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DEVIATION REQUEST AND DECISION FORM

Updated: 6/26/2019

PROJECT INFORMATION

Project Name : Grandwood Ranch
Schedule No.(s) : 6119000003
Legal Description : S2N2, EX PT TO HIGBY RD CONV BY REC# 205092691 W/MR SEC 19-11-66

APPLICANT INFORMATION

Company : Grandwood Enterprises
Name : Bill Herebic
☒ Owner ☐ Consultant ☐ Contractor
Mailing Address : 270 Lodgepole Way
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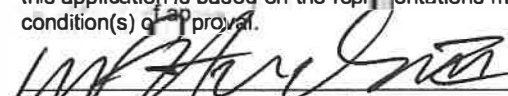
Phone Number : 719-651-9152
FAX Number : N/A
Email Address : Herebic5@msn.com

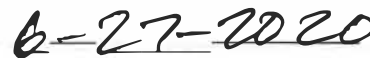
ENGINEER INFORMATION

Company : LSC Transportation Consultants, Inc.
Name : Jeffrey C. Hodsdon
Colorado P.E. Number : 31684
Mailing Address : 2504 E. Pikes Peak Ave
Suite 304
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OWNER, APPLICANT, AND ENGINEER DECLARATION

To the best of my knowledge, the information on this application and all additional or supplemental documentation is true, factual and complete. I am fully aware that any misrepresentation of any information on this application may be grounds for denial. I have familiarized myself with the rules, regulations and procedures with respect to preparing and filing this application. I also understand that an incorrect submittal will be cause to have the project removed from the agenda of the Planning Commission, Board of County Commissioners and/or Board of Adjustment or delay review until corrections are made, and that any approval of this application is based on the representations made in the application and may be revoked on any breach of representation or condition(s) of approval.


Signature of owner (or authorized representative)


Date

Engineer's Seal, Signature
And Date of Signature



PCD File No. SP-195

DEVIATION REQUEST (Attach diagrams, figures, and other documentation to clarify request)

A deviation from the standards of or in Section **2.3.2** of the Engineering Criteria Manual (ECM) is requested.

Identify the specific ECM standard which a deviation is requested:

2.3.2 Design Standards by Functional Classification

Table 2-5: Roadway Design Standards for Rural Collectors and Locals

Criteria for a Rural Major Collector Roadway

- Design speed/posted speed
- Minimum centerline horizontal curve radius
- Vertical curve K-values
- Design ADT

State the reason for the requested deviation:

Furrow Road is proposed to extend through the Grandwood Ranch development to connect to an existing Major Arterial, Higby Road (consistent with the *2016 Major Transportation Corridors Plan (MTCP) Update*). Due to existing steep and varying terrain, northern and southern connection points that impose restricting geometry, and designated wetlands and Preble mouse habitat a reduced horizontal curve radius and reduced speed limit for a major rural collector is being requested. Additional reasons for the requested deviation include:

- Challenging topography on the site.
- The significant elevation difference south to north across the site, with over 100-feet of fall in elevation from Minglewood Trail to Higby Road, combined with the relatively short, fixed horizontal distance between Furrow/Minglewood and Higby Road and the fixed intersection location of Furrow/Minglewood.
- The goal of preserving as much as possible, the natural land features within the site.

A potential ADT of 5,500 vehicles/day (long-term) instead of 3,000 vehicles/day

Explain the proposed alternative and compare to the ECM standards (May provide applicable regional or national standards used as basis):

The following alternatives to Rural Major Collector standards are requested, per criteria in Table 2-5 of the ECM. Please refer to the LSC Exhibit No. 4 and the attached plan & profile exhibit by Matrix Design Group:

- Design speed on Furrow Road of 40 mph instead of 50 mph
- Posted speed limit on Furrow Road of 35 mph instead of 45 mph
- Minimum centerline curve radius of 600 feet instead of the prescribed 930 feet
- Minimum K-value for a collector with a design speed of 40 mph is 44 for crest curves and 64 for sag curves. The proposed K-values for both crest and sag curves along Furrow Road is 42 with stop conditions at the intersection of Higby Road/Furrow Road and Furrow Road/Minglewood Trail.
- Design elements/features often included along higher volume roadways can be incorporated into this design. Horizontal curve warning signs (where necessary), roadside markers for nighttime visibility, shoulder and centerline pavement markings in combination with the proposed standard shoulder and ROW width (which allows for additional sight distance across horizontal curves) will allow this roadway to accommodate a potential ADT of 5,500 vehicles/day (long-term)

The following proposed intersection spacings are covered in Deviation #1 – Intersection Spacing

- Intersection spacing on Furrow Road of 707 feet between Copper Valley Court and Higby Road instead of 1/4-mile
- Intersection spacing on Furrow Road of 879 feet between Copper Valley Court and Minglewood instead of 1/4-mile

Note: This deviation is for the section from the Grandwood property line south to Higby Road. Please refer to the separate deviation prepared by Matrix Design Group for the section of Furrow just north of the Grandwood property line. **For reference only**, the following applies to the section north of the Grandwood property line in order to allow room for the construction of retaining walls and grading operations, a modified Rural Major Collector segment is proposed for the extents of improvements within the existing Timberview Subdivision, Filing 2. The proposed segment replaces the typical roadside swale with curb and gutter to properly convey stormwater runoff and to allow feasible space for retaining wall construction without disturbing adjacent property owners. Curb and gutter will also serve as protection against erosion at the base of the retaining walls. Once the Furrow Road extension reaches the Grandwood Ranch development site, the standard EPC Rural Major Collector cross-section will be assumed for the remainder of the roadway extension.

LIMITS OF CONSIDERATION

(At least one of the conditions listed below must be met for this deviation request to be considered.)

- ☐ The ECM standard is inapplicable to the particular situation.
- ☒ Topography, right-of-way, or other geographical conditions or impediments impose an undue hardship and an equivalent alternative that can accomplish the same design objective is available and does not compromise public safety or accessibility.
- ☒ A change to a standard is required to address a specific design or construction problem, and if not modified, the standard will impose an undue hardship on the applicant with little or no material benefit to the public.

Provide justification:

- The existing speed limit of Furrow Road within Timberview Subdivision (to the north) is 25 mph. Transitioning from the EPC standard of a 40-mph posted speed limit to a 25-mph posted speed limit may be challenging given vertical curve constraints. In addition, as a minor arterial, Higby Road is currently posted at a 35 mph speed limit adjacent to the site. With existing adjacent roadway speed limits, posting the proposed Furrow Road at 35 mph would be consistent with adjacent roadway speed postings and vehicular travel.
- If a horizontal curve radius of 930 feet were to be used (as required for a Major Collector), Furrow Road would have to shift west to incorporate the geometry. Shifting the roadway to create a larger radius would reduce lots west of Furrow Road below the 2.5-acre minimum lot size. This shift would also result in improvements encroaching into designated Preble mouse habitat on the west side of Furrow Road.
- The section of Furrow just north of the Grandwood property line contains several existing horizontal curves, each with horizontal radii between approximately 400' – 500'. Given these radii and 80' ROW, this section to the north through Timberview would not be able to meet the criteria for a Rural Major Collector either. The roadway is currently posted at 25 mph, but following the connection, the County may find it reasonable to repost for a speed limit between 30-35 mph. This would be comparable to or slightly lower than what is proposed for the section through Grandwood.
- Geometry previously shown with a 93-foot horizontal curve radius and 90-foot ROW resulted in public ROW encroaching into existing private lots within Timberview Subdivision. Please reference attached exhibit for further explanation on geometric constraints.
- Existing conditions along the Furrow Road alignment show approximately 113-feet of vertical fall resulting in an average 7% slope. With El Paso County criteria of 4% approach grade for 100-feet and, at a design speed of 40 mph, a K-value of 44 for crest curves and 64 for sag curves, there is not enough horizontal room to allow the vertical design of Furrow Road to meet Criteria completely. The attached exhibits provide a visual of the proposed vertical design with the approved deviation and with attempts at meeting Criteria. Using K-values with the proposed Furrow Road results in short and steep tangent sections between curves that exceed maximum limits and does not allow for proper approach grades at intersections for the required distance.

CRITERIA FOR APPROVAL

Per ECM section 5.8.7 the request for a deviation may be considered if the request is **not based exclusively on financial considerations**. The deviation must not be detrimental to public safety or surrounding property. The applicant must include supporting information demonstrating compliance with **all of the following criteria**:

The deviation will achieve the intended result with a comparable or superior design and quality of improvement.

- The roadway will meet the County's geometric criteria for cross section and ROW width for a Rural Major Collector and design speed and horizontal curvature for a Rural Minor Collector. This roadway will be able to accommodate the projected traffic volumes and will add a significant benefit to the citizens and traveling public in this area – especially long term once the connection from Gleneagle to the south is established.
- The proposed horizontal curve radius (600 feet) exceeds the County's Minor Collector criteria of 565 feet.
- For comparison and perspective of roadway design/criteria for Collector roads, the City of Colorado Springs Engineering Criteria Manual states for a collector, at a design ADT of 1,500 – 5,000, the minimum required horizontal alignment radius is 335-feet with a posted speed limit of 30 mph. The proposed Furrow Road minimum horizontal radius of 600-feet far exceeds City criteria proving to satisfy design and quality improvements. Also, for comparison, the City of Colorado Springs' criteria for a Minor Arterial at a posted speed limit of 40 mph and an ADT of 5,000 – 25,000 requires a minimum radius of 765 feet.
- Posting Furrow Road at 35 mph will be more conducive to surrounding development, existing roadway and vehicular travel.
- The proposed horizontal curve radius and posted speed limit will not obstruct or impede on short- and long-term travel.
- A stop condition at the north and south end of the proposed Furrow Road will reduce travel speeds along Furrow Road and reduce impact of the reduced horizontal curve radius and the slightly reduced K-value on vertical curves. With reduced speed limits and stop conditions at both ends of Furrow Road, design will meet the intent of the Criteria. Reduced vertical curves along Furrow Road will allow the approach criteria to be met and ultimately allow the connection of Furrow Road and Higby Road as planned in the County's MTCP.

The deviation will not adversely affect safety or operations.

- A projected long total ADT of 5,500 vehicles/day (vpd) is projected for this roadway segment. Almost all the traffic would be background traffic and **the resulting background traffic will depend on many factors**. One intersection with light turning volumes is proposed for this section.
- The proposed cross street intersection being constructed with this site will be a minor intersection, and although the spacing is less than ¼ mile, this intersection will not need to be signalized and will have minimal impact on through traffic. Access has been minimized to the extent possible. As such, there will be minimal interference to the background traffic traveling through this subdivision.
- Horizontal curve warning signs (where necessary), roadside markers for nighttime visibility, shoulder and centerline pavement markings in combination with the standard shoulder and ROW width (which allows for additional sight distance across horizontal curves) will allow this roadway to accommodate a potential ADT of 5,500 vehicles/day (long-term) despite the lower design speed.
- The “design ADT” for the rural major collector is a guideline and does not indicate that higher ADT cannot be accommodated with respect to roadway volume carrying capacity
- The horizontal alignment proposed will be consistent with the proposed design speed. The proposed lower design speed is appropriate given the proposed horizontal geometry achievable given the topography, the intersection spacing and horizontal alignment of Furrow Road to the north through Timberview. It is also appropriate considering the given the grades. El Paso County has varying terrain. While the standard design speed of a Rural Major Collector in Ellicott, for example, may be easy to achieve in different parts of the County, this topography and character of this area is significantly different from the eastern plains and is surrounded by neighborhoods.
- A “sharp curve ahead” sign could be installed in advance of the horizontal curve in question on Furrow Road.
- Both ends of the proposed Furrow Road are stop conditions. Stop conditions at Higby Road and Minglewood Trail and steep grads along Furrow Road will create a condition that inhibits excessive speeds and promote safer vehicular travel north and south. Stop conditions and reduced speeds do not result in adverse affects due to a reduced horizontal curve radius and K-value for vertical curves.
- Reduced K-values for vertical curves for Furrow Road will allow the approach grade criteria to be met which will provide safe travel while approaching intersections along Furrow Road.
- The reduction in crest curve k-value is extremely minor and will not affect safety or operations of passengers traveling over crest curves. The reduction in sag curve K-value will not adversely affect safety and operations with reduced speeds and stop conditions surrounding the proposed road. Speeds will further be reduced with “sharp curve ahead” signage and further reduce any impacts that might result in reduced K-value for sag curves. A two-way stop condition will be provided along Copper Valley Court as well.

The deviation will not adversely affect maintenance and its associated cost.

The deviation requests will not adversely affect maintenance cost for the following criteria for a Rural Major Collector roadway (per ECM Table 2-5: Roadway Design Standards for Rural Collectors and Locals):

Design speed/posted speed

- The design speed/posted speed is not anticipated to affect maintenance costs. The lower speeds would not affect the ability of County maintenance vehicles and snowplows to complete their work.

Horizontal and Vertical Geometry

- The horizontal and vertical geometry design would not affect the ability of County maintenance vehicles and snowplows to complete their work. Vertical and horizontal curves are near design criteria and does not create extreme conditions for maintenance.

Design ADT

- A higher projected ADT has the potential to increase the ESAL value and affect pavement design. An ADT of 5,500 is in the range of a rural Minor Arterial. This should be considered when completing the pavement design.

Intersection spacing criteria

Deviating from the ECM's intersection spacing criteria will not affect maintenance costs on the subject roadways

The deviation will not adversely affect aesthetic appearance.

- The aesthetic appearance will not be adversely affected, as the roadway will be paved, with County and MUTCD standard pavement markings that would be consistent with County roads.
- The deviation would result in significantly better aesthetic appearance than a resulting road built to all Major Collector standards as the amount of grading and disturbance of the topography would result in significantly higher impact. See attached plan & profile exhibit by Matrix Design Group.

The deviation meets the design intent and purpose of the ECM standards.

- Proposed modifications to the above-referenced design elements of the Rural Major Collector classification would be appropriate for this particular section of Furrow Road.
- Horizontal curve warning signs (where necessary), roadside markers for nighttime visibility, shoulder and centerline pavement markings in combination with the standard shoulder and ROW width (which allows for additional sight distance across horizontal curves) will allow this roadway to accommodate a potential ADT of 5,500 vehicles/day (long-term) despite the lower design speed. The "design ADT" for the rural major collector is a guideline and does not indicate that higher ADT cannot be accommodated with respect to roadway volume carrying capacity.
- The projected future potential ADT will be accommodated by the proposed Furrow Road design. The proposed horizontal curve and speed limit will not limit conveyance through the site.
- The horizontal and vertical alignment proposed will be consistent with the proposed design speed and stop conditions. The proposed lower design speed is appropriate given the proposed horizontal and vertical geometry achievable given the topography, the intersection spacing and horizontal alignment of Furrow Road to the north through Timberview. It is also appropriate considering the given the existing grades. El Paso County has varying terrain. While the standard design speed of a Rural Major Collector in Ellicott, for example, may be easy to achieve in different parts of the County, this topography and character of this area is significantly different from the eastern plains and is surrounded by neighborhoods.

The deviation meets the control measure requirements of Part I.E.3 and Part I.E.4 of the County's MS4 permit, as applicable.

The requested deviation meets control measure requirements of the MS4 Permit. Grading and Erosion Control Plans and SWMP Report will provide protection of existing conditions and erosion control measures per standards.

REVIEW AND RECOMMENDATION:

Approved by the ECM Administrator

This request has been determined to have met the criteria for approval. A deviation from Section _____ of the ECM is hereby granted based on the justification provided.

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Denied by the ECM Administrator

This request has been determined not to have met criteria for approval. A deviation from Section _____ of the ECM is hereby denied.

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ECM ADMINISTRATOR COMMENTS/CONDITIONS:

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1.1. PURPOSE

The purpose of this resource is to provide a form for documenting the findings and decision by the ECM Administrator concerning a deviation request. The form is used to document the review and decision concerning a requested deviation. The request and decision concerning each deviation from a specific section of the ECM shall be recorded on a separate form.

1.2. BACKGROUND

A deviation is a critical aspect of the review process and needs to be documented to ensure that the deviations granted are applied to a specific development application in conformance with the criteria for approval and that the action is documented as such requests can point to potential needed revisions to the ECM.

1.3. APPLICABLE STATUTES AND REGULATIONS

Section 5.8 of the ECM establishes a mechanism whereby an engineering design standard can be modified when if strictly adhered to, would cause unnecessary hardship or unsafe design because of topographical or other conditions particular to the site, and that a departure may be made without destroying the intent of such provision.

1.4. APPLICABILITY

All provisions of the ECM are subject to deviation by the ECM Administrator provided that one of the following conditions is met:

- The ECM standard is inapplicable to a particular situation.
- Topography, right-of-way, or other geographical conditions or impediments impose an undue hardship on the applicant, and an equivalent alternative that can accomplish the same design objective is available and does not compromise public safety or accessibility.
- A change to a standard is required to address a specific design or construction problem, and if not modified, the standard will impose an undue hardship on the applicant with little or no material benefit to the public.

1.5. TECHNICAL GUIDANCE

The review shall ensure all criteria for approval are adequately considered and that justification for the deviation is properly documented.

1.6. LIMITS OF APPROVAL

Whether a request for deviation is approved as proposed or with conditions, the approval is for project-specific use and shall not constitute a precedent or general deviation from these Standards.

1.7. REVIEW FEES

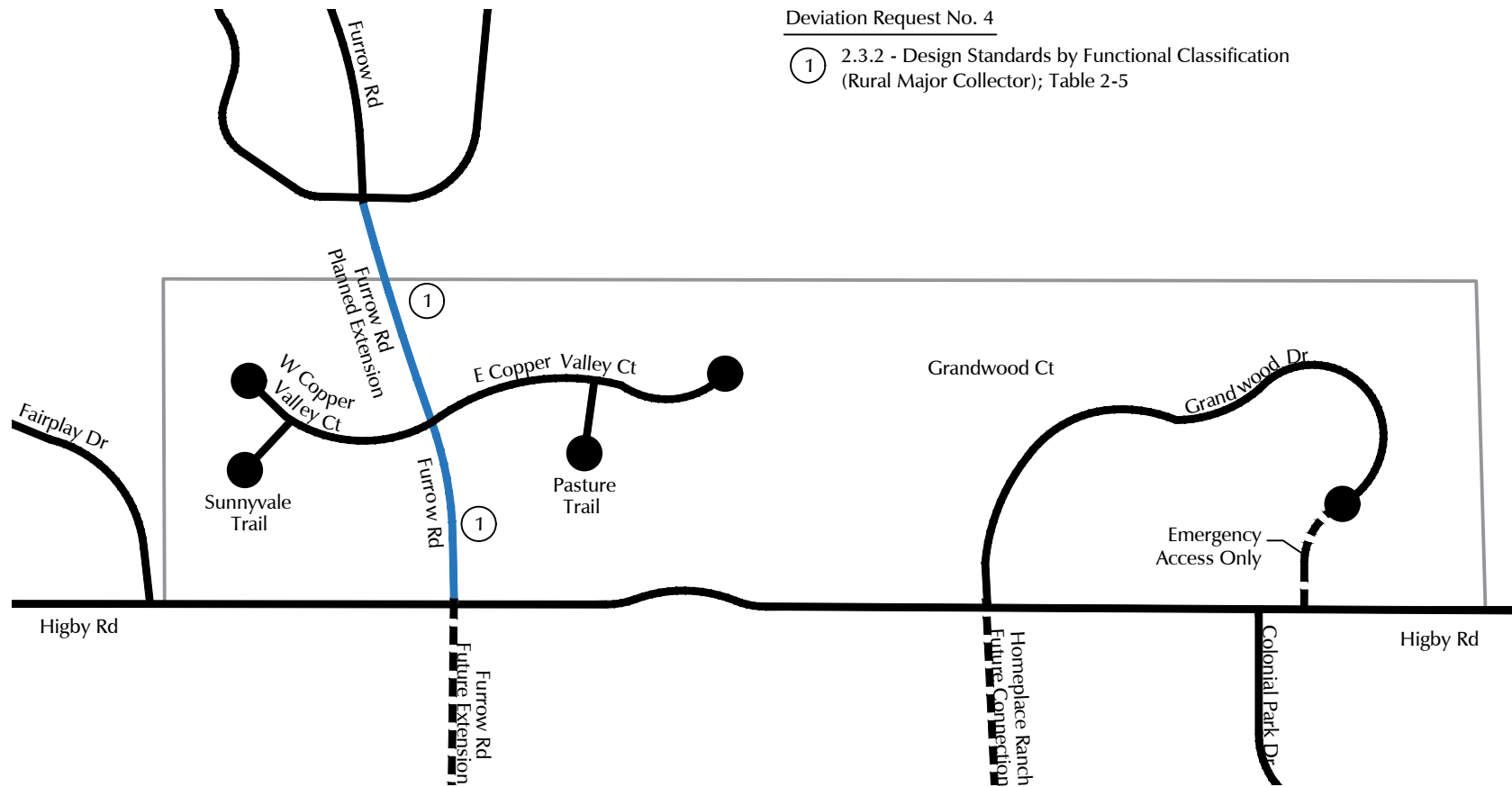
A Deviation Review Fee shall be paid in full at the time of submission of a request for deviation. The fee for Deviation Review shall be as determined by resolution of the BoCC.

Deviation Request No. 4

① 2.3.2 - Design Standards by Functional Classification
(Rural Major Collector); Table 2-5



Not to
scale



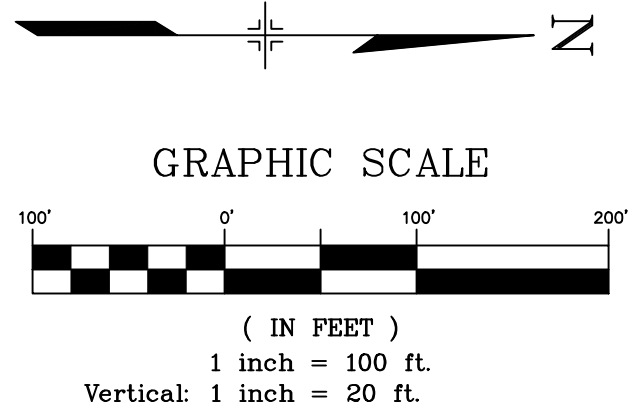
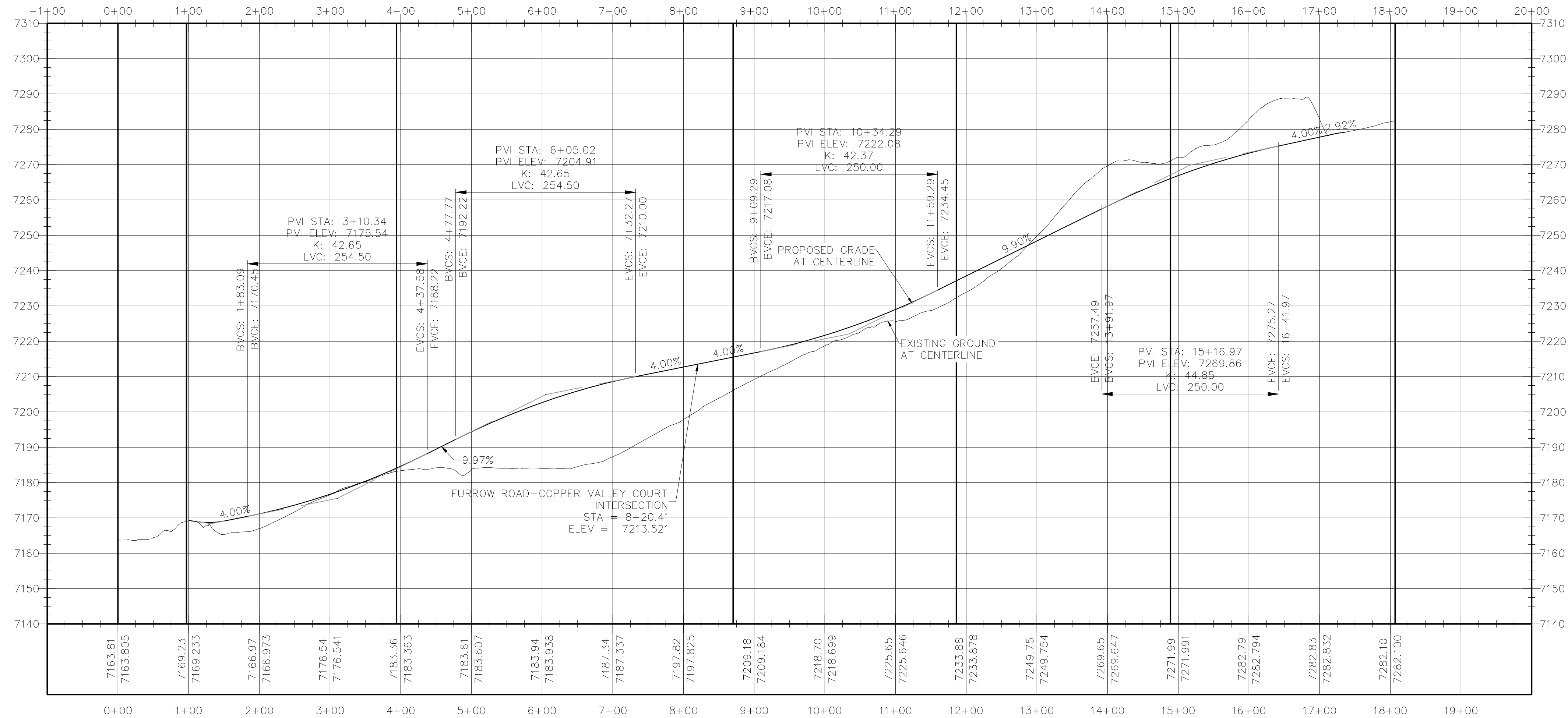
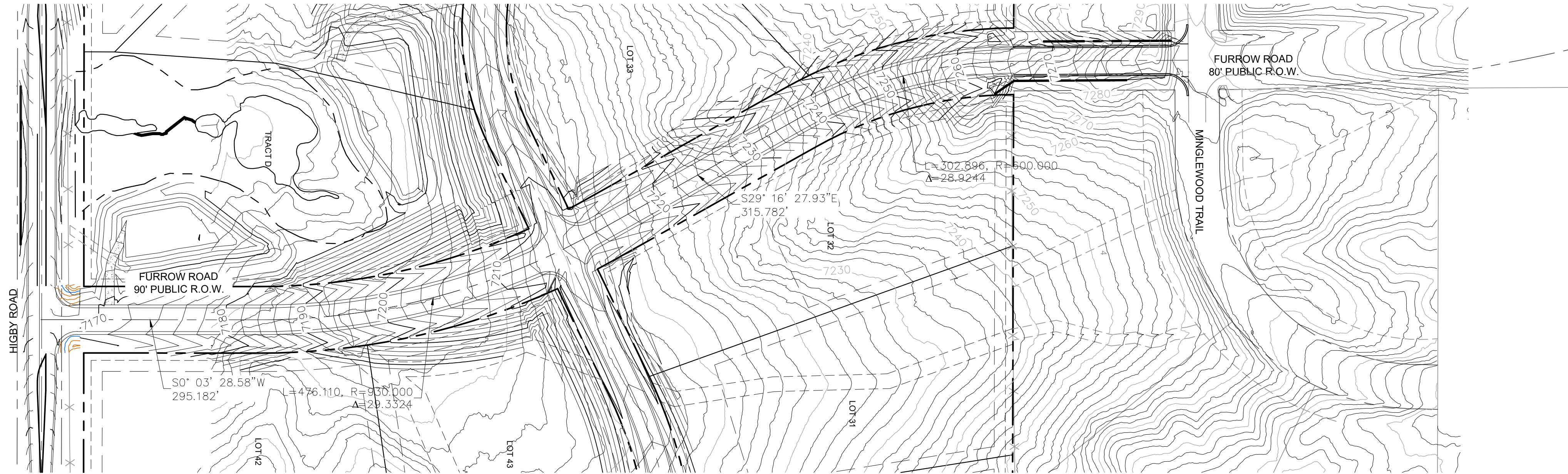
- Existing roadway
- - - Proposed roadway (including future roadways by others)
- Portion of roadway for which deviation is requested
- Site property boundary

Deviation Exhibit 4

Rural Major Collector Design Standards

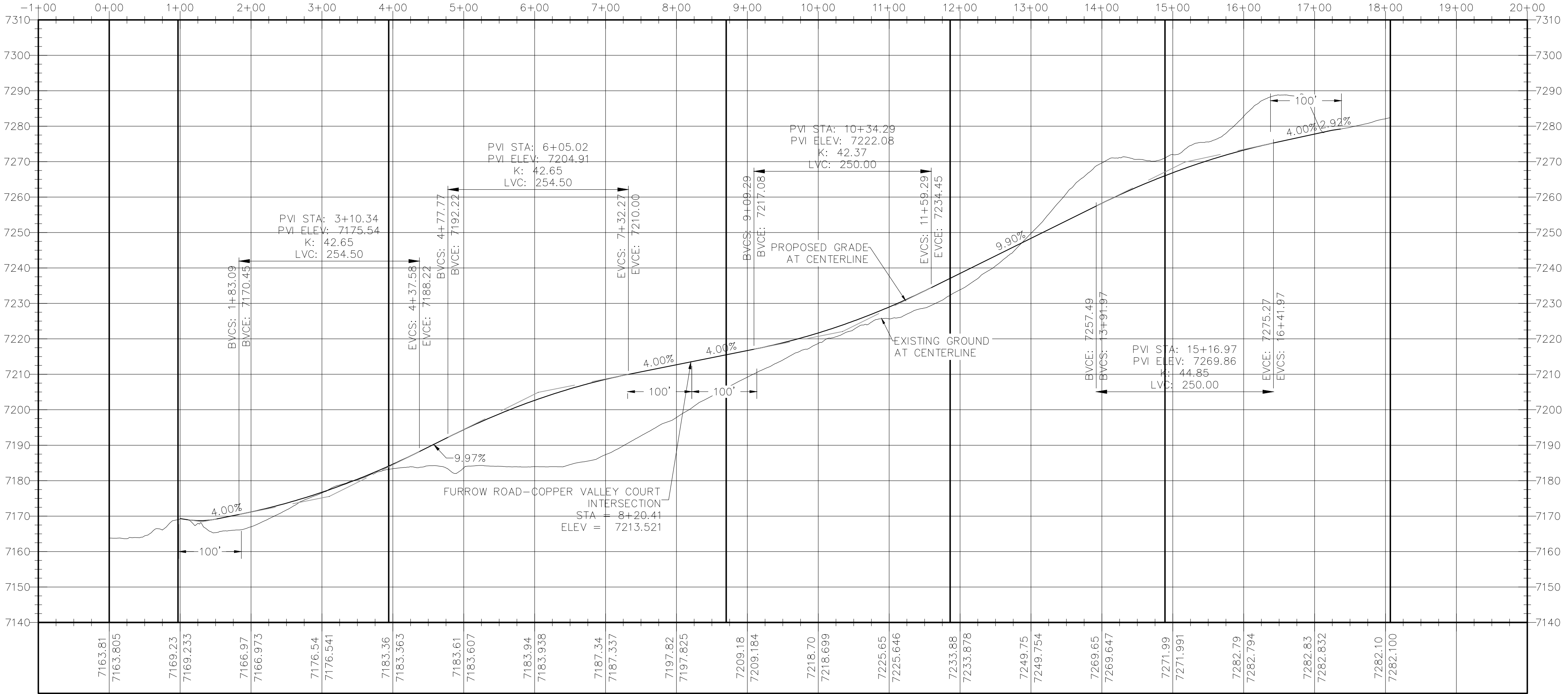
Grandwood Ranch (LSC# 185020)

GRANDWOOD RANCH - FURROW ROAD
DEVIATION REQUEST EXHIBIT

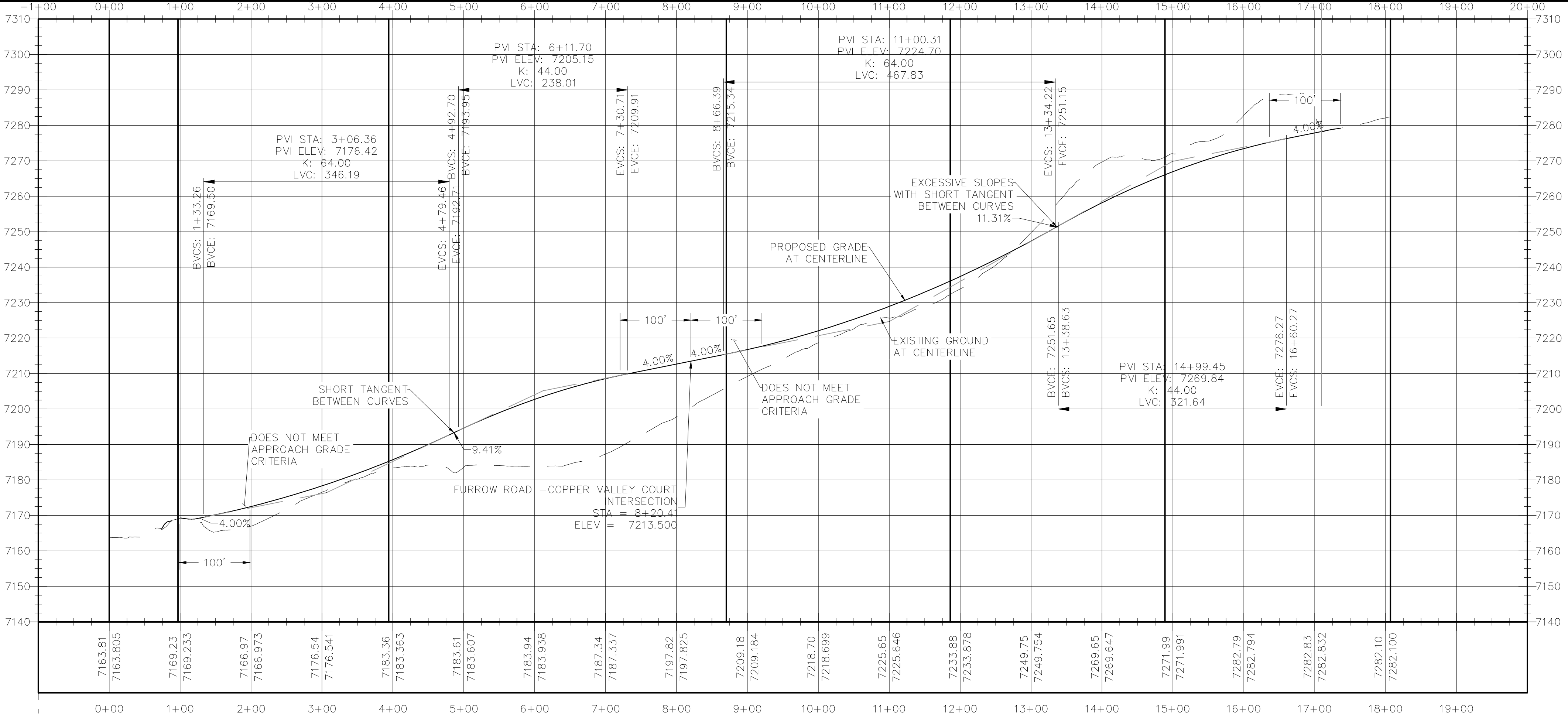


GRANDWOOD RANCH - FURROW ROAD
VERTICAL CURVE DEVIATION REQUEST EXHIBIT

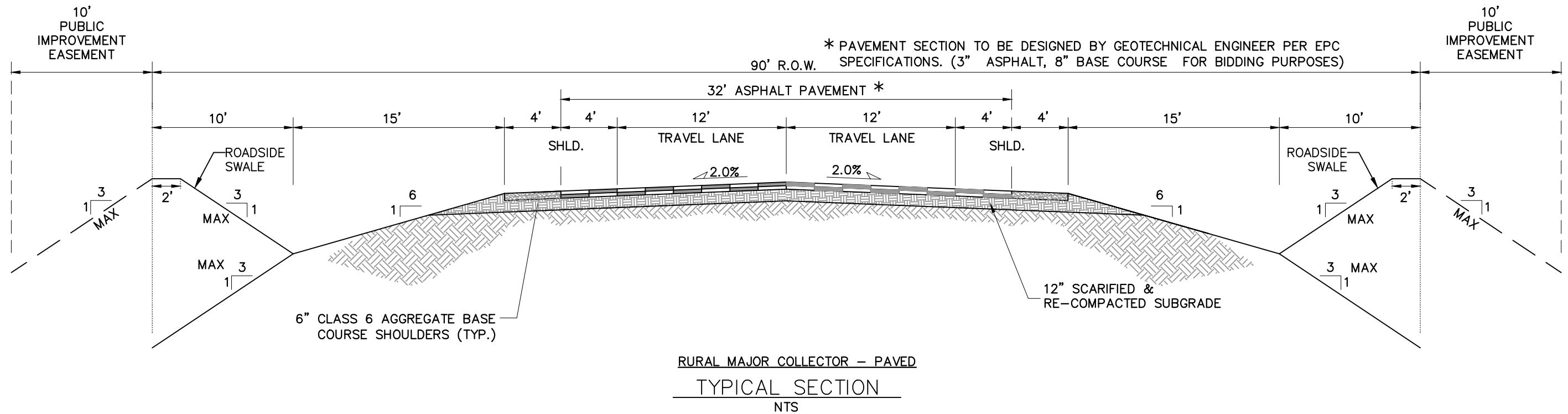
FURROW ROAD PROFILE
PROPOSED K-VALUES

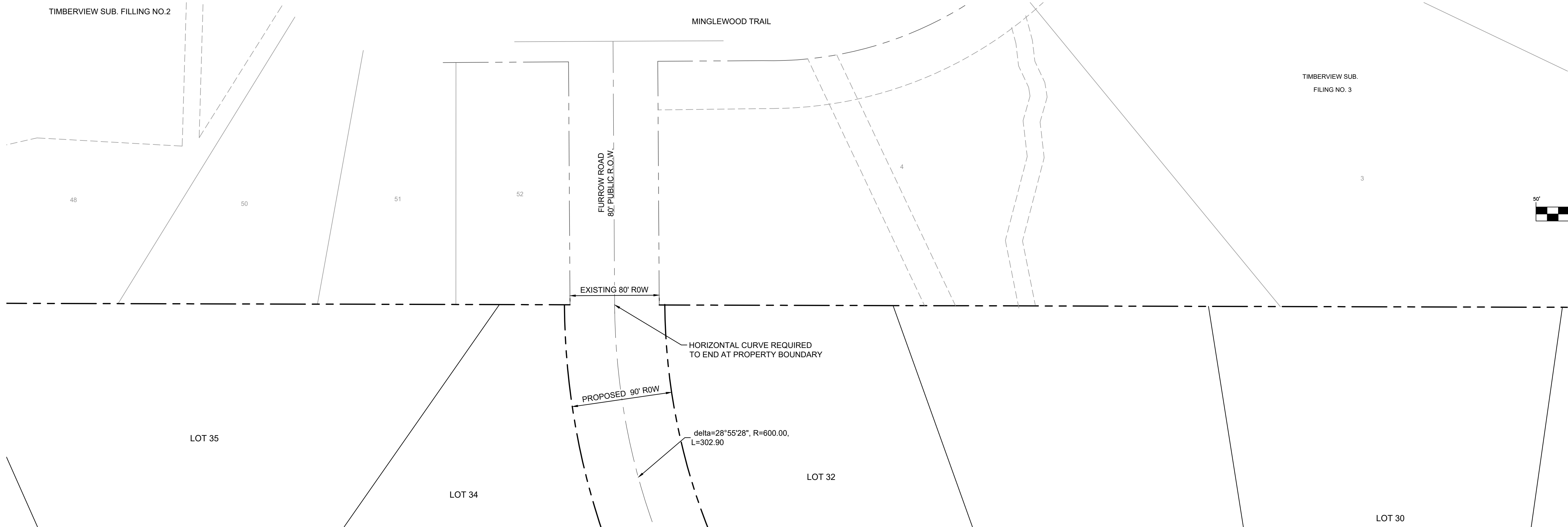


FURROW ROAD PROFILE
K-VALUES PER CRITERIA

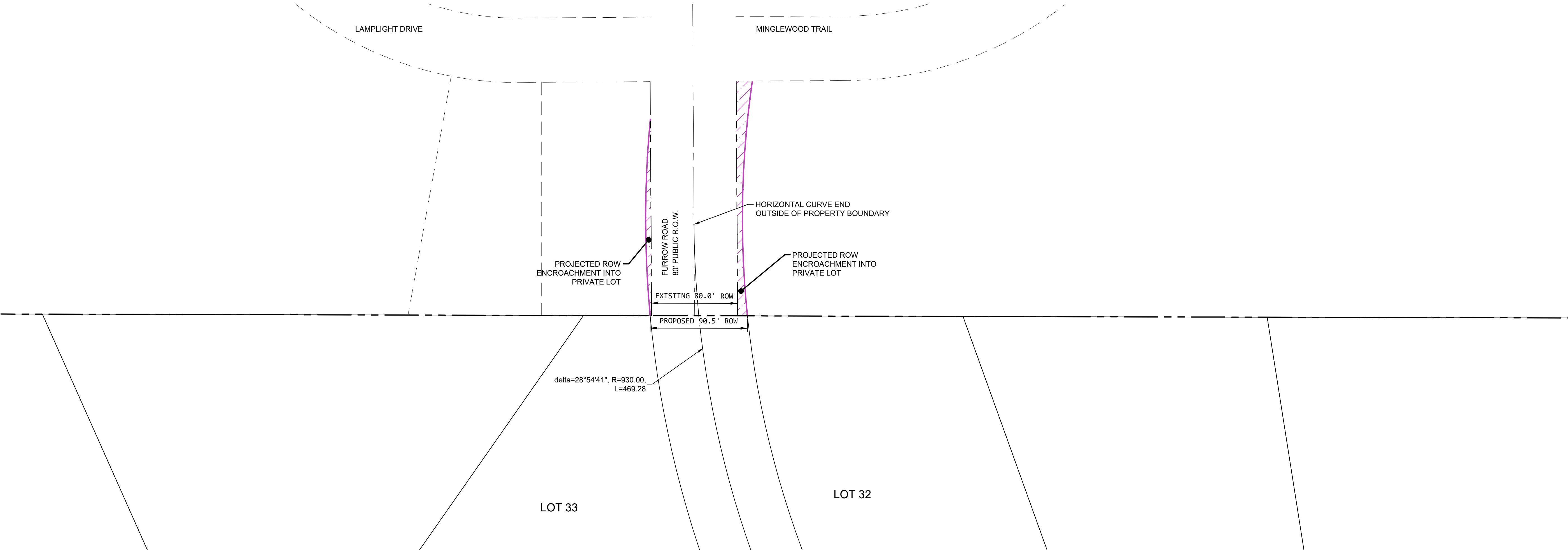


GRANDWOOD RANCH - FURROW ROAD SECTION DEVIATION REQUEST EXHIBIT





FURROW ROAD - CURRENT PROPOSED IMPROVEMENTS GEOMETRY



FURROW ROAD - PREVIOUSLY PROPOSED IMPROVEMENTS GEOMETRY