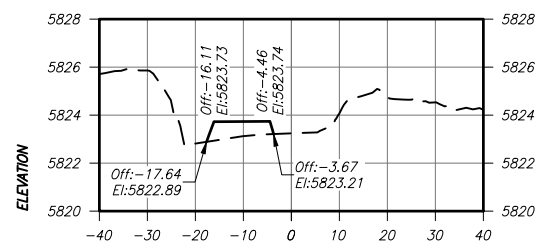


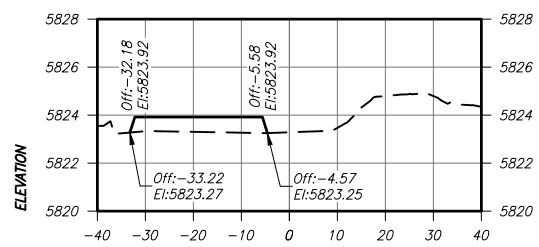
DRAFT-
 NOT FOR
 CONSTRUCTION

Date: 06/10/17
 Designed: JLF
 Drawn: JY
 Checked: JLF/KS/BPA
 Approved: LRLT

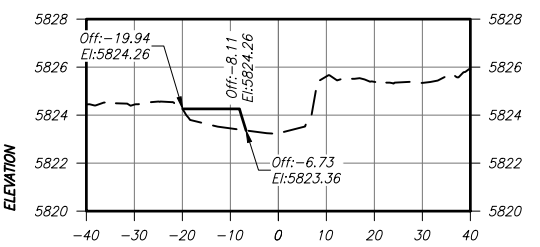
Drawing Name
CHANNEL SECTIONS - 1
 Drawing No.
32
 Sheet 32 of 44



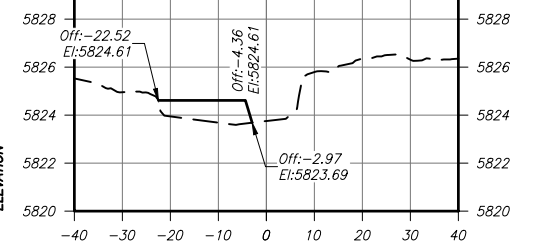
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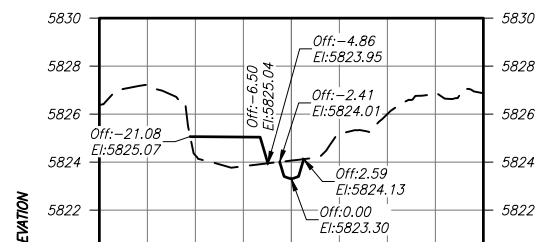
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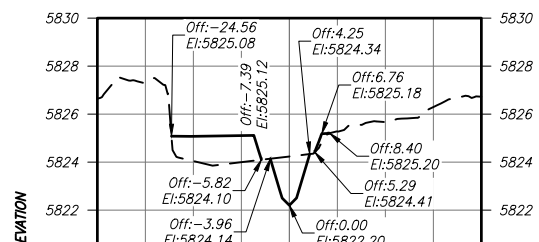
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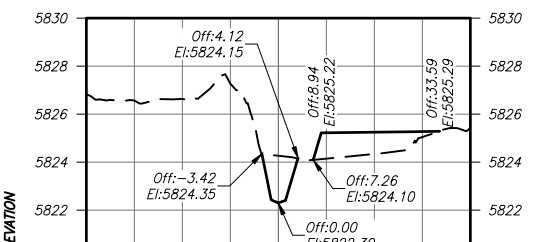
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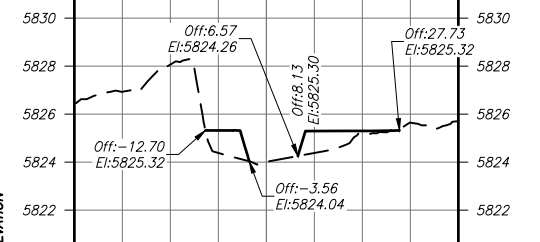
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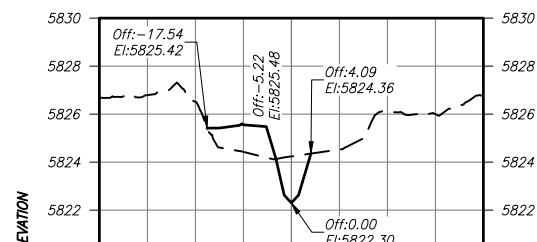
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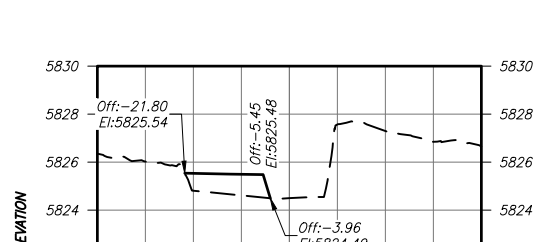
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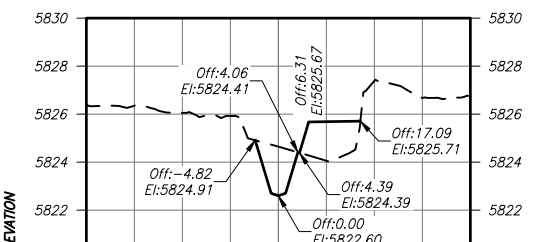
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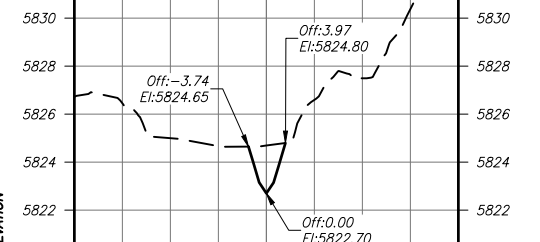
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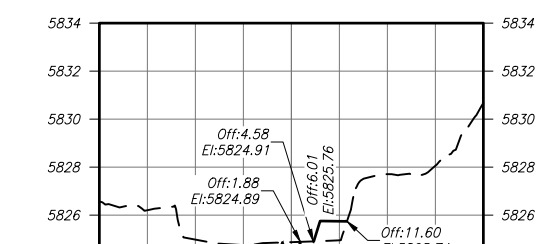
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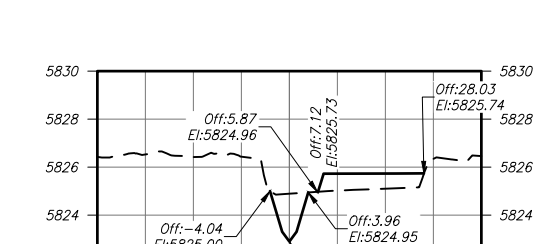
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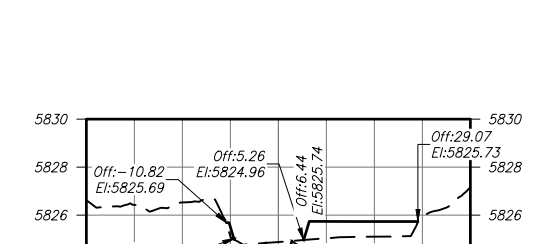
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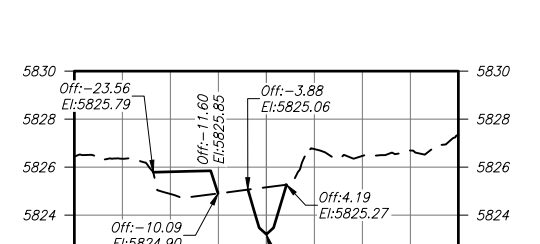
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16+45



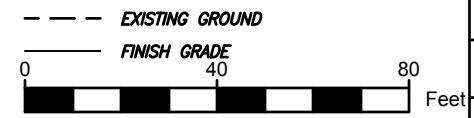
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16+75

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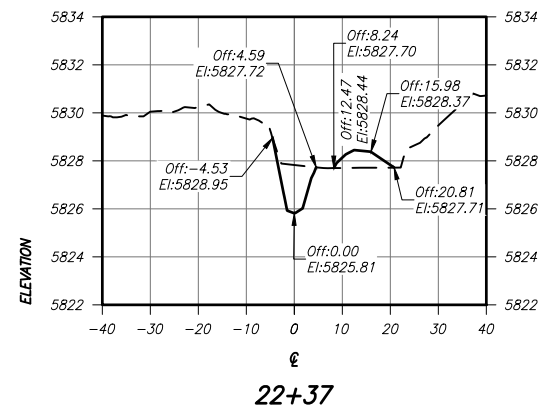
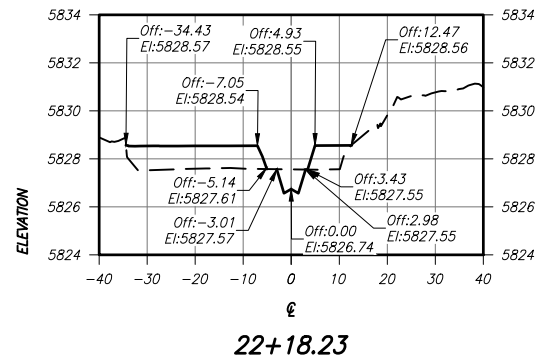
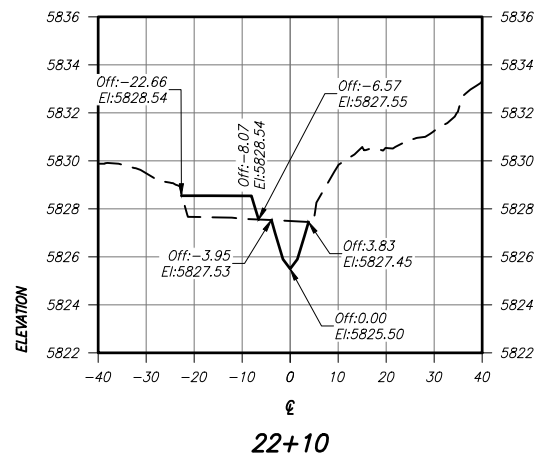
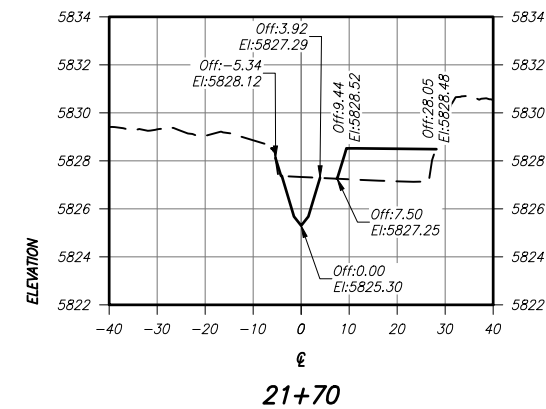
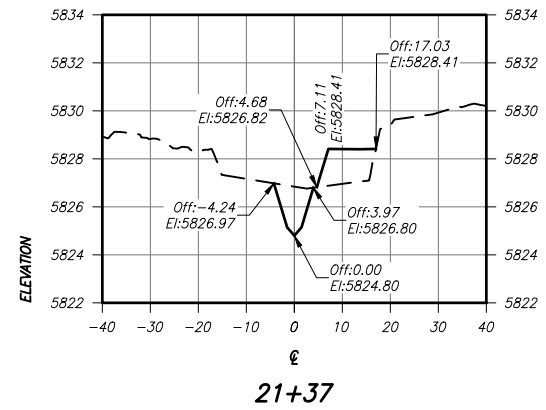
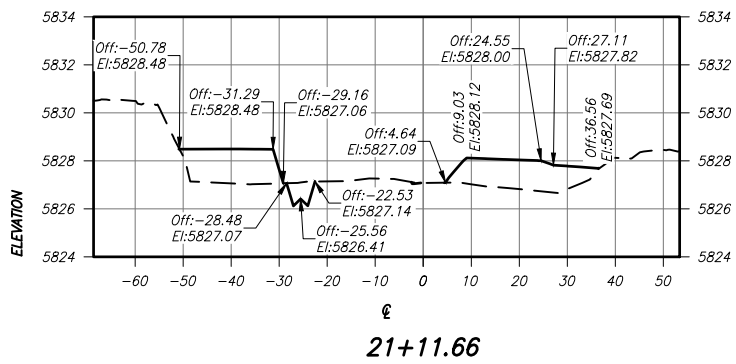
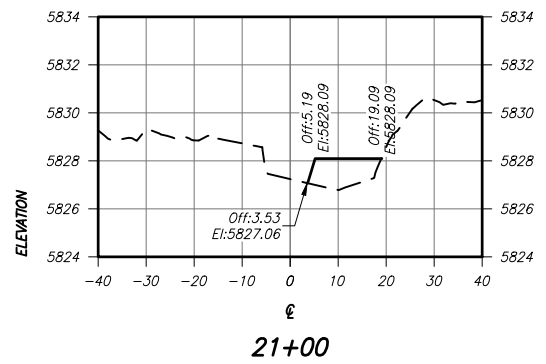
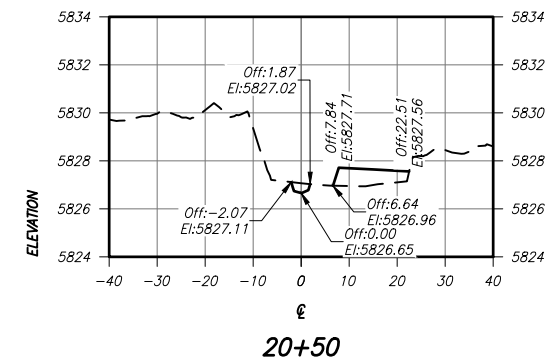
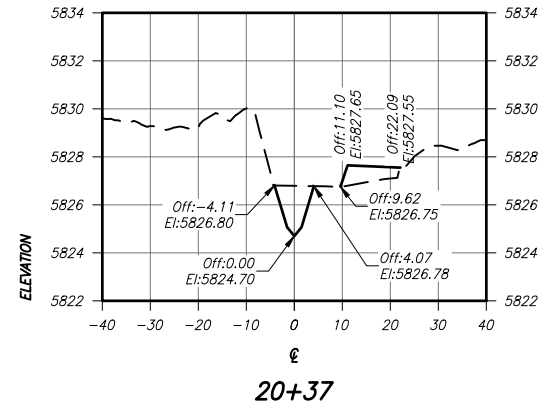
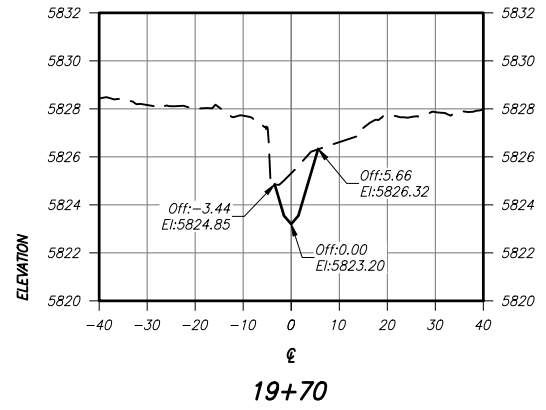
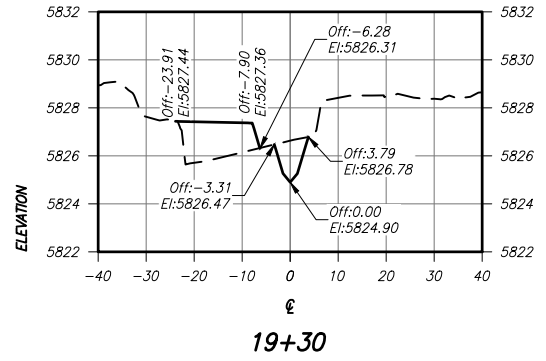
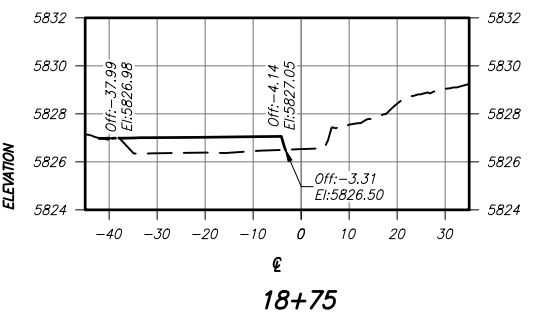
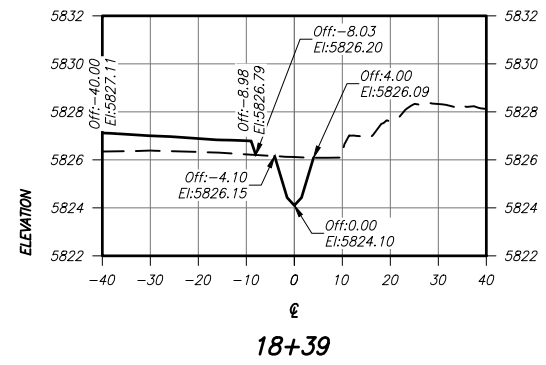
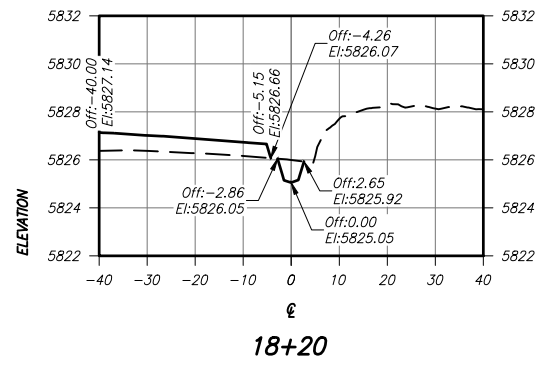
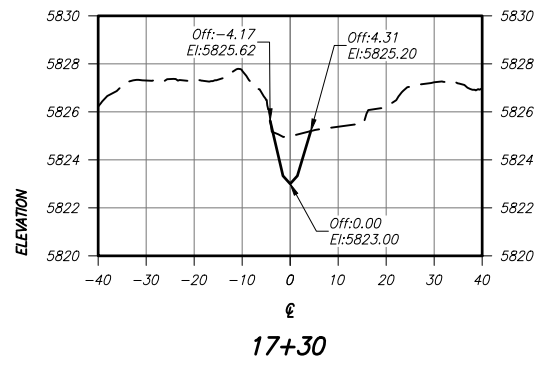
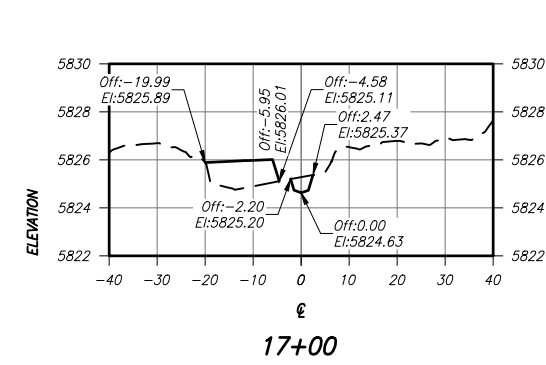
- CROSS SECTIONS FACE UPSTREAM. CROSS SECTION CENTERLINE STATION IS LOCATED ALONG THE THALWEG ALIGNMENT.
- Y-AXIS IS ELEVATION; X-AXIS IS DISTANCE IN FEET ALONG A CHORD PERPENDICULAR TO THE THALWEG. THE ZERO STATION SHOWN ON THESE CROSS SECTIONS REPRESENTS THE THALWEG ALIGNMENT.
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- CROSS SECTIONS ARE TO BE USED TO STAKE OUT THE CHANNEL OFFSETS AT THE VERTICAL GRADE BREAKS OF THE CHANNEL PROFILE.



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 NOT FOR
 CONSTRUCTION

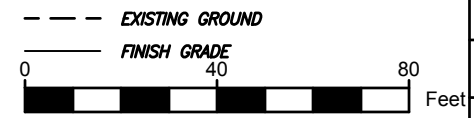
Date: 06/10/17
 Designed: JLF
 Drawn: JY
 Checked: JLF/KS/BPA
 Approved: LRLT

Drawing Name
CHANNEL SECTIONS - 2
 Drawing No.
33
 Sheet 33 of 44



NOTES

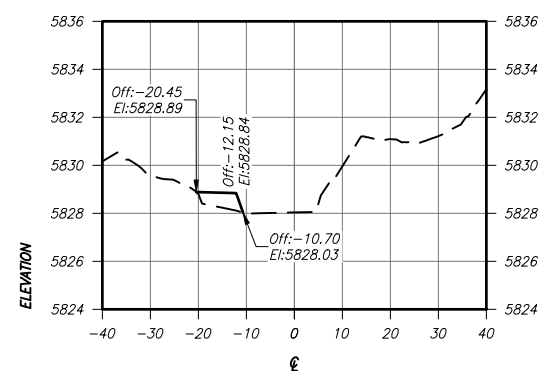
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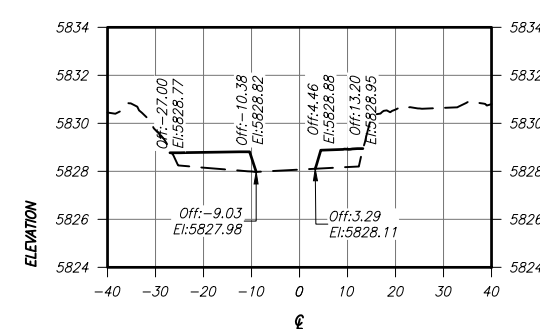
DRAFT-
 NOT FOR
 CONSTRUCTION

Date: 06/10/17
 Designed: JWF
 Drawn: JY
 Checked: JWF/KS/BPA
 Approved: LRLT

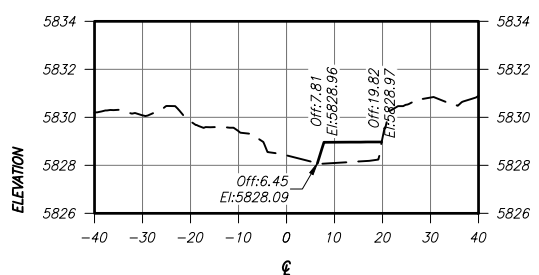
Drawing Name
CHANNEL SECTIONS - 3
 Drawing No.
34
 Sheet 34 of 44



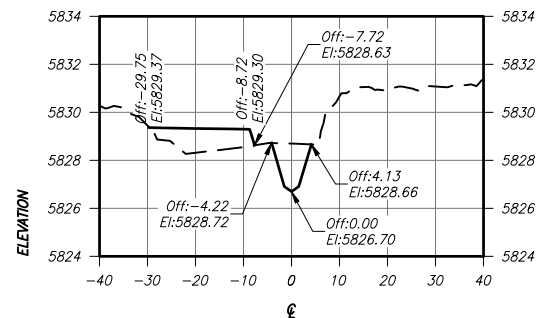
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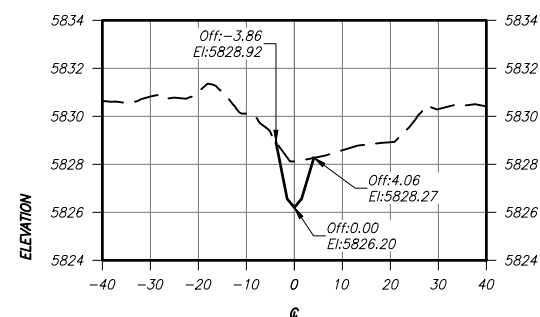
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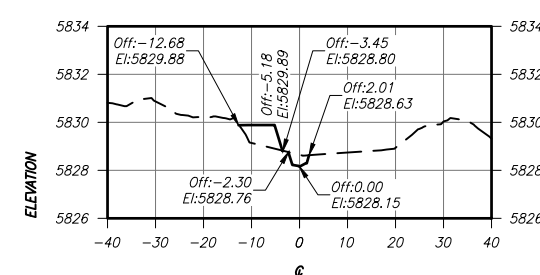
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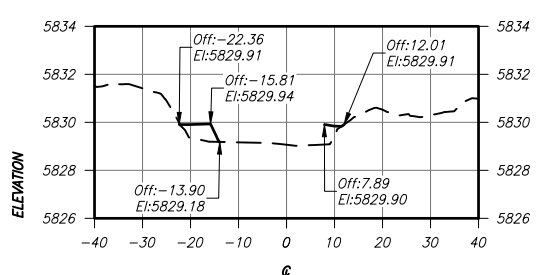
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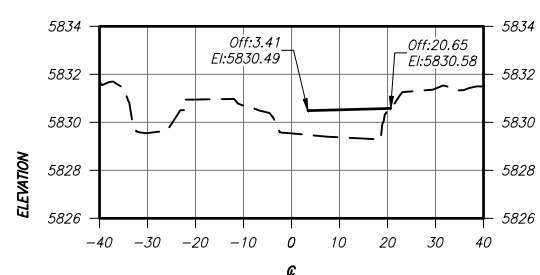
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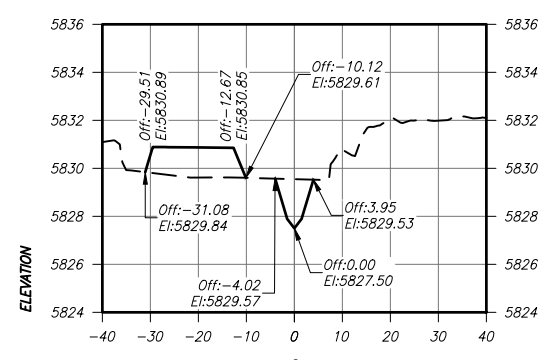
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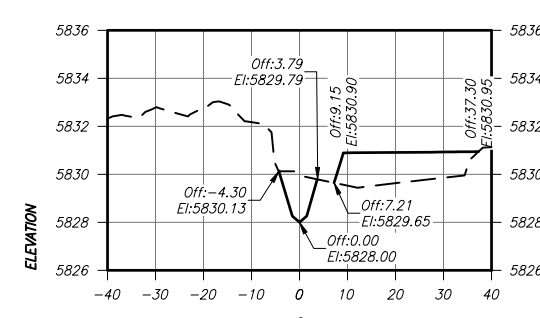
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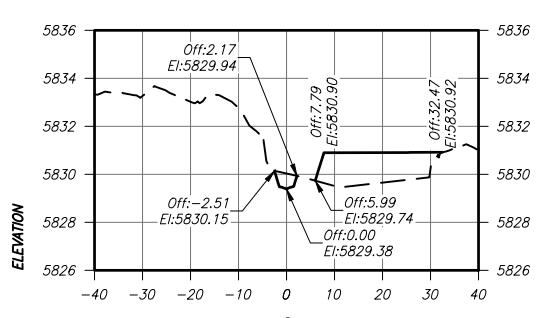
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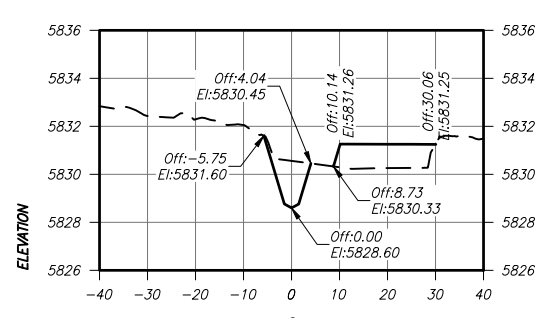
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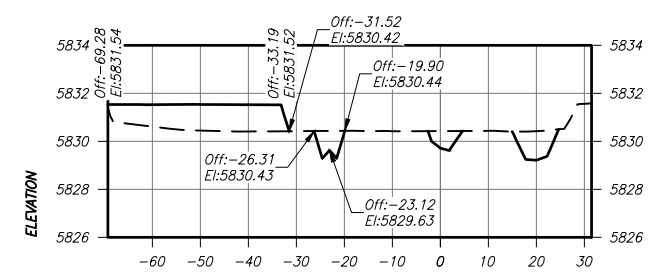
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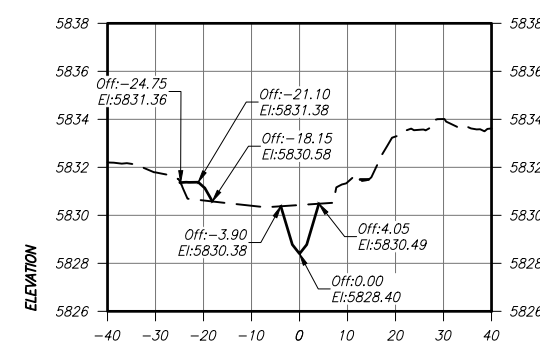
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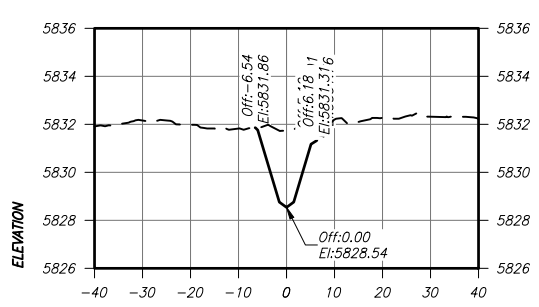
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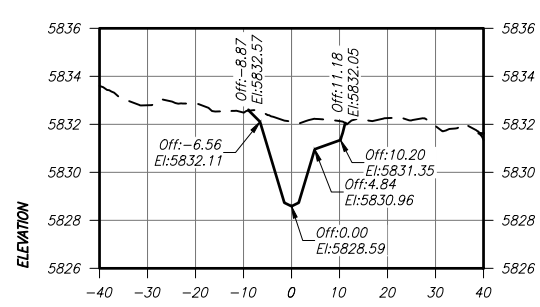
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27+91



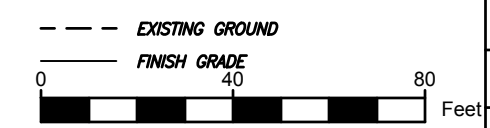
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28+32

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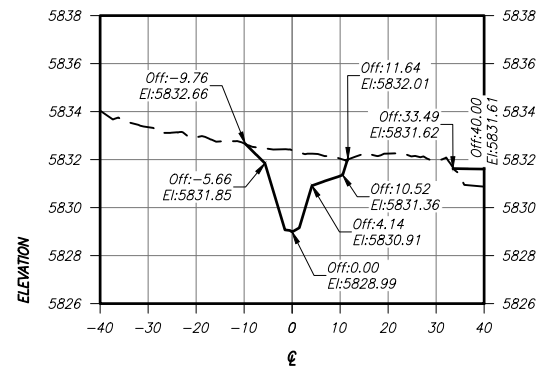
1. CROSS SECTIONS FACE UPSTREAM. CROSS SECTION CENTERLINE STATION IS LOCATED ALONG THE THALWEG ALIGNMENT.
2. Y-AXIS IS ELEVATION; X-AXIS IS DISTANCE IN FEET ALONG A CHORD PERPENDICULAR TO THE THALWEG. THE ZERO STATION SHOWN ON THESE CROSS SECTIONS REPRESENTS THE THALWEG ALIGNMENT.
3. CONSTRUCTED CHANNEL SHALL TRANSITION SMOOTHLY BETWEEN CROSS SECTIONAL GEOMETRIES SHOWN WITHIN THESE CROSS SECTIONS. CROSS SECTION GEOMETRY SHOWN REPRESENTS ONE POINT IN A SMOOTH TRANSITION.
4. CROSS SECTIONS ARE TO BE USED TO STAKE OUT THE CHANNEL OFFSETS AT THE VERTICAL GRADE BREAKS OF THE CHANNEL PROFILE.



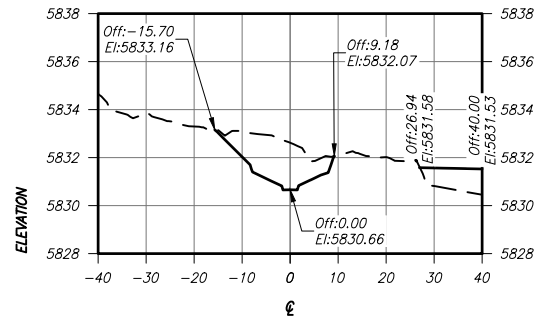
DRAFT-
 NOT FOR
 CONSTRUCTION

Date: 06/10/17
 Designed: JLF
 Drawn: JY
 Checked: JLF/KS/BPA
 Approved: LRLT

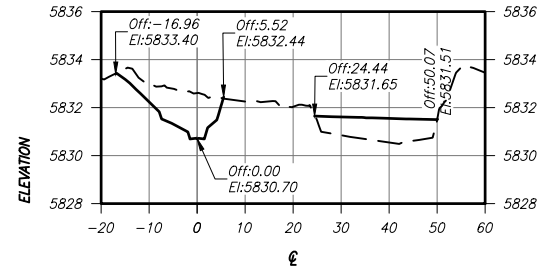
Drawing Name
CHANNEL SECTIONS - 4
 Drawing No.
35
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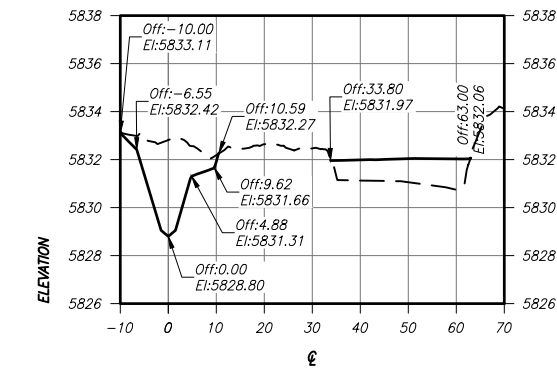
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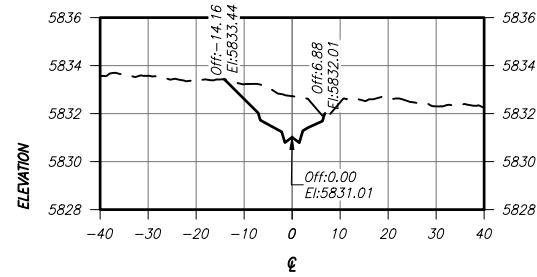
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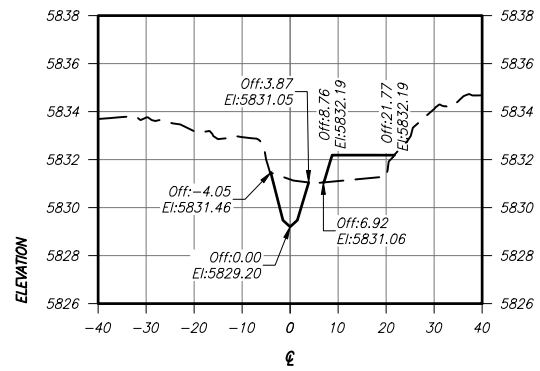
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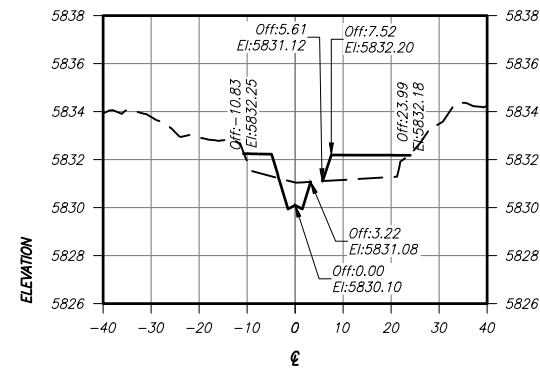
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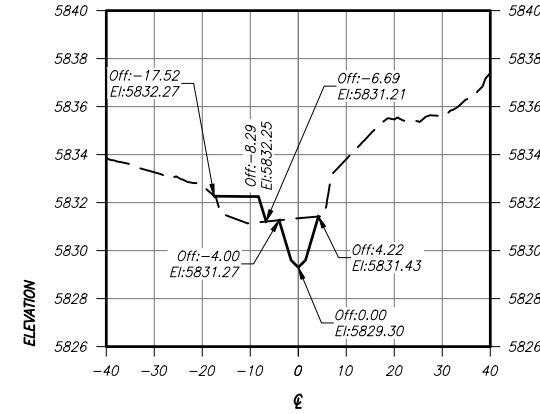
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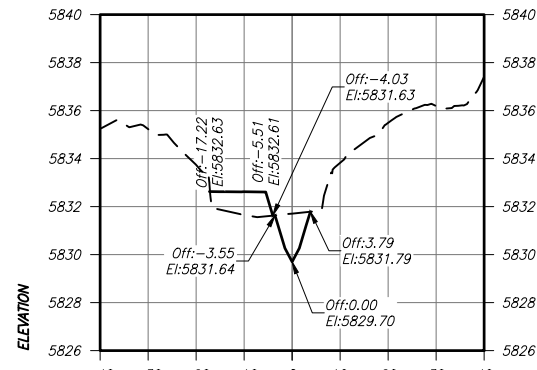
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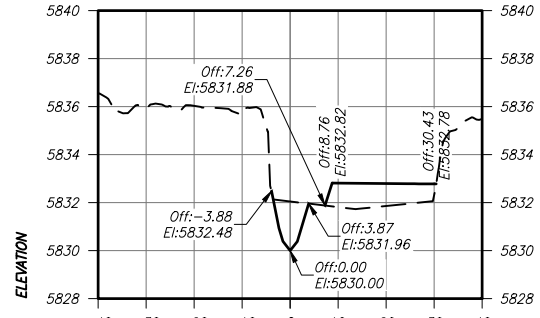
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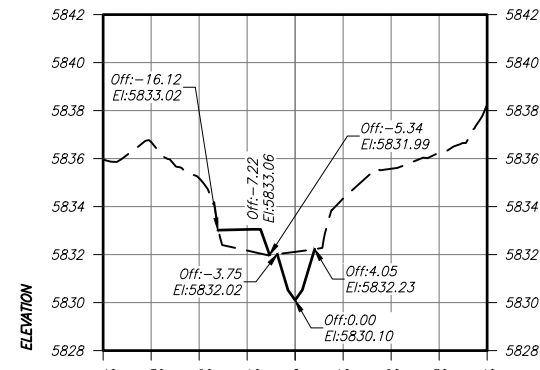
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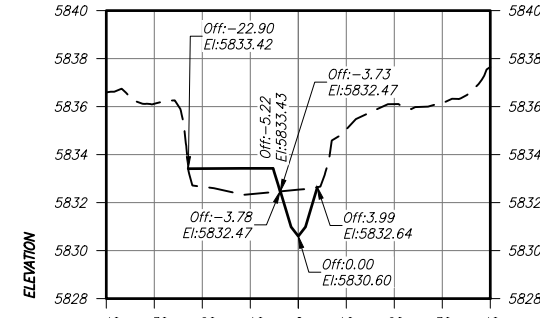
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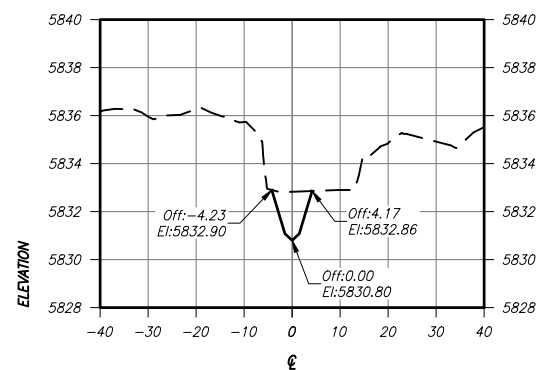
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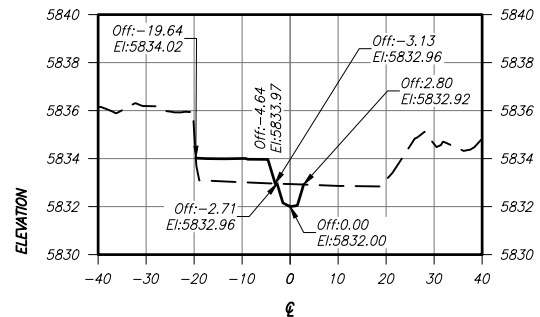
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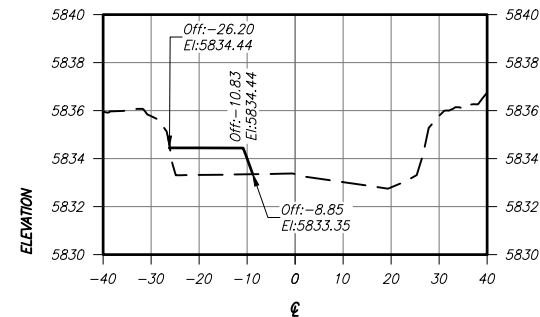
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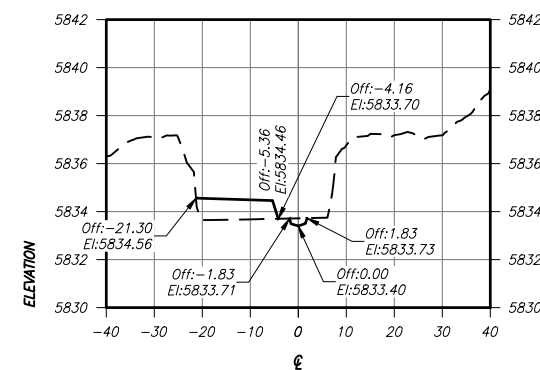
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33+00



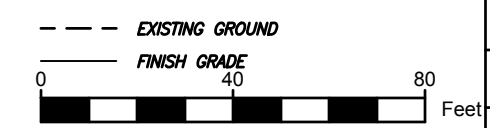
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34+00

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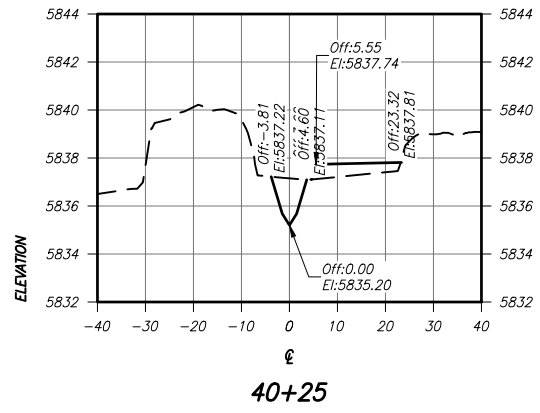
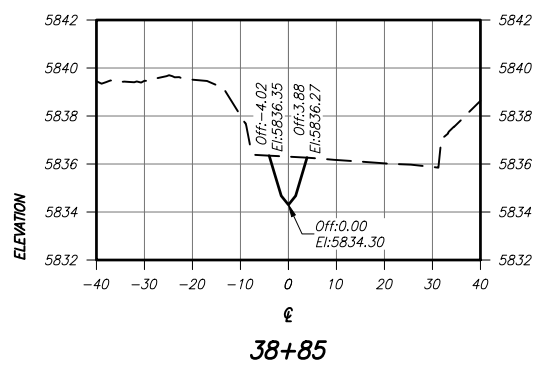
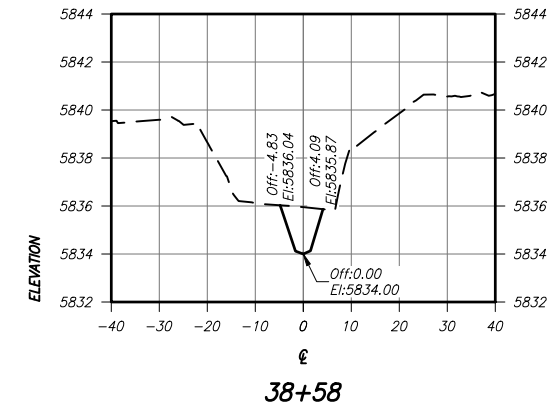
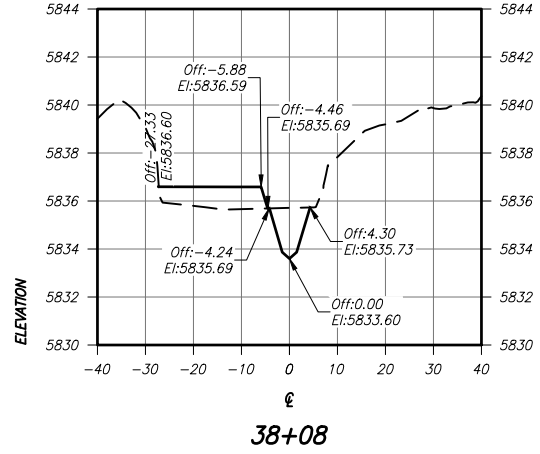
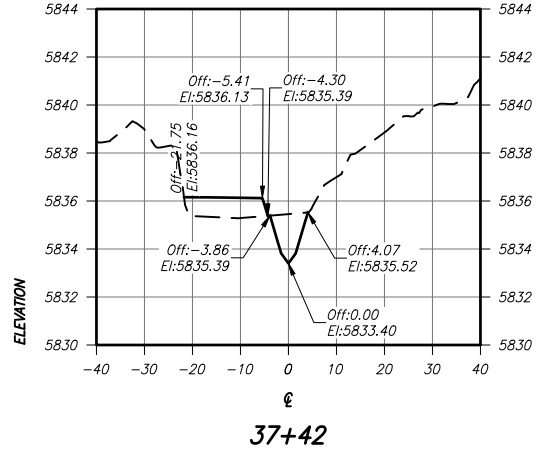
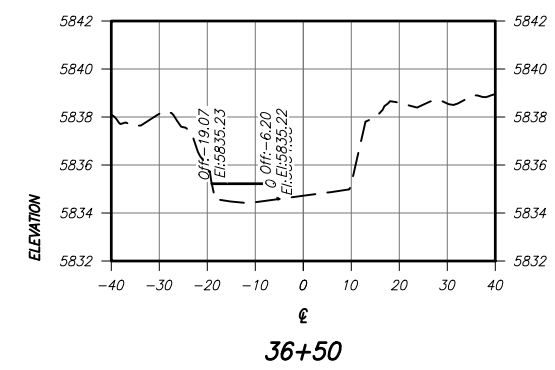
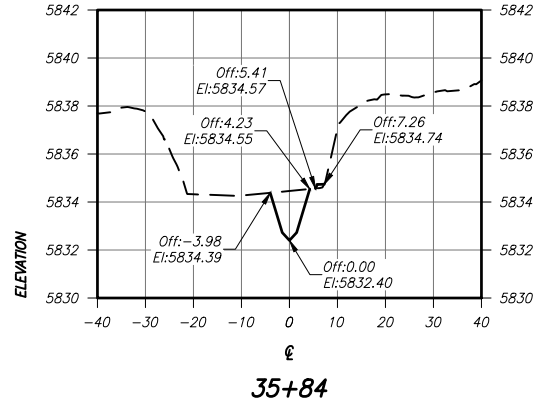
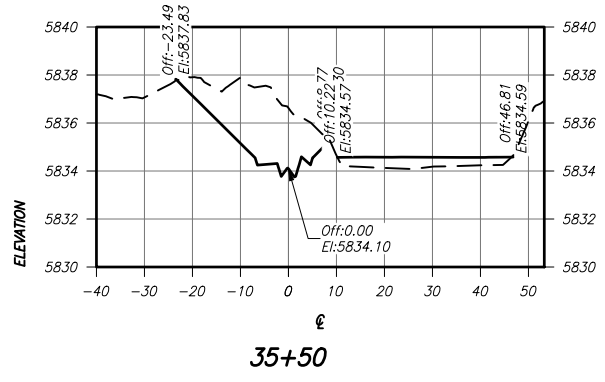
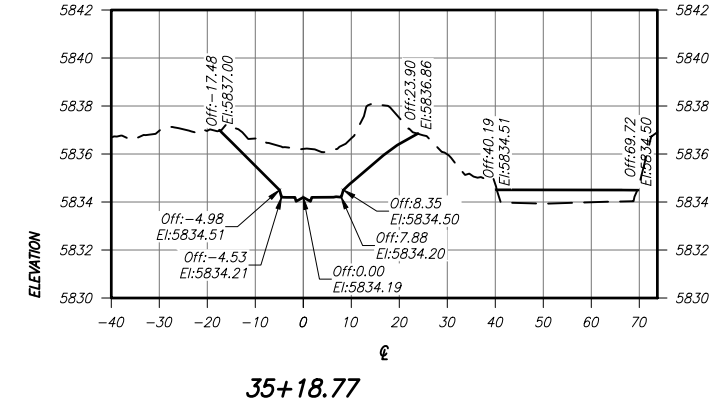
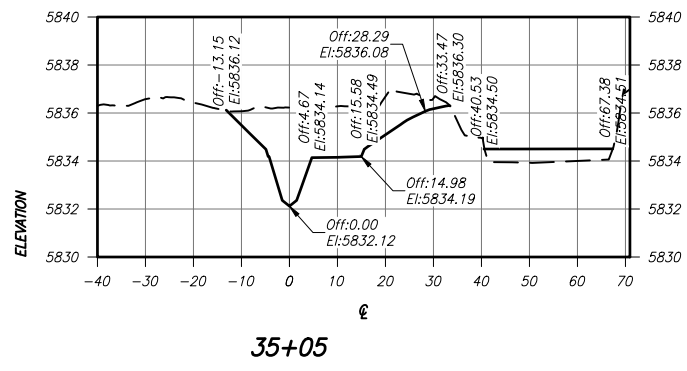
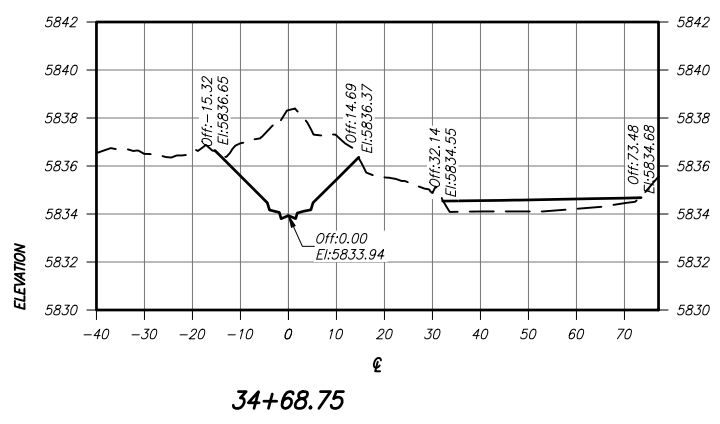
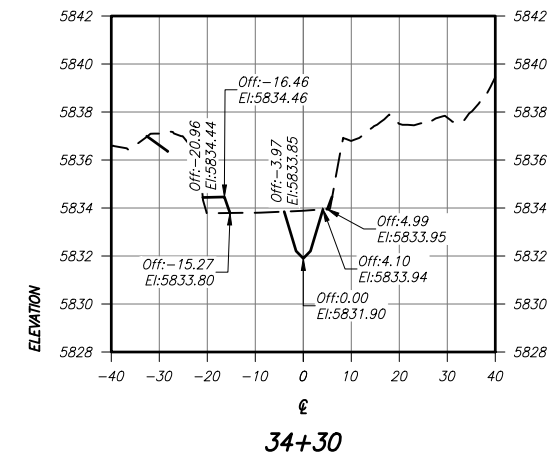
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 NOT FOR
 CONSTRUCTION

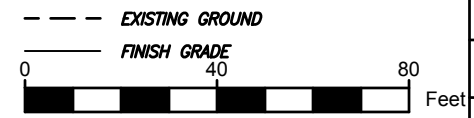
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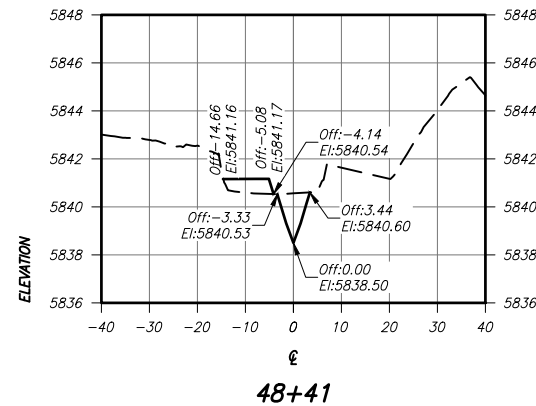
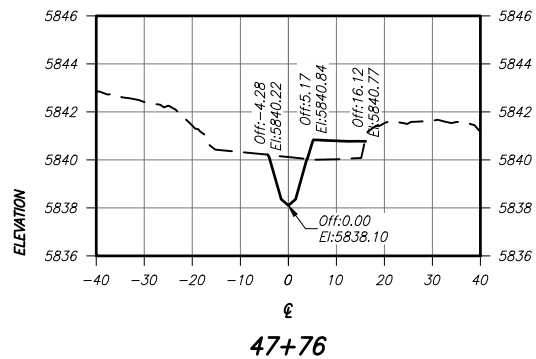
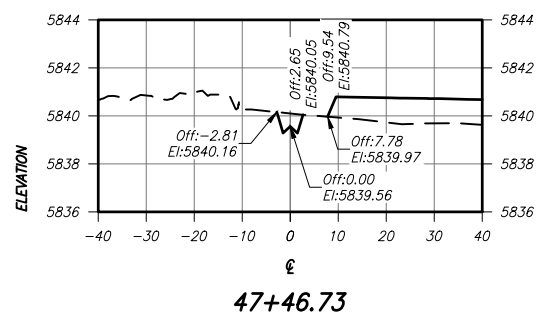
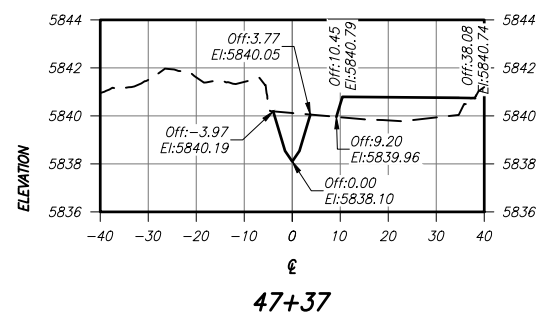
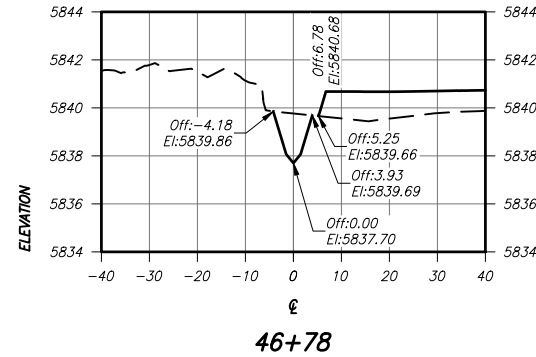
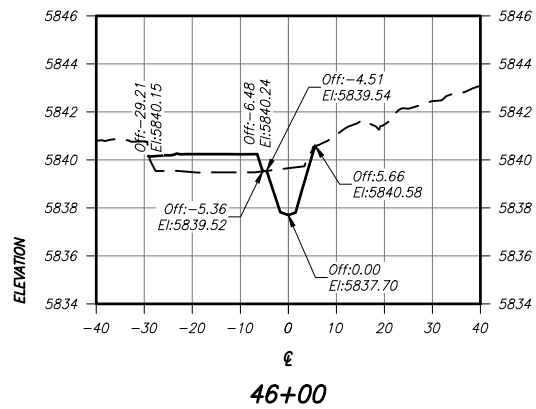
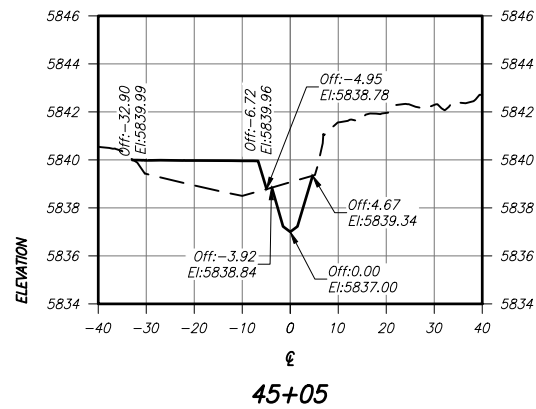
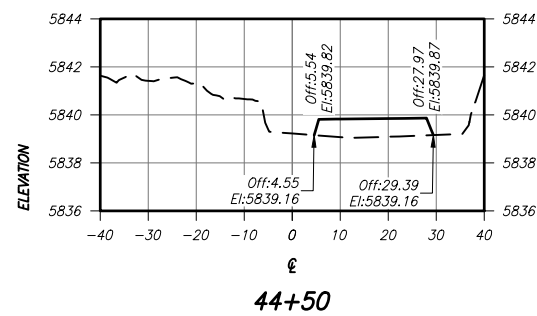
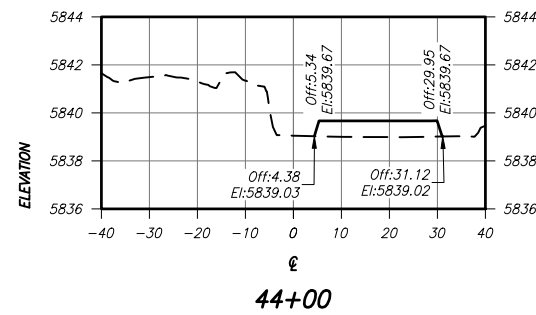
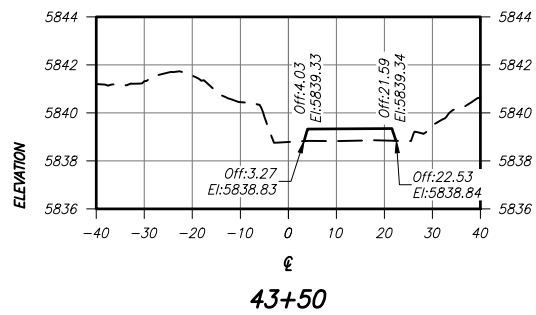
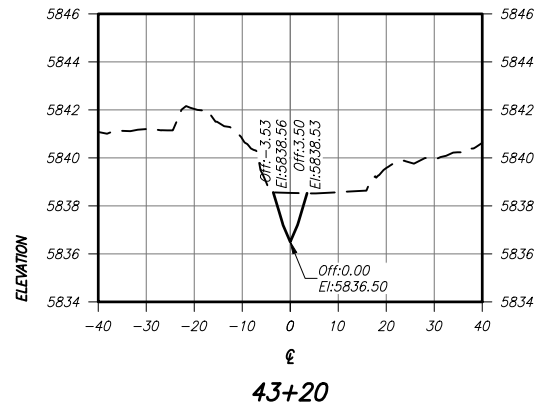
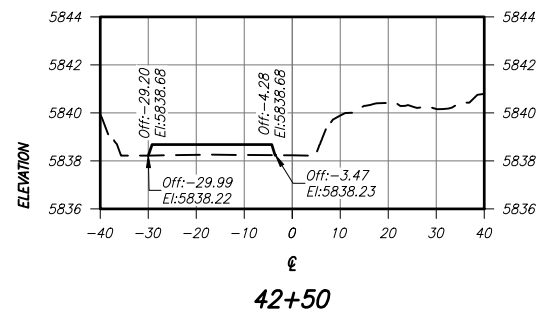
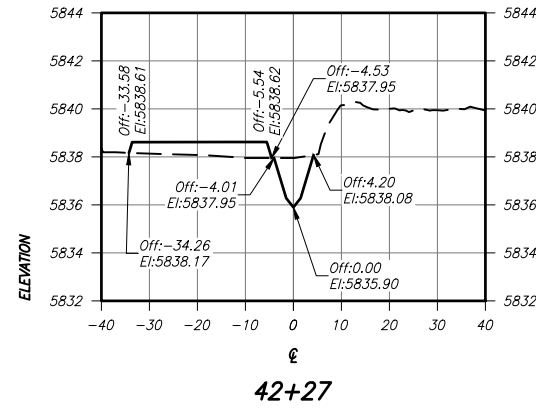
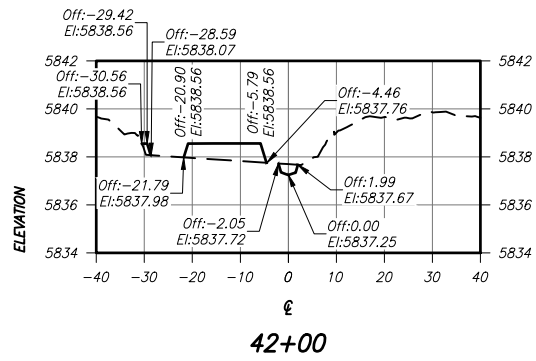
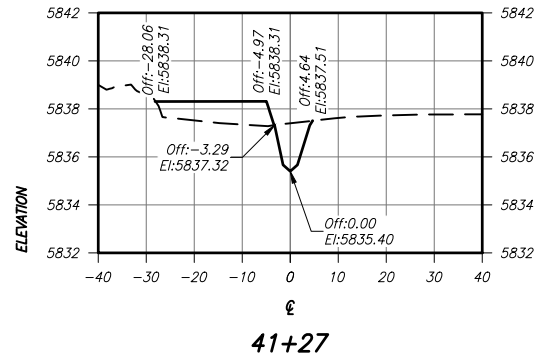
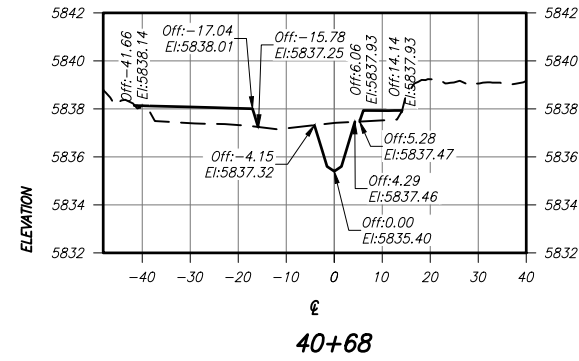
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CHANNEL SECTIONS - 5
 Drawing No.
36
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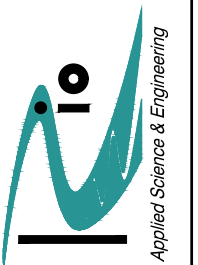
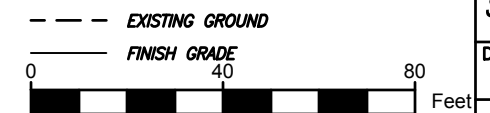
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Big Springs Enhancement Project
 Prelinal (80% Design) Drawings
 for the Lemhi Regional Land Trust
 Big Springs Creek, Lemhi County, Idaho
 Project: 014-101-001-01

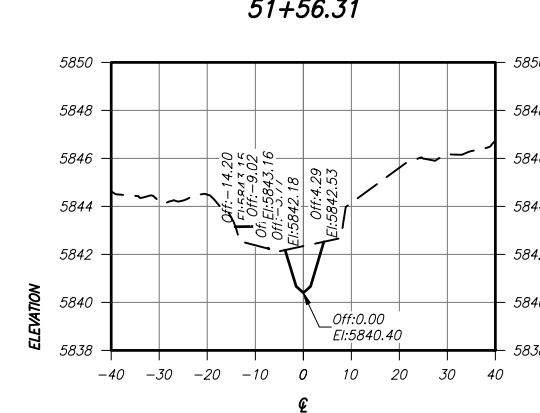
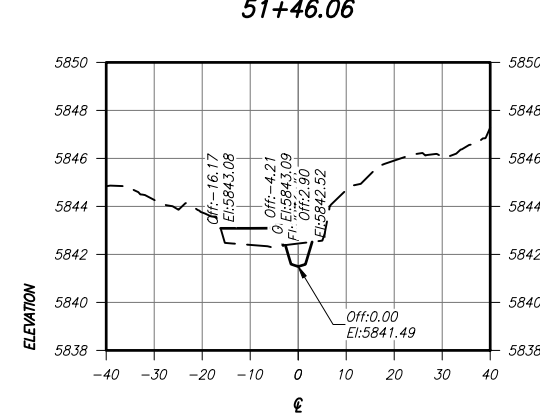
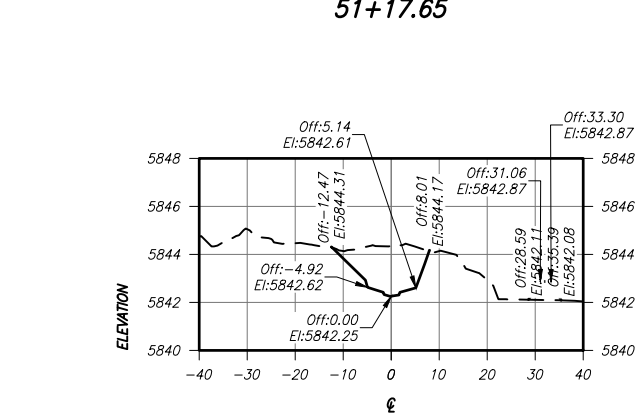
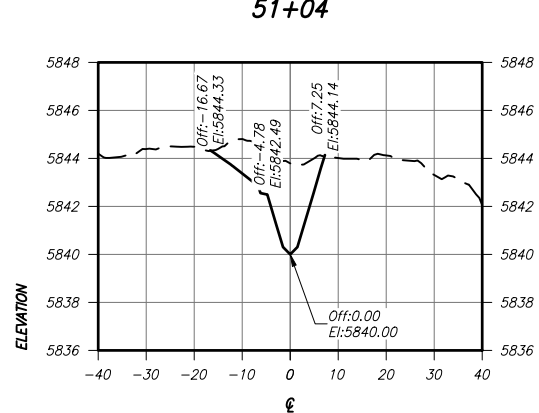
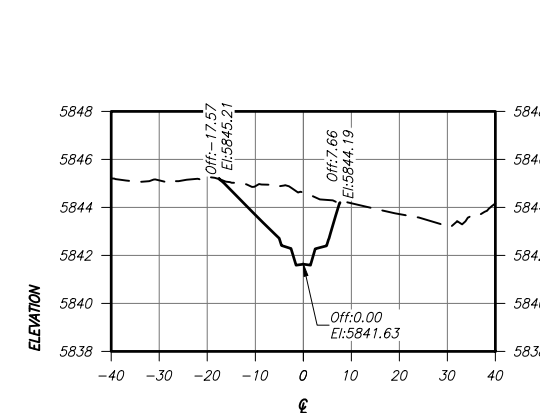
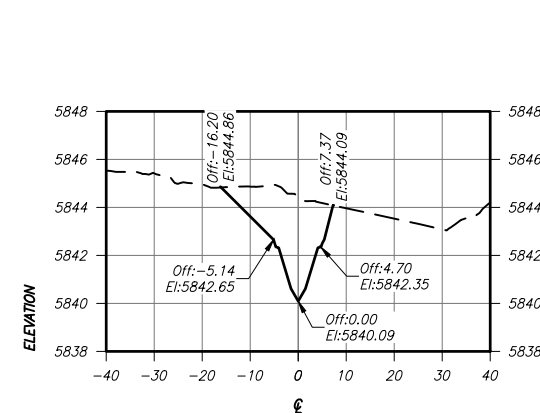
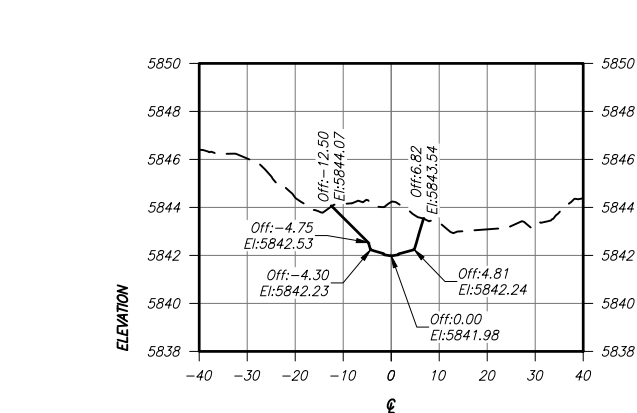
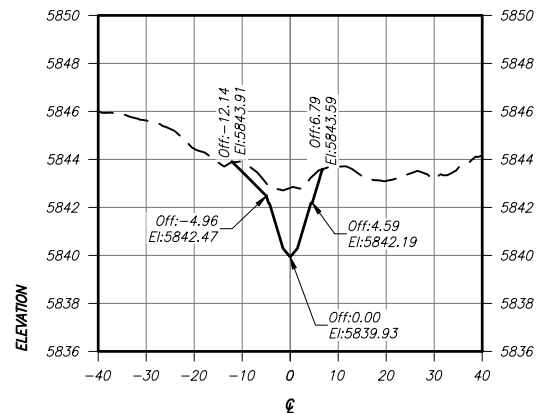
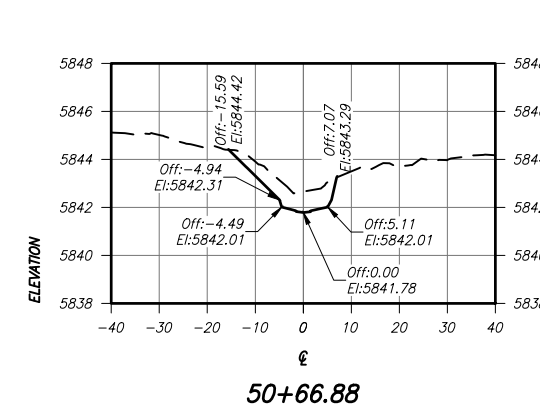
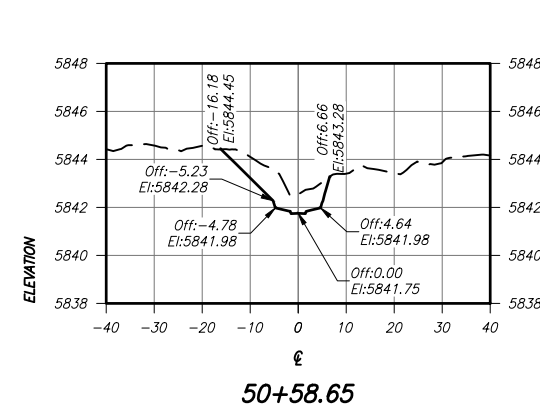
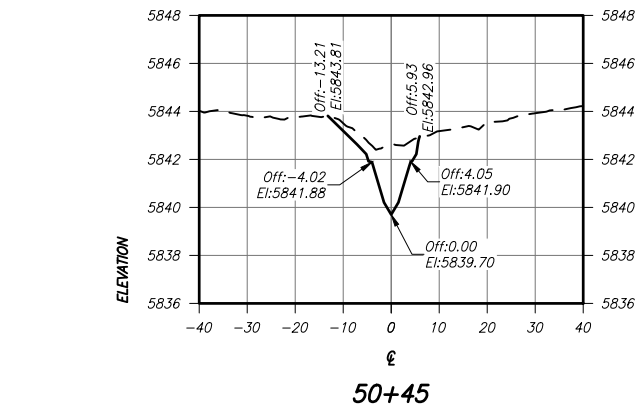
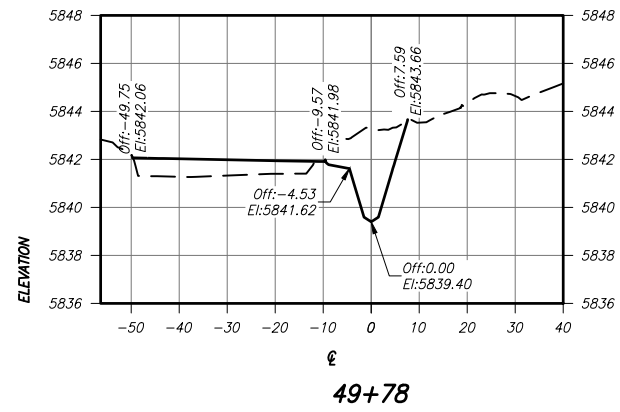
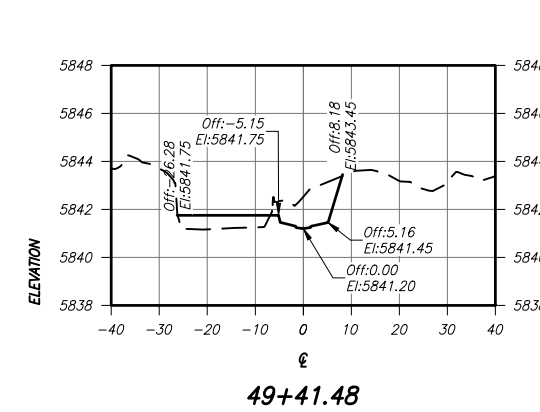
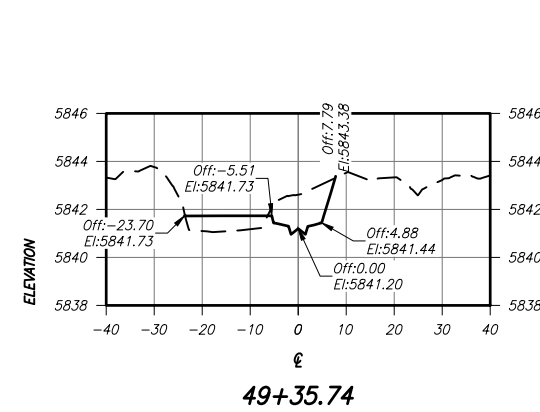
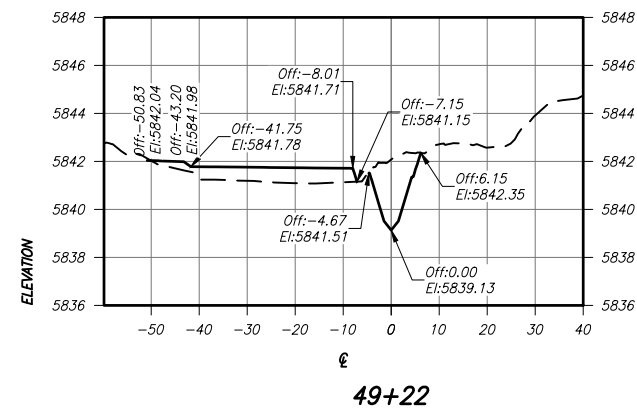
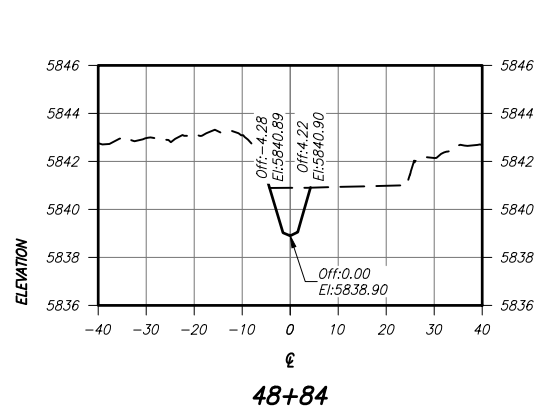
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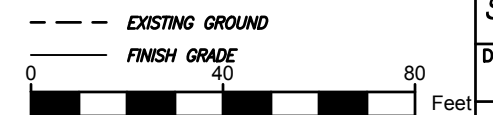
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Sheet **37** of **44**



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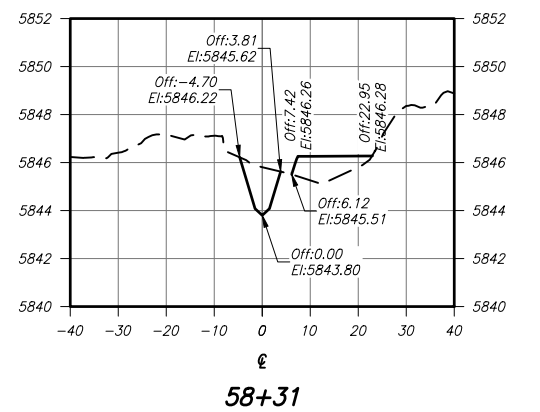
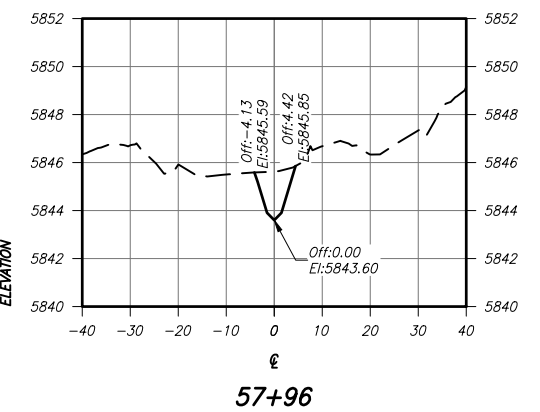
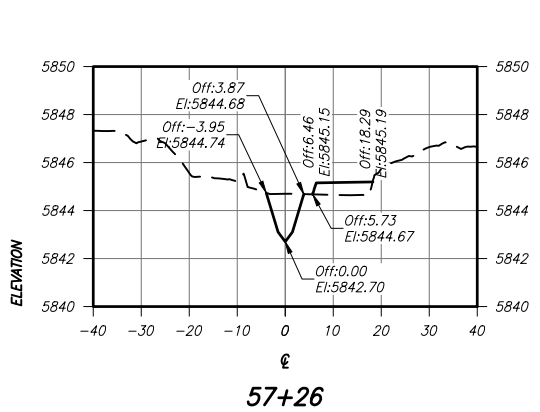
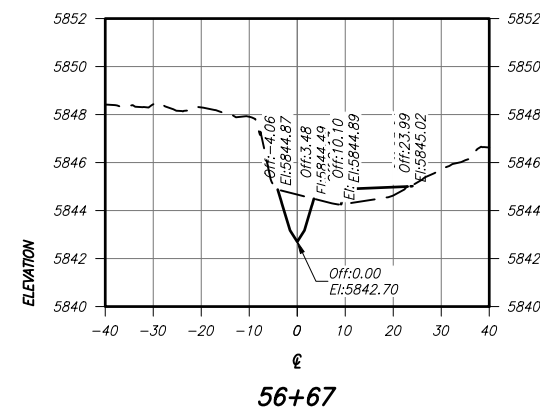
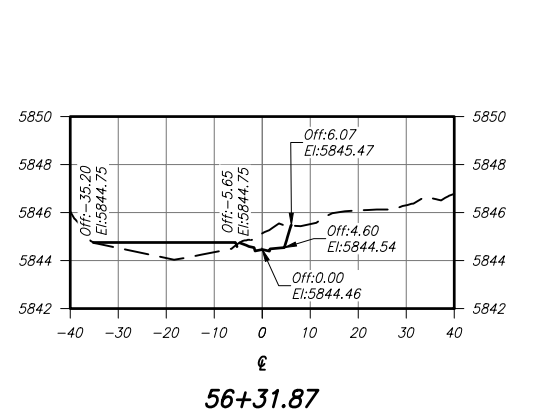
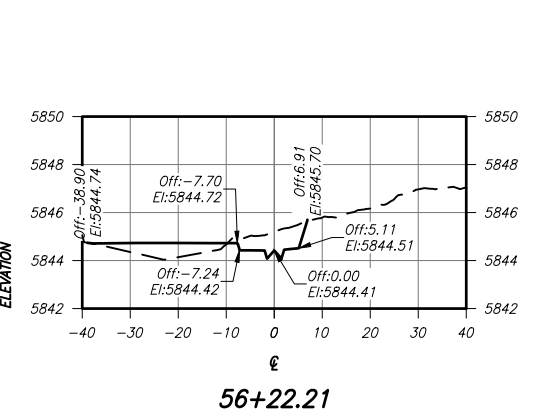
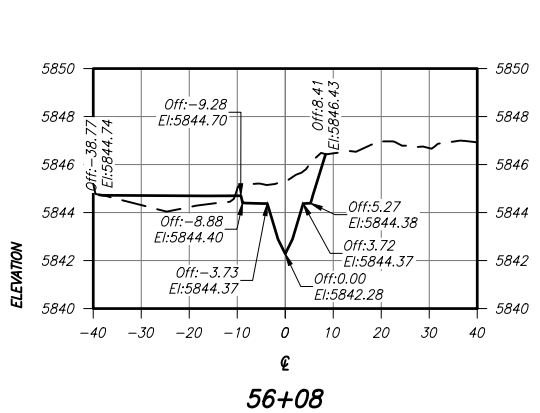
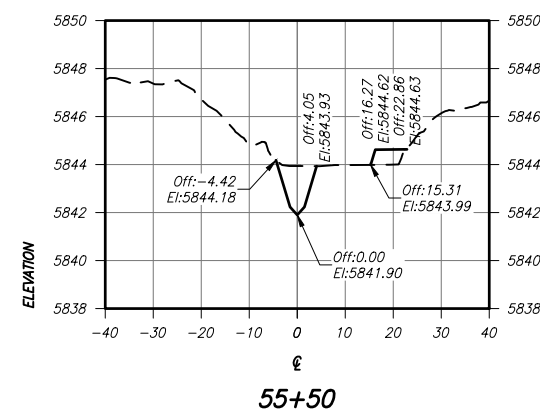
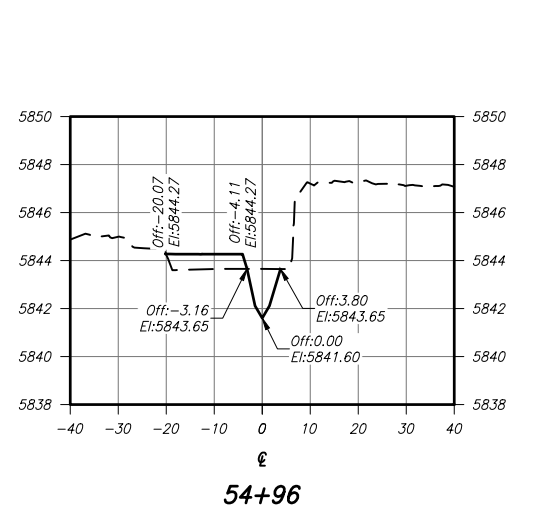
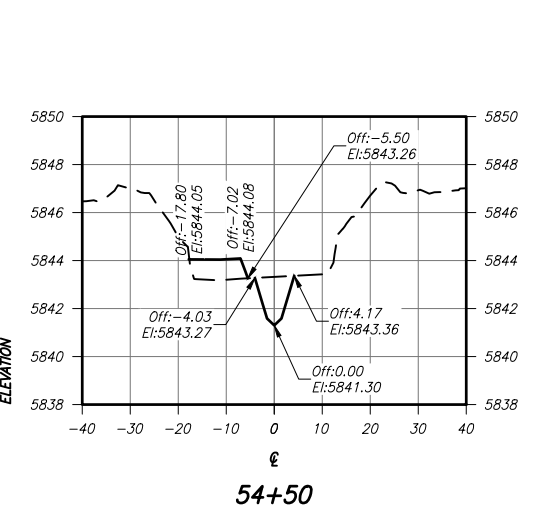
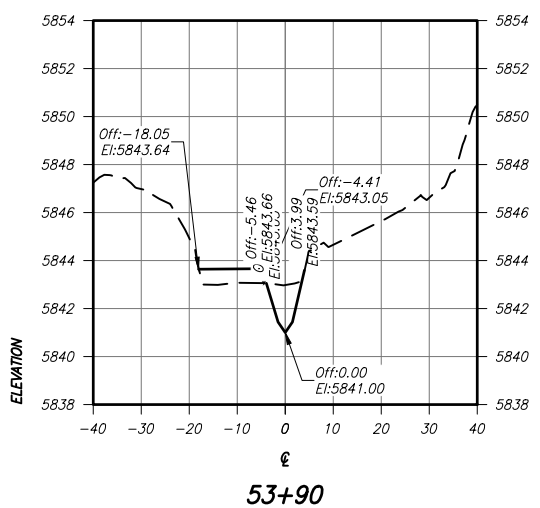
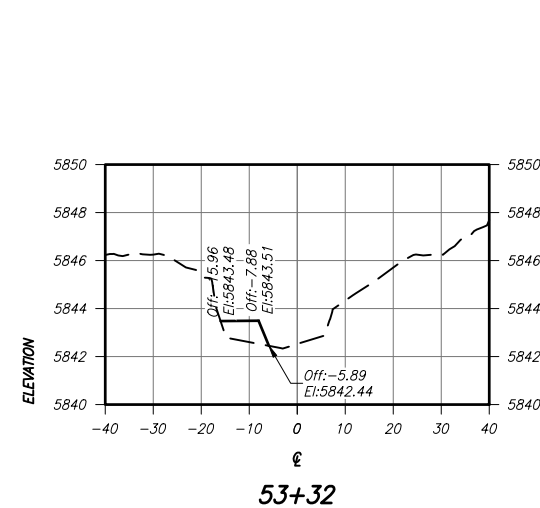
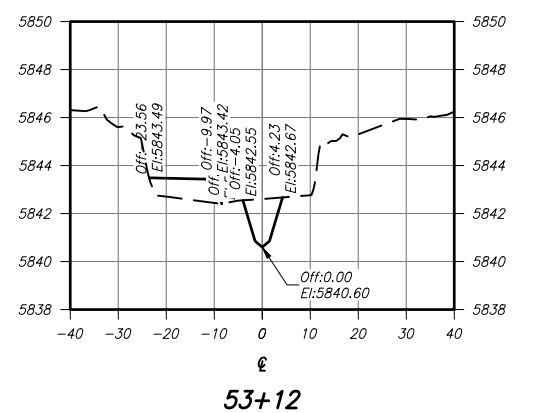
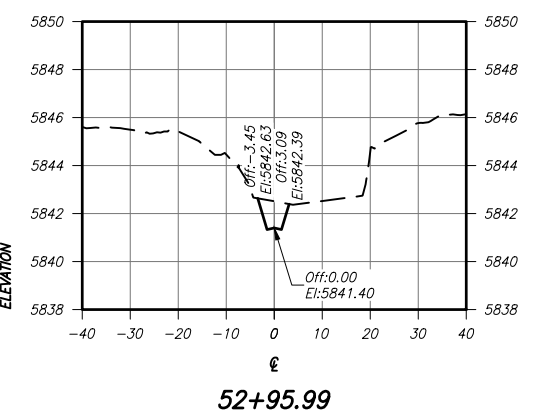
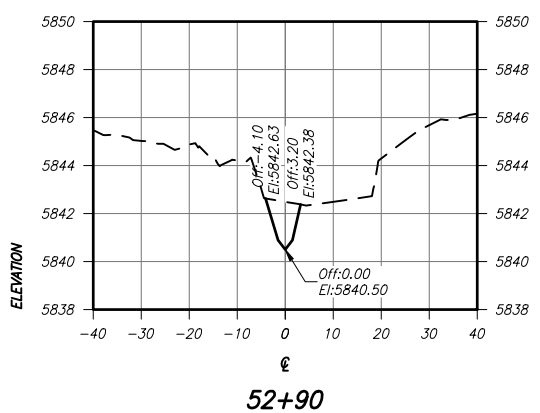
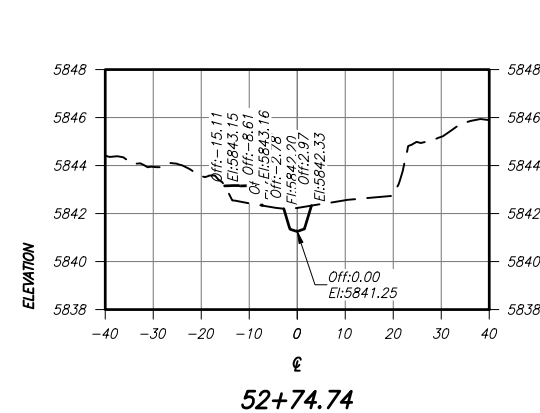
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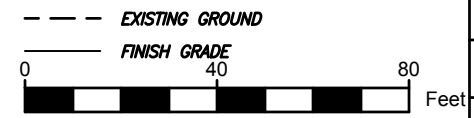
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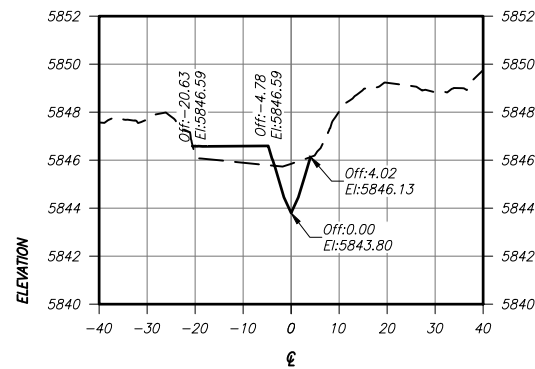
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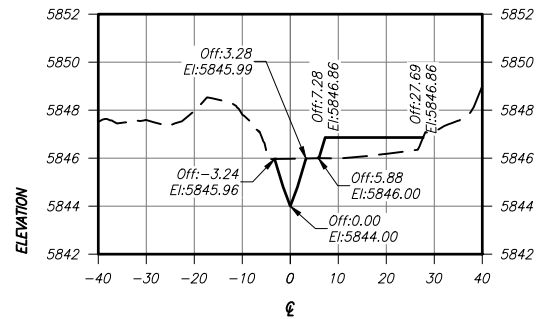
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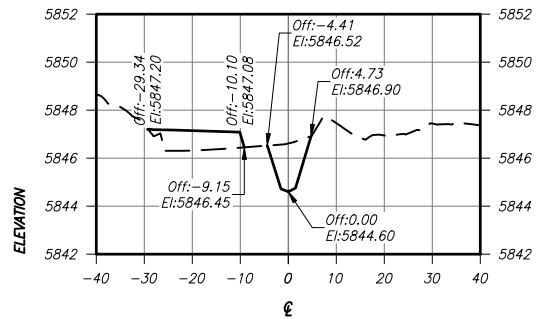




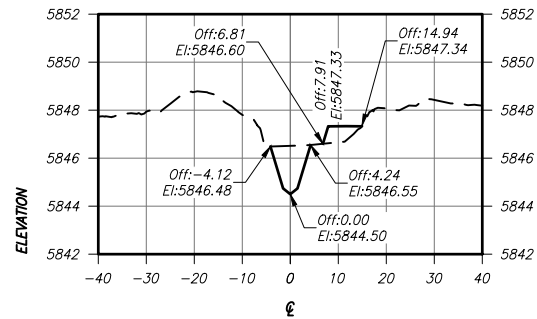
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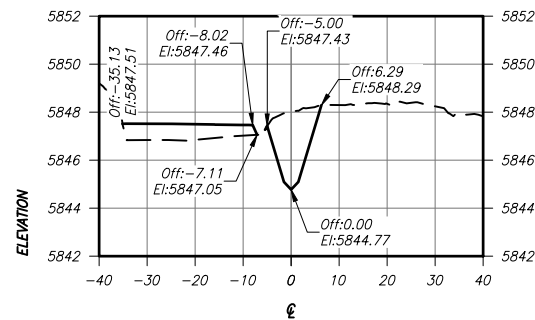
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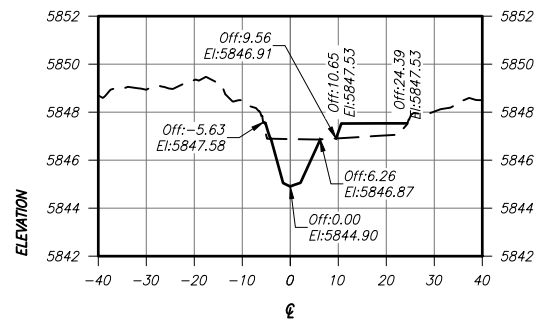
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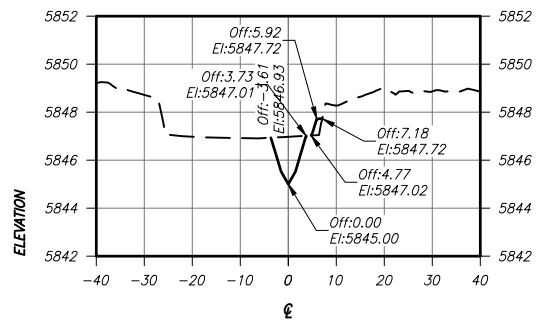
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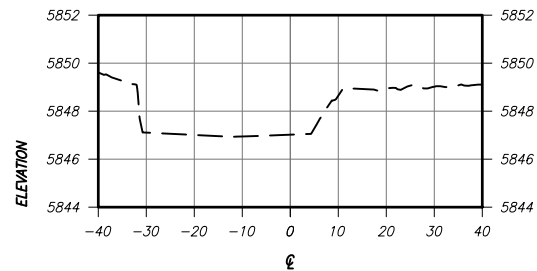
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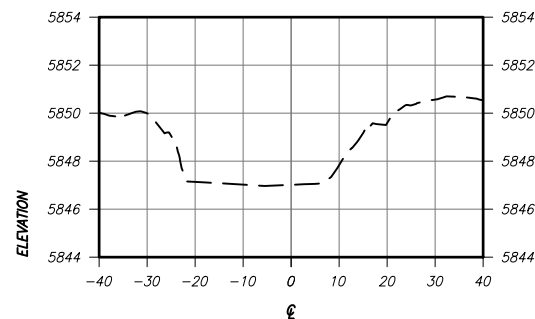
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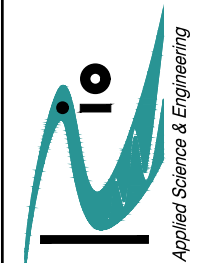
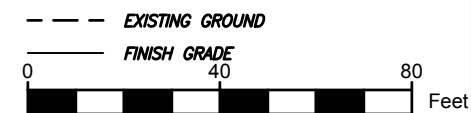
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 Prefinal (80% Design) Drawings
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 Big Springs Creek, Lemhi County, Idaho
 Project: 014-101-001-01

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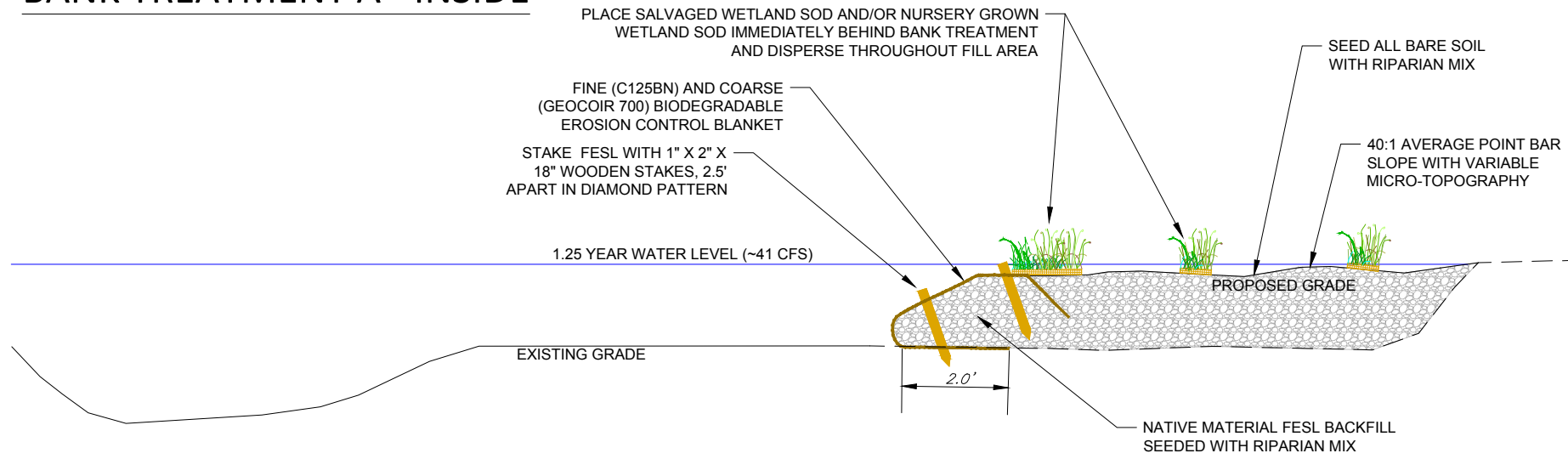
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CHANNEL SECTIONS - 9

Drawing No.
40

Sheet **40** of **44**

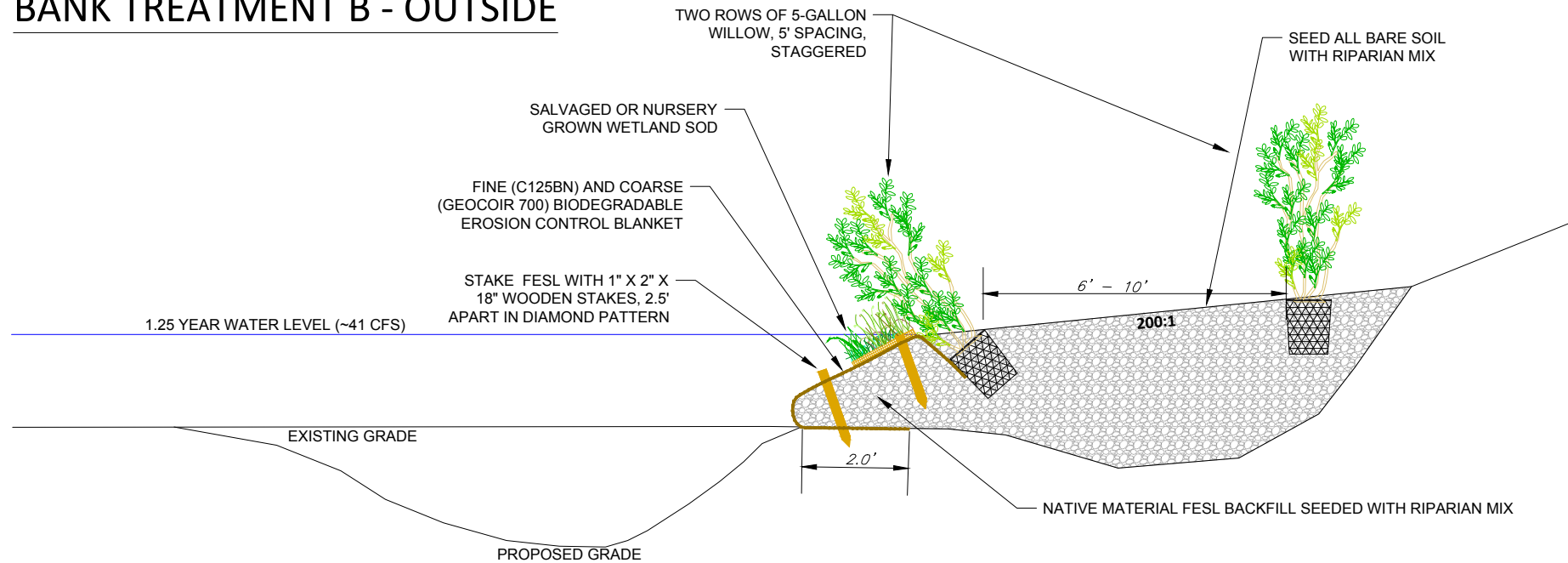
BANK TREATMENT A - INSIDE



BANK TREATMENT A - INSIDE - NOTES:

1. Place GEOCOIR 700 erosion control fabric on the existing grade 2' from the desired fill edge, place C125BN erosion control fabric directly on top of the GEOCOIR 700 to retain fines, place fill in 1' maximum lifts and compact using the excavator bucket until the desired elevation and a 2:1 slope is achieved. Broadcast riparian seed mix onto the edge and wrap the C125BN and GEOCOIR 700 to cover the exposed edge, trench 1' of the fabric into the compacted fill. Stake with 18" wooden stakes, 2.5' apart on a diamond pattern.
2. Finish backfilling point bar with compacted fill in 1' maximum lifts. Prep the top 0.25' to meet the seed bed specification by removing all stones and dirt clods greater than 2" and raking a smooth seed bed consisting of loose soil.
3. Place salvaged wetland sod according to the drawings with the excavator and press down with the excavator bucket.
4. Broadcast seed bare soil according to the seeding specifications.

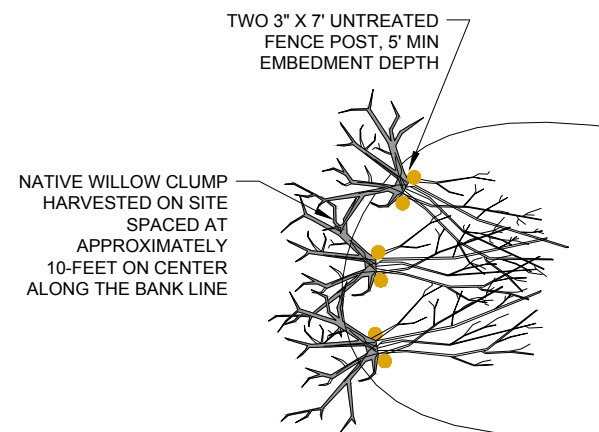
BANK TREATMENT B - OUTSIDE



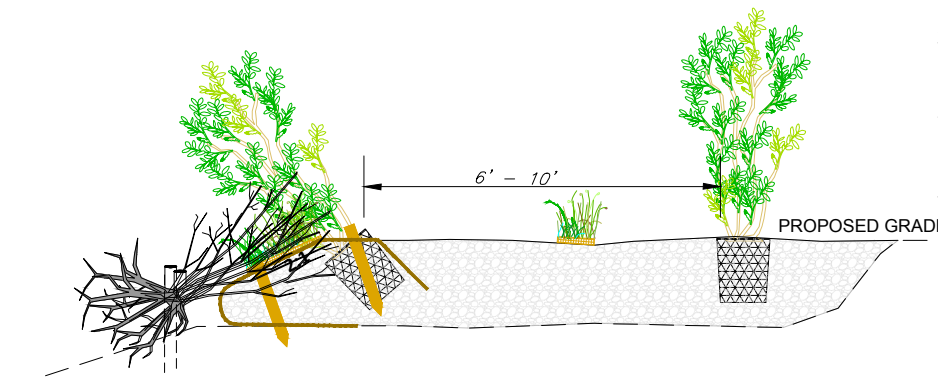
BANK TREATMENT B - OUTSIDE - NOTES:

1. Place GEOCOIR 700 erosion control fabric on the existing grade 2' from the desired fill edge, place C125BN erosion control fabric directly on top of the GEOCOIR 700 to retain fines, place fill in 1' maximum lifts and compact using the excavator bucket until the desired elevation and a 2:1 slope is achieved. Broadcast riparian seed mix onto the edge and wrap the C125BN and GEOCOIR 700 to cover the exposed edge, trench 1' of the fabric into the compacted fill. Stake with 18" wooden stakes, 2.5' apart on a diamond pattern.
2. Plant either a DR-30 or 5-gallon native willow on a 5' spacing directly behind the trenched erosion control fabric at an angle to encourage overhanging branches.
3. Finish backfilling point bar with compacted fill in 1' maximum lifts. Prep the top 0.25' to meet the seed bed specification by removing all stones and dirt clods greater than 2" and raking a smooth seed bed consisting of loose soil.
4. Place salvaged wetland sod according to the drawings with the excavator and press down with the excavator bucket.
5. Plant native 5-gallon willows adjacent to the existing bank at a 5' staggered spacing from the first row of willows.
6. Broadcast seed bare soil according to the seeding specifications.

BANK TREATMENT C - WILLOW CLUMP BANK



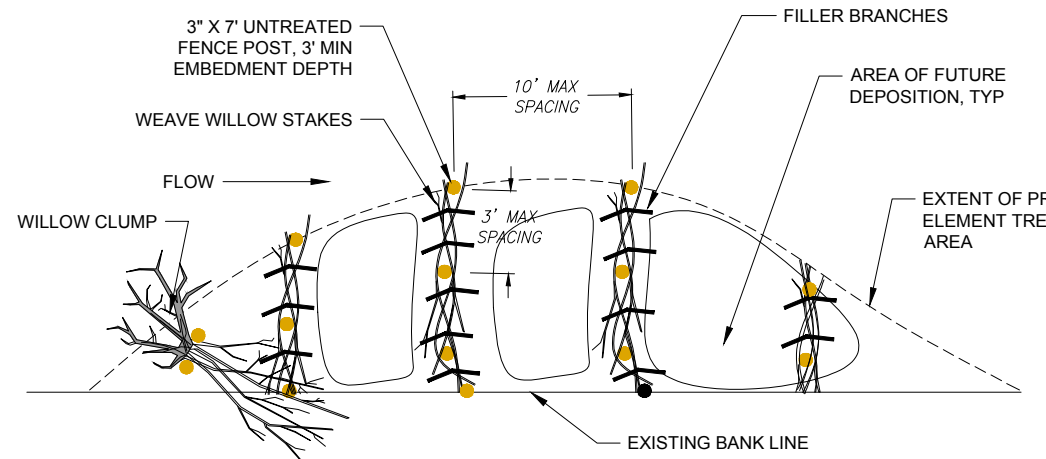
PLAN VIEW



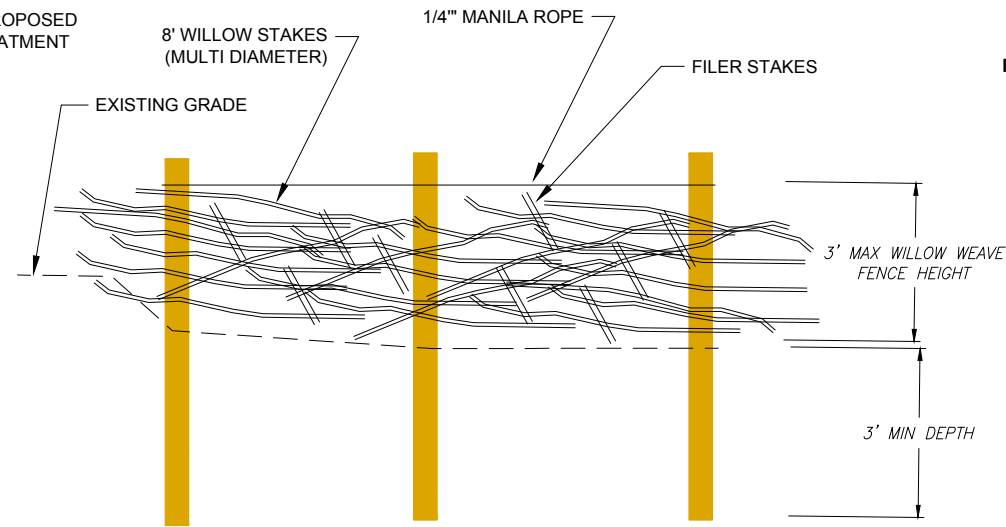
OVERLAYED ON BANK TREATMENT - B

WILLOW CLUMPS

1. The purpose of the willow clumps to encourage the entrapment of fine sediment and the formation of a natural point bars and/or islands OR as additional bank armoring in areas where scour is anticipated.
2. Willow clumps shall consist of a native willow and its rootball harvested from the project area a minimum of 30' from the existing water's edge. Willow clumps encountered when performing new channel excavations may also be used.
3. Posts shall be 3" diameter, 7' length untreated fence posts installed on 3' spacing. Pre-drill holes in each post 6" from the top of a diameter sufficient to thread 1/4" manila rope.
4. Place willow clumps with the rootball facing upstream and secure with two posts as depicted on the Drawings. If clump appears to be buoyant, secure in place with 1/4" manila rope.
5. Reclaim willow clump holes with borrow source material to existing grade and broadcast seed with riparian seed mix according to the seeding specifications.



POST LINE WILLOW WEAVE FENCE - PLAN VIEW



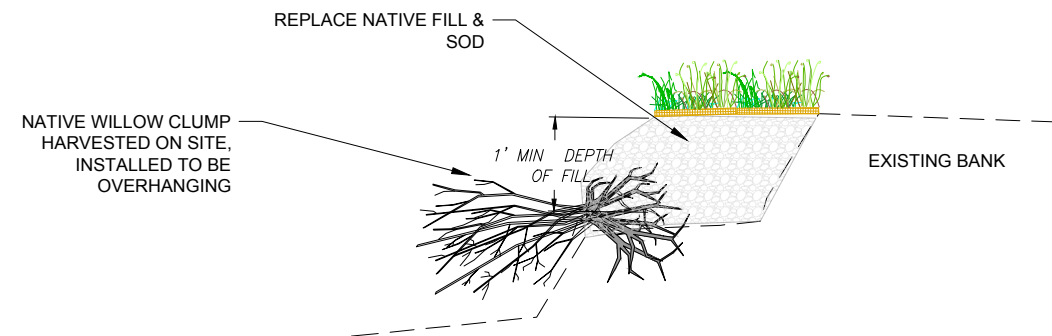
POST LINE WILLOW WEAVE FENCE - SECTION VIEW

INSTALLING WOOD STRUCTURES NOTES:

1. The Engineer shall supervise the installation of the wood habitat structures to insure proper installation. The Contractor may proceed with unsupervised installation of the rest of the structures, once the Engineer has signed off that they are properly trained.
2. All structures shall be placed as shown on the Drawings. Each type of structure has specific methods of construction in the various layers. The Contractor shall pay careful attention to the type and orientation shown on the Drawings.
3. All structures shall be secured as specified. Duckbills, cables, rebar and other unnatural materials are not permitted.

POST LINE WILLOW WEAVE FENCES

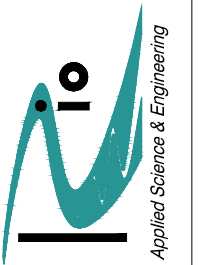
1. The purpose of the post line willow weave fences is to encourage the entrapment of fine sediment and the formation of a natural point bar. These structures may be installed in the "wet" with an excavator operating from the bank to pound in the posts. The remaining structure shall be built with hand crews.
2. Willow stakes used shall range between 1/2" to 3" in diameter and have a minimum length of 8'. If the minimum length is unavailable onsite, Contractor may either propose an offsite collection site or increase the pile spacing to insure that a minimum of 2' of each stake overlaps with the posts. A range of diameters is desired to minimize porosity of the fence. Stakes may be either live or dead and can be collected from willows within the project area. When harvesting, no more than 20% of a single plant shall be taken from any one live plant.
3. Posts shall be 3" diameter, 6' length untreated fence posts installed on 3' spacing. Pre-drill holes in each post 6" from the top of a diameter sufficient to thread 1/4" manila rope.
4. Place posts with the excavator as depicted on the Drawings.
5. Weave willow stakes such that each stake is firmly in place and extends a minimum of 2' beyond the piles. Use a mix of small and large diameter stakes to minimize porosity of fence. Alternate weave directions of each installed willow stake, firmly press down and install filler branches in voids.
6. Secure willow stakes in place with 1/4" manila rope threaded through the fence posts.



OVERHANGING WILLOW TRANSPLANT

OVERHANGING WILLOW TRANSPLANTS

1. The purpose of the overhanging willow transplants is to provide cover for juvenile Chinook and Steelhead fry in zones where optimal velocities are anticipated. These structures should be installed in the dry below the anticipated low flow July water line.
2. Given the timing of transplanting, these willows are not expected to regenerate.
3. Willow transplants shall consist of a native willow and its rootball harvested from the project area a minimum of 30' from the existing water's edge. Willow transplants encountered when performing new channel excavations may also be used.
4. Excavate approximately 1' below the anticipated water line and stock pile native topsoil and sod. Place willow transplant with the rootball in the bank and the branches overhanging the anticipated water's edge. Place a minimum of 1' of alluvium on top of the transplant to secure and replace native top soil and sod.
5. Reclaim willow transplant holes with borrow source material to existing grade and broadcast seed with riparian seed mix according to the seeding specifications.



Big Springs Enhancement Project
 Prefinal (80% Design) Drawings
 for the Lemhi Regional Land Trust
 Big Springs Creek, Lemhi County, Idaho
 Project: 014-101-001-01

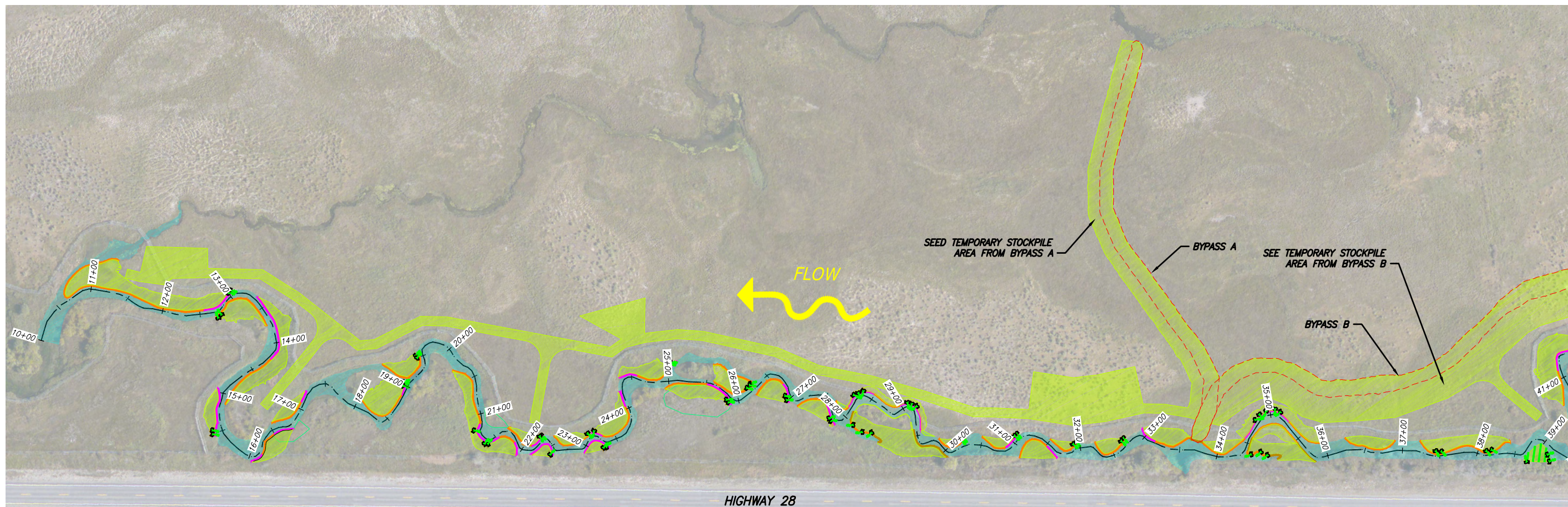
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 CONSTRUCTION

Date: 06/10/17
 Designed: JJF
 Drawn: JJF
 Checked: JY/KS/BPA
 Approved: LRLT

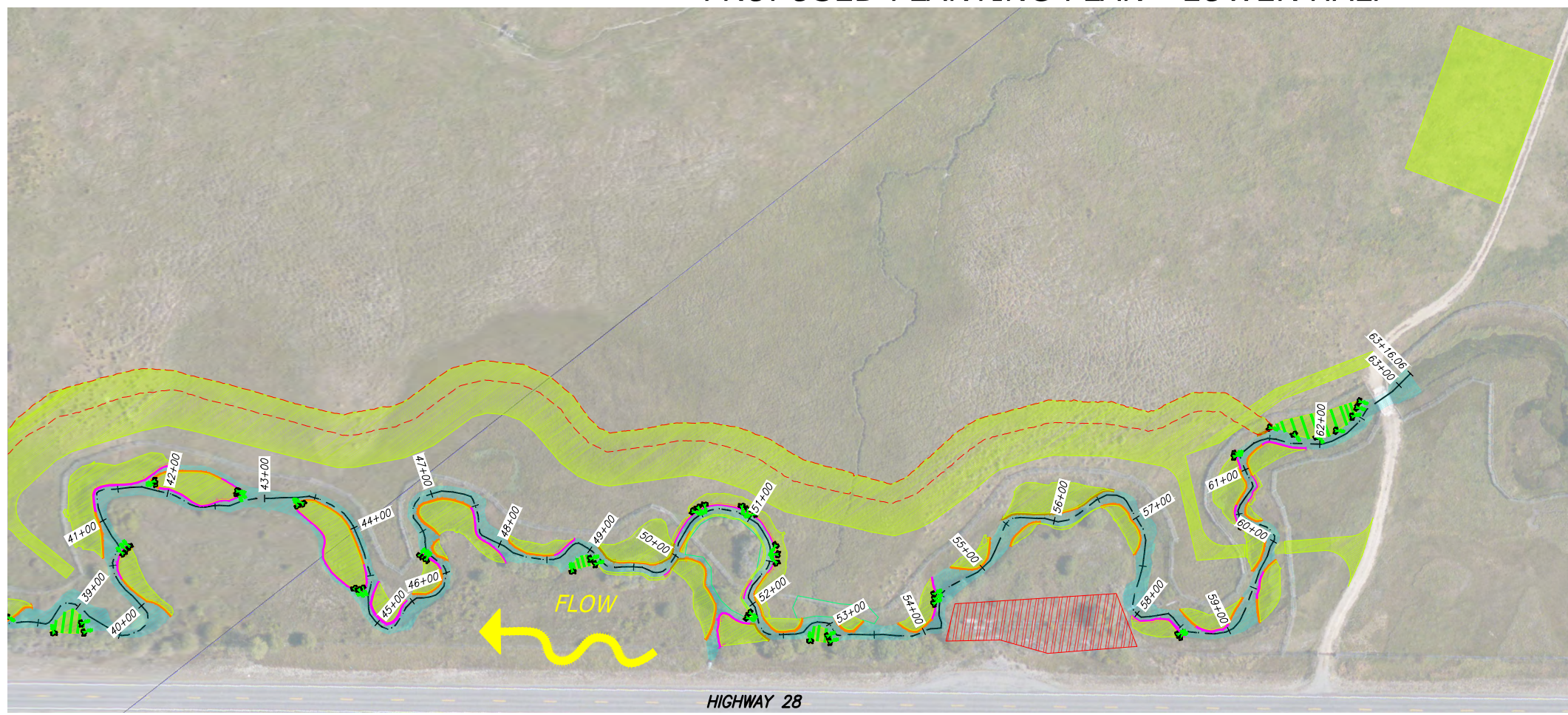
Drawing Name
**PLWWF &
 WILLOW CLUMP
 DETAILS**

Drawing No.
 42

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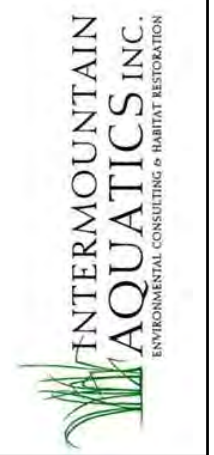
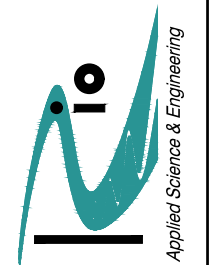
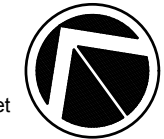
PROPOSED PLANTING PLAN - LOWER HALF



PROPOSED PLANTING PLAN - UPPER HALF

LEGEND

-  DO NOT DISTURB
-  PROPOSED WATER
-  PROPOSED WETLAND PLANTING AREA (5.24 ACRES)
-  PROPOSED BANK TYPE A
-  PROPOSED BANK TYPE B
-  PROPOSED BANK TYPE C
-  PROPOSED WILLOW WEAVE



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Drawing Name
 PLANTING
 PLAN

Drawing No.
 43

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PLANTING AND RECLAMATION

GENERAL REQUIREMENTS

Work includes but is not limited to:

1. Storage and care of nursery-grown plants
2. Planting containerized plants
3. Removal of all plastic plant labels
4. Seeding to all riparian areas depicted in the drawings
5. Dormant seeding all access routes, staging areas, and other disturbed areas
6. Assisting the Sponsor with the installation of a temporary irrigation system to irrigate all new plant materials in the riparian areas as directed by the Contracting Officer (materials will be provided).

PLANT SELECTION & CARE

1. The contractor shall furnish a written list of the proposed sources of all nursery stock at least 30 days prior to the material delivery to the Contracting Officer for approval.
2. Substitutions of plant materials will not be permitted unless authorized in writing by the Contracting Officer. Upon submission of proof that the specified plant is not reasonably obtainable, a change order may be procured, providing for use of the nearest equivalent size or variety of plant having the same essential characteristics.
3. All plant materials, shipments and deliveries shall comply with state and federal laws and regulations governing inspection, shipping, selling and handling of plant stock. For any shipments out of state, a certificate of inspection for injurious insects, plant diseases, and other plant pests will accompany each shipment or delivery of plant and seed material.
4. All plants shall be mature, healthy, vigorous, well branched, densely foliated and free of disease and insects. All plants shall have healthy, well-developed root systems and shall be free from physical damage or other conditions that would prevent thriving growth.
5. Immediately upon delivery and until installation, plant material shall be shaded, watered and protected from browse to ensure that the plants remain alive and healthy.
6. All plants shall be labeled by plant name. Labels shall be attached securely to all plants and/or containers when delivered and removed when planted.

TRANSPLANTED/SALVAGED WETLAND SOD

GENERAL INFORMATION

1. Salvaged Wetland Sod shall consist of primarily sedges and rushes and harvested from Bypass Channels A and B and new channel excavations.
2. Salvaged Wetland Sod shall be stockpiled within the borrow sources, the dewatered zones or the stockpile area designated on the plans.
3. When placing Salvaged Wetland sod on the fill areas, first line the edge treatments with approximately 3' width, then place pockets of Salvaged Wetland Sod throughout the fill area to encourage establishment.
4. Wherever feasible, Contractor shall take care to minimize the number of times the sod is handled and make very attempt to plant it with the root side down.

NURSERY WETLAND SOD

GENERAL INFORMATION

1. Nursery grown Wetland Sod shall be prevegetated mats with dimensions of 1-m x 5-m.
2. Wetland Sod mat delivery shall be scheduled to coincide with immediate job site installation. If mats cannot be immediately installed, they shall be stored in a shady location for no more than **three** days and must be kept thoroughly saturated and covered (tarp) during that time. In hot, dry weather mats shall be stored under the same conditions for no more than **two** days.
3. Mats are delivered rolled and are most easily moved by two people with hay hooks.
4. Each Wetland Sod mat is approximately 16.2 feet in length and 3.2 feet wide. Per mat weights vary seasonally between 120 - 170 pounds.
5. Each mat is banded with a species classification tag for identification. For example, a mix with *Carex nebrascensis*, *Carex aquatilis* and *Juncus arcticus* will read **CnCaJa**.

INSTALLATION

1. Move Wetland Sod mats to the installation site, unroll and stake down. Ensure that the plant roots and the bottom of the mat are in direct contact with the soil.
2. Stake Wetland Sod according to the following specification.
3. Use eight to twelve, 16" wooden stakes per mat for installations involving moving water (i.e. stream channels, windward lake shores, storm water retention areas).
4. Drive stakes through the mat at a slight angle and leave about 4" of the stake protruding above the mat.
5. Use six to eight, 16" wooden stakes per mat for site conditions without erosive characteristics (i.e. pond and lake shorelines, wetland areas).
6. Space between the mat bottom and ground caused by folds, wrinkles or upturned mat edges will create a void that will allow the root system to dry out. Installing mats over large rocks, tree branches, very rough ground or anything that prevents root-to-soil contact should be avoided or remedied prior to installation.
7. Mats shall not be installed on slopes steeper than 2.5:1. Some die-back can be expected when slopes exceed 3:1 steepness.
8. Remove all plastic plant labels after installation.
9. Wetland Sod mats shall be placed in the channel margins in 2-4" water depth.

CONTAINER PLANTS

NURSERY GROWN WILLOWS

1. All nursery grown willows will be obtained and supplied by the Sponsor.
2. Plant according to locations and spacing specified in the Drawings for the individual edge/fill treatments.
3. Containers shall be separated from the plant immediately before planting to prevent desiccation of the roots.
4. To plant, dig a vertical hole (by hand, excavator or auger) twice as deep and wide as the container, plant vertically and backfill with floodplain soils first and topsoil second. All backfill shall be, at a minimum, 30% loam and free of particles greater than 2". Backfill uniformly around each plant to maximize root to soil contact and eliminate all air pockets.
5. Care shall be taken to avoid "J-Rooting," do not force plant roots into too small/shallow of a hole and cause the roots to curve back around towards the surface.
6. Two types of soil amendments, each from Reforestation Technologies International (rti) are required for all container plantings. The use of any other amendment shall only be allowed after prior approval by the Contracting Officer. One application of rti - bio pak and one application of rti - endo ecto shall be used in each plant hole.
7. Remove all plastic plant labels after installation.
8. Water in with buckets immediately after installation and maintain bucket watering until irrigation system is up and running.
9. Irrigate all potted plants immediately after planting and continue through September.

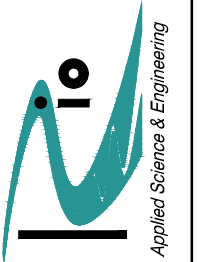
SEEDING

GENERAL INFORMATION

1. The anticipated areas requiring seeding are 0.1 acres of upland seeding and 4.6 acres of riparian seeding.
2. The Contractor is required to provide enough seed to broadcast 120% of the anticipated areas. All leftover seed will become property of the Sponsor.
3. Seed all bank and channel fill areas during construction. All additional construction access and borrow source areas shall be dormant seeded in the fall dormant period, approximately Nov 1 -15. Any blank areas within the bank and channel fill zones that did not germinate should be reseeded during the fall dormant period.
4. The sage upland mix shall be used to reclaim all construction access and staging areas outside of the riparian area, seed all other disturbed areas outside of the main channel with the riparian mix.
5. All disturbed areas shall be prepped and seeded to the following specification. The seed bed shall be prepped by removing all stones and dirt clods greater than 2" and raking a smooth seed bed consisting of loose soil no less than 2" deep.
6. All areas shall be hand seeded or ATV seeded using the following steps:
 - a. Rake/harrow to prep seed bed
 - b. Broadcast seed evenly across the area to be seeded at twice the rate of drilling
 - c. Rake/harrow seed into the seed bed
 - d. Roll seeded areas with a hand roller or cultipacker

Big Springs - Wetland Seed Mix

Common Name	Scientific Name	PLS lbs/ac
Blue Wildrye	Elymus glaucus	4.46
Bluejoint Reedgrass	Calamagrostis canadensis	1
Tufted Hairgrass	Deschampsia caespitosa	1
Fowl Mannagrass	Glyceria elata	1.2
American Mannagrass	Glyceria grandis	1.5
Artic Rush	Juncus articus	0.5
Nebraska Sedge	Carex nebrascensis	2
Woods Rose	Rosa Woodsii	1
Total	Broadcasted on Prepped Seed Bed, Raked, Rolled	12.66



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Drawing Name
PLANTING NOTES

Drawing No.
44

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