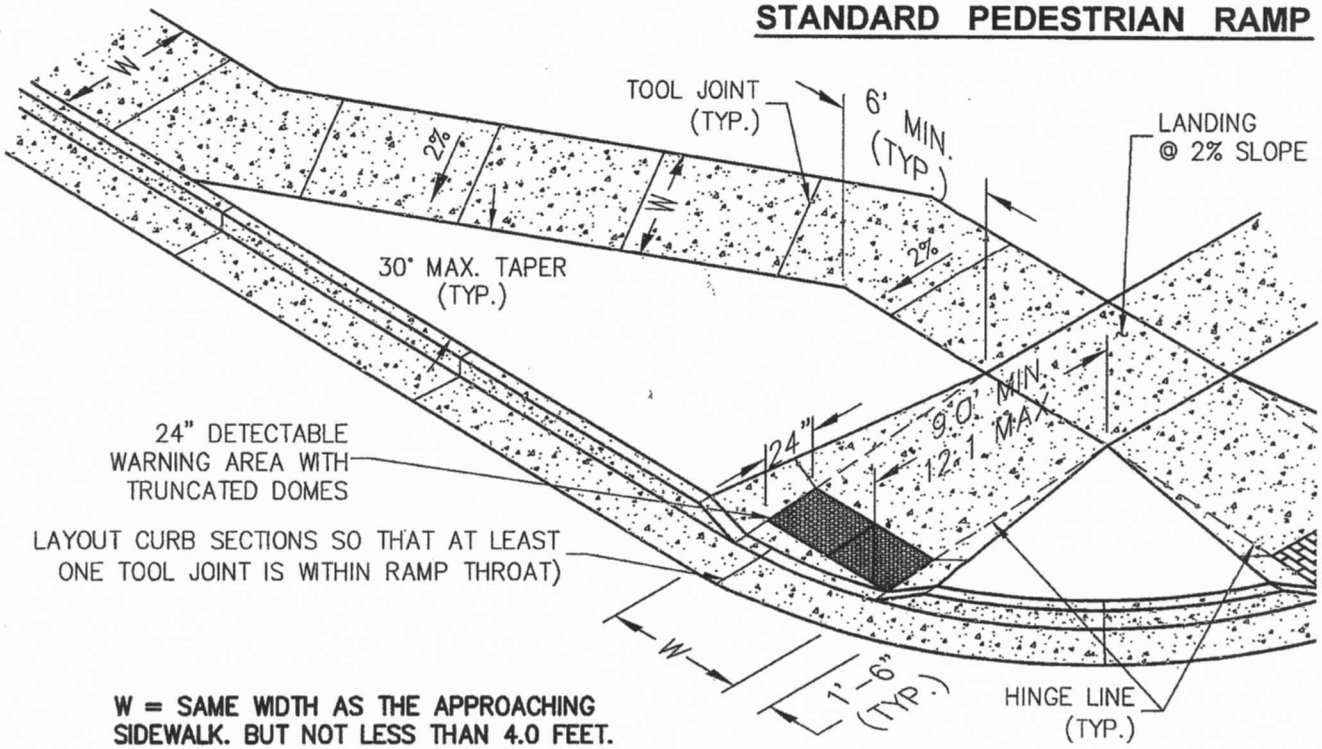
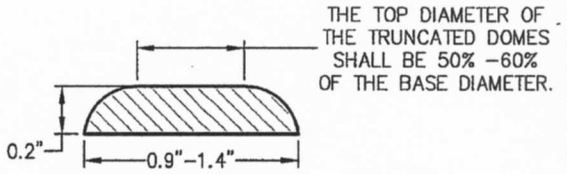
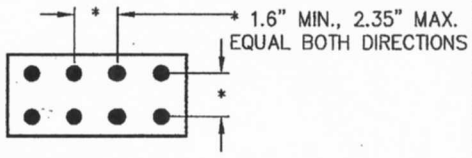
STANDARD PEDESTRIAN RAMP



W = SAME WIDTH AS THE APPROACHING SIDEWALK. BUT NOT LESS THAN 4.0 FEET.



ELEVATION VIEW

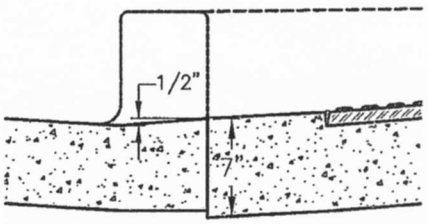


DOME SPACING

TRUNCATED DOME DETAILS

GENERAL NOTES

1. All work shall be done in accordance with current City of Colorado Springs Engineering Division Standard Specifications.
2. Contractor to obtain required Concrete Permits prior to construction.
3. Contractor to notify Engineering Division Inspection Office at least 24 hours prior to placement of any concrete.
4. Pedestrian ramps with 24" detectable warning area shall be 4000 psi, plain concrete, with a coarse broom finish perpendicular to direction of travel.
5. Contractor shall stamp their company name and construction date within the pedestrian ramp area.
6. Ramp location and length may require modification to maintain the 12:1 maximum running slope due to intersection street grades and/or alignment.
7. Where the 1'-6" flared side(s) of a perpendicular curb ramp is (are) contiguous with a pedestrian or hard surface area, the flare width shall be increased to 8' minimum and the maximum flare slope shall not exceed 10:1.
8. Pedestrian walkway and/or location of existing or future pedestrian ramps on opposite corners shall be reviewed before constructing new ramps. New ramps shall align with existing ramps and pedestrian walkway.
9. At marked pedestrian crossings, the bottom of the ramps, exclusive of the flare sides, shall be totally contained within the markings.
10. Detectable warning area shall be prefabricated reddish integrally colored truncated-dome surfaced concrete pavers or the pre-cast panels from the City's approved product list.



FLOWLINE TO RAMP RISE

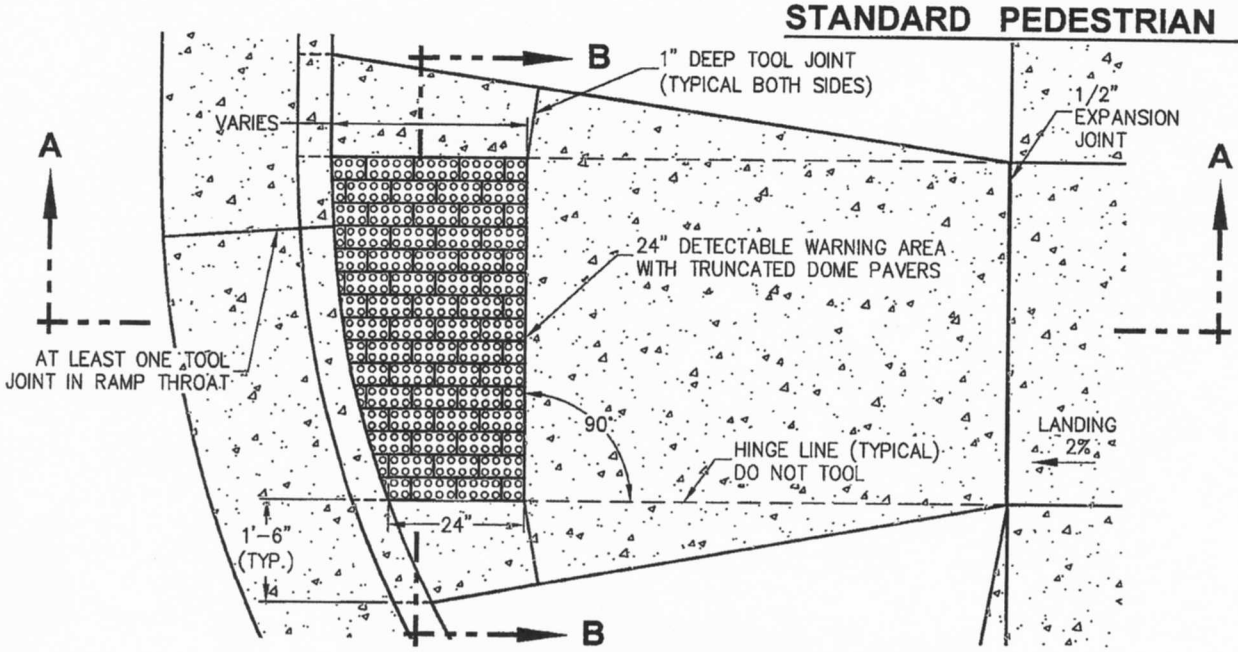
CITY OF COLORADO SPRINGS

PEDESTRIAN RAMP GENERAL DETAILS

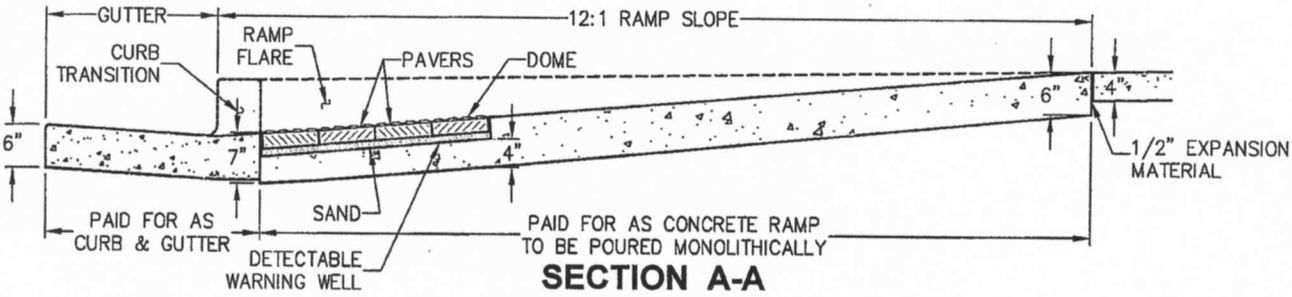
Approved By: Gary R. Hayes City Engineer

Drawn By: J.Niño Date: Jan., 2005 STD. D-8A

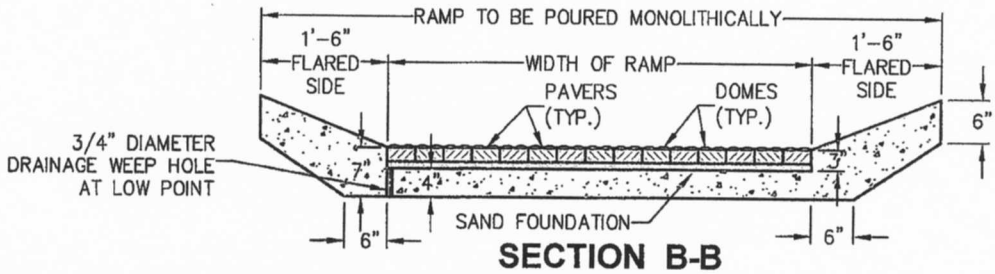
STANDARD PEDESTRIAN RAMP



RAMP WITH DETECTABLE PAVERS



SECTION A-A



SECTION B-B

NOTES

1. Detectable warning pavers shall be prefabricated reddish integrally colored truncated domes surfaced concrete or masonry pavers. Pavers shall meet the requirements of ASTM C 902 or ASTM C 936 and comply with ADA requirements.
2. Prior to start of work, Contractor shall submit, to City Engineering for approval, a sample paver and documentation from the manufacturer. Pavers surface shall have a minimum of 70% light reflectivity contrast with the adjoining surface.
3. Well for pavers shall be accurately blocked out to ensure proper depth, alignment, and uniform grade. Only full width pavers shall be used to obtain specified ramp throat width.
4. Pavers shall be placed in the running pattern shown, domes placed in a square grid and aligned in the direction of travel. Pavers shall be installed so that the bases of the truncated domes are at the same elevation as the adjoining ramp surface.
5. Sand for bedding material shall conform to ASTM C 33. Sand to be placed between joints shall conform to ASTM C 144.
6. Bedding sand shall be screed to the appropriate depth ahead of the pavers installation. A plate vibrator shall be used to embed the pavers into the sand. Any pavers that are damaged during transport or installation will be rejected and shall be replaced at the Contractor's expense.
7. When cut pavers are required, cut sections shall not significantly impact overall truncated domes pattern and cut domes shall be beveled at a 45-degree angle to create a smooth transition.
8. Joint spacing shall be in accordance with the manufacturer's recommendations, but shall not be more than 1/8". Joints shall be filled completely with joint sand. Excess sand shall be removed by sweeping.

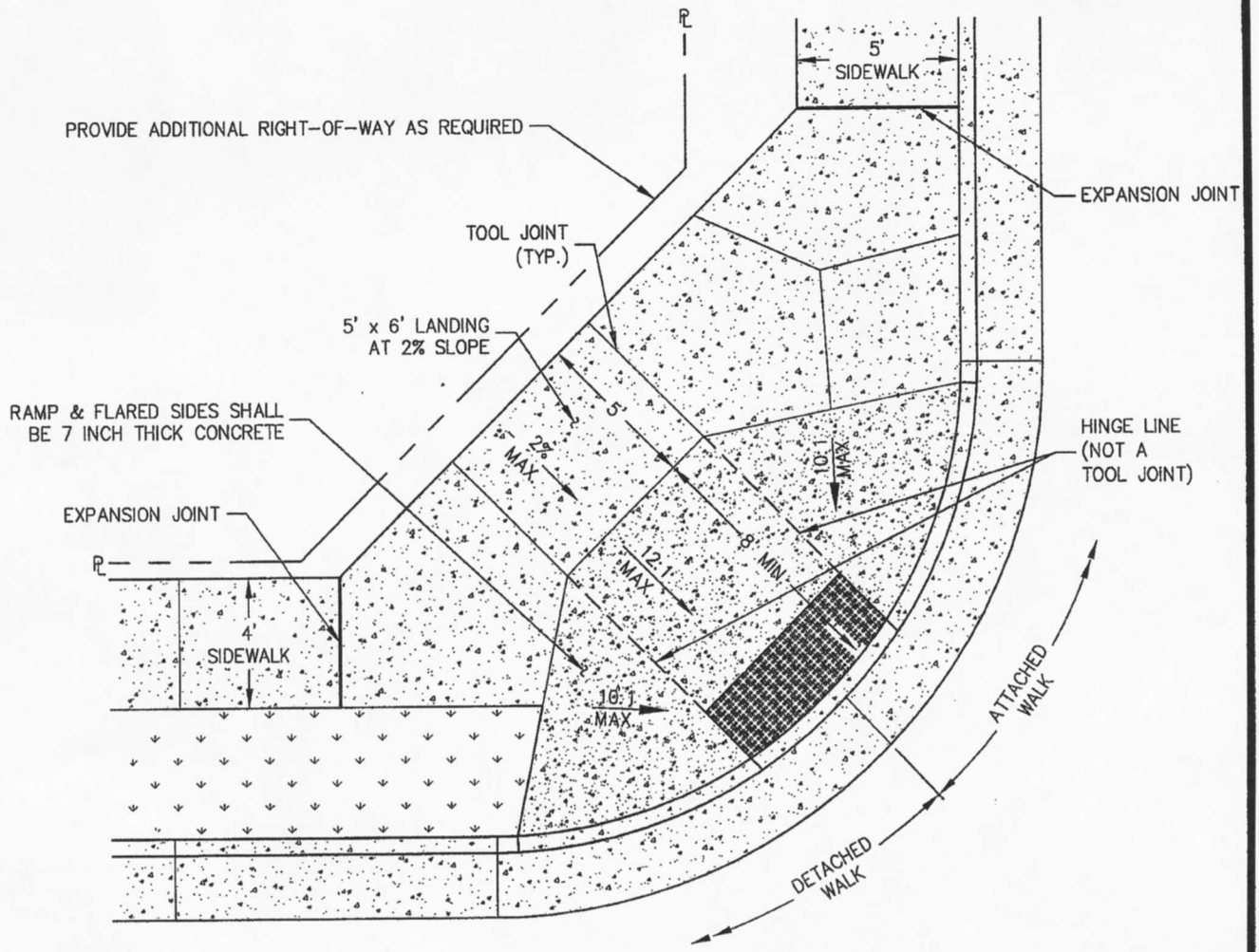
CITY OF COLORADO SPRINGS

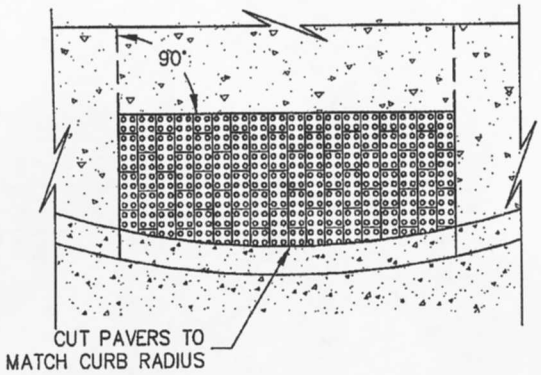
PEDESTRIAN RAMP DETAILS FOR DETECTABLE PAVERS

Approved By:	City Engineer
Drawn By: J.Niño Date: Jan., 2005	STD. D-88

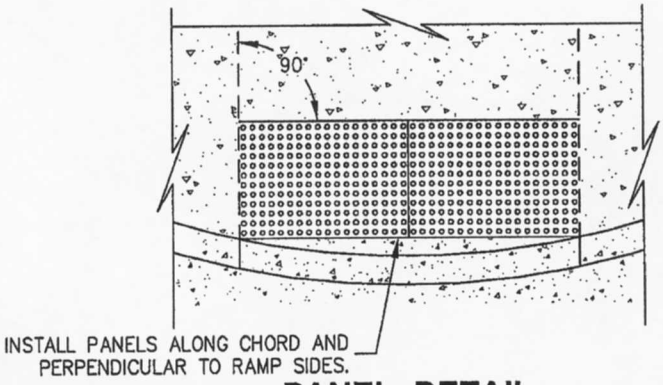
ALTERNATE RADIAL PEDESTRIAN RAMP

FOR RETROFIT APPLICATIONS





PAVER DETAIL



PANEL DETAIL

NOTES

1. See General Notes and Standard Ramp Details.
2. Ramps shall align with each other across the street.
3. For retrofit applications only.
4. Not for new construction.

CITY OF COLORADO SPRINGS

ALTERNATE RADIAL PEDESTRIAN RAMP DETAILS

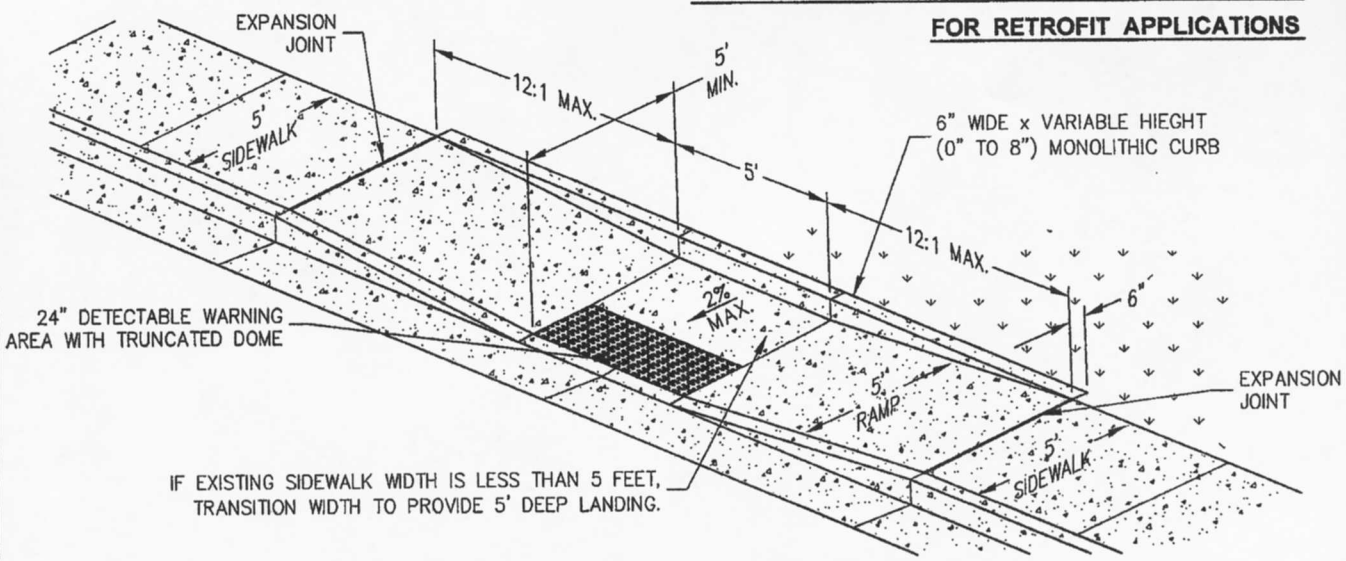
Approved By: City Engineer

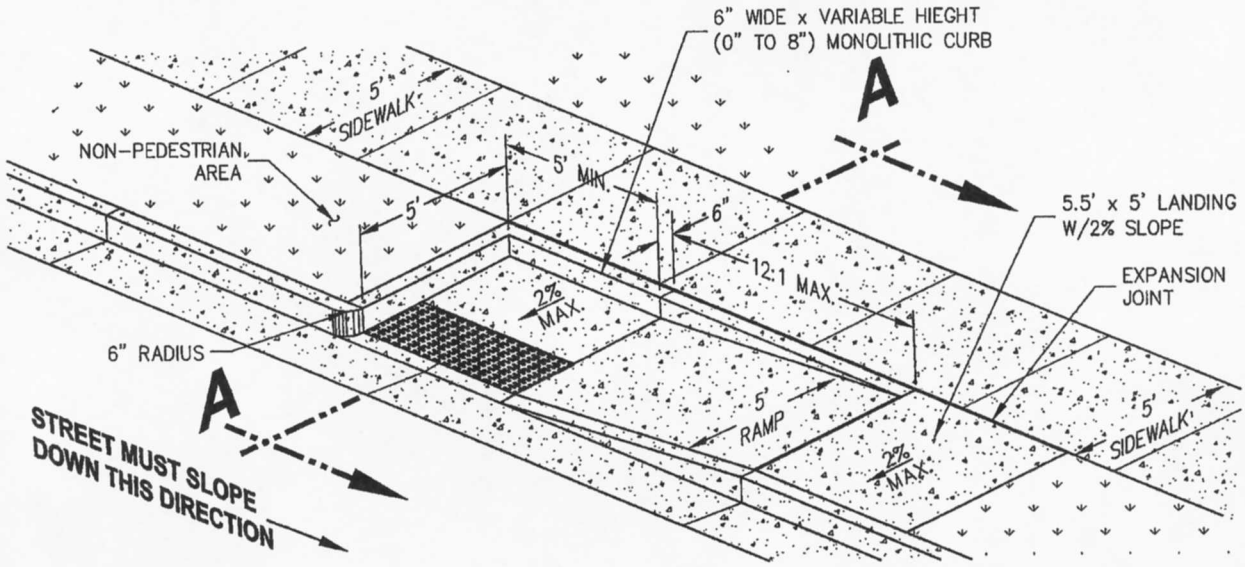
Drawn By: J.Niño | Date: Mar., 2005 | STD. D-8H

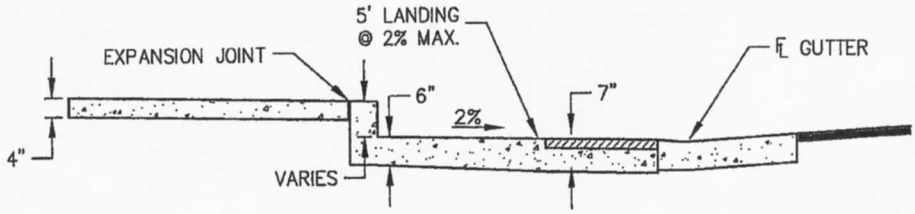
C:\Juan\PROJECTS\2005\Ped Ramp Stds\STD D-8H.dwg, 3/15/2005 11:10:09 AM, Proj. Eng.: Jerry Banks, Eng. Tech.: J Niño

ALTERNATE PARALLEL RAMPS FOR MID-BLOCK OR "T" INTERSECTION

FOR RETROFIT APPLICATIONS







SECTION A - A

NOTES

1. See General Notes and Standard Ramp Details.
2. Ramp shall align with the ramp across the street.
3. For retrofit applications <u>only</u>, where combined ramps can not be constructed due to limited Right-of-Way, existing buildings, etc.
4. A single ramp may only be used if drainage is not a concern and the opposite side of the landing is protected by a non-pedestrian area (i.e. landscaping, tree well, etc.). Ramp drop-offs may also need to be protected with a railing or barrier.
5. Not for new construction.

CITY OF COLORADO SPRINGS

ALTERNATE PARALLEL PEDESTRIAN RAMP DETAILS MID-BLOCK OR "T" INTERSECTION

Approved By: City Engineer

Drawn By: J.Niño | Date: Mar., 2005 | STD. D-8J

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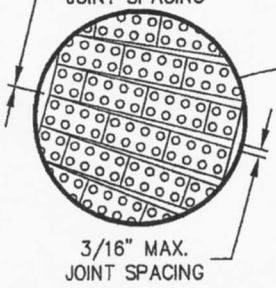
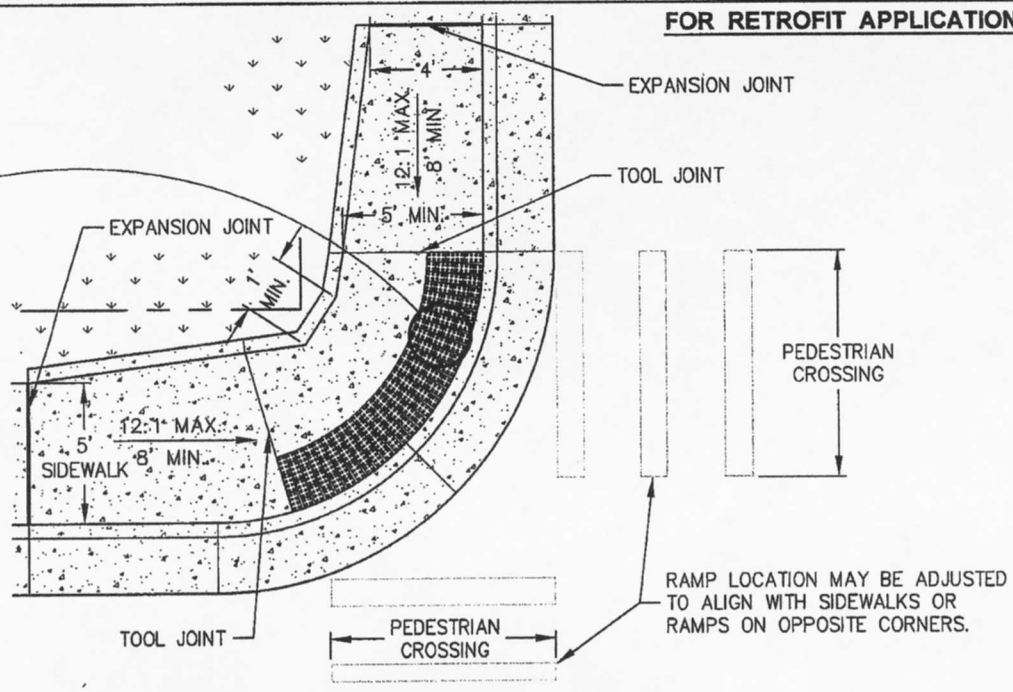
ALTERNATE PARALLEL PEDESTRIAN RAMP FOR CORNERS

FOR RETROFIT APPLICATIONS

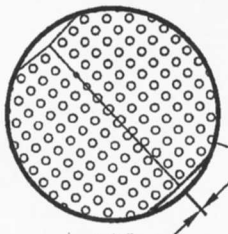


PAVER DETAIL

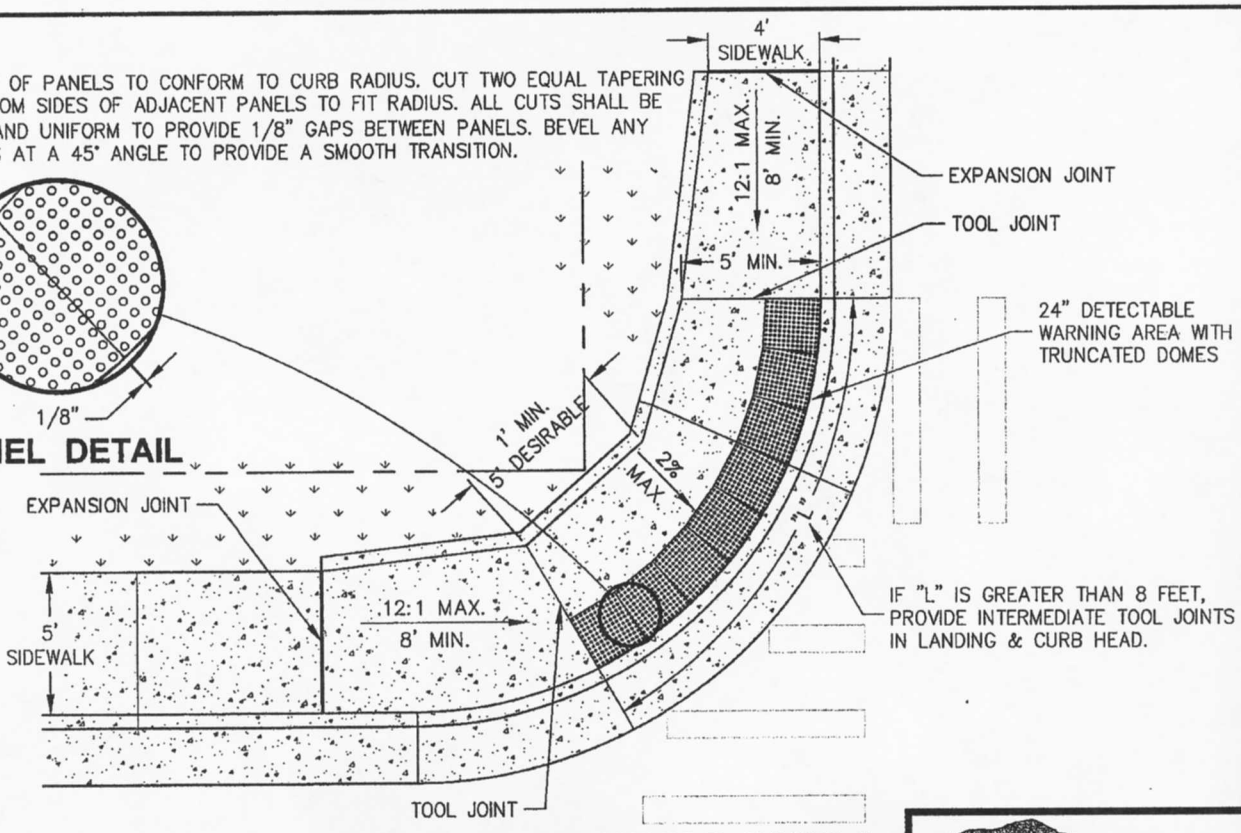


RAMPS WITH DETECTABLE PAVERS

CUT FRONT OF PANELS TO CONFORM TO CURB RADIUS. CUT TWO EQUAL TAPERING WEDGES FROM SIDES OF ADJACENT PANELS TO FIT RADIUS. ALL CUTS SHALL BE STRAIGHT AND UNIFORM TO PROVIDE 1/8" GAPS BETWEEN PANELS. BEVEL ANY CUT DOMES AT A 45° ANGLE TO PROVIDE A SMOOTH TRANSITION.



PANEL DETAIL



RAMPS WITH DETECTABLE PANELS

NOTES

1. See General Notes and Standard Ramp Details.
2. Ramp shall align with the ramps across the street.
3. For retrofit applications only, where combined ramps can not be constructed due to limited Right-of-Way, existing buildings, etc.
4. Not for new construction.

CITY OF COLORADO SPRINGS

ALTERNATE PARALLEL PEDESTRIAN RAMP DETAILS FOR CORNERS

Approved By: City Engineer		
Drawn By: J.Nino	Date: Mar. 2005	STD. D-8K

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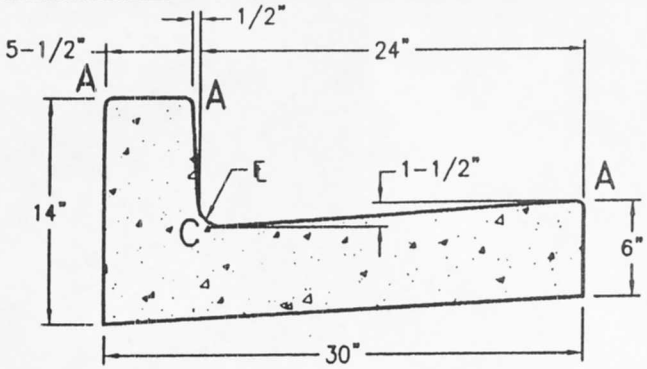
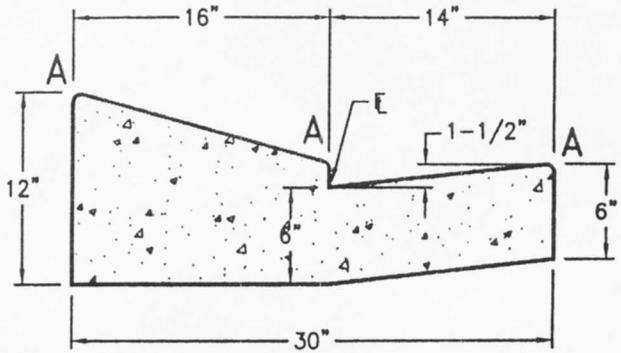


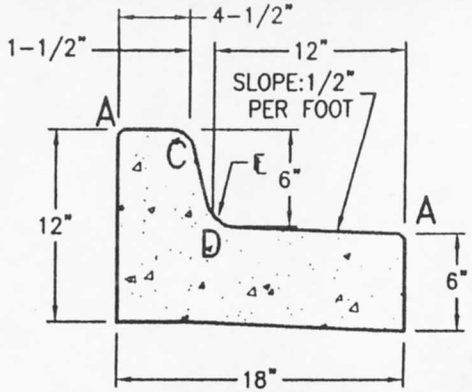
TYPE 1

VERTICAL
CURB AND GUTTER
SCALE: 1" = 1'-0"



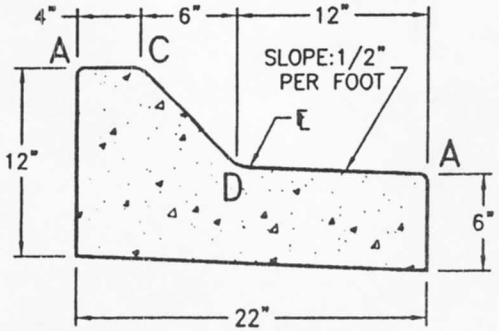
TYPE 2

RAMP
CURB AND GUTTER
SCALE: 1" = 1'-0"



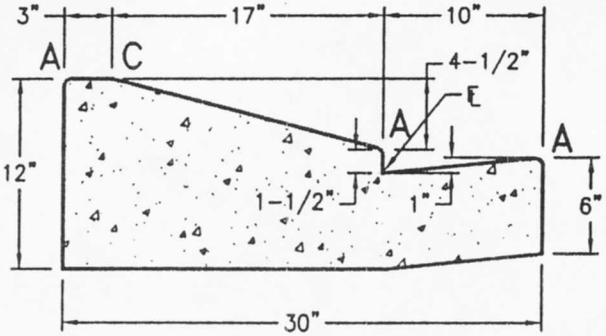
TYPE 3

STANDARD MEDIAN
CURB AND GUTTER
SCALE: 1" = 1'-0"



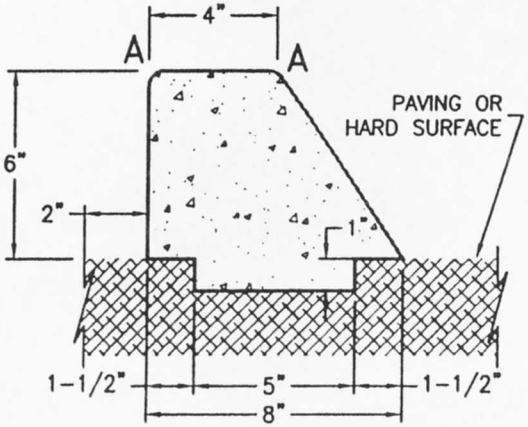
TYPE 4

MOUNTABLE MEDIAN
CURB AND GUTTER
SCALE: 1" = 1'-0"



TYPE 5

MODIFIED TYPE 2
CURB AND GUTTER
SCALE: 1" = 1'-0"



TYPE 6

ALTERNATE MOUNTABLE MEDIAN
CURB AND GUTTER
SCALE: 1" = 0'-6"

LENGTH FOR RADII

A = 1/2"
C = 1-1/2"
D = 1-1/2" TO 2"

NOTES FOR TYPE 6 CURB:

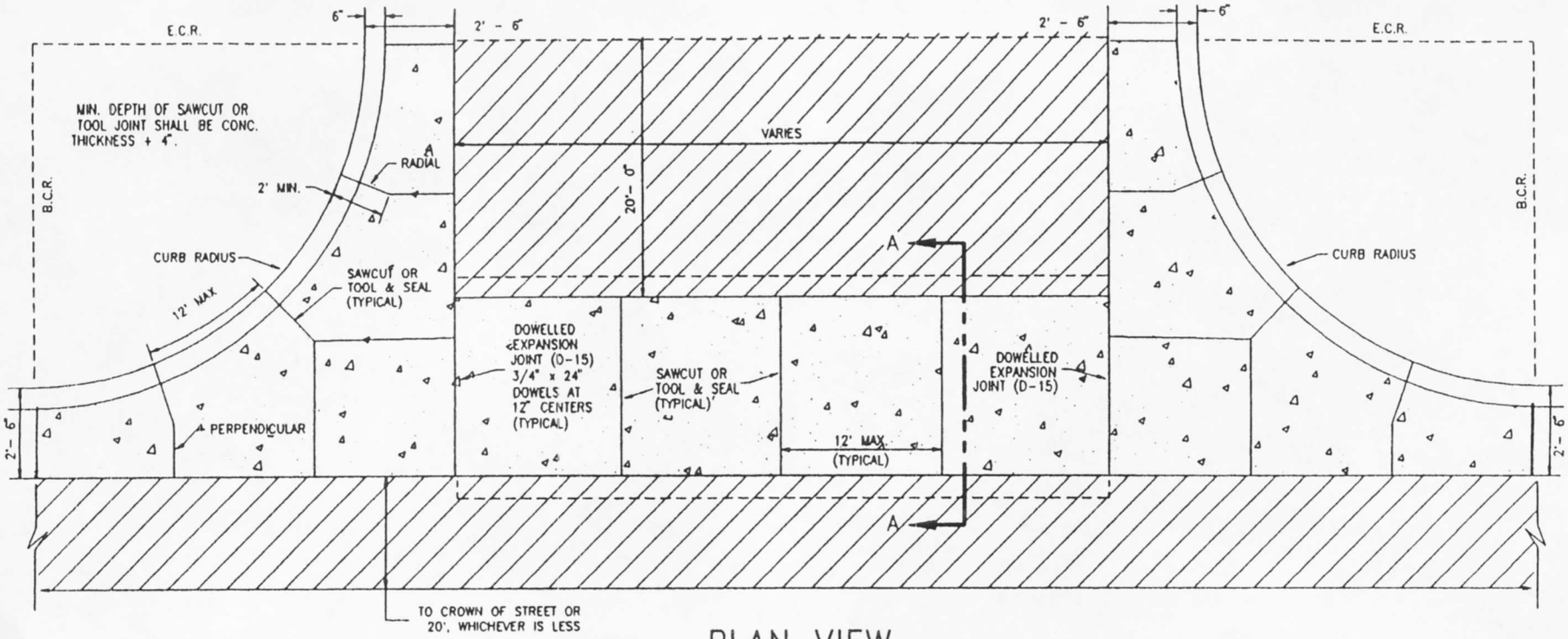
1. 4000 P.S.I. concrete mix design shall be modified to include 0.5 bags of fiber mesh per cubic foot.
2. 1" deep tool joints shall be installed at 6' (six foot) spacing.
3. Type 6 median curb will only be allowed where street section falls away from curb, "spill" condition.

CITY OF [illegible]

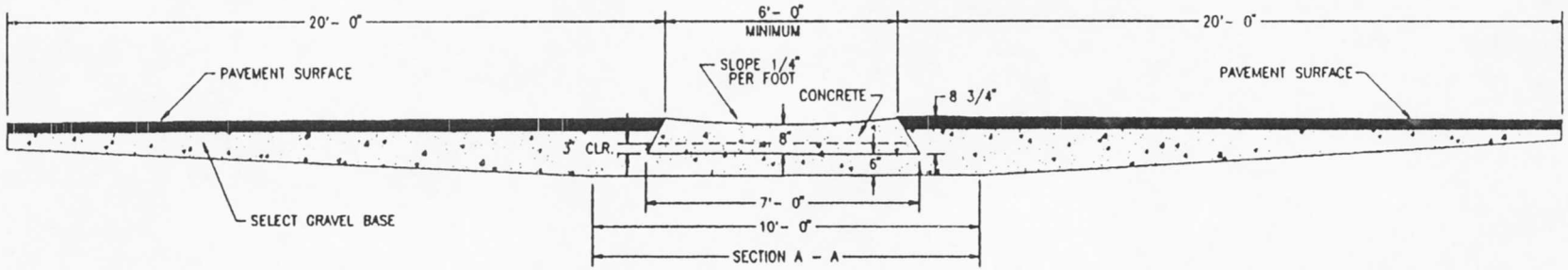
Standard Curb & Gutter
Type 1, 2, 3, 4, 5 & 6

Approved By: [illegible] City Engineer

Drawn By: J. Niño | Date: Aug. 00 | STD. D-6



PLAN VIEW



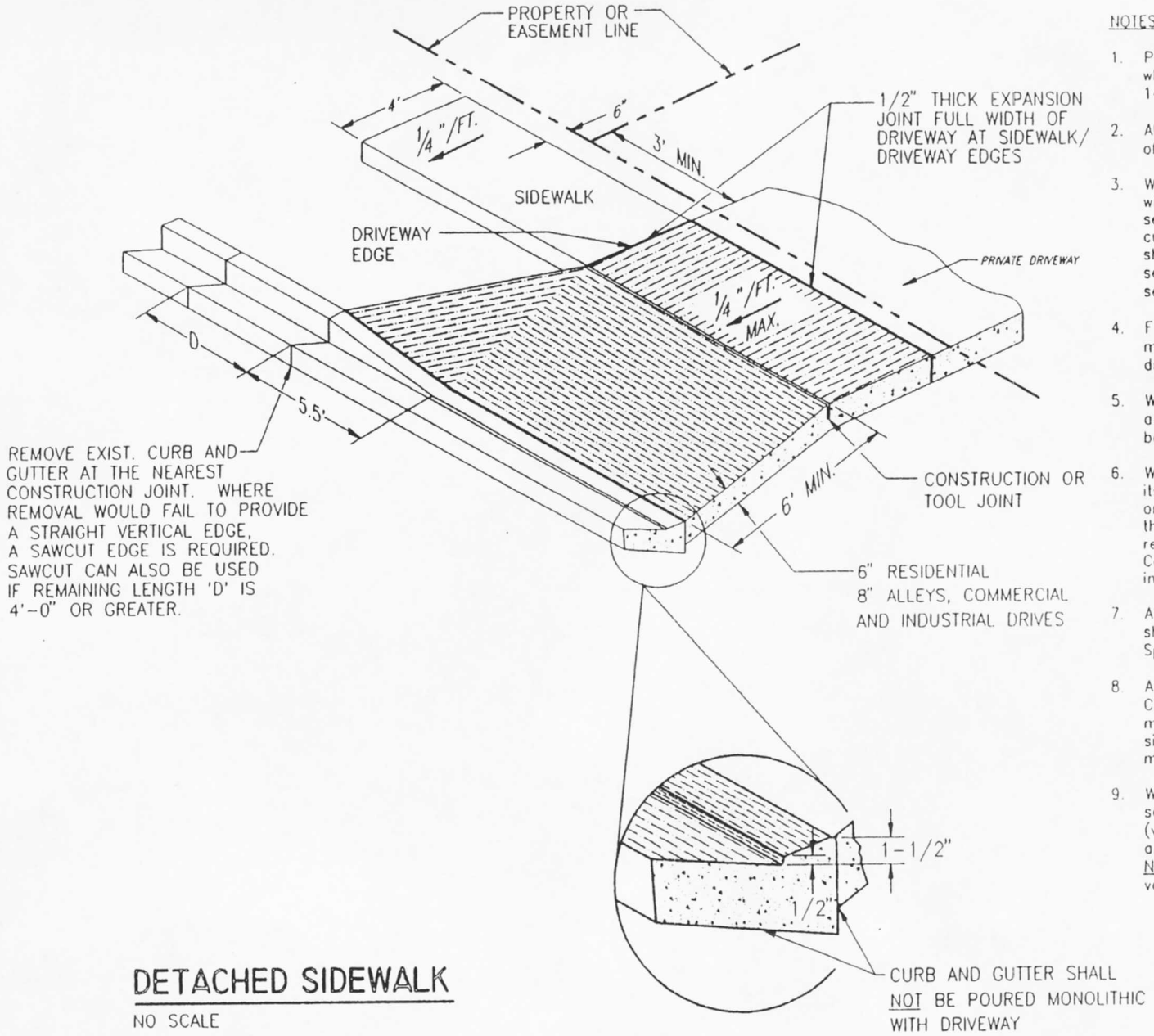
SECTION A-A

NO SCALE

NOTES

1. SQUARED-OFF RETURN TO BE POURED MONOLITHIC 8" P.C.C. MINIMUM WITH 6x6 - 4,4 W.W.F. OR #4 @ 18" E.W.
2. = 3" MINIMUM ASPHALT DEPTH (2 LIFTS).

CITY OF COLORADO SPRINGS	
Cross Pan	
approved by: Gary R. Haynes City Engineer	
Drawn BY: J2	DATE: 03/9 D. D-7



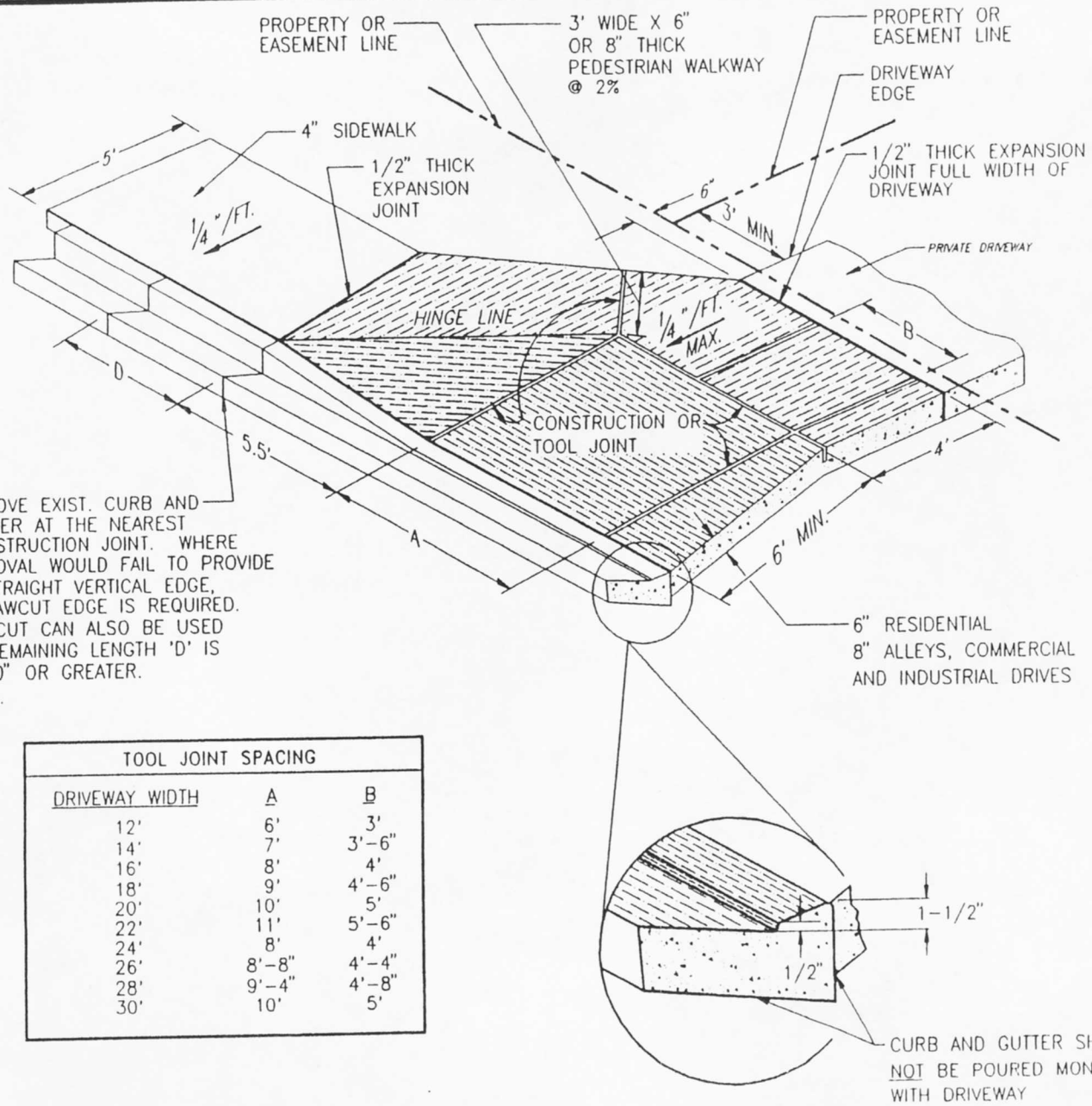
DETACHED SIDEWALK

NO SCALE

NOTES:

1. Provide centerline construction or tool joint when driveway width (edge to edge) is 14' or greater.
2. All tool joints shall be a minimum of 1-1/2" deep.
3. When replacing existing curb and gutter with new driveway, entire curb and gutter section shall be removed and replaced with curb and gutter (variable-curb-height) as shown. Do NOT break curb from gutter section. Machine sawcut is allowable; see D-16C.
4. Flared portion of driveway shall be poured monolithic with main rectangular portion of driveway.
5. Where there is more than one driveway on a lot, 30' of full curb shall be provided between driveways.
6. Where an existing sidewalk is in place, and its thickness is less than 6" (residential) or 8" (commercial, industrial, or alley) the the sidewalk through the driveway shall be removed and replaced with Portland Cement Concrete, 6" (residential) or 8" (commercial) in thickness.
7. All excavation, embankment and concrete shall be in accordance with City Standard Specifications.
8. All provisions of Section 14-15-104 of the City Code shall be met, with regard to minimum setback from intersection and side property lines, minimum spacing, maximum width, etc.
9. When a driveway is to be taken out of service, the entire length of curb and gutter (variable-curb-height) shall be removed and replaced with new curb and gutter. Do NOT place new curb head on existing variable-curb-height curb and gutter.

CITY OF COLORADO SPRINGS		
Standard Driveway with Detached Walk		
Approved by: Gary R. Haynes		City Engineer
Drawn by: KLW	Date: 07/94	STD. D-16B



TOOL JOINT SPACING		
DRIVEWAY WIDTH	A	B
12'	6'	3'
14'	7'	3'-6"
16'	8'	4'
18'	9'	4'-6"
20'	10'	5'
22'	11'	5'-6"
24'	8'	4'
26'	8'-8"	4'-4"
28'	9'-4"	4'-8"
30'	10'	5'

NOTES:

1. Provide centerline construction or tool joint when driveway width (edge to edge) is 14' or greater.
2. All tool joints shall be a minimum of 1-1/2" deep.
3. When replacing existing curb and gutter with new driveway, entire curb and gutter section shall be removed and replaced with curb and gutter (variable-curb-height) as shown. Do NOT break curb from gutter section. Machine sawcut is allowable; see D-16C.
4. Flared portion of driveway shall be poured monolithic with main rectangular portion of driveway.
5. Where there is more than one driveway on a lot, 30' of full curb shall be provided between driveways.
6. Where an existing sidewalk is in place, and its thickness is less than 6" (residential) or 8"(commercial, industrial, or alley) the the sidewalk through the driveway shall be removed and replaced with Portland Cement Concrete, 6" (residential) or 8" (commercial) in thickness.
7. All excavation, embankment and concrete shall be in accordance with City Standard Specifications.
8. All provisions of Section 14-15-104 of the City Code shall be met, with regard to minimum setback from intersection and side property lines, minimum spacing, maximum width, etc.
9. When a driveway is to be taken out of service, the entire length of curb and gutter (variable-curb-height) shall be removed and replaced with new curb and gutter. Do NOT place new curb head on existing variable-curb-height curb and gutter.

ATTACHED SIDEWALK

NO SCALE

CITY OF COLORADO SPRINGS		
Standard Driveway with Detached Walk		
Approved by: Gary R. Hayes	City Engineer	
Drawn by: KLM	Date: 07/94	STD. D-16A

2004 ADA Compliant Detectable Warning Paver

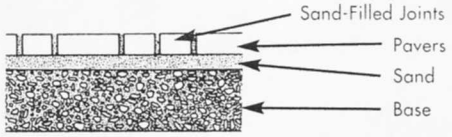
(July 23, 2004: Access Board Issues New Guidelines for Accessible Design)

The 2004 ADA Compliant Detectable Warning Paver is an additional guidance provision for wheelchair and pedestrian access to streets, sidewalks and other components of the public right of way. This product will help ensure local jurisdictions and other entities that their facilities are accessible to people with physical or sensory disabilities. Available in a variety of colors, the 2004 ADA Compliant Detectable Warning Paver provides visual as well as textural contrast to conventional publicly utilized pavements.

COMPOSITION AND MANUFACTURE

The 2004 ADA Compliant Detectable Warning Paver is made from a "no slump" concrete mix. Made under extreme pressure and high frequency vibrations, the 2004 ADA Compliant Detectable Warning Paver has a compressive strength greater than 8000 psi, a water absorption maximum of 5% and will meet or exceed ASTM C-936 and freeze-thaw testing per Section 8 of ASTM C-67.

Typical Cross Section Of Concrete Paver Installation



APPLICATIONS

Transportation Centers • Street Intersections Hazardous Vehicle Areas • Pedestrian Ramps

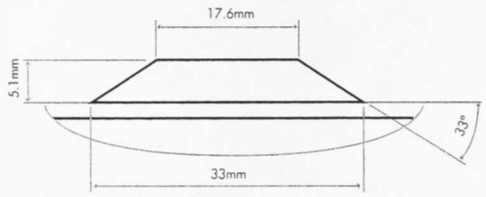
PRODUCT INFORMATION

The 2004 ADA Compliant Detectable Warning Paver is available in 1 size and 1 thickness, 60mm = 2 3/8"

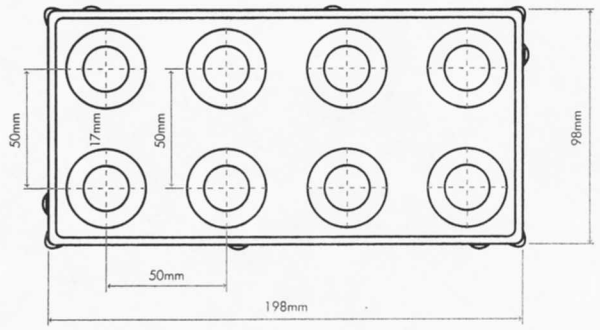
DETECTABLE WARNING PAVER

Nominal Dimensions 3 7/8" W x 7 13/16" L 98mm x 198mm

Height/Thickness: 60mm = 2 3/8" *Fractional dimensions are nominal.



The 2004 ADA Compliant Detectable Warning Paver Truncated Dome Cross Section



The 2004 ADA Compliant Detectable Warning Paver Top View

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The Strength of a National Company With Local Customer Service

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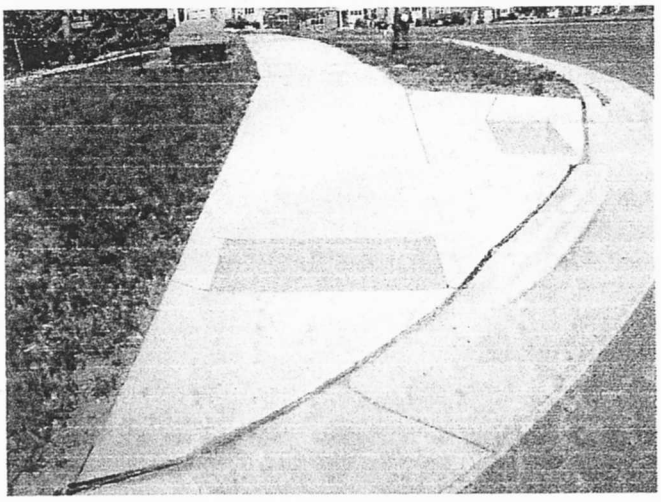
- Denver, CO: (303) 287-3700
- Hagerstown, MD: (240) 420-3780
- Houston, TX: (281) 391-7283
- Kansas City, MO: (816) 524-9900
- Las Vegas, NV: (702) 221-2700
- New Orleans, LA: (985) 882-9111
- Phoenix, AZ: (602) 257-4588
- Sacramento, CA: (916) 452-5233
- St. Louis/ Cape Girardeau, MO: (573) 332-8312
- Winters, CA: (530) 795-4400

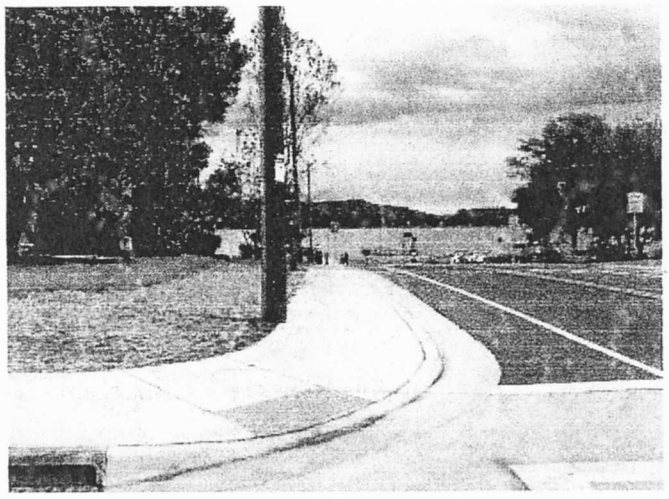
Member of ASLA & NCMA

ICPI Charter Member

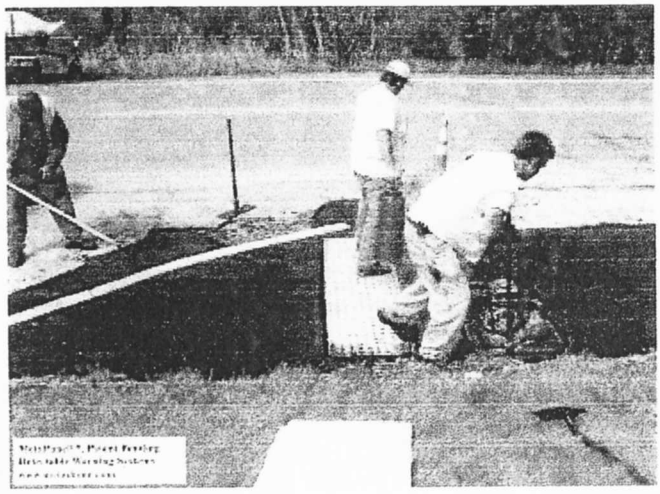
Anchor Retaining Wall Systems

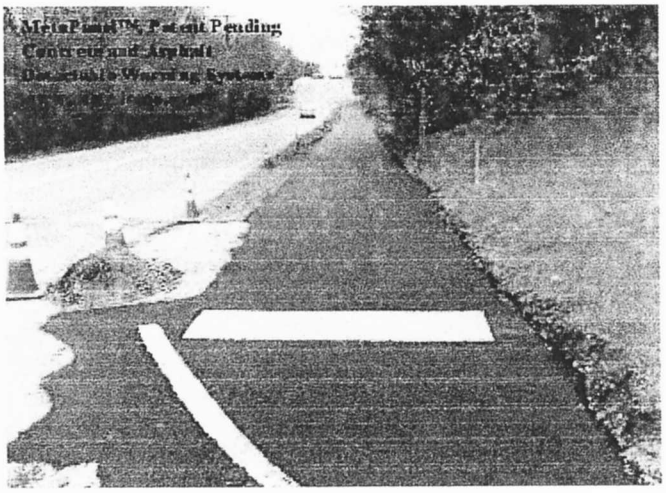
SKU# CDC 153 04/05



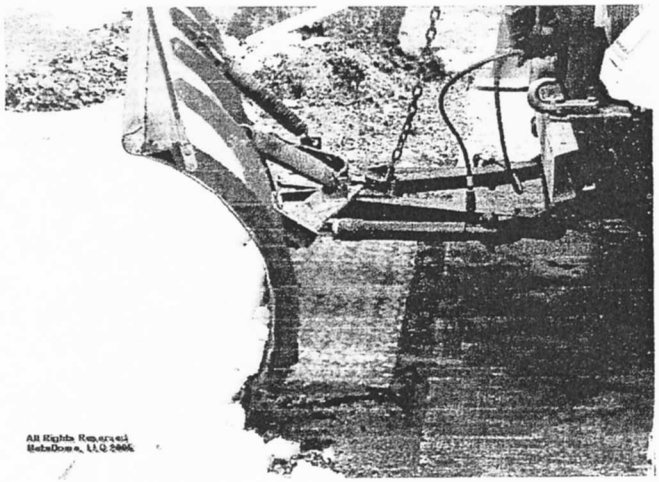


MetaPanel™ Concrete Applications





MetaPanel™ Asphalt Application



MetaPanel™ Durable Stainless Steel Truncated Domes

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E-Mail: Inquiry@metadome.com
Website: www.metadome.com
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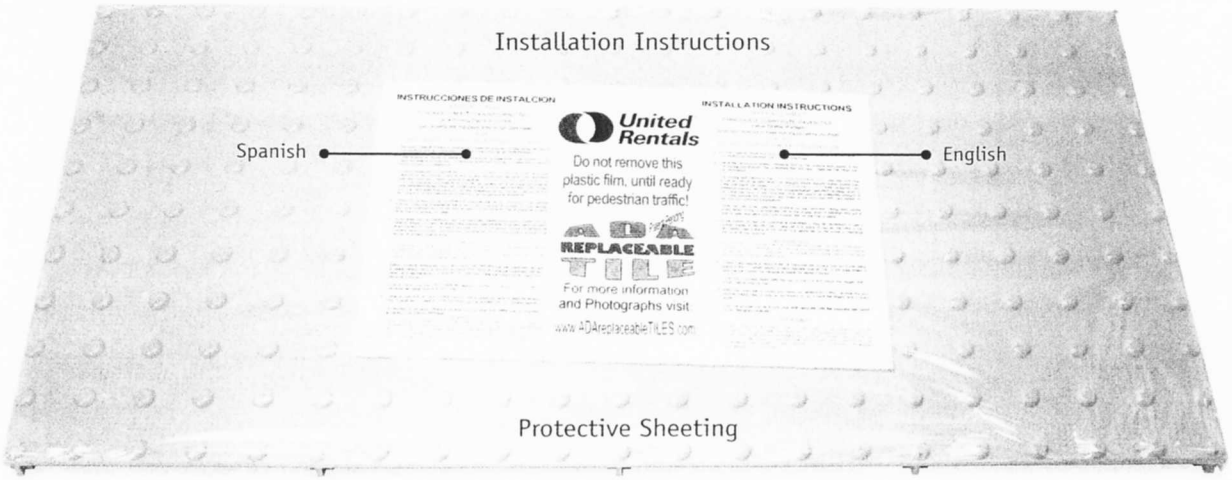


Replaceable Cast-In-Place Tiles Installation Procedure

A. Review Federal, State and local standards and specifications prior to installing "American Disabilities Act" conforming Tiles.

B. Leave the protective plastic adhesive film on the surface and edges of the Tile during installation. The protective film will help keep the Tile clean during installation.

C. The timing and setting of the "ADA REPLACEABLE TILE" into the concrete is not as critical as with other Tile designs which require higher slump concrete and early set times. "ADA REPLACEABLE TILE" does, however, recommend placing the Tile into the predetermined specified location prior to the initial set time of the concrete. This will insure an adequate amount of concrete around the anchors. Set times of the concrete will vary based on the mix and ambient temperature.

D. Place the Tile in its' specified location on the concrete. Using both hands, press down firmly to embed the Tile to the proper level. A minimal amount of side to side and back and forth motion will set the Tile in place.

E. If low slump or fast set concrete is specified, it may be necessary to use a rubber mallet to tap the Tile to help set it in place. If you do not have a rubber mallet, use a piece of flat wood and lightly tap on the wood to distribute the force of the tapping.

Size	Order #	Color
2' x 3'	E2436	*
2' x 4'	E2448	*
2' x 5'	E2460	*
24" Flexible Connector	EFS24	*
36" Flexible Connector	EFS36	*
Replacement Security Tool	ST1212	

*Add color **Letter** following the last part number.

Manufactured by ADA Replaceable Tiles.

IMPORTANT NOTE!

This Tile does not require that the concrete be forced into the "honeycomb" cavities on the underside of the Tile. The anchors provide positive anchoring of the Tile. The Tile is designed to be hollow and provide sound attenuation for visually impaired pedestrians.

F. These Tiles displace about 2 lbs. of concrete per square foot, so if you place about 2 lbs. (1 small brick) in each square foot of Tile, it will stay where it was placed. Leave the weights in place for about 2 hours.

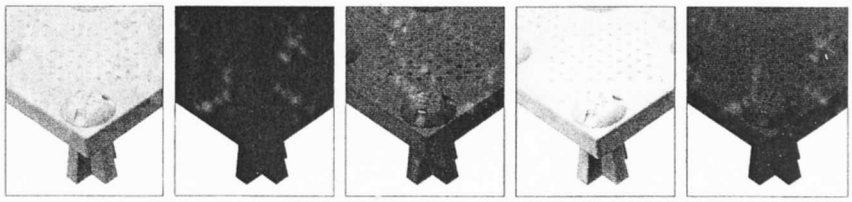
G. Float the concrete flush with the top of the Tile and finish the edges with a small radius edging tool.

H. After the concrete is cured and ready for pedestrian traffic, remove the protective plastic film. It may be necessary to cut around the edges with a sharp knife.

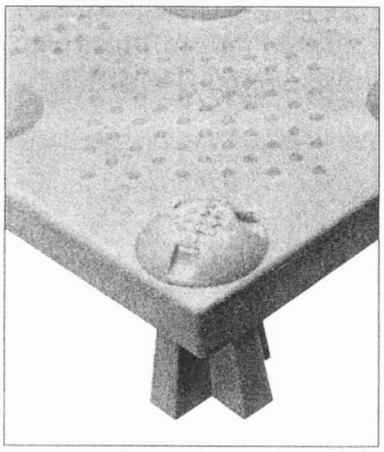
I. The Tile should not be driven over with vehicles until the concrete has cured to its' designed strength.

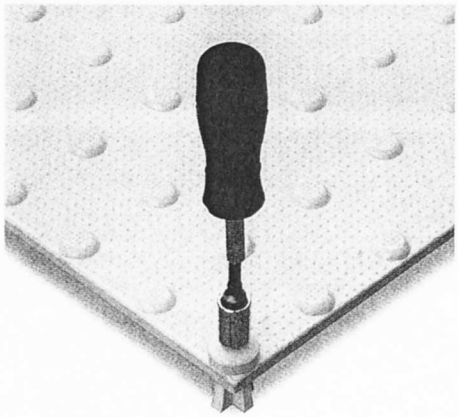
REPLACEMENT

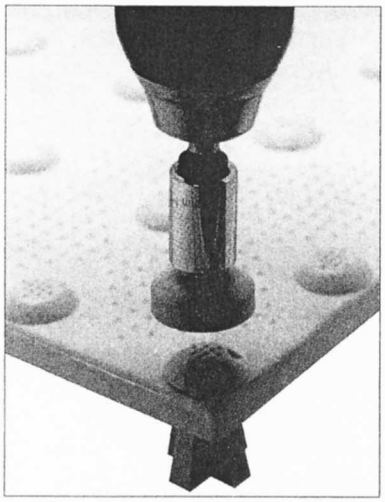
If the "ADA REPLACEABLE TILE" should have to be replaced, use the "security tool" provided and remove all the "domed screws" (they have three slots). Tap around the edges with a mallet to loosen the Tile. Lift the Tile out of the recess. Clean out the recess with water pressure or compressed air and install the new Tile with the security screws. The anchors will remain in the concrete.



Y - yellow | B - black | G - gray | W - white | R - brick red

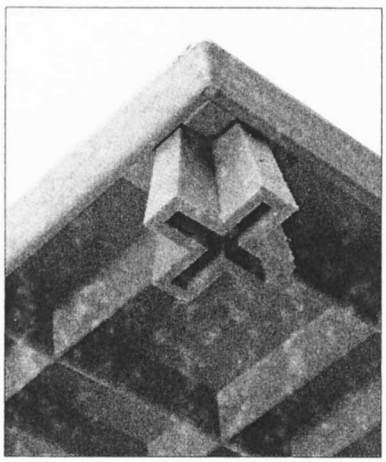


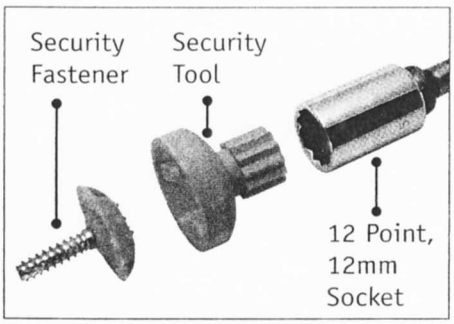


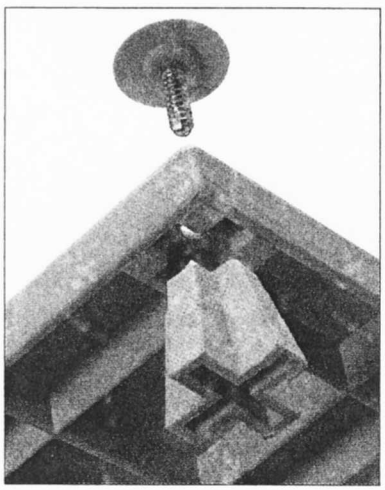


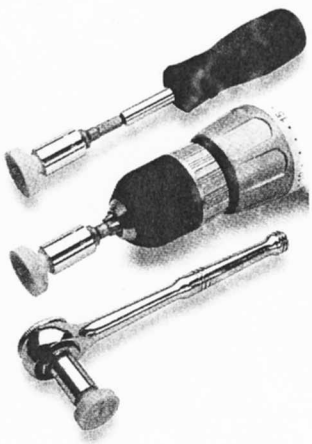
If the Tile needs to be replaced, remove the security fasteners, tap around the edges and remove the damaged tile.

Reinstallation is easy, remove the debris, place new tile in recess and secure with new security fasteners. It's that easy!

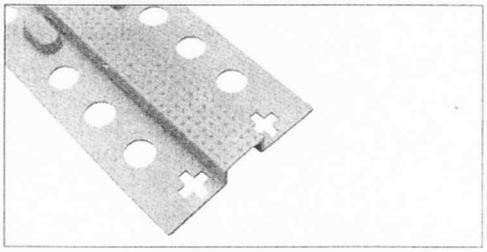


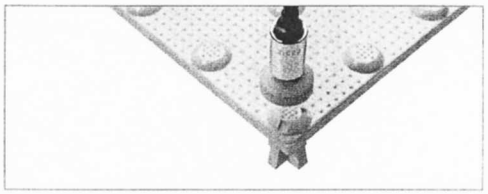


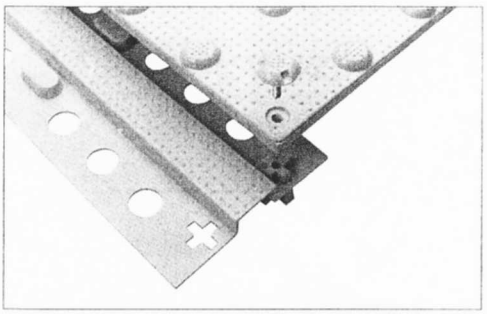


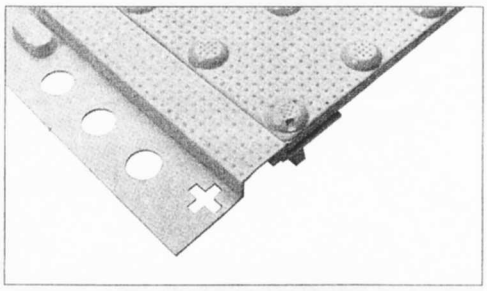


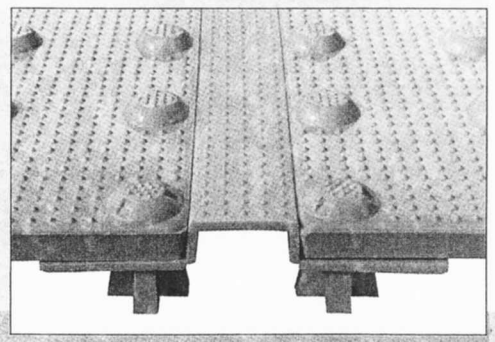
Joining multiple tiles is easy with the flexible connector.

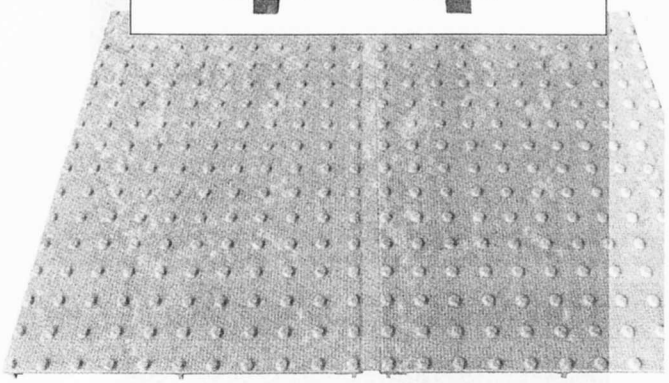








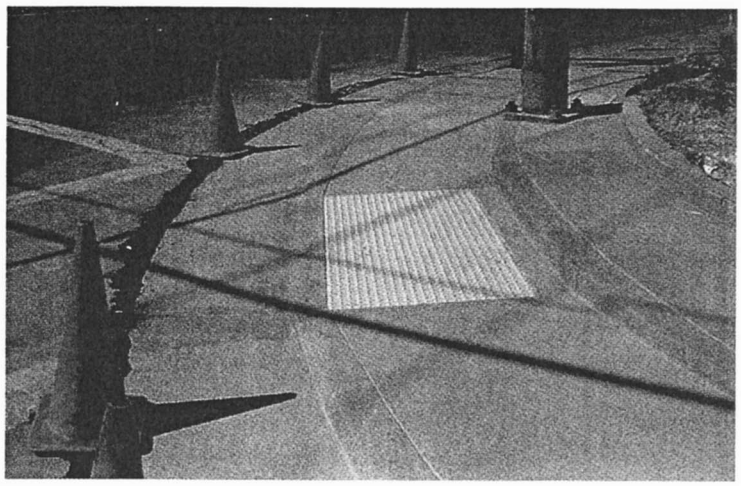




Cast-In-Place Tiles

ADA CAST-IN-PLACE Paver Tiles can only be installed in freshly poured concrete. Contractors can easily install CAST-IN-PLACE paver tiles for a fraction of the installation cost associated with Surface Mounted tiles.

Concrete surface preparation efforts associated with the Surface Mounted tiles has been eliminated as has the cost of mechanical fasteners and structural adhesives.



CAST-IN-PLACE Paver Tiles Installation Procedure

A. The physical characteristics of the concrete shall be as specified in the Contract Documents while maintaining a slump range of 4-7 to permit the solid placement of the Paver Tile in the wet cement.

B. The concrete shall be poured and finished level, true and smooth to the required dimensions prior to the placement of the tile.

C. Place the tile 6 - 8 inches from the curb line. Working in a grid pattern, tamp the tile into the wet concrete using a rubber mallet and a scrap piece of wood. **Continue this process until all of the air has been released**, and the tile surface is flush with the surrounding area.

IMPORTANT: You should always avoid striking the surface of the tile directly.

D. Following the placement, the tile elevation should be checked to the adjacent surface with a straight edge. The tile elevation should be consistent with the Contract Drawings and Specifications. Any required adjustments must be made prior to the time when the concrete begins to set.

E. When you are confident that the tile is in place, and no further adjustments are needed, place a cinder block on both ends to hold the tile in place while the concrete sets.

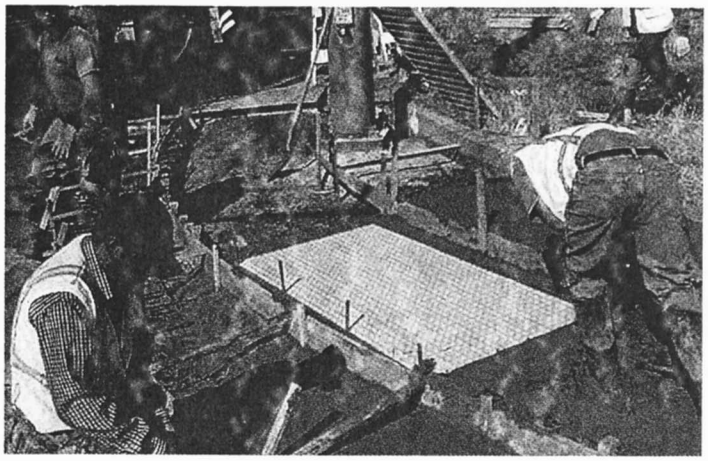
F. During and after the tile installation, as well as the concrete curing stage, no walking or external forces can be placed on the tile. The area must be protected from pedestrian traffic until concrete is cured. The surface will be ready for pedestrian traffic within 1 - 2 hours.

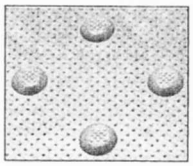
G. Be sure to clean all debris from the face of the tile before concrete can cure.

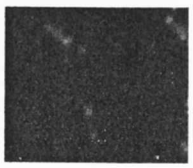
Size	Order #	Color
2' x 3'	2436IDPAV2	*
2' x 4'	2448IDPAV2	*
2' x 5'	2460IDPAV2	*
3' x 4'	3648IDPAV2	*
3' x 5'	3560IDPAV2	*

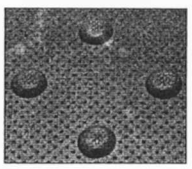
* Add color Letter following number 2 at end of part number.

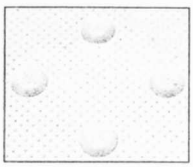
Manufactured by ADA Solutions.

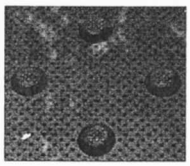



Y - yellow


B - black


G - gray


W - white


R - brick red

Industry-related Definitions

Curb Ramps

Curb ramps utilizing truncated dome warning tiles are required to connect pedestrian access routes to street crossings. Generally, this requires two separate curb ramps at each corner instead of a single ramp which opens diagonally onto an intersection. Single installations are discouraged whenever possible as they can misdirect blind pedestrians who use the slope of curb ramps as a cue.

Detectable Warnings

Detectable warnings are designed to work much like a stop sign and to alert visually impaired pedestrians to the presence of a hazard in their line of travel

A Detectable Warning surface is defined by the ADA Accessibility Guidelines (ADAAG) as "a standardized surface feature built into or applied to walking surfaces or other elements to warn visually impaired people of hazards on a circulation path." Detectable Warnings incorporating truncated domes are the best indicator to alert pedestrians there is a hazard approaching in their way of travel. Truncated domes are the only detectable warning allowed by the ADA Accessibility Guidelines (ADAAG).

Due to their distinctive design, truncated domes can be identified underfoot and by sound on cane contact (also referred to as sound attenuation). Color contrast is another beneficial aspect of the truncated dome, making the tile visually detectable from the surrounding surface.

United Rentals offers detectable warning solutions for curb ramps, vehicular ways, parking areas, pedestrian crossings, escalator approaches, transit platforms and multi-modal transit facilities.

Truncated Domes

Truncated domes are the Federally legislated standard design requirement for detectable warnings which enable people with visual disabilities to determine the boundary between the sidewalk and the street. Because truncated domes have a unique design they can be detected underfoot and by sound on cane contact. United Rentals offers this unique sound on cane feature required for optimum detectability in warning surfaces.

About The Law

Summary

To view the entire report published by the Access Board go to http://www.access-board.gov/rowdraft.htm

Detectable Warning Surfaces (1108)

Pedestrian street crossings, including, curb ramps and blended transitions (1104.3.2), certain median and refuge islands (1105.4.2), and rail lines (1103.7) are required to have detectable warnings for persons with vision impairments. These surfaces feature a distinctive pattern of raised domes to provide a tactile cue detectable by cane or underfoot at the boundary between pedestrian and vehicular routes.

1108 Detectable Warning Surfaces

1108.1 General. Detectable warnings shall consist of a surface of truncated domes aligned in a square grid pattern and shall comply with 1108.

1108.1.1 Dome Size. Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inches (23 mm) minimum to 1.4 inches (36 mm) maximum, a top diameter of 50% of the base diameter minimum to 65% of the base diameter maximum, and a height of 0.2 inches (5 mm).

1108.1.2 Dome Spacing. Truncated domes in a detectable warning surface shall have a center-to-center spacing of 1.6 inches (41 mm) minimum and 2.4 inches (61 mm) maximum, and a base-to-base spacing of 0.65 inches (16 mm) minimum, measured between the most adjacent domes on square grid.

1108.1.3 Contrast. Detectable warning surfaces shall contrast visually with adjacent walking surfaces either light-on-dark, or dark-on-light.

1108.1.4 Size. Detectable warning surfaces shall extend 24 inches (610 mm) minimum in the direction of travel and the full width of the curb ramp, landing, or blended transition.

1108.2 Location.

1108.2.1 Curb Ramps and Blended Transitions. The detectable warning surface shall be located so that the edge nearest the curb line is 6 inches (150 mm) minimum and 8 inches (205 mm) maximum from the curb line.

1108.2.2 Rail Crossings. The detectable warning surface shall be located so that the edge nearest the rail crossing is 6 inches (150 mm) minimum and 8 inches (205 mm) maximum from the vehicle dynamic envelope.

1108.2.3 Platform Edges. Detectable warning surfaces at platform boarding edges shall be 24 inches (610 mm) wide and shall extend the full length of the platform.

4.29 Detectable Warnings (ADAAG).

4.29.5 Detectable Warnings at Hazardous Vehicular Areas. If a walk crosses or adjoins a vehicular way, and the walking surfaces are not separated by curbs, railings, or other elements between the pedestrian areas and vehicular areas, the boundary between the areas shall be defined by a continuous detectable warning which is 36 in (915 mm) wide, complying with 4.29.2.