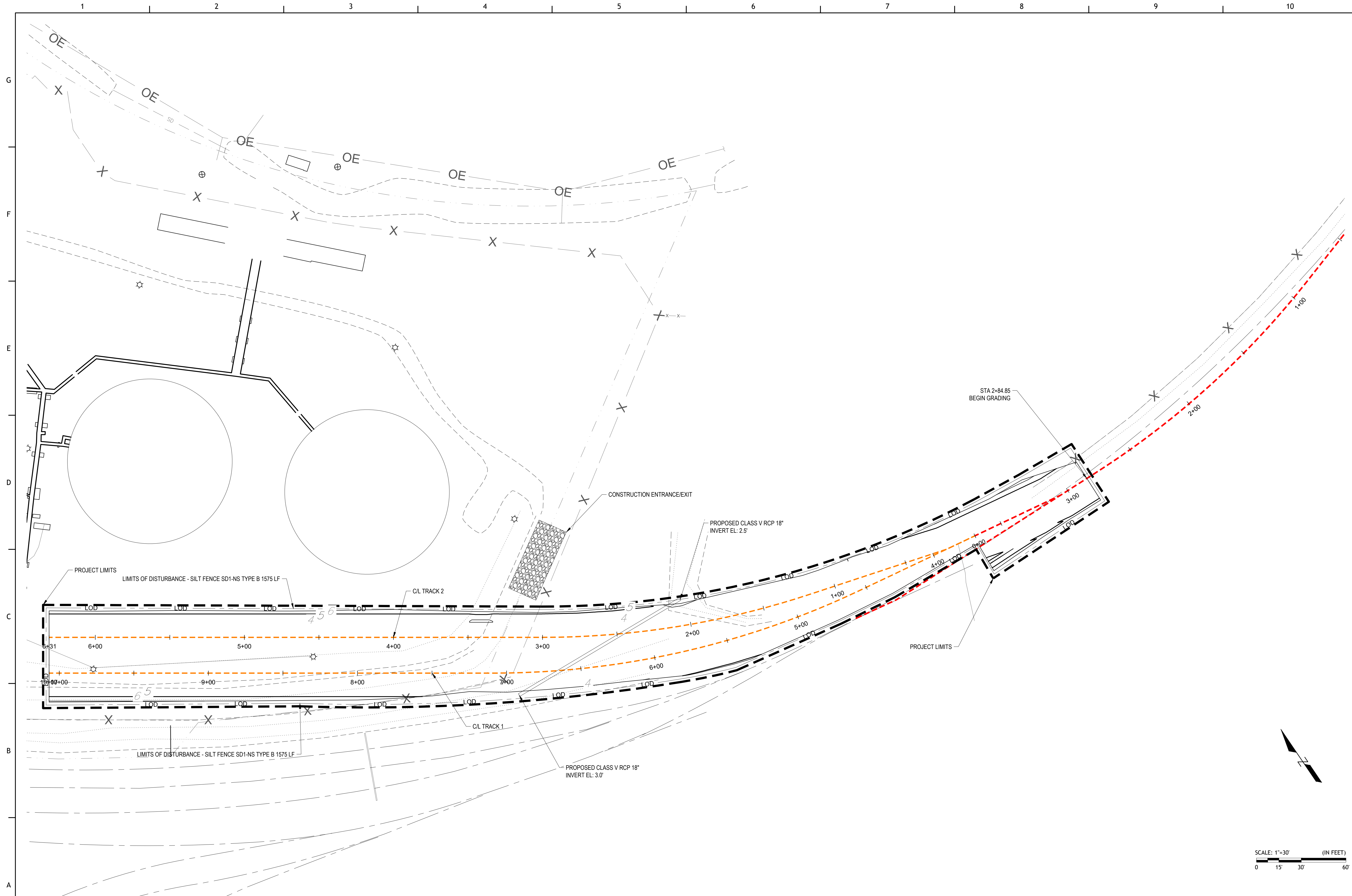













SCALE: 1"=30' (IN FEET)



A horizontal scale bar with alternating black and white segments. It is marked with '0' at the left end, '15'' at the first segment boundary, '30'' at the second segment boundary, and '60'' at the right end.

**PRELIMINARY**  
NOT TO BE USED FOR CONSTRUCTION

[illegible]

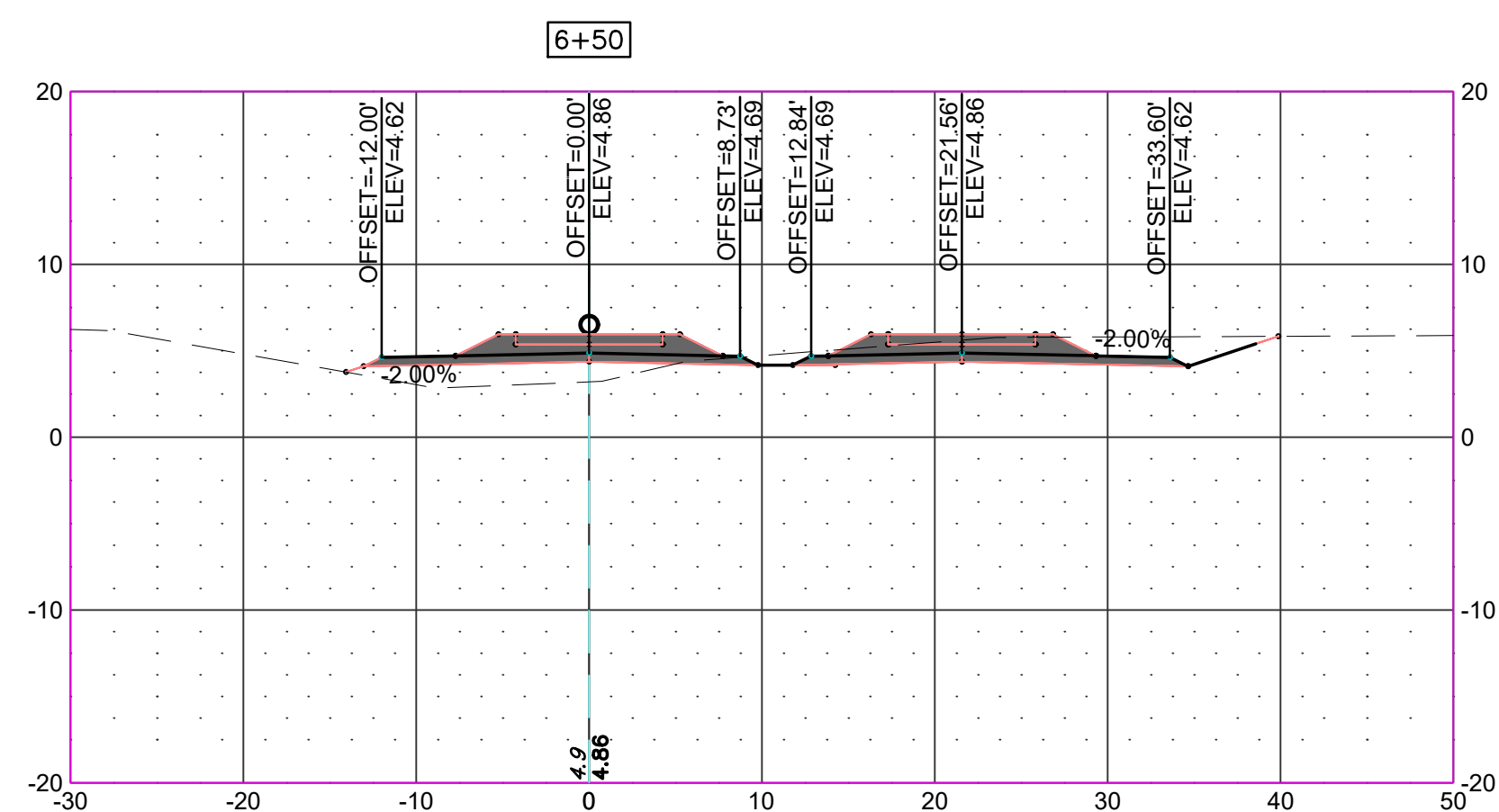
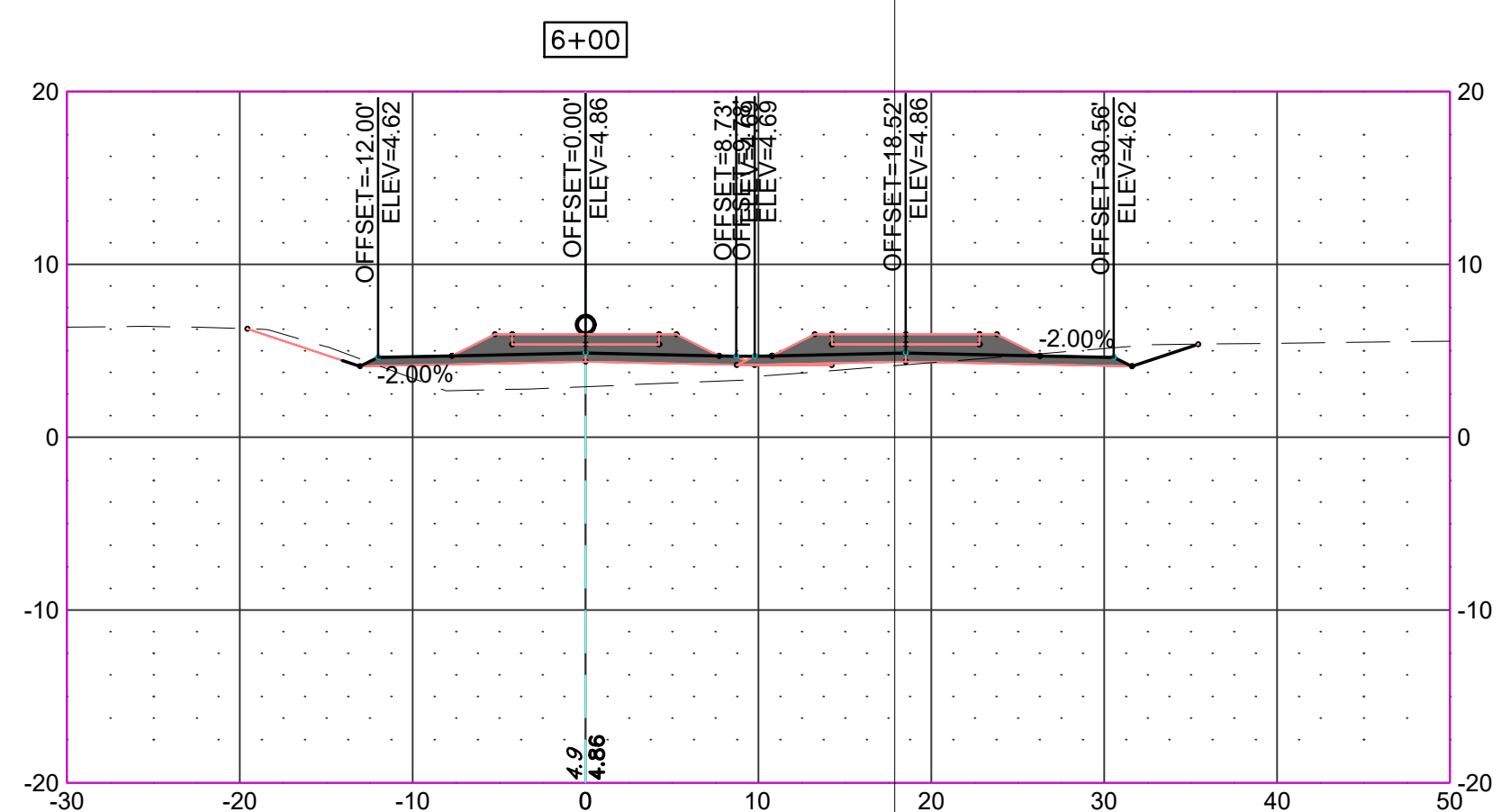
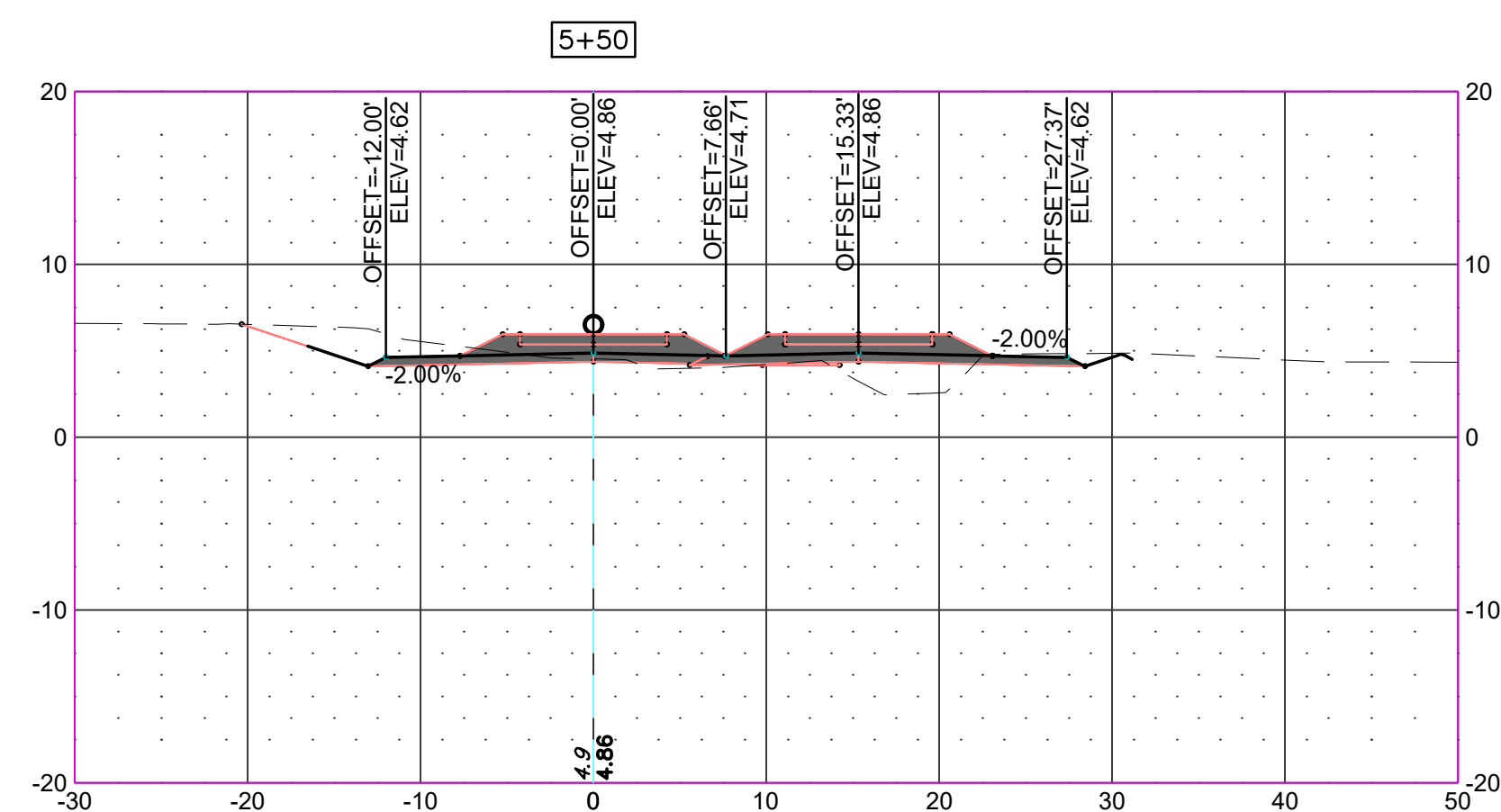
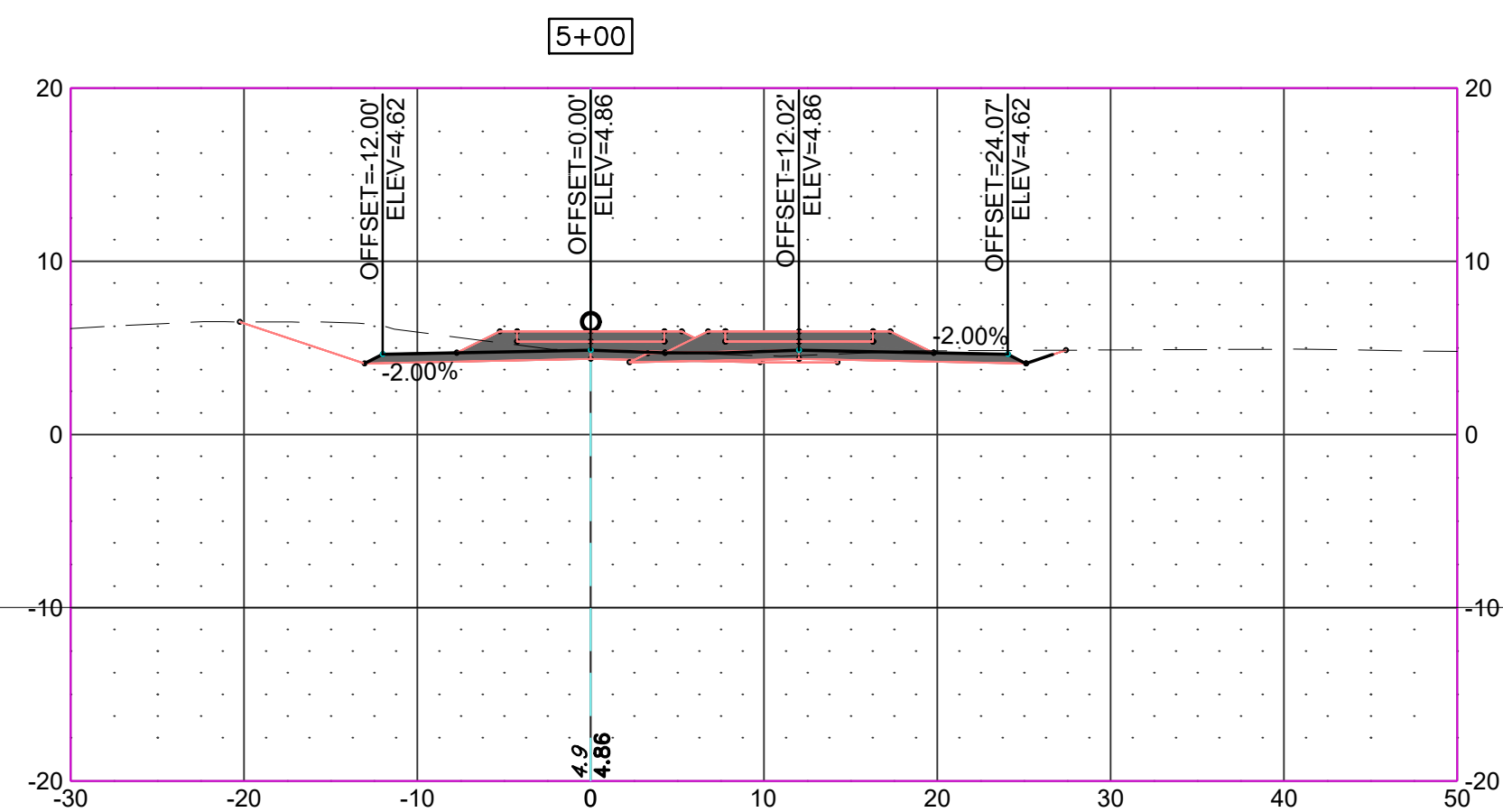
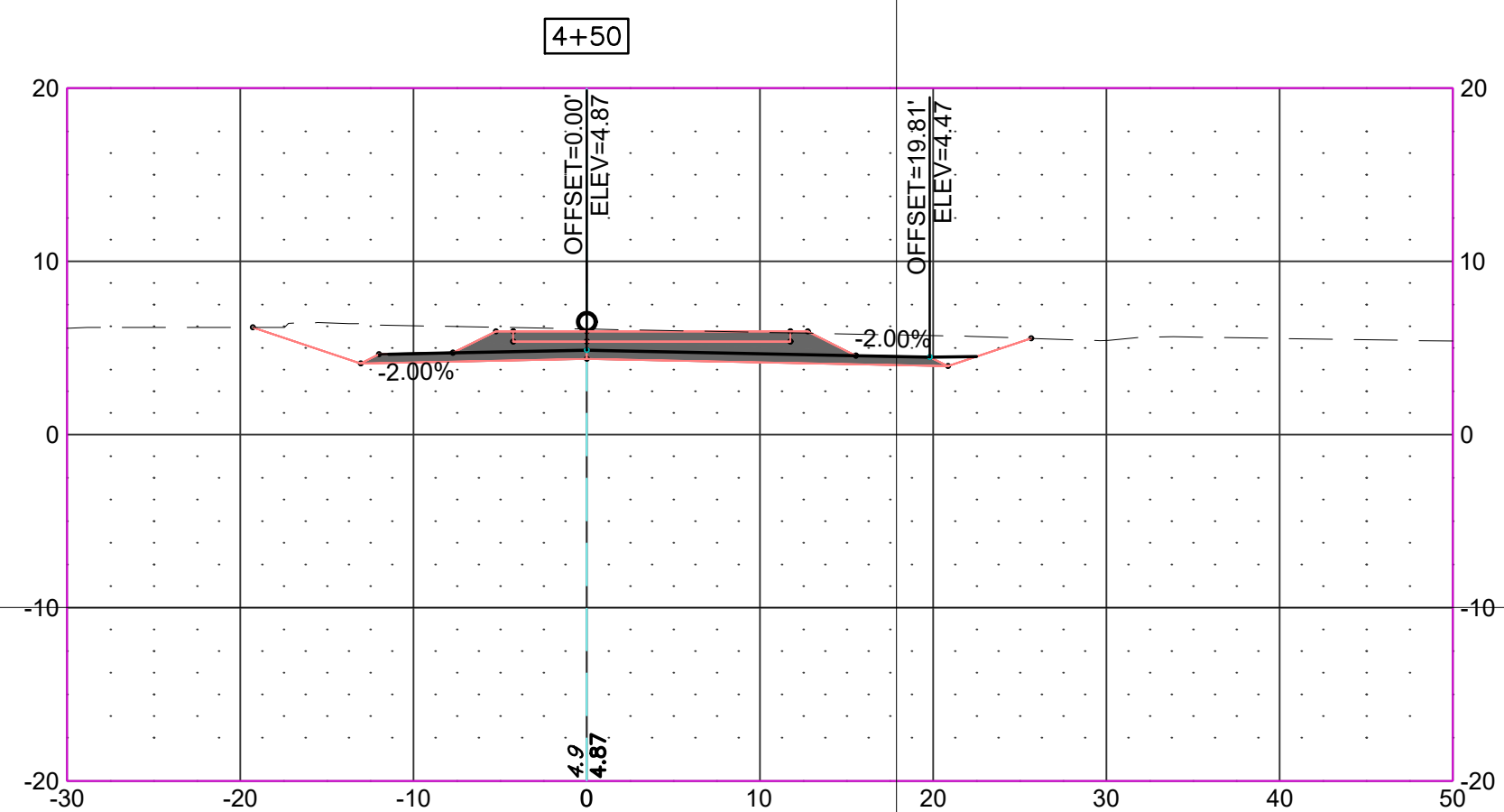
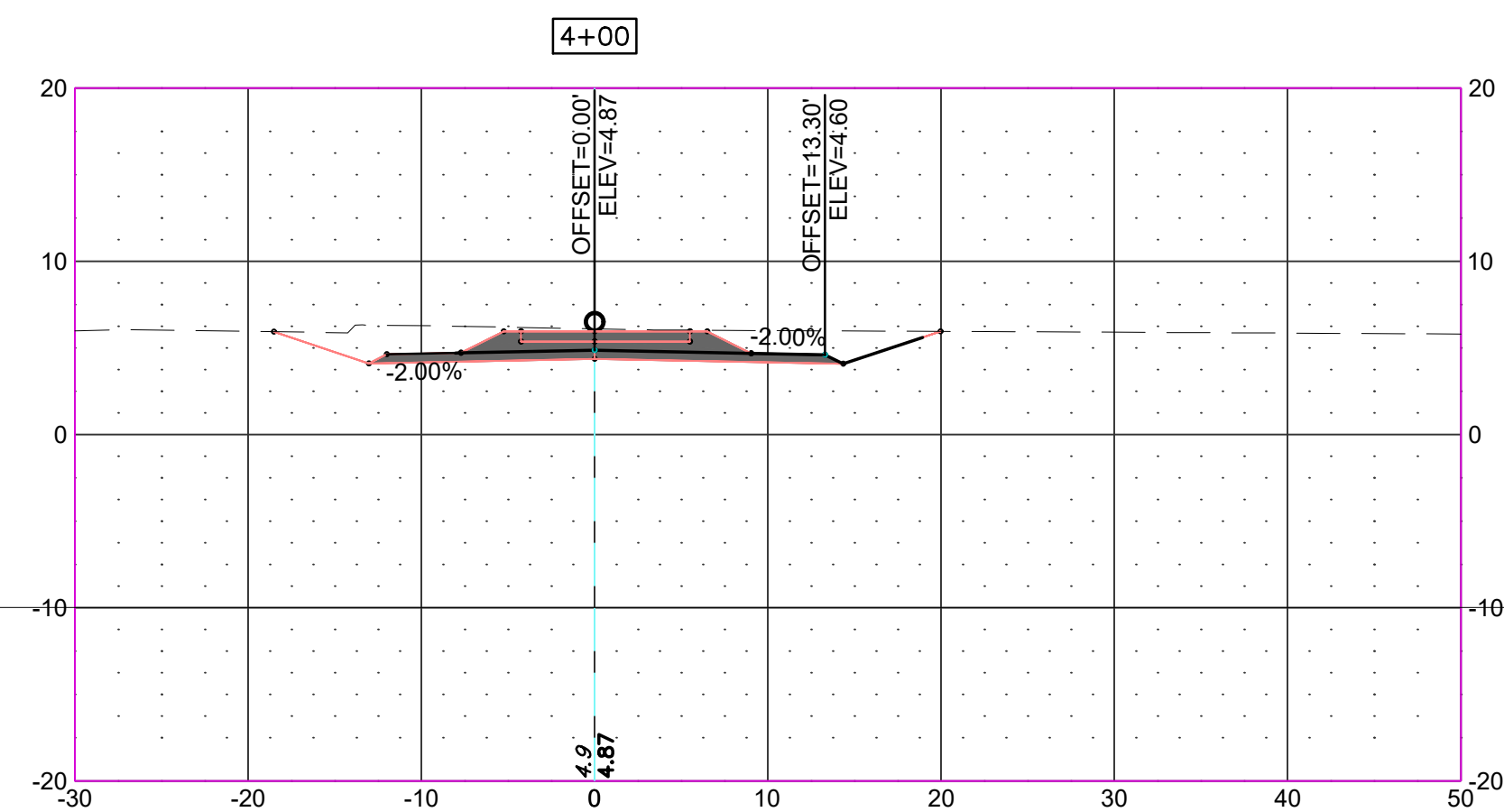
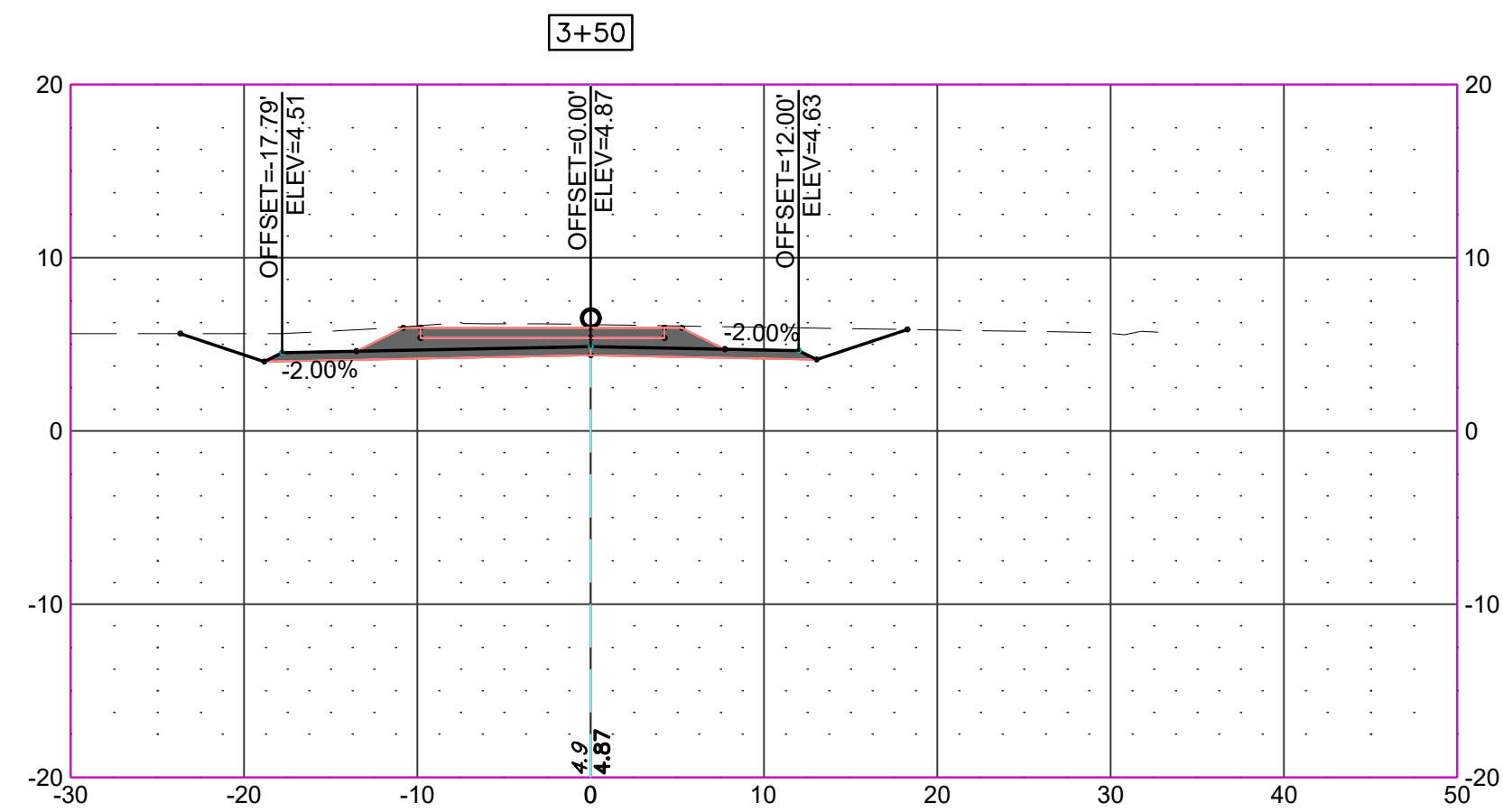
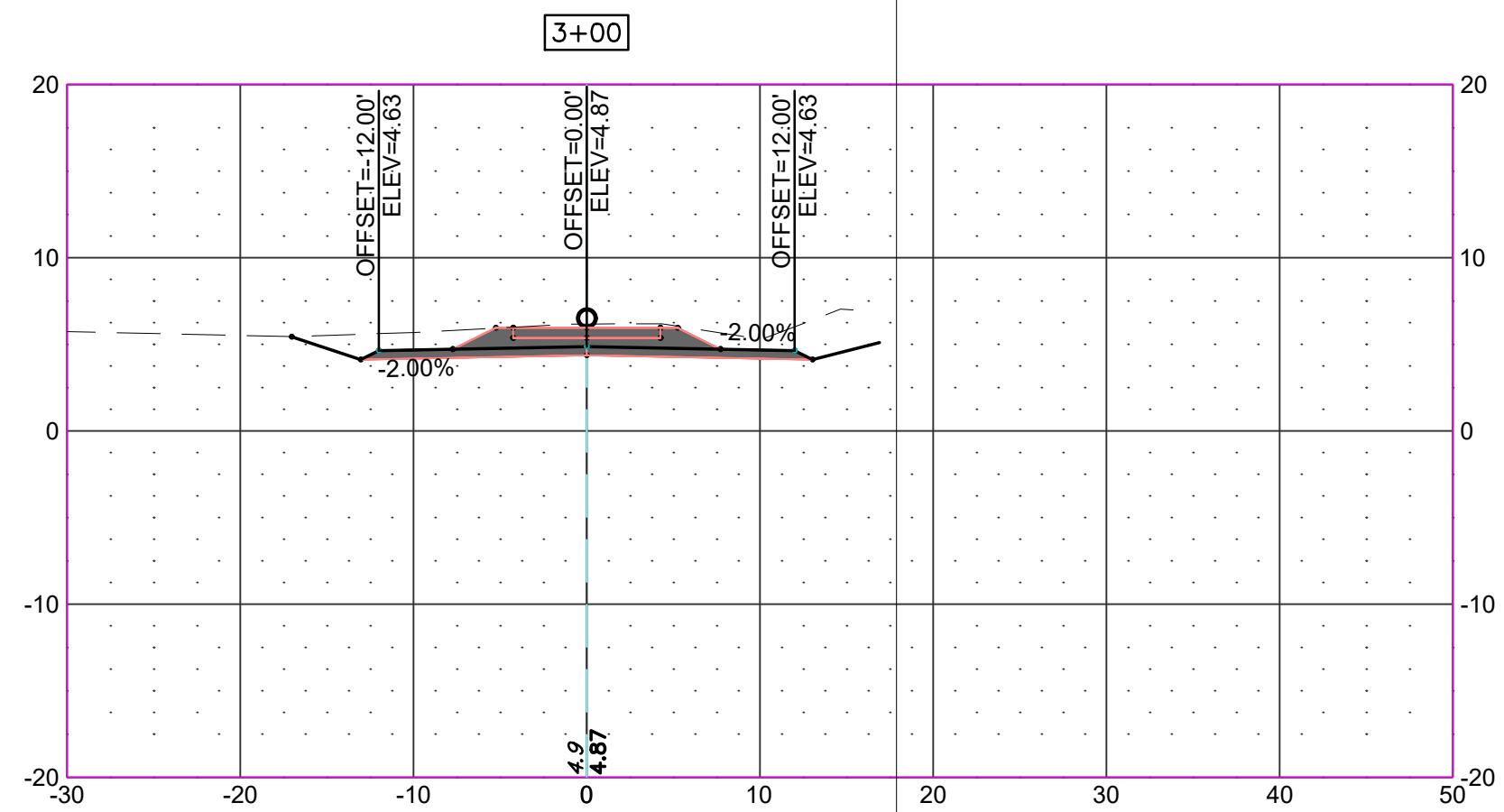
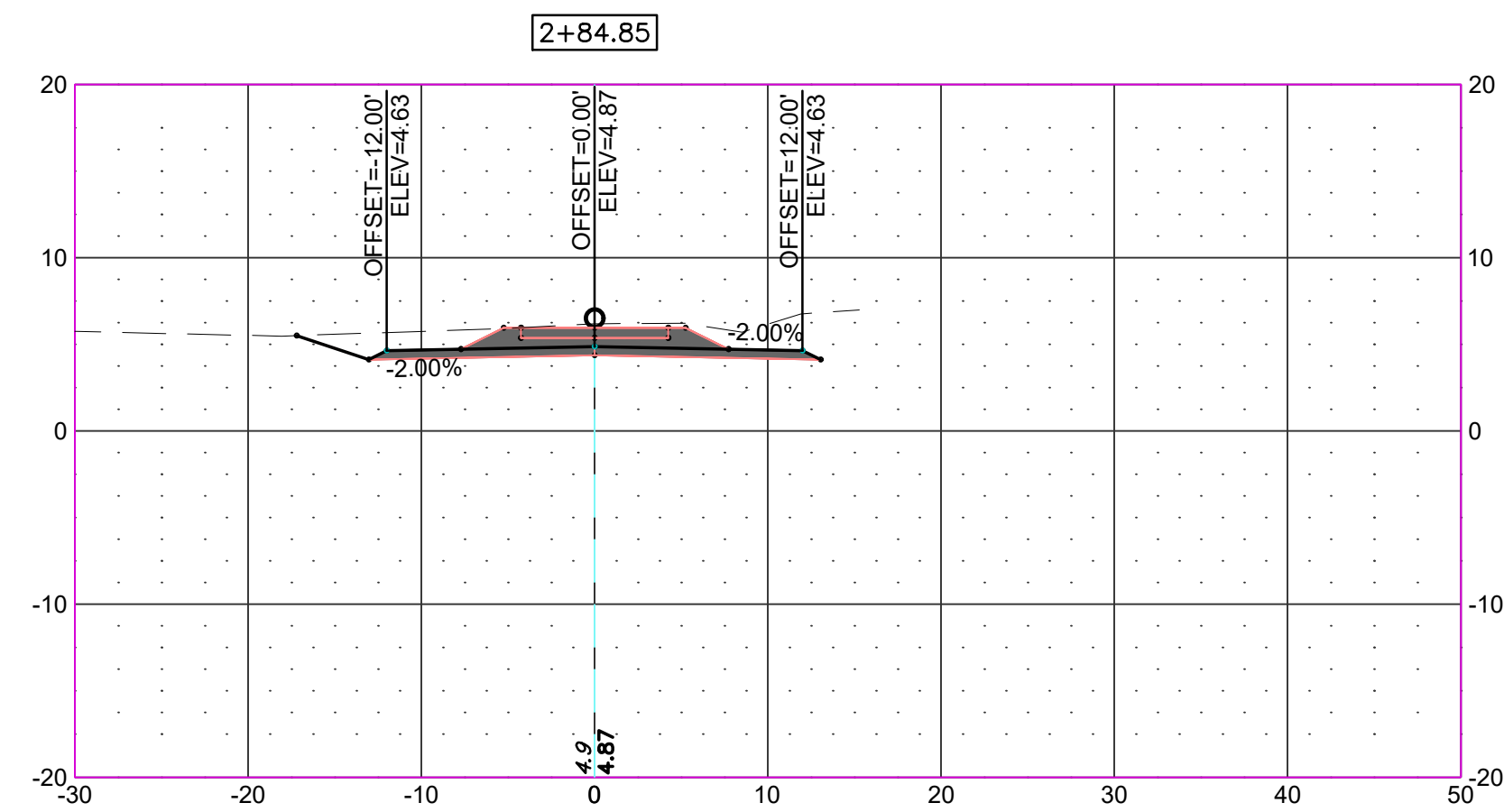
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CONTRACT NO.:	CHECKED BY:
23-1022	JPB
CATEGORY CODE:	SUBMITTED BY:
	CCW
FILE NAME: 23-1023 GRADING PLAN.DWG	
SIZE: ANSI D	

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## BWC TERMINALS DESIGN SUPPORT

## GRADING PLAN

SHEET ID  
C102



SCALE: 1"=30' (IN FEET)



A horizontal scale bar with alternating black and white segments. It is marked with '0', '15'', '30'', and '60''.

**PRELIMINARY**  
NOT TO BE USED FOR CONSTRUCTION

## BWC TERMINALS DESIGN SUPPORT

## CROSS SECTIONS

SHEET ID  
CS101



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DRAWN BY: CCW	DESIGNED BY: CCW	SOLICITATION
	CHECKED BY: JPB	CONTRACT N°: 23-1022
	SUBMITTED BY: CCW	CATEGORY C
SIZE: ANSI D	FILE NAME: 23-1022 GRADING PLAN DWG	

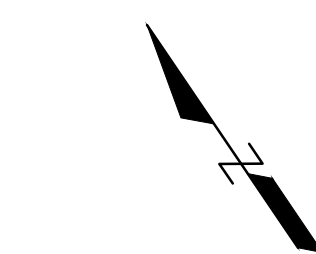
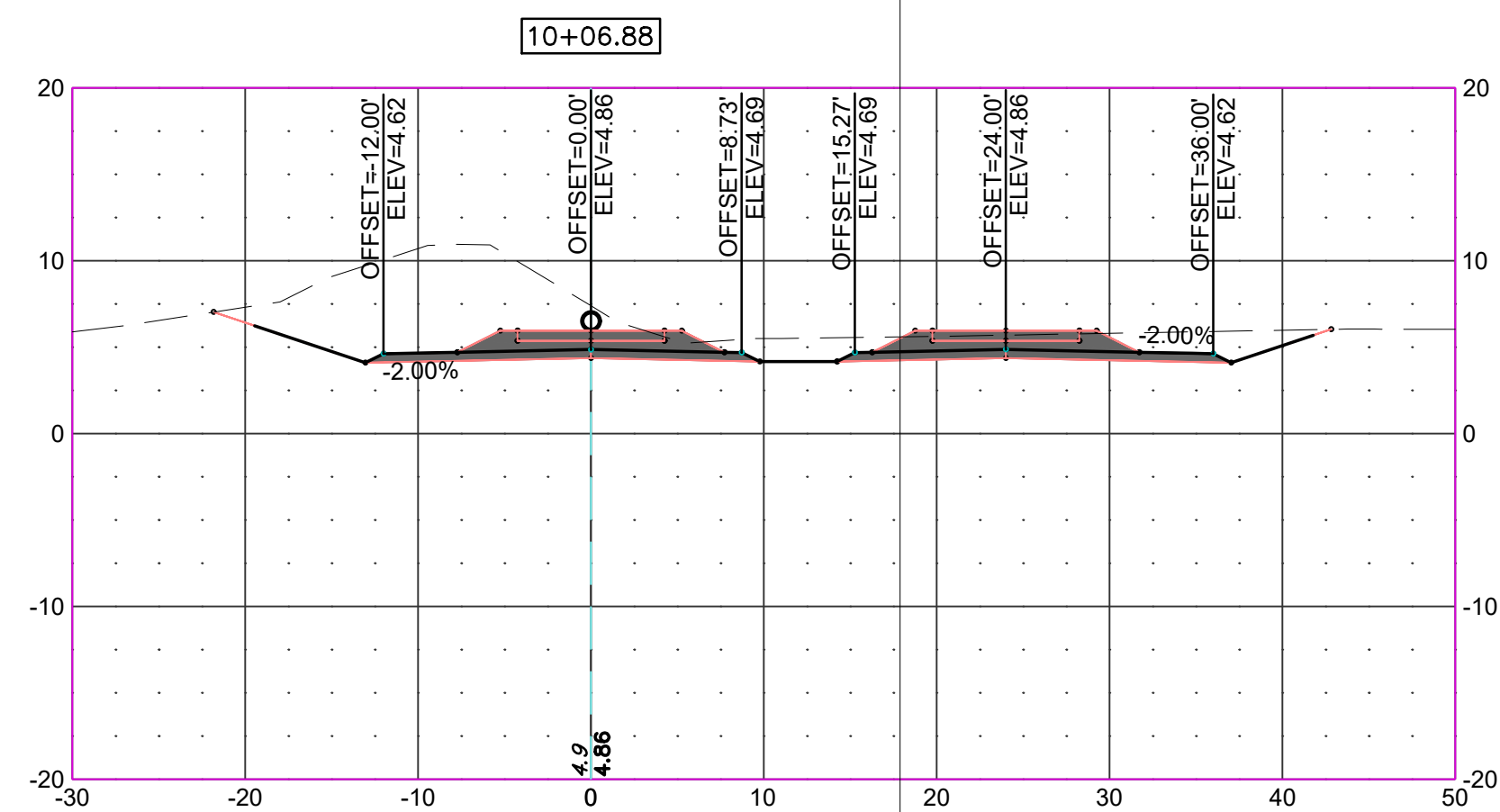
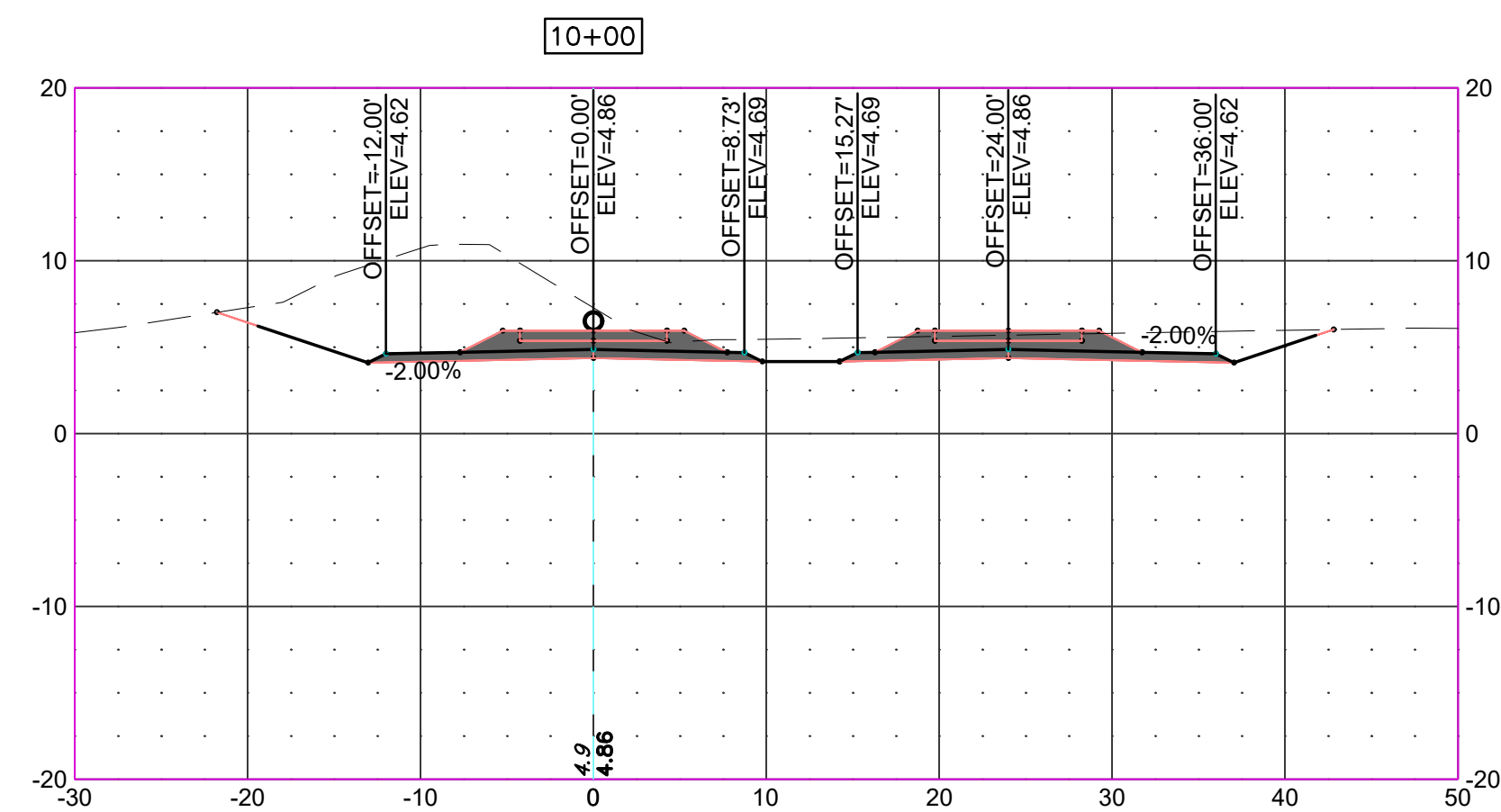
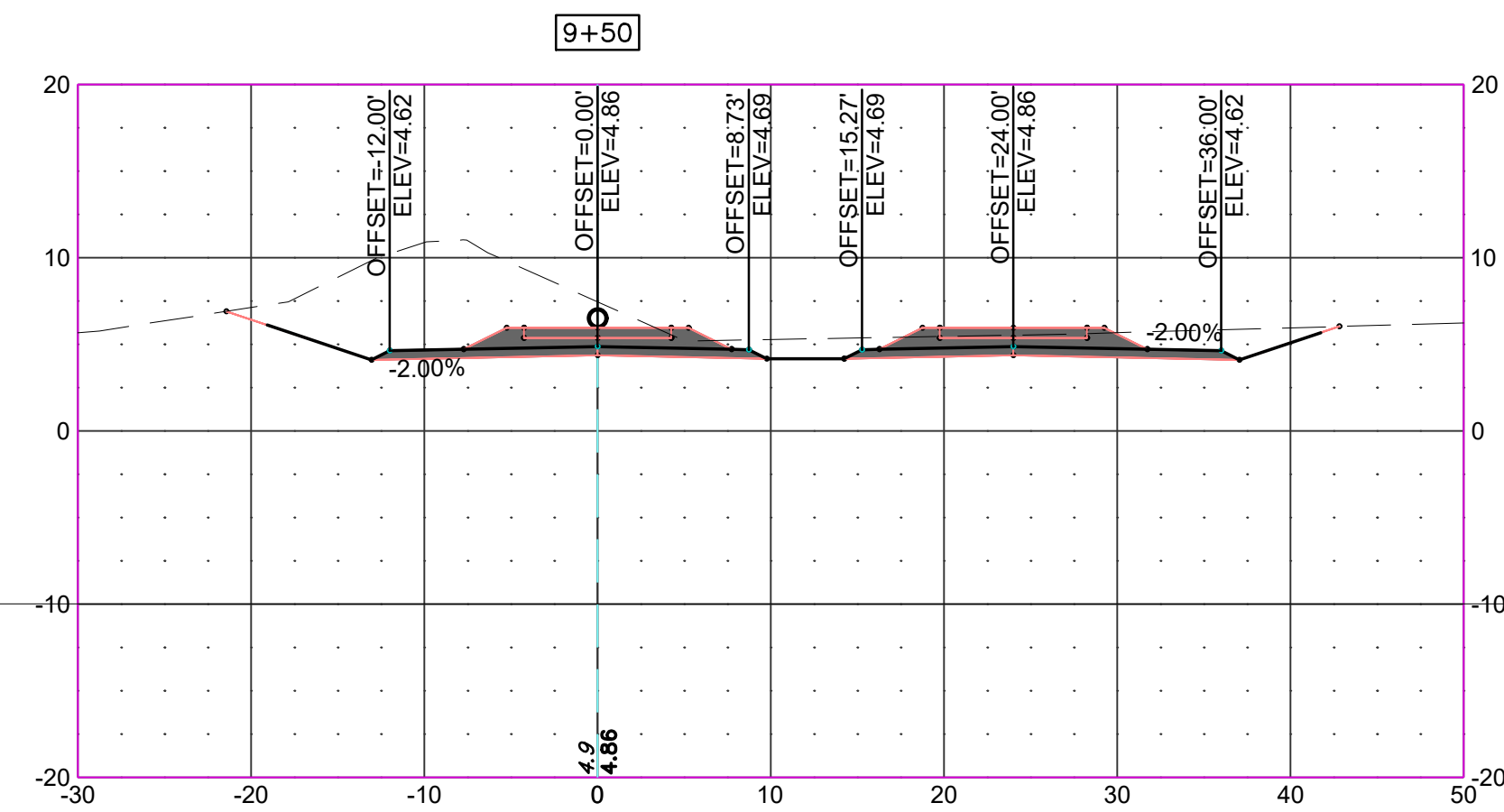
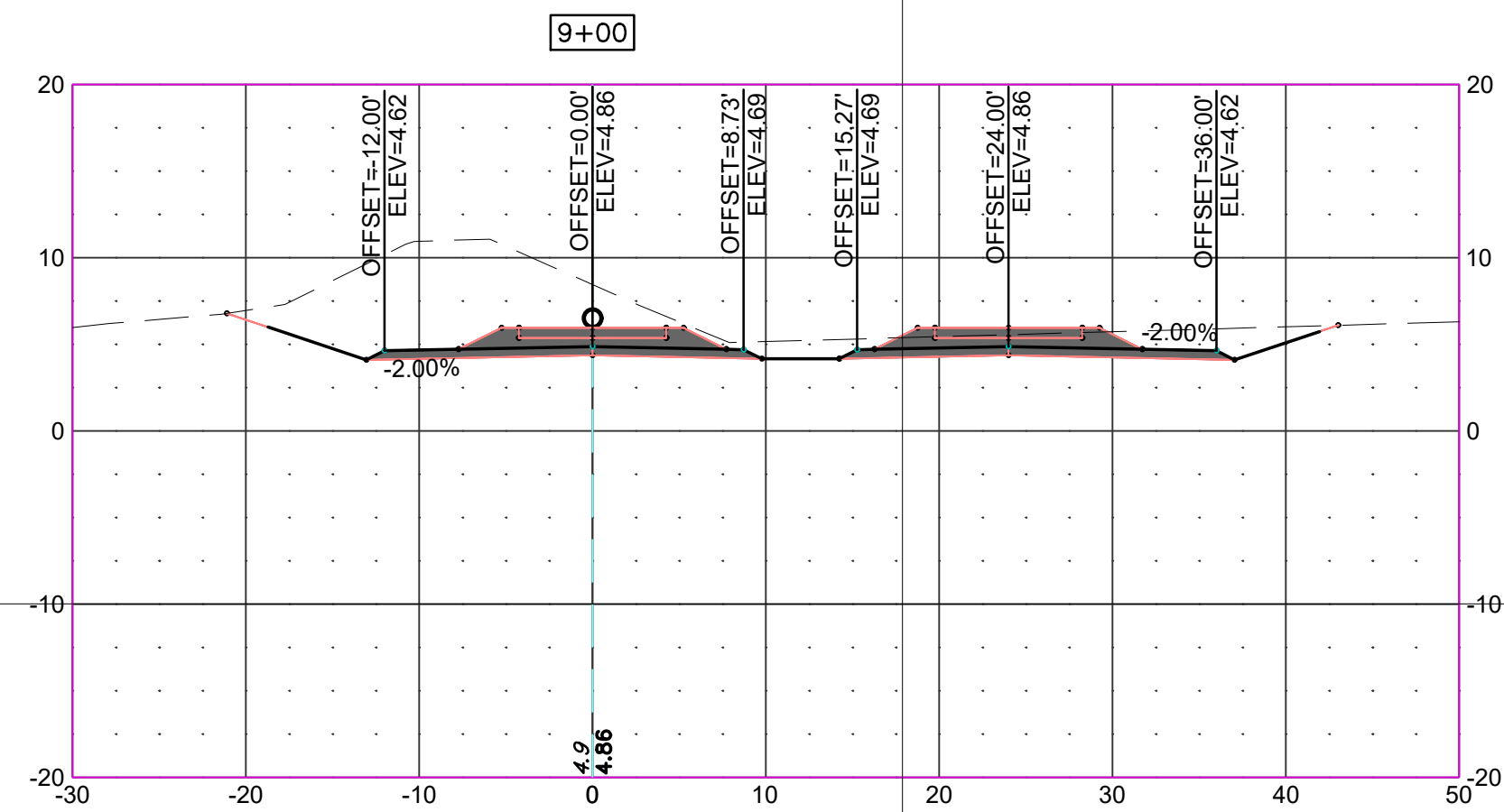
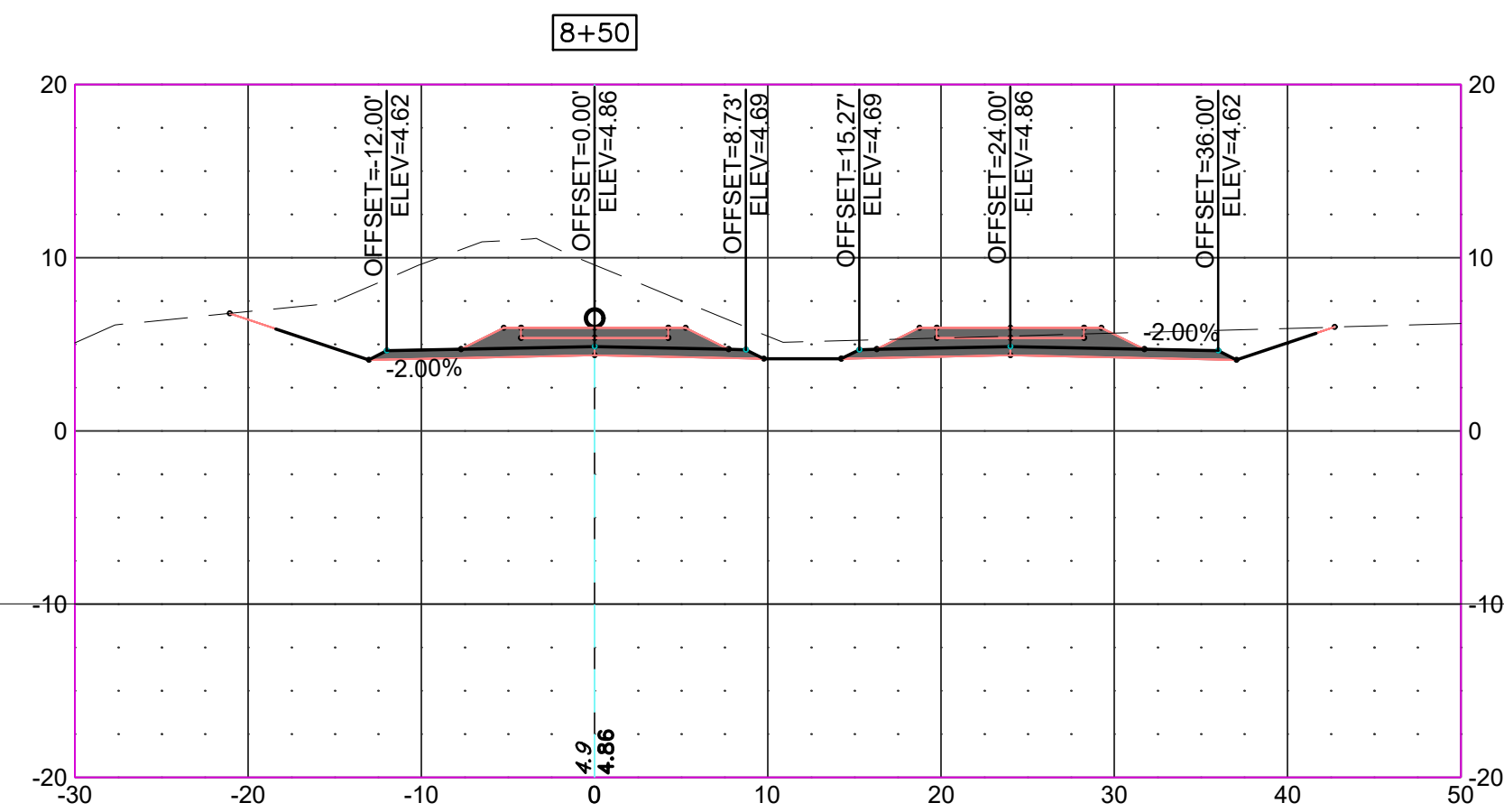
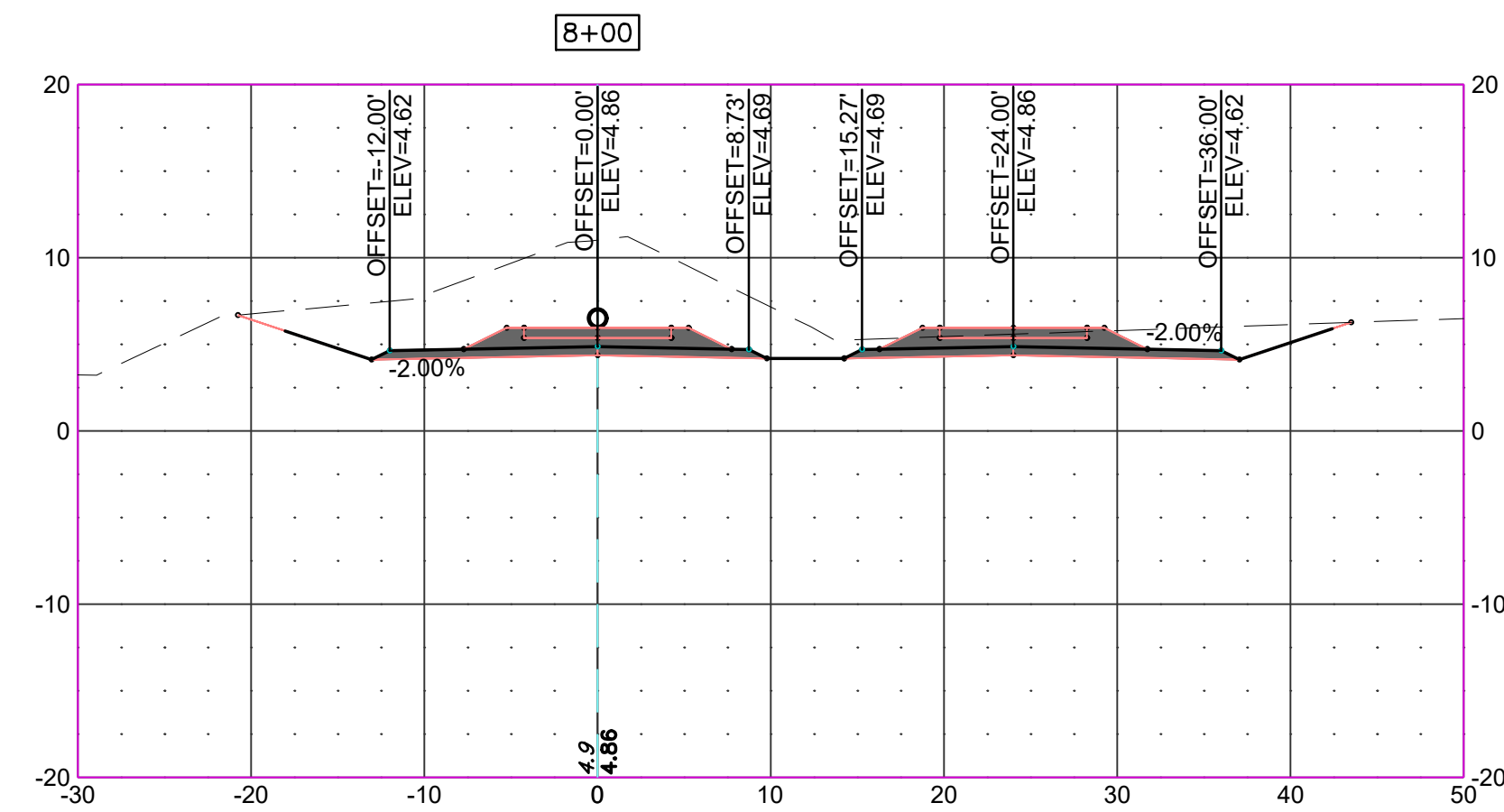
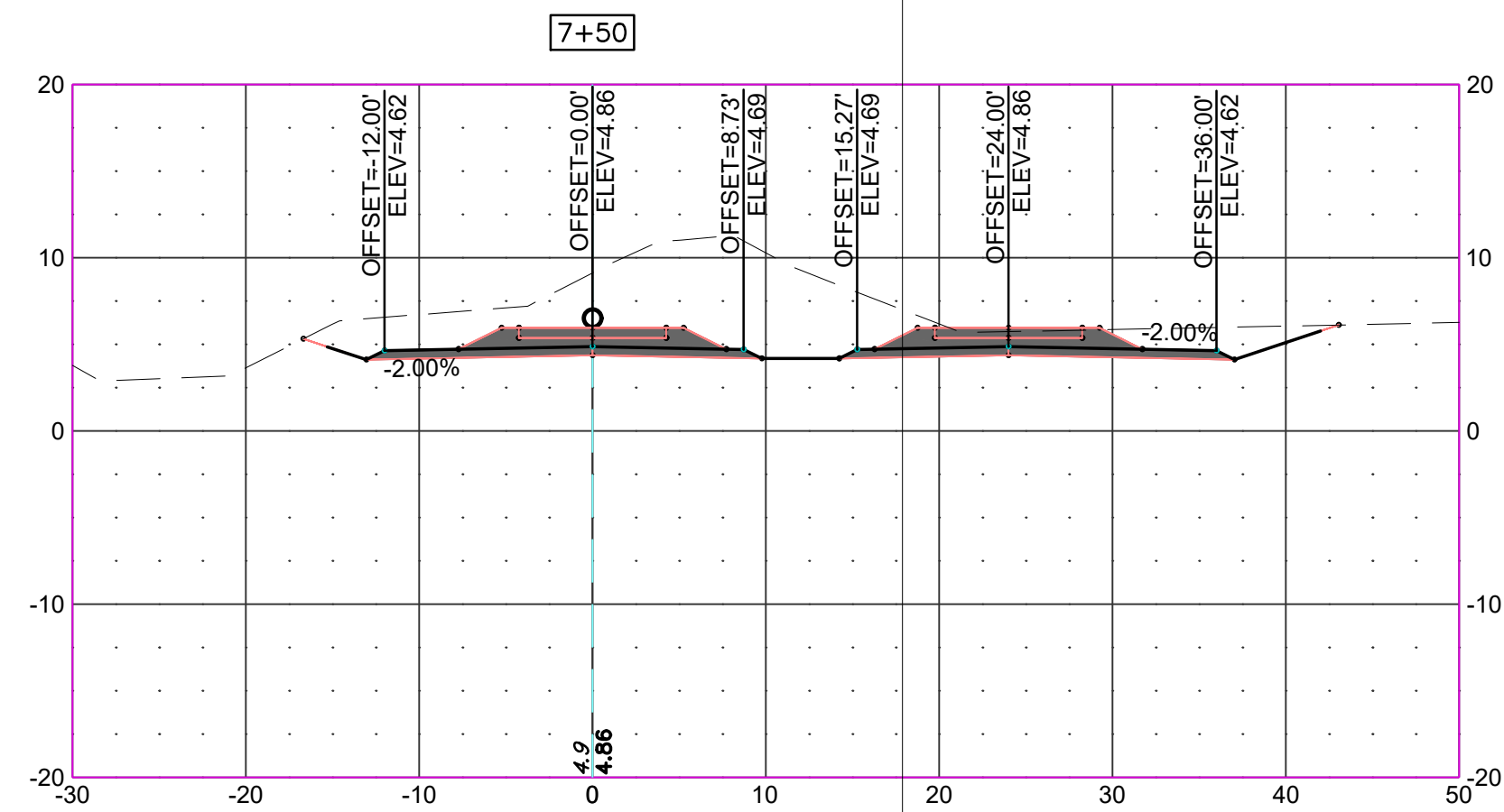
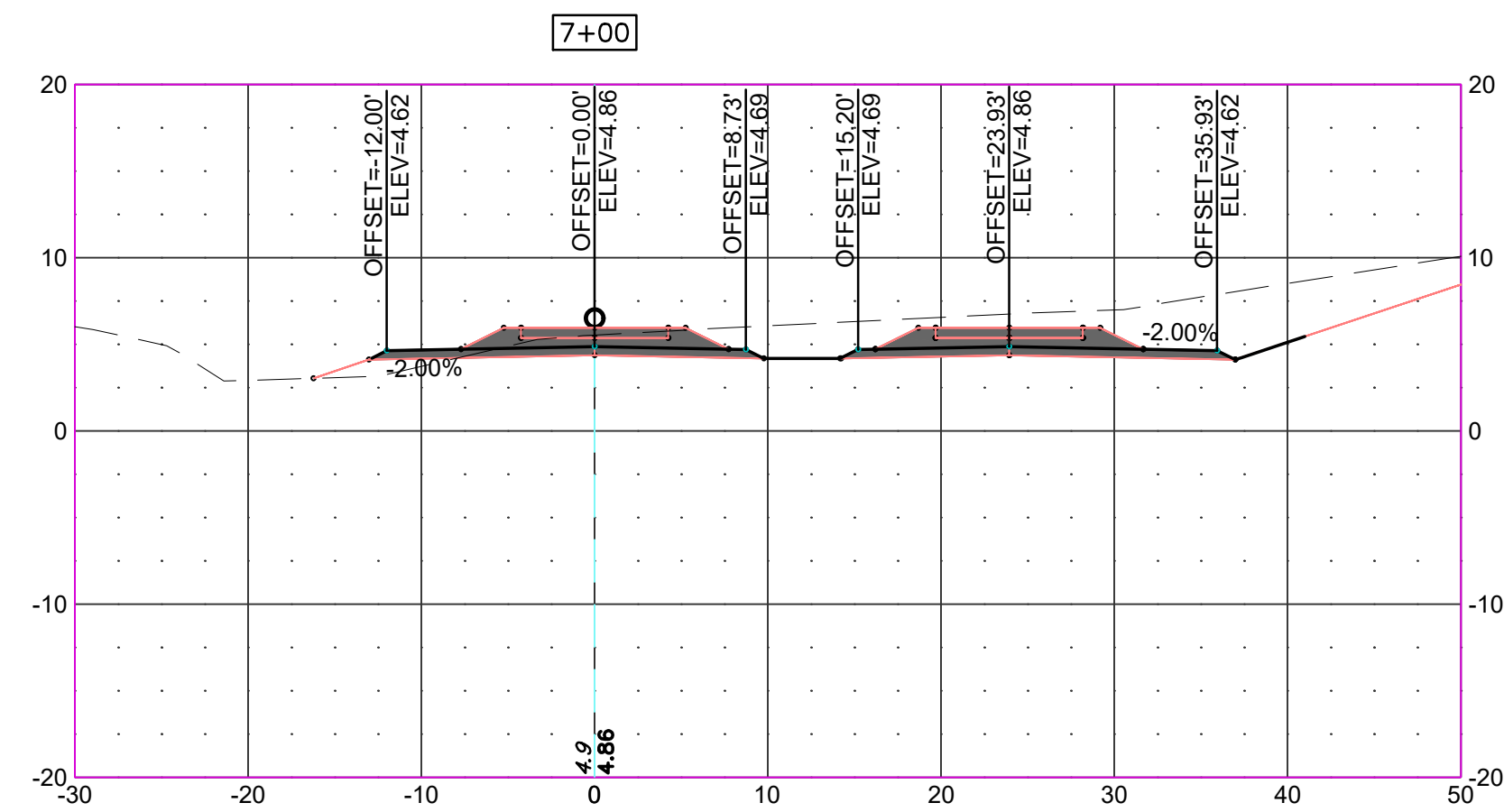
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		23-1022

DESCRIPTION

**MARK**

DATE \_\_\_\_\_



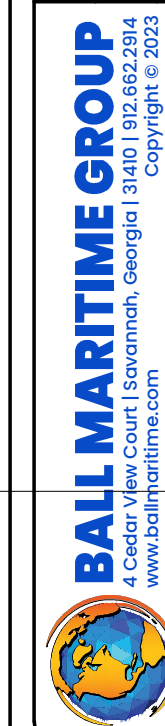


SCALE: 1"=30' (IN FEET)

**PRELIMINARY**  
NOT TO BE USED FOR CONSTRUCTION

[illegible]

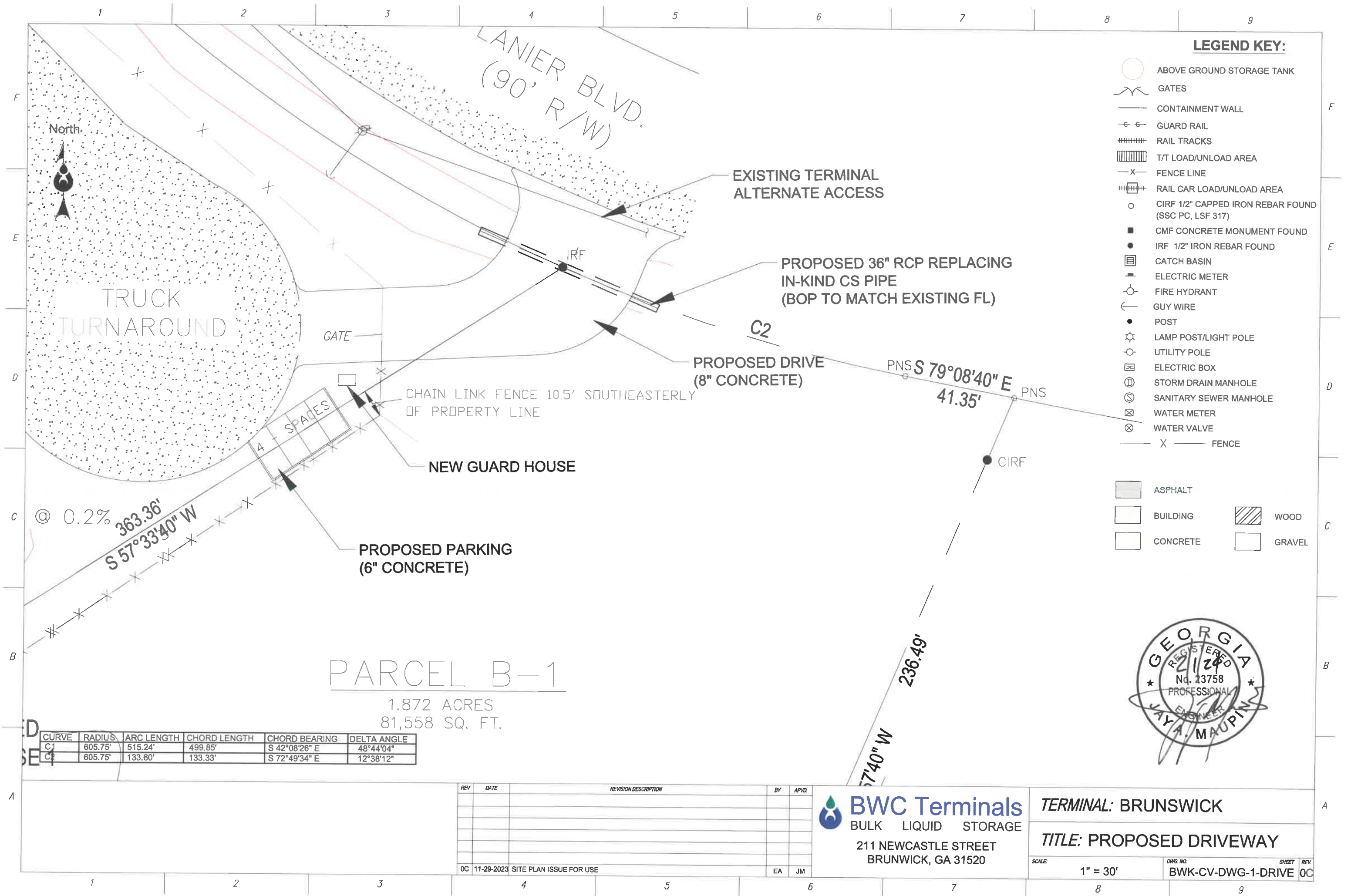
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SUBMITTED BY:	CCW



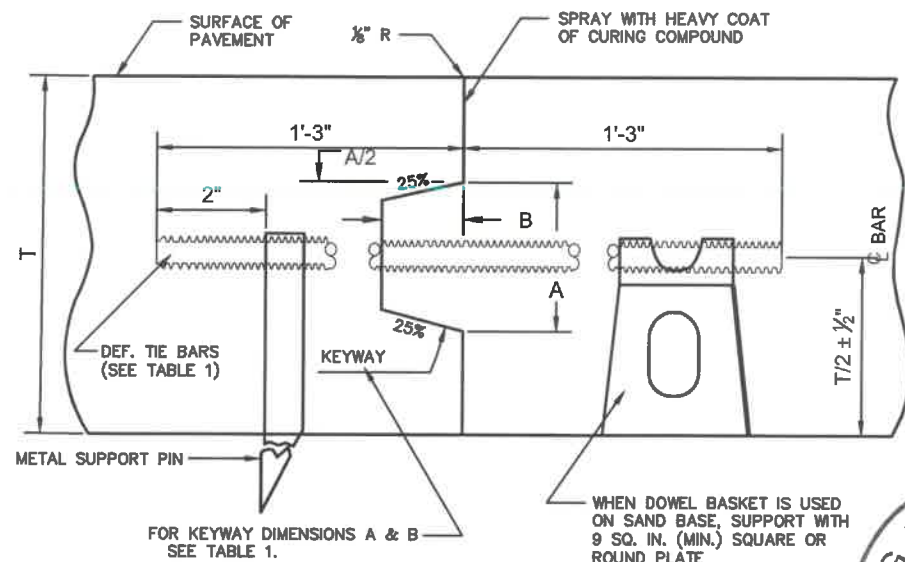
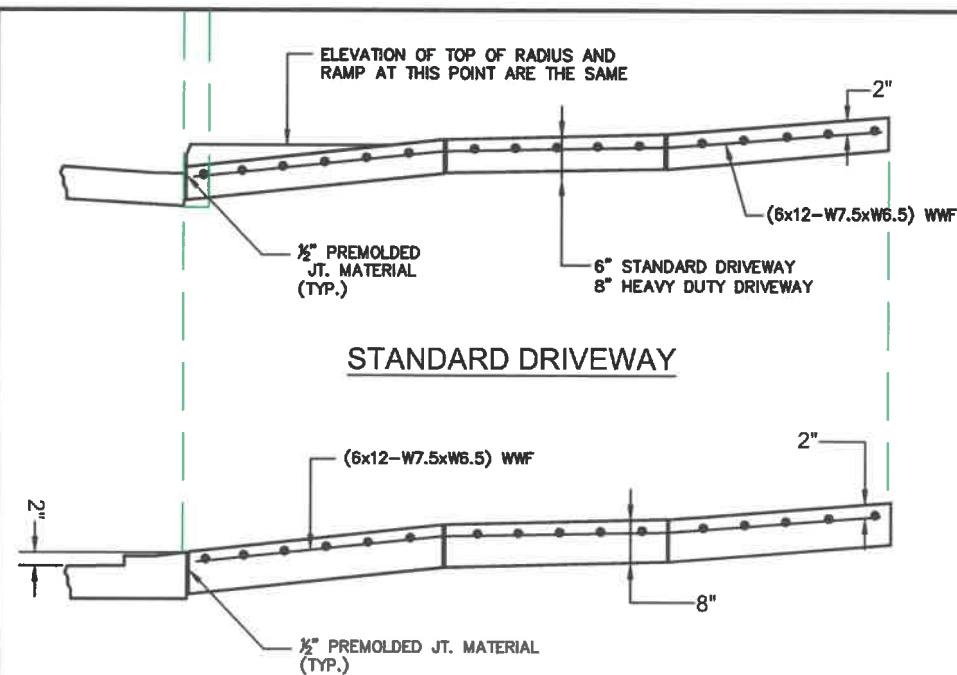
## BWC TERMINALS DESIGN SUPPORT

## CROSS SECTIONS

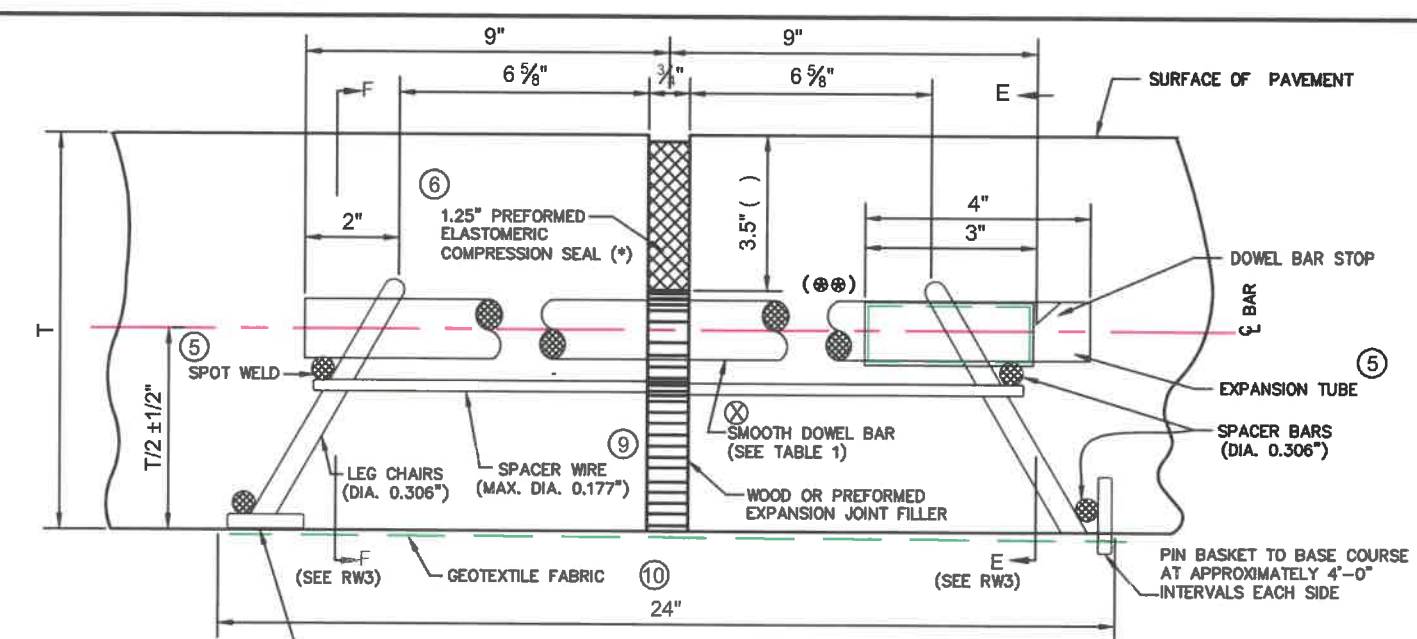
SHEET ID  
CS102







FOR KEYWAY DIMENSIONS A & B SEE TABLE 1.  
KEYWAY UTILIZATION SHALL NOT BE ALLOWED FOR PAVEMENT THICKNESS LESS THAN 8".  
IN LIEU OF THE KEYWAY, ONE OF THE FOLLOWING OPTIONS WILL BE ALLOWED (FOR ALL CASES):  
A. INSTALL TIE BARS OF THE SIZE SHOWN IN TABLE 1 OR 1/2 OF THE SPACING.  
B. INSTALL TIE BARS HAVING DIAMETERS 1/4" LARGER THAN THE DIAMETERS SHOWN IN TABLE 1, AT THE SAME SPACING).



WHEN DOWEL BASKET IS USED ON SAND BASE, SUPPORT WITH 9 SQ. IN. (MIN.) SQUARE OR ROUND PLATE

(\*) APPROVED SILICONE JOINT SEALANT WITH BACKER MATERIAL IS OPTIONAL  
(\*\*) 3" FOR 8" PAVEMENT  
(\*\*\*) THIS HALF OF DOWEL SHALL BE GREASED.

#### EXPANSION JOINT DOWELS

PAVEMENT THICKNESS (D)	DOWEL DIA.
6"	3/4"
7"	1"
8"	1"
9" & 10"	1 1/4"

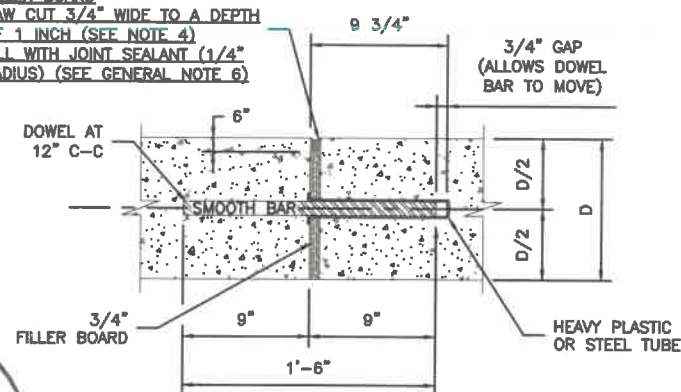
#### NOTES FOR DOWEL EXPANSION JOINT:

- EXPANSION JOINT SHALL BE PLACED AT THE END OF EACH CURB RADIUS AND SPACED AT A MAXIMUM DISTANCE OF 160 FEET.
- CENTER DOWEL HORIZONTALLY ON JOINT.
- EXPANSION JOINT BARS SHALL BE HELD PARALLEL TO THE FINISHED CONCRETE SURFACE.

#### GENERAL NOTES:

- FOR FURTHER INFORMATION REGARDING THE PLACEMENT OF CONCRETE AND REINFORCING, REFER TO THE GOVERNING SPECIFICATION ITEM 360 "CONCRETE PAVEMENT".
- THE CHAIRS USED TO SUPPORT THE BAR MATS SHALL BE OF SUFFICIENT STRUCTURAL QUALITY AND NUMBER TO HOLD THE MAT WITHIN THE PLACEMENT HEIGHT, AND SHALL BE OF A TYPE APPROVED BY THE ENGINEER. SPACING OF BAR SUPPORT CHAIRS SHALL BE 3'-0" MAXIMUM.
- SAWED CONTRACTION JOINTS SHALL BE USED FOR LONGITUDINAL JOINTS WHEREVER MORE THAN ONE LANE WIDTH IS PLACED IN A SINGLE POUR. KEYED CONSTRUCTION JOINTS SHALL BE USED AT ALL OTHER JOINTS.
- ALL SAW CUTTING SHOWN ON THIS DETAIL SHALL BE INCIDENTAL TO ITEM 360 "CONCRETE PAVEMENT".
- D = THICKNESS OF CONCRETE PAVEMENT.
- JOINT SEALANT SHALL CONFORM TO THE REQUIREMENTS OF ITEM 360 "CONCRETE PAVEMENT".

STEP 1: PLACE CONCRETE OVER TOP OF FILLER BOARD  
STEP 2: SAW CUT 3/4" WIDE TO A DEPTH OF 1 INCH (SEE NOTE 4)  
STEP 3: FILL WITH JOINT SEALANT (1/4" RADIUS) (SEE GENERAL NOTE 6)



NOTES:  
1. ALL DIMENSIONS TO BE FIELD VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION

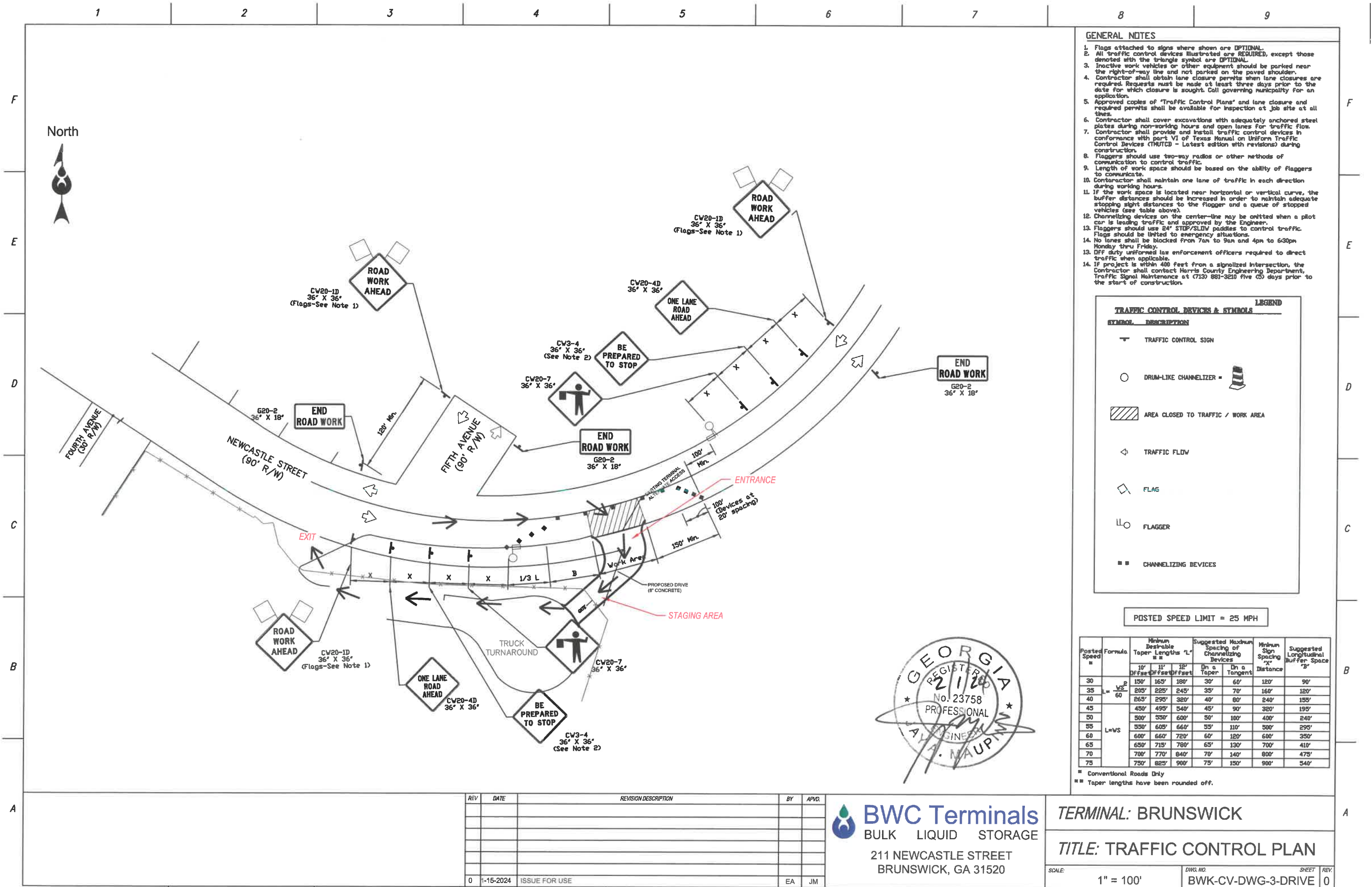
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**BWC Terminals**  
BULK LIQUID STORAGE

BRUNSWICK TERMINAL  
DATE: 6/19/19  
PROJECT NO: 100570

DRAWING TITLE:  
**CONCRETE PAVEMENT DETAILS**

25% SCALE: N.T.S.  
10% SCALE: N.T.S.  
DRAWING NO: BWK-100xxx-CV-DWG-001  
SHEET OF: 0



- GENERAL NOTES**
- Flags attached to signs where shown are OPTIONAL.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol are OPTIONAL.
  - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
  - Contractor shall obtain lane closure permits when lane closures are required. Requests must be made at least three days prior to the date for which closure is sought. Call governing municipality for an application.
  - Approved copies of 'Traffic Control Plans' and lane closure and required permits shall be available for inspection at job site at all times.
  - Contractor shall cover excavations with adequately anchored steel plates during non-working hours and open lanes for traffic flow.
  - Contractor shall provide and install traffic control devices in conformance with part VI of Texas Manual on Uniform Traffic Control Devices (TMUTCD) - Latest edition with revisions during construction.
  - Flaggers should use two-way radios or other methods of communication to control traffic.
  - Length of work space should be based on the ability of flaggers to communicate.
  - Contractor shall maintain one lane of traffic in each direction during working hours.
  - If the work space is located near horizontal or vertical curves, the buffer distances should be increased in order to maintain adequate stopping sight distances to the flagger and a queue of stopped vehicles (see table above).
  - Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
  - Flaggers should use 24" STOP/SLIP paddles to control traffic. Flags should be limited to emergency situations.
  - No lanes shall be blocked from 7am to 9am and 4pm to 6:30pm Monday thru Friday.
  - Off duty uniformed law enforcement officers required to direct traffic when applicable.
  - If project is within 400 feet from a signalized intersection, the Contractor shall contact Harris County Engineering Department, Traffic Signal Maintenance at (713) 881-3210 five (5) days prior to the start of construction.

**LEGEND**

**TRAFFIC CONTROL DEVICES & SYMBOLS**

SYMBOL	DESCRIPTION
	TRAFFIC CONTROL SIGN
	DRUM-LIKE CHANNELIZER
	AREA CLOSED TO TRAFFIC / WORK AREA
	TRAFFIC FLOW
	FLAG
	FLAGGER
	CHANNELIZING DEVICES

POSTED SPEED LIMIT = 25 MPH

Posted Speed "S"	Formula	Minimum Desirable Sign Taper Lengths "L"			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{VS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55	$L = VS$	330'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900'	75'	150'	900'	540'

Conventional Roads Only  
Taper lengths have been rounded off.



REV	DATE	REVISION DESCRIPTION	BY	APVD.
0	1-15-2024	ISSUE FOR USE	EA	JM

**BWC Terminals**  
BULK LIQUID STORAGE  
211 NEWCASTLE STREET  
BRUNSWICK, GA 31520

**TERMINAL: BRUNSWICK**  
**TITLE: TRAFFIC CONTROL PLAN**

SCALE: 1" = 100'

DWG. NO. BWK-CV-DWG-3-DRIVE

SHEET REV. 0