Design Standards Letter

Letter Number: G-1966-34

Letter Date: 12/16/1966

Effective Date: 12/16/1966

Section/Plan No.: None

Subject: Implementation Procedures

Body

ALL DIVISION AND DISTRICT ENGINEERS AND CHIEF COUNSEL:

We are furnishing you herewith several copies of new standard drawings 21.80, 21.81, 21.82, 21.83, 21.84, 21.85, and 21.90, and a copy of the Table of General Design Data intended for use with the new typical sections.

These drawings cover the typical sections for all roads and have been developed for the purpose of providing a safer cross section for highways.

The major changes on the typical section sheets include slope revisions, ditch depths, an increase in the minimum right-of-way width for some roadways and the addition of a safety zone for all sections for over 400 ADT design traffic.

These new drawings will not replace the present drawings nor the present Table of General Design Data in all instances. The new drawings or present drawings are to be used on projects as follows:

1. For all projects which have not been approved for right-of-way acquisition, the design of the project is to be based fully on the new typical sections. No confirmation of the use of the new sections for these projects is required.

2. On those projects which have been approved for right-of-way acquisition but on which no right-of-way has been acquired, the District should review the plans for use of the new typical sections wherever practicable and feasible. Following such review, the District should submit to this office complete project identification and supporting data by system justifying the recommendation to use or not to use the new typical sections. Project identification should include the county, route, location, type of improvement, length, design ADT, project number, and the fiscal year for right-of-way and construction.

Information regarding the status or percentage of appraisals and other pertinent

project factors used to base recommendation should be provided. All of this information is necessary in order to document for future use the reasons for retaining the present typical sections or for fully implementing the new typical sections. All recommendations by the District will be reviewed in this office, after which the District will be advised of the procedure to follow.

3. On those projects where any right-of-way has been acquired, the use of the new typical sections will not be mandatory. (Note this will not include advance full takings.) The District may, however, recommend such adoption provided the plans may be revised with no delay in the Letting Schedule. The District may also give consideration to providing flatter slopes. Providing flatter slopes in all cases shall be done within the established right-of-way limits and for the purpose of providing as safe a roadside as is feasible within this right-of-way, and if no delay to the letting schedule will result. A list of all projects in this category is to be furnished this office by the District. Each project is to [be] fully identified as detailed under Item Two above, and contain the Districts' recommendation concerning adoption or flattening of slopes. All recommendations by the District will be reviewed by this office after which the District will be advised of the procedure to follow.

4. The use of the new typical sections is not applicable for small culvert replacement projects where the intent is to continue the service of the road without upgrading it. In this case, the typical sections used in the original construction should be used, except that the roadbed width should be not less than 24 feet.

5. For those projects involving bridge replacements, the use of the new typical sections should be considered in accordance with Items 1, 2, and 3 above.

Because the "safety zone" is a new concept for the roadway typical section, the following is offered as a general guide for the use and application of the "safety zone".

1. Use on all rural main line roadways over 400 ADT design traffic.

2. Use on all rural outer roadways where horizontal and vertical alignment is based on design speeds greater than 50 MPH. Do not use when design speed is 50 MPH or less. Exception - when state route is carried along an outer roadway, use safety zone as per design traffic requirements.

3. For at-grade intersecting rural roadways and crossroads:
   (a) State routes - use based on design traffic requirements.
   (b) County, local and private - do not use.

4. For grade separated roadways:
   (a) State routes - use based on design traffic requirements.

(b) County, local and private - do not use.

5. For ramps (diamond and cloverleaf) and loops, rural areas, do not use.

6. For directional interchange ramps, rural areas, use.

7. For suburban, urban, and other developed areas, consider use only on mainline roadways and when design speeds are 50 MPH or greater and where curb is not used.

8. For medians on divided highways:
(a) Standard 60' median provides safety zone.
(b) Standard 60' median will allow for maximum of 5.33' differential in grades between pavements with use of 20' safety zones outside standard 4' shoulders (with 12' of 3:1 slope).
(c) Wider medians will permit greater differential in grades. Use of 20' clear zone outside 4' shoulders be maintained with maximum 3:1 contiguous slope used between clear zones.
(d) Wide median widths which do not require a contiguous slope between clear zones will permit independent roadway design.

9. For over 400 ADT design traffic and where safety zones are omitted, use the following slopes.

Fills 3:1 slopes for fills 0' to 15'

2:1 slopes for fills greater than 15"
Shoulders to be widened 2' where guard rail is required.

Cuts 3:1 slopes for cuts 0' to 15'
2:1 slopes for cuts greater than 15'
6:1 slopes for ditch in-slopes with 2' minimum depth of ditch.

10. Safety zones, when used, shall be carried full-width to bridge ends.

11. Where existing roadway is to be incorporated into completed facility as part of mainline roadway, the use of safety zone will be considered on an individual project basis.

12. ~~In shallow fill sections and in cuts where culvert will require a head wall to be located within the safety zone, guardrail will be required. Continue use of slopes on current headwall standards.~~ **VOID See General Letter 1967.**

13. Unusual conditions -
(a) Steep sidehill conditions where fill slope from safety zone, using

standard slopes, will not catch the ground, and the type of fill material eliminates the possibility of using substandard slopes, then the safety zone may be omitted and guard rail used at the shoulder line. (Desirable length for elimination is 500', but no case less than 250')

(b) Long fill section through a reservoir project. Safety zone can be eliminated and guard rail used at the shoulder line.

(c) Speed change lanes adjacent to mainline roadways are to be placed within mainline roadway safety zone with no further widening of safety zone.

In conjunction with the new typical sections, additional revised standard drawings for Entrances, Guardrail, Typical Section for "Off" - "On" Ramps, and Tabulated Earthwork and Section Data will be required. At this date, only the entrance standard drawing for under 400 ADT design traffic (Drawing 21.90) is available and is furnished with this letter. Remaining standard drawings will be furnished as soon as possible.

Please advise this office if there are any questions concerning the implementation procedures as set out herein.

Reproducible drawings of the typical sections are not being furnished at this time due to the indeterminate demand. Such drawings will be furnished upon request.

L.V. McLaughlin
Division Engineer
Surveys and Plans