

CITY OF TUCSON, ARIZONA
DEPARTMENT OF TRANSPORTATION

ENGINEERING DIVISION
ACTIVE PRACTICE GUIDELINES

PREPARED BY: Thad B. Harvey

EFFECTIVE: 4/6/04

APPROVED BY: 

DATE: 4/6/04

CITY ENGINEER

SUBJECT: STEEL PLATING OF OPEN TRENCHES.

A. PURPOSE:

To establish and promote uniform policies for placement of steel plates over open trenches within the public right-of-way.

B. BACKGROUND:

The following Active Practice Guideline is intended to provide a high level of service of city streets by establishing criteria for use of steel plates during the cutting of pavement, trenching, backfilling, and repair of pavement cuts. Overall goal is to reduce traffic congestion and hazards along with increasing public safety in and around construction sites.

This standard shall apply to all public and private entities seeking to trench within the City of Tucson rights-of-way. Builders, developers, utilities, etc. shall make every effort to utilize common trench and plate practices to ensure public safety.

C. POLICY:

1. Steel plating of transverse and longitudinal trenches shall be in accordance with Standard Plan # S-2004-008 and the following schedule:

Steel Plate Installation	Posted Speed Limit	Major Streets & Routes
TYPE 1	Less Than 25 MPH	All Other Streets
TYPE 2	25 MPH or Greater	Arterial & Collector Streets

a. Type 2 Plate installation shall be recessed by milling existing pavement to set flush with finish grade. Full depth cutting is not permitted of pavement section outside of the trench. Milling depth shall match thickness of plates and the gap between the edge of plate and existing pavement must be filled with temporary asphalt mix.

b. Trench widths are based on an analysis per the 14th Edition of Standards

Specifications for Highway Bridges by AASHTO. An assumed axle loading of 12 Tons was used with a 30% impact factor. The axle length is 6 feet: Therefore the number of wheels carried by a plate depends on the roadway width.

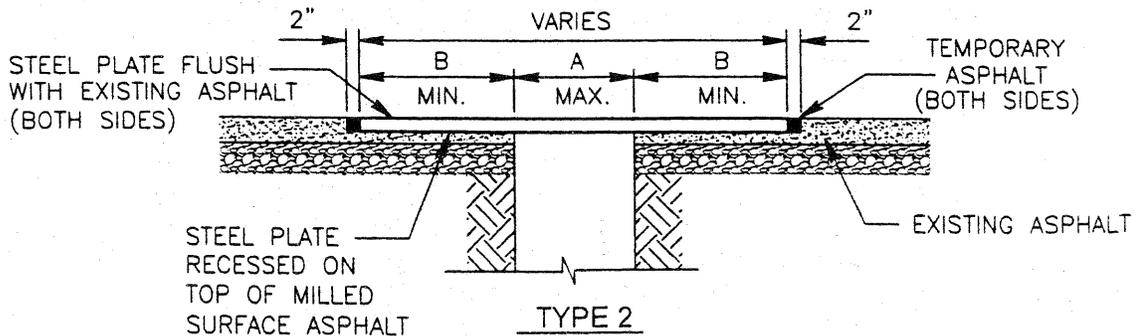
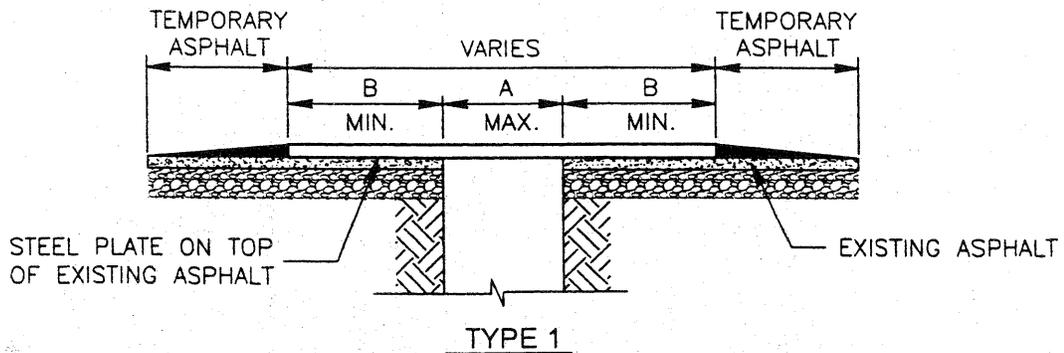
- c. Steel plates must be able to withstand H-20 traffic loading without movement.
- d. Plates shall be fabricated from ASTM A36 Steel (min).
- e. Plates shall be secured from lateral movement and vertical vibration (associated noise) while in use by temporary asphalt mix.

2. Plate size shall be determined by the following schedule:

PLATE SIZE						
LONGITUDINAL		PLATE SPECIFICATIONS			TRANSVERSE	
Trench Width (in)	T - Top (in)	Thickness (in)	Width (ft)	Length (ft)	Trench Width (in)	T - Top (in)
12	18	1	4	8	58	19
12	18	1	4	10	58	31
24	18	1	5	10	70	25
36	18	1	6	10	44	38
48	18	1	7	10	52	34
60	18	1	8	10	58	31
12	18	1-1/4	4	15	88	47
24	18	1-1/4	5	12	104	20
36	18	1-1/4	6	12	66	39
36	18	1-1/4	6	16	66	63
48	18	1-1/4	7	12	76	33
48	18	1-1/4	7	16	76	58
60	18	1-1/4	8	12	86	29
60	18	1-1/4	8	15	86	47
60	18	1-1/4	8	16	86	63
60	18	1-1/4	8	20	86	77
60	18	1-1/4	8	20	102	69

NOTES:

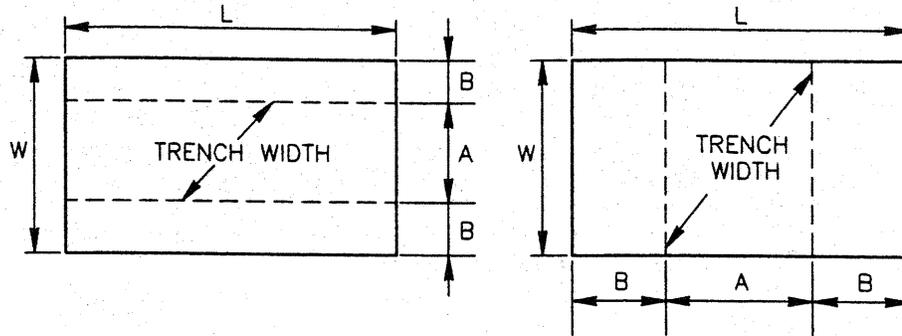
1. USE TYPE 1 PLATE INSTALLATION WHERE POSTED SPEED LIMIT IS ~~LESS THAN 25 MPH.~~ ^{or less} USE TYPE 2 PLATE INSTALLATION WHERE POSTED SPEED LIMIT IS ~~25 MPH OR GREATER.~~ ^{Greater than 25 MPH}
2. FOR TYPE 2 PLATE INSTALLATION, THE STEEL PLATE SHALL BE RECESSED BY MILLING INTO THE EXISTING ASPHALT TO SET FLUSH WITH THE SURFACE OF THE EXISTING ASPHALT. FULL DEPTH CUTTING OF PAVEMENT SECTION OUTSIDE OF TRENCH IS NOT PERMITTED. MILLING DEPTH SHALL MATCH THICKNESS OF PLATE. THE GAP BETWEEN THE EDGE OF THE PLATE AND THE ADJACENT EXISTING ASPHALT PAVEMENT MUST BE FILLED WITH TEMPORARY ASPHALT.
3. TRENCH WIDTHS ARE BASED ON AN ANALYSIS PER THE 14TH EDITION OF STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES BY AASHTO. AN ASSUMED AXLE LOADING OF 12 TONS WITH A 30% IMPACT FACTOR WAS USED. THE AXLE LENGTH IS 6 FEET; THEREFORE THE NUMBER OF WHEELS CARRIED BY A PLATE DEPENDS ON THE ROADWAY WIDTH.
4. STEEL PLATE MUST BE ABLE TO WITHSTAND H-20 TRAFFIC LOADINGS WITHOUT ANY MOVEMENT.
5. PLATES SHALL BE FABRICATED FROM ASTM A36 STEEL (MIN).
6. PLATES SHALL BE SECURED FROM LATERAL MOVEMENT AND VERTICAL VIBRATION (ASSOCIATED NOISE) WHILE IN USE BY TEMPORARY ASPHALT (COLD MIX).



Drawn: CJK APR 2004
 Scale: NO SCALE
 Approved: _____

**STANDARD
TRENCH PLATING**

City of Tucson, Arizona
ENGINEERING DIVISION



LONGITUDINAL
STEEL PLATE

TRANSVERSE
STEEL PLATE

PLATE SIZE						
LONGITUDINAL			TRANSVERSE			
(A)	(B)	THICKNESS	(W)	(L)	(A)	(B)
12"	18"	1"	4'	8'	58"	19"
12"	18"	1"	4'	10'	58"	31"
24"	18"	1"	5'	10'	70"	25"
36"	18"	1"	6'	10'	44"	38"
48"	18"	1"	7'	10'	52"	34"
60"	18"	1"	8'	10'	58"	31"
12"	18"	1-1/4"	4'	15'	88"	47"
24"	18"	1-1/4"	5'	12'	104"	20"
36"	18"	1-1/4"	6'	12'	66"	39"
36"	18"	1-1/4"	6'	16'	66"	63"
48"	18"	1-1/4"	7'	12'	76"	33"
48"	18"	1-1/4"	7'	16'	76"	58"
60"	18"	1-1/4"	8'	12'	86"	29"
60"	18"	1-1/4"	8'	15'	86"	47"
60"	18"	1-1/4"	8'	16'	86"	63"
60"	18"	1-1/4"	8'	20'	86"	77"
60"	18"	1-3/8"	8'	20'	102"	69"