

December 16, 2005

Mr. William Merrell, P.E.
LANDesign
244 North 7th Street
Grand Junction, CO 81501

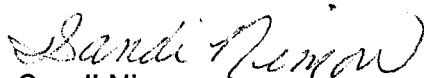
Re: Design Exception #DE32-05 - 2523 Highway 6&50 – Rimrock/Hansen Centerline
Curve Radius

Dear Mr. Merrell:

Please find attached the committee's decision for the above referenced request. This design exception has been approved, as **modified**. You may use this decision to proceed through the development review process for this exception.

If you have any questions concerning this decision, please feel free to contact the Development Engineer in charge of your project or Tim Moore, Public Works Manager at (970) 244-1557.

Sincerely,


Sandi Nimon
Sr. Administrative Assistant

Xc: Rick Dorris, Development Engineer (256-4034)

DESIGN EXCEPTION #DE 32-05

To: Mark Relph, Director of Public Works & Utilities
Bob Blanchard, Director of Community Development
Rick Beaty, Fire Chief

From: Tim Moore, Public Works Manager

Copy to: Rick Dorris, Development Engineer

Cc: Lori Bowers

Date: November 23, 2005

RE: 2523 Highway 6 & 50 - Rimrock/Hanson Centerline Curve Radius

DESCRIPTION OF THE SITUATION

The applicant is preparing to submit a site plan and a simple subdivision for the redevelopment of the Hanson Equipment site located at 2523 Highway 6&50 (I-70B). The property is presently used as a business location for Hanson Equipment, Inc. and is located adjacent to Rimrock Marketplace.

Site Description:

A TEDS Manual exception for Alignments – Curve Radii is requested for the proposed curve geometry of the Bogart Lane – Independent Ave. transition. The TEDS requires a horizontal centerline curve radius of 300' for commercial streets. The proposed design utilizes a centerline curve radius of 150' for two curves in the transition.

EXCEPTION CONSIDERATIONS

- 1. Will the exception compromise safety?**
Staff does not believe the proposed exception will create a safety issue. Bogart Lane will function as an internal street in a shopping center. There are no plans to extend Bogart Lane beyond the proposed terminus in the shopping center.
- 2. Have other alternatives been considered that would meet the standard?**
The developer did consider a number of alternatives including one that meets the TEDS manual.
- 3. Has the proposed design been used in other areas?**
There are similar areas with the reduced radii.

4. Will the exception require CDOT or FHWA coordination?

No

5. Is this a one-time exception or a manual revision?

This would be a one-time exception.

Staff Recommendation

The AASHTO design for 25 MPH would allow for a 165' radius. This speed seems more appropriate for this specific condition. The purpose for the minimum curve radius of 300' is to allow adequate stopping sight distances for vehicle speeds of 30 MPH. There is merit to having a lower speed on Bogart Lane in this area. Independent Avenue serves as a local commercial access and terminates at a stop condition where Bogart Lane meets the internal street network for the shopping center. If this were a portion of street that would continue in the future, it might be prudent to require the 30 MPH design. However, it will not, and staff recommends the AASSHTO design standard of a 165' radius.

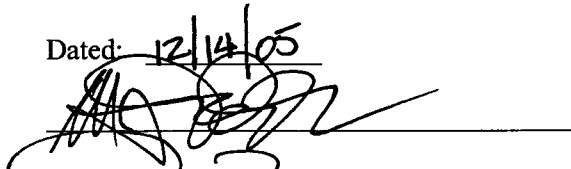
Recommended by: _____

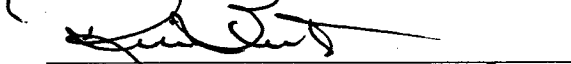
Approved as Requested: _____

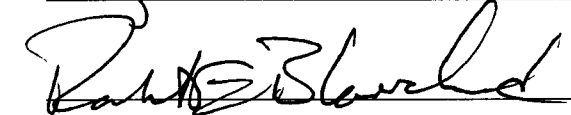
Approved as Modified:

Denied _____

Dated: 12/14/05








VE#32-05 Rimrock Hanson Curve Radii

Memorandum

TO: Tim Moore
FROM: Rick Dorris 
DATE: November 15, 2005
SUBJECT: Rimrock/Hanson TEDS exception request

The TEDS requires a 300' centerline radius for local commercial streets. They are requesting two 150' radius curves with a short tangent in between them. I had them perform a sight distance analysis to determine if the alternatives are safe. The 300' curve available sight distance translates to a drive speed of 43.5 MPH where as the two 150' radius curves translate to a 37 MPH speed; this according to Landesign's analysis which conforms to the stopping sight distance tables in the TEDS.

There is merit in trying to keep speeds slower in this area which lends the design to the two 150' curves. On the other hand 300' is the standard and they can accommodate it. The existing Bogart lane was configured as it exists because it was the best that could be done on Rimrock without having control of the Hanson property and without further burdening the original Rimrock development.

I can support the two 150' curve design, since sight distance is adequate, but we should dictate they go with Plan #1 since there is more separation between the highway and Bogart/Independent.

Three copies are attached for your review.

TEDS EXCEPTION REQUEST

2523 Highway 6 & 50

November 2005

Submitted By:

**THF Grand Junction Development, LLC
2127 Innerbelt Business Center Dr., Ste. 200
St. Louis, MO 63114**

**TEDS Exception Request
for
2523 Highway 6 & 50**

Introduction

This document outlines a request for an exception to the 'Alignments – Curve Radii' defined in Section 5.1.4.2 of the TEDS Manual for a proposed commercial project located at 2523 US Highway 6 & 50.

Background

The developer is preparing to submit a site plan/simple subdivision application to the City of Grand Junction for developing the site as a new multi-tenant retail center with an additional small commercial pad for sale/lease. The property is presently used as the business location for Hanson Equipment, Inc. and is located adjacent to Rimrock Marketplace.

During a pre-design meeting, City staff indicated that the present curve located where the north end of Bogart Lane connects to the Frontage Road is unsafe and should be re-aligned as part of the proposed development. This curve was constructed as part of the Rimrock Marketplace construction.

Proposed Exception

A TEDS Manual exception for Alignments - Curve Radii is requested for the proposed curve geometry of the Bogart Lane/Independent Avenue transition. The TEDS Manual requires a horizontal centerline curve radius of 300' for commercial streets. The proposed design utilizes a centerline curve radius of 150' for two curves in the transition.

Alternatives Considered

Plan1 and Plan 2 show the proposed reconfiguration of the Bogart Lane - Independent Avenue - Frontage Road area. The only difference is the location of the bike path. Note that the Frontage Road is proposed to connect to Independent Avenue in a tee intersection, and will not connect directly to Bogart Lane.

Following is discussion and justification for the proposed horizontal alignment/curve radii for the Bogart Lane and Independent Avenue transition.

- The intent of the proposed area street design is to close off the existing US Highway 6 & 50 access and to reconfigure the Bogart Lane - Independent Avenue - Frontage Road area. The result will be a much safer area for traffic flow due to the elimination of the hazards associated with traffic movements to and from the highway. In addition, traffic flow and safety in the Independent Avenue - Frontage Road area will be enhanced with the new street configuration using a tee intersection and a stop sign.
- The existing street geometry where the north end of Bogart Lane connects to the Frontage Road is unsafe. The centerline radius is approximately 62' and the curve actually bends to the east of the Bogart Lane centerline. The proposed alignment is much gentler and safer with two 150' curves separated by a short tangent, with no bend to the east.
- The Frontage Road/Bogart Lane has been moved fifteen feet farther back from the existing CDOT Right-of-Way in order to provide room to widen Highway I-70B.
- Sight distances would be adequate when it is considered that there will be no obstructions to block the line of sight throughout the entire curve.
- Other criteria that needs to be considered is that Bogart Lane is essentially in a shopping center, where there will a considerable amount of pedestrian traffic. The speed limit desired would probably be 25 mph, for which the 150' radius curve is adequate. The tighter curve would tend to create some traffic calming, which would be beneficial in an area where pedestrians are likely to cross the road at any place.

Alternate Numbers 1 & 2 shows the effect of a 300 feet radius on this intersection. There are several negatives to these layouts. The Frontage Road comes into the Bogart Lane/Independent Road street while it is still in a curve, so the angle of the intersection is slightly odd. With a 300 feet radius, there will be nothing to slow traffic down, so it will flow considerably faster through the shopping center. This would put pedestrians at a higher risk, and make the intersection with the Frontage Road more dangerous. The same could be said about the three entrances into the new shopping center.

Another factor to consider is that this design would have us removing a considerable portion of the recently constructed Bogart Lane. Obviously that portion of Bogart Lane was not considered to be lacking in safety or capacity when it was approved for construction.

Alternate Number 3 also has a 300 feet radius, but this one extends into the Frontage Road. Obviously this design doesn't allow for expansion of Highway I-70B. The intersection with Independent Road would be potentially dangerous, and there would be no traffic calming, so all of the problems with Alternates 1 & 2 would also apply here.

Alternate Number 4 is an attempt to carry traffic through the site in a different fashion. We have an intersection of the Frontage Road with Independent Road that would be very dangerous and force stop signs in all directions. There are also several curves that we treated as intersections. About the only good feature about this layout is that traffic would be calmed.

From my clients perspective this layout would be completely undesirable due to the parking problems it creates.

Proposed Design

The requested alignment - curve radii is shown in detail in Plans 1 and 2. The on-site layout shown in these plans is preliminary only as far as building location, parking stalls, and landscaping.

Impacts of Change

Granting this exception request is not anticipated to have adverse impacts on traffic flow or public safety.

NO.	REVISION	DATE

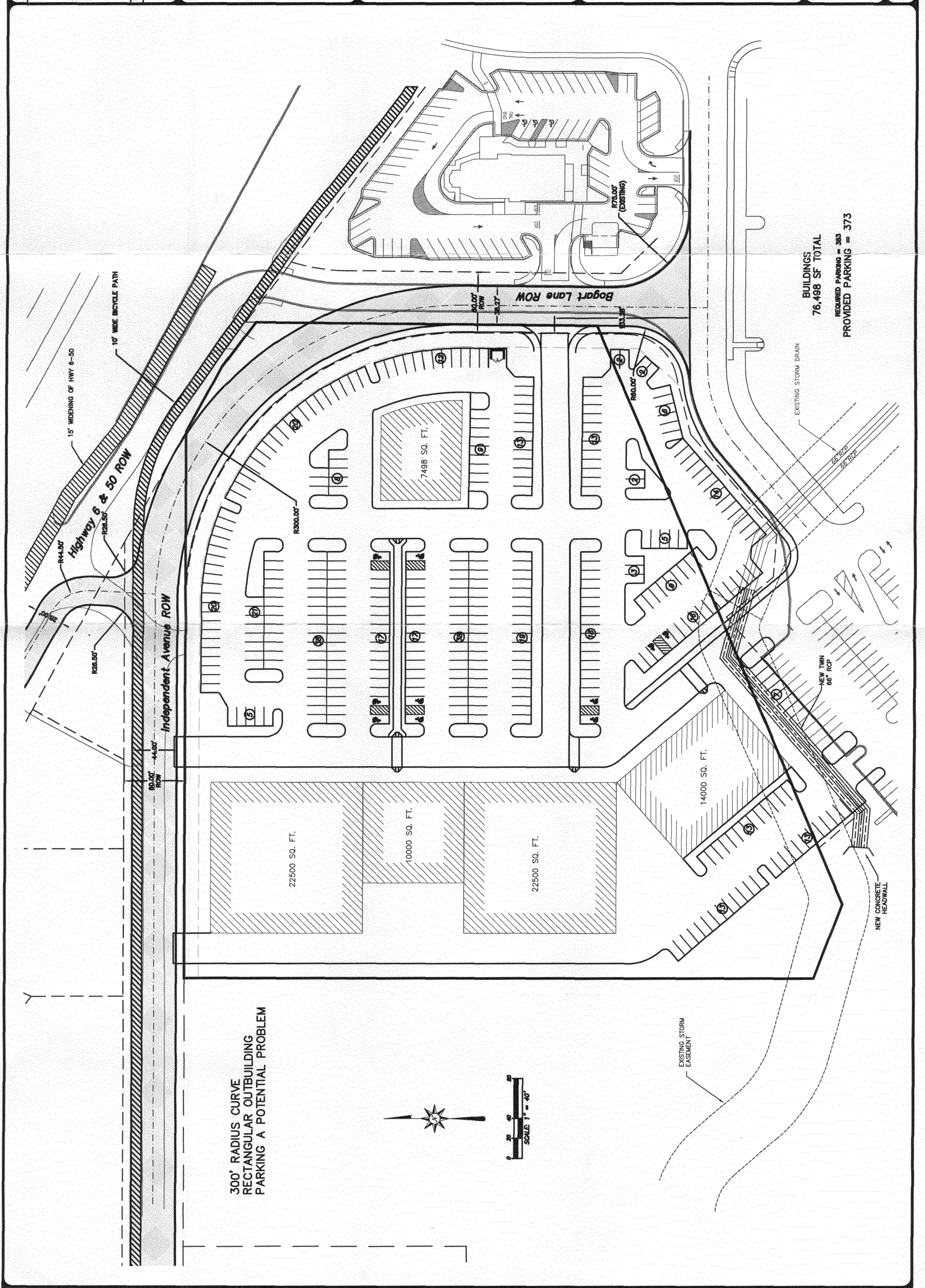
ALTERNATE #1

RIMROCK-HANSON

LANDesign
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 244 NORTH 7th STREET
 GRAND JUNCTION, COLORADO 81501 (970) 246-4088

PROJECT NO.: 205077
 FILE NAME: RIMROCK-HANSON-205077
 DATE: 10/24/05
 DRAWN: ARC
 CHK'D: WSM

SHEET 1 OF 1



BUILDINGS
 76,498 SF TOTAL
 REQUIRED PARKING = 303
 PROVIDED PARKING = 373

DATE:	NO.	REVISION:	BY:

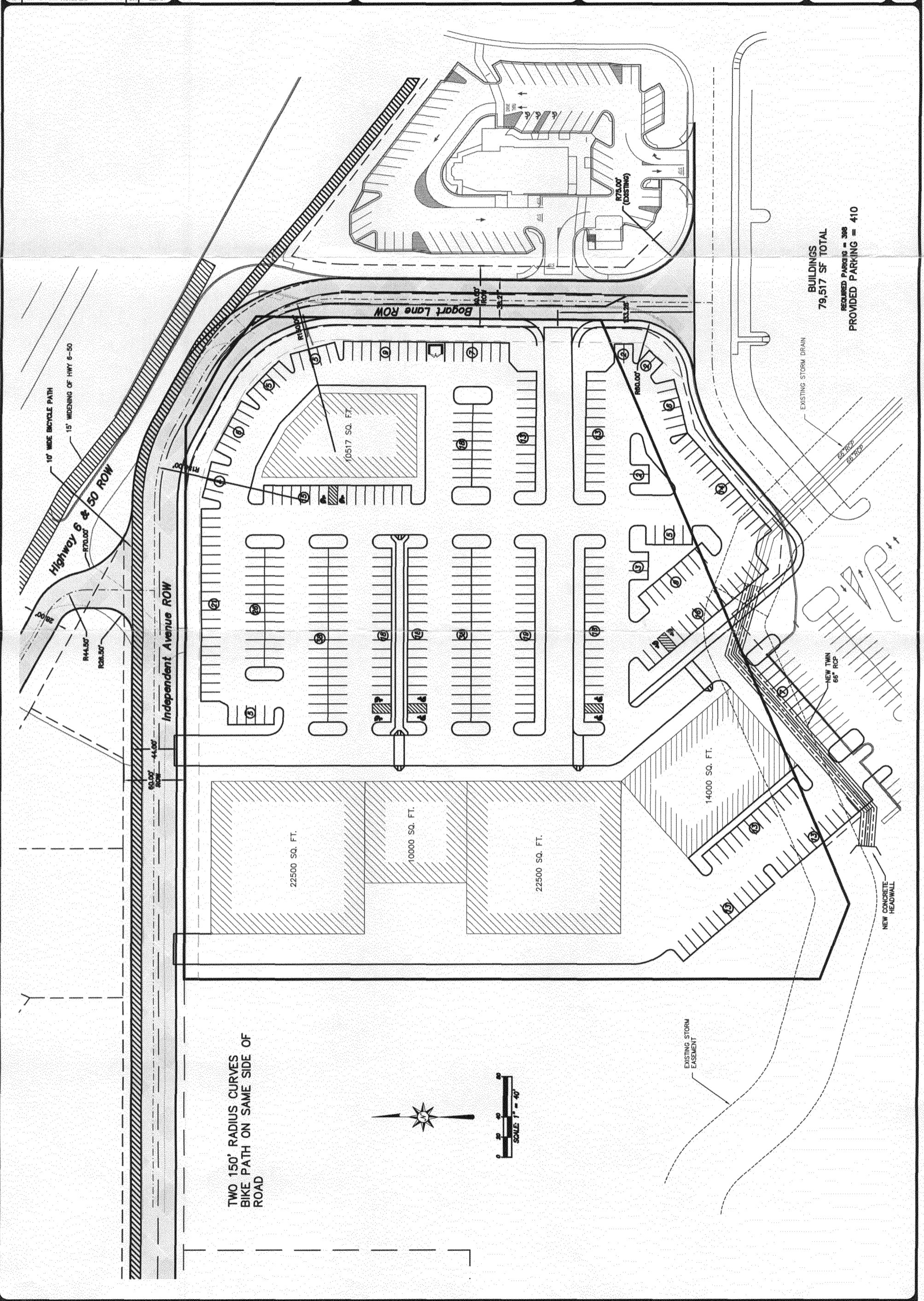
PLAN #1

RIMROCK-HANSON

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 244 NORTH 7th STREET
 GRAND JUNCTION, COLORADO 81501 (970) 245-4089

PROJECT NO.: 205077
 FILE NAME: RIMROCK-HANSON-205077
 DATE: 10/24/05
 DRAWN: ARC
 CHK'D: WSM

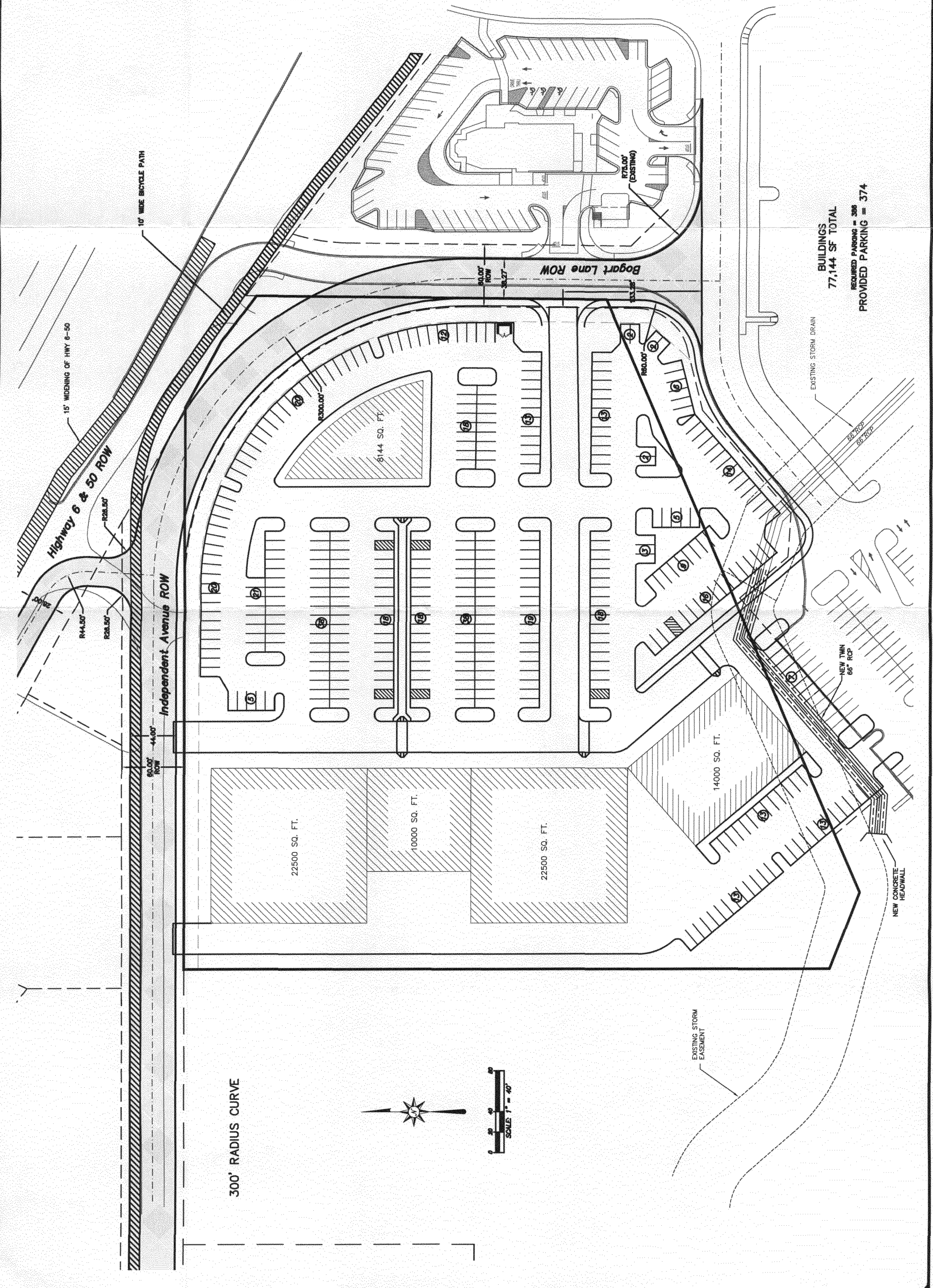
SHEET 1 OF 1



BUILDINGS
 79,517 SF TOTAL
 REQUIRED PARKING = 396
 PROVIDED PARKING = 410

TWO 150' RADIUS CURVES
 BIKE PATH ON SAME SIDE OF
 ROAD

DATE	NO.	REVISION	BY



BUILDINGS
77,144 SF TOTAL
REQUIRED PARKING = 386
PROVIDED PARKING = 374

300' RADIUS CURVE



EXISTING STORM EASEMENT

NEW CONCRETE HEADWALL

NEW TWIN 66\"/>

EXISTING STORM DRAIN

66\"/>

66\"/>

14000 SQ. FT.

22500 SQ. FT.

10000 SQ. FT.

22500 SQ. FT.

6144 SQ. FT.

R200.00'

R60.00'

Bogart Lane ROW

30.00' ROW

31.27'

R72.00' (EXISTING)

10' WIDE BICYCLE PATH

Highway 6 & 50 ROW

Independent Avenue ROW

60.00' ROW

44.00'

R28.50'

R44.50'

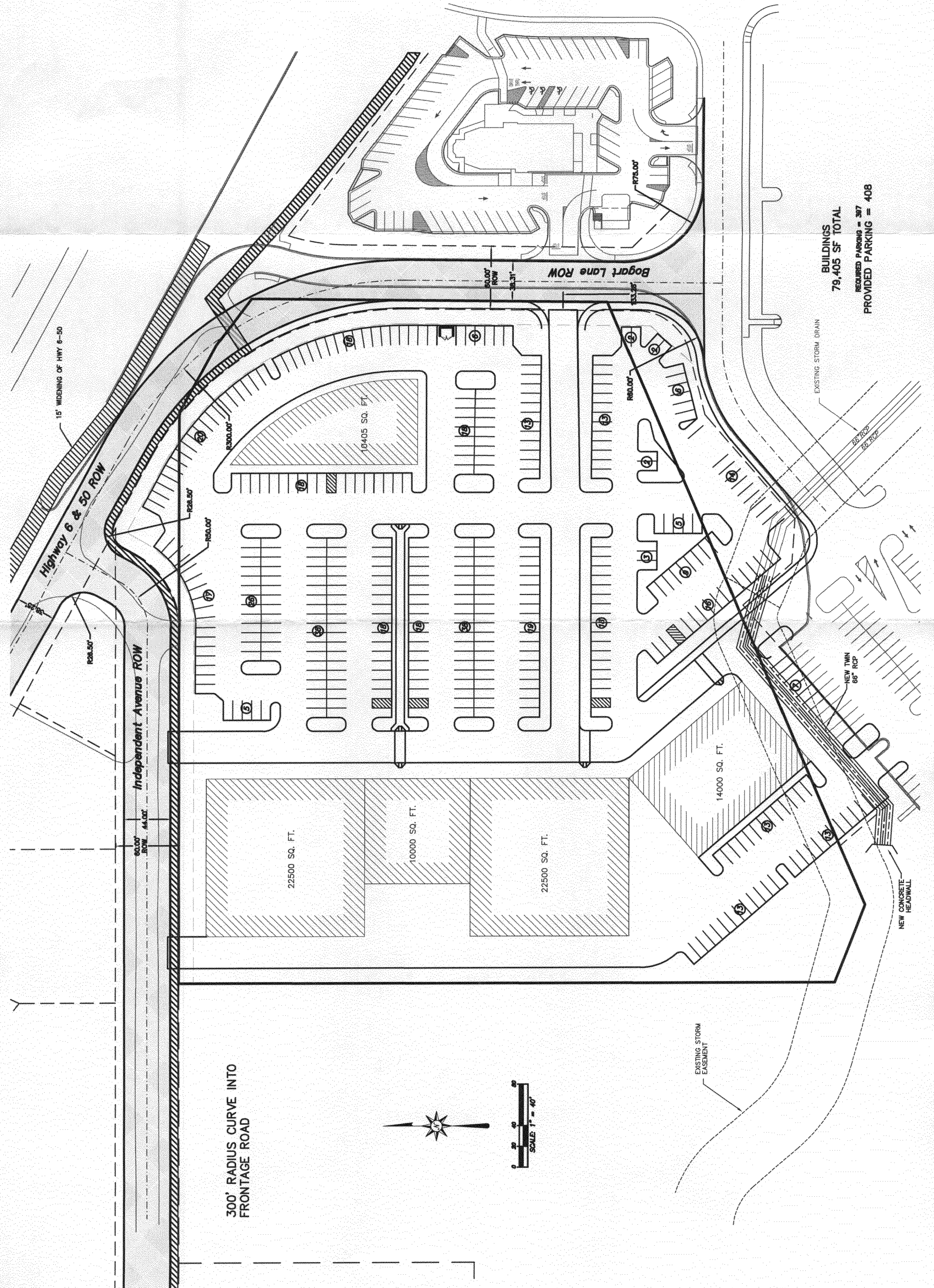
15' WIDENING OF HWY 6-50

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 GRAND JUNCTION, COLORADO 81501 (970) 245-4099

PROJECT NO.: 205077
 FILE NAME: RIMROCK-HANSON-205077
 DRAWN: ARC
 CHK'D: WSM
 DATE: 10/24/05

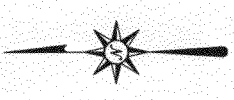
RIMROCK-HANSON
ALTERNATE #3

DATE:	NO.:	REVISION:	BY:



BUILDINGS
 79,405 SF TOTAL
 REQUIRED PARKING = 387
 PROVIDED PARKING = 408

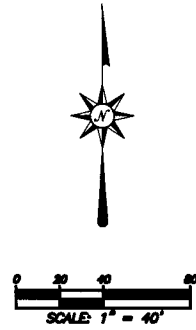
300' RADIUS CURVE INTO
 FRONTAGE ROAD



SCALE: 1" = 40'

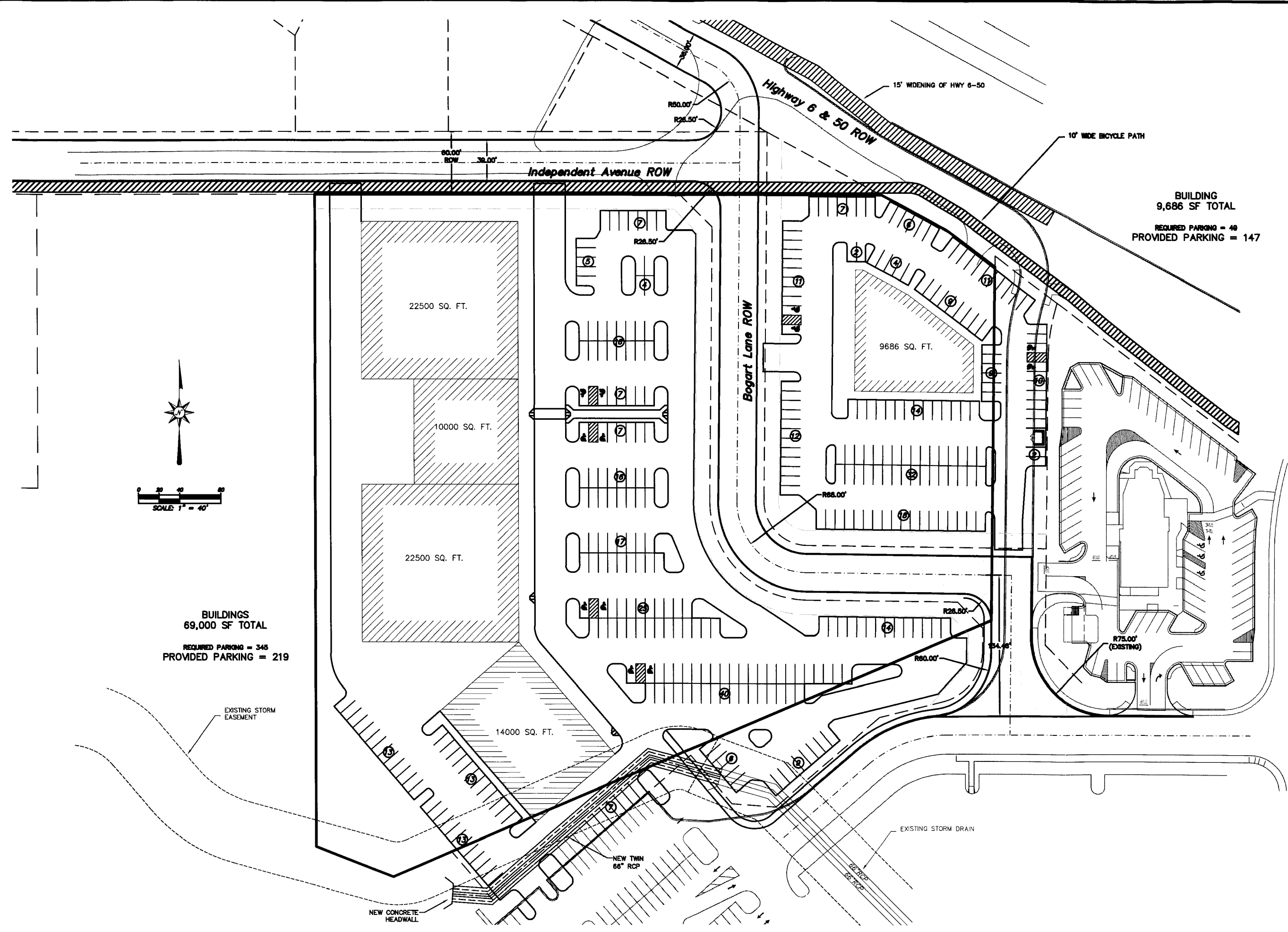
EXISTING STORM
 EASEMENT

NEW CONCRETE
 HEADWALL



BUILDINGS
69,000 SF TOTAL
REQUIRED PARKING = 348
PROVIDED PARKING = 219

BUILDING
9,686 SF TOTAL
REQUIRED PARKING = 48
PROVIDED PARKING = 147



BY:	
REVISION:	
NO:	
DATE:	

ALTERNATE #4

RIMROCK-HANSON

FILE NAME: RIMROCK-HANSON-205077
DRAWN: ARC
DATE: 10/24/05
CHK'D: MSM
PROJECT NO.: 205077

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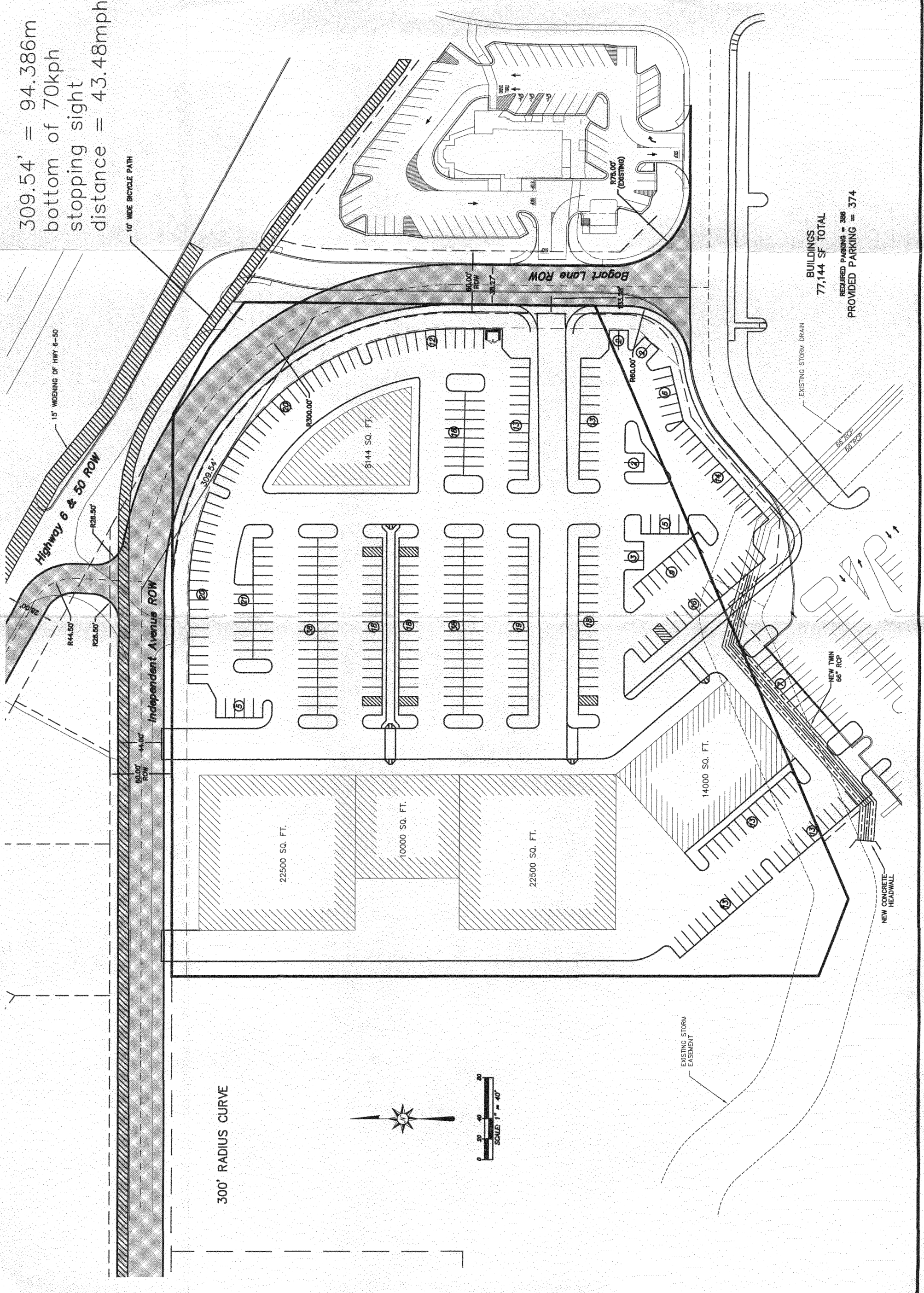
DATE:	NO.	REVISION:	BY:

ALTERNATE #2

RIMROCK-HANSON

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 244 NORTH 7th STREET
 GRAND JUNCTION, COLORADO 81501 (970) 245-4099

309.54' = 94.386m
 bottom of 70kph
 stopping sight
 distance = 43.48mph



BUILDINGS
 77,144 SF TOTAL
 REQUIRED PARKING = 386
 PROVIDED PARKING = 374

DATE:	NO.	REVISION:	BY:

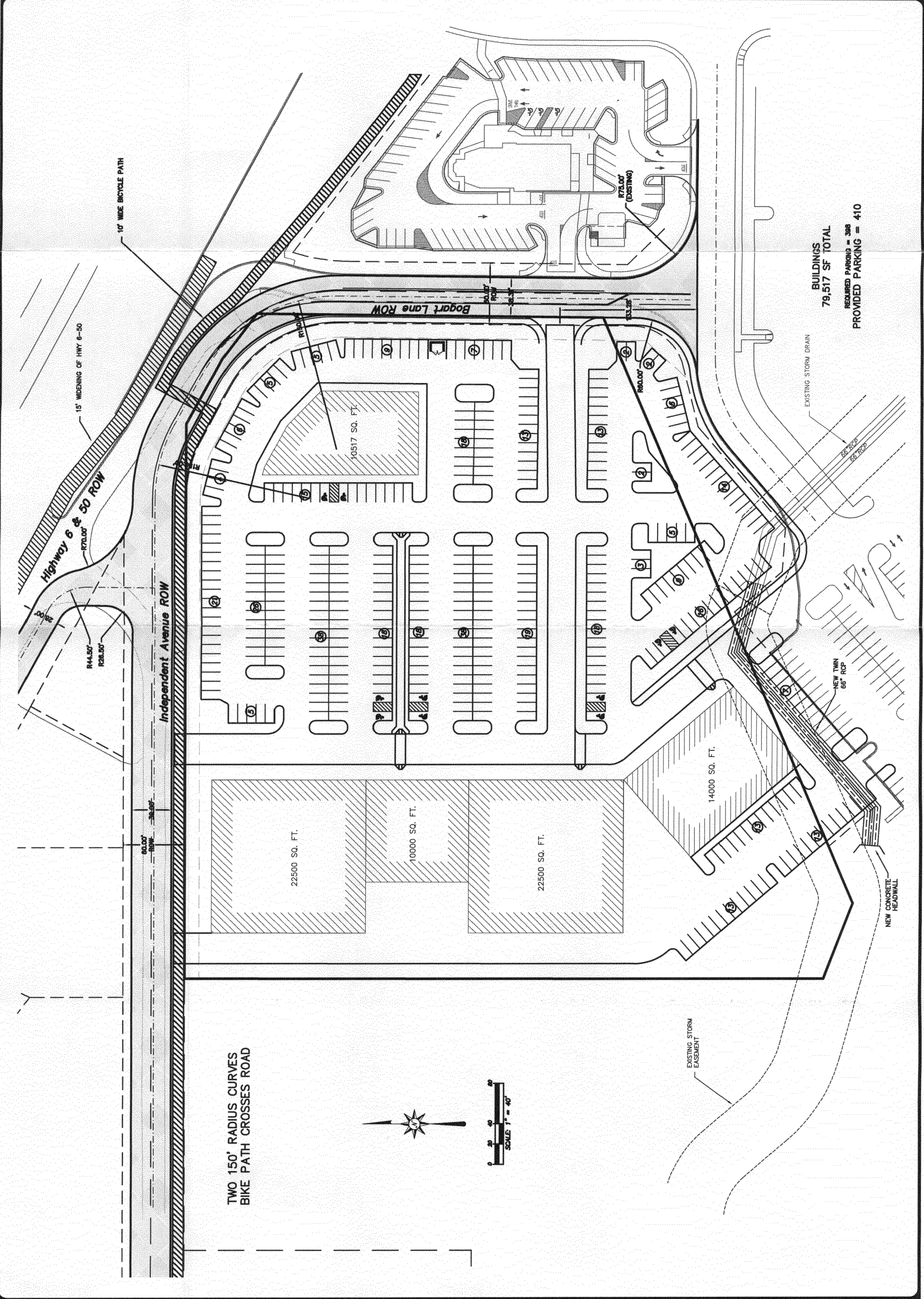
PLAN #2

RIMROCK-HANSON

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 244 NORTH 7th STREET
 GRAND JUNCTION, COLORADO 81501 (970) 245-4089

PROJECT NO.: 205077
 FILE NAME: RIMROCK-HANSON-205077
 DATE: 10/24/05
 DRAWN: ARC
 CHK'D: WSM

SHEET 1 OF 1



BUILDINGS
 79,517 SF TOTAL
 REQUIRED PARKING = 388
 PROVIDED PARKING = 410

TWO 150' RADIUS CURVES
 BIKE PATH CROSSES ROAD

From: Jody Kliska
To: Tim Moore
Date: 12/6/2005 4:31:16 PM
Subject: TEDS Exception Rimrock/Hanson

Tim,

Sorry, the papers got buried on my desk. Didn't mean to take this long with it.

I can see why the committee was unclear on this one. It took me a while to decipher the packet. Apparently the reason for the exception is that the developer is unable to meet the parking requirement with the 300' radius without losing square footage. The 300' radius design requires the developer dedicate a little more ROW than the 150' plan. The 300' radius offers more separation from the highway as well.

The TEDS chart is set up on the assumption of 30 MPH design for commercial streets, with no superelevation. The AASHTO design for 25 MPH would allow for a 165' radius. At 20 MPH, the minimum radius is 90'. (Exhibit 3-41, Geometric Design Guide).

As Rick Dorris mentions in his review, there is merit to having lower speeds on the street. Independent Avenue serves as local commercial access and terminates at a stop condition where Bogart Lane meets the internal street network for the shopping center. If this were a portion of street that would continue in the future, it might be prudent to require the 30 MPH design; however, it will not. That's probably the best reason to support the exception.

Hope this helps.

Jody

Rimrock/Hanson Site

Horizontal Curve questions.

As part of the TEDS EXCEPTION for this project we would like to use two horizontal curves (with a short straight section between them) with a radius of 150 feet.

STOPPING SIGHT DISTANCE

The two 150' radius curves would provide a stopping sight distance of approximately 260', which would seem to correspond with a Design Speed of 37.26 mph (AASHTO Geometric Design of Highways and Streets, 1994 edition, Table III-1.)

SHARPEST CURVE WITHOUT SUPERELEVATION

Table III-12 of the AASHTO book would seem to indicate that a 150' radius curve would only be adequate for a 20 mph design speed. It would appear that the City used a different "Side Friction Factor" for the design curves in the TEDS Manual. *-TEDS*

SUPERELEVATION

We haven't really looked at superelevation, but it doesn't look as though the AASHTO Tables would be very helpful in this instance.

Considering that a portion of this street will be essentially internal in a shopping center, with a fair amount of pedestrian traffic, it would seem ideal to calm traffic. We hadn't considered the speed limit of this stretch of road, but 25 mph would seem to be ideal (if not too high). The 150' radius curve would tend to act as a restriction that would calm traffic.

William S. Merrell, P.E.