

MAR 24 2014



DEVIATION APPROVAL FORM

Procedure Number:	CR 920 Bridge Clearance	Revision:	
Procedure Name:	Exhibit D-4A Bridge Clearance	Date Requested:	3/06/2014
Corridor/Project Name:	Chisholm Trail/Segment 6	Project Number:	02947-SWP-03-DB-PM
Requestor Name:	Greg Vowels	Organization Name:	Granite Construction
Original Requirement:	<i>Exhibit D-4A SH 121 SWP/CTP Geometric Design Criteria From FM 1187 to US 67 states:</i> 16'-6" Minimum Vertical Clearance over County Roads		
Proposed Change:	<i>Exhibit D-4A SH 121 SWP/CTP Geometric Design Criteria From FM 1187 to US 67:</i> 16'-4" Minimum Vertical Clearance over County Road 920		
Justification:	<p>The clearance at CR 920 was calculated to be 16.72 ft., but the actual measured clearance for this overpass is 16.37 ft. The Chisholm Trail Parkway contract with NTTA requires a clearance of 16.50 ft. The reason for this discrepancy has to do with the cross slope of the reconstruction of CR 920. The existing condition of CR 920 consisted of 2-10 ft. lanes of roadway with a crowned section (the approximate cross slopes of which was 1%), with the Profile Grade Line at the Centerline of the roadway. Projecting this out to the ultimate 16 ft. section (12 ft. lane and a 4 ft. shoulder) the shoulder would sit 0.16 ft. lower than the PGL. This is the elevation upon which bridge clearance calculation was incorrectly based. This section of roadway was designed to provide a 1% reverse crown for CR 920 (or a positive slope), raising the grade 0.16 ft. higher than the PGL. The combination of this results in a clearance difference of 0.32 ft. The reverse crown was introduced into the design to provide a smoother transition from CR 920 onto the ramps north of CR 920.</p> <p>The vertical clearances shown in the Technical Provisions were derived from chapters 3 and 6 of the Roadway Design Manual (RDM). The first is RDM, Chapter 3, Section 4 Two-Lane Rural Highways, Table 3-7, which calls for "Vertical Clearance, New structures to be 16.5 ft." but contains a footnote that specifies, "Exceptional cases near as practical to 16.5 ft. but never less than 14.5 ft." The next is RDM, Chapter 3, Section 6 Freeways, which states "All controlled access highway grade separation structures, including railroad underpasses should provide 16.5 ft. minimum vertical clearance over the usable roadway." It also goes on to state "The above-specified clearances apply over the entire width of roadway including usable shoulders and include an allowance of 6 inches for future pavement overlays." It is shown in the RDM that 16.5 ft. is the minimum vertical clearance, but clearances as low as 14.5 ft. are acceptable on two-lane rural highways such as CR 920. It also states that the reason for the 16.5 ft. requirement is to allow for 6 inches of overlay.</p> <p>The request is to allow the 16.37 ft. clearance of CR 920. The clearance issue has been discussed with this precinct's County Commissioner, and he is in agreement with leaving the clearance at 16.37 ft.</p>		



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Consequences if not implemented:	To achieve a clearance of 16.5 ft., the cross slope of CR 920 will need to be adjusted. Currently, CR 920 contains a 1% reverse crown cross slope from east of the northbound ramps to west of the southbound ramps. This will require transitioning from a 1% reverse crown section to a 1% normal crown section under the northbound bridge. This will involve a full depth pavement adjustment, because the pavement design specifies 3 inches of HMAC, and that is the section that exists in this area today. This will require removing the base material and excavating to obtain the full depth of the pavement design. The ride quality will suffer due to the pavement transitions. Moving in a westerly direction, the driver will transition from the normal crown of the existing roadway, to the 1% reverse crown section of Ramp N2, to normal crown section under the newly constructed bridge, to the reverse crown section of Ramp S2 to the normal crowned section of the existing roadway. All of these transitions will occur within the span of 700 ft.
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Approval Signatures:			
Title	Printed Name	Signature	Date
Requestor	Greg Vowels		
Corridor/Project Manger	Kevin Reilly		
Design Manager	Kelly Johnson		
PD Contract Manager	Wallace Heimer		
Director of Project Delivery	Elizabeth Mow		