

TECHNICAL MEMORANDUM

Subject: Drainage Outfalls – Hillcamp Subdivision (Plat Application SB25-0009 & SB25-0010)

Prepared for: City of Lone Tree Planning Division – Chuck Darnell

Prepared by: JR Engineering - Kevin Rohrbough, PE

Date: March 27, 2026

1. Purpose

This technical narrative supports the Hillcamp Preliminary Plan applications to provide information regarding the project's proposed stormwater outfall configuration. This analysis is preliminary in nature and will be refined during the final design of the construction documents associated with the Project.

The intent of this analysis is to identify and compare the existing (pre-development) flows and the post-development flows within the drainageways adjacent to the project. In addition, this memorandum identifies the approximate limits of disturbance for the drainage outfalls.

2. Outfall Design

There are 11 drainageways adjacent to the development that were analyzed. The pre-development and post-development flows for each drainageway are summarized with the attached exhibits.

Per the geotechnical recommendations for the Site, the stormwater flows are not to be conveyed over the steep hillsides surrounding the project area, as these flows would create unstable slope conditions. Thus, the project intends to organize the stormwater flows on-site and discharge them down and directly into the existing drainageways. These ponds will convey flows and discharge them into a low tail-water basin which will assist in limiting velocities and provide stabilization.

Preliminary Storm Plan and Profiles have been provided to show the approximate routes for the pond outfalls and approximate limits of disturbance. Effort has been made to limit the amount of disturbance within these steeper hillsides. The existing grade in these areas will not be altered and the areas will be revegetated using native grasses and seed mix.

The ultimate flow rates within each drainageway will generally match pre-development conditions.

3. Conclusion

The preliminary proposed Outfall Designs have been selected through iterative design and through technical drainage design and implementing the recommendations provided by the City of Lone Tree and Geotechnical Engineers.

A Summary of the Findings of the Outfall Designs:

- Ultimate release rates from the Site will be below historic rates meeting the City's Drainage Criteria.
- All of the flow rates within each drainageway, except Design Point 27, are within 10% of the historical rates.
- Efforts to reduce the flow rates at Design Point 27 will be made during final design to closer match historical flow rates with the drainageway.
- Additional analysis of this drainageway may be required during final design to ensure flows rates will not create additional erosion.
- Efforts have been made to minimize disturbance to the hillsides and existing vegetation.
- Provide low tailwater basin proposed at downstream end to reduce erosion impacts.
- Ultimate outfall and discharge locations have been strategically selected within each drainageway.
- The drainage scheme prevents the release of unconcentrated flows over the edge of the steeper hillsides.

The proposed Outfall Designs best satisfy the intent of the Planning Development Districts, subdivision code, and supports the City's goals for responsible, connected, and environmentally sensitive development.

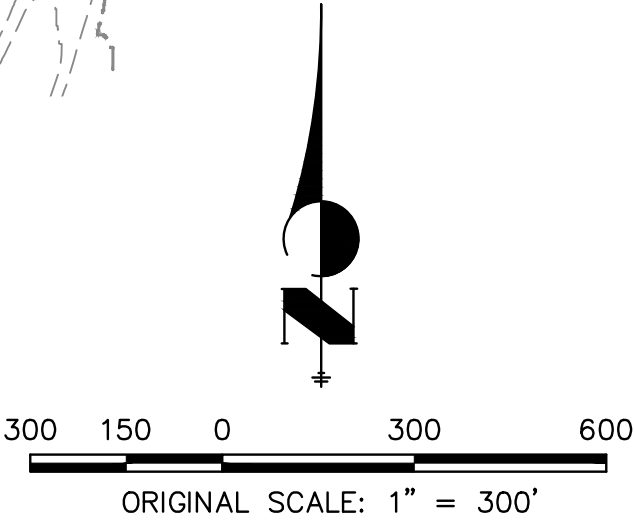
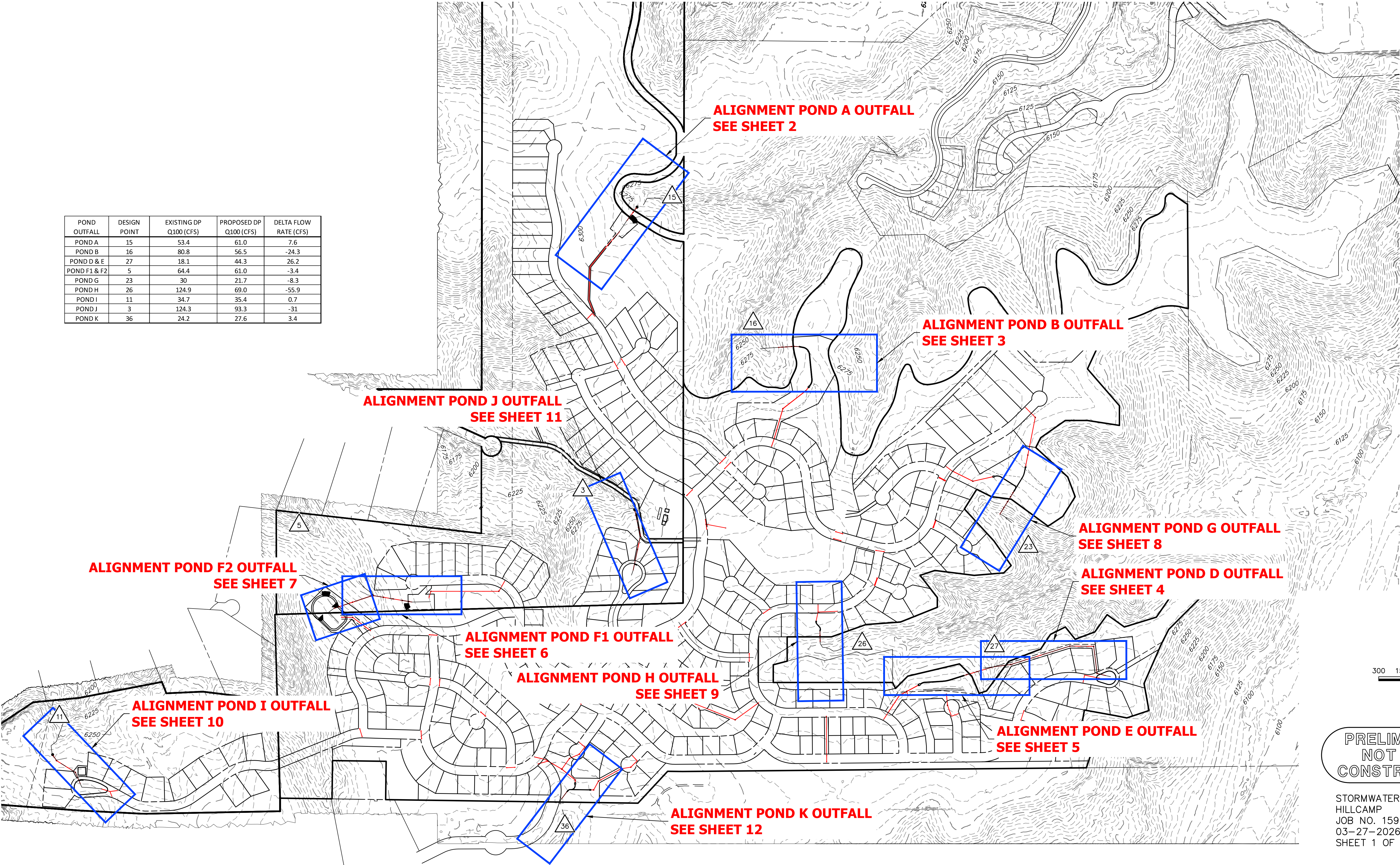
Attachments:

Hillcamp Drainage Outfall Memo – Profiles

Hillcamp Drainageway Outfall Design Point Map and Comparison Table

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STORMWATER OUTFALL EXHIBIT

POND OUTFALL	DESIGN POINT	EXISTING DP Q100 (CFS)	PROPOSED DP Q100 (CFS)	DELTA FLOW RATE (CFS)
POND A	15	53.4	61.0	7.6
POND B	16	80.8	56.5	-24.3
POND D & E	27	18.1	44.3	26.2
POND F1 & F2	5	64.4	61.0	-3.4
POND G	23	30	21.7	-8.3
POND H	26	124.9	69.0	-55.9
POND I	11	34.7	35.4	0.7
POND J	3	124.3	93.3	-31
POND K	36	24.2	27.6	3.4



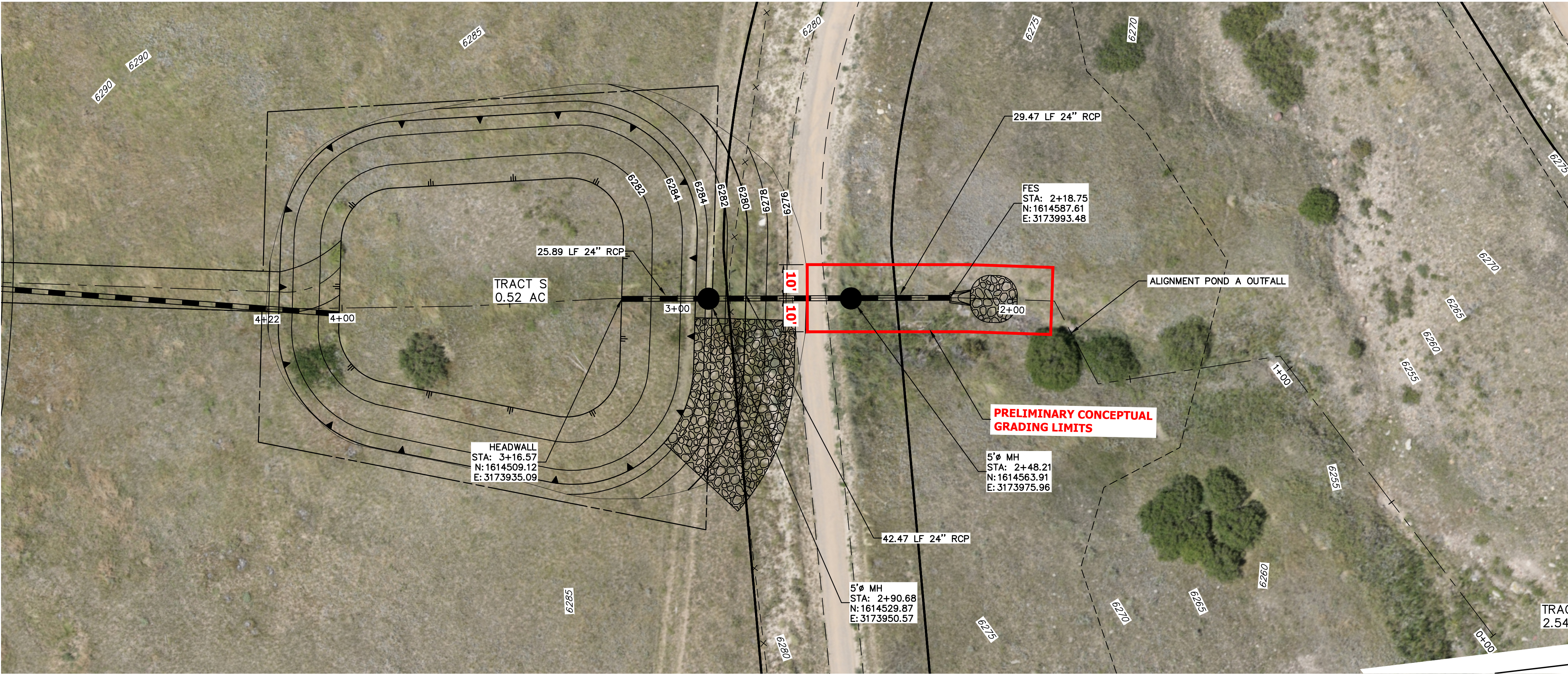
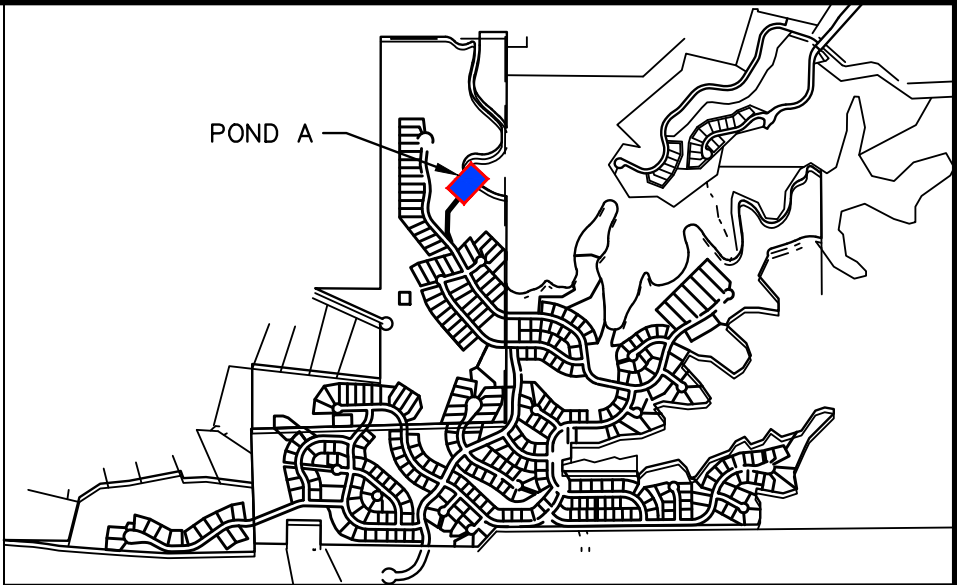
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HILLCAMP
JOB NO. 15950.12
03-27-2026
SHEET 1 OF 12

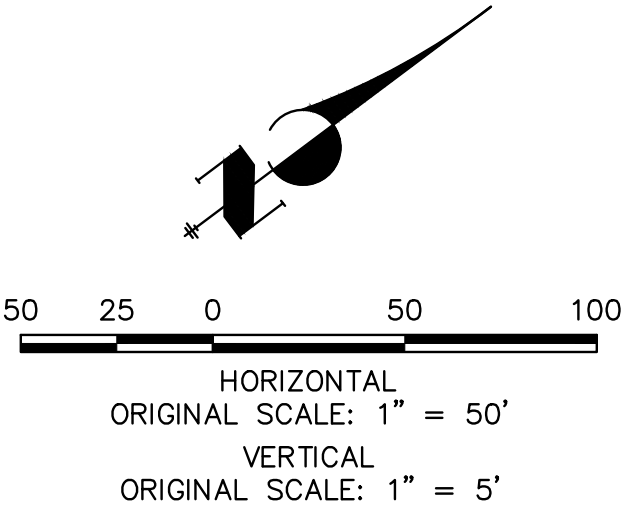
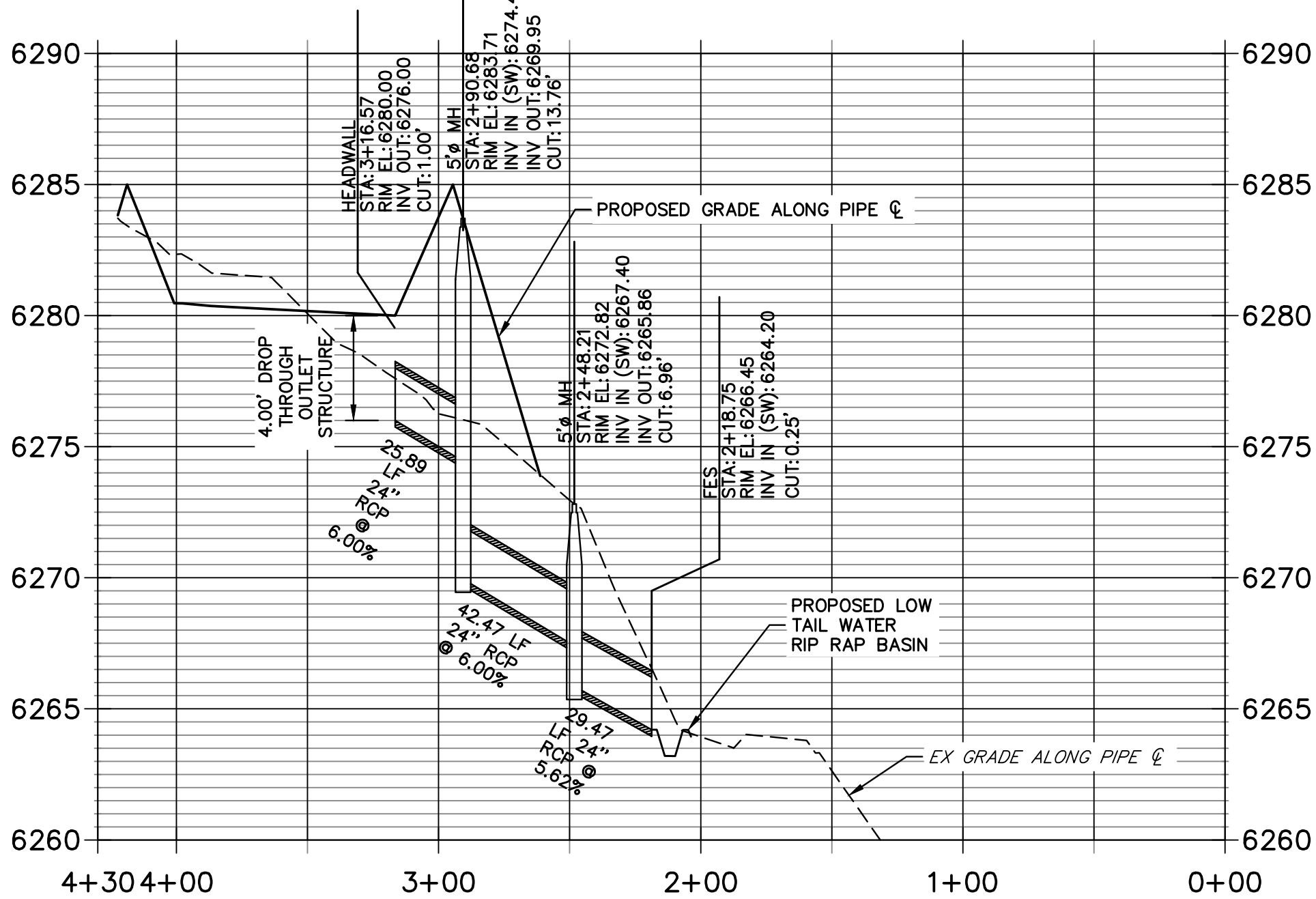
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POND A OUTFALL PROFILE
STA 0+00.00 TO 4+30.00



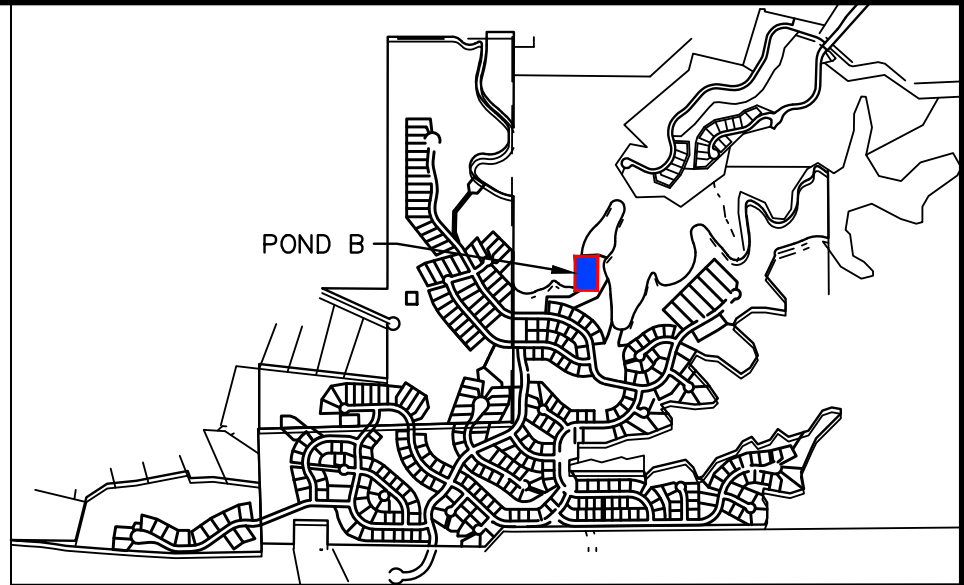
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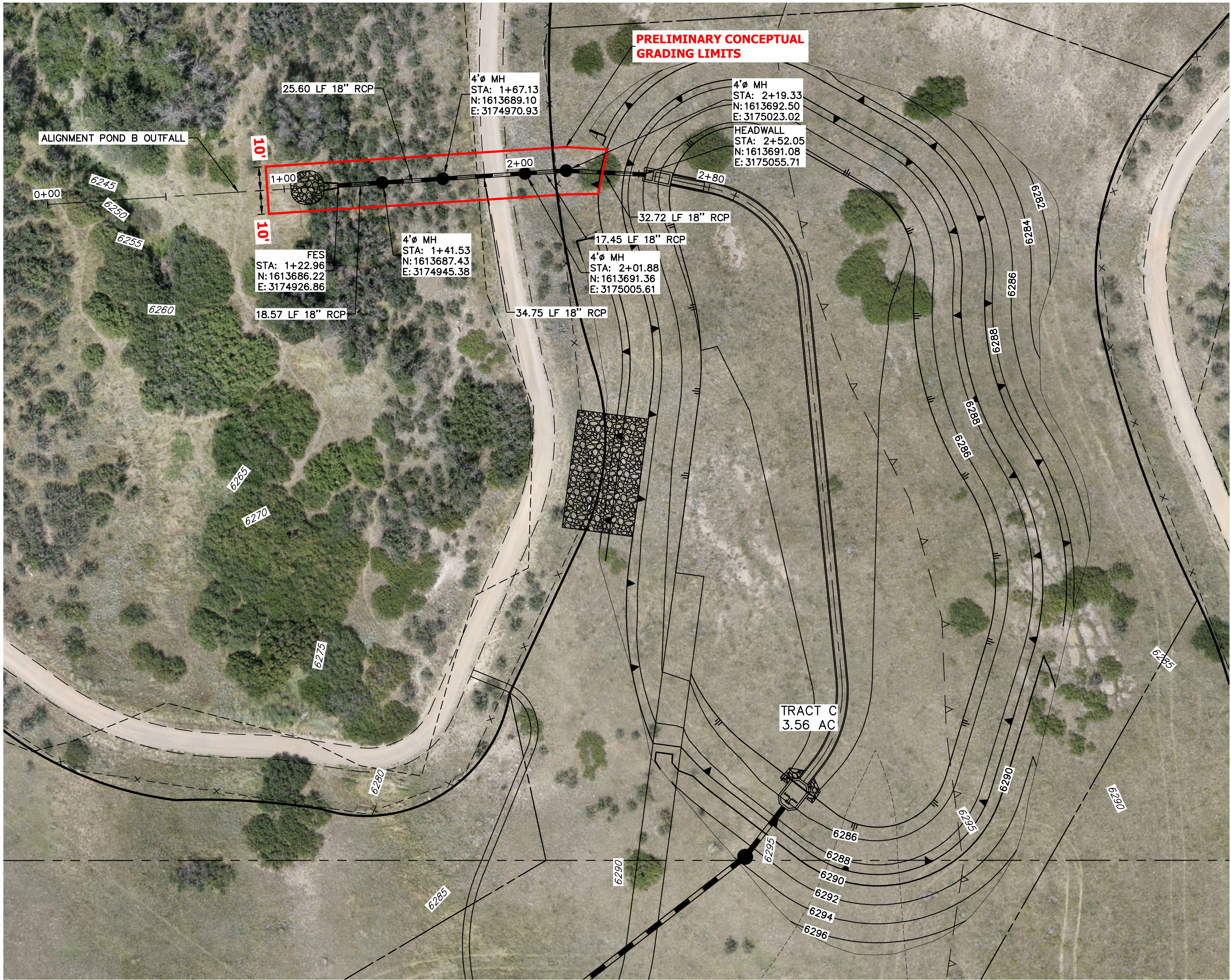
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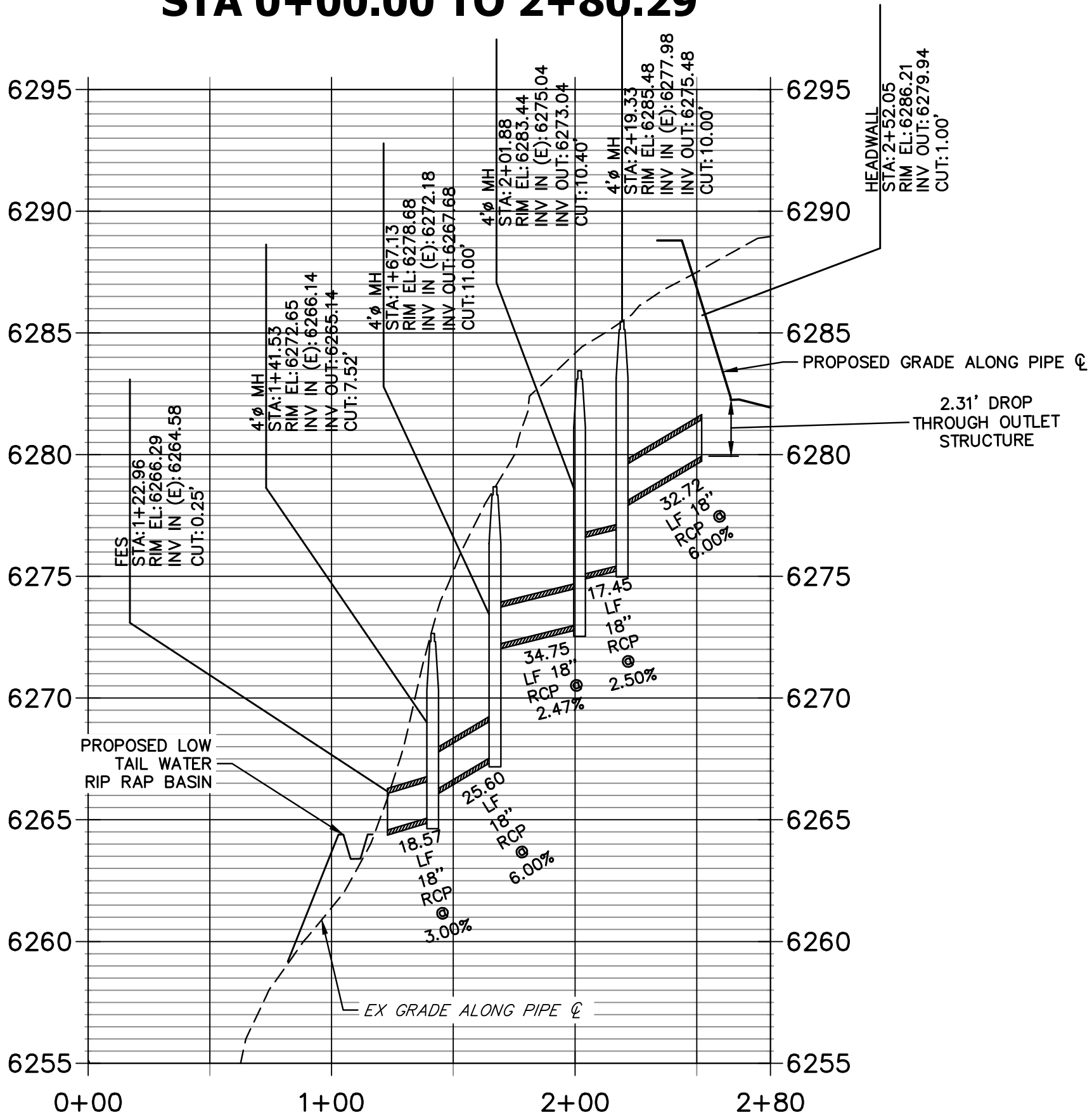


KEYMAP
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ORIGINAL SCALE: 1" = 30'



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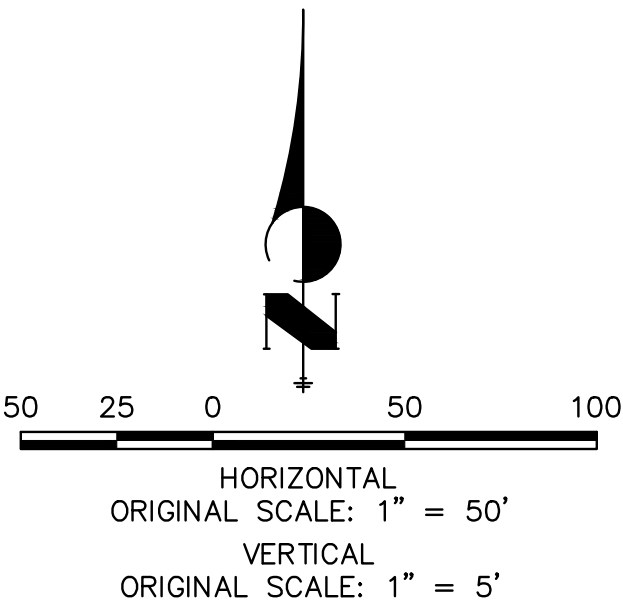


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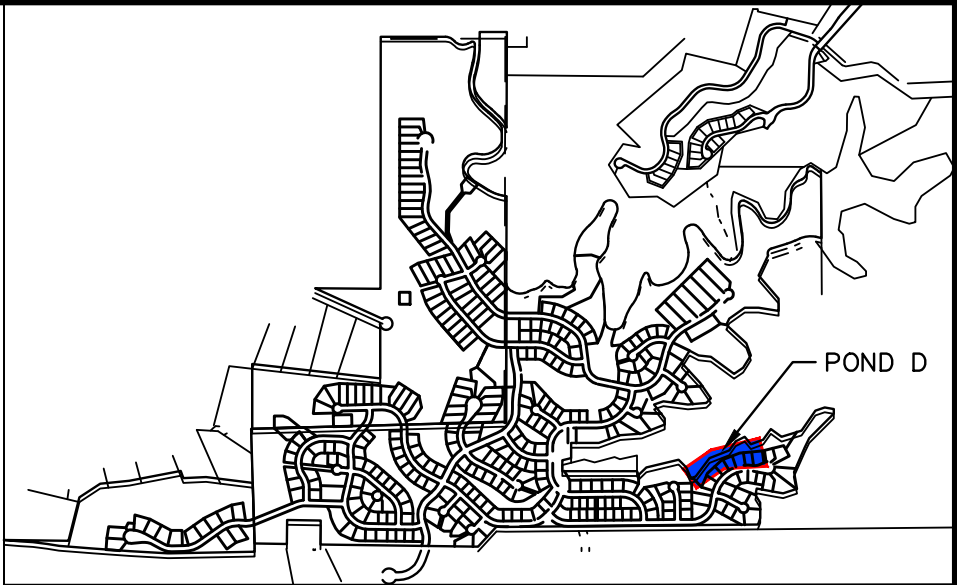
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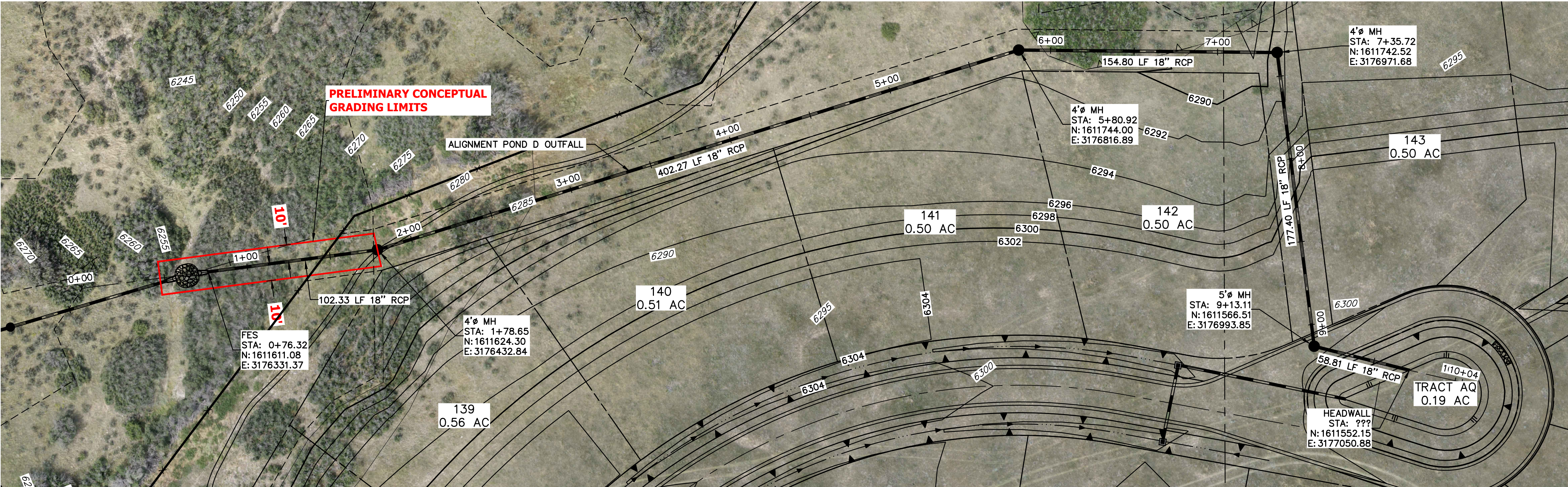
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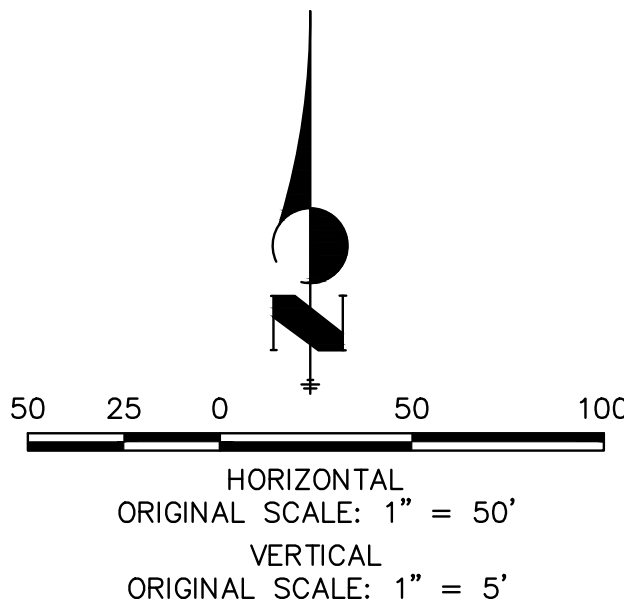
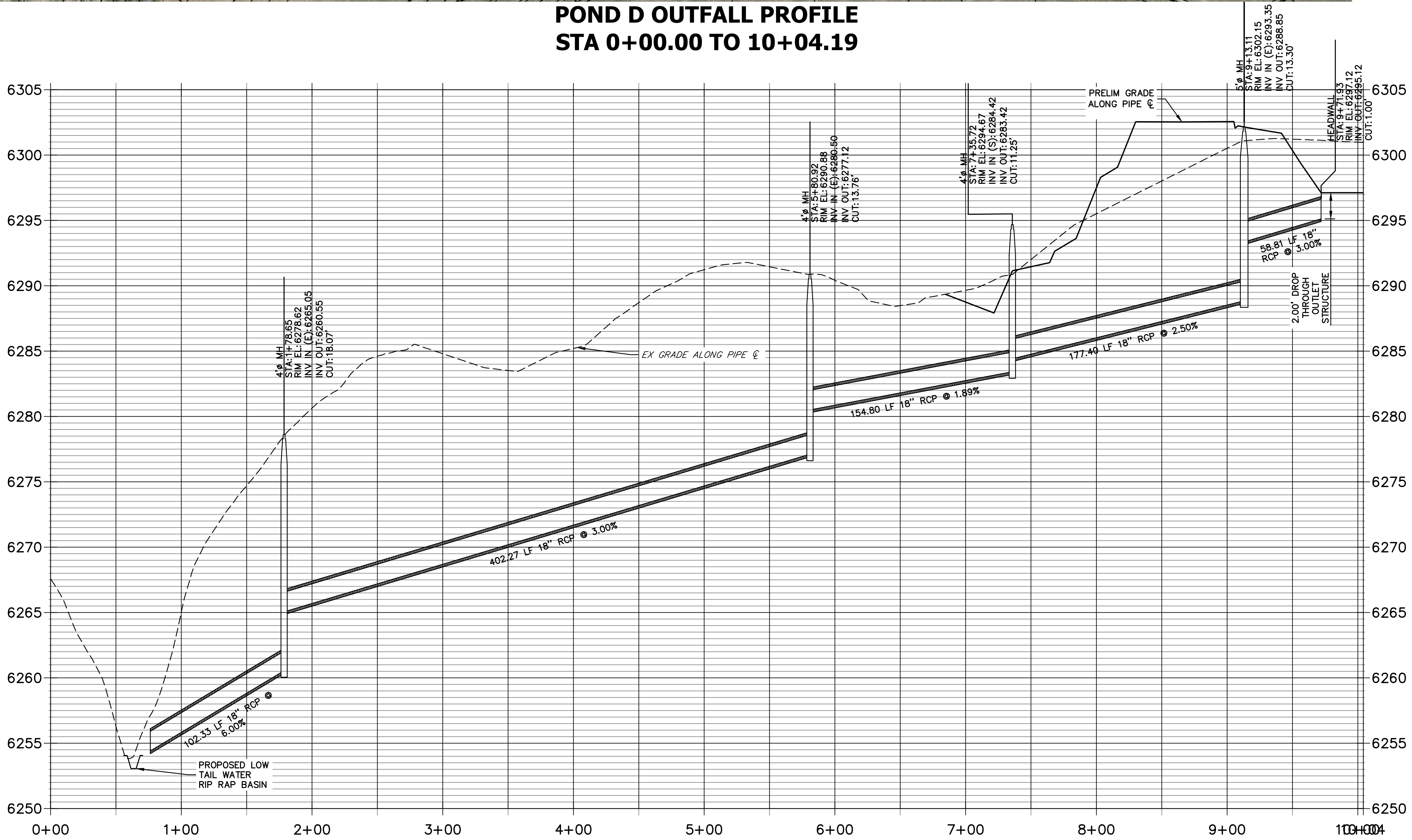
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STORMWATER OUTFALL EXHIBIT



KEYMAP
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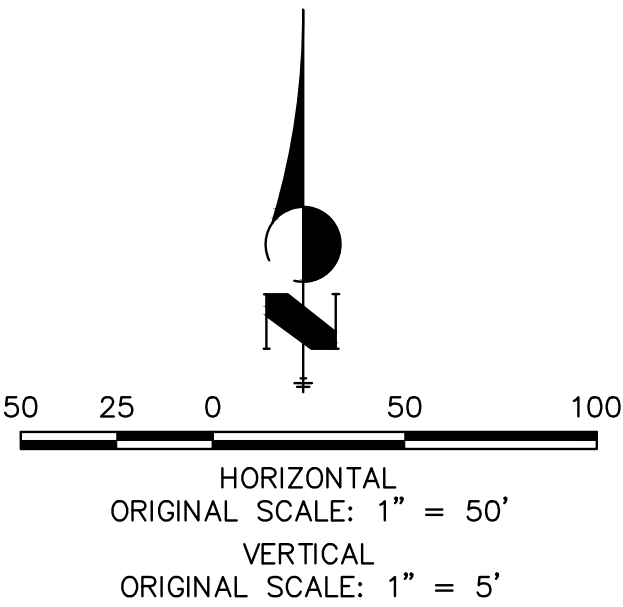
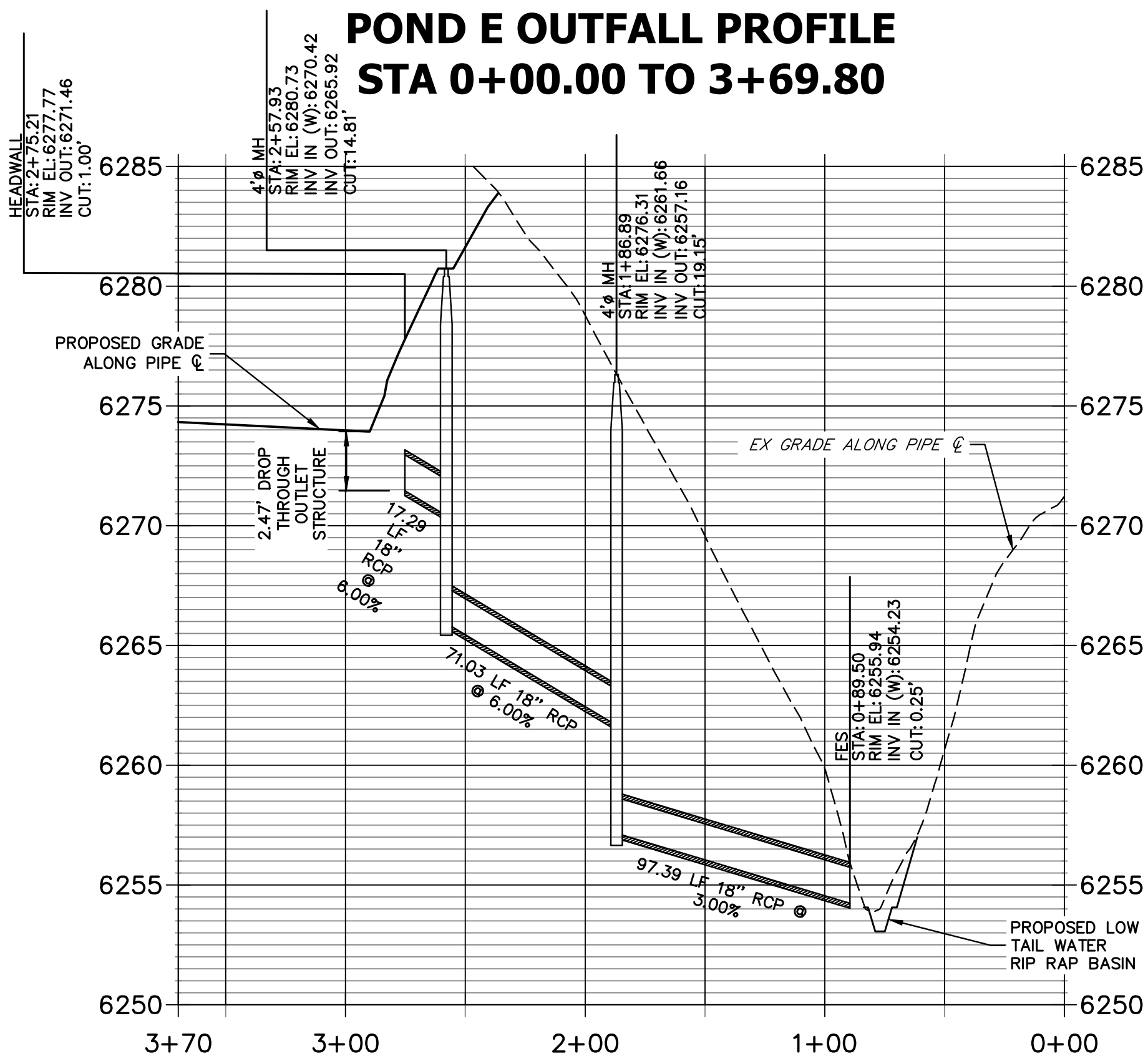
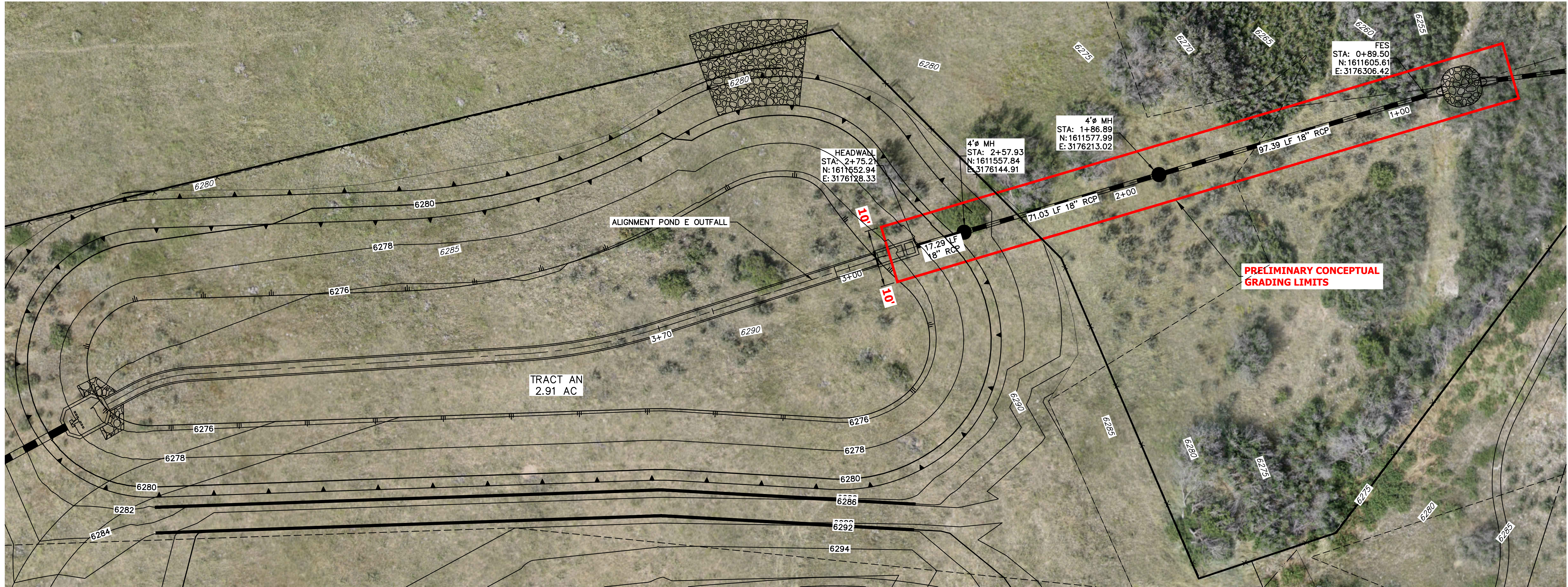
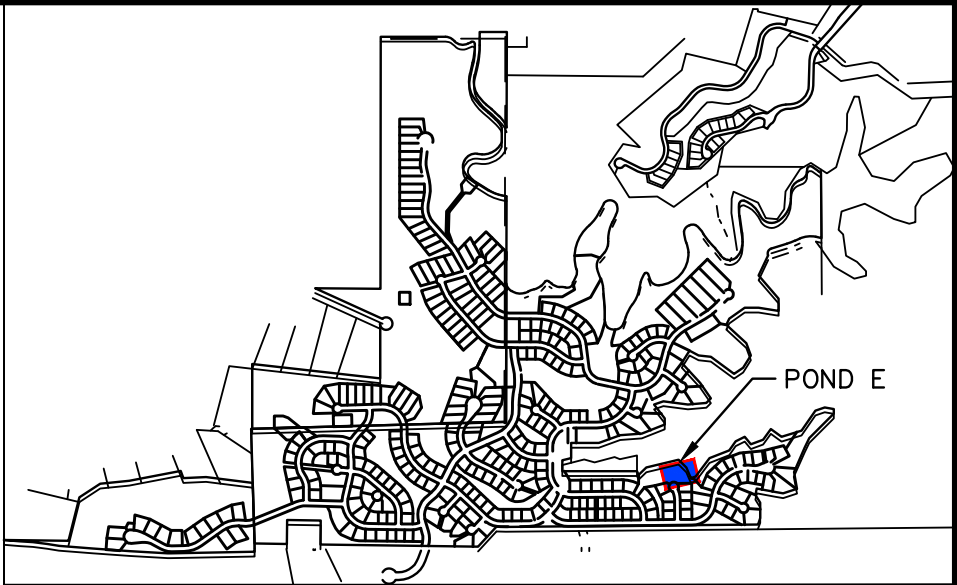
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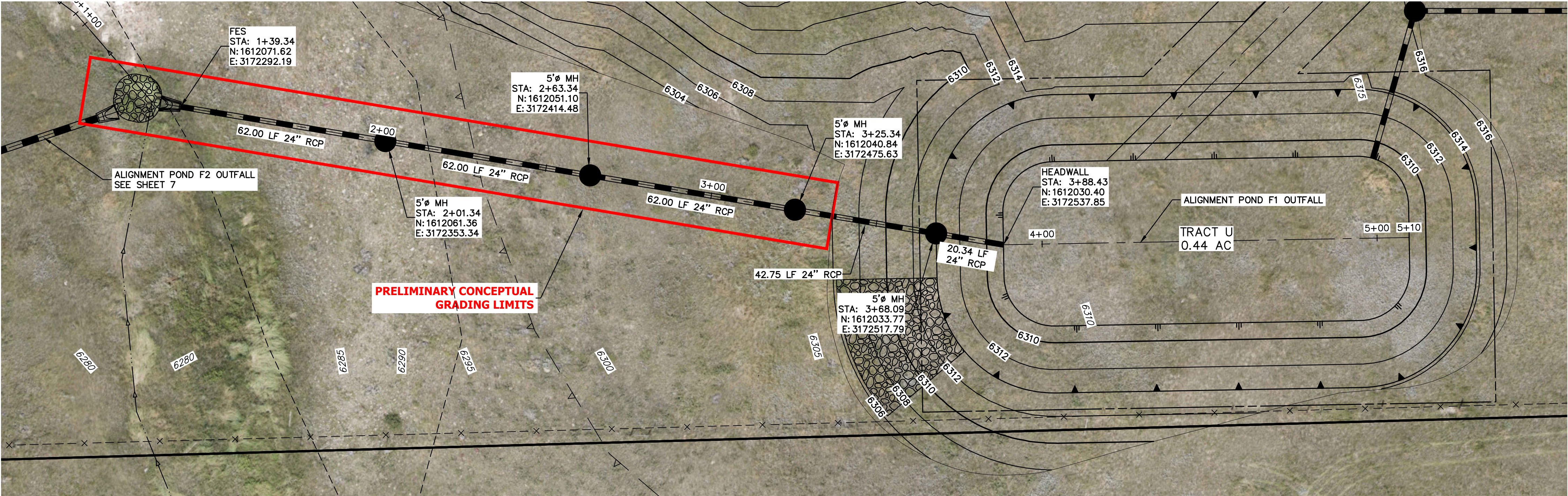
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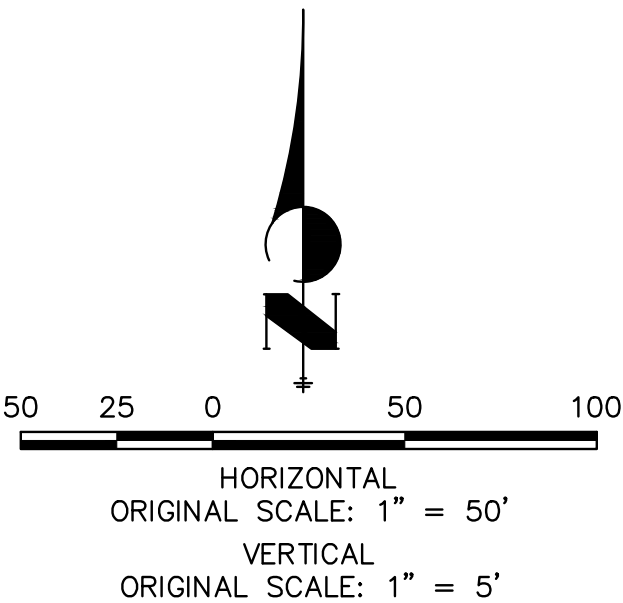
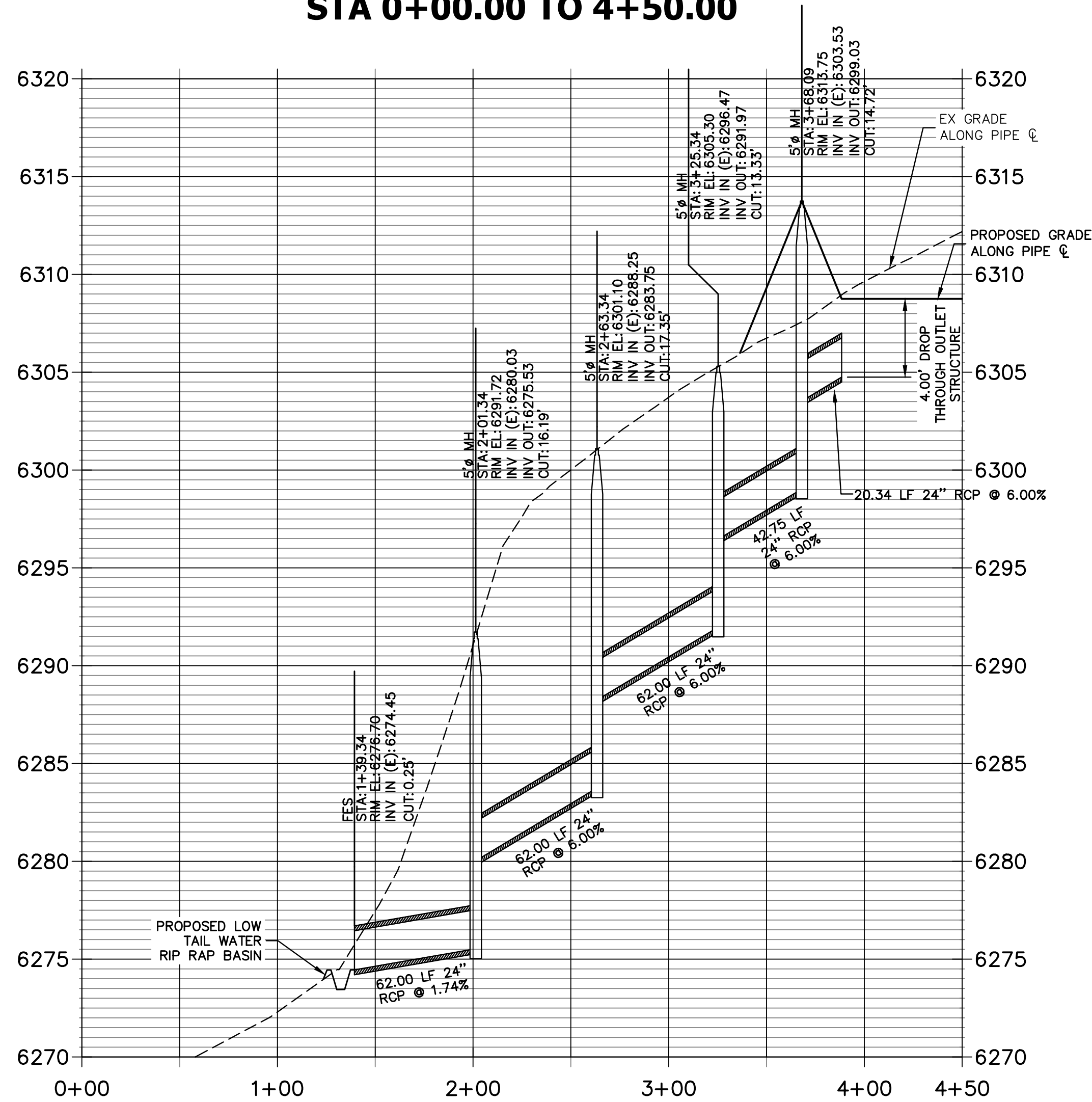
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POND F1 OUTFALL PROFILE
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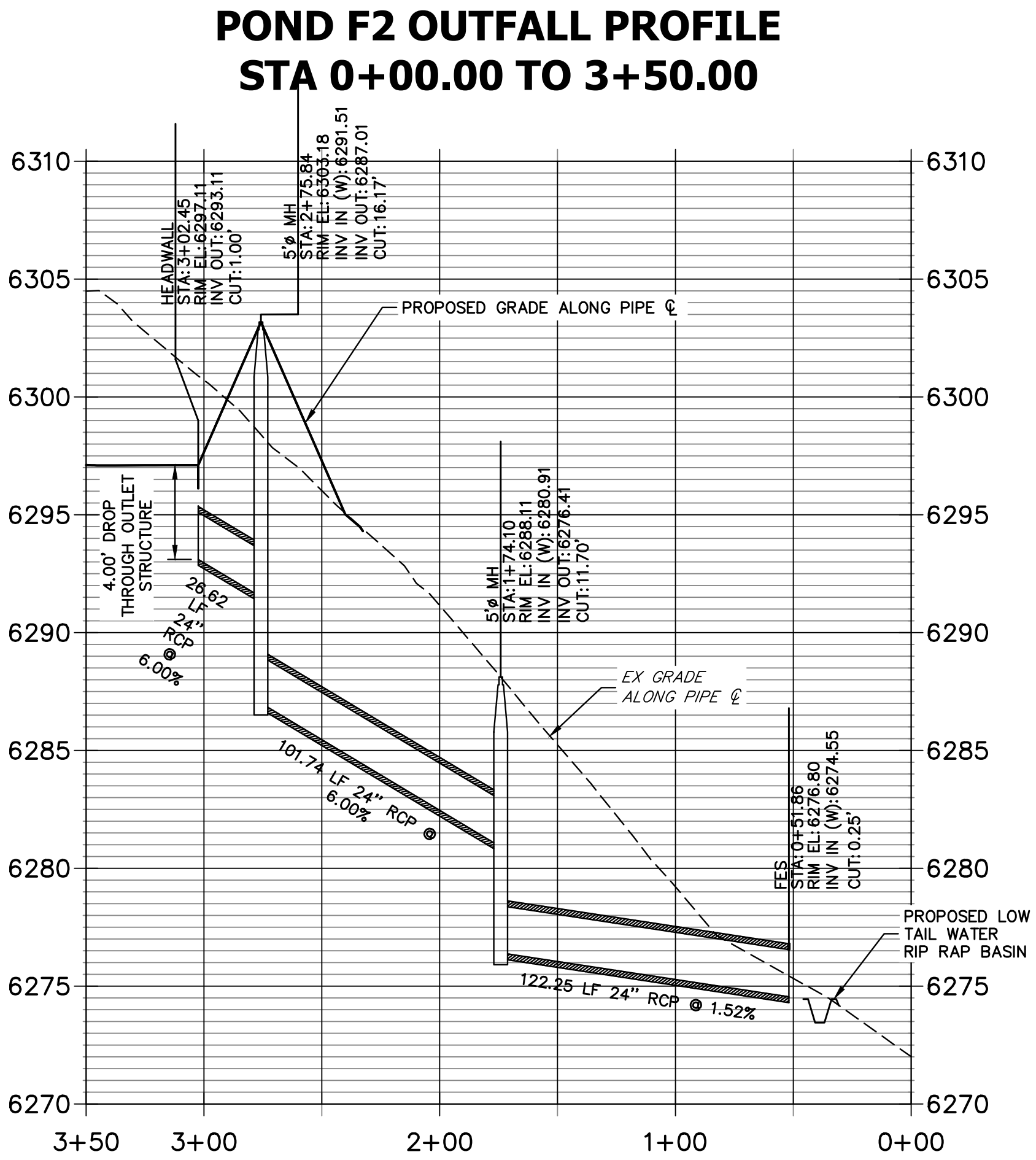
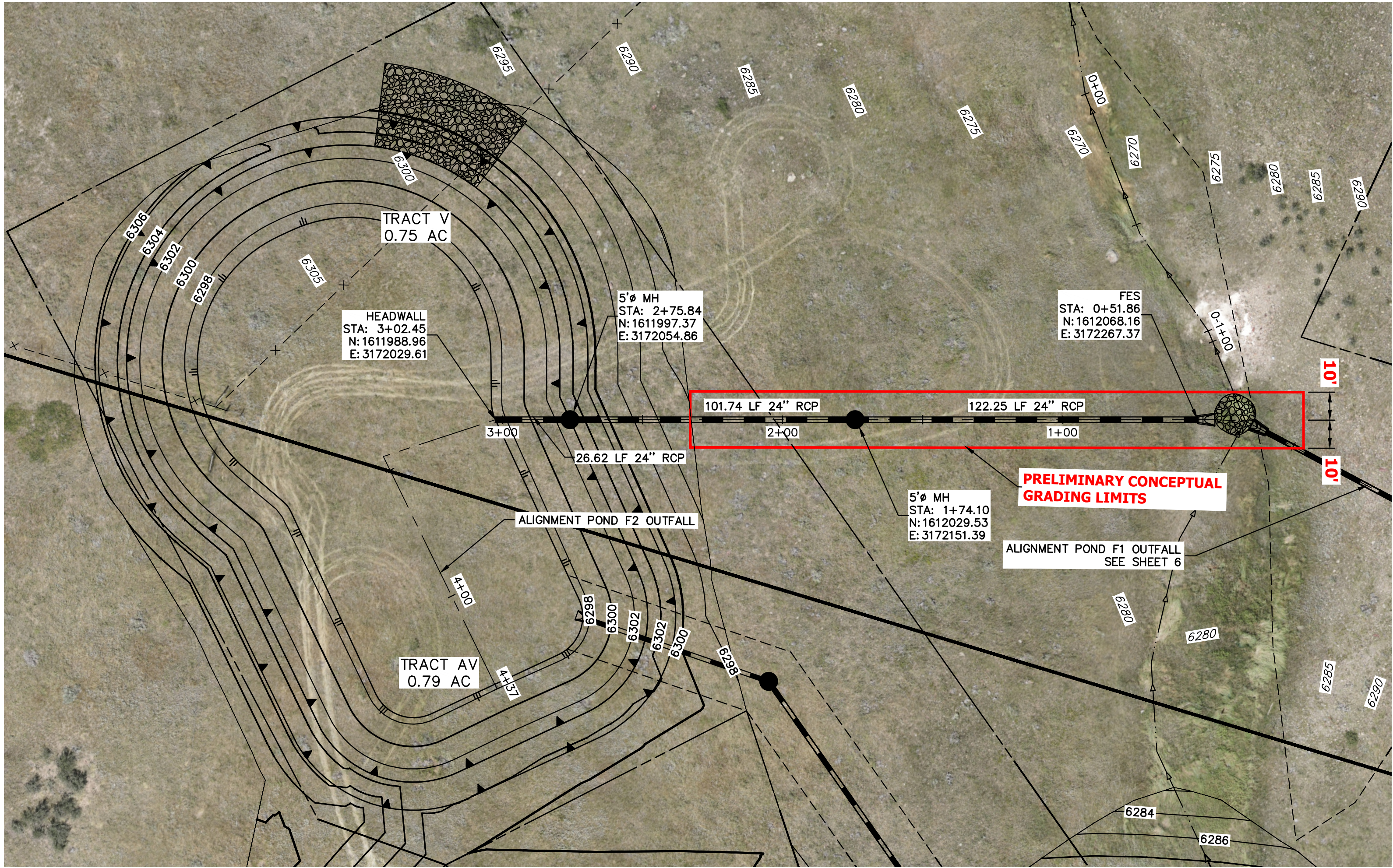
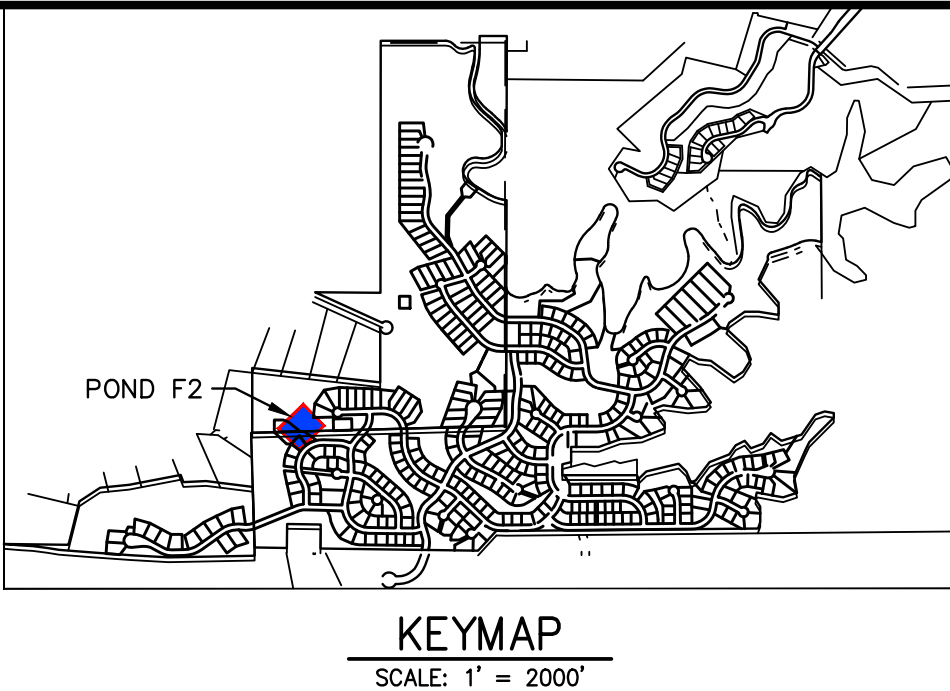
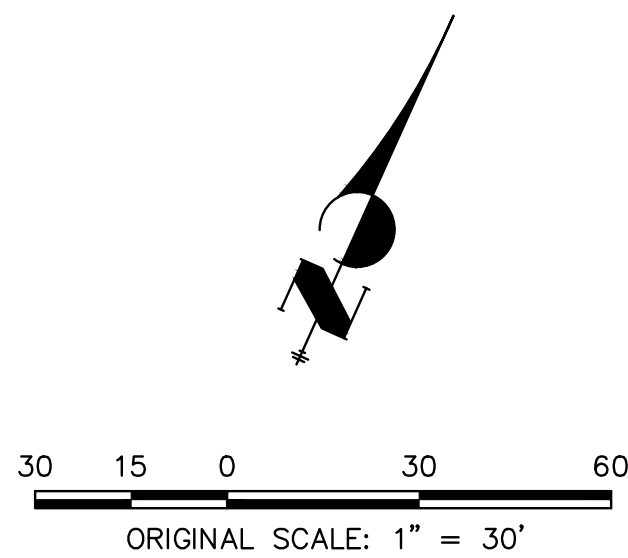
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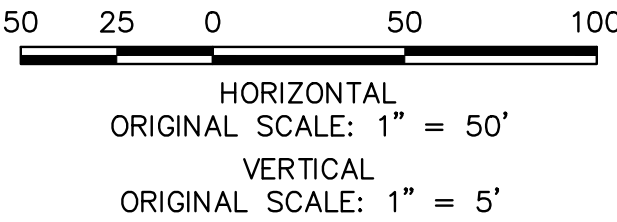
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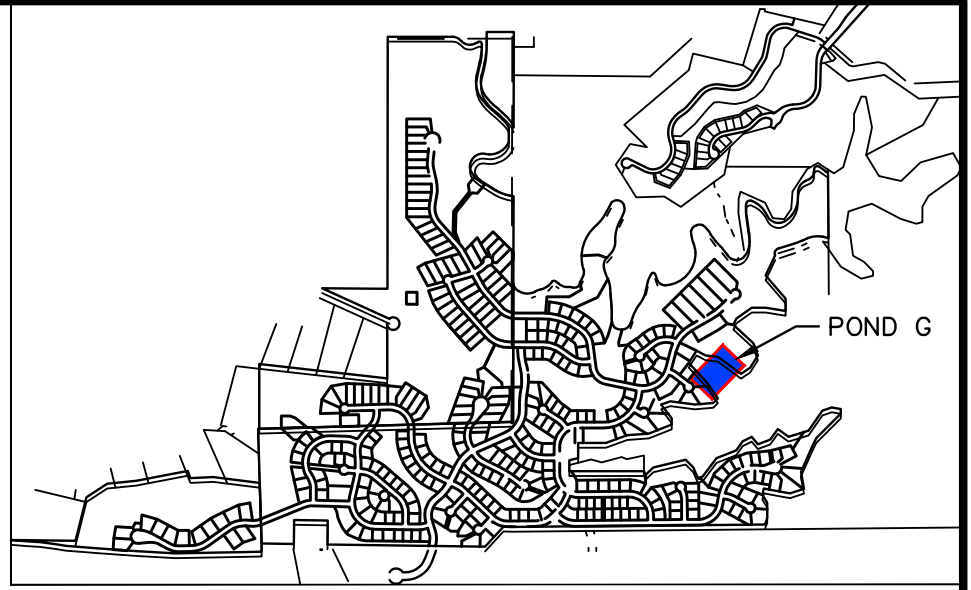
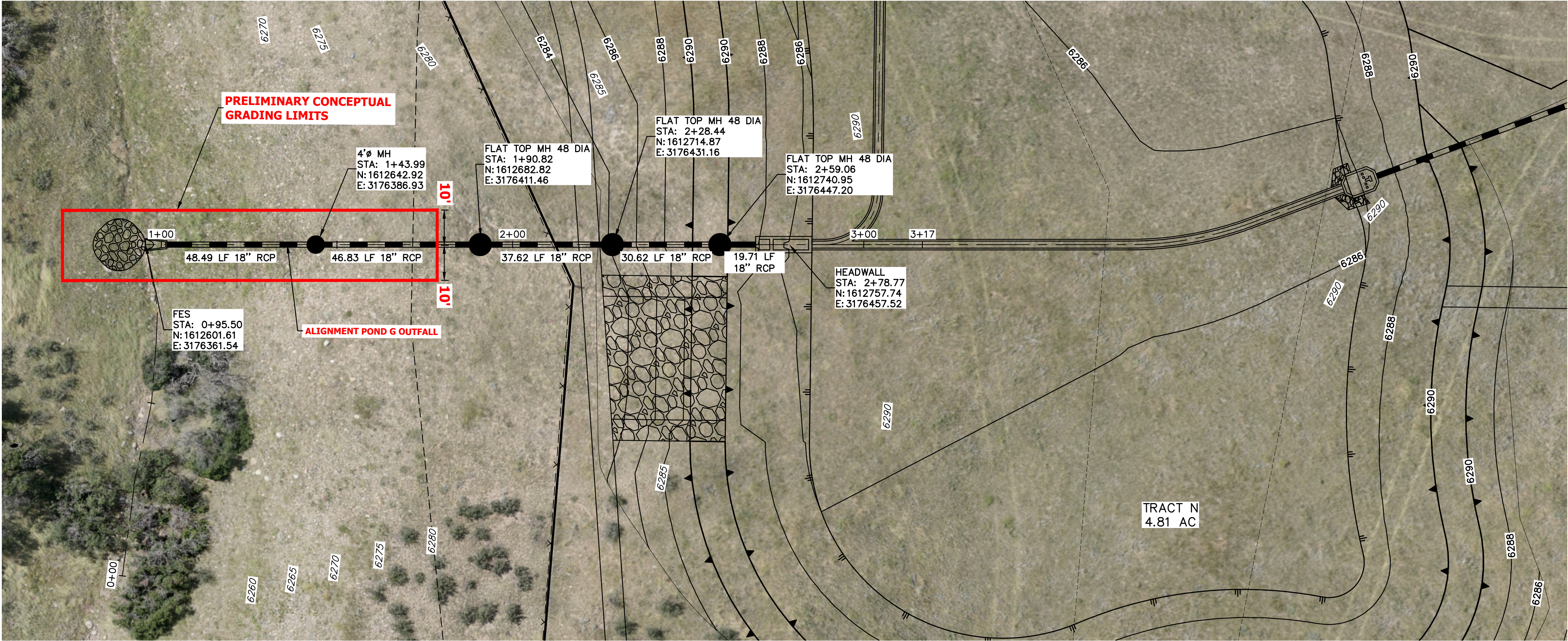
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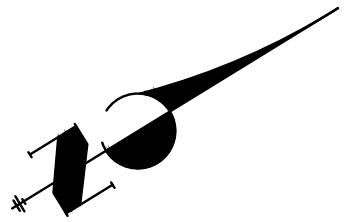


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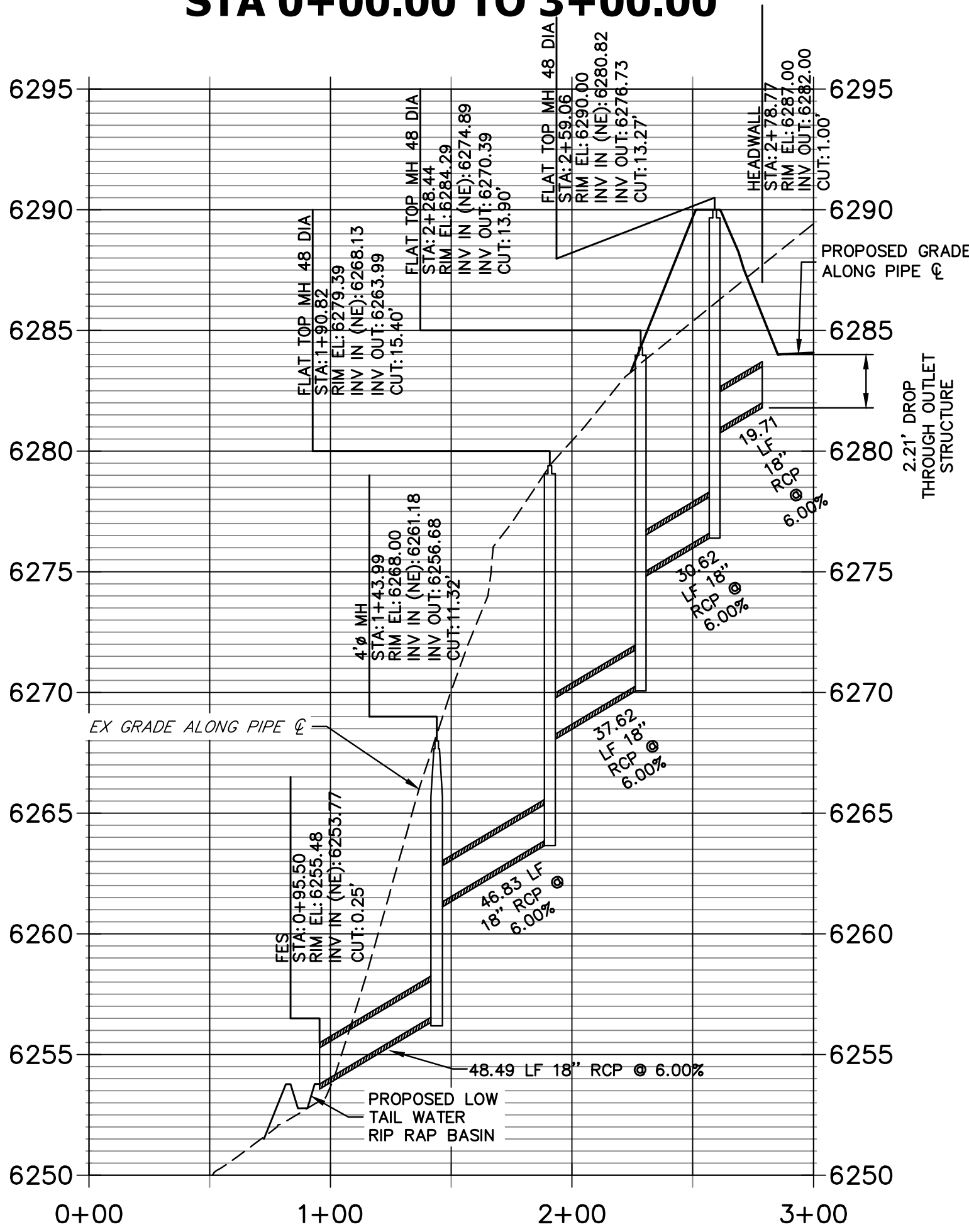


KEYMAP
SCALE: 1" = 2000'



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ORIGINAL SCALE: 1" = 20'

POND G OUTFALL PROFILE
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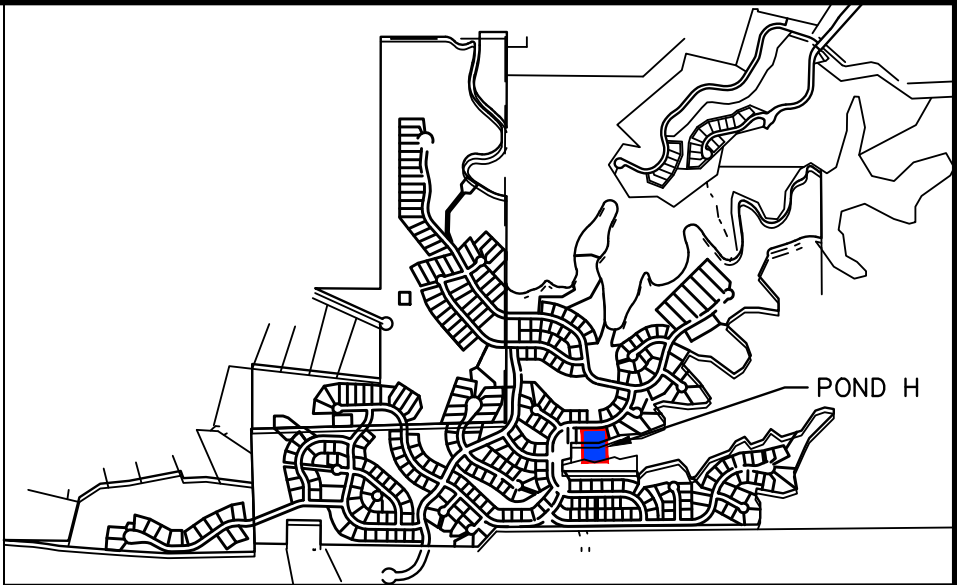
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03-27-2026
SHEET 8 OF 12

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HORIZONTAL
ORIGINAL SCALE: 1" = 50'
VERTICAL
ORIGINAL SCALE: 1" = 5'

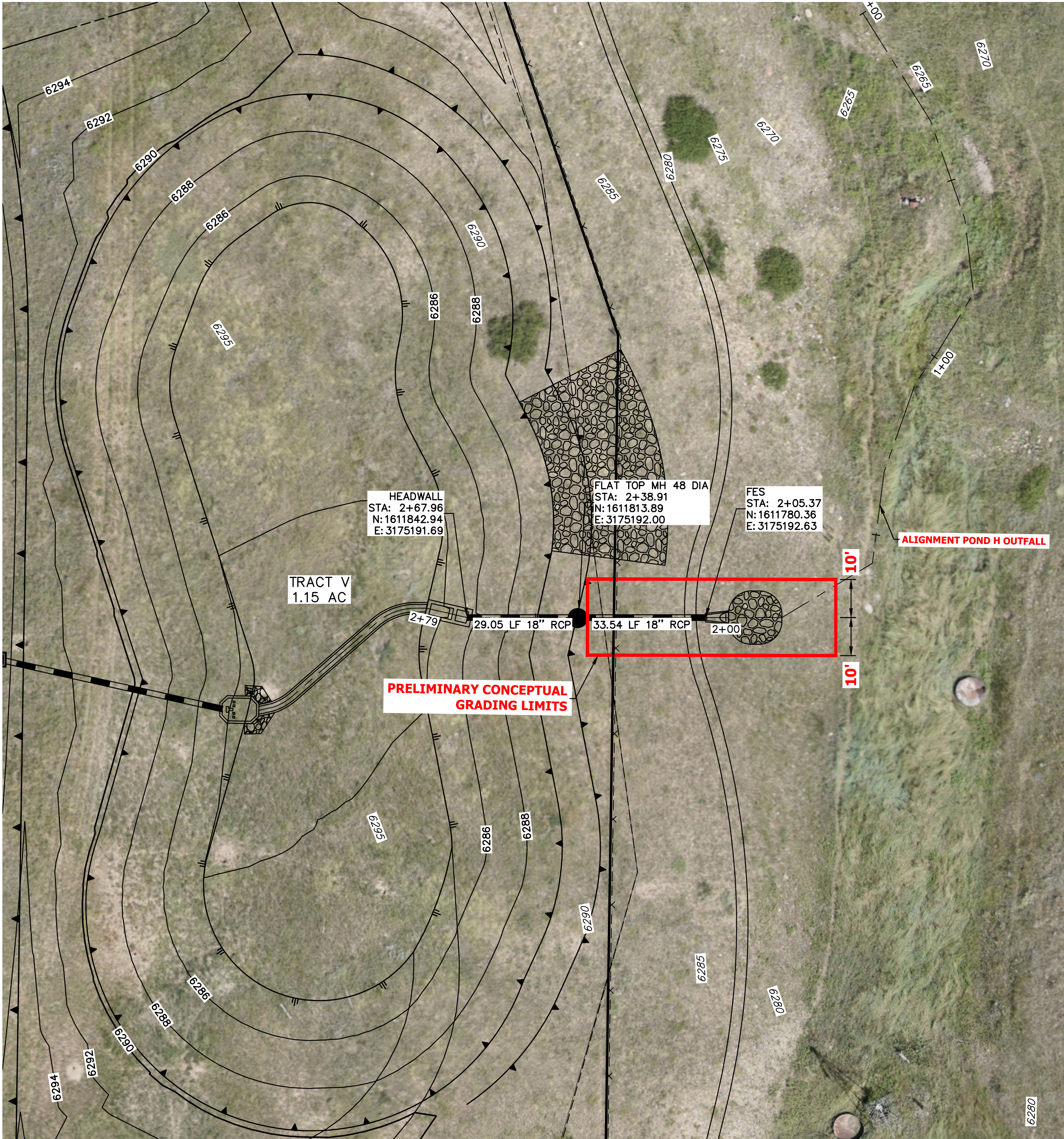
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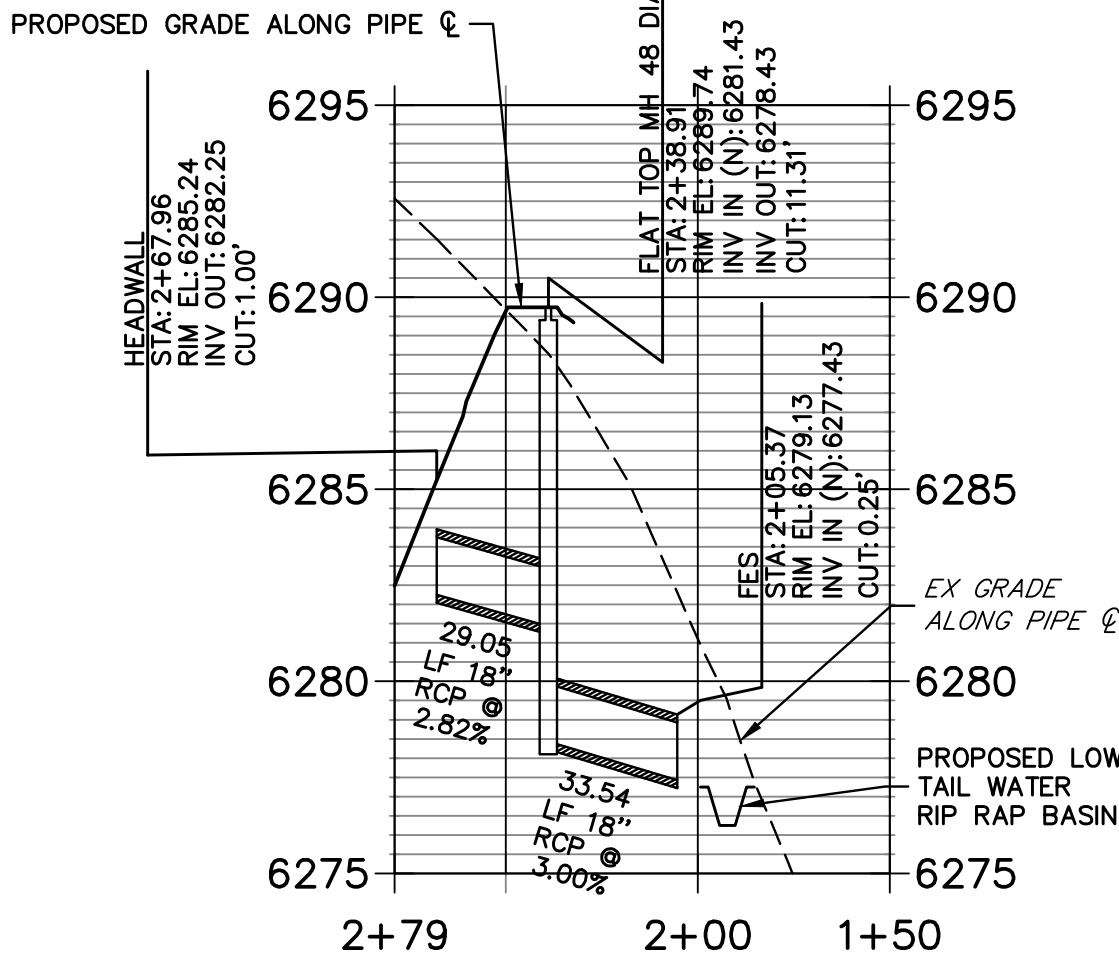
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KEYMAP
SCALE: 1" = 2000'



POND H OUTFALL PROFILE
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JOB NO. 15950.12
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ORIGINAL SCALE: 1" = 50'
VERTICAL
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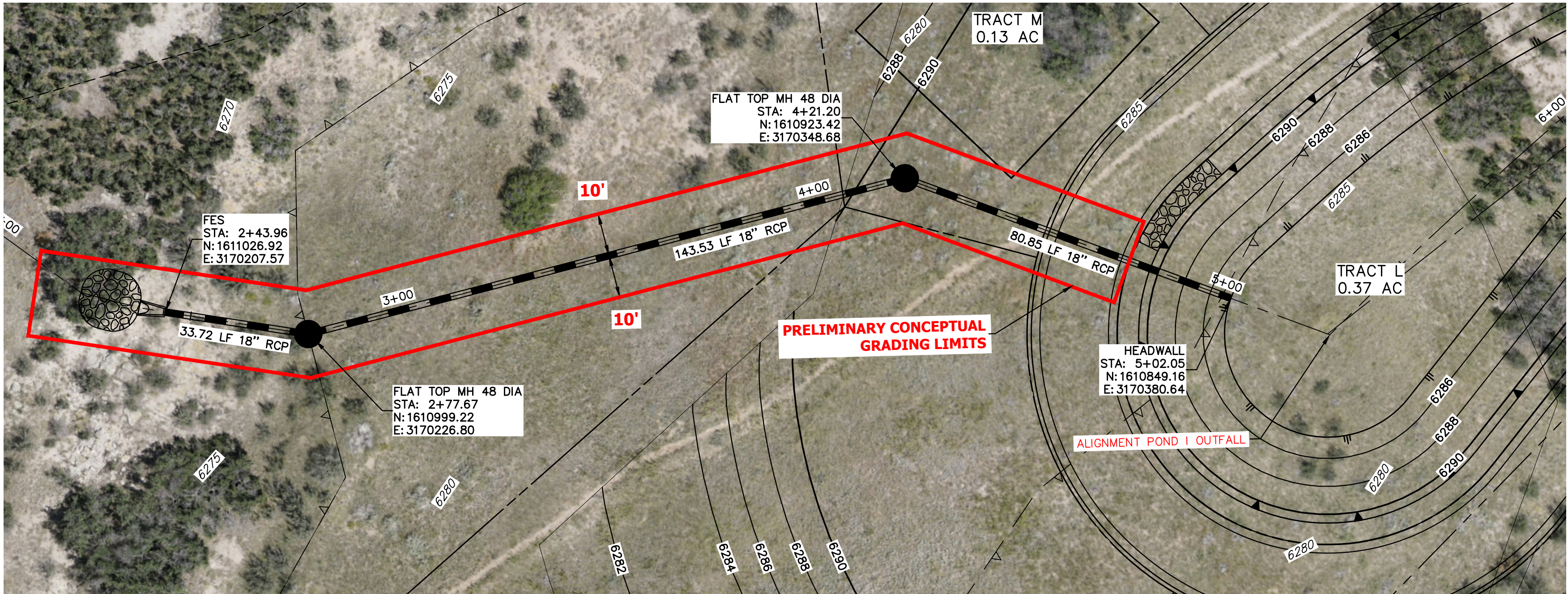
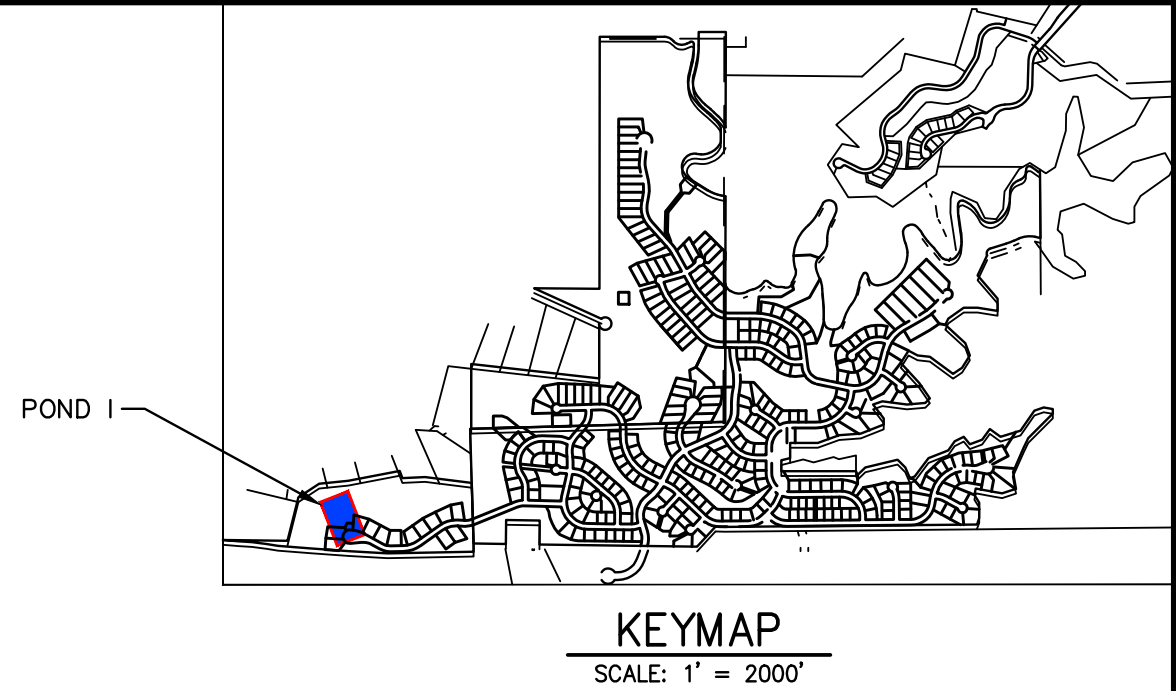
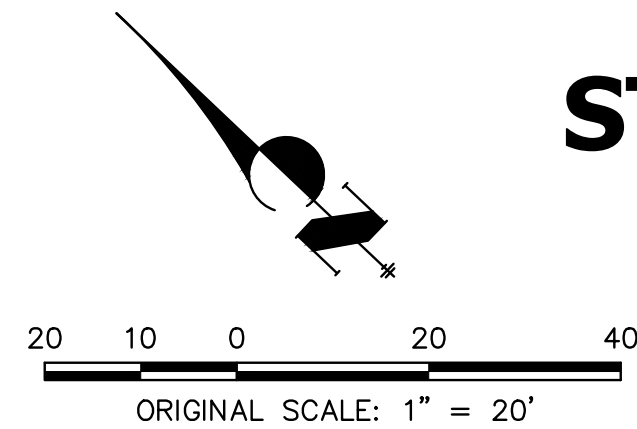
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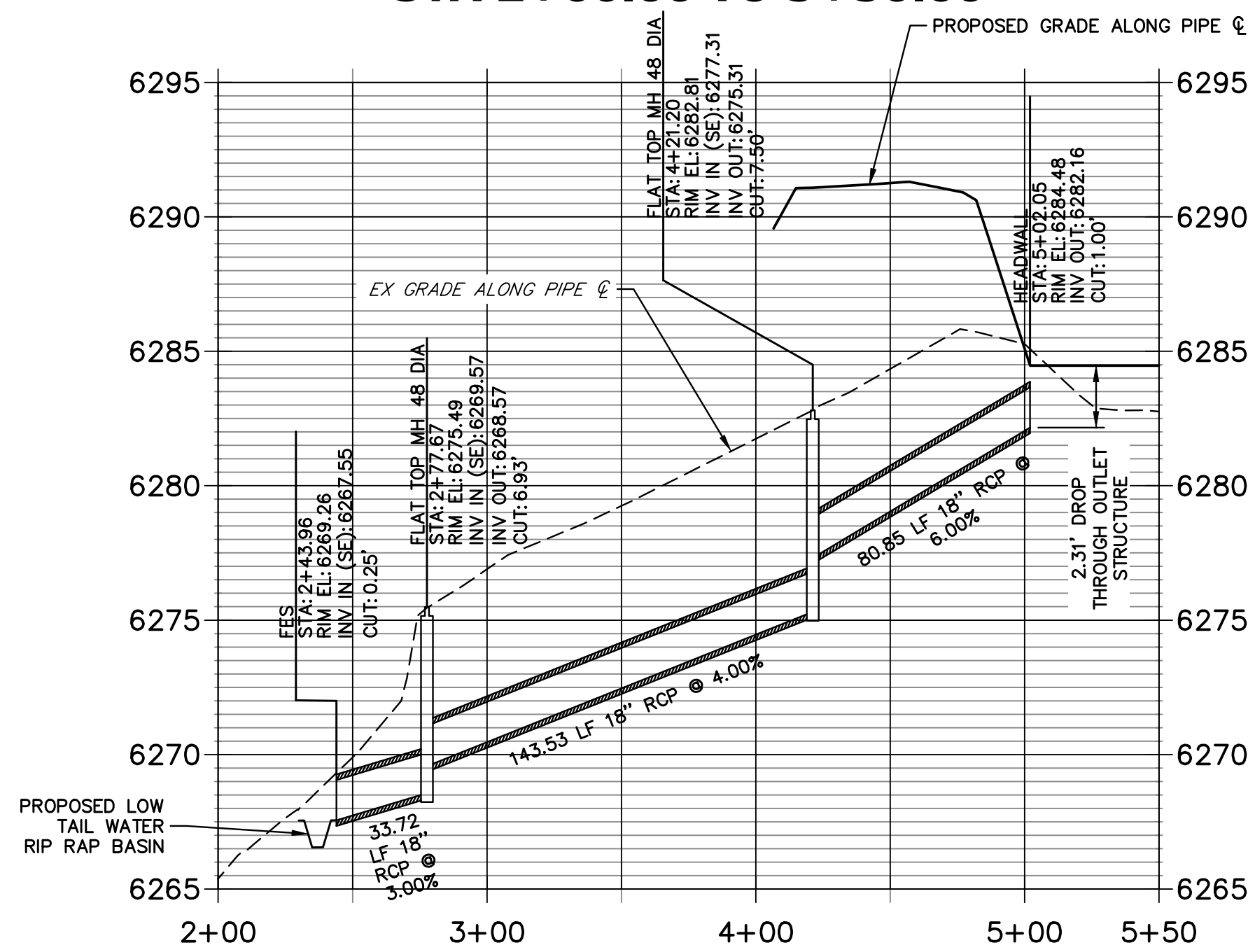
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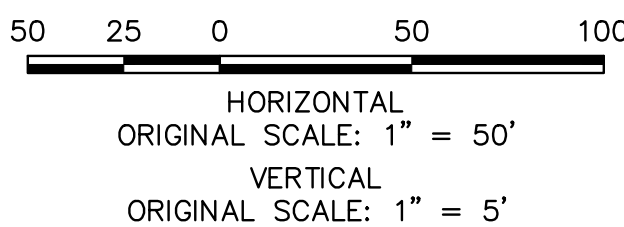


POND I OUTFALL PROFILE STA 2+00.00 TO 5+50.00



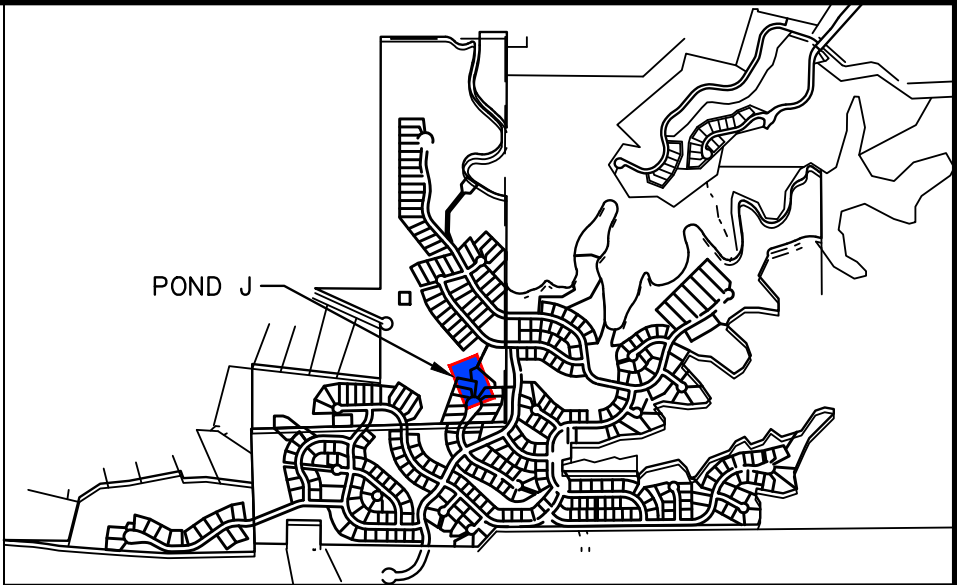
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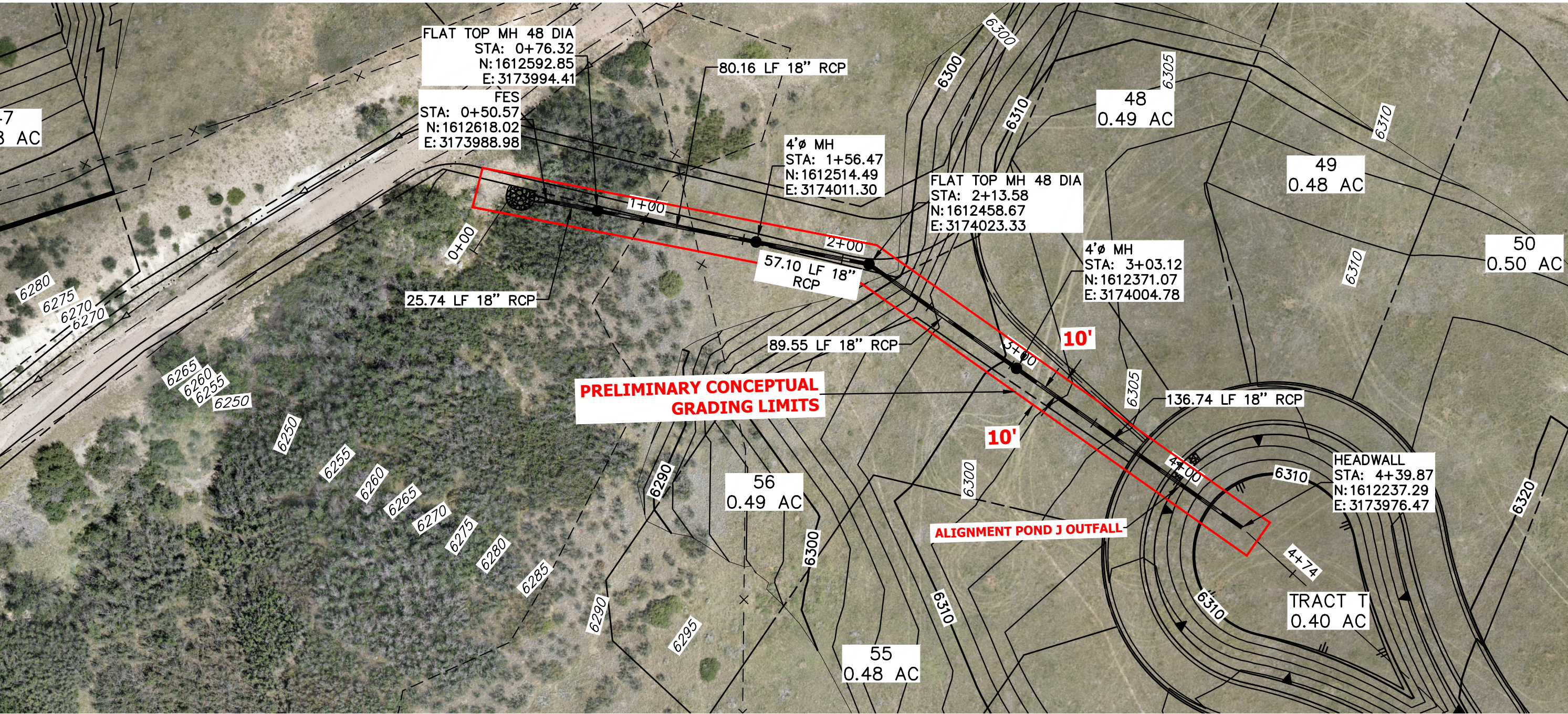
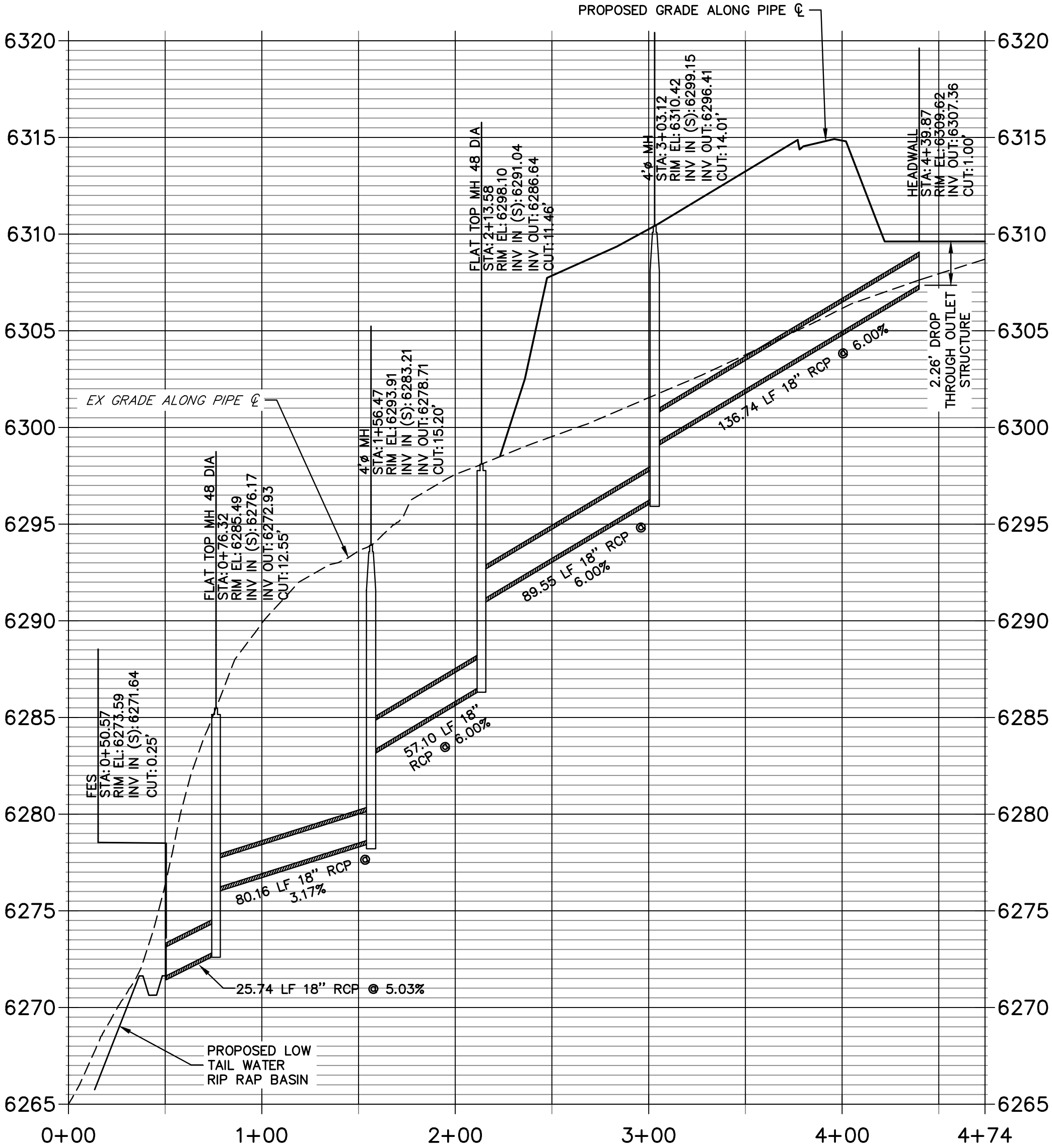
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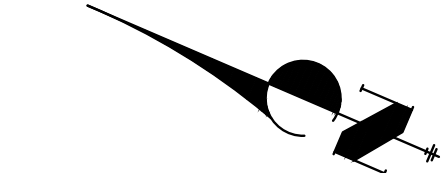
KEYMAP
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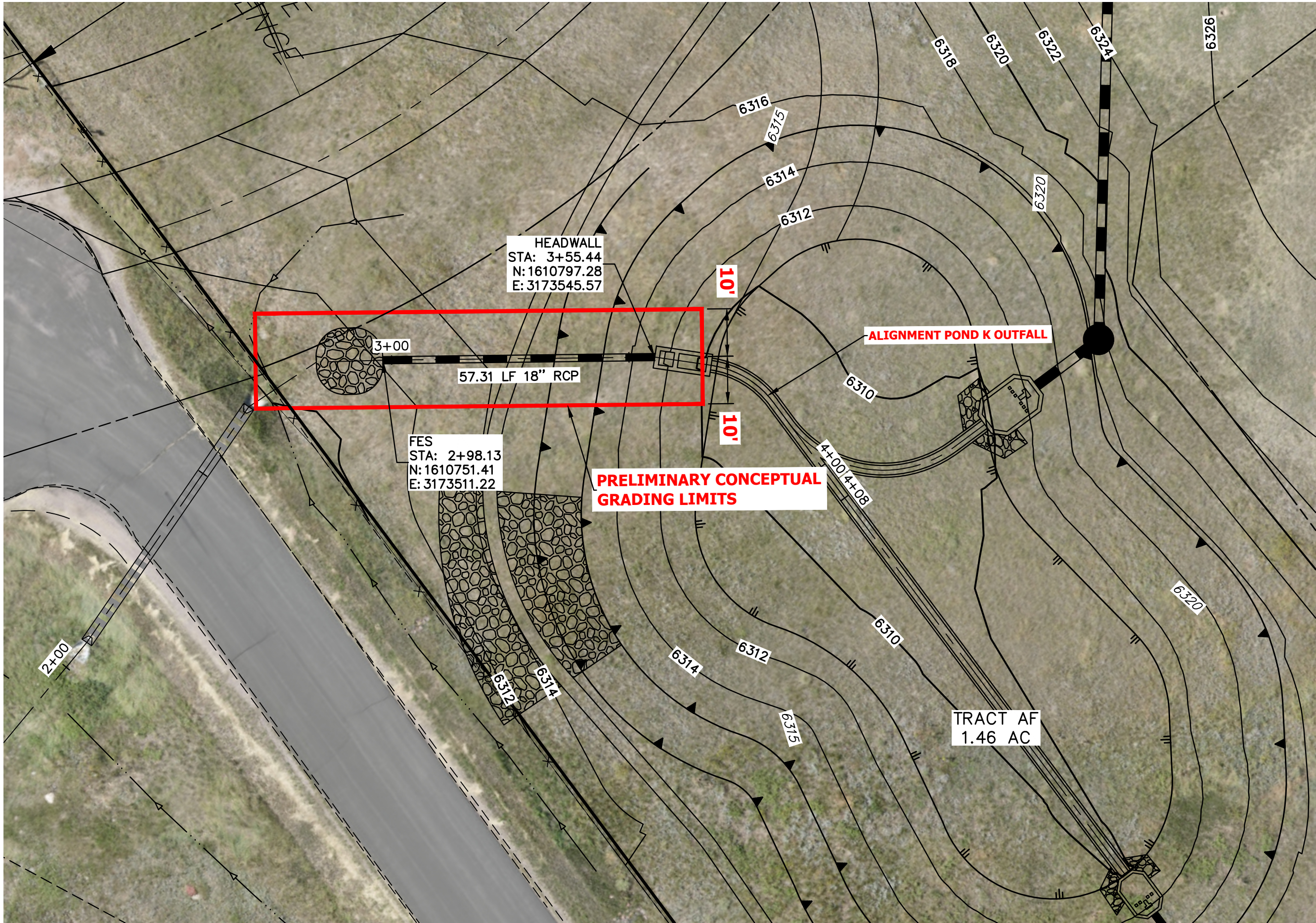
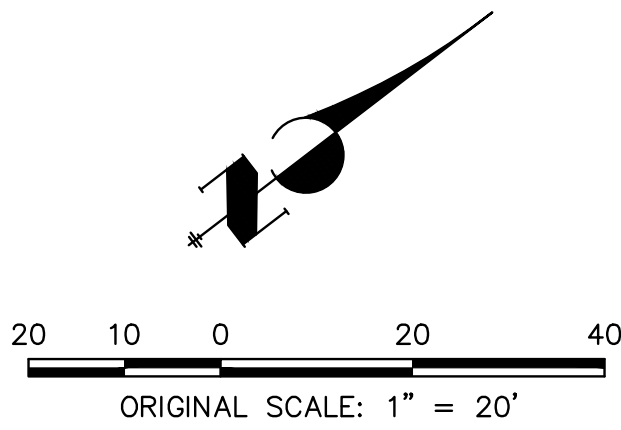
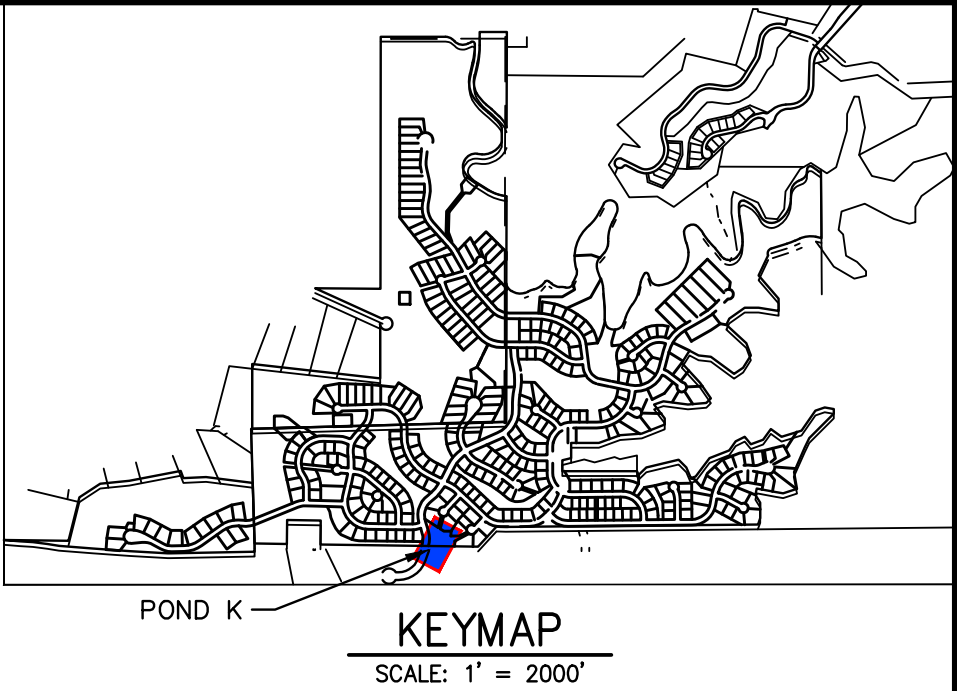


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VERTICAL
ORIGINAL SCALE: 1" = 5'

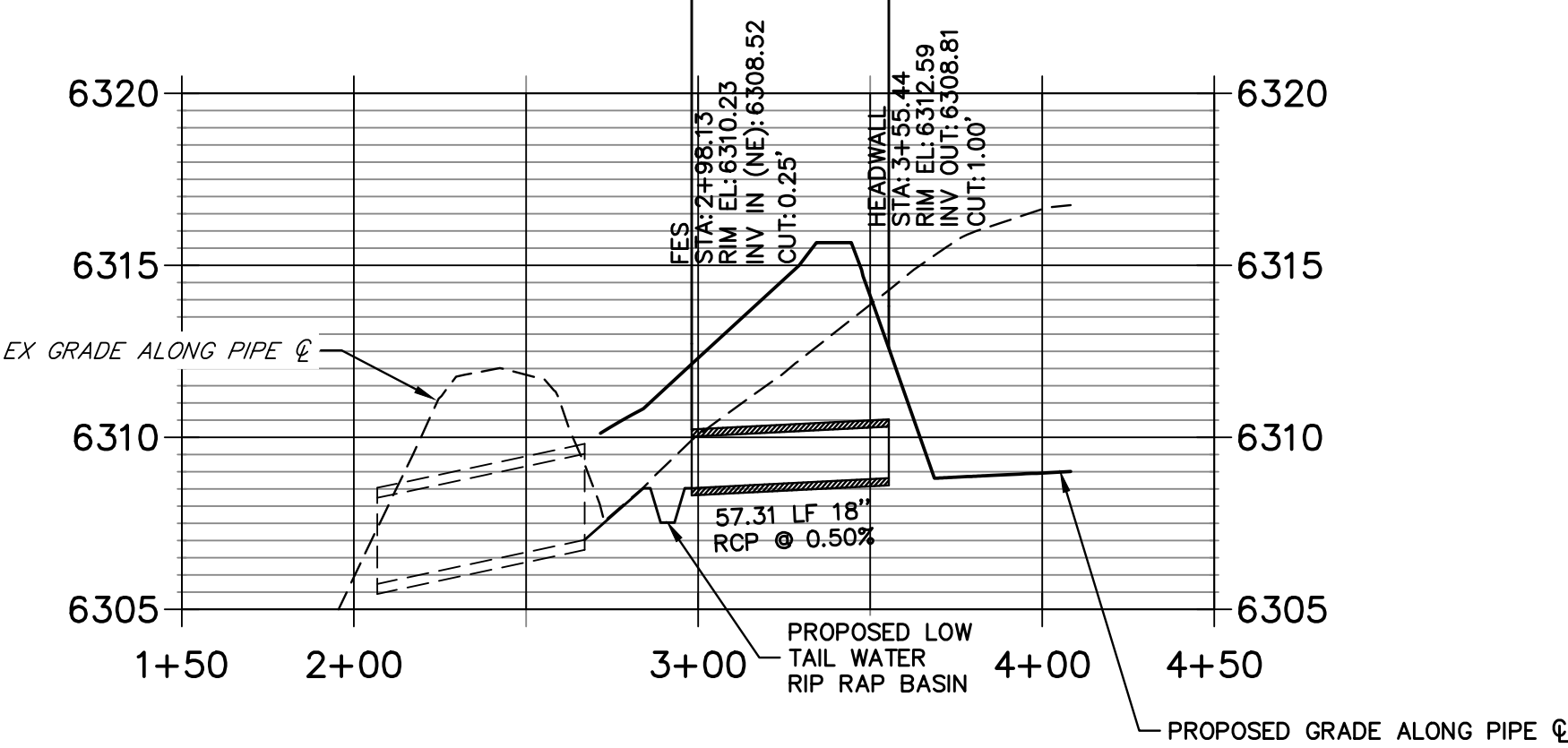
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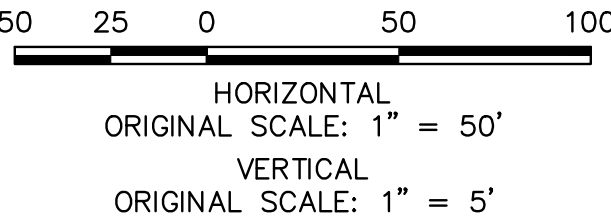


POND K OUTFALL PROFILE
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