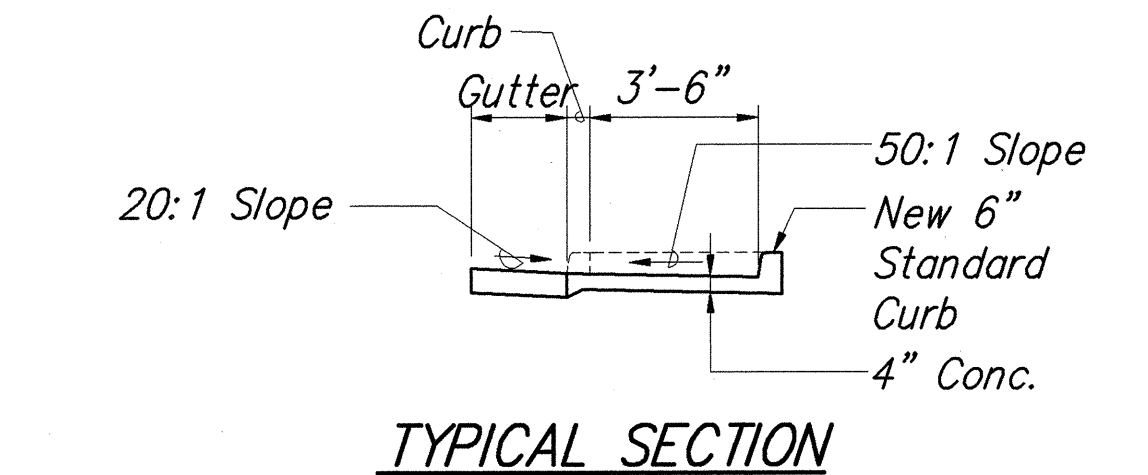
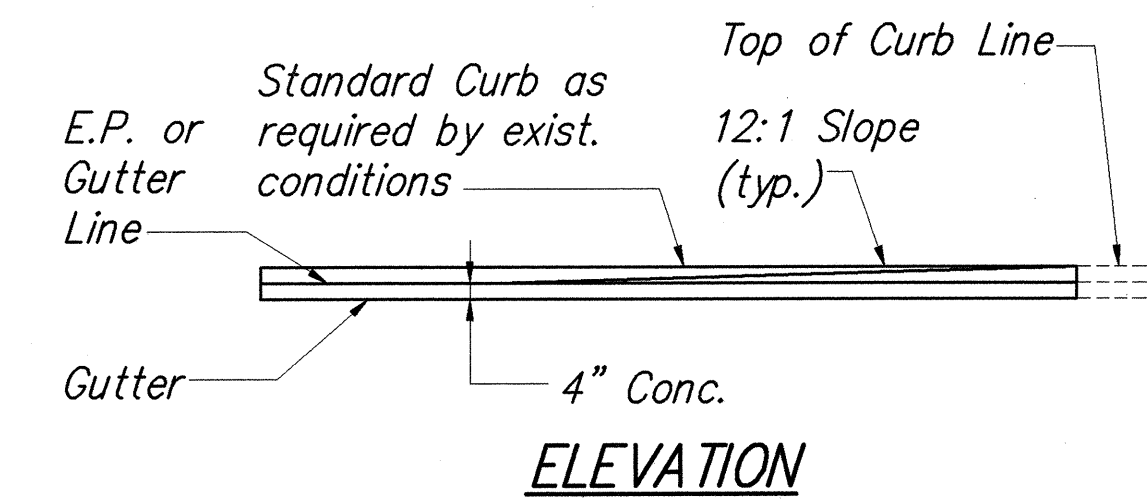
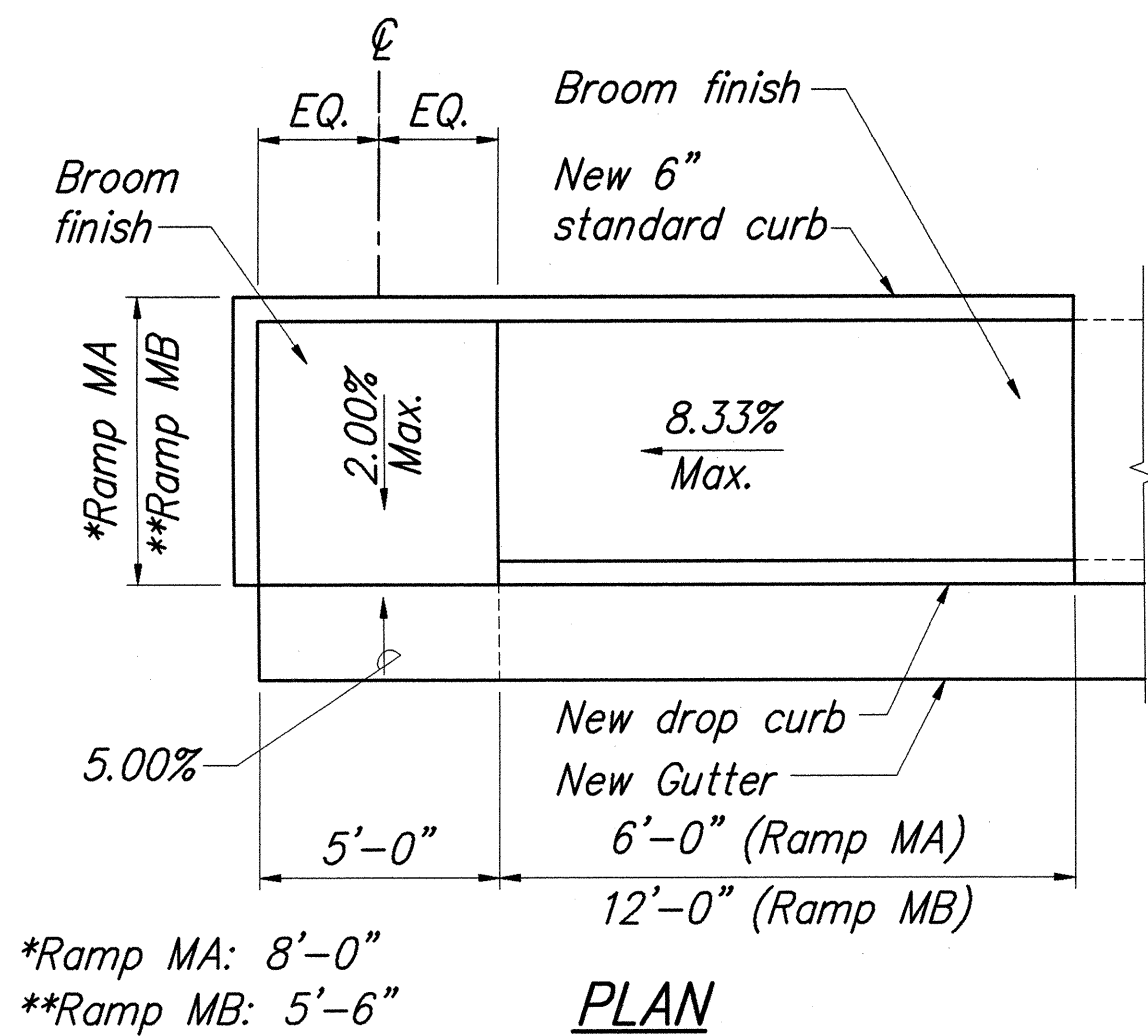
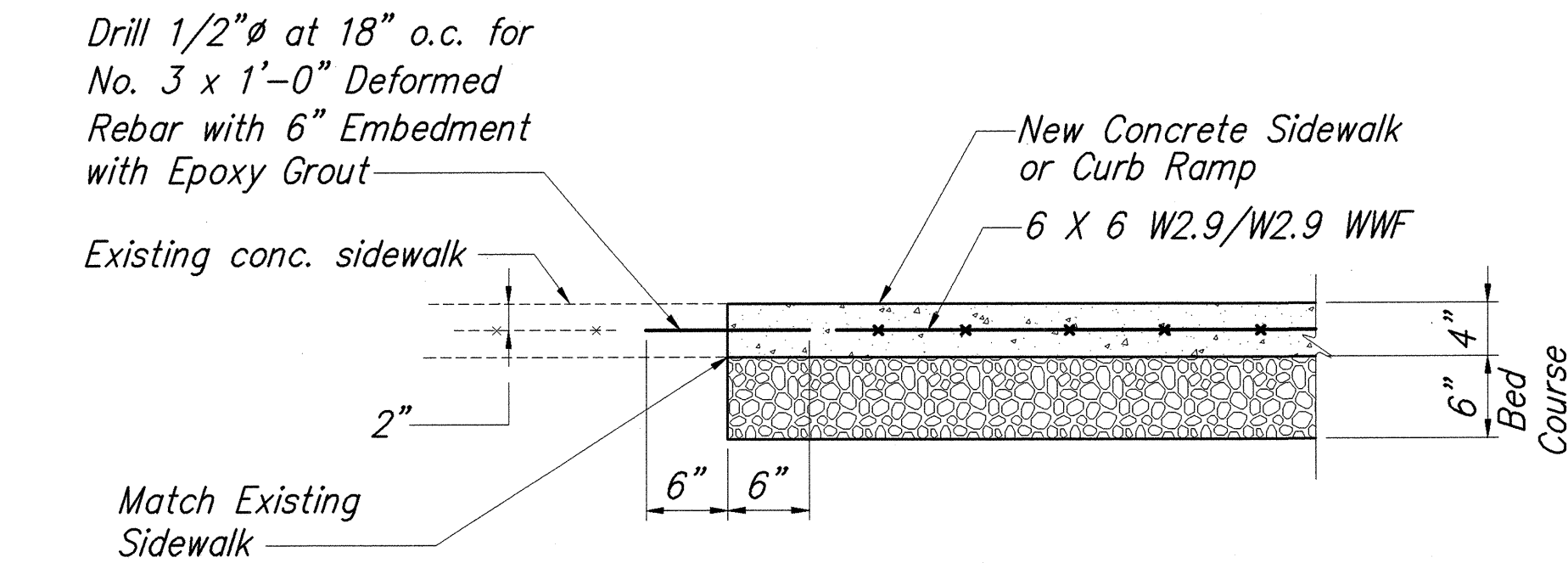


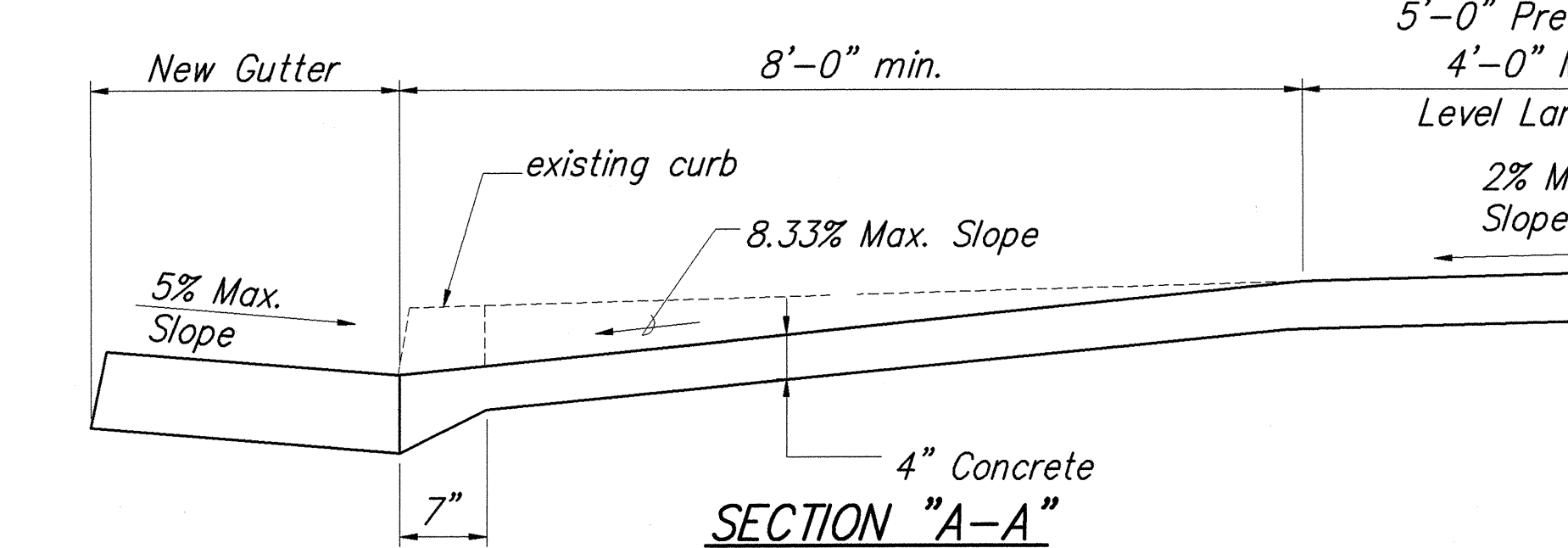
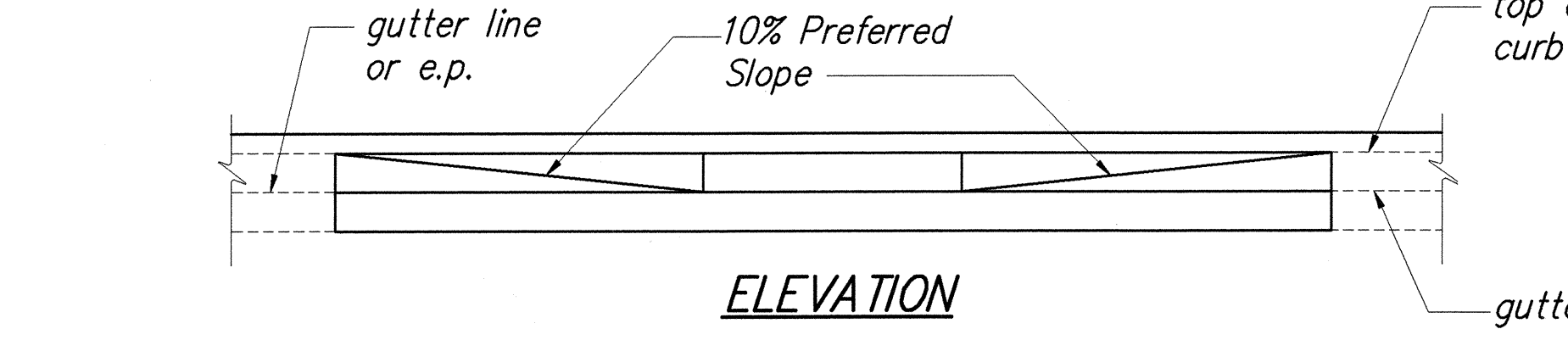
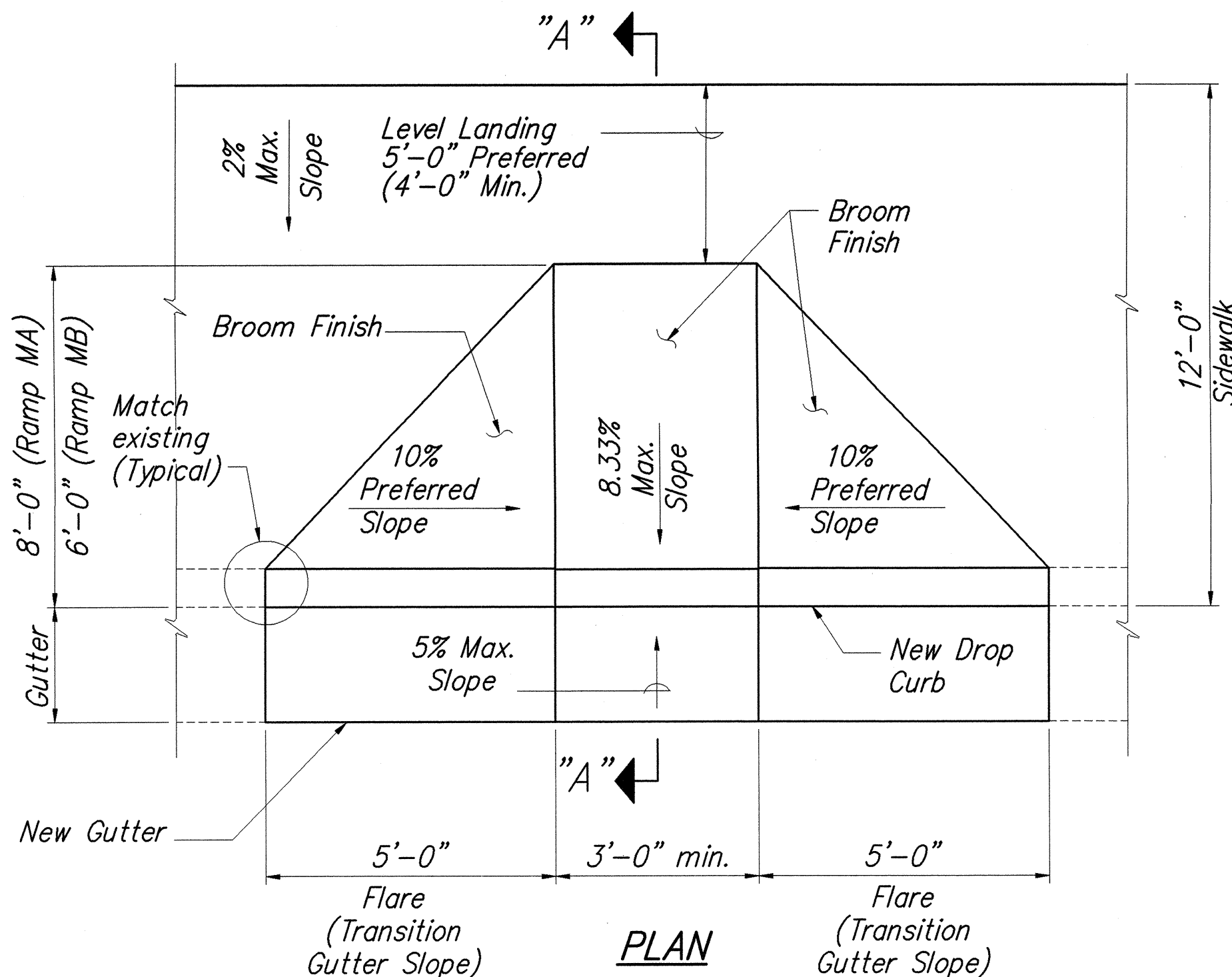
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	22	88



**CURB RAMP – MODIFIED TYPE "B" DETAIL**  
Scale: 1/4" = 1'-0"



**TYPICAL CONSTRUCTION JOINT AT EXISTING SIDEWALK**  
Not to scale



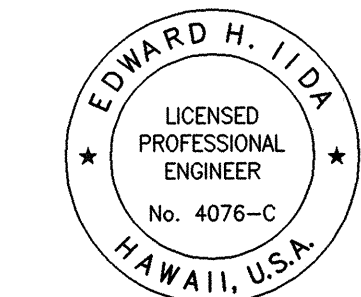
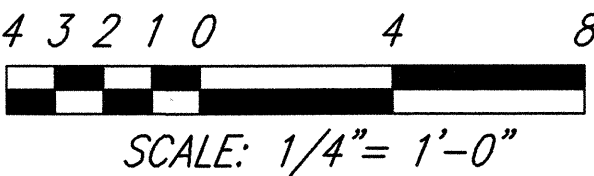
**CURB RAMP – TYPE "A" DETAIL**  
Not to scale

**NOTE:**  
All curb ramps shall be reinforced.

**CURB RAMP NOTES:**

- These typical details are intended as curb ramp guidelines for design and construction.
- A 2% maximum cross slope shall be maintained in the direction of pedestrian traffic.
- The maximum slopes of adjoining gutters or road surface immediately fronting the curb ramp shall not exceed 5% for Type A ramps and 8.33% for Type B ramps. The counterslope may be exceeded when the change of grade does not exceed 13% (11% preferred) over a distance of 2ft. Exceeding the 13% (11% preferred) change in grade will cause a person in a wheelchair to tip forward and/or fall backward.
- All pullboxes shall be installed away from the curb ramp and within the sidewalk/paved area to the maximum extent feasible.
- Where necessary, existing pullboxes, handholes, manholes, etc. shall be adjusted to match curb ramp grade. Adjustments shall not be paid for separately but shall be considered incidental to the various curb ramp items unless indicated otherwise.
- Unless otherwise noted, new gutters are required as shown.
- All curb ramps shall be reinforced with 6x6 W2.9/W2.9 welded wire fabric.
- Transitions from ramps to gutters and roadways shall be flush.
- Curb ramps and sidewalks shall be constructed to eliminate ponding to the maximum extent feasible.
- Construction joints are required to join curb ramps with sidewalks.
- Surfaces of sidewalks and curb ramps shall be firm, stable, and slip-resistant. This includes the surfaces of pullboxes, valve covers, manhole covers, etc.
- Bed course material is required for curb ramps, sidewalks, and gutters.
- All sidewalks shall provide a minimum clear width of 3'-0" (excluding curb) for pedestrian circulation. If this cannot be met, a minimum 32-inch clear width is allowed for a distance of 24-inches.
- If possible, install utility poles, fire hydrants, light poles, sign posts, pullboxes, etc. off of sidewalk but within the right-of-way.
- Objects protruding from utility poles and walls adjacent to the sidewalks (i.e. mounted fire hydrants, telephones, meters on poles, etc.) shall be mounted to meet the current American with Disabilities Act Accessibility Guidelines (ADAAG) and will be subject to Engineer's approval.
- If a curb ramp is not constructed according to the plans, the Contractor shall reconstruct the curb ramp at no cost to the State. Construction tolerance for Portland Cement Concrete shall be based on 1/4 inch per 10 ft. (±0.2%). Remedial measures will not be accepted.
- Additional information is available from:
  - American with Disabilities Act Accessibility Guidelines (ADAAG), Jan. 1998, The Access Board.
  - Accessible Rights-of-Way: A Design Guide, Nov. 1999, The Access Board.
  - Designing Sidewalks and Trails for Access, Part 1, July 1999, FHWA.
  - Designing Sidewalks and Trails for Access, Part 2, Sept 2001, FHWA.

**GRAPHIC SCALE:**



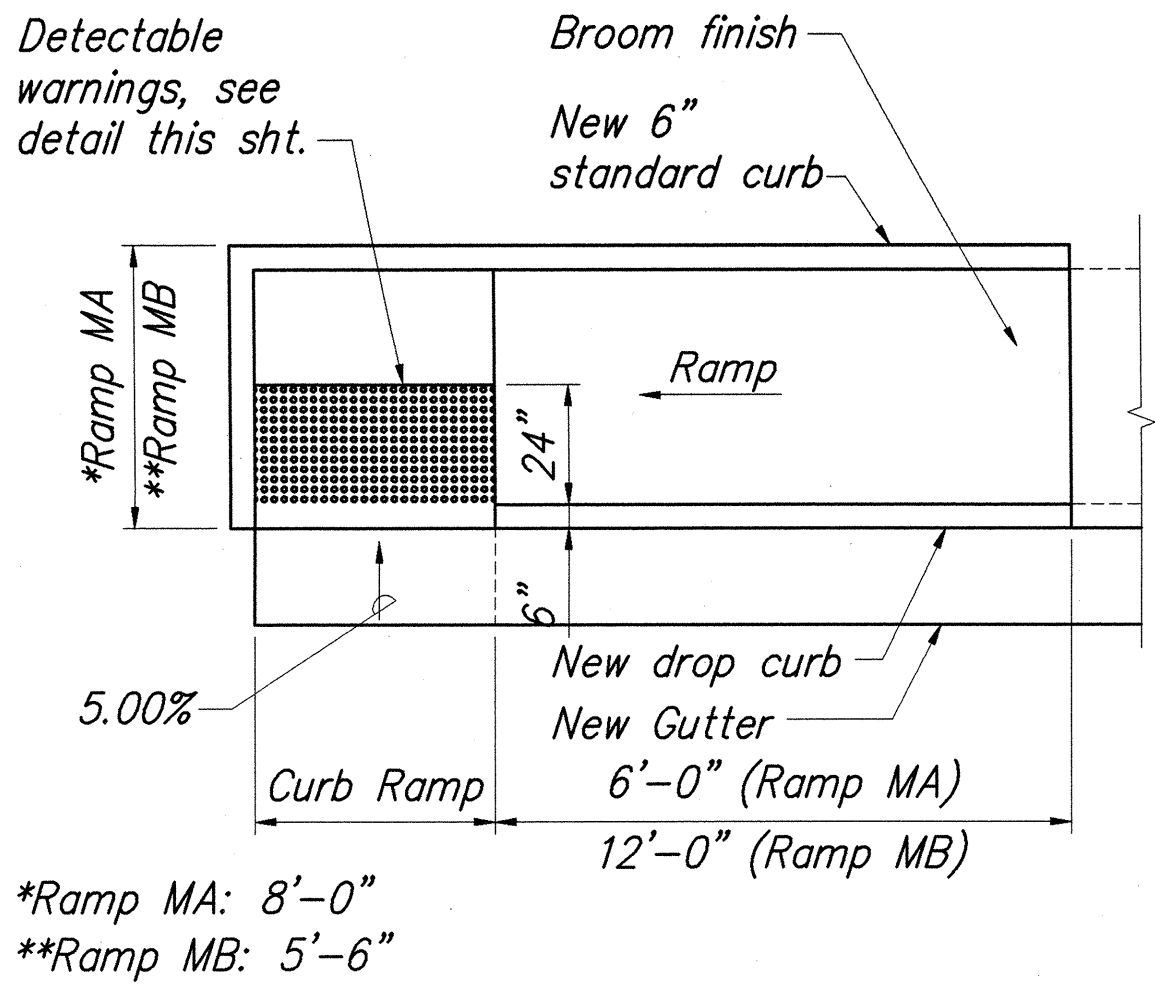
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Edward H. Iida*  
MITSUNAGA & ASSOCIATES

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**CURB RAMP DETAILS**

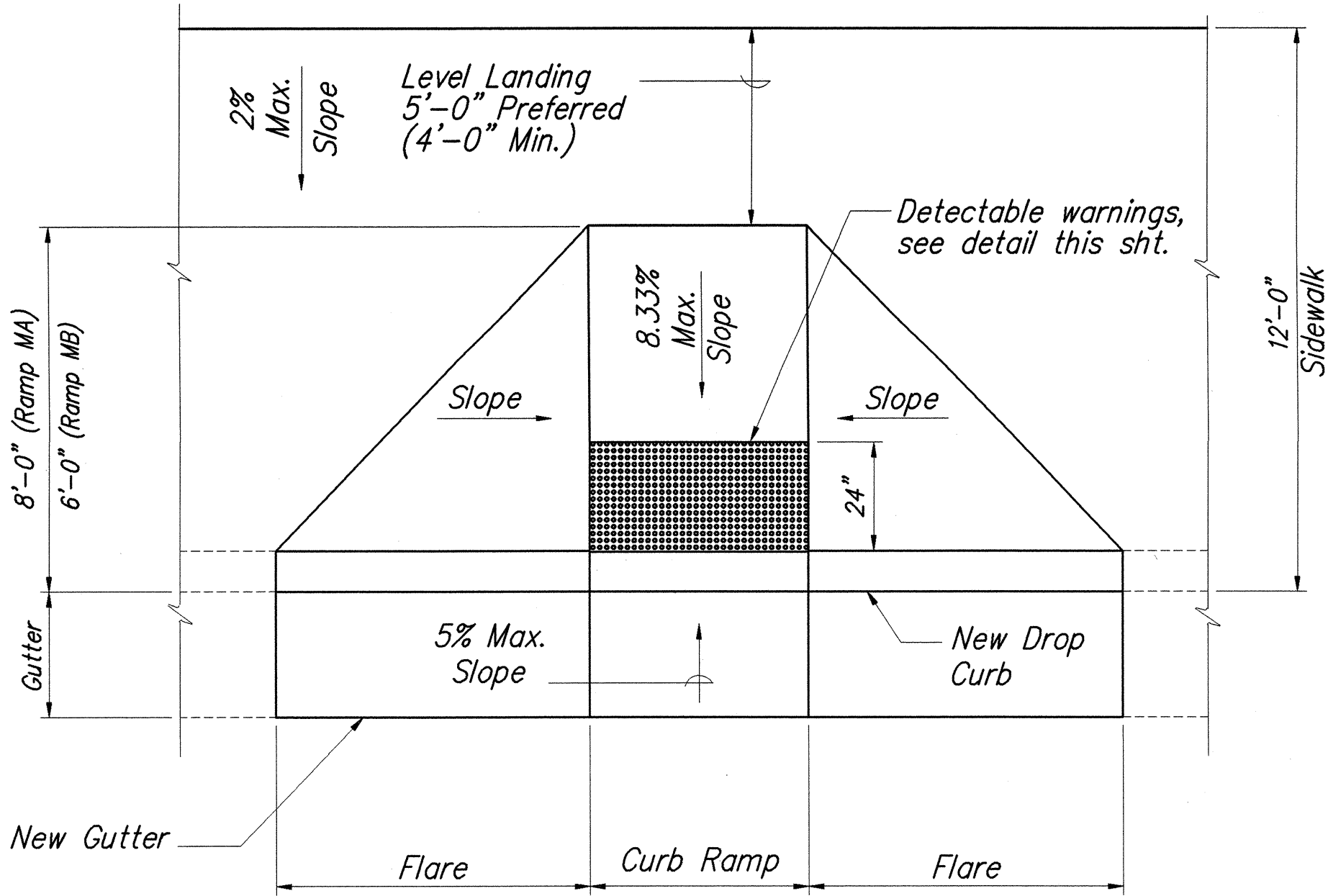
**INTERSTATE ROUTE H-1 REHABILITATION**  
Vicinity Of Makakilo Interchange  
Project No. H1A-01-02M  
Scale: As Noted Date: April 2003

SHEET No. **C-20** OF **42** SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	H1A-01-02M	2003	23	88



TRANSITION RAMP WITH DETECTABLE WARNING



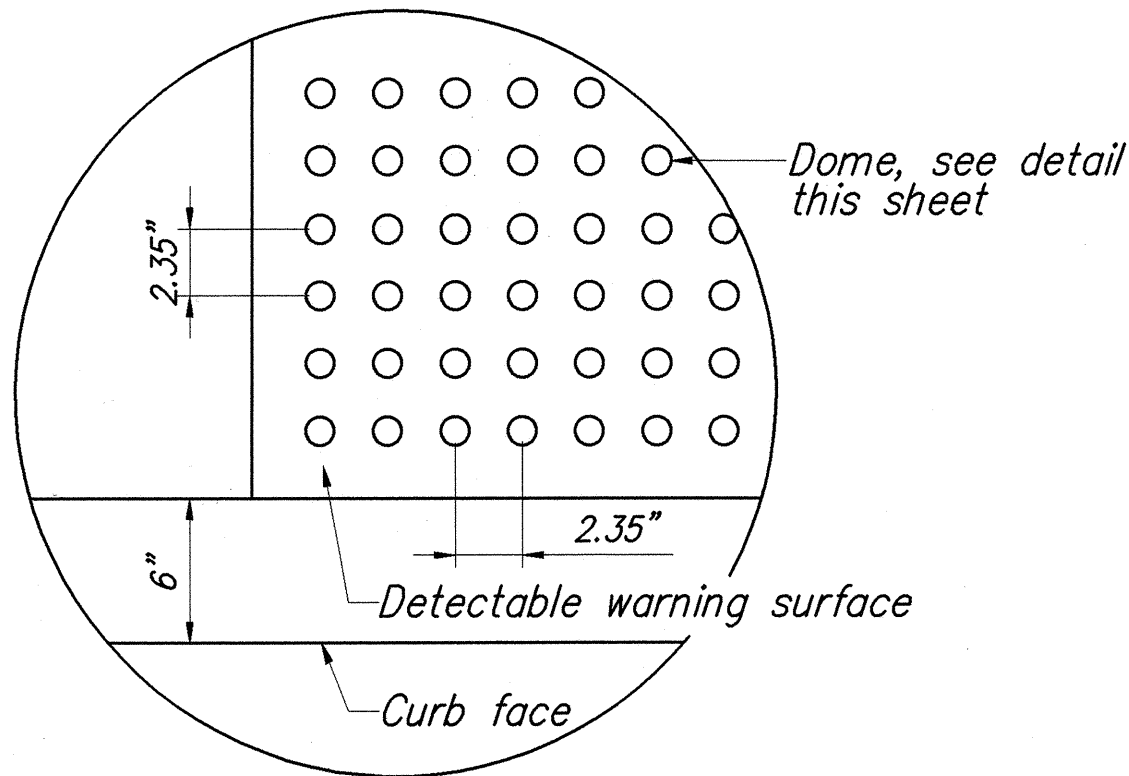
DETECTABLE WARNING AT CURB RAMP

NOTES:

1. Detectable warnings shall be 24 inches in the direction of travel and extend the full width of the curb ramp or flush surface (does not include flares).
2. Truncated domes shall have a diameter of 0.9 inch at the bottom, a diameter of 0.4 inch at the top, a height of 0.2 inch and a center to center spacing of 2.35 inches measured along one side of a square arrangement.
3. Domes shall be aligned on a square grid in the predominant direction of travel to permit wheels to roll between the domes.
4. There shall be a minimum of 70 percent contrast in light reflectance between the detectable warning and an adjoining surface, or the detectable warning shall be "safety yellow".
5. The material used to provide visual contrast shall be an integral part of the detectable warning surface.
6. The detectable warning shall be located so that the edge nearest the curb line or other potential hazard is 6 to 8 inches from the curb line or other potential hazard, such as a reflecting pool edge or the edge of a transit platform.

TYPICAL INSTALLATION OF DETECTABLE WARNINGS

Not to scale



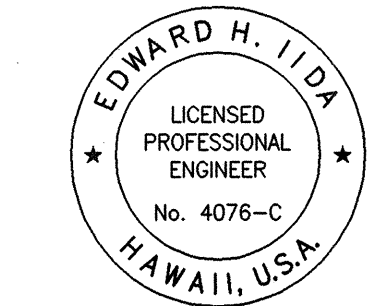
ENLARGEMENT

DETECTABLE WARNING DETAIL

Not to scale

DOME SECTION

GRAPHIC SCALE:



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION  
*Edward H. Iida*  
 MITSUNAGA & ASSOCIATES

STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 HIGHWAYS DIVISION  
**DETECTABLE WARNING DETAILS**

**INTERSTATE ROUTE H-1 REHABILITATION**  
**Vicinity Of Makakilo Interchange**  
**Project No. H1A-01-02M**  
 Scale: As Noted      Date: April 2003  
 SHEET No. C-21 OF 42 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	4/03
No.	DESIGNED BY	4/03
	CHECKED BY	4/03