



# Technical Memorandum

DATE: February 20, 2020

PROJECT: 10-1-074

TO: Mr. Jason Smith, Teichert Aggregates (JSmith@teichert.com)

FROM: Till Angermann, Principal Hydrogeologist  
Mohamed Nasser, Project Engineer

SUBJECT: ALTERNATE MINING PIT CONFIGURATION  
SHIFLER PROPERTY, WOODLAND, YOLO COUNTY

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Luhdorff & Scalmanini Consulting Engineers (LSCE) previously evaluated potential effects of planned future mining and reclamation activities at Teichert's Shifler property on groundwater levels and flow (LSCE 2016, 2019, 2020). The evaluations assumed that Moore Canal, which traverses the Shifler property, would be mined out.

A proposed project alternative leaves the existing Moore canal in place while creating smaller mining pits around it (Exhibits A and B). This alternative mining pit configuration does not affect any of the conclusions set forth in the previous reports.

## References

- Luhdorff and Scalmanini Consulting Engineers. 2016. Groundwater conditions in the vicinity of planned wet pit mining operations, Shifler property. Report. February 8, 2016. LSCE file 10-1-074.
- Luhdorff and Scalmanini Consulting Engineers. 2019. Groundwater conditions in the vicinity of planned wet pit mining operations, Shifler property, Woodland. Technical Memorandum. December 9, 2019. LSCE file 10-1-074.
- Luhdorff and Scalmanini Consulting Engineers. 2020. Supplemental Analysis of Groundwater Conditions, Planned Mining and Reclamation Activities, Shifler Property, Woodland, Yolo County. Technical Memorandum. February 5, 2020. LSCE file 10-1-074.

## Exhibits

- Exhibit A Shifler Mining Plan – Alternate A (Site Plan and Cross Sections)  
Exhibit B Shifler Reclamation Plan – Alternate A (Site Plan and Cross Sections)



**NOTES:**

- ELEVATIONS AND DISTANCES ARE APPROXIMATE. EXISTING GROUND IS BASED ON AERIAL TOPOGRAPHY FLOWN IN APRIL 2010 BY POINT CO. PHOTOGRAMMETRIC SERVICES.
- HIGH AND LOW AVERAGE GROUNDWATER ELEVATIONS BASED ON "GROUNDWATER CONDITIONS IN VICINITY OF PLANNED WET-PIT MINING OPERATIONS-SCHWARZGRUBER PROPERTY" BY LUHDORFF & SCALMANINI CONSULTING ENGINEERS DATED APRIL 25, 2011.
- BERMS OR V-DITCHES (NOT SHOWN) TO BE ADDED ALONG THE TOP OF SLOPES AS NECESSARY TO KEEP SURFACE RUNOFF FROM ADJACENT AREAS FROM ENTERING INTO THE DESIGNATED OPEN WATER AREAS.
- BOTTOM MINING ELEVATIONS ARE ±10' DEPENDING ON ACTUAL BOTTOM OF GRAVEL DEPTHS.
- EXISTING STOCKPILES ARE TO BE RE-GRADED OR REMOVED FROM THE SITE. PROPOSED MINING SLOPES SHOWN ON PLAN AND SECTIONS REPRESENT CONDITIONS AFTER THE STOCKPILES HAVE BEEN REMOVED OR RE-GRADED.
- PROPOSED CONTOURS SHOWN AT 5' INTERVAL.
- WELLS NOTED TO BE ABANDONED SHALL BE ABANDONED PER YOLO COUNTY DEPARTMENT OF ENVIRONMENTAL HEALTH STANDARDS.
- TOPSOIL AND OVERBURDEN STOCKPILE SHALL BE SLOPED AND VEGETATED PER SECTION 10-4.433 OF THE MINING ORDINANCE.
- SEE RECLAMATION SUMMARY FOR LANDSCAPE EXHIBITS.

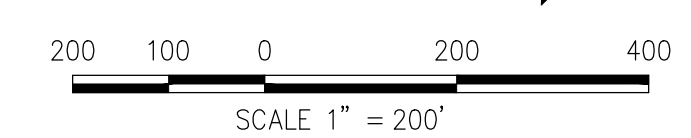
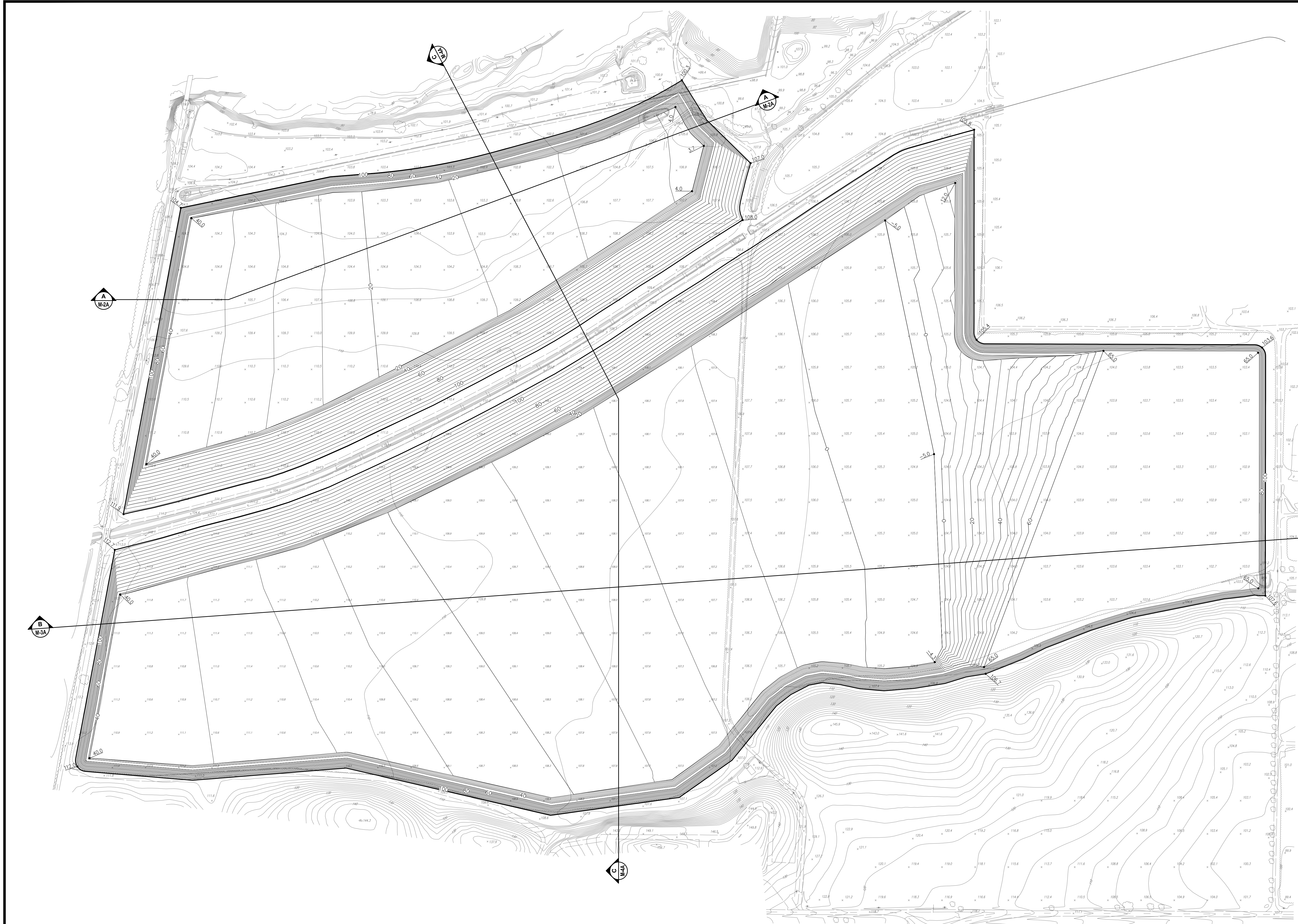
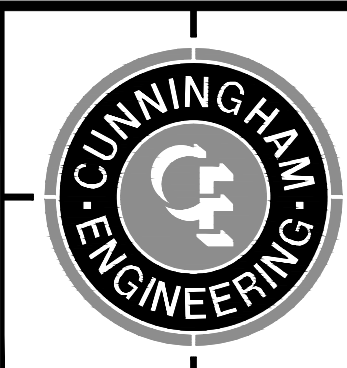
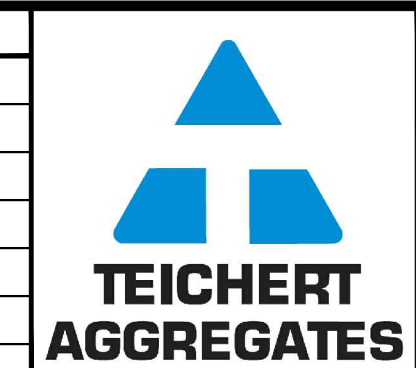


Exhibit A

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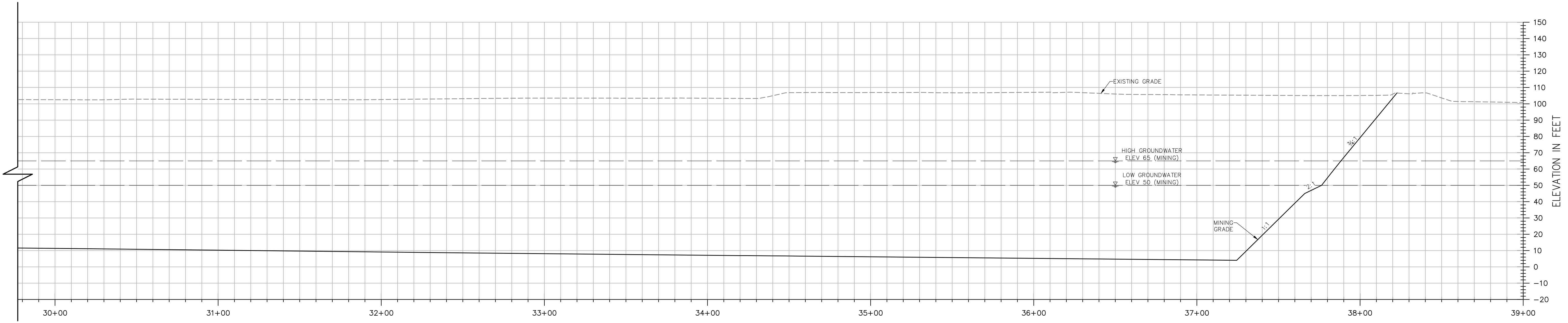
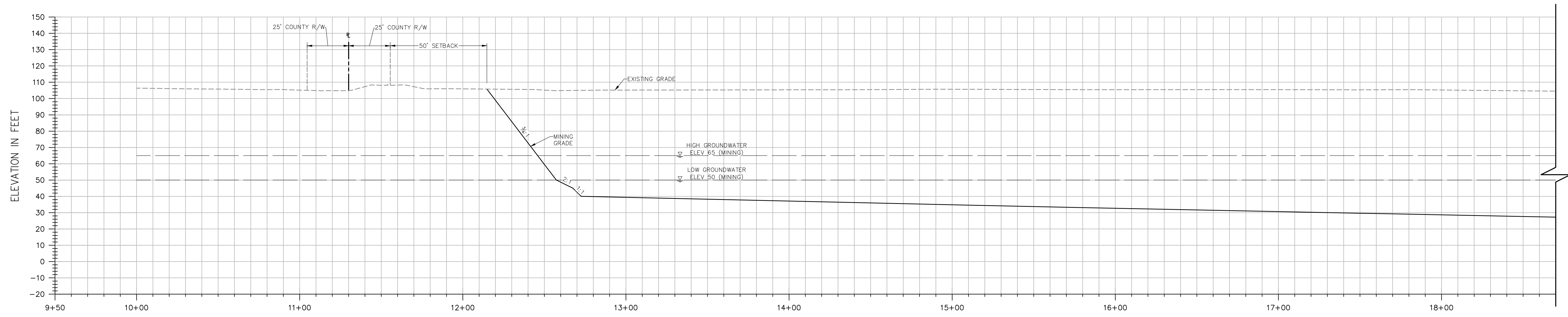


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**SHIFLER MINING PLAN - ALTERNATE A  
 SITE PLAN**

SHEET  
**M-1A**  
 OF  
**4**  
 DATE: 3/25/14  
 JOB NO: 1129.20





**SECTION A-A**

H: 1"=30'  
V: 1"=30'

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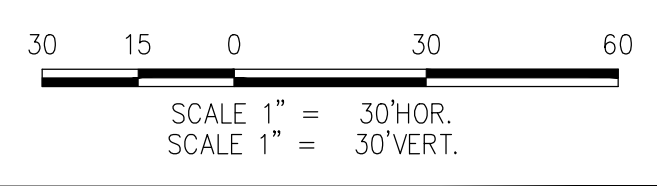
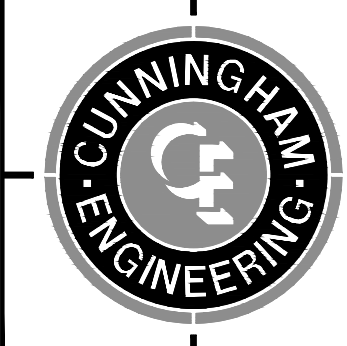


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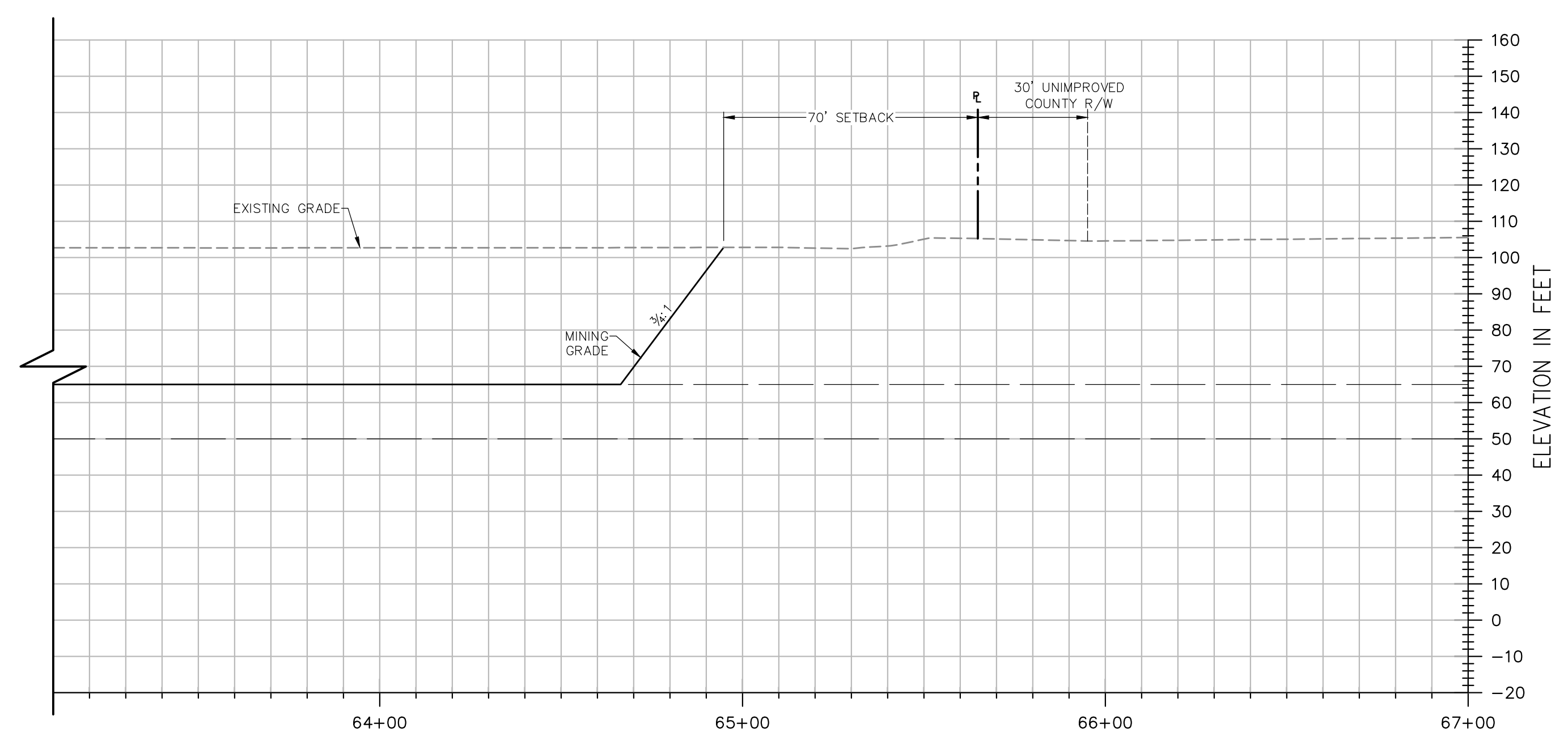
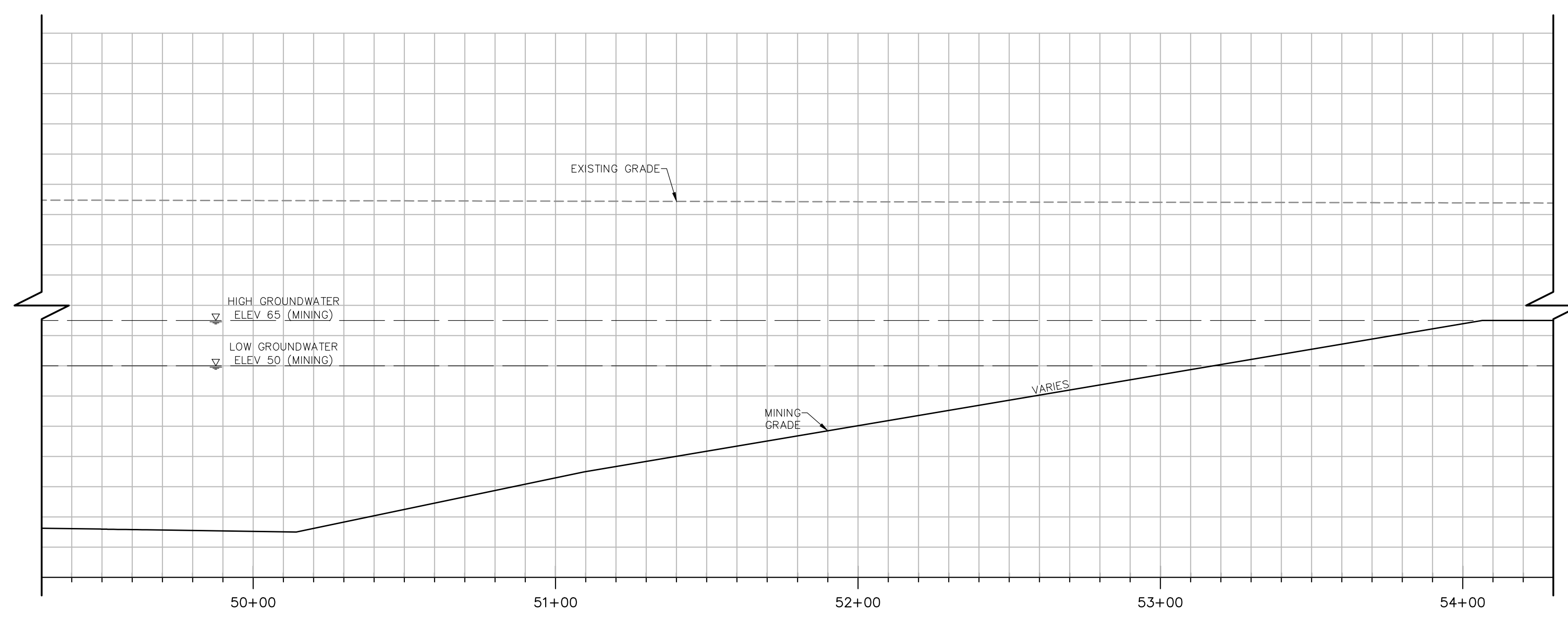
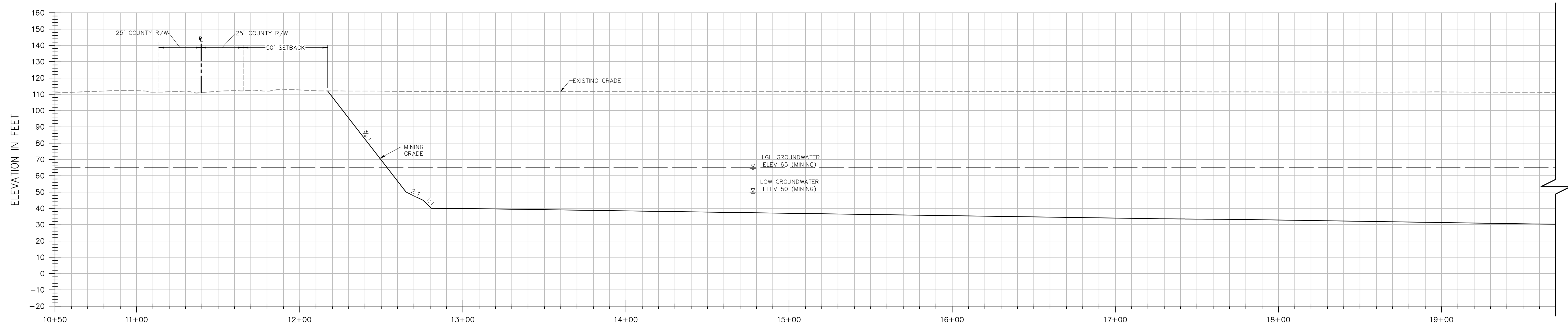
**SHIFLER MINING PLAN - ALTERNATE A  
CROSS SECTION A-A**

SHEET  
**M-2A**  
OF  
**4**  
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YOLO COUNTY

CALIFORNIA

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**SECTION B-B**  
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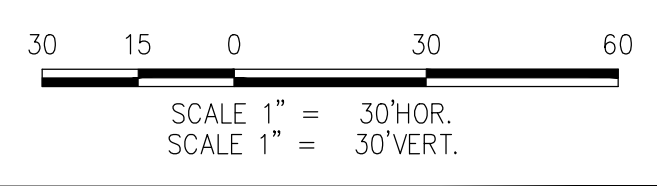
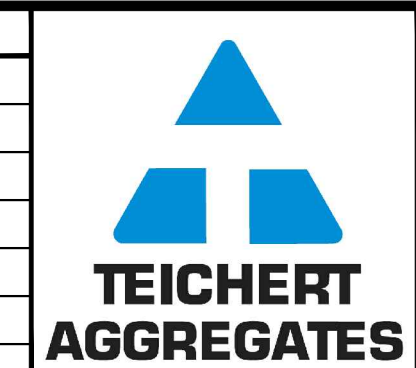


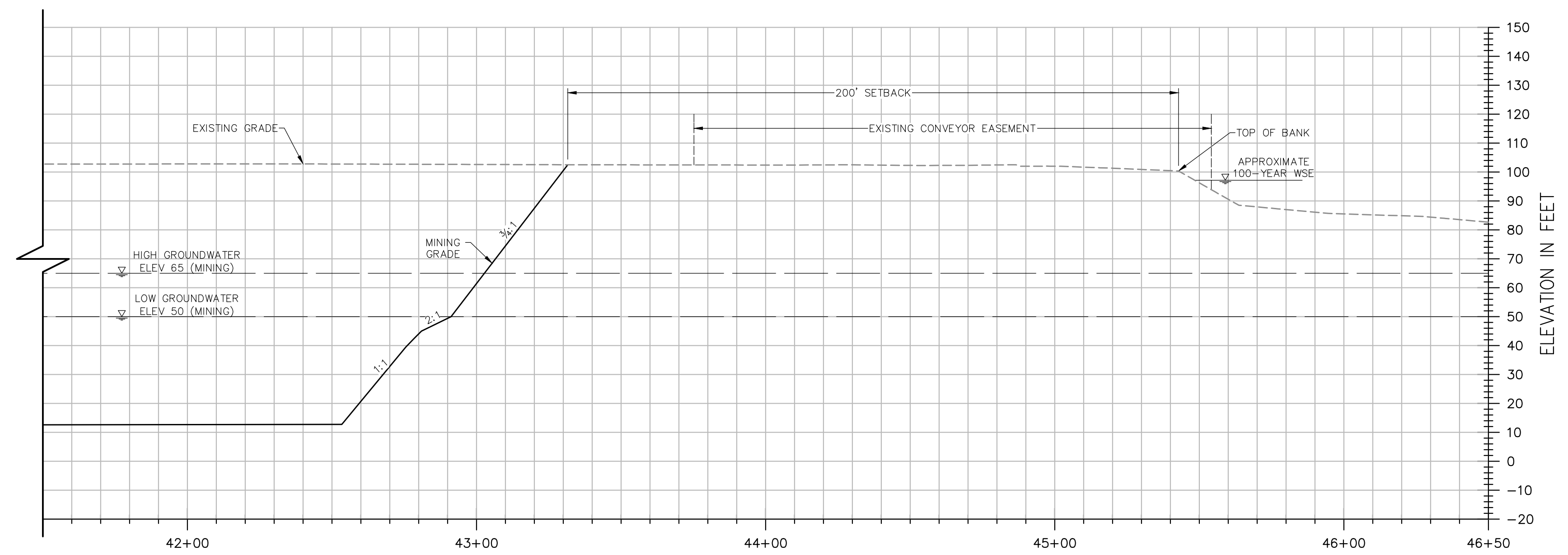
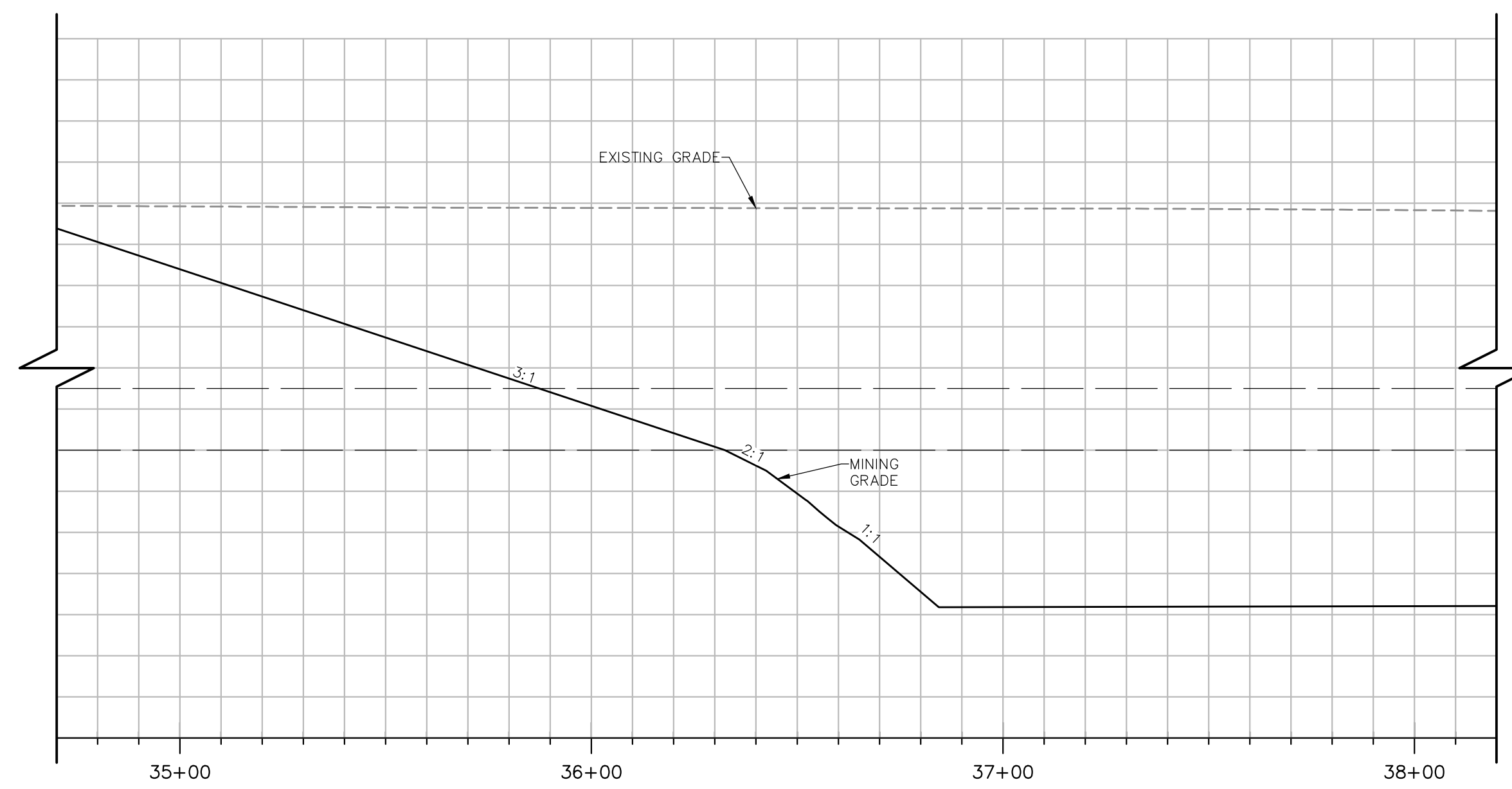
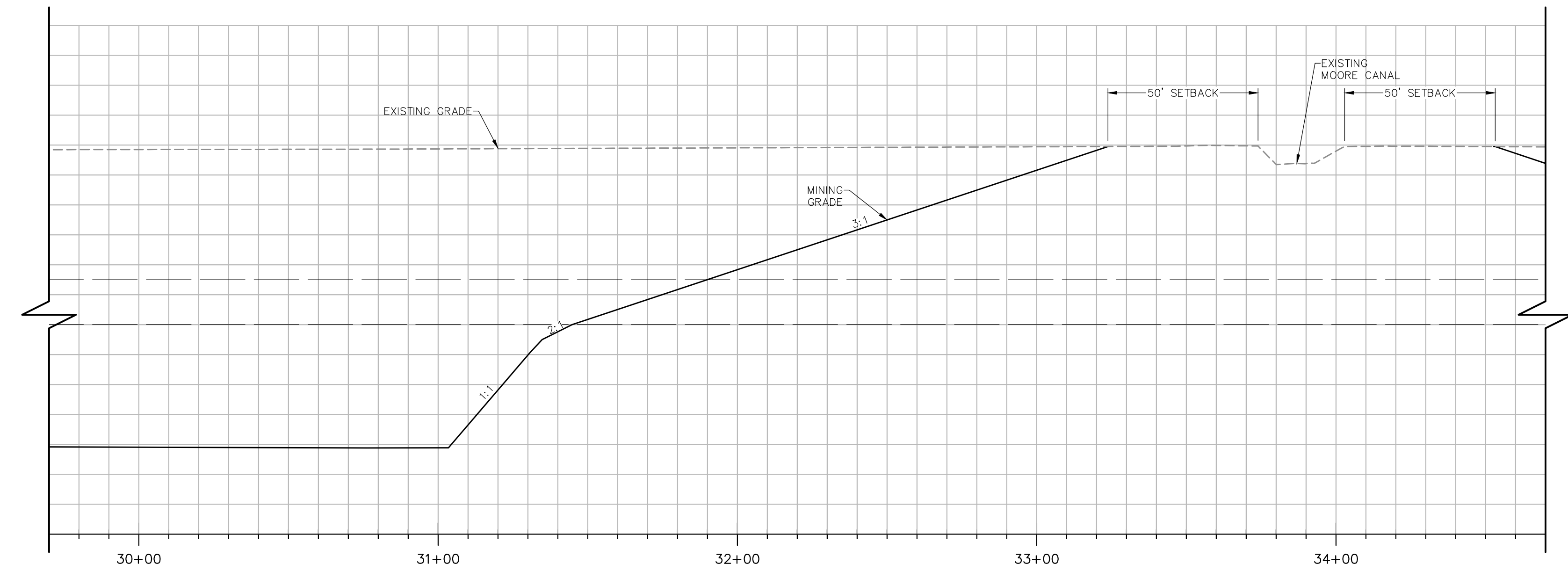
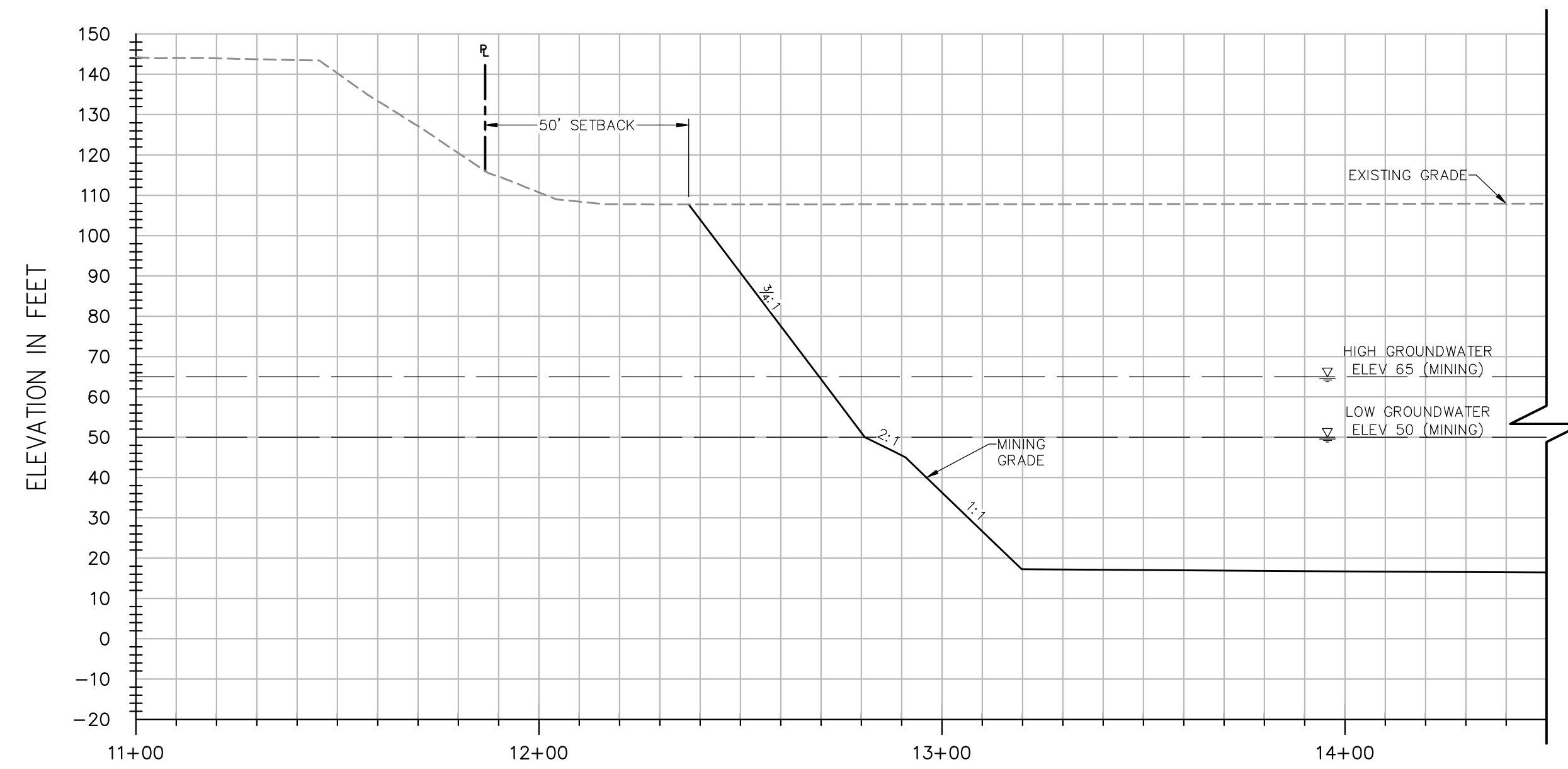
Exhibit A

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**SHIFLER MINING PLAN - ALTERNATE A**  
**CROSS SECTION B-B**

SHEET	M-3A
OF	4
DATE:	3/25/14
JOB NO:	1129.20



**SECTION C-C**

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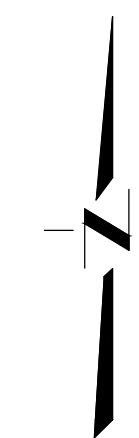
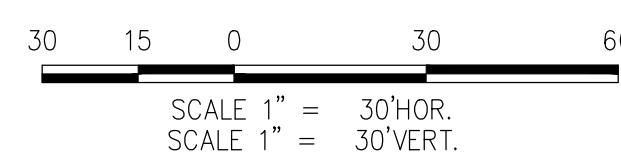
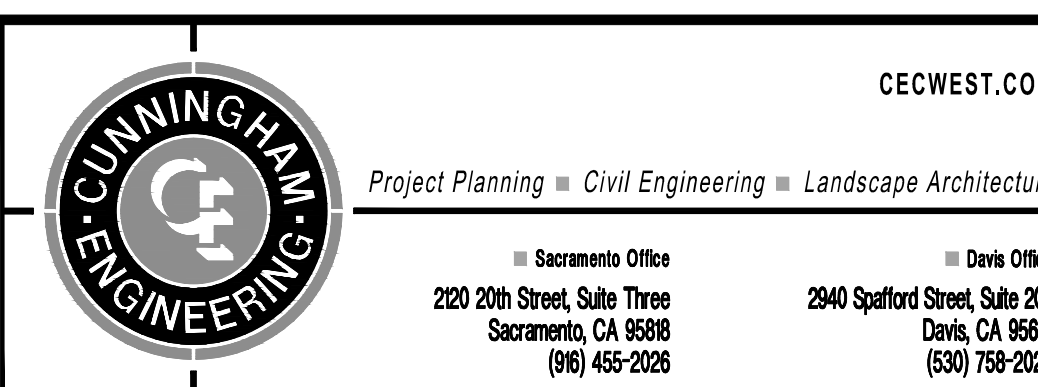
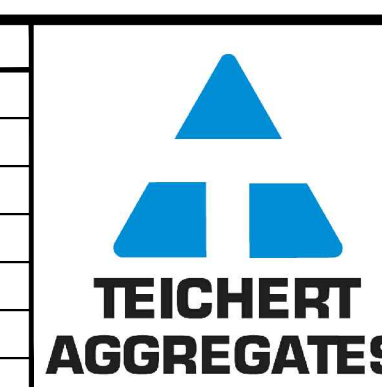


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**SHIFLER MINING PLAN - ALTERNATE A**  
**CROSS SECTION C-C**

YOLO COUNTY CALIFORNIA

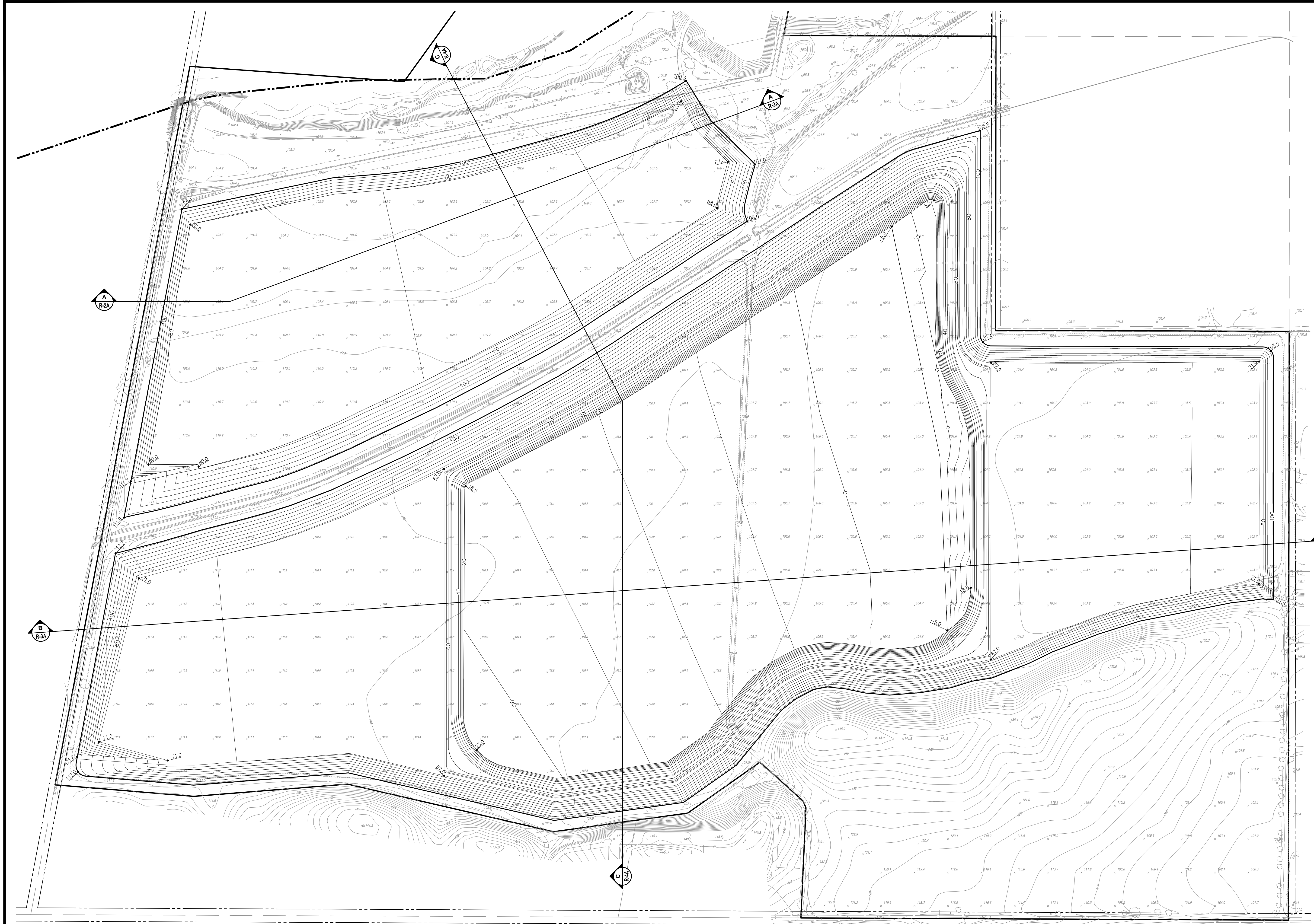
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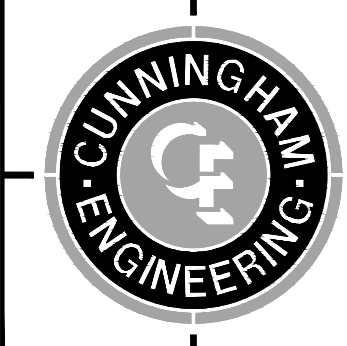
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- FOR DETAILS, SEE ACCOMPANYING RECLAMATION PLAN PREPARED BY TEICHERT AGGREGATES (MAY 2011)
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- SEE RECLAMATION SUMMARY FOR LANDSCAPE EXHIBITS.



**Exhibit B**

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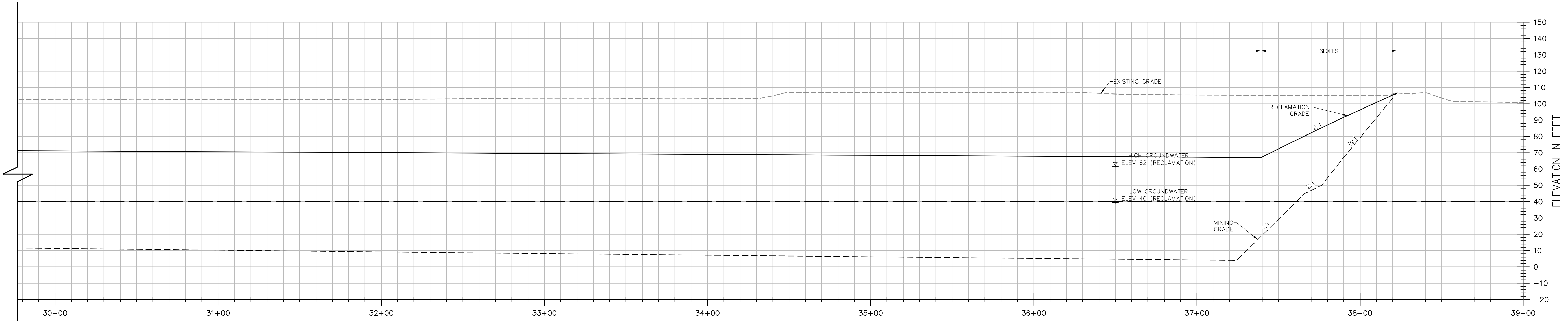
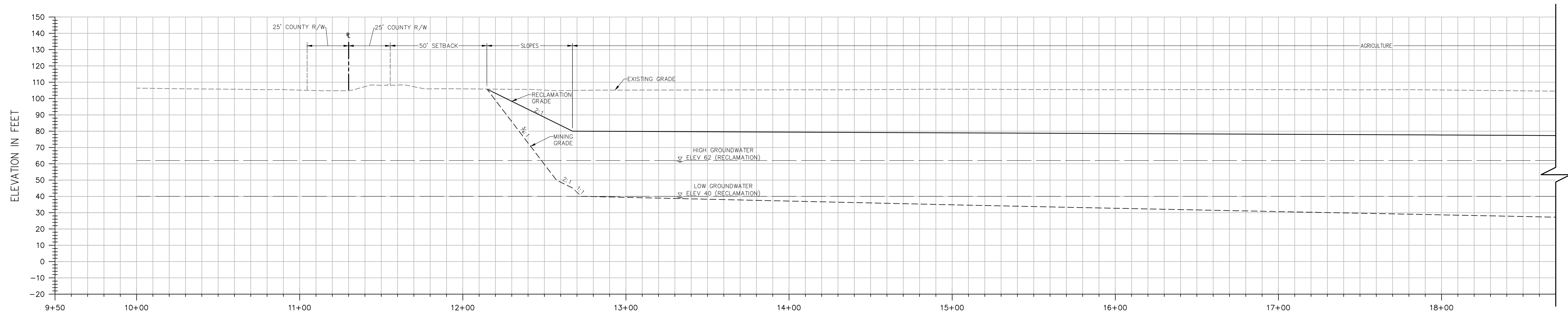
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**SHIFLER RECLAMATION PLAN - ALTERNATE A**  
**SITE PLAN**

SHEET	R-1A
OF	4
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YOLO COUNTY CALIFORNIA





**SECTION A-A**

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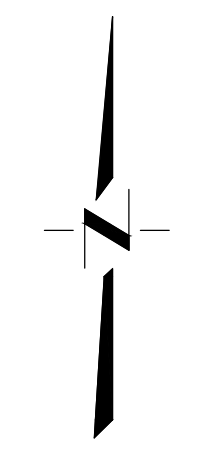
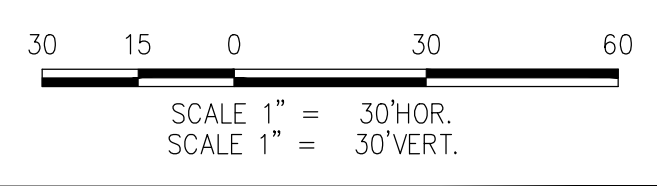
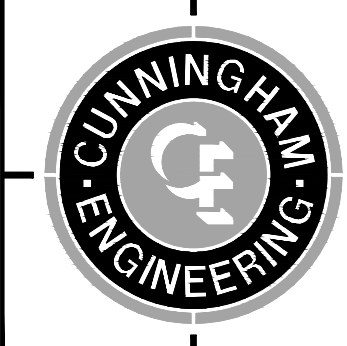


Exhibit B

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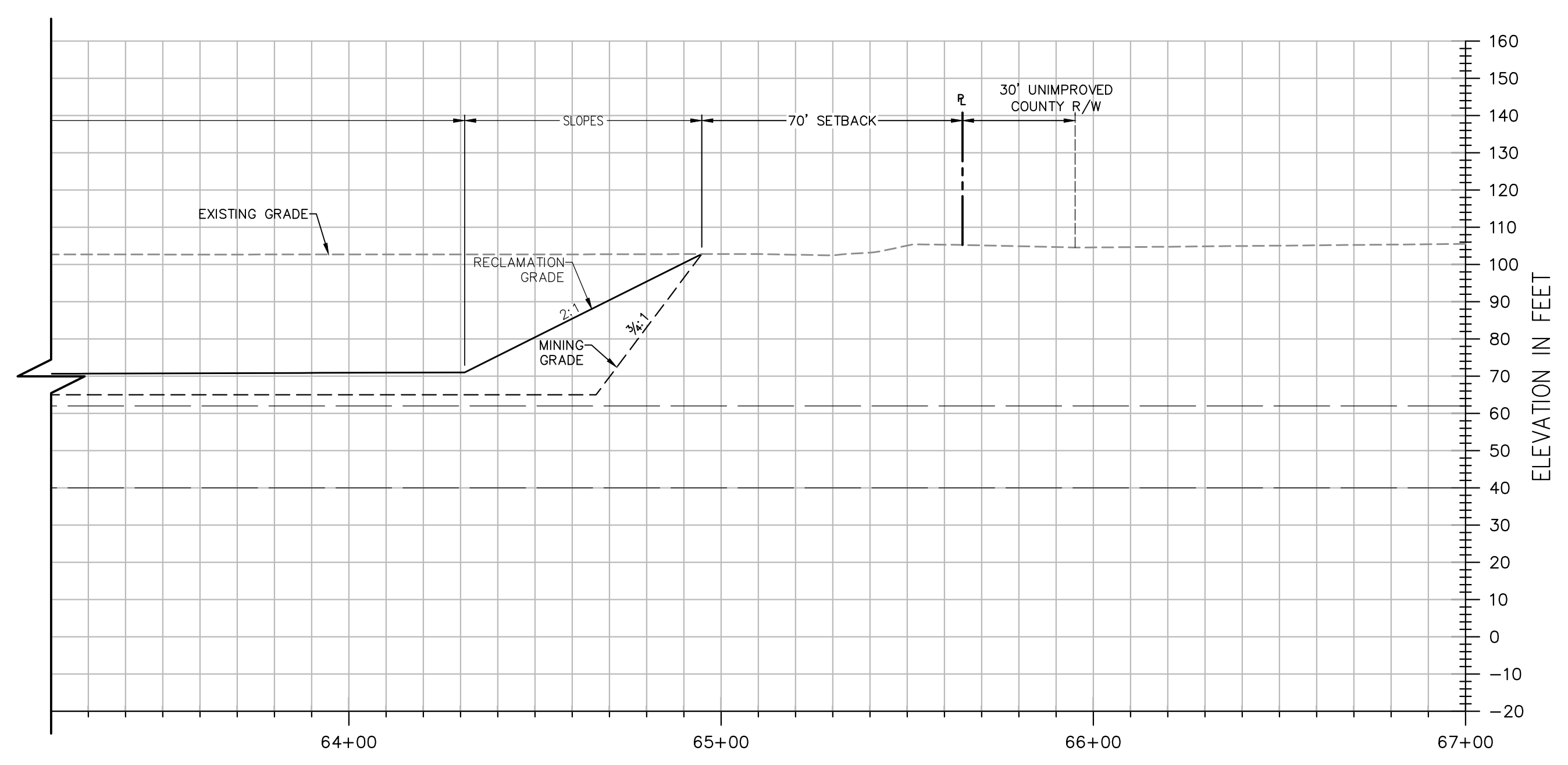
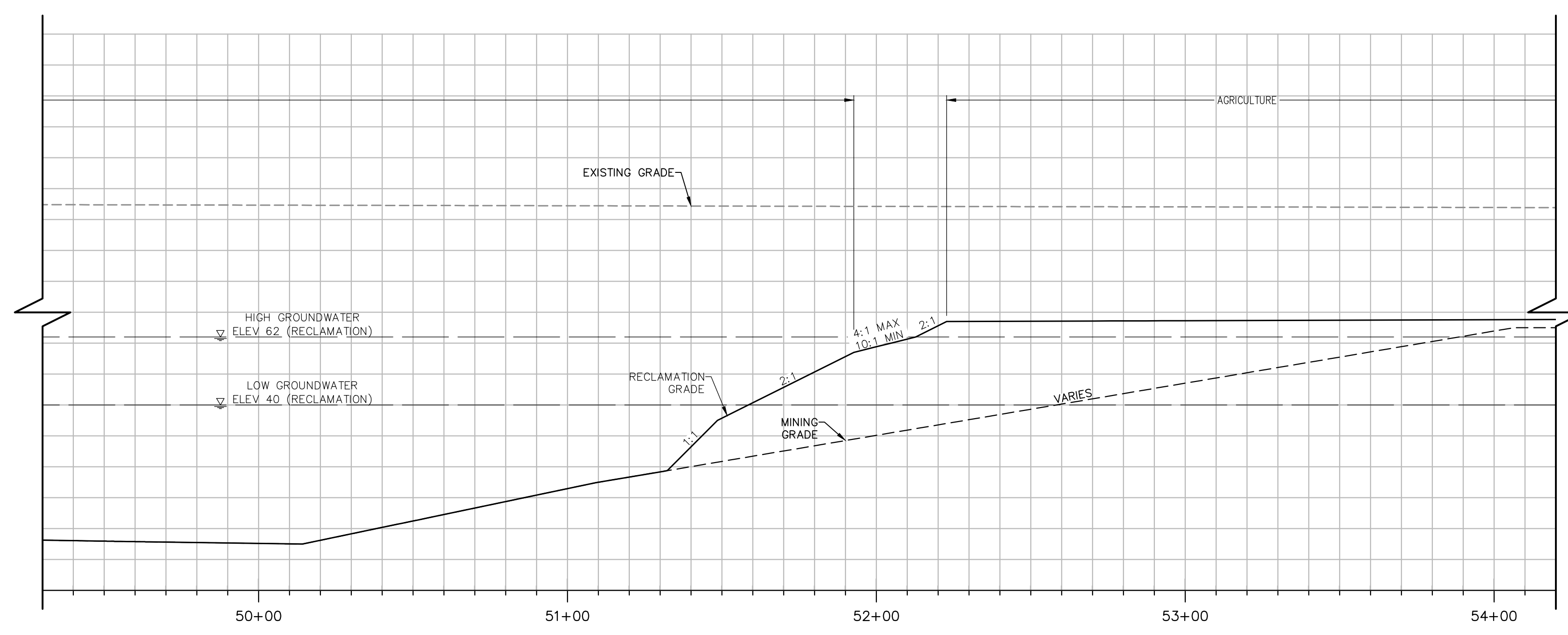
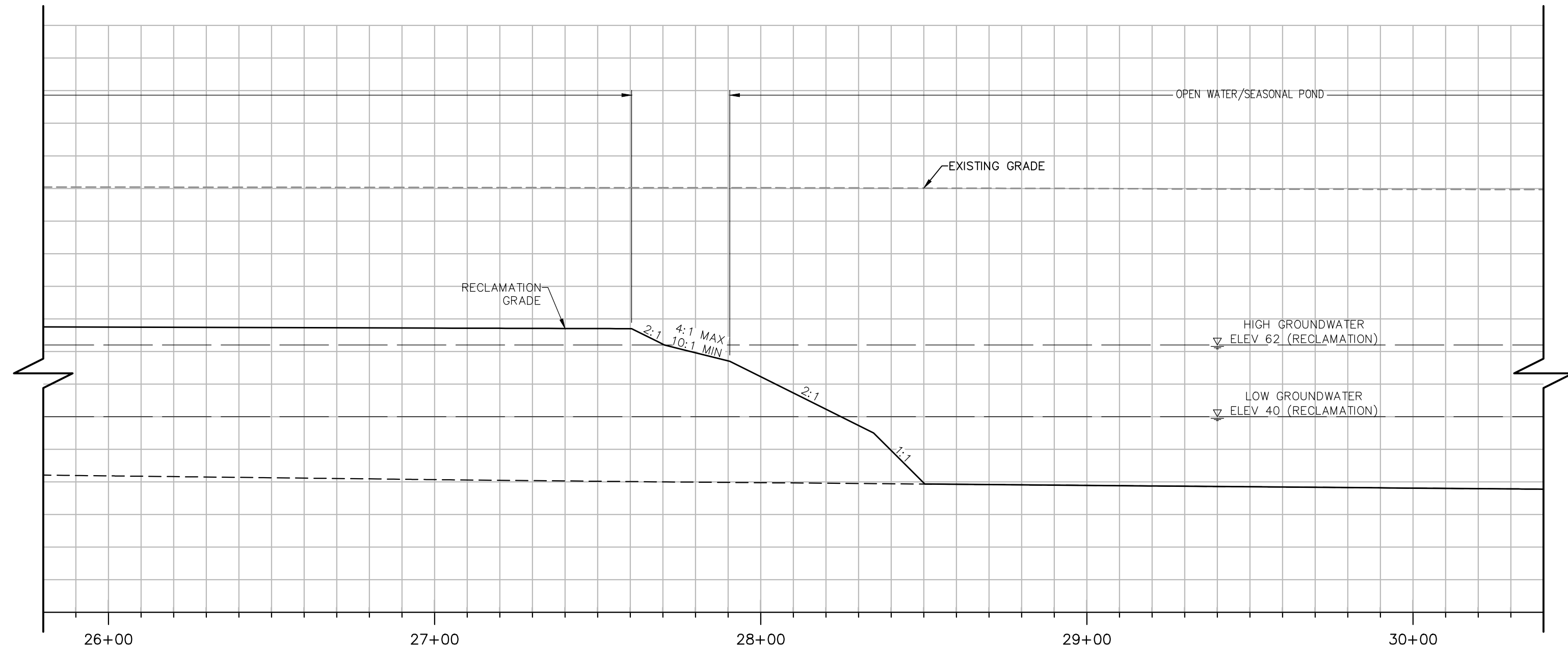
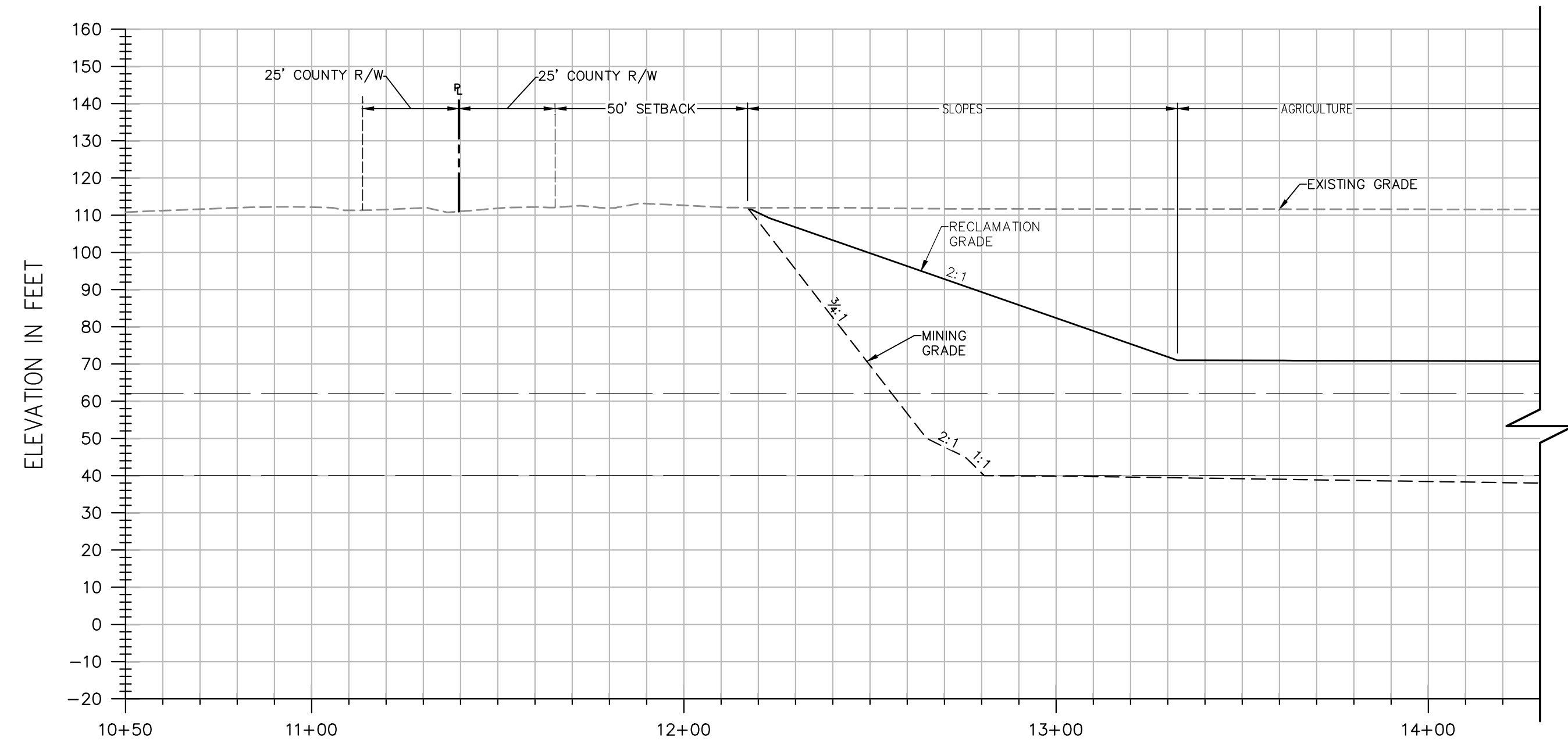
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**SHIFLER RECLAMATION PLAN - ALTERNATE A**  
**CROSS SECTION A-A**

YOLO COUNTY

CALIFORNIA

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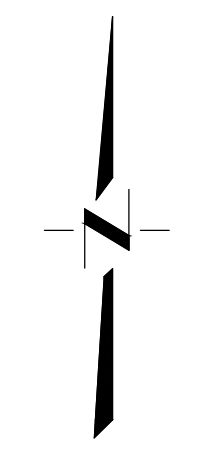
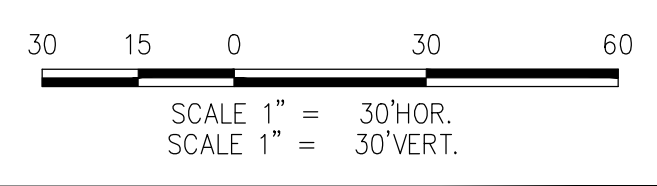
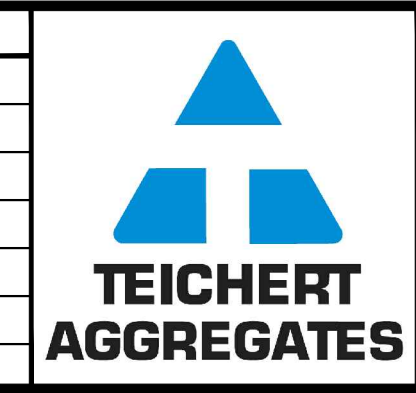


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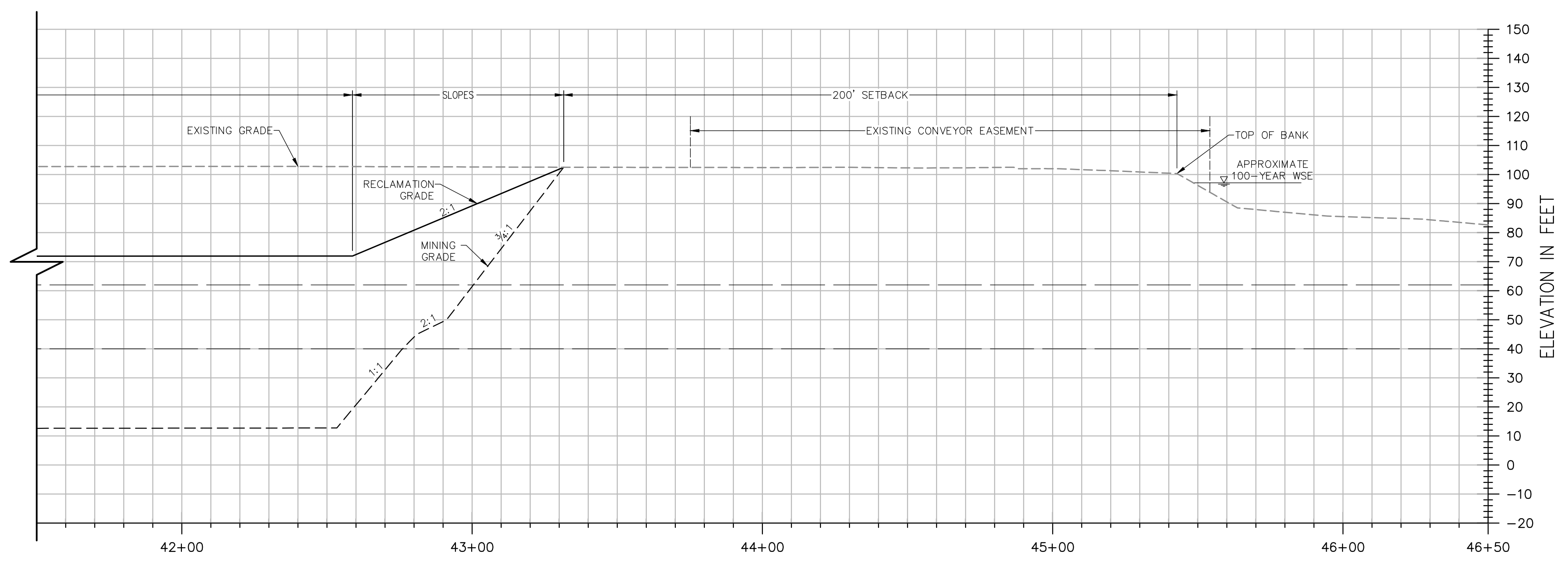
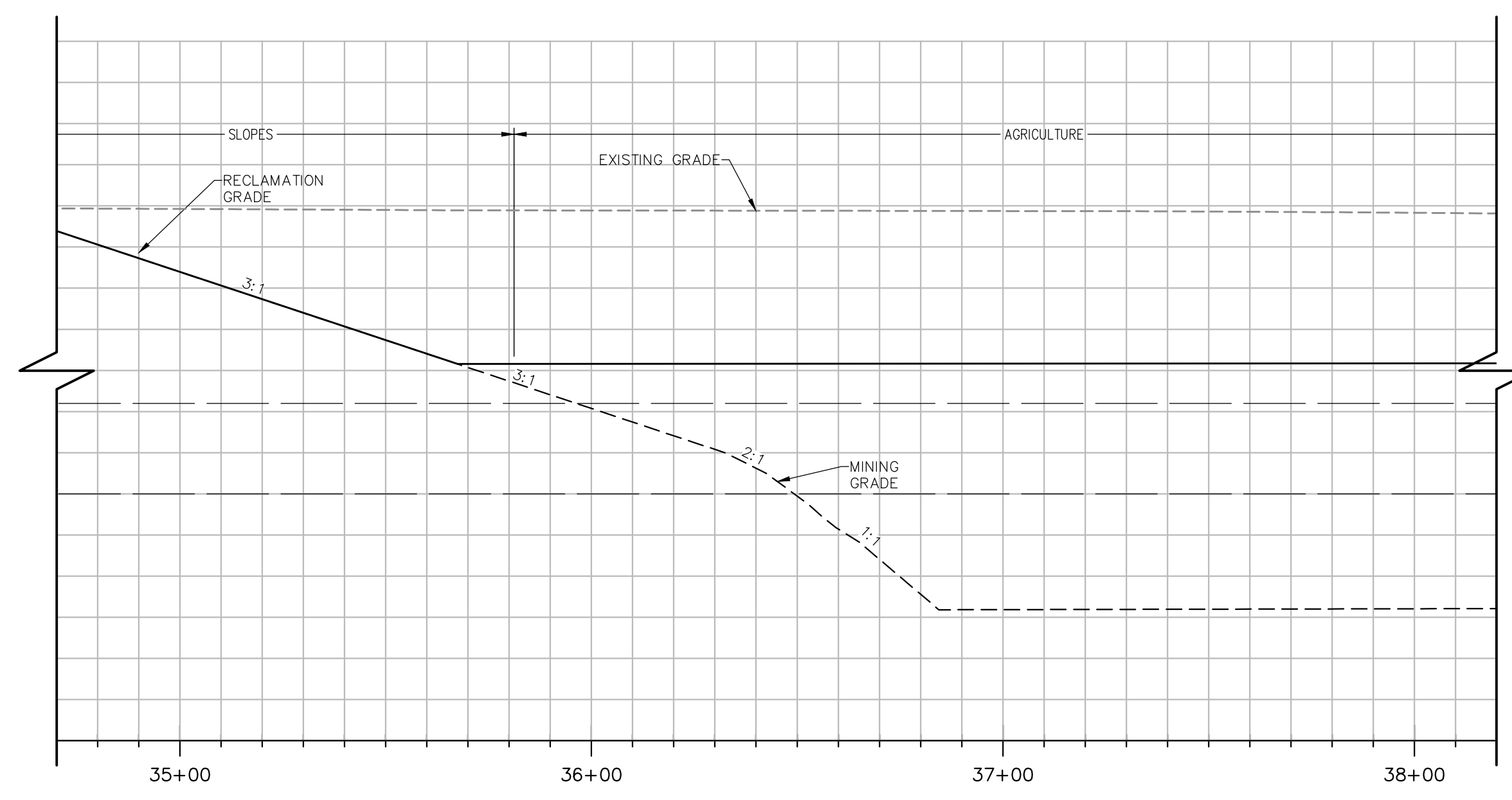
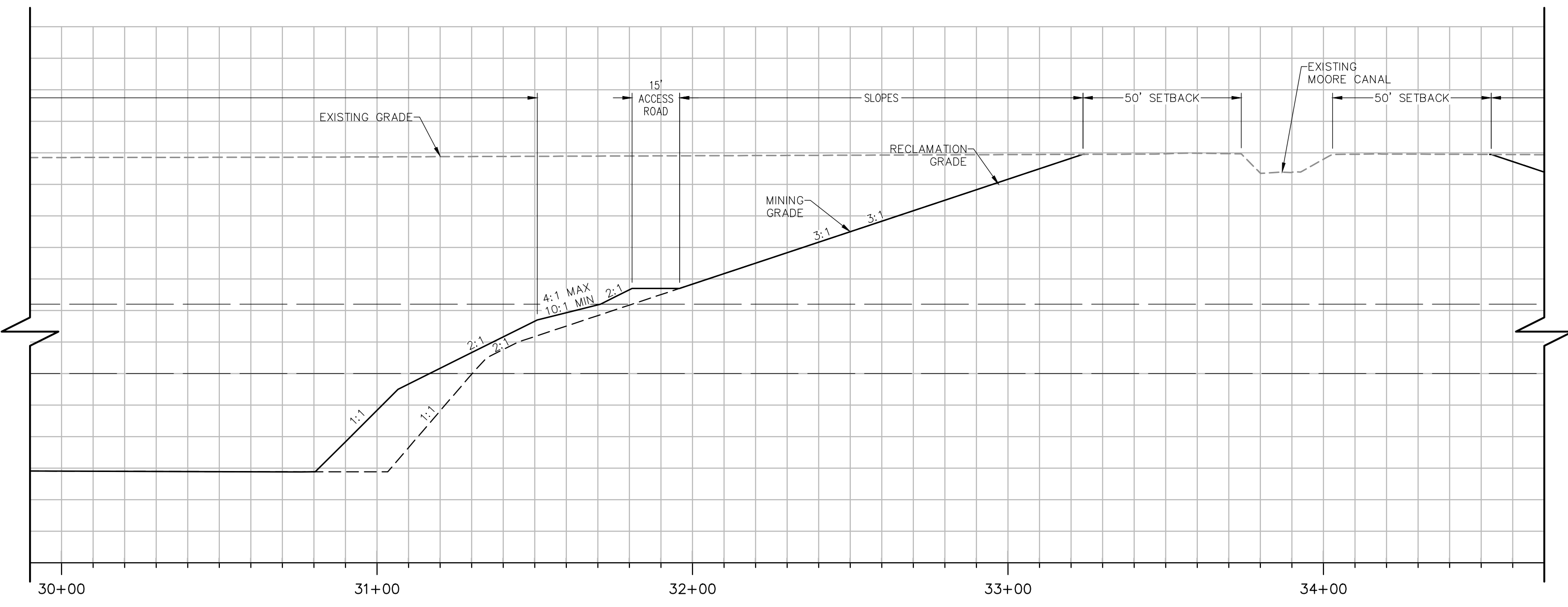
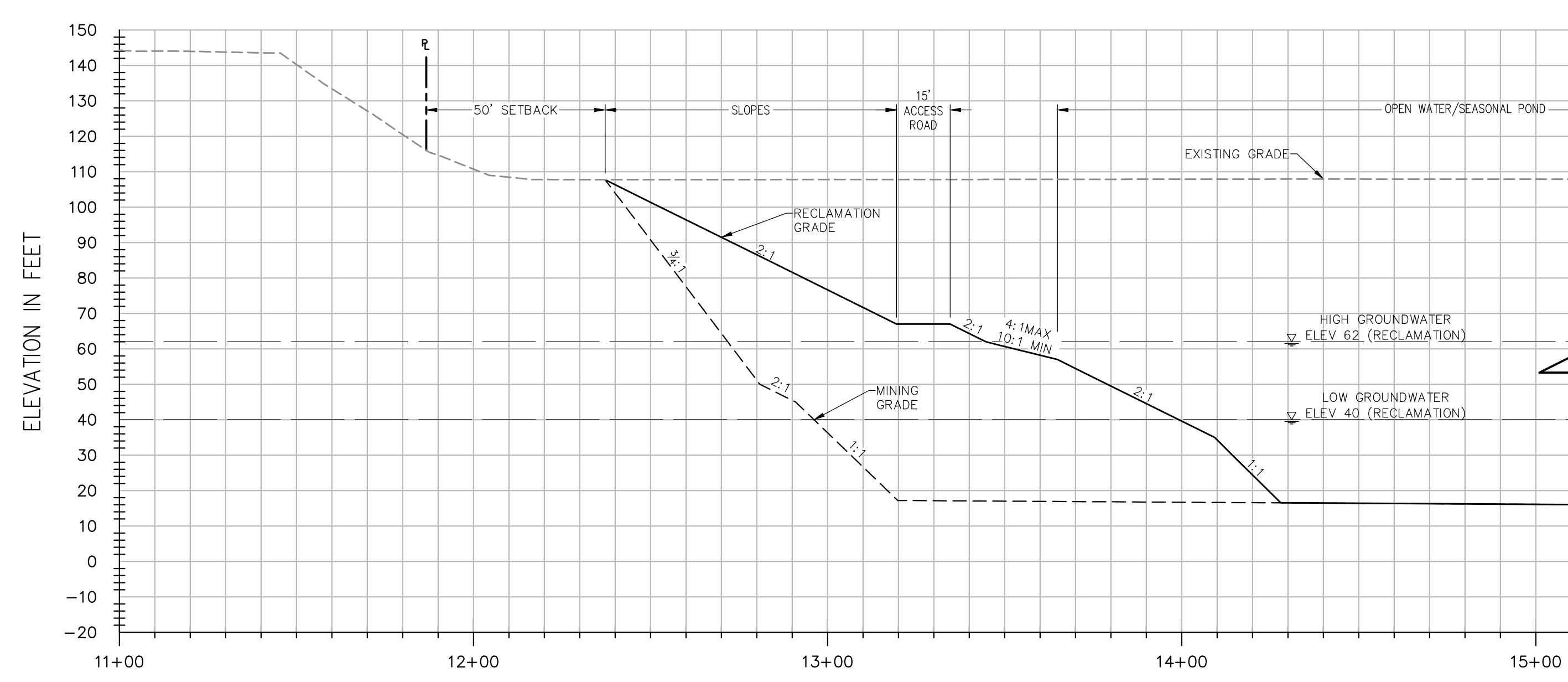


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**SHIFLER RECLAMATION PLAN - ALTERNATE A**  
**CROSS SECTION B-B**  
YOLO COUNTY CALIFORNIA

SHEET	R-3A
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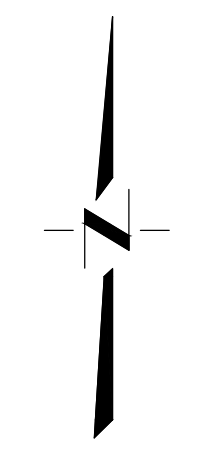
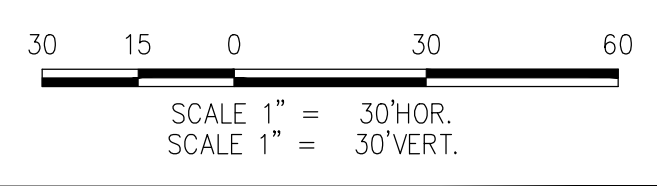
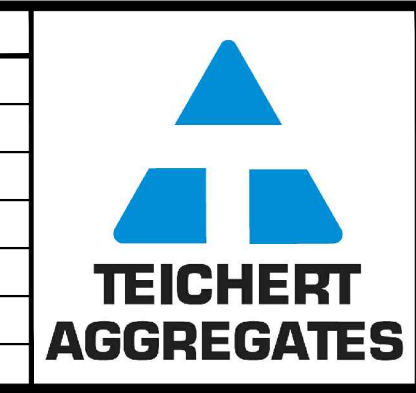


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**SHIFLER RECLAMATION PLAN - ALTERNATE A**  
**CROSS SECTION C-C**  
YOLO COUNTY CALIFORNIA

SHEET <b>R-4A</b> OF <b>4</b>
DATE: 3/25/14
JOB NO: 1129.20