

**POSITIVE PAVEMENT DRAINAGE
RECOMMENDED FINAL TYPICAL SECTIONS****1-2B**1) 10' TO 22' MEDIANS

Use of the 10' minimum median width is limited to four-lane freeways that have significant right-of-way, terrain or environmental constraints that prohibit the use of the standard 22' or wider median. Future traffic volumes should indicate that additional travel lanes would not be needed within the foreseeable future. A median of this width will be paved with a concrete median barrier. The Pavement Management Unit will develop positive pavement drainage if necessary.

Use of the 22' width median with concrete barrier on new location or widening projects is limited to those projects that have significant right-of-way, terrain or environmental constraints that prohibit or restrict the use of the 46' or wider median. This width median has a concrete barrier and is paved with positive pavement drainage developed by the Pavement Management Unit if necessary.

2) 30' TO 36' MEDIANS

Use of this median width when widening an existing two-lane, two-way facility to four lanes with restricted right-of-way. Use this width only in cases where a 46' minimum width cannot be provided. The mainline pavement will normally have 6' median shoulders and a 5:1 median ditch slope. **Positive Drainage Treatment**, developed by the Pavement Management Unit and/or the Hydraulics Unit, will be necessary to adequately drain the subgrade since the recommended minimum of 18" below subgrade cannot be achieved with these median widths. The outside shoulder widths will be in accordance with Table 1-4B (Figure 1). The outside shoulder in fills and cuts will be constructed as shown on 1-2B (Figure 1).

3) 46' MEDIAN

This is the minimum median width used for freeways without a concrete median barrier and also the minimum width to be used on new location, non-freeway divided facilities. The 46' minimum width is used when significant right-of-way, terrain or environmental restraints prohibit or restrict the use of the standard 70' freeway median or the standard 60' non-freeway new location.

This median width is also the standard median width to be used when widening existing two-lane roadways to four-lane divided facilities. This median should be used only when significant right-of-way, terrain or environmental restraints prohibit the use of the desirable 60' median width.

POSITIVE PAVEMENT DRAINAGE**RECOMMENDED FINAL TYPICAL SECTIONS (continued)****1-2B**

The median should have 6' shoulders and a 6:1 median ditch slope. The outside widths will be in accordance with Table 1-4B (Figure 1). The outside shoulder in fills and cuts will be constructed as shown on 1-2B (Figure 2A or 2B).

4) **60' MEDIANS**

Use this median for new location, non-freeway projects when significant right-of-way, terrain or environmental restraints are not present. This median width should also be used when widening existing two lane roadways to four-lane divided facilities and no design or environmental constraints exist to restrict widening beyond the standard 46' median. Future traffic projections should indicate that additional travel lanes would not be required in the foreseeable future. The median would have 10' shoulders and an 8:1 median ditch slope. The outside shoulder widths will be in accordance with Table 1-4B (Figure 1). The outside shoulder in fills and cuts will be constructed as shown 1-2B (Figure 3).

5) **70' MEDIANS**

This is the standard median width for freeways. Use this median for all freeway facilities where traffic projections of future volumes indicate the need for two or more additional lanes within the foreseeable future or for four-lane freeways where significant right-of-way, terrain or environmental restraints are not present. The median should have 12' shoulders and an 8:1 median ditch slope. The outside shoulder width will be in accordance with Table 1-4B (Figure 1). The outside shoulder in fills and cuts will be constructed as shown 1-2B (Figure 4).

6) **23'-30' RAISED MEDIAN**

Use this variable raised median width with collector and arterial streets. This typical section should be used in cases where significant right of way, terrain, or environmental restraints prohibit or restrict the use of a 46' median. Ideally, 23' should be the minimum median width allowed for proper intersection treatments including the channelization of left-overs. The outside shoulder widths should be in accordance with 1-4B Figures 1 and 1A. The outside shoulder in fills and cuts will be constructed as shown 1-2B (Figure 5).

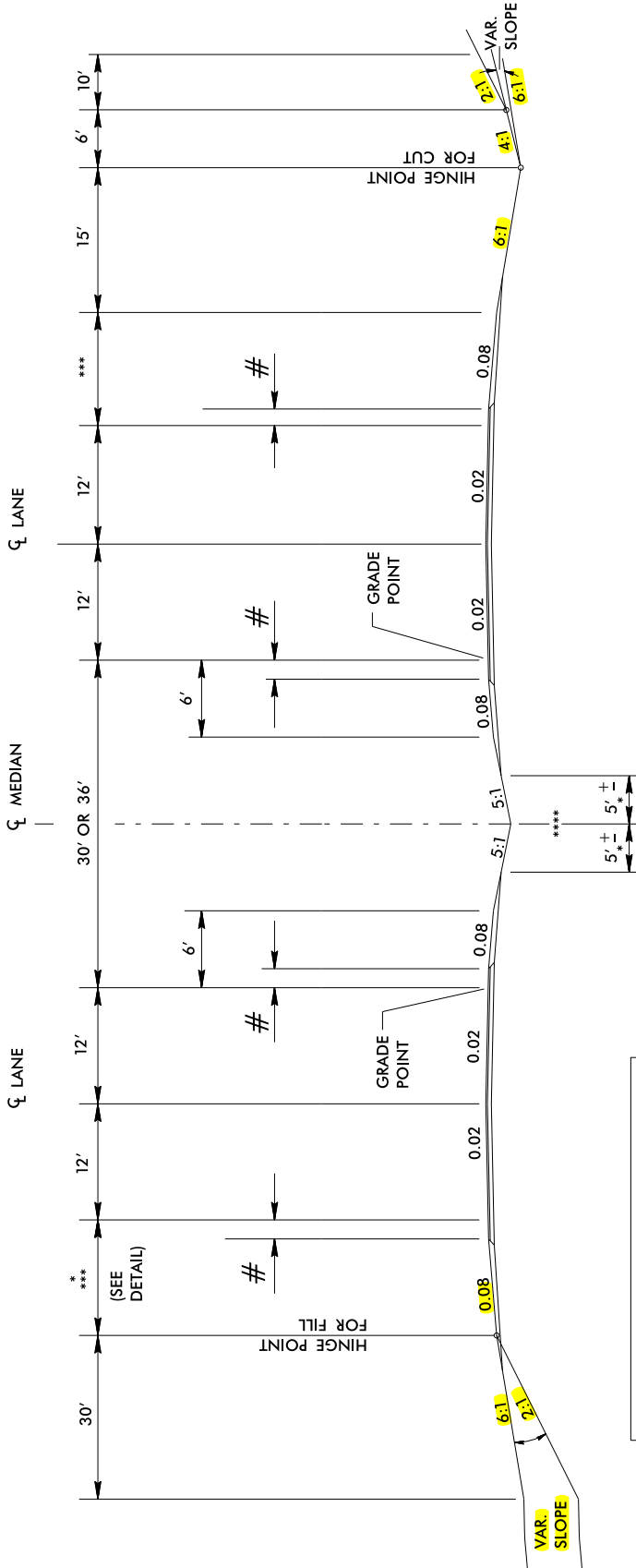
PAVEMENT DRAINAGE**RECOMMENDED FINAL TYPICAL SECTIONS (continued)****1-2B**

GENERAL COMMENTS TO BE INCLUDED WITH ATTACHED TYPICAL SECTIONS:

- a) The minimum median width is 46' for all divided facilities without a concrete median barrier and should be the minimum provided when possible. The 10' to 22' freeway median with a concrete barrier is intended for use only where rugged terrain, restricted right-of-way or significant environmental constraints prohibit the use of the 46' or wider median. The 30' – 36' median is intended for use only when widening existing two-lane, two-way facilities to four lanes with very restricted right-of-way. The 60' median should be used on non-freeway facilities when there is no likelihood of needing future median lanes. The 70' median is to be used for freeway facilities that will require additional median lanes in the foreseeable future or where significant environmental, right-of-way, and terrain restraints are not present.
- b) Refer to the paved shoulder policy for paved shoulder widths. For turf shoulders, the maximum cross slope is 0.08 and for paved shoulders, greater than 2', the slope will vary from 0.02 to 0.04.
- c) In Superelevated areas, the median slope may be steepened to a maximum slope of 4:1 to obtain a ditch grade that will drain.
- d) In areas where fill is necessary, the outside shoulders are as shown on Typical Sections. When guardrail is required, the fill shoulder will be widened 3' beyond the face of the guardrail. (See detail Typical Section, 1-2A, Figure 1A).
- e) **Positive Drainage Treatment** is required when the ditch is less than 18" below the subgrade at the edge of the nearest traffic lane. The Positive Drainage Treatment should be obtained from the Pavement Management Unit. This treatment must be a median underdrain or a minimum roadway grade of 1% in satisfactory drainage soils, or 1.5% in soils, which do not have satisfactory drainage properties. If marginal situations occur, appropriate median drainage structures should be placed to provide adequate ditch drainage.
- f) When proposing a 70' median and two additional lanes (lanes five and six) are imminent in the foreseeable future, the grade point should be placed at the "future" median edge of pavement. (See detail on Typical Section, 1-2B, Figure 4). This cross slope should be 0.02 to the outside. If additional lanes (lanes seven and eight) are added, the slope of the lanes should be toward the median. The median shoulder will have a 0.08 slope when a turf shoulder is used.

FIGURE 1

1-2B
F - 1



30' - 36' MEDIAN

USE WHEN WIDENING EXISTING TWO LANE - TWO WAY FACILITY TO FOUR LANES WITH VERY RESTRICTED RW AND THE MINIMUM 46' MEDIAN CANNOT BE PROVIDED.

**** REQUIRES POSITIVE DRAINAGE TREATMENT TO ADEQUATELY DRAIN THE SUBGRADE. THE DETAIL SHOULD BE OBTAINED FROM THE PAVEMENT MANAGEMENT UNIT.

* USE FINISHED SLOPE $\pm 5'$ FROM ζ OF MEDIAN DITCH IN ORDER THAT DRAINAGE STRUCTURES CAN BE CONSTRUCTED AT THE FINAL ELEVATION ON GRADING PROJECTS.

** SLOPES MAY BE VARIED DURING DESIGN TO 6:1 MINIMUM.

*** SEE ROADWAY DESIGN MANUAL PART 1, CHAPTER 1-4B, F-1.

SEE ROADWAY DESIGN MANUAL PART 1, CHAPTER 1-4C.

30' - 36' MEDIANS

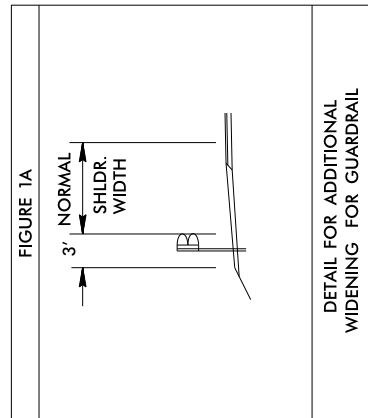
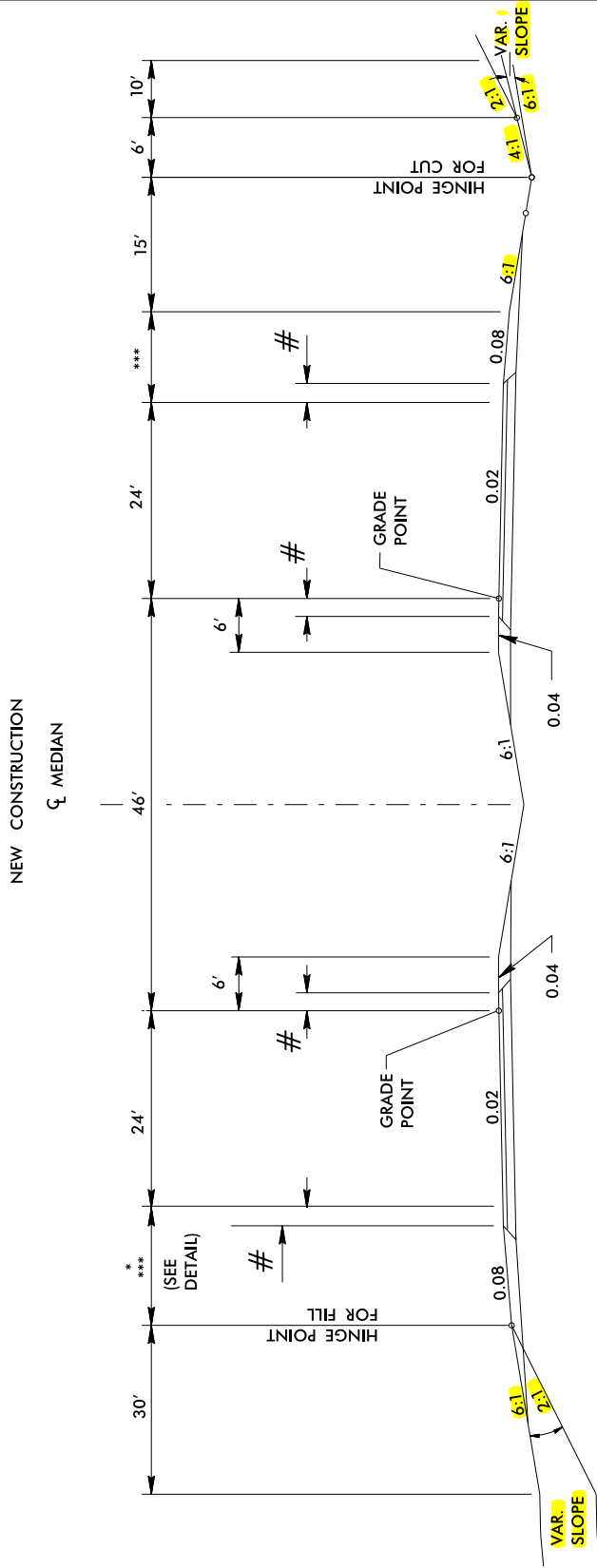


FIGURE 2A

1-2B
FIG. 2A



46' MEDIAN (MINIMUM)
USE WHEN THERE ARE EXISTING
RIGHT OF WAY & TERRAIN
CONSTRAINTS

NOTE: FOR GUIDE TO DRAINAGE SUBGRADE AND SHOULDER
SUBGRADE SEE ROADWAY STANDARD DRAWINGS No. 225.01, 225.02.

* FOR GUARDRAIL WIDENING DETAIL,
SEE FIGURE 1A.

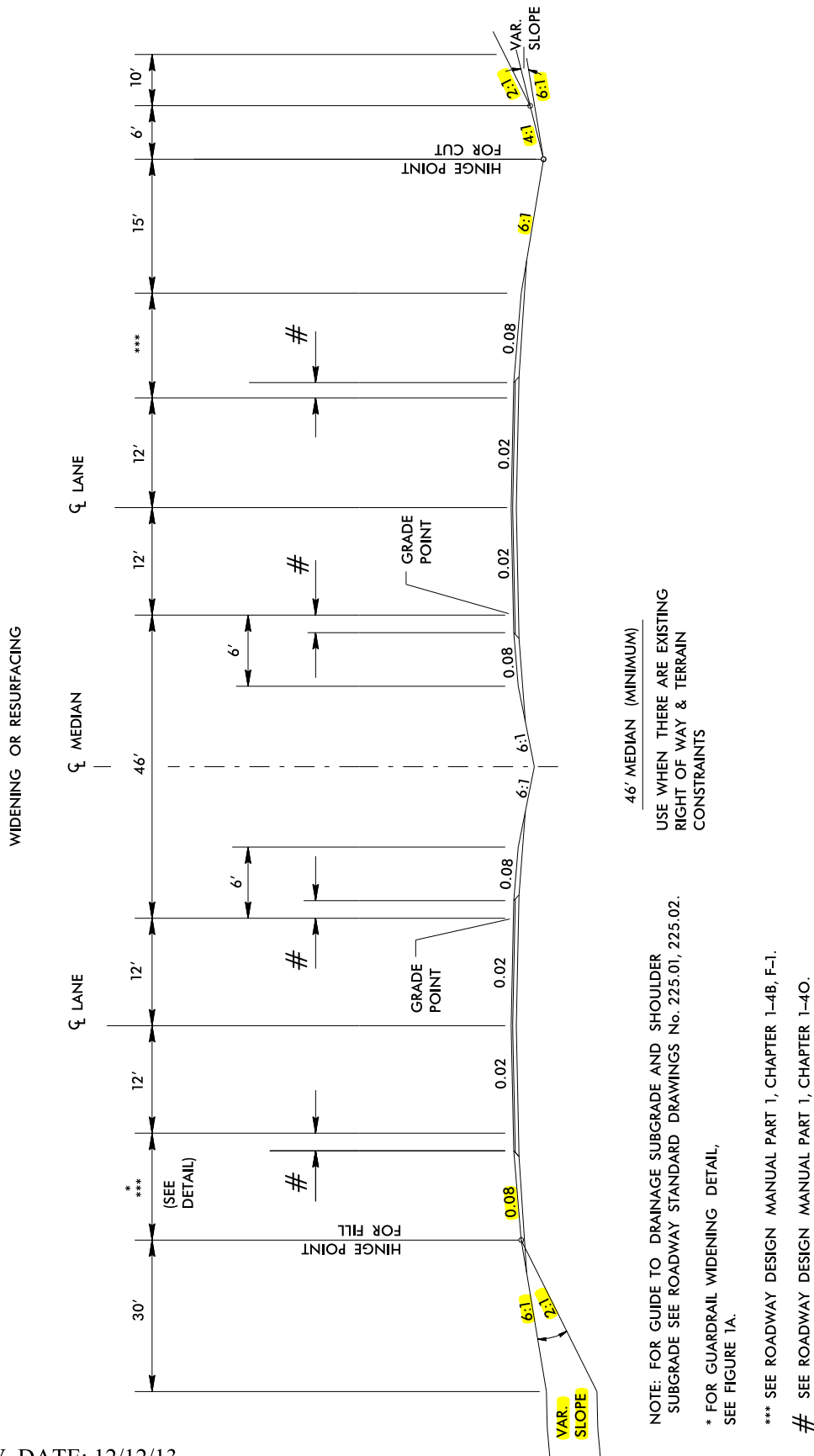
*** SEE ROADWAY DESIGN MANUAL PART 1, CHAPTER 1-4B, F-1.

SEE ROADWAY DESIGN MANUAL PART 1, CHAPTER 1-4O.

46' MEDIAN (MINIMUM)

FIGURE 2B

1-2B
FIG. 2B

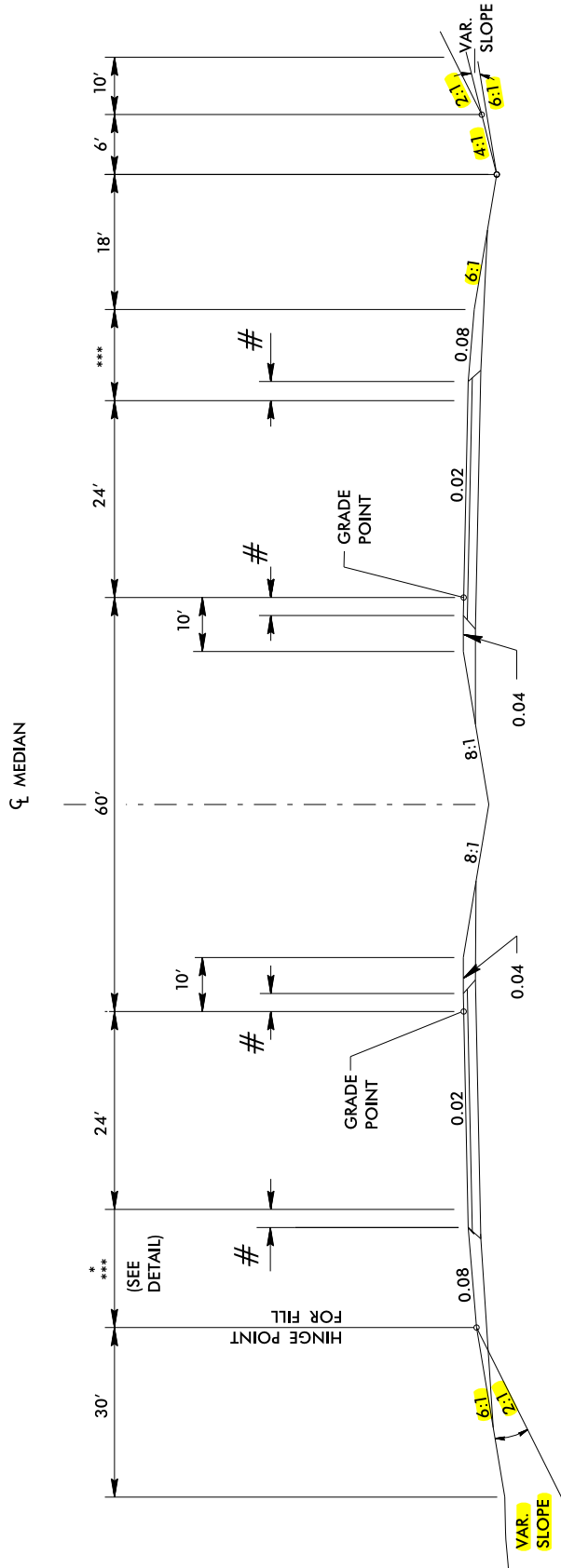


46' MEDIAN (MINIMUM)

FIGURE 3

1-2B

FIG. 3



NOTE: FOR GUIDE TO DRAINAGE SUBGRADE AND SHOULDER SUBGRADE SEE ROADWAY STANDARD DRAWINGS No. 225.01, 225.02.

* FOR GUARDRAIL WIDENING DETAIL, SEE FIGURE 1A.

*** SEE ROADWAY DESIGN MANUAL PART 1, CHAPTER 1-4B, F-1.

SEE ROADWAY DESIGN MANUAL PART 1, CHAPTER 1-40.

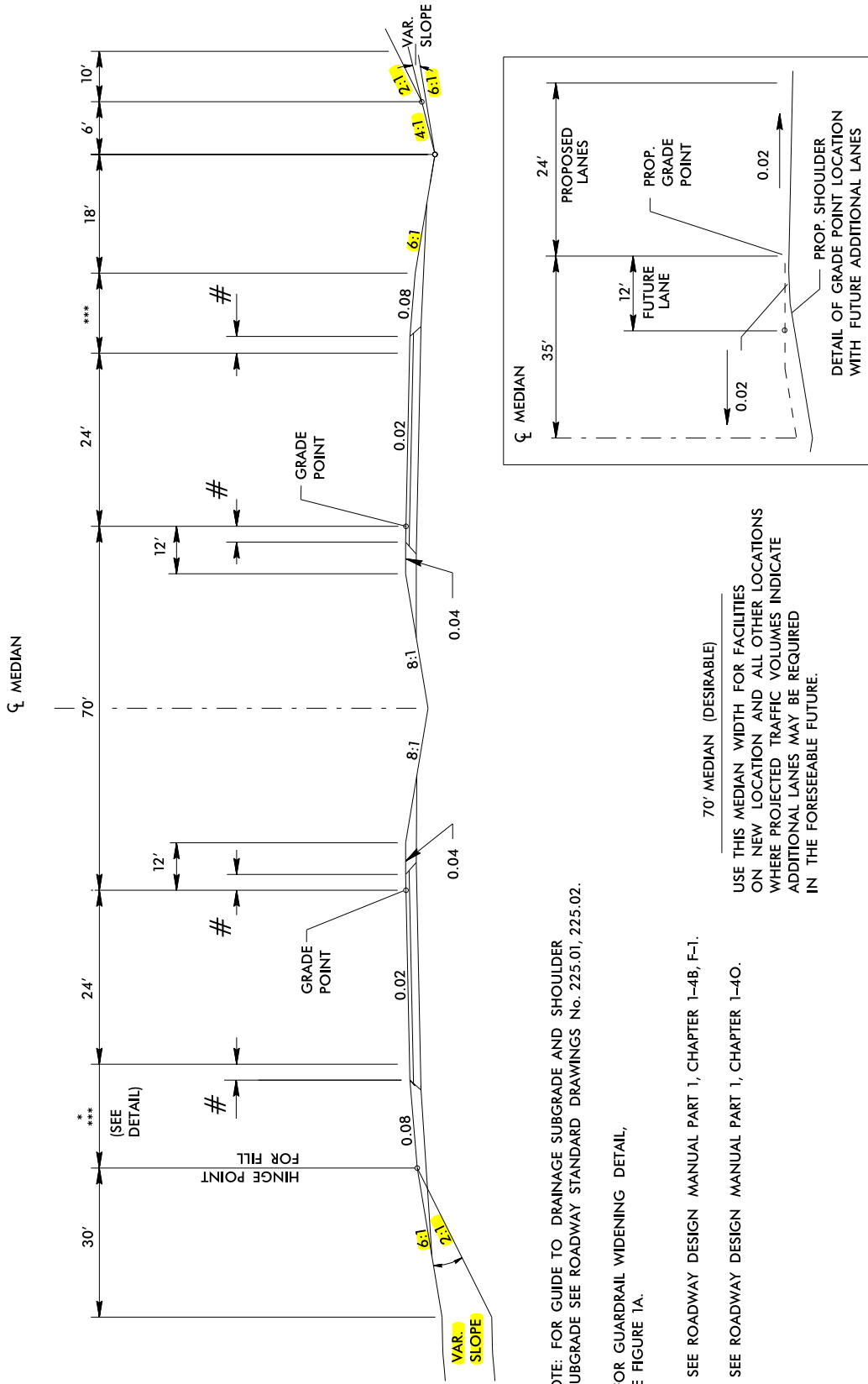
60' MEDIAN (MINIMUM DESIRABLE)

USE THIS MEDIAN WIDTH WHEN RIGHT OF WAY PERMITS MORE THAN THE MINIMUM MEDIAN WIDTH AND THE PROJECTED TRAFFIC VOLUMES INDICATE THAT NO FUTURE LANES WILL BE REQUIRED.

60' MEDIAN (MINIMUM DESIRABLE)

FIGURE 4

1-2B
FIG. 4



NOTE: FOR GUIDE TO DRAINAGE SUBGRADE AND SHOULDER SUBGRADE SEE ROADWAY STANDARD DRAWINGS No. 225.01, 225.02.

* FOR GUARDRAIL WIDENING DETAIL, SEE FIGURE 1A.

*** SEE ROADWAY DESIGN MANUAL PART 1, CHAPTER 1-4B, F-1.

SEE ROADWAY DESIGN MANUAL PART 1, CHAPTER 1-4O.

70' MEDIAN (DESIRABLE)

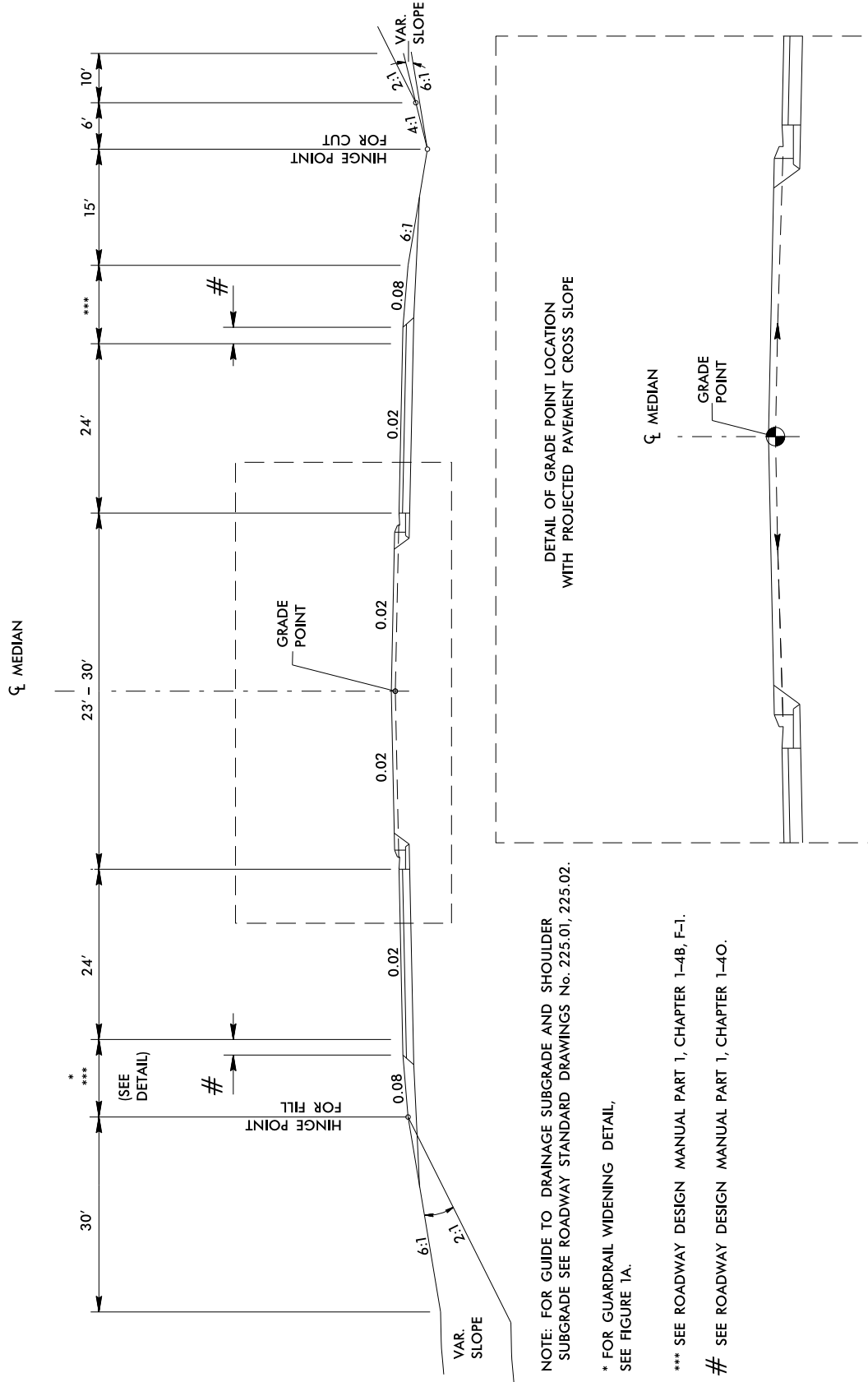
USE THIS MEDIAN WIDTH FOR FACILITIES ON NEW LOCATION AND ALL OTHER LOCATIONS WHERE PROJECTED TRAFFIC VOLUMES INDICATE ADDITIONAL LANES MAY BE REQUIRED IN THE FORESEEABLE FUTURE.

70' MEDIAN (DESIRABLE)

FIGURE 5

1-2B

FIG. 5



23' - 30' RAISED MEDIANS

FIGURE 1A

1-4B
F-1A

SHOULDER WIDTHS

ARTERIALS, INTERSTATES, AND FREEWAYS

IN THE DESIGN OF ARTERIALS, INTERSTATES AND FREEWAYS,
USE THE FOLLOWING MINIMUM USABLE SHOULDER WIDTHS.

ADT	DESIGN YEAR			
	UNDER 400	400 – 1500	1501 – 2000	OVER 2000
ARTERIALS	4'	6'	6'	8' **

NOTE: SEE "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" (2011), Table 7-3

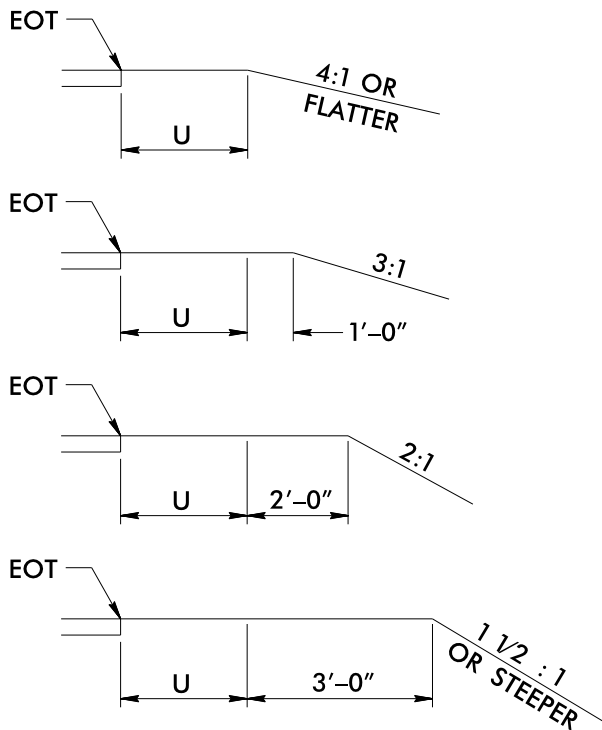
** 10' ON FREEWAYS, EXPRESSWAYS, AND INTERSTATES AND 12' ON FREEWAYS AND INTERSTATES WHEN TRUCK DHV EXCEEDS 500.

USABLE SHOULDER

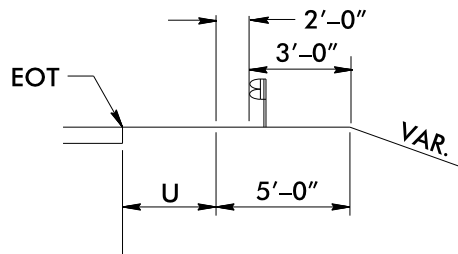
U = USABLE SHOULDER

EOT = EDGE OF TRAVEL LANE

WITHOUT GUARDRAIL



WITH GUARDRAIL



MEDIANS**1-6****MEDIAN WIDTHS FOR FREEWAYS****1-6A**

70' Standard
 46' Minimum (without concrete barrier)
 22' Minimum for six or more lanes with concrete barrier
 22' Standard for four-lanes with concrete barrier
 10' Minimum for four-lanes with concrete barrier

MEDIAN WIDTHS FOR HIGHWAYS OTHER THAN FREEWAYS**1-6B**

NEW LOCATION	WIDENING TO 4 LANE DIVIDED
60' Standard	60' Desirable with ditch
46' Minimum	46' Standard with ditch
	*30' Minimum with ditch
	23'-30' with raised median

*NOTE: A 30' median should not be used at intersections subject to heavy school bus crossings. A 46' median is needed at these intersections.

MEDIAN WIDTHS FOR FREEWAYS WITH CONCRETE BARRIER**1-6C**

Six or more lanes – 22' Minimum with Standard Concrete Median Barrier. See Roadway Standard Drawings, Std. No's. 854.01, 854.02, 854.04, and 854.05.

Four lanes – 22' Standard and 10' Minimum with Concrete Median Barrier. See Roadway Standard Drawings, Std. No's. 854.01, 854.02, 854.04, and 854.05.

RAISED MEDIAN WIDTHS FOR ALL HIGHWAYS OTHER THAN FREEWAYS**1-6D**

No provisions for U-turns, 16' minimum. Provisions for U-turns (passenger vehicles only) *30' minimum.

*This width may be reduced if a breakdown lane is provided. If provisions are made for truck U-turns, the median widths will have to be designed to fit the project conditions.

RAISED MEDIAN WIDTHS FOR ALL

REV. DATE: 12/12/13

REV. NO.8