CITY OF Grand Junction COLORADO

PUBLIC WORKS & UTILITIES

DESIGN EXCEPTION #DE 9-05

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: Justin Vansel, Project Engineer

Date: February 22, 2005

RE: Intersection Radii – 27 Road & Club Court.

DESCRIPTION OF THE SITUATION

Section 6.2.4 of TEDS includes a table of Minimum Flowline Radii based upon the through street and adjacent streets. Using the table, a minimum radii of 25 feet would be required for the curb, gutter and sidewalk improvements Public Works is planning for 27 Road at Club Ct. The exception requested by the Engineering Division is to construct a flowline radius of 20 feet. This exception is being sought in order to avoid conflicts with the existing entrance signs, utilities and landscaping.

Site Description:
This intersection is part of the proposed CIP project this year for the east edge of 27 Road from the north end of the Safeway improvements at 681 Horizon Dr. north to Club Ct. Club Ct. provides access to a residential subdivision with very little truck traffic.

EXCEPTION CONSIDERATIONS

1. **Will the exception compromise safety?**
   Staff does not believe the proposed configuration will create future safety issues. The project proposes to increase pavement width on 27 Road to include a 4 foot bike lane. The net effect will be to create a turning radius of approximately 35 feet (see attached plan).

2. **Have other alternatives been considered that would meet the standard?**
   The alternative of removing existing signage & landscaping and modifying the private concrete and pavement improvements could be accomplished to meet TEDS.

3. **Has the proposed design been used in other areas?**
   There are examples of developed areas that do not meet this standard.

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

Staff recommends approval of the exception request with the understanding that the completed project will actually provide for a turning radius that will accommodate truck traffic.

Recommended by: _____

Approved as Requested: ____

Approved as Modified: X
SEE ATTACHMENT

Denied _____

Dated: 2/23/05

\DE#9-05 Intersection Radii Club Ct. 2-23-05

CITY OF Grand Junction COLORADO

PUBLIC WORKS & UTILITIES
ENGINEERING DIVISION

Memorandum

TO: Tim Moore, Public Works Manager

FROM: Justin J. Vensel, Project Engineer

DATE: February 16, 2005

SUBJECT: **TEDS Exception**

Project/Development:	**Curb, Gutter and Sidewalk along 27 Rd north of Safeway improvements to Club Ct.**
TEDS reference(s):	6.2.4 Intersection Radii at 27 Rd and Club Ct.
Description of exception:	This intersection is part of the new installation of Curb Gutter and Sidewalk along the east edge of 27 Rd from the north end of the Safeway improvements at 681 Horizon Dr. North to Club Ct. The TEDS exception being requested is to construct a flow line radius of 20 feet as opposed to the minimum for a Local Residential intersecting a Collector of 25 feet. This exception is being sought in order to avoid conflicts with existing entrance signs, utilities and landscaping.
Justification:	Club Ct. provides access to a gated residential subdivision with very little truck traffic. The existing half street section is 16' wide, a 12' driving lane with a 4' bike lane. By installing the new curb and gutter, in alignment with the existing, we will be widening the road section to 22'. The extra width provided by the road widening serves to increase the actual turning radius to 35 feet.
Exhibits:	Plan view

Minimum Intersection Flowline Radii

Through Street[2]	Intersecting Street				
	Arterial	Collector	Local Residential	Local Commercial	Local Industrial[1]
Arterial	35'	30'	30'	30'	30'
Collector	30'	30'	25'	30'	30'

[1] Radii at intersections with industrial streets shall be individually designed based on the turning requirements for the type of truck that will most commonly use the street.

[2] At signalized intersections where right turn channelization islands are provided or high truck and bus volumes may use the access, a larger flowline radius may be required.

6.2.5 Lane Requirements

Lane design through an intersection shall be consistent with the lane design of the streets forming the intersection.

6.2.5.1 Lane Widths

Lane widths shall be consistent with the cross-sections as shown in the City Standard Street Details.

6.2.5.2 Exclusive Turn Lanes

The purpose of an exclusive turn lane is to expedite the movement of through traffic, increase intersection capacity, permit the controlled movement of turning traffic, and promote the safety of all traffic. The provision of left-turn lanes is essential from both capacity and safety standpoints where left turns would otherwise share the use of a through lane. Right-turn lanes remove the speed differences in the main travel lanes, reducing the frequency and severity of rear-end collisions.

Separate right turn lanes shall be required in accordance with the right turn warrant chart. Separate left turn lanes shall be required at all new signal locations and at unsignalized locations in accordance with the left turn warrant chart.

Corner Radii Into Local Urban Streets

Because of space limitations, presence of pedestrians, and generally lower operating speed in urban areas, curve radii for turning movements may be smaller than those normally used in rural areas. Corner radii to accommodate right-turning movements depend largely on the number and type of turning vehicles and the volume of pedestrians. Minimum turning paths for passenger vehicles and all other design vehicles are included in Chapter 2.

Guidelines for right-turning radii into minor side streets in urban areas usually range from 1.5 to 9 m [5 to 30 ft] and most are between 3 and 4.5 m [10 to 15 ft]. Where a substantial number of pedestrians are present, the lower end of the ranges described below may be appropriate. Most passenger cars operating at very low speed on lanes 3 m [10 ft] or more in width are able to make a right turn with a curb radius of about 4.5 m [15 ft] with little encroachment on other lanes. However, operation of these vehicles at increased speeds or of larger vehicles even at a very low speed generally results in substantial encroachment on adjacent lanes at either the beginning or the end of the turn, or both.

Where there are curb parking lanes on both of the intersecting streets and parking is restricted for some distance from the corner, the extra width provided by the restriction serves to increase the usable radius. On most streets, curb radii of 3 to 4.5 m [10 to 15 ft] are reasonable because streets and sidewalks are generally confined within the public right-of-way, and larger radii can be obtained only by narrowing sidewalks at corners and increasing the length of pedestrian crosswalks. However, to ensure efficient traffic operation on arterial streets carrying heavy traffic volumes, it is desirable to provide corner radii of 4.5 to 7.5 m [15 to 25 ft] for passenger vehicles and 9 to 15 m [30 to 50 ft] for most trucks and buses, provided there are no significant pedestrian conflicts. Where large truck combinations turn frequently, somewhat larger radii should be provided for turns.

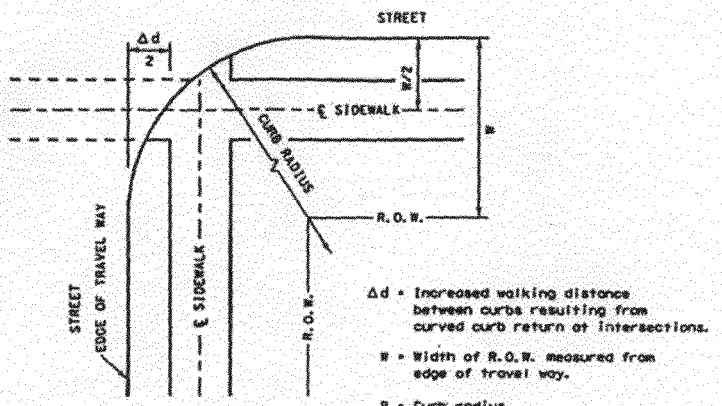
The WB-19 [WB-62] and larger trucks generally are not engaged in local travel destinations but are used principally for "over-the-road" transportation between trucking terminals or industrial or commercial areas. Ideally, such destinations are located near major highway facilities that are designed to accommodate the larger combination units.

If trucks are routed over local streets to reach their destinations, careful consideration should be given to the network to be used. Generally, this network should not include narrow streets, streets with relatively small right-turning radii at intersections, or streets with parking and significant pedestrian crossing volumes.

ISLANDS

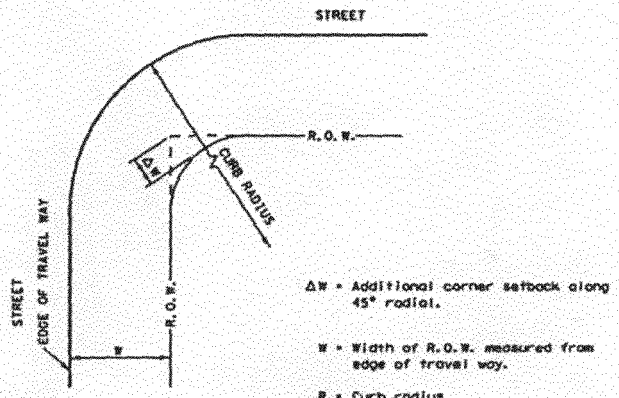
General Characteristics

An island is a defined area between traffic lanes used for control of vehicle movements. Islands also provide an area for pedestrian refuge and traffic control devices. Within an intersection, a median or an outer separation is also considered an island. This definition makes



CURB RADIUS, R	ADDED CROSSWALK DISTANCE Δd	
	W = 3m [10 Ft]	W = 6m [20 Ft]
METERS [FEET]	METERS [FEET]	METERS [FEET]
3 [10]	0.8 [3]	0.0 [0]
6 [20]	4.0 [14]	1.6 [5]
9 [30]	8.0 [27]	4.6 [15]
12 [40]	12.4 [42]	8.1 [27]
15 [50]	16.9 [57]	12.0 [40]

Exhibit 9-33. Variations in Length of Crosswalk With Different Curb Radii and Width of Borders



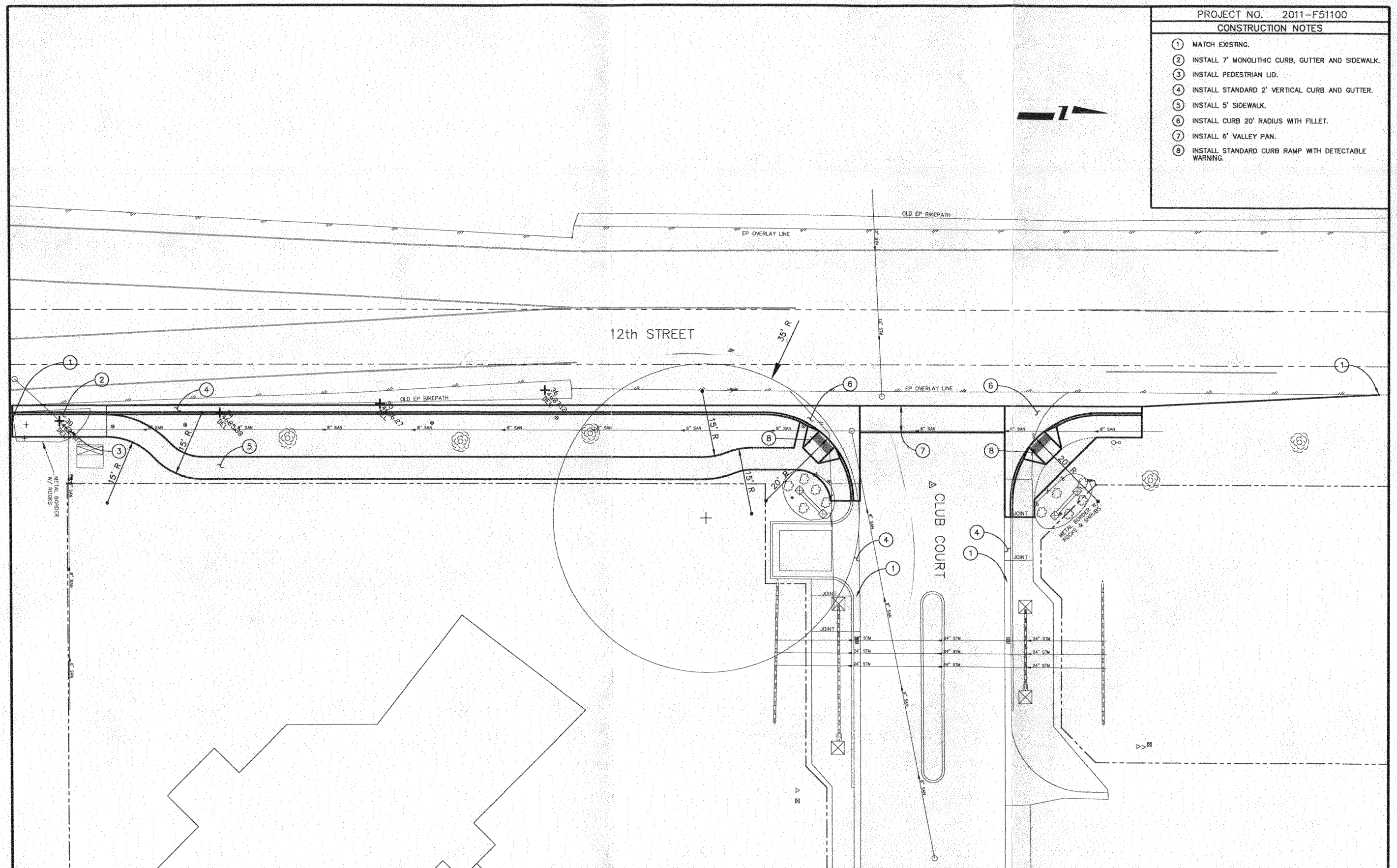
CURB RADIUS, R	ADDITIONAL CORNER SETBACK ΔW	
	W = 3m [10 Ft]	W = 6m [20 Ft]
METERS [FEET]	METERS [FEET]	METERS [FEET]
3 [10]	0.0 [0]	0.0 [0]
6 [20]	1.3 [4]	0.0 [0]
9 [30]	2.5 [8]	1.3 [4]
12 [40]	4.0 [13]	2.5 [8]
15 [50]	5.0 [17]	4.0 [13]

Exhibit 9-34. Corner Setbacks with Different Curb Radii and Width of Borders

PROJECT NO. 2011-F51100

CONSTRUCTION NOTES

1. MATCH EXISTING.
2. INSTALL 7' MONOLITHIC CURB, GUTTER AND SIDEWALK.
3. INSTALL PEDESTRIAN LID.
4. INSTALL STANDARD 2' VERTICAL CURB AND GUTTER.
5. INSTALL 5' SIDEWALK.
6. INSTALL CURB 20' RADIUS WITH FILLET.
7. INSTALL 6' VALLEY PAN.
8. INSTALL STANDARD CURB RAMP WITH DETECTABLE WARNING.



DESCRIPTION	DATE
REVISION 1	
REVISION 2	
REVISION 3	
REVISION 4	

DRAWN BY JAH DATE 1/2005
DESIGNED BY JV DATE 1/2005
CHECKED BY DATE
APPROVED BY DATE

SCALE: 1" = 10'
PLAN
0 2.5 5 10

CITY OF Grand Junction COLORADO

PUBLIC WORKS AND UTILITIES ENGINEERING DIVISION

12th STREET AND CLUB COURT
CURB, GUTTER AND SIDEWALK PLAN

1

CITY OF Grand Junction COLORADO

PUBLIC WORKS & UTILITIES

Memorandum

TO: **Justin Vensel, Quality Assurance Technician**

FROM: **Sandi Nimon, Sr. Administrative Assistant** Sandi

DATE: **February 28, 2005**

SUBJECT: **#DE 9-05 Design Exception for Intersection Radii – 27 Road and Club Court**

Attached is Design Exception #DE 9-05 for Intersection Radii - 27 Road and Club Court.

This exception has been approved, as modified, in the attachment on the last page of this document.

If you have any questions, please don't hesitate to contact Tim Moore.

sn

Design Exception #DE 9-05

The committee approved the exception requested with the following modifications:

1. The radius on the south side be designed to be as long as possible. If the removal of portions of the existing concrete and asphalt increases the ability to extend the radius, those modifications should be included in the project.
2. The Radius on the north side should meet the TEDS standard of 25 feet.